

KIC 006381309

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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

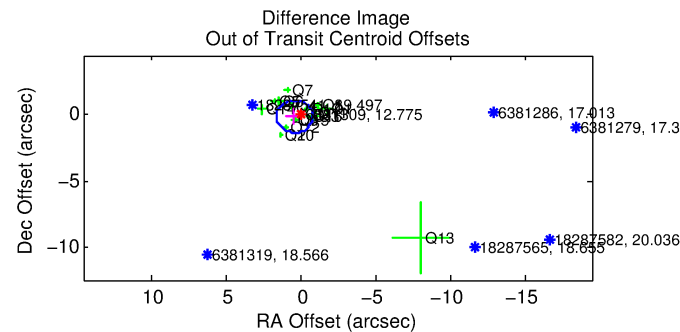
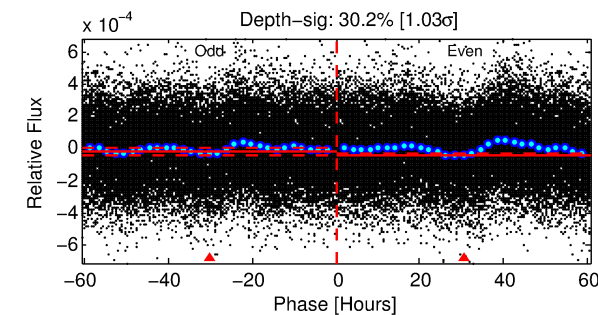
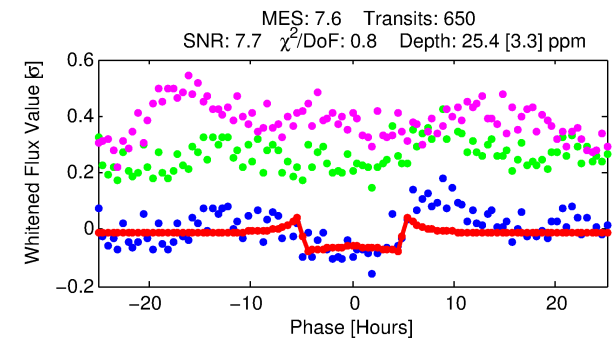
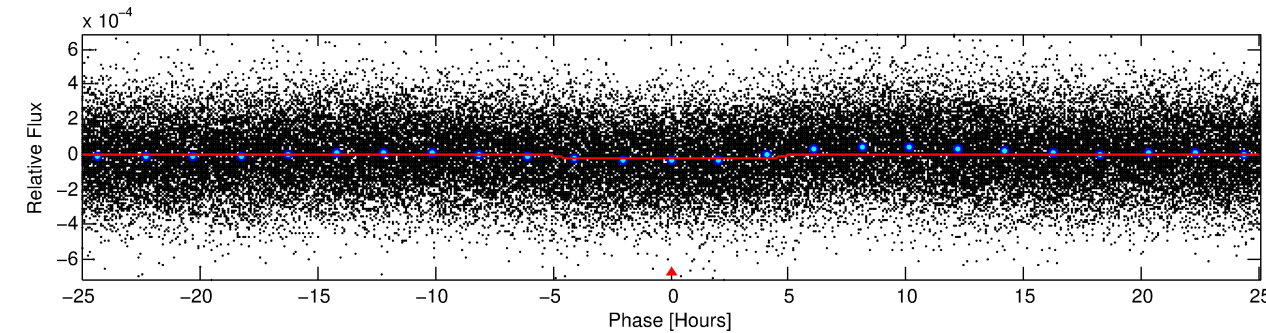
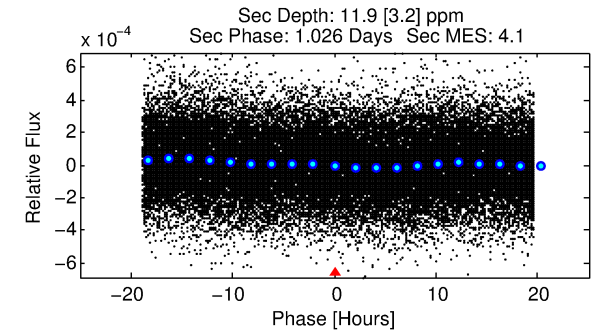
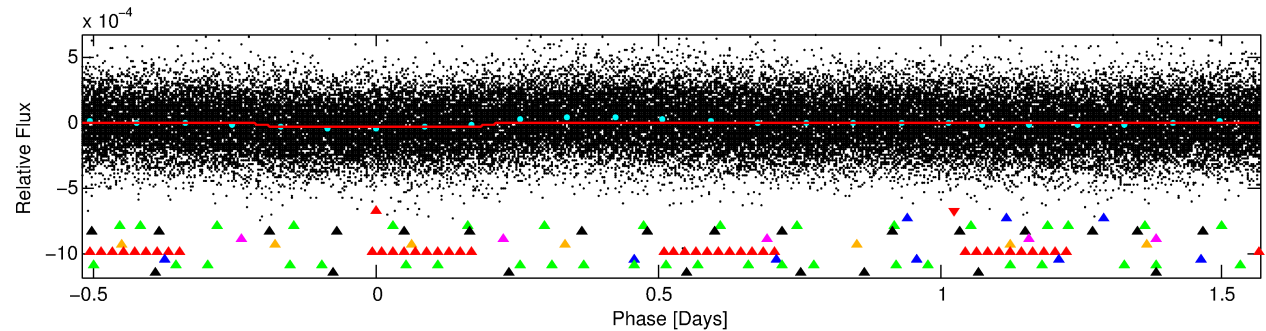
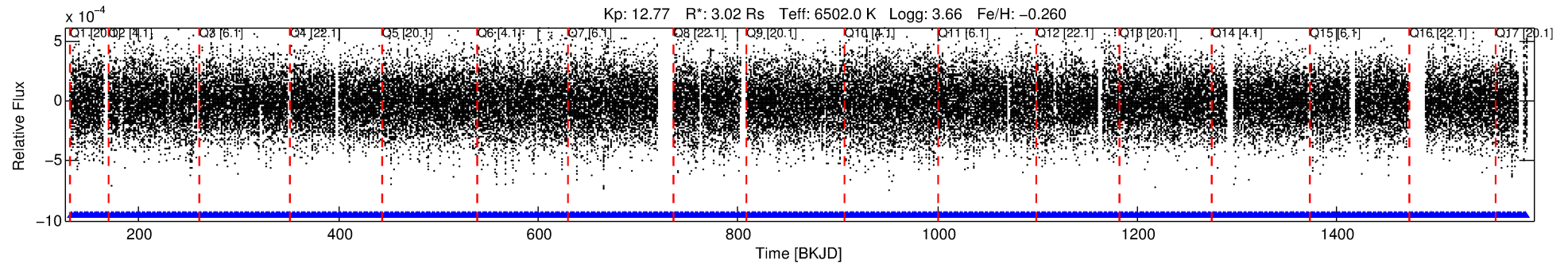
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-01

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 1 of 10 Period: 2.089 d



DV Fit Results:

Period = 2.08911 [0.00002] d
Epoch = 132.9316 [0.0054] BKJD
Rp/R* = 0.0051 [0.0013]
a/R* = 1.29 [0.70]
b = 0.81 [0.59]
Seff = 10859.36 [6561.64]
Teq = 2603 [393] K
Rp = 1.69 [0.76] Re
a = 0.0367 [0.0135] AU
Ag = 3.09 [2.53] [0.82σ]
Teffp = 5335 [774] K [3.15σ]

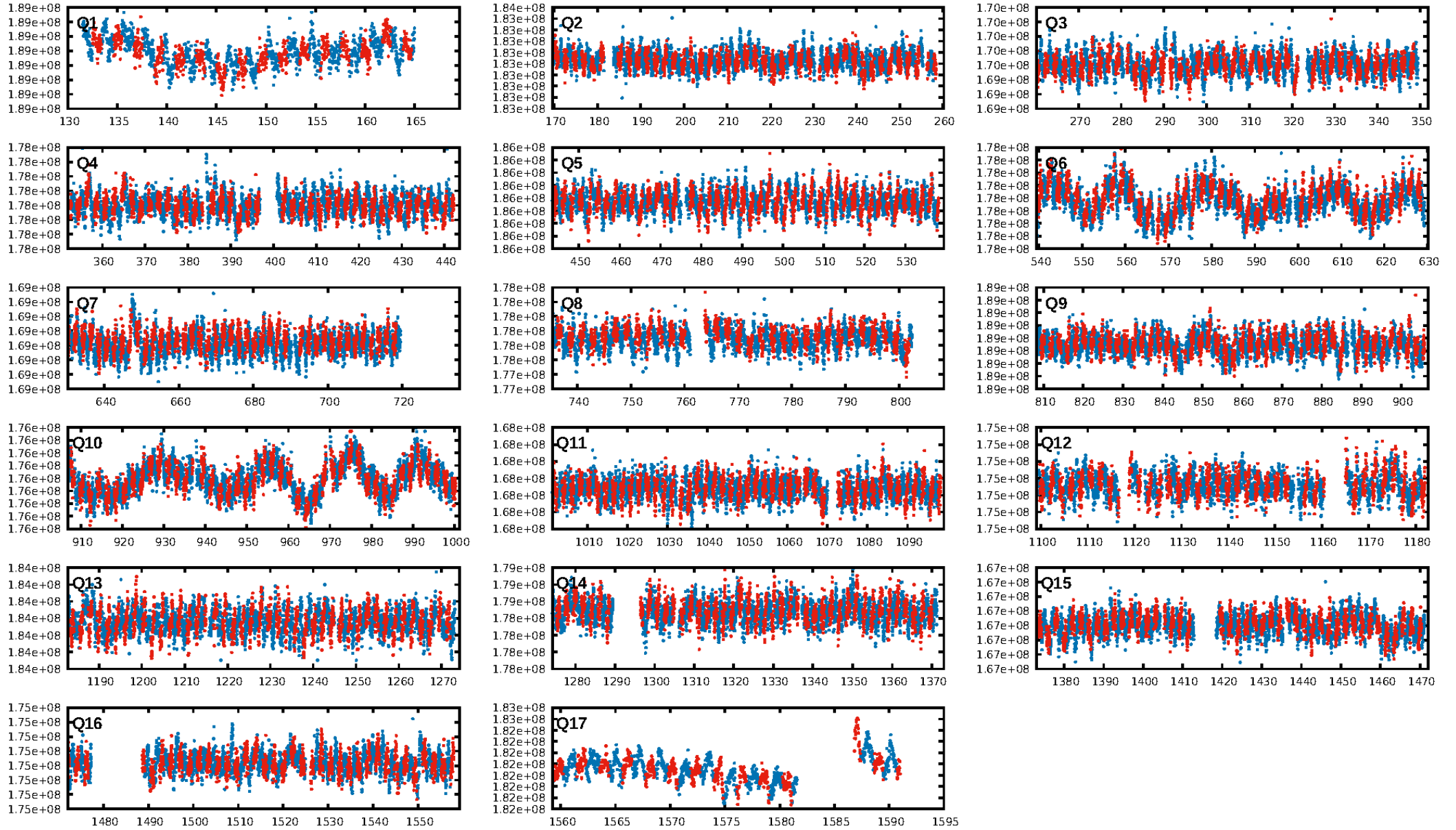
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [62.87σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [620/620]
GhostDiagnostic-chr: 1.093
Centroid-sig: 0.5%
Centroid-so: 0.916 arcsec [1.93σ]
OotOffset-rm: 0.415 arcsec [1.02σ]
KicOffset-rm: 0.383 arcsec [0.86σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.59 [10/17]
DiffImageOverlap-fno: 1.00 [17/17]

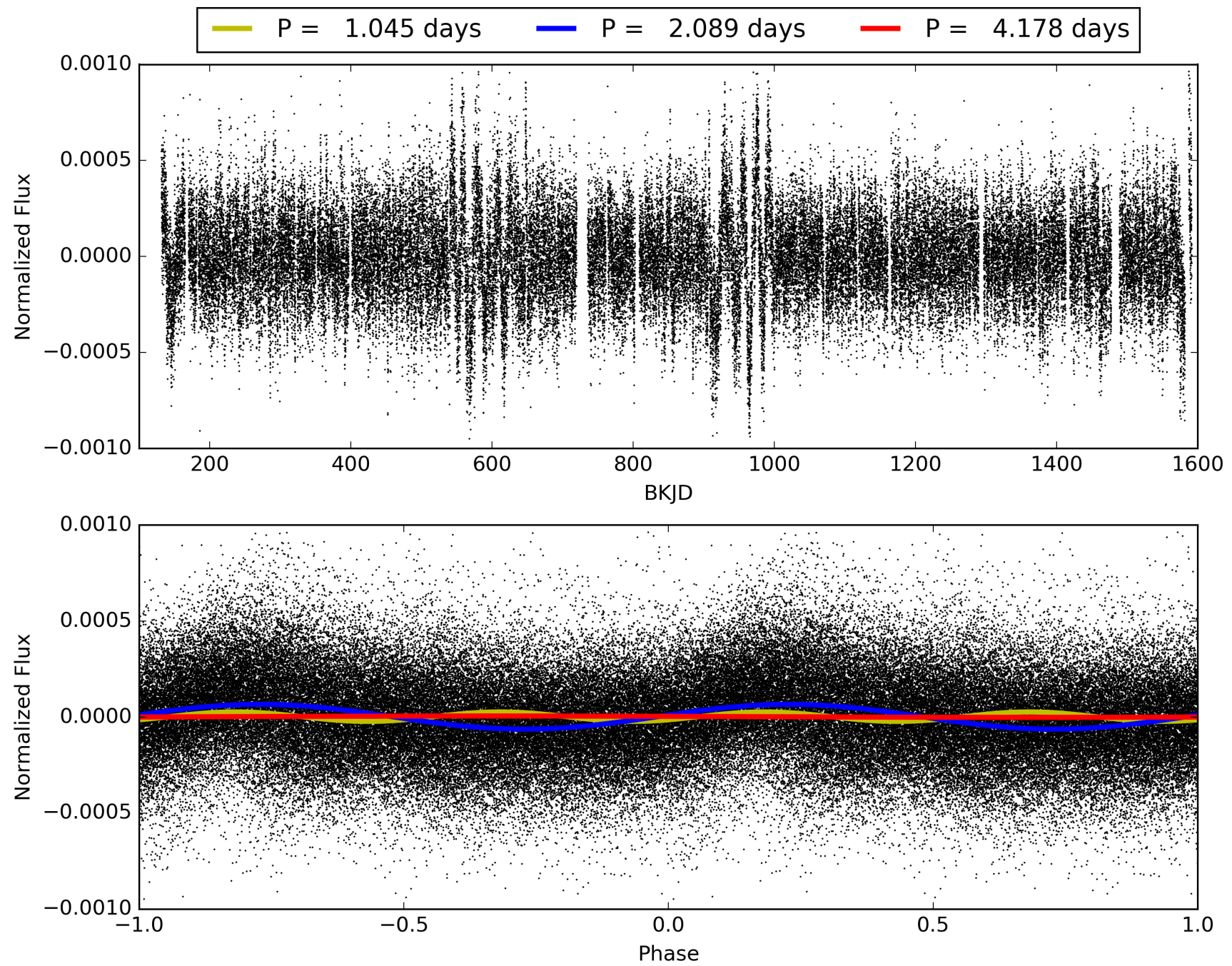
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:33:40 Z

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

TCE 006381309-01, PDC Light Curves

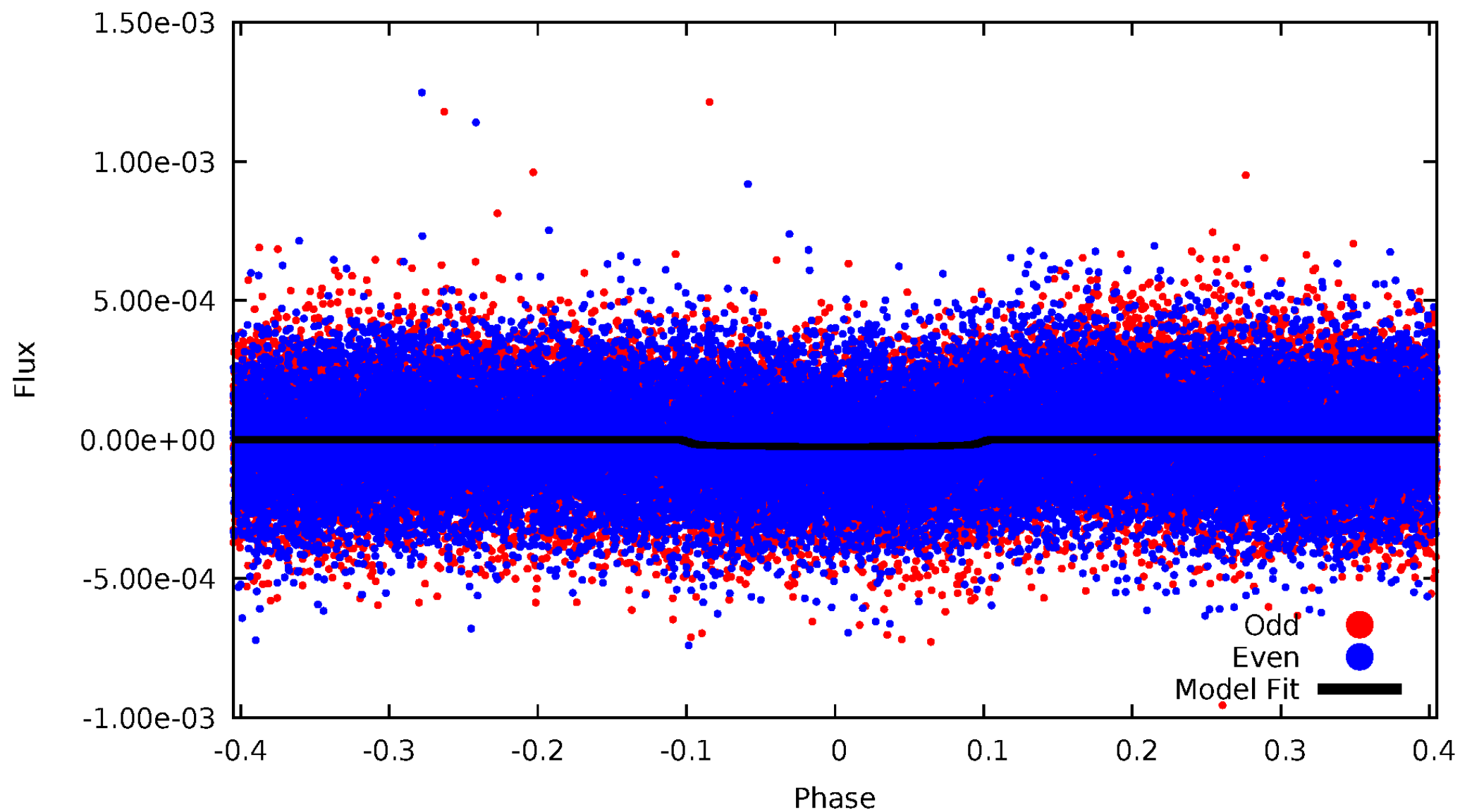


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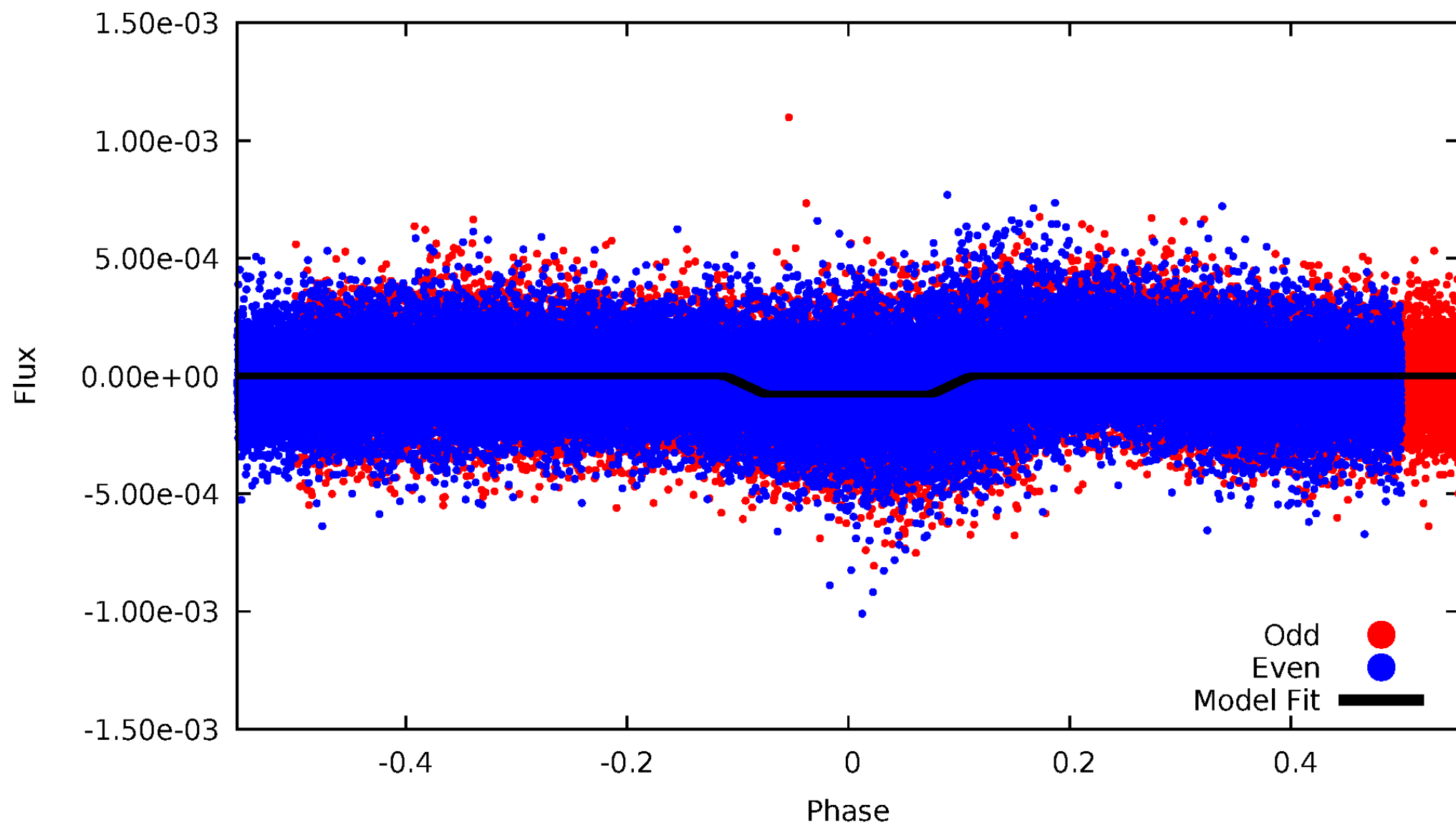
DV Odd/Even

TCE 006381309-01

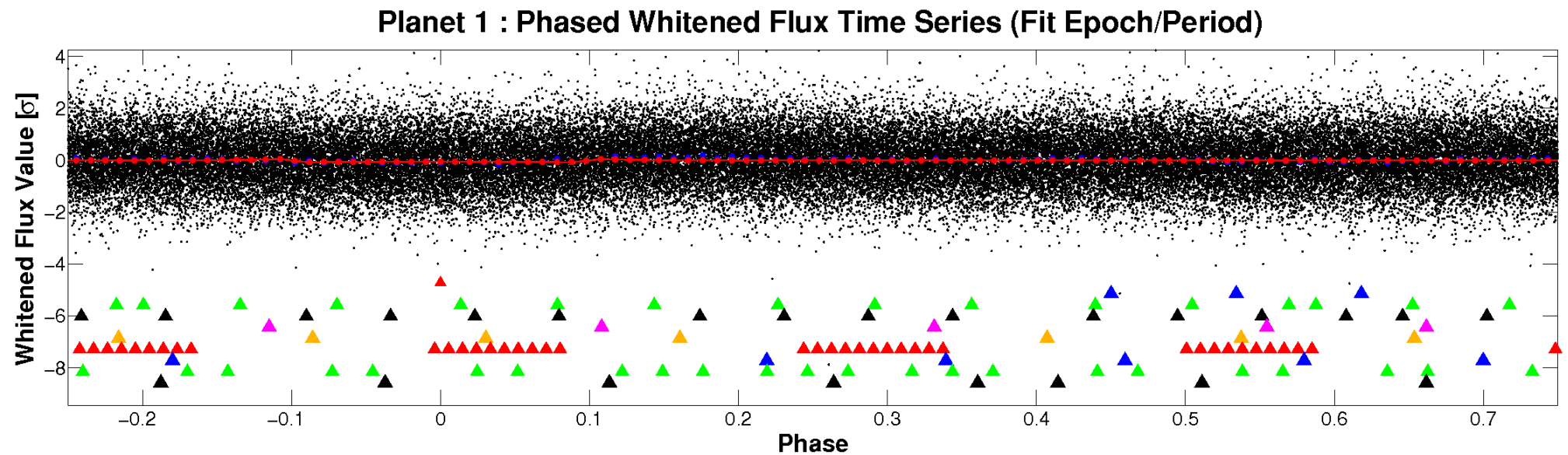
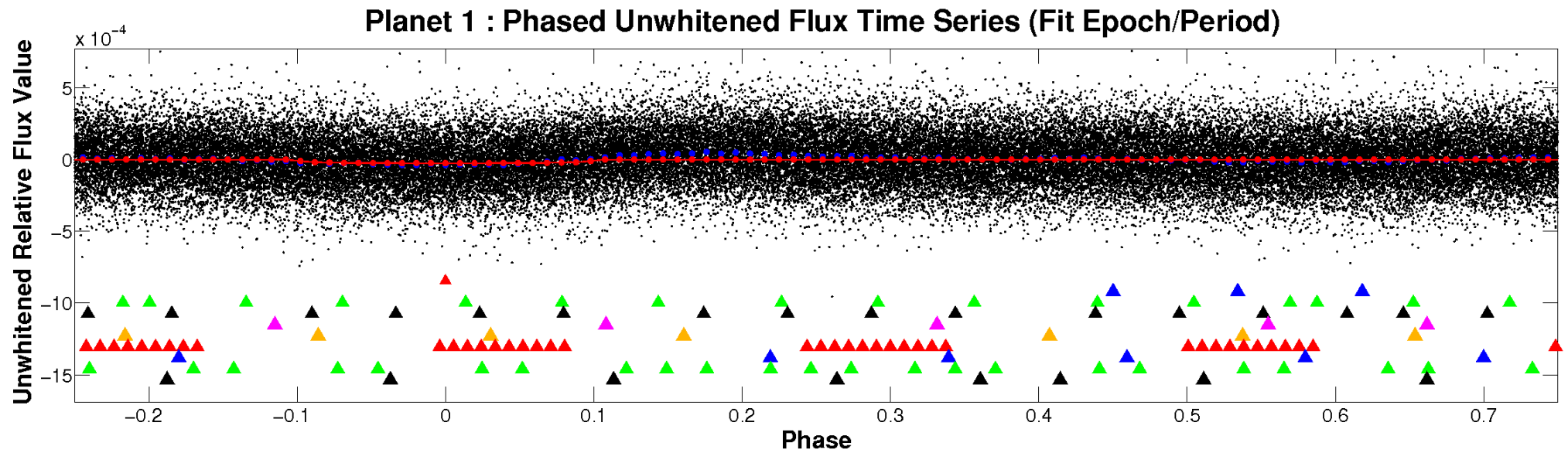


ALT Odd/Even

TCE 006381309-01

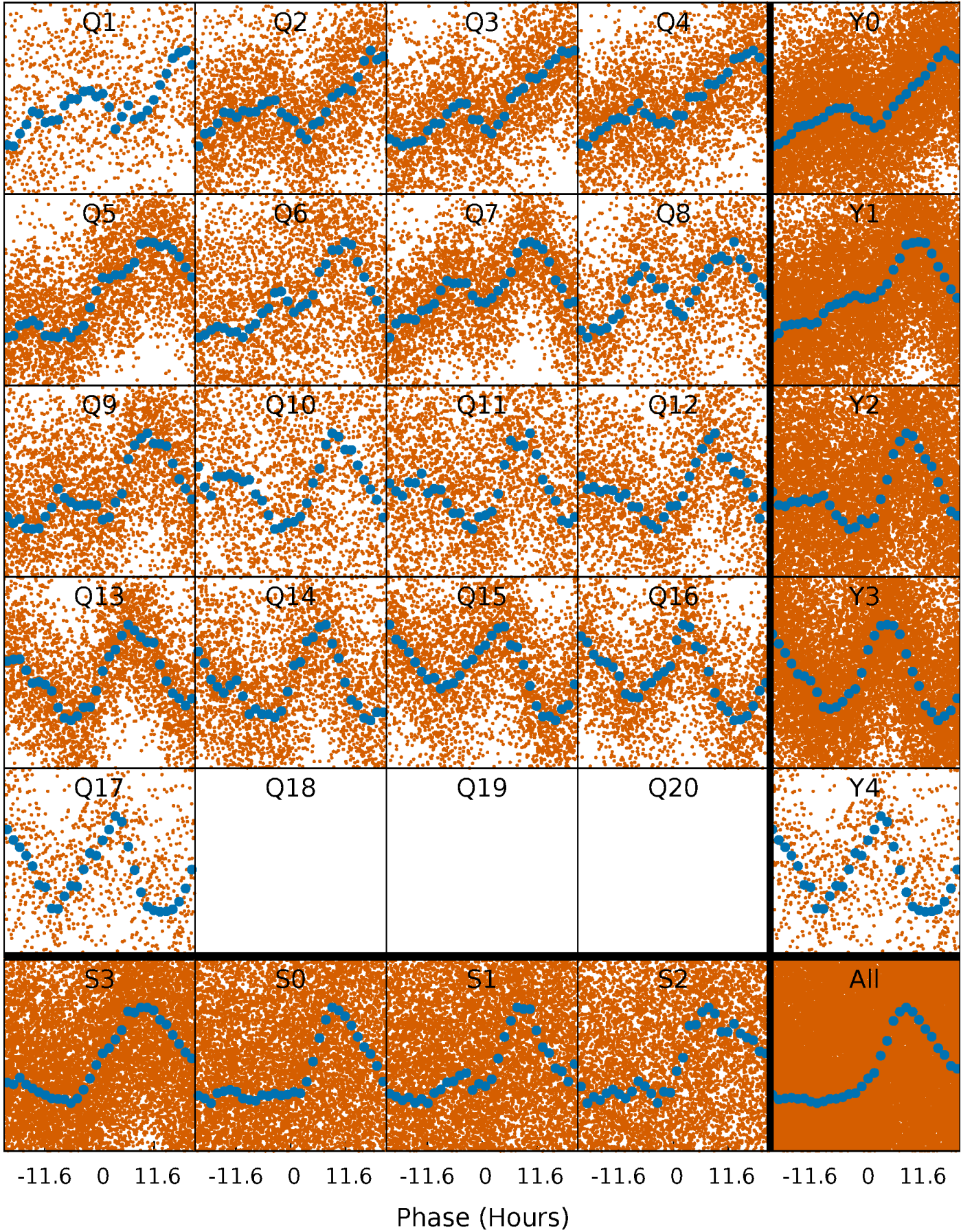


Non-Whitened Vs. Whitened Light Curve



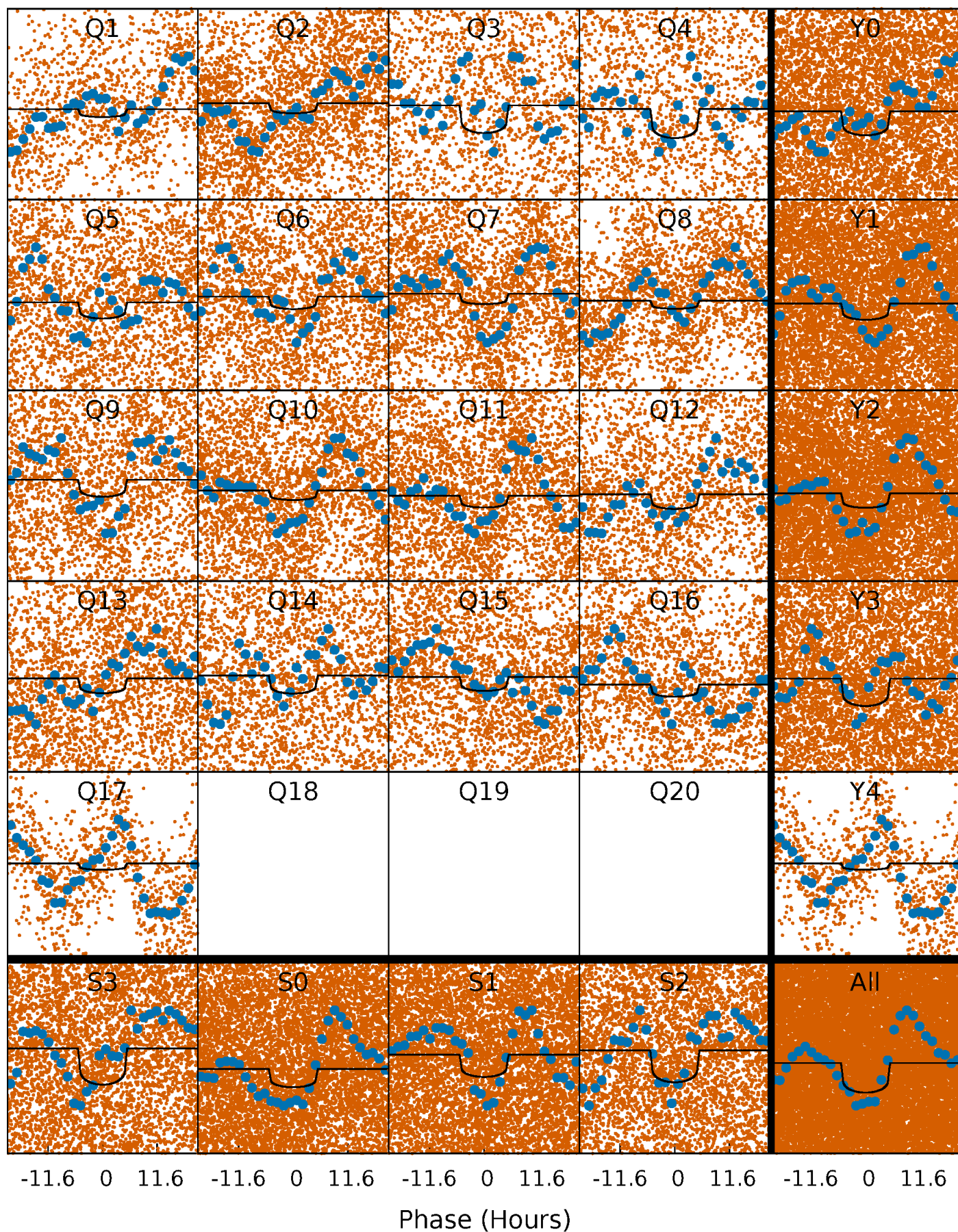
PDC Quarter-Phased Transit Curves

TCE 006381309-01 P= 2.089113 Days $T_0=132.931551$ (BKJD)



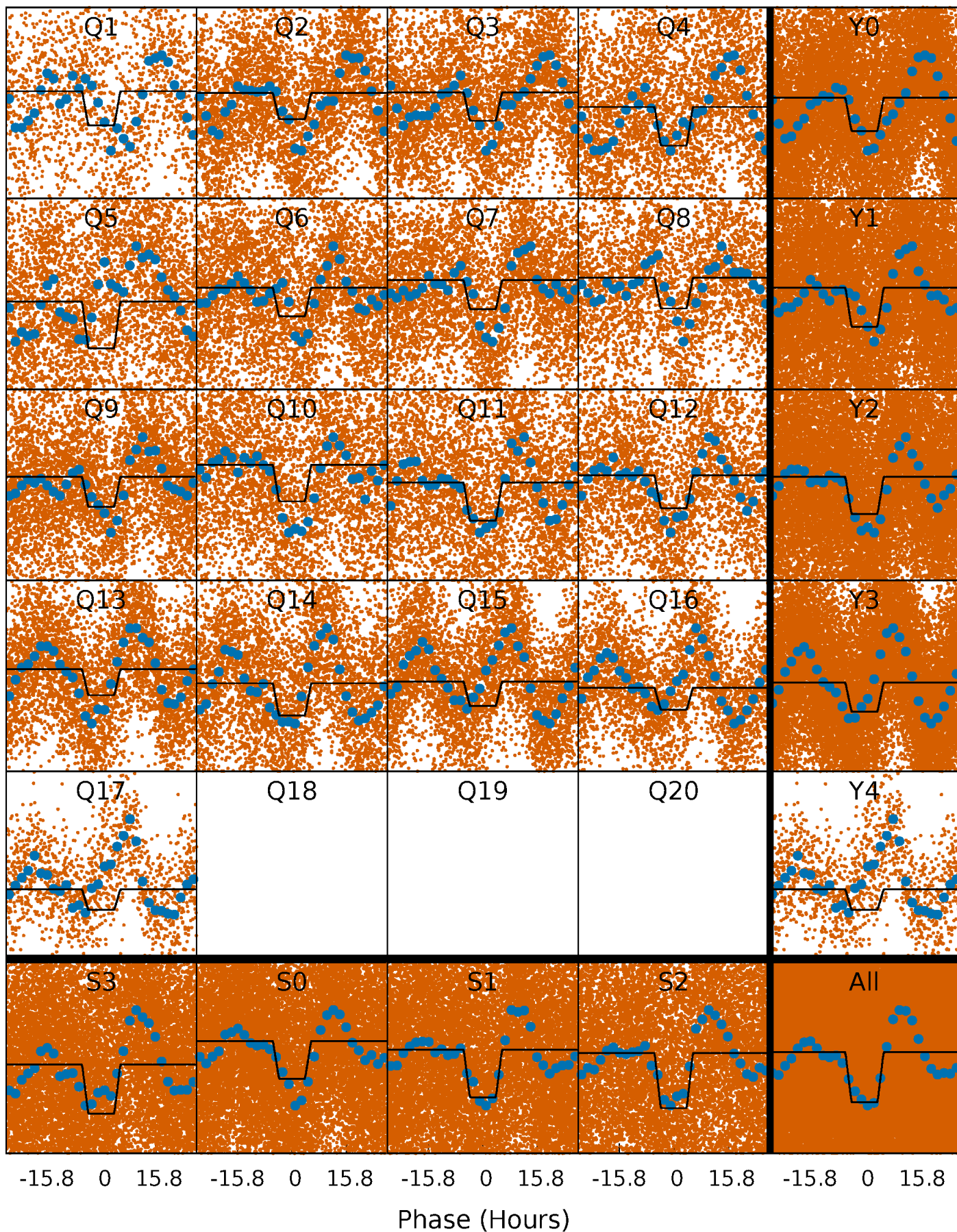
DV Quarter-Phased Transit Curves

TCE 006381309-01 P= 2.089113 Days $T_0=132.931551$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

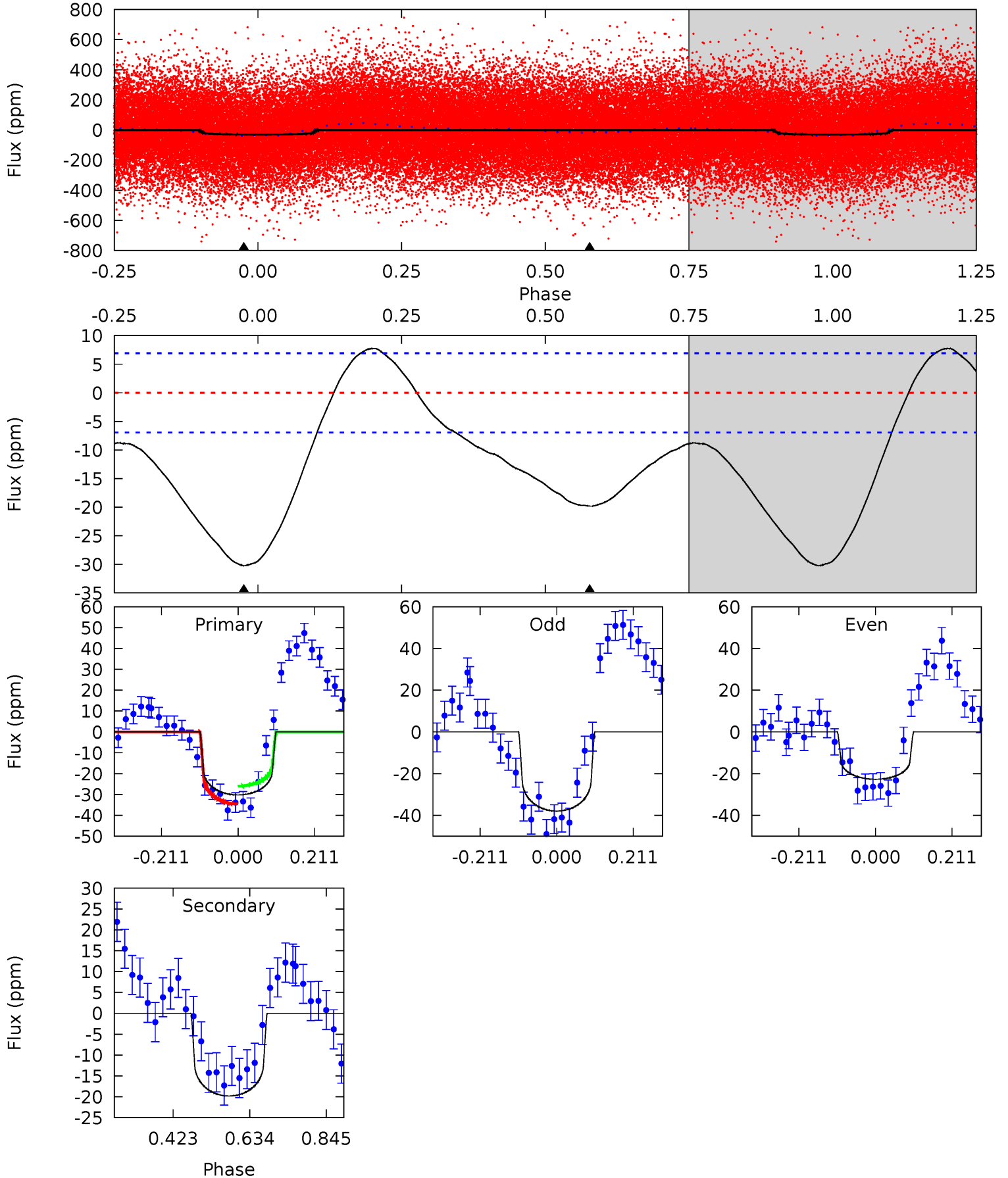
TCE 006381309-01 P= 2.088762 Days $T_0=132.997144$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-01, P = 2.089113 Days, E = 130.842438 Days

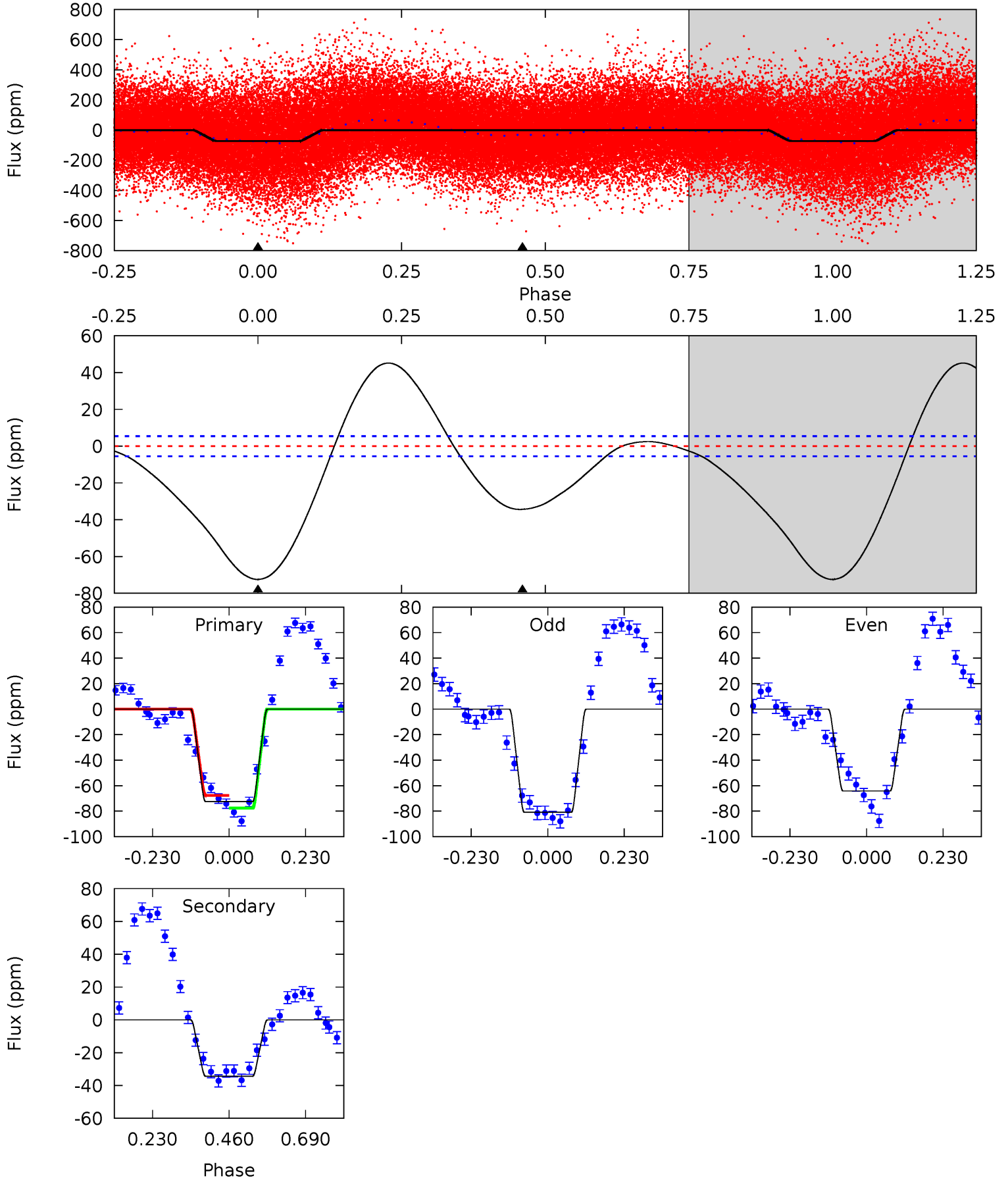
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.2	12.6	0	0	4.41	1.25	3.55	19.2	19.2	12.6	12.6	4.84	0.98	0.20	2.77



Alt Model-Shift Uniqueness Test

006381309-01, P = 2.088762 Days, E = 130.908382 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
58.3	27.7	0	0	4.39	1.20	11.9	58.3	58.3	27.7	27.7	6.71	0.99	0.38	3.92



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-20 ± 2	$1.51^{+0.55}_{-0.44}$	3535^{+232}_{-333}	6056^{+985}_{-720}	$6.453^{+6.032}_{-2.858}$
Alt.	-34 ± 1	$2.71^{+0.63}_{-0.62}$	3536^{+234}_{-349}	5210^{+432}_{-340}	$3.512^{+1.992}_{-1.152}$

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

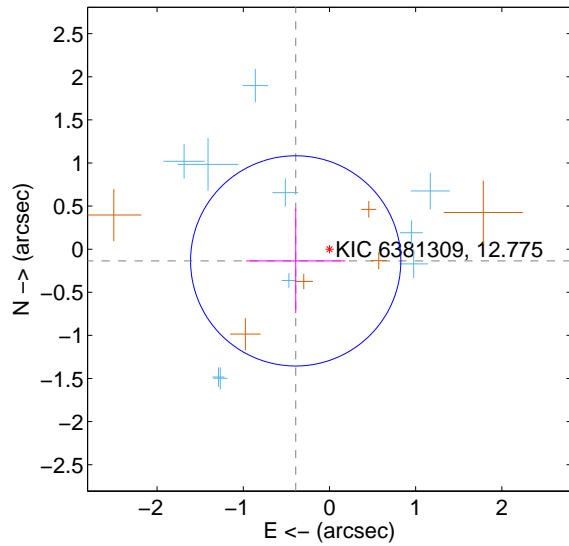
Supplemental centroid analysis for 006381309-01. Kepler magnitude: 12.78. Transit SNR 7.66

There are 10 quarters with good PRF difference image offsets

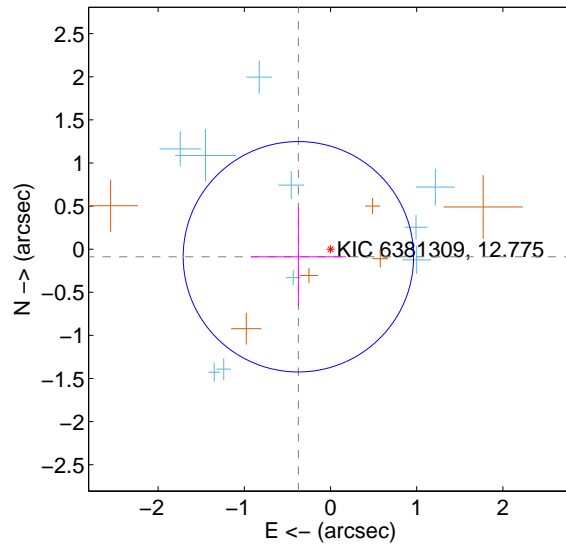
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.415 ± 0.406	1.02	0.392 ± 0.574	-0.136 ± 0.605
PRF-fit source offset from KIC position	0.383 ± 0.445	0.86	0.372 ± 0.553	-0.088 ± 0.574
photometric centroid source offset	0.92 ± 0.47	1.93	-0.63 ± 0.47	-0.66 ± 0.48

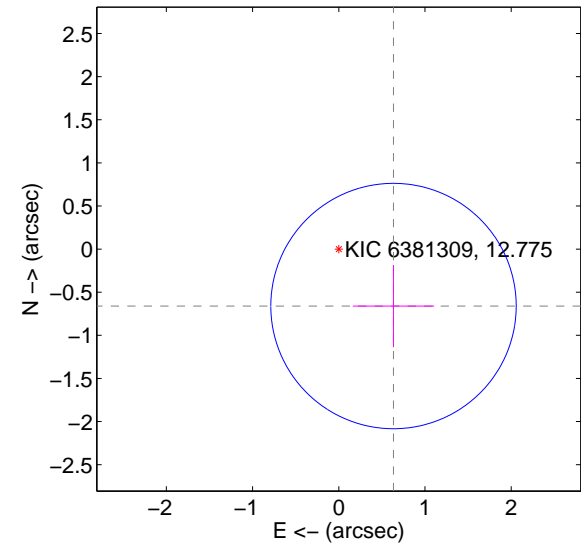
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

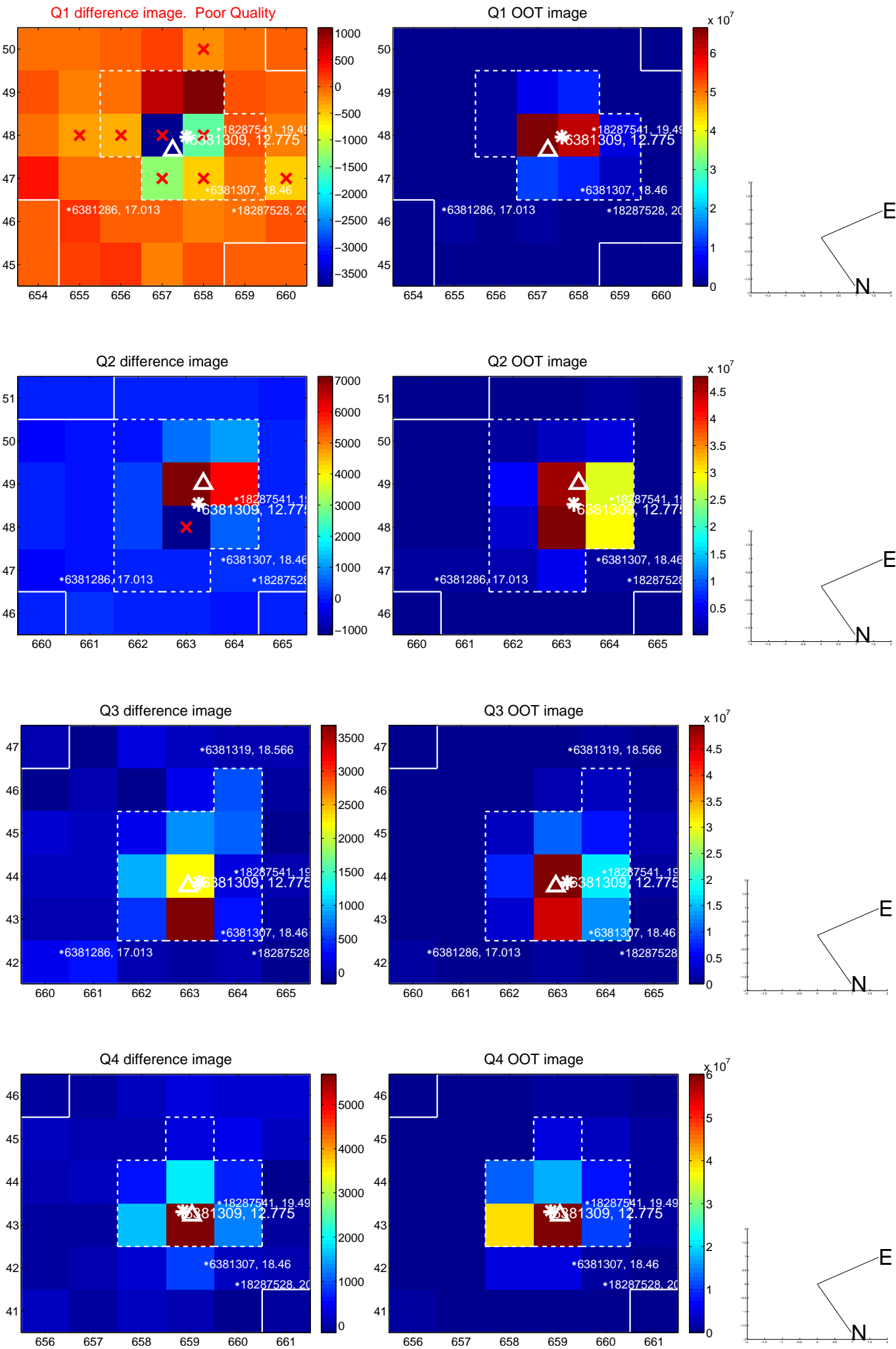


offset from photometric centroids

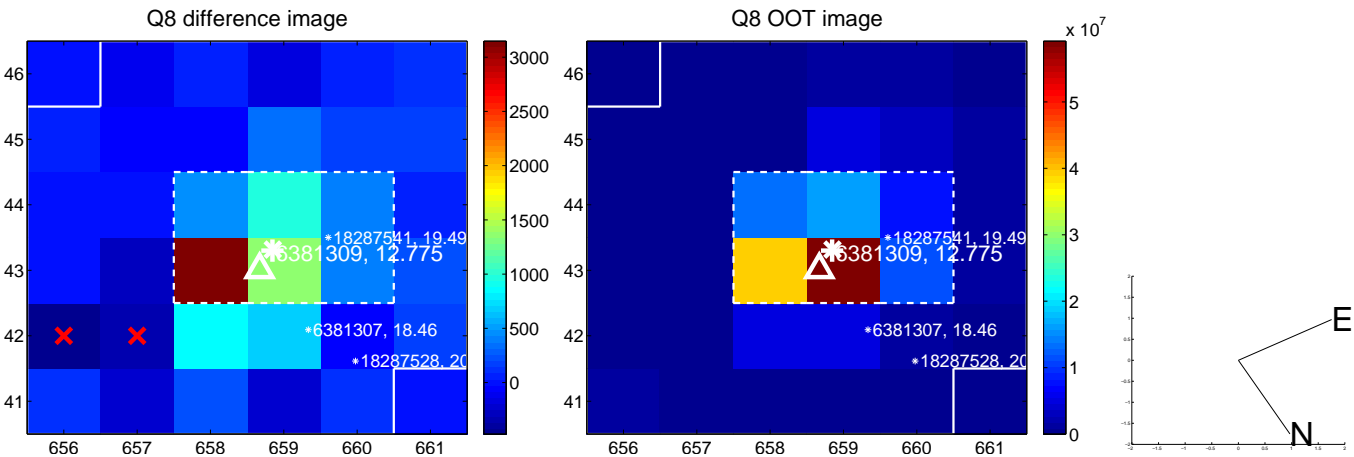
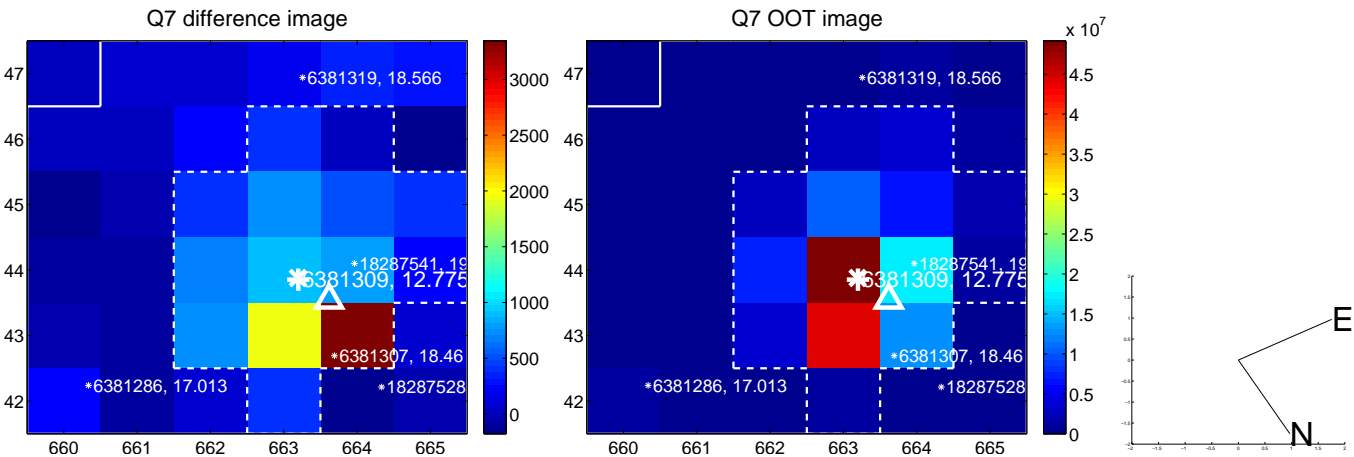
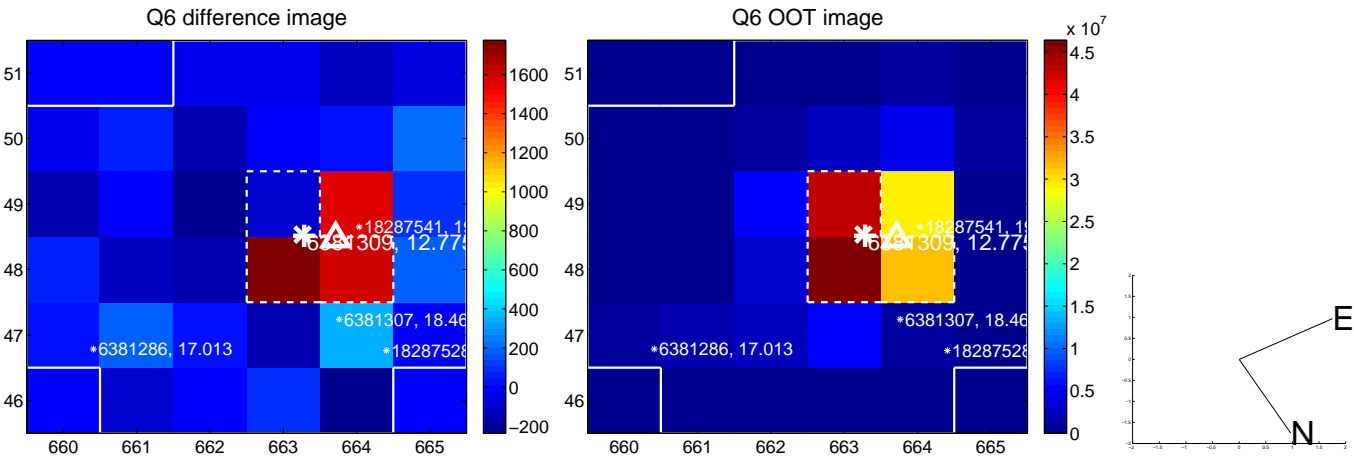
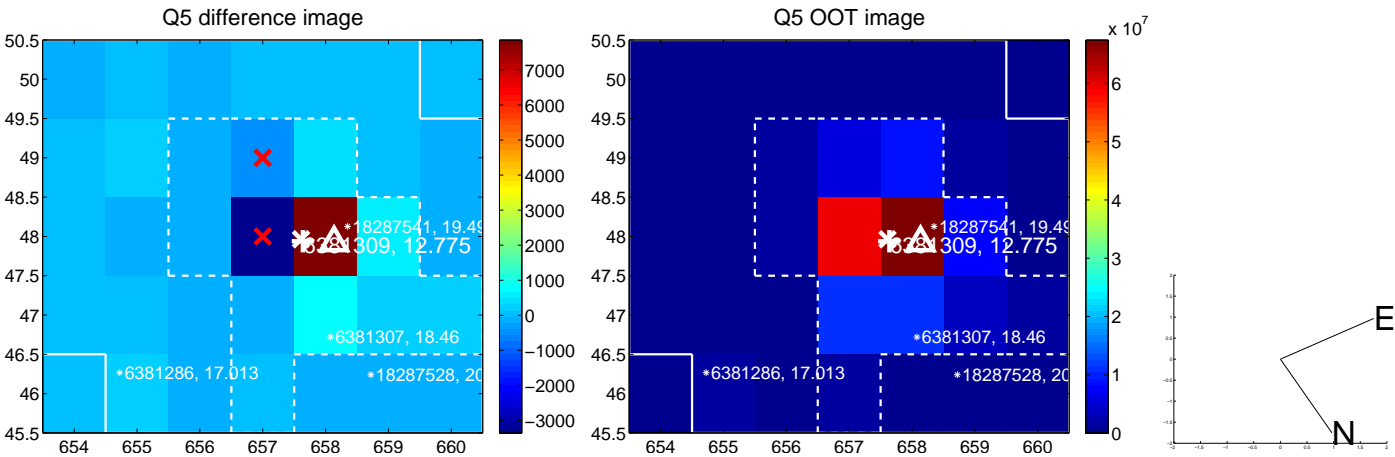


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

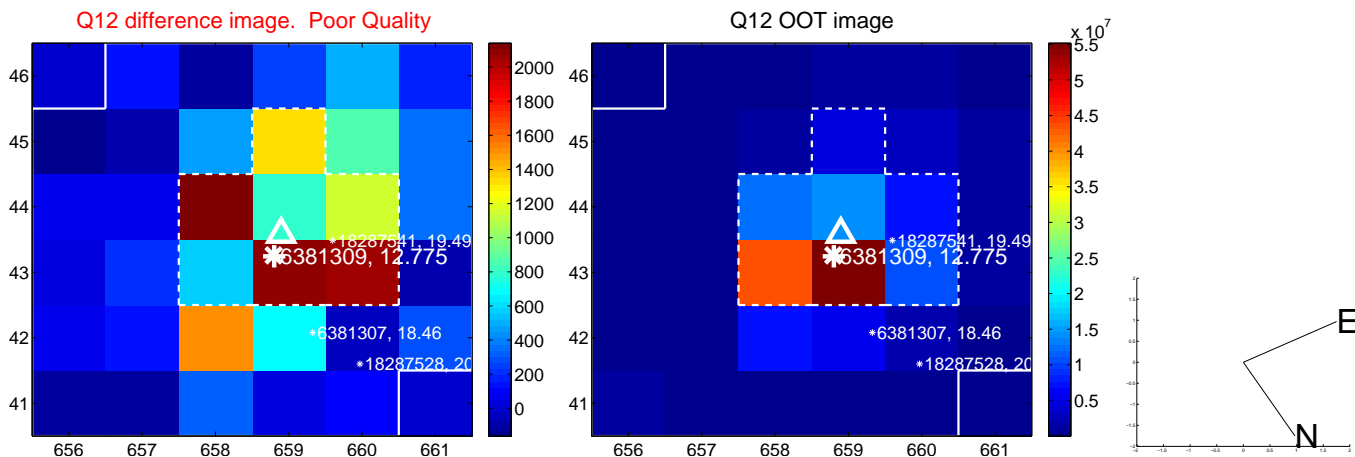
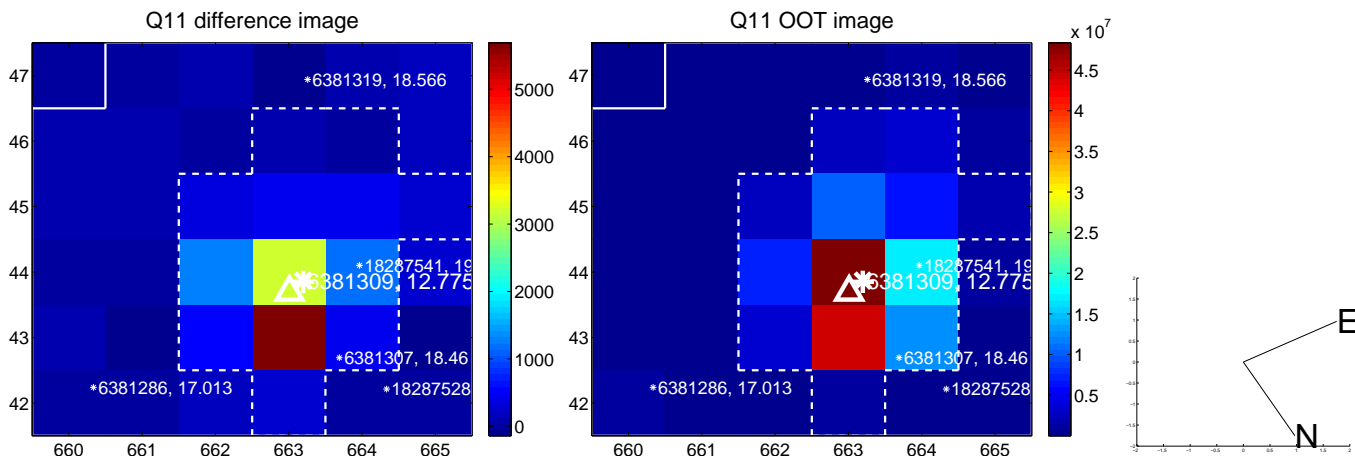
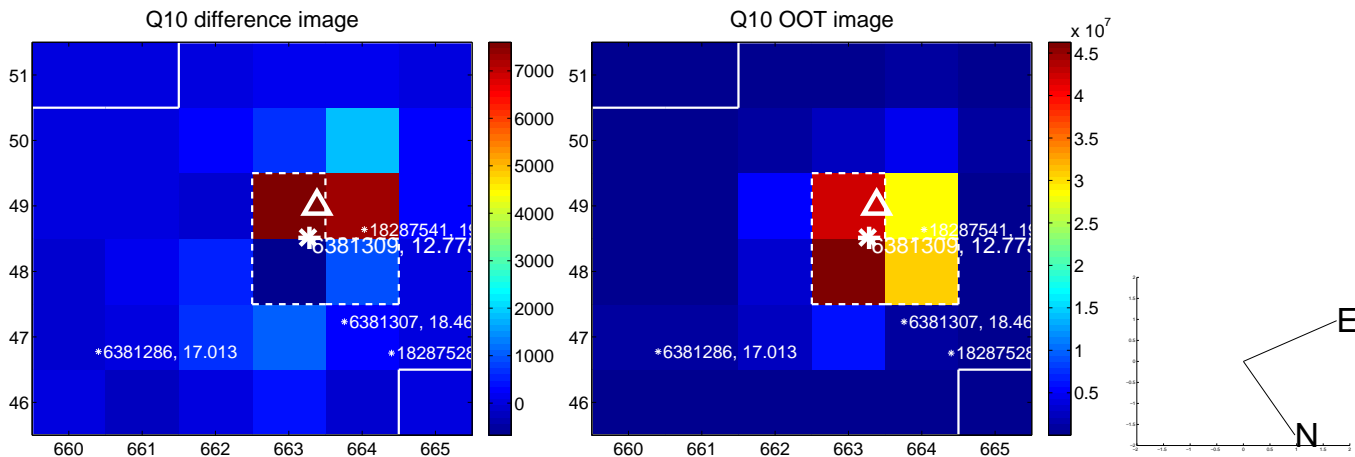
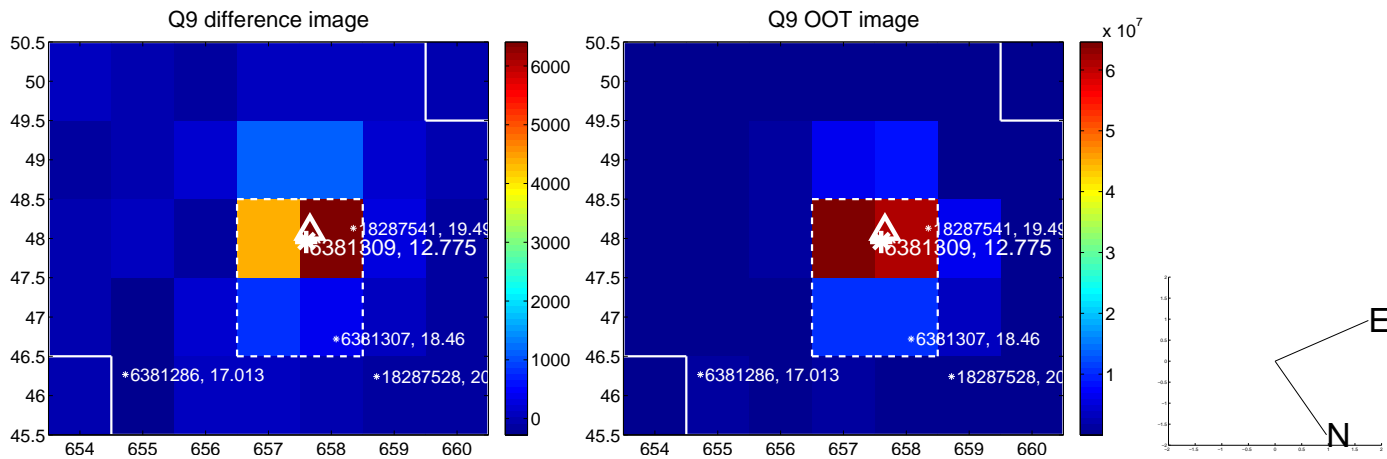
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



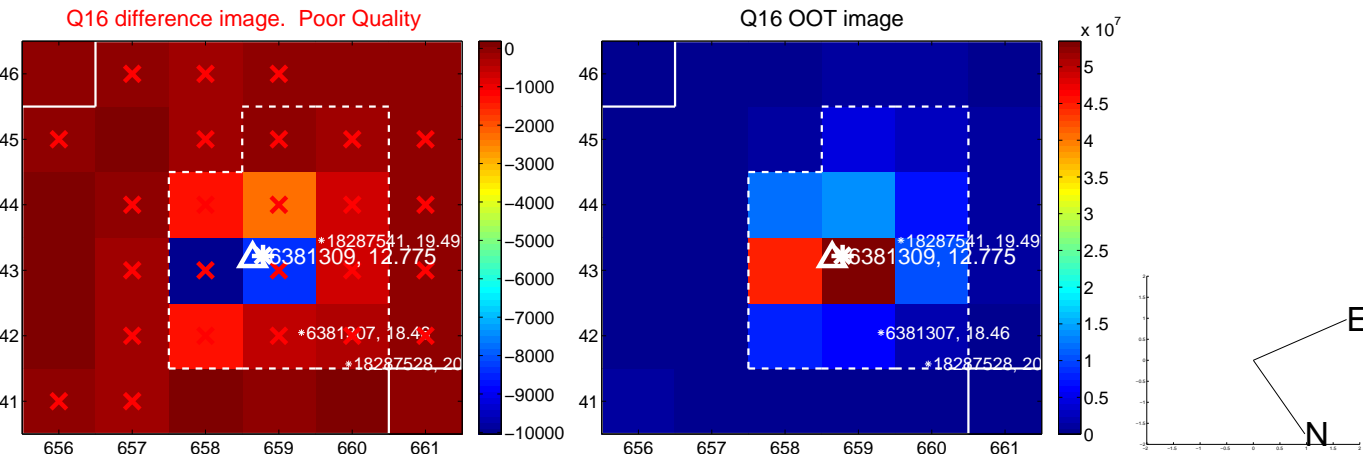
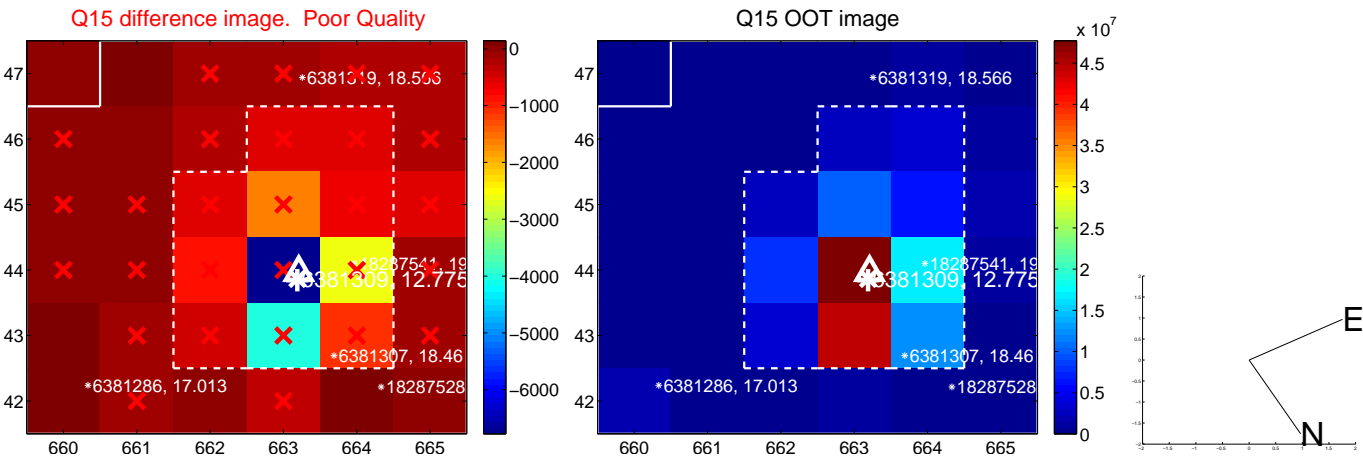
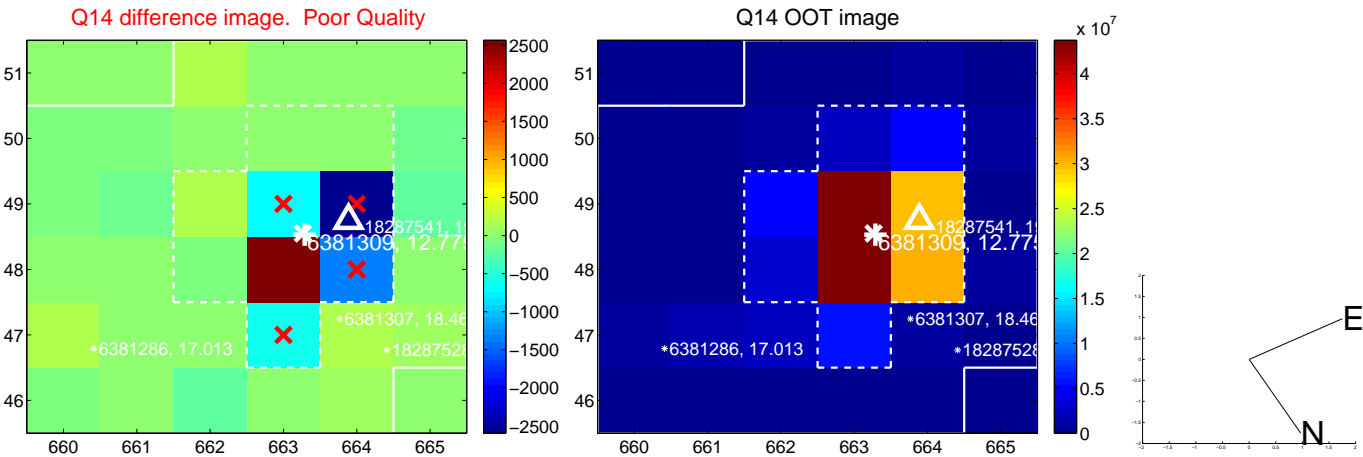
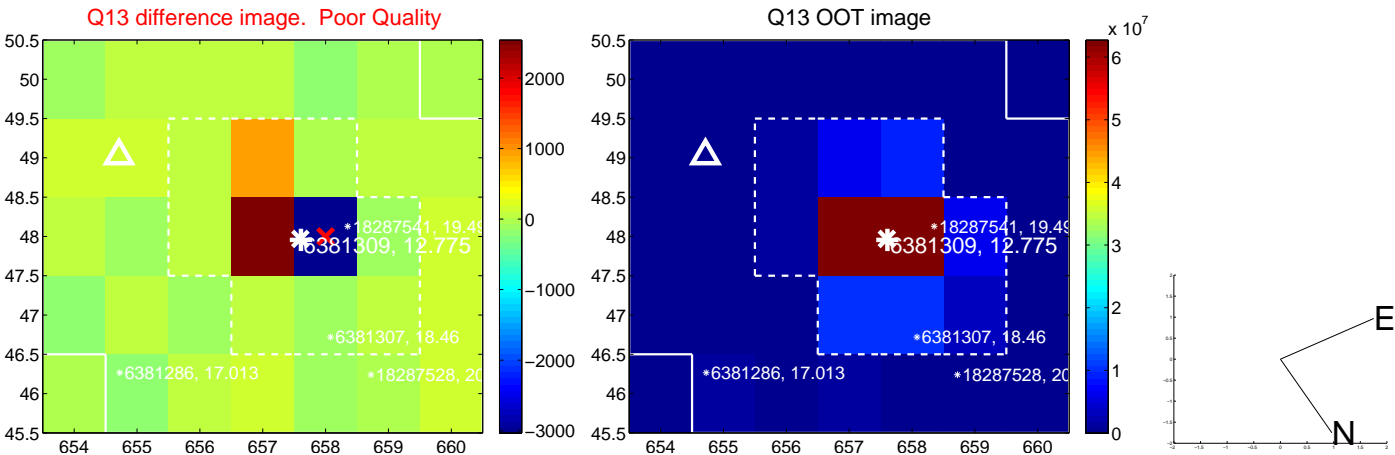
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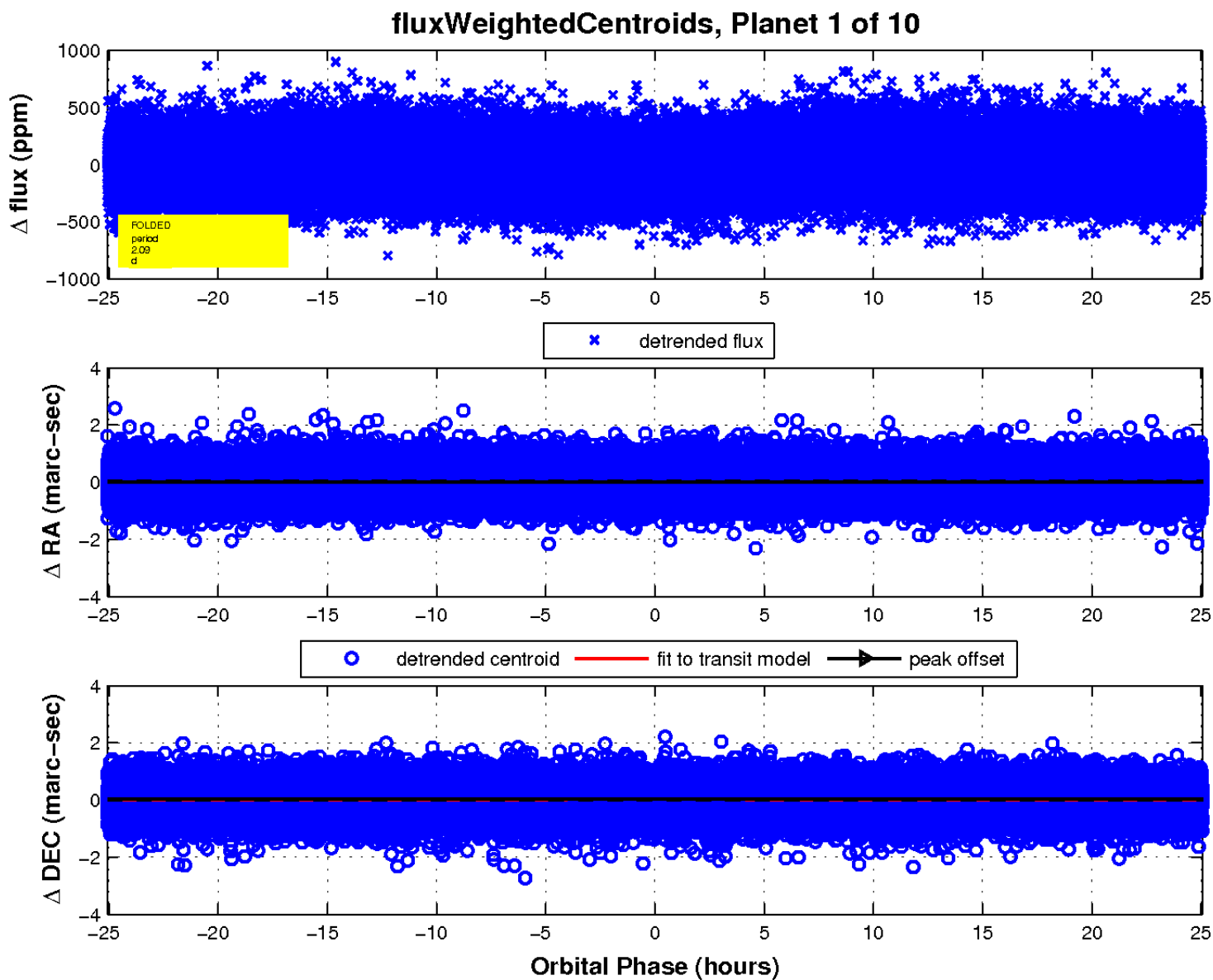
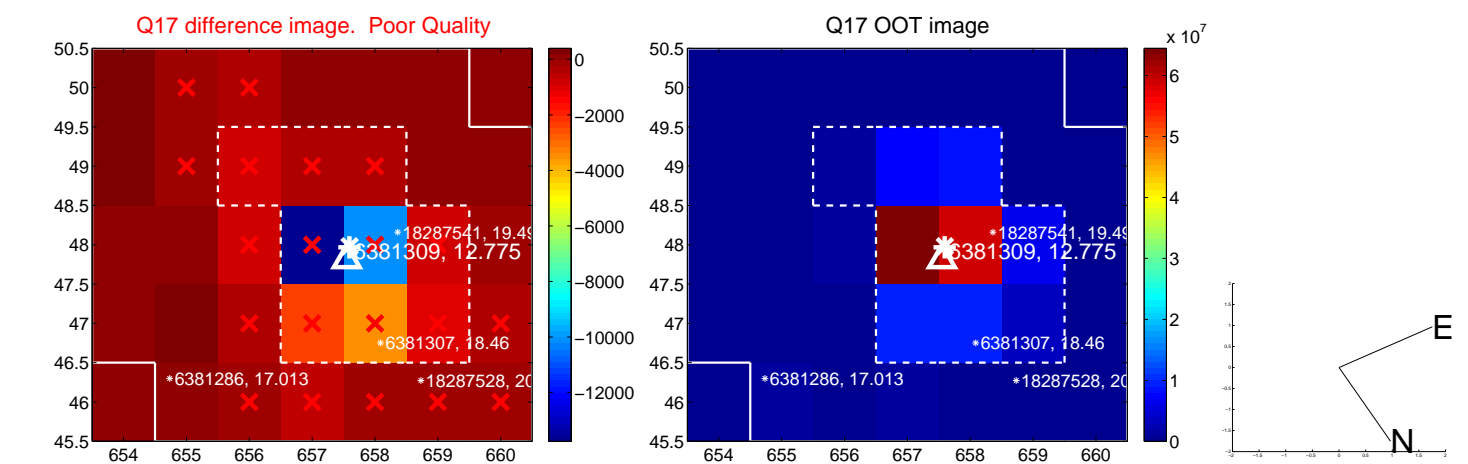
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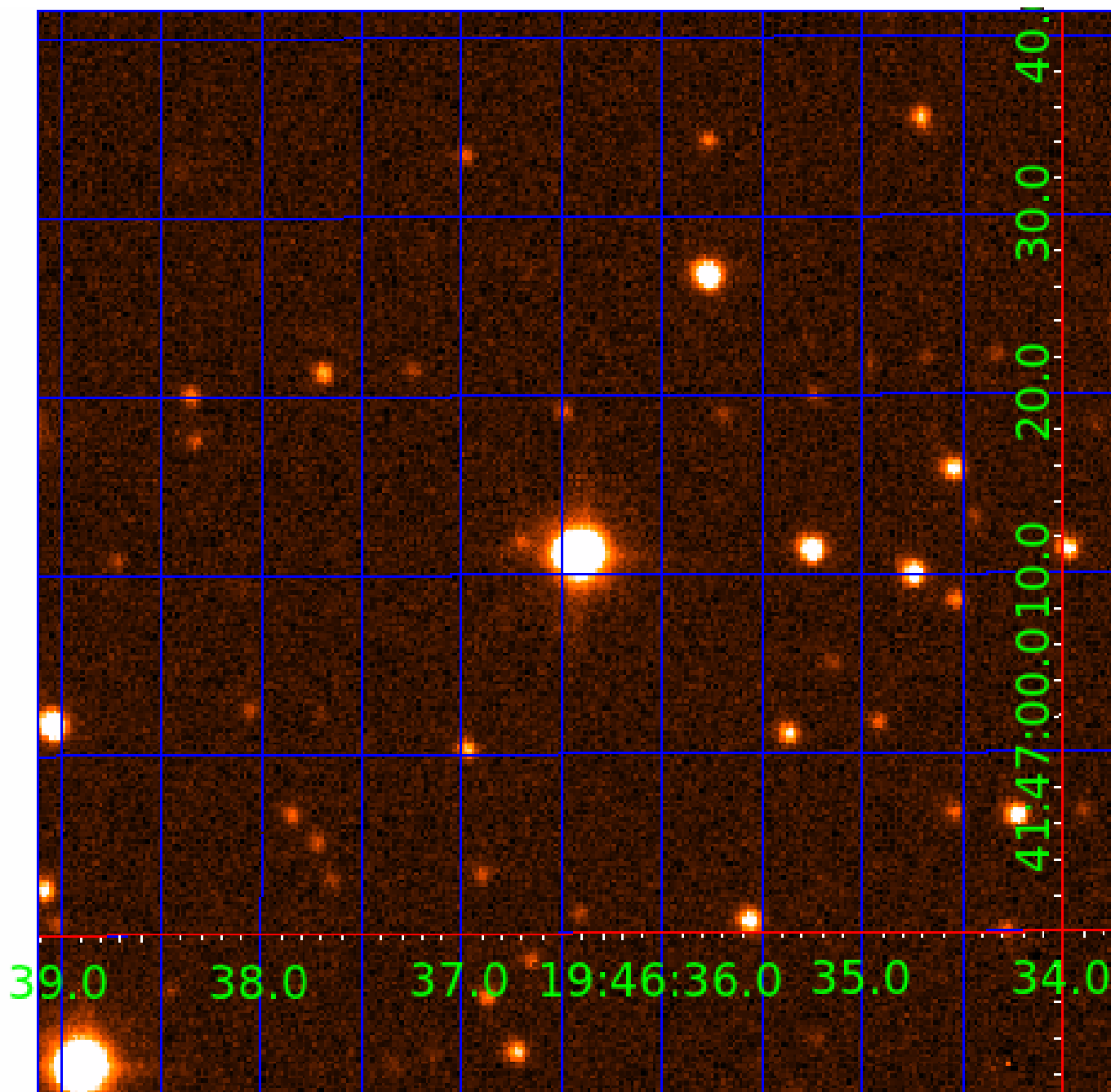


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UKIRT Image

Declination



KIC 006381309

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006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
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006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
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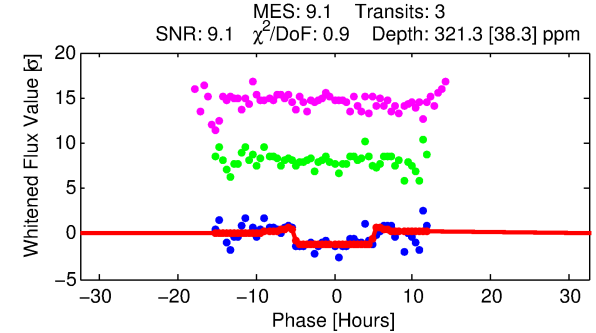
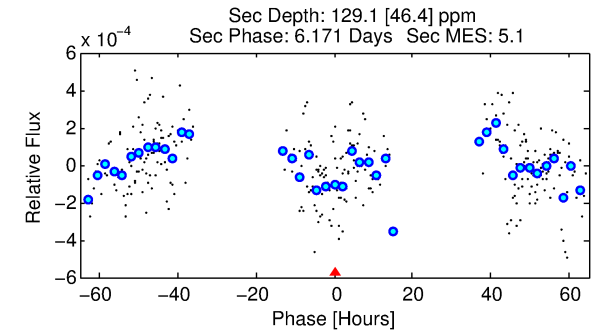
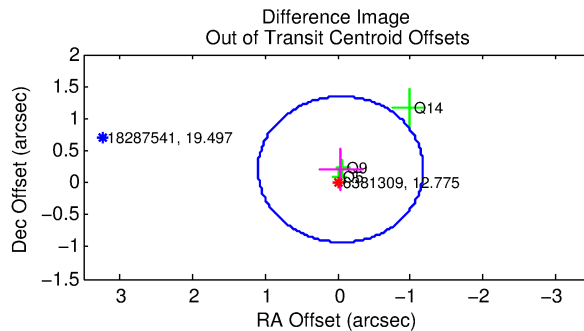
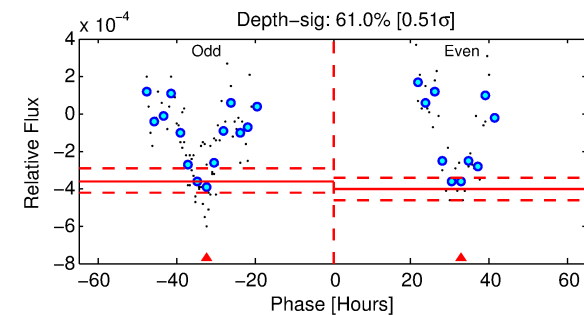
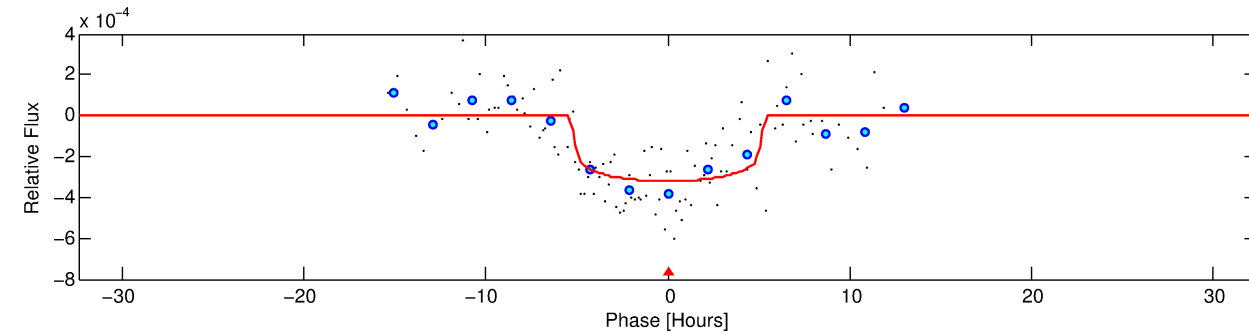
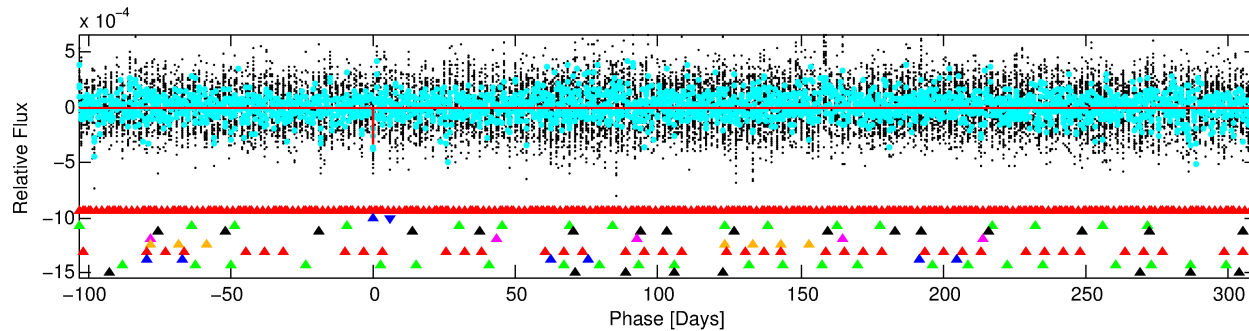
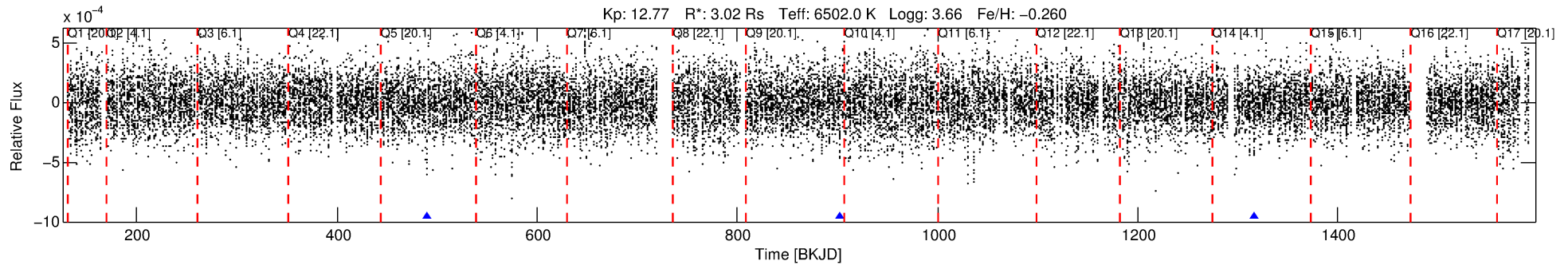
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-02

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 2 of 10 Period: 413.469 d



DV Fit Results:

Period = 413.46886 [0.00886] d
Epoch = 489.3720 [0.0134] BKJD
Rp/R* = 0.0180 [0.0041]
a/R* = 192.07 [230.91]
b = 0.78 [0.62]
Seff = 9.42 [5.69]
Teq = 447 [67] K
Rp = 5.93 [2.62] Re
a = 1.2455 [0.4581] AU
Ag = 3135.65 [2602.41] [1.20σ]
Teffp = 5168 [767] K [6.13σ]

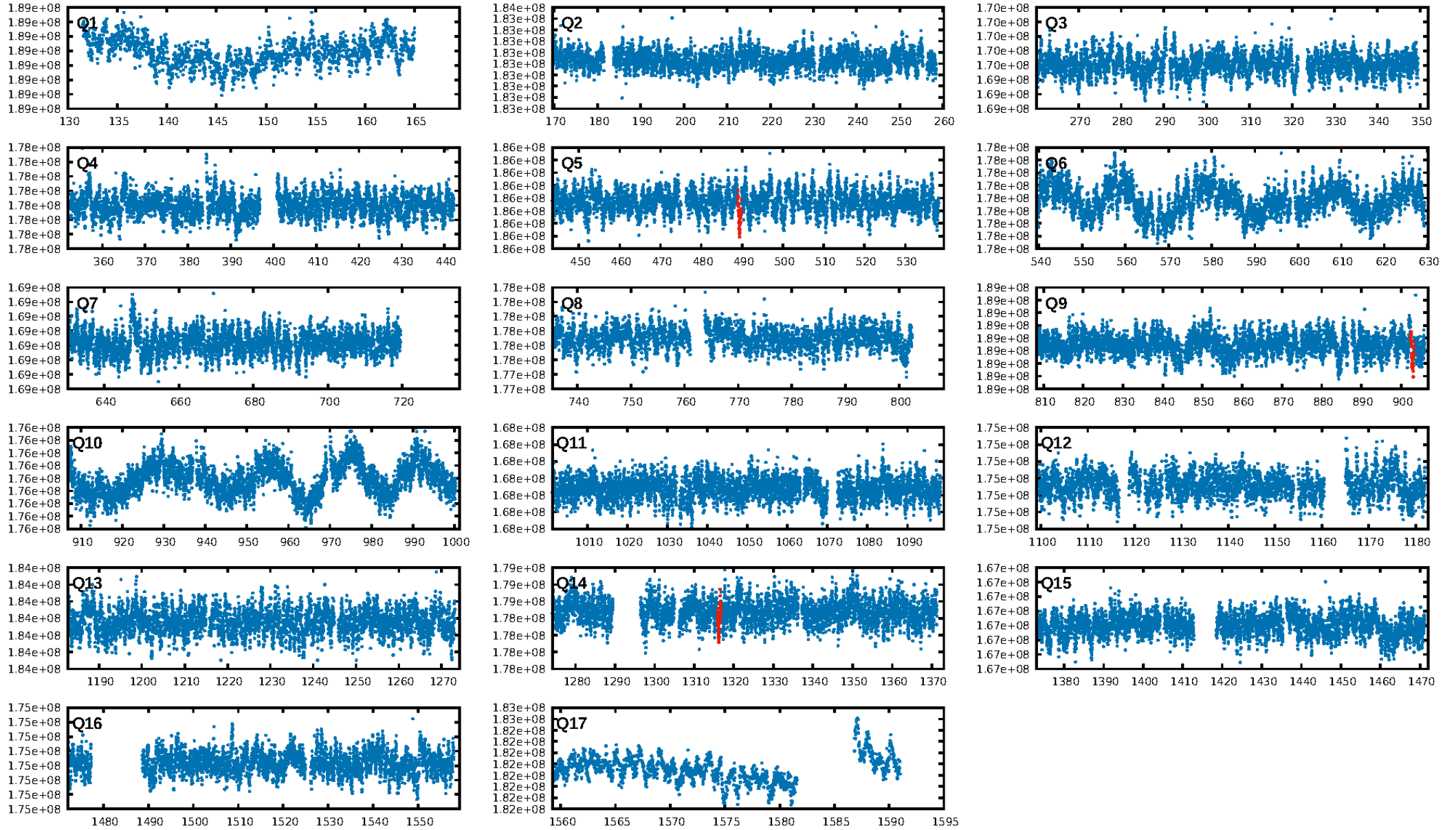
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [237.67σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 31.7%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.01023
Centroid-sig: 96.2%
Centroid-so: 0.181 arcsec [0.35σ]
OotOffset-rm: 0.212 arcsec [0.56σ]
KicOffset-rm: 0.249 arcsec [0.78σ]
OotOffset-st: 1/0/0/2 [3]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/3]

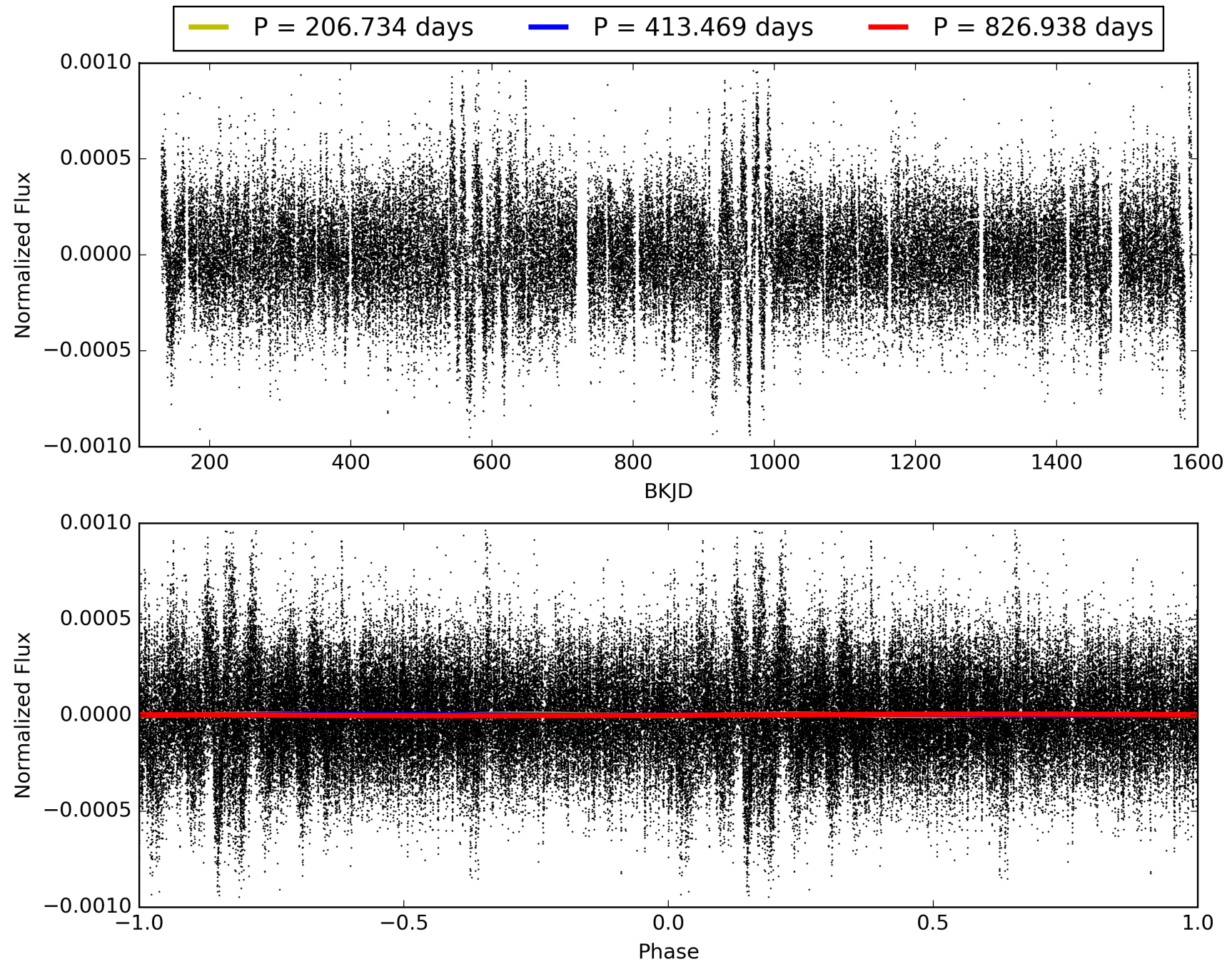
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:33:52 Z

