

KIC 007816999

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})
007816999-01	OBS	No	2.136986	132.767769	43.1	9.731	8.2	7.5	0.79	5159	0.55	430.37
007816999-02	OBS	No	93.206905	168.604896	220.5	3.296	14.0	3.5	0.79	5159	1.30	2.80
007816999-03	OBS	No	167.068223	149.790427	544.8	4.413	12.6	6.7	0.79	5159	2.29	1.29
007816999-04	OBS	No	139.746572	205.777922	193.8	6.194	12.3	2.9	0.79	5159	1.31	1.63
007816999-05	OBS	No	271.391733	142.572361	217.2	15.000	10.7	-1.0	0.79	5159	1.13	0.67
007816999-06	OBS	No	356.878727	481.792582	362.9	5.646	11.3	4.6	0.79	5159	2.01	0.47
007816999-08	OBS	No	184.487802	310.869972	253.1	10.500	10.4	-1.0	0.79	5159	1.22	1.13
007816999-09	OBS	No	489.387806	531.611891	588.2	6.569	9.1	6.0	0.79	5159	2.08	0.31
007816999-10	OBS	No	332.678790	313.662559	329.7	7.500	9.7	-1.0	0.79	5159	1.40	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

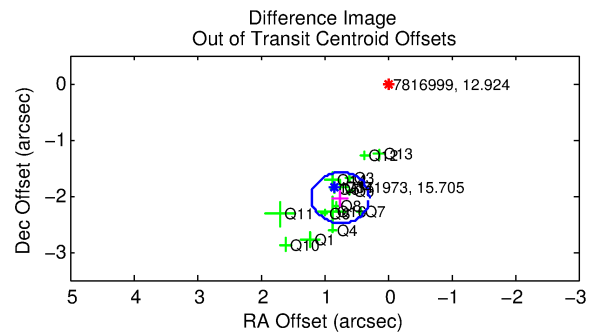
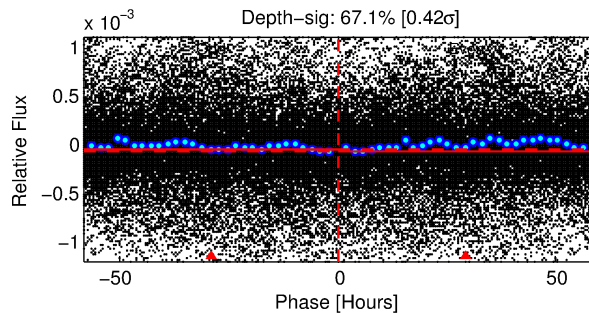
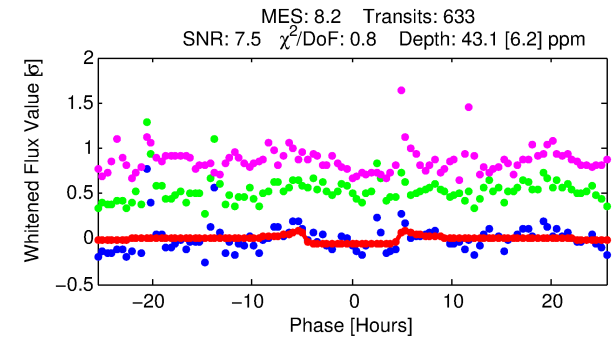
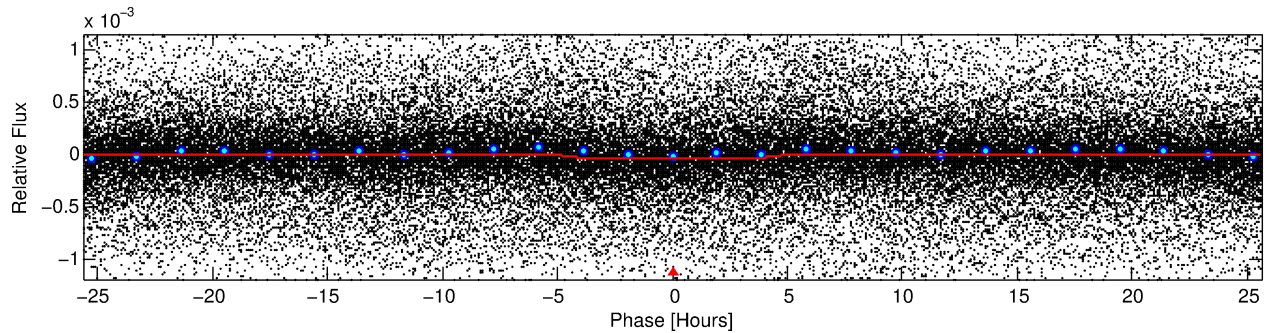
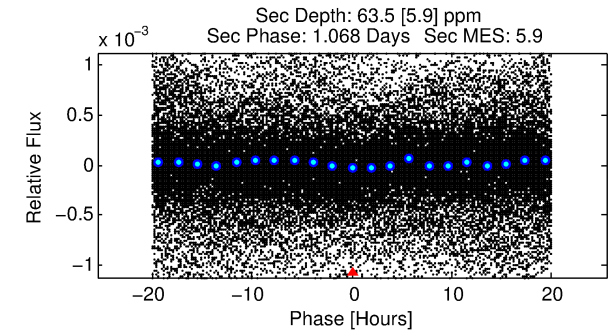
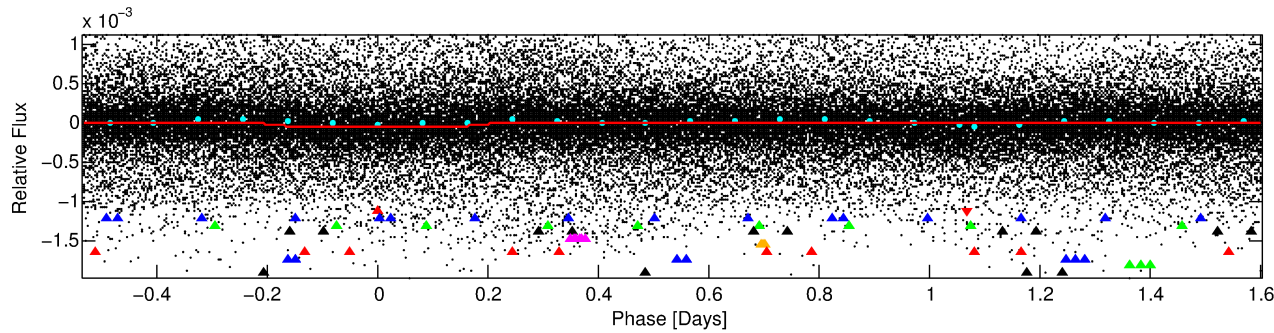
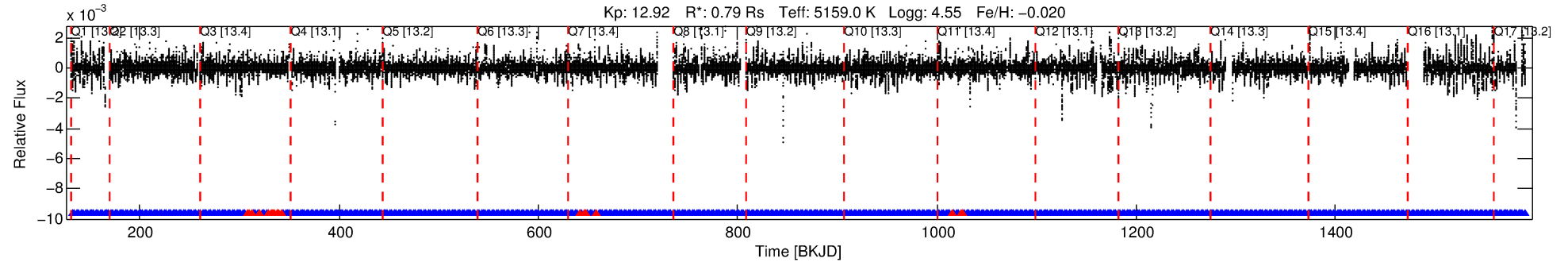
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-01

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 1 of 10 Period: 2.137 d



DV Fit Results:

Period = 2.13699 [0.00002] d
Epoch = 132.7678 [0.0049] BKJD
Rp/R* = 0.0064 [0.0023]
a/R* = 1.46 [1.04]
b = 0.70 [0.98]
Seff = 430.37 [91.73]
Teq = 1161 [62] K
Rp = 0.55 [0.21] Re
a = 0.0303 [0.0033] AU
Ag = 104.97 [78.00] [1.33σ]
Teffp = 5748 [1068] K [4.29σ]

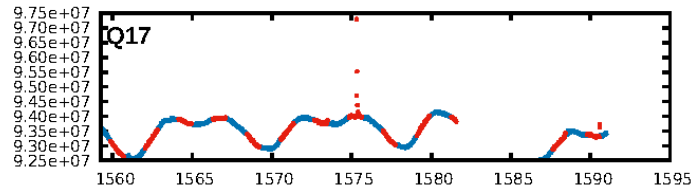
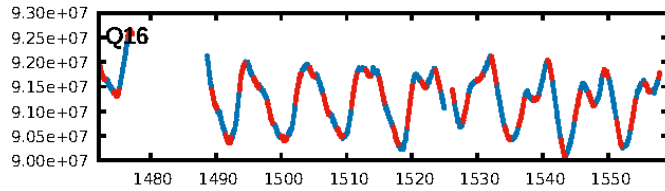
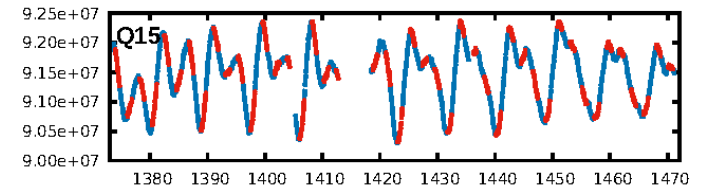
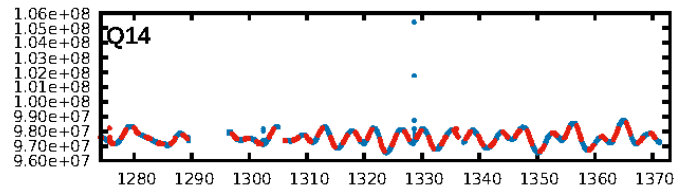
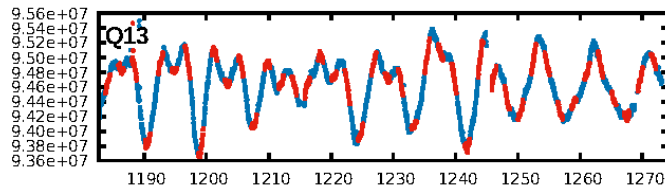
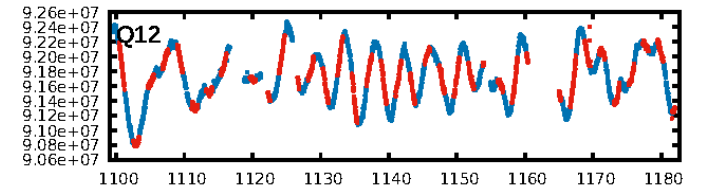
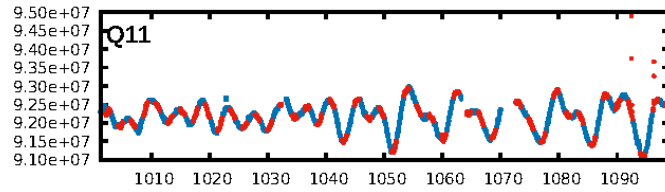
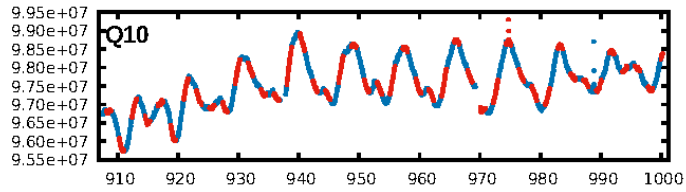
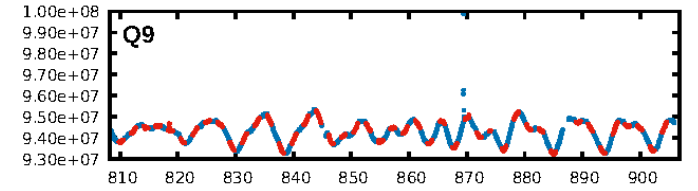
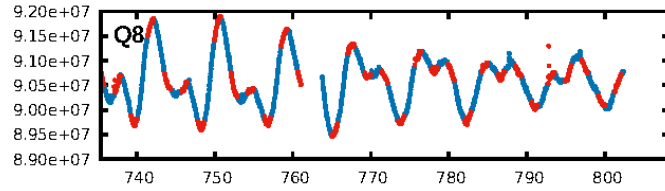
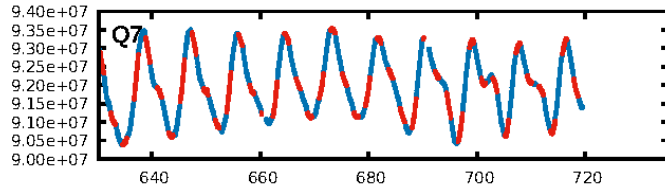
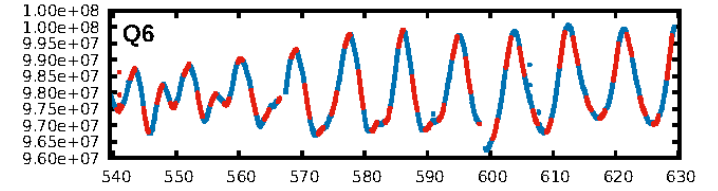
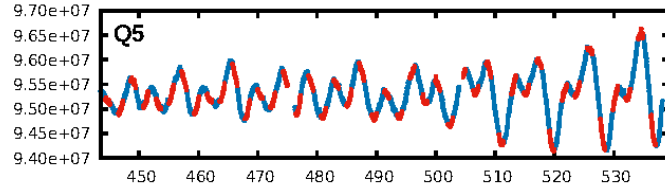
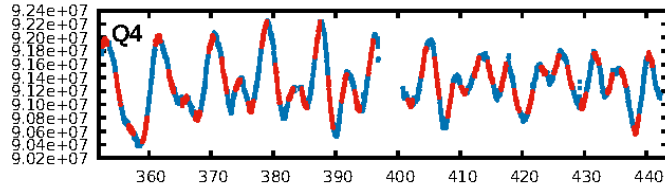
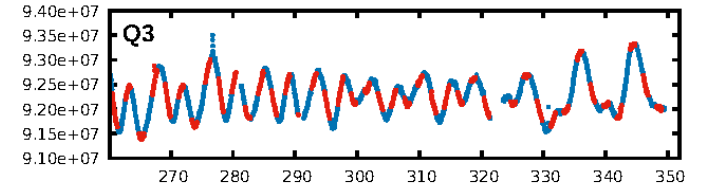
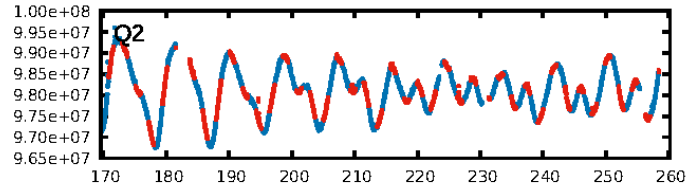
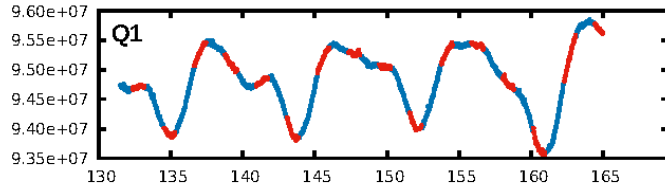
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [212.73σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.16e-10
RollingBand-fgt: 0.97 [586/604]
GhostDiagnostic-chr: 0.6523
Centroid-sig: 0.0%
Centroid-so: 2.518 arcsec [3.24σ]
OotOffset-rm: 2.169 arcsec [14.33σ]
KicOffset-rm: 2.132 arcsec [13.75σ]
OotOffset-st: 3/3/4/5 [15]
KicOffset-st: 3/3/4/5 [15]
DiffImageQuality-fgm: 0.93 [14/15]
DiffImageOverlap-fno: 1.00 [17/17]

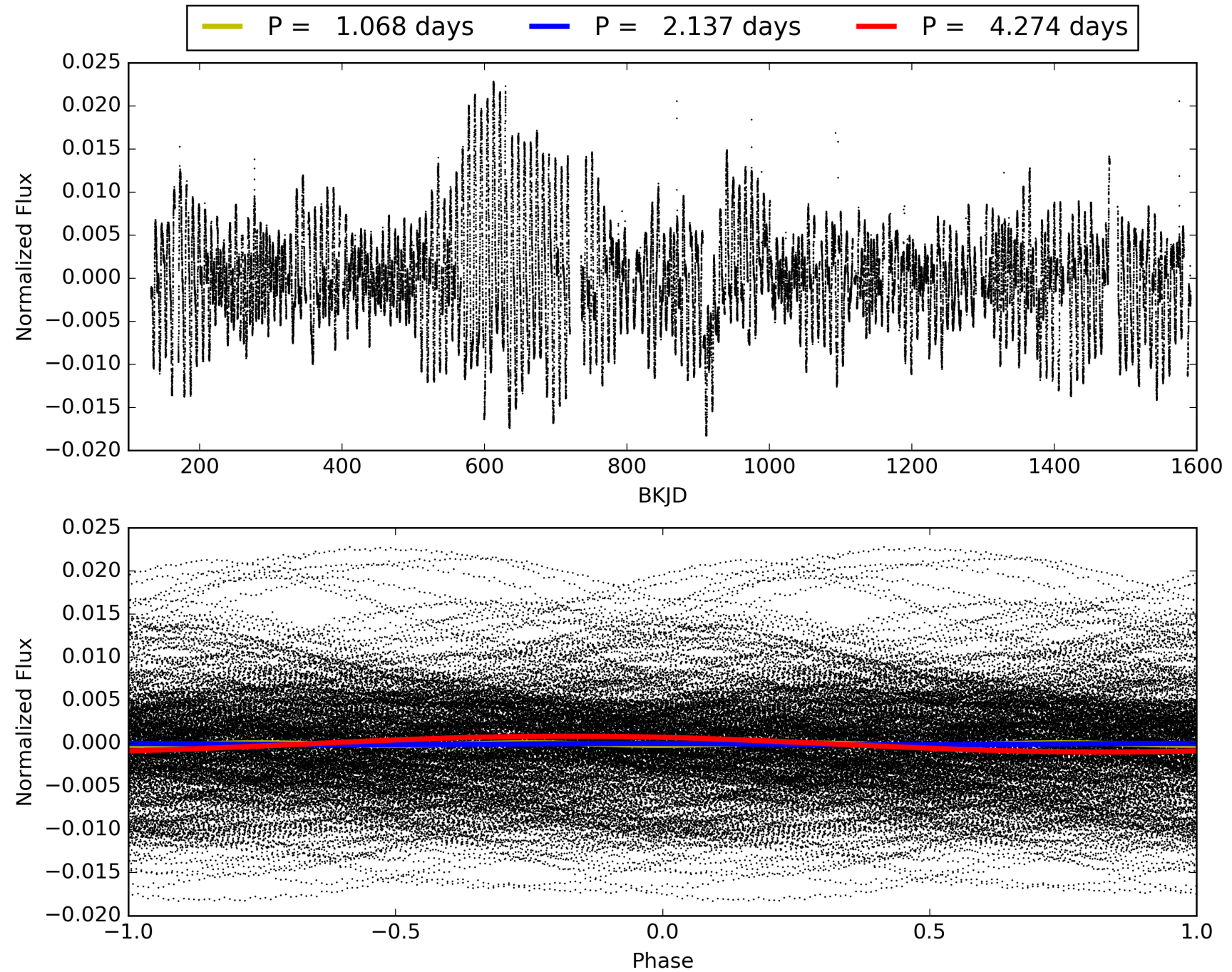
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:41:05 Z

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

TCE 007816999-01, PDC Light Curves

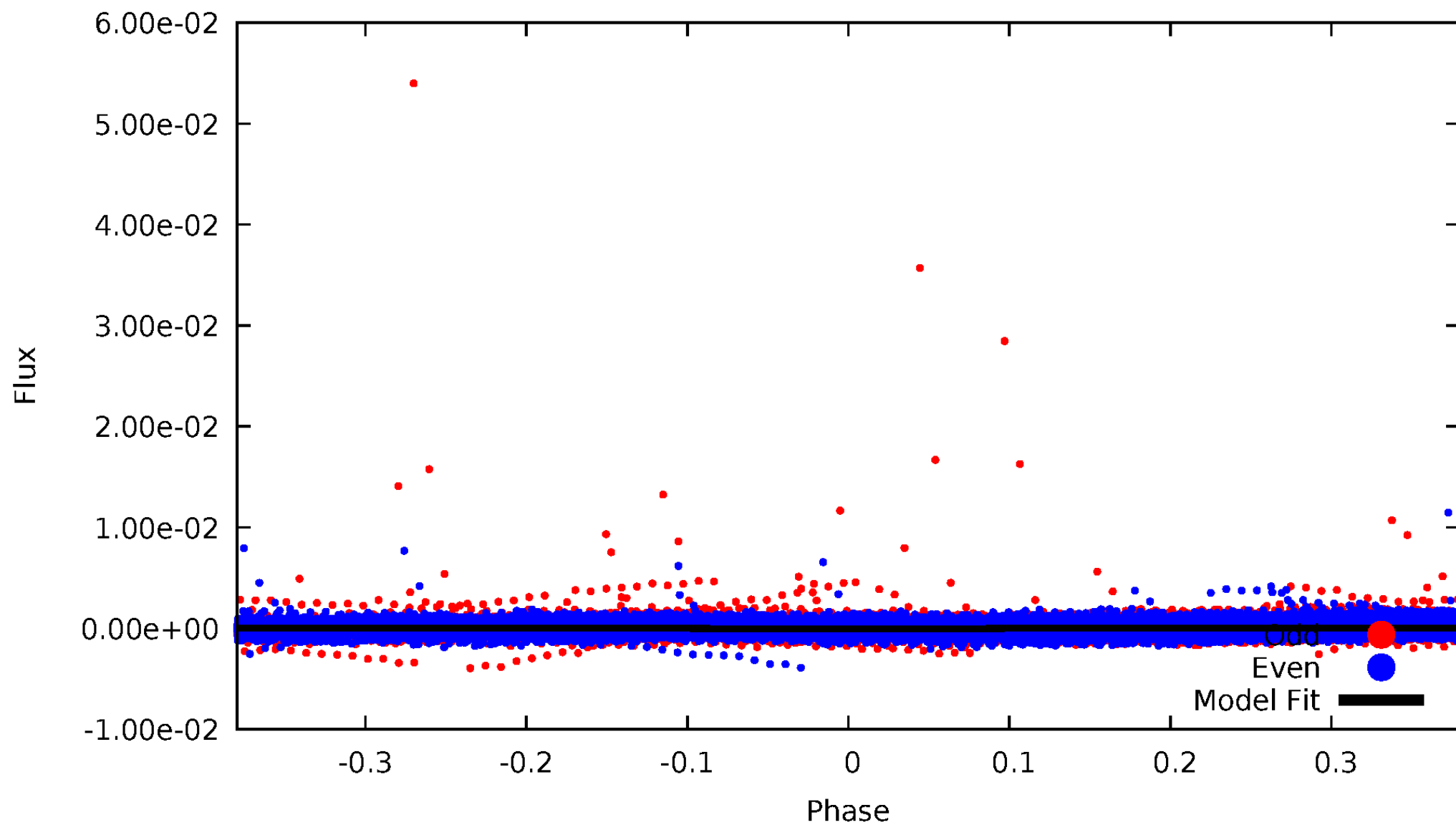


TCE 007816999-01



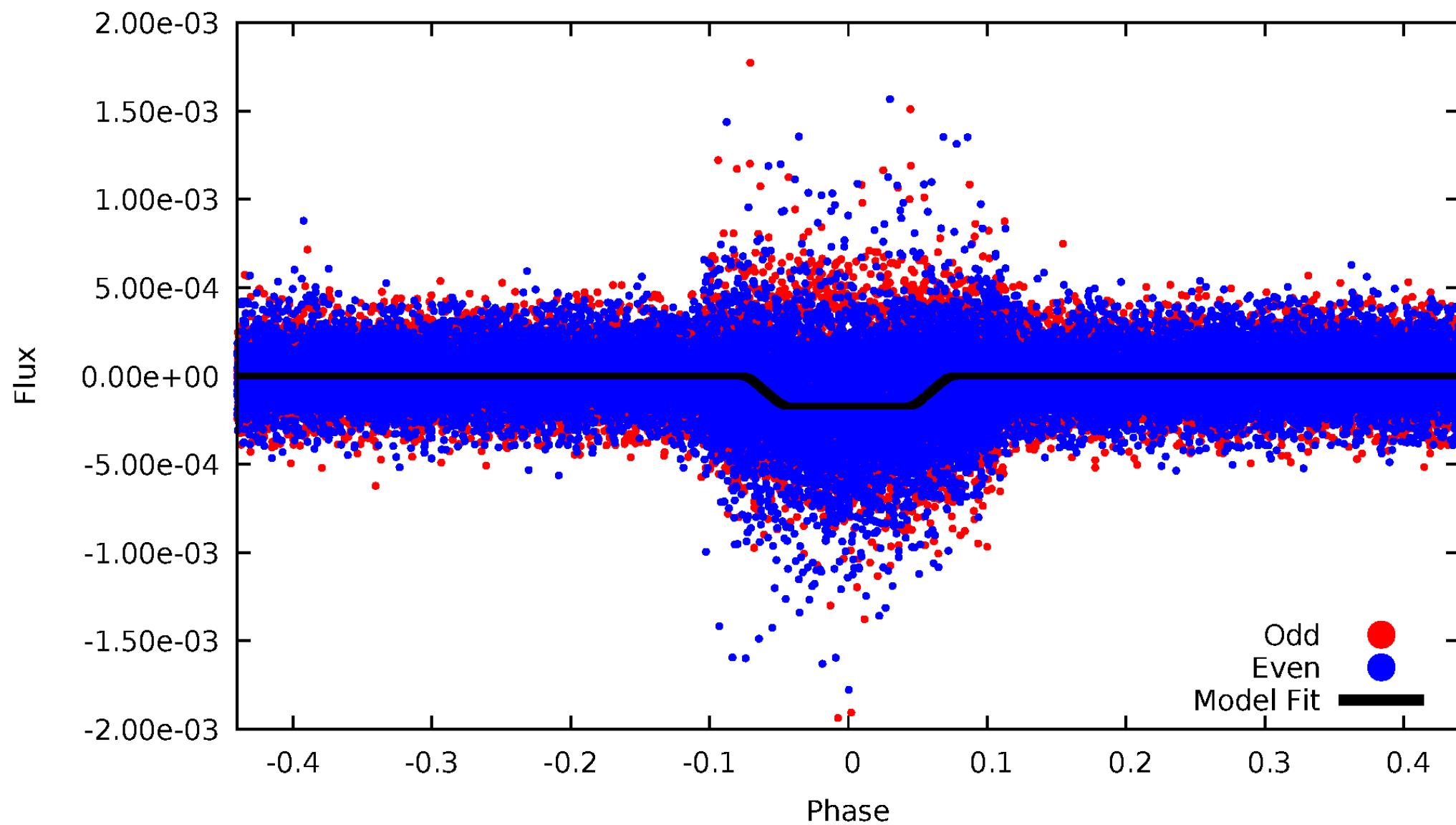
DV Odd/Even

TCE 007816999-01



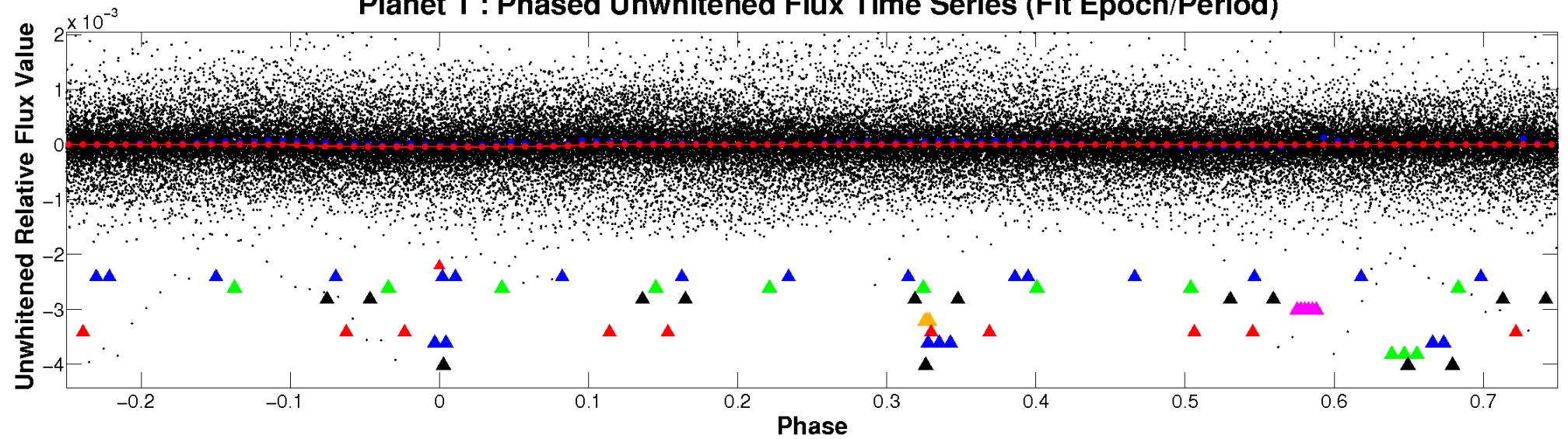
ALT Odd/Even

TCE 007816999-01

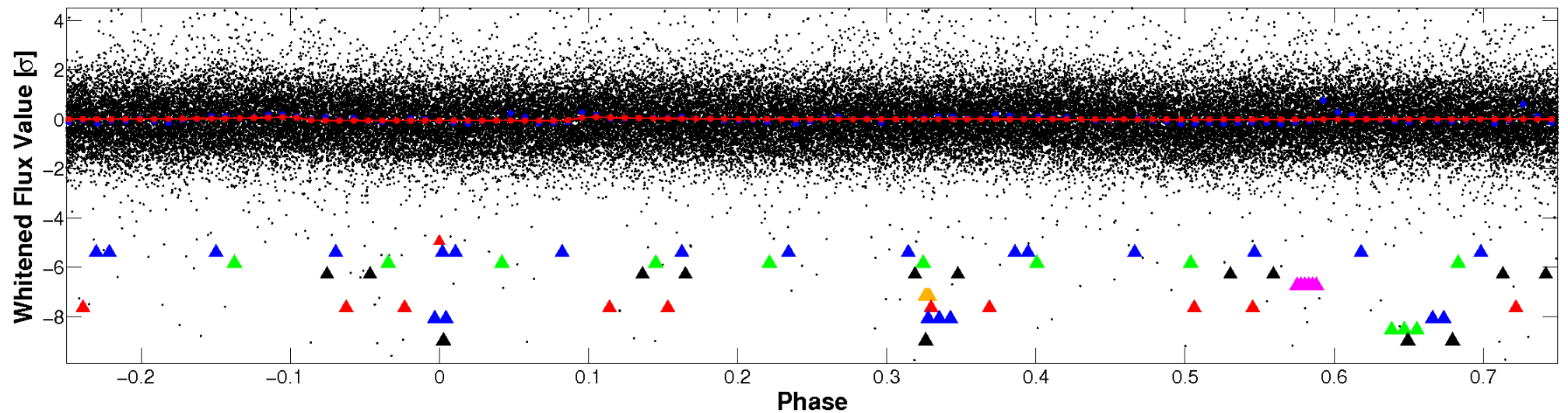


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

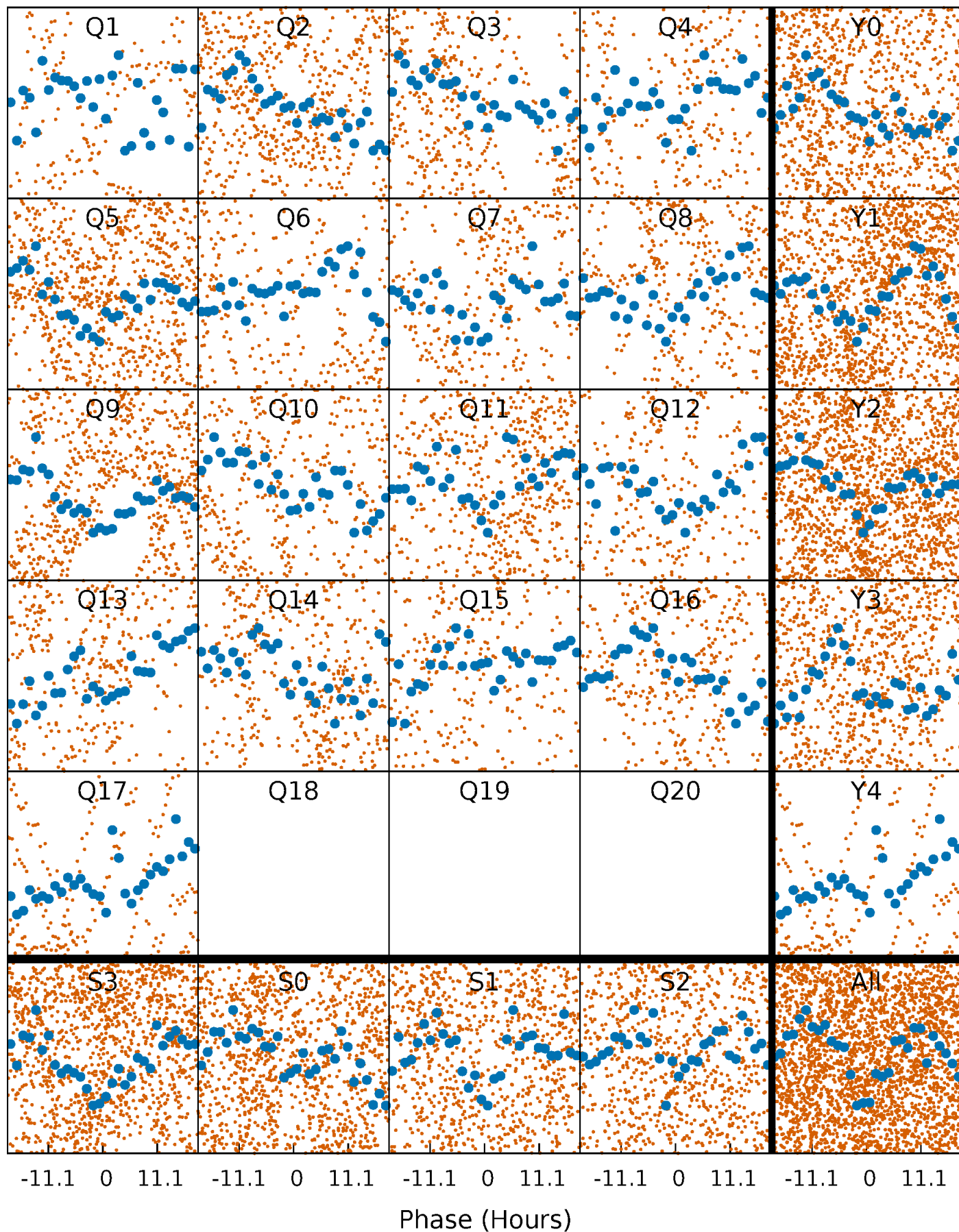


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



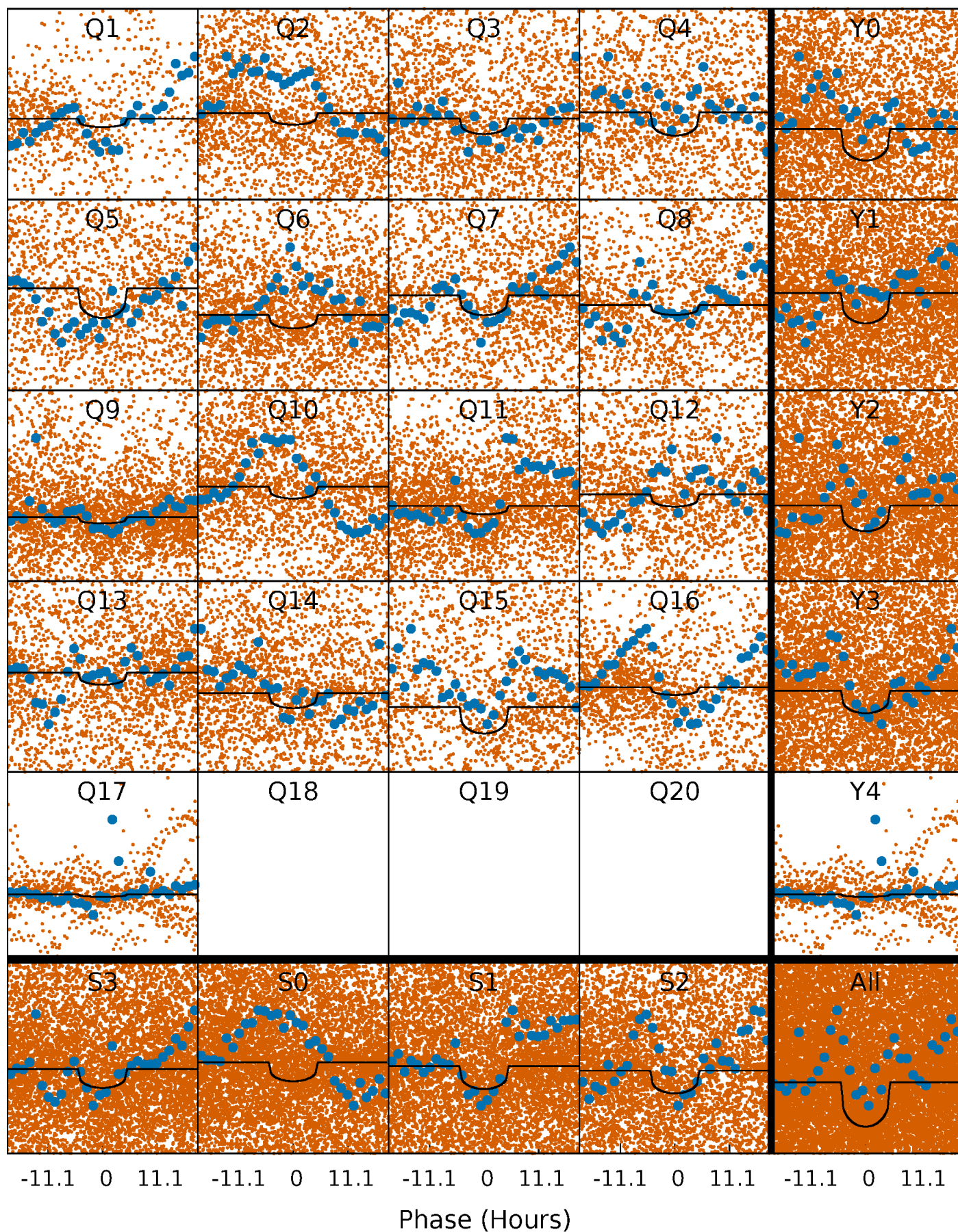
PDC Quarter-Phased Transit Curves

TCE 007816999-01 P= 2.136986 Days $T_0=132.767769$ (BKJD)



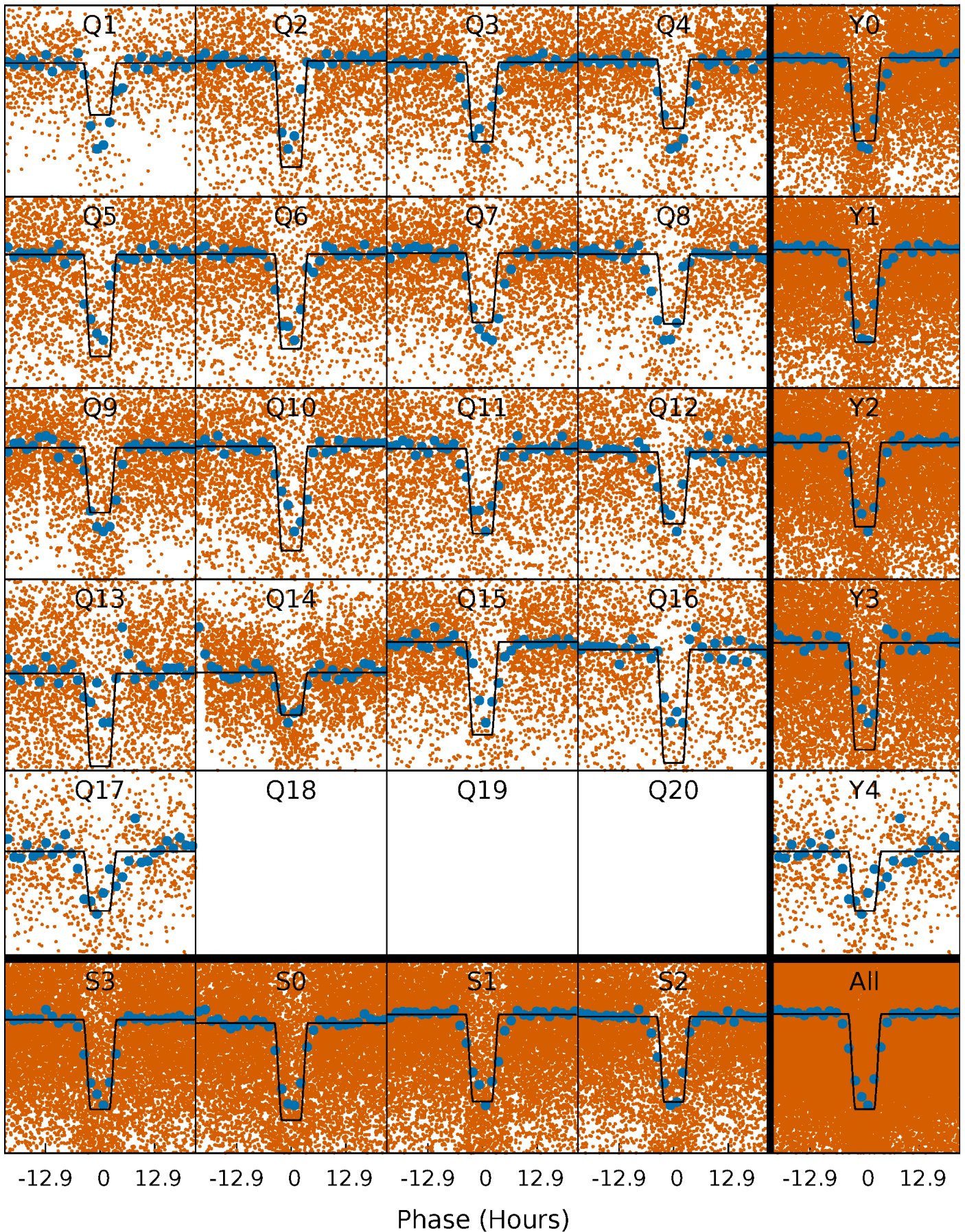
DV Quarter-Phased Transit Curves

TCE 007816999-01 P= 2.136986 Days $T_0=132.767769$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

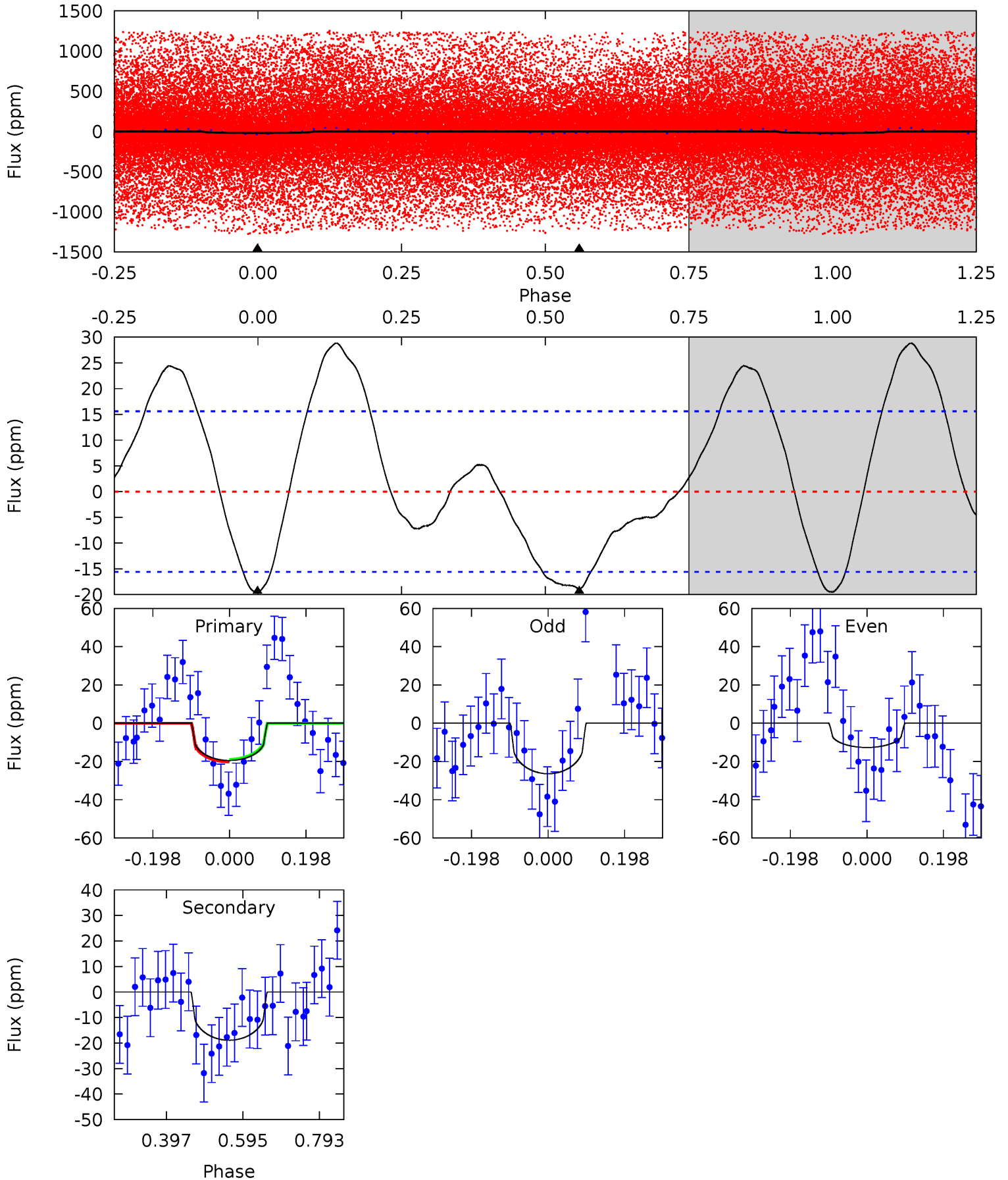
TCE 007816999-01 P= 2.137131 Days $T_0=132.730516$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-01, P = 2.136986 Days, E = 130.630783 Days

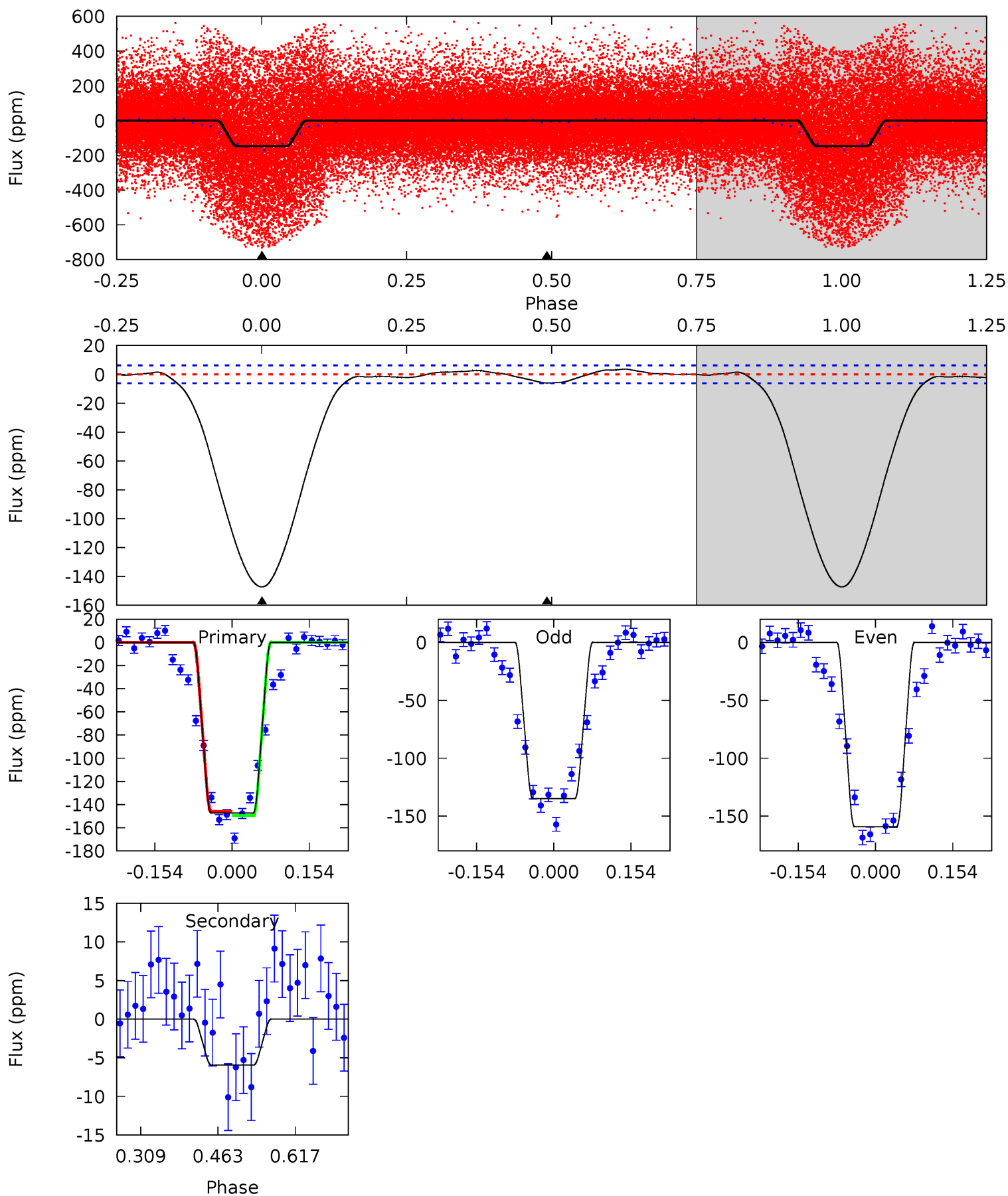
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.52	5.35	0	0	4.42	1.29	1.86	5.52	5.52	5.35	5.35	1.97	-1.19	0.60	0.18



Alt Model-Shift Uniqueness Test

007816999-01, P = 2.137131 Days, E = 130.593385 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
106.6	4.29	0	0	4.47	1.42	0.94	106.6	106.6	4.29	4.29	8.75	1.06	0.02	1.31



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-19 ± 4	$0.56^{+0.21}_{-0.21}$	1631^{+76}_{-68}	4412^{+942}_{-526}	31^{+48}_{-15}
Alt.	-6 ± 1	$1.13^{+0.22}_{-0.20}$	1631^{+74}_{-70}	2857^{+190}_{-183}	$2.367^{+1.206}_{-0.838}$

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

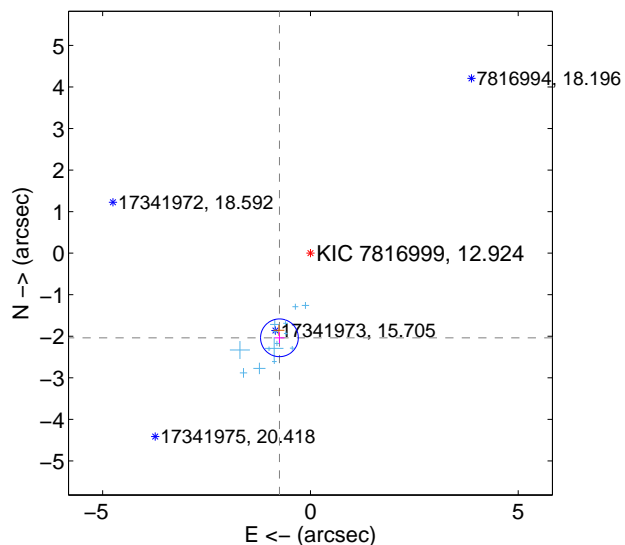
Supplemental centroid analysis for 007816999-01. Kepler magnitude: 12.92. Transit SNR 7.49

There are 14 quarters with good PRF difference image offsets

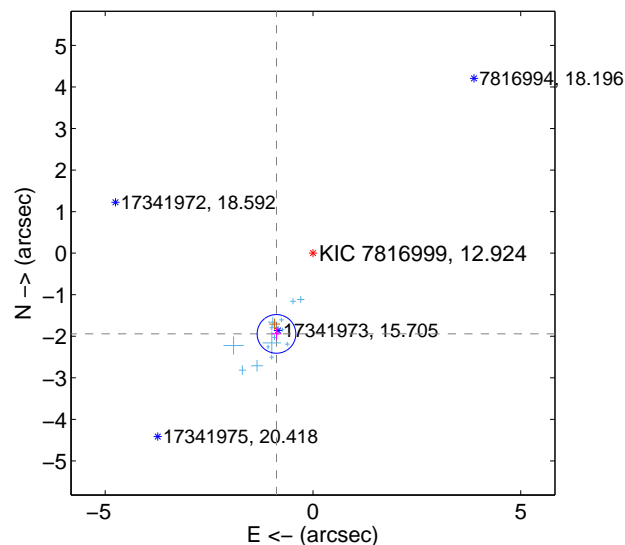
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.169 \pm 0.151	14.33	0.746 \pm 0.121	-2.037 \pm 0.134
PRF-fit source offset from KIC position	2.132 \pm 0.155	13.75	0.878 \pm 0.120	-1.942 \pm 0.136
photometric centroid source offset	2.52 \pm 0.78	3.24	1.82 \pm 0.72	-1.74 \pm 0.83

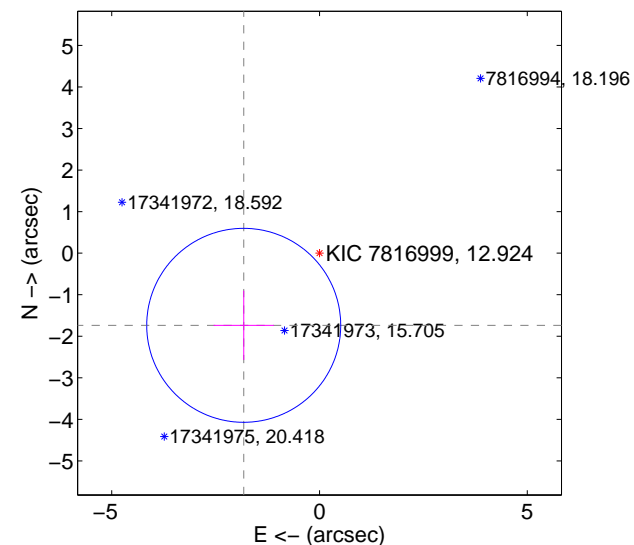
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

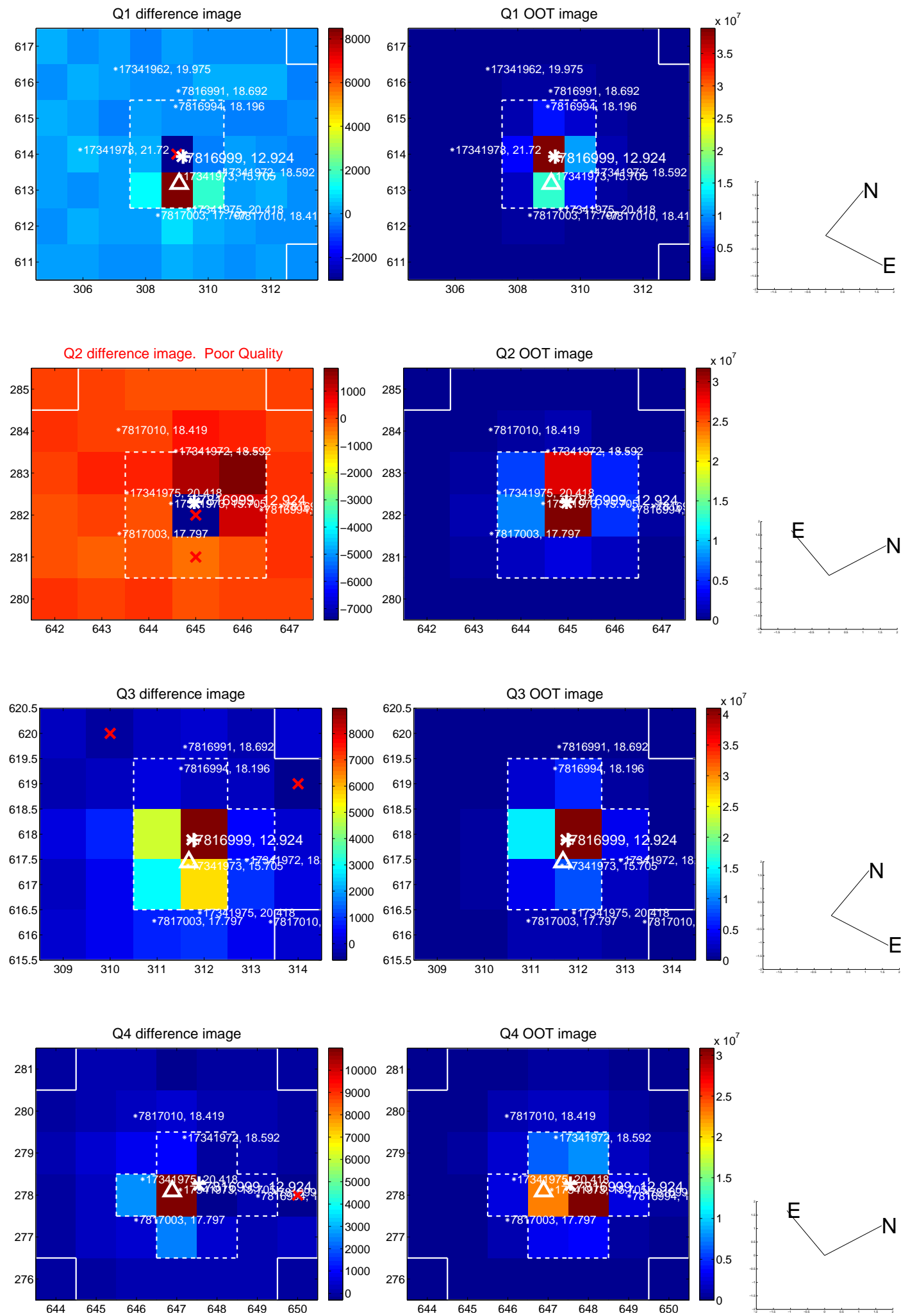


offset from photometric centroids

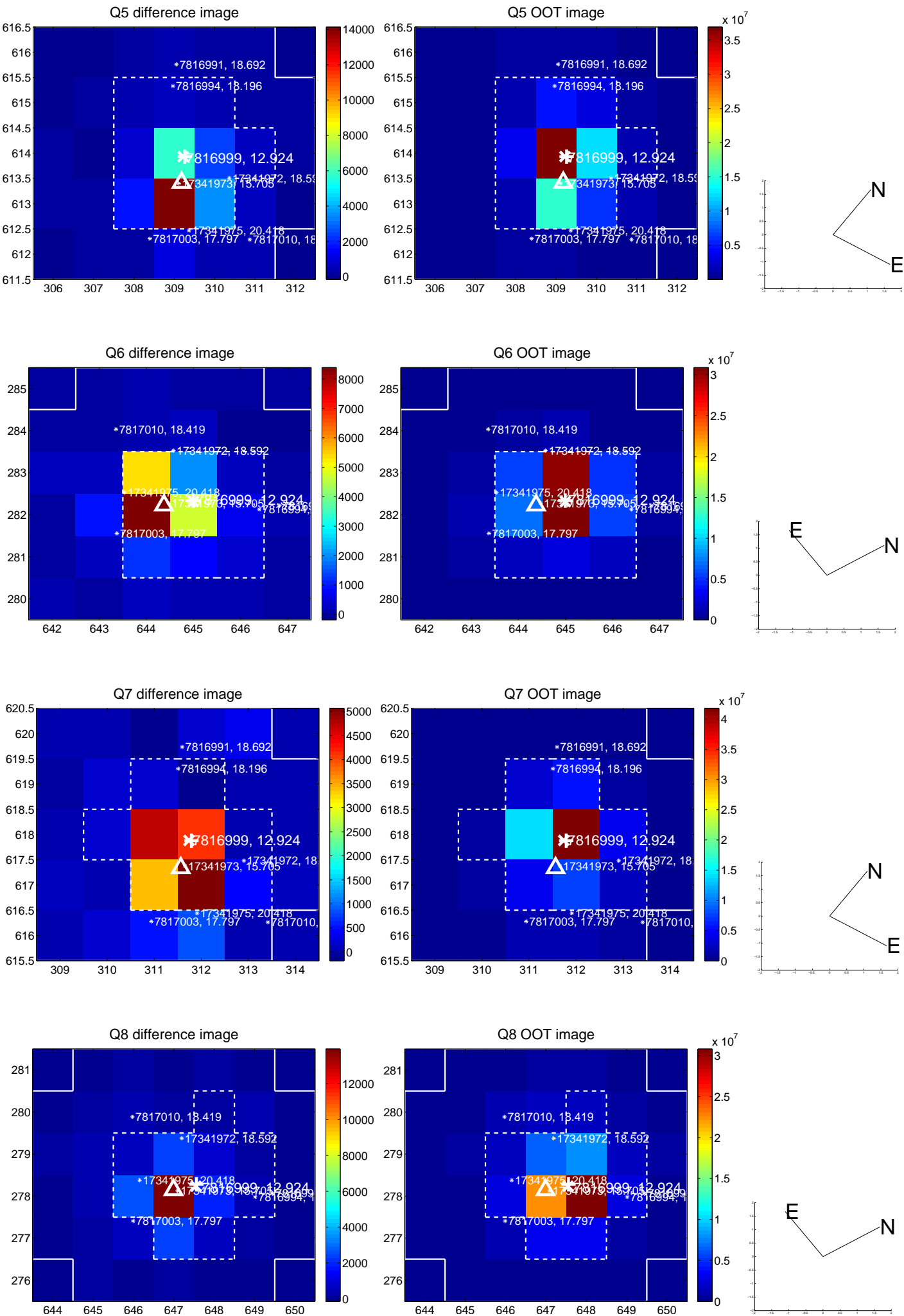


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

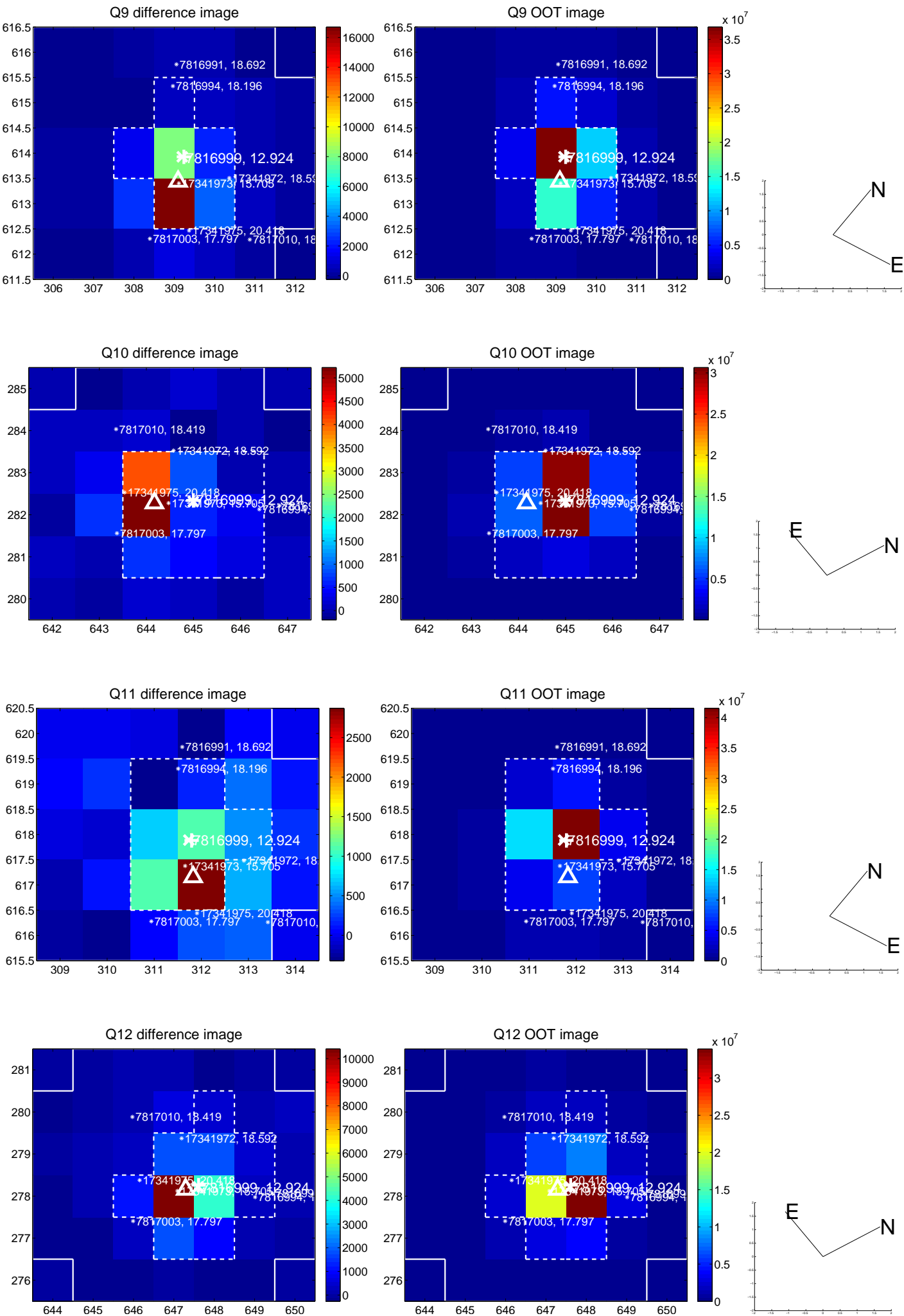
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



