

KIC 009099950

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})
009099950-01	OBS	4125.01	1.111287	132.357275	35.0	4.555	17.3	14.6	2.31	6486	1.44	14968.94
009099950-02	OBS	No	258.643639	155.087871	478.5	14.855	10.3	7.0	2.31	6486	5.23	10.46
009099950-03	OBS	No	256.341306	170.177250	519.1	9.229	9.2	8.0	2.31	6486	6.55	10.58
009099950-04	OBS	No	287.434388	400.156029	619.6	10.998	8.7	7.2	2.31	6486	10.99	9.08
009099950-05	OBS	No	362.267766	321.919458	383.0	11.190	8.9	5.7	2.31	6486	5.30	6.67
009099950-06	OBS	No	426.360917	241.688650	722.8	8.660	8.5	9.0	2.31	6486	7.75	5.37
009099950-07	OBS	No	648.969862	201.926308	360.3	9.626	8.3	5.3	2.31	6486	5.04	3.07
009099950-08	OBS	No	309.674046	326.010681	364.6	11.669	8.1	4.5	2.31	6486	4.95	8.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099950-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
009099950-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
009099950-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009099950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009099950-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_MEAS
009099950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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 009099950-01

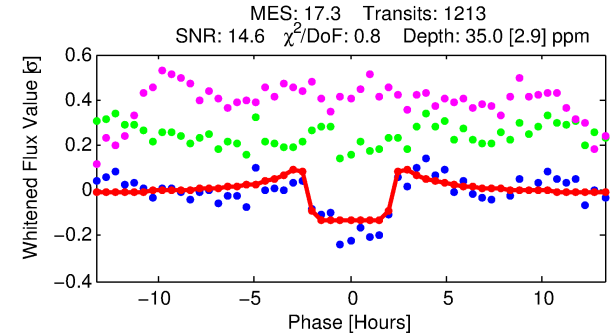
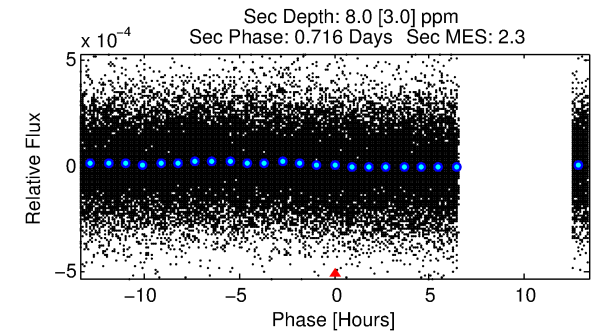
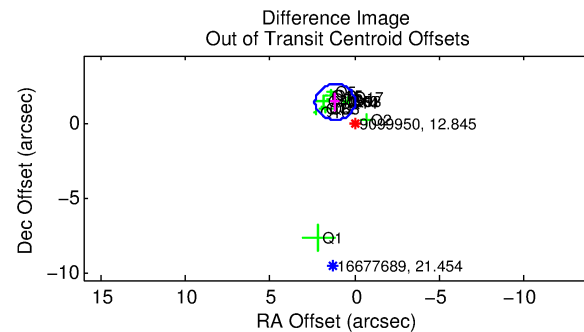
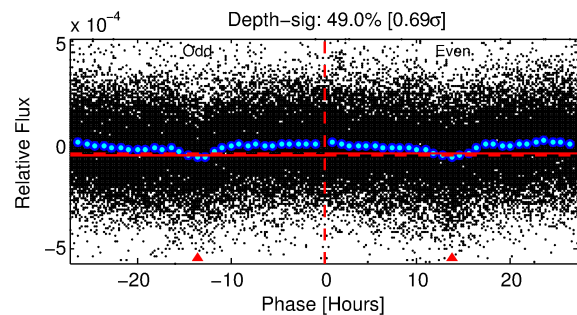
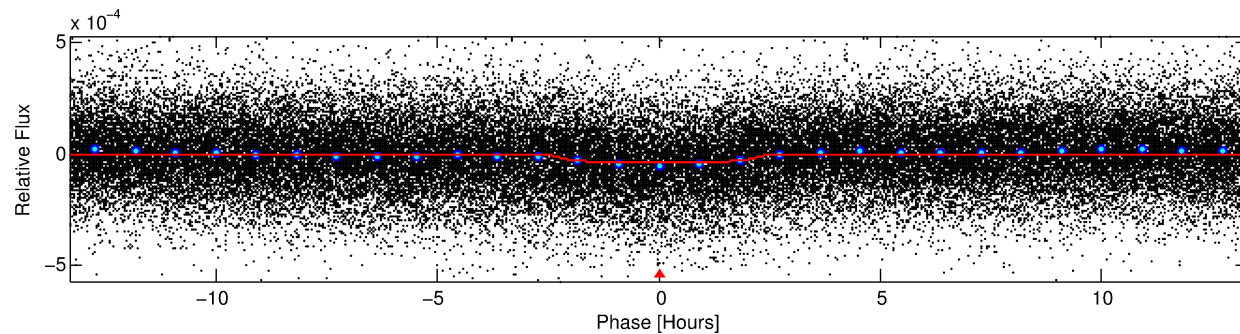
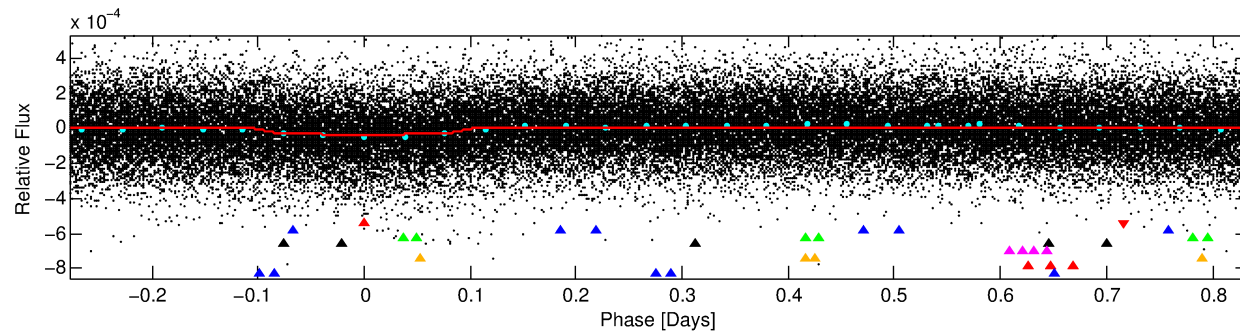
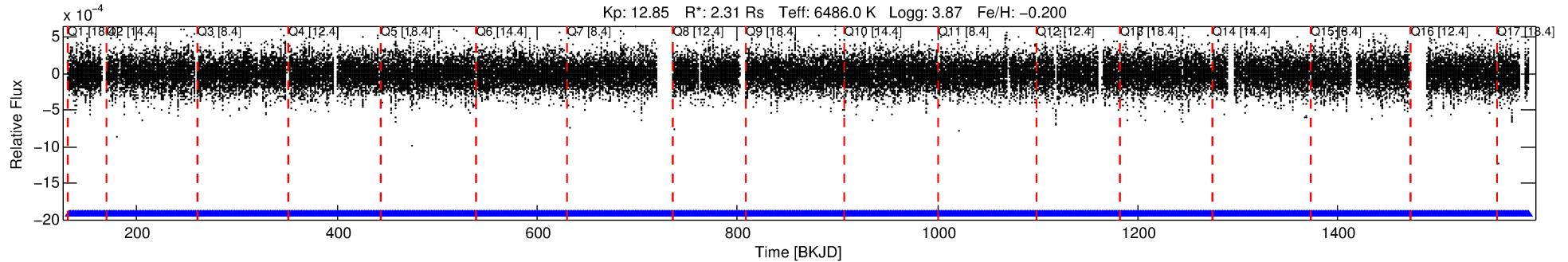
No Significant Match Found

DV One-Page Summary

KIC: 9099950 Candidate: 1 of 8 Period: 1.111 d

KOI: K04125 Corr: No Ephemeris Match

Kp: 12.85 R*: 2.31 Rs Teff: 6486.0 K Logg: 3.87 Fe/H: -0.200



DV Fit Results:

Period = 1.11129 [0.00001] d
Epoch = 132.3573 [0.0020] BKJD
Rp/R* = 0.0057 [0.0011]
a/R* = 1.66 [1.09]
b = 0.63 [0.99]
Seff = 14968.94 [7509.44]
Teq = 2820 [354] K
Rp = 1.44 [0.58] Re
a = 0.0238 [0.0076] AU
Ag = 1.20 [0.87] [0.23σ]
Teffp = 4562 [623] K [2.43σ]

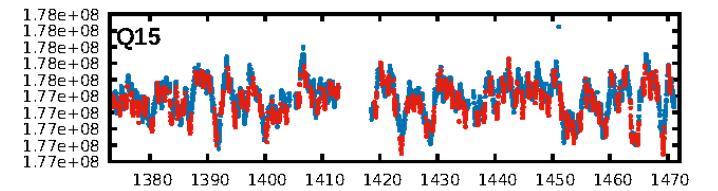
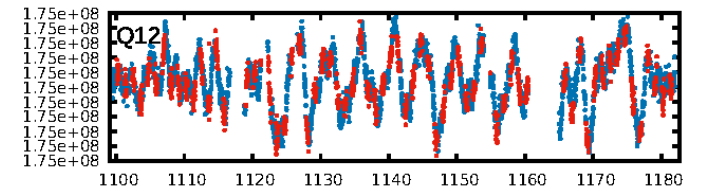
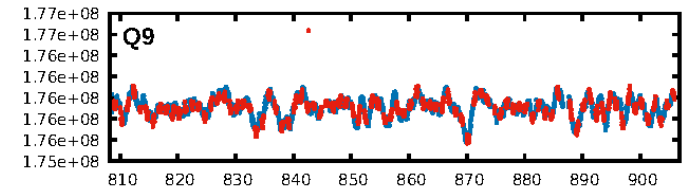
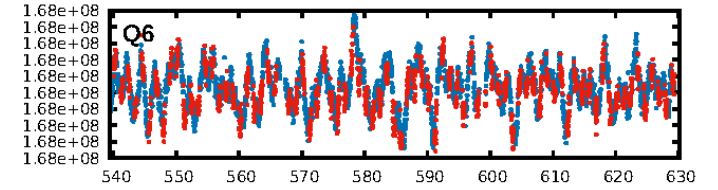
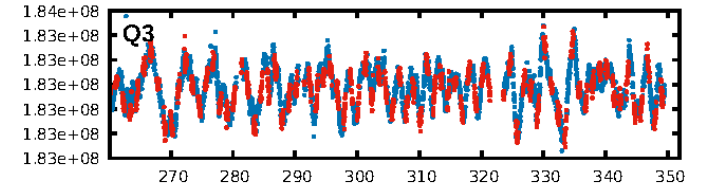
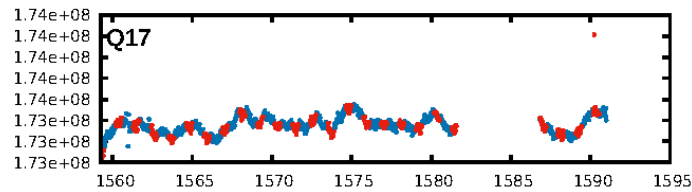
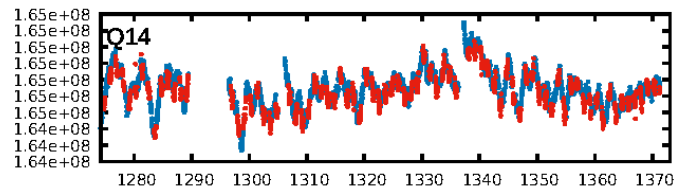
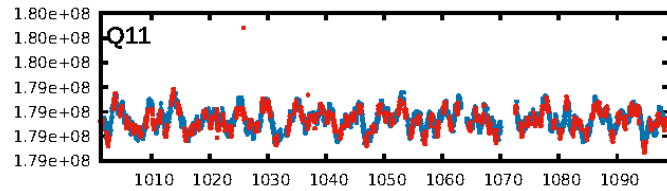
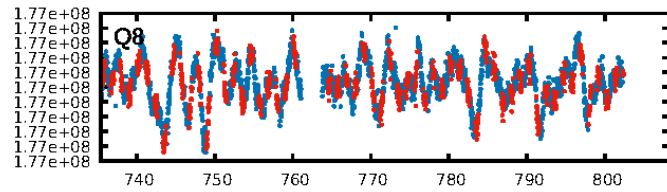
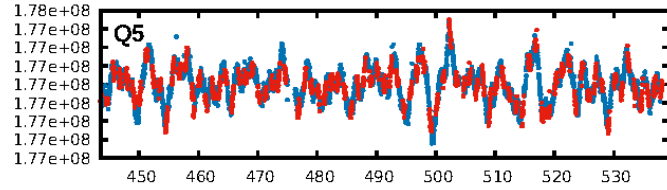
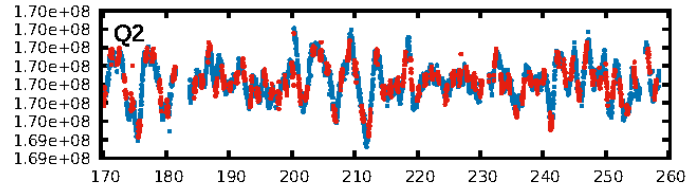
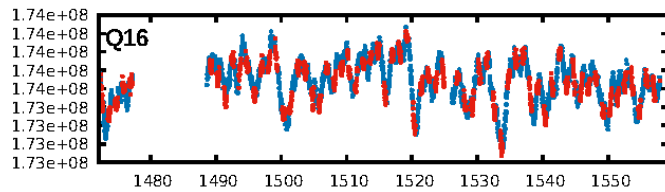
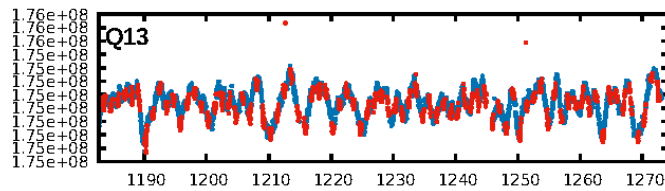
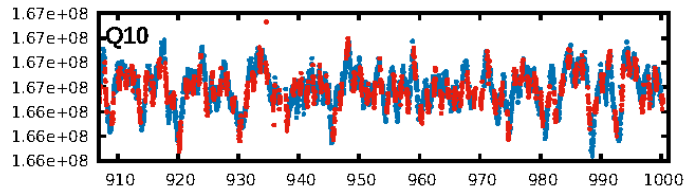
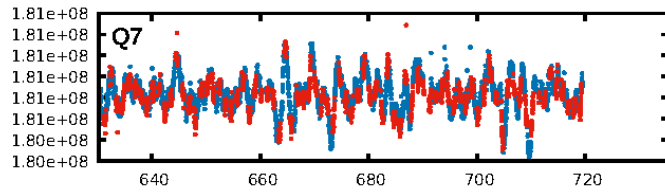
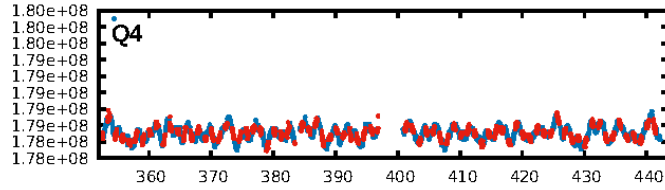
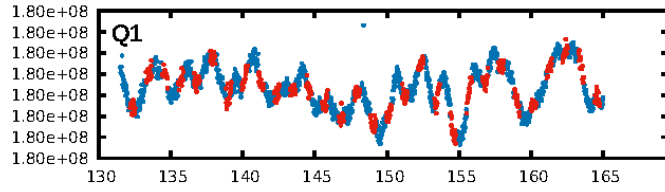
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [595.18σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.81e-55
RollingBand-fgt: 1.00 [1158/1158]
GhostDiagnostic-chr: 1.255
Centroid-sig: 0.0%
Centroid-so: 3.377 arcsec [6.09σ]
OotOffset-rm: 1.804 arcsec [4.55σ]
KicOffset-rm: 1.781 arcsec [4.23σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

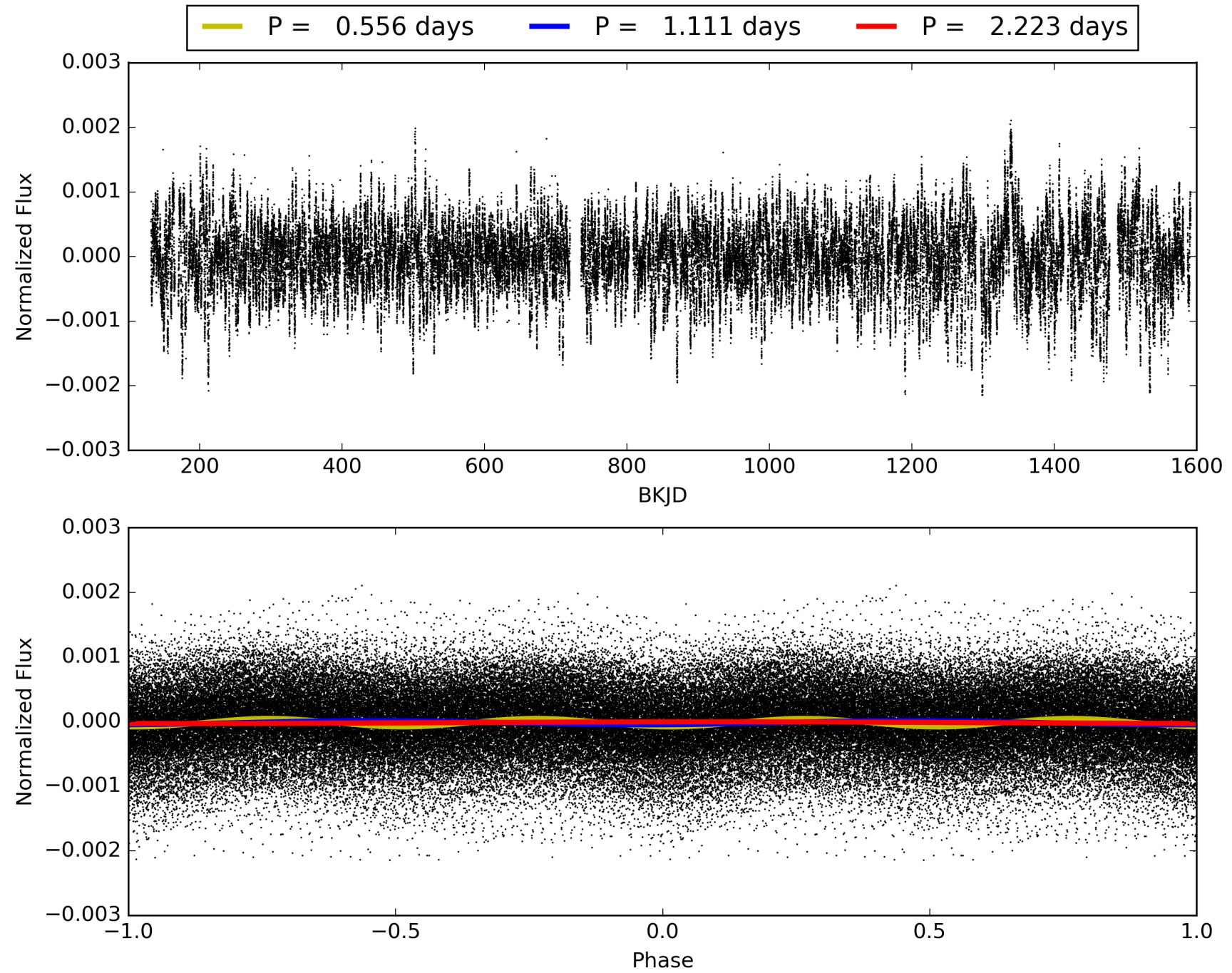
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:44:50 Z

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

TCE 009099950-01, PDC Light Curves

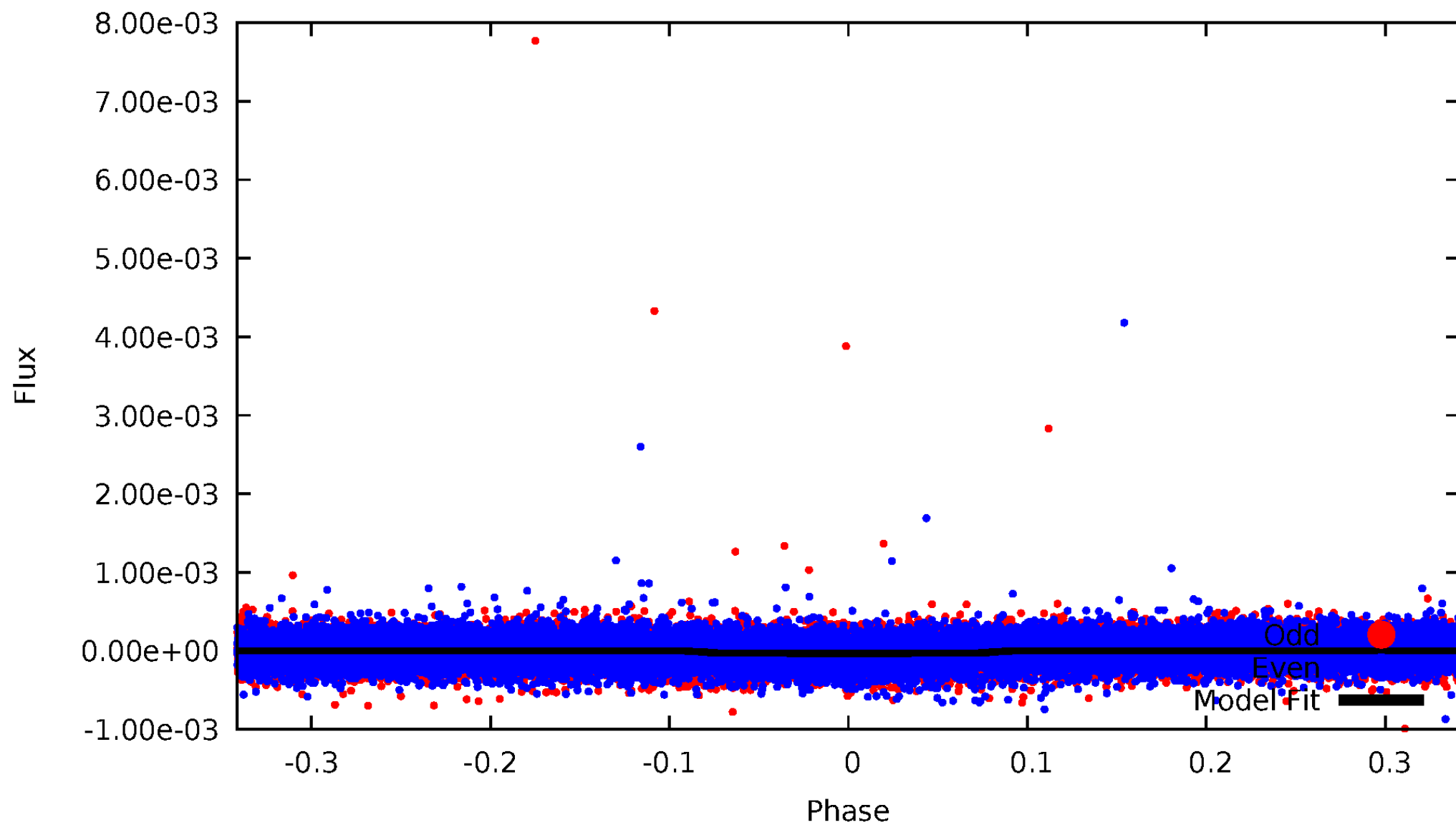


TCE 009099950-01



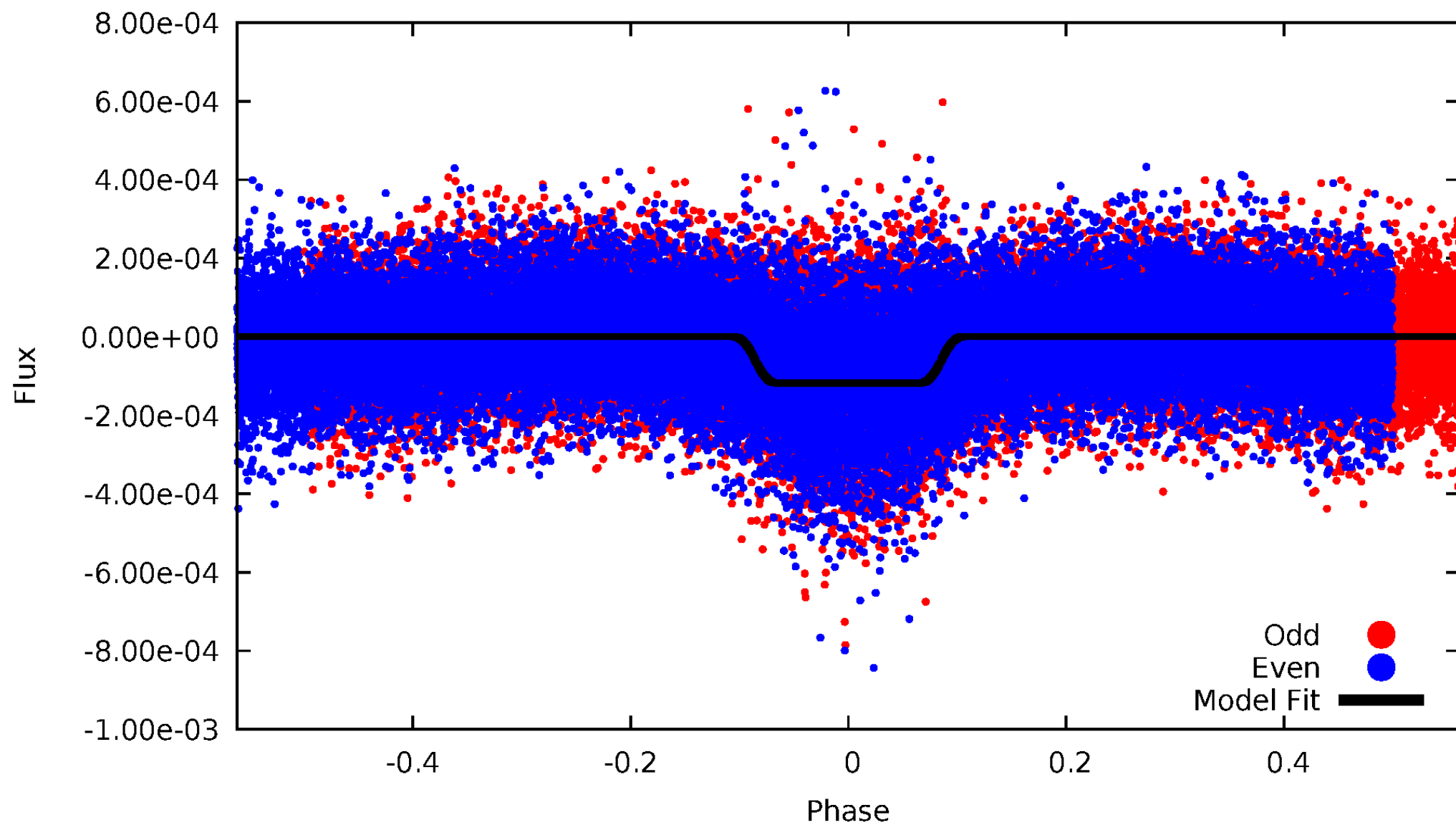
DV Odd/Even

TCE 009099950-01

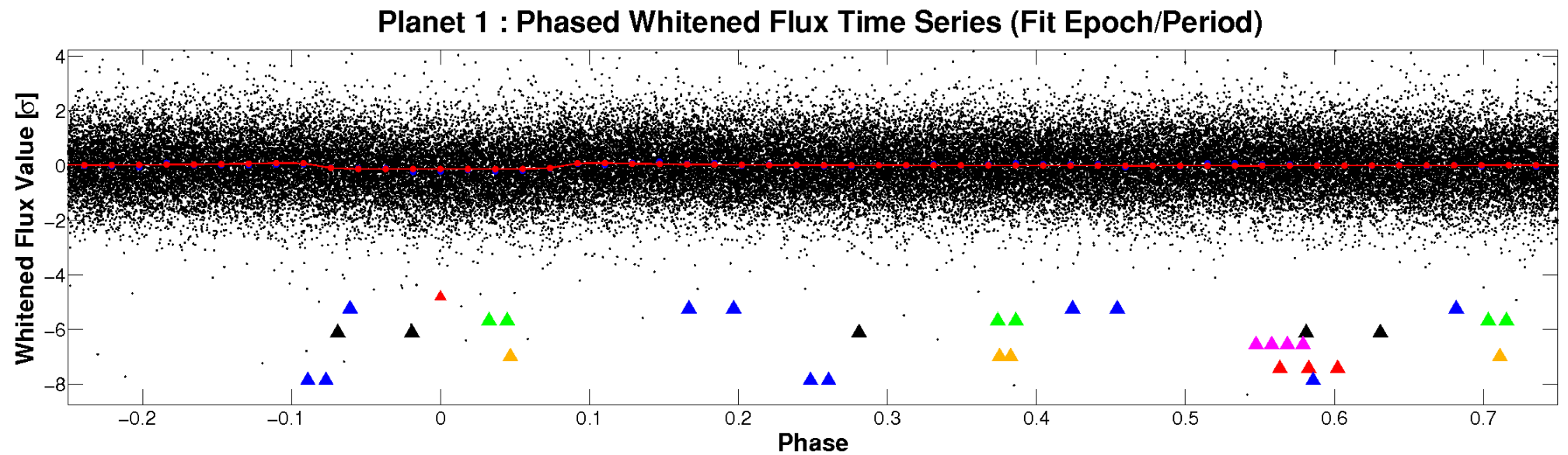
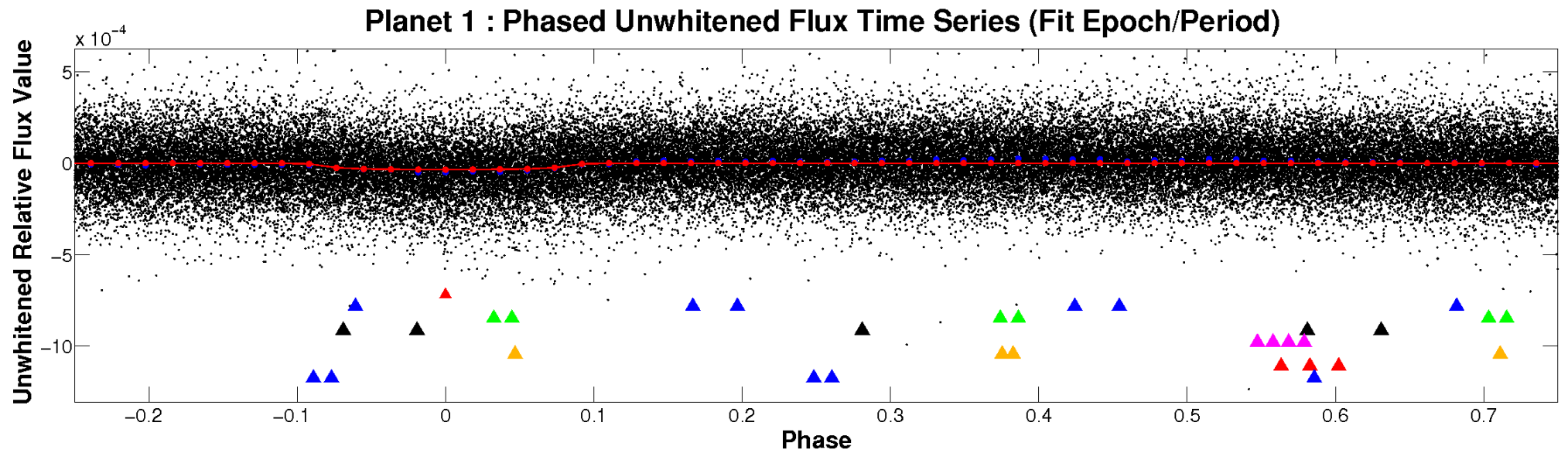


ALT Odd/Even

TCE 009099950-01

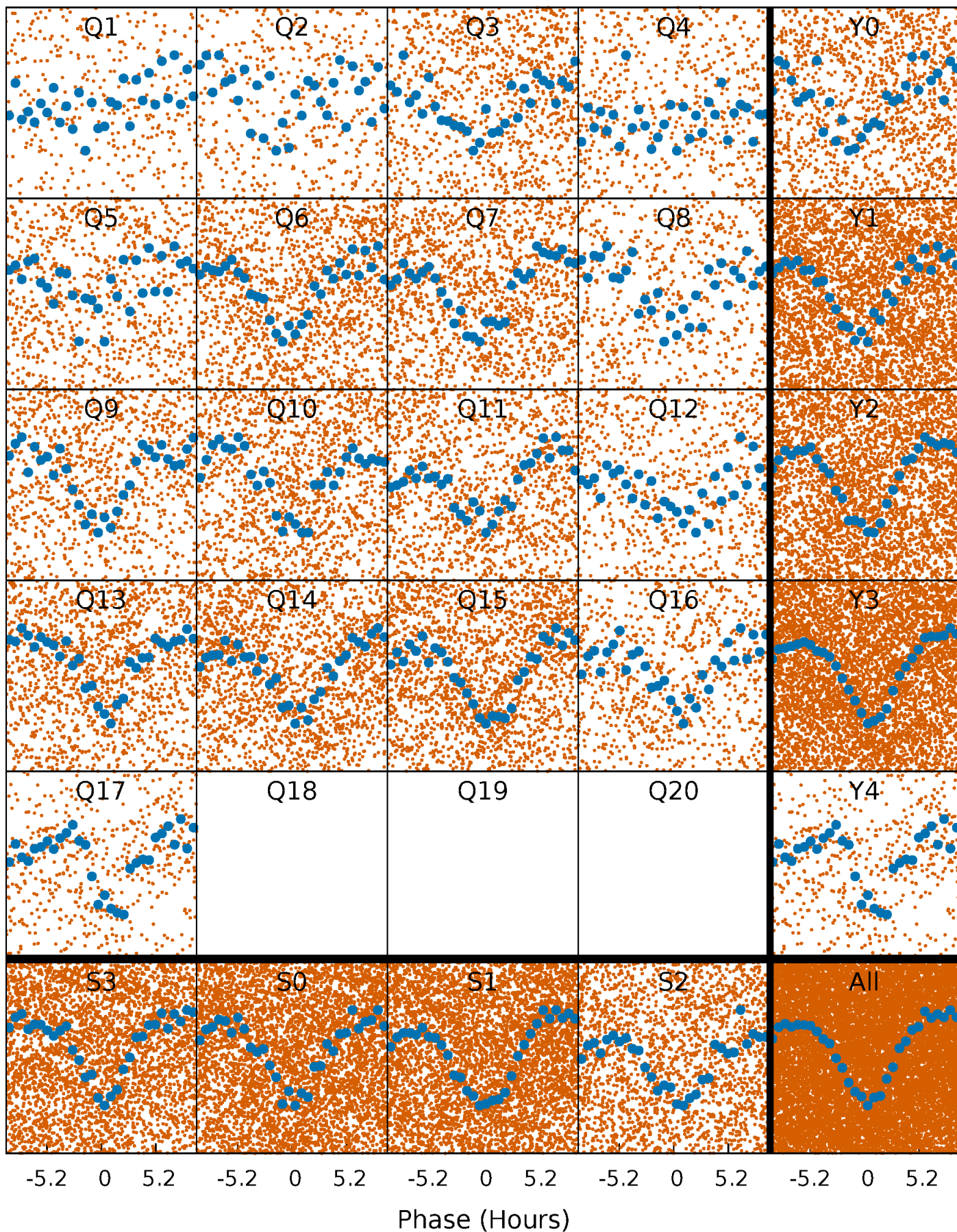


Non-Whitened Vs. Whitened Light Curve



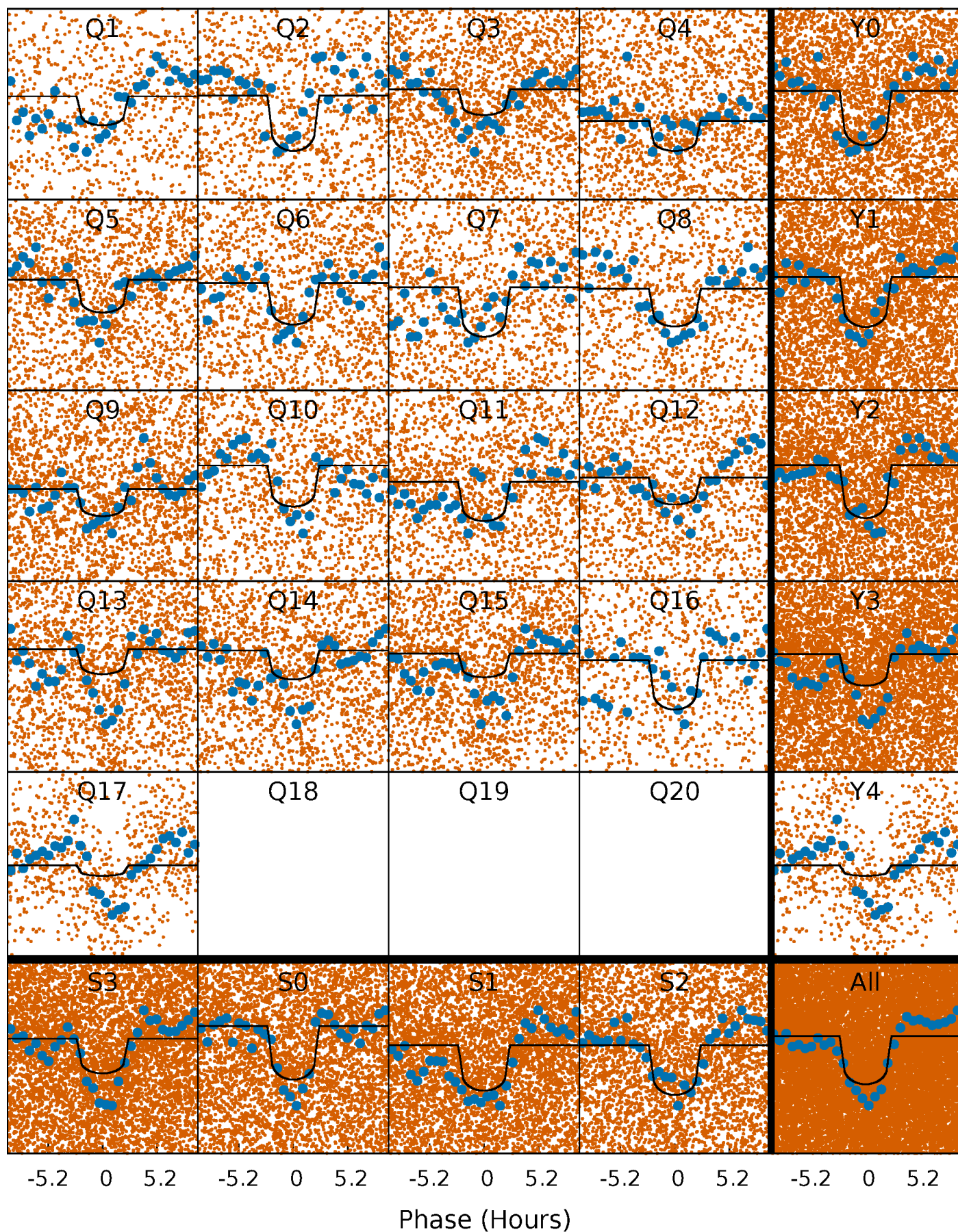
PDC Quarter-Phased Transit Curves

TCE 009099950-01 P= 1.111287 Days $T_0=132.357275$ (BKJD)



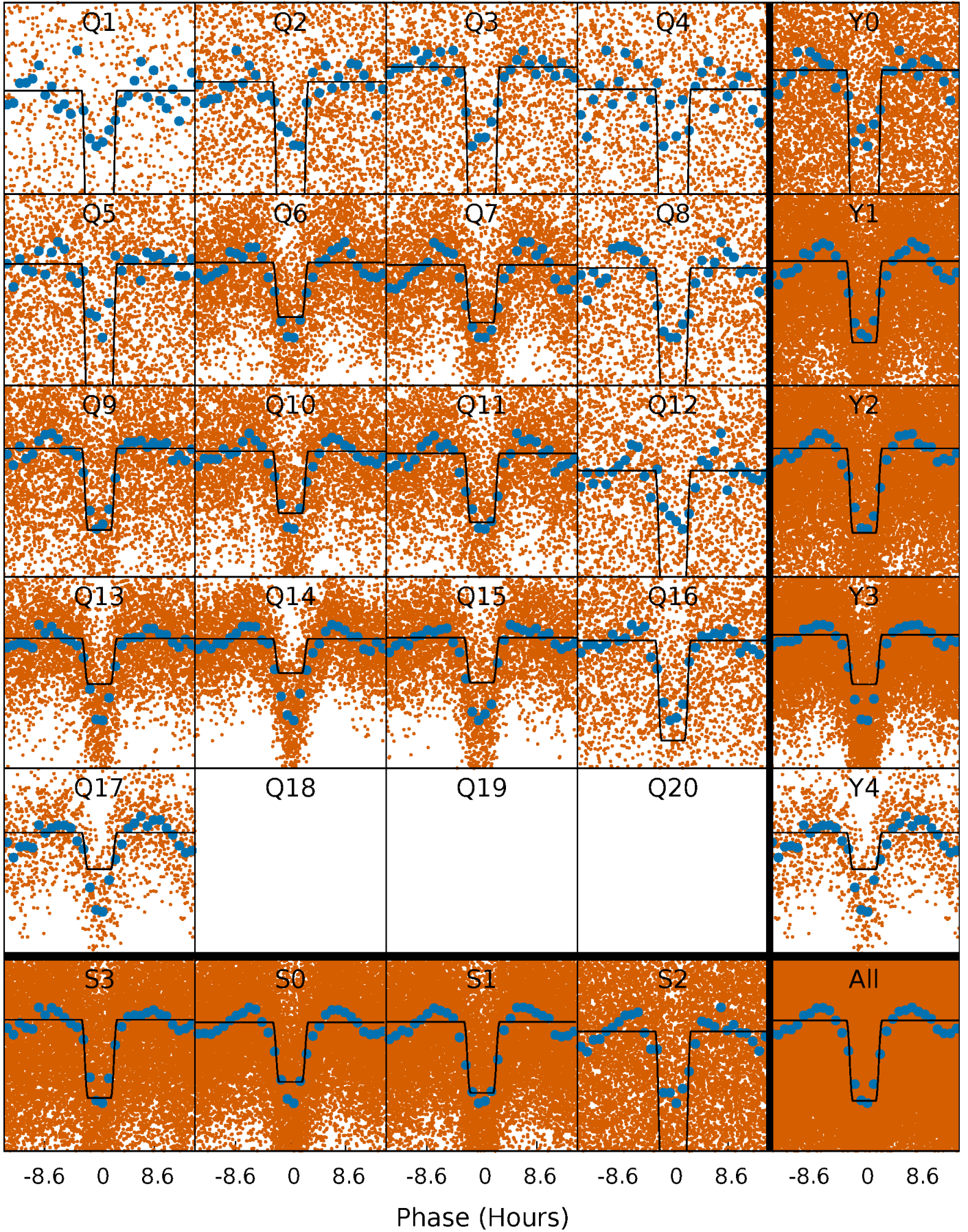
DV Quarter-Phased Transit Curves

TCE 009099950-01 P= 1.111287 Days $T_0=132.357275$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

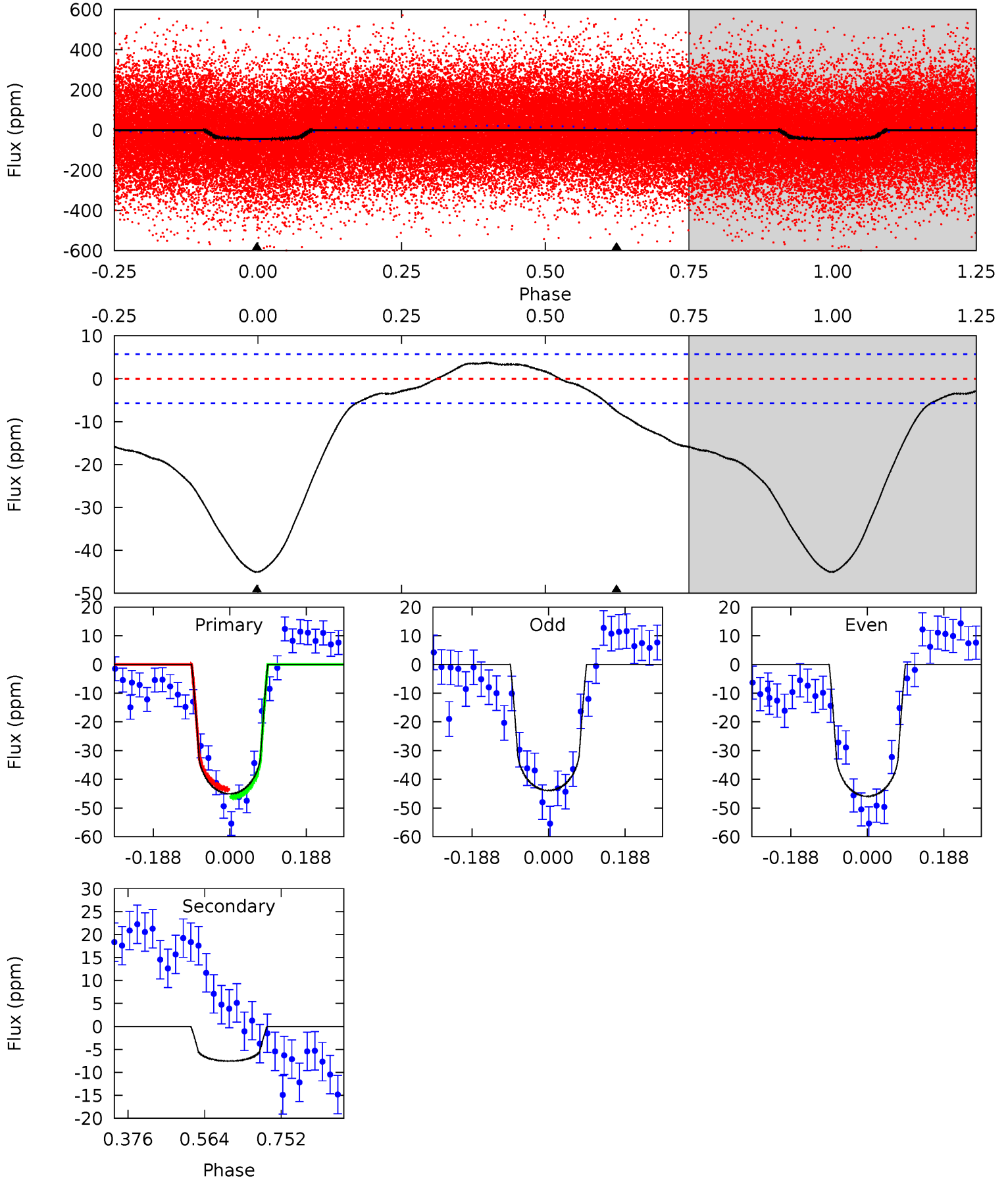
TCE 009099950-01 P= 1.111355 Days $T_0=132.310301$ (BKJD)



DV Model-Shift Uniqueness Test

009099950-01, P = 1.111287 Days, E = 131.245988 Days

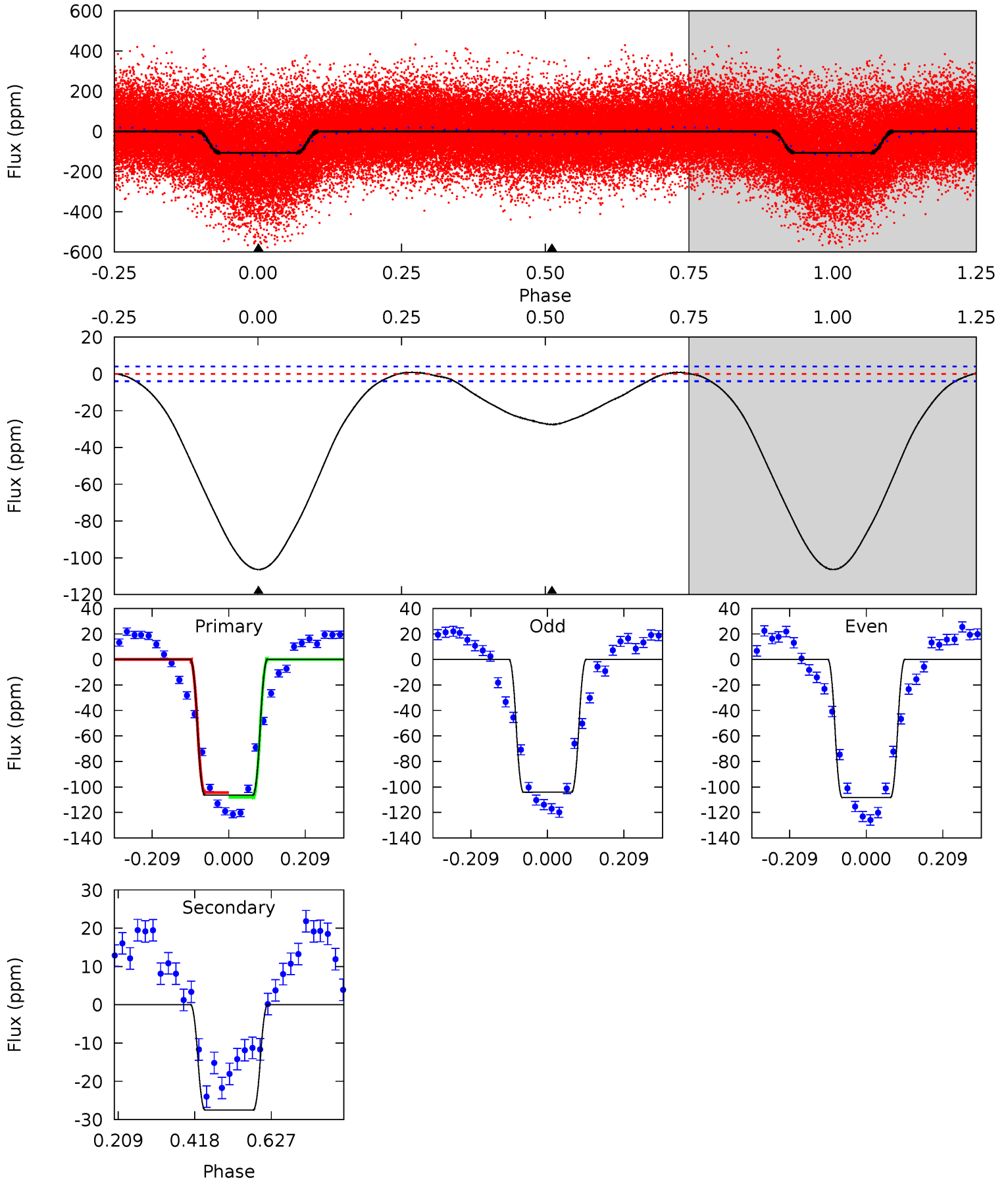
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.9	5.86	0	0	4.43	1.32	2.29	34.9	34.9	5.86	5.86	0.79	1.17	0.08	1.06



Alt Model-Shift Uniqueness Test

009099950-01, P = 1.111355 Days, E = 131.198946 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
117.4	30.3	0	0	4.41	1.26	1.72	117.4	117.4	30.3	30.3	2.36	1.00	0.01	2.01



Stellar Parameters For KIC 009099950

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+156}_{-176}	$3.872^{+0.280}_{-0.100}$	$-0.200^{+0.300}_{-0.250}$	$2.308^{+0.438}_{-0.813}$	$1.446^{+0.183}_{-0.313}$	$0.166^{+0.332}_{-0.050}$
	+2%/-3%	+7%/-3%	+150%/-125%	+19%/-35%	+13%/-22%	+200%/-30%
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 009099950-01 / KOI 4125.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-8 ± 1	$1.36^{+0.35}_{-0.35}$	3868^{+238}_{-319}	4385^{+531}_{-426}	$1.258^{+0.921}_{-0.462}$
Alt.	-27 ± 1	$2.65^{+0.42}_{-0.51}$	3872^{+241}_{-294}	4396^{+272}_{-246}	$1.233^{+0.542}_{-0.323}$

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

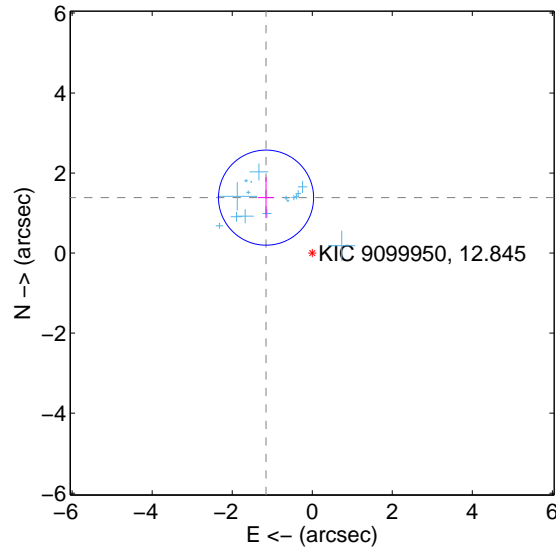
Supplemental centroid analysis for 009099950-01. Kepler magnitude: 12.85. Transit SNR 14.56

There are 16 quarters with good PRF difference image offsets

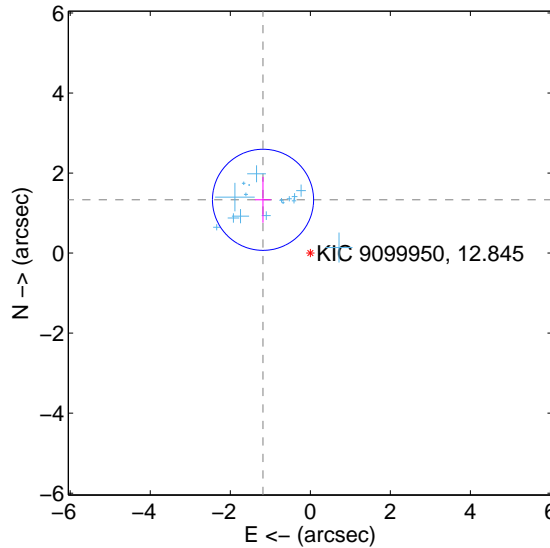
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.804 ± 0.396	4.55	1.154 ± 0.204	1.386 ± 0.512
PRF-fit source offset from KIC position	1.781 ± 0.421	4.23	1.182 ± 0.202	1.332 ± 0.573
photometric centroid source offset	3.38 ± 0.55	6.09	1.64 ± 0.50	2.95 ± 0.57

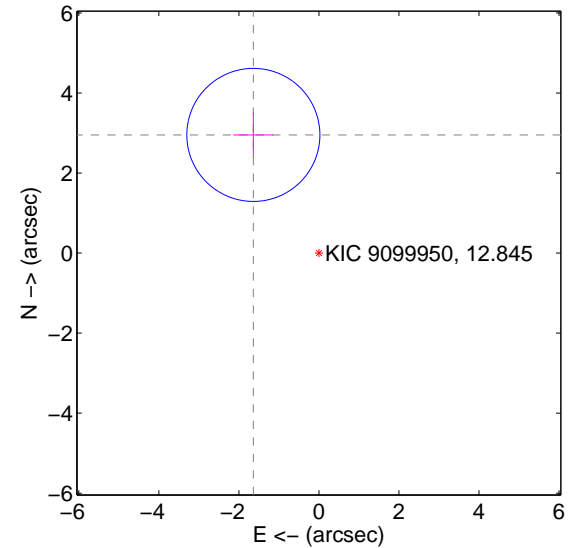
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

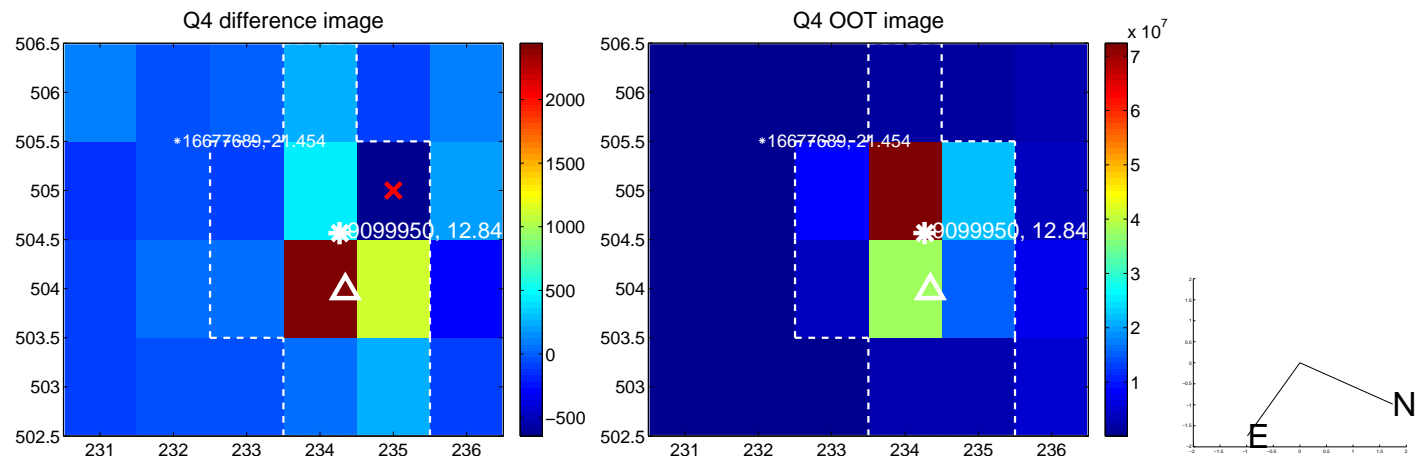
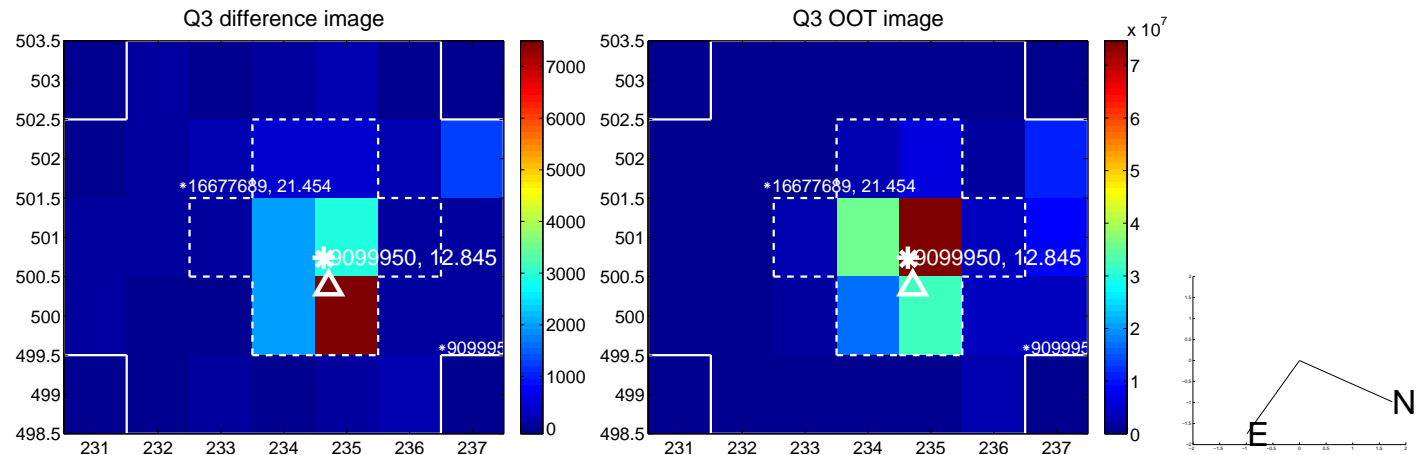
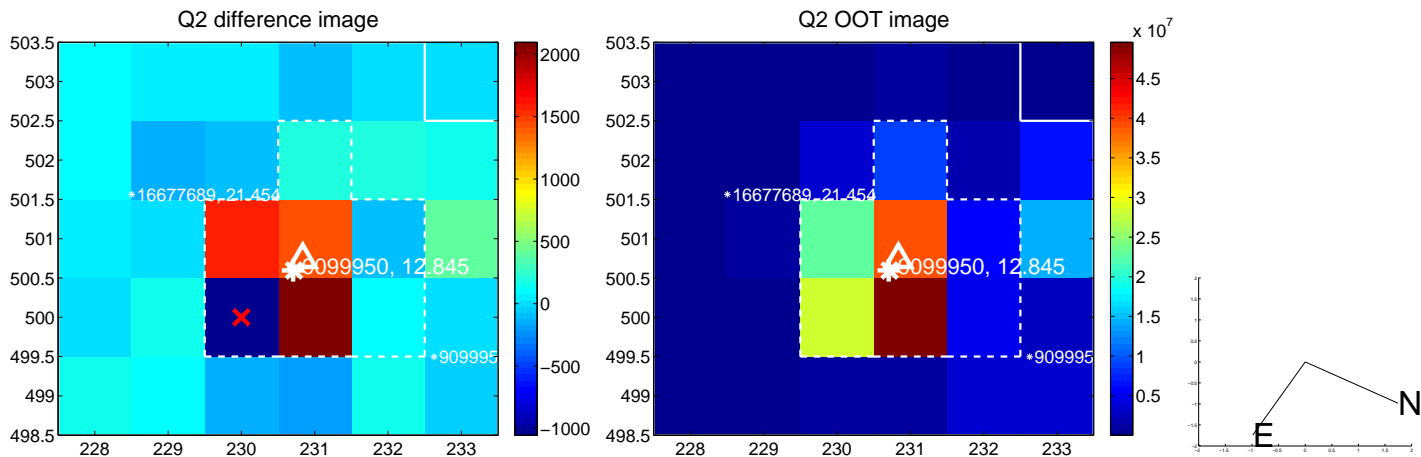
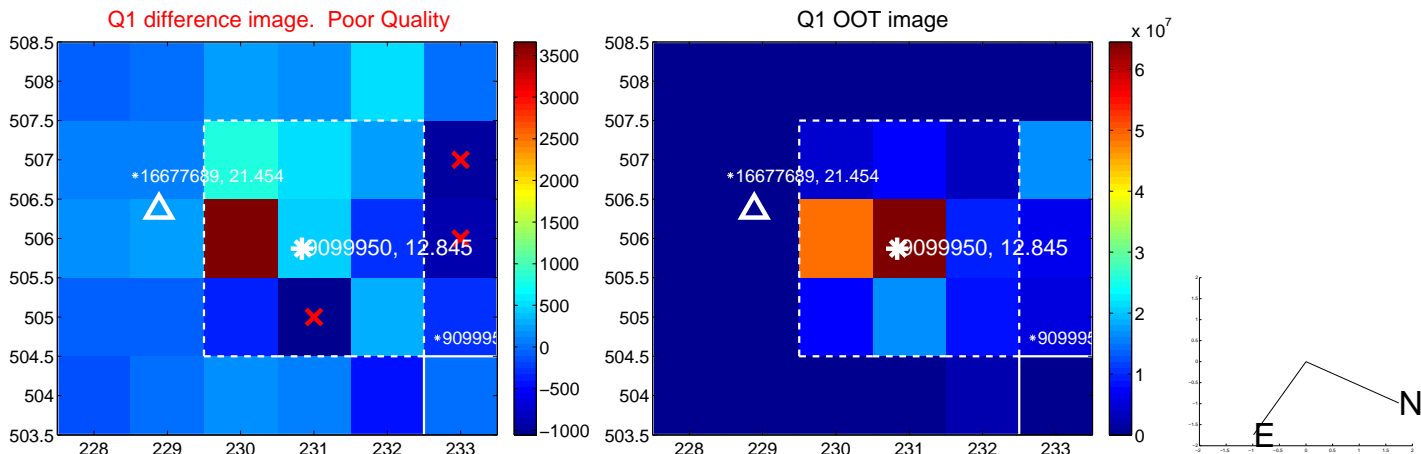


offset from photometric centroids

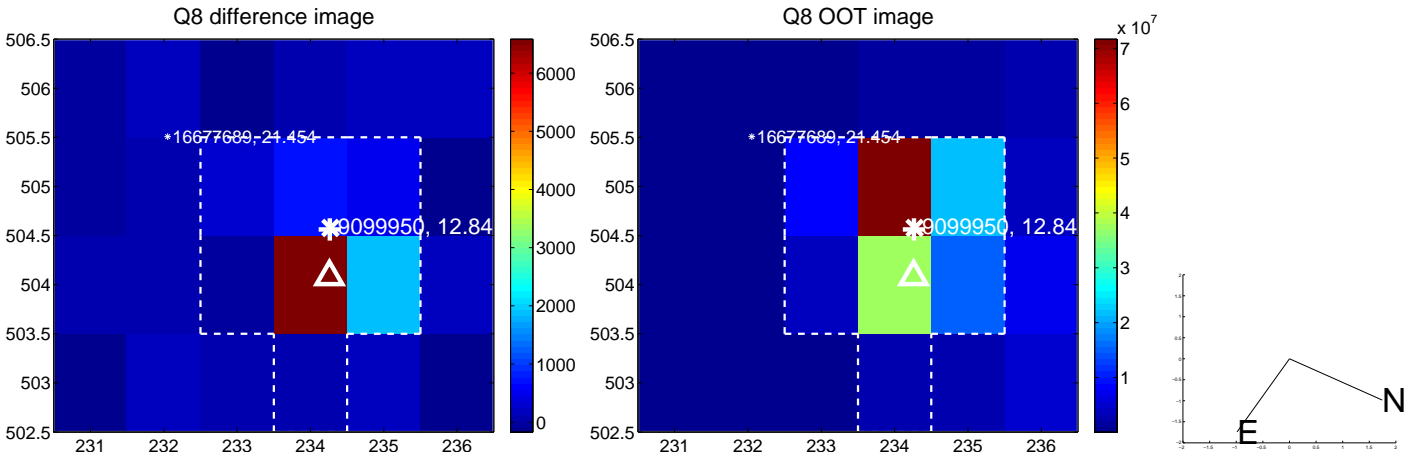
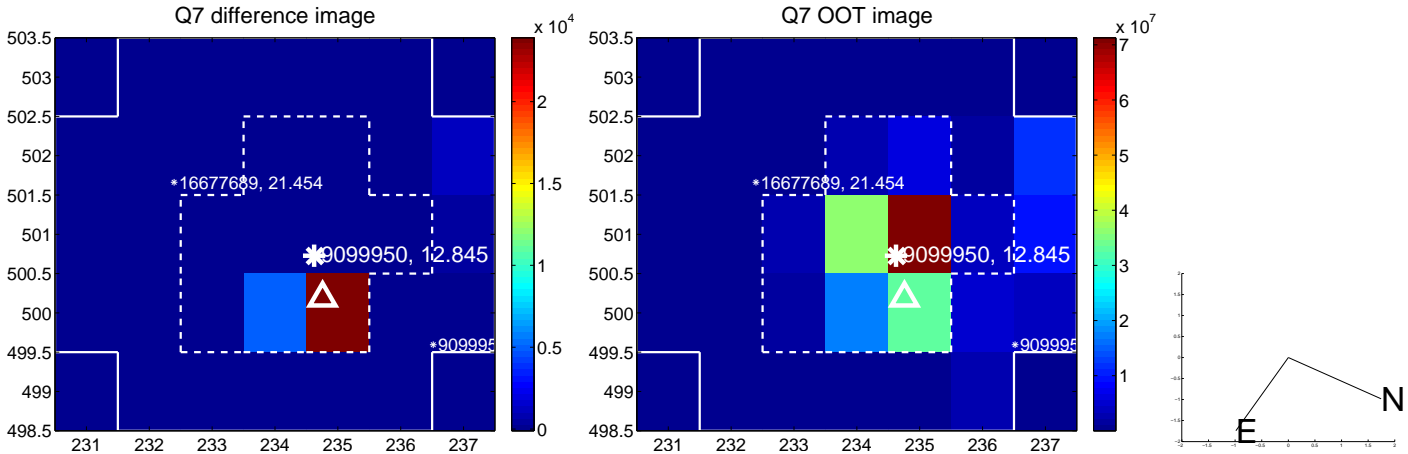
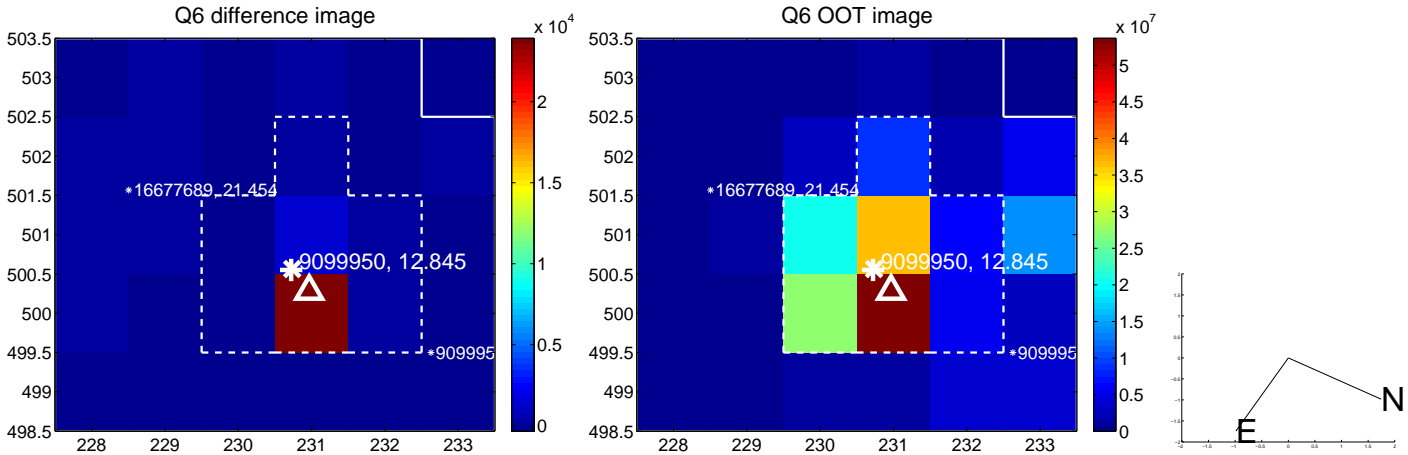
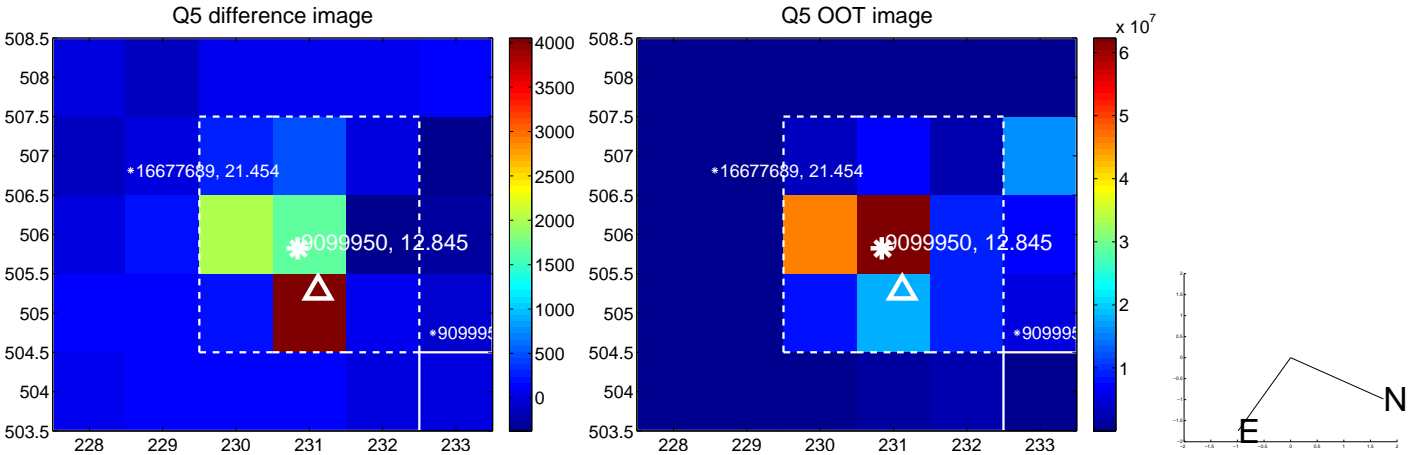


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

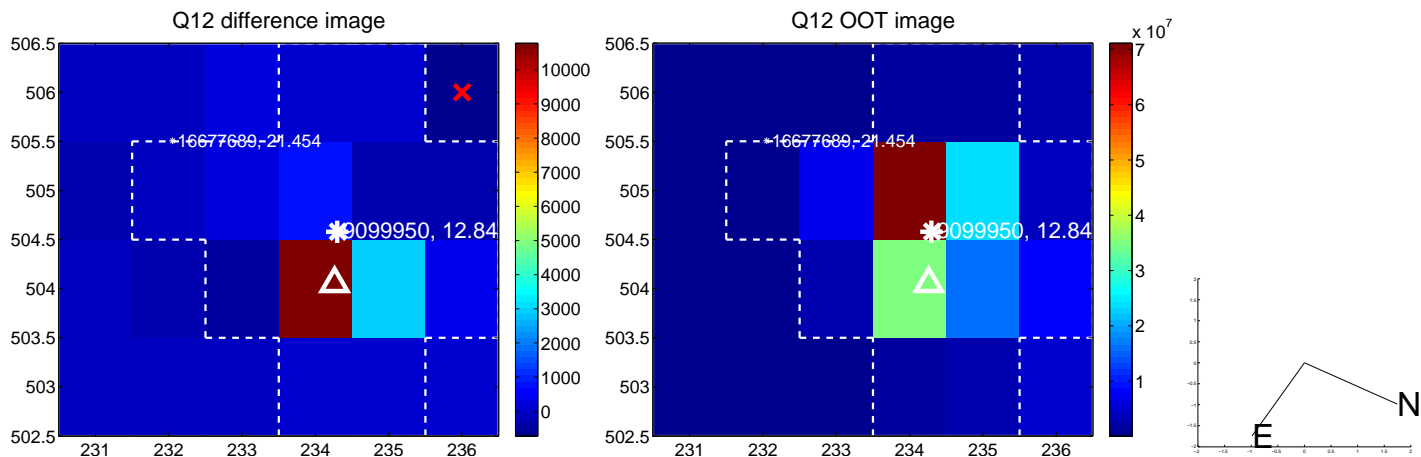
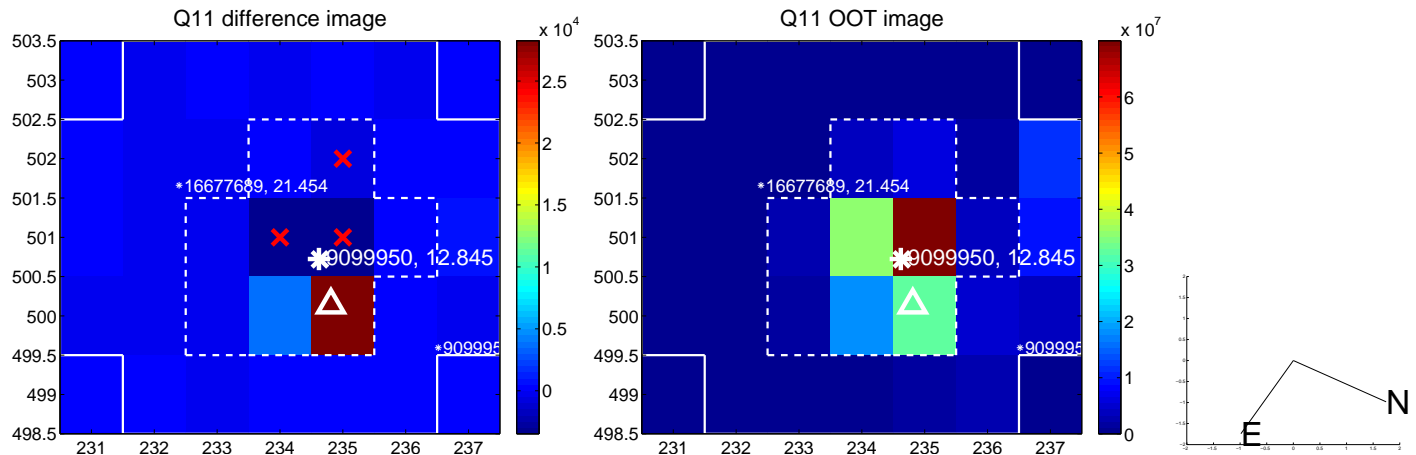
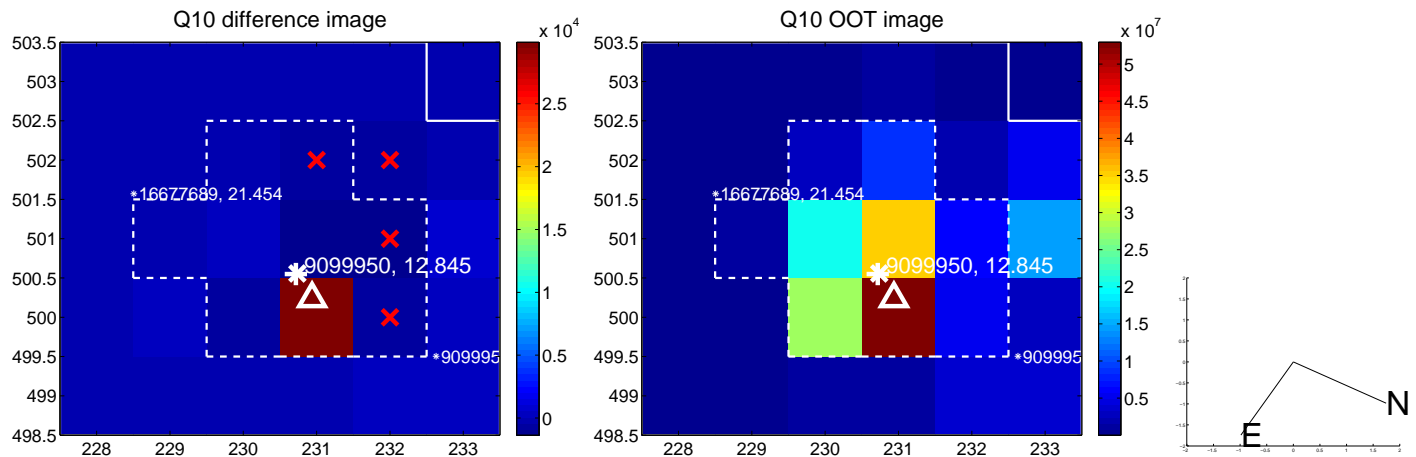
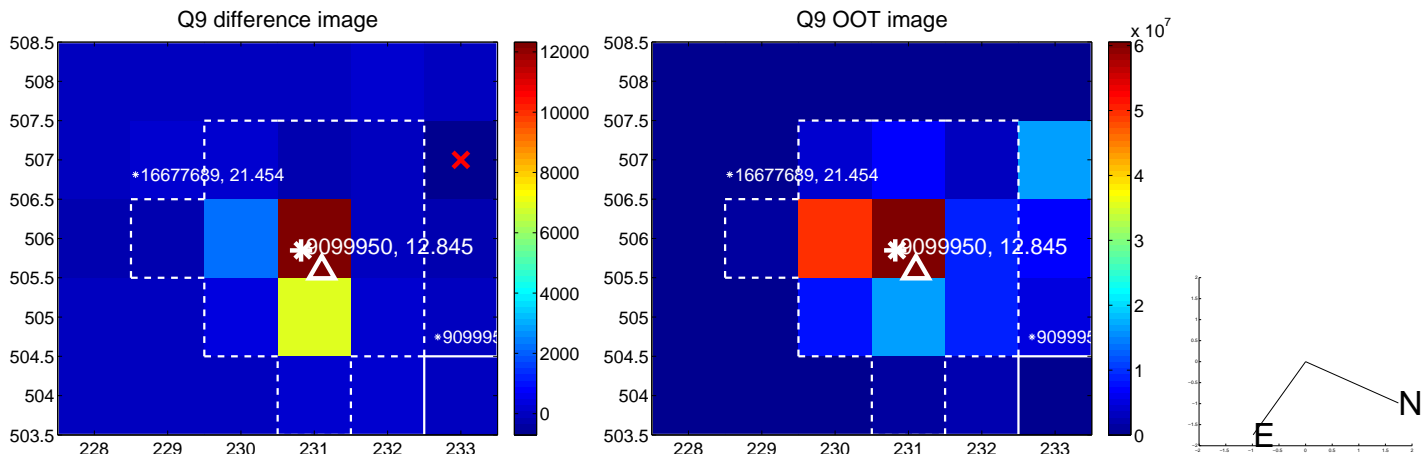
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