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

TCE 006381309-02, PDC Light Curves

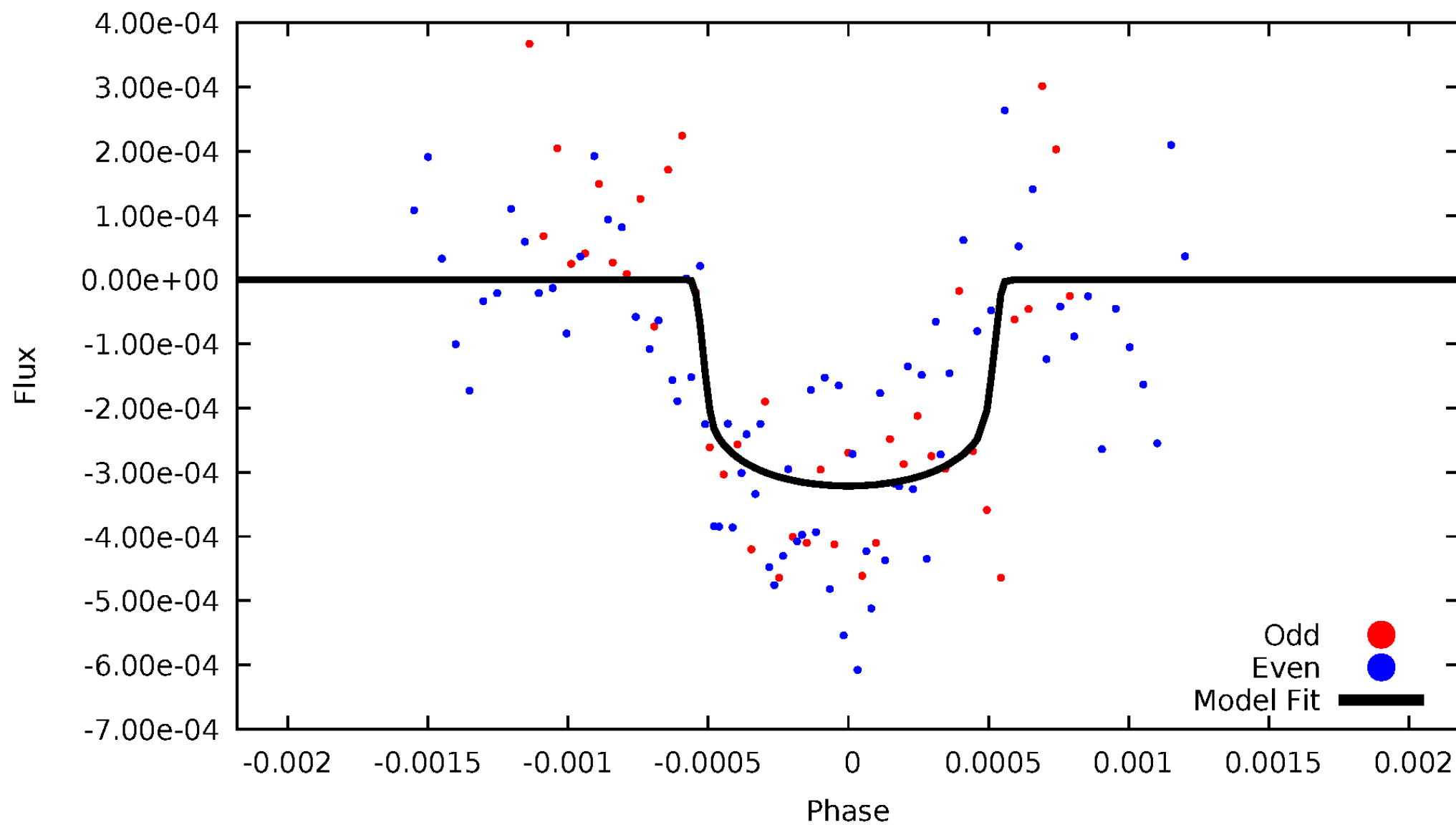


TCE 006381309-02



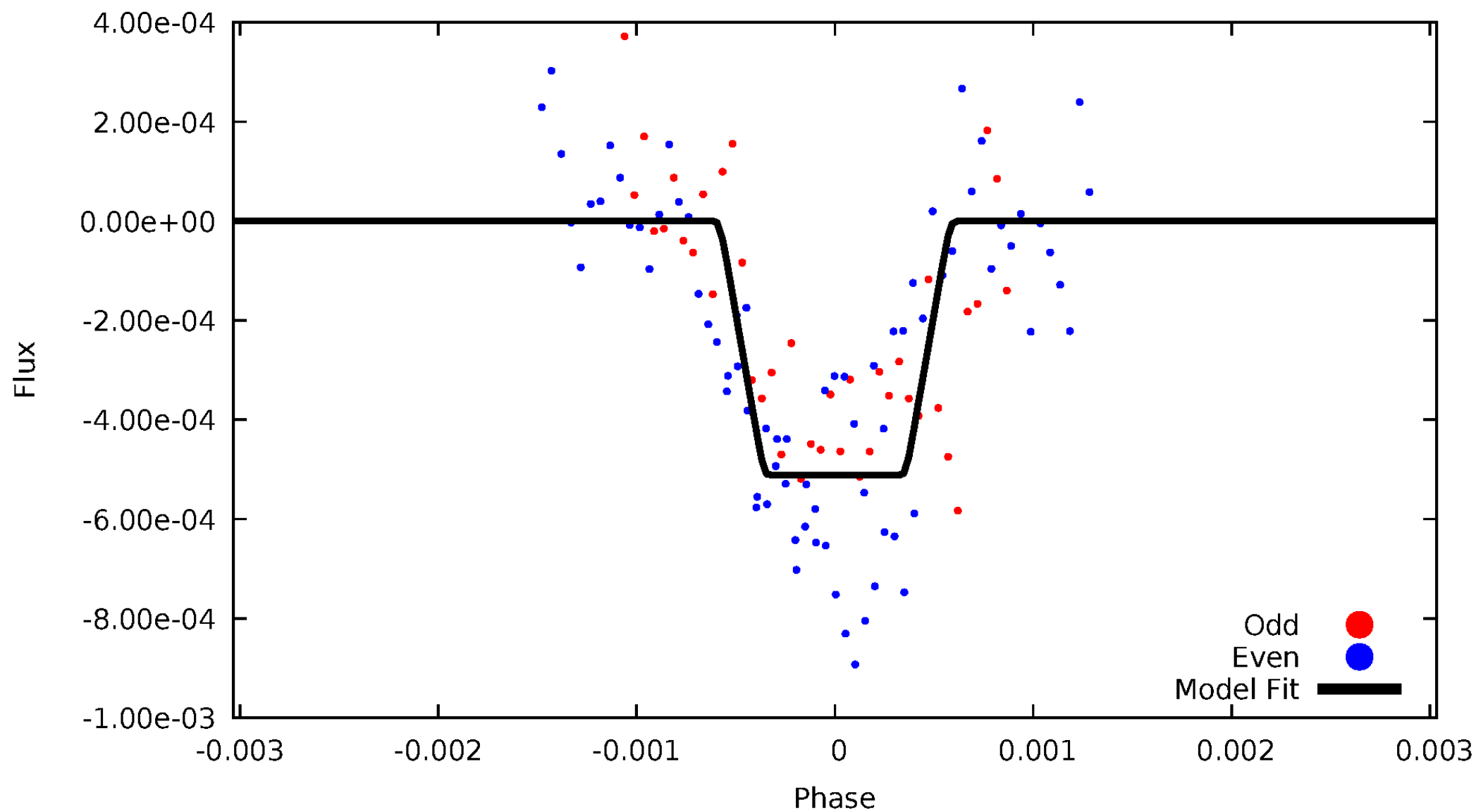
DV Odd/Even

TCE 006381309-02



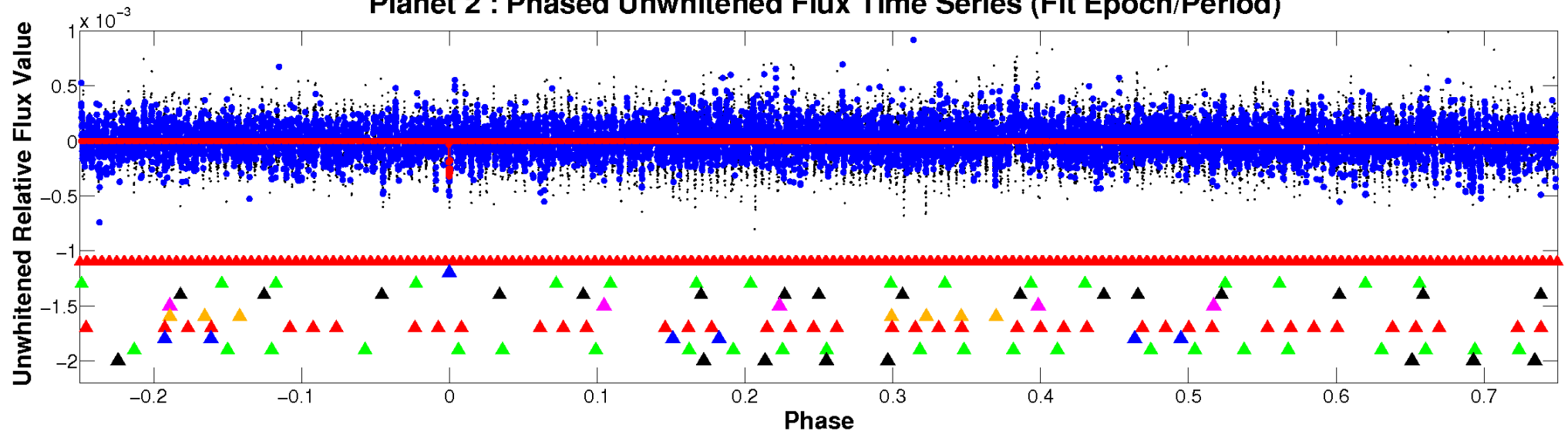
ALT Odd/Even

TCE 006381309-02

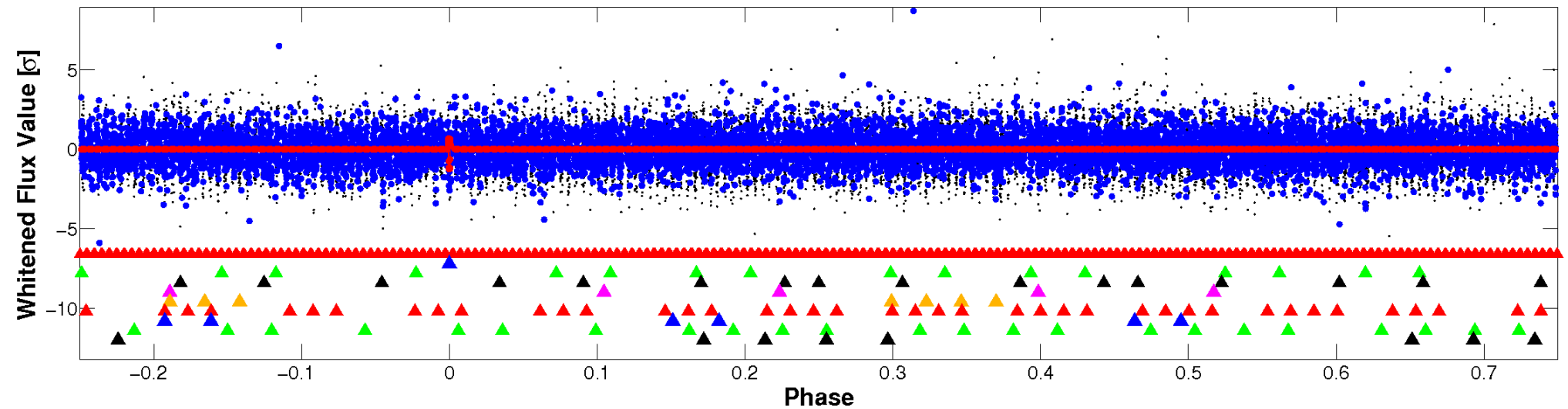


Non-Whitened Vs. Whitened Light Curve

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

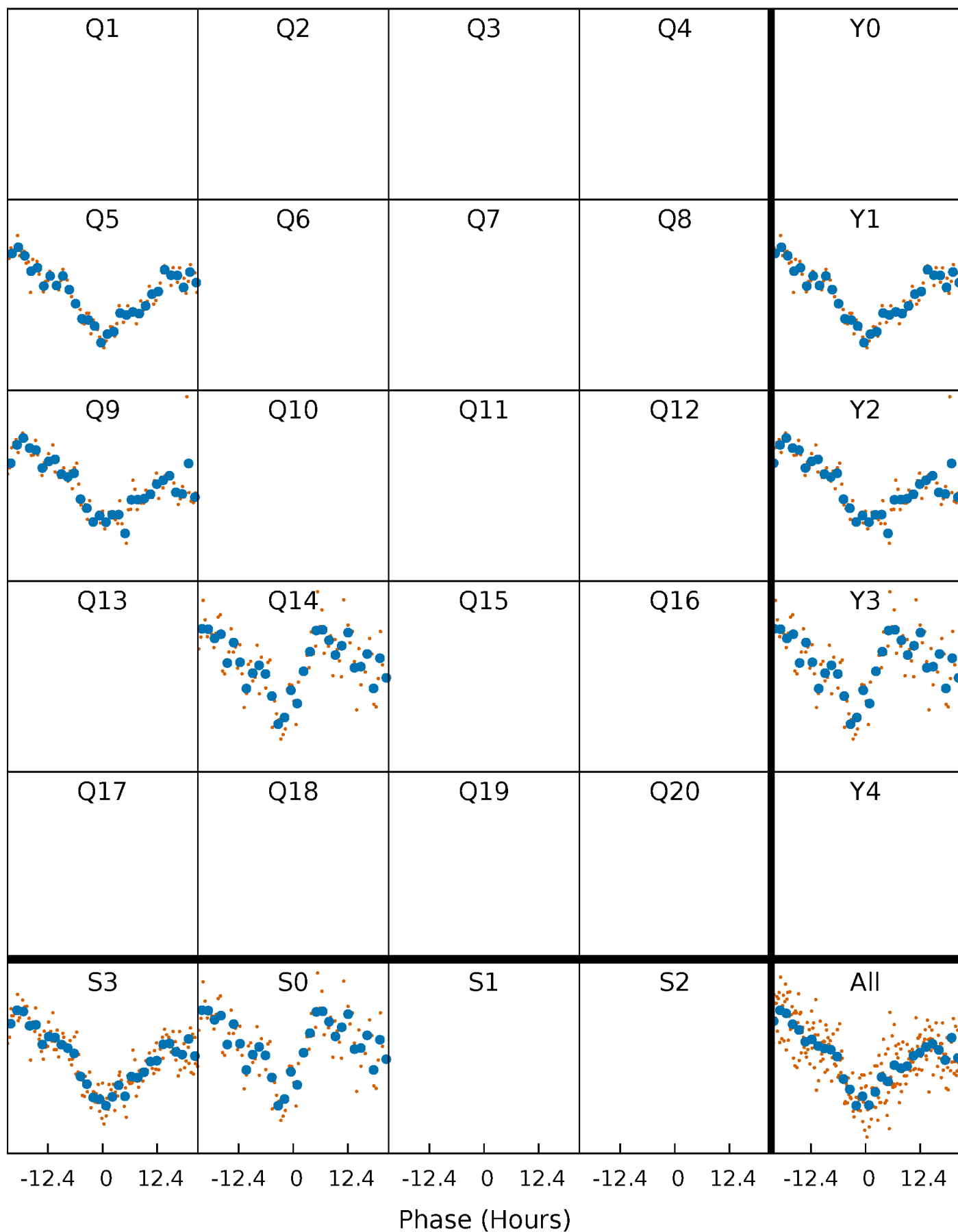


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



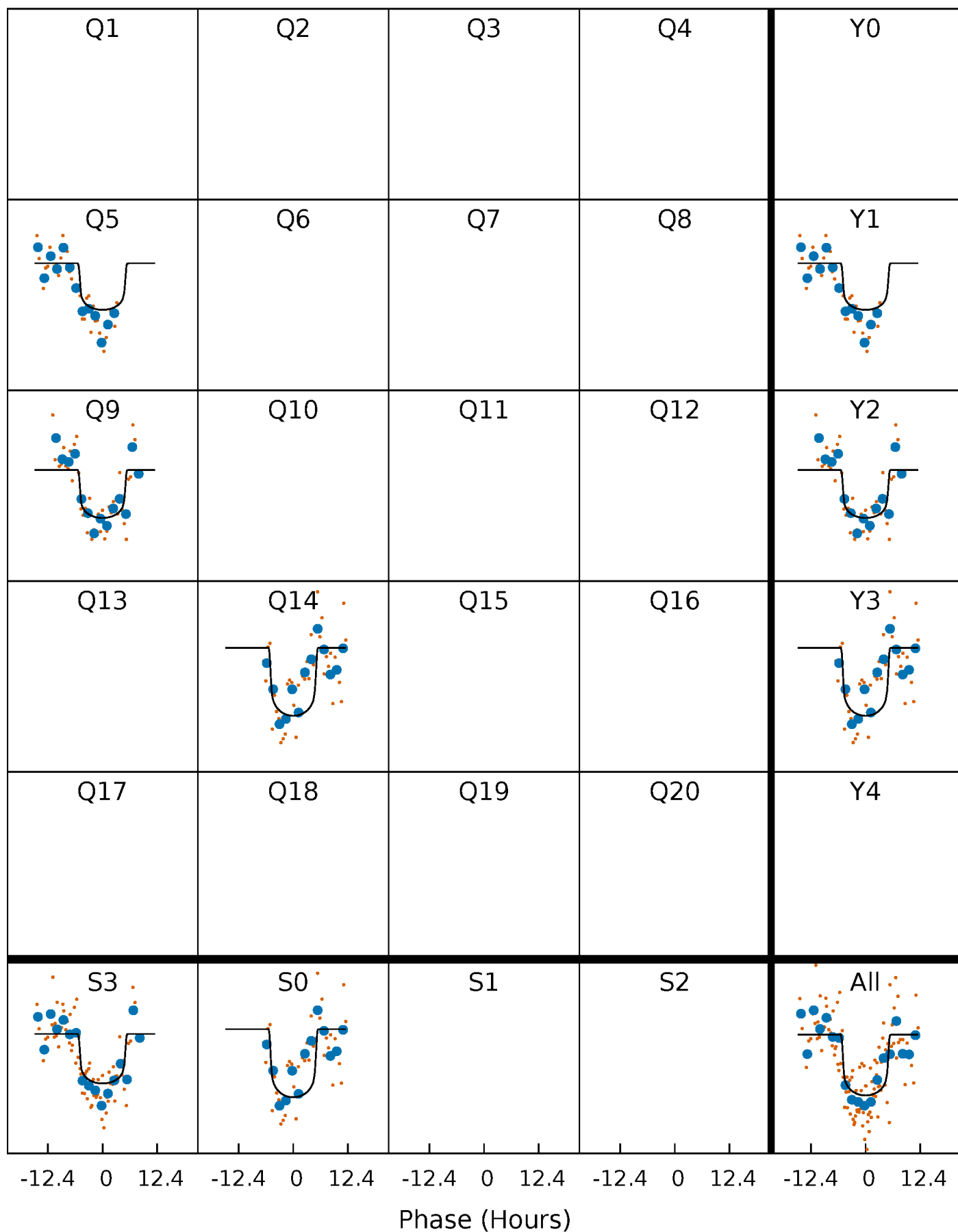
PDC Quarter-Phased Transit Curves

TCE 006381309-02 $P=413.468856$ Days $T_0=489.372022$ (BKJD)



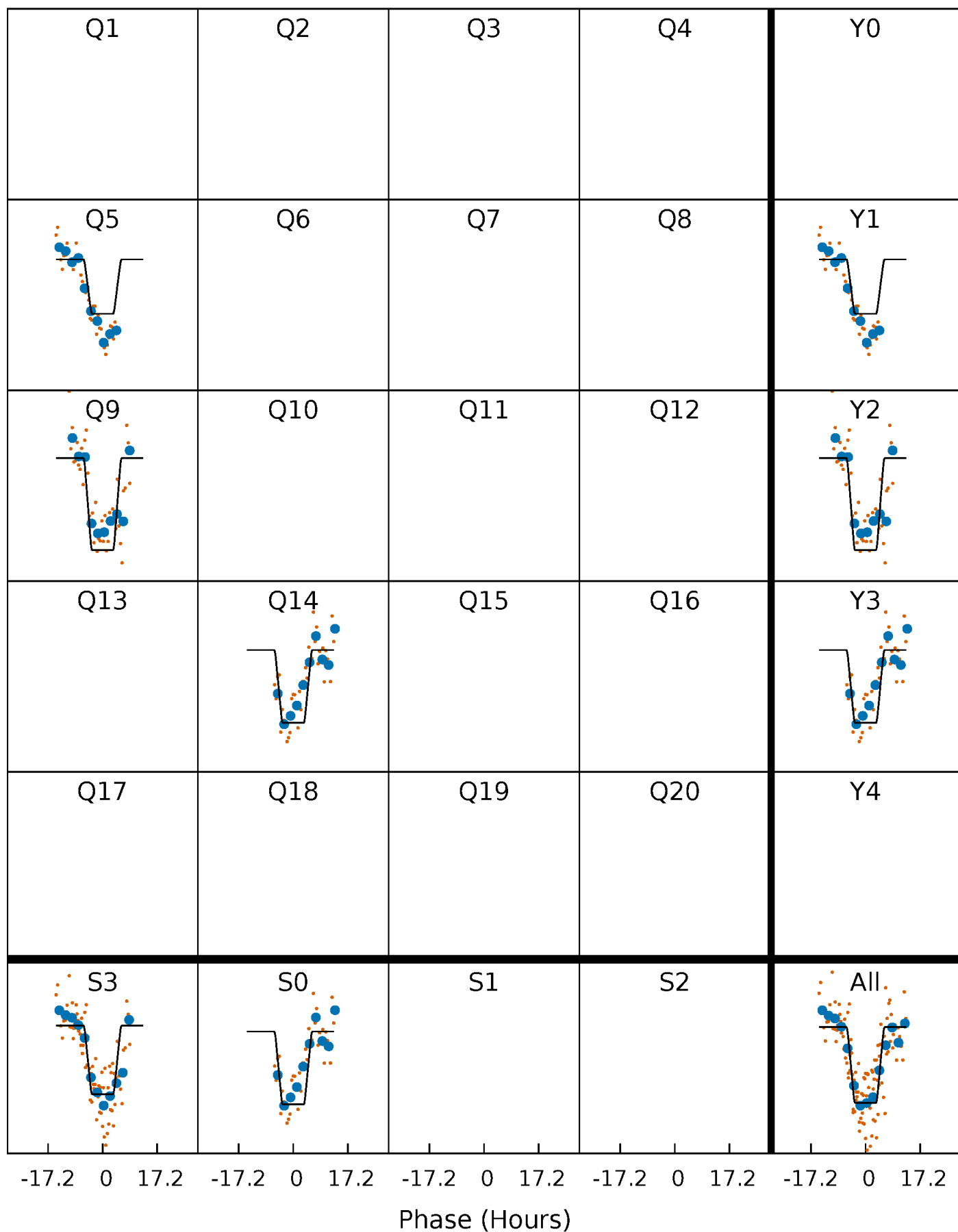
DV Quarter-Phased Transit Curves

TCE 006381309-02 P=413.468856 Days $T_0=489.372022$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

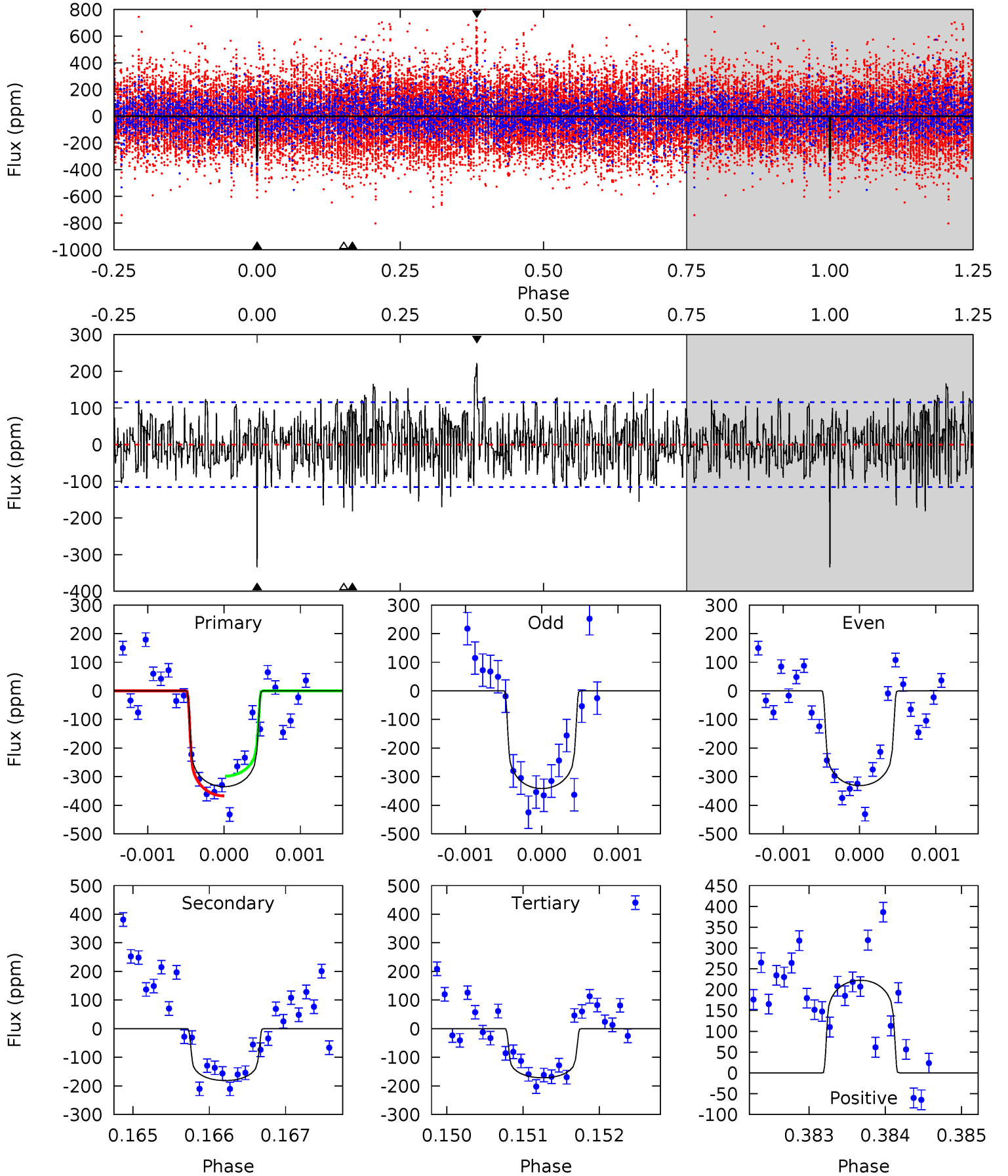
TCE 006381309-02 P=413.466275 Days $T_0=489.343081$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-02, $P = 413.468856$ Days, $E = 75.903166$ Days

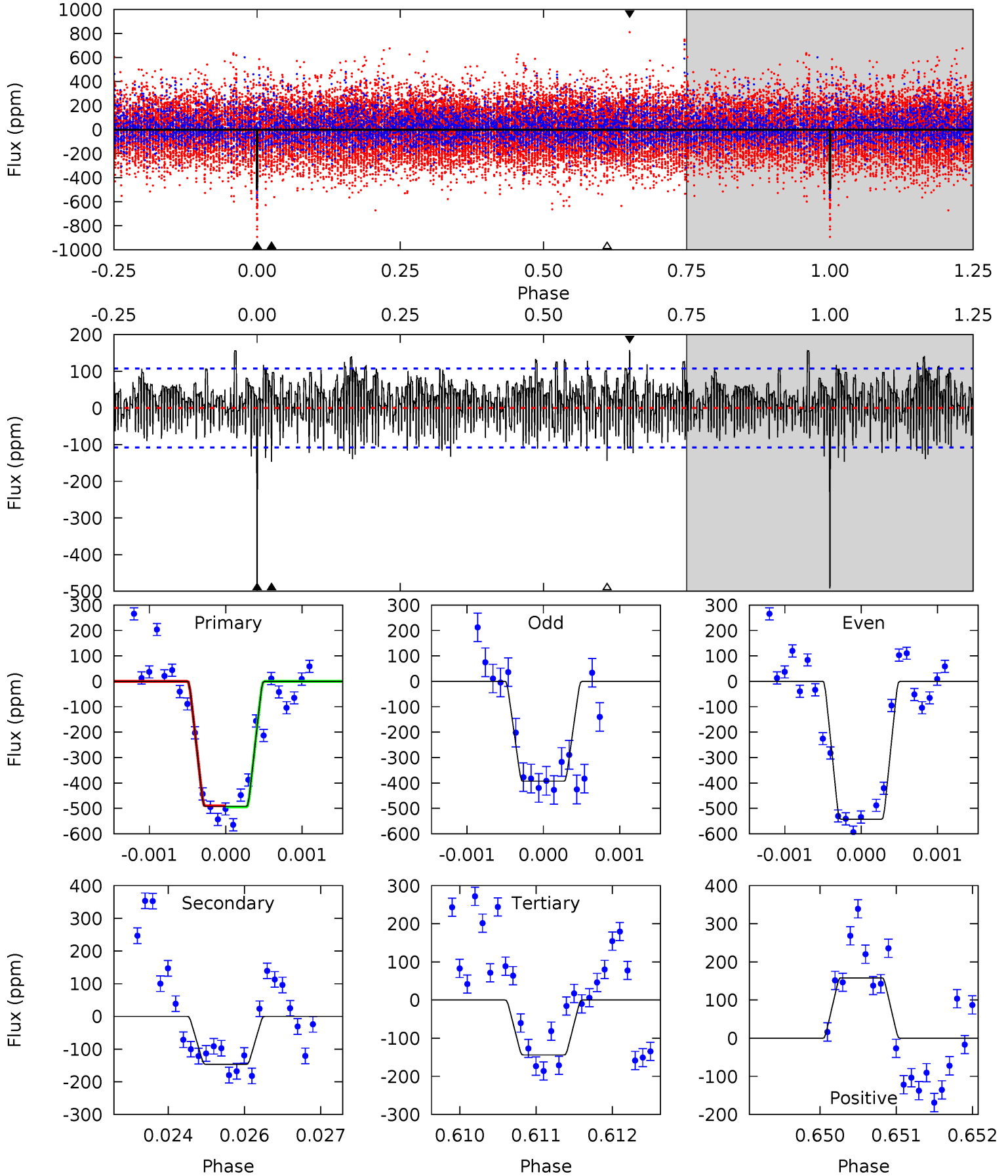
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	8.49	8.04	10.4	5.43	3.25	2.55	7.64	5.26	0.45	-1.93	0.23	0.99	0.40	1.61



Alt Model-Shift Uniqueness Test

006381309-02, $P = 413.466275$ Days, $E = 75.876806$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.8	7.37	7.25	7.97	5.42	3.24	2.47	17.5	16.8	0.13	-0.59	3.64	1.18	0.24	0.12



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-181 ± 21	$5.42^{+1.73}_{-1.59}$	607^{+38}_{-56}	5701^{+839}_{-623}	5394^{+4925}_{-2353}
Alt.	-146 ± 20	$6.89^{+1.83}_{-1.63}$	606^{+38}_{-55}	4831^{+469}_{-341}	2627^{+1749}_{-996}

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 $A_{obs} \gg 1.0$

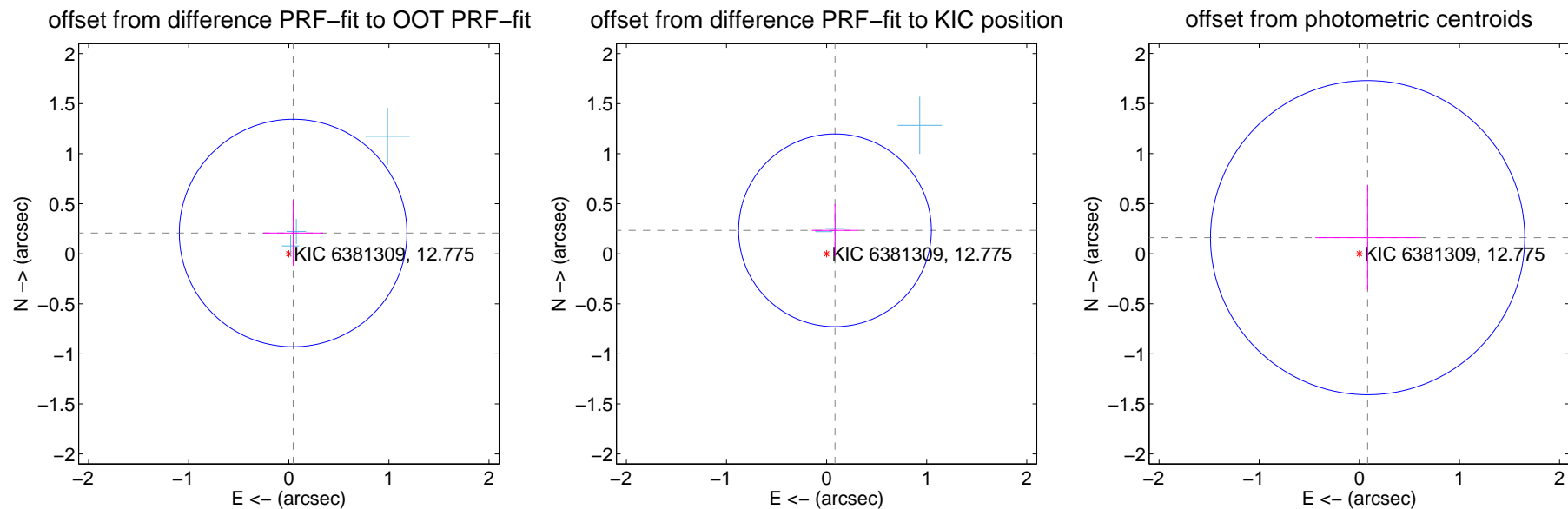
DV Centroid Data

Supplemental centroid analysis for 006381309-02. Kepler magnitude: 12.78. Transit SNR 9.06

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.212 ± 0.379	0.56	-0.043 ± 0.300	0.208 ± 0.328
PRF-fit source offset from KIC position	0.249 ± 0.321	0.78	-0.084 ± 0.232	0.235 ± 0.263
photometric centroid source offset	0.18 ± 0.52	0.35	-0.08 ± 0.52	0.16 ± 0.52

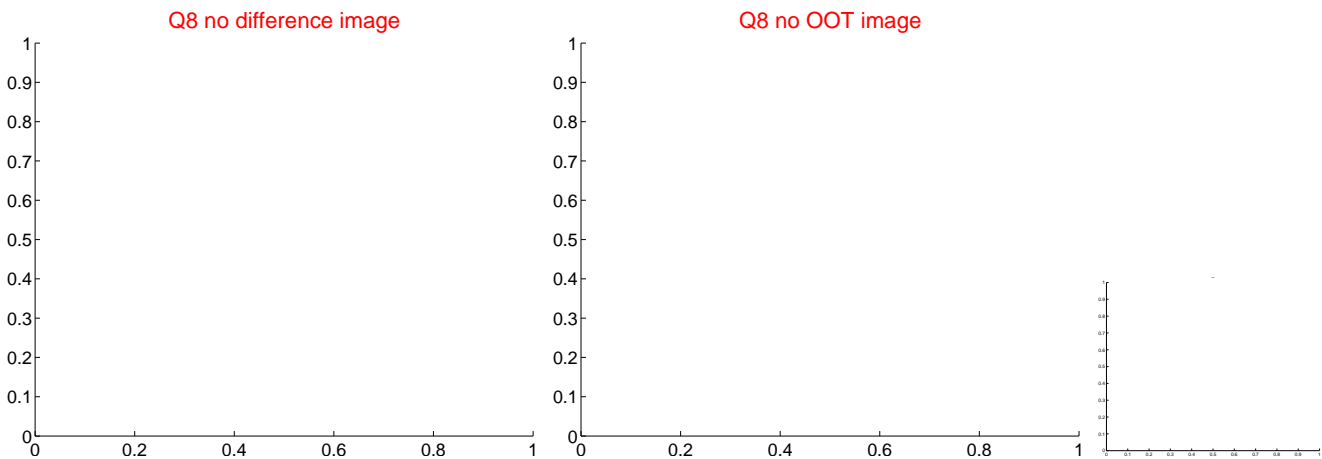
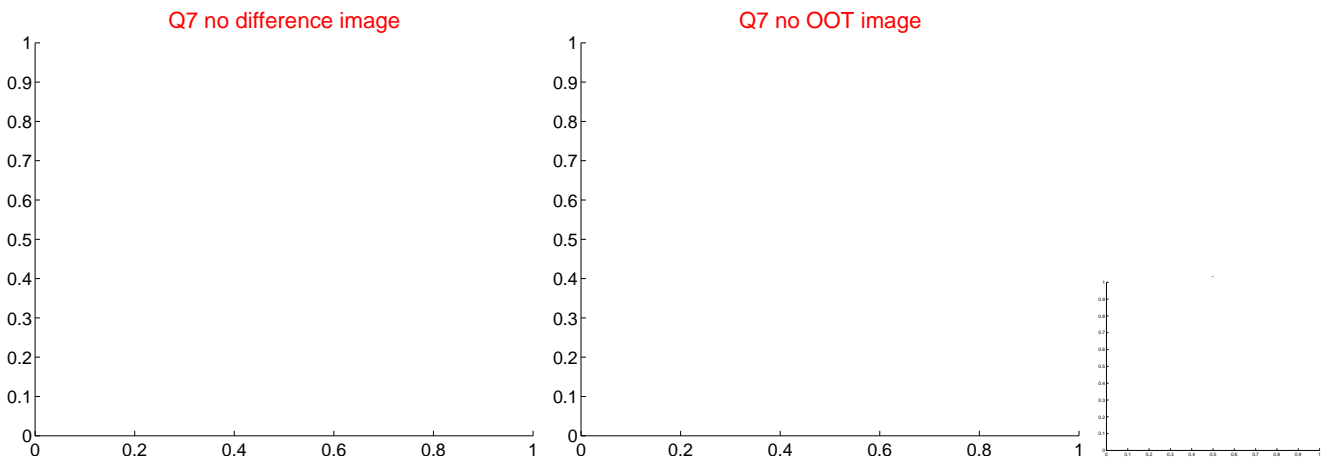
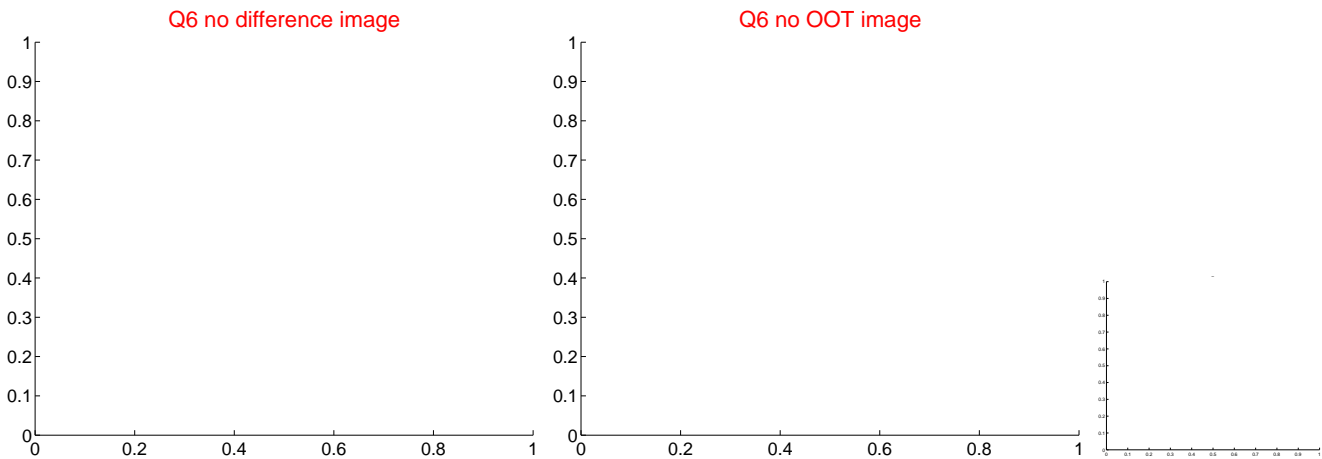
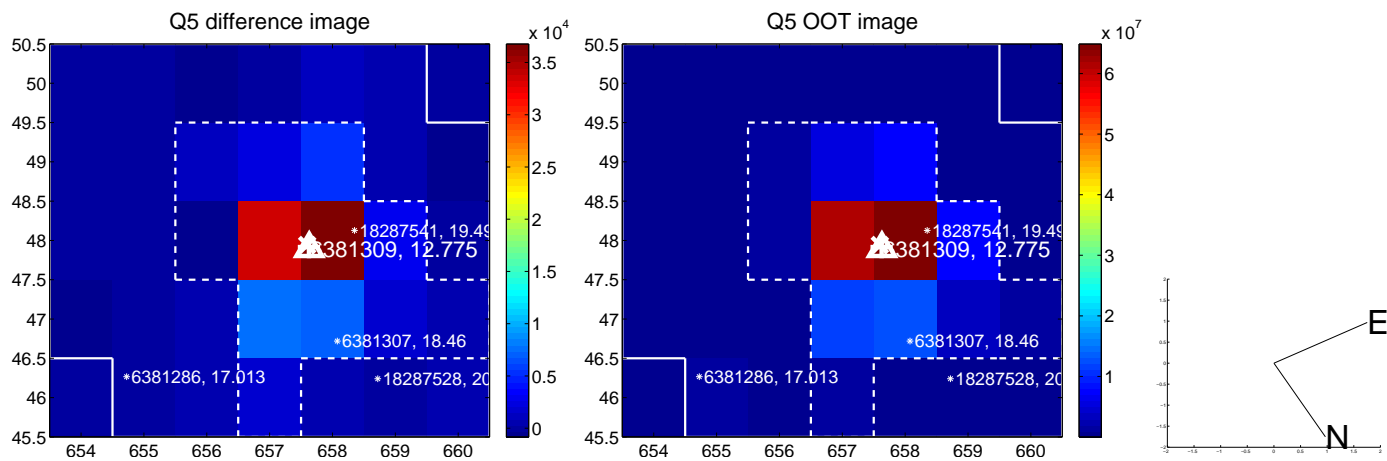


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

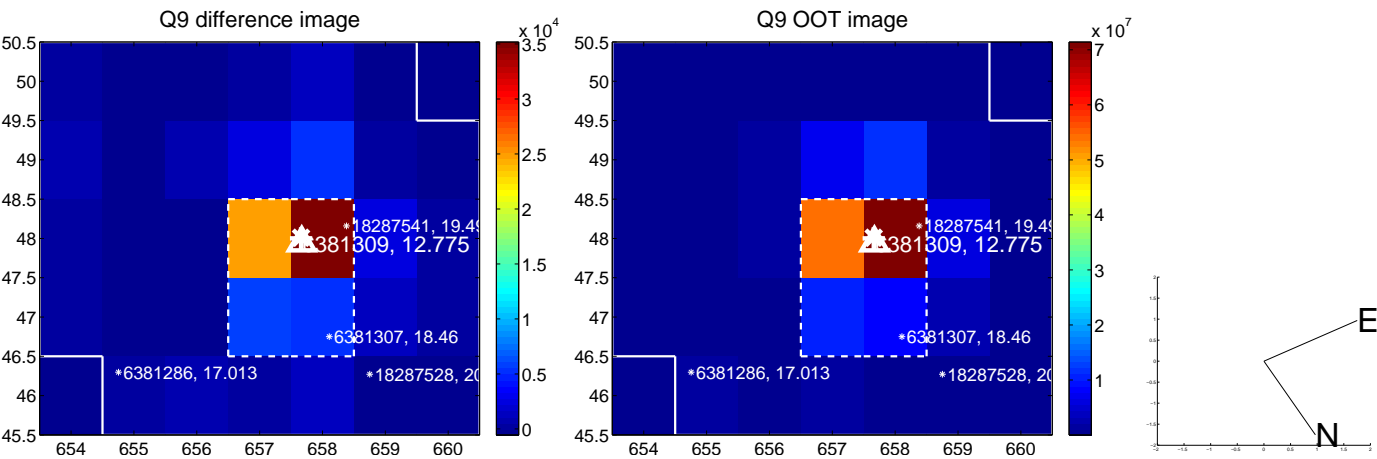
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



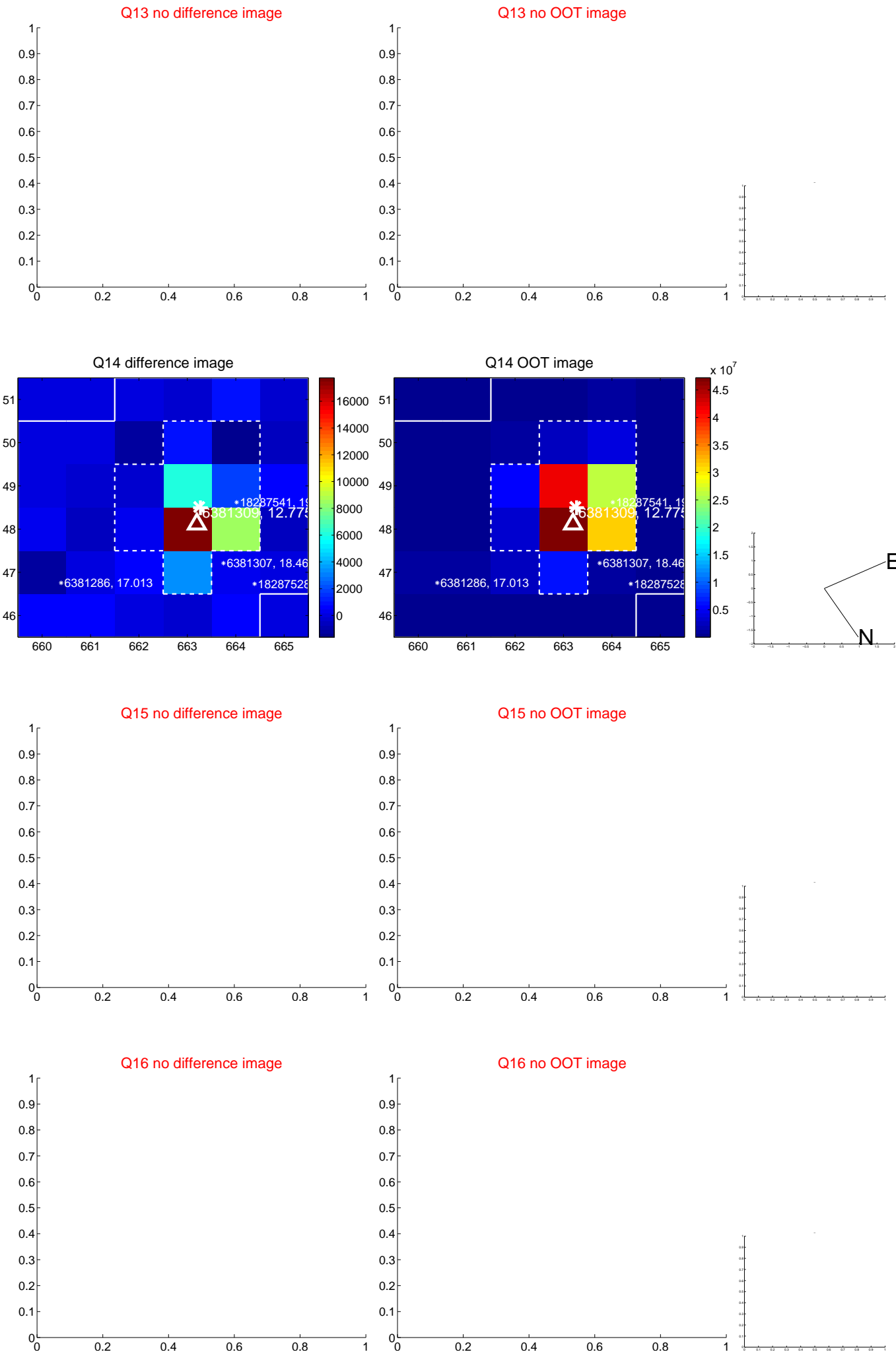
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



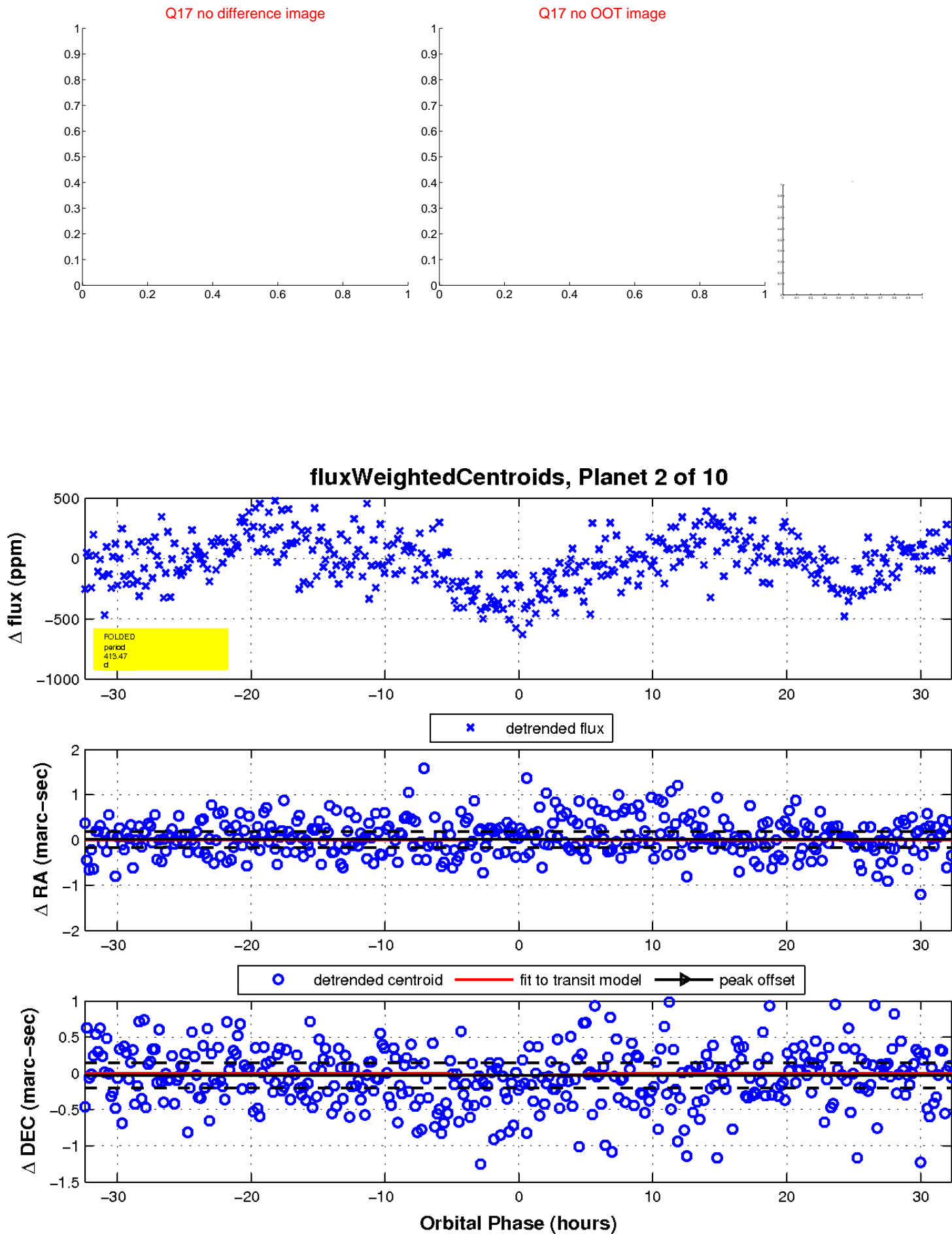
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

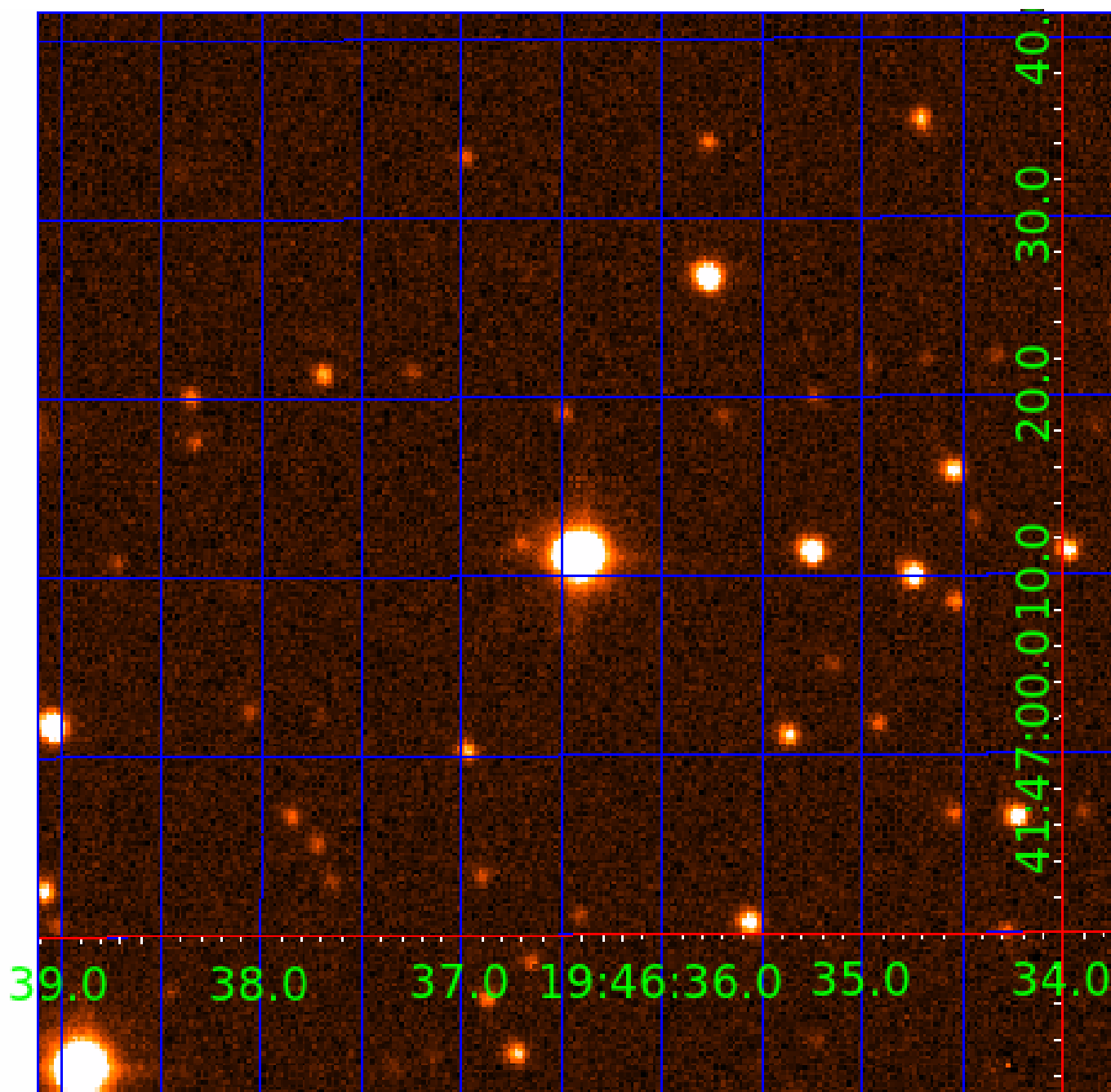


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006381309

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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

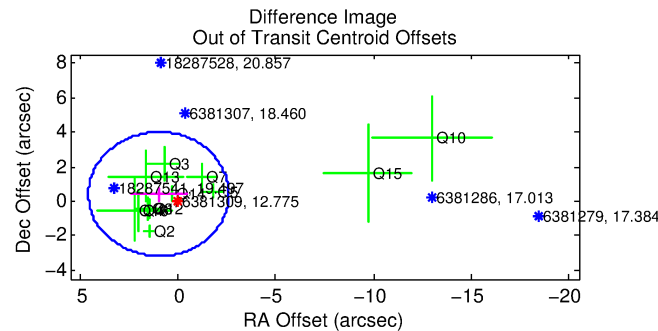
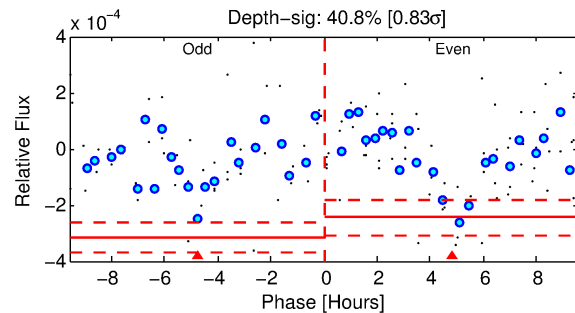
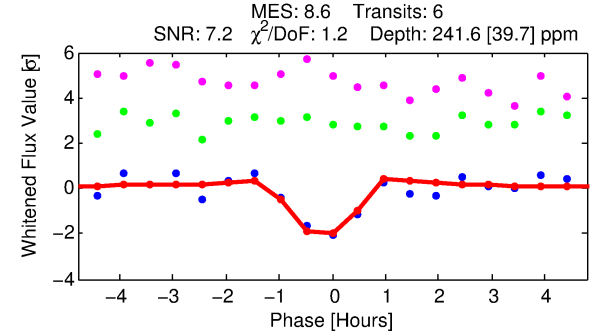
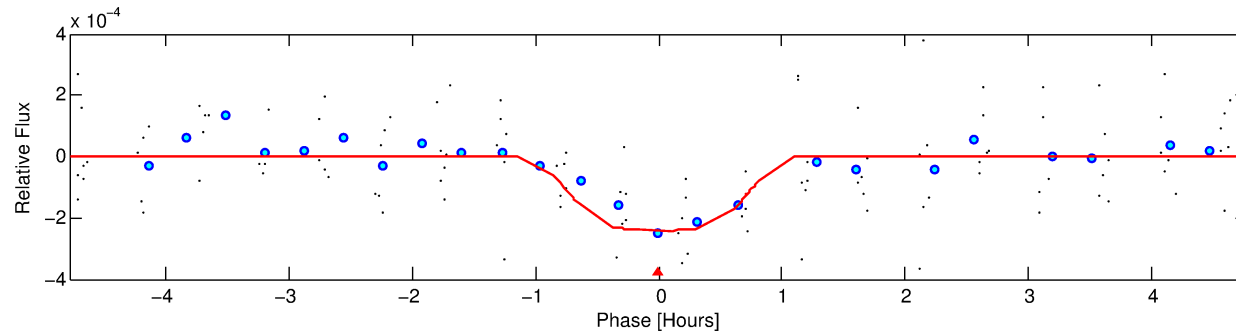
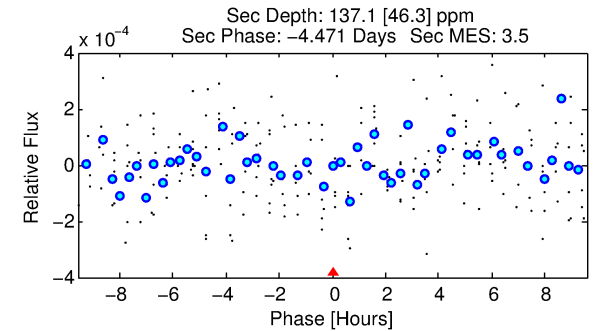
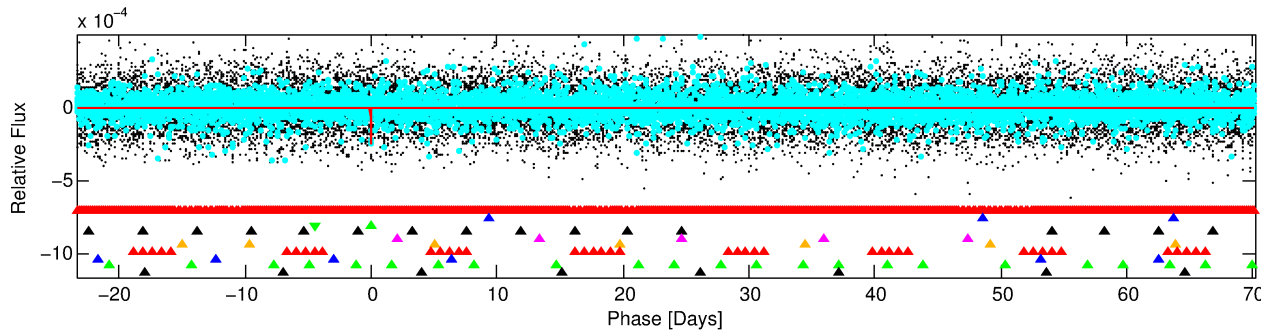
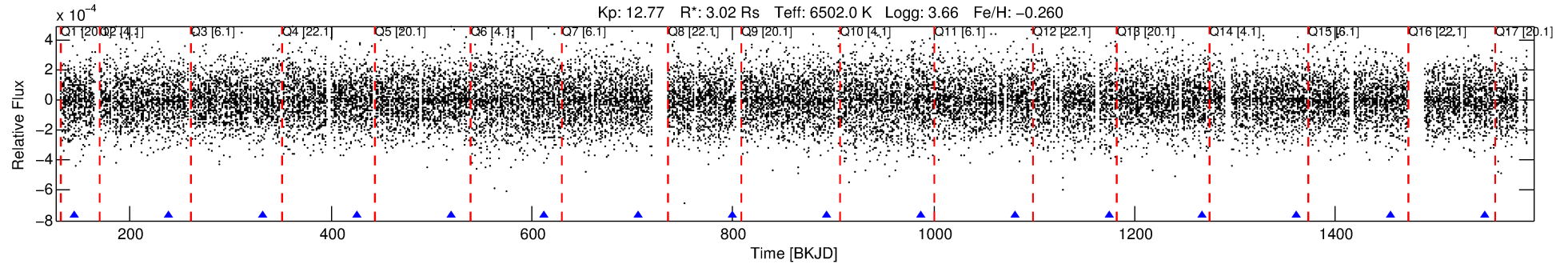
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-03

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 3 of 10 Period: 93.565 d



DV Fit Results:

Period = 93.56510 [0.00060] d
Epoch = 145.0118 [0.0057] BKJD
Rp/R* = 0.0151 [0.0108]
a/R* = 352.81 [1355.92]
b = 0.64 [3.58]
Seff = 68.28 [41.25]
Teff = 733 [111] K
Rp = 4.98 [4.01] Re
a = 0.4625 [0.1701] AU
Ag = 649.25 [1024.04] [0.63σ]
Teffp = 5721 [2098] K [2.37σ]

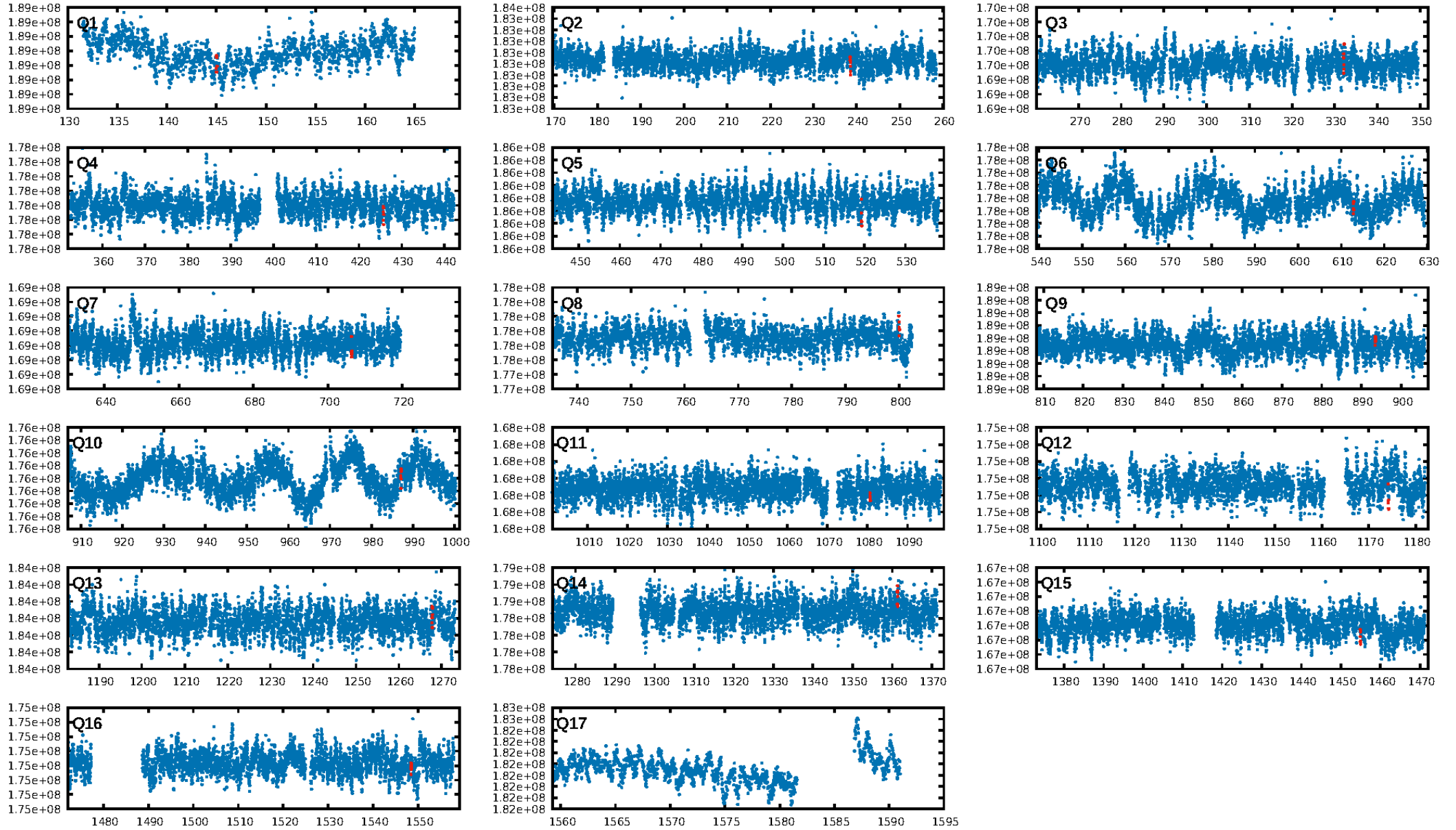
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.98σ]
LongPeriod-sig: 100.0% [253.37σ]
ModelChiSquare2-sig: 20.1%
ModelChiSquareGof-sig: 93.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -214.9
Centroid-sig: 89.5%
Centroid-so: 0.269 arcsec [0.38σ]
OotOffset-rm: 1.068 arcsec [0.89σ]
KicOffset-rm: 1.083 arcsec [0.96σ]
OotOffset-st: 3/3/4/2 [12]
KicOffset-st: 3/3/4/2 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 0.62 [10/16]

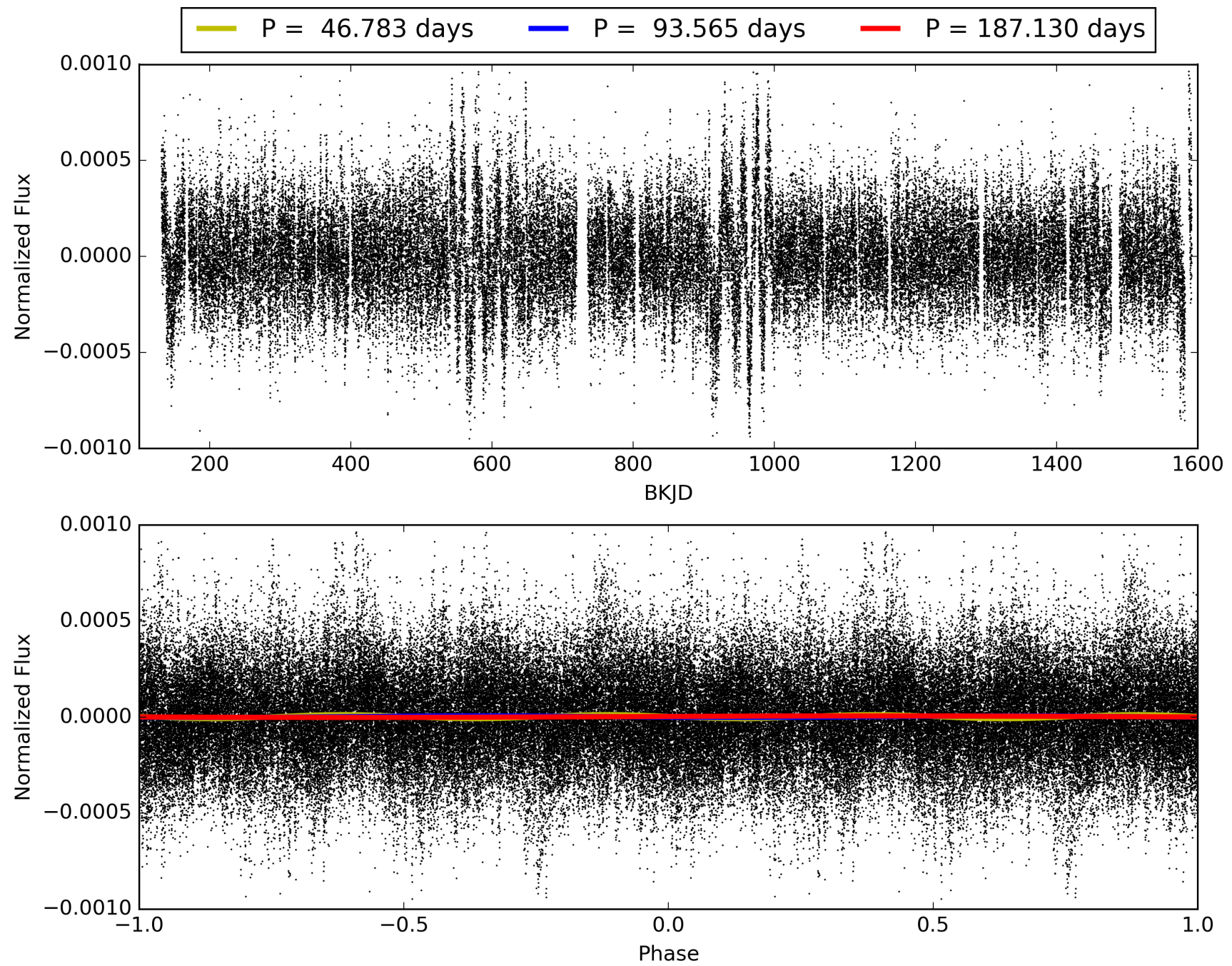
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:33:58 Z

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

TCE 006381309-03, PDC Light Curves

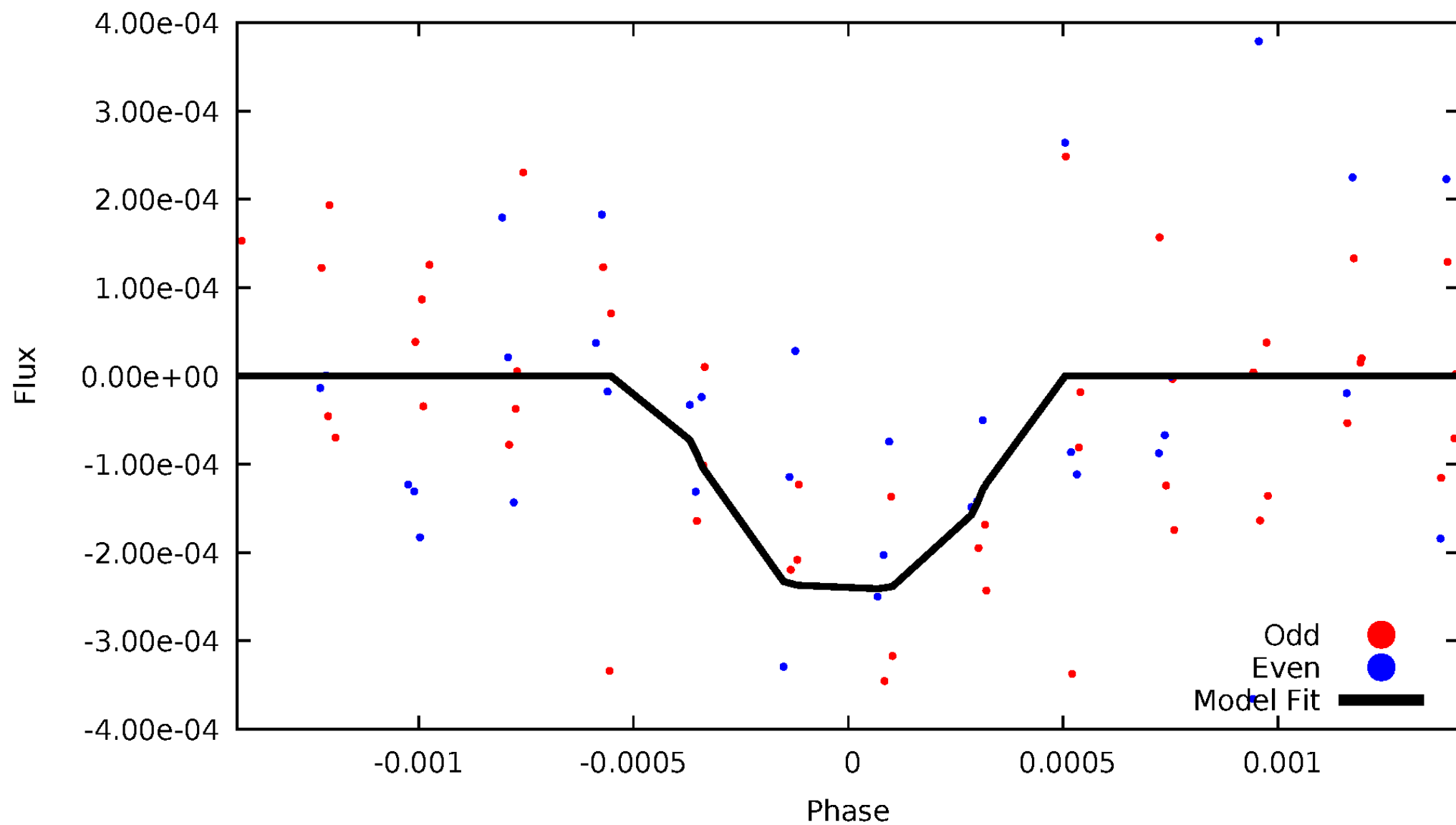


TCE 006381309-03



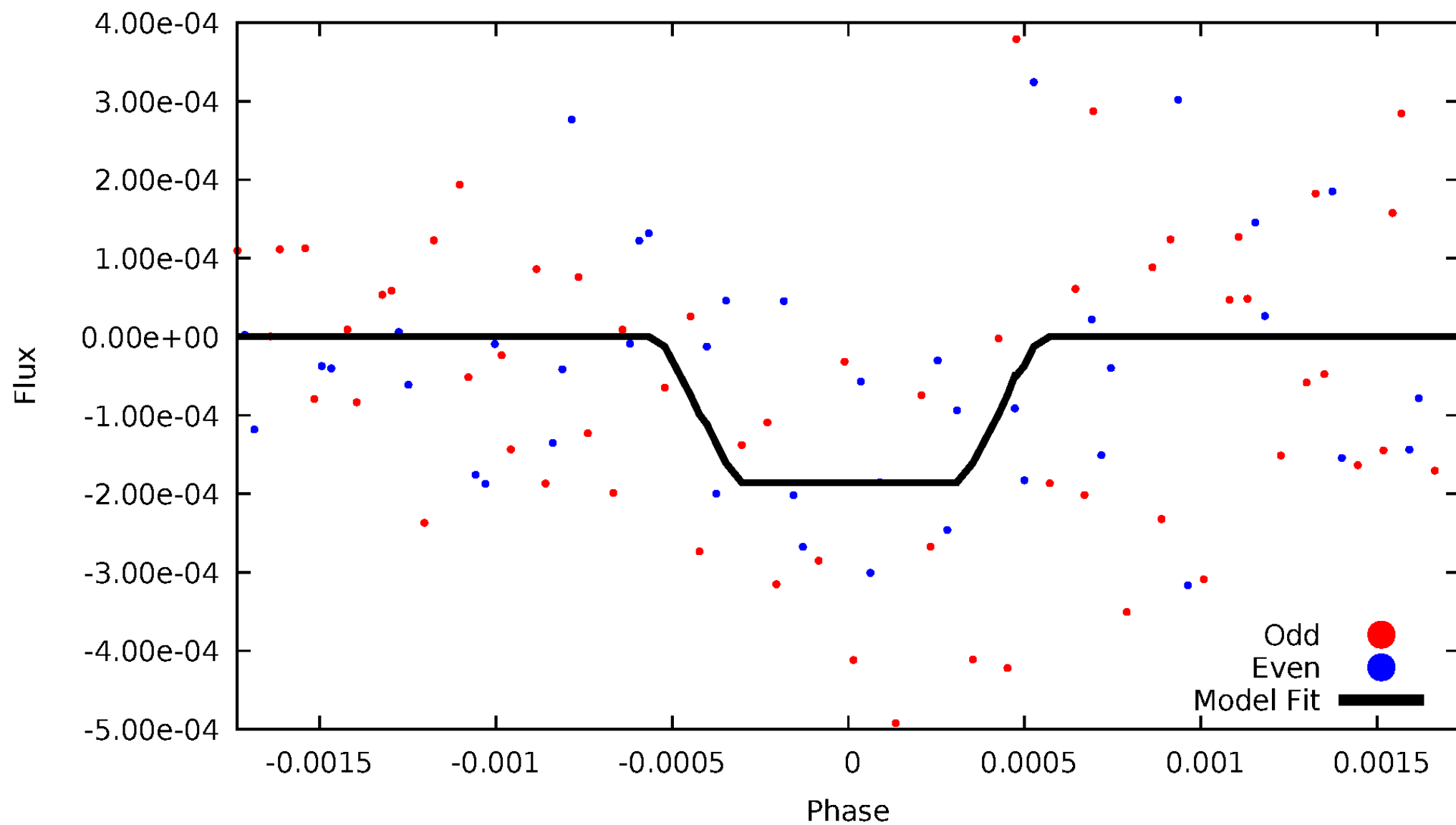
DV Odd/Even

TCE 006381309-03



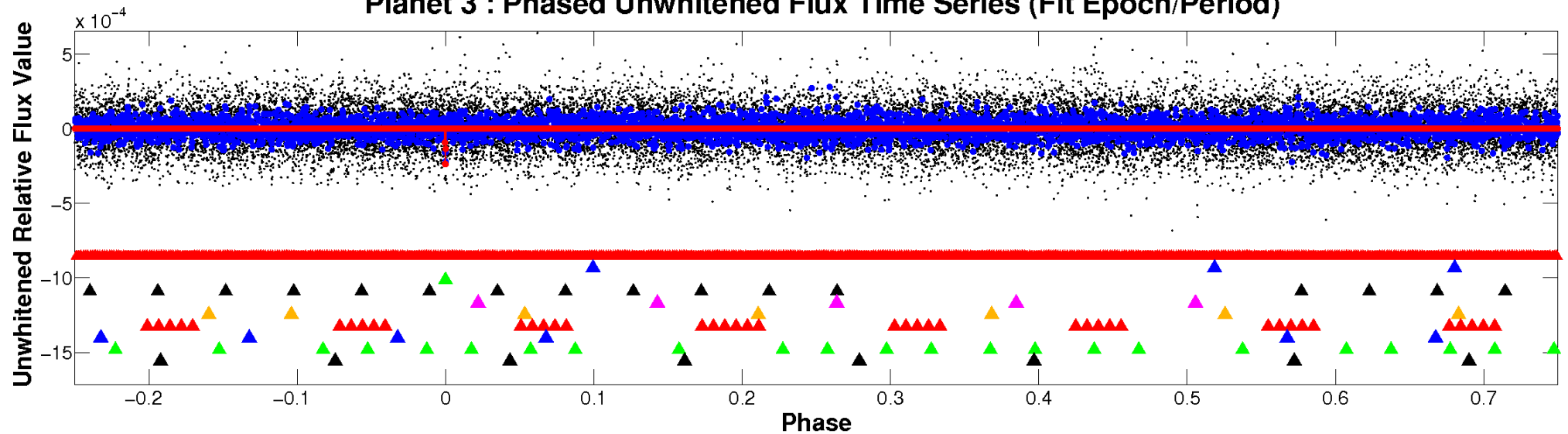
ALT Odd/Even

TCE 006381309-03

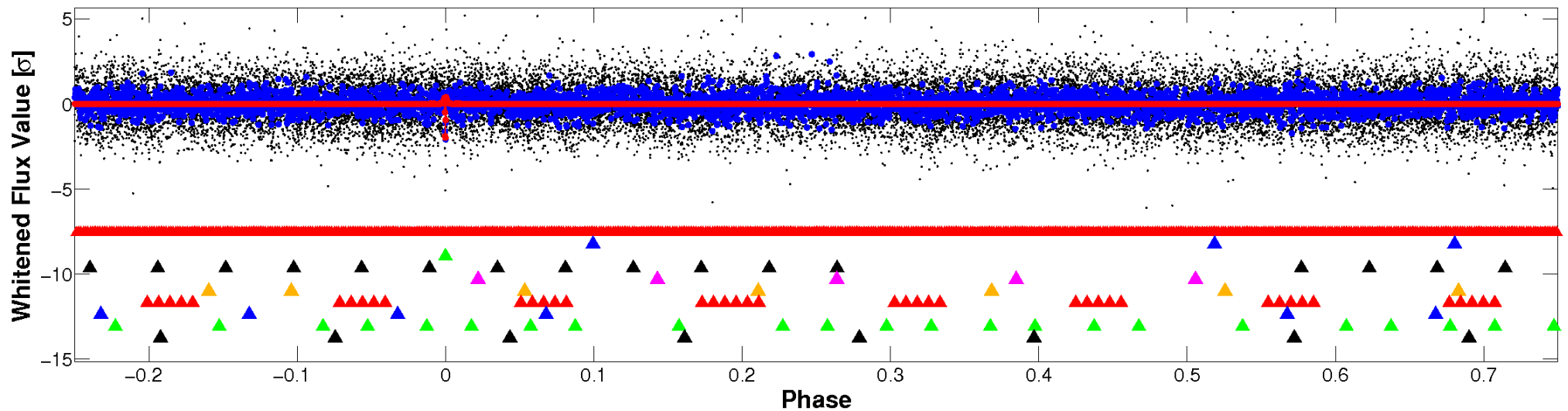


Non-Whitened Vs. Whitened Light Curve

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

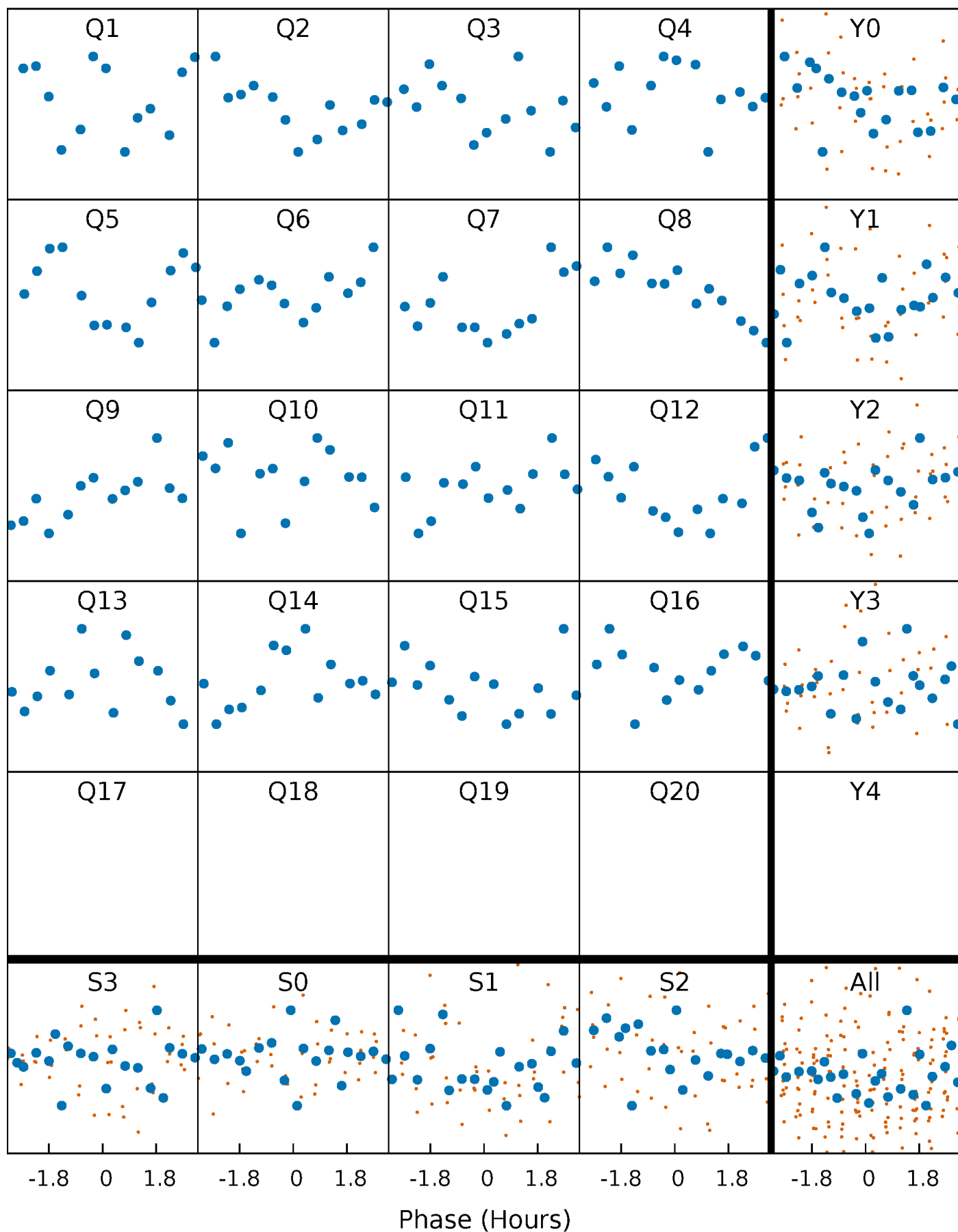


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



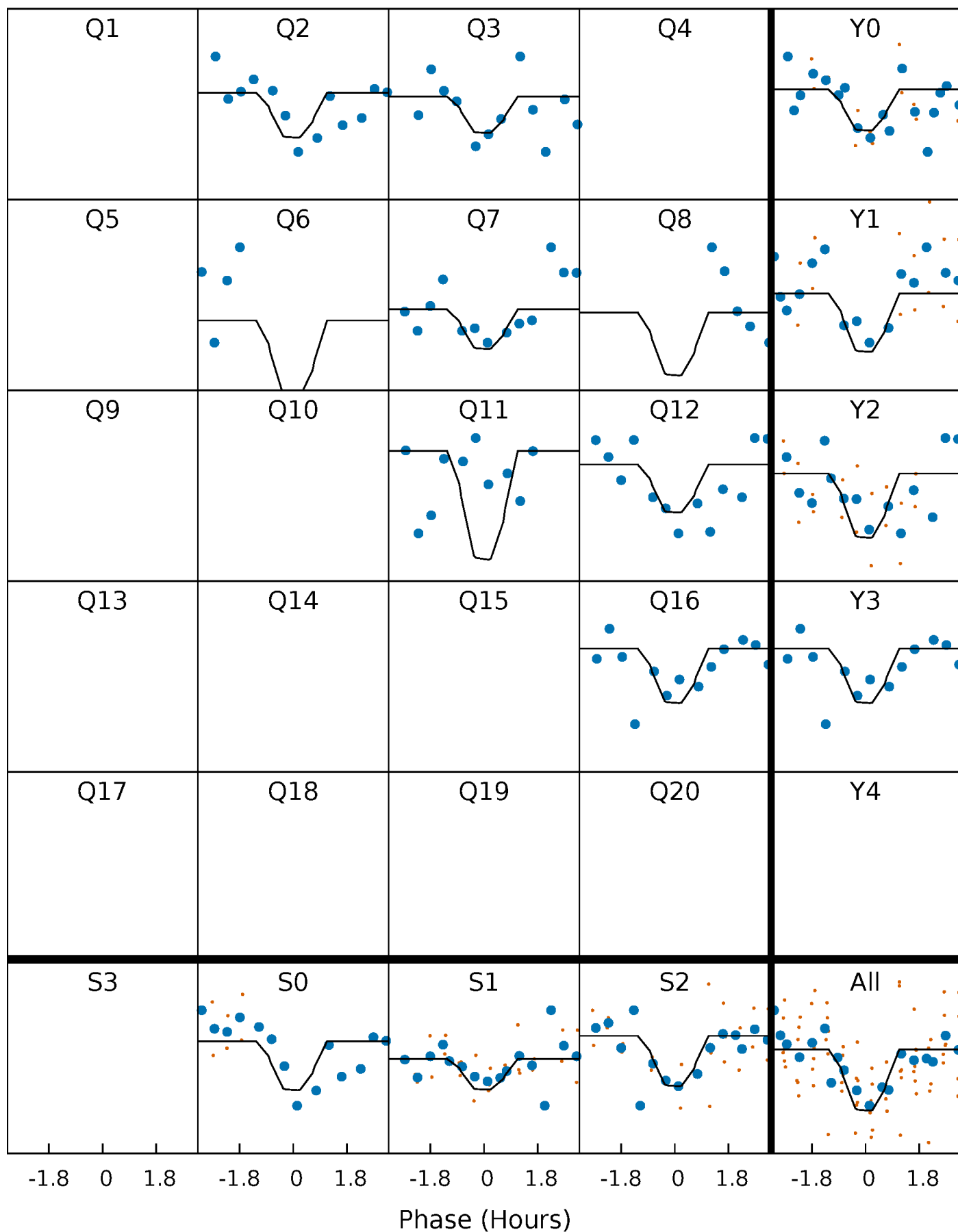
PDC Quarter-Phased Transit Curves

TCE 006381309-03 P= 93.565101 Days $T_0=145.011810$ (BKJD)



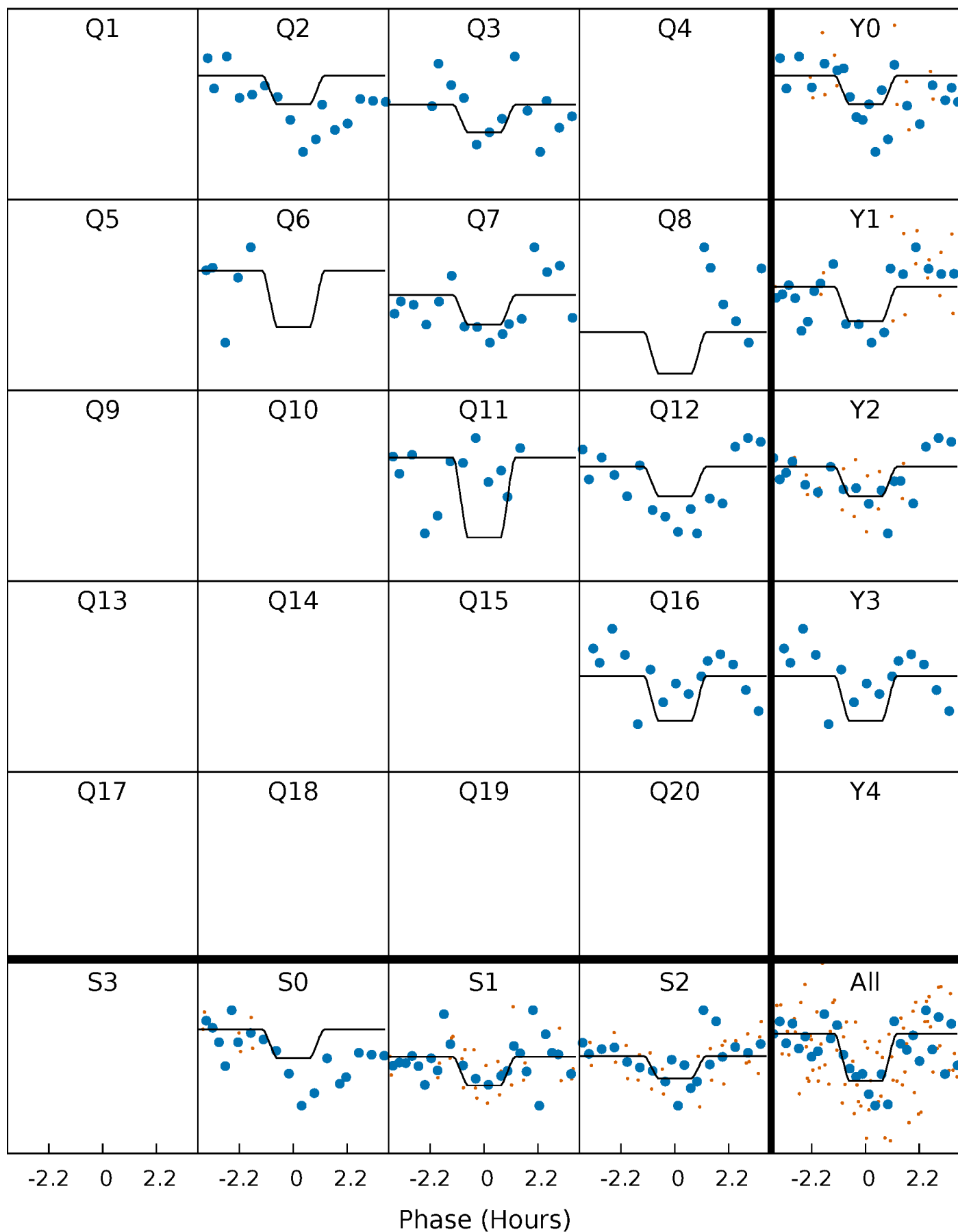
DV Quarter-Phased Transit Curves

TCE 006381309-03 P= 93.565101 Days $T_0=145.011810$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

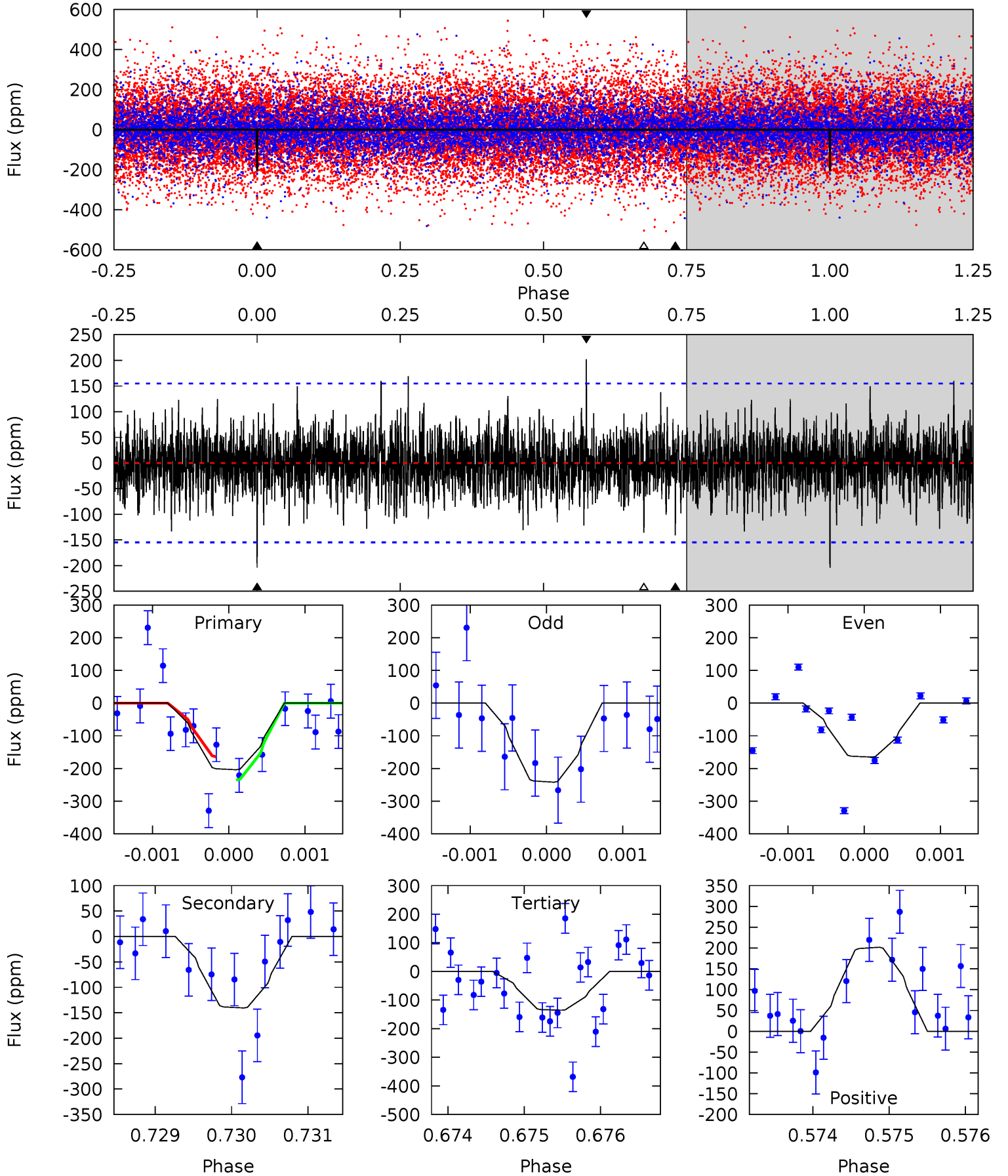
TCE 006381309-03 P= 93.566052 Days $T_0=145.007886$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-03, P = 93.565101 Days, E = 51.446709 Days

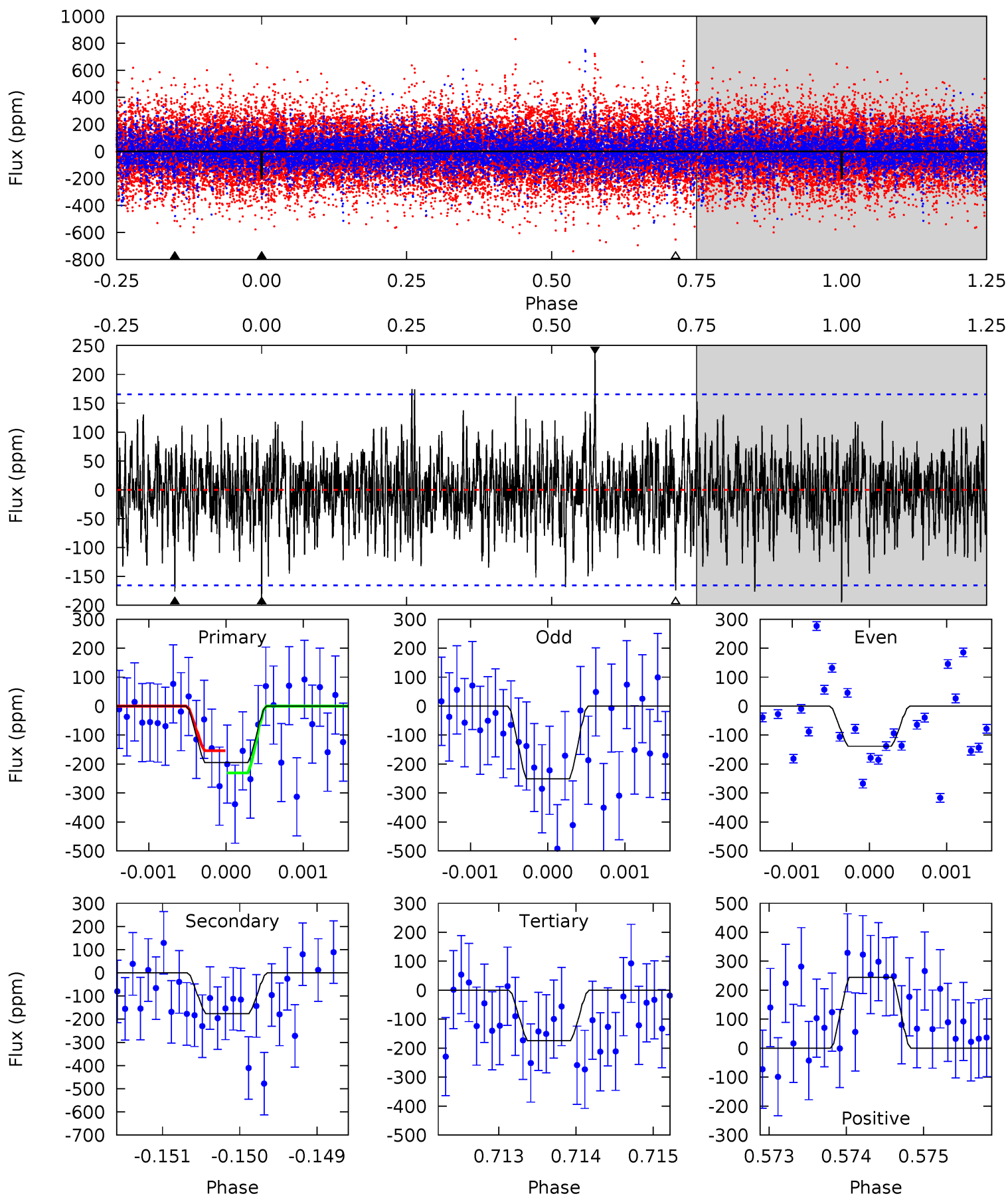
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.27	5.01	4.83	7.19	5.52	3.39	1.40	2.44	0.08	0.18	-2.18	1.40	0.96	0.50	1.28



Alt Model-Shift Uniqueness Test

006381309-03, P = 93.566052 Days, E = 51.441834 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.39	5.79	5.72	8.02	5.44	3.27	1.62	0.67	-1.63	0.07	-2.23	1.86	1.02	0.56	1.24



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-141 ± 28	$4.91^{+3.50}_{-2.84}$	999^{+62}_{-102}	5499^{+3385}_{-1051}	667^{+3329}_{-445}
Alt.	-176 ± 30	$4.46^{+3.33}_{-2.77}$	995^{+59}_{-99}	6249^{+4514}_{-1426}	1076^{+5823}_{-744}

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 $A_{\text{obs}} \gg 1.0$

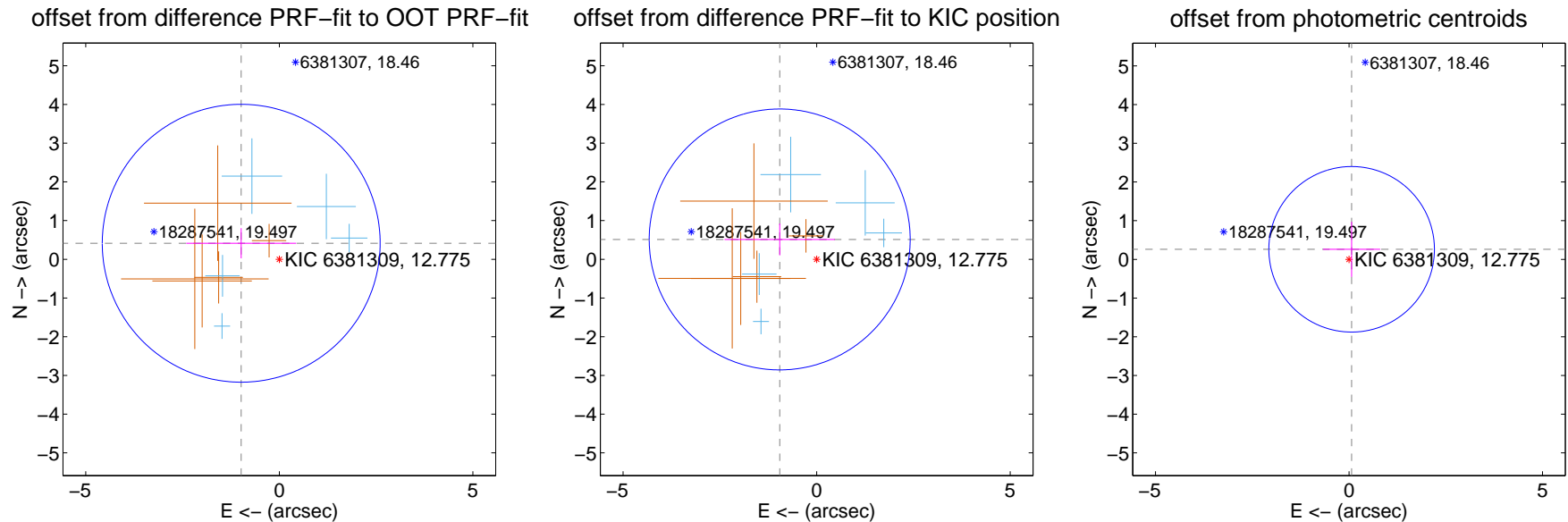
DV Centroid Data

Supplemental centroid analysis for 006381309-03. Kepler magnitude: 12.78. Transit SNR 7.24

