

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

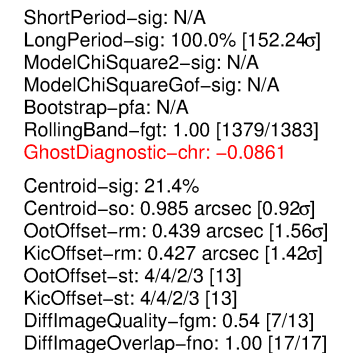
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

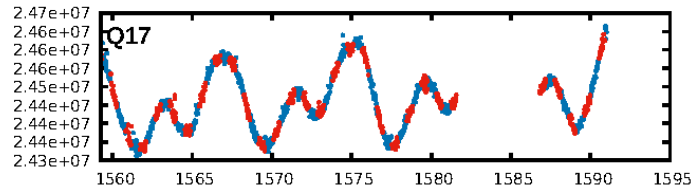
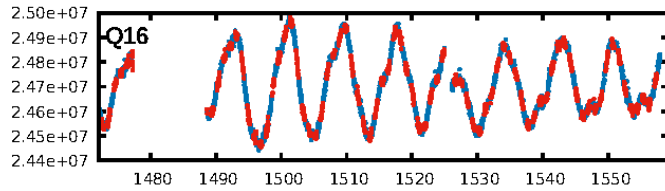
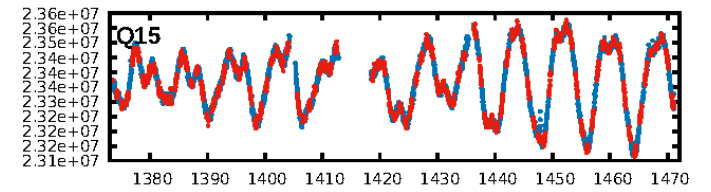
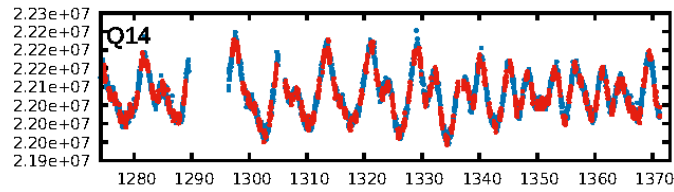
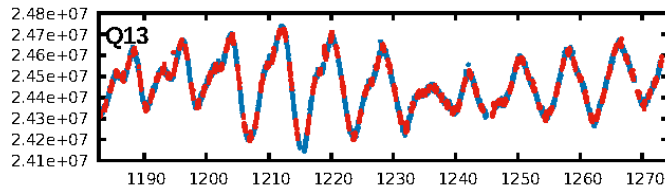
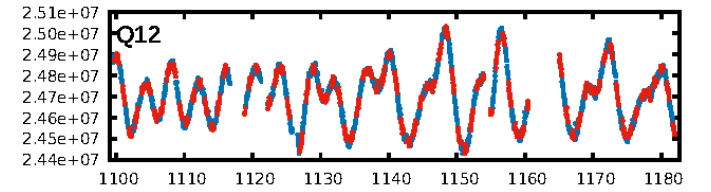
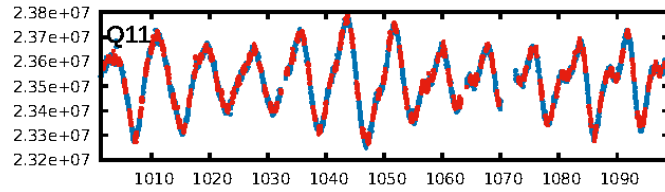
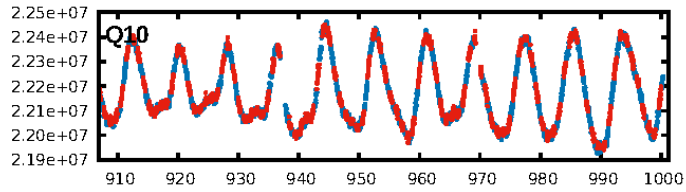
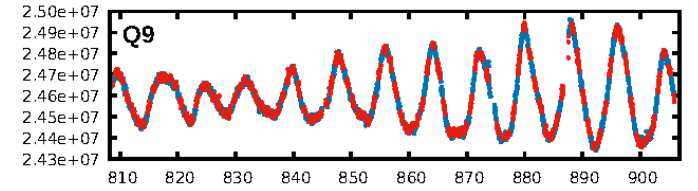
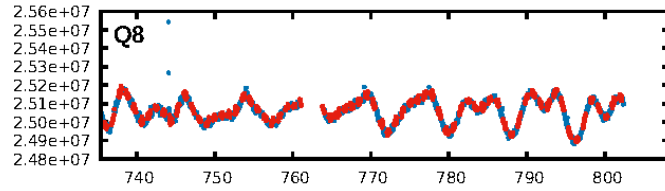
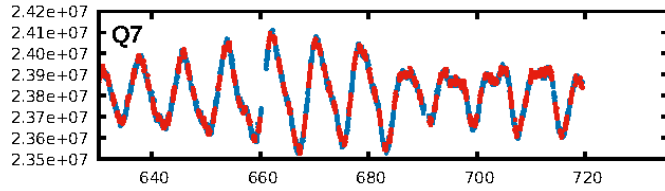
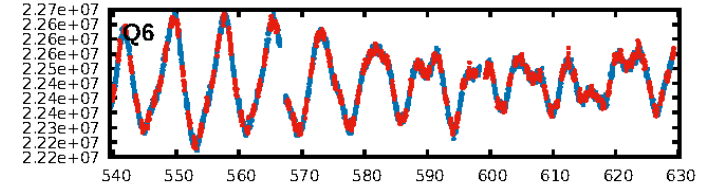
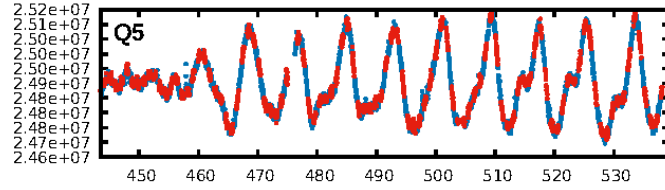
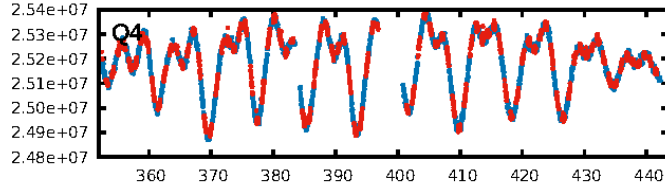
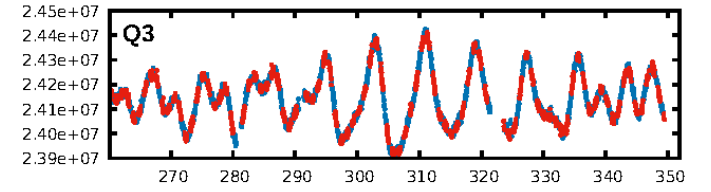
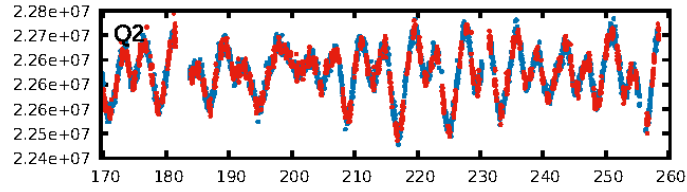
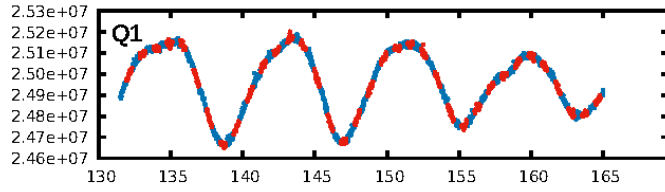
Ephemeris Match Information For 004821181-01

No Significant Match Found

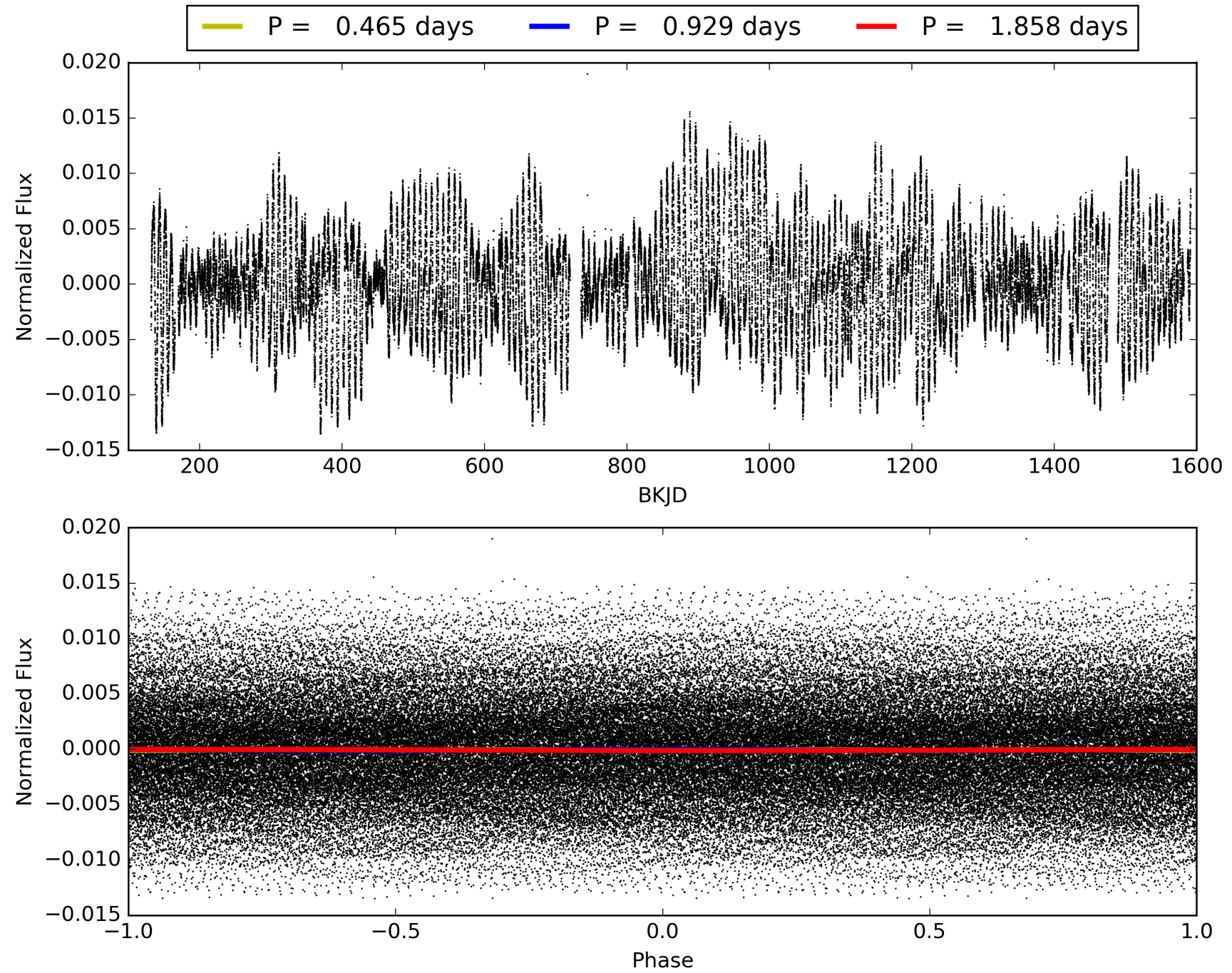
KIC: 4821181 Candidate: 1 of 10 Period: 0.929 d



TCE 004821181-01, PDC Light Curves

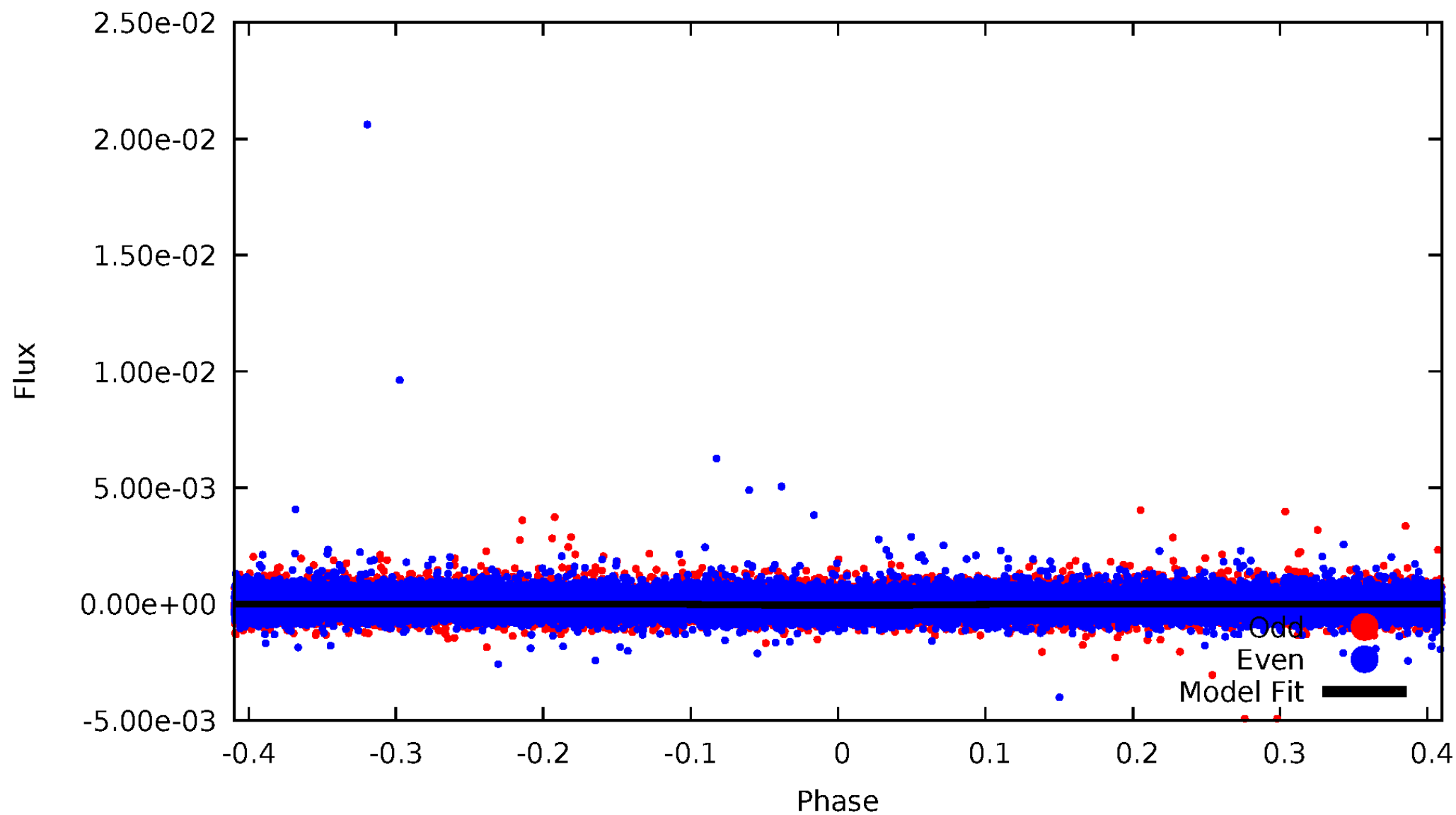


TCE 004821181-01



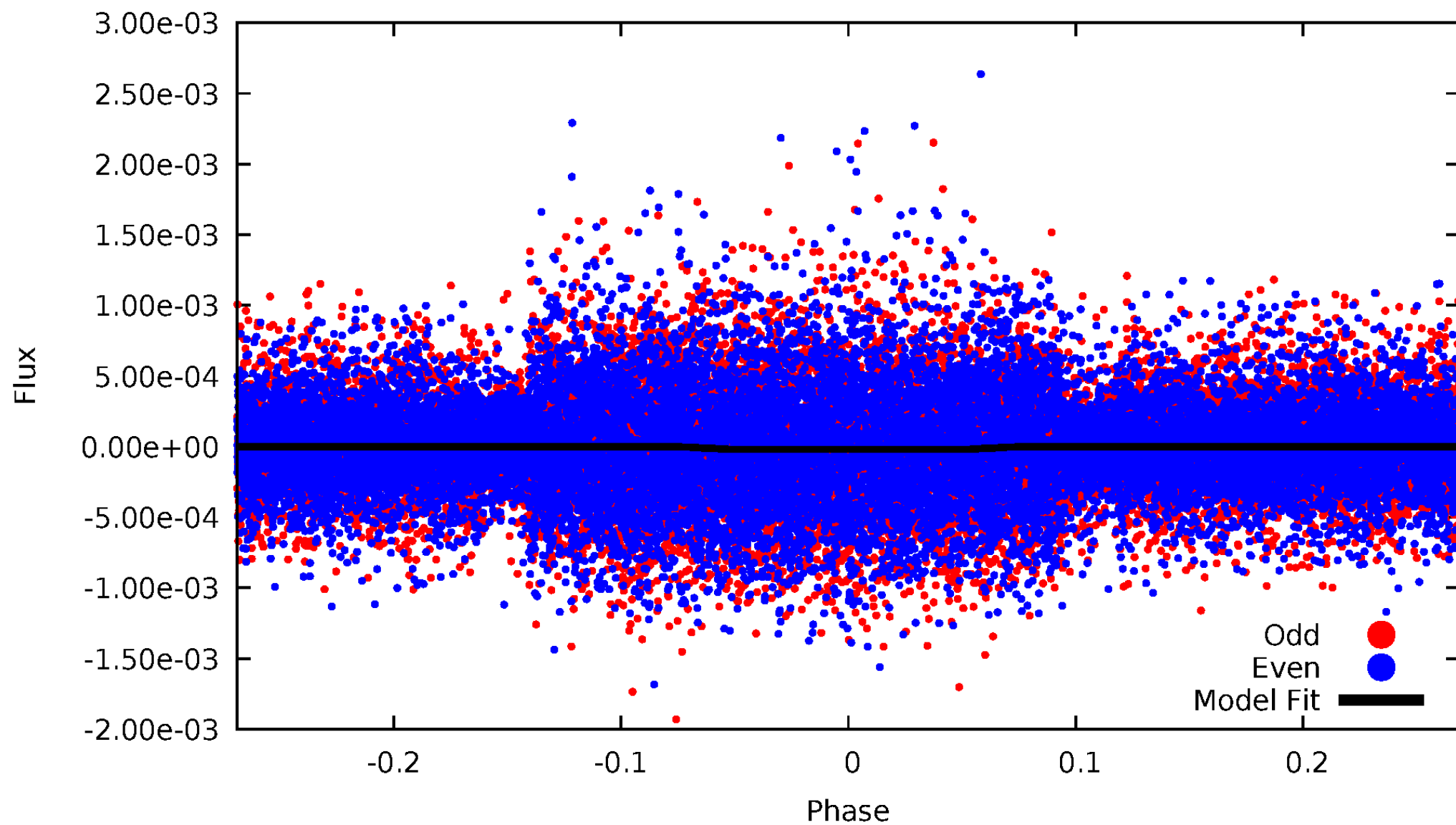
DV Odd/Even

TCE 004821181-01

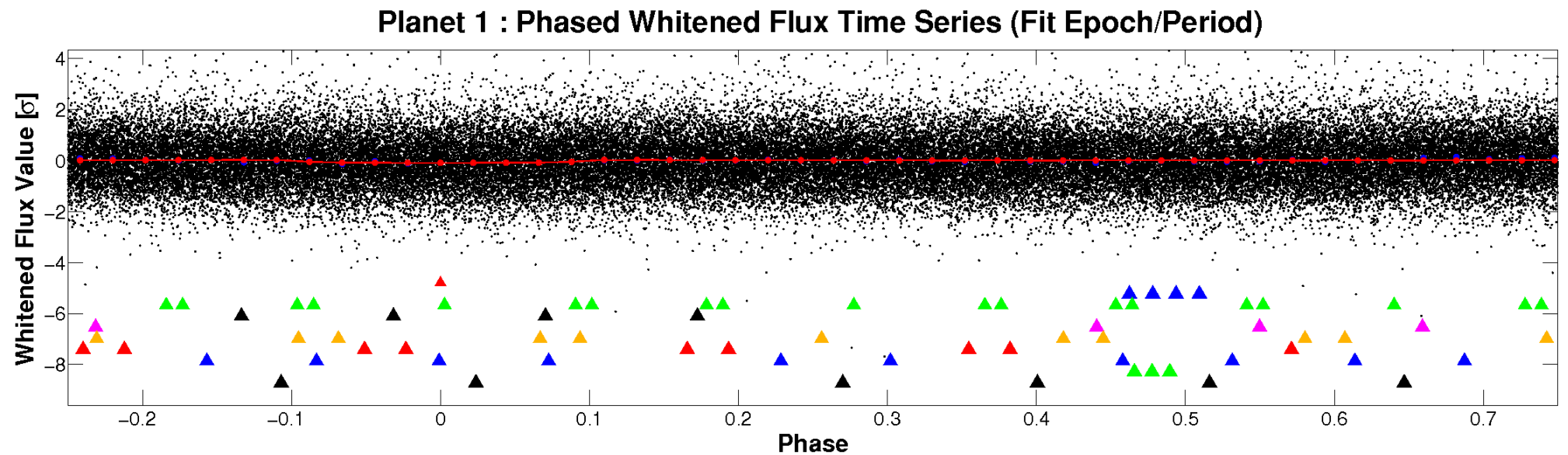
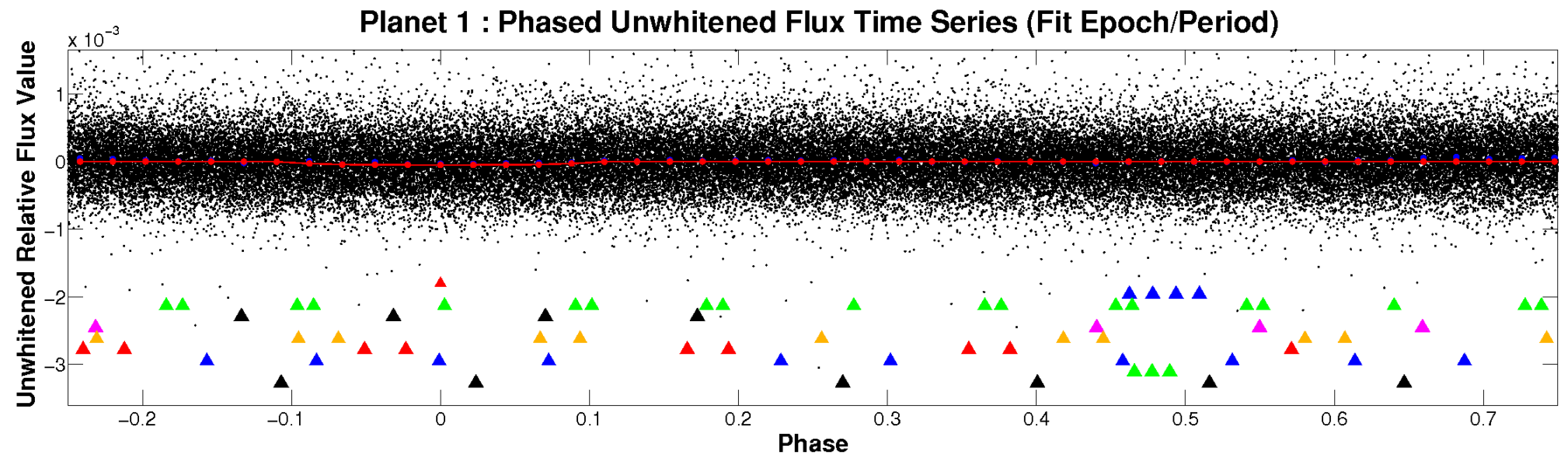


ALT Odd/Even

TCE 004821181-01

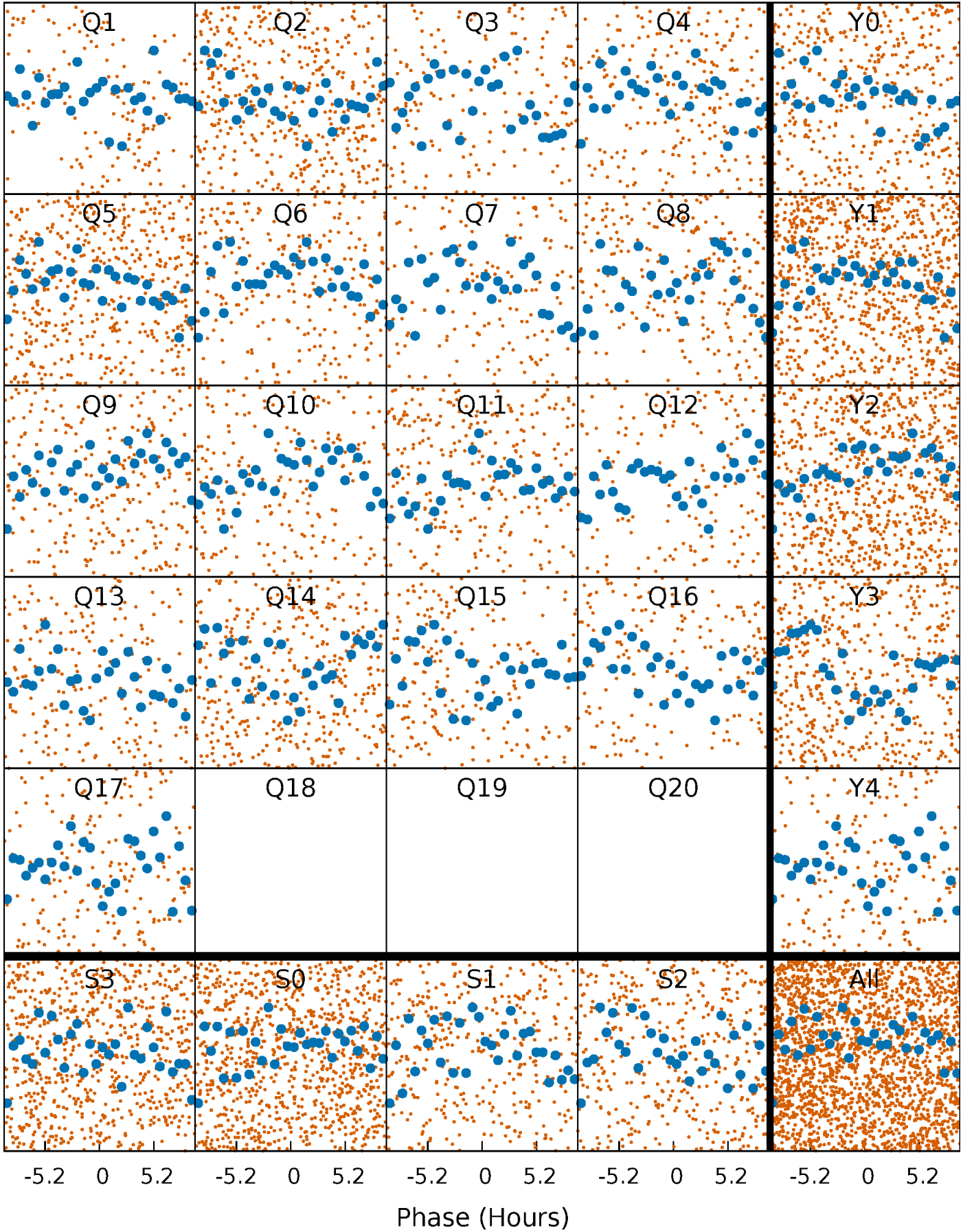


Non-Whitened Vs. Whitened Light Curve



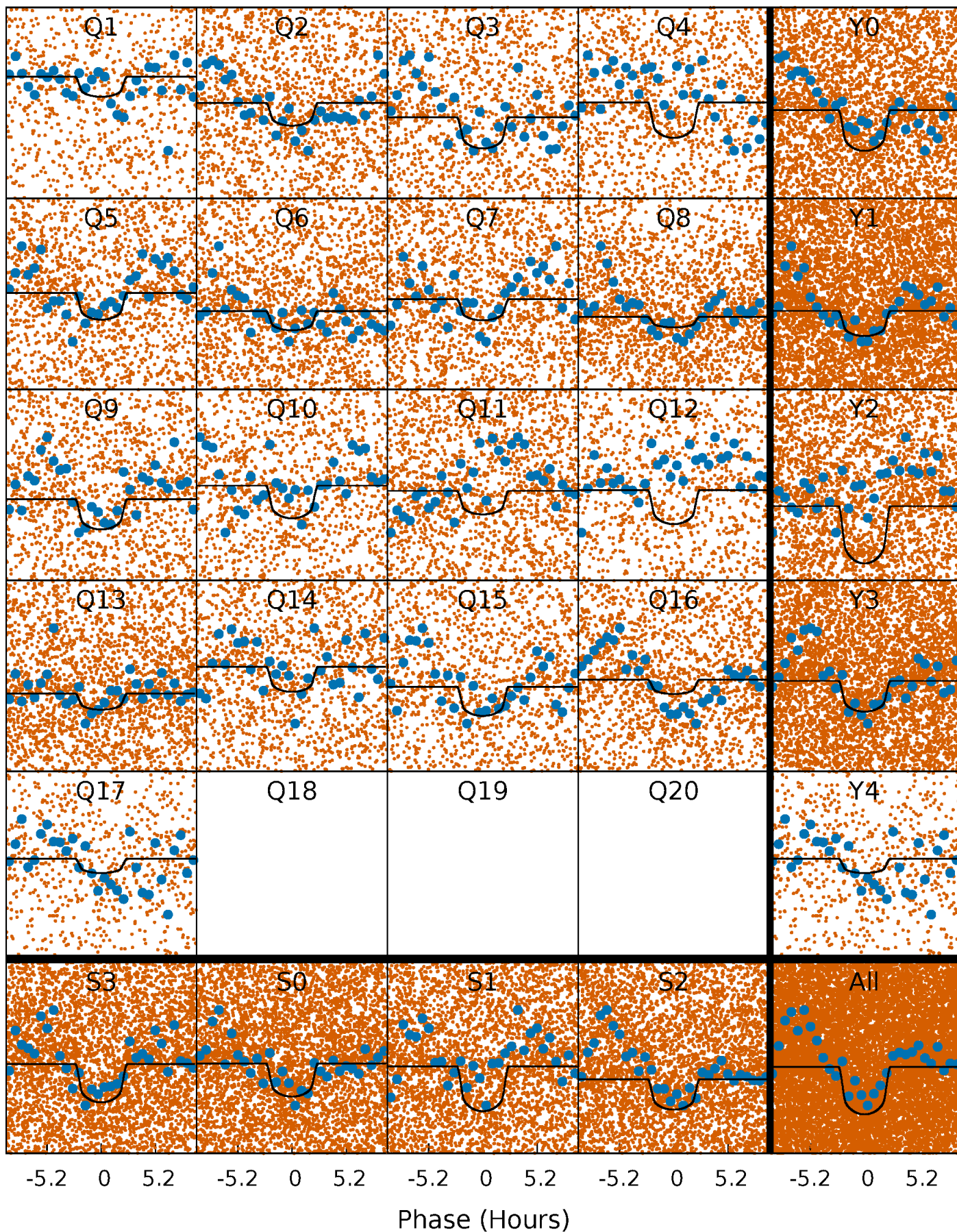
PDC Quarter-Phased Transit Curves

TCE 004821181-01 P= 0.929046 Days $T_0=132.123307$ (BKJD)



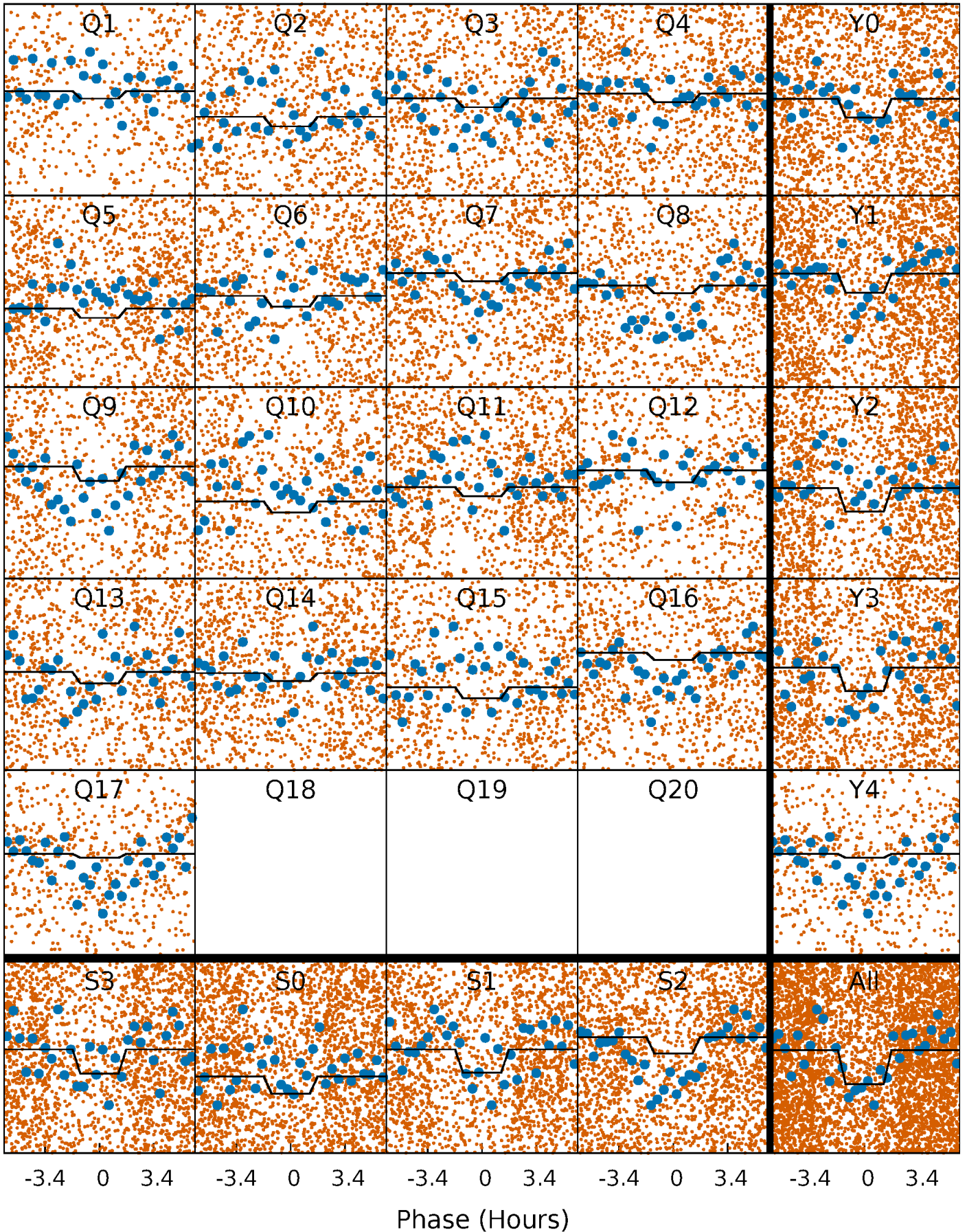
DV Quarter-Phased Transit Curves

TCE 004821181-01 P= 0.929046 Days $T_0=132.123307$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

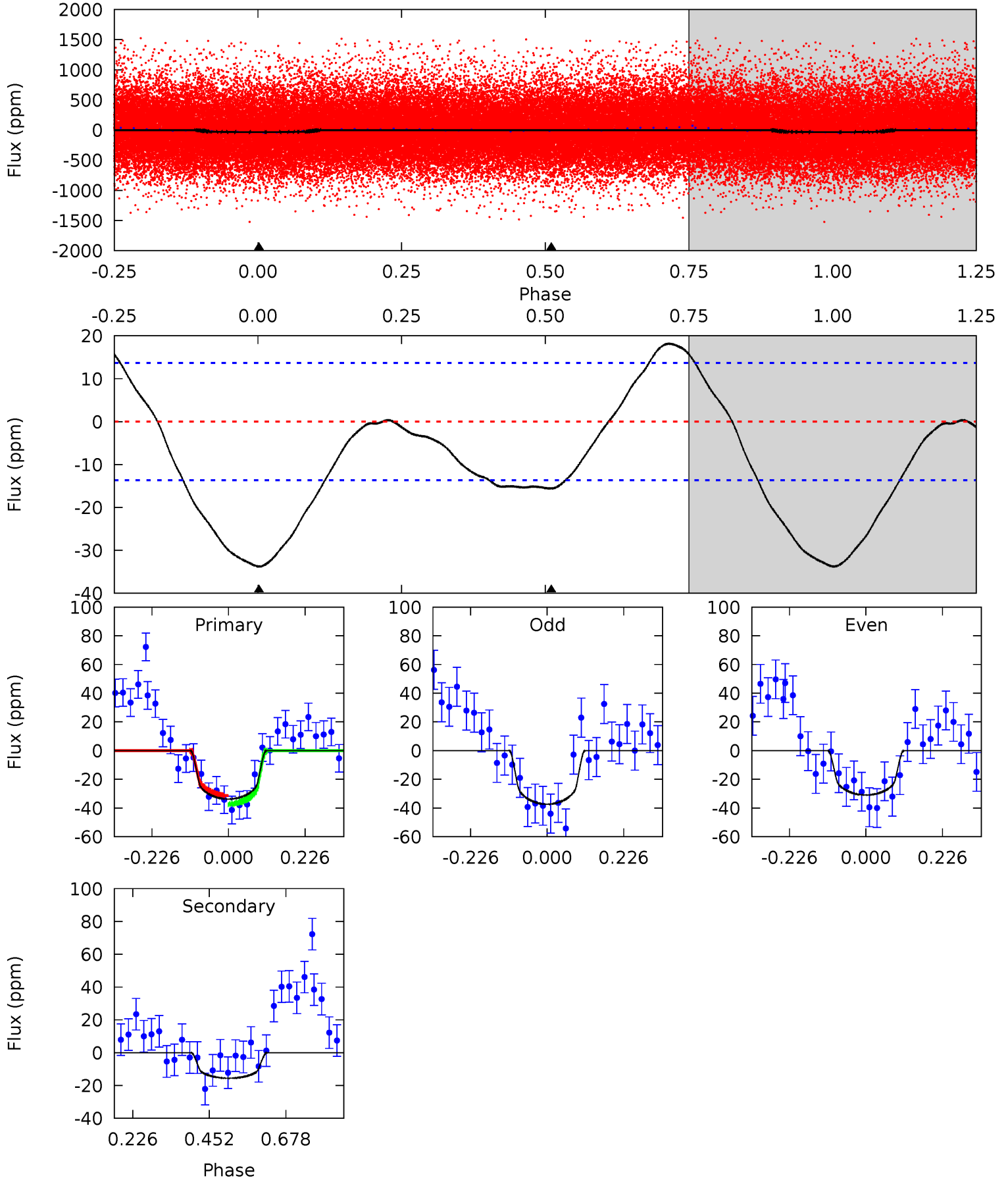
TCE 004821181-01 P= 0.929052 Days $T_0=132.147157$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-01, P = 0.929046 Days, E = 131.194261 Days

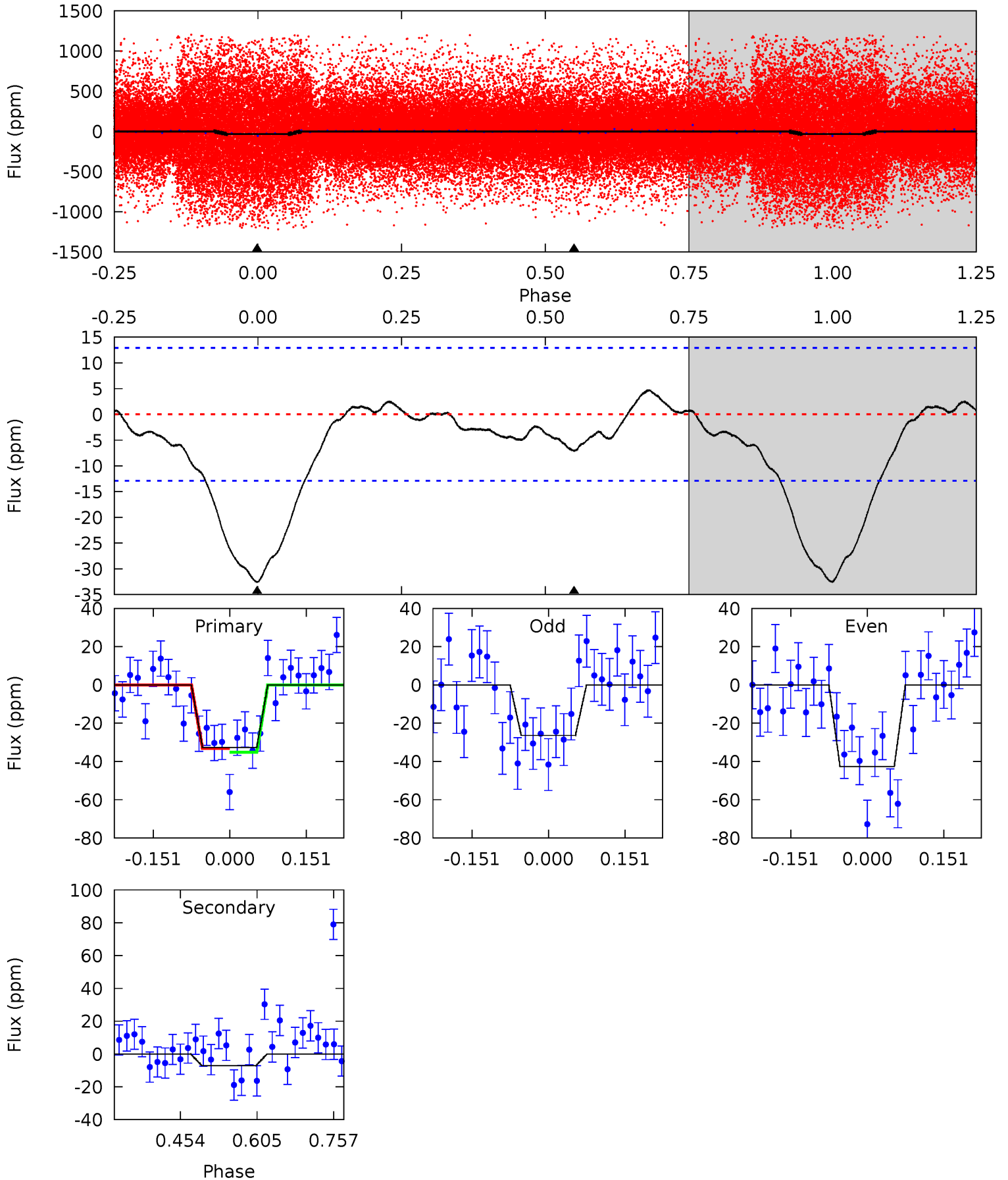
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	5.01	0	0	4.39	1.21	2.58	10.9	10.9	5.01	5.01	1.04	0.81	0.35	0.93



Alt Model-Shift Uniqueness Test

004821181-01, P = 0.929052 Days, E = 131.218105 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	2.46	0	0	4.48	1.43	0.73	11.3	11.3	2.46	2.46	2.82	0.89	0.13	0.35



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-16 ± 3	$0.65^{+0.28}_{-0.28}$	2022^{+74}_{-80}	3721^{+896}_{-443}	$5.569^{+11.755}_{-2.884}$
Alt.	-7 ± 3	$0.38^{+0.27}_{-0.23}$	2028^{+71}_{-76}	3877^{+2021}_{-709}	$6.868^{+42.443}_{-4.730}$

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

DV Centroid Data

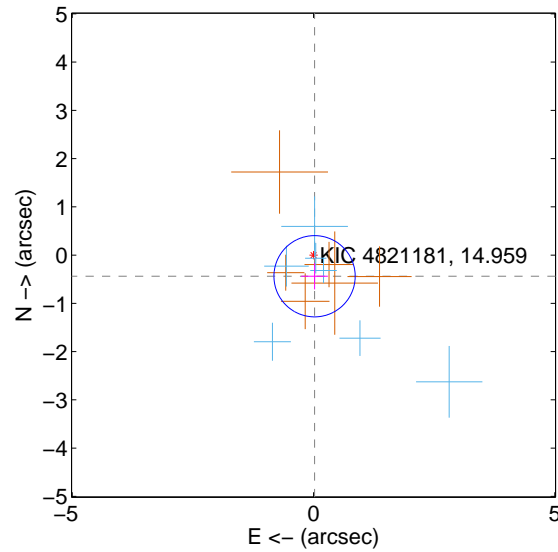
Supplemental centroid analysis for 004821181-01. Kepler magnitude: 14.96. Transit SNR 9.02

There are 7 quarters with good PRF difference image offsets

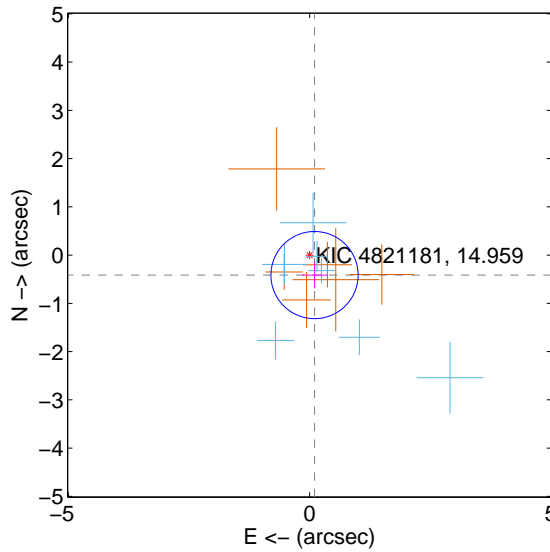
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.439 ± 0.281	1.56	-0.022 ± 0.276	-0.438 ± 0.274
PRF-fit source offset from KIC position	0.427 ± 0.301	1.42	-0.102 ± 0.263	-0.414 ± 0.277
photometric centroid source offset	0.98 ± 1.07	0.92	0.73 ± 0.99	-0.66 ± 1.15

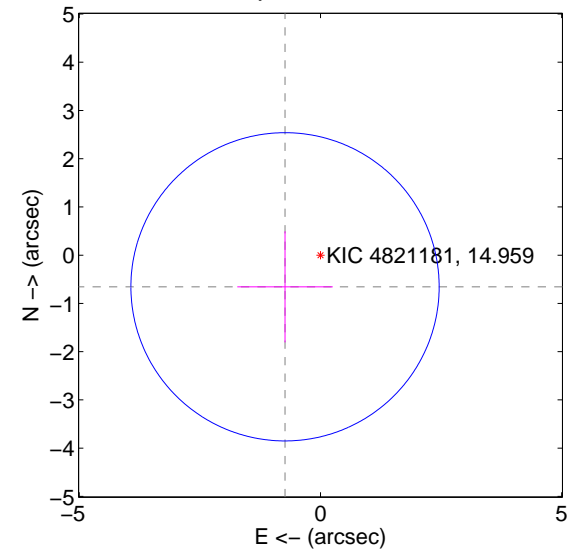
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

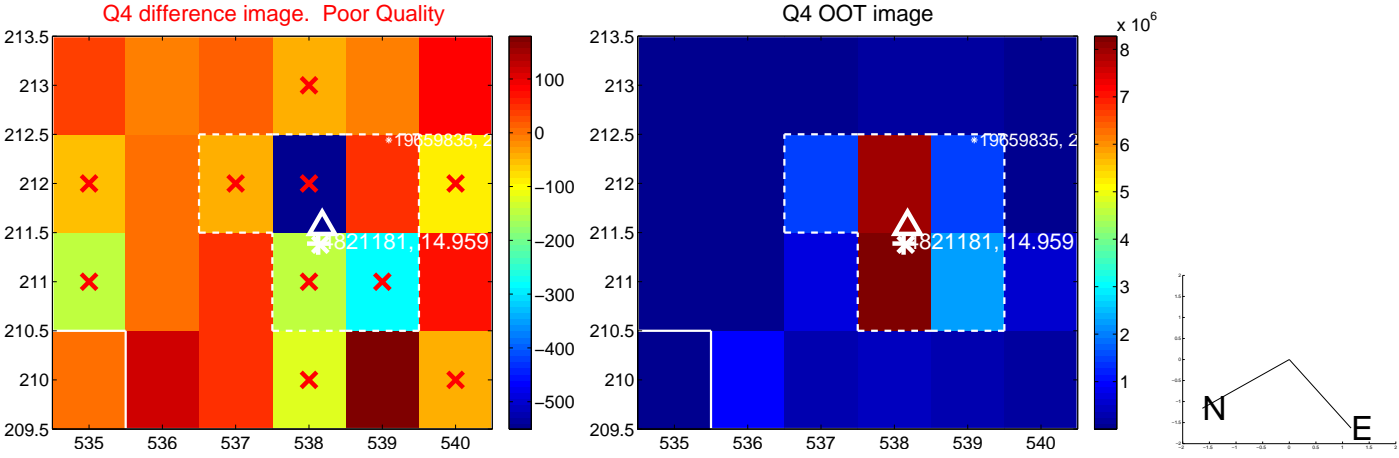
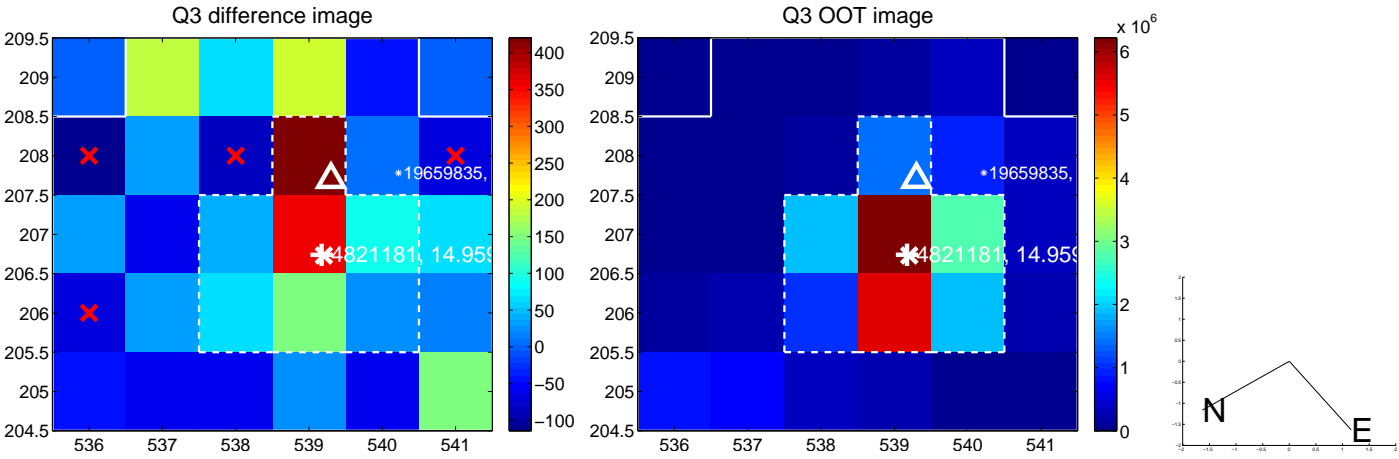
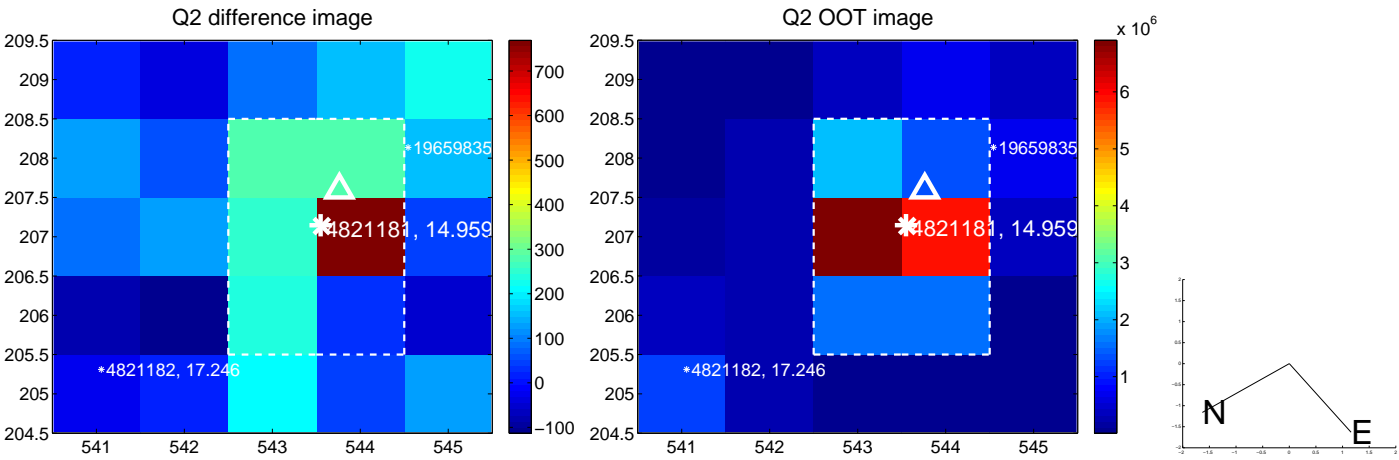
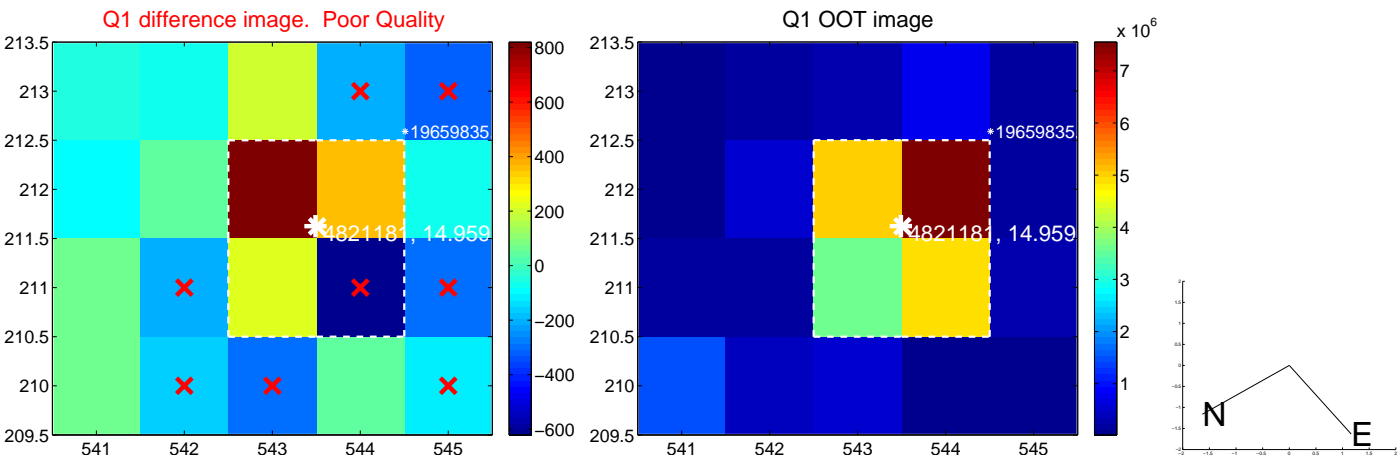


offset from photometric centroids

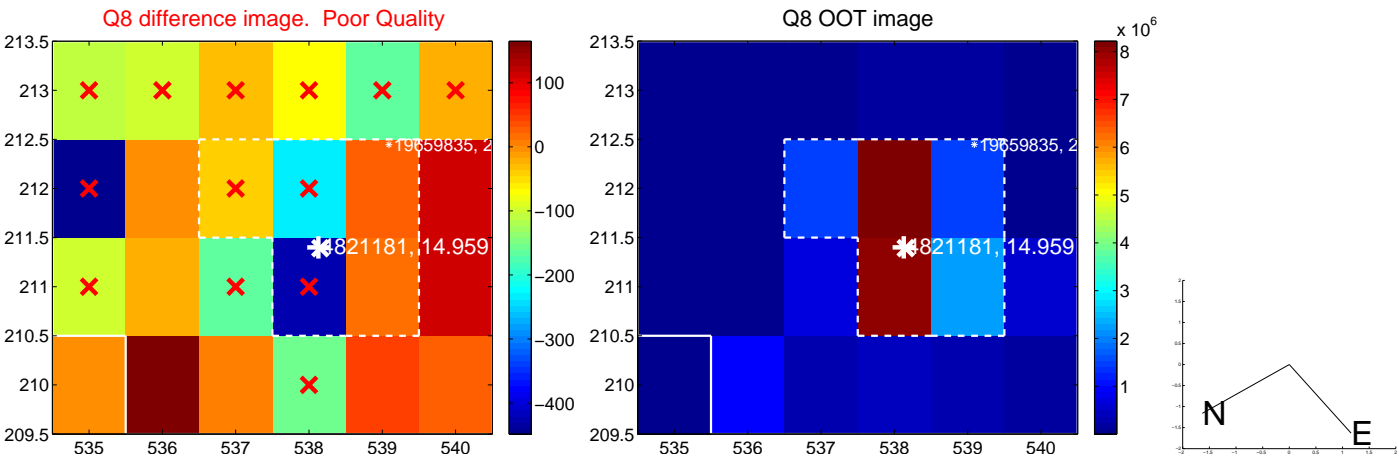
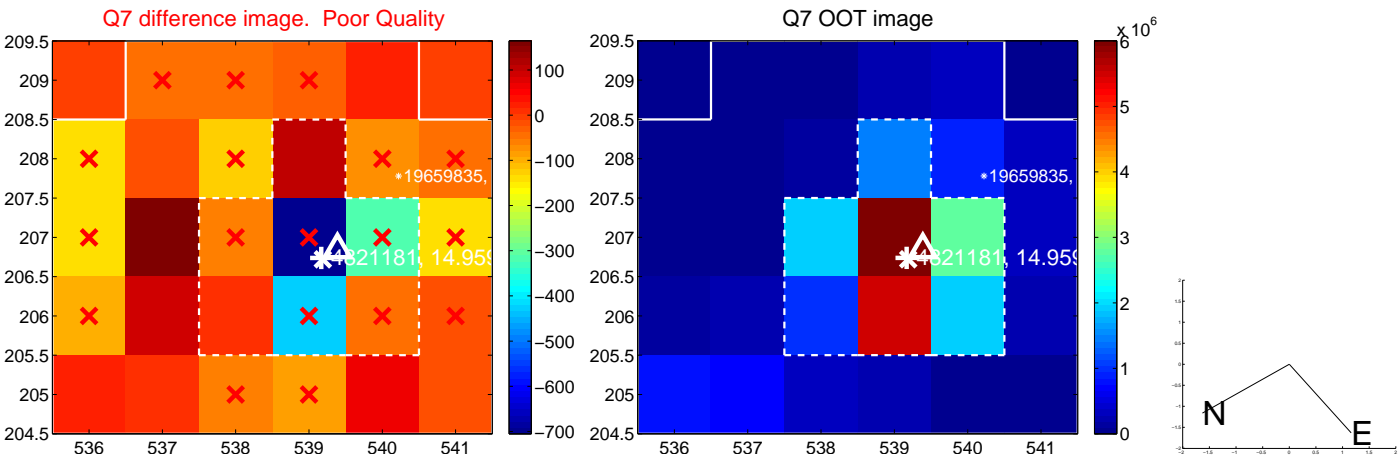
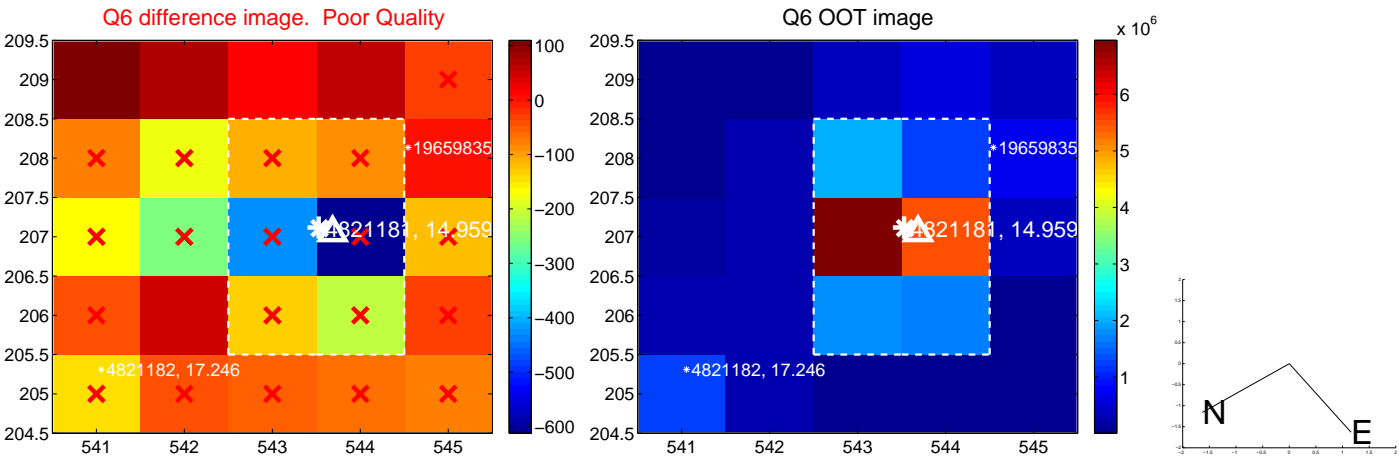
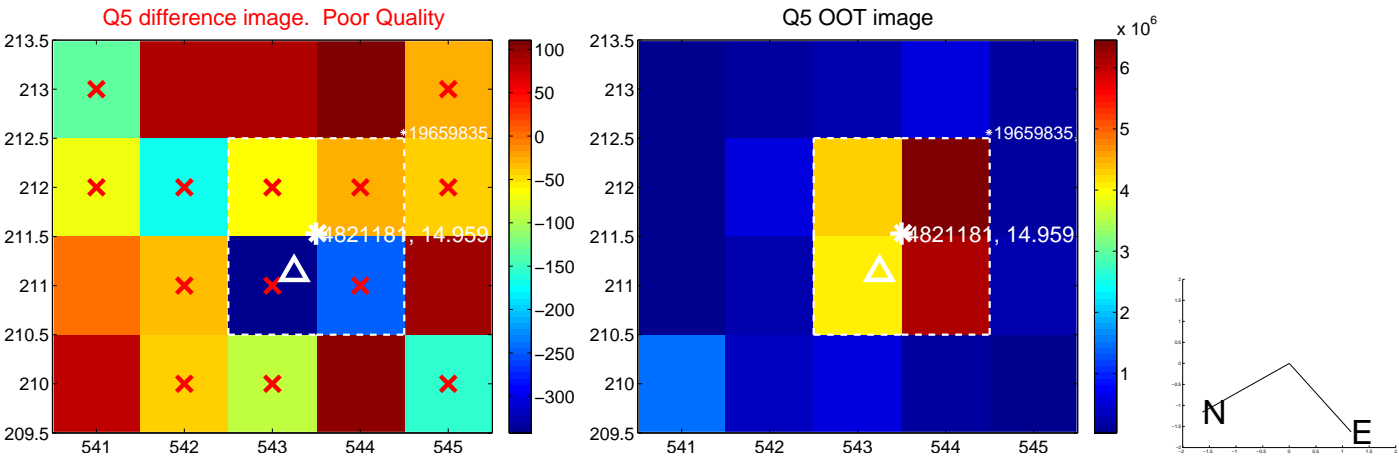


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs $> 15,000,000$ are from the UKIRT catalog.

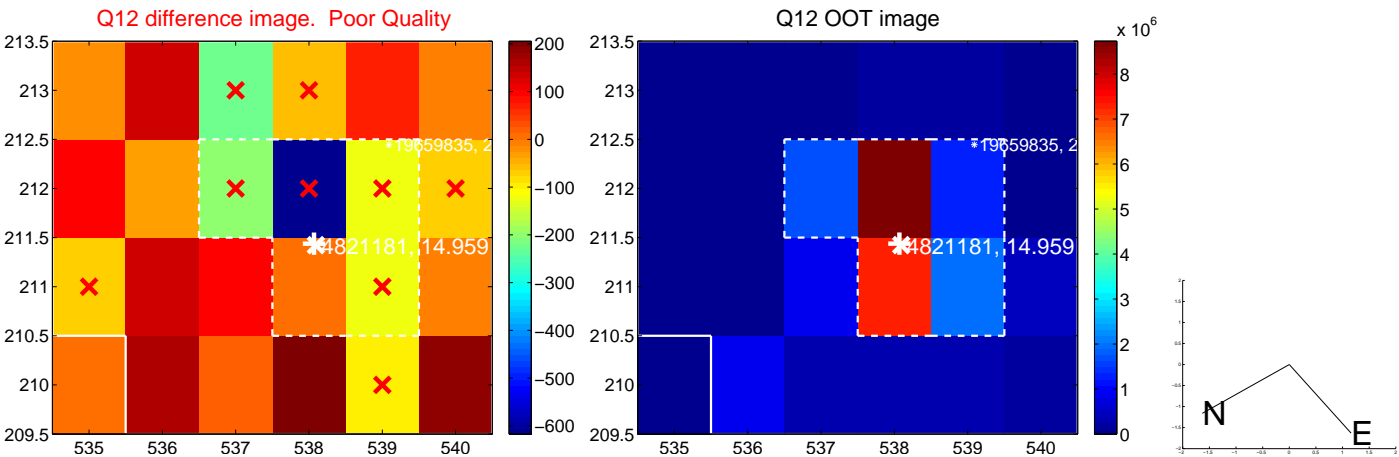
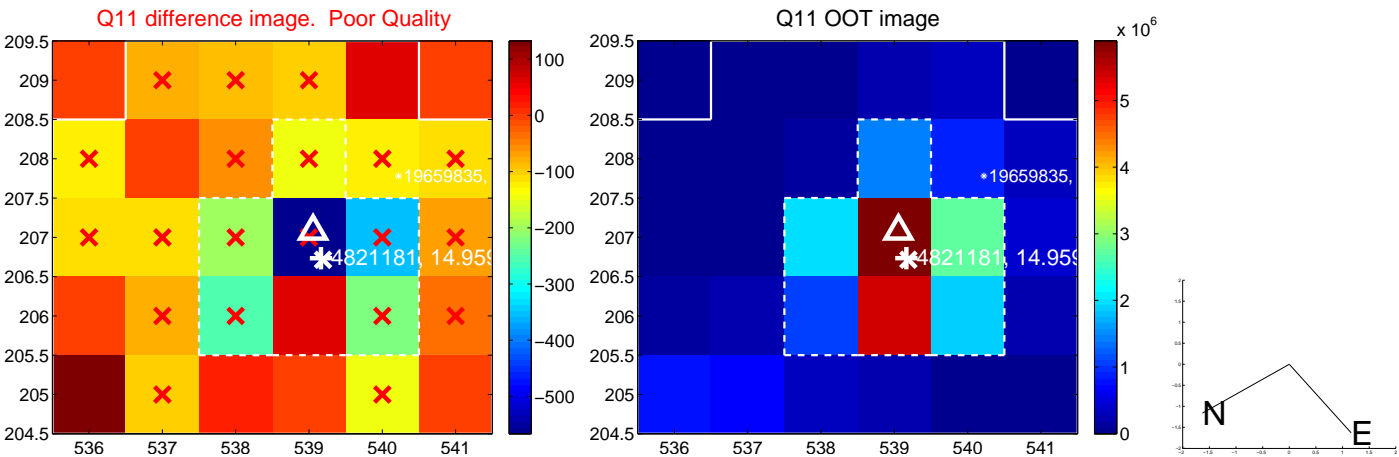
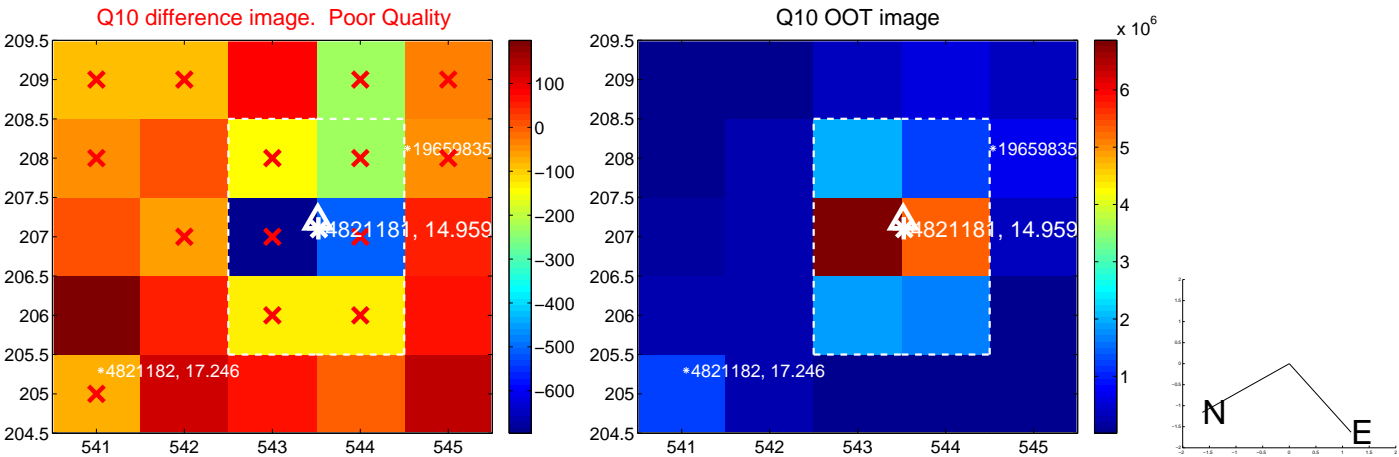
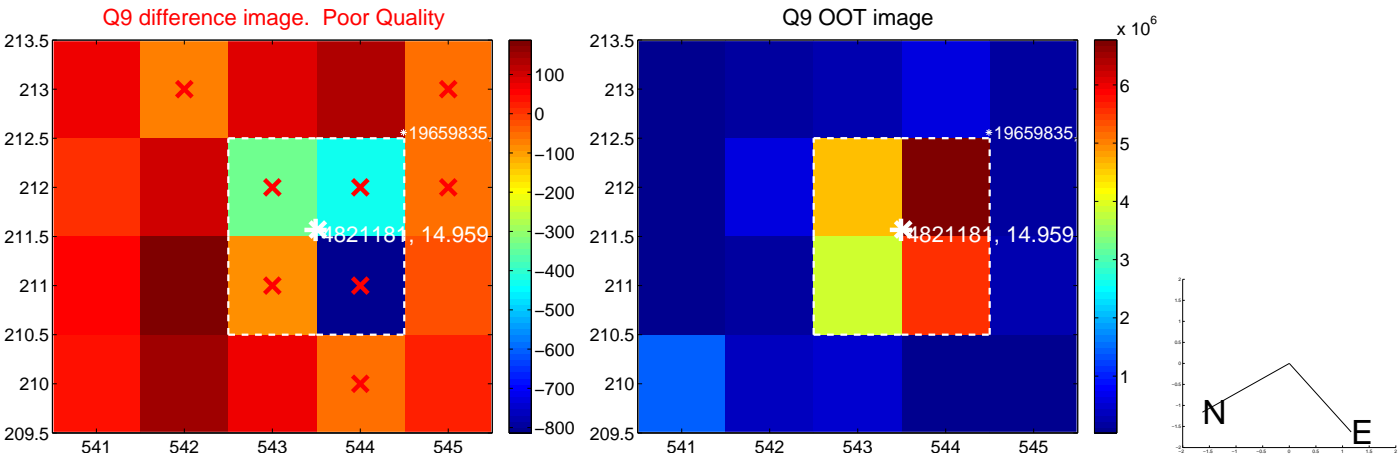
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



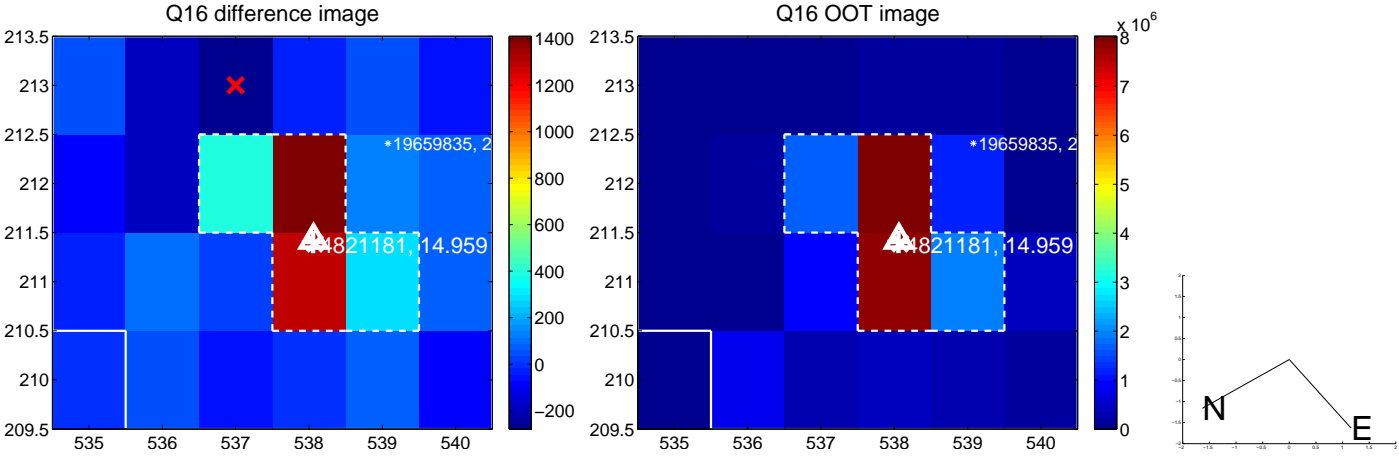
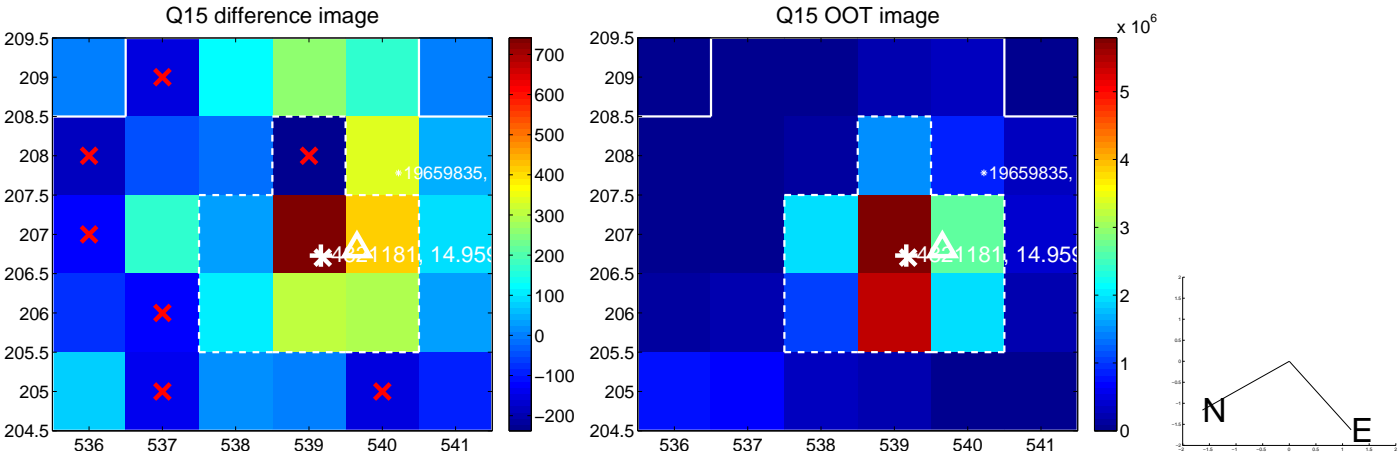
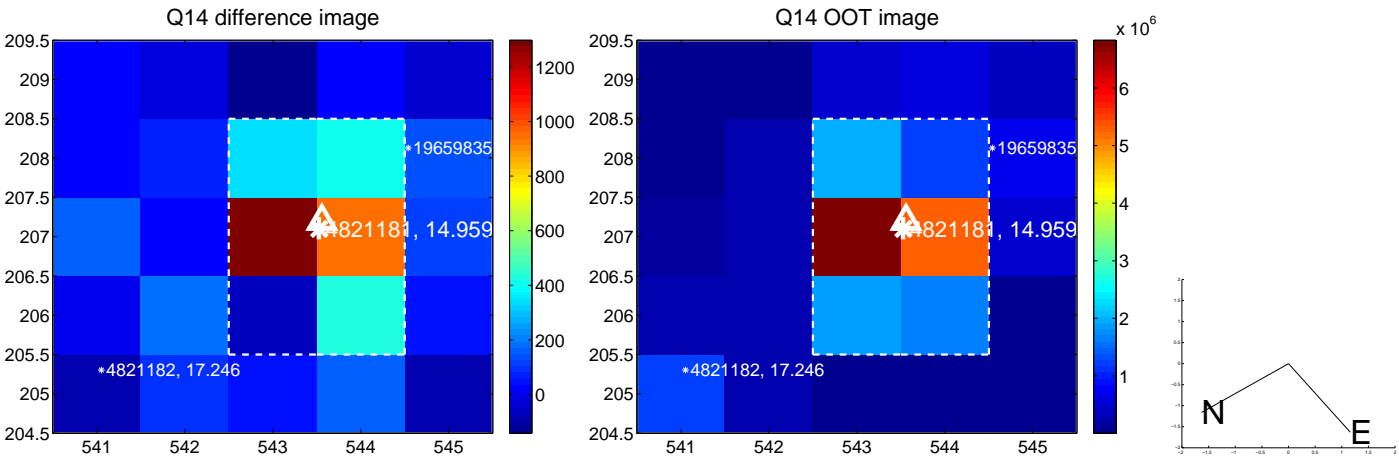
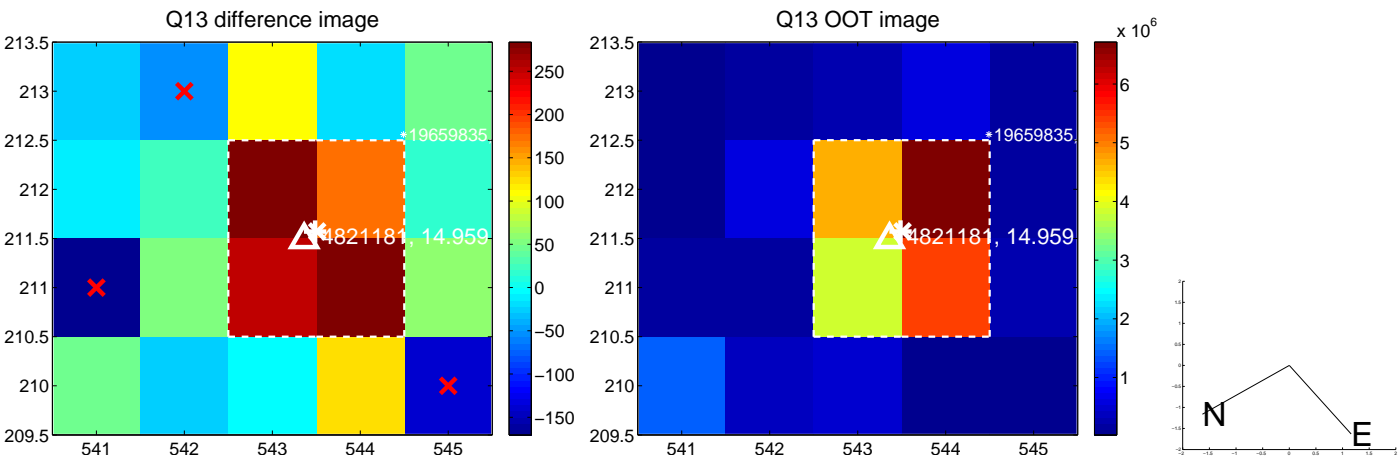
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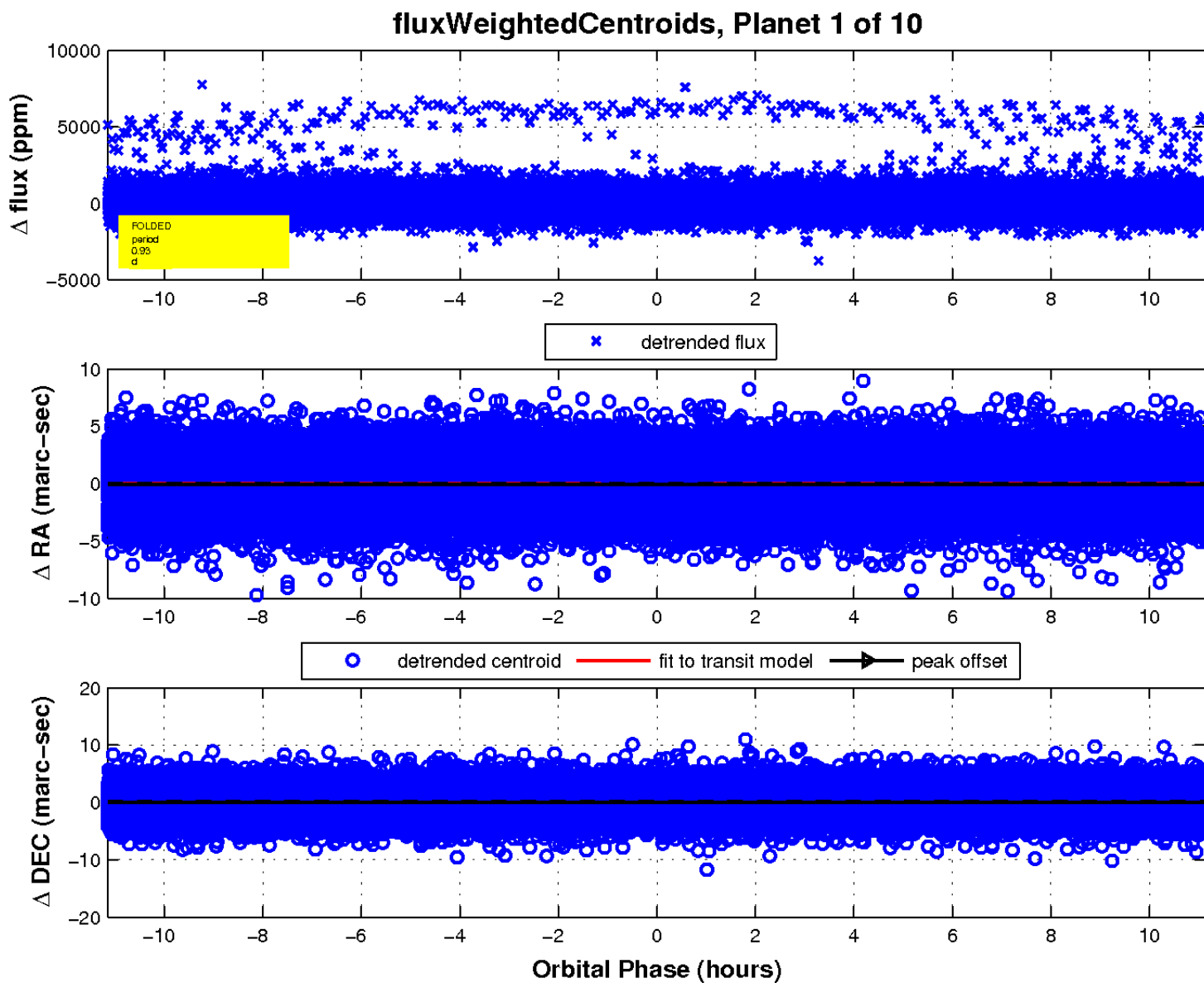
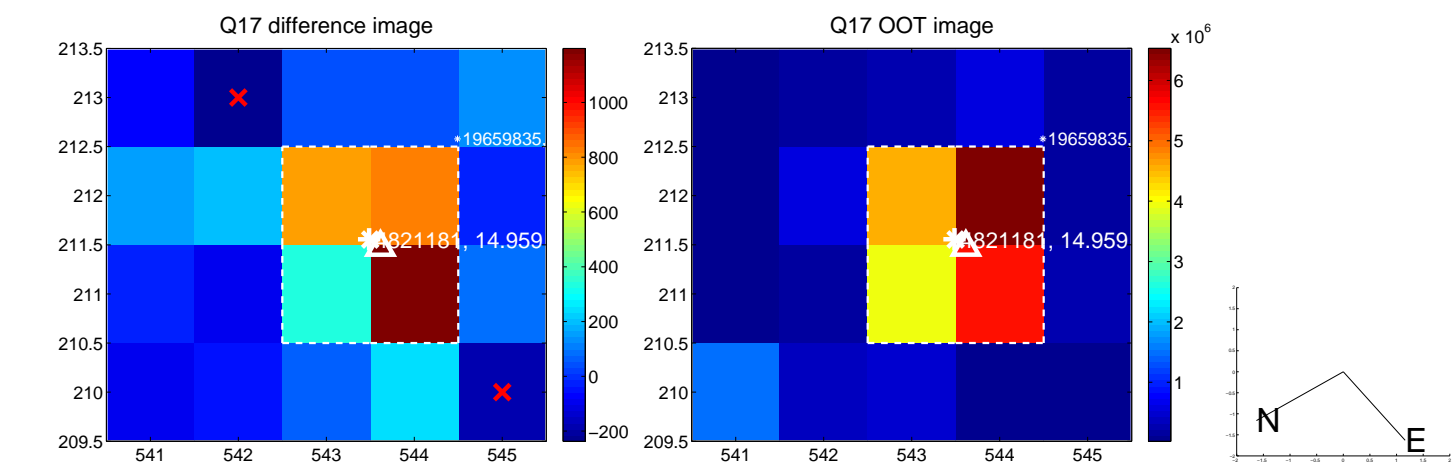
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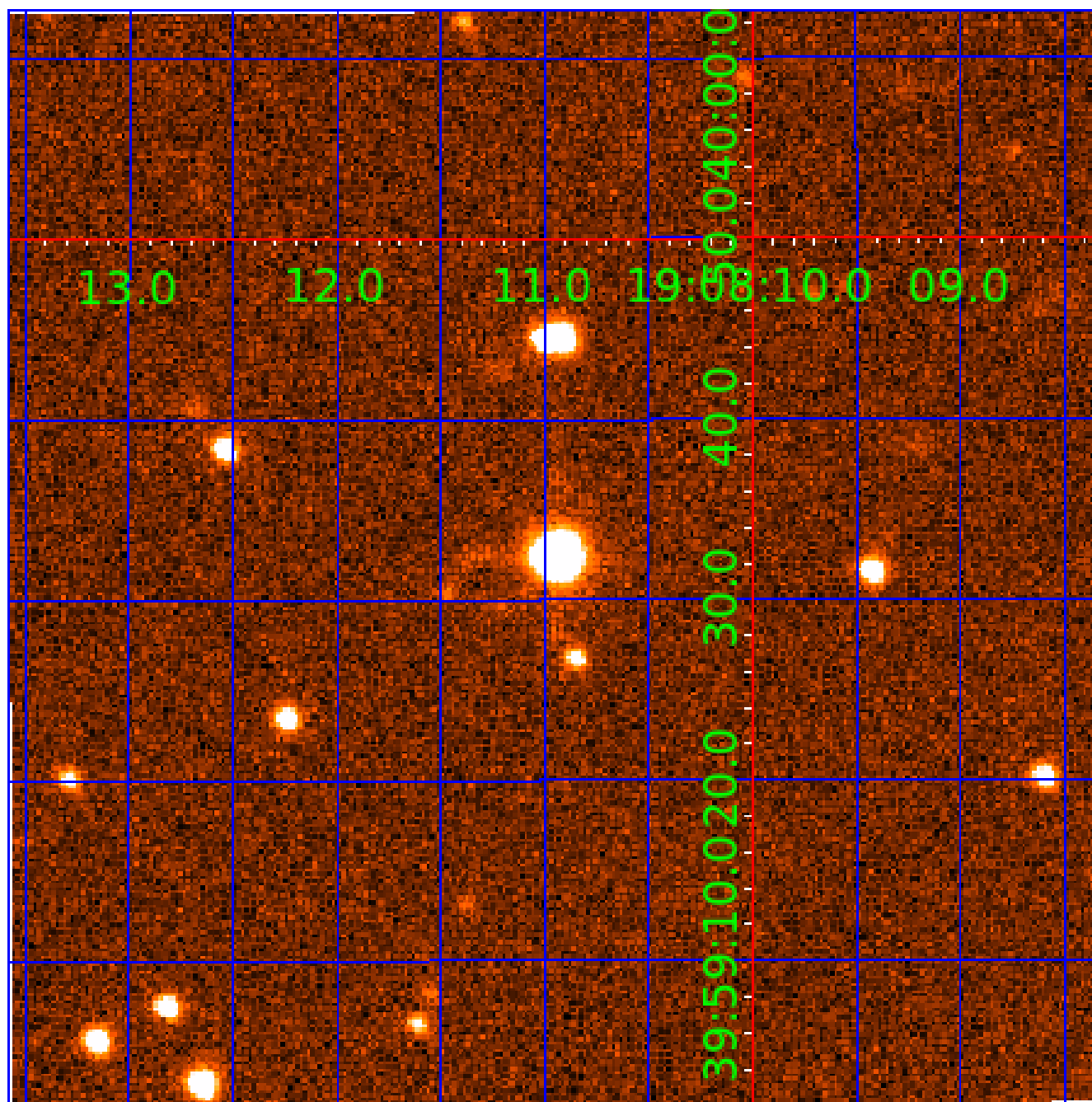


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UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

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004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

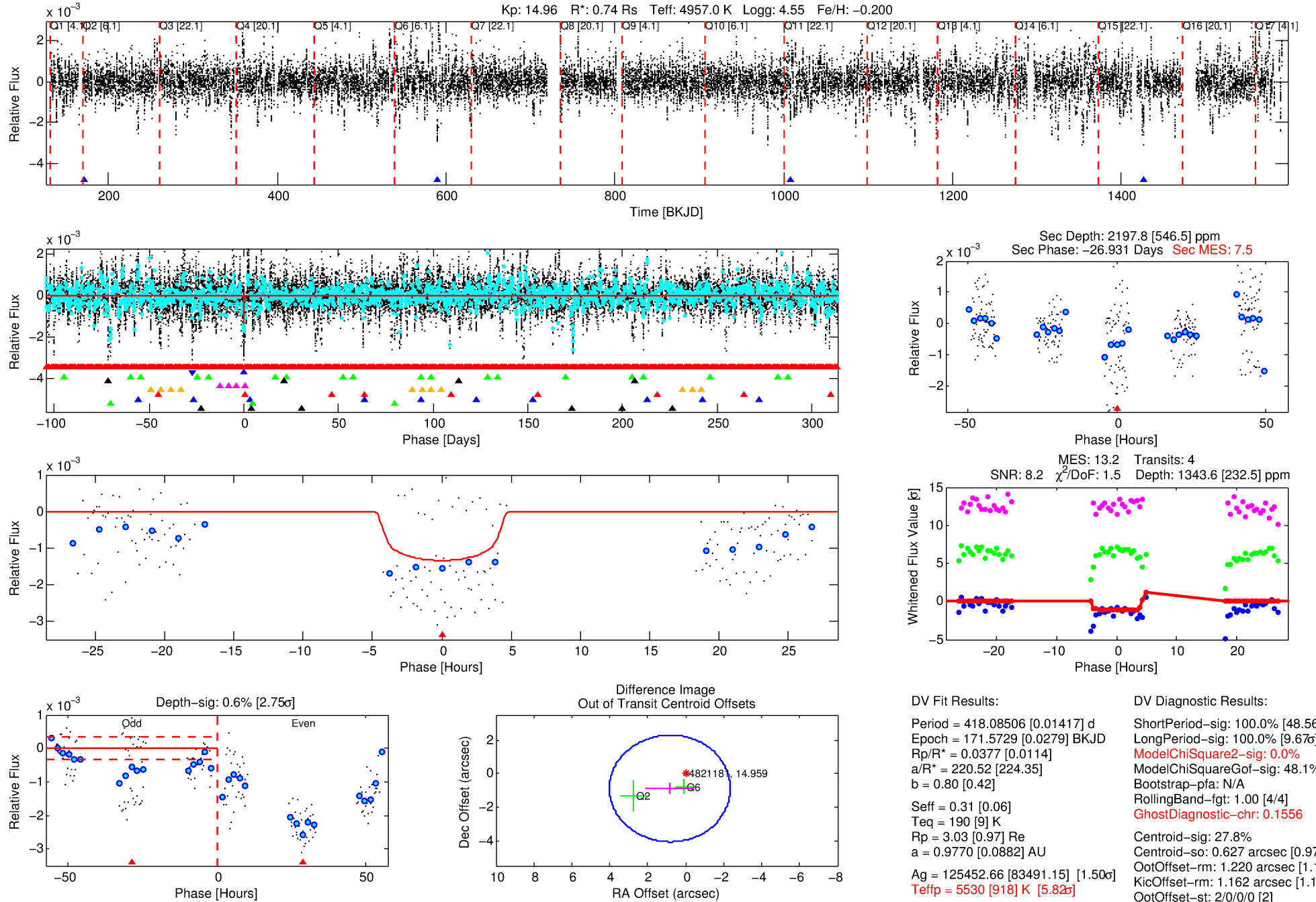
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-02

No Significant Match Found

DV One-Page Summary

KIC: 4821181 Candidate: 2 of 10 Period: 418.085 d



DV Fit Results:

Period = 418.08506 [0.01417] d
Epoch = 171.5729 [0.0279] BKJD
Rp/R* = 0.0377 [0.0114]
a/R* = 220.52 [224.35]
b = 0.80 [0.42]
Seff = 0.31 [0.06]
Teq = 190 [9] K
Rp = 3.03 [0.97] Re
a = 0.9770 [0.0882] AU
Ag = 125452.66 [83491.15] [1.50σ]
Teff = 5530 [918] K [5.82σ]

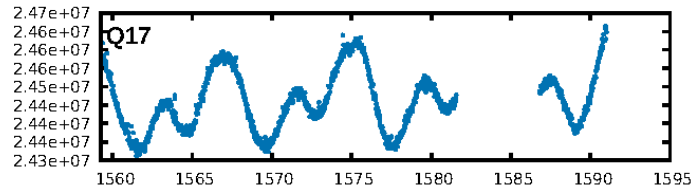
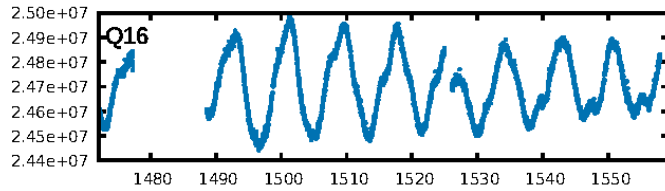
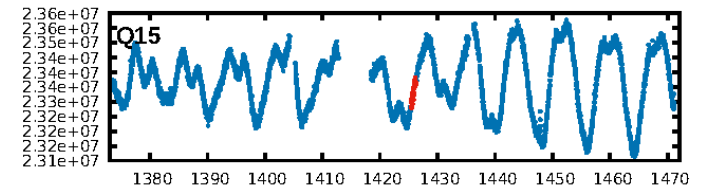
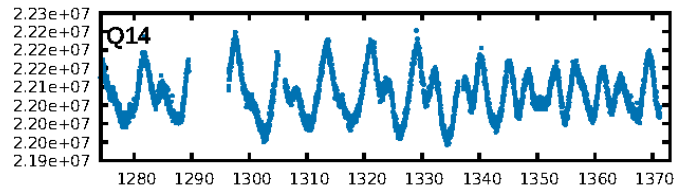
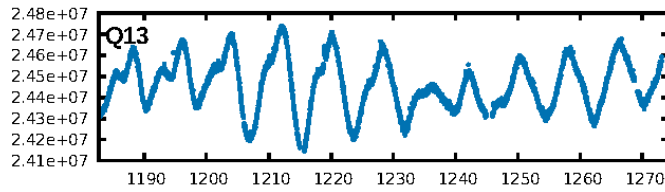
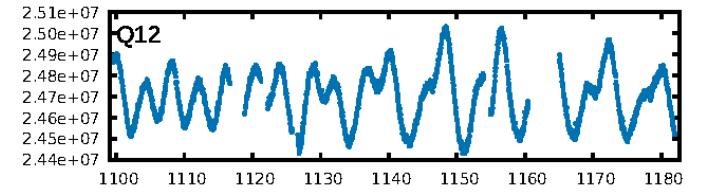
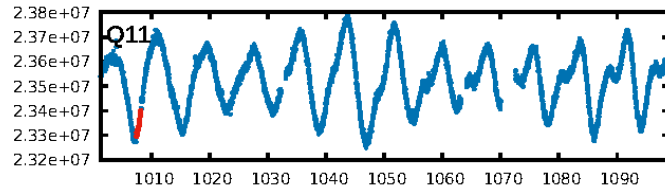
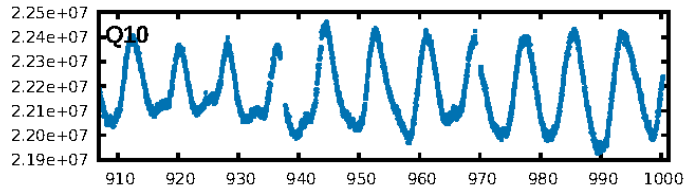
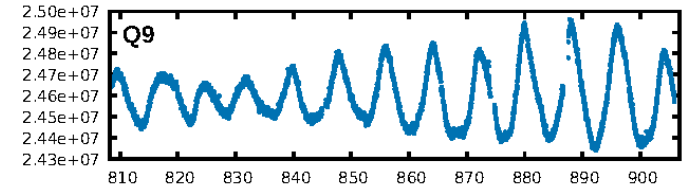
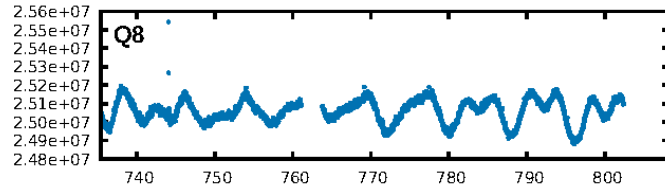
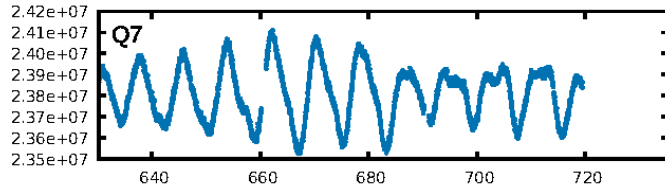
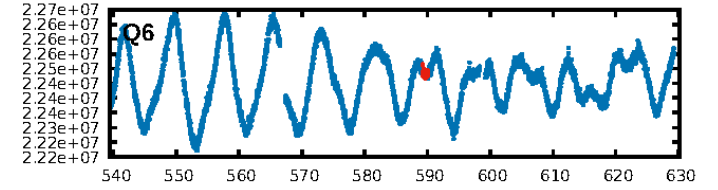
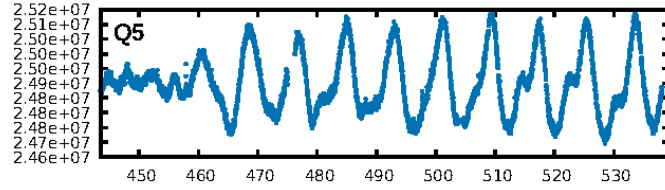
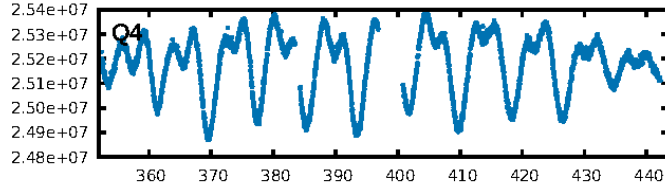
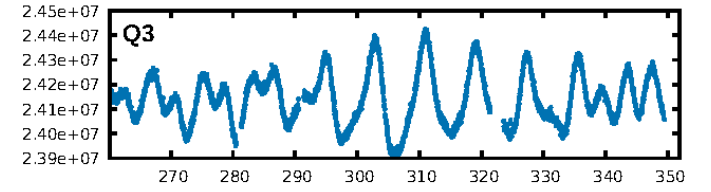
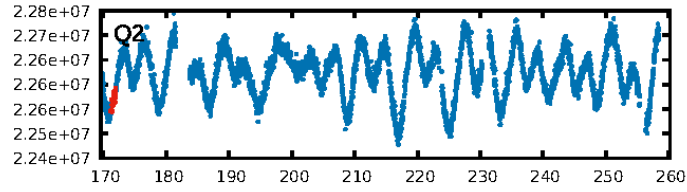
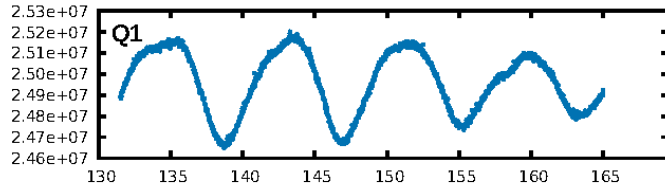
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [48.56σ]
LongPeriod-sig: 100.0% [9.67σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 48.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.1556
Centroid-sig: 27.8%
Centroid-so: 0.627 arcsec [0.97σ]
OotOffset-rm: 1.220 arcsec [1.15σ]
OotOffset-st: 2/0/0/0 [2]
KicOffset-rm: 1.162 arcsec [1.14σ]
KicOffset-st: 2/0/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/3]