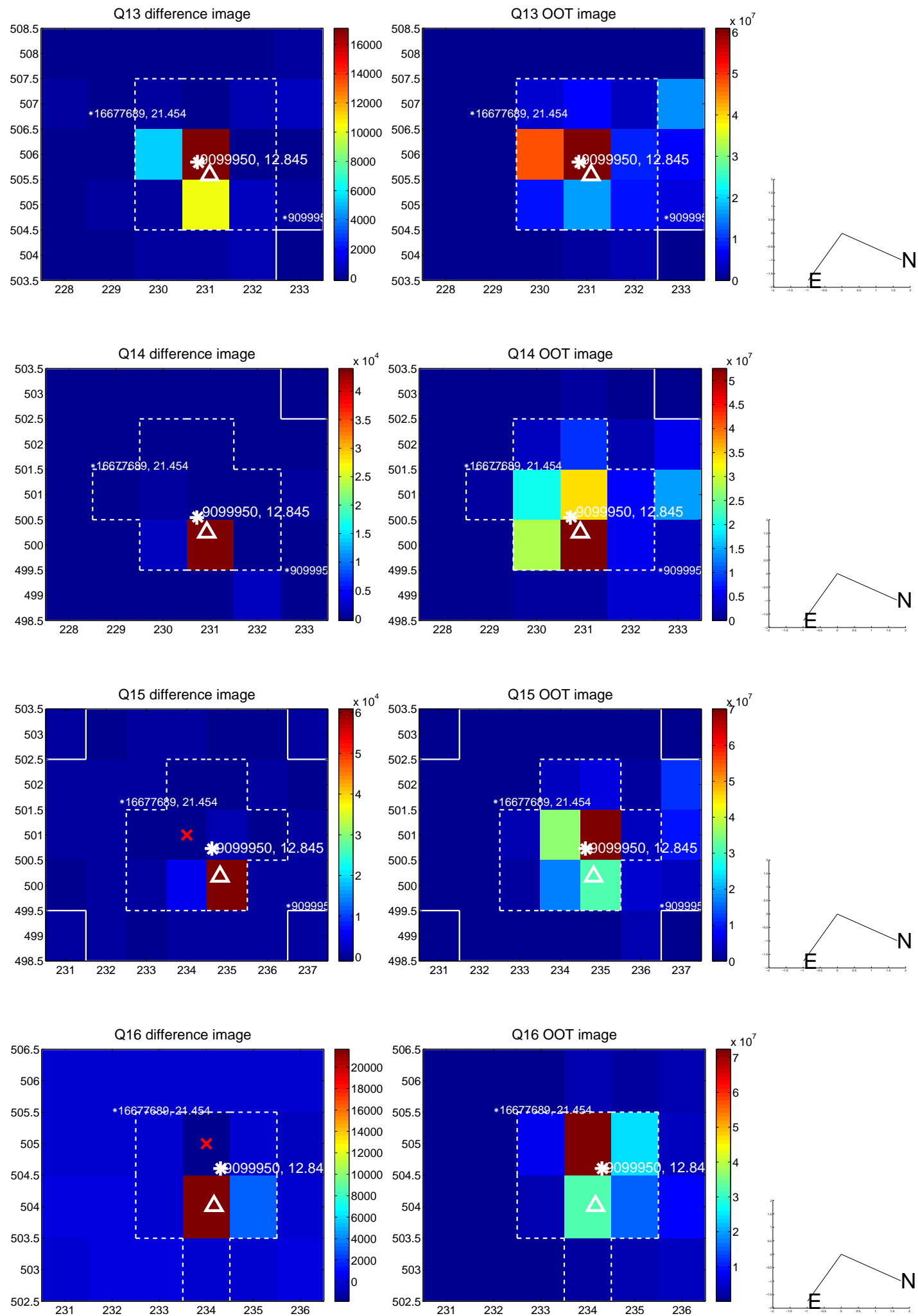
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



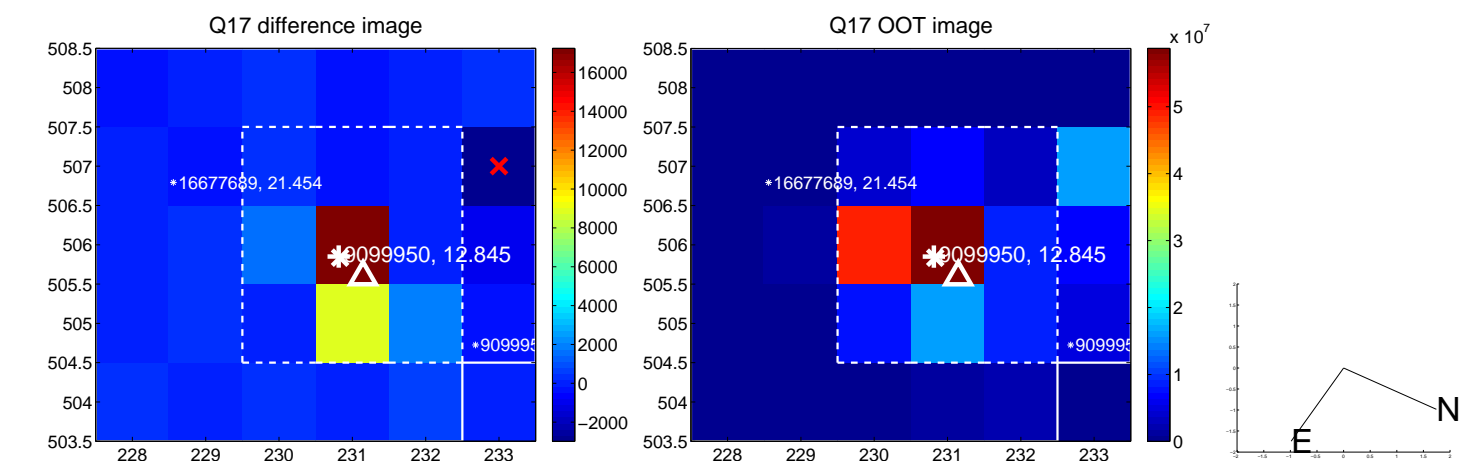
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



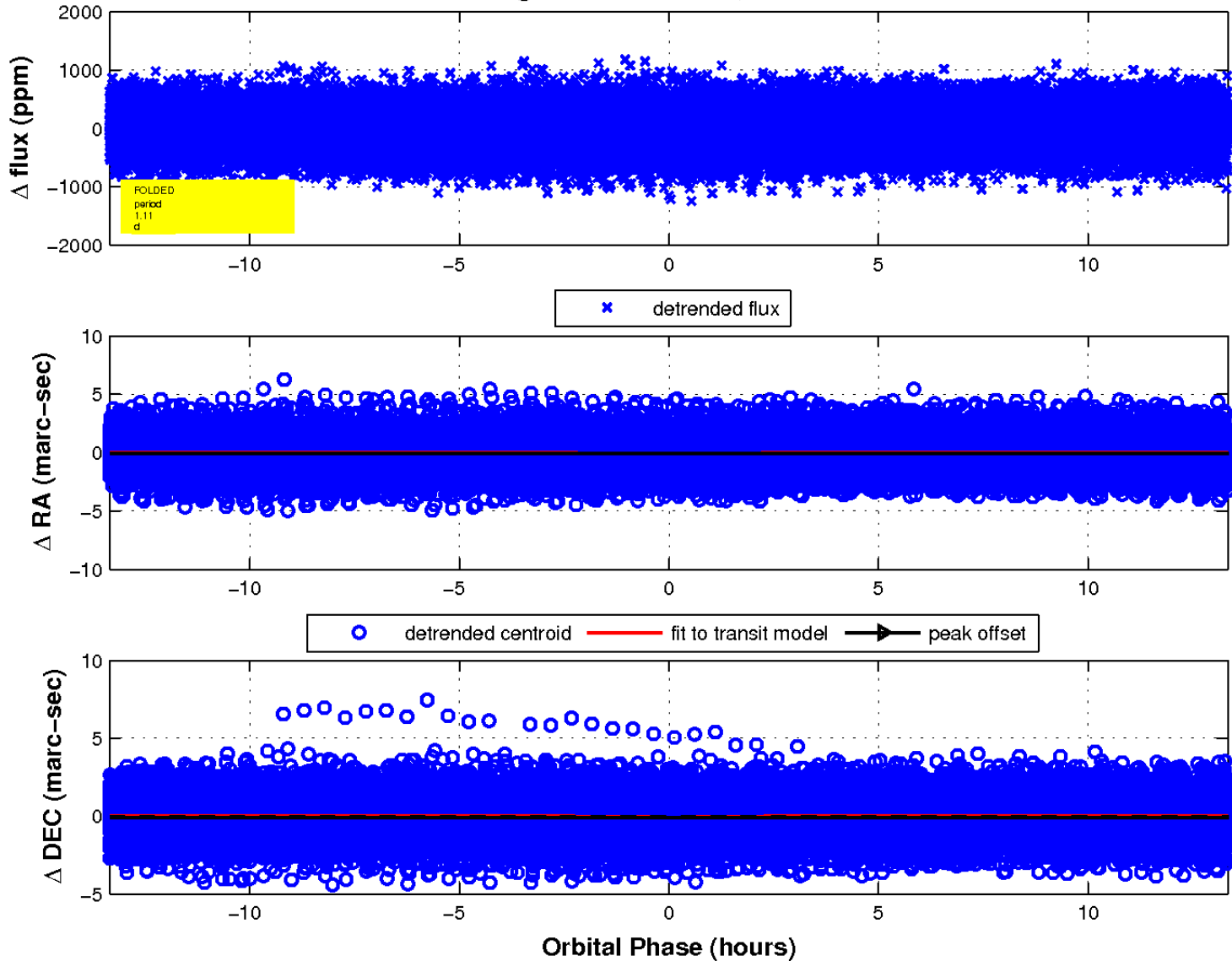
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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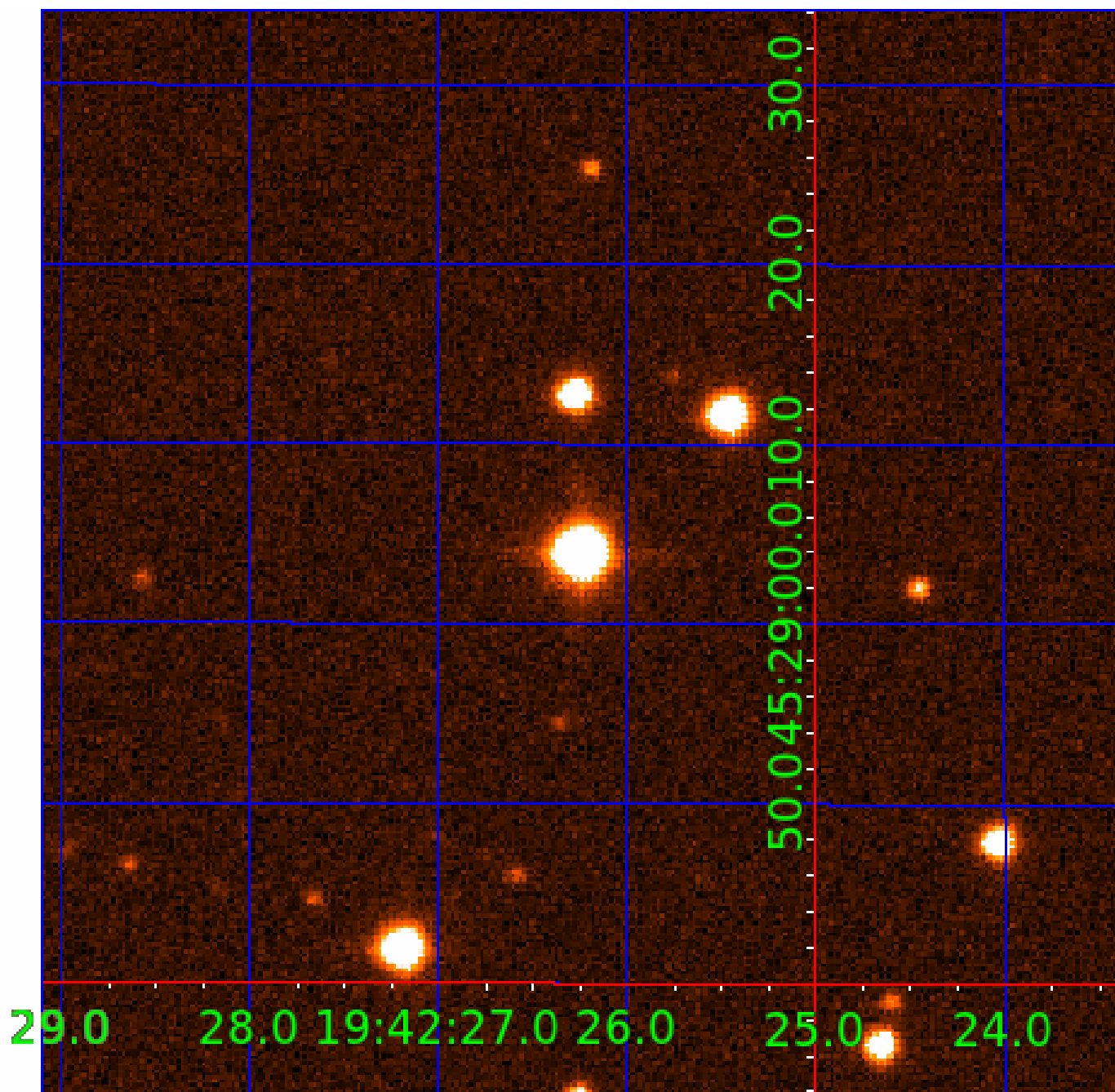


fluxWeightedCentroids, Planet 1 of 8



UKIRT Image

Declination



KIC 009099950

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})
009099950-01	OBS	4125.01	1.111287	132.357275	35.0	4.555	17.3	14.6	2.31	6486	1.44	14968.94
009099950-02	OBS	No	258.643639	155.087871	478.5	14.855	10.3	7.0	2.31	6486	5.23	10.46
009099950-03	OBS	No	256.341306	170.177250	519.1	9.229	9.2	8.0	2.31	6486	6.55	10.58
009099950-04	OBS	No	287.434388	400.156029	619.6	10.998	8.7	7.2	2.31	6486	10.99	9.08
009099950-05	OBS	No	362.267766	321.919458	383.0	11.190	8.9	5.7	2.31	6486	5.30	6.67
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009099950-08	OBS	No	309.674046	326.010681	364.6	11.669	8.1	4.5	2.31	6486	4.95	8.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099950-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
009099950-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
009099950-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009099950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009099950-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_MEAS
009099950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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.

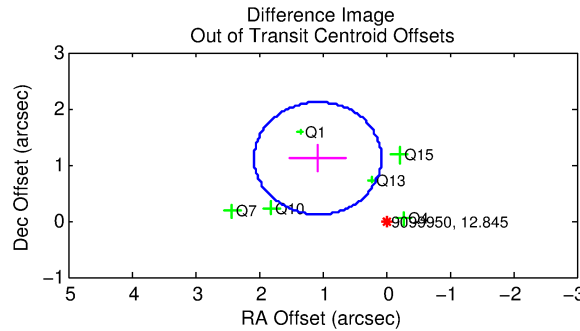
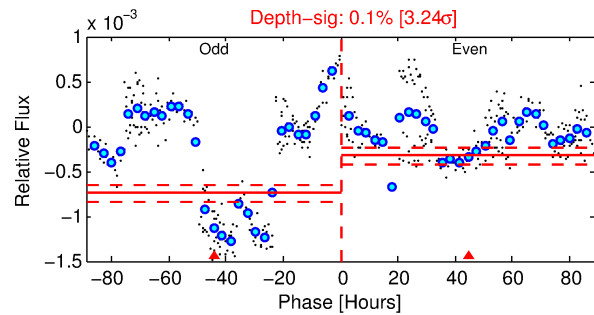
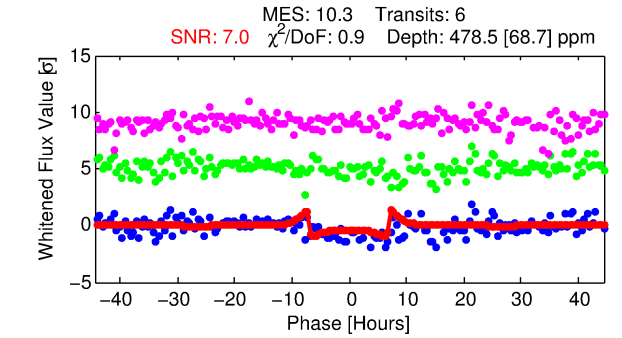
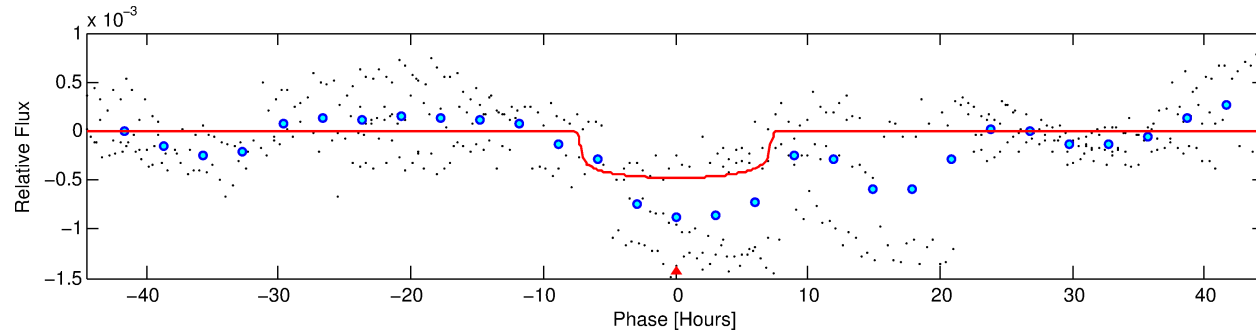
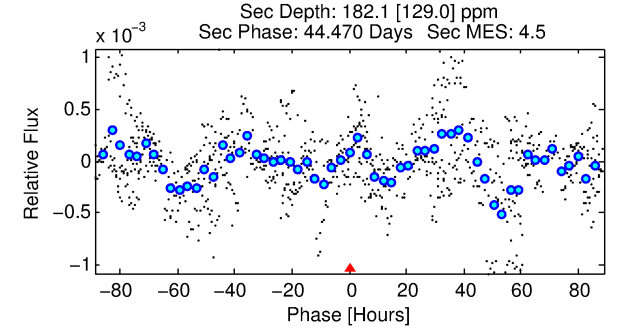
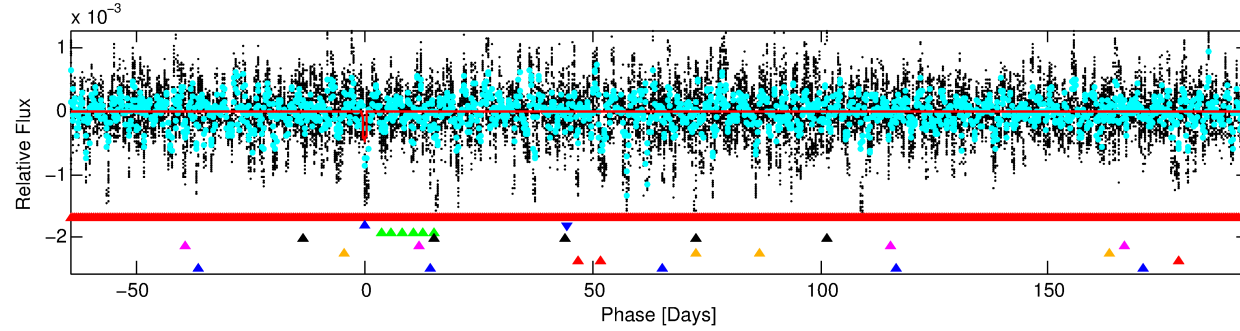
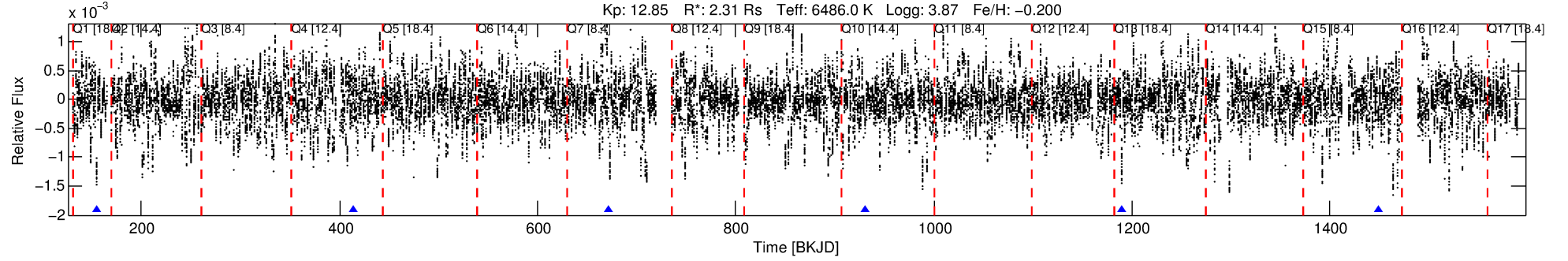
Ephemeris Match Information For 009099950-02

No Significant Match Found

DV One-Page Summary

KIC: 9099950 Candidate: 2 of 8 Period: 258.644 d
KOI: K04125 Corr: No Ephemeris Match

Kp: 12.85 R*: 2.31 Rs Teff: 6486.0 K Logg: 3.87 Fe/H: -0.200



DV Fit Results:

Period = 258.64364 [0.00267] d
Epoch = 155.0879 [0.0086] BKJD
Rp/R* = 0.0208 [0.0035]
a/R* = 116.77 [84.77]
b = 0.52 [1.01]
Seff = 10.46 [5.25]
Teff = 459 [58] K
Rp = 5.23 [2.04] Re
a = 0.8988 [0.2861] AU
Ag = 2962.80 [2742.63] [1.08σ]
Teffp = 5230 [1037] K [4.60σ]

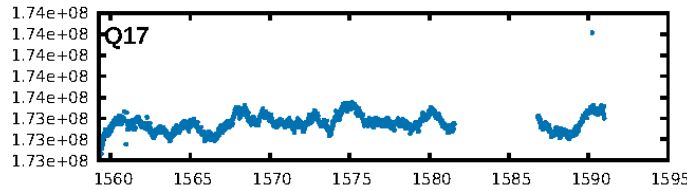
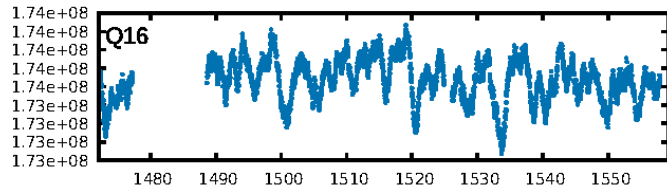
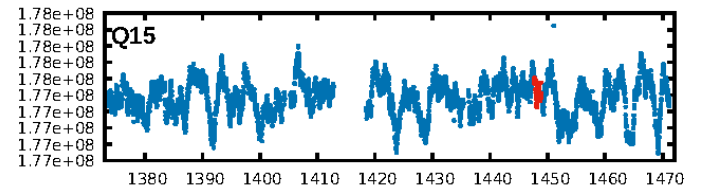
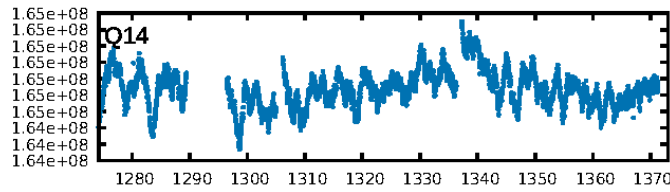
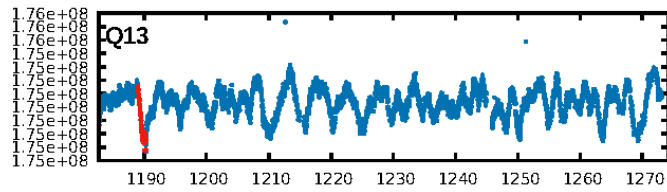
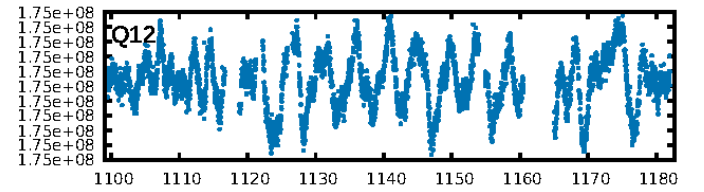
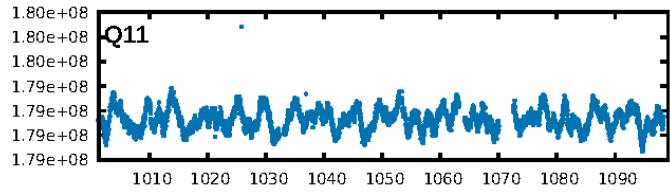
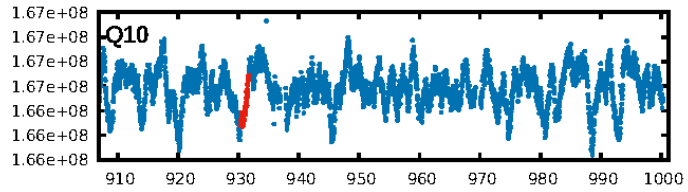
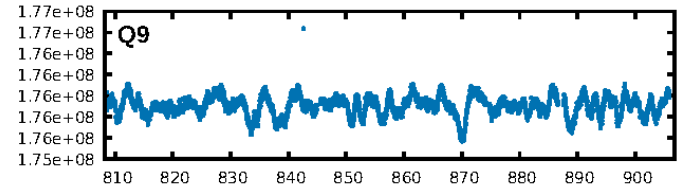
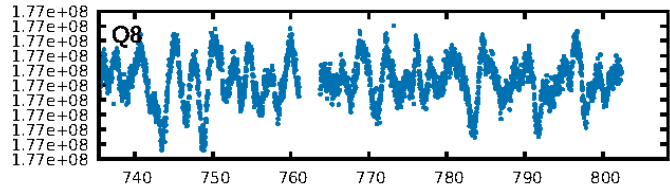
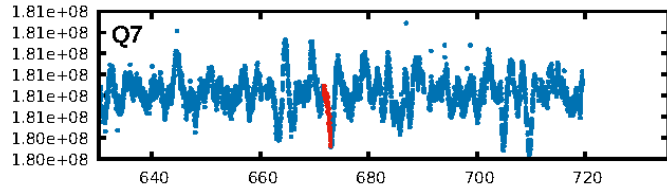
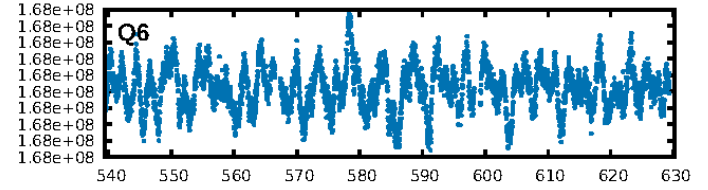
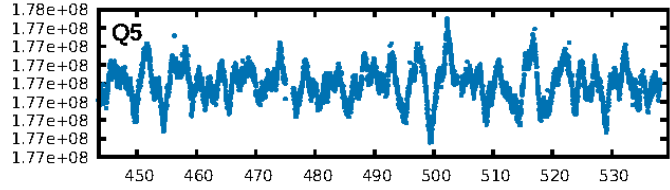
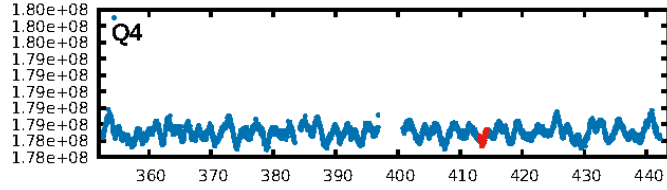
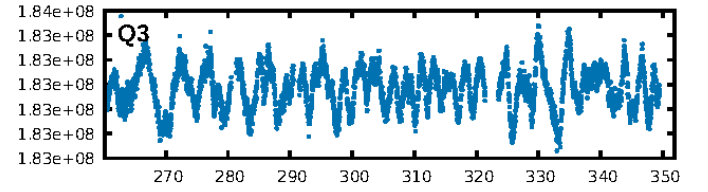
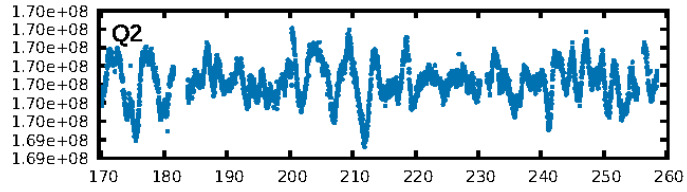
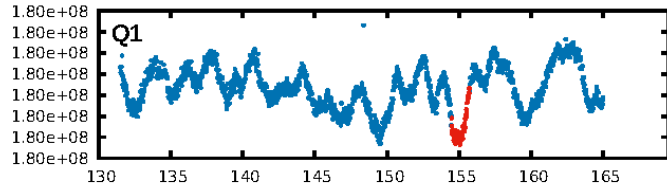
DV Diagnostic Results:

ShortPeriod-sig: 99.8% [3.16σ]
LongPeriod-sig: 100.0% [37.38σ]
ModelChiSquare2-sig: 0.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.99e-12
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 17.55
Centroid-sig: 85.7%
Centroid-so: 1.186 arcsec [1.91σ]
OotOffset-rm: 1.547 arcsec [4.64σ]
KicOffset-rm: 1.554 arcsec [4.34σ]
OotOffset-st: 1/2/1/2 [6]
KicOffset-st: 1/2/1/2 [6]
DiffImageQuality-fgm: 0.83 [5/6]
DiffImageOverlap-fno: 0.00 [0/6]

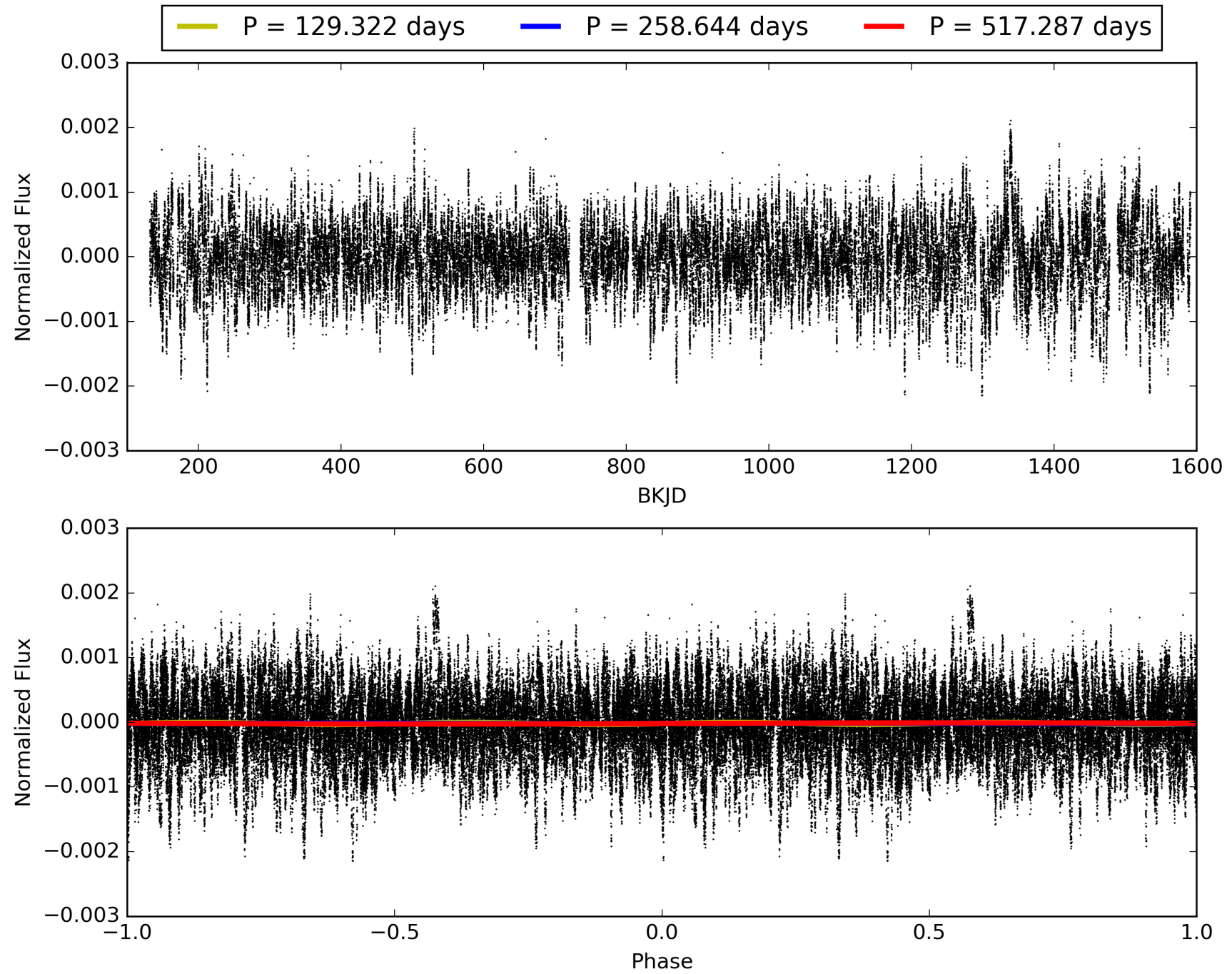
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:45:01 Z

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

TCE 009099950-02, PDC Light Curves

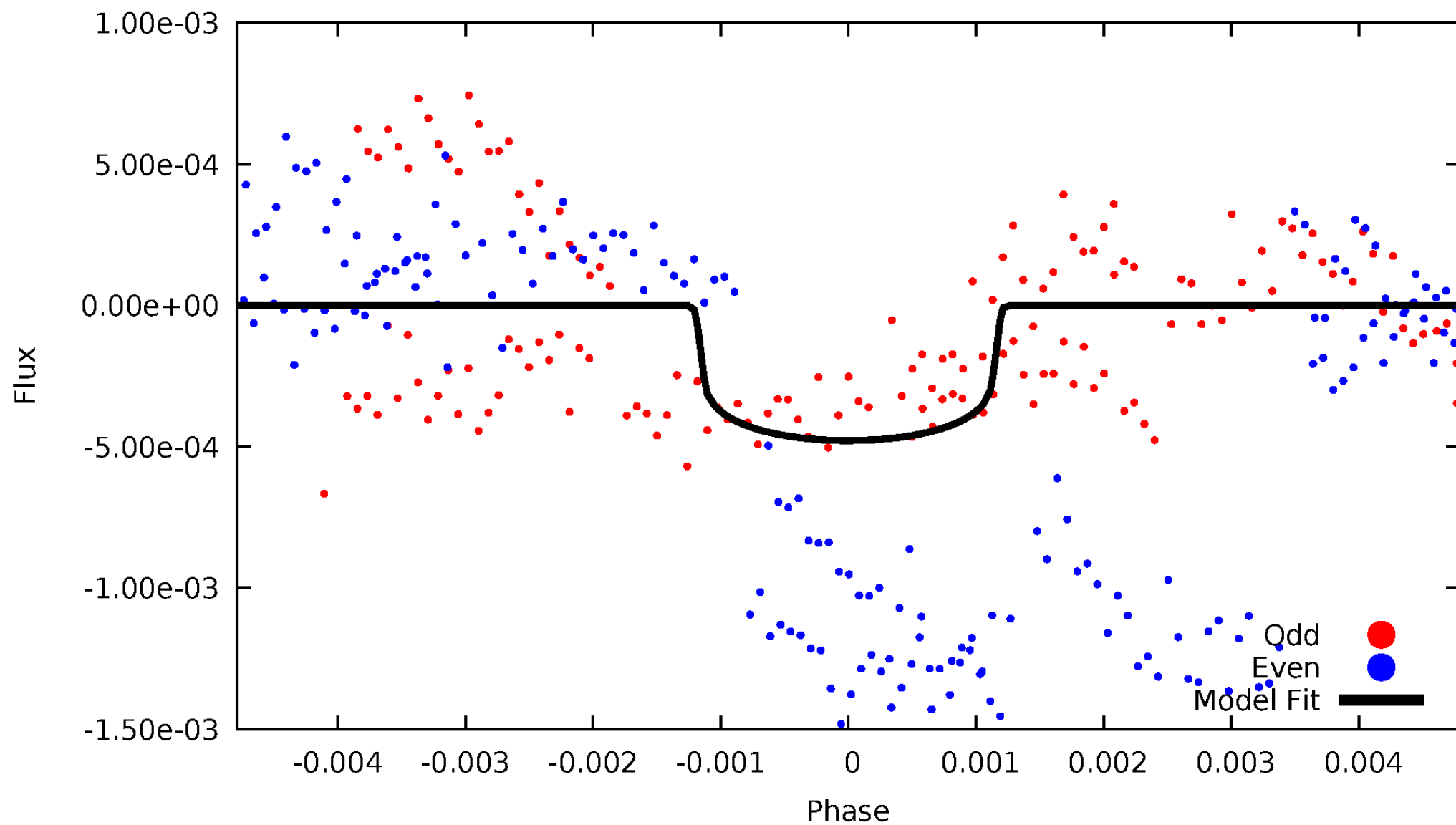


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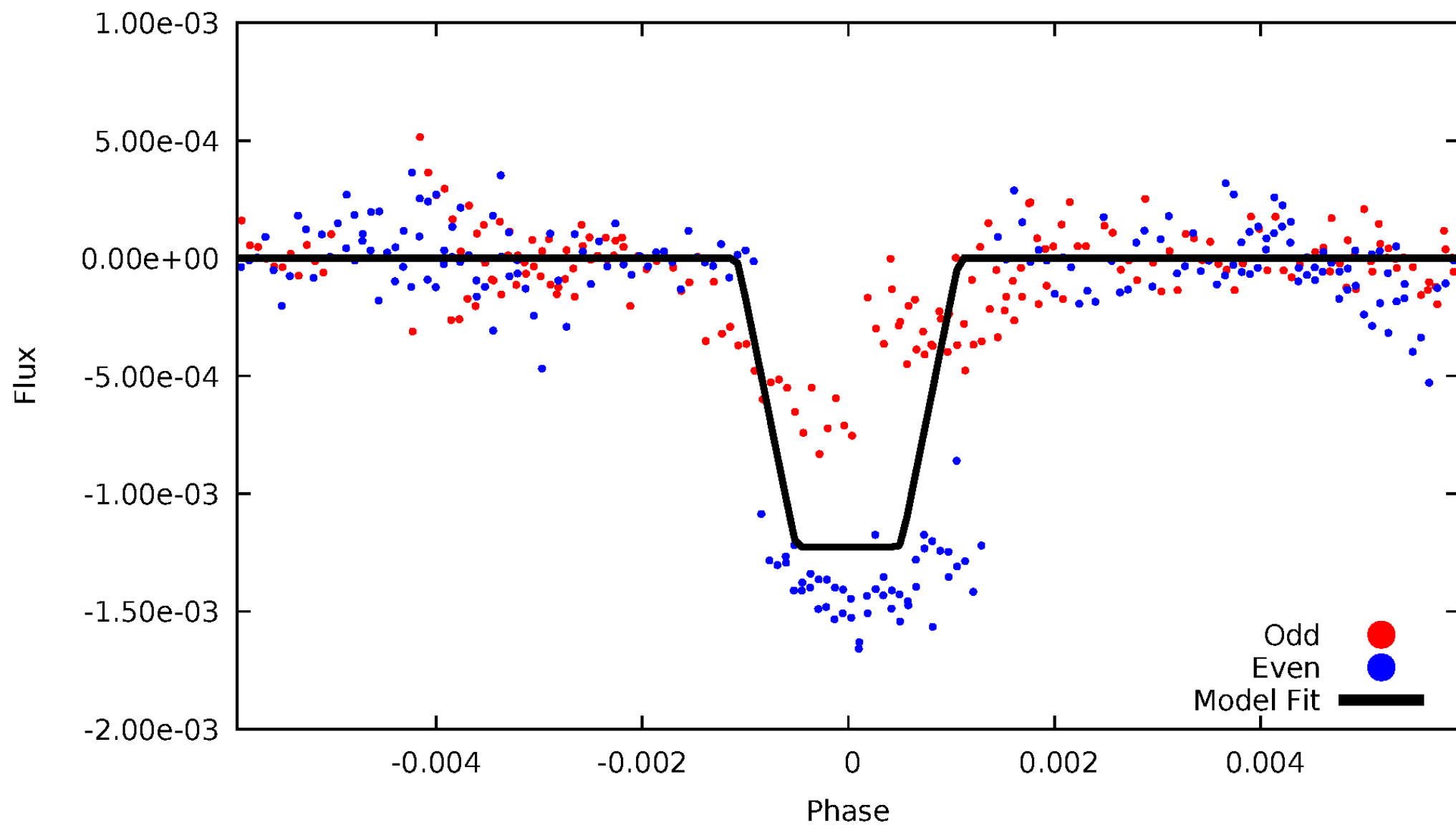
DV Odd/Even

TCE 009099950-02



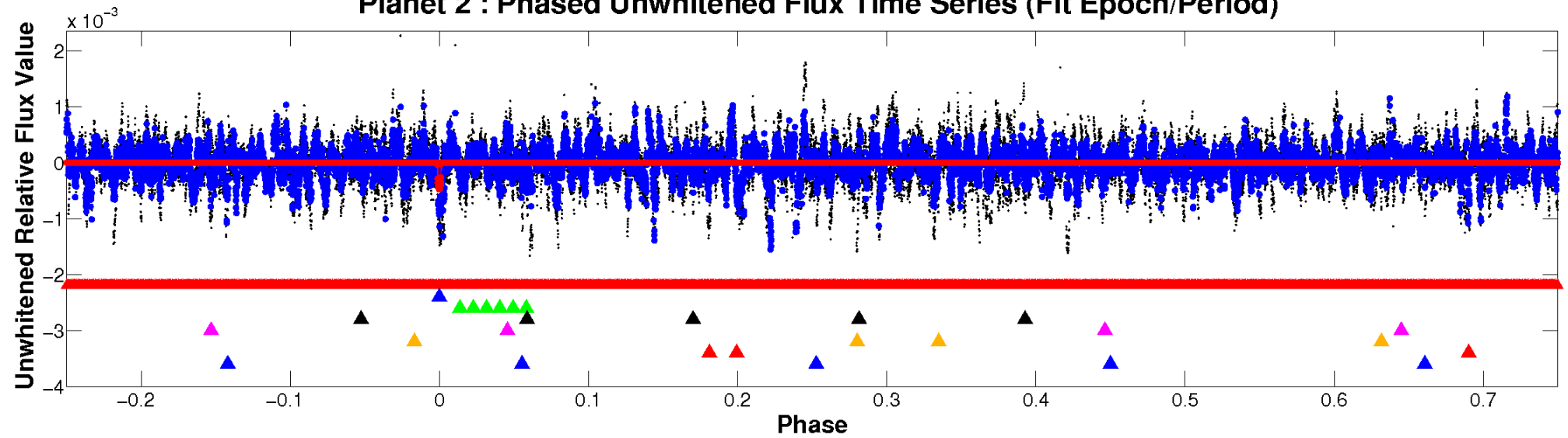
ALT Odd/Even

TCE 009099950-02

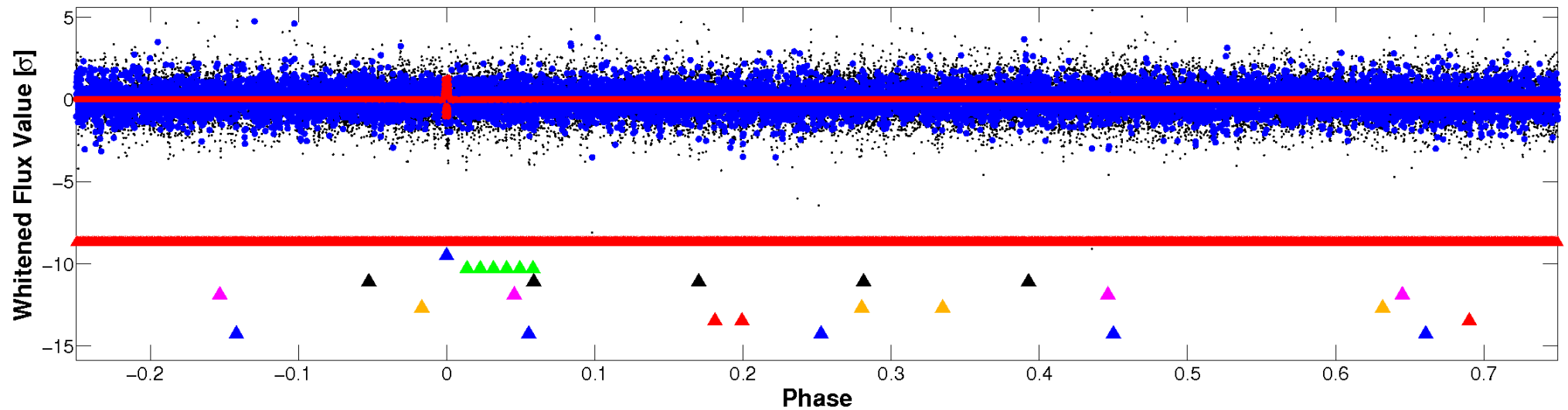


Non-Whitened Vs. Whitened Light Curve

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

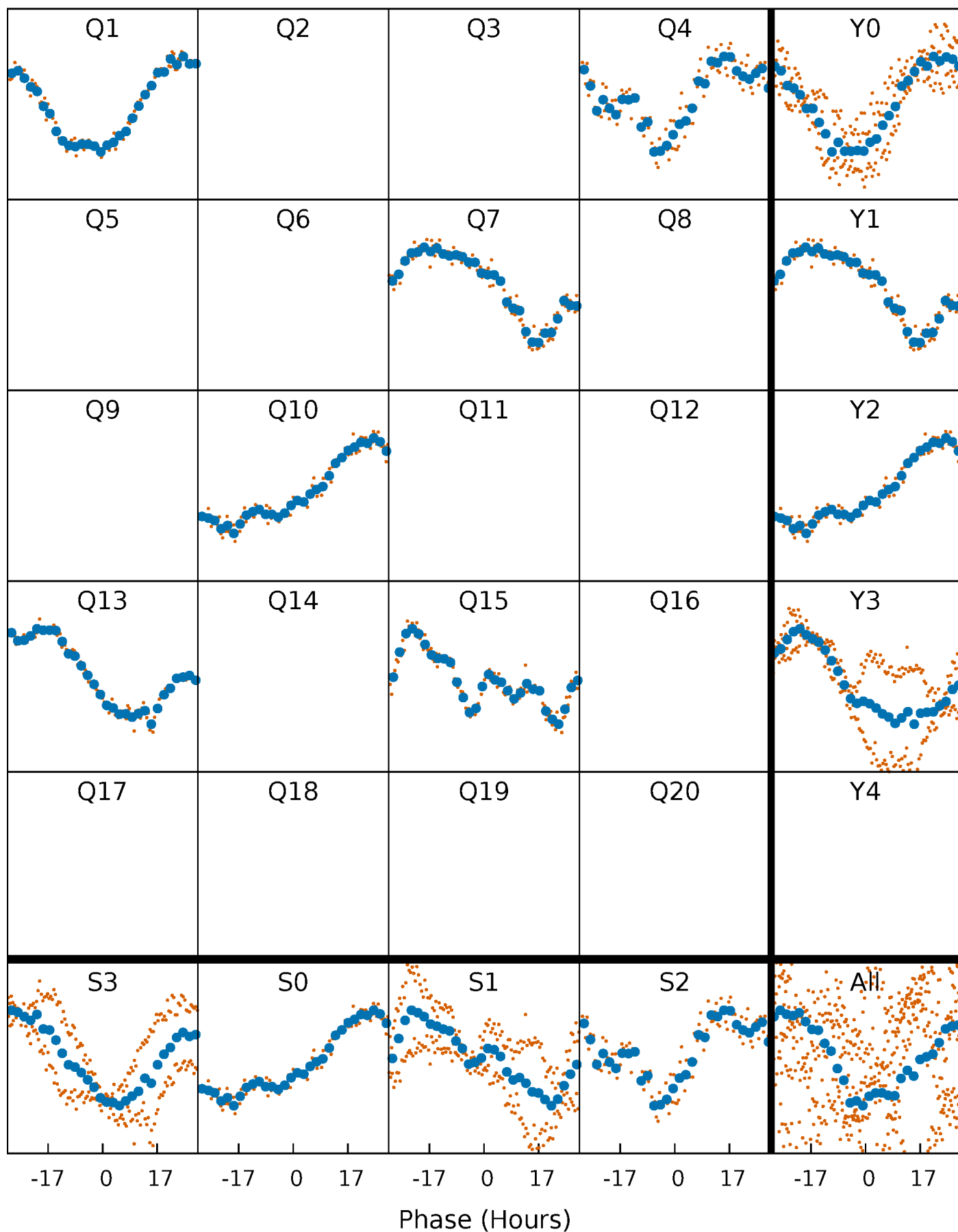


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



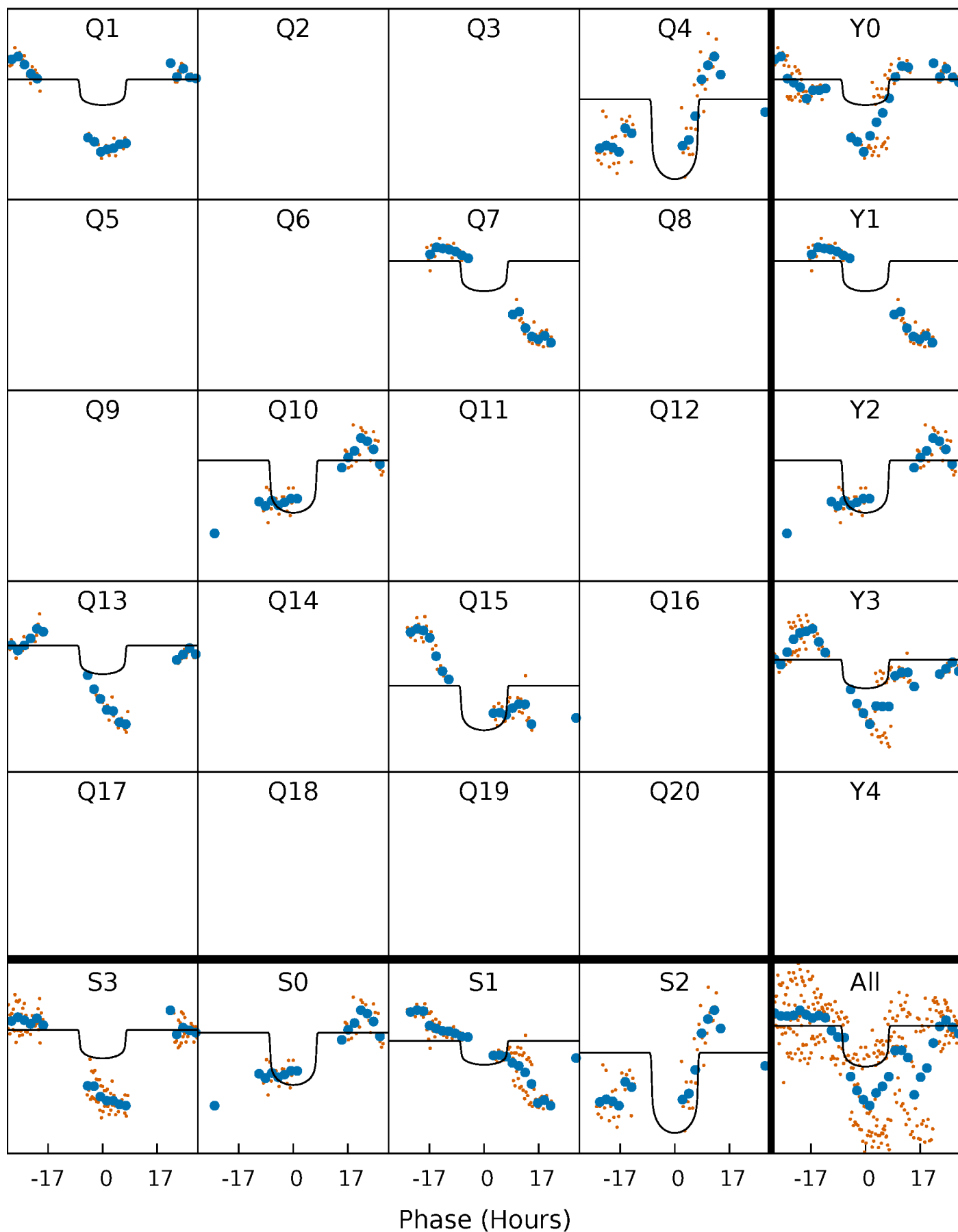
PDC Quarter-Phased Transit Curves

TCE 009099950-02 $P=258.643639$ Days $T_0=155.087871$ (BKJD)



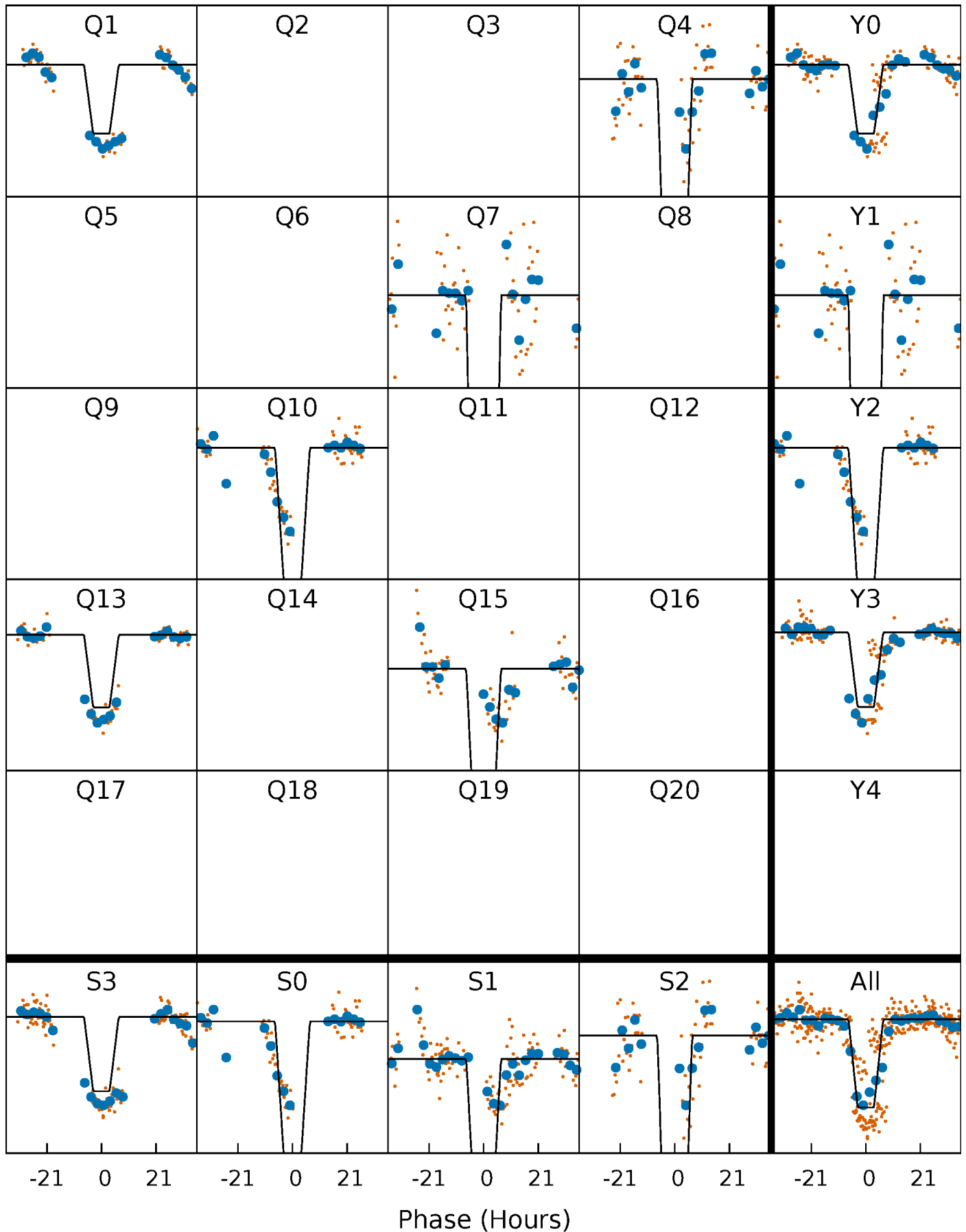
DV Quarter-Phased Transit Curves

TCE 009099950-02 $P=258.643639$ Days $T_0=155.087871$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

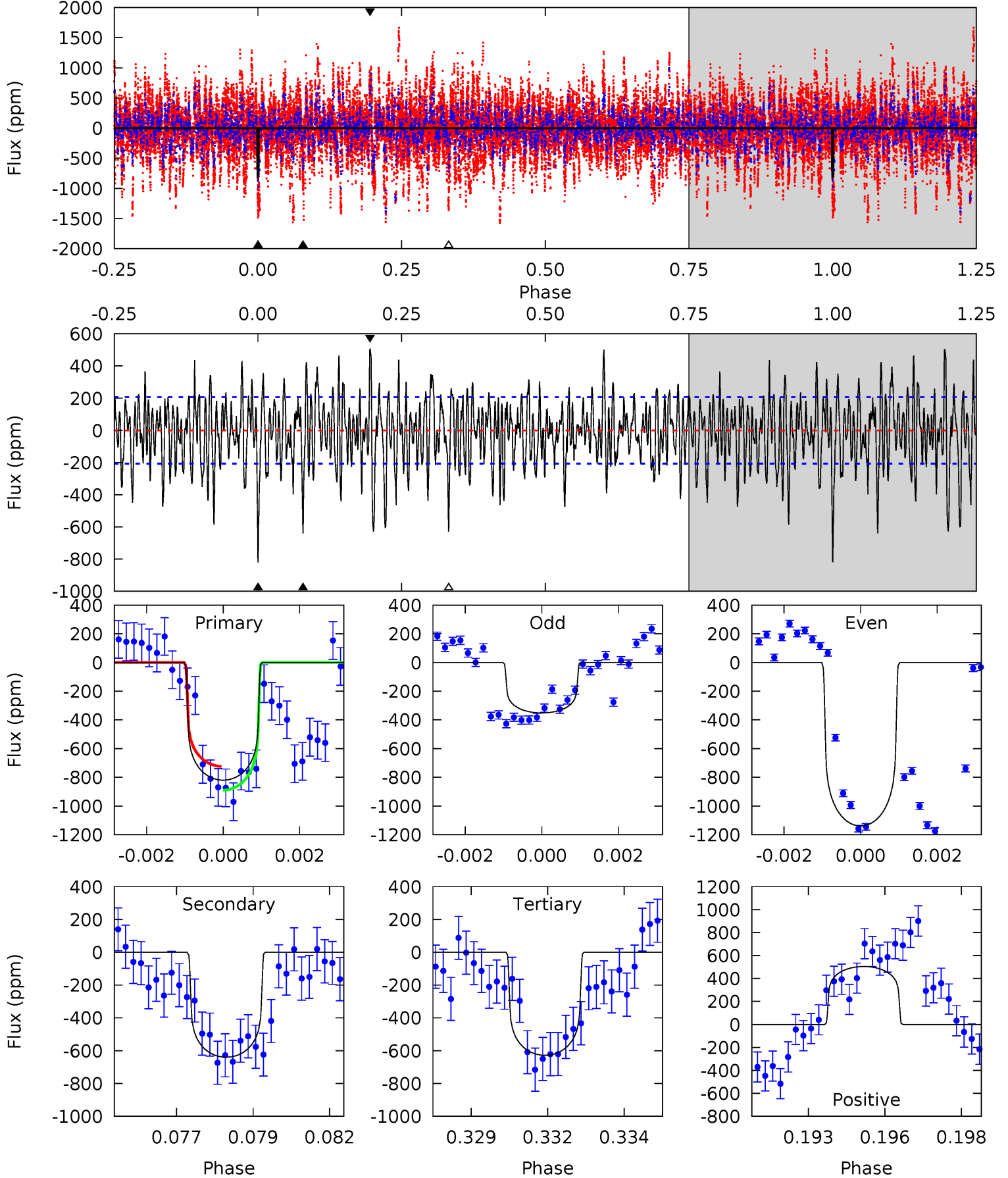
TCE 009099950-02 P=258.668436 Days $T_0=155.045216$ (BKJD)



DV Model-Shift Uniqueness Test

009099950-02, P = 258.643639 Days, E = 155.087871 Days

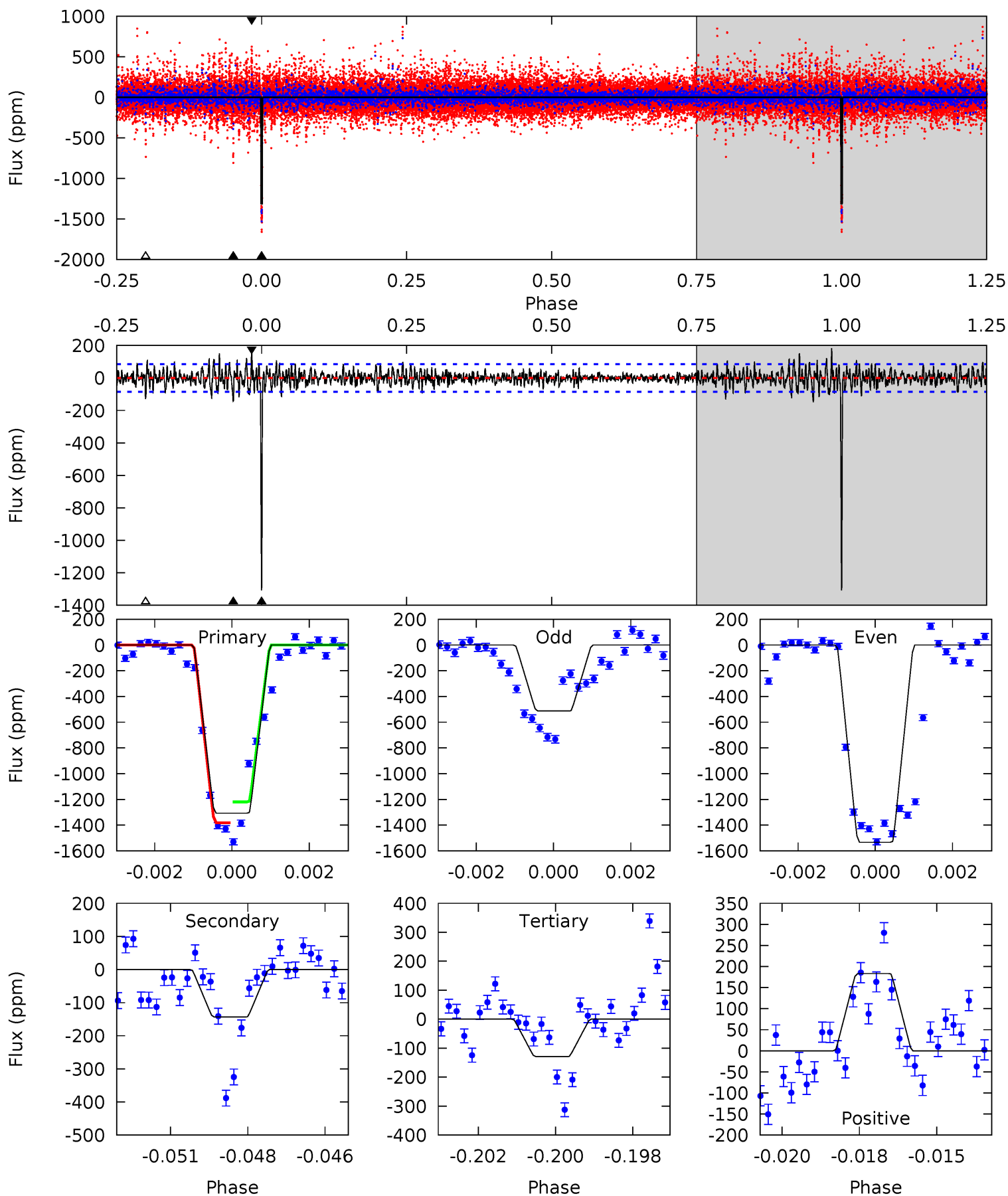
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	16.3	16.1	12.9	5.29	3.03	4.57	4.89	8.06	0.29	3.46	9.99	1.44	0.38	2.09



Alt Model-Shift Uniqueness Test

009099950-02, P = 258.668436 Days, E = 155.045216 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
81.3	8.92	8.04	11.4	5.31	3.06	2.01	73.3	69.9	0.88	-2.48	34.5	1.40	0.12	4.93



Stellar Parameters For KIC 009099950

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+156}_{-176}	$3.872^{+0.280}_{-0.100}$	$-0.200^{+0.300}_{-0.250}$	$2.308^{+0.438}_{-0.813}$	$1.446^{+0.183}_{-0.313}$	$0.166^{+0.332}_{-0.050}$
	+2%/-3%	+7%/-3%	+150%/-125%	+19%/-35%	+13%/-22%	+200%/-30%
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 009099950-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-640 ± 39	$4.96^{+1.10}_{-1.22}$	628^{+40}_{-55}	7235^{+926}_{-648}	11783^{+7626}_{-4067}
Alt.	-143 ± 16	$8.36^{+1.56}_{-1.42}$	631^{+34}_{-50}	4085^{+208}_{-174}	916^{+403}_{-260}

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

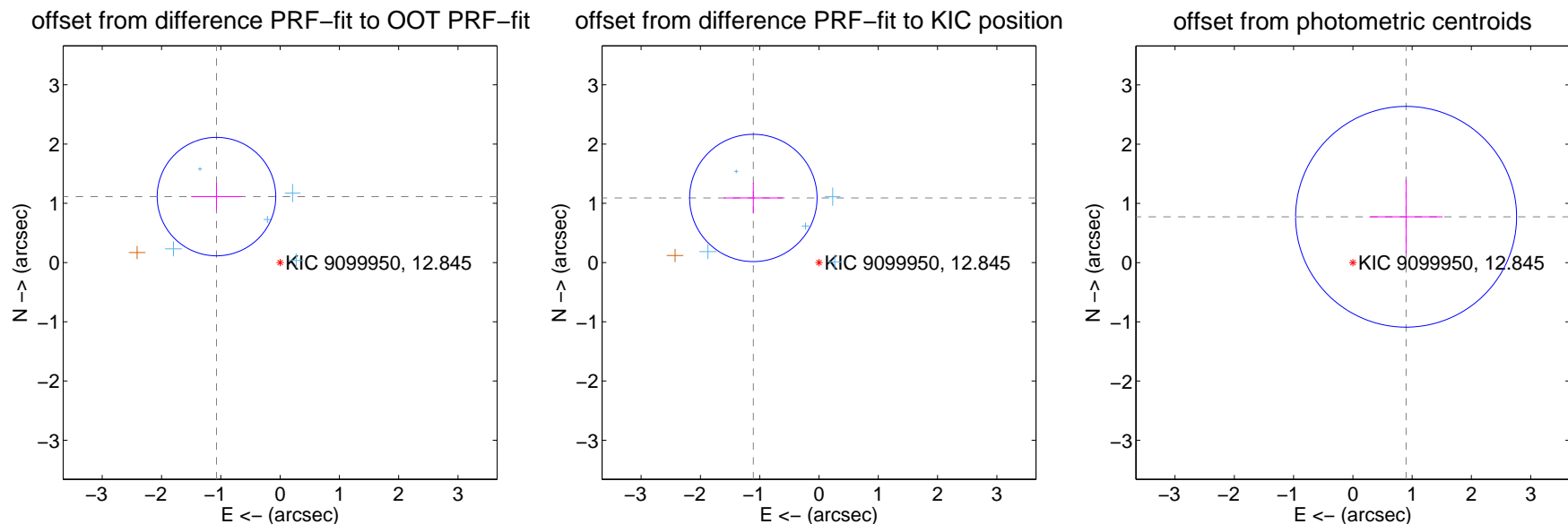
DV Centroid Data

Supplemental centroid analysis for 009099950-02. Kepler magnitude: 12.85. Transit SNR 7.02

There are 5 quarters with good PRF difference image offsets

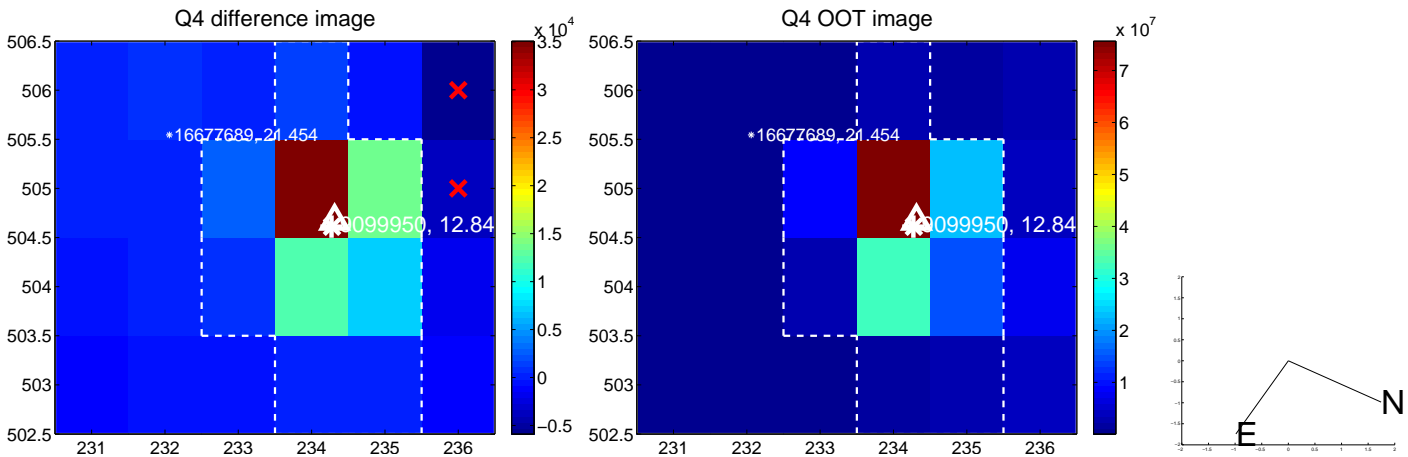
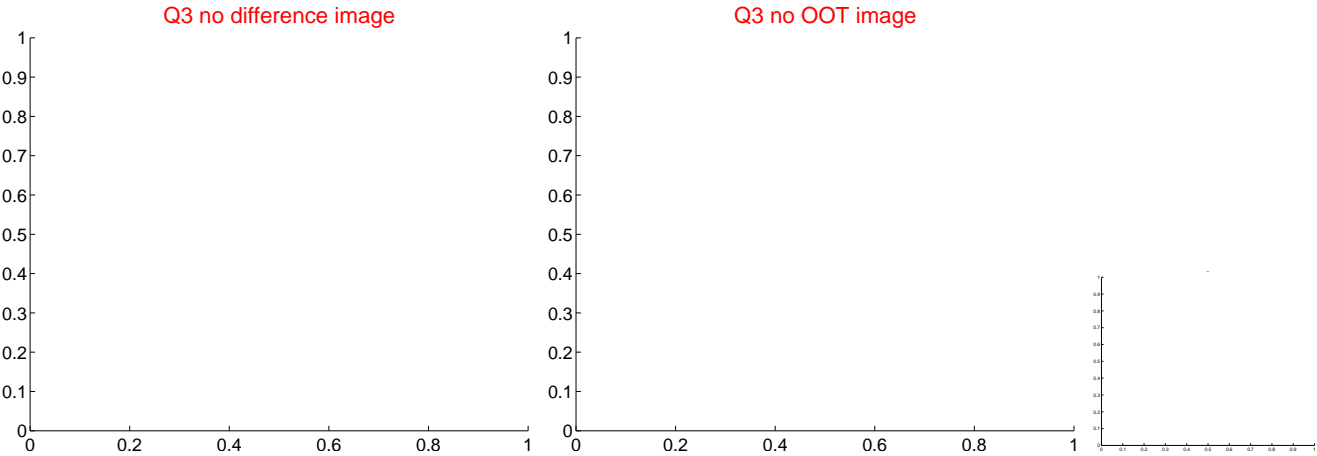
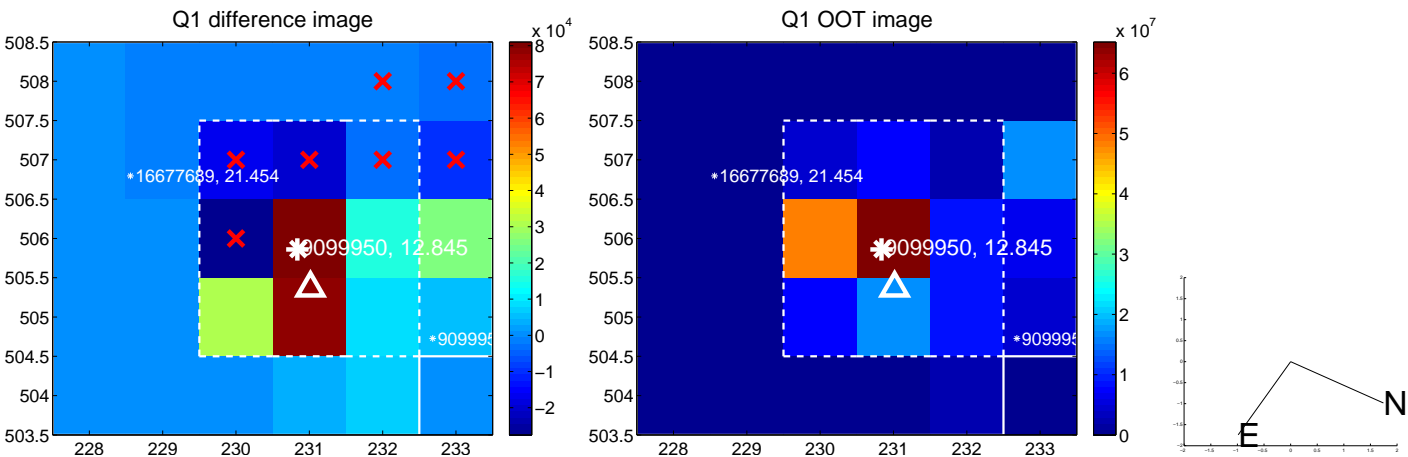
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.547 ± 0.333	4.64	1.073 ± 0.427	1.113 ± 0.231
PRF-fit source offset from KIC position	1.554 ± 0.358	4.34	1.107 ± 0.497	1.091 ± 0.257
photometric centroid source offset	1.19 ± 0.62	1.91	-0.90 ± 0.62	0.77 ± 0.62