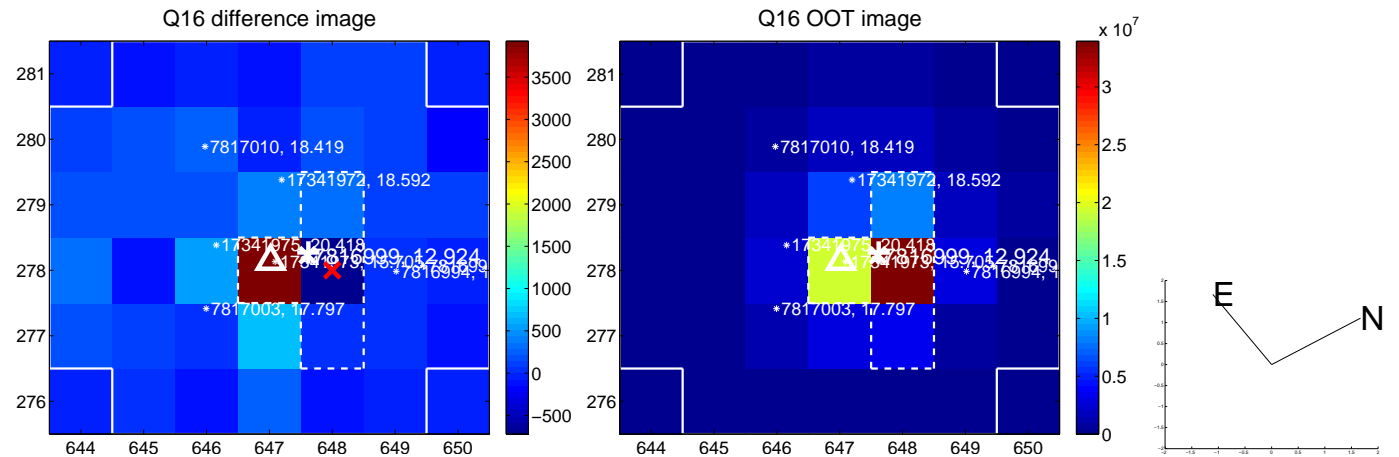
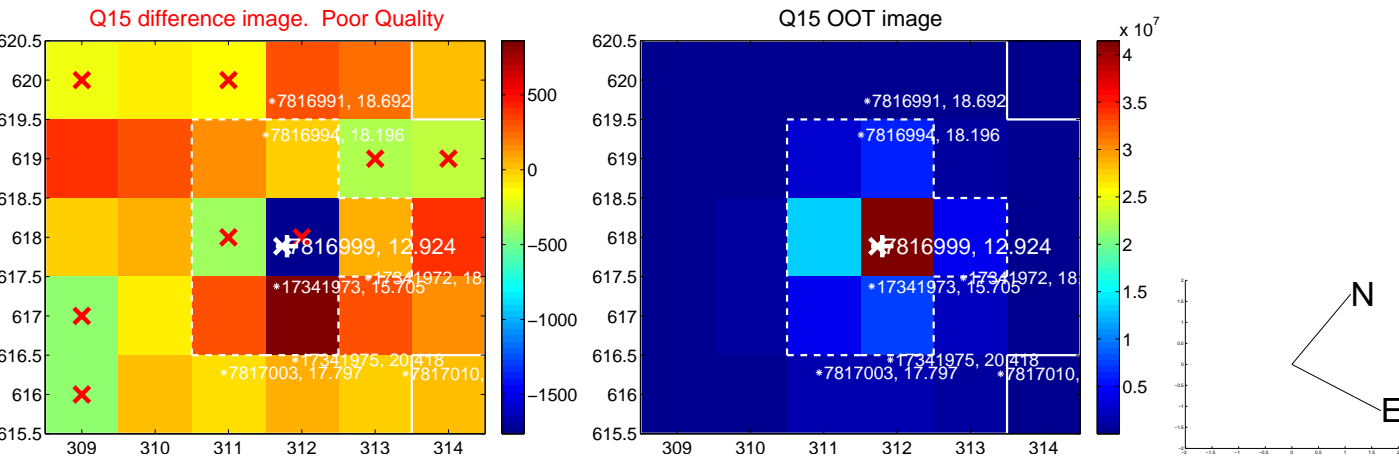
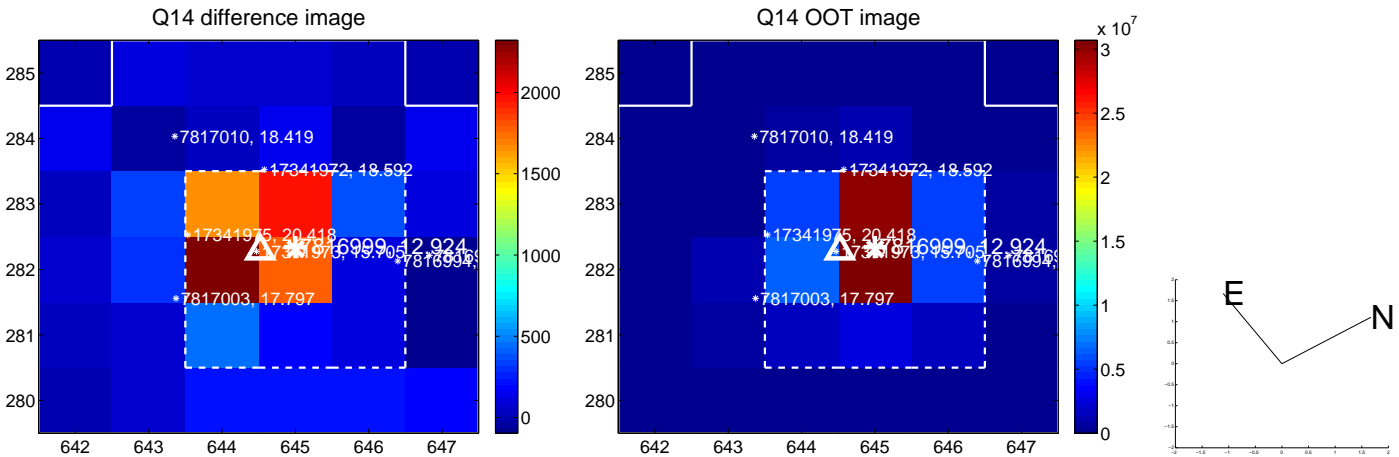
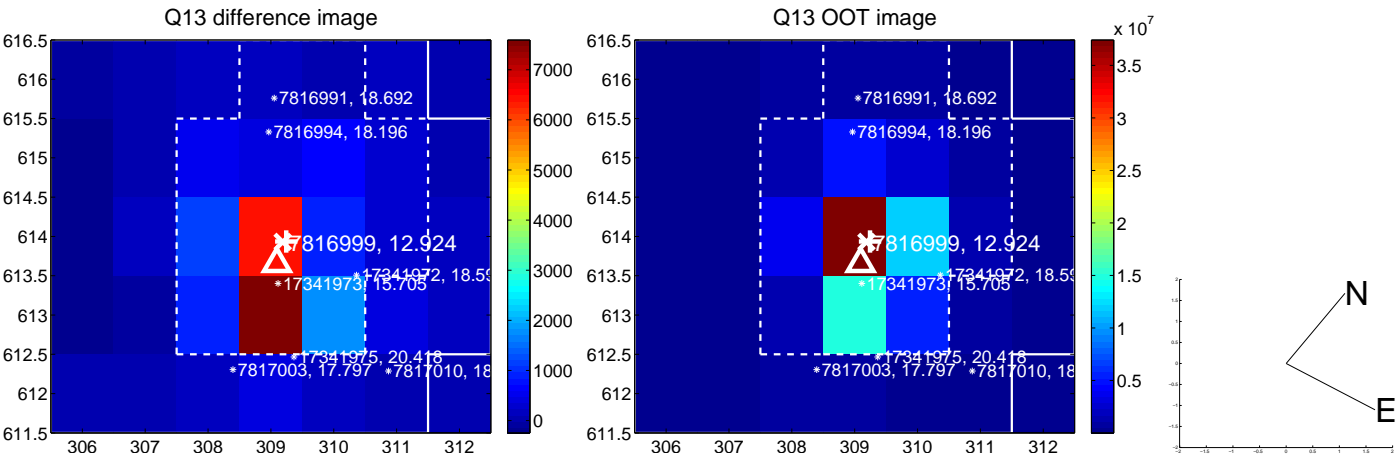
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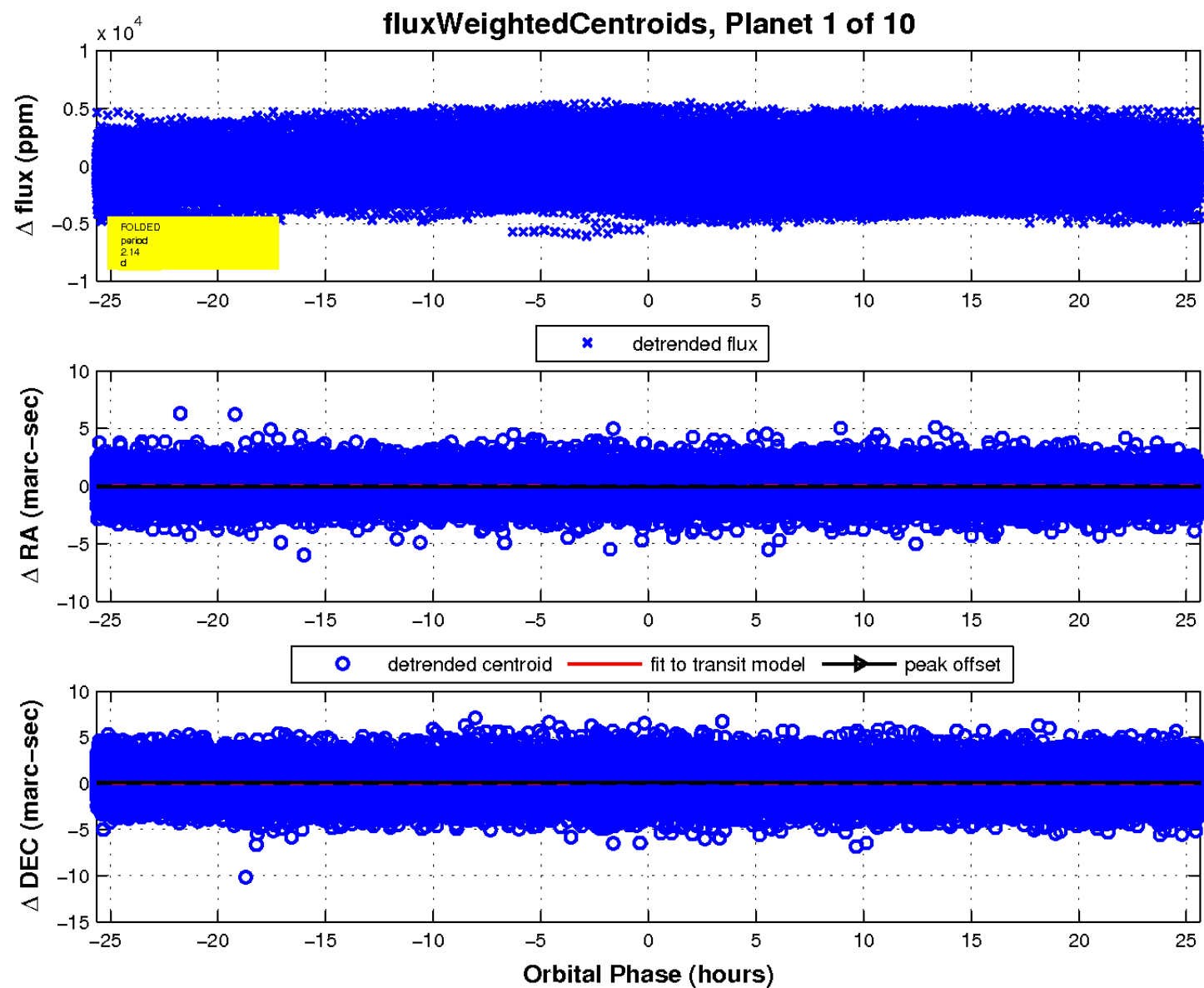
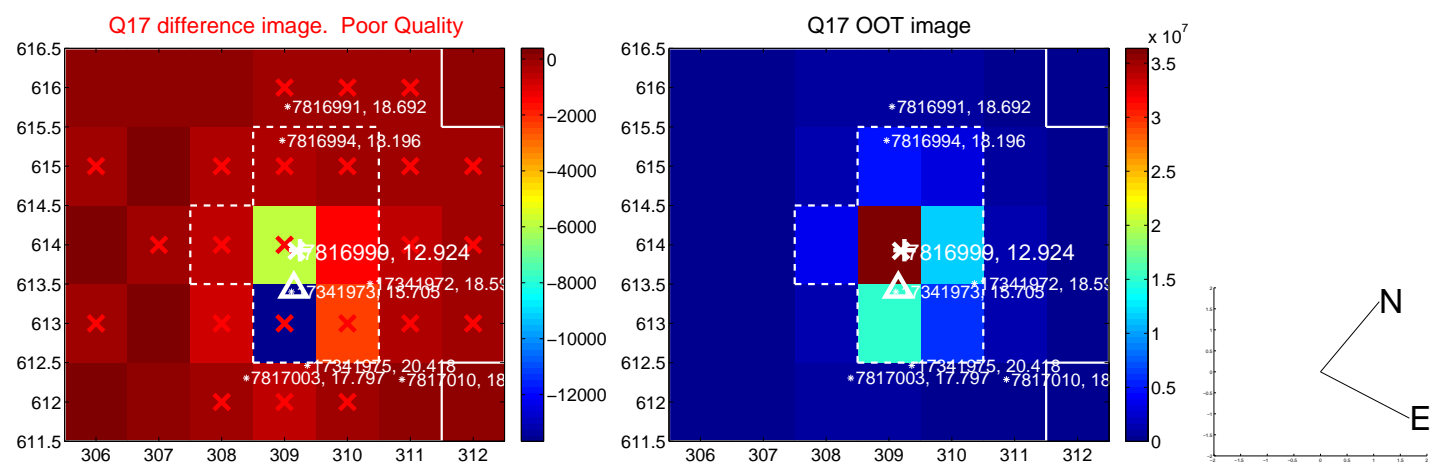
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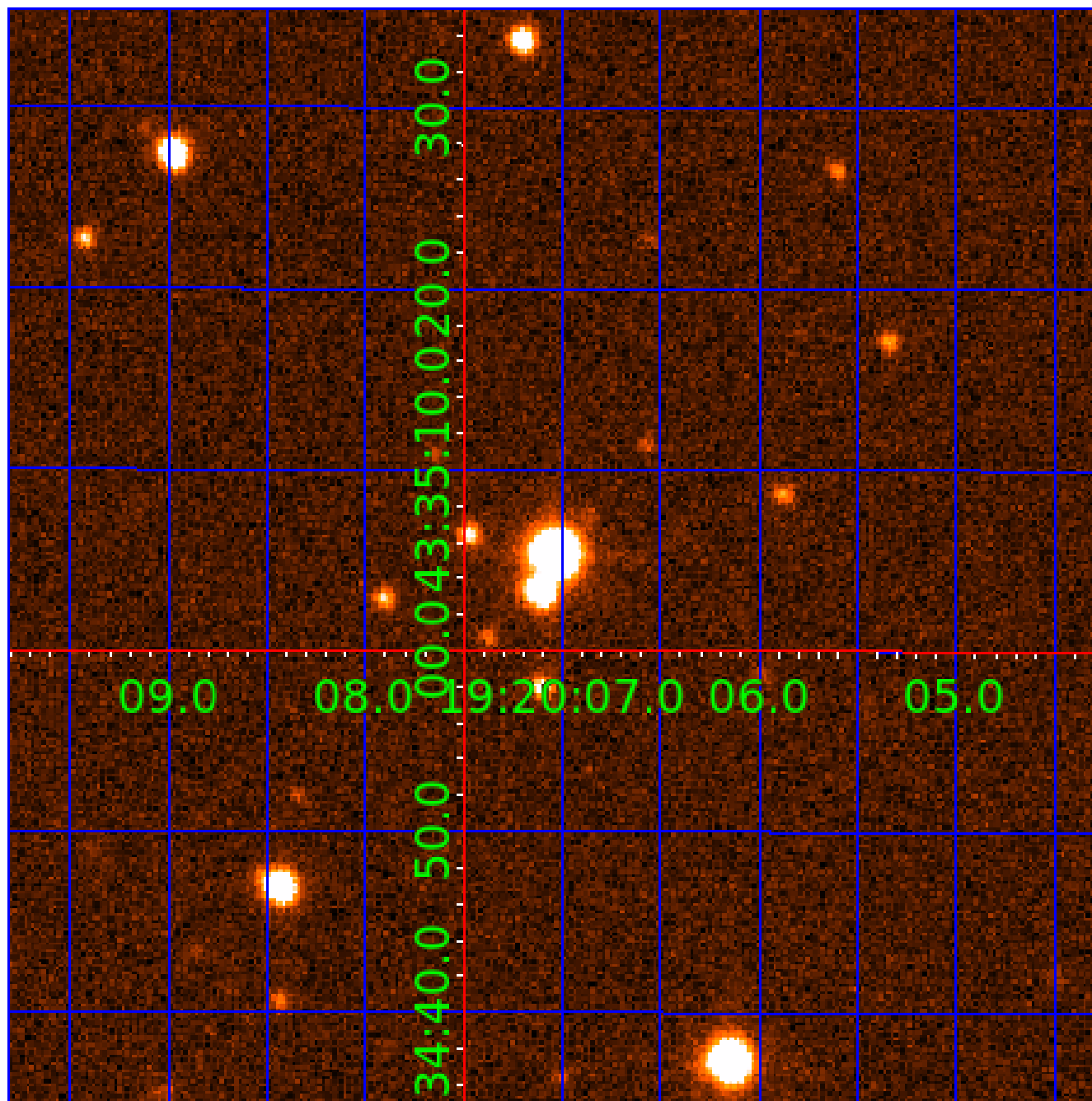


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UKIRT Image

Declination



KIC 007816999

Q1-17 DR25 TCE Parameters

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007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

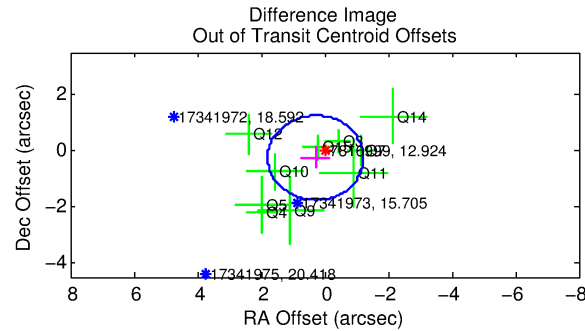
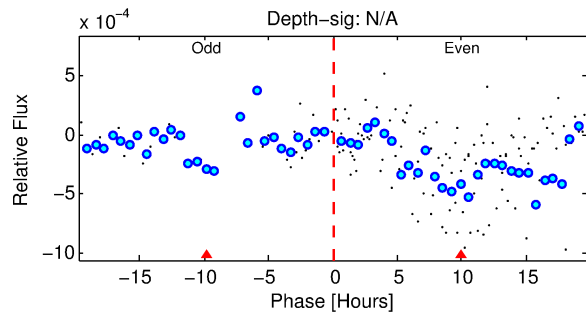
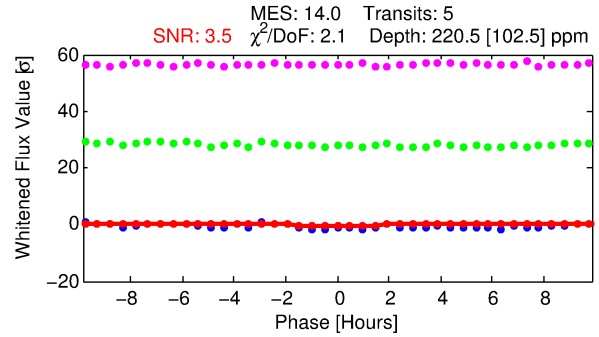
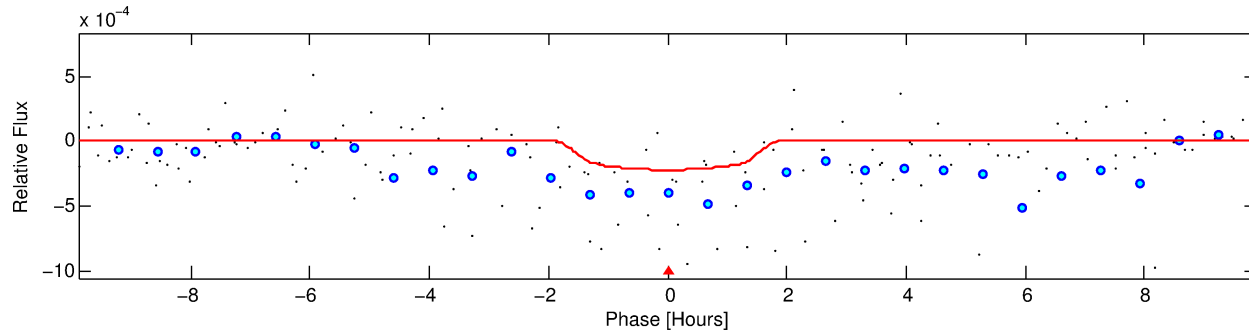
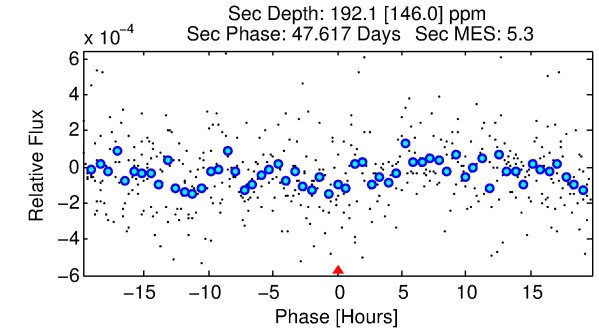
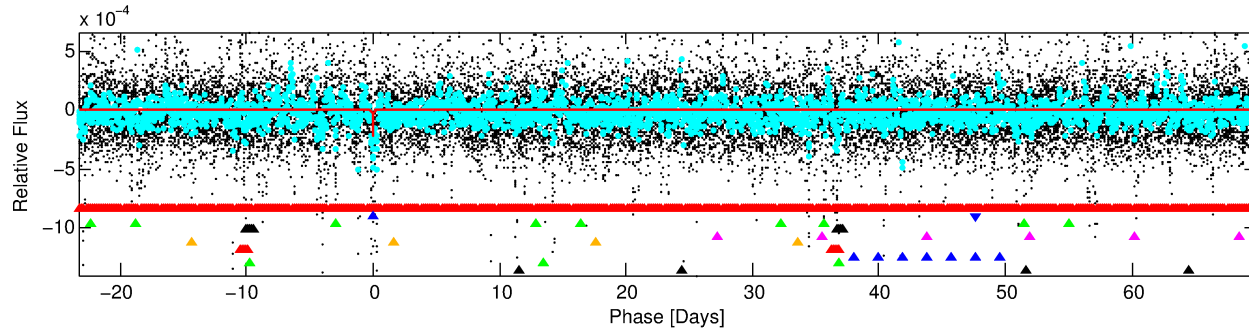
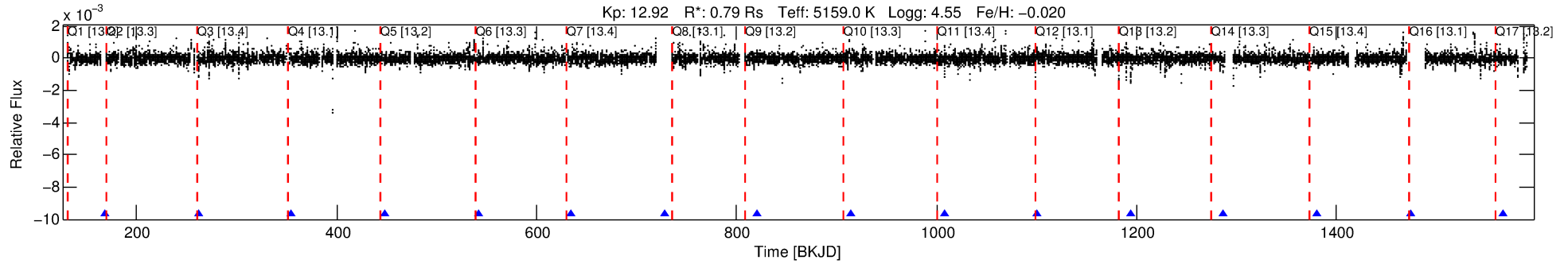
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-02

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 2 of 10 Period: 93.207 d



DV Fit Results:

Period = 93.20691 [0.00361] d
Epoch = 168.6049 [0.0241] BKJD
Rp/R* = 0.0151 [0.0577]
a/R* = 138.80 [1967.63]
b = 0.79 [7.13]
Seff = 2.80 [0.60]
Teq = 330 [18] K
Rp = 1.30 [4.97] Re
a = 0.3759 [0.0405] AU
Ag = 8817.20 [67707.87] [0.13] σ
Teffp = 4943 [9490] K [0.49] σ

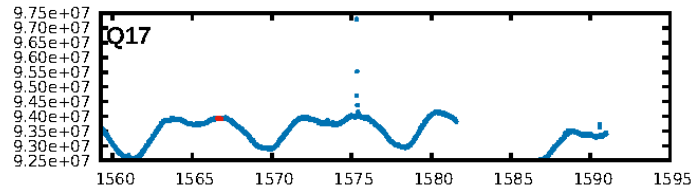
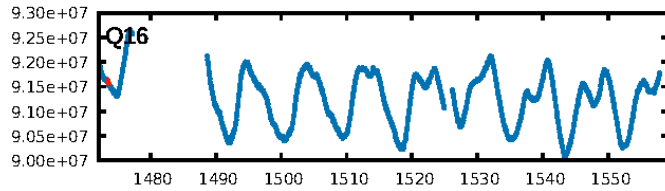
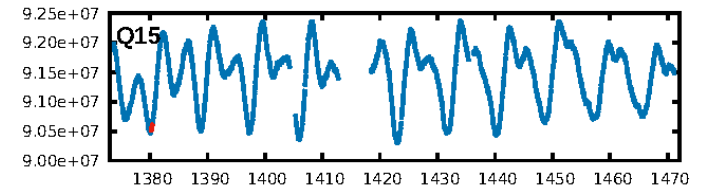
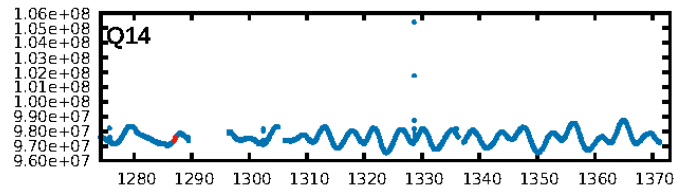
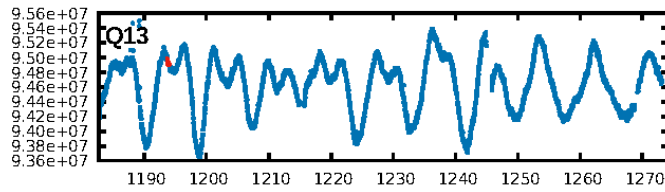
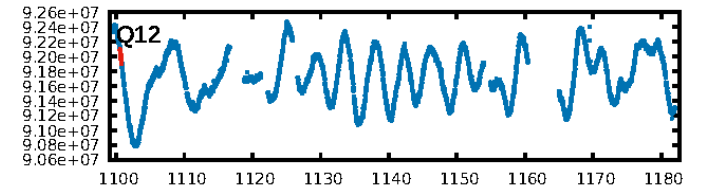
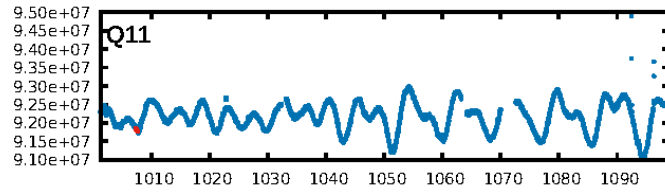
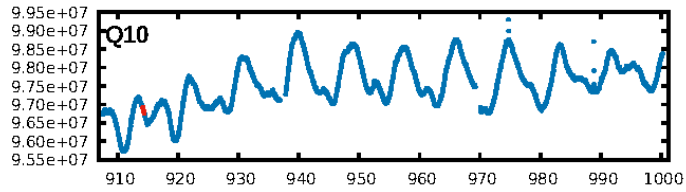
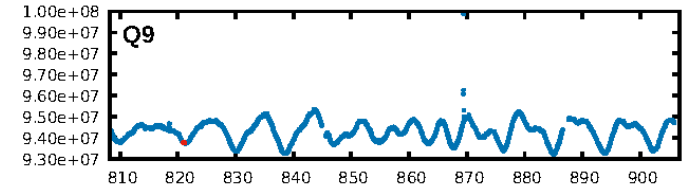
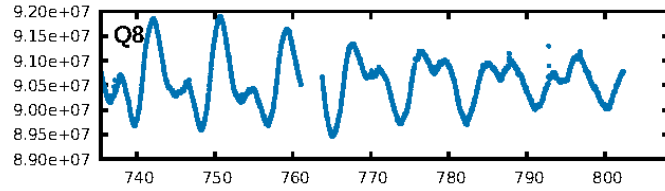
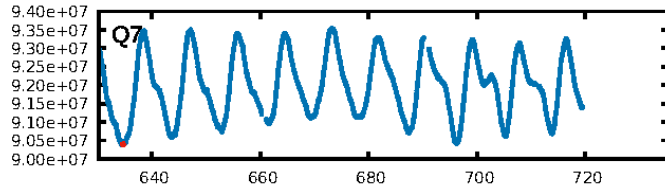
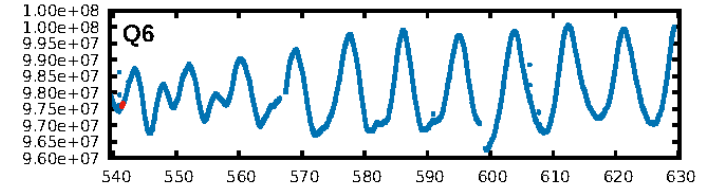
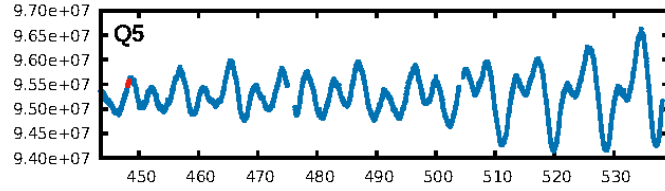
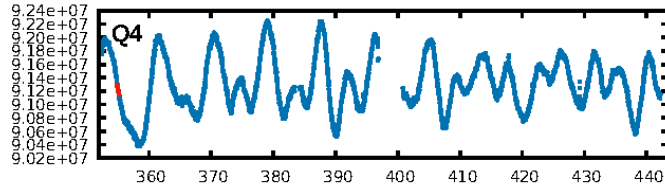
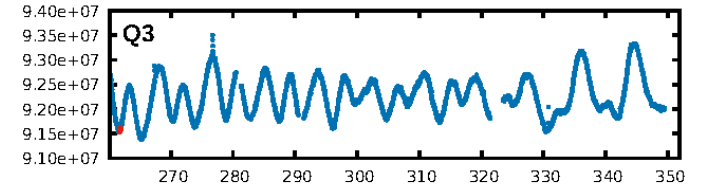
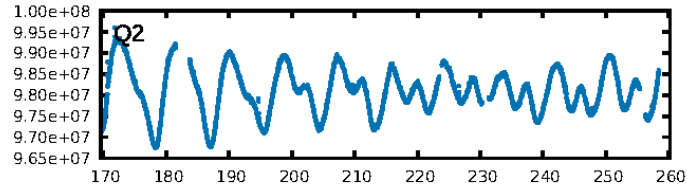
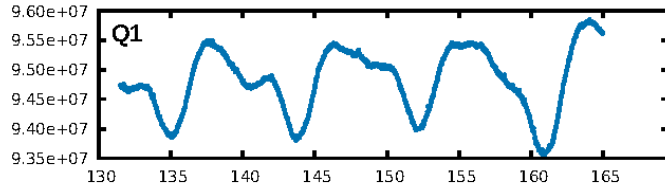
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [212.73] σ
LongPeriod-sig: 100.0% [56.35] σ
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 68.2%
Bootstrap-pfa: 6.06e-17
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.4387
Centroid-sig: 1.1%
Centroid-so: 2.411 arcsec [1.57] σ
OotOffset-rm: 0.388 arcsec [0.77] σ
OotOffset-st: 2/4/2/2 [10]
KicOffset-rm: 0.475 arcsec [0.92] σ
KicOffset-st: 2/4/2/2 [10]
DiffImageQuality-fgm: 0.60 [6/10]
DiffImageOverlap-fno: 0.33 [4/12]

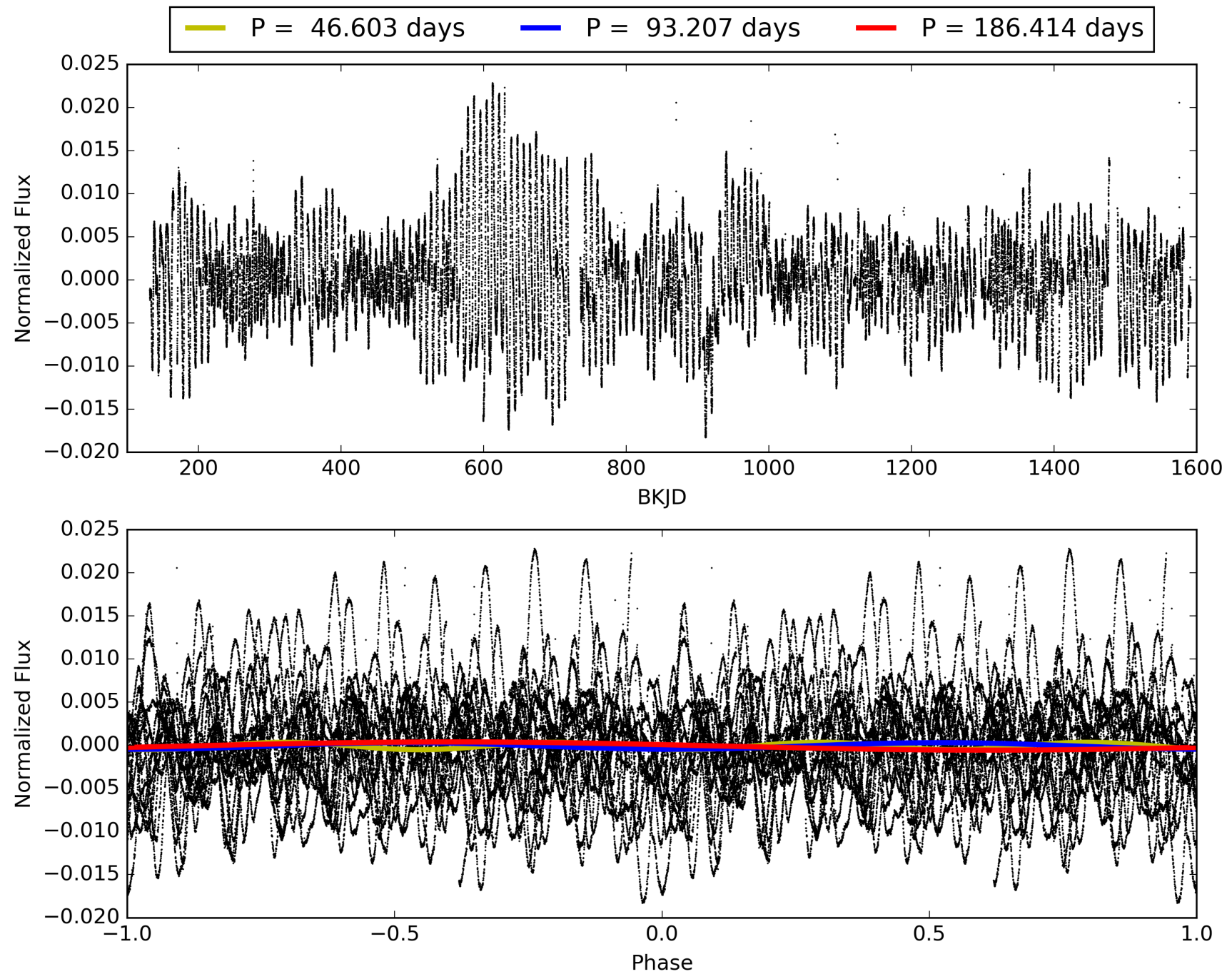
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:41:16 Z

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

TCE 007816999-02, PDC Light Curves

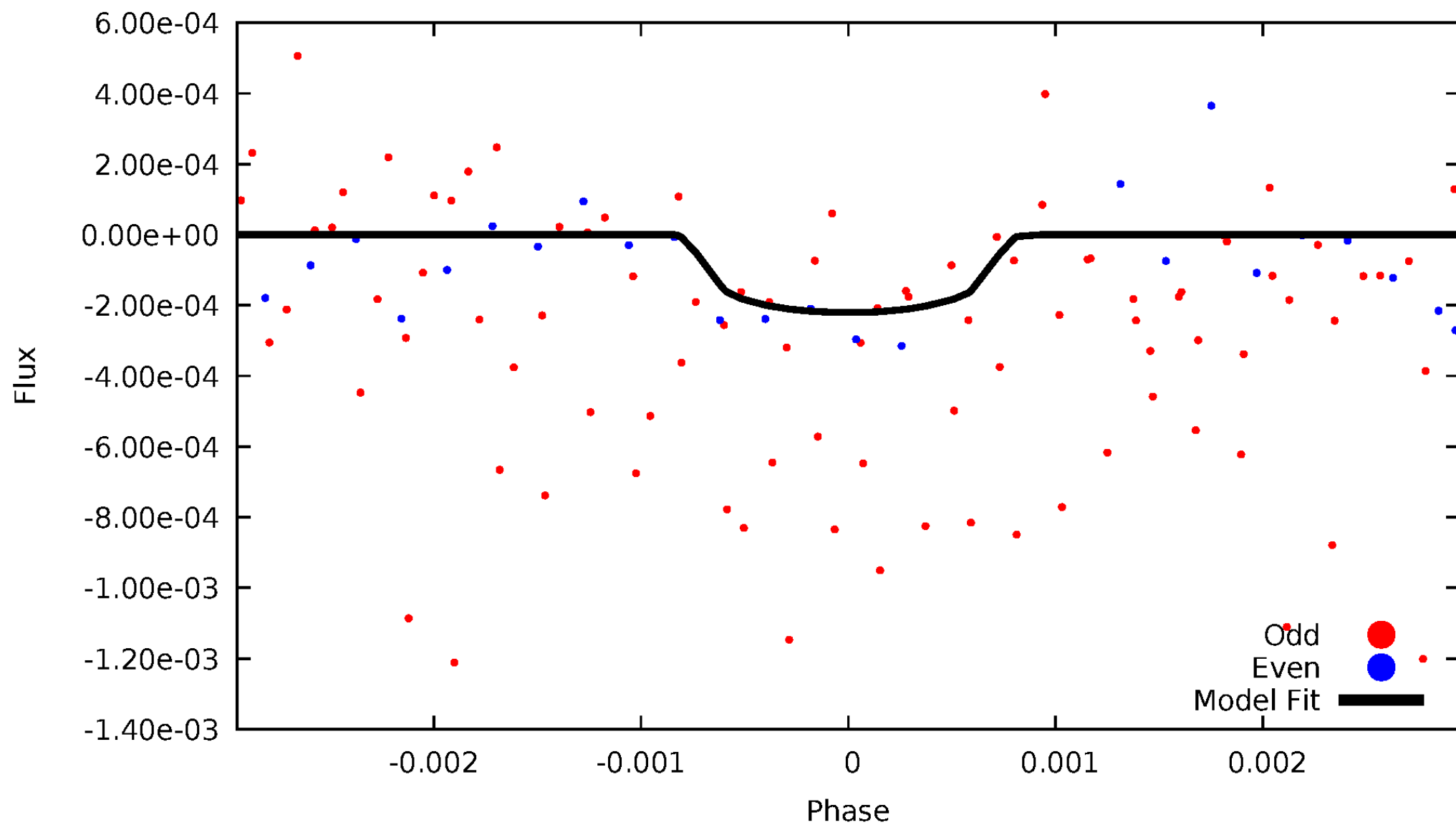


TCE 007816999-02



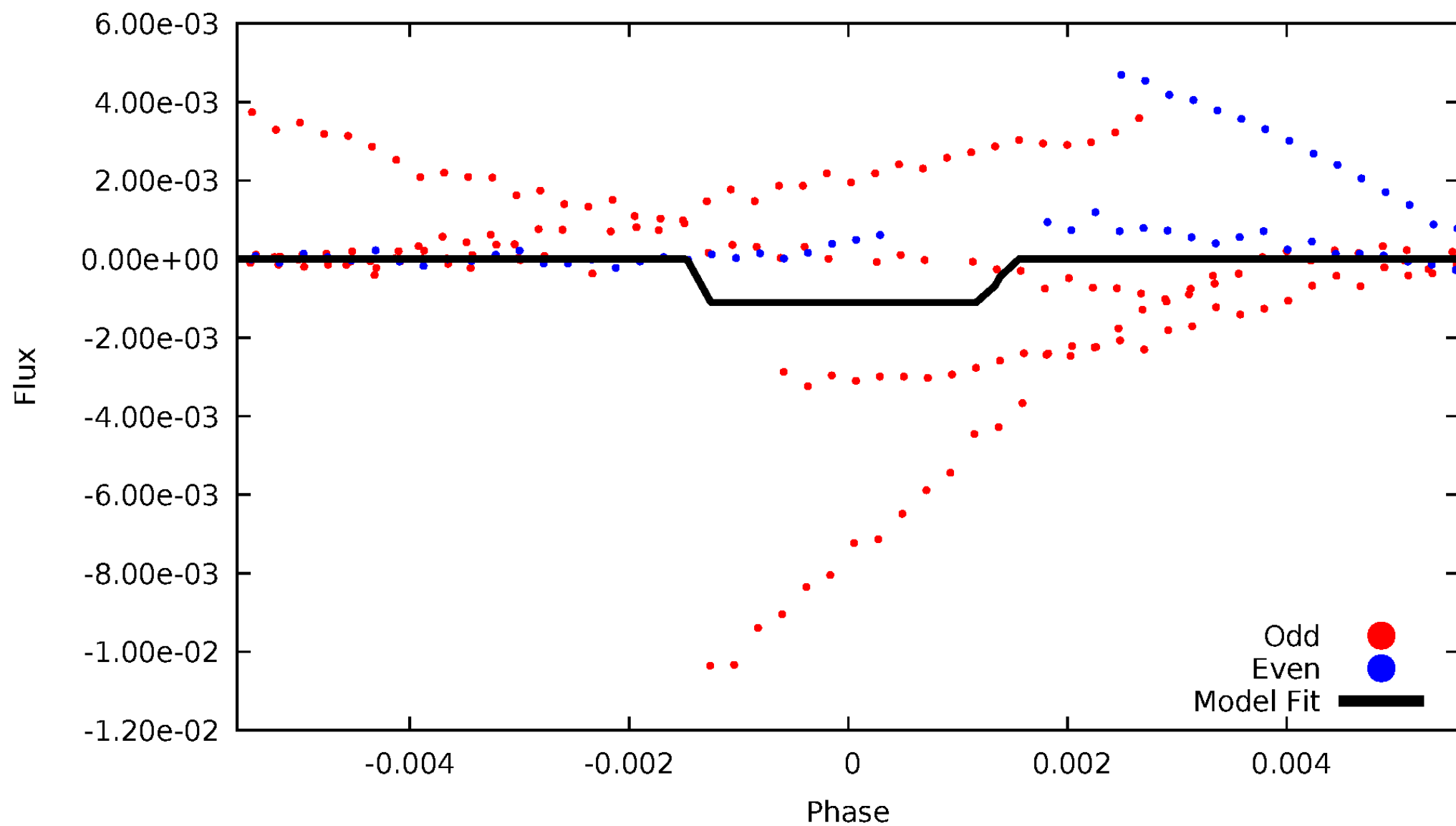
DV Odd/Even

TCE 007816999-02



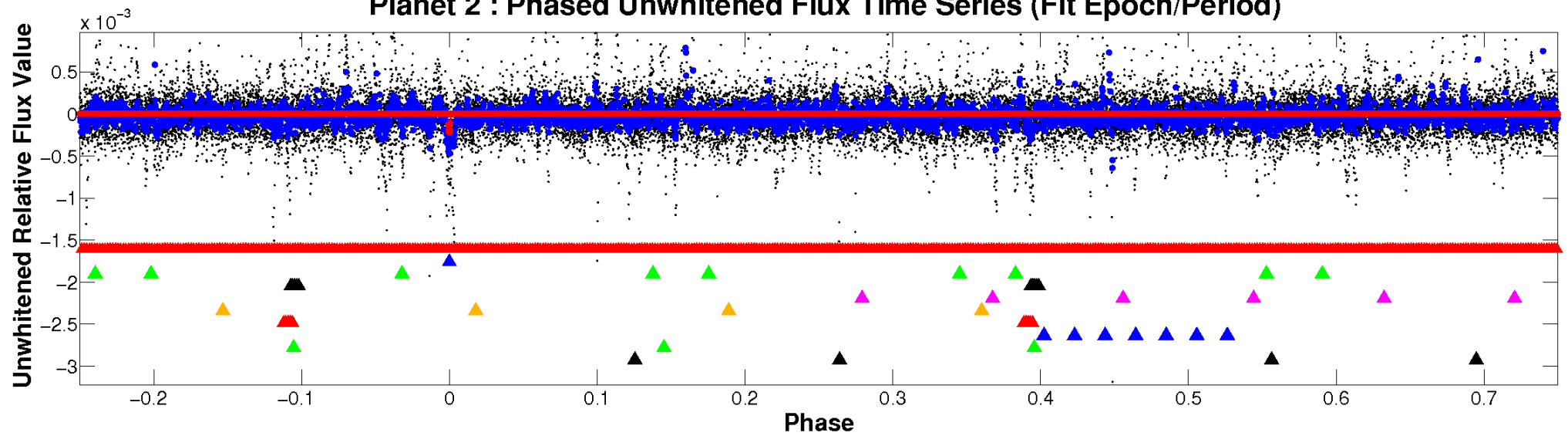
ALT Odd/Even

TCE 007816999-02

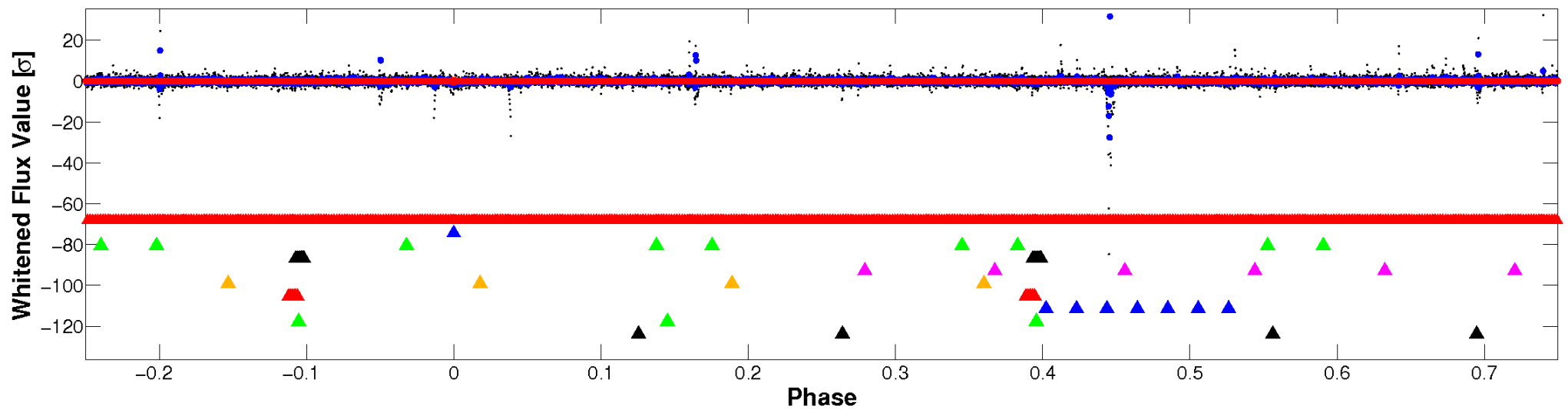


Non-Whitened Vs. Whitened Light Curve

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

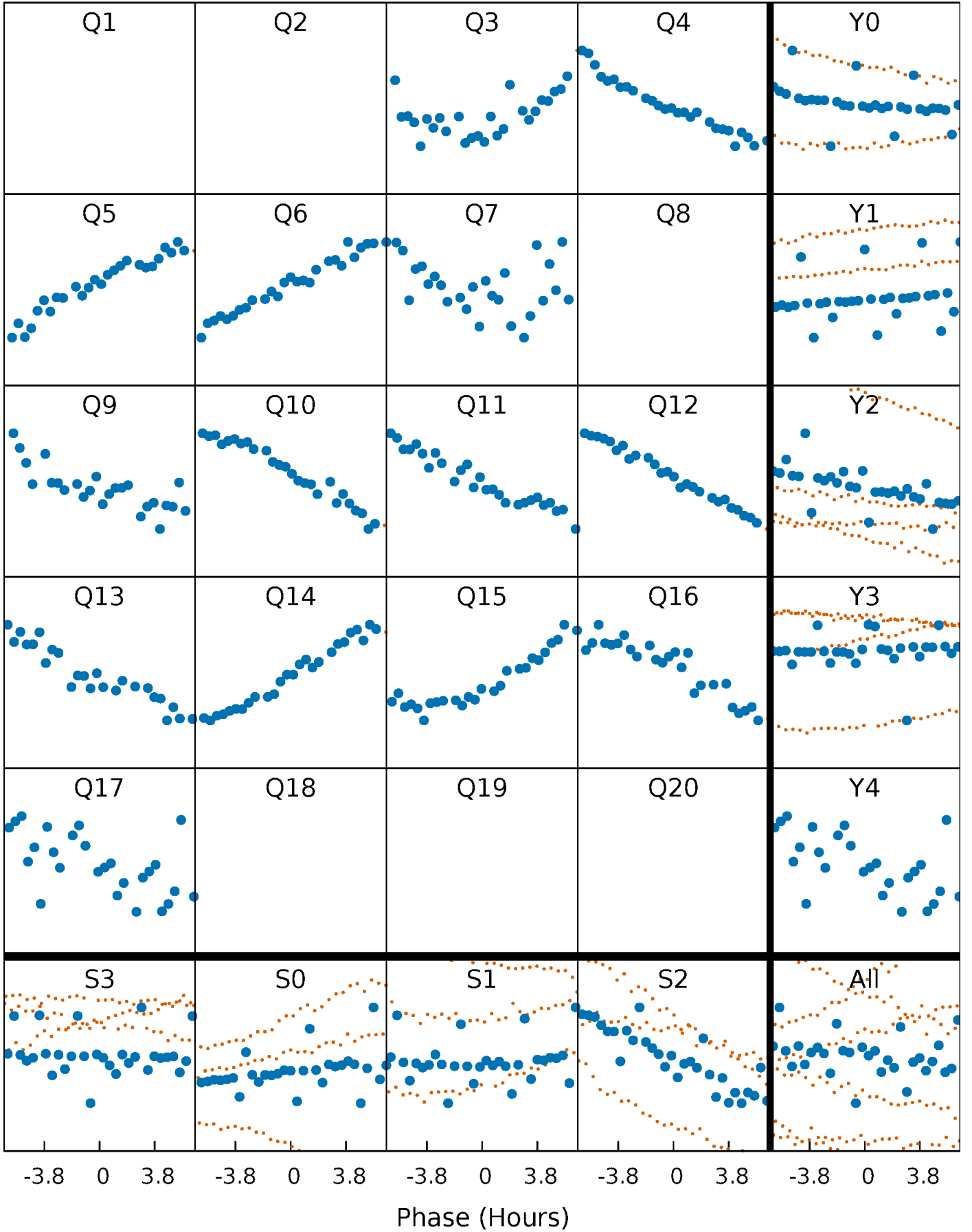


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



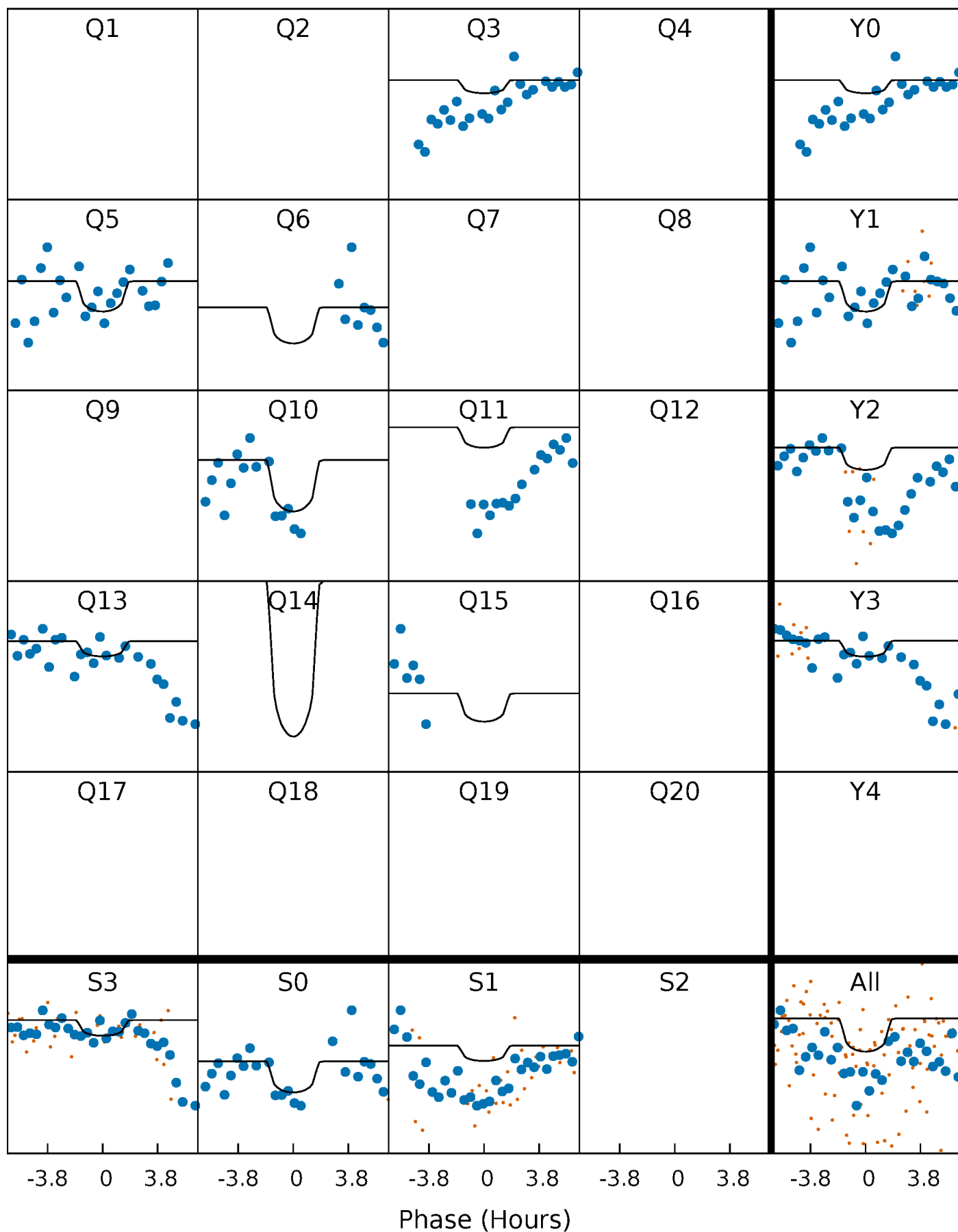
PDC Quarter-Phased Transit Curves

TCE 007816999-02 P= 93.206905 Days $T_0=168.604896$ (BKJD)



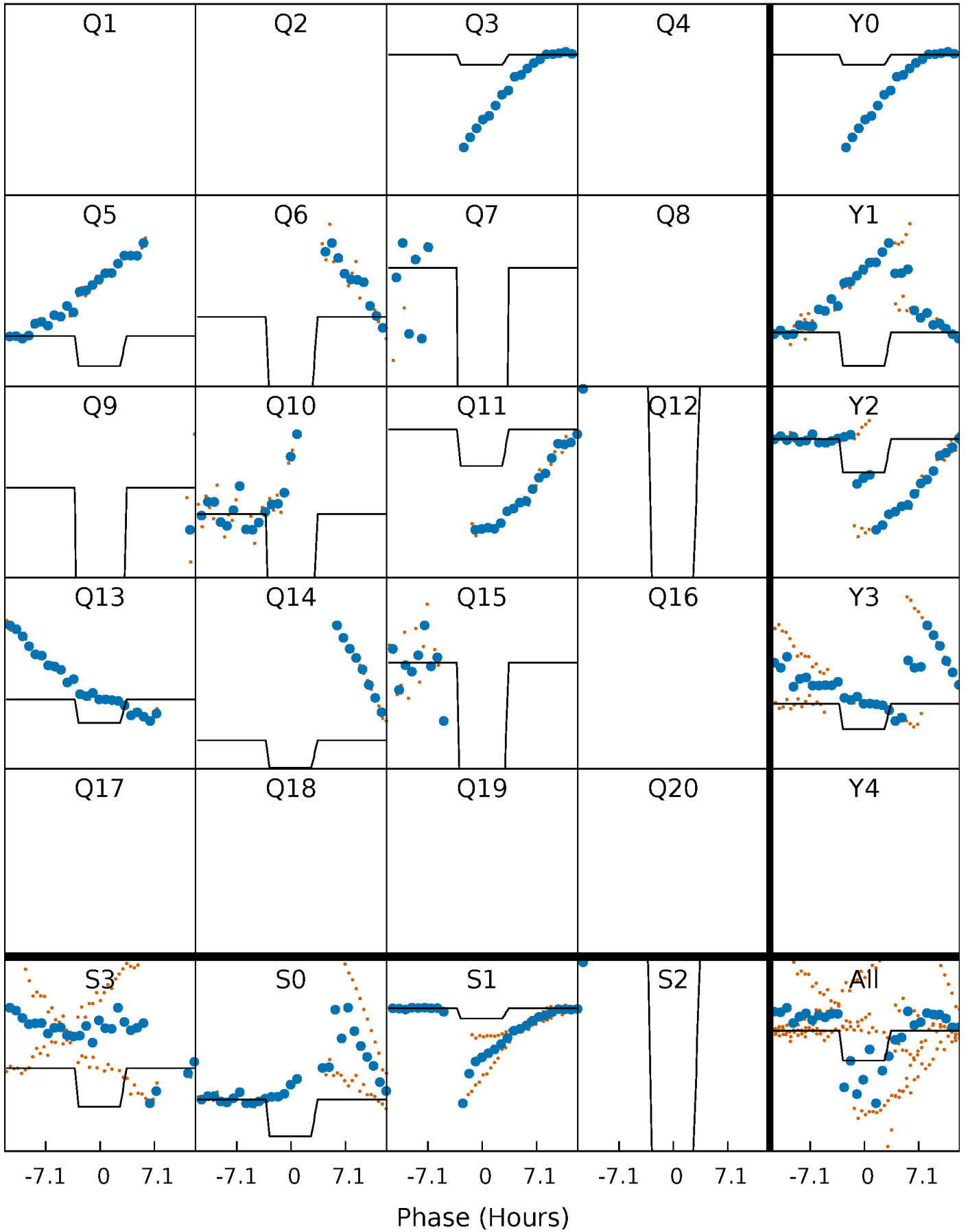
DV Quarter-Phased Transit Curves

TCE 007816999-02 P= 93.206905 Days $T_0=168.604896$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