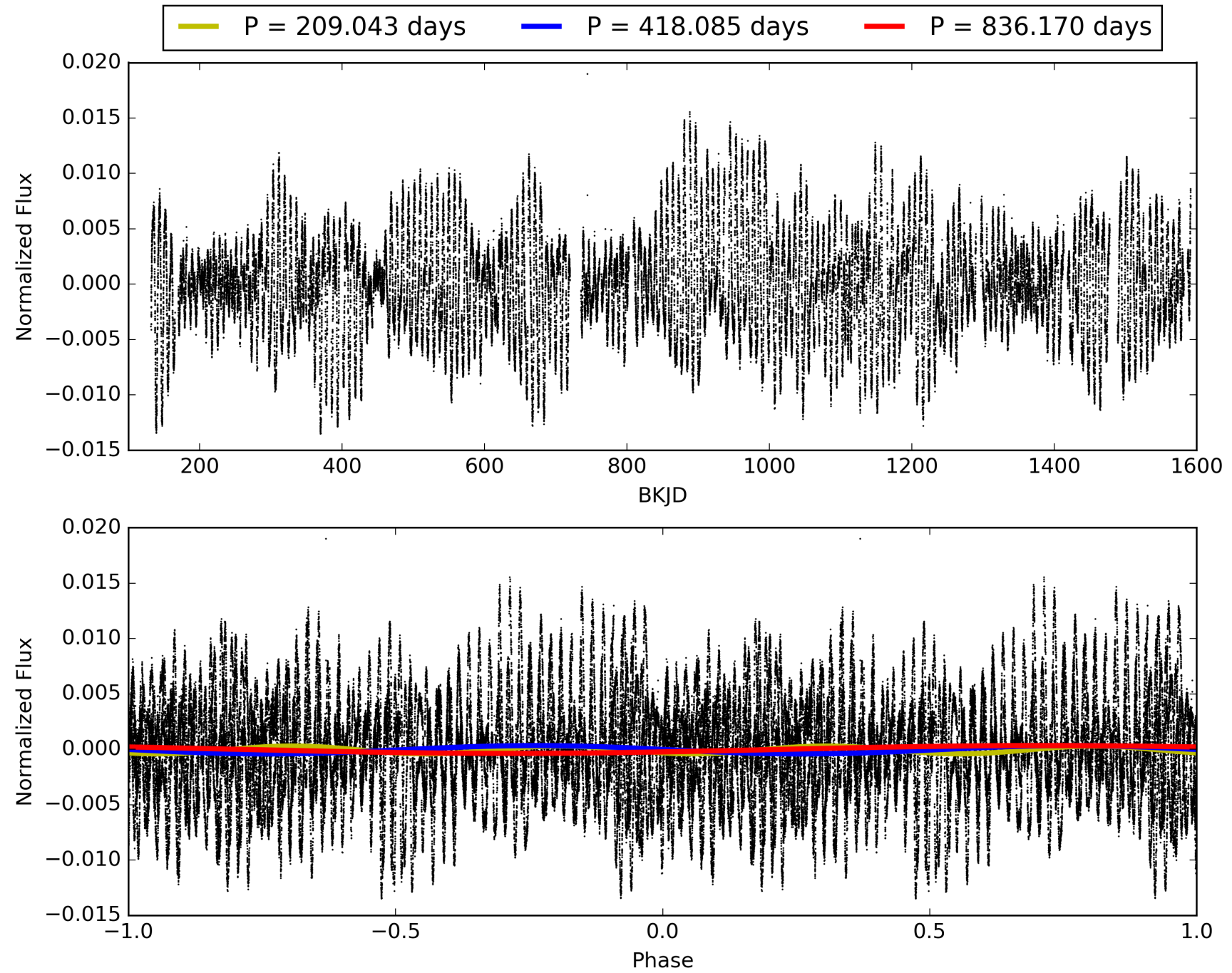
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 06:40:09 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-02, PDC Light Curves

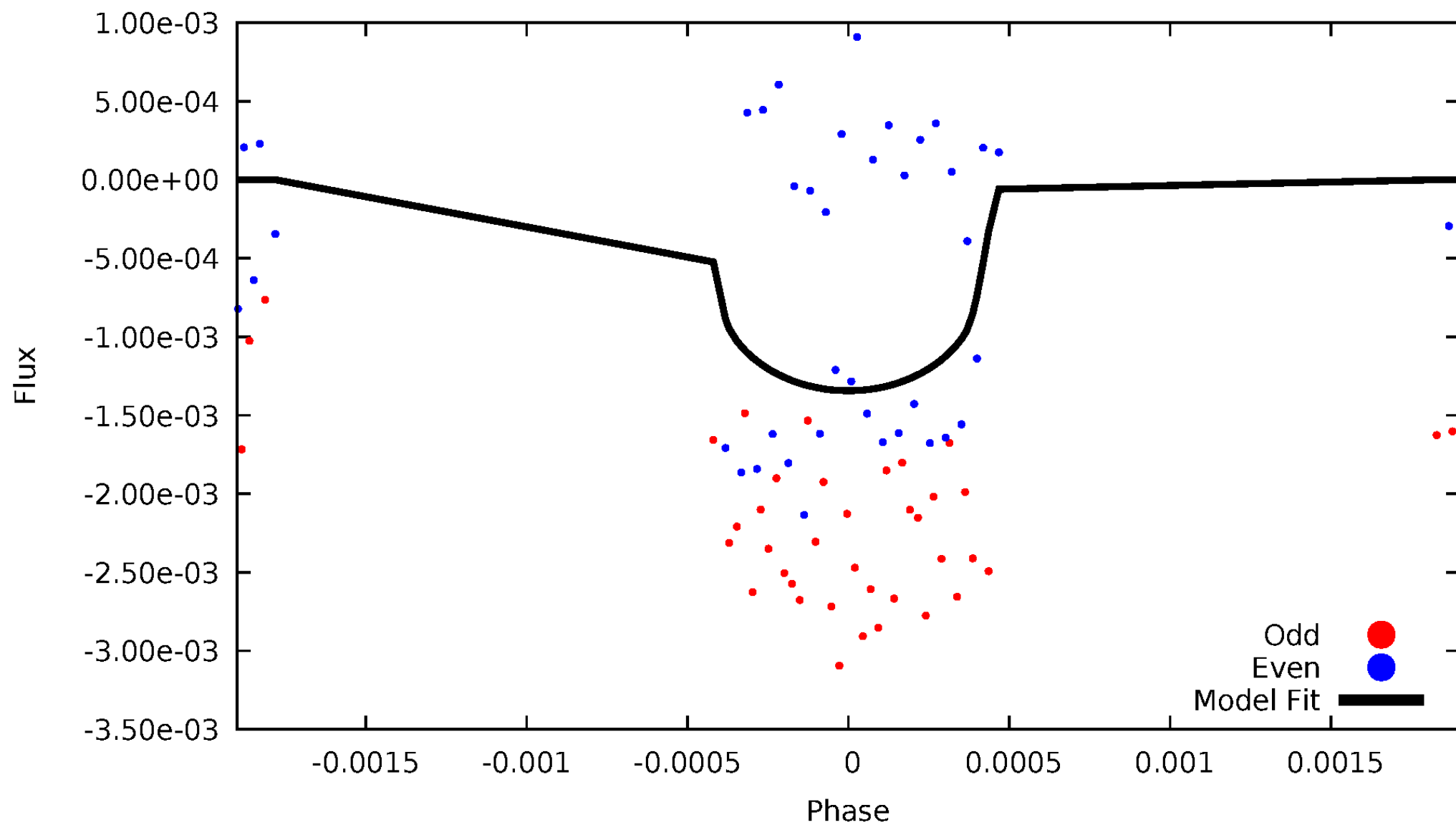


TCE 004821181-02



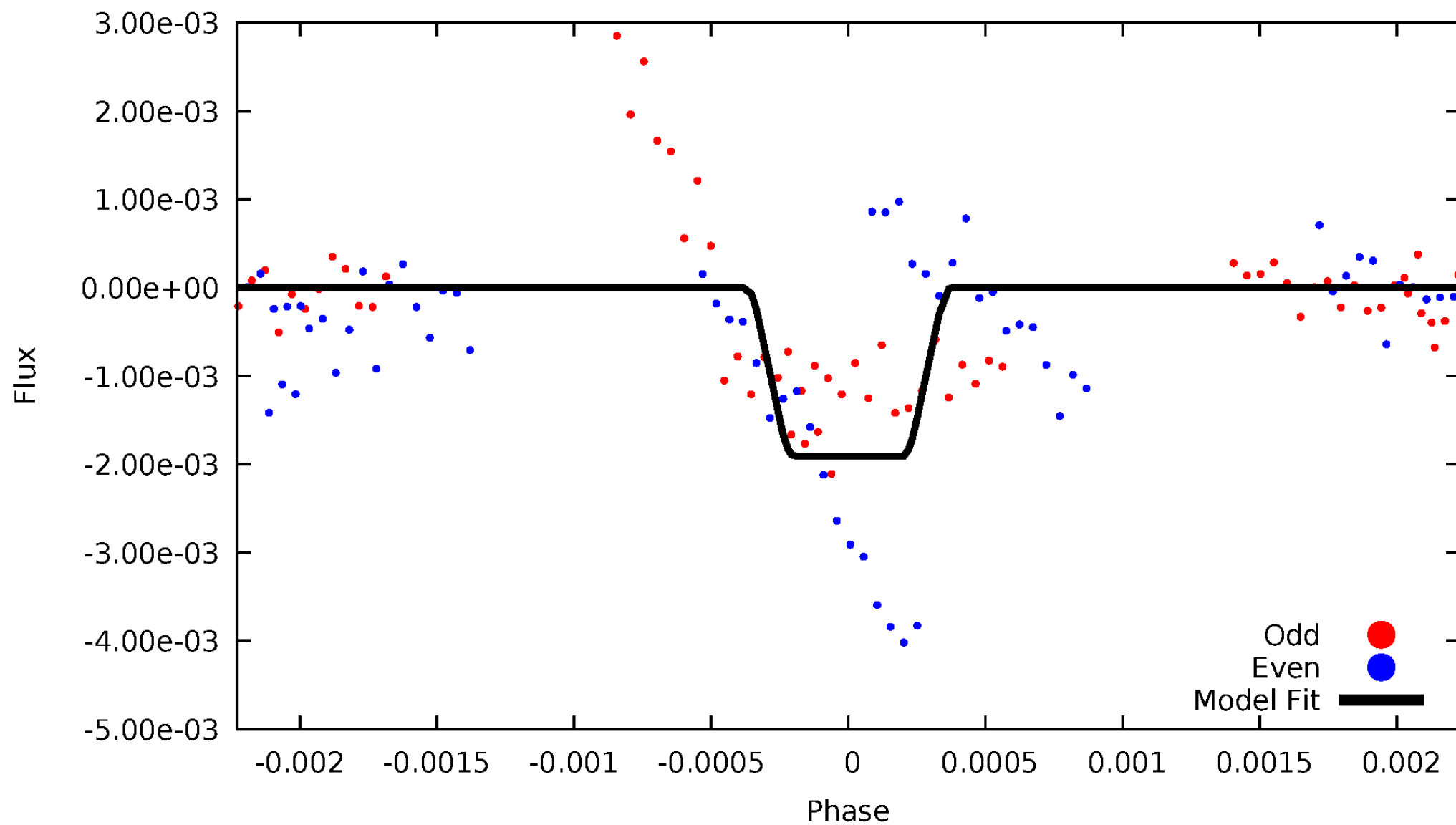
DV Odd/Even

TCE 004821181-02



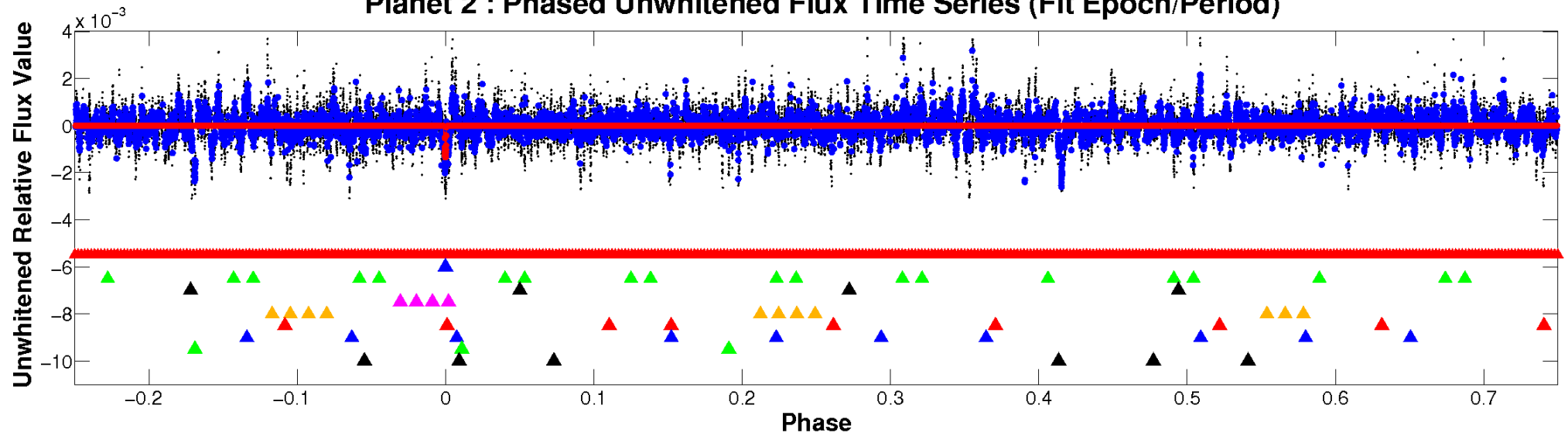
ALT Odd/Even

TCE 004821181-02

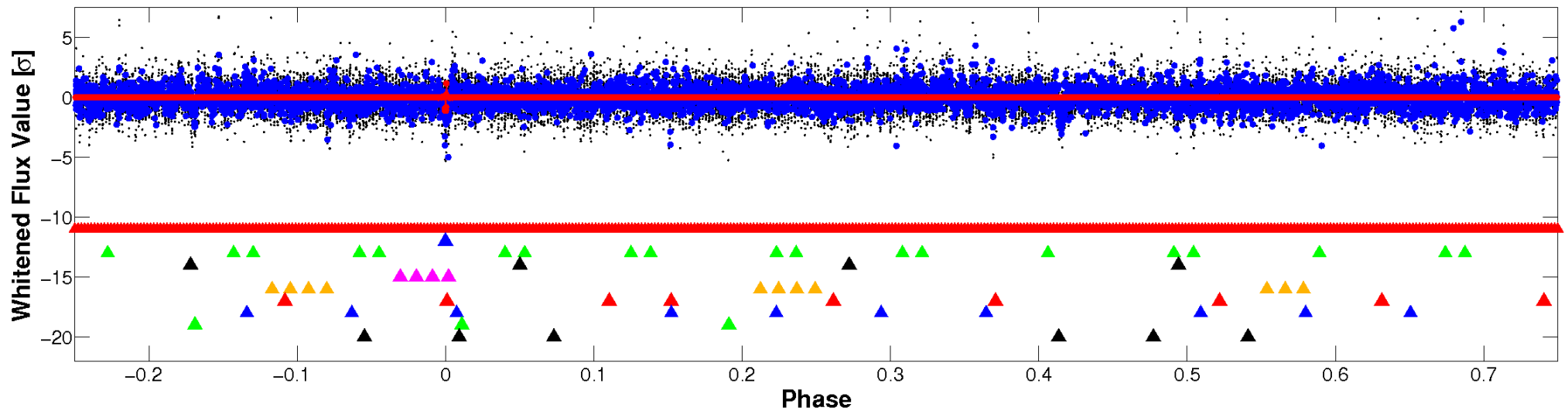


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

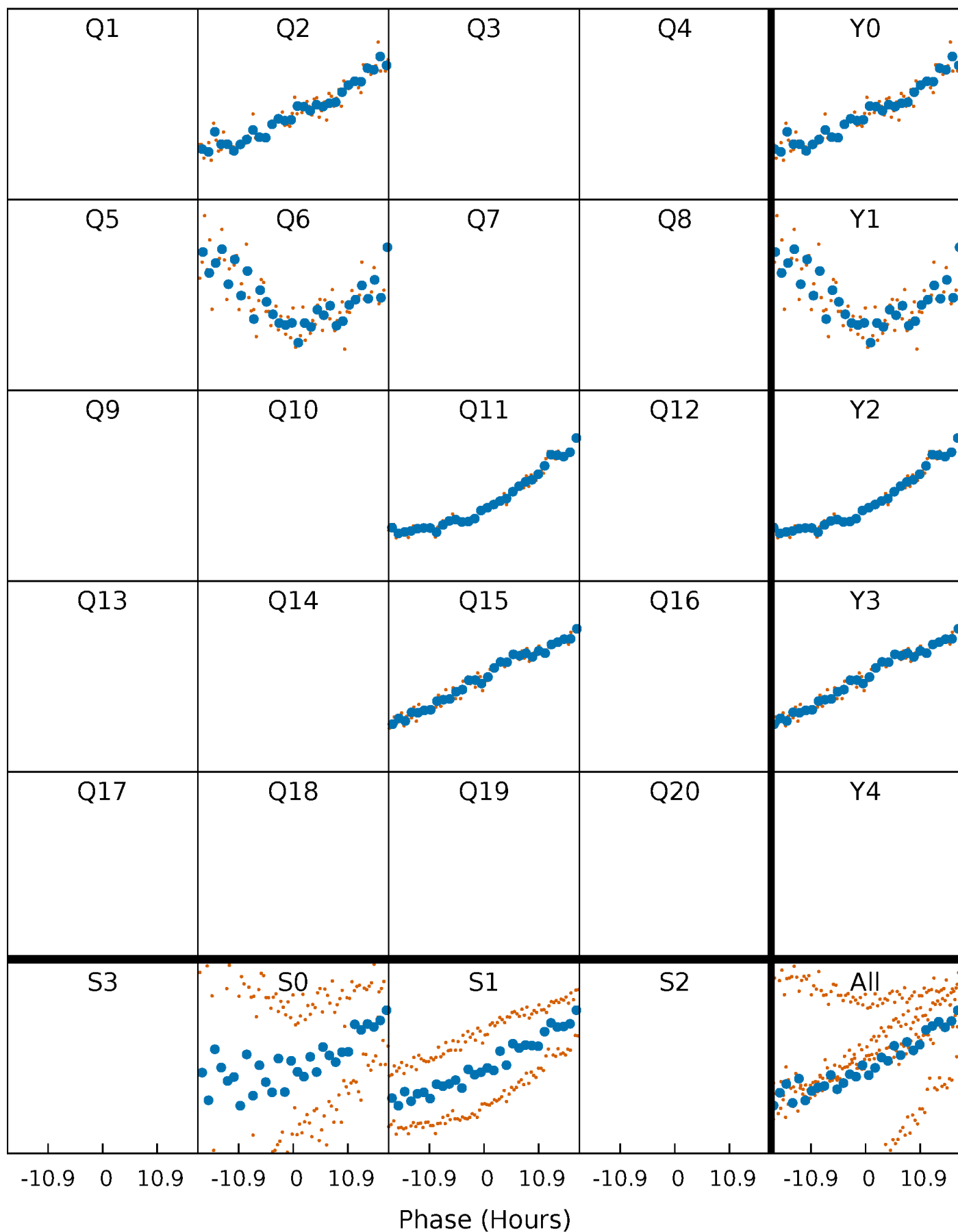


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



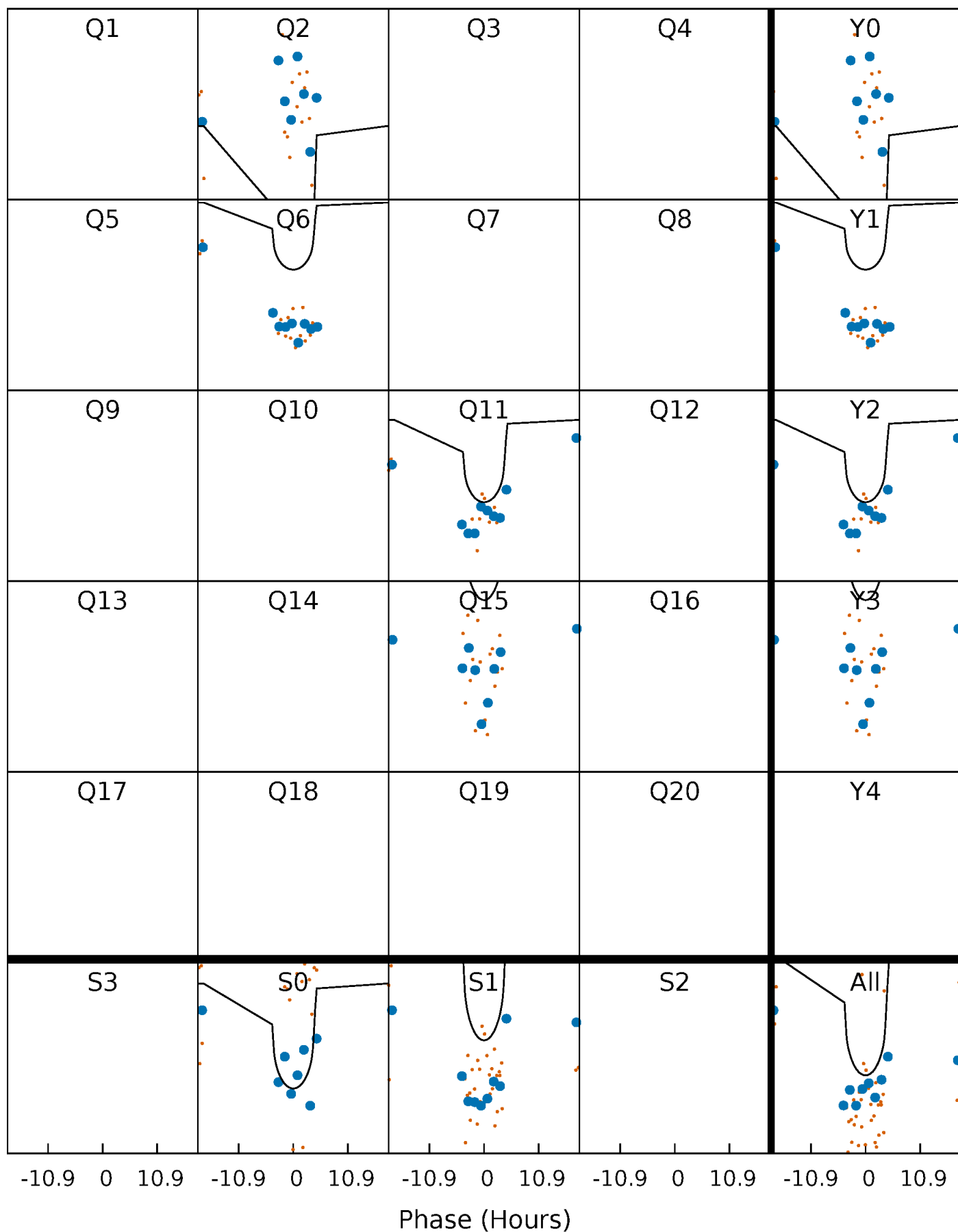
PDC Quarter-Phased Transit Curves

TCE 004821181-02 P=418.085055 Days $T_0=171.572862$ (BKJD)



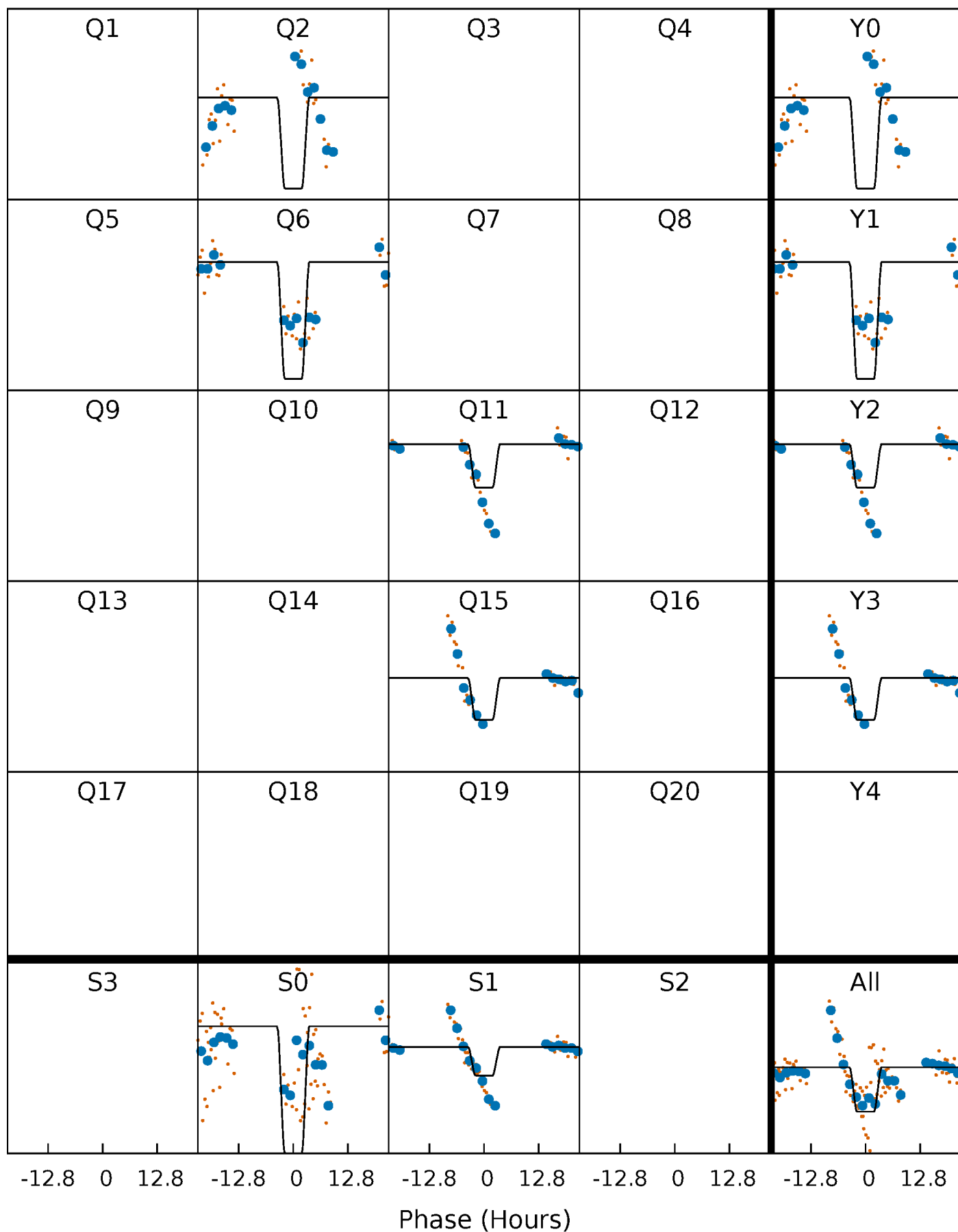
DV Quarter-Phased Transit Curves

TCE 004821181-02 P=418.085055 Days $T_0=171.572862$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

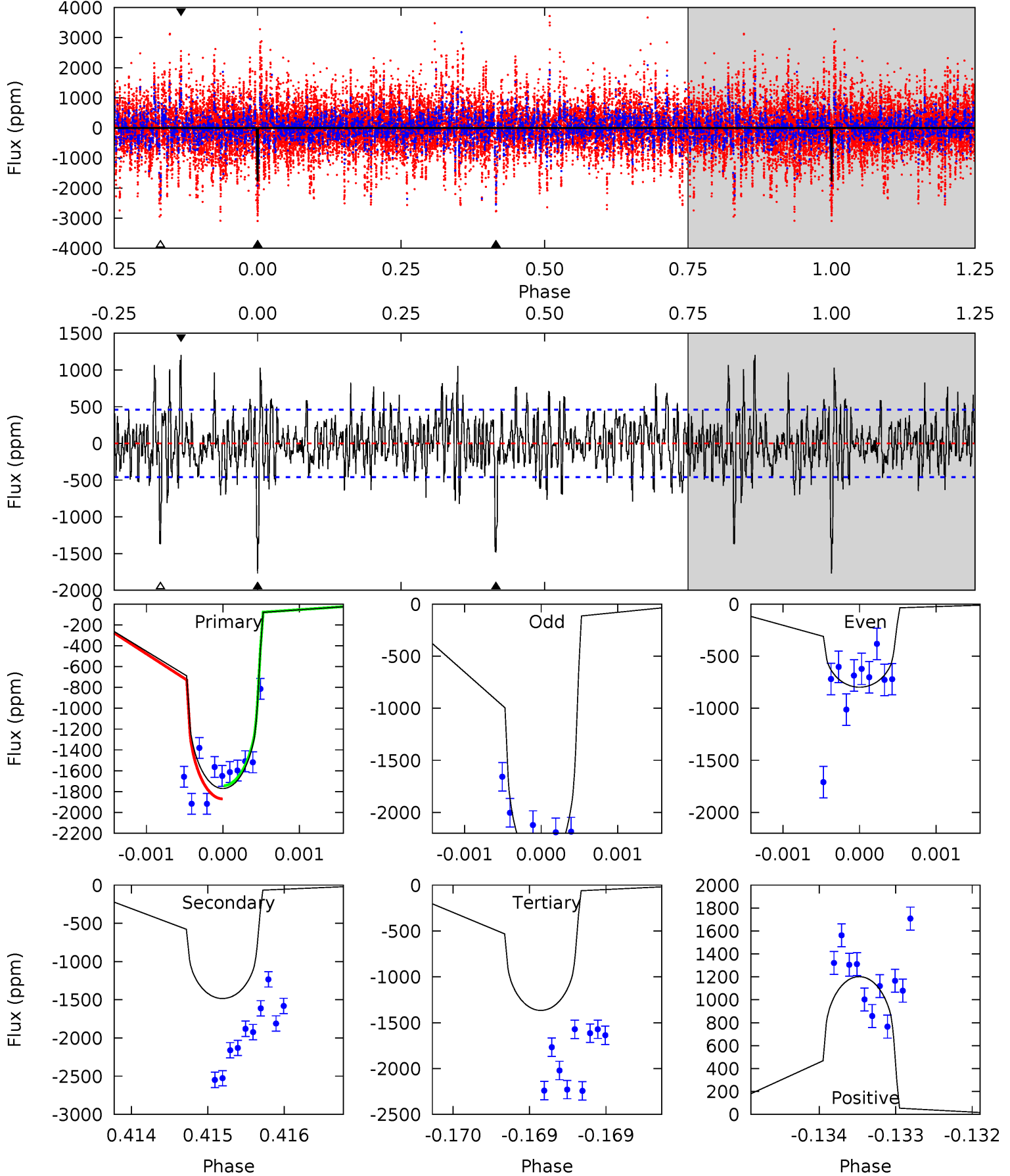
TCE 004821181-02 P=418.200050 Days $T_0=171.405138$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-02, P = 418.085055 Days, E = 171.572862 Days

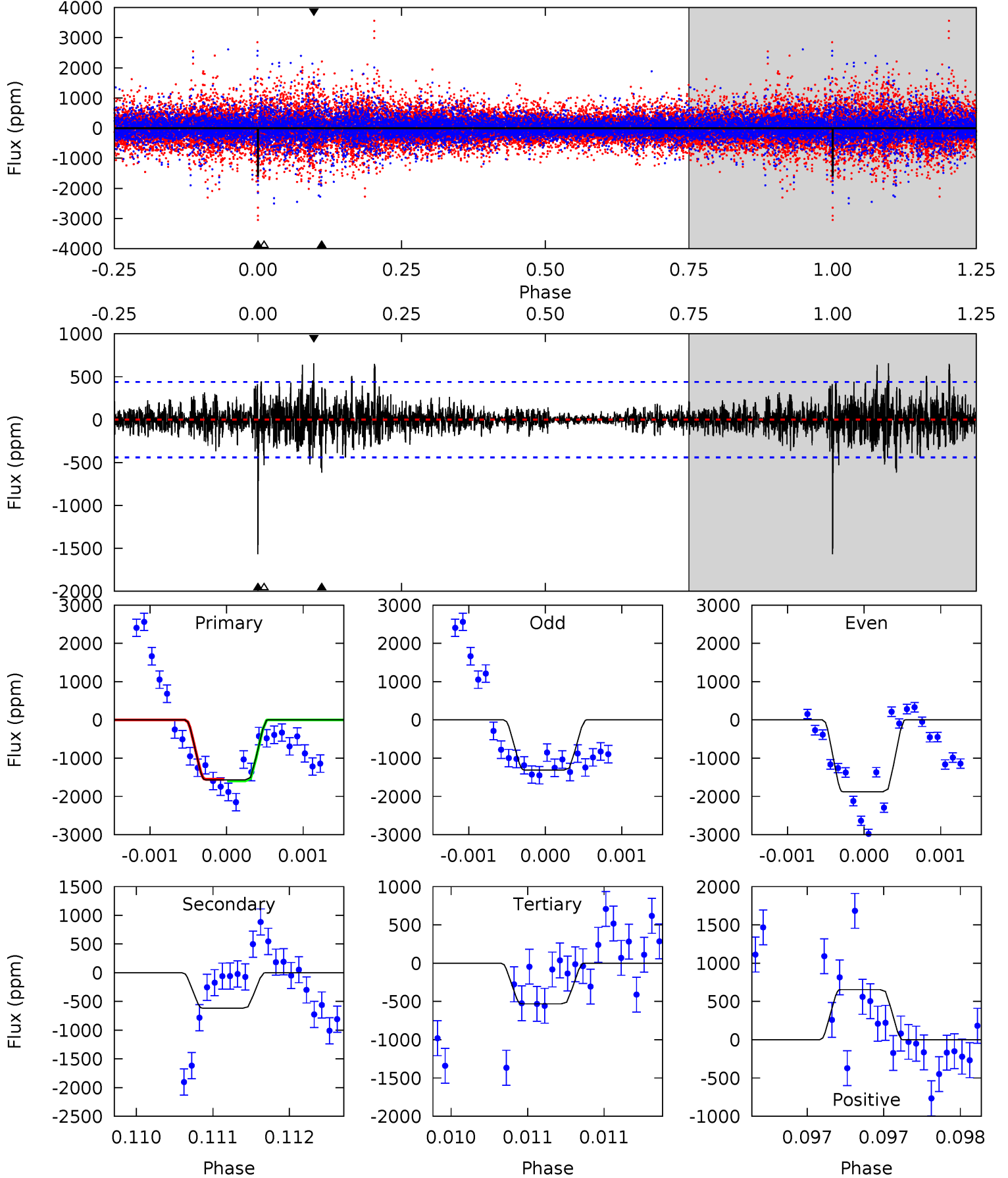
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.1	17.7	16.2	14.3	5.47	3.32	3.74	4.81	6.77	1.40	3.36	10.4	0.81	0.40	0.75



Alt Model-Shift Uniqueness Test

004821181-02, P = 418.200050 Days, E = 171.405138 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.7	7.77	6.67	8.24	5.51	3.39	1.39	13.0	11.4	1.10	-0.47	3.86	0.86	0.30	0.25



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1484 ± 84	$3.02^{+0.94}_{-0.82}$	264^{+9}_{-10}	5006^{+773}_{-528}	86280^{+76893}_{-35684}
Alt.	-618 ± 80	$3.52^{+0.94}_{-0.98}$	263^{+10}_{-10}	3963^{+527}_{-310}	26203^{+24651}_{-9990}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

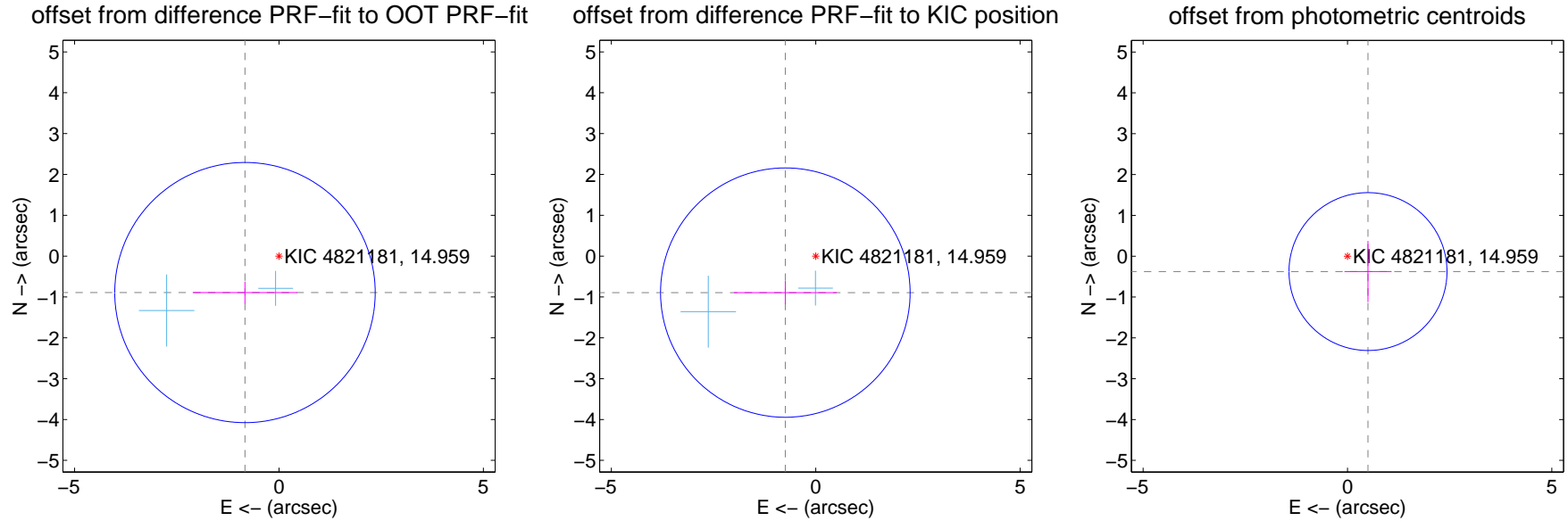
DV Centroid Data

Supplemental centroid analysis for 004821181-02. Kepler magnitude: 14.96. Transit SNR 8.16

There are 2 quarters with good PRF difference image offsets

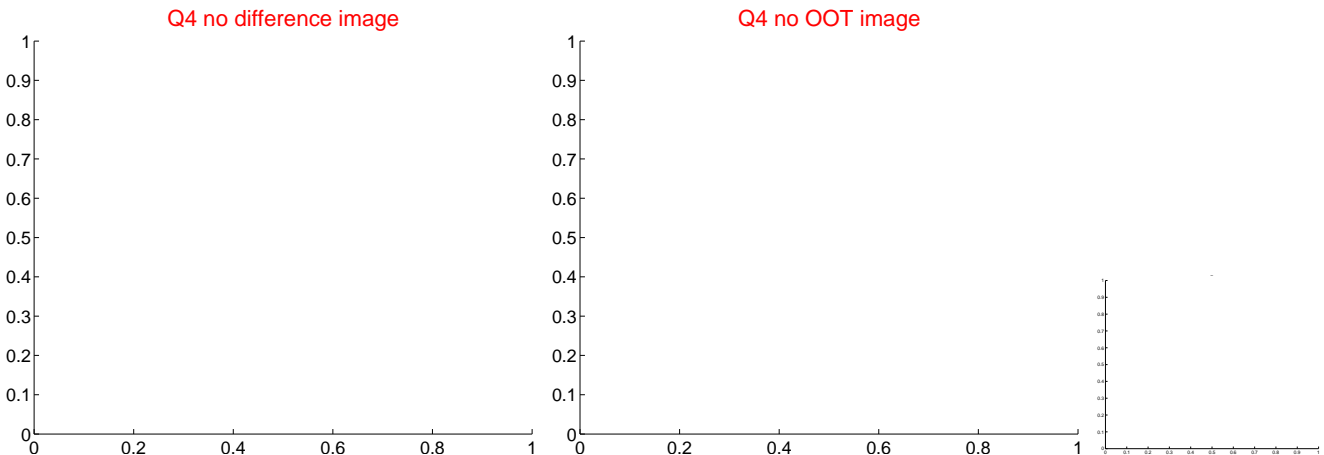
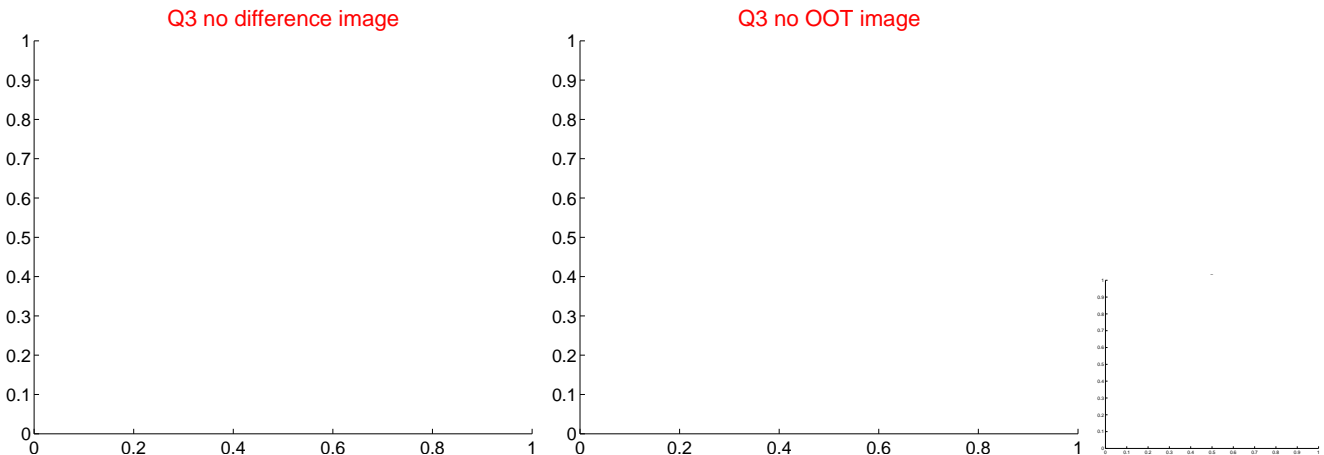
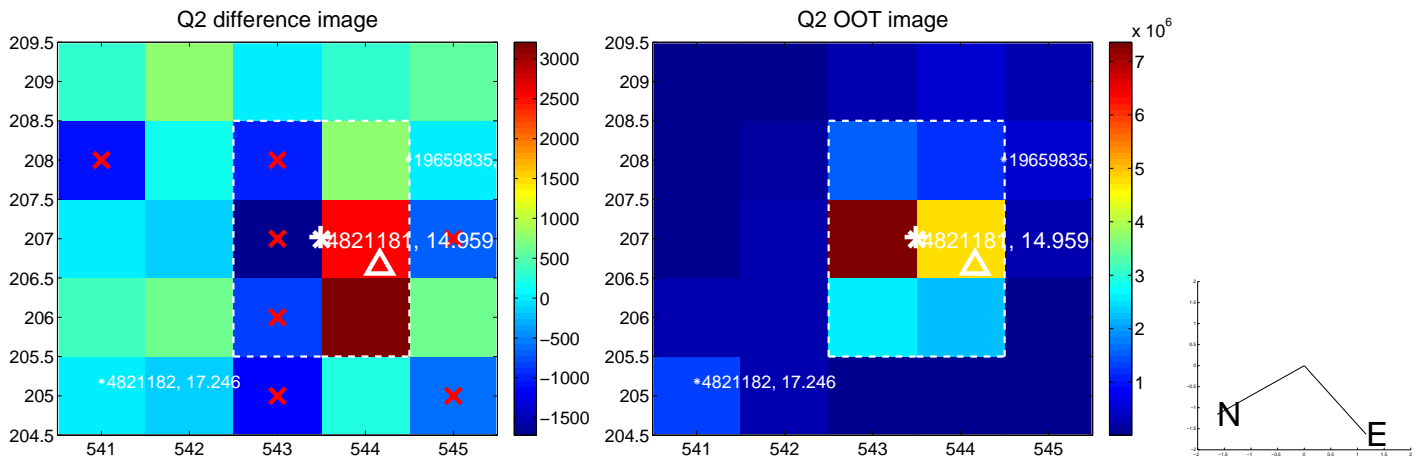
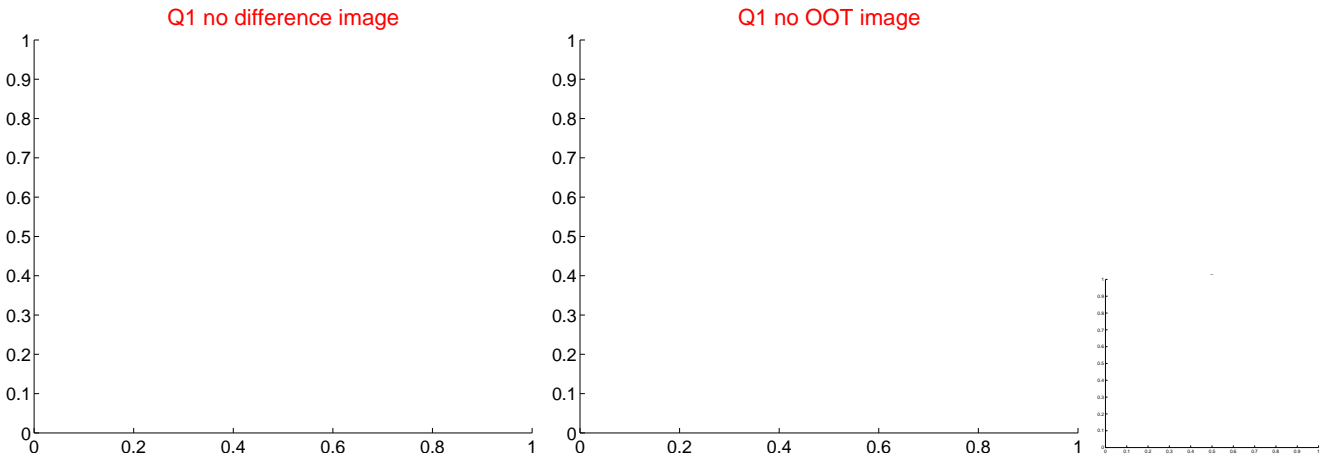
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.220 ± 1.062	1.15	0.832 ± 1.277	-0.892 ± 0.268
PRF-fit source offset from KIC position	1.162 ± 1.017	1.14	0.743 ± 1.257	-0.893 ± 0.284
photometric centroid source offset	0.63 ± 0.64	0.97	-0.50 ± 0.58	-0.38 ± 0.75

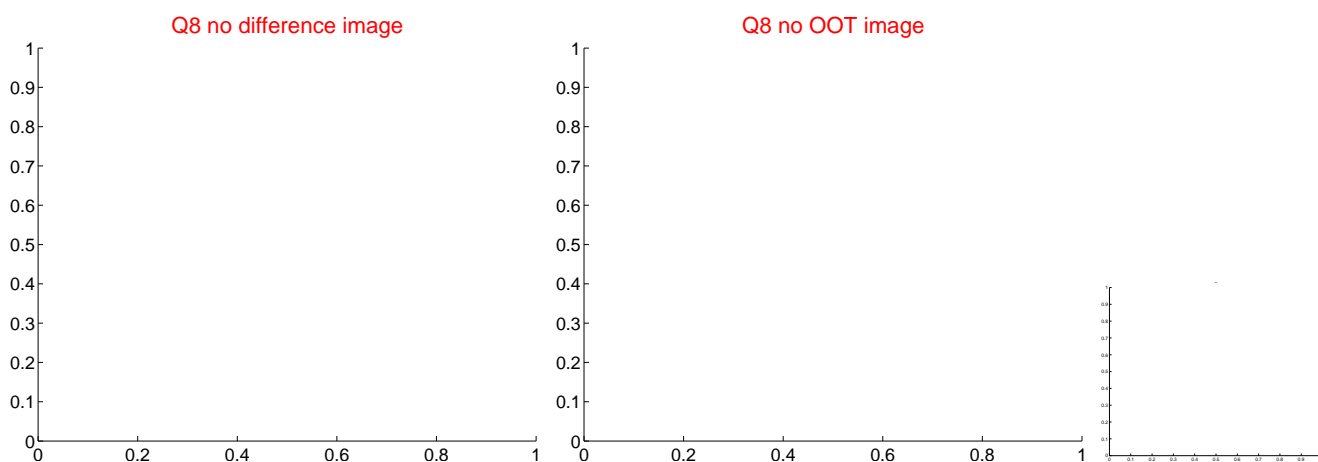
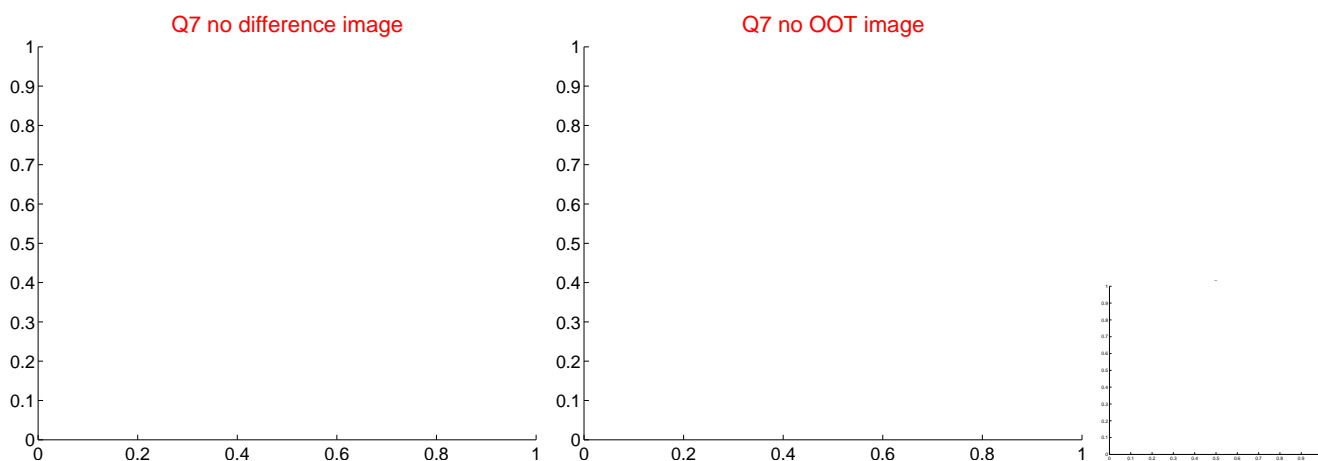
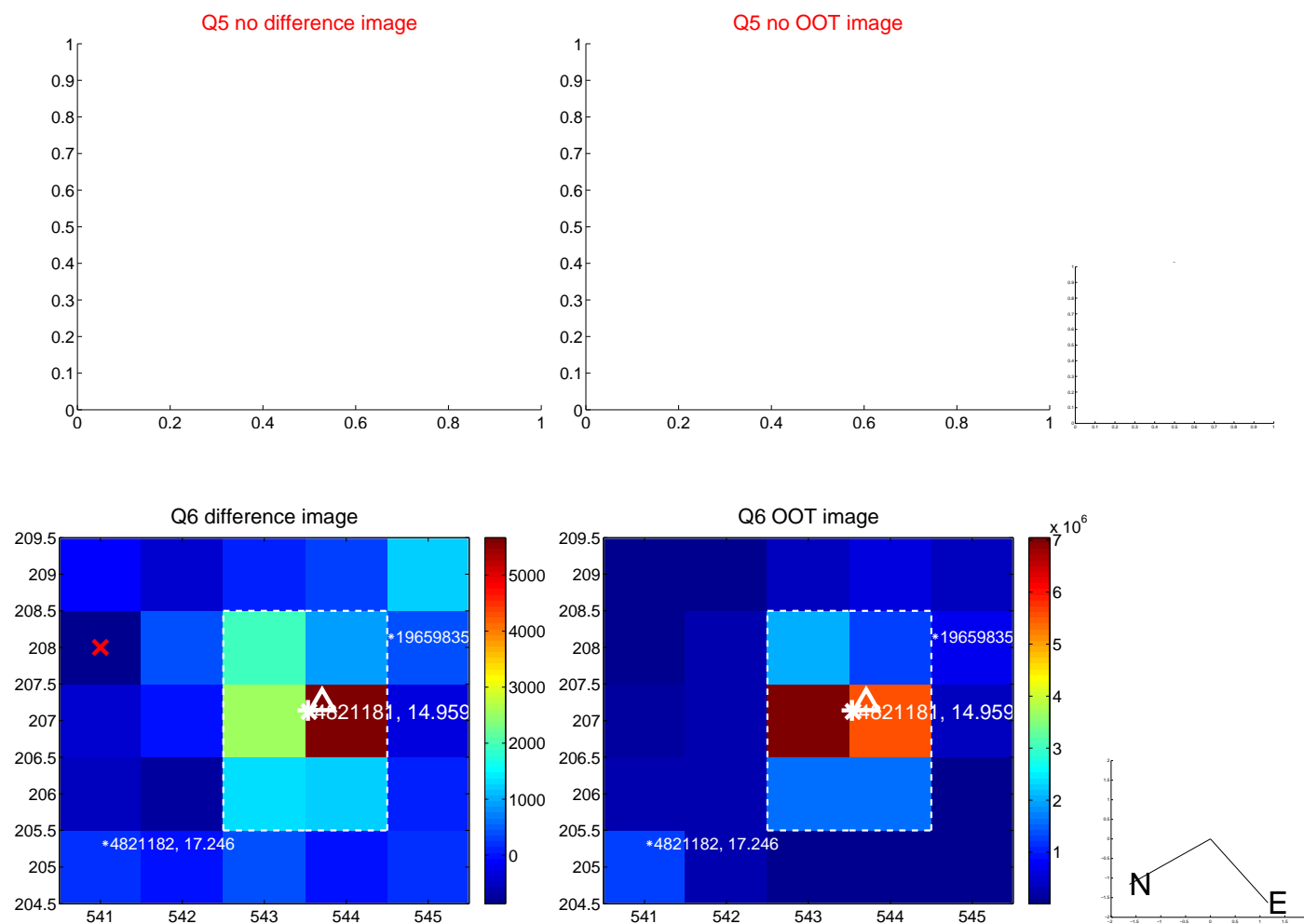


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



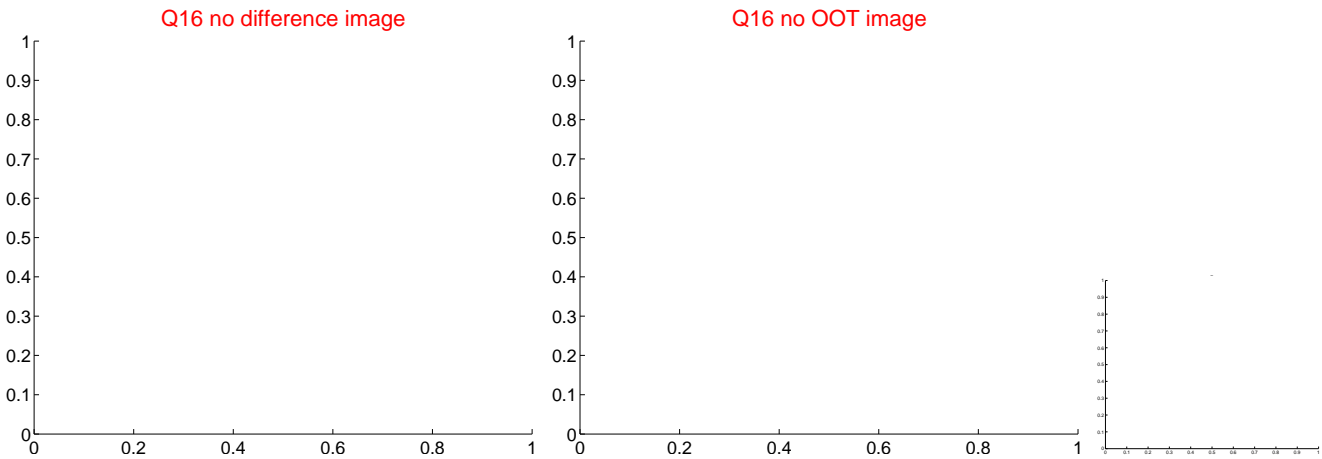
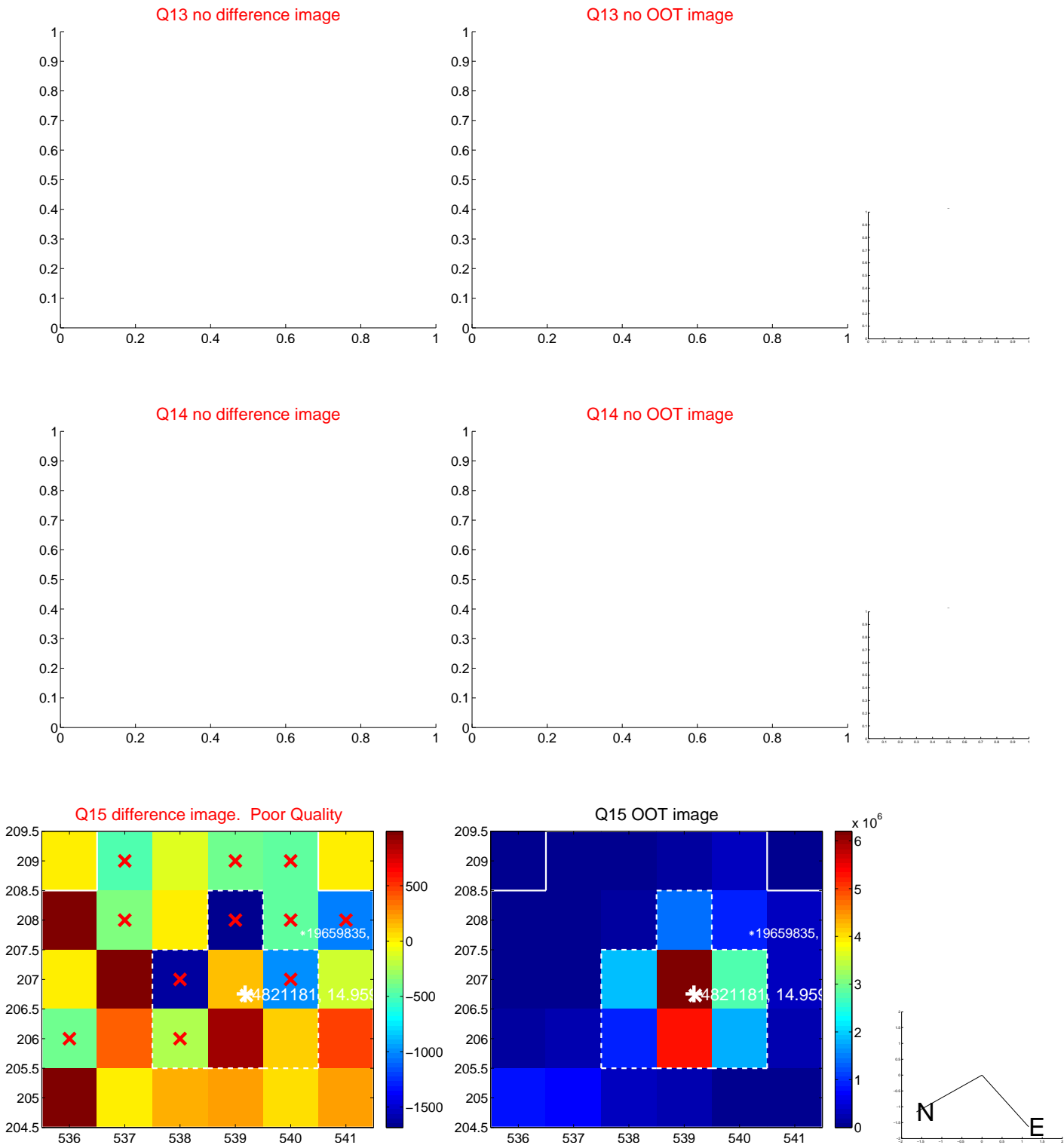
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



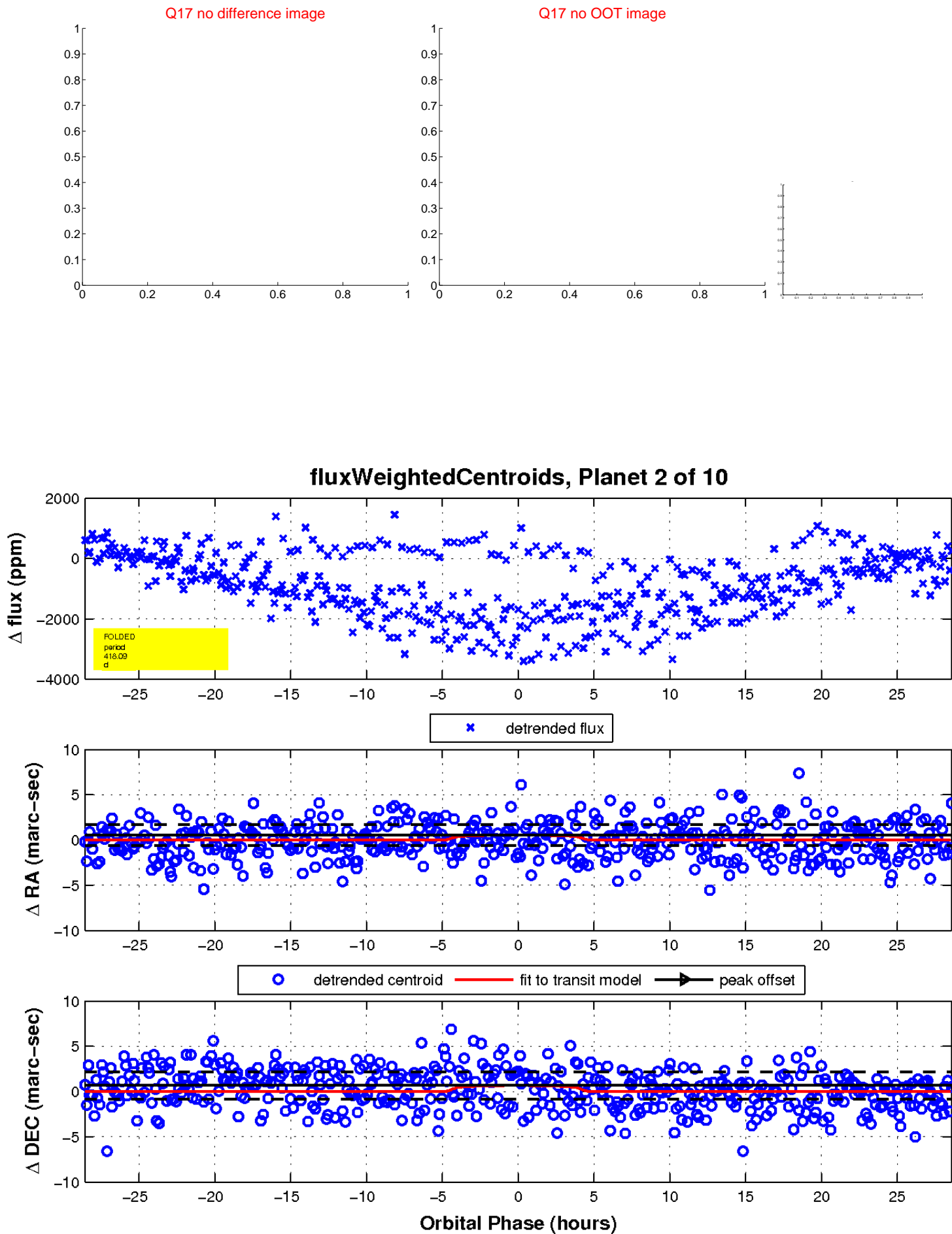
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

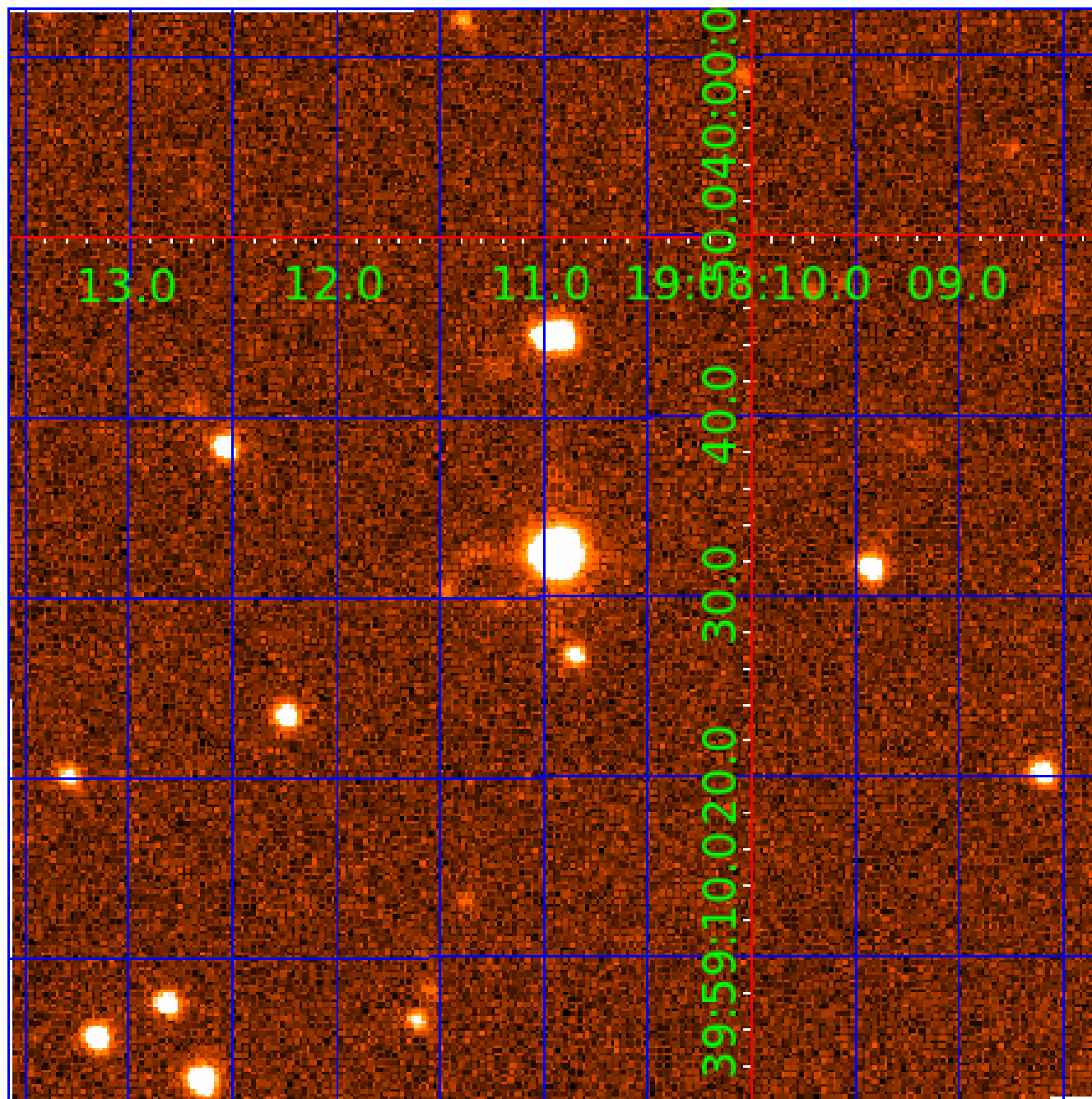


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

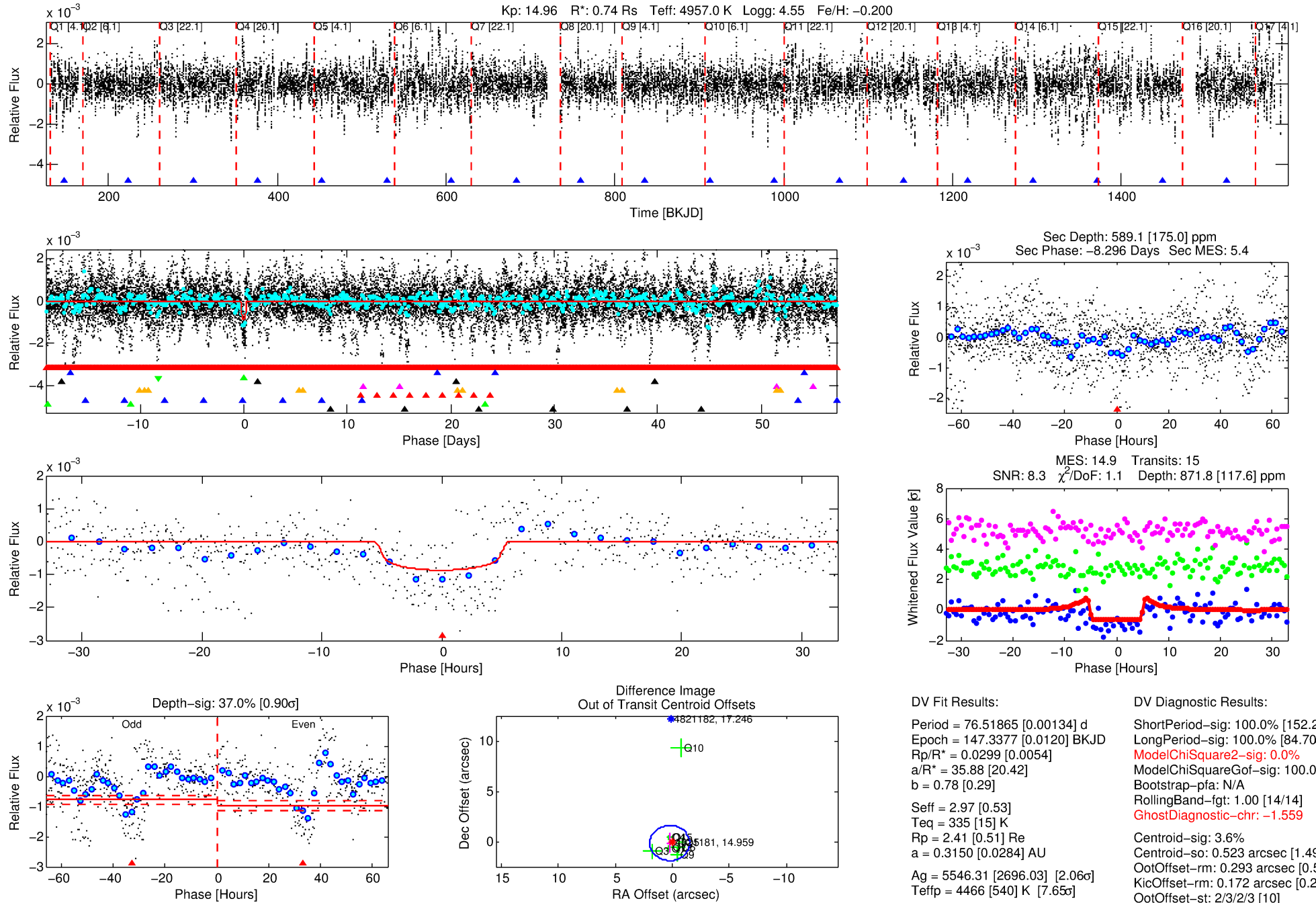
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-03

No Significant Match Found

DV One-Page Summary

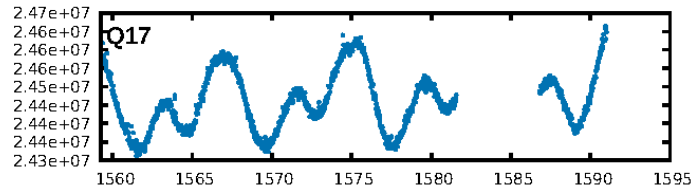
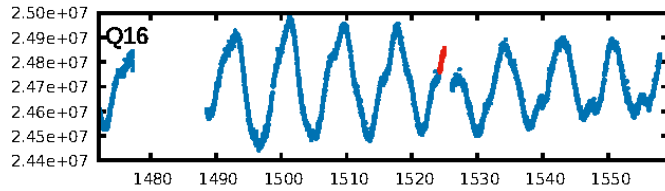
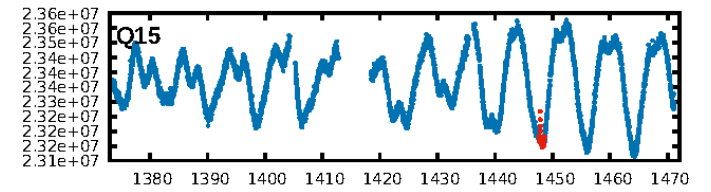
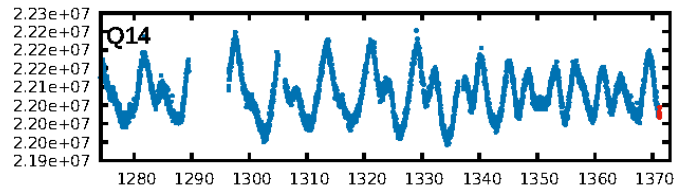
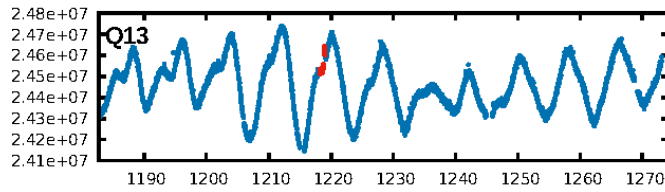
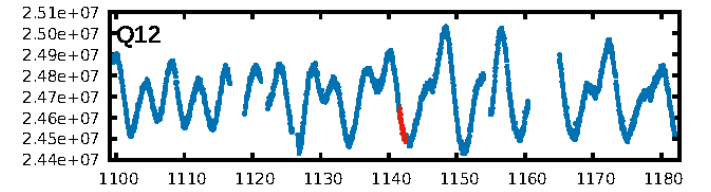
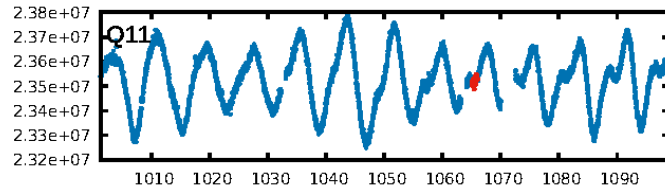
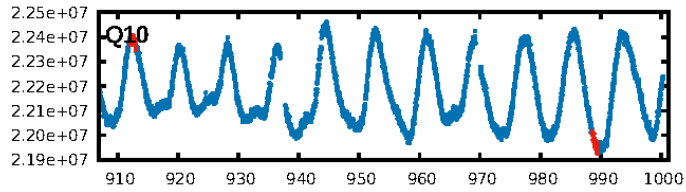
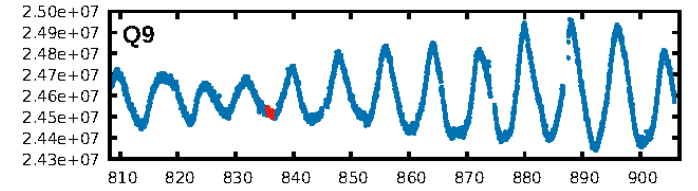
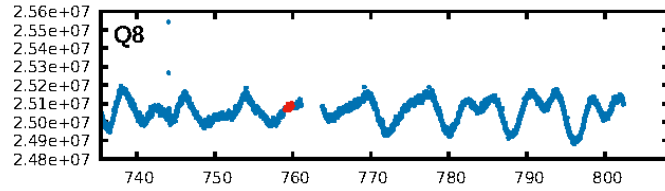
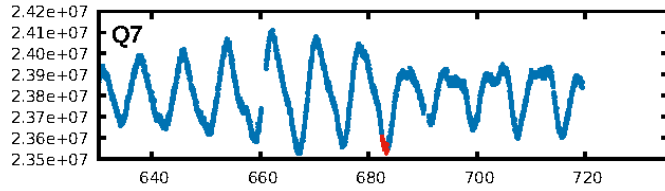
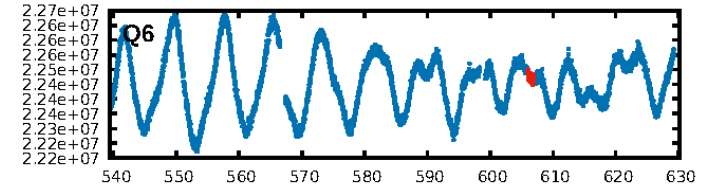
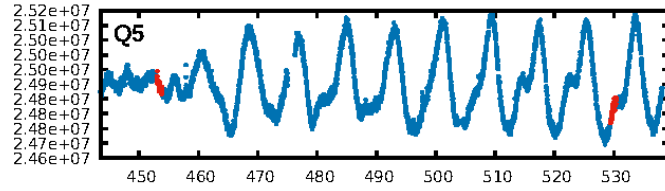
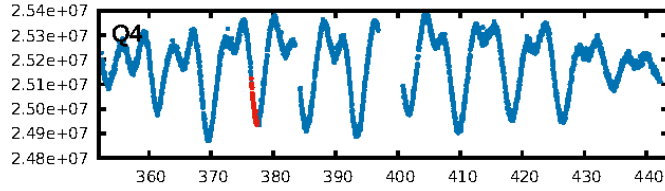
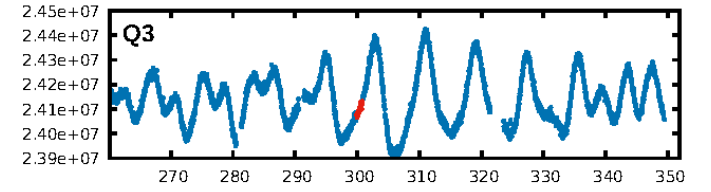
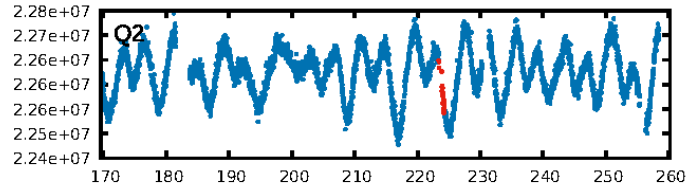
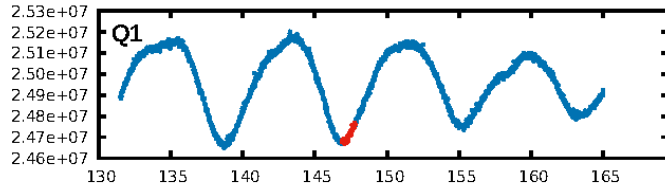
KIC: 4821181 Candidate: 3 of 10 Period: 76.519 d



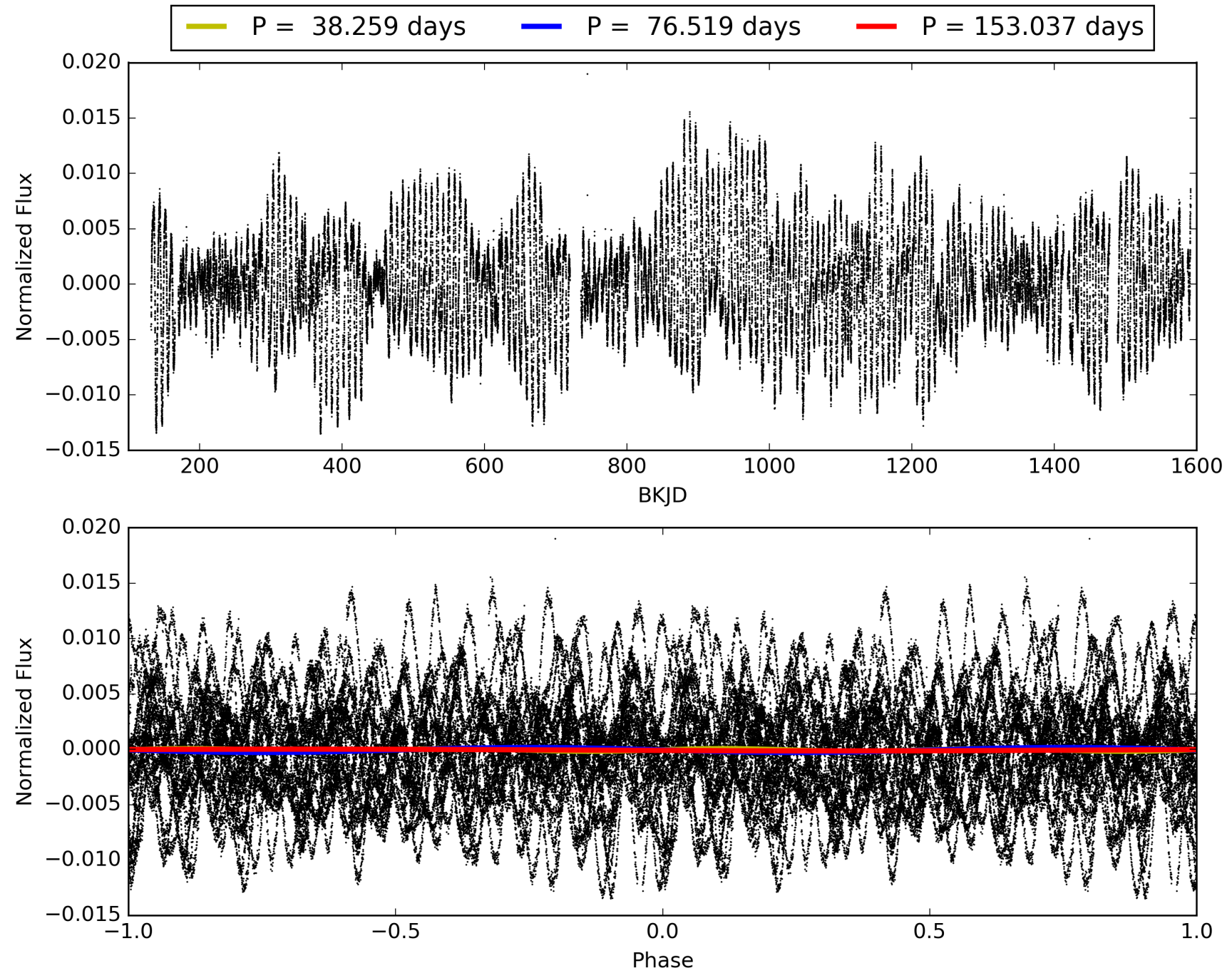
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-03, PDC Light Curves

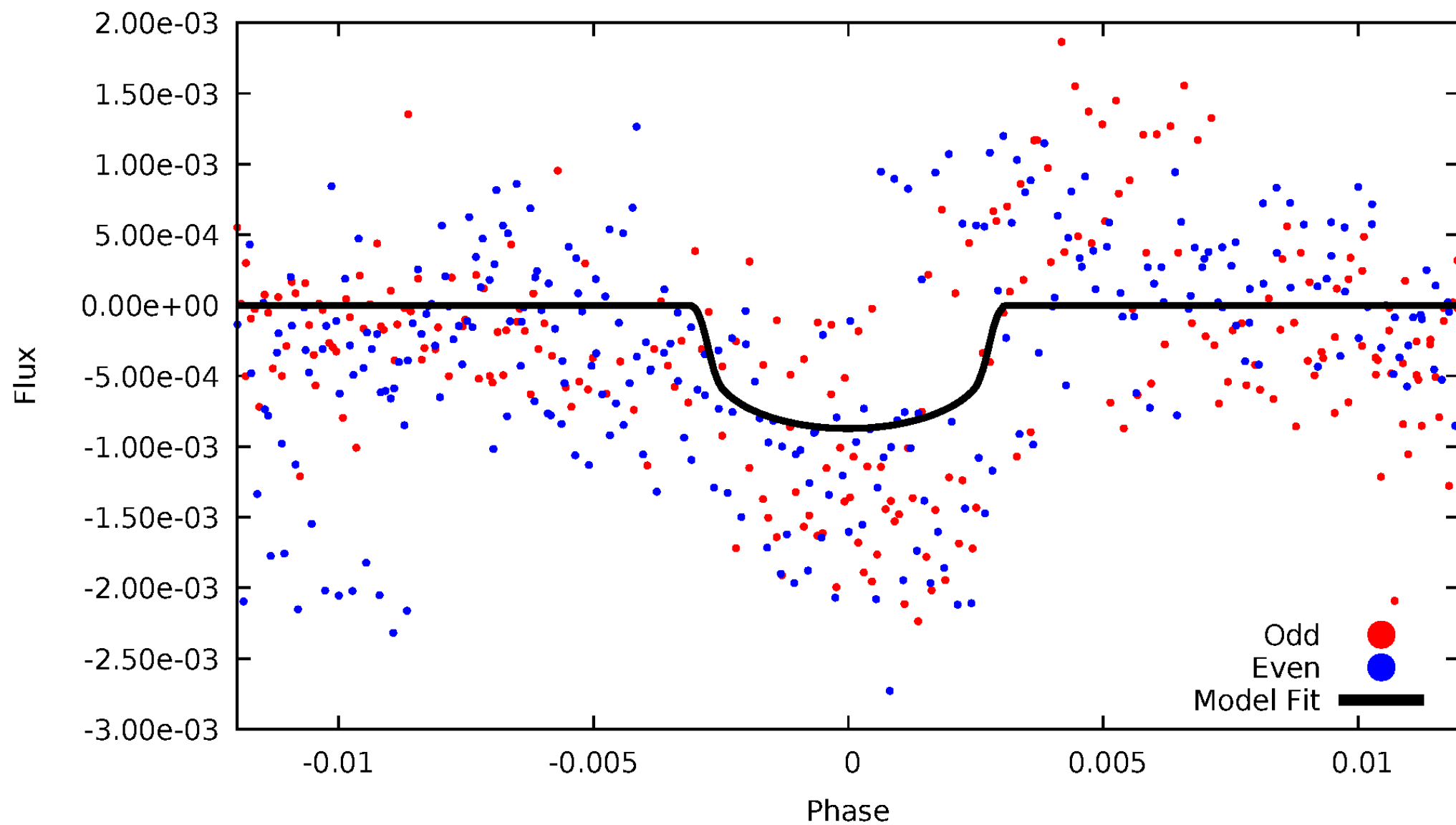


TCE 004821181-03



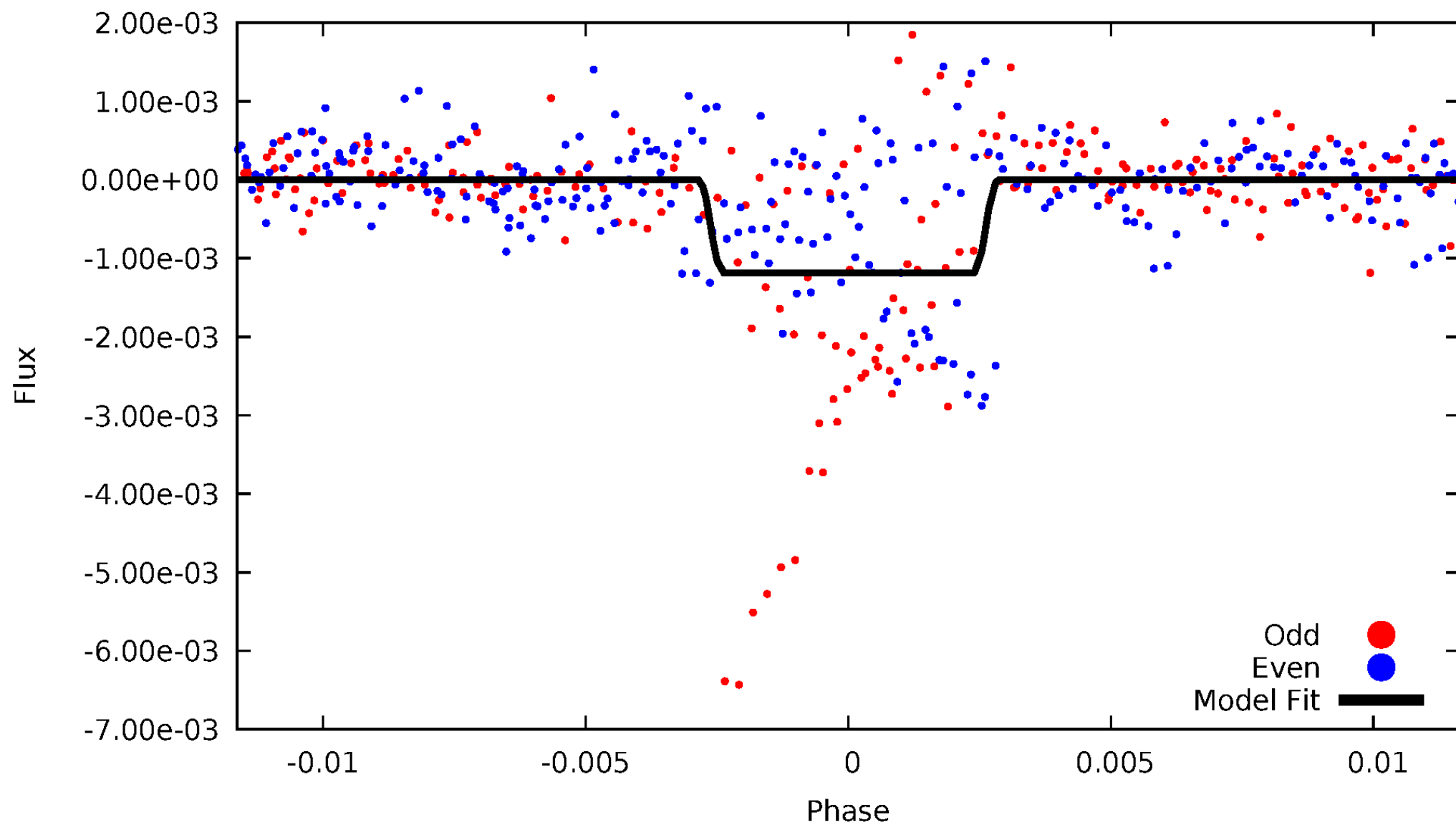
DV Odd/Even

TCE 004821181-03



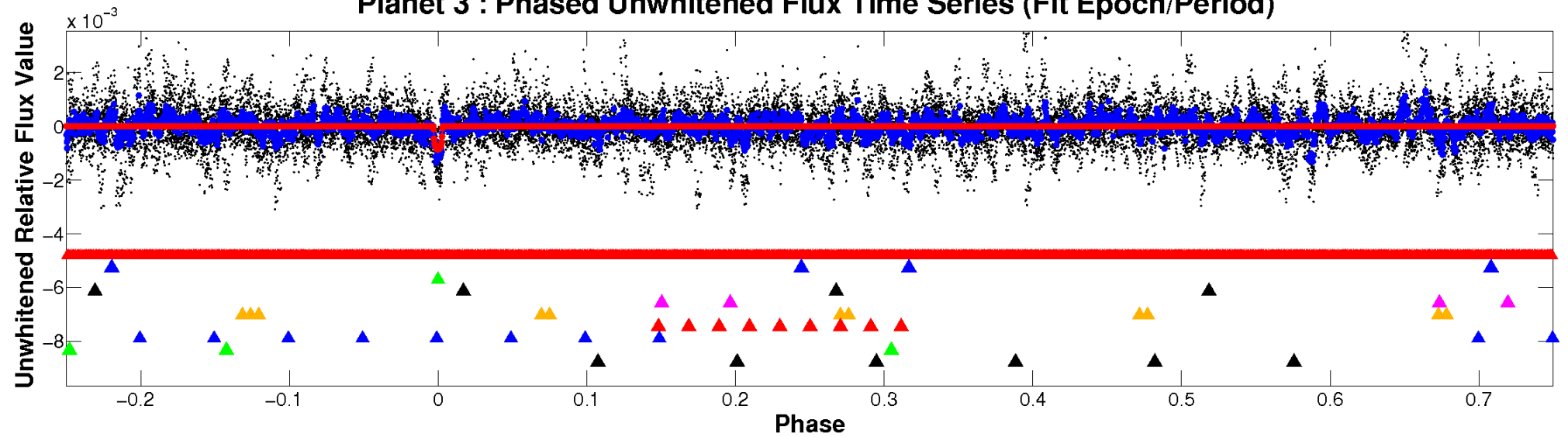
ALT Odd/Even

TCE 004821181-03

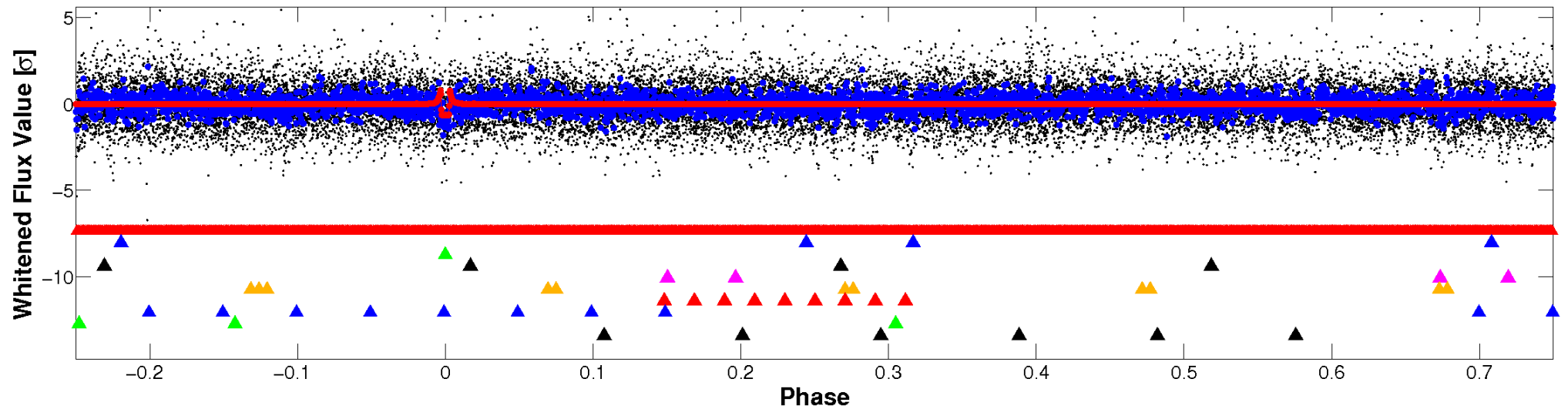


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

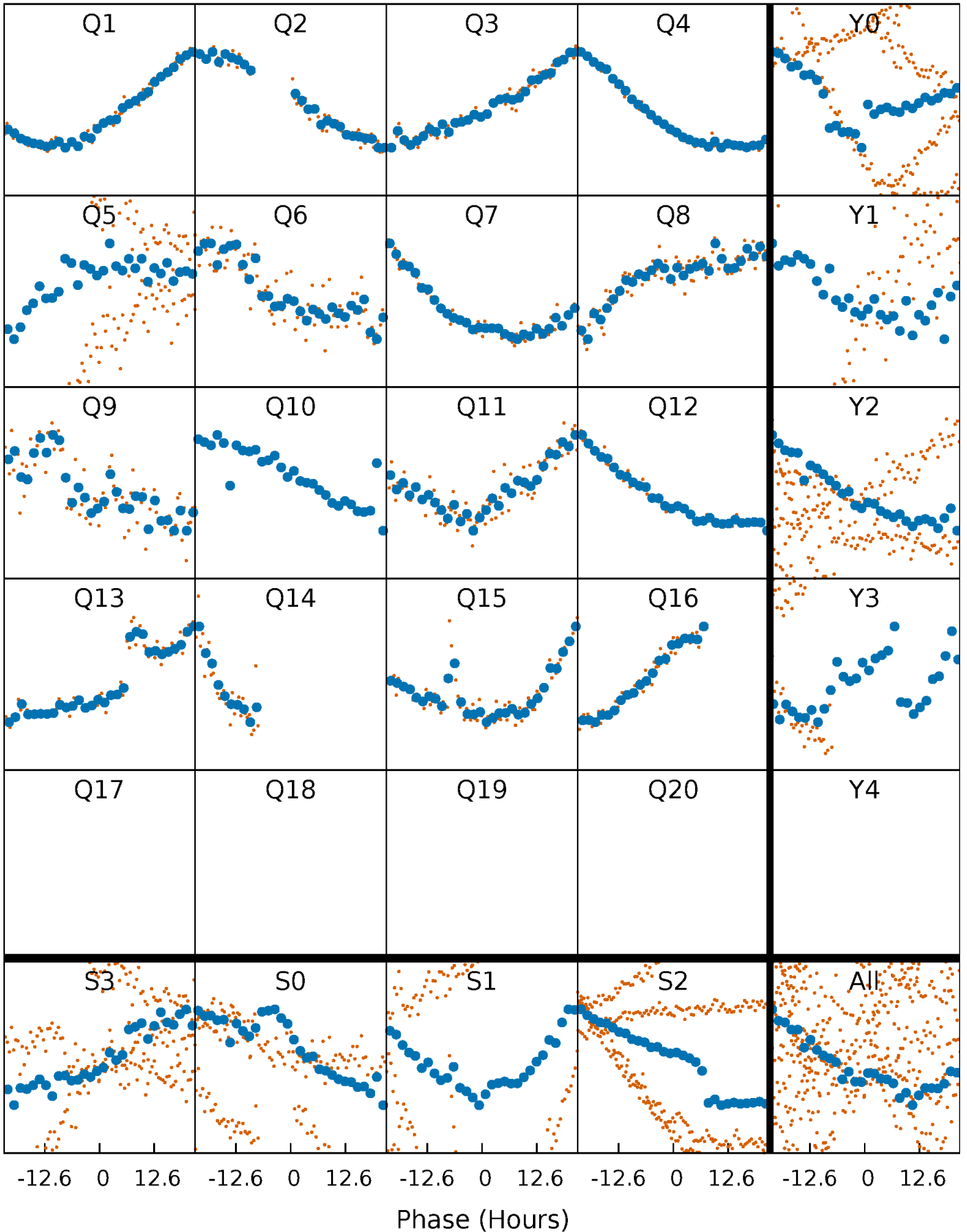


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



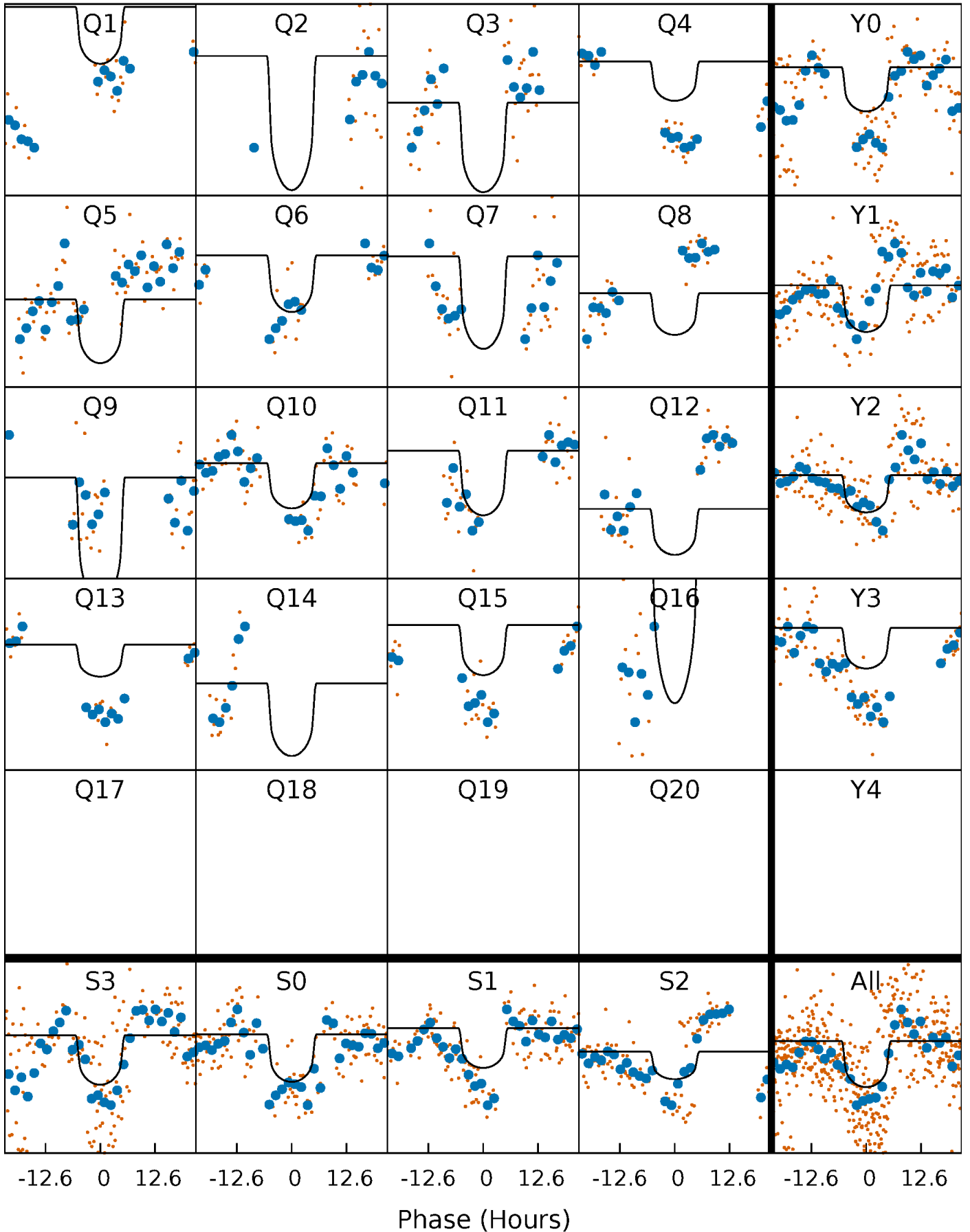
PDC Quarter-Phased Transit Curves

TCE 004821181-03 P= 76.518646 Days $T_0=147.337688$ (BKJD)