There are 5 quarters with good PRF difference image offsets

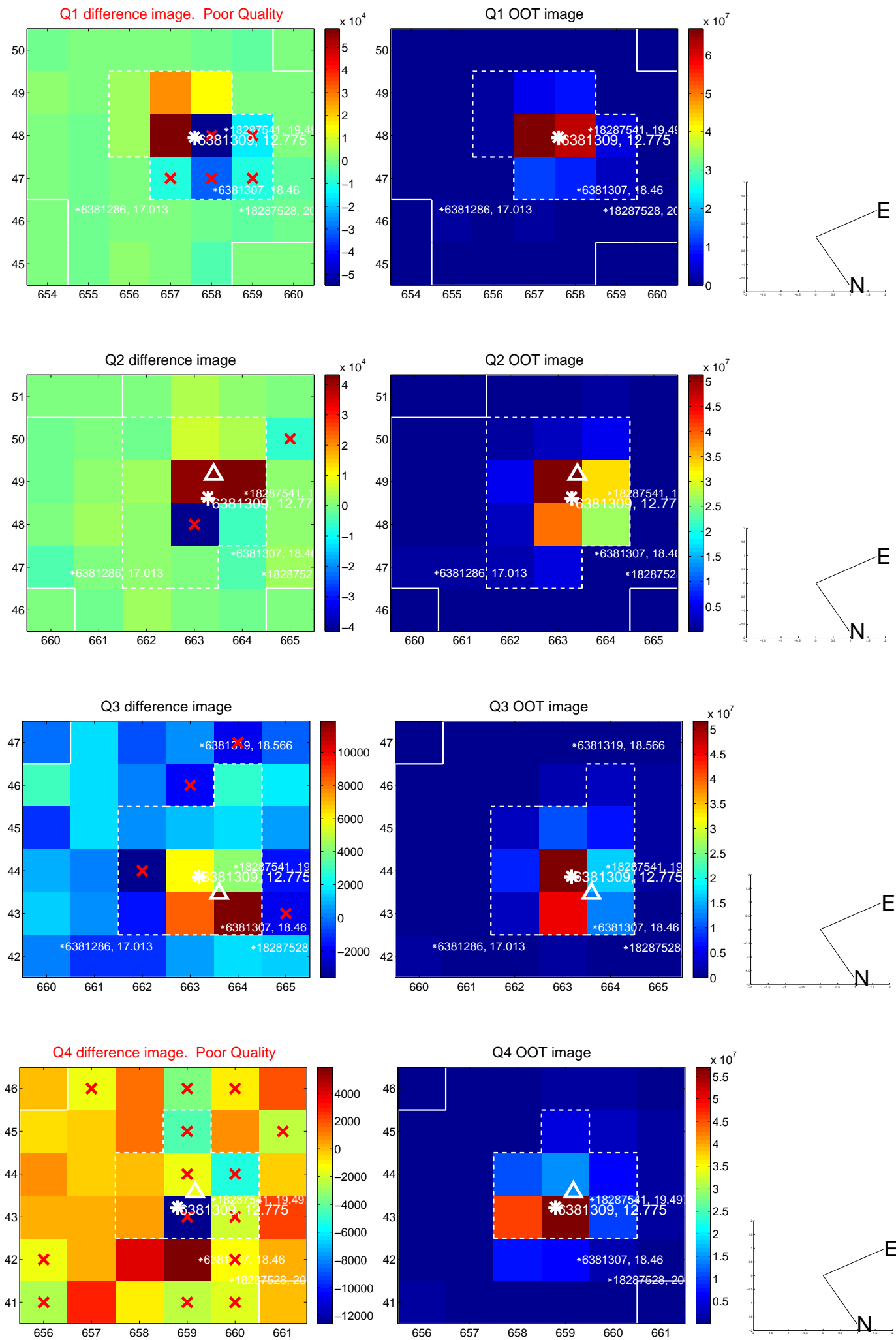
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.068 ± 1.196	0.89	0.984 ± 1.418	0.415 ± 0.391
PRF-fit source offset from KIC position	1.083 ± 1.123	0.96	0.954 ± 1.424	0.513 ± 0.410
photometric centroid source offset	0.27 ± 0.71	0.38	-0.07 ± 0.74	0.26 ± 0.71

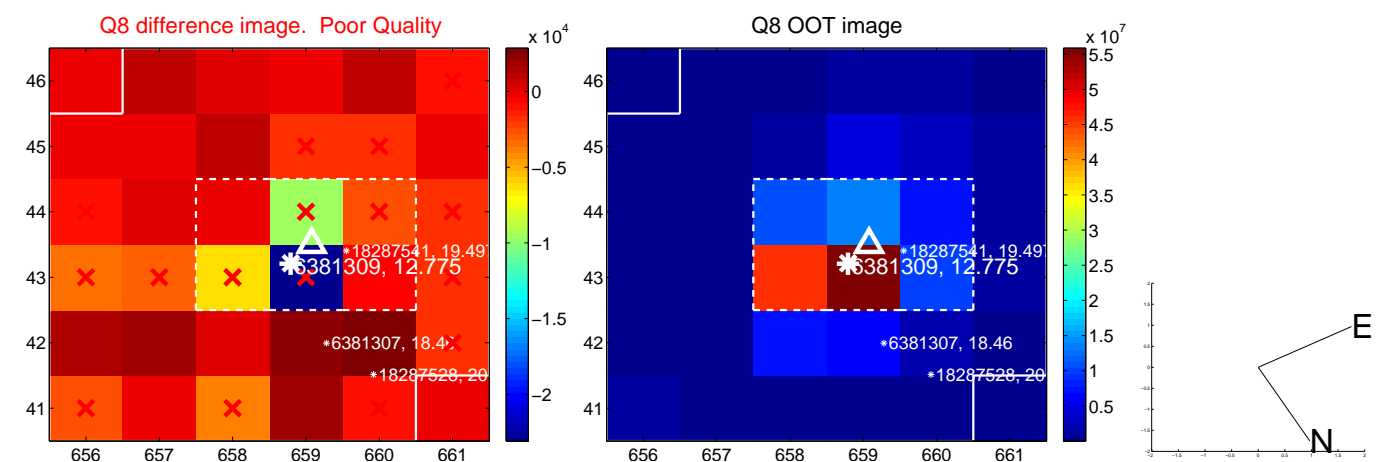
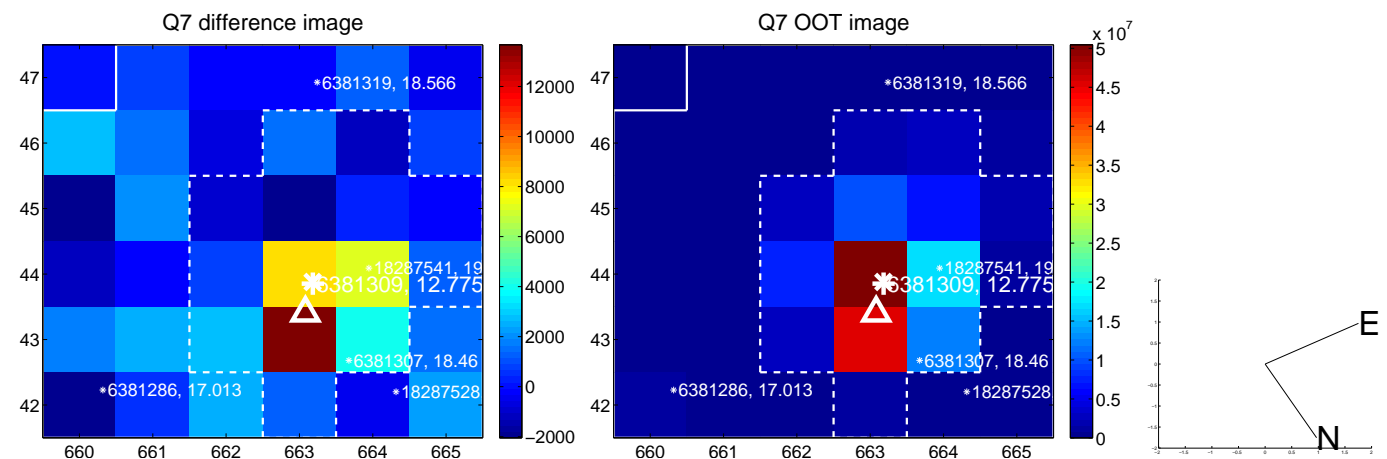
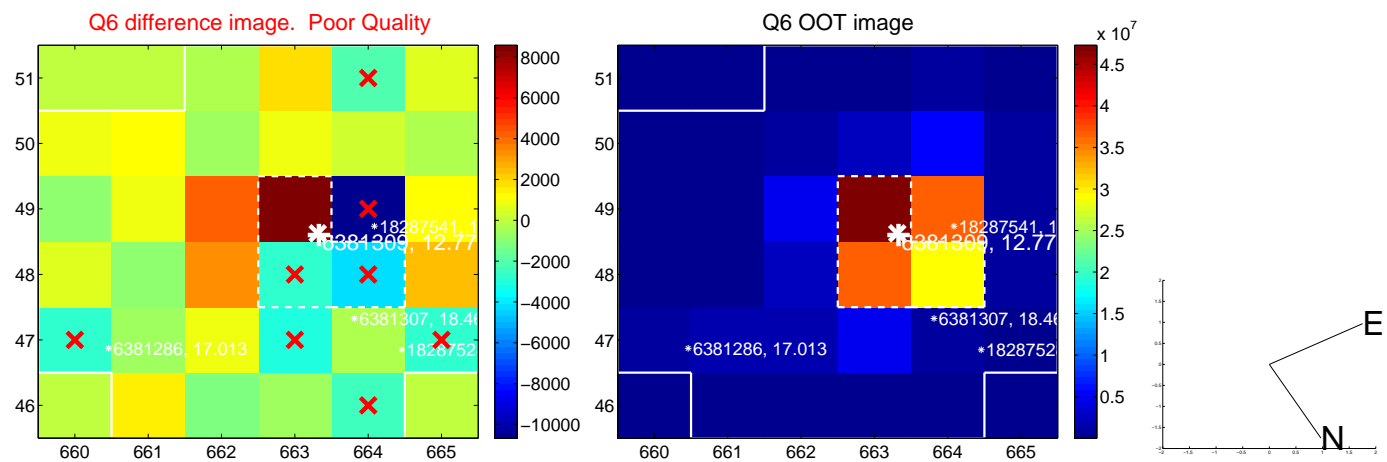
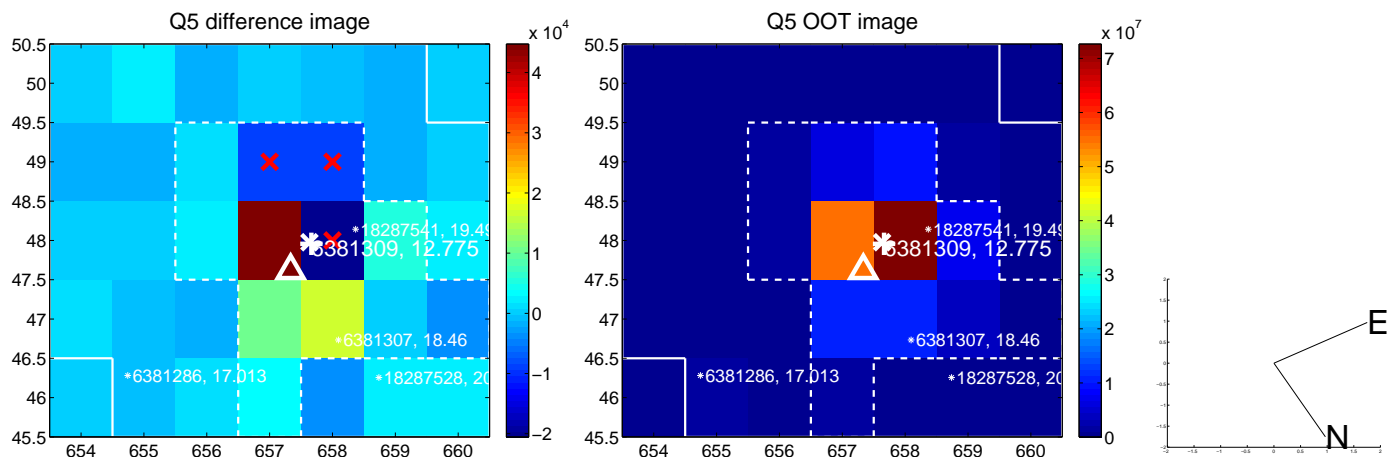


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

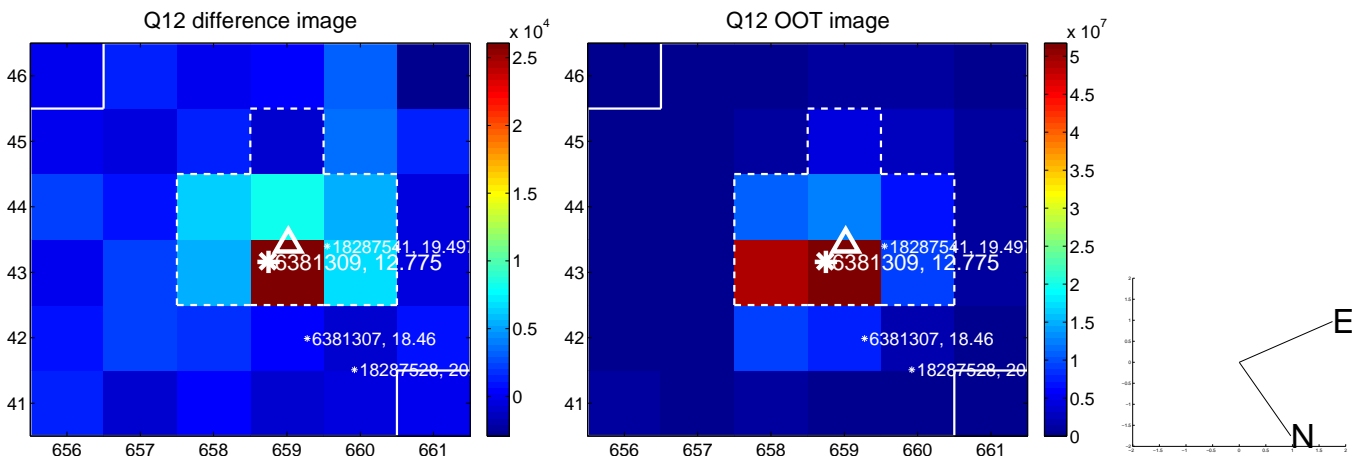
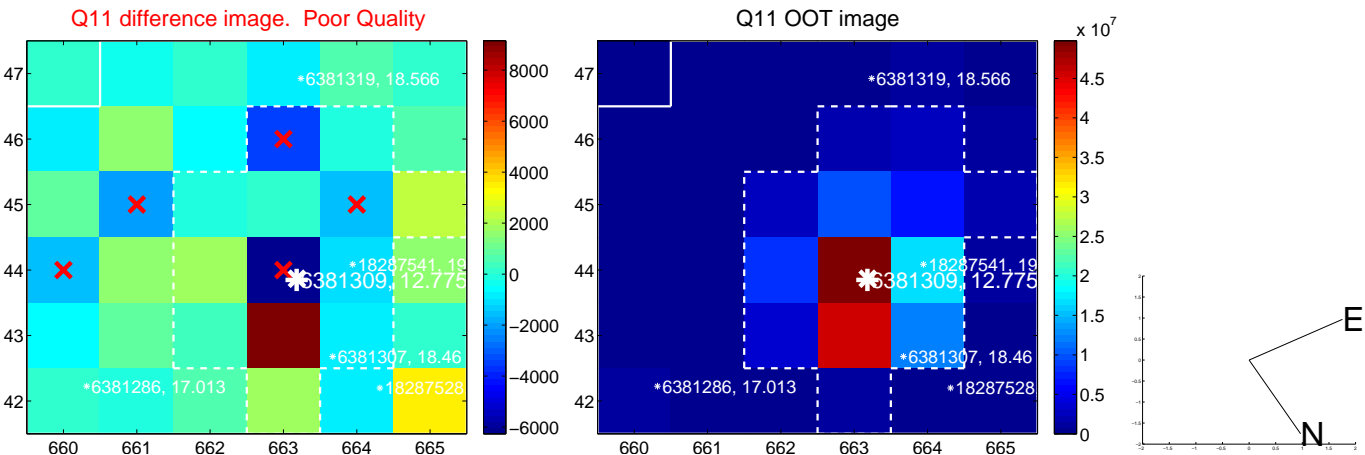
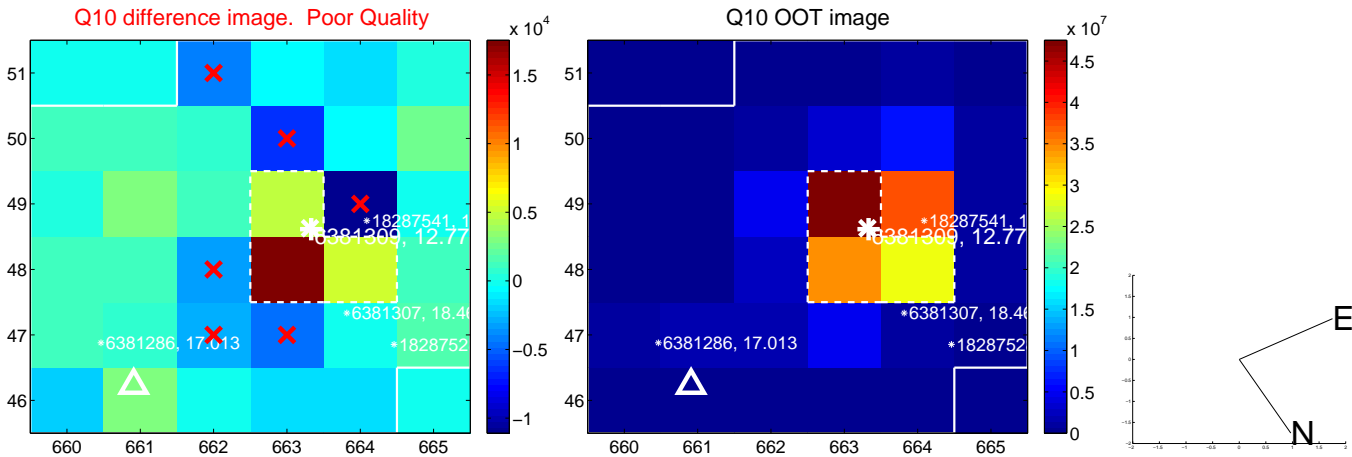
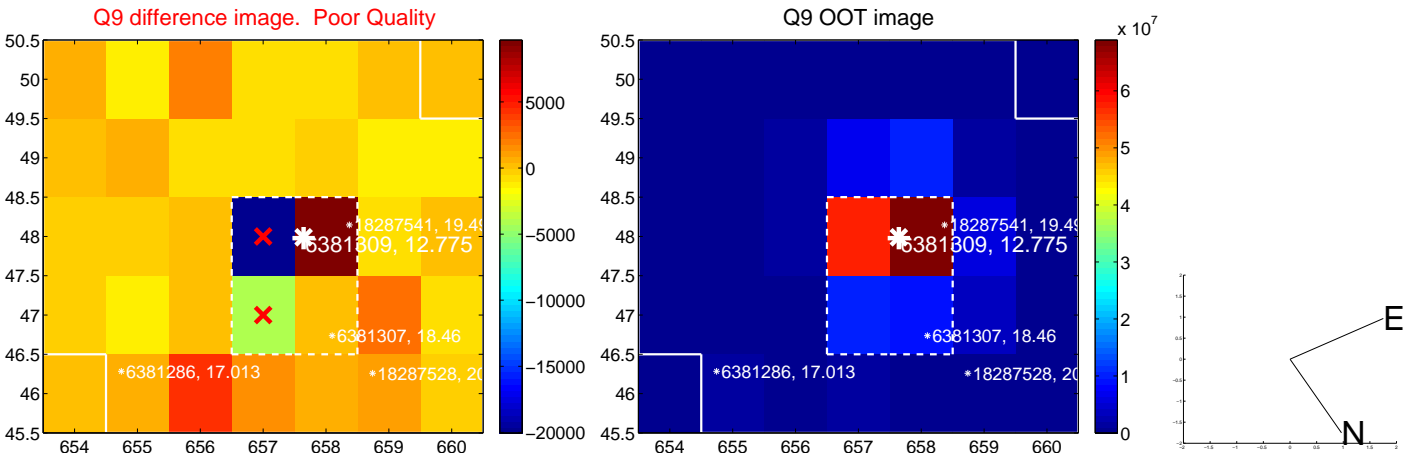
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



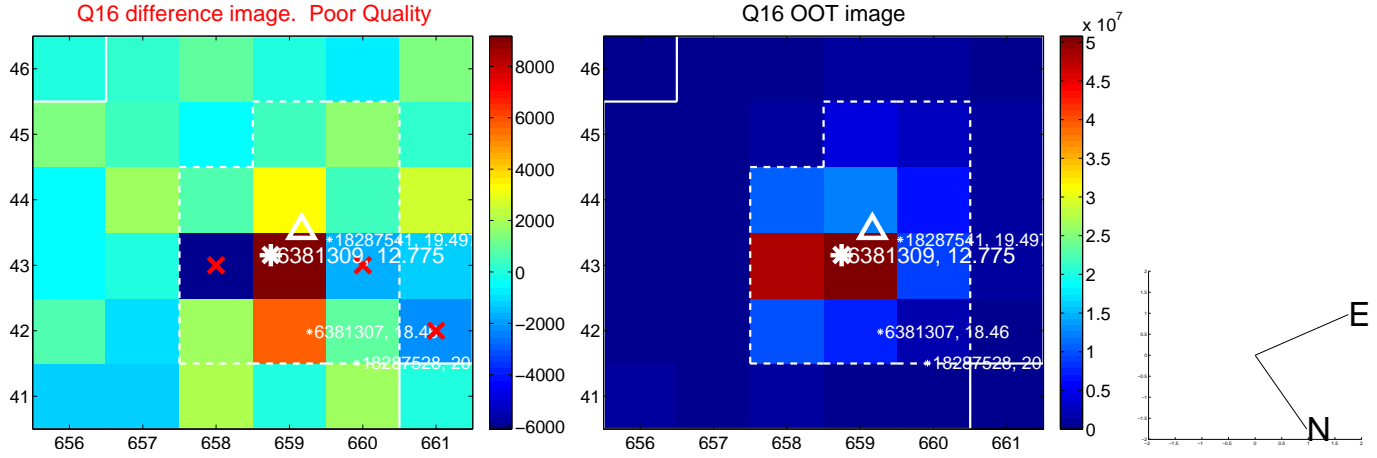
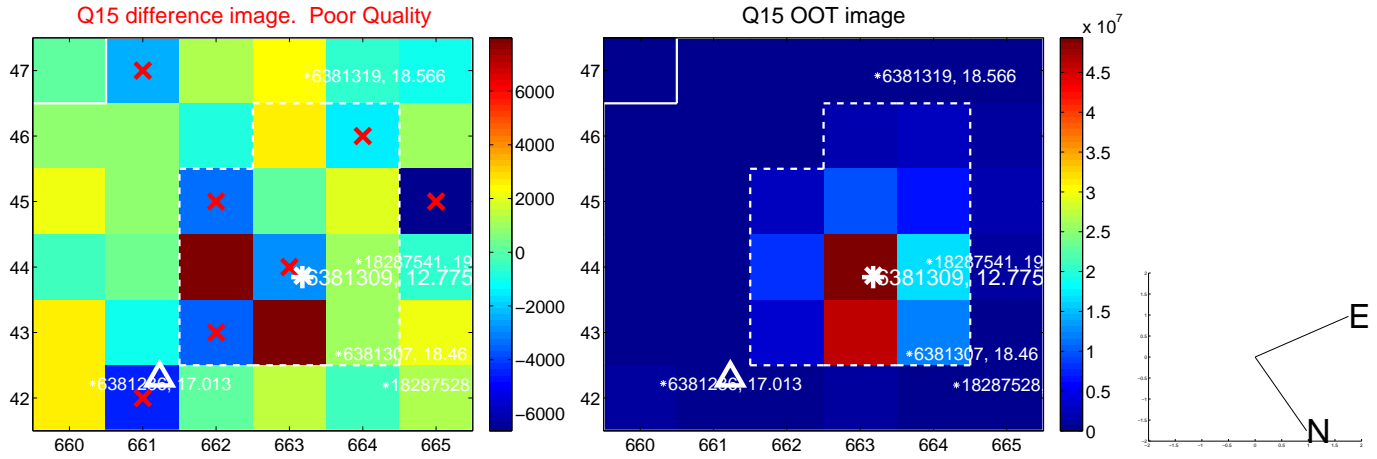
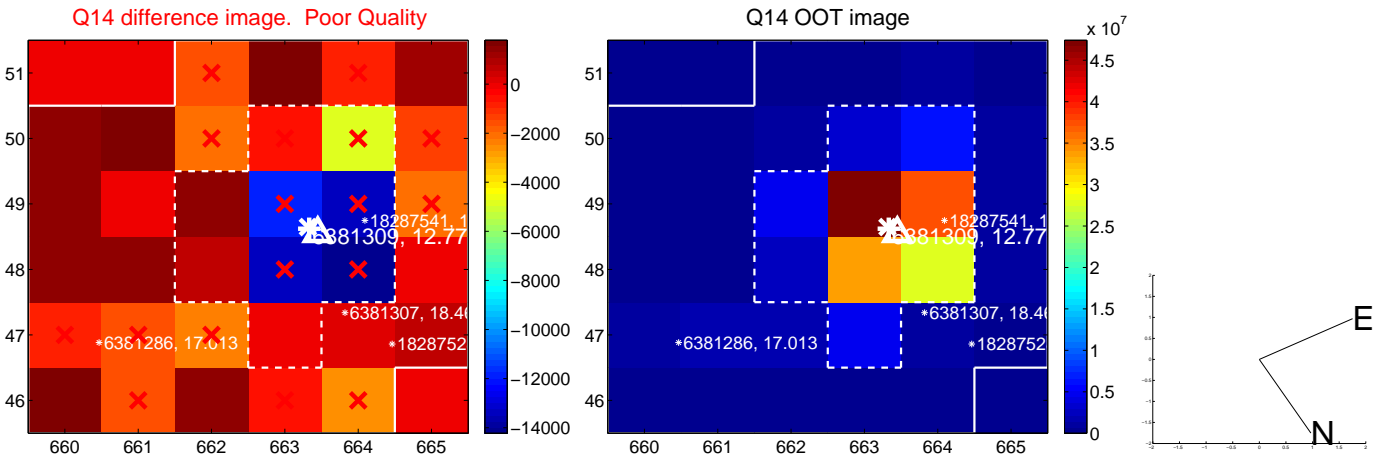
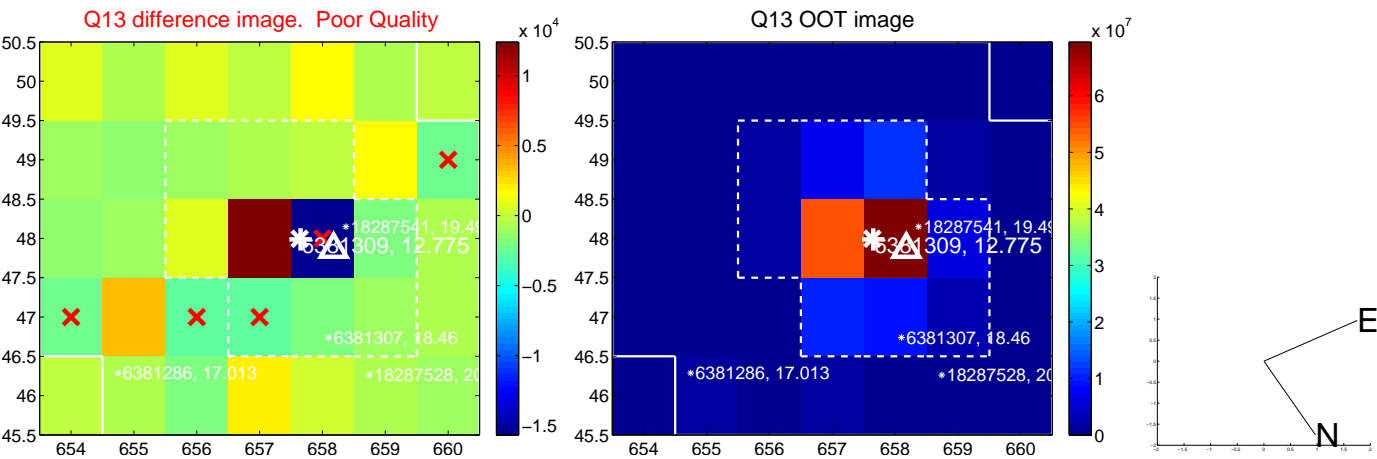
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



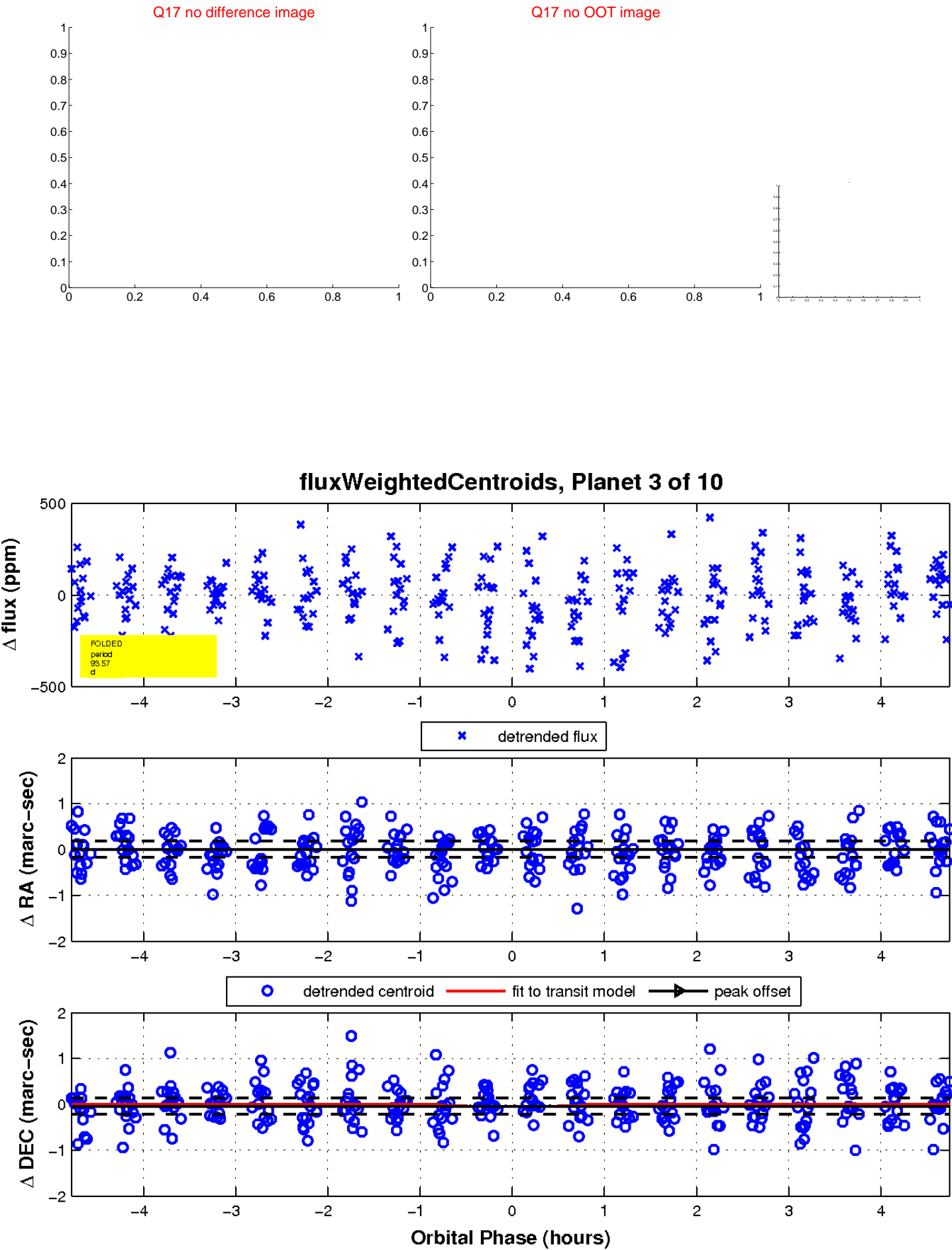
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

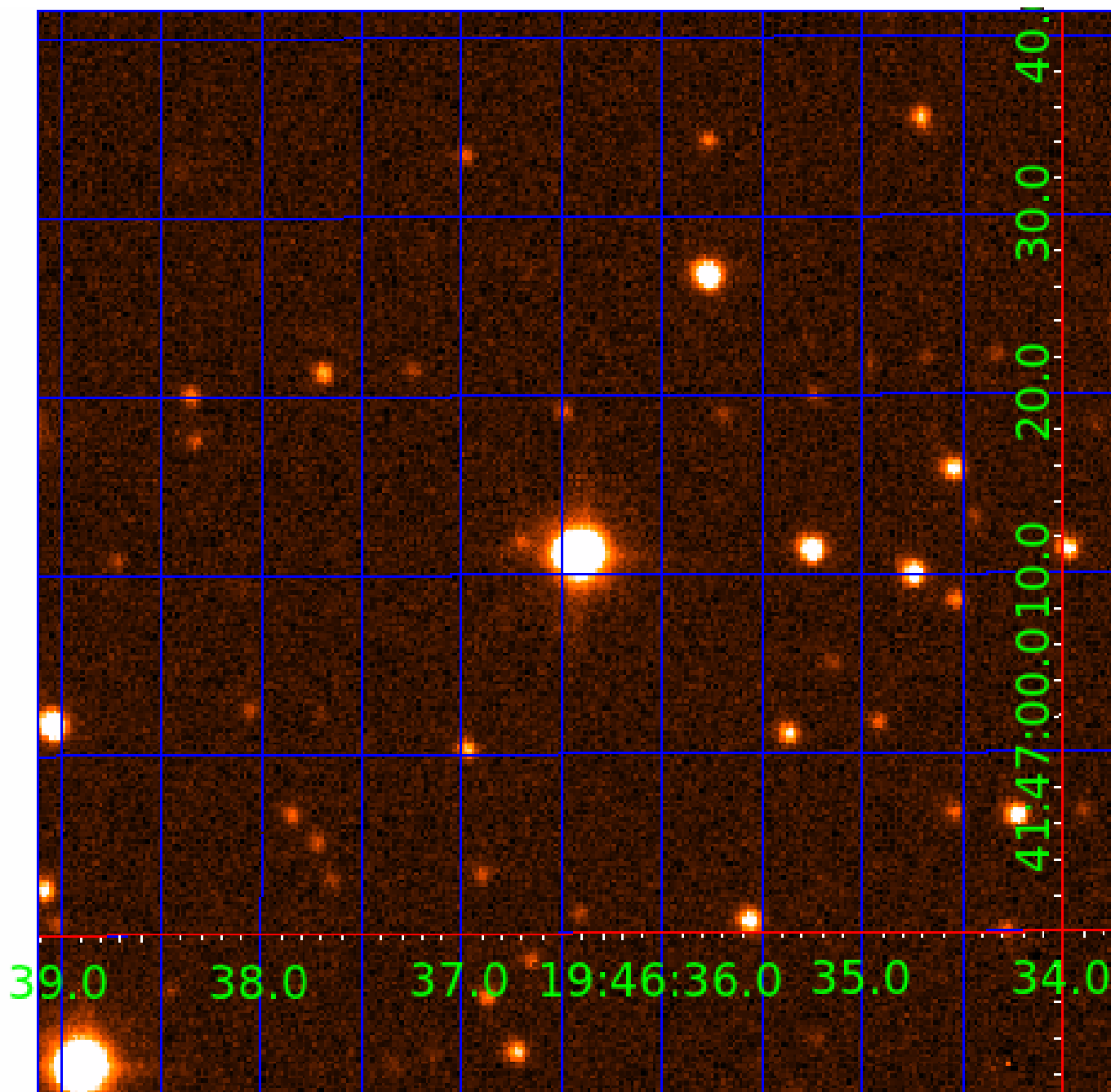


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006381309

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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

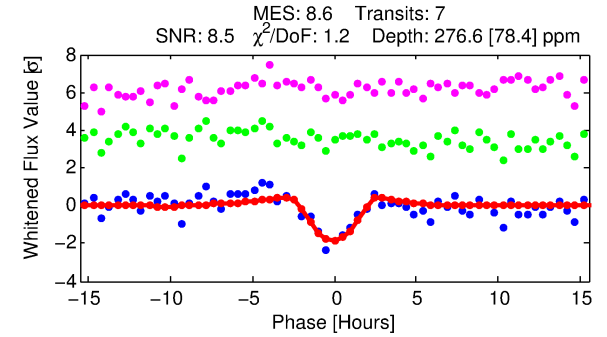
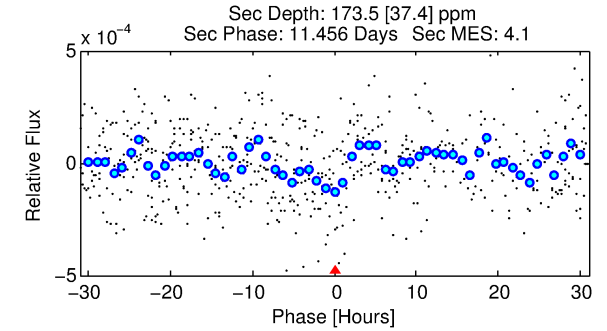
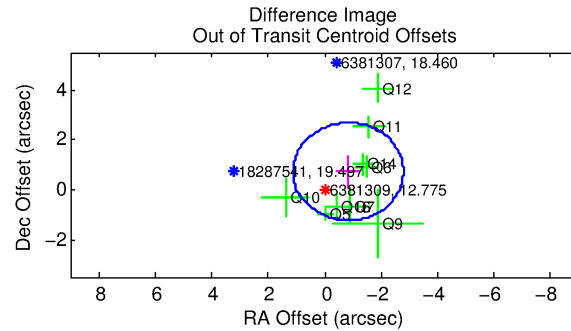
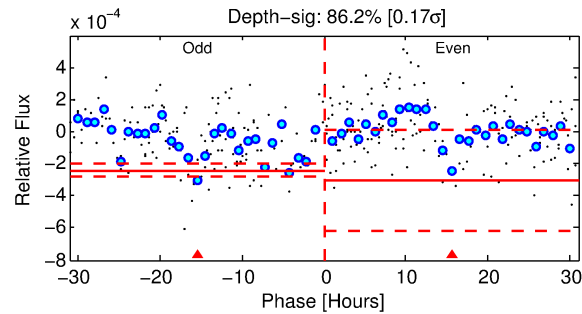
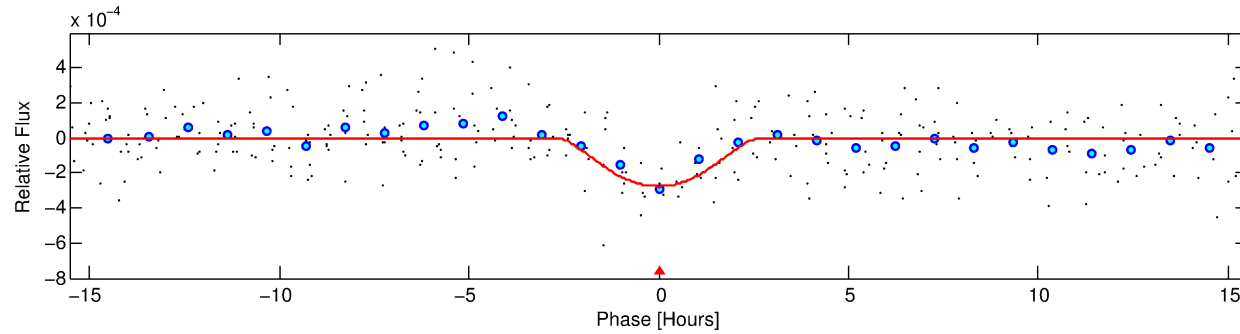
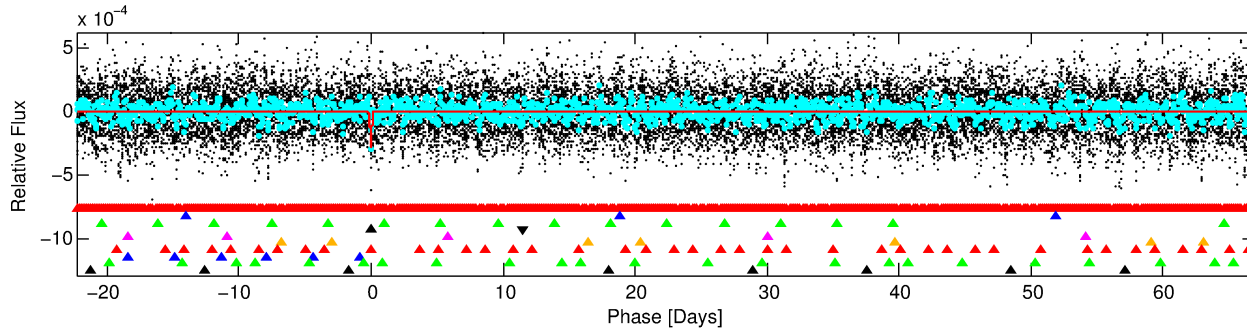
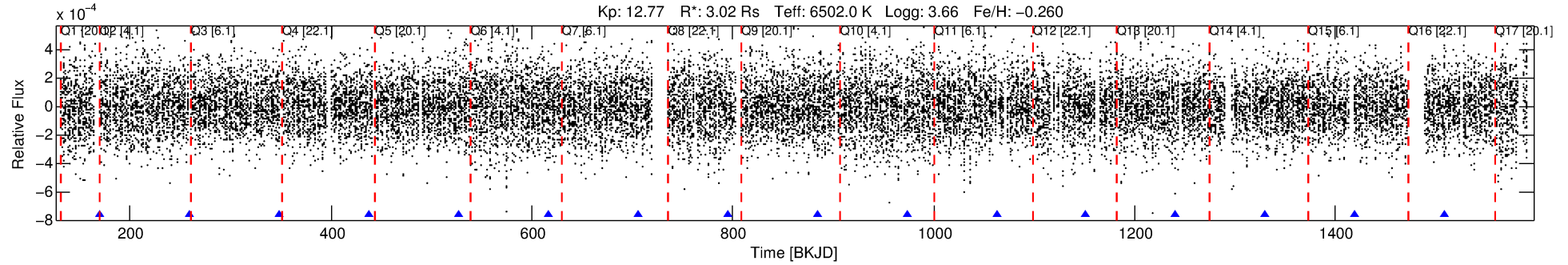
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-04

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 4 of 10 Period: 89.280 d



DV Fit Results:

Period = 89.28003 [0.00148] d
Epoch = 169.7164 [0.0147] BKJD
Rp/R* = 0.0294 [0.1266]
a/R* = 32.56 [37.70]
b = 1.00 [0.19]
Seff = 72.68 [43.92]
Teq = 745 [112] K
Rp = 9.68 [41.87] Re
a = 0.4483 [0.1649] AU
Ag = 204.51 [1766.24] [0.12 σ]
Teffp = 4353 [9378] K [0.38 σ]

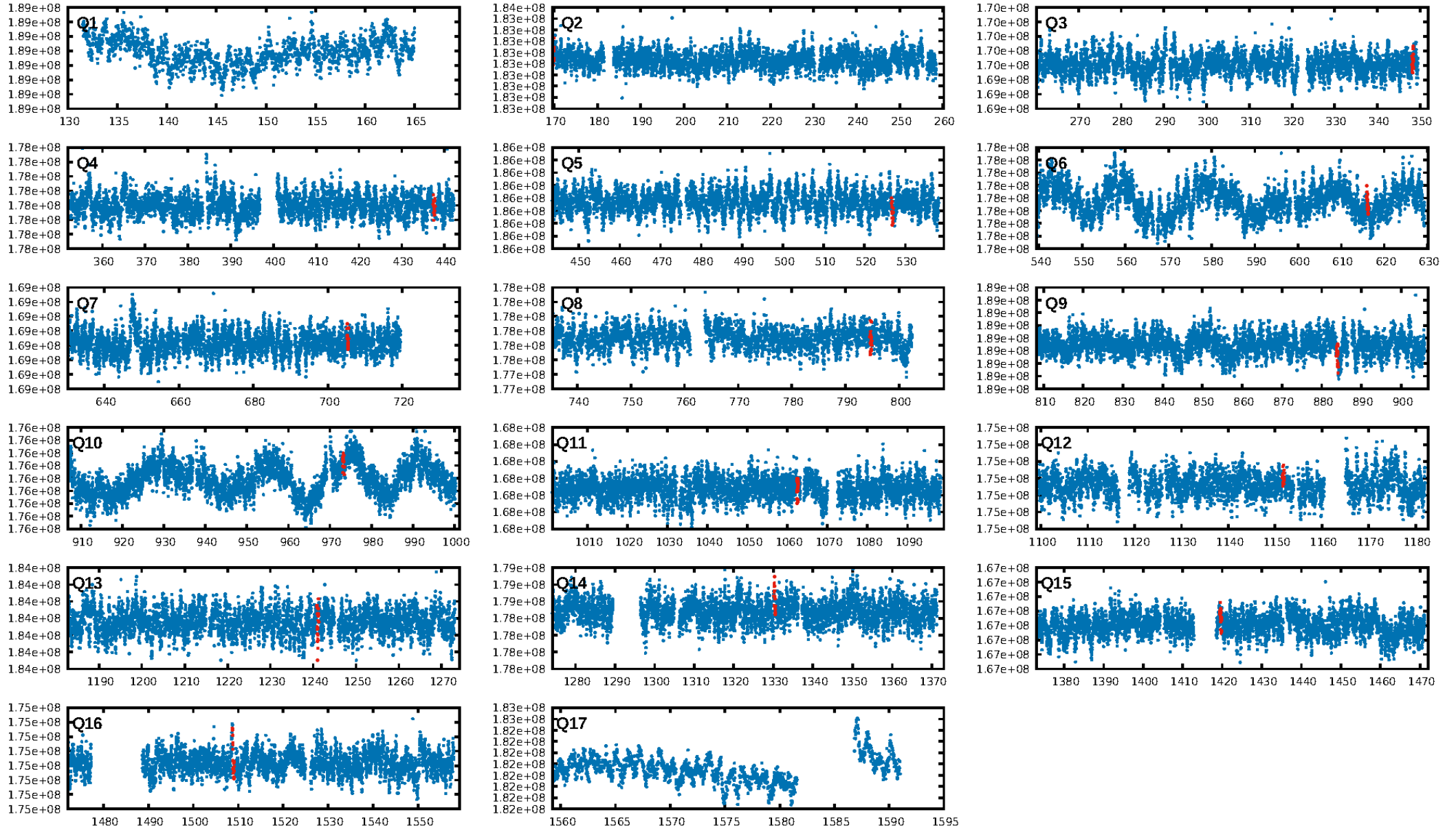
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [79.94 σ]
LongPeriod-sig: 100.0% [18.98 σ]
ModelChiSquare2-sig: 20.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 8.43
Centroid-sig: 28.0%
Centroid-so: 0.504 arcsec [0.99 σ]
OotOffset-rm: 1.103 arcsec [1.69 σ]
KicOffset-rm: 1.144 arcsec [1.95 σ]
OotOffset-st: 3/2/2/2 [9]
KicOffset-st: 3/2/2/2 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.25 [3/12]

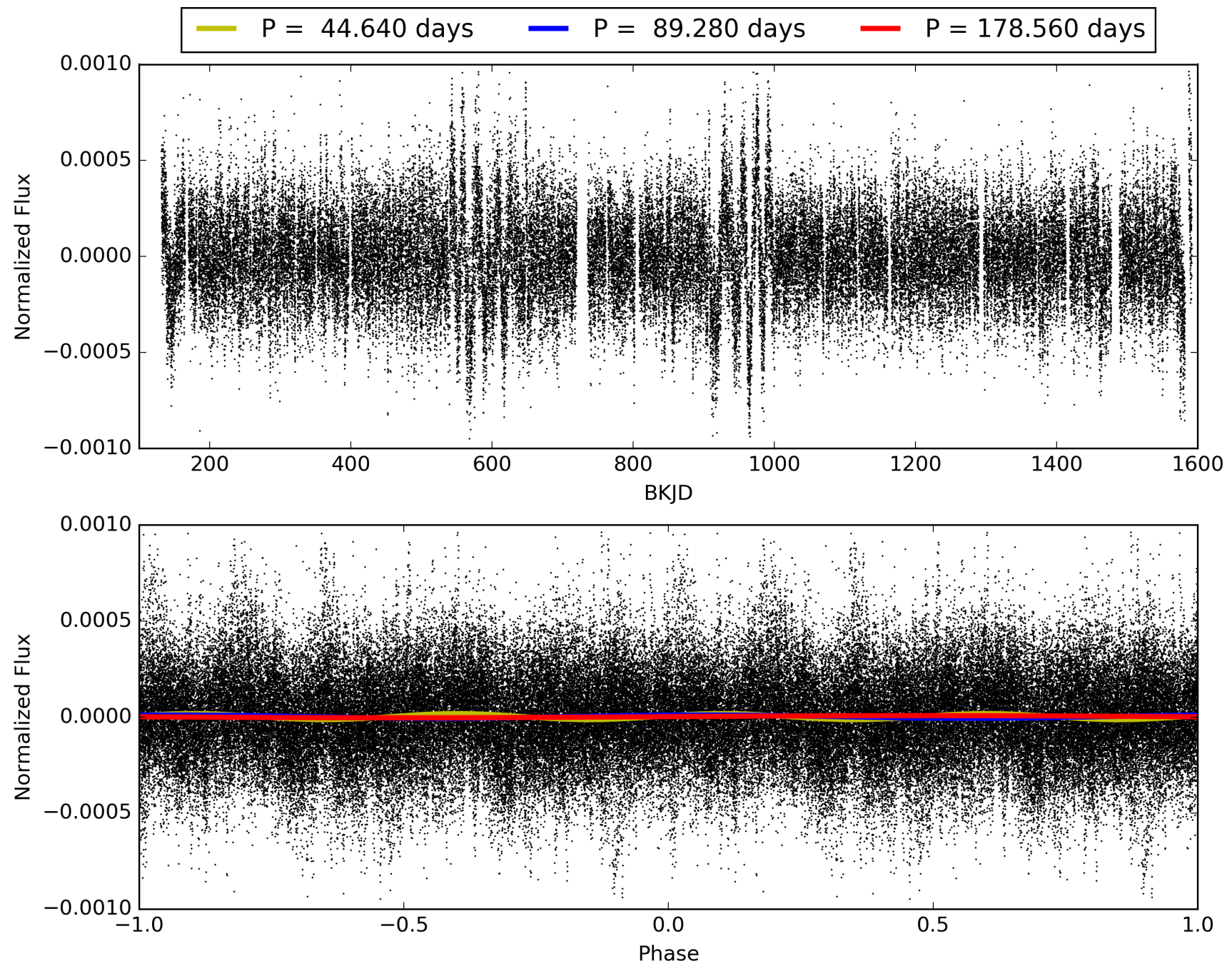
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:34:04 Z

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

TCE 006381309-04, PDC Light Curves

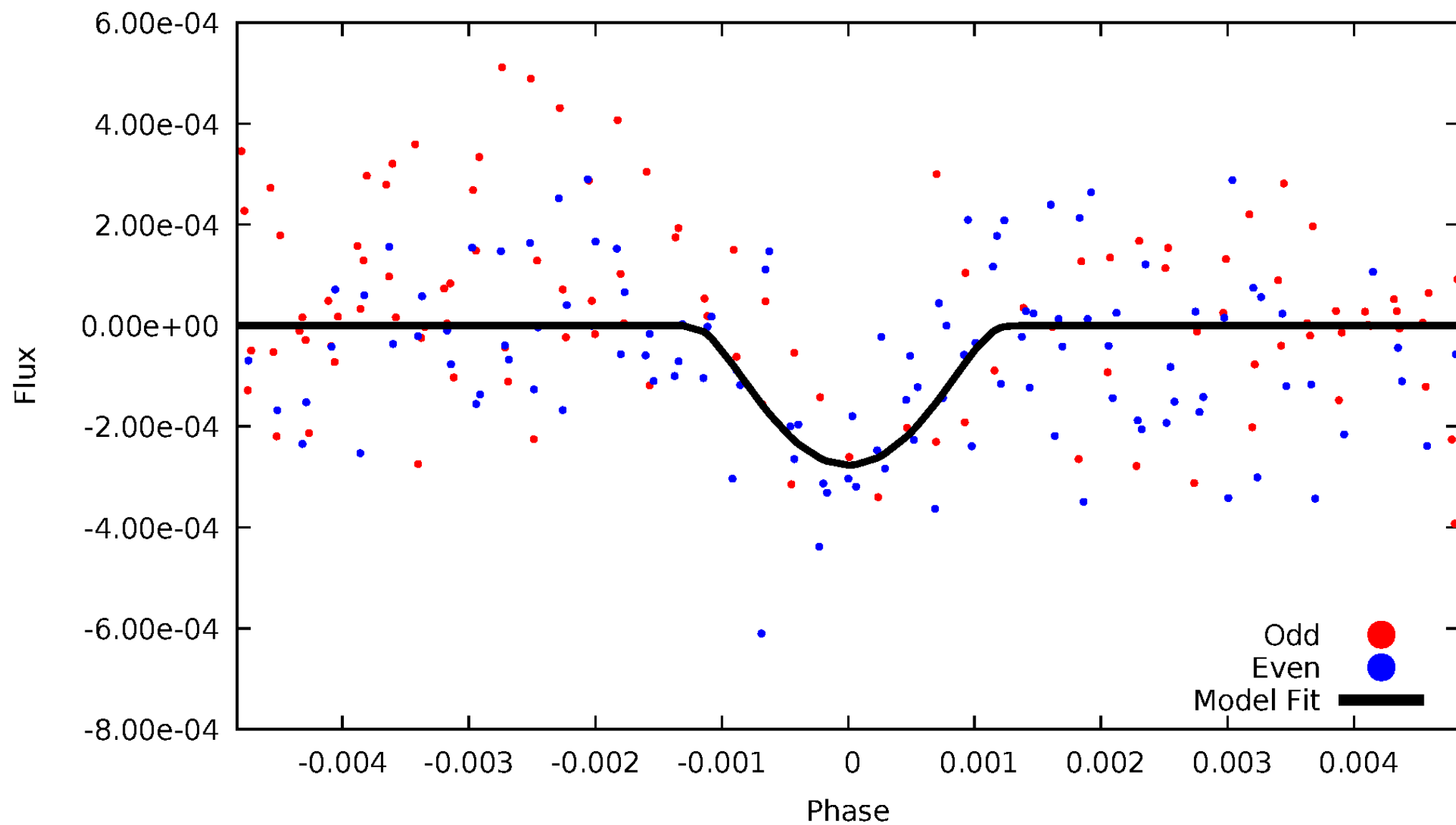


TCE 006381309-04



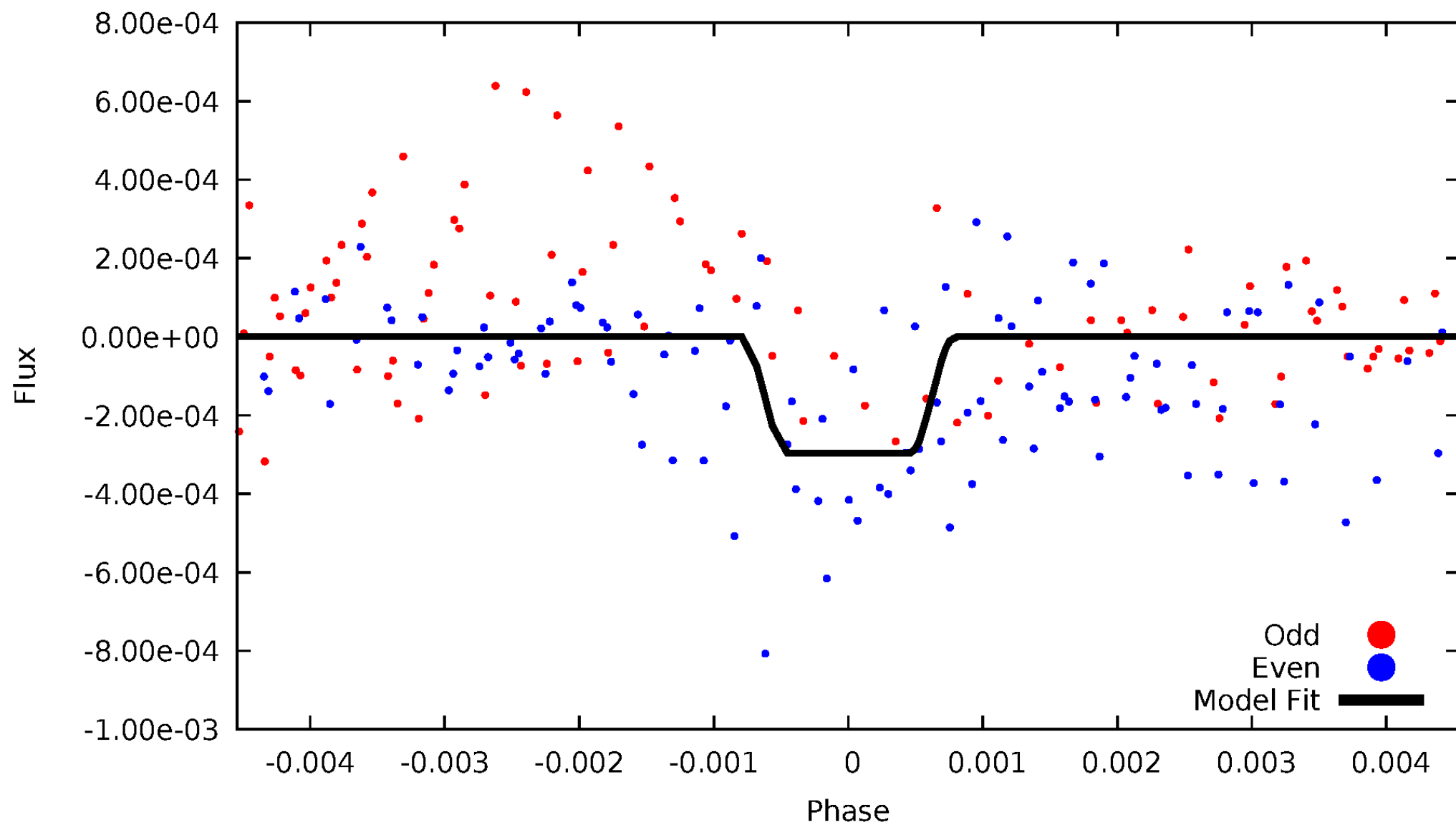
DV Odd/Even

TCE 006381309-04



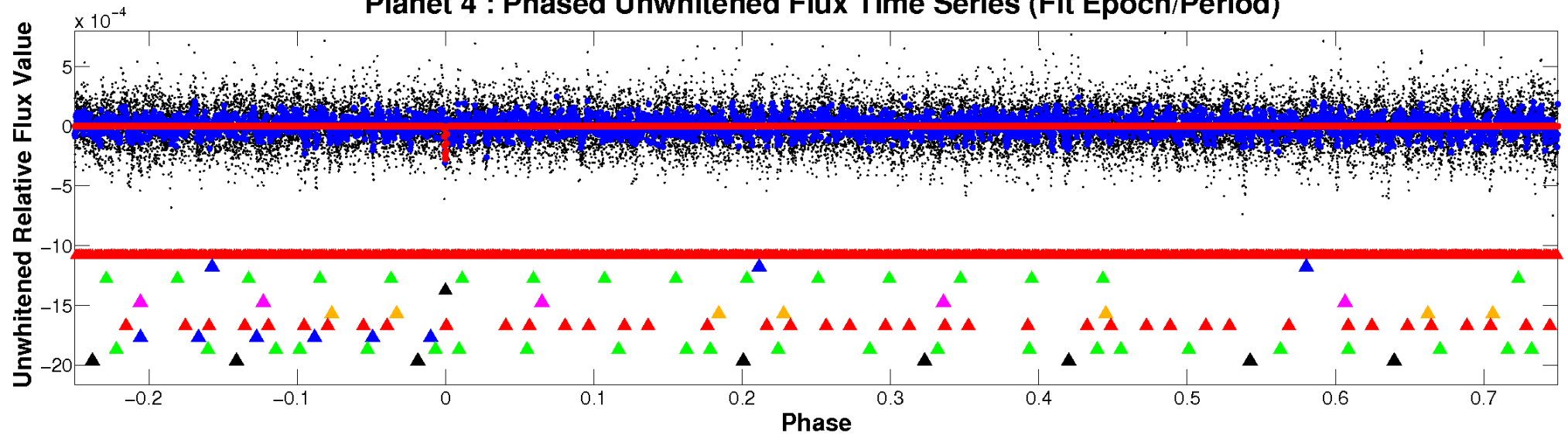
ALT Odd/Even

TCE 006381309-04

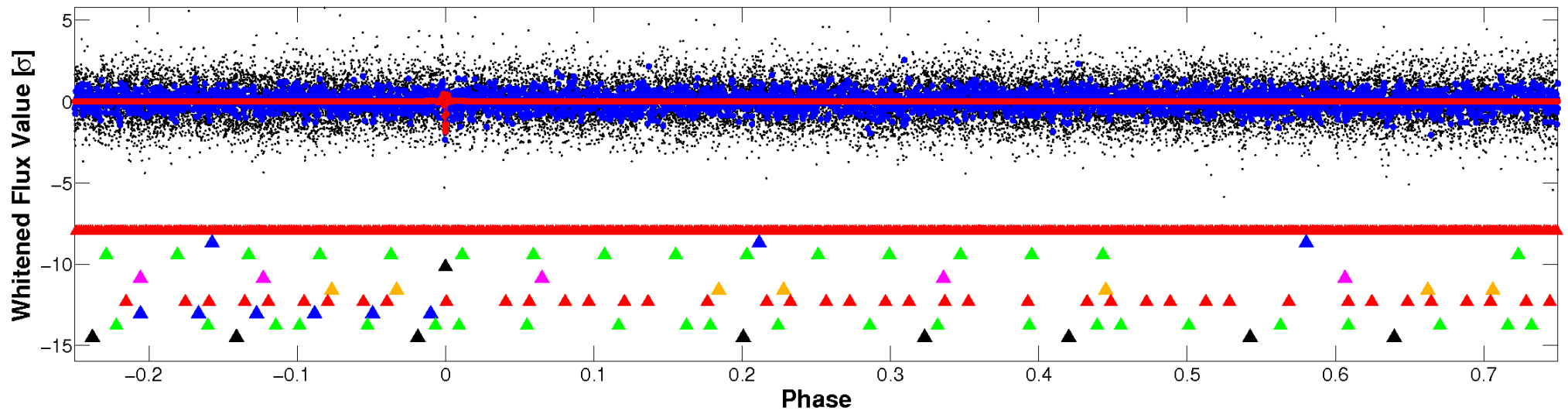


Non-Whitened Vs. Whitened Light Curve

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

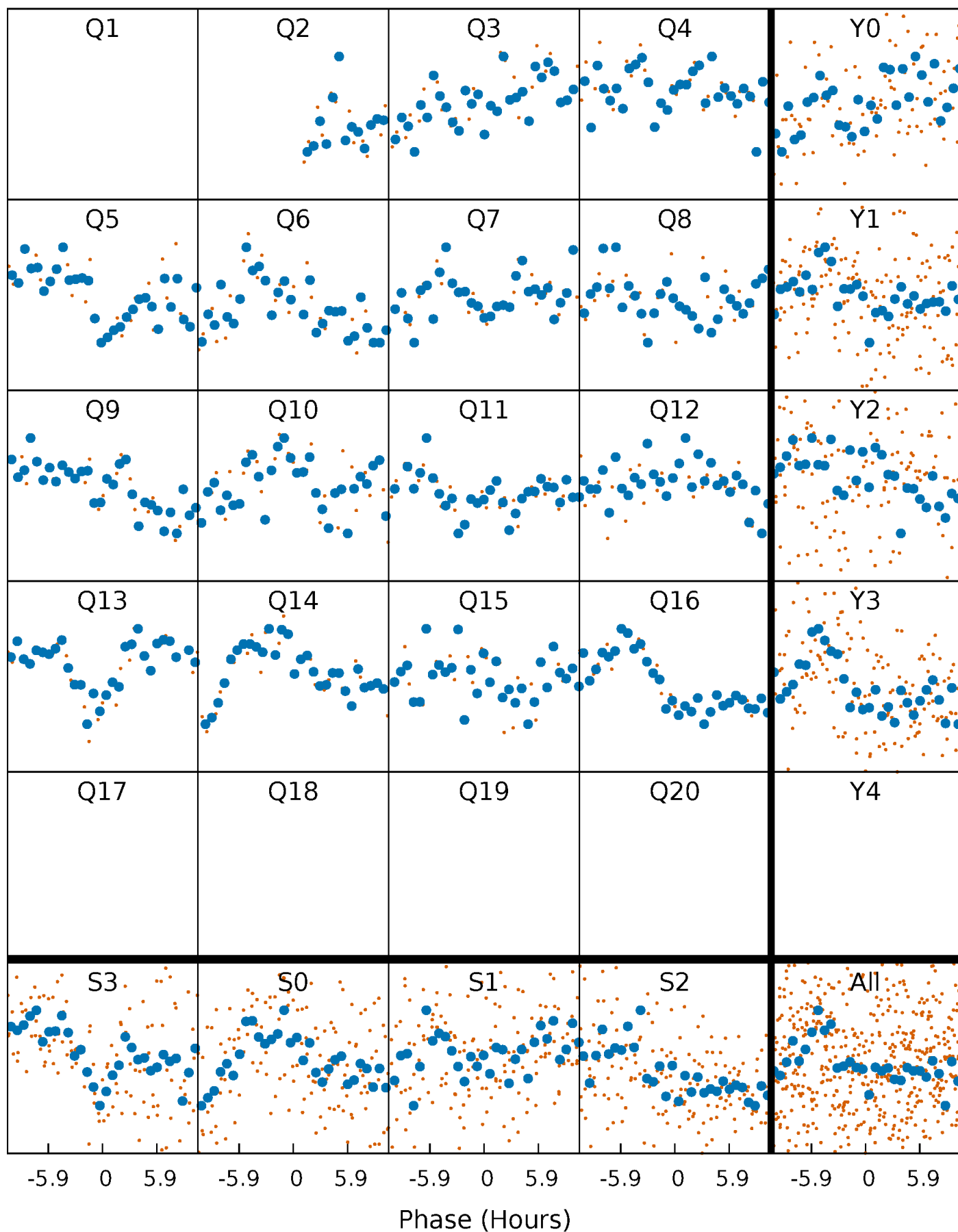


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



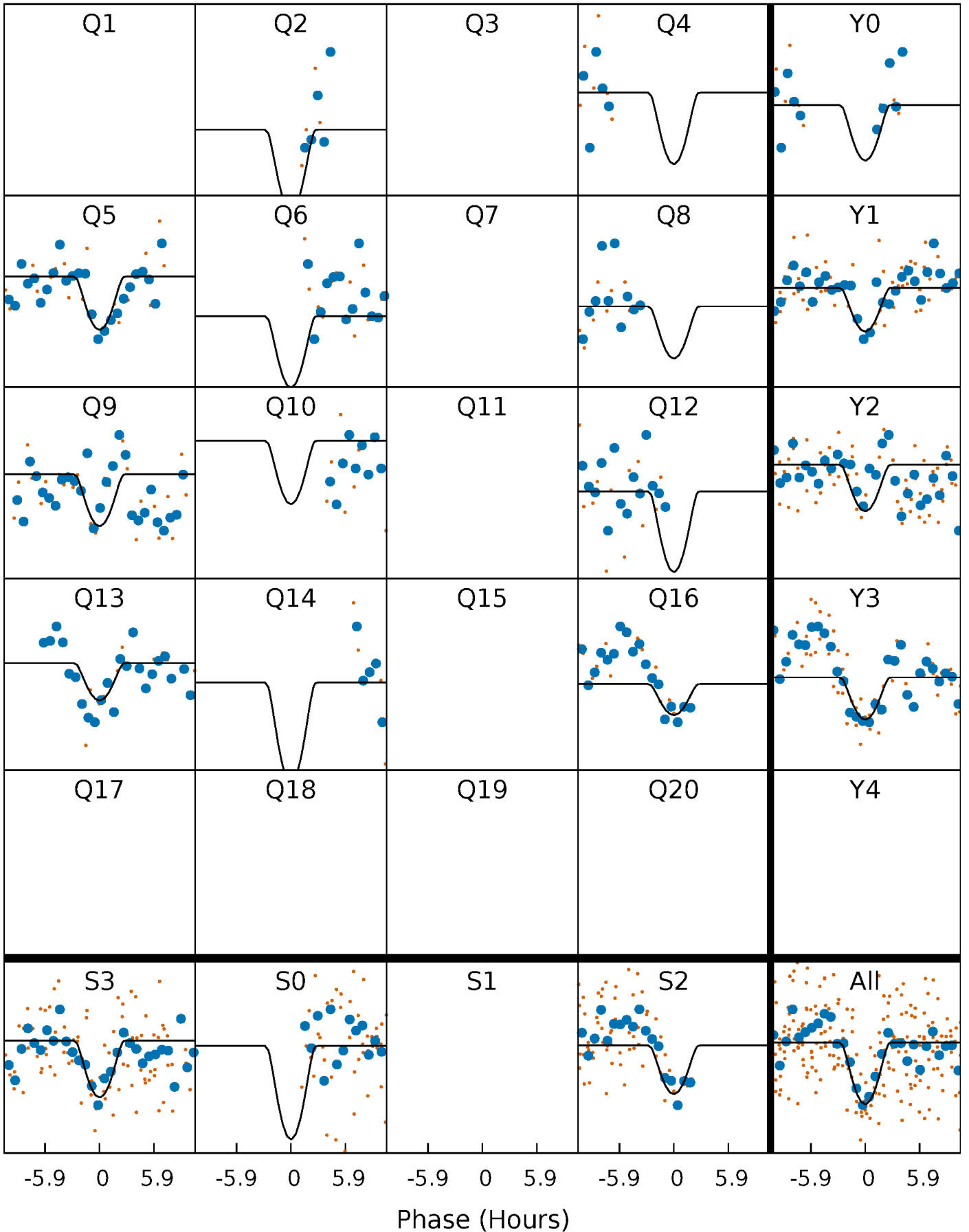
PDC Quarter-Phased Transit Curves

TCE 006381309-04 P= 89.280030 Days $T_0=169.716410$ (BKJD)



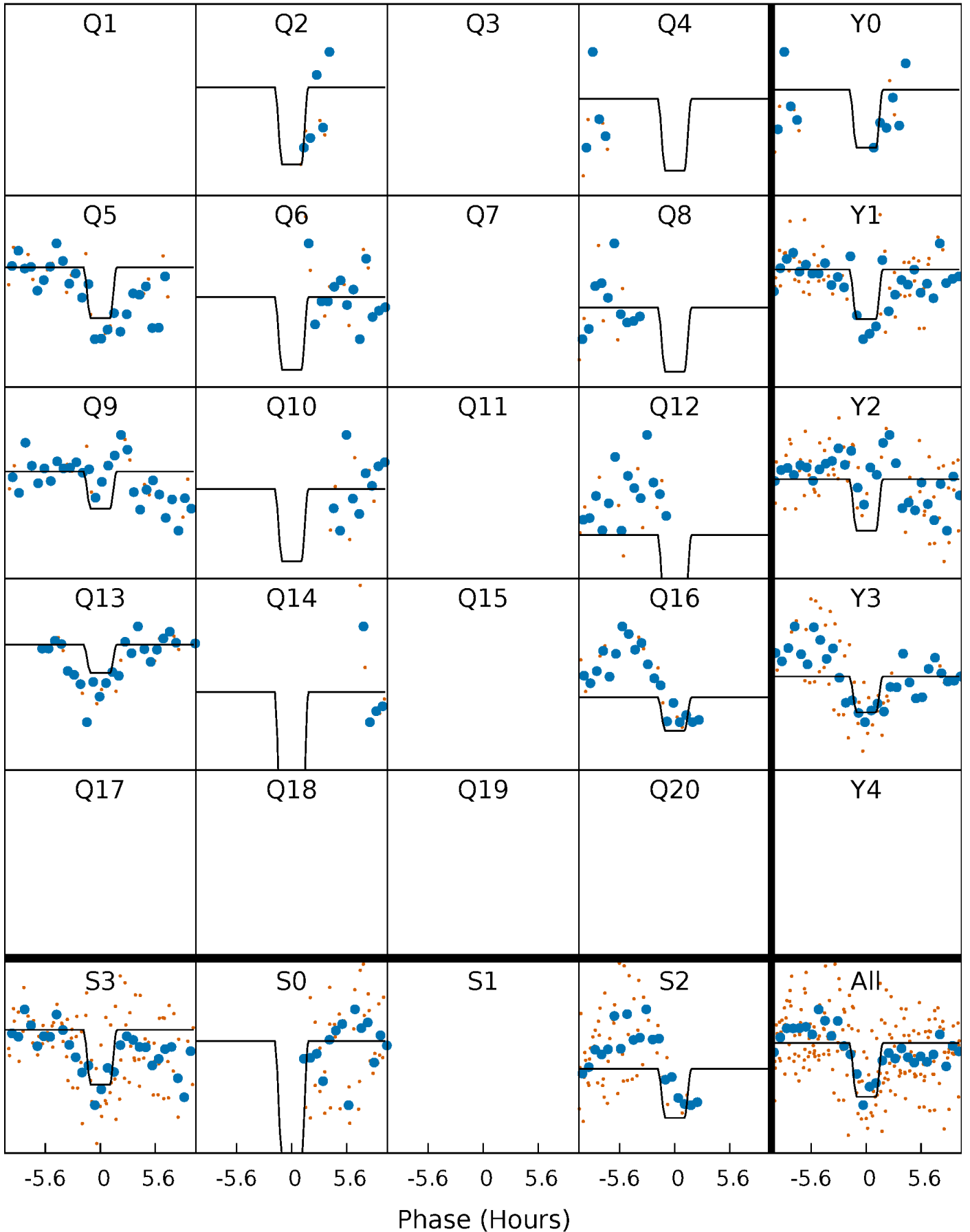
DV Quarter-Phased Transit Curves

TCE 006381309-04 P= 89.280030 Days $T_0=169.716410$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

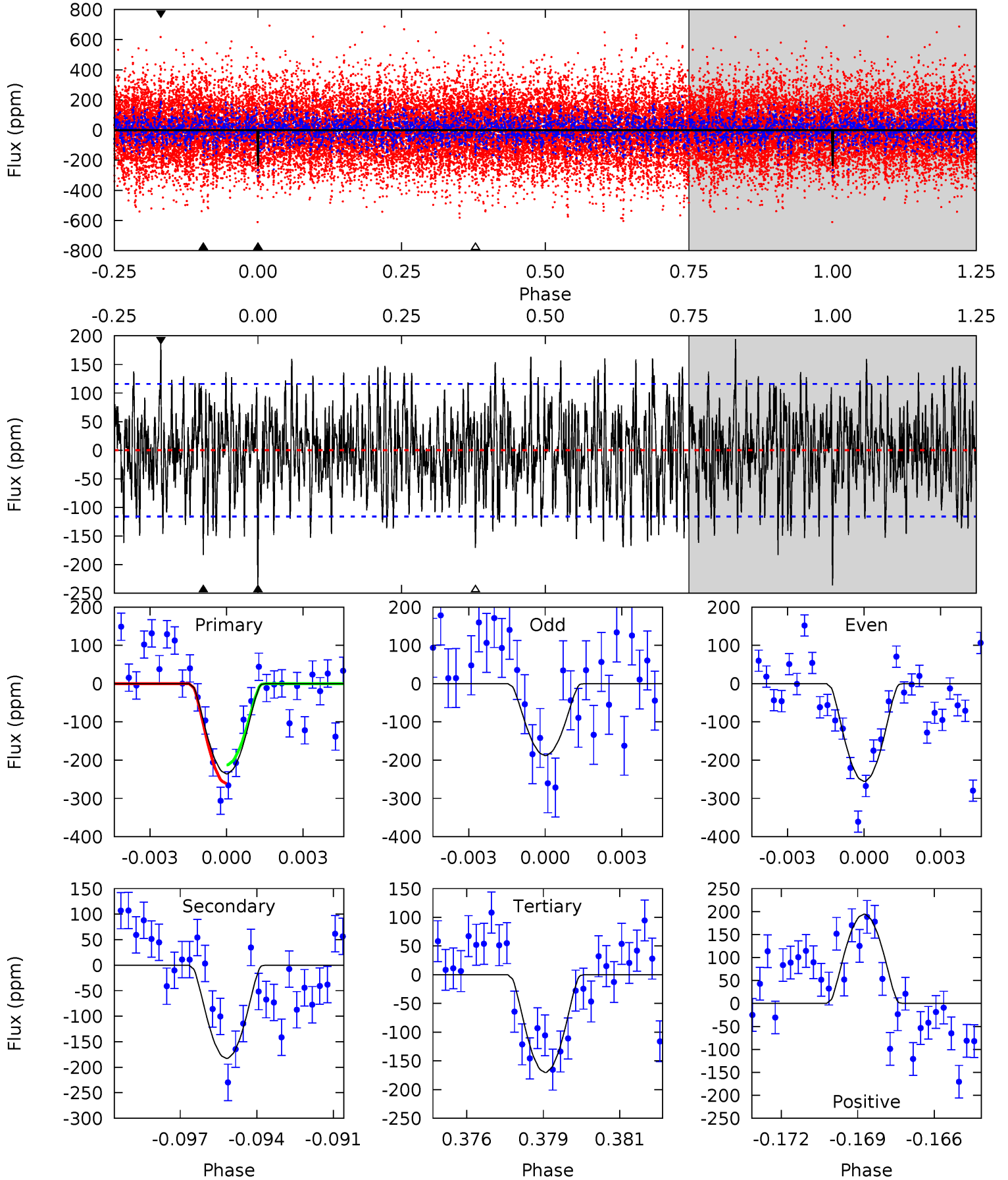
TCE 006381309-04 $P = 89.278628$ Days $T_0 = 169.727052$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-04, P = 89.280030 Days, E = 80.436380 Days

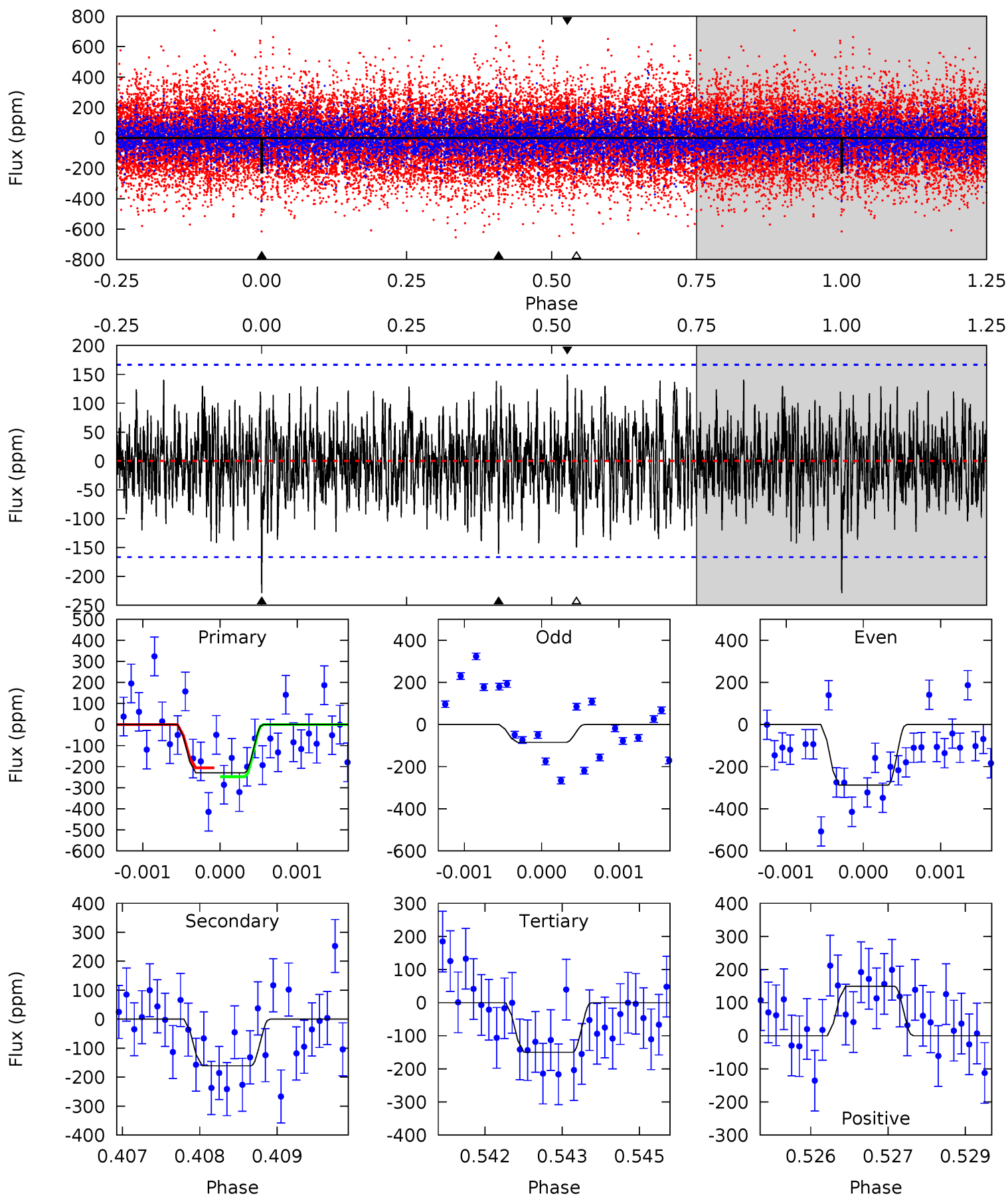
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	8.32	7.75	8.84	5.27	3.00	2.80	2.98	1.89	0.57	-0.52	1.42	0.76	0.45	1.11



Alt Model-Shift Uniqueness Test

006381309-04, P = 89.278628 Days, E = 80.448424 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.40	5.19	4.85	4.83	5.39	3.19	1.61	2.56	2.57	0.35	0.36	3.04	0.88	0.39	0.67



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-183 ± 22	$27.60^{+32.88}_{-17.90}$	1013^{+59}_{-92}	3107^{+1248}_{-588}	26^{+195}_{-20}
Alt.	-161 ± 31	$27.22^{+31.60}_{-18.59}$	1014^{+65}_{-94}	3046^{+1422}_{-546}	23^{+214}_{-17}

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

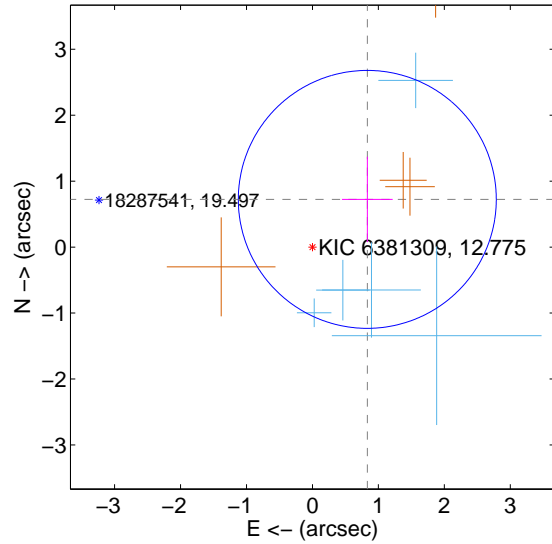
Supplemental centroid analysis for 006381309-04. Kepler magnitude: 12.78. Transit SNR 8.49

There are 5 quarters with good PRF difference image offsets

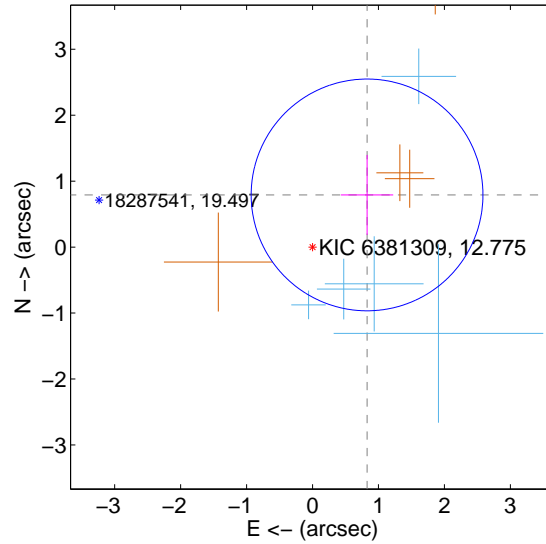
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.103 ± 0.652	1.69	-0.832 ± 0.385	0.724 ± 0.648
PRF-fit source offset from KIC position	1.144 ± 0.586	1.95	-0.827 ± 0.397	0.791 ± 0.606
photometric centroid source offset	0.50 ± 0.51	0.99	-0.09 ± 0.52	0.50 ± 0.51

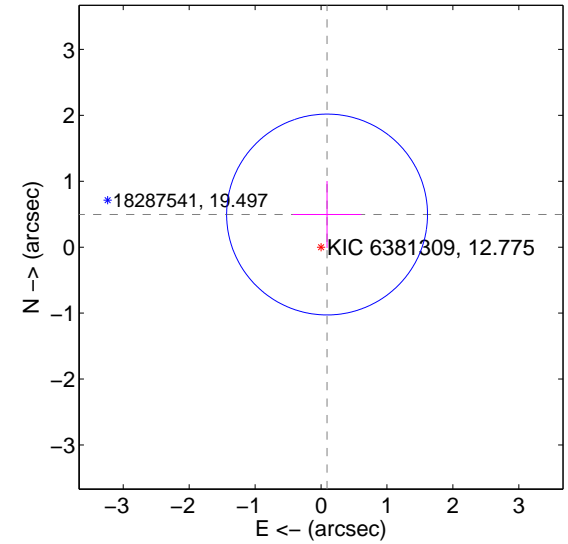
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

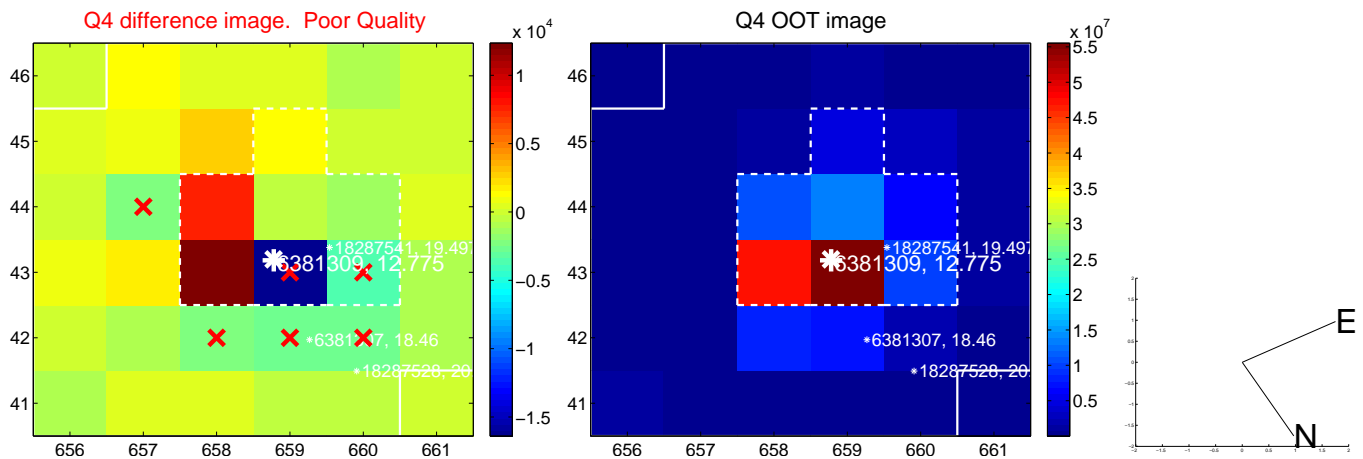
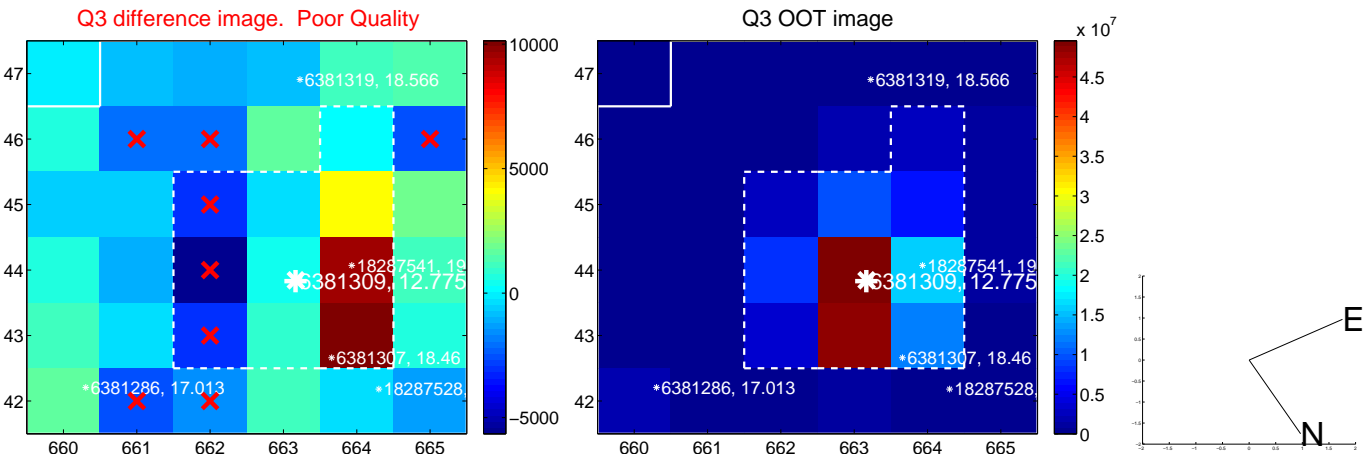
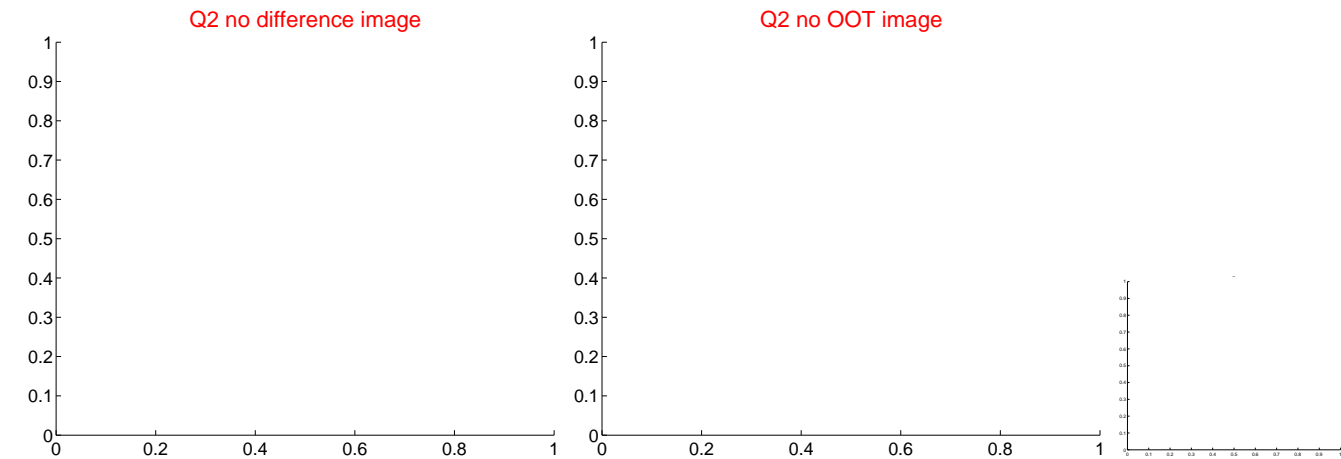
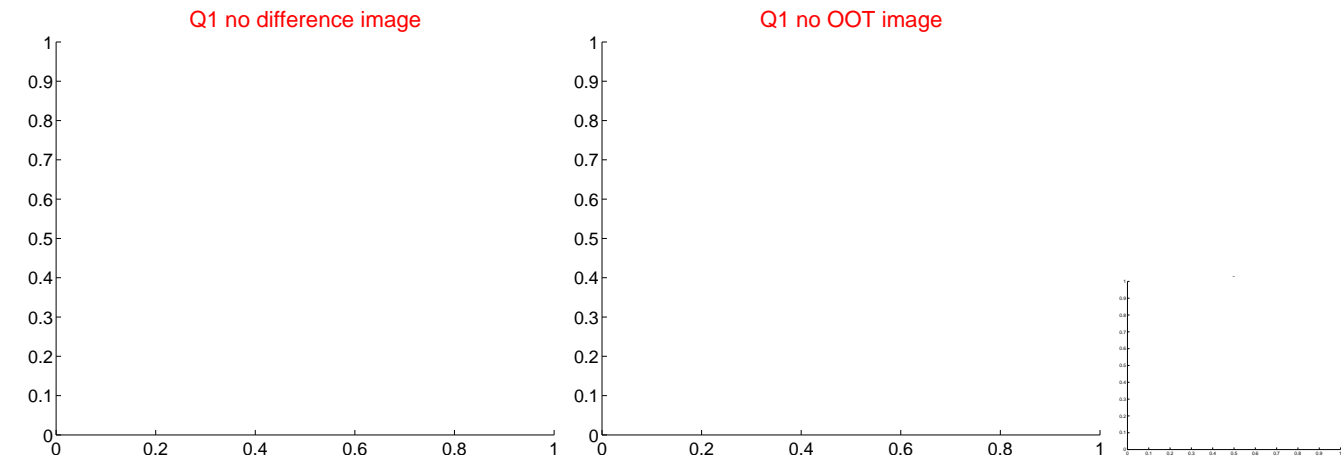


offset from photometric centroids

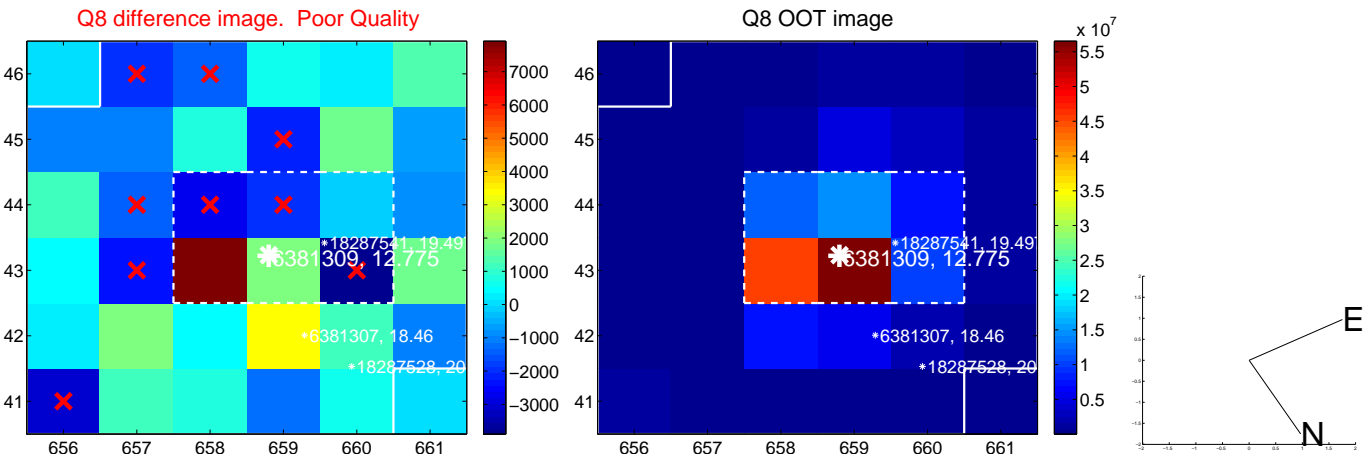
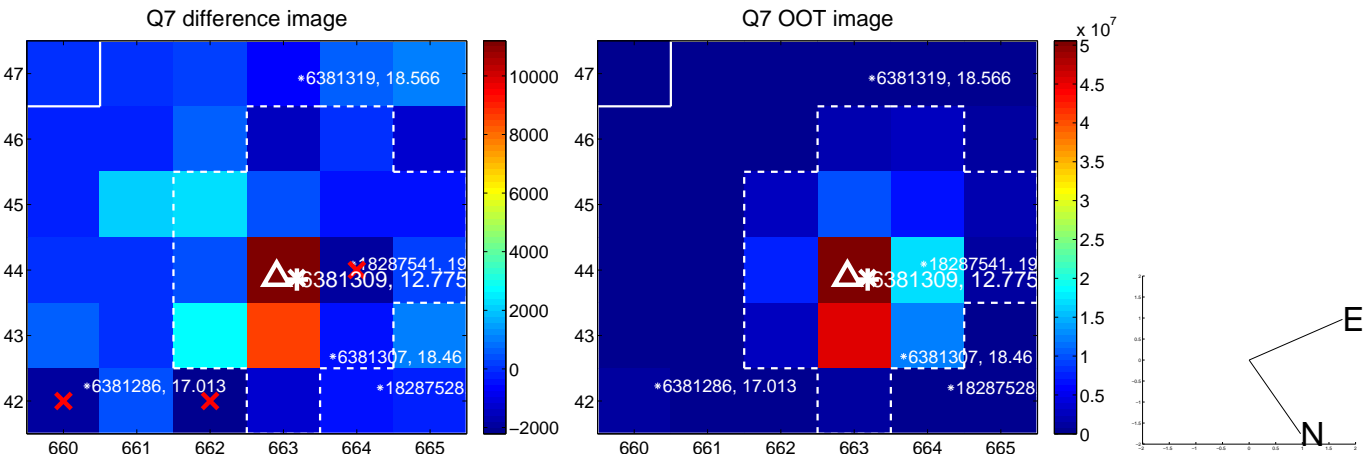
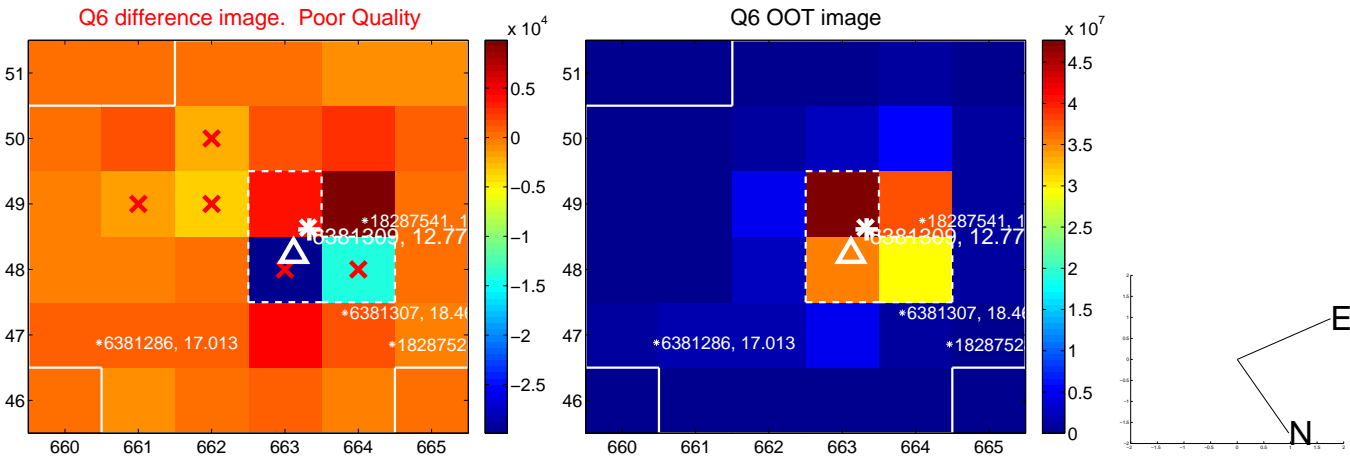
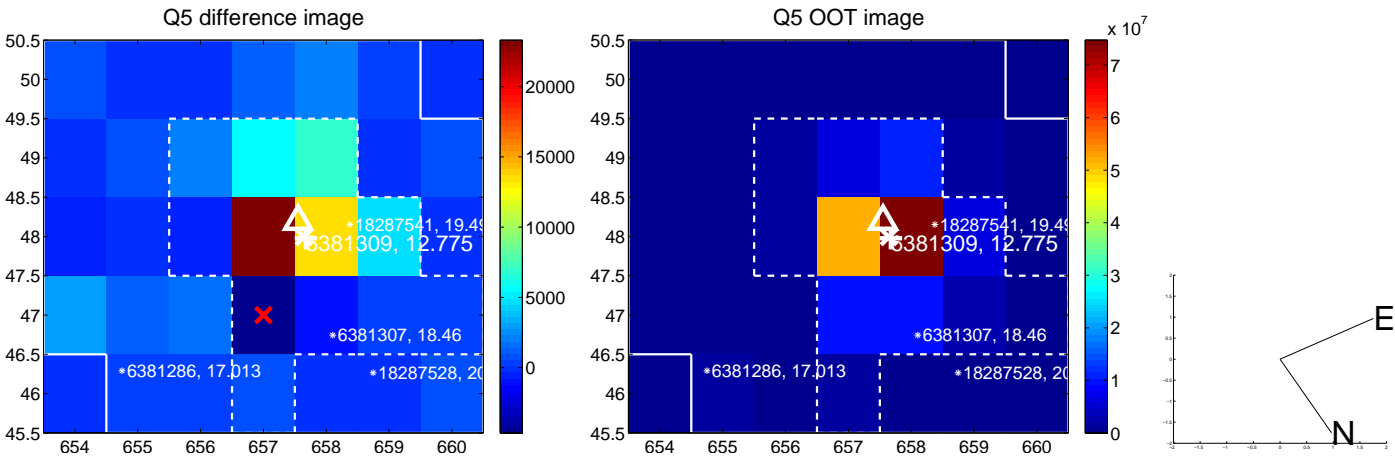