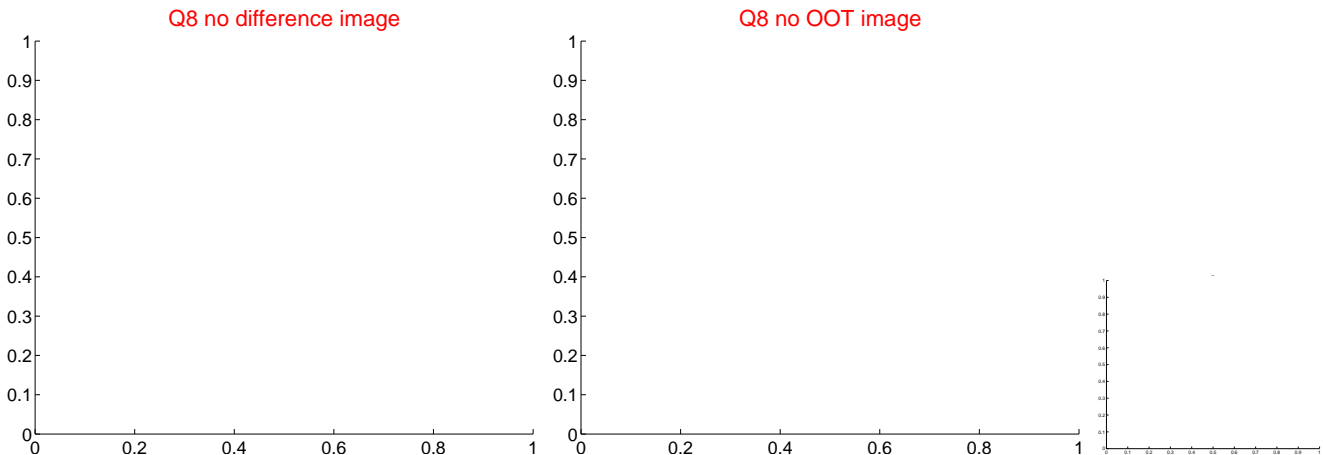
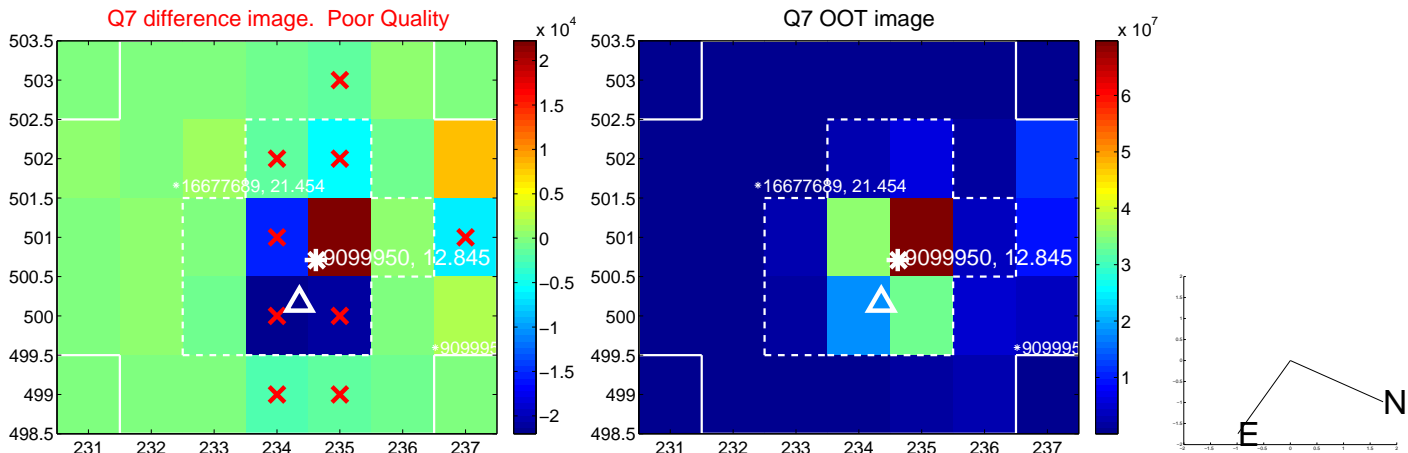
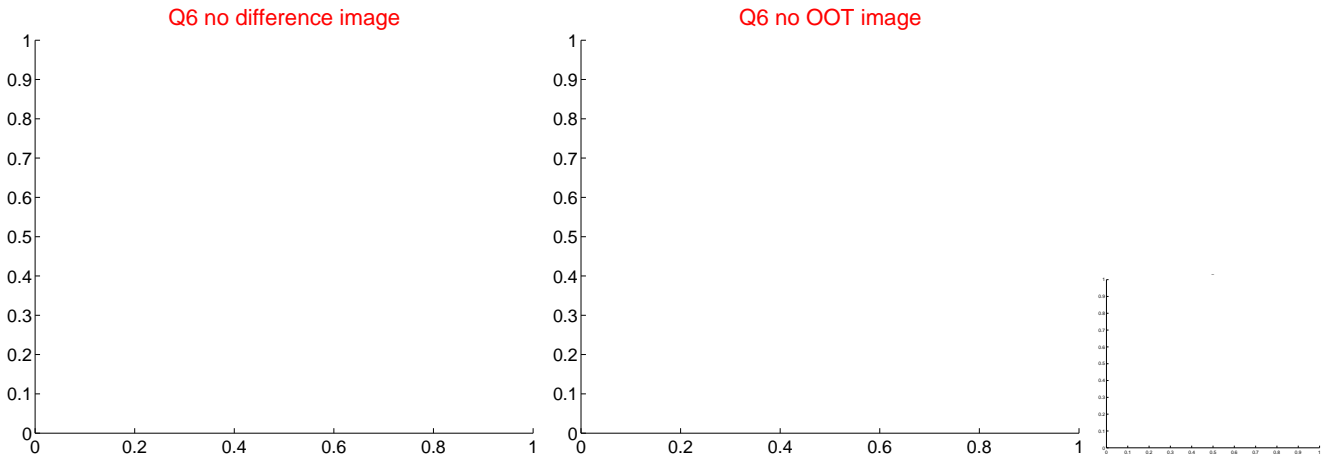
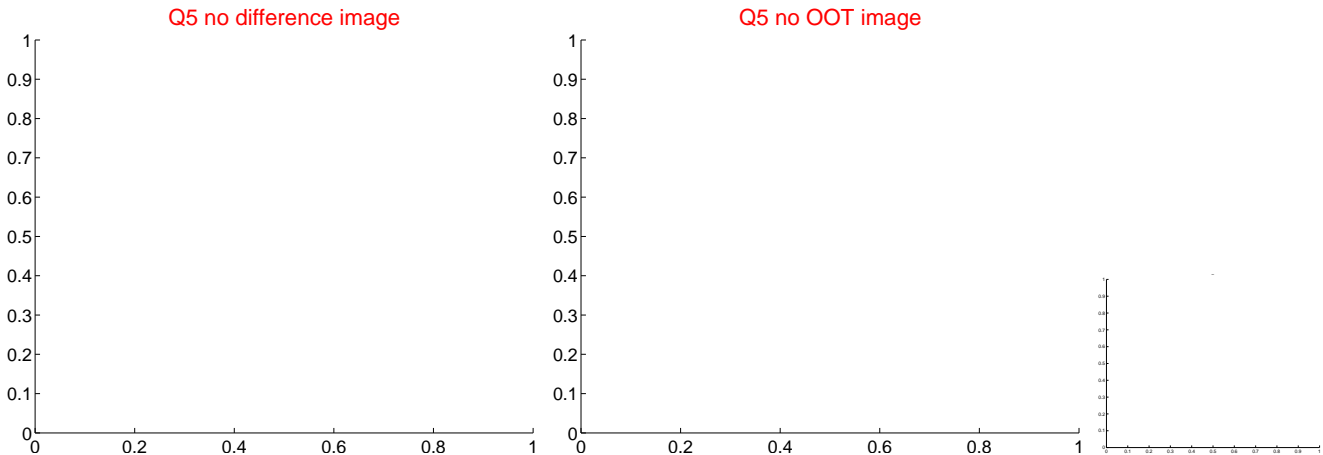


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

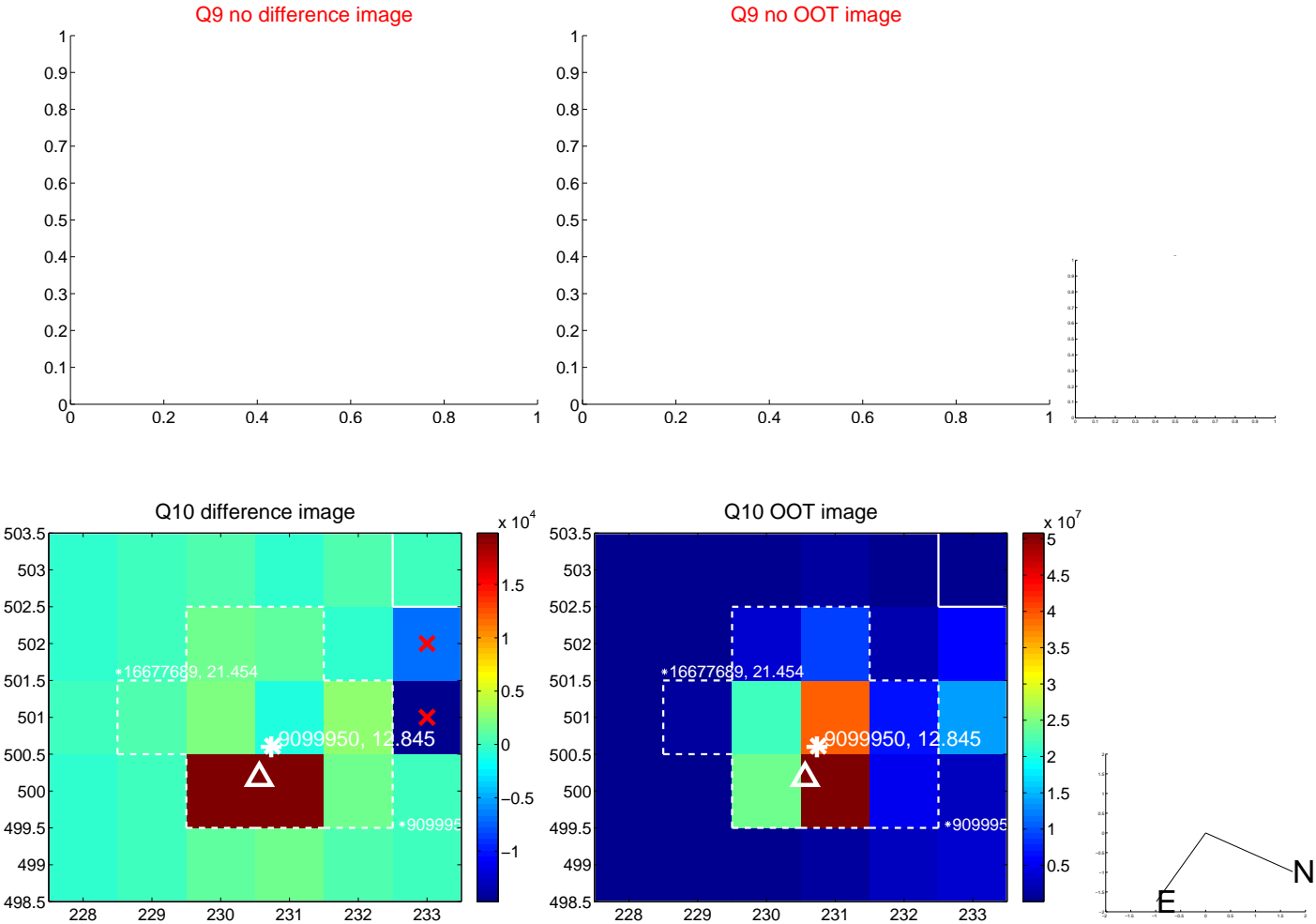
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



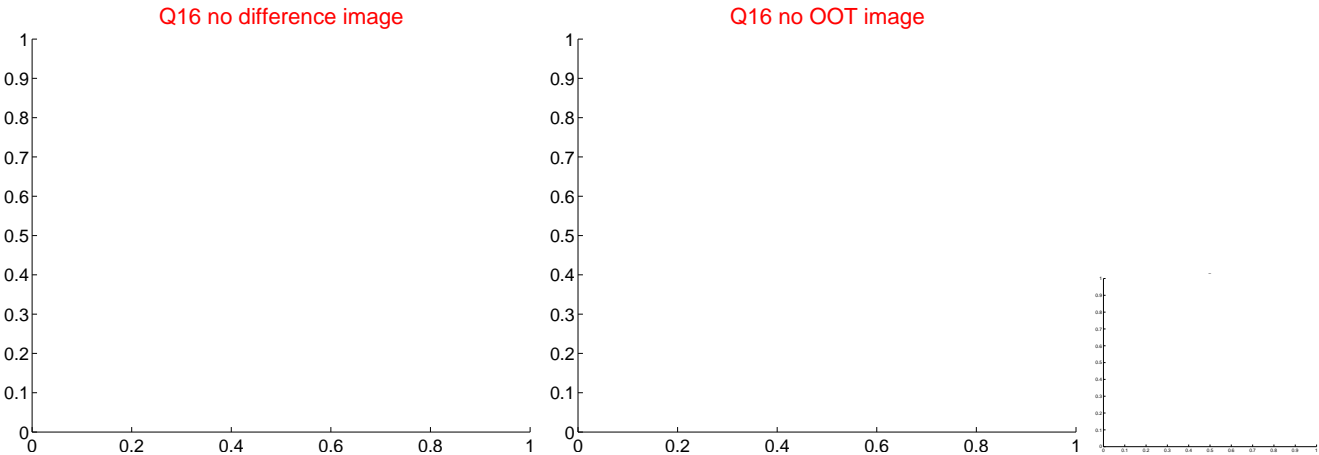
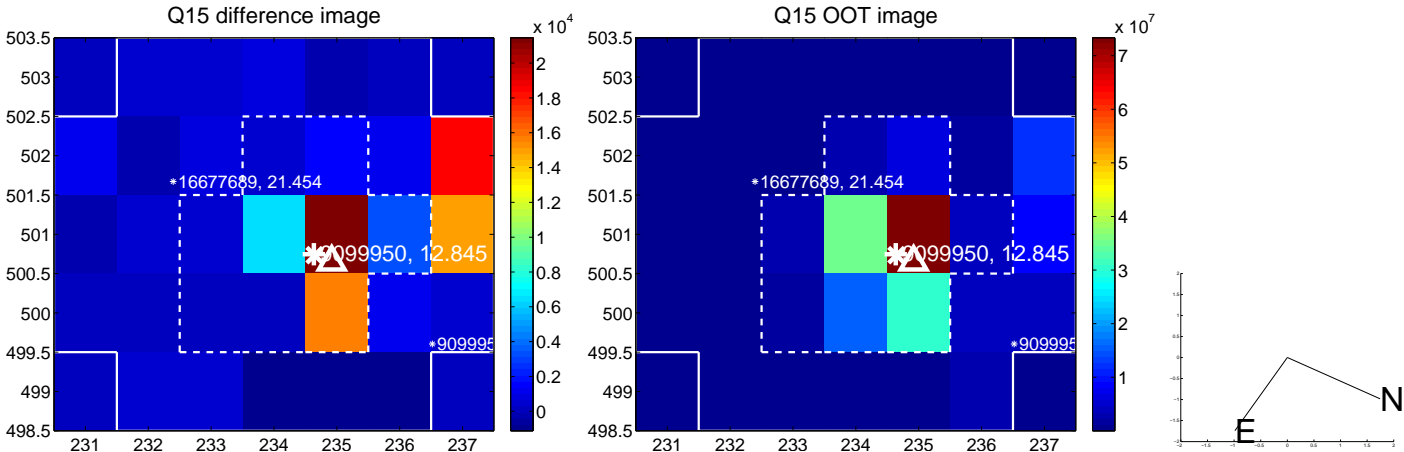
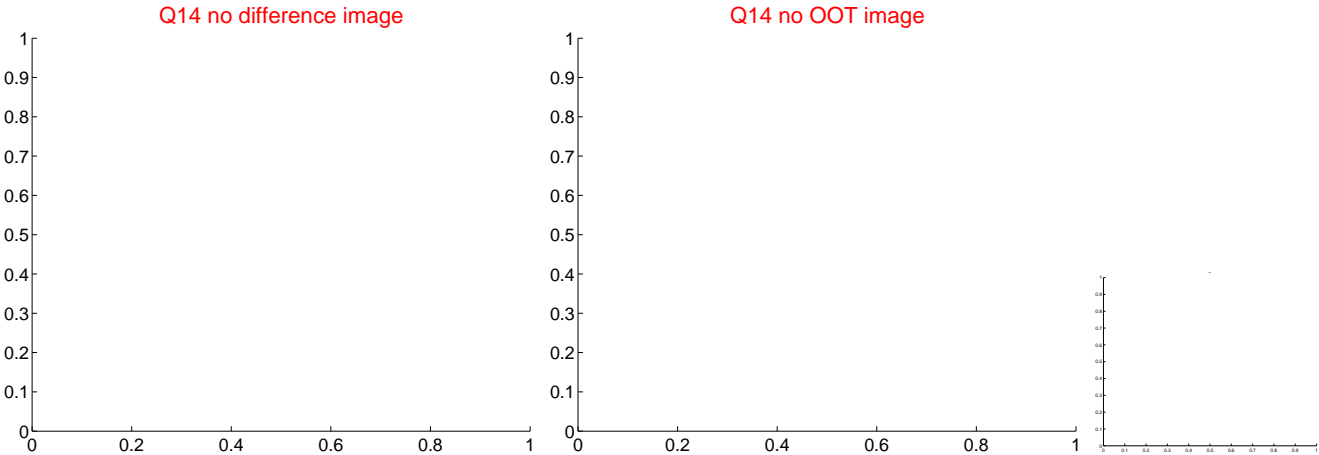
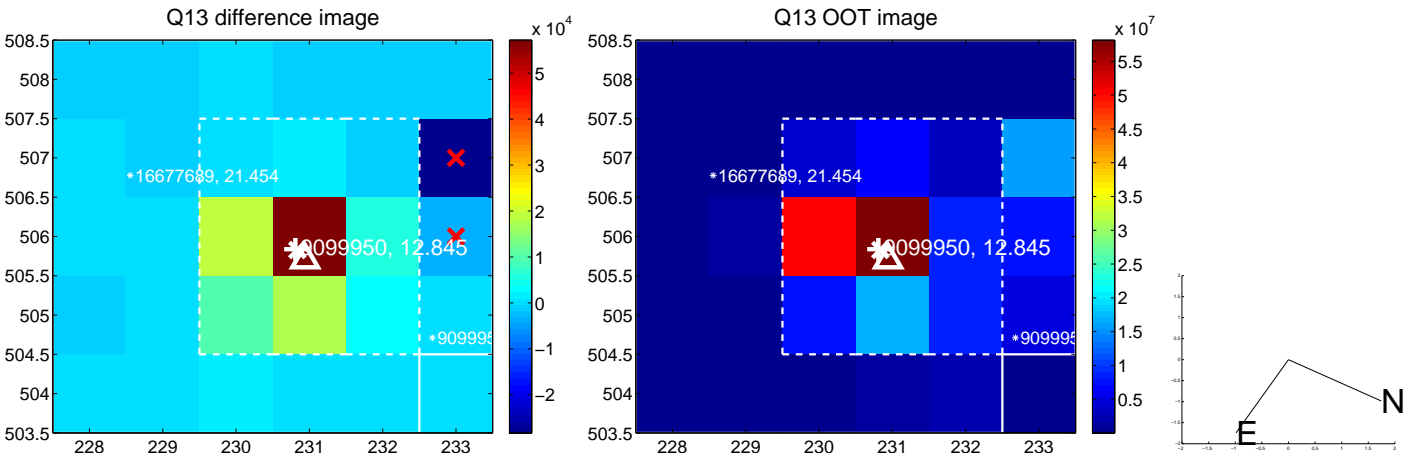
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



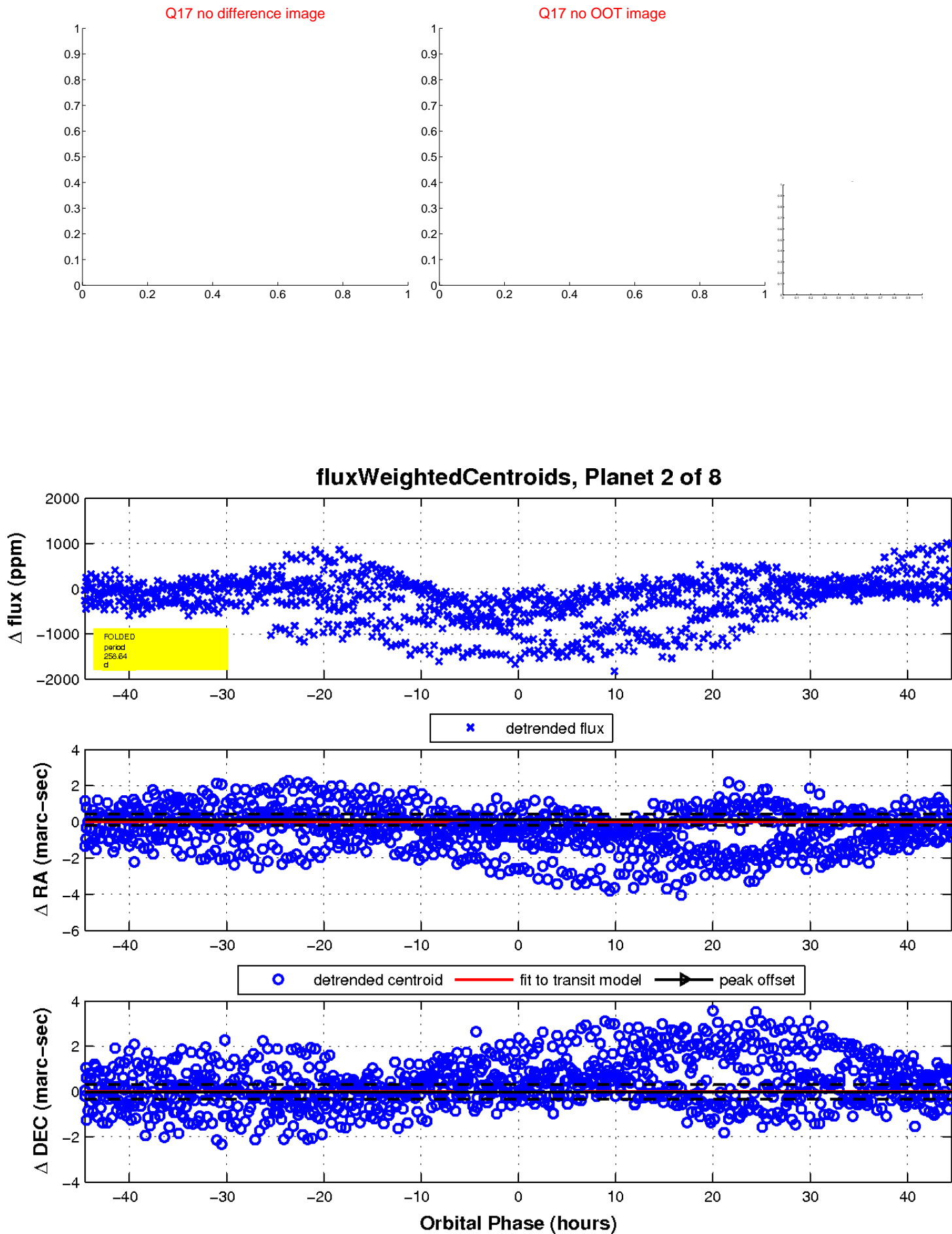
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

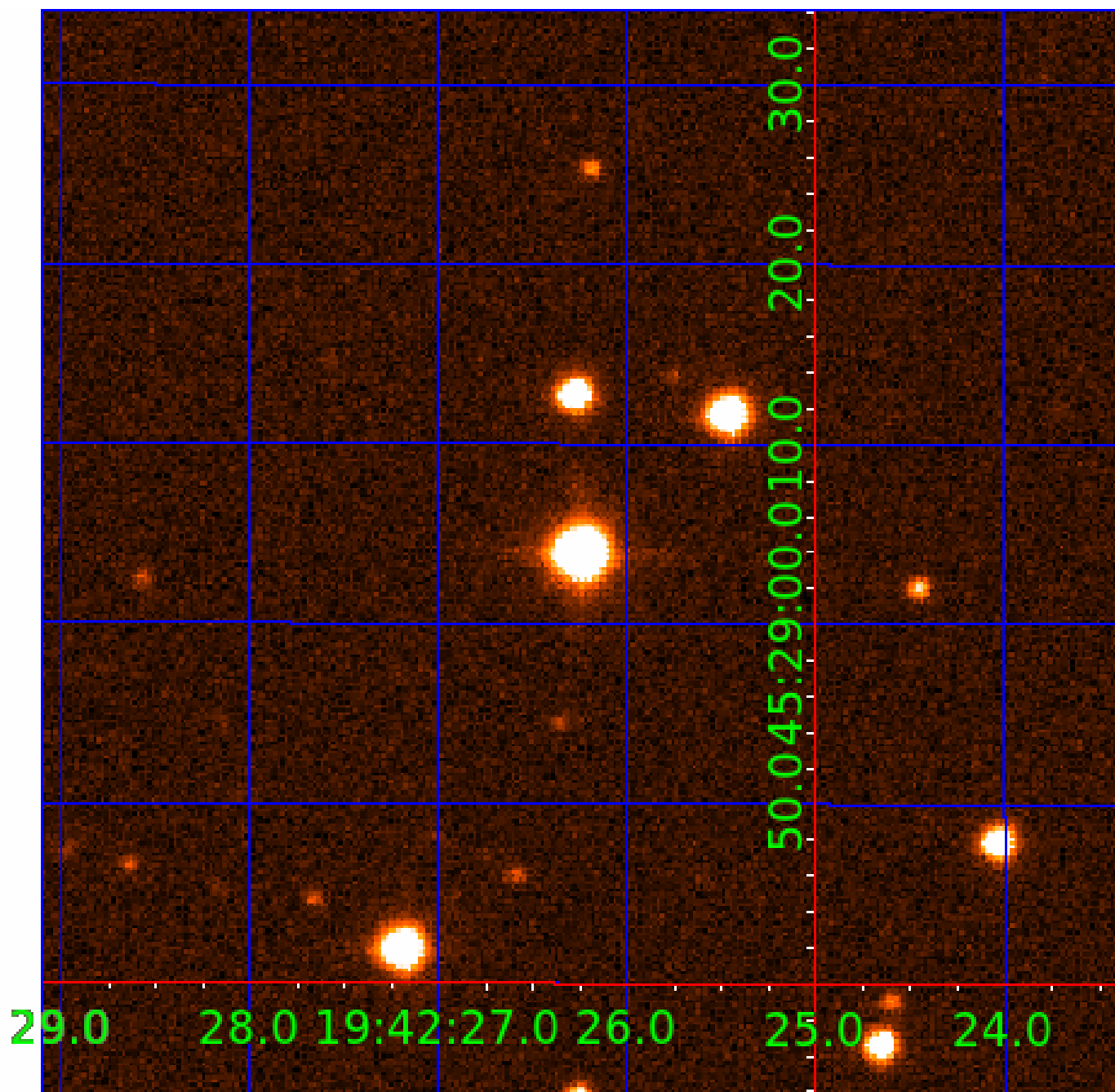


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009099950

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})
009099950-01	OBS	4125.01	1.111287	132.357275	35.0	4.555	17.3	14.6	2.31	6486	1.44	14968.94
009099950-02	OBS	No	258.643639	155.087871	478.5	14.855	10.3	7.0	2.31	6486	5.23	10.46
009099950-03	OBS	No	256.341306	170.177250	519.1	9.229	9.2	8.0	2.31	6486	6.55	10.58
009099950-04	OBS	No	287.434388	400.156029	619.6	10.998	8.7	7.2	2.31	6486	10.99	9.08
009099950-05	OBS	No	362.267766	321.919458	383.0	11.190	8.9	5.7	2.31	6486	5.30	6.67
009099950-06	OBS	No	426.360917	241.688650	722.8	8.660	8.5	9.0	2.31	6486	7.75	5.37
009099950-07	OBS	No	648.969862	201.926308	360.3	9.626	8.3	5.3	2.31	6486	5.04	3.07
009099950-08	OBS	No	309.674046	326.010681	364.6	11.669	8.1	4.5	2.31	6486	4.95	8.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099950-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
009099950-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
009099950-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009099950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009099950-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_MEAS
009099950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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.

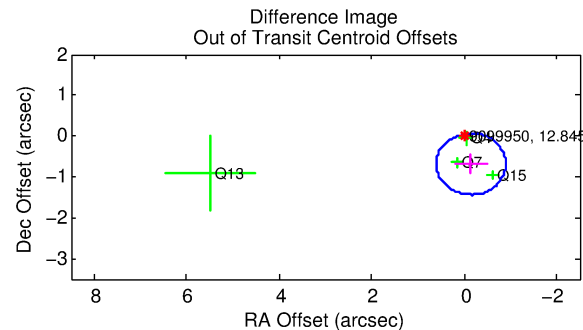
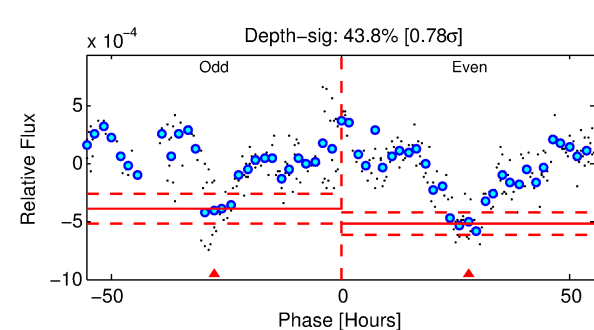
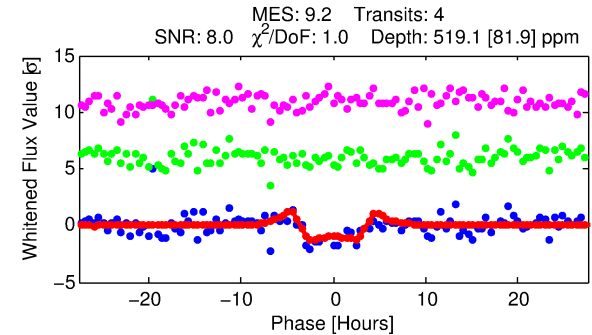
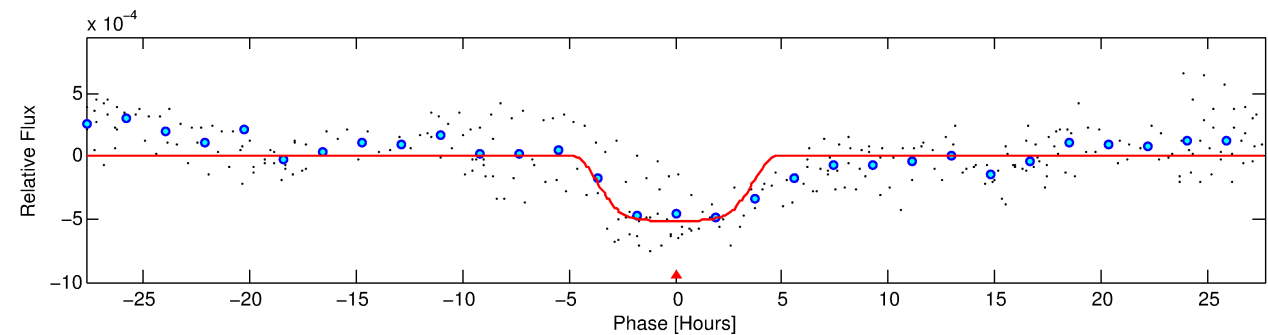
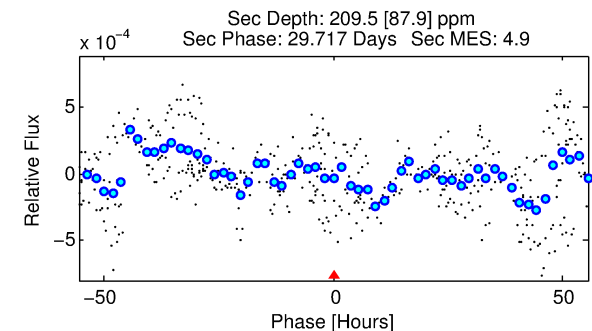
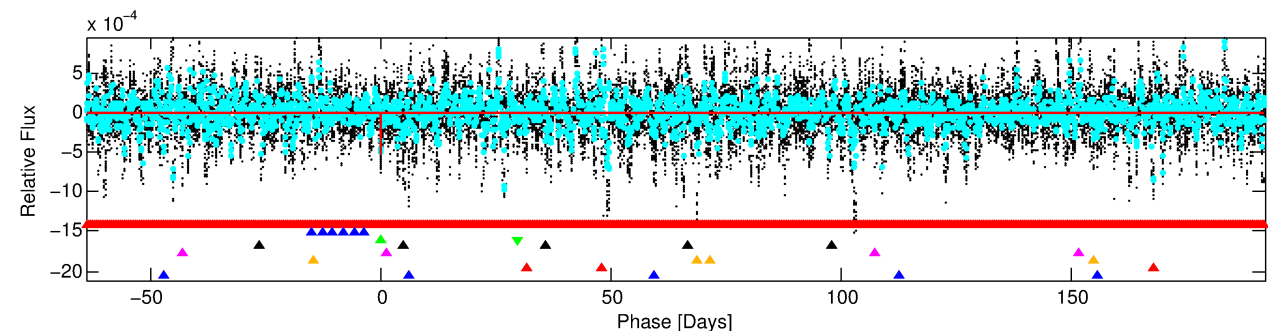
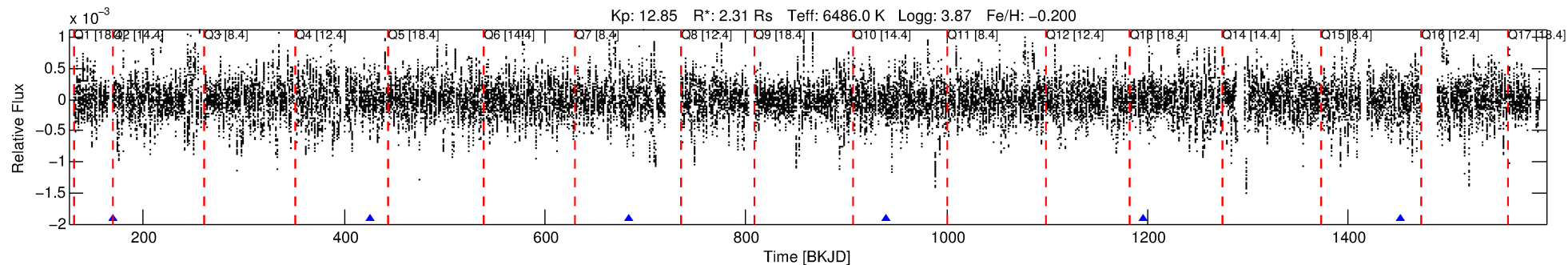
Ephemeris Match Information For 009099950-03

No Significant Match Found

DV One-Page Summary

KIC: 9099950 Candidate: 3 of 8 Period: 256.341 d
KOI: K04125 Corr: No Ephemeris Match

Kp: 12.85 R*: 2.31 Rs Teff: 6486.0 K Logg: 3.87 Fe/H: -0.200



DV Fit Results:

Period = 256.34131 [0.00544] d
Epoch = 170.1772 [0.0182] BKJD
Rp/R* = 0.0260 [0.0023]
a/R* = 79.96 [12.76]
b = 0.95 [0.02]
Seff = 10.58 [5.31]
Teq = 460 [58] K
Rp = 6.55 [2.38] Re
a = 0.8934 [0.2844] AU
Ag = 2143.63 [1433.09] [1.50σ]
Teffp = 4838 [566] K [7.70σ]

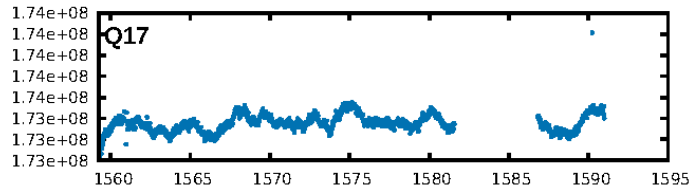
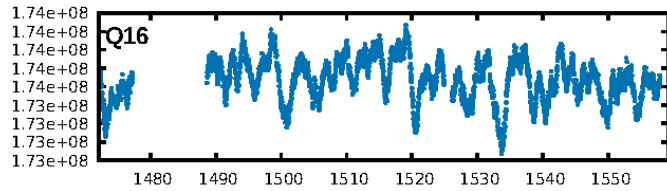
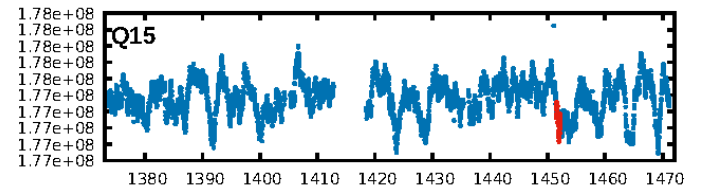
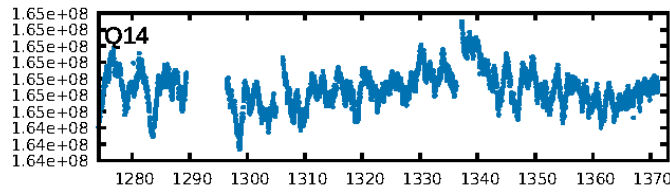
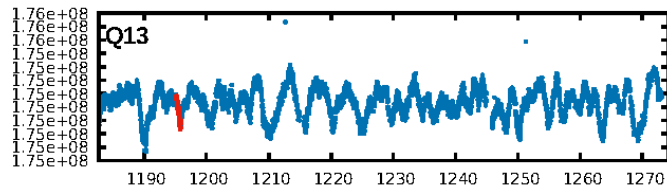
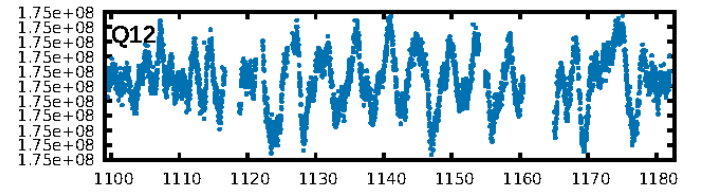
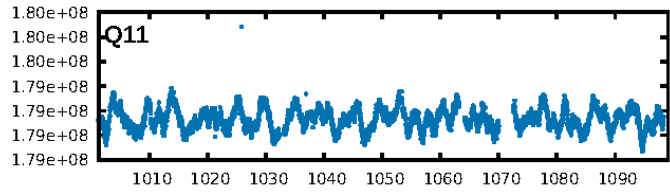
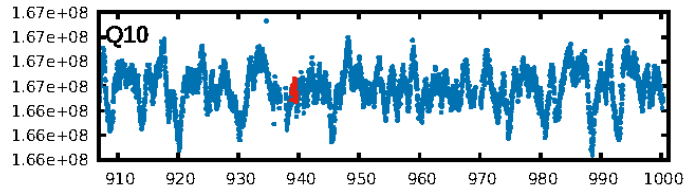
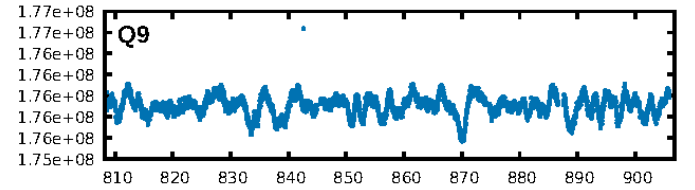
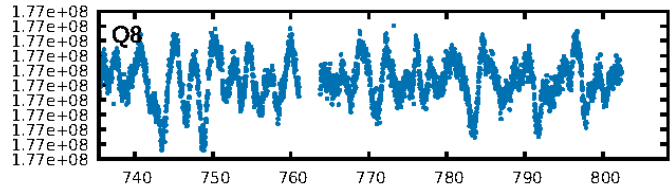
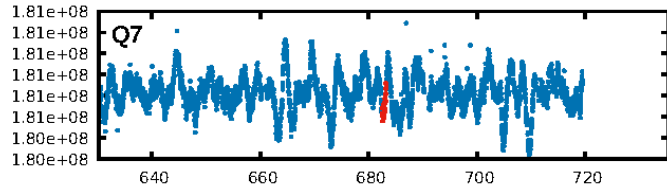
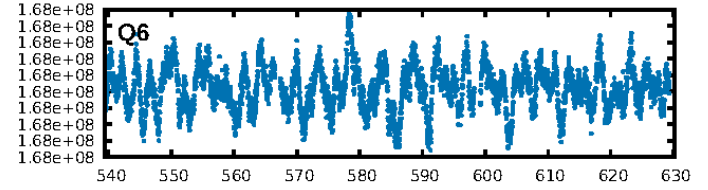
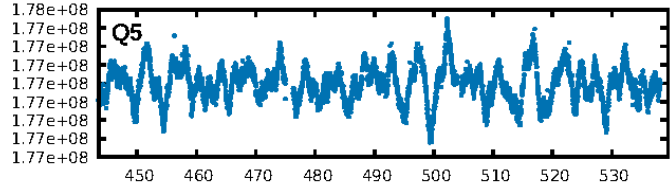
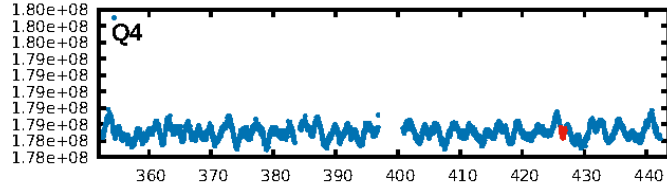
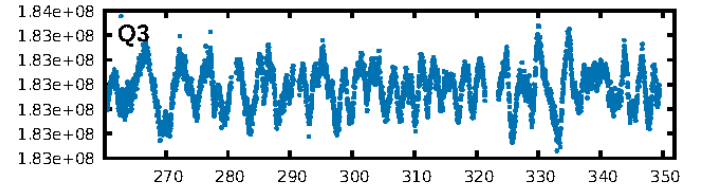
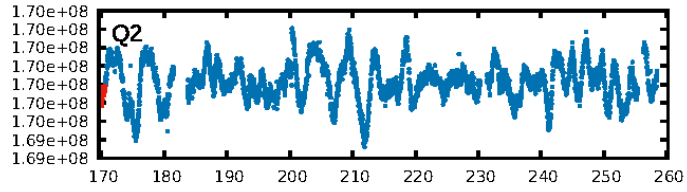
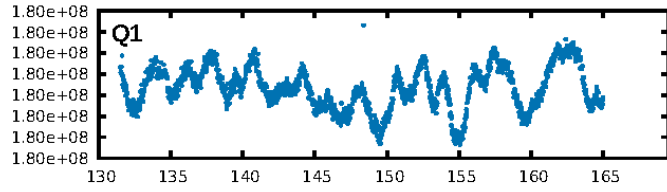
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [595.18σ]
LongPeriod-sig: 99.8% [3.16σ]
ModelChiSquare2-sig: 4.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.01e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -5.848
Centroid-sig: 47.1%
Centroid-so: 1.012 arcsec [1.72σ]
OotOffset-rm: 0.701 arcsec [2.80σ]
OotOffset-st: 0.2/1/1 [4]
KicOffset-rm: 0.747 arcsec [2.81σ]
KicOffset-st: 0.2/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/4]

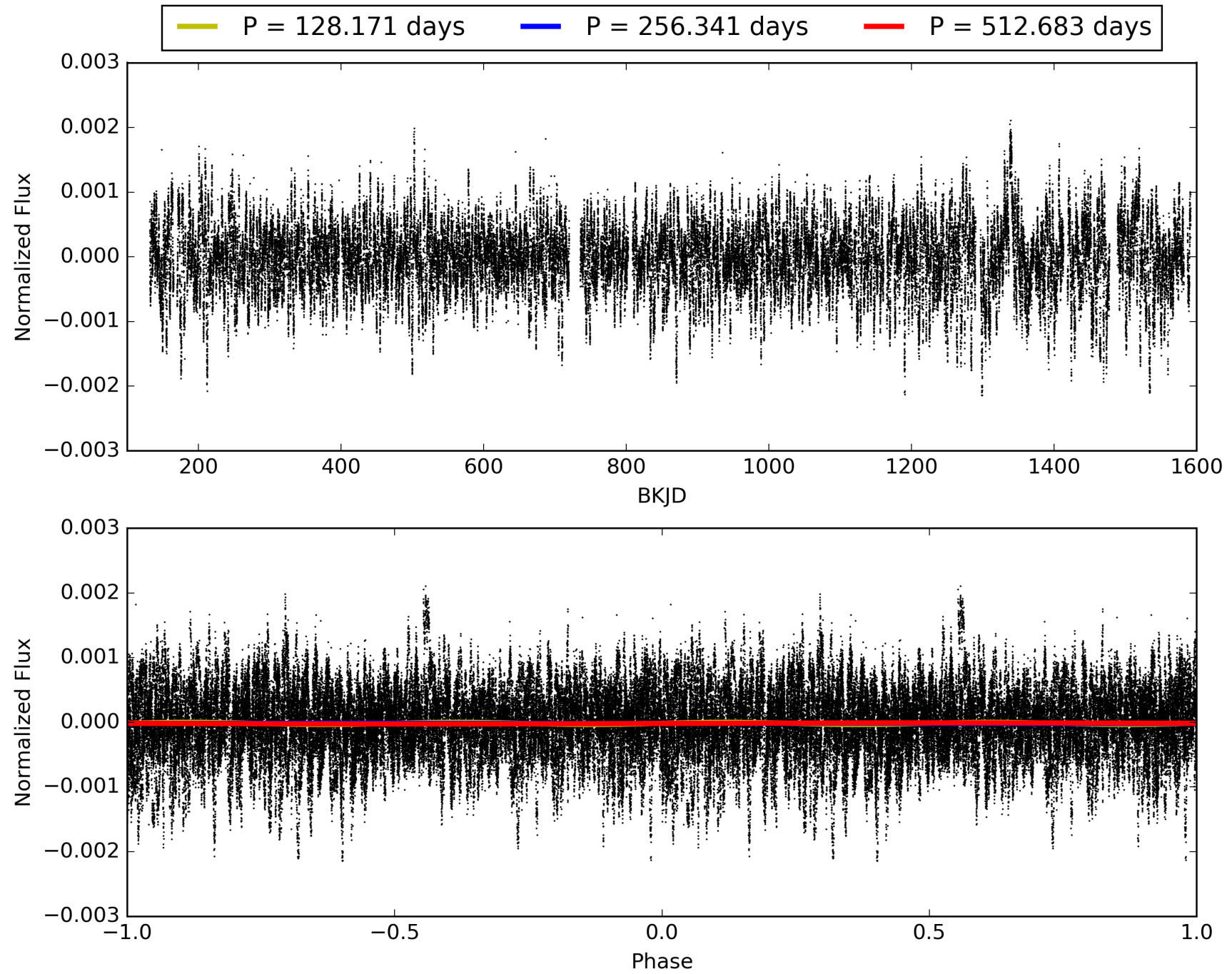
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:45:07 Z

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

TCE 009099950-03, PDC Light Curves

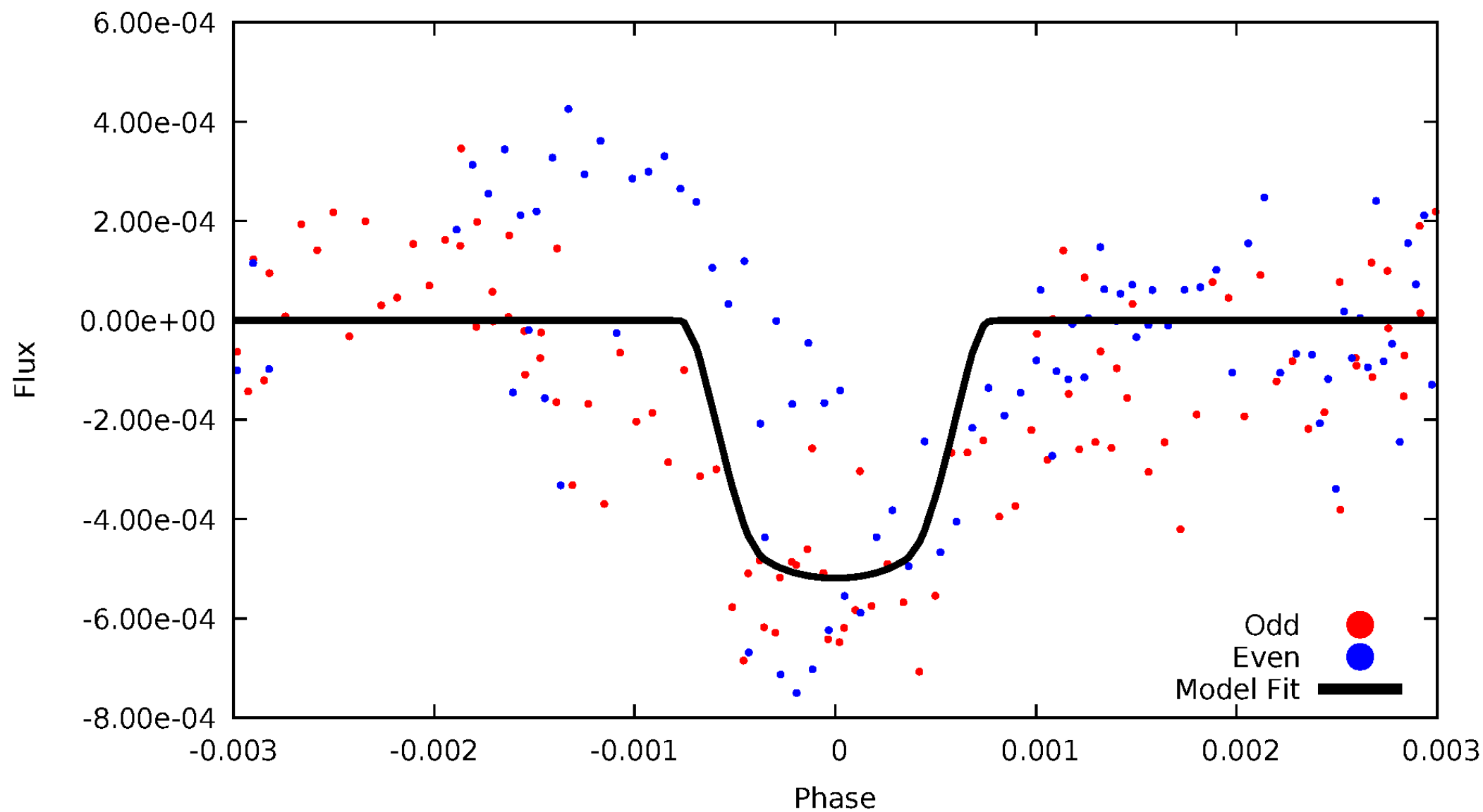


TCE 009099950-03



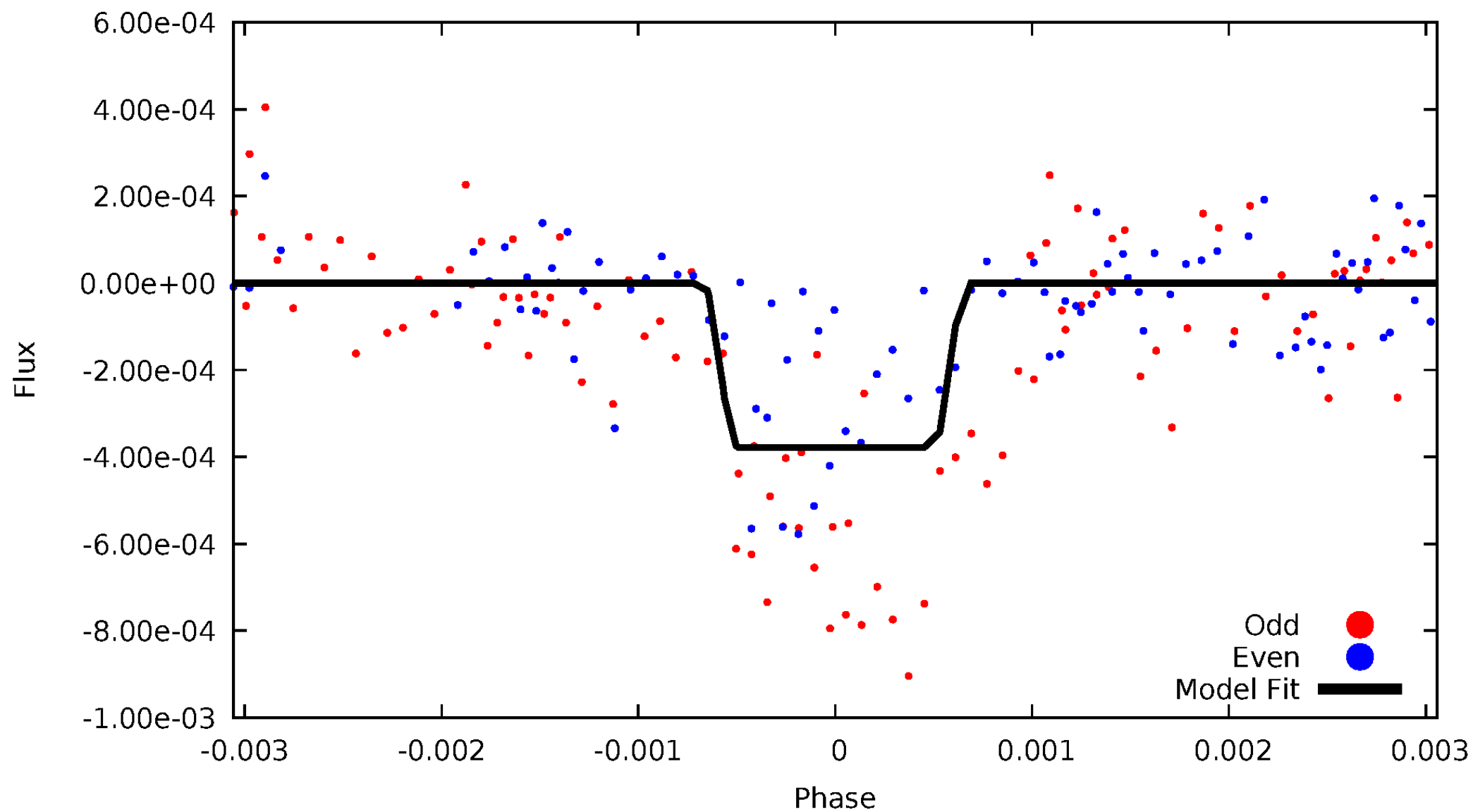
DV Odd/Even

TCE 009099950-03



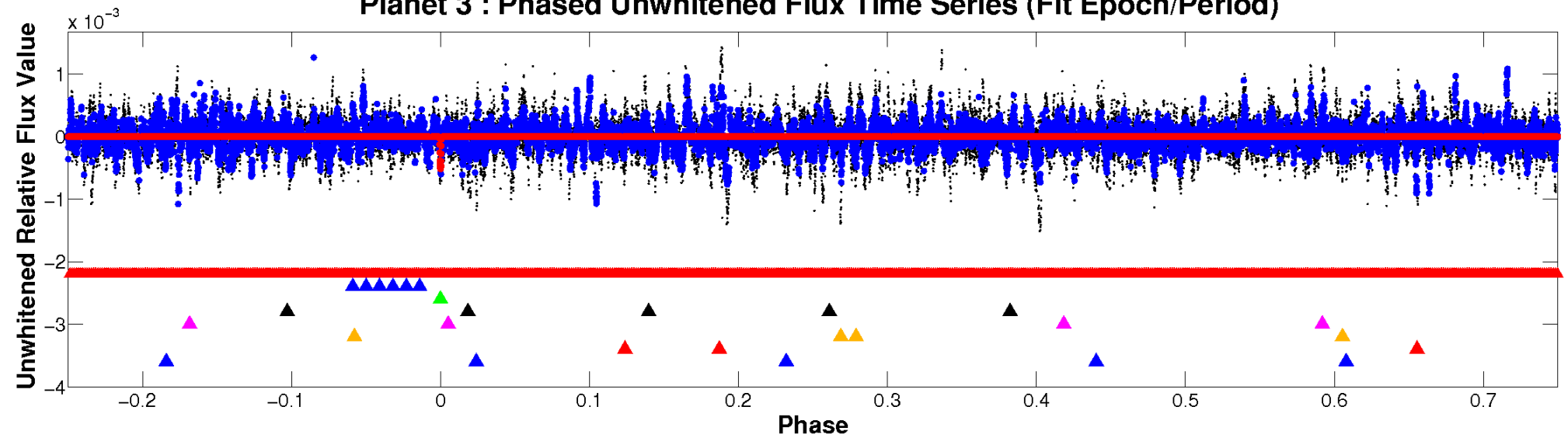
ALT Odd/Even

TCE 009099950-03

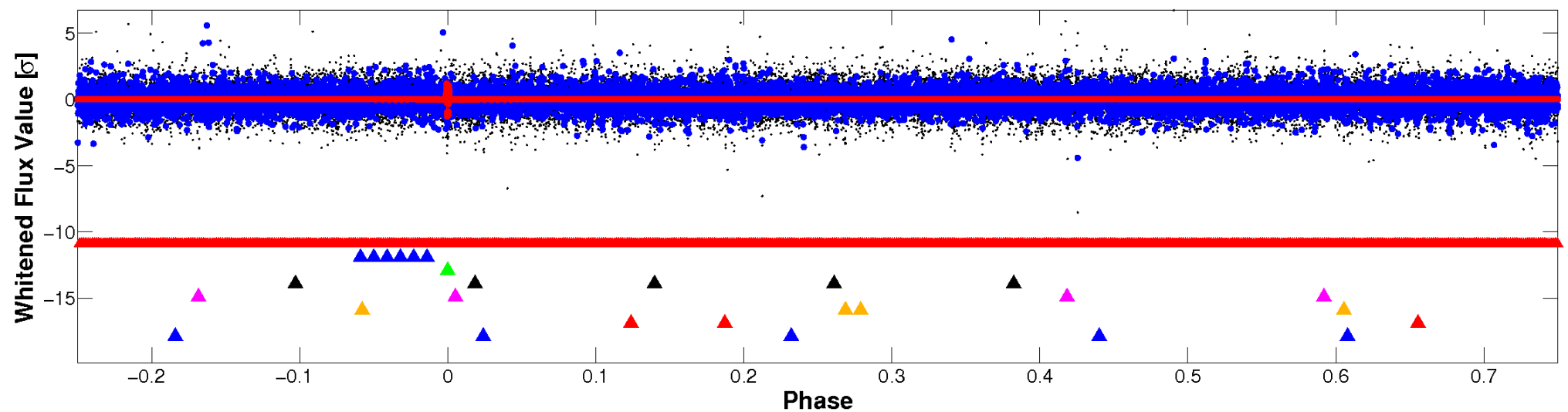


Non-Whitened Vs. Whitened Light Curve

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

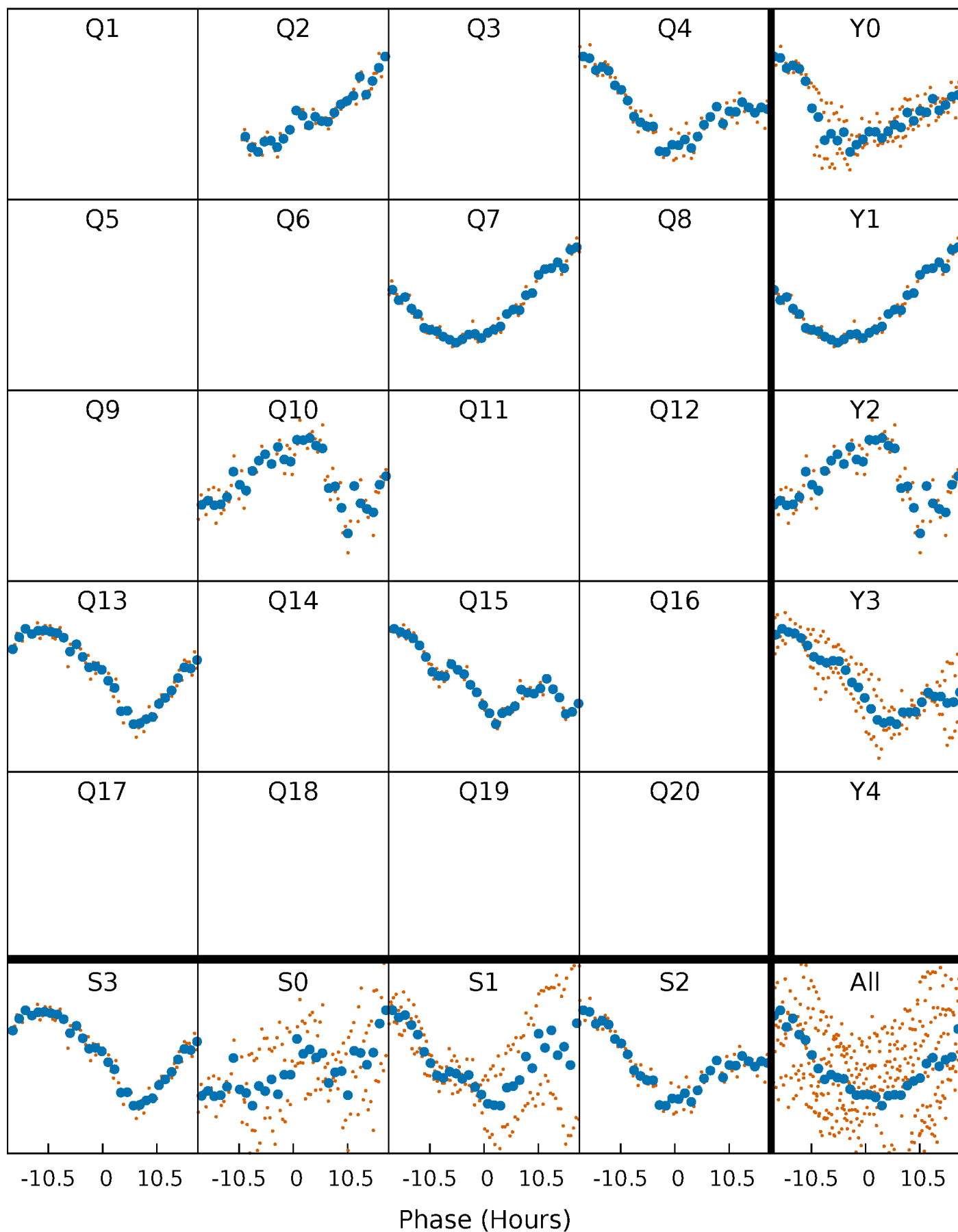


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



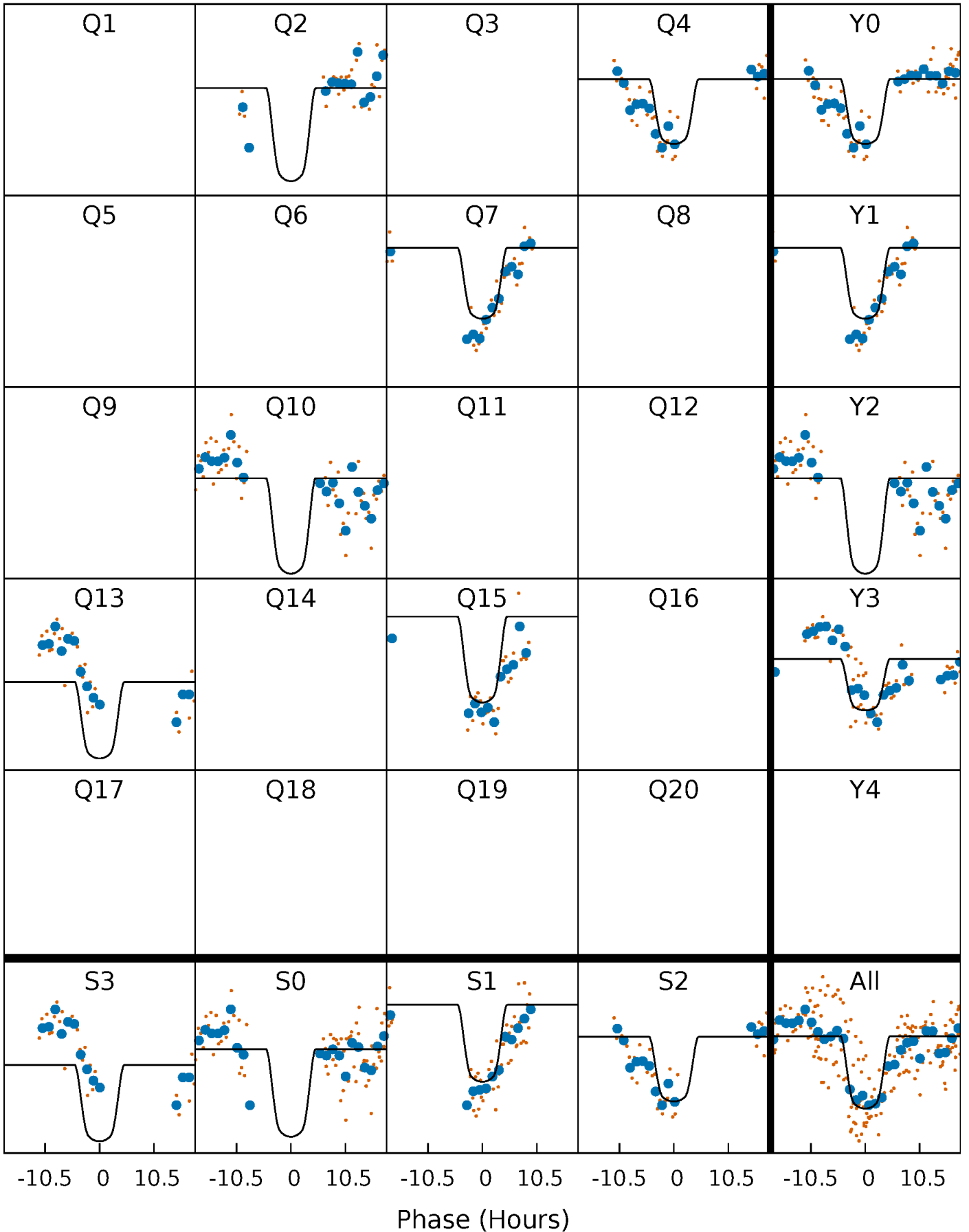
PDC Quarter-Phased Transit Curves

TCE 009099950-03 $P=256.341306$ Days $T_0=170.177250$ (BKJD)



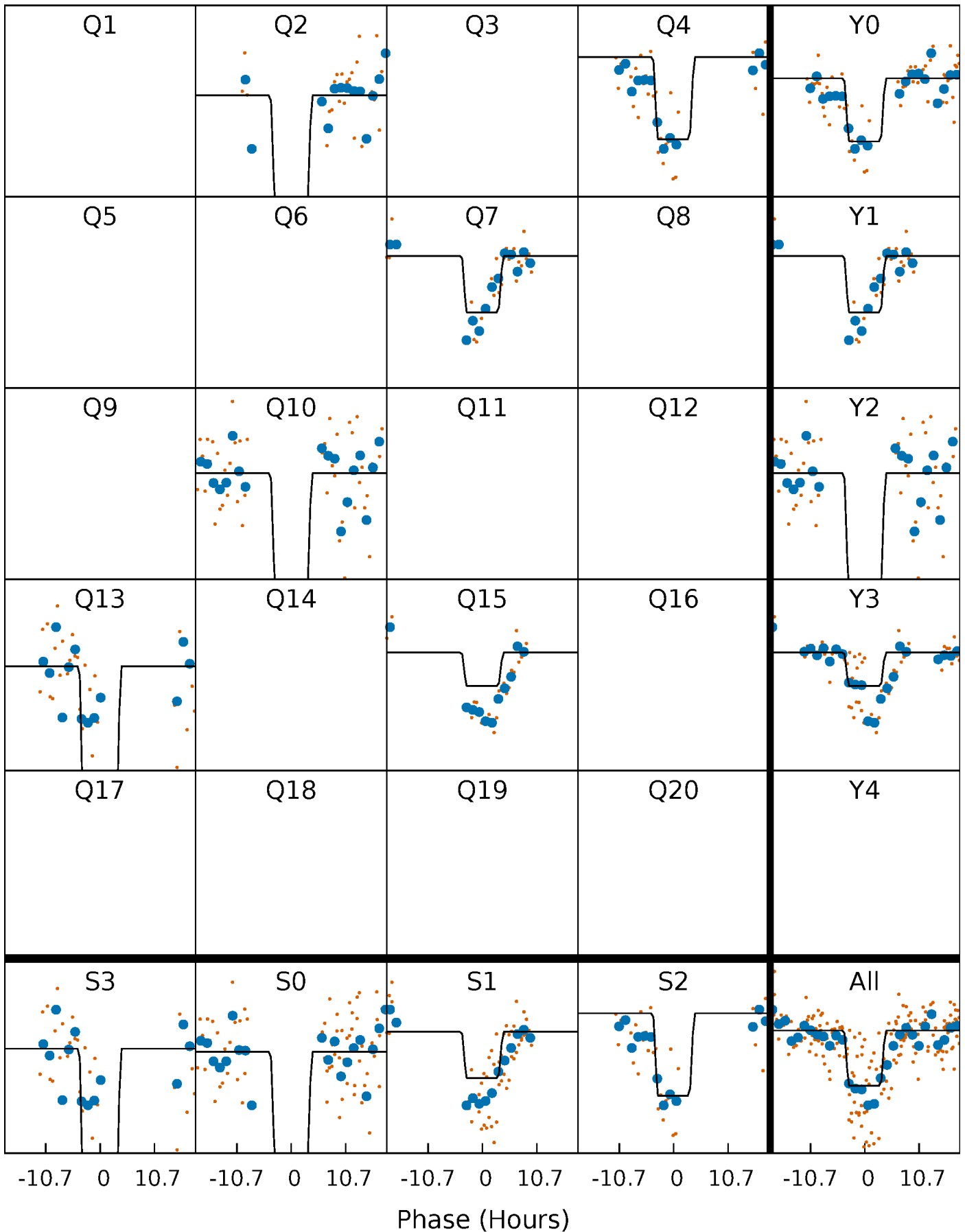
DV Quarter-Phased Transit Curves

TCE 009099950-03 $P=256.341306$ Days $T_0=170.177250$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

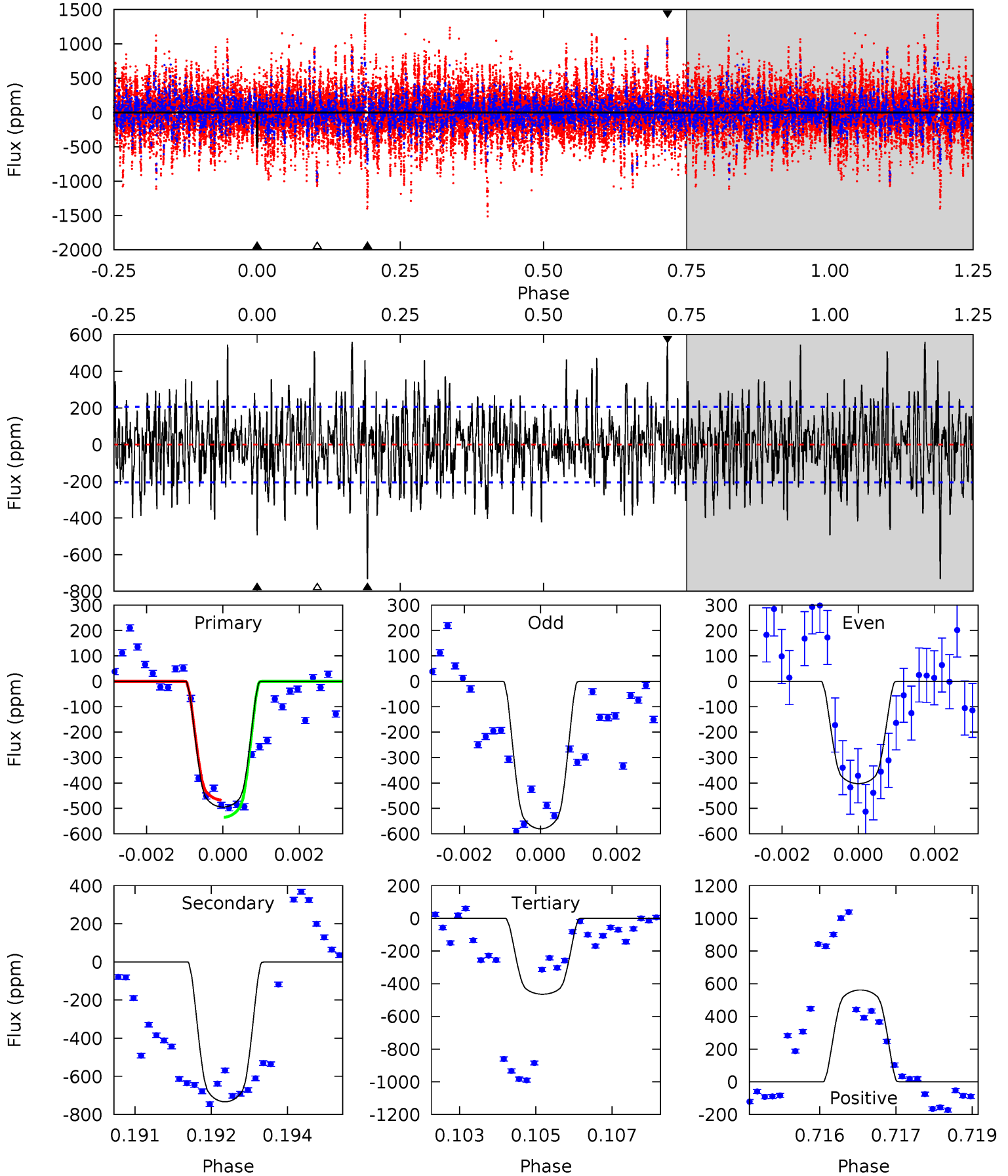
TCE 009099950-03 P=256.345821 Days $T_0=170.166699$ (BKJD)



DV Model-Shift Uniqueness Test

009099950-03, P = 256.341306 Days, E = 170.177250 Days

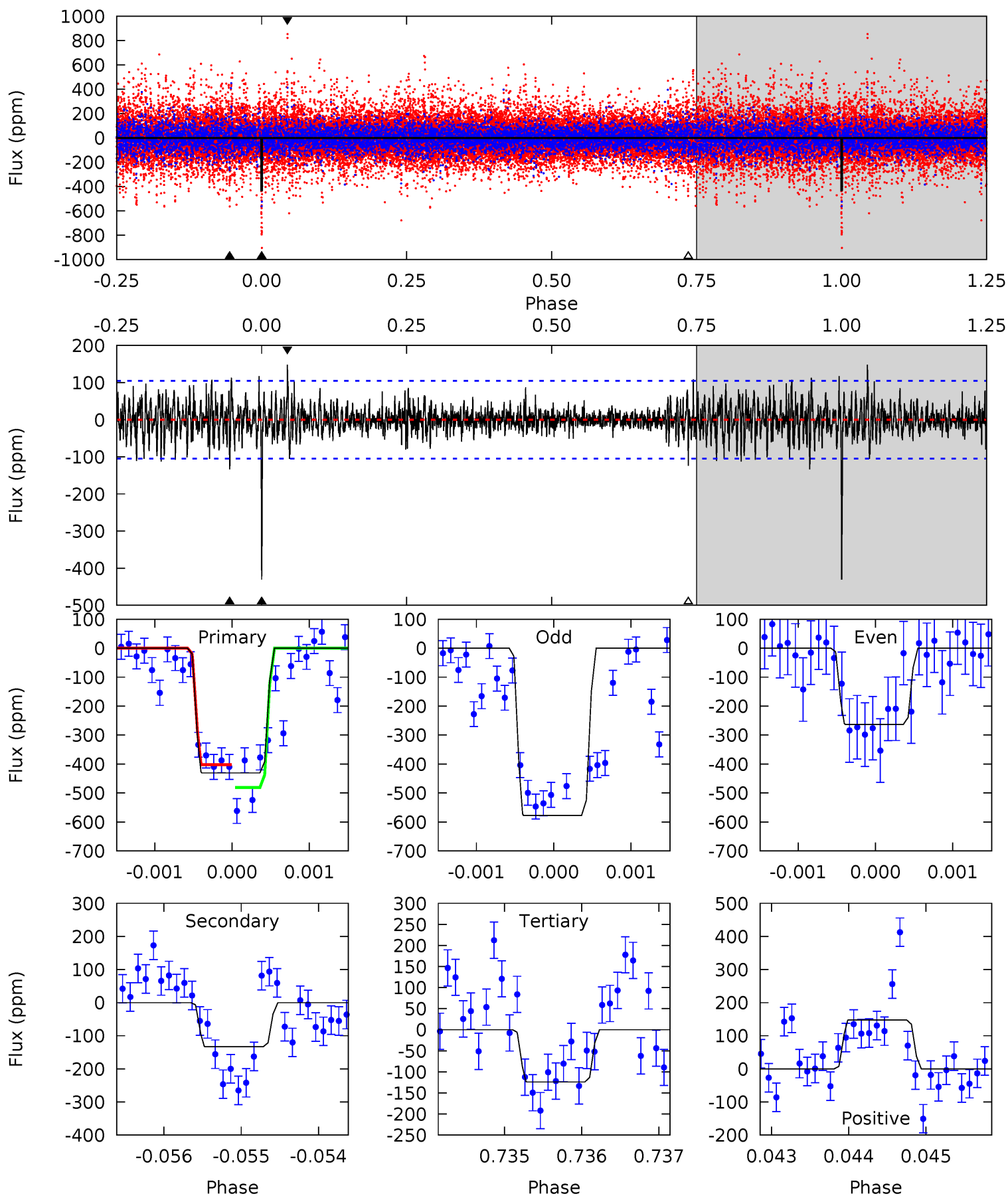
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	19.1	12.1	14.6	5.37	3.16	3.95	0.79	-1.74	6.99	4.46	2.30	0.80	0.43	0.87



Alt Model-Shift Uniqueness Test

009099950-03, P = 256.345821 Days, E = 170.166699 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.2	6.88	6.40	7.64	5.41	3.23	1.52	15.8	14.6	0.47	-0.76	7.89	1.04	0.26	1.99



Stellar Parameters For KIC 009099950

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+156}_{-176}	$3.872^{+0.280}_{-0.100}$	$-0.200^{+0.300}_{-0.250}$	$2.308^{+0.438}_{-0.813}$	$1.446^{+0.183}_{-0.313}$	$0.166^{+0.332}_{-0.050}$
	+2%/-3%	+7%/-3%	+150%/-125%	+19%/-35%	+13%/-22%	+200%/-30%
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 009099950-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-733 ± 38	$6.28^{+1.03}_{-1.17}$	631^{+37}_{-52}	6609^{+421}_{-326}	8142^{+3761}_{-2058}
Alt.	-133 ± 19	$4.63^{+1.00}_{-0.91}$	629^{+41}_{-51}	5077^{+321}_{-309}	2704^{+1450}_{-891}

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

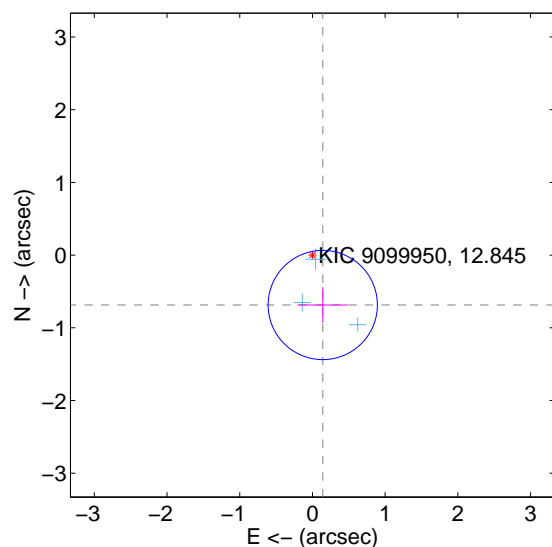
Supplemental centroid analysis for 009099950-03. Kepler magnitude: 12.85. Transit SNR 7.97

There are 3 quarters with good PRF difference image offsets

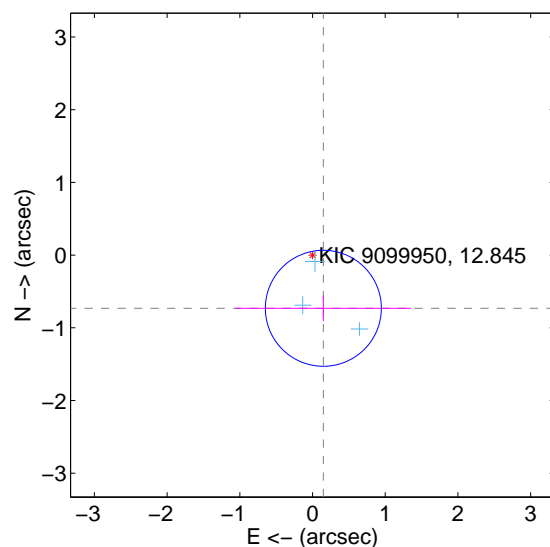
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.701 ± 0.250	2.80	-0.142 ± 0.347	-0.686 ± 0.245
PRF-fit source offset from KIC position	0.747 ± 0.266	2.81	-0.149 ± 1.209	-0.732 ± 0.177
photometric centroid source offset	1.01 ± 0.59	1.72	-0.27 ± 0.54	0.97 ± 0.59

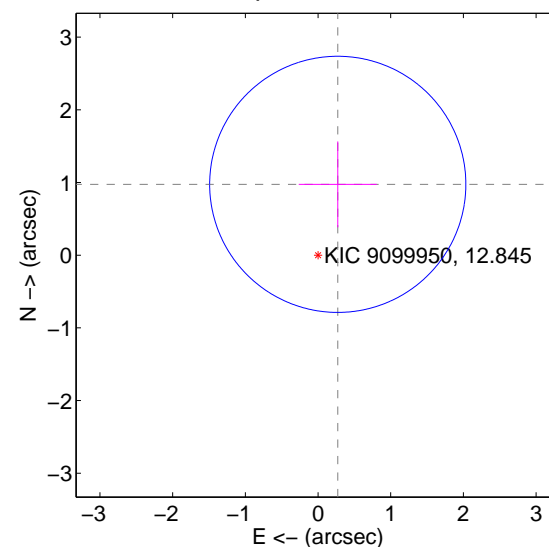
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