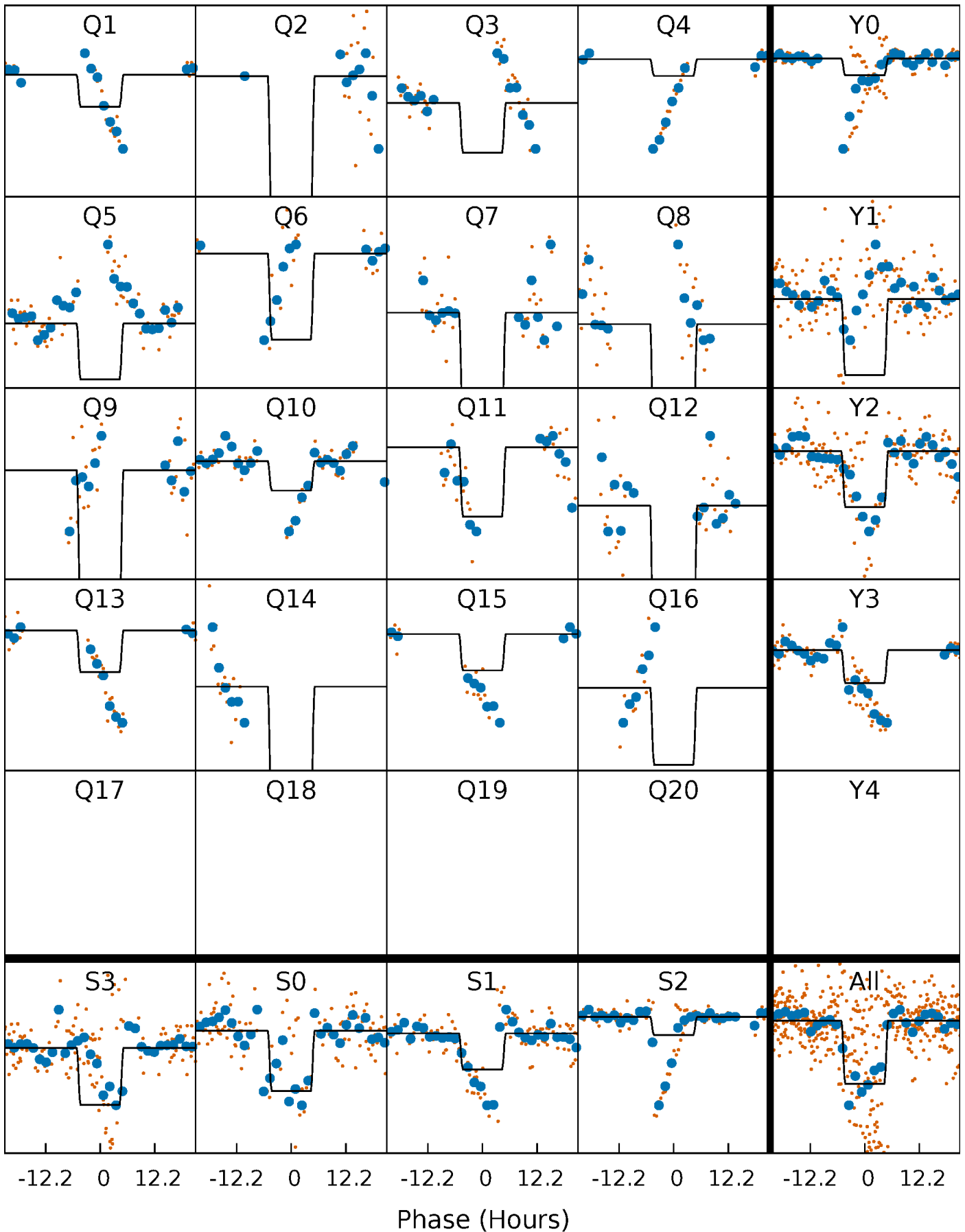
DV Quarter-Phased Transit Curves

TCE 004821181-03 P= 76.518646 Days $T_0=147.337688$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

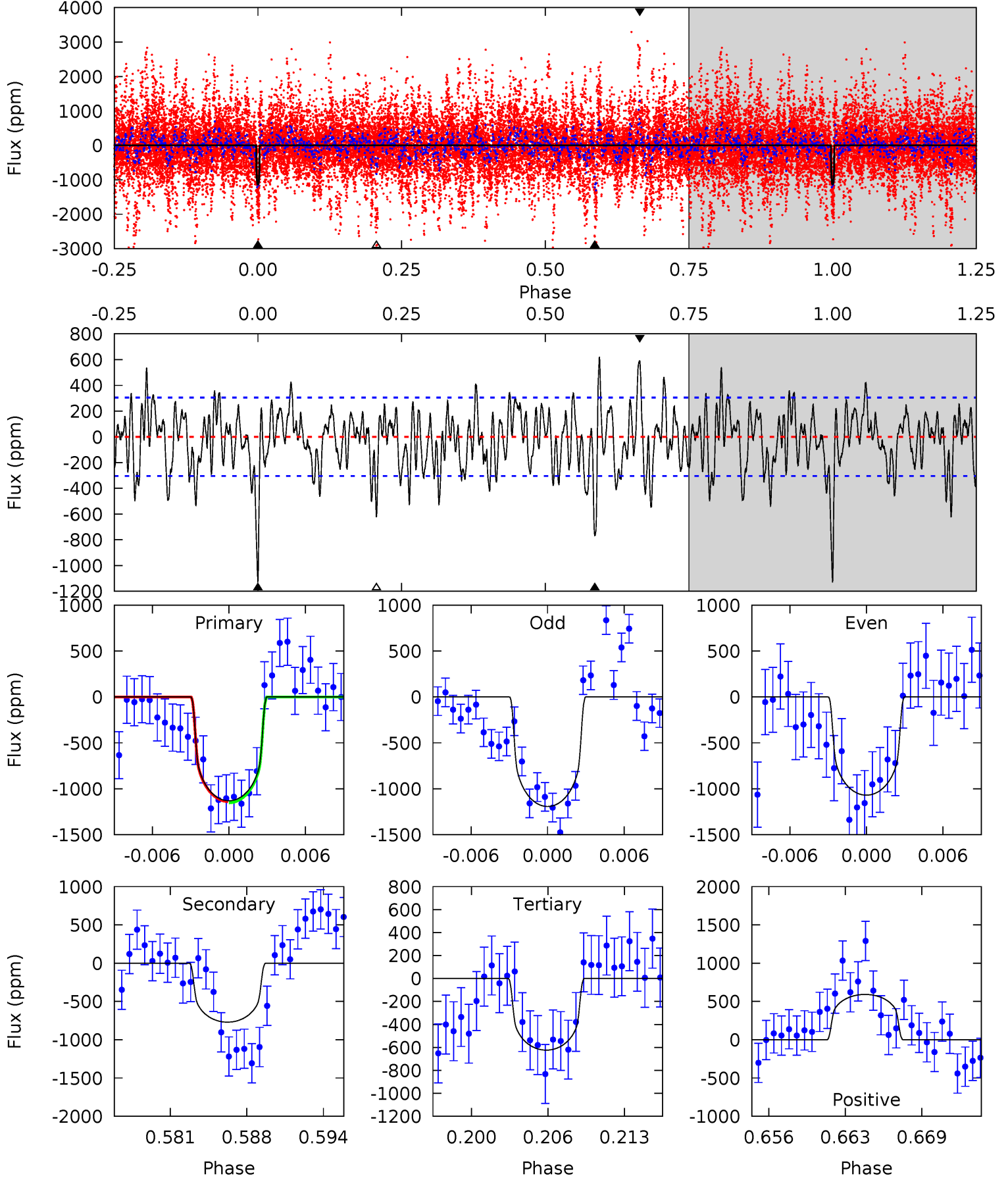
TCE 004821181-03 P= 76.512376 Days $T_0=147.416051$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-03, P = 76.518646 Days, E = 70.819042 Days

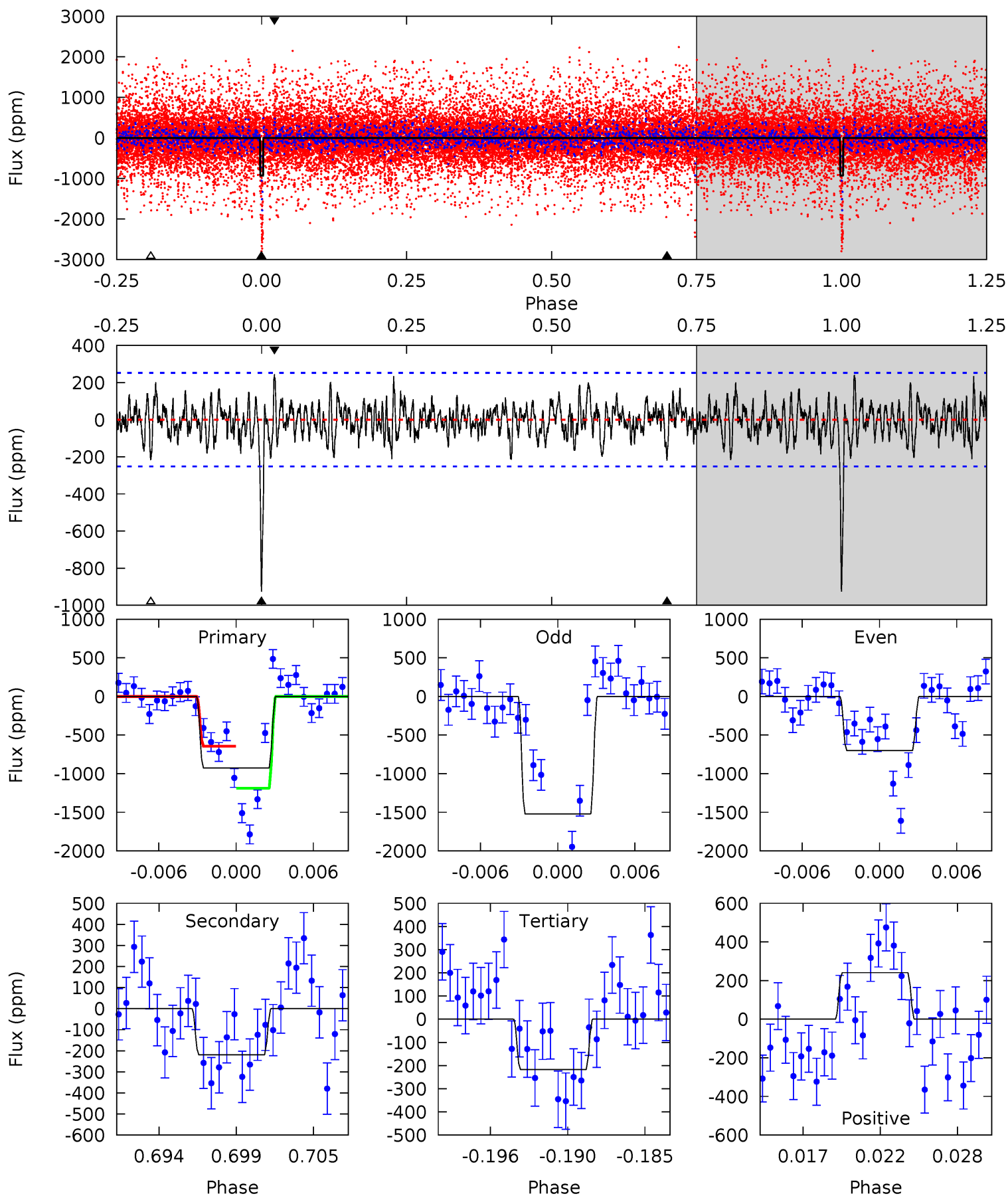
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	12.9	10.5	9.93	5.12	2.73	3.43	8.49	9.03	2.46	2.99	1.03	0.35	0.36	0.10



Alt Model-Shift Uniqueness Test

004821181-03, P = 76.512376 Days, E = 70.903675 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	4.46	4.43	4.91	5.14	2.77	1.48	14.4	14.0	0.03	-0.45	8.49	1.02	0.21	5.62



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-770 ± 60	$2.39^{+0.44}_{-0.47}$	466^{+16}_{-16}	4834^{+463}_{-345}	7488^{+4088}_{-2126}
Alt.	-219 ± 49	$2.77^{+0.49}_{-0.44}$	466^{+16}_{-18}	3617^{+264}_{-228}	1553^{+788}_{-503}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

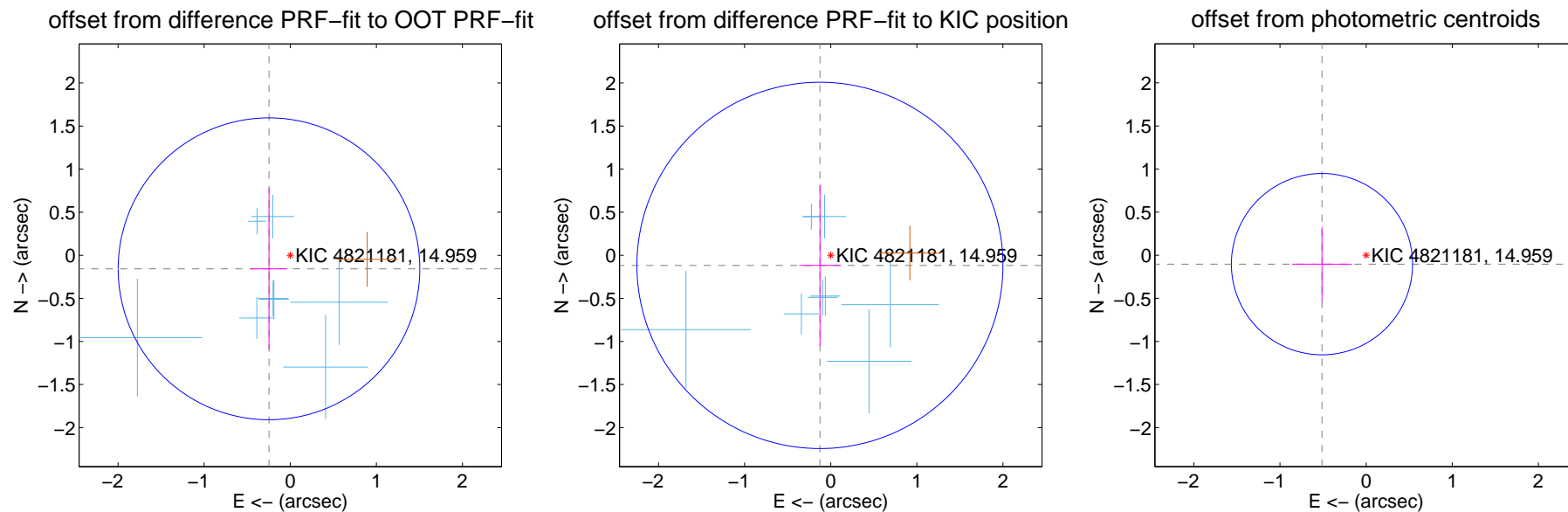
DV Centroid Data

Supplemental centroid analysis for 004821181-03. Kepler magnitude: 14.96. Transit SNR 8.31

There are 8 quarters with good PRF difference image offsets

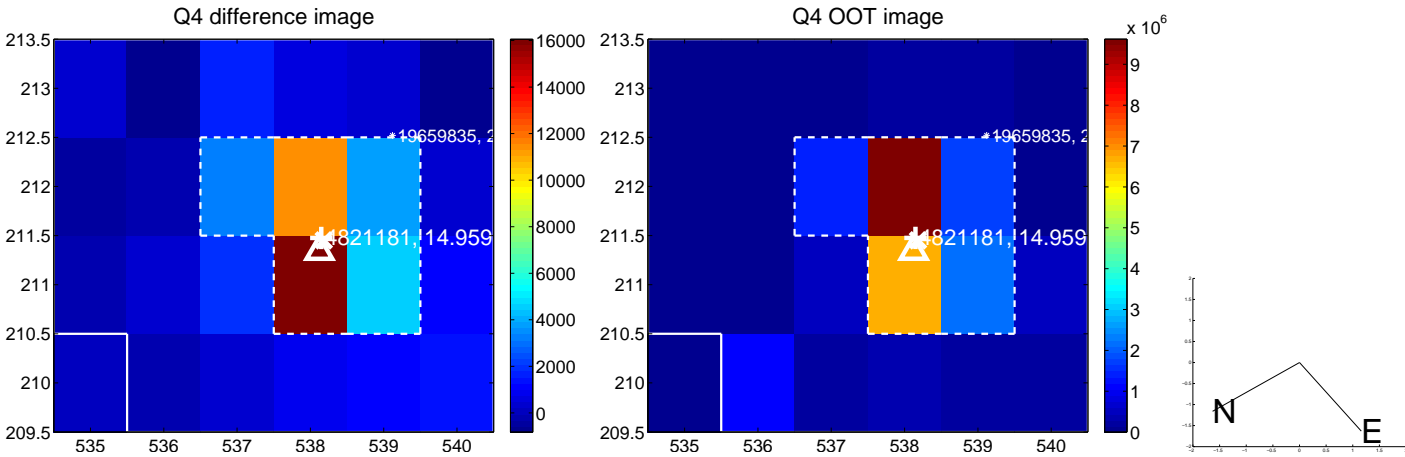
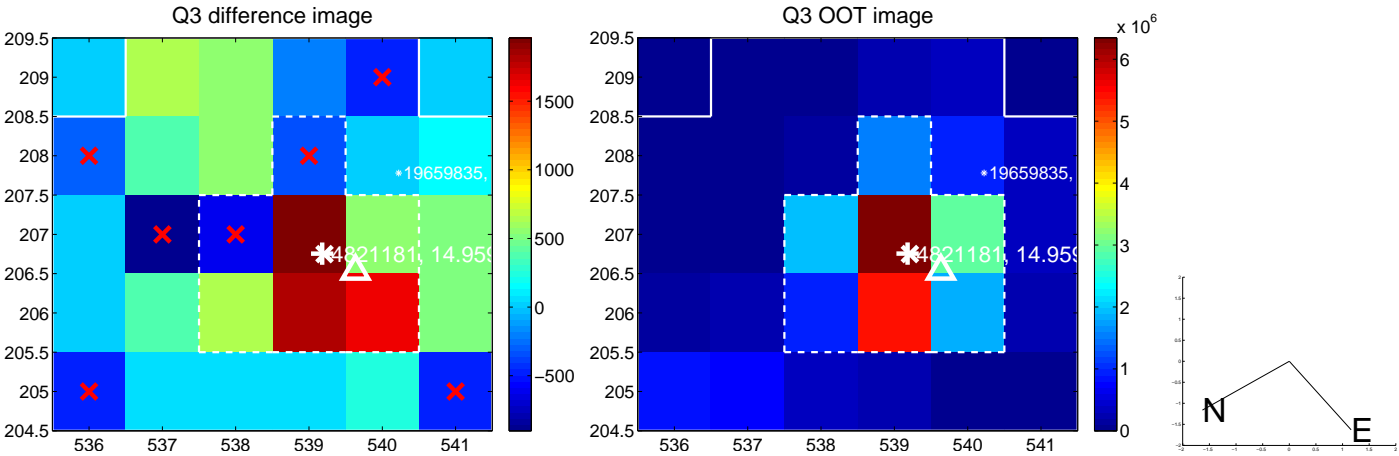
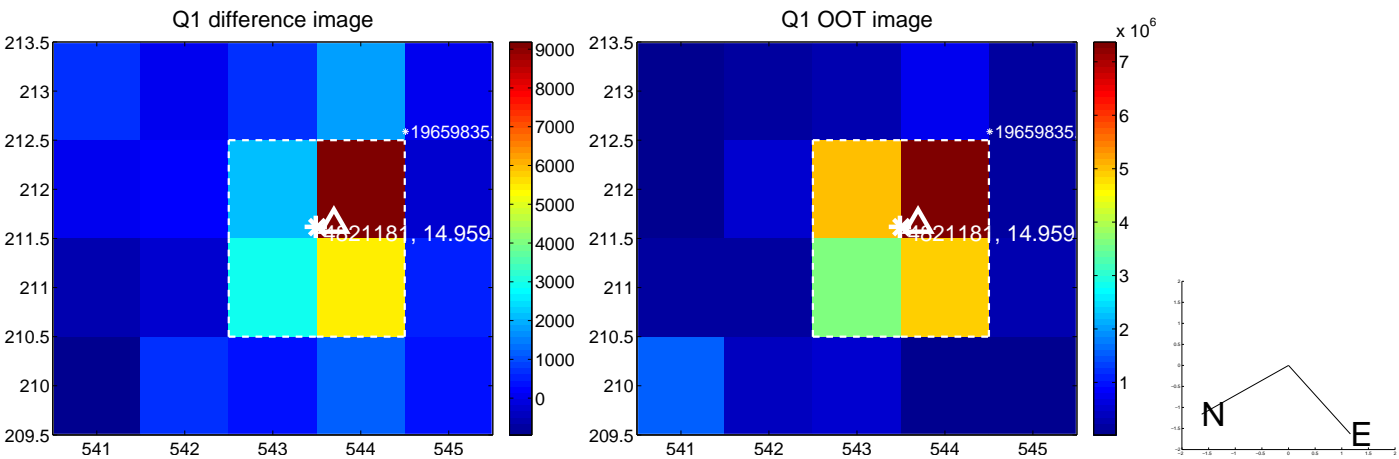
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.293 ± 0.584	0.50	0.247 ± 0.214	-0.157 ± 0.936
PRF-fit source offset from KIC position	0.172 ± 0.709	0.24	0.125 ± 0.242	-0.117 ± 0.934
photometric centroid source offset	0.52 ± 0.35	1.49	0.51 ± 0.35	-0.10 ± 0.43

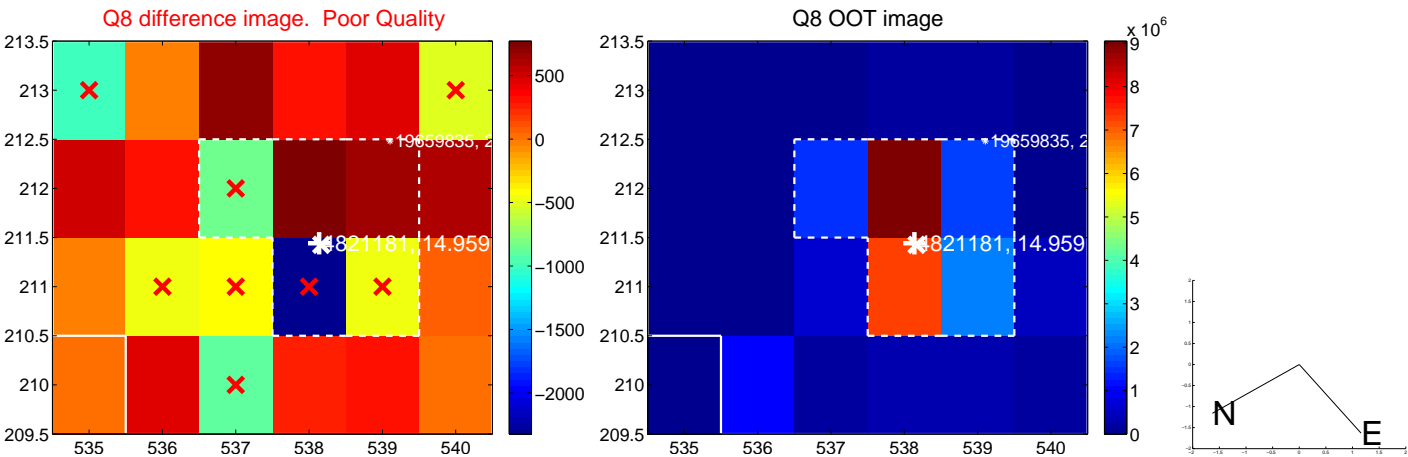
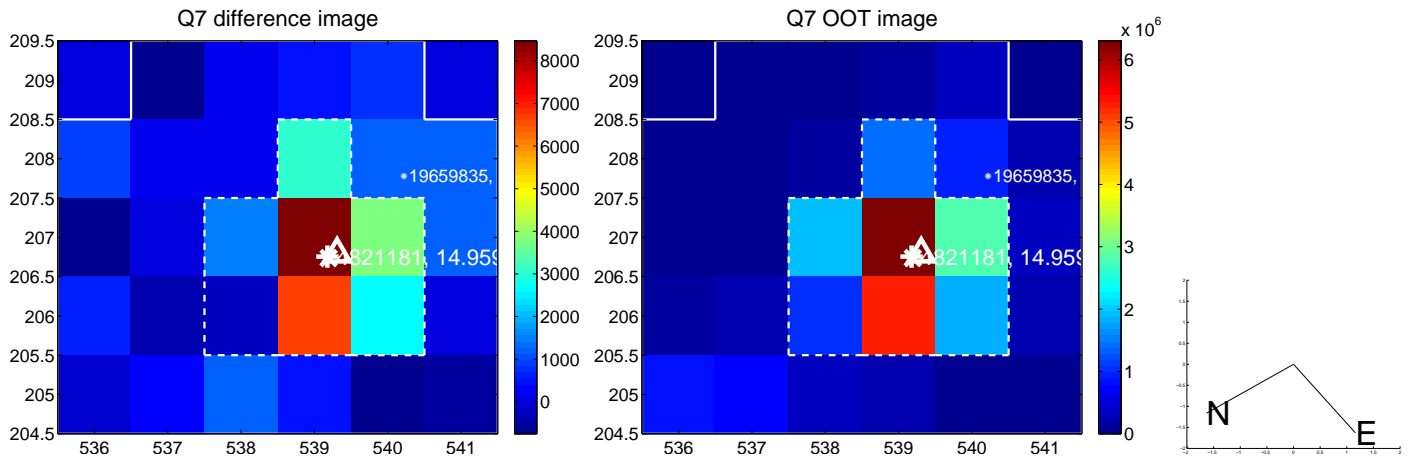
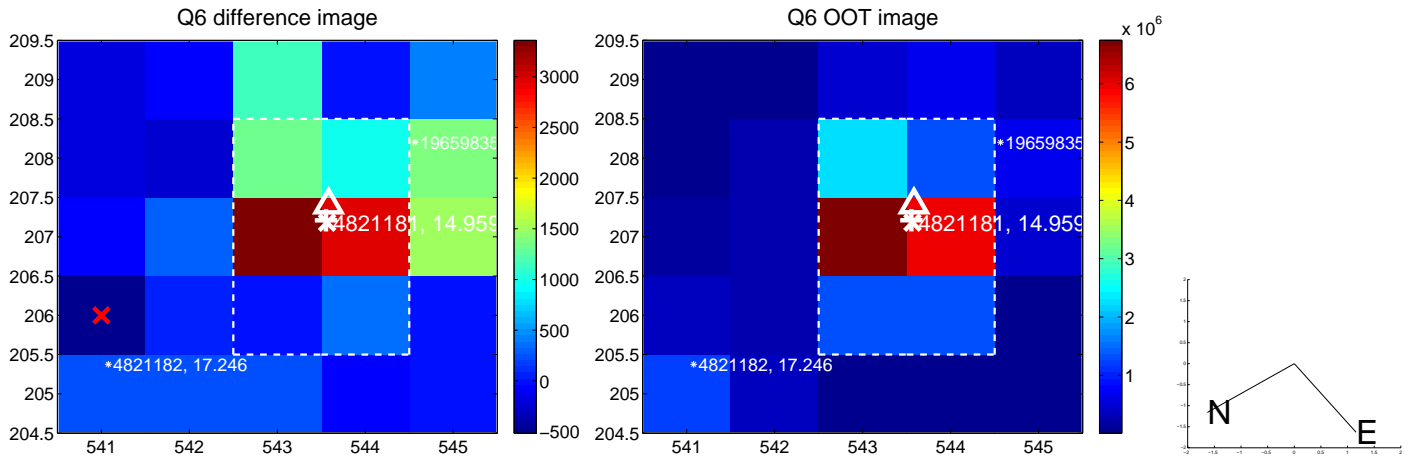
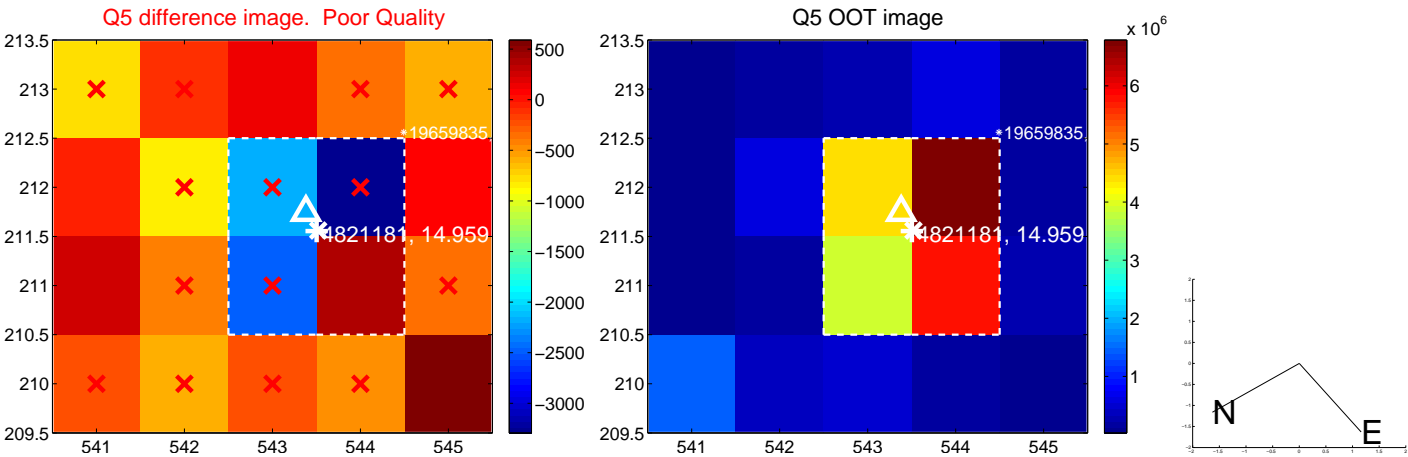


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

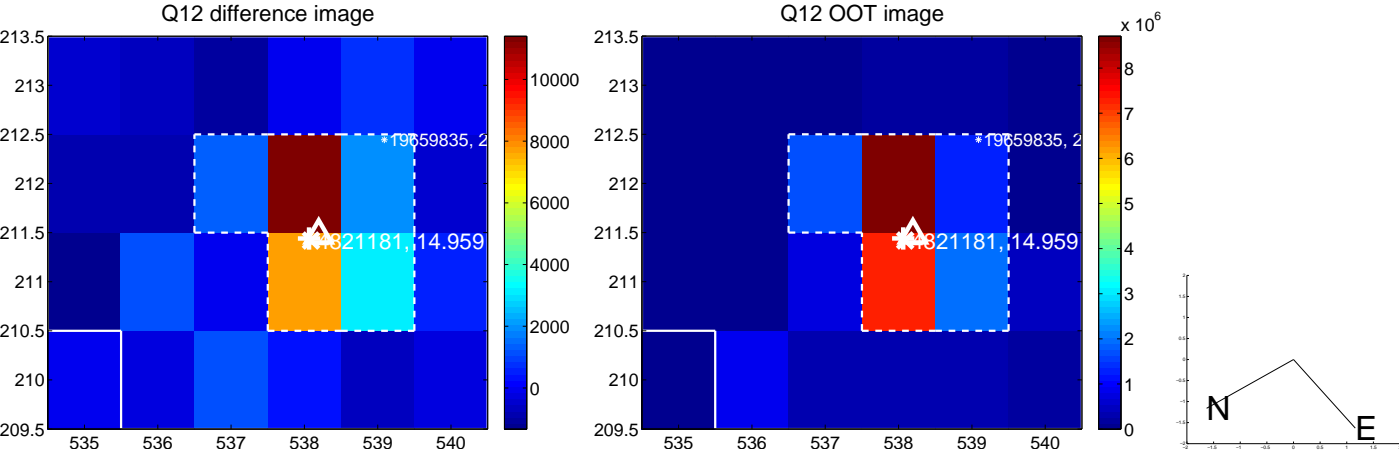
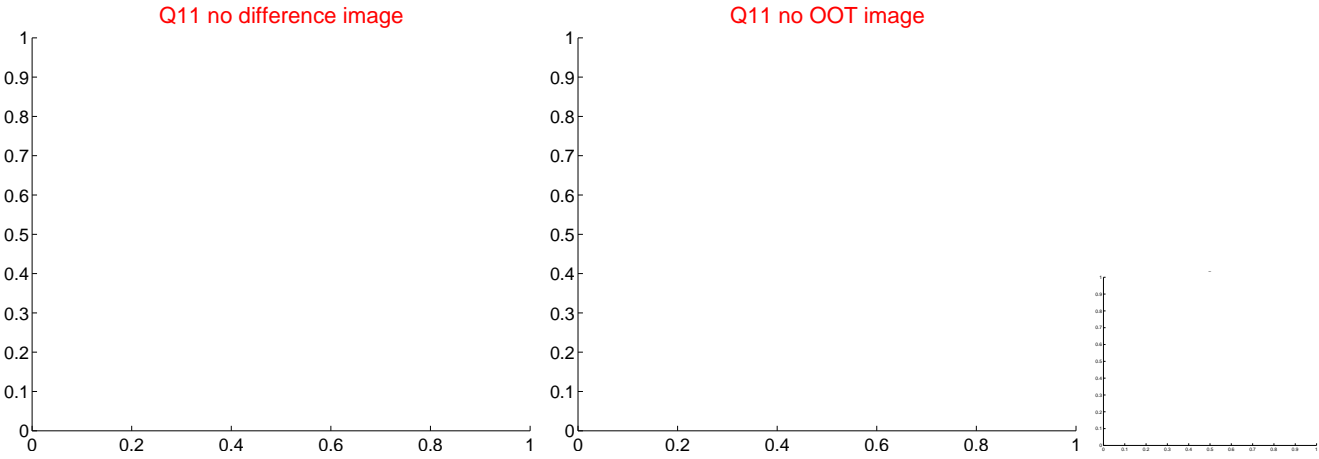
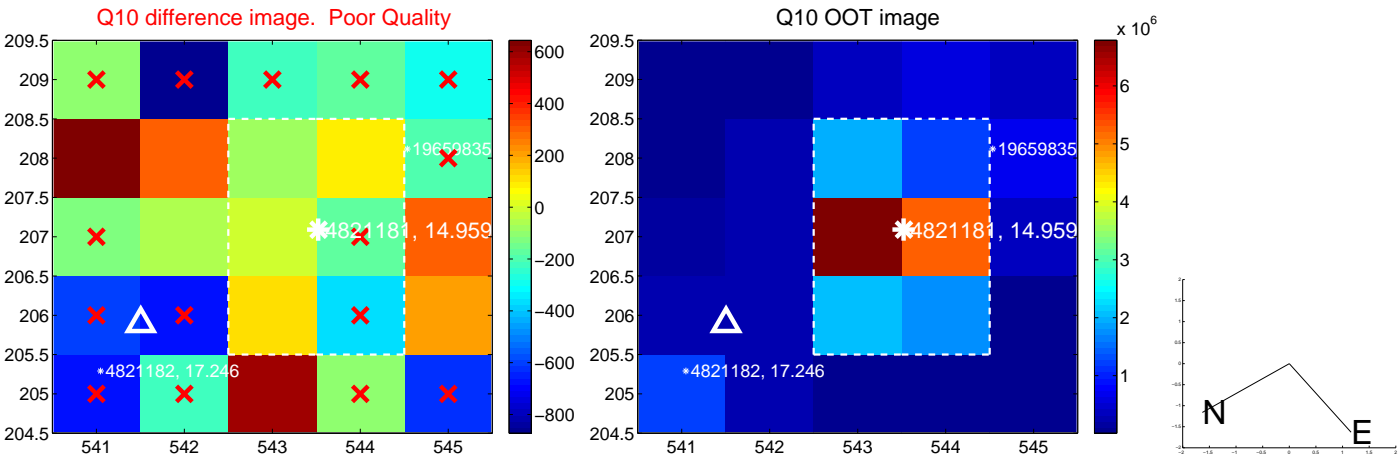
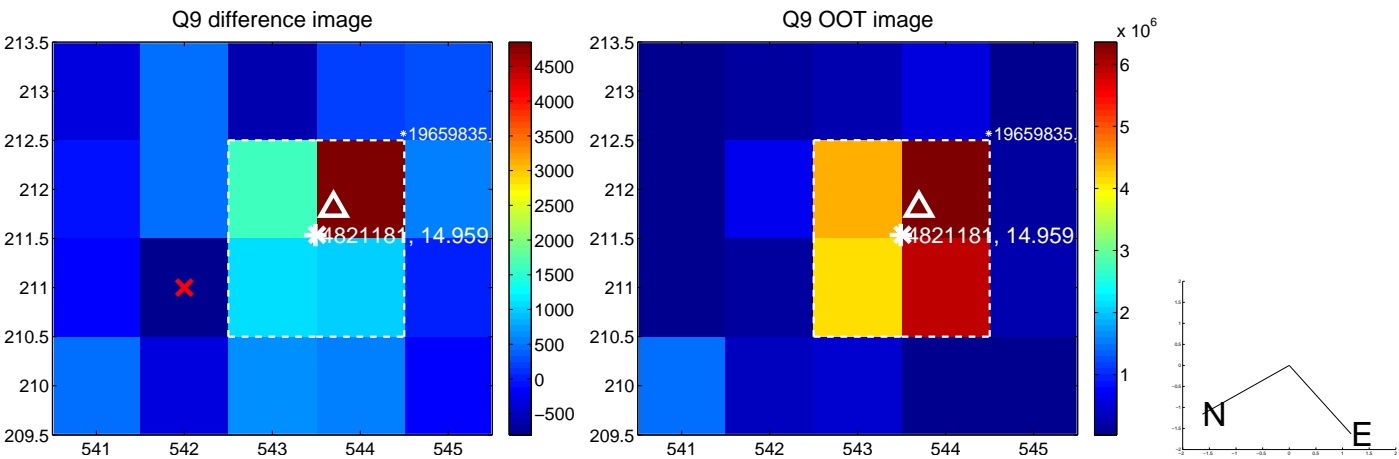
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



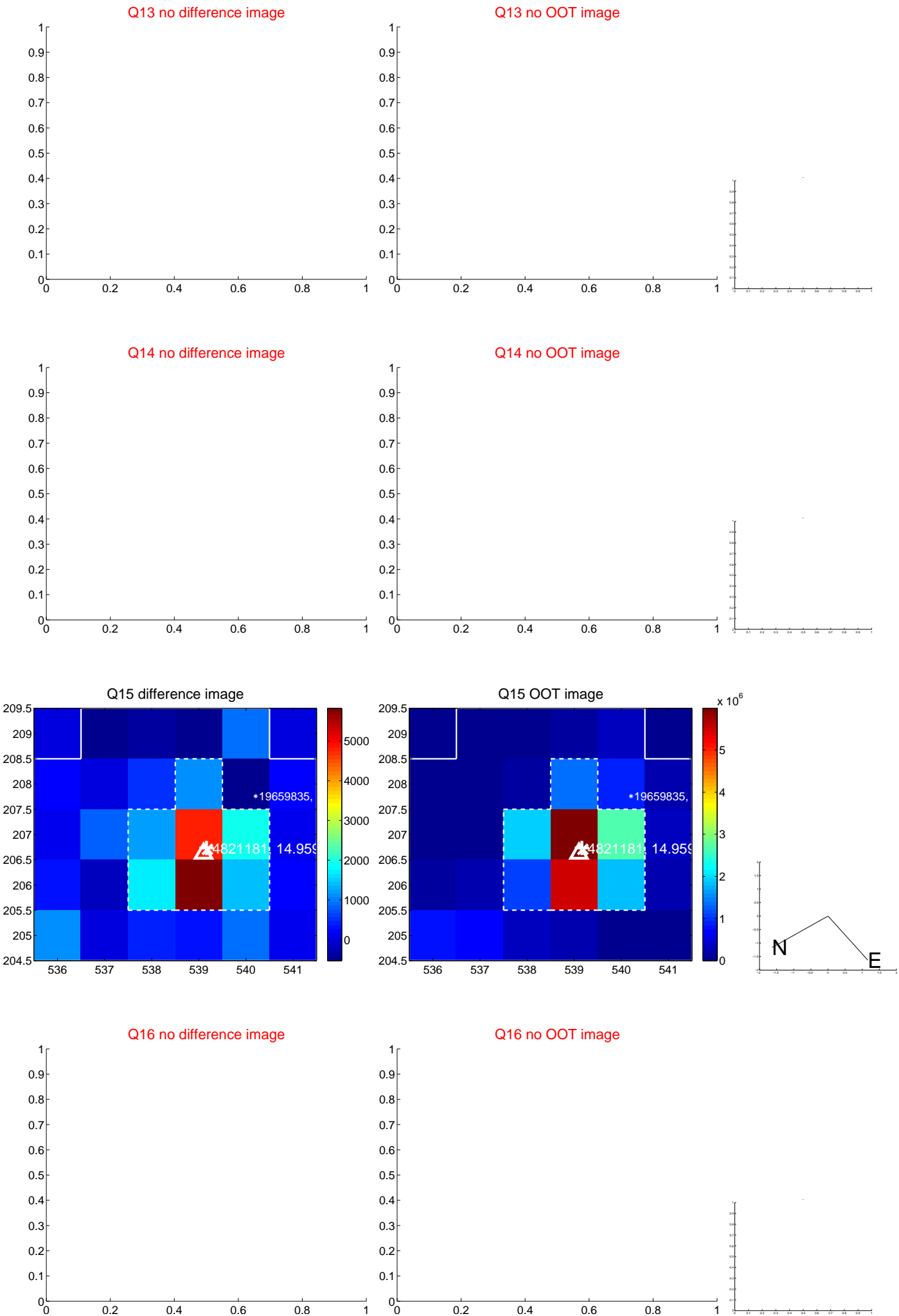
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



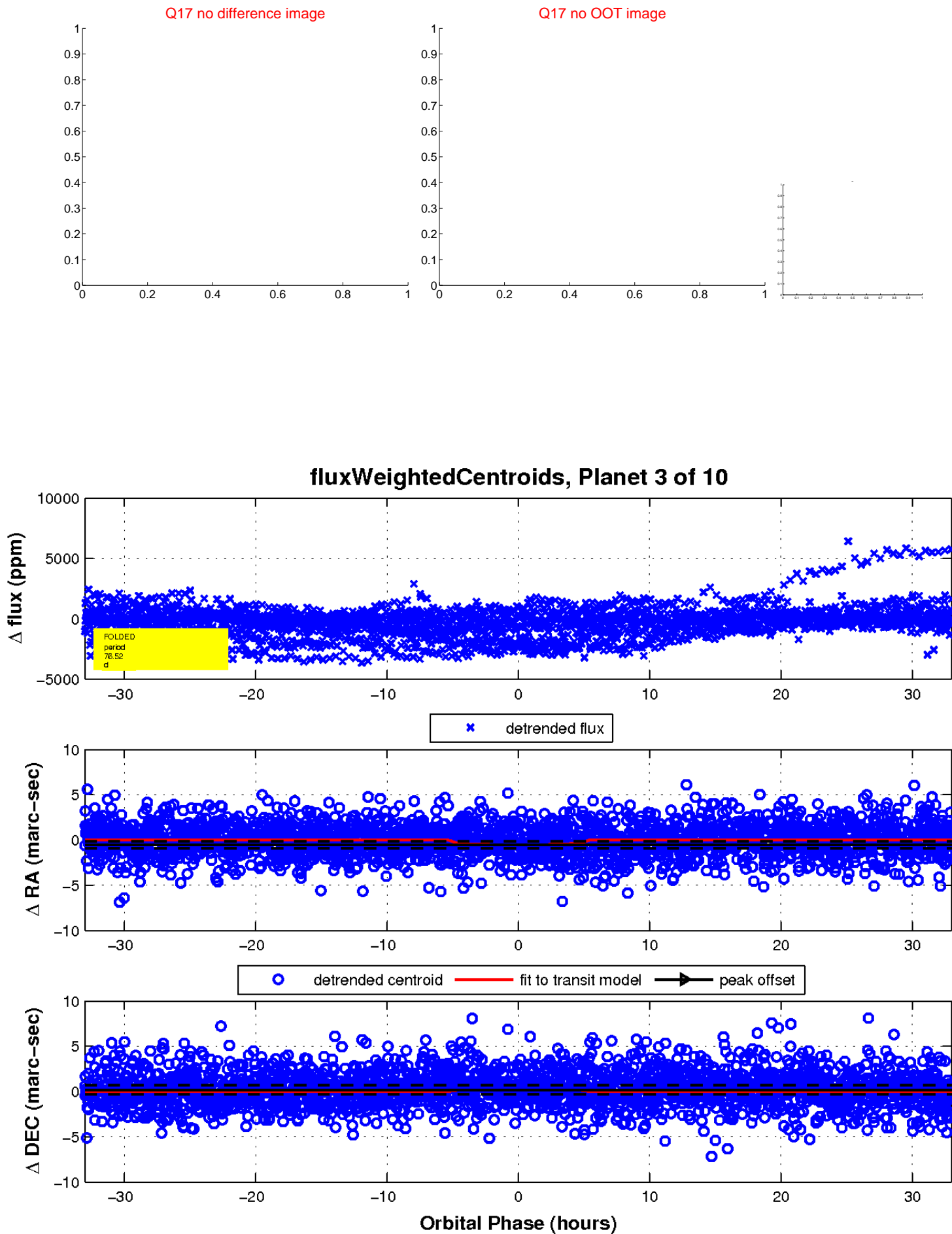
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

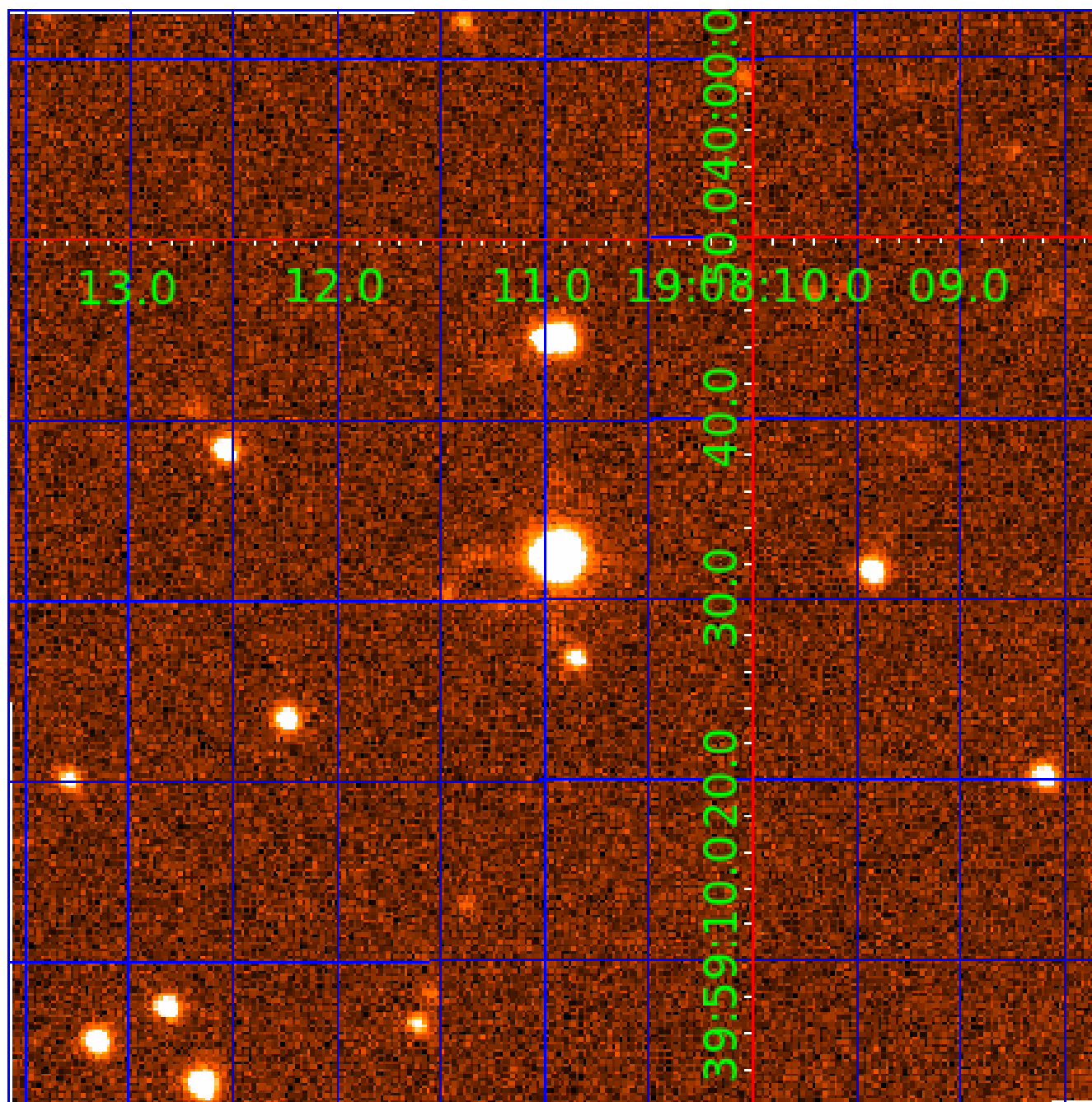


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

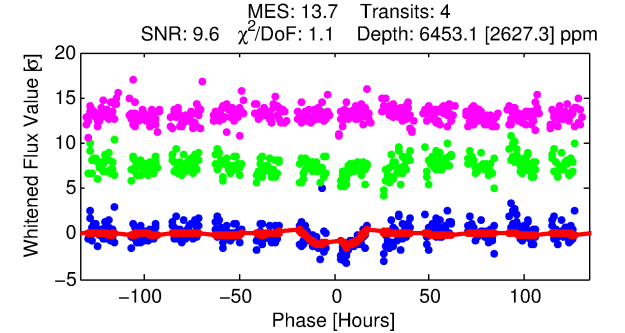
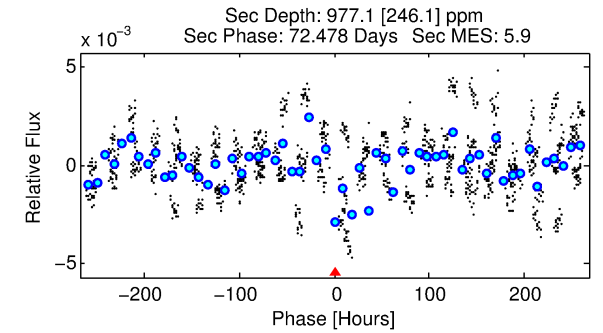
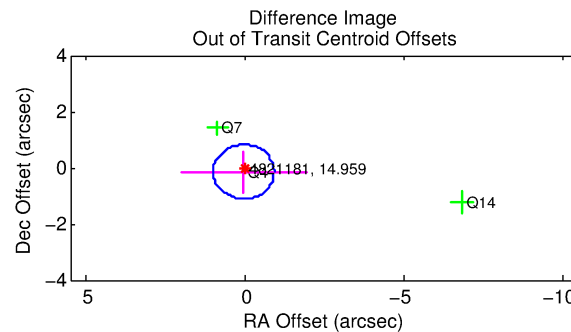
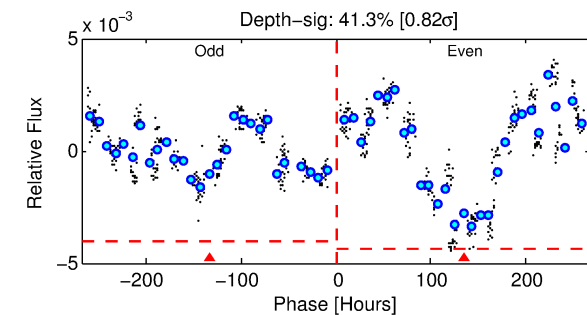
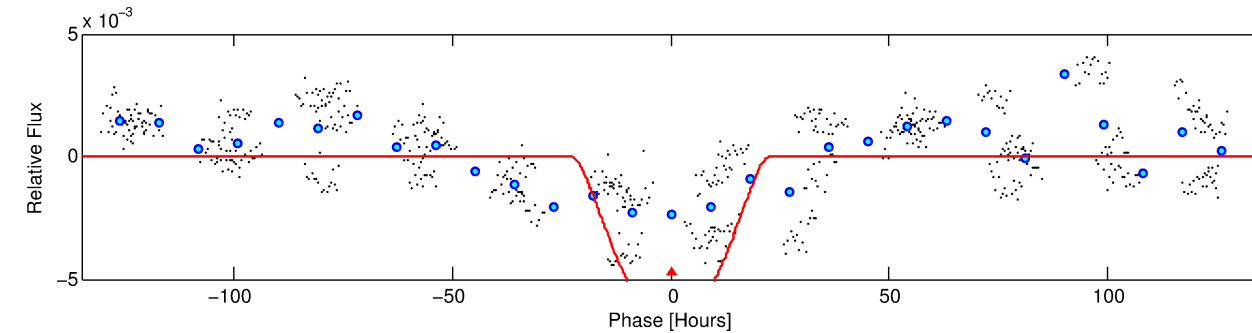
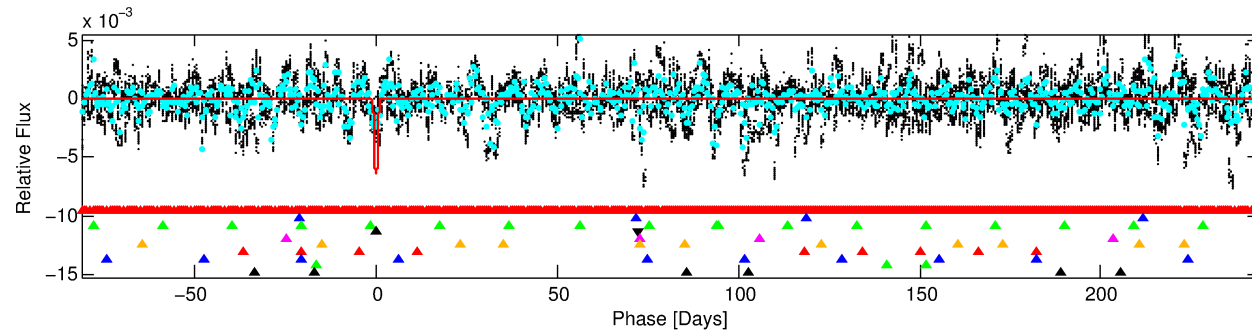
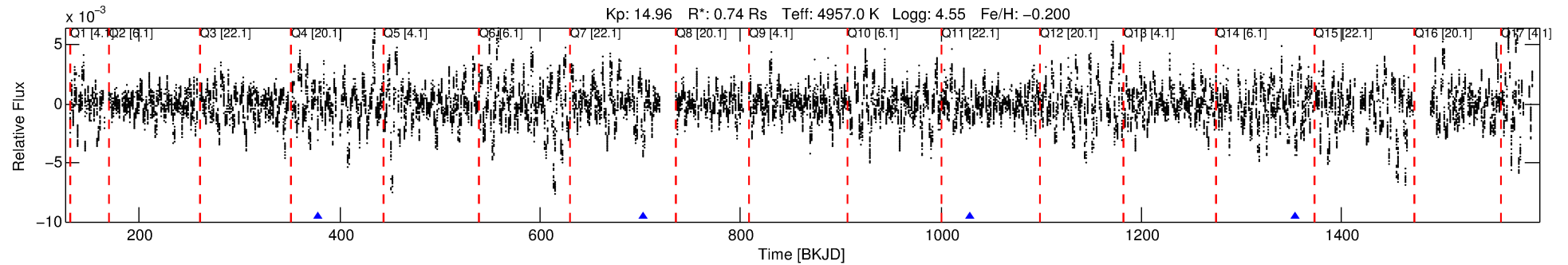
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-04

No Significant Match Found

DV One-Page Summary

KIC: 4821181 Candidate: 4 of 10 Period: 325.261 d



DV Fit Results:

Period = 325.26074 [0.03929] d
Epoch = 378.1963 [0.0626] BKJD
Rp/R* = 0.0912 [0.0227]
a/R* = 33.74 [3.36]
b = 0.91 [0.03]
Seff = 0.43 [0.08]
Teq = 207 [9] K
Rp = 7.34 [1.99] Re
a = 0.8265 [0.0746] AU
Ag = 6810.23 [3907.55] [1.74 σ]
Teffp = 2902 [415] K [6.50 σ]

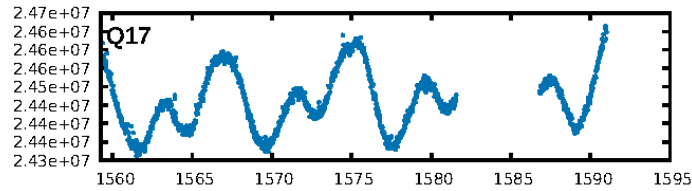
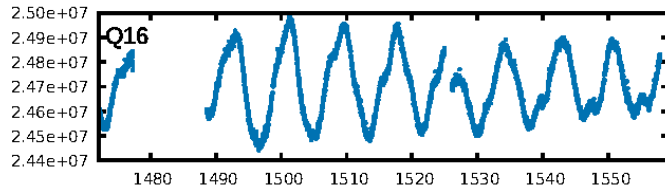
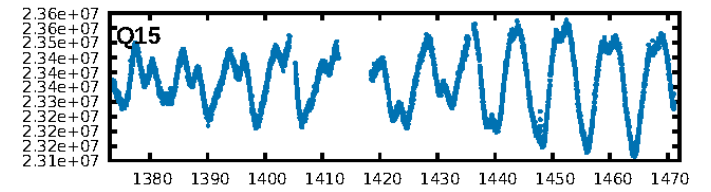
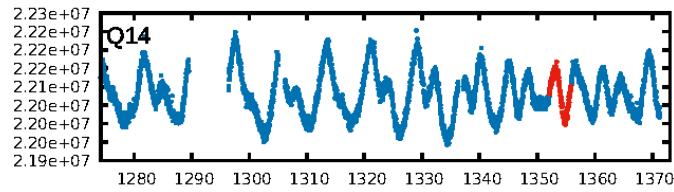
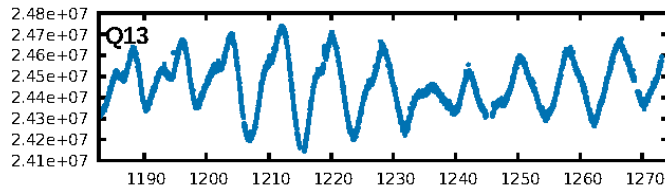
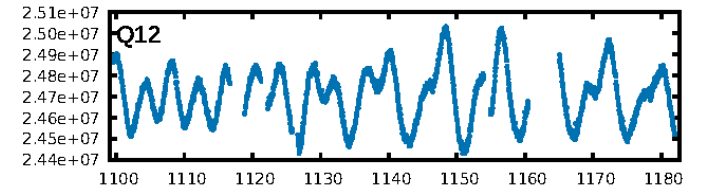
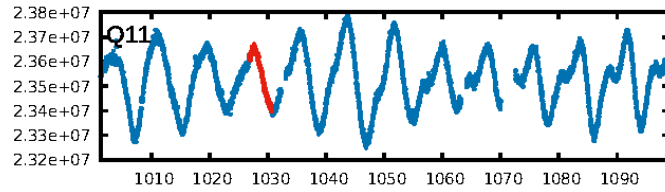
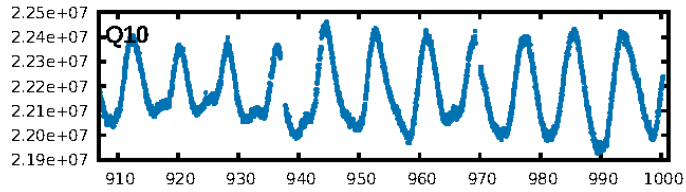
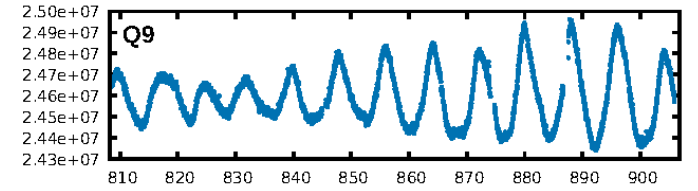
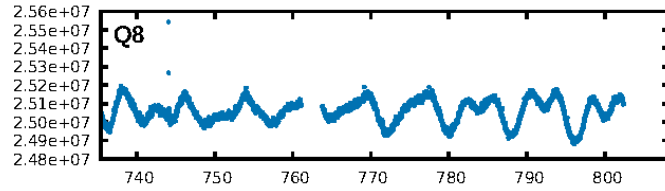
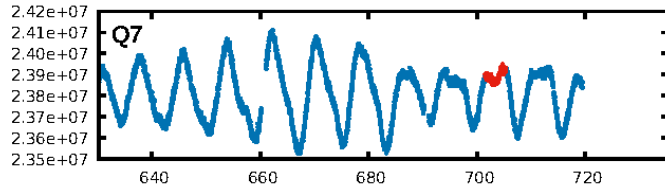
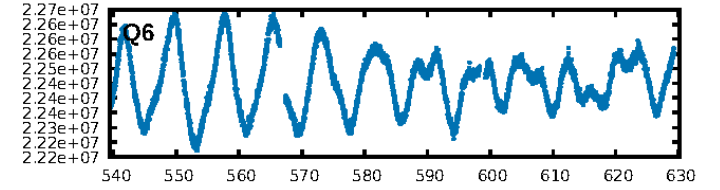
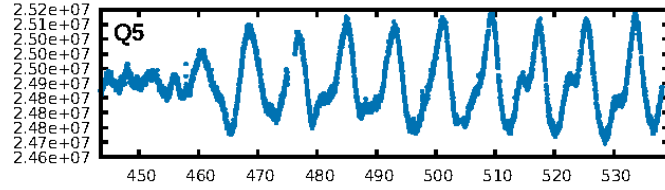
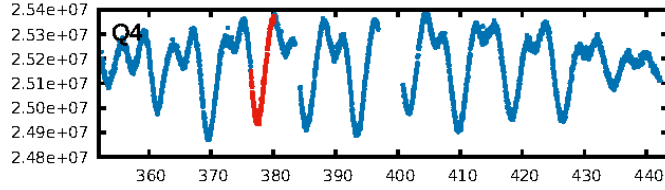
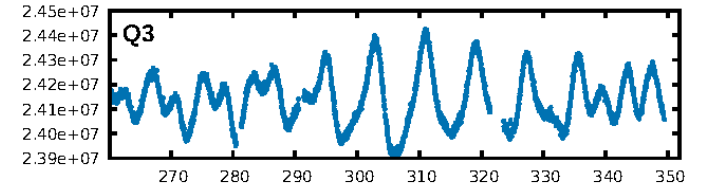
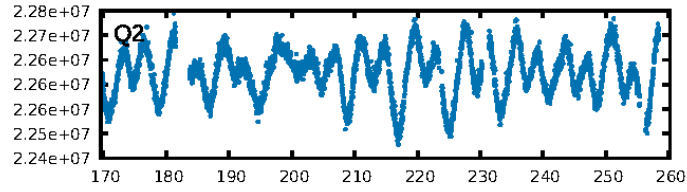
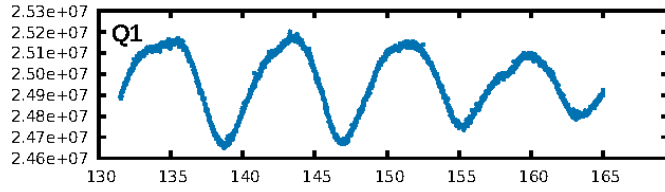
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [53.94 σ]
LongPeriod-sig: 100.0% [48.56 σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 2.872
Centroid-sig: 7.8%
Centroid-so: 0.109 arcsec [1.59 σ]
OotOffset-rm: 0.154 arcsec [0.48 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.147 arcsec [0.08 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

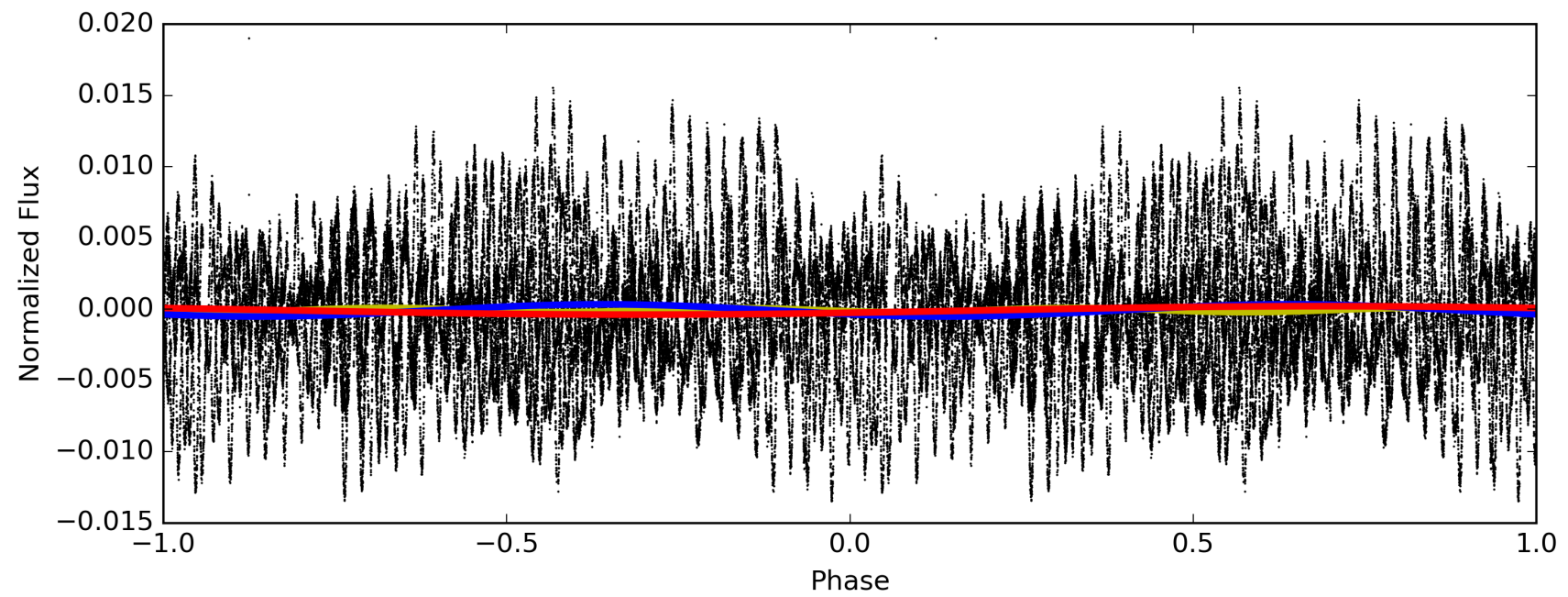
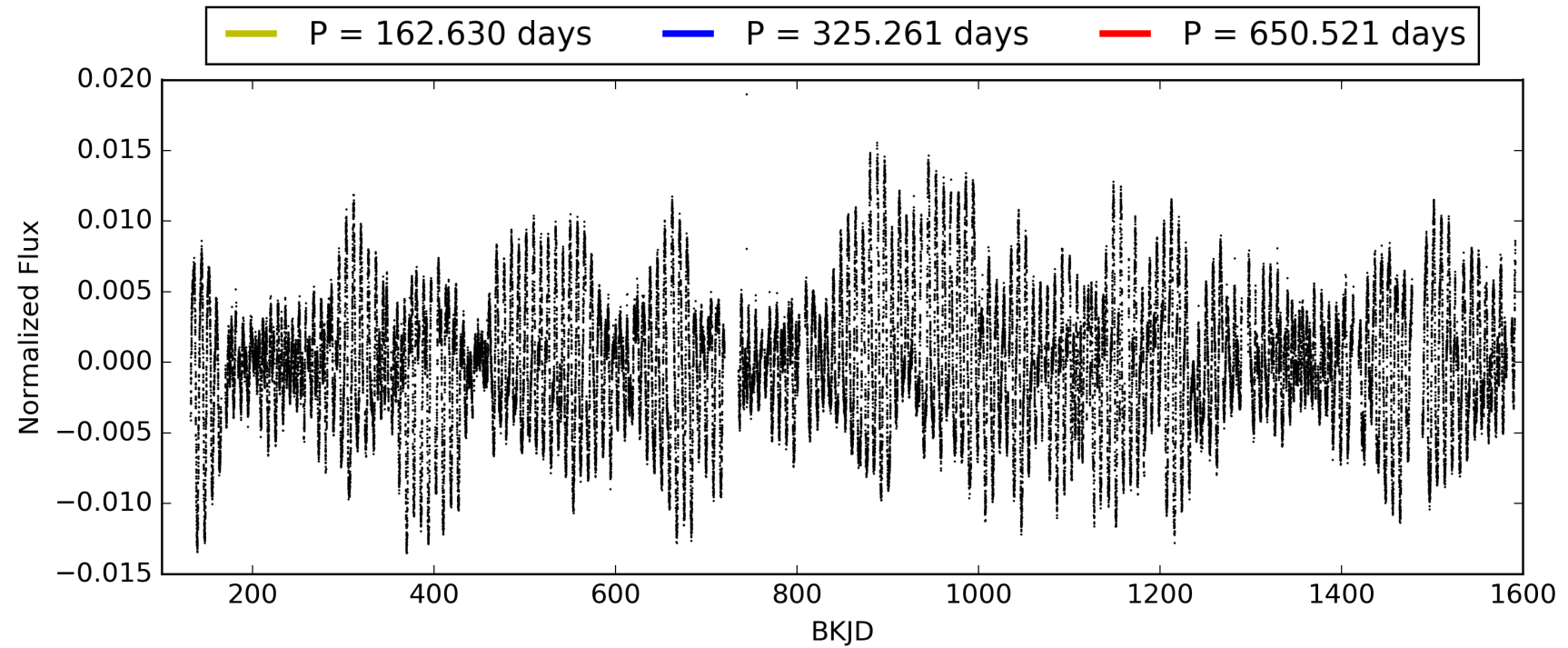
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 06:40:18 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-04, PDC Light Curves

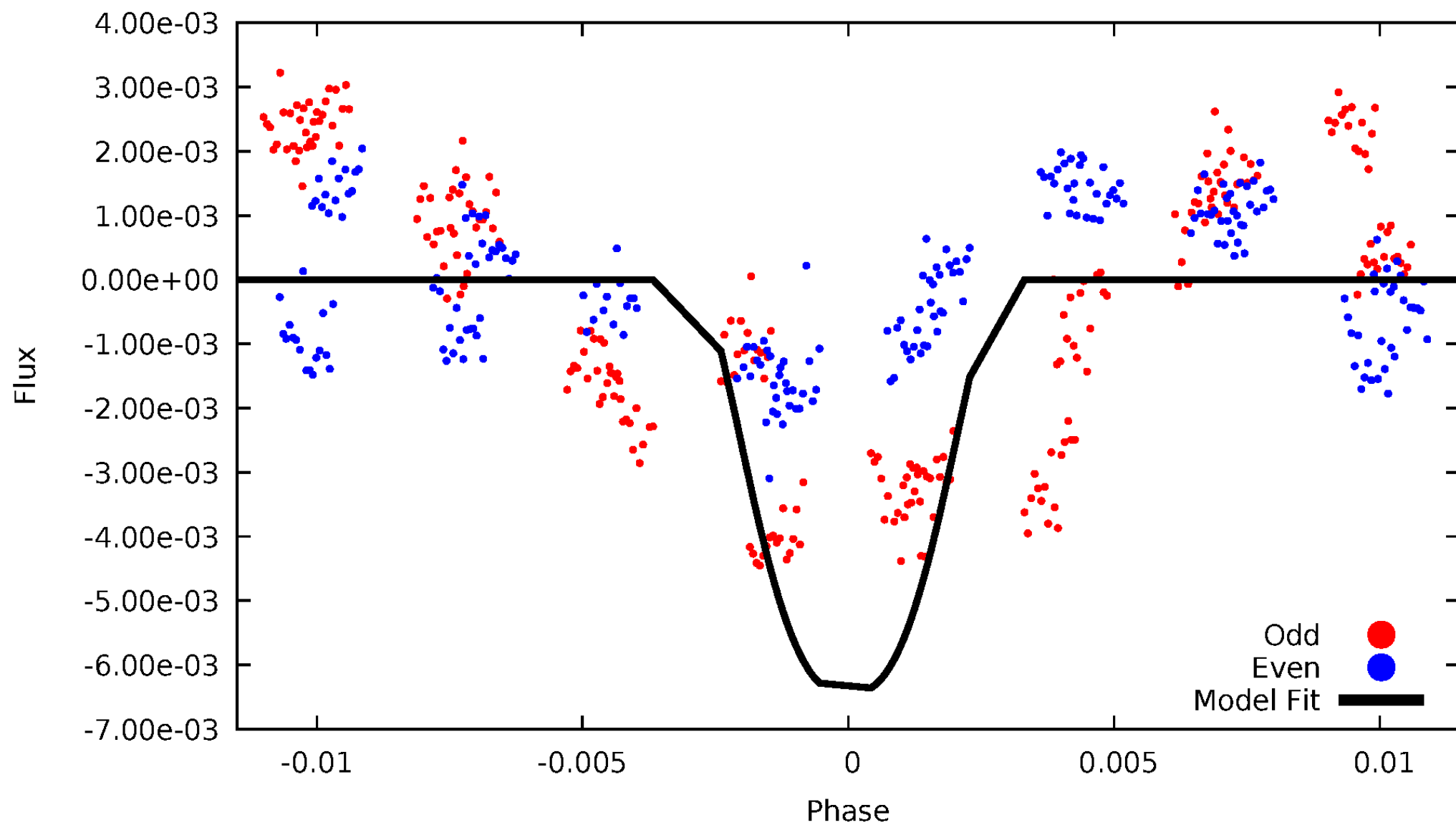


TCE 004821181-04



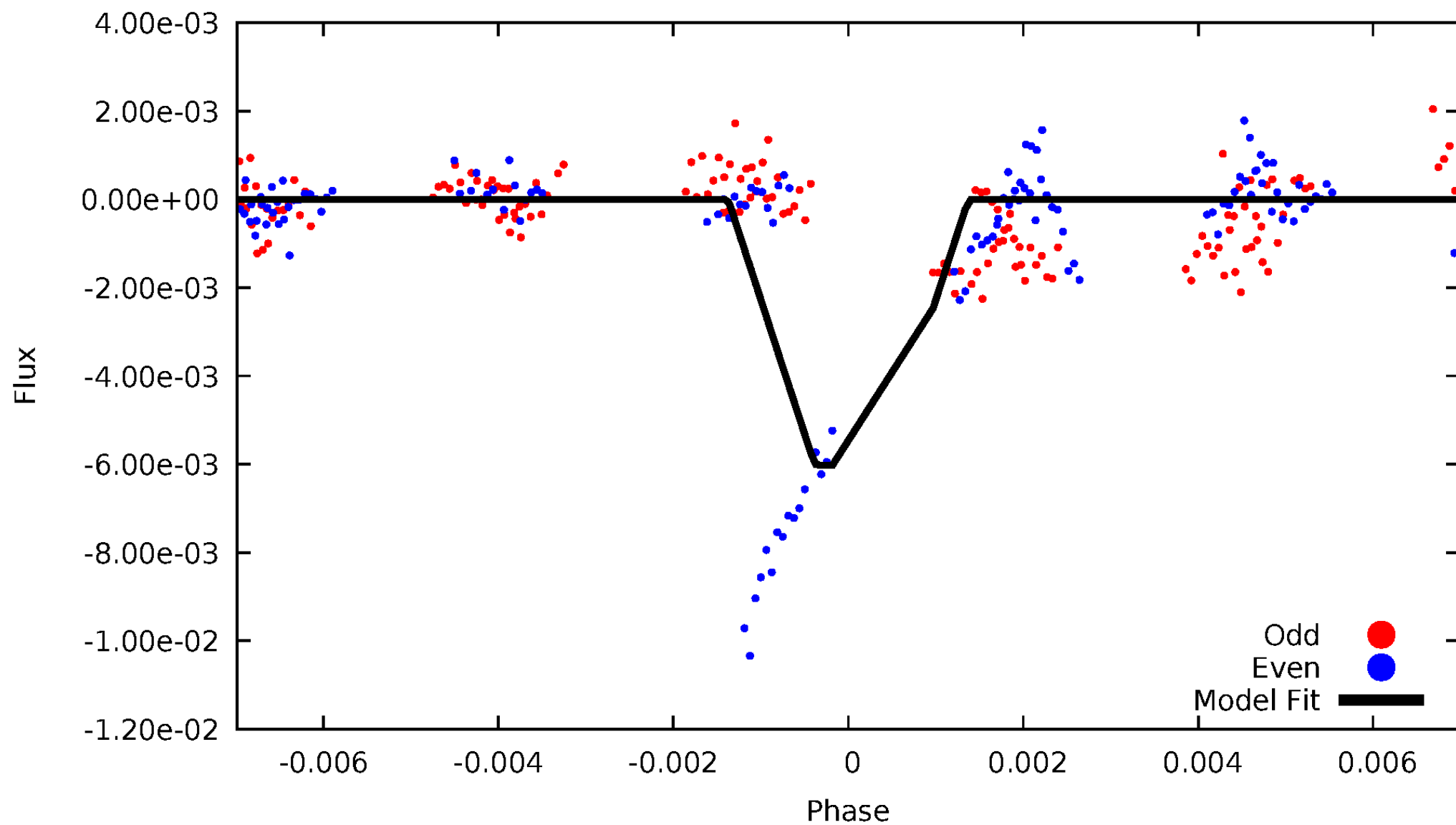
DV Odd/Even

TCE 004821181-04



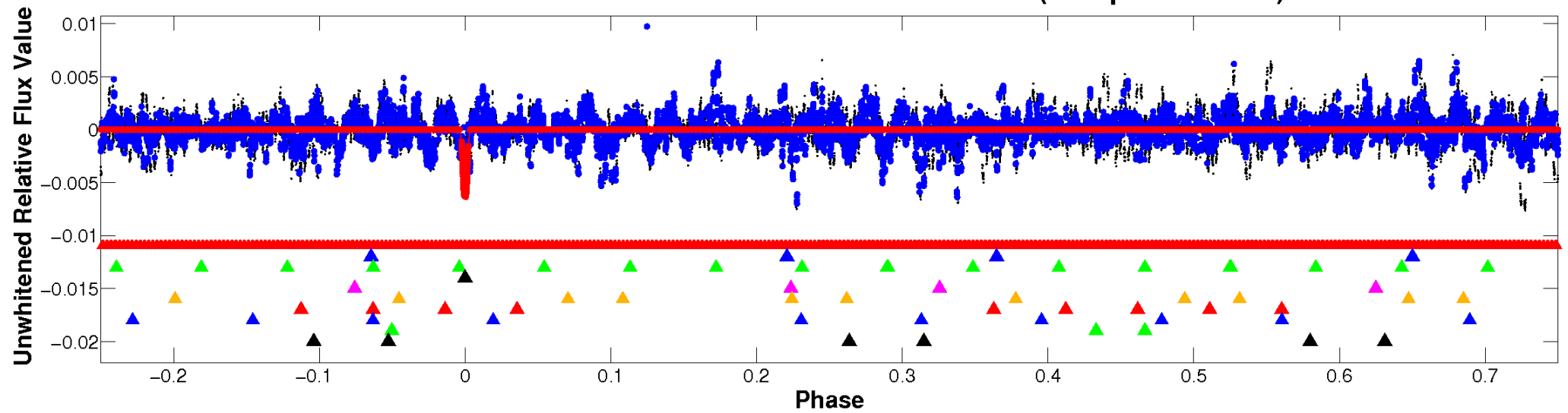
ALT Odd/Even

TCE 004821181-04

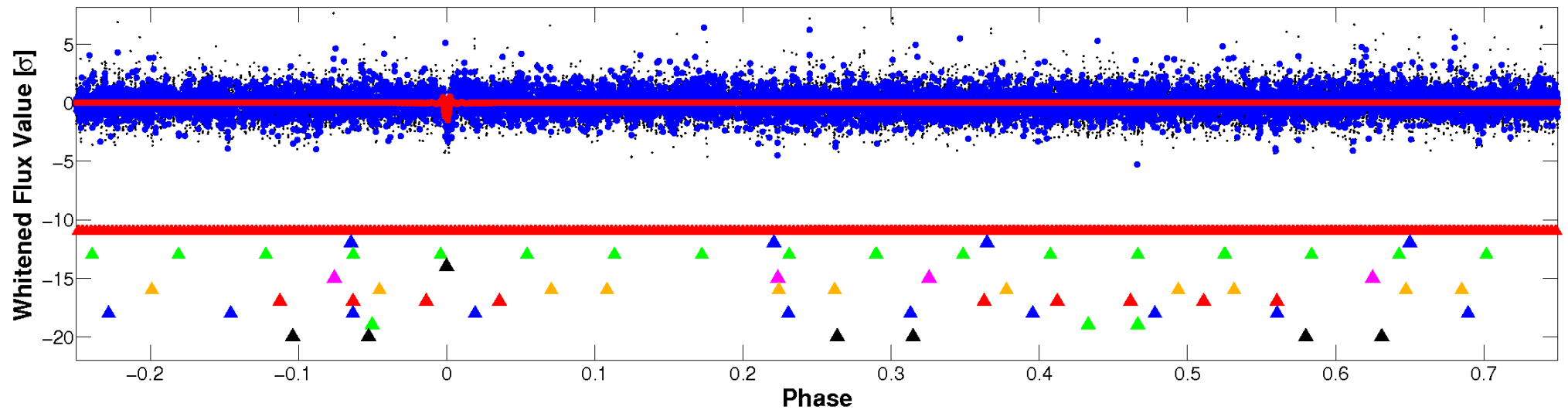


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

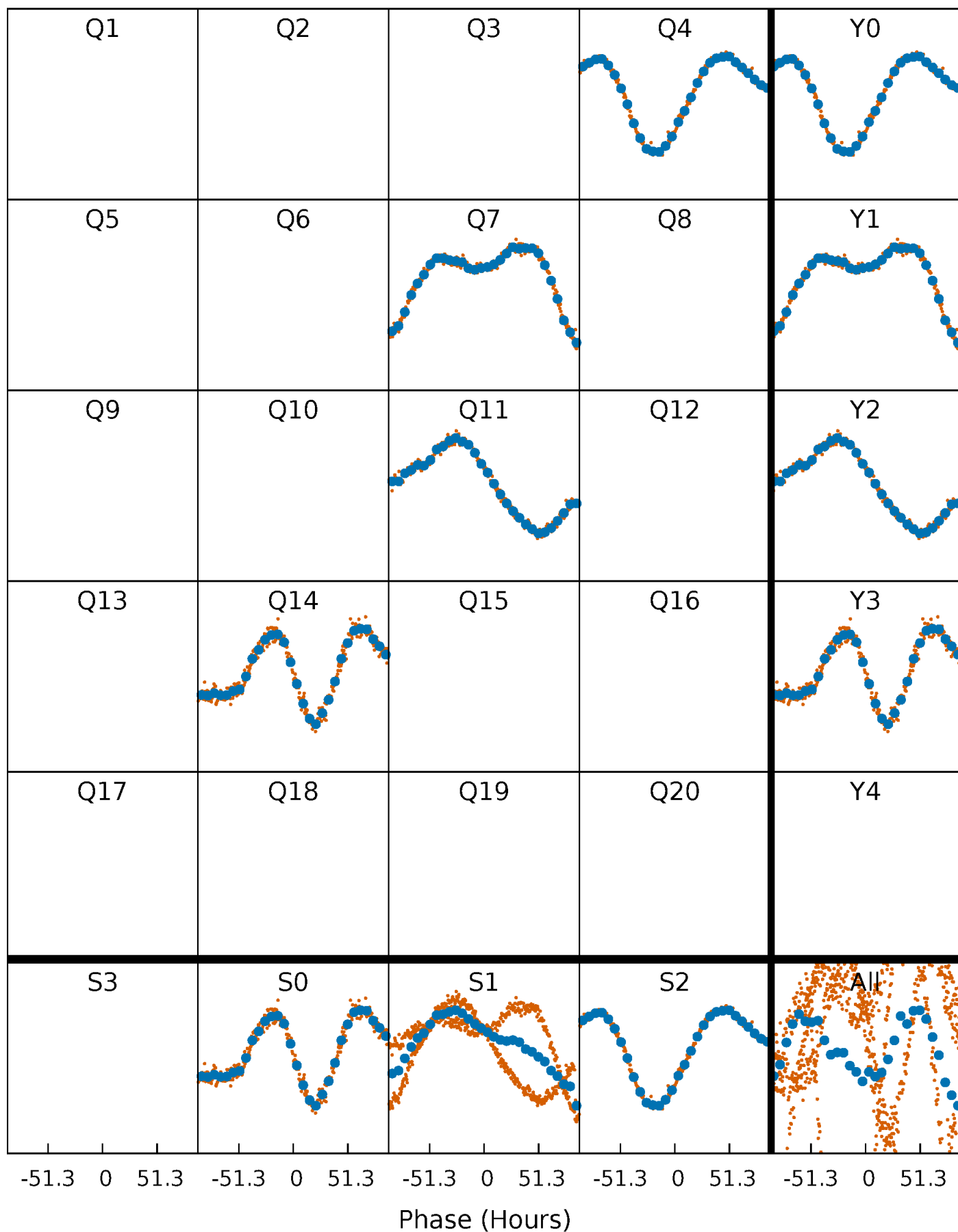


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



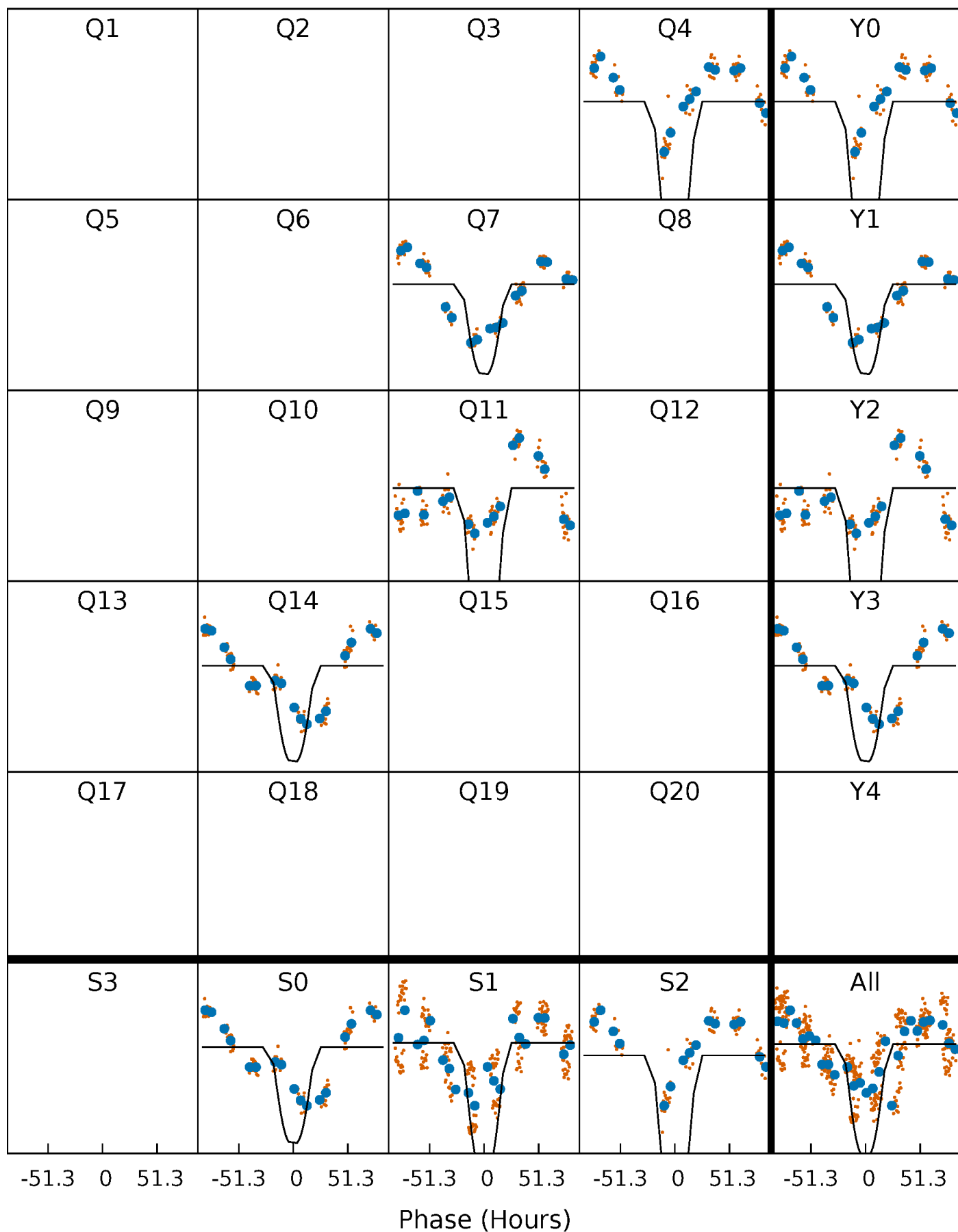
PDC Quarter-Phased Transit Curves

TCE 004821181-04 P=325.260739 Days $T_0=378.196283$ (BKJD)