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

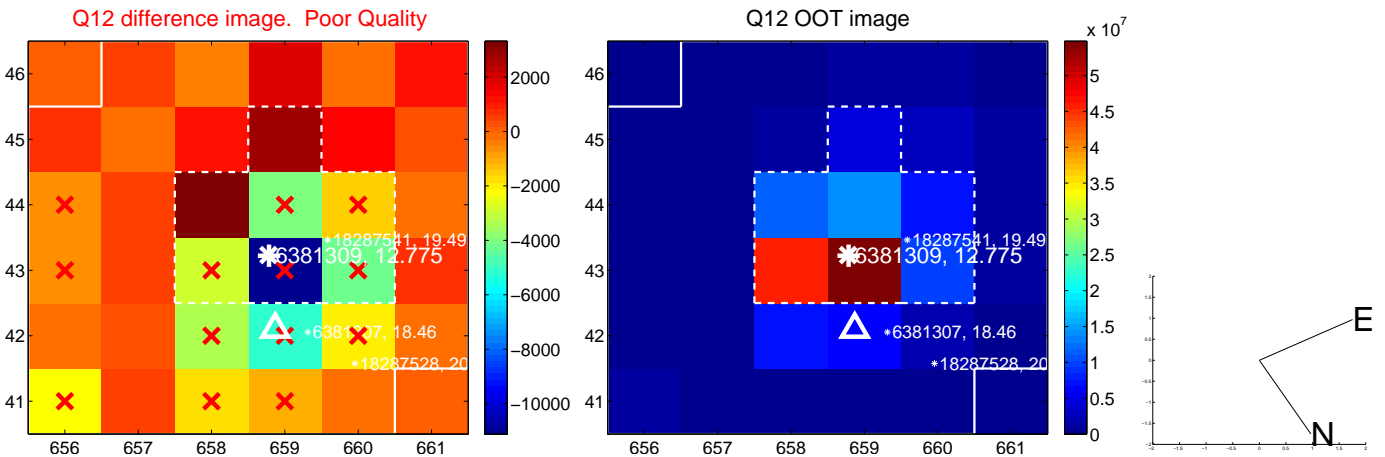
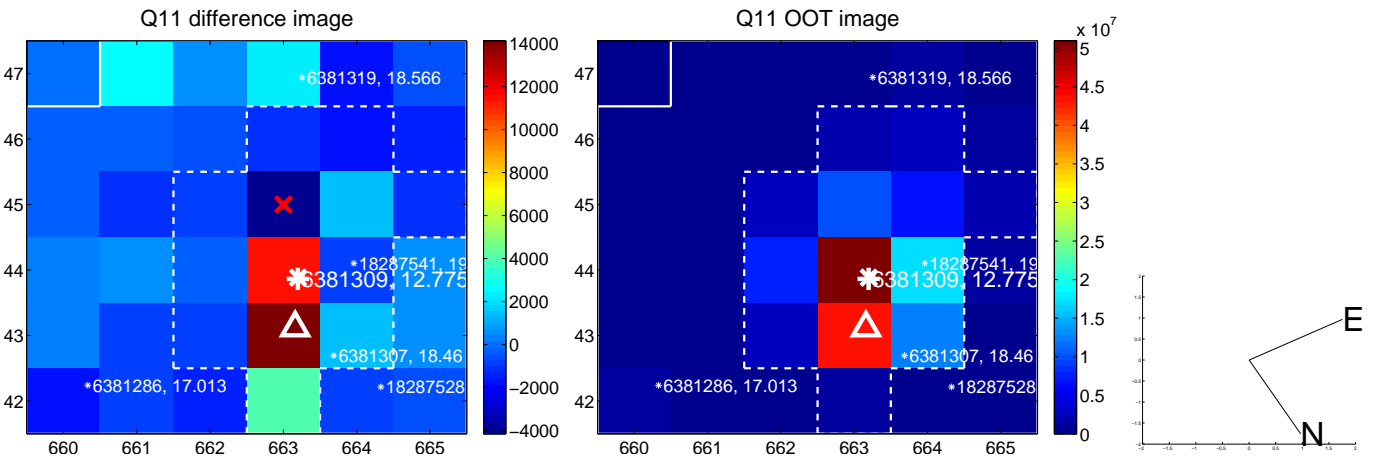
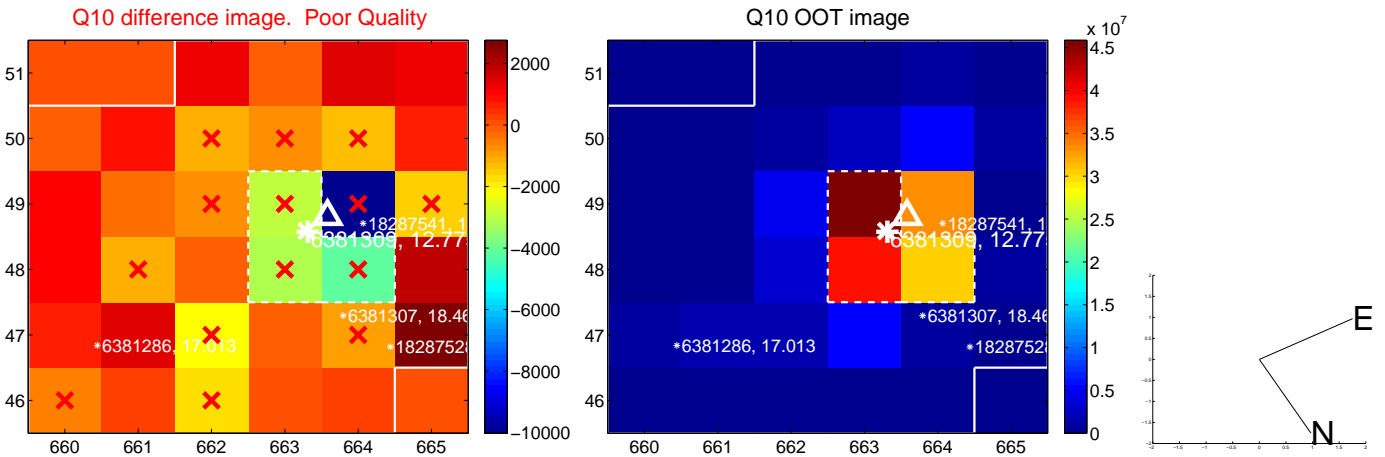
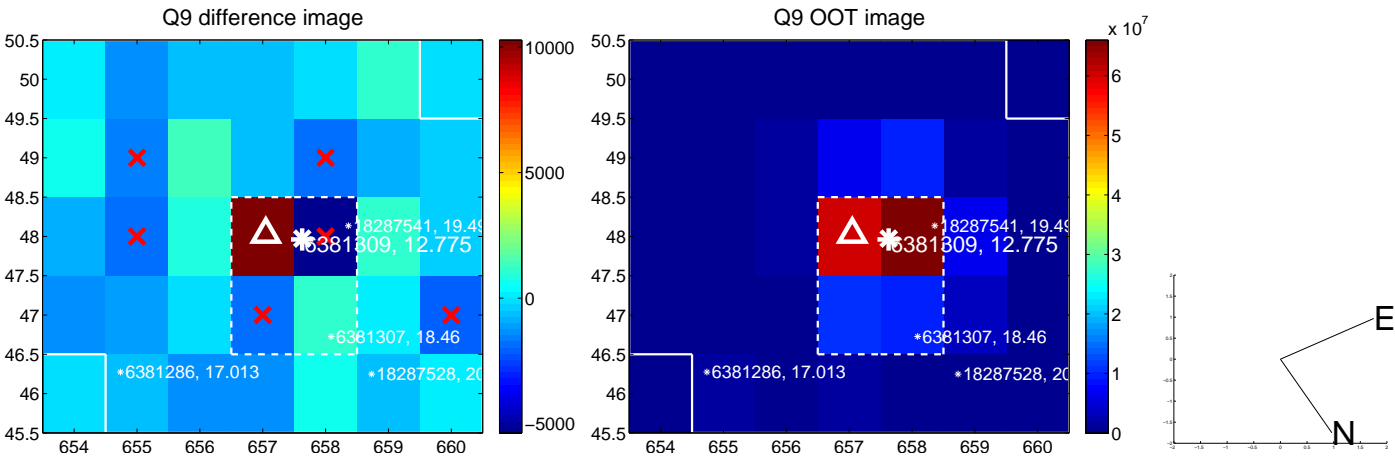
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



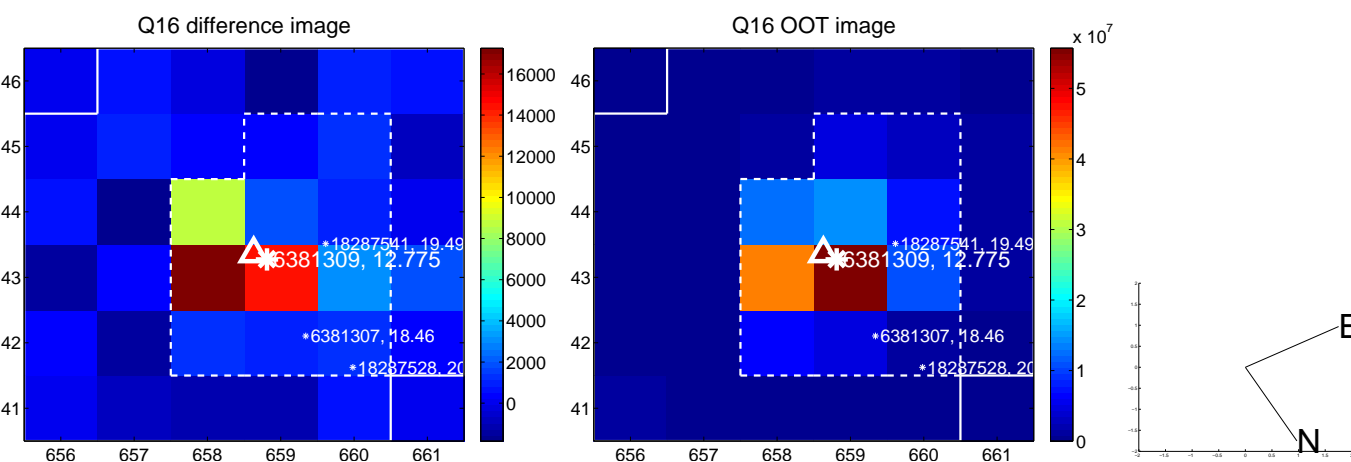
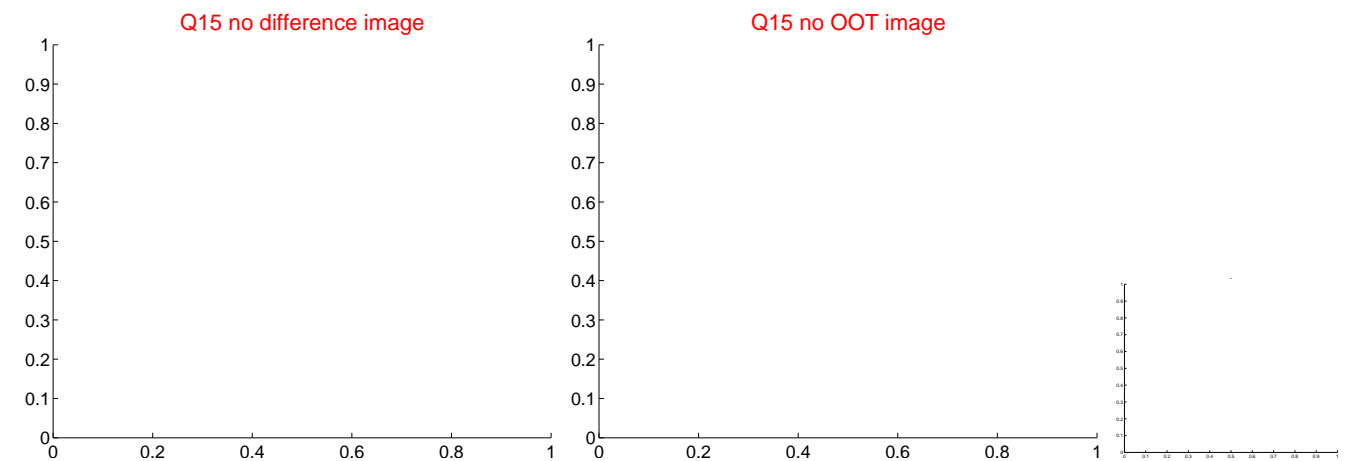
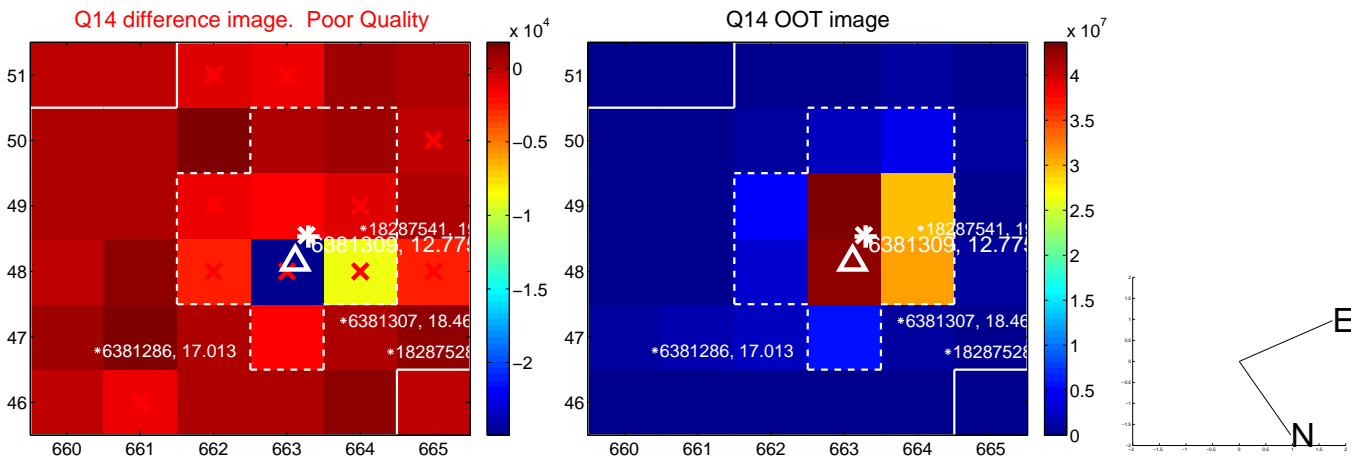
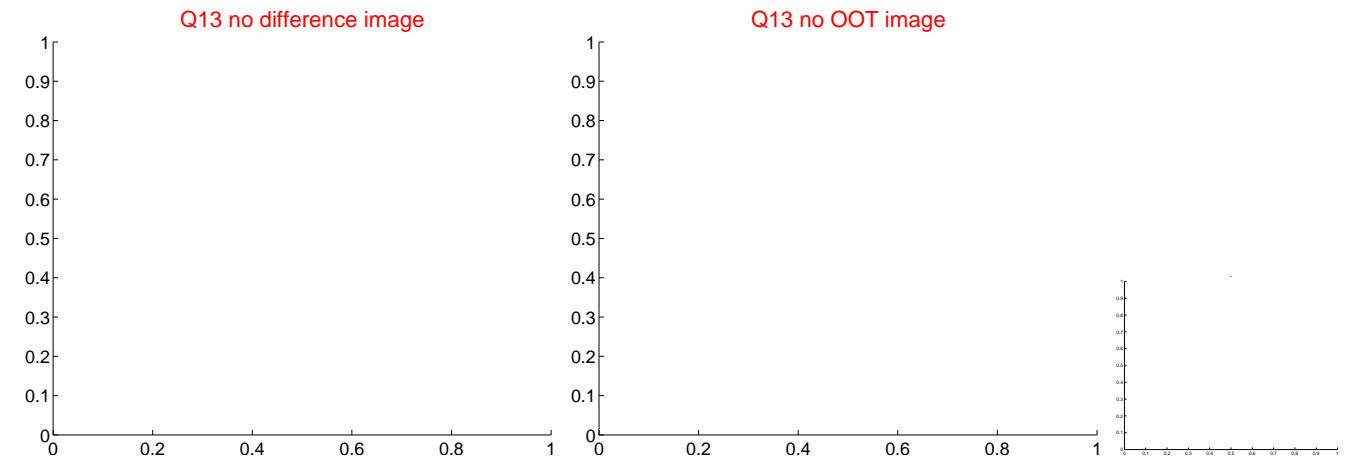
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



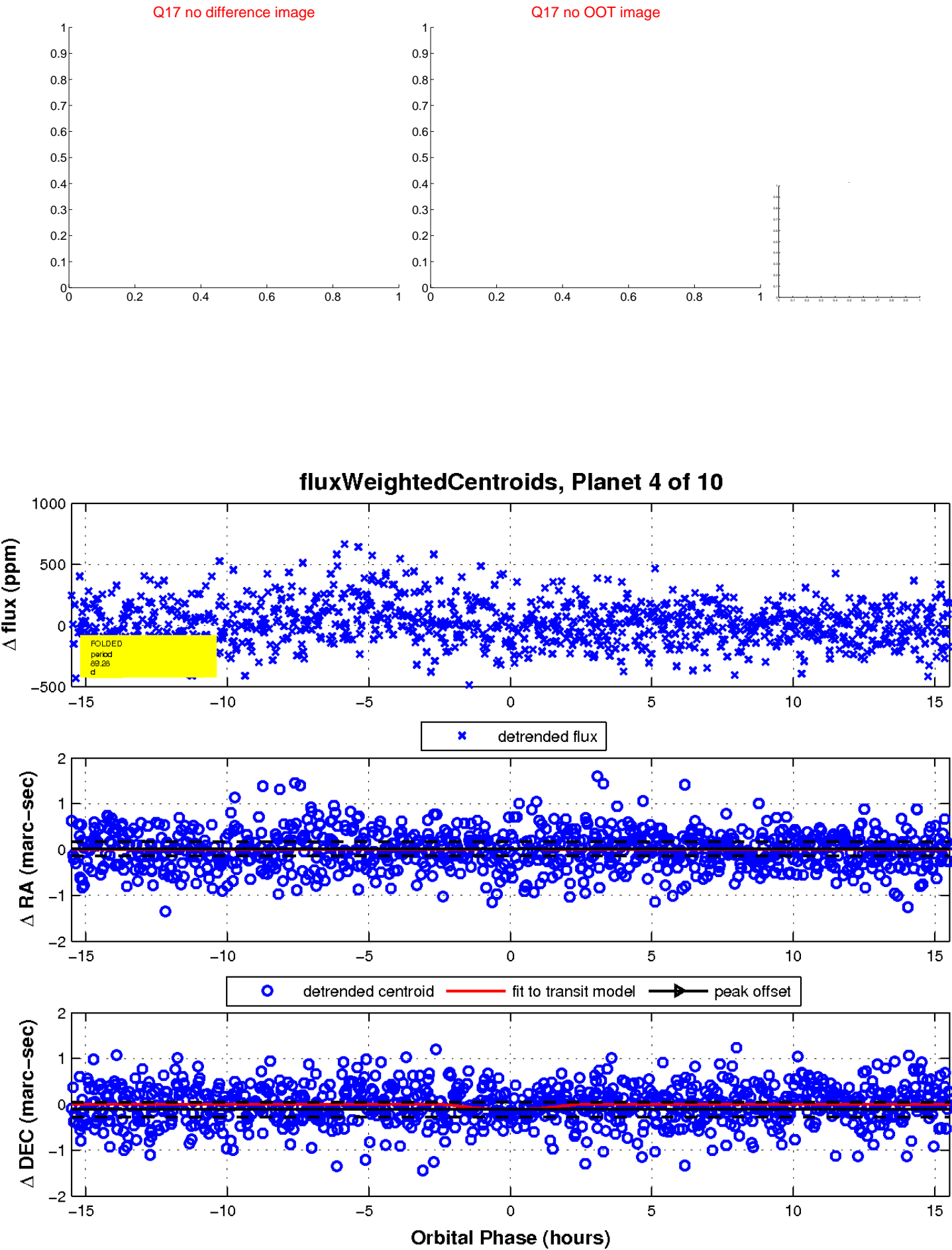
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

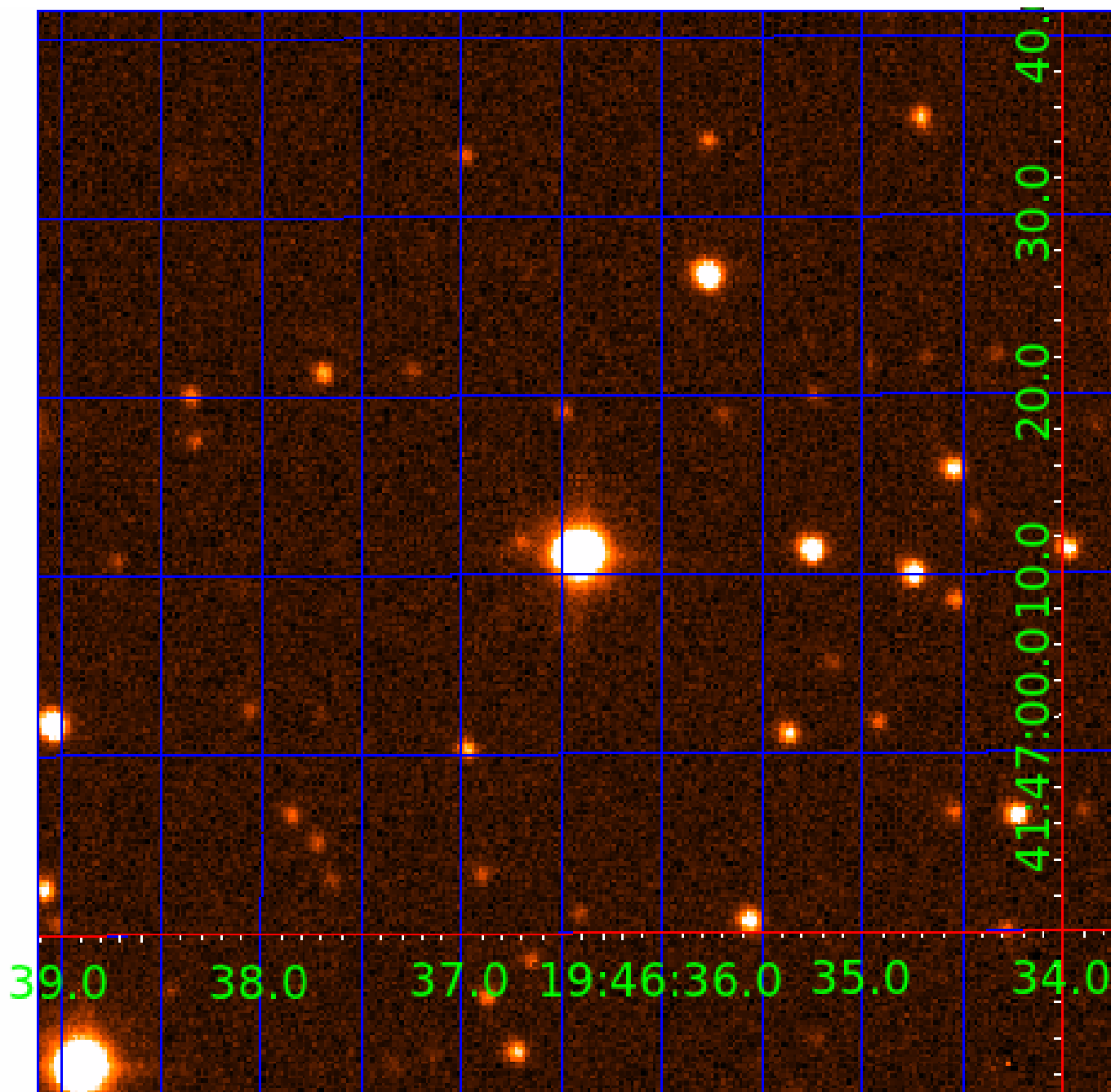


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006381309

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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

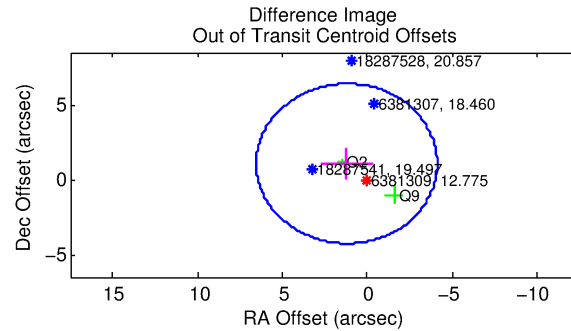
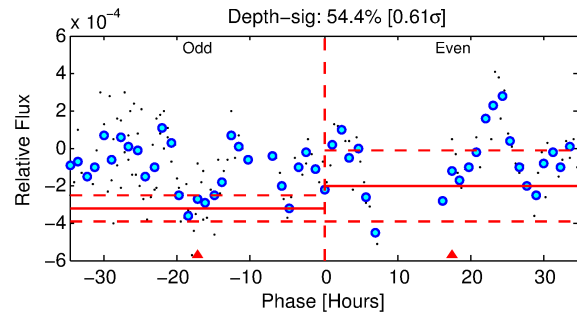
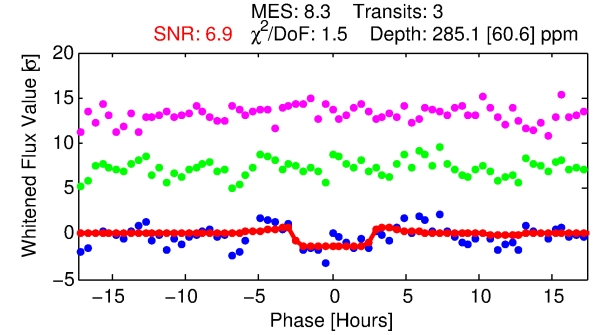
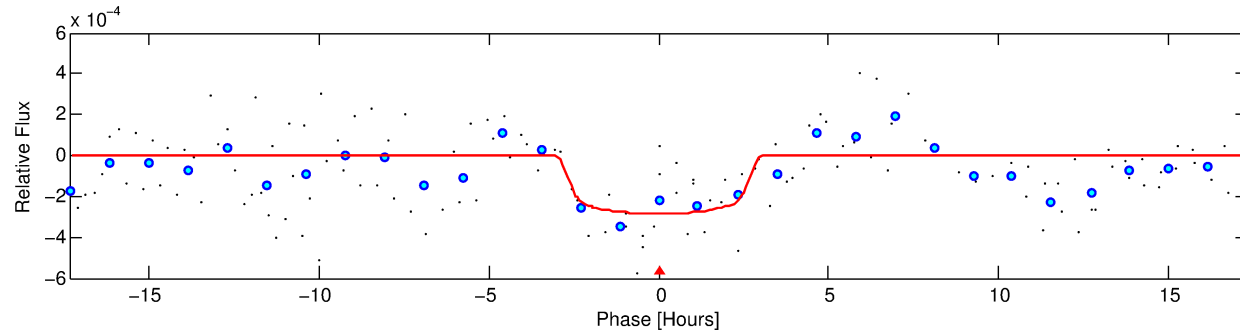
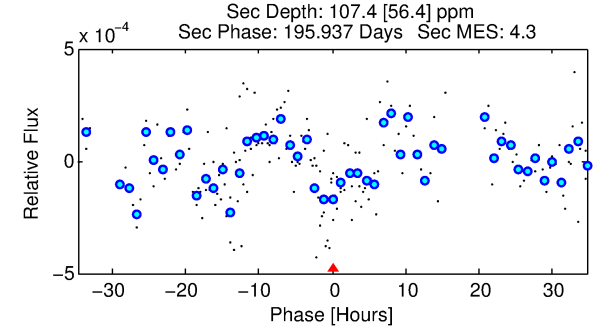
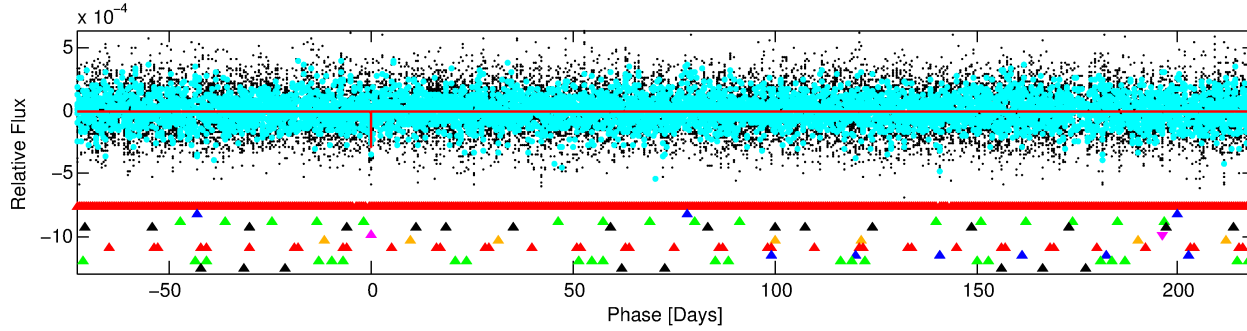
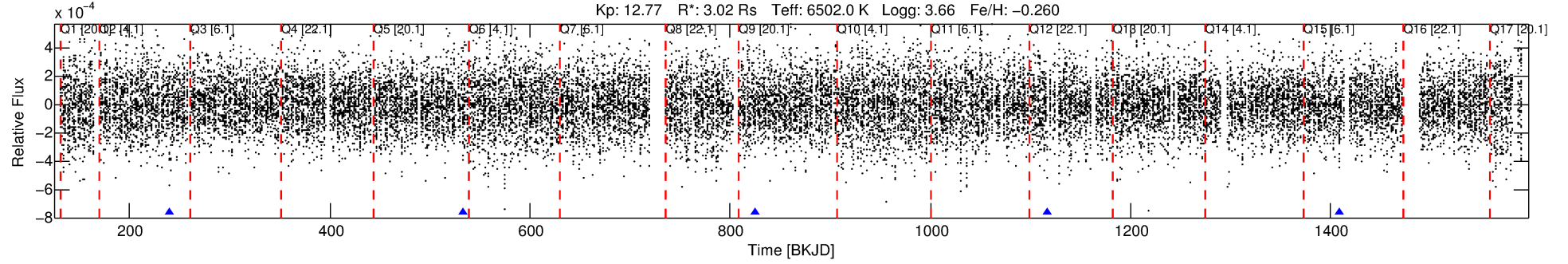
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-05

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 5 of 10 Period: 292.009 d



DV Fit Results:

Period = 292.00941 [0.00616] d
Epoch = 240.6351 [0.0109] BKJD
Rp/R* = 0.0177 [0.0068]
a/R* = 200.44 [400.76]
b = 0.87 [0.54]
Seff = 14.97 [9.05]
Teq = 502 [76] K
Rp = 5.85 [3.15] Re
a = 0.9877 [0.3633] AU
Ag = 1686.36 [1861.71] [0.91σ]
Teffp = 4969 [1167] K [3.82σ]

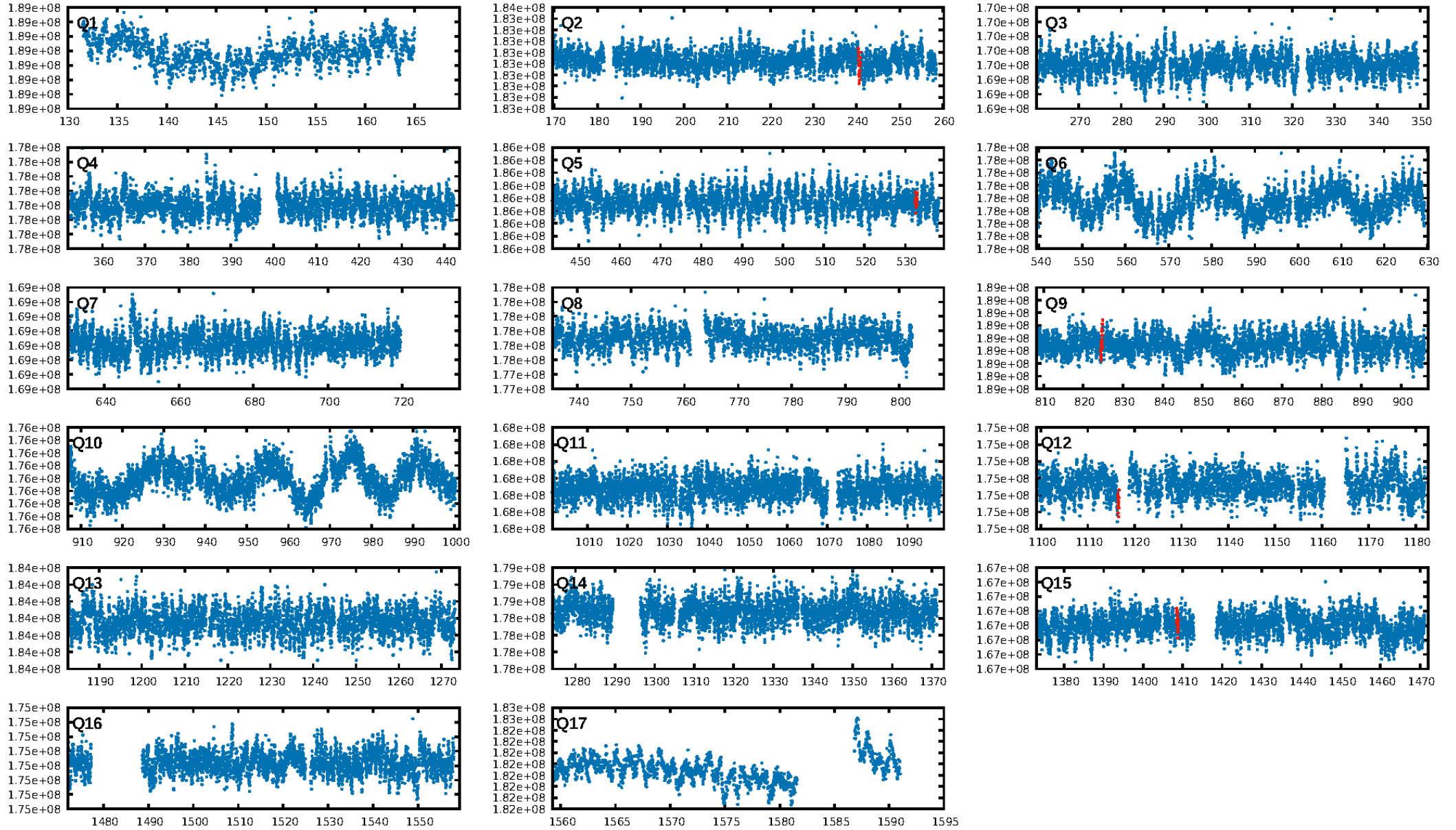
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [45.26σ]
LongPeriod-sig: 100.0% [237.67σ]
ModelChiSquare2-sig: 30.3%
ModelChiSquareGof-sig: 99.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.588
Centroid-sig: 1.3%
Centroid-so: 1.246 arcsec [1.87σ]
OotOffset-rm: 1.602 arcsec [0.90σ]
KicOffset-rm: 1.651 arcsec [0.88σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.25 [1/4]

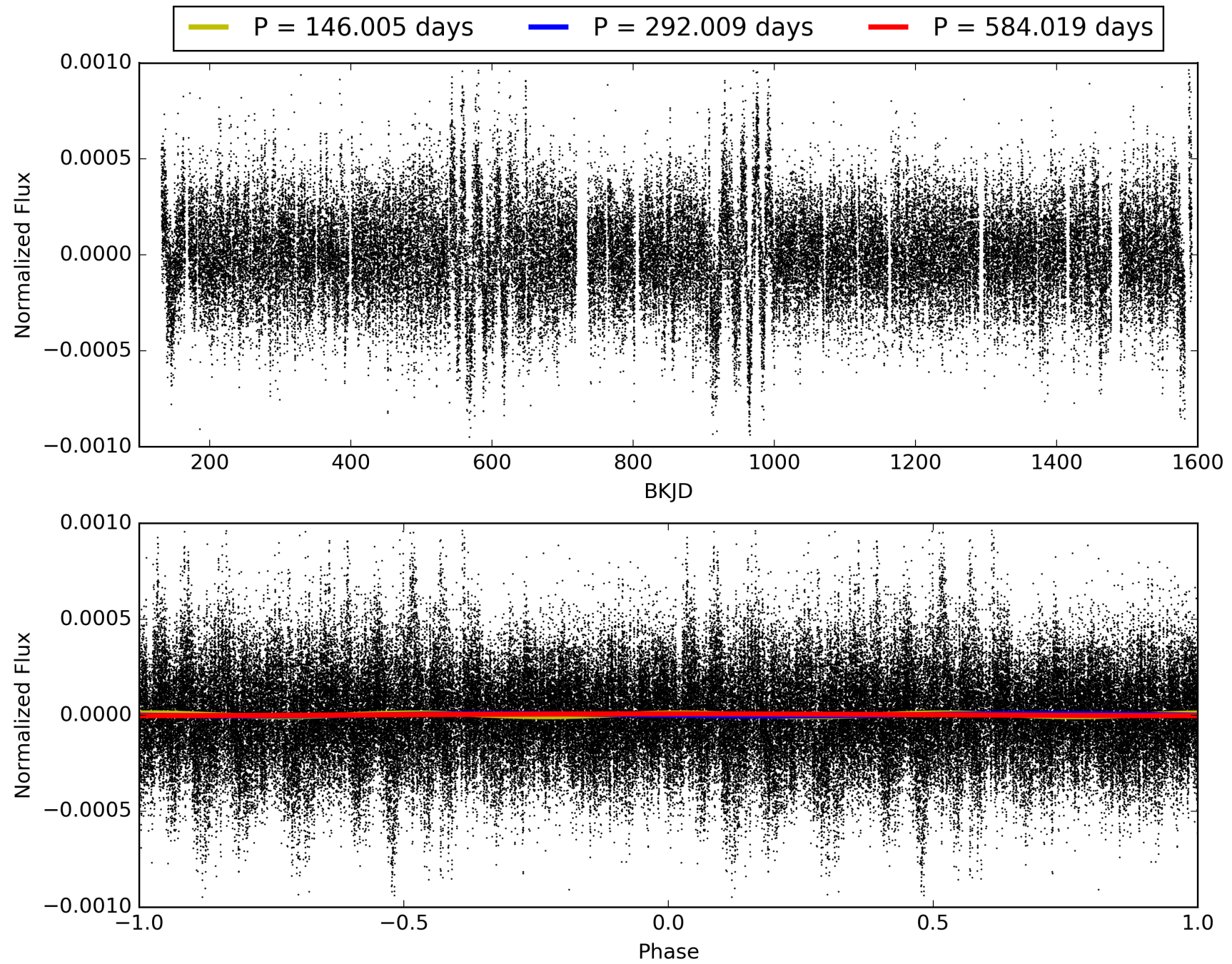
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:34:10 Z

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

TCE 006381309-05, PDC Light Curves

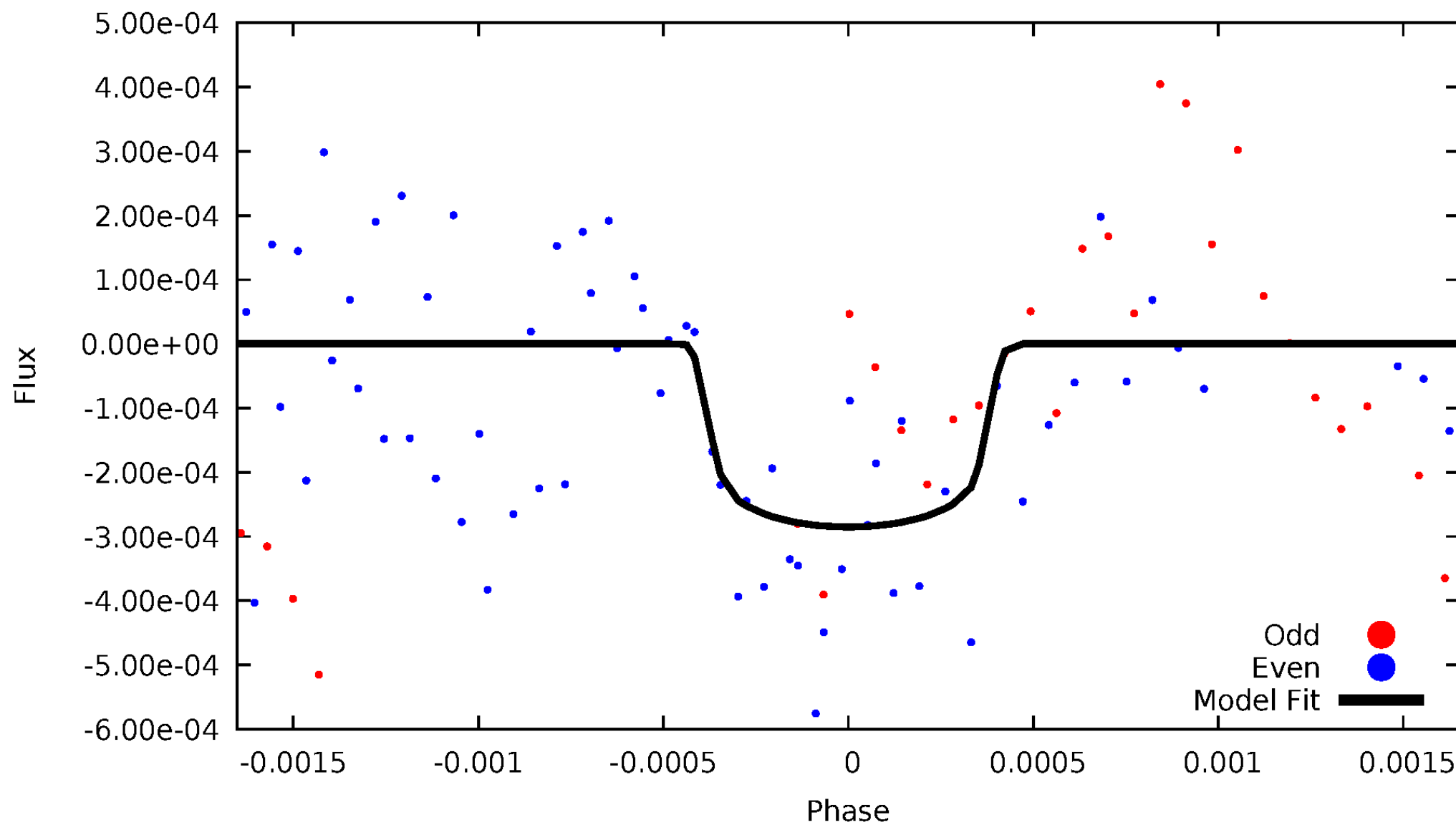


TCE 006381309-05



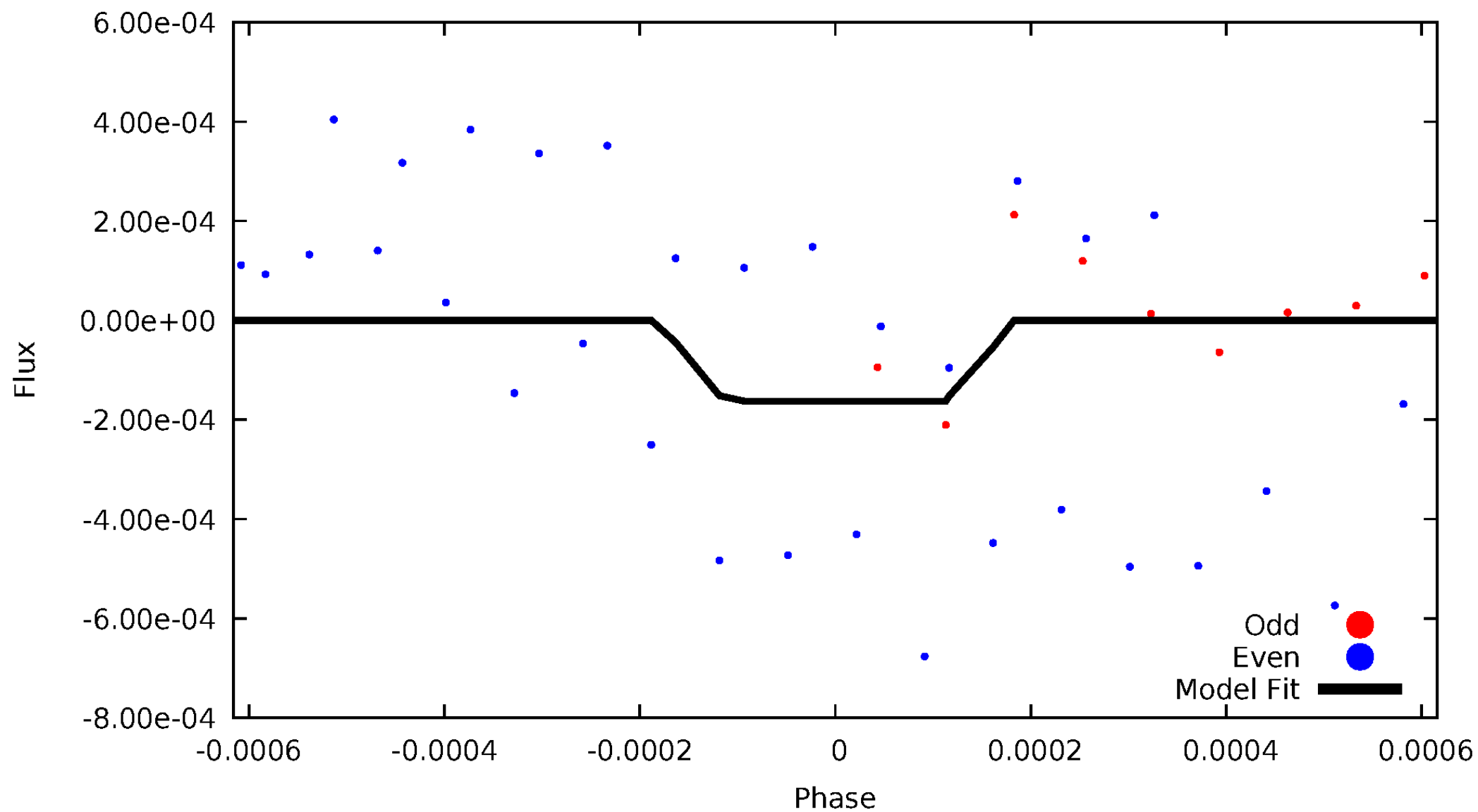
DV Odd/Even

TCE 006381309-05



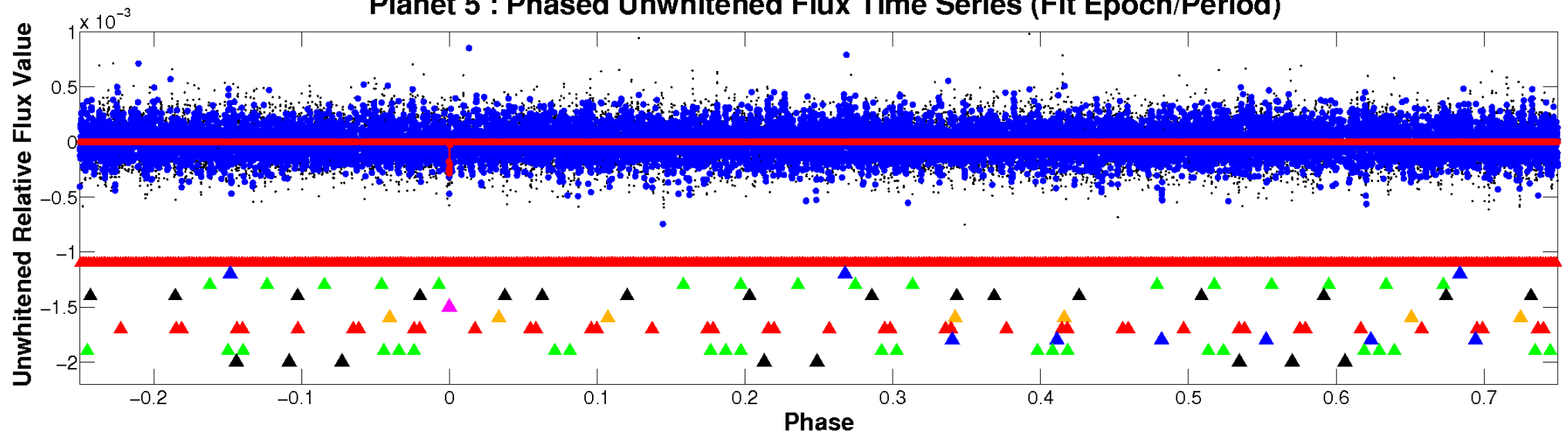
ALT Odd/Even

TCE 006381309-05

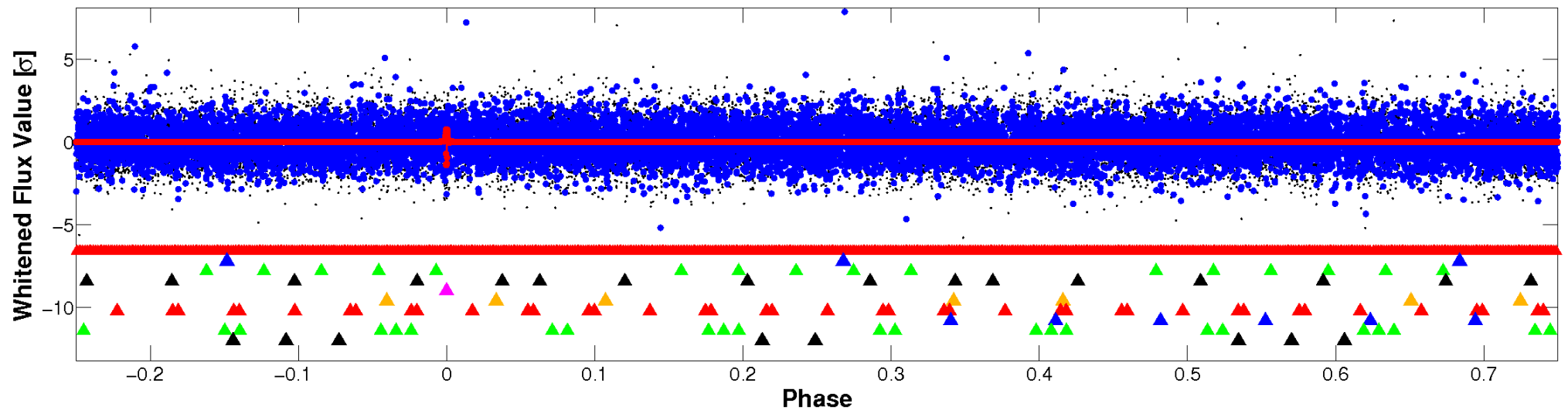


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

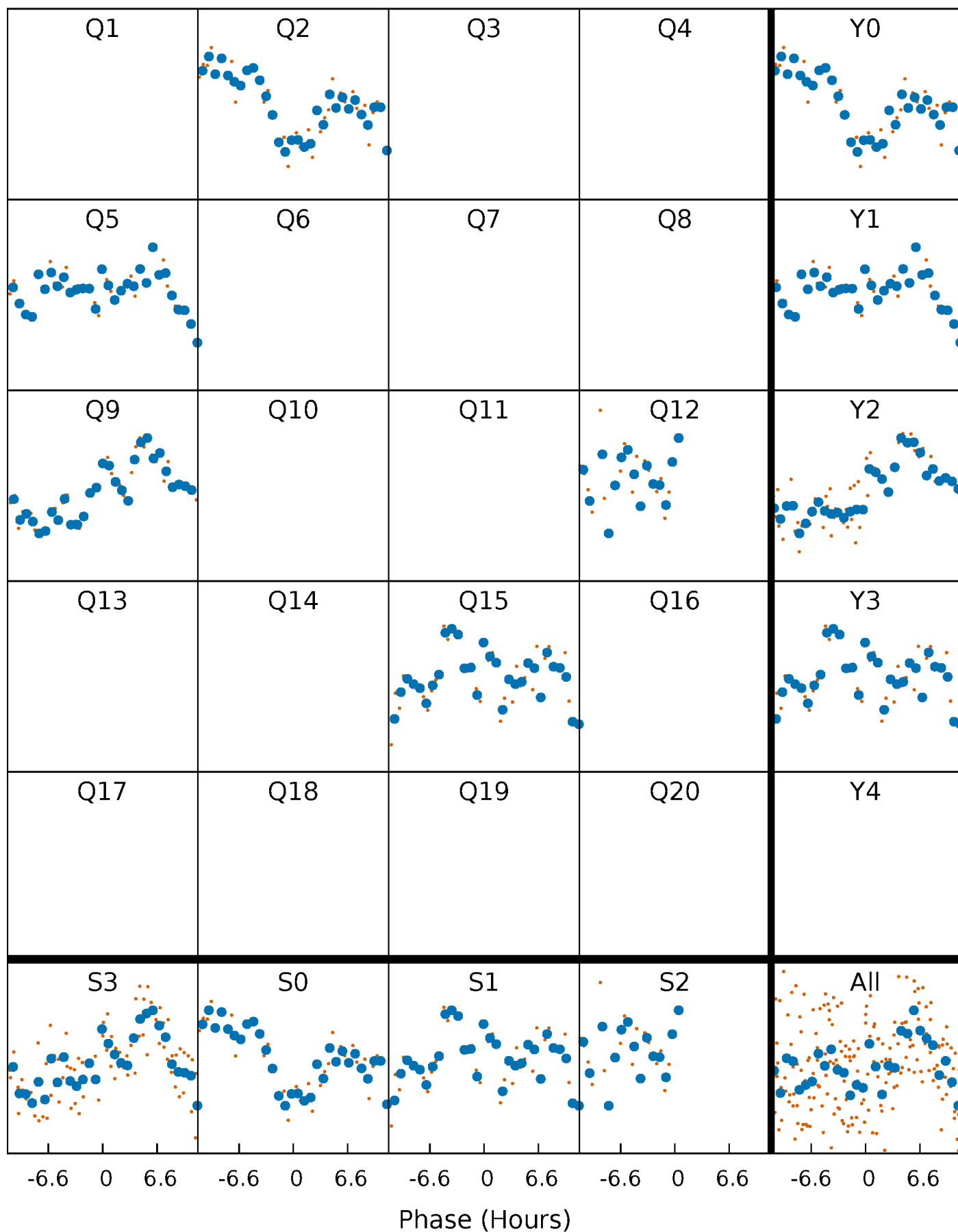


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



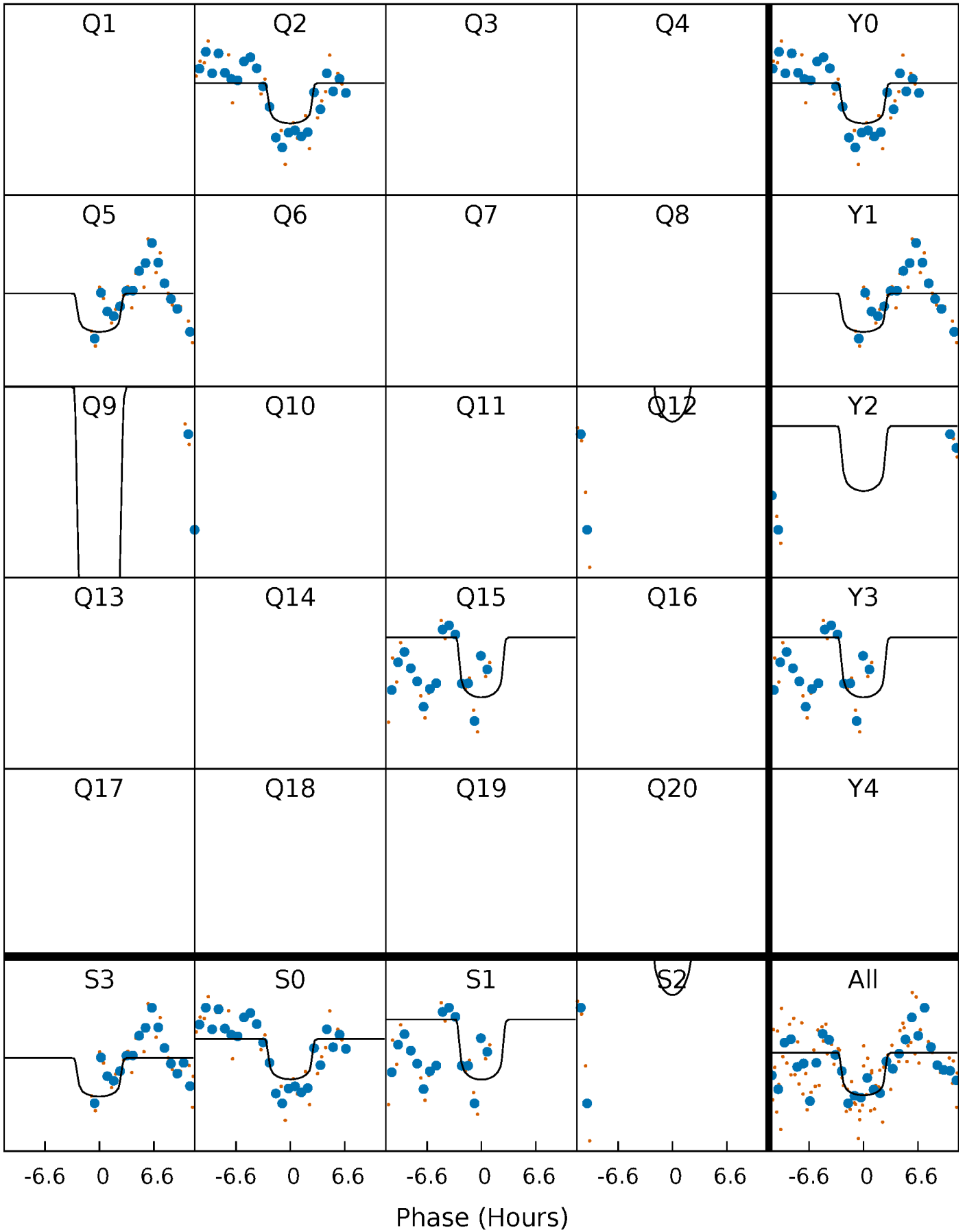
PDC Quarter-Phased Transit Curves

TCE 006381309-05 $P=292.009411$ Days $T_0=240.635083$ (BKJD)



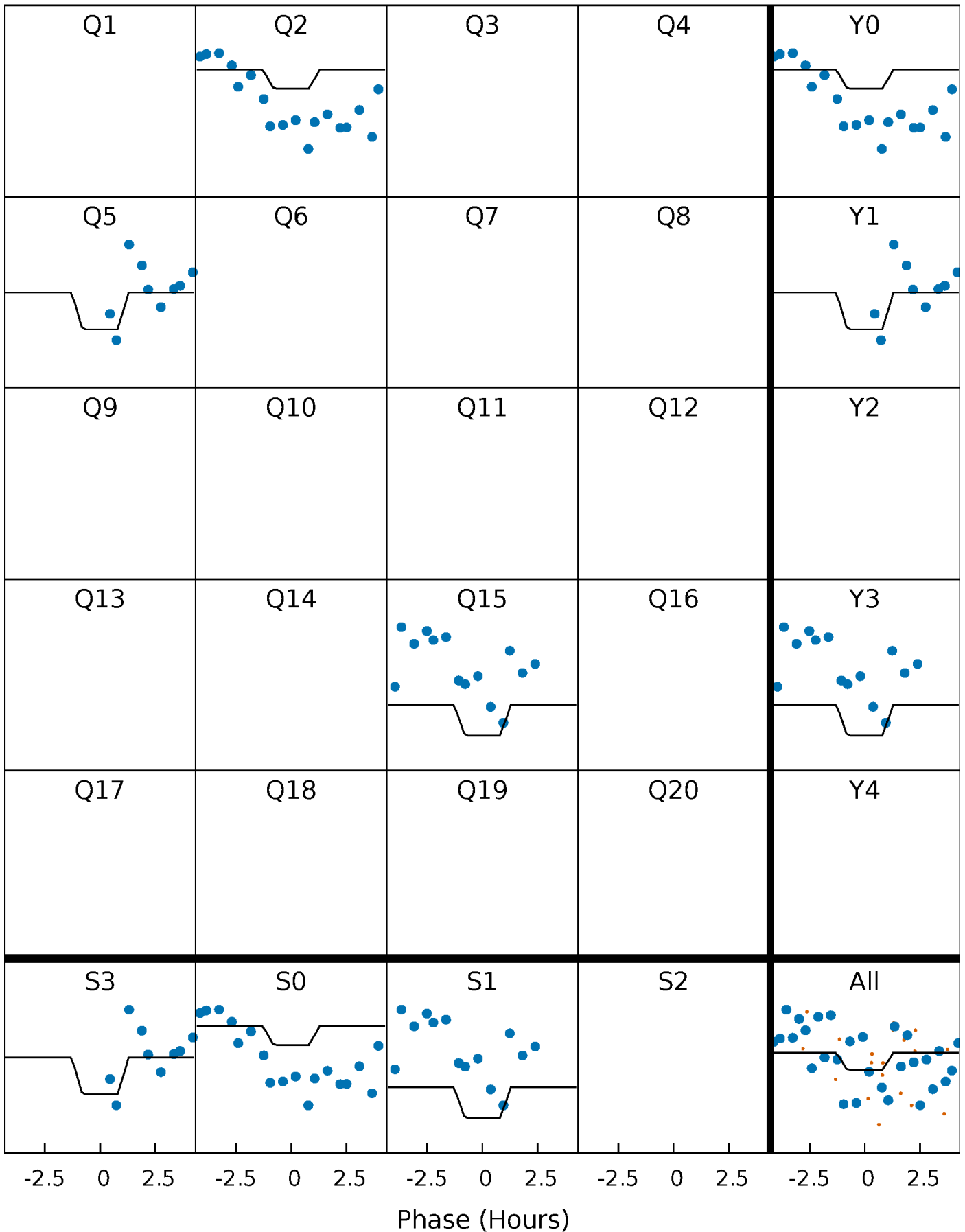
DV Quarter-Phased Transit Curves

TCE 006381309-05 $P=292.009411$ Days $T_0=240.635083$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

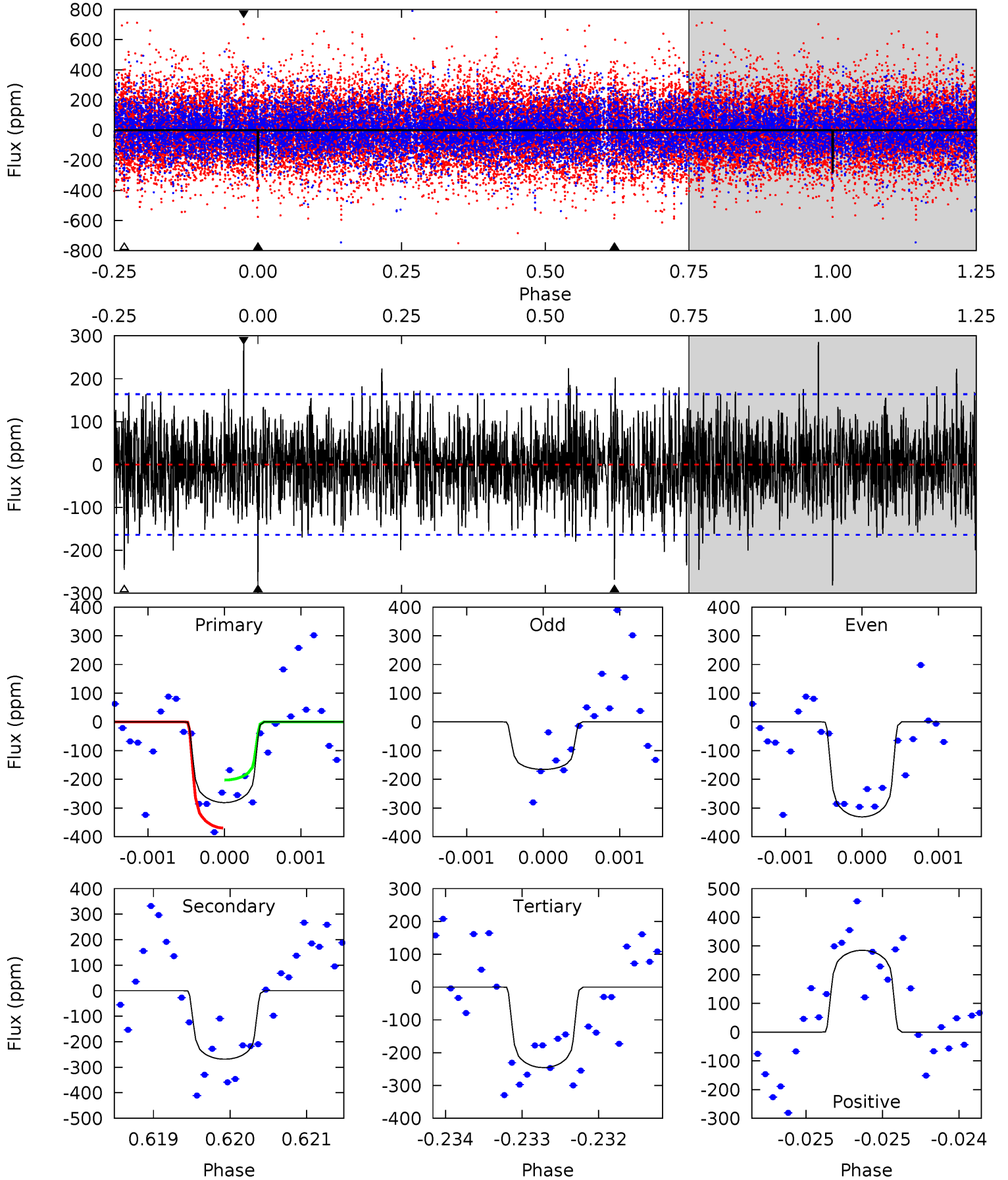
TCE 006381309-05 $P=292.009195$ Days $T_0=240.582701$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-05, P = 292.009411 Days, E = 240.635083 Days

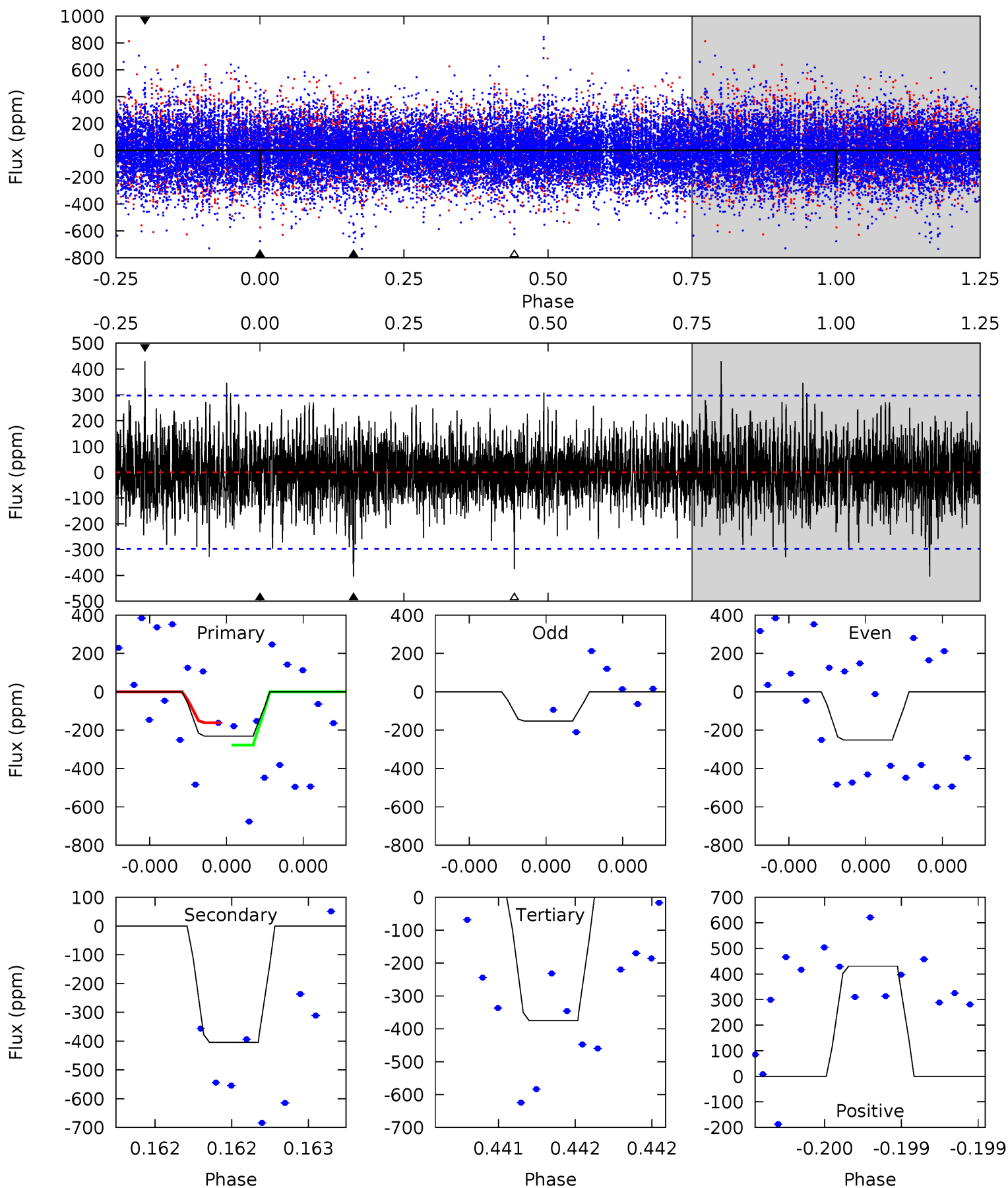
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.39	8.96	8.19	9.52	5.47	3.32	2.20	1.20	-0.13	0.77	-0.56	2.52	1.10	0.50	2.79



Alt Model-Shift Uniqueness Test

006381309-05, P = 292.009195 Days, E = 240.582701 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.40	7.69	7.14	8.19	5.65	3.59	1.62	-2.73	-3.79	0.55	-0.50	0.77	1.43	0.52	1.08



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-268 ± 30	$5.32^{+2.43}_{-2.12}$	682^{+43}_{-64}	6283^{+1994}_{-968}	5182^{+9270}_{-2773}
Alt.	-404 ± 53	$3.95^{+2.33}_{-2.02}$	684^{+44}_{-64}	8324^{+5508}_{-1778}	13886^{+43210}_{-8222}

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

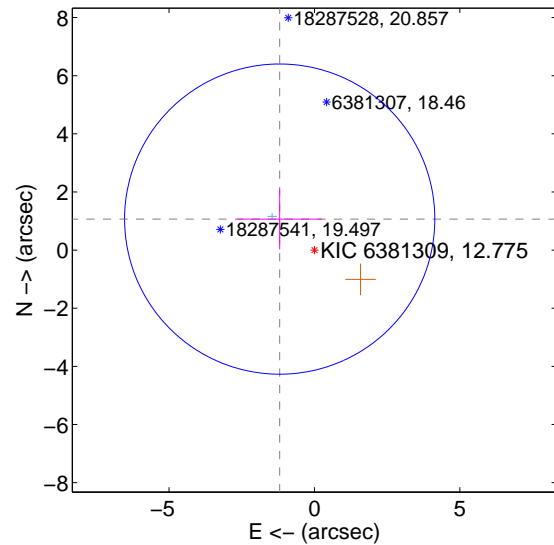
Supplemental centroid analysis for 006381309-05. Kepler magnitude: 12.78. Transit SNR 6.88

There are 1 quarters with good PRF difference image offsets

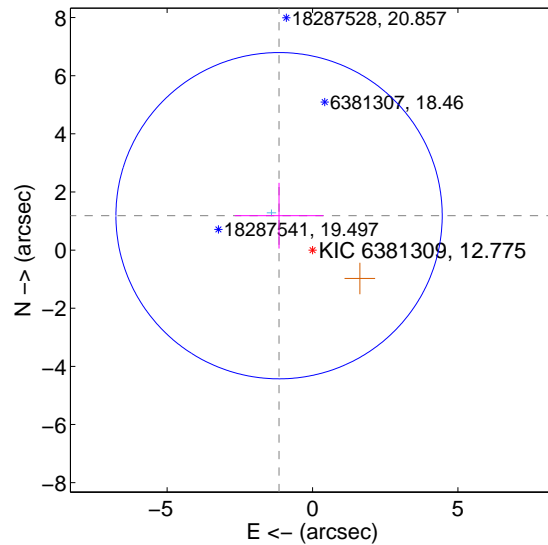
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.602 ± 1.779	0.90	1.195 ± 1.458	1.066 ± 1.040
PRF-fit source offset from KIC position	1.651 ± 1.871	0.88	1.151 ± 1.522	1.184 ± 1.131
photometric centroid source offset	1.25 ± 0.67	1.87	0.90 ± 0.67	0.87 ± 0.66

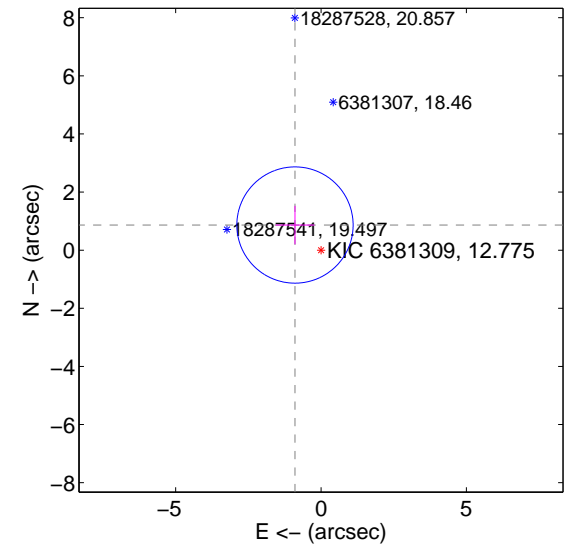
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

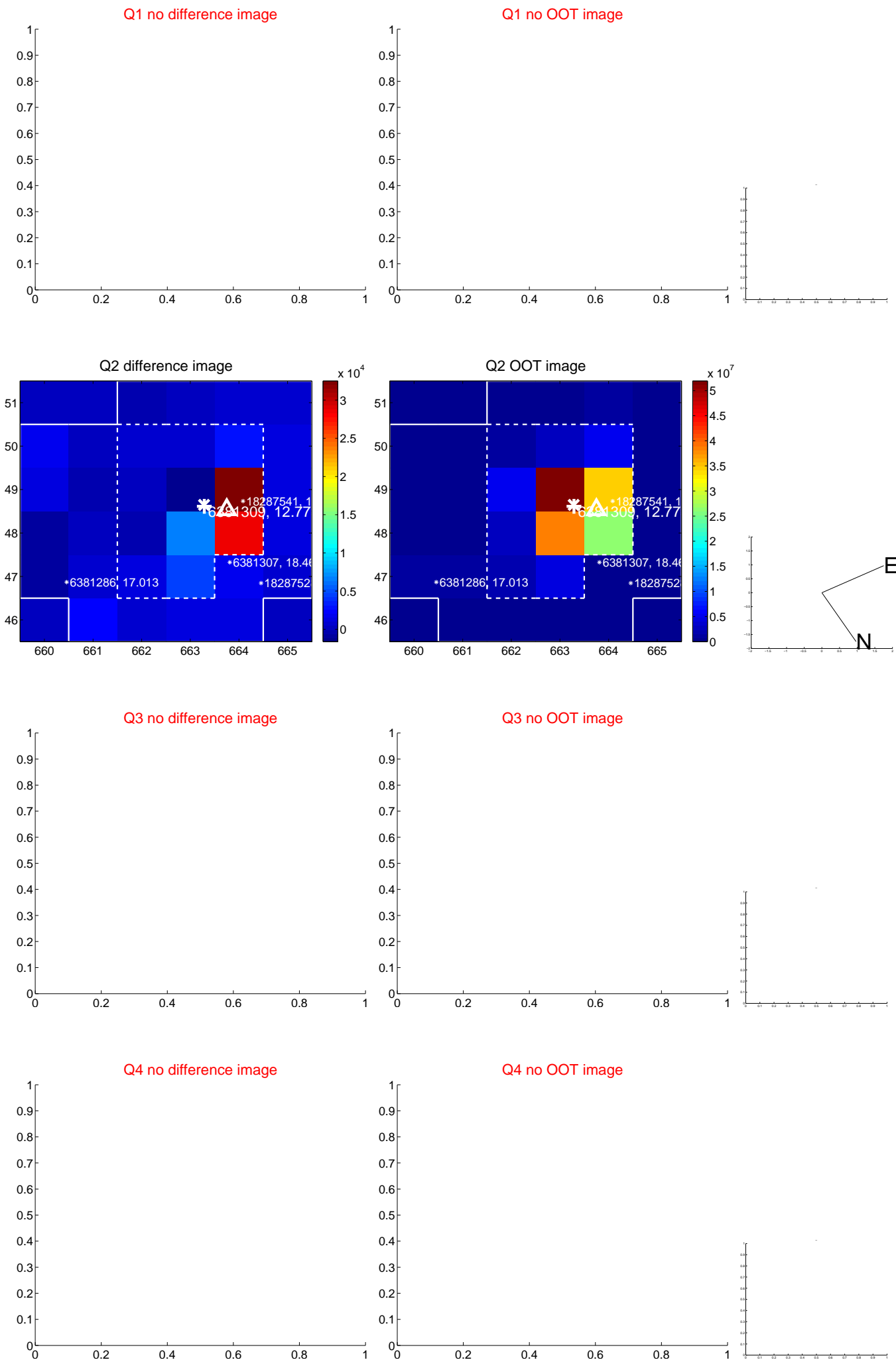


offset from photometric centroids

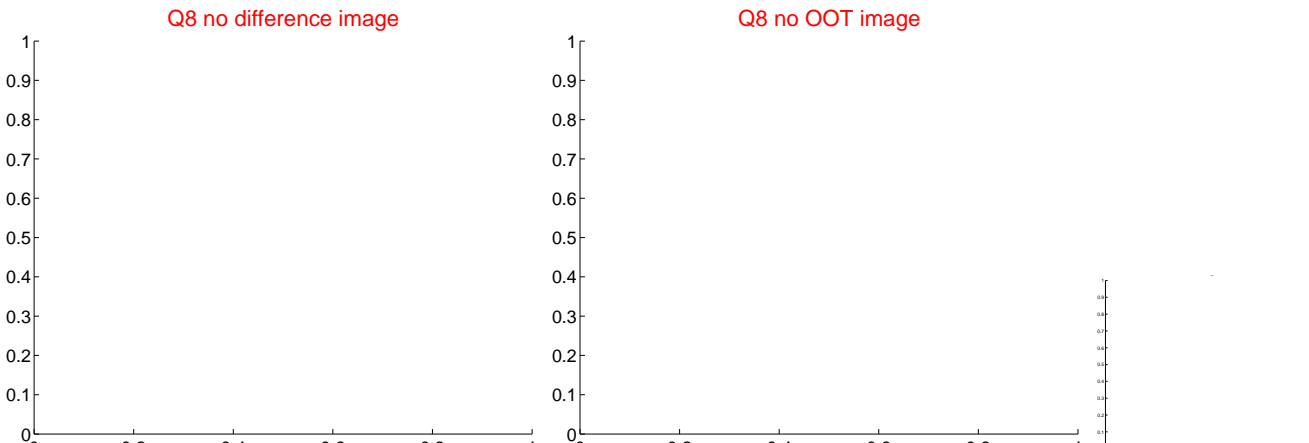
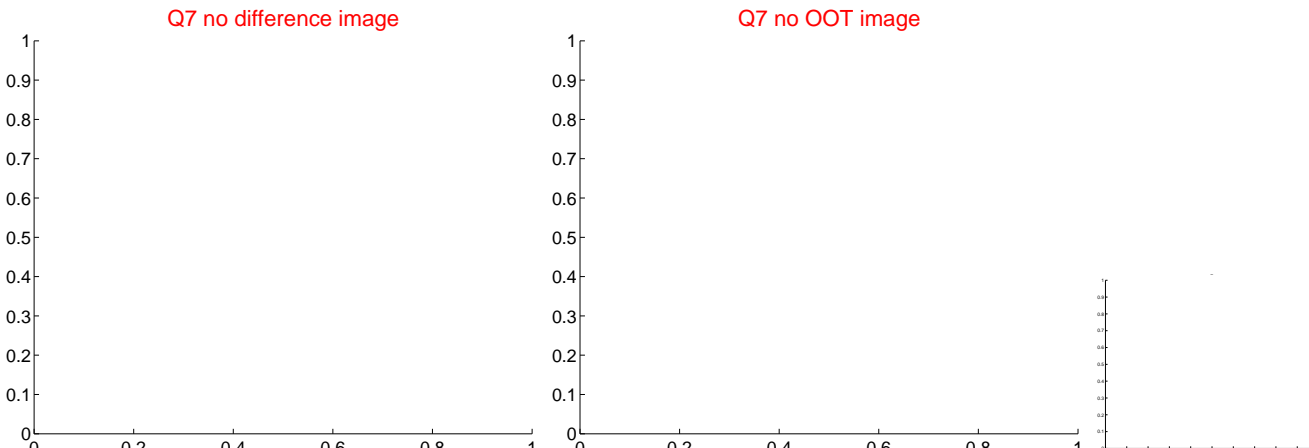
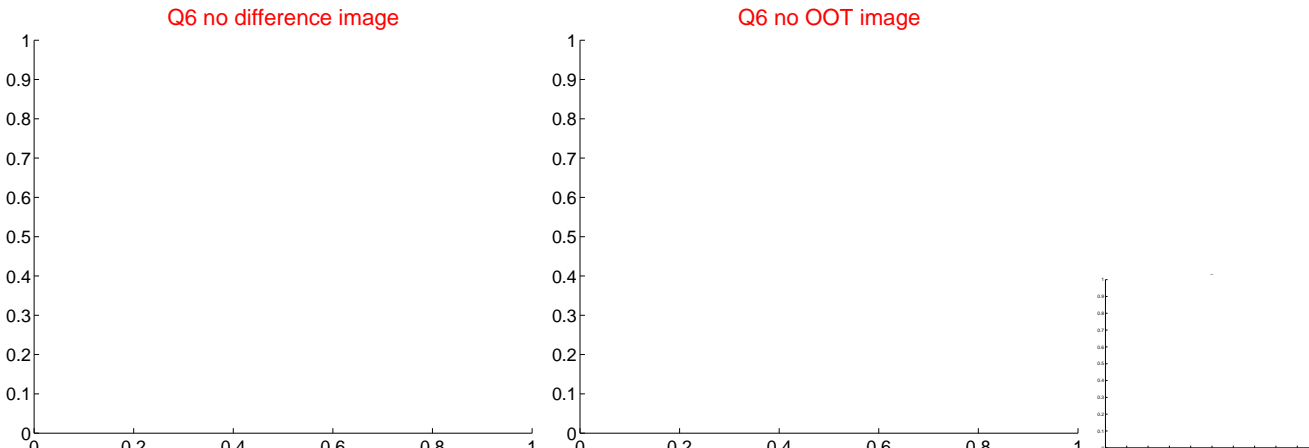
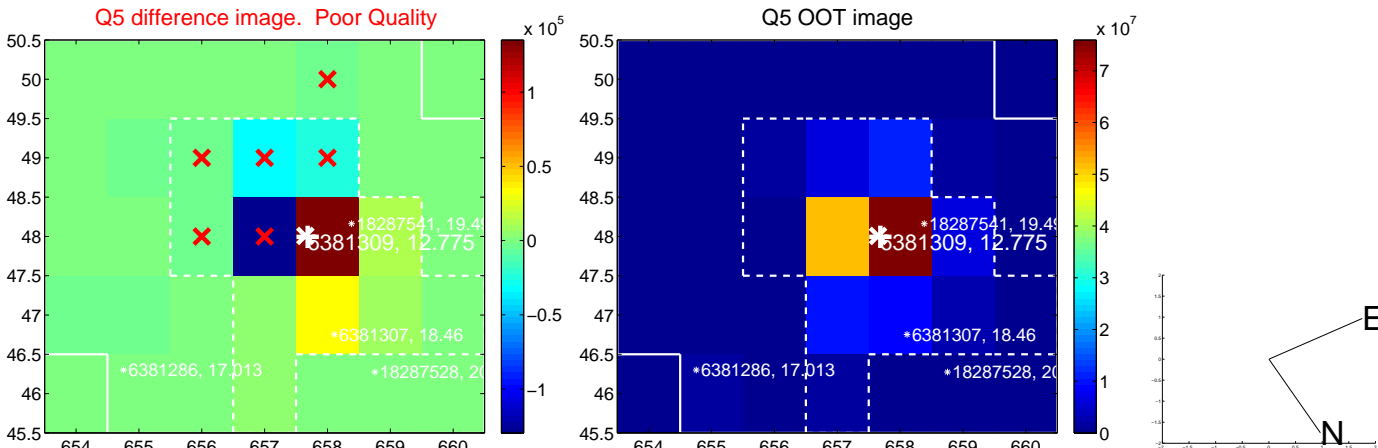


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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.

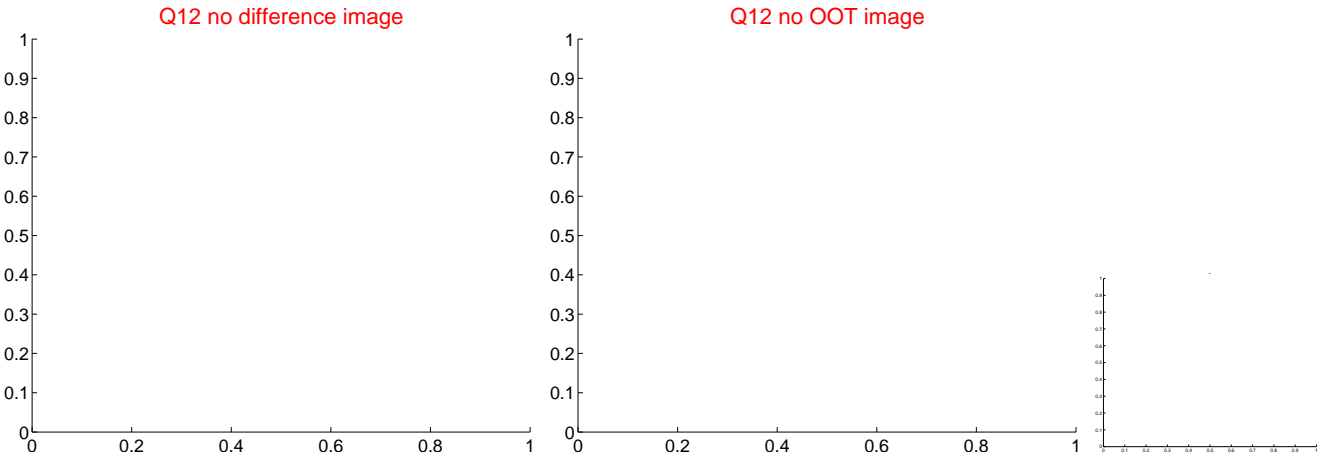
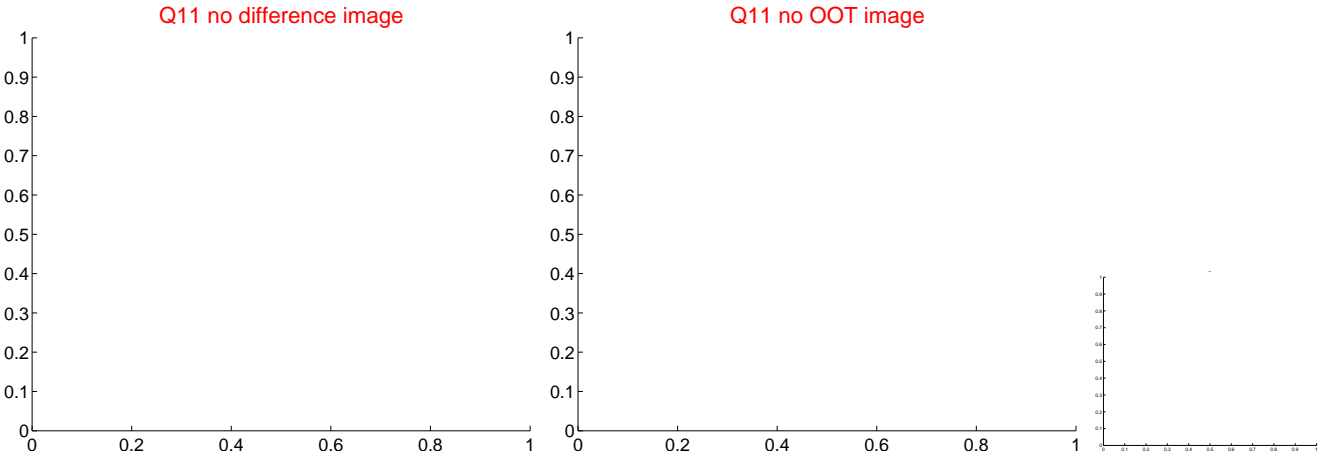
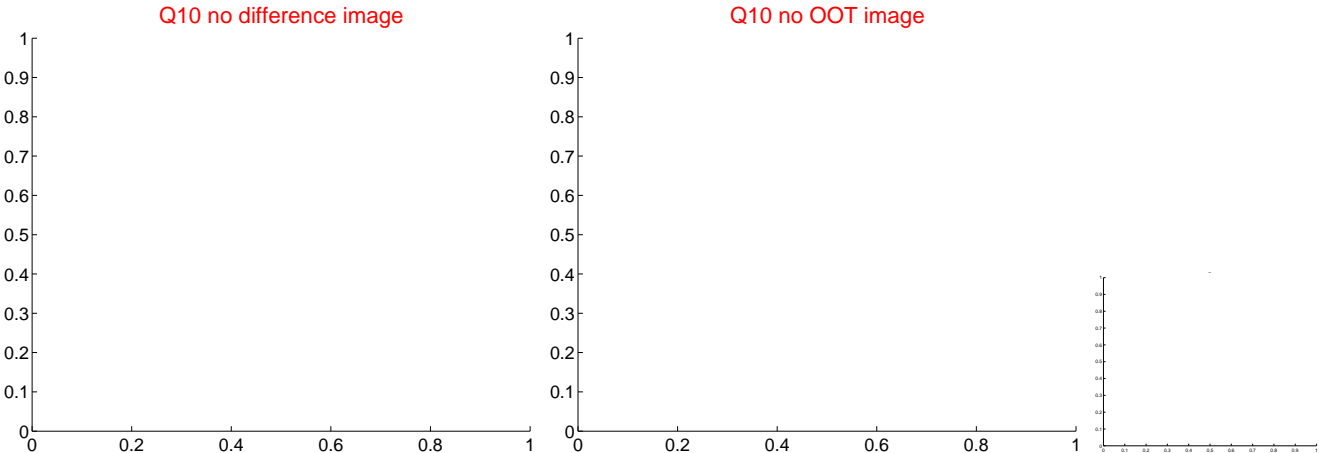
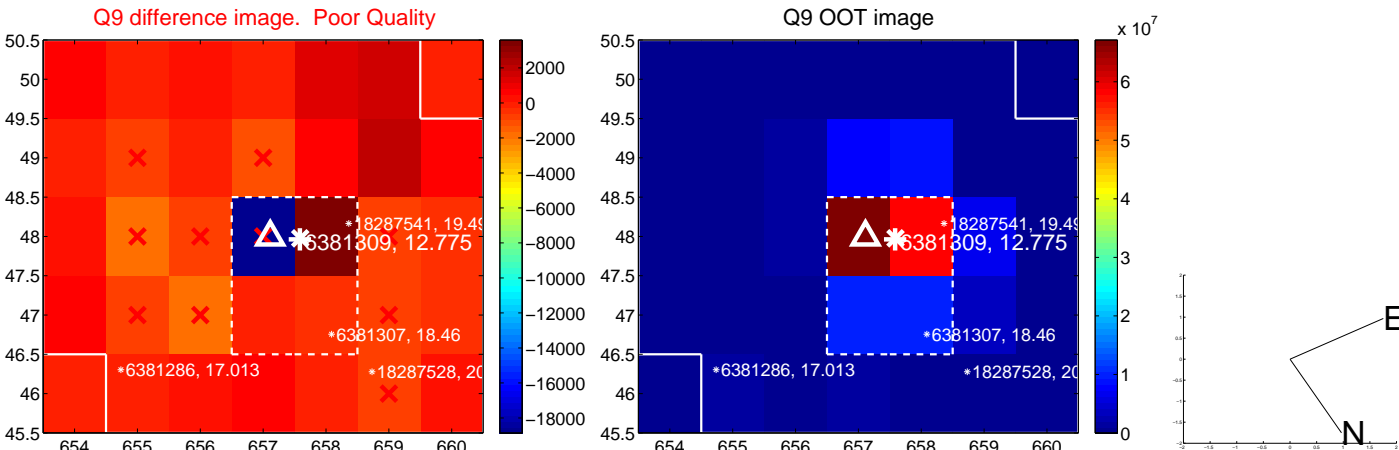
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



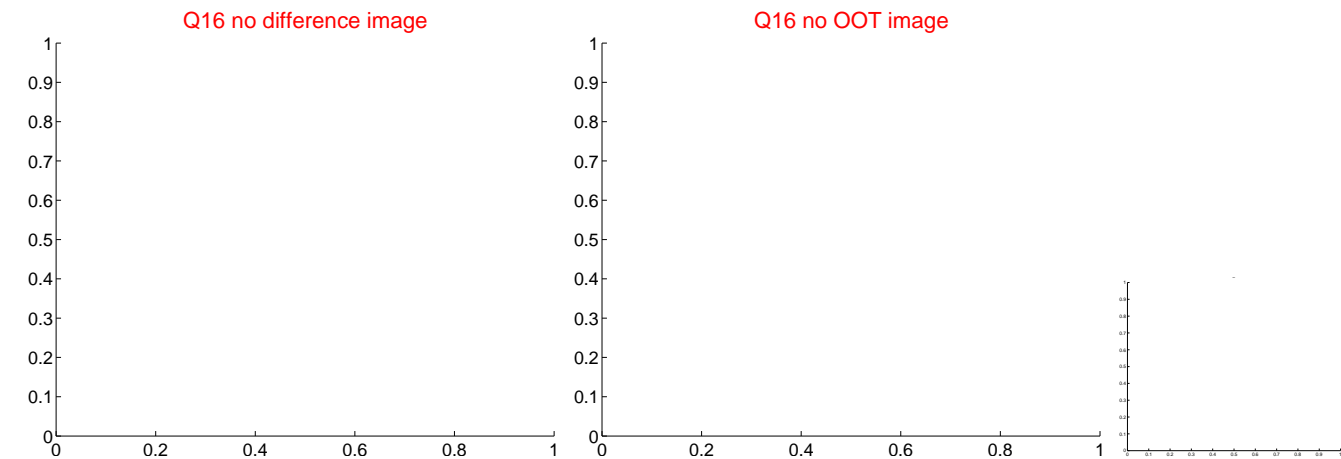
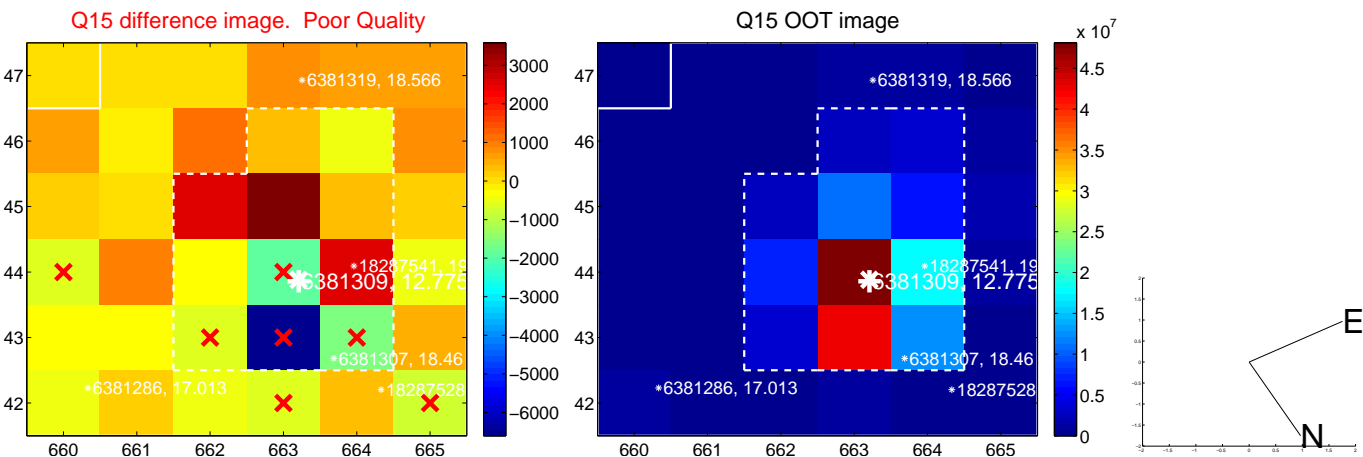
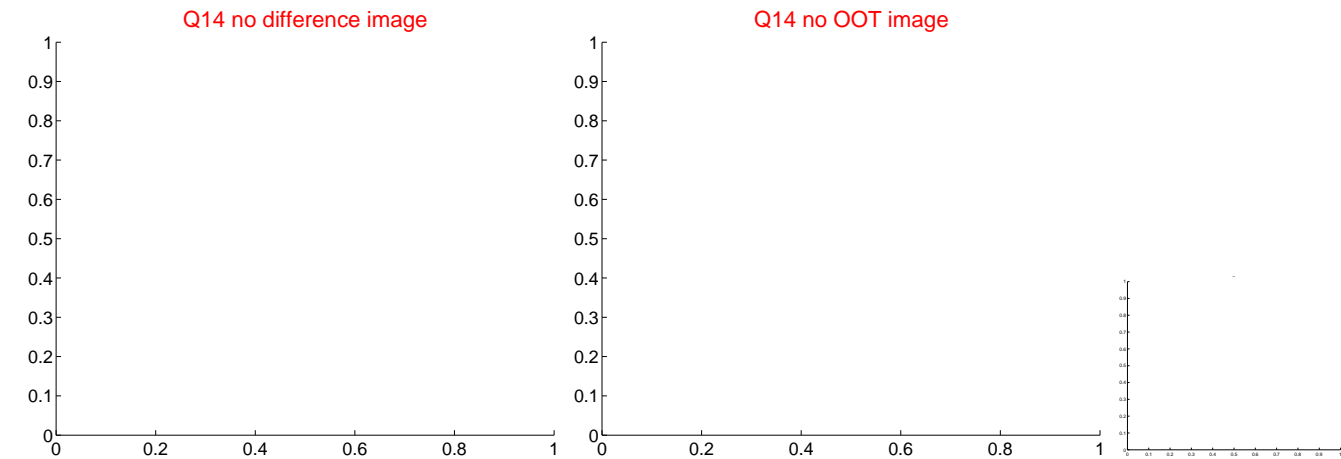
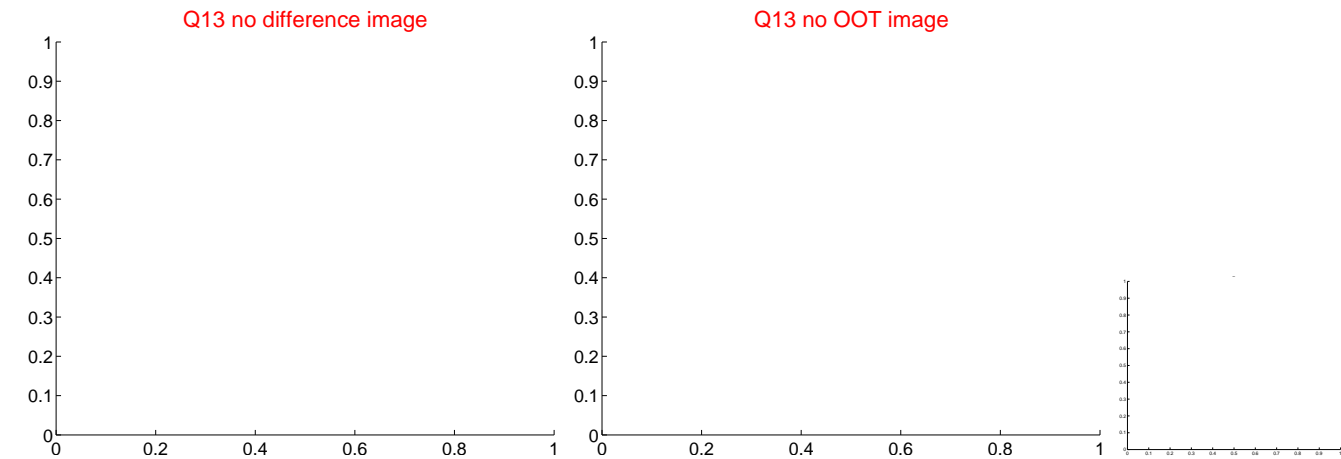
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



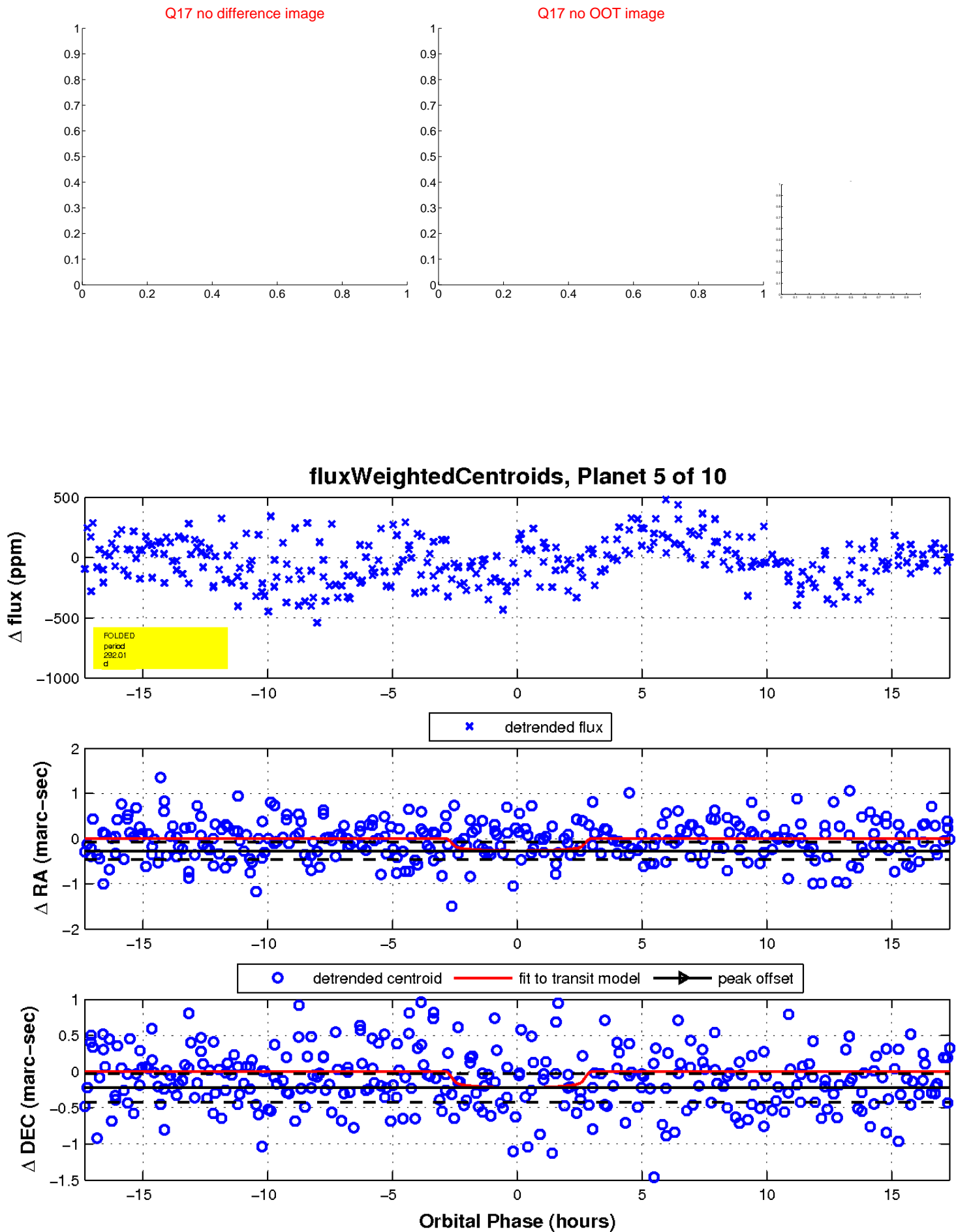
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

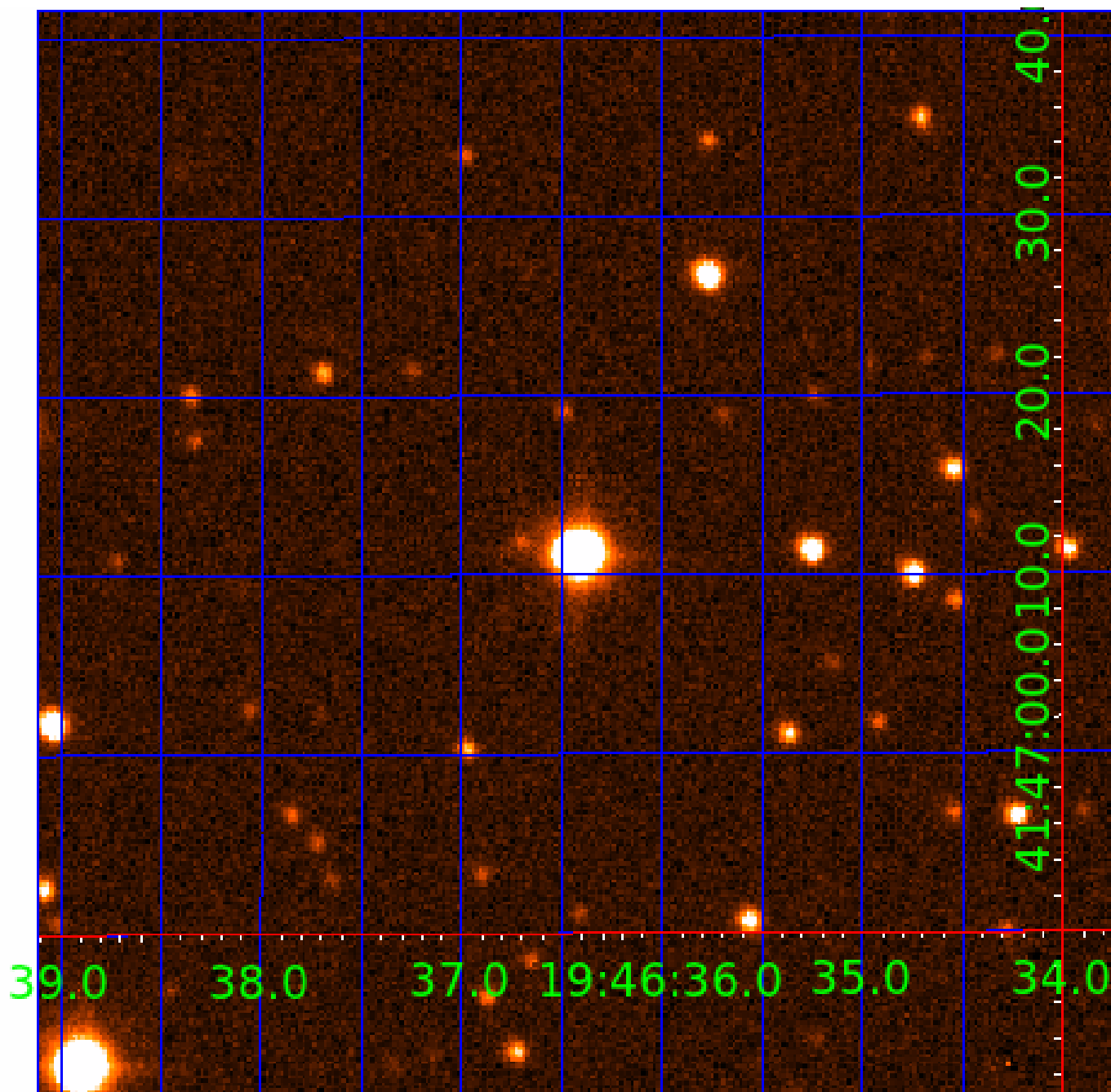


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006381309

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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