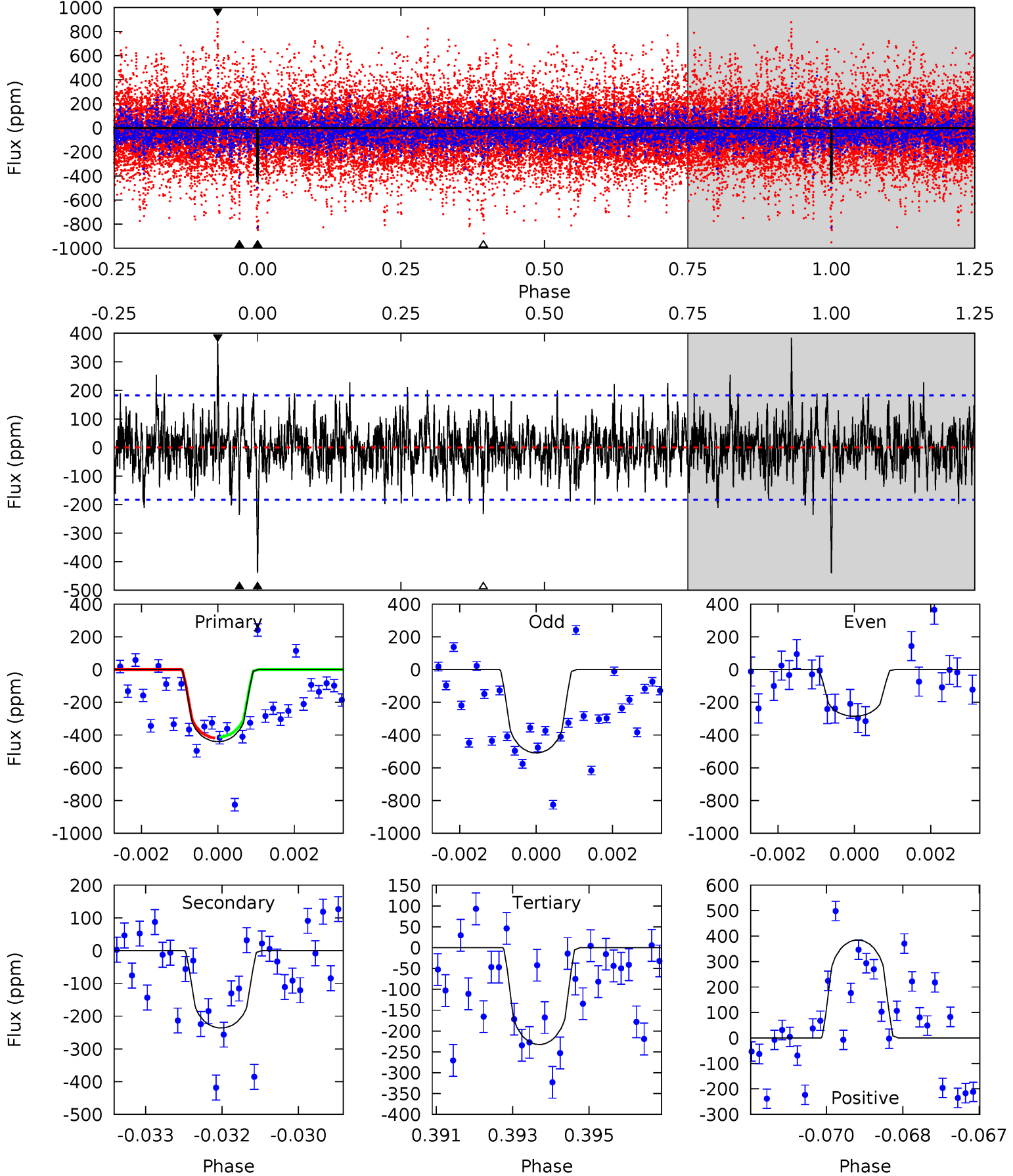
TCE 007816999-02 P= 93.217901 Days $T_0=168.513841$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-02, P = 93.206905 Days, E = 75.397991 Days

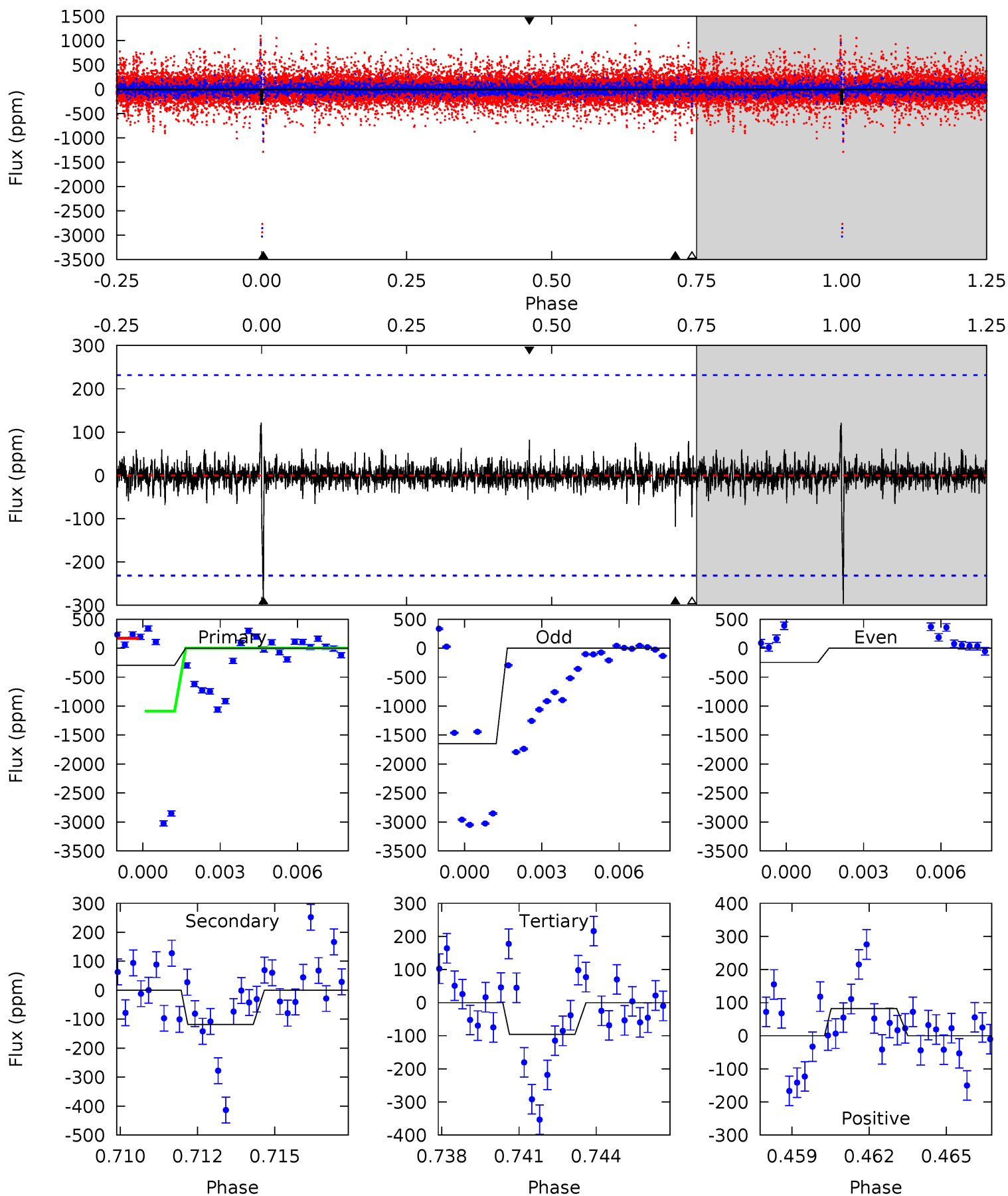
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	6.92	6.81	11.3	5.35	3.13	1.94	6.09	1.63	0.11	-4.35	2.33	1.60	0.47	0.08



Alt Model-Shift Uniqueness Test

007816999-02, P = 93.217901 Days, E = 75.295940 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.74	2.68	2.18	1.87	5.26	2.98	0.39	4.56	4.88	0.50	0.81	11.8	-17.4	0.29	10.3



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-236 ± 34	$4.03^{+4.24}_{-2.86}$	464^{+21}_{-19}	3457^{+1940}_{-646}	1113^{+11908}_{-859}
Alt.	-118 ± 44	$4.53^{+4.73}_{-3.05}$	463^{+22}_{-20}	2962^{+1259}_{-521}	404^{+3431}_{-309}

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

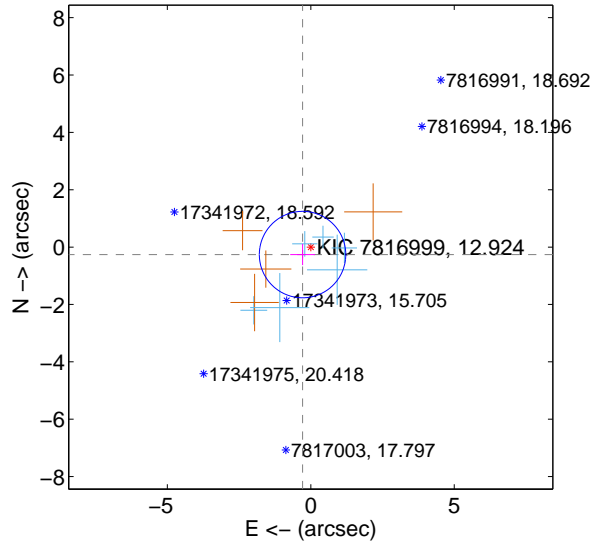
Supplemental centroid analysis for 007816999-02. Kepler magnitude: 12.92. Transit SNR 3.47

There are 6 quarters with good PRF difference image offsets

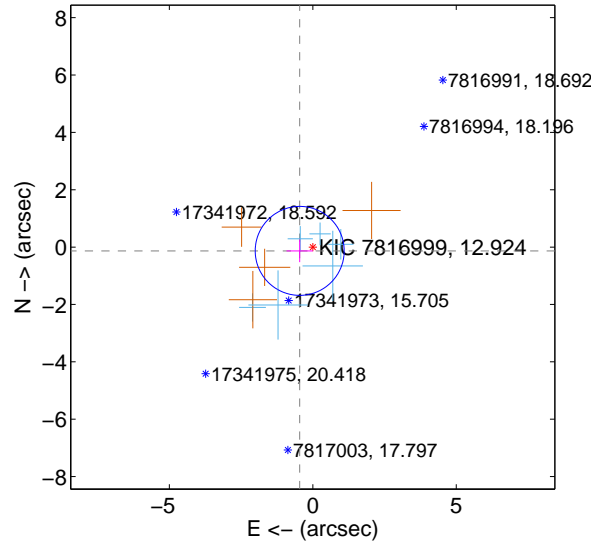
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.388 ± 0.502	0.77	0.287 ± 0.432	-0.261 ± 0.369
PRF-fit source offset from KIC position	0.475 ± 0.517	0.92	0.457 ± 0.460	-0.132 ± 0.394
photometric centroid source offset	2.41 ± 1.54	1.57	0.04 ± 1.52	2.41 ± 1.54

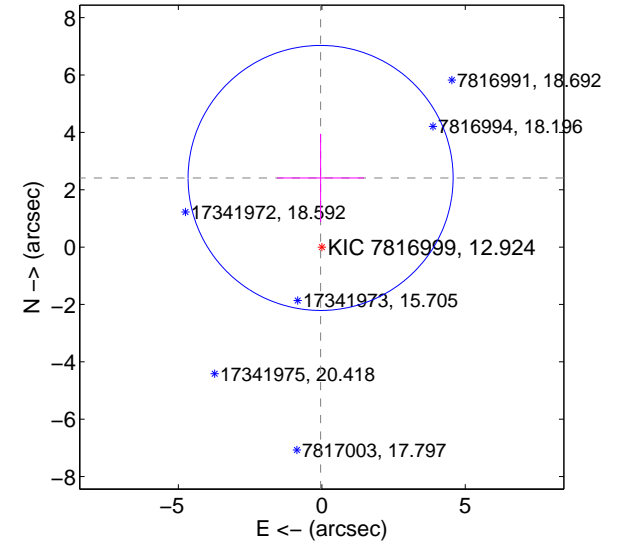
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

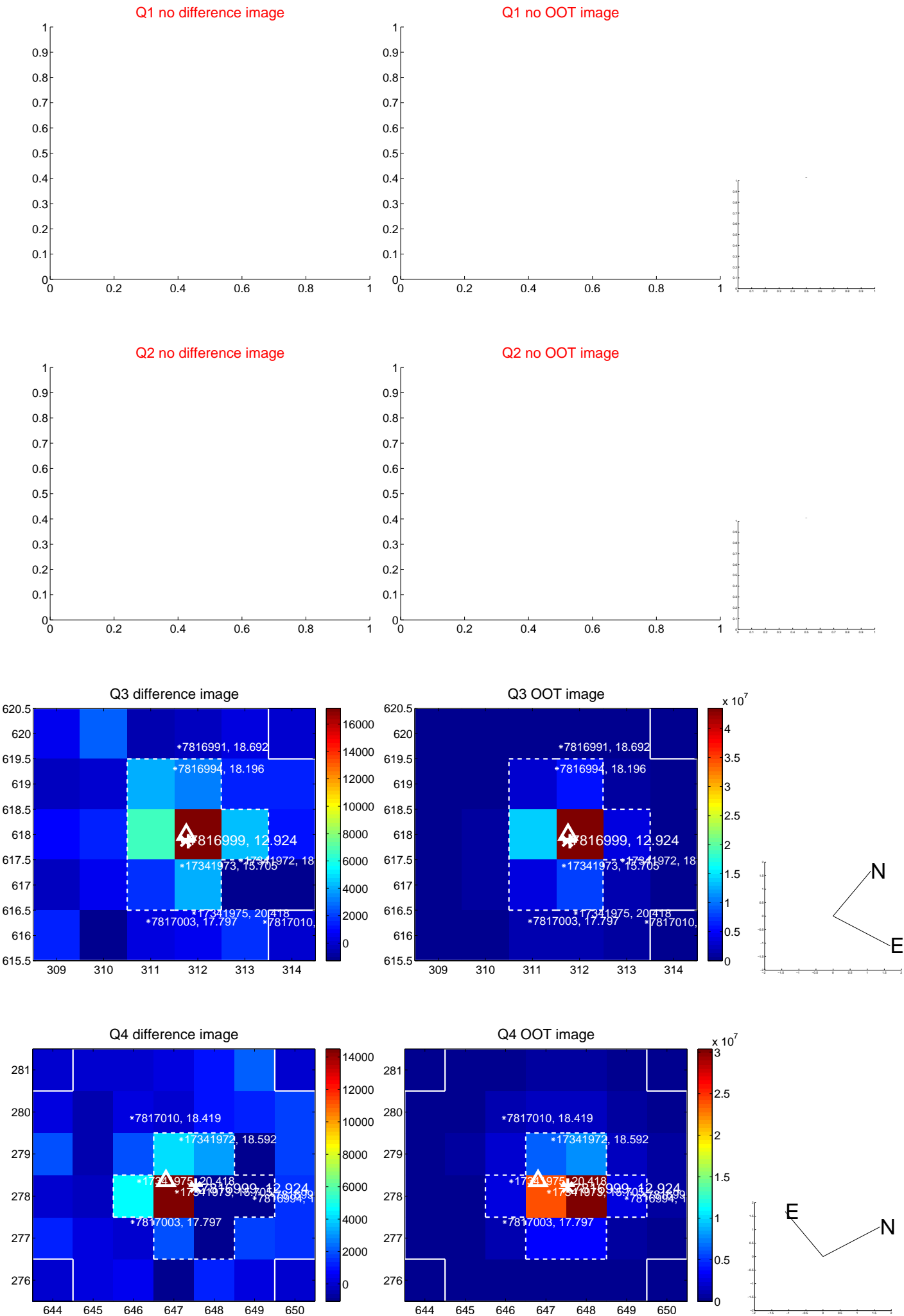


offset from photometric centroids

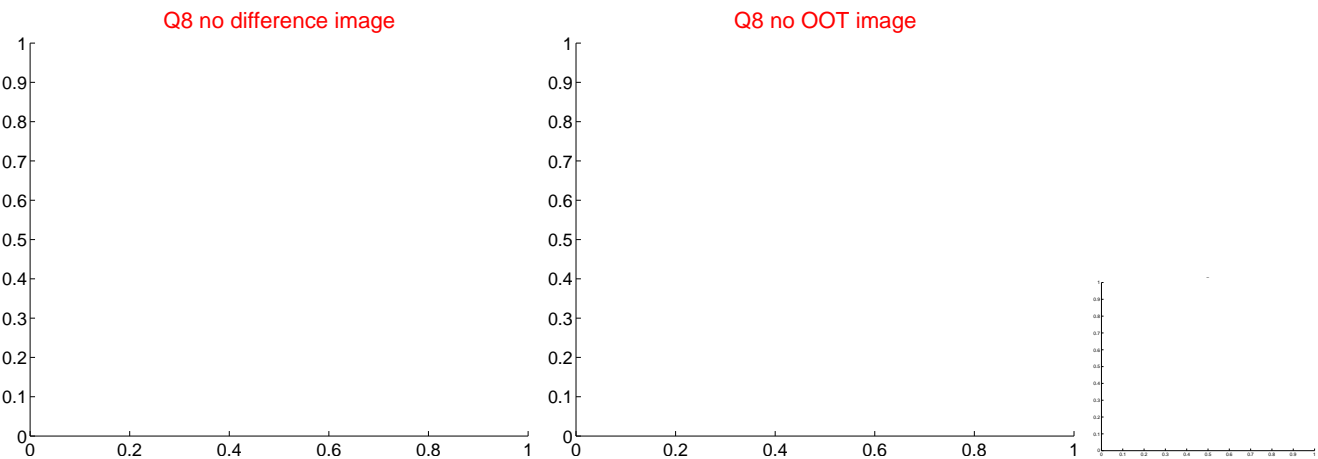
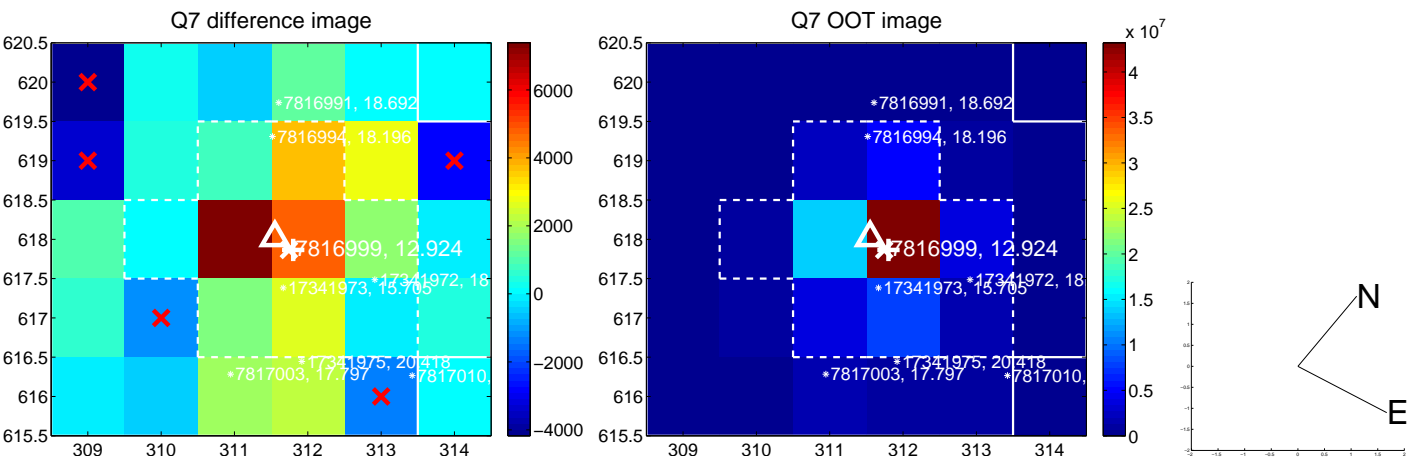
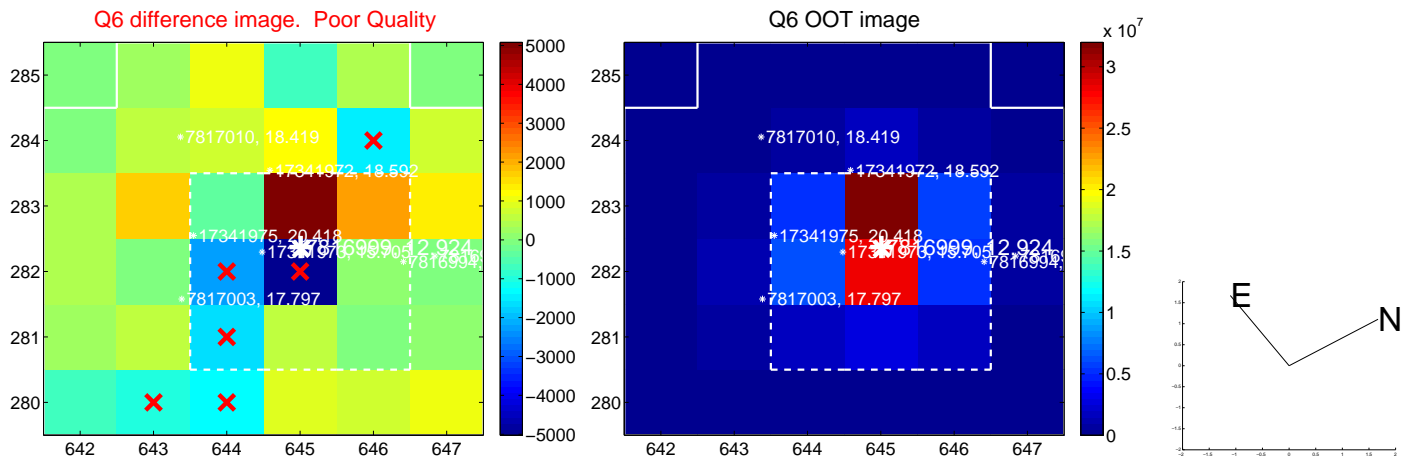
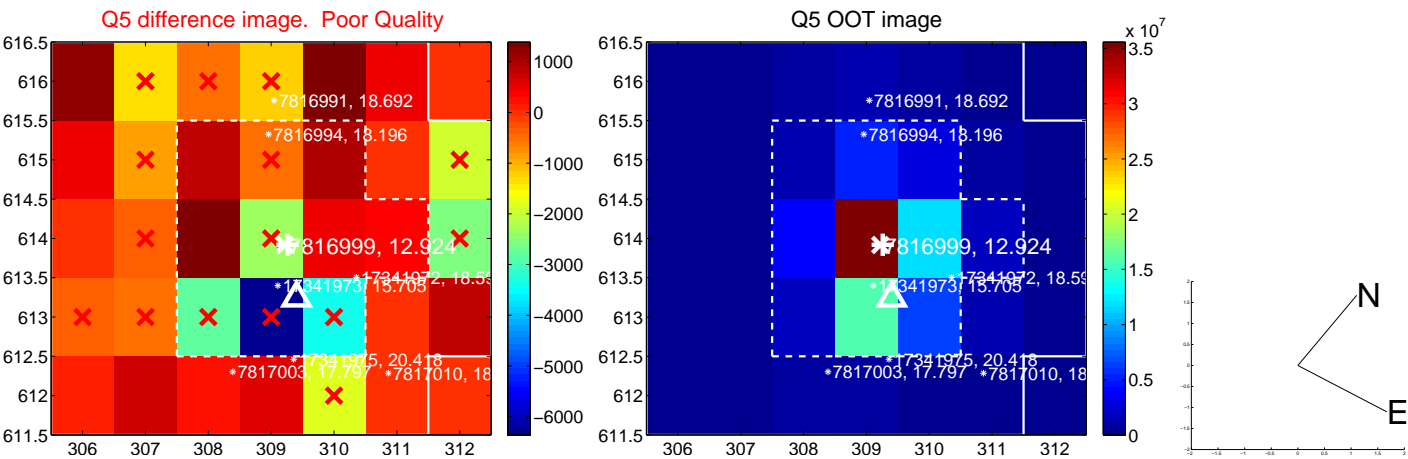


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

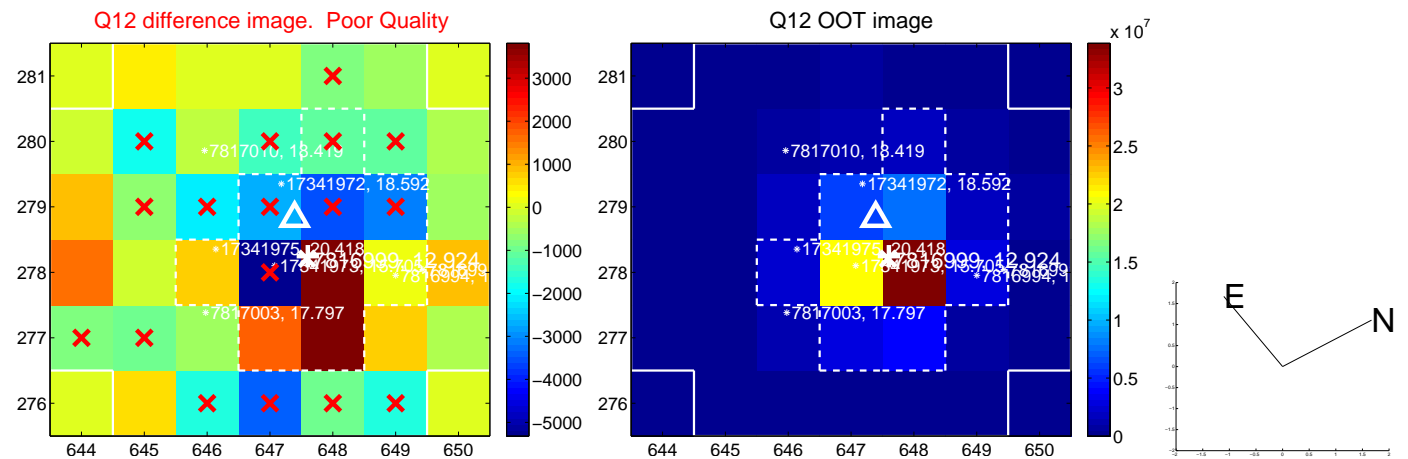
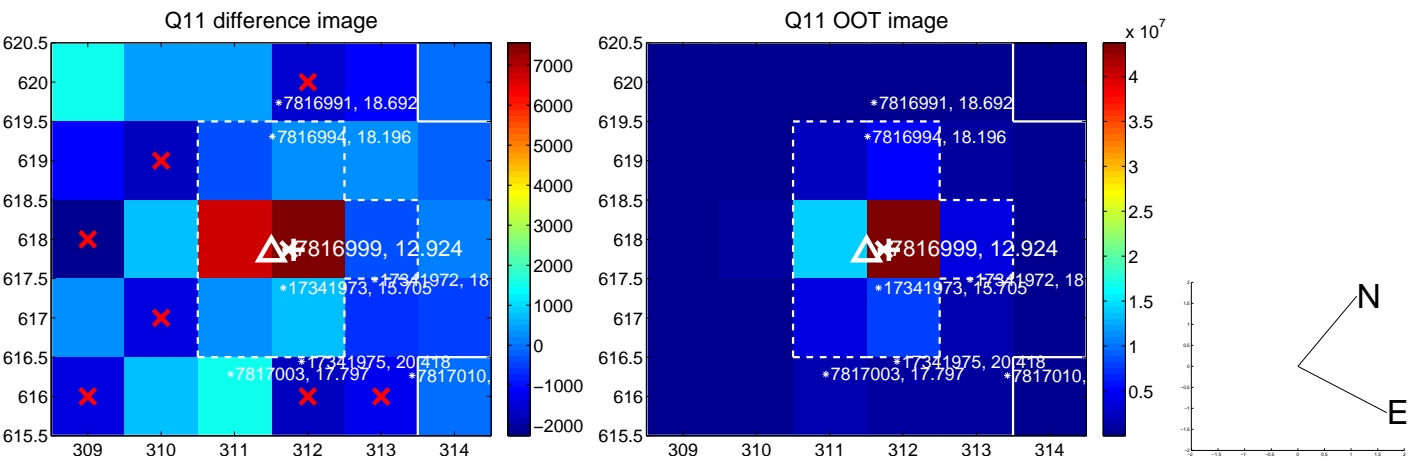
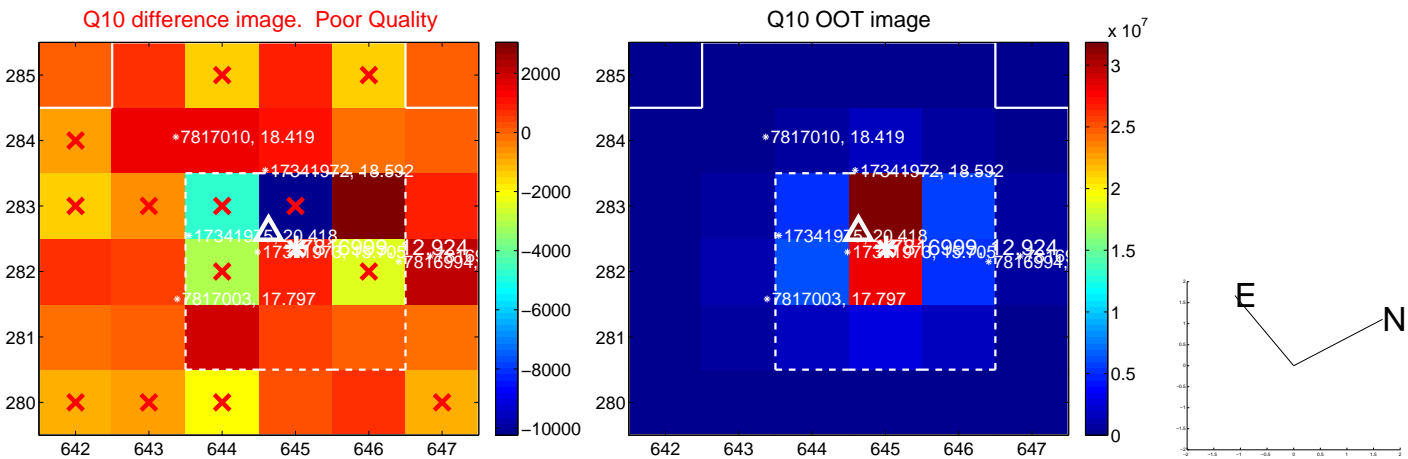
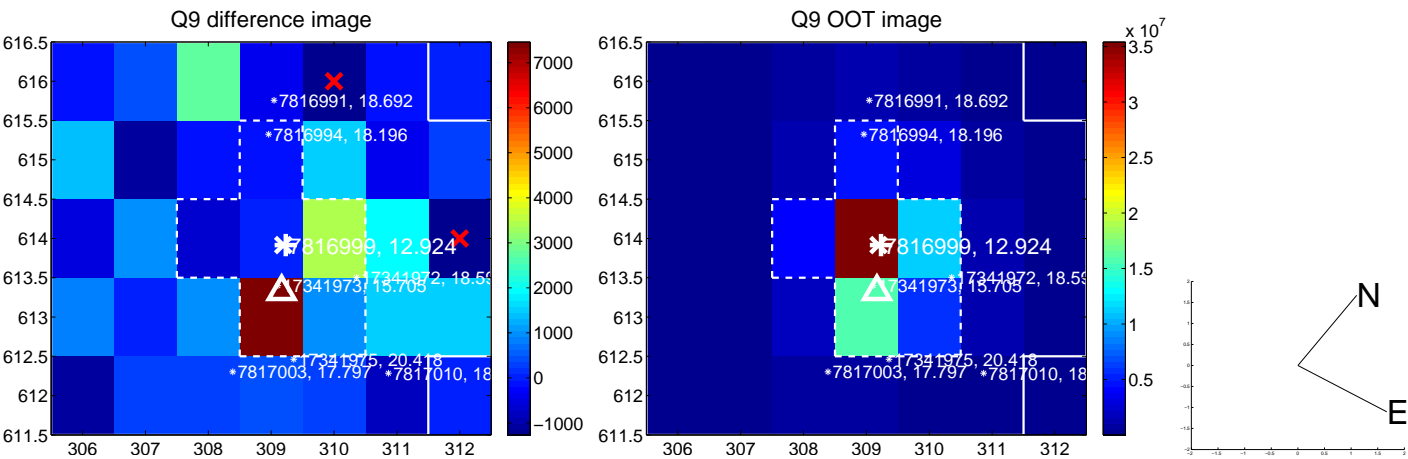
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

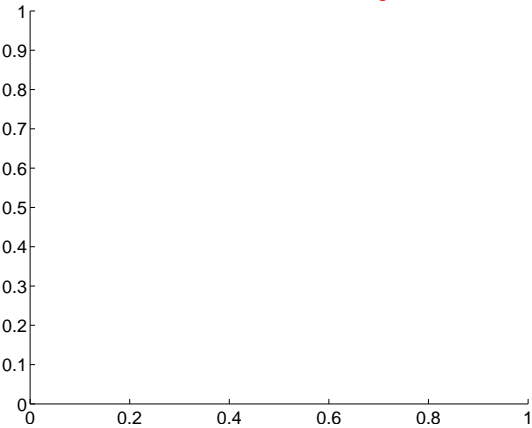


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

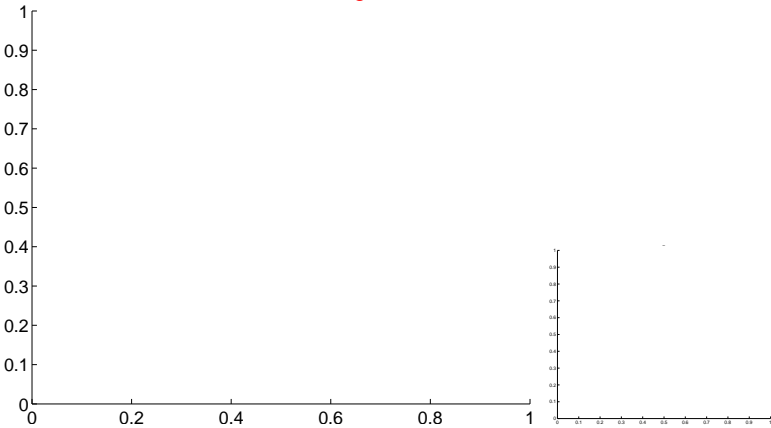


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

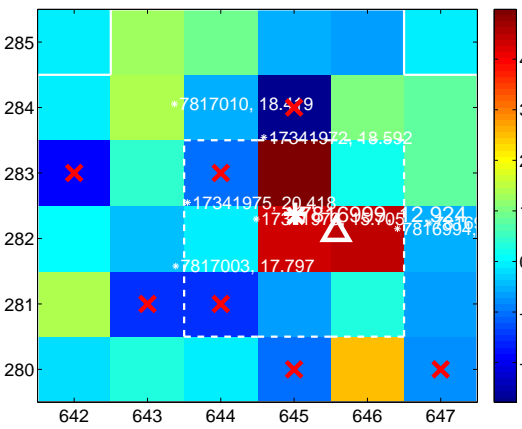
Q13 no difference image



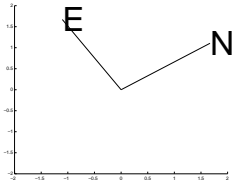
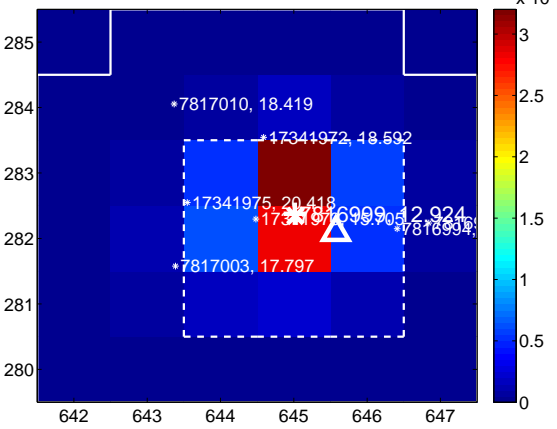
Q13 no OOT image



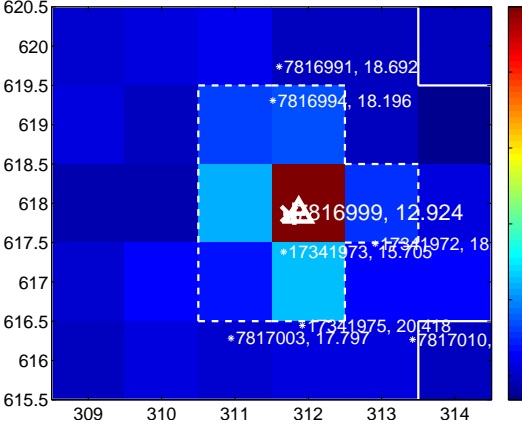
Q14 difference image. Poor Quality



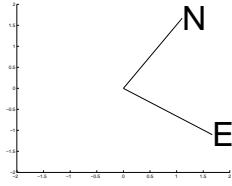
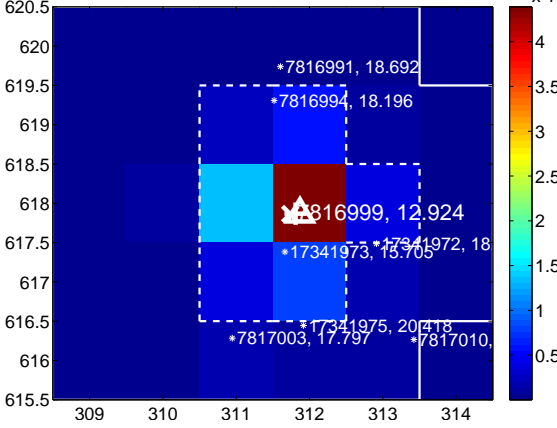
Q14 OOT image



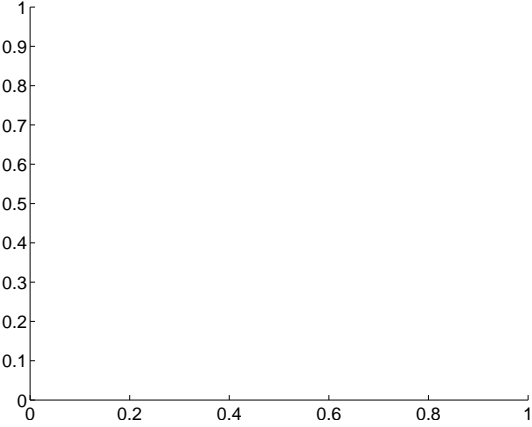
Q15 difference image



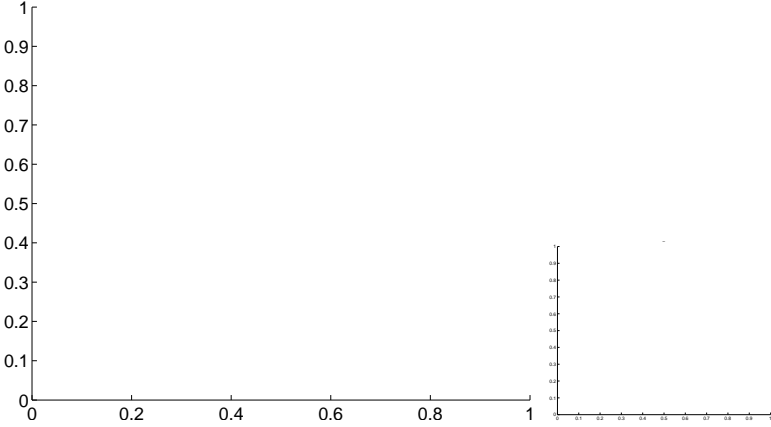
Q15 OOT image



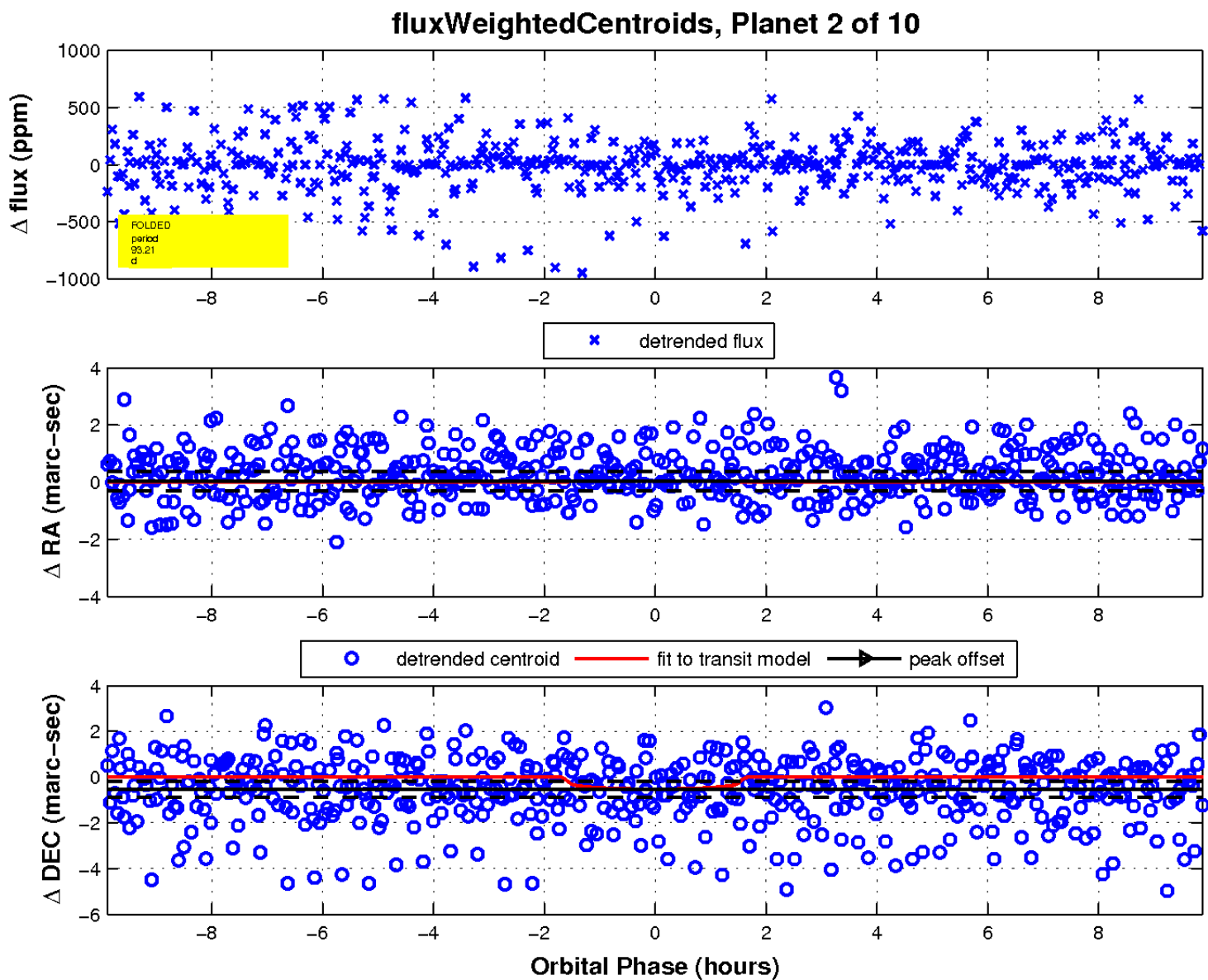
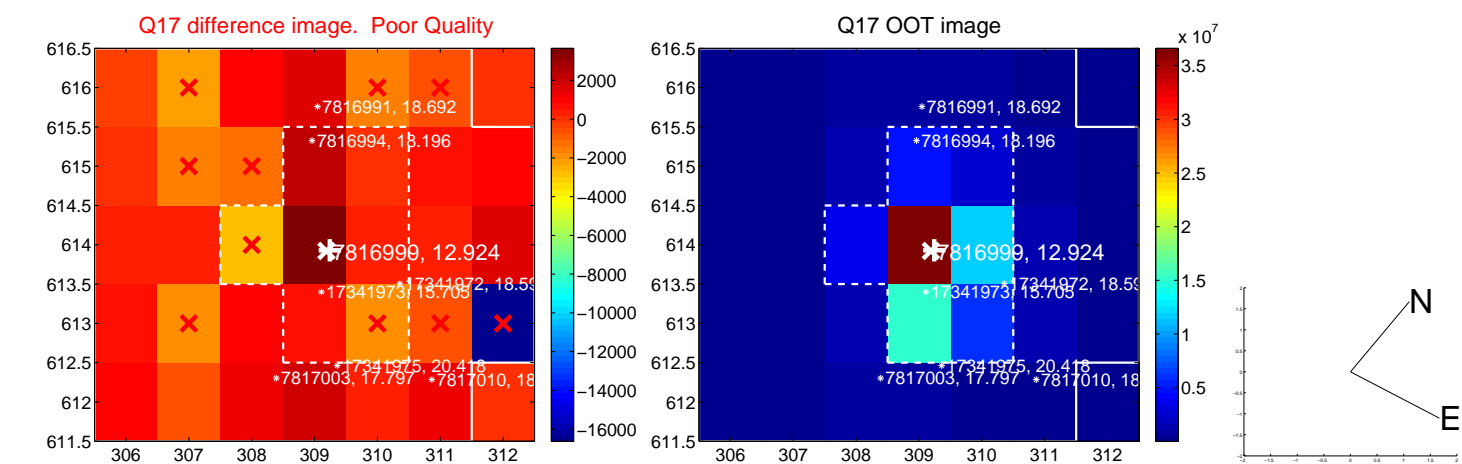
Q16 no difference image



Q16 no OOT image

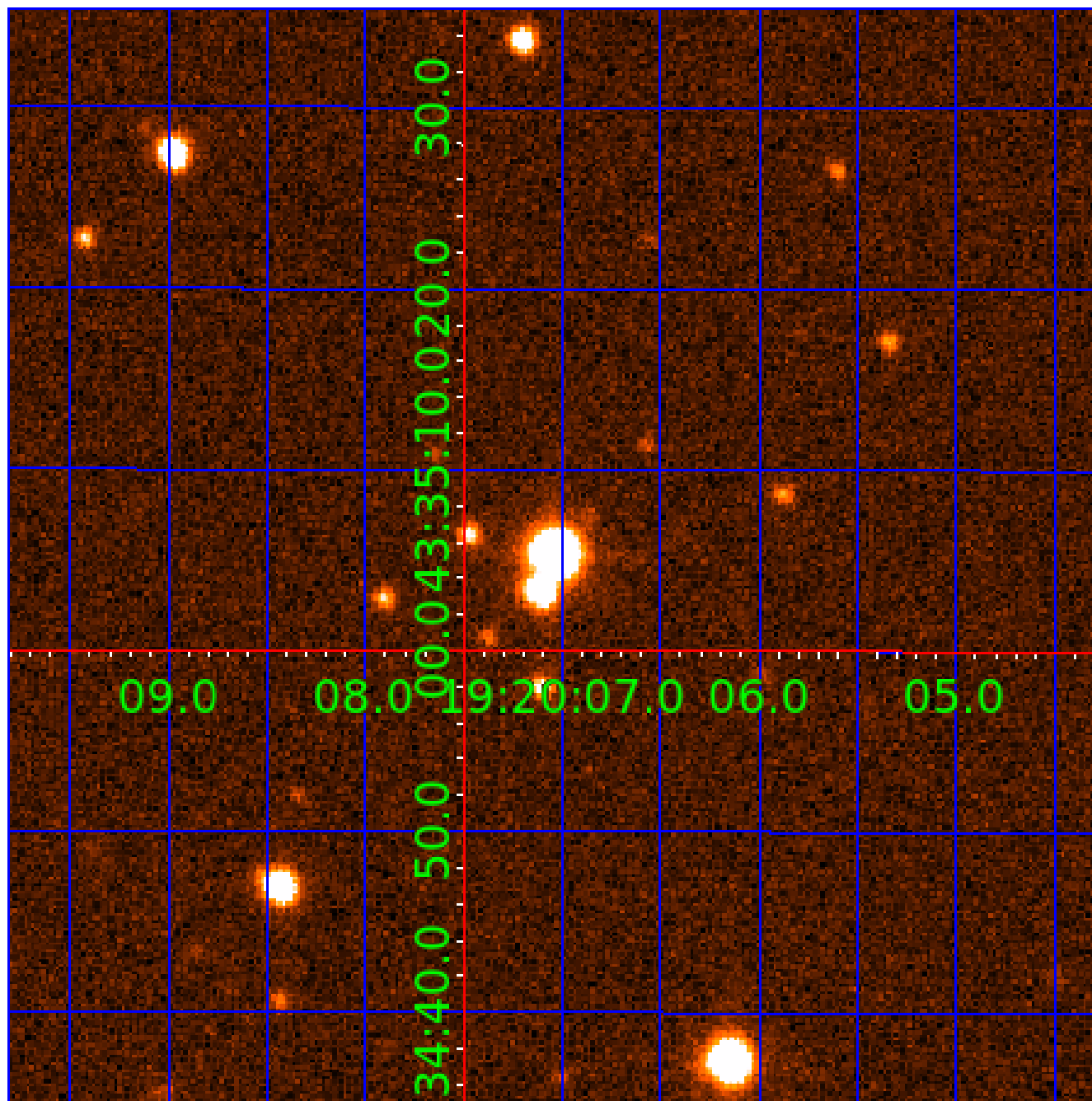


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007816999

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})
007816999-01	OBS	No	2.136986	132.767769	43.1	9.731	8.2	7.5	0.79	5159	0.55	430.37
007816999-02	OBS	No	93.206905	168.604896	220.5	3.296	14.0	3.5	0.79	5159	1.30	2.80
007816999-03	OBS	No	167.068223	149.790427	544.8	4.413	12.6	6.7	0.79	5159	2.29	1.29
007816999-04	OBS	No	139.746572	205.777922	193.8	6.194	12.3	2.9	0.79	5159	1.31	1.63
007816999-05	OBS	No	271.391733	142.572361	217.2	15.000	10.7	-1.0	0.79	5159	1.13	0.67
007816999-06	OBS	No	356.878727	481.792582	362.9	5.646	11.3	4.6	0.79	5159	2.01	0.47
007816999-08	OBS	No	184.487802	310.869972	253.1	10.500	10.4	-1.0	0.79	5159	1.22	1.13
007816999-09	OBS	No	489.387806	531.611891	588.2	6.569	9.1	6.0	0.79	5159	2.08	0.31
007816999-10	OBS	No	332.678790	313.662559	329.7	7.500	9.7	-1.0	0.79	5159	1.40	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

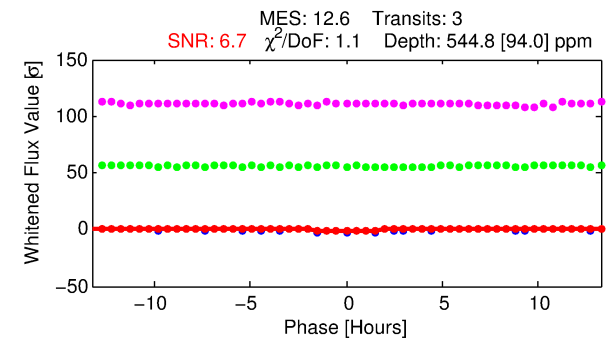
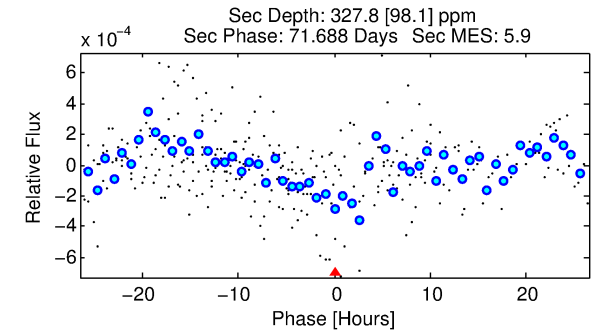
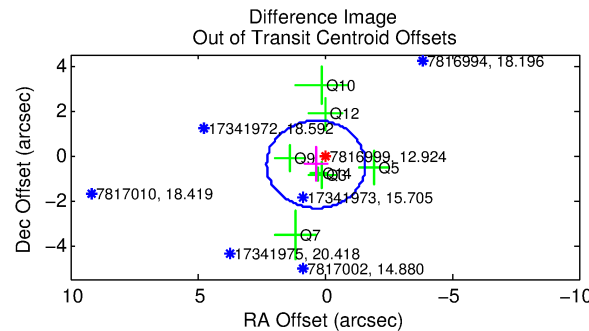
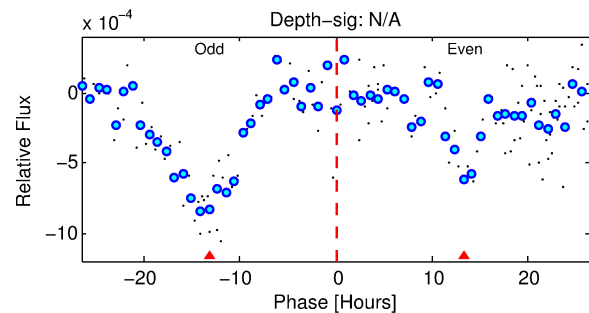
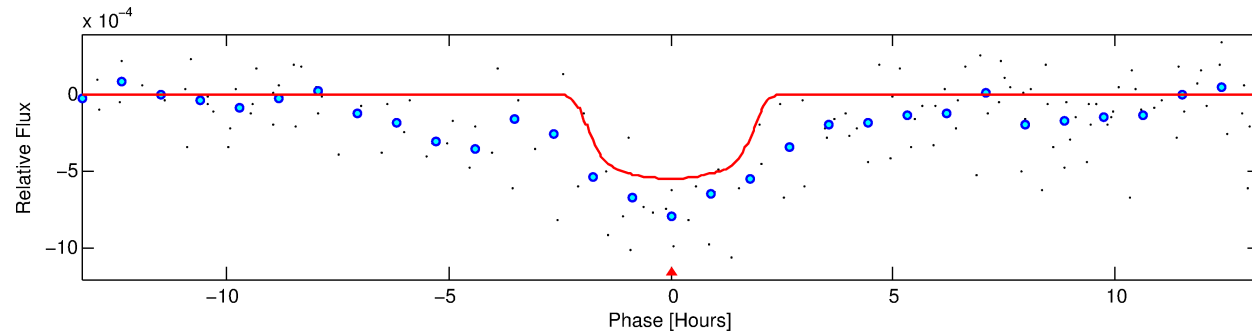
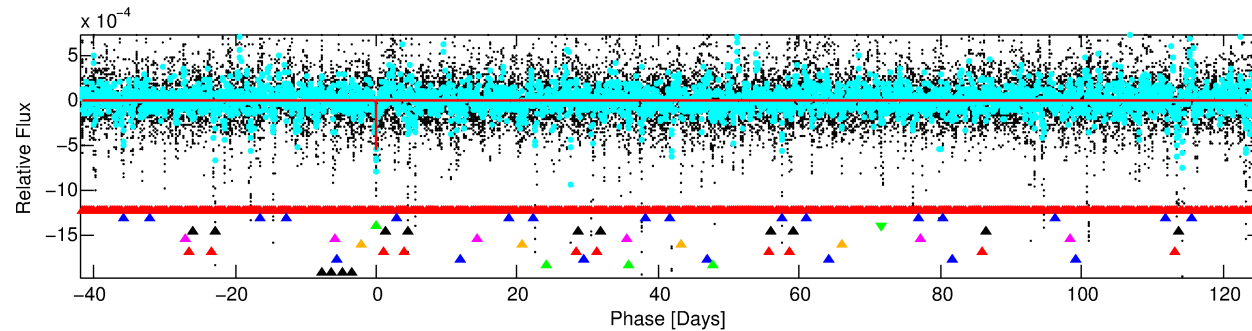
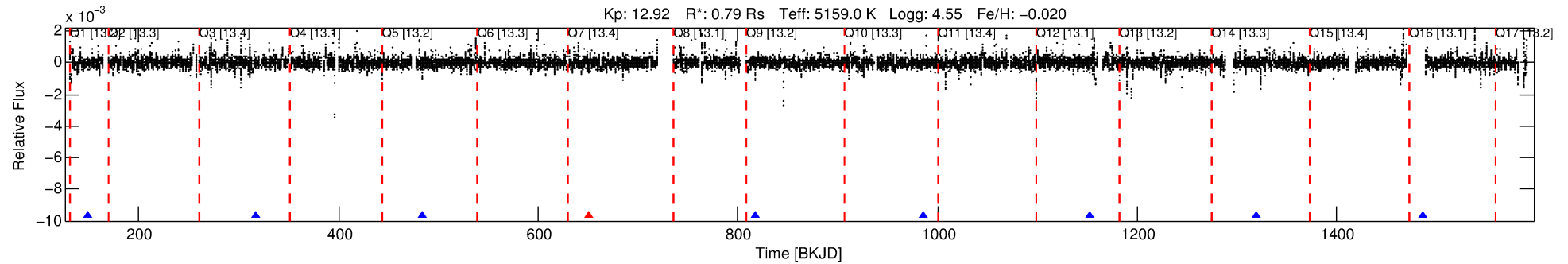
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-03

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 3 of 10 Period: 167.068 d



DV Fit Results:

Period = 167.06822 [0.01092] d
Epoch = 149.7904 [0.0322] BKJD
Rp/R* = 0.0266 [0.0071]
a/R* = 132.07 [132.56]
b = 0.92 [0.17]
Seff = 1.29 [0.27]
Teq = 272 [14] K
Rp = 2.29 [0.69] Re
a = 0.5547 [0.0597] AU
Ag = 10581.16 [6680.11] [1.58 σ]
Teffp = 4259 [673] K [5.92 σ]

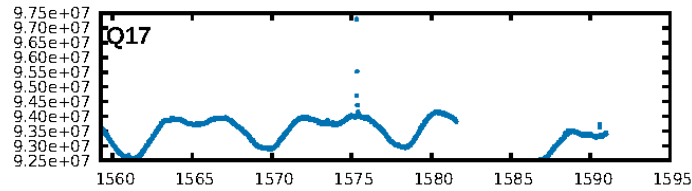
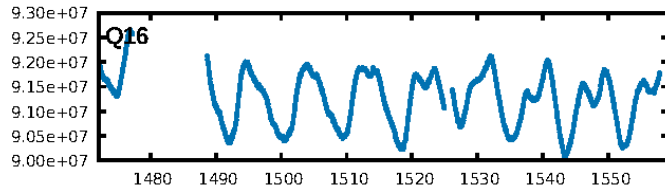
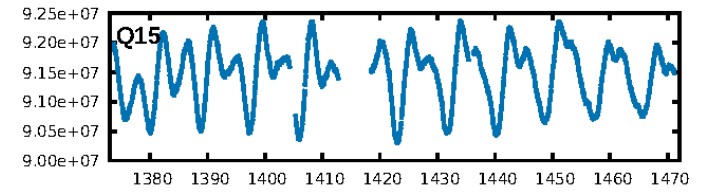
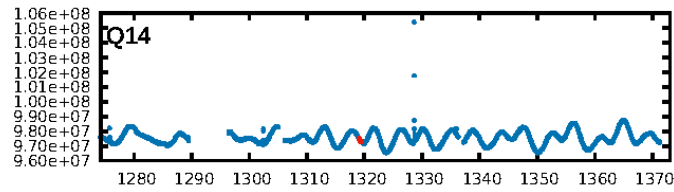
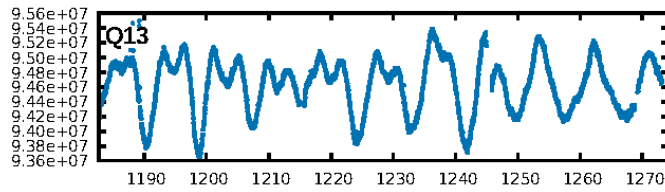
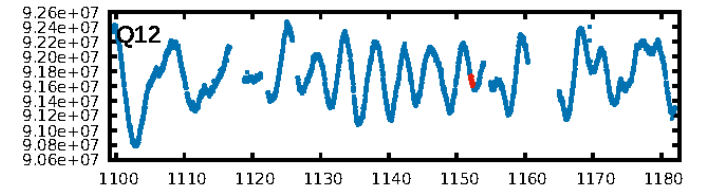
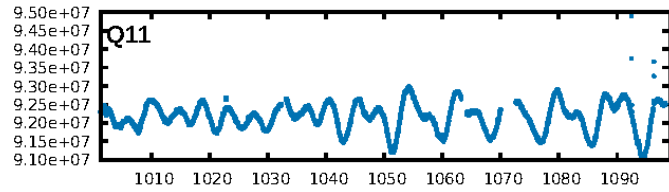
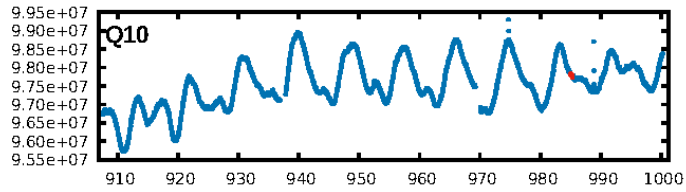
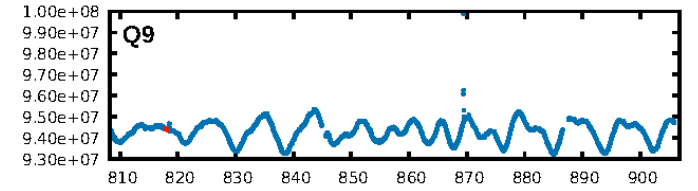
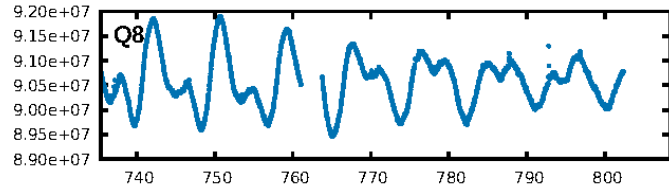
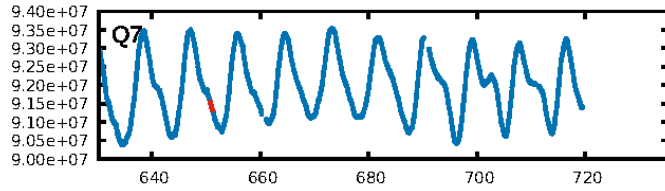
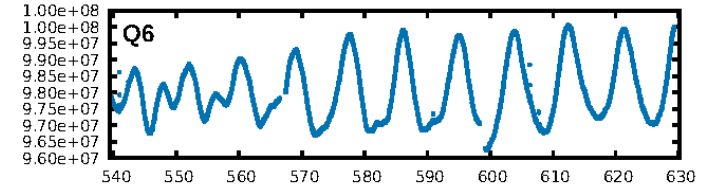
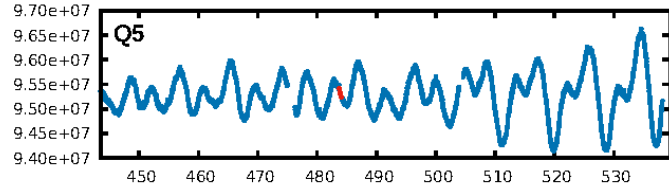
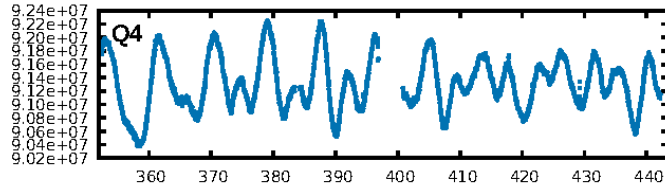
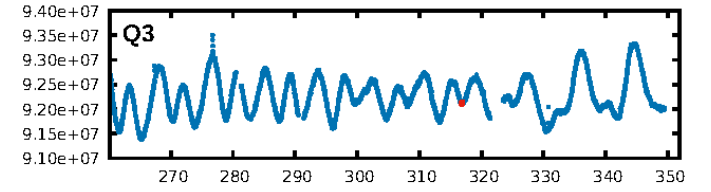
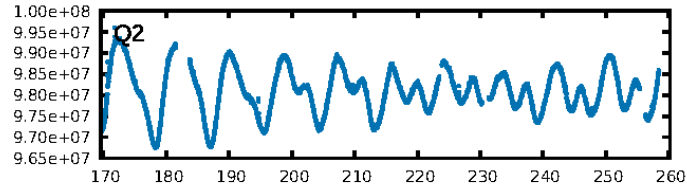
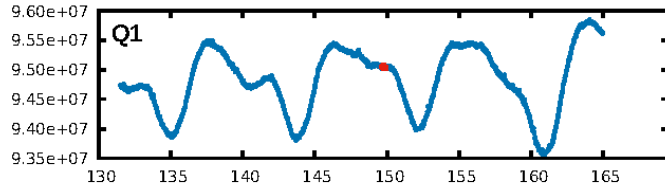
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [86.22 σ]
LongPeriod-sig: 100.0% [36.71 σ]
ModelChiSquare2-sig: 32.6%
ModelChiSquareGof-sig: 95.9%
Bootstrap-pfa: 1.29e-13
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: -0.1176
Centroid-sig: 32.4%
Centroid-so: 0.560 arcsec [0.78 σ]
OotOffset-rm: 0.521 arcsec [0.80 σ]
OotOffset-st: 2/2/1/2 [7]
KicOffset-rm: 0.559 arcsec [0.88 σ]
KicOffset-st: 2/2/1/2 [7]
DiffImageQuality-fgm: 0.71 [5/7]
DiffImageOverlap-fno: 0.38 [3/8]