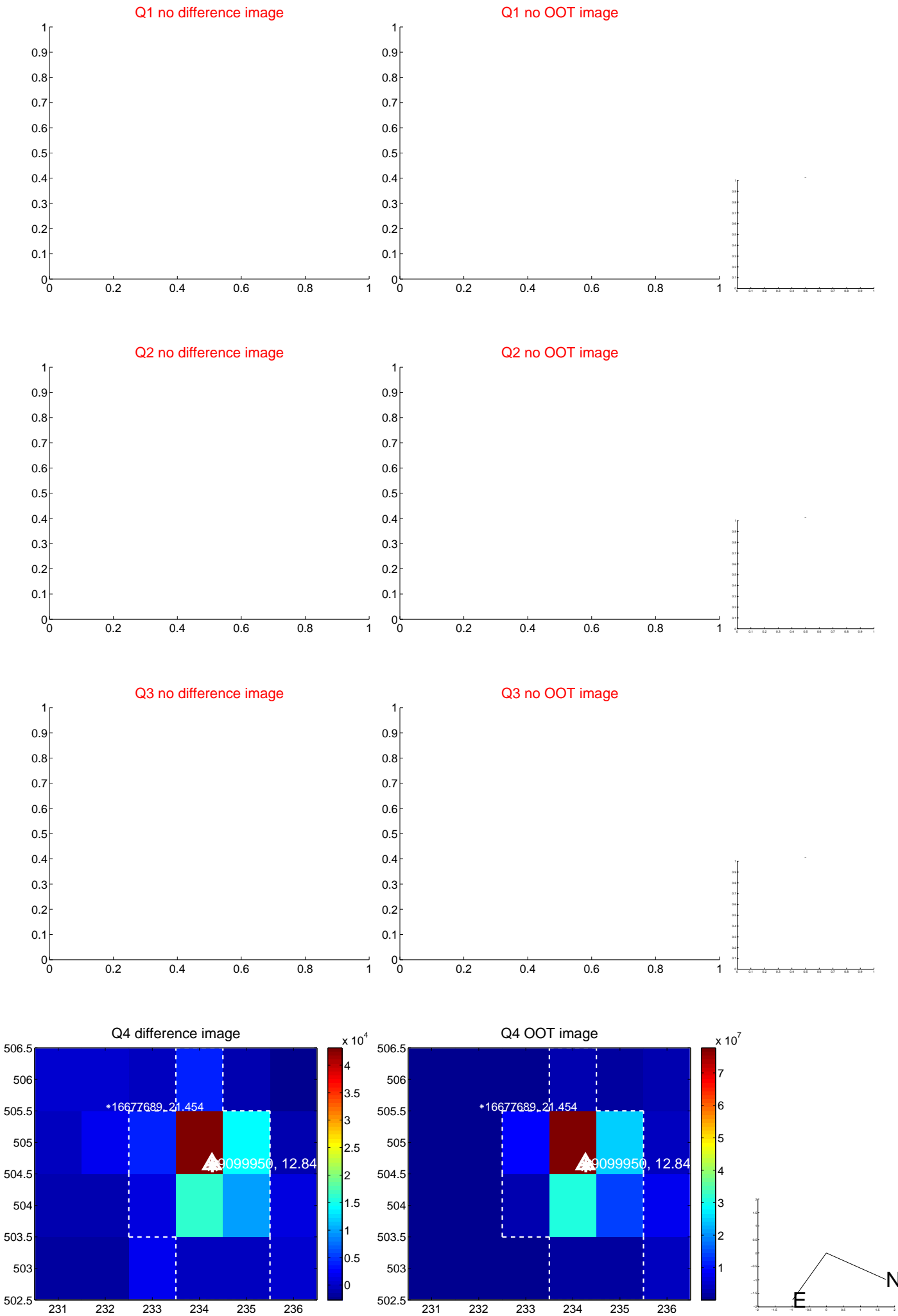


offset from photometric centroids

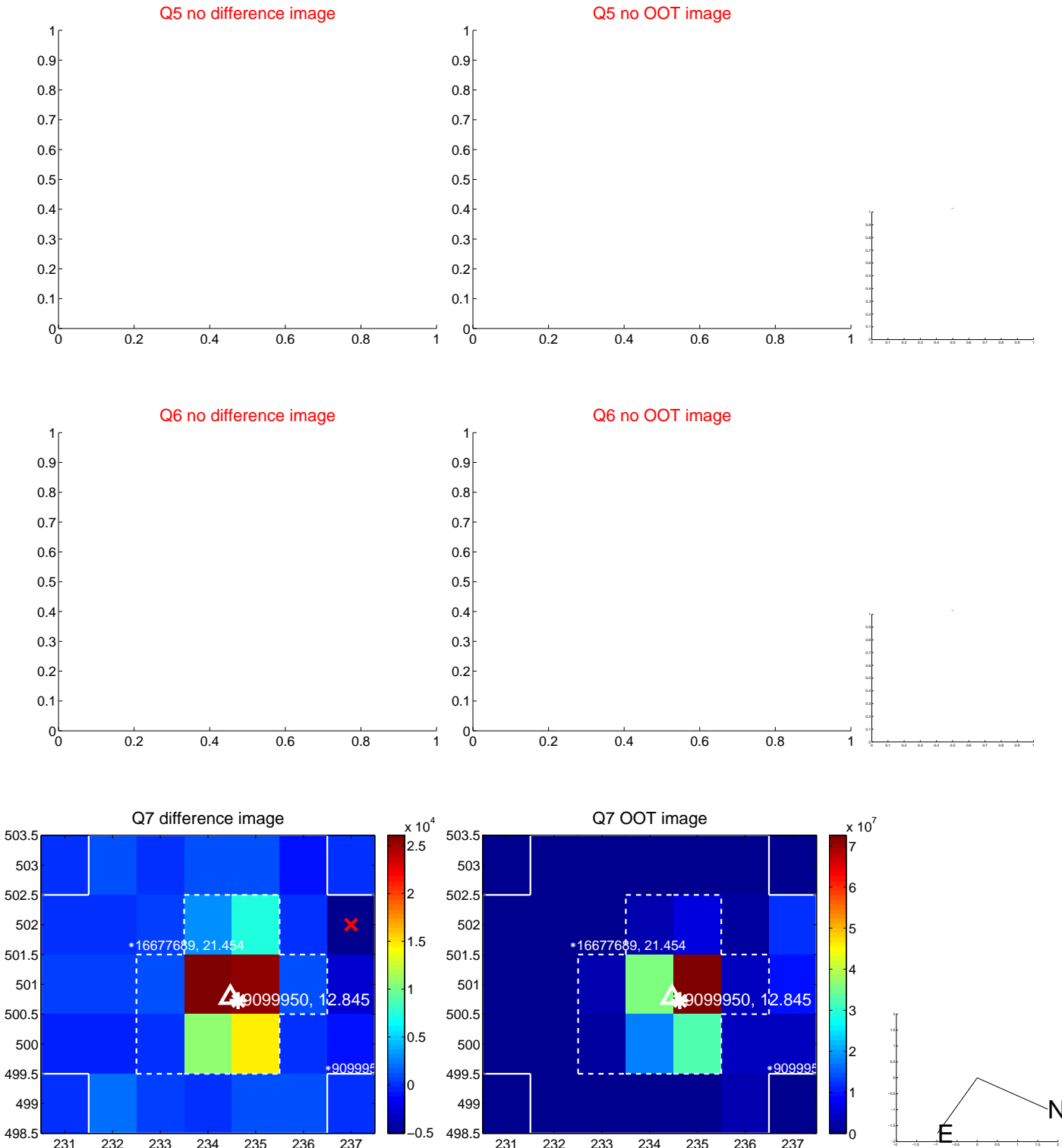


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



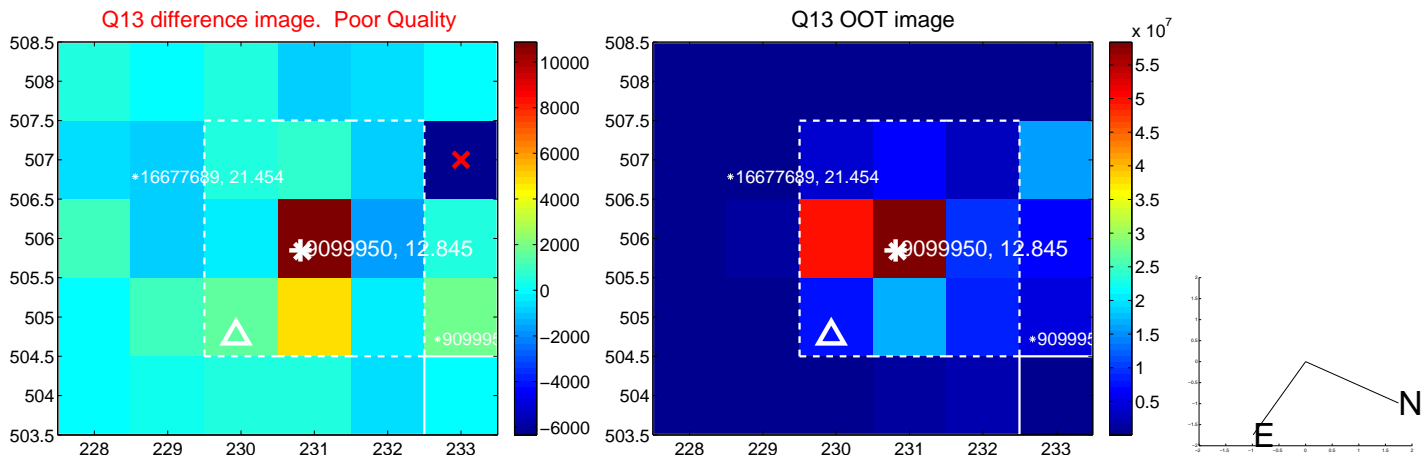
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



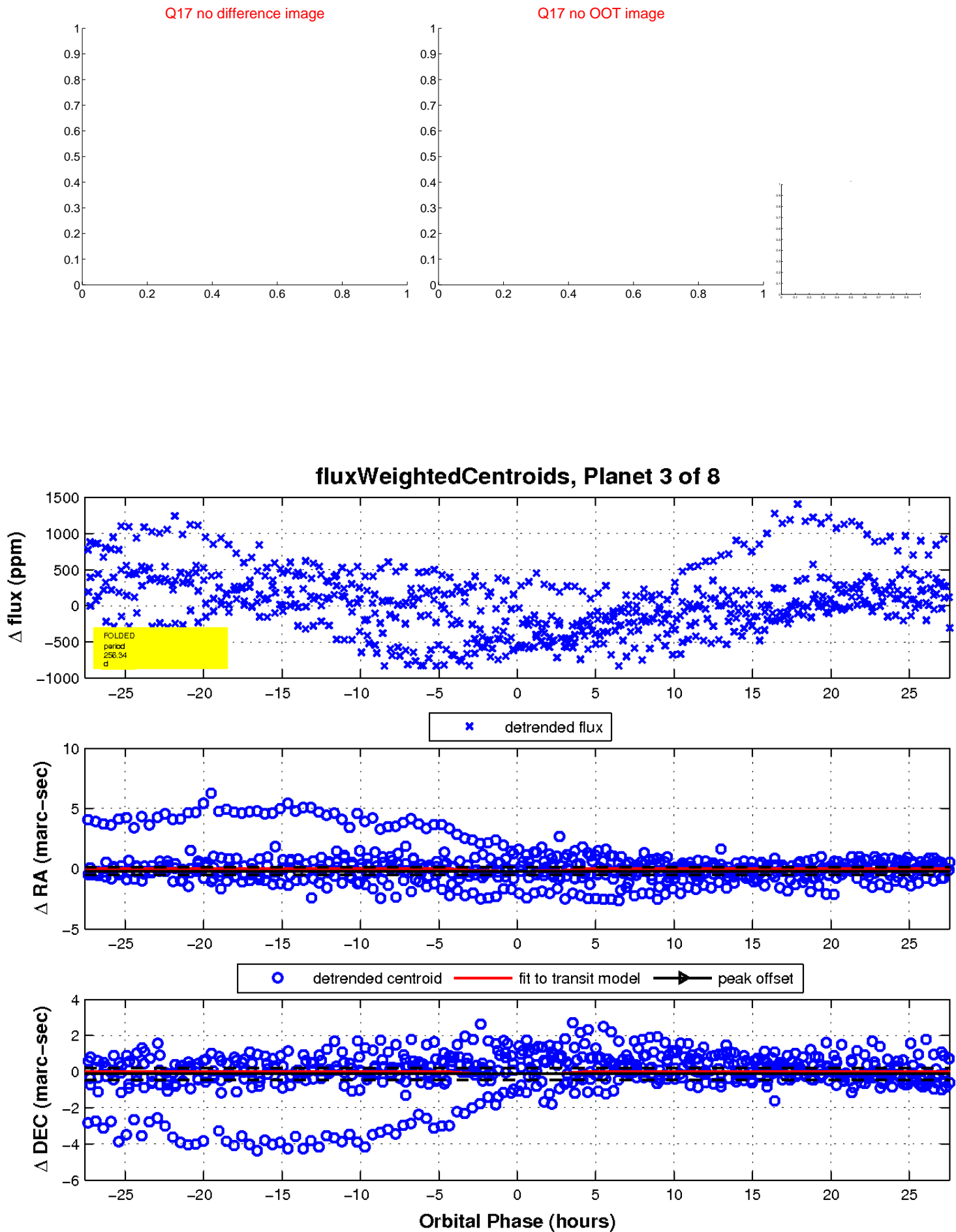
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

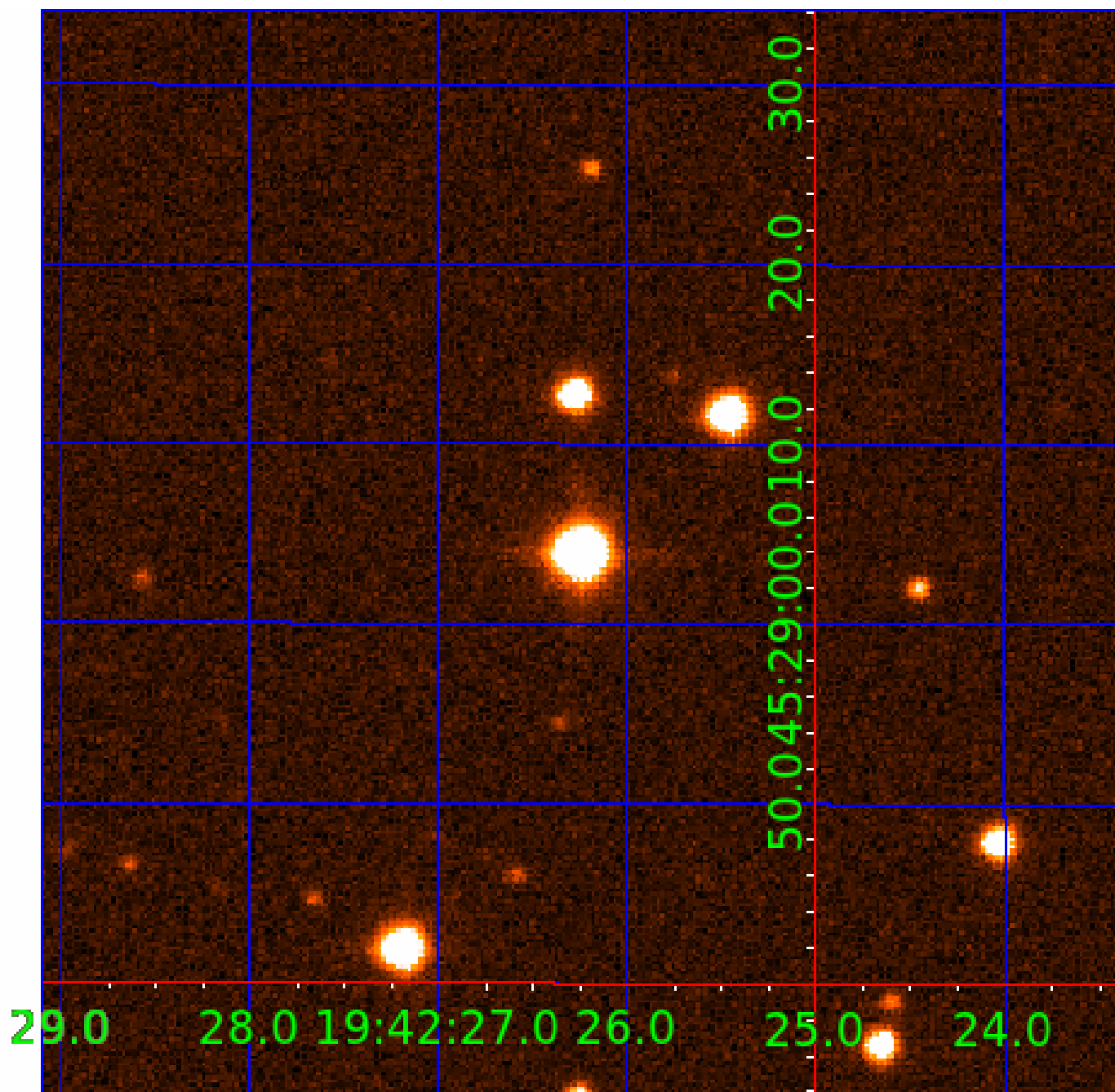


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009099950

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})
009099950-01	OBS	4125.01	1.111287	132.357275	35.0	4.555	17.3	14.6	2.31	6486	1.44	14968.94
009099950-02	OBS	No	258.643639	155.087871	478.5	14.855	10.3	7.0	2.31	6486	5.23	10.46
009099950-03	OBS	No	256.341306	170.177250	519.1	9.229	9.2	8.0	2.31	6486	6.55	10.58
009099950-04	OBS	No	287.434388	400.156029	619.6	10.998	8.7	7.2	2.31	6486	10.99	9.08
009099950-05	OBS	No	362.267766	321.919458	383.0	11.190	8.9	5.7	2.31	6486	5.30	6.67
009099950-06	OBS	No	426.360917	241.688650	722.8	8.660	8.5	9.0	2.31	6486	7.75	5.37
009099950-07	OBS	No	648.969862	201.926308	360.3	9.626	8.3	5.3	2.31	6486	5.04	3.07
009099950-08	OBS	No	309.674046	326.010681	364.6	11.669	8.1	4.5	2.31	6486	4.95	8.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099950-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
009099950-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
009099950-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009099950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009099950-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_MEAS
009099950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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.

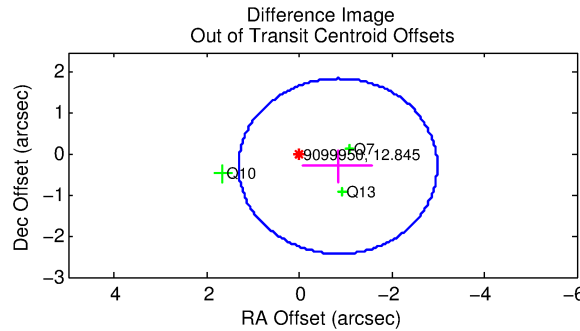
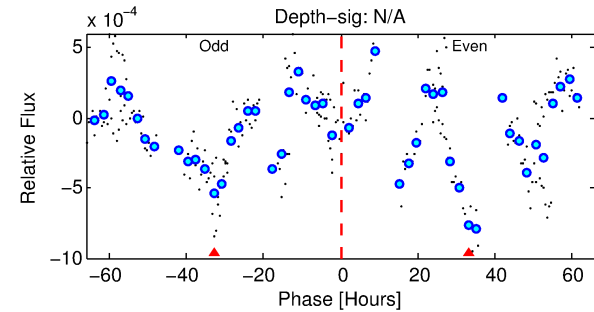
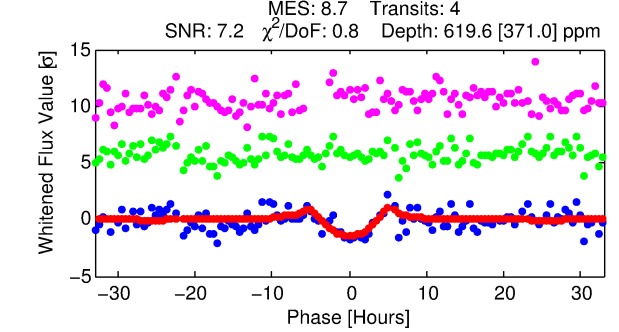
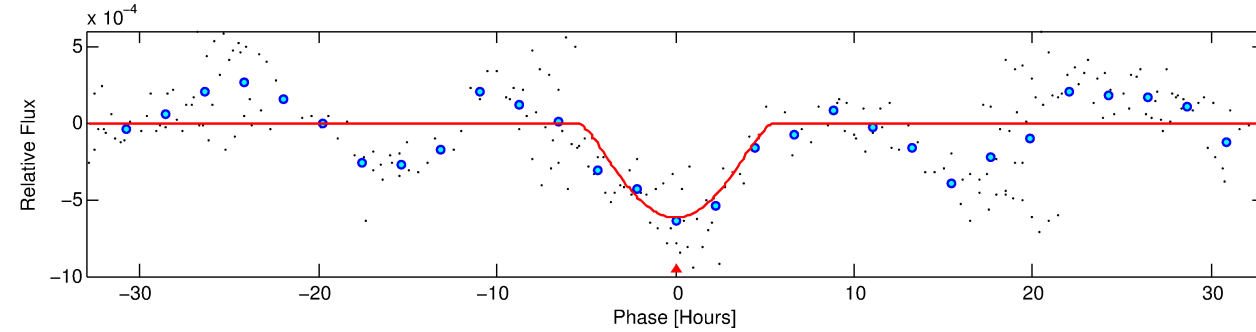
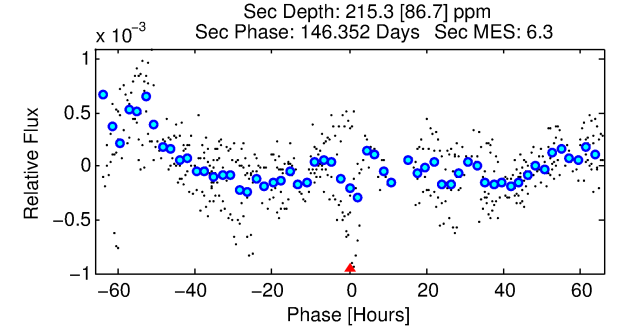
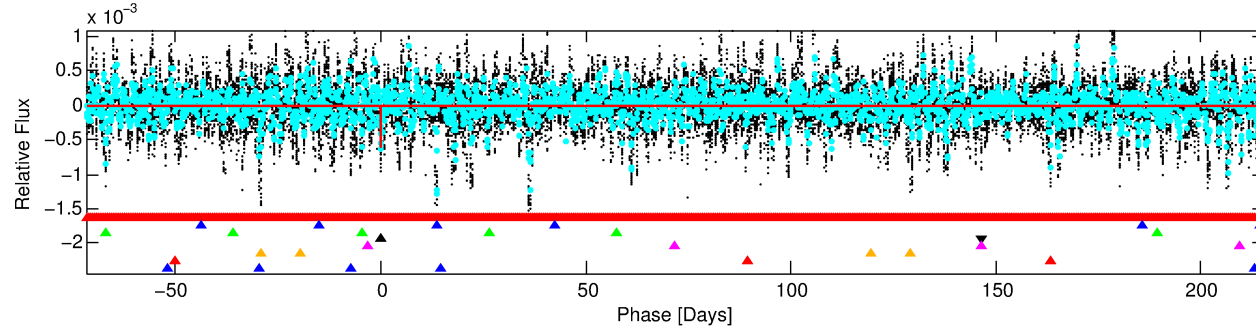
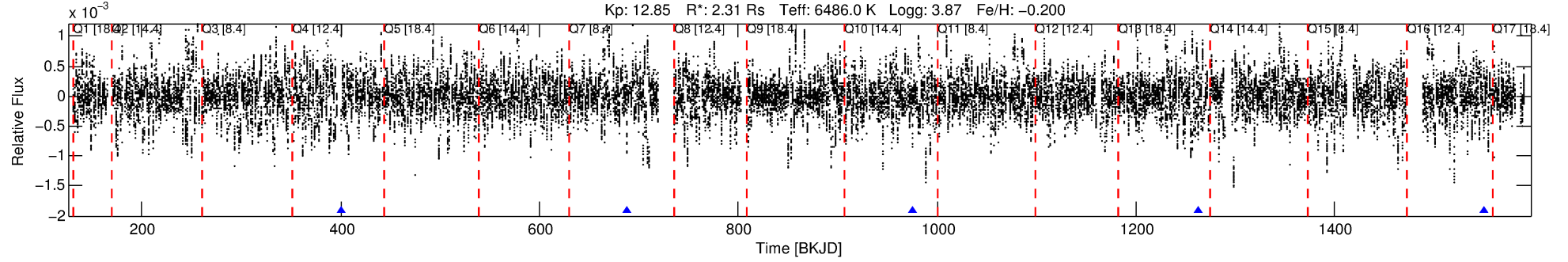
Ephemeris Match Information For 009099950-04

No Significant Match Found

DV One-Page Summary

KIC: 9099950 Candidate: 4 of 8 Period: 287.434 d
KOI: K04125 Corr: No Ephemeris Match

Kp: 12.85 R*: 2.31 Rs Teff: 6486.0 K Logg: 3.87 Fe/H: -0.200



DV Fit Results:

Period = 287.43439 [0.00949] d
Epoch = 400.1560 [0.0237] BKJD
Rp/R* = 0.0437 [0.0839]
a/R* = 59.66 [29.42]
b = 1.00 [0.14]
Seff = 9.08 [4.56]
Teff = 443 [56] K
Rp = 10.99 [21.48] Re
a = 0.9643 [0.3070] AU
Ag = 911.02 [3548.43] [0.26σ]
Teffp = 3760 [3634] K [0.91σ]

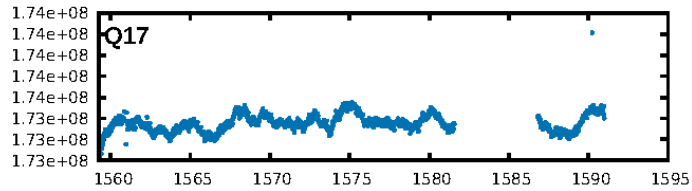
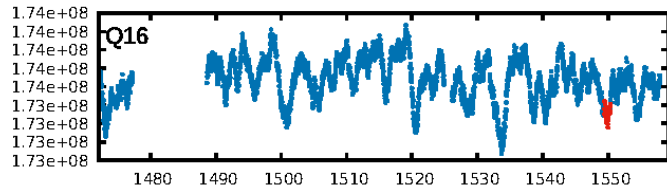
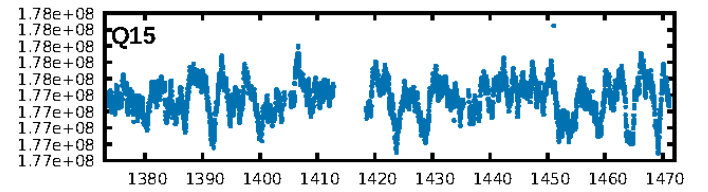
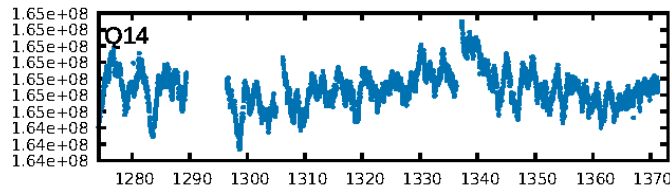
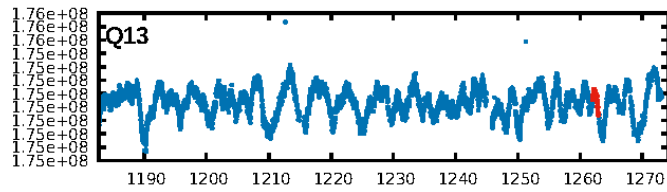
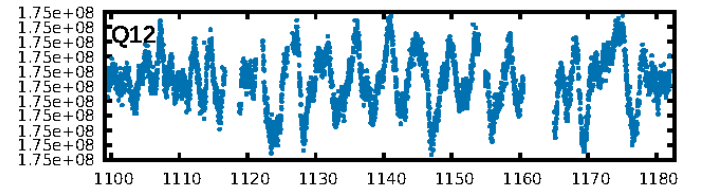
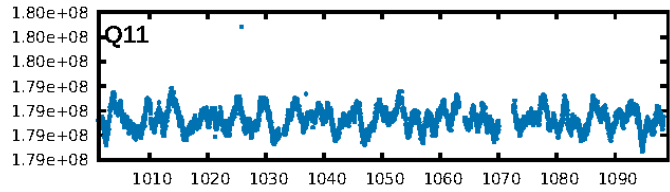
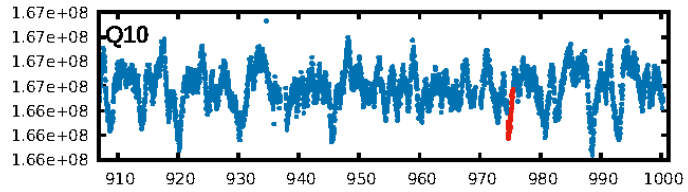
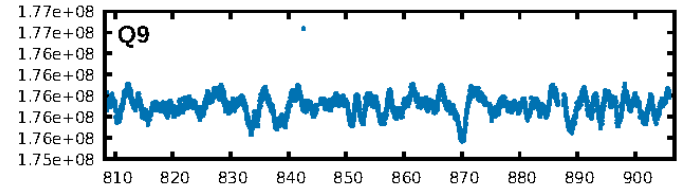
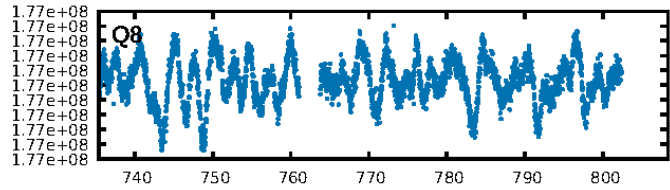
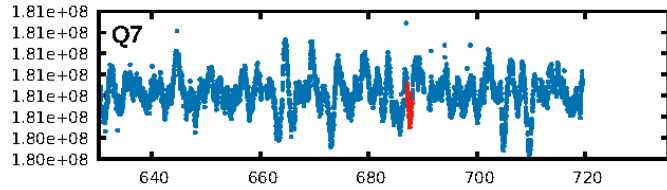
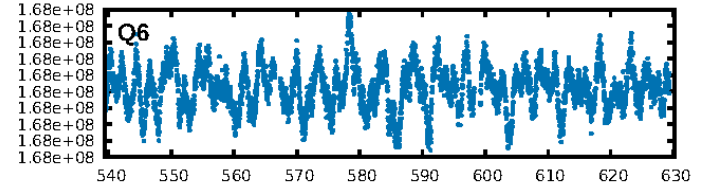
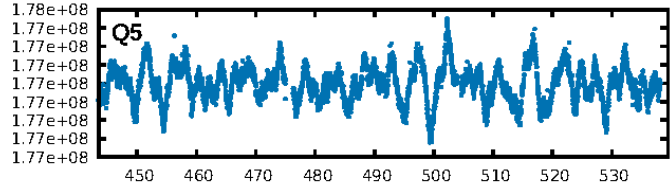
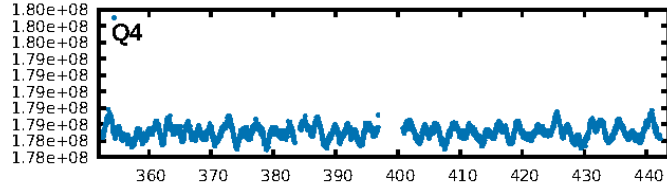
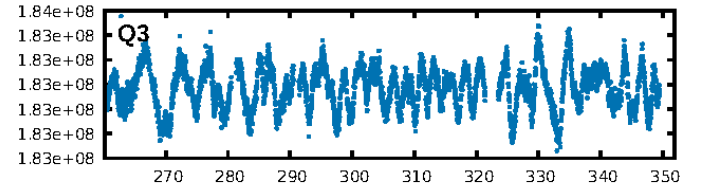
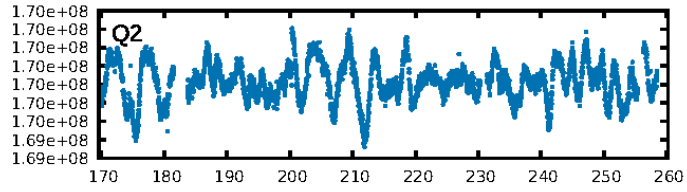
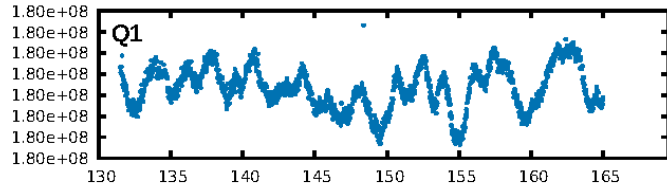
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.38σ]
LongPeriod-sig: 100.0% [33.29σ]
ModelChiSquare2-sig: 11.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.05e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -4.069
Centroid-sig: 19.5%
Centroid-so: 1.883 arcsec [3.13σ]
OotOffset-rm: 0.885 arcsec [1.24σ]
KicOffset-rm: 0.884 arcsec [1.25σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

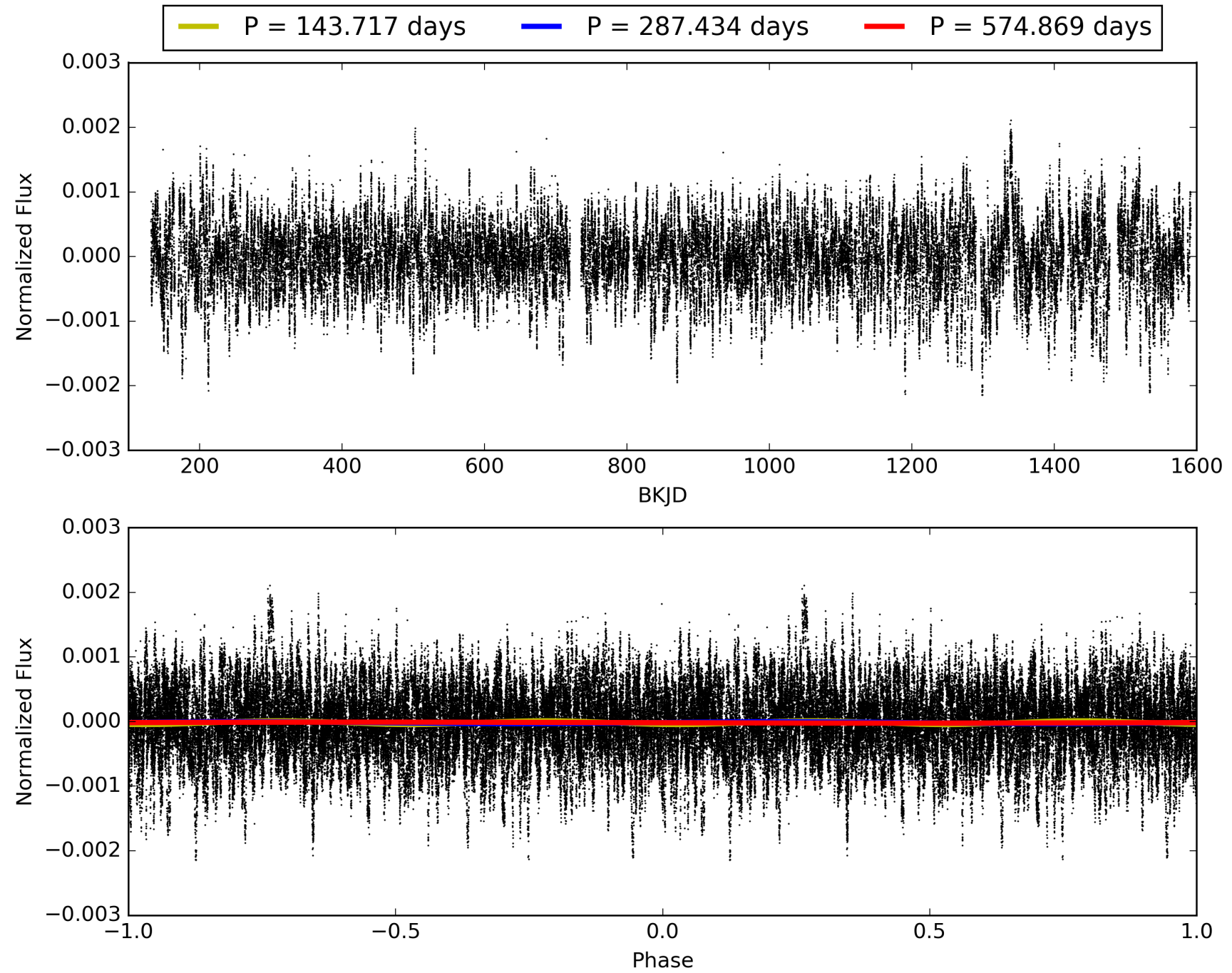
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:45:13 Z

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

TCE 009099950-04, PDC Light Curves

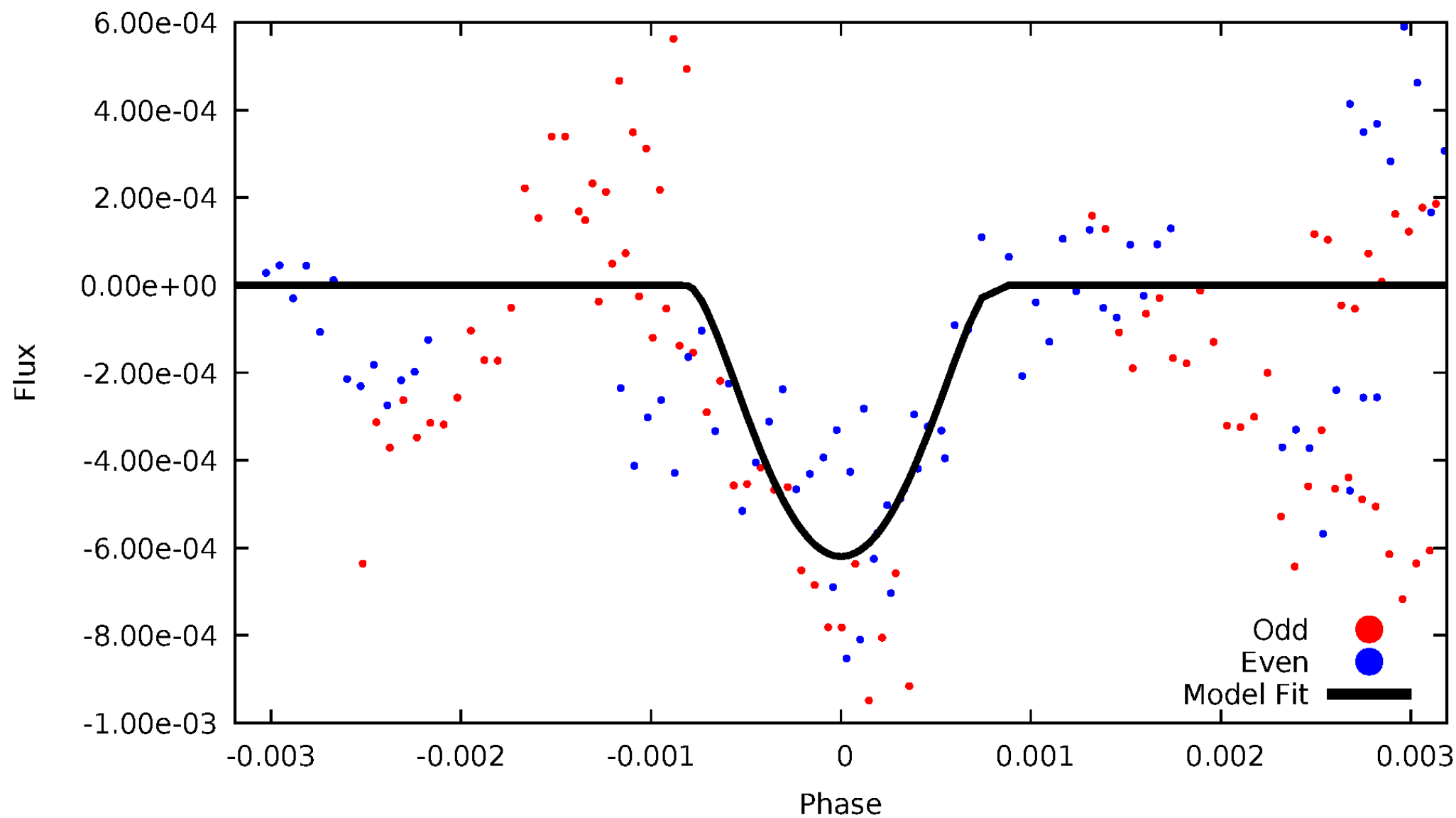


TCE 009099950-04



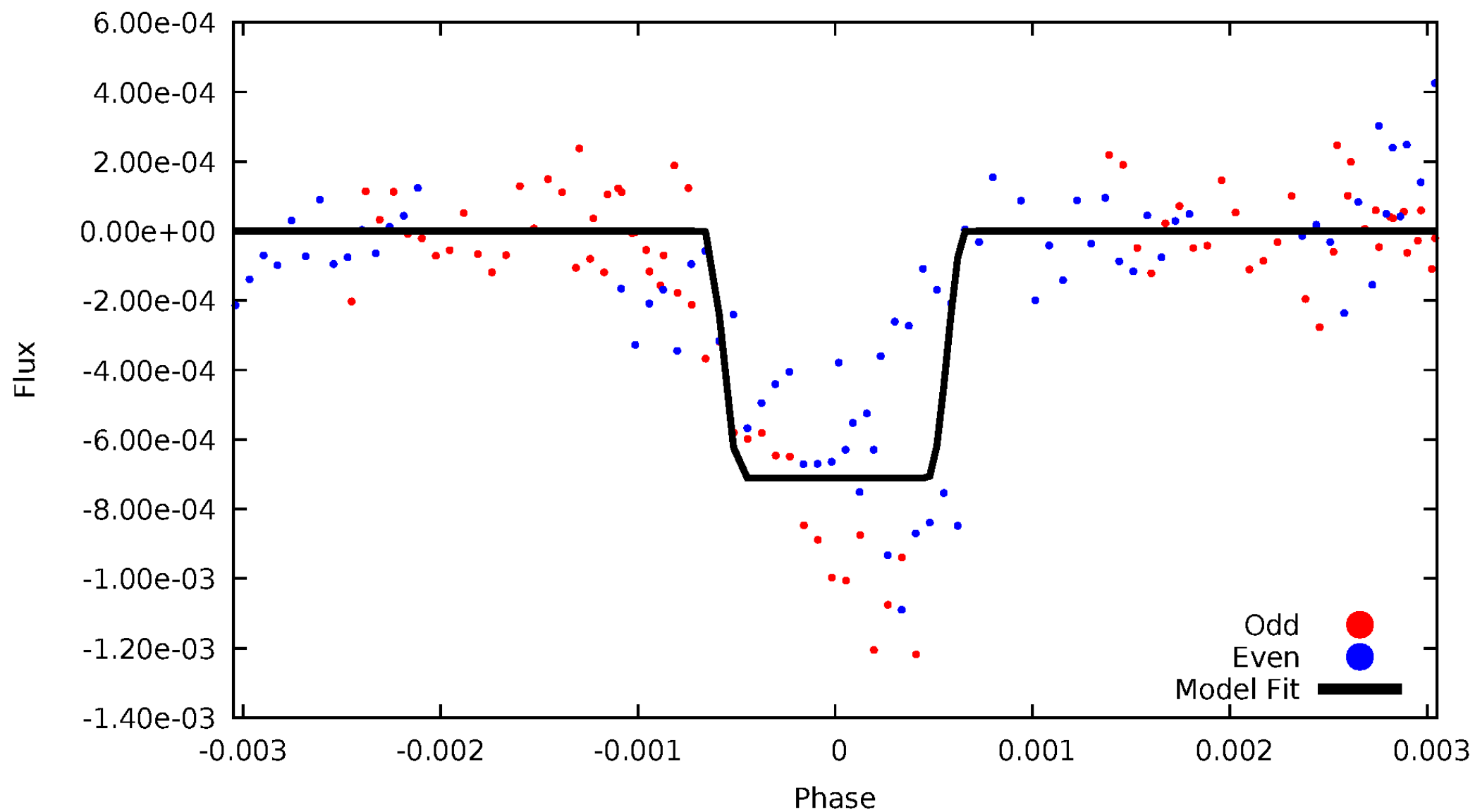
DV Odd/Even

TCE 009099950-04



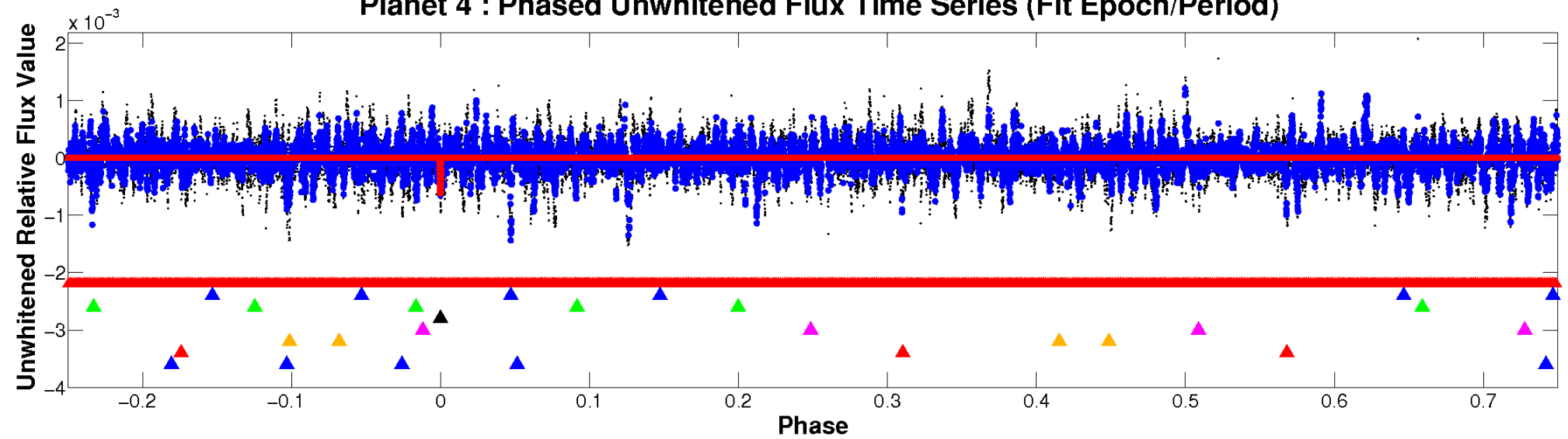
ALT Odd/Even

TCE 009099950-04

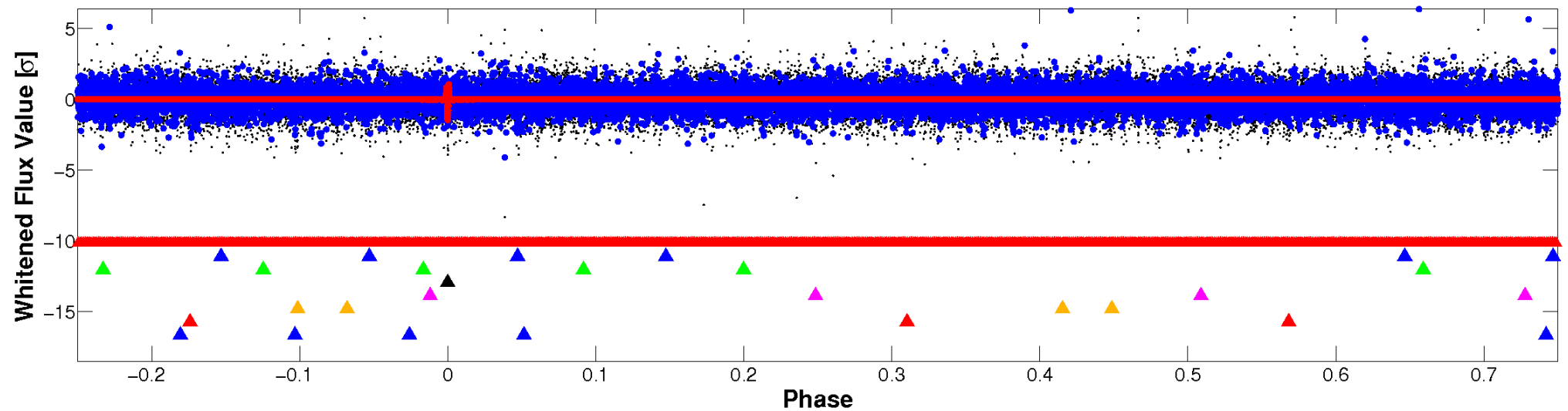


Non-Whitened Vs. Whitened Light Curve

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

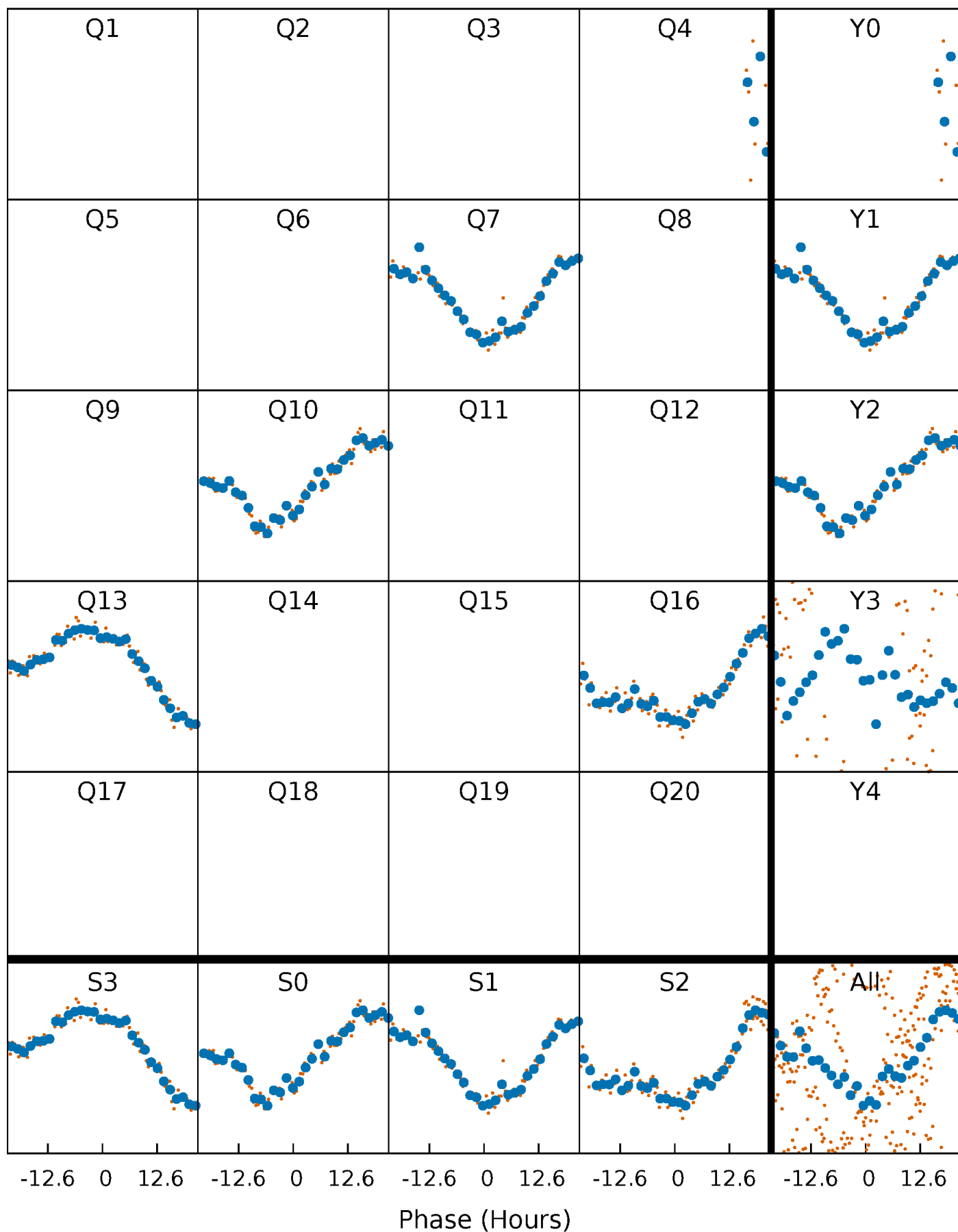


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



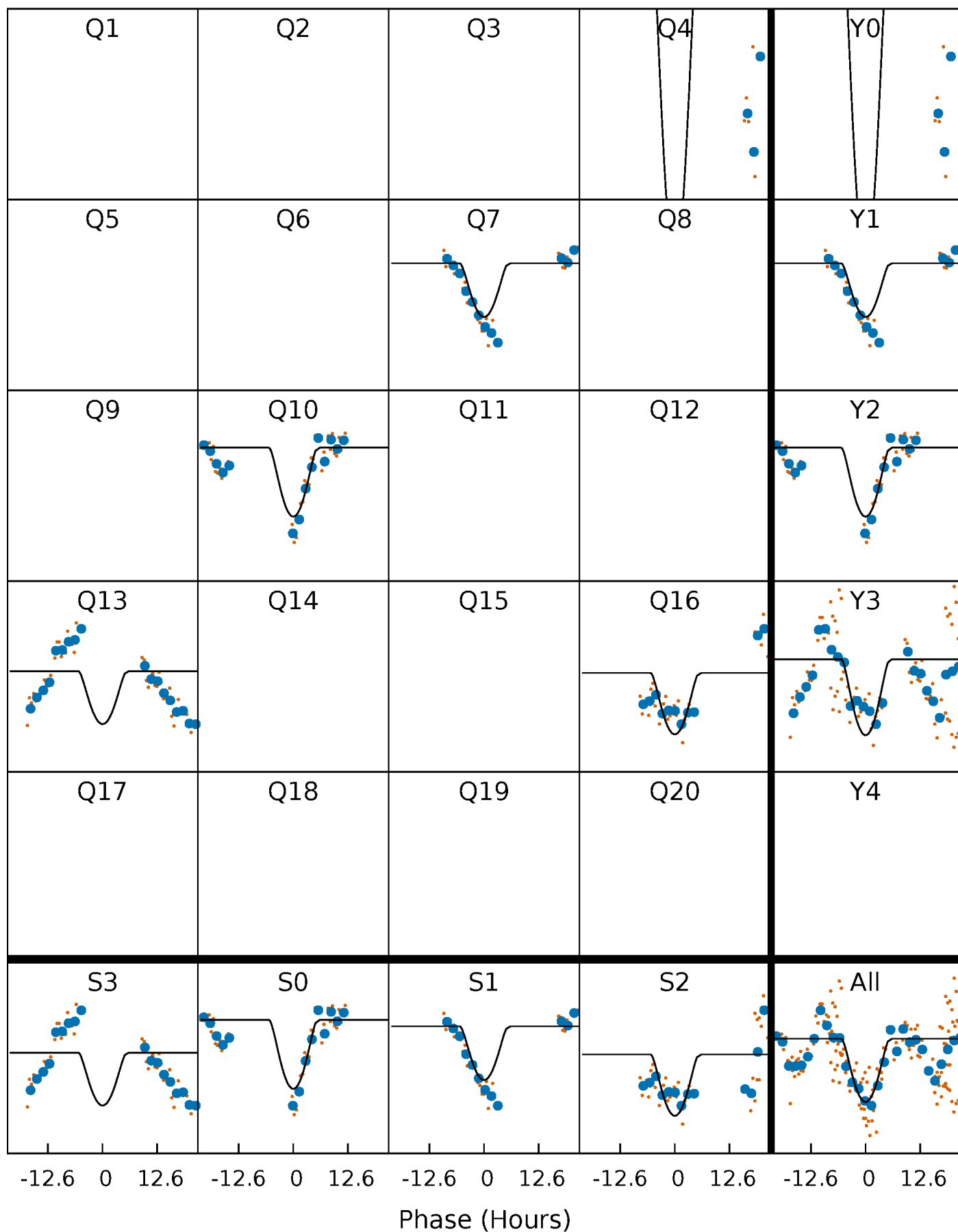
PDC Quarter-Phased Transit Curves

TCE 009099950-04 P=287.434388 Days $T_0=400.156029$ (BKJD)



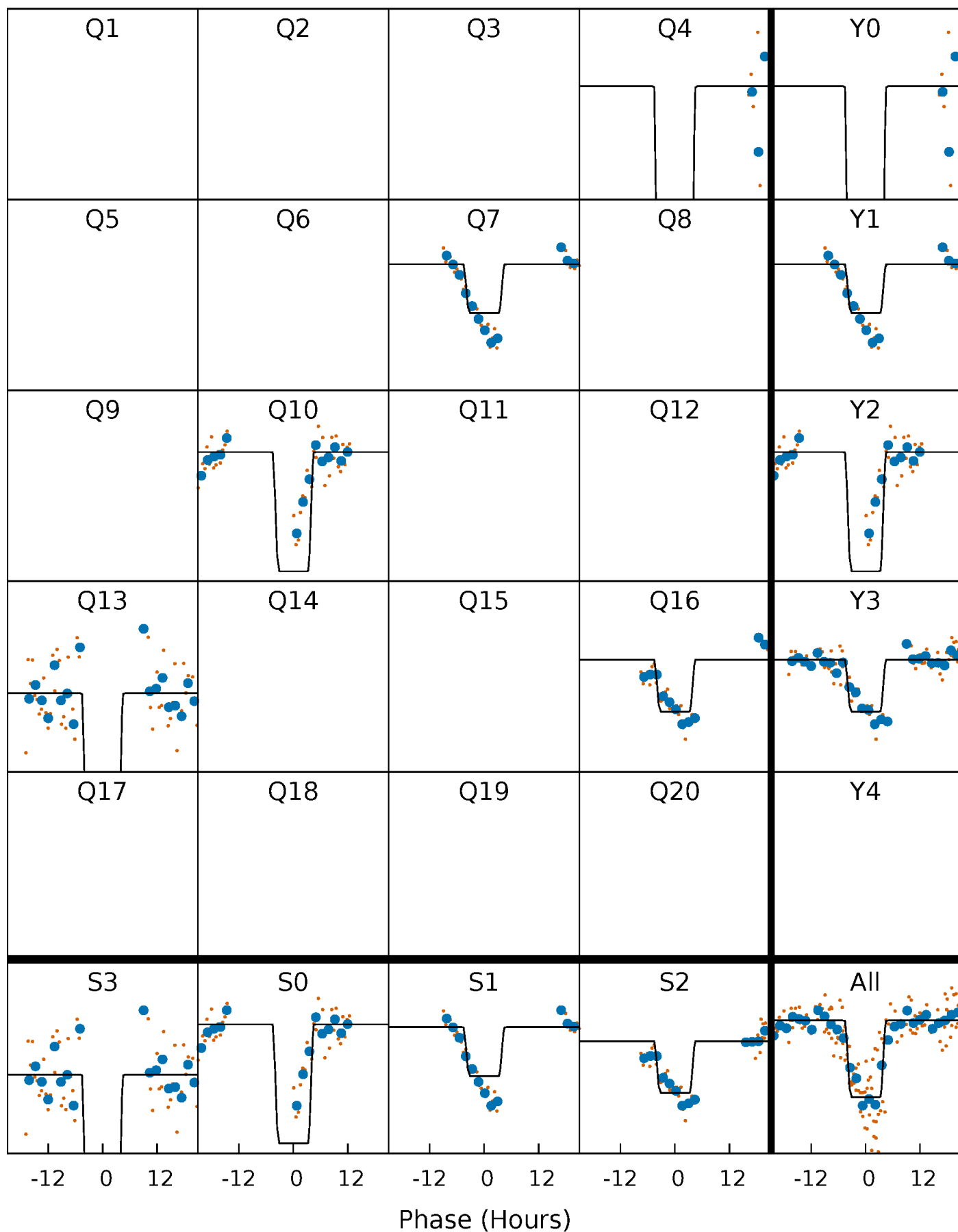
DV Quarter-Phased Transit Curves

TCE 009099950-04 P=287.434388 Days $T_0=400.156029$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

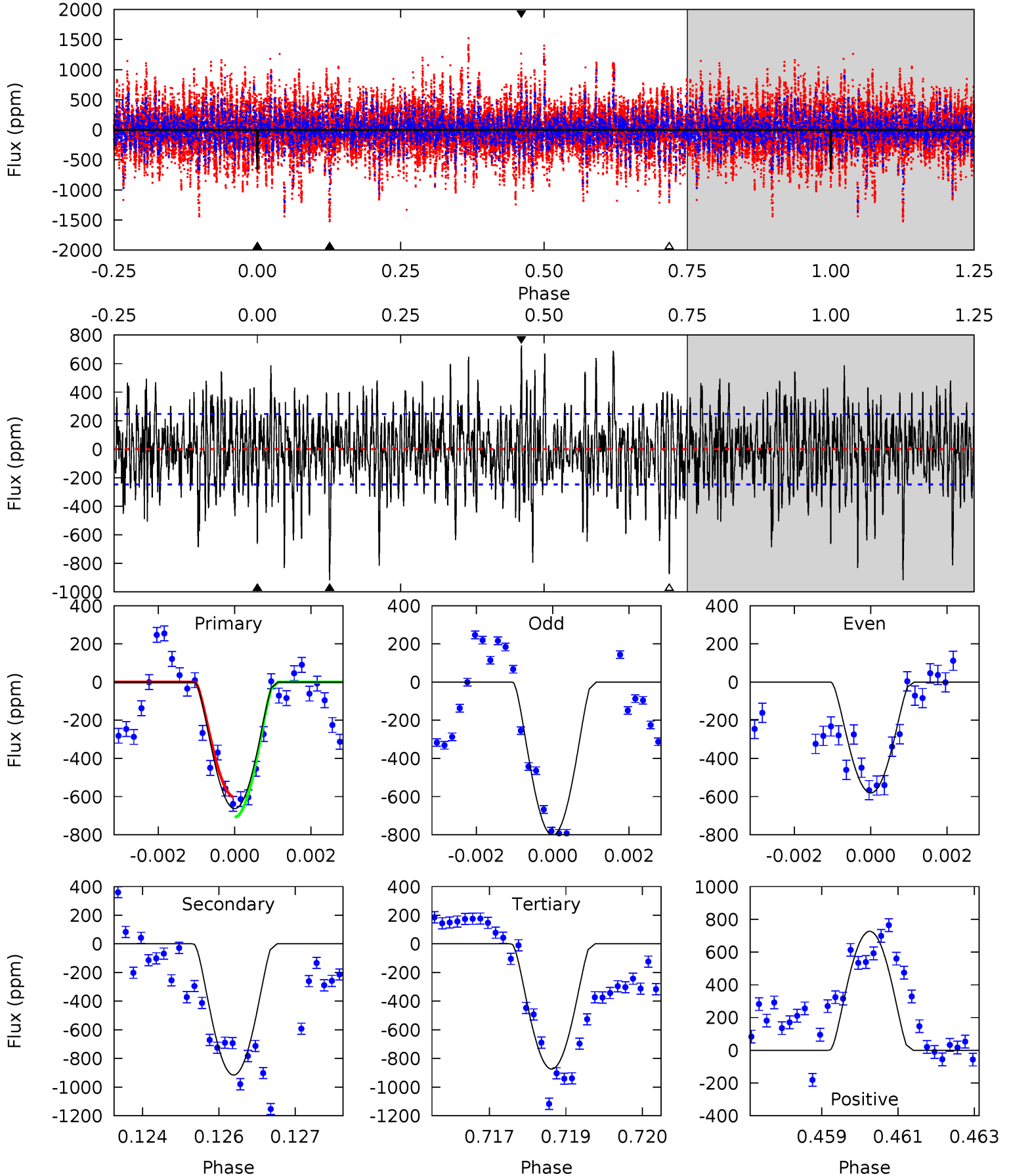
TCE 009099950-04 $P=287.432077$ Days $T_0=400.143924$ (BKJD)



DV Model-Shift Uniqueness Test

009099950-04, P = 287.434388 Days, E = 112.721641 Days

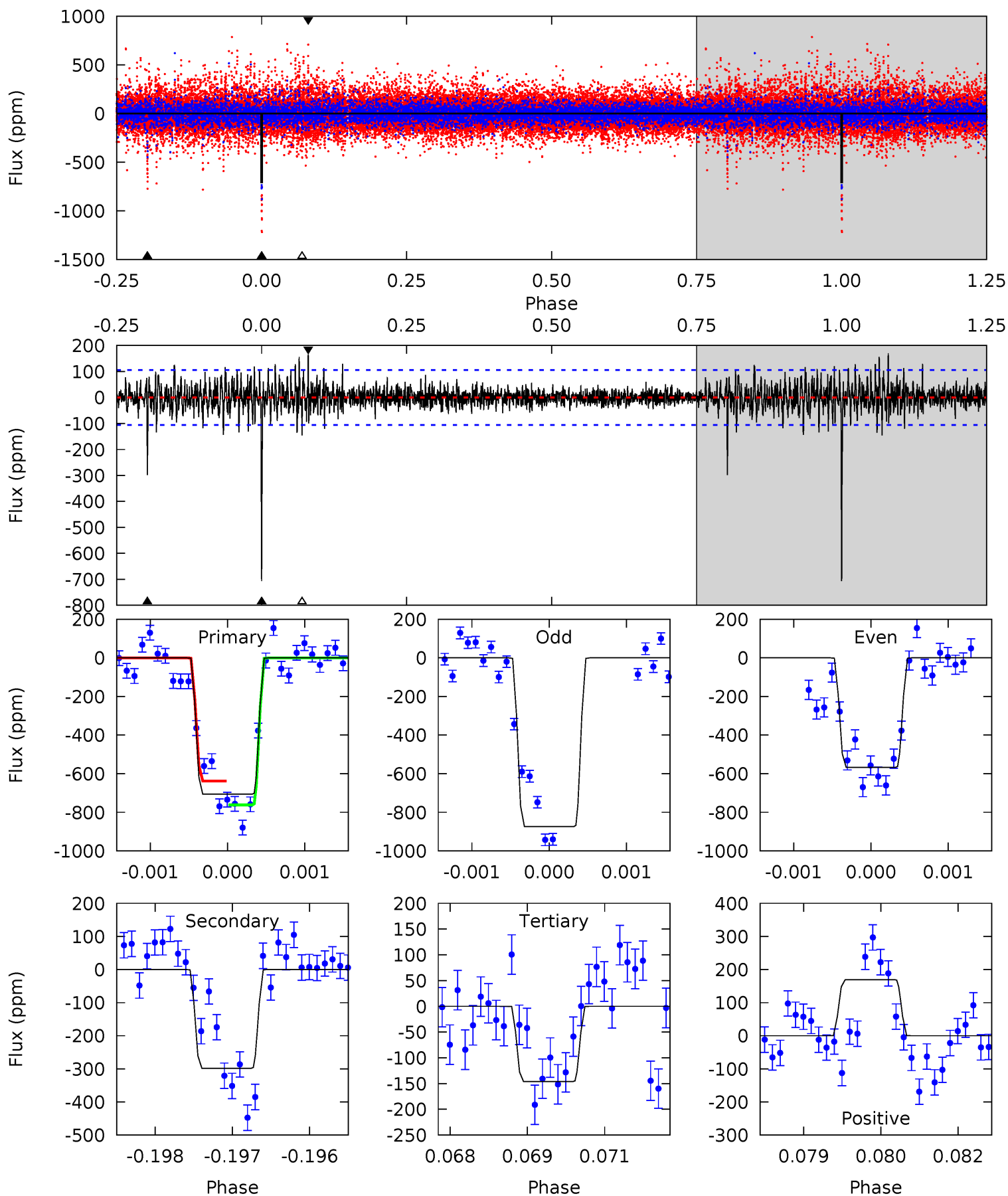
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	19.9	19.0	15.8	5.37	3.16	4.66	-4.59	-1.39	0.91	4.11	2.34	0.97	0.44	1.15



Alt Model-Shift Uniqueness Test

009099950-04, P = 287.432077 Days, E = 112.711847 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.0	15.2	7.45	8.65	5.39	3.20	1.60	28.6	27.4	7.77	6.58	7.68	0.92	0.19	3.14



Stellar Parameters For KIC 009099950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6486^{+156}_{-176}	$3.872^{+0.280}_{-0.100}$	$-0.200^{+0.300}_{-0.250}$	$2.308^{+0.438}_{-0.813}$	$1.446^{+0.183}_{-0.313}$	$0.166^{+0.332}_{-0.050}$
	+2%/-3%	+7%/-3%	+150%/-125%	+19%/-35%	+13%/-22%	+200%/-30%
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 009099950-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-916 ± 46	$17.90^{+17.38}_{-12.45}$	608^{+36}_{-54}	4267^{+3044}_{-812}	1423^{+14702}_{-1041}
Alt.	-298 ± 20	$15.30^{+15.86}_{-11.03}$	608^{+36}_{-51}	3749^{+2558}_{-732}	632^{+8127}_{-481}

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 $A_{obs} \gg 1.0$

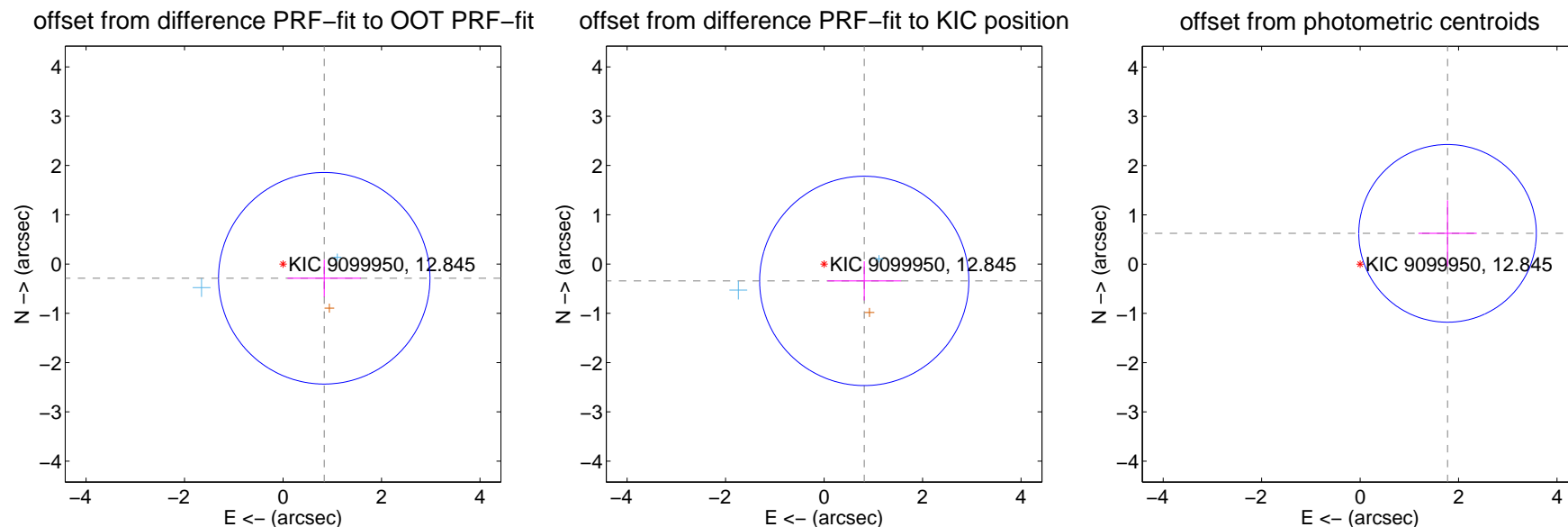
DV Centroid Data

Supplemental centroid analysis for 009099950-04. Kepler magnitude: 12.85. Transit SNR 7.23

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.885 ± 0.716	1.24	-0.837 ± 0.746	-0.289 ± 0.377
PRF-fit source offset from KIC position	0.884 ± 0.708	1.25	-0.816 ± 0.750	-0.342 ± 0.397
photometric centroid source offset	1.88 ± 0.60	3.13	-1.78 ± 0.59	0.62 ± 0.67

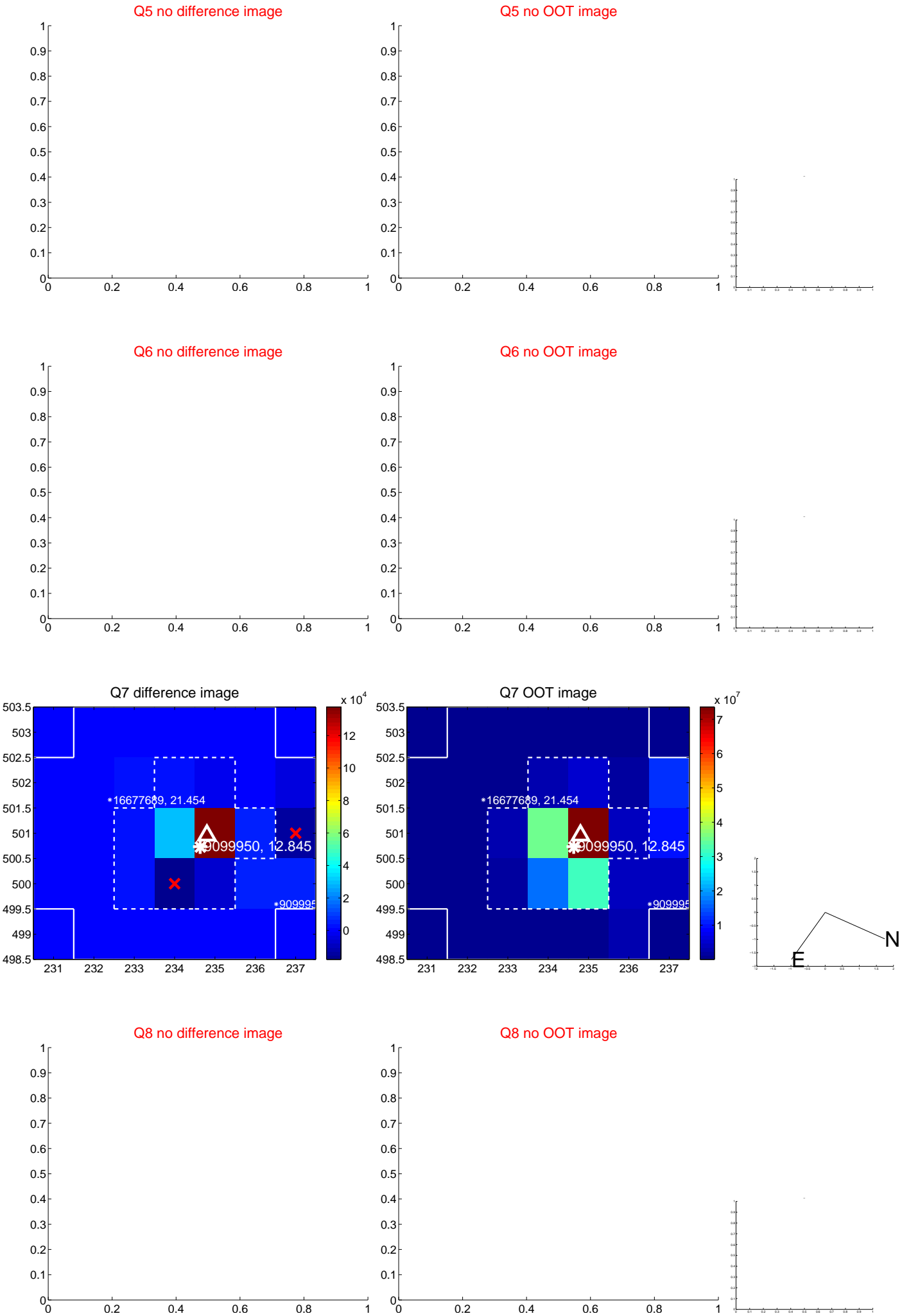


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

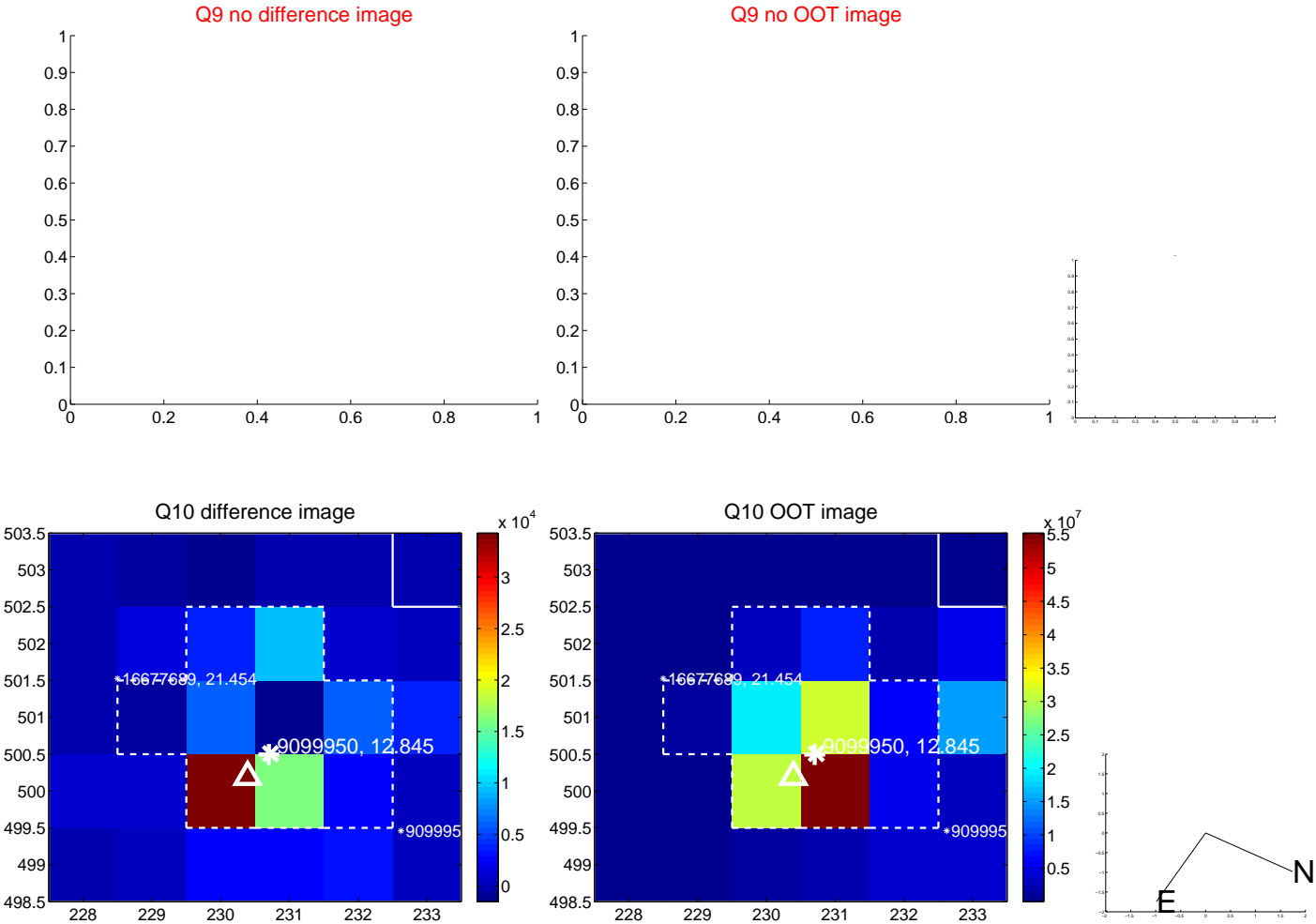
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



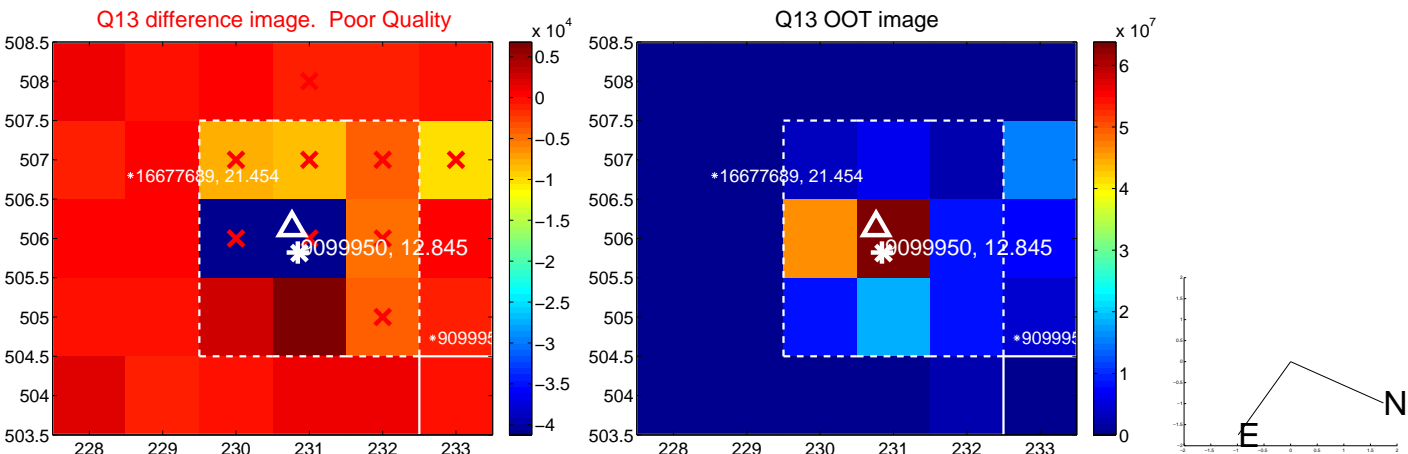
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



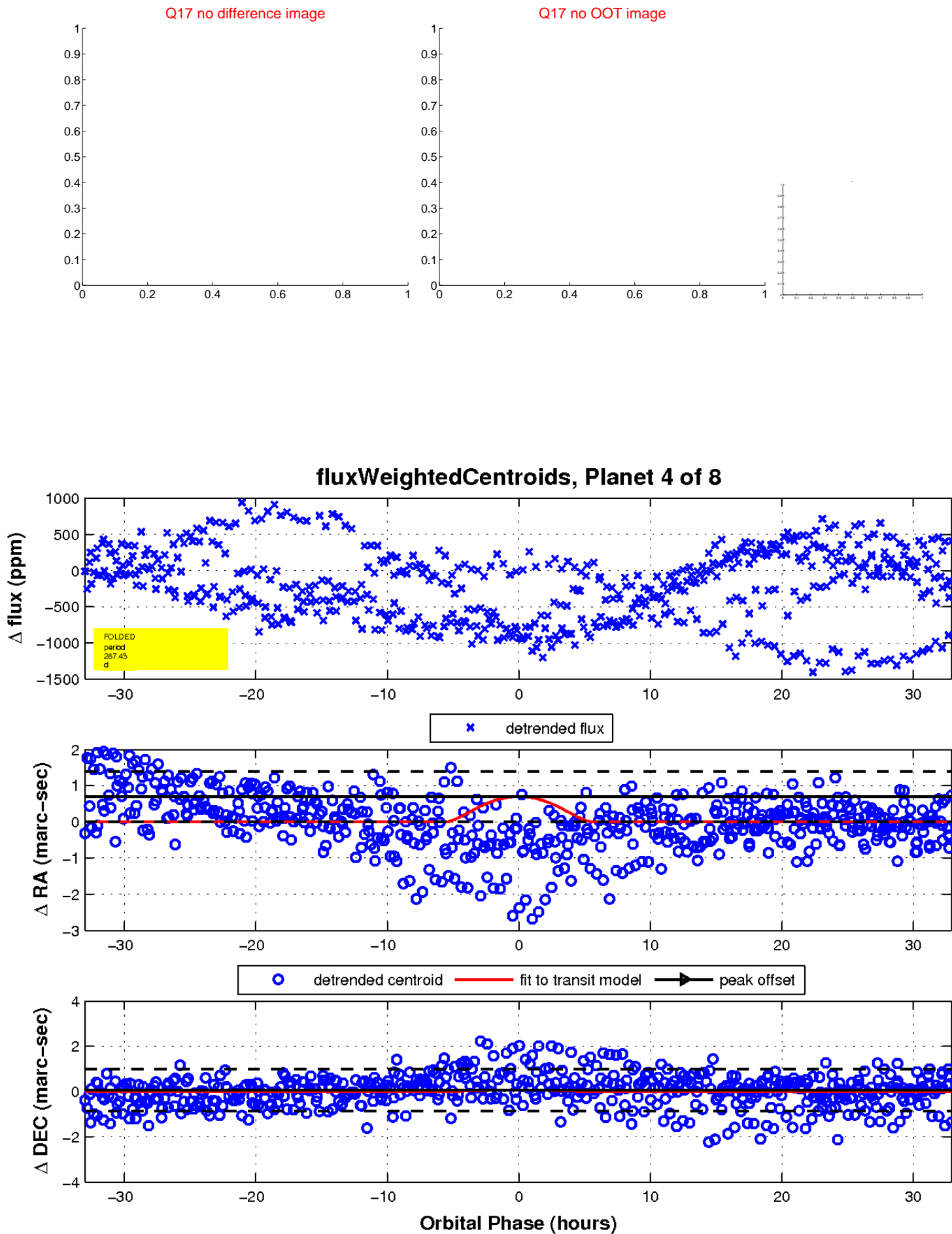
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

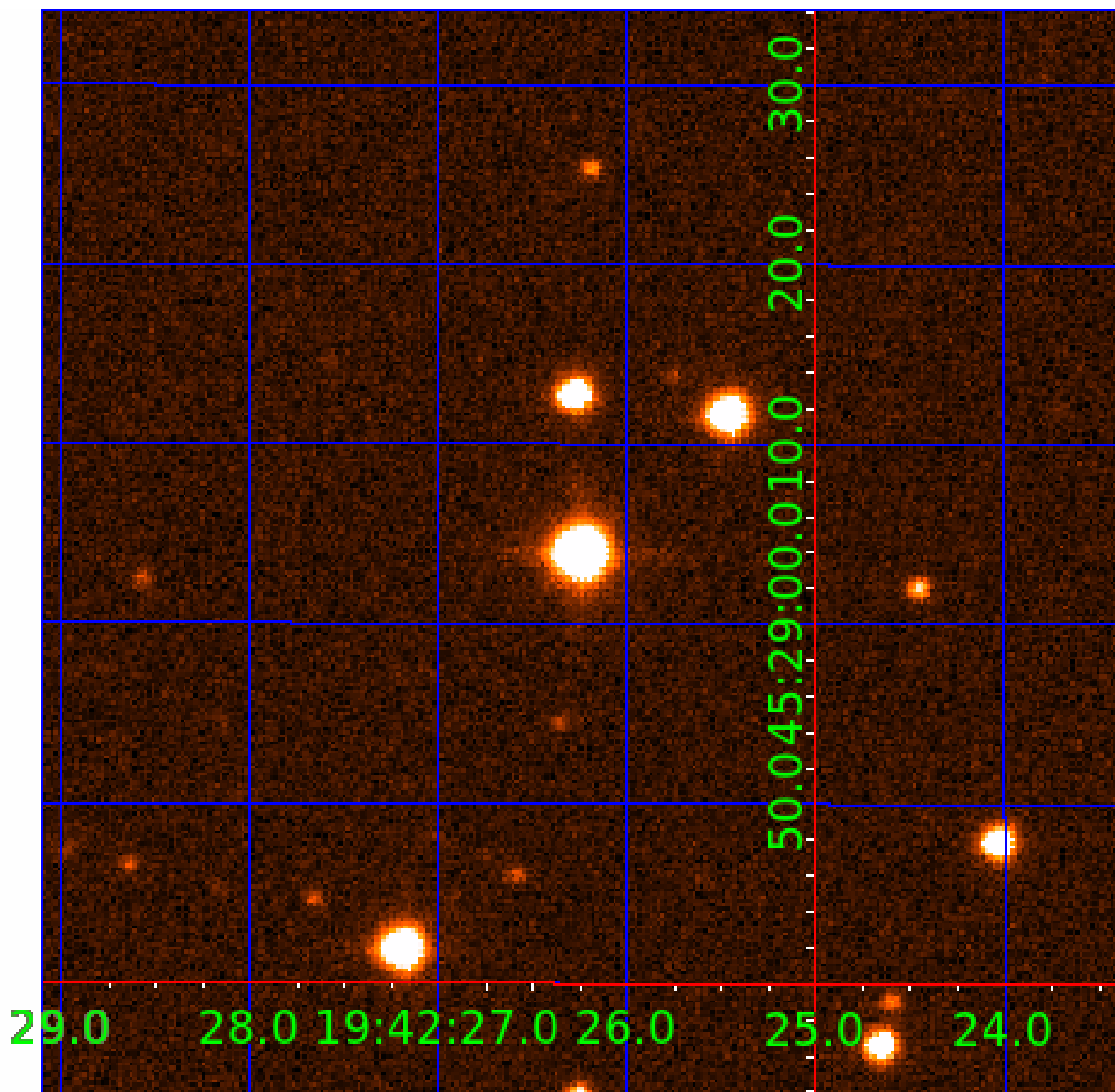


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009099950

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})
009099950-01	OBS	4125.01	1.111287	132.357275	35.0	4.555	17.3	14.6	2.31	6486	1.44	14968.94
009099950-02	OBS	No	258.643639	155.087871	478.5	14.855	10.3	7.0	2.31	6486	5.23	10.46
009099950-03	OBS	No	256.341306	170.177250	519.1	9.229	9.2	8.0	2.31	6486	6.55	10.58
009099950-04	OBS	No	287.434388	400.156029	619.6	10.998	8.7	7.2	2.31	6486	10.99	9.08
009099950-05	OBS	No	362.267766	321.919458	383.0	11.190	8.9	5.7	2.31	6486	5.30	6.67
009099950-06	OBS	No	426.360917	241.688650	722.8	8.660	8.5	9.0	2.31	6486	7.75	5.37
009099950-07	OBS	No	648.969862	201.926308	360.3	9.626	8.3	5.3	2.31	6486	5.04	3.07
009099950-08	OBS	No	309.674046	326.010681	364.6	11.669	8.1	4.5	2.31	6486	4.95	8.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099950-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
009099950-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
009099950-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009099950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009099950-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_MEAS
009099950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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.