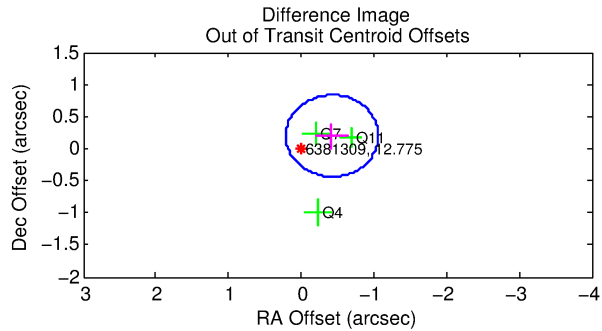
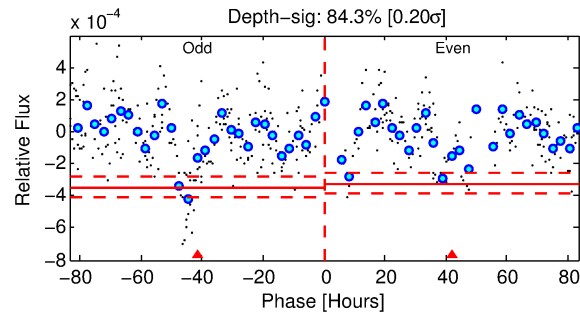
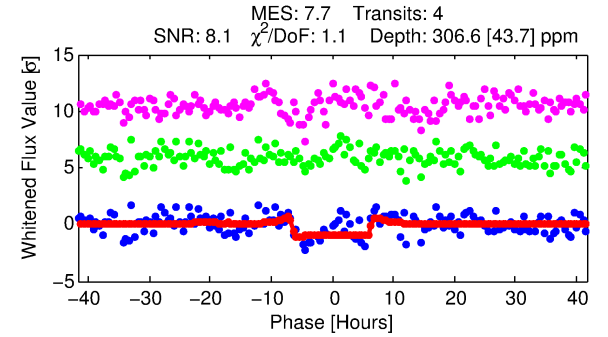
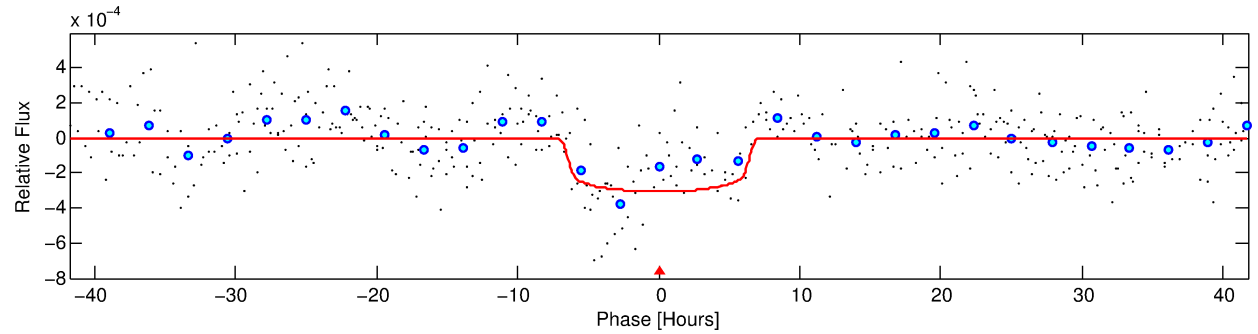
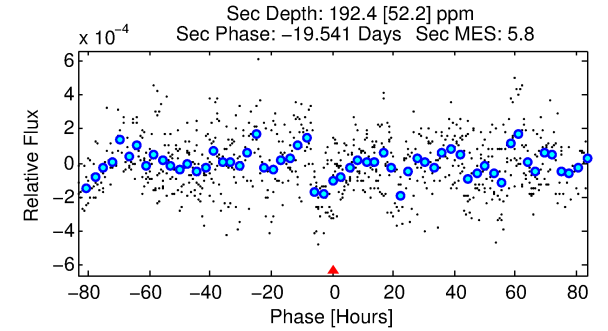
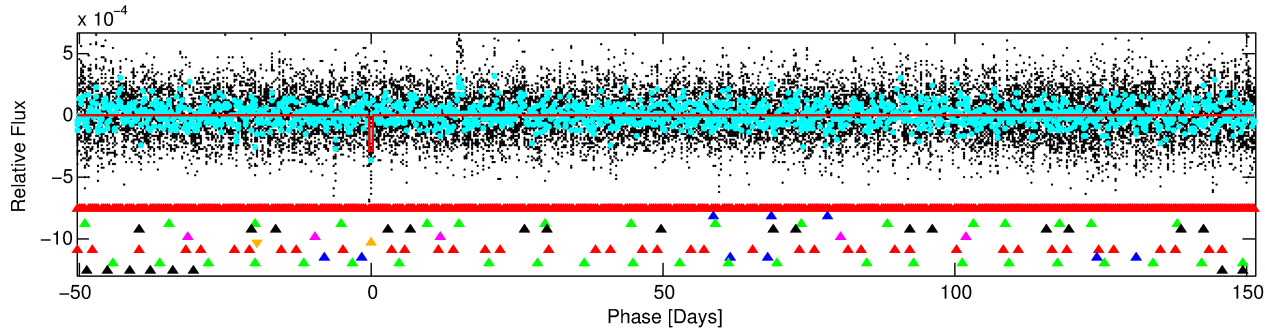
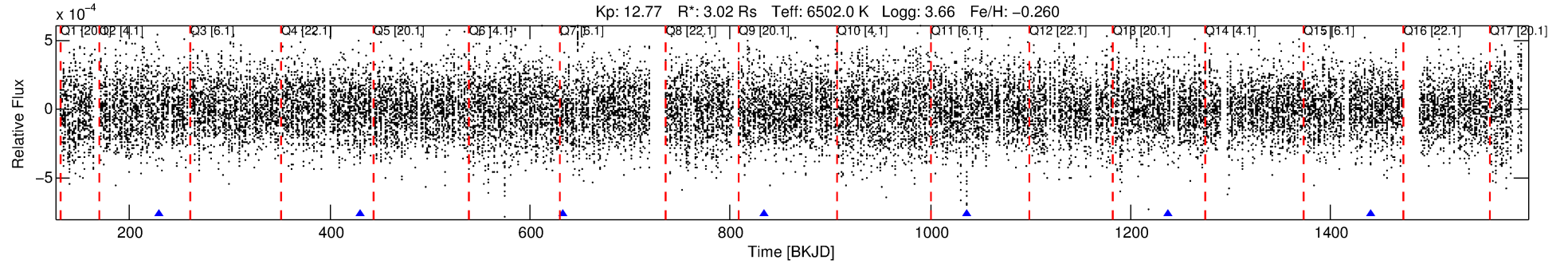
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-06

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 6 of 10 Period: 201.857 d



DV Fit Results:

Period = 201.85685 [0.00410] d
Epoch = 228.8515 [0.0148] BKJD
Rp/R* = 0.0183 [0.0019]
a/R* = 59.57 [22.50]
b = 0.86 [0.11]
Seff = 24.49 [14.80]
Teq = 567 [86] K
Rp = 6.02 [2.36] Re
a = 0.7722 [0.2840] AU
Ag = 1739.79 [1187.79] [1.46σ]
Teffp = 5664 [511] K [9.84σ]

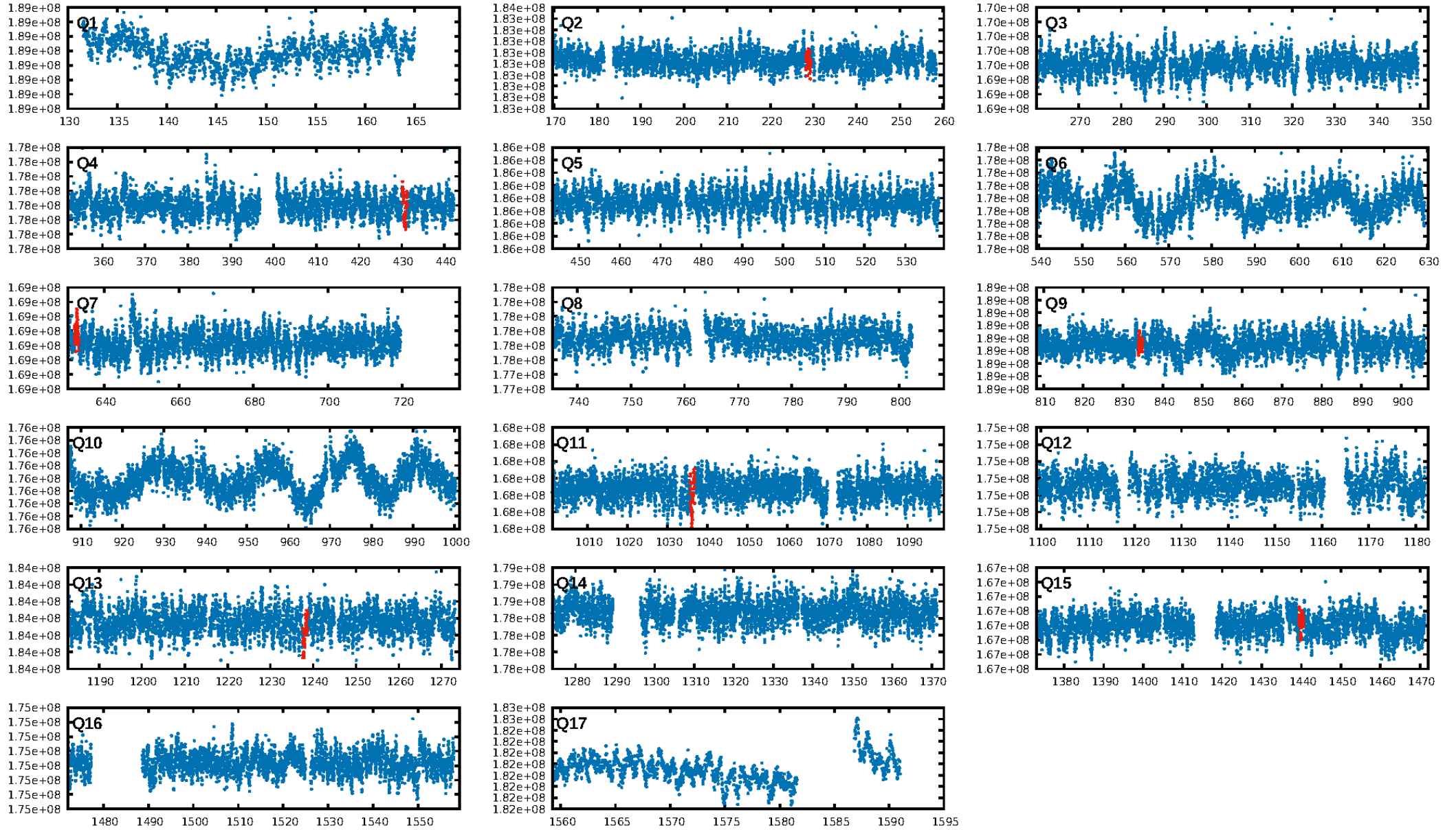
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.23σ]
LongPeriod-sig: 100.0% [99.57σ]
ModelChiSquare2-sig: 36.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 4.071
Centroid-sig: 3.8%
Centroid-so: 0.699 arcsec [1.74σ]
OotOffset-rm: 0.467 arcsec [2.20σ]
KicOffset-rm: 0.464 arcsec [1.91σ]
OotOffset-st: 0/2/1/0 [3]
KicOffset-st: 0/2/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/7]

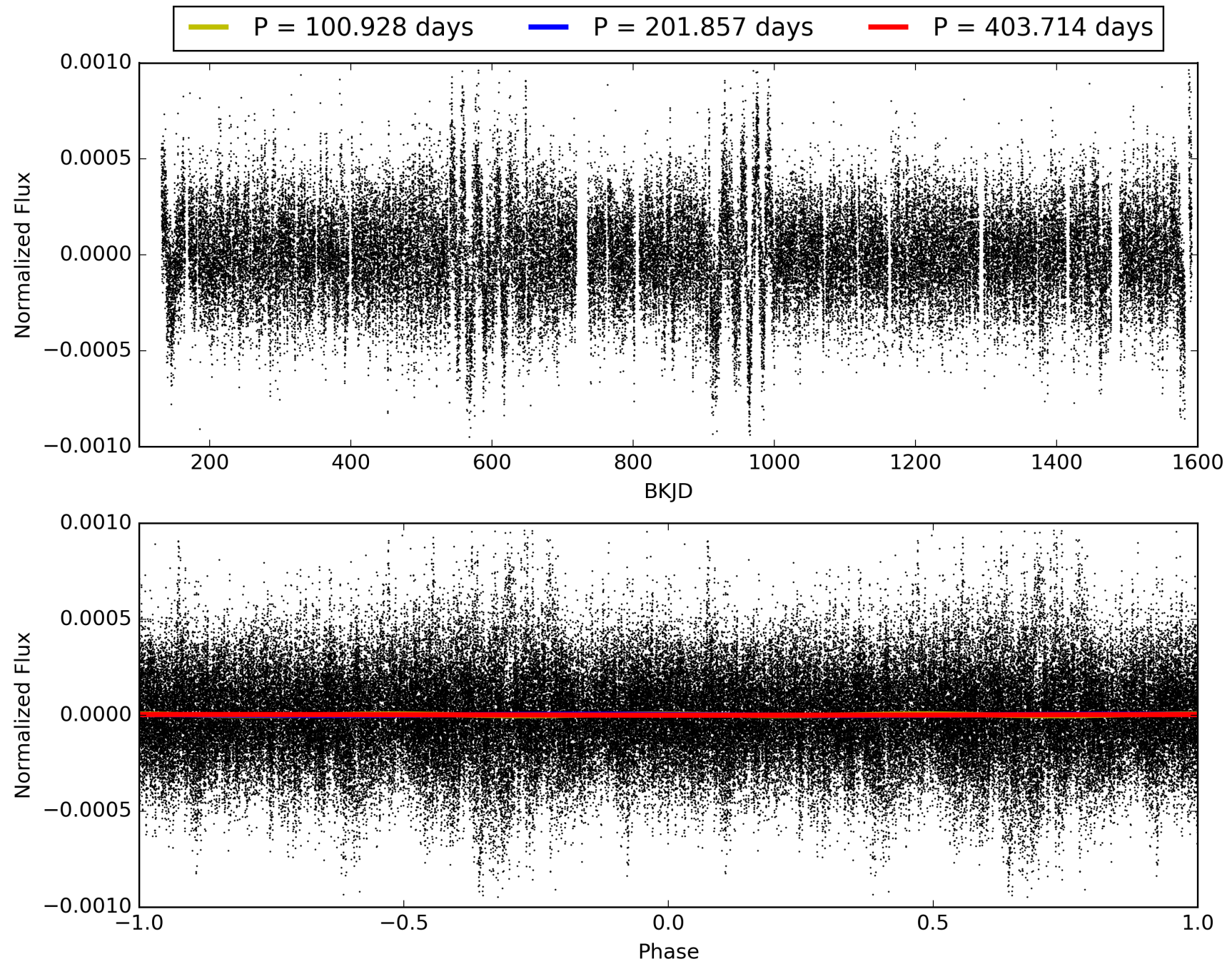
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:34:15 Z

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

TCE 006381309-06, PDC Light Curves

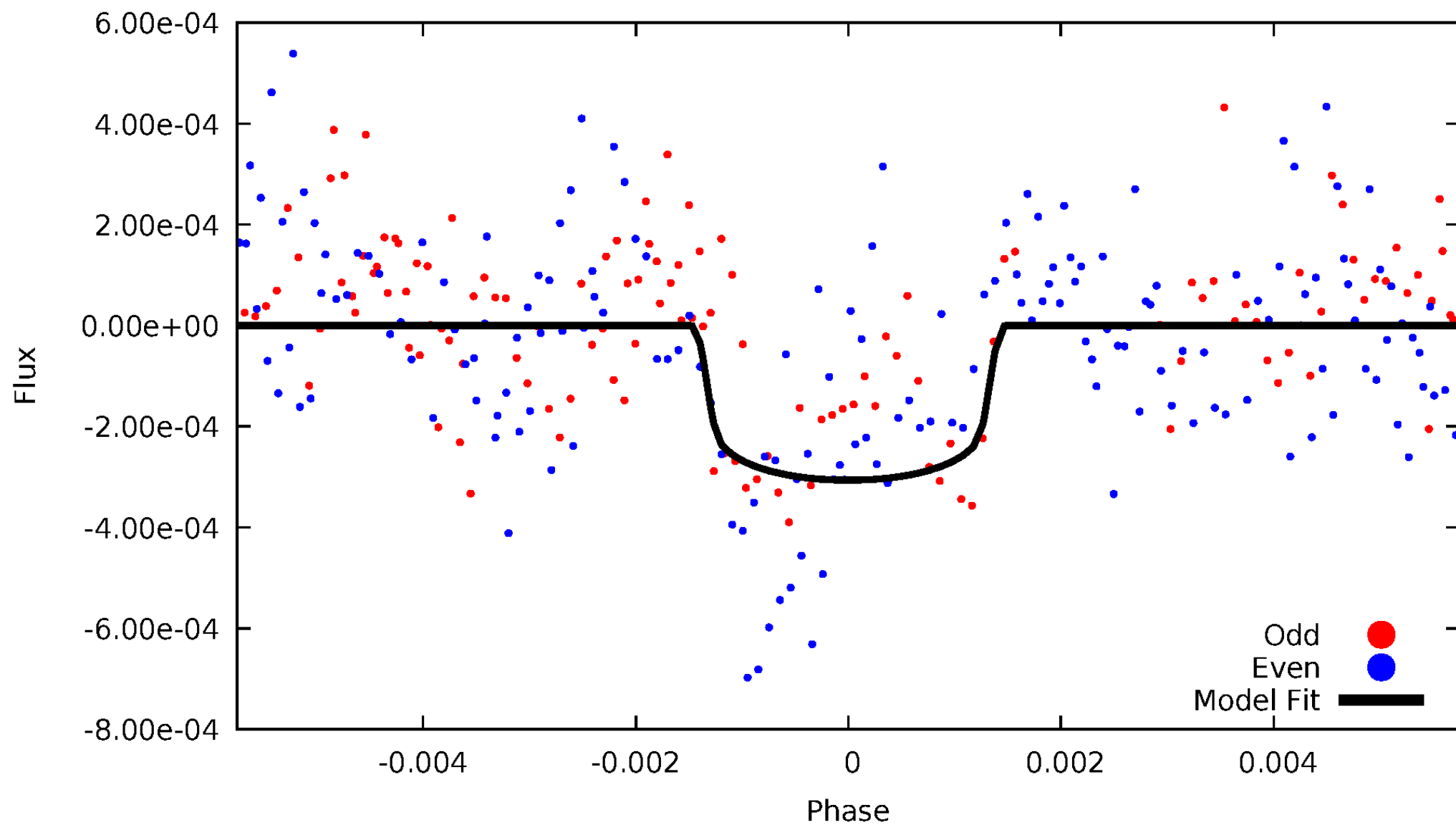


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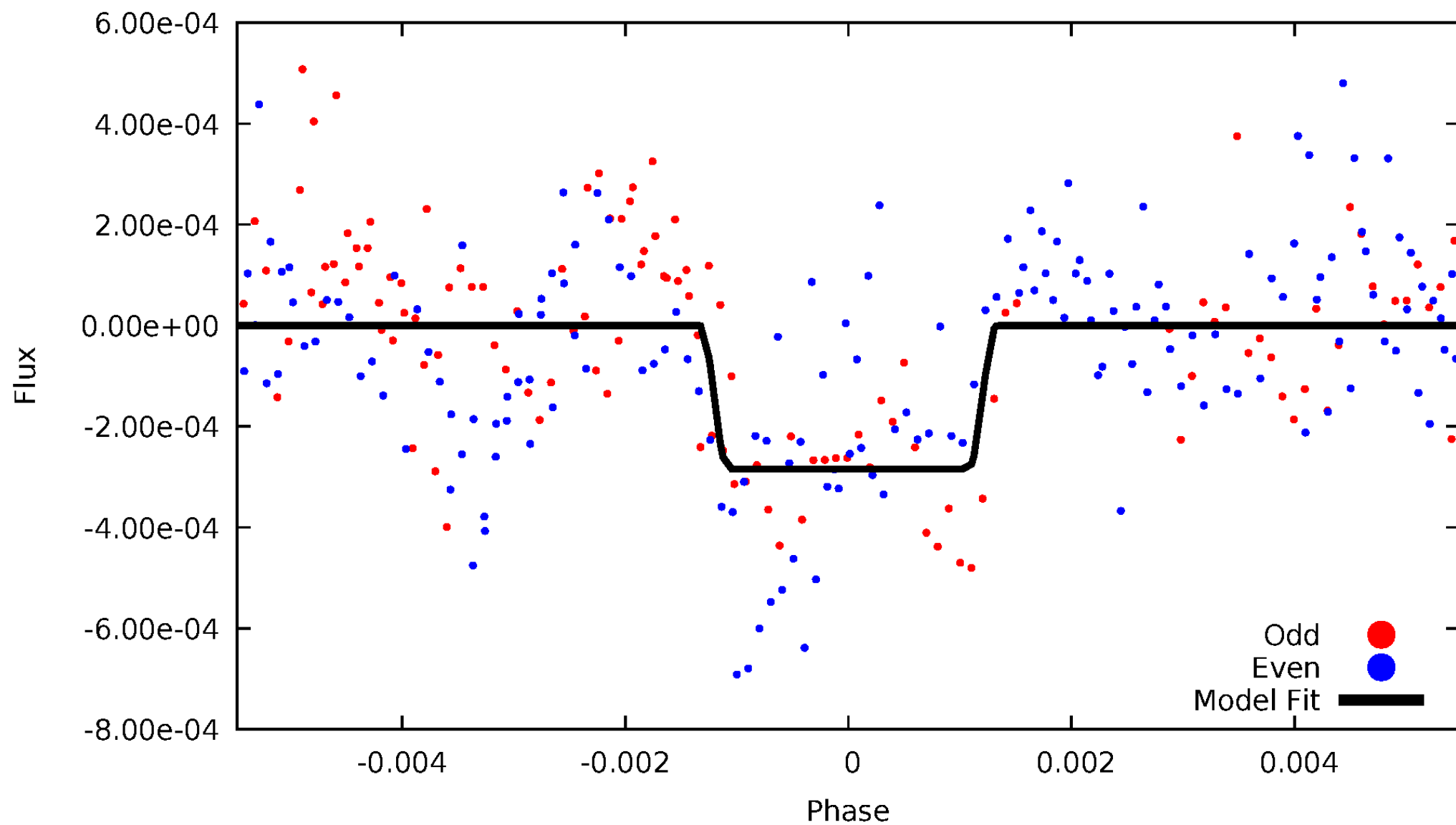
DV Odd/Even

TCE 006381309-06



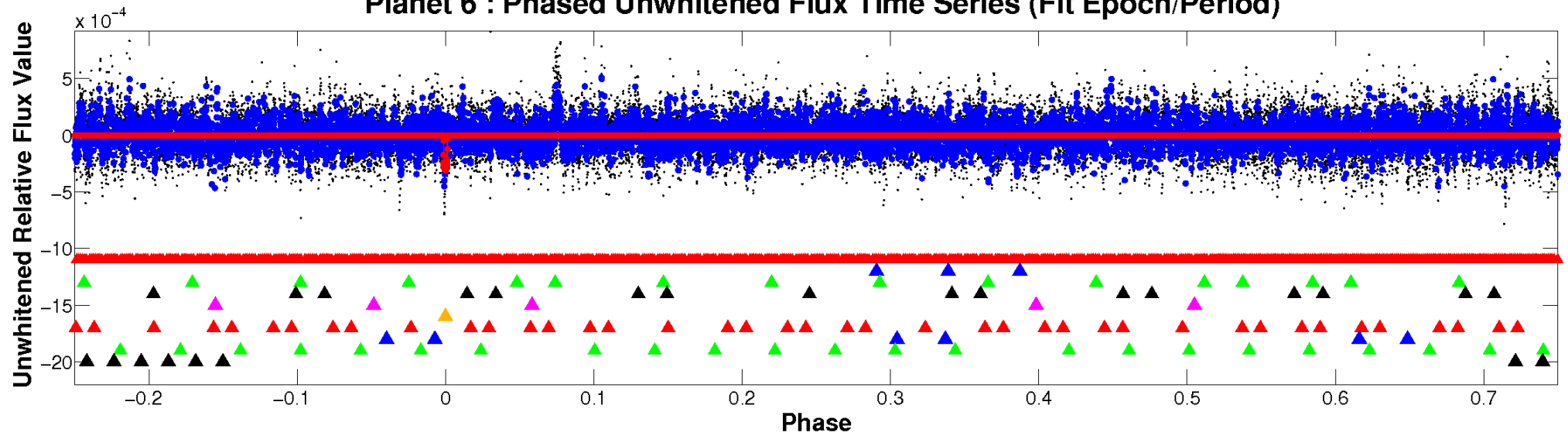
ALT Odd/Even

TCE 006381309-06

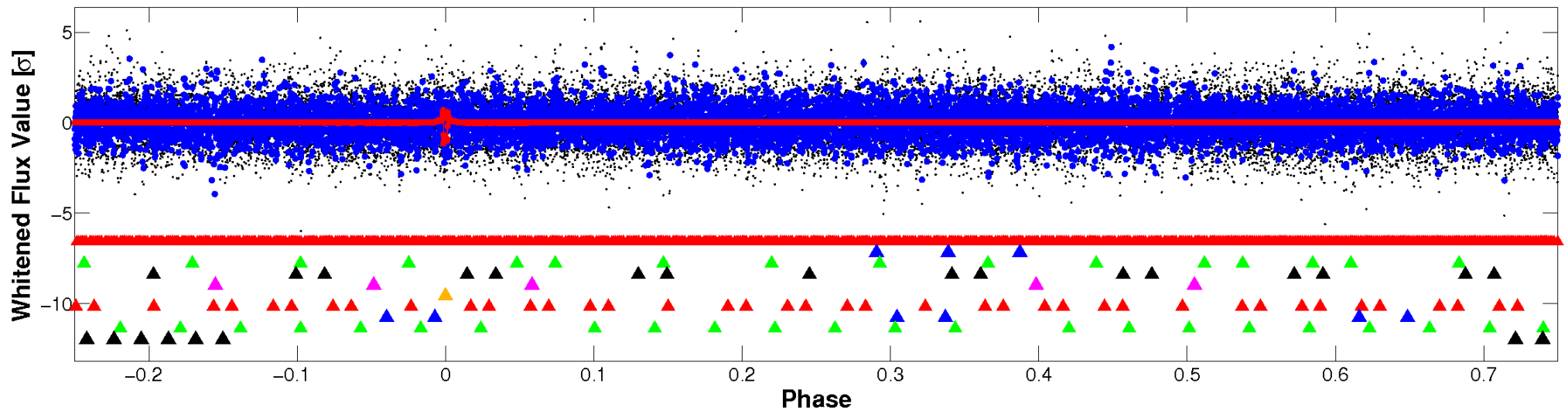


Non-Whitened Vs. Whitened Light Curve

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

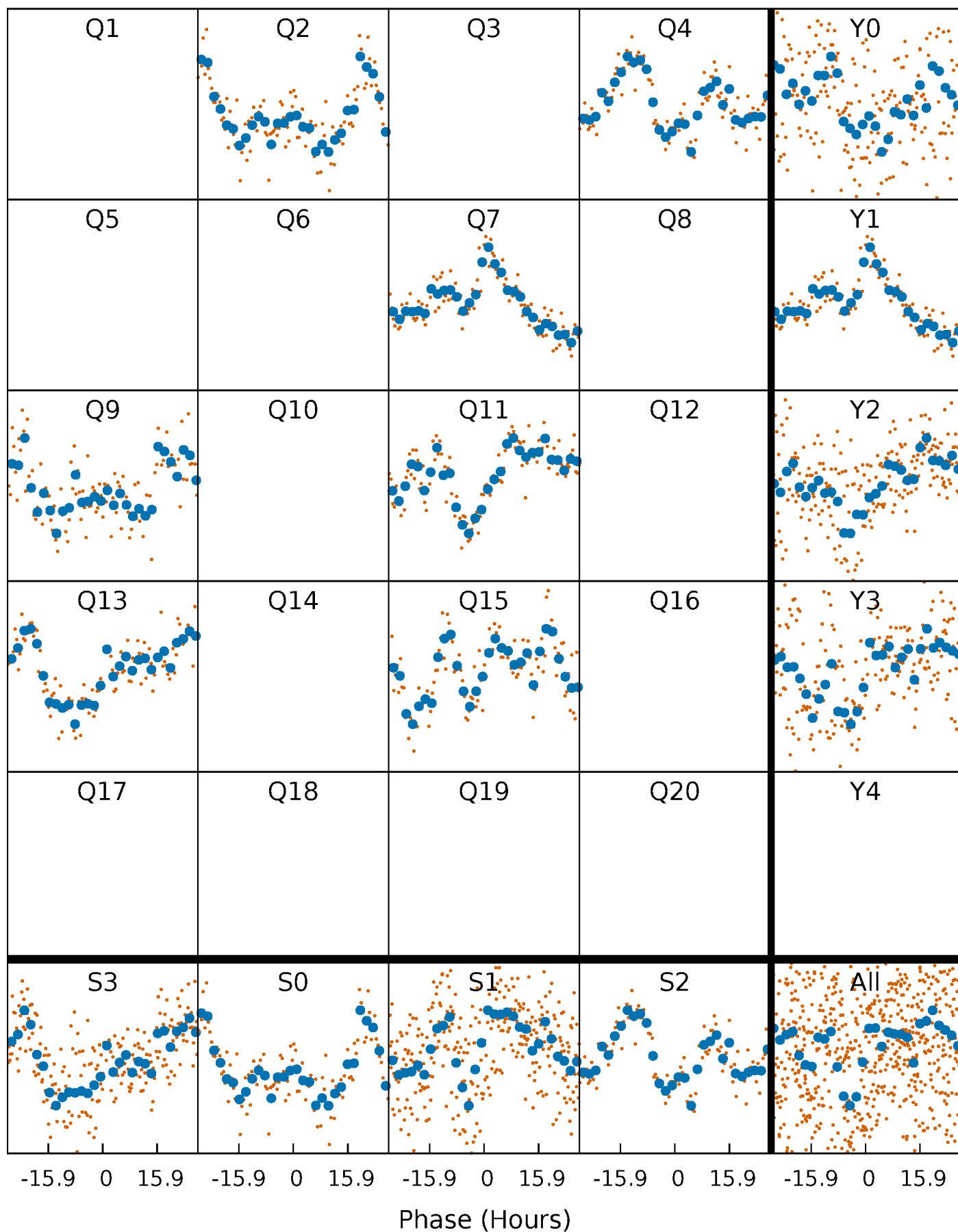


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



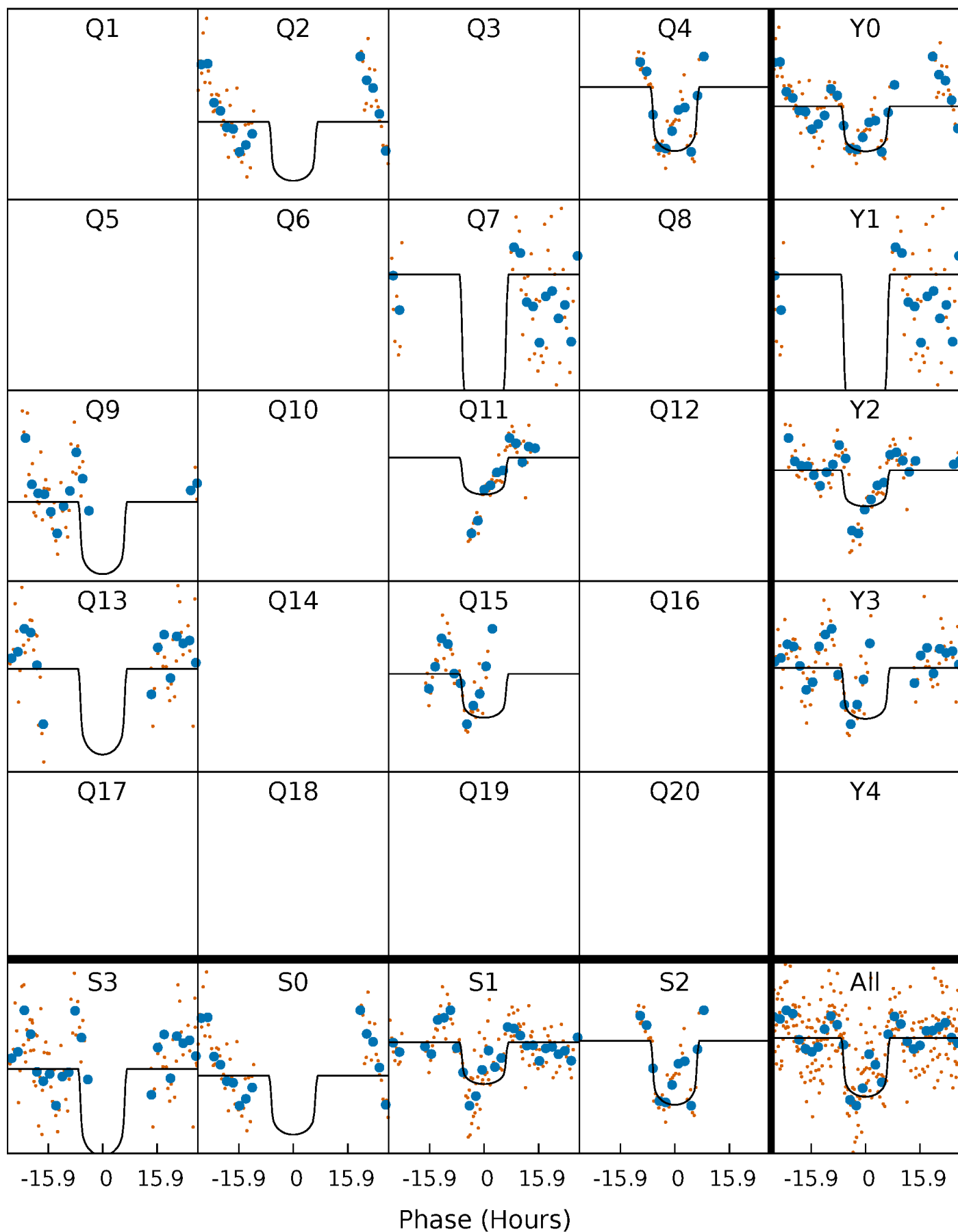
PDC Quarter-Phased Transit Curves

TCE 006381309-06 P=201.856850 Days $T_0=228.851504$ (BKJD)



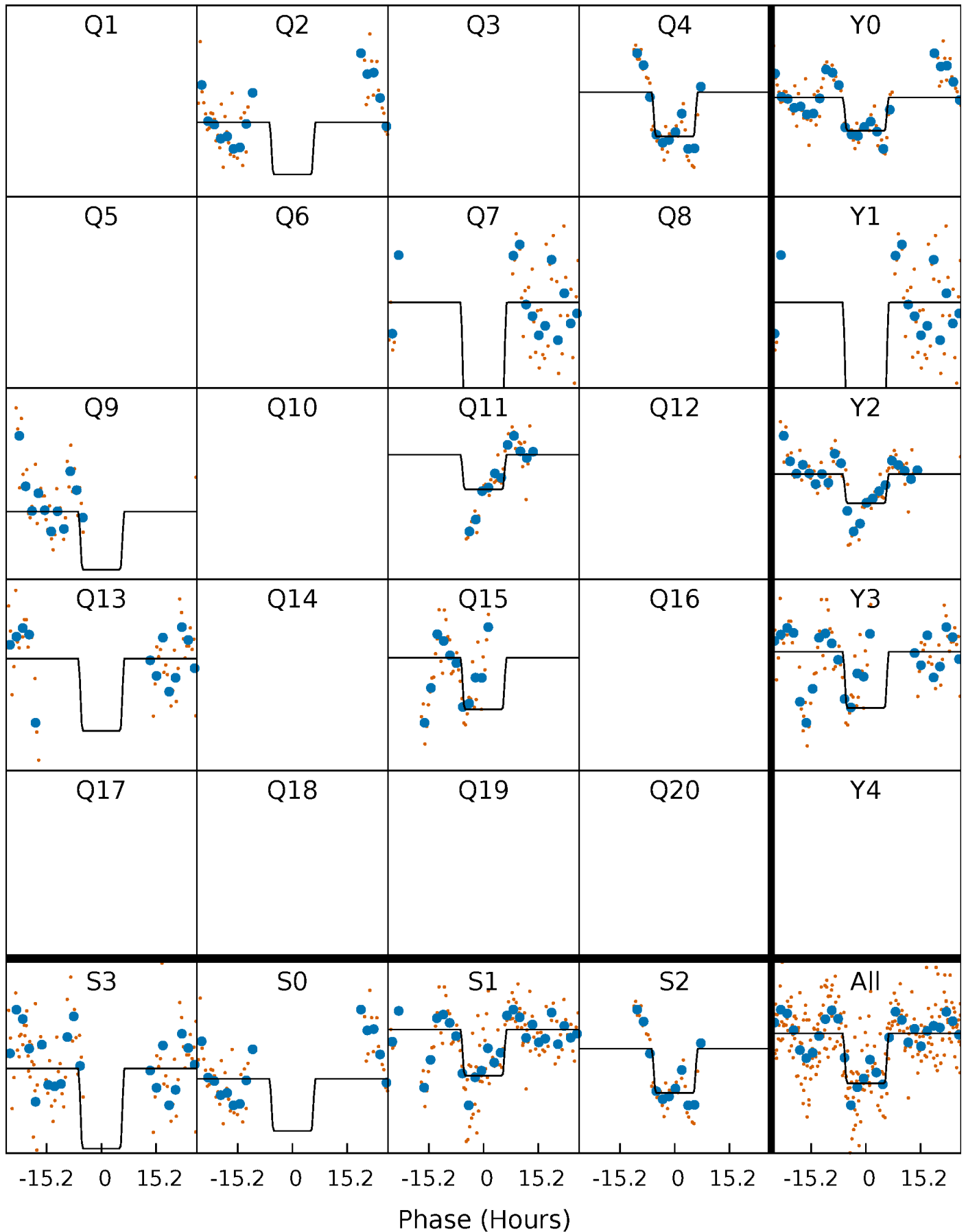
DV Quarter-Phased Transit Curves

TCE 006381309-06 $P=201.856850$ Days $T_0=228.851504$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

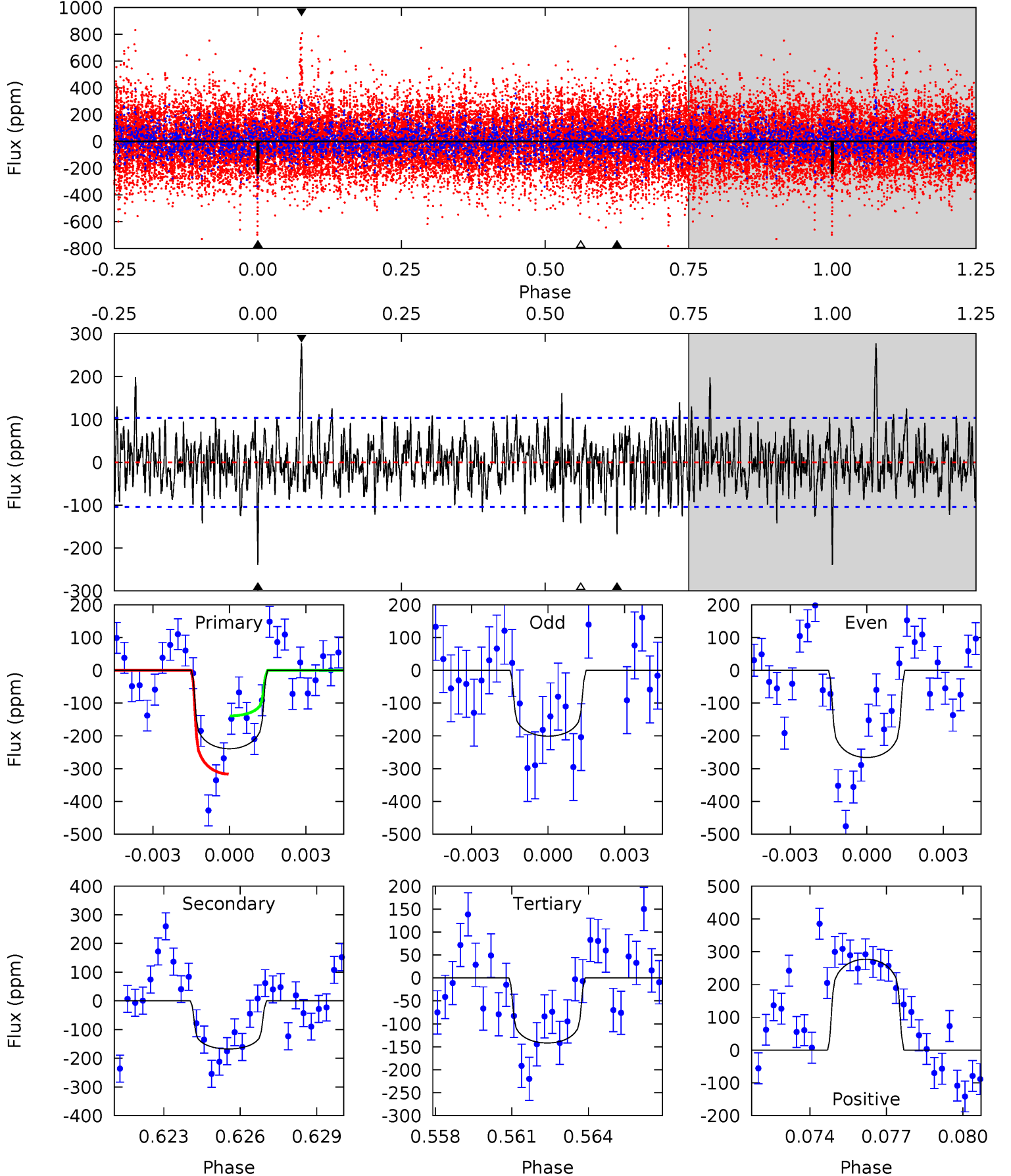
TCE 006381309-06 P=201.856328 Days $T_0=228.864021$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-06, $P = 201.856850$ Days, $E = 26.994654$ Days

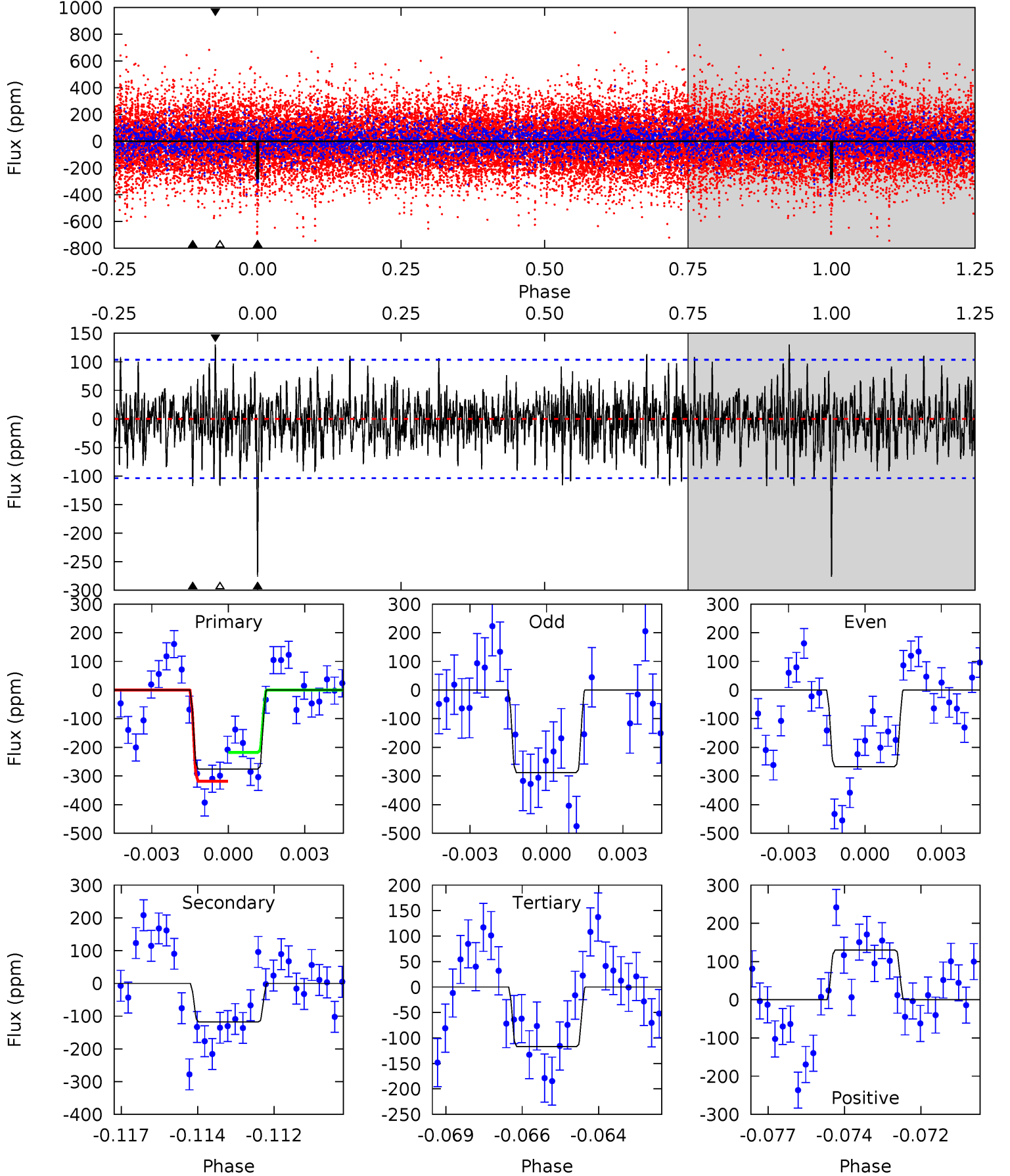
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	8.50	7.18	14.0	5.26	2.97	2.52	4.94	-1.92	1.31	-5.54	1.65	0.84	0.54	4.49



Alt Model-Shift Uniqueness Test

006381309-06, P = 201.856328 Days, E = 27.007693 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	5.99	5.95	6.62	5.28	3.01	1.78	8.09	7.42	0.03	-0.63	0.54	0.92	0.32	2.55



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-168 ± 20	$5.72^{+1.00}_{-1.21}$	772^{+47}_{-74}	5466^{+381}_{-276}	1724^{+907}_{-483}
Alt.	-118 ± 20	$5.20^{+1.01}_{-1.07}$	767^{+50}_{-69}	5250^{+393}_{-324}	1468^{+773}_{-468}

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 $A_{obs} \gg 1.0$

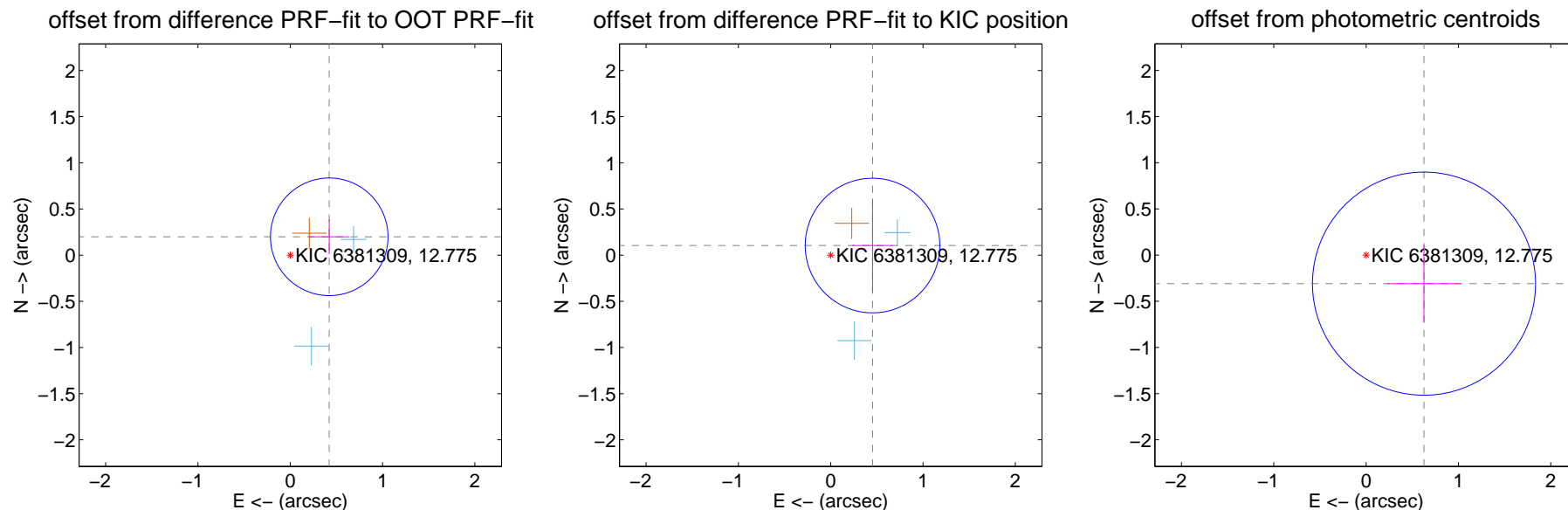
DV Centroid Data

Supplemental centroid analysis for 006381309-06. Kepler magnitude: 12.78. Transit SNR 8.13

There are 2 quarters with good PRF difference image offsets

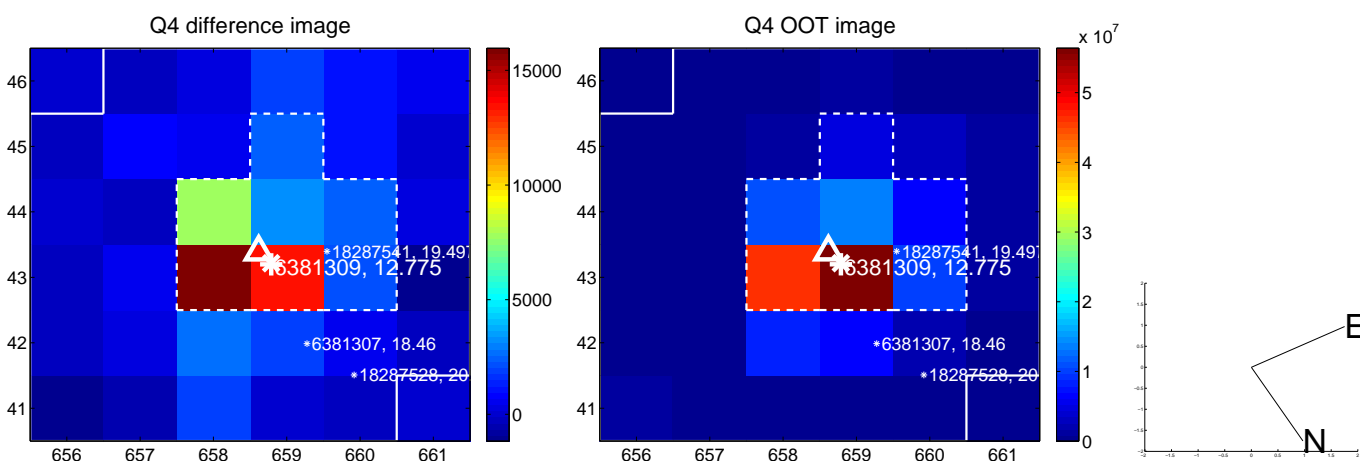
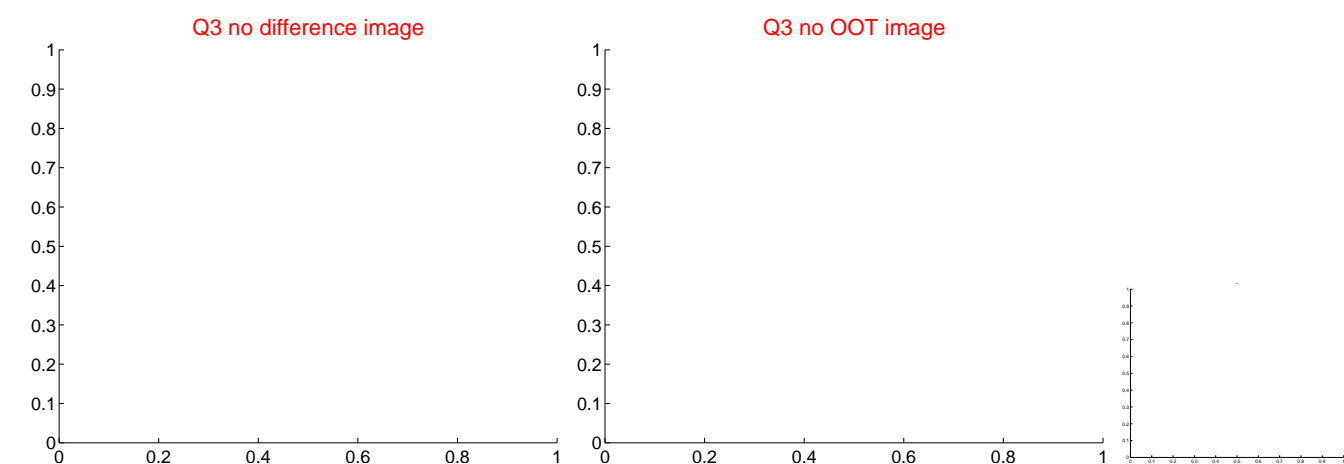
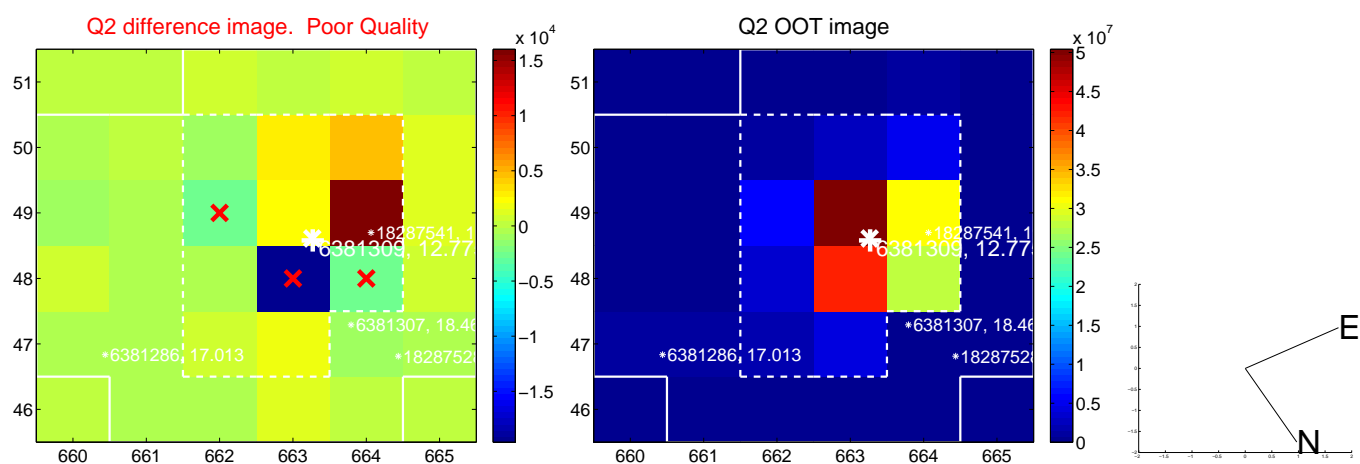
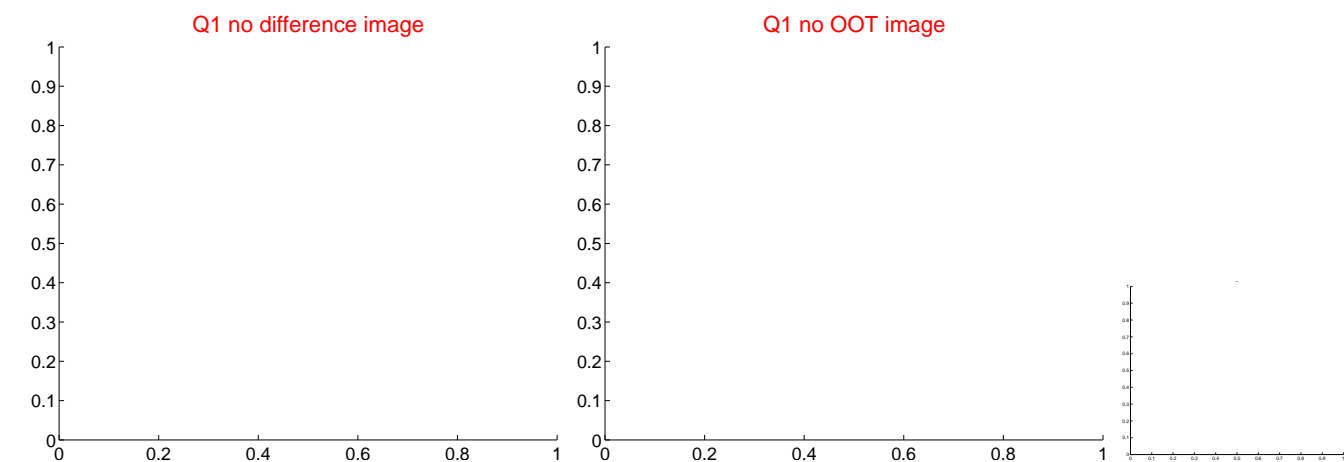
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.467 ± 0.212	2.20	-0.422 ± 0.217	0.199 ± 0.189
PRF-fit source offset from KIC position	0.464 ± 0.243	1.91	-0.453 ± 0.220	0.104 ± 0.508
photometric centroid source offset	0.70 ± 0.40	1.74	-0.63 ± 0.40	-0.31 ± 0.42

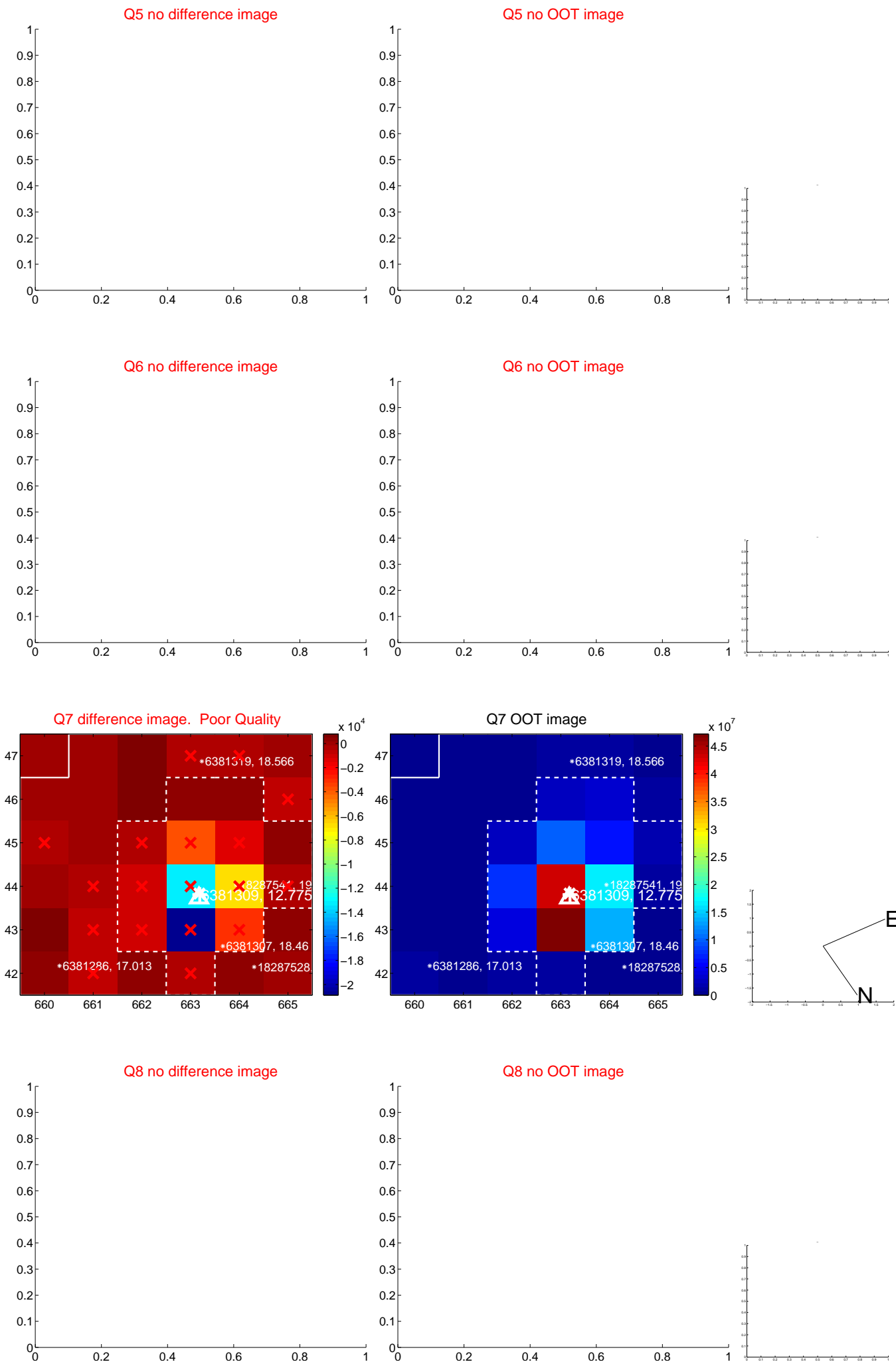


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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.

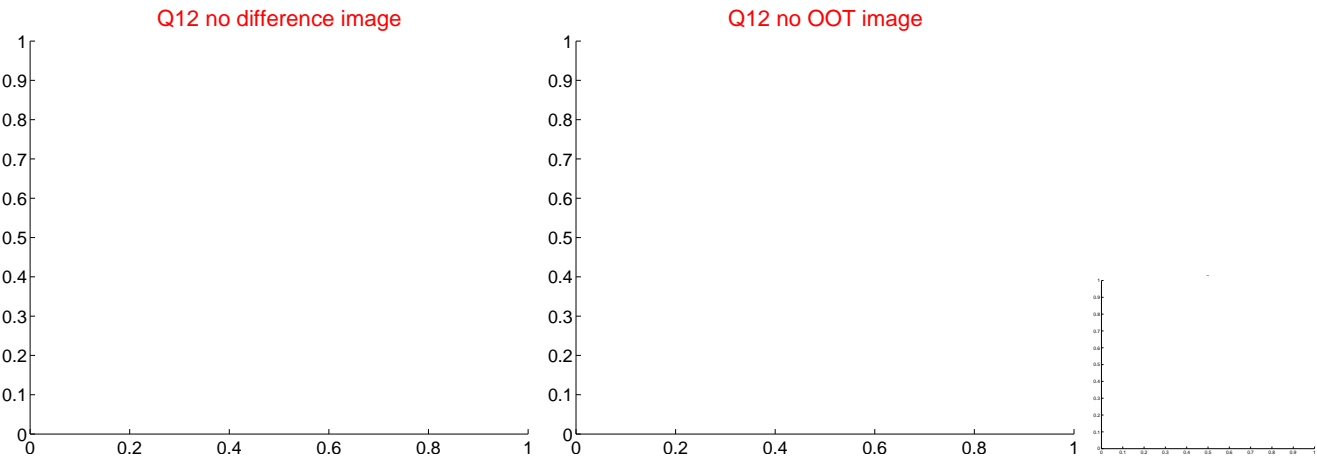
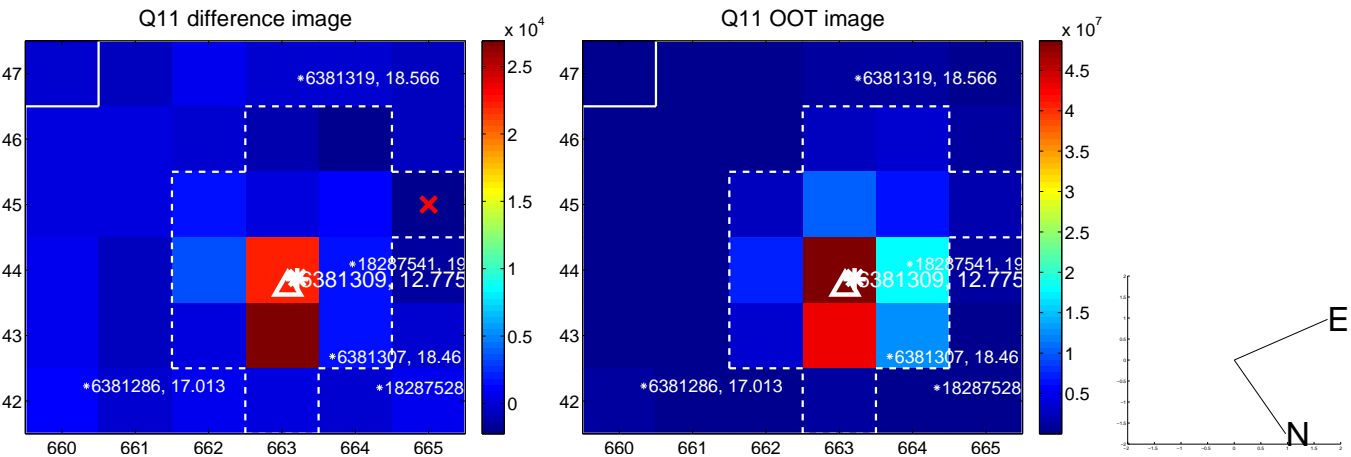
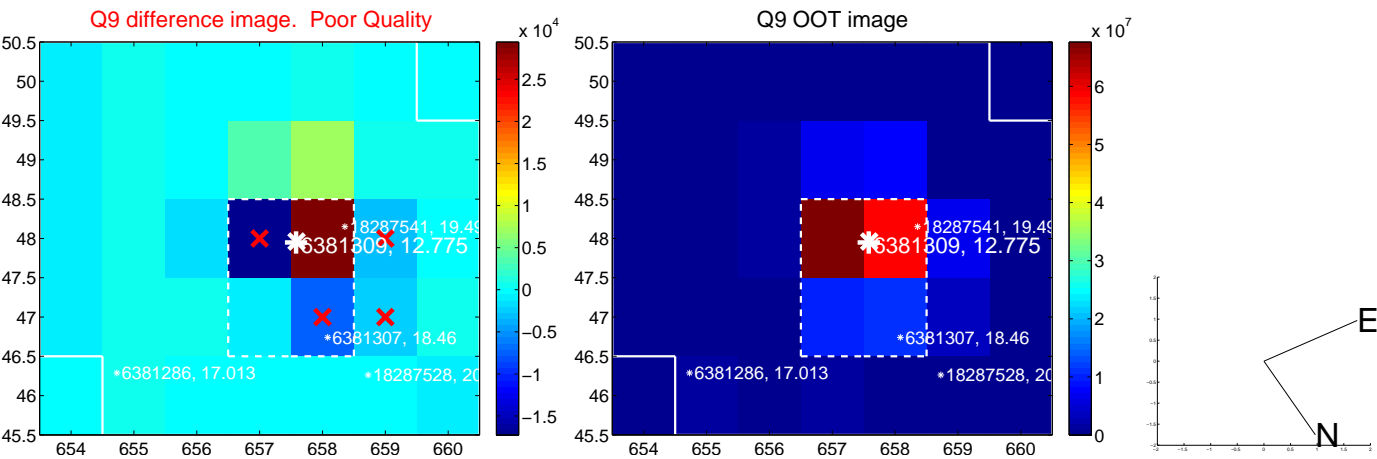
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



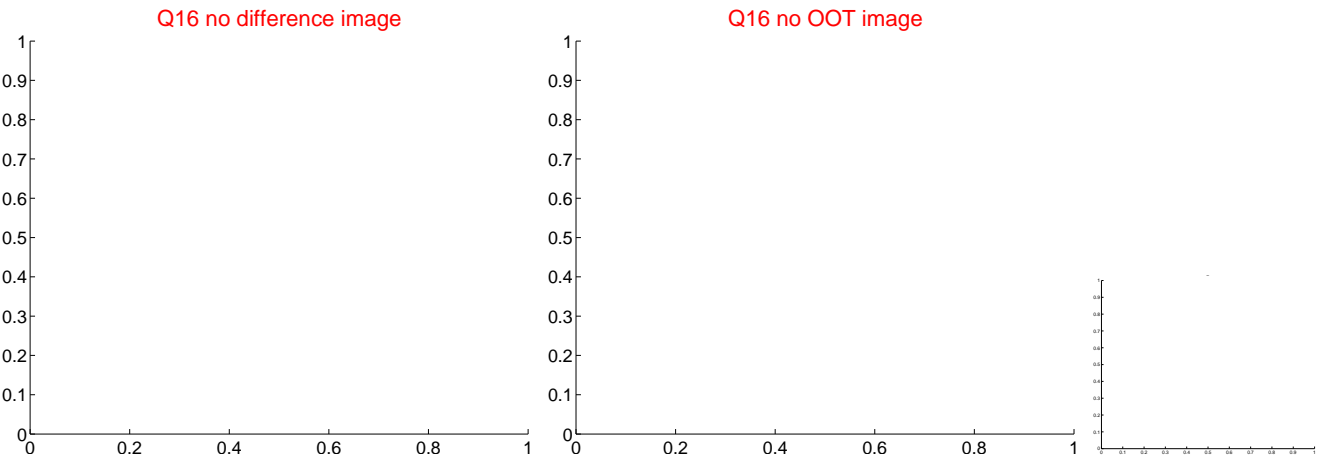
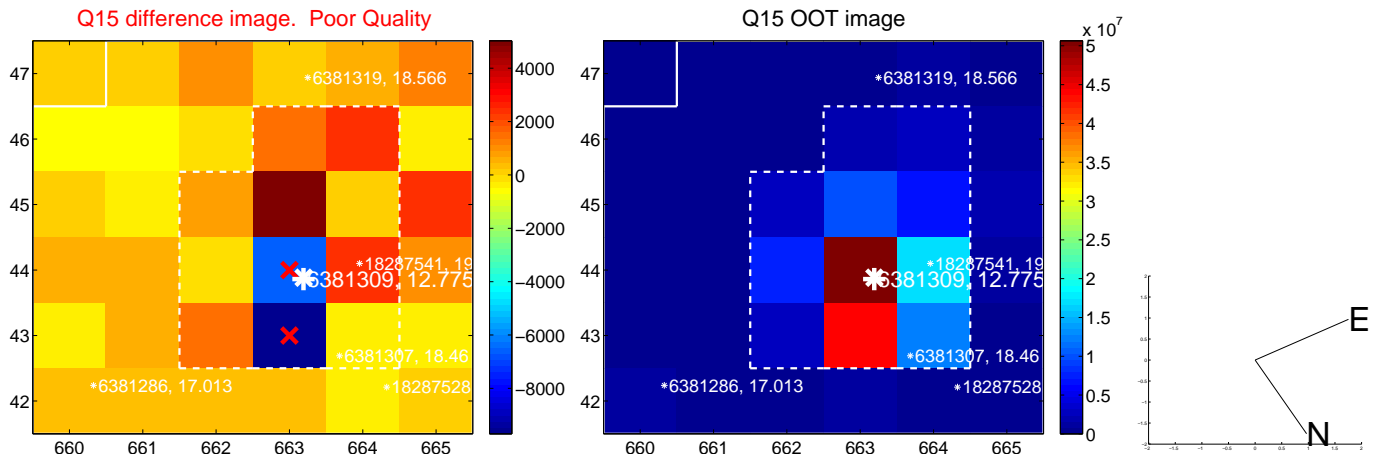
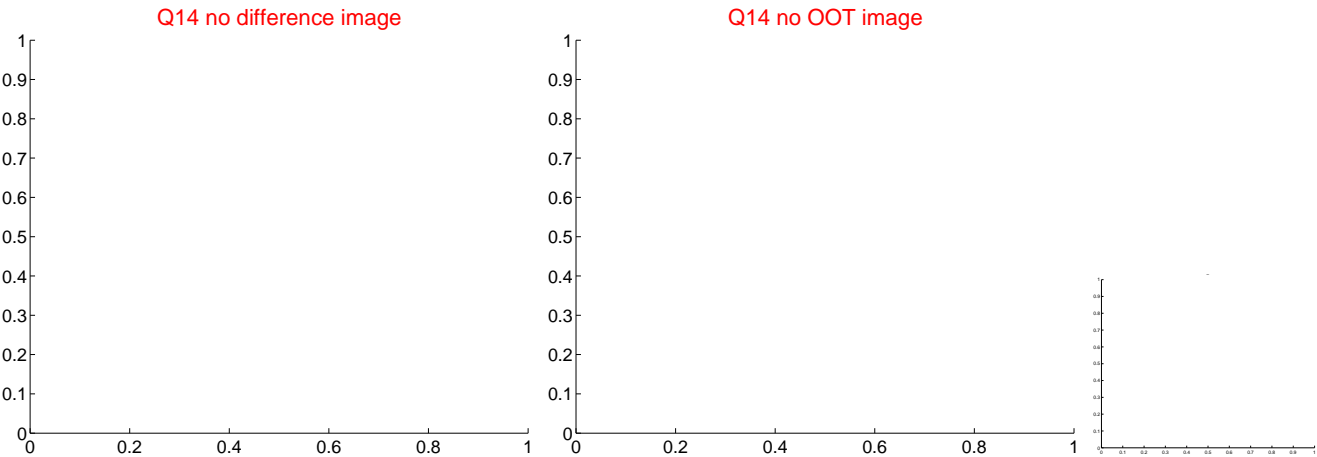
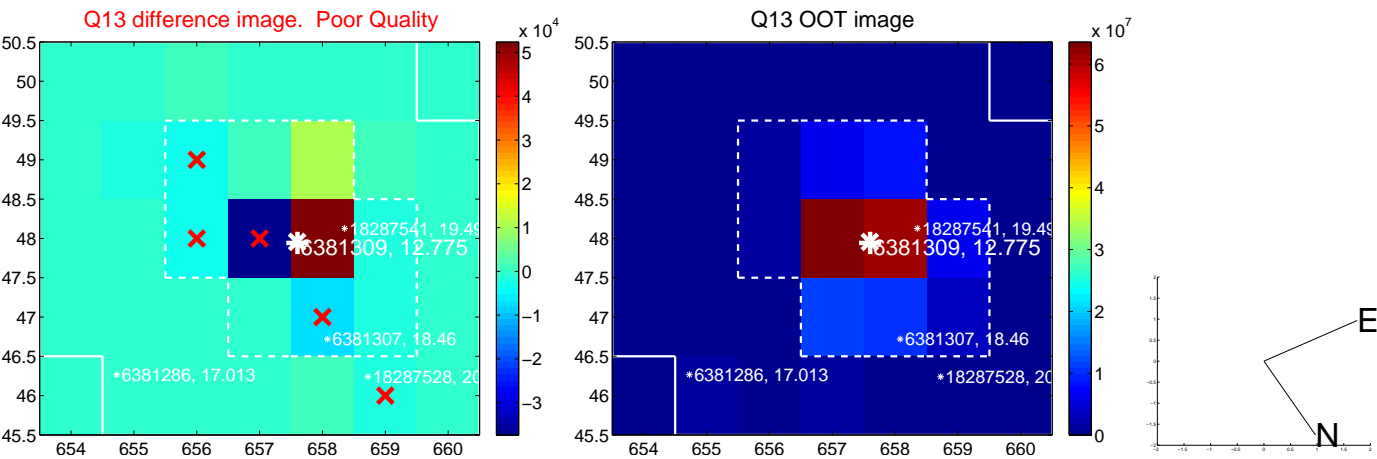
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



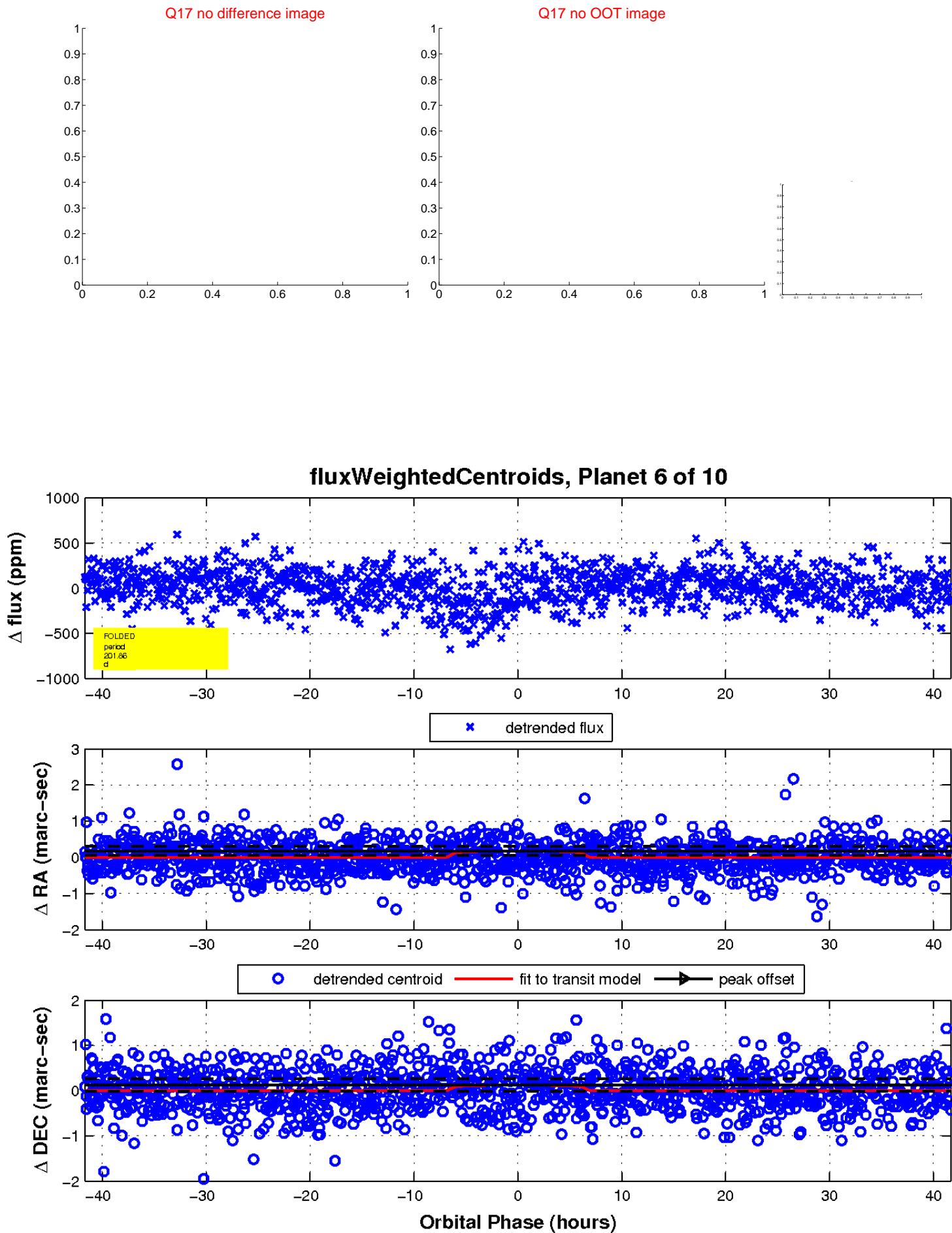
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white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

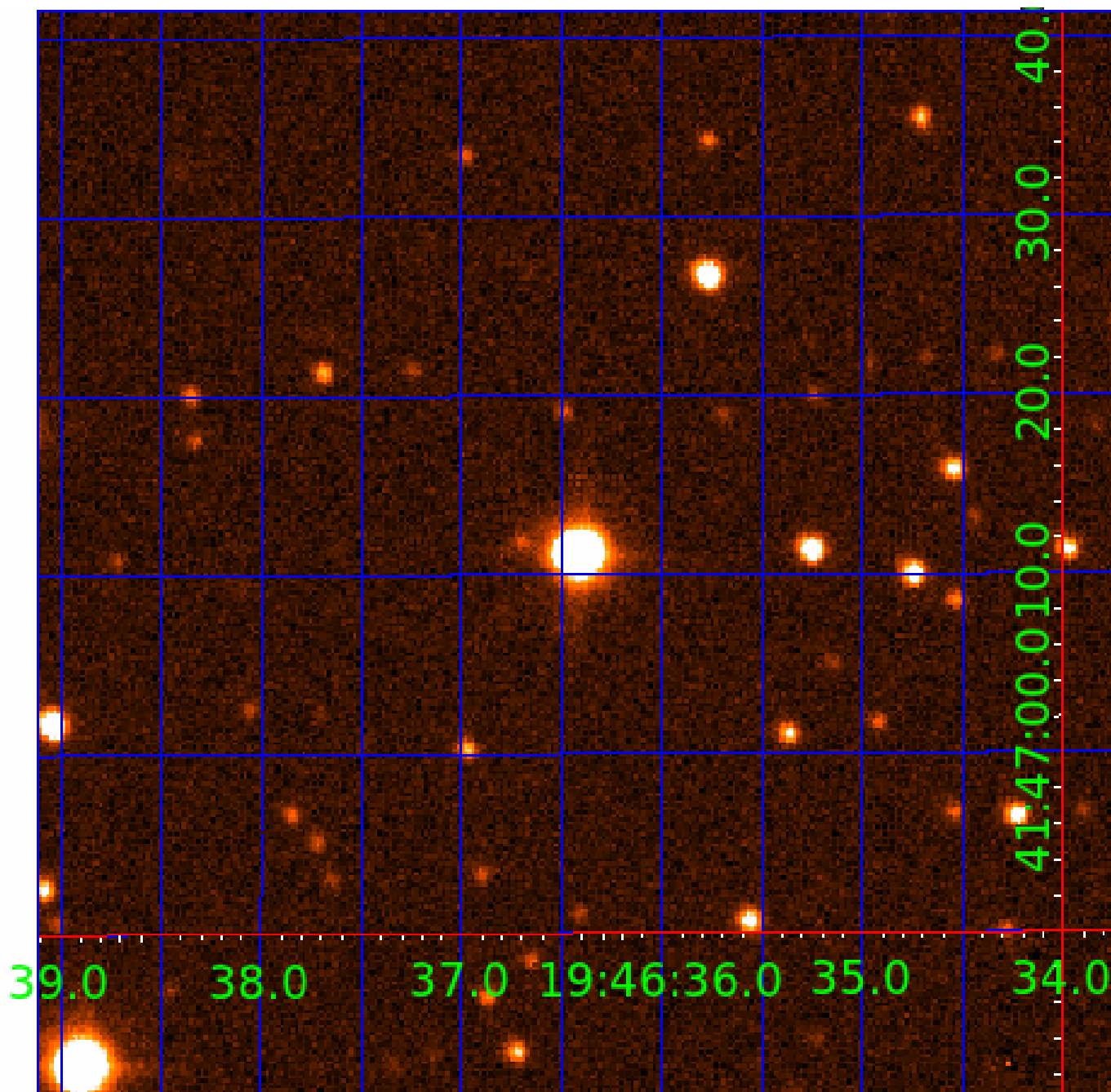


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

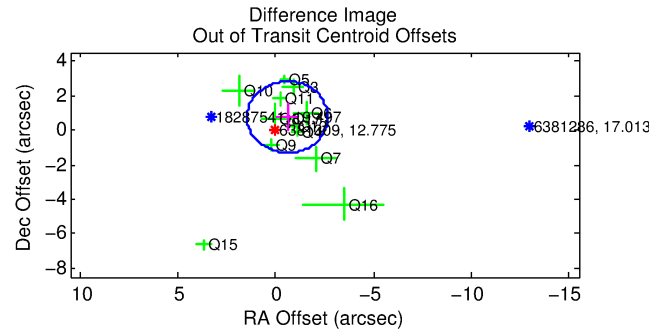
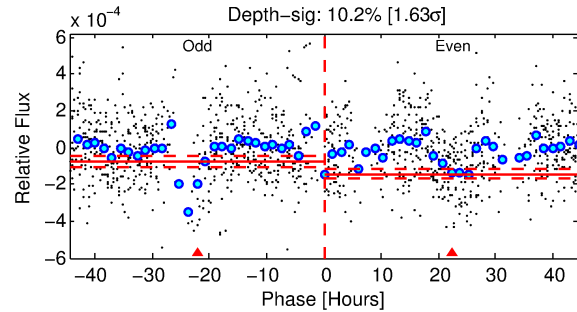
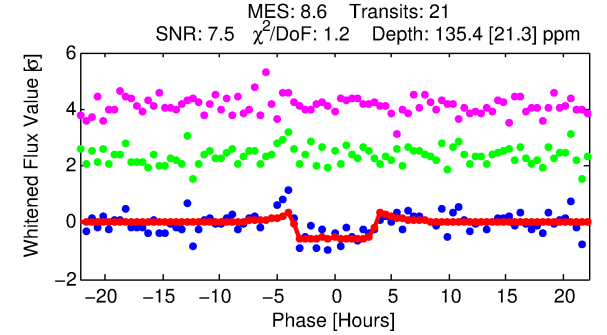
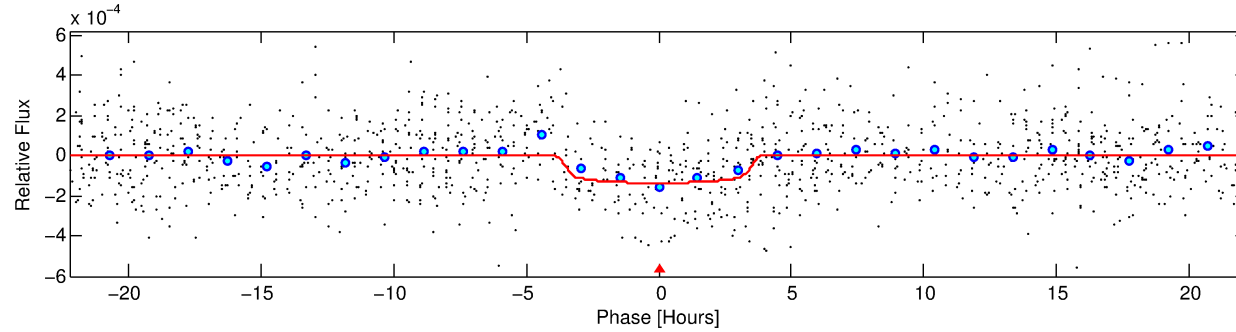
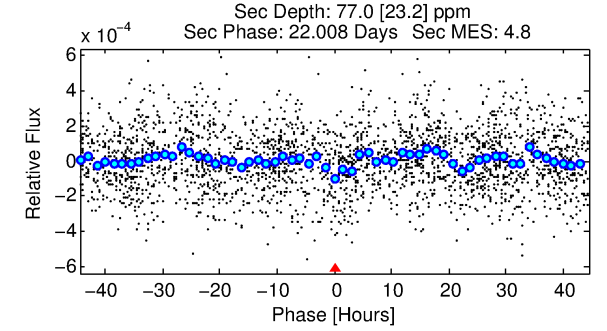
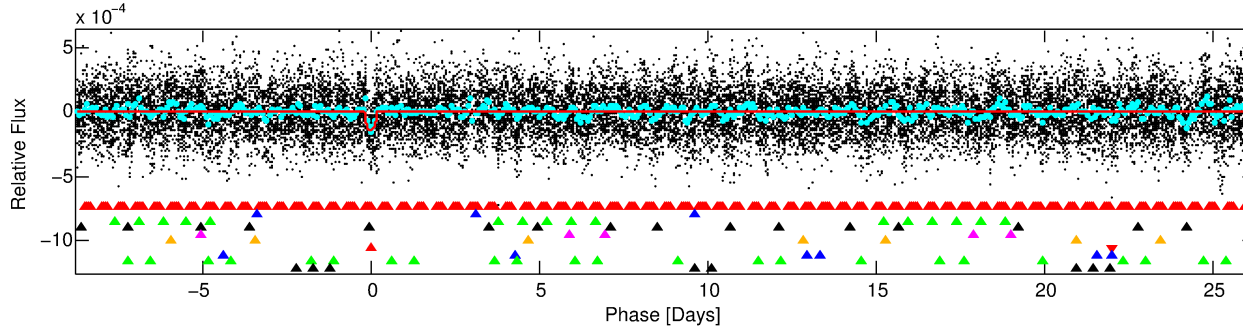
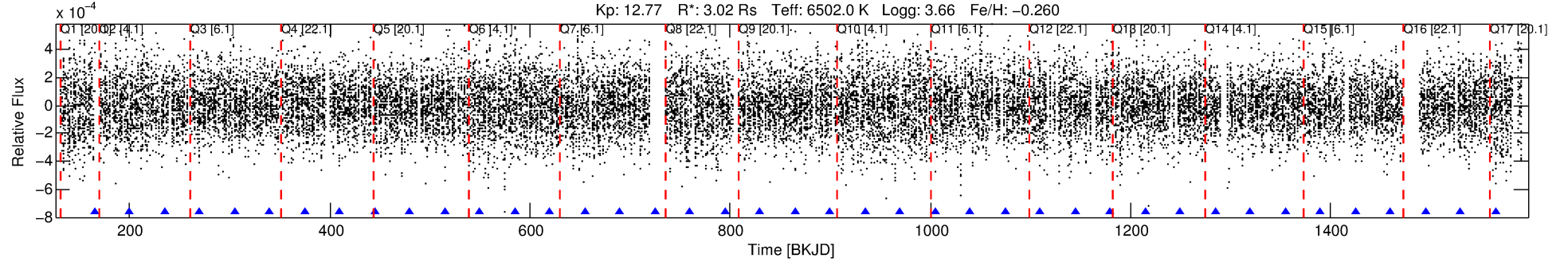
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-07

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 7 of 10 Period: 34.998 d



DV Fit Results:

Period = 34.99752 [0.00044] d
Epoch = 164.7775 [0.0107] BKJD
Rp/R* = 0.0122 [0.0044]
a/R* = 18.53 [36.75]
b = 0.87 [0.55]
Seff = 253.34 [153.08]
Teq = 1017 [154] K
Rp = 4.02 [2.10] Re
a = 0.2401 [0.0883] AU
Ag = 150.97 [147.48] [1.02σ]
Teffp = 5513 [1084] K [4.11σ]

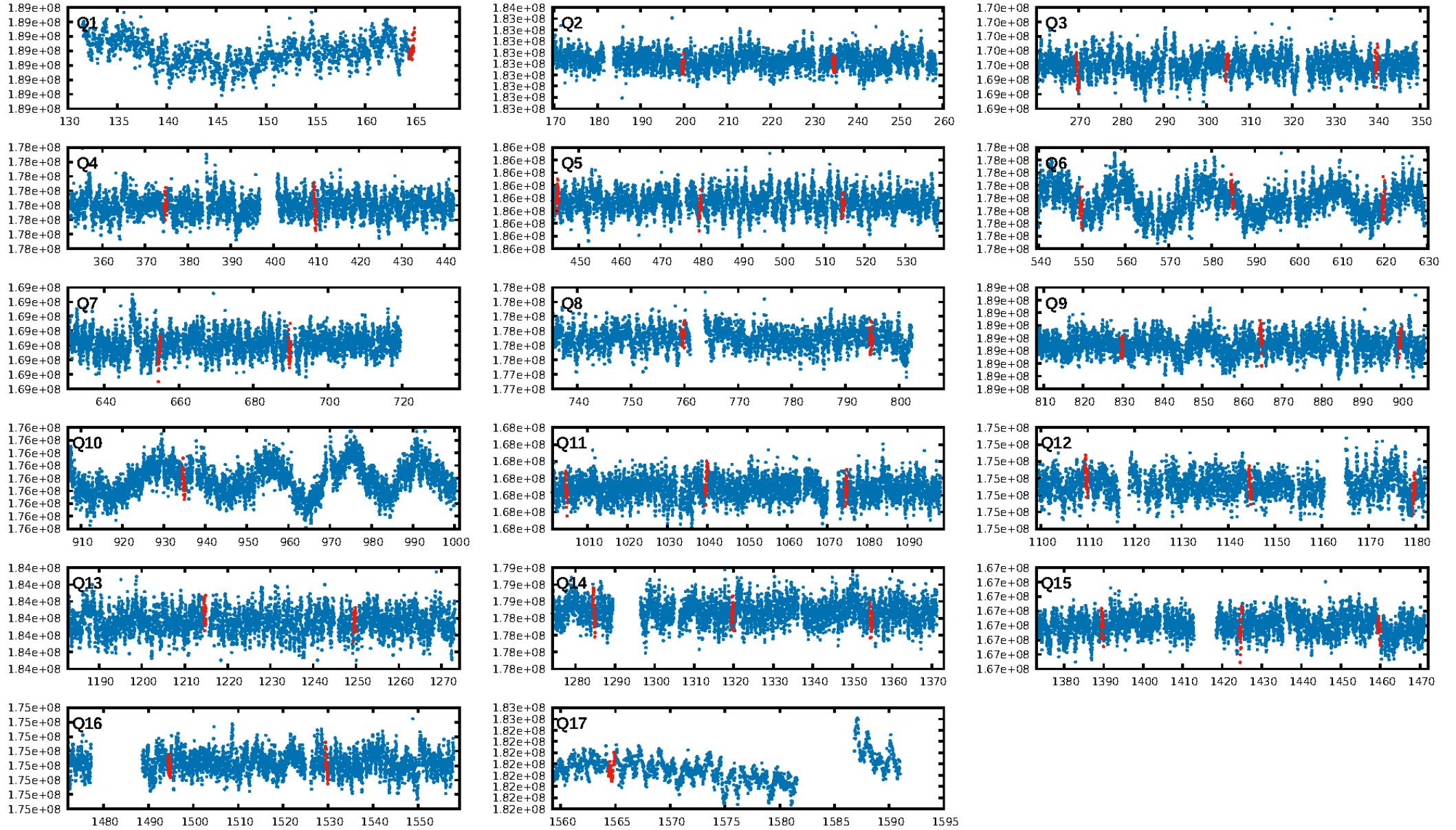
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.87σ]
LongPeriod-sig: 100.0% [77.83σ]
ModelChiSquare2-sig: 5.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [19/19]
GhostDiagnostic-chr: -15.68
Centroid-sig: 44.0%
Centroid-so: 0.340 arcsec [0.78σ]
OotOffset-rm: 0.957 arcsec [1.39σ]
OotOffset-st: 2/4/3/4 [13]
KicOffset-rm: 0.999 arcsec [1.45σ]
KicOffset-st: 2/4/3/4 [13]
DiffImageQuality-fgm: 0.46 [6/13]
DiffImageOverlap-fno: 0.50 [8/16]

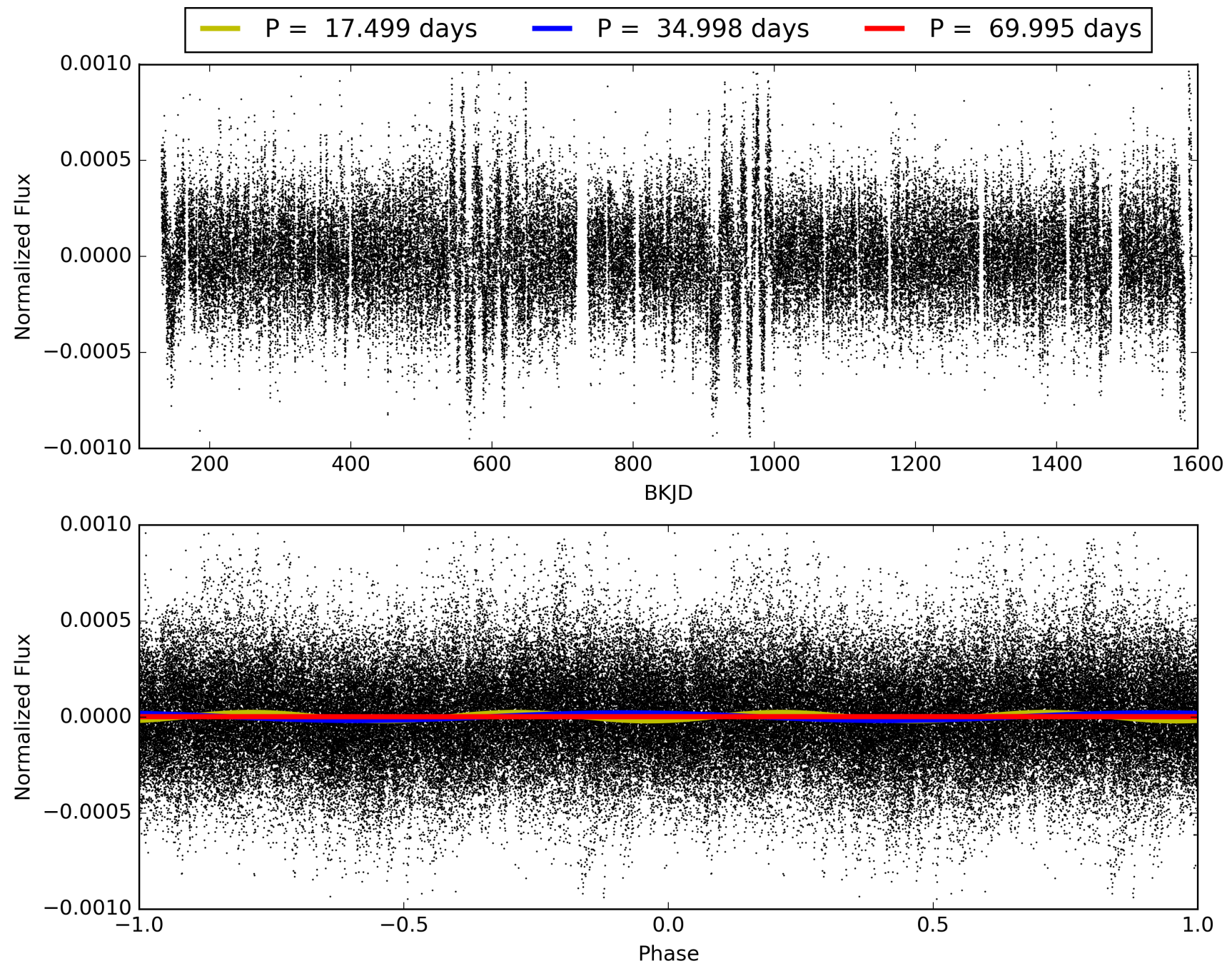
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:34:20 Z

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

TCE 006381309-07, PDC Light Curves

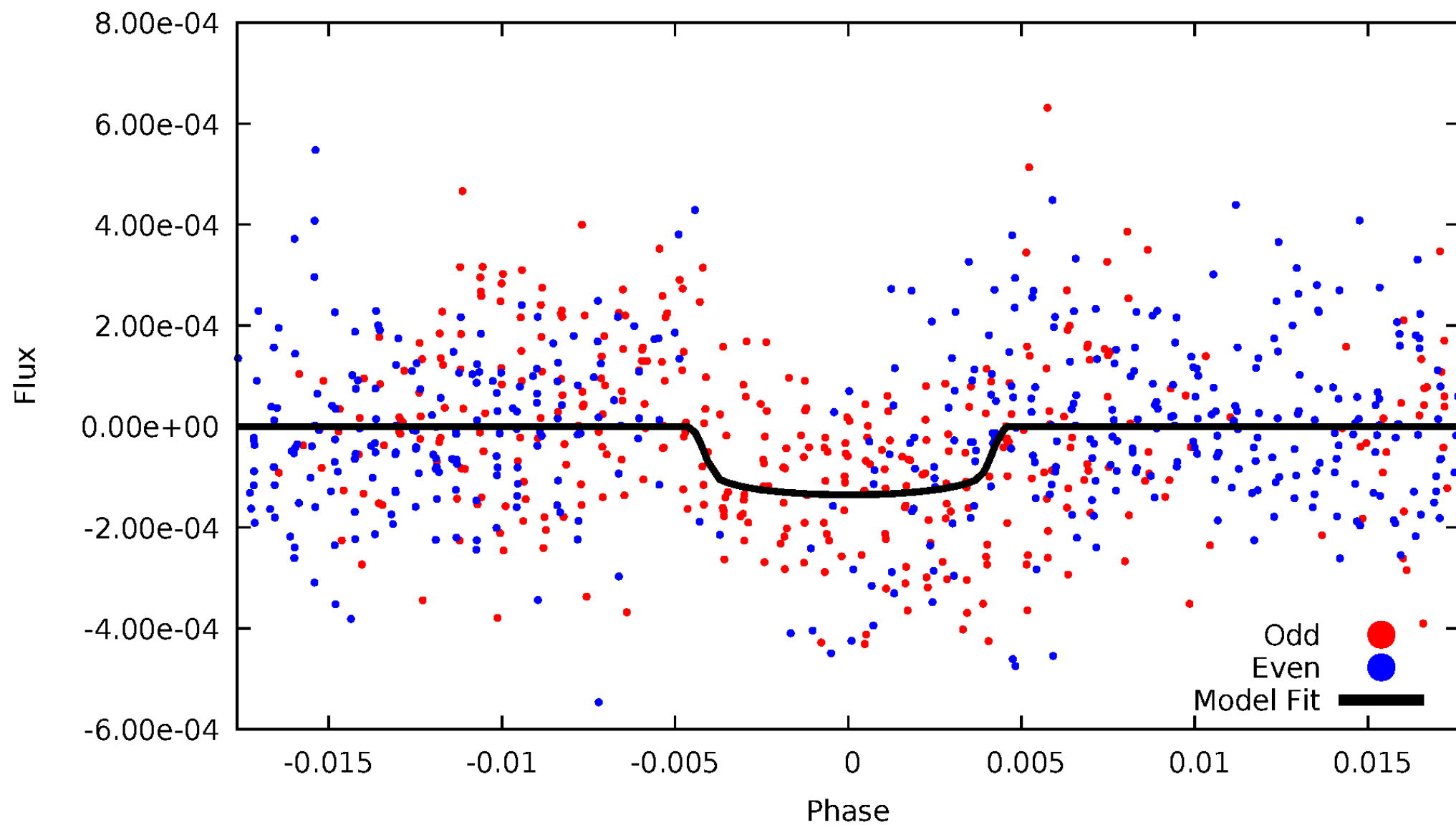


TCE 006381309-07



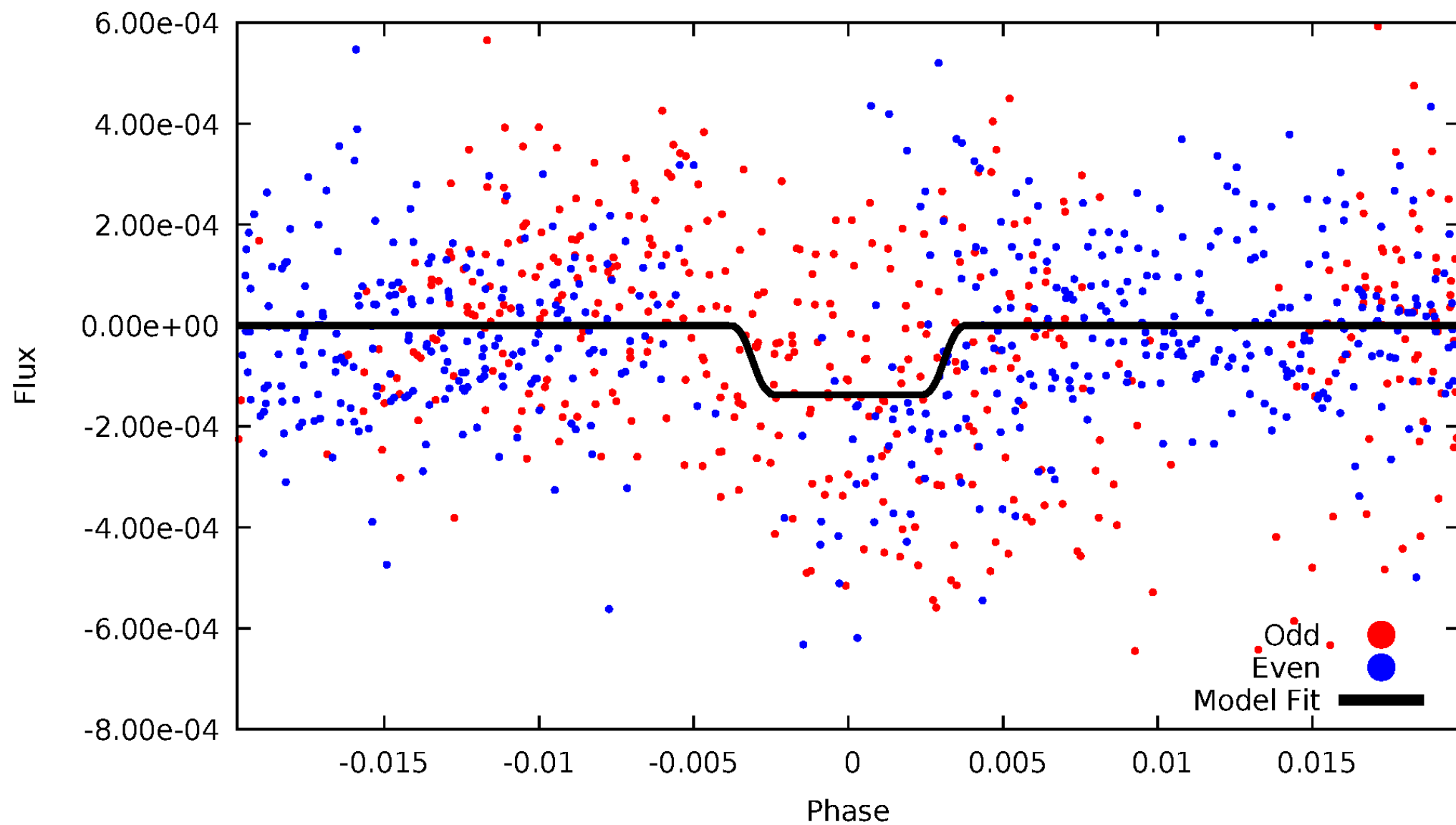
DV Odd/Even

TCE 006381309-07

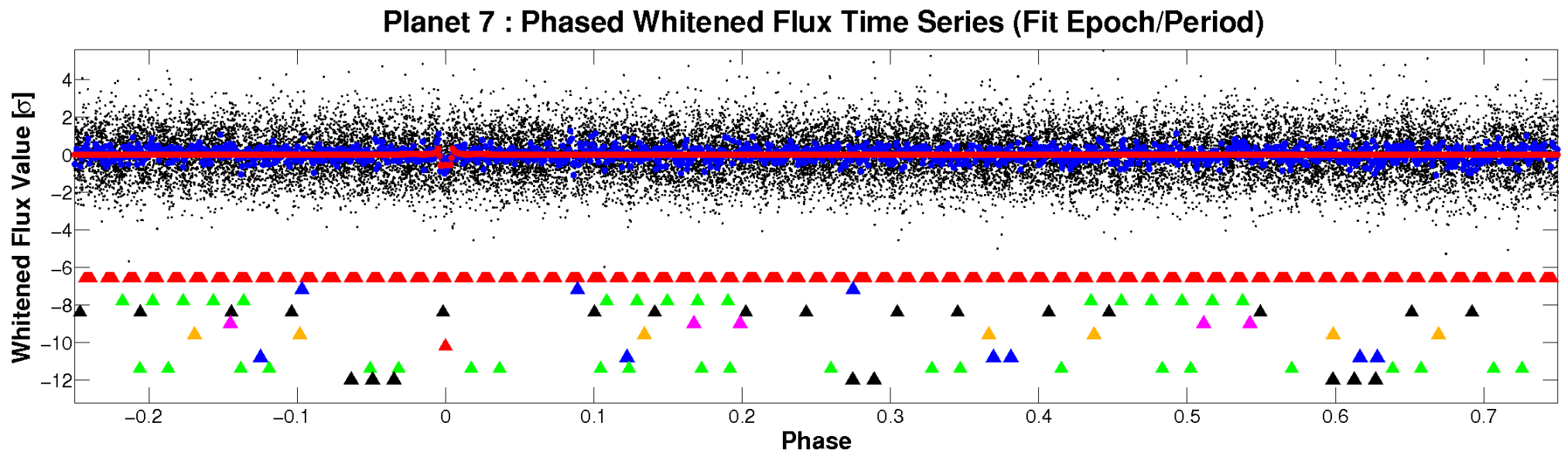
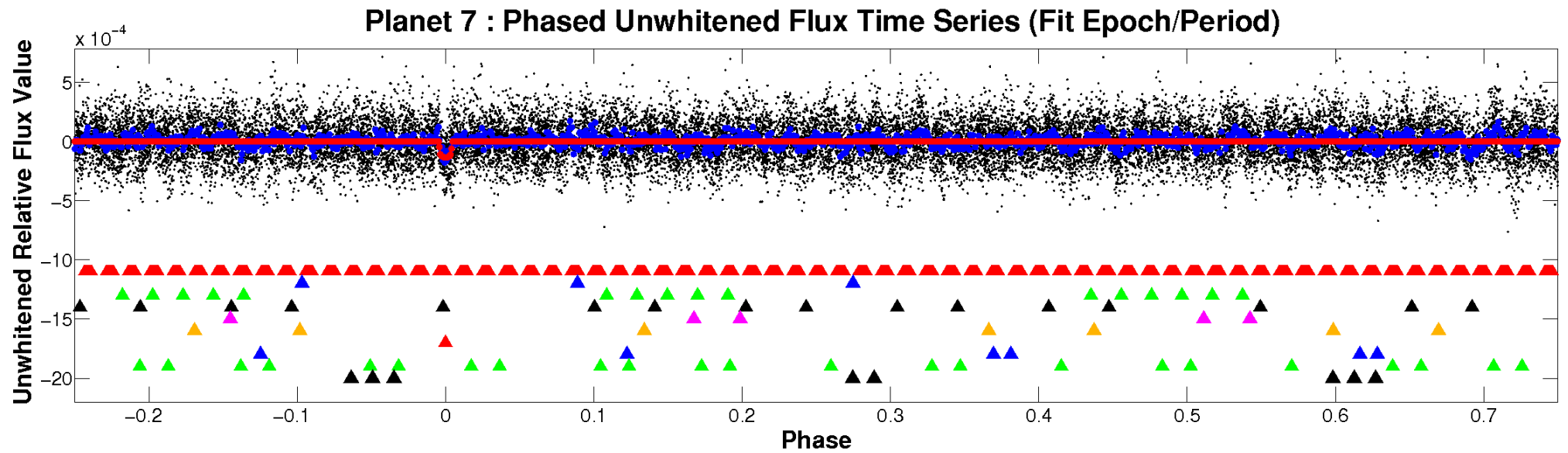