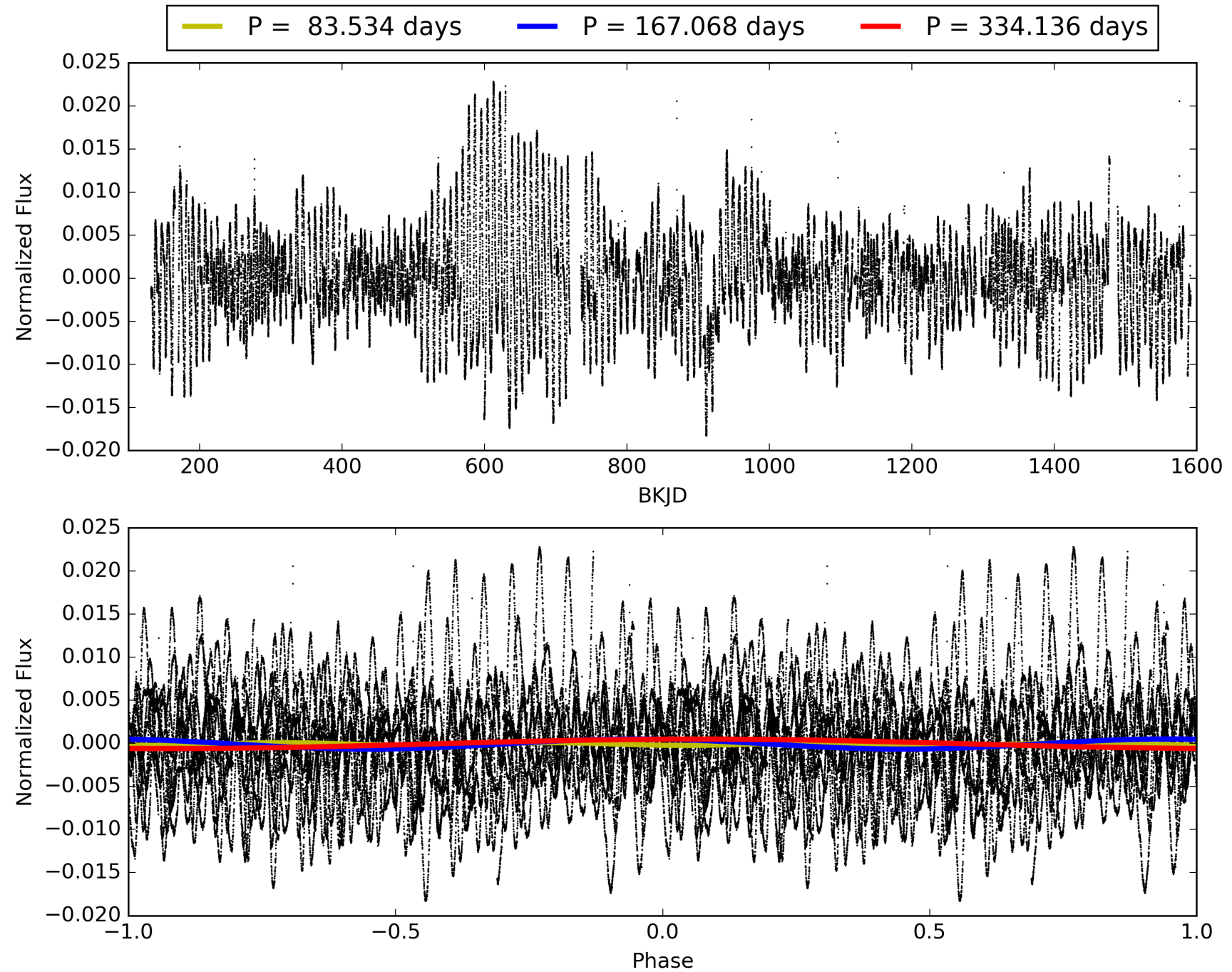
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:41:22 Z

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

TCE 007816999-03, PDC Light Curves

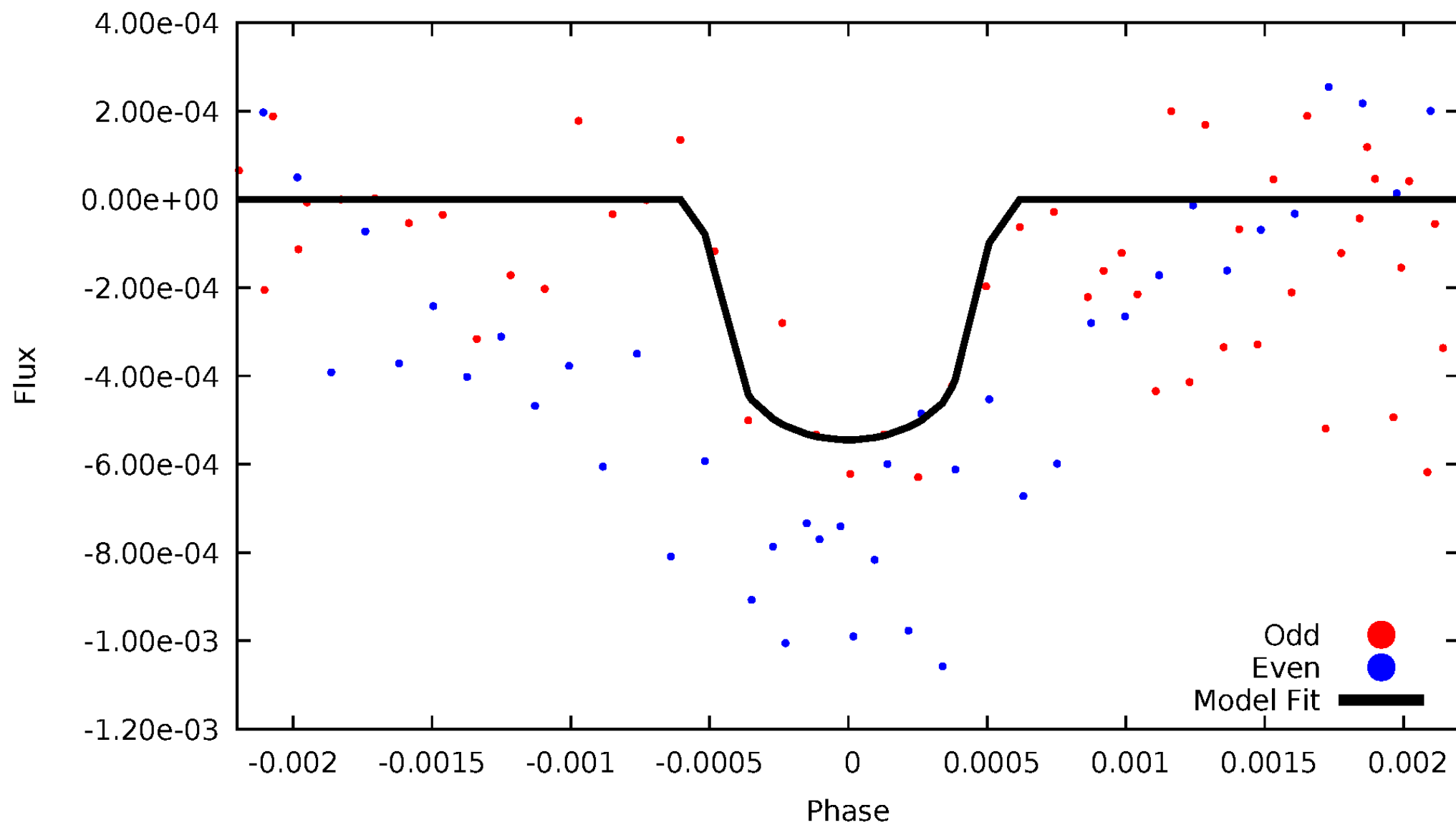


TCE 007816999-03



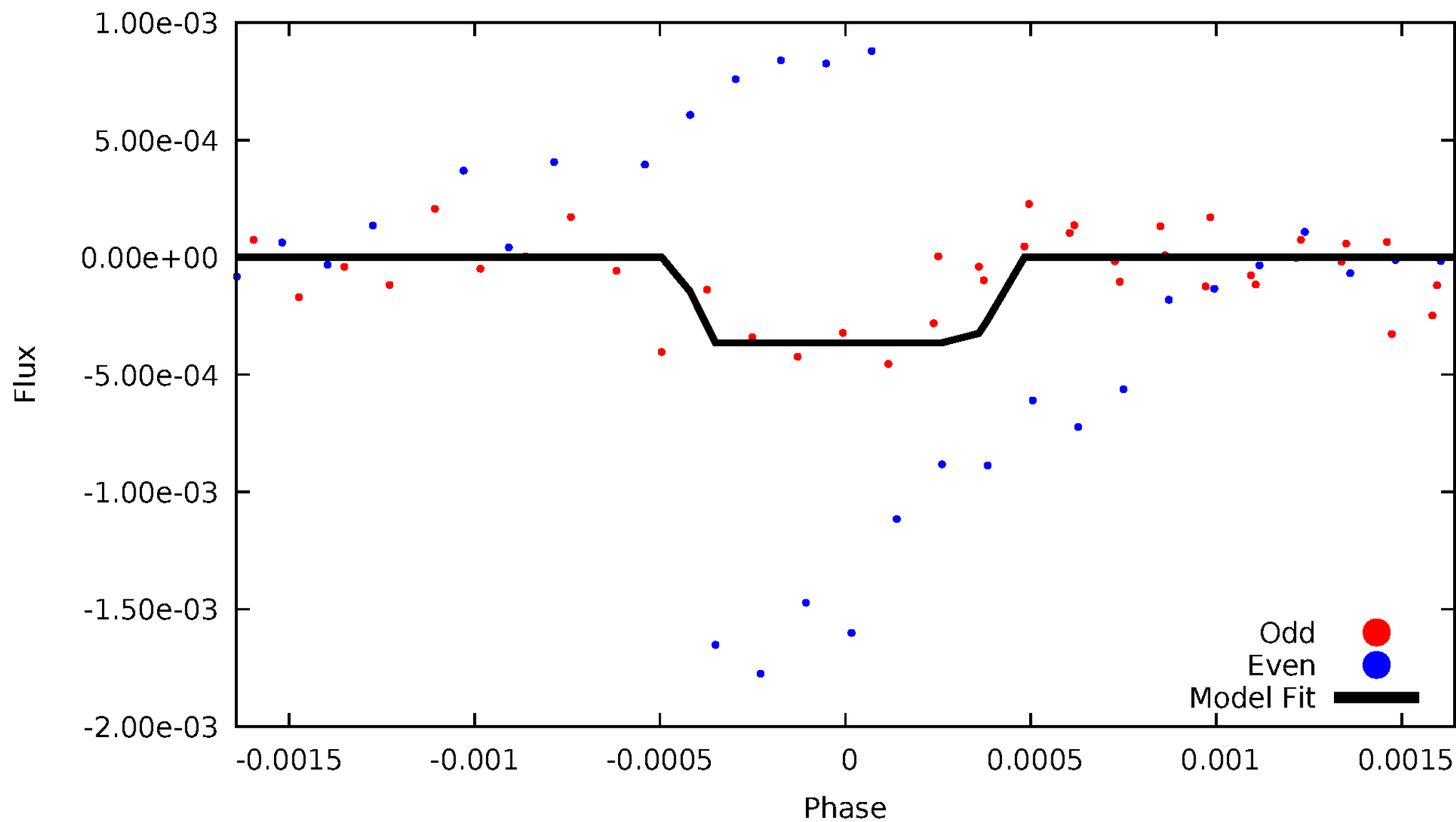
DV Odd/Even

TCE 007816999-03



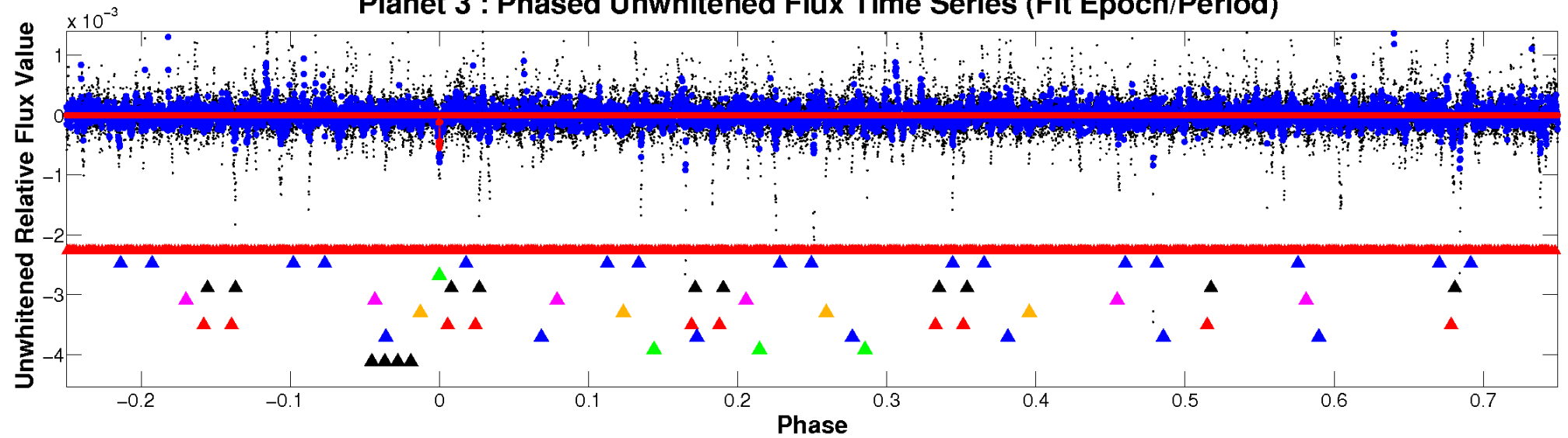
ALT Odd/Even

TCE 007816999-03

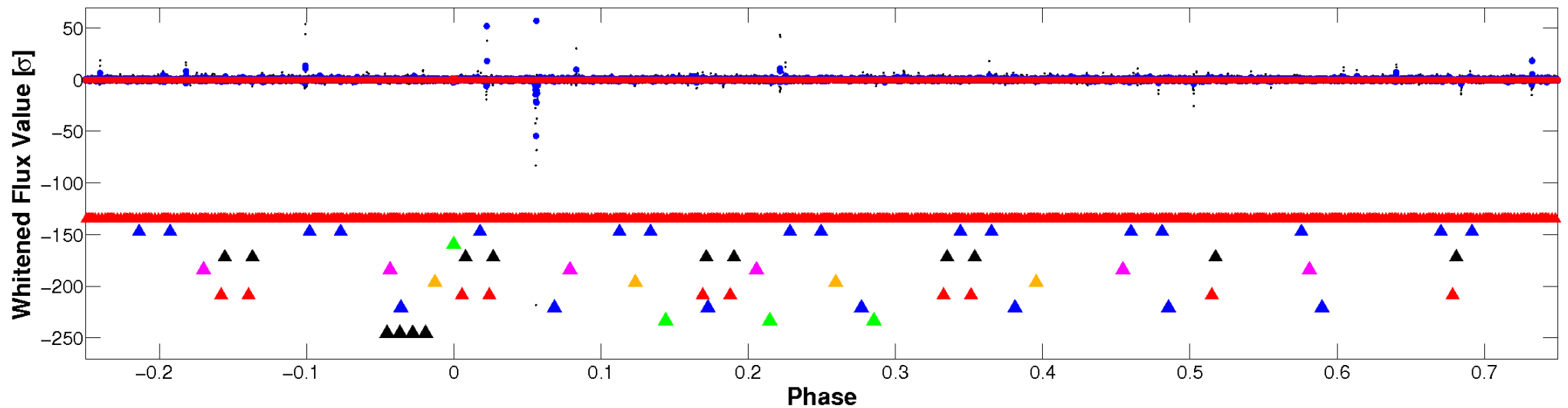


Non-Whitened Vs. Whitened Light Curve

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

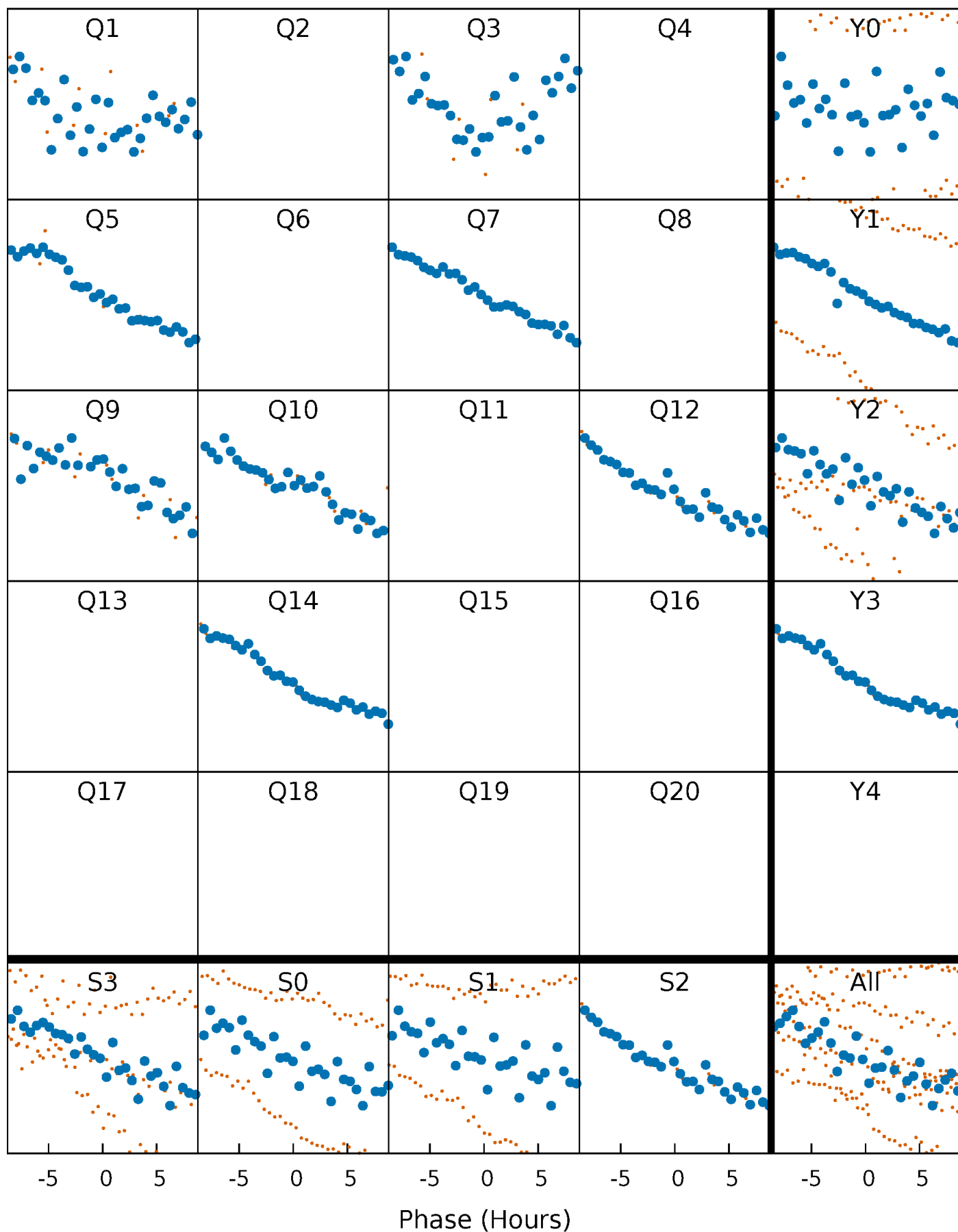


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



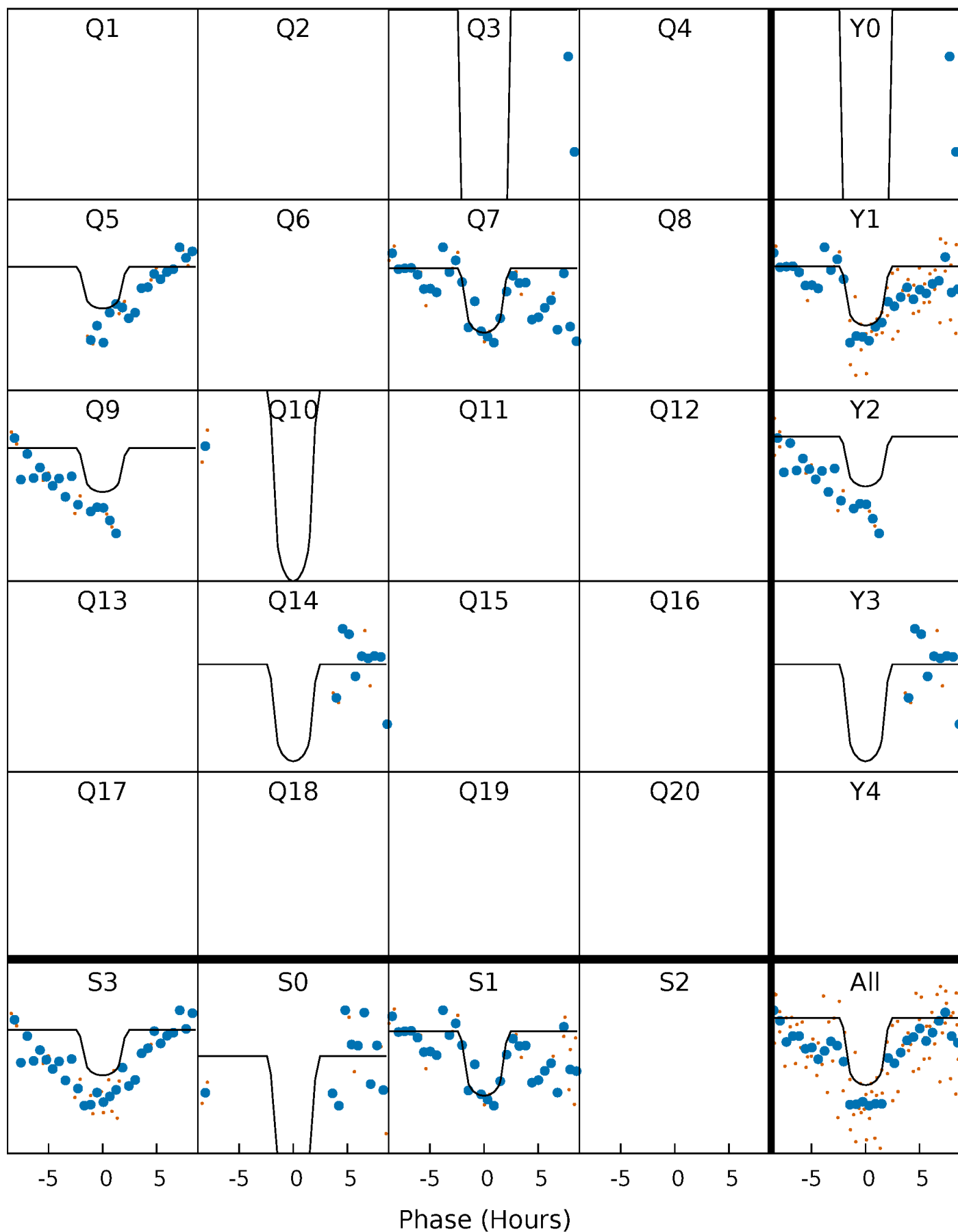
PDC Quarter-Phased Transit Curves

TCE 007816999-03 P=167.068223 Days $T_0=149.790427$ (BKJD)



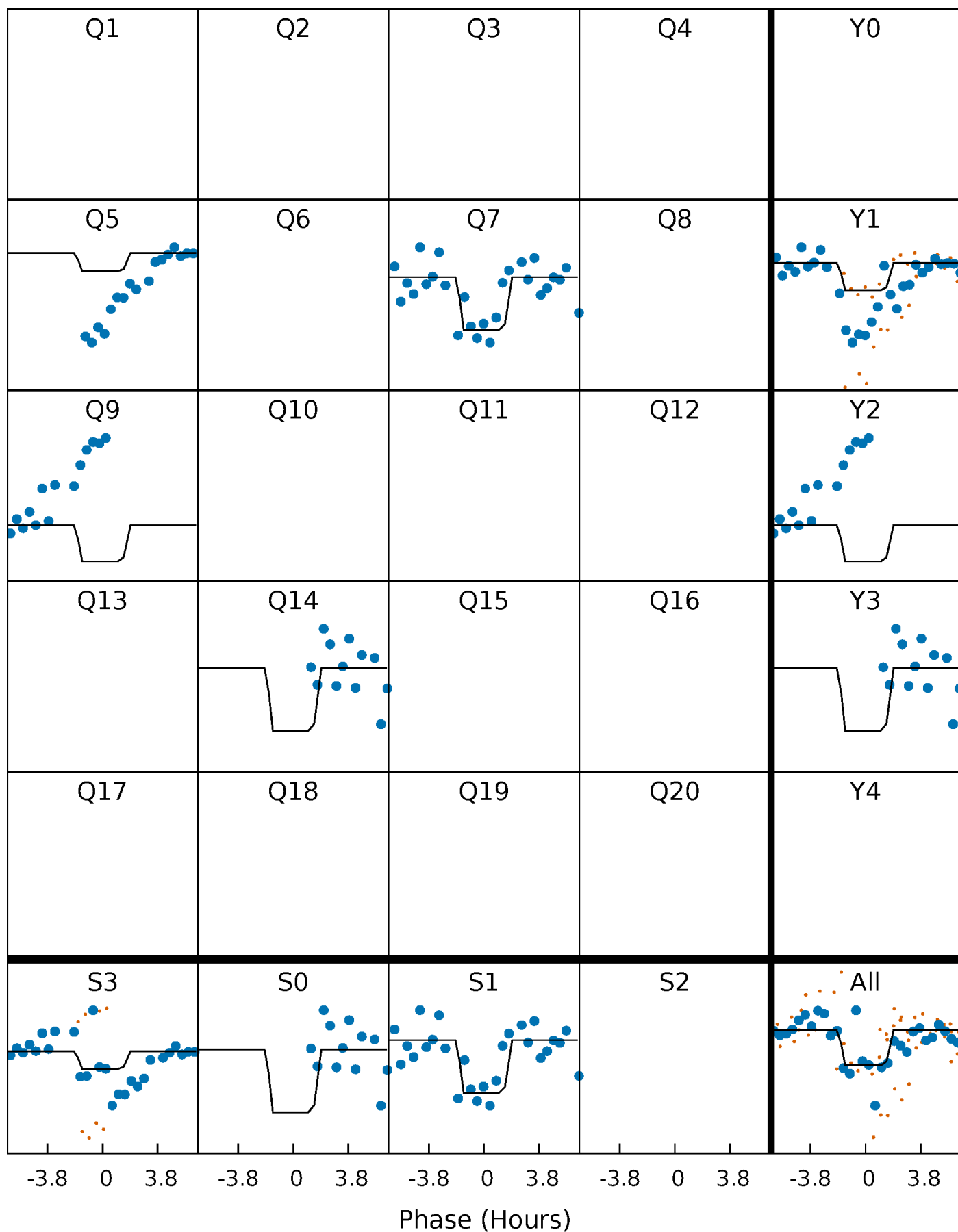
DV Quarter-Phased Transit Curves

TCE 007816999-03 P=167.068223 Days $T_0=149.790427$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

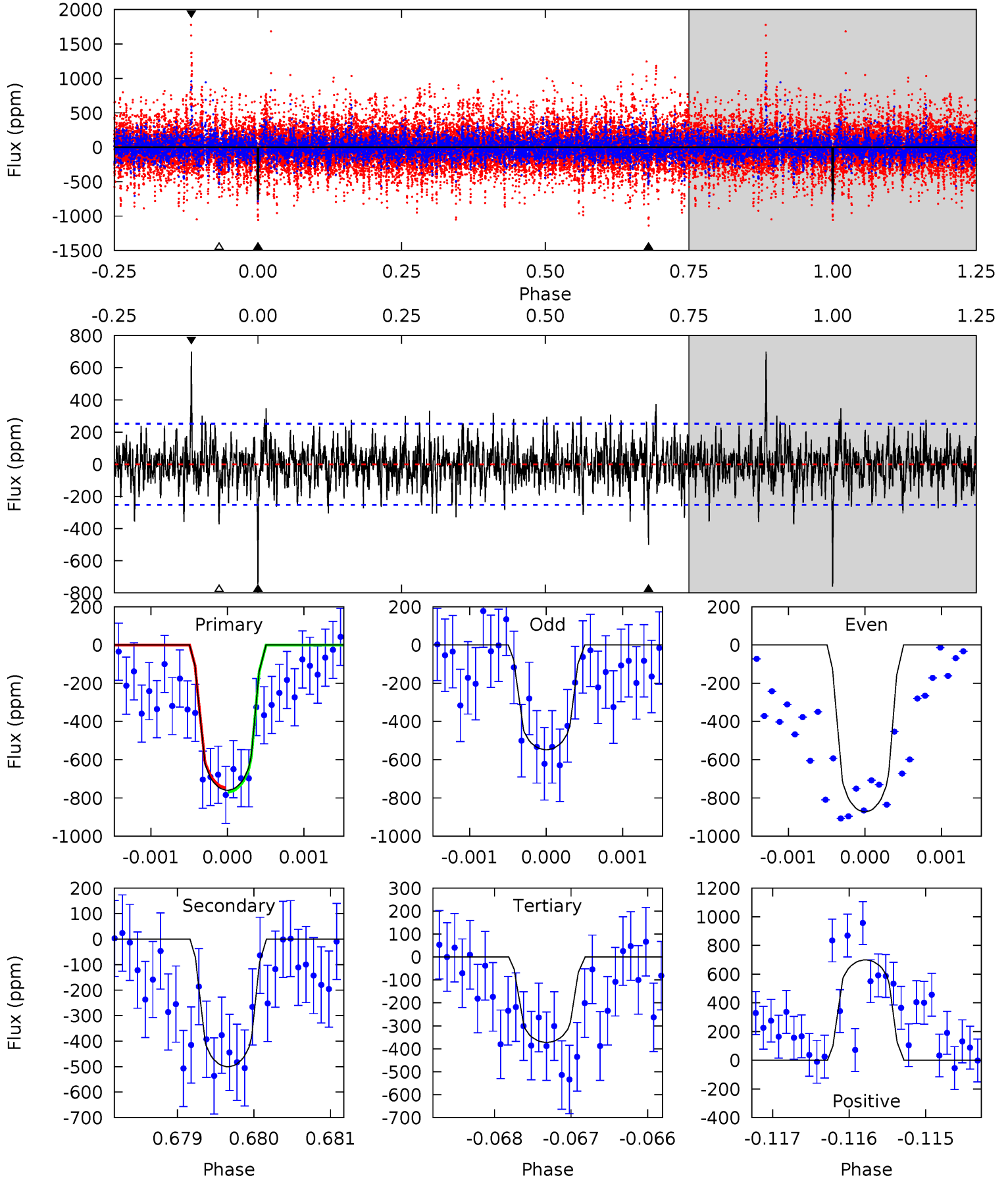
TCE 007816999-03 P=167.090490 Days $T_0=149.746256$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-03, P = 167.068223 Days, E = 149.790427 Days

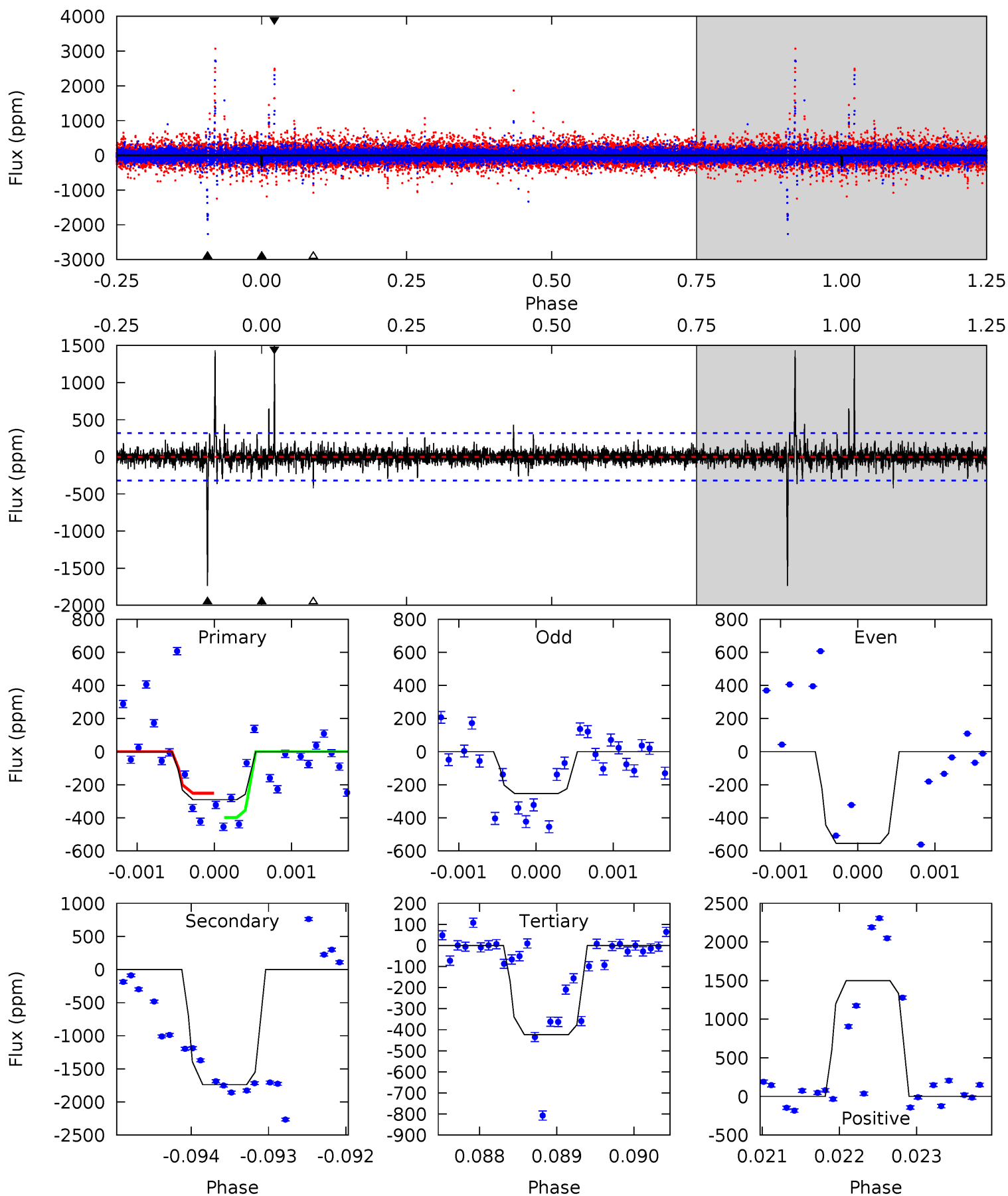
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	10.8	8.01	15.0	5.42	3.23	2.13	8.33	1.29	2.75	-4.28	3.01	0.91	0.48	0.24



Alt Model-Shift Uniqueness Test

007816999-03, P = 167.090490 Days, E = 149.746256 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.97	29.8	7.26	25.6	5.47	3.32	1.29	-2.28	-20.7	22.5	4.12	2.73	1.28	0.46	1.27



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-500 ± 47	$2.31^{+0.63}_{-0.66}$	382^{+17}_{-17}	4822^{+756}_{-488}	16181^{+14895}_{-6554}
Alt.	-1739 ± 58	$1.68^{+0.61}_{-0.64}$	382^{+19}_{-17}	7640^{+3209}_{-1216}	$104513^{+176330}_{-45829}$

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

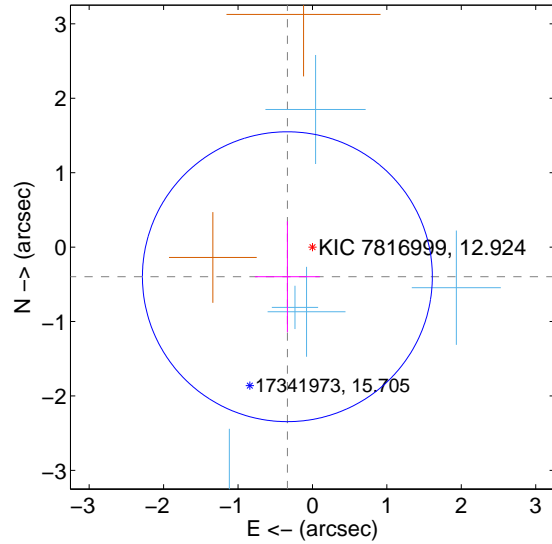
Supplemental centroid analysis for 007816999-03. Kepler magnitude: 12.92. Transit SNR 6.74

There are 5 quarters with good PRF difference image offsets

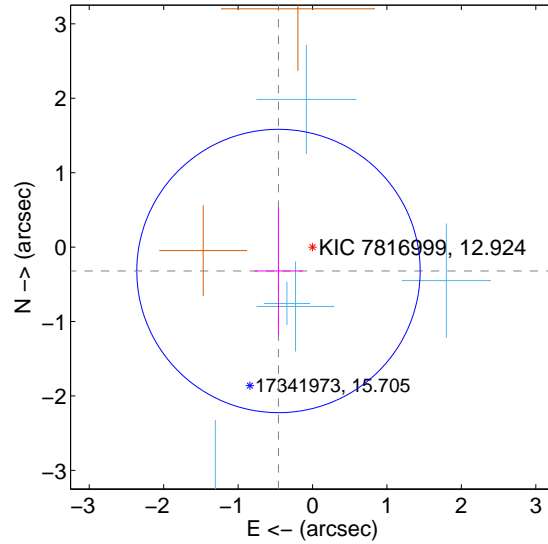
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.521 ± 0.649	0.80	0.337 ± 0.436	-0.398 ± 0.745
PRF-fit source offset from KIC position	0.559 ± 0.634	0.88	0.457 ± 0.325	-0.321 ± 0.854
photometric centroid source offset	0.56 ± 0.72	0.78	-0.11 ± 0.72	0.55 ± 0.72

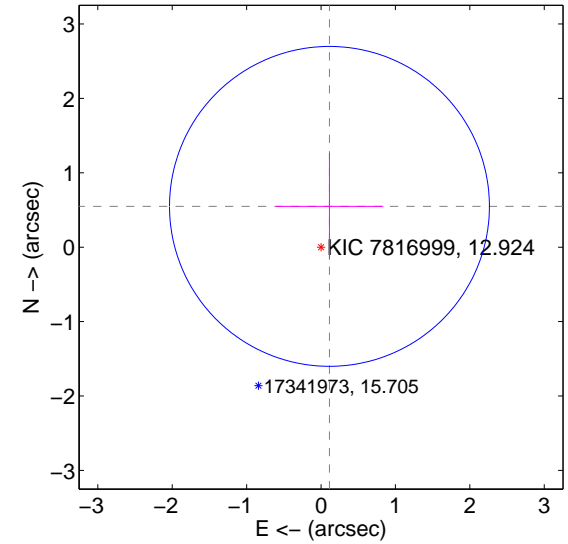
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

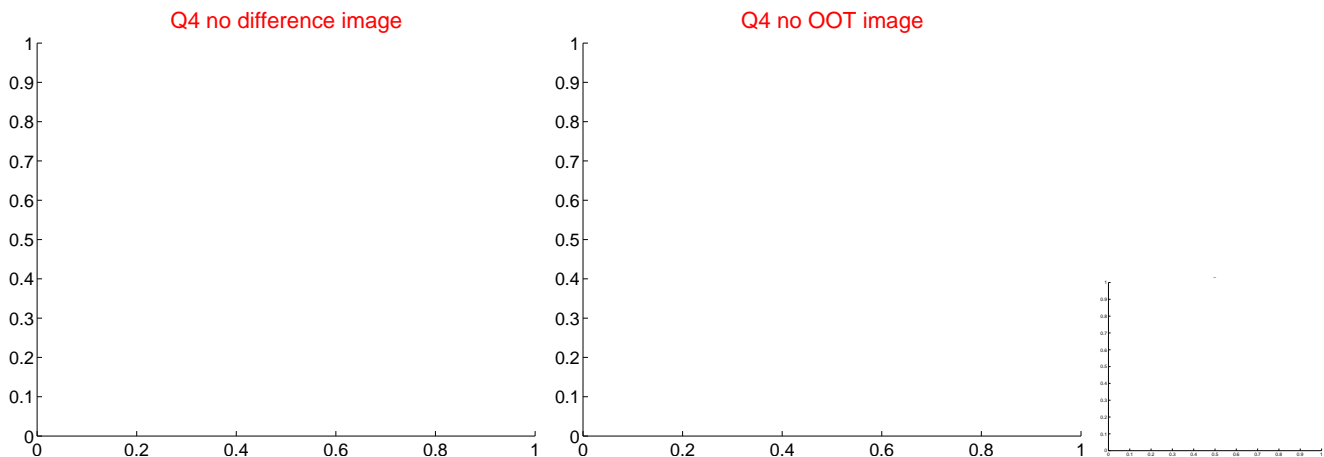
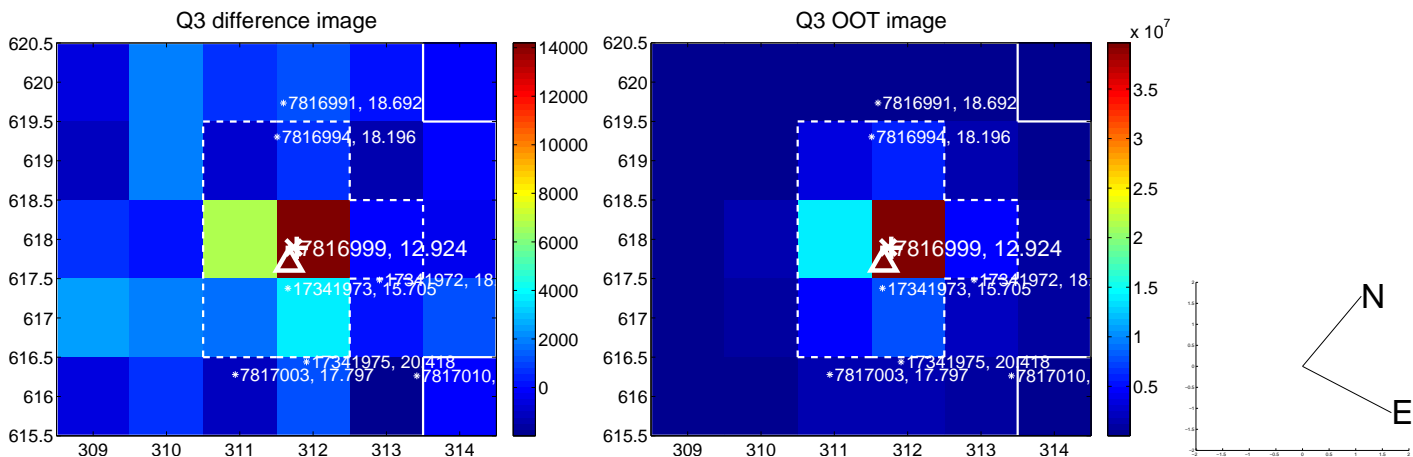
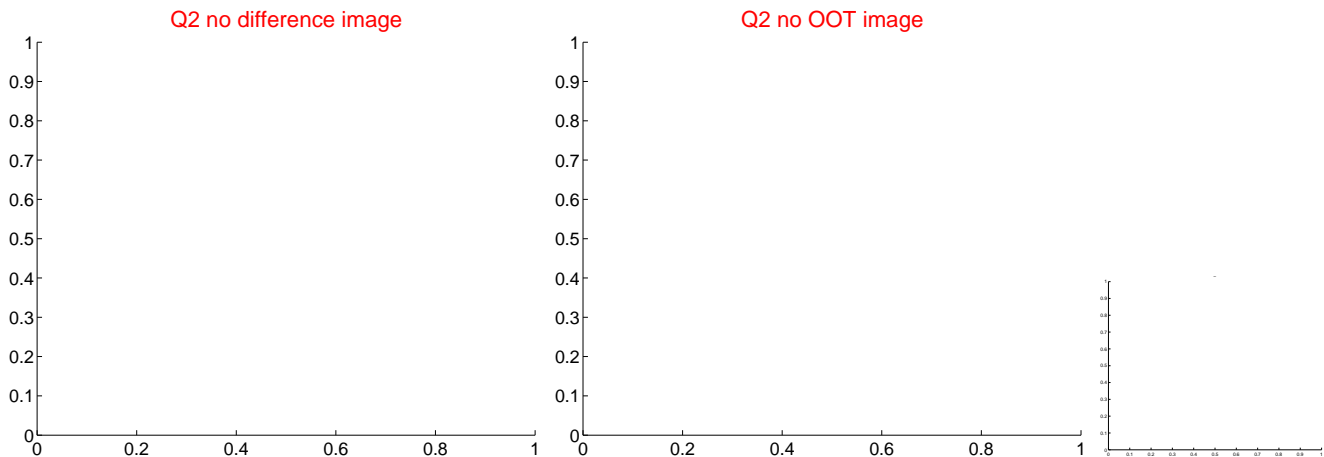
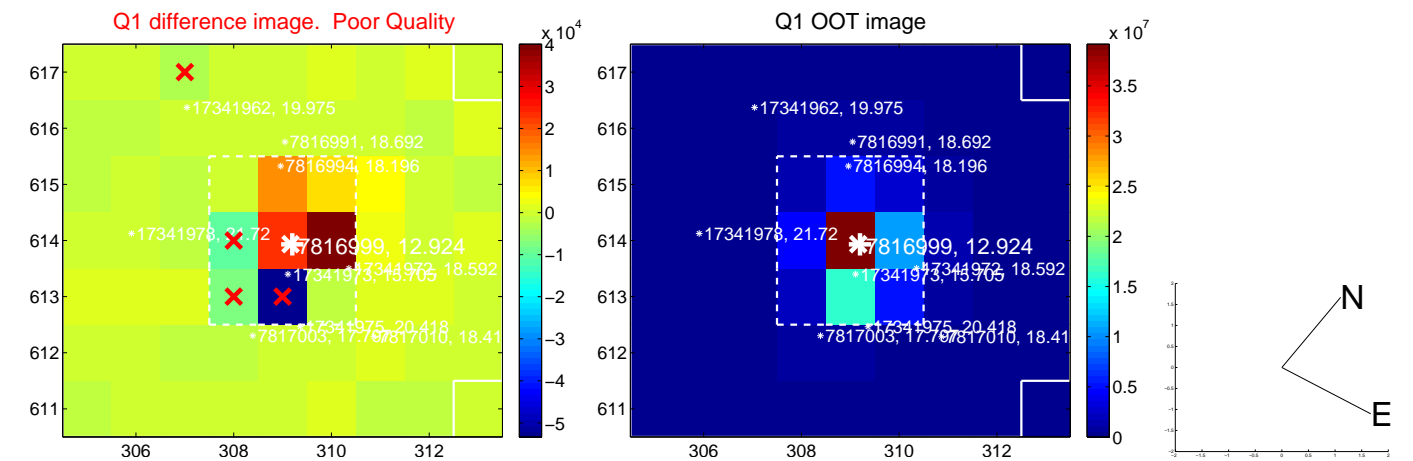


offset from photometric centroids

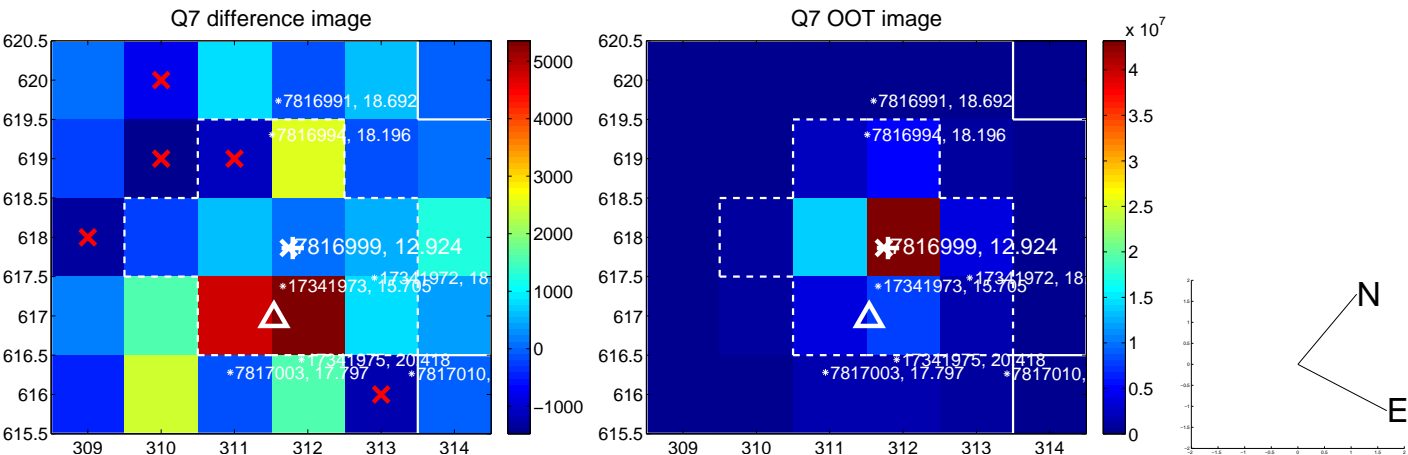
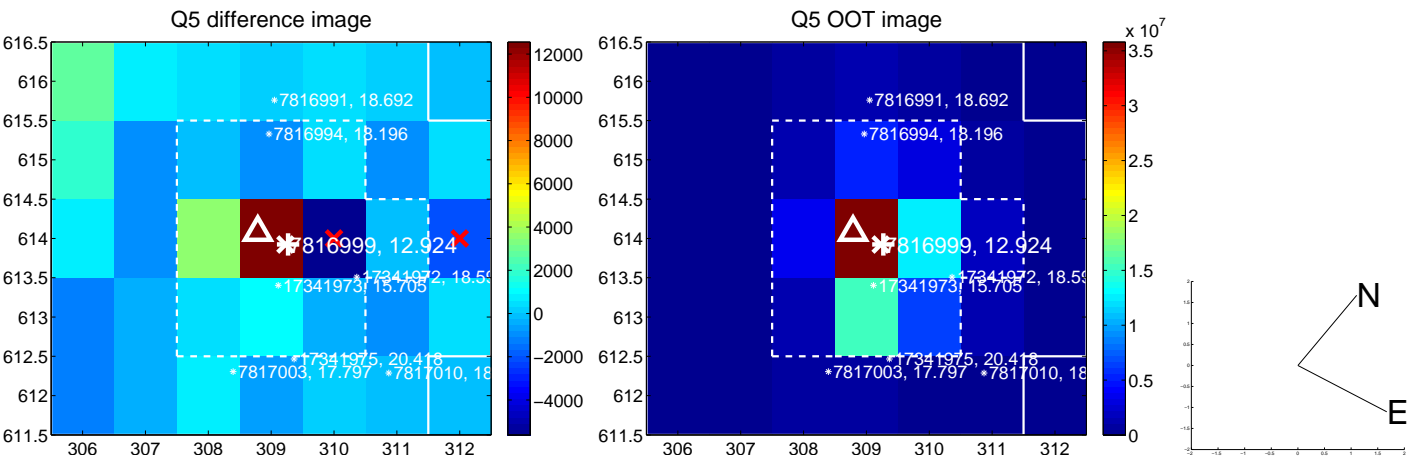


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

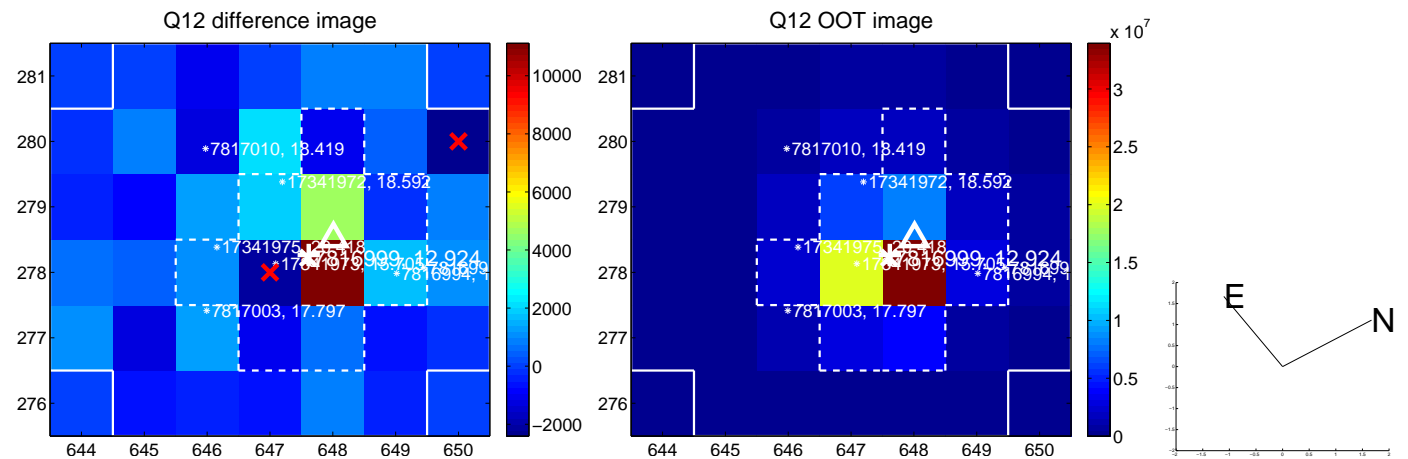
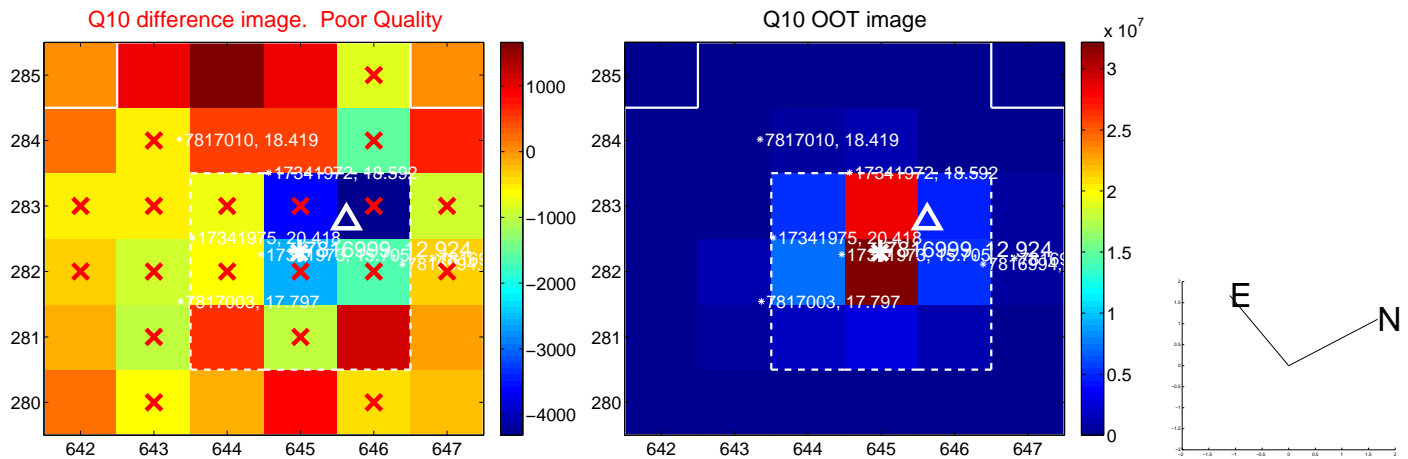
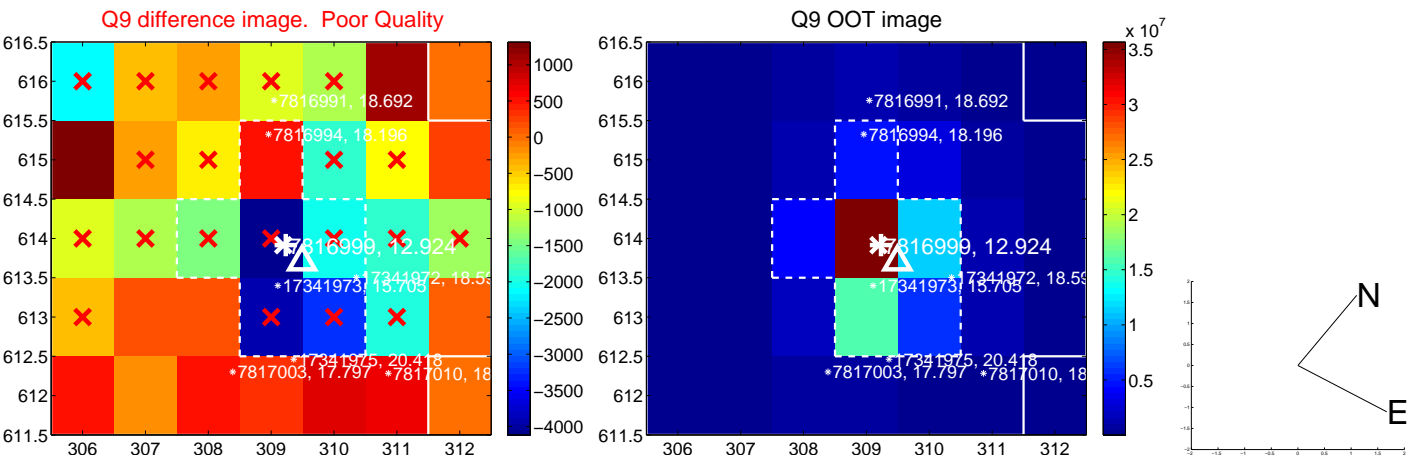
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



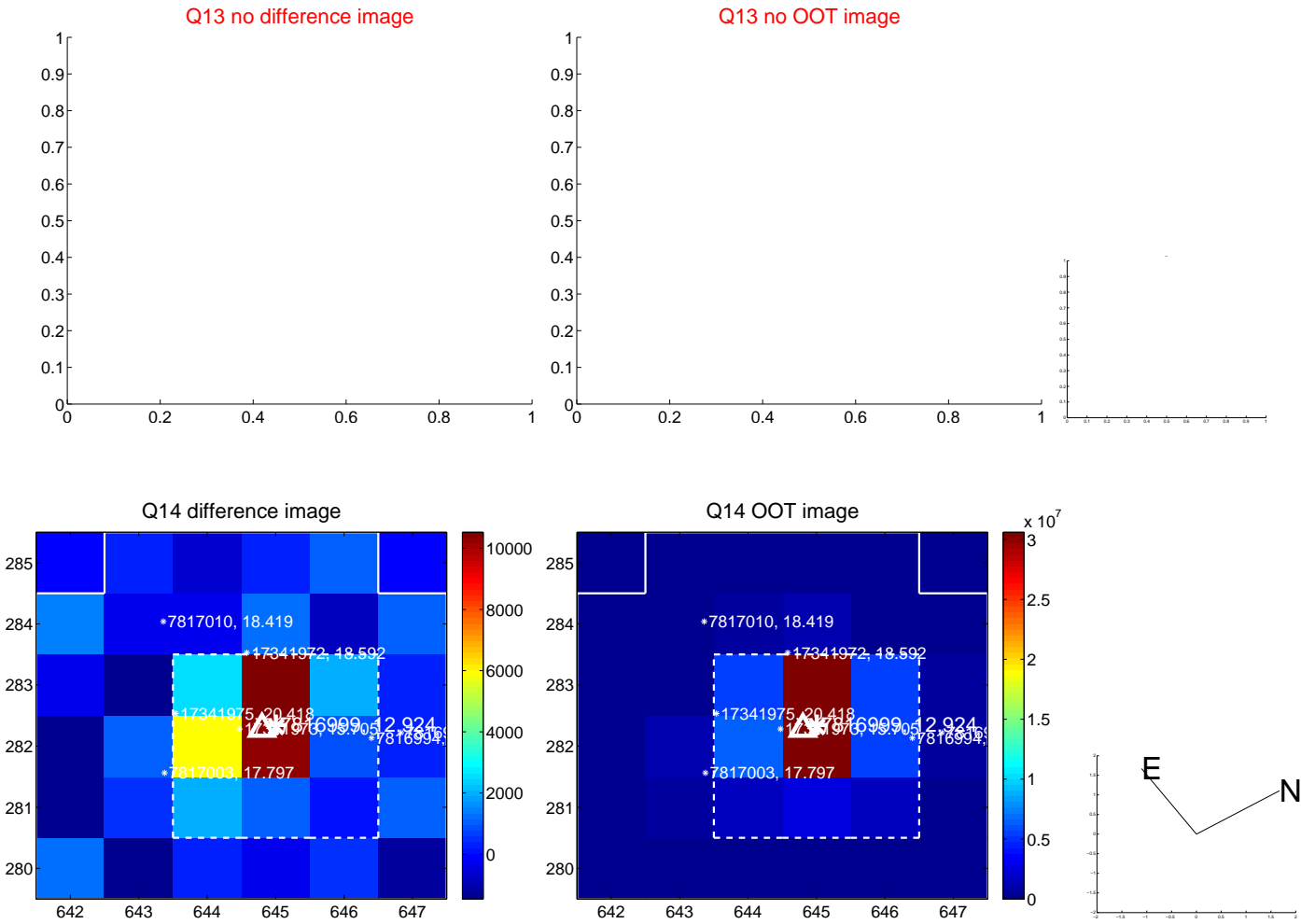
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