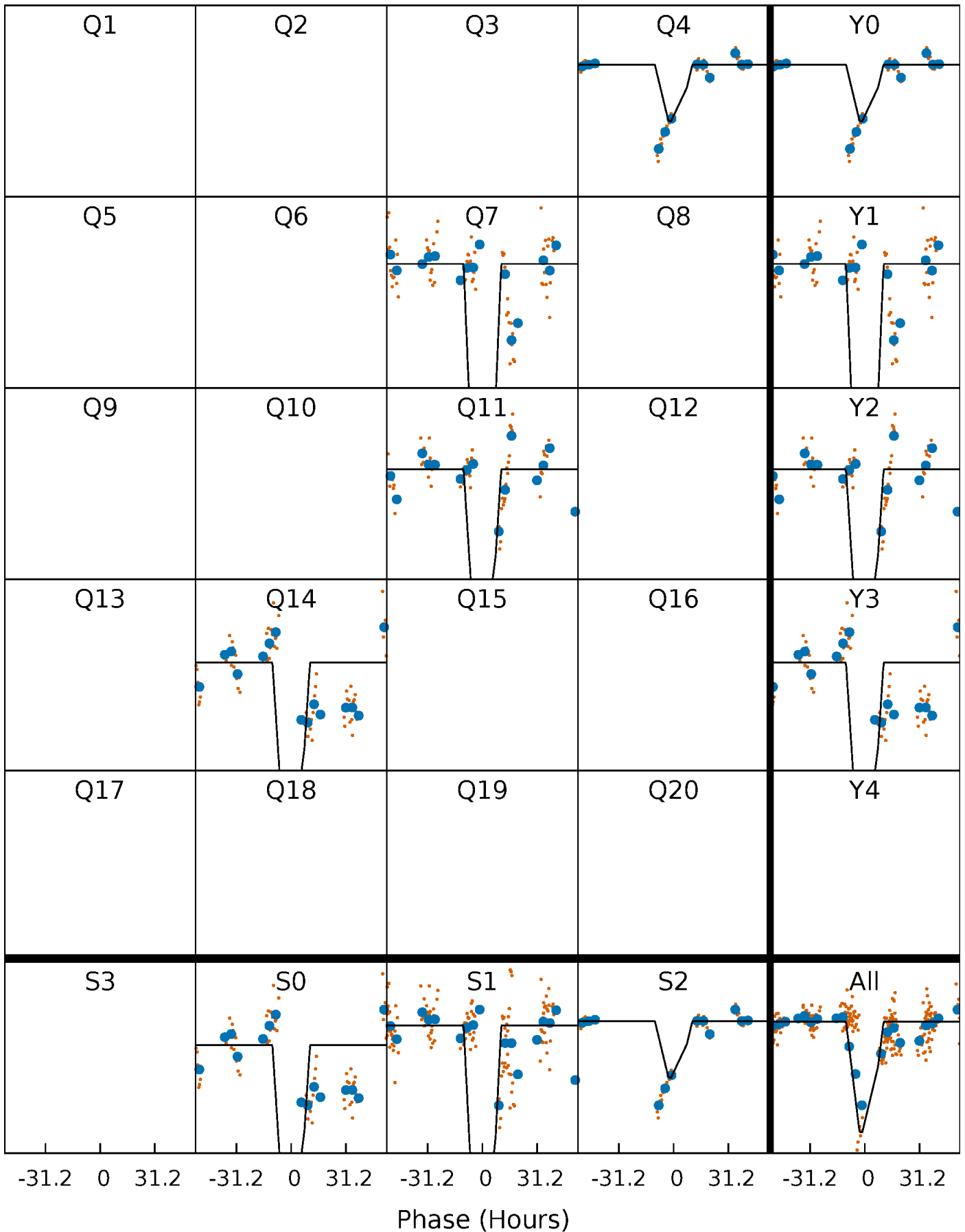
DV Quarter-Phased Transit Curves

TCE 004821181-04 P=325.260739 Days $T_0=378.196283$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

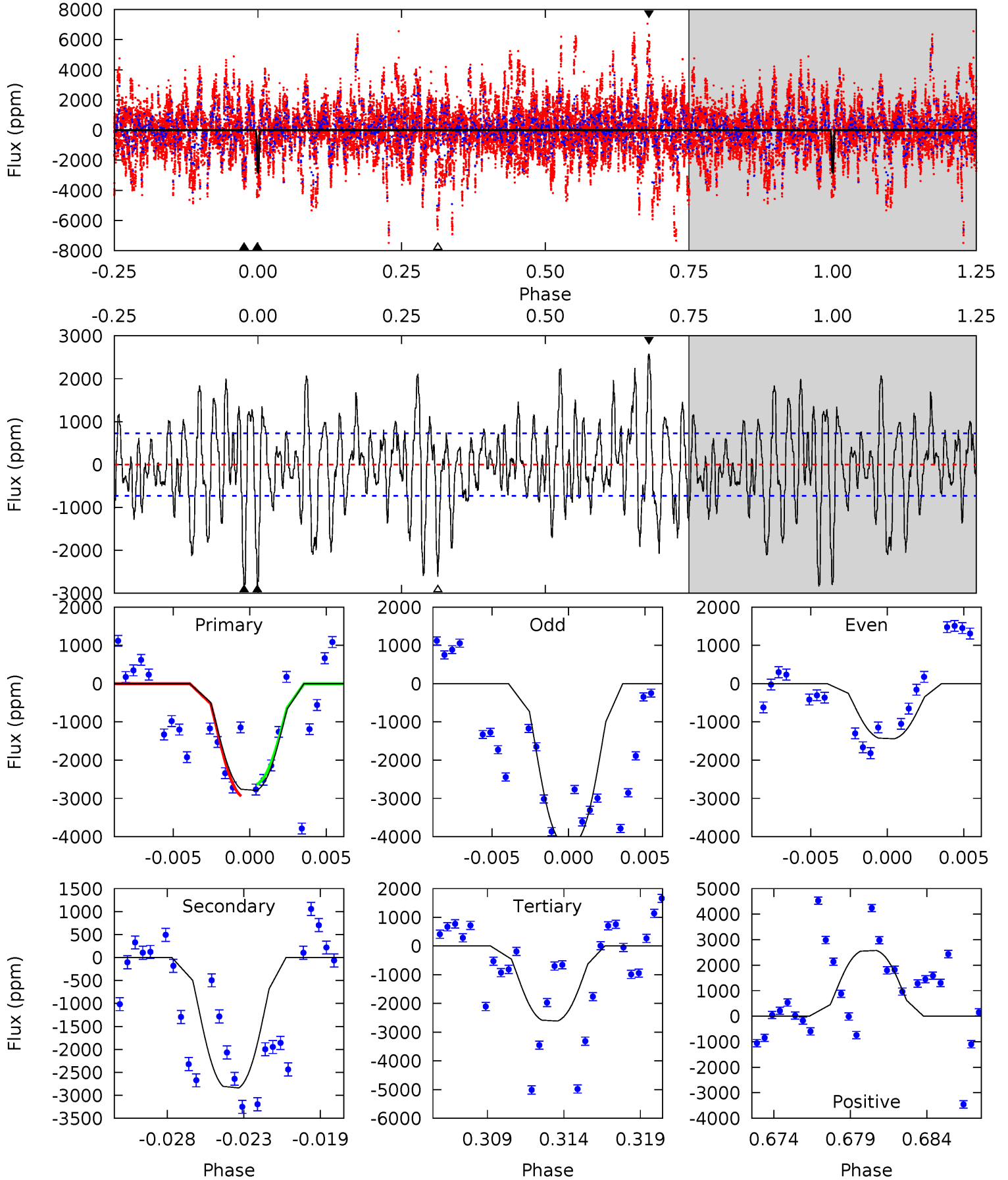
TCE 004821181-04 P=325.240974 Days $T_0=378.079755$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-04, $P = 325.260739$ Days, $E = 52.935544$ Days

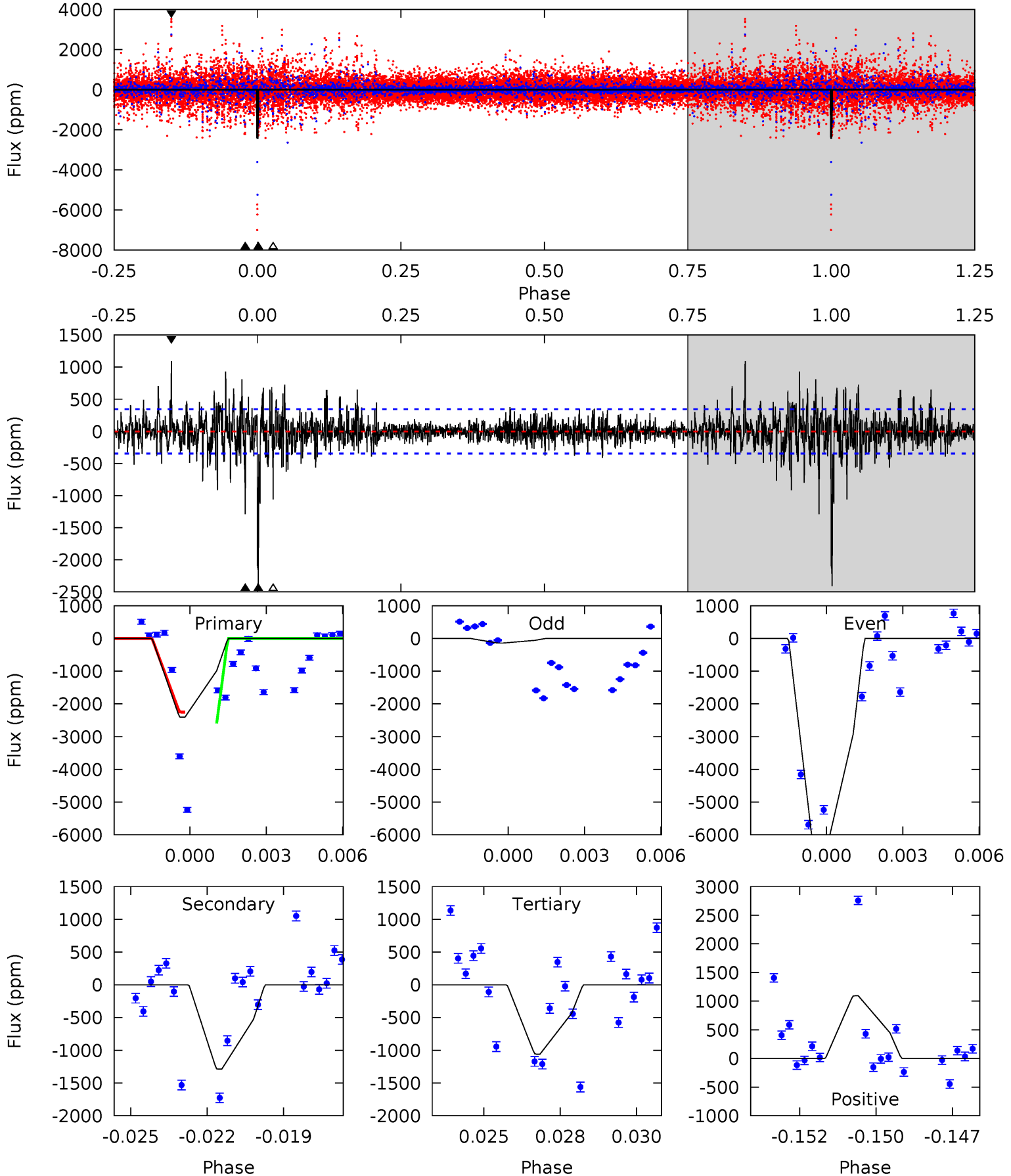
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	20.2	18.5	18.3	5.17	2.83	6.22	1.28	1.53	1.61	1.86	9.74	1.13	0.48	1.09



Alt Model-Shift Uniqueness Test

004821181-04, $P = 325.240974$ Days, $E = 52.838781$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.7	19.6	16.1	16.6	5.27	2.99	2.49	20.5	20.0	3.47	2.95	56.0	6.06	0.31	2.17



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2839 ± 141	$7.30^{+1.80}_{-2.11}$	287^{+11}_{-11}	4038^{+531}_{-326}	20359^{+19037}_{-7361}
Alt.	-1287 ± 66	$6.36^{+1.82}_{-1.94}$	287^{+11}_{-11}	3693^{+487}_{-294}	12211^{+13350}_{-4723}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

DV Centroid Data

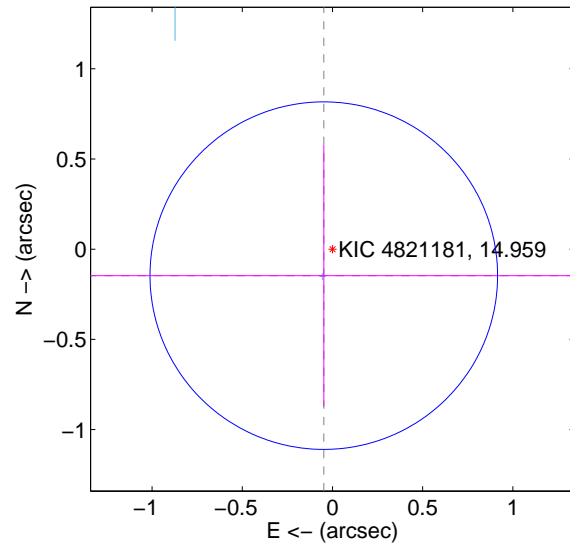
Supplemental centroid analysis for 004821181-04. Kepler magnitude: 14.96. Transit SNR 9.59

There are 2 quarters with good PRF difference image offsets

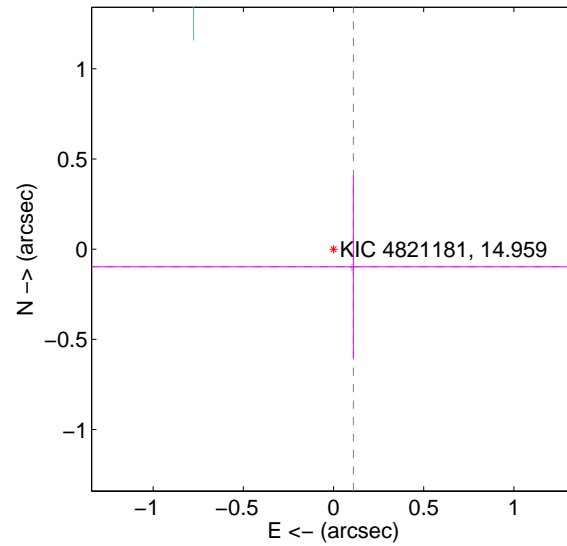
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.154 ± 0.321	0.48	0.048 ± 1.966	-0.147 ± 0.724
PRF-fit source offset from KIC position	0.147 ± 1.941	0.08	-0.110 ± 2.171	-0.097 ± 0.506
photometric centroid source offset	0.11 ± 0.07	1.59	-0.11 ± 0.07	-0.01 ± 0.11

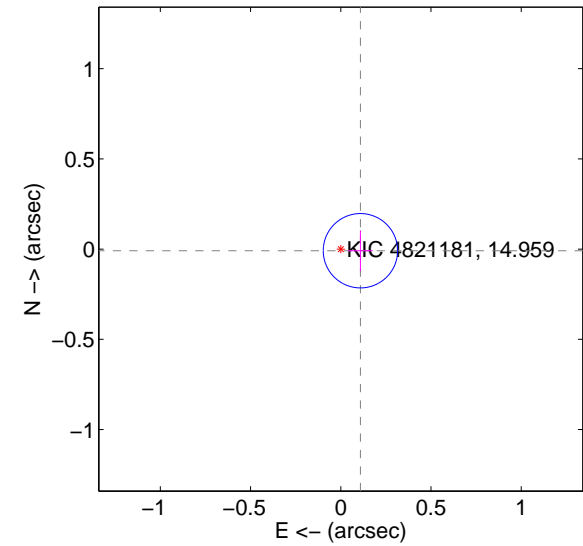
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

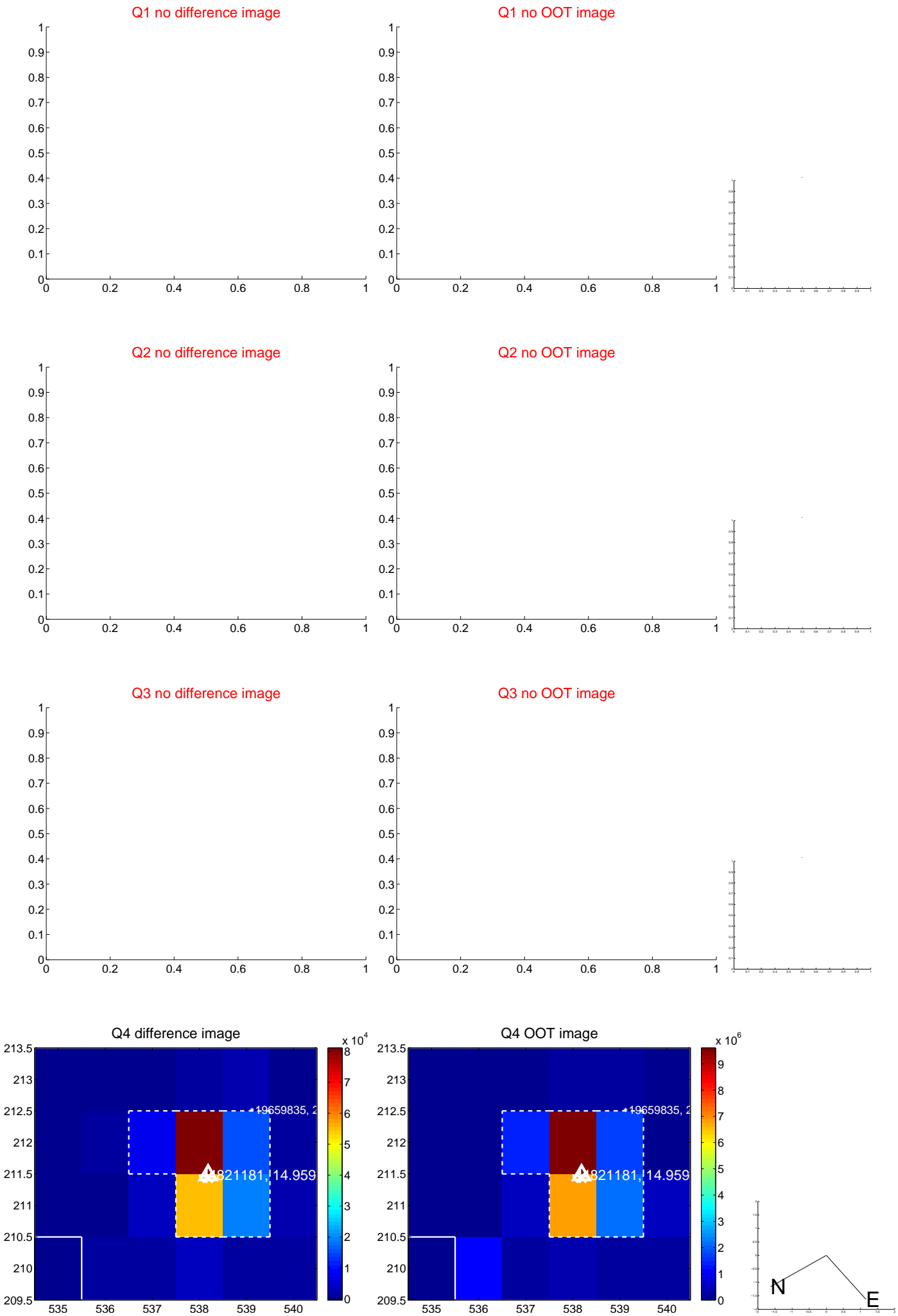


offset from photometric centroids



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs $> 15,000,000$ are from the UKIRT catalog.

white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

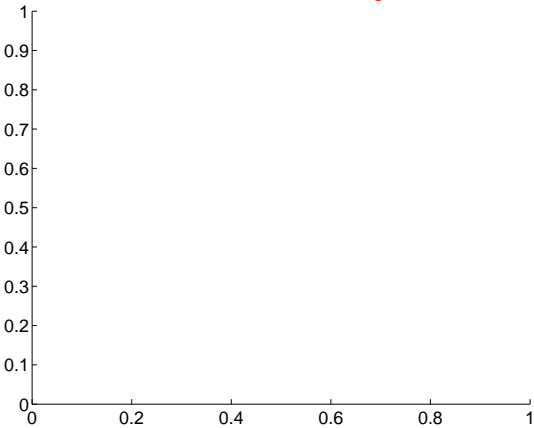
Q5 no difference image



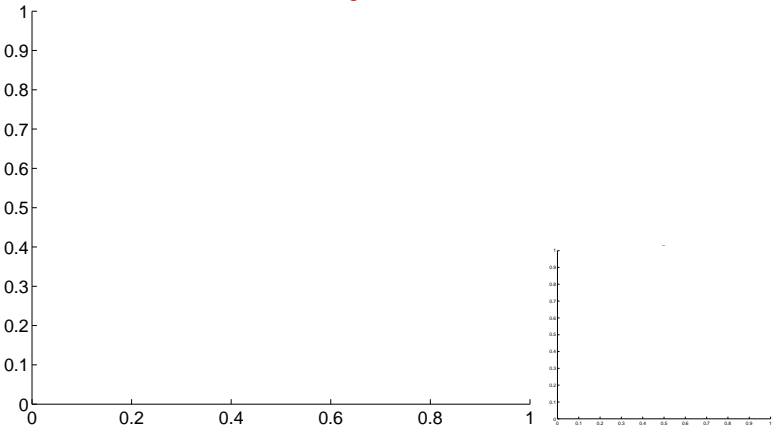
Q5 no OOT image



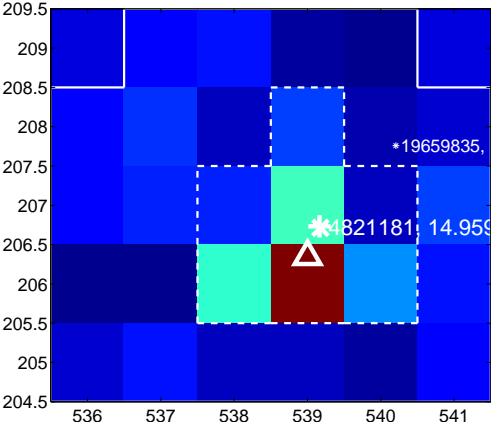
Q6 no difference image



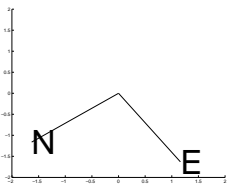
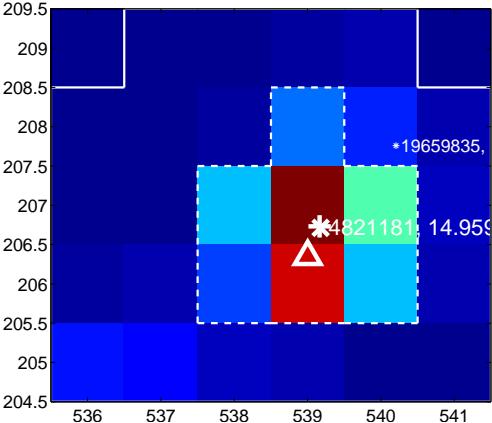
Q6 no OOT image



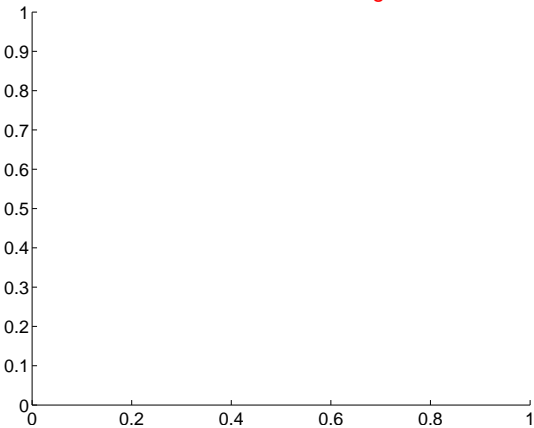
Q7 difference image



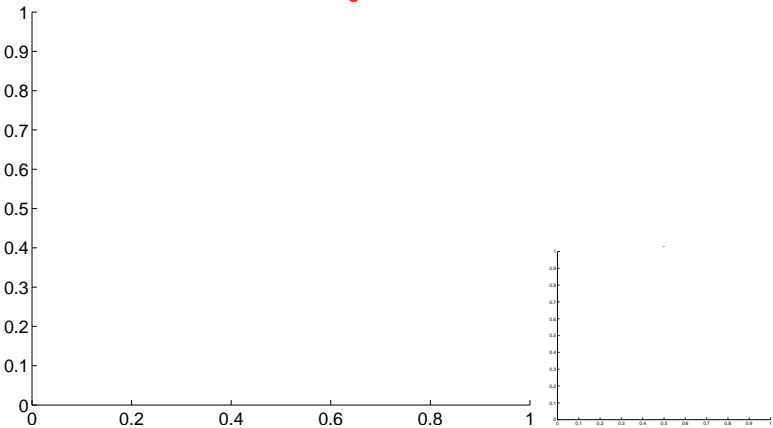
Q7 OOT image



Q8 no difference image



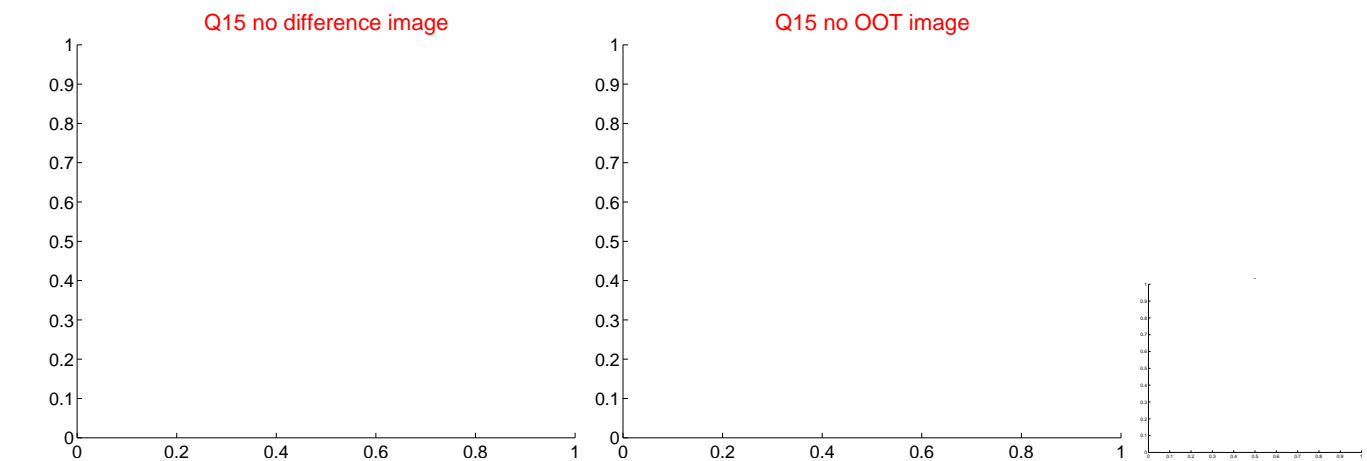
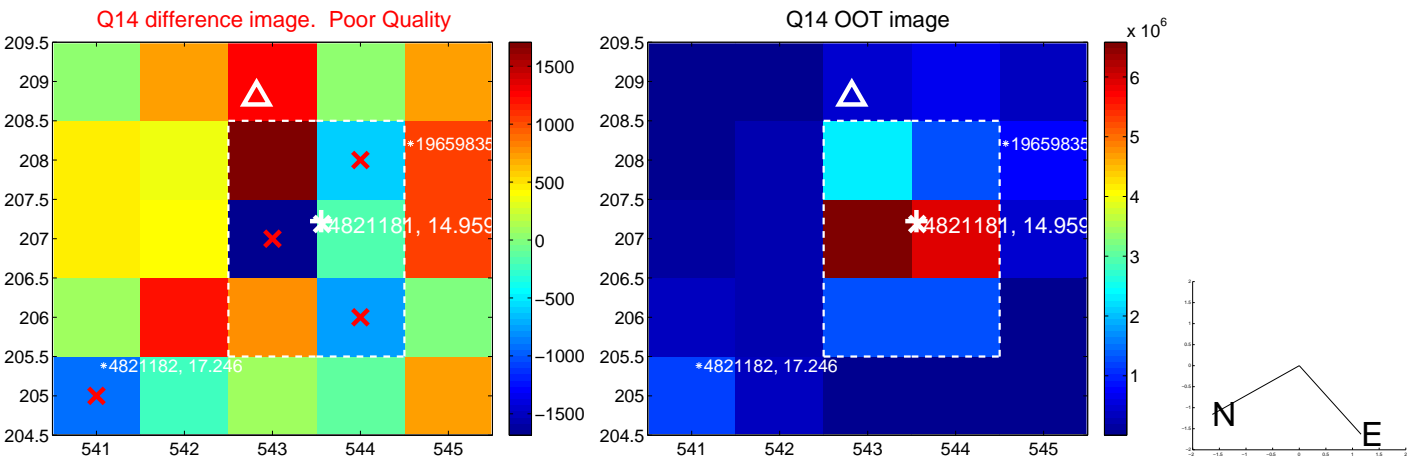
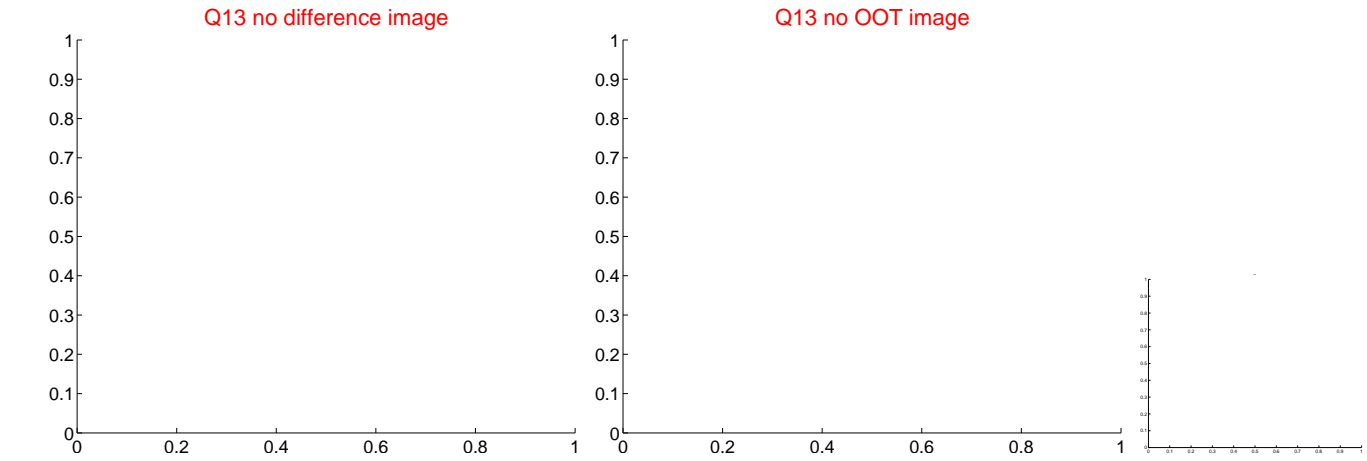
Q8 no OOT image



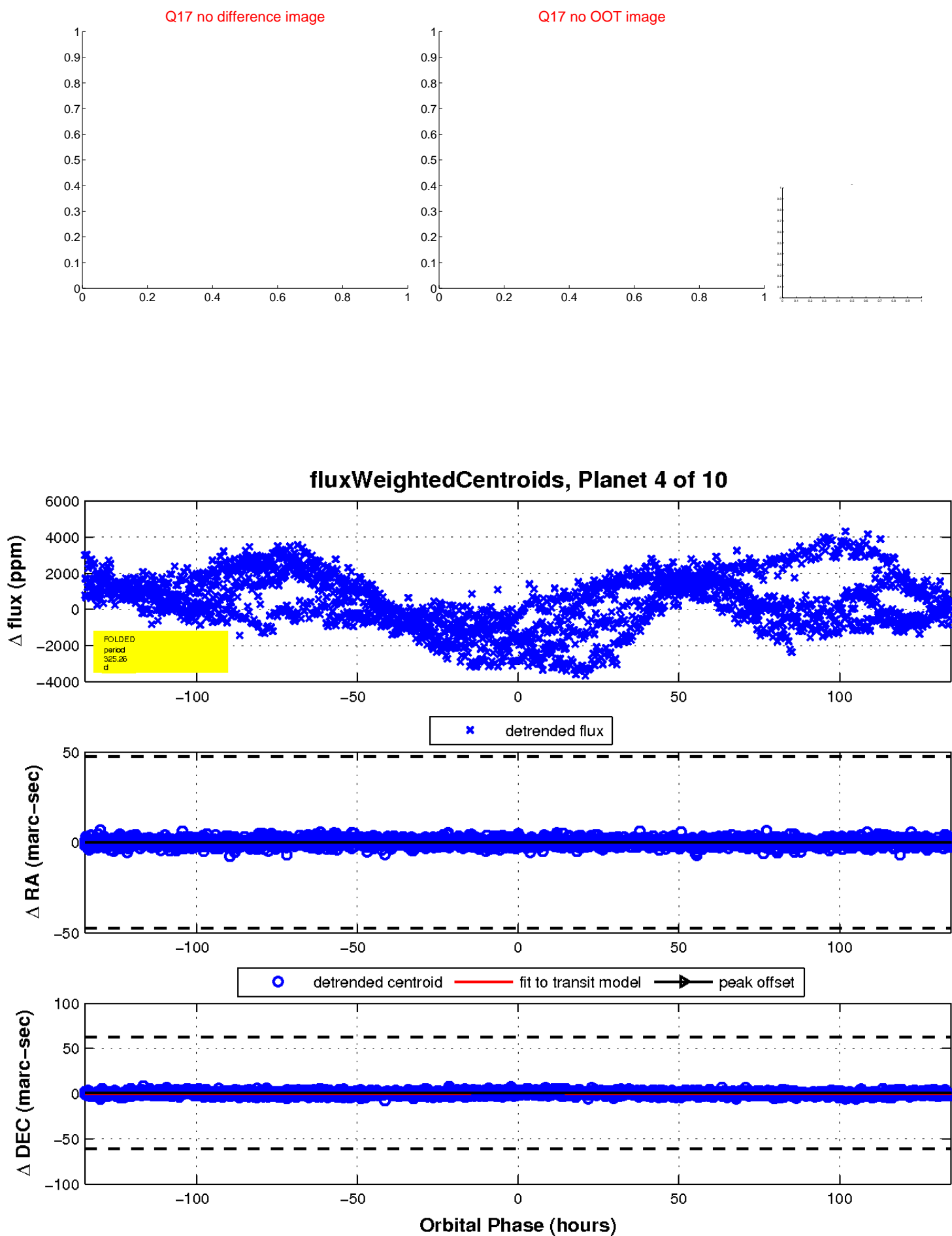
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

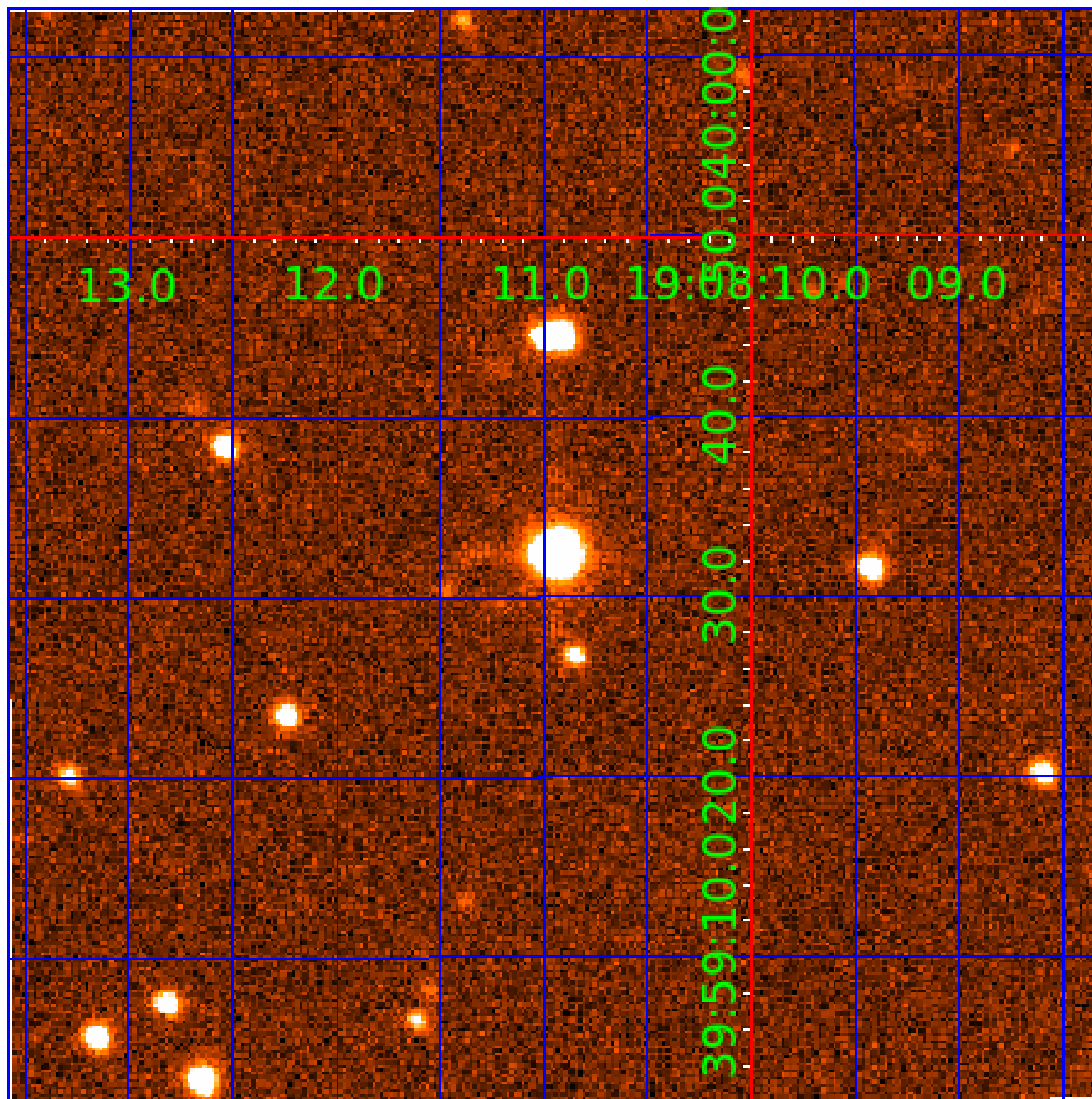


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

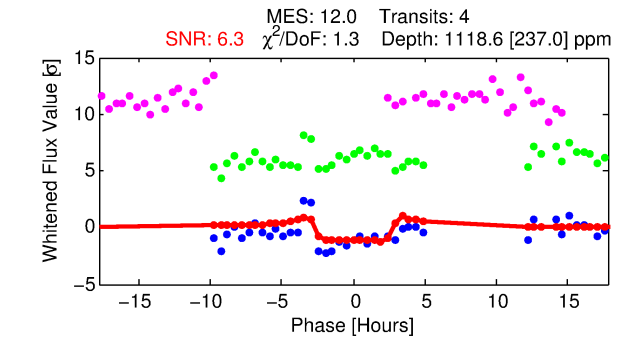
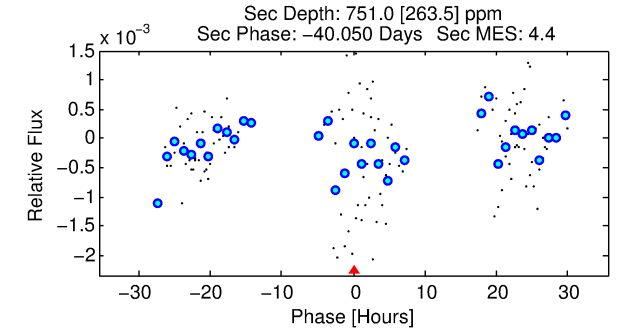
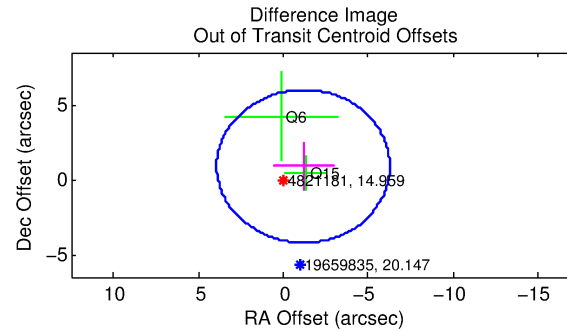
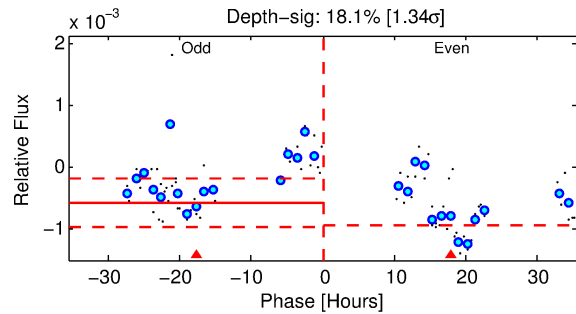
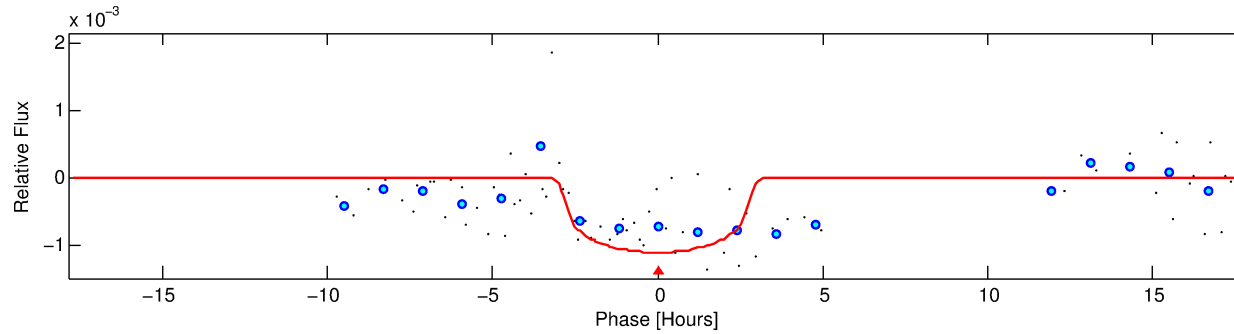
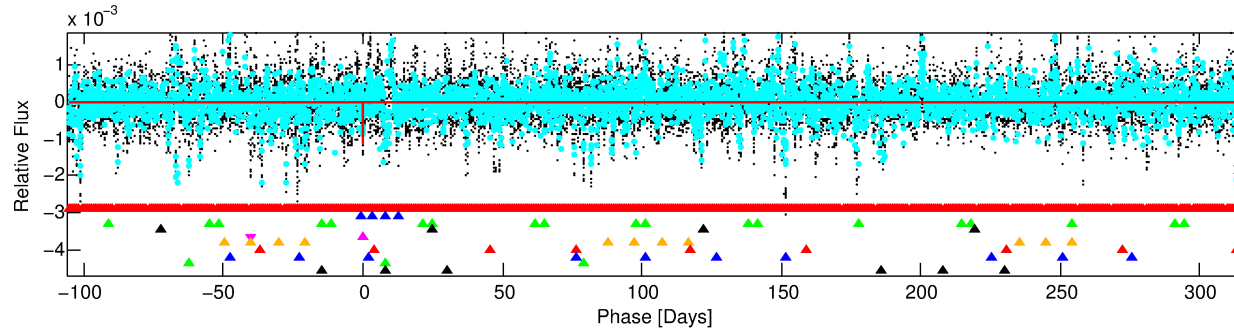
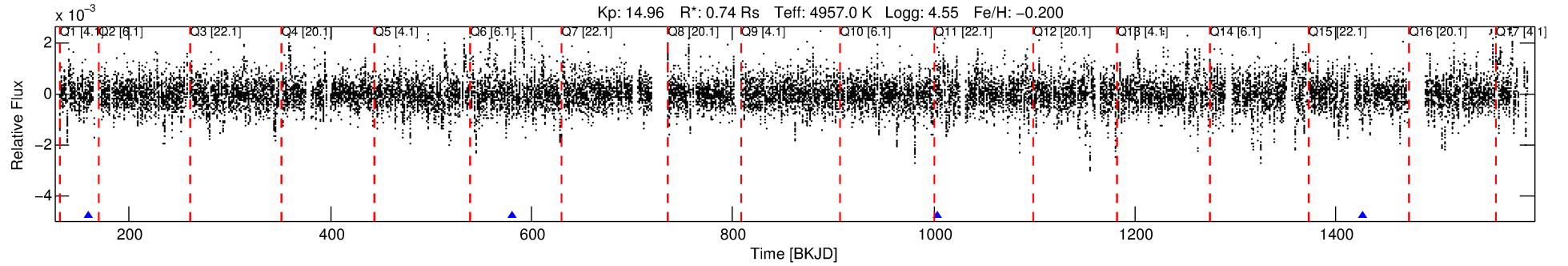
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-05

No Significant Match Found

DV One-Page Summary

KIC: 4821181 Candidate: 5 of 10 Period: 422.614 d



DV Fit Results:

Period = 422.61417 [0.00942] d
Epoch = 158.8506 [0.0177] BKJD
Rp/R* = 0.0321 [0.0328]
a/R* = 435.50 [1527.43]
b = 0.65 [3.23]
Seff = 0.30 [0.05]
Teq = 189 [8] K
Rp = 2.58 [2.66] Re
a = 0.9841 [0.0888] AU
Ag = 59946.22 [124788.18] [0.48 σ]
Teffp = 4582 [2384] K [1.84 σ]

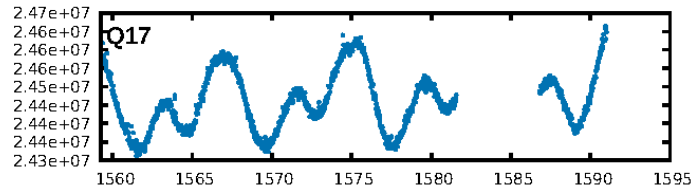
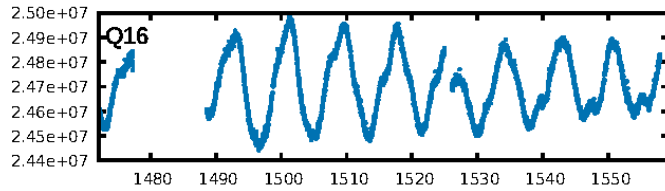
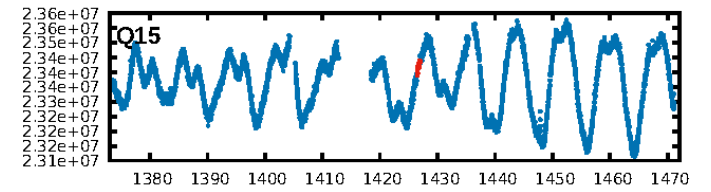
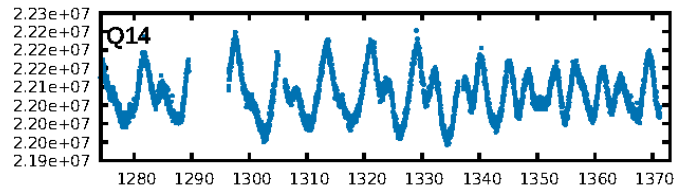
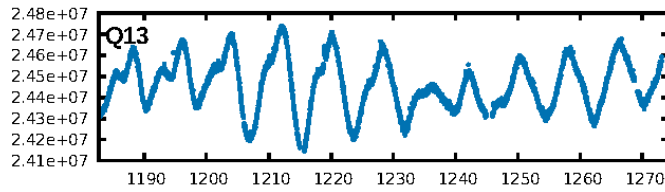
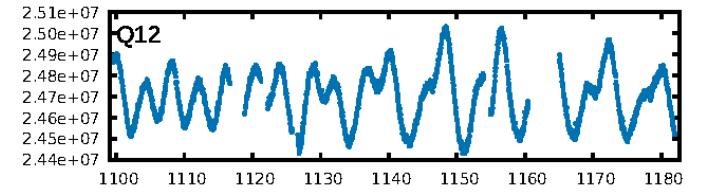
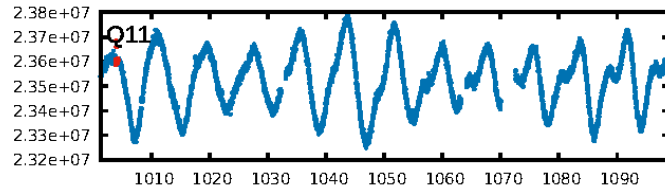
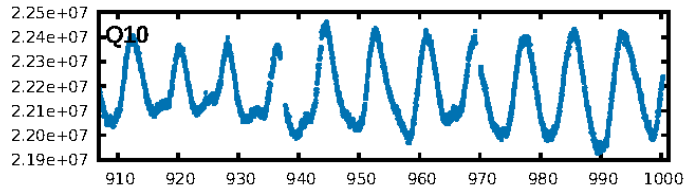
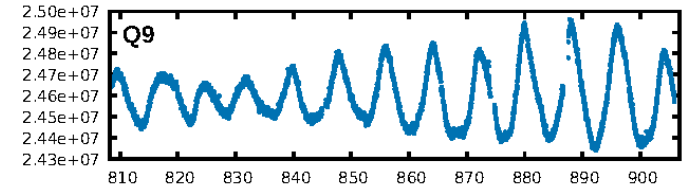
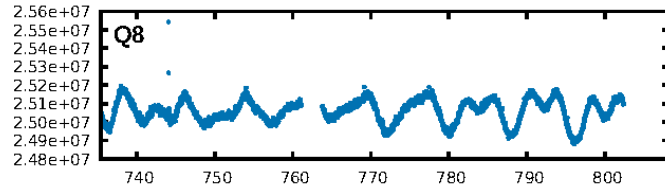
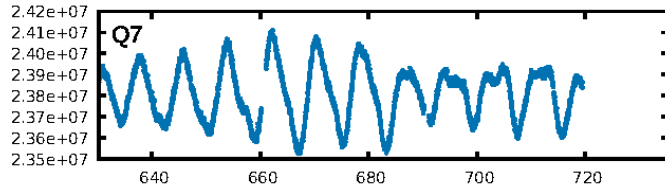
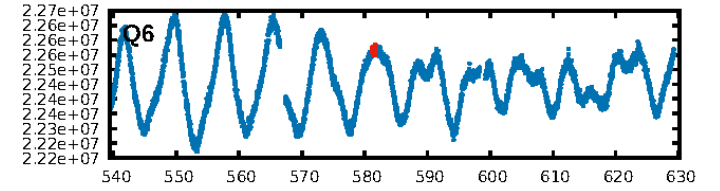
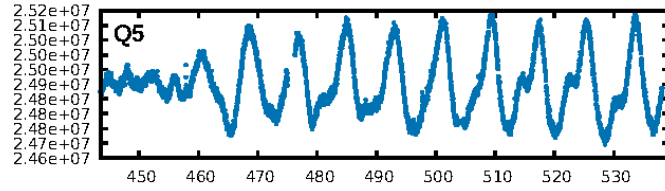
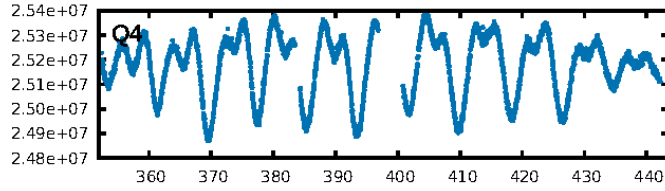
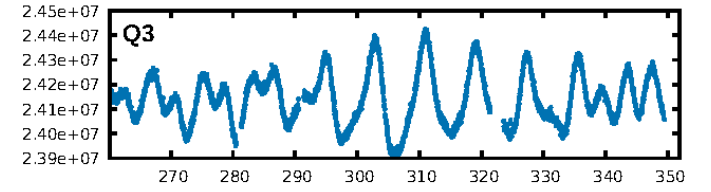
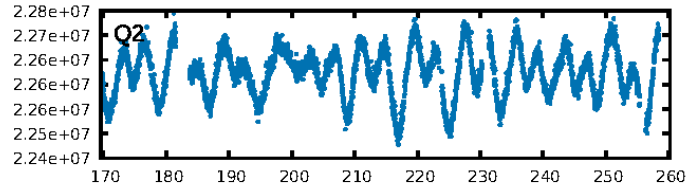
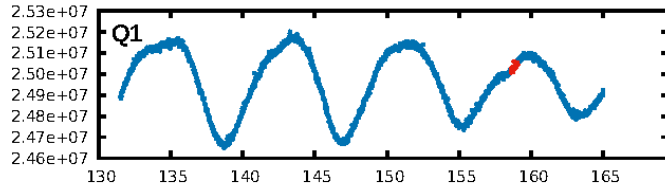
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.67 σ]
LongPeriod-sig: 100.0% [151.50 σ]
ModelChiSquare2-sig: 27.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2366
Centroid-sig: 4.2%
Centroid-so: 1.262 arcsec [1.73 σ]
OotOffset-rm: 1.484 arcsec [0.87 σ]
KicOffset-rm: 1.597 arcsec [0.94 σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 0.00 [0/3]

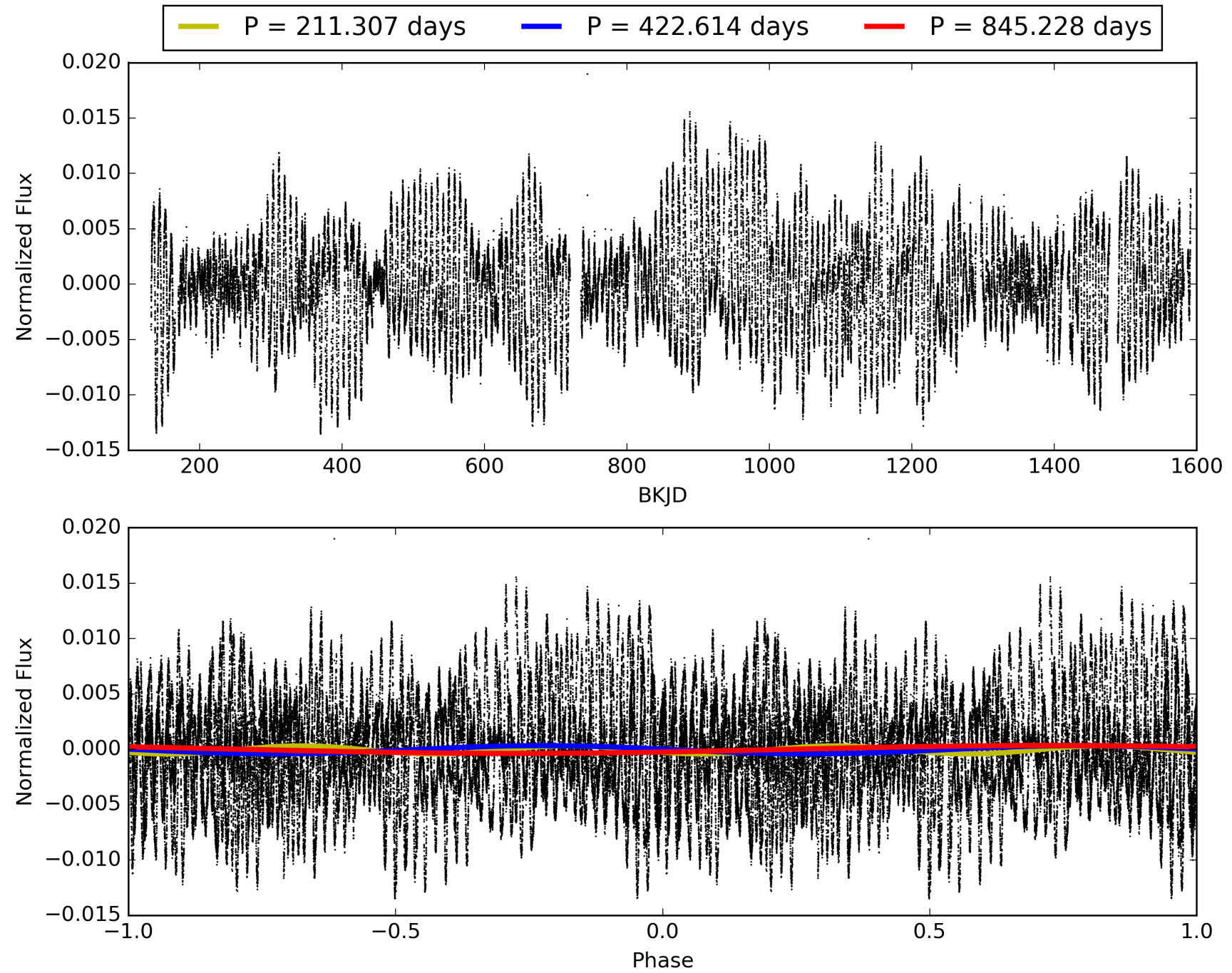
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 06:40:25 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-05, PDC Light Curves

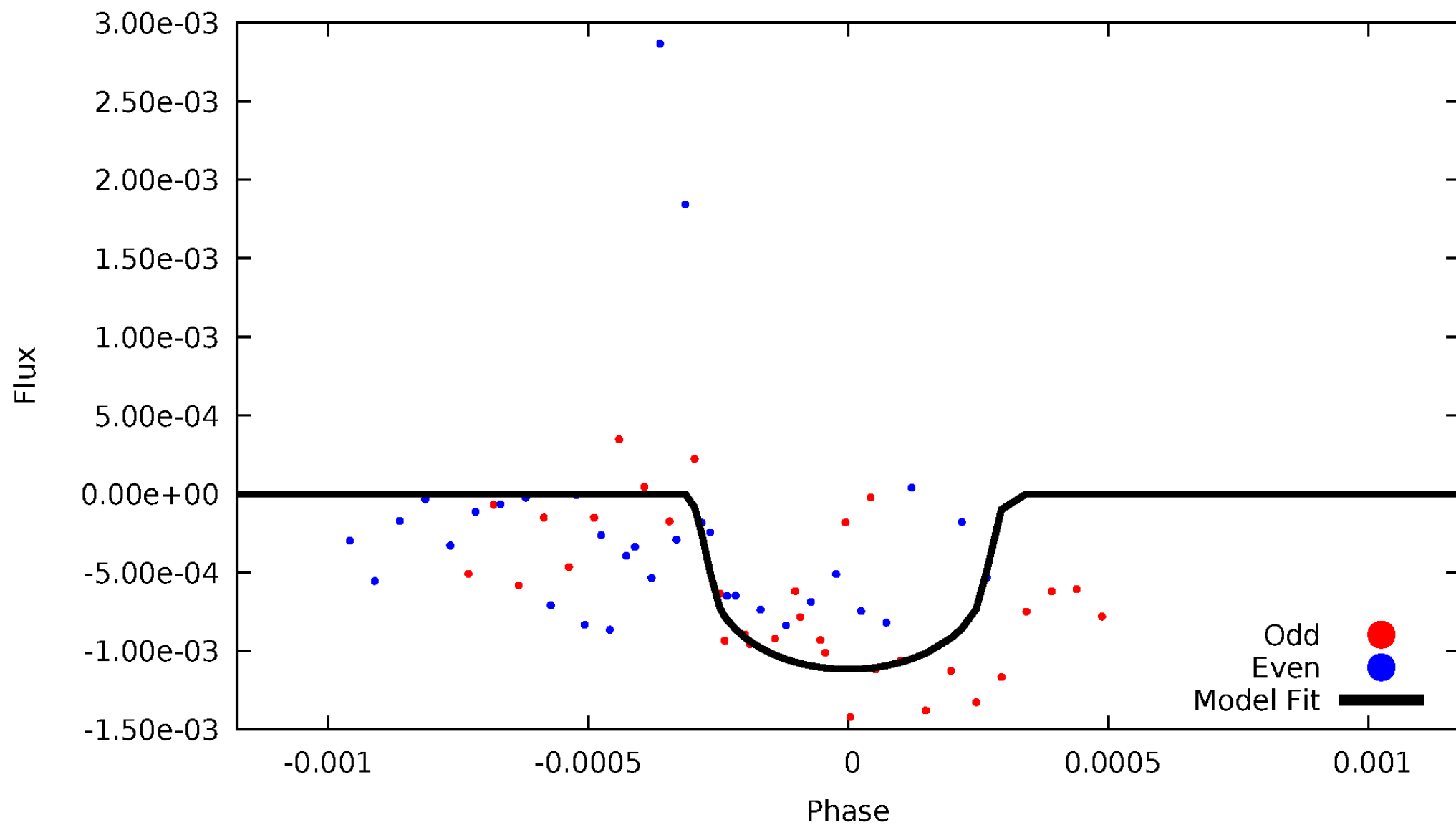


TCE 004821181-05



DV Odd/Even

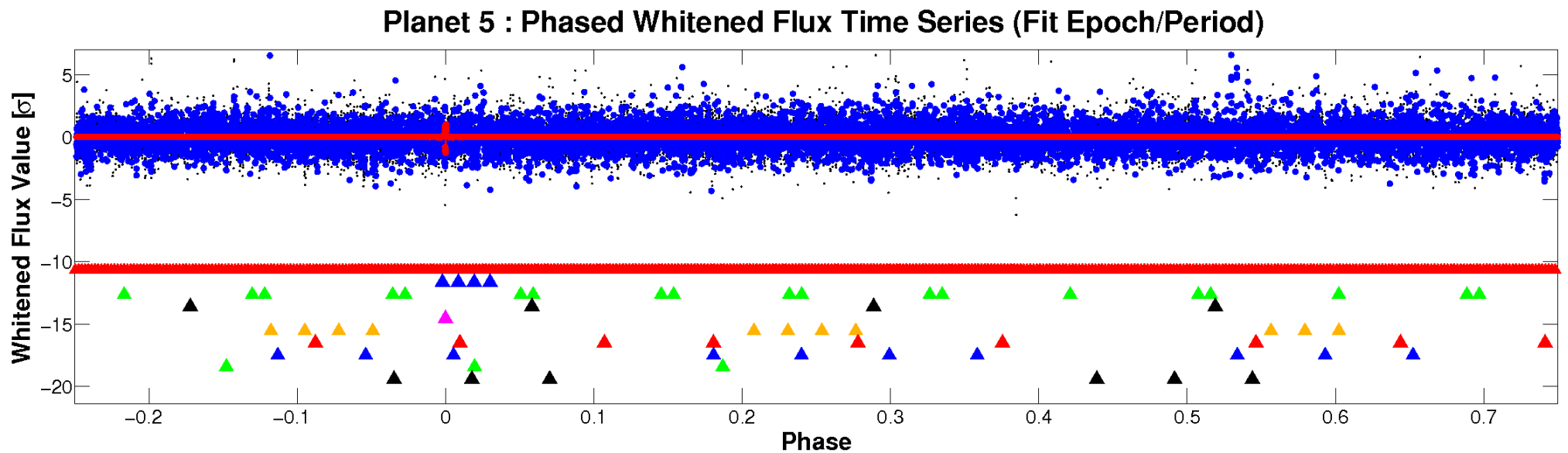
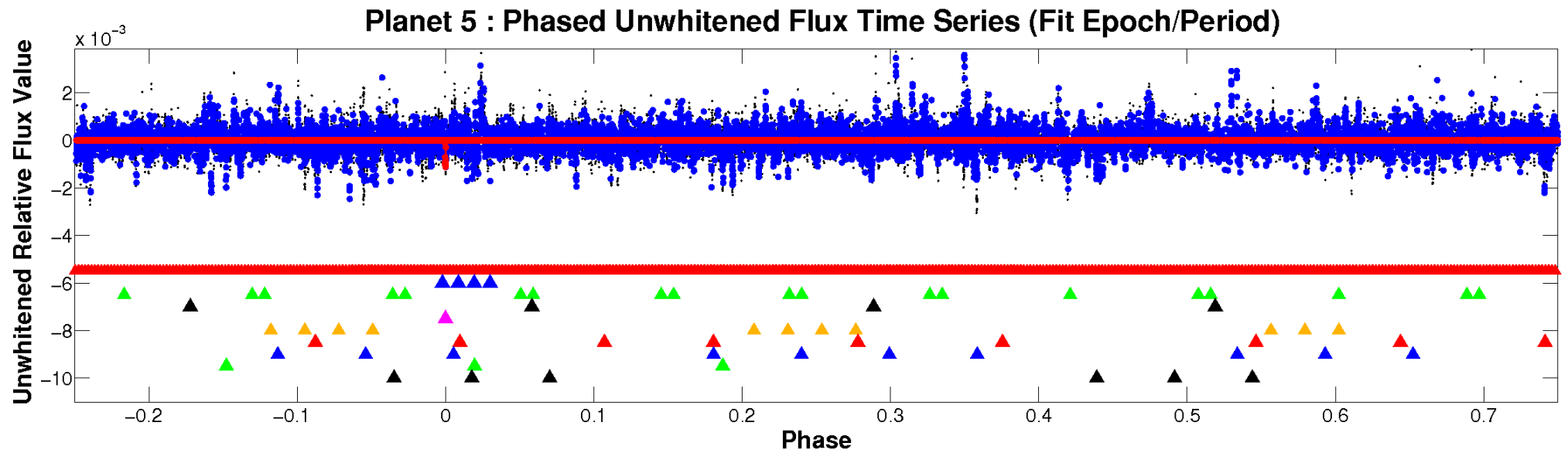
TCE 004821181-05



ALT Odd/Even

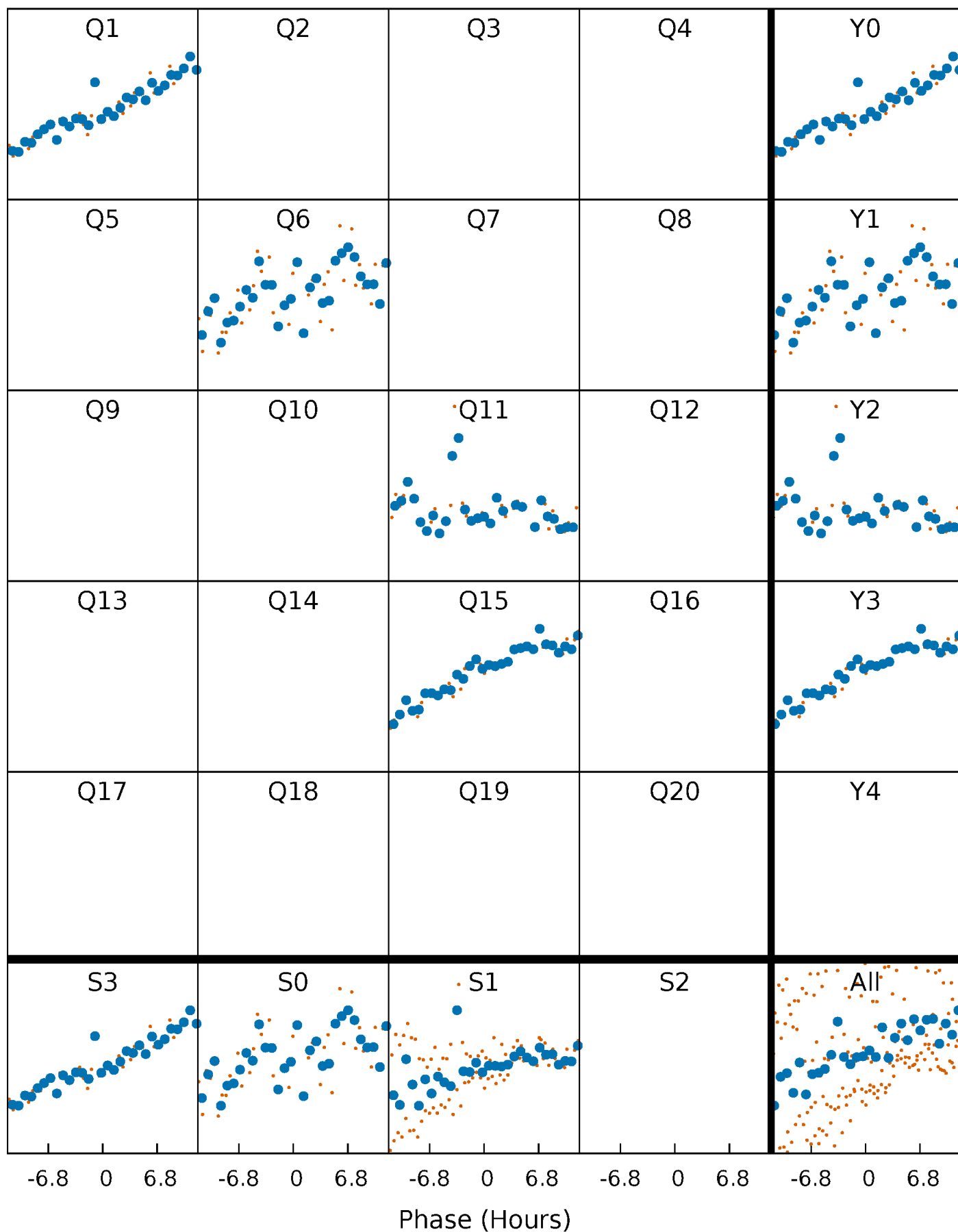
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve



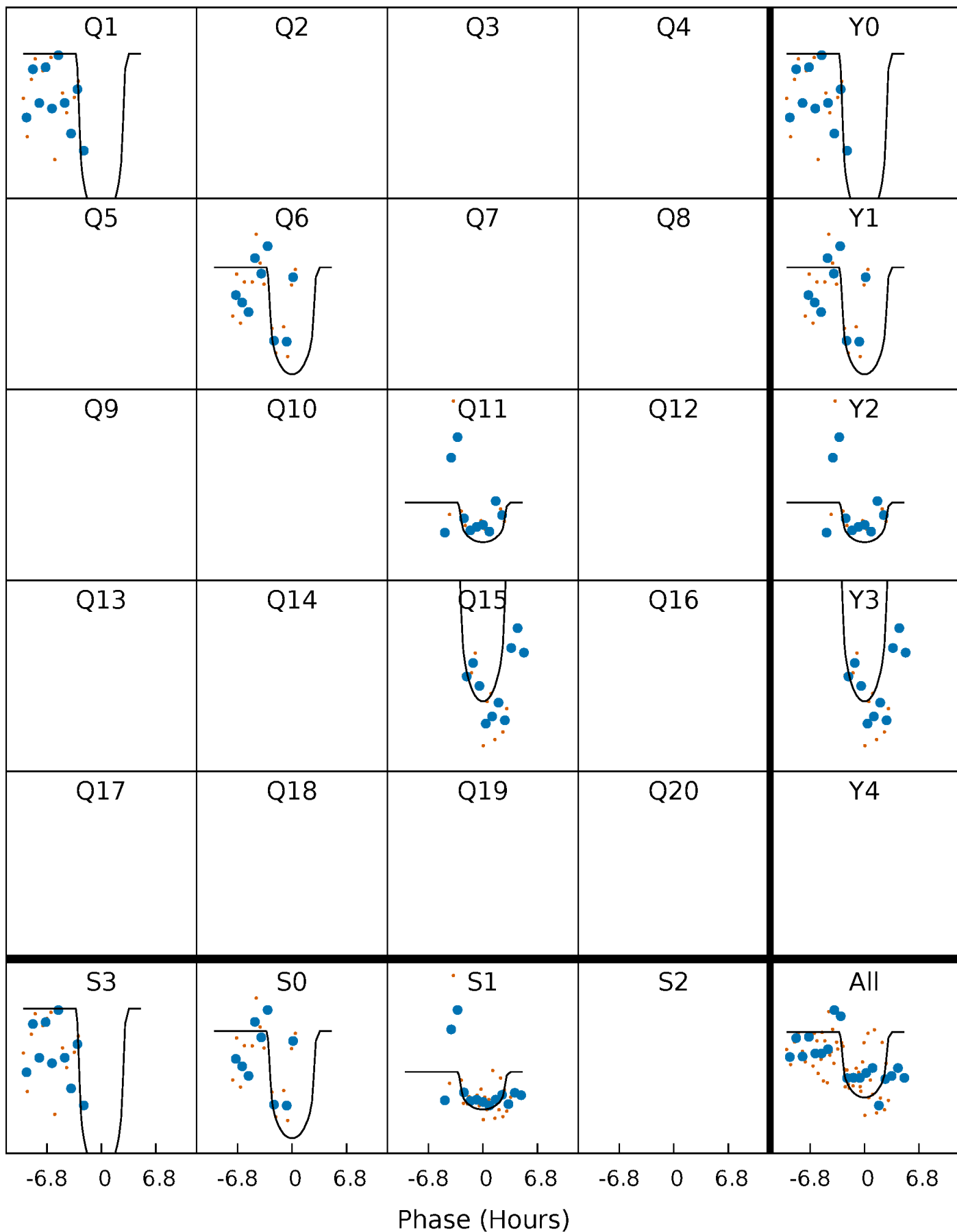
PDC Quarter-Phased Transit Curves

TCE 004821181-05 $P=422.614166$ Days $T_0=158.850559$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 004821181-05 $P=422.614166$ Days $T_0=158.850559$ (BKJD)

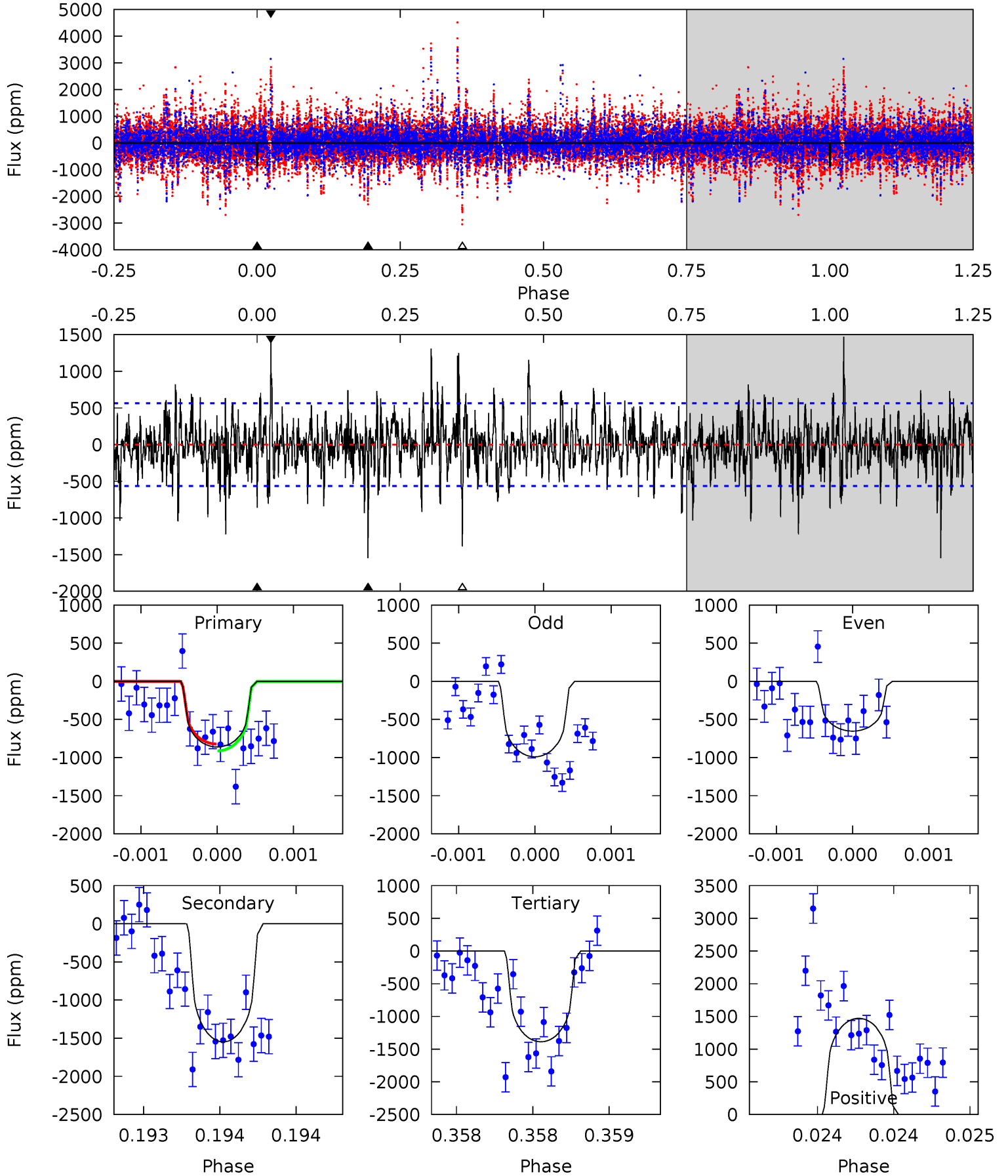


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

004821181-05, P = 422.614166 Days, E = 158.850559 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.43	15.2	13.6	14.4	5.53	3.41	2.78	-5.16	-5.97	1.57	0.76	1.62	1.09	0.49	0.43



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1548 ± 102	$3.20^{+2.43}_{-1.96}$	263^{+10}_{-9}	4891^{+3067}_{-938}	$79804^{+496551}_{-53615}$
Alt.	N/A	N/A	N/A	N/A	N/A

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

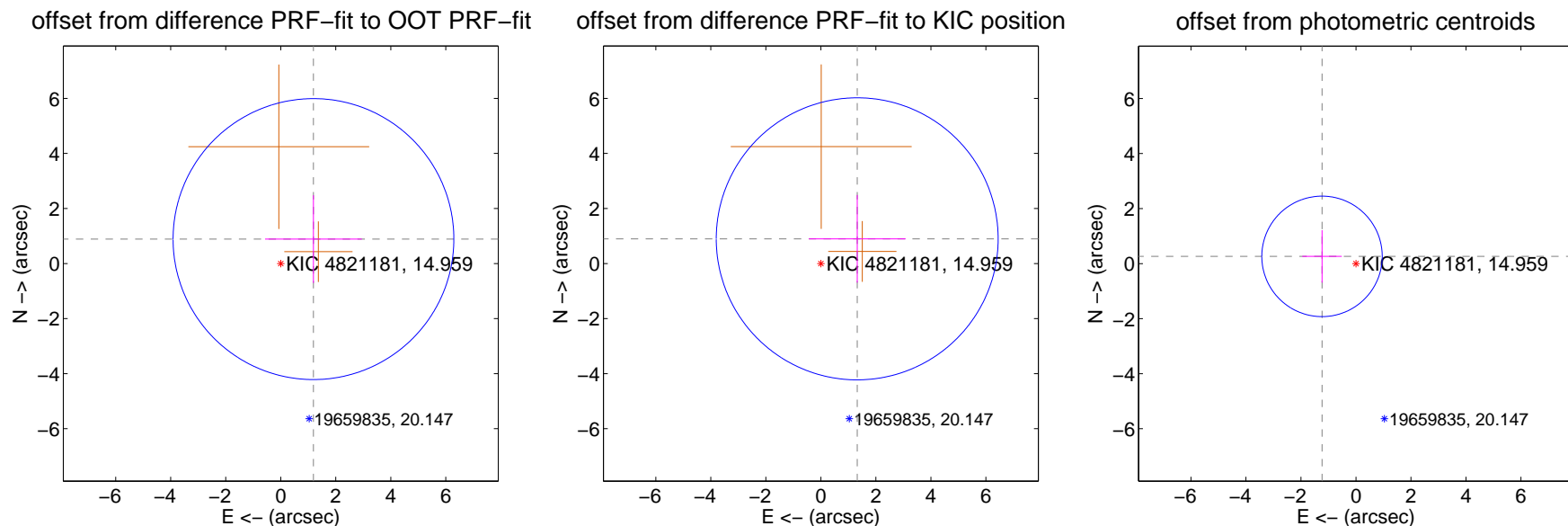
DV Centroid Data

Supplemental centroid analysis for 004821181-05. Kepler magnitude: 14.96. Transit SNR 6.29

There are 0 quarters with good PRF difference image offsets

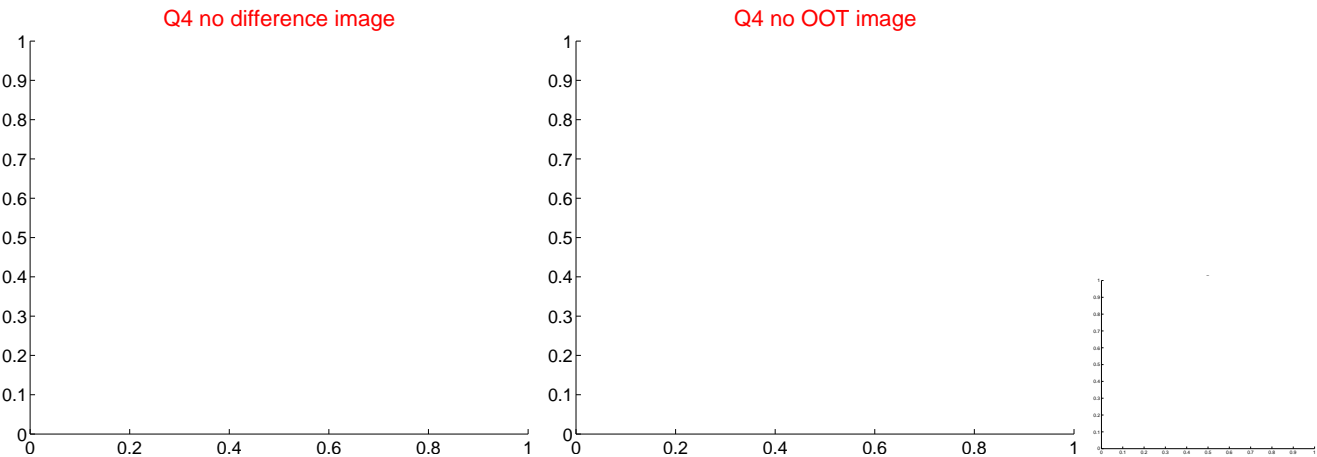
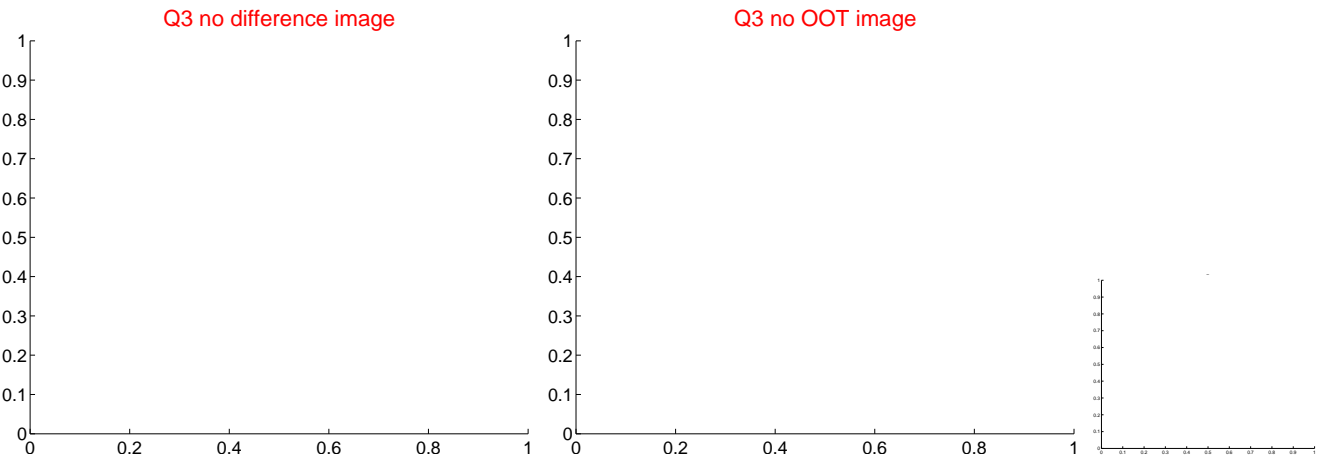
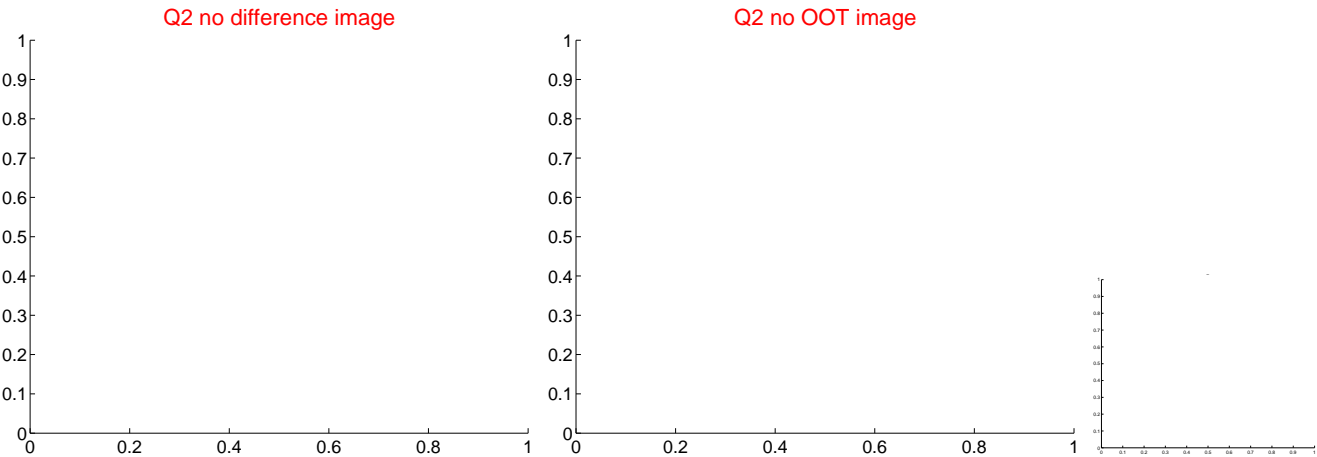
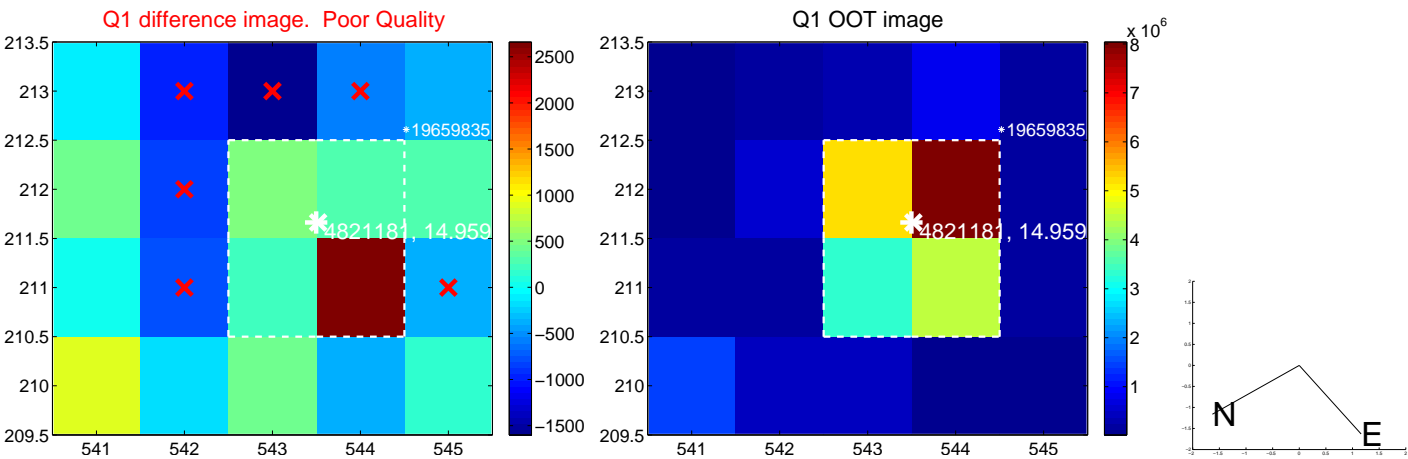
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.484 ± 1.701	0.87	-1.189 ± 1.758	0.888 ± 1.593
PRF-fit source offset from KIC position	1.597 ± 1.708	0.94	-1.321 ± 1.758	0.898 ± 1.593
photometric centroid source offset	1.26 ± 0.73	1.73	1.23 ± 0.72	0.26 ± 0.95

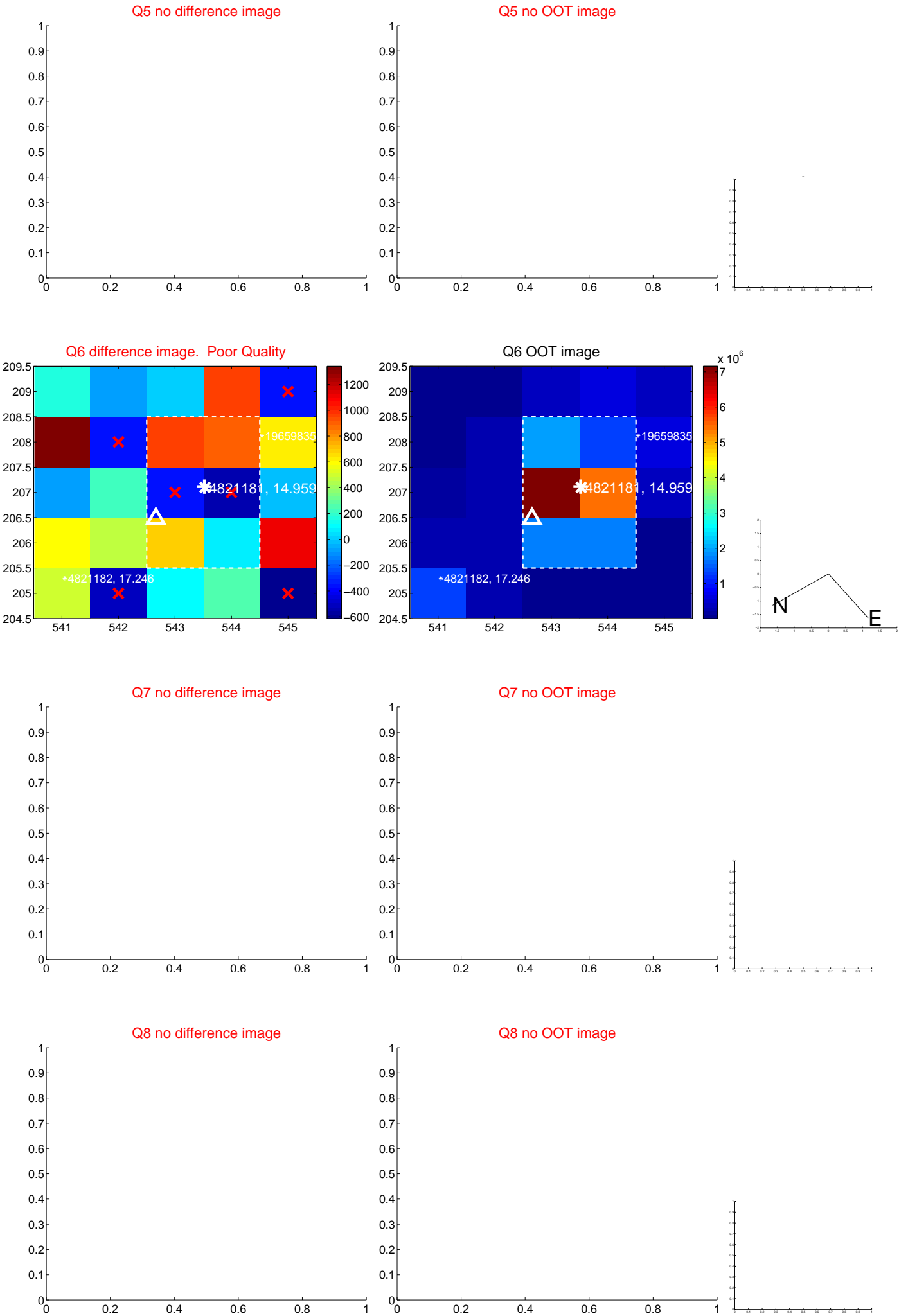


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



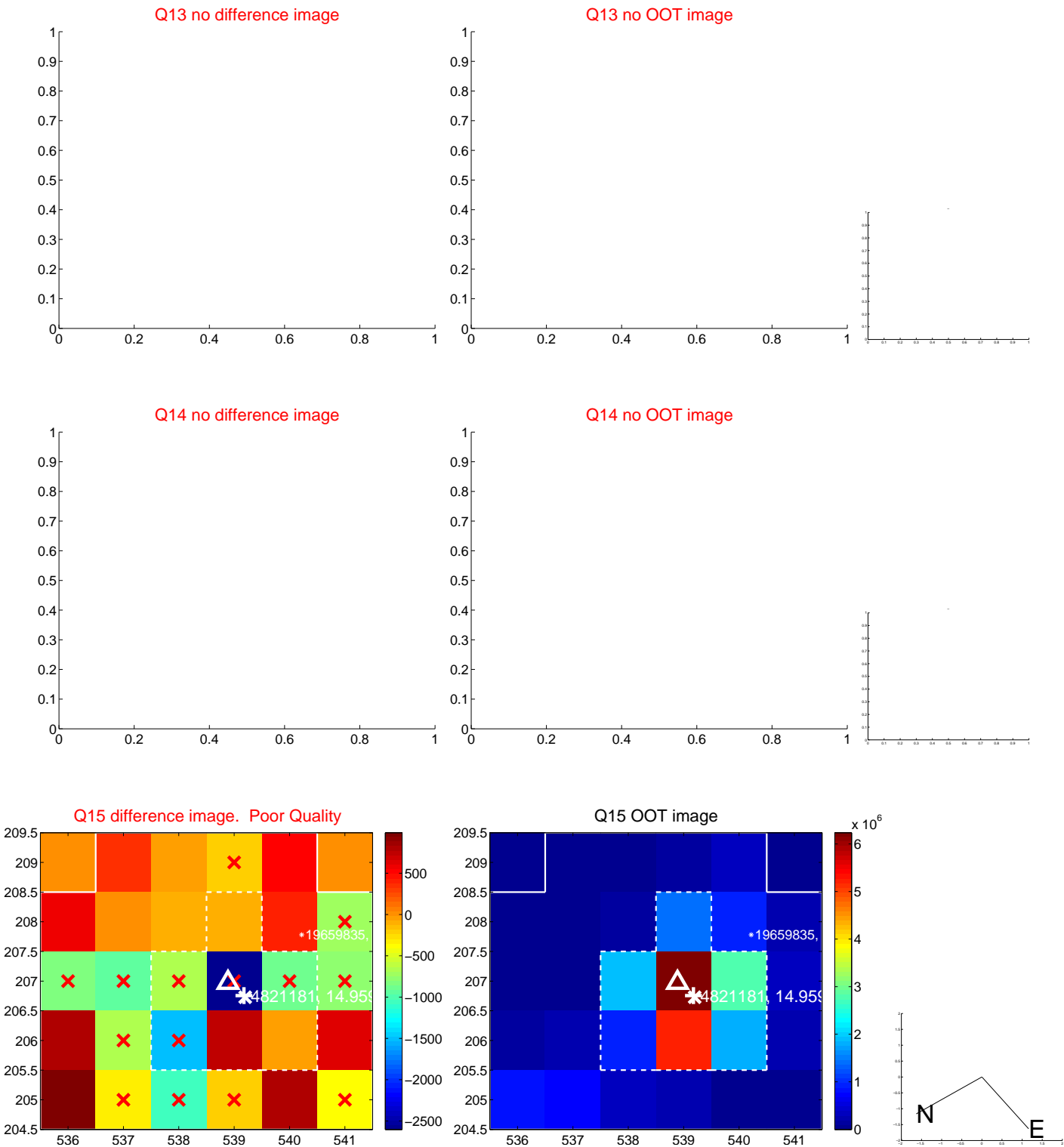
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



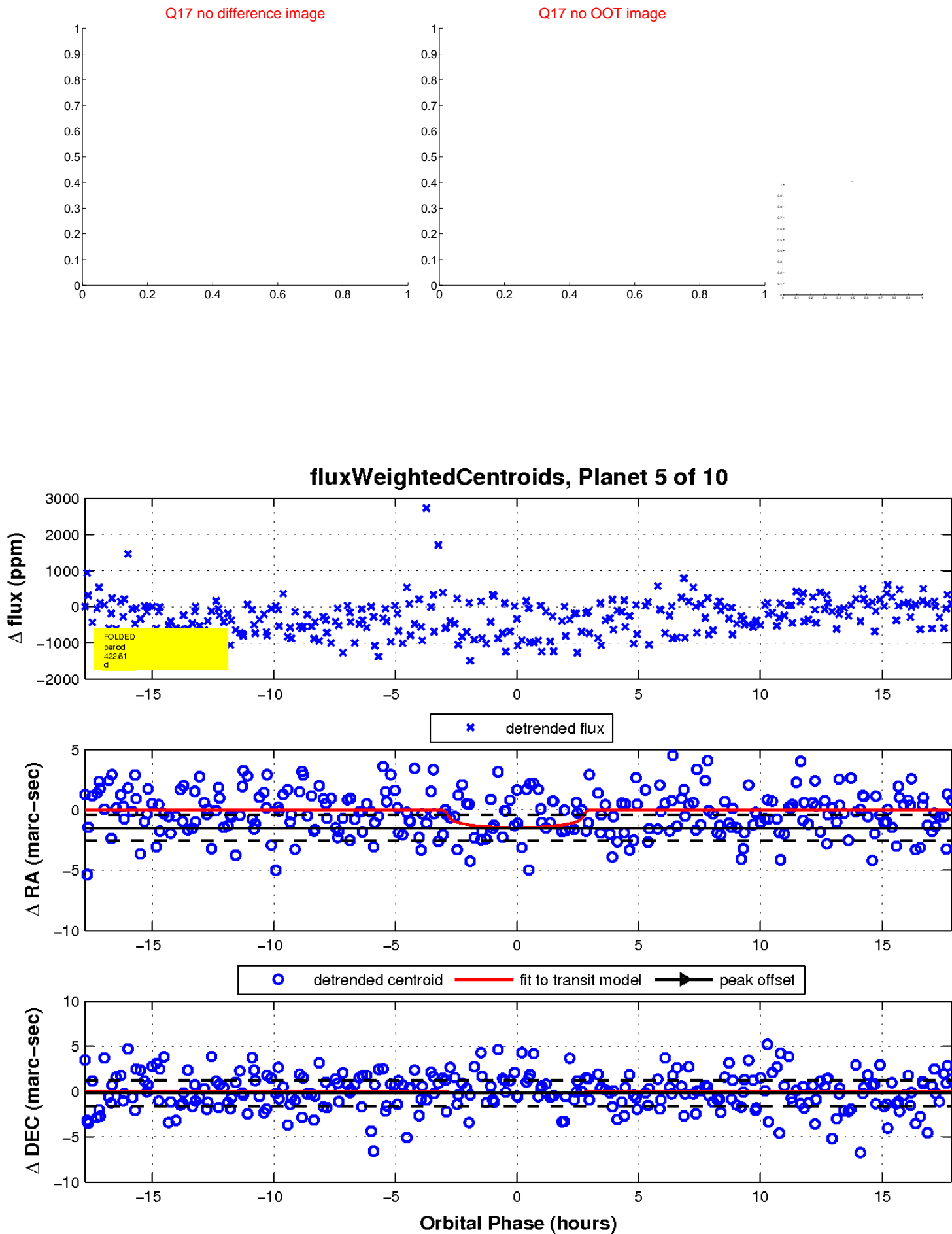
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.