ALT Odd/Even

TCE 006381309-07

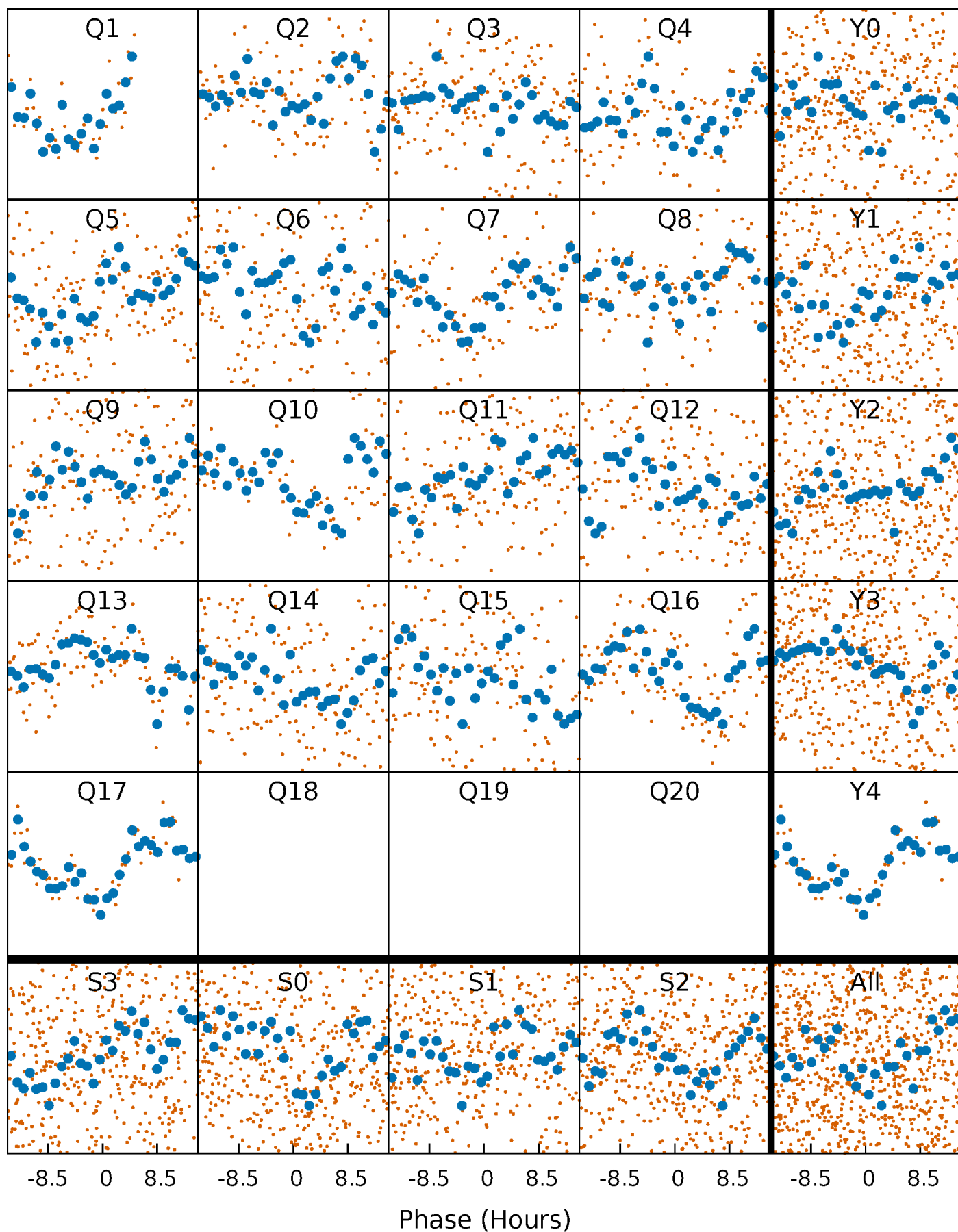


Non-Whitened Vs. Whitened Light Curve



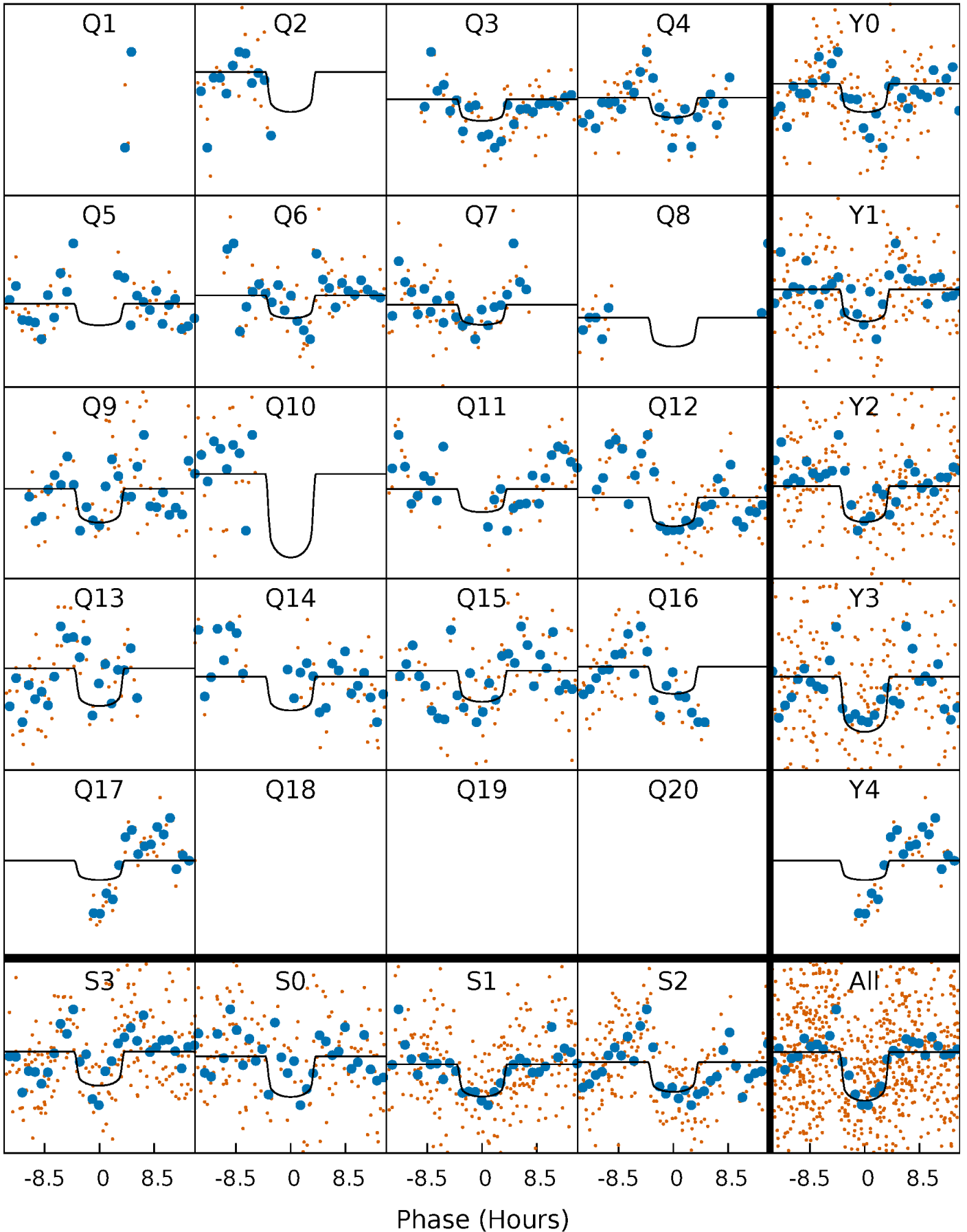
PDC Quarter-Phased Transit Curves

TCE 006381309-07 $P = 34.997523$ Days $T_0 = 164.777492$ (BKJD)



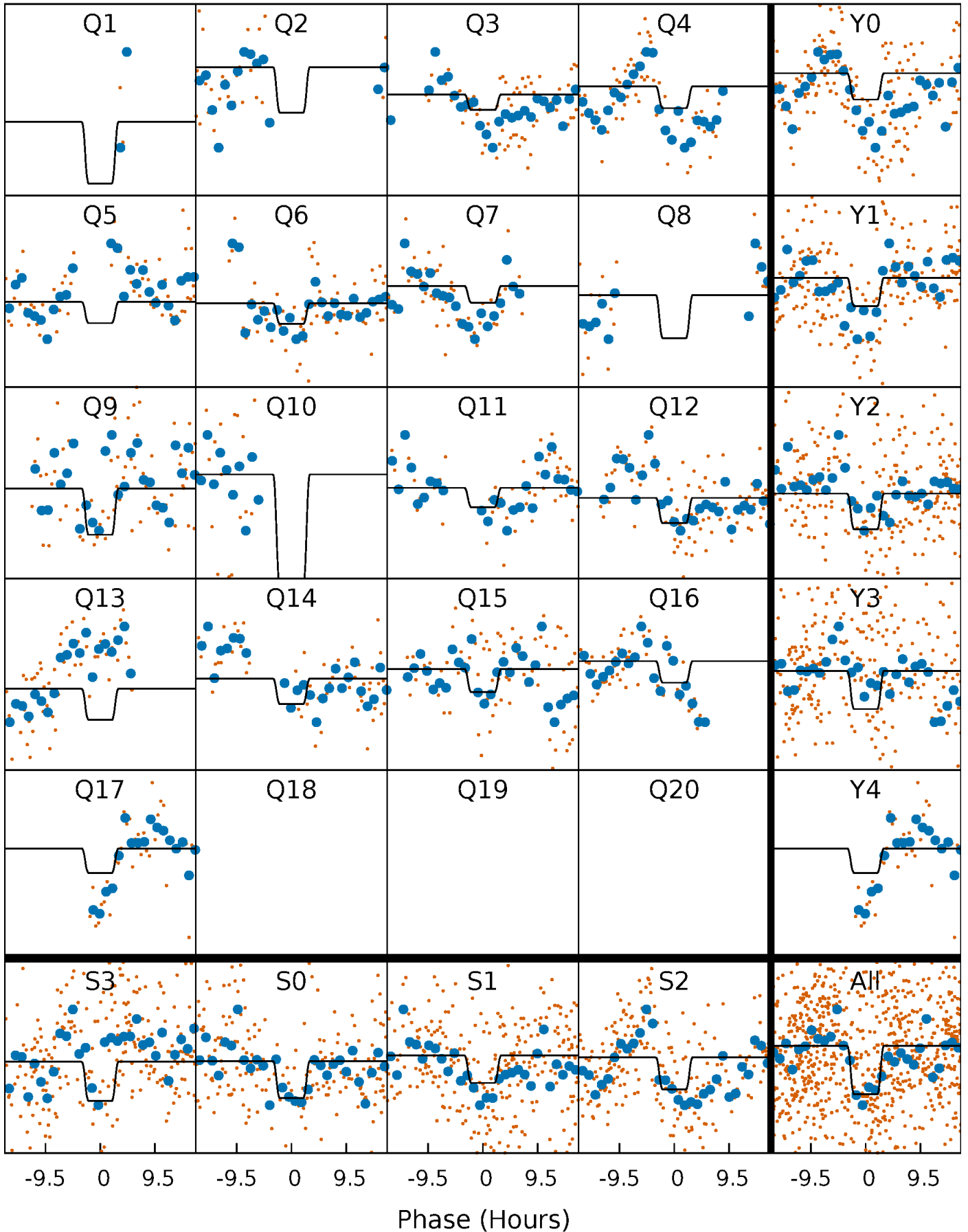
DV Quarter-Phased Transit Curves

TCE 006381309-07 $P = 34.997523$ Days $T_0 = 164.777492$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

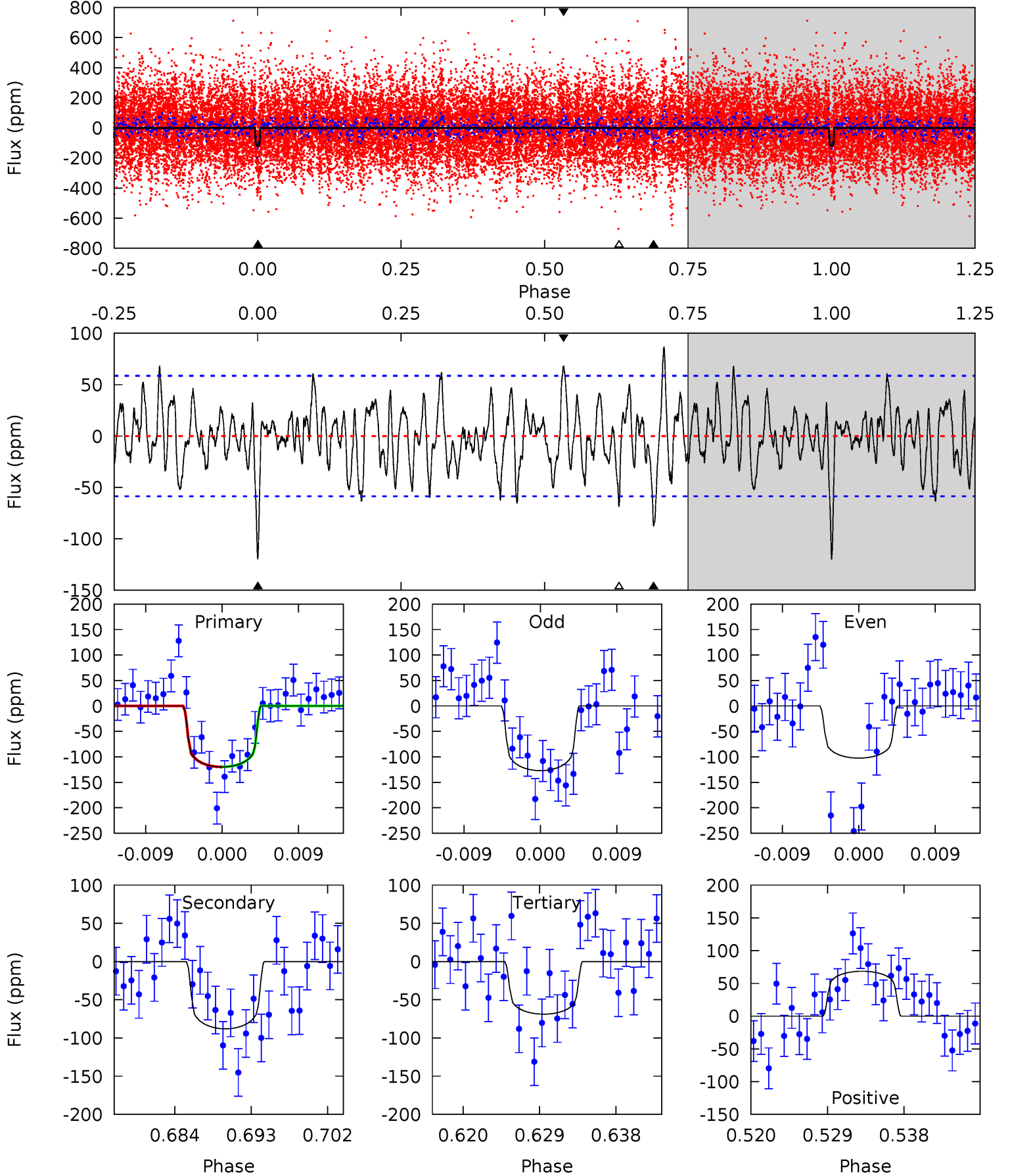
TCE 006381309-07 $P = 34.997354$ Days $T_0 = 164.798549$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-07, P = 34.997523 Days, E = 129.779969 Days

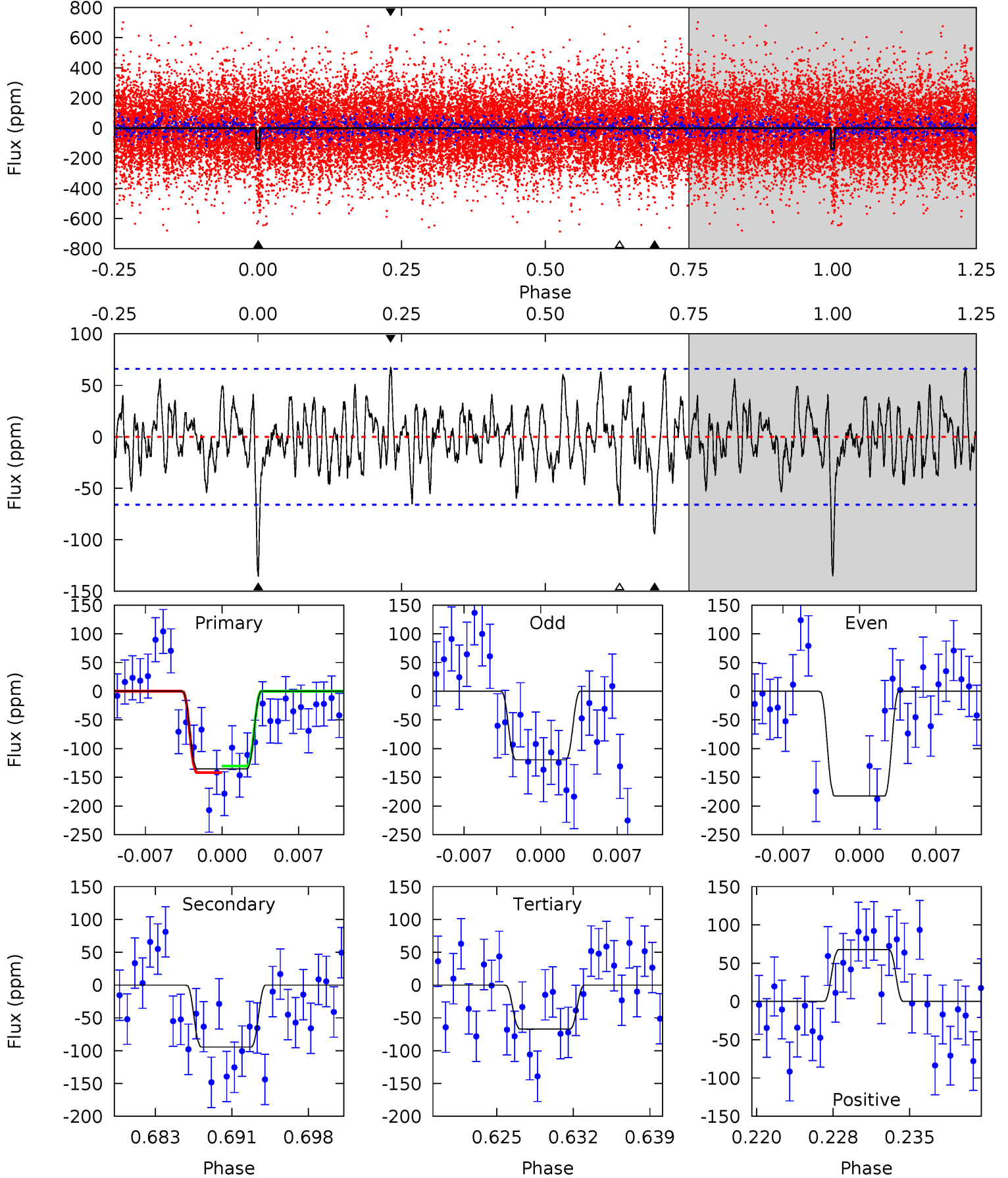
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	7.58	5.93	5.90	5.04	2.61	2.24	4.38	4.41	1.65	1.68	0.97	0.88	0.42	0.01



Alt Model-Shift Uniqueness Test

006381309-07, P = 34.997354 Days, E = 129.801195 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	7.28	5.17	5.23	5.09	2.68	1.81	5.26	5.21	2.11	2.06	2.29	0.71	0.33	0.42



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-88 ± 12	$3.80^{+1.51}_{-1.40}$	1387^{+90}_{-124}	5693^{+1433}_{-750}	200^{+297}_{-102}
Alt.	-94 ± 13	$3.60^{+1.53}_{-1.46}$	1387^{+81}_{-130}	5852^{+1787}_{-779}	233^{+447}_{-119}

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 $A_{obs} \gg 1.0$

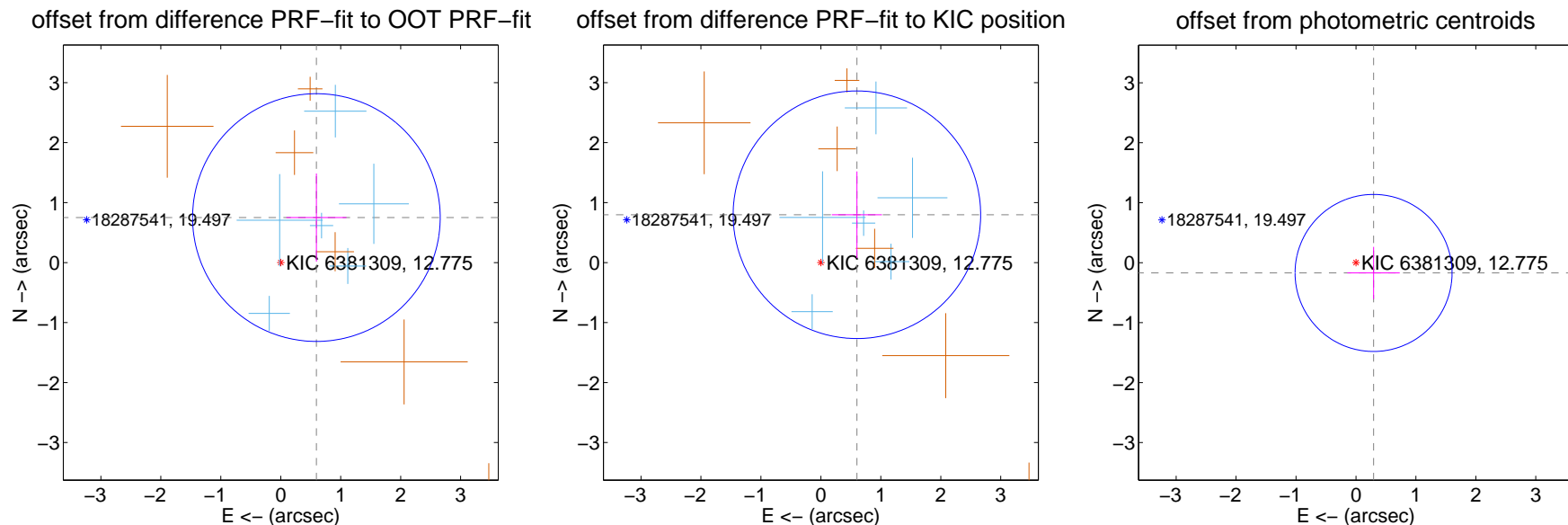
DV Centroid Data

Supplemental centroid analysis for 006381309-07. Kepler magnitude: 12.78. Transit SNR 7.54

There are 6 quarters with good PRF difference image offsets

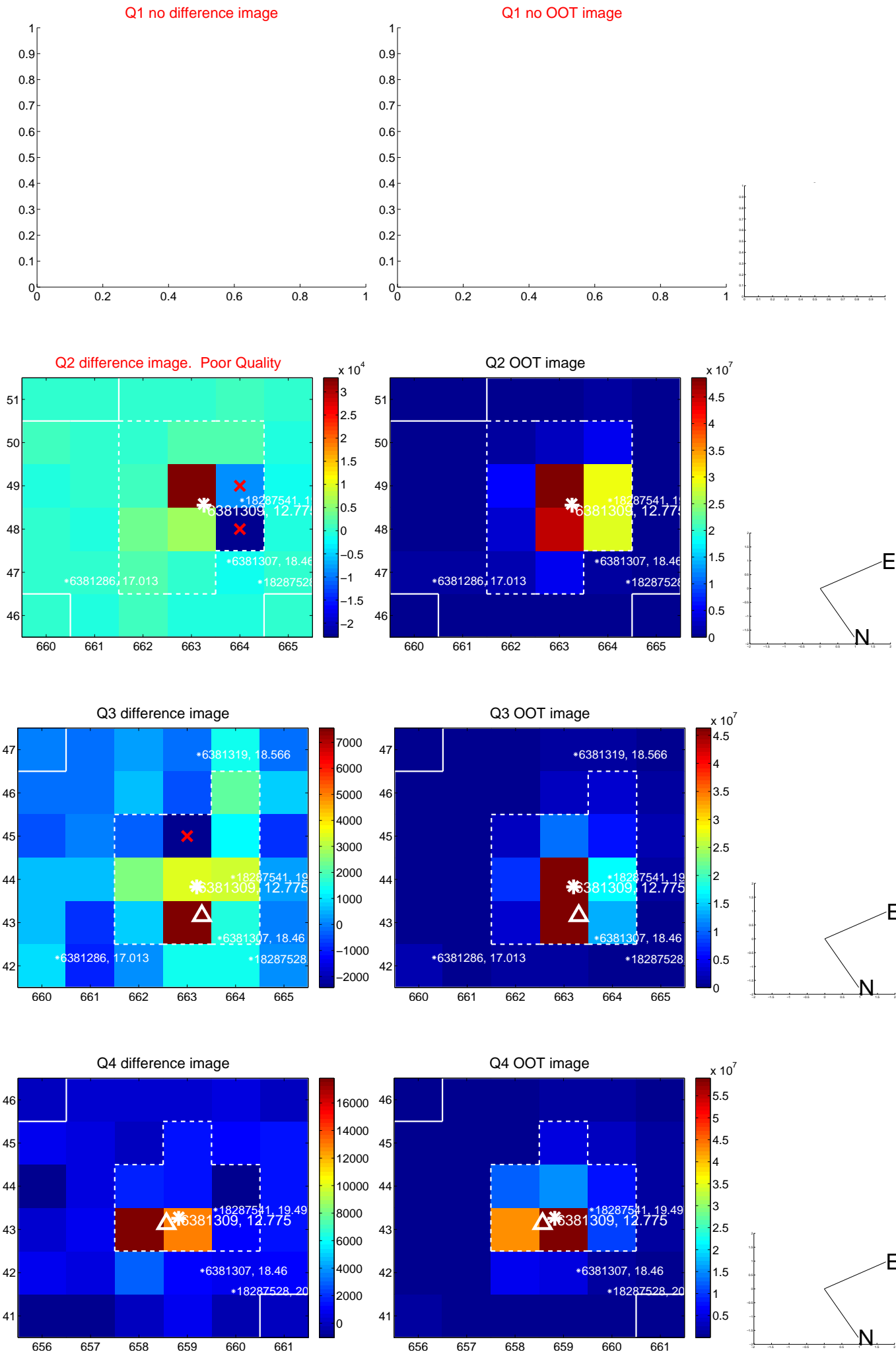
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.957 ± 0.688	1.39	-0.594 ± 0.501	0.751 ± 0.735
PRF-fit source offset from KIC position	0.999 ± 0.688	1.45	-0.601 ± 0.417	0.798 ± 0.723
photometric centroid source offset	0.34 ± 0.44	0.78	-0.29 ± 0.44	-0.17 ± 0.43

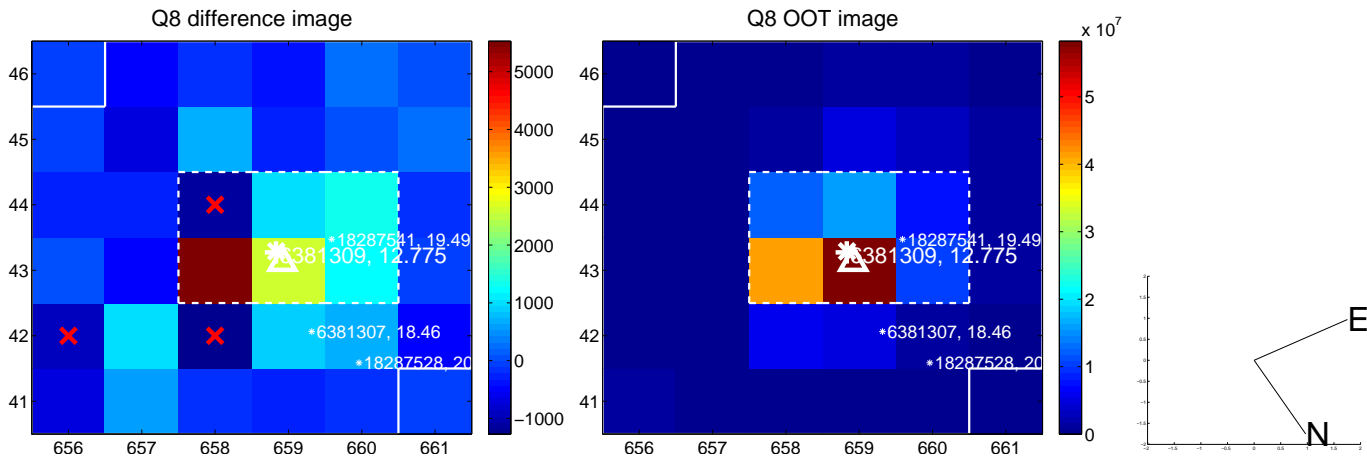
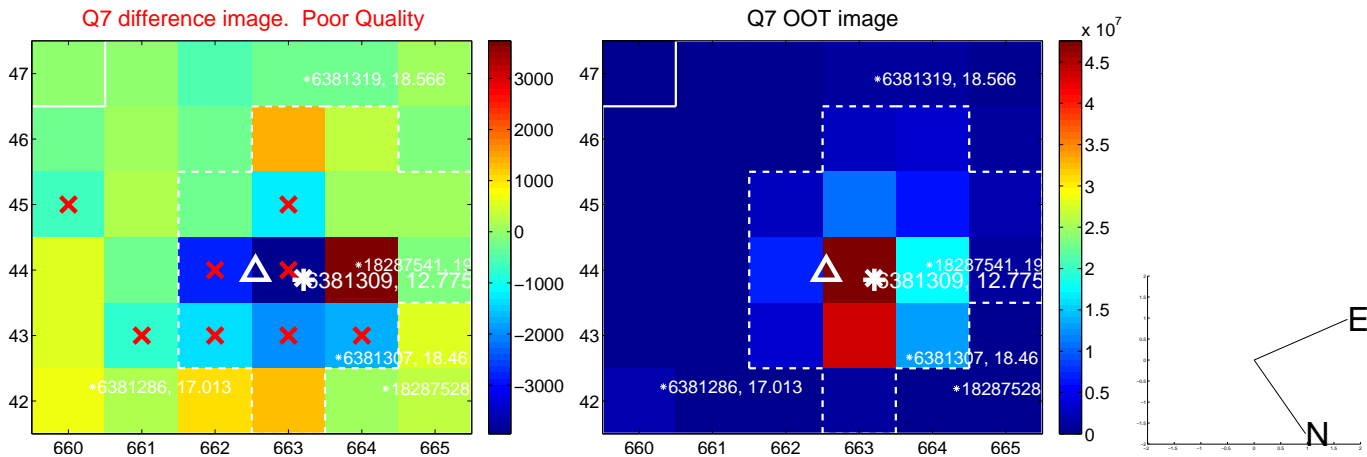
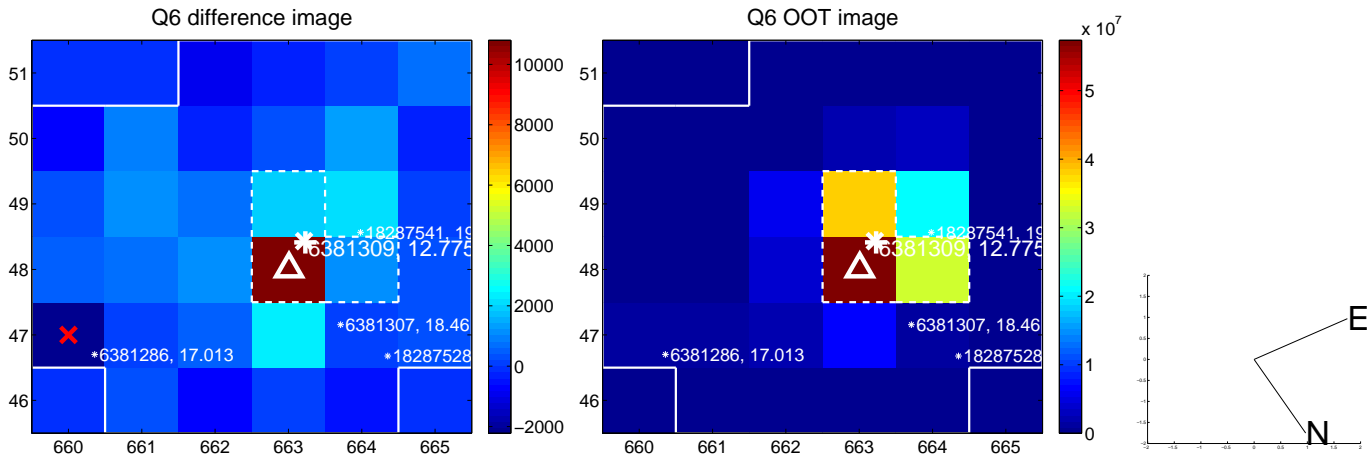
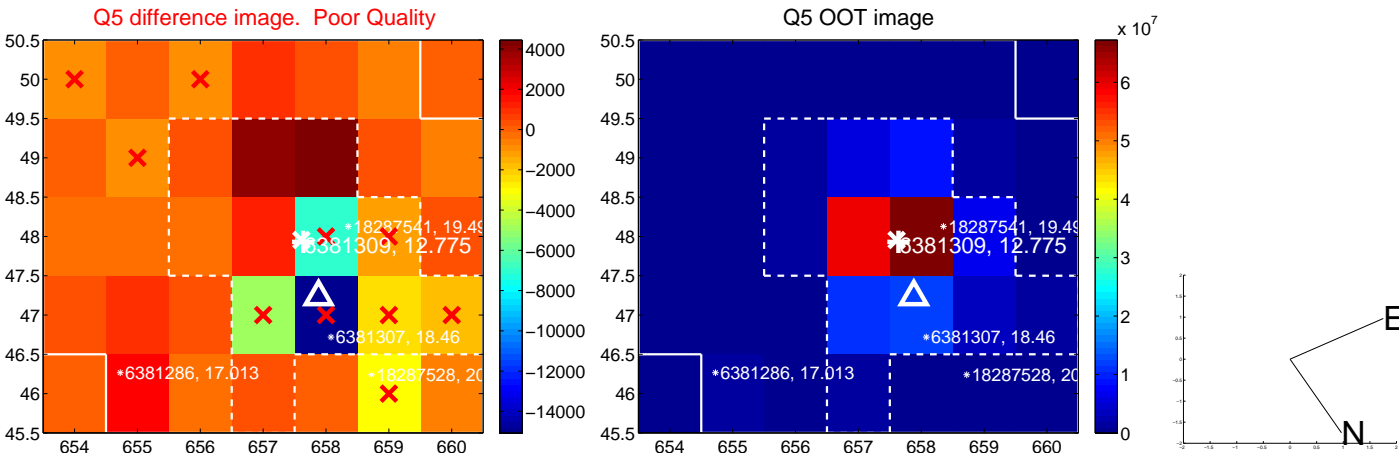


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

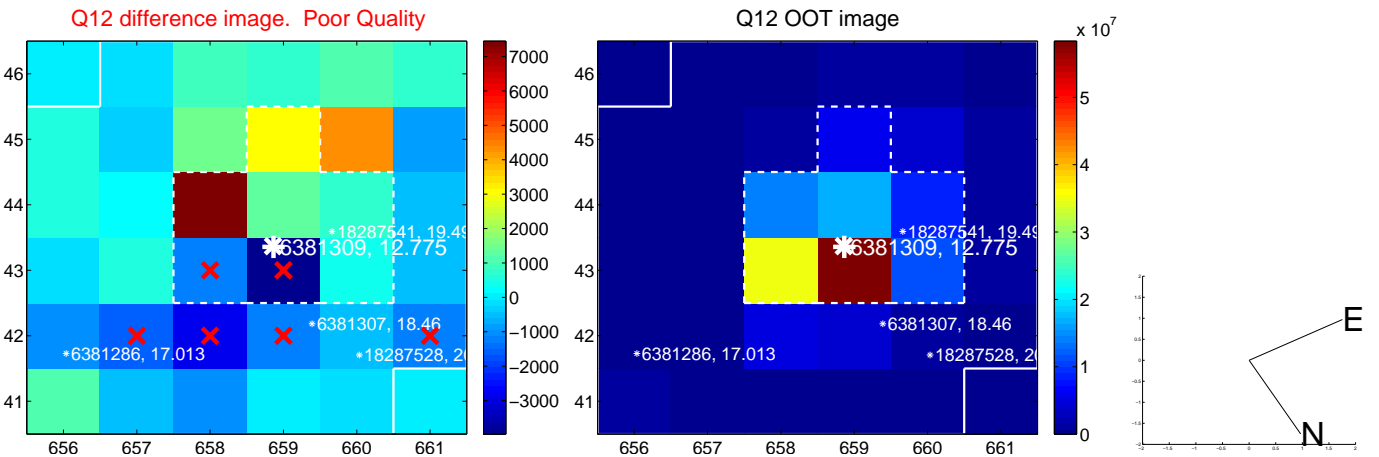
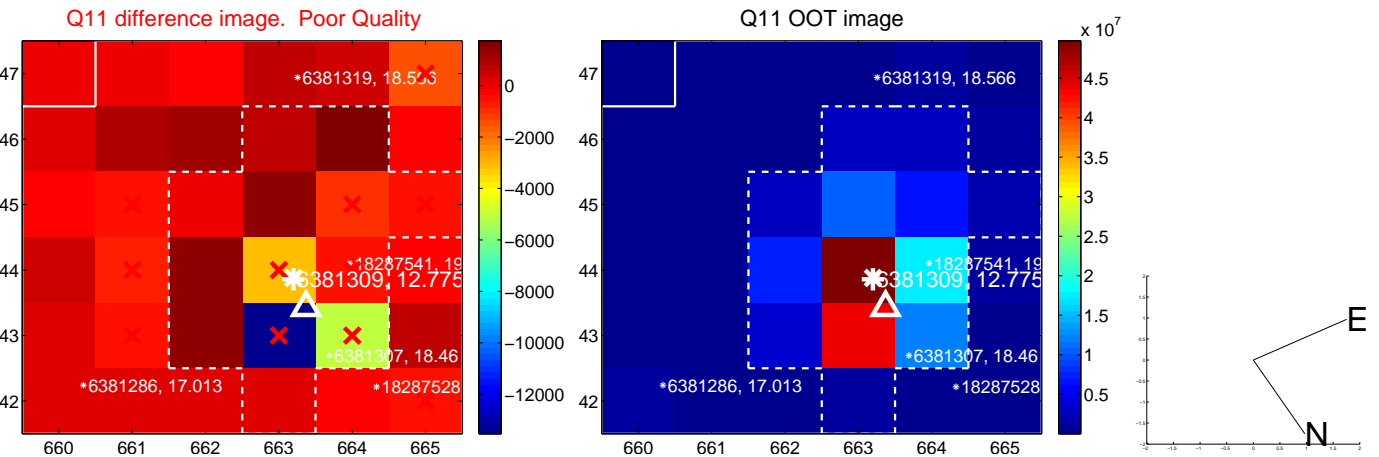
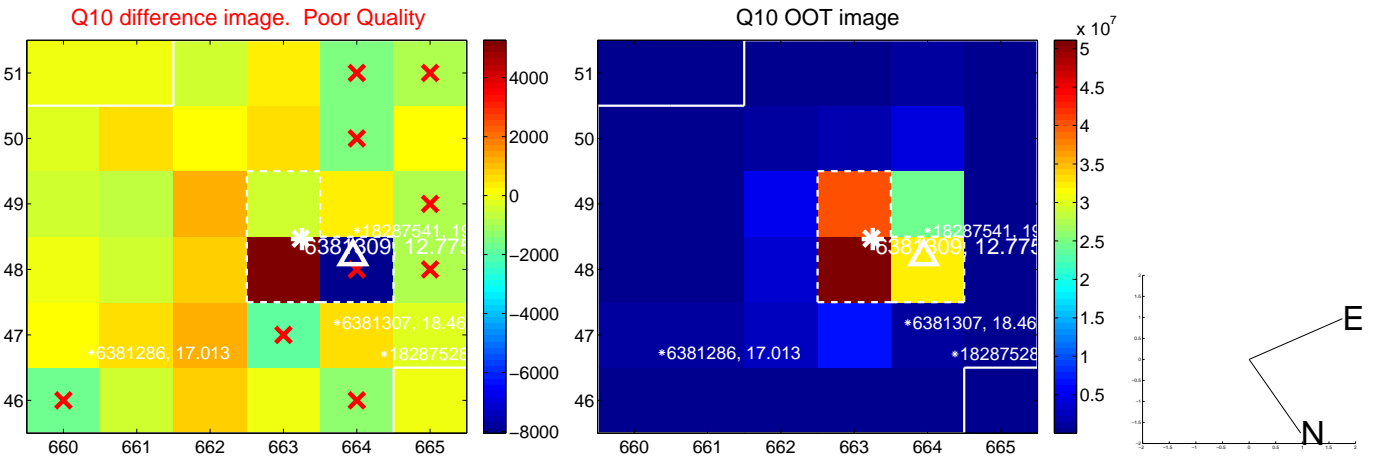
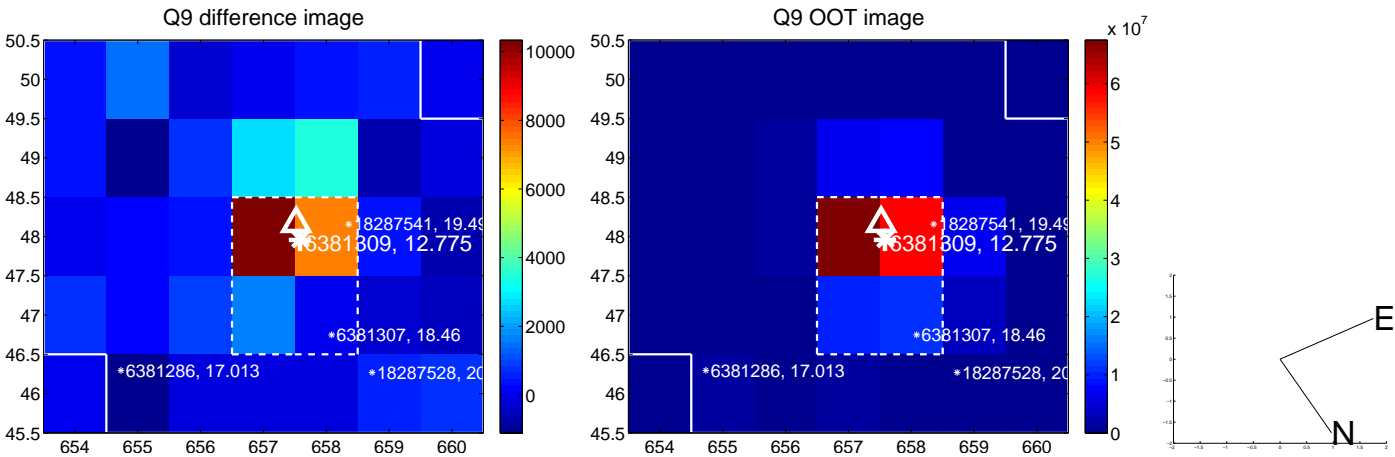
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



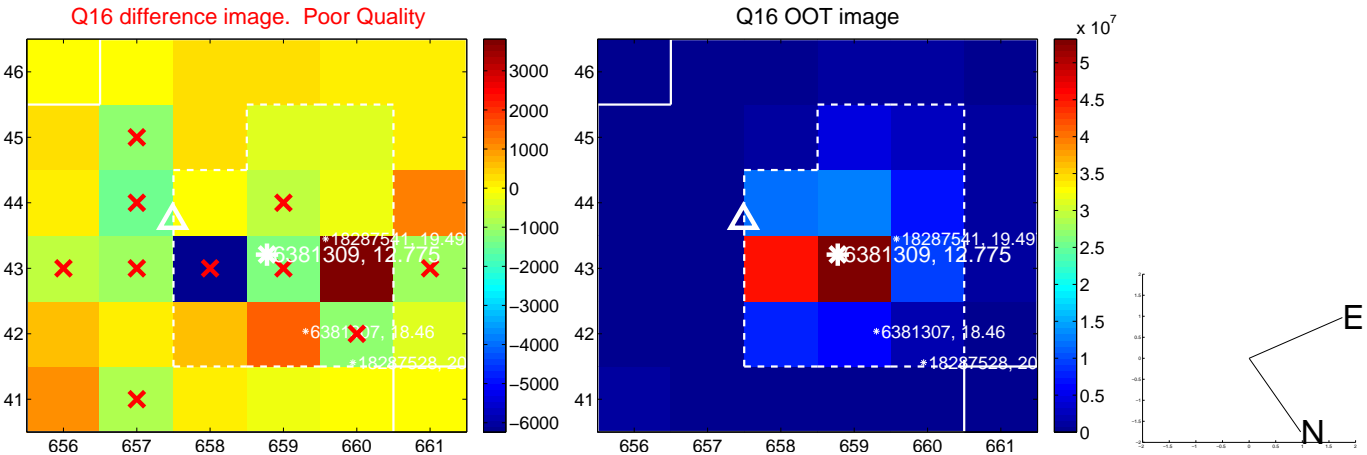
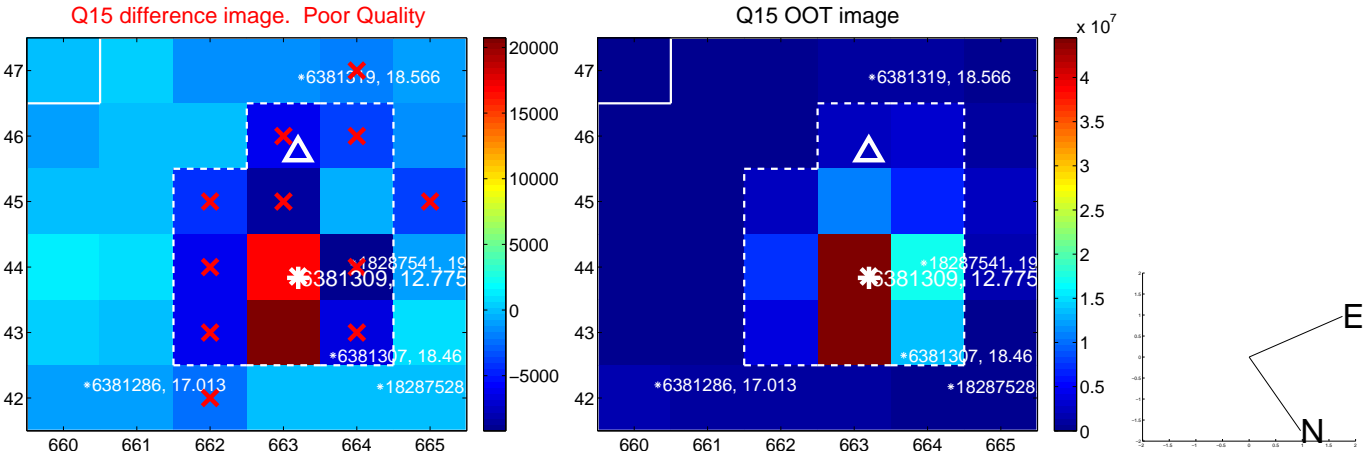
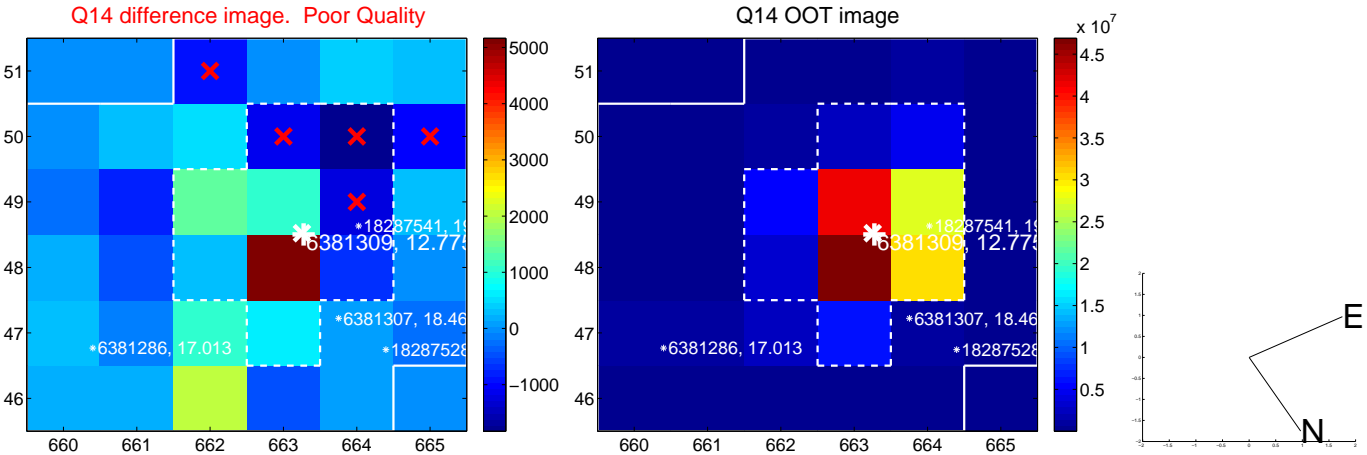
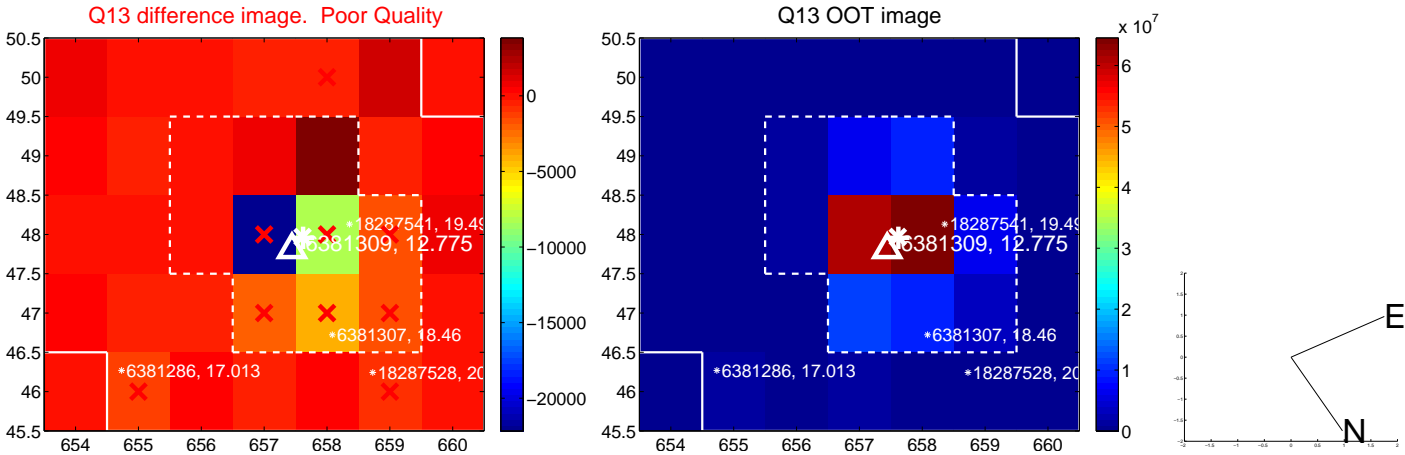
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



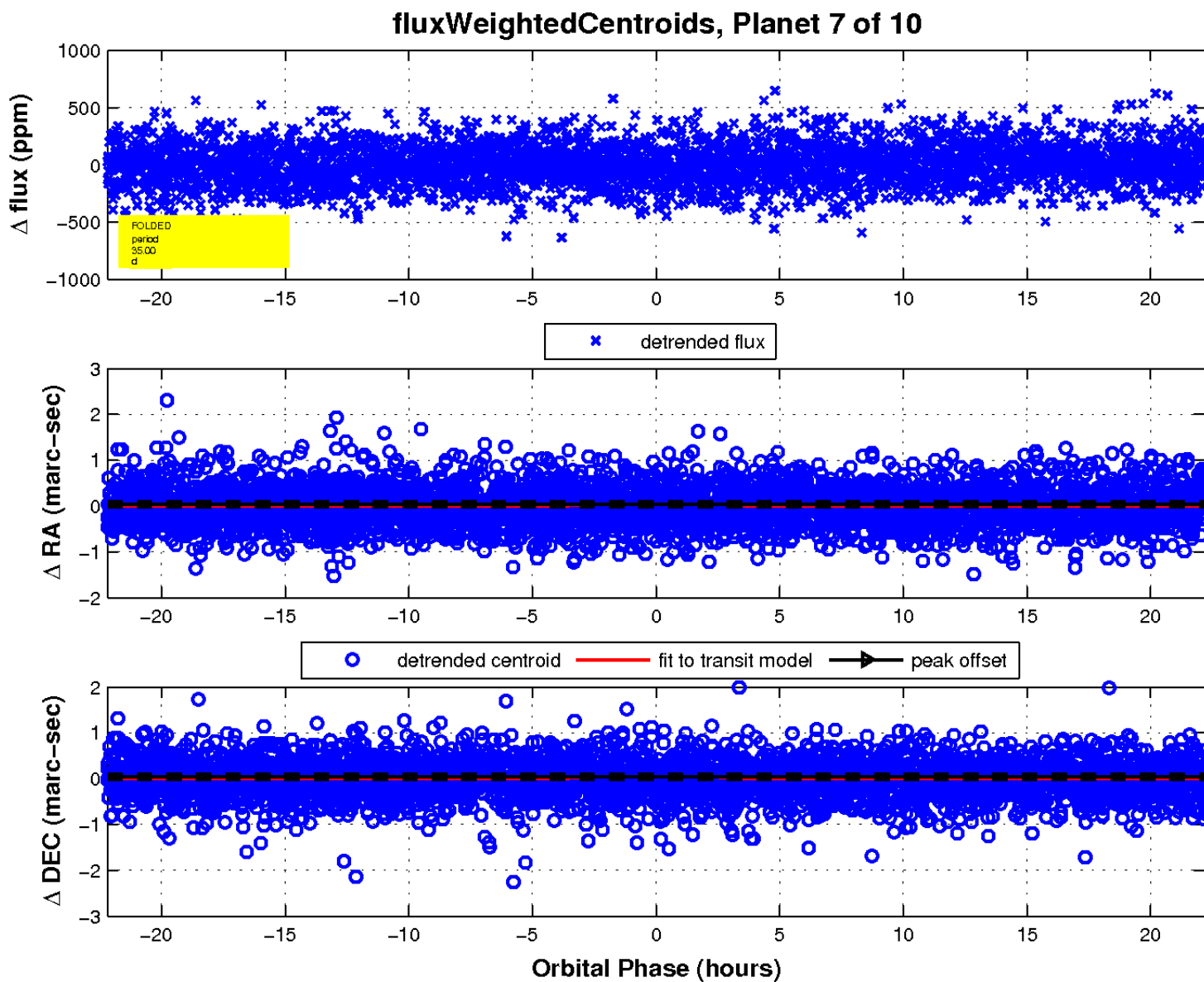
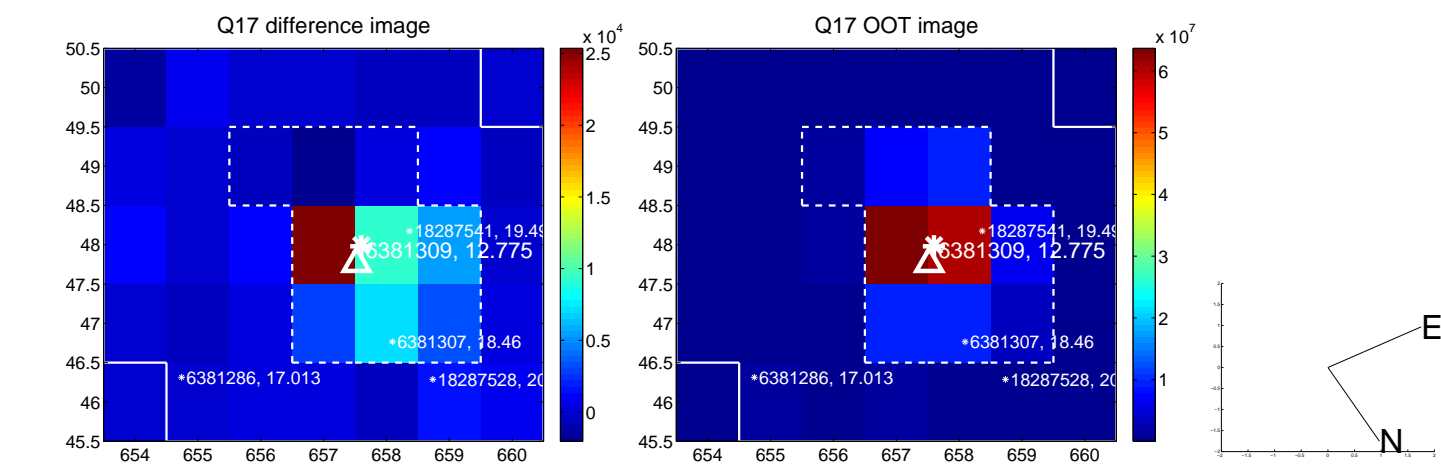
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

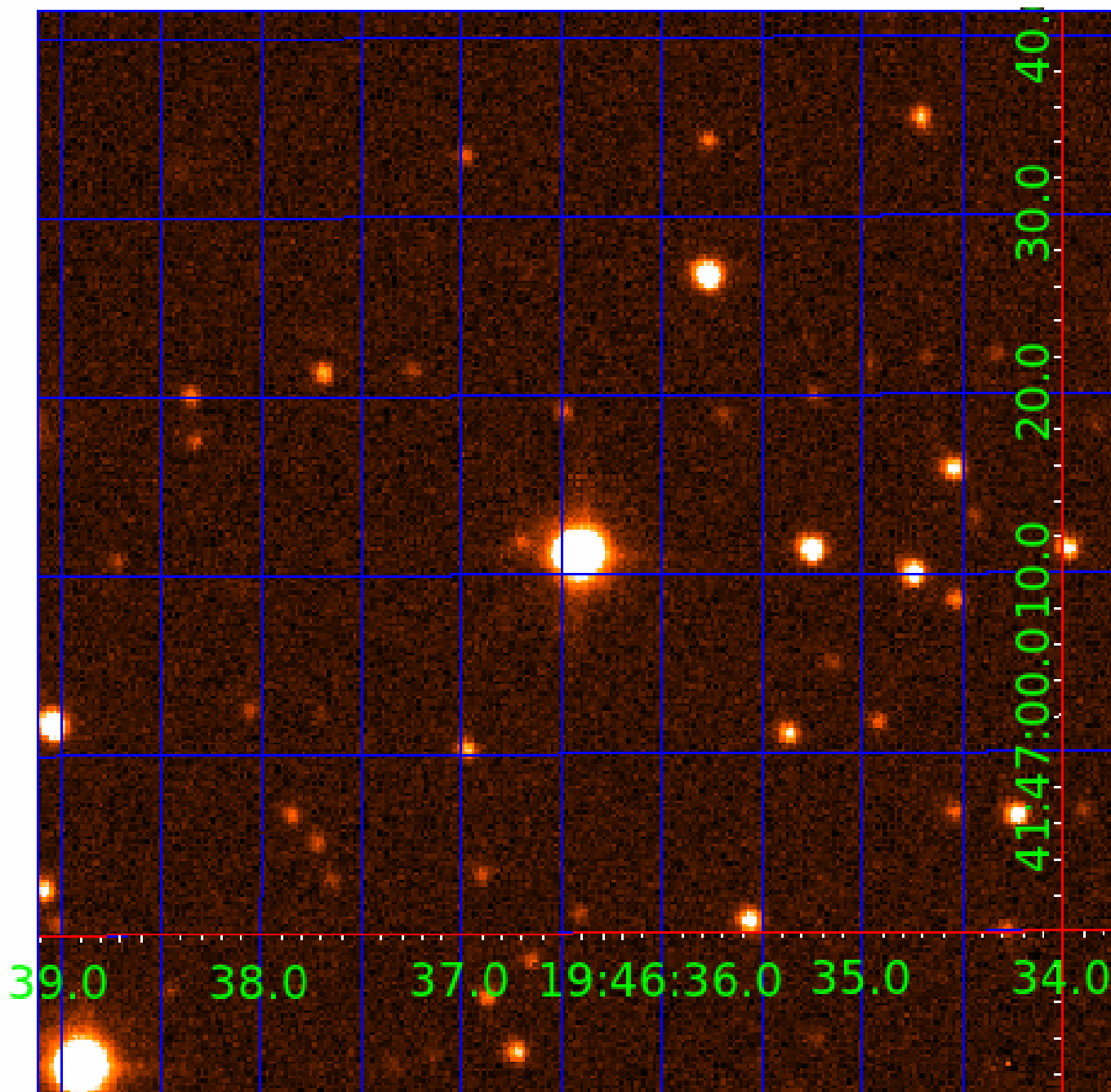


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006381309

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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

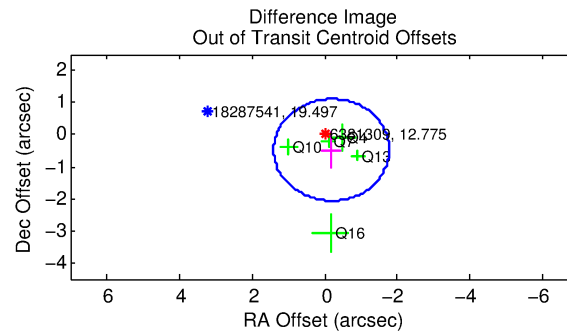
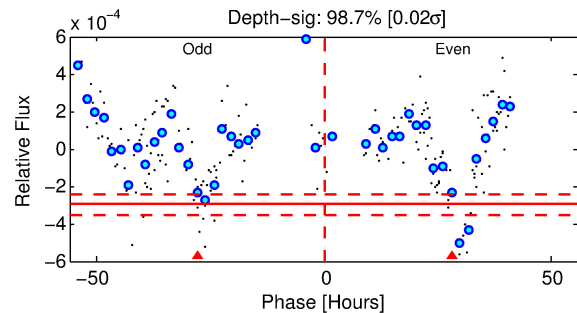
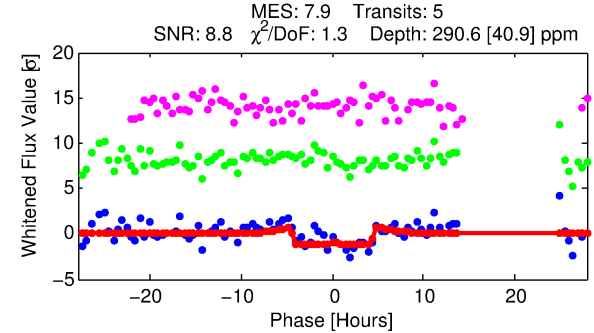
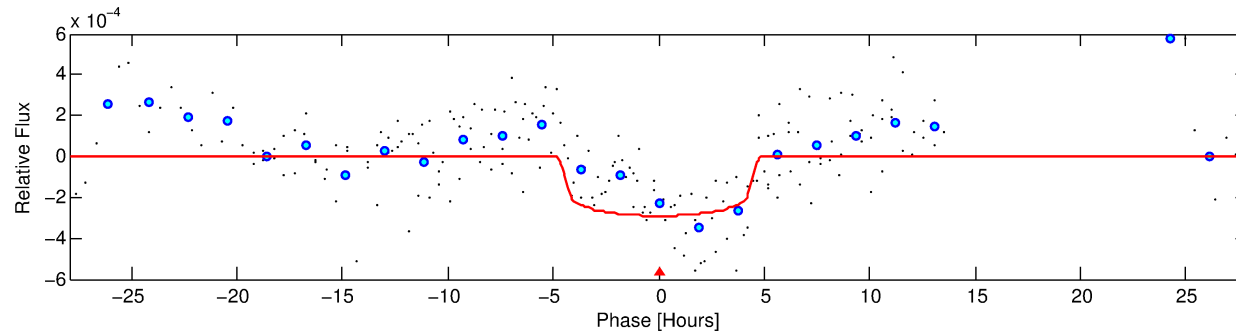
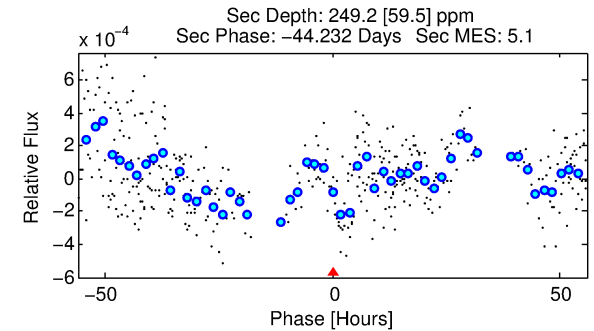
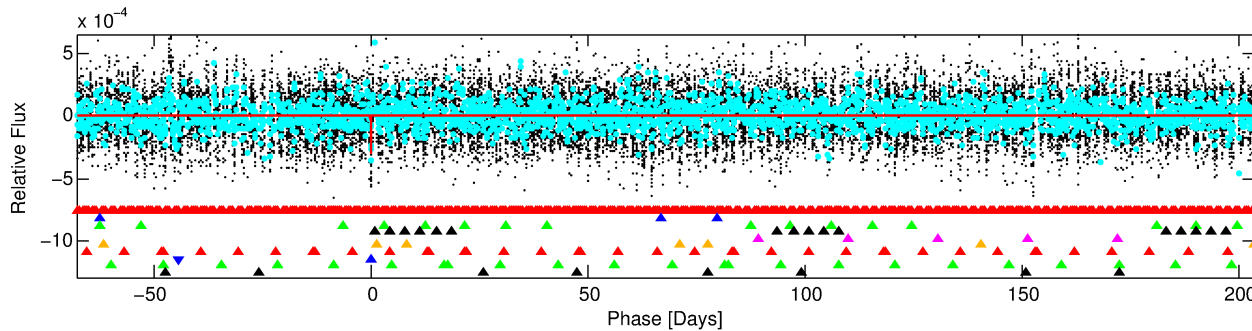
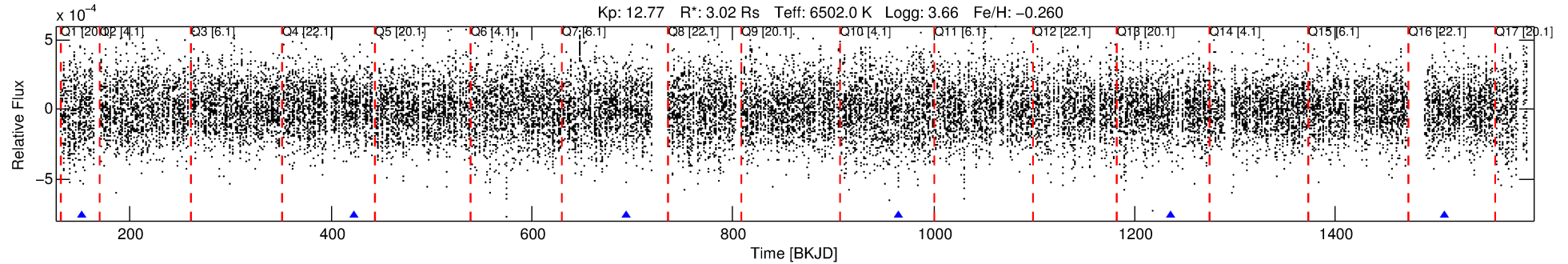
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-08

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 8 of 10 Period: 271.333 d



DV Fit Results:

Period = 271.33349 [0.00732] d
Epoch = 151.3578 [0.0183] BKJD
Rp/R* = 0.0169 [0.0053]
a/R* = 154.93 [256.75]
b = 0.74 [1.02]
Seff = 16.51 [9.98]
Teq = 514 [78] K
Rp = 5.57 [2.74] Re
a = 0.9405 [0.3460] AU
Ag = 3904.89 [3492.73] [1.12σ]
Teffp = 6282 [1070] K [5.38σ]

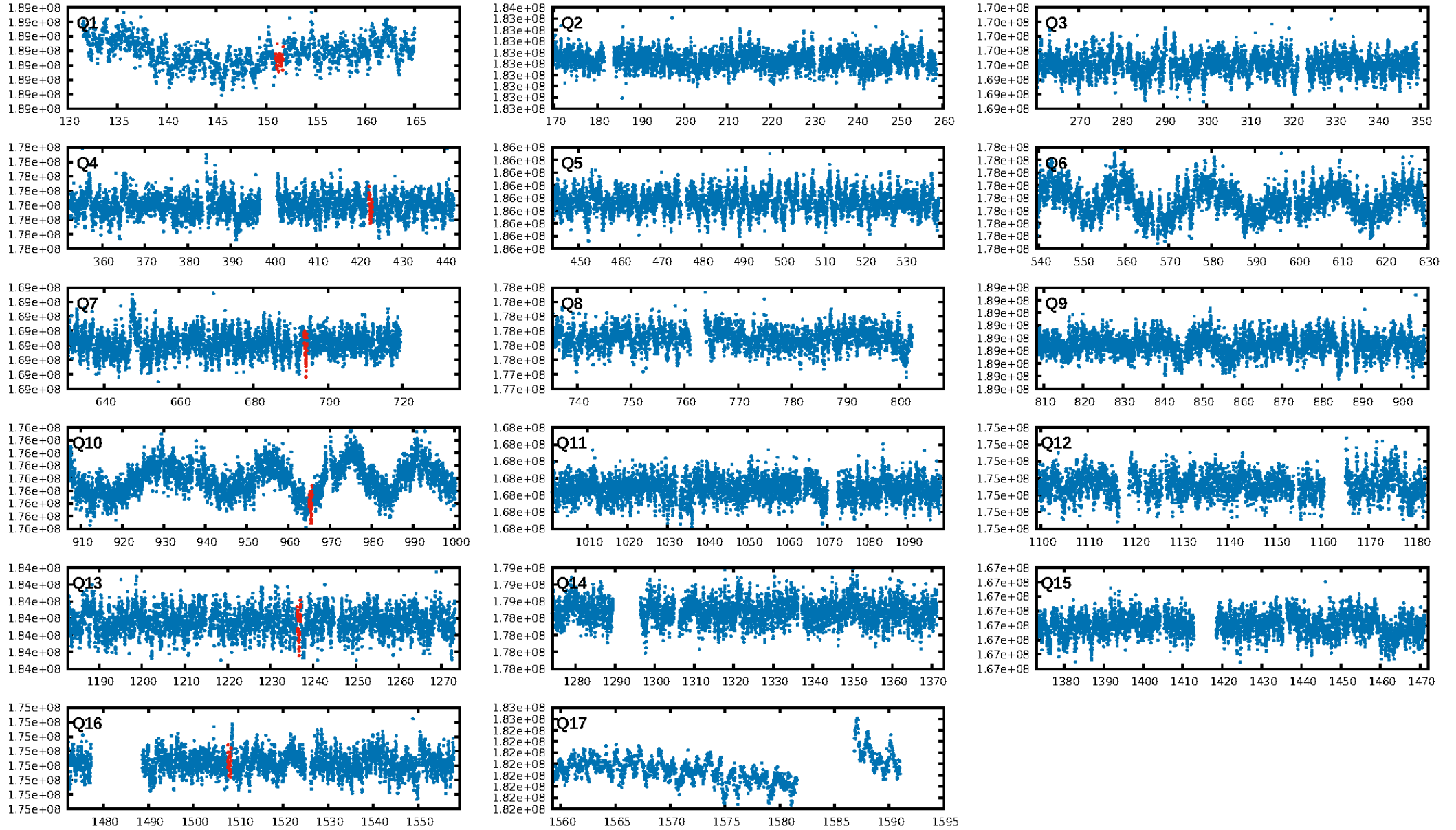
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [99.57σ]
LongPeriod-sig: 100.0% [45.26σ]
ModelChiSquare2-sig: 60.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.572
Centroid-sig: 18.4%
Centroid-so: 0.687 arcsec [1.51σ]
OotOffset-rm: 0.513 arcsec [0.97σ]
KicOffset-rm: 0.472 arcsec [1.12σ]
OotOffset-st: 1/1/2/1 [5]
KicOffset-st: 1/1/2/1 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 0.17 [1/6]

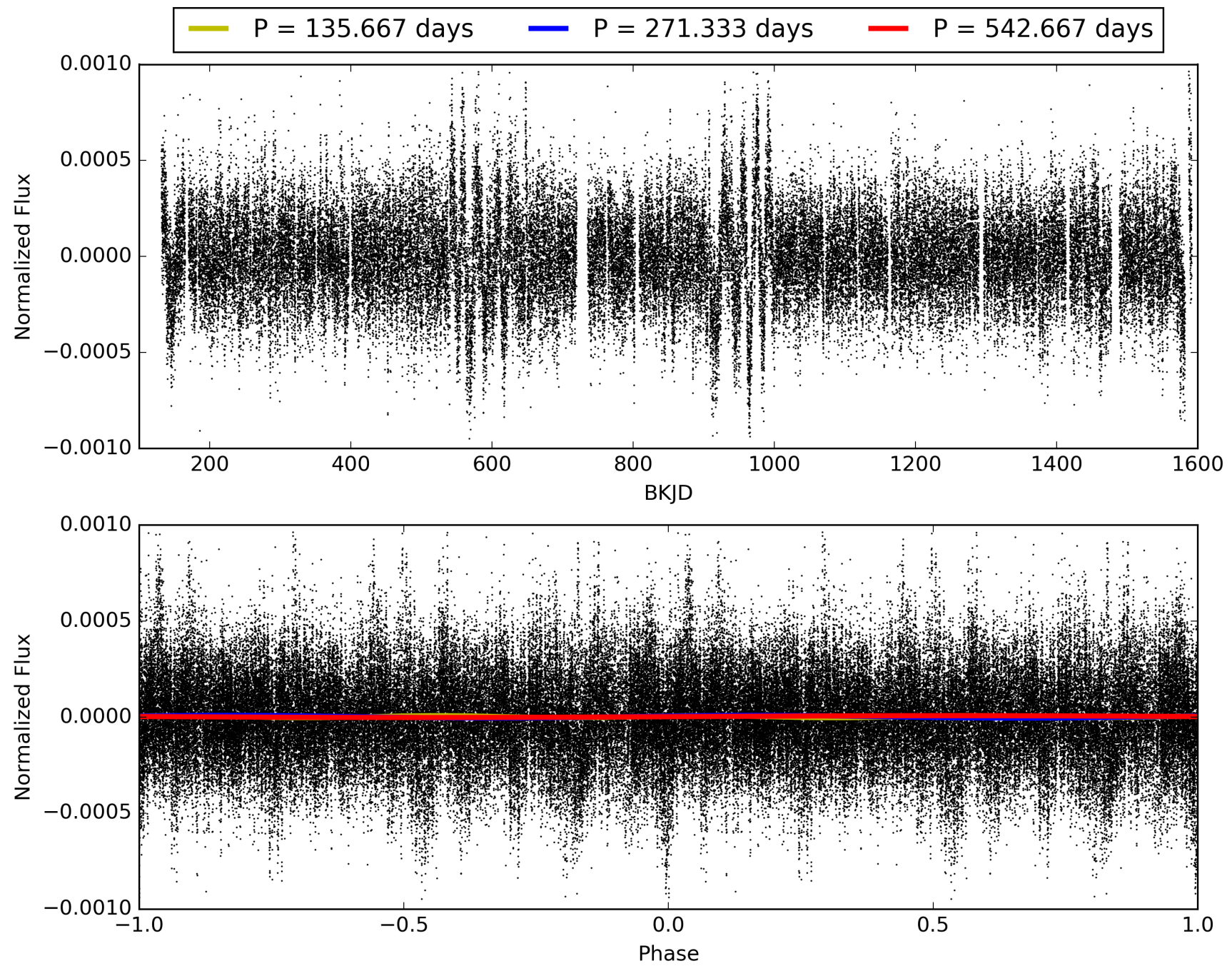
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:34:25 Z

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

TCE 006381309-08, PDC Light Curves

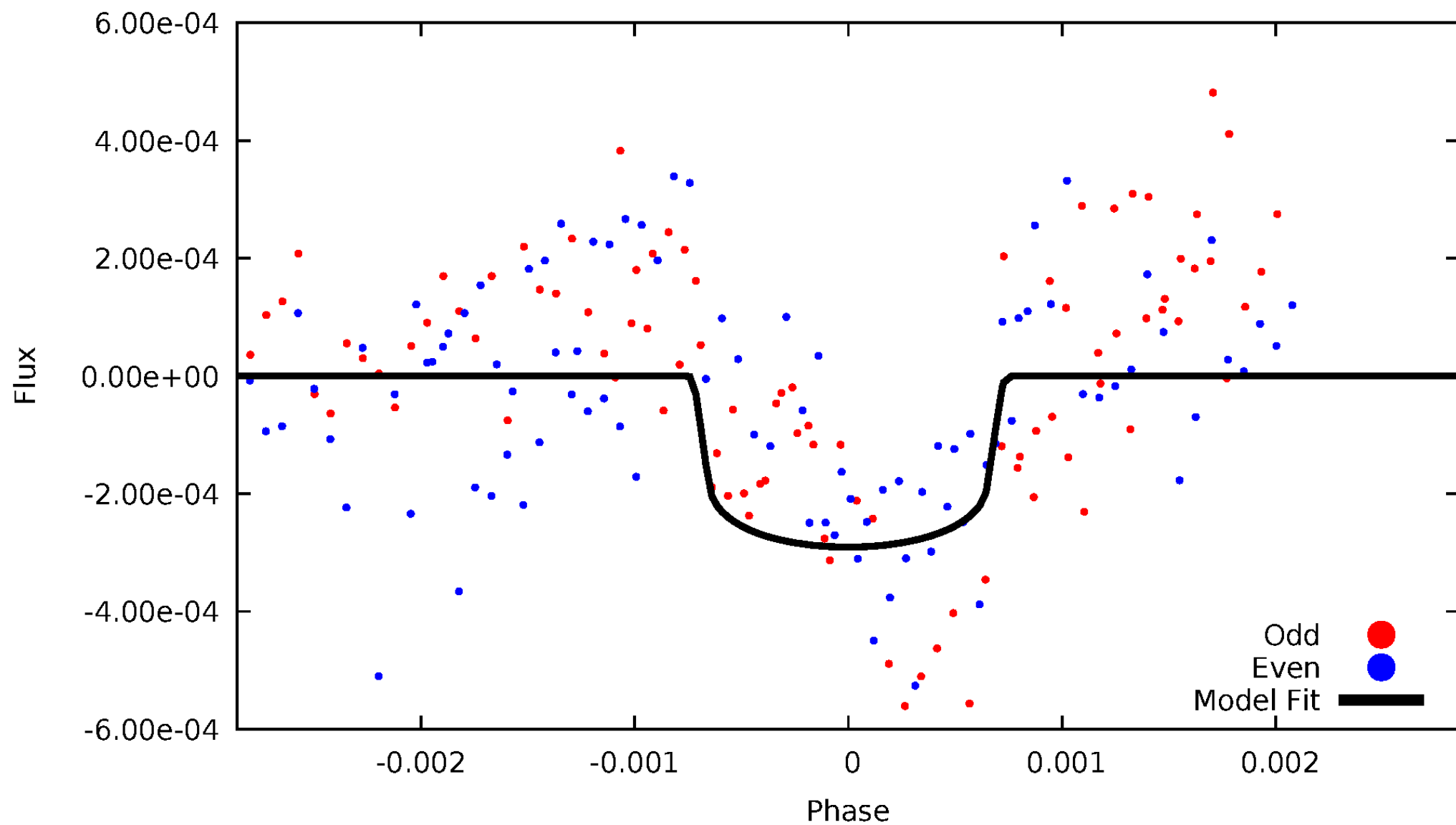


TCE 006381309-08



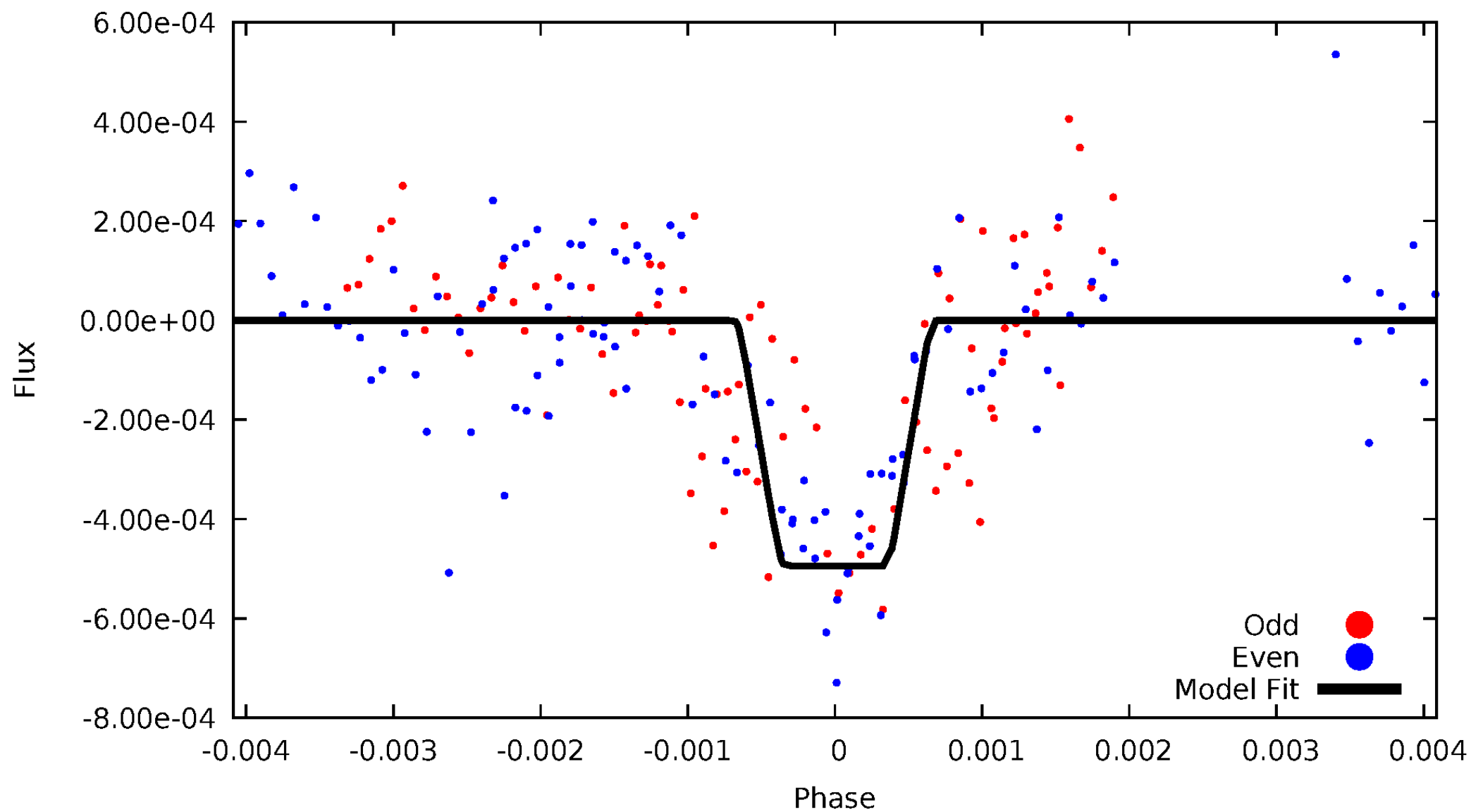
DV Odd/Even

TCE 006381309-08



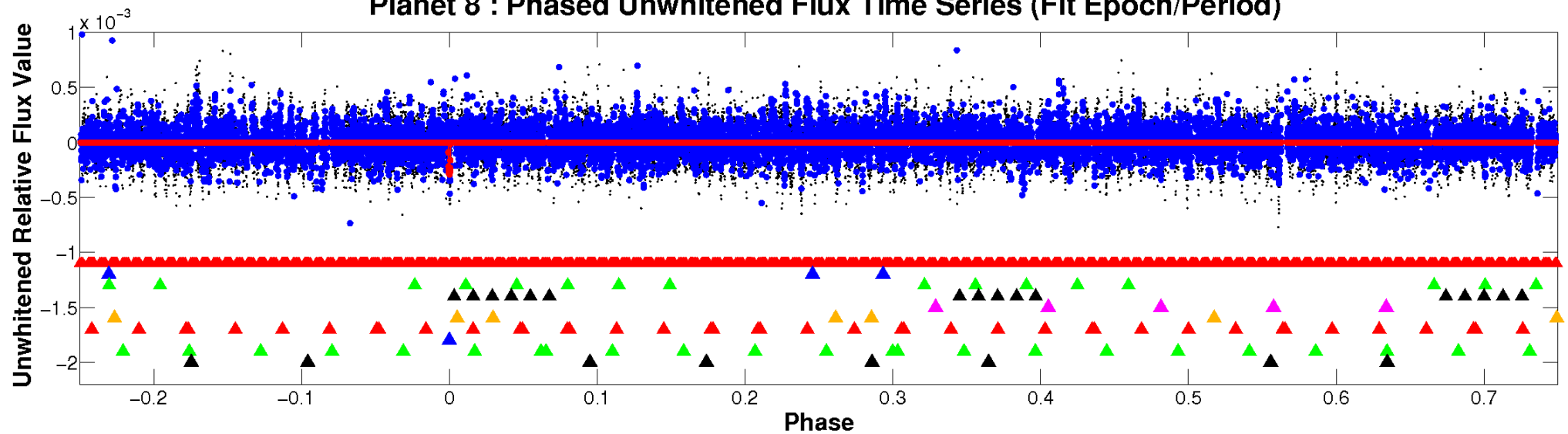
ALT Odd/Even

TCE 006381309-08

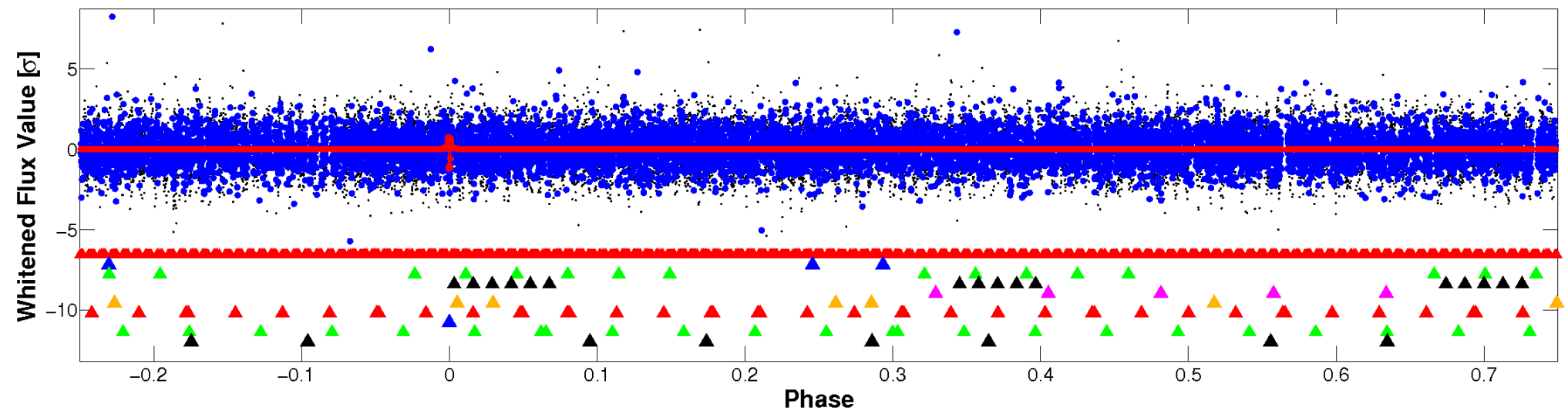


Non-Whitened Vs. Whitened Light Curve

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

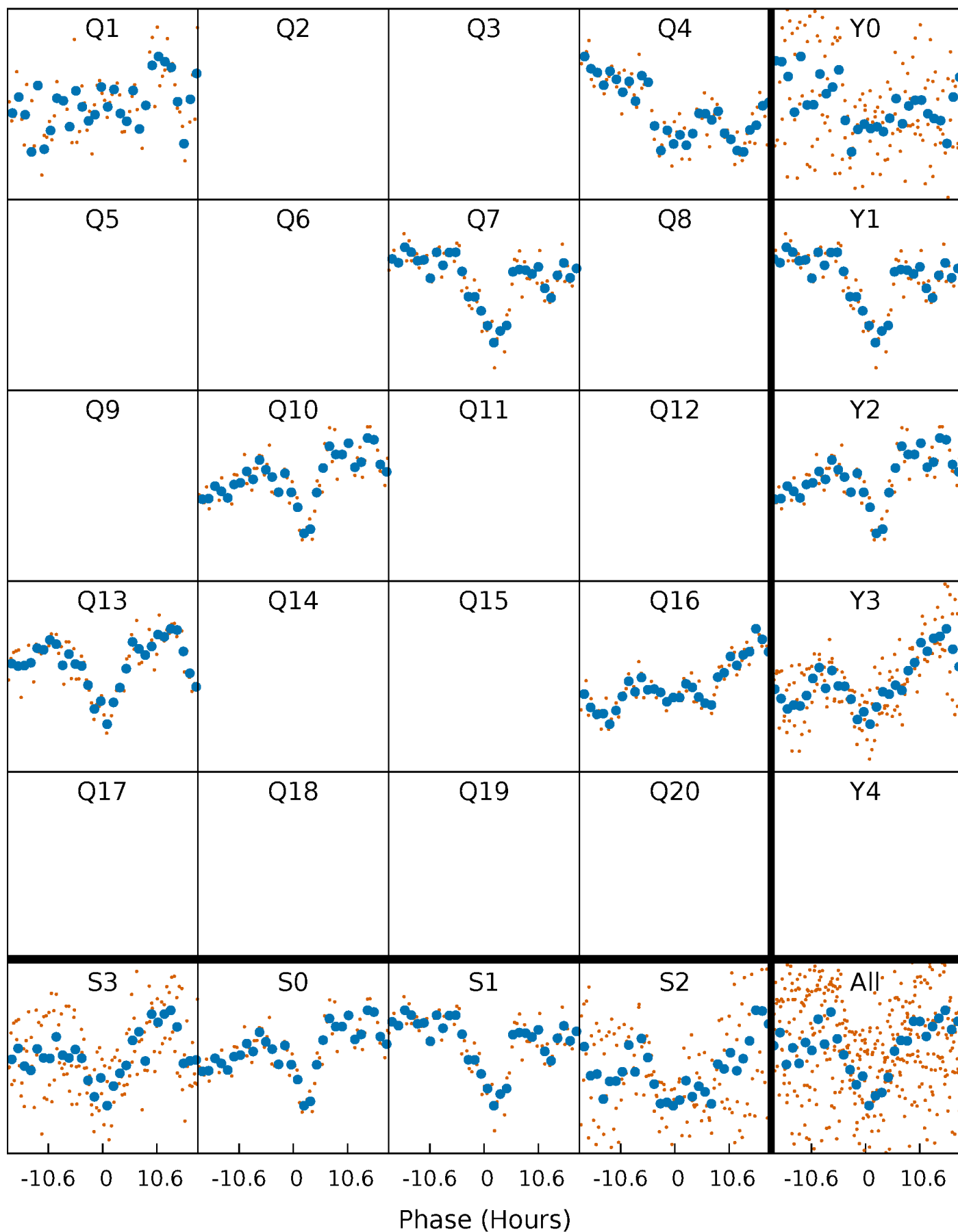


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



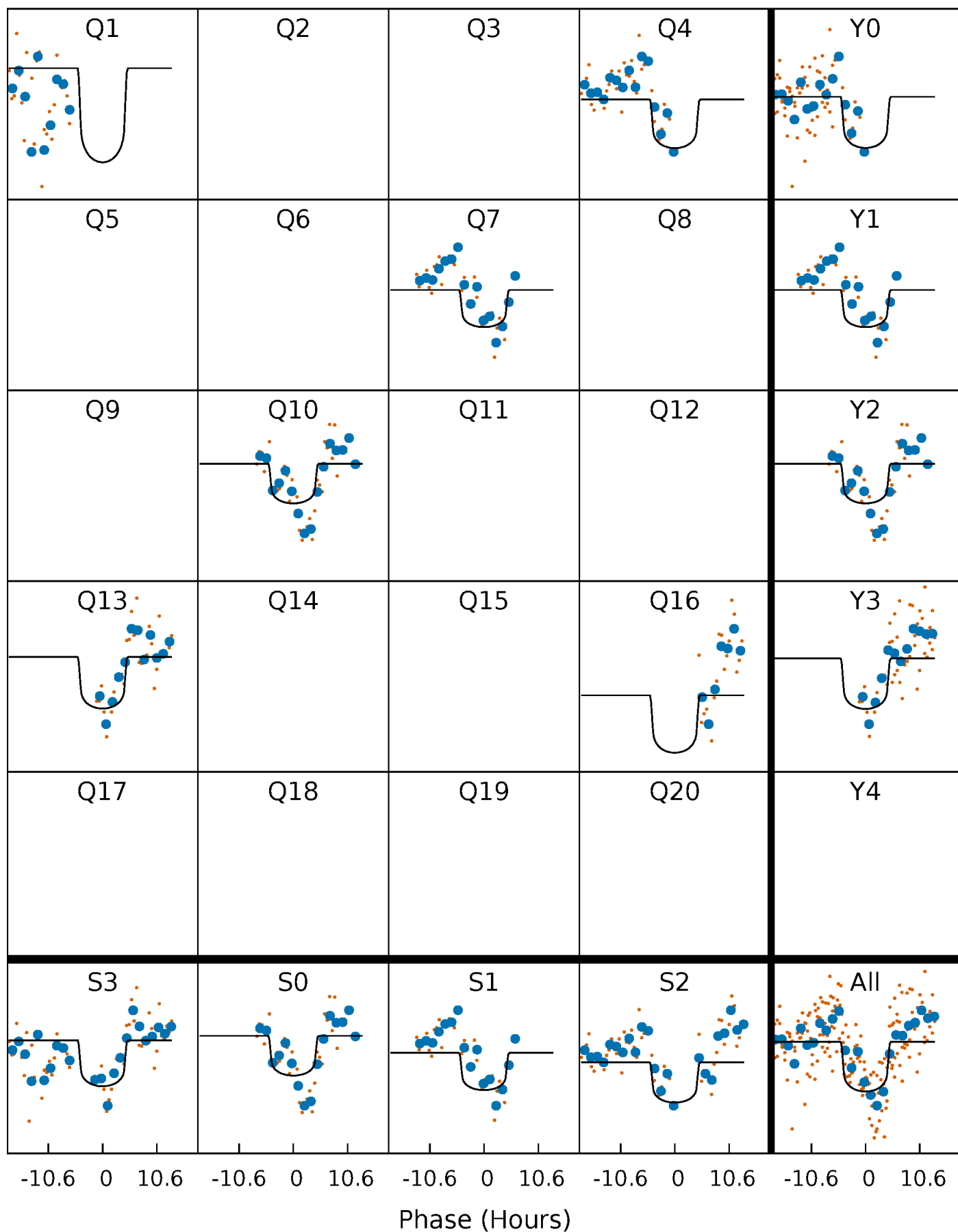
PDC Quarter-Phased Transit Curves

TCE 006381309-08 $P=271.333486$ Days $T_0=151.357834$ (BKJD)



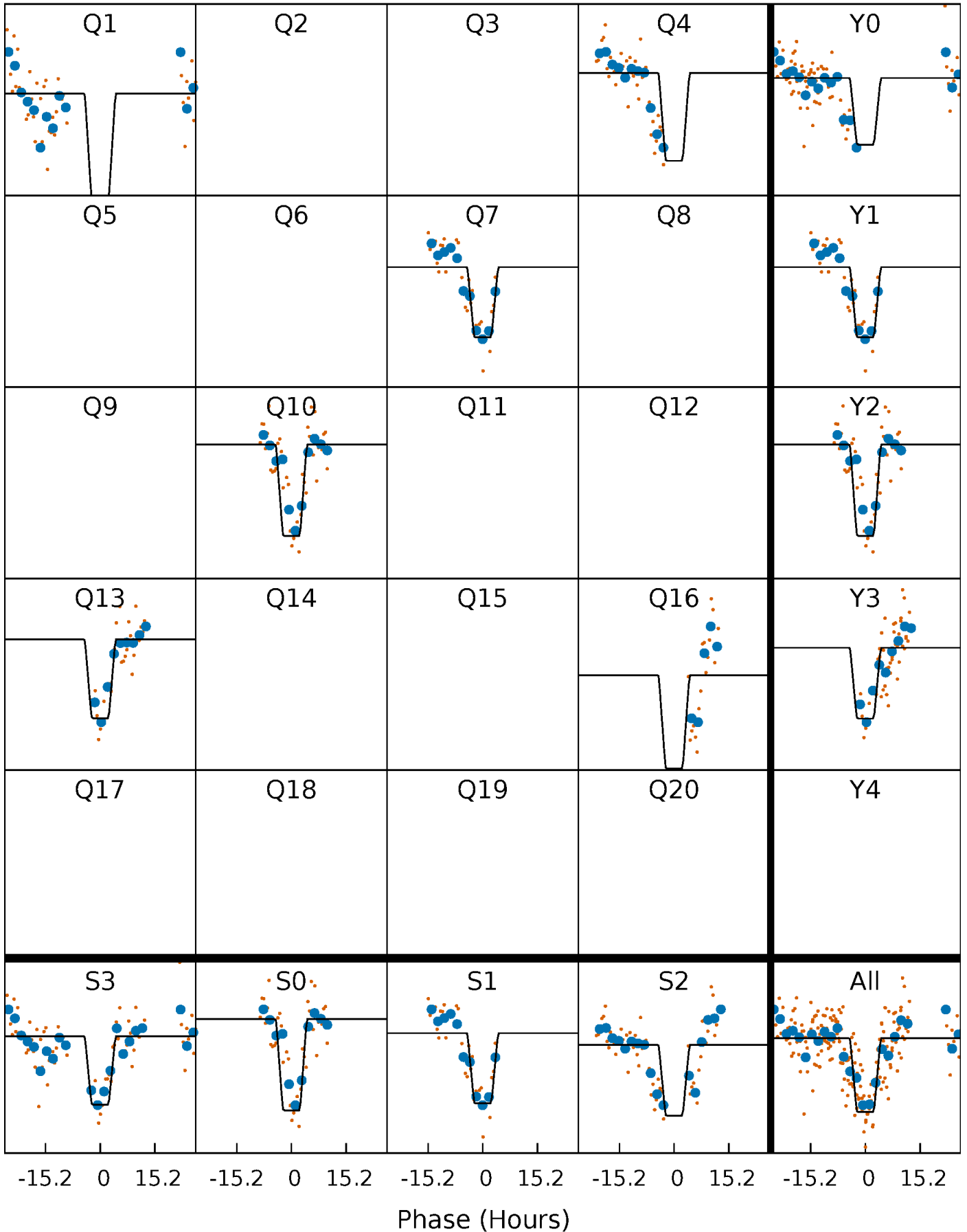
DV Quarter-Phased Transit Curves

TCE 006381309-08 $P=271.333486$ Days $T_0=151.357834$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