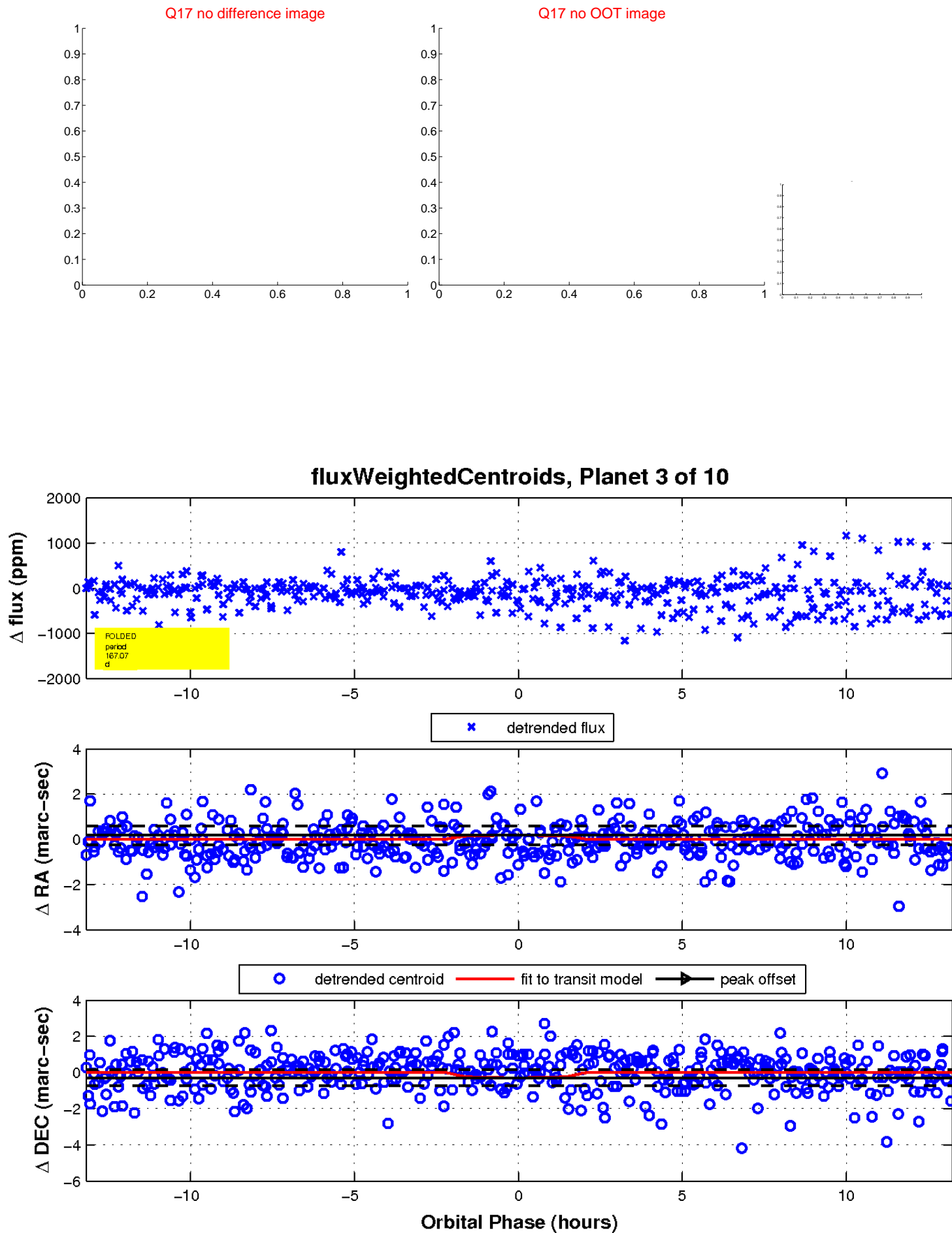
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

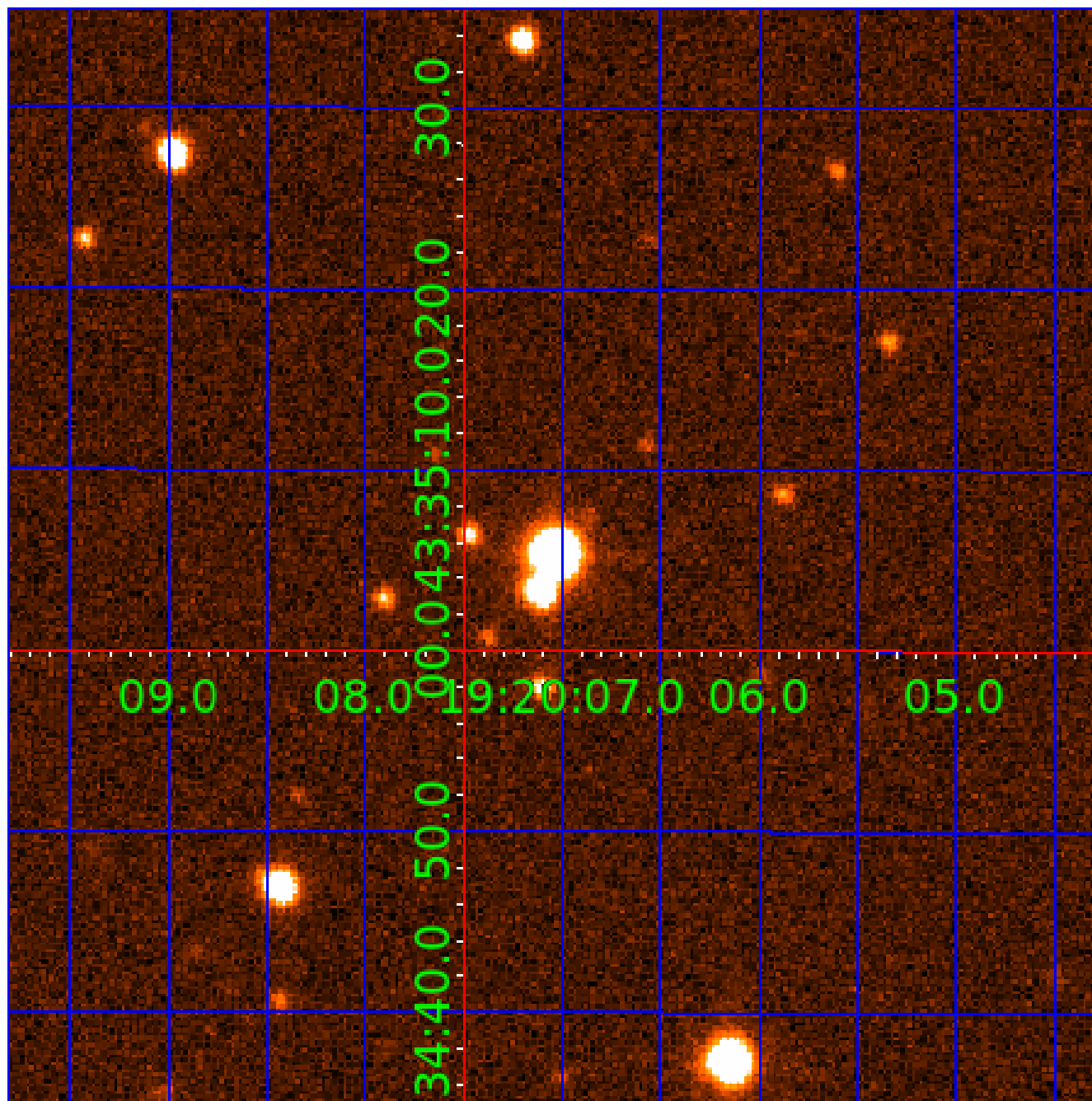


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007816999

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})
007816999-01	OBS	No	2.136986	132.767769	43.1	9.731	8.2	7.5	0.79	5159	0.55	430.37
007816999-02	OBS	No	93.206905	168.604896	220.5	3.296	14.0	3.5	0.79	5159	1.30	2.80
007816999-03	OBS	No	167.068223	149.790427	544.8	4.413	12.6	6.7	0.79	5159	2.29	1.29
007816999-04	OBS	No	139.746572	205.777922	193.8	6.194	12.3	2.9	0.79	5159	1.31	1.63
007816999-05	OBS	No	271.391733	142.572361	217.2	15.000	10.7	-1.0	0.79	5159	1.13	0.67
007816999-06	OBS	No	356.878727	481.792582	362.9	5.646	11.3	4.6	0.79	5159	2.01	0.47
007816999-08	OBS	No	184.487802	310.869972	253.1	10.500	10.4	-1.0	0.79	5159	1.22	1.13
007816999-09	OBS	No	489.387806	531.611891	588.2	6.569	9.1	6.0	0.79	5159	2.08	0.31
007816999-10	OBS	No	332.678790	313.662559	329.7	7.500	9.7	-1.0	0.79	5159	1.40	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

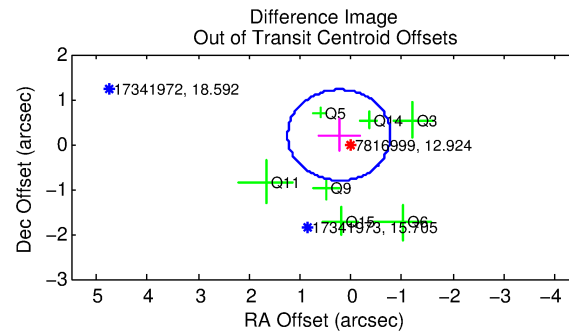
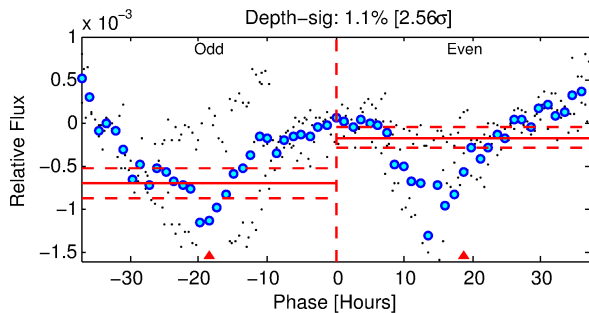
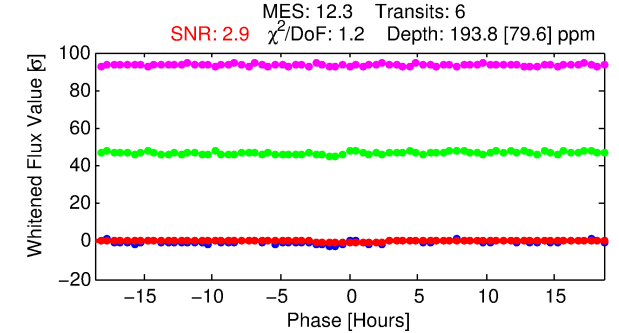
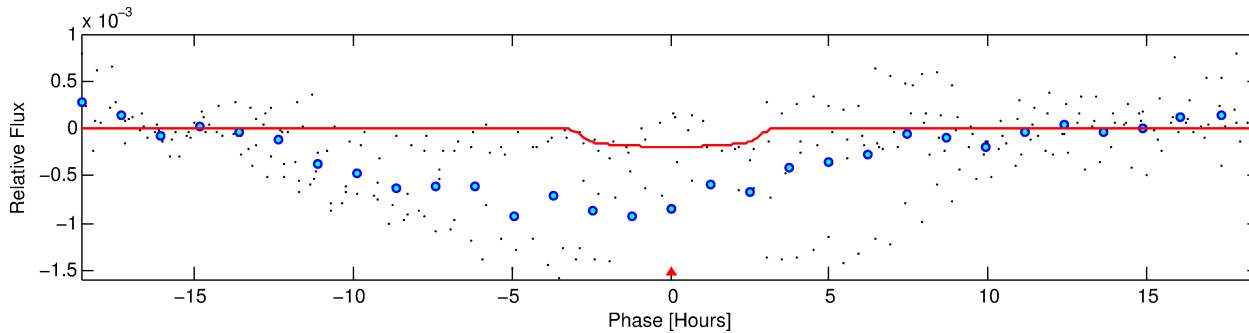
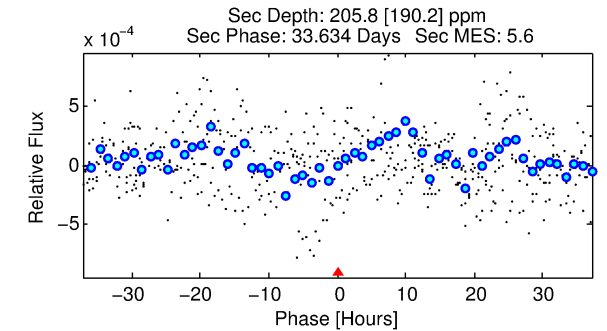
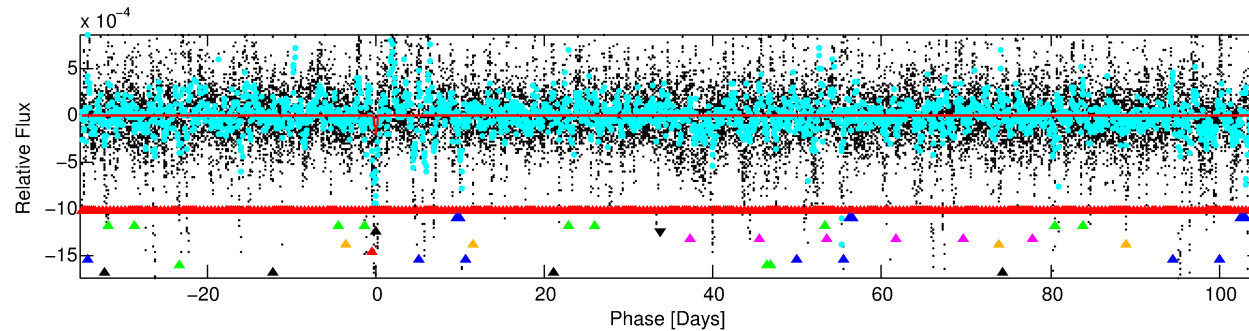
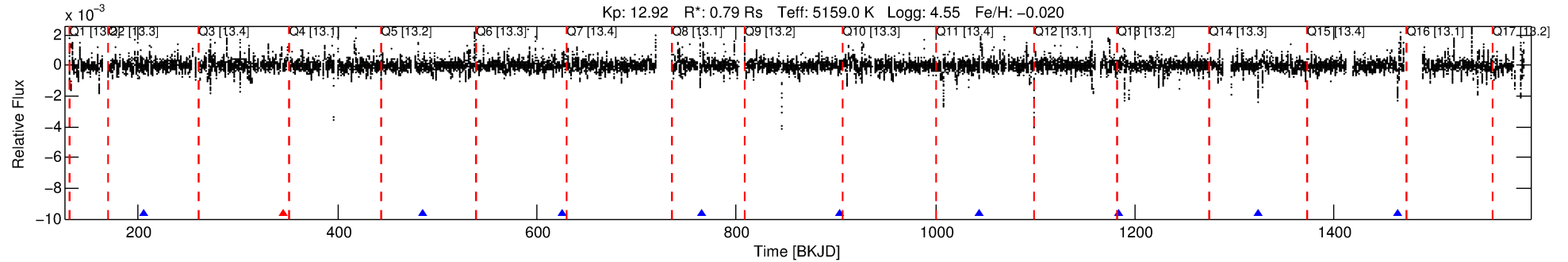
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-04

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 4 of 10 Period: 139.747 d



DV Fit Results:

Period = 139.74657 [0.00446] d
Epoch = 205.7779 [0.0231] BKJD
Rp/R* = 0.0152 [0.0121]
a/R* = 86.16 [261.98]
b = 0.88 [0.77]
Seff = 1.63 [0.35]
Teff = 288 [15] K
Rp = 1.31 [1.06] Re
a = 0.4924 [0.0530] AU
Ag = 16029.71 [29646.96] [0.54 σ]
Teffp = 5015 [2319] K [2.04 σ]

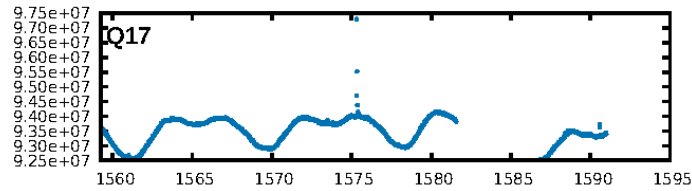
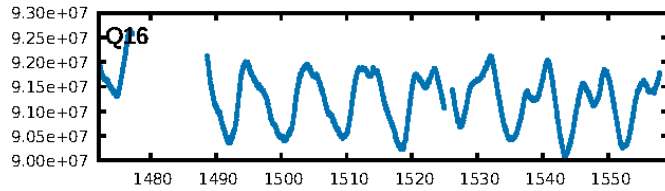
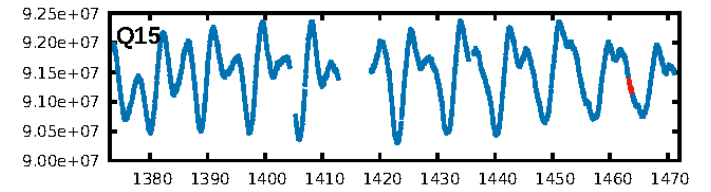
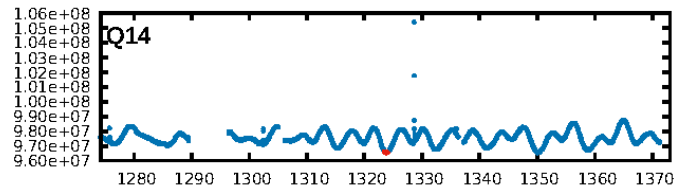
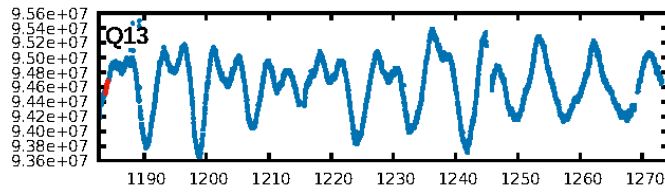
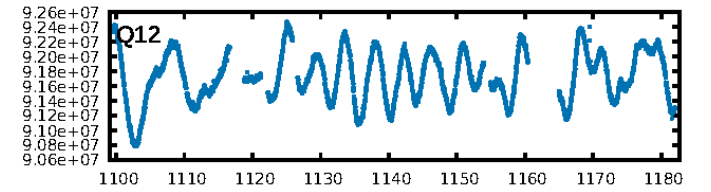
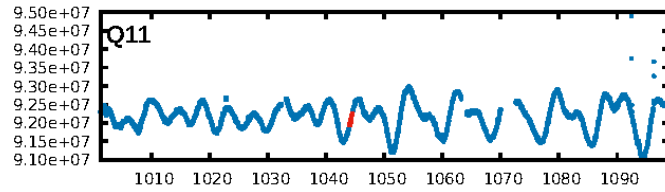
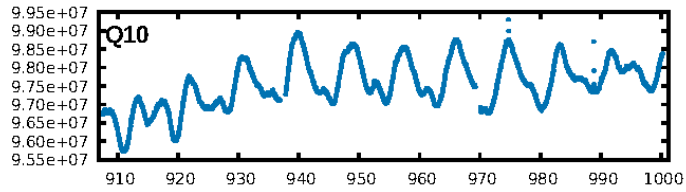
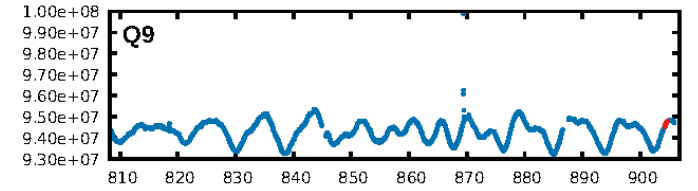
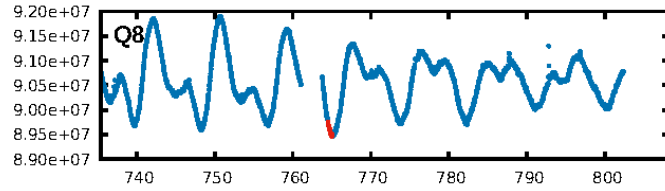
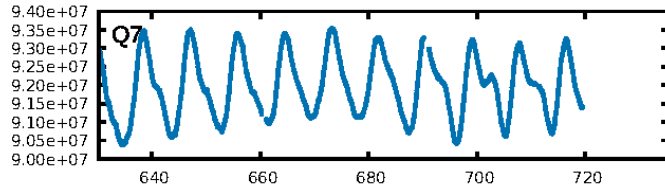
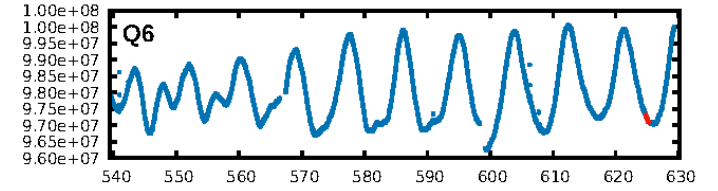
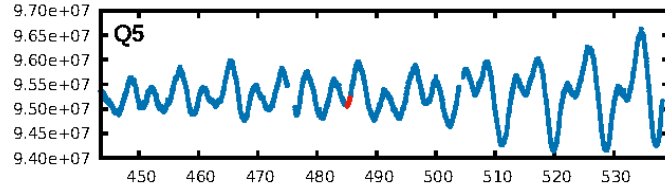
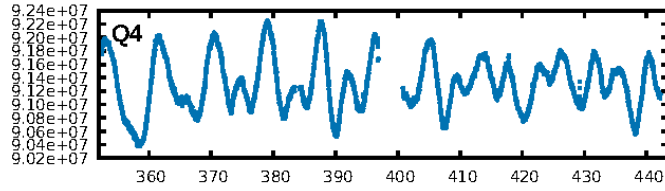
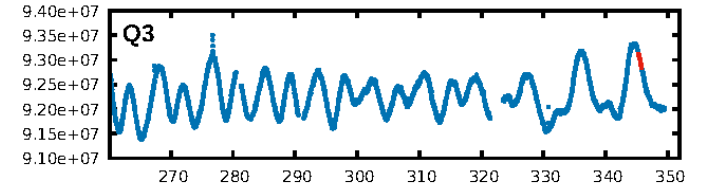
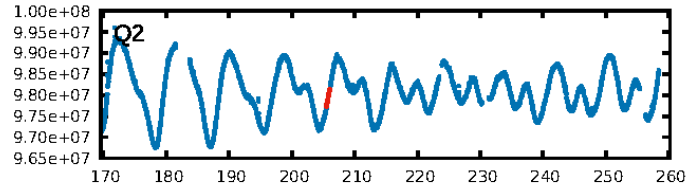
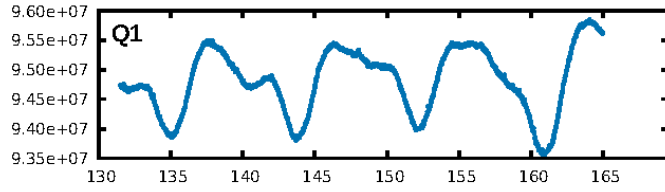
DV Diagnostic Results:

ShortPeriod-sig: 0.4% [0.01 σ]
LongPeriod-sig: 100.0% [86.22 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: 2.32e-12
RollingBand-fgt: 0.83 [5/6]
GhostDiagnostic-chr: -0.27
Centroid-sig: 2.4%
Centroid-so: 2.599 arcsec [1.48 σ]
OotOffset-rm: 0.308 arcsec [0.91 σ]
KicOffset-rm: 0.470 arcsec [1.29 σ]
OotOffset-st: 2/3/0/2 [7]
KicOffset-st: 2/3/0/2 [7]
DiffImageQuality-fgm: 0.71 [5/7]
DiffImageOverlap-fno: 0.00 [0/8]

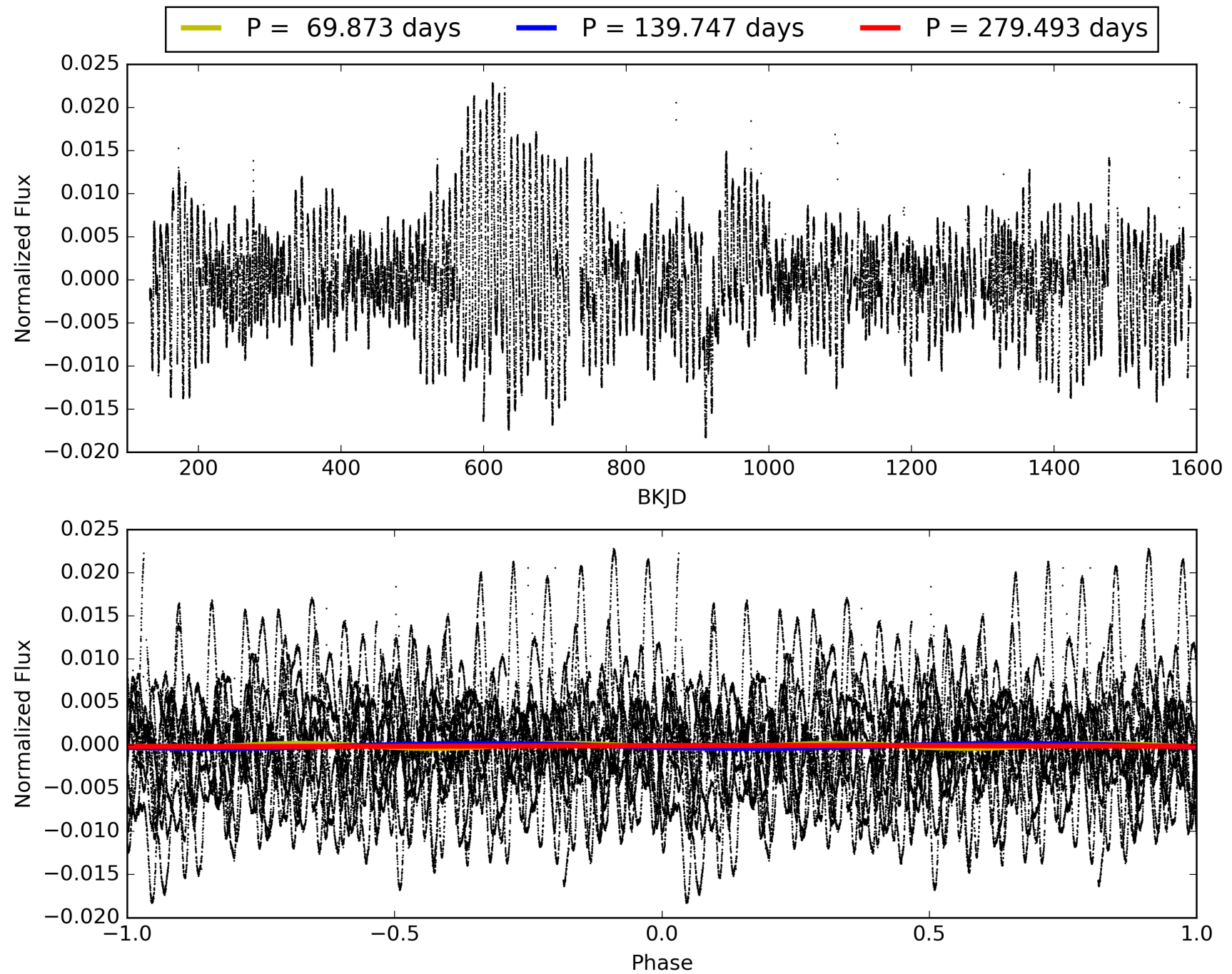
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:41:27 Z

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

TCE 007816999-04, PDC Light Curves

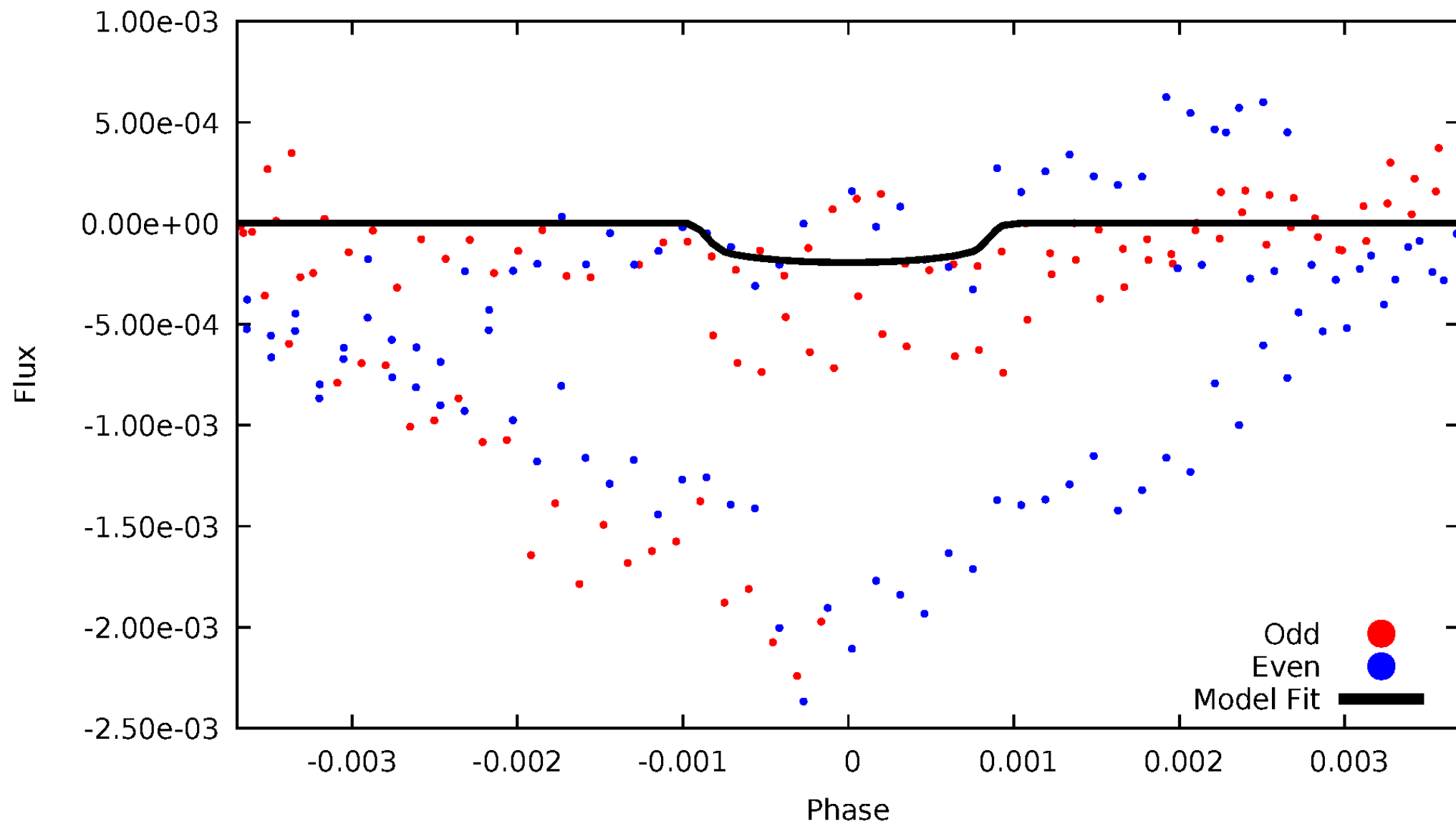


TCE 007816999-04



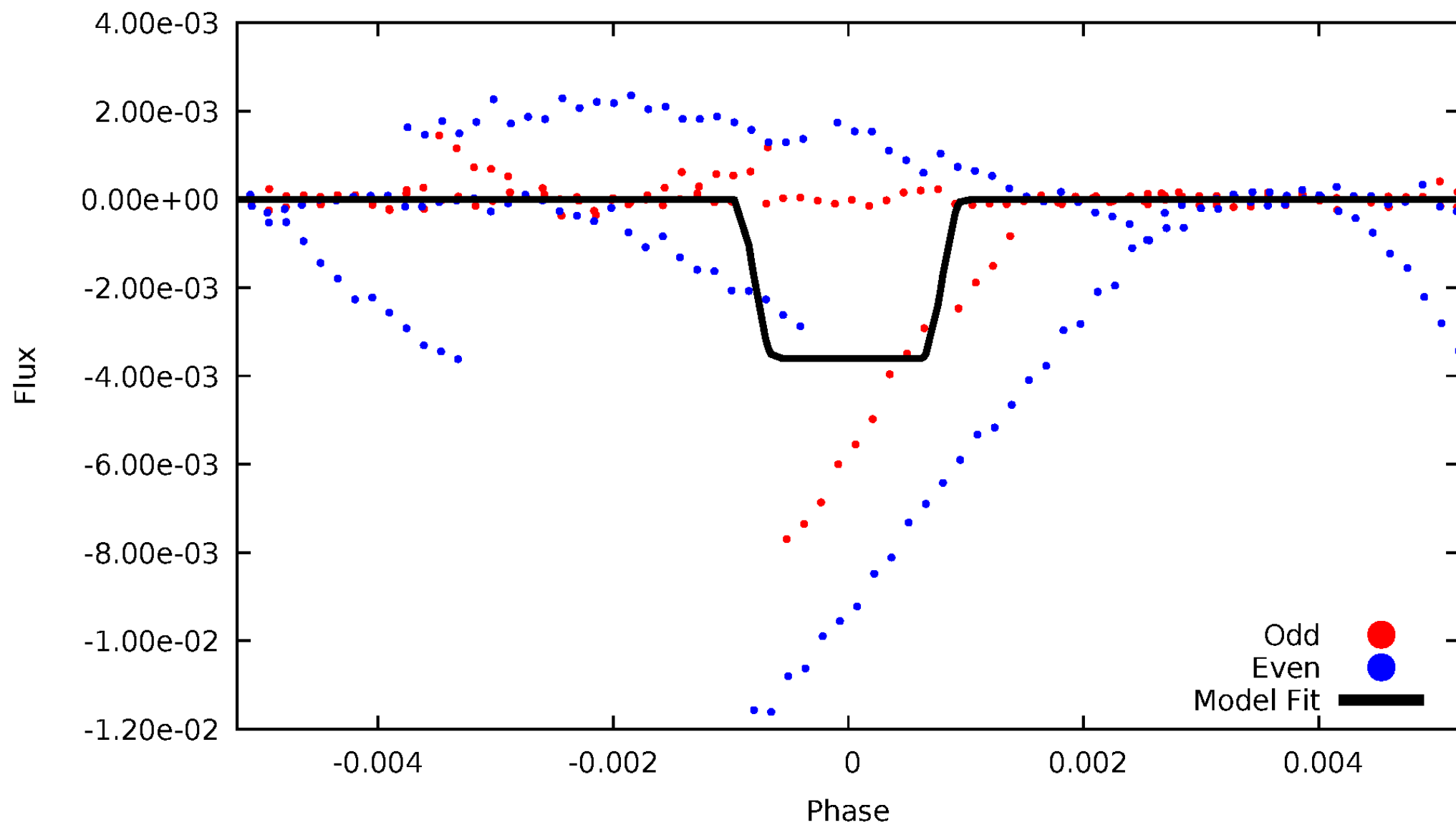
DV Odd/Even

TCE 007816999-04



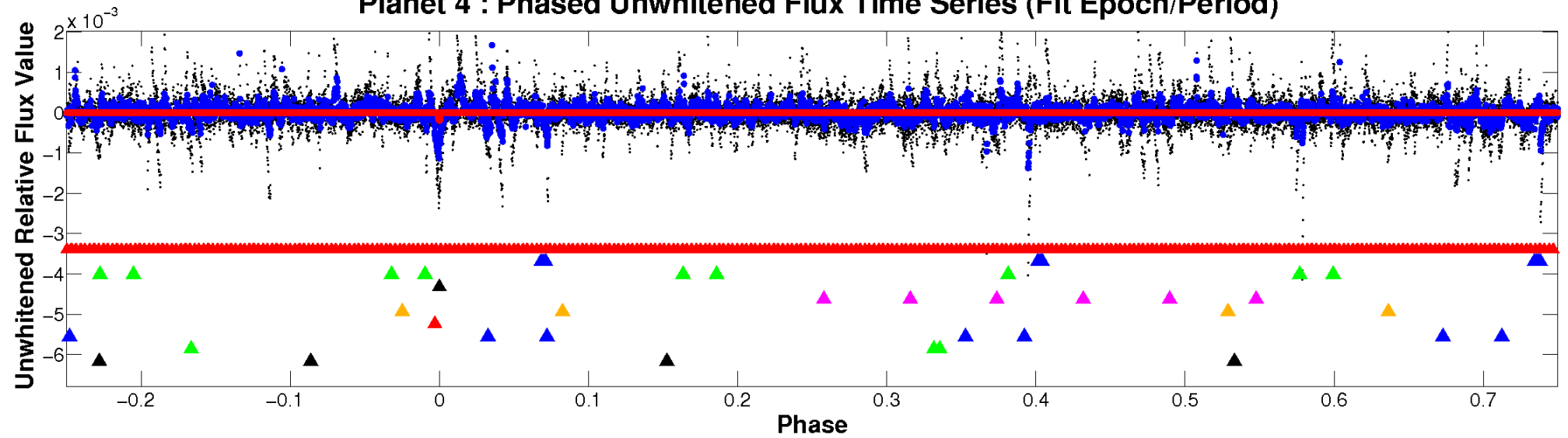
ALT Odd/Even

TCE 007816999-04

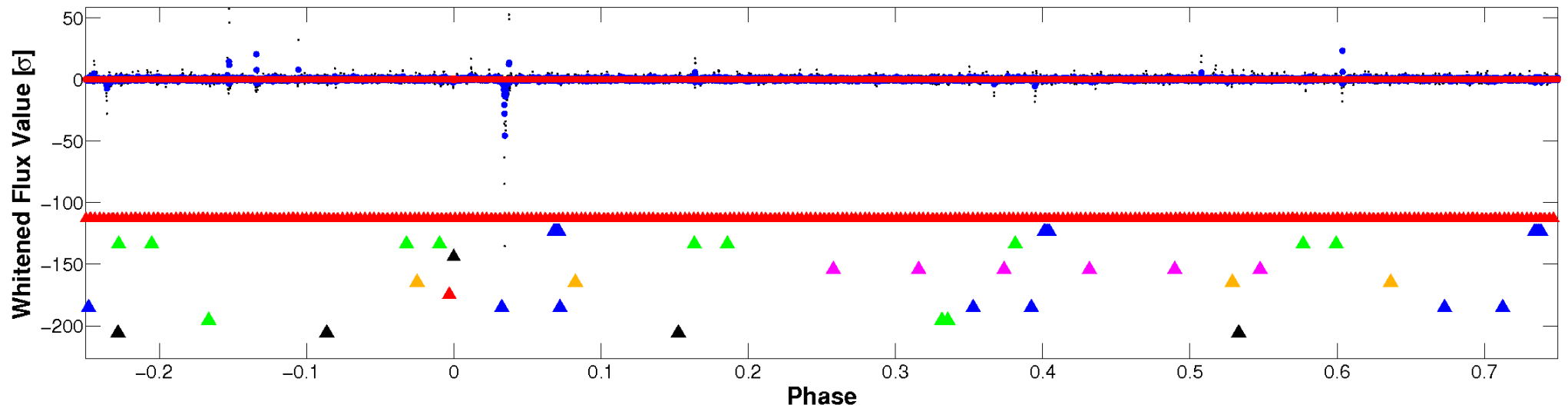


Non-Whitened Vs. Whitened Light Curve

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

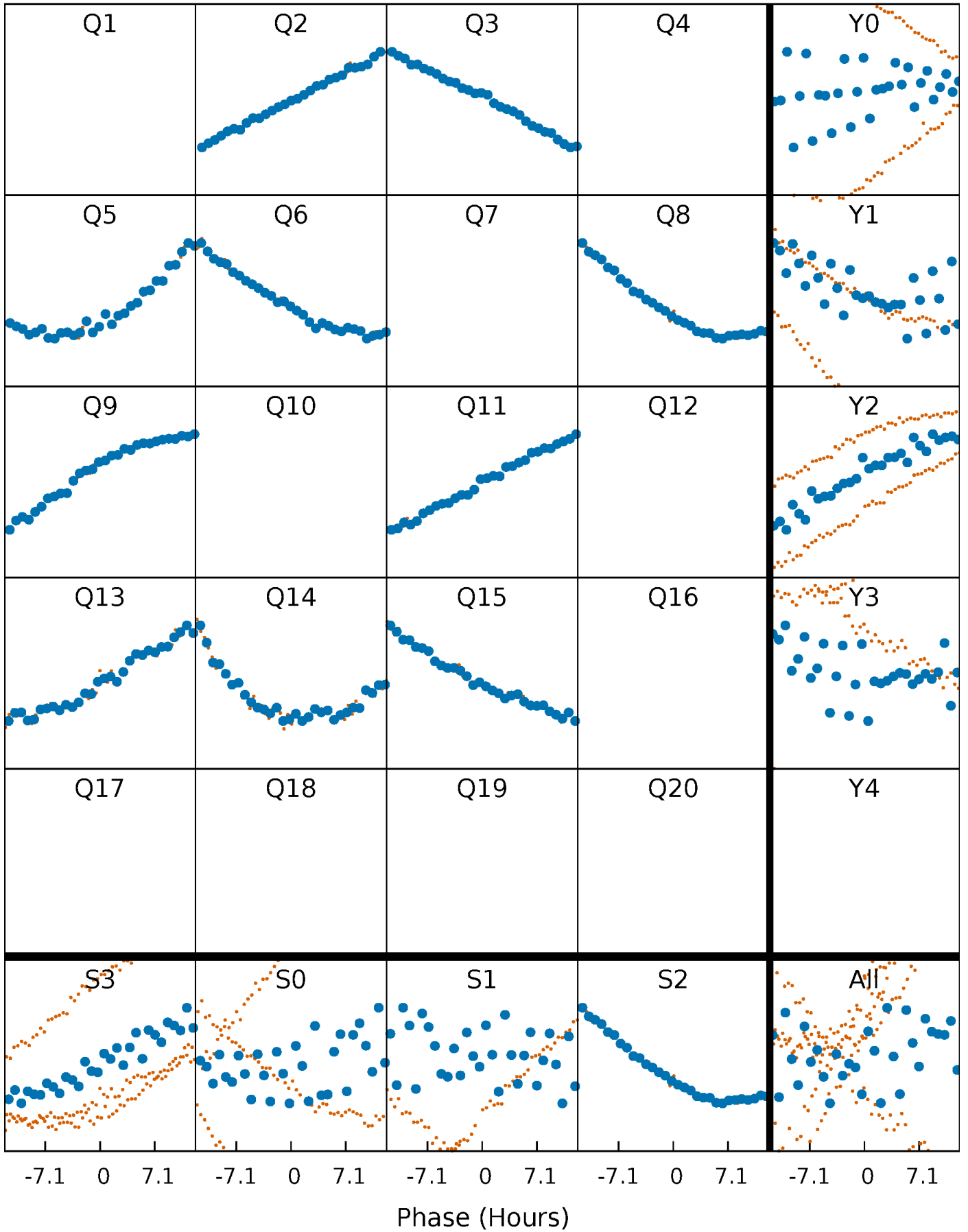


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



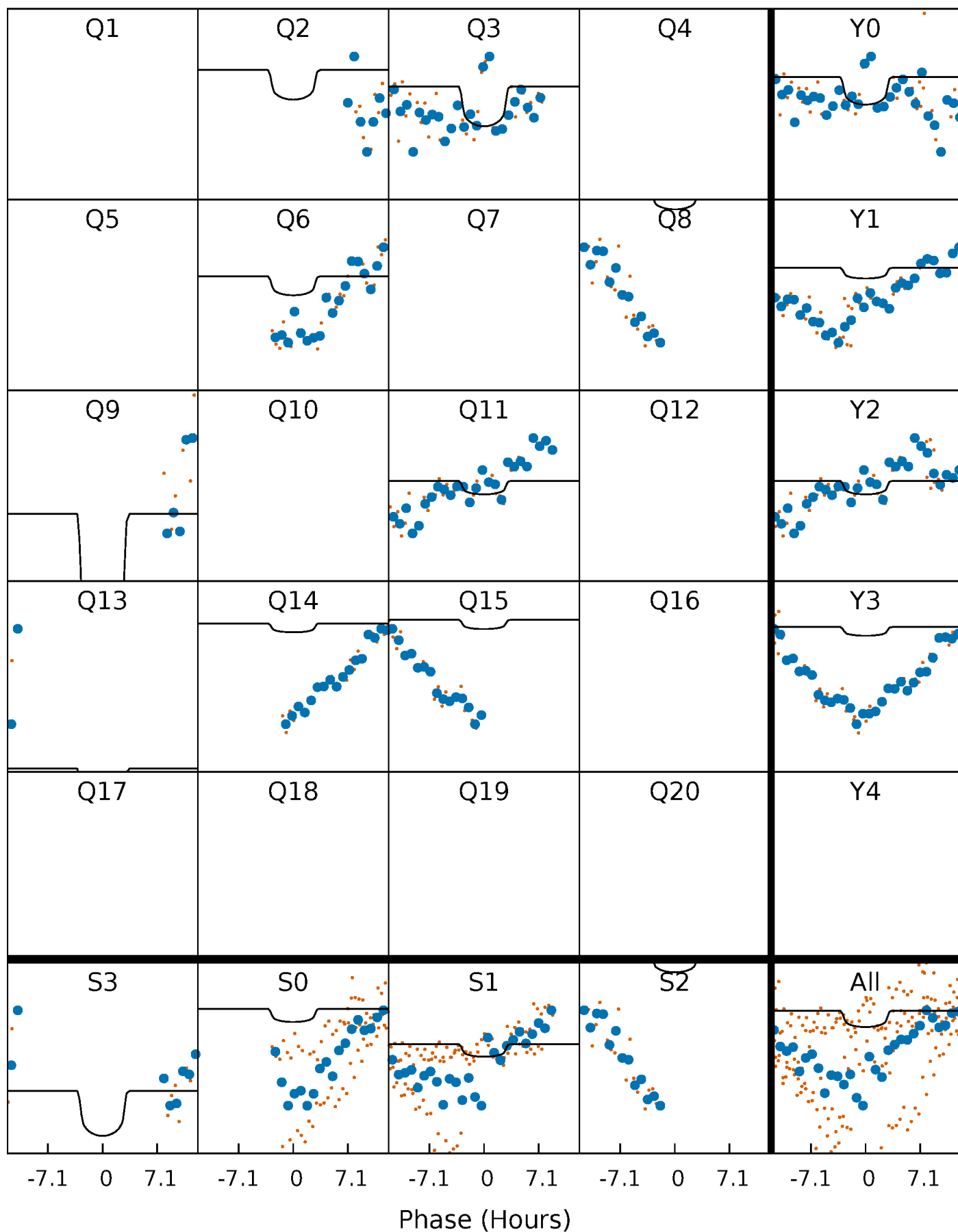
PDC Quarter-Phased Transit Curves

TCE 007816999-04 P=139.746572 Days $T_0=205.777922$ (BKJD)



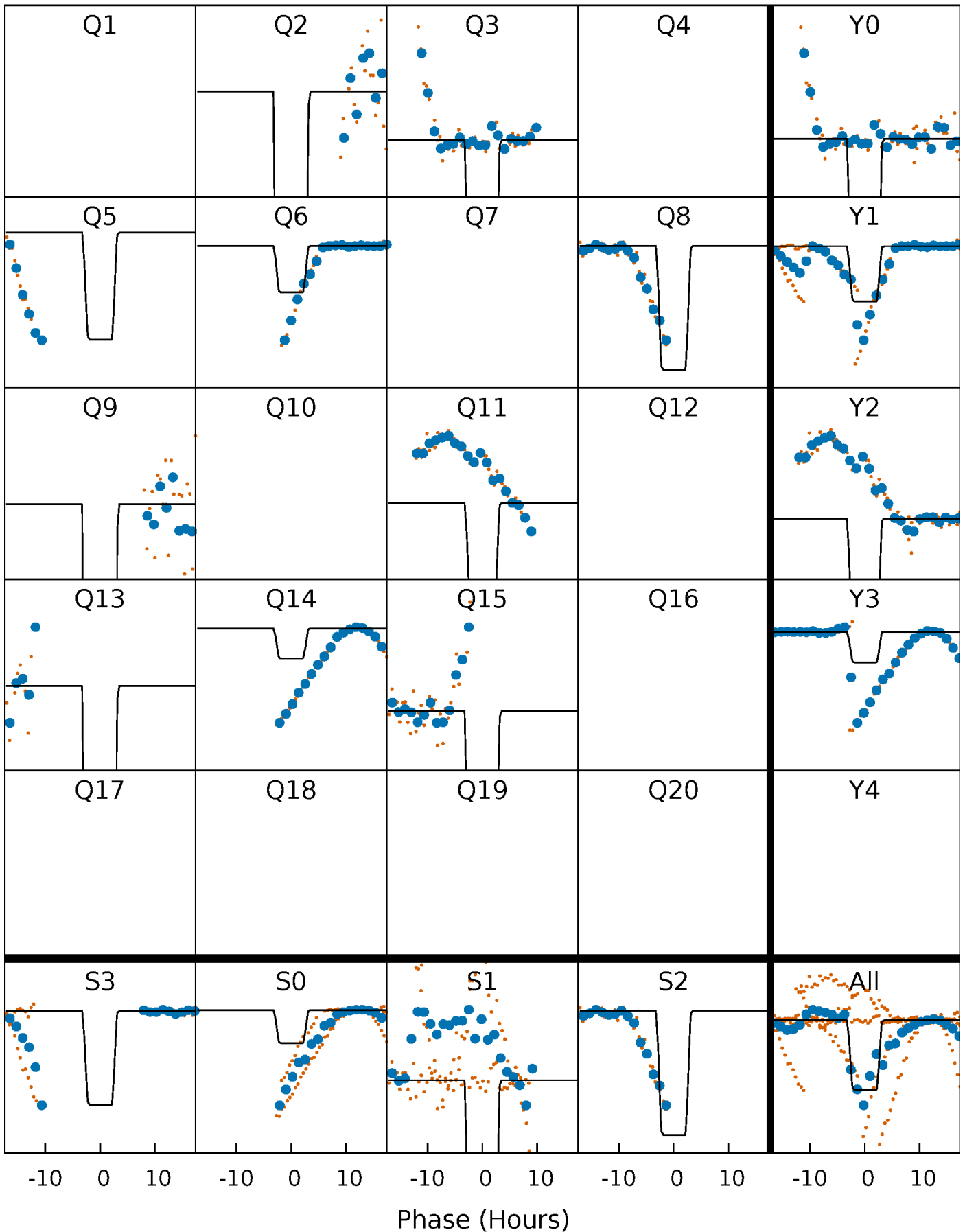
DV Quarter-Phased Transit Curves

TCE 007816999-04 P=139.746572 Days $T_0=205.777922$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

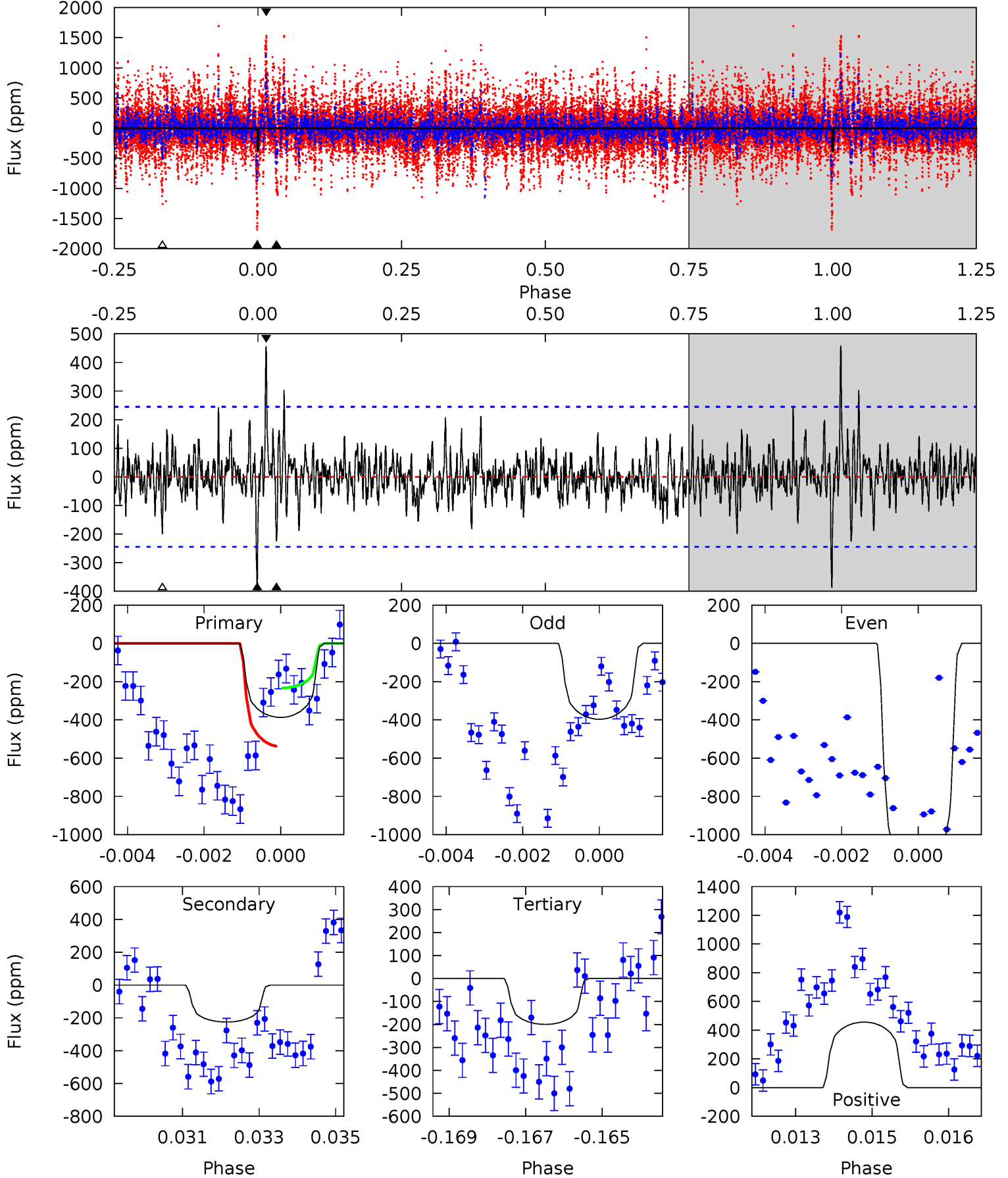
TCE 007816999-04 P=139.765550 Days $T_0=205.680000$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-04, P = 139.746572 Days, E = 66.031350 Days

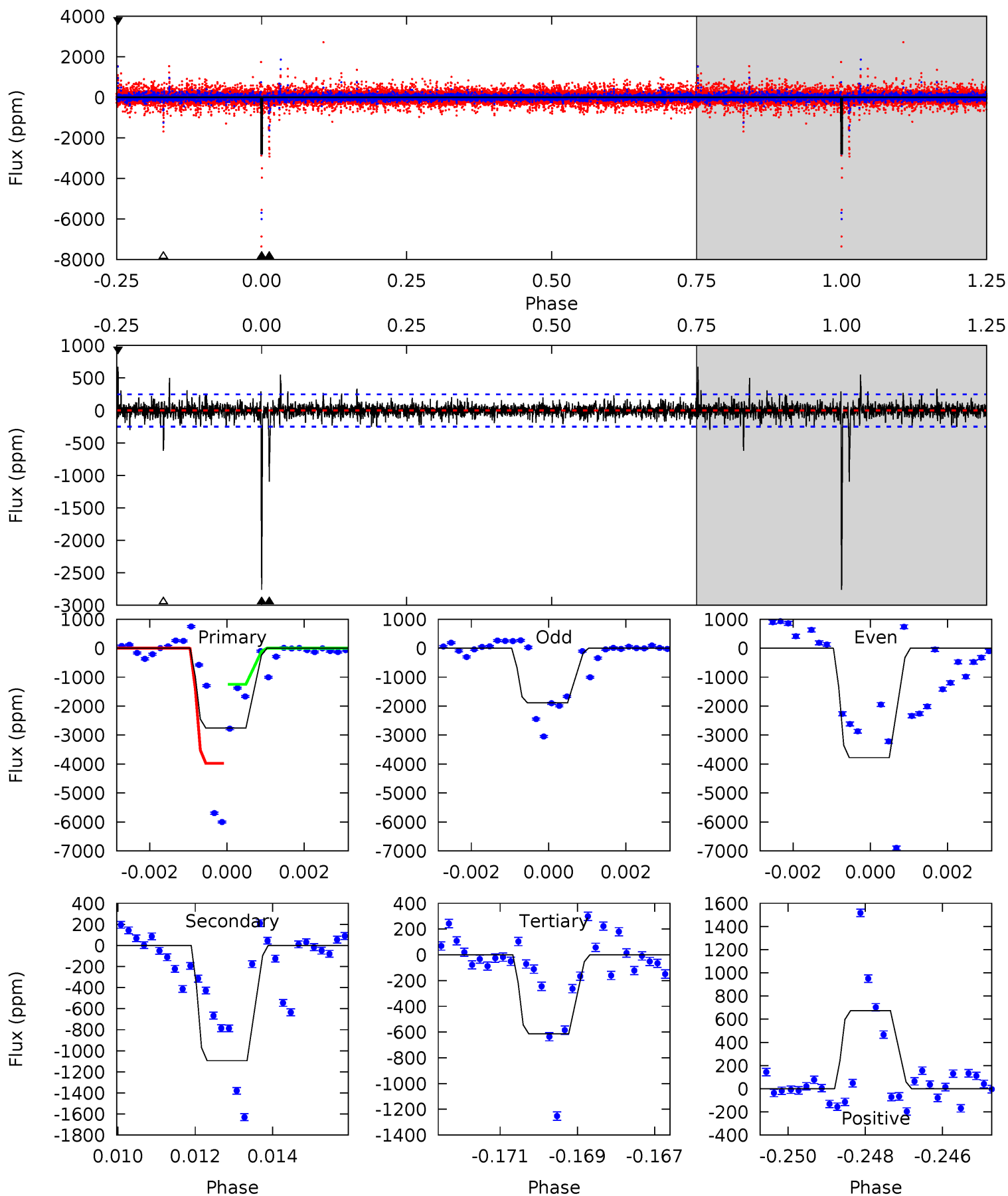
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.45	4.92	4.36	9.96	5.34	3.12	1.38	4.08	-1.51	0.56	-5.04	8.68	0.94	0.54	3.35



Alt Model-Shift Uniqueness Test

007816999-04, P = 139.765550 Days, E = 65.914450 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.1	23.4	13.1	14.4	5.32	3.09	1.47	45.9	44.7	10.3	9.01	15.2	1.82	0.20	0



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-226 ± 46	$1.44^{+0.98}_{-0.89}$	406^{+19}_{-18}	4953^{+3023}_{-950}	14480^{+83818}_{-9475}
Alt.	-1093 ± 47	$5.28^{+1.04}_{-1.10}$	405^{+19}_{-17}	4076^{+361}_{-262}	5256^{+3106}_{-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

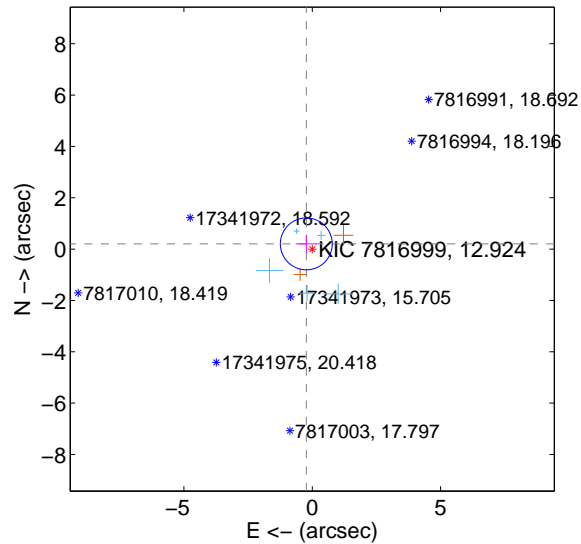
Supplemental centroid analysis for 007816999-04. Kepler magnitude: 12.92. Transit SNR 2.93

There are 5 quarters with good PRF difference image offsets

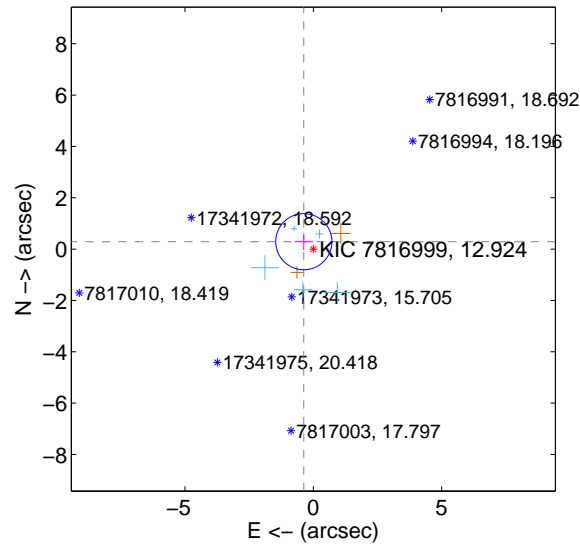
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.308 ± 0.337	0.91	0.232 ± 0.412	0.203 ± 0.352
PRF-fit source offset from KIC position	0.470 ± 0.365	1.29	0.370 ± 0.357	0.289 ± 0.323
photometric centroid source offset	2.60 ± 1.75	1.48	-0.97 ± 1.68	2.41 ± 1.76

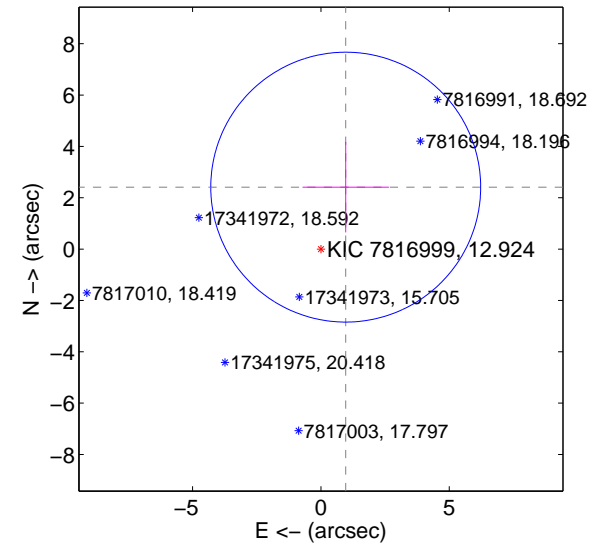
offset from difference PRF-fit to OOT PRF-fit



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.