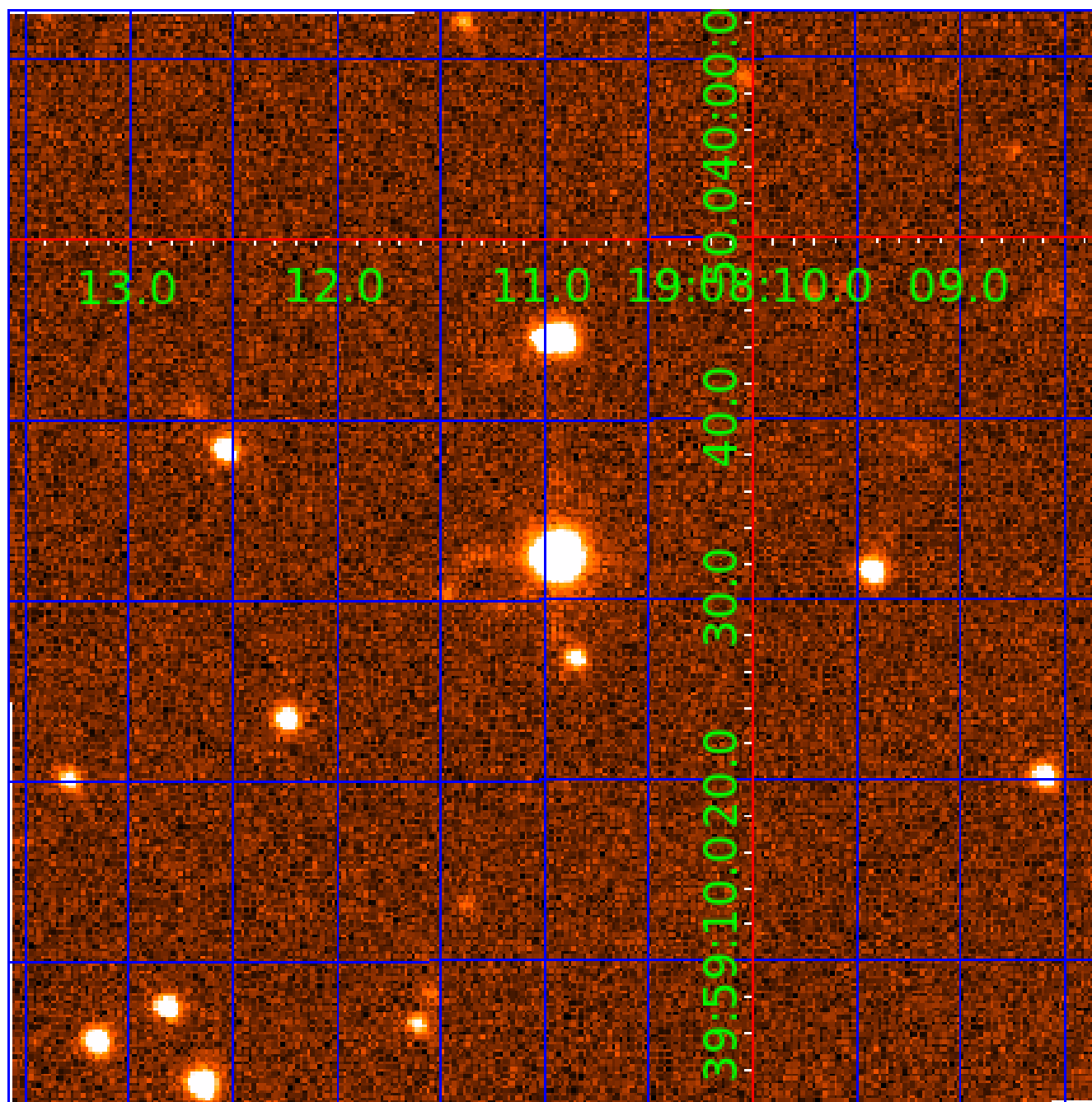


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

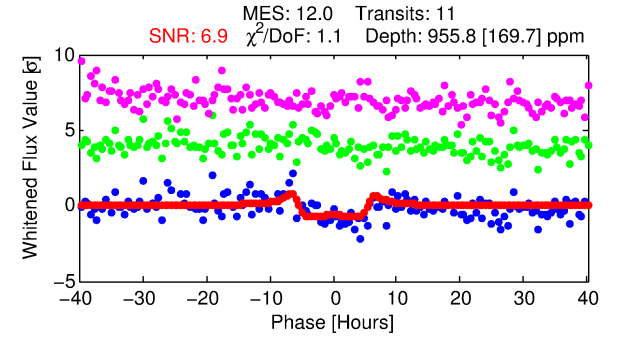
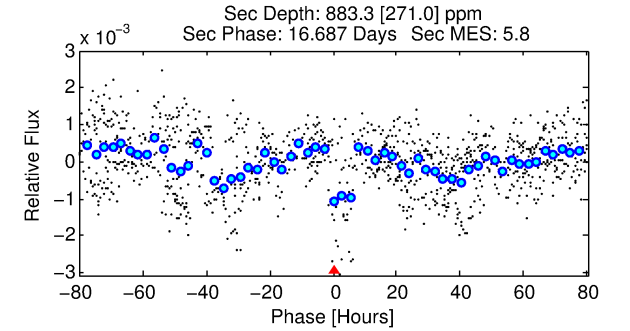
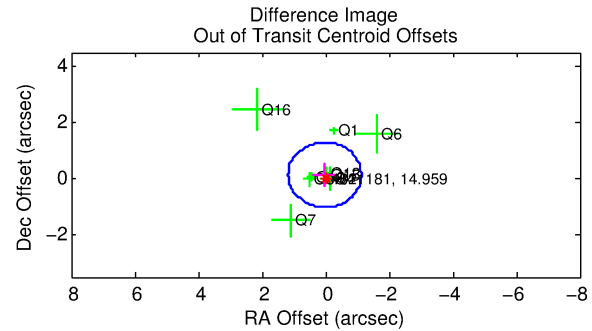
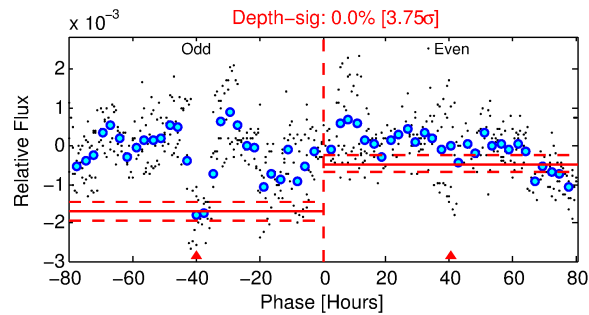
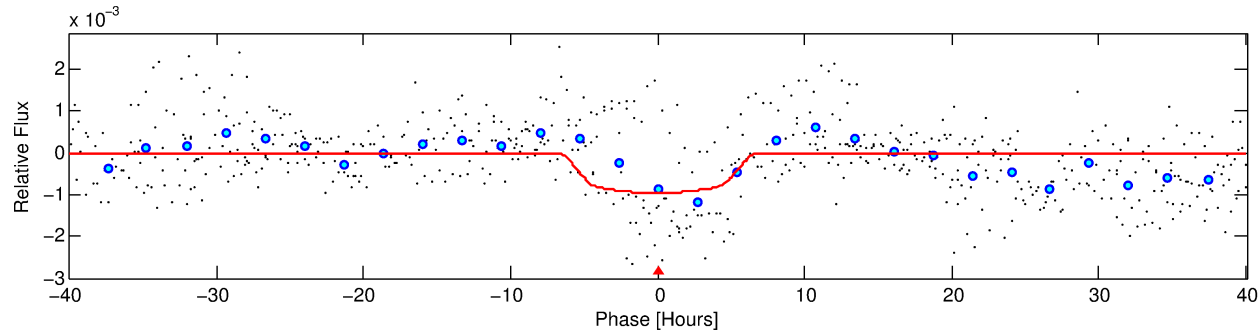
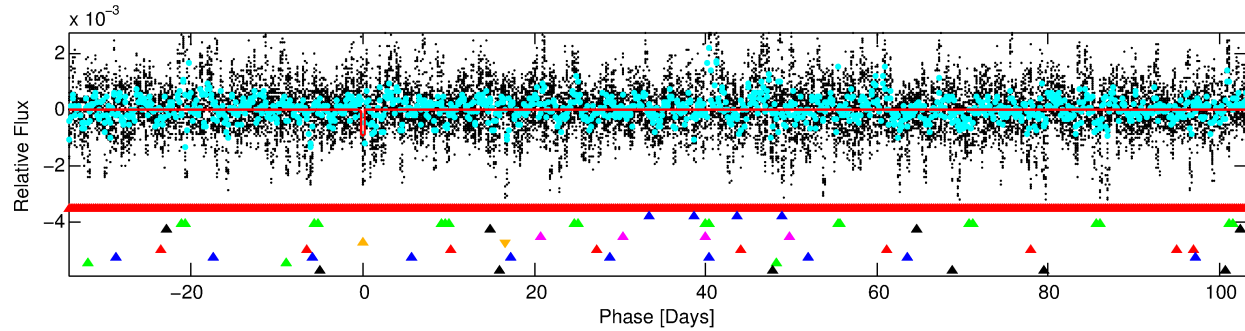
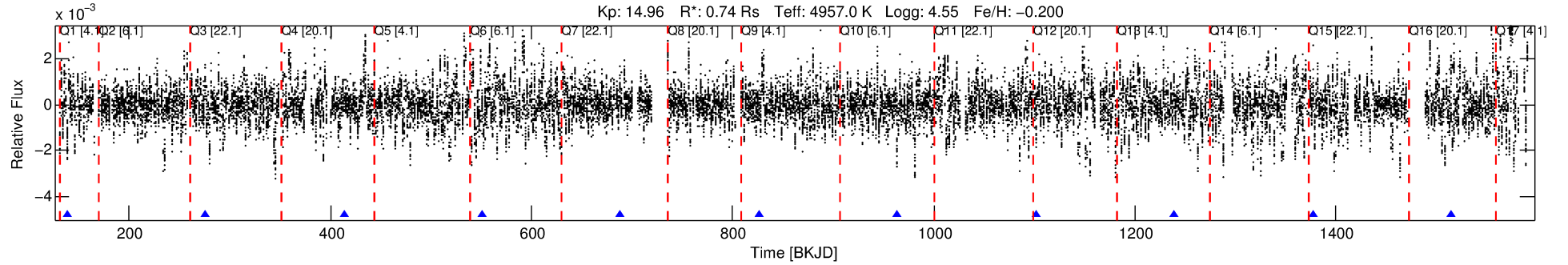
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-06

No Significant Match Found

DV One-Page Summary

KIC: 4821181 Candidate: 6 of 10 Period: 137.649 d



DV Fit Results:

Period = 137.64945 [0.00364] d
Epoch = 138.1109 [0.0221] BKJD
Rp/R* = 0.0347 [0.0040]
a/R* = 39.57 [9.46]
b = 0.90 [0.05]
Seff = 1.36 [0.24]
Teq = 275 [12] K
Rp = 2.79 [0.44] Re
a = 0.4659 [0.0420] AU
Ag = 13533.94 [5506.41] [2.46 σ]
Teff = 4590 [463] K [9.31 σ]

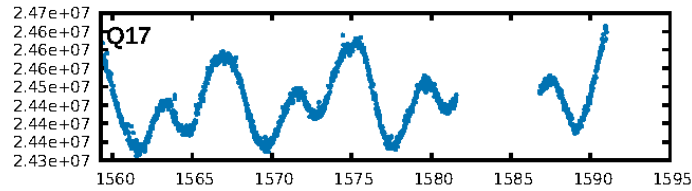
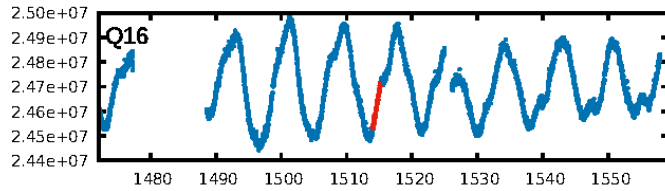
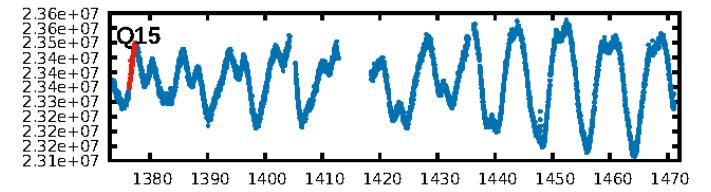
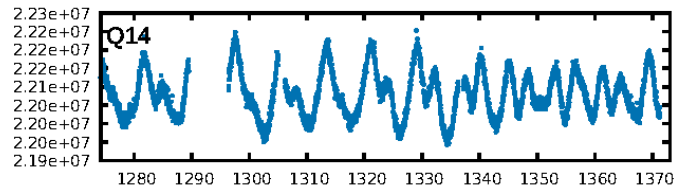
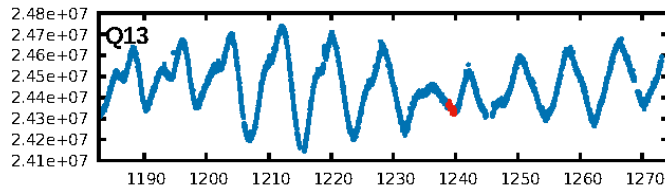
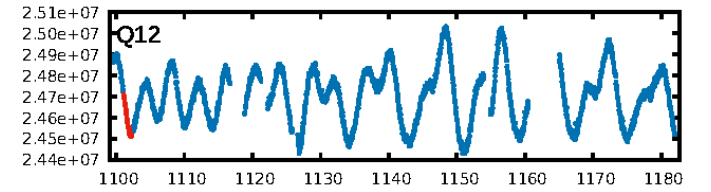
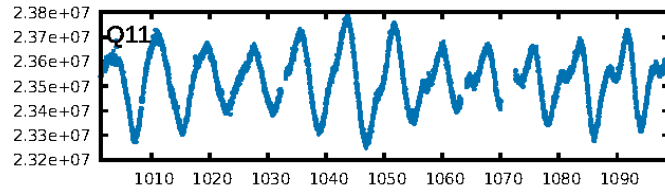
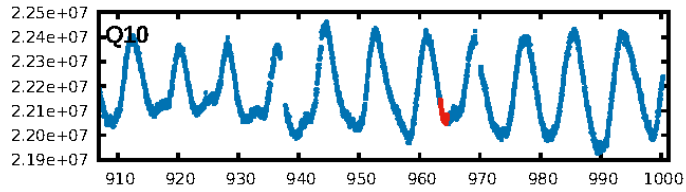
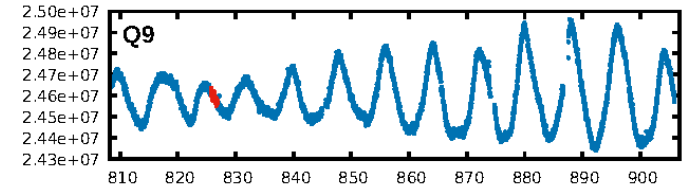
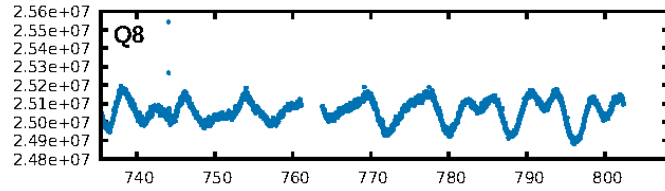
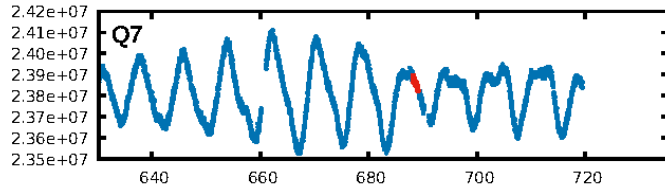
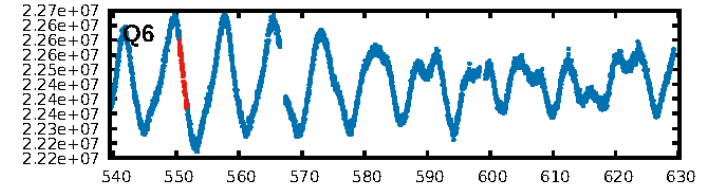
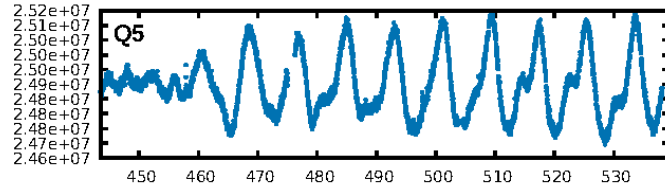
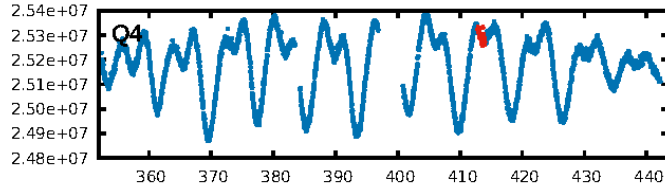
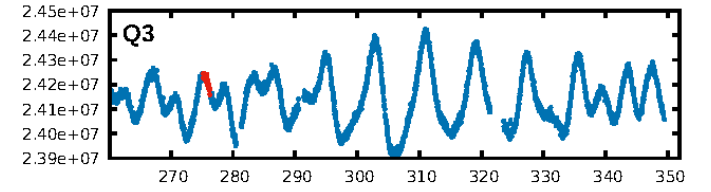
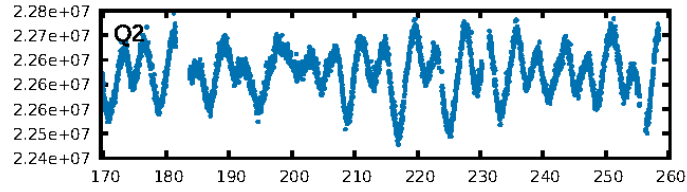
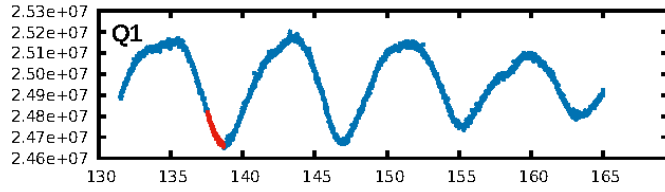
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [84.70 σ]
LongPeriod-sig: 100.0% [20.00 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: -6.69
Centroid-sig: 3.9%
Centroid-so: 0.803 arcsec [2.09 σ]
OotOffset-rm: 0.138 arcsec [0.36 σ]
OotOffset-st: 2/3/3/1 [9]
KicOffset-rm: 0.187 arcsec [0.49 σ]
KicOffset-st: 2/3/3/1 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.00 [0/11]

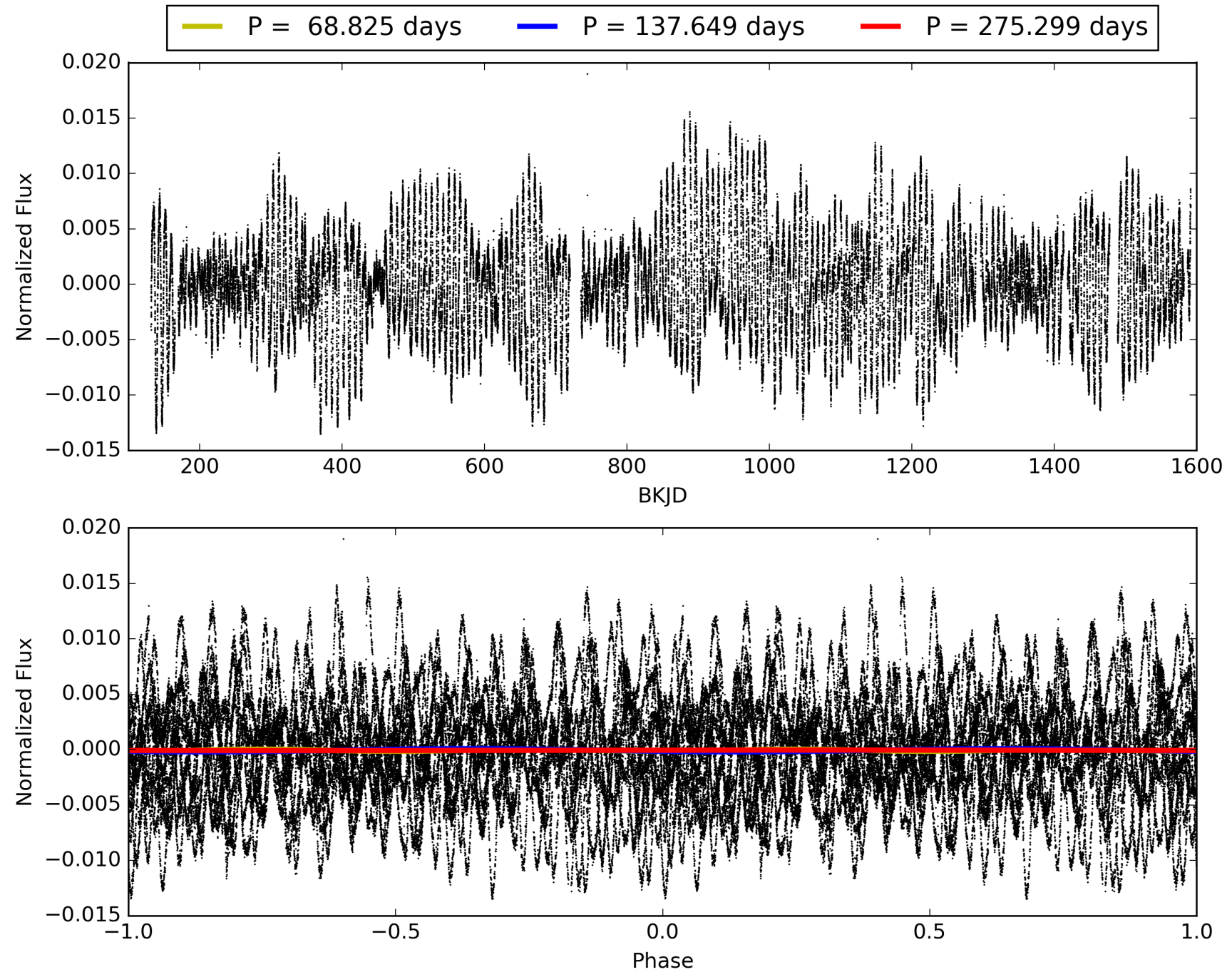
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 06:40:29 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-06, PDC Light Curves

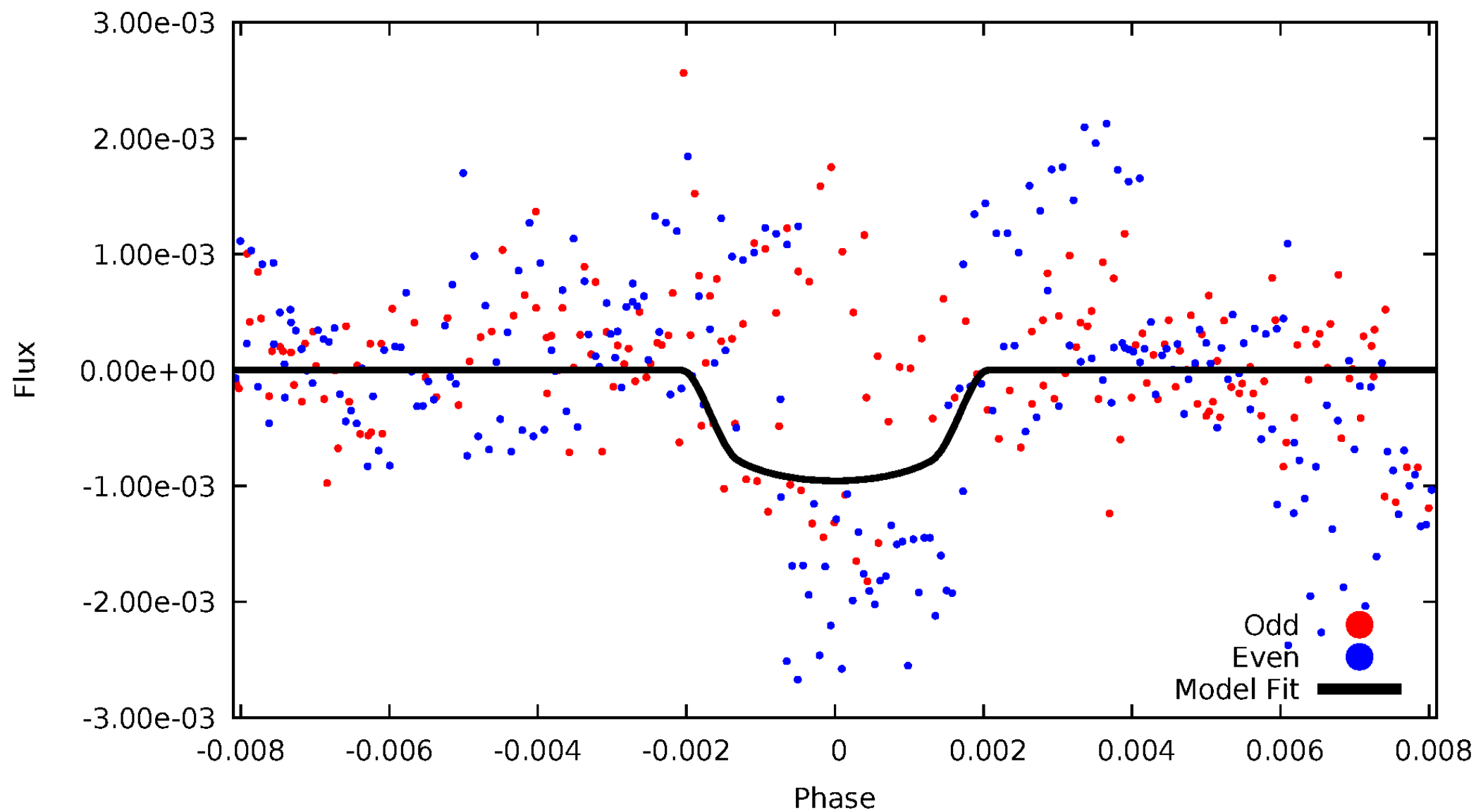


TCE 004821181-06



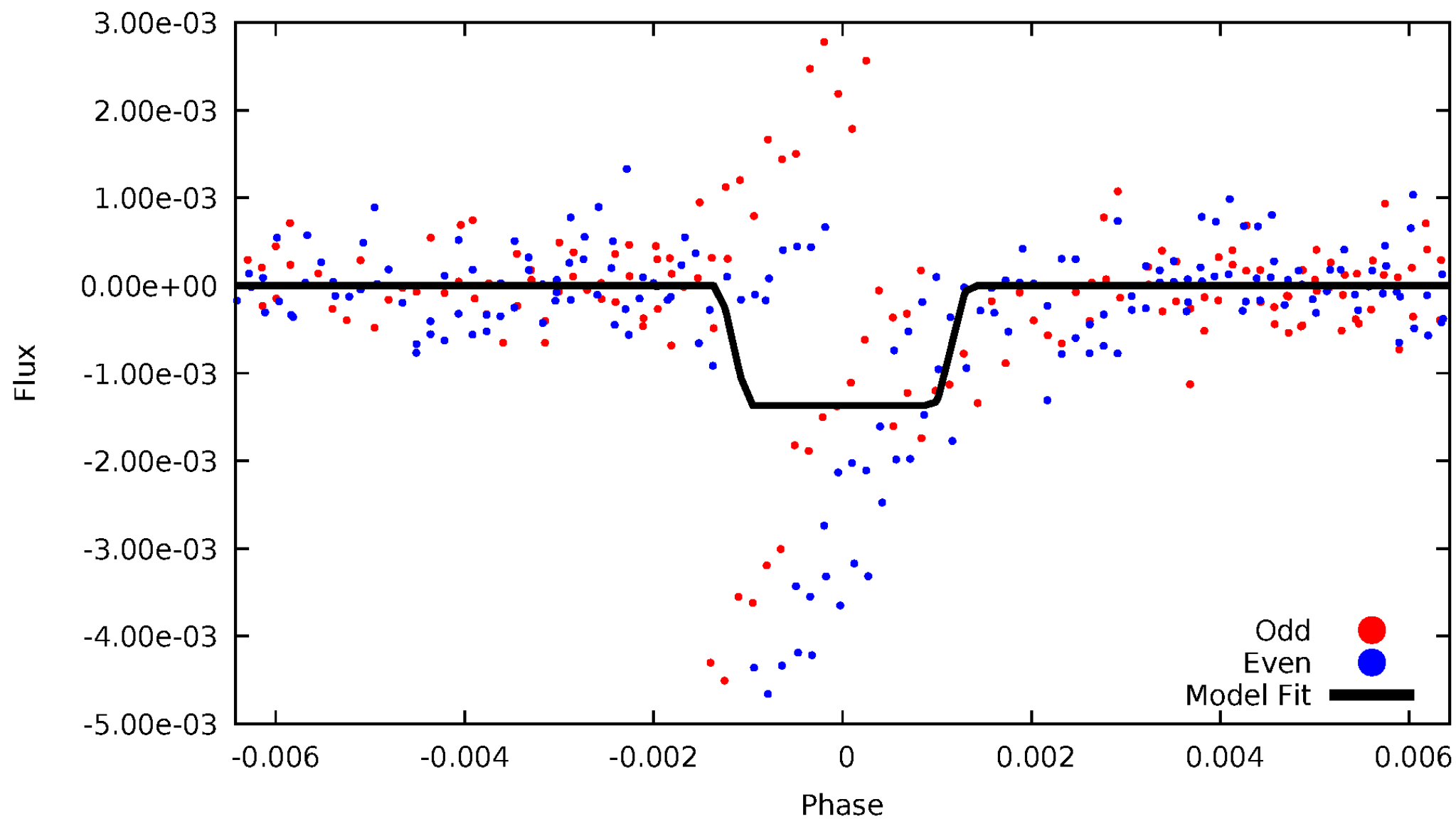
DV Odd/Even

TCE 004821181-06



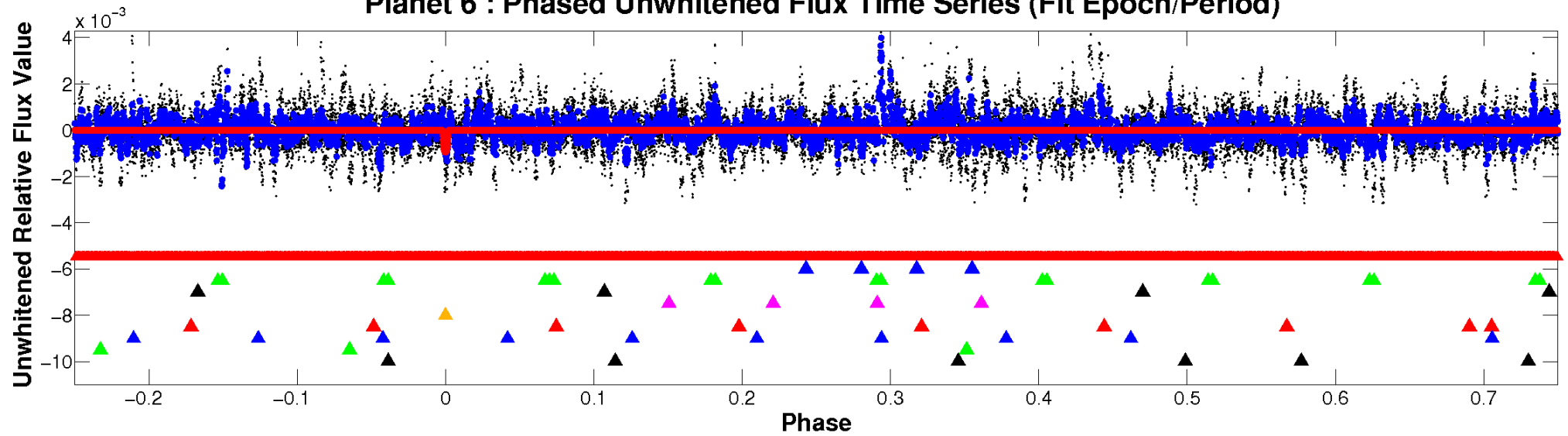
ALT Odd/Even

TCE 004821181-06

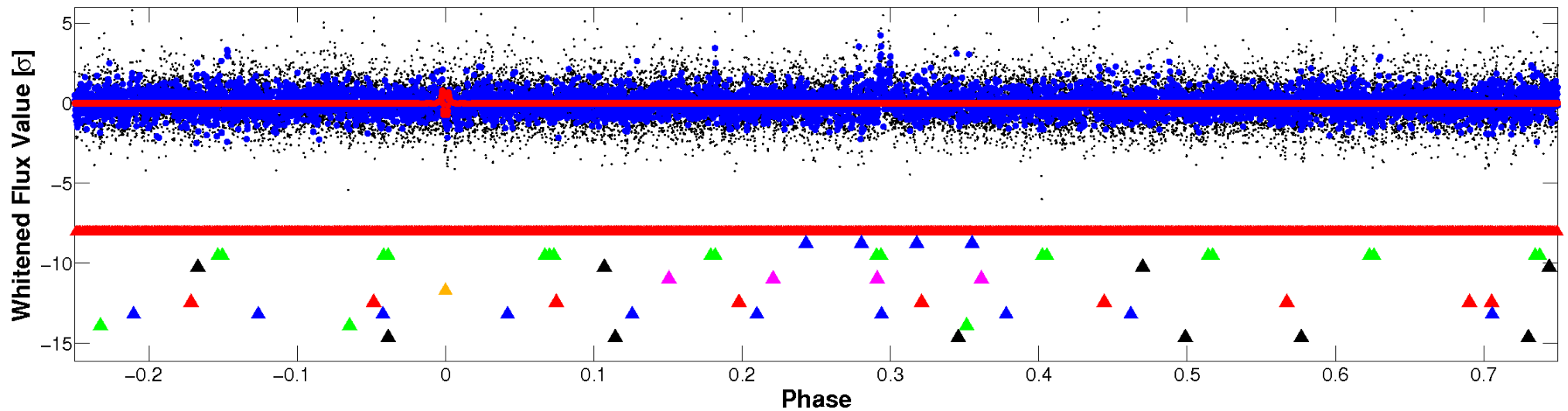


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

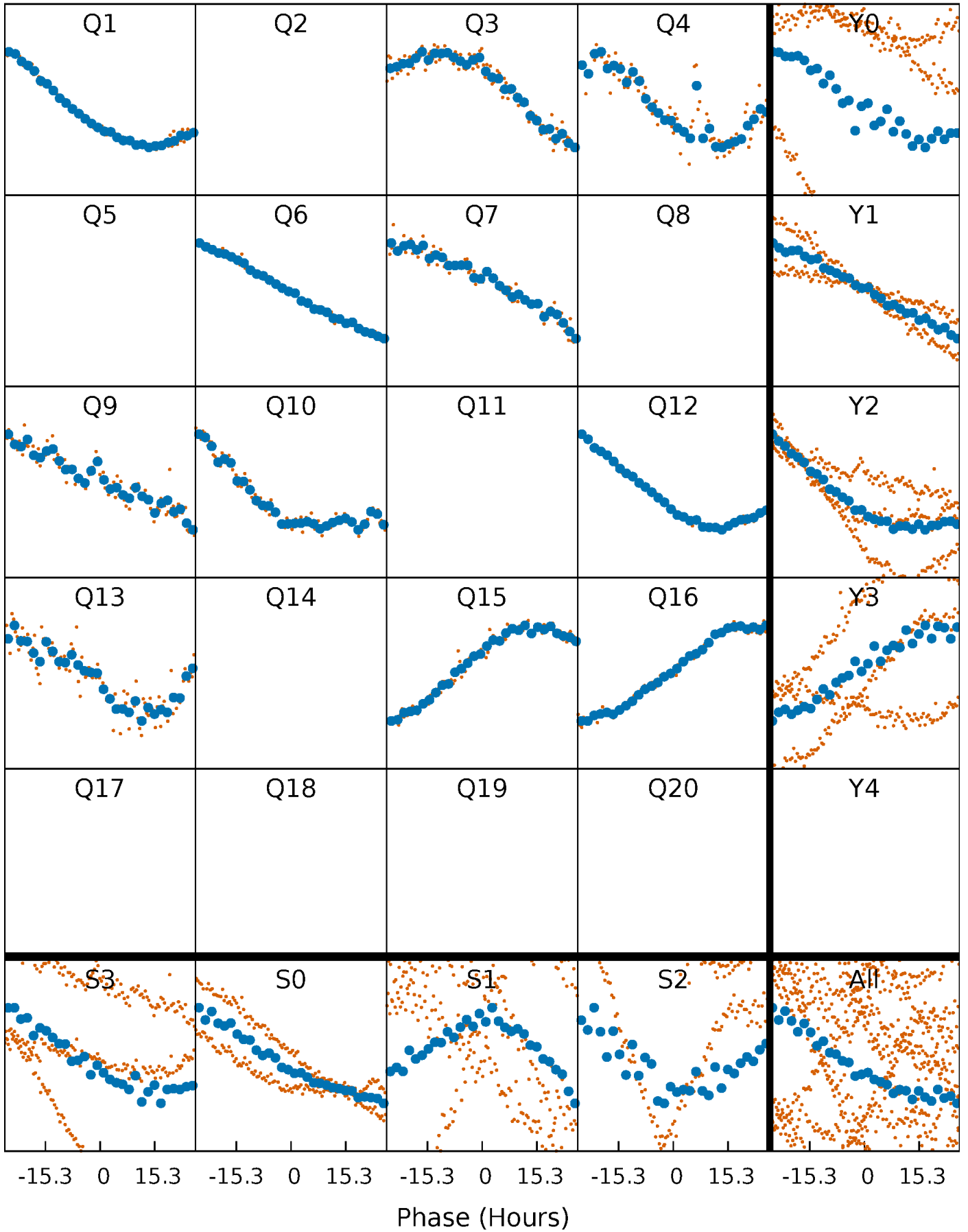


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



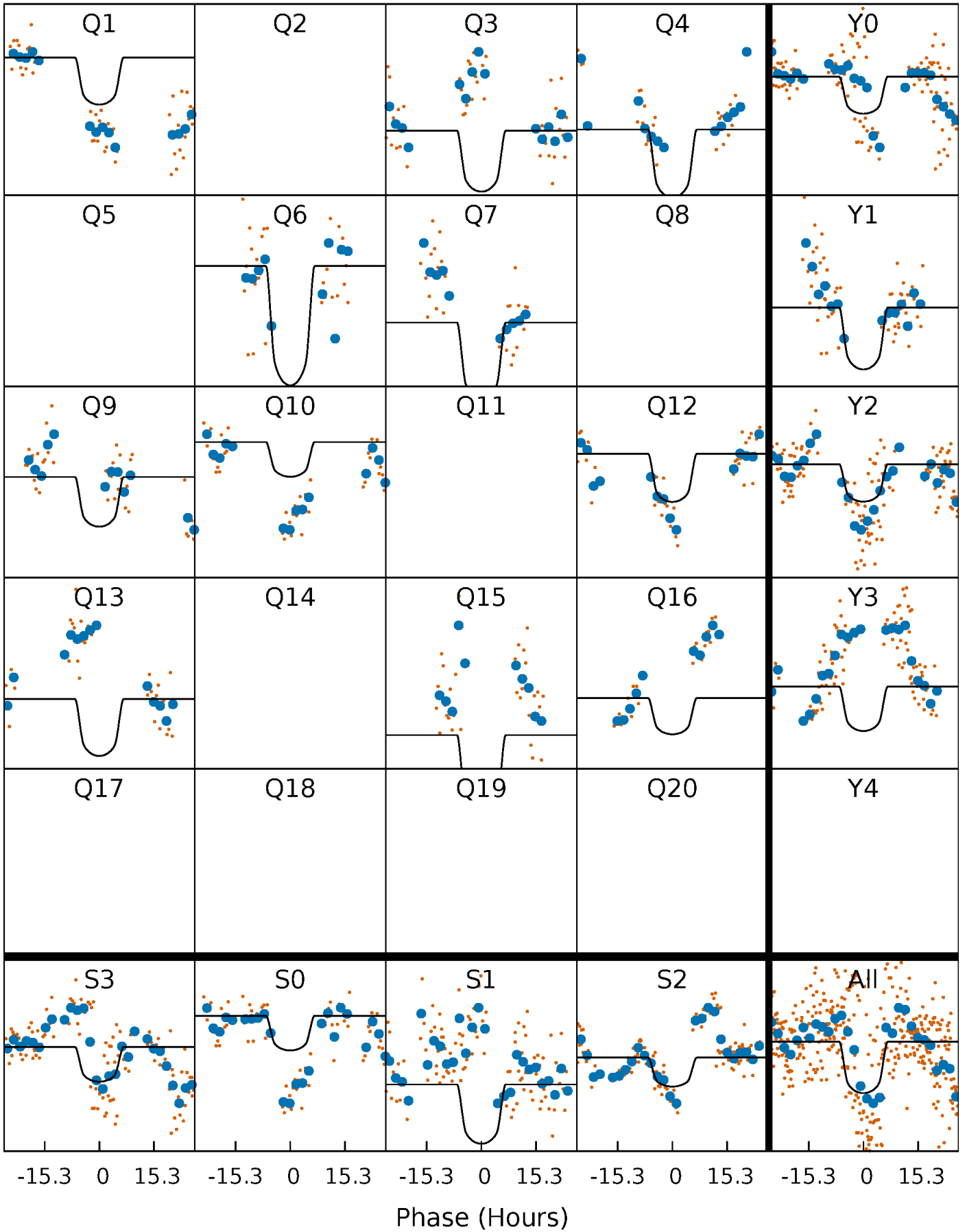
PDC Quarter-Phased Transit Curves

TCE 004821181-06 P=137.649446 Days $T_0=138.110864$ (BKJD)



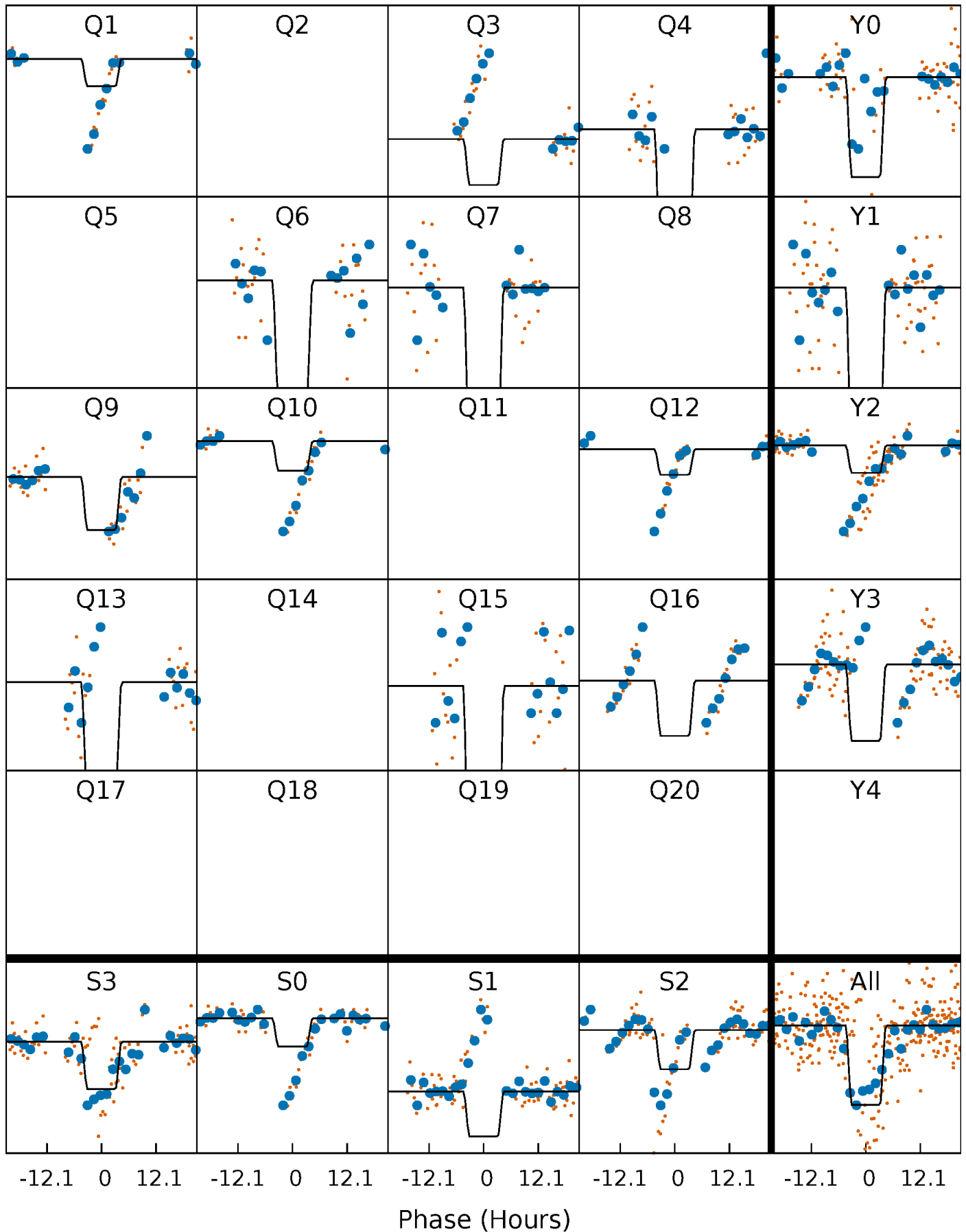
DV Quarter-Phased Transit Curves

TCE 004821181-06 P=137.649446 Days $T_0=138.110864$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

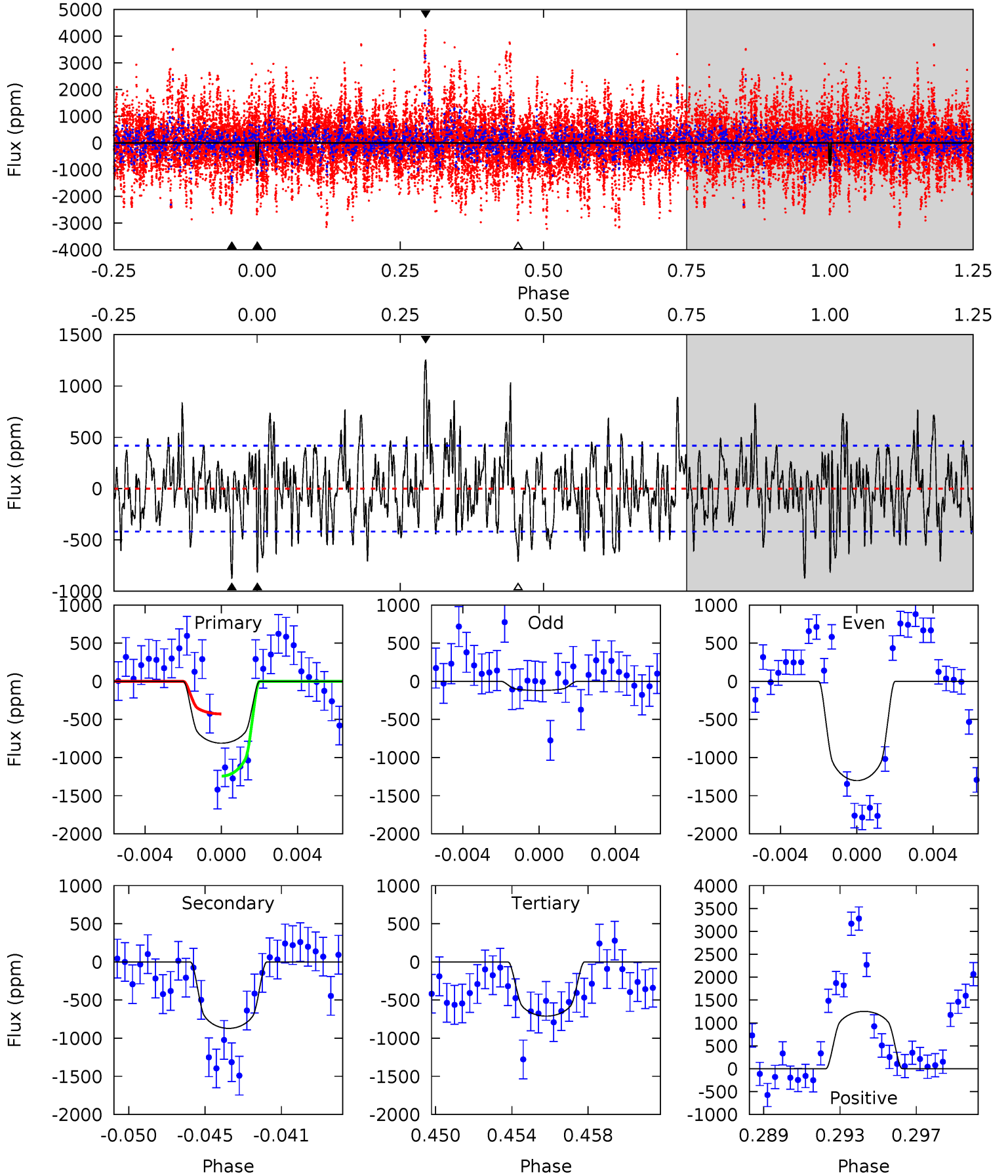
TCE 004821181-06 P=137.640460 Days $T_0=138.140033$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-06, P = 137.649446 Days, E = 0.461418 Days

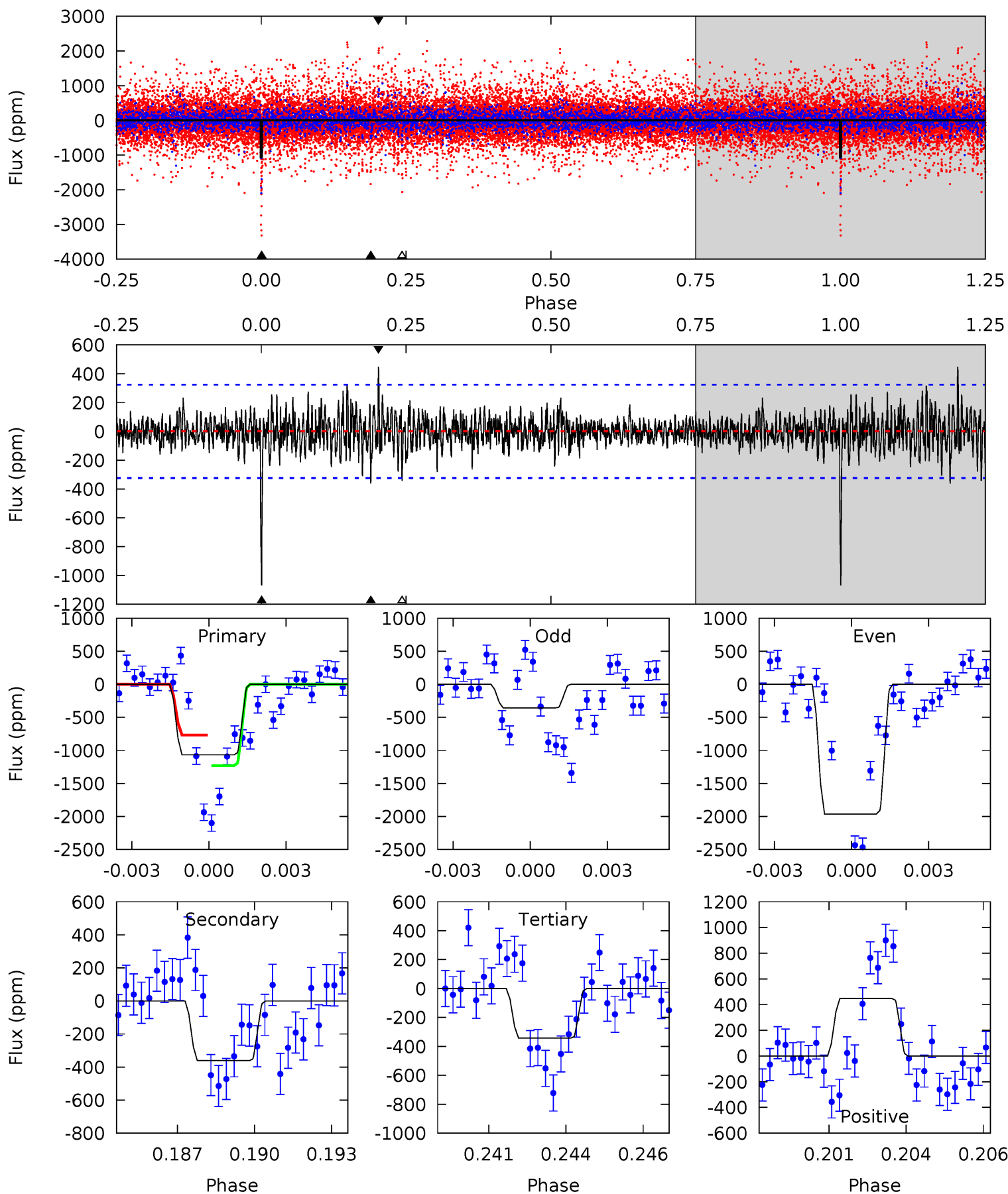
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	10.8	8.82	15.5	5.19	2.87	3.65	1.25	-5.48	2.00	-4.73	7.33	-0.08	0.59	5.05



Alt Model-Shift Uniqueness Test

004821181-06, P = 137.640460 Days, E = 0.499573 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	5.87	5.57	7.28	5.27	3.00	1.36	11.8	10.1	0.29	-1.41	13.6	0.47	0.30	0



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-871 ± 81	$2.78^{+0.39}_{-0.38}$	381^{+15}_{-13}	4642^{+280}_{-245}	13699^{+4490}_{-3097}
Alt.	-361 ± 62	$2.97^{+0.36}_{-0.38}$	382^{+15}_{-15}	3842^{+222}_{-187}	4987^{+1798}_{-1226}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

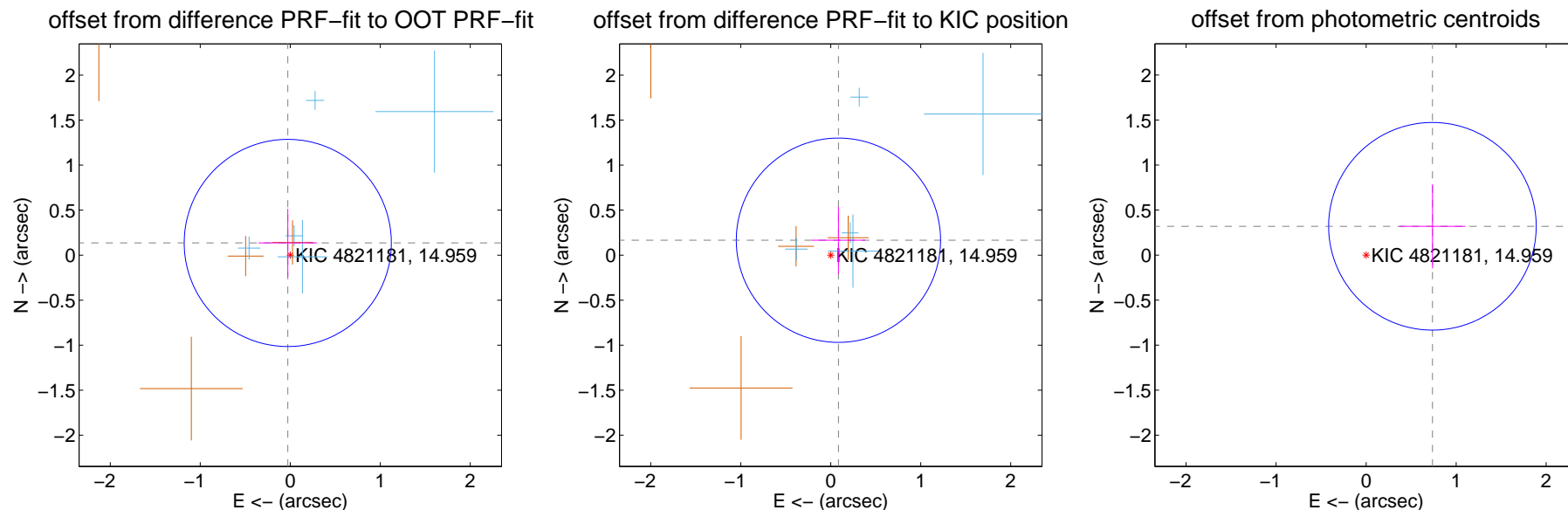
DV Centroid Data

Supplemental centroid analysis for 004821181-06. Kepler magnitude: 14.96. Transit SNR 6.88

There are 5 quarters with good PRF difference image offsets

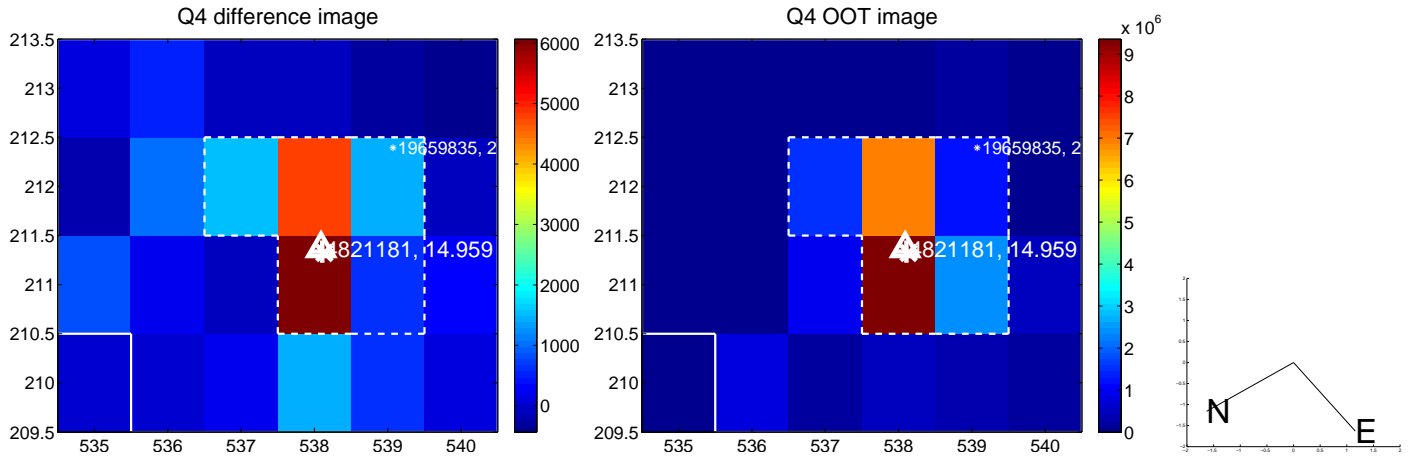
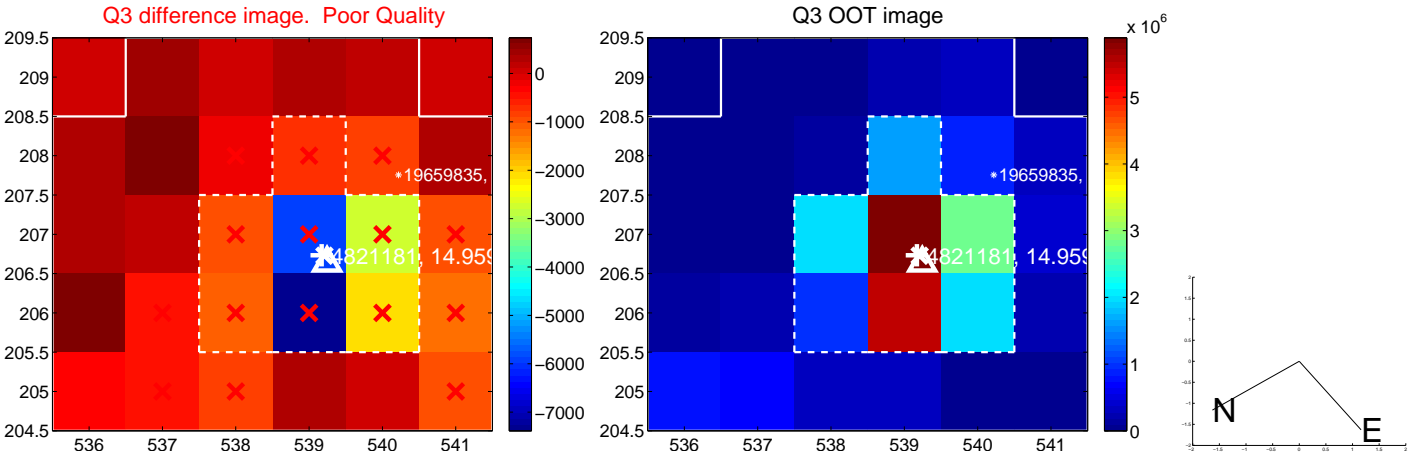
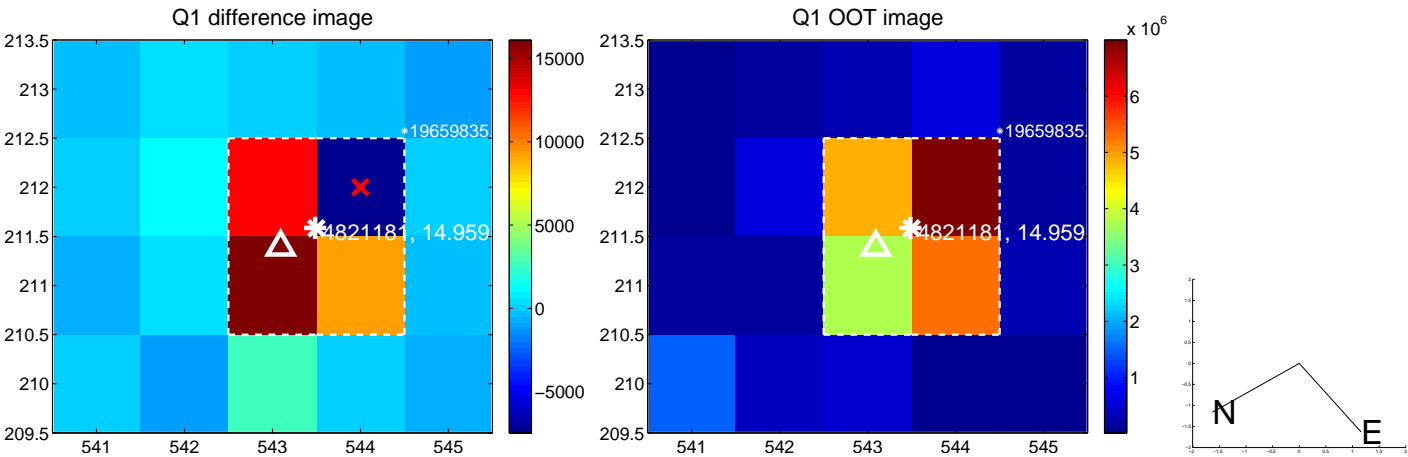
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.138 ± 0.384	0.36	0.028 ± 0.325	0.136 ± 0.380
PRF-fit source offset from KIC position	0.187 ± 0.378	0.49	-0.086 ± 0.297	0.166 ± 0.372
photometric centroid source offset	0.80 ± 0.38	2.09	-0.74 ± 0.37	0.32 ± 0.47

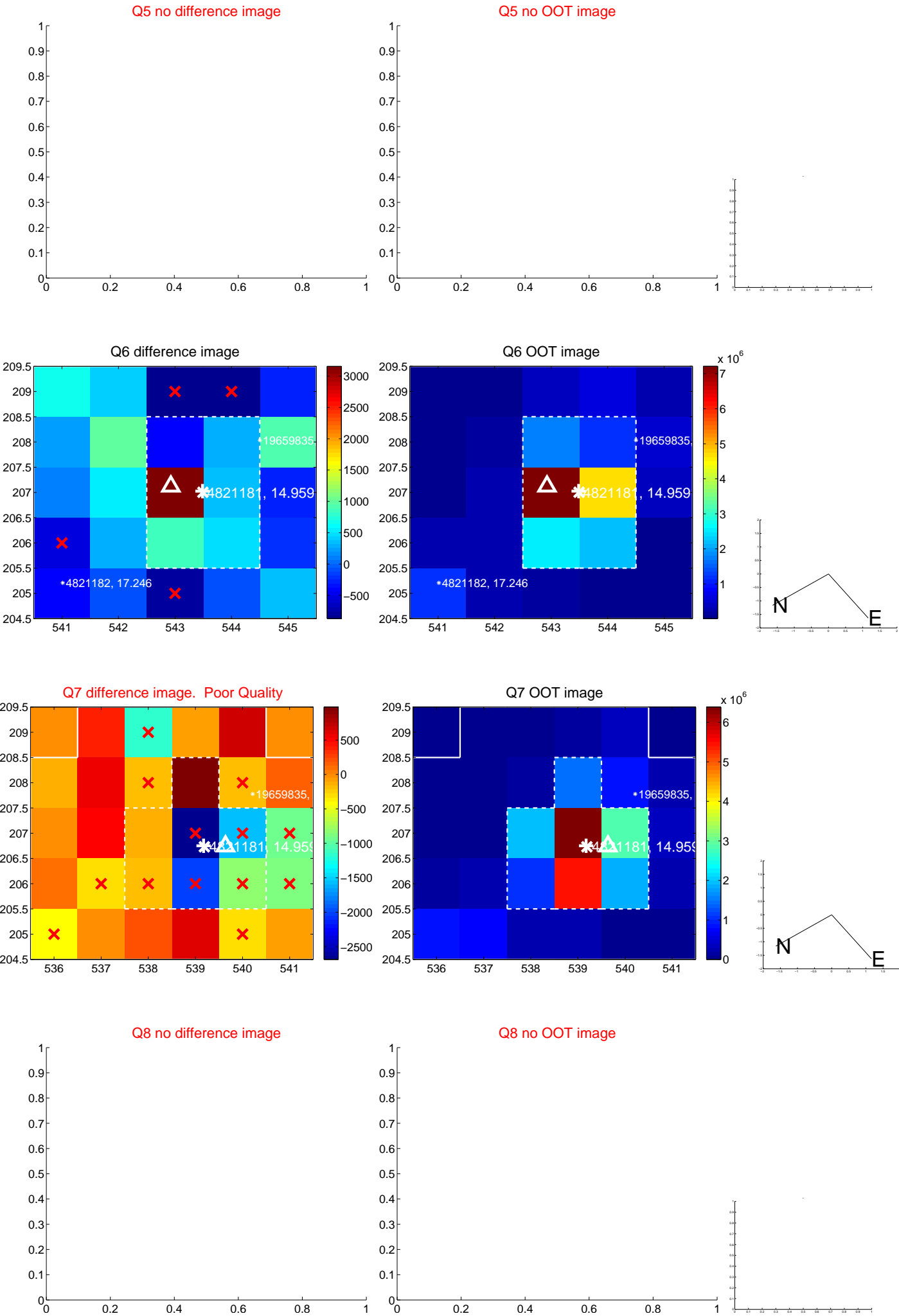


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

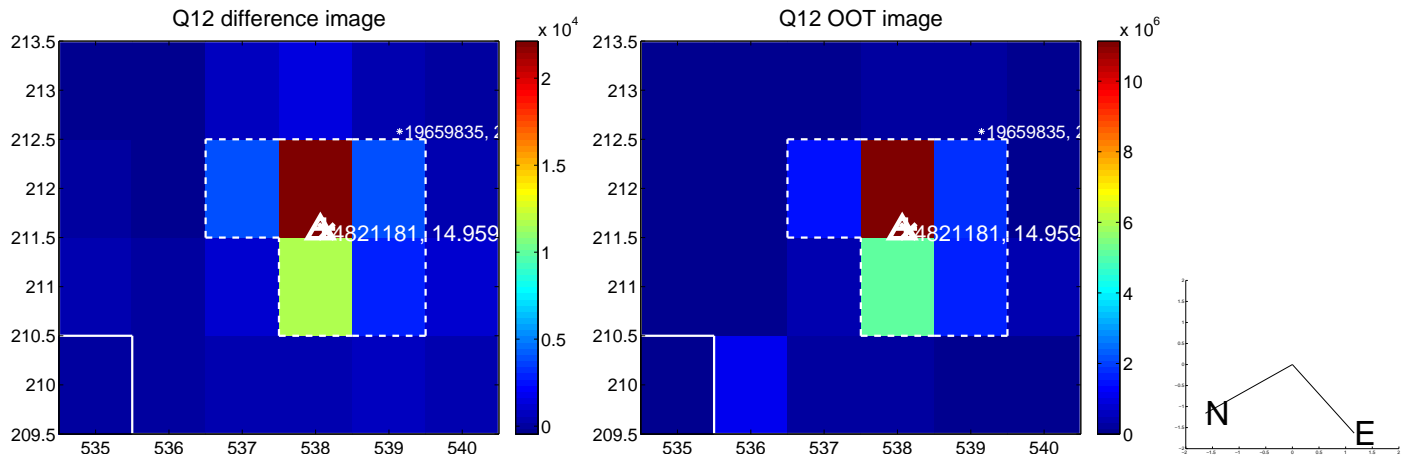
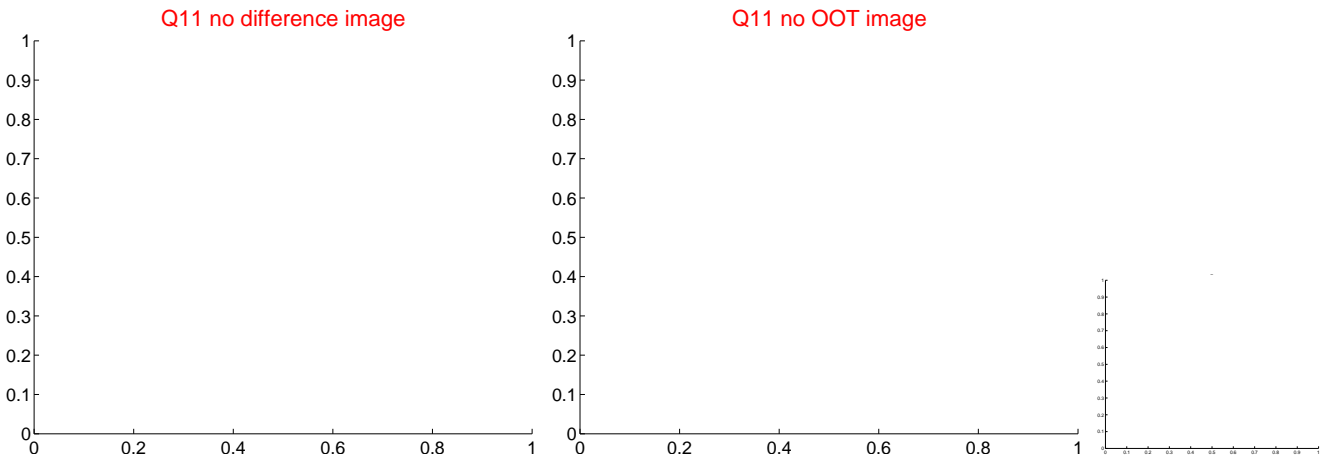
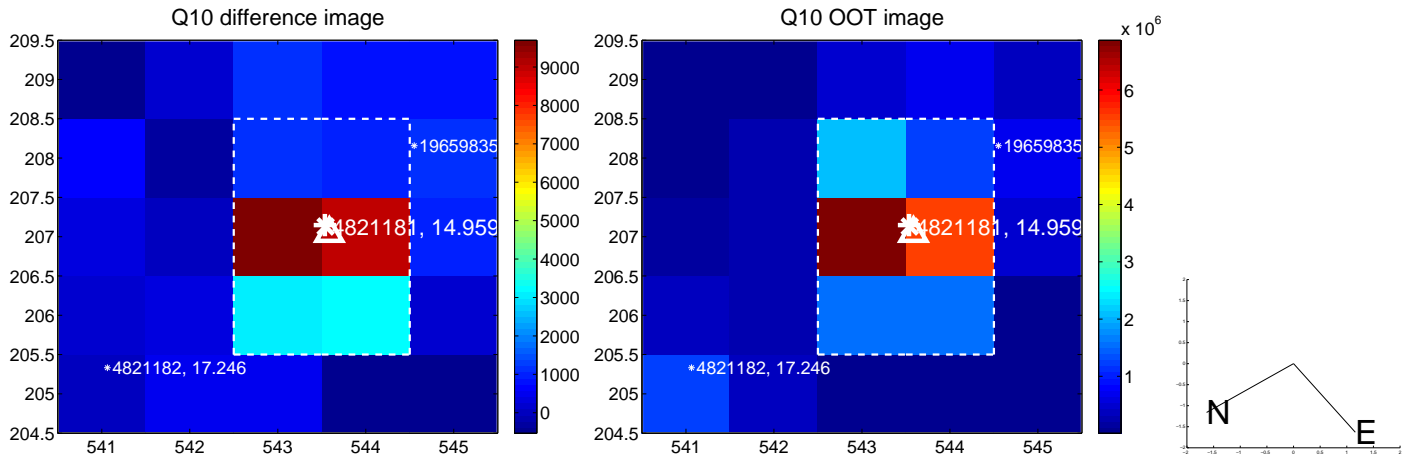
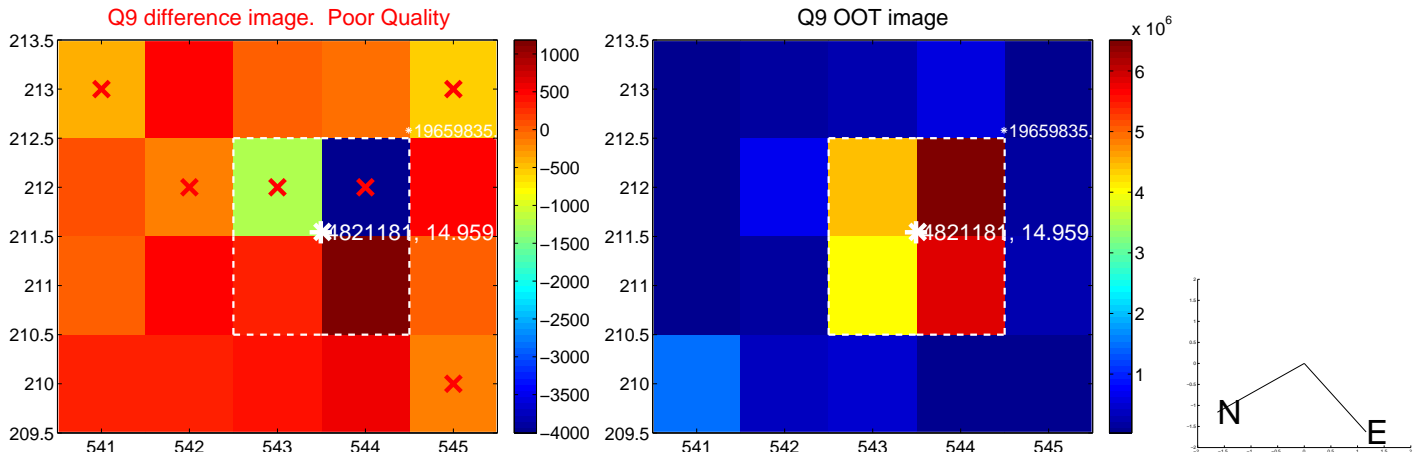
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



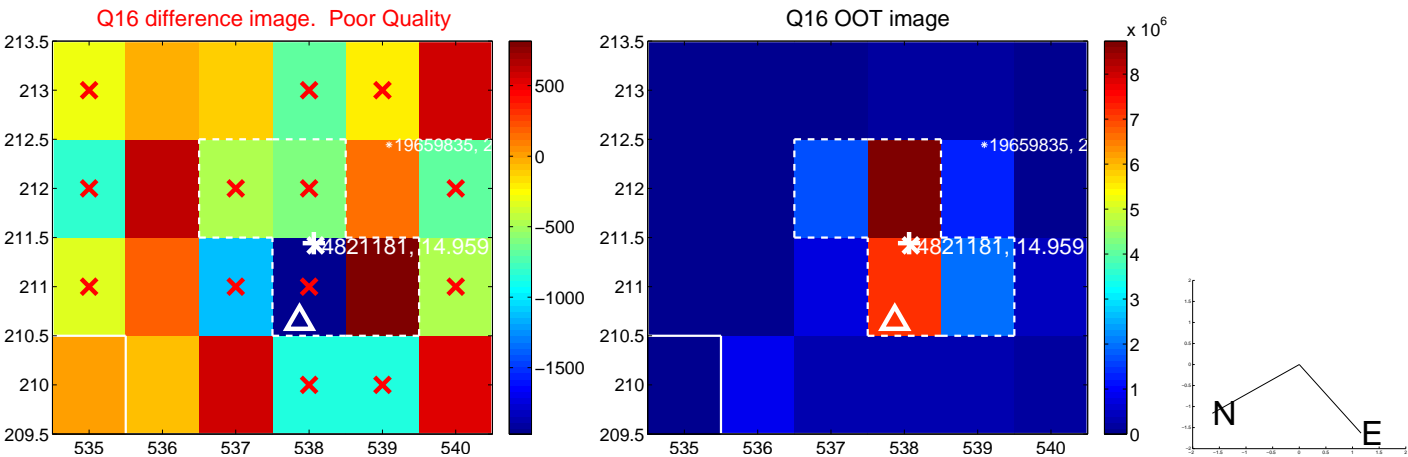
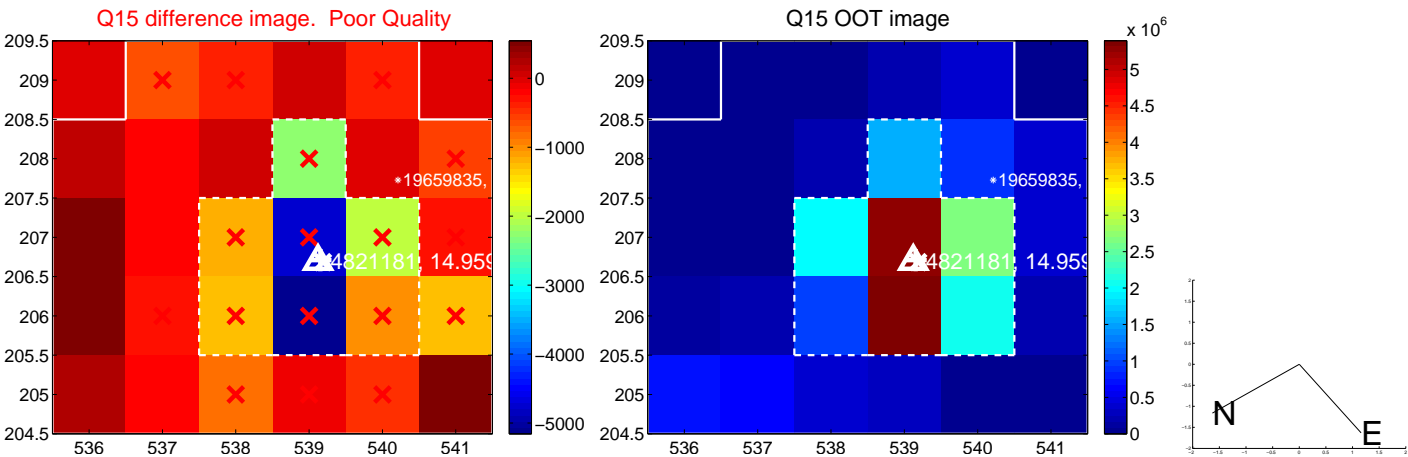
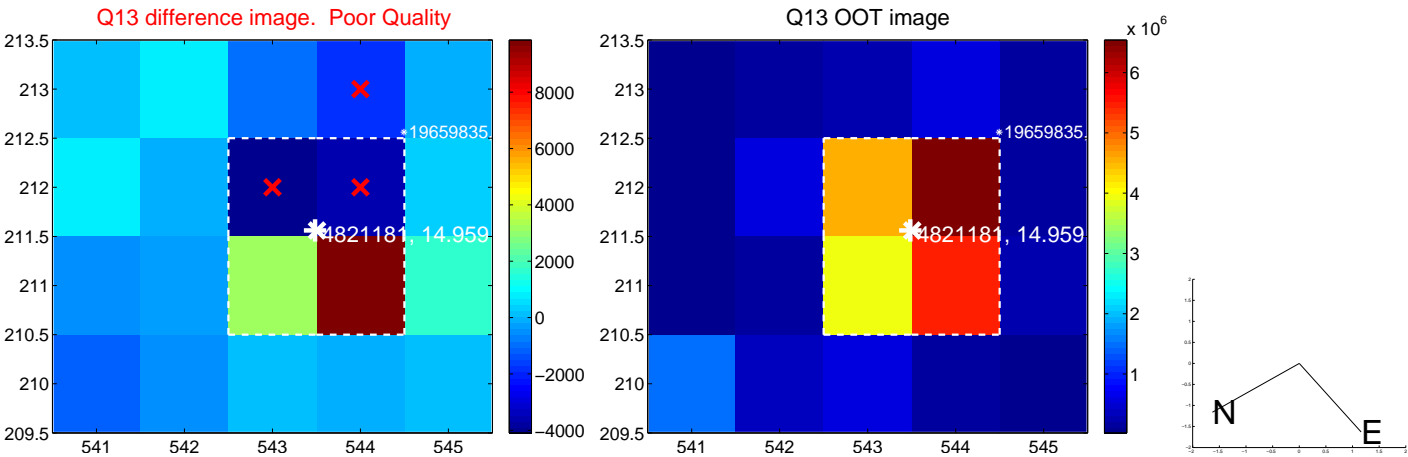
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



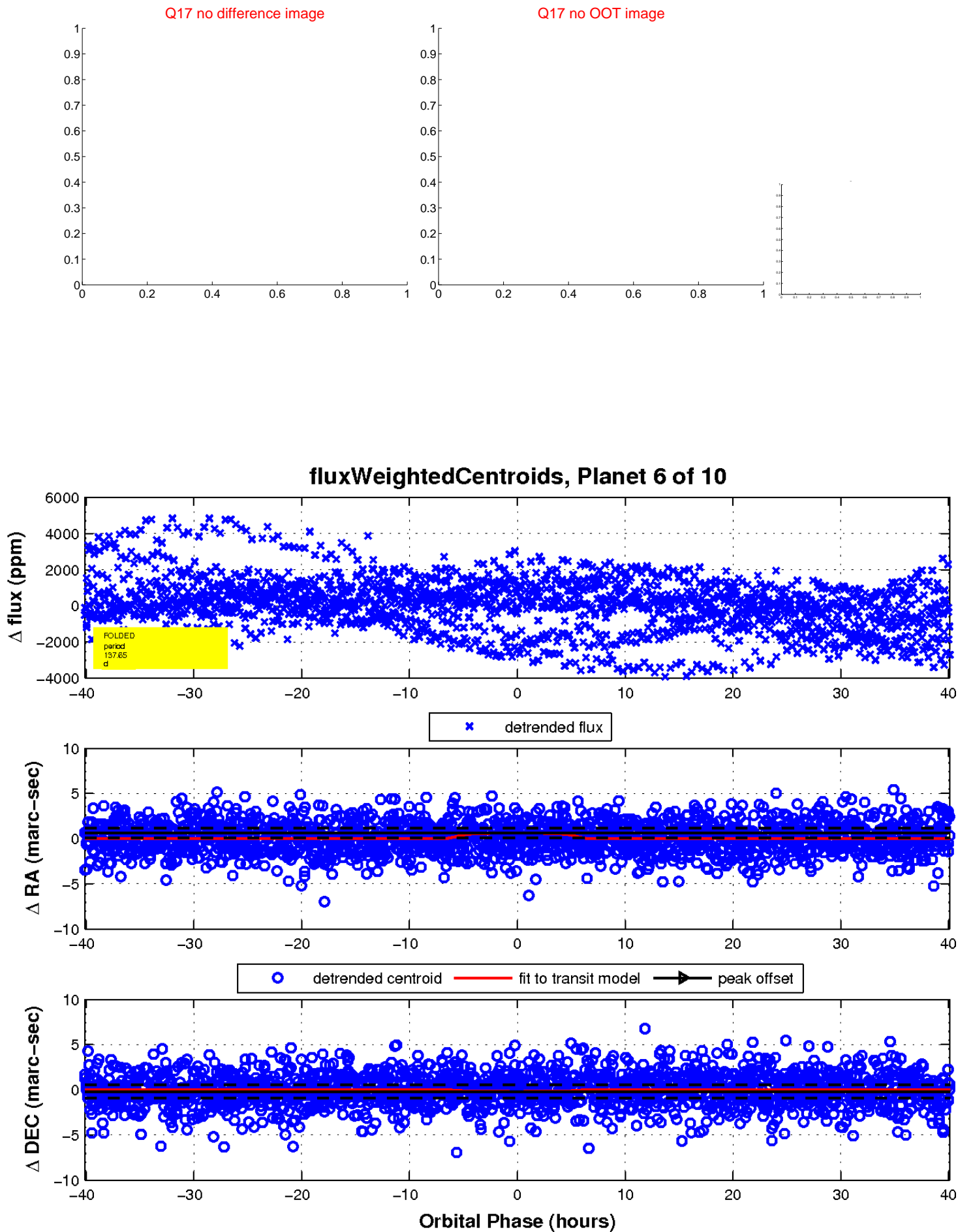
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

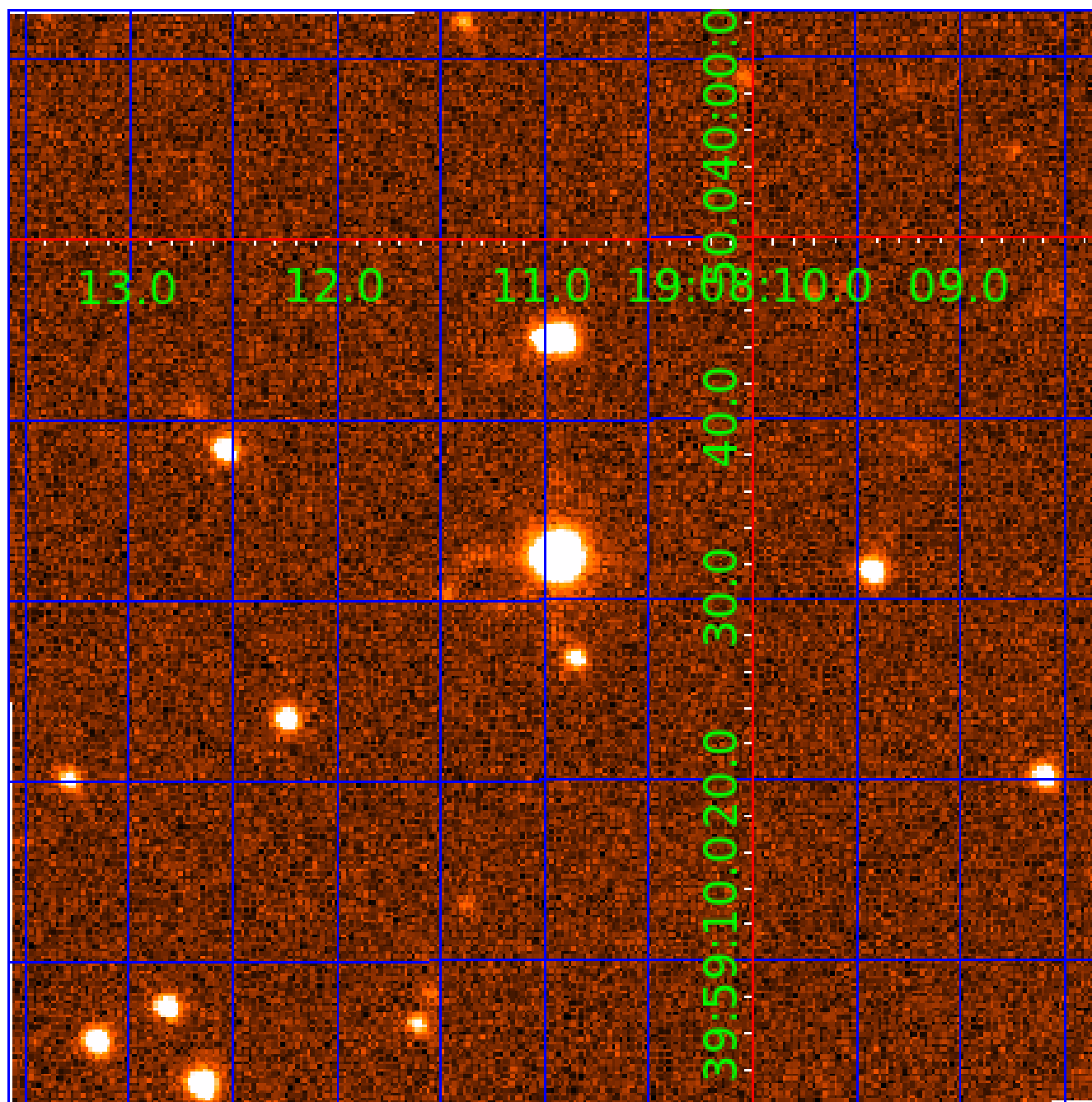


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

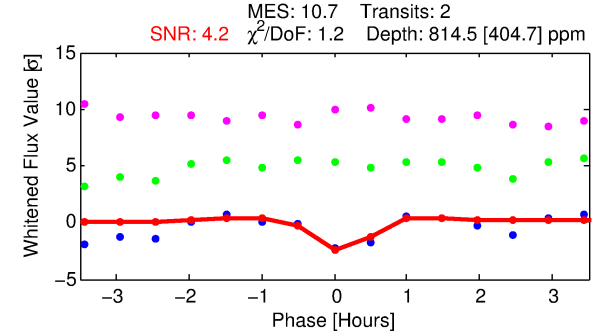
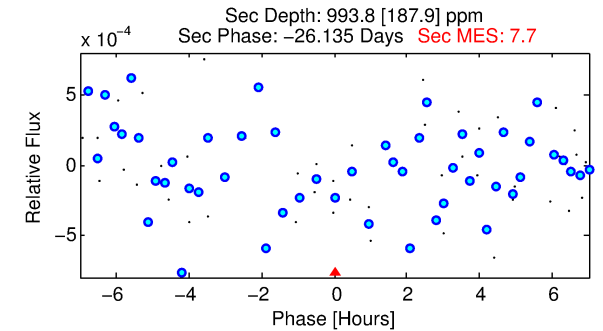
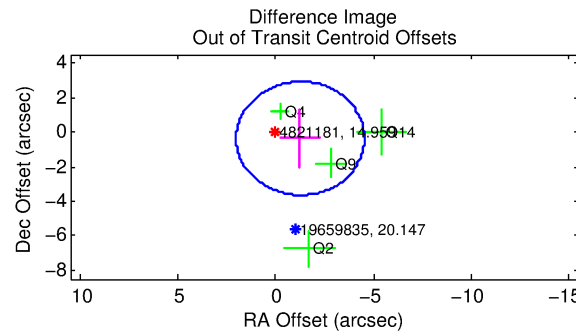
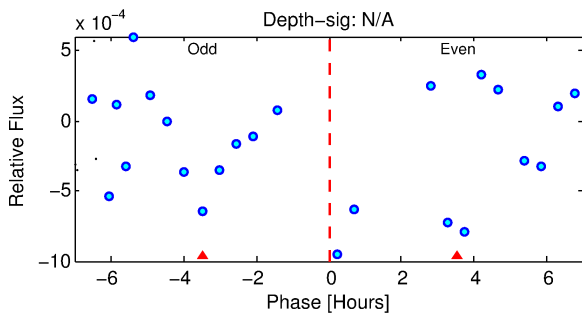
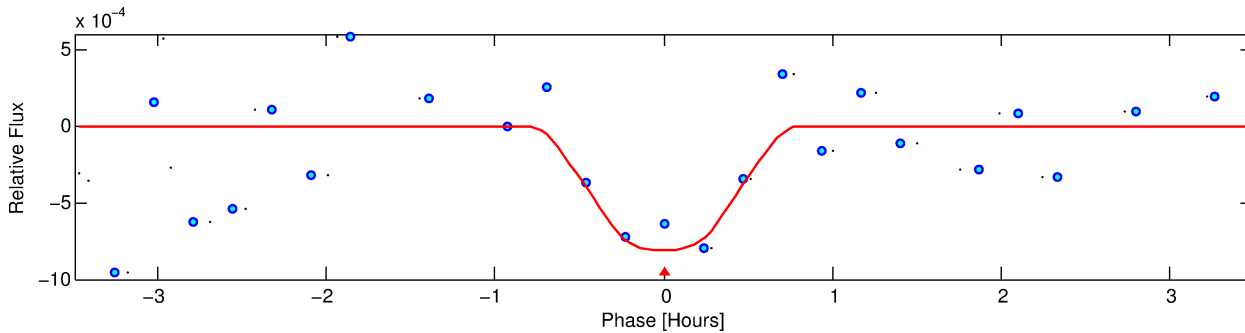
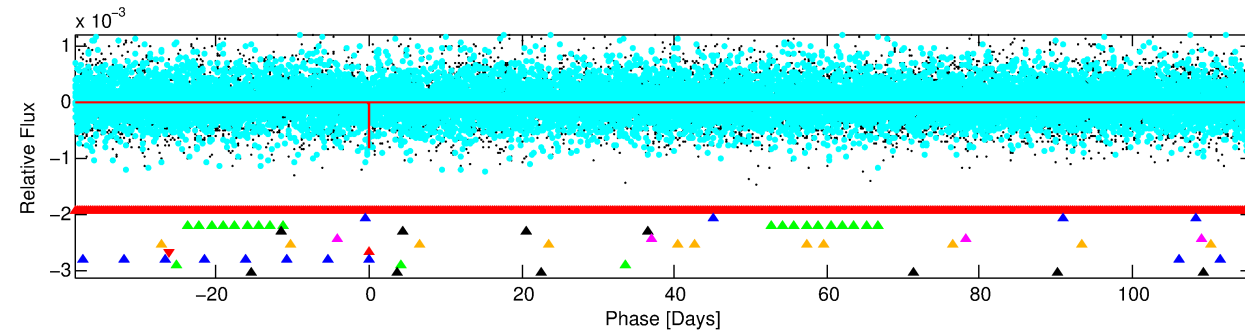
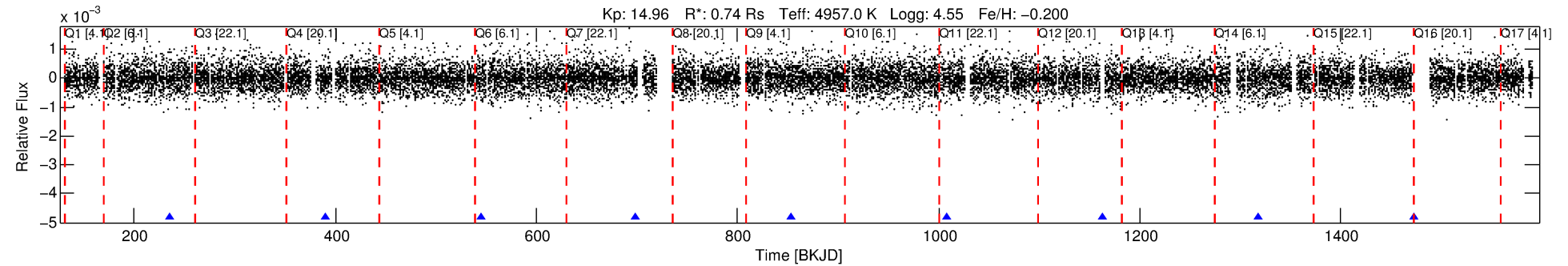
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-07

No Significant Match Found

DV One-Page Summary

KIC: 4821181 Candidate: 7 of 10 Period: 154.598 d



DV Fit Results:

Period = 154.59834 [0.00345] d
Epoch = 235.2000 [0.0114] BKJD
Rp/R* = 0.0322 [0.0569]
a/R* = 511.15 [3189.72]
b = 0.90 [1.37]
Seff = 1.16 [0.21]
Teq = 265 [12] K
Rp = 2.59 [4.59] Re
a = 0.5034 [0.0454] AU
Ag = 20585.29 [72900.72] [0.28 σ]
Teffp = 4904 [4341] K [1.07 σ]