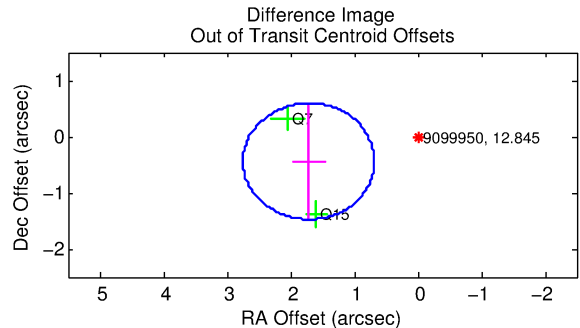
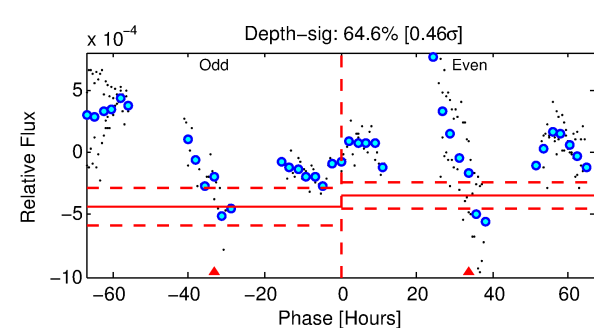
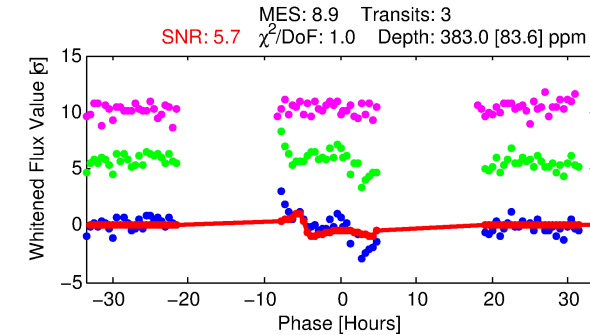
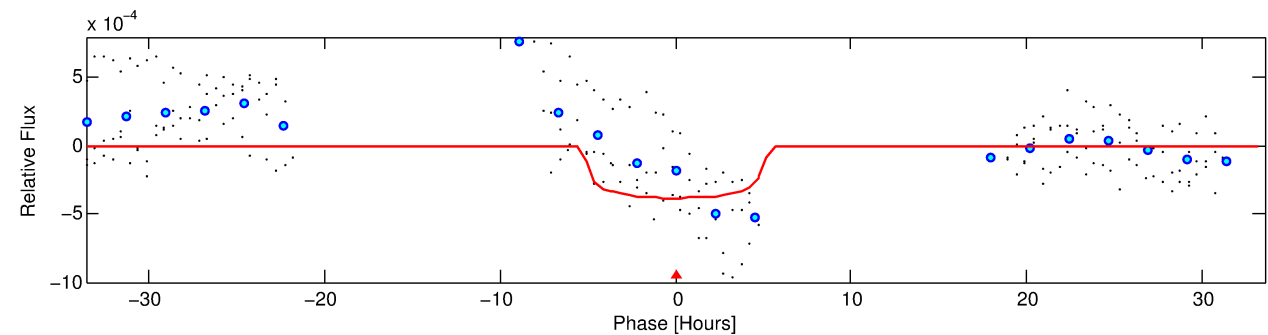
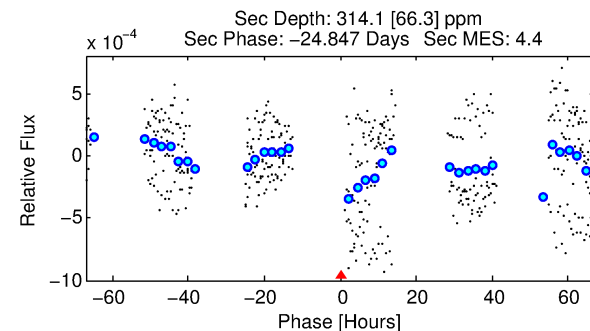
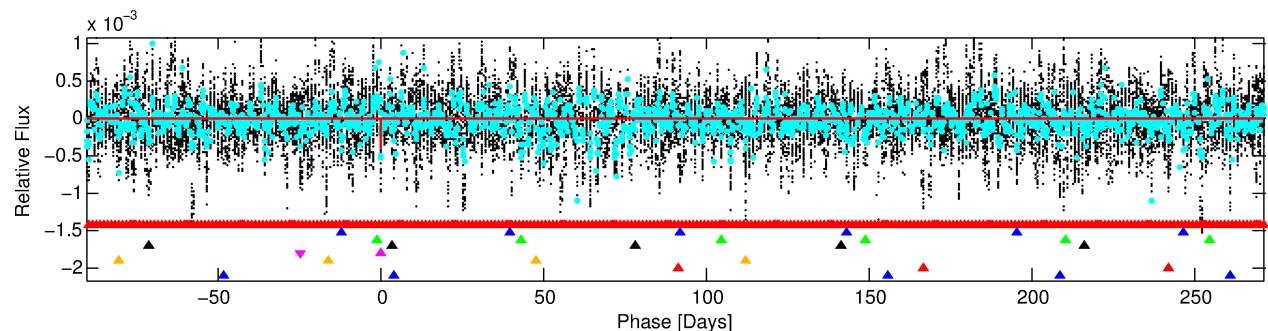
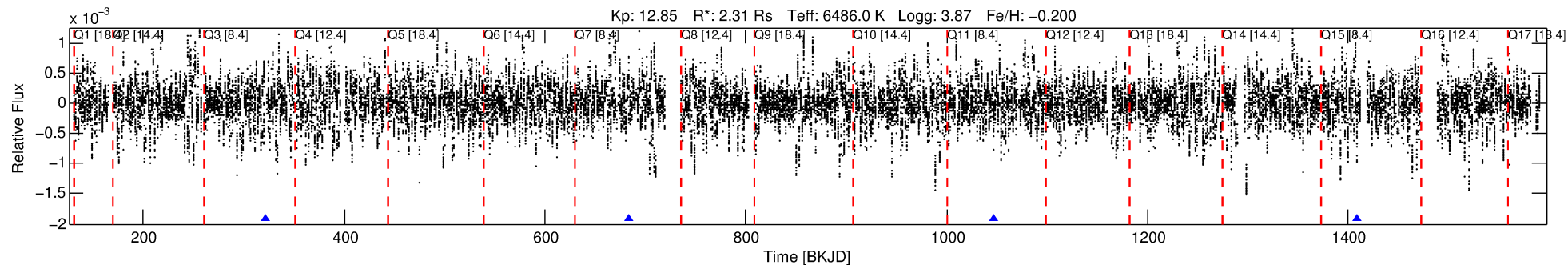
Ephemeris Match Information For 009099950-05

No Significant Match Found

DV One-Page Summary

KIC: 9099950 Candidate: 5 of 8 Period: 362.268 d
KOI: K04125 Corr: No Ephemeris Match

Kp: 12.85 R*: 2.31 Rs Teff: 6486.0 K Logg: 3.87 Fe/H: -0.200



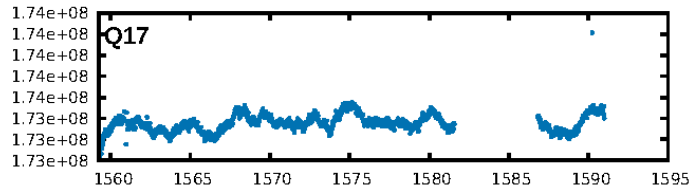
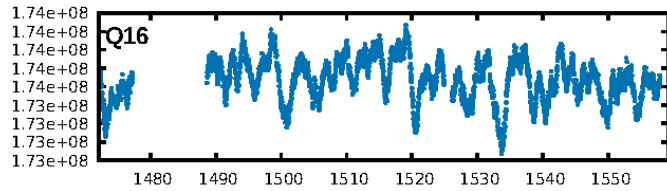
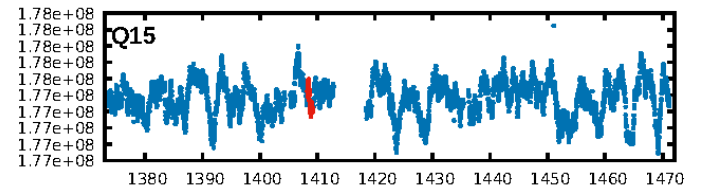
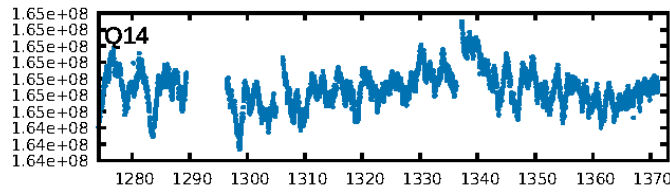
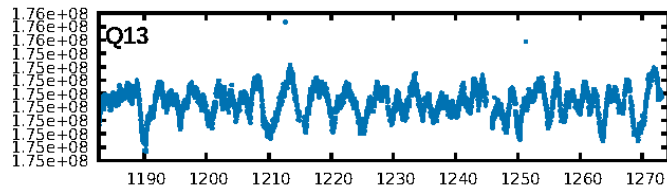
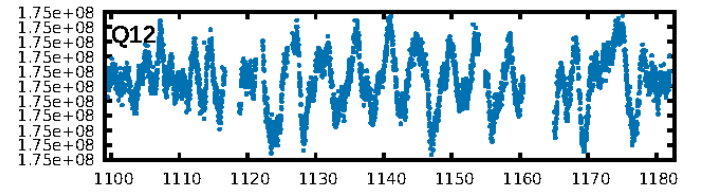
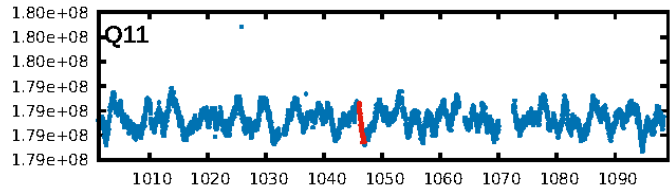
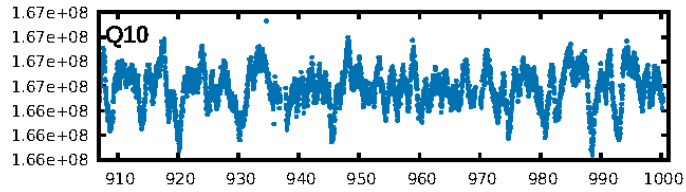
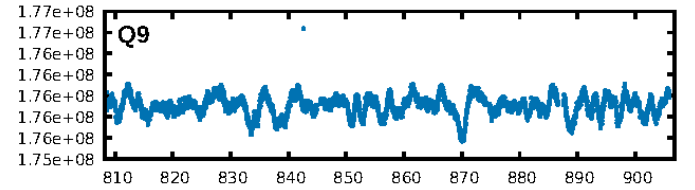
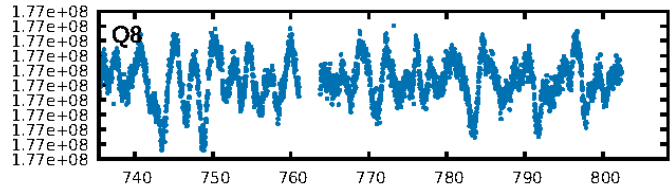
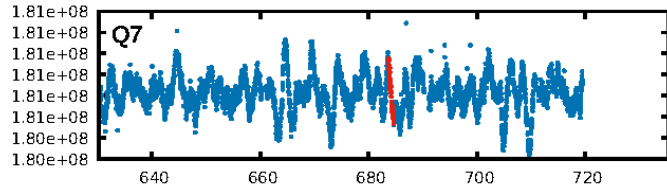
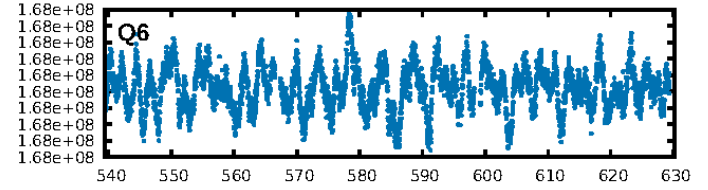
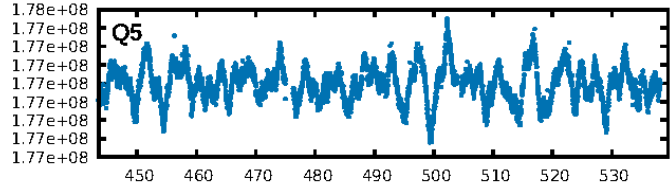
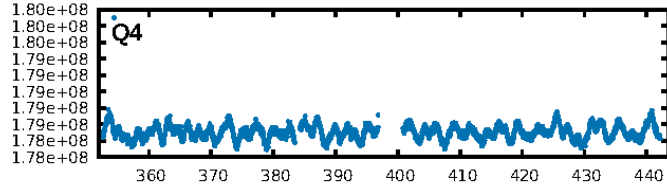
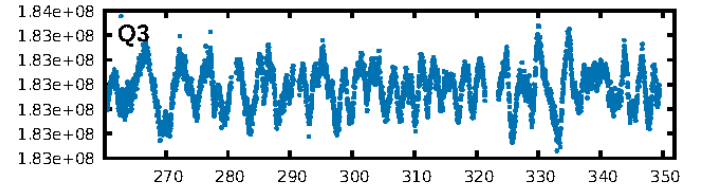
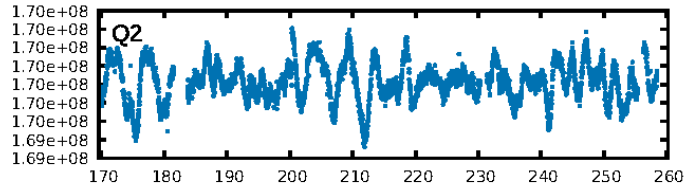
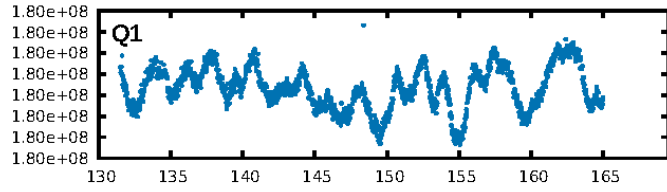
DV Fit Results:

Period = 362.26777 [0.01214] d
Epoch = 321.9195 [0.0326] BKJD
Rp/R* = 0.0210 [0.0032]
a/R* = 117.24 [54.40]
b = 0.90 [0.09]
Seff = 6.67 [3.35]
Teq = 410 [51] K
Rp = 5.30 [2.03] Re
a = 1.1251 [0.3582] AU
Ag = 7800.99 [4774.44] [1.63σ]
Teffp = 5955 [570] K [9.69σ]

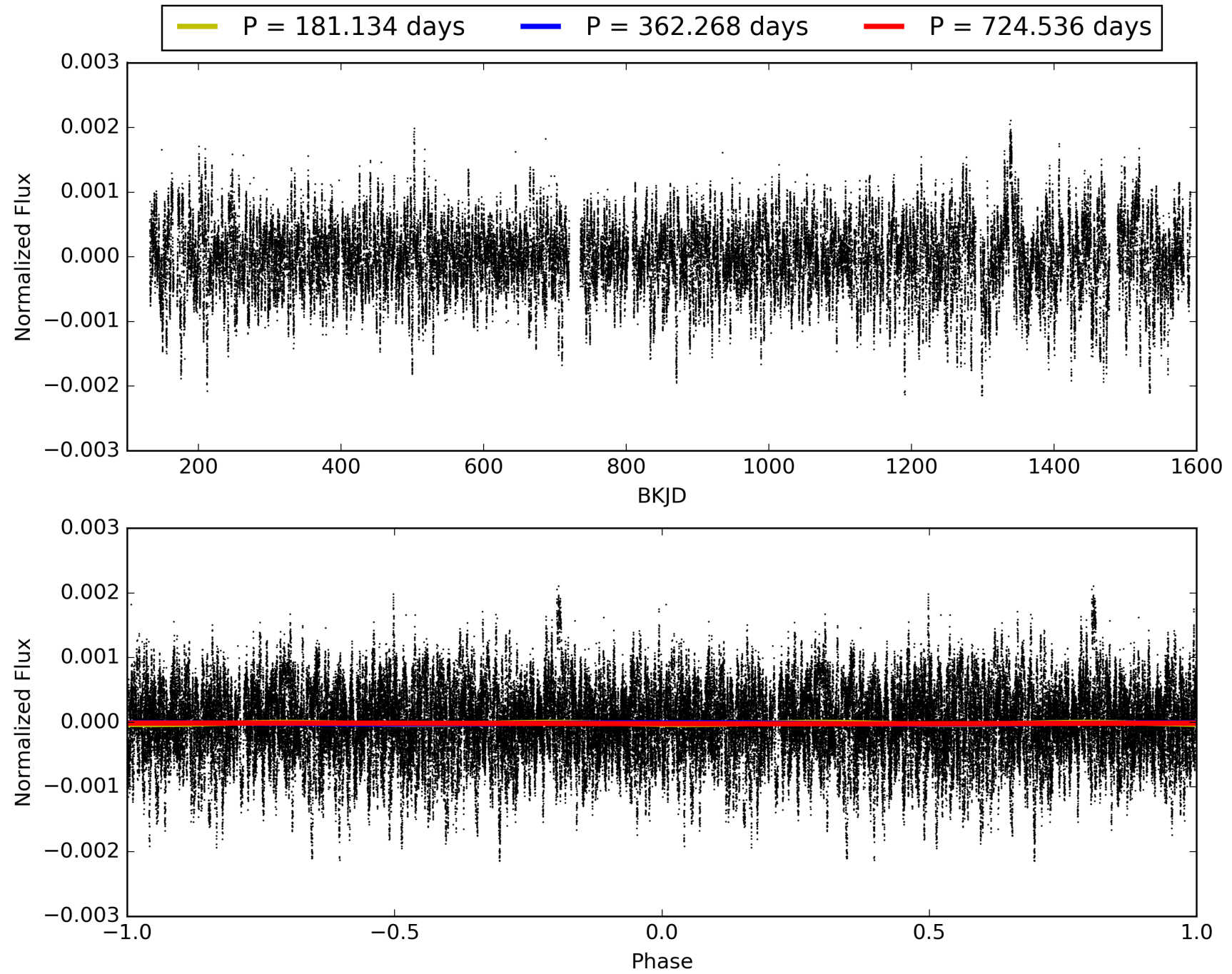
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [78.08σ]
LongPeriod-sig: 100.0% [108.71σ]
ModelChiSquare2-sig: 39.0%
ModelChiSquareGof-sig: 96.2%
Bootstrap-pfa: 4.22e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3739
Centroid-sig: 85.1%
Centroid-so: 1.219 arcsec [1.08σ]
OotOffset-rm: 1.772 arcsec [5.14σ]
KicOffset-rm: 1.812 arcsec [5.06σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-st: 0/2/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/3]

TCE 009099950-05, PDC Light Curves

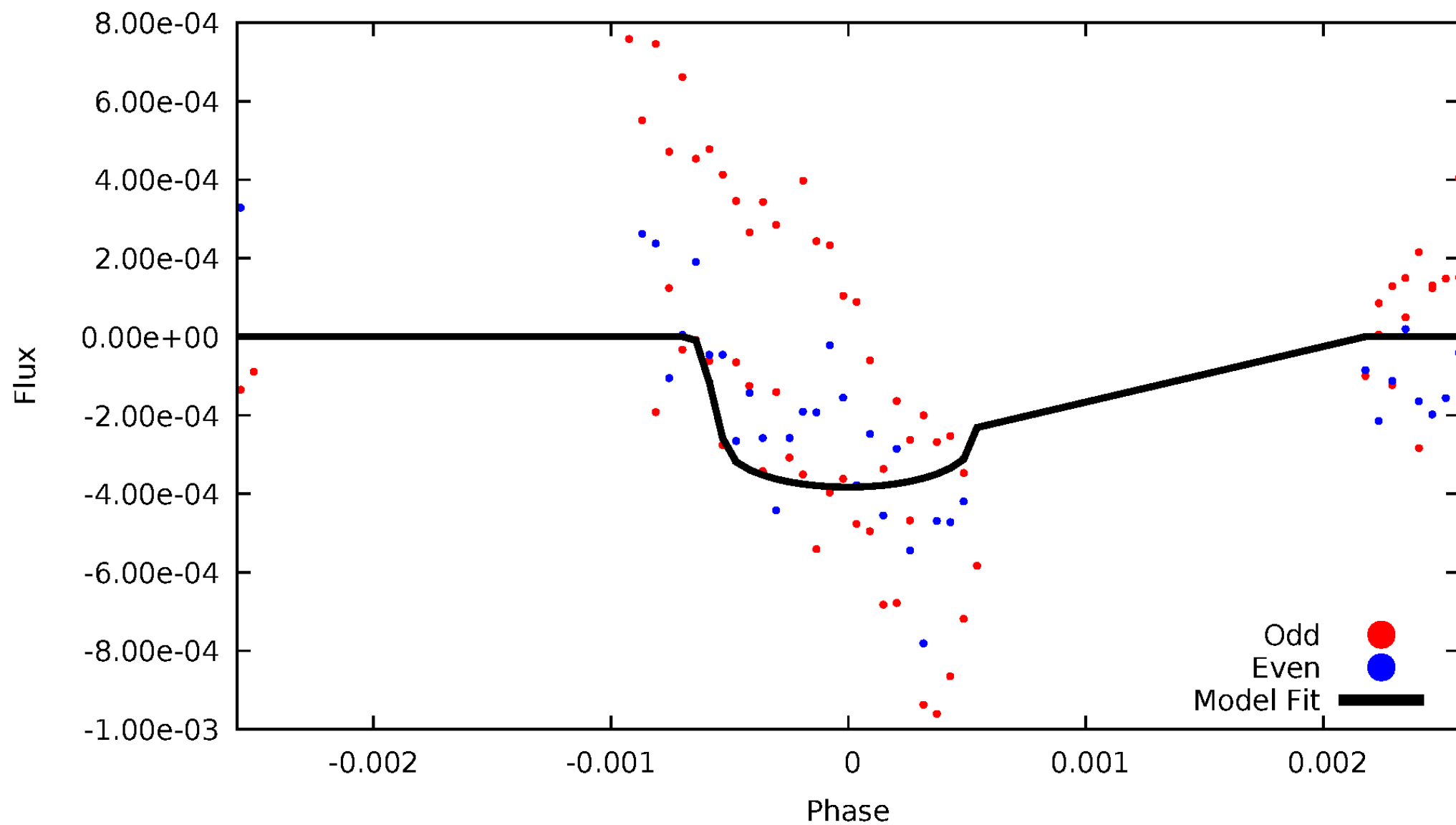


TCE 009099950-05



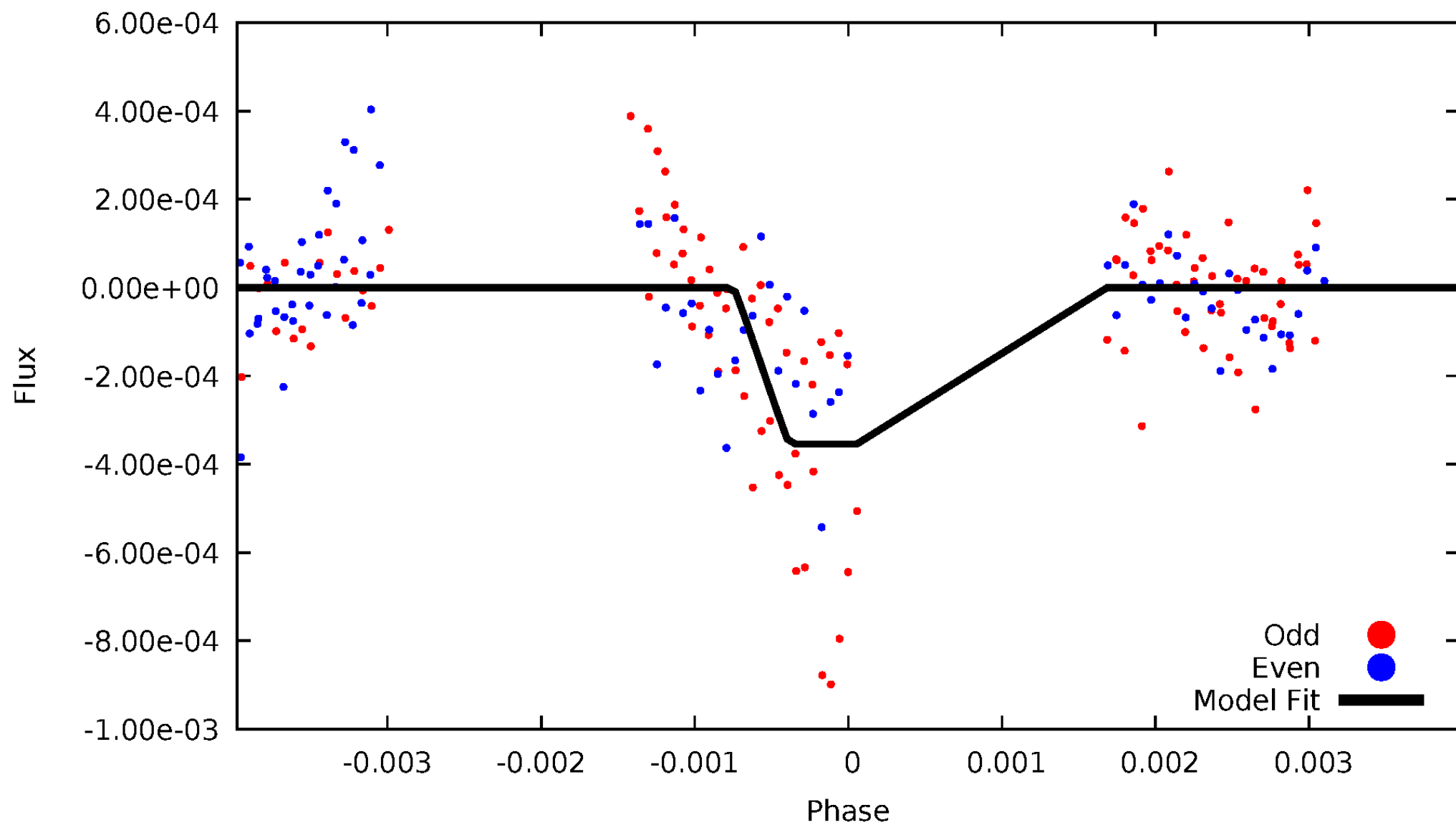
DV Odd/Even

TCE 009099950-05



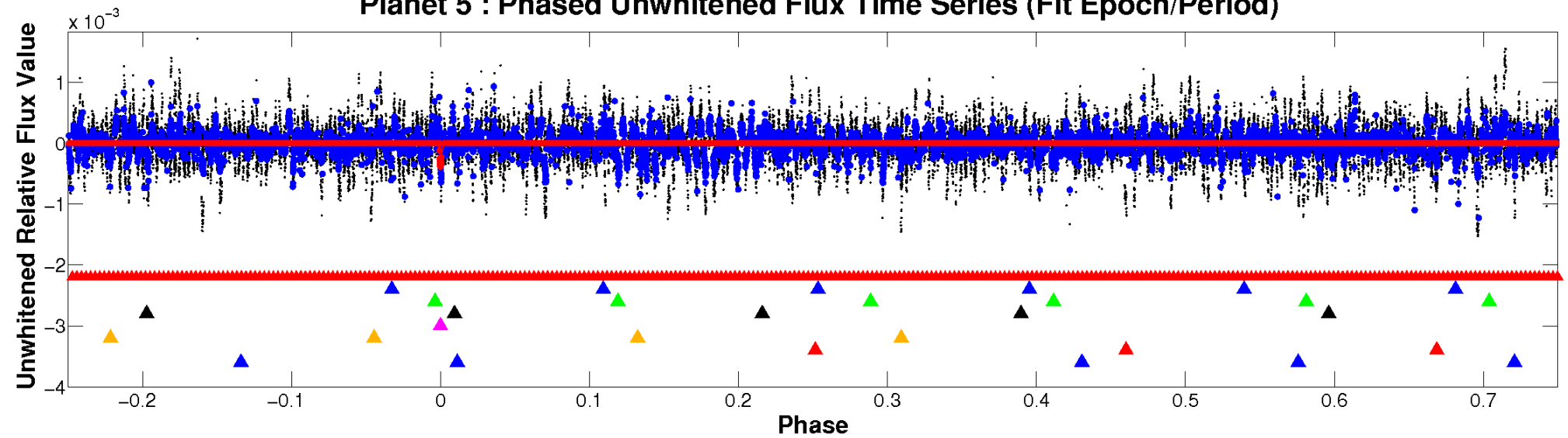
ALT Odd/Even

TCE 009099950-05

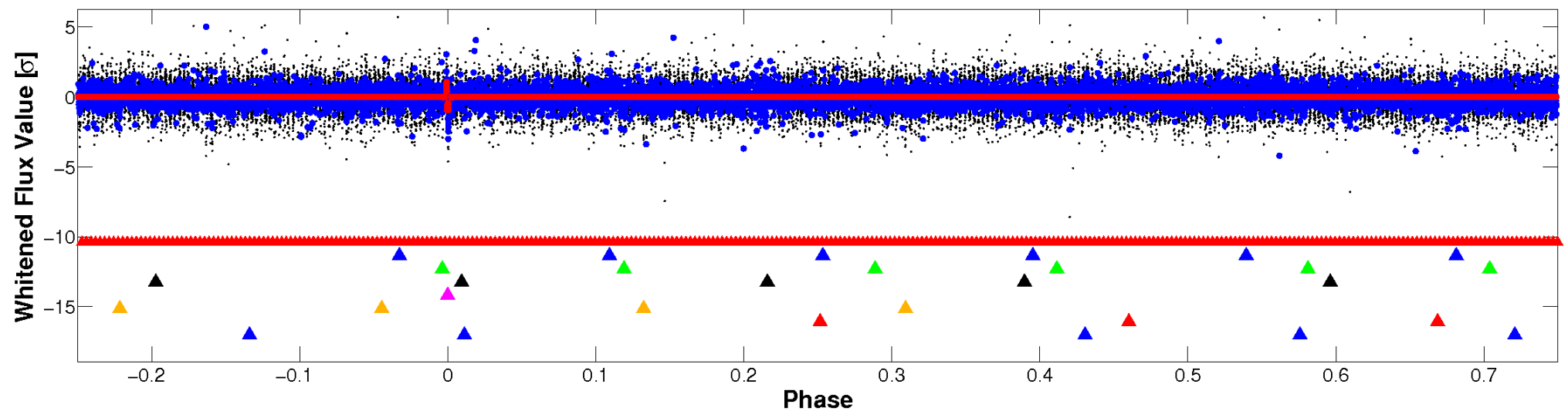


Non-Whitened Vs. Whitened Light Curve

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

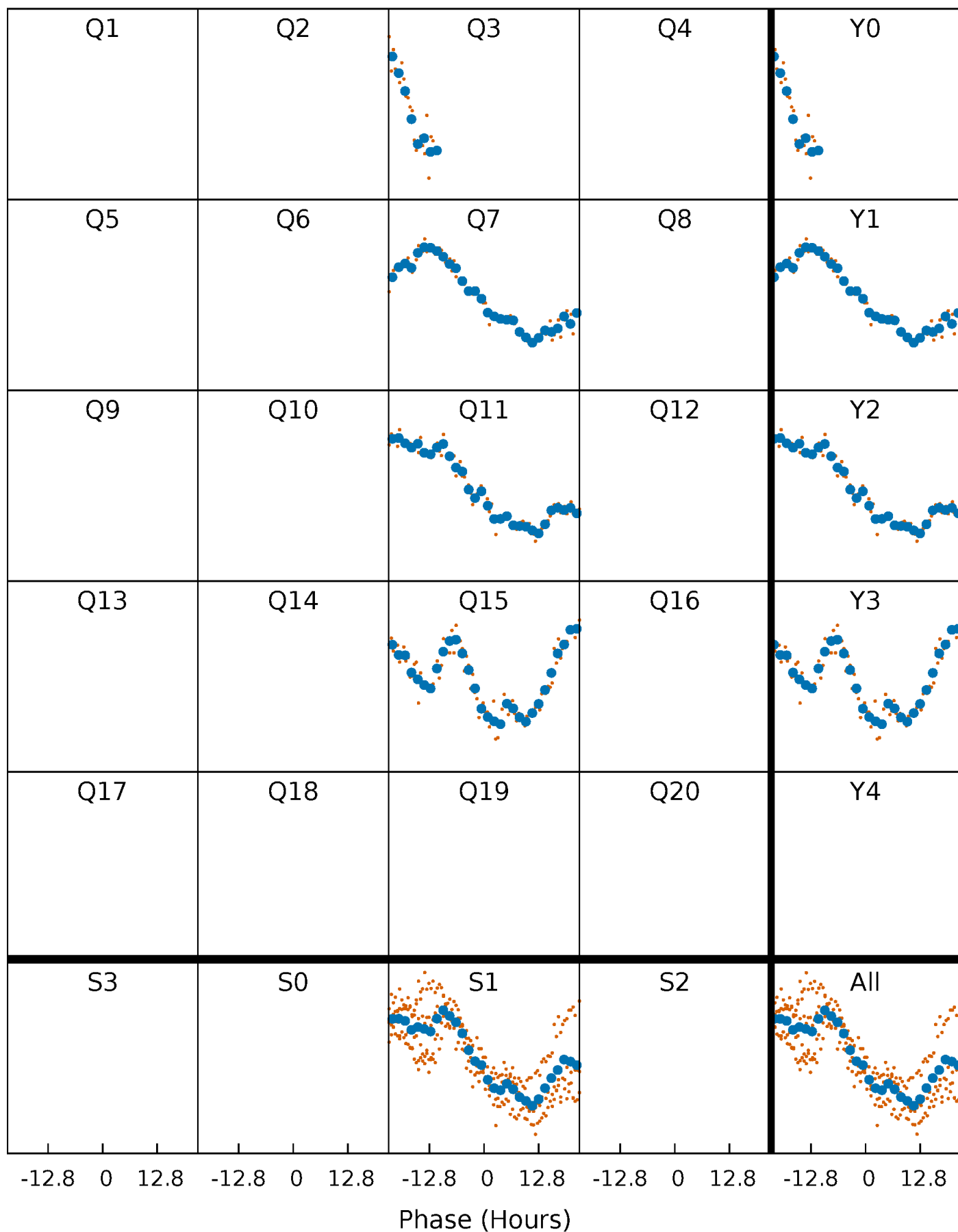


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



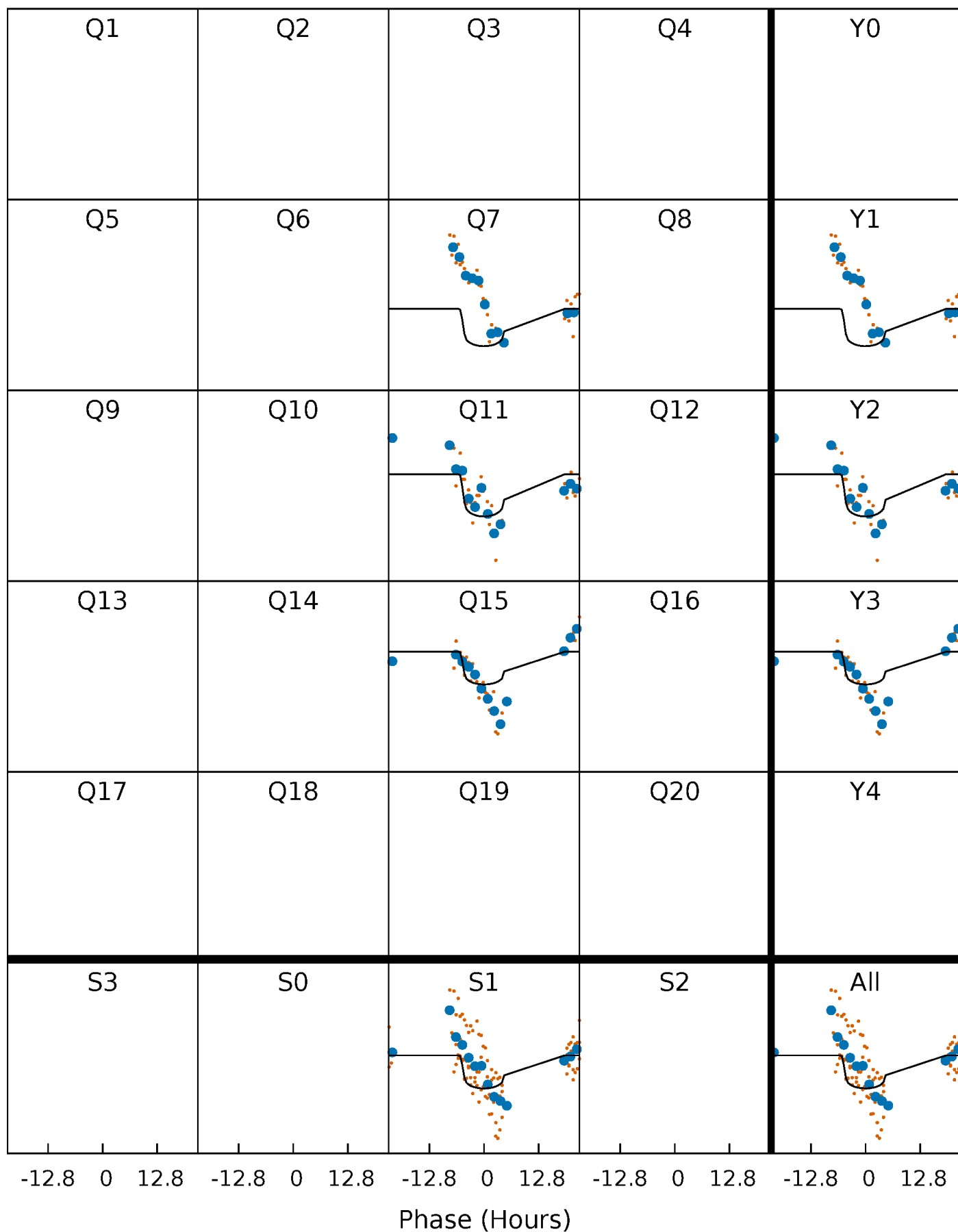
PDC Quarter-Phased Transit Curves

TCE 009099950-05 $P=362.267765$ Days $T_0=321.919458$ (BKJD)



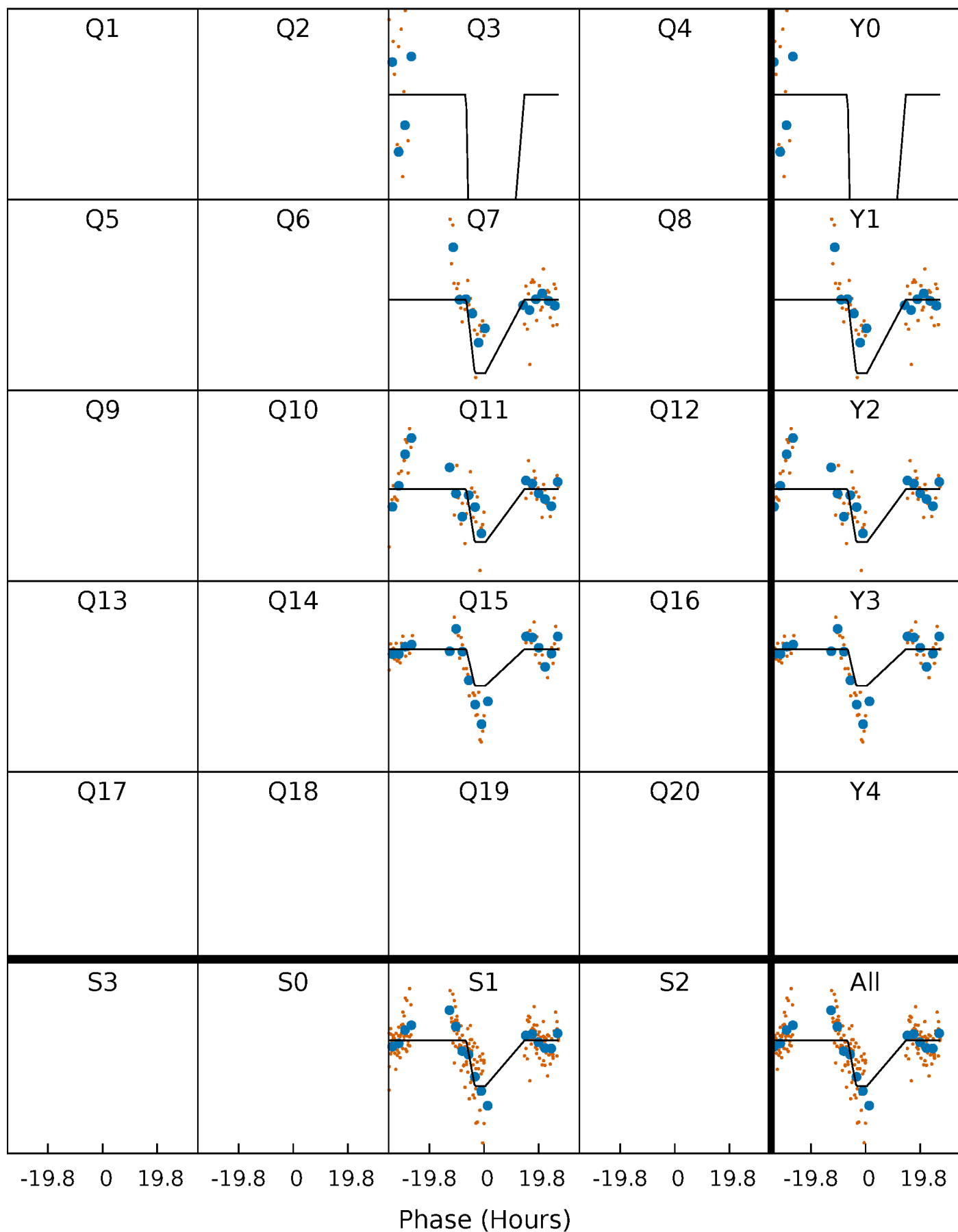
DV Quarter-Phased Transit Curves

TCE 009099950-05 $P=362.267765$ Days $T_0=321.919458$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

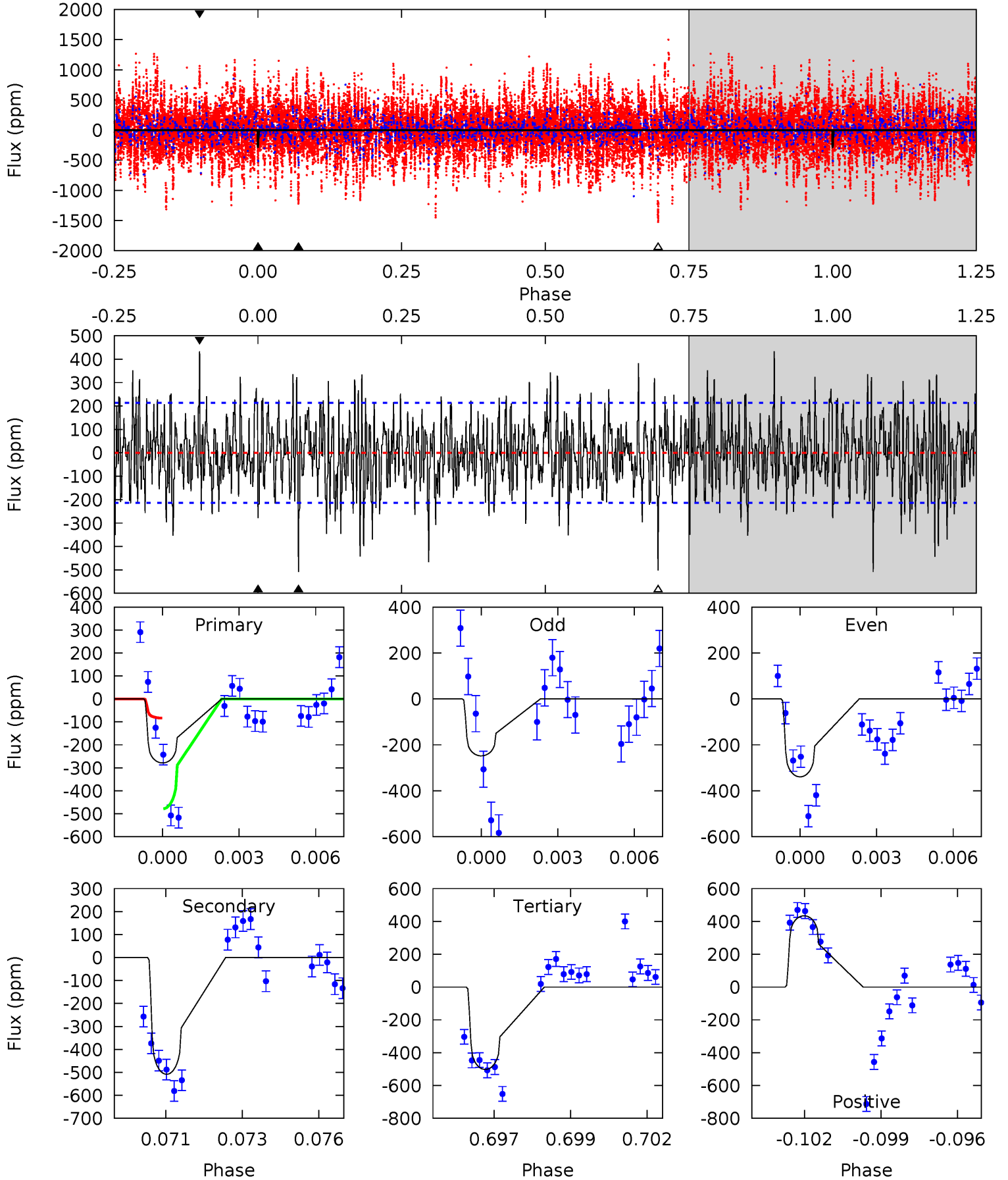
TCE 009099950-05 $P=362.266585$ Days $T_0=322.099232$ (BKJD)



DV Model-Shift Uniqueness Test

009099950-05, P = 362.267765 Days, E = 321.919458 Days

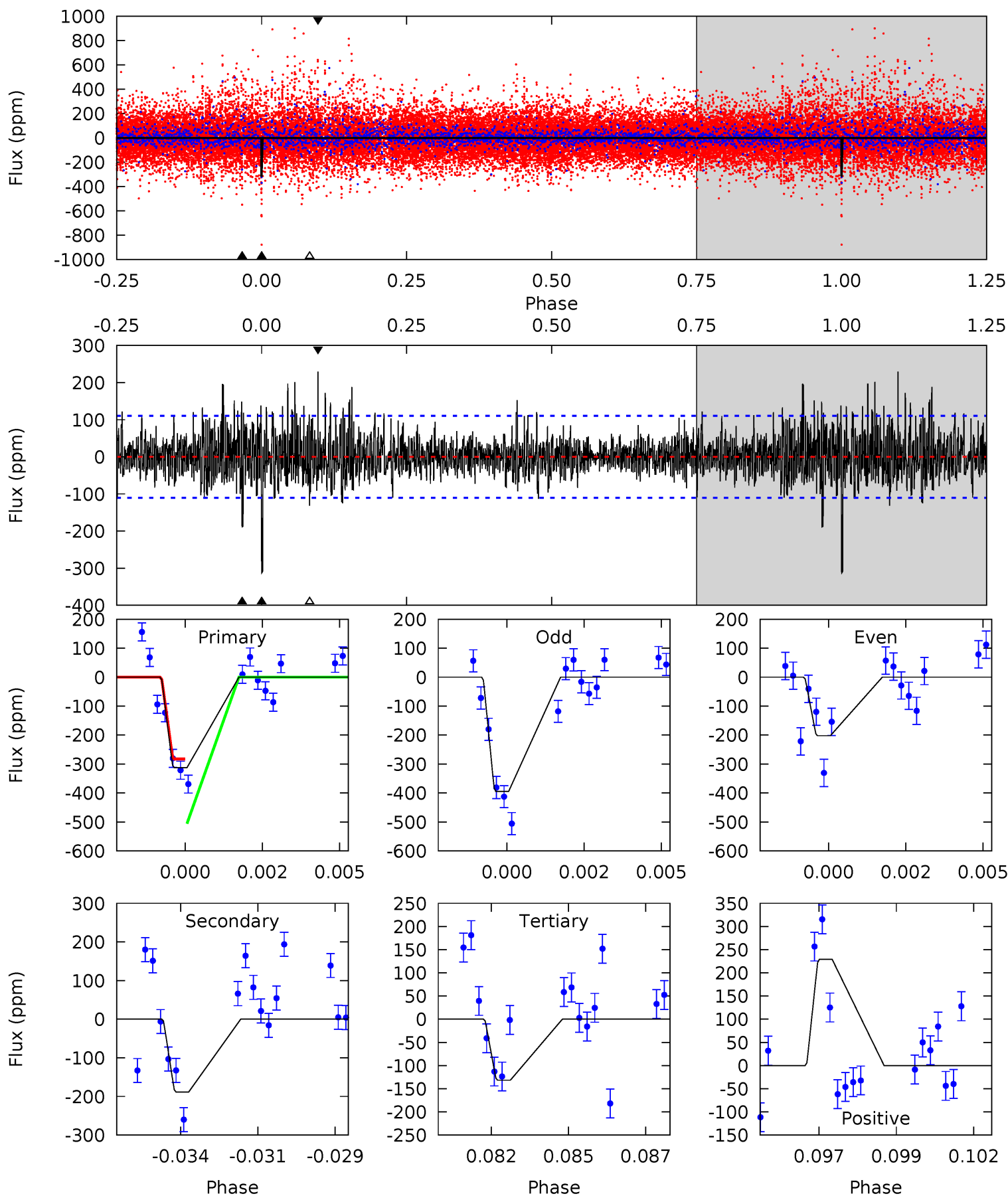
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.86	12.5	12.4	10.7	5.26	2.99	3.11	-5.50	-3.83	0.15	1.82	1.06	0.80	0.46	4.90



Alt Model-Shift Uniqueness Test

009099950-05, P = 362.266585 Days, E = 322.099232 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.0	9.05	6.31	11.0	5.29	3.03	1.90	8.69	4.00	2.73	-1.96	4.39	1.67	0.42	1.65



Stellar Parameters For KIC 009099950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6486^{+156}_{-176}	$3.872^{+0.280}_{-0.100}$	$-0.200^{+0.300}_{-0.250}$	$2.308^{+0.438}_{-0.813}$	$1.446^{+0.183}_{-0.313}$	$0.166^{+0.332}_{-0.050}$
	+2%/-3%	+7%/-3%	+150%/-125%	+19%/-35%	+13%/-22%	+200%/-30%
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 009099950-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-508 ± 41	$5.01^{+1.11}_{-1.08}$	561^{+36}_{-47}	6738^{+731}_{-488}	14428^{+7886}_{-4850}
Alt.	-188 ± 21	$4.36^{+1.08}_{-0.99}$	560^{+35}_{-45}	5591^{+507}_{-432}	6619^{+4506}_{-2220}

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

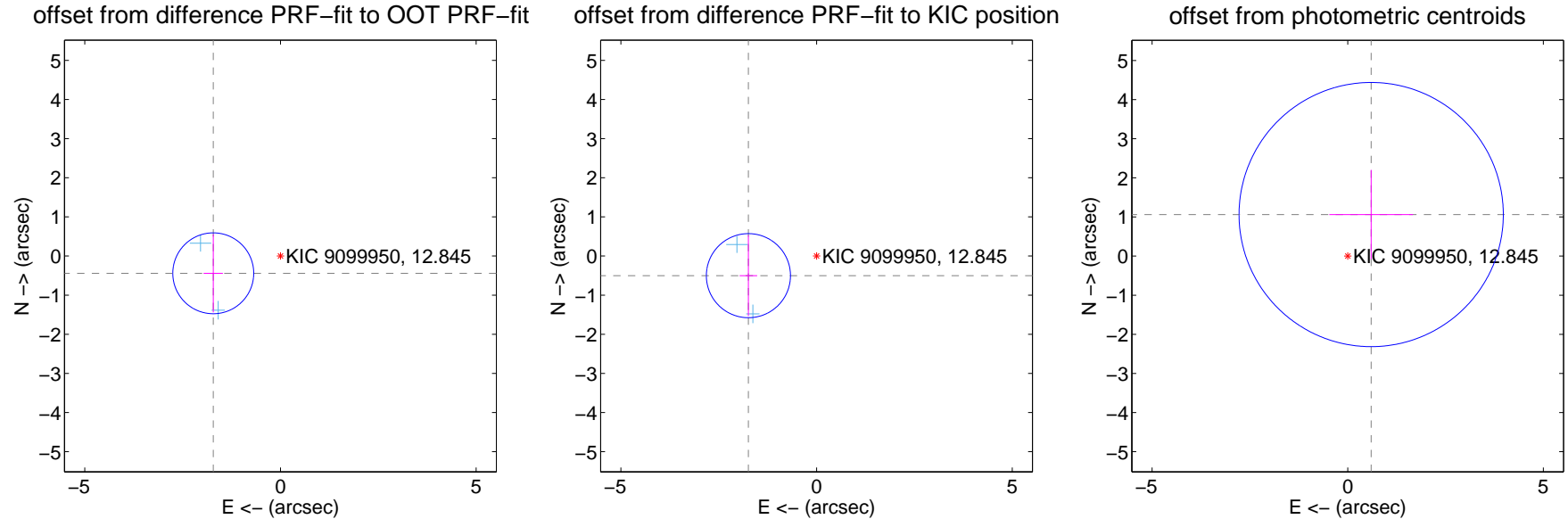
DV Centroid Data

Supplemental centroid analysis for 009099950-05. Kepler magnitude: 12.85. Transit SNR 5.72

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.772 ± 0.344	5.14	1.717 ± 0.246	-0.441 ± 0.998
PRF-fit source offset from KIC position	1.812 ± 0.358	5.06	1.741 ± 0.224	-0.502 ± 1.032
photometric centroid source offset	1.22 ± 1.13	1.08	-0.60 ± 1.07	1.06 ± 1.14



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

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



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

Q5 no difference image



Q5 no OOT image



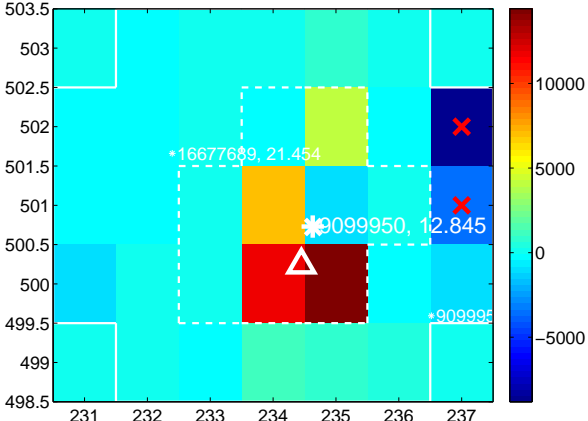
Q6 no difference image



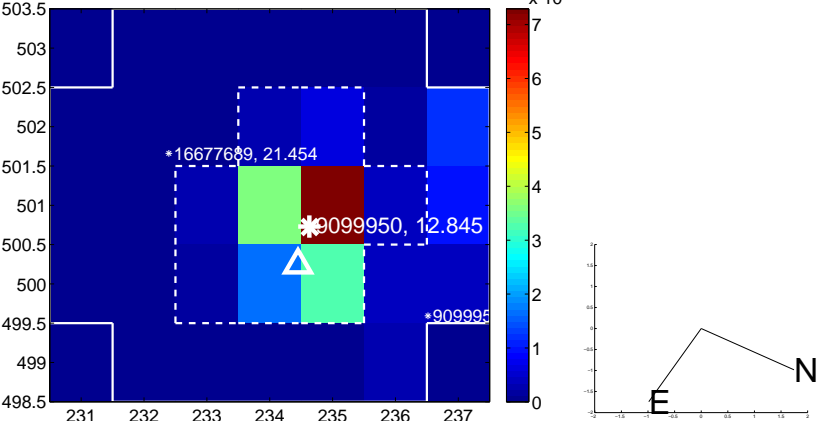
Q6 no OOT image



Q7 difference image



Q7 OOT image



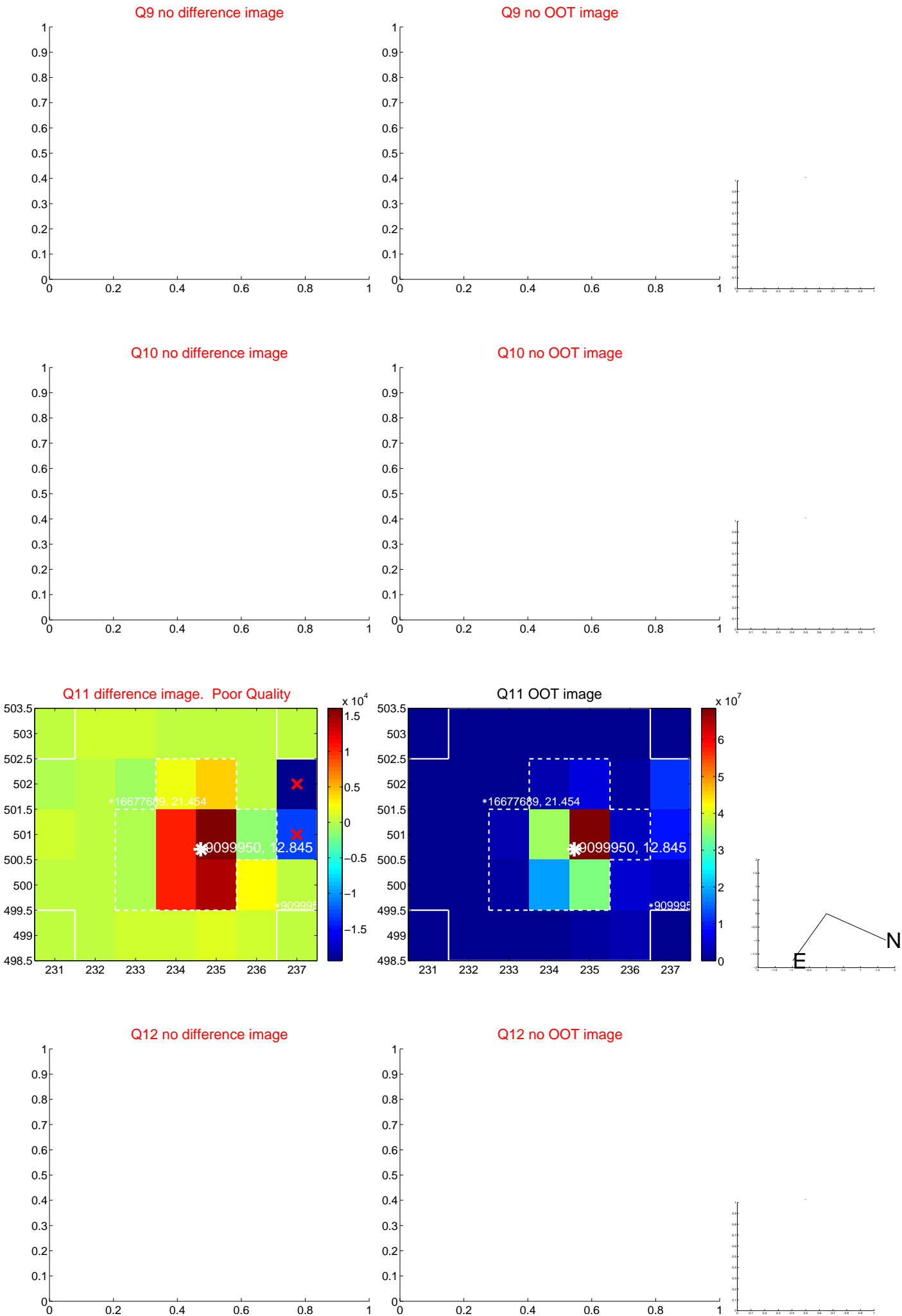
Q8 no difference image



Q8 no OOT image

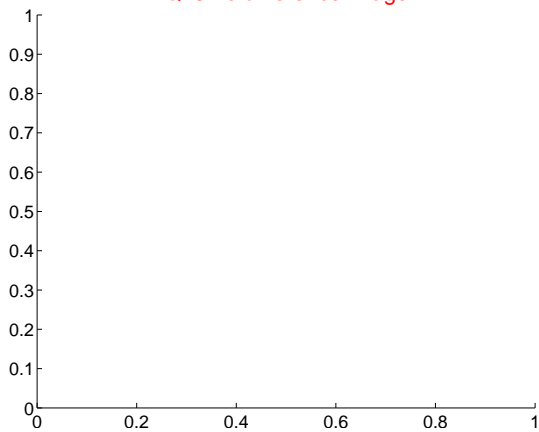


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

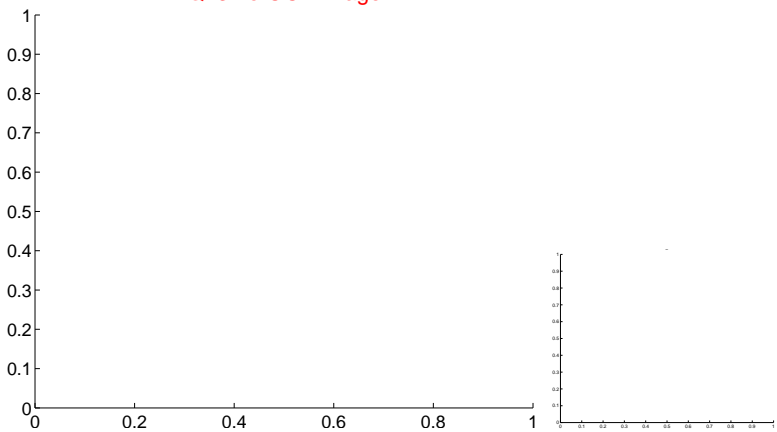


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

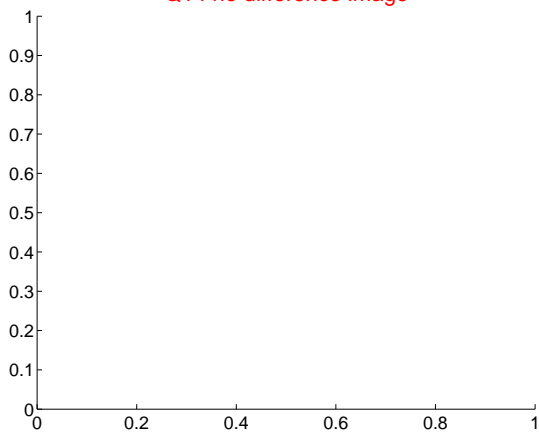
Q13 no difference image



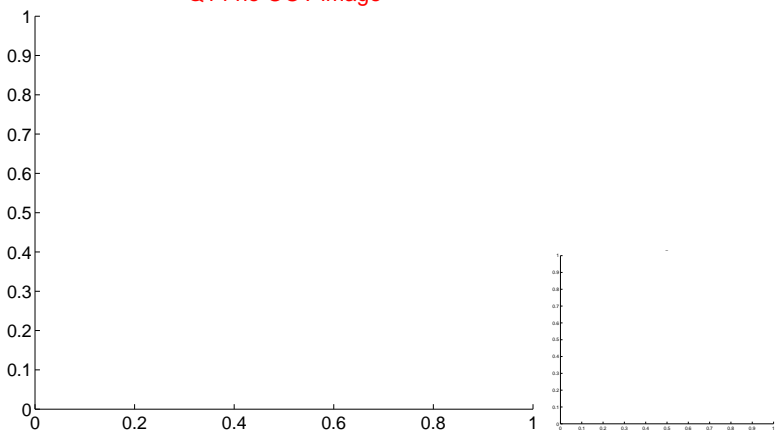
Q13 no OOT image



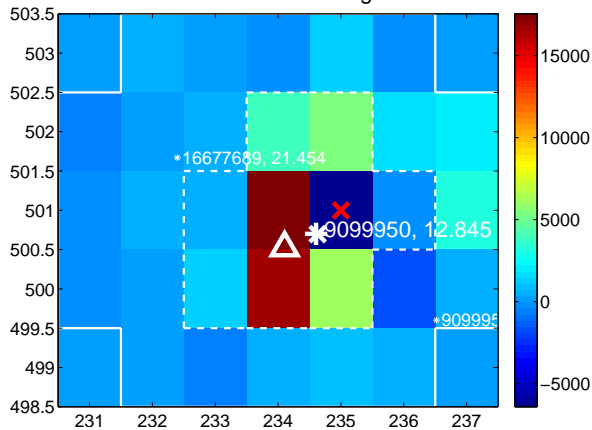
Q14 no difference image



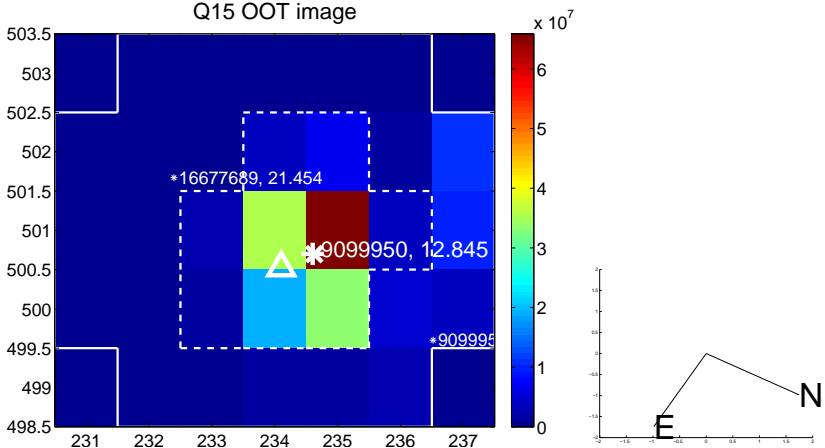
Q14 no OOT image



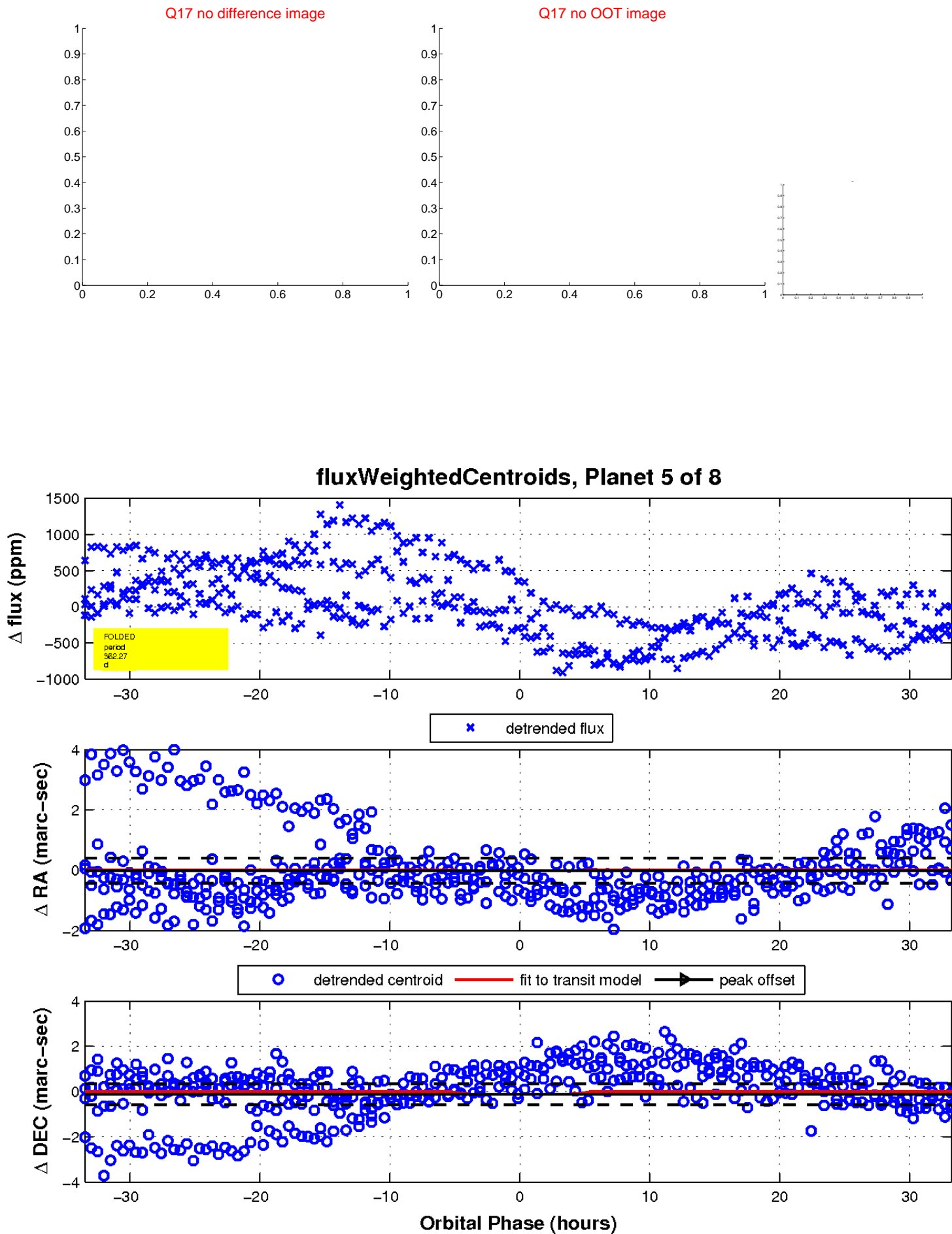
Q15 difference image



Q15 OOT image

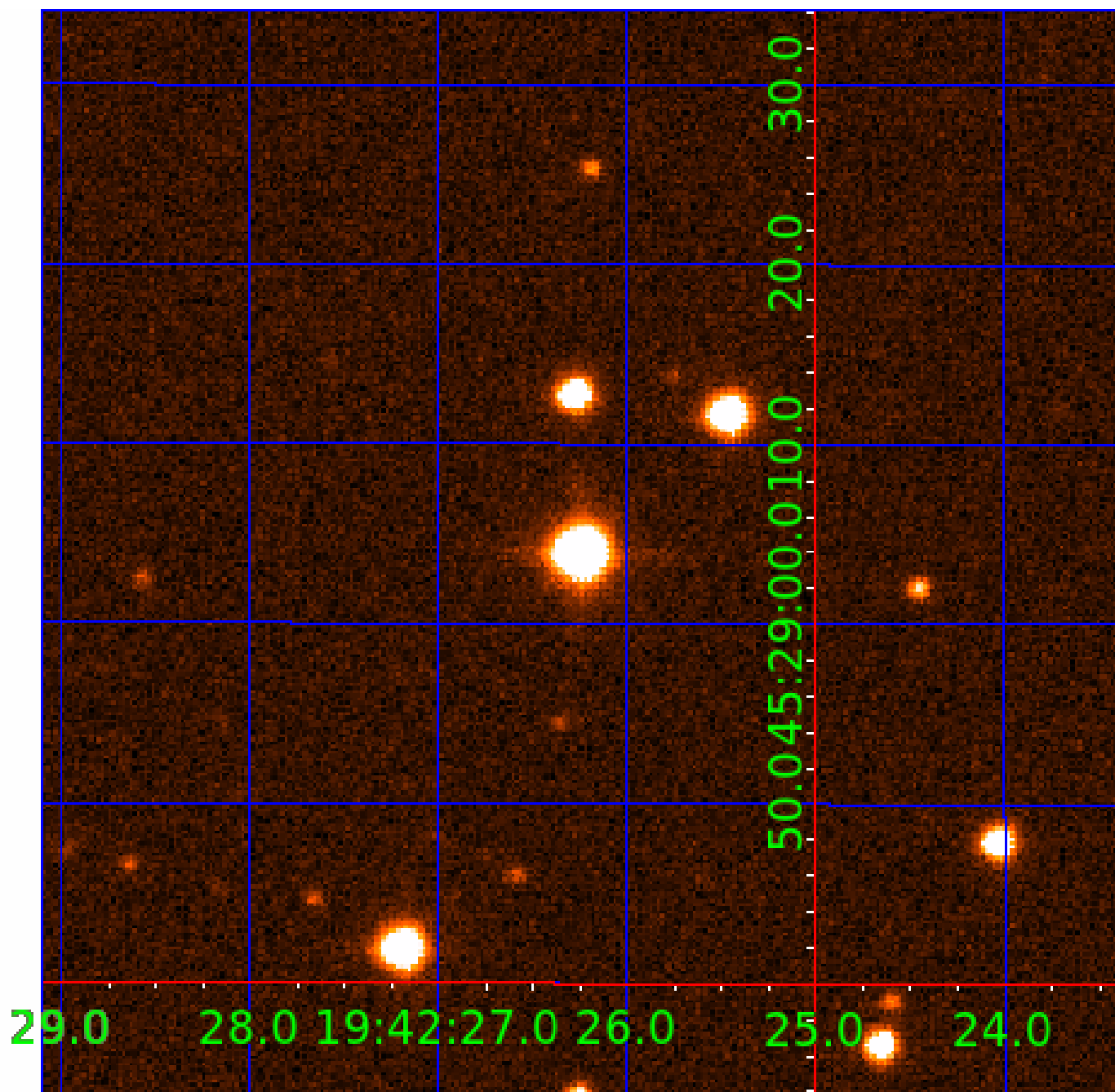


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009099950

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})
009099950-01	OBS	4125.01	1.111287	132.357275	35.0	4.555	17.3	14.6	2.31	6486	1.44	14968.94
009099950-02	OBS	No	258.643639	155.087871	478.5	14.855	10.3	7.0	2.31	6486	5.23	10.46
009099950-03	OBS	No	256.341306	170.177250	519.1	9.229	9.2	8.0	2.31	6486	6.55	10.58
009099950-04	OBS	No	287.434388	400.156029	619.6	10.998	8.7	7.2	2.31	6486	10.99	9.08
009099950-05	OBS	No	362.267766	321.919458	383.0	11.190	8.9	5.7	2.31	6486	5.30	6.67
009099950-06	OBS	No	426.360917	241.688650	722.8	8.660	8.5	9.0	2.31	6486	7.75	5.37
009099950-07	OBS	No	648.969862	201.926308	360.3	9.626	8.3	5.3	2.31	6486	5.04	3.07
009099950-08	OBS	No	309.674046	326.010681	364.6	11.669	8.1	4.5	2.31	6486	4.95	8.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099950-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
009099950-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
009099950-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009099950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009099950-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_MEAS
009099950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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.