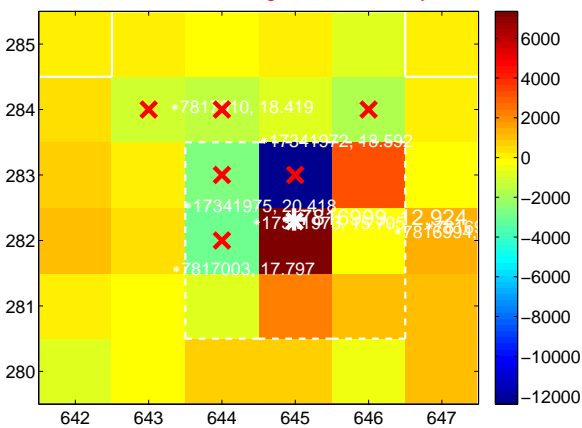
Q1 no difference image



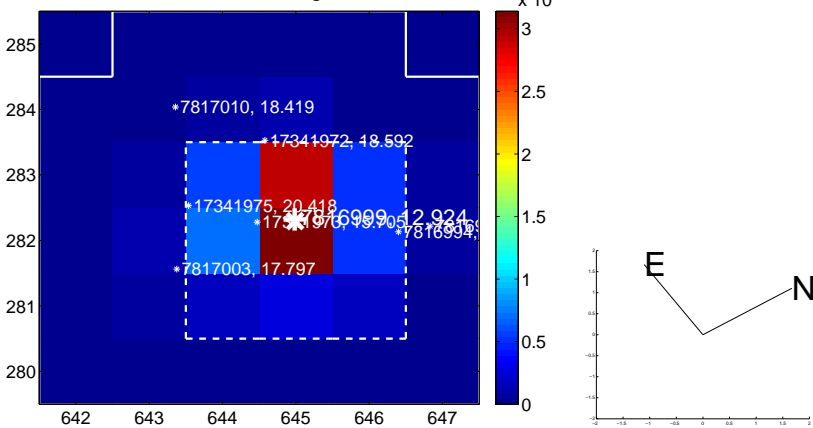
Q1 no OOT image



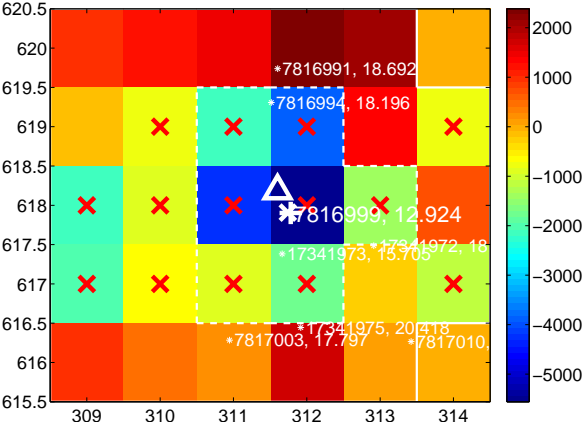
Q2 difference image. Poor Quality



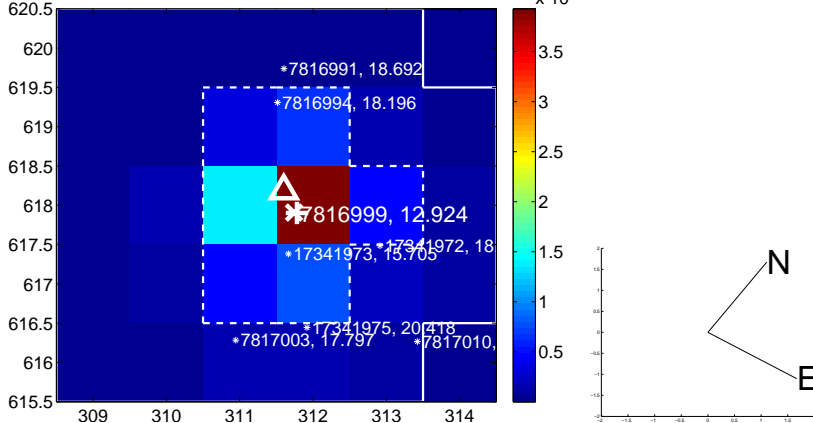
Q2 OOT image



Q3 difference image. Poor Quality



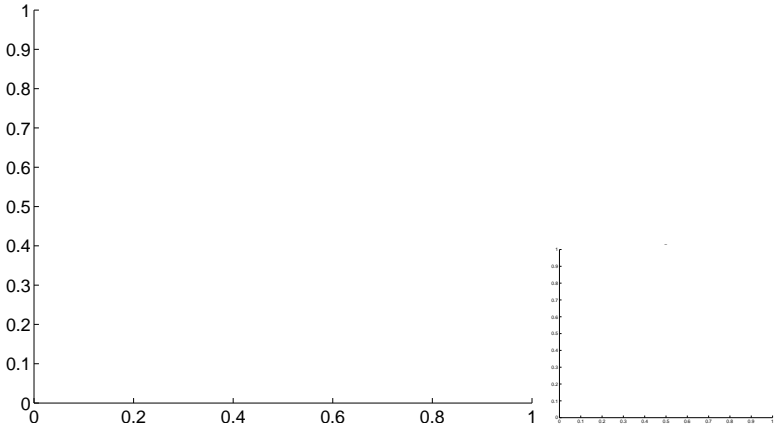
Q3 OOT image



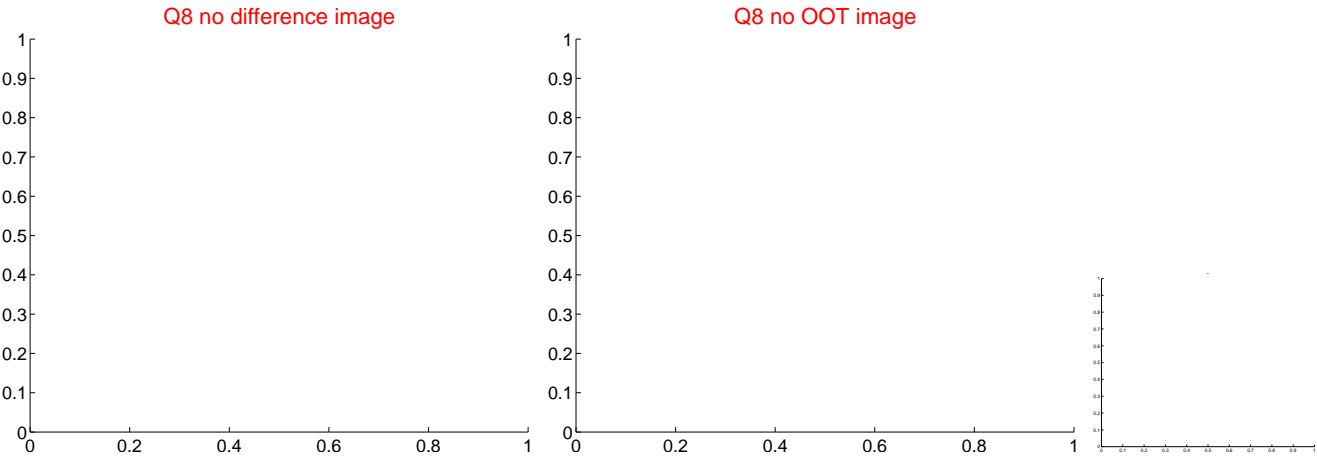
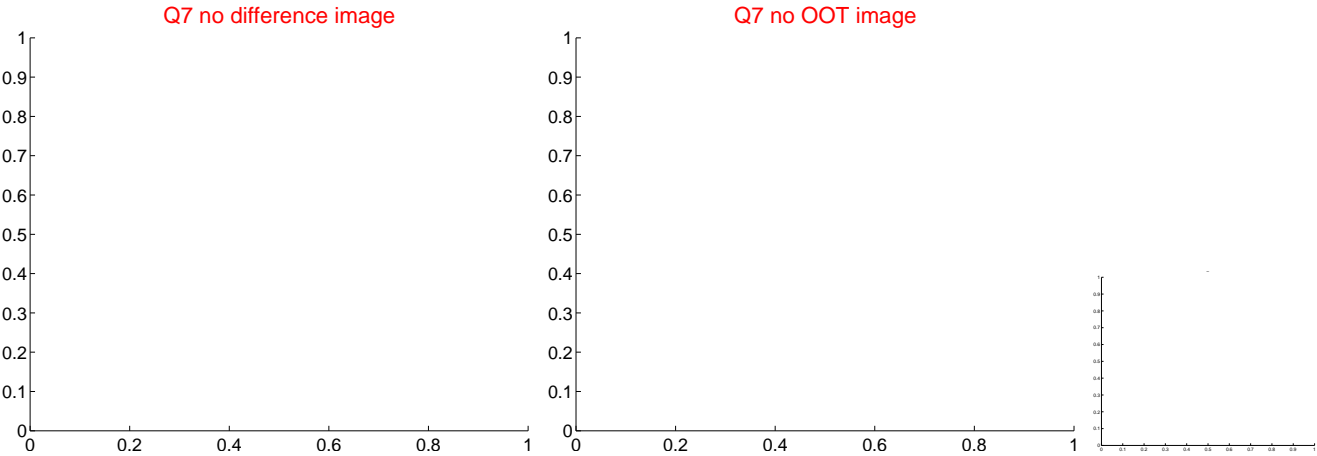
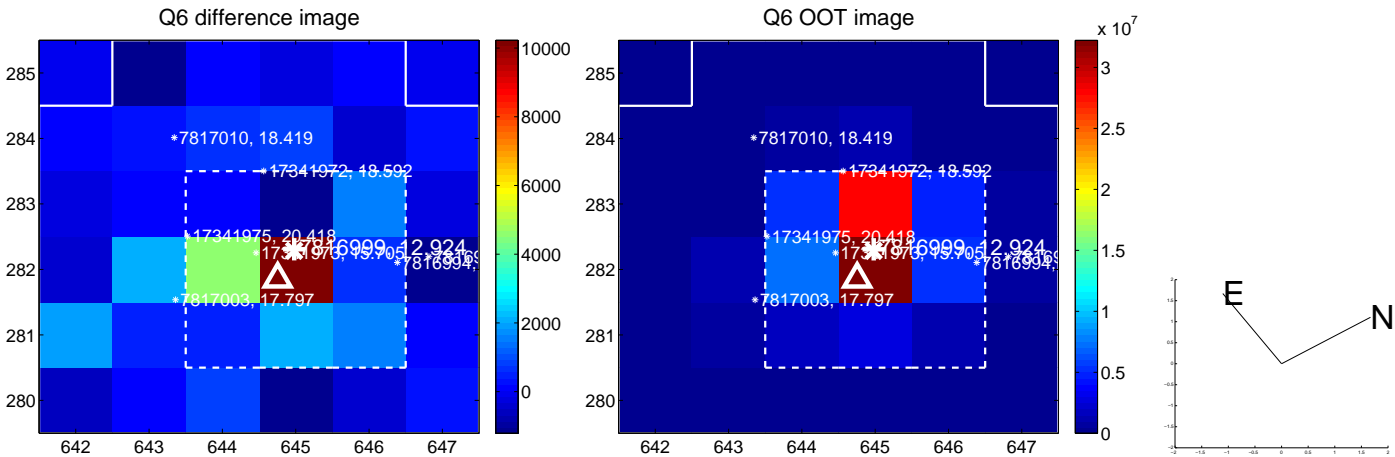
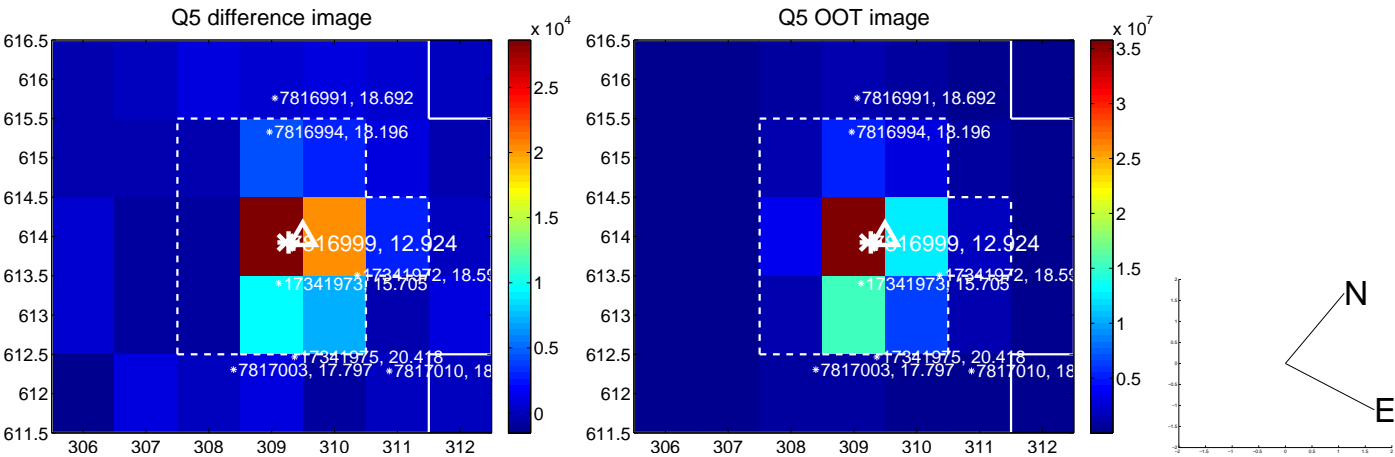
Q4 no difference image



Q4 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.

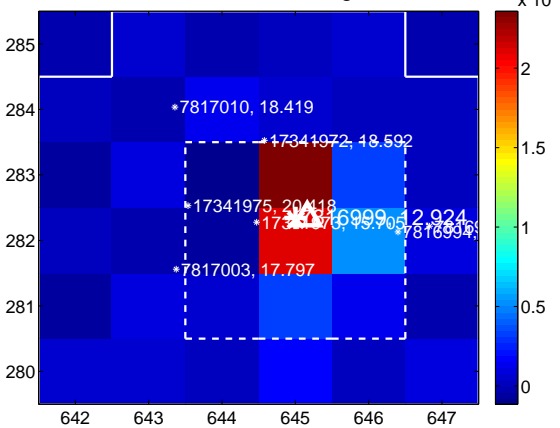
Q13 no difference image



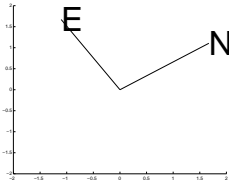
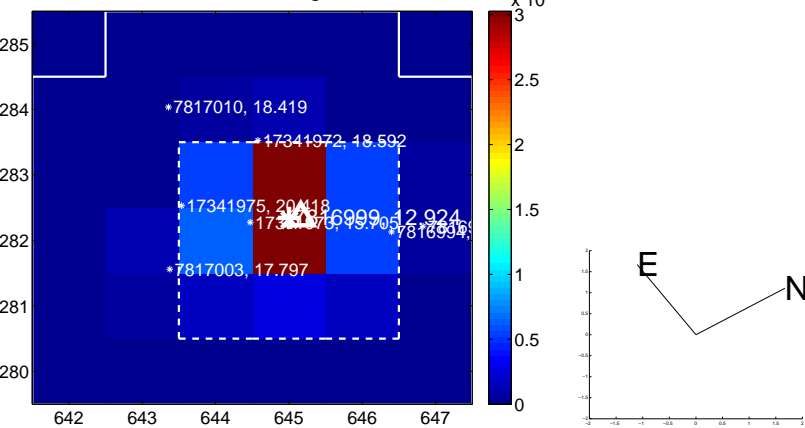
Q13 no OOT image



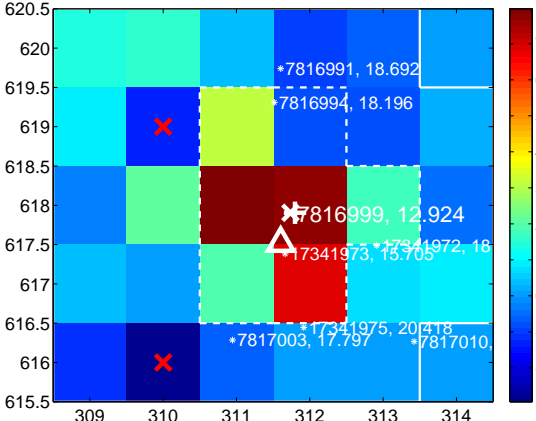
Q14 difference image



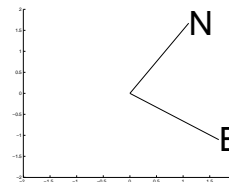
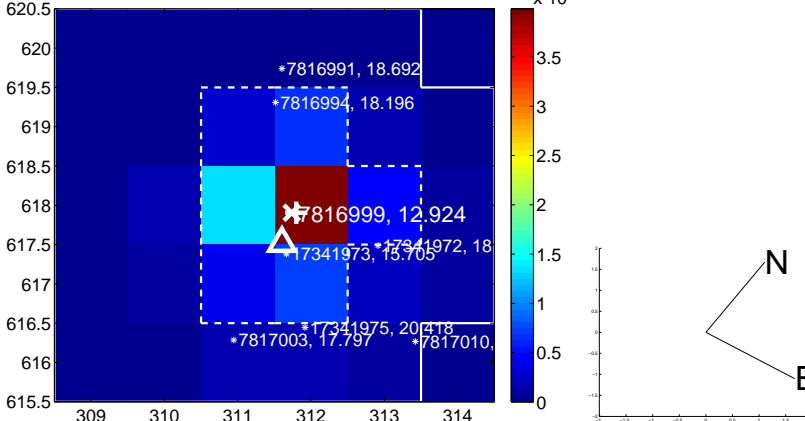
Q14 OOT image



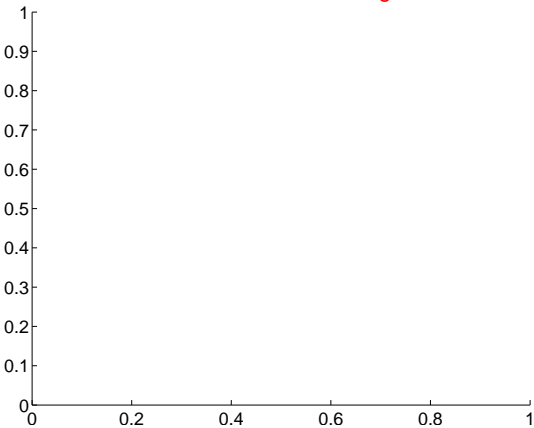
Q15 difference image



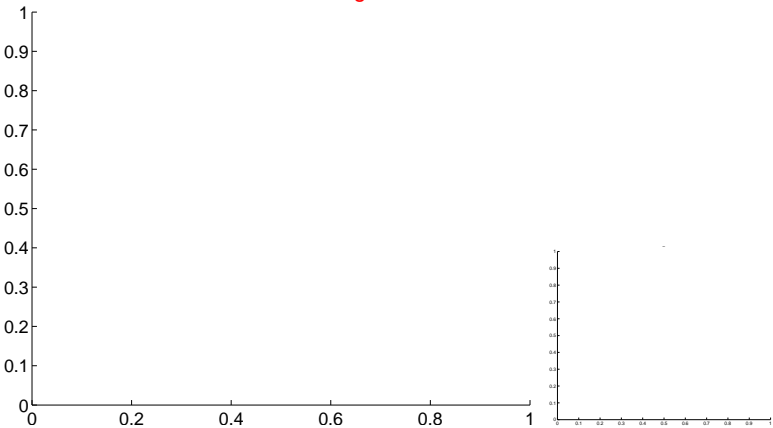
Q15 OOT image



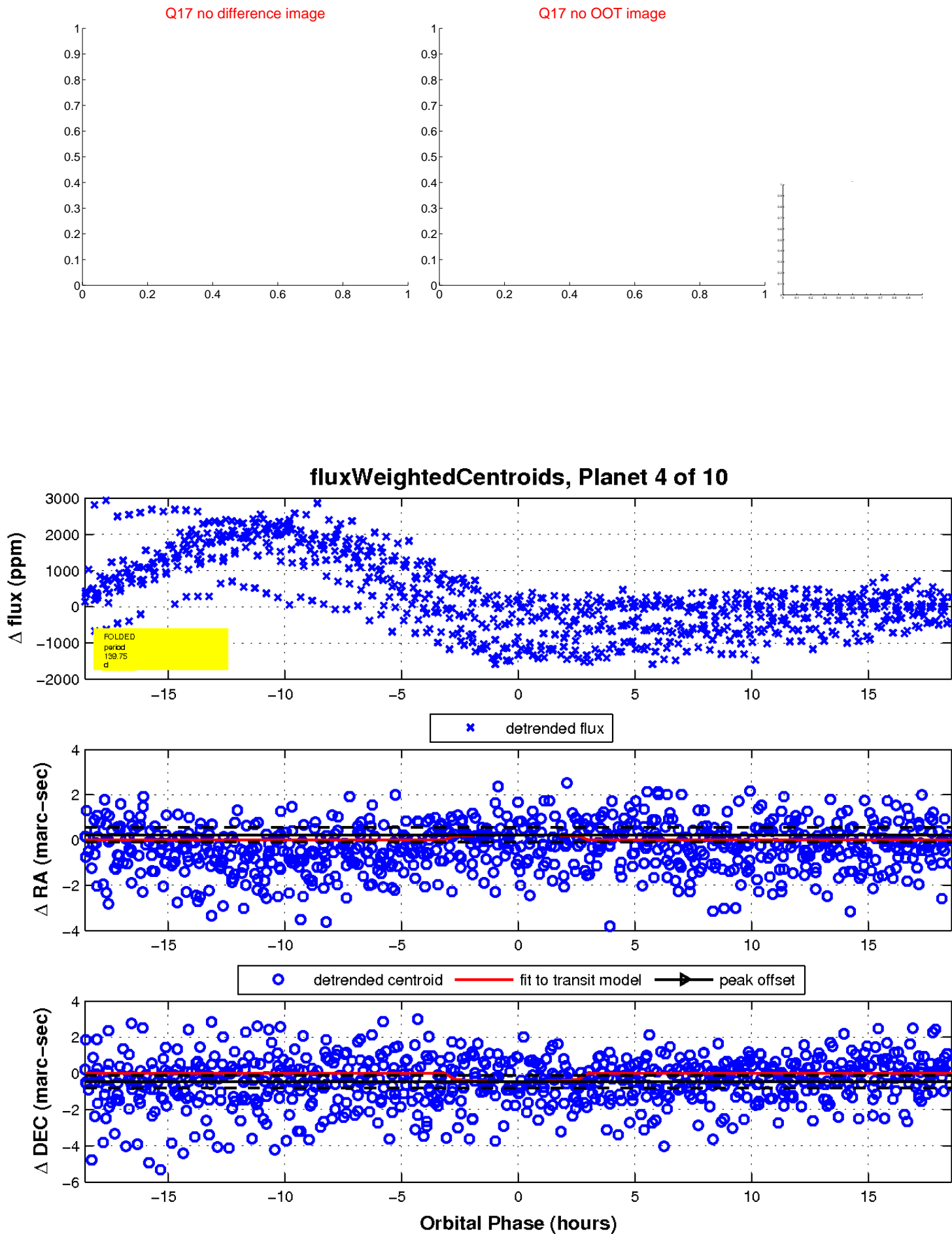
Q16 no difference image



Q16 no OOT image

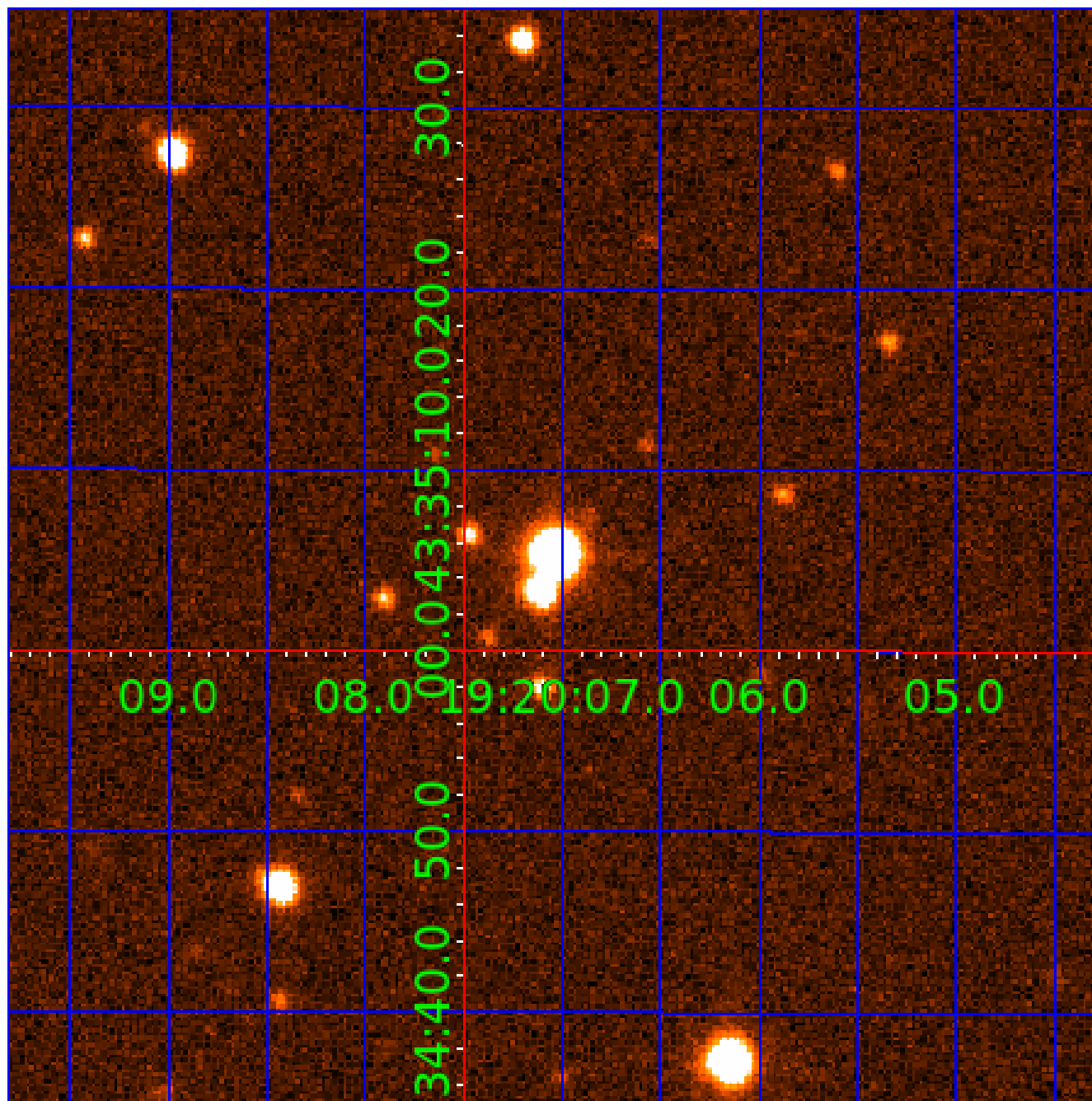


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007816999

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})
007816999-01	OBS	No	2.136986	132.767769	43.1	9.731	8.2	7.5	0.79	5159	0.55	430.37
007816999-02	OBS	No	93.206905	168.604896	220.5	3.296	14.0	3.5	0.79	5159	1.30	2.80
007816999-03	OBS	No	167.068223	149.790427	544.8	4.413	12.6	6.7	0.79	5159	2.29	1.29
007816999-04	OBS	No	139.746572	205.777922	193.8	6.194	12.3	2.9	0.79	5159	1.31	1.63
007816999-05	OBS	No	271.391733	142.572361	217.2	15.000	10.7	-1.0	0.79	5159	1.13	0.67
007816999-06	OBS	No	356.878727	481.792582	362.9	5.646	11.3	4.6	0.79	5159	2.01	0.47
007816999-08	OBS	No	184.487802	310.869972	253.1	10.500	10.4	-1.0	0.79	5159	1.22	1.13
007816999-09	OBS	No	489.387806	531.611891	588.2	6.569	9.1	6.0	0.79	5159	2.08	0.31
007816999-10	OBS	No	332.678790	313.662559	329.7	7.500	9.7	-1.0	0.79	5159	1.40	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

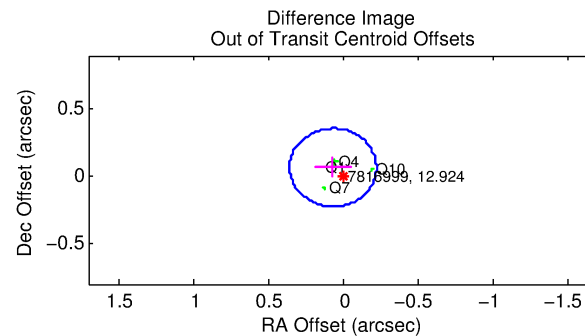
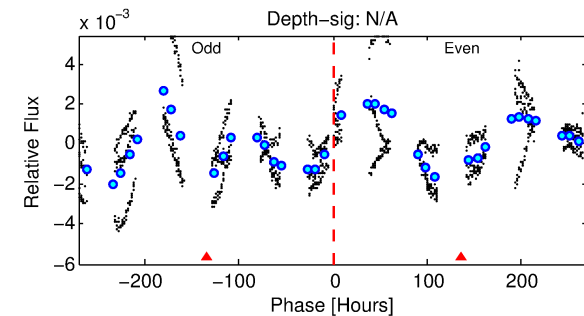
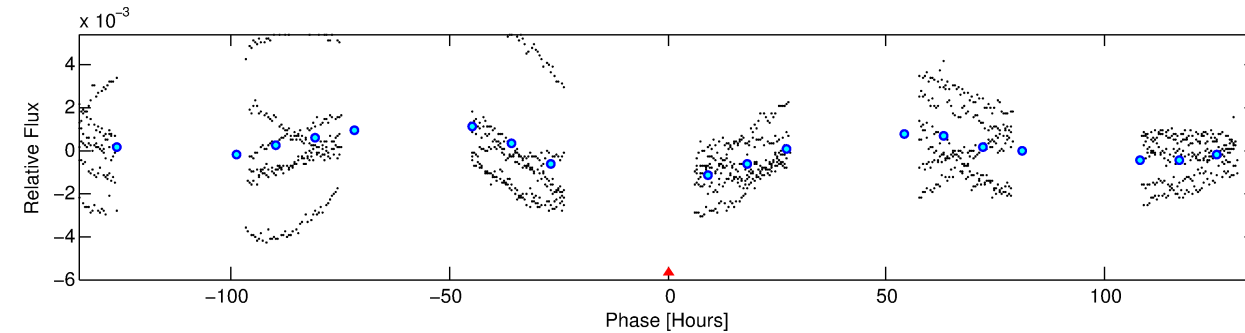
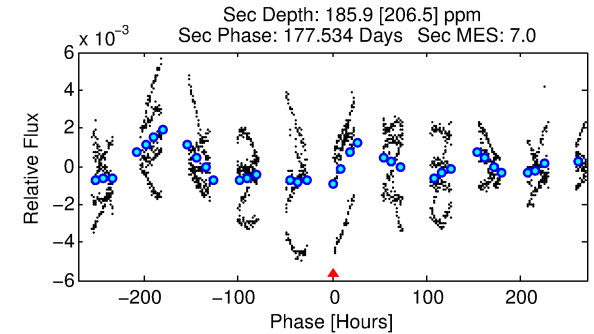
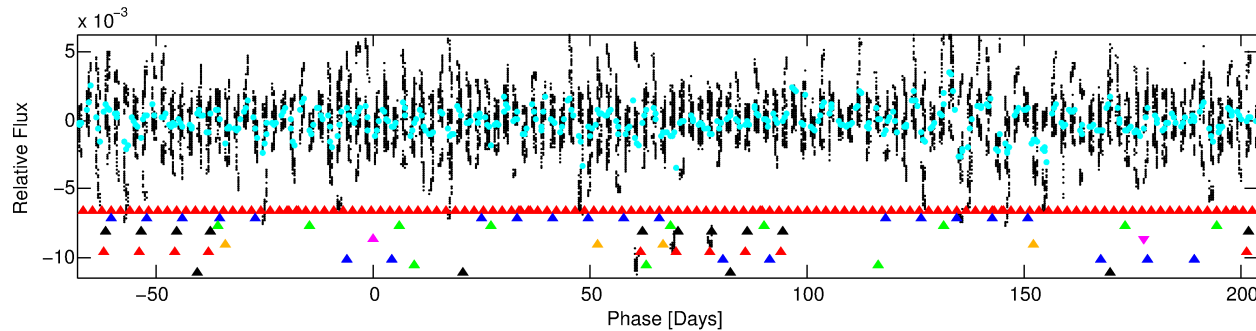
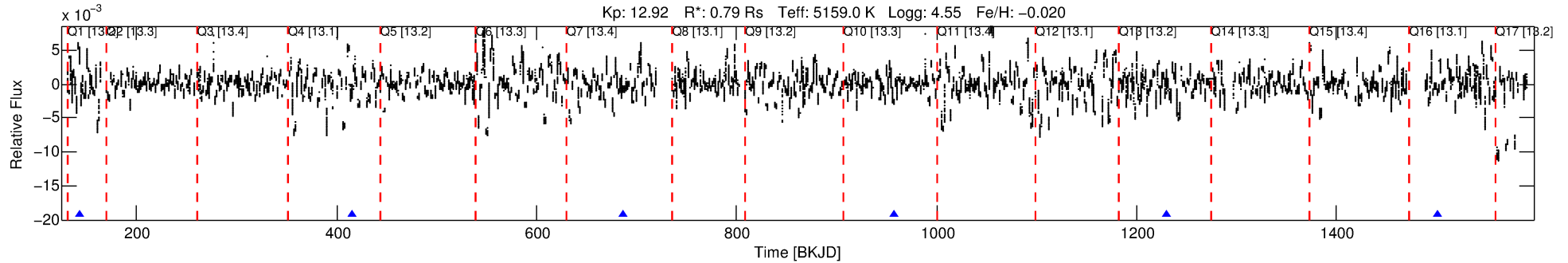
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-05

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 5 of 10 Period: 271.392 d



TPS TCE Results:

Period = 271.39173 d
Epoch = 142.5724 BKJD

DV fit results are unavailable

DV Diagnostic Results:

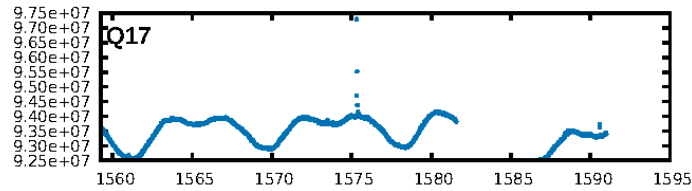
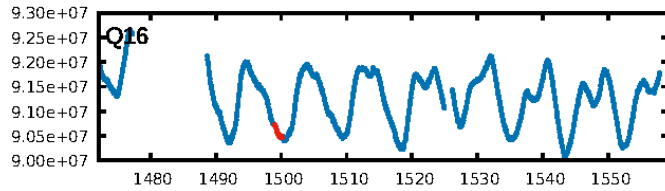
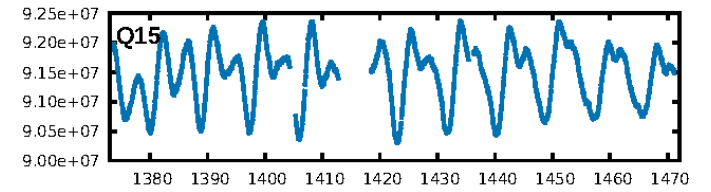
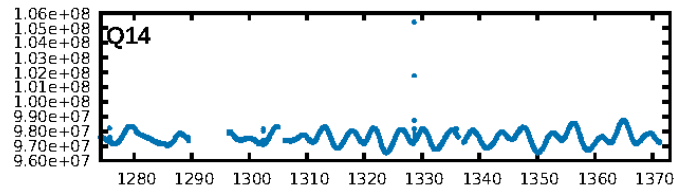
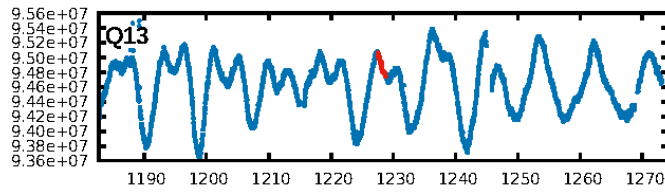
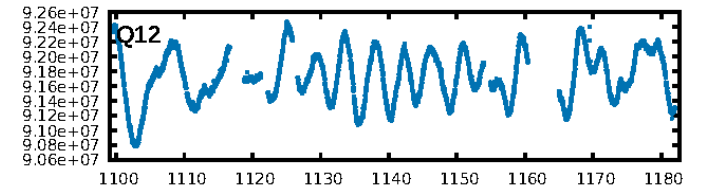
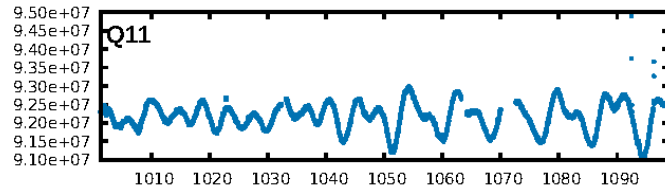
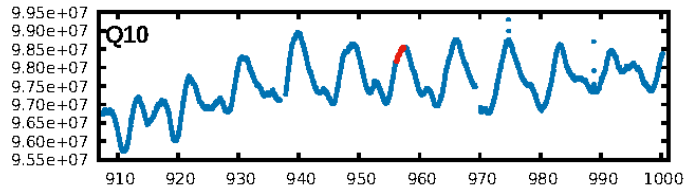
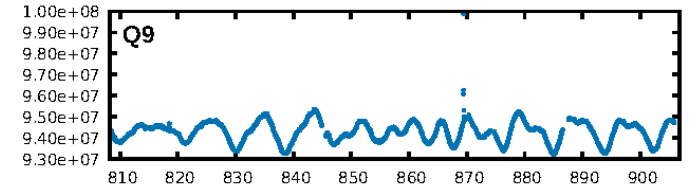
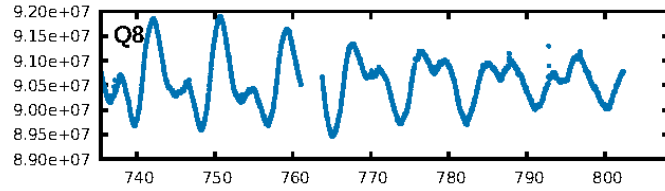
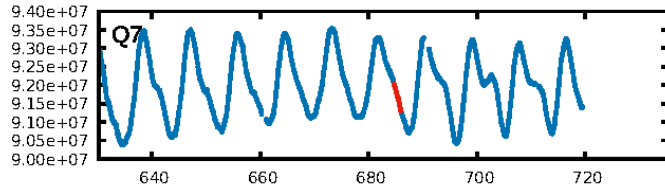
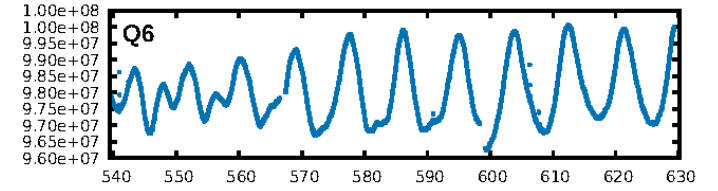
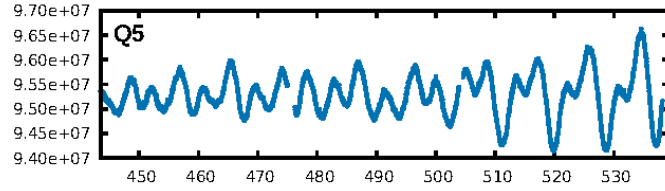
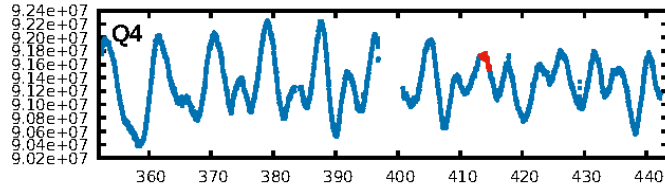
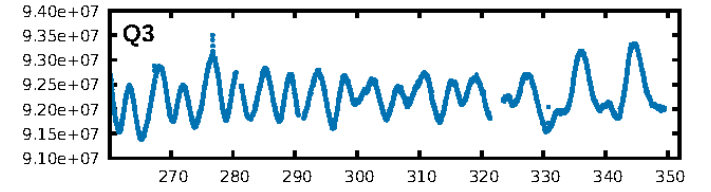
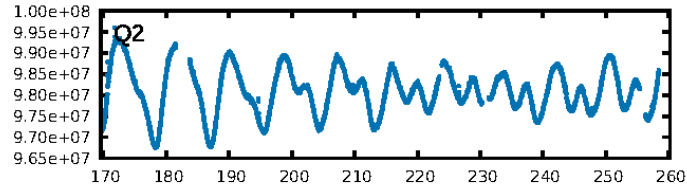
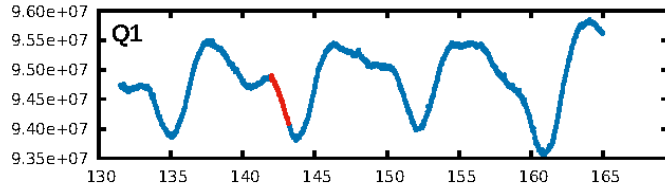
ShortPeriod-sig: 100.0% [113.91 σ]
LongPeriod-sig: 100.0% [87.71 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.79e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.0884

Centroid-sig: 12.6%
Centroid-so: 0.413 arcsec [1.01 σ]
OotOffset-rm: 0.093 arcsec [0.96 σ]
KicOffset-rm: 0.220 arcsec [1.84 σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/4]

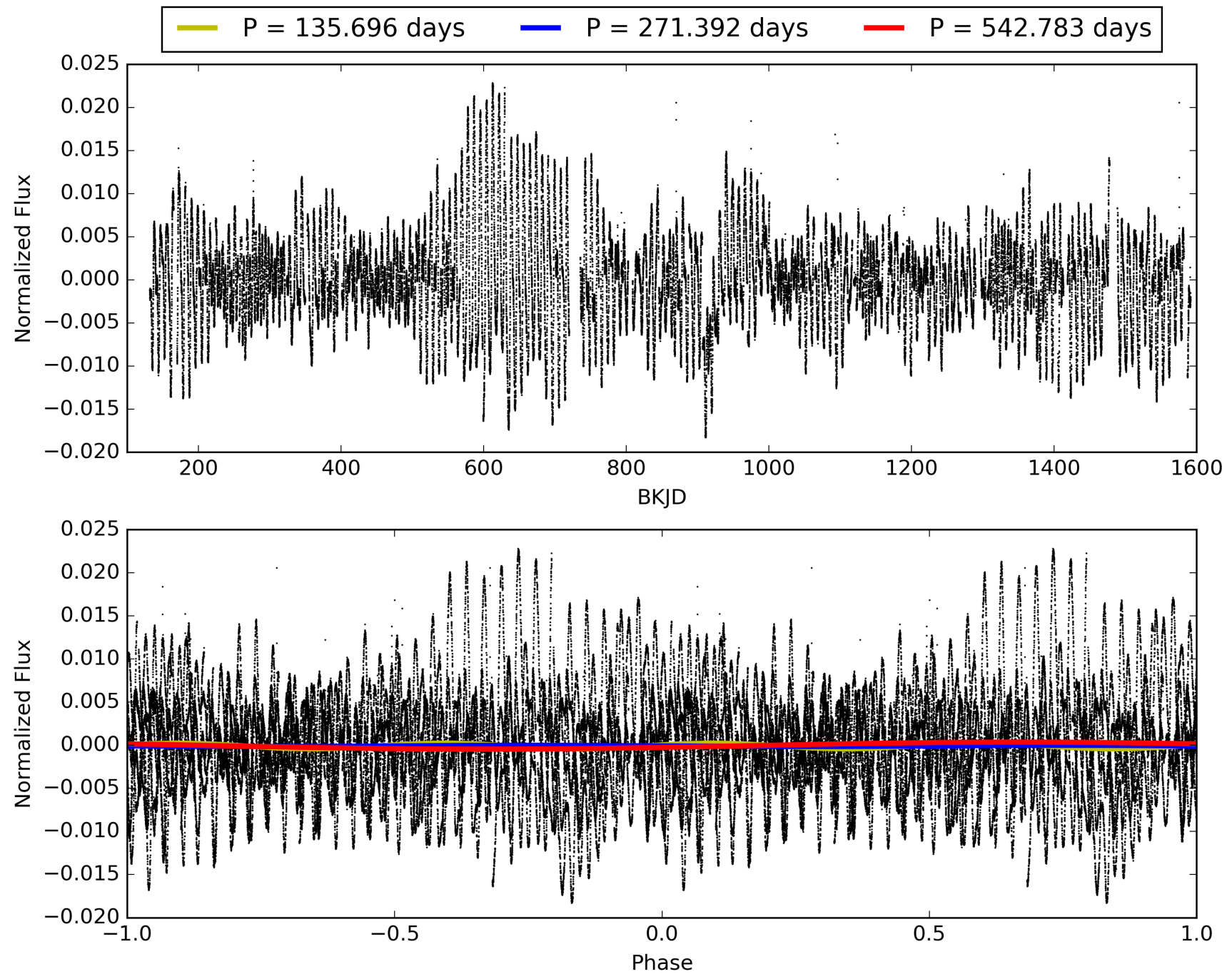
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:41:32 Z

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

TCE 007816999-05, PDC Light Curves

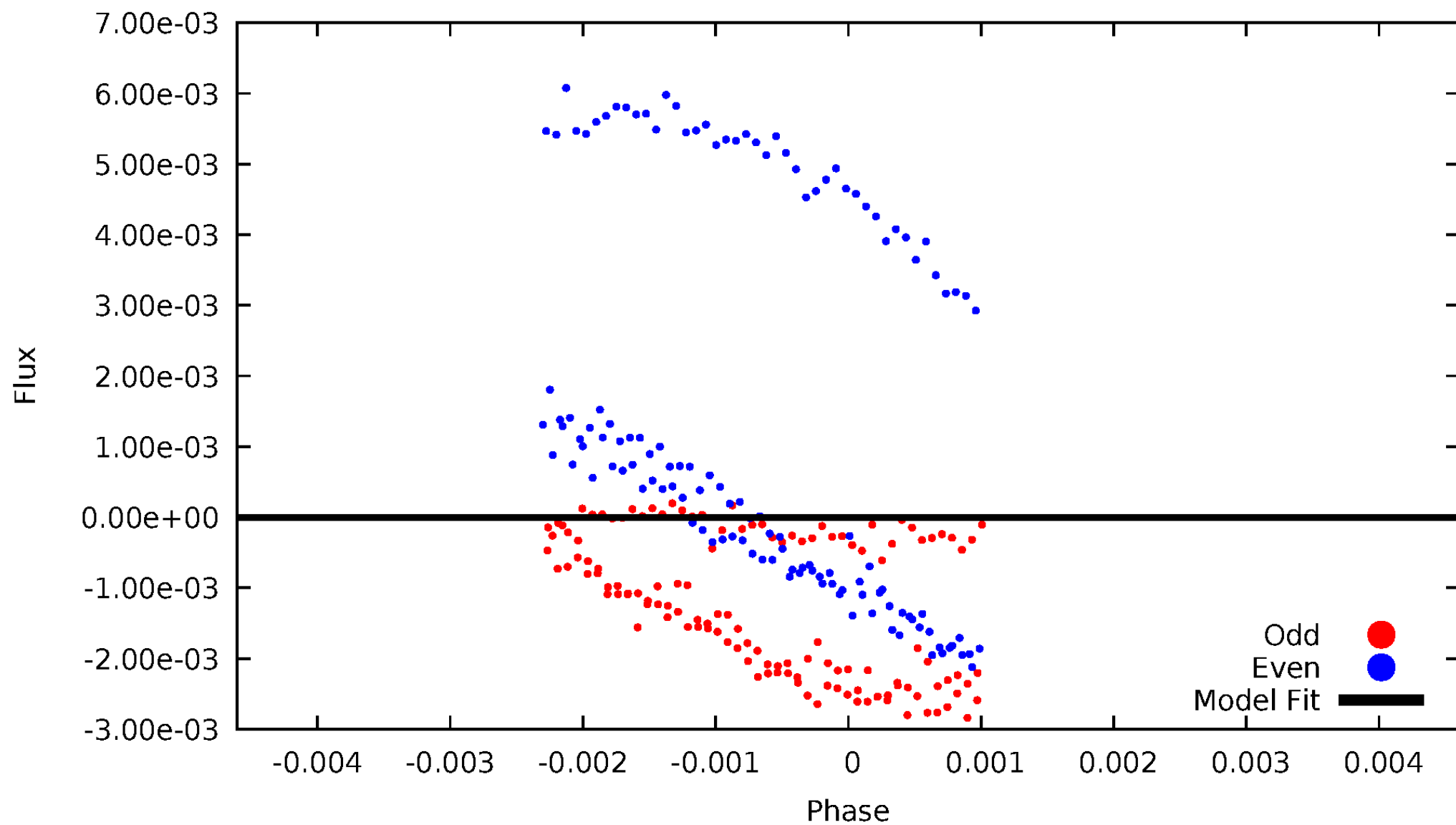


TCE 007816999-05



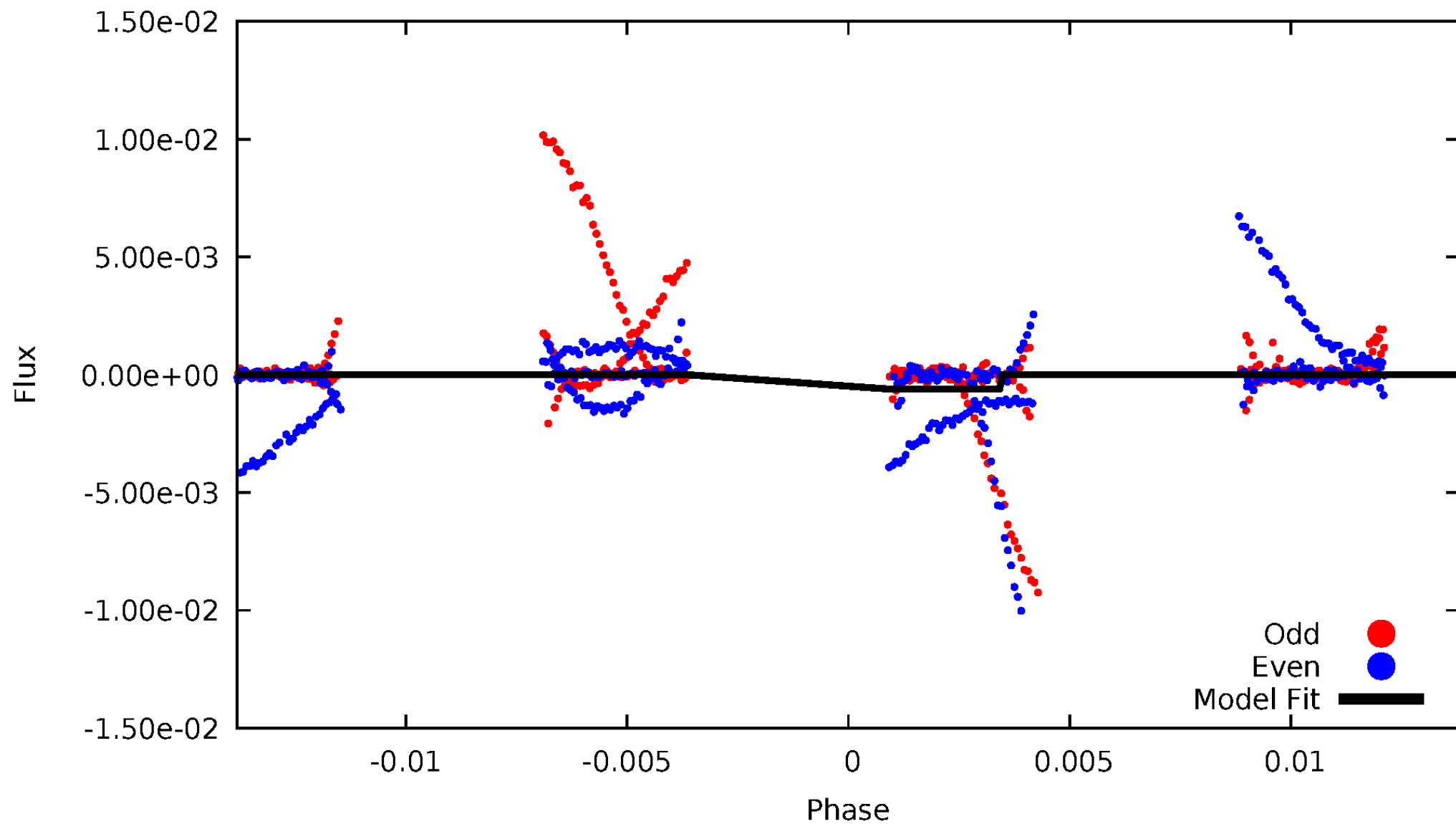
DV Odd/Even

TCE 007816999-05



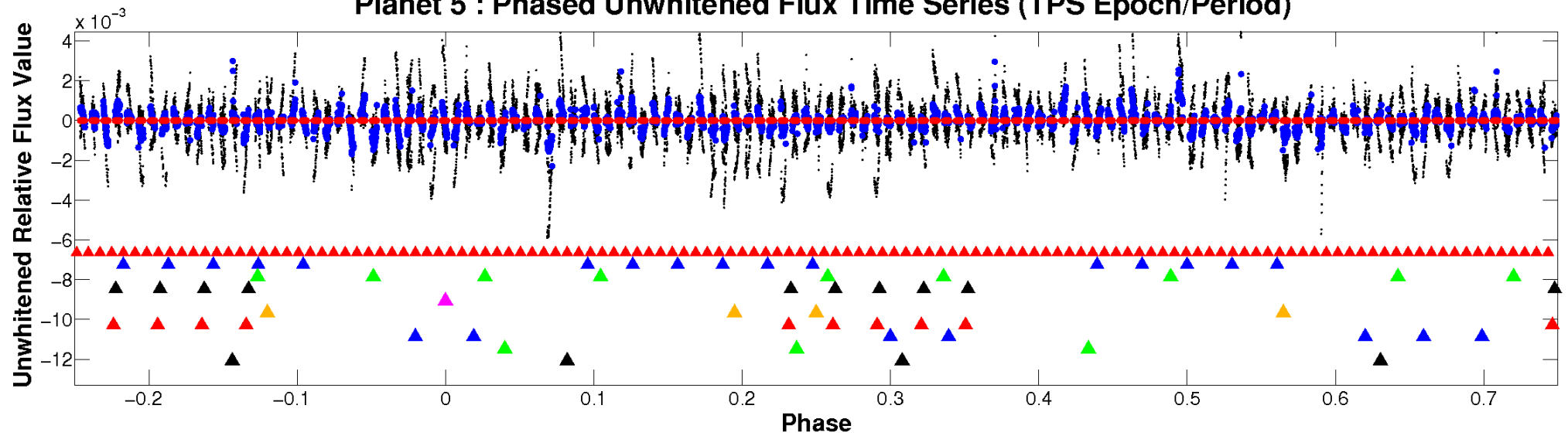
ALT Odd/Even

TCE 007816999-05

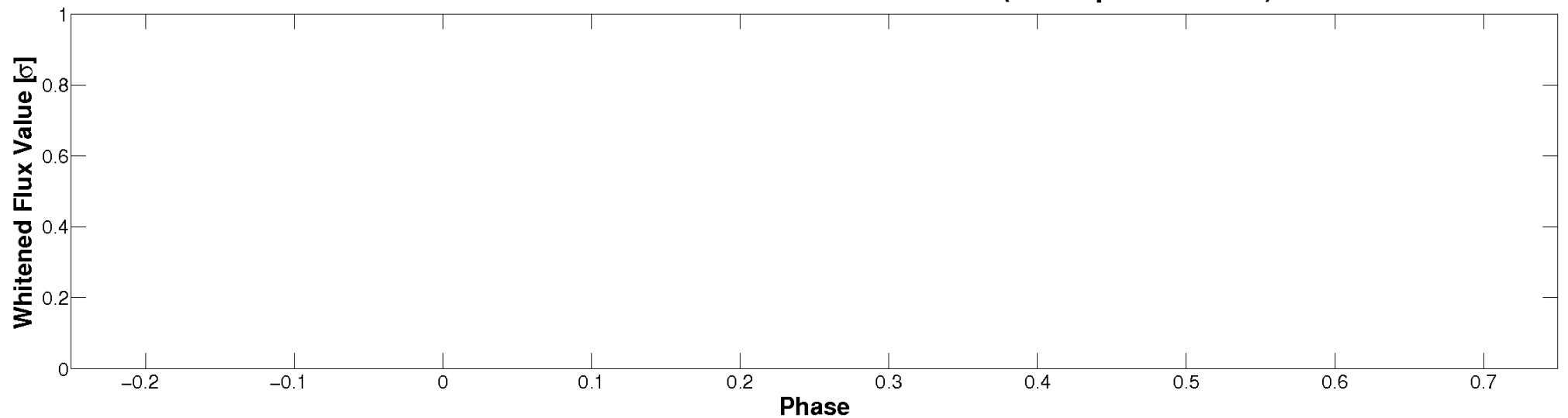


Non-Whitened Vs. Whitened Light Curve

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

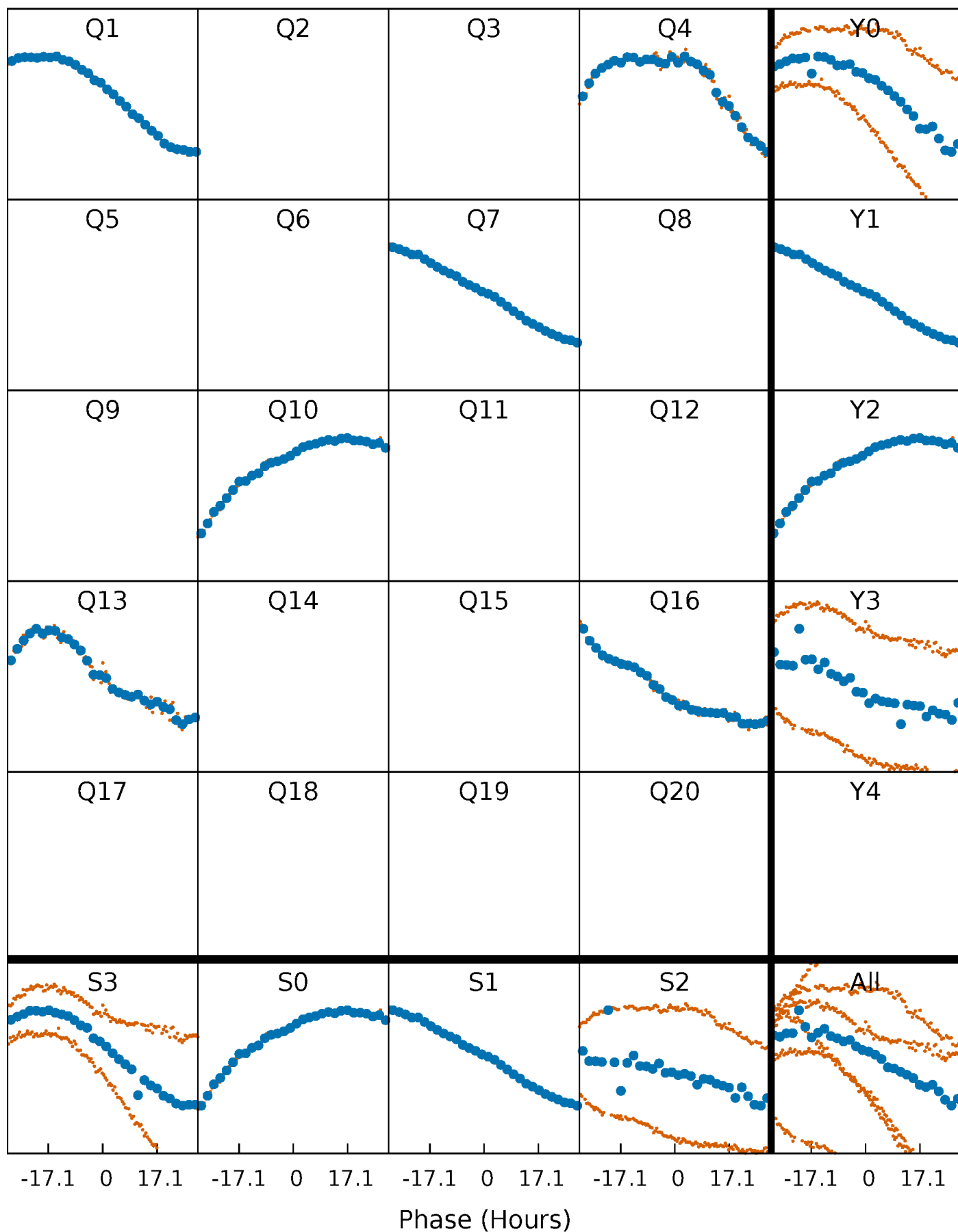


Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)



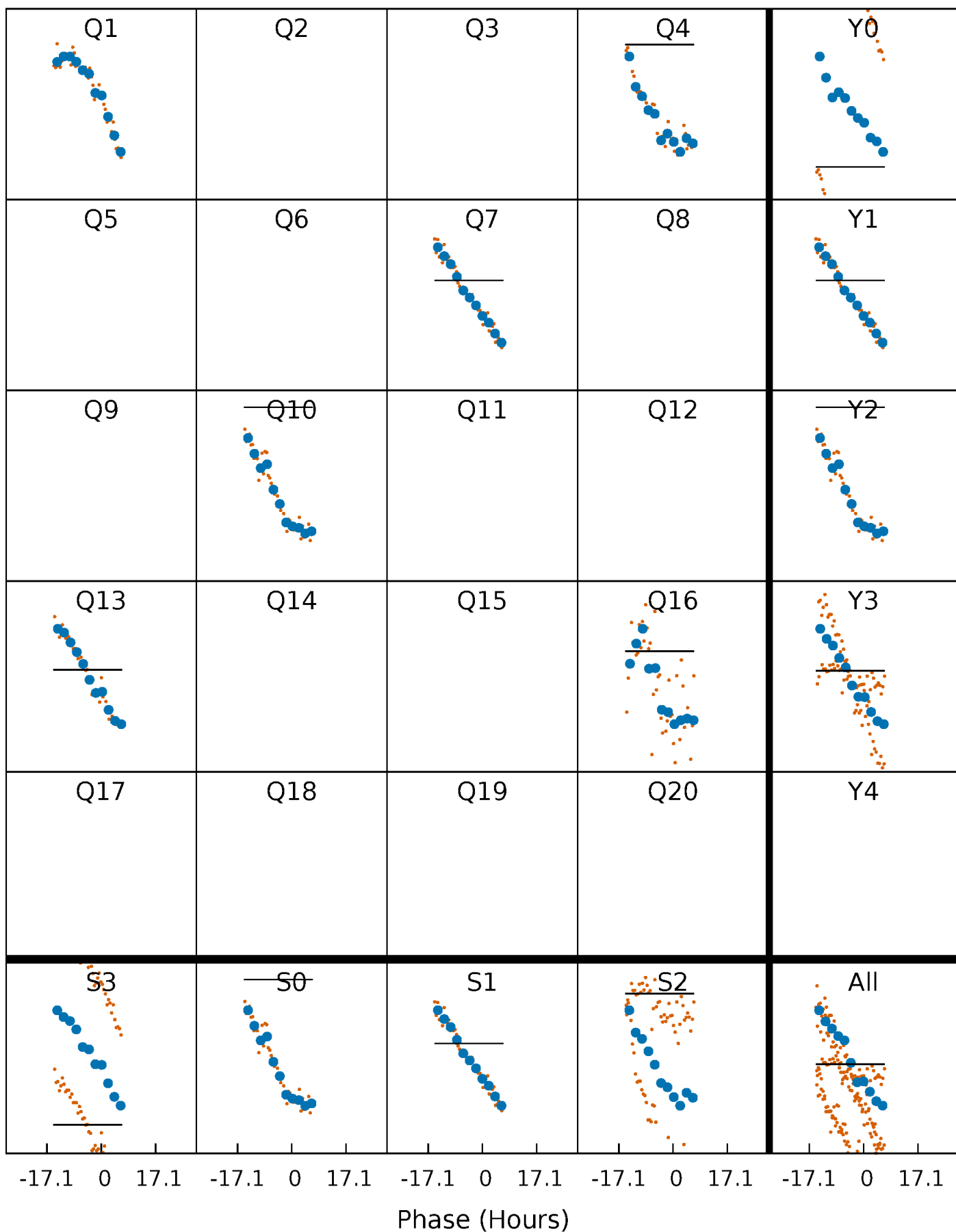
PDC Quarter-Phased Transit Curves

TCE 007816999-05 $P=271.391733$ Days $T_0=142.572361$ (BKJD)