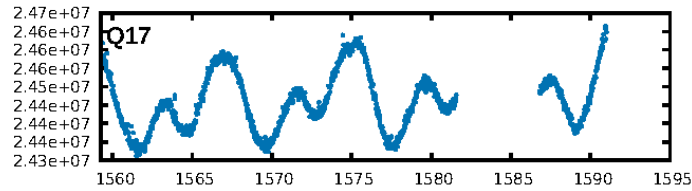
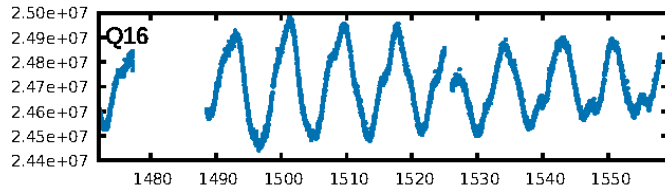
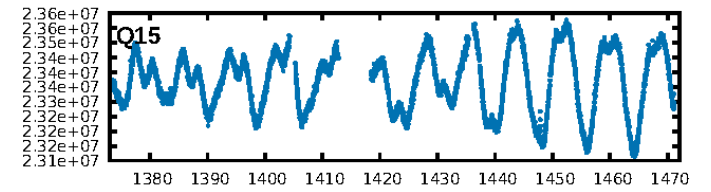
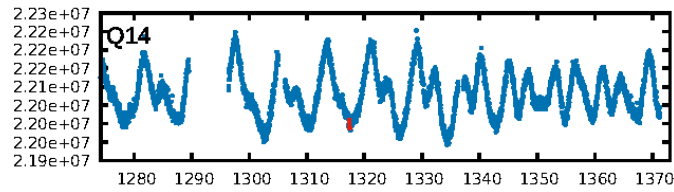
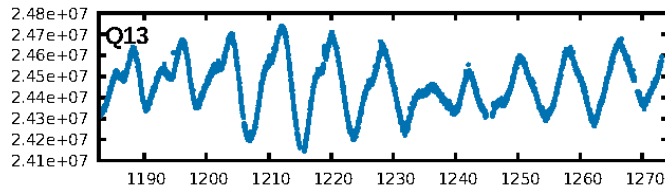
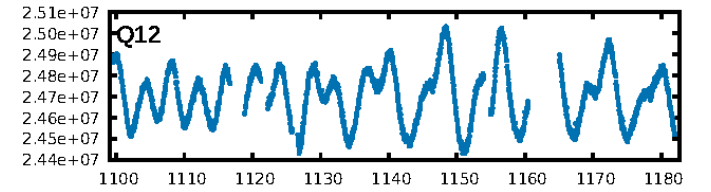
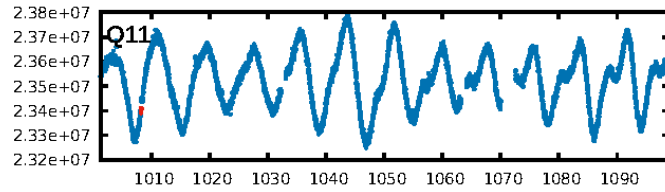
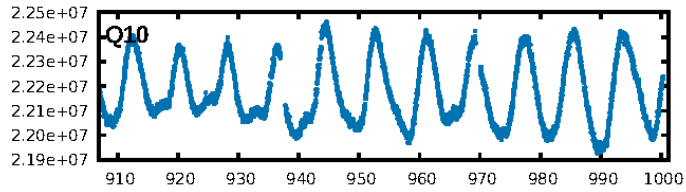
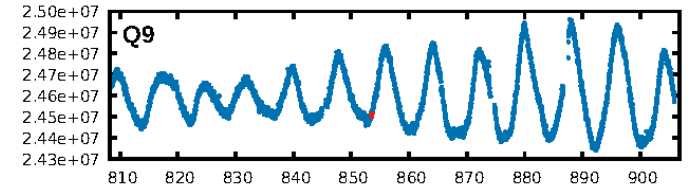
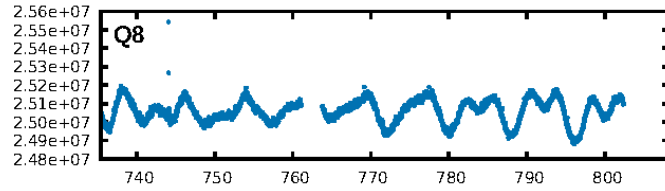
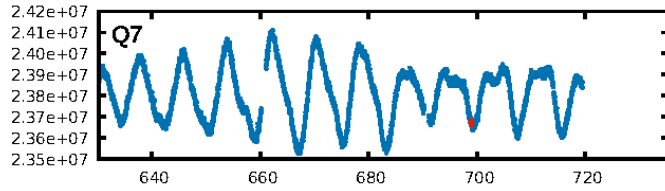
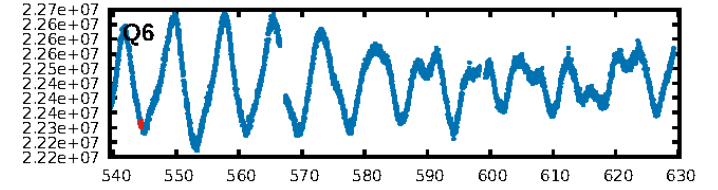
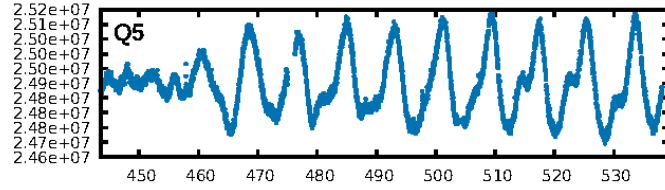
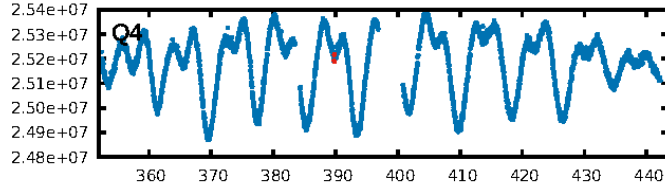
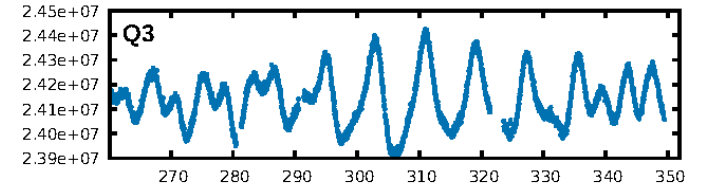
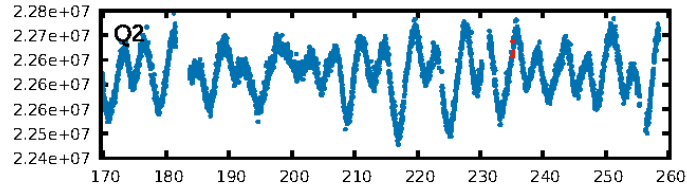
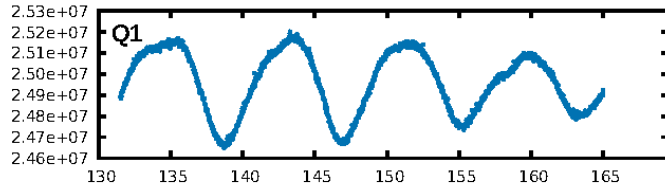
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.18 σ]
LongPeriod-sig: 100.0% [179.29 σ]
ModelChiSquare2-sig: 48.7%
ModelChiSquareGoF-sig: 92.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -0.1959
Centroid-sig: 99.5%
Centroid-so: 0.052 arcsec [0.02 σ]
OotOffset-rm: 1.308 arcsec [1.20 σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-rm: 1.414 arcsec [1.34 σ]
KicOffset-st: 2/0/1/1 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.40 [2/5]

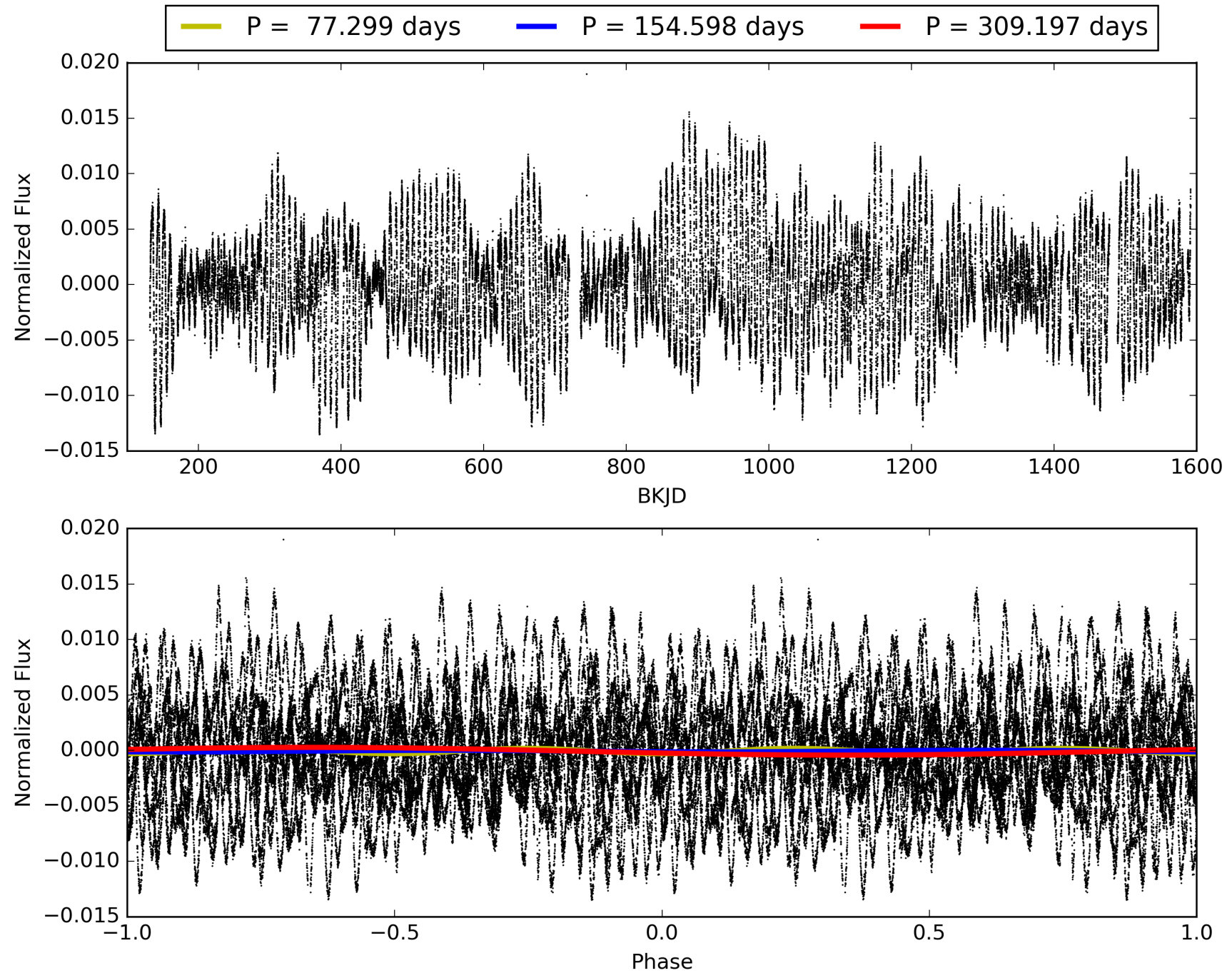
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 06:40:38 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-07, PDC Light Curves

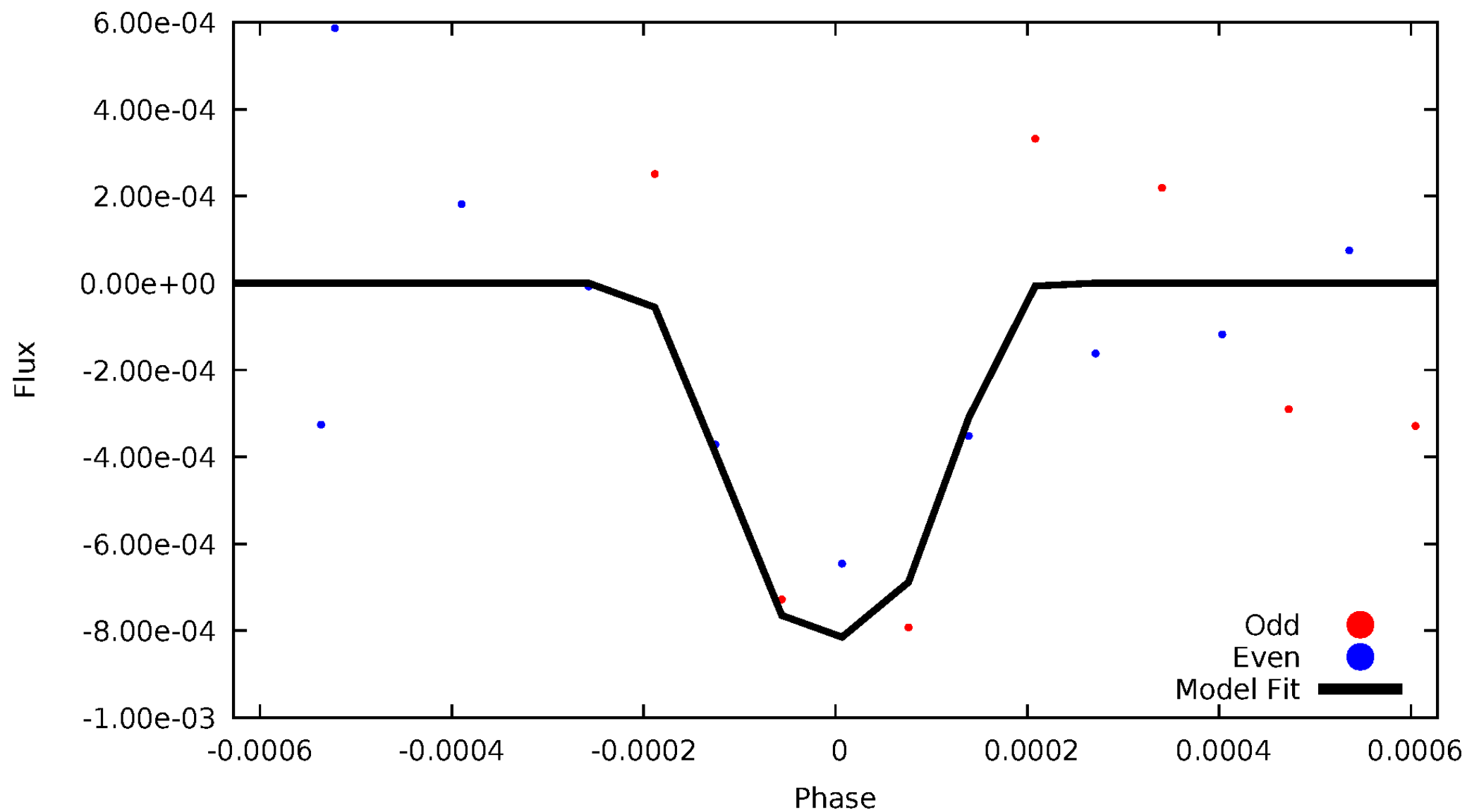


TCE 004821181-07



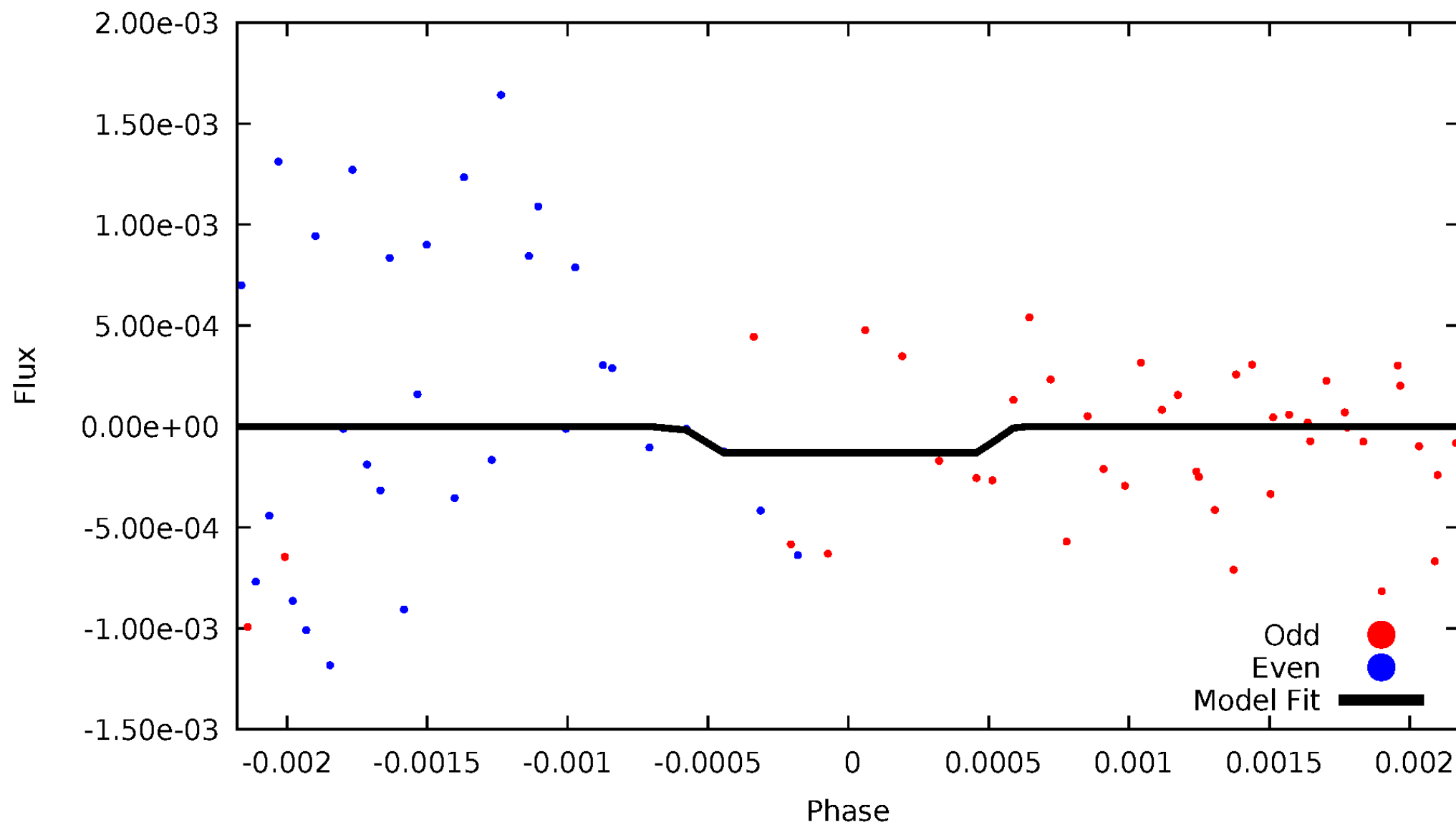
DV Odd/Even

TCE 004821181-07



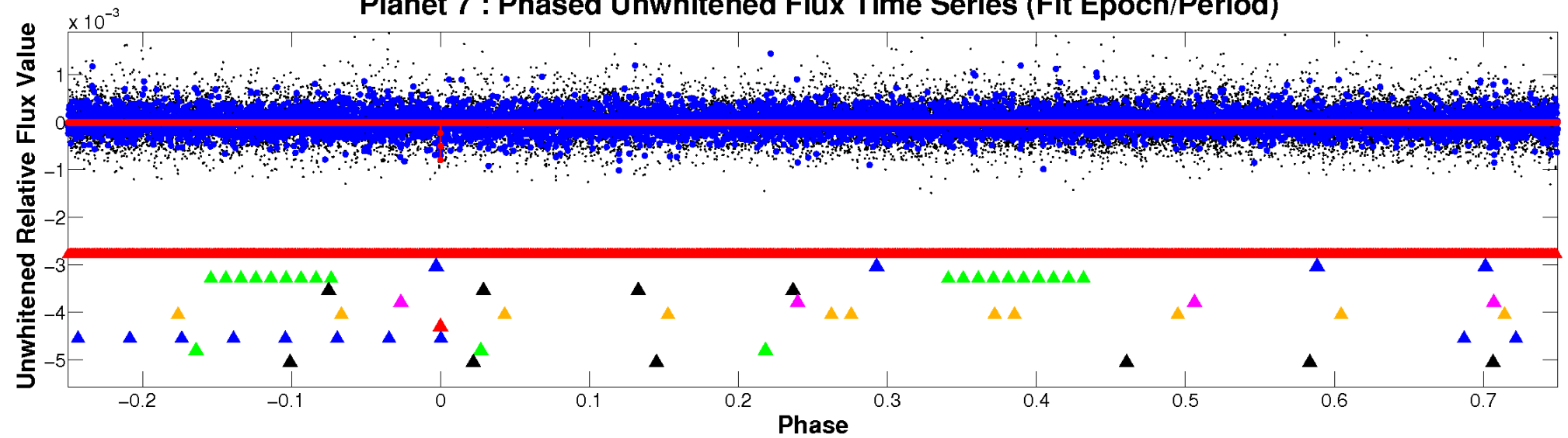
ALT Odd/Even

TCE 004821181-07

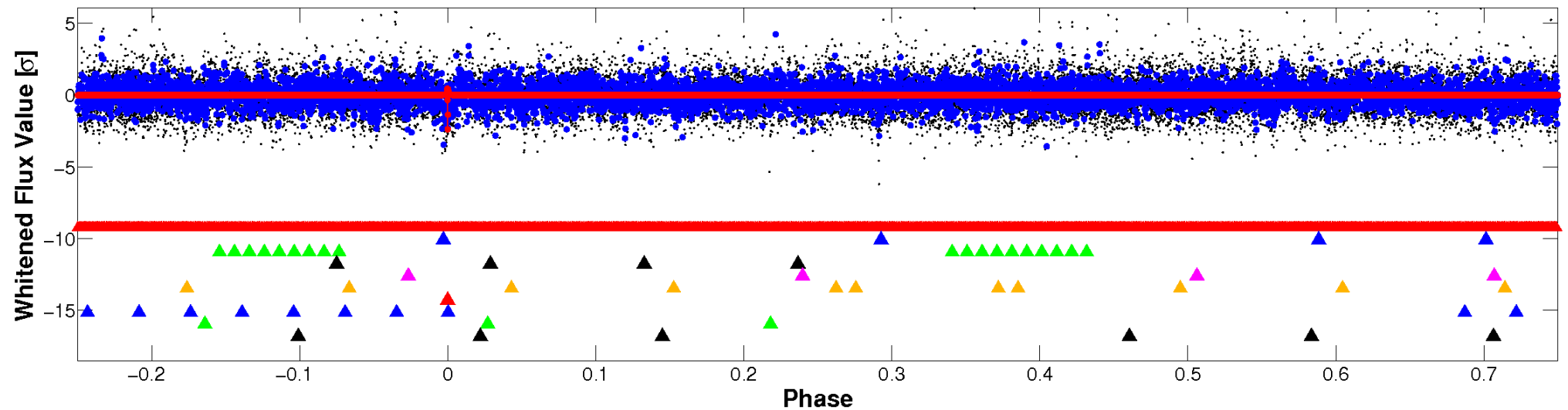


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

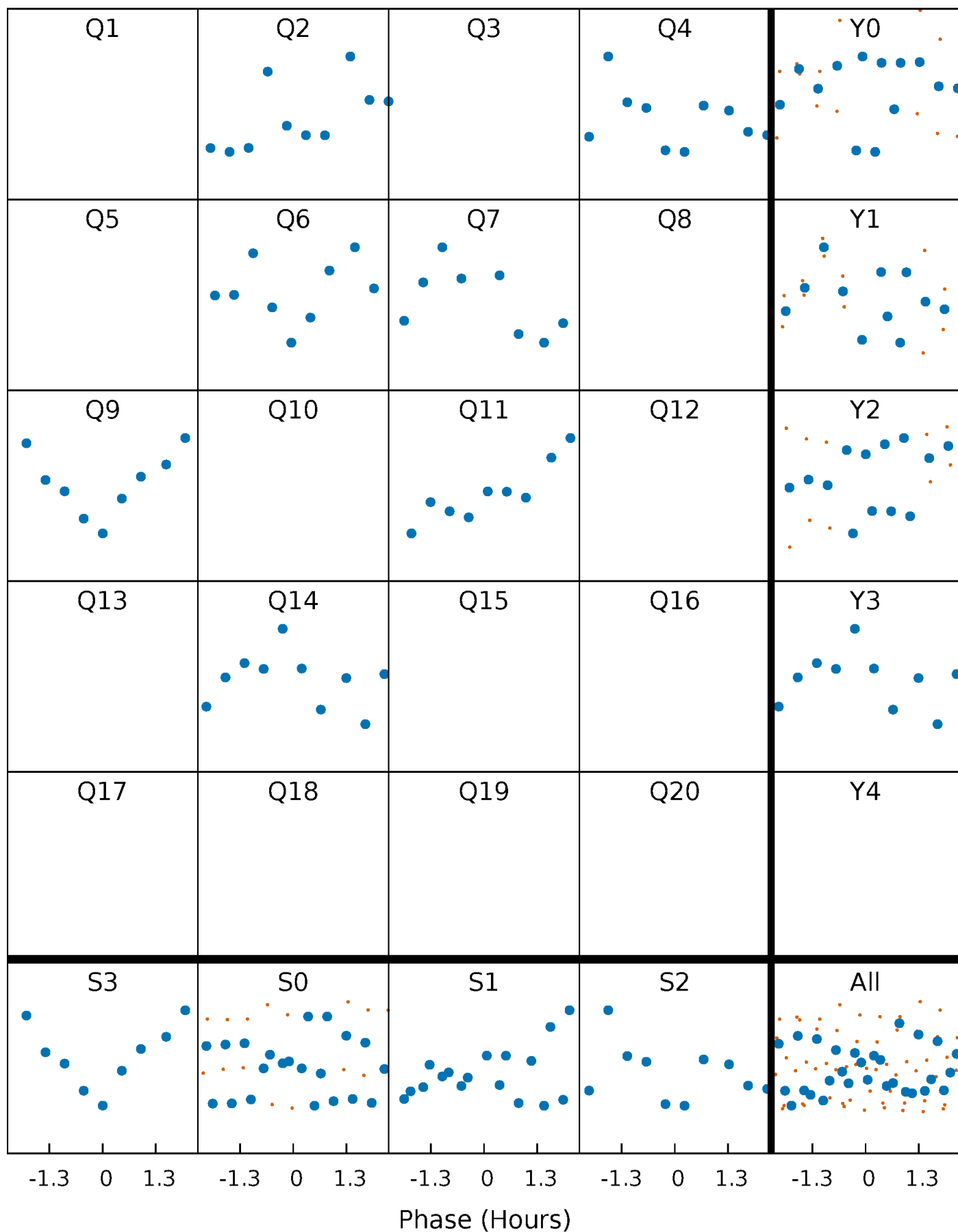


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



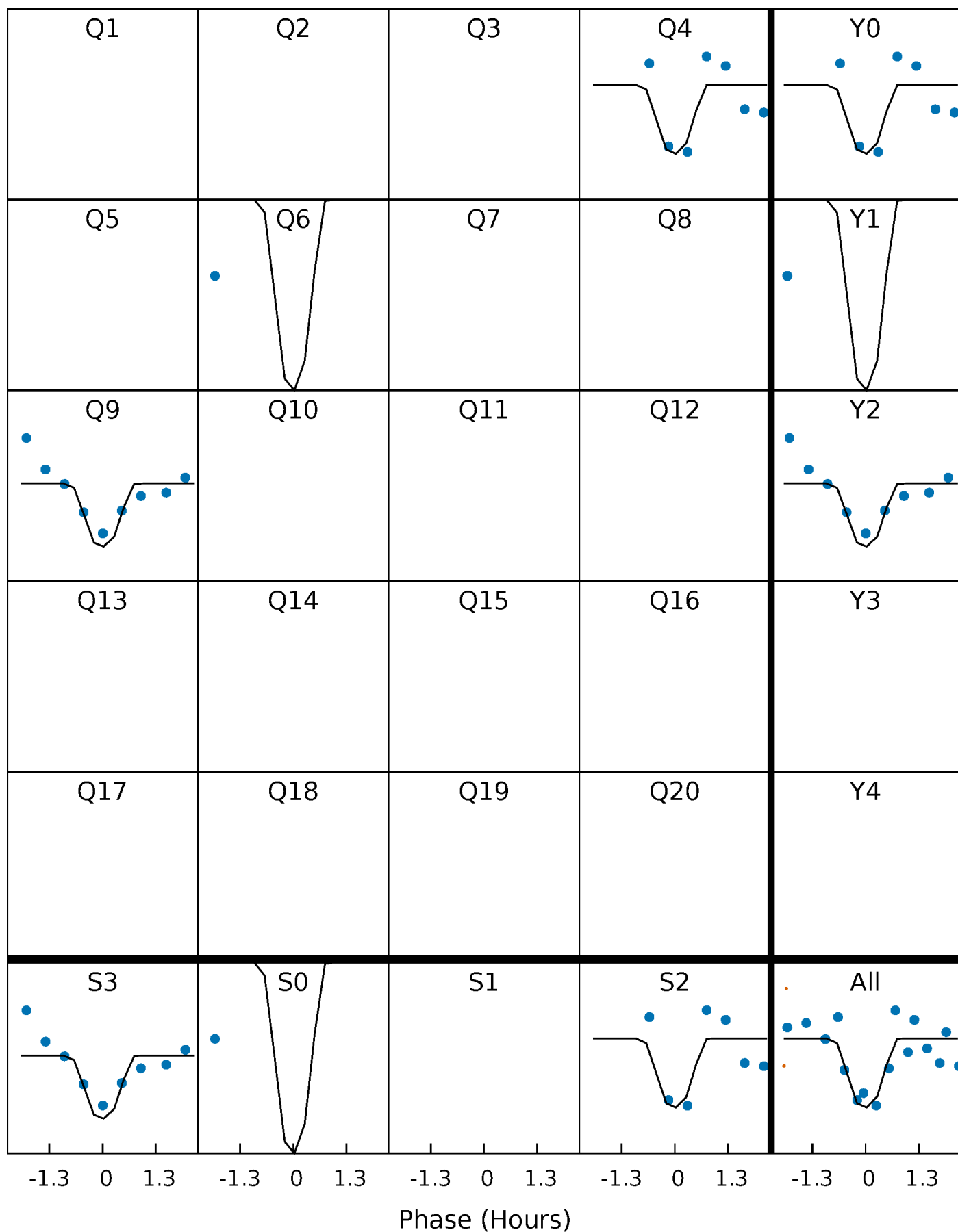
PDC Quarter-Phased Transit Curves

TCE 004821181-07 P=154.598339 Days $T_0=235.200018$ (BKJD)



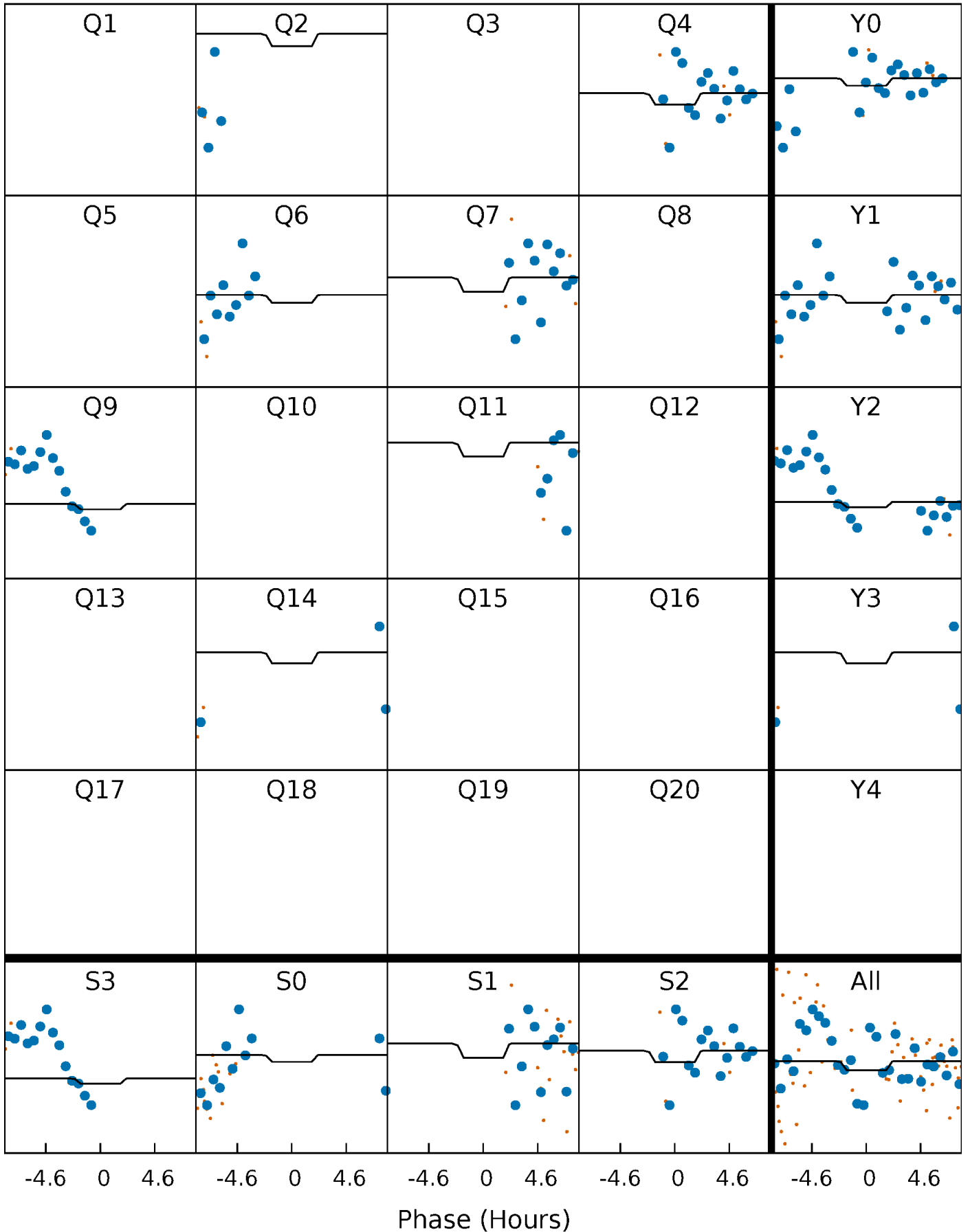
DV Quarter-Phased Transit Curves

TCE 004821181-07 P=154.598339 Days $T_0=235.200018$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

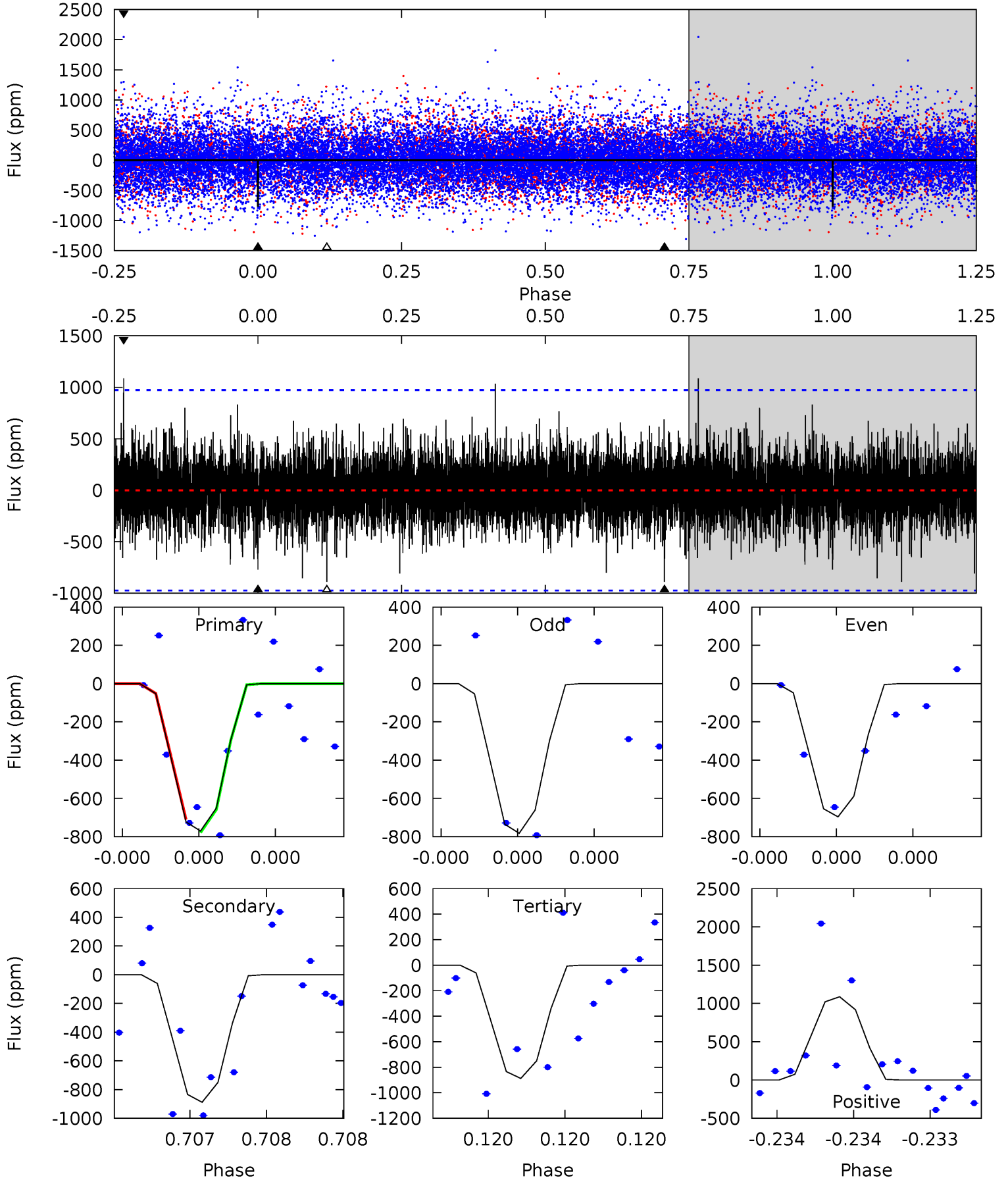
TCE 004821181-07 P=154.627560 Days $T_0=235.193784$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-07, P = 154.598339 Days, E = 80.601679 Days

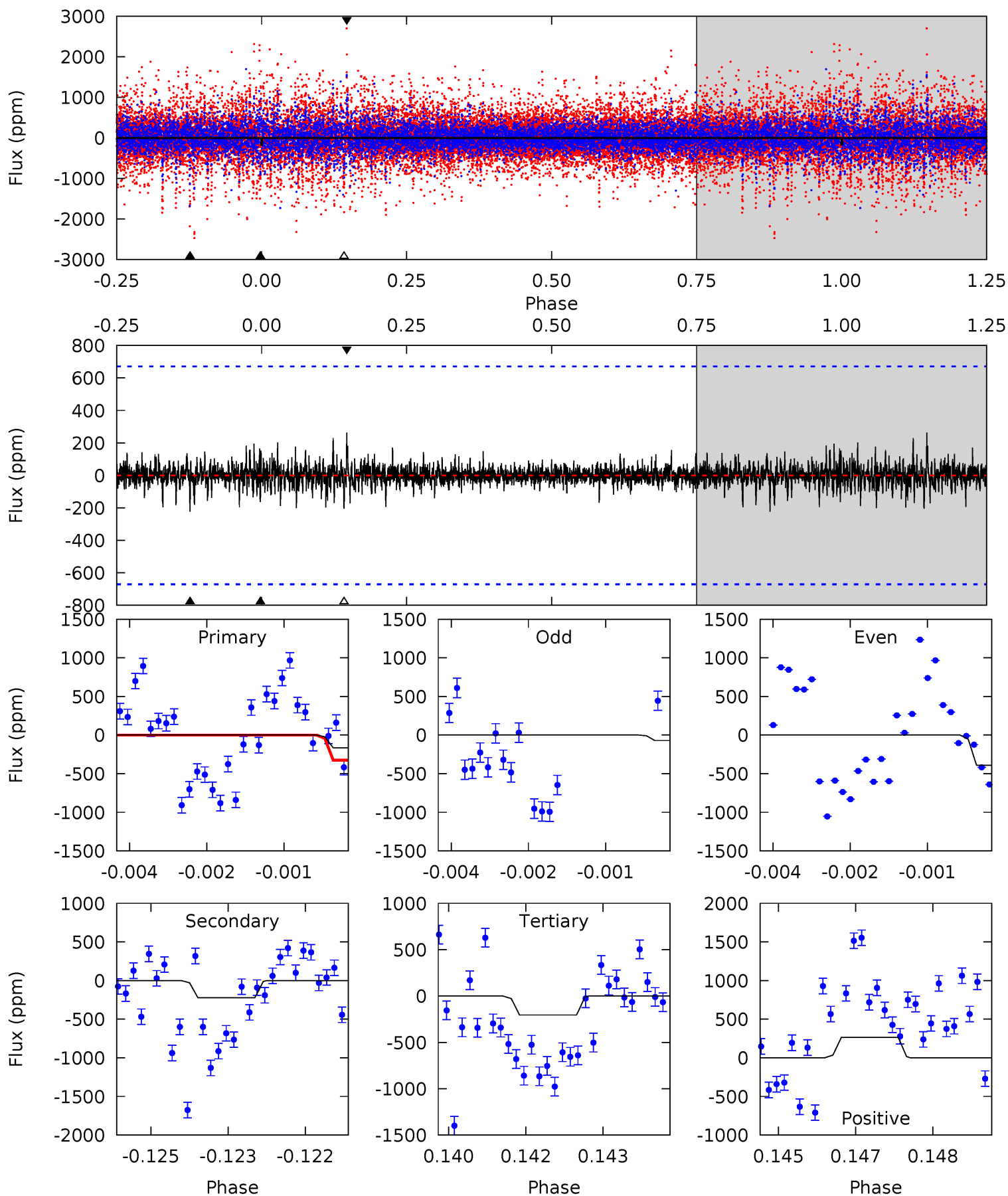
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.46	5.15	5.15	6.31	5.64	3.59	1.18	-0.68	-1.84	0.00	-1.16	0.25	1.00	0.55	0.17



Alt Model-Shift Uniqueness Test

004821181-07, $P = 154.627560$ Days, $E = 80.566224$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.33	1.80	1.66	2.13	5.42	3.23	0.35	-0.33	-0.80	0.14	-0.33	1.06	1.00	0.54	1.09



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-888 ± 172	$4.27^{+4.02}_{-2.86}$	368^{+13}_{-14}	3928^{+2290}_{-740}	6594^{+51127}_{-4768}
Alt.	-223 ± 124	$3.59^{+3.67}_{-2.47}$	368^{+13}_{-15}	3282^{+1690}_{-681}	2080^{+20147}_{-1667}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

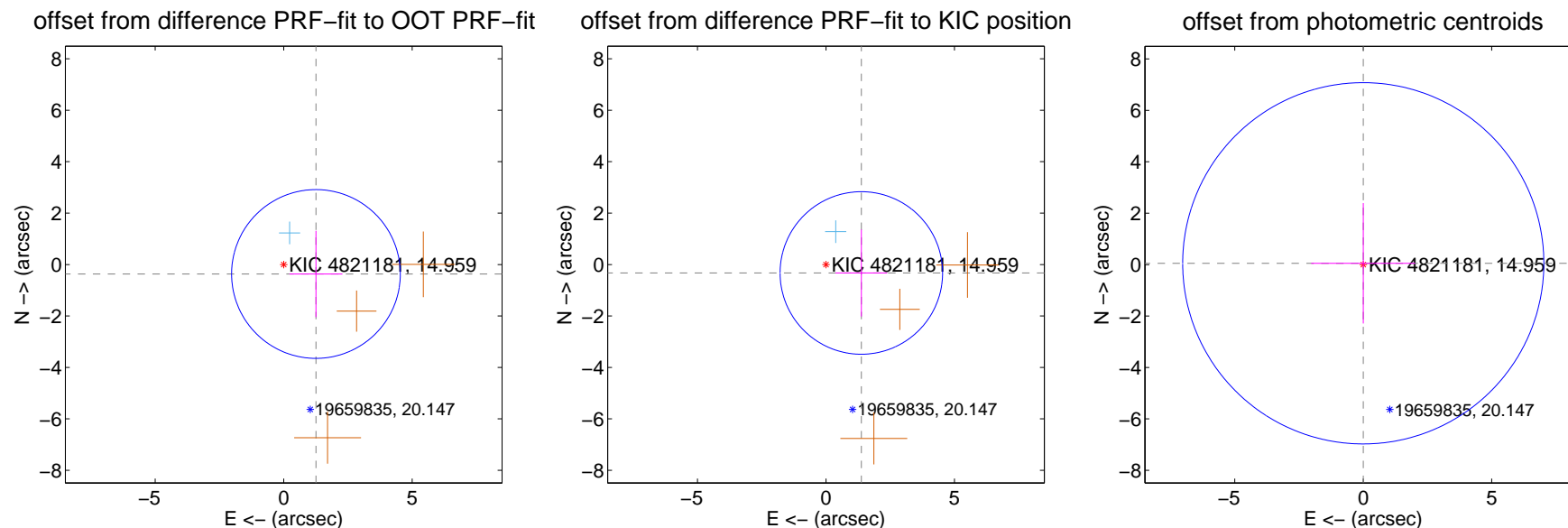
DV Centroid Data

Supplemental centroid analysis for 004821181-07. Kepler magnitude: 14.96. Transit SNR 4.16

There are 1 quarters with good PRF difference image offsets

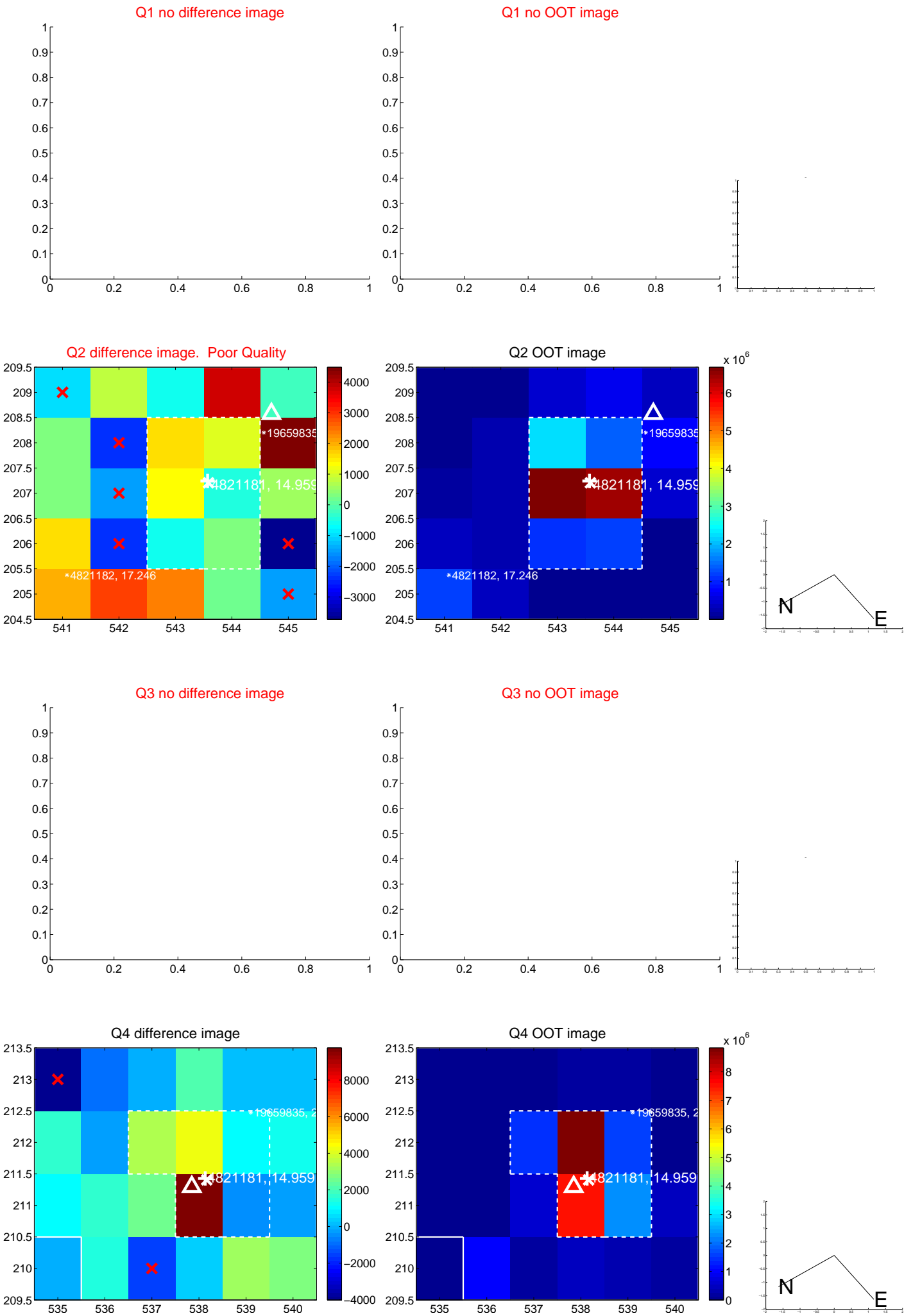
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.308 ± 1.094	1.20	-1.255 ± 1.028	-0.367 ± 1.678
PRF-fit source offset from KIC position	1.414 ± 1.053	1.34	-1.375 ± 1.005	-0.328 ± 1.692
photometric centroid source offset	0.05 ± 2.34	0.02	-0.00 ± 2.02	0.05 ± 2.34

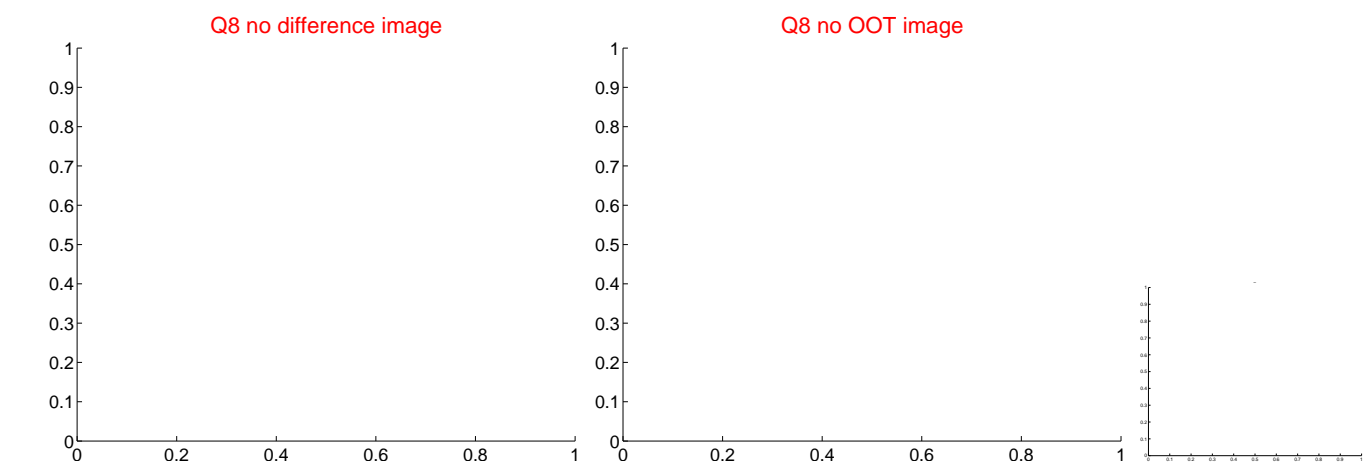
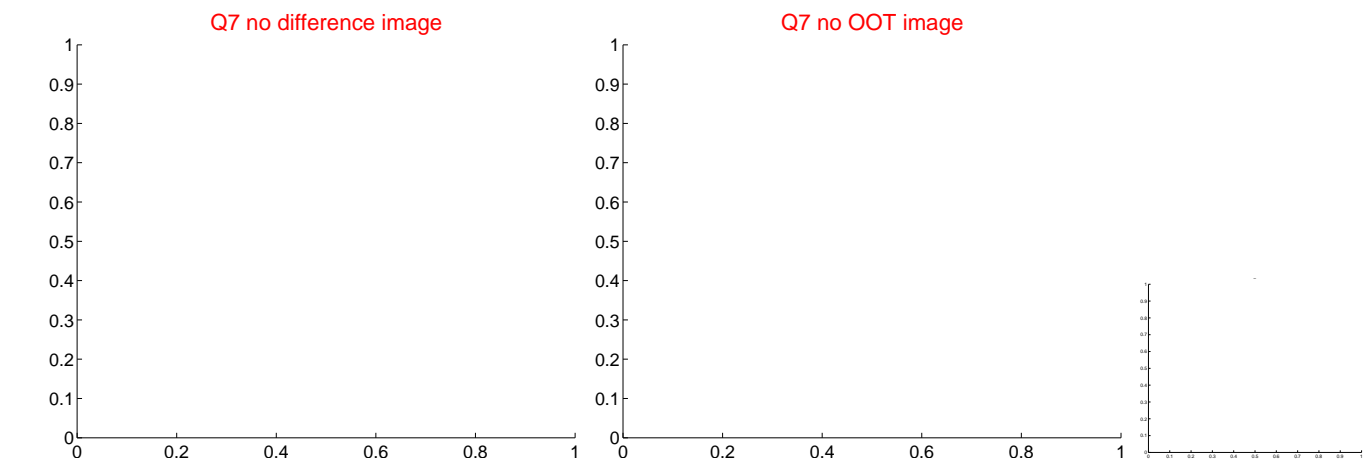
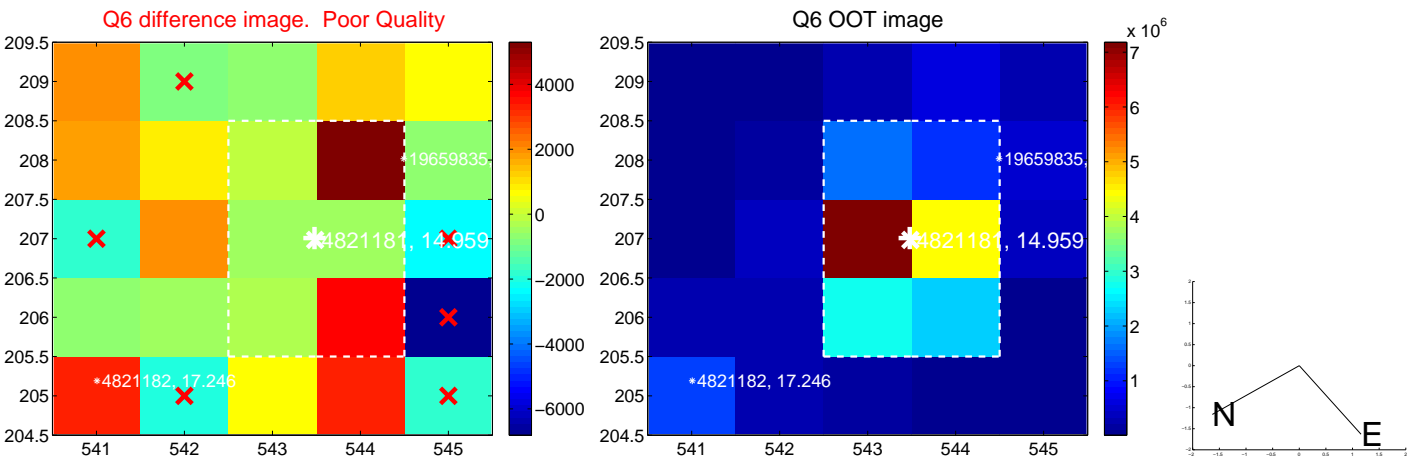
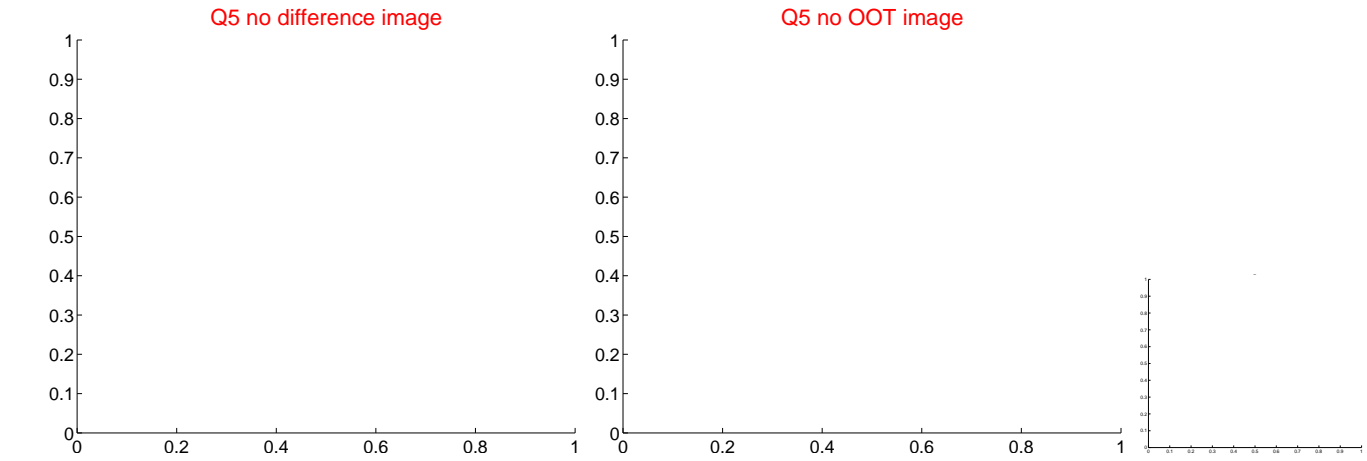


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

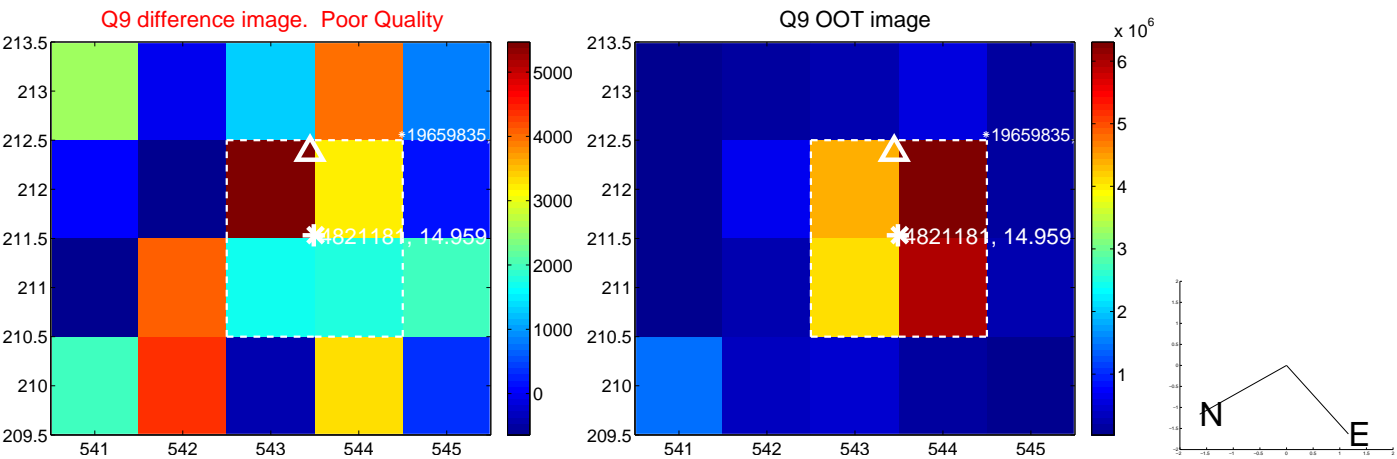
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



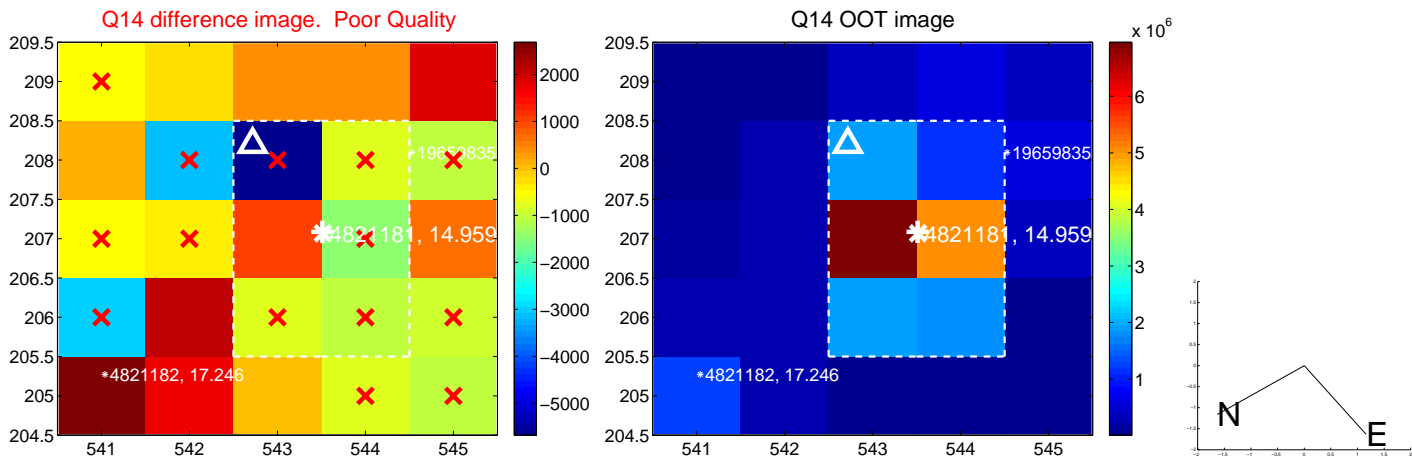
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



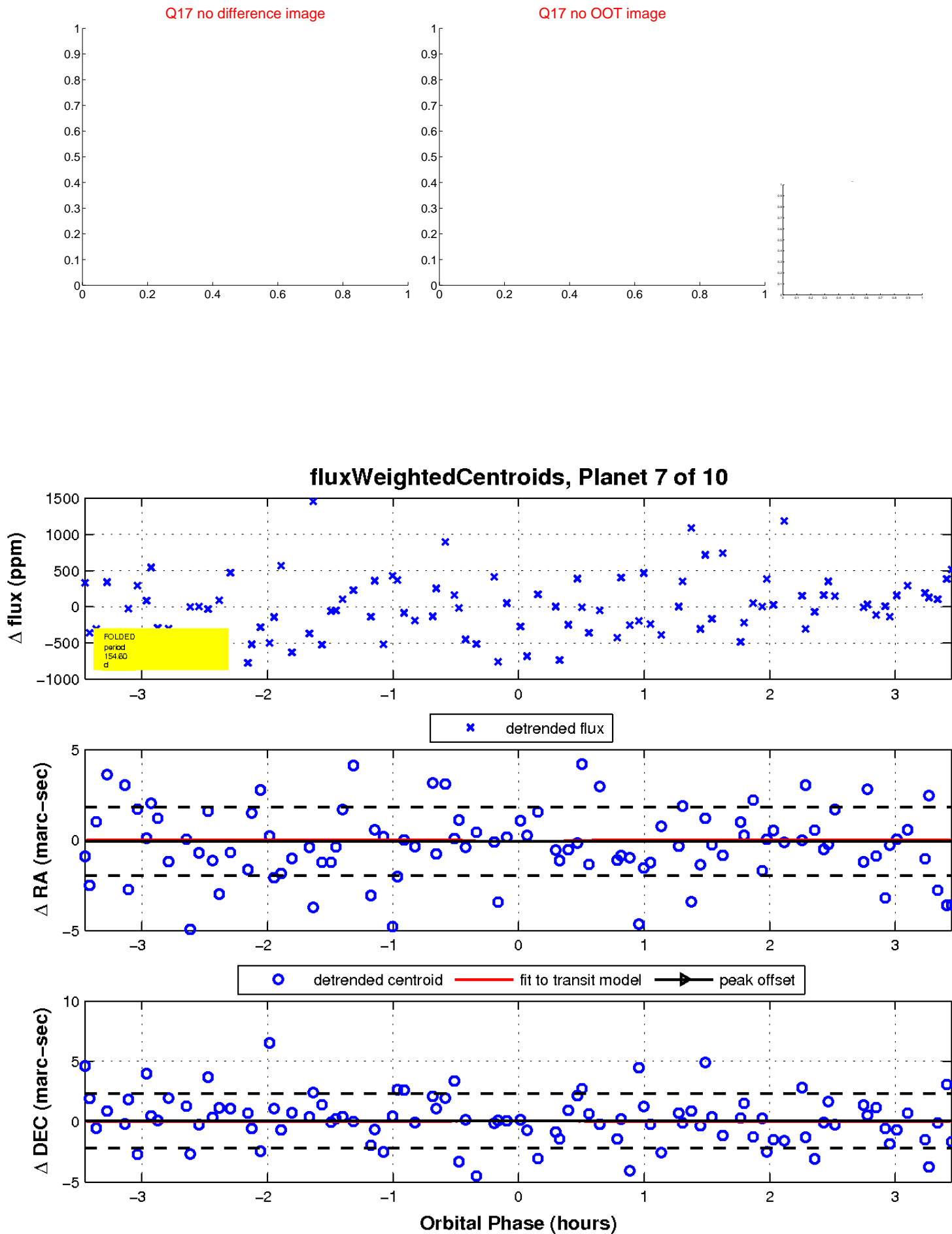
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value

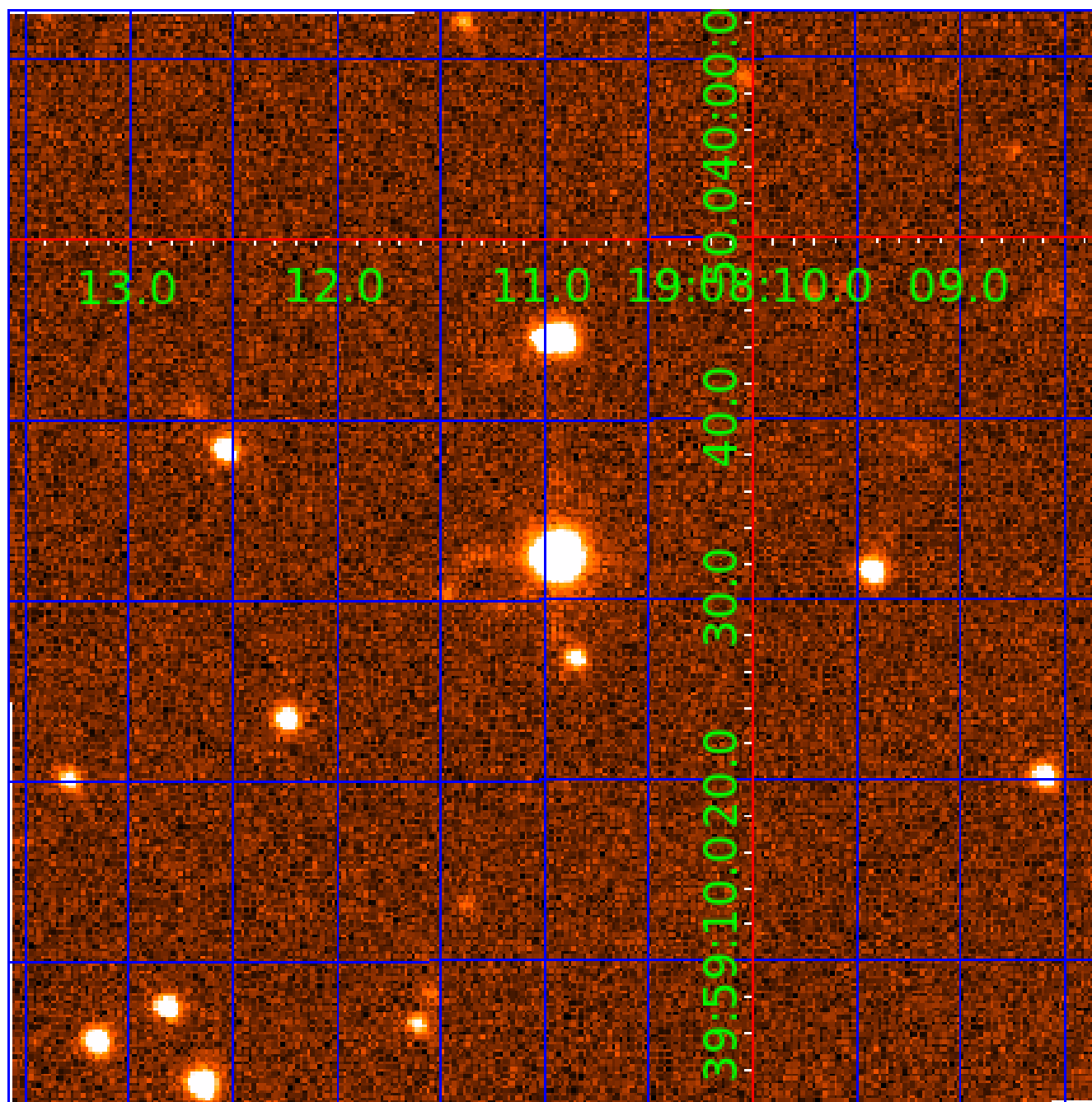


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

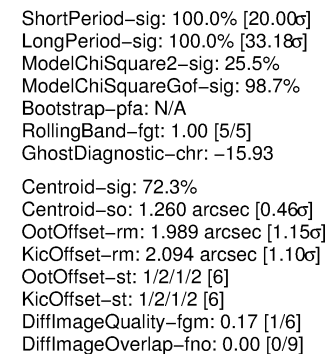
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-08

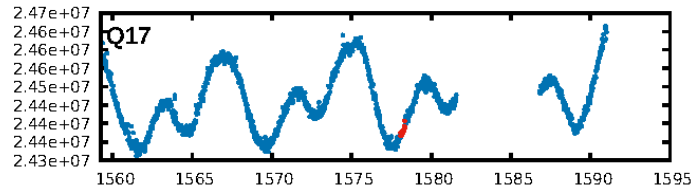
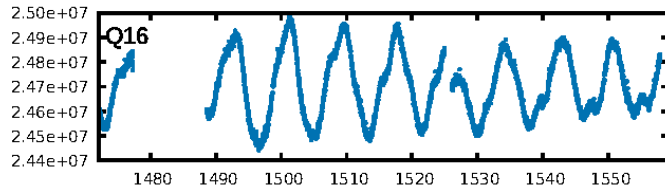
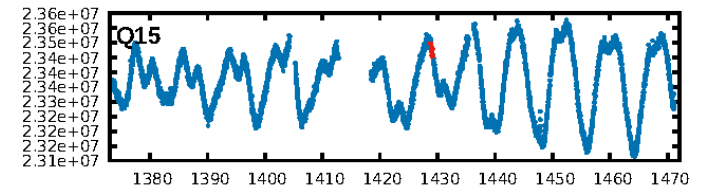
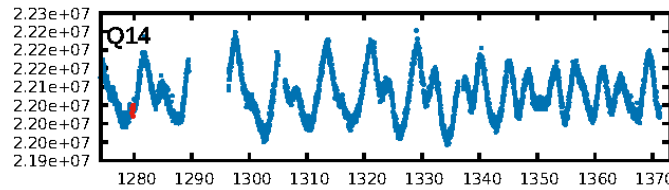
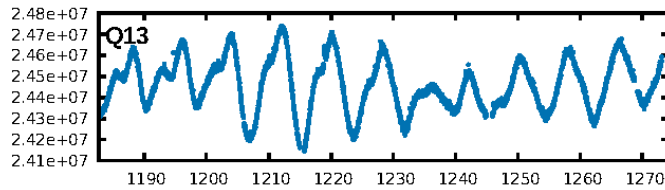
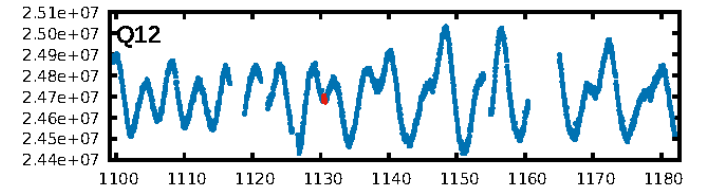
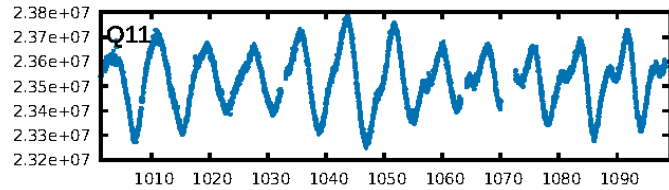
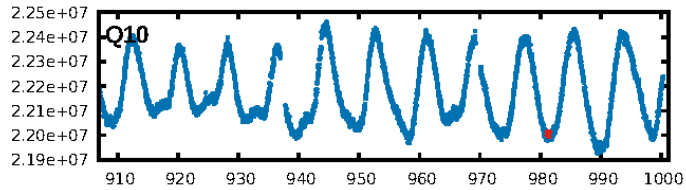
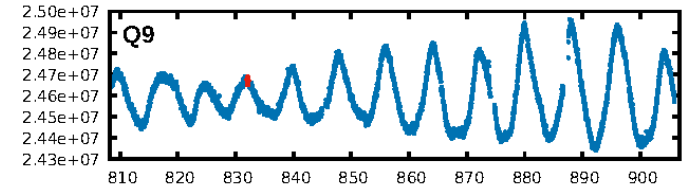
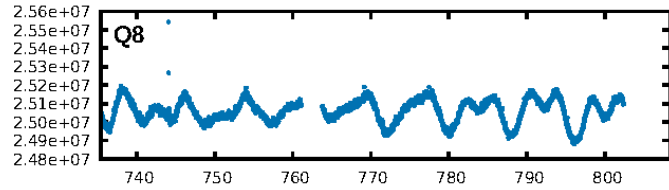
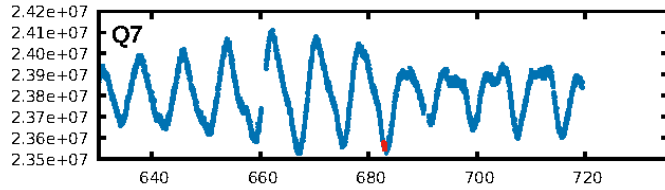
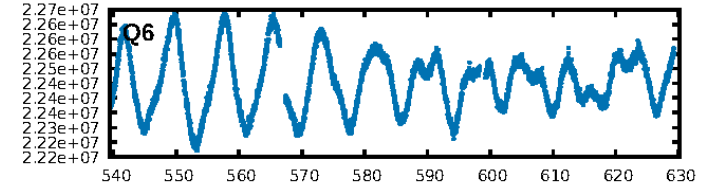
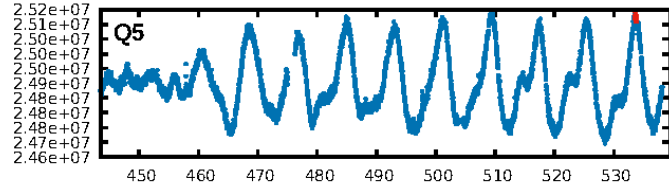
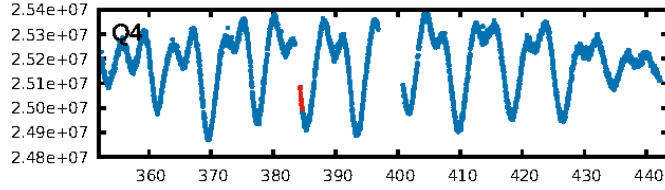
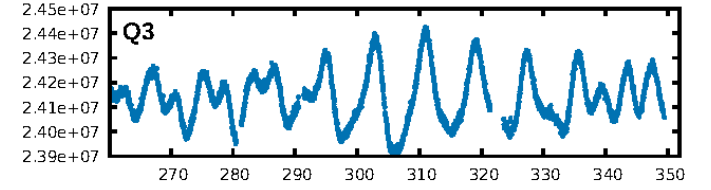
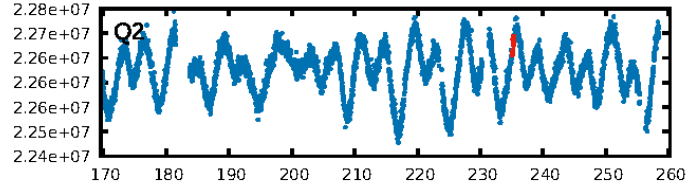
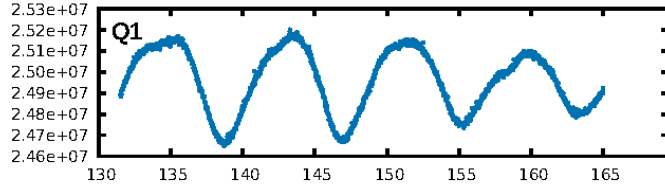
No Significant Match Found

KIC: 4821181 Candidate: 8 of 10 Period: 149.218 d

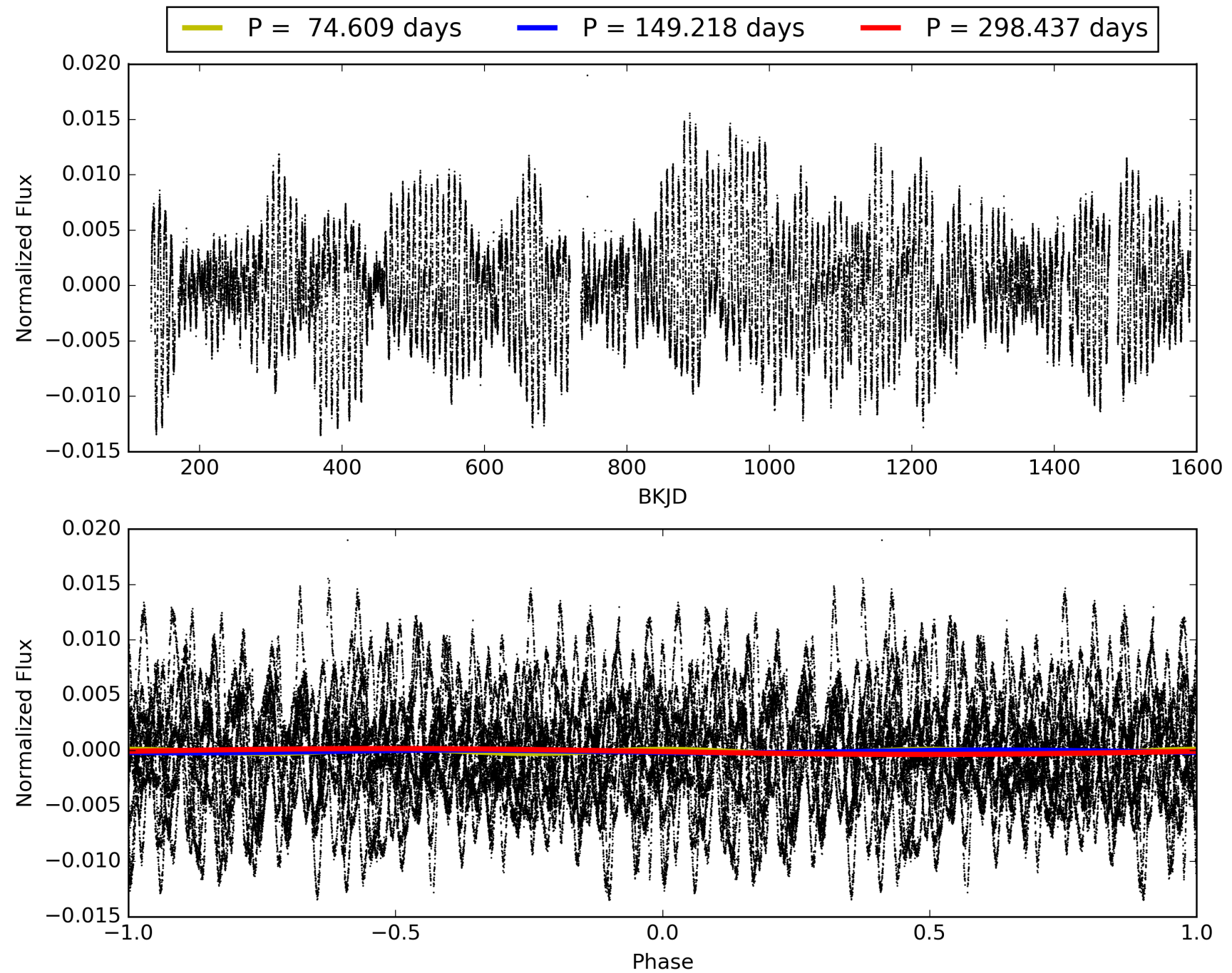


This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-08, PDC Light Curves

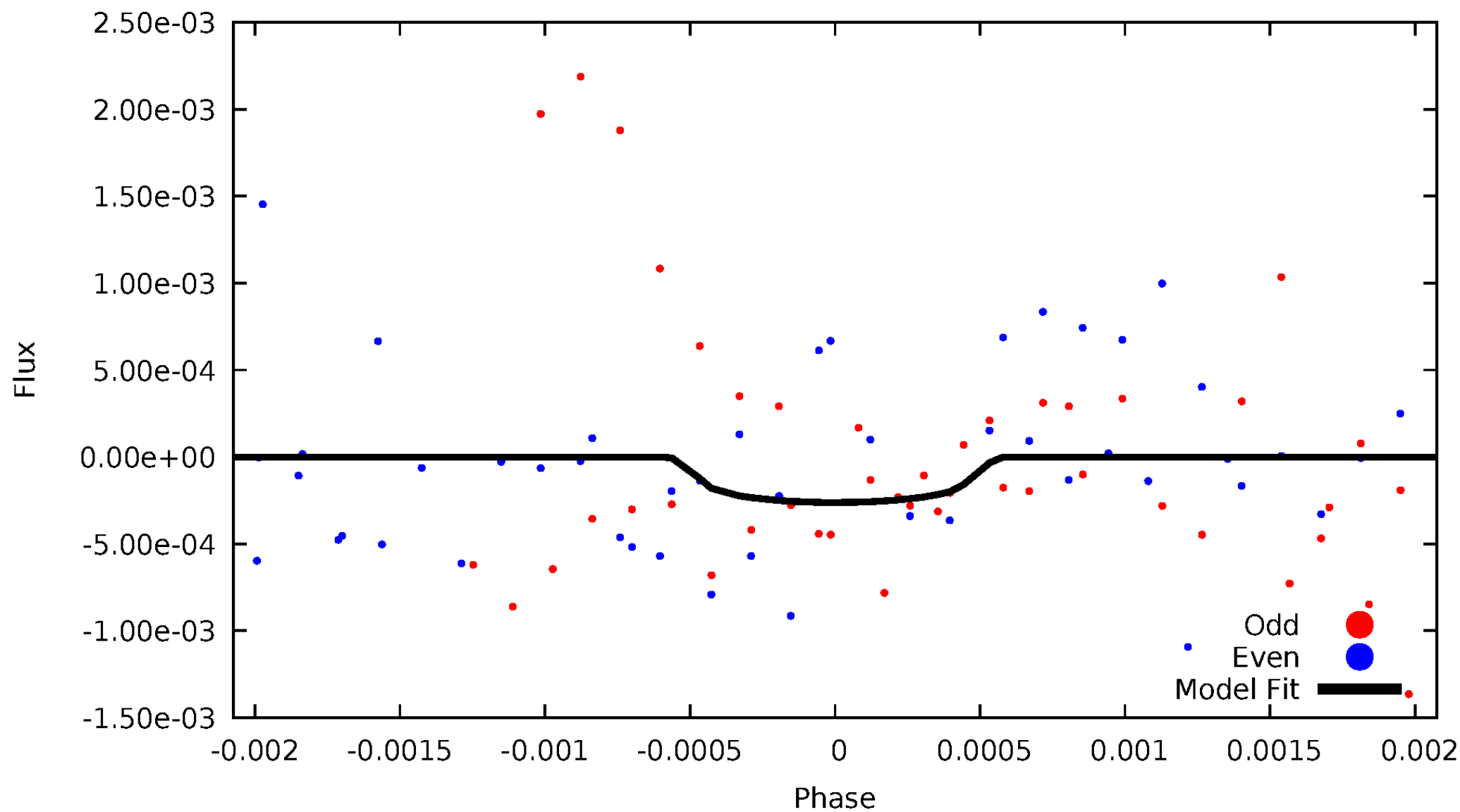


TCE 004821181-08



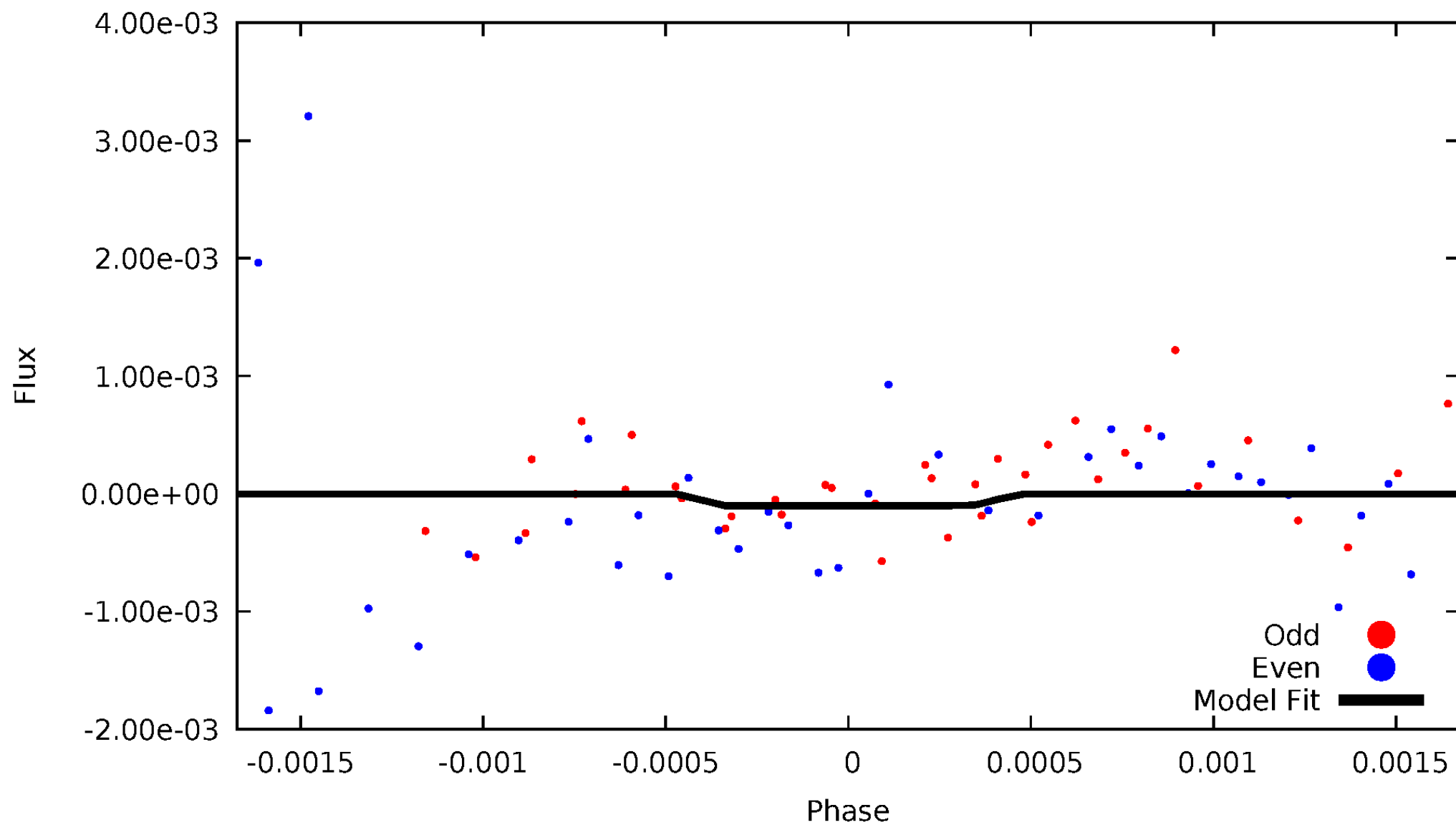
DV Odd/Even

TCE 004821181-08



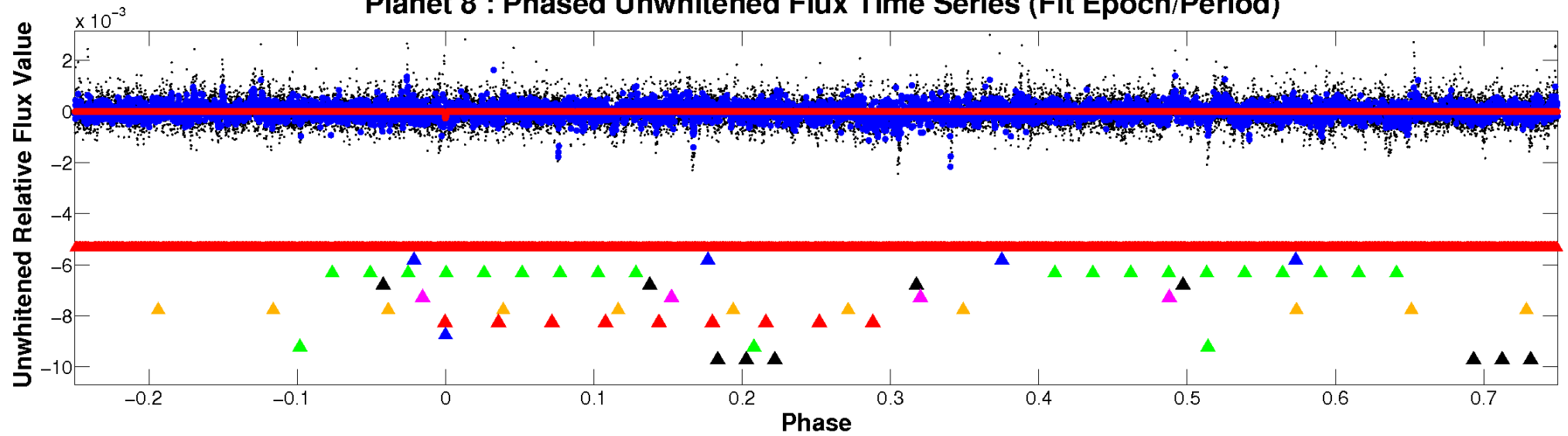
ALT Odd/Even

TCE 004821181-08

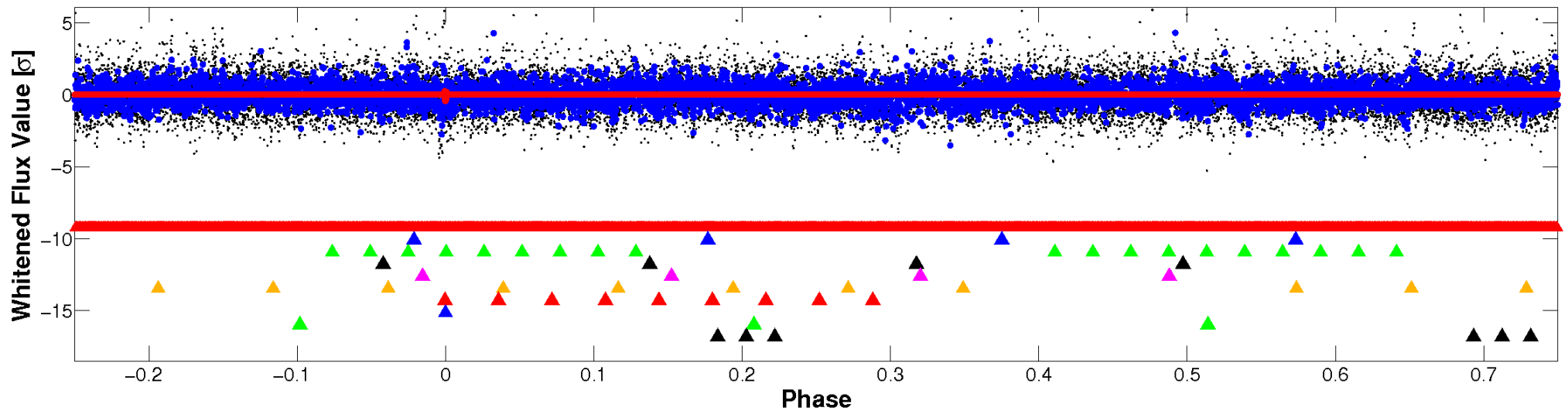


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

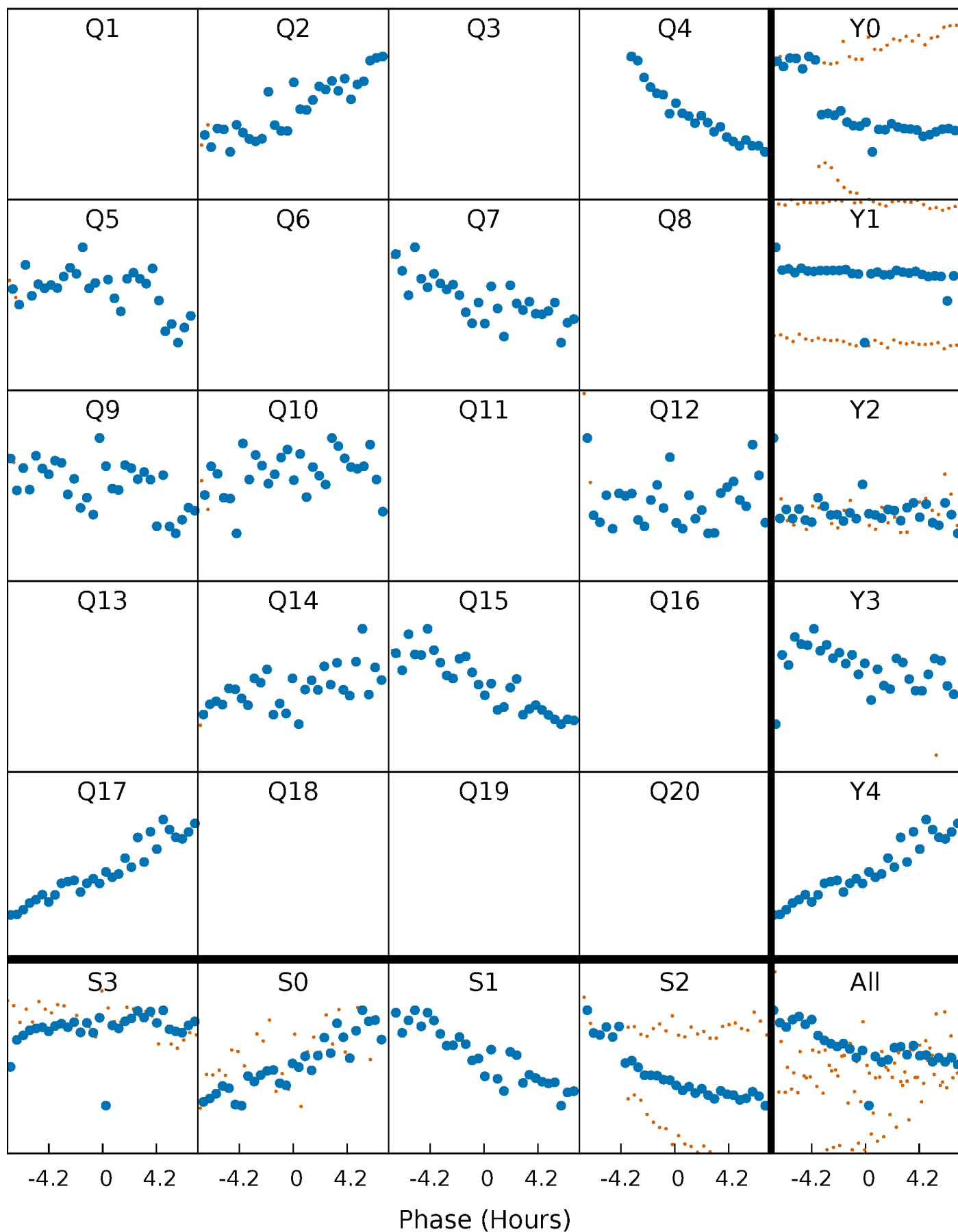


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



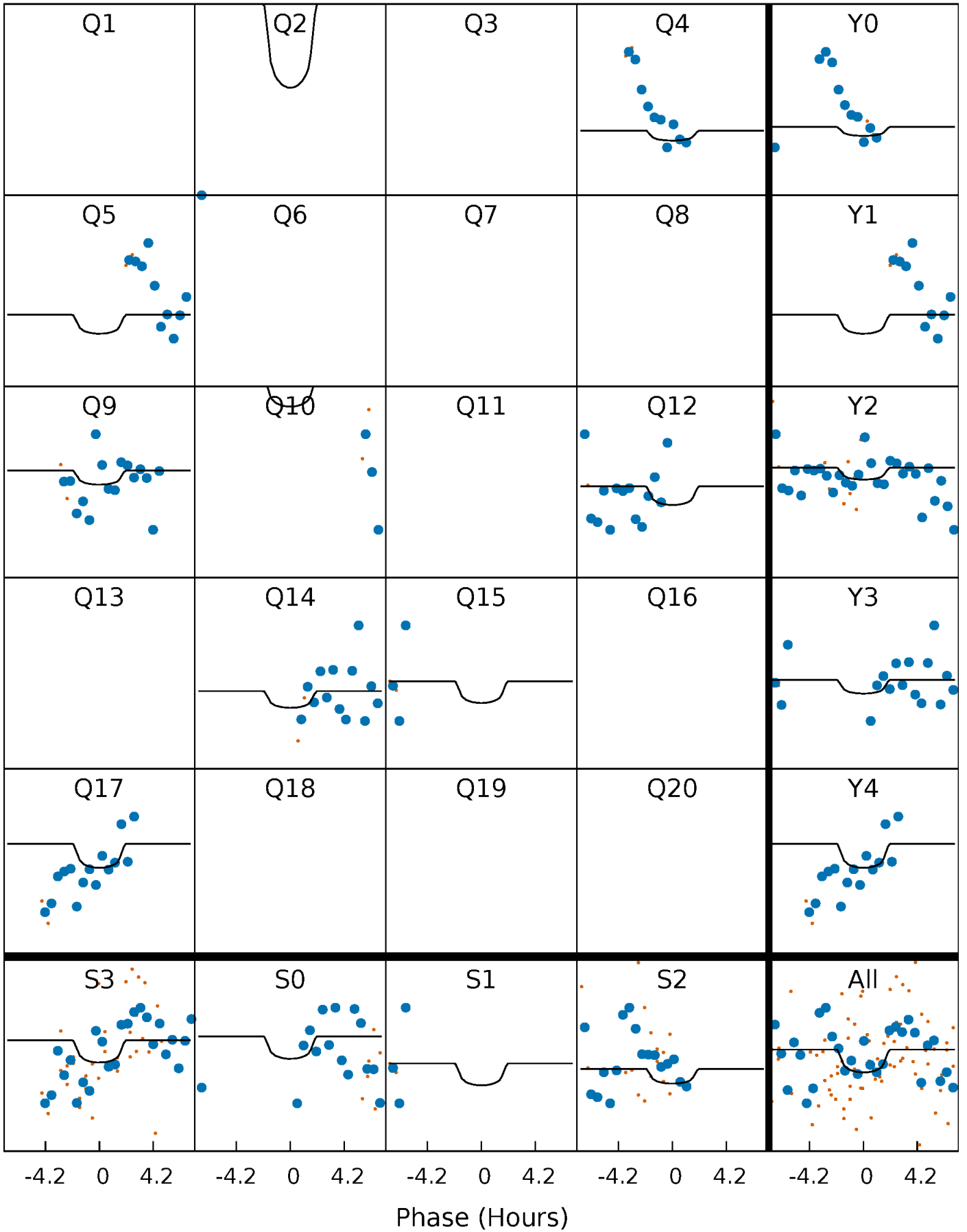
PDC Quarter-Phased Transit Curves

TCE 004821181-08 P=149.218390 Days $T_0=235.246513$ (BKJD)