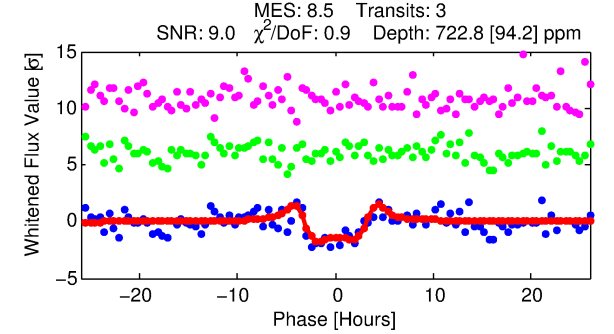
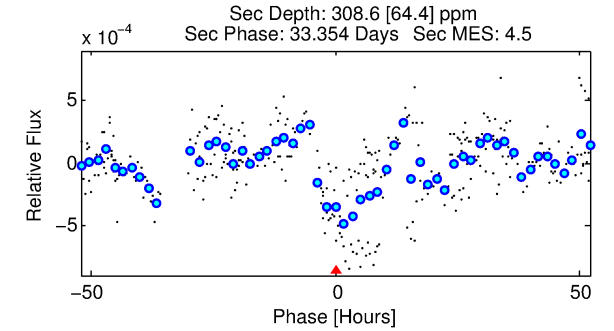
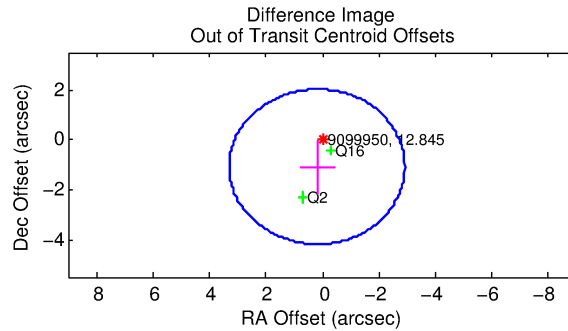
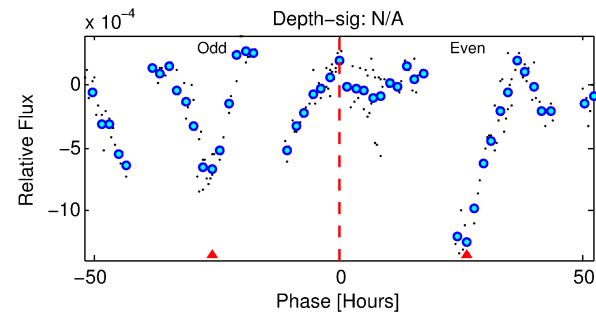
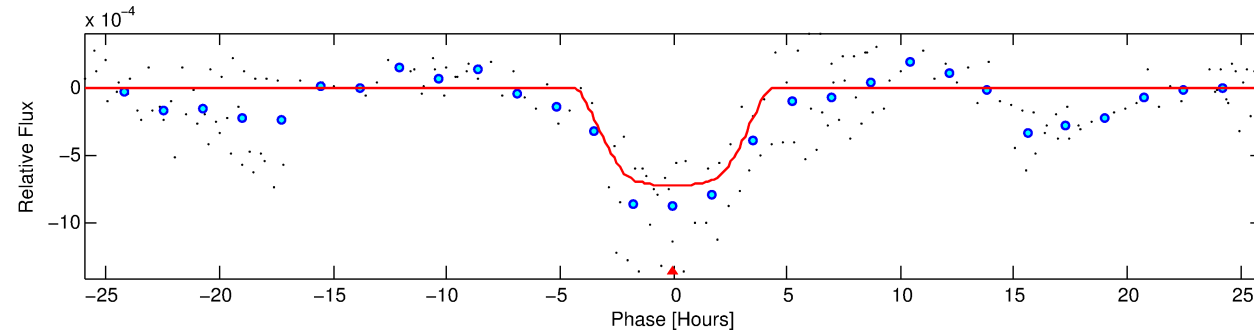
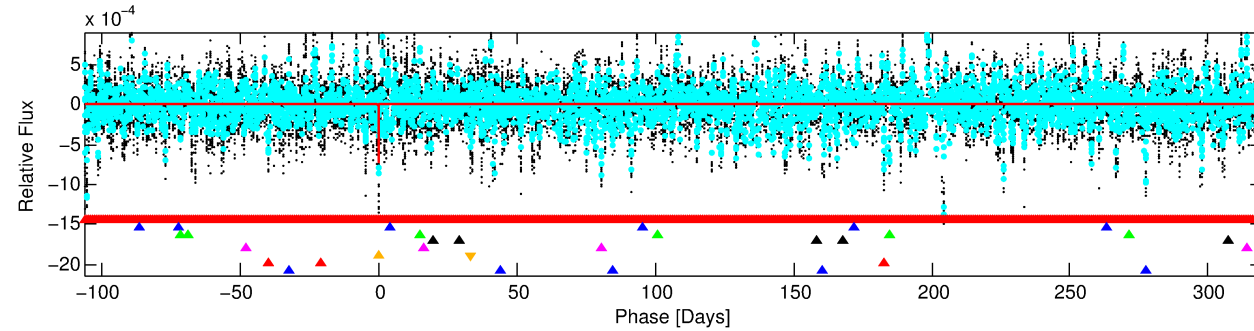
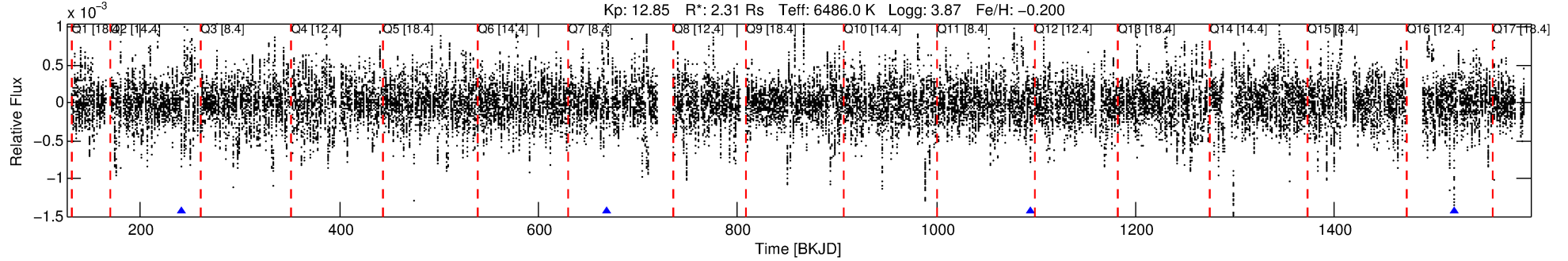
Ephemeris Match Information For 009099950-06

No Significant Match Found

DV One-Page Summary

KIC: 9099950 Candidate: 6 of 8 Period: 426.361 d
KOI: K04125 Corr: No Ephemeris Match

Kp: 12.85 R*: 2.31 Rs Teff: 6486.0 K Logg: 3.87 Fe/H: -0.200



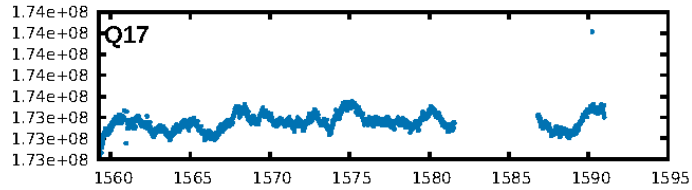
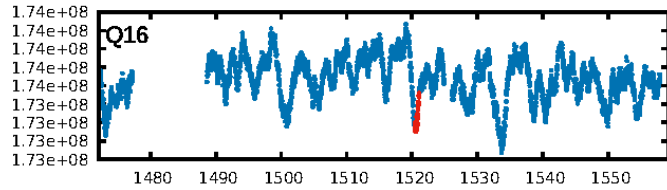
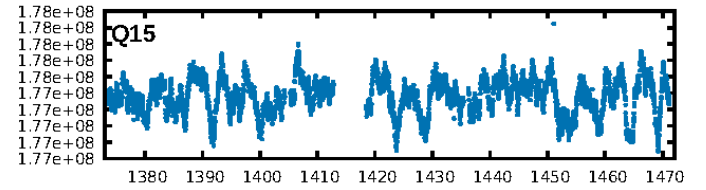
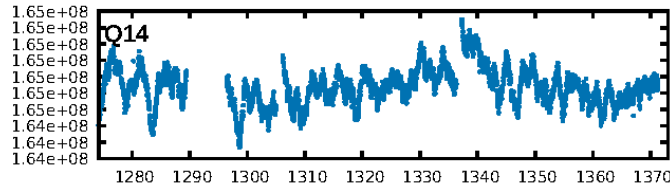
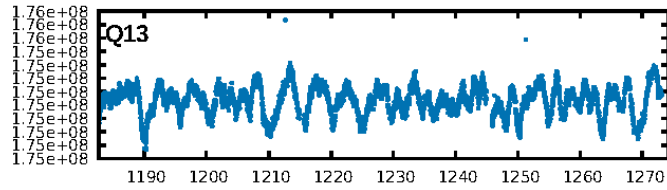
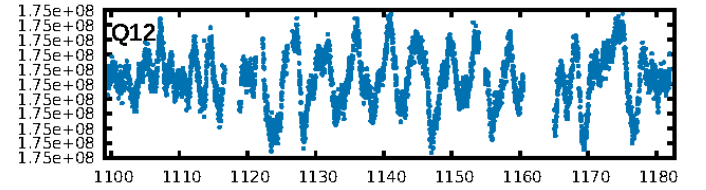
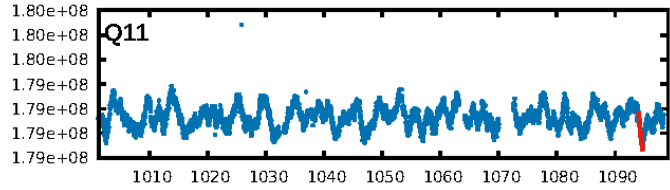
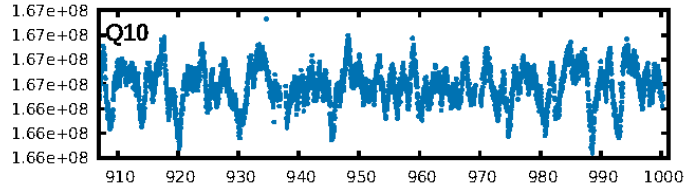
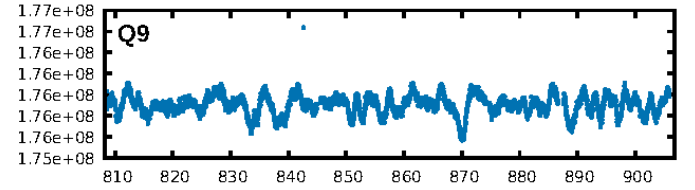
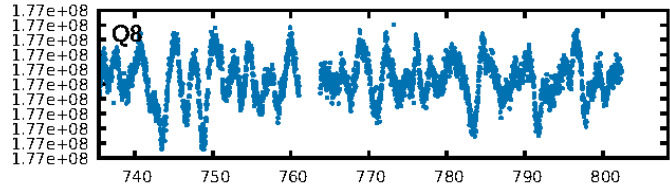
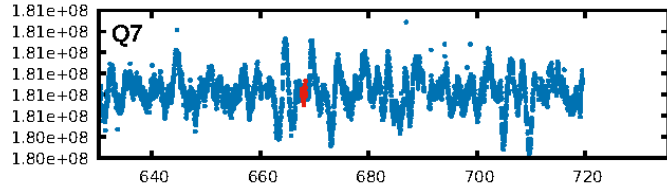
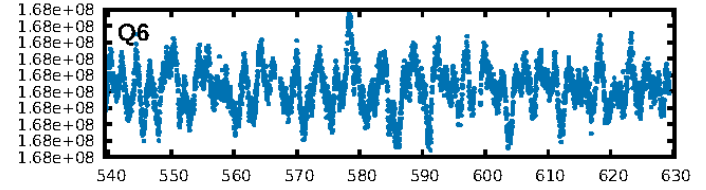
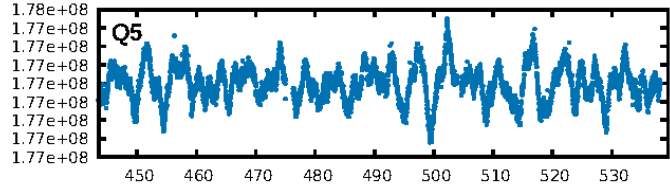
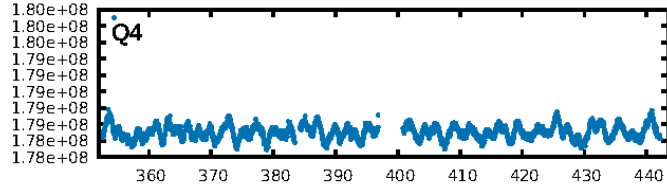
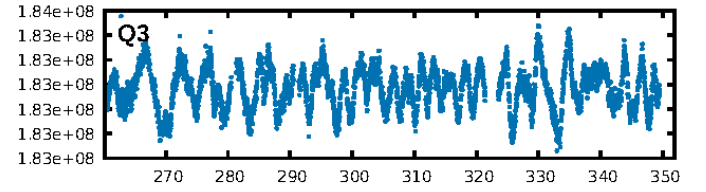
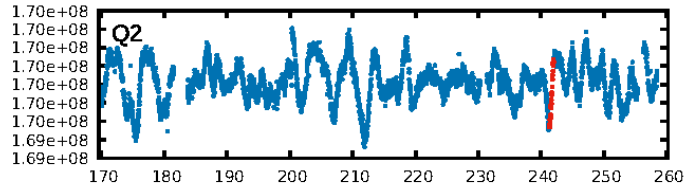
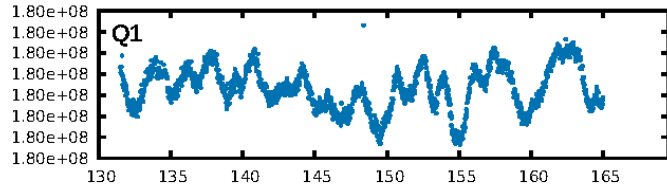
DV Fit Results:

Period = 426.36092 [0.00551] d
Epoch = 241.6887 [0.0113] BKJD
Rp/R* = 0.0308 [0.0023]
a/R* = 146.15 [19.75]
b = 0.95 [0.01]
Seff = 5.37 [2.69]
Teq = 388 [49] K
Rp = 7.75 [2.79] Re
a = 1.2542 [0.3993] AU
Ag = 4451.04 [2460.91] [1.81σ]
Teffp = 4902 [341] K [13.09σ]

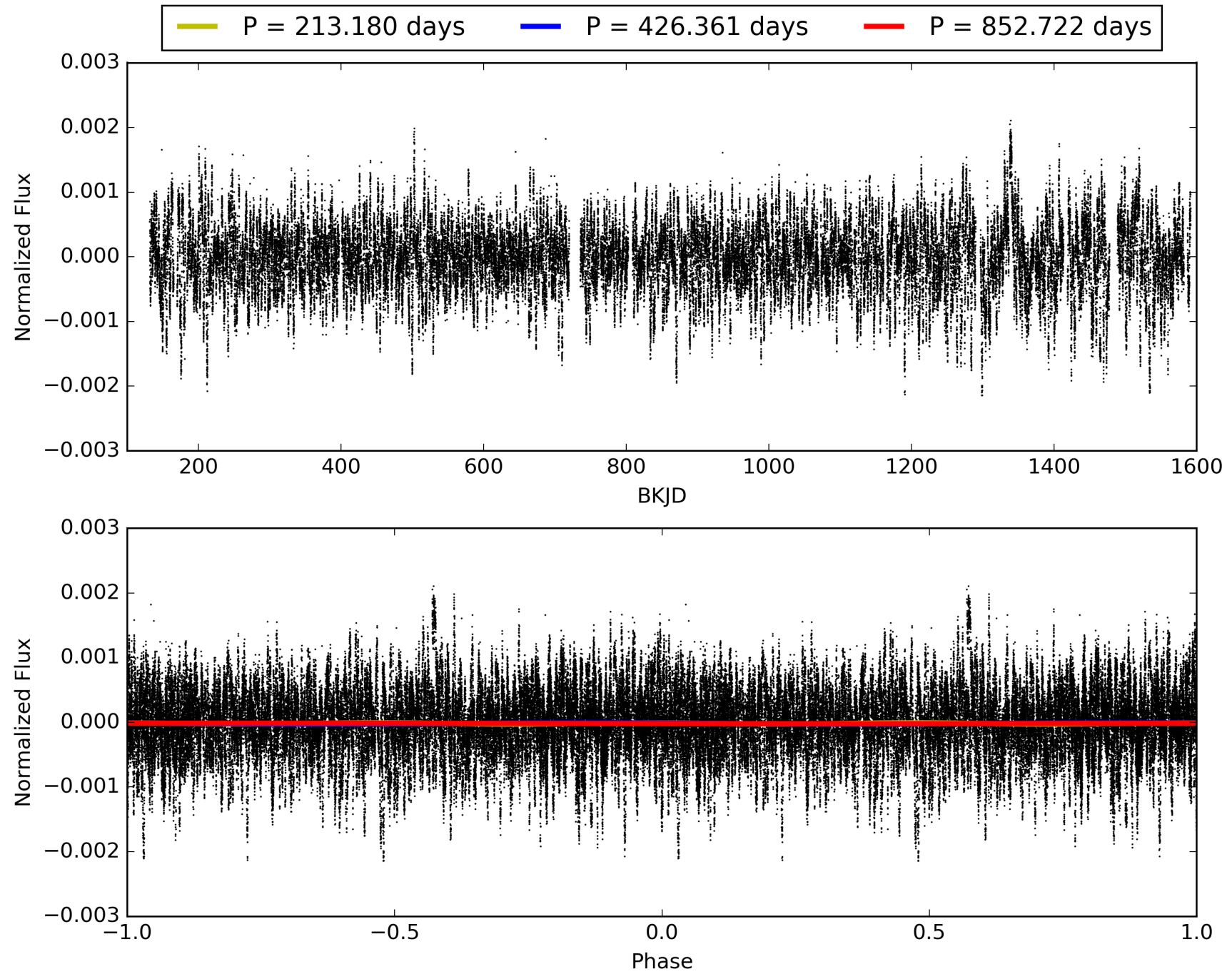
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [108.71σ]
LongPeriod-sig: 100.0% [412.62σ]
ModelChiSquare2-sig: 59.7%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 1.80e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.788
Centroid-sig: 0.2%
Centroid-so: 0.918 arcsec [2.11σ]
OotOffset-rm: 1.098 arcsec [1.06σ]
KicOffset-rm: 1.145 arcsec [1.10σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/3]

TCE 009099950-06, PDC Light Curves

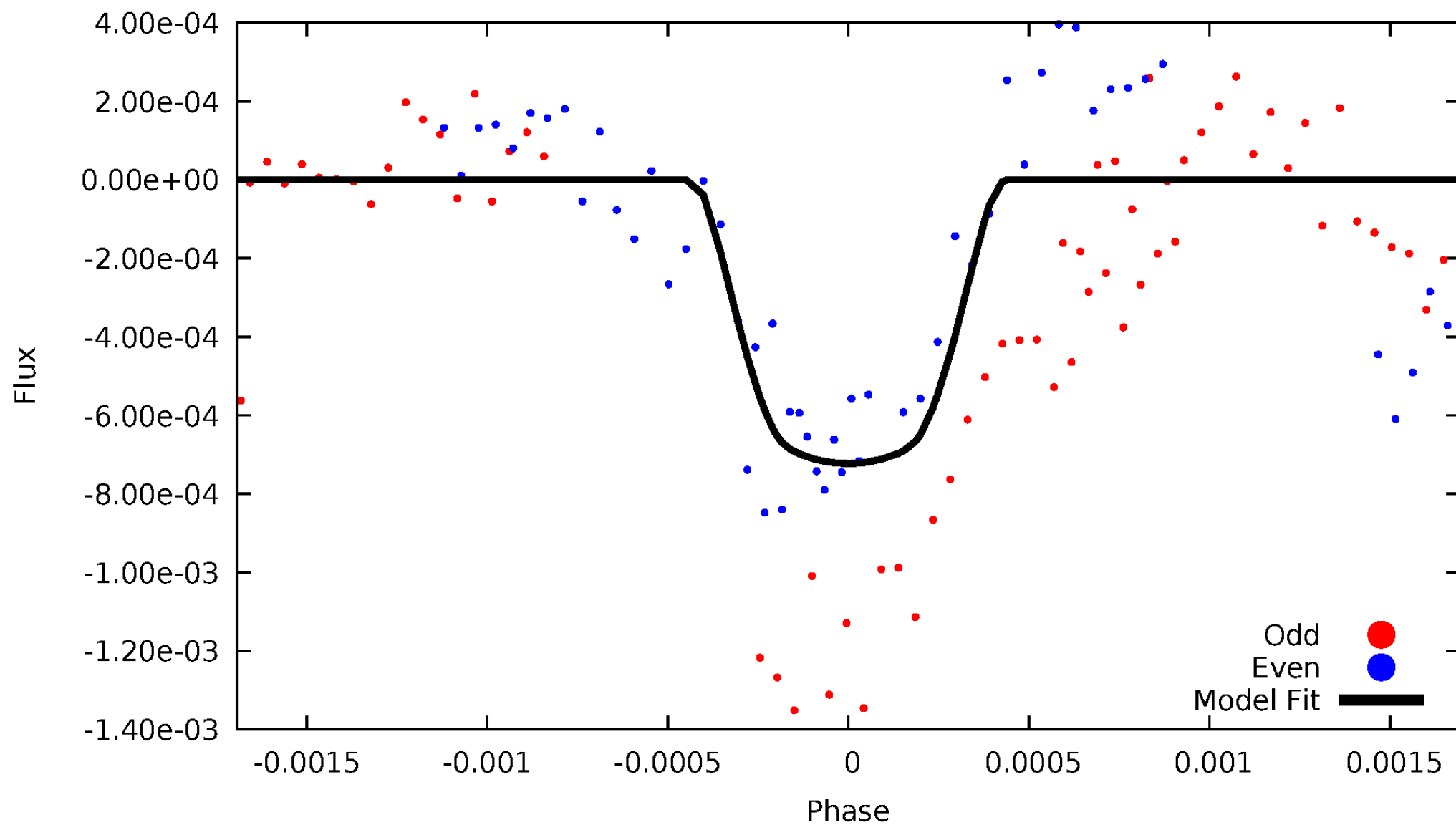


TCE 009099950-06



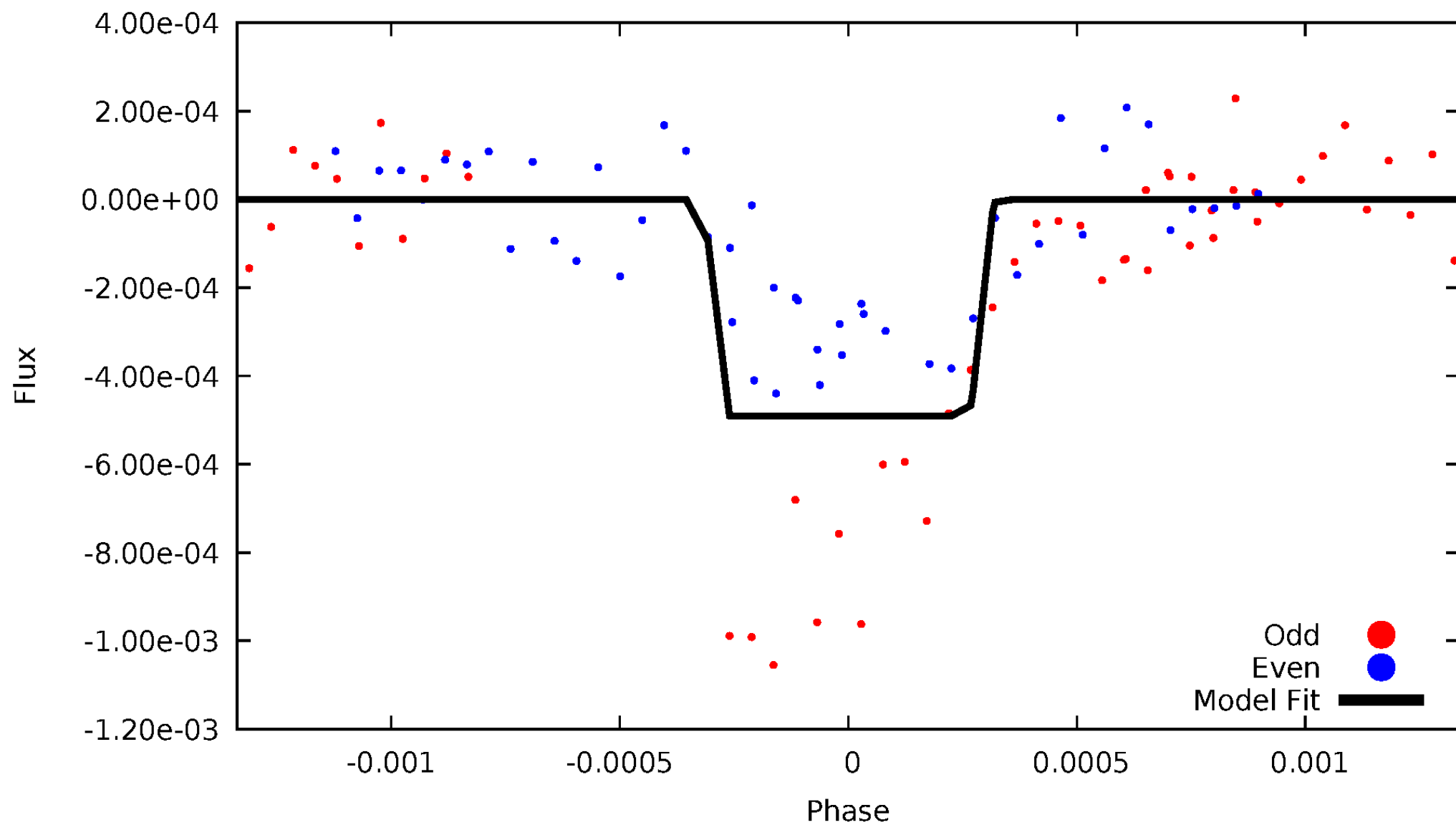
DV Odd/Even

TCE 009099950-06



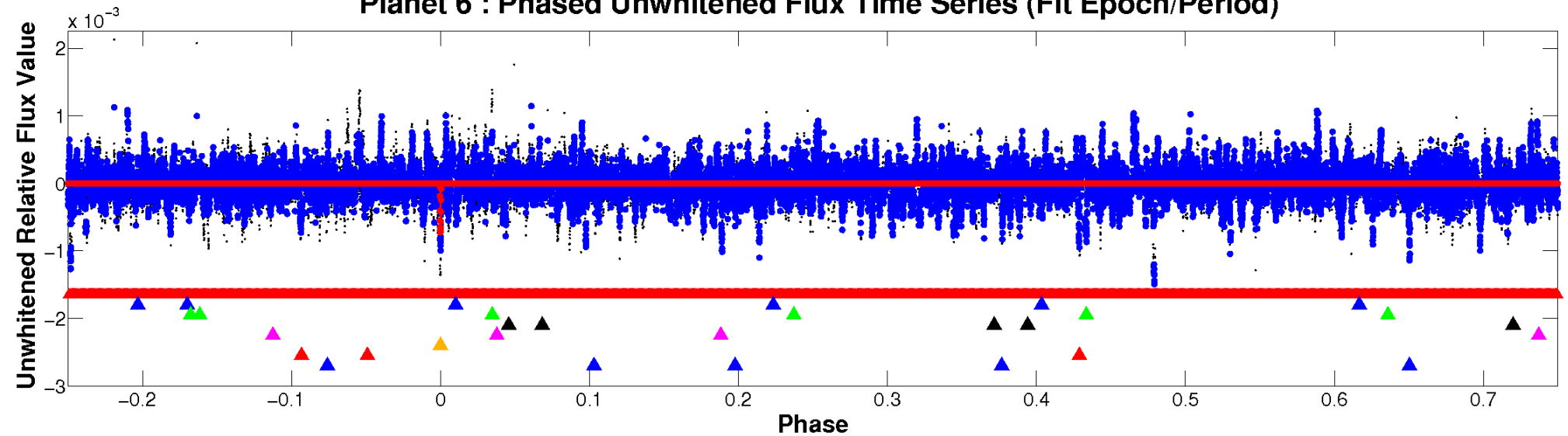
ALT Odd/Even

TCE 009099950-06

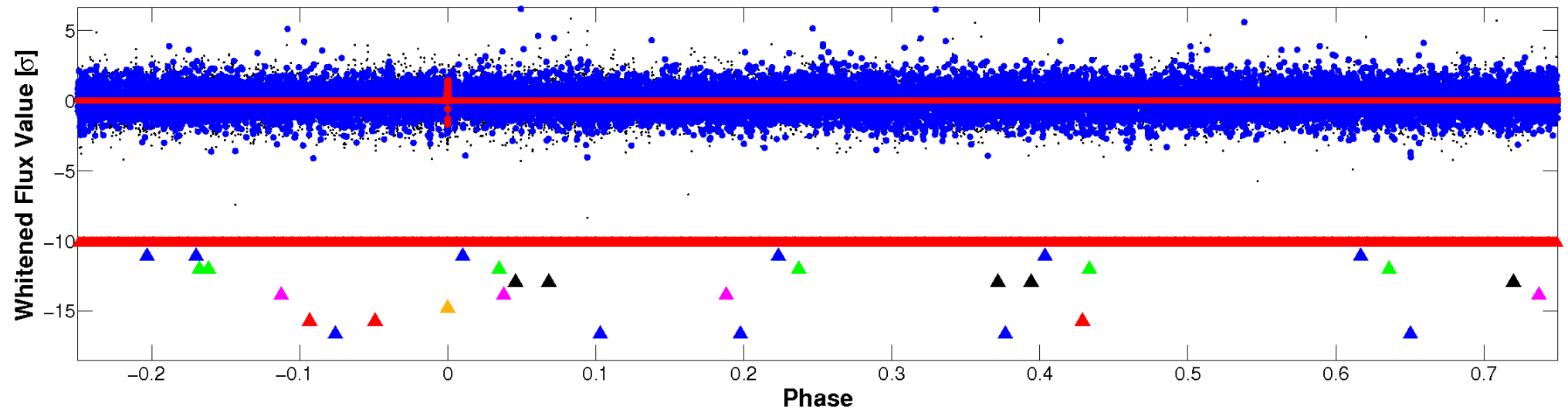


Non-Whitened Vs. Whitened Light Curve

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

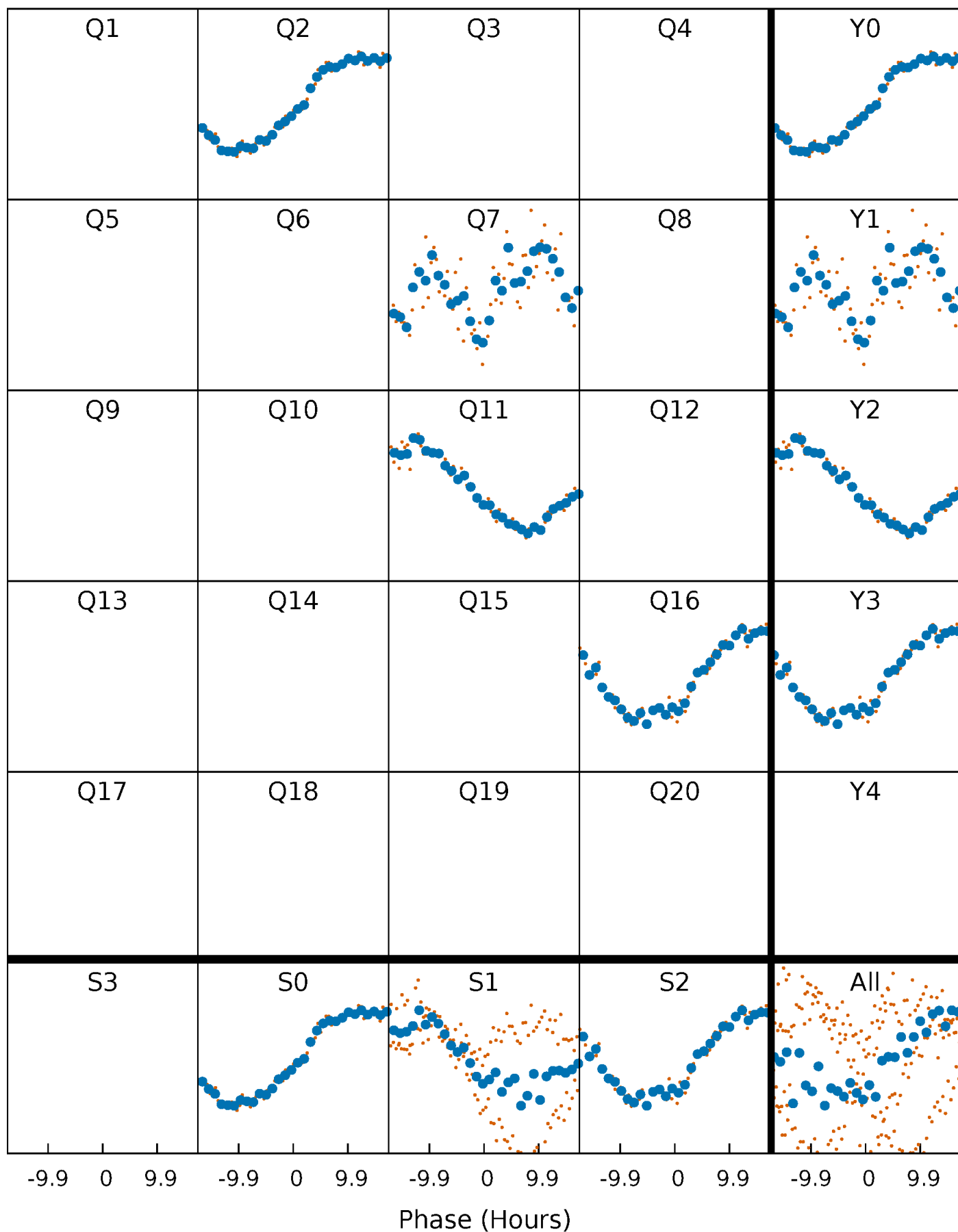


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



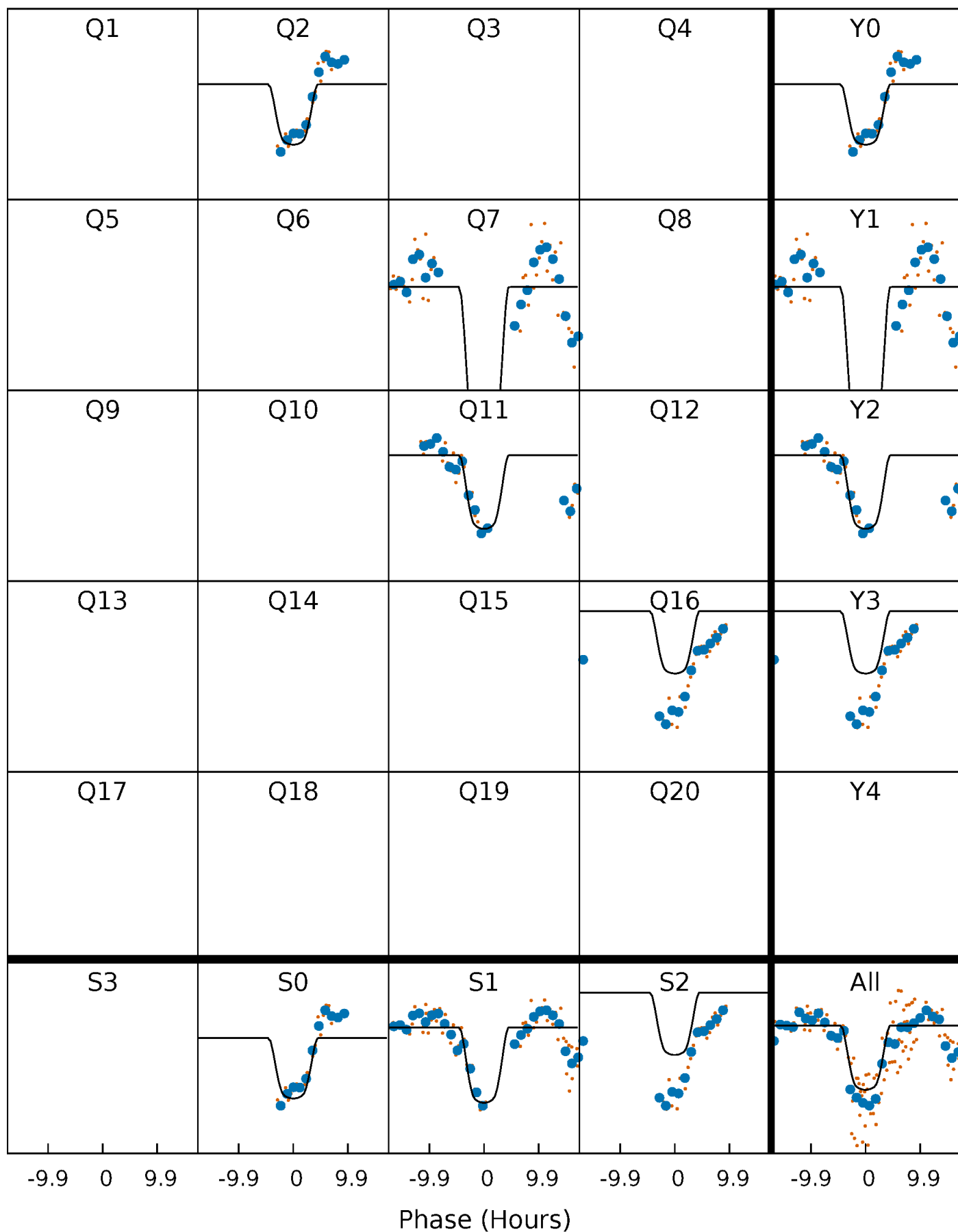
PDC Quarter-Phased Transit Curves

TCE 009099950-06 $P=426.360917$ Days $T_0=241.688650$ (BKJD)



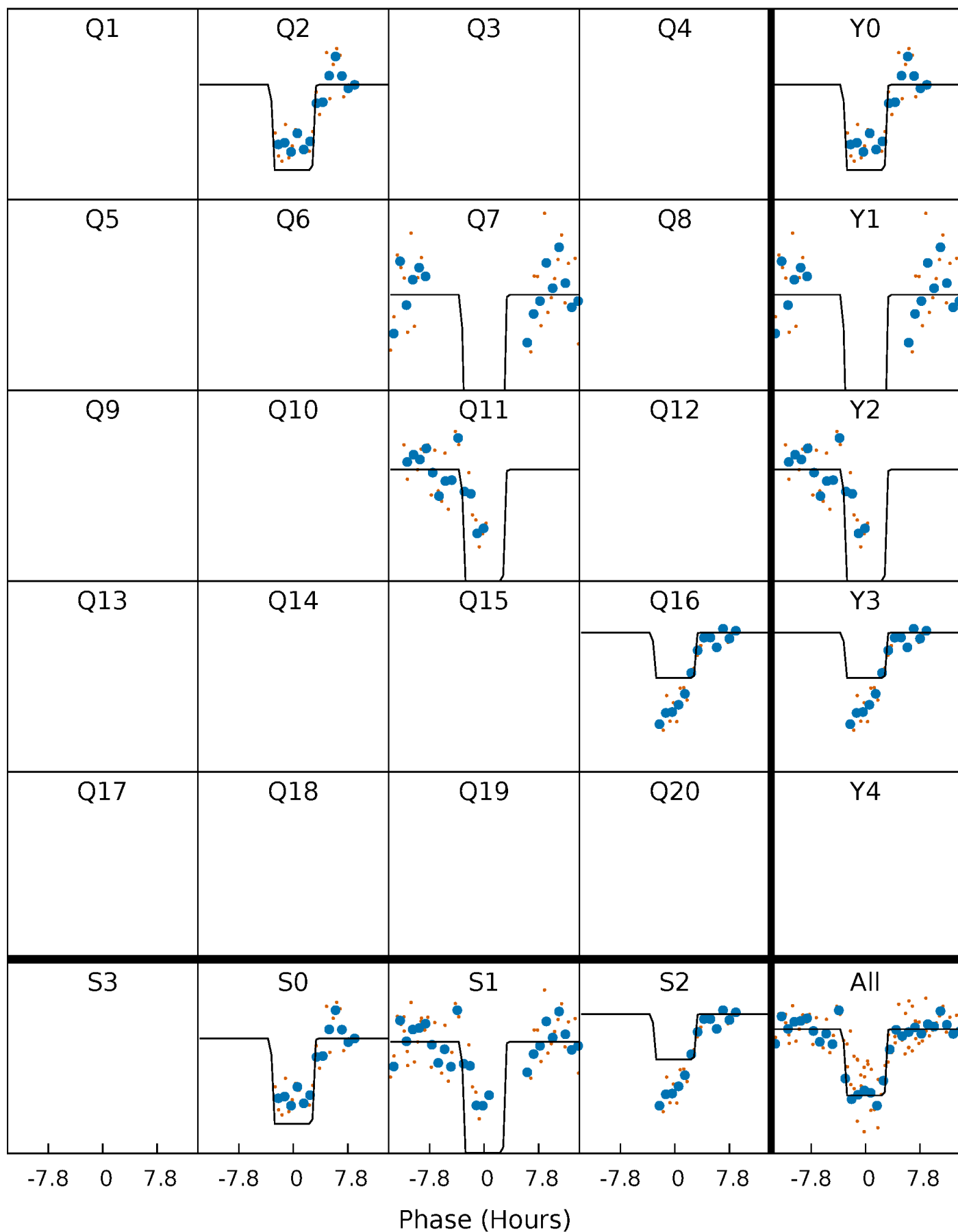
DV Quarter-Phased Transit Curves

TCE 009099950-06 P=426.360917 Days $T_0=241.688650$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

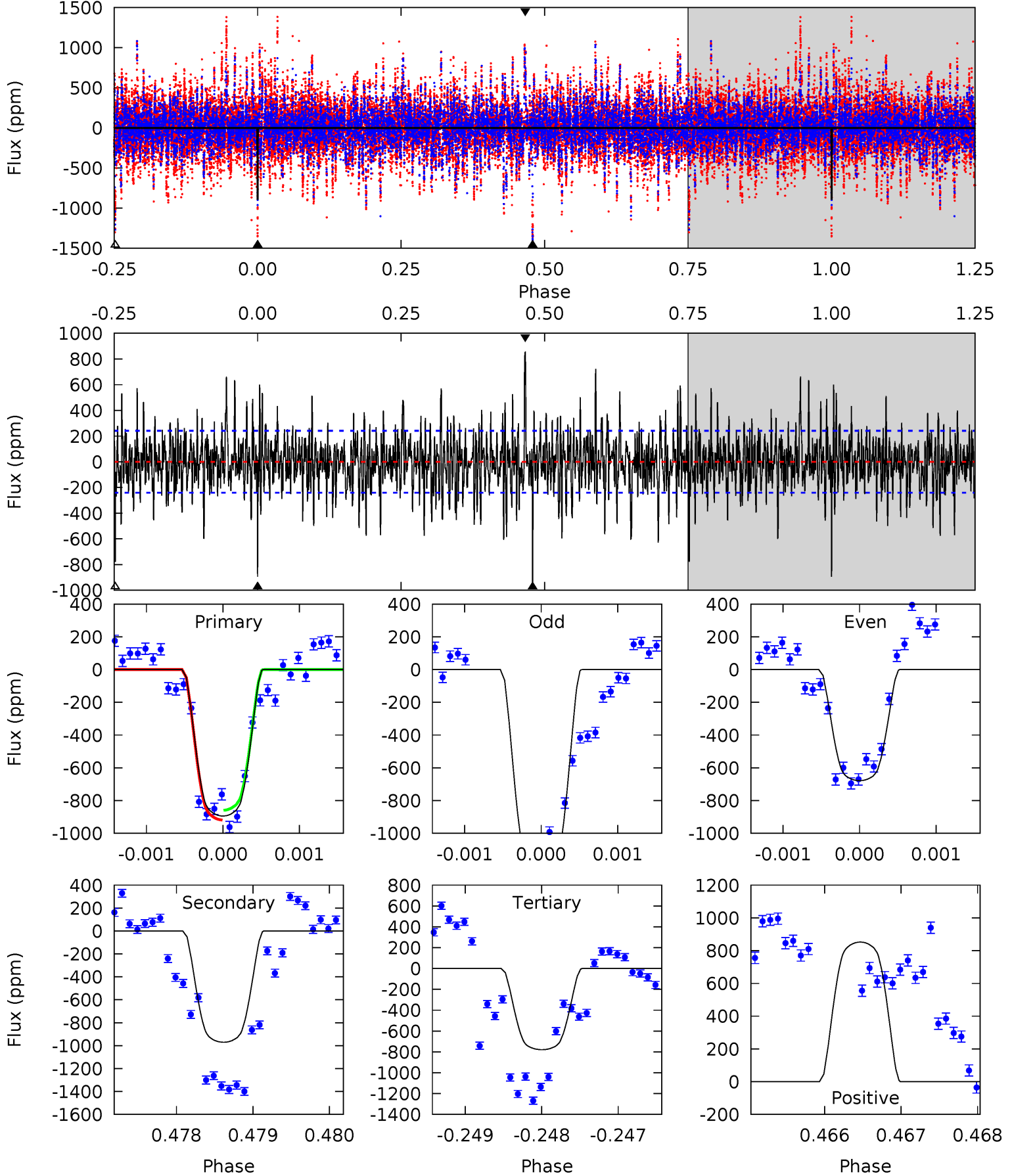
TCE 009099950-06 P=426.366663 Days $T_0=241.677754$ (BKJD)



DV Model-Shift Uniqueness Test

009099950-06, P = 426.360917 Days, E = 241.688650 Days

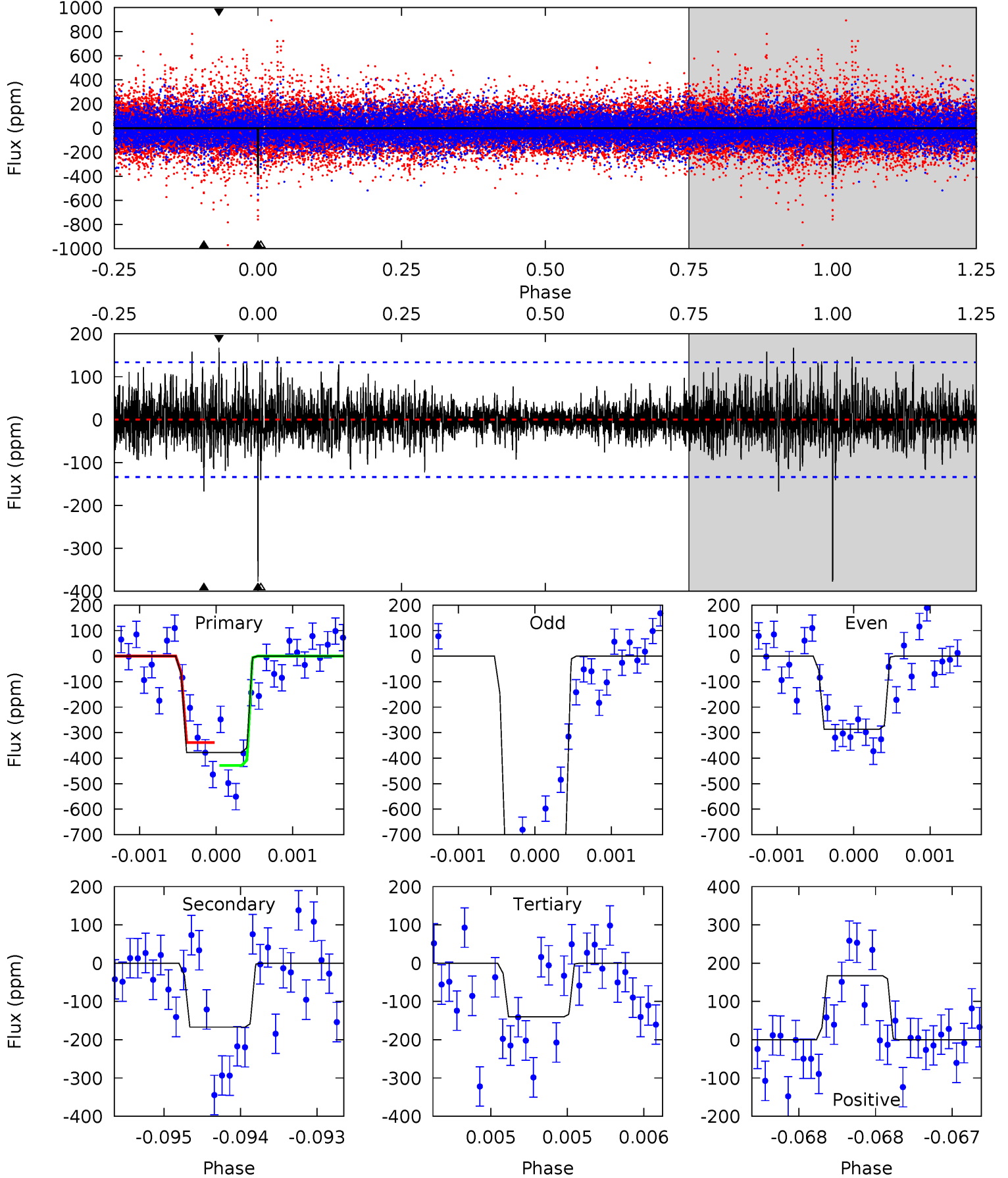
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	22.1	17.8	19.4	5.48	3.34	4.11	2.63	0.97	4.37	2.70	6.21	1.25	0.47	0.68



Alt Model-Shift Uniqueness Test

009099950-06, P = 426.366663 Days, E = 241.677754 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	6.90	5.80	6.91	5.52	3.40	1.34	9.79	8.68	1.09	-0.02	10.7	1.28	0.31	1.86



Stellar Parameters For KIC 009099950

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+156}_{-176}	$3.872^{+0.280}_{-0.100}$	$-0.200^{+0.300}_{-0.250}$	$2.308^{+0.438}_{-0.813}$	$1.446^{+0.183}_{-0.313}$	$0.166^{+0.332}_{-0.050}$
	+2%/-3%	+7%/-3%	+150%/-125%	+19%/-35%	+13%/-22%	+200%/-30%
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 009099950-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-971 ± 44	$7.41^{+1.17}_{-1.39}$	531^{+32}_{-46}	6517^{+328}_{-292}	15392^{+6986}_{-3724}
Alt.	-167 ± 24	$5.35^{+0.95}_{-1.04}$	532^{+33}_{-45}	5002^{+308}_{-255}	5031^{+2470}_{-1464}

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

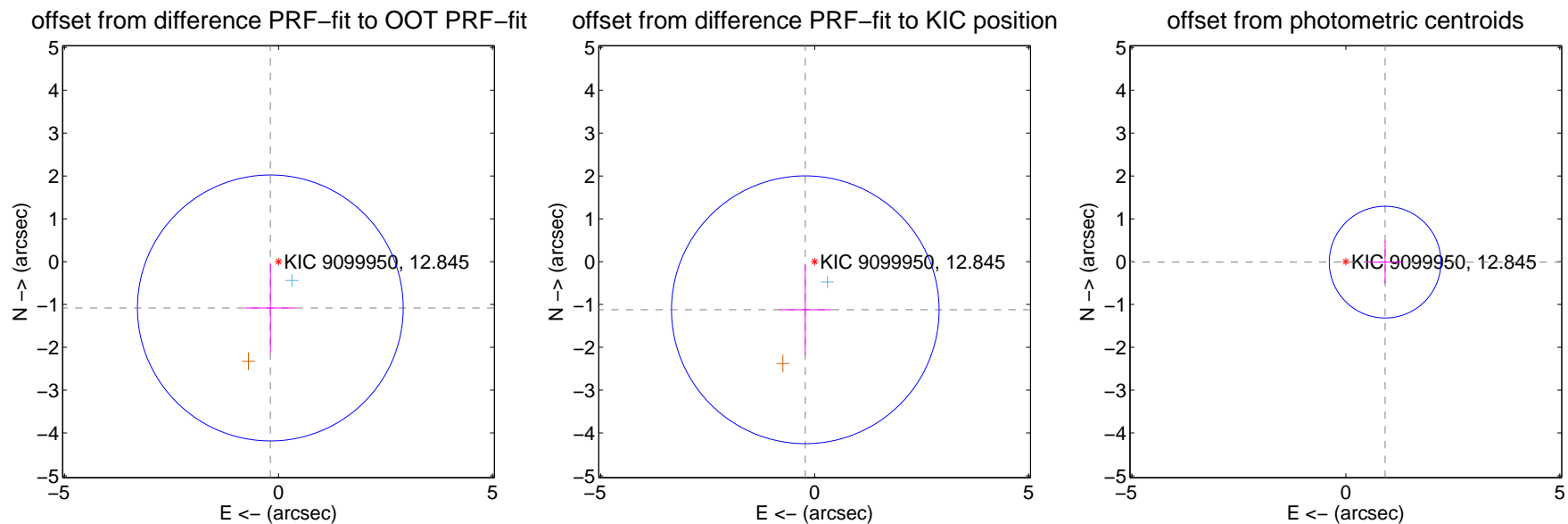
DV Centroid Data

Supplemental centroid analysis for 009099950-06. Kepler magnitude: 12.85. Transit SNR 8.98

There are 1 quarters with good PRF difference image offsets

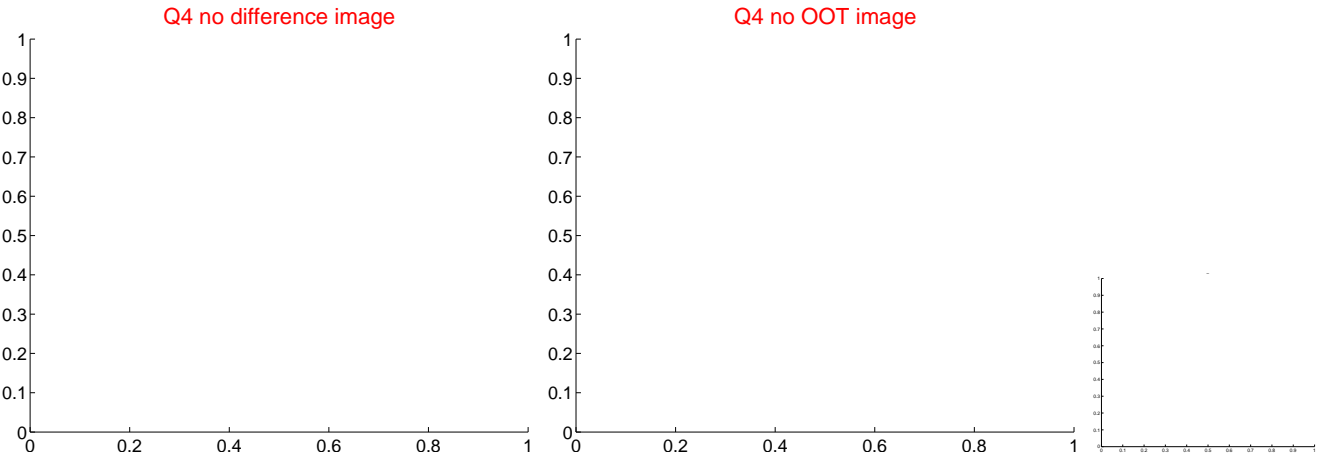
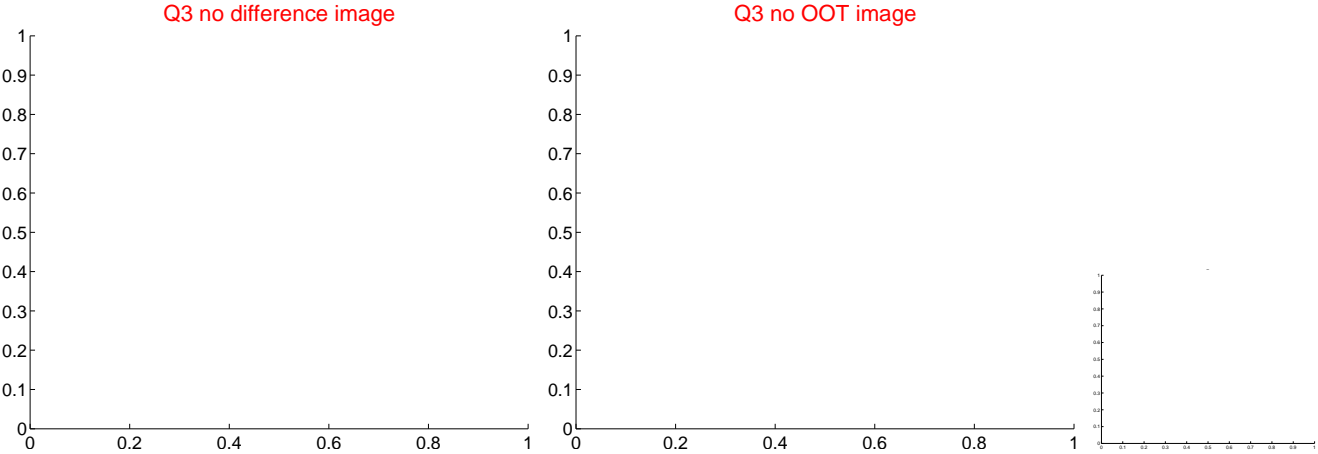
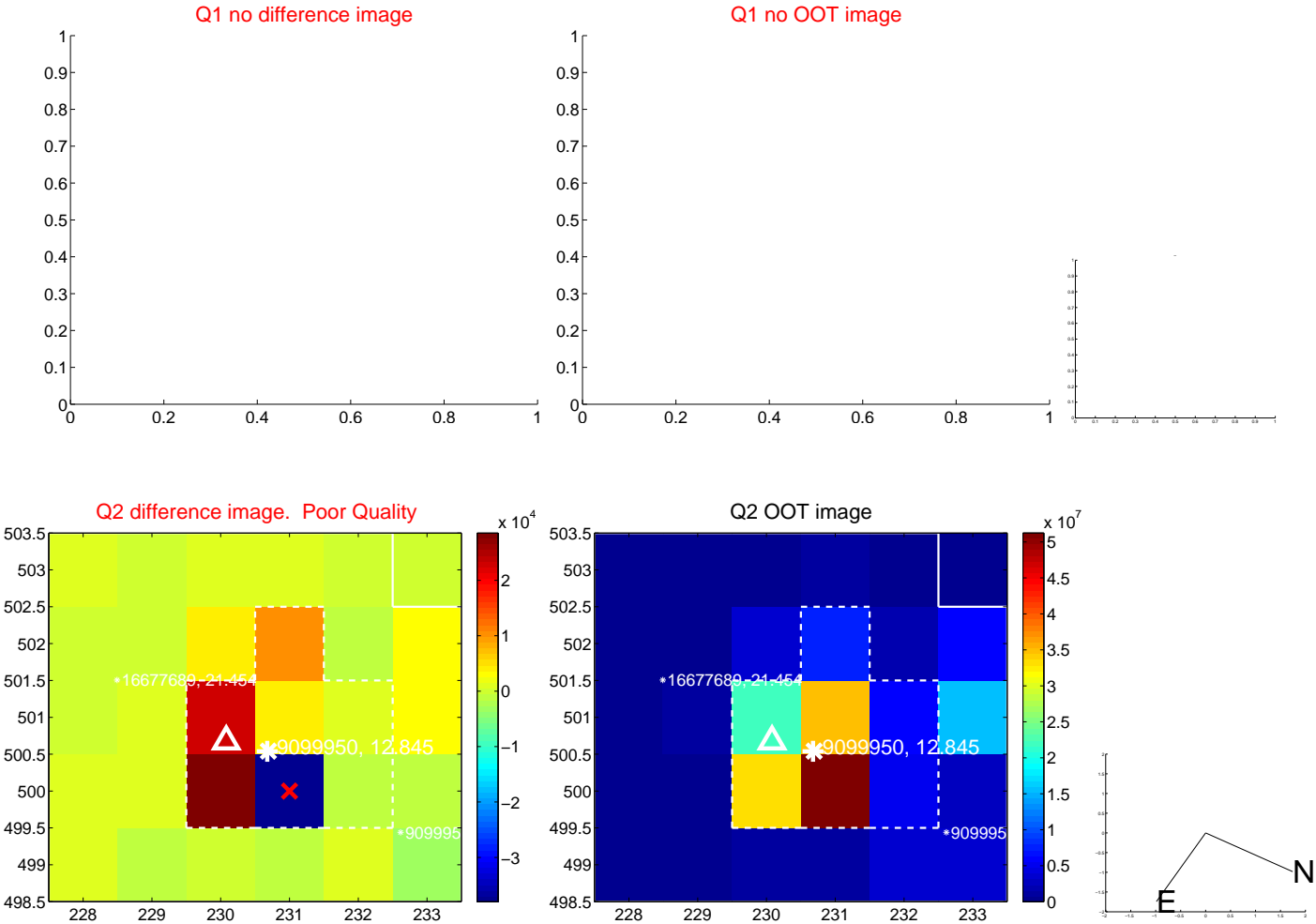
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.098 ± 1.035	1.06	0.190 ± 0.597	-1.082 ± 1.046
PRF-fit source offset from KIC position	1.145 ± 1.042	1.10	0.217 ± 0.612	-1.124 ± 1.055
photometric centroid source offset	0.92 ± 0.43	2.11	-0.92 ± 0.43	-0.01 ± 0.50



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

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



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

Q5 no difference image



Q5 no OOT image



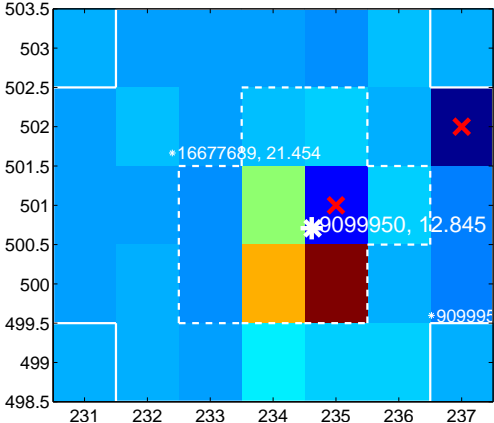
Q6 no difference image



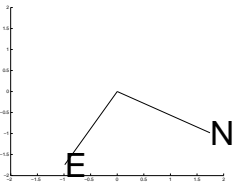
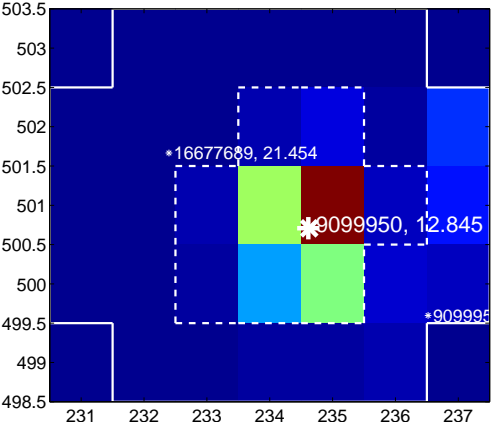
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



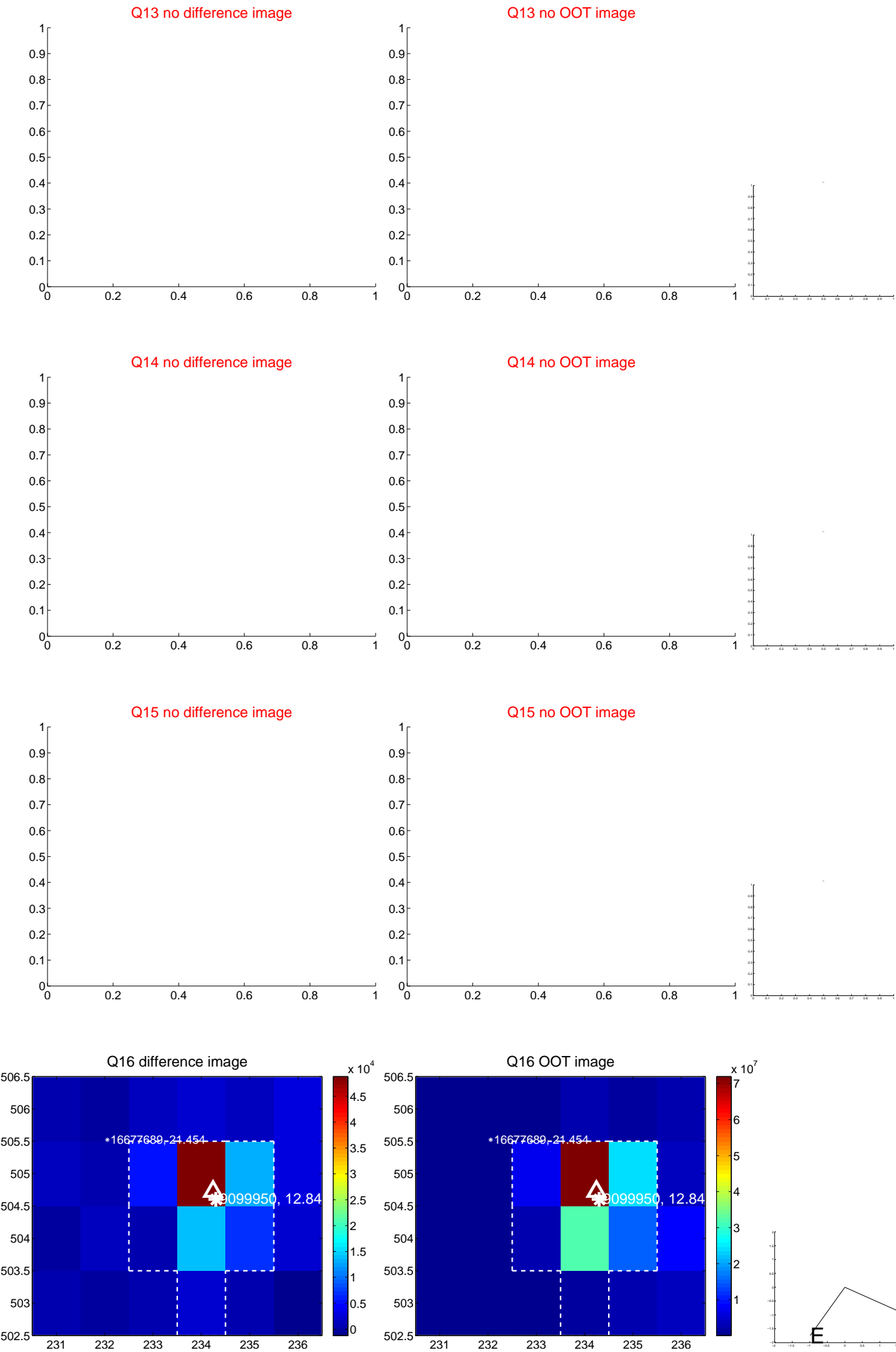
Q8 no OOT image



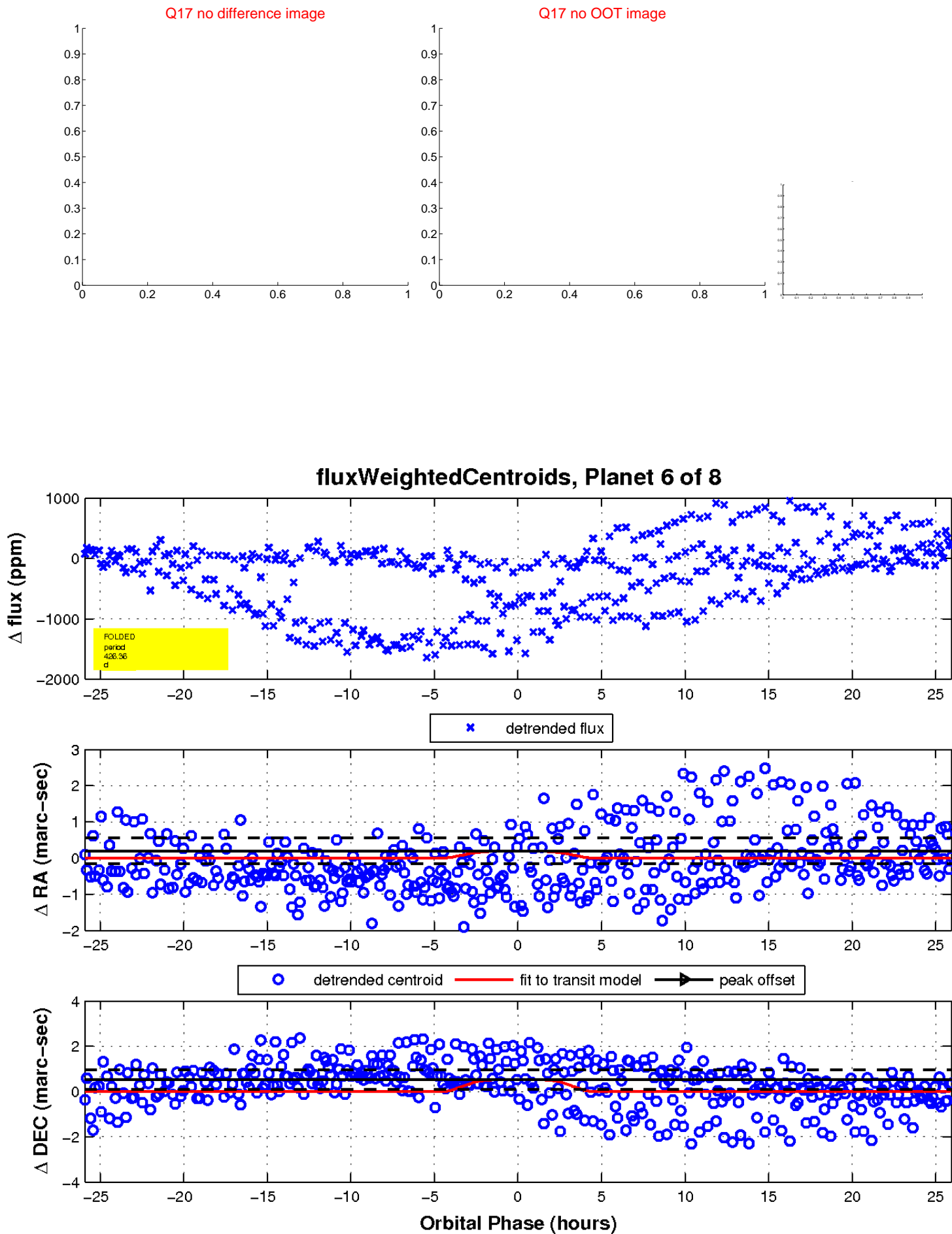
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

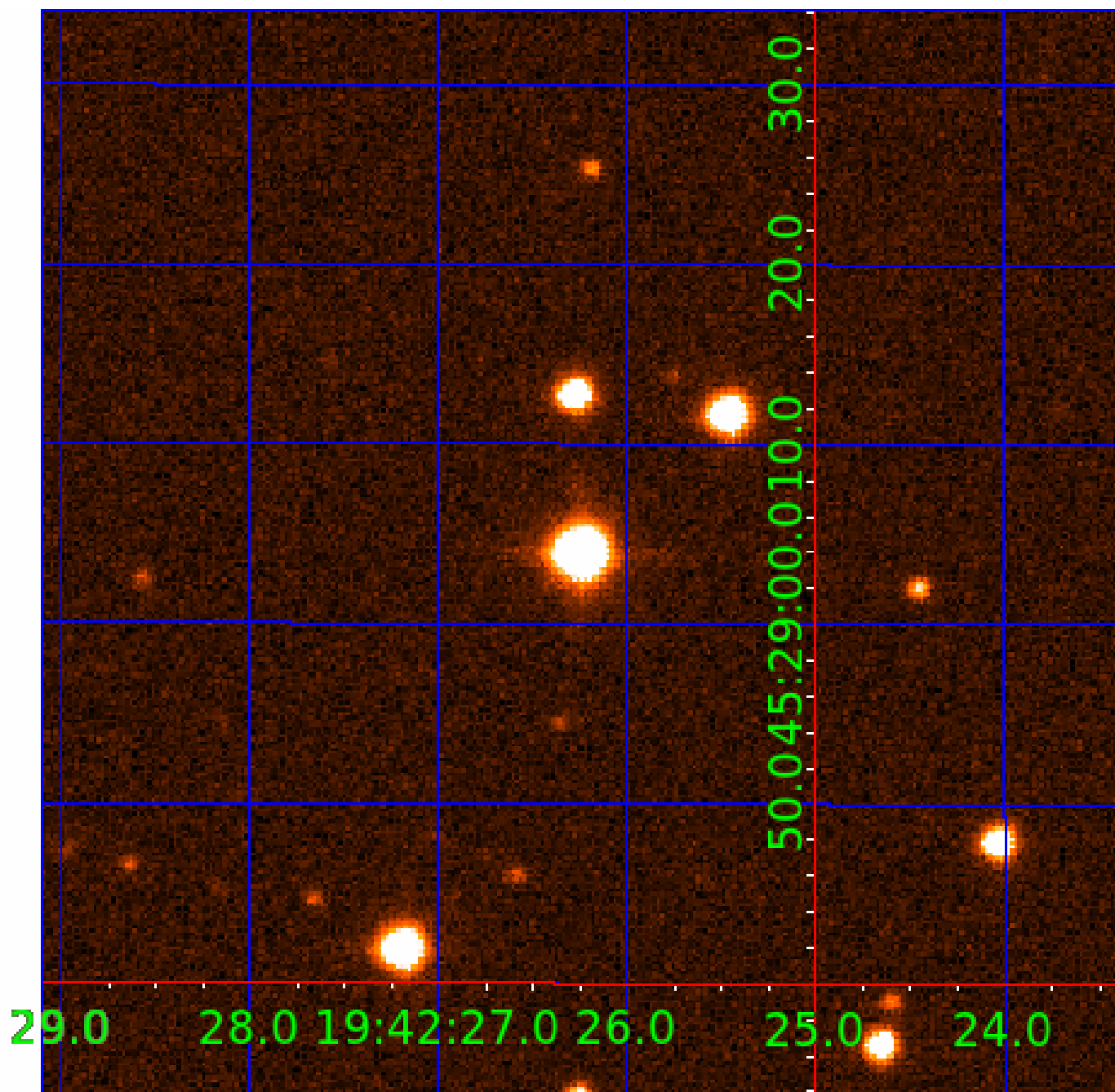


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009099950

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})
009099950-01	OBS	4125.01	1.111287	132.357275	35.0	4.555	17.3	14.6	2.31	6486	1.44	14968.94
009099950-02	OBS	No	258.643639	155.087871	478.5	14.855	10.3	7.0	2.31	6486	5.23	10.46
009099950-03	OBS	No	256.341306	170.177250	519.1	9.229	9.2	8.0	2.31	6486	6.55	10.58
009099950-04	OBS	No	287.434388	400.156029	619.6	10.998	8.7	7.2	2.31	6486	10.99	9.08
009099950-05	OBS	No	362.267766	321.919458	383.0	11.190	8.9	5.7	2.31	6486	5.30	6.67
009099950-06	OBS	No	426.360917	241.688650	722.8	8.660	8.5	9.0	2.31	6486	7.75	5.37
009099950-07	OBS	No	648.969862	201.926308	360.3	9.626	8.3	5.3	2.31	6486	5.04	3.07
009099950-08	OBS	No	309.674046	326.010681	364.6	11.669	8.1	4.5	2.31	6486	4.95	8.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099950-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
009099950-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
009099950-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009099950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009099950-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_MEAS
009099950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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.