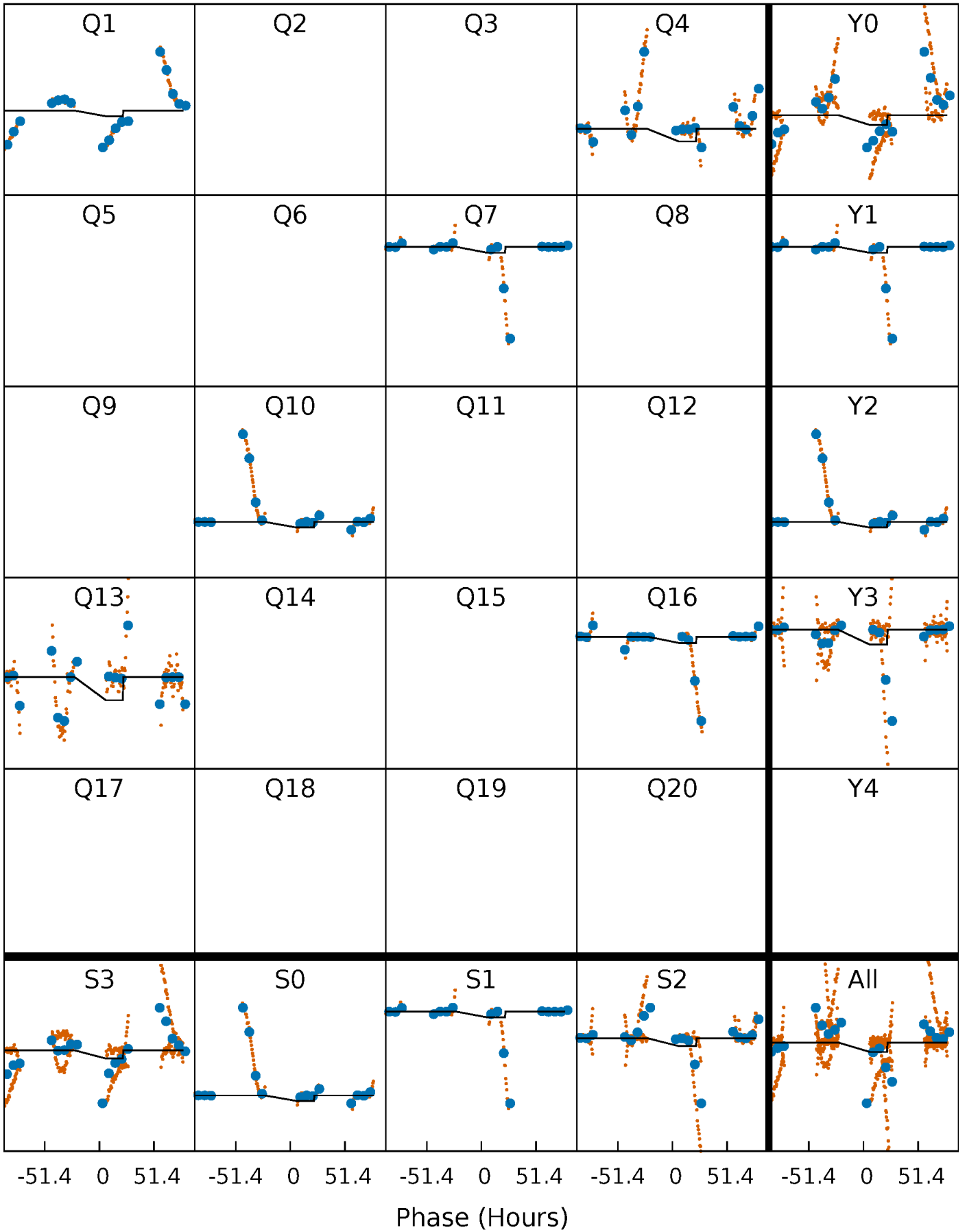
DV Quarter-Phased Transit Curves

TCE 007816999-05 $P=271.391733$ Days $T_0=142.572361$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

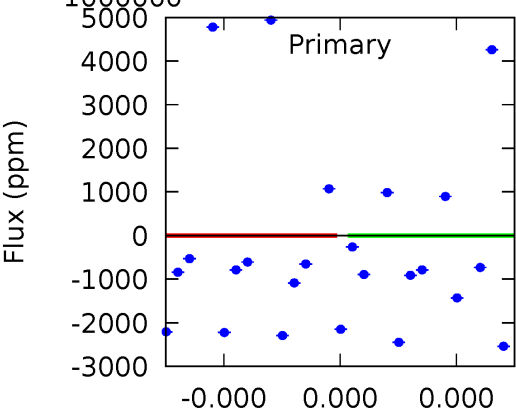
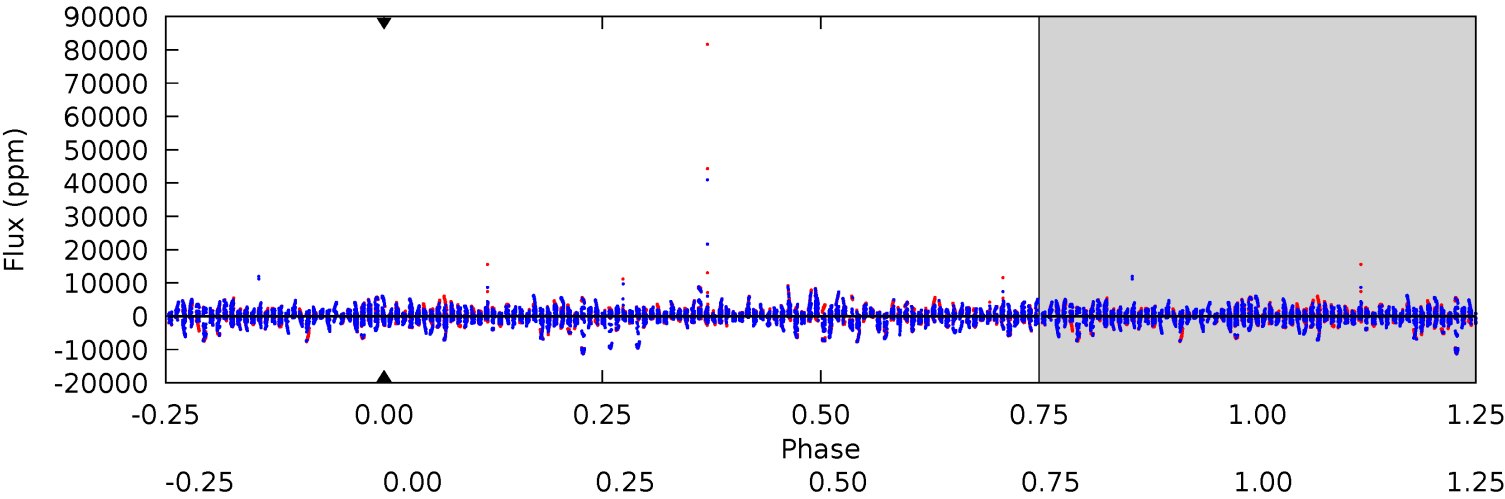
TCE 007816999-05 $P=271.391733$ Days $T_0=143.829220$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-05, P = 271.391733 Days, E = 142.572361 Days

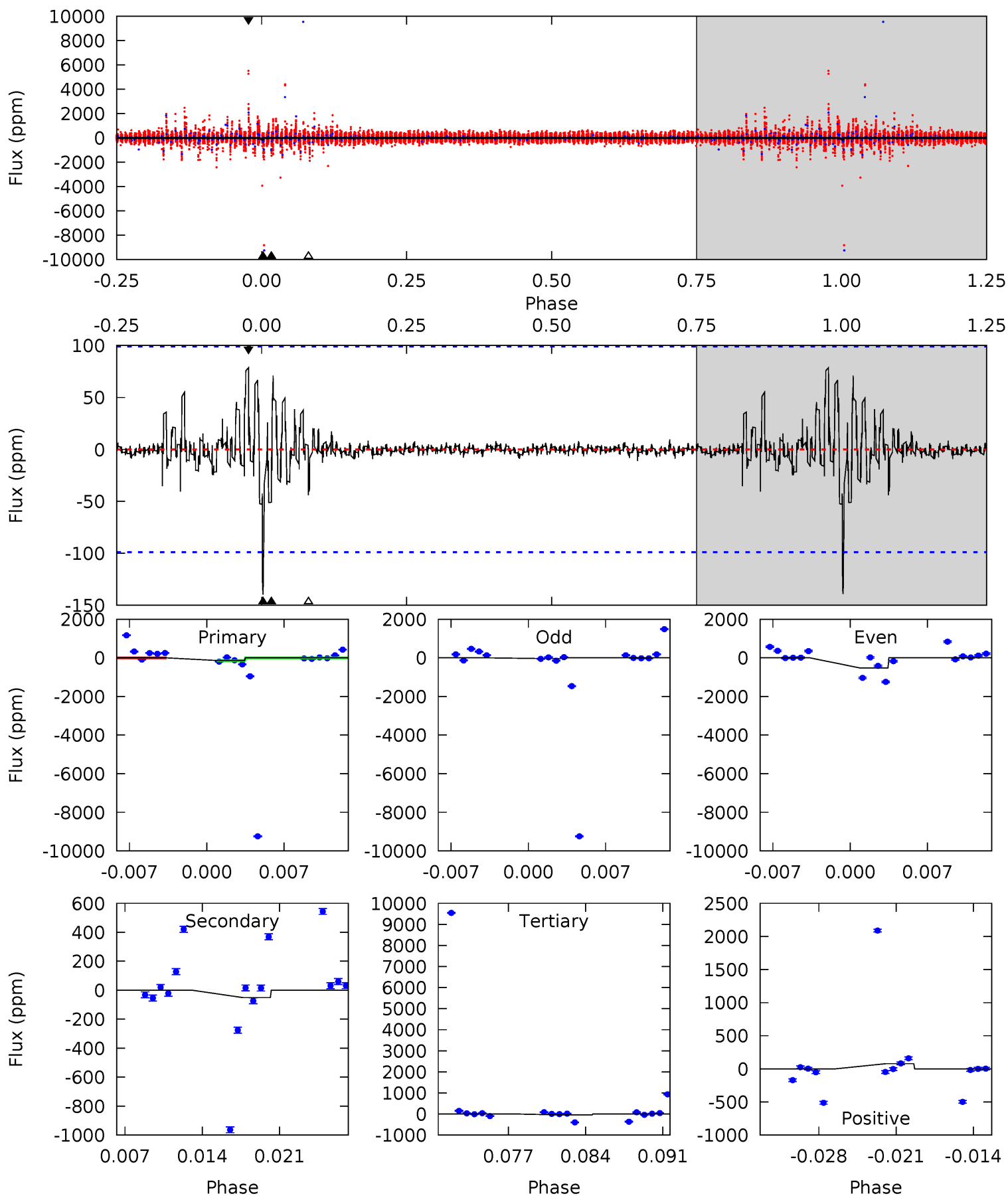
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

007816999-05, P = 271.391733 Days, E = 143.829220 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.17	2.62	2.27	4.05	5.10	2.70	0.44	4.90	3.12	0.35	-1.42	9.22	1.39	0.36	0



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$6.62^{+6.82}_{-4.79}$	324^{+17}_{-14}	3943^{+14090}_{-18653}	$9995^{+1716913}_{-1199132}$
Alt.	-51 ± 19	$7.10^{+6.29}_{-4.80}$	324^{+16}_{-13}	2394^{+838}_{-341}	310^{+2630}_{-227}

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

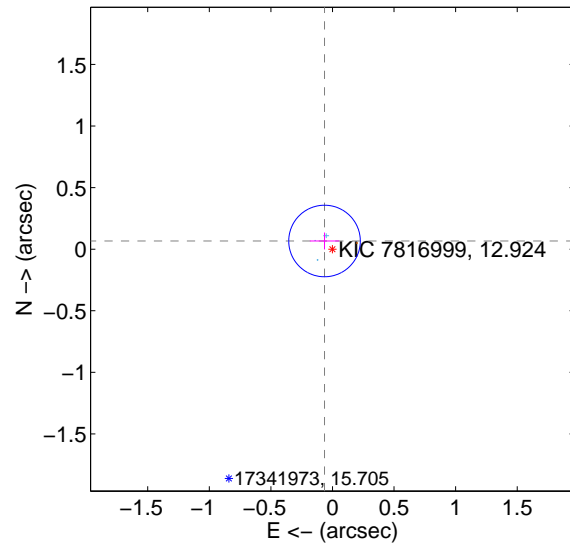
Supplemental centroid analysis for 007816999-05. Kepler magnitude: 12.92. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

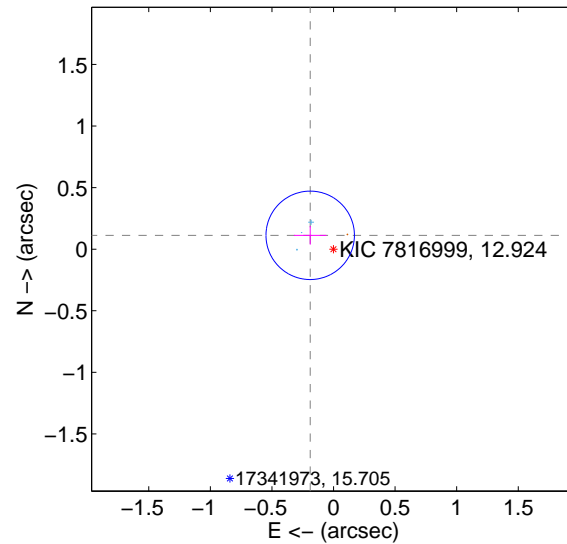
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.093 ± 0.097	0.96	0.065 ± 0.119	0.066 ± 0.069
PRF-fit source offset from KIC position	0.220 ± 0.120	1.84	0.189 ± 0.132	0.112 ± 0.076
photometric centroid source offset	0.41 ± 0.41	1.01	0.07 ± 0.29	-0.41 ± 0.41

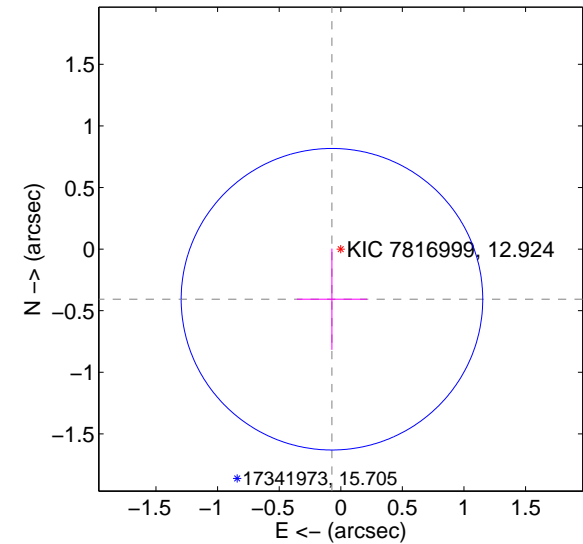
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

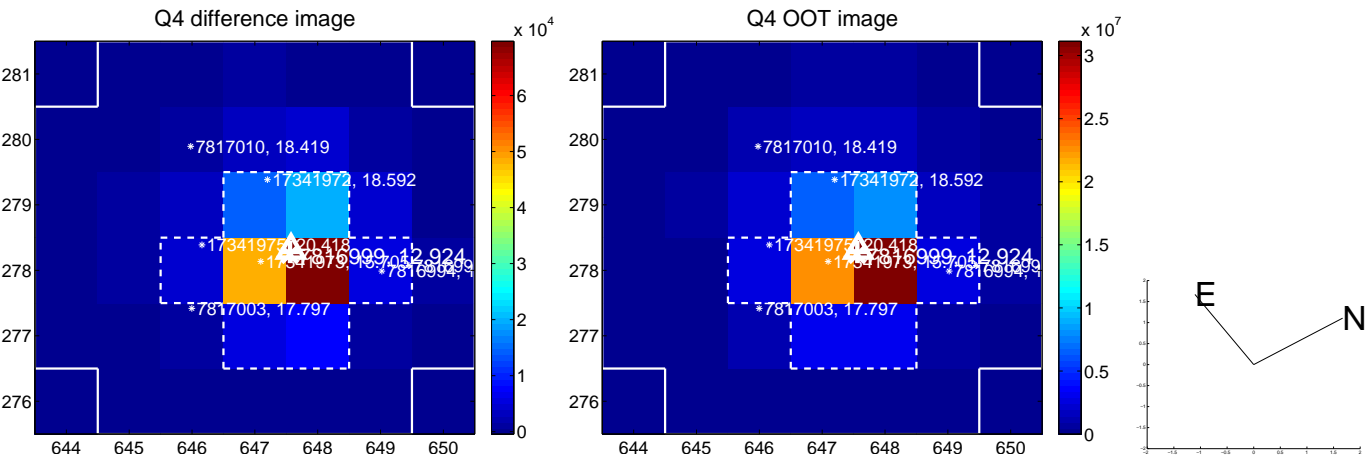
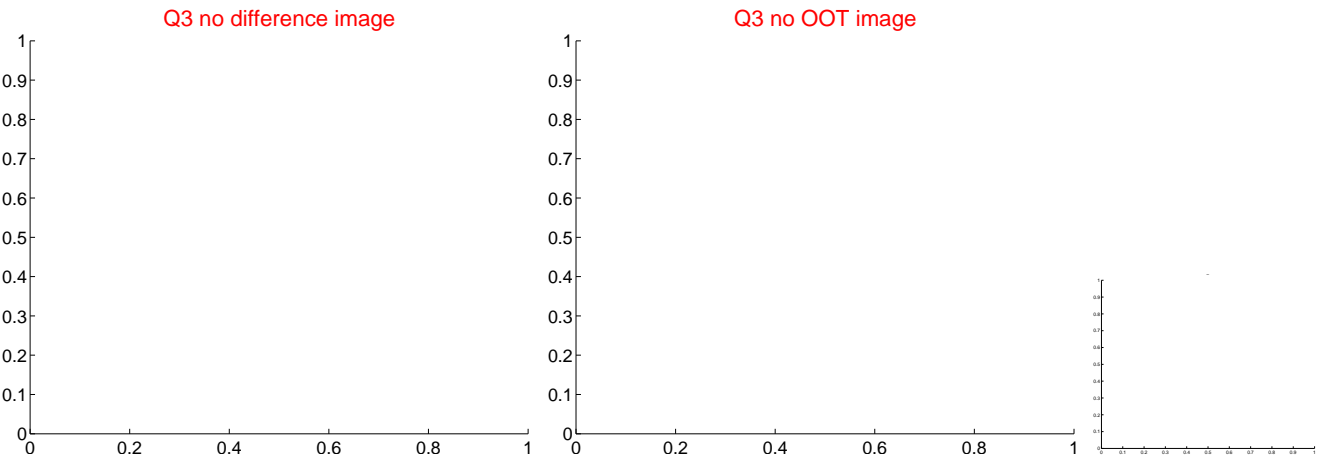
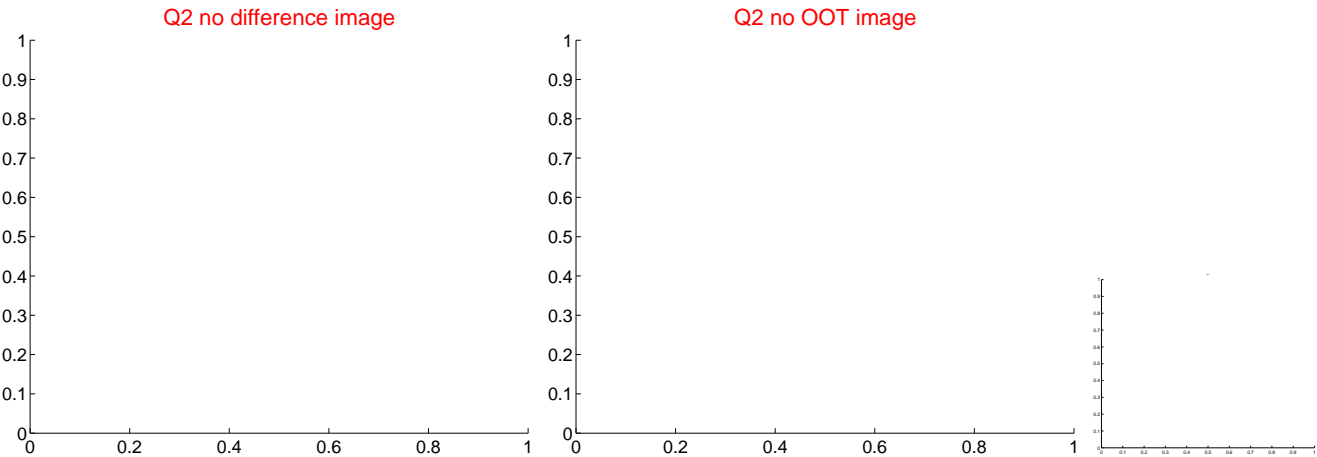
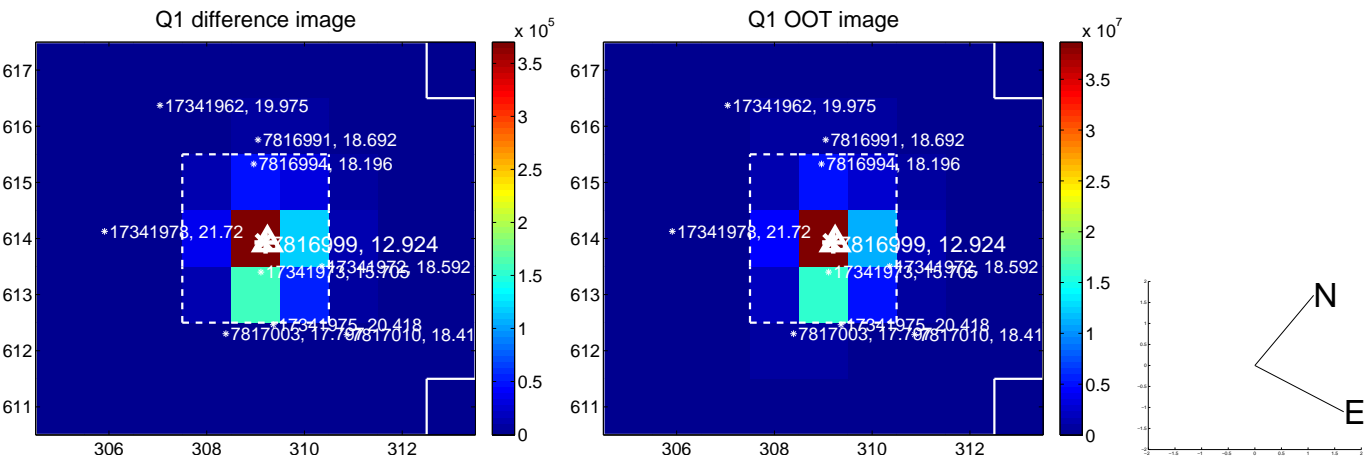


offset from photometric centroids



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

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



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

Q5 no difference image



Q5 no OOT image



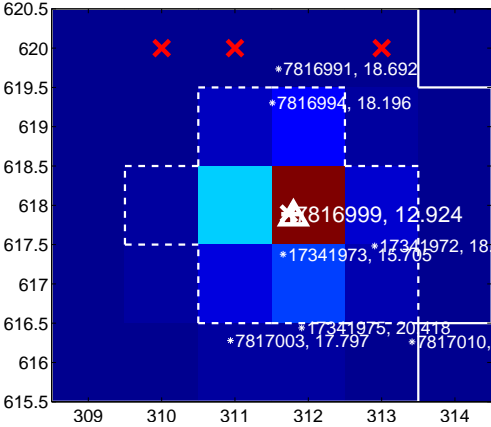
Q6 no difference image



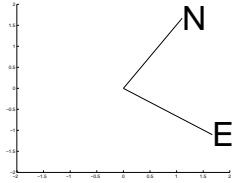
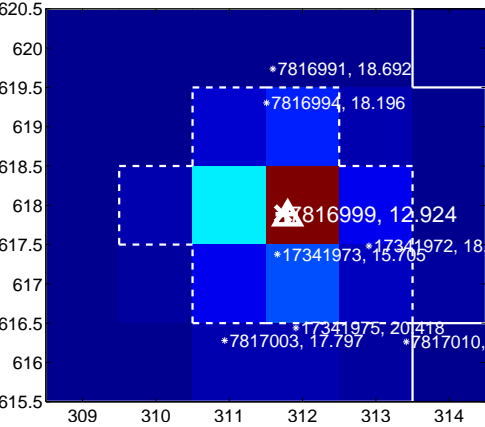
Q6 no OOT image



Q7 difference image



Q7 OOT image



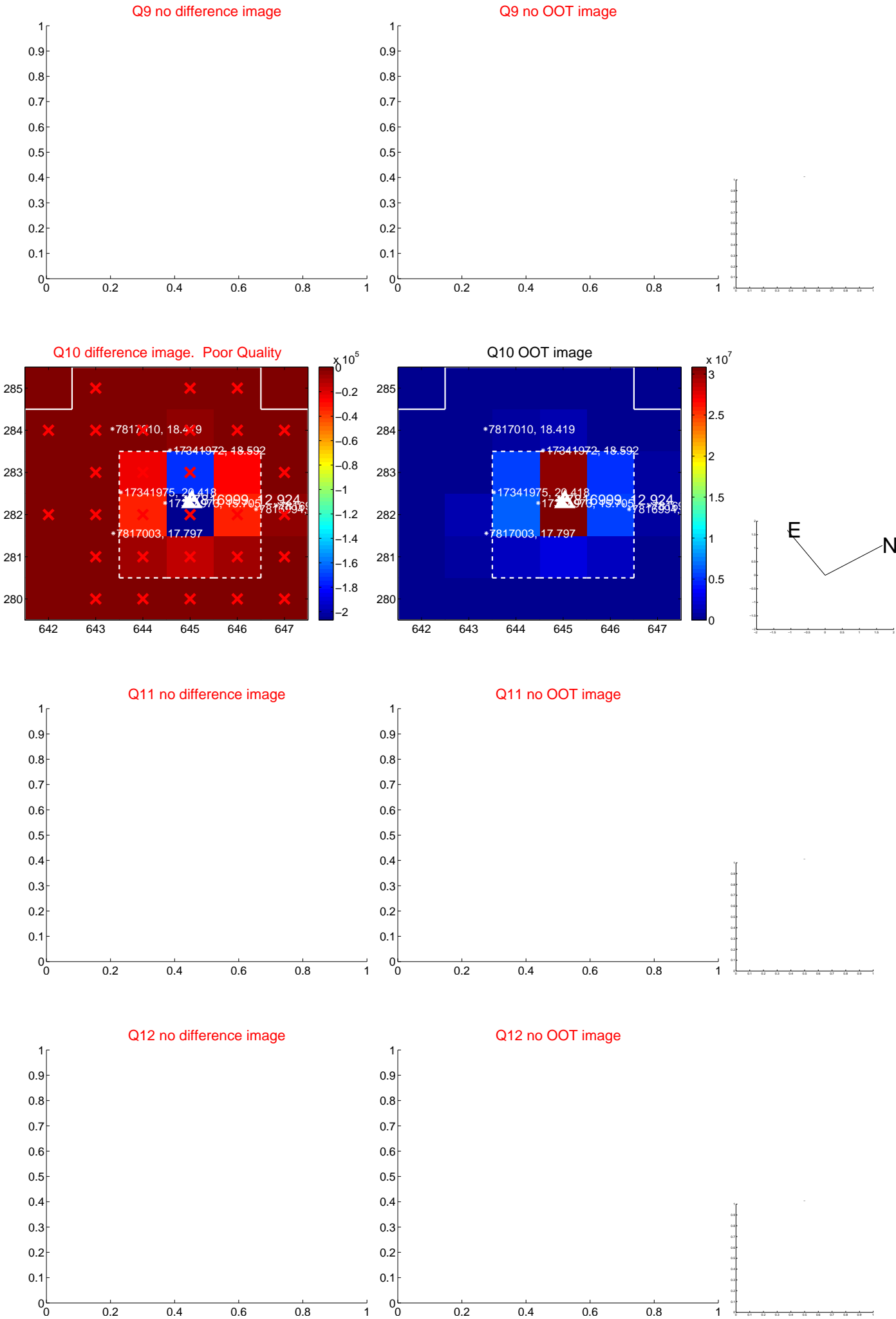
Q8 no difference image



Q8 no OOT image



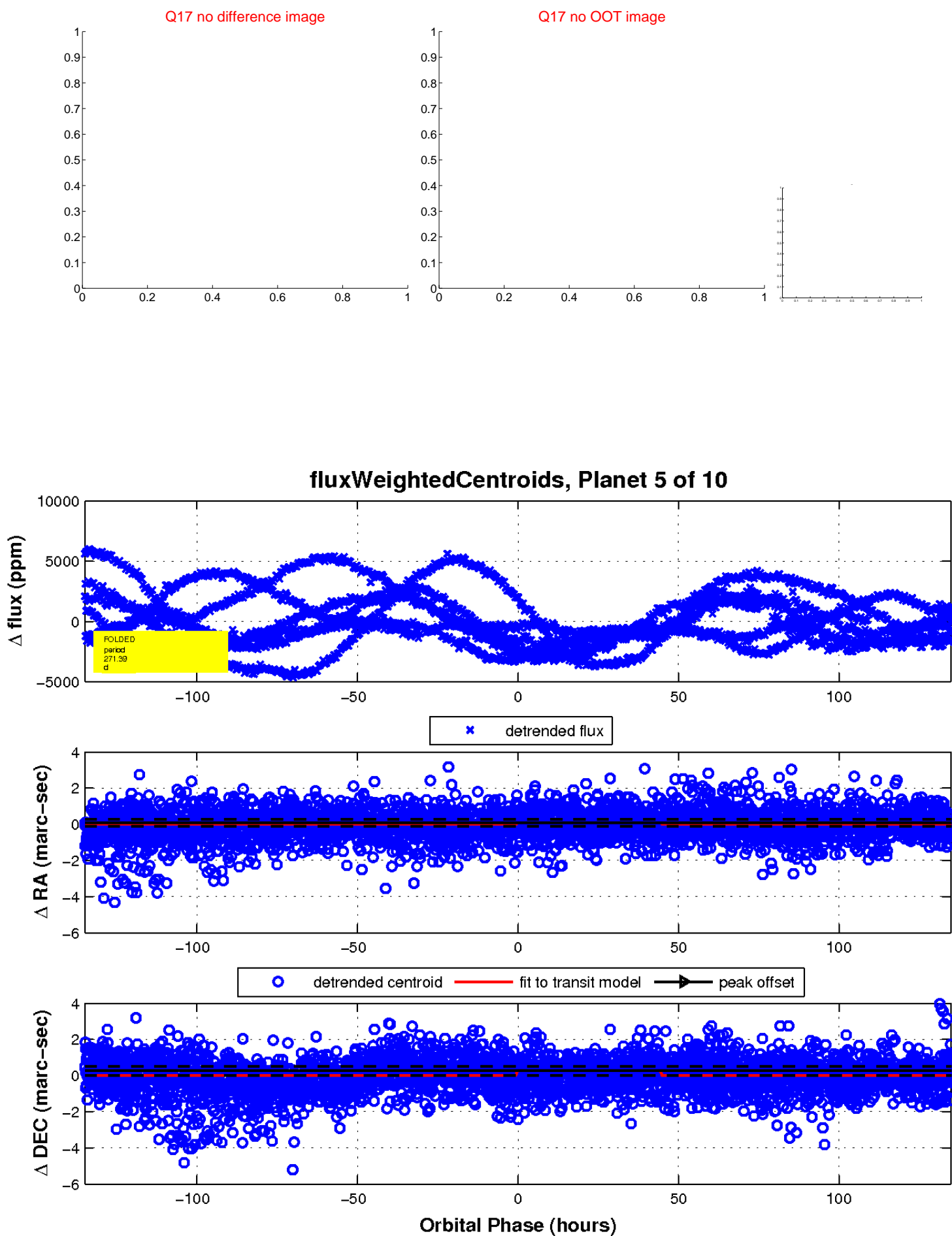
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

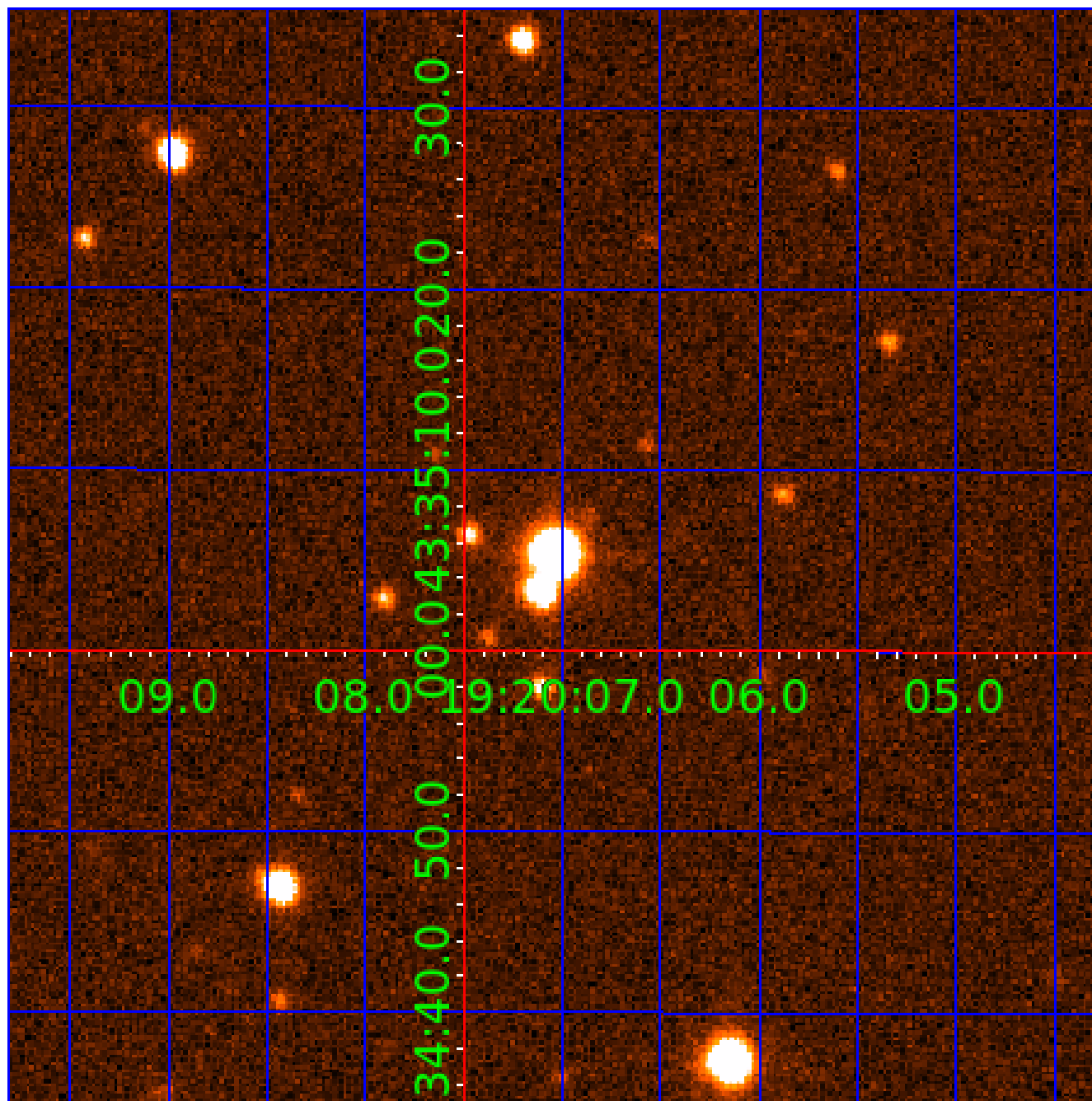


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007816999

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})
007816999-01	OBS	No	2.136986	132.767769	43.1	9.731	8.2	7.5	0.79	5159	0.55	430.37
007816999-02	OBS	No	93.206905	168.604896	220.5	3.296	14.0	3.5	0.79	5159	1.30	2.80
007816999-03	OBS	No	167.068223	149.790427	544.8	4.413	12.6	6.7	0.79	5159	2.29	1.29
007816999-04	OBS	No	139.746572	205.777922	193.8	6.194	12.3	2.9	0.79	5159	1.31	1.63
007816999-05	OBS	No	271.391733	142.572361	217.2	15.000	10.7	-1.0	0.79	5159	1.13	0.67
007816999-06	OBS	No	356.878727	481.792582	362.9	5.646	11.3	4.6	0.79	5159	2.01	0.47
007816999-08	OBS	No	184.487802	310.869972	253.1	10.500	10.4	-1.0	0.79	5159	1.22	1.13
007816999-09	OBS	No	489.387806	531.611891	588.2	6.569	9.1	6.0	0.79	5159	2.08	0.31
007816999-10	OBS	No	332.678790	313.662559	329.7	7.500	9.7	-1.0	0.79	5159	1.40	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

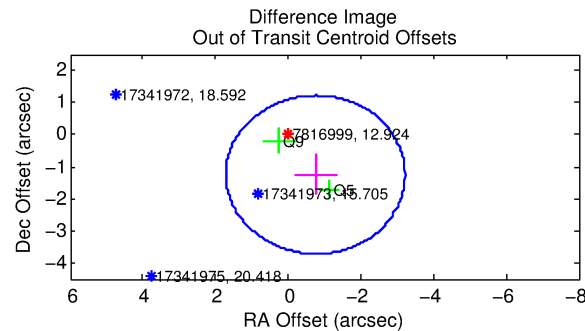
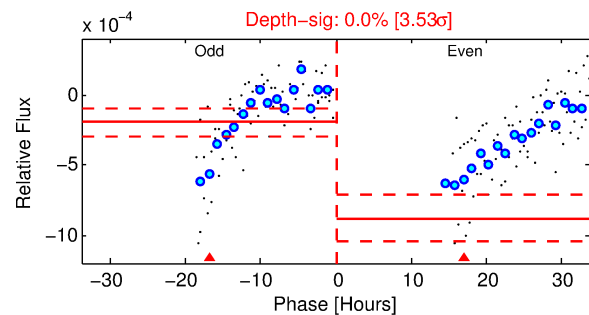
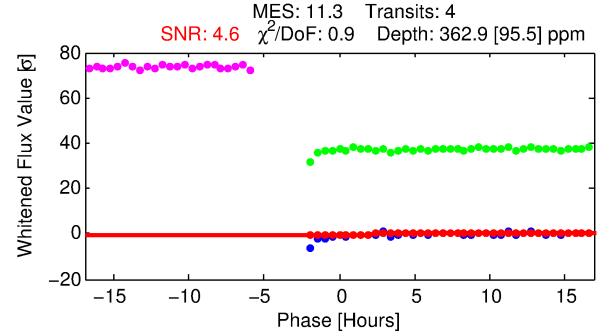
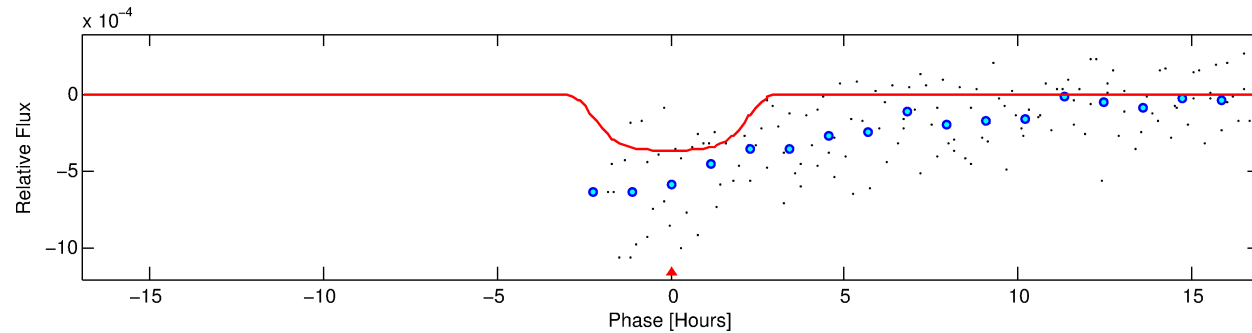
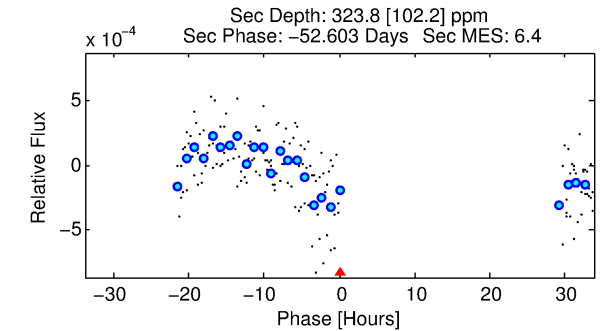
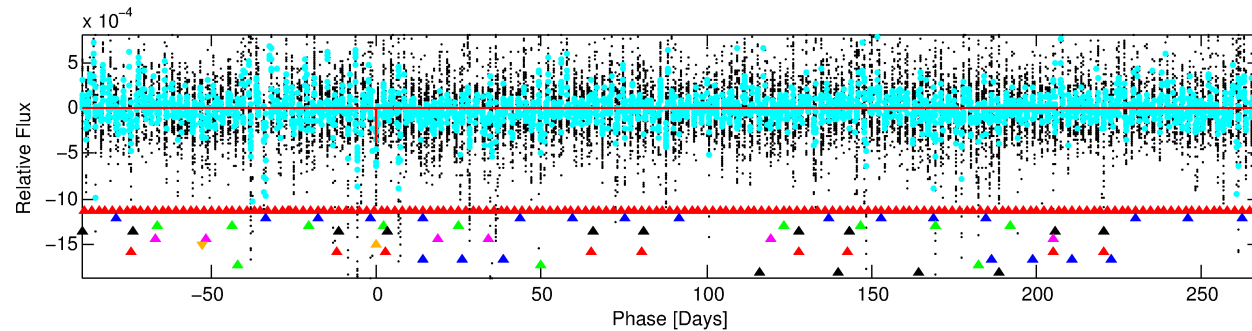
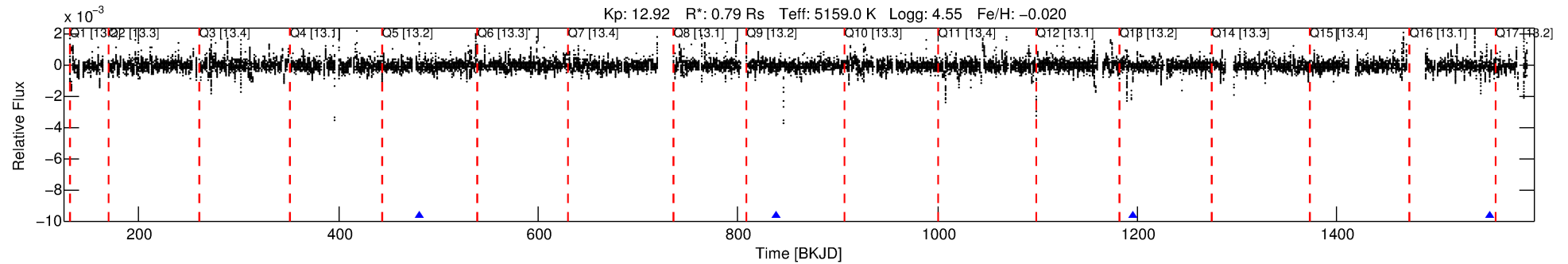
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-06

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 6 of 10 Period: 356.879 d



DV Fit Results:

Period = 356.87873 [0.00993] d
Epoch = 481.7926 [0.0195] BKJD
Rp/R* = 0.0233 [0.0041]
a/R* = 171.67 [78.64]
b = 0.96 [0.03]
Seff = 0.47 [0.10]
Teq = 211 [11] K
Rp = 2.01 [0.44] Re
a = 0.9200 [0.0990] AU
Ag = 37288.11 [18403.23] [2.03 σ]
Teffp = 4531 [560] K [7.71 σ]

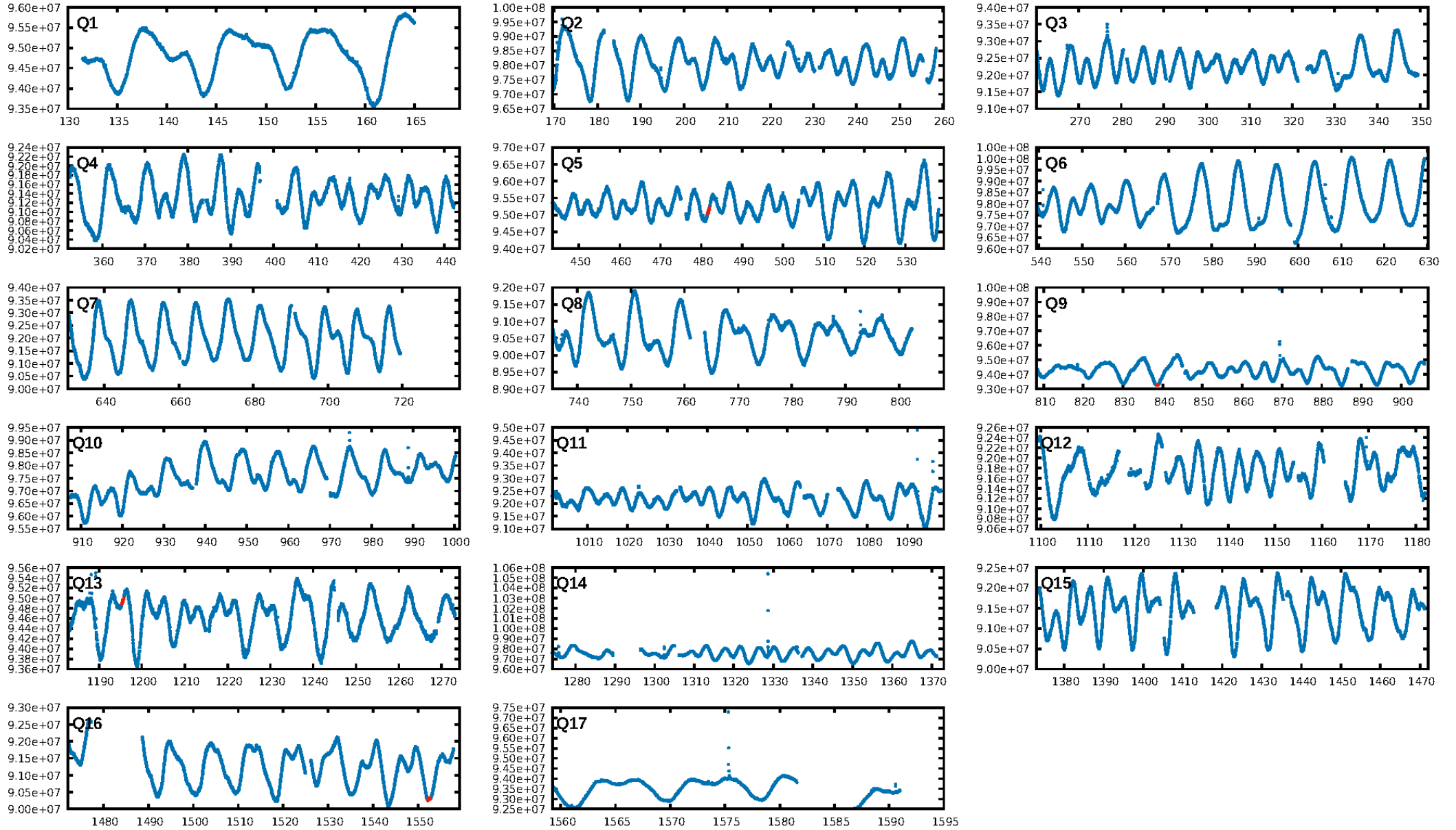
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [61.87 σ]
LongPeriod-sig: 100.0% [367.16 σ]
ModelChiSquare2-sig: 6.3%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 5.51e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -78.13
Centroid-sig: 53.6%
Centroid-so: 0.769 arcsec [0.59 σ]
OotOffset-rm: 1.457 arcsec [1.77 σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-rm: 1.309 arcsec [1.65 σ]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [4/4]

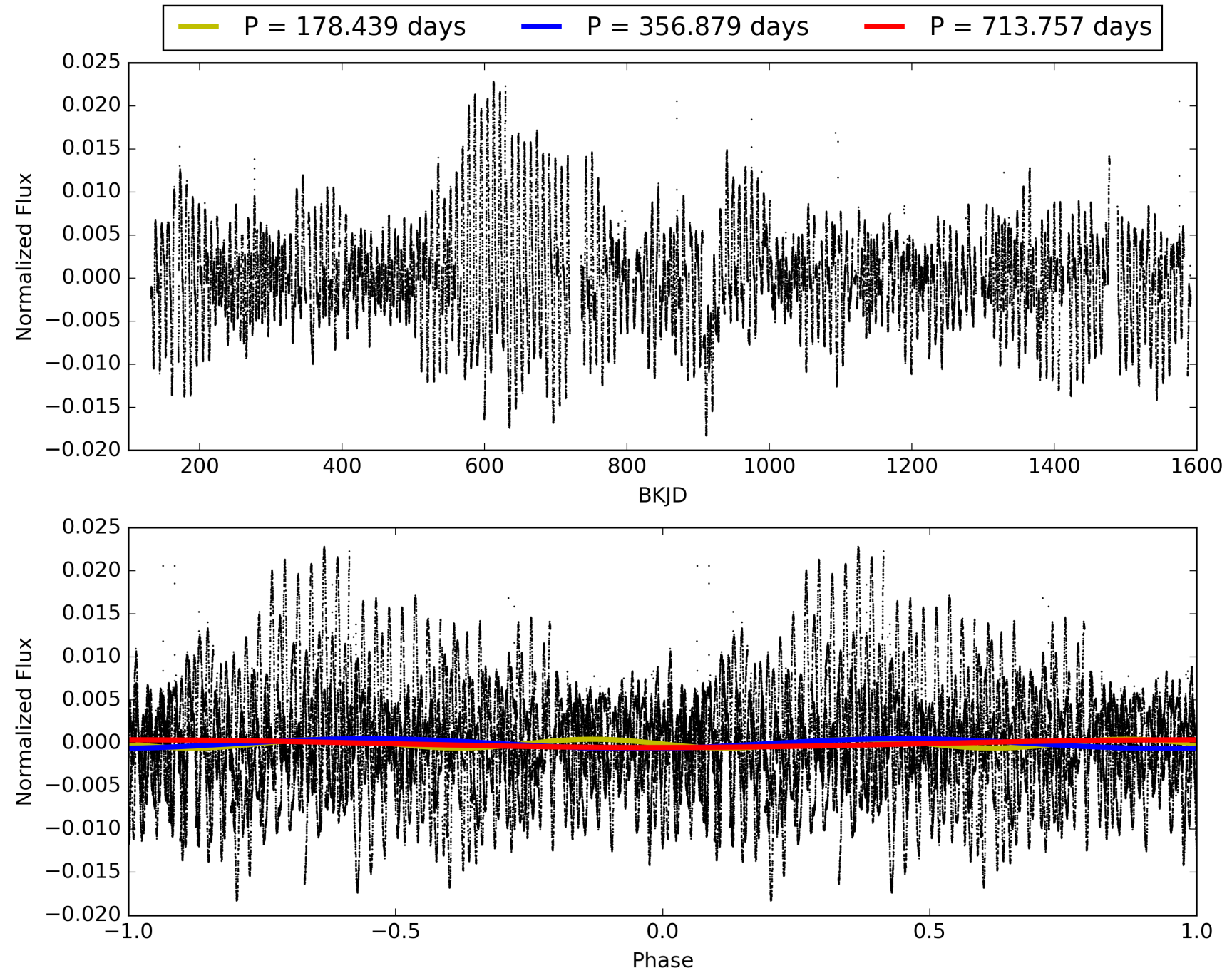
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:41:39 Z