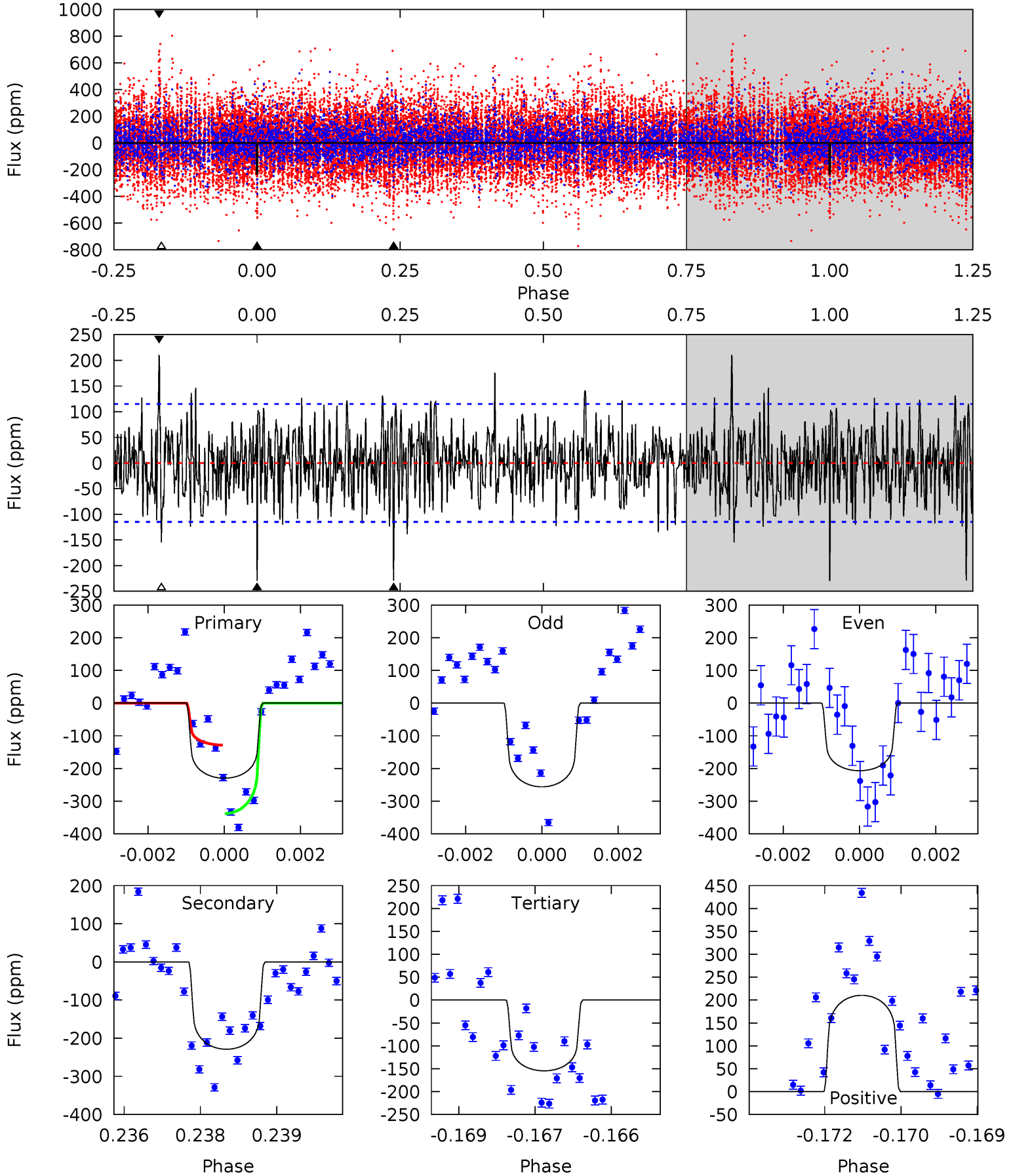
TCE 006381309-08 $P=271.316810$ Days $T_0=151.472957$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-08, P = 271.333486 Days, E = 151.357834 Days

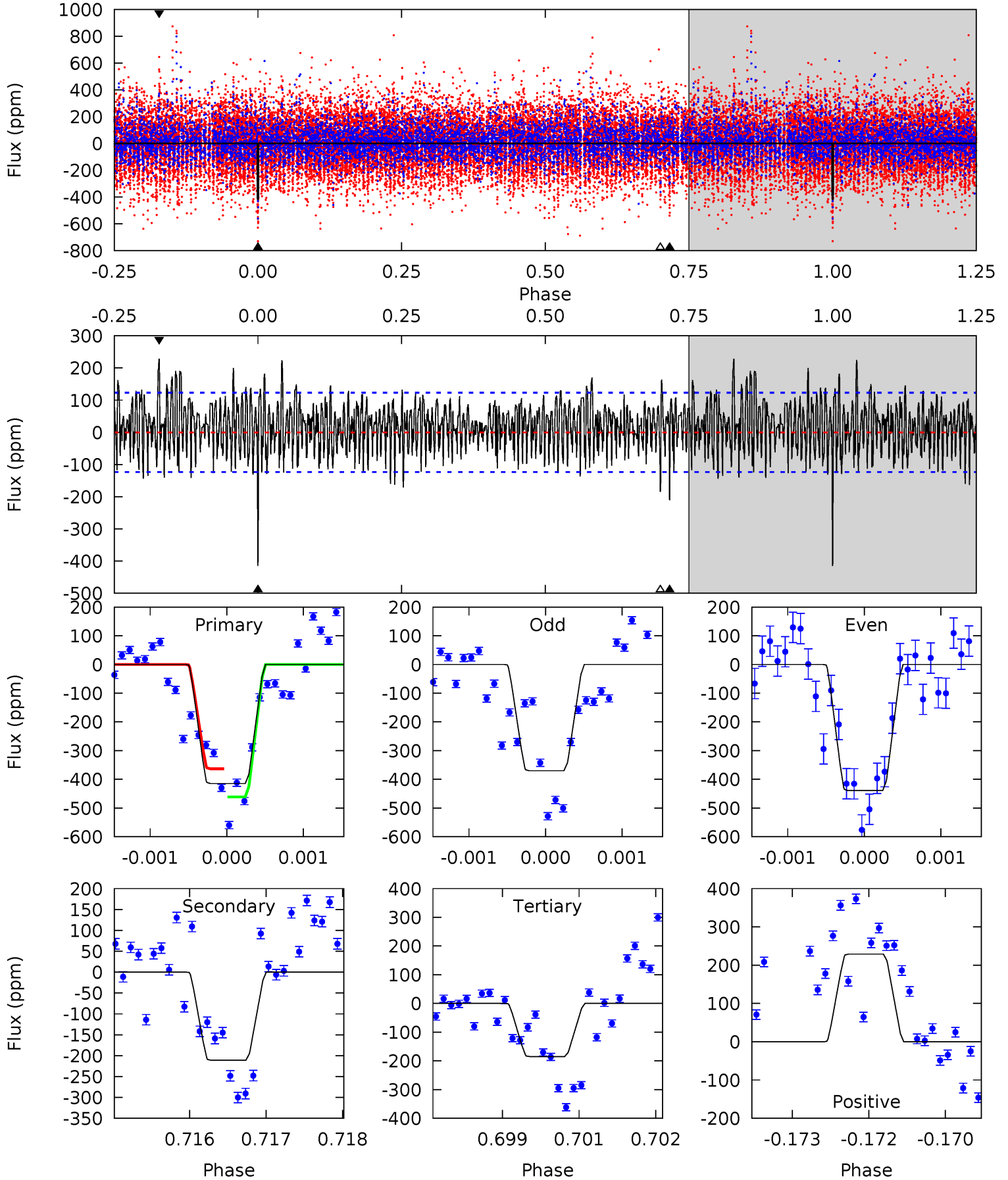
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	10.7	7.23	9.83	5.38	3.17	2.25	3.51	0.91	3.48	0.87	1.17	1.03	0.48	4.91



Alt Model-Shift Uniqueness Test

006381309-08, P = 271.316810 Days, E = 151.472957 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	9.25	8.10	10.0	5.40	3.20	2.60	10.1	8.14	1.15	-0.78	1.50	0.98	0.36	2.14



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-229 ± 21	$5.12^{+1.80}_{-1.87}$	698^{+45}_{-66}	6183^{+1405}_{-820}	4372^{+5884}_{-2039}
Alt.	-211 ± 23	$6.73^{+2.16}_{-1.88}$	698^{+48}_{-63}	5281^{+747}_{-507}	2256^{+2185}_{-976}

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 $A_{\text{obs}} \gg 1.0$

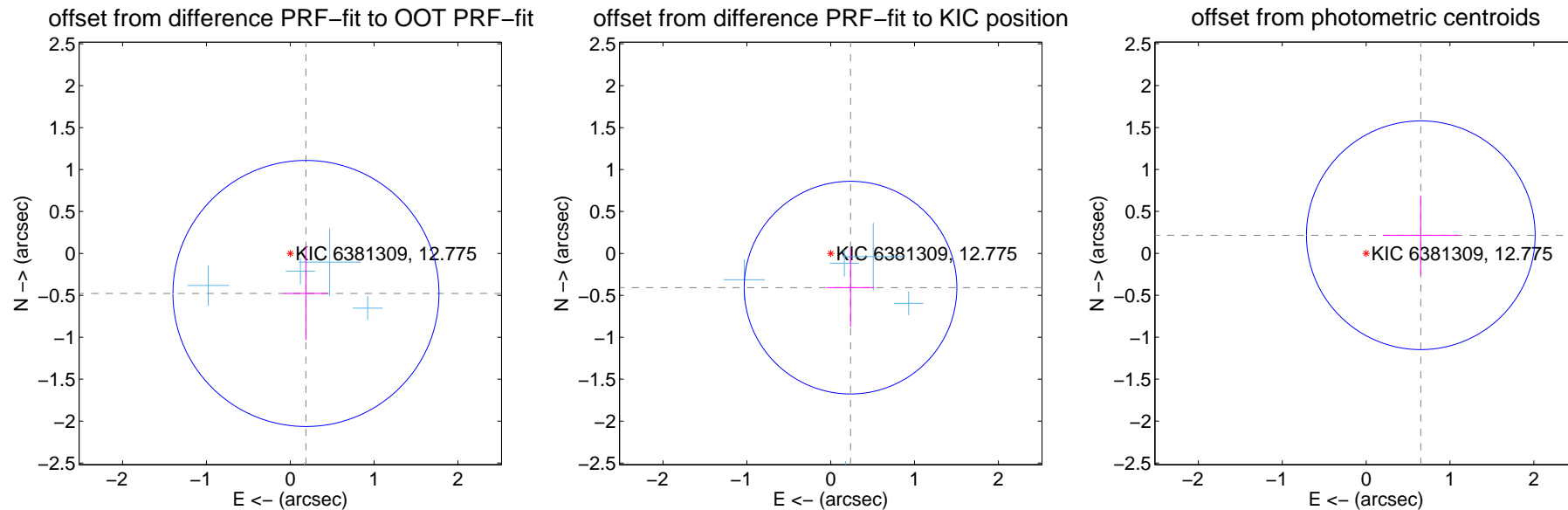
DV Centroid Data

Supplemental centroid analysis for 006381309-08. Kepler magnitude: 12.78. Transit SNR 8.76

There are 5 quarters with good PRF difference image offsets

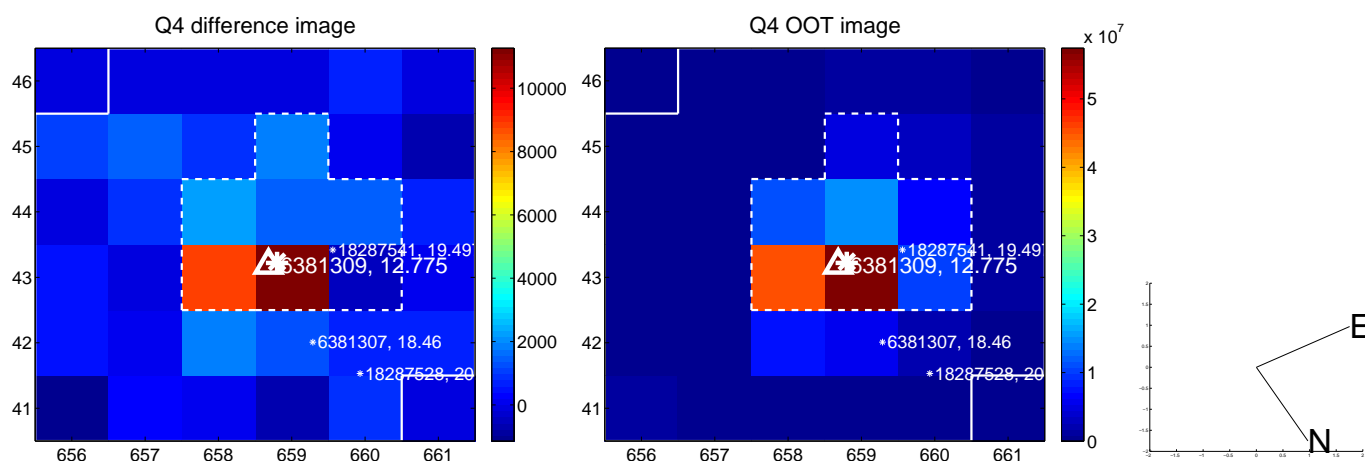
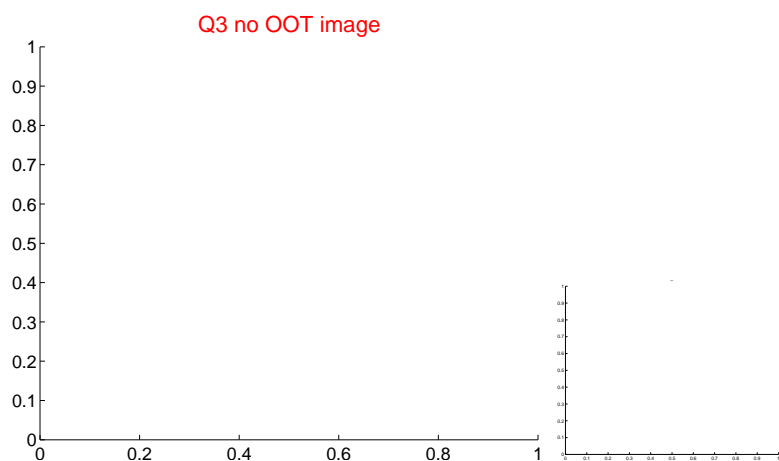
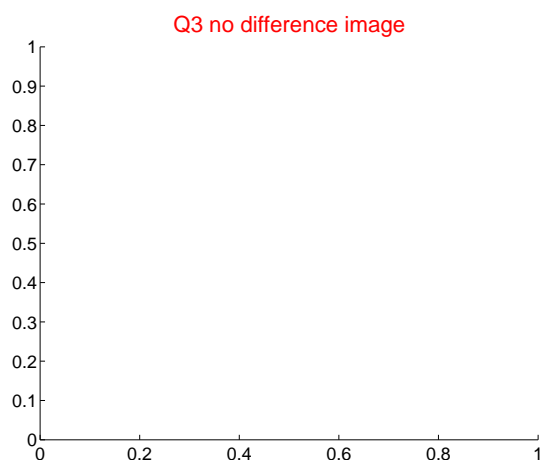
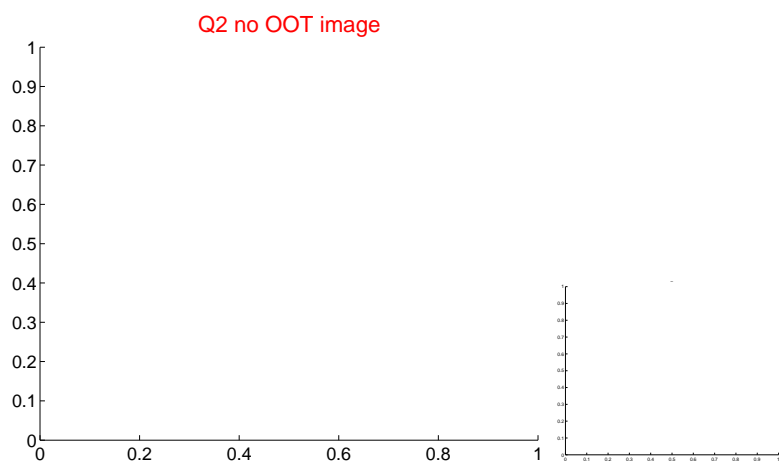
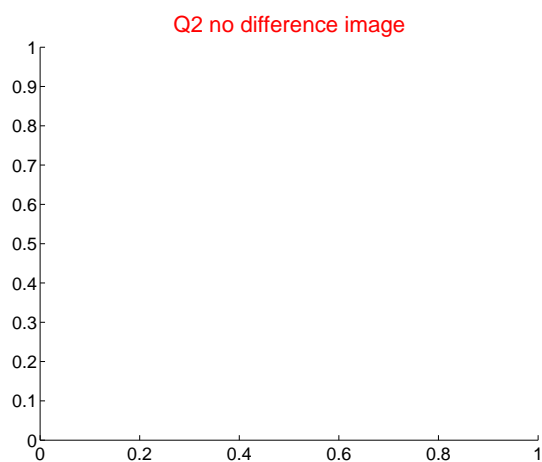
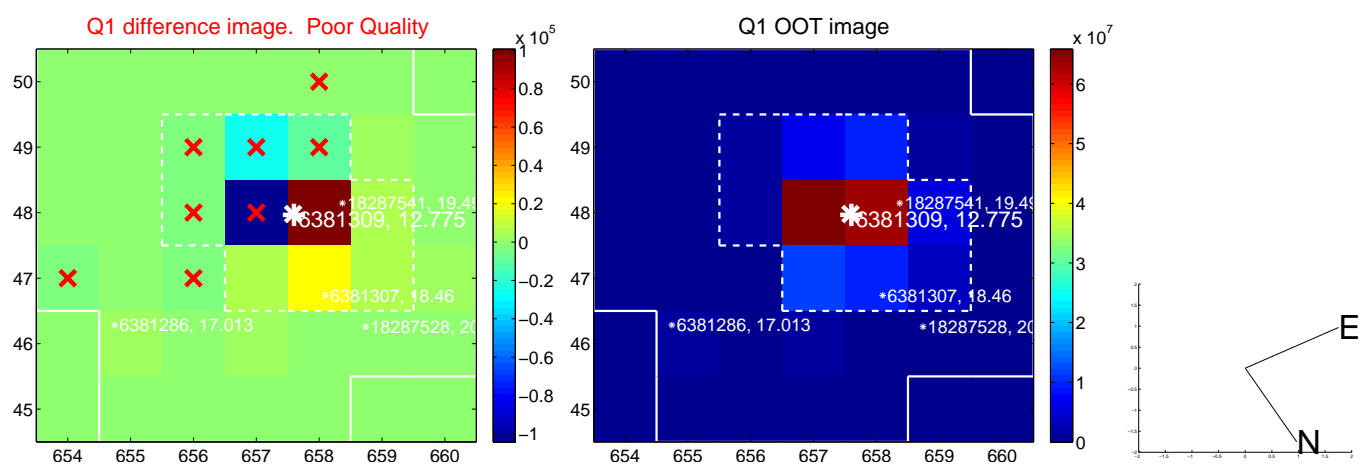
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.513 ± 0.529	0.97	-0.187 ± 0.264	-0.478 ± 0.558
PRF-fit source offset from KIC position	0.472 ± 0.423	1.12	-0.236 ± 0.282	-0.408 ± 0.468
photometric centroid source offset	0.69 ± 0.45	1.51	-0.65 ± 0.45	0.22 ± 0.47

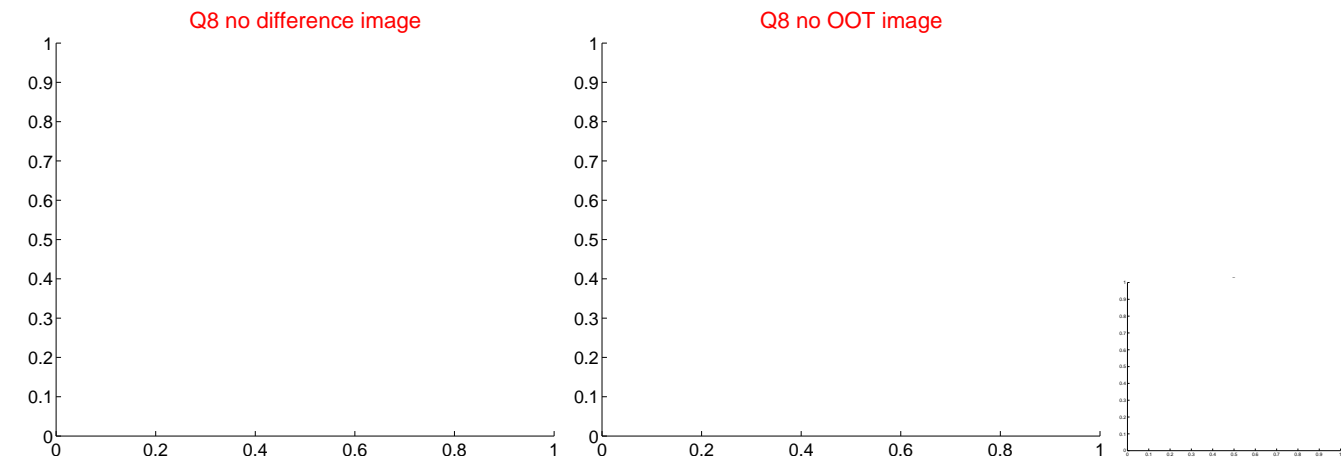
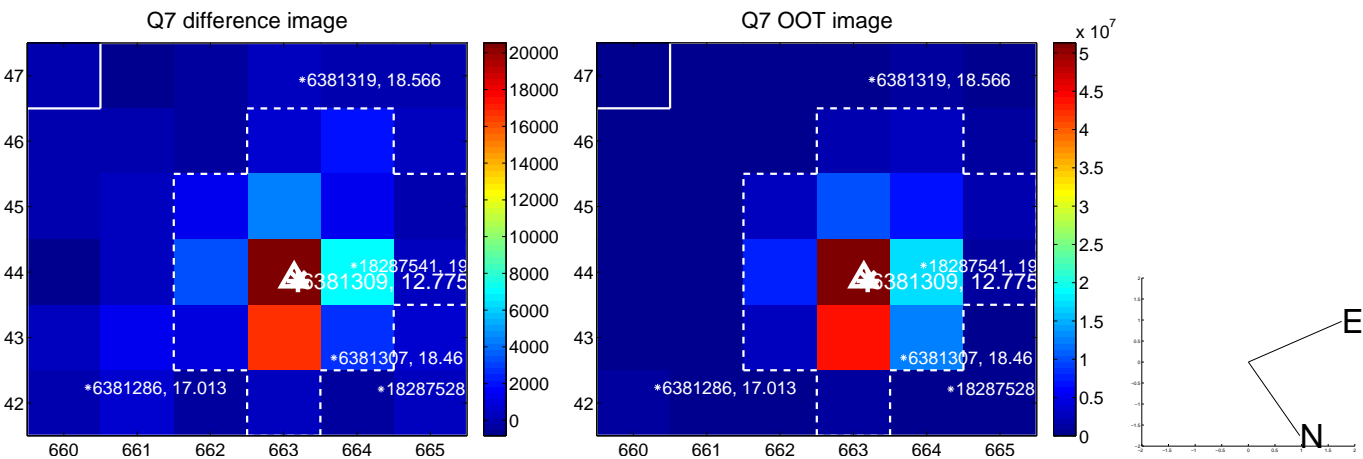
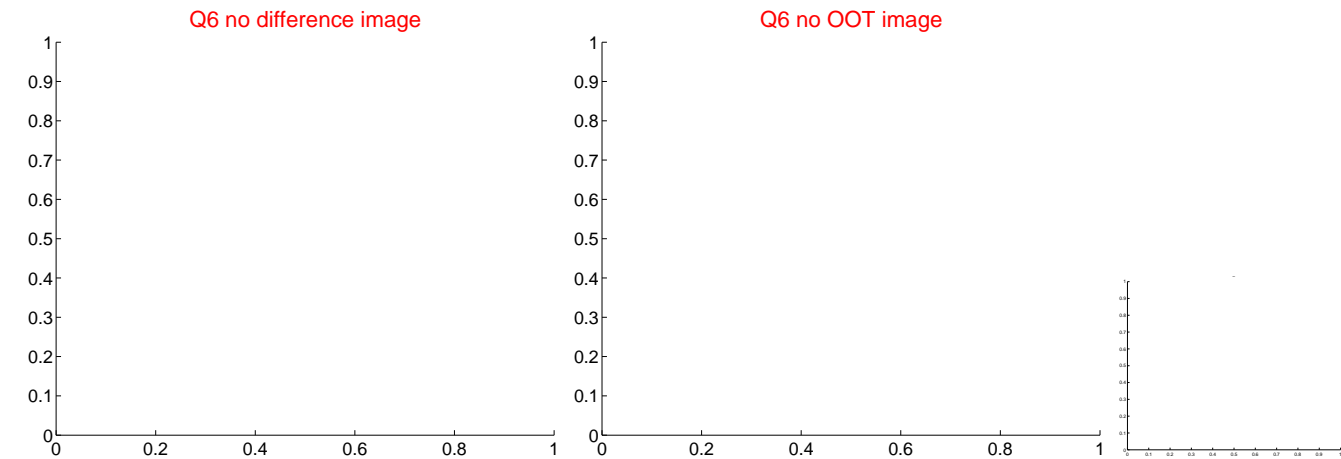
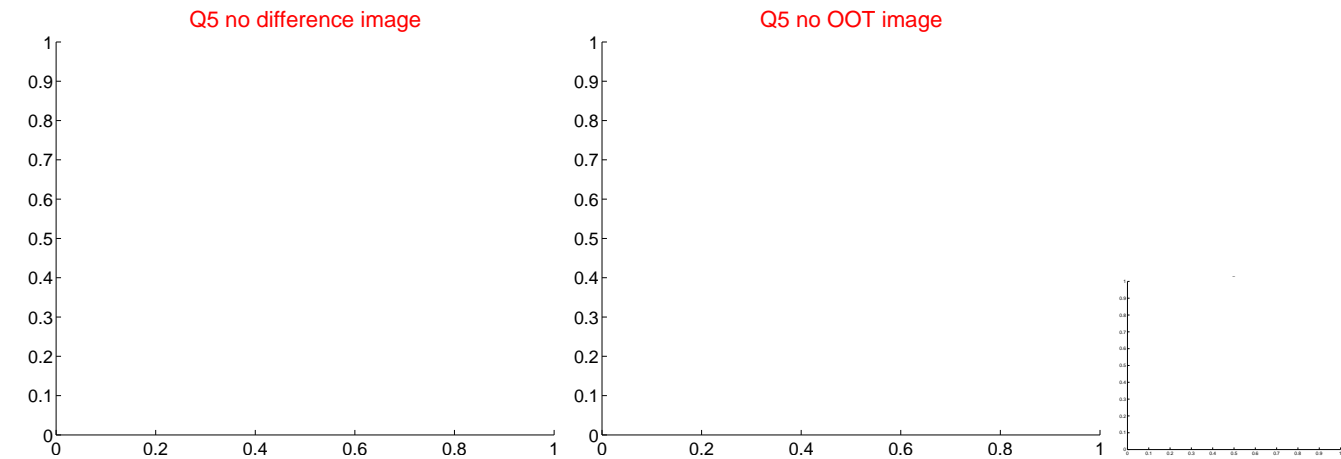


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

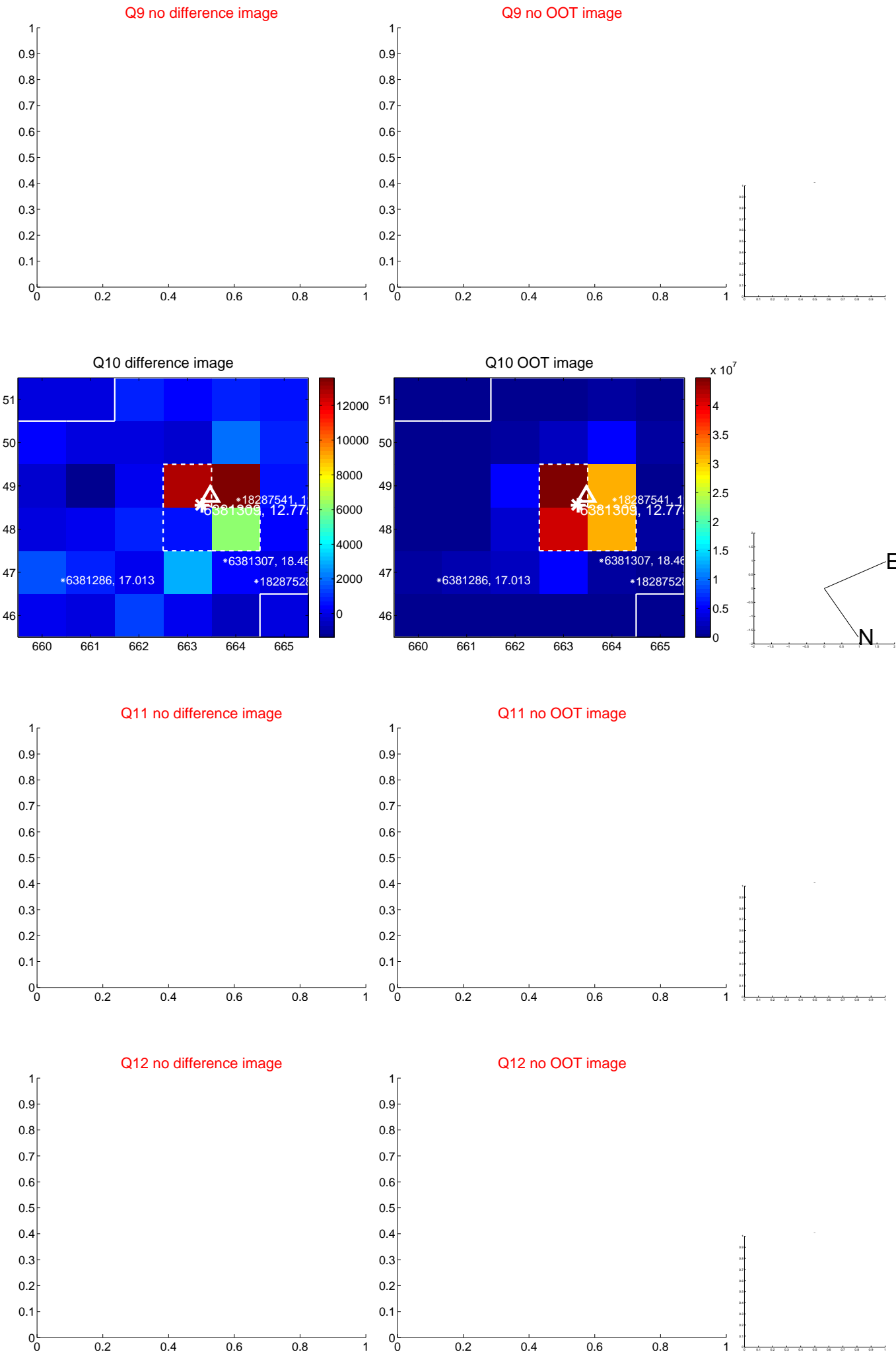
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



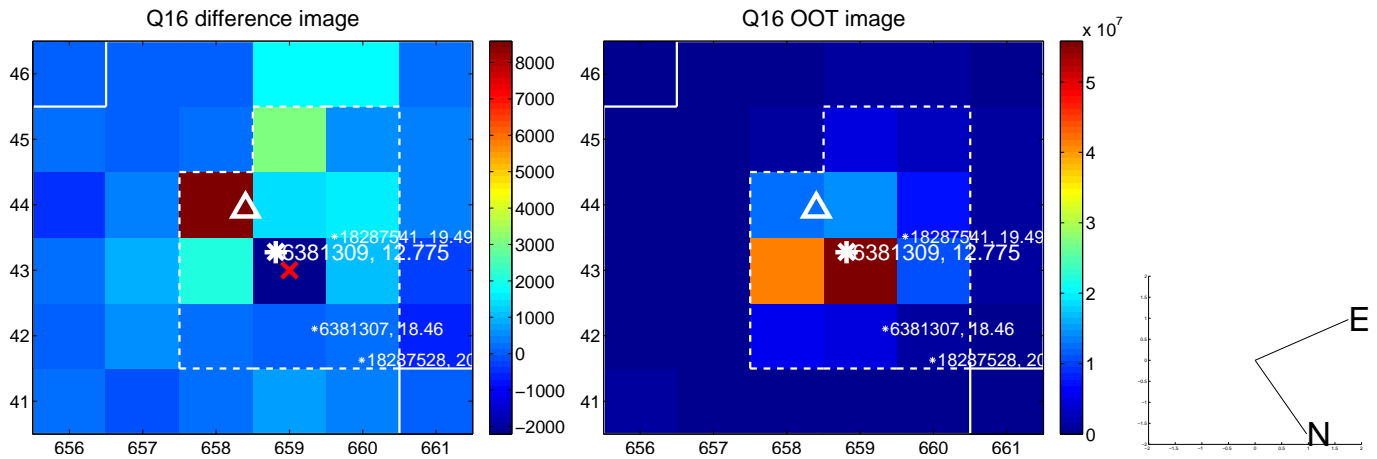
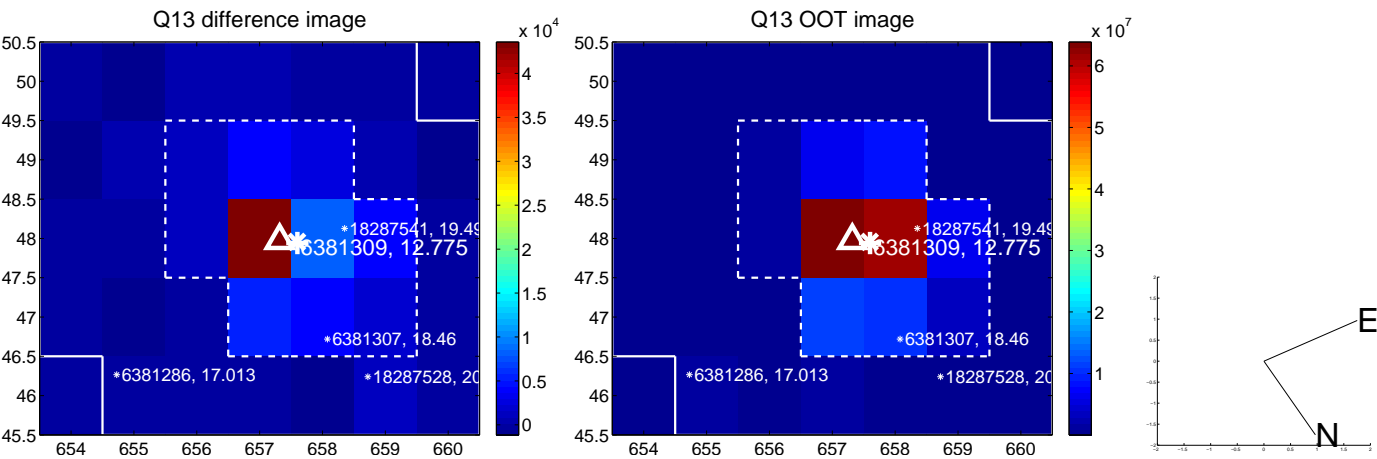
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



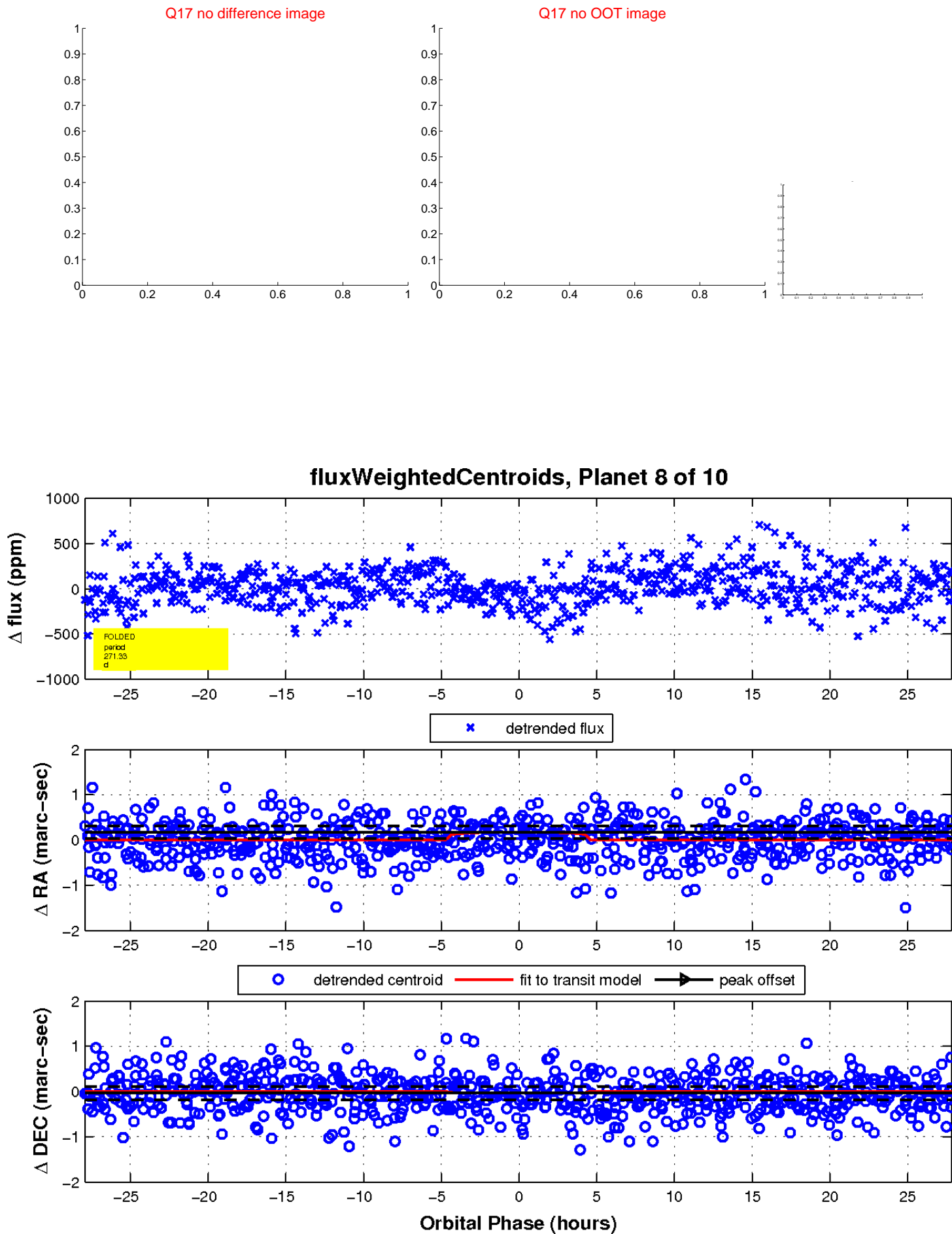
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

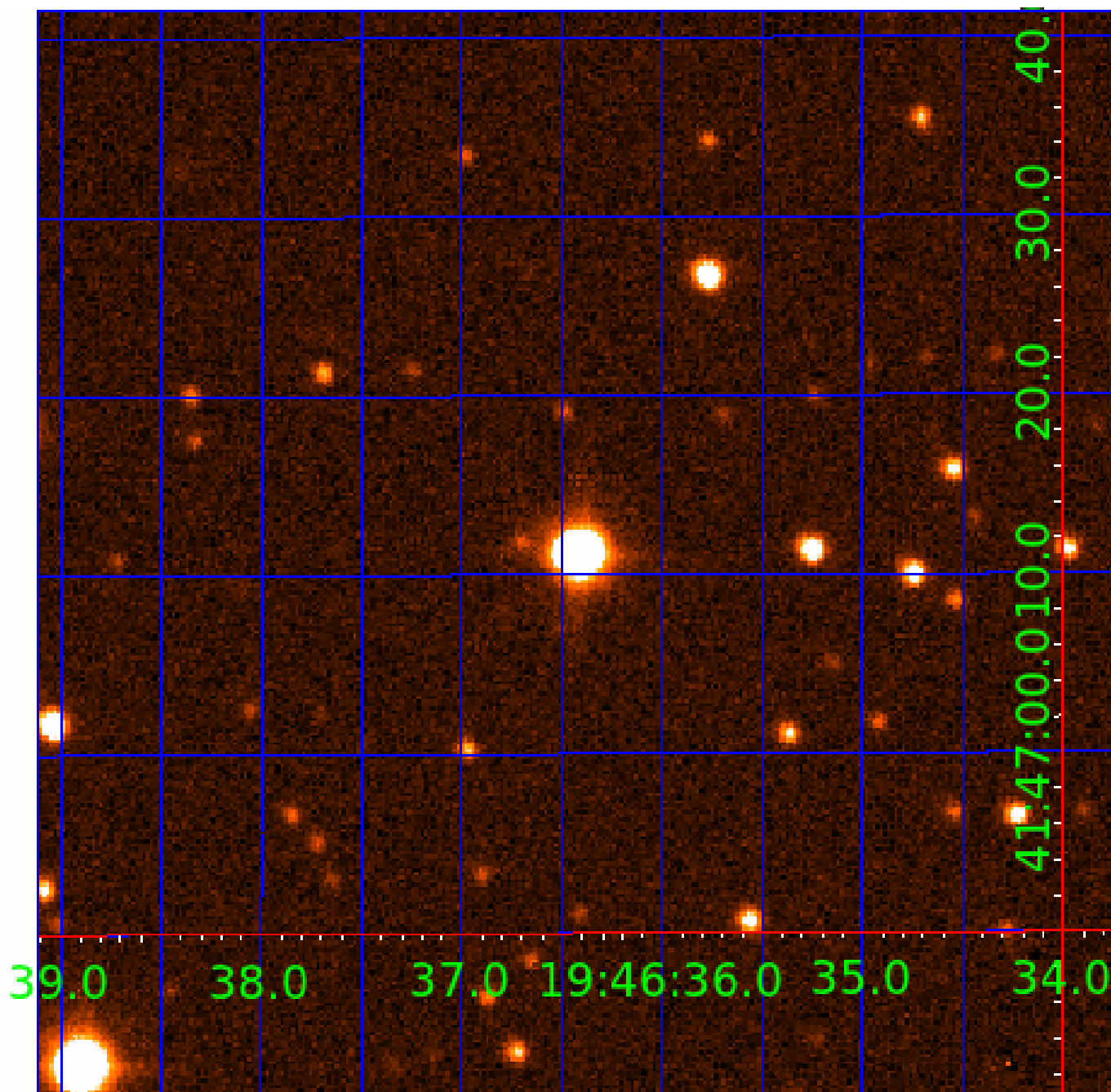


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006381309

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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

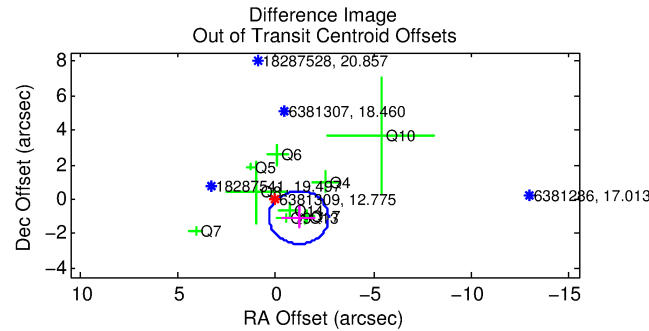
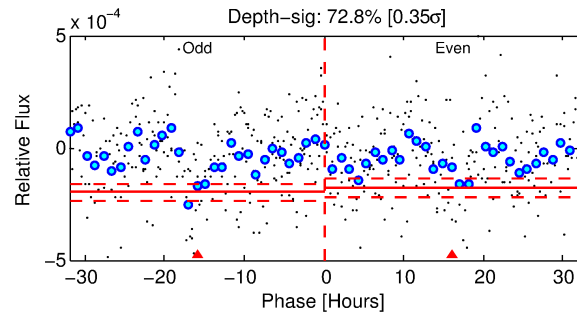
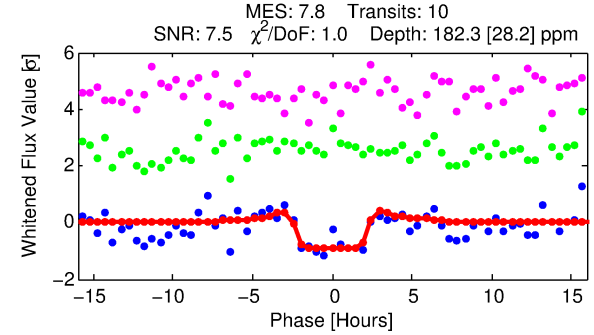
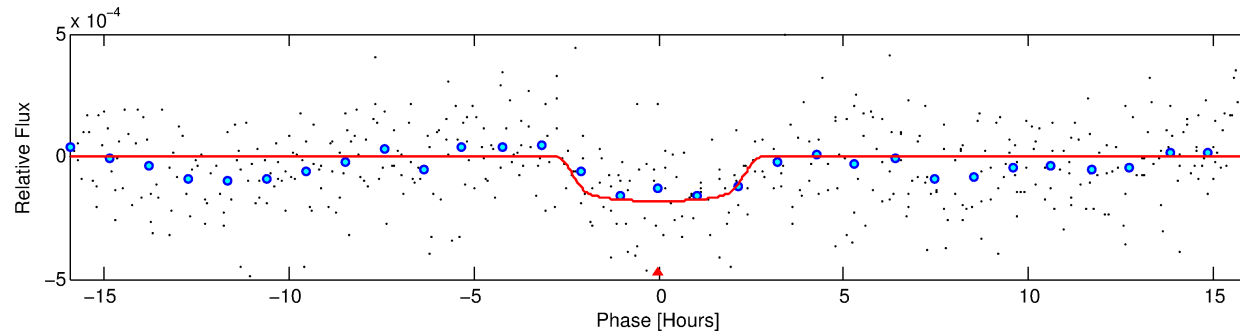
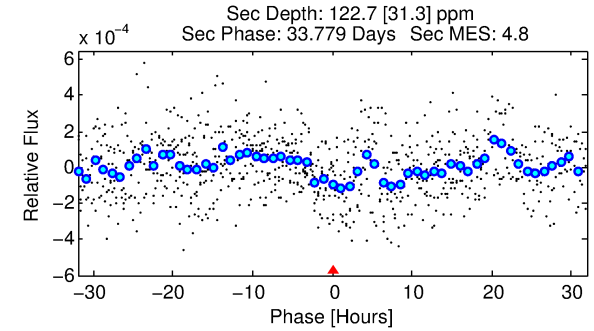
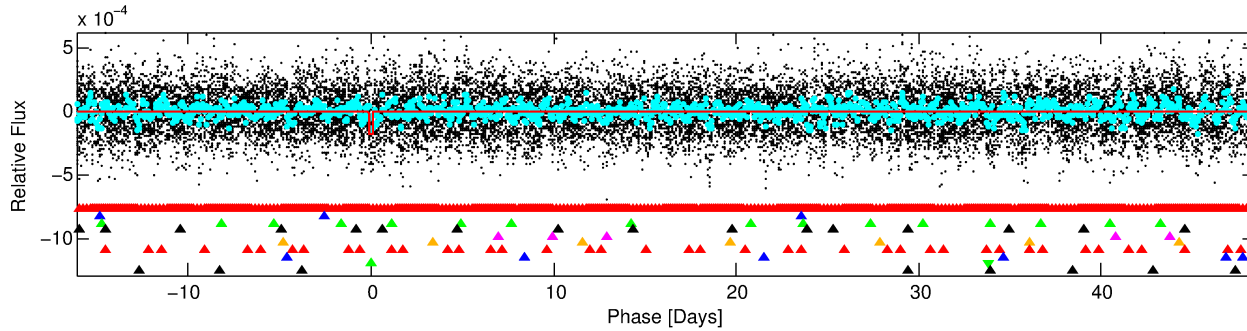
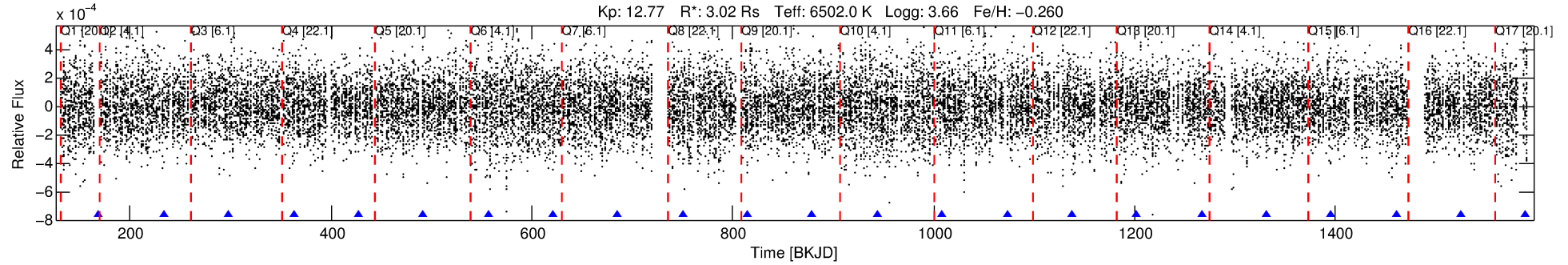
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-09

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 9 of 10 Period: 64.559 d



DV Fit Results:

Period = 64.55925 [0.00104] d
Epoch = 169.1077 [0.0156] BKJD
Rp/R* = 0.0151 [0.0024]
a/R* = 34.68 [25.12]
b = 0.94 [0.09]
Seff = 111.98 [67.66]
Teq = 829 [125] K
Rp = 4.98 [2.04] Re
a = 0.3611 [0.1328] AU
Ag = 354.51 [254.05] [1.39σ]
Teffp = 5565 [586] K [7.90σ]

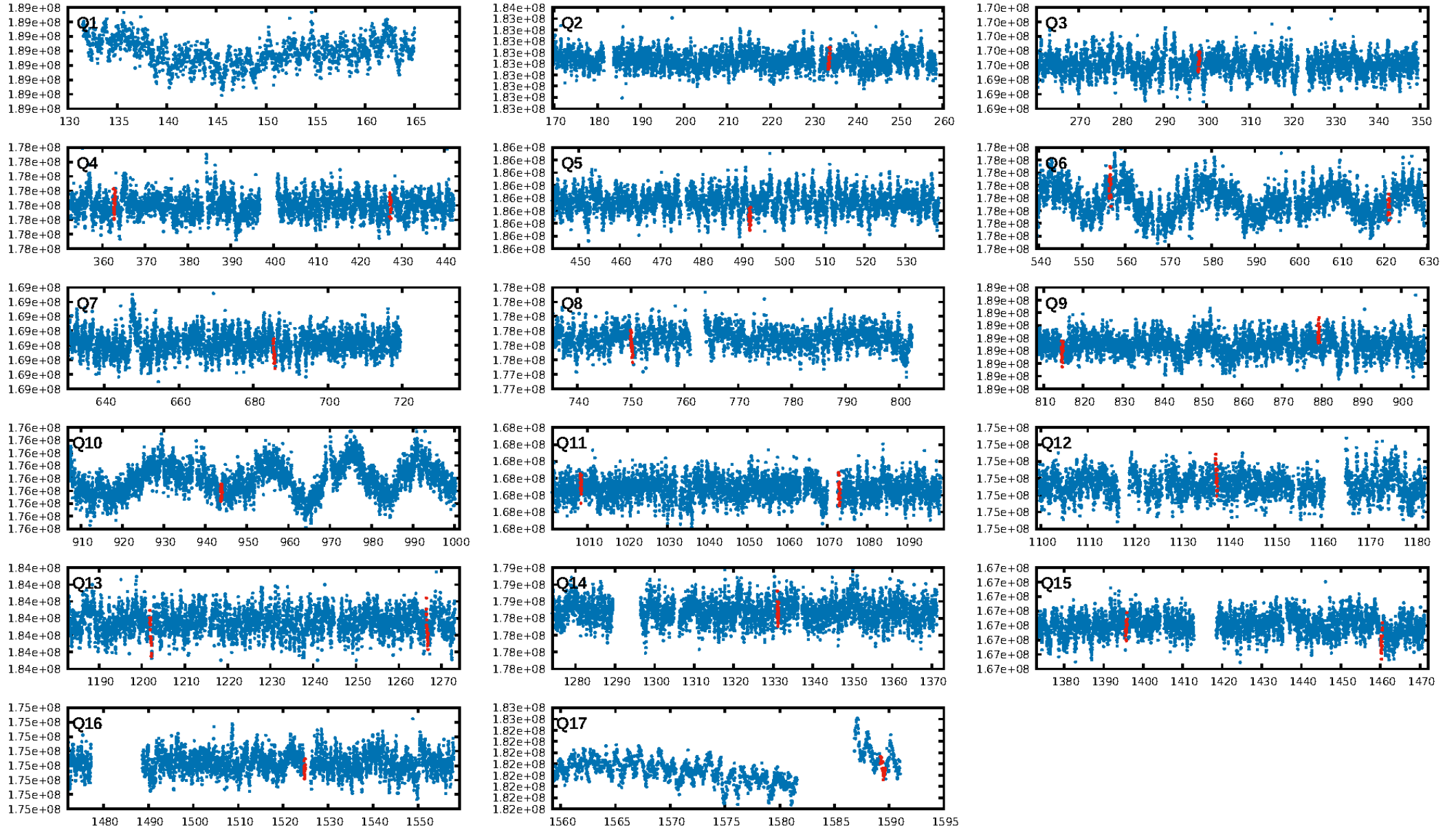
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.83σ]
LongPeriod-sig: 100.0% [79.94σ]
ModelChiSquare2-sig: 90.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 0.306
Centroid-sig: 11.8%
Centroid-so: 0.787 arcsec [1.60σ]
OotOffset-rm: 1.578 arcsec [3.10σ]
KicOffset-rm: 1.546 arcsec [3.26σ]
OotOffset-st: 3/1/2/4 [10]
KicOffset-st: 3/1/2/4 [10]
DiffImageQuality-fgm: 0.80 [8/10]
DiffImageOverlap-fno: 0.50 [7/14]

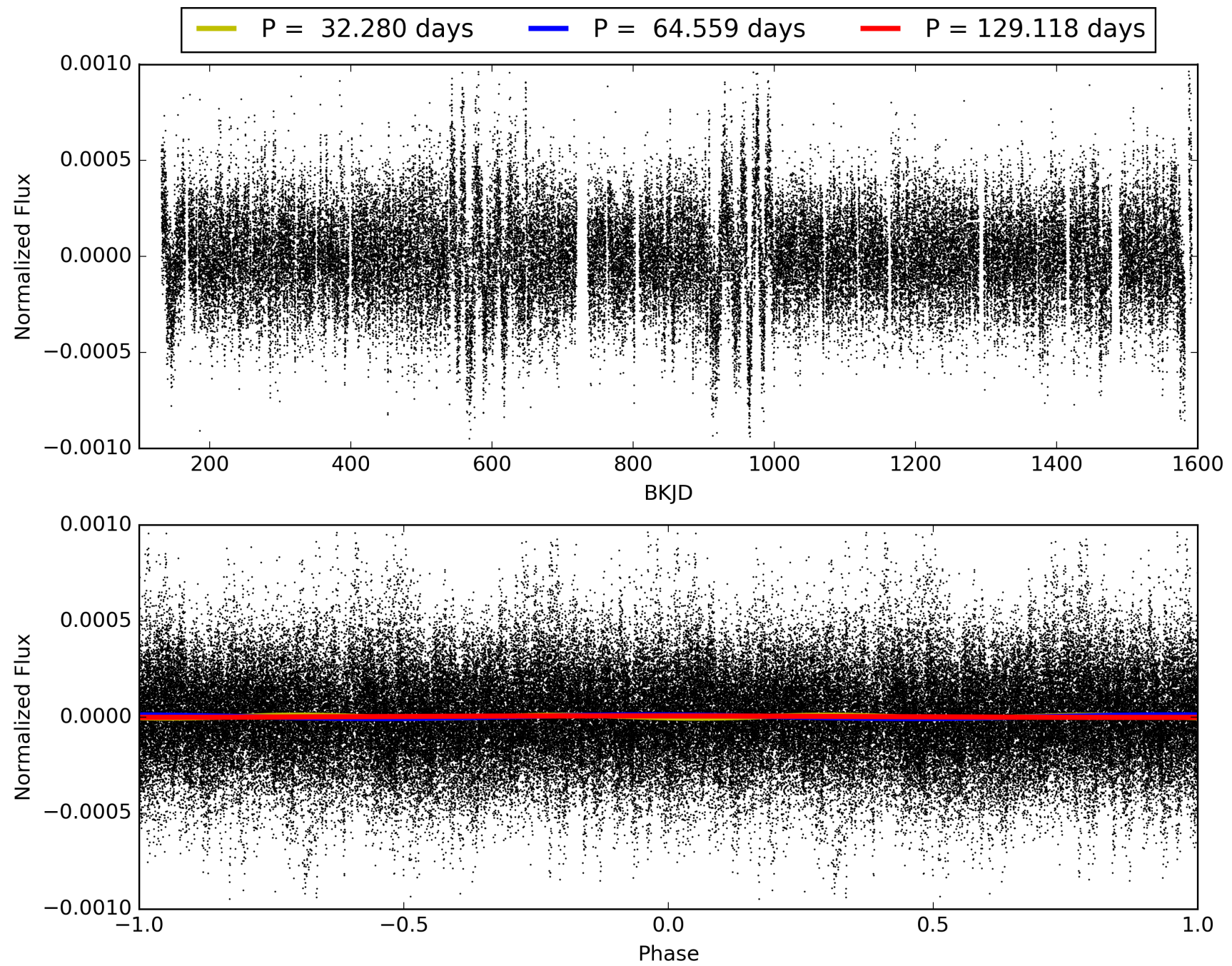
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:34:30 Z

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

TCE 006381309-09, PDC Light Curves

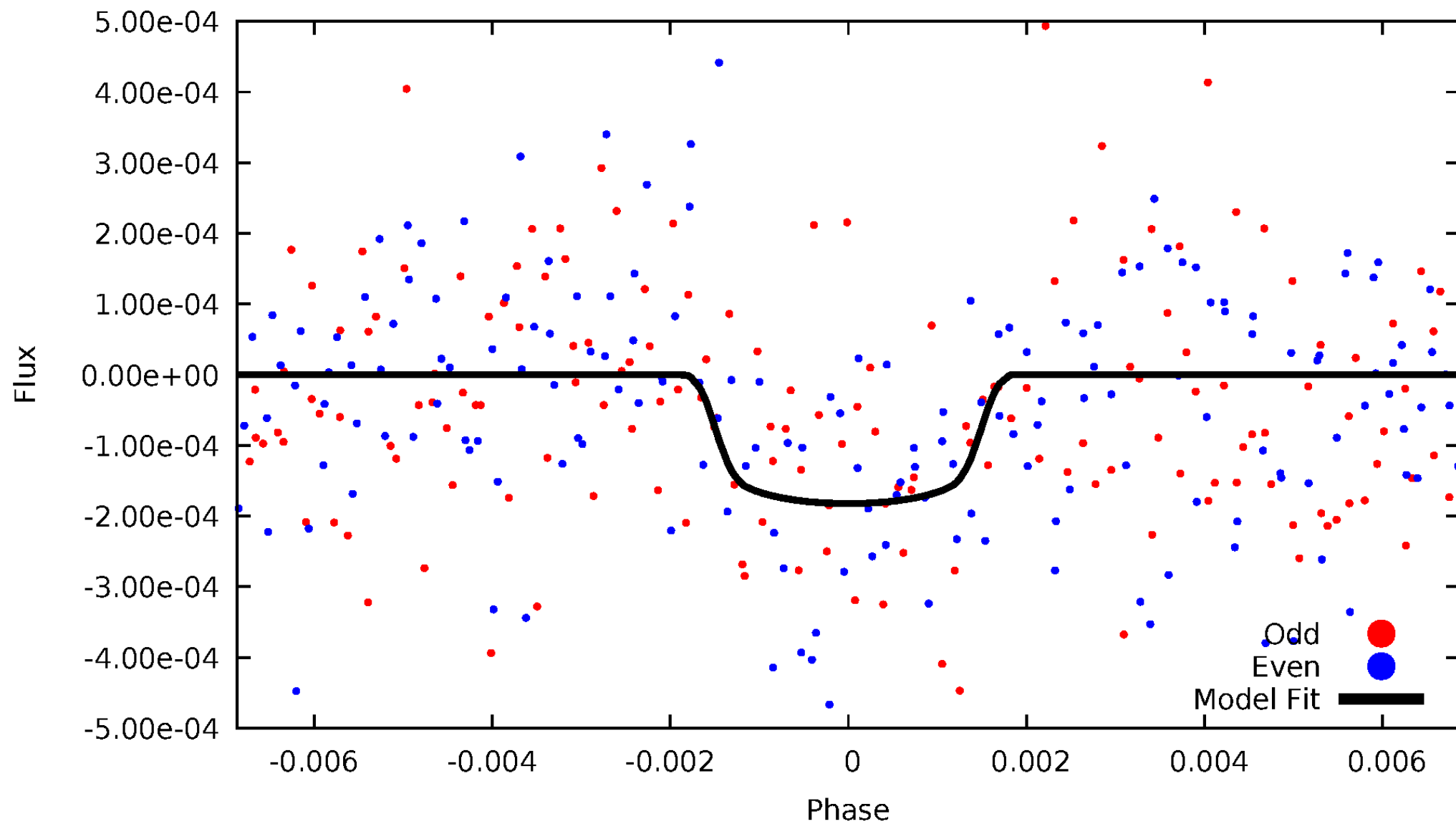


TCE 006381309-09



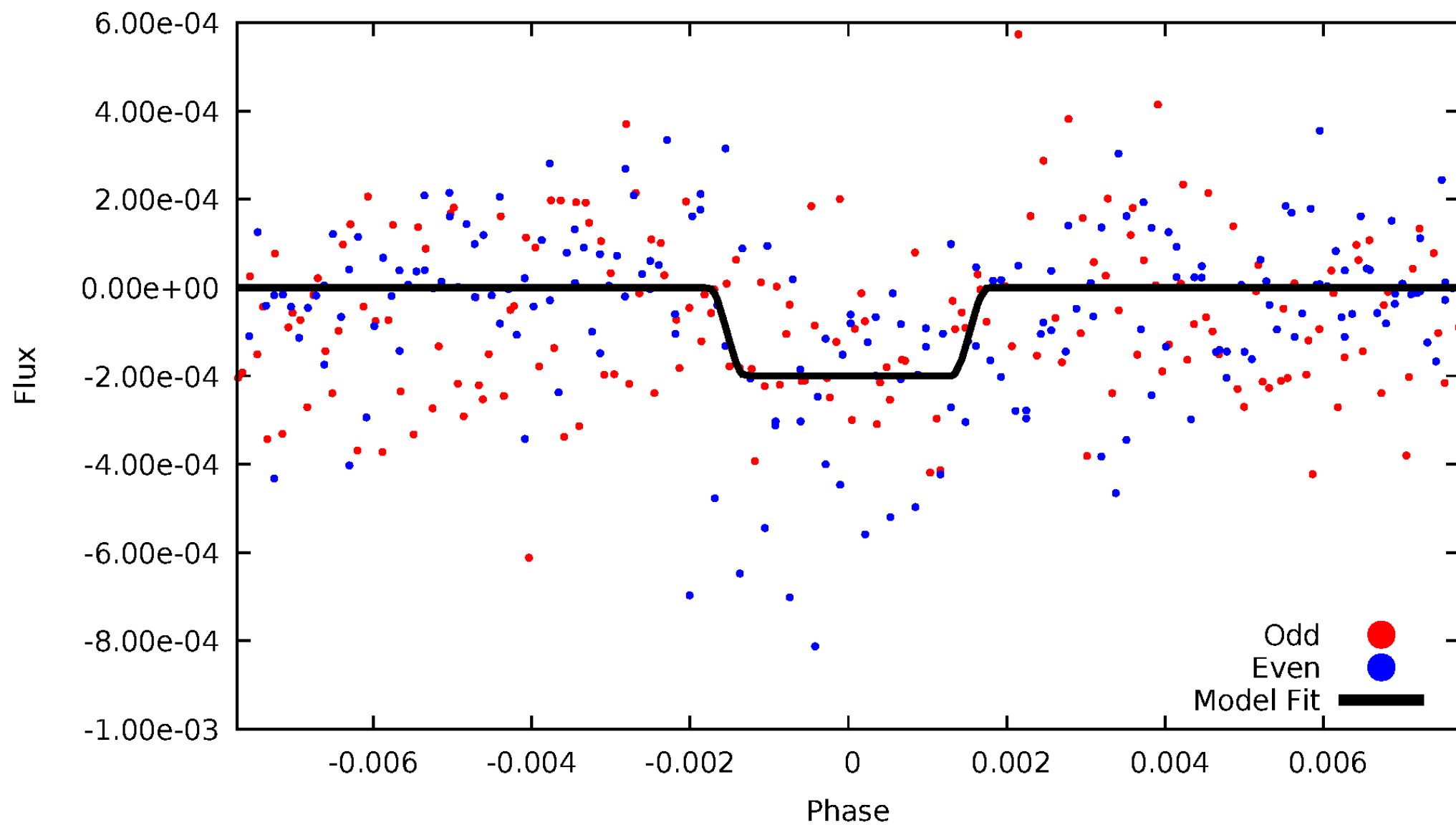
DV Odd/Even

TCE 006381309-09



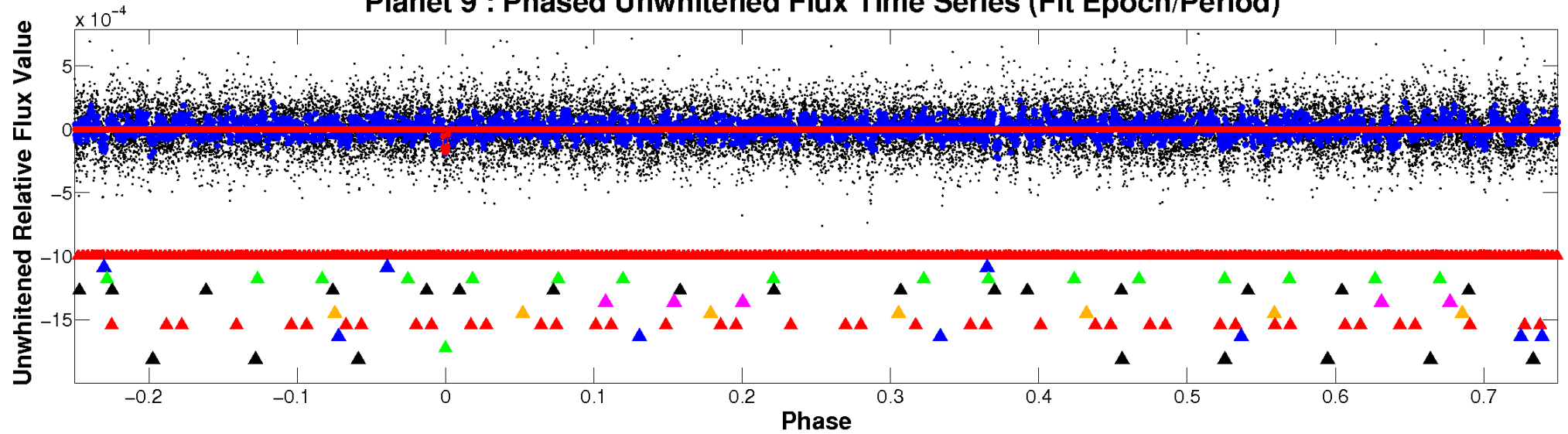
ALT Odd/Even

TCE 006381309-09

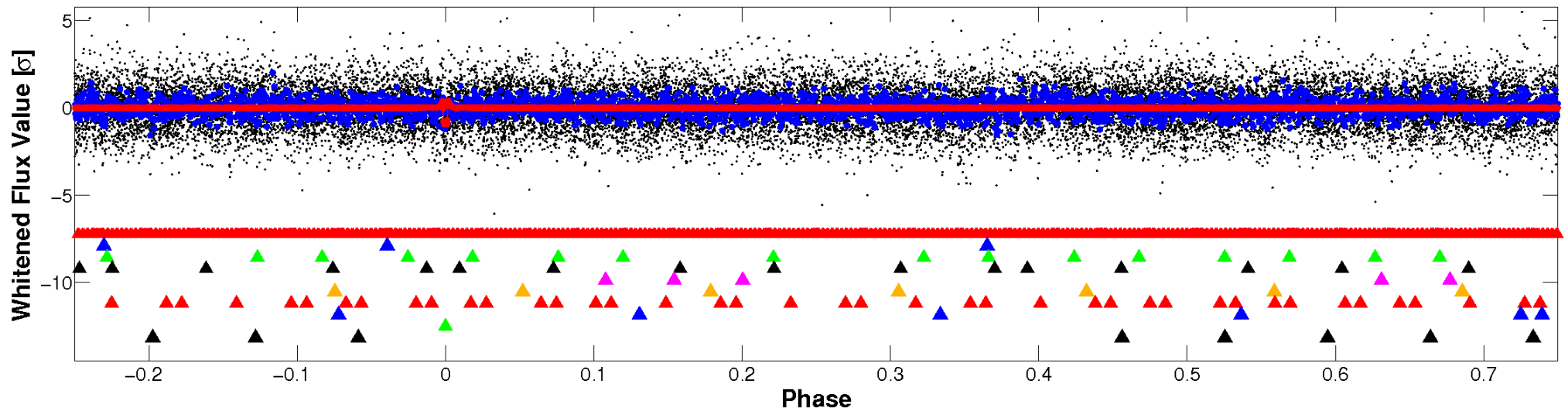


Non-Whitened Vs. Whitened Light Curve

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

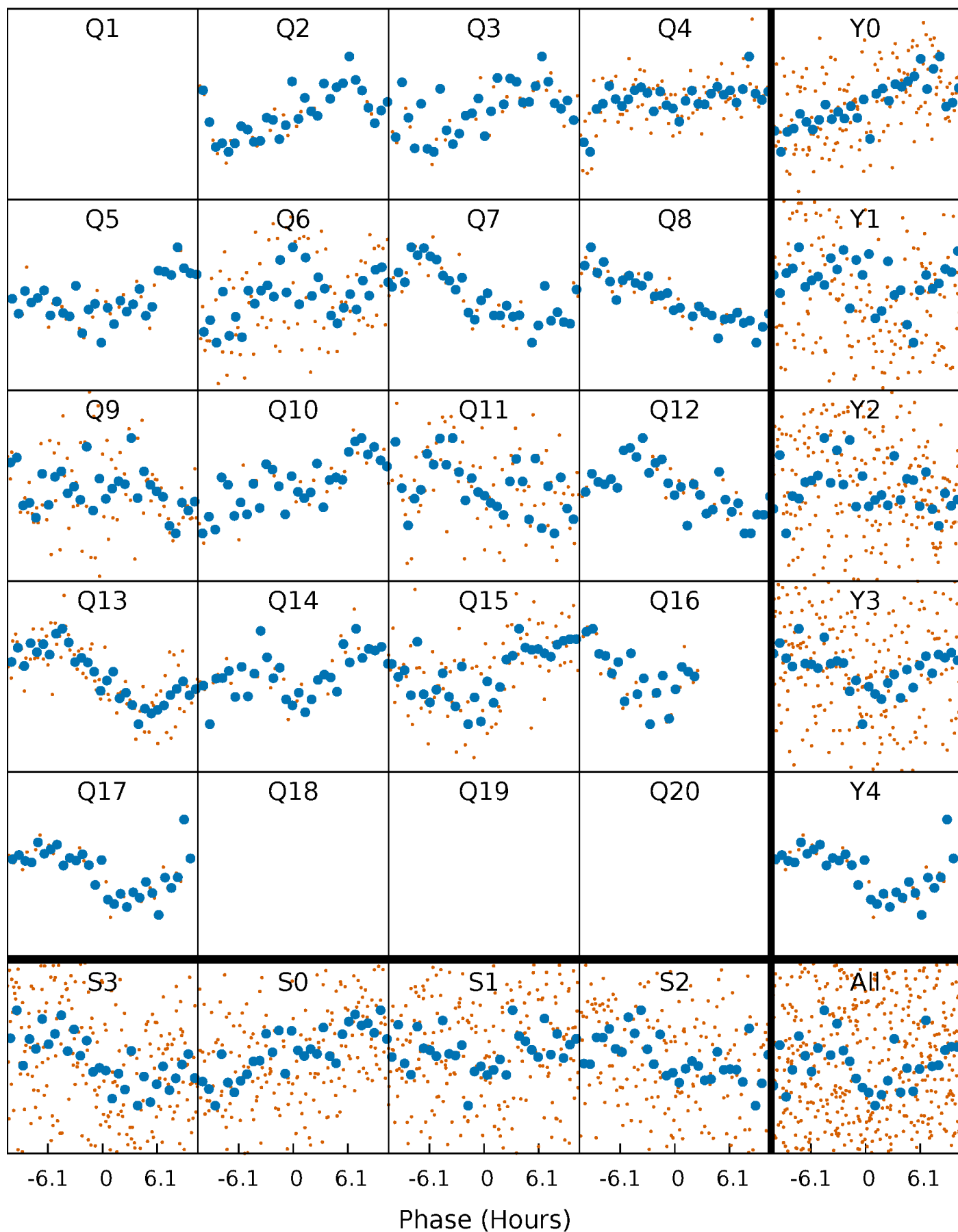


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



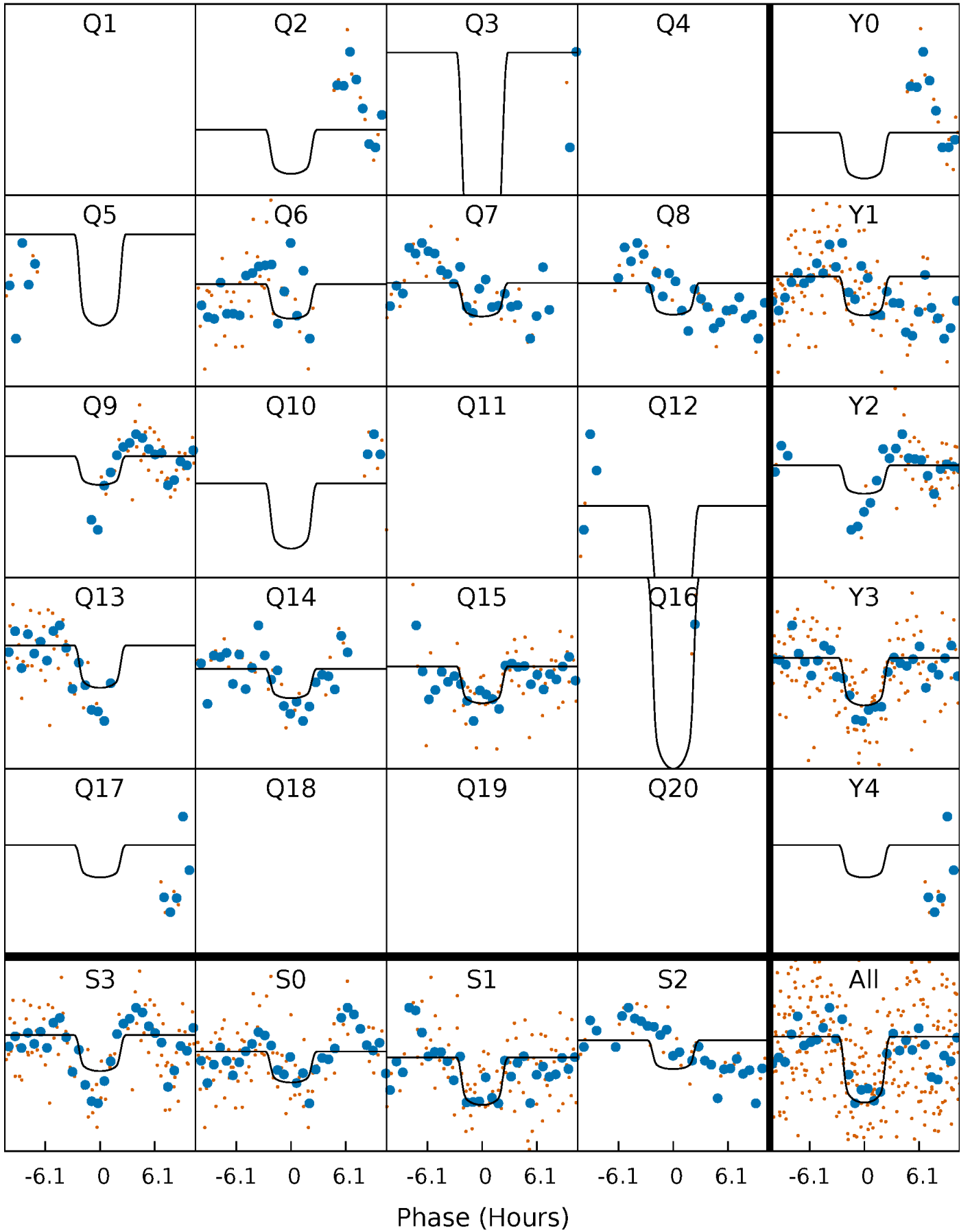
PDC Quarter-Phased Transit Curves

TCE 006381309-09 P= 64.559247 Days $T_0=169.107730$ (BKJD)



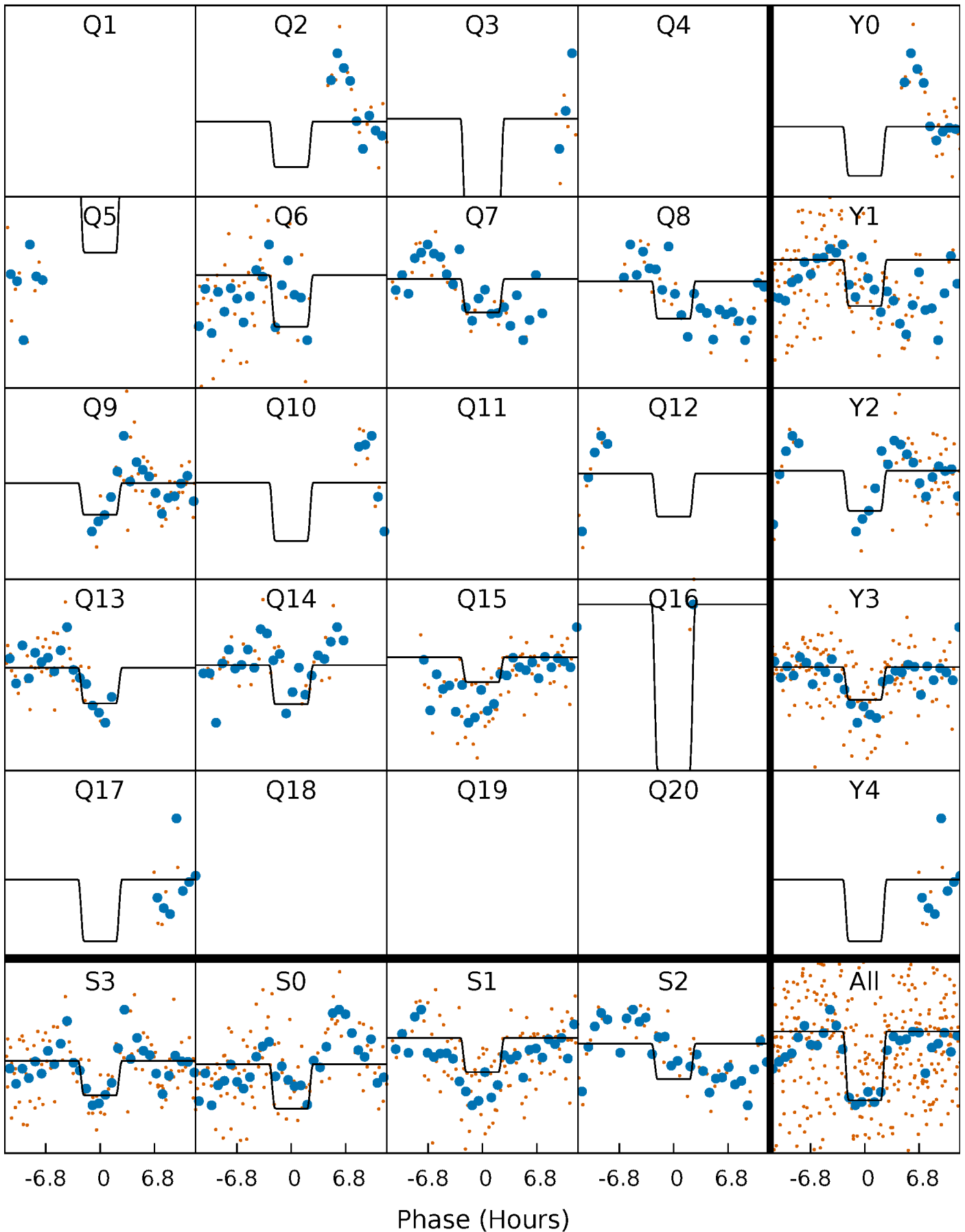
DV Quarter-Phased Transit Curves

TCE 006381309-09 $P = 64.559247$ Days $T_0 = 169.107730$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

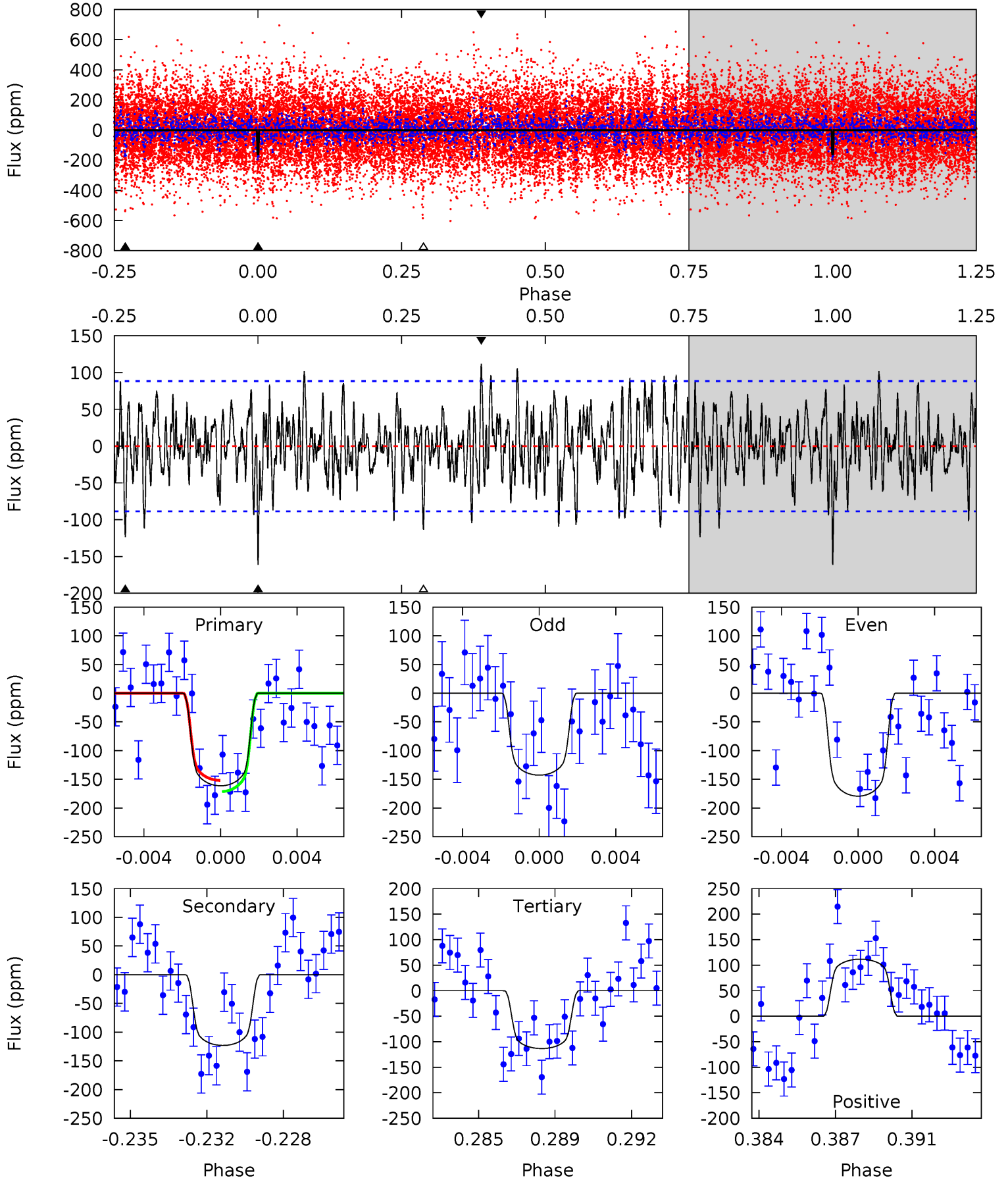
TCE 006381309-09 P= 64.558849 Days $T_0=169.116531$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-09, P = 64.559247 Days, E = 104.548483 Days

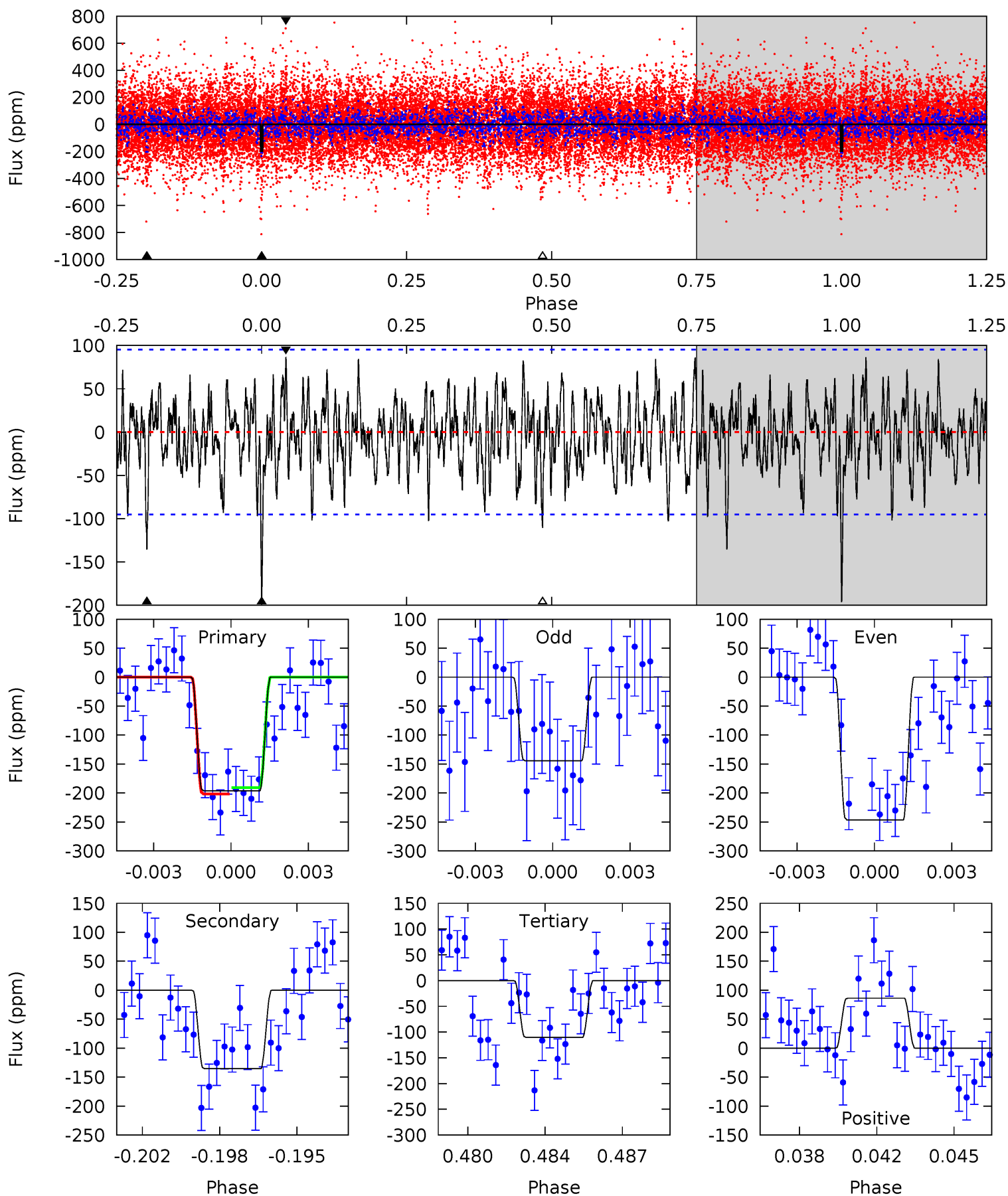
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.50	7.25	6.68	6.58	5.21	2.89	2.27	2.83	2.92	0.57	0.67	1.08	0.37	0.41	0.58



Alt Model-Shift Uniqueness Test

006381309-09, P = 64.558849 Days, E = 104.557682 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	7.43	6.06	4.74	5.23	2.92	1.89	4.71	6.03	1.37	2.70	2.81	1.07	0.31	0.31



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-123 ± 17	$4.69^{+1.06}_{-1.14}$	1126^{+71}_{-115}	5549^{+511}_{-386}	407^{+283}_{-135}
Alt.	-135 ± 18	$4.37^{+0.97}_{-1.04}$	1130^{+67}_{-110}	5877^{+649}_{-446}	513^{+358}_{-175}

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 $A_{obs} \gg 1.0$

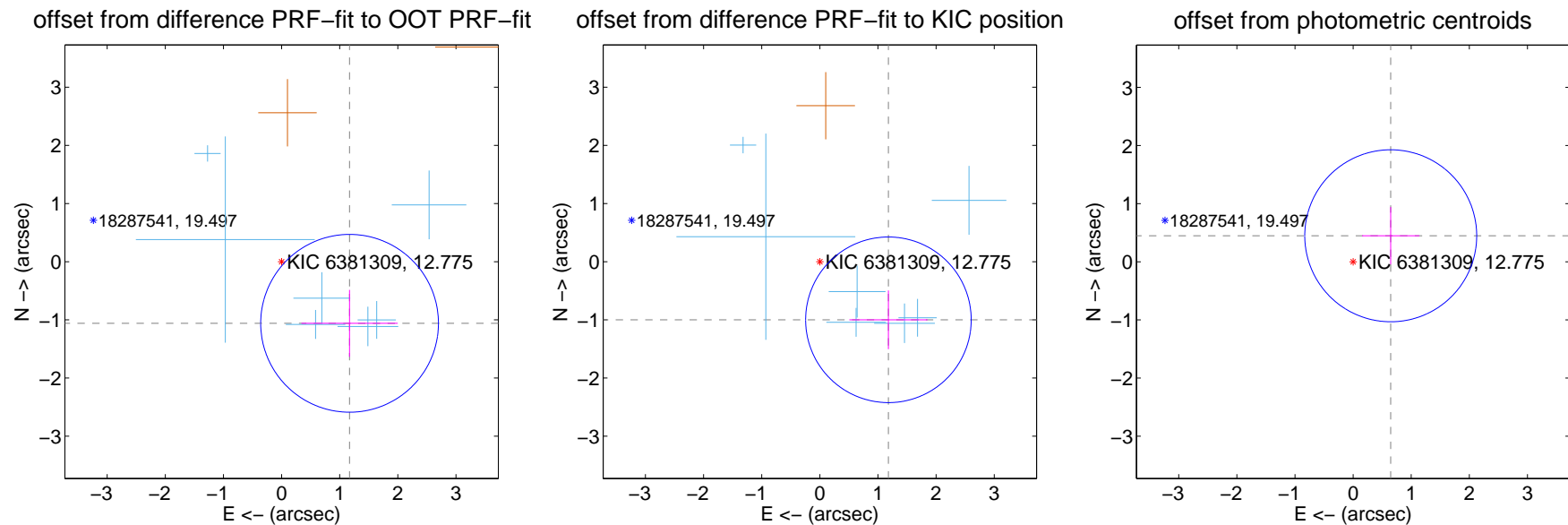
DV Centroid Data

Supplemental centroid analysis for 006381309-09. Kepler magnitude: 12.78. Transit SNR 7.52

There are 8 quarters with good PRF difference image offsets

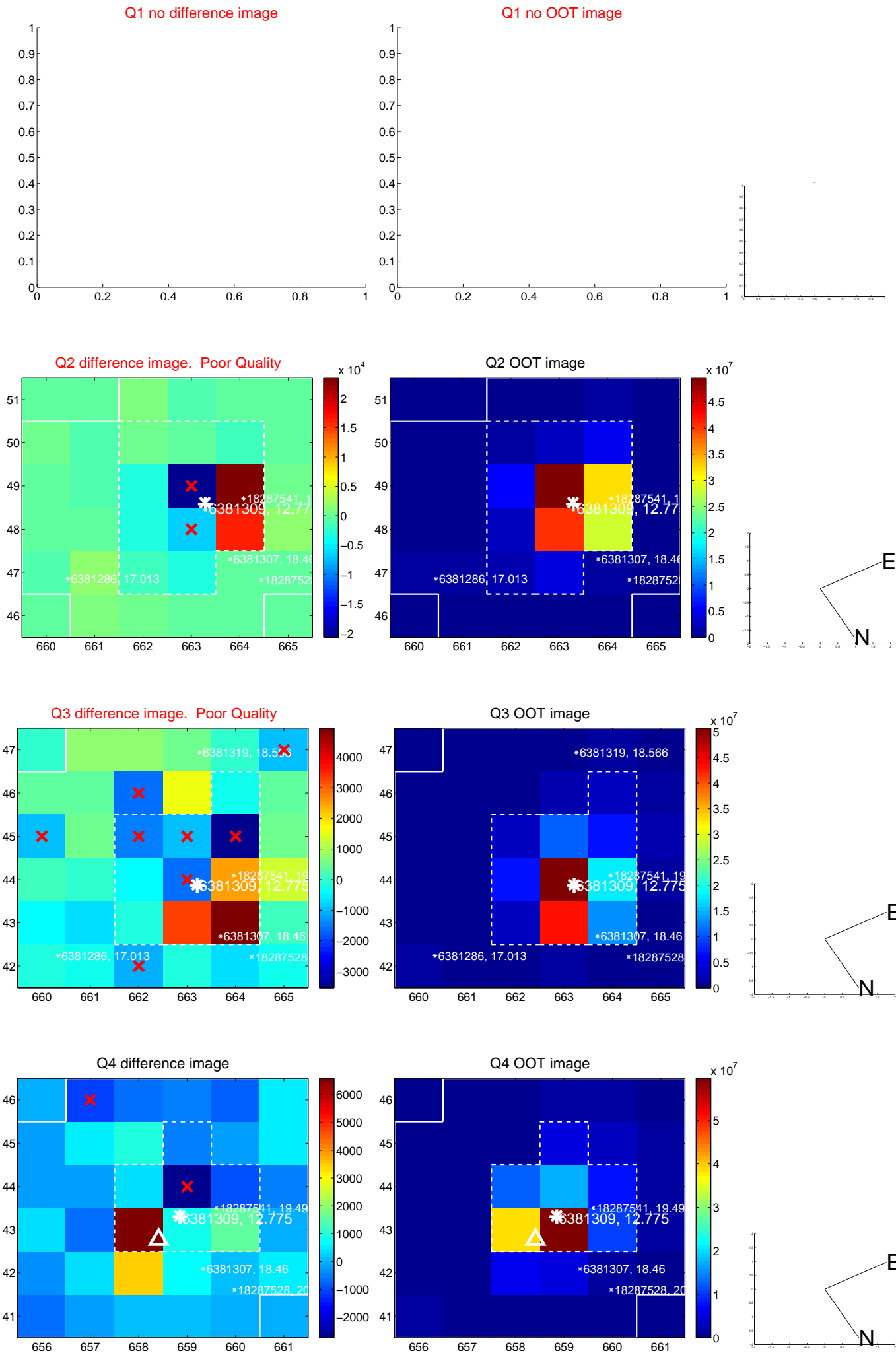
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.578 ± 0.510	3.10	-1.170 ± 0.829	-1.059 ± 0.575
PRF-fit source offset from KIC position	1.546 ± 0.475	3.26	-1.180 ± 0.673	-0.999 ± 0.505
photometric centroid source offset	0.79 ± 0.49	1.60	-0.65 ± 0.49	0.45 ± 0.49

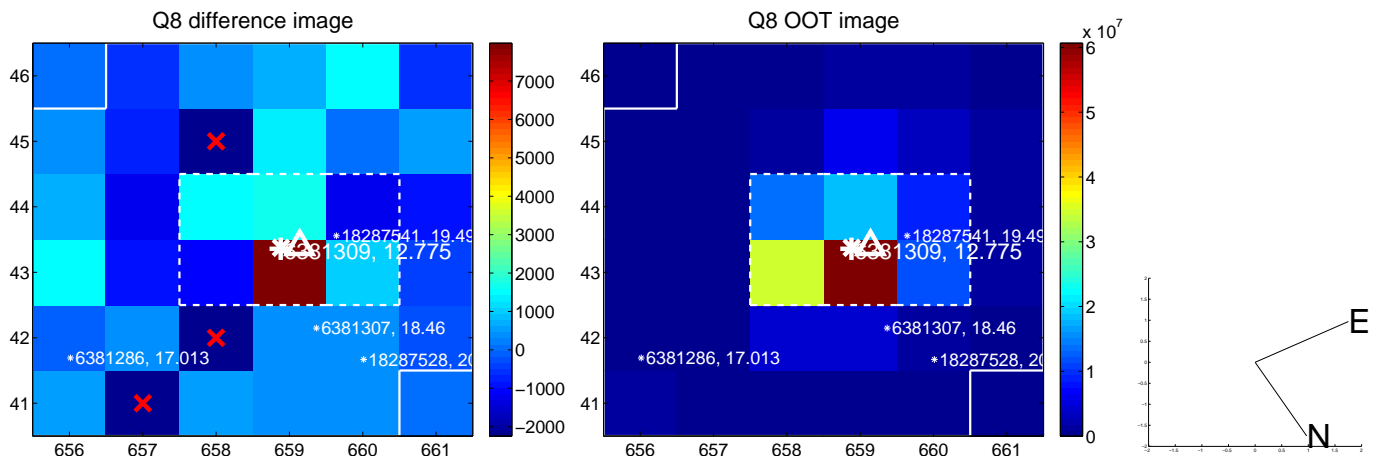
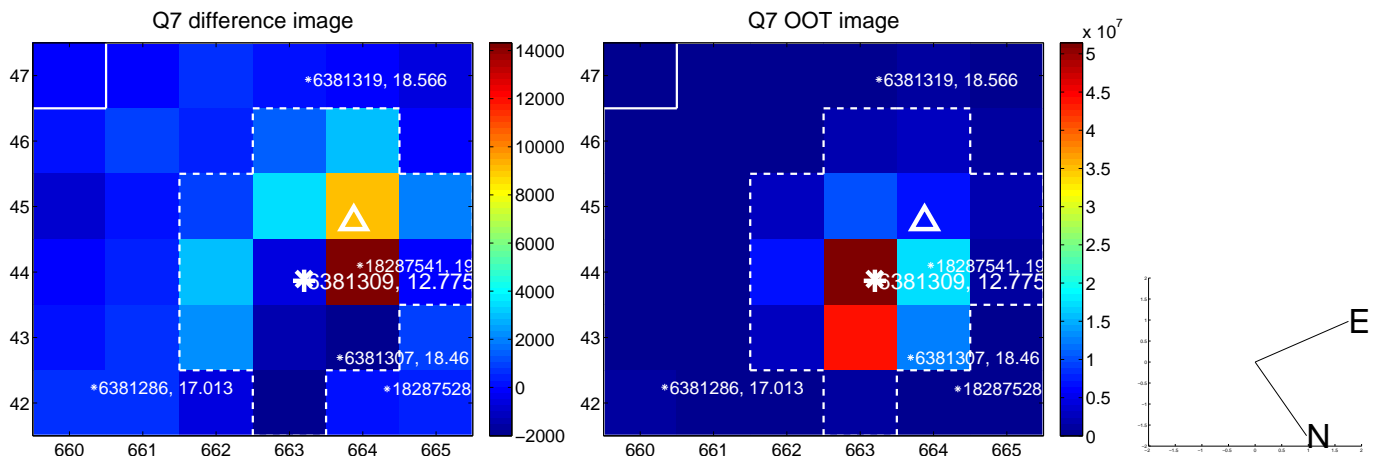
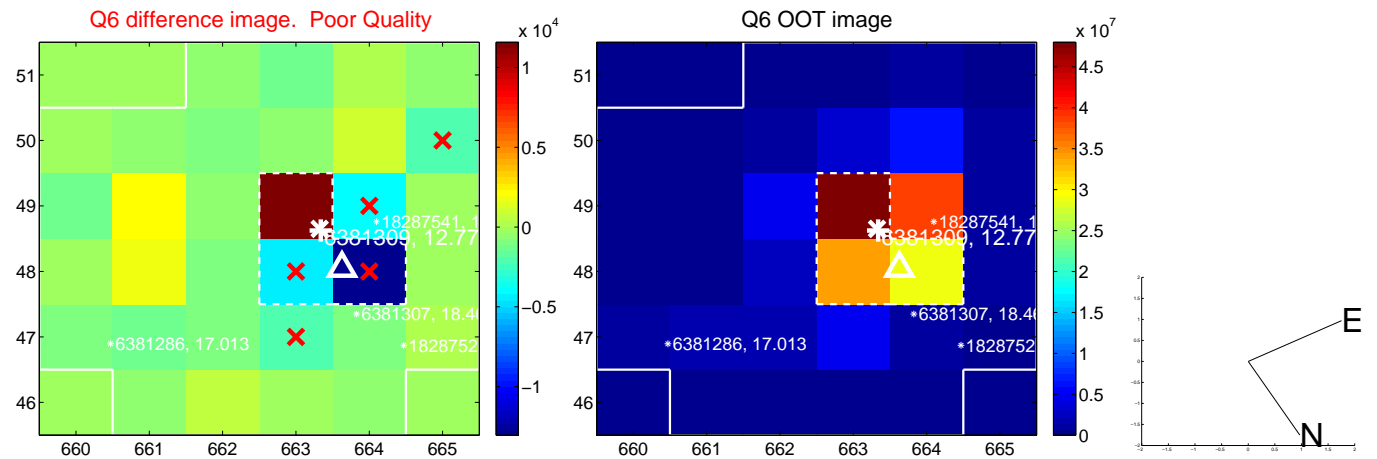
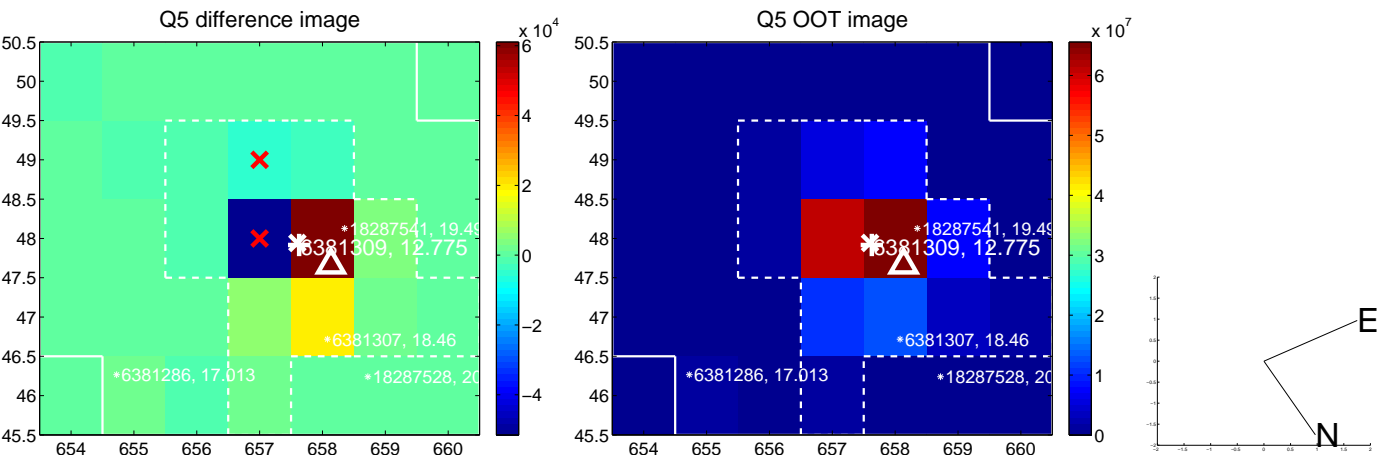