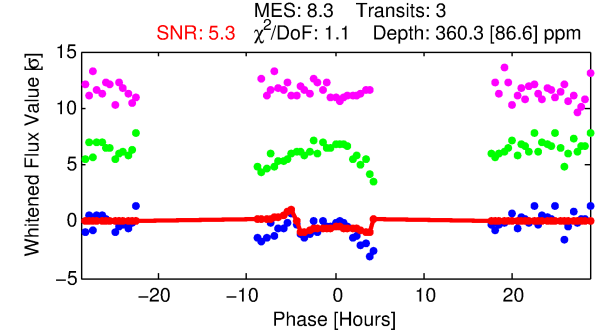
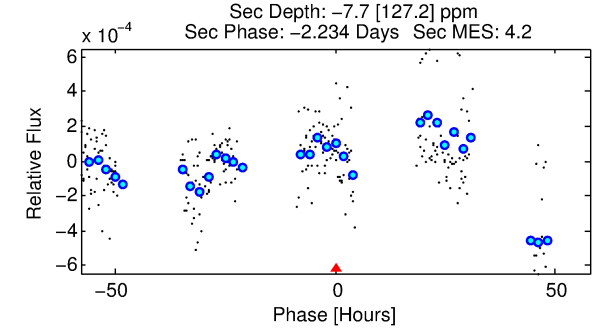
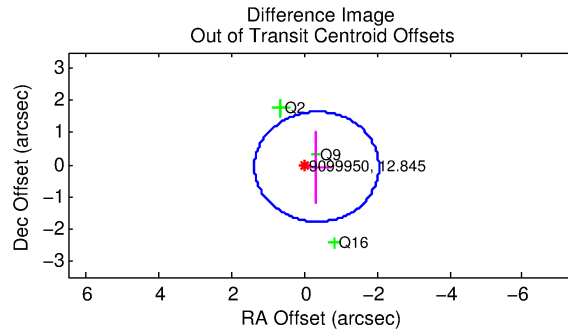
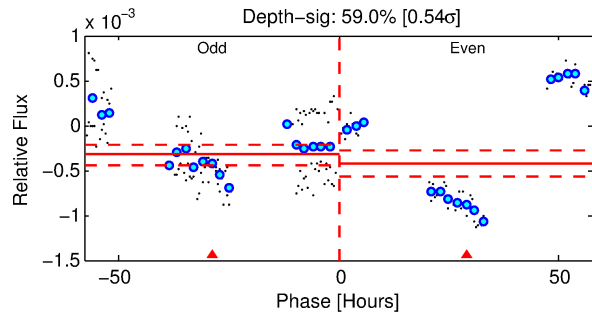
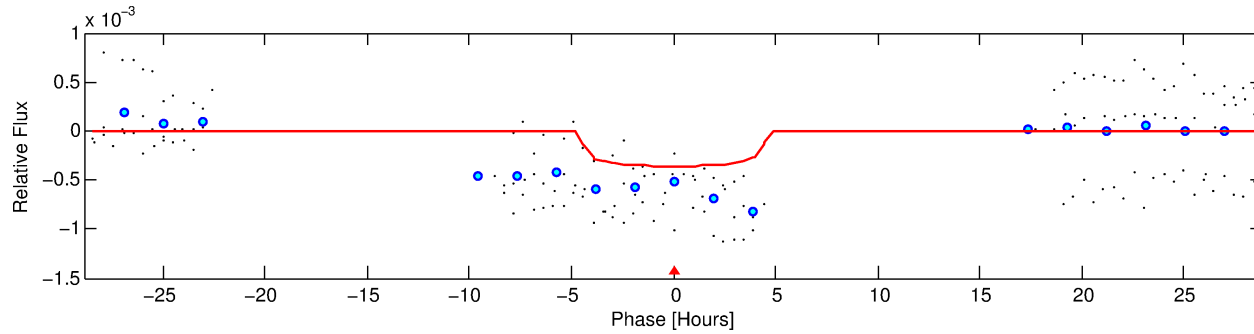
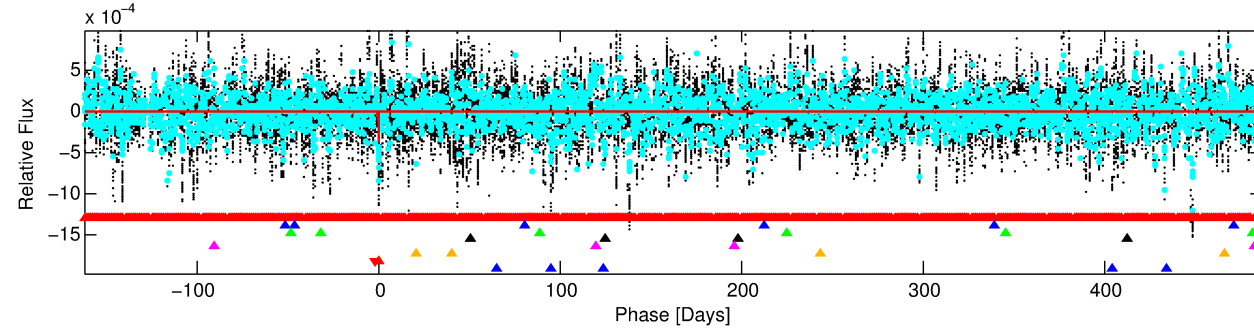
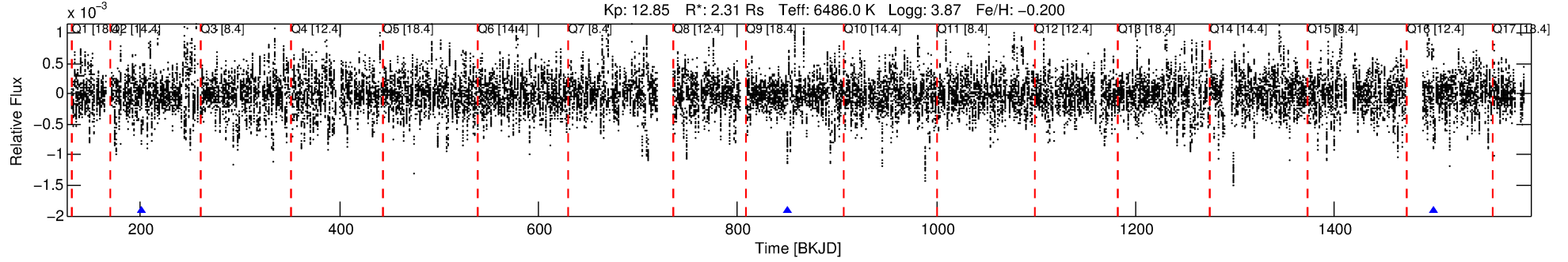
Ephemeris Match Information For 009099950-07

No Significant Match Found

DV One-Page Summary

KIC: 9099950 Candidate: 7 of 8 Period: 648.970 d
KOI: K04125 Corr: No Ephemeris Match

Kp: 12.85 R*: 2.31 Rs Teff: 6486.0 K Logg: 3.87 Fe/H: -0.200



DV Fit Results:

Period = 648.96986 [0.01079] d
Epoch = 201.9263 [0.0188] BKJD
Rp/R* = 0.0200 [0.0049]
a/R* = 267.16 [277.63]
b = 0.88 [0.27]
Seff = 3.07 [1.54]
Teff = 337 [42] K
Rp = 5.04 [2.17] Re
a = 1.6596 [0.5283] AU
Ag = N/A
Teffp = N/A

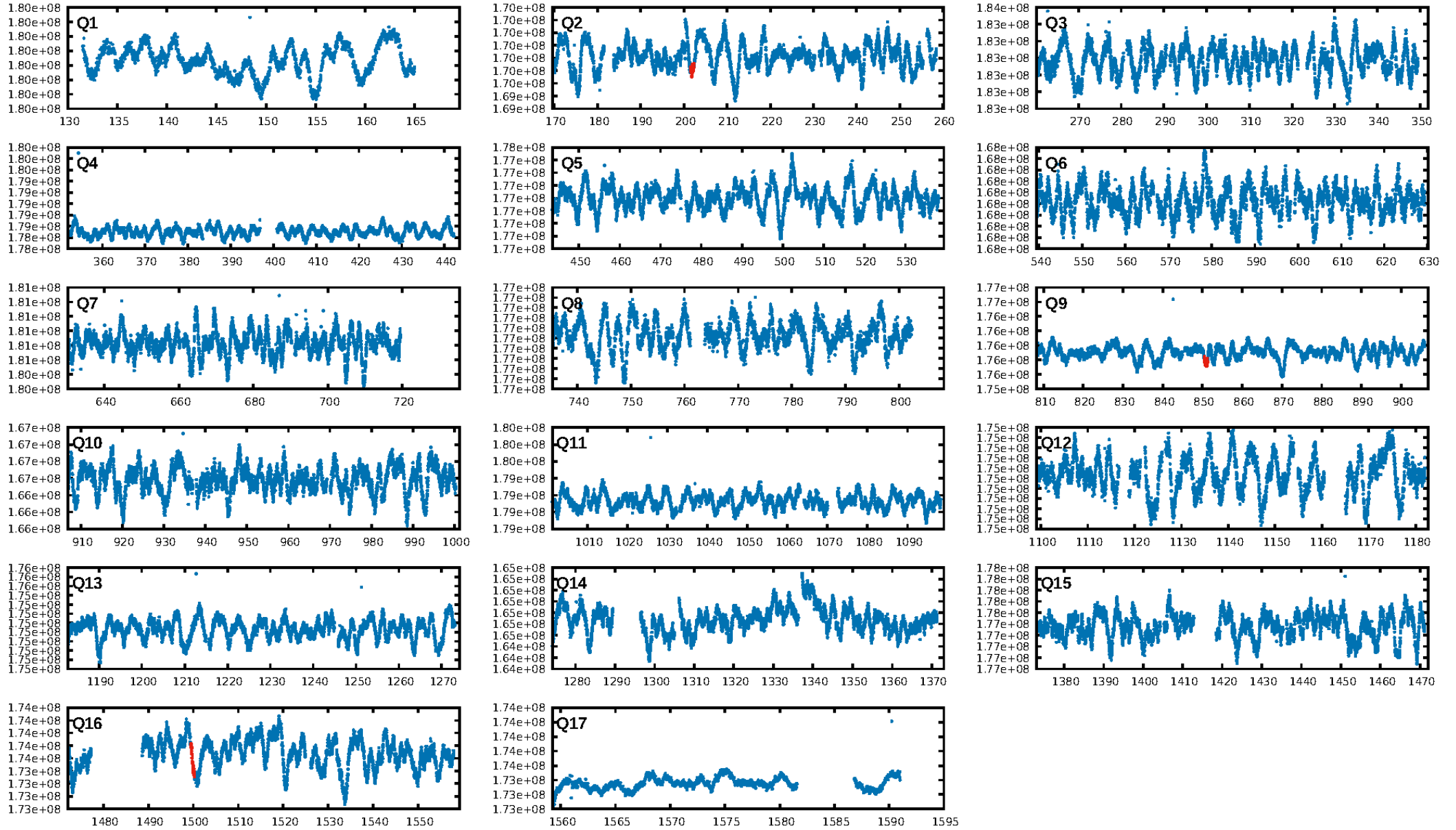
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [412.62σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 19.1%
ModelChiSquareGof-sig: 97.8%
Bootstrap-pfa: 3.37e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.096
Centroid-sig: 64.8%
Centroid-so: 0.971 arcsec [1.09σ]
OotOffset-rm: 0.349 arcsec [0.61σ]
KicOffset-rm: 0.345 arcsec [0.52σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

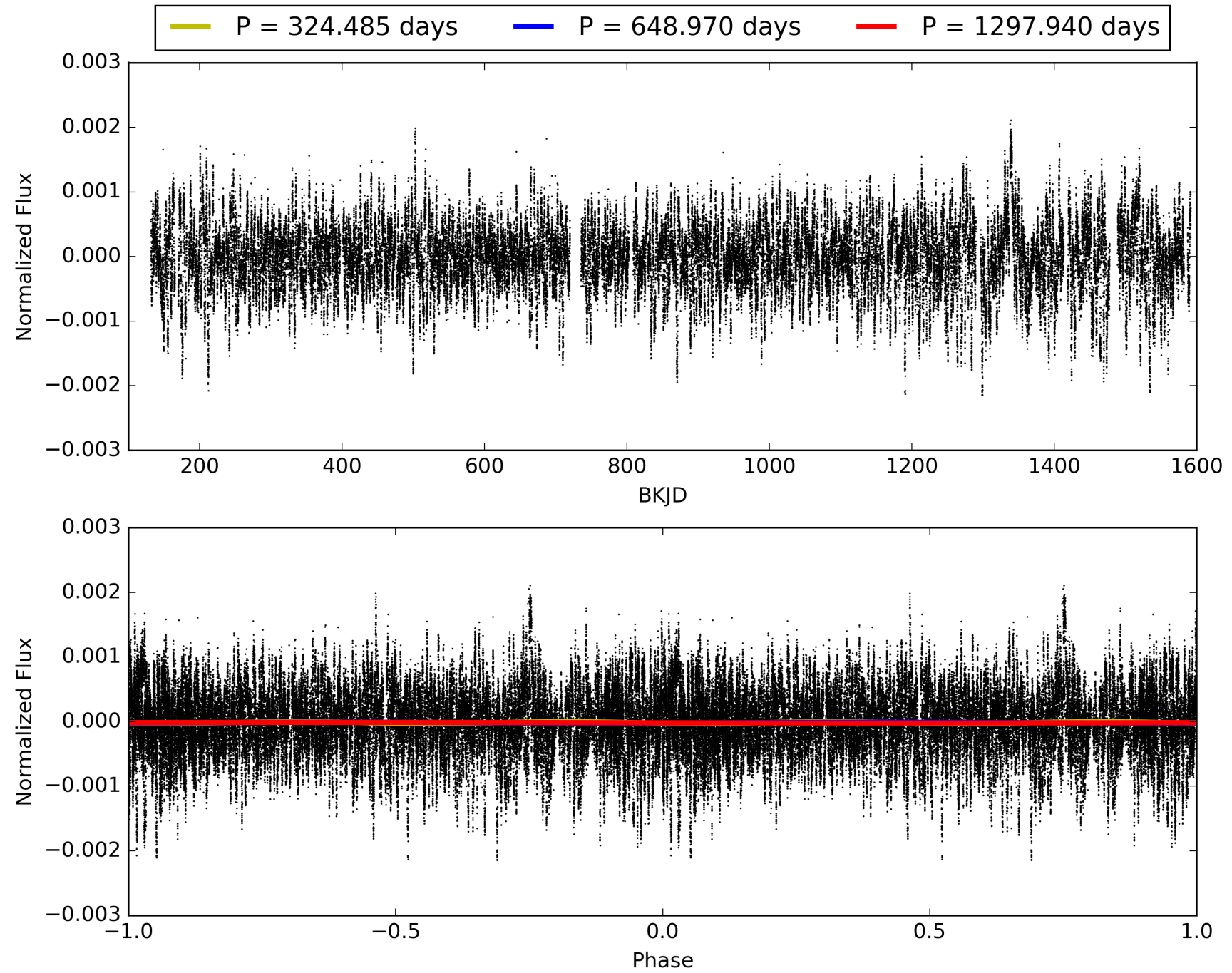
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:45:33 Z

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

TCE 009099950-07, PDC Light Curves

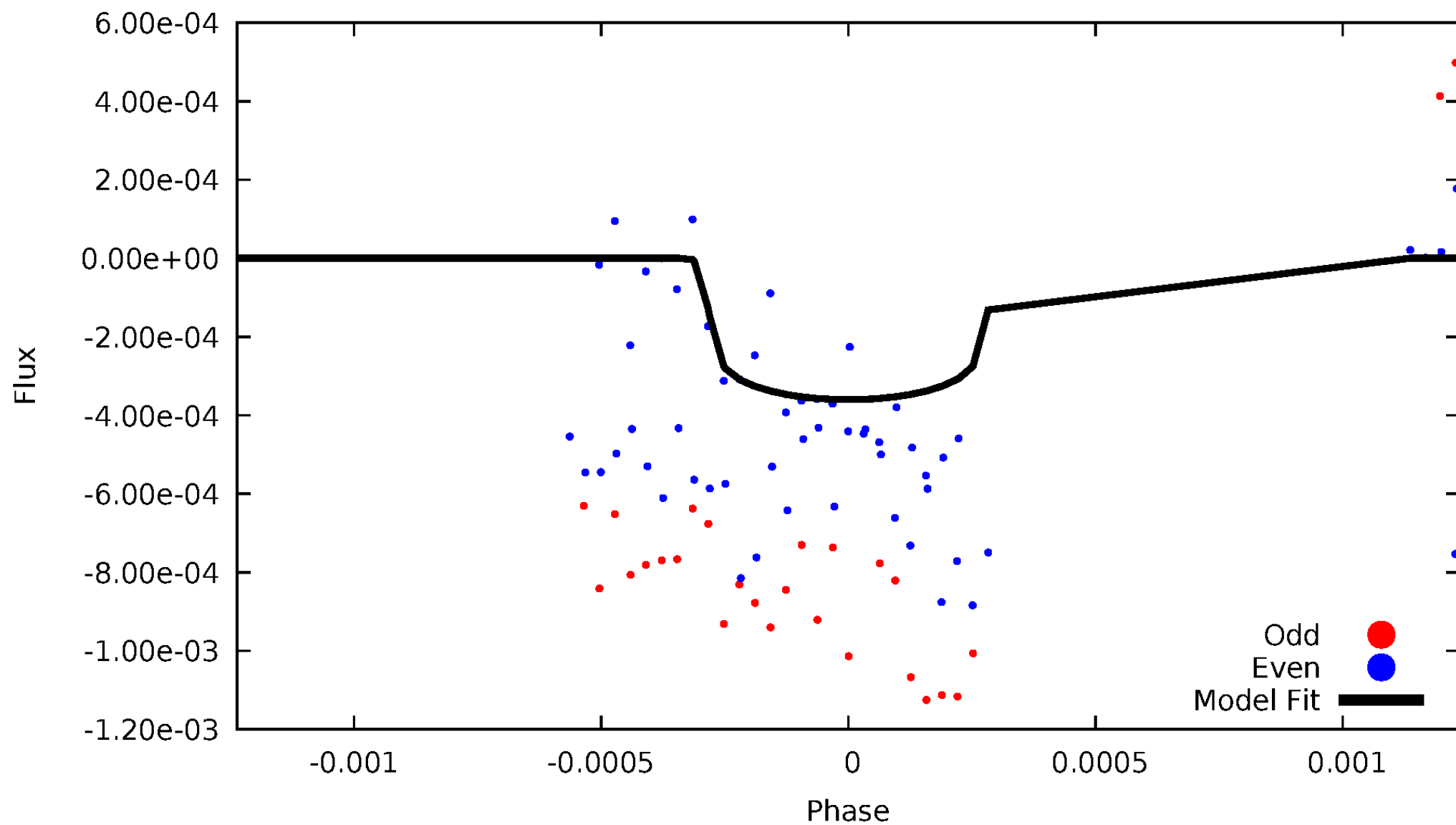


TCE 009099950-07



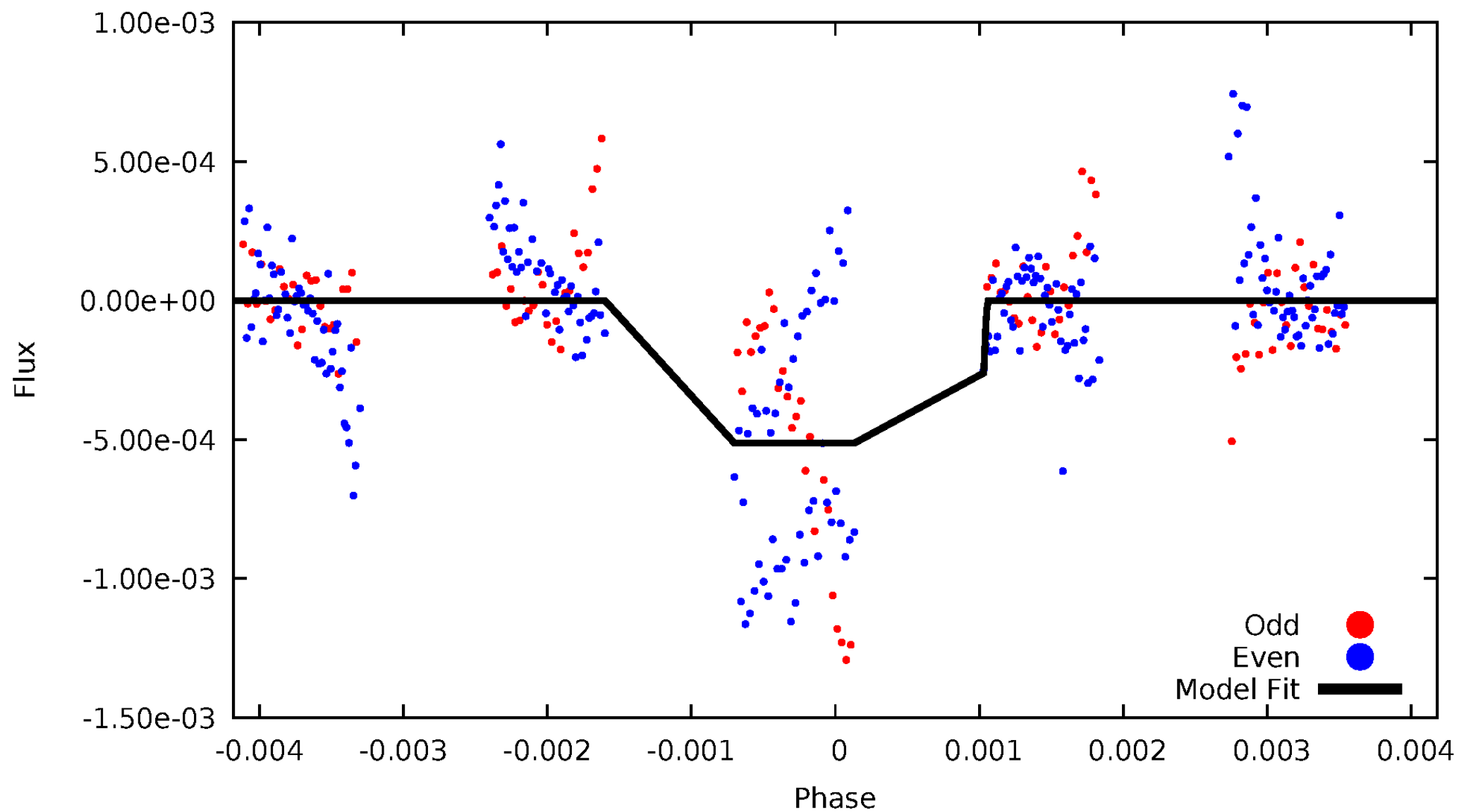
DV Odd/Even

TCE 009099950-07



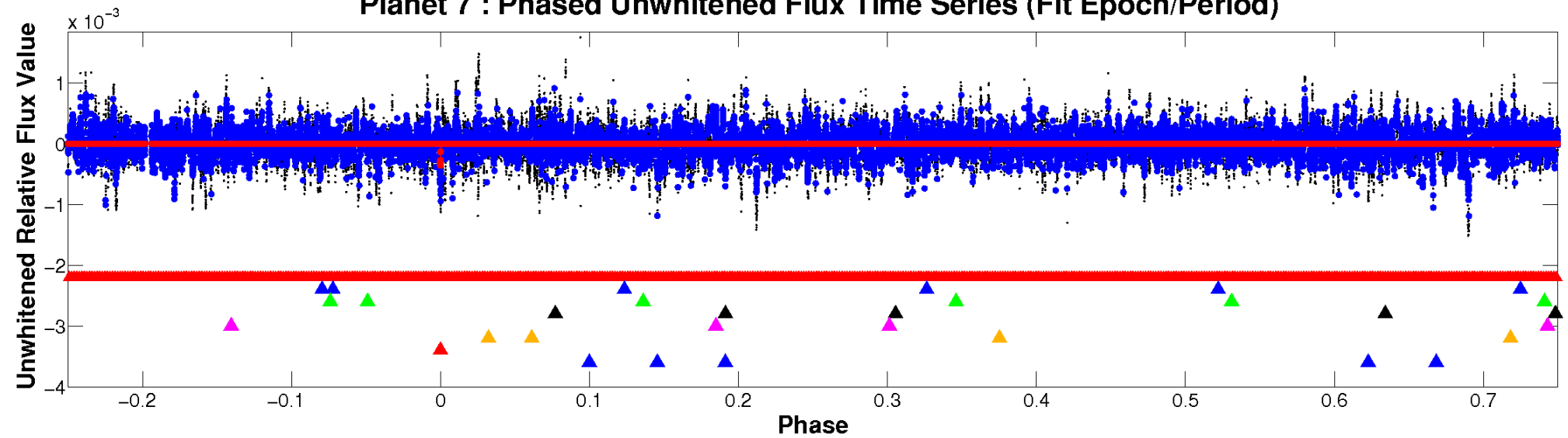
ALT Odd/Even

TCE 009099950-07

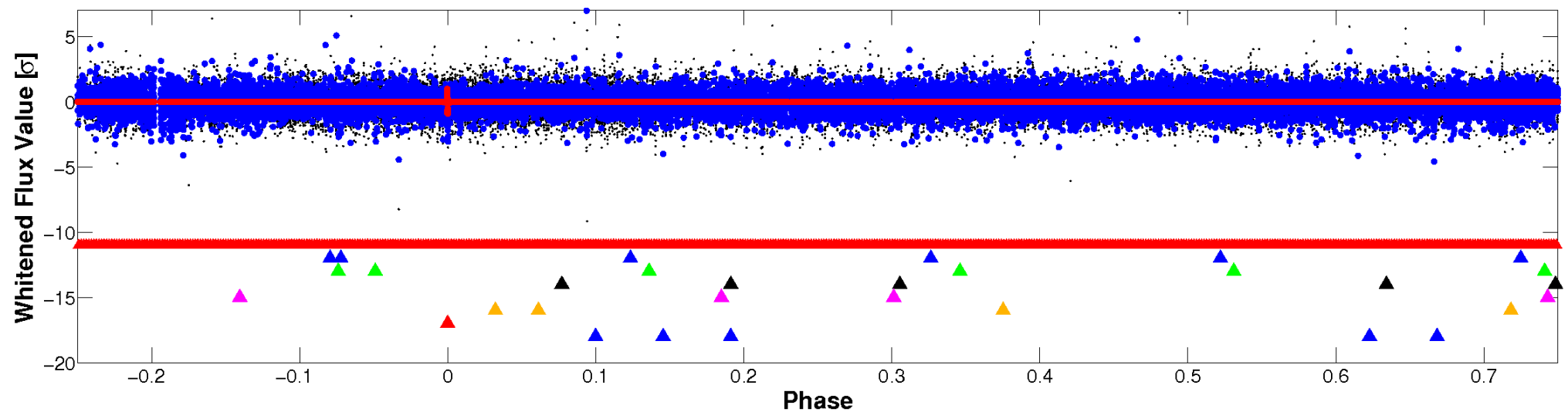


Non-Whitened Vs. Whitened Light Curve

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

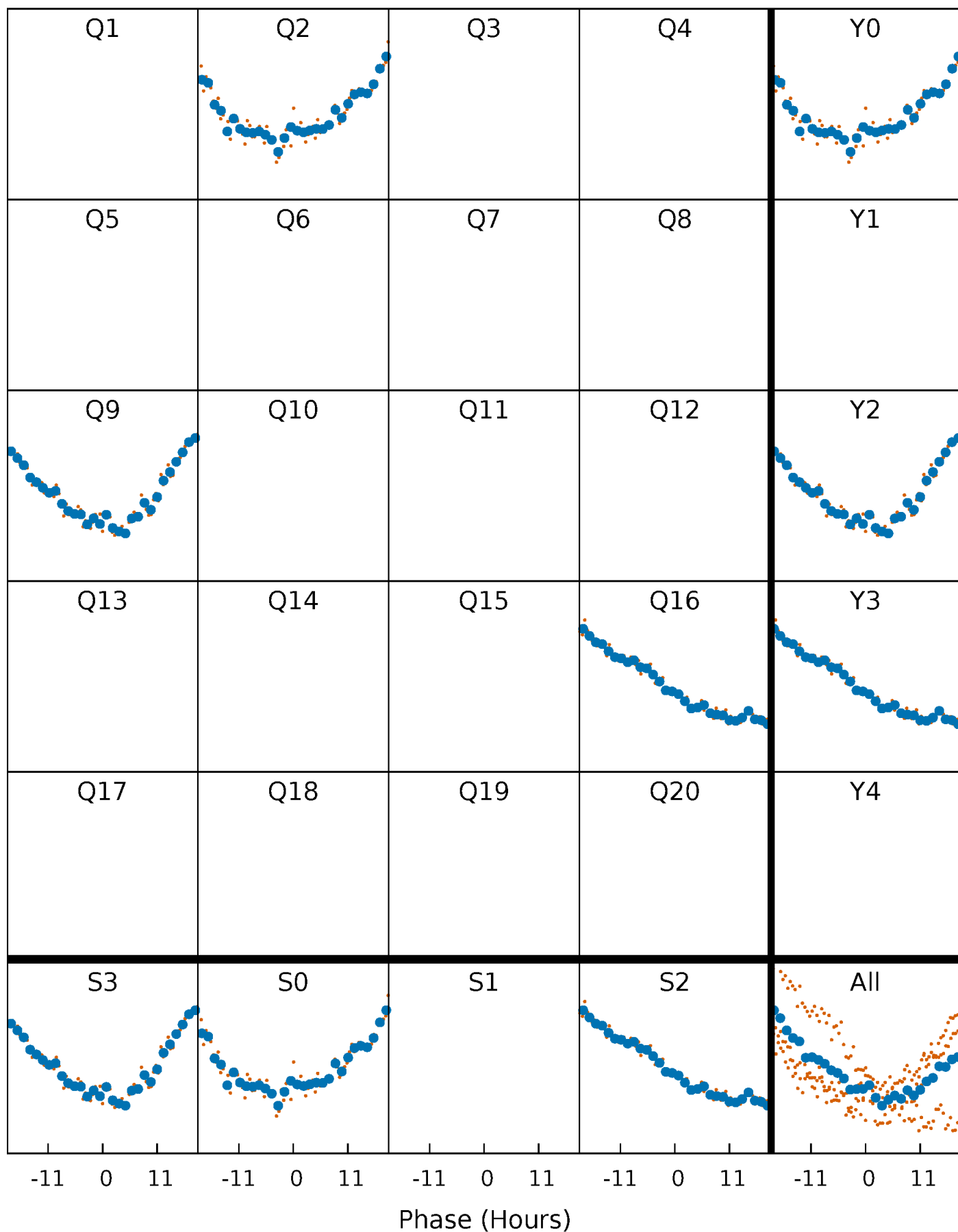


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



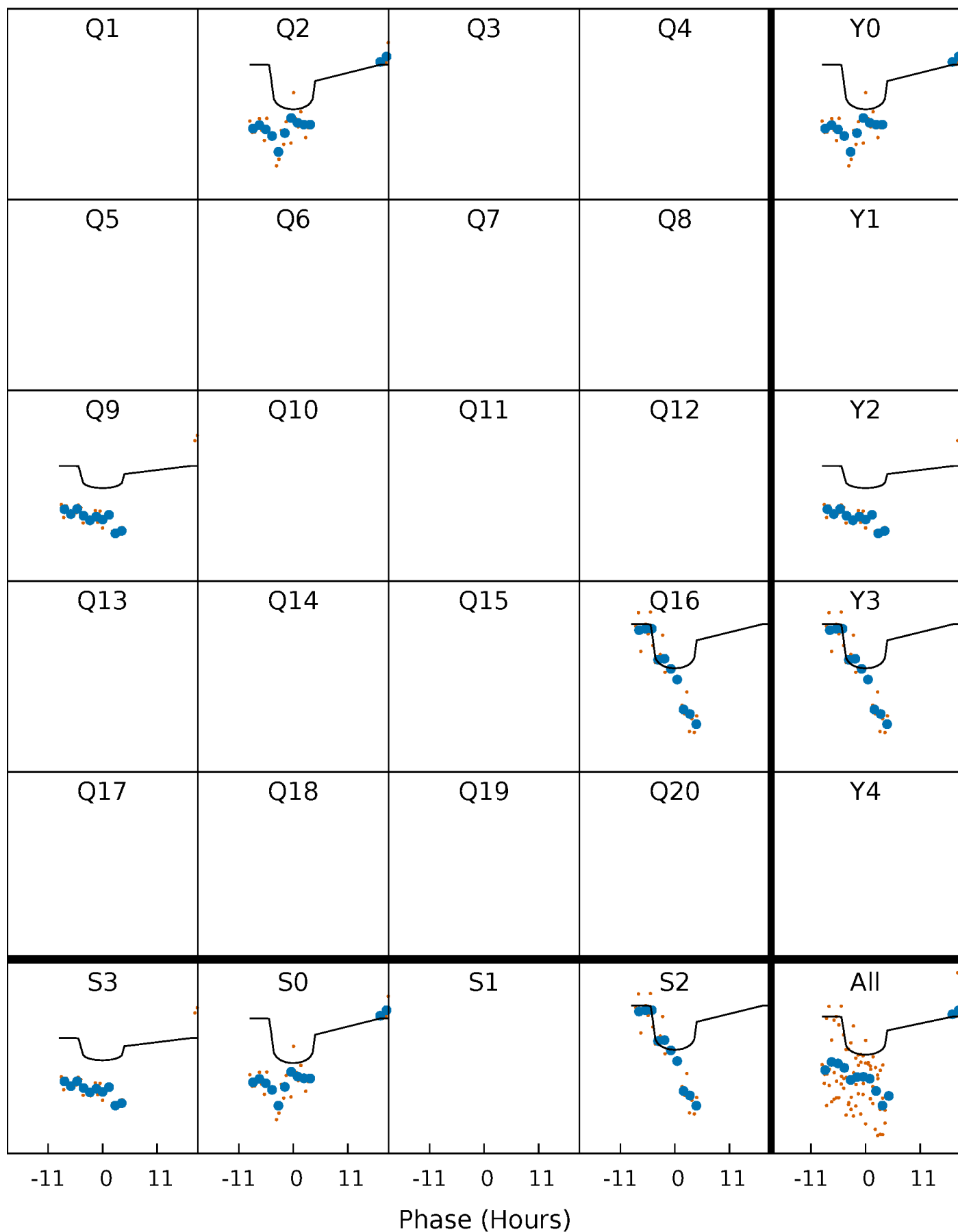
PDC Quarter-Phased Transit Curves

TCE 009099950-07 $P=648.969862$ Days $T_0=201.926308$ (BKJD)



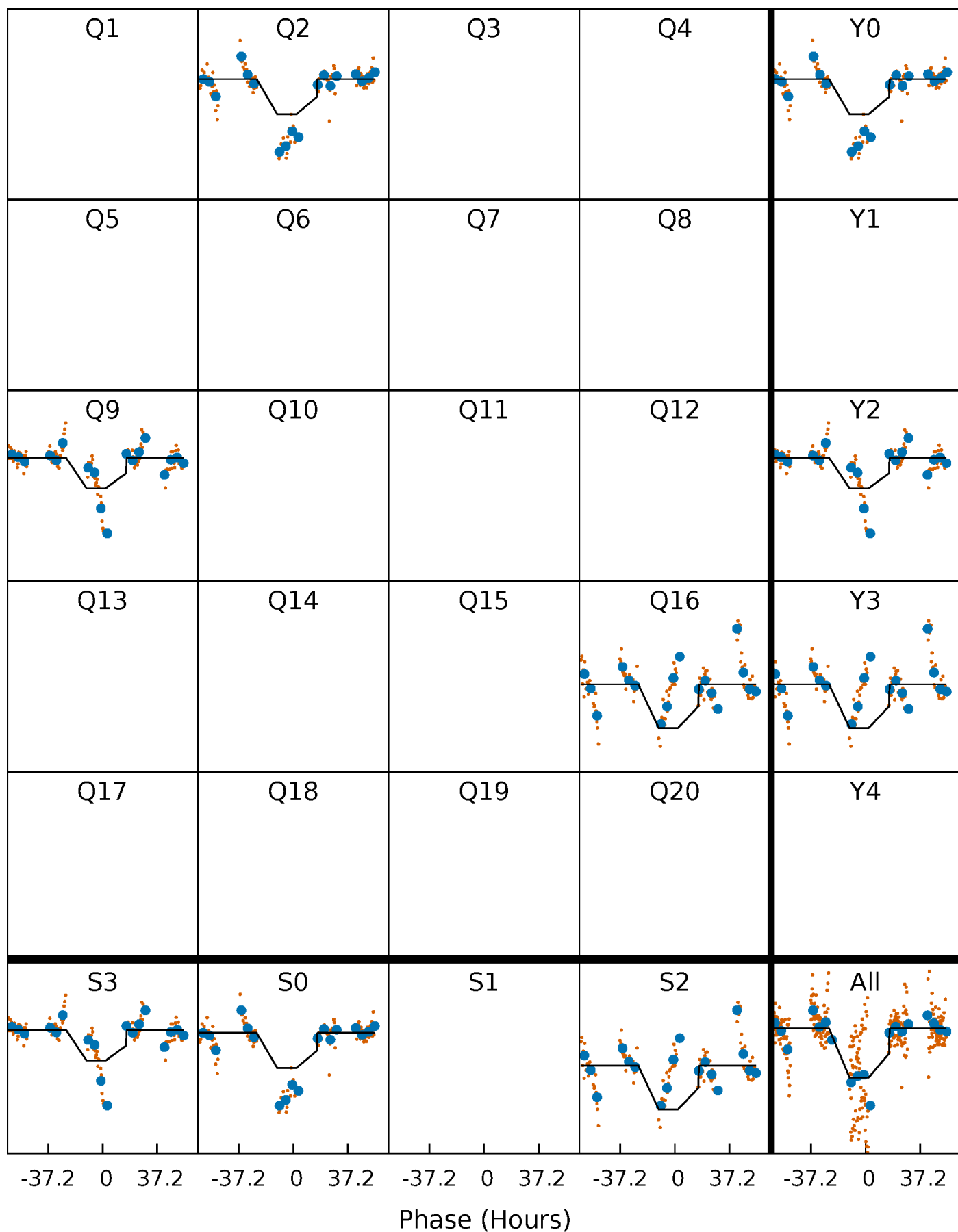
DV Quarter-Phased Transit Curves

TCE 009099950-07 $P=648.969862$ Days $T_0=201.926308$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

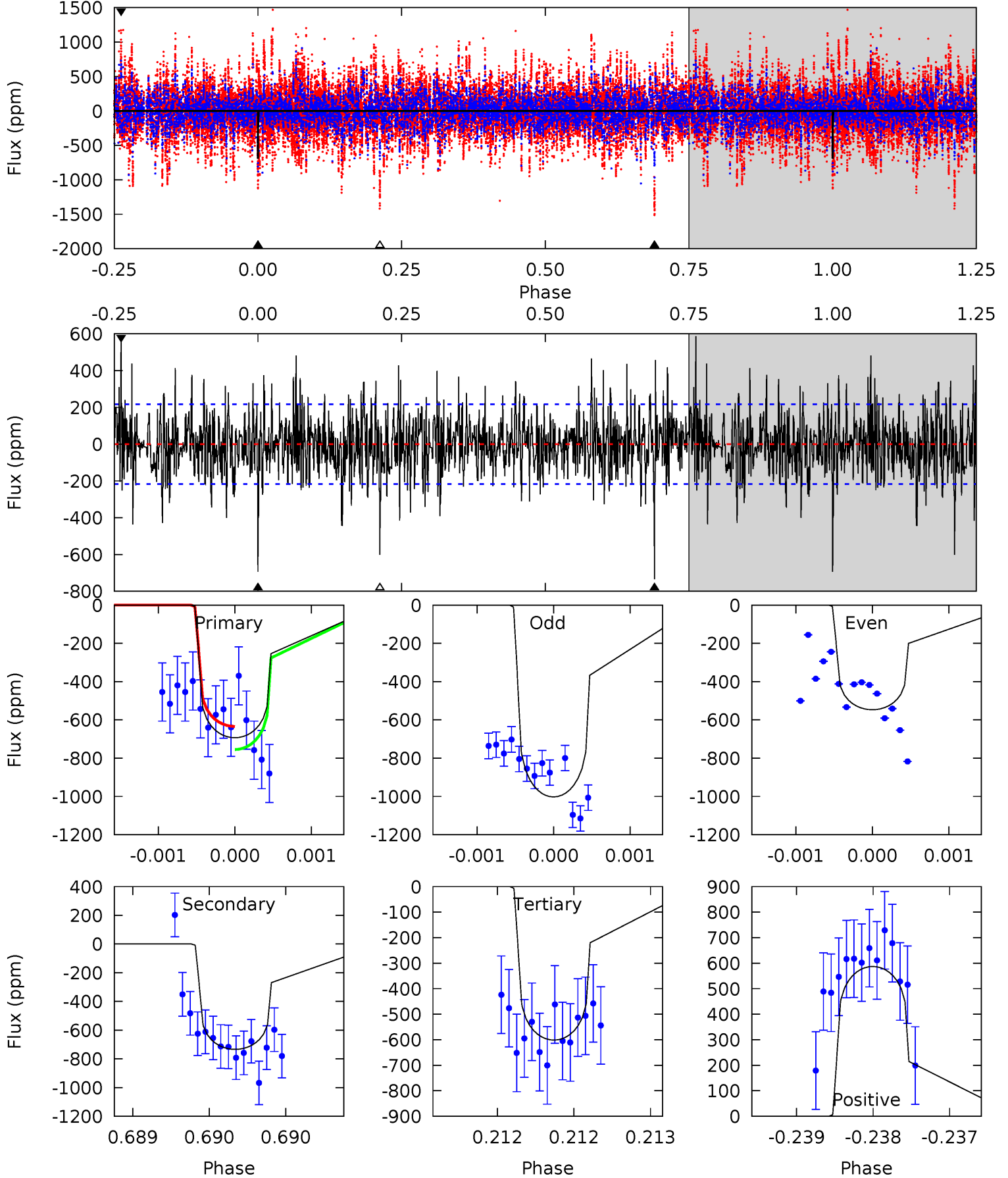
TCE 009099950-07 P=649.003922 Days $T_0=201.985669$ (BKJD)



DV Model-Shift Uniqueness Test

009099950-07, P = 648.969862 Days, E = 201.926308 Days

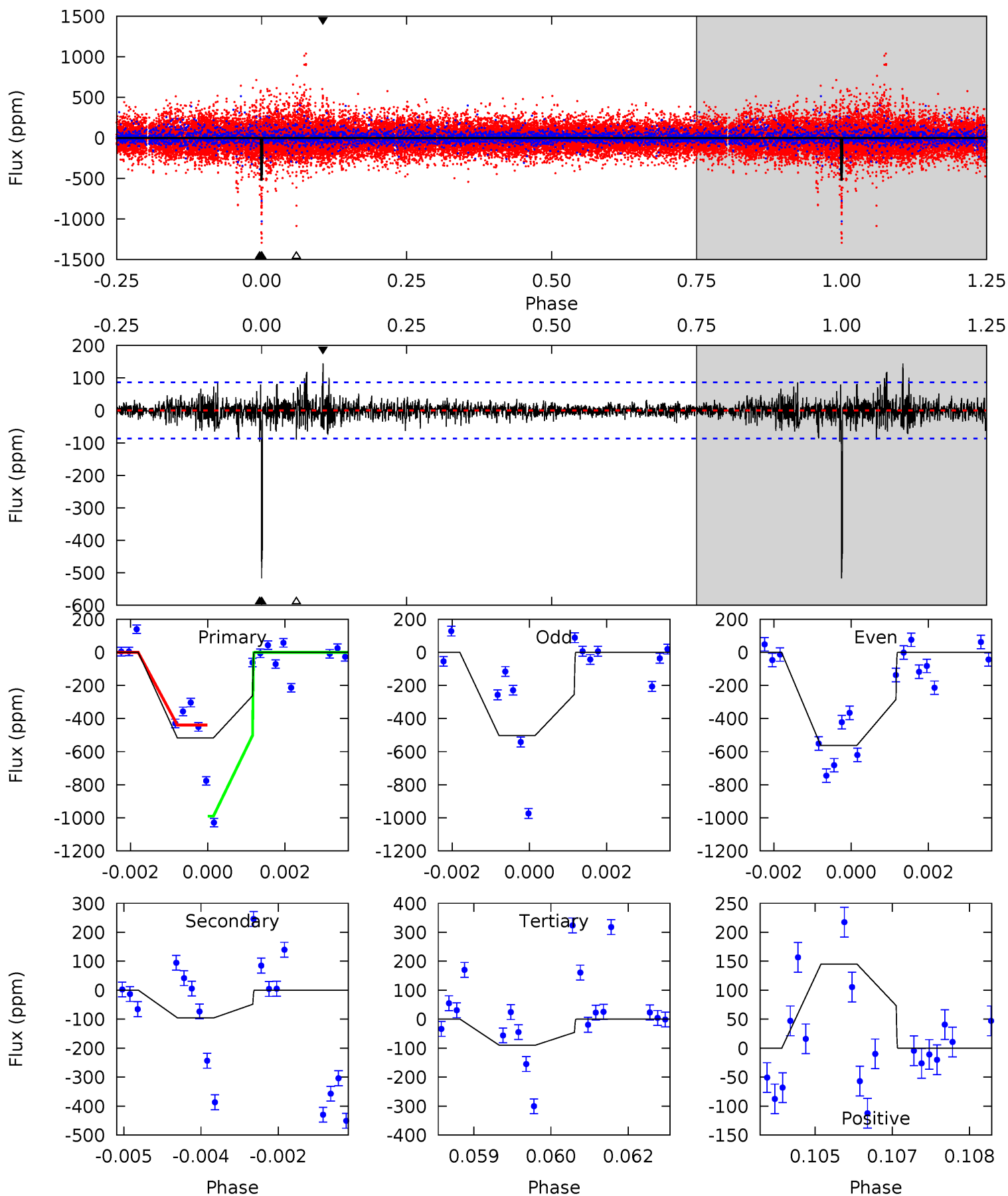
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.7	18.8	15.4	15.0	5.54	3.43	3.38	2.35	2.71	3.39	3.75	5.61	1.24	0.44	1.53



Alt Model-Shift Uniqueness Test

009099950-07, P = 649.003922 Days, E = 201.985669 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.9	5.92	5.54	8.95	5.35	3.13	1.17	26.4	23.0	0.37	-3.03	1.96	1.06	0.22	13.5



Stellar Parameters For KIC 009099950

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+156}_{-176}	$3.872^{+0.280}_{-0.100}$	$-0.200^{+0.300}_{-0.250}$	$2.308^{+0.438}_{-0.813}$	$1.446^{+0.183}_{-0.313}$	$0.166^{+0.332}_{-0.050}$
	+2%/-3%	+7%/-3%	+150%/-125%	+19%/-35%	+13%/-22%	+200%/-30%
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 009099950-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-734 ± 39	$4.78^{+1.47}_{-1.37}$	463^{+28}_{-36}	7658^{+1575}_{-900}	48853^{+41370}_{-19774}
Alt.	-96 ± 16	$5.34^{+1.55}_{-1.39}$	463^{+28}_{-40}	4440^{+485}_{-332}	4945^{+4342}_{-2026}

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

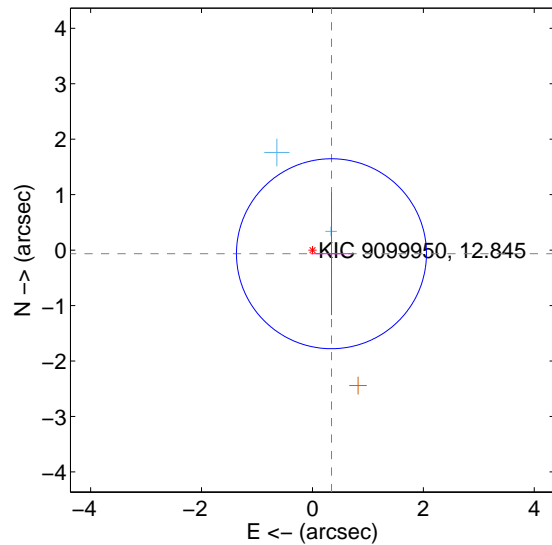
Supplemental centroid analysis for 009099950-07. Kepler magnitude: 12.85. Transit SNR 5.33

There are 2 quarters with good PRF difference image offsets

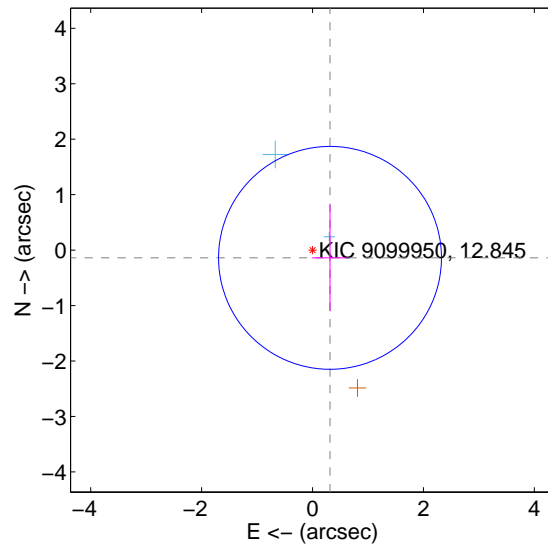
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.349 ± 0.571	0.61	-0.343 ± 0.376	-0.065 ± 1.107
PRF-fit source offset from KIC position	0.345 ± 0.670	0.52	-0.315 ± 0.324	-0.140 ± 0.961
photometric centroid source offset	0.97 ± 0.89	1.09	-0.94 ± 0.88	0.24 ± 1.07

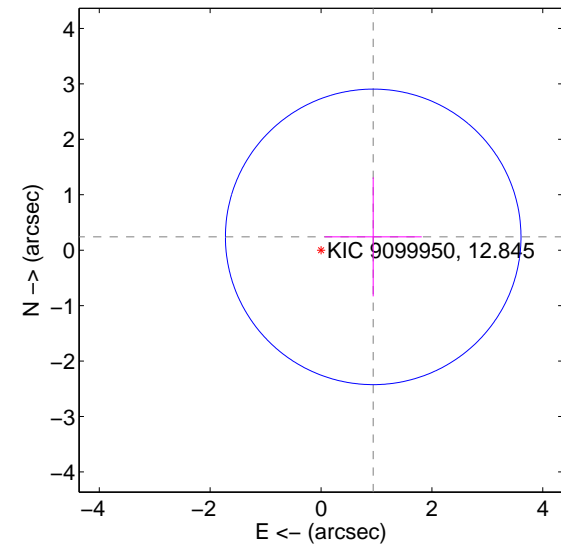
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

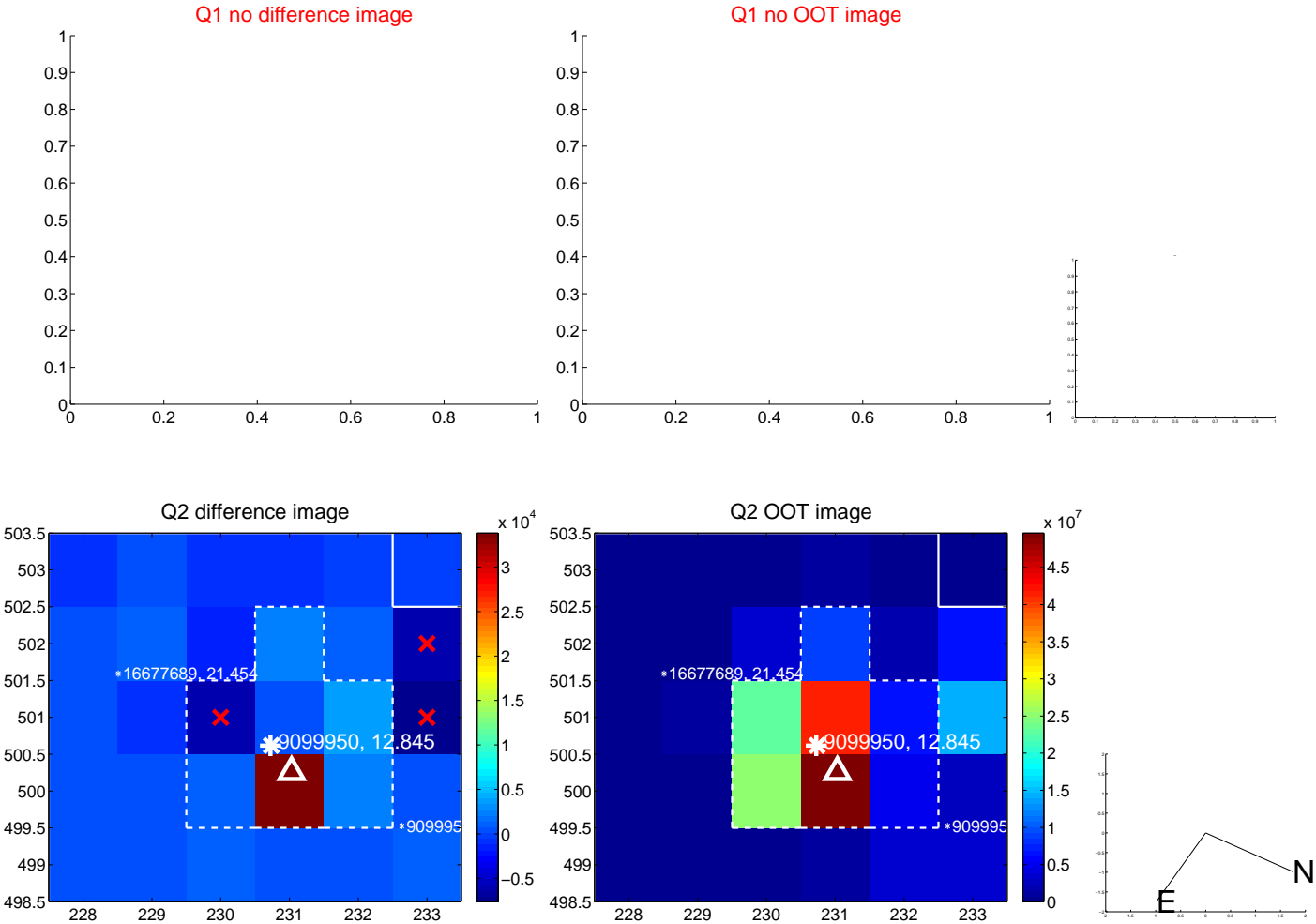


offset from photometric centroids



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.

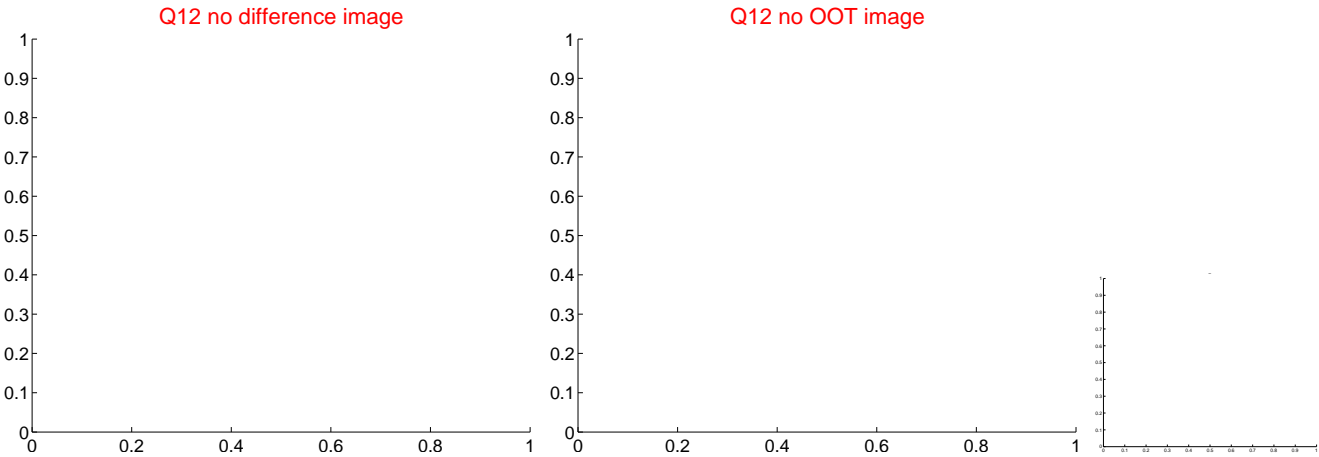
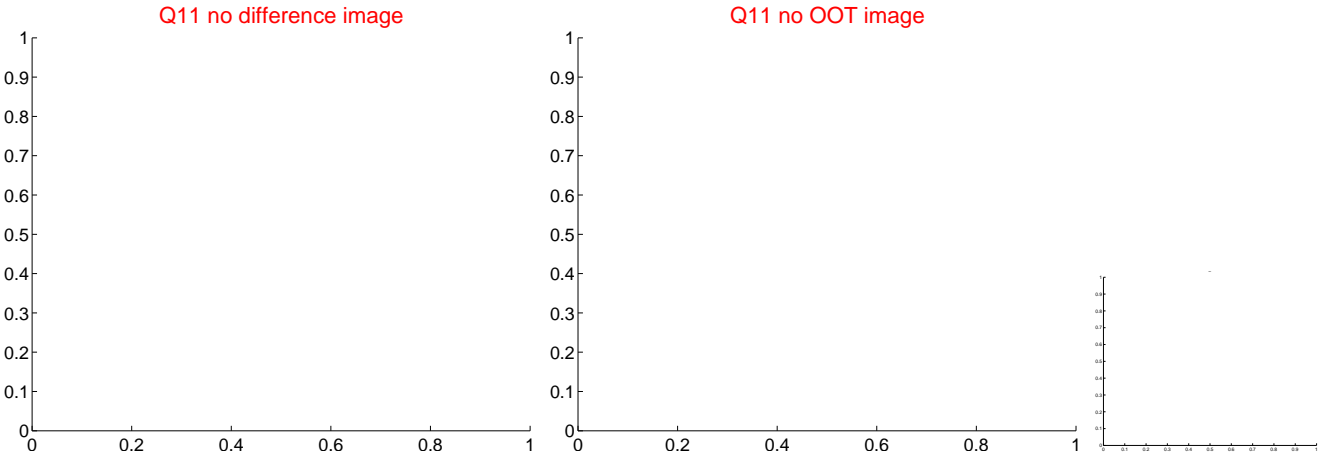
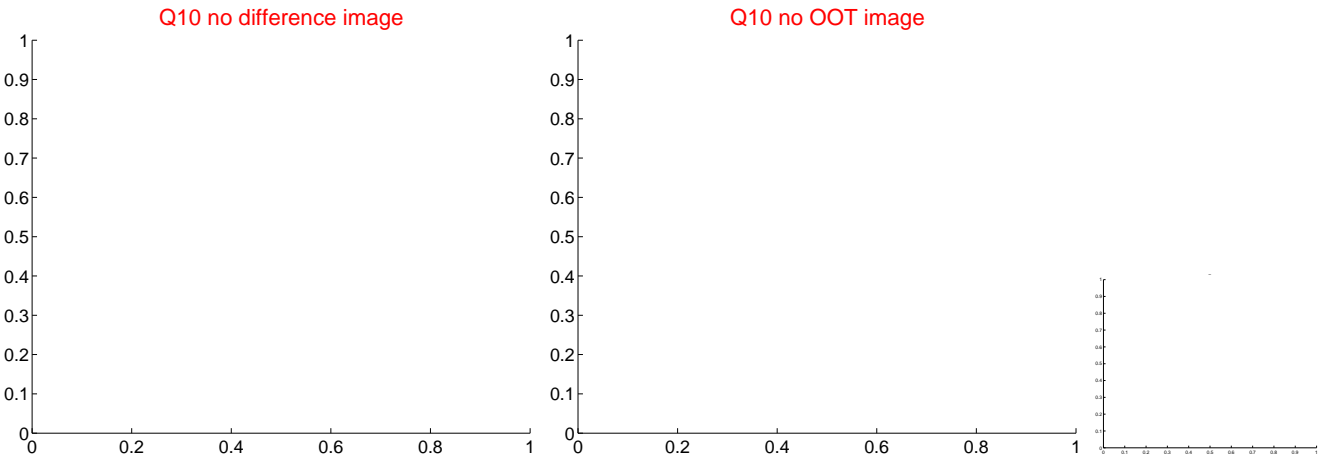
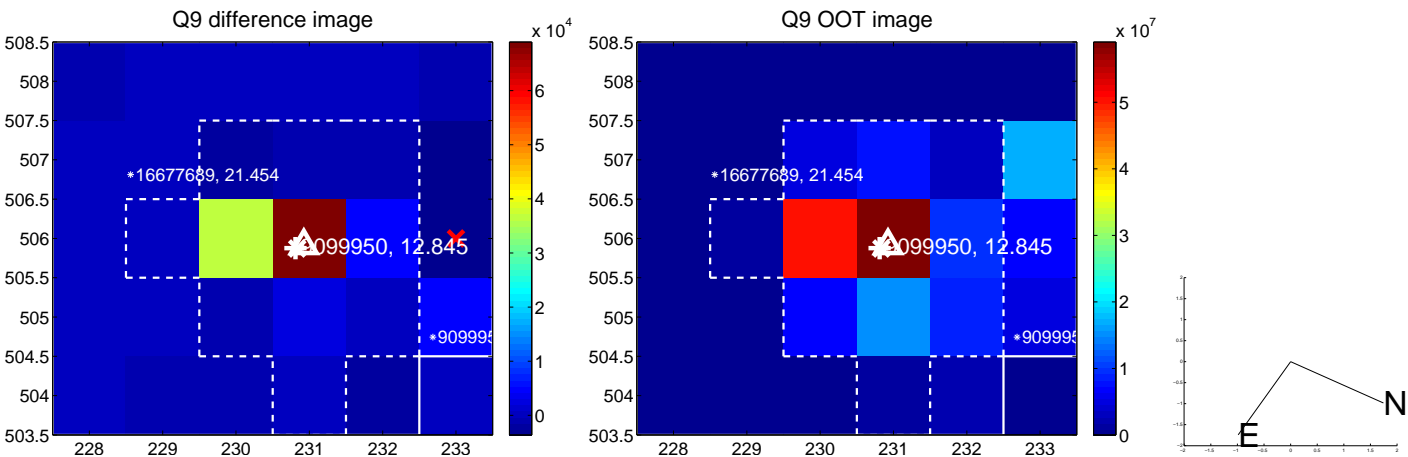
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



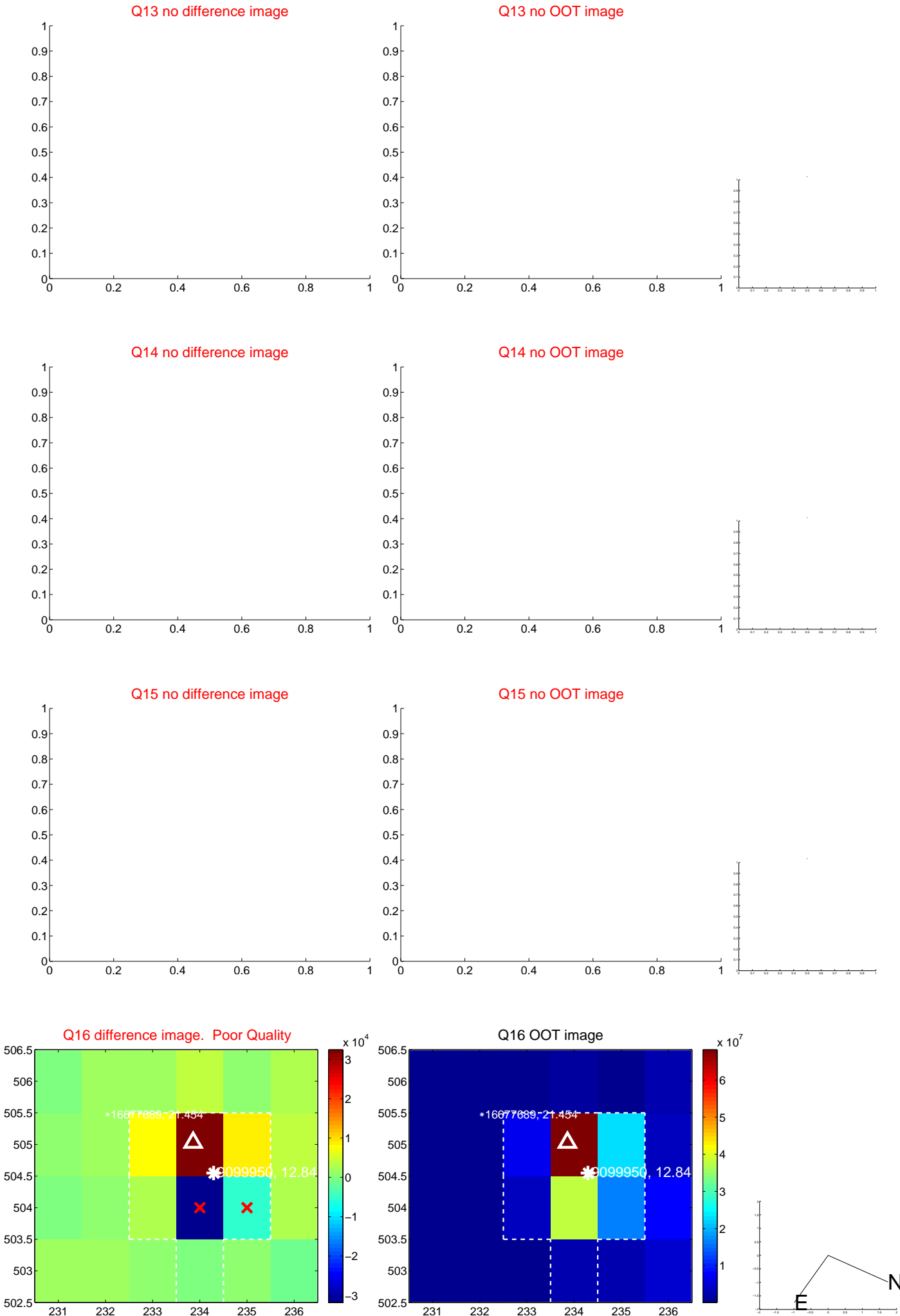
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



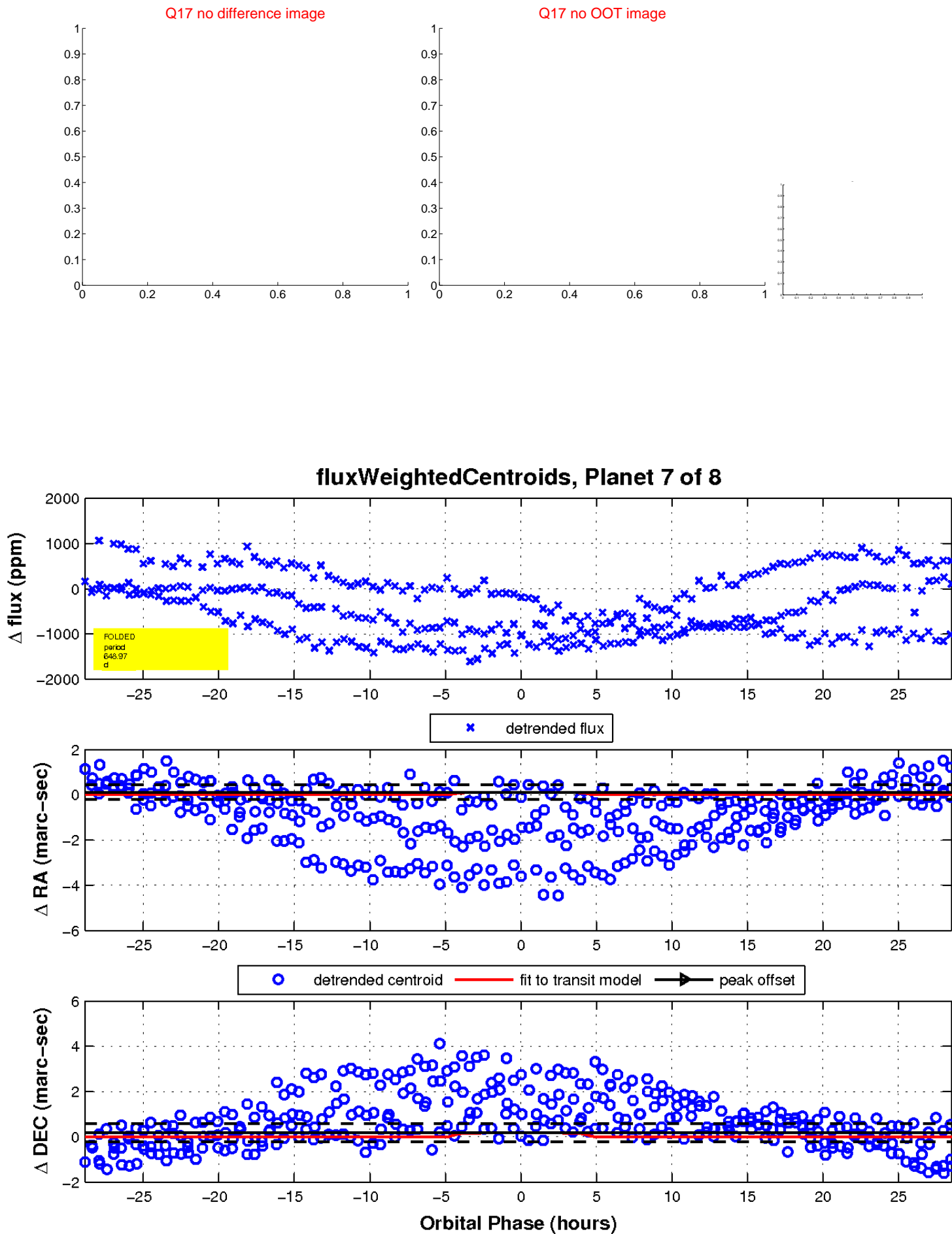
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

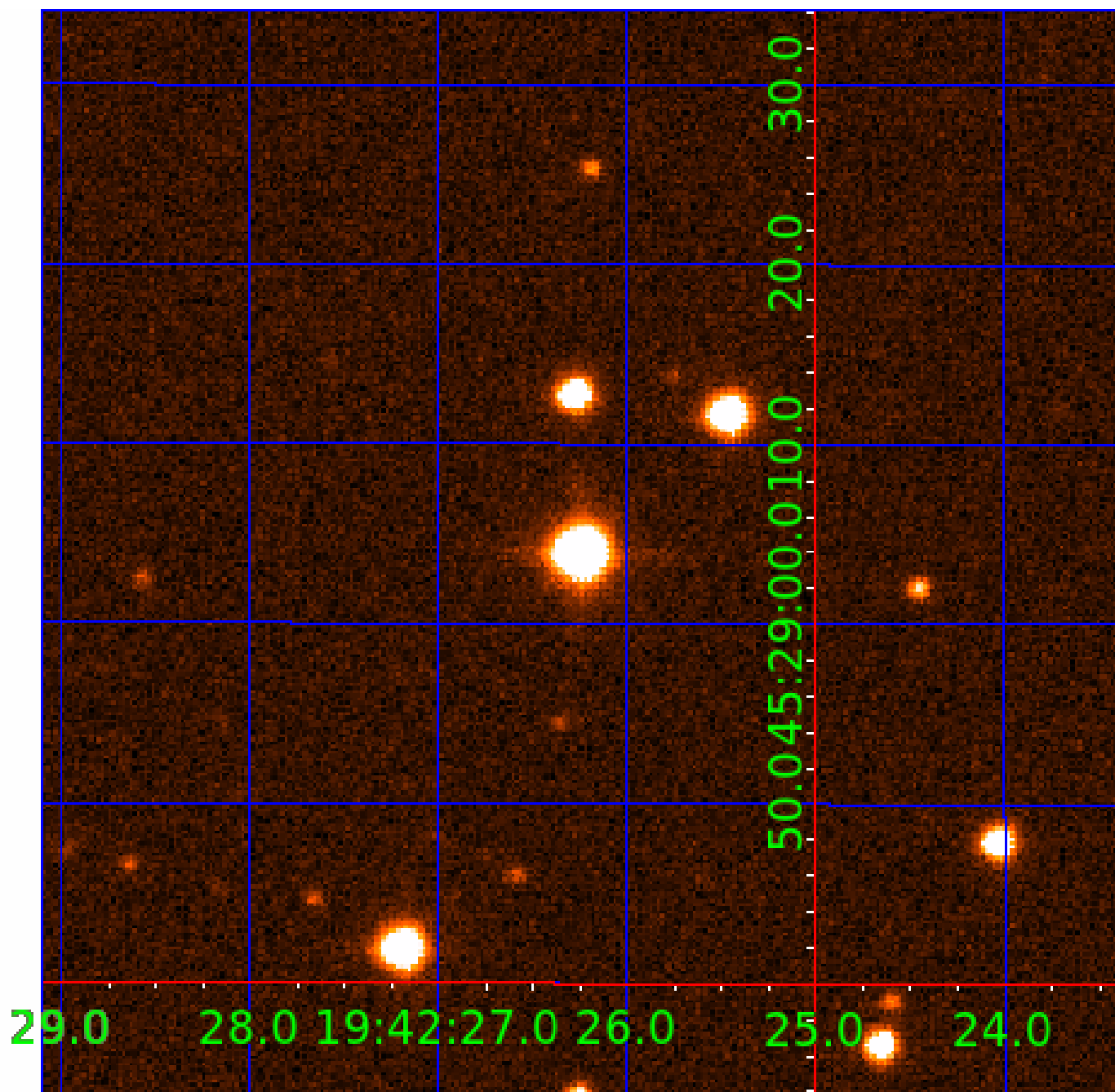


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009099950

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})
009099950-01	OBS	4125.01	1.111287	132.357275	35.0	4.555	17.3	14.6	2.31	6486	1.44	14968.94
009099950-02	OBS	No	258.643639	155.087871	478.5	14.855	10.3	7.0	2.31	6486	5.23	10.46
009099950-03	OBS	No	256.341306	170.177250	519.1	9.229	9.2	8.0	2.31	6486	6.55	10.58
009099950-04	OBS	No	287.434388	400.156029	619.6	10.998	8.7	7.2	2.31	6486	10.99	9.08
009099950-05	OBS	No	362.267766	321.919458	383.0	11.190	8.9	5.7	2.31	6486	5.30	6.67
009099950-06	OBS	No	426.360917	241.688650	722.8	8.660	8.5	9.0	2.31	6486	7.75	5.37
009099950-07	OBS	No	648.969862	201.926308	360.3	9.626	8.3	5.3	2.31	6486	5.04	3.07
009099950-08	OBS	No	309.674046	326.010681	364.6	11.669	8.1	4.5	2.31	6486	4.95	8.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009099950-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
009099950-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS
009099950-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009099950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009099950-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_MEAS
009099950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009099950-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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 009099950-08

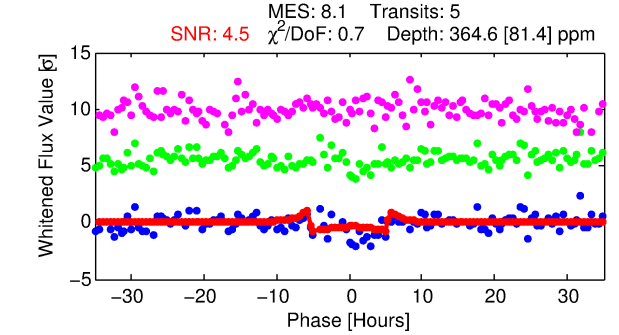
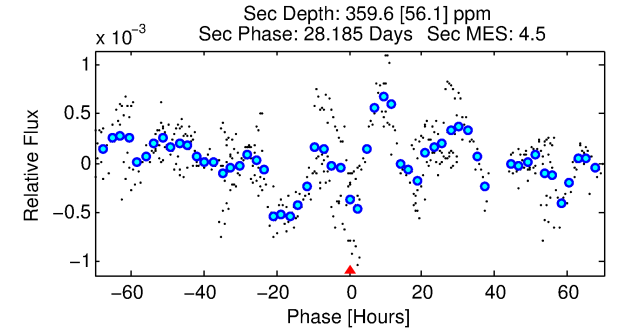
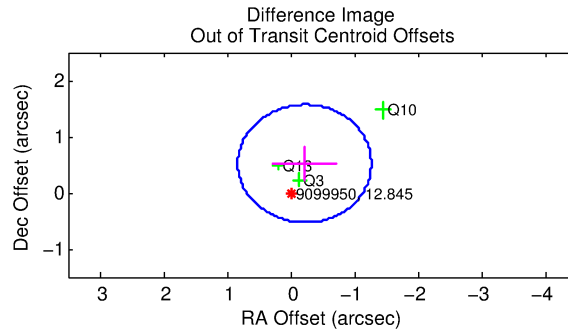
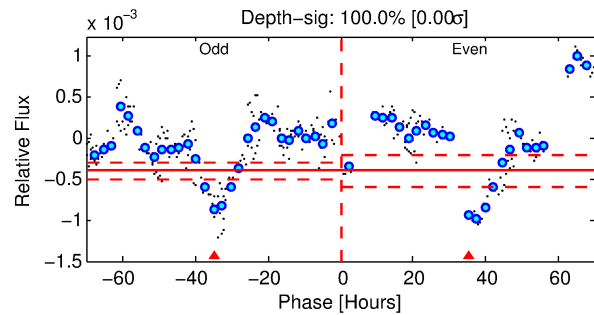
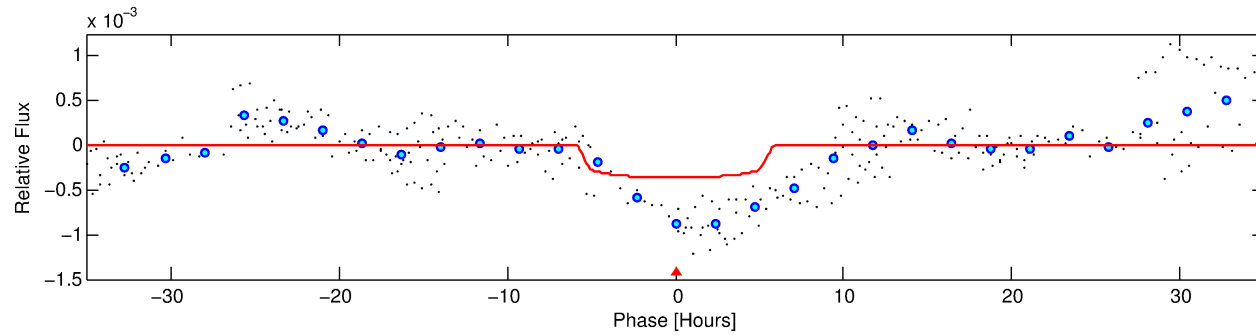
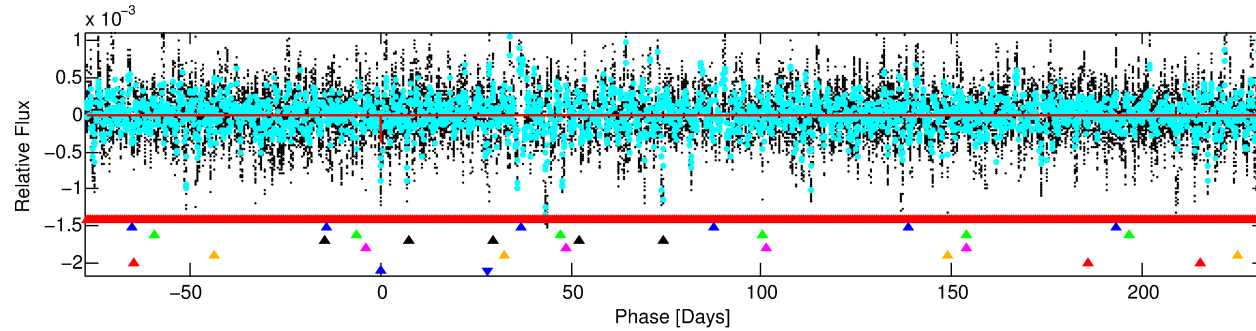
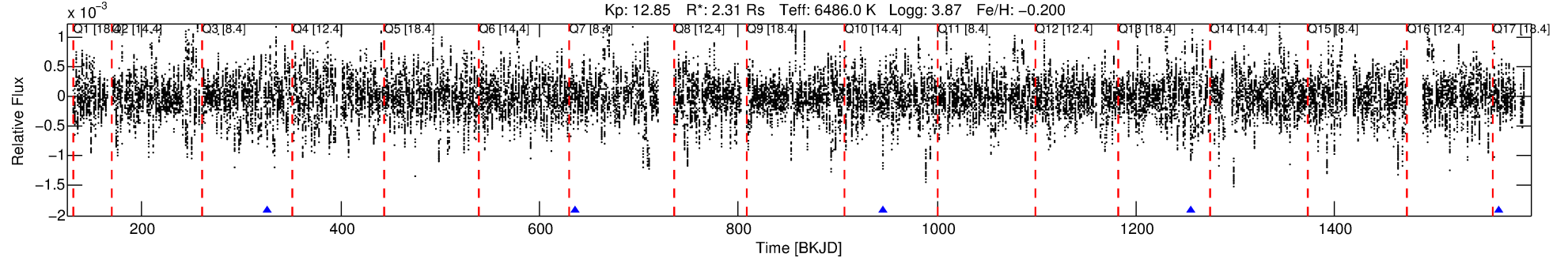
No Significant Match Found