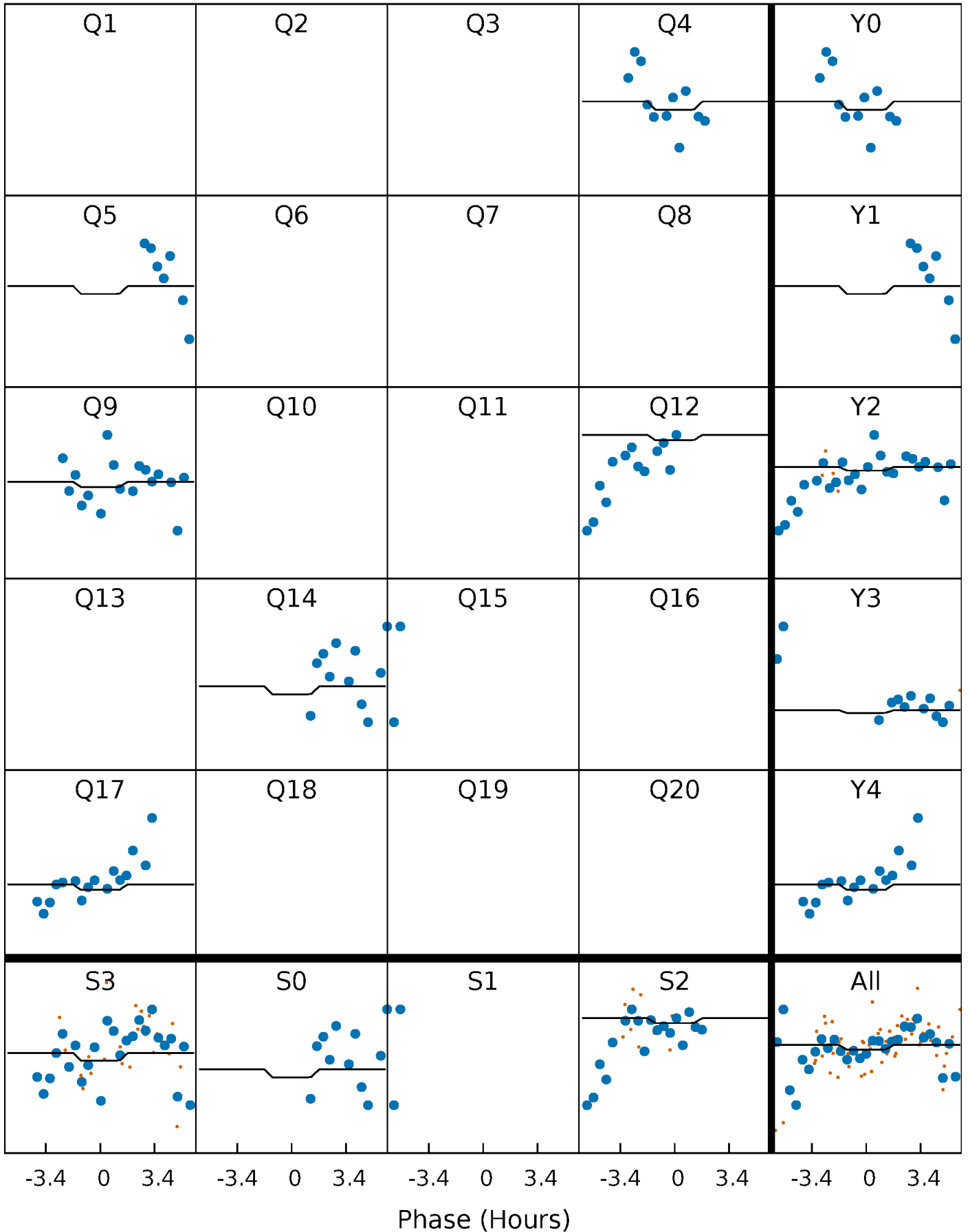
DV Quarter-Phased Transit Curves

TCE 004821181-08 P=149.218390 Days $T_0=235.246513$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

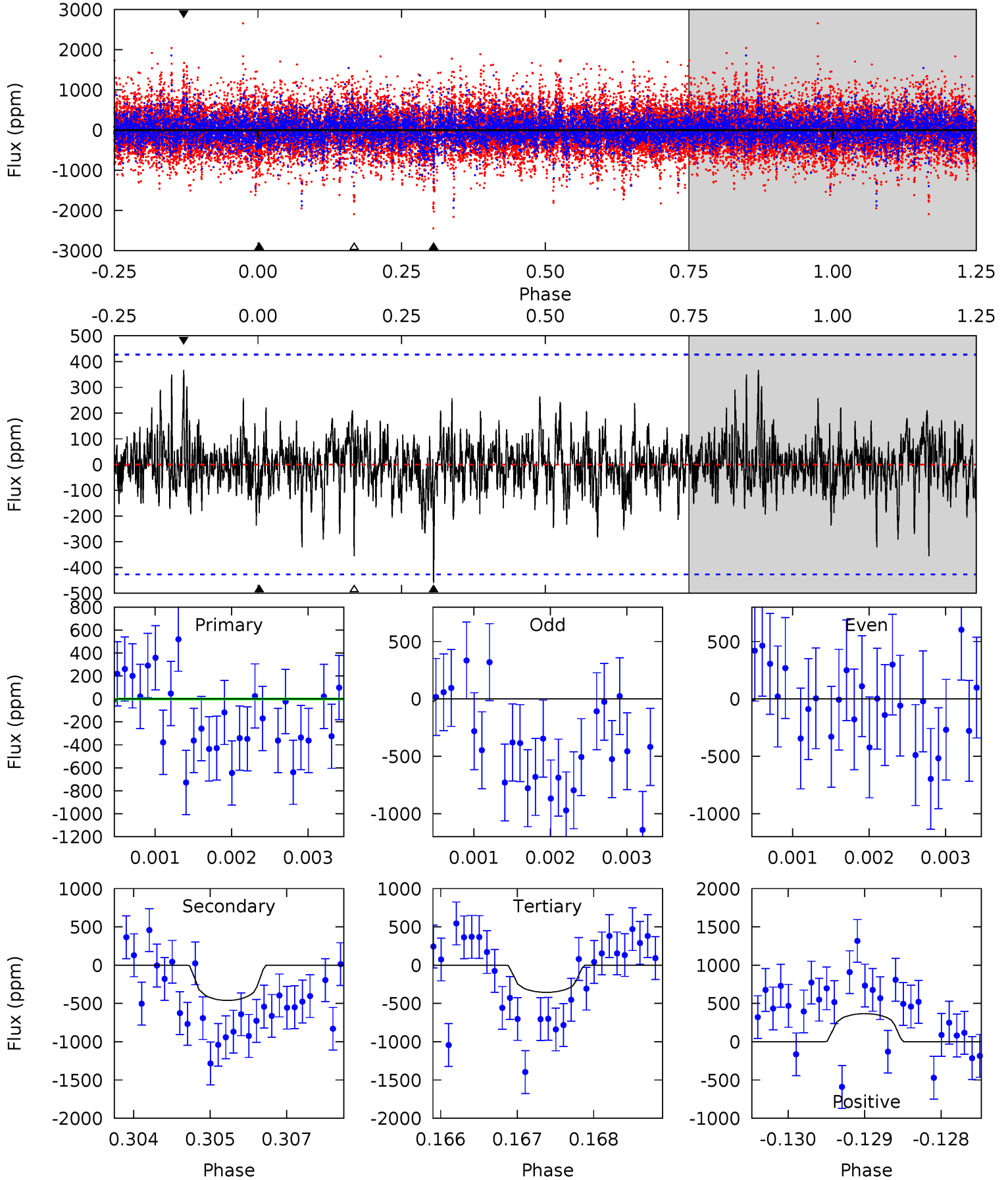
TCE 004821181-08 P=149.219478 Days $T_0=235.223420$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-08, $P = 149.218390$ Days, $E = 86.028123$ Days

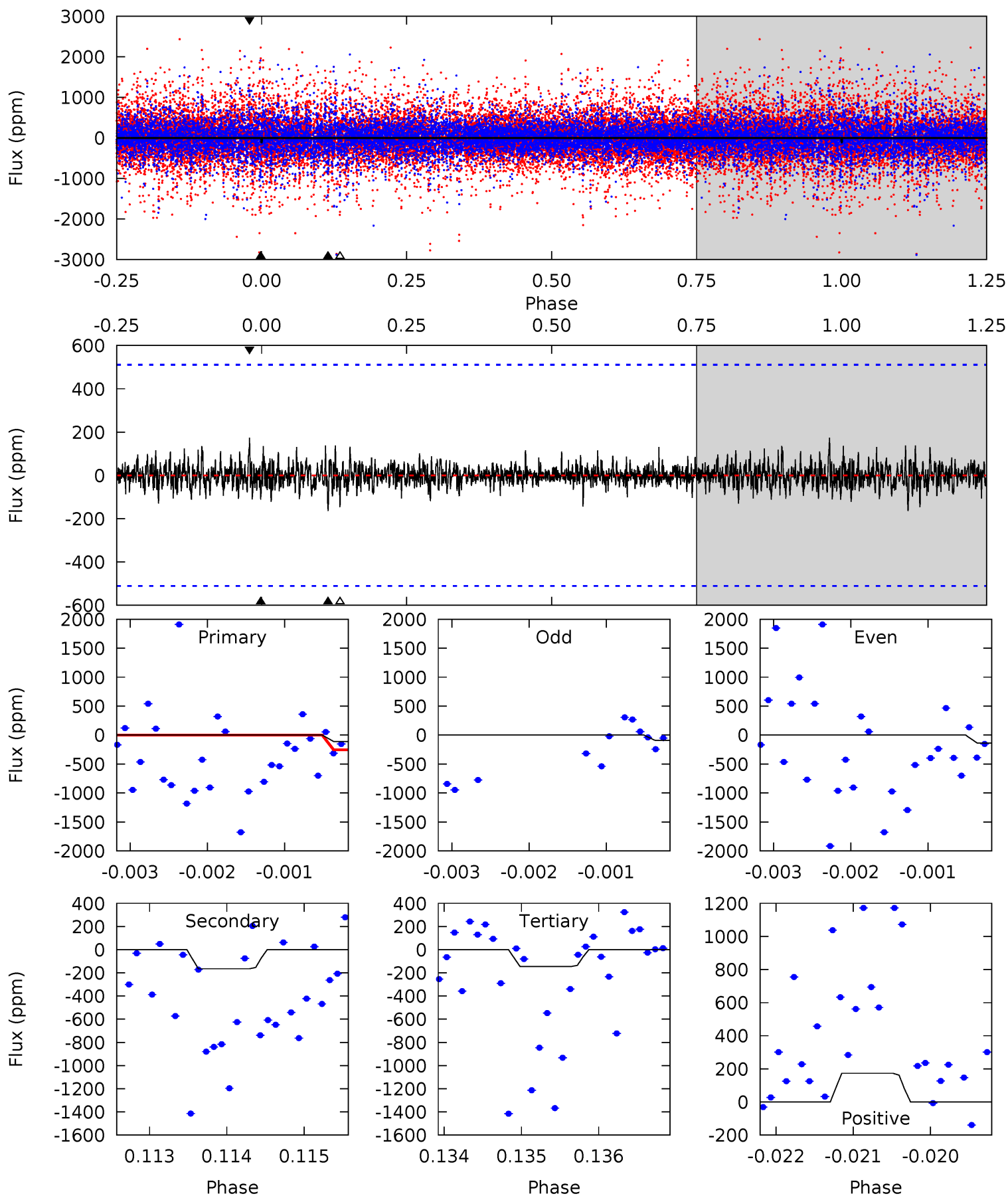
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.40	5.86	4.52	4.67	5.43	3.25	1.04	-2.12	-2.27	1.35	1.19	0.35	0.57	0.44	0.38



Alt Model-Shift Uniqueness Test

004821181-08, P = 149.219478 Days, E = 86.003942 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.19	1.76	1.56	1.86	5.47	3.31	0.39	-0.37	-0.66	0.20	-0.09	0.21	0.85	0.51	1.08



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-461 ± 79	$3.89^{+4.56}_{-2.72}$	372^{+13}_{-14}	3638^{+2232}_{-731}	4027^{+41008}_{-3140}
Alt.	-165 ± 93	$3.78^{+3.93}_{-2.61}$	373^{+13}_{-15}	3061^{+1639}_{-611}	1285^{+14089}_{-1049}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

DV Centroid Data

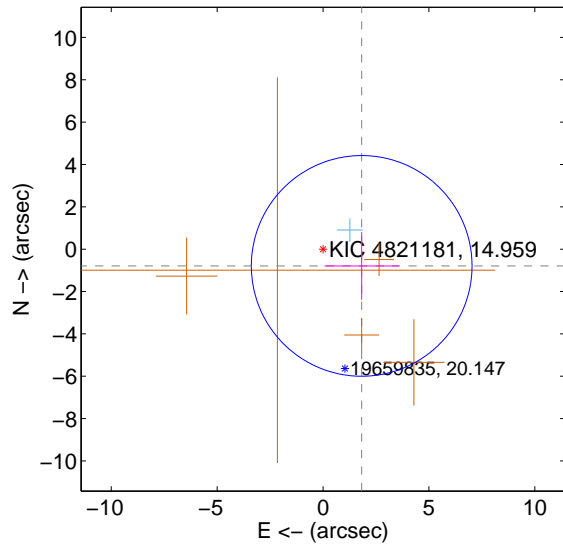
Supplemental centroid analysis for 004821181-08. Kepler magnitude: 14.96. Transit SNR 2.16

There are 1 quarters with good PRF difference image offsets

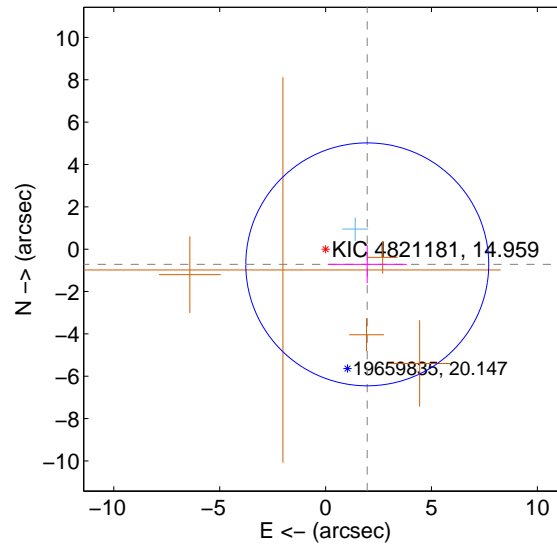
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.989 ± 1.737	1.15	-1.825 ± 1.761	-0.790 ± 1.598
PRF-fit source offset from KIC position	2.094 ± 1.912	1.10	-1.967 ± 1.866	-0.717 ± 0.899
photometric centroid source offset	1.26 ± 2.75	0.46	-0.93 ± 2.53	-0.85 ± 2.99

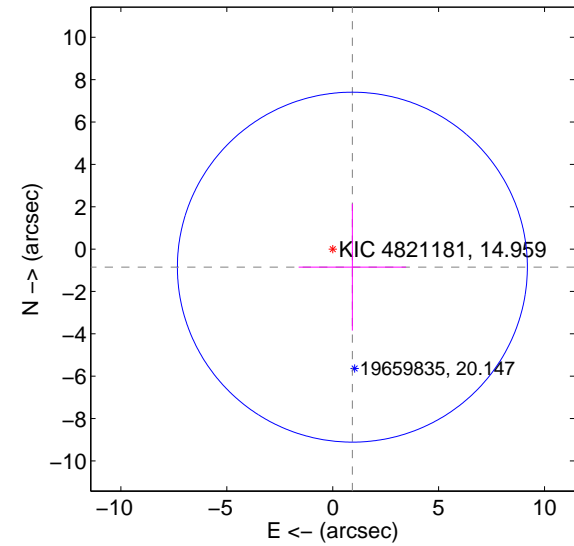
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

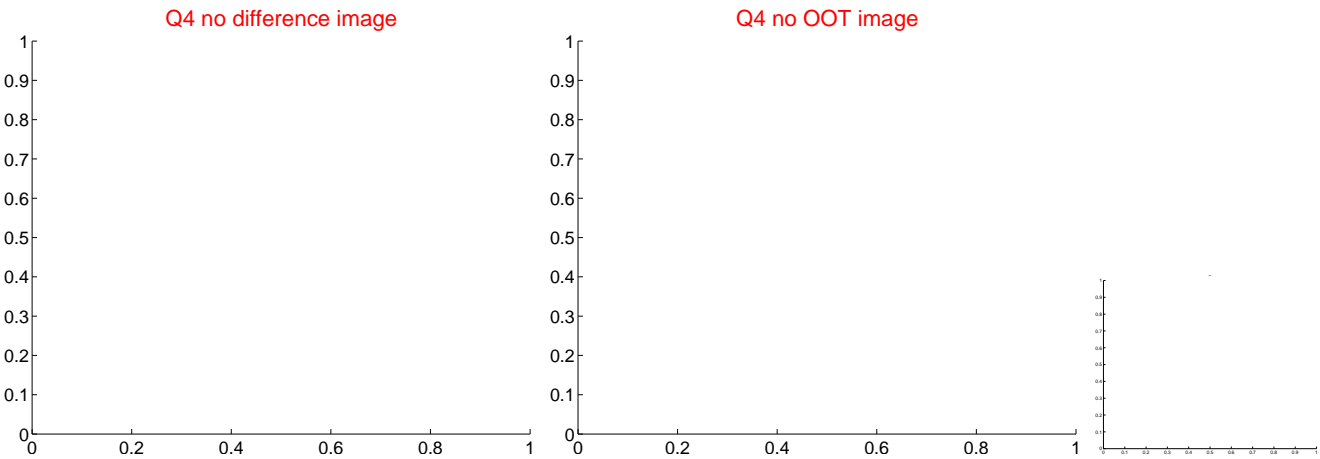
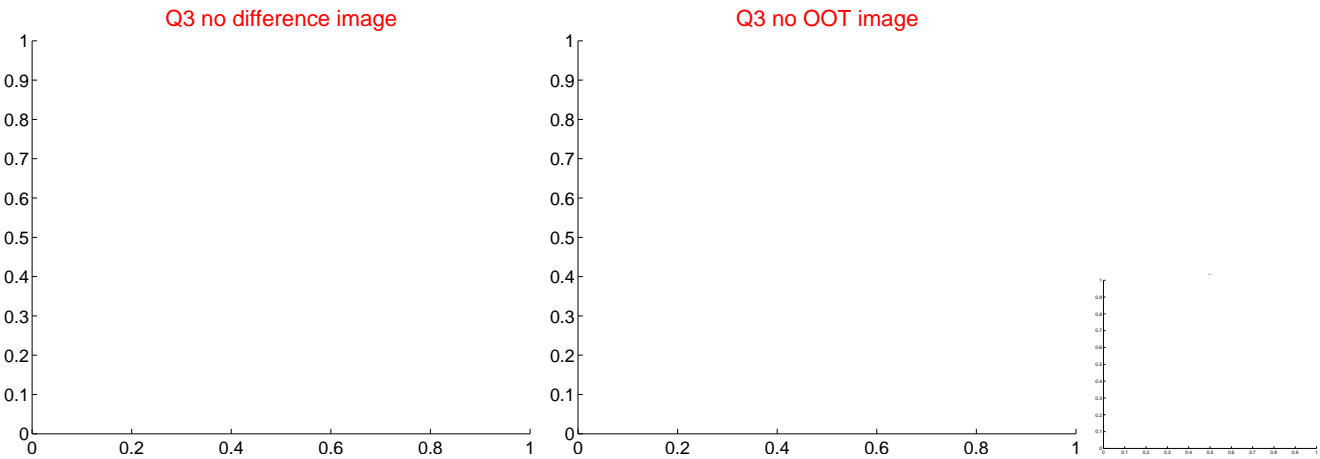
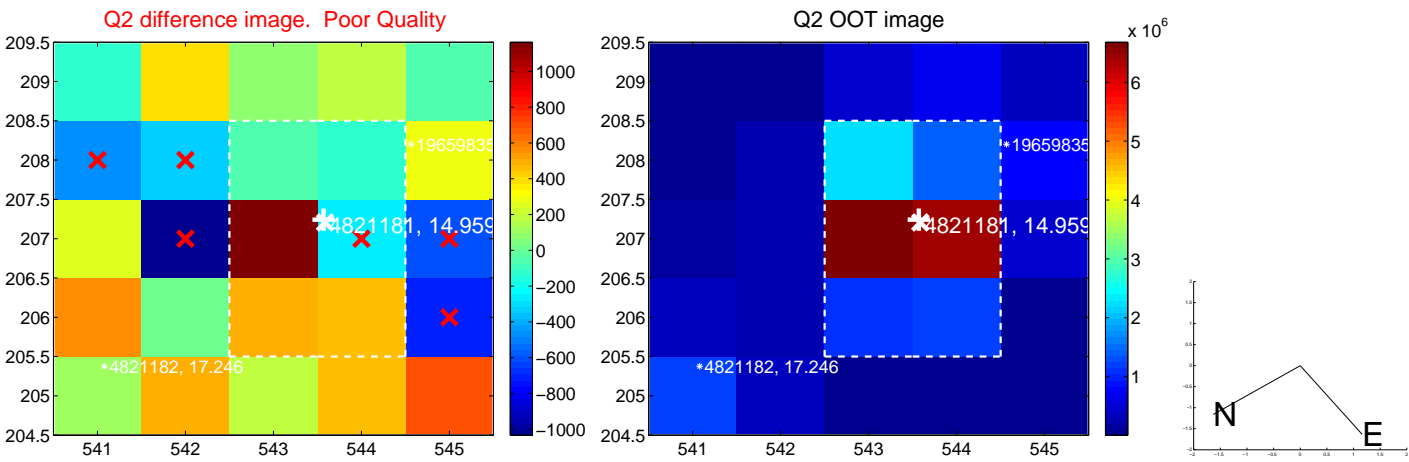
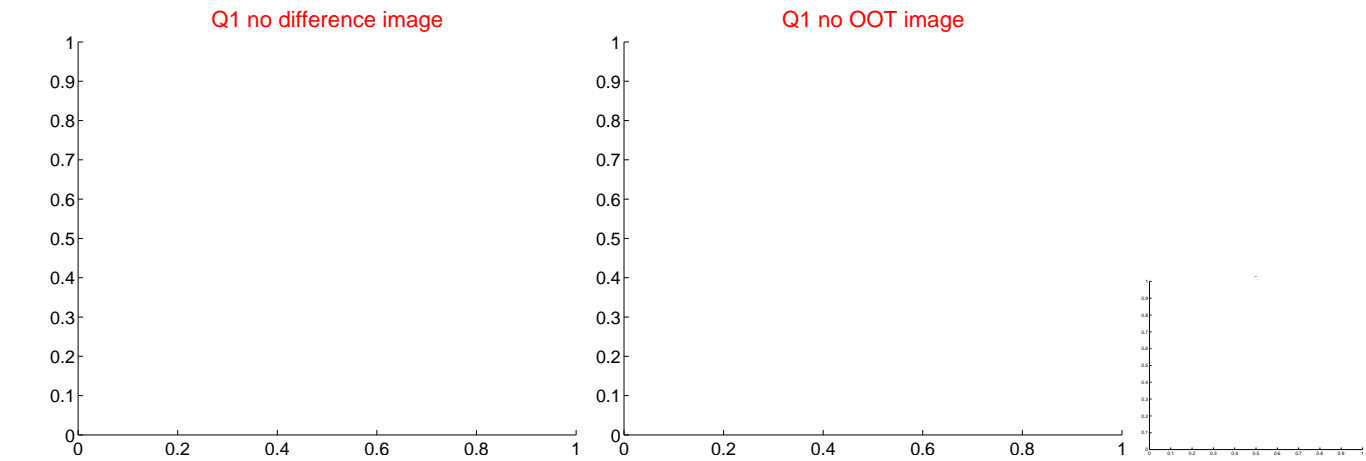


offset from photometric centroids

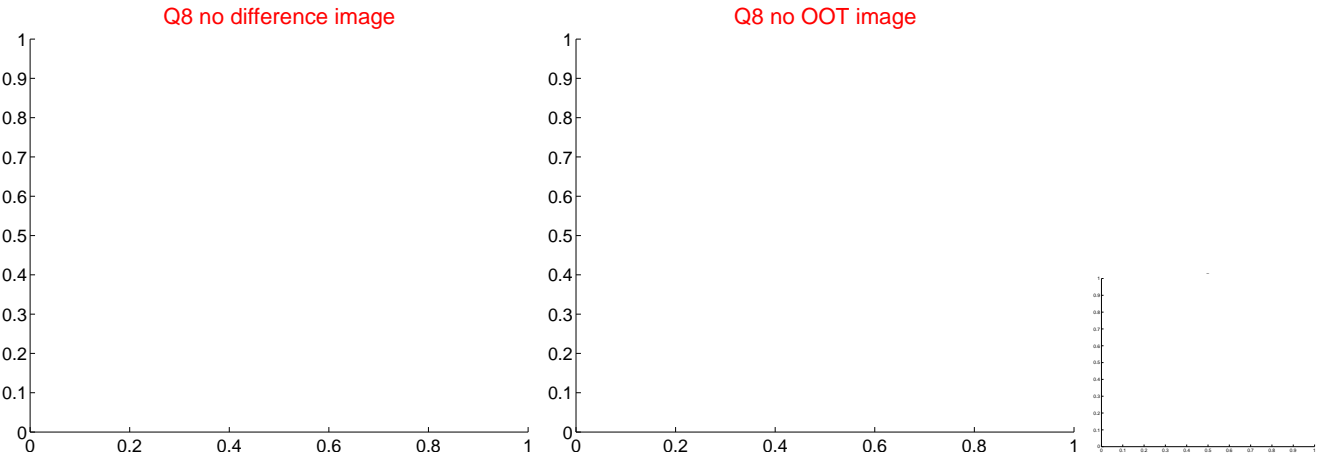
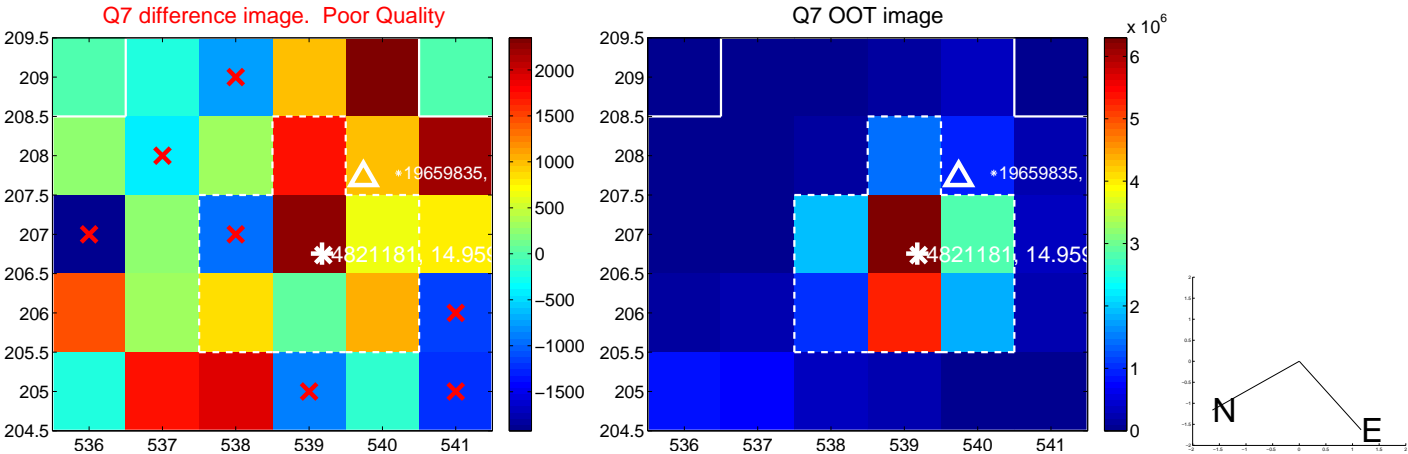
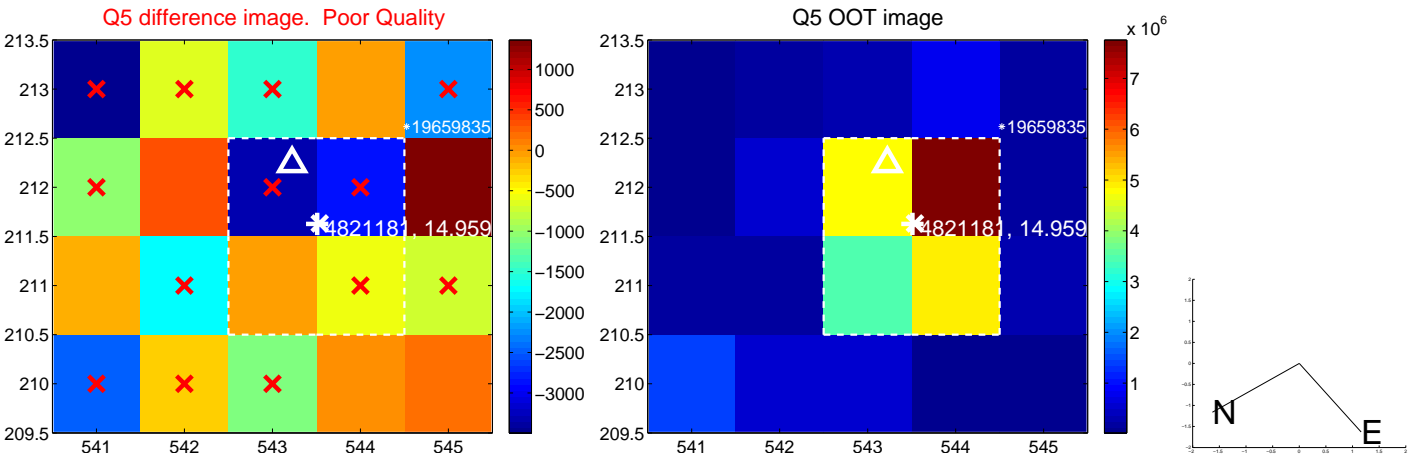


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

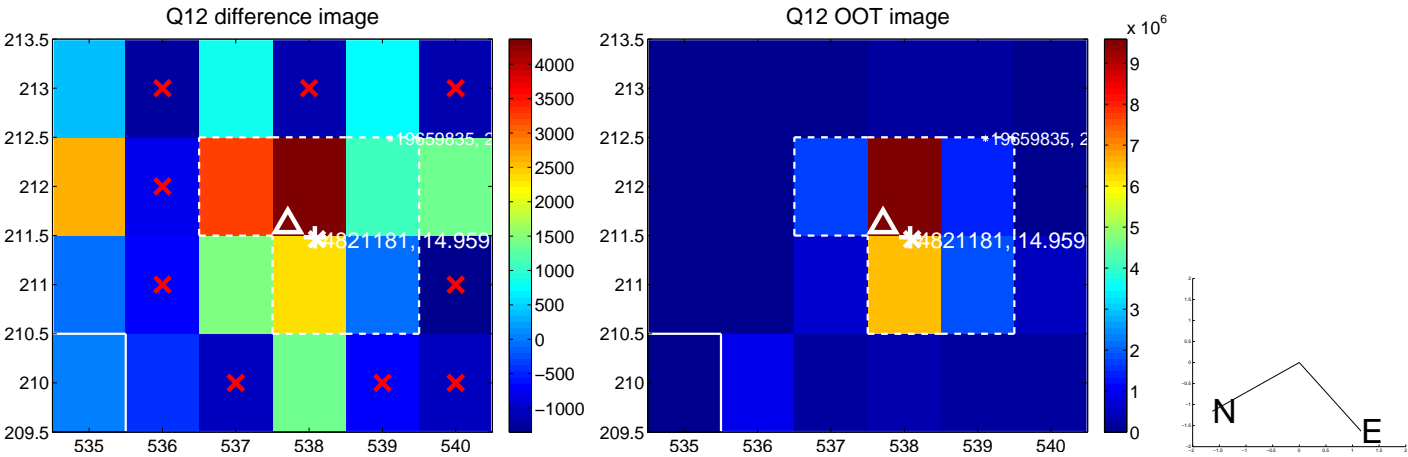
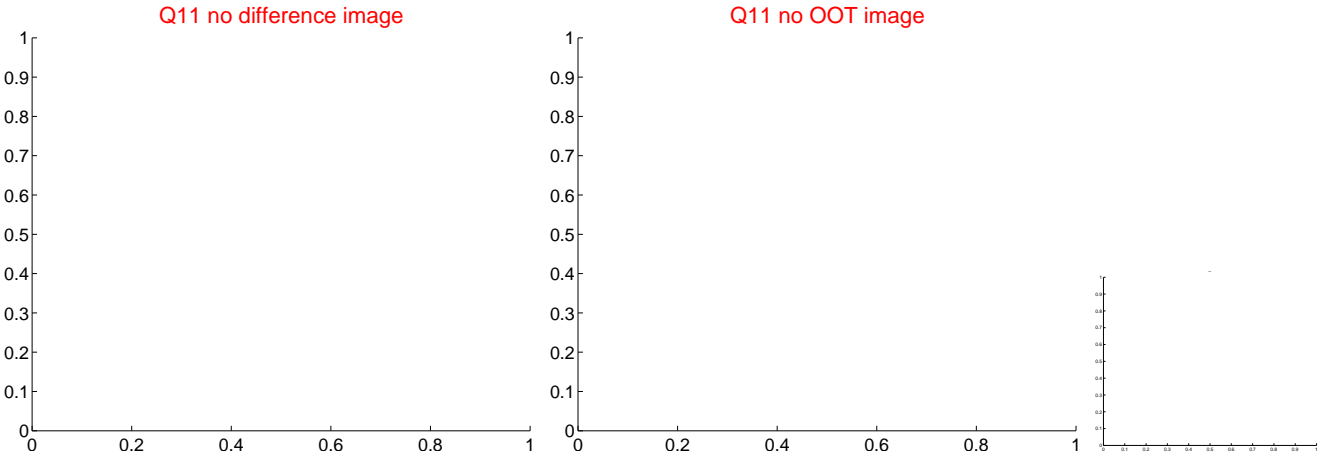
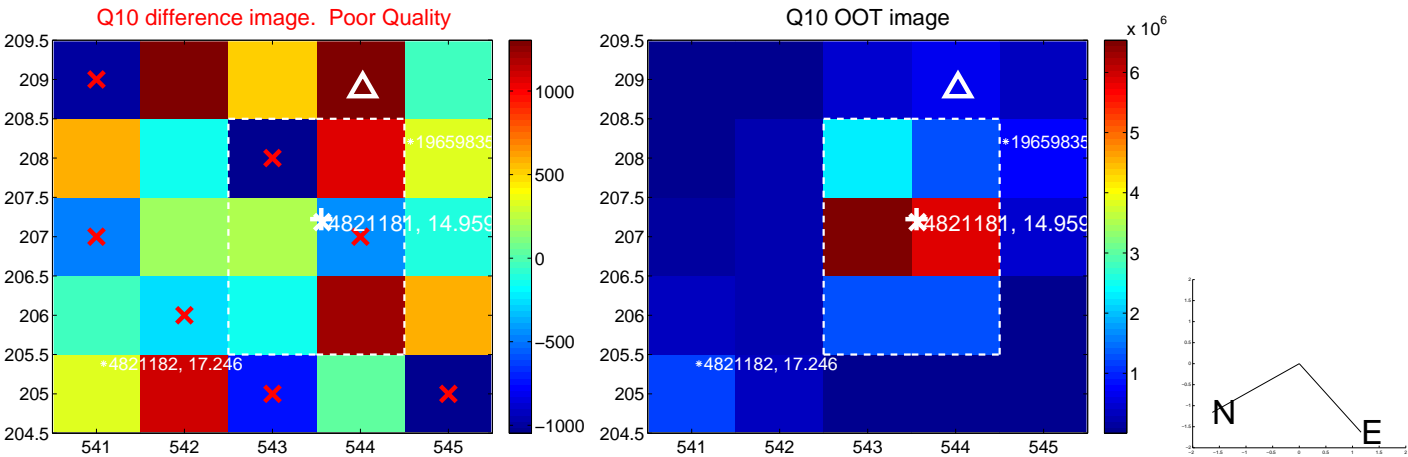
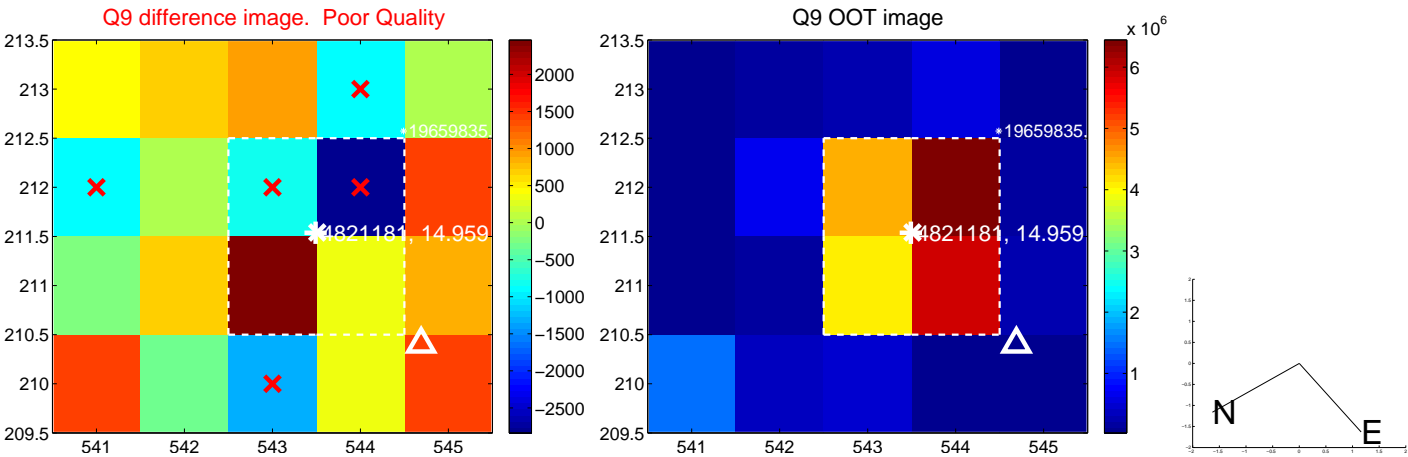
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

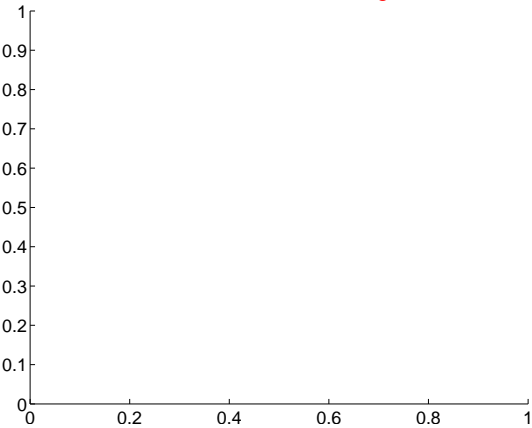


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

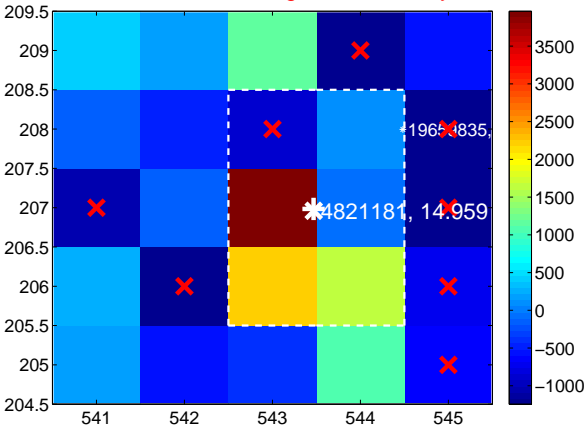
Q13 no difference image



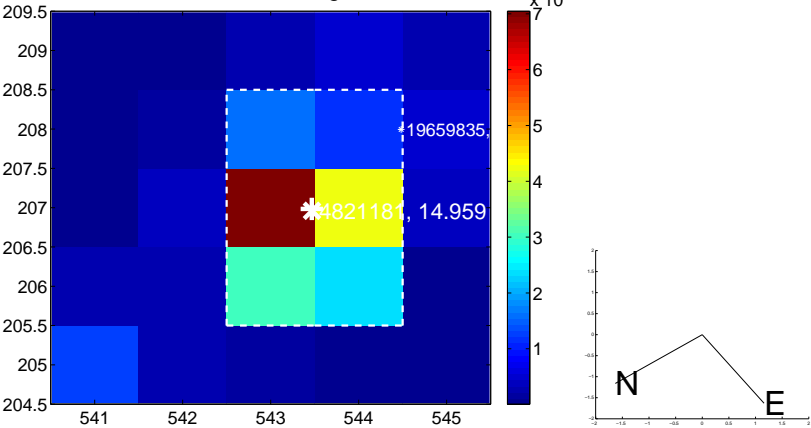
Q13 no OOT image



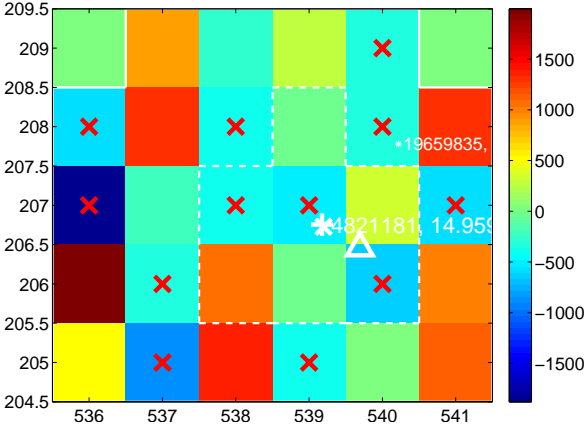
Q14 difference image. Poor Quality



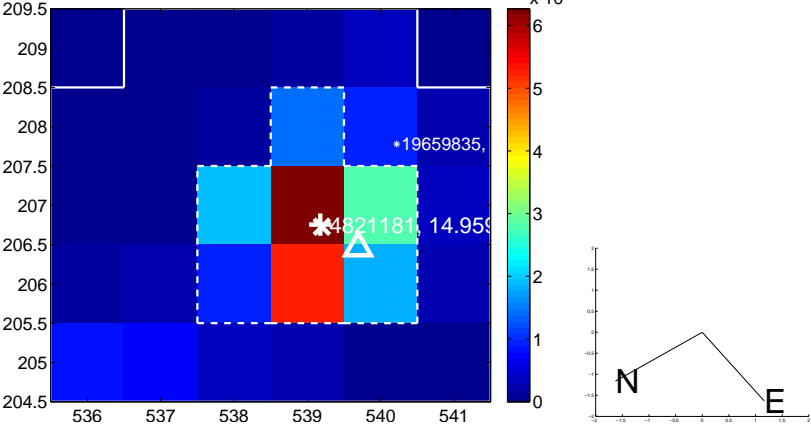
Q14 OOT image



Q15 difference image. Poor Quality



Q15 OOT image



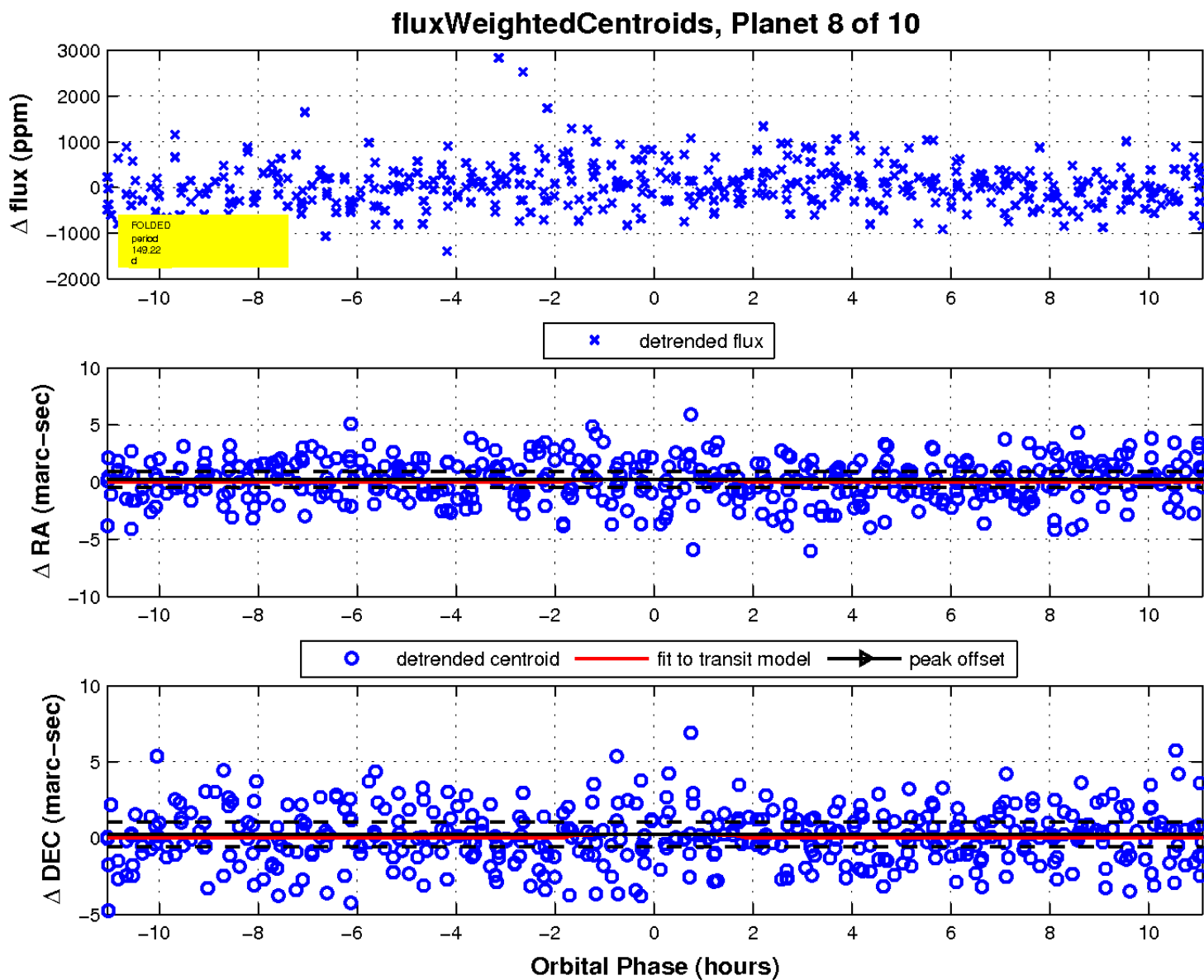
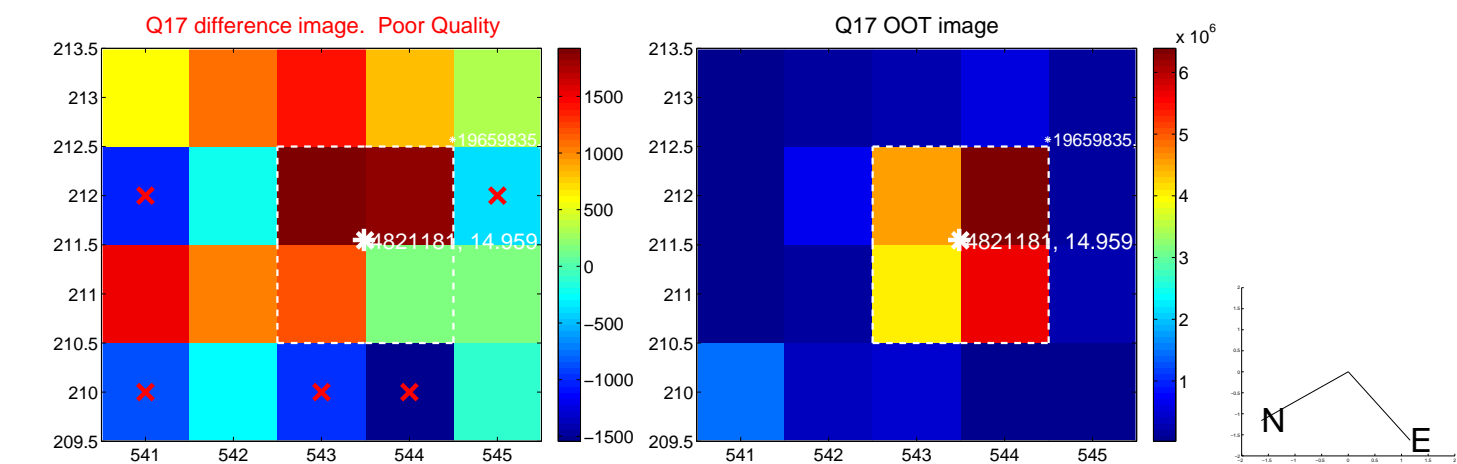
Q16 no difference image



Q16 no OOT image

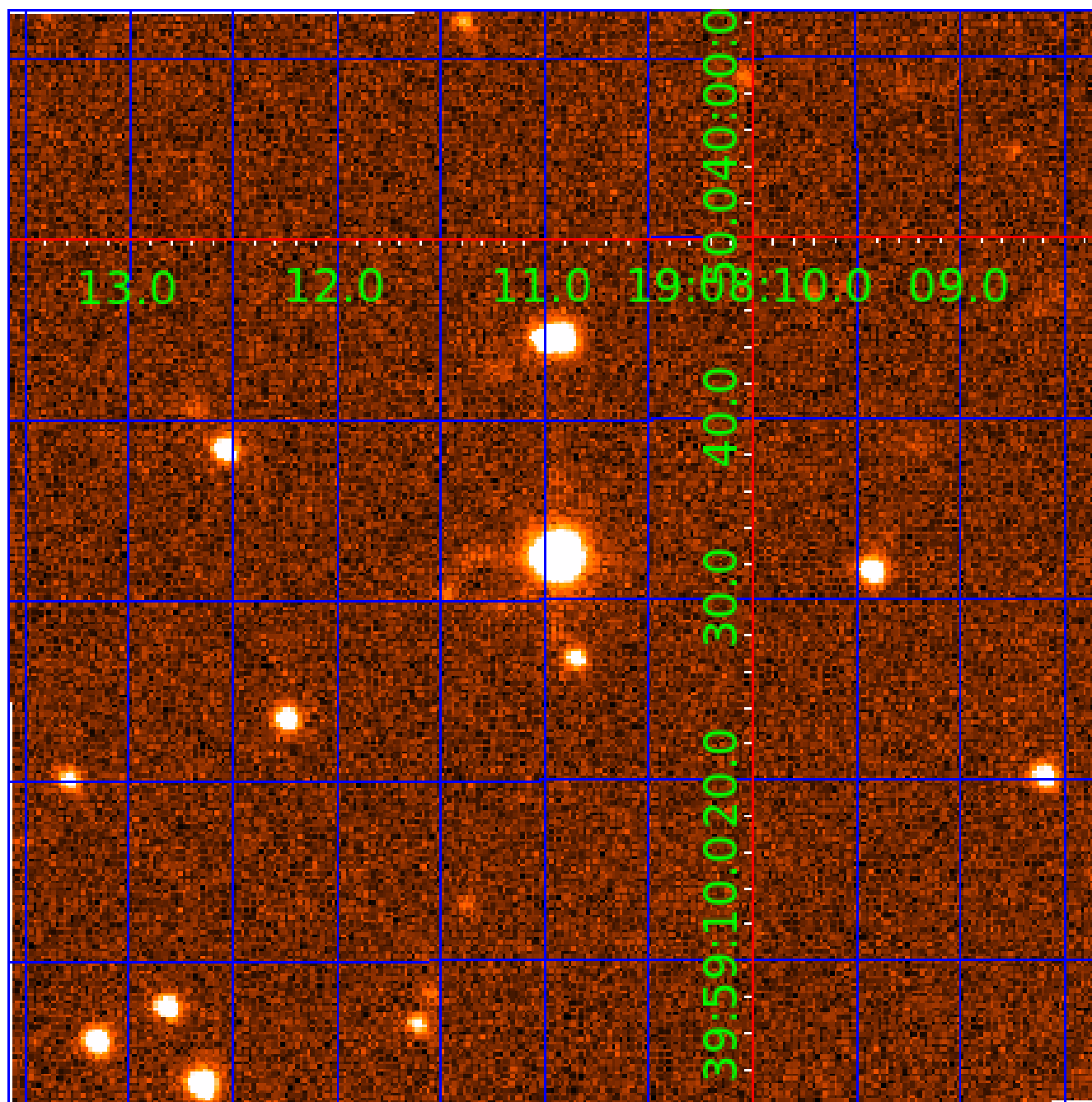


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

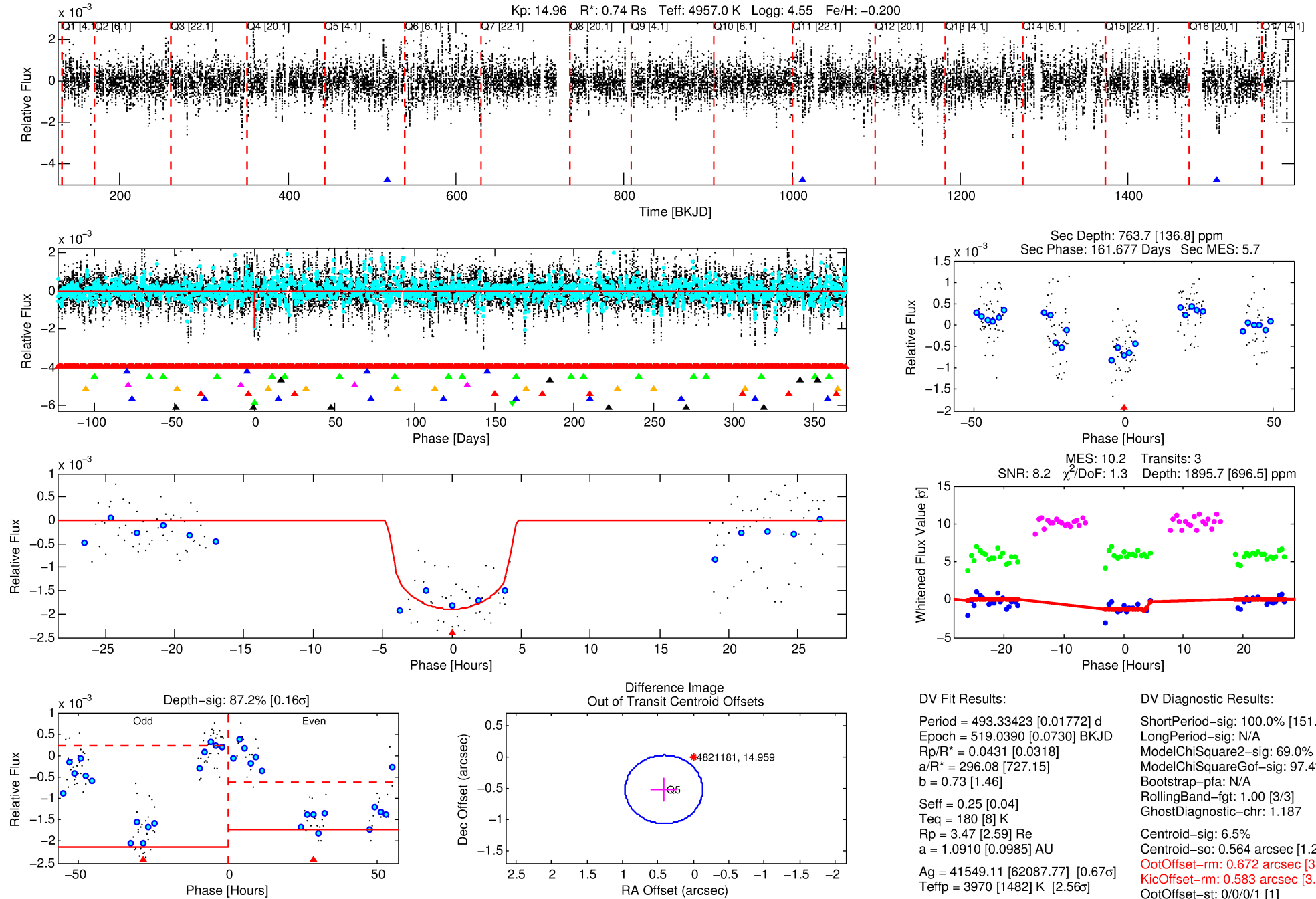
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-09

No Significant Match Found

DV One-Page Summary

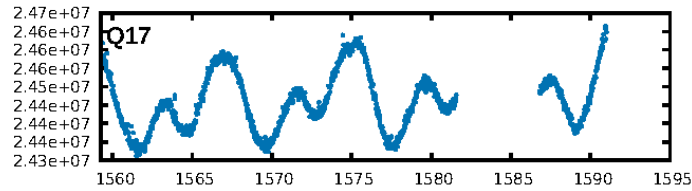
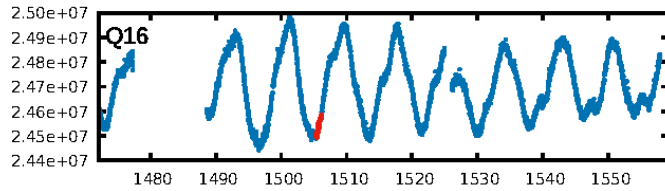
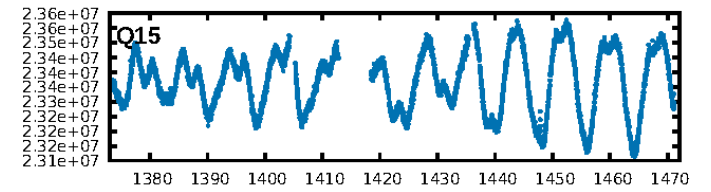
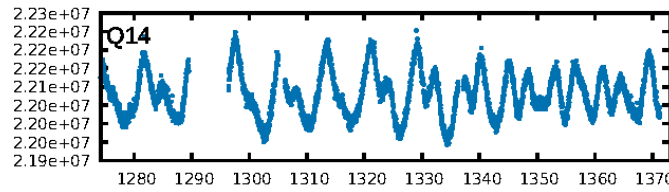
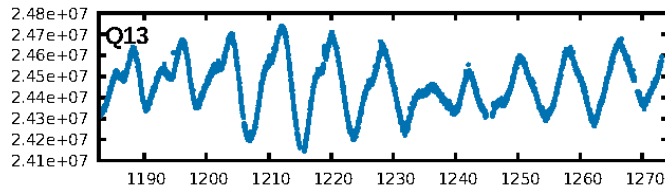
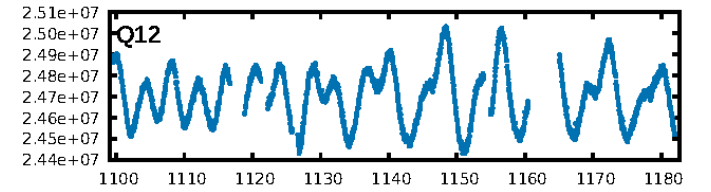
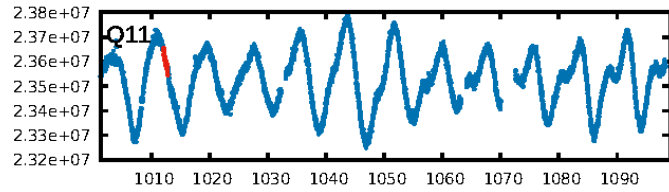
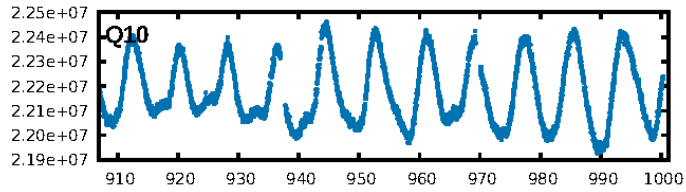
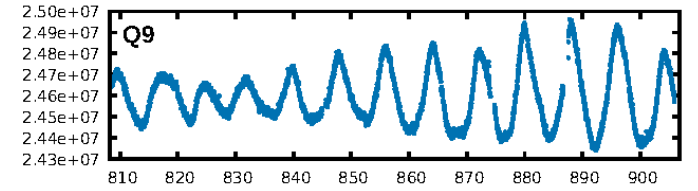
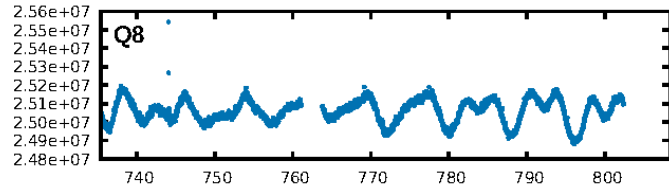
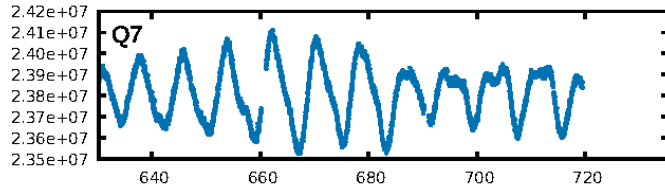
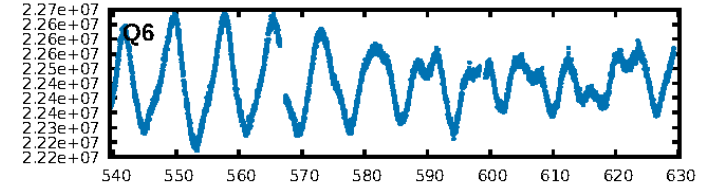
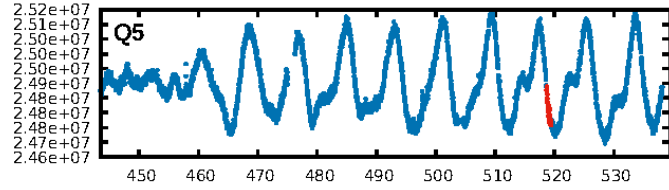
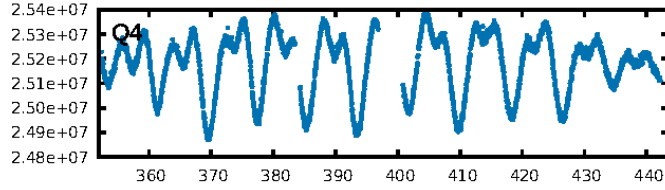
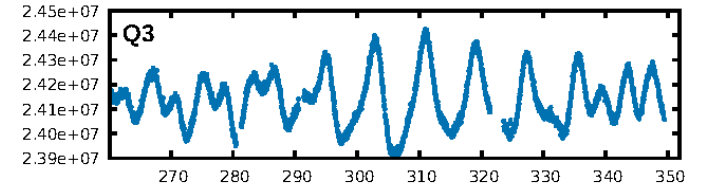
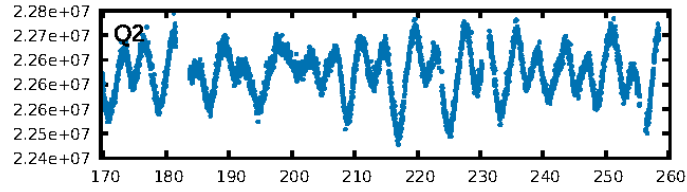
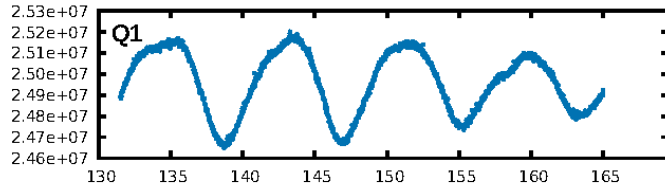
KIC: 4821181 Candidate: 9 of 10 Period: 493.334 d



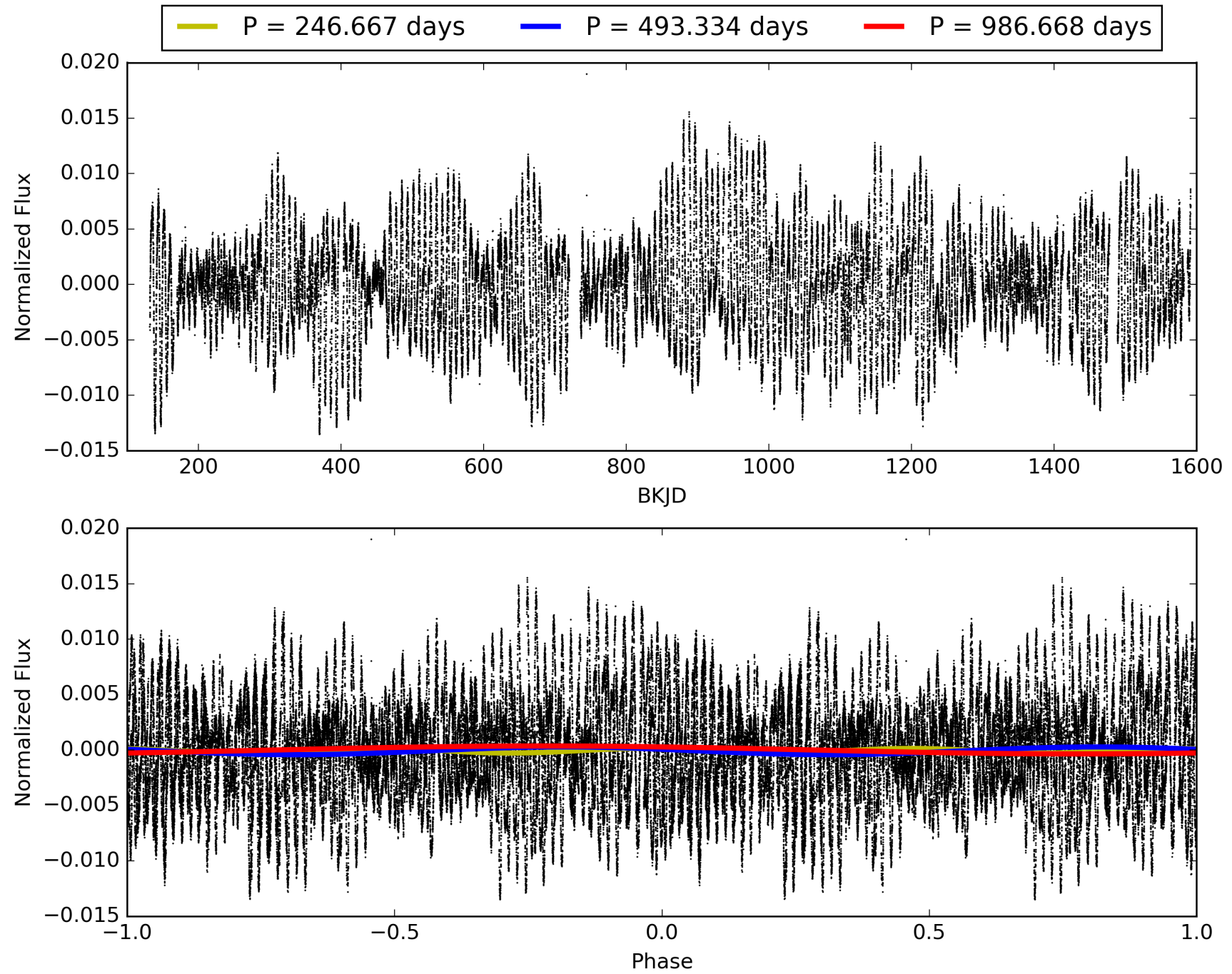
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 06:40:50 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-09, PDC Light Curves

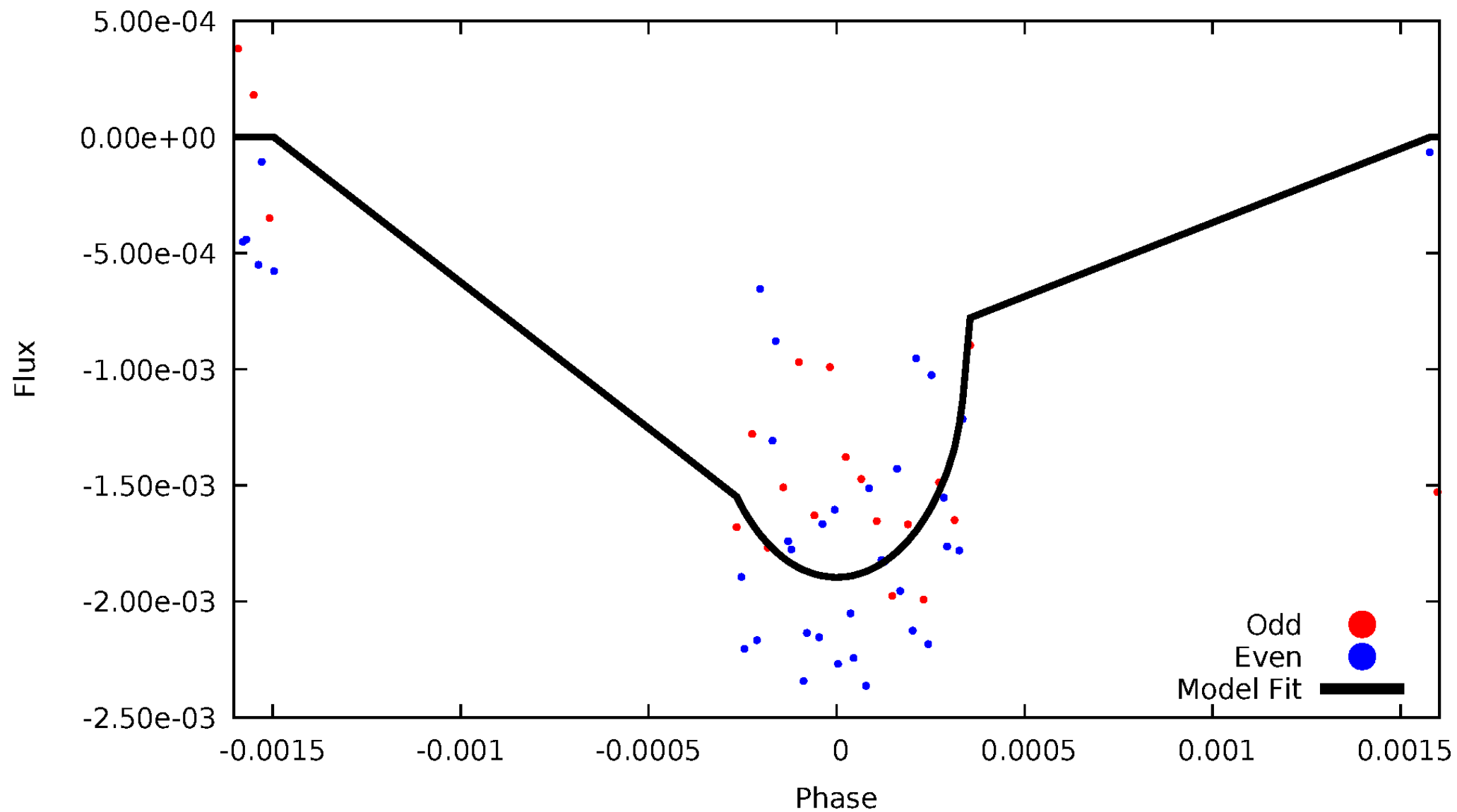


TCE 004821181-09



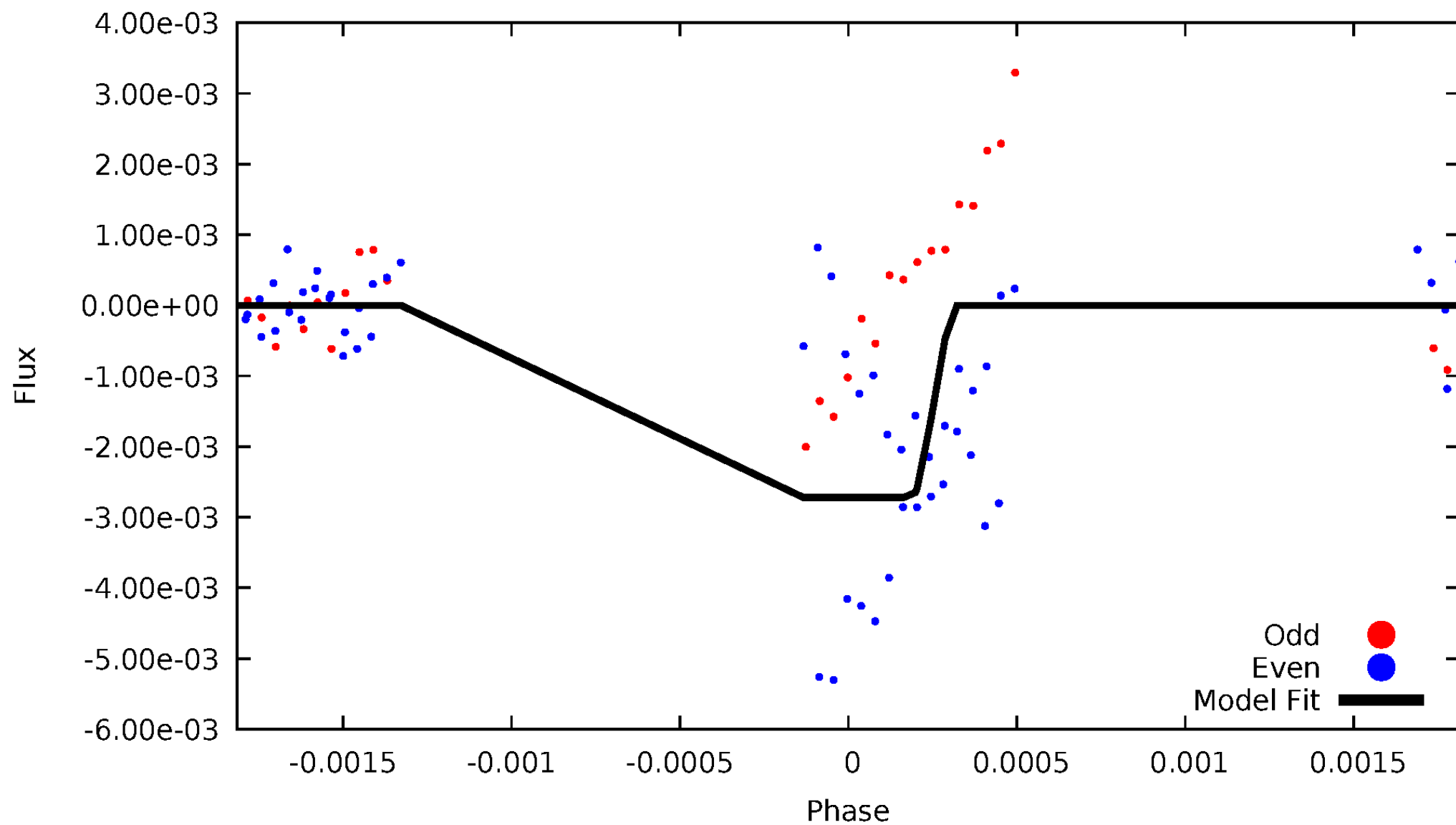
DV Odd/Even

TCE 004821181-09



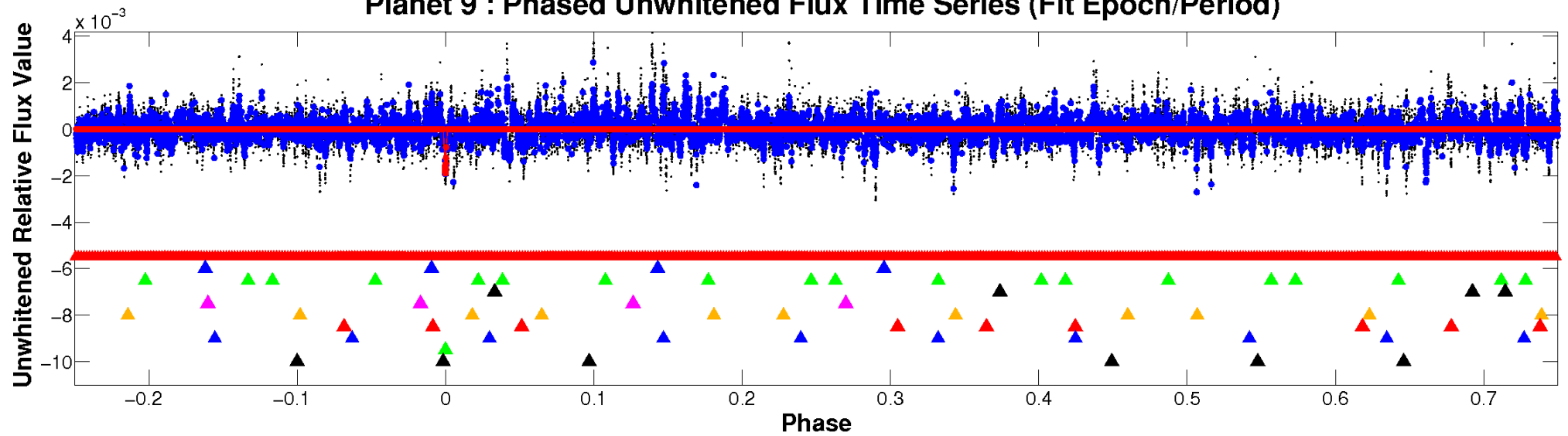
ALT Odd/Even

TCE 004821181-09

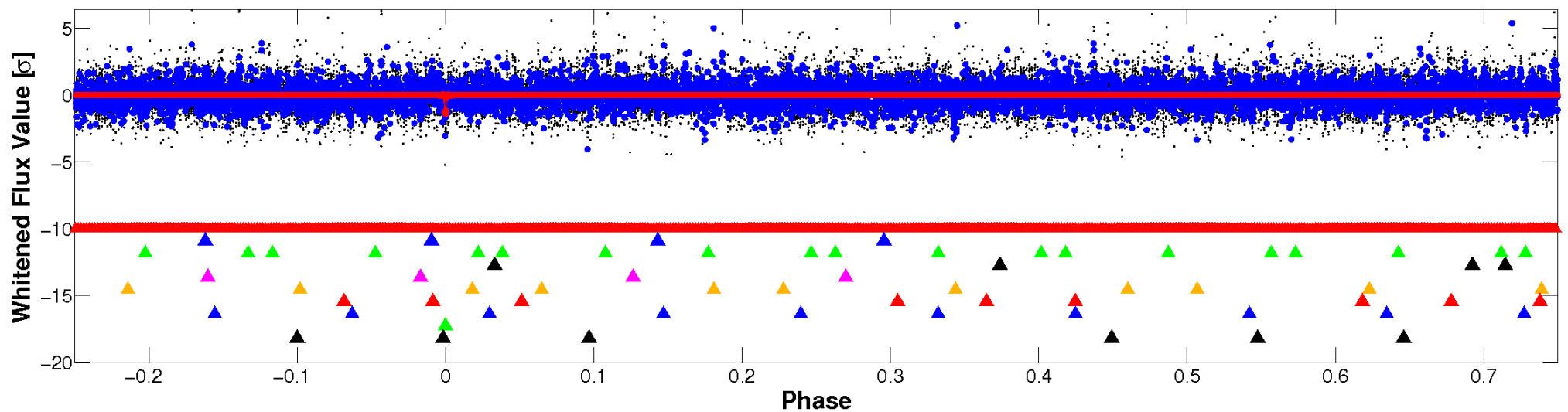


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

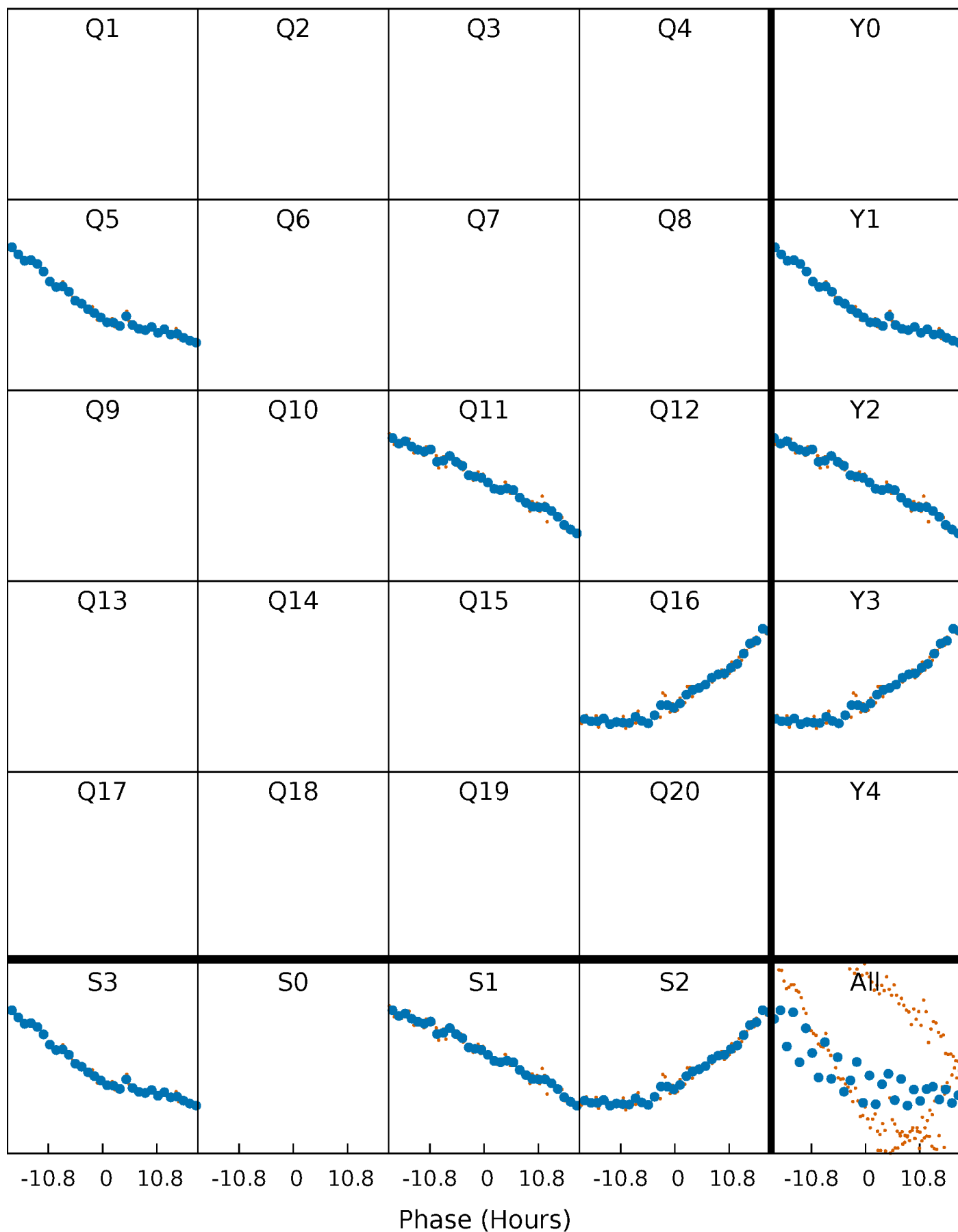


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



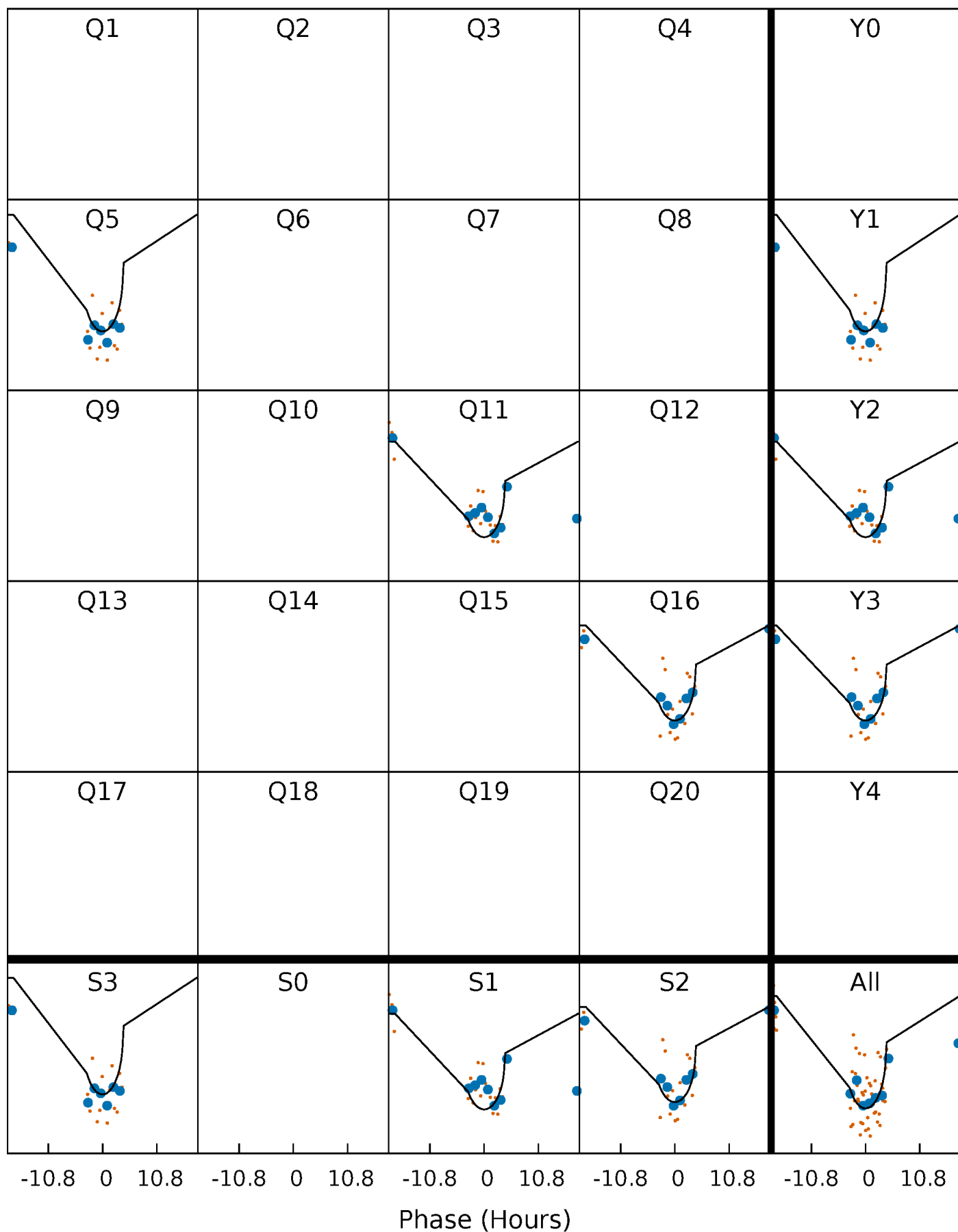
PDC Quarter-Phased Transit Curves

TCE 004821181-09 $P=493.334234$ Days $T_0=519.039022$ (BKJD)



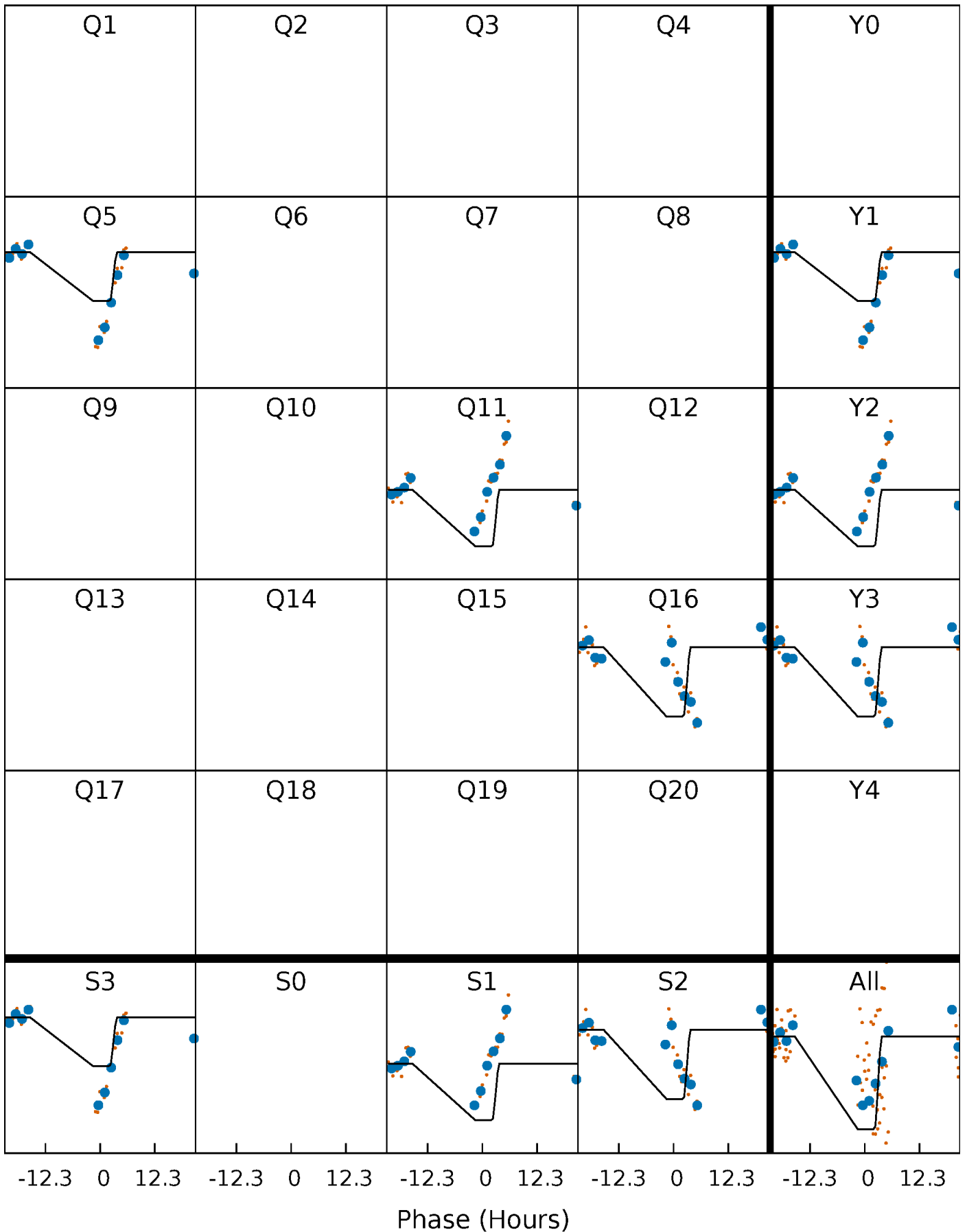
DV Quarter-Phased Transit Curves

TCE 004821181-09 $P=493.334234$ Days $T_0=519.039022$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

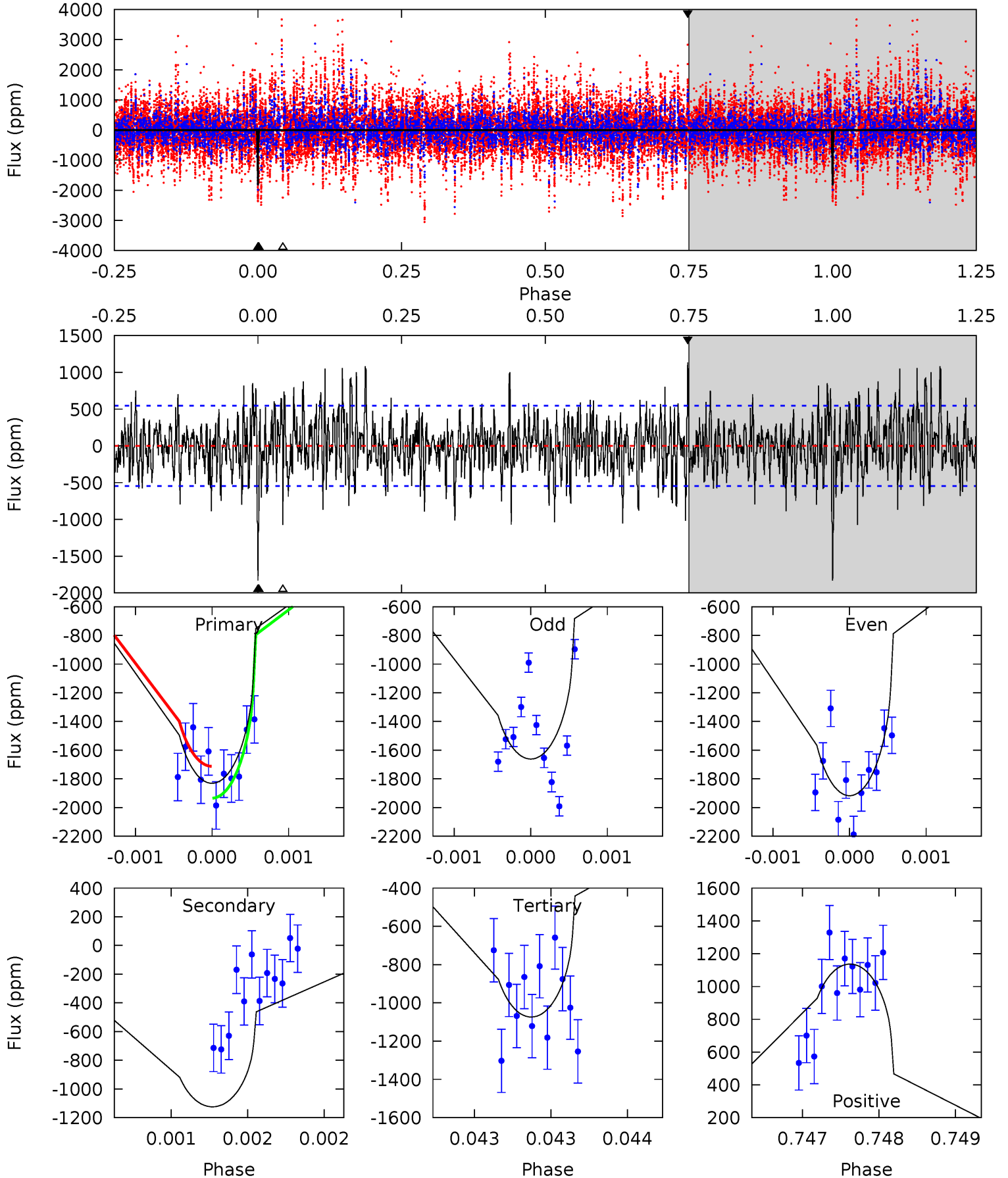
TCE 004821181-09 P=493.347873 Days $T_0=518.956539$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-09, P = 493.334234 Days, E = 25.704788 Days