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

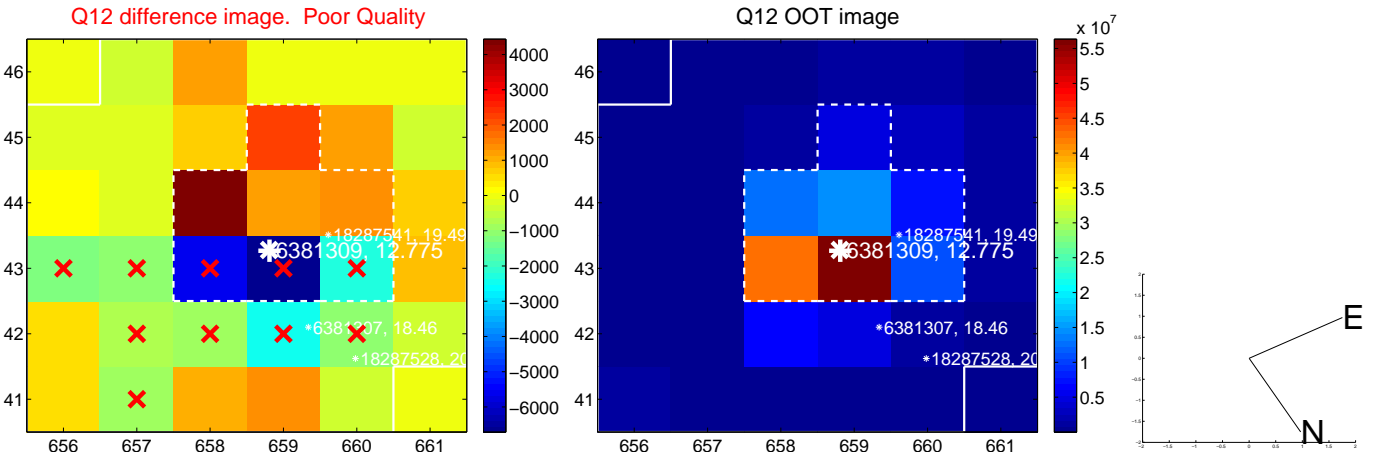
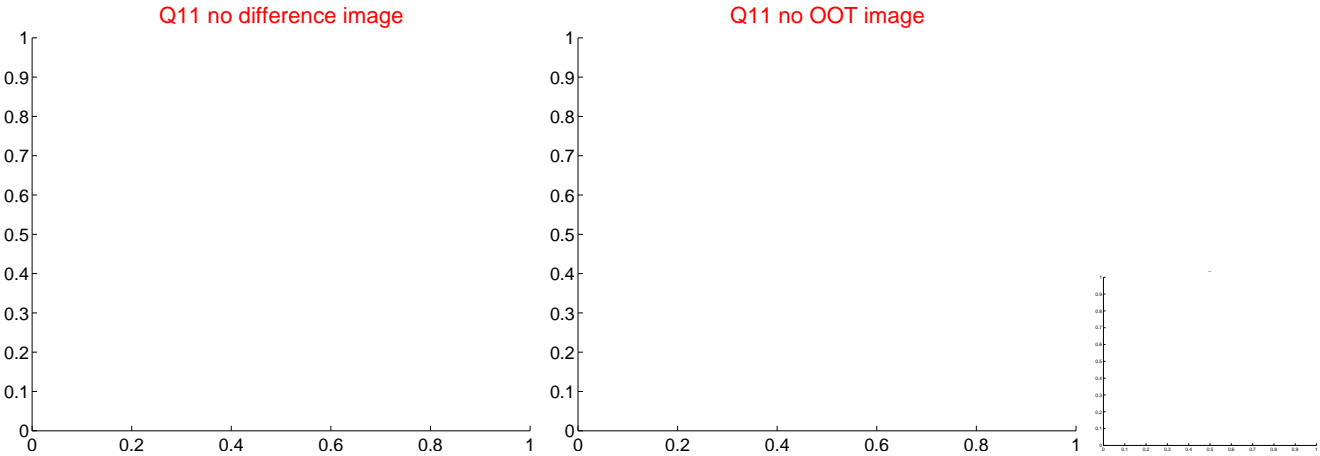
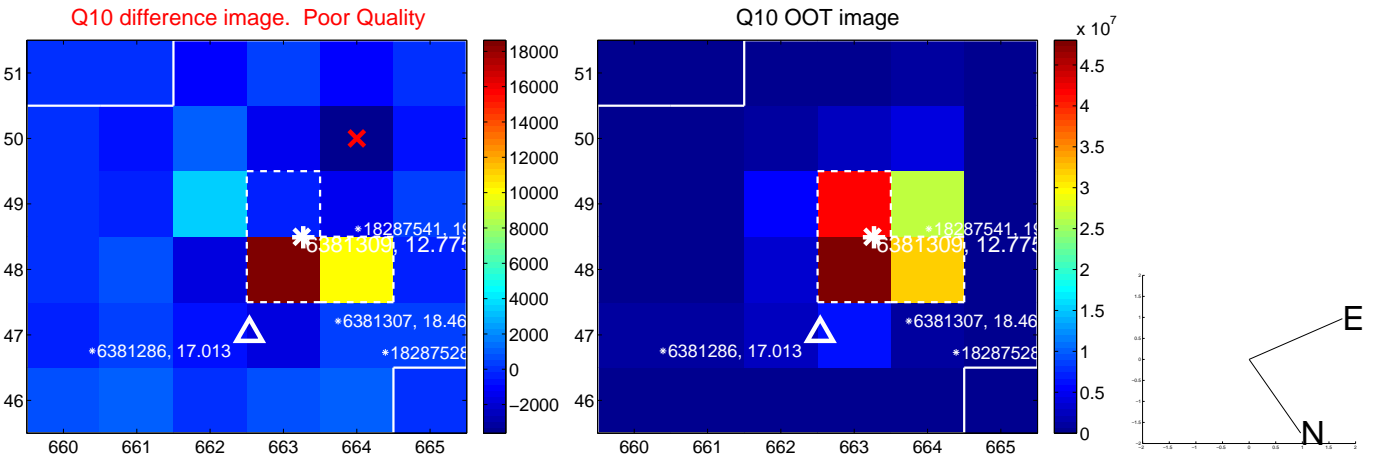
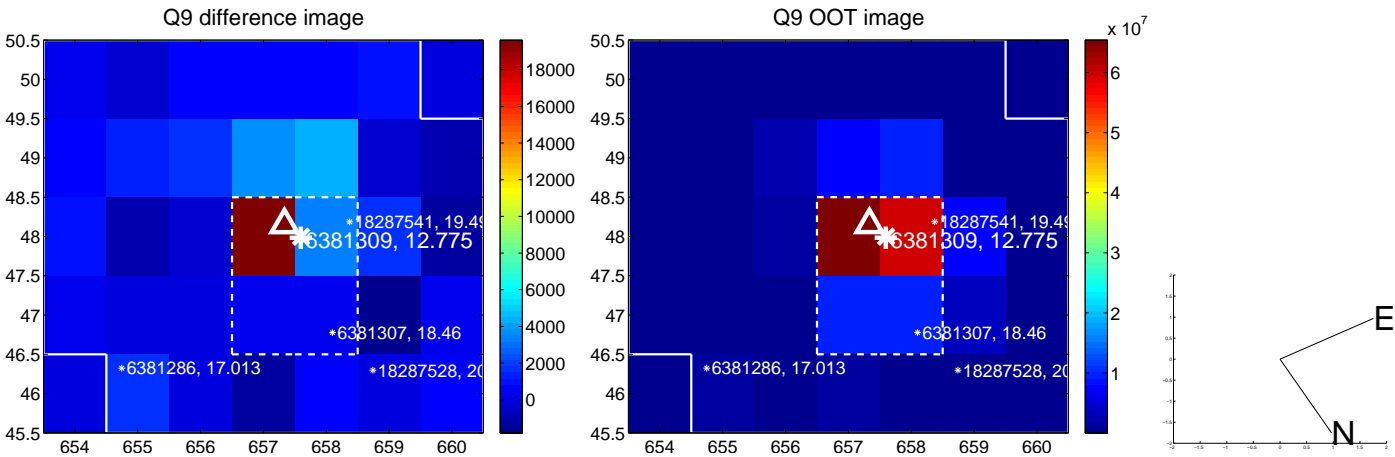
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



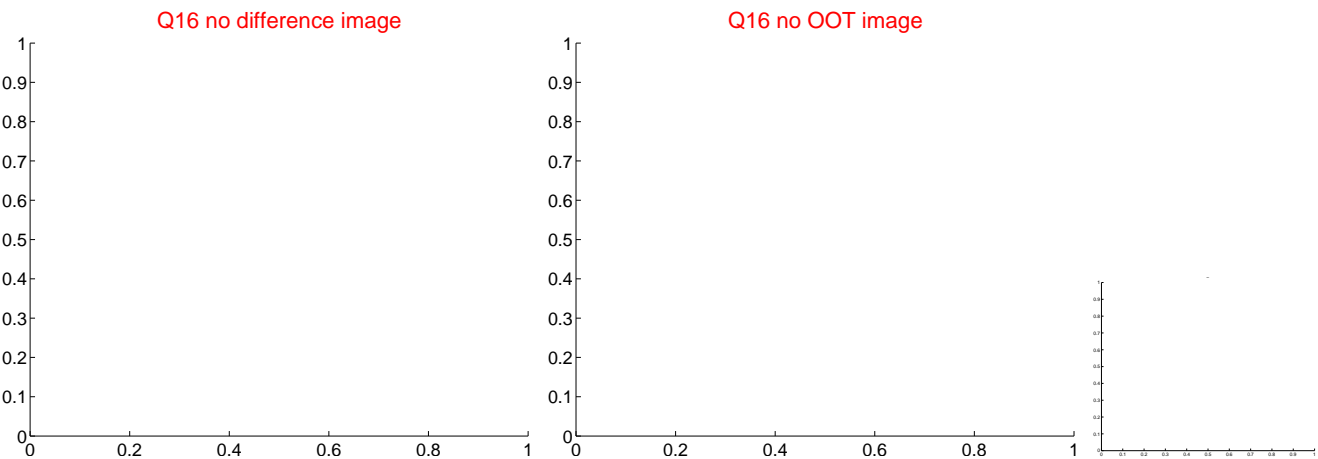
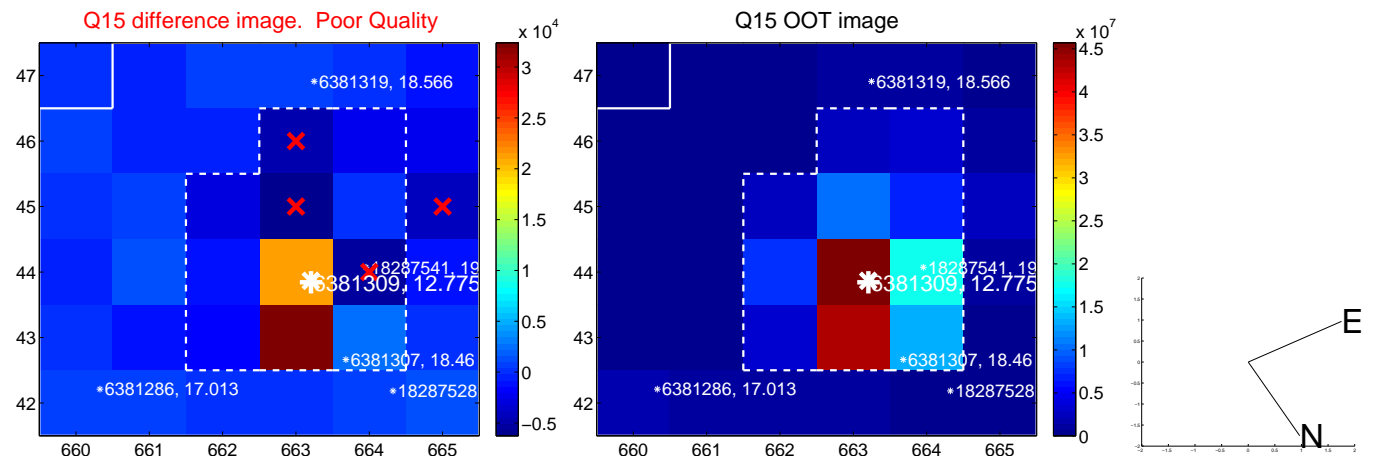
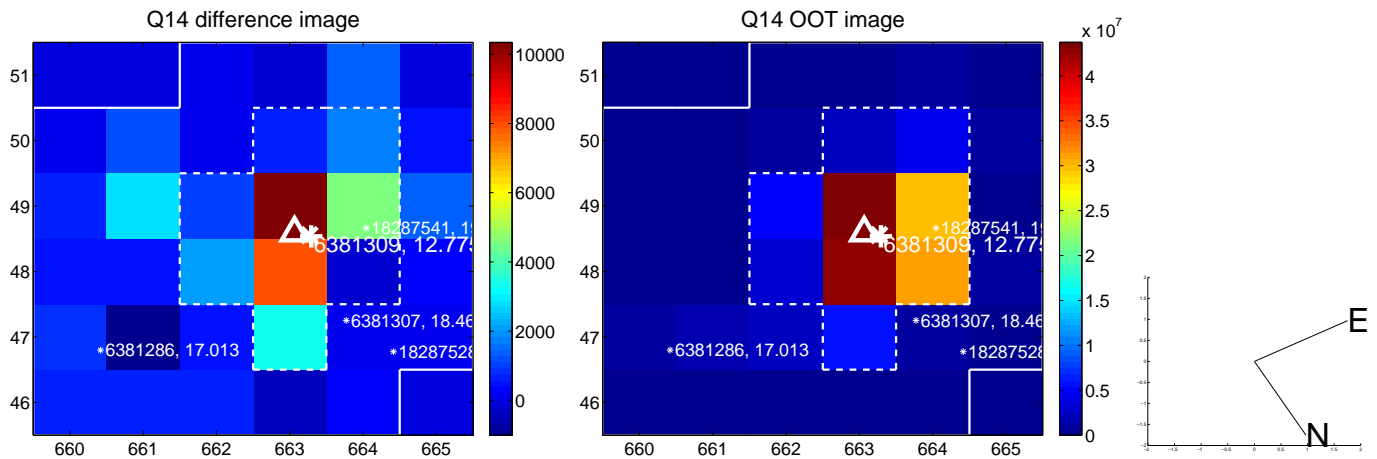
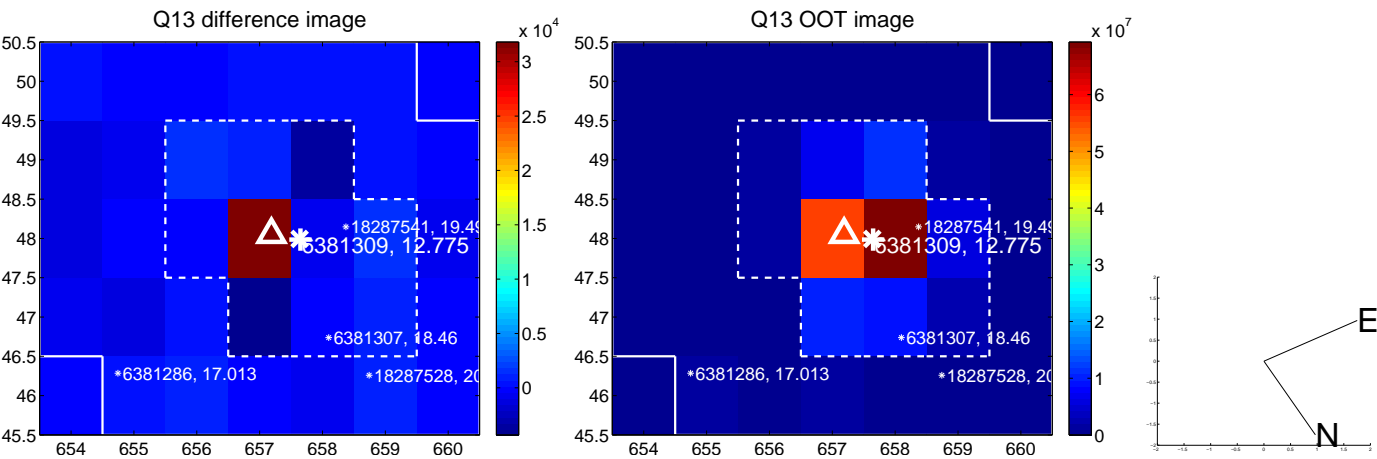
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



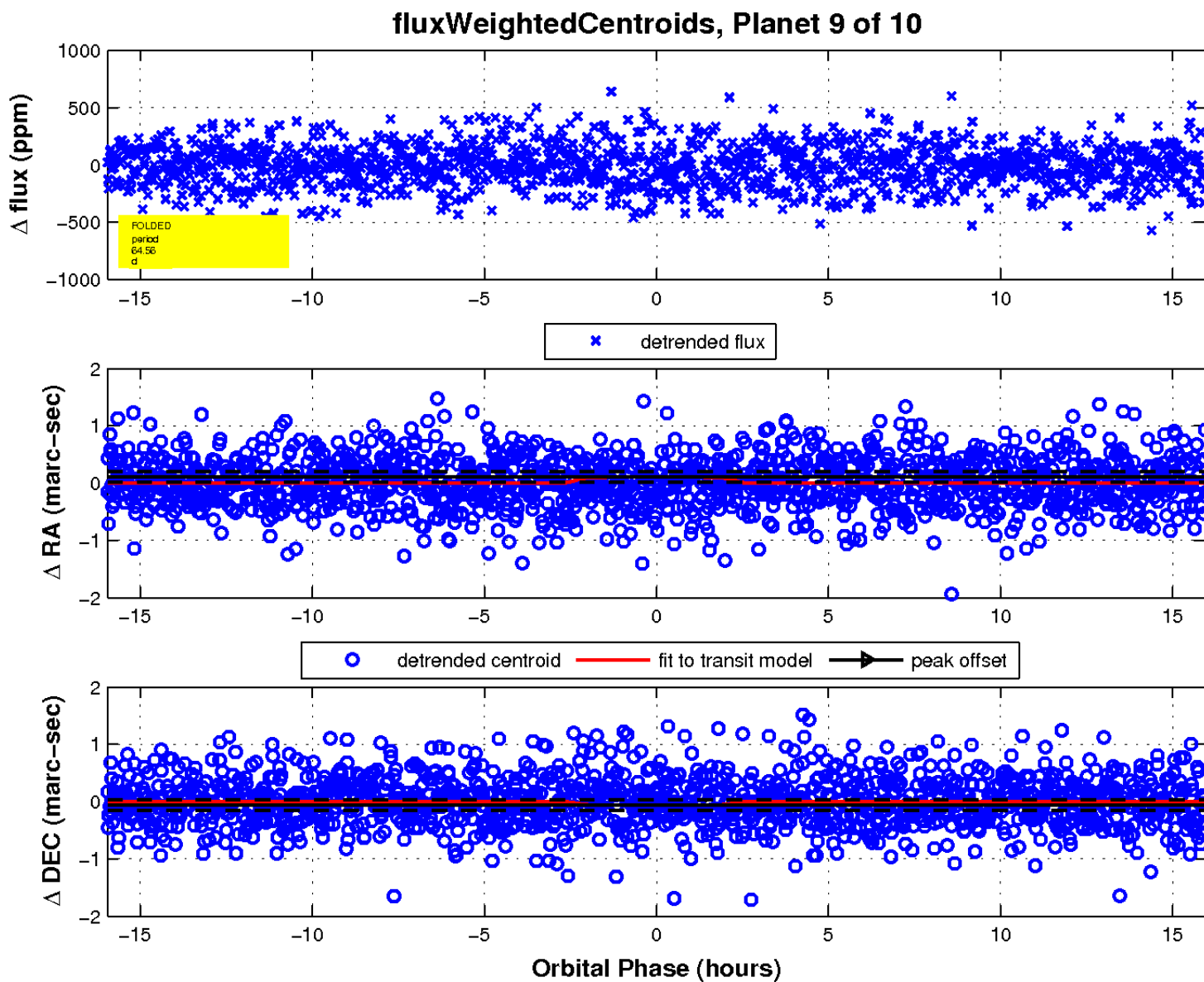
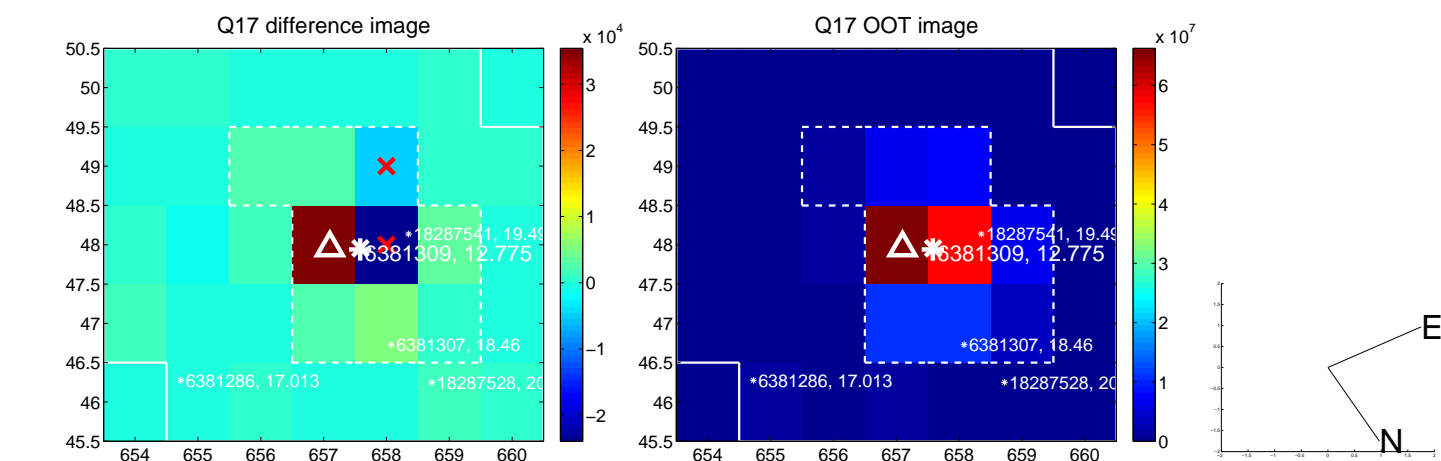
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

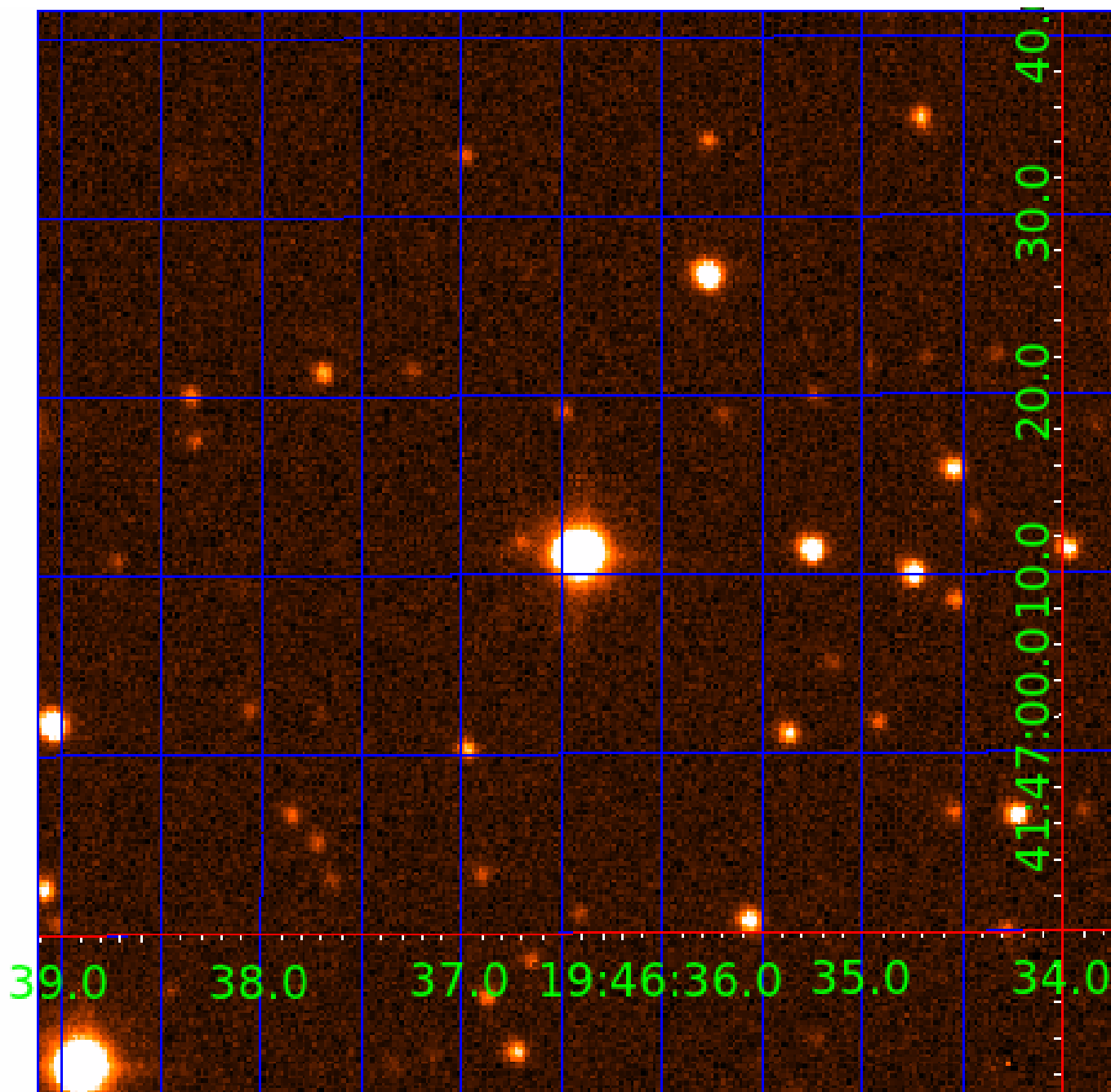


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006381309

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})
006381309-01	OBS	No	2.089113	132.931551	25.4	10.148	7.6	7.7	3.02	6502	1.69	10859.36
006381309-02	OBS	No	413.468856	489.372022	321.3	10.813	9.1	9.1	3.02	6502	5.93	9.41
006381309-03	OBS	No	93.565101	145.011810	241.6	1.597	8.6	7.2	3.02	6502	4.99	68.28
006381309-04	OBS	No	89.280030	169.716410	276.6	5.178	8.6	8.5	3.02	6502	9.68	72.68
006381309-05	OBS	No	292.009411	240.635083	285.1	5.788	8.3	6.9	3.02	6502	5.85	14.97
006381309-06	OBS	No	201.856850	228.851504	306.6	13.919	7.7	8.1	3.02	6502	6.02	24.49
006381309-07	OBS	No	34.997523	164.777492	135.4	7.405	8.6	7.5	3.02	6502	4.02	253.34
006381309-08	OBS	No	271.333486	151.357834	290.6	9.311	7.9	8.8	3.02	6502	5.57	16.51
006381309-09	OBS	No	64.559247	169.107730	182.3	5.316	7.8	7.5	3.02	6502	4.98	111.98
006381309-10	OBS	No	198.151176	198.559978	241.4	9.777	8.2	6.2	3.02	6502	5.45	25.11

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006381309-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
006381309-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
006381309-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
006381309-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006381309-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006381309-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006381309-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

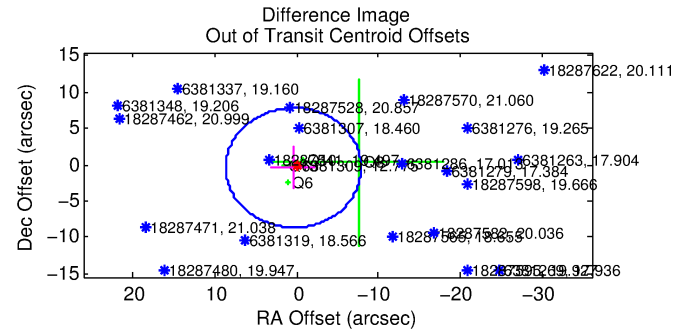
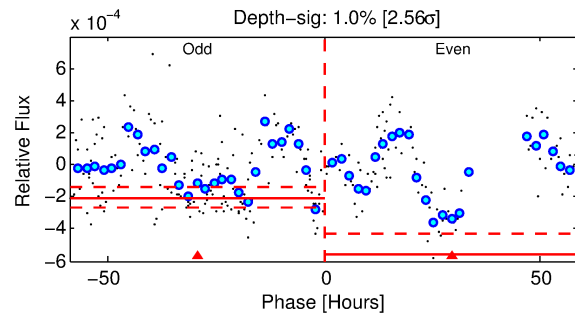
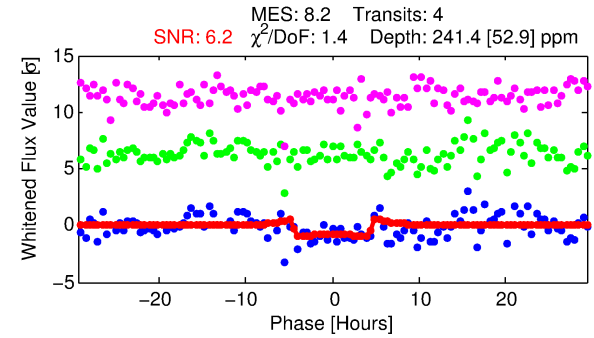
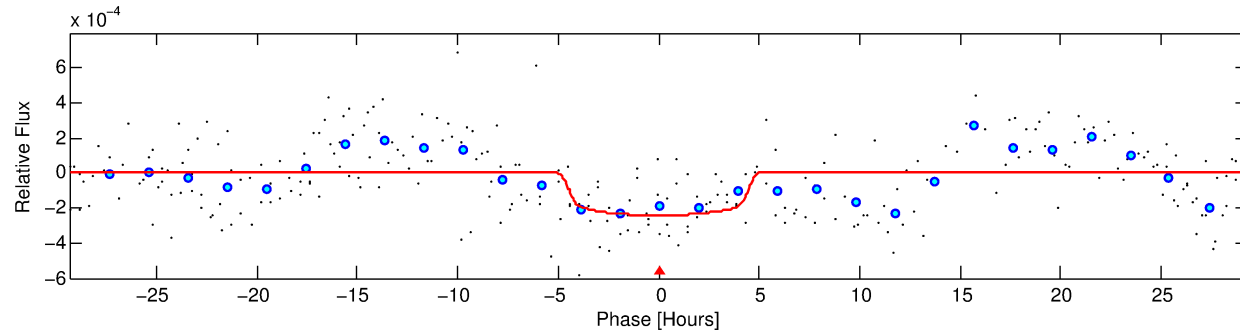
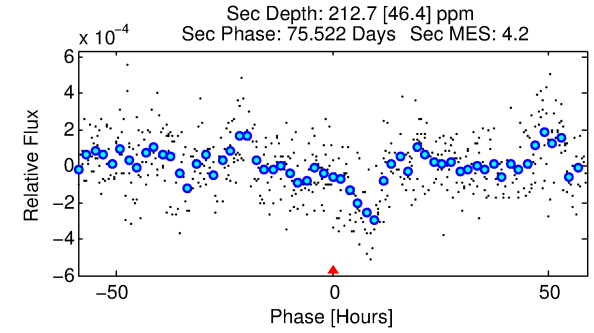
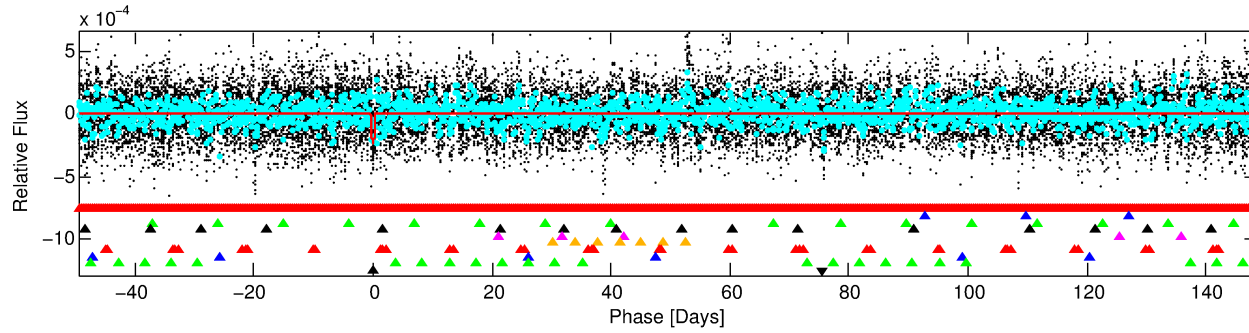
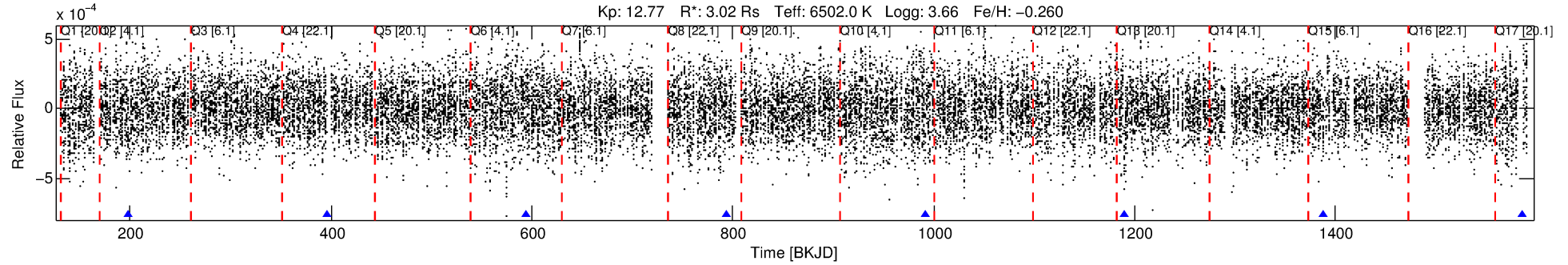
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006381309-10

No Significant Match Found

DV One-Page Summary

KIC: 6381309 Candidate: 10 of 10 Period: 198.151 d



DV Fit Results:

Period = 198.15118 [0.00411] d
Epoch = 198.5600 [0.0196] BKJD
Rp/R* = 0.0165 [0.0038]
a/R* = 74.92 [80.38]
b = 0.89 [0.24]
Seff = 25.10 [15.17]
Teq = 571 [86] K
Rp = 5.45 [2.41] Re
a = 0.7627 [0.2806] AU
Ag = 2291.06 [1783.27] [1.28σ]
Teffp = 6105 [793] K [6.94σ]

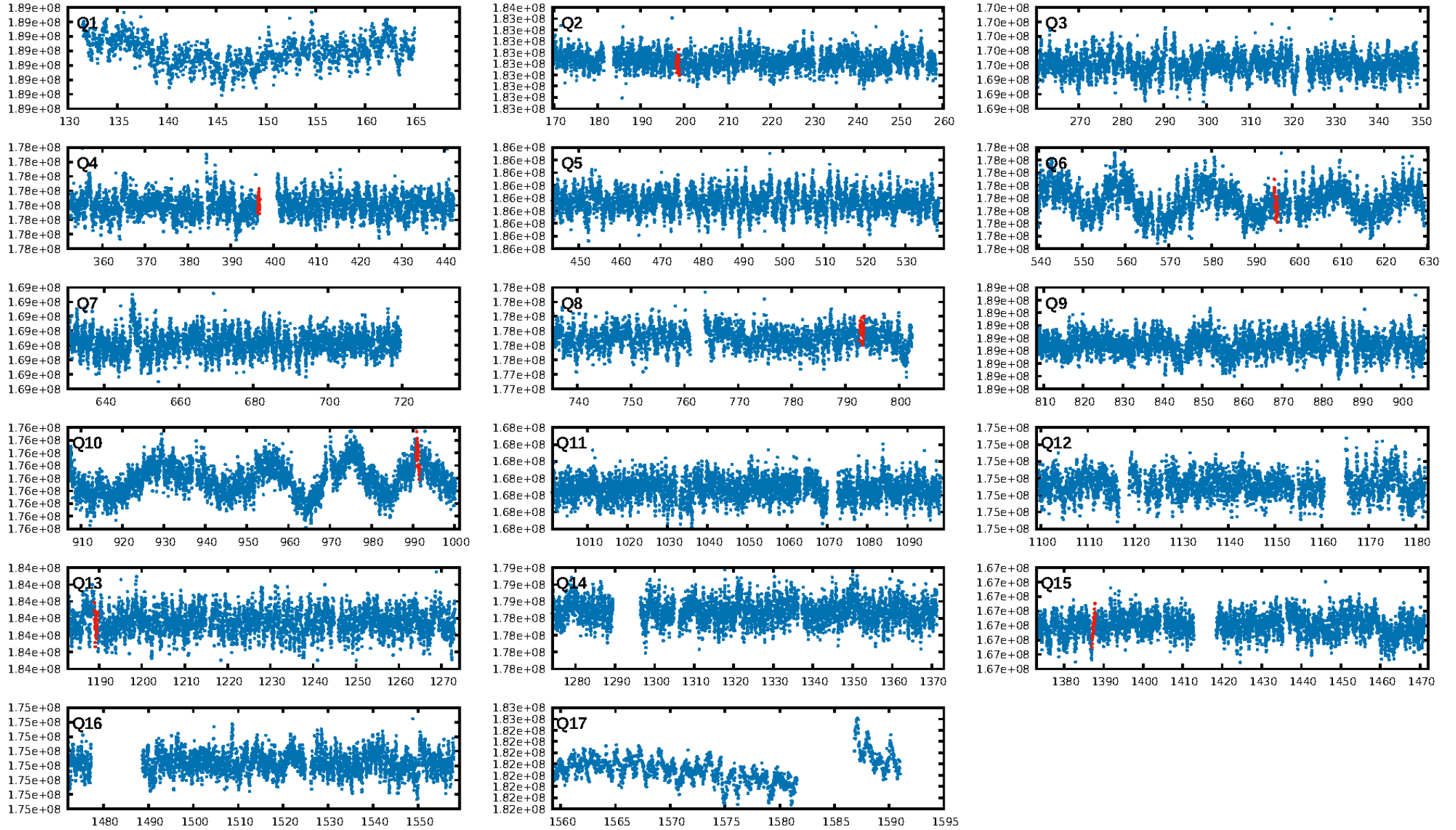
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [253.37σ]
LongPeriod-sig: 100.0% [5.23σ]
ModelChiSquare2-sig: 66.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 3.88
Centroid-sig: 8.9%
Centroid-so: 0.660 arcsec [1.23σ]
OotOffset-rm: 0.568 arcsec [0.21σ]
KicOffset-rm: 0.537 arcsec [0.20σ]
OotOffset-st: 2/0/1/1 [4]
KicOffset-st: 2/0/1/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/5]

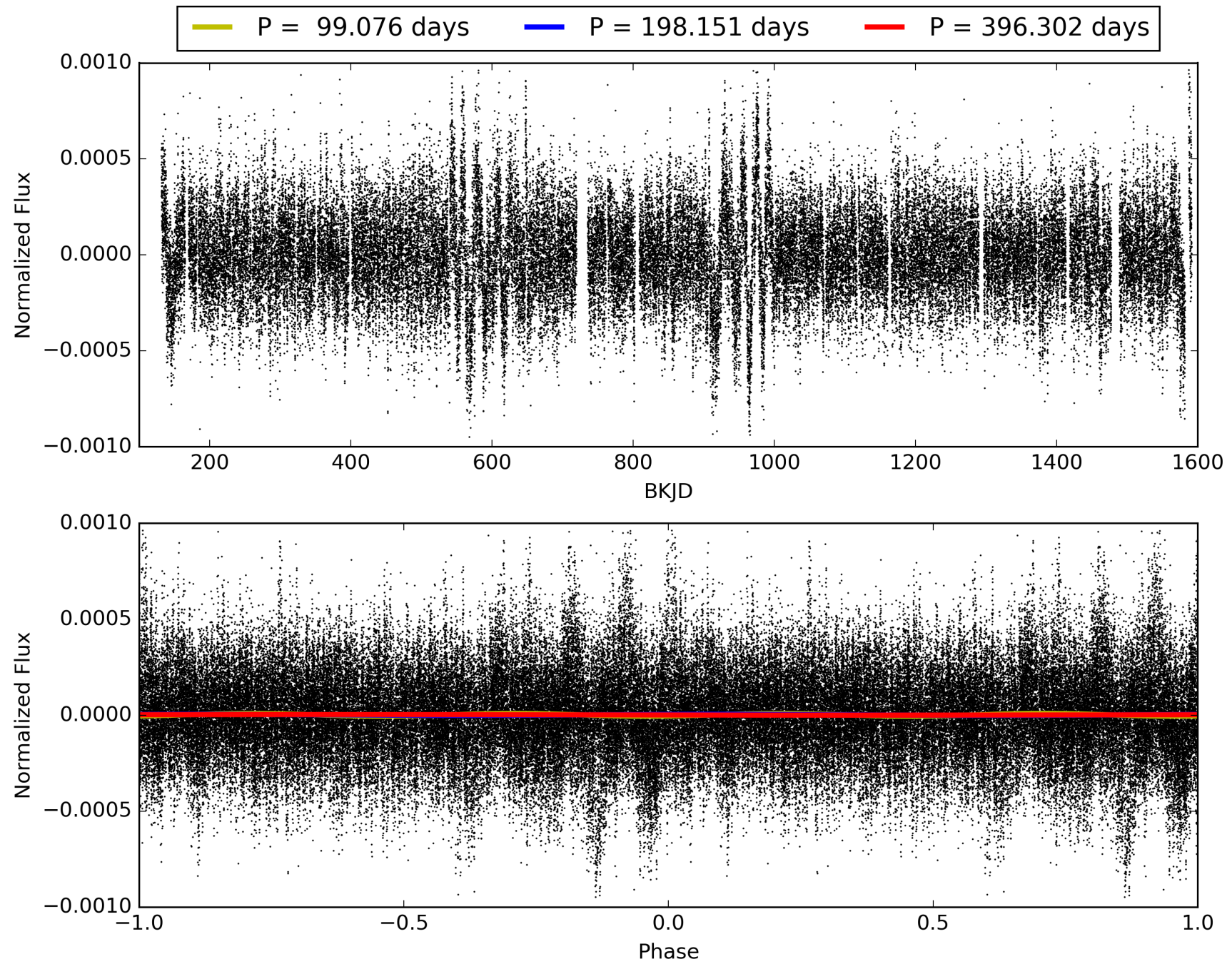
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:34:35 Z

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

TCE 006381309-10, PDC Light Curves

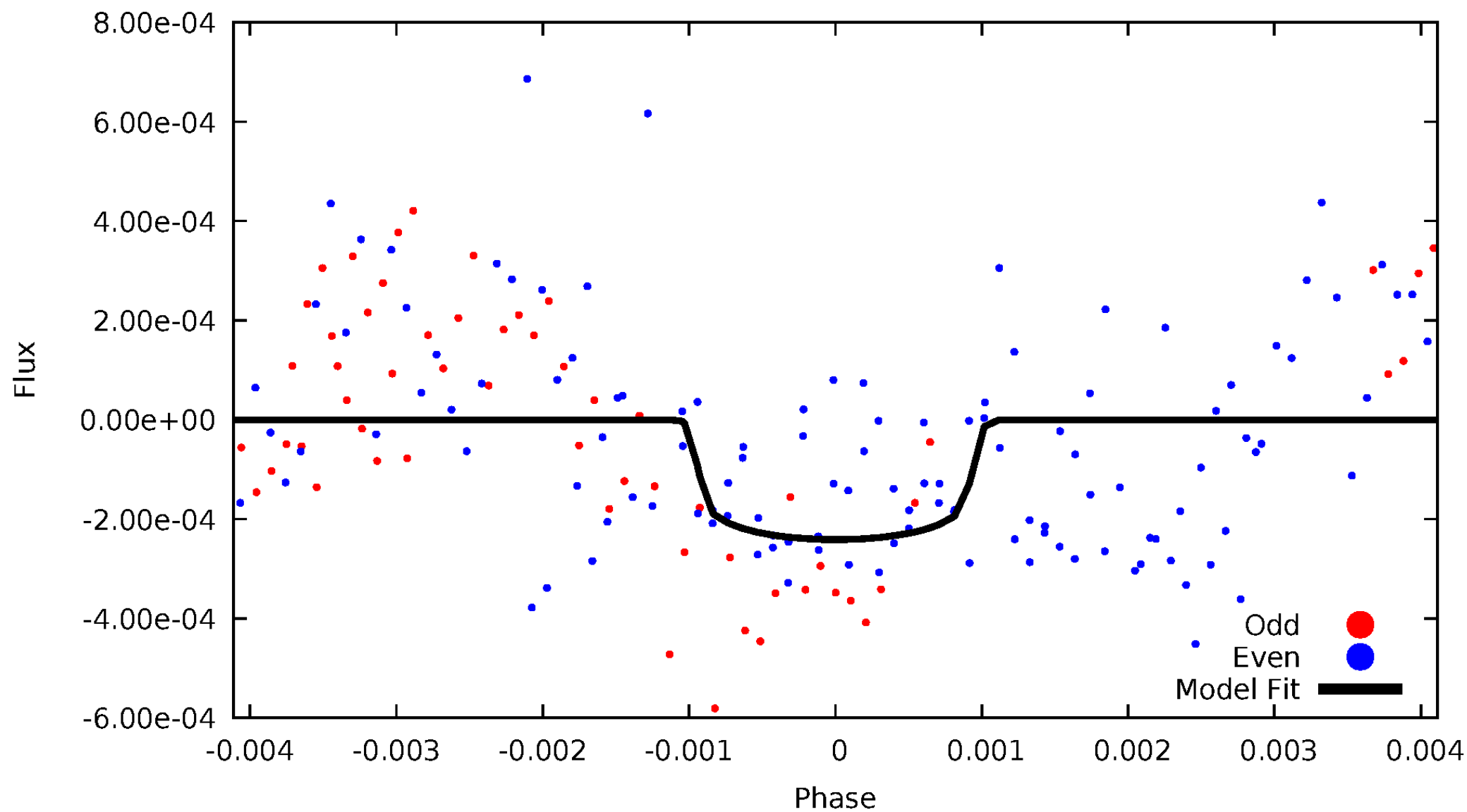


TCE 006381309-10



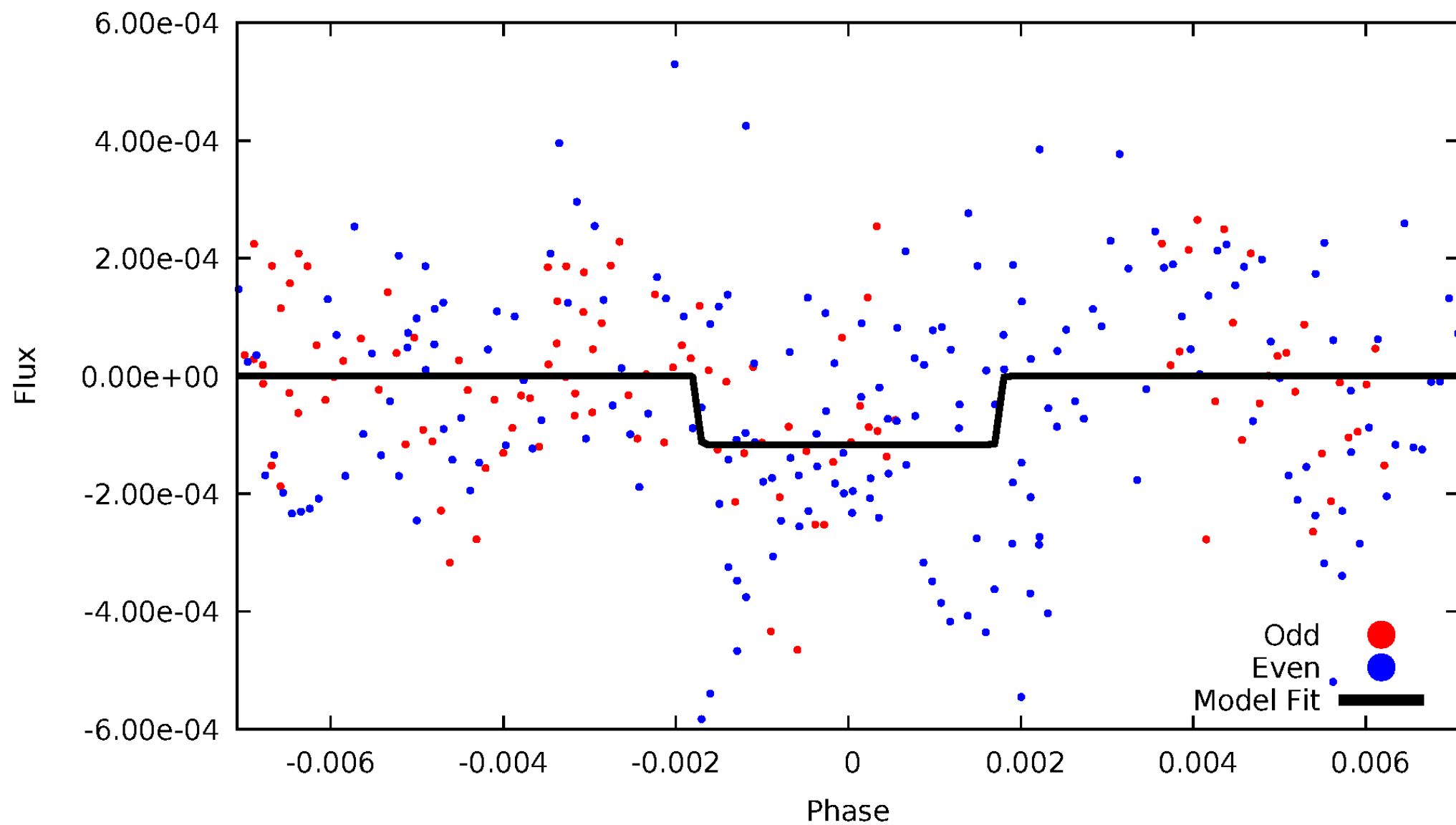
DV Odd/Even

TCE 006381309-10



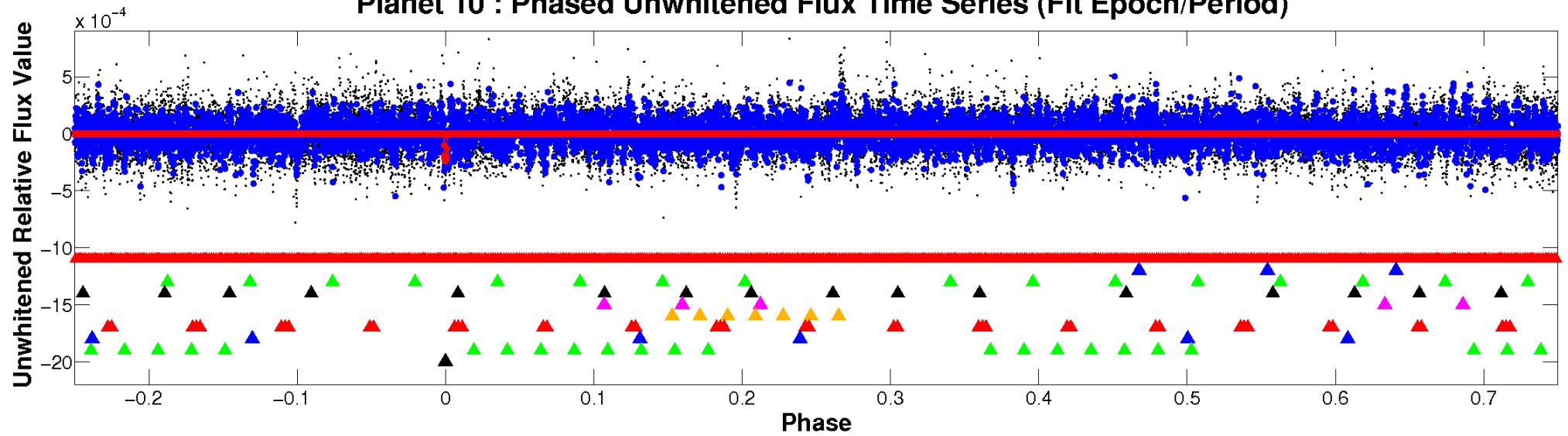
ALT Odd/Even

TCE 006381309-10

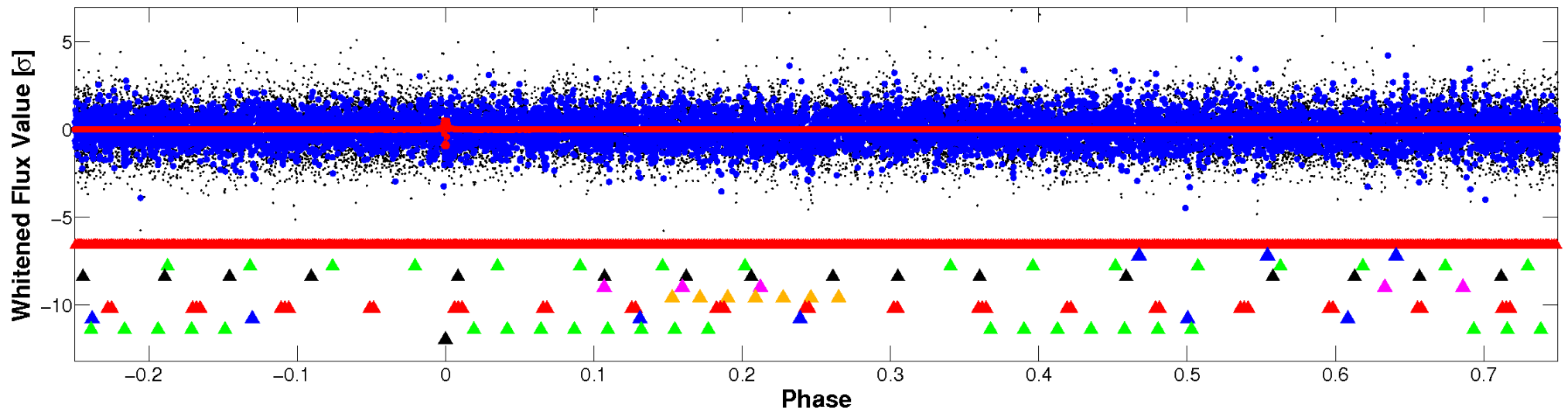


Non-Whitened Vs. Whitened Light Curve

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

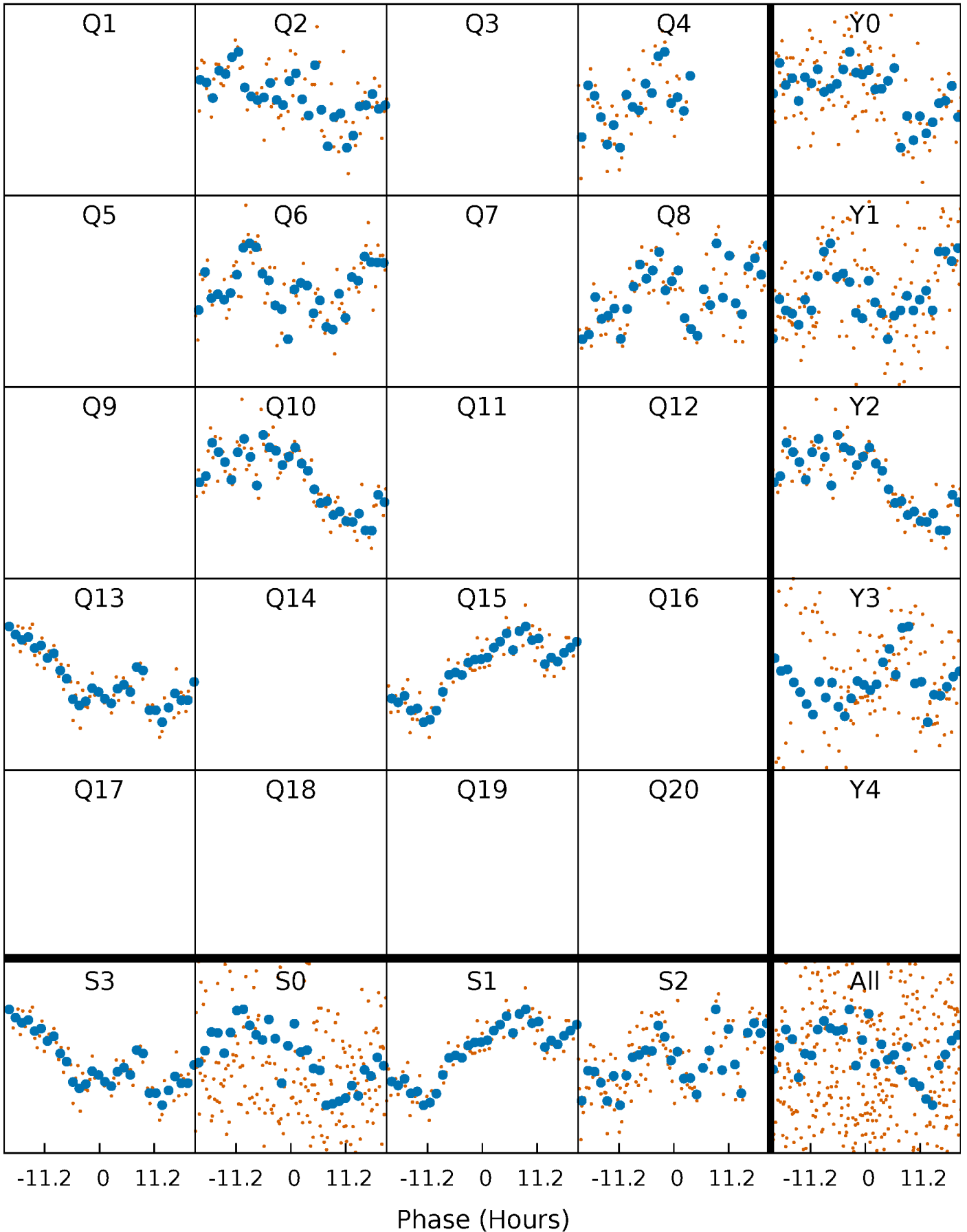


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



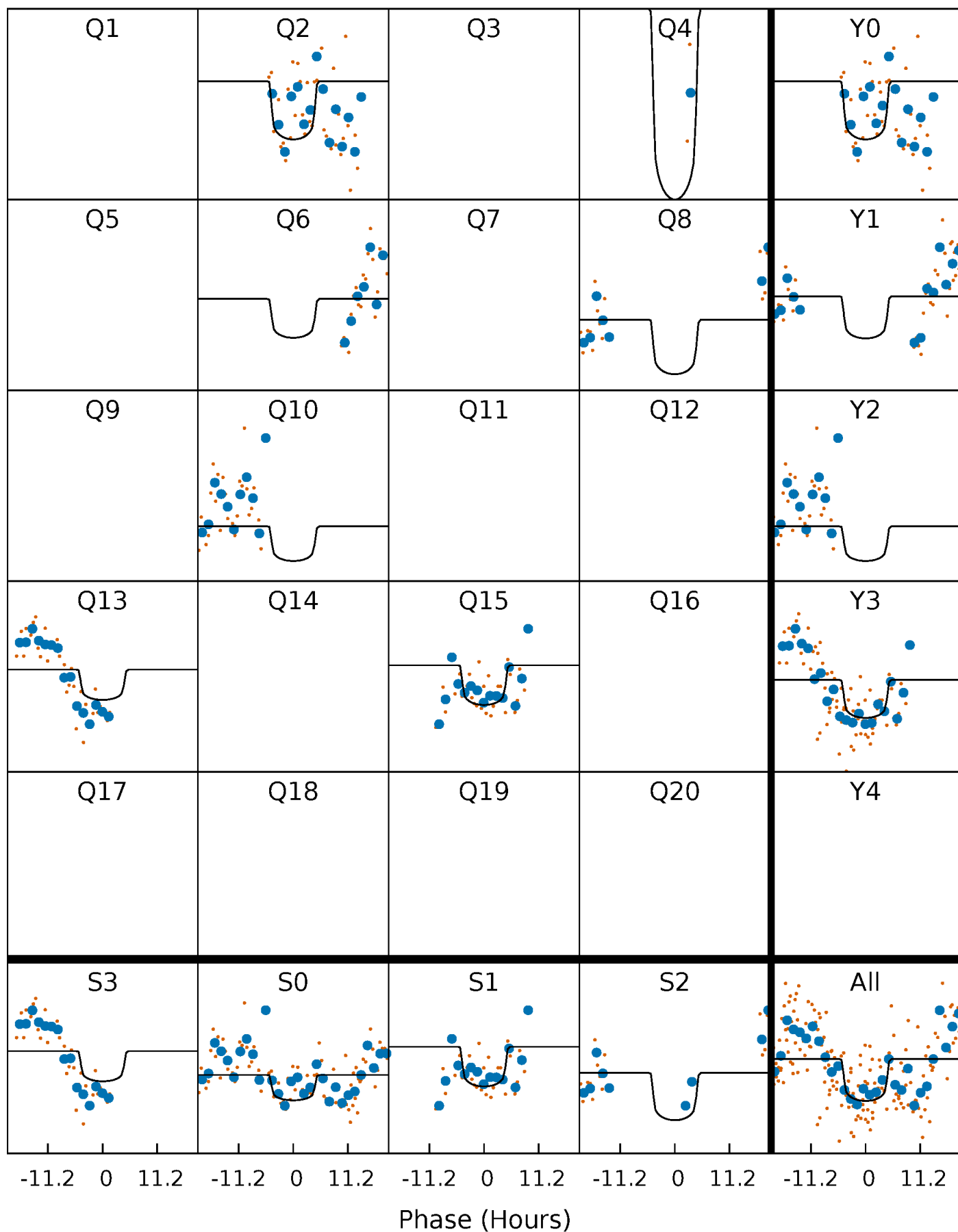
PDC Quarter-Phased Transit Curves

TCE 006381309-10 $P=198.151176$ Days $T_0=198.559978$ (BKJD)



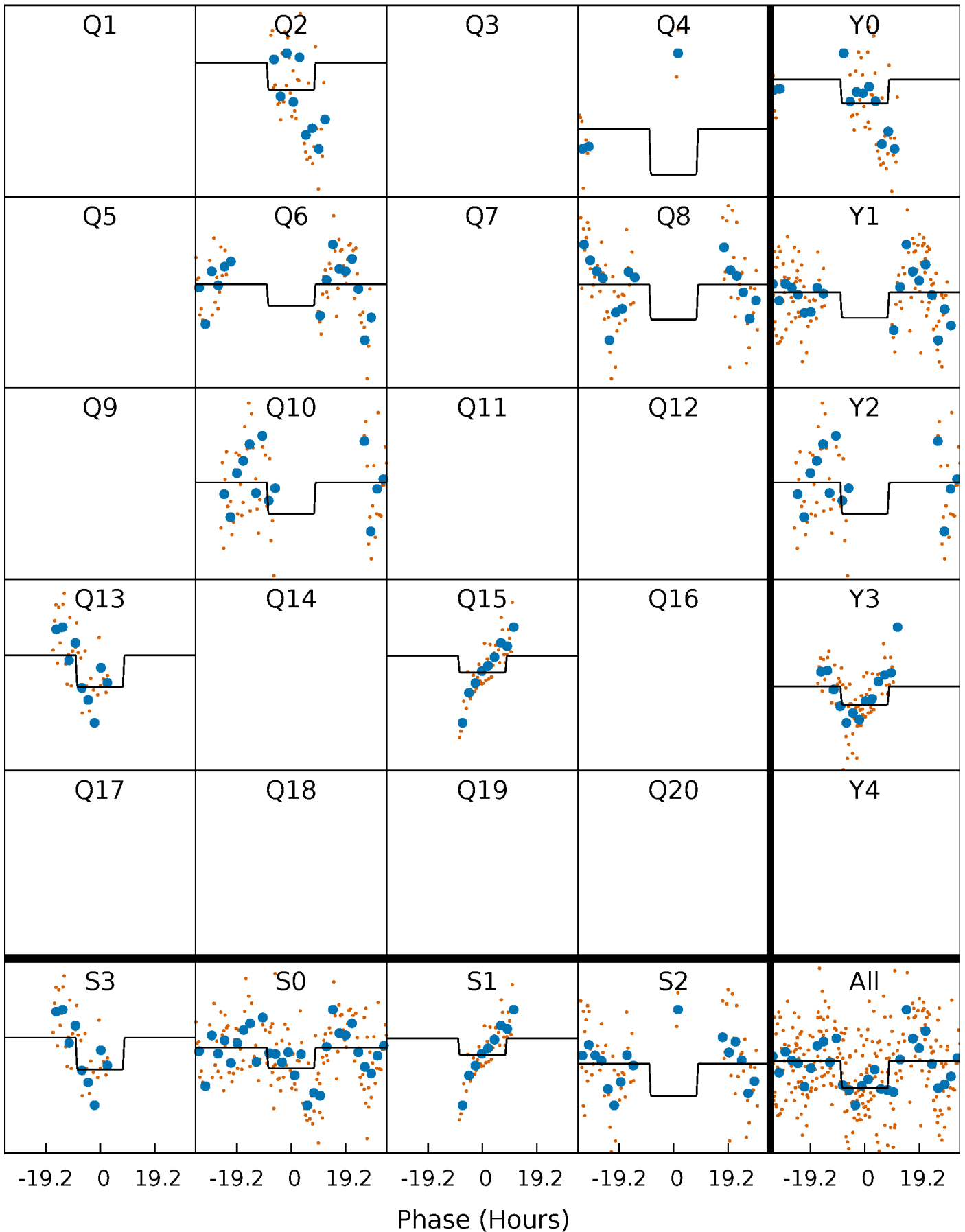
DV Quarter-Phased Transit Curves

TCE 006381309-10 P=198.151176 Days $T_0=198.559978$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

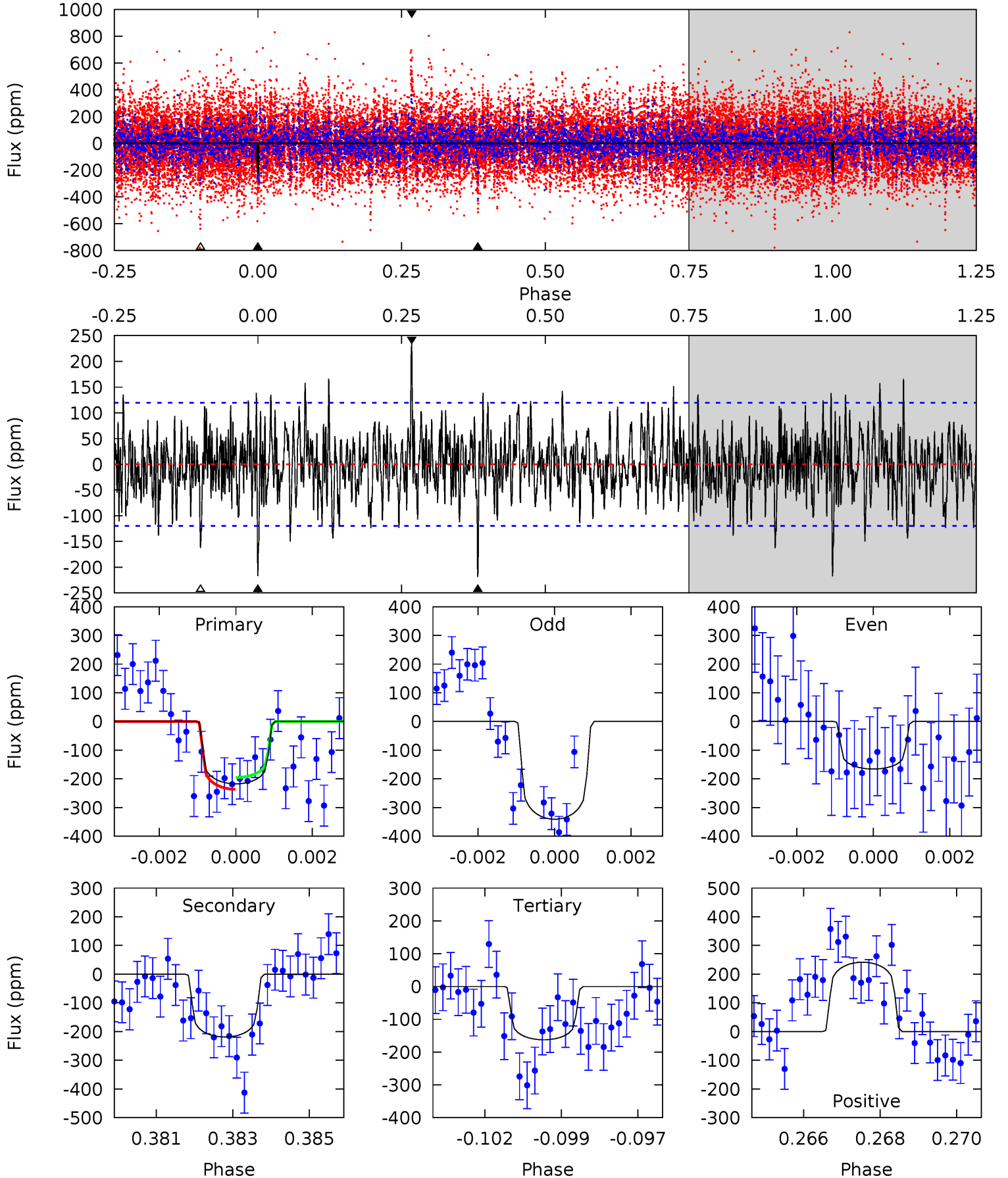
TCE 006381309-10 P=198.123798 Days $T_0=198.650377$ (BKJD)



DV Model-Shift Uniqueness Test

006381309-10, P = 198.151176 Days, E = 0.408802 Days

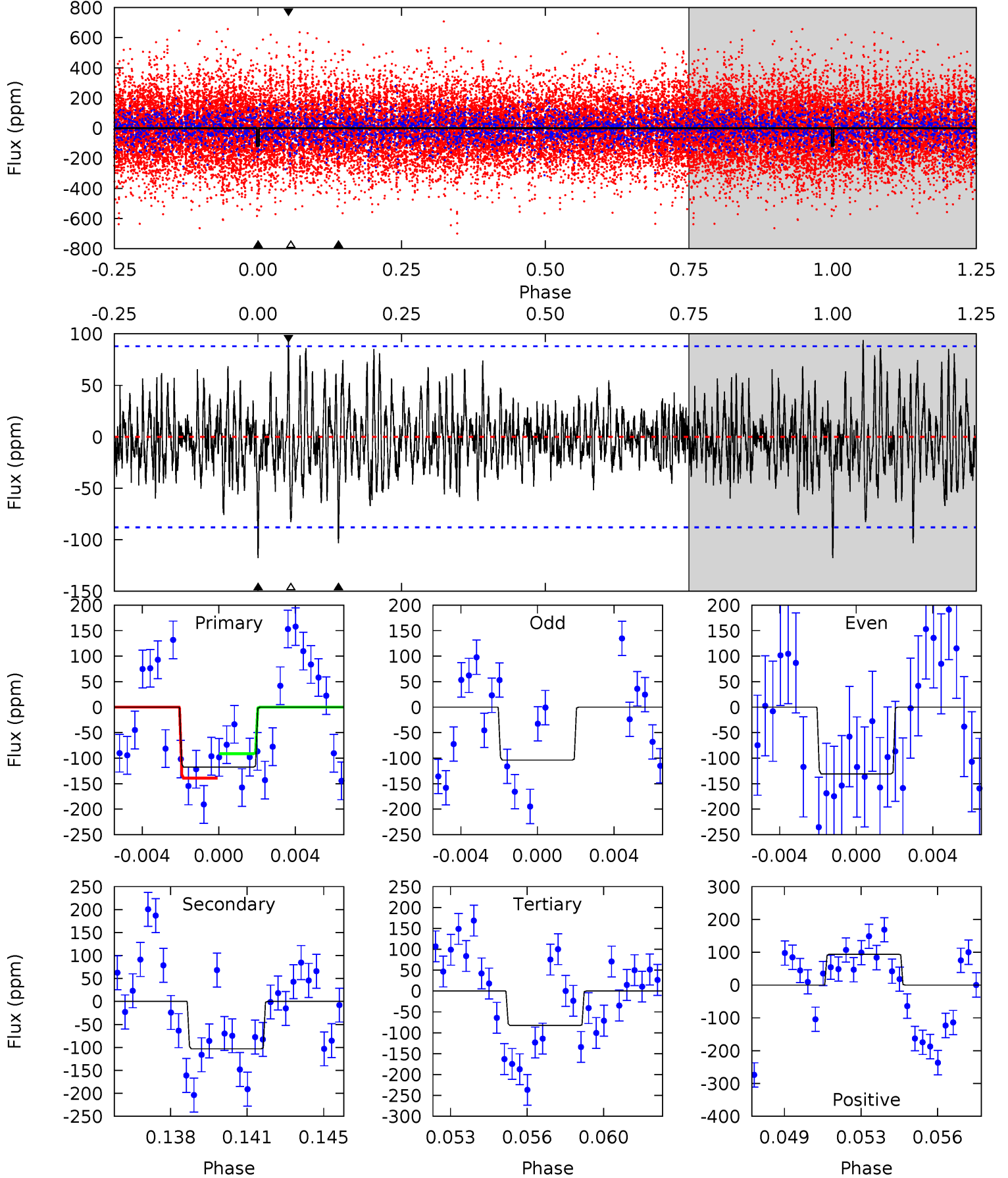
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.66	9.73	7.22	10.7	5.31	3.07	2.21	2.43	-1.08	2.50	-1.01	3.56	1.24	0.52	0.92



Alt Model-Shift Uniqueness Test

006381309-10, P = 198.123798 Days, E = 0.526579 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.99	6.13	4.91	5.58	5.22	2.92	1.50	2.07	1.41	1.22	0.55	0.70	0.38	0.44	1.42



Stellar Parameters For KIC 006381309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6502^{+177}_{-196}	$3.656^{+0.349}_{-0.082}$	$-0.260^{+0.300}_{-0.250}$	$3.020^{+0.489}_{-1.142}$	$1.507^{+0.228}_{-0.342}$	$0.077^{+0.196}_{-0.021}$
	+3%/-3%	+10%/-2%	+115%/-96%	+16%/-38%	+15%/-23%	+254%/-27%
Source	PHO1	FLK73	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 006381309-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-219 ± 23	$5.03^{+1.47}_{-1.34}$	776^{+46}_{-74}	6145^{+866}_{-622}	2771^{+2431}_{-1088}
Alt.	-103 ± 17	$3.29^{+1.34}_{-1.20}$	779^{+46}_{-78}	6305^{+1490}_{-920}	3159^{+4327}_{-1671}

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

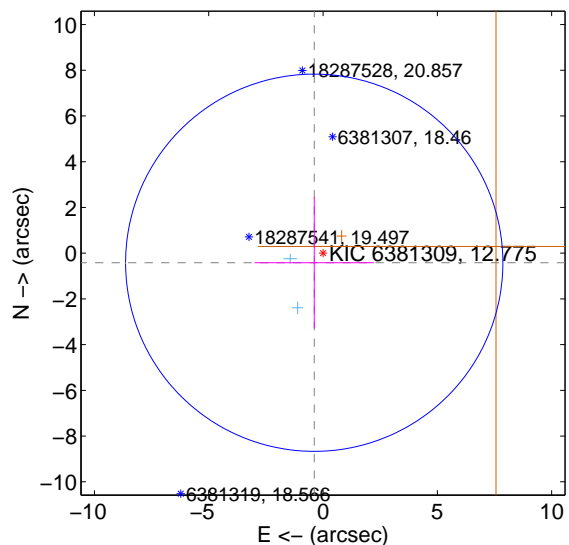
Supplemental centroid analysis for 006381309-10. Kepler magnitude: 12.78. Transit SNR 6.16

There are 2 quarters with good PRF difference image offsets

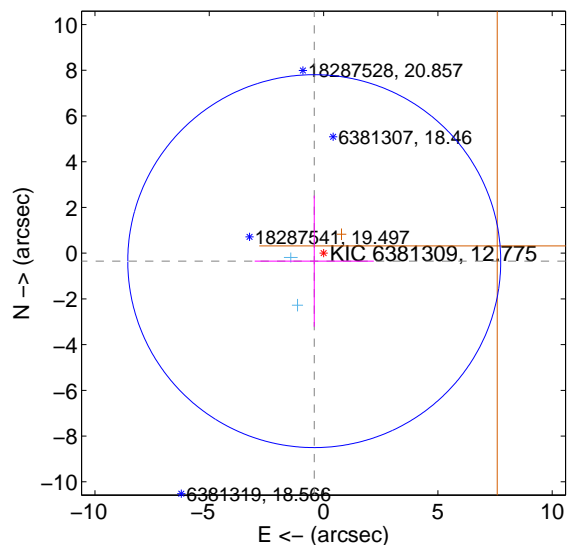
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.568 ± 2.750	0.21	0.385 ± 2.605	-0.418 ± 2.867
PRF-fit source offset from KIC position	0.537 ± 2.719	0.20	0.408 ± 2.605	-0.348 ± 2.867
photometric centroid source offset	0.66 ± 0.54	1.23	0.52 ± 0.54	-0.41 ± 0.53

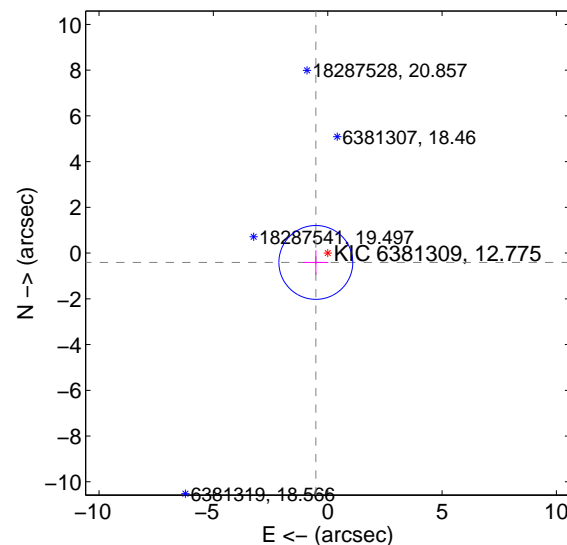
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

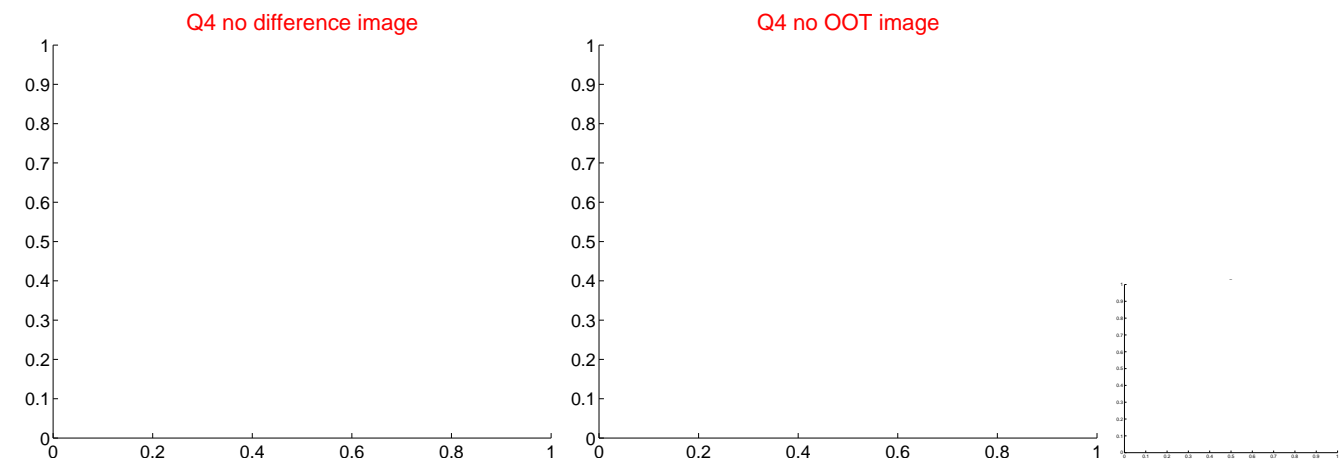
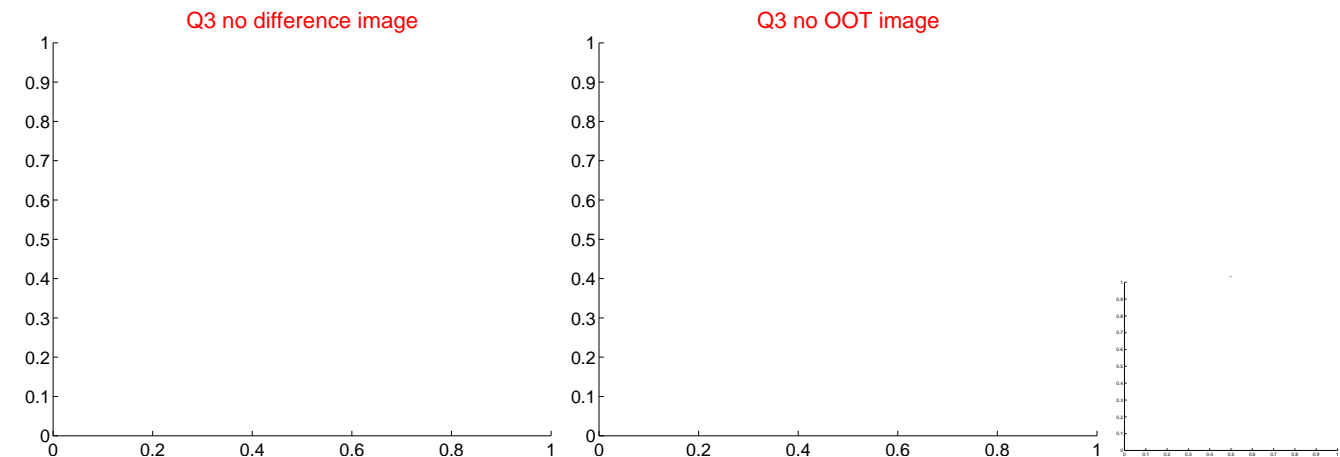
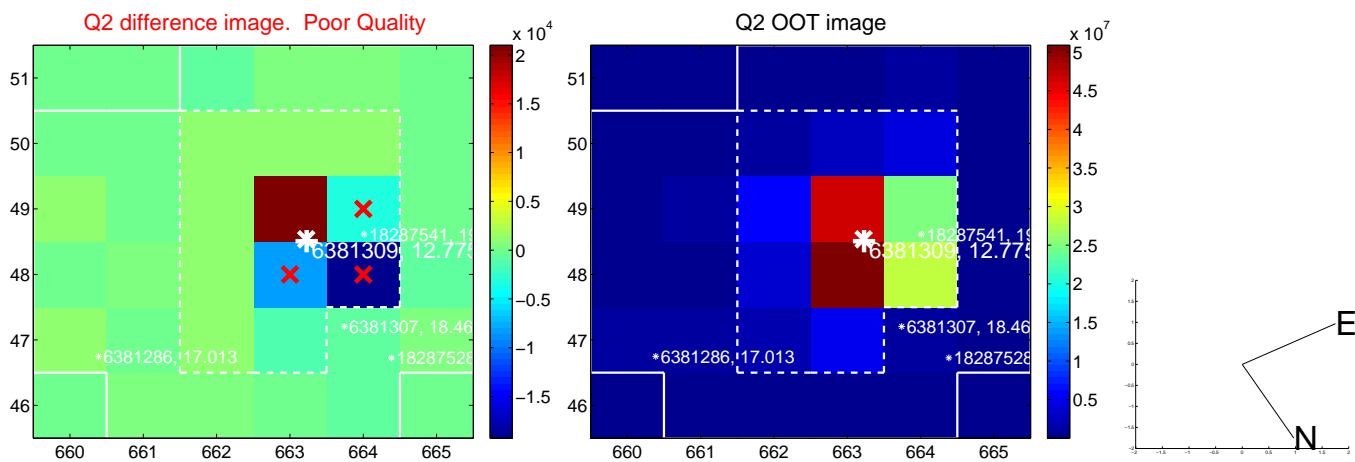
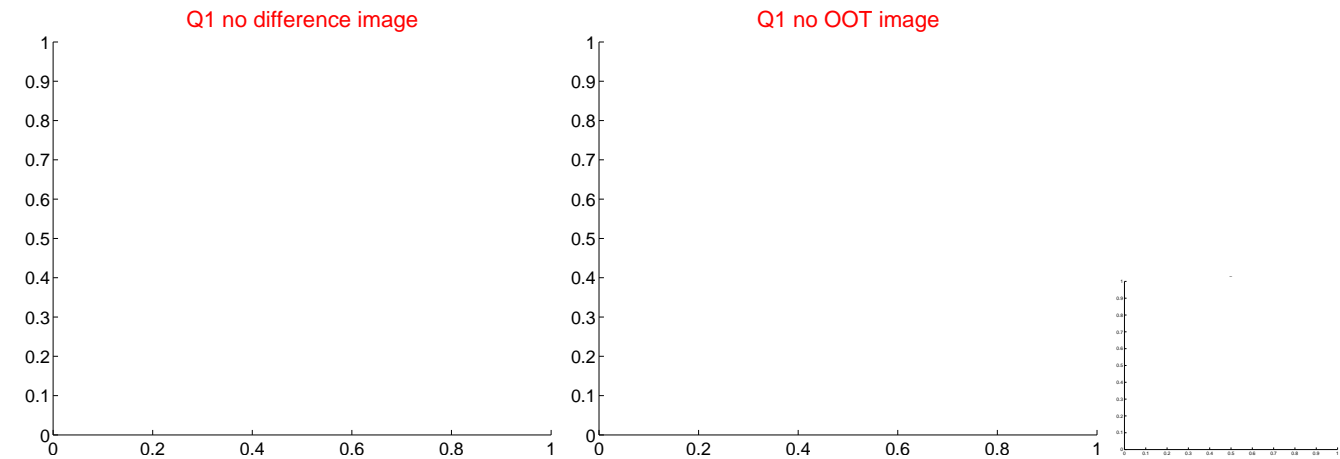


offset from photometric centroids

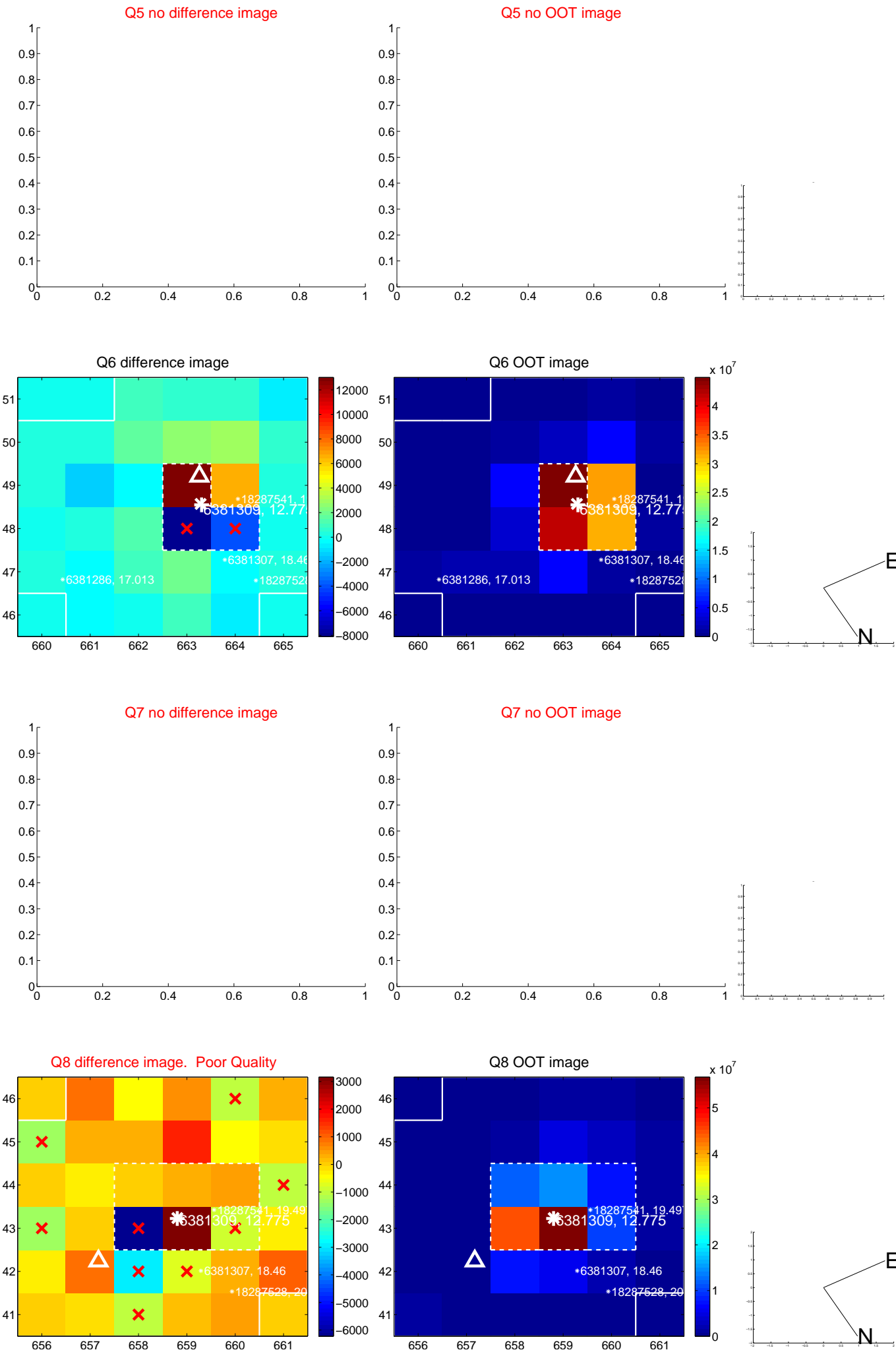


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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.

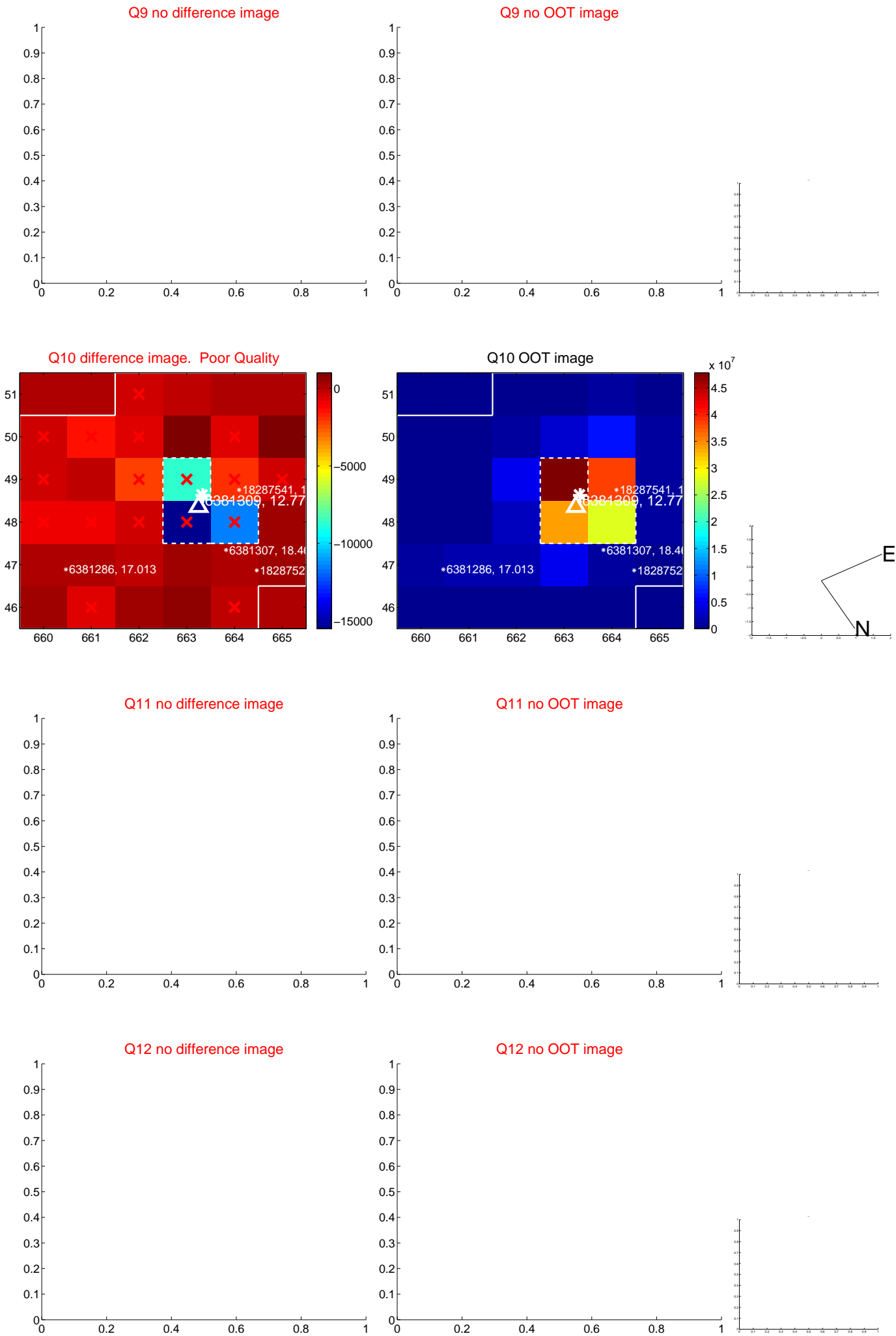
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



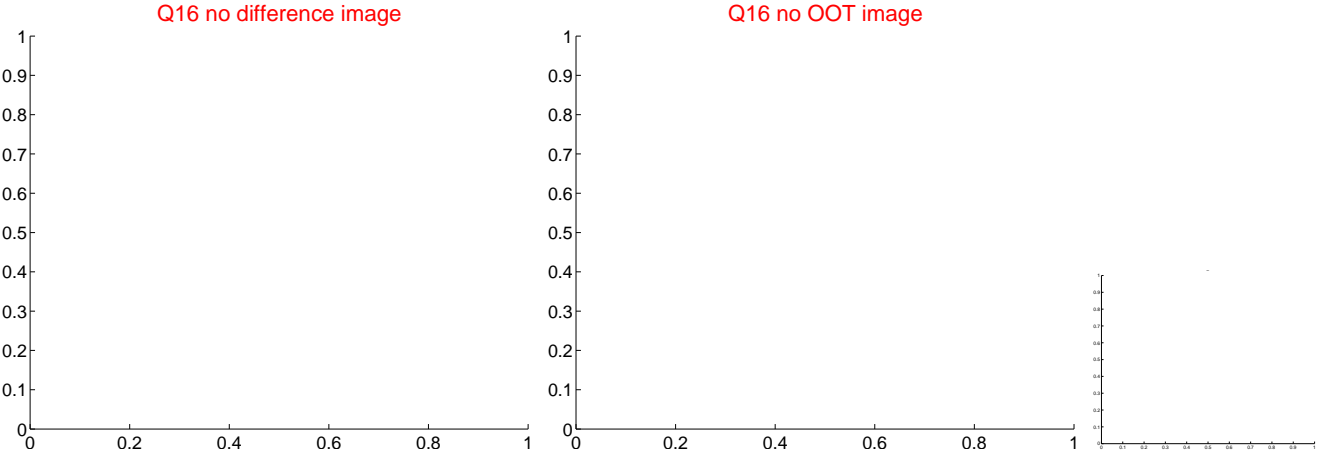
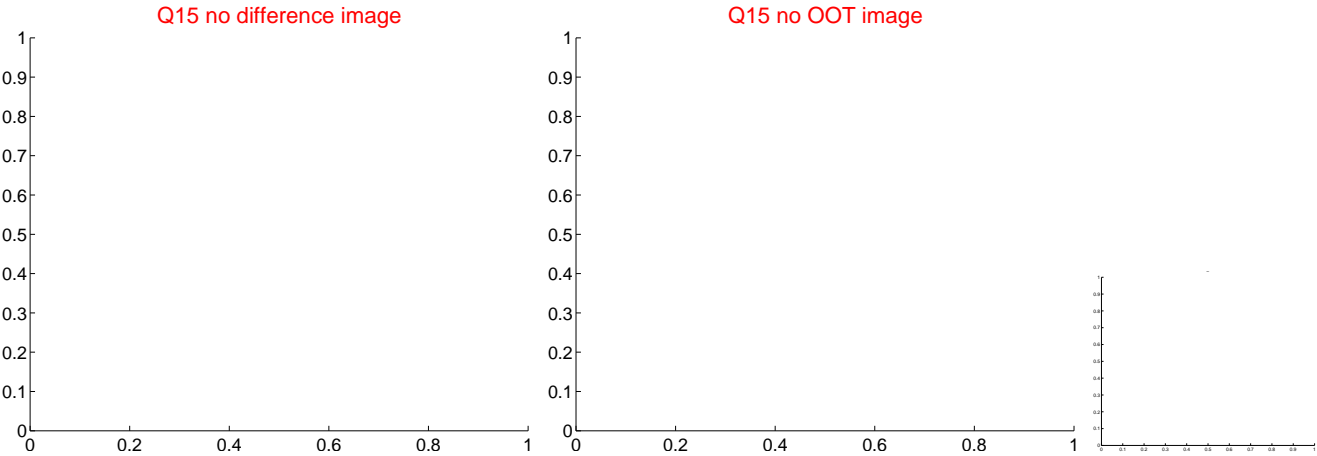
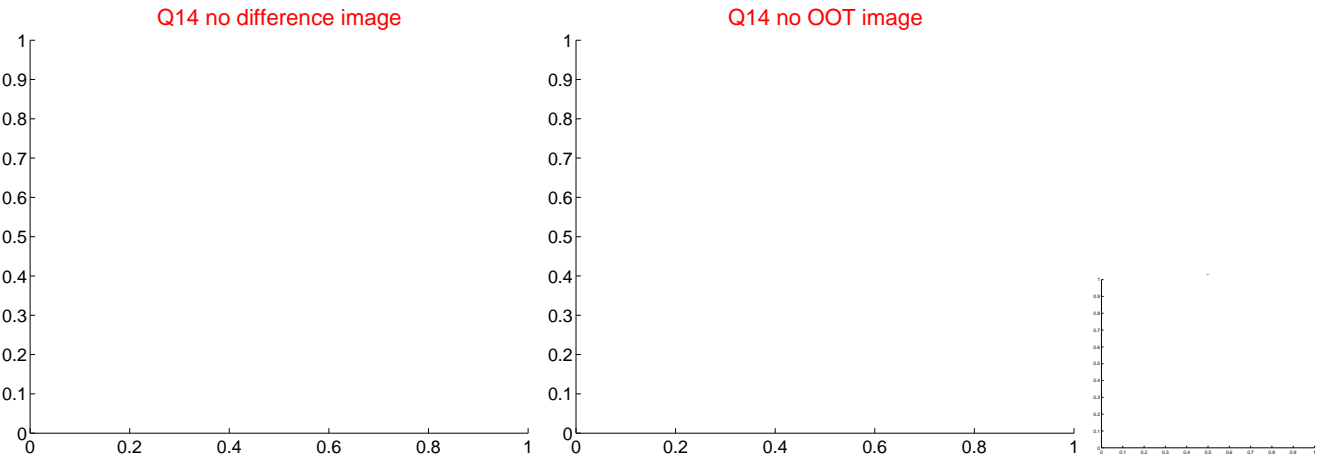
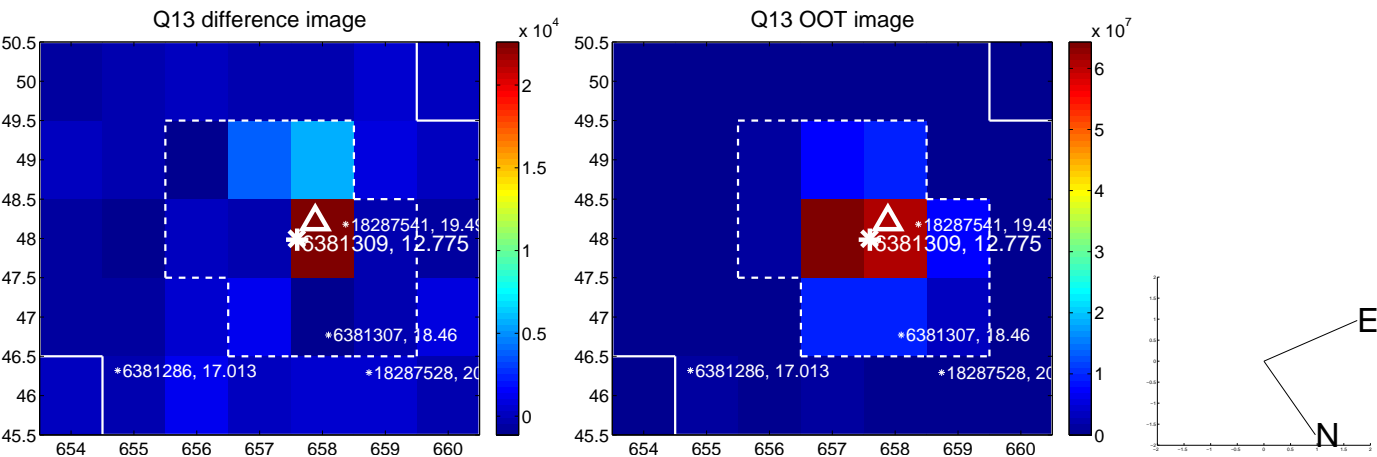
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



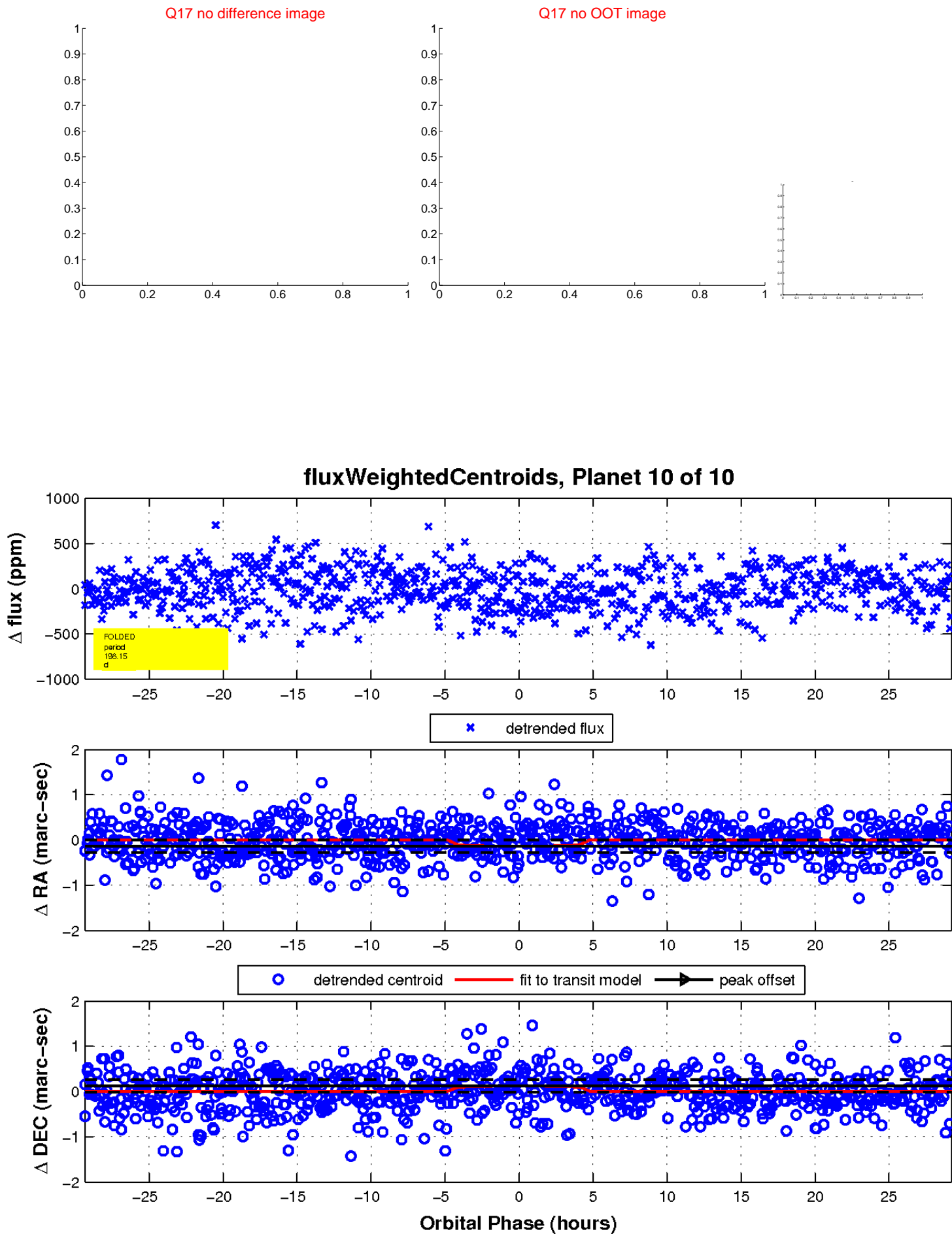
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