DV One-Page Summary

KIC: 9099950 Candidate: 8 of 8 Period: 309.674 d

KOI: K04125 Corr: No Ephemeris Match

Kp: 12.85 R*: 2.31 Rs Teff: 6486.0 K Logg: 3.87 Fe/H: -0.200



DV Fit Results:

Period = 309.67405 [0.00434] d
Epoch = 326.0107 [0.0112] BKJD
Rp/R* = 0.0196 [0.0031]
a/R* = 118.28 [58.02]
b = 0.84 [0.18]
Seff = 8.22 [4.13]
Teff = 432 [54] K
Rp = 4.95 [1.91] Re
a = 1.0134 [0.3226] AU
Ag = 8305.83 [5031.28] [1.65σ]
Teffp = 6374 [594] K [9.97σ]

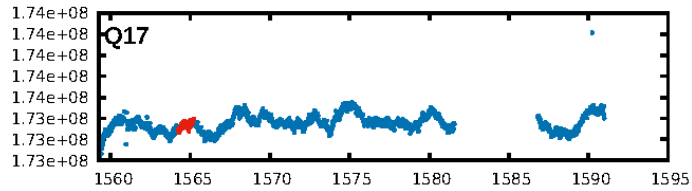
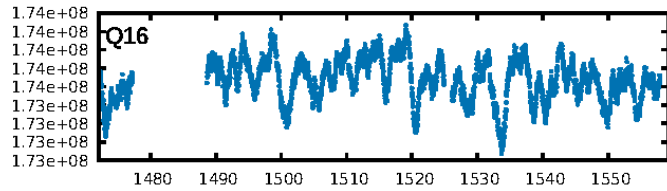
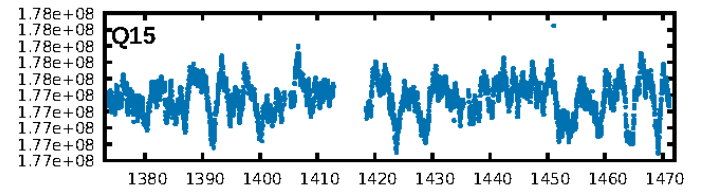
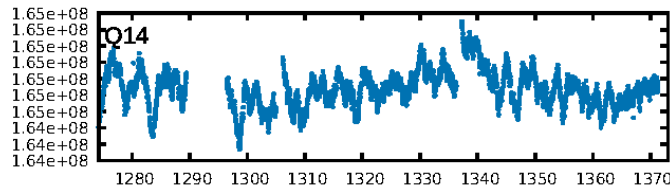
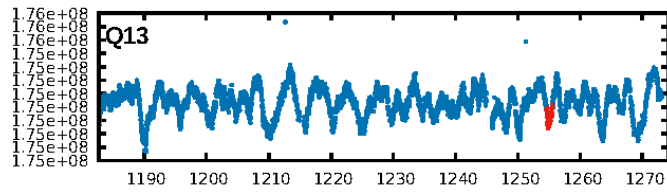
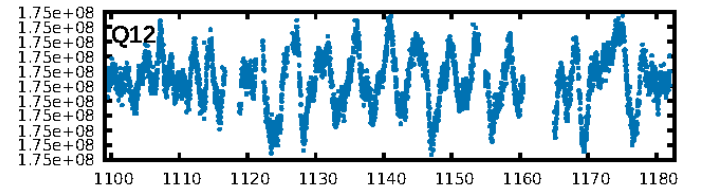
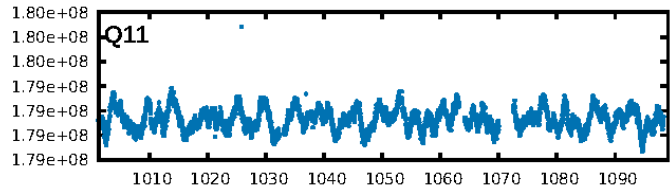
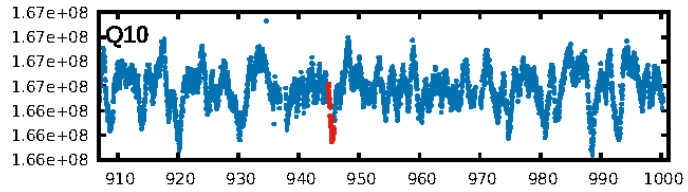
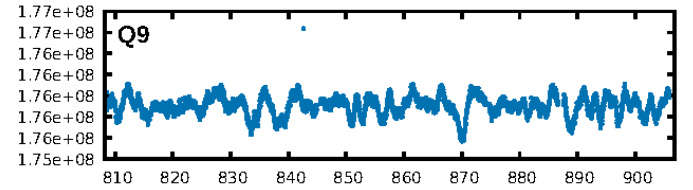
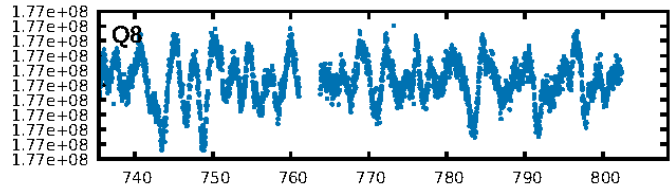
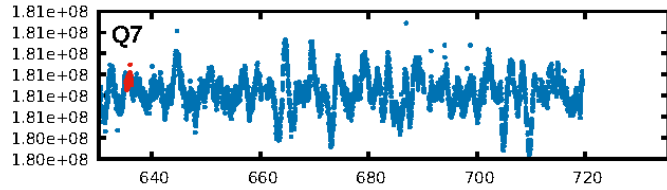
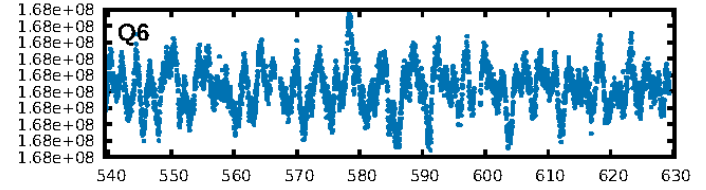
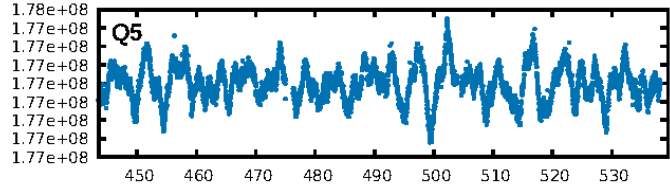
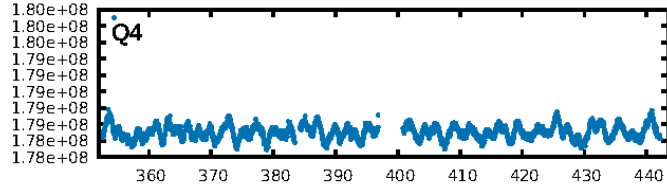
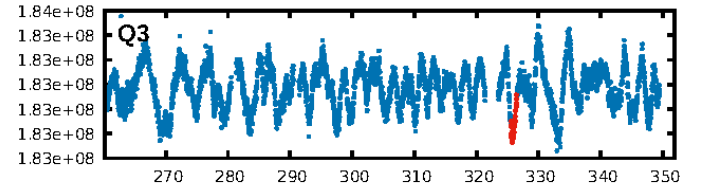
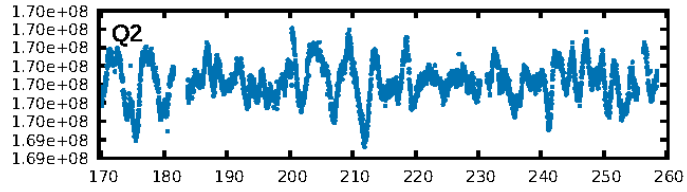
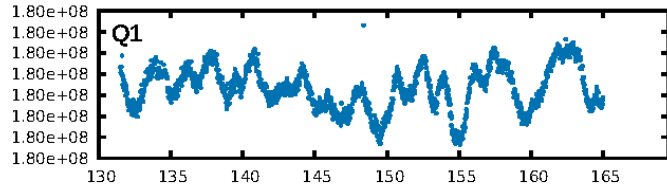
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.29σ]
LongPeriod-sig: 100.0% [78.08σ]
ModelChiSquare2-sig: 72.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.81e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.662
Centroid-sig: 47.0%
Centroid-so: 1.308 arcsec [1.44σ]
OotOffset-rm: 0.563 arcsec [1.61σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.470 arcsec [1.00σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/5]

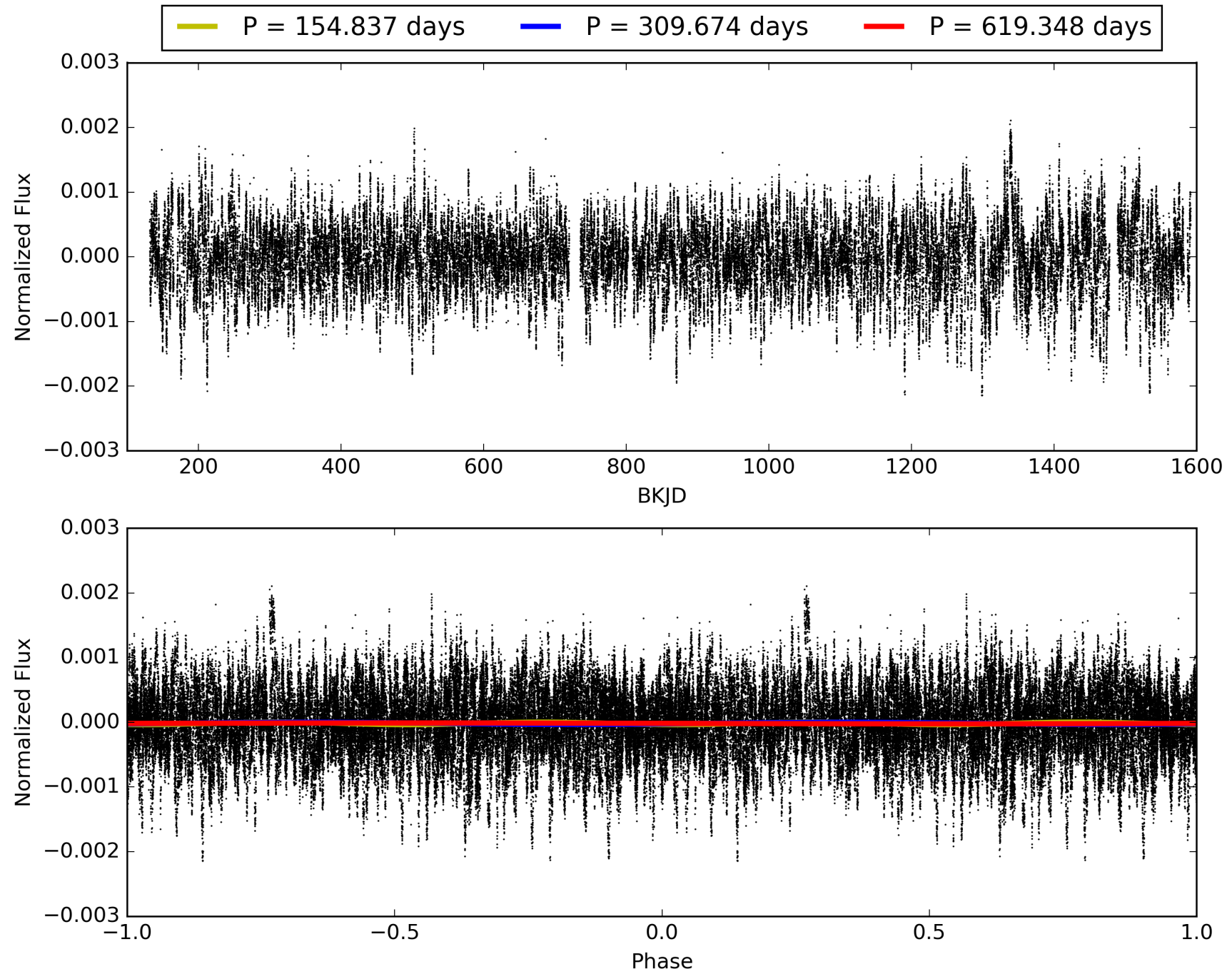
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:45:39 Z

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

TCE 009099950-08, PDC Light Curves

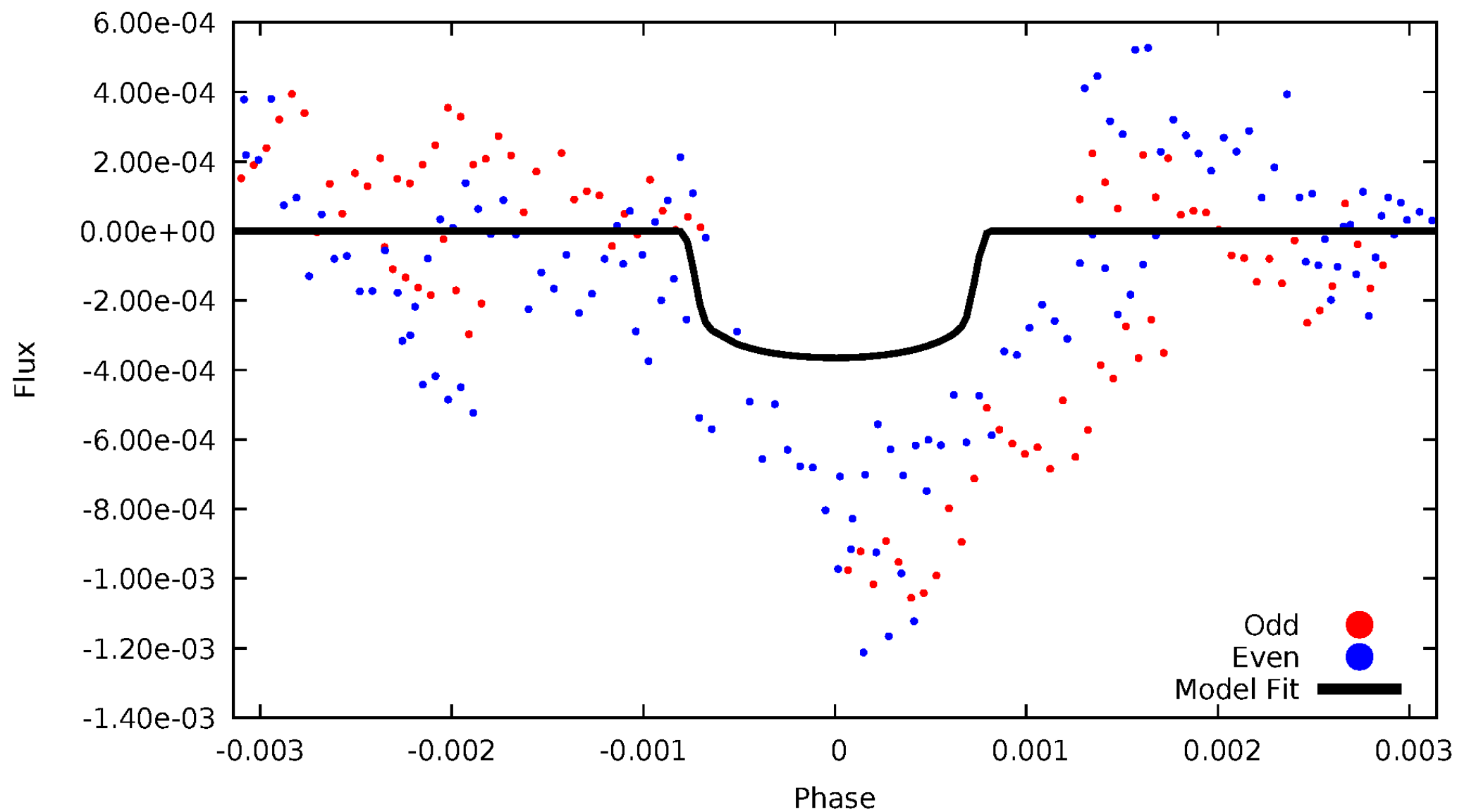


TCE 009099950-08



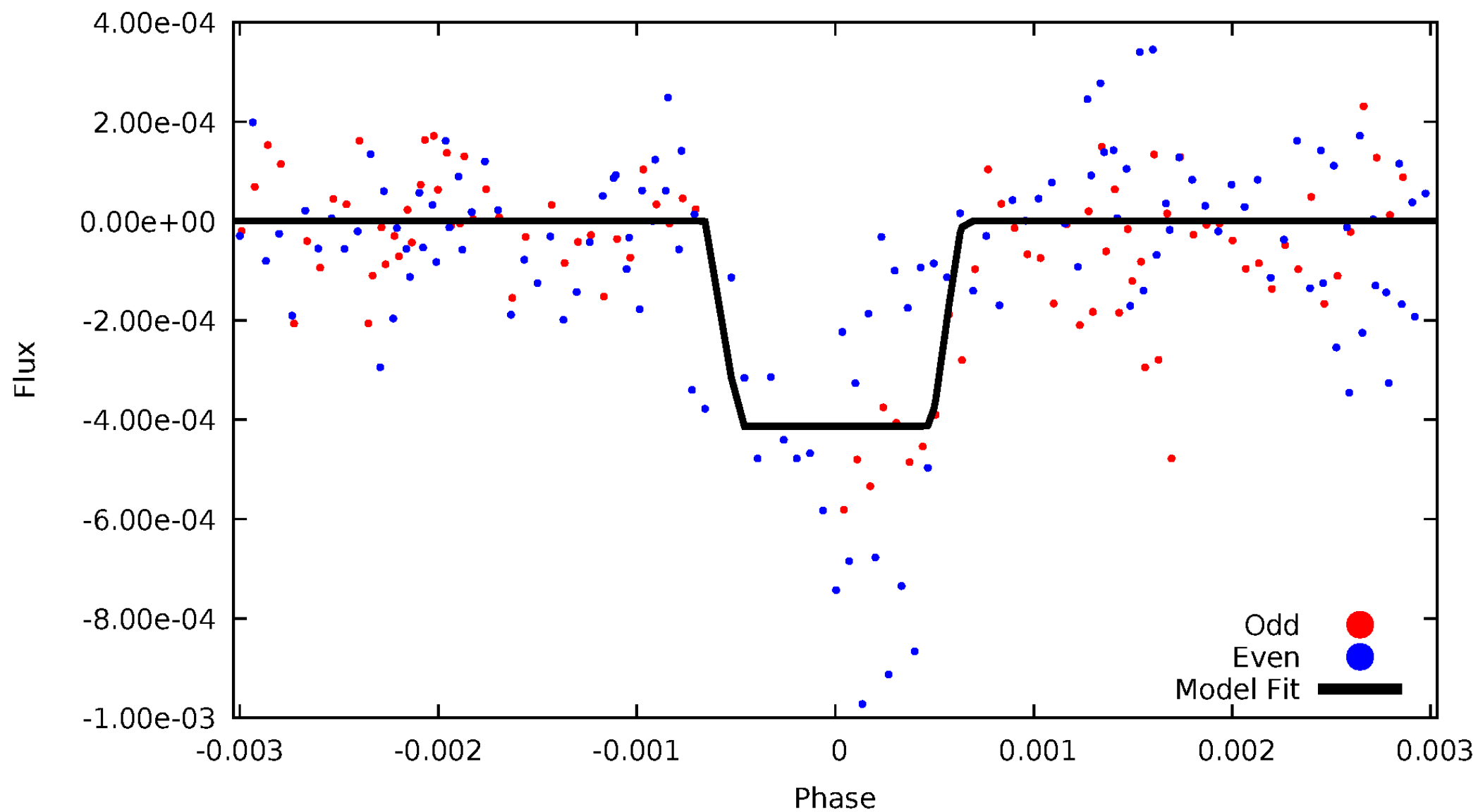
DV Odd/Even

TCE 009099950-08



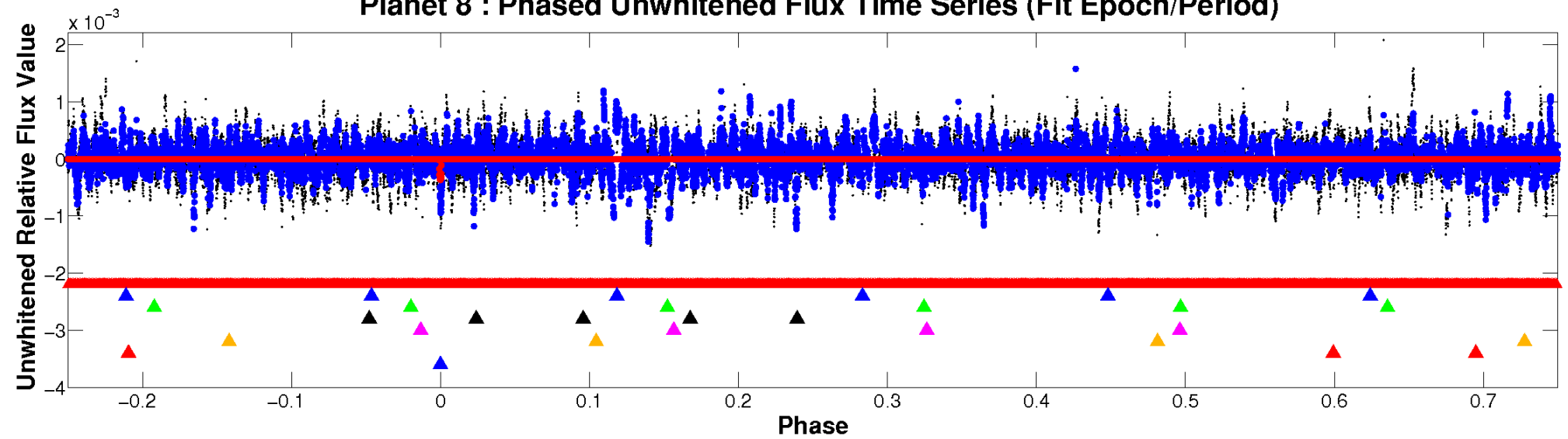
ALT Odd/Even

TCE 009099950-08

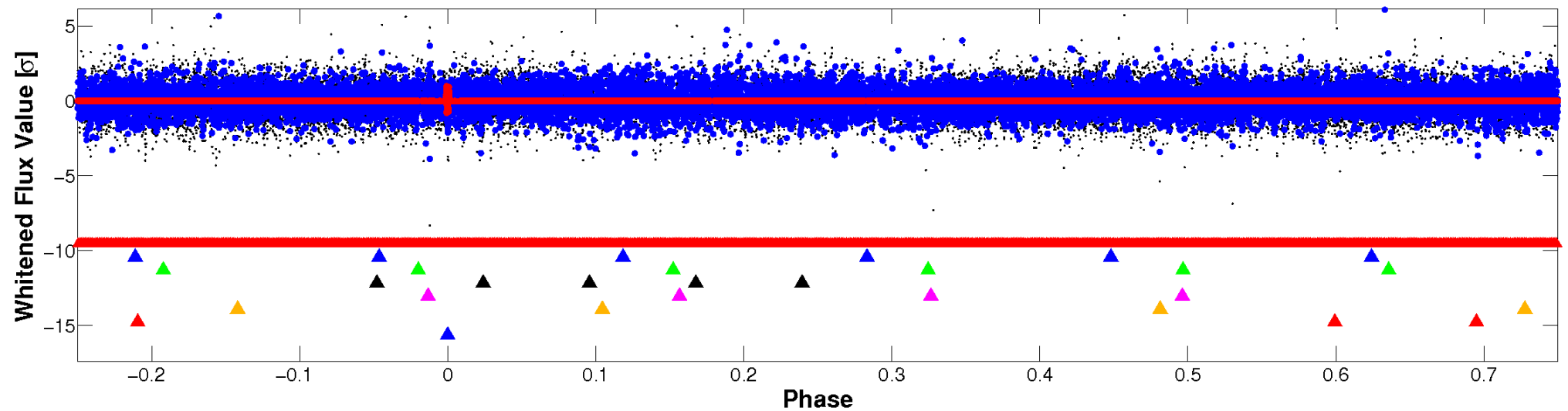


Non-Whitened Vs. Whitened Light Curve

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

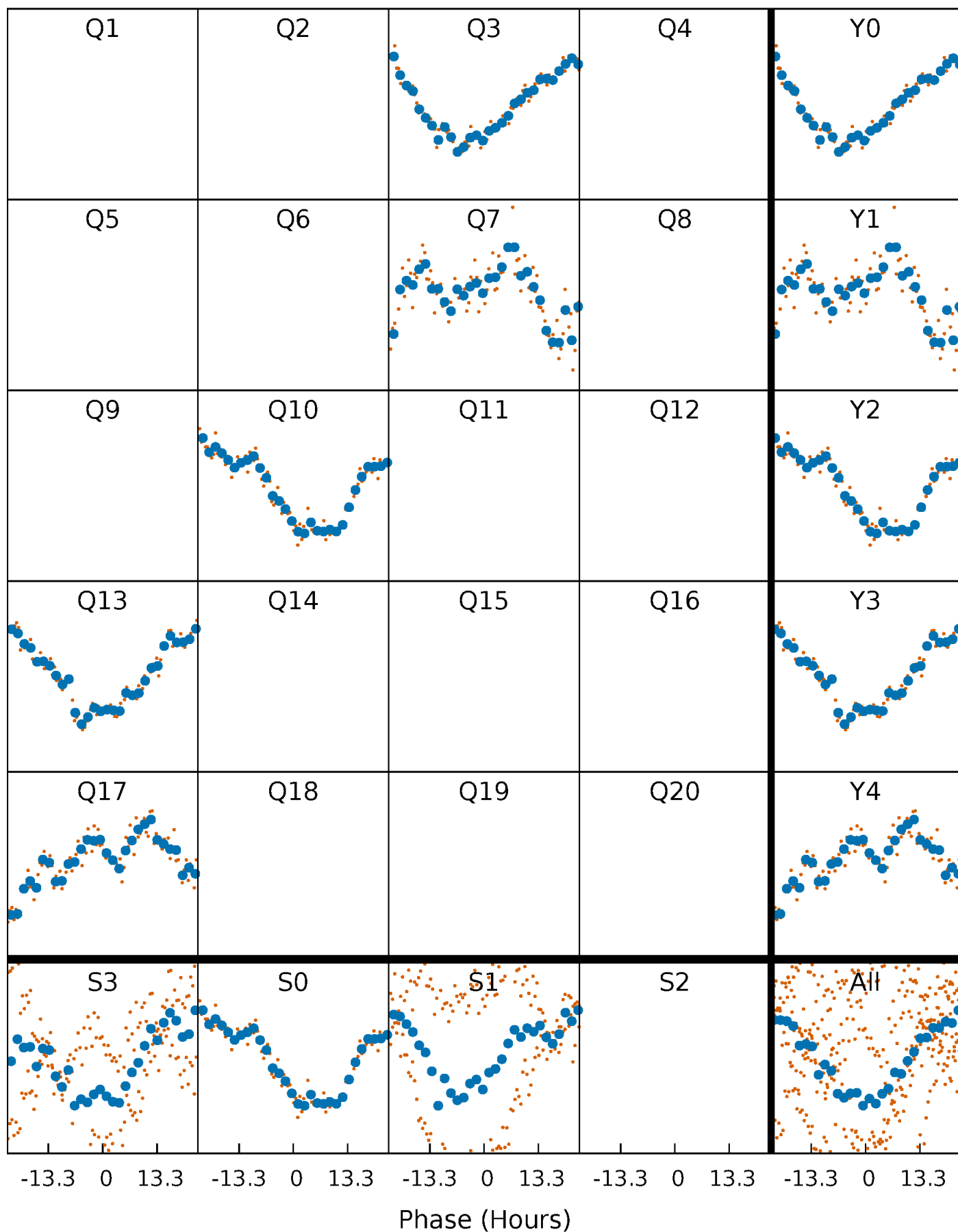


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



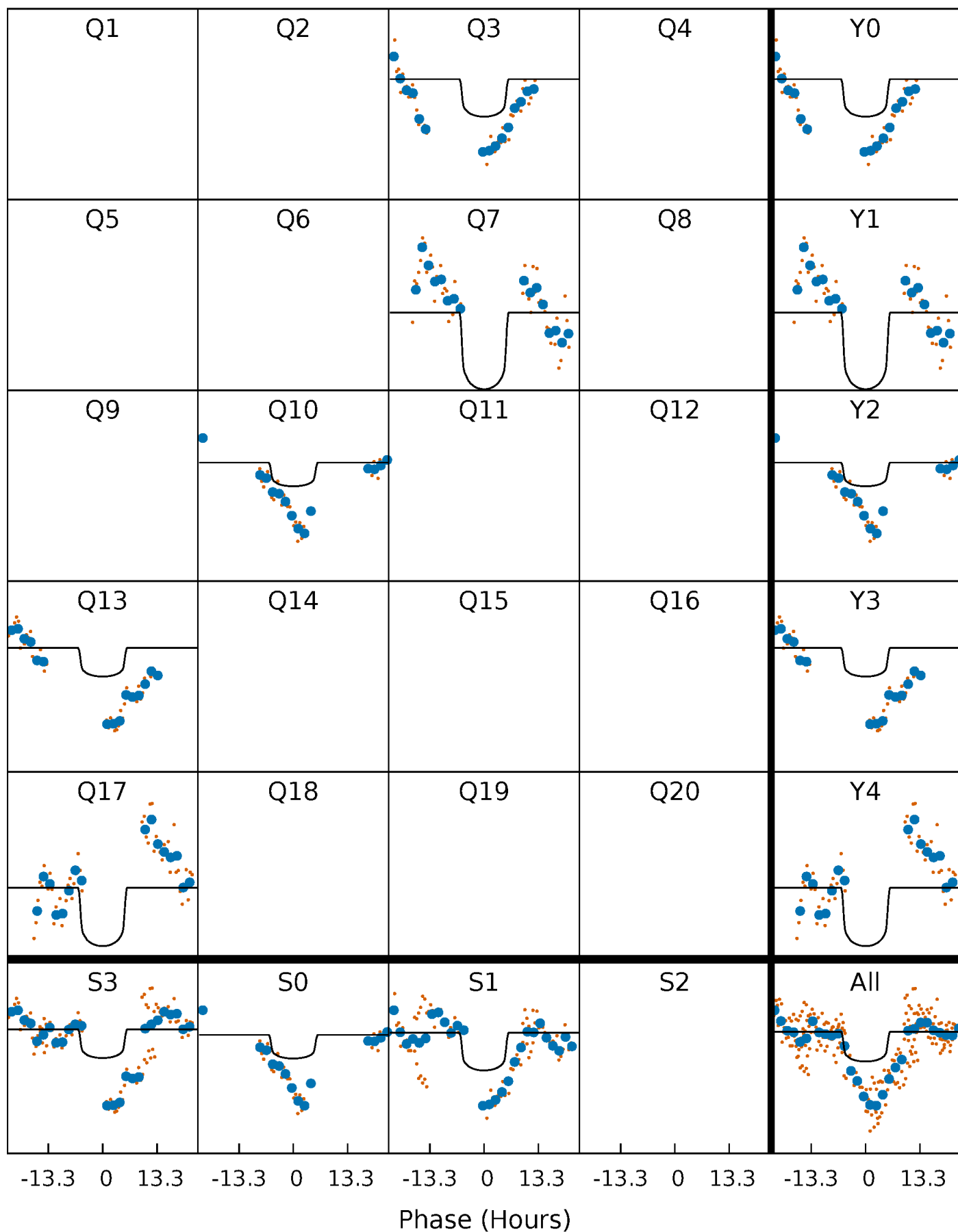
PDC Quarter-Phased Transit Curves

TCE 009099950-08 $P=309.674046$ Days $T_0=326.010681$ (BKJD)



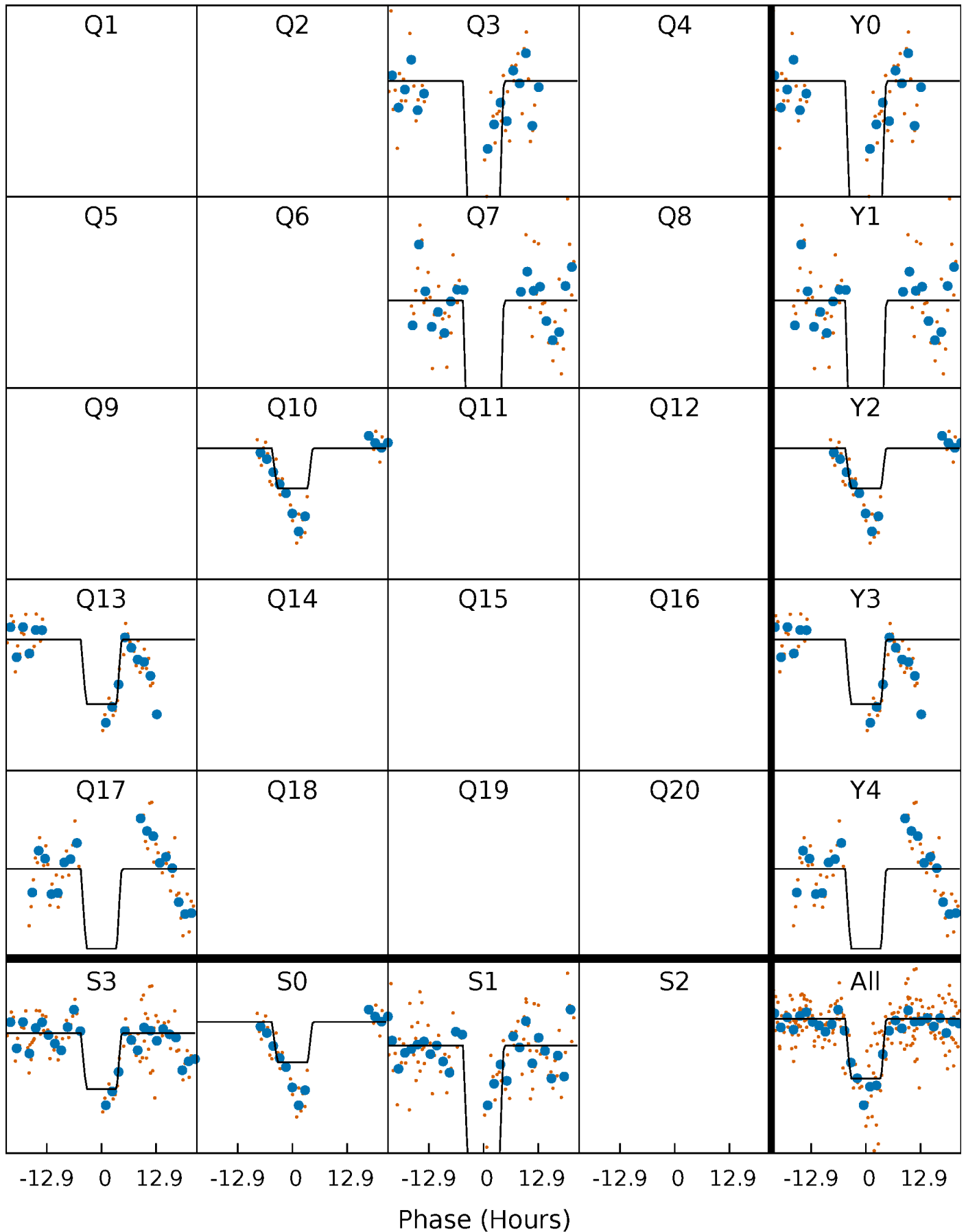
DV Quarter-Phased Transit Curves

TCE 009099950-08 $P=309.674046$ Days $T_0=326.010681$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

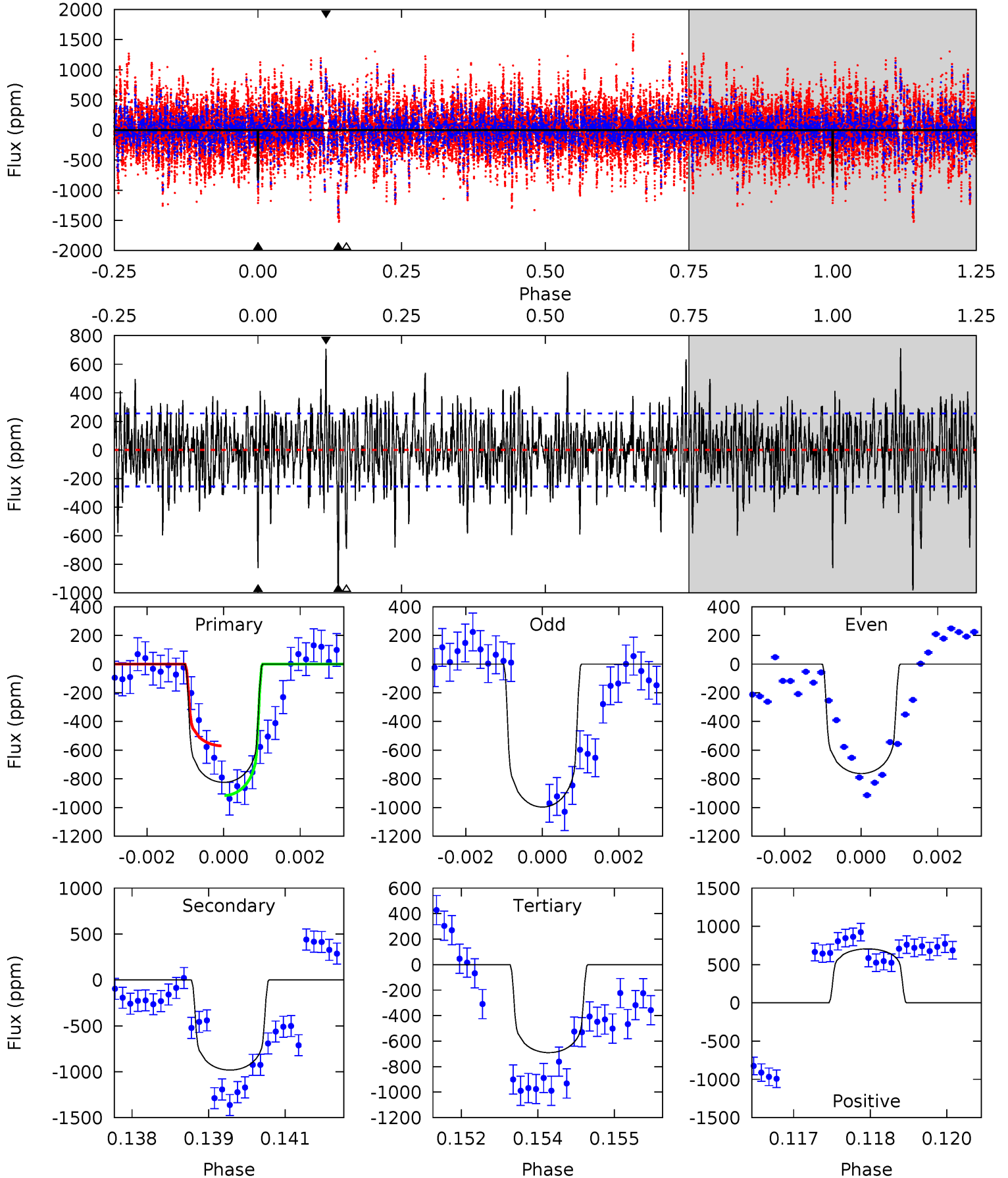
TCE 009099950-08 $P=309.677413$ Days $T_0=326.007821$ (BKJD)



DV Model-Shift Uniqueness Test

009099950-08, P = 309.674046 Days, E = 16.336635 Days

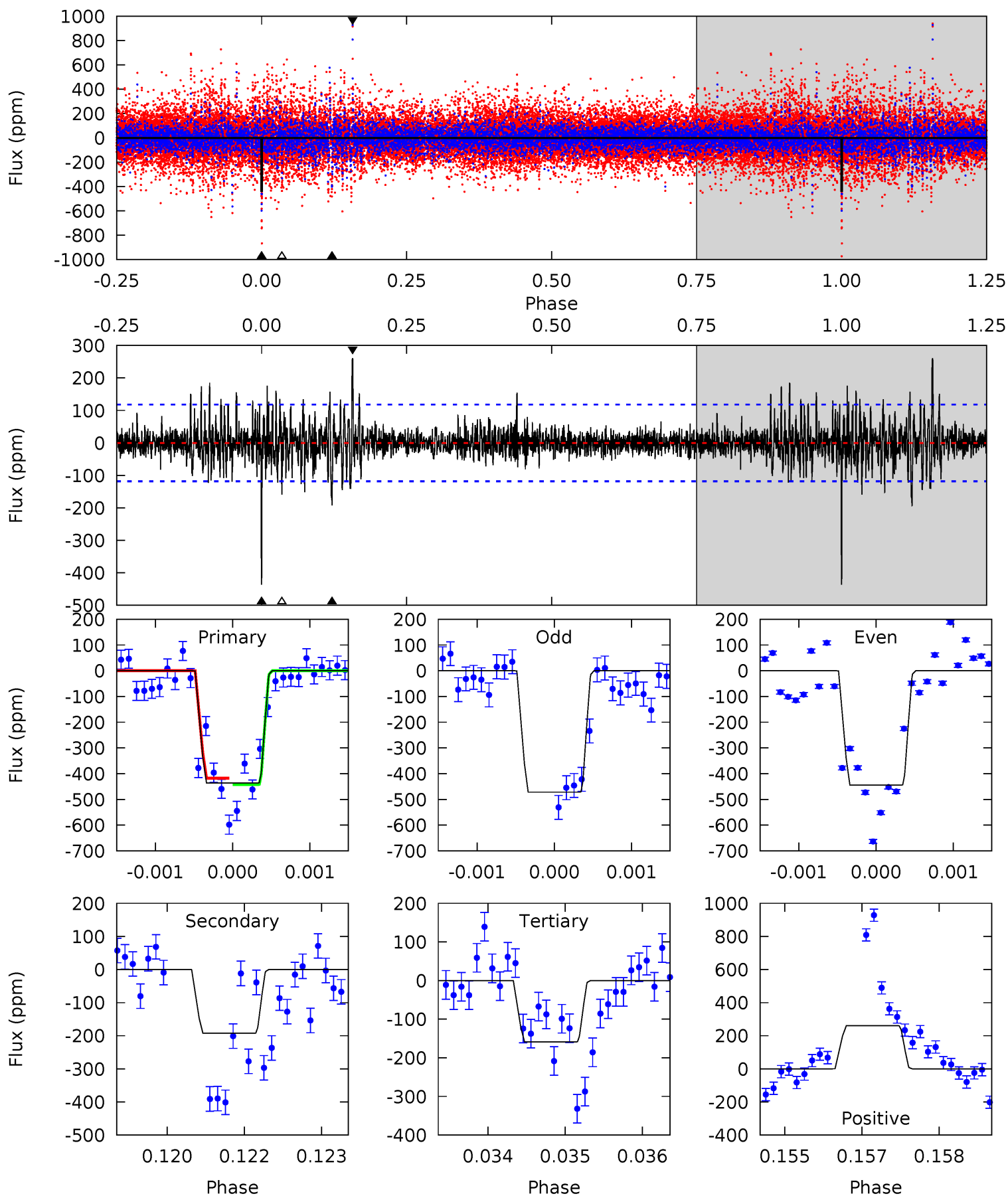
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	20.6	14.5	14.8	5.37	3.16	3.72	2.82	2.49	6.13	5.80	2.22	0.72	0.42	3.46



Alt Model-Shift Uniqueness Test

009099950-08, P = 309.677413 Days, E = 16.330408 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.9	8.80	7.26	11.9	5.40	3.21	1.62	12.7	8.04	1.54	-3.11	0.57	0.86	0.37	0.50



Stellar Parameters For KIC 009099950

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+156}_{-176}	$3.872^{+0.280}_{-0.100}$	$-0.200^{+0.300}_{-0.250}$	$2.308^{+0.438}_{-0.813}$	$1.446^{+0.183}_{-0.313}$	$0.166^{+0.332}_{-0.050}$
	+2%/-3%	+7%/-3%	+150%/-125%	+19%/-35%	+13%/-22%	+200%/-30%
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 009099950-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-982 ± 48	$4.73^{+1.03}_{-1.05}$	594^{+33}_{-50}	8509^{+1105}_{-822}	24849^{+15186}_{-7861}
Alt.	-192 ± 22	$4.86^{+1.11}_{-1.03}$	594^{+35}_{-53}	5356^{+481}_{-374}	4541^{+2705}_{-1603}

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

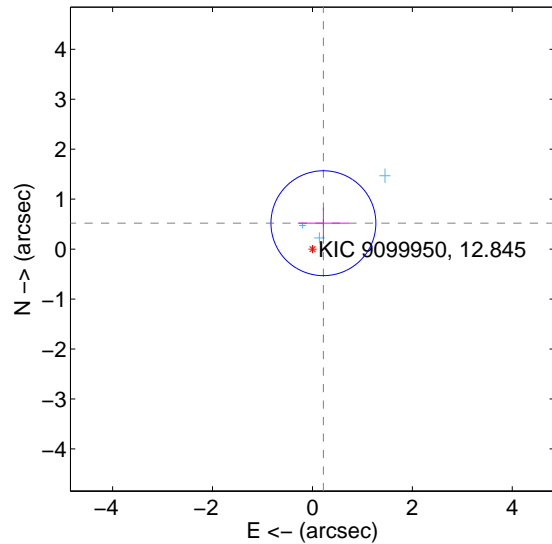
Supplemental centroid analysis for 009099950-08. Kepler magnitude: 12.85. Transit SNR 4.47

There are 3 quarters with good PRF difference image offsets

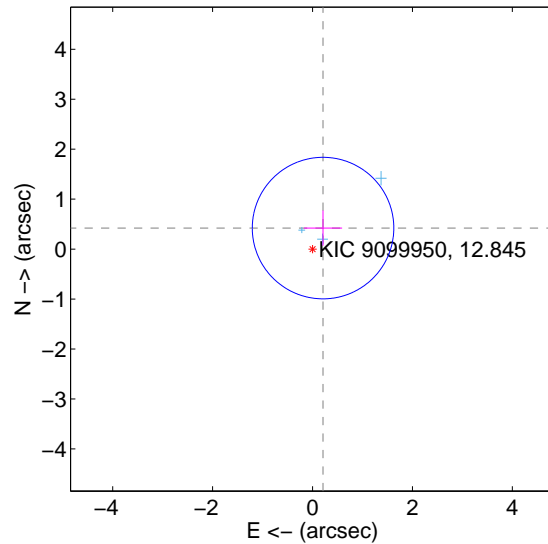
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.563 ± 0.350	1.61	-0.219 ± 0.509	0.518 ± 0.313
PRF-fit source offset from KIC position	0.470 ± 0.472	1.00	-0.211 ± 0.383	0.421 ± 0.354
photometric centroid source offset	1.31 ± 0.91	1.44	-0.41 ± 0.94	1.24 ± 0.91

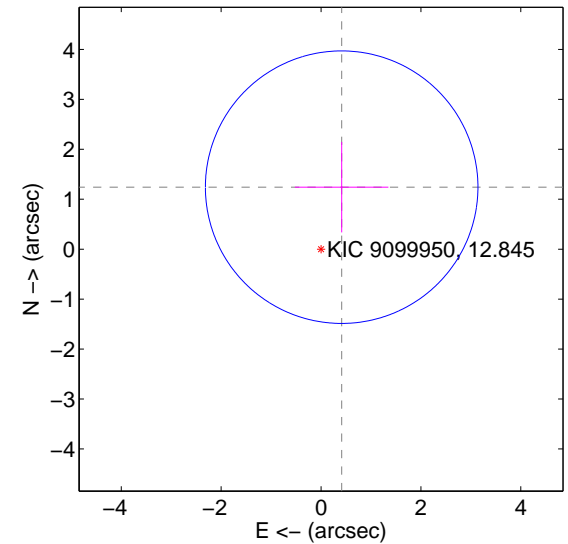
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

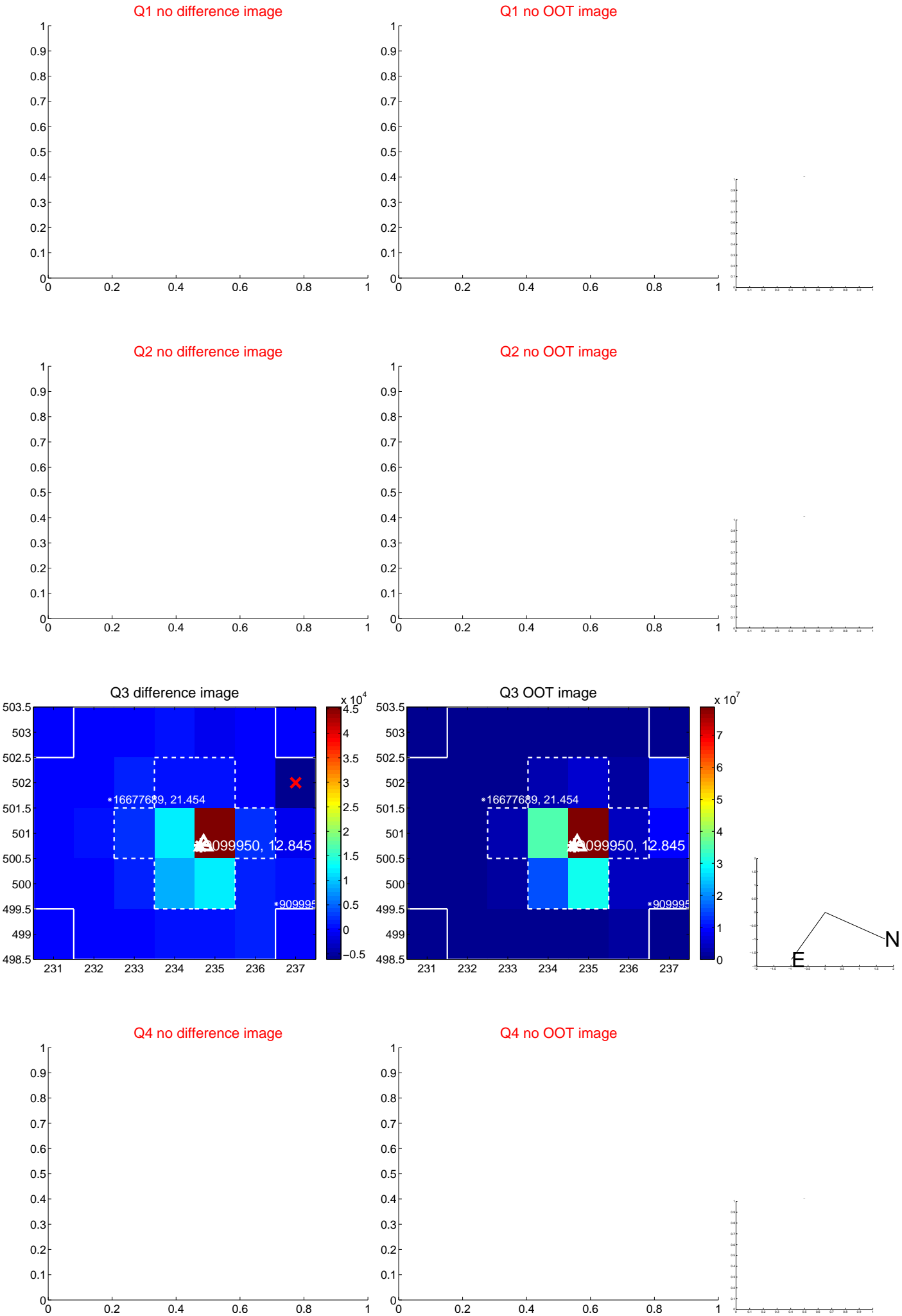


offset from photometric centroids

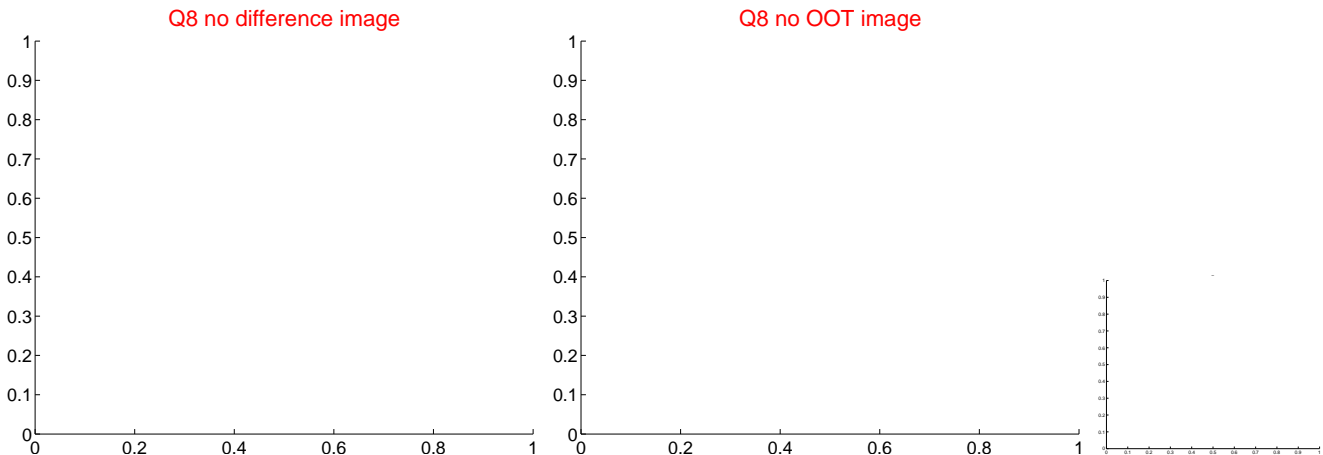
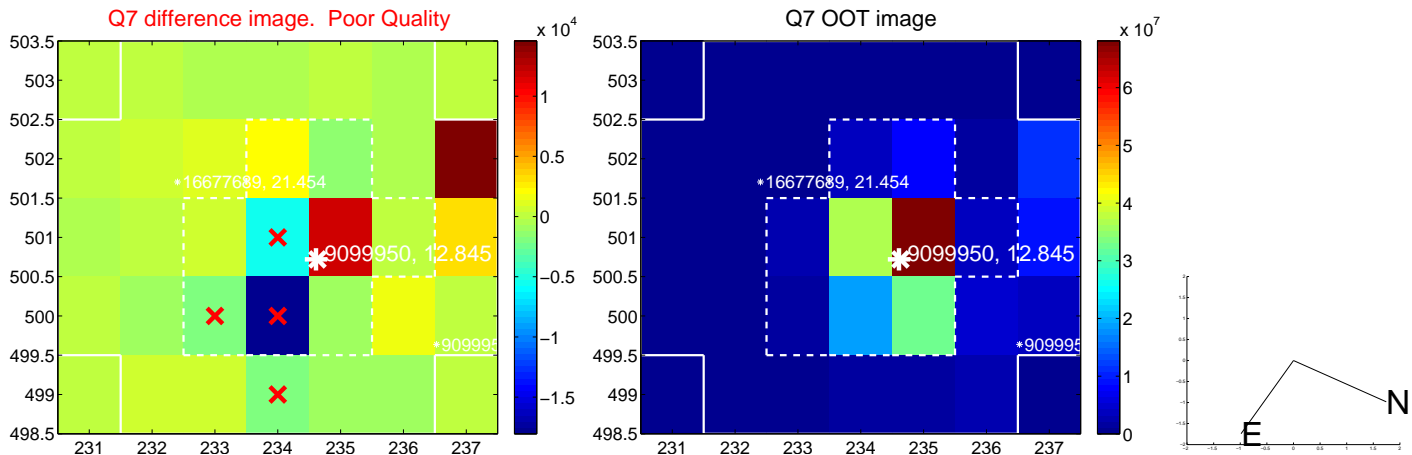
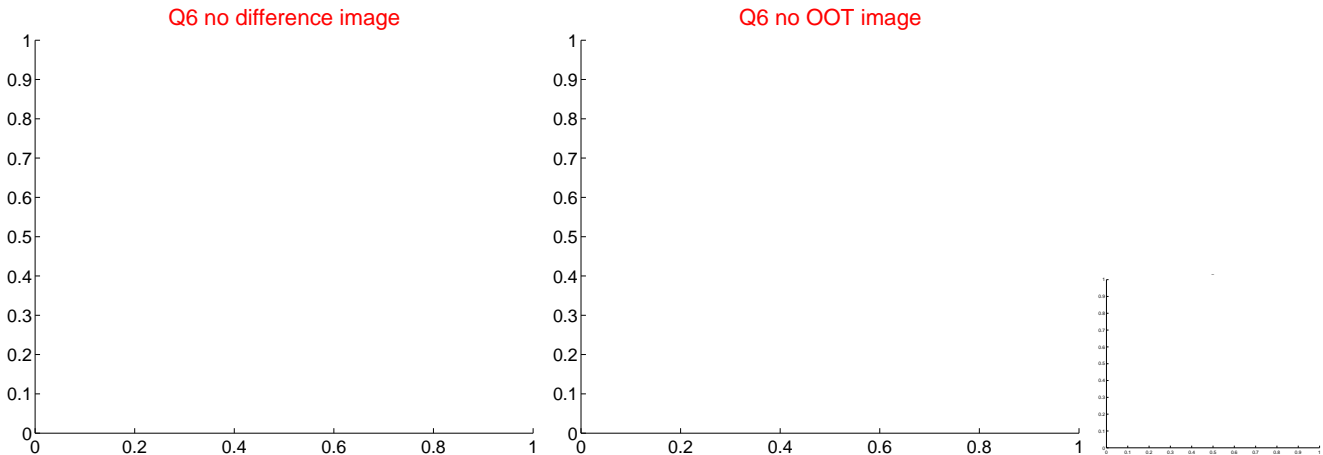
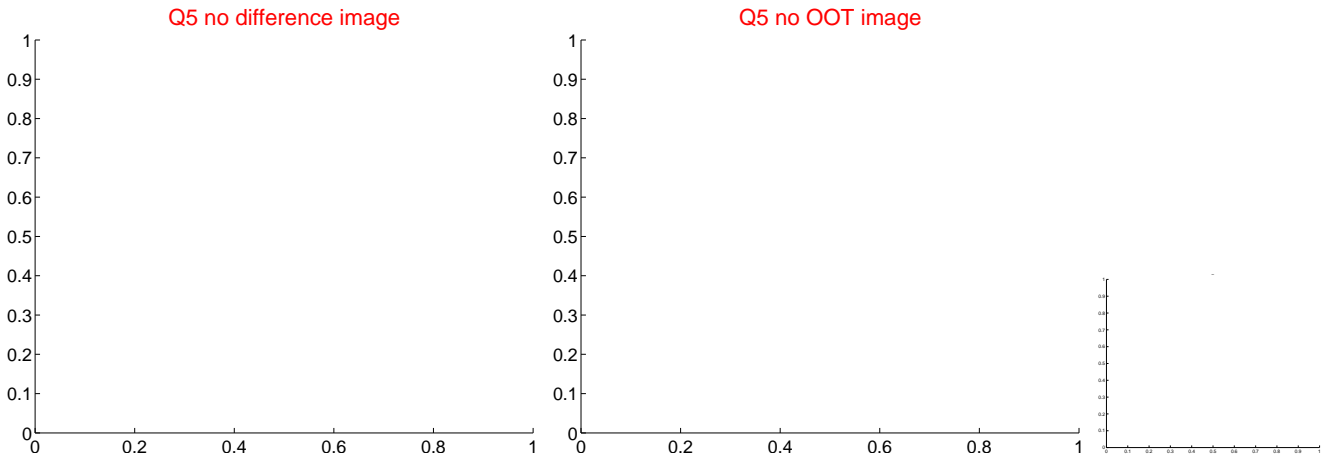


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

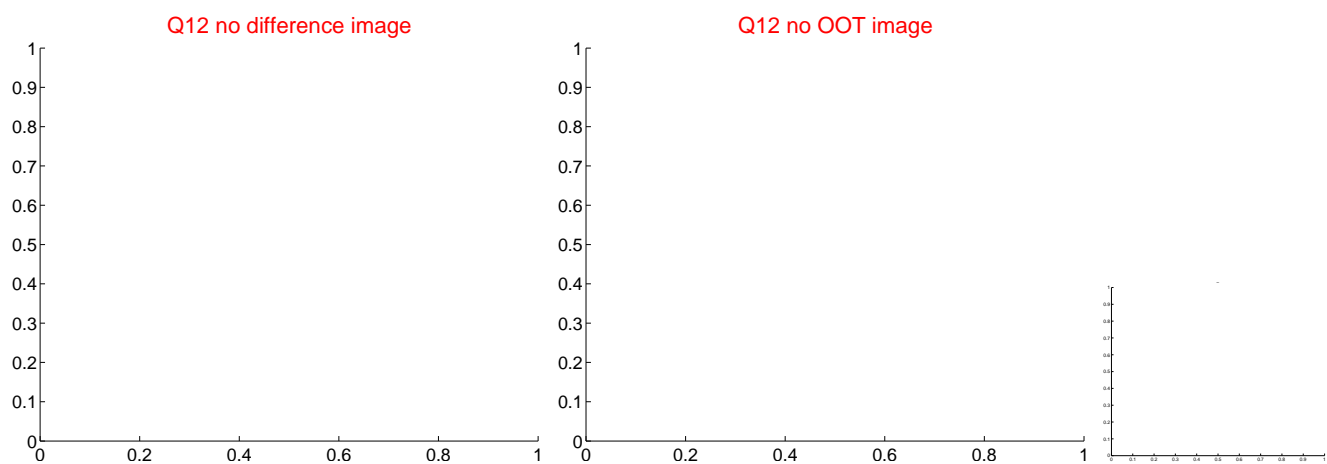
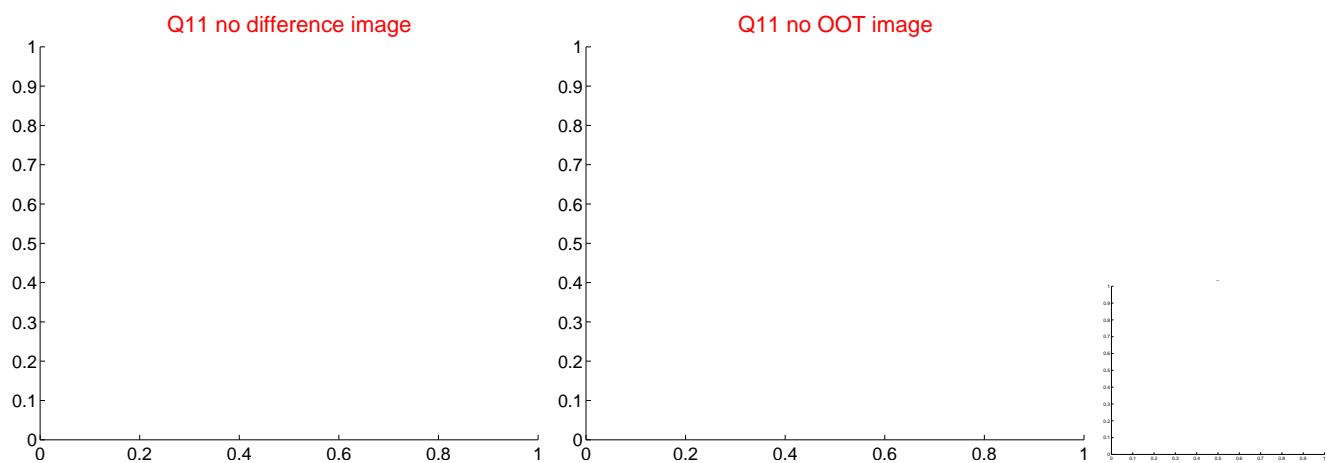
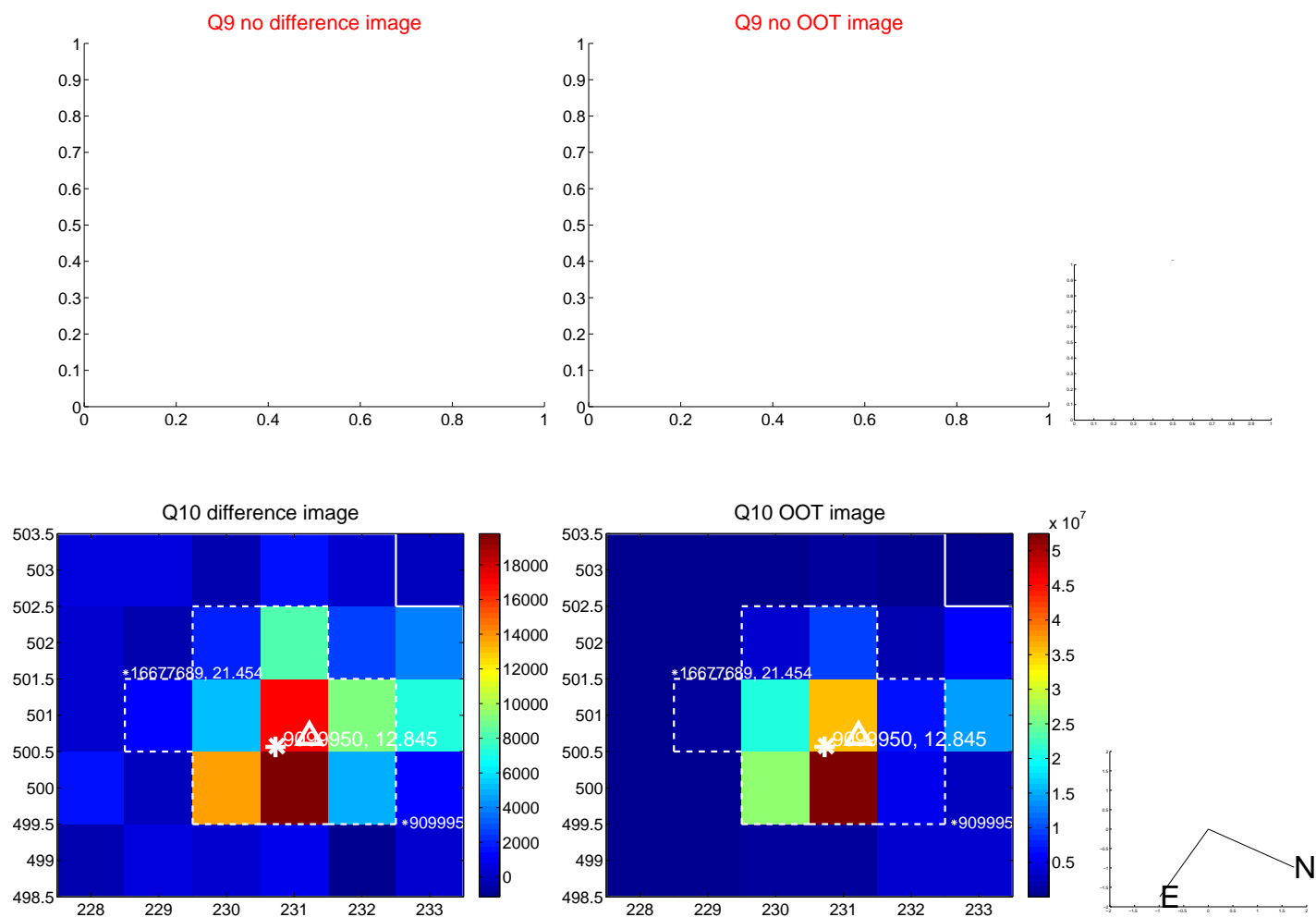
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



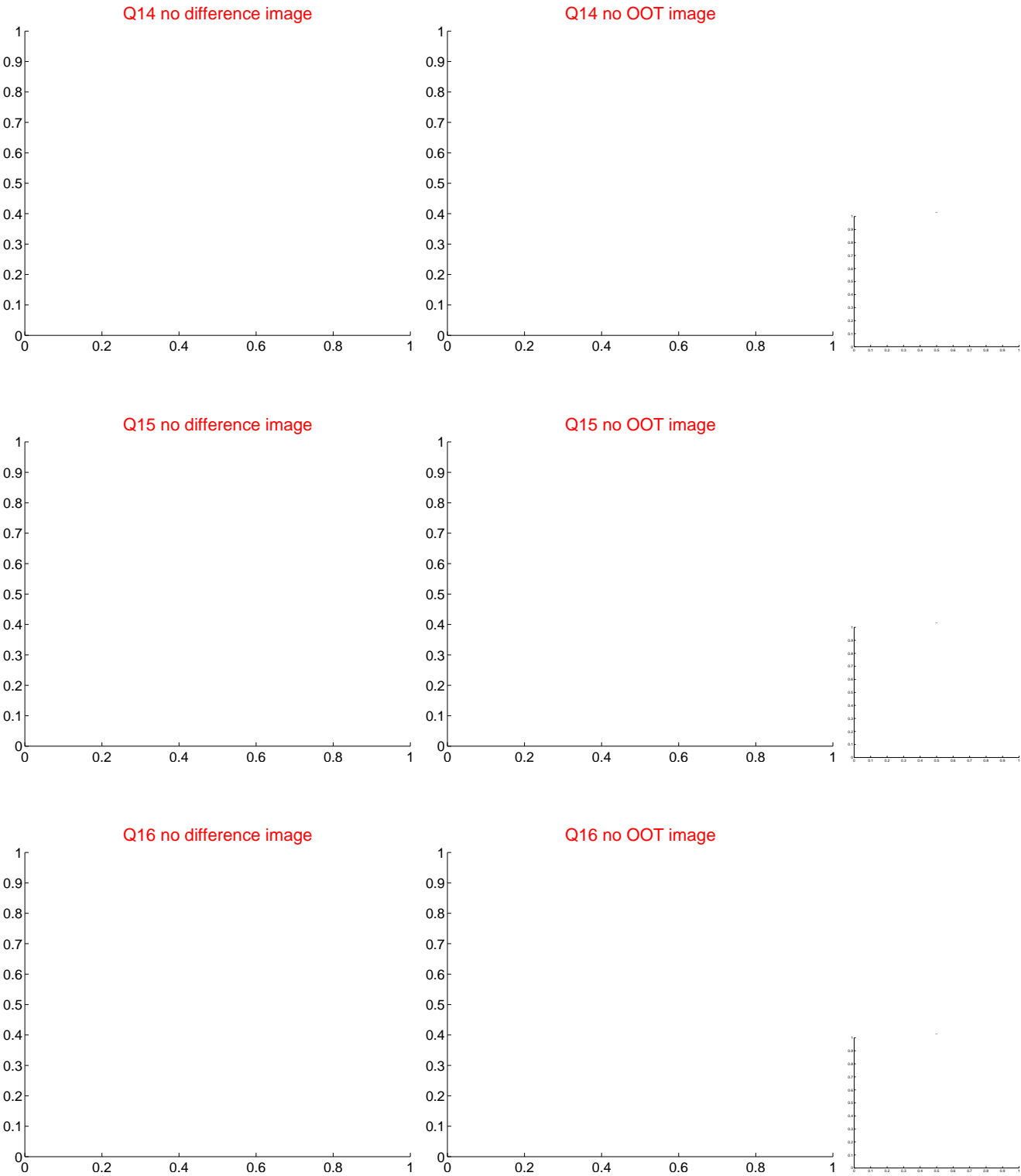
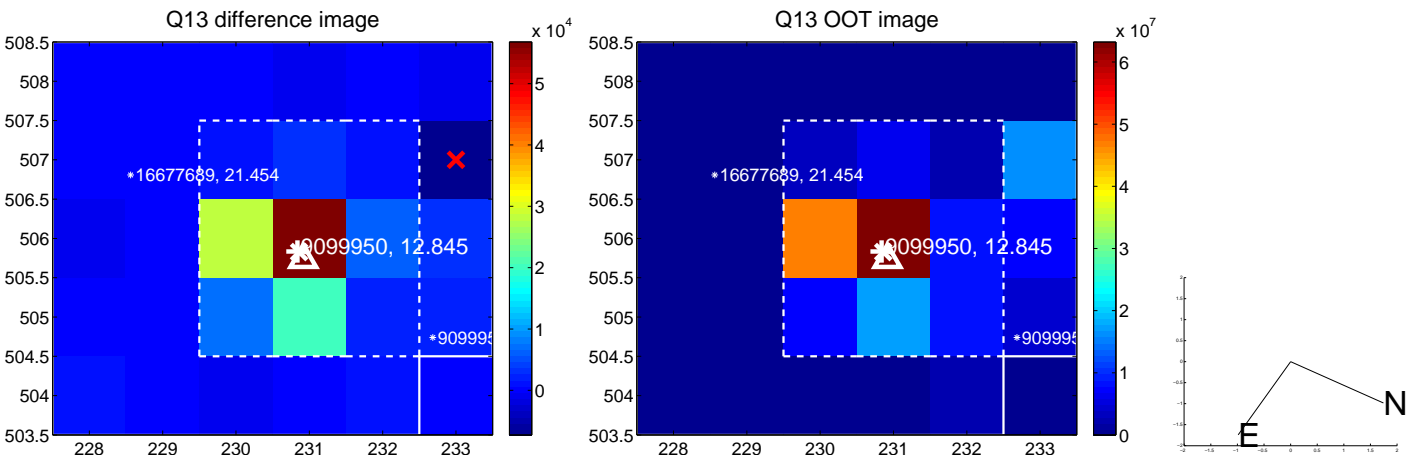
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



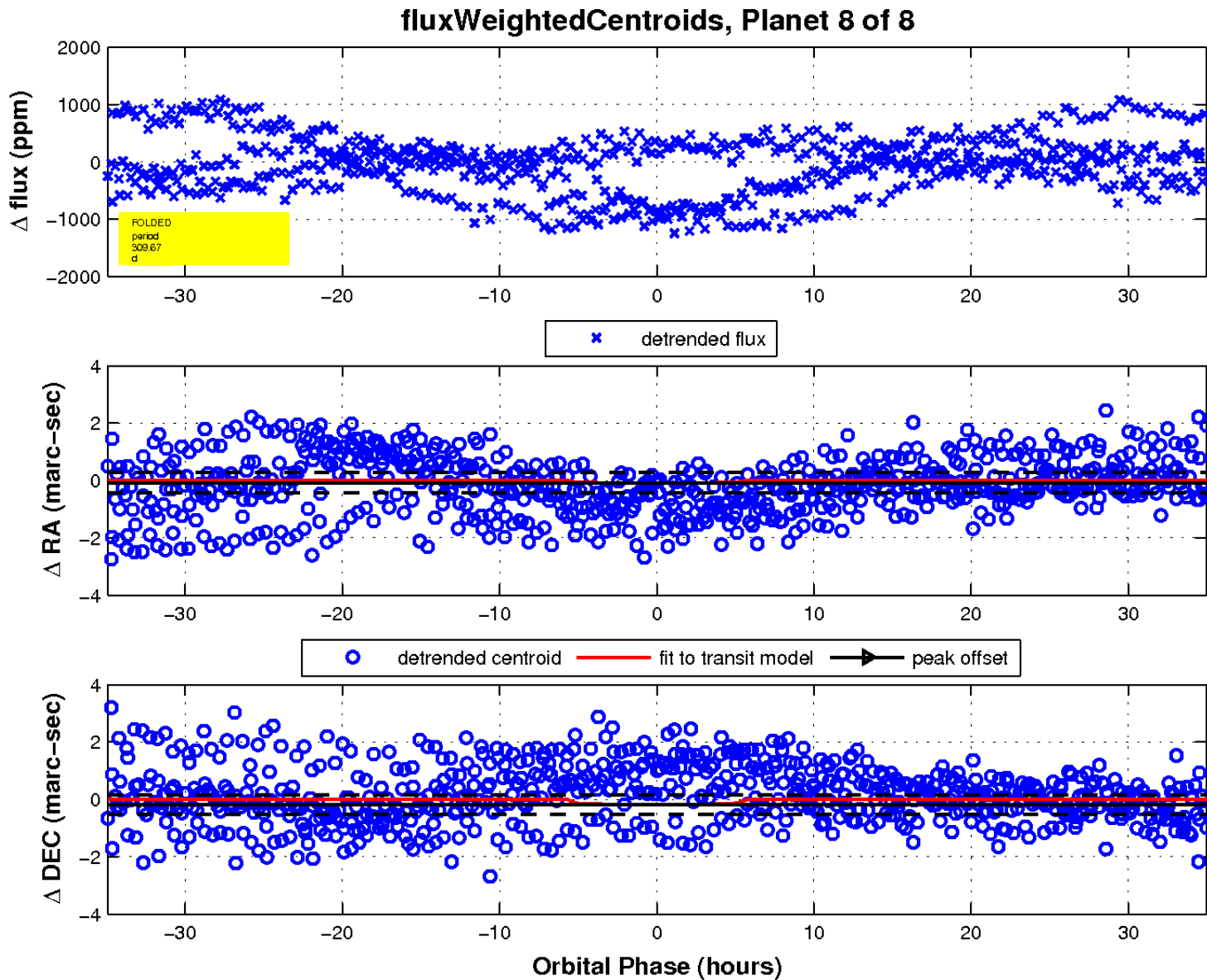
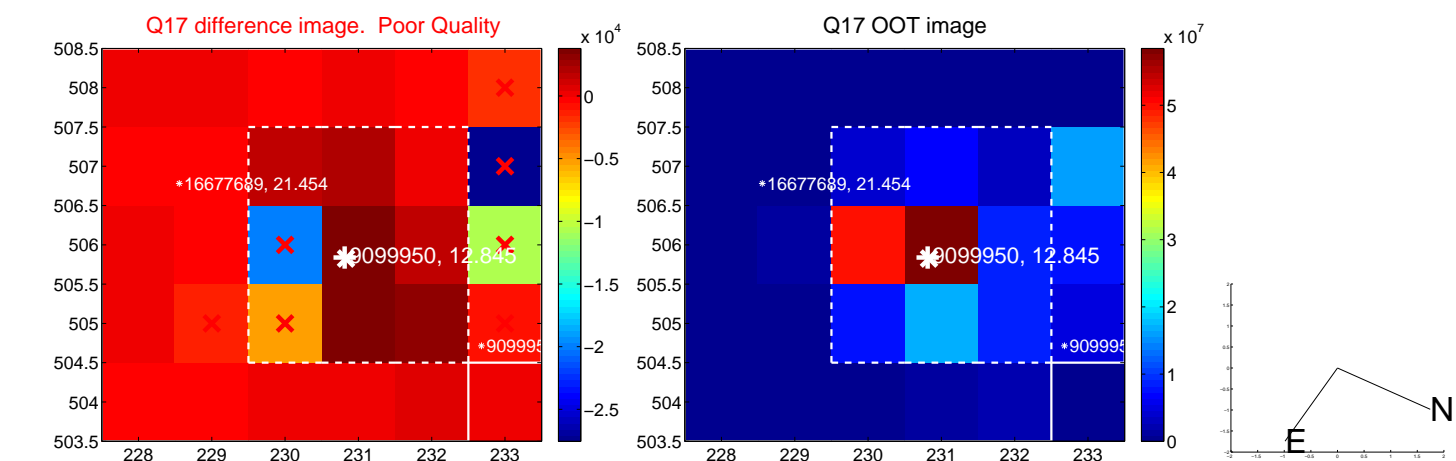
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