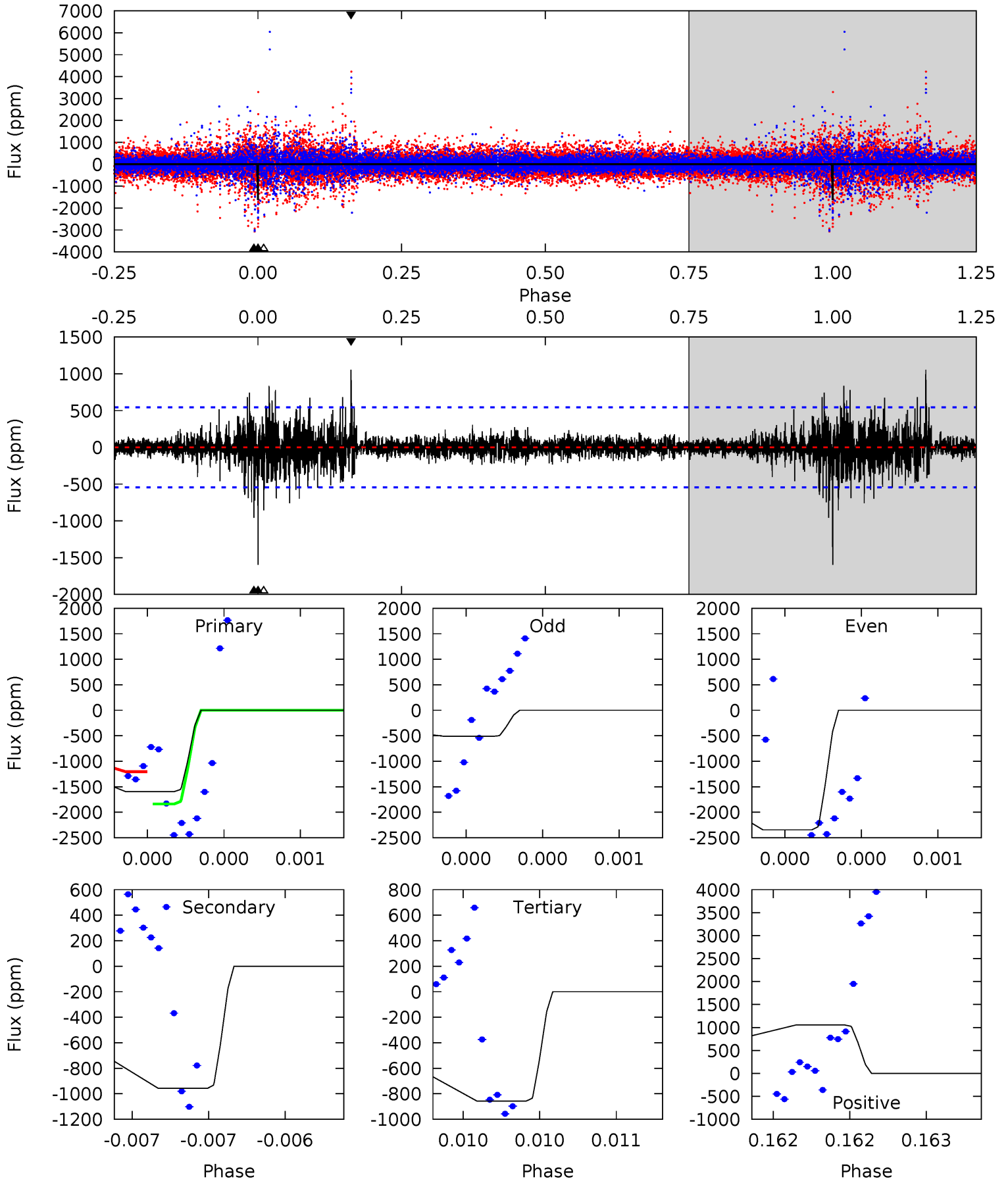
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.5	11.4	10.9	11.5	5.54	3.42	3.22	7.67	7.03	0.51	-0.12	1.23	1.04	0.38	1.12



Alt Model-Shift Uniqueness Test

004821181-09, $P = 493.347873$ Days, $E = 25.608666$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	9.83	8.80	10.8	5.59	3.50	1.22	7.56	5.54	1.03	-0.99	11.3	1.87	0.40	3.03



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1124 ± 99	$3.76^{+2.64}_{-2.32}$	250^{+9}_{-10}	4332^{+2169}_{-771}	$52661^{+309165}_{-35071}$
Alt.	-957 ± 97	$4.32^{+2.45}_{-2.24}$	250^{+9}_{-10}	3998^{+1304}_{-548}	$33682^{+106442}_{-19671}$

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

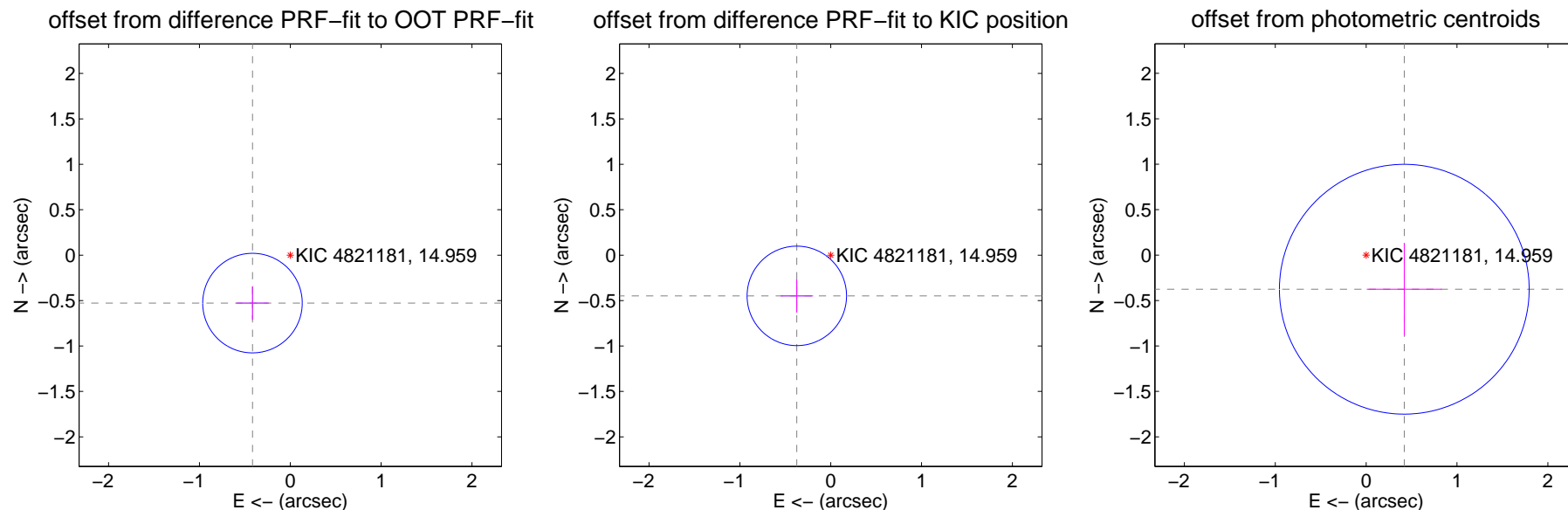
DV Centroid Data

Supplemental centroid analysis for 004821181-09. Kepler magnitude: 14.96. Transit SNR 8.20

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.672 ± 0.183	3.68	0.416 ± 0.179	-0.528 ± 0.185
PRF-fit source offset from KIC position	0.583 ± 0.182	3.20	0.373 ± 0.179	-0.448 ± 0.185
photometric centroid source offset	0.56 ± 0.46	1.23	-0.42 ± 0.41	-0.38 ± 0.51

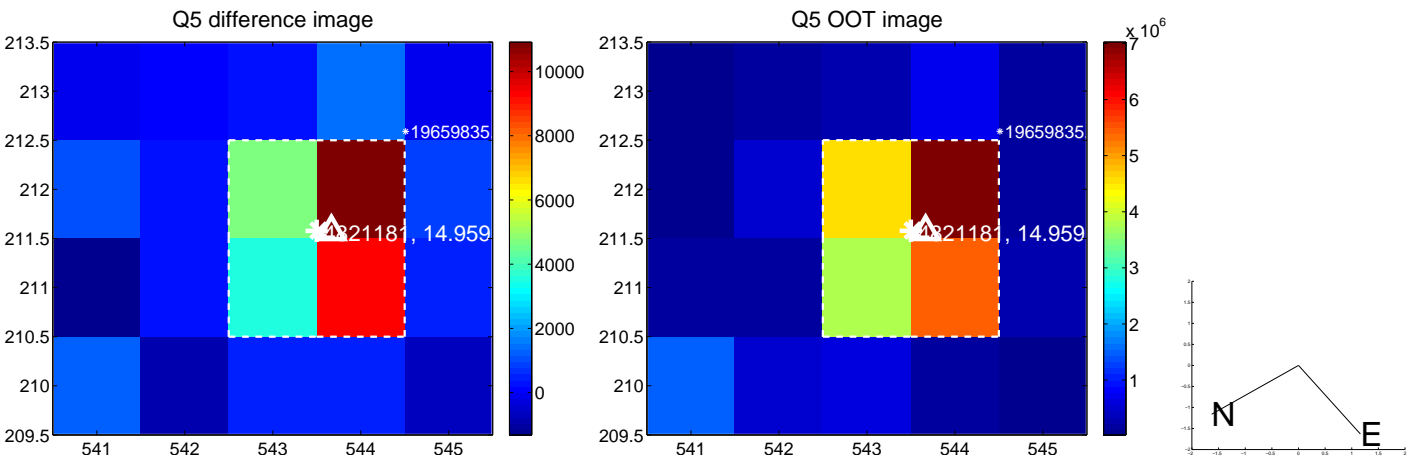


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

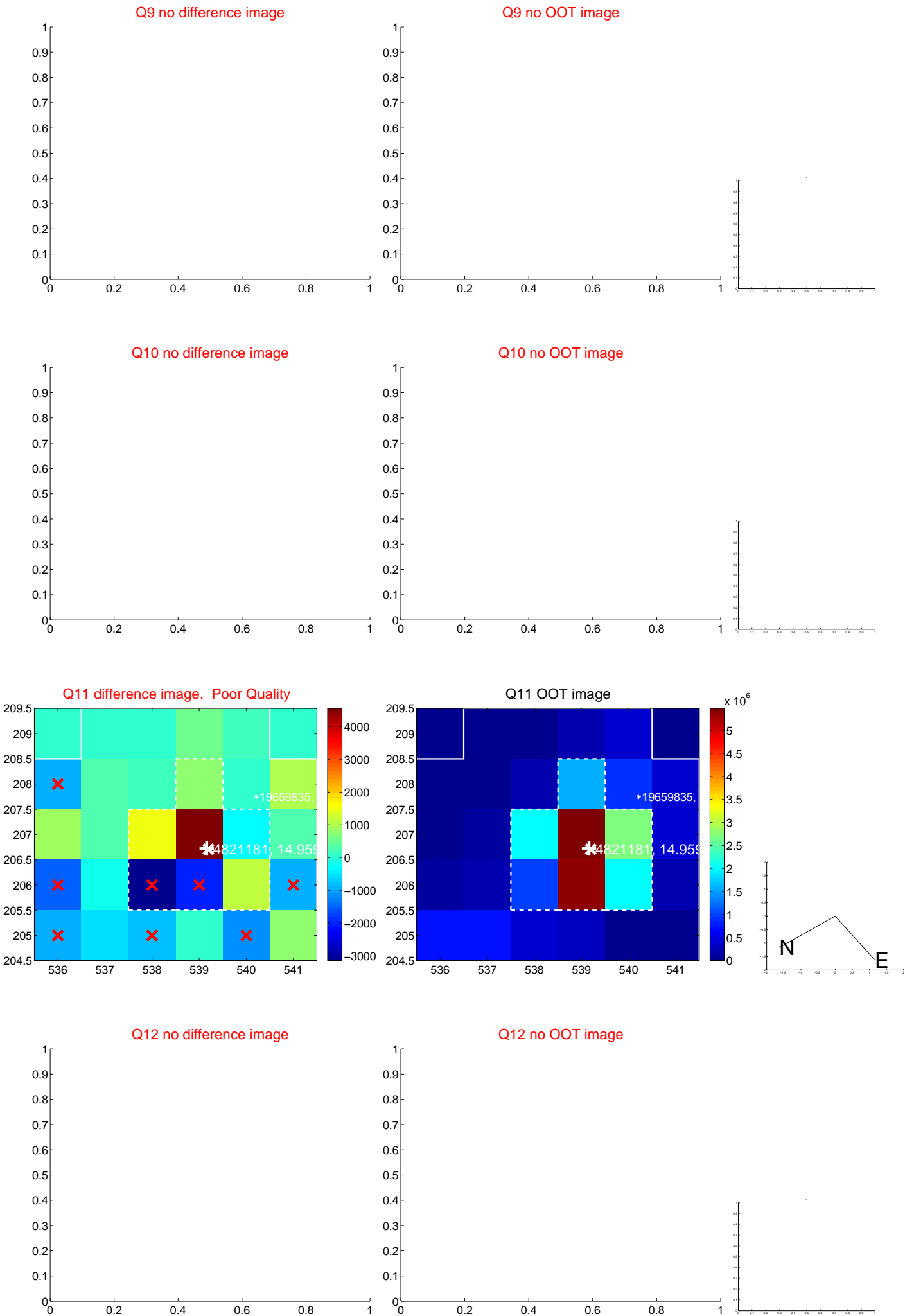
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



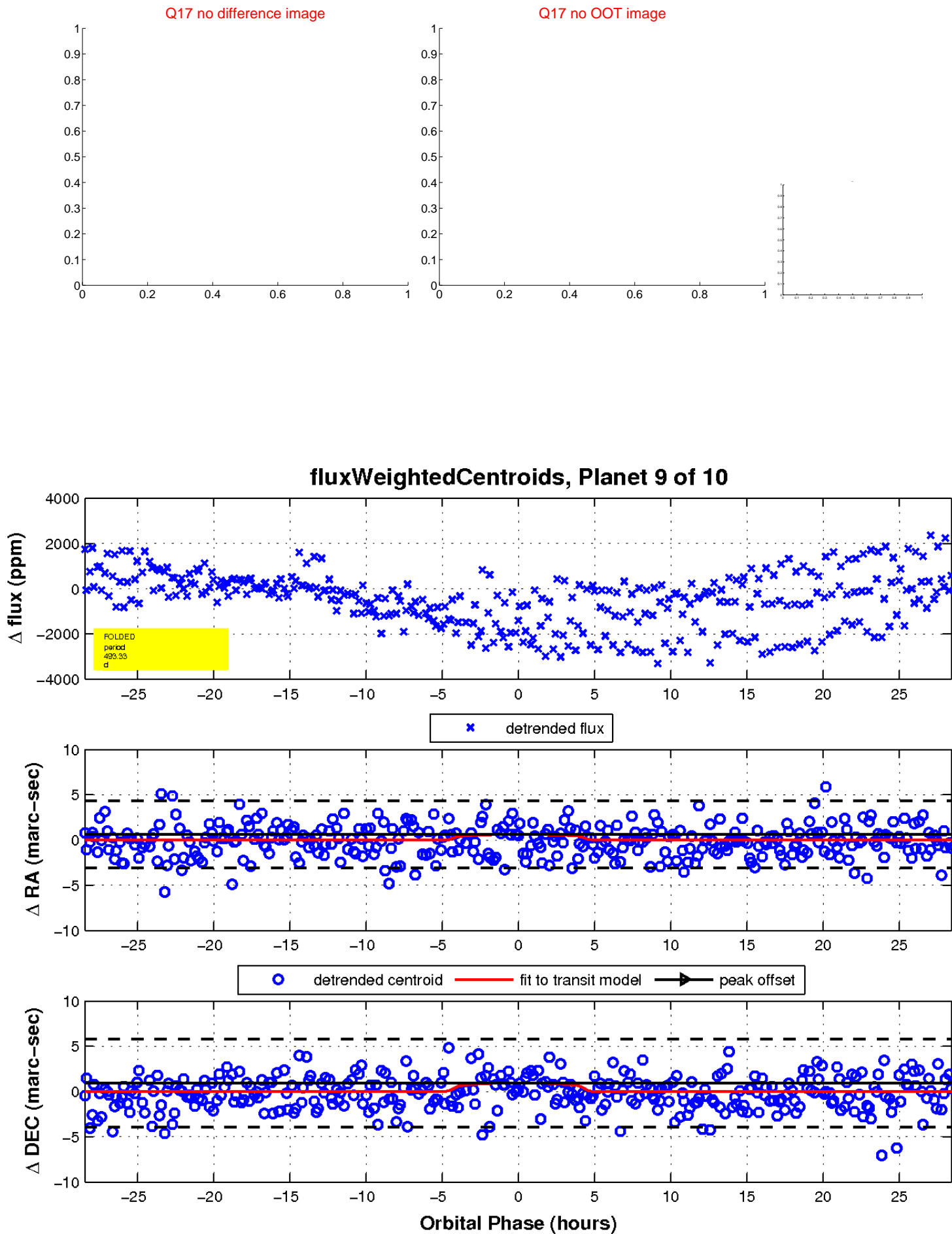
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

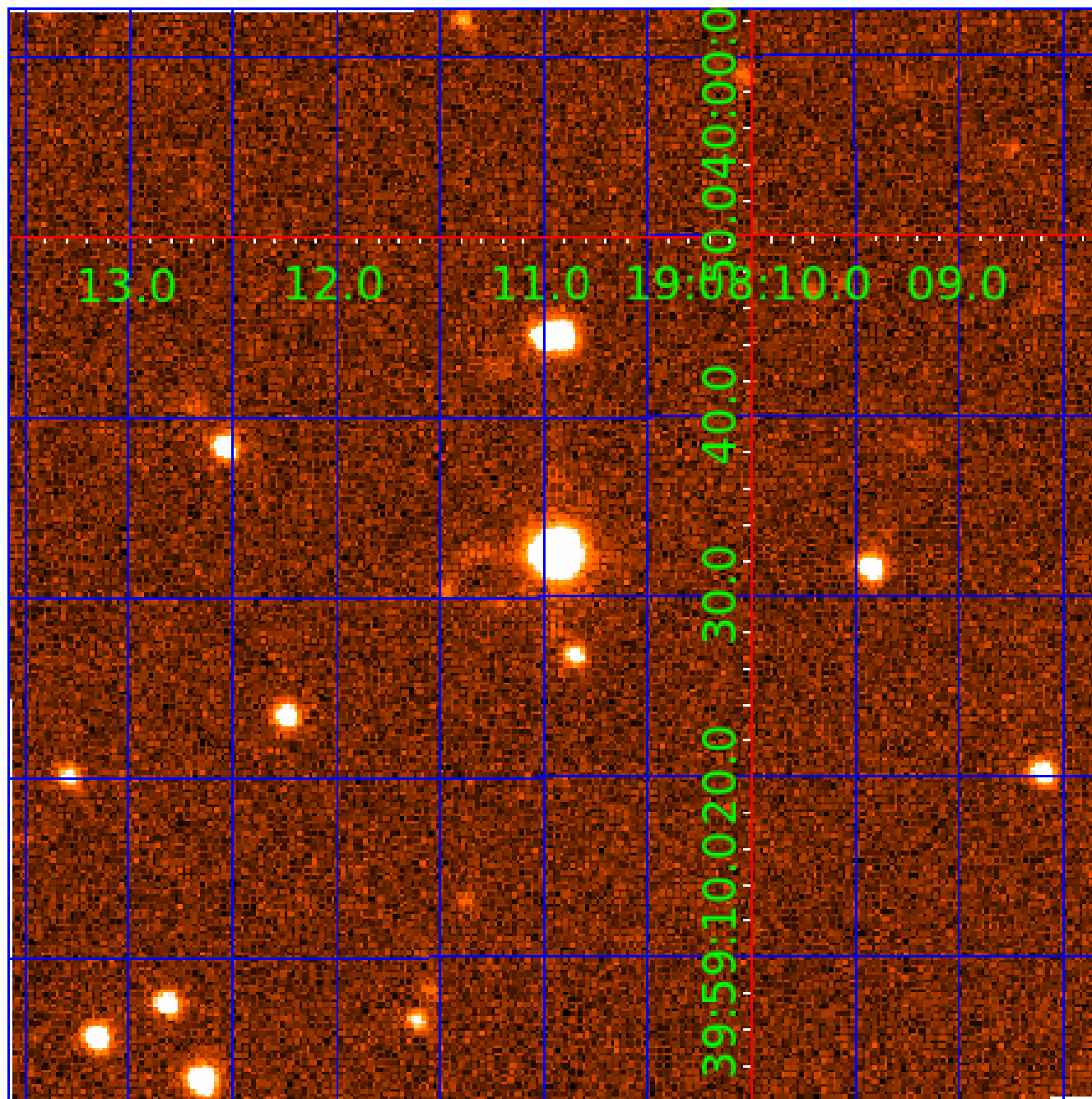


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
004821181-01	OBS	No	0.929046	132.123307	50.0	4.568	7.7	9.0	0.74	4957	0.65	1064.37
004821181-02	OBS	No	418.085055	171.572862	1343.6	9.528	13.2	8.2	0.74	4957	3.03	0.31
004821181-03	OBS	No	76.518646	147.337688	871.8	11.006	14.9	8.3	0.74	4957	2.41	2.97
004821181-04	OBS	No	325.260739	378.196283	6453.1	44.881	13.7	9.6	0.74	4957	7.34	0.43
004821181-05	OBS	No	422.614166	158.850559	1118.6	5.960	12.0	6.3	0.74	4957	2.58	0.30
004821181-06	OBS	No	137.649446	138.110864	955.8	13.375	12.0	6.9	0.74	4957	2.79	1.36
004821181-07	OBS	No	154.598339	235.200018	814.5	1.164	10.7	4.2	0.74	4957	2.59	1.16
004821181-08	OBS	No	149.218390	235.246513	261.8	3.713	10.2	2.2	0.74	4957	1.33	1.22
004821181-09	OBS	No	493.334234	519.039022	1895.7	9.487	10.2	8.2	0.74	4957	3.47	0.25
004821181-10	OBS	No	222.392056	344.425283	752.8	9.000	10.4	-1.0	0.74	4957	1.96	0.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004821181-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
004821181-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
004821181-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004821181-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
004821181-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV
004821181-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
004821181-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_MEAS
004821181-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004821181-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

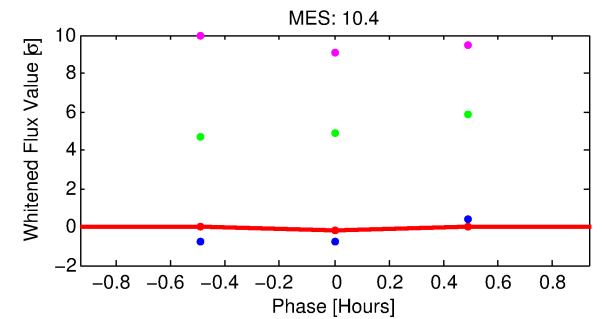
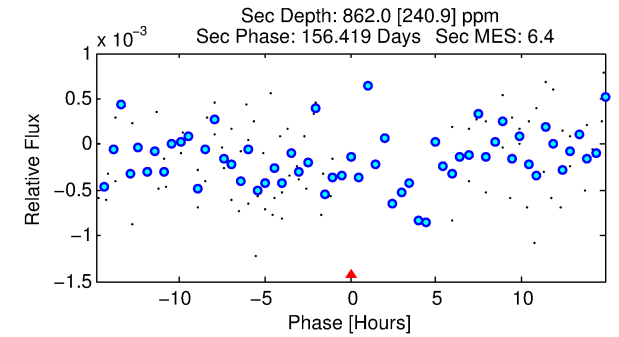
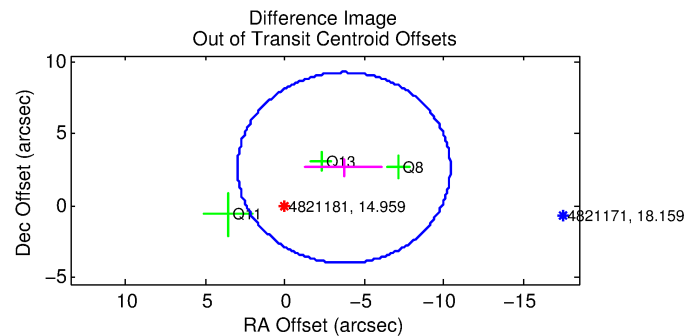
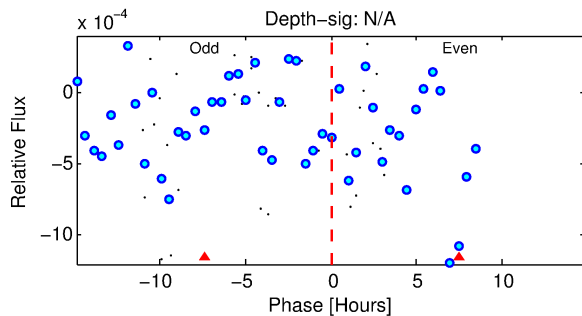
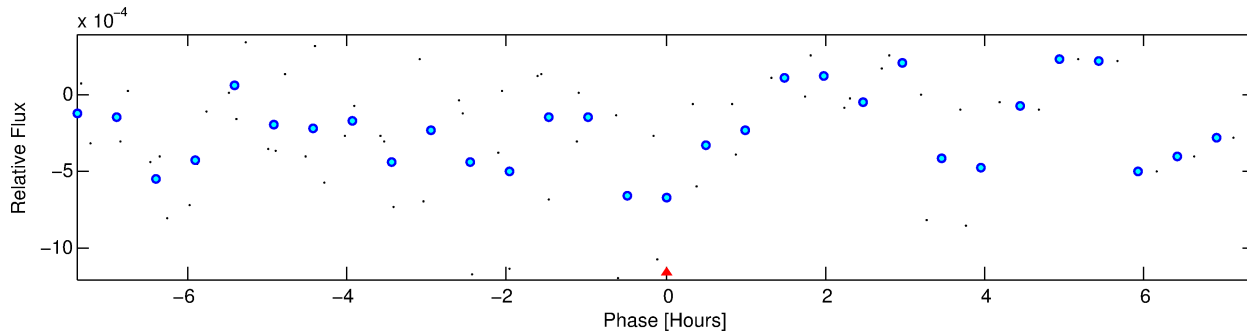
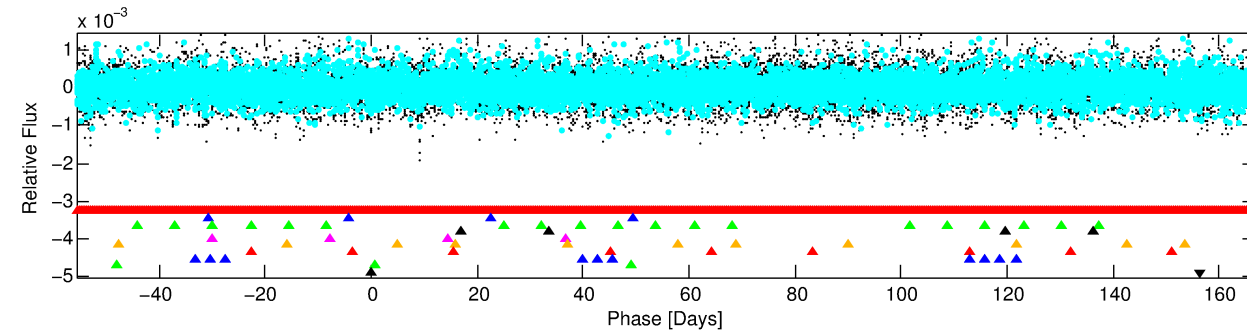
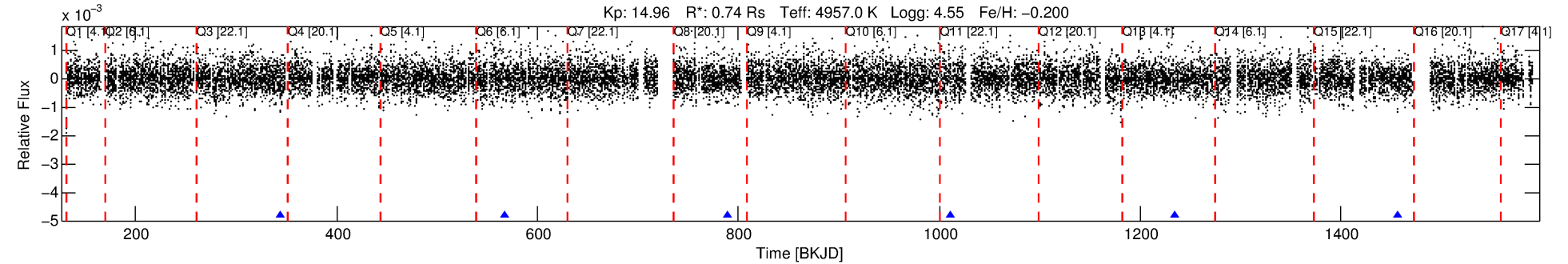
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004821181-10

No Significant Match Found

DV One-Page Summary

KIC: 4821181 Candidate: 10 of 10 Period: 222.392 d



TPS TCE Results:

Period = 222.39206 d
Epoch = 344.4253 BKJD

DV fit results are unavailable

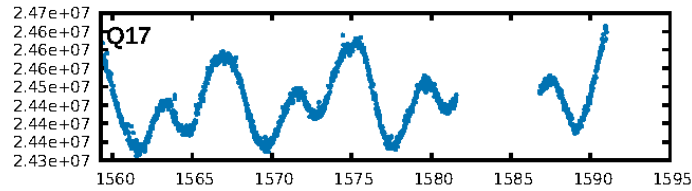
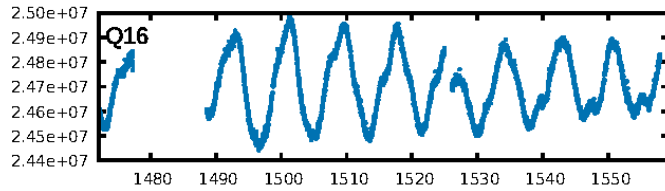
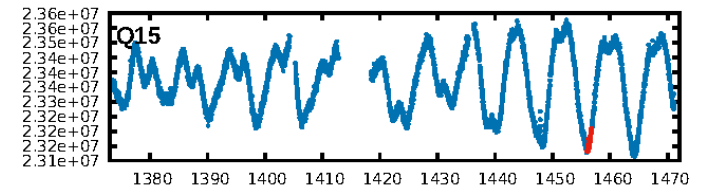
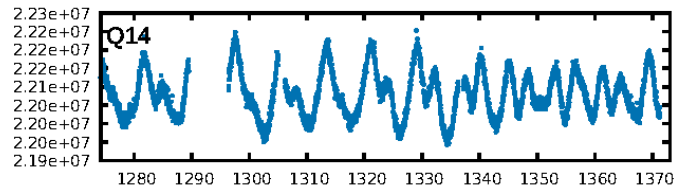
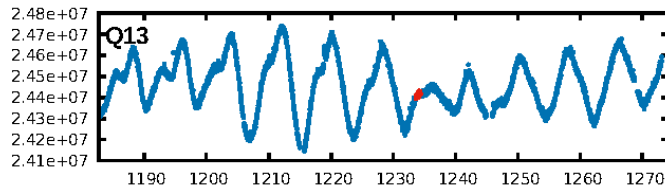
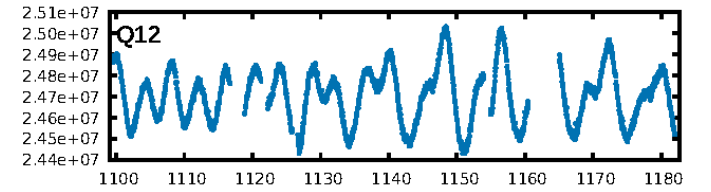
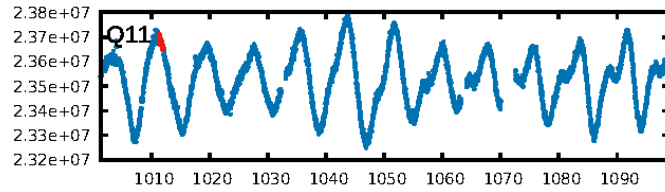
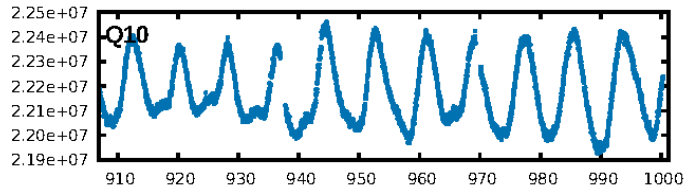
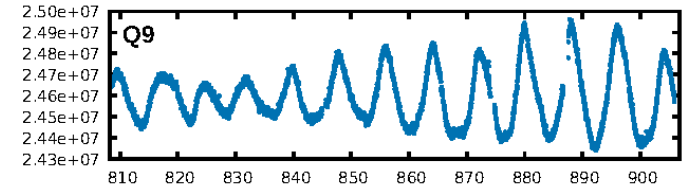
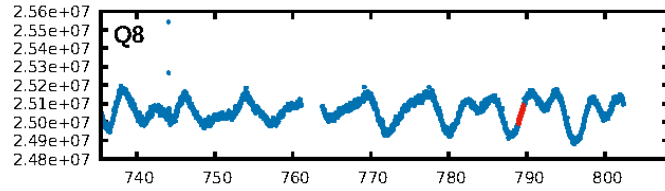
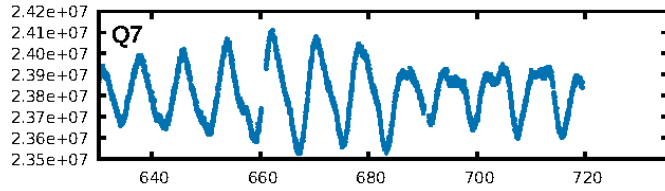
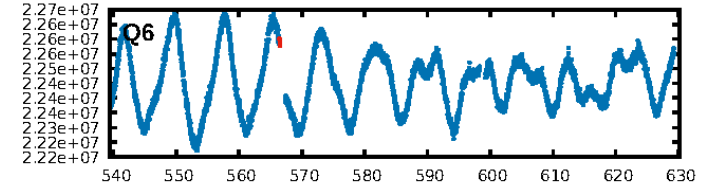
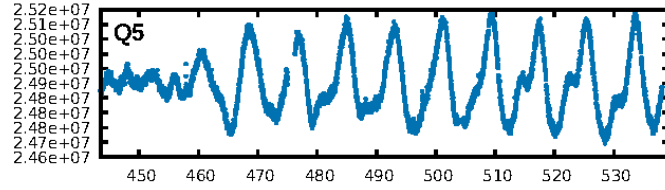
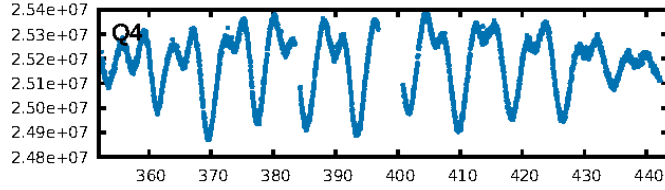
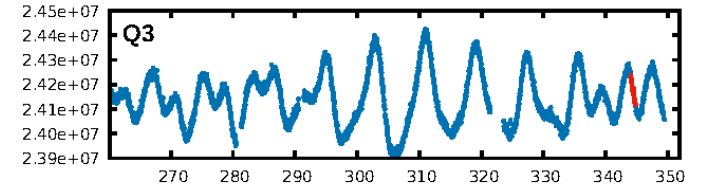
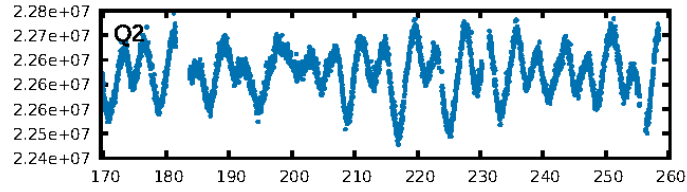
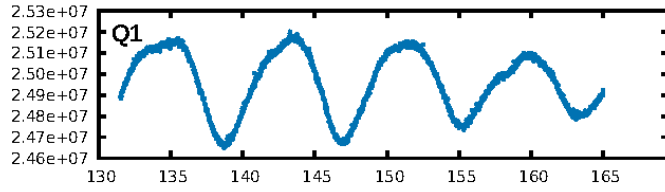
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [179.29σ]
LongPeriod-sig: 100.0% [53.94σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 22.28
Centroid-sig: 44.0%
Centroid-so: 0.300 arcsec [0.56σ]
OotOffset-rm: 4.551 arcsec [2.04σ]
KicOffset-rm: 4.645 arcsec [2.16σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.20 [1/5]

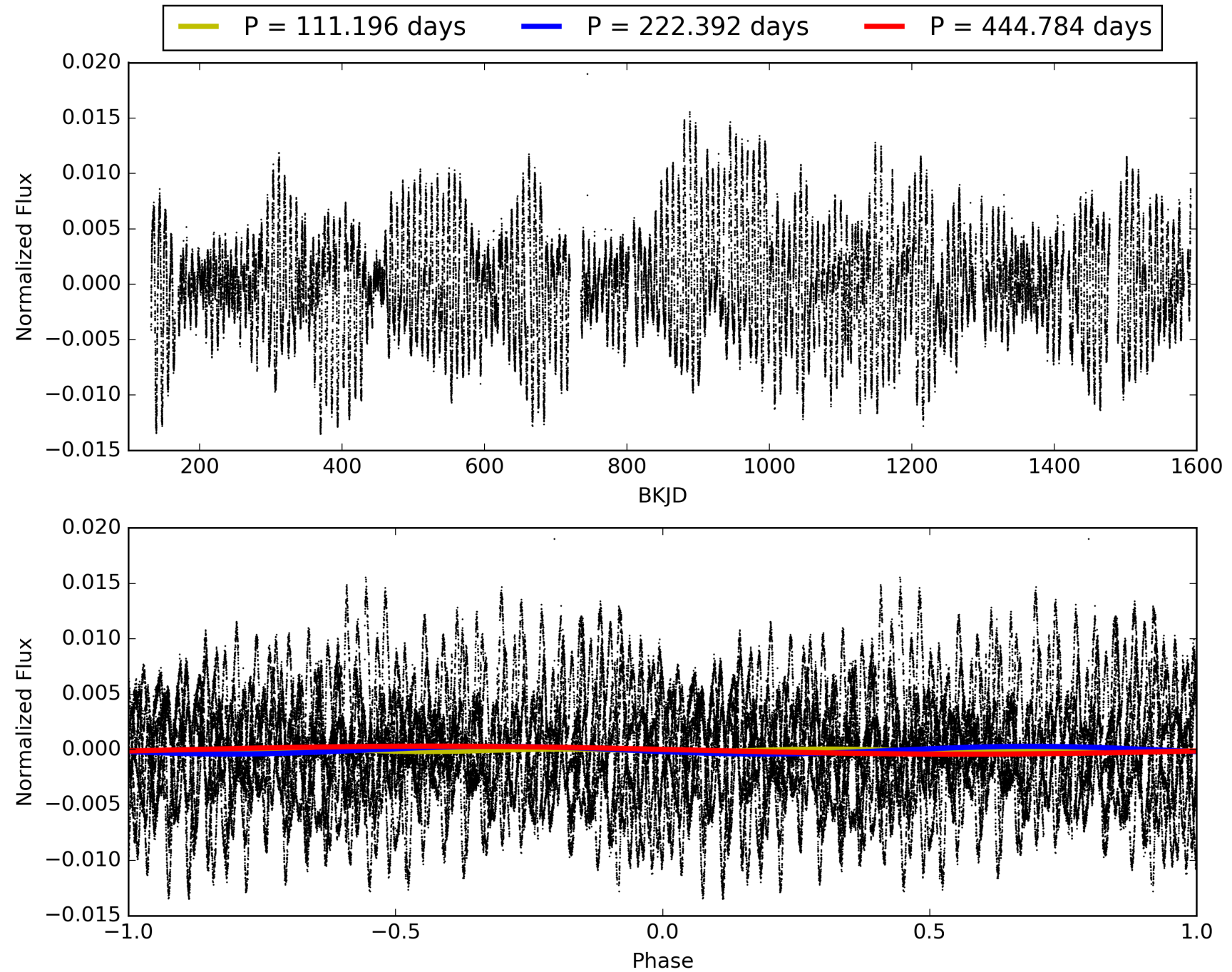
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 06:40:57 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004821181-10, PDC Light Curves

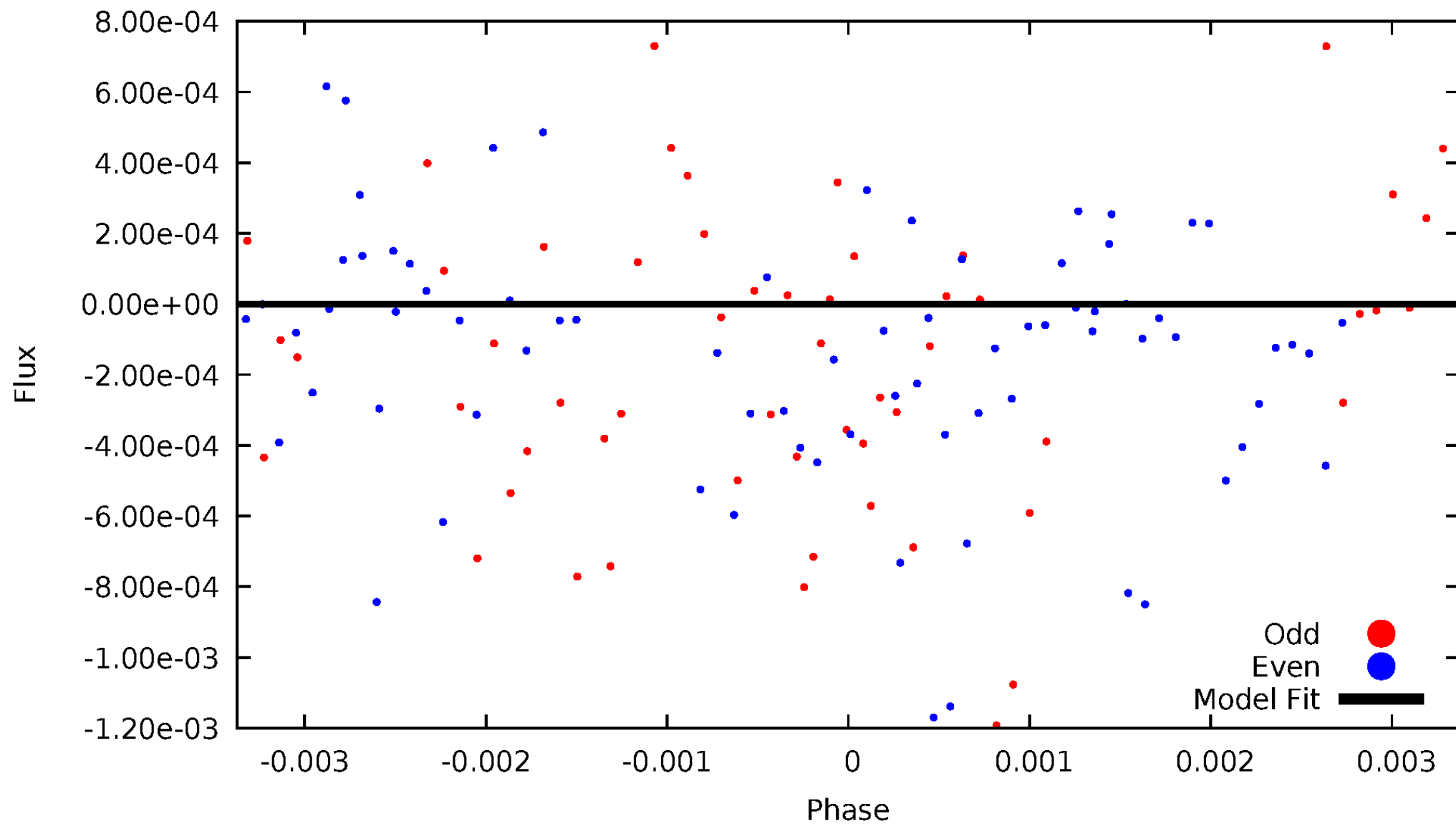


TCE 004821181-10



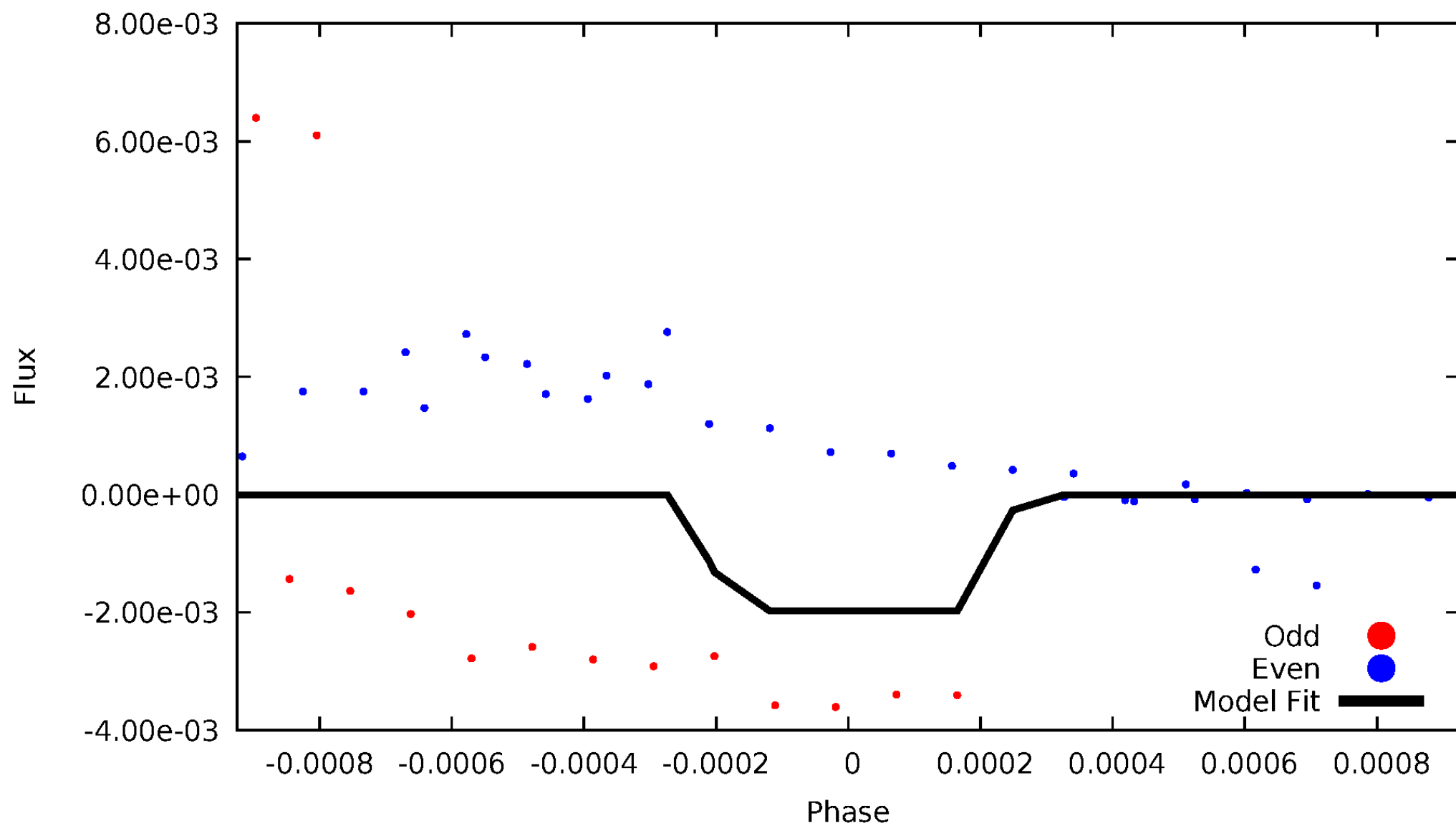
DV Odd/Even

TCE 004821181-10



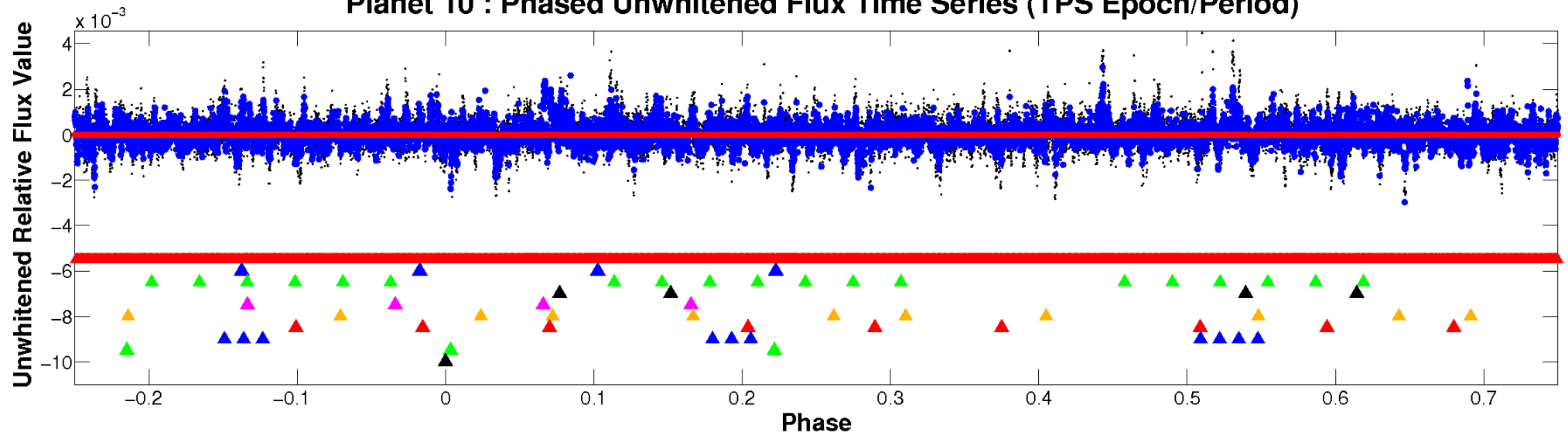
ALT Odd/Even

TCE 004821181-10

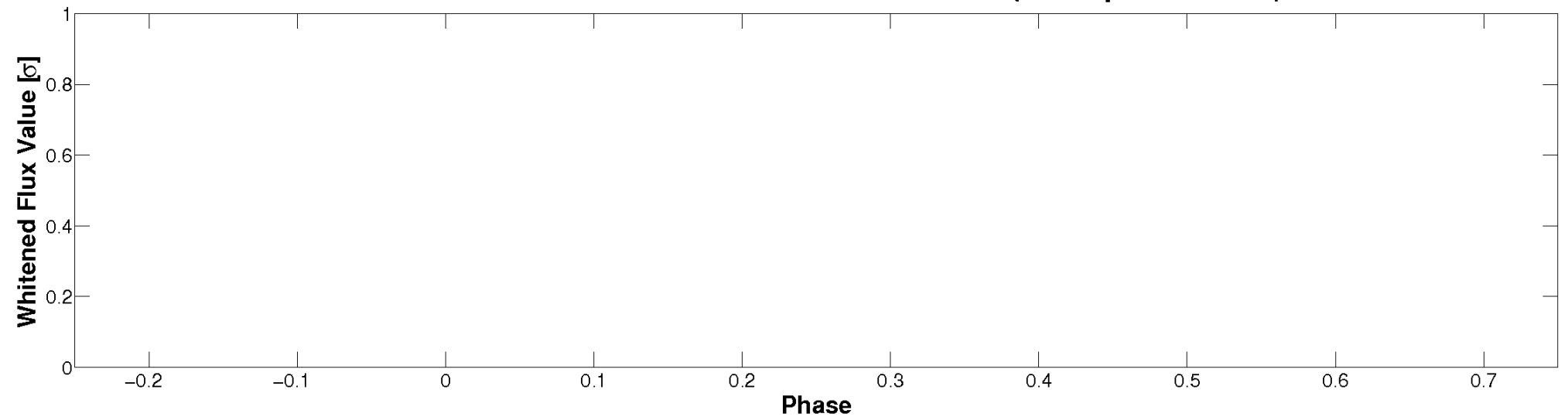


Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

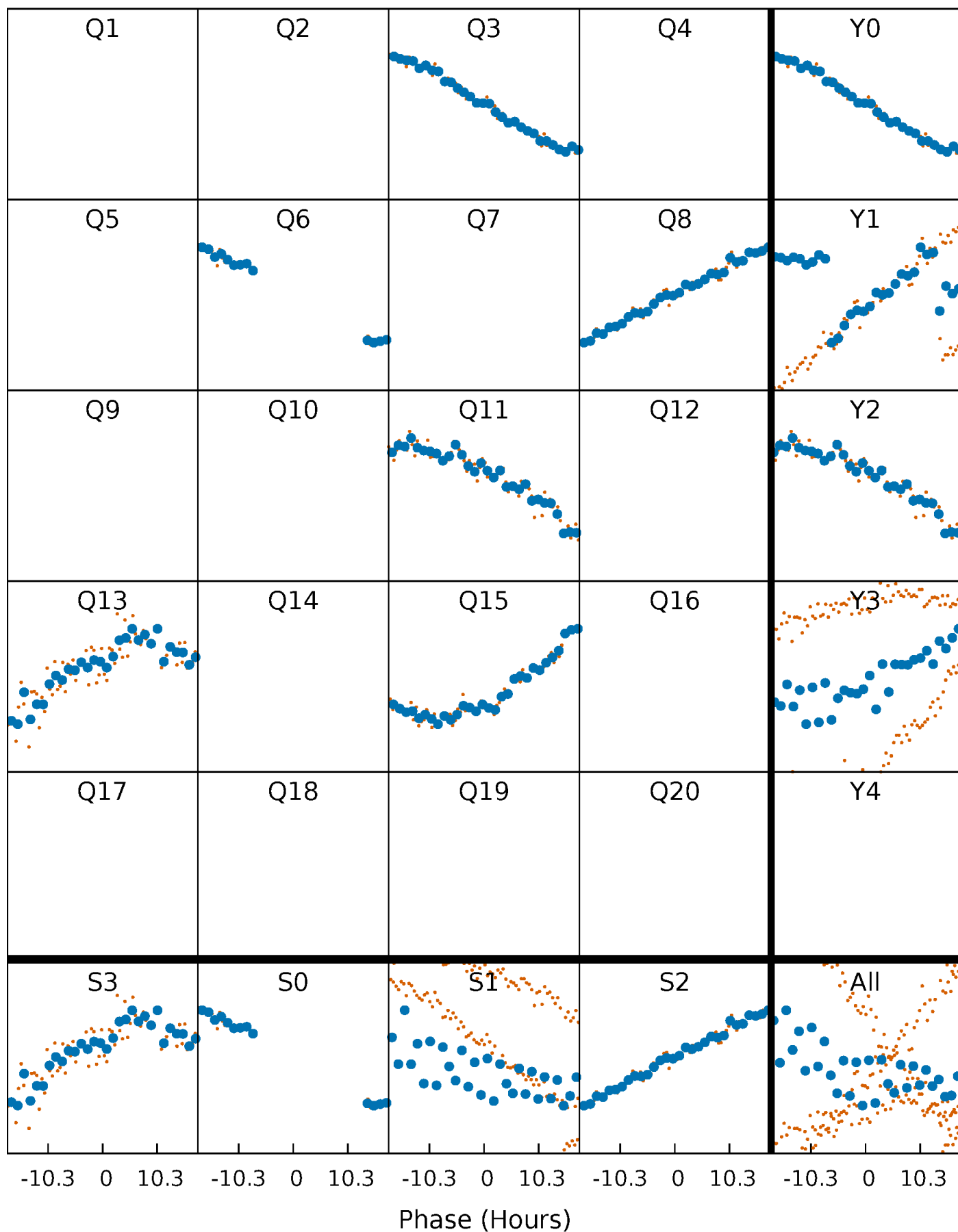


Planet 10 : Phased Whitened Flux Time Series (TPS Epoch/Period)



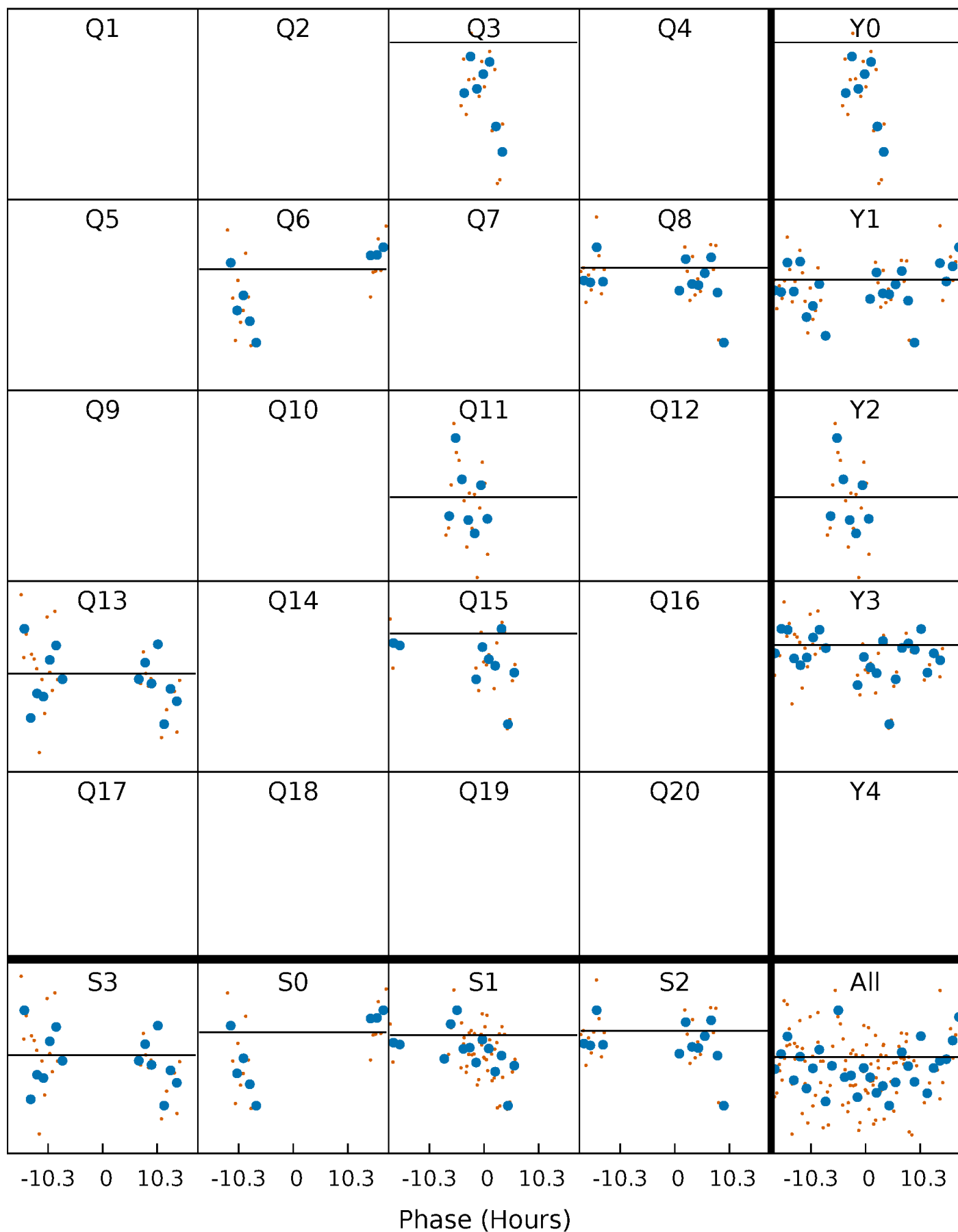
PDC Quarter-Phased Transit Curves

TCE 004821181-10 $P=222.392056$ Days $T_0=344.425283$ (BKJD)



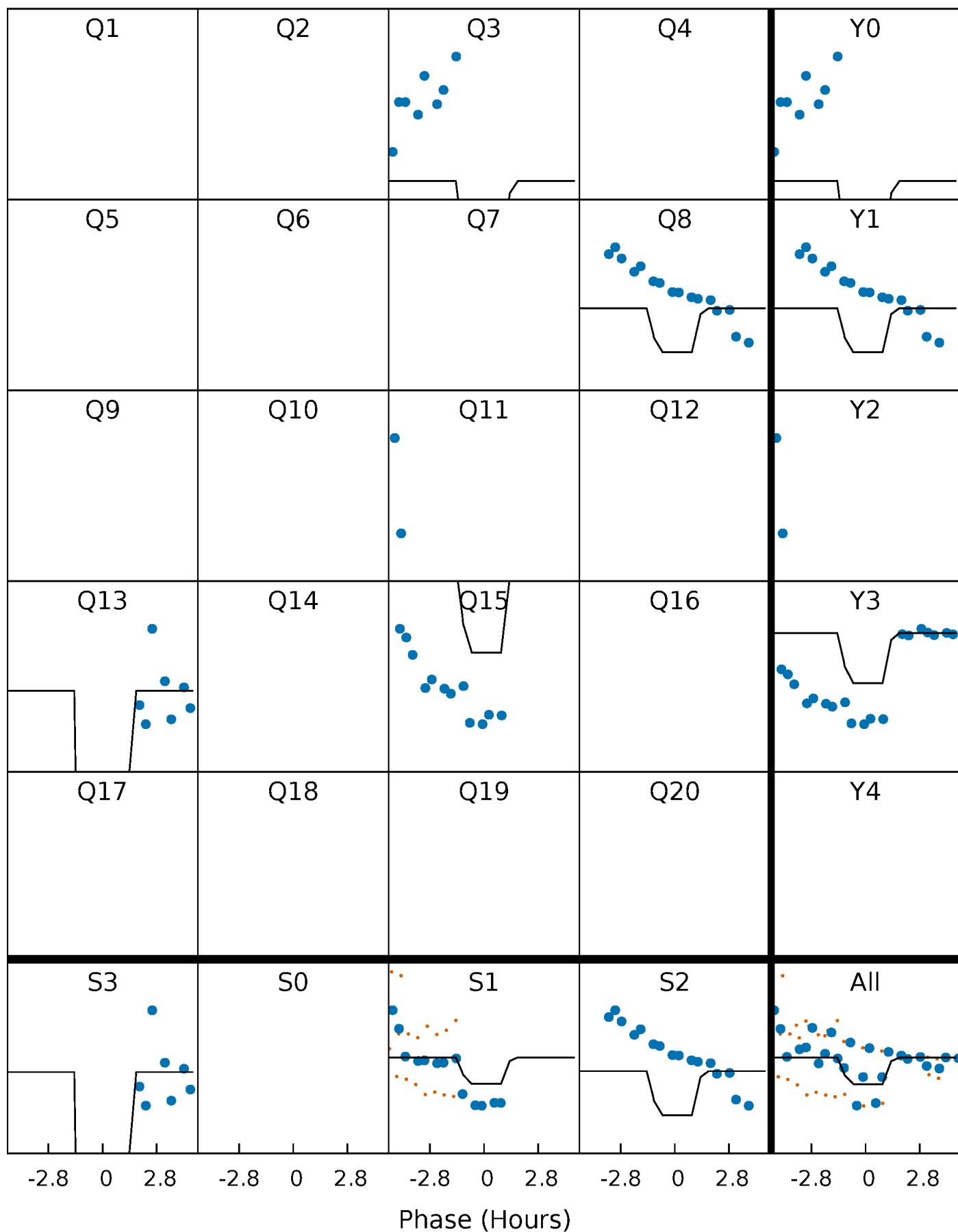
DV Quarter-Phased Transit Curves

TCE 004821181-10 $P=222.392056$ Days $T_0=344.425283$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

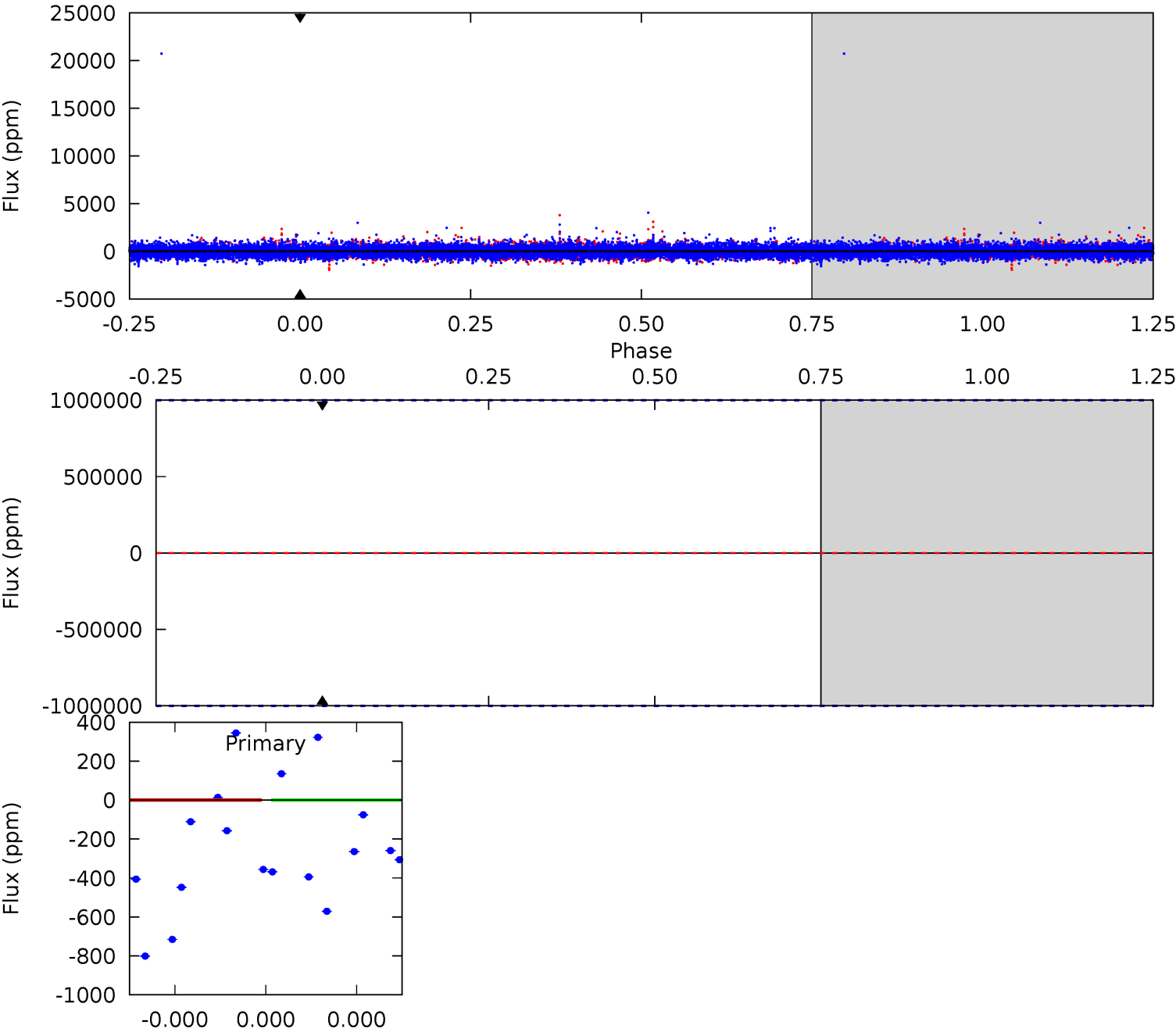
TCE 004821181-10 P=222.392056 Days $T_0=344.631835$ (BKJD)



DV Model-Shift Uniqueness Test

004821181-10, P = 222.392056 Days, E = 122.033227 Days

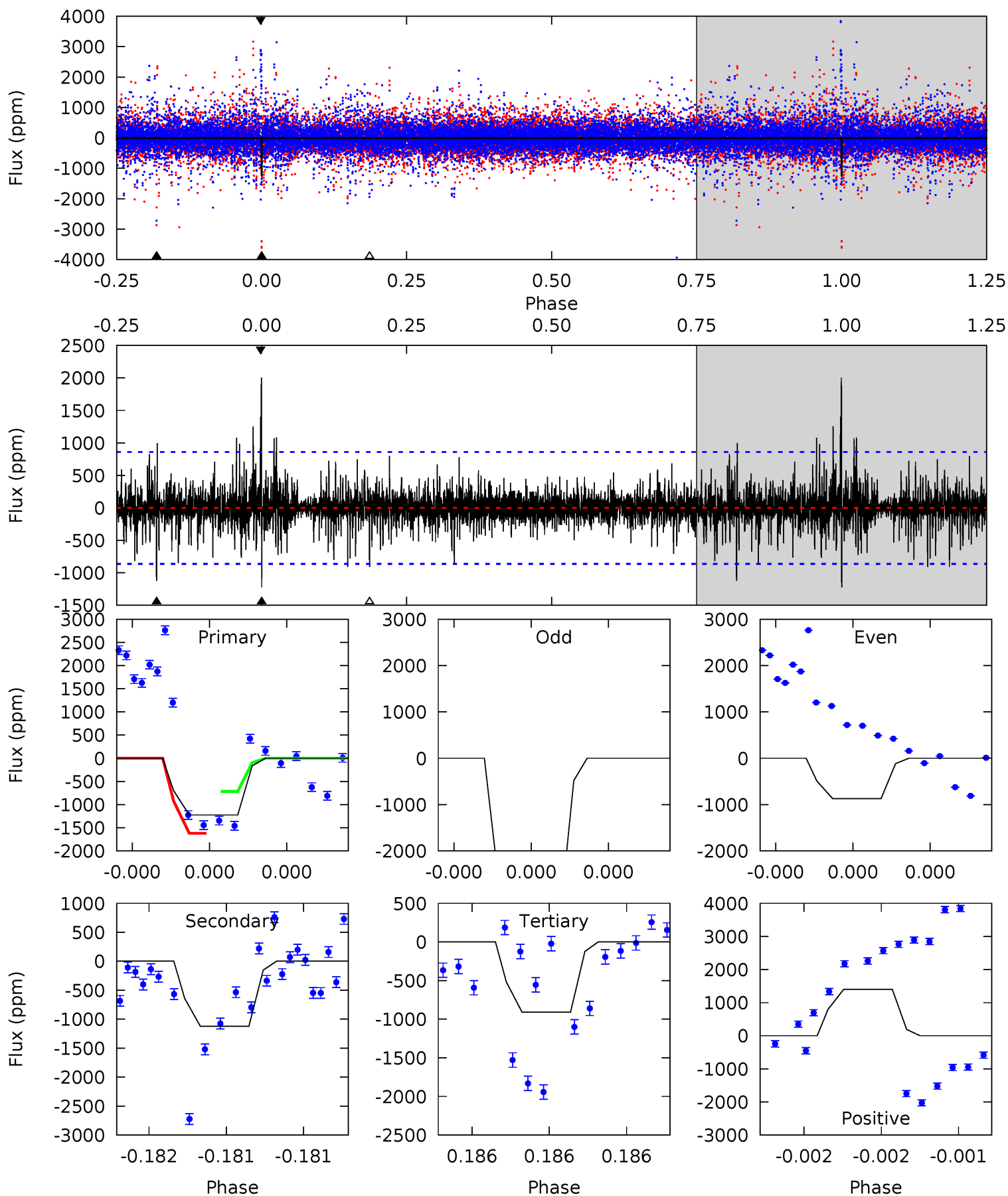
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004821181-10, P = 222.392056 Days, E = 122.239779 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.95	7.29	5.90	9.10	5.59	3.51	1.23	2.05	-1.15	1.39	-1.81	8.31	1.00	0.62	2.55



Stellar Parameters For KIC 004821181

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4957^{+136}_{-151}	$4.554^{+0.072}_{-0.042}$	$-0.200^{+0.300}_{-0.300}$	$0.738^{+0.065}_{-0.079}$	$0.712^{+0.093}_{-0.057}$	$2.490^{+0.785}_{-0.415}$
	+3%/-3%	+2%/-1%	+150%/-150%	+9%/-11%	+13%/-8%	+32%/-17%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 004821181-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$6.24^{+6.26}_{-4.32}$	326^{+12}_{-12}	-2674^{+18206}_{-10768}	$-707.714^{+1310400.166}_{-905074.146}$
Alt.	-1123 ± 154	$6.98^{+7.20}_{-4.50}$	326^{+12}_{-13}	3499^{+1628}_{-649}	5241^{+35835}_{-3940}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

DV Centroid Data

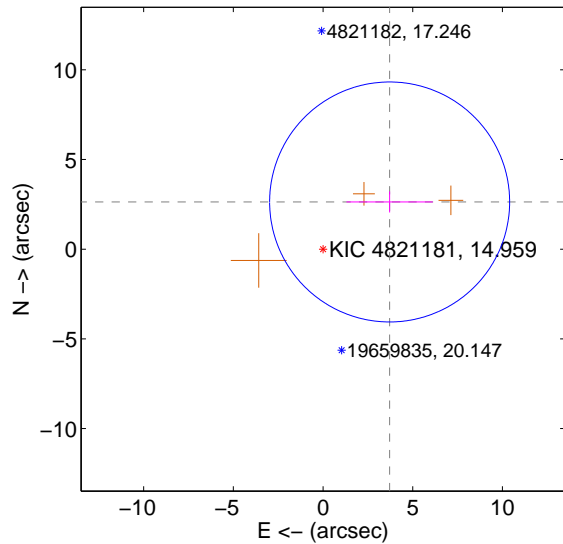
Supplemental centroid analysis for 004821181-10. Kepler magnitude: 14.96. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

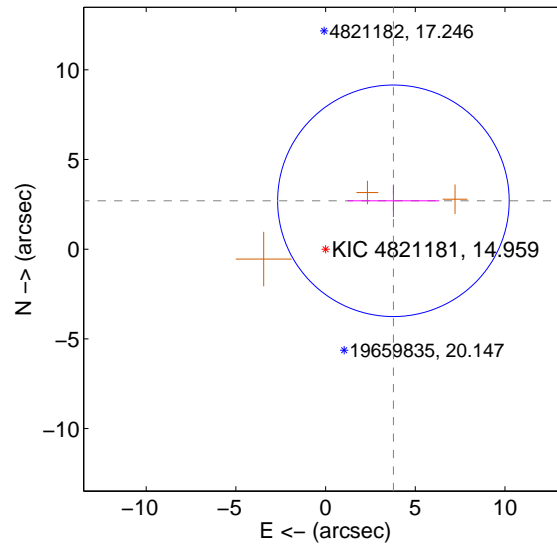
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.551 ± 2.230	2.04	-3.712 ± 2.406	2.632 ± 0.588
PRF-fit source offset from KIC position	4.645 ± 2.151	2.16	-3.781 ± 2.562	2.698 ± 0.908
photometric centroid source offset	0.30 ± 0.54	0.56	0.30 ± 0.54	-0.00 ± 0.65

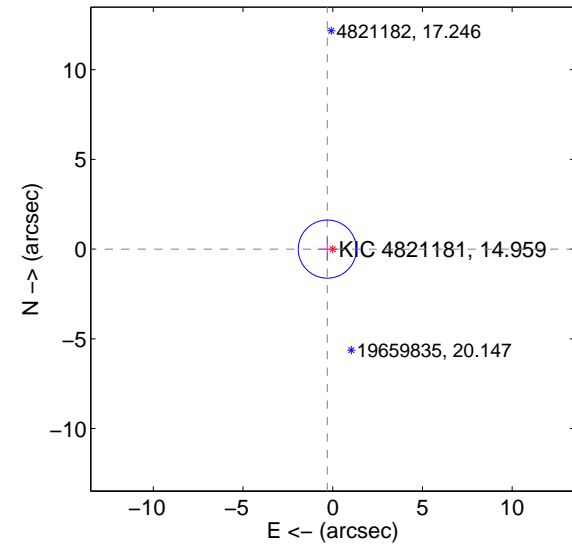
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

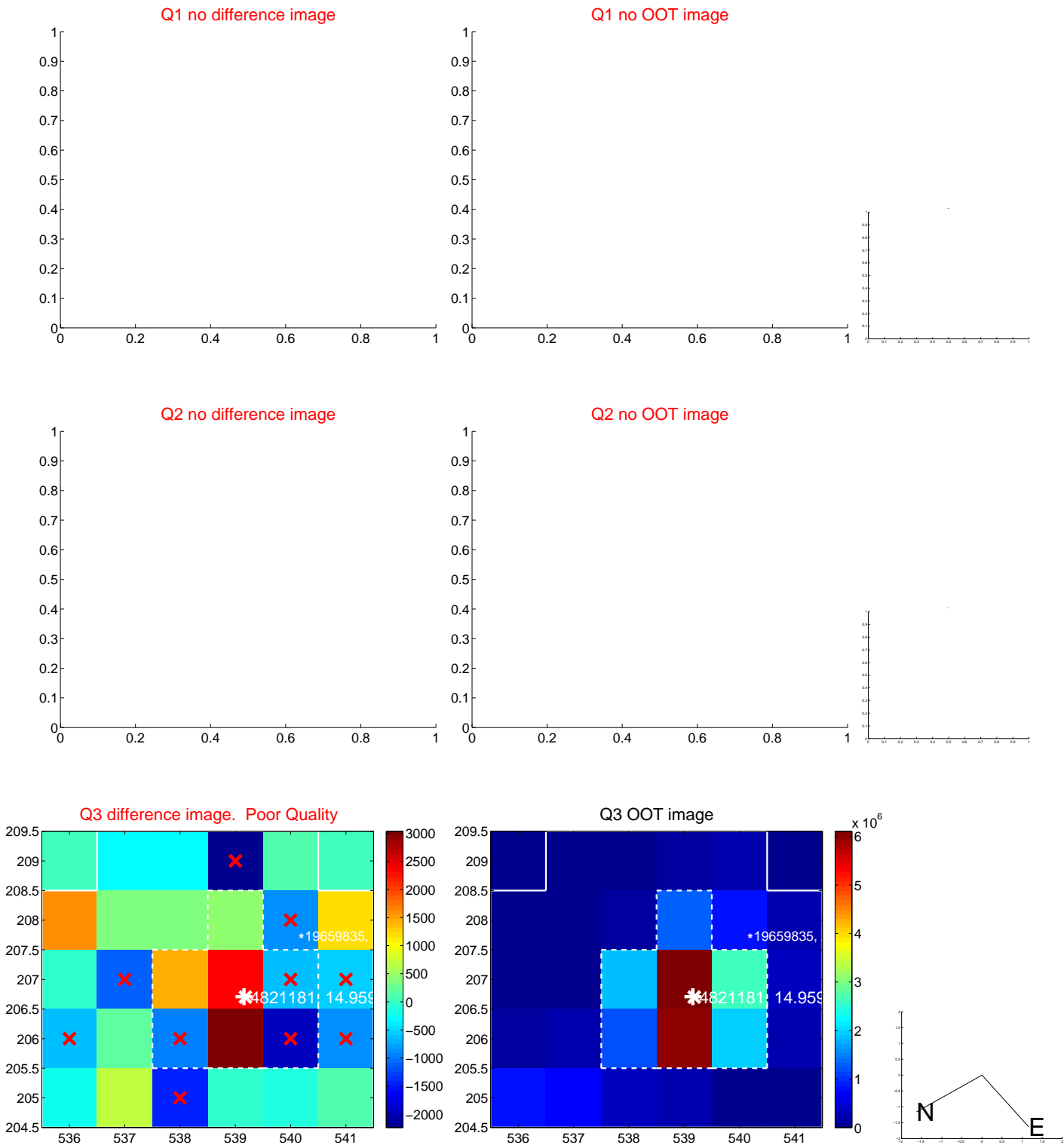


offset from photometric centroids

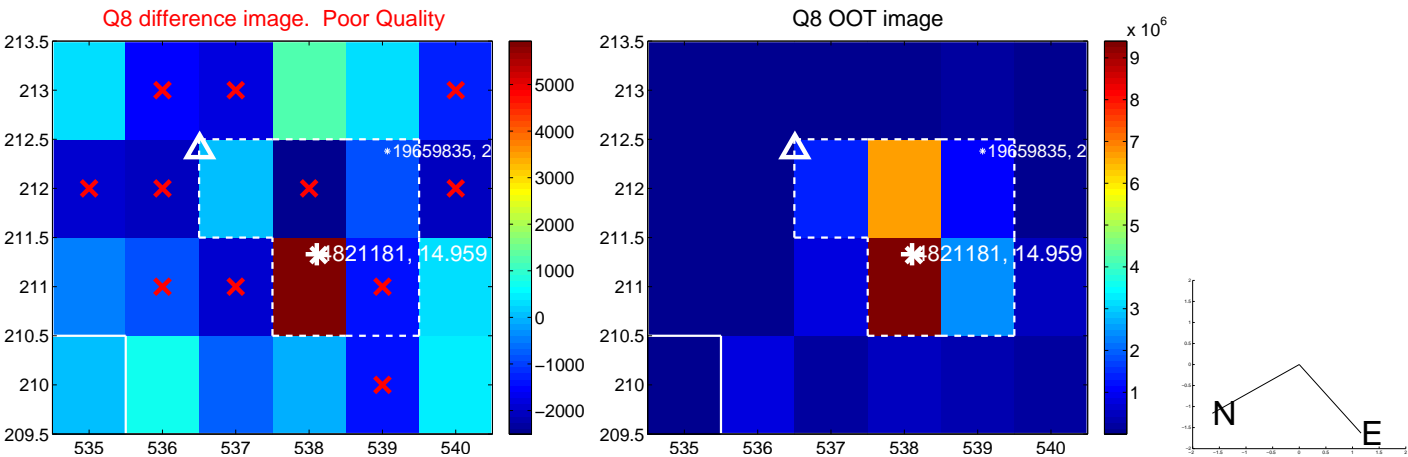


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

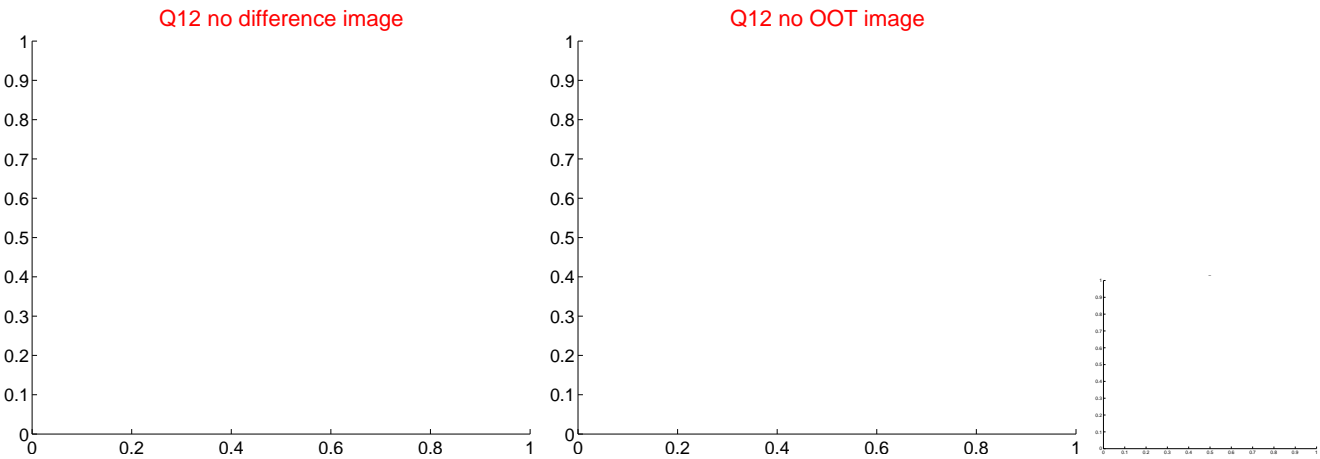
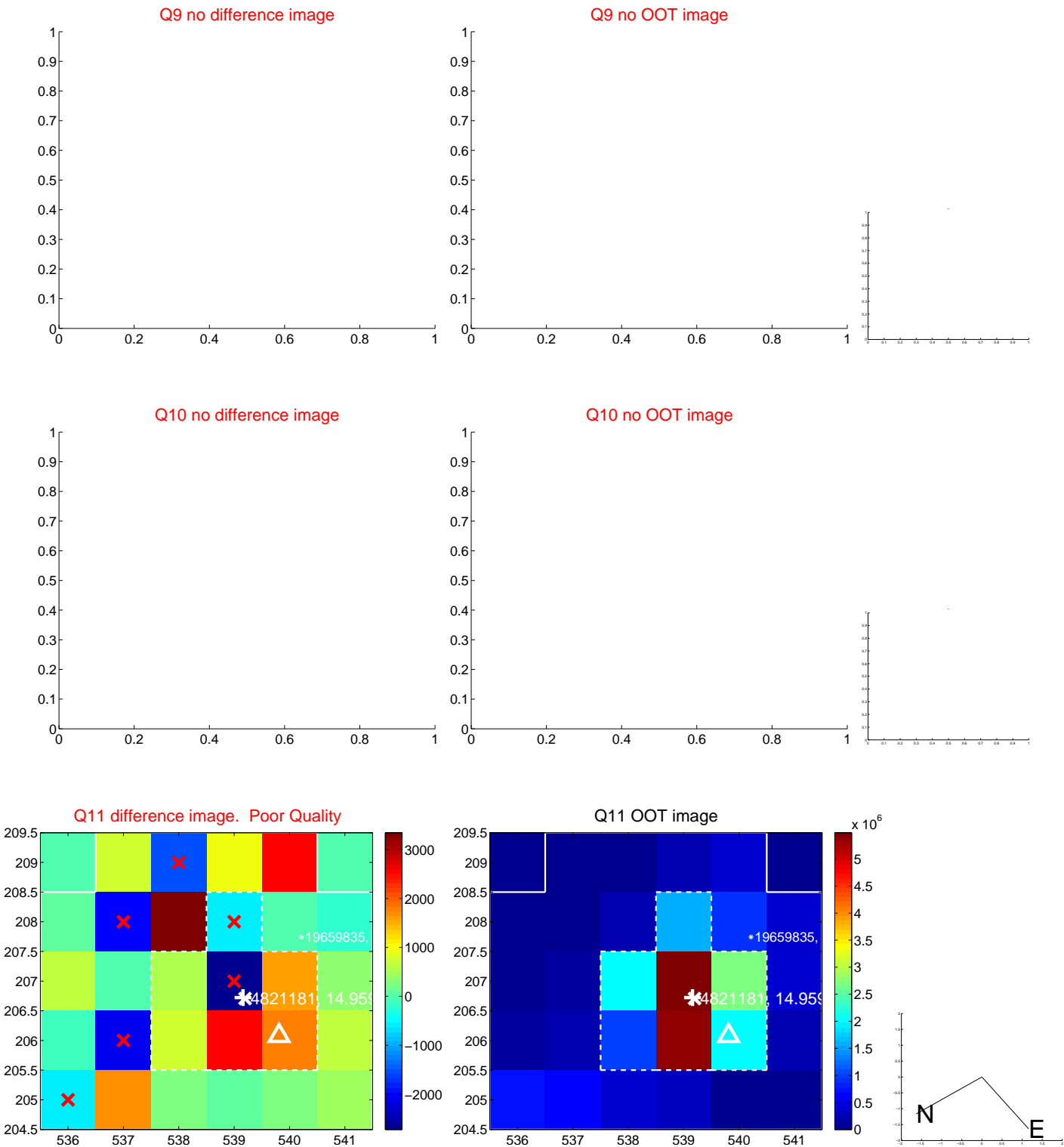
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



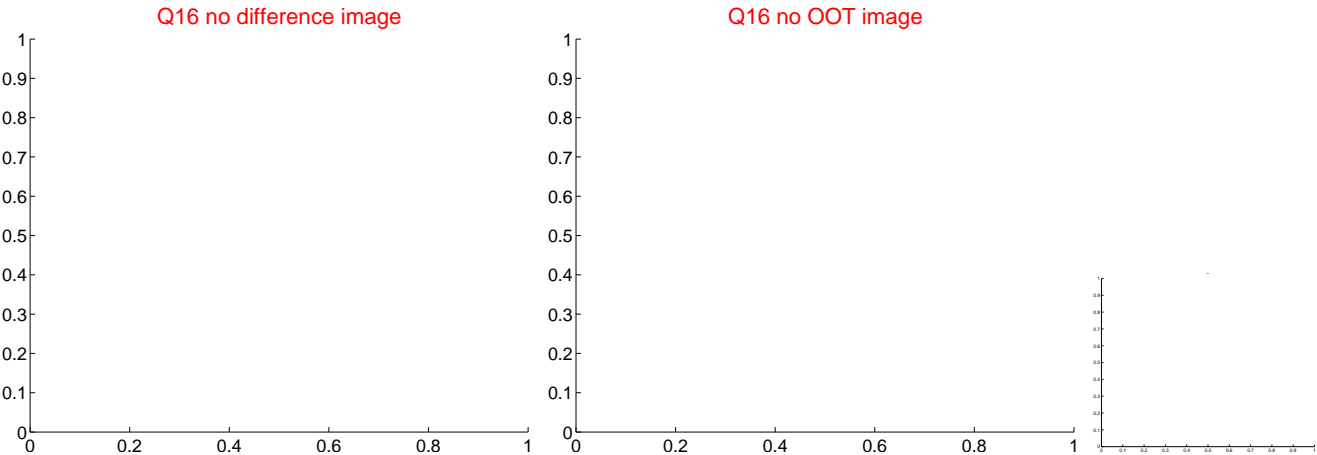
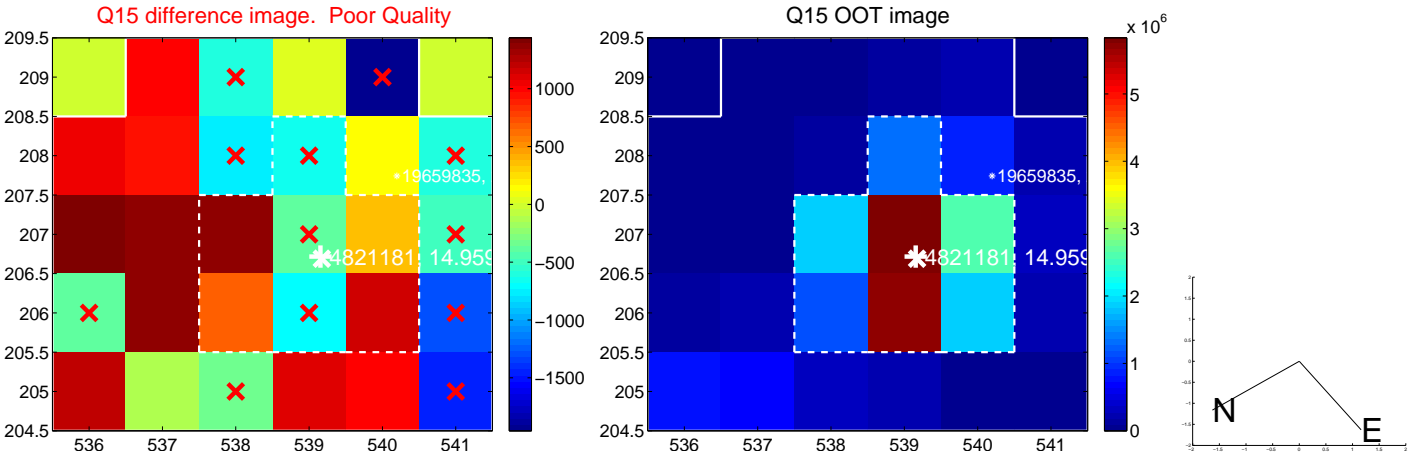
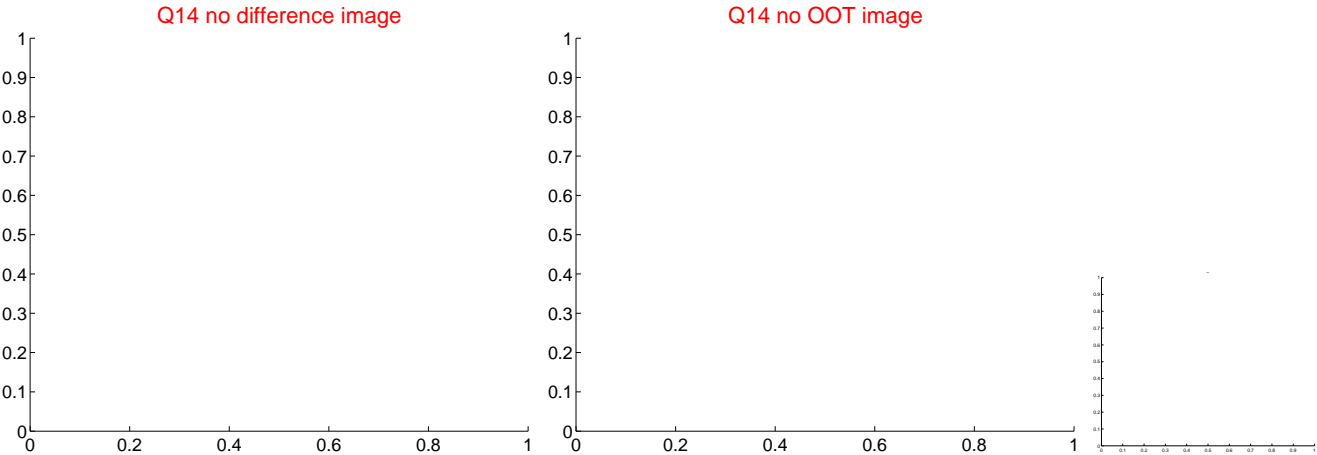
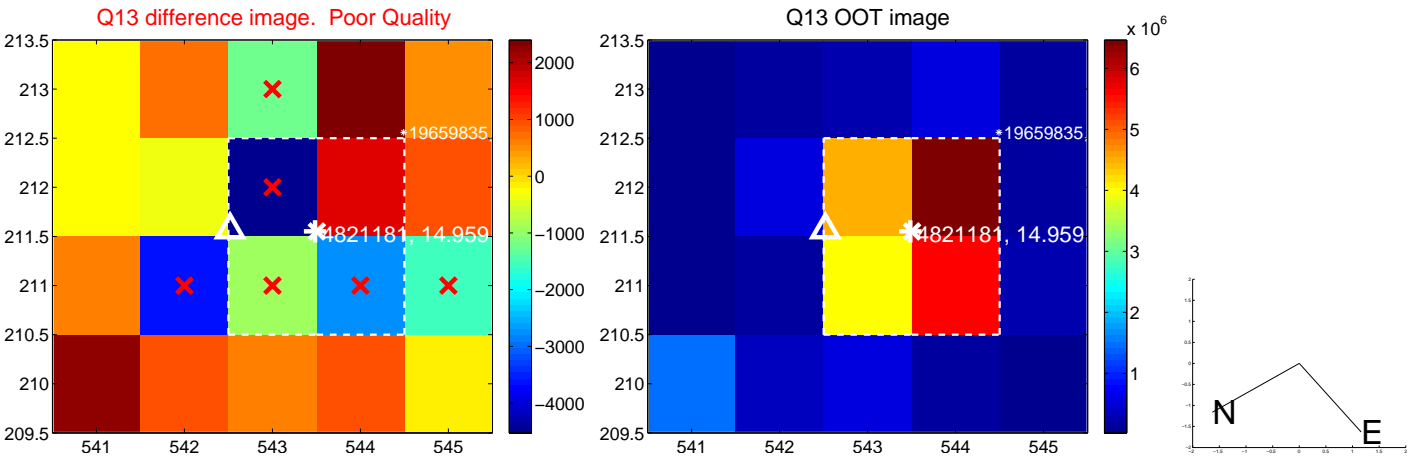
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



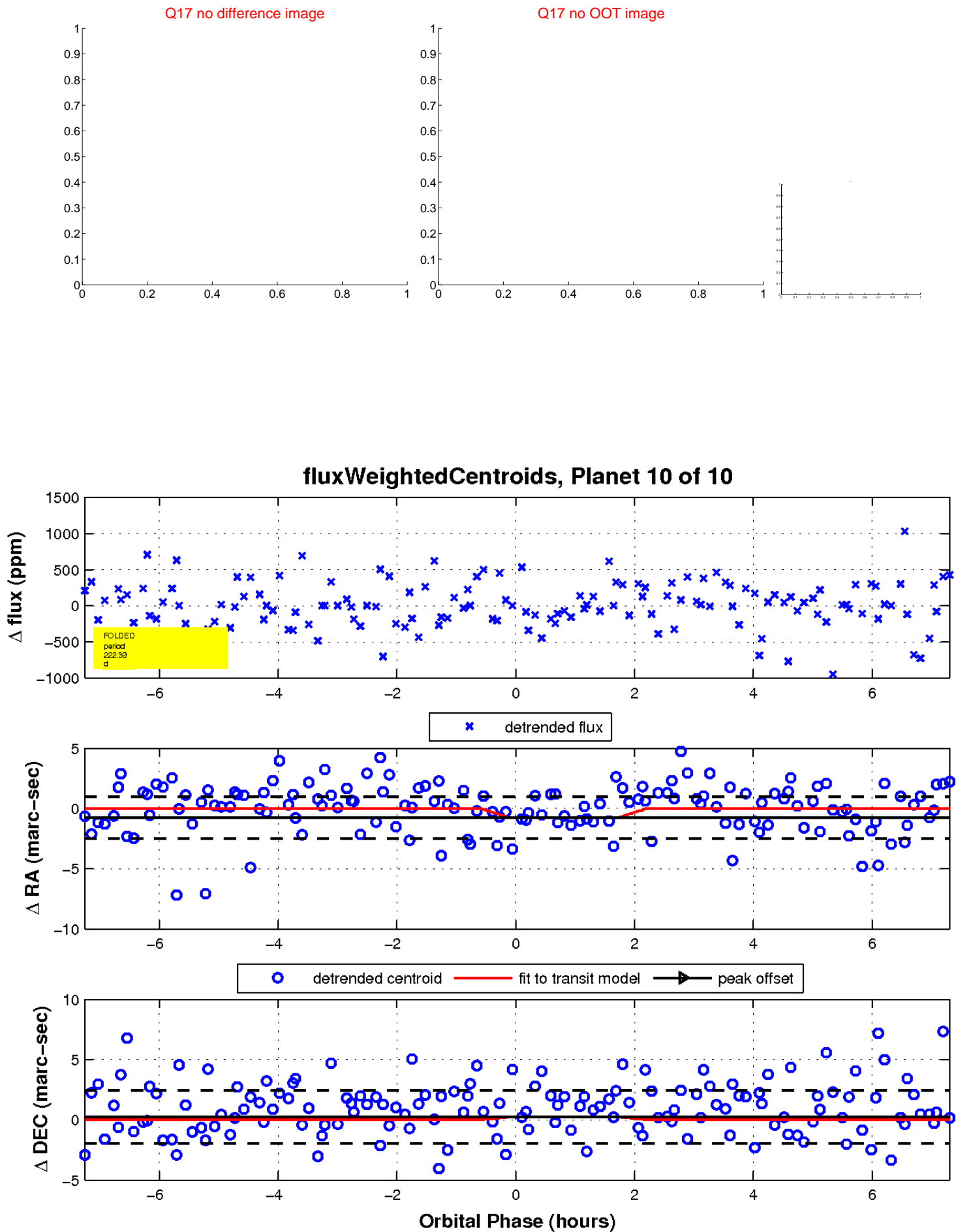
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