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

TCE 007816999-06, PDC Light Curves

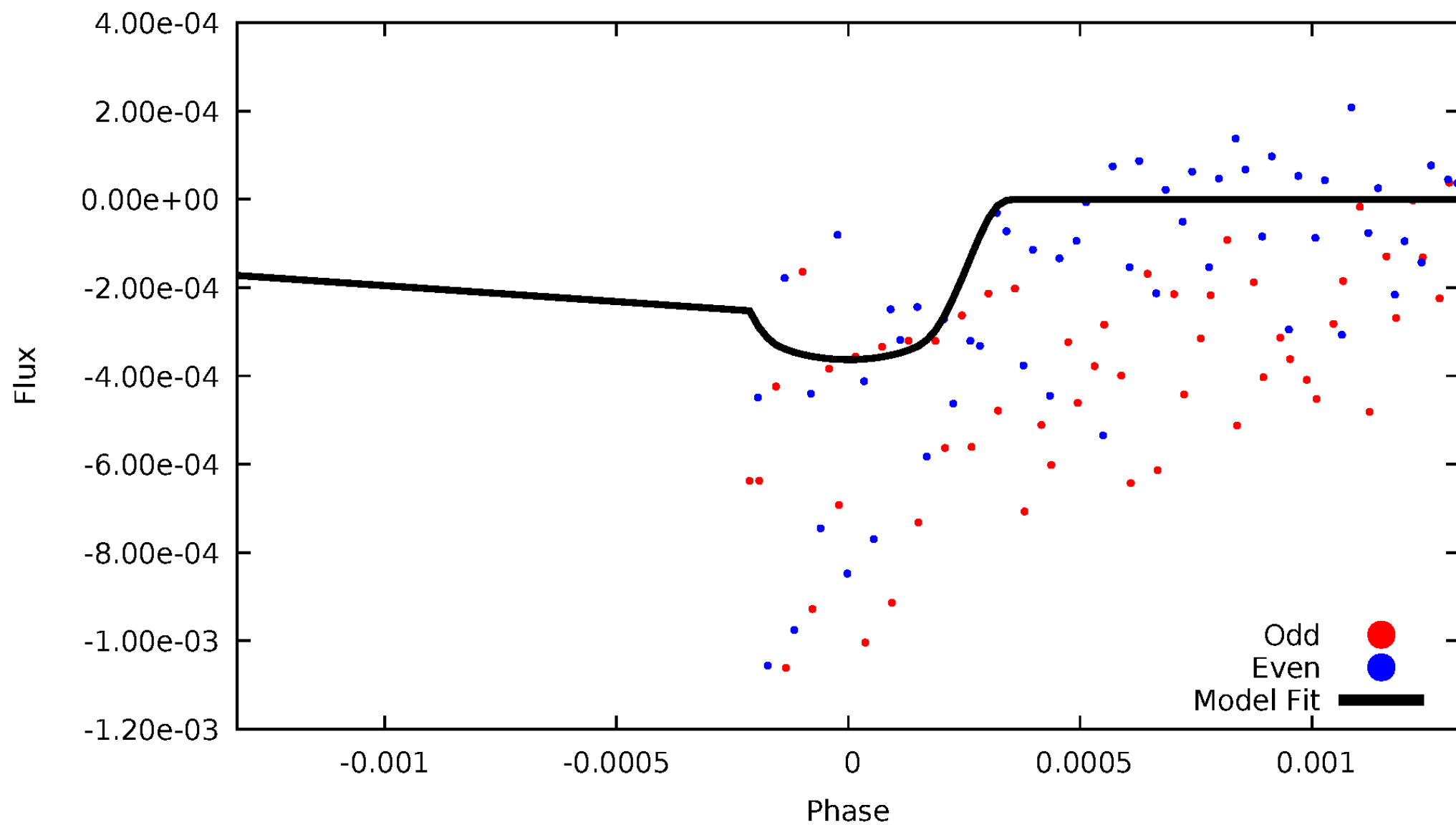


TCE 007816999-06



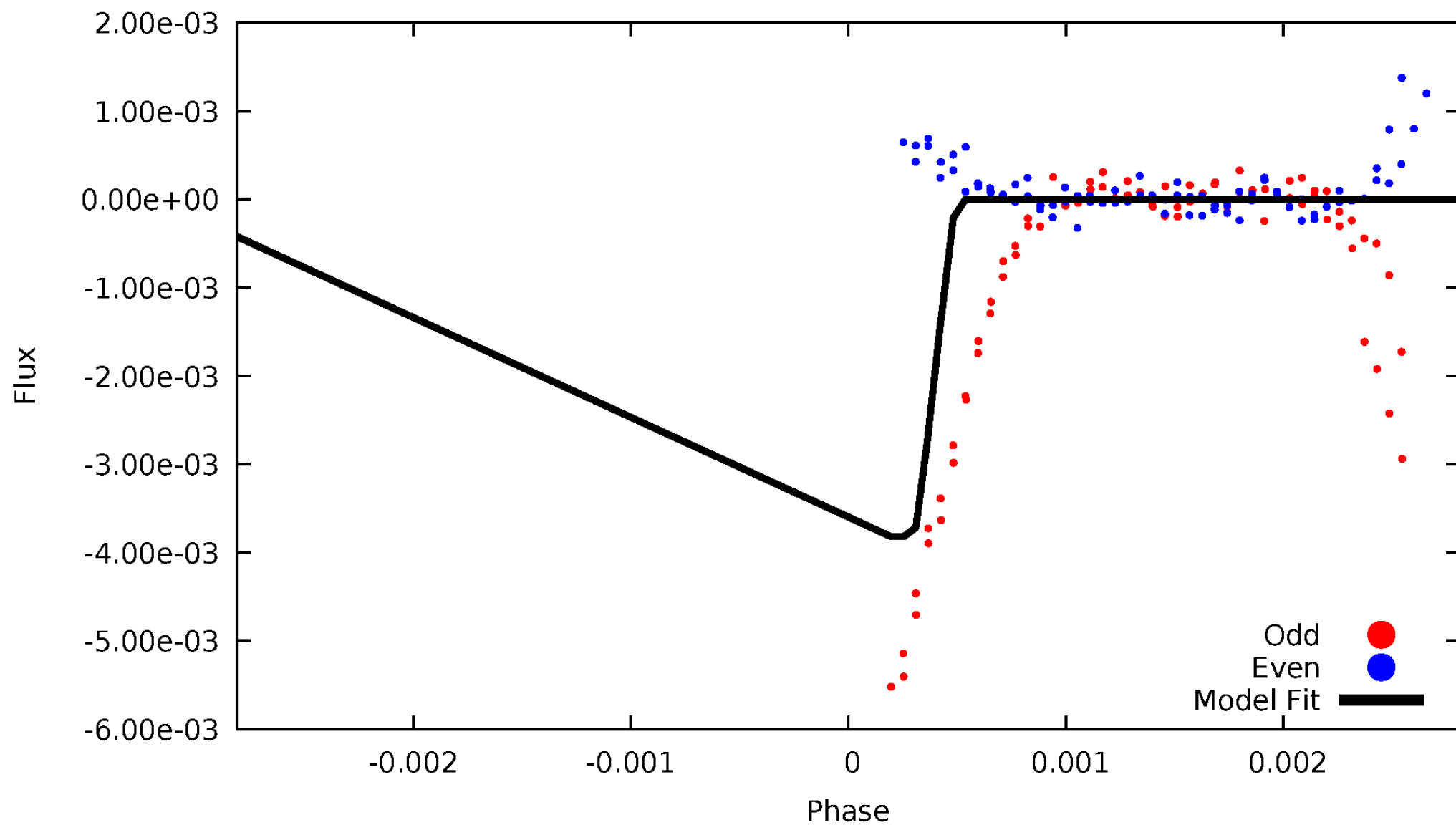
DV Odd/Even

TCE 007816999-06



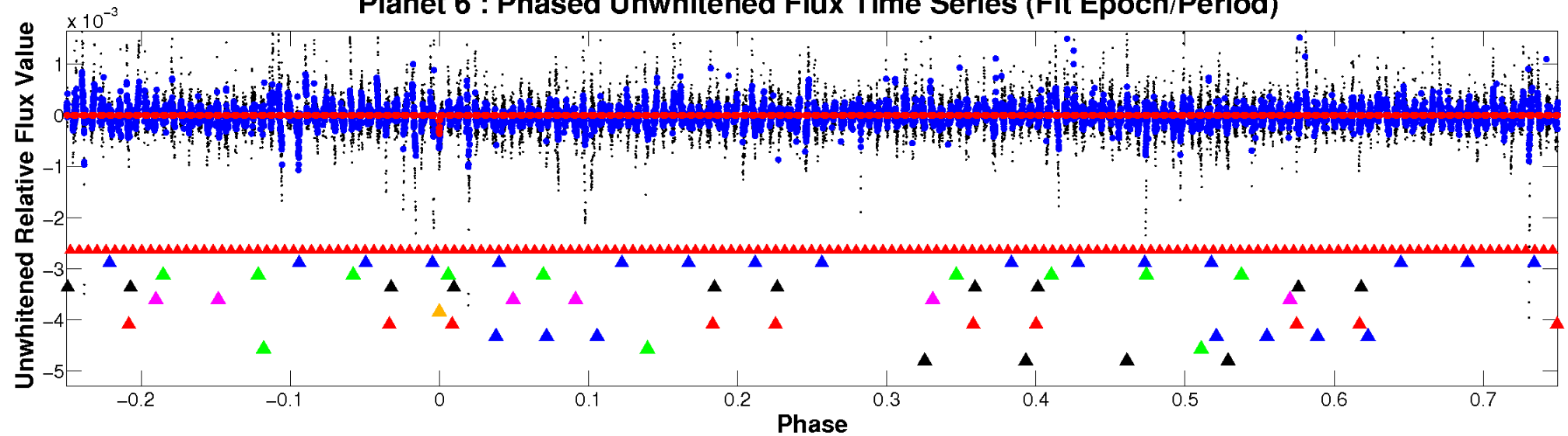
ALT Odd/Even

TCE 007816999-06

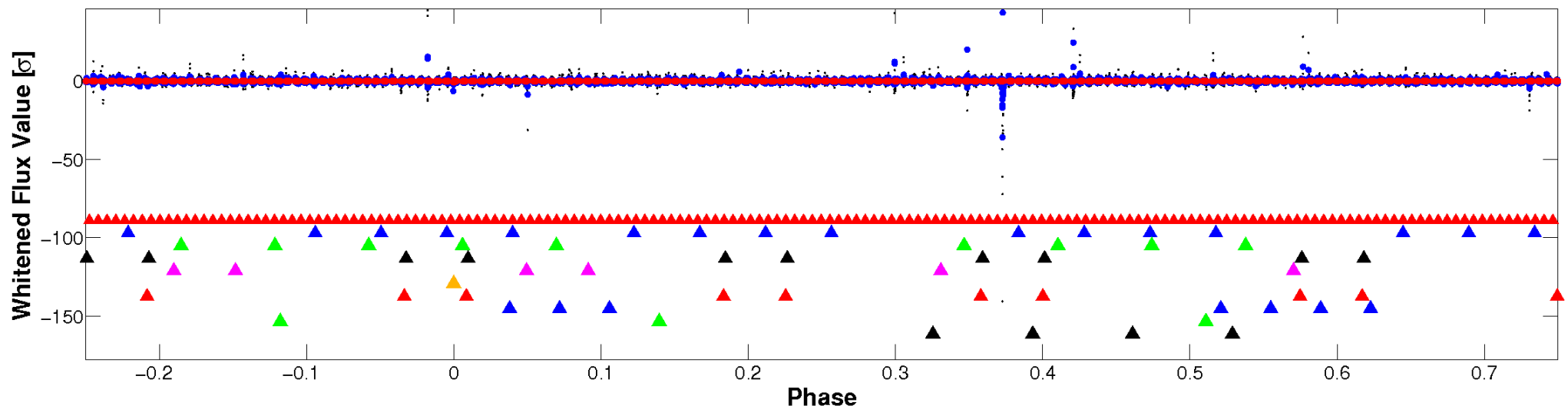


Non-Whitened Vs. Whitened Light Curve

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

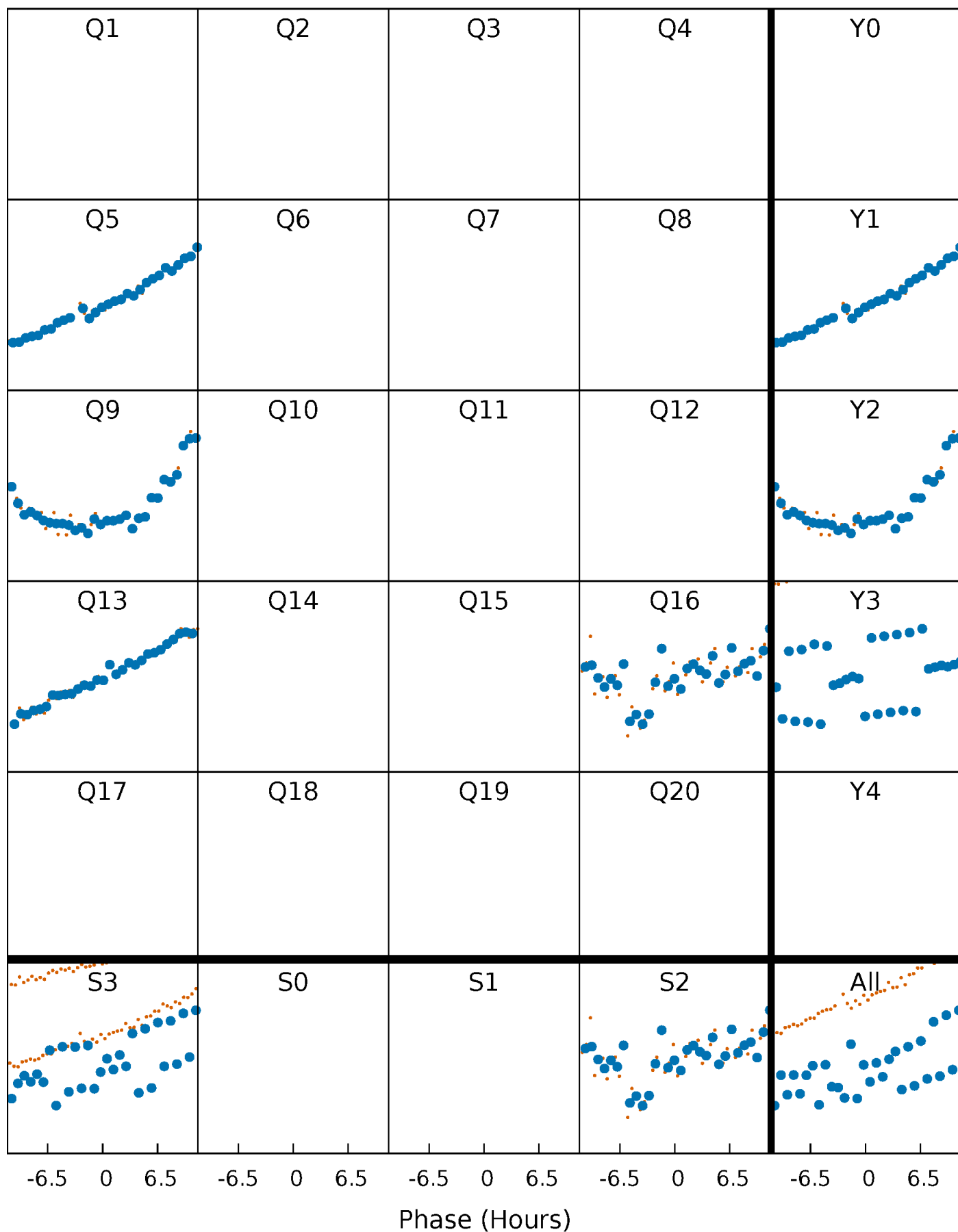


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



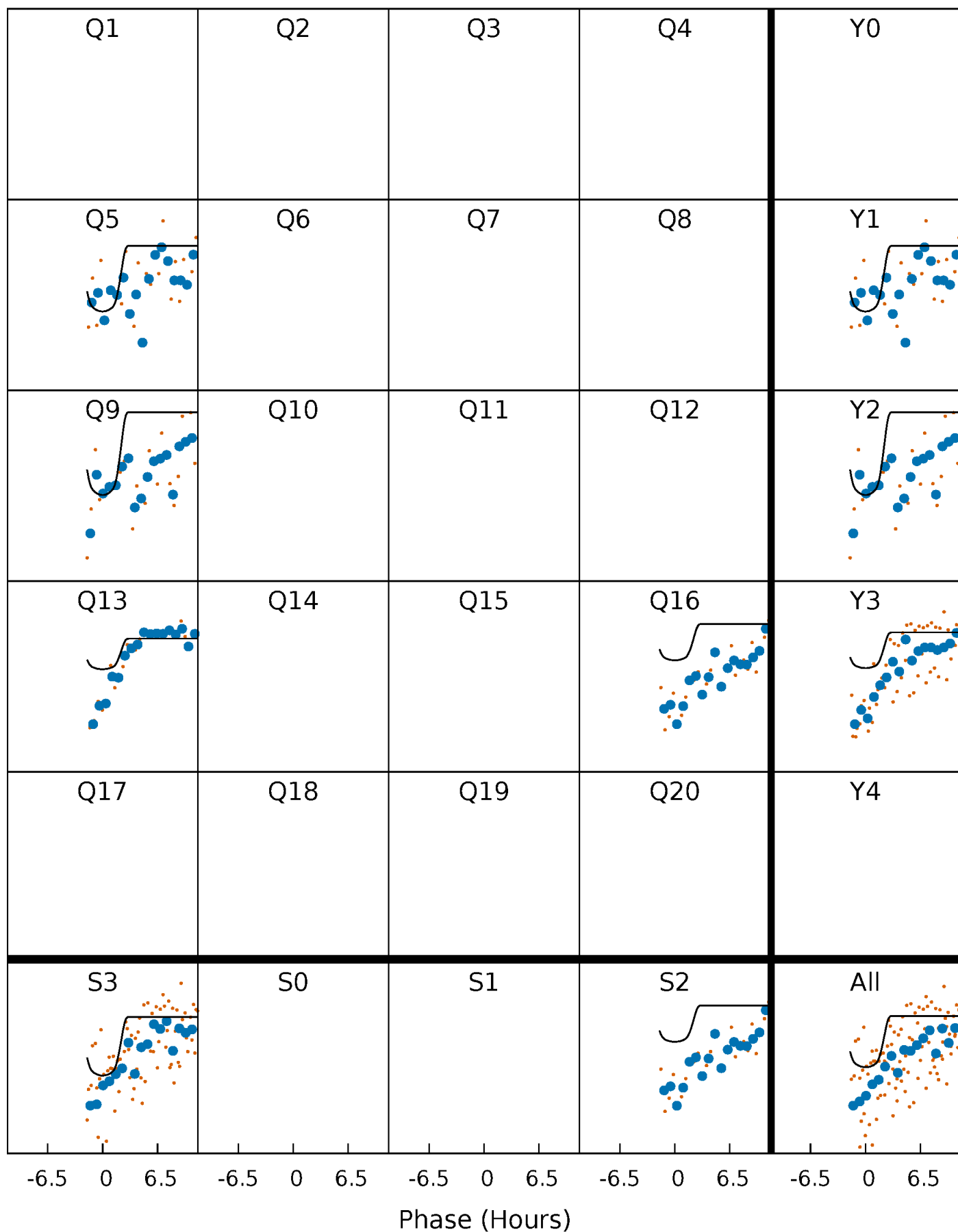
PDC Quarter-Phased Transit Curves

TCE 007816999-06 $P=356.878727$ Days $T_0=481.792582$ (BKJD)



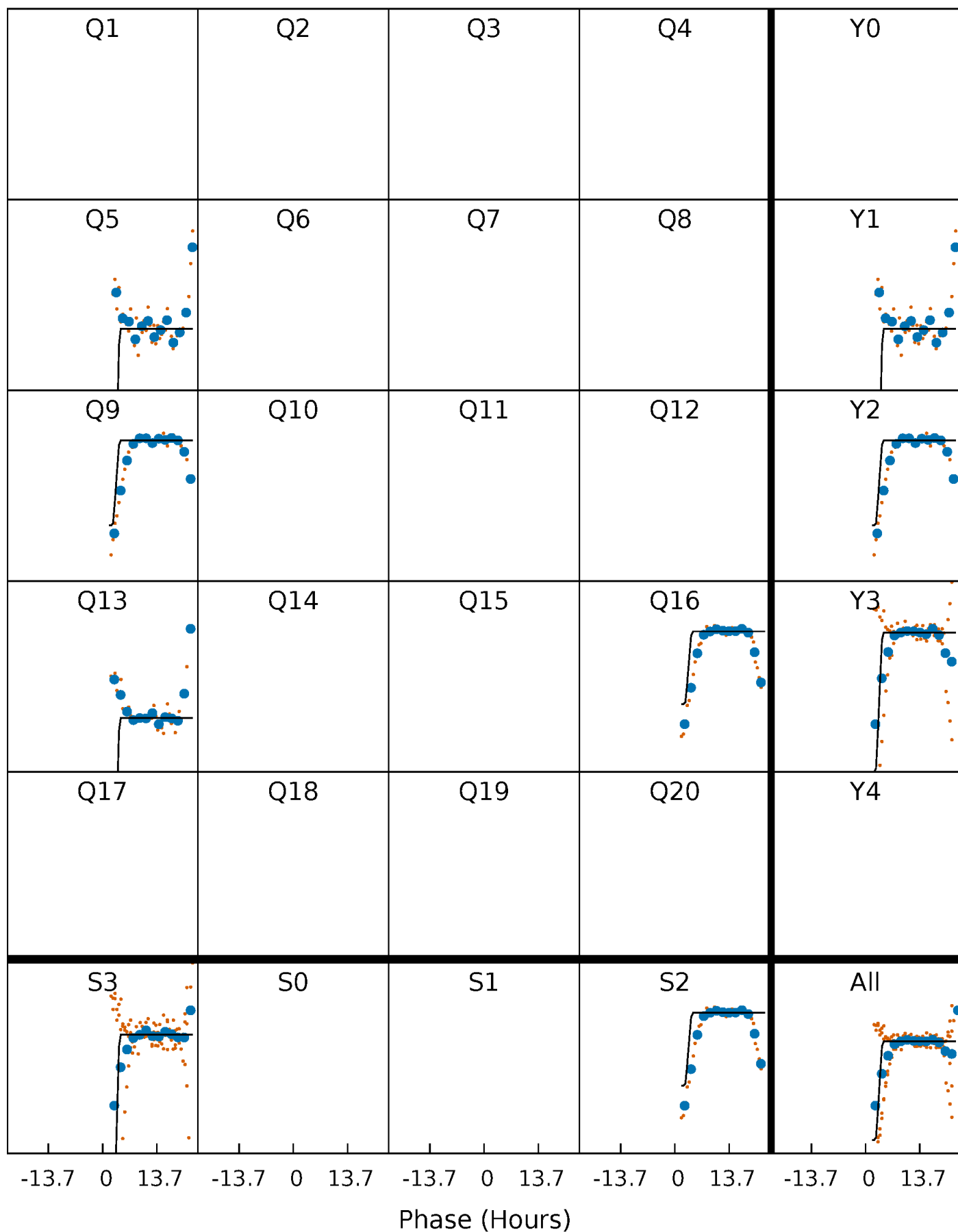
DV Quarter-Phased Transit Curves

TCE 007816999-06 P=356.878727 Days $T_0=481.792582$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

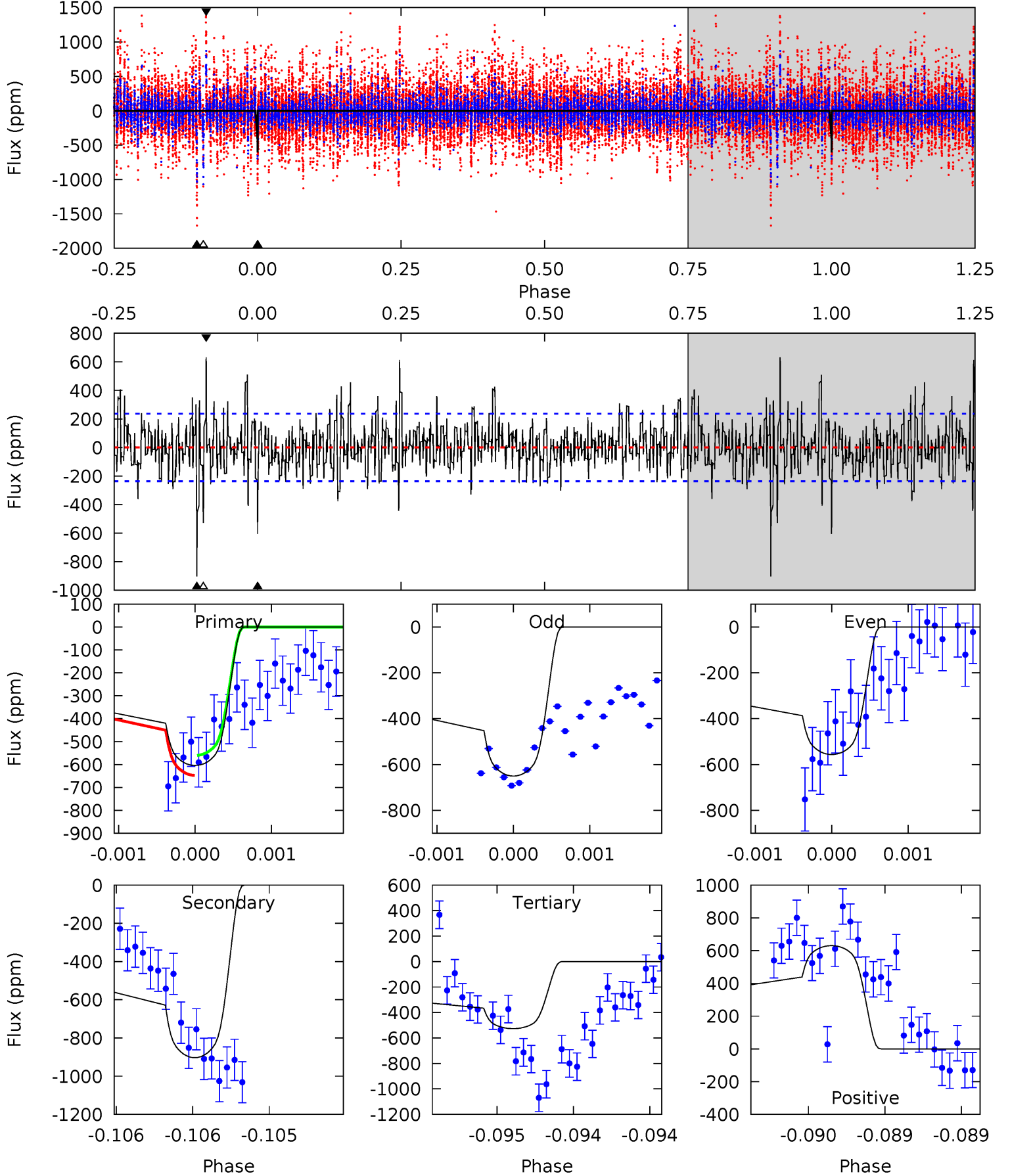
TCE 007816999-06 P=356.892412 Days $T_0=481.612697$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-06, P = 356.878727 Days, E = 124.913855 Days

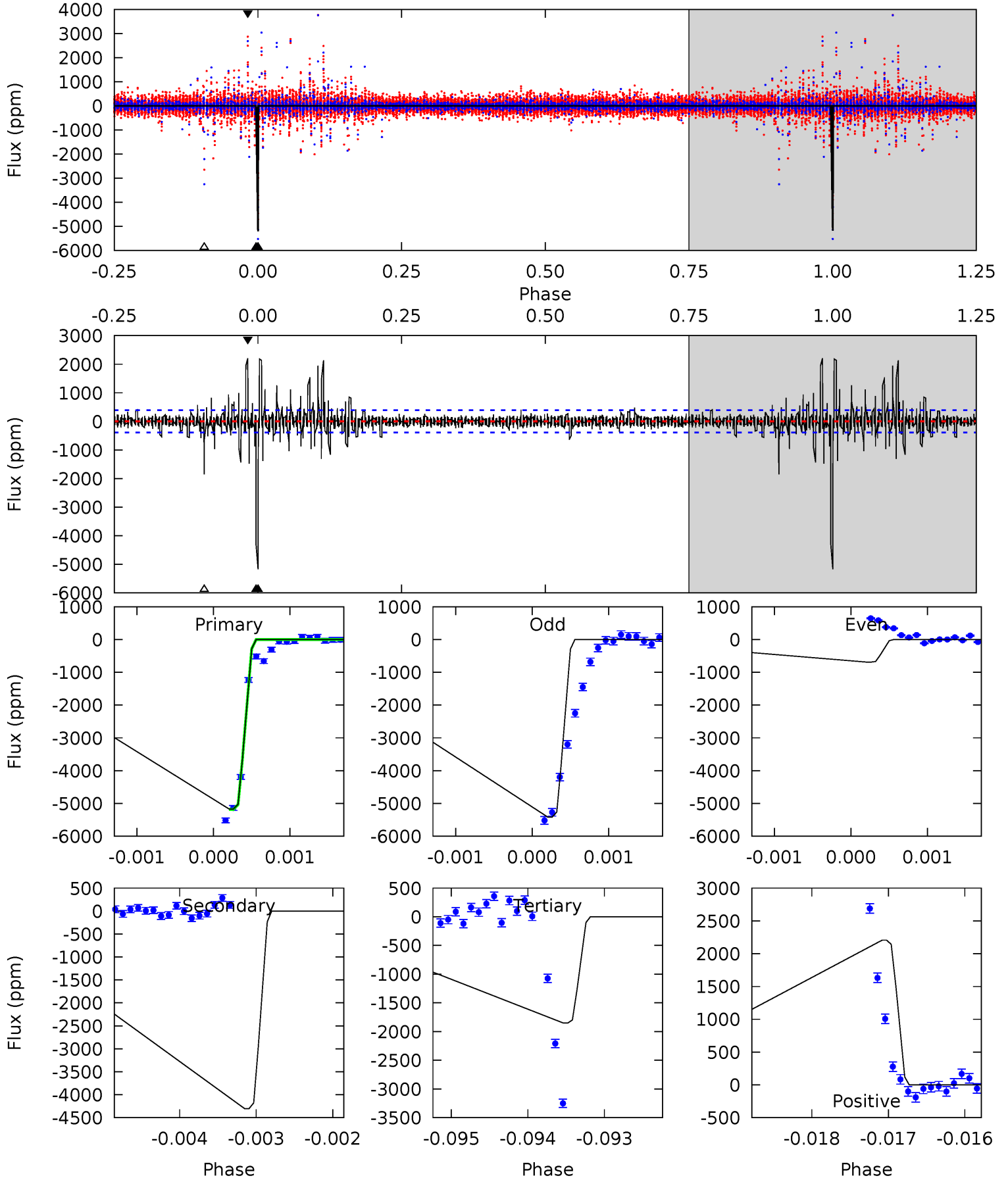
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	21.2	12.4	14.8	5.56	3.45	2.81	1.81	-0.62	8.82	6.39	0.89	1.02	0.41	0.99



Alt Model-Shift Uniqueness Test

007816999-06, P = 356.892412 Days, E = 124.720285 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
72.1	60.0	25.8	30.8	5.46	3.30	1.87	46.3	41.3	34.2	29.2	39.8	1.02	0.30	0



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-903 ± 43	$2.04^{+0.39}_{-0.37}$	296^{+14}_{-13}	5788^{+629}_{-461}	101746^{+47037}_{-29860}
Alt.	-4304 ± 72	$5.37^{+0.52}_{-0.49}$	297^{+13}_{-13}	5323^{+262}_{-239}	69512^{+13558}_{-10878}

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

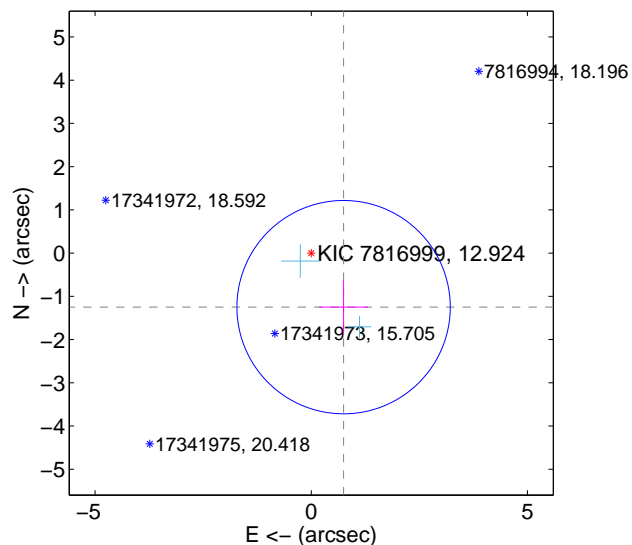
Supplemental centroid analysis for 007816999-06. Kepler magnitude: 12.92. Transit SNR 4.58

There are 2 quarters with good PRF difference image offsets

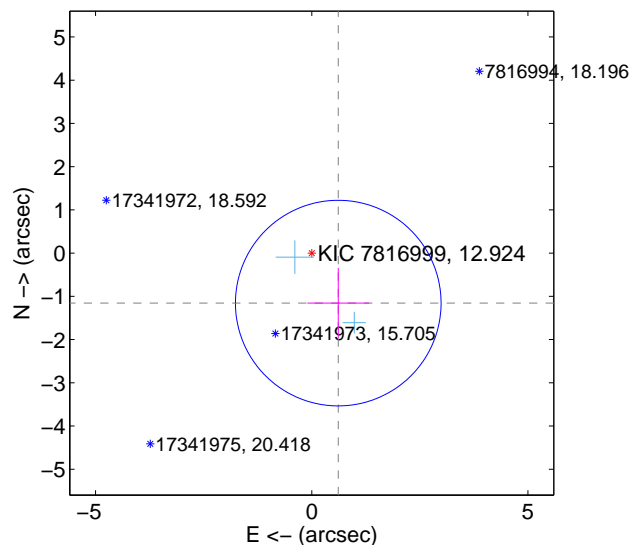
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.457 ± 0.823	1.77	-0.748 ± 0.564	-1.250 ± 0.624
PRF-fit source offset from KIC position	1.309 ± 0.793	1.65	-0.614 ± 0.715	-1.157 ± 0.813
photometric centroid source offset	0.77 ± 1.30	0.59	-0.76 ± 1.30	0.08 ± 1.30

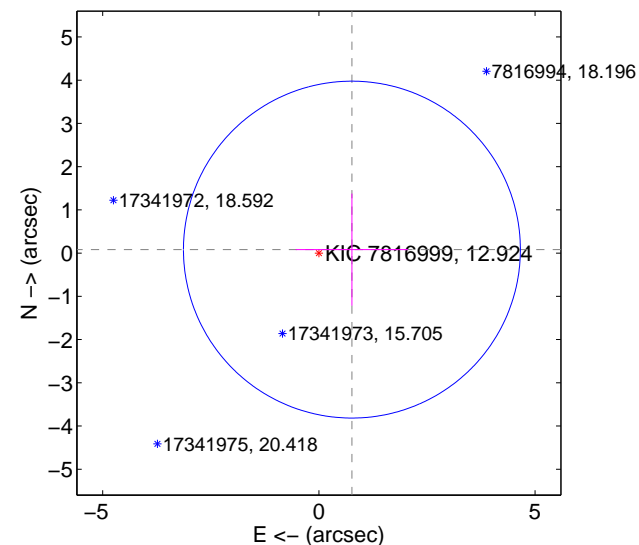
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

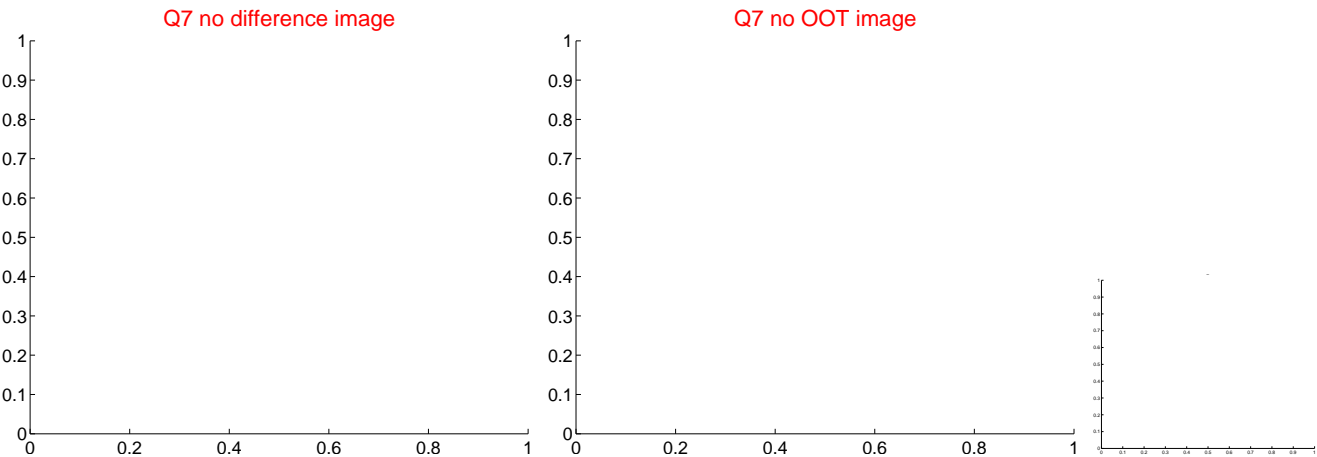
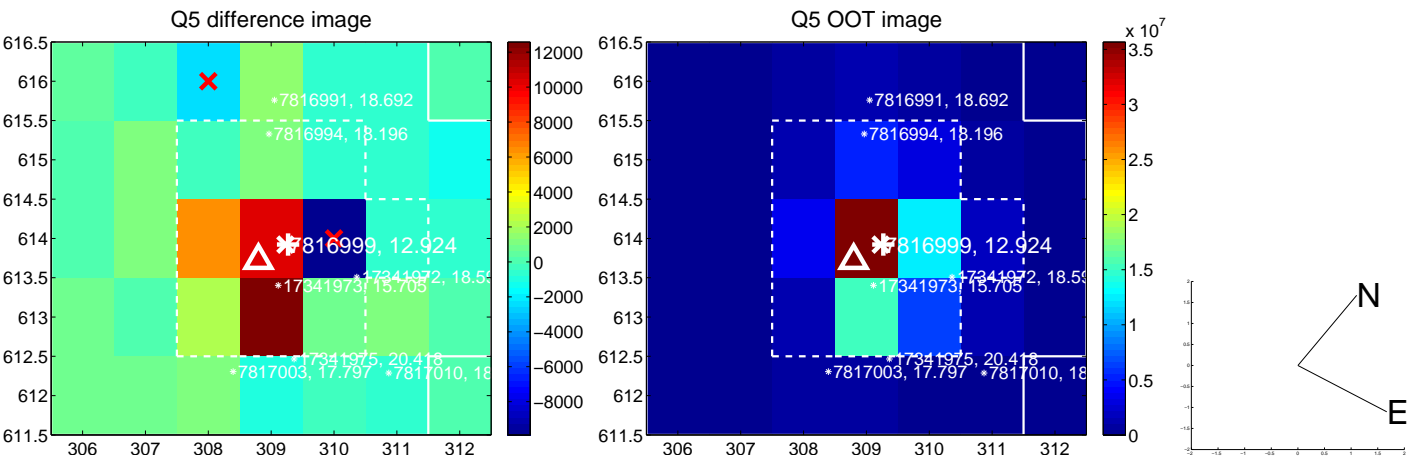


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

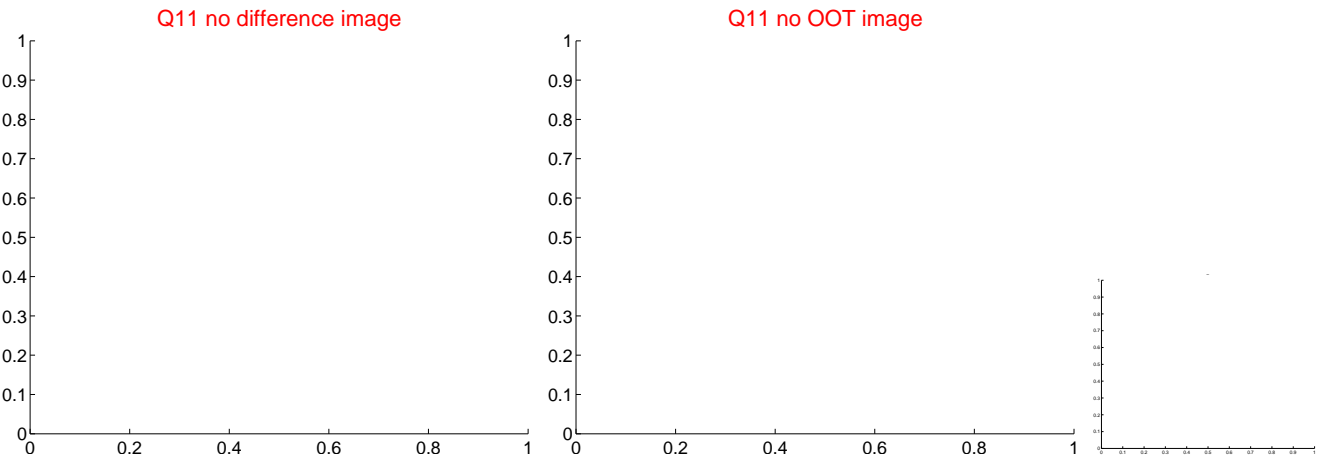
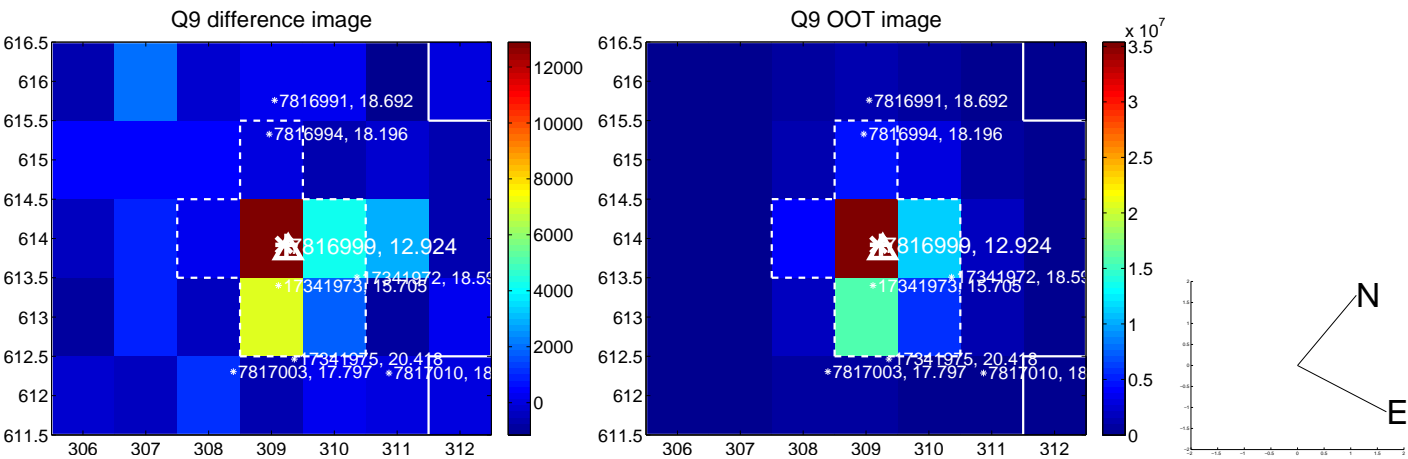
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



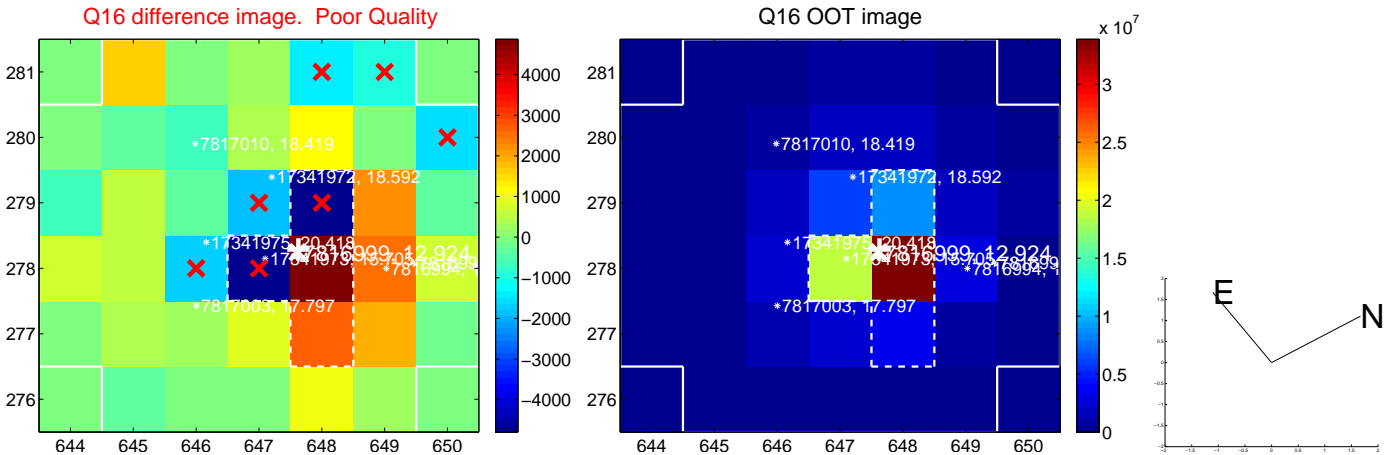
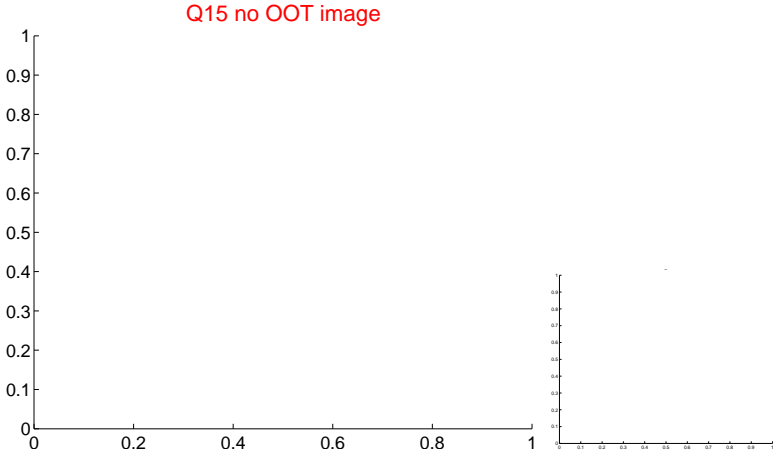
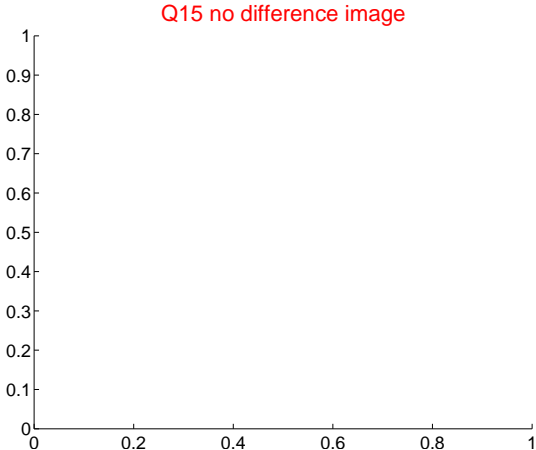
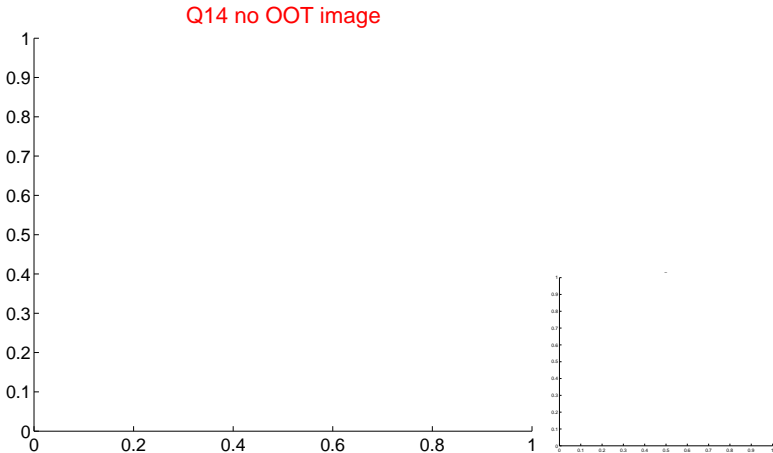
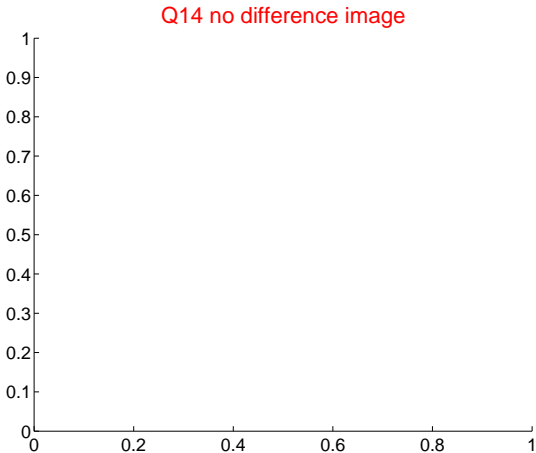
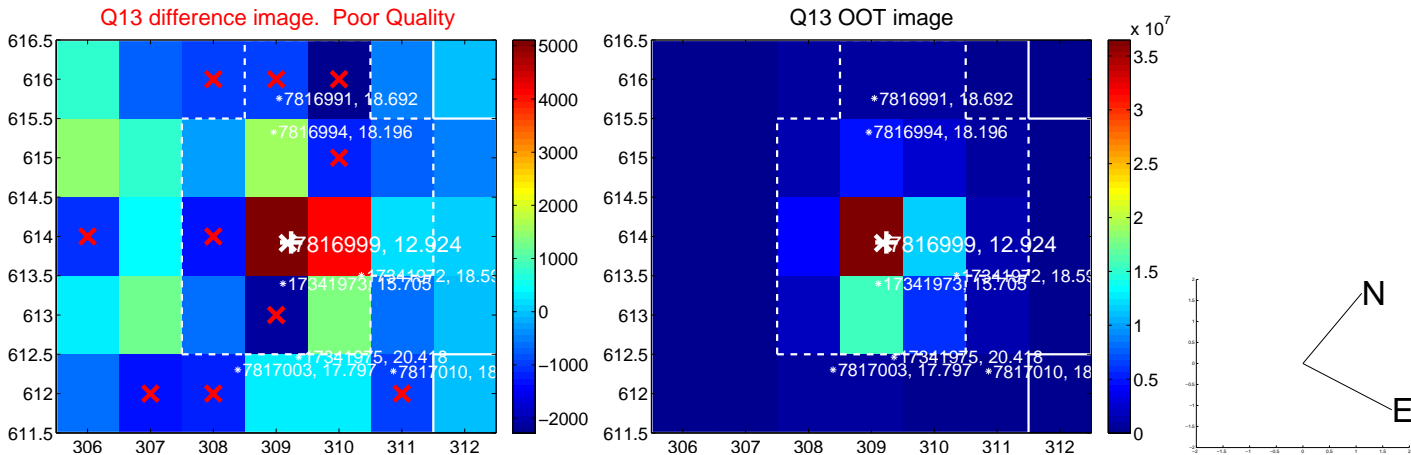
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



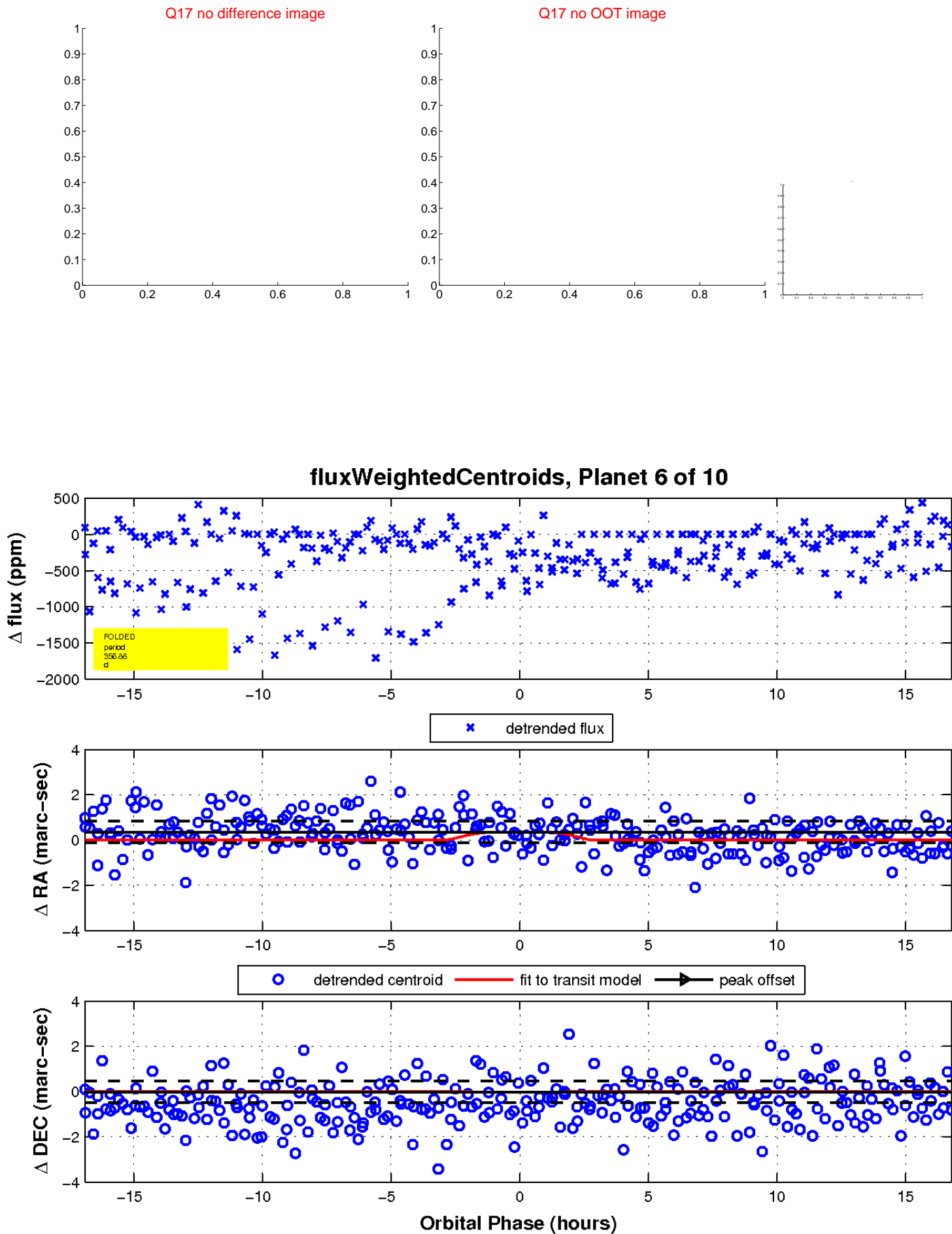
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

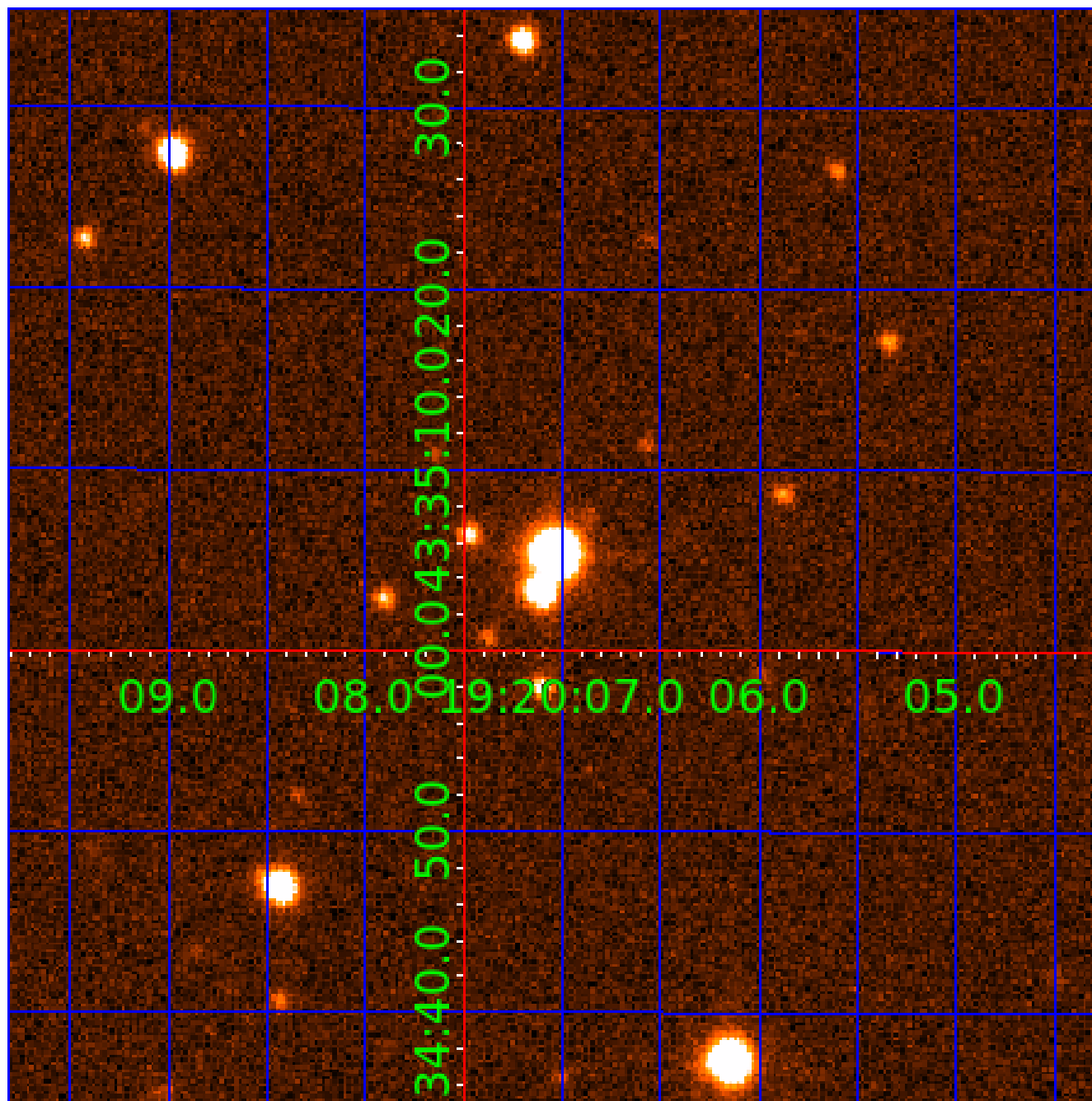


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007816999

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})
007816999-01	OBS	No	2.136986	132.767769	43.1	9.731	8.2	7.5	0.79	5159	0.55	430.37
007816999-02	OBS	No	93.206905	168.604896	220.5	3.296	14.0	3.5	0.79	5159	1.30	2.80
007816999-03	OBS	No	167.068223	149.790427	544.8	4.413	12.6	6.7	0.79	5159	2.29	1.29
007816999-04	OBS	No	139.746572	205.777922	193.8	6.194	12.3	2.9	0.79	5159	1.31	1.63
007816999-05	OBS	No	271.391733	142.572361	217.2	15.000	10.7	-1.0	0.79	5159	1.13	0.67
007816999-06	OBS	No	356.878727	481.792582	362.9	5.646	11.3	4.6	0.79	5159	2.01	0.47
007816999-08	OBS	No	184.487802	310.869972	253.1	10.500	10.4	-1.0	0.79	5159	1.22	1.13
007816999-09	OBS	No	489.387806	531.611891	588.2	6.569	9.1	6.0	0.79	5159	2.08	0.31
007816999-10	OBS	No	332.678790	313.662559	329.7	7.500	9.7	-1.0	0.79	5159	1.40	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

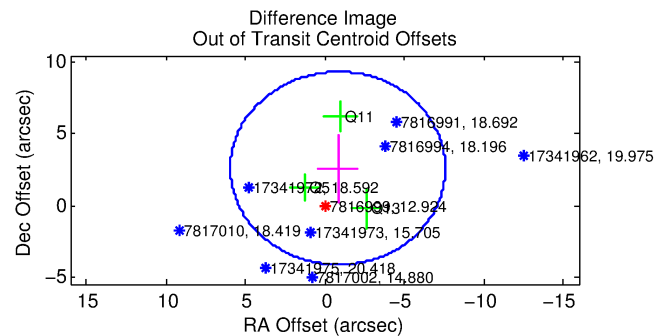
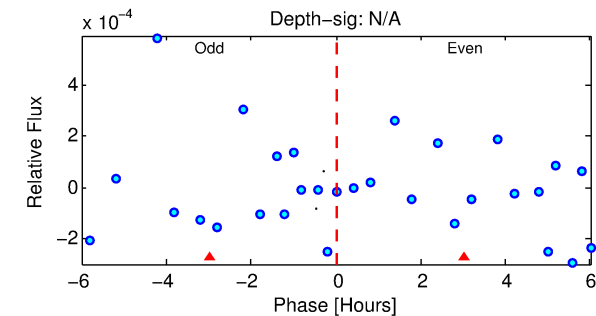
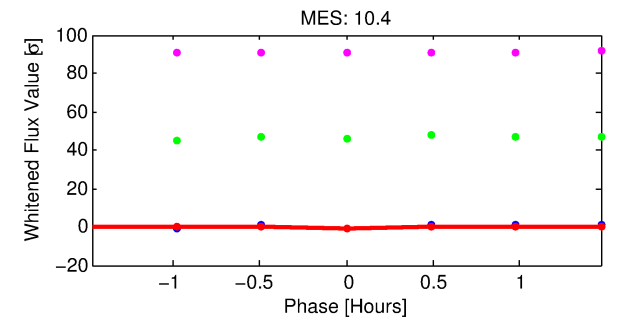
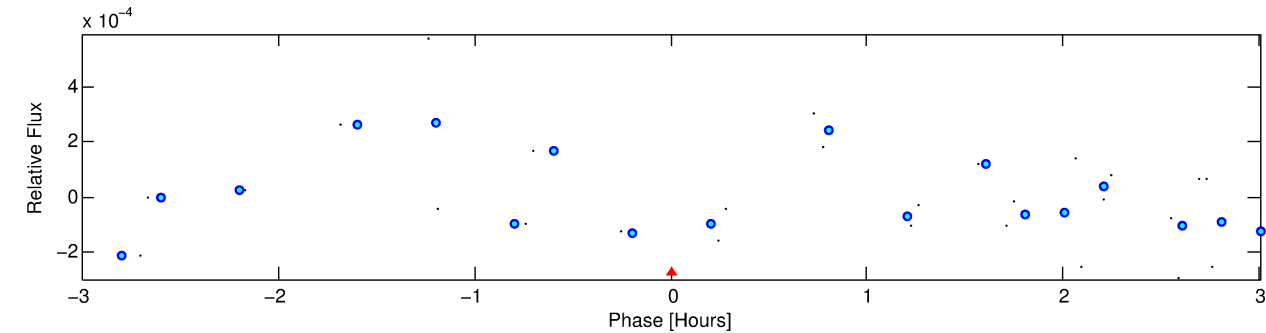
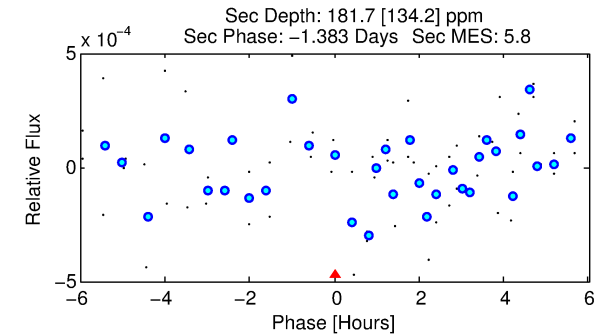
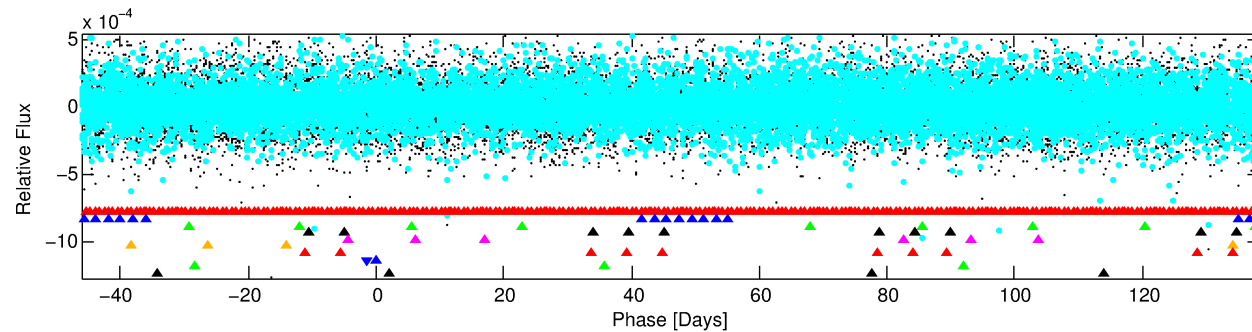
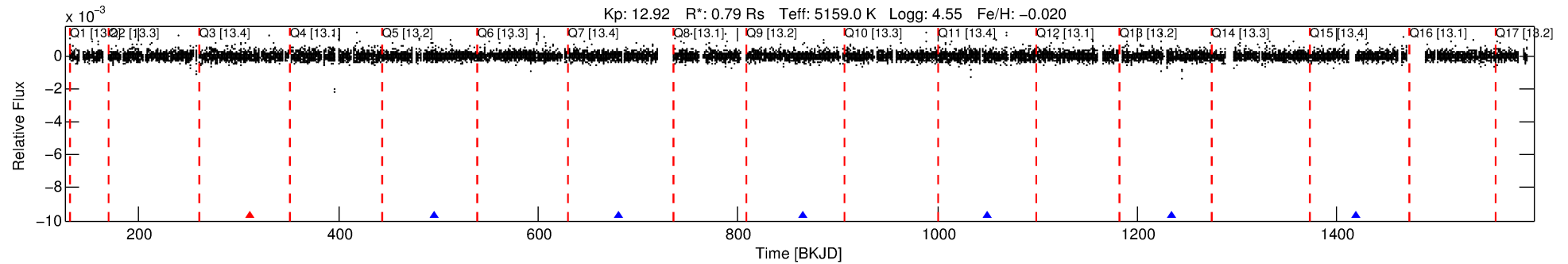
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-08

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 8 of 10 Period: 184.488 d



TPS TCE Results:

Period = 184.48780 d
Epoch = 310.8700 BKJD

DV fit results are unavailable

DV Diagnostic Results:

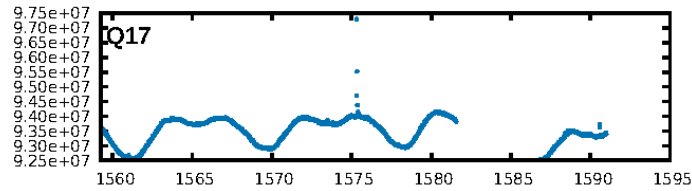
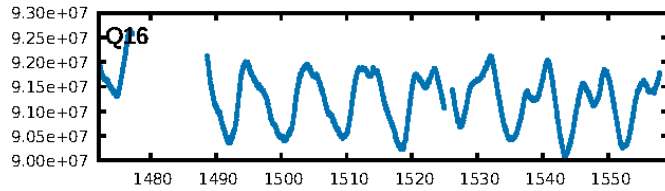
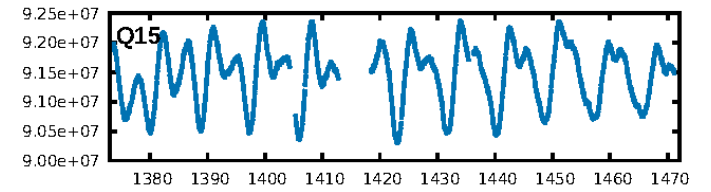
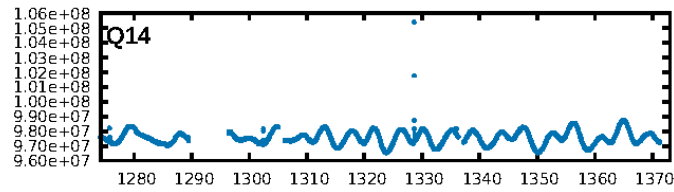
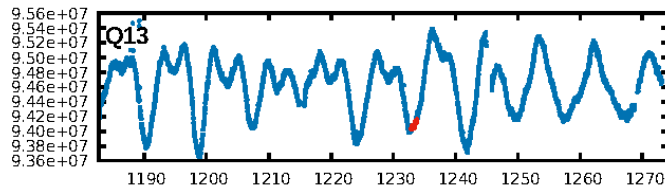
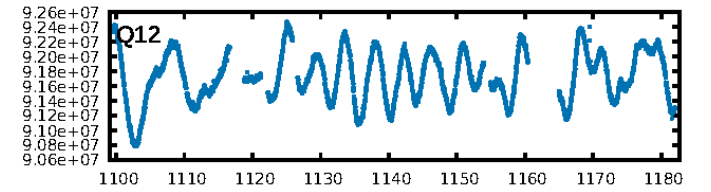
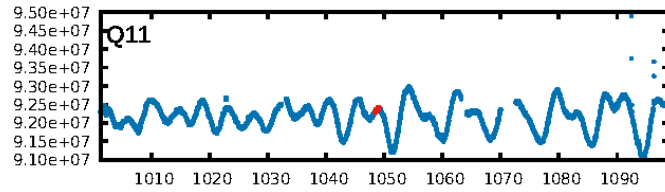
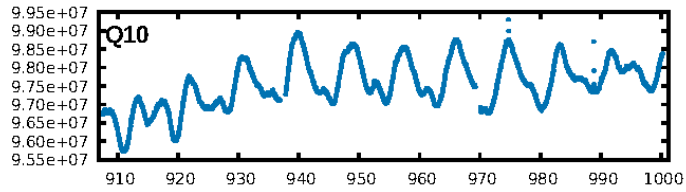
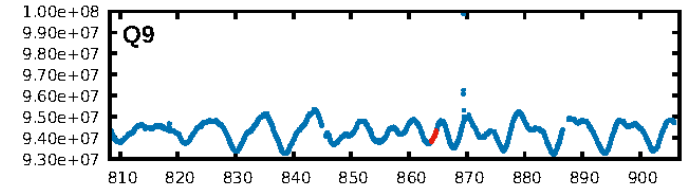
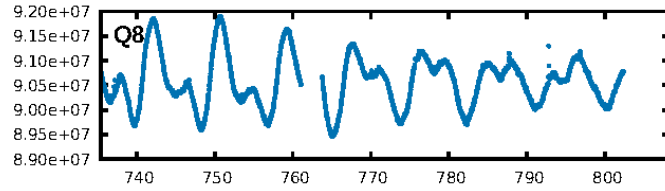
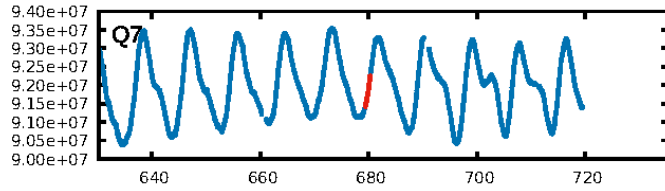
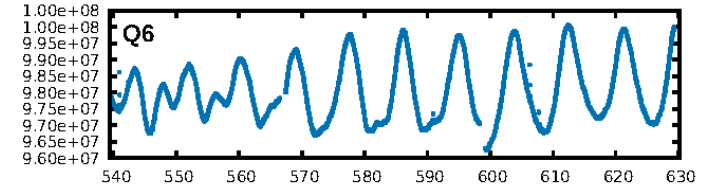
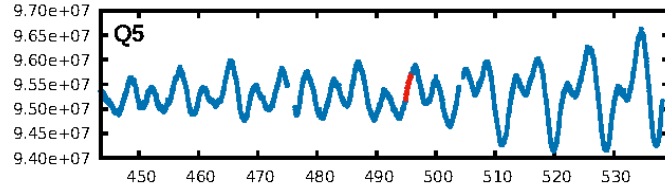
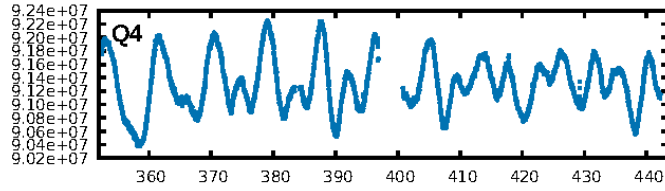
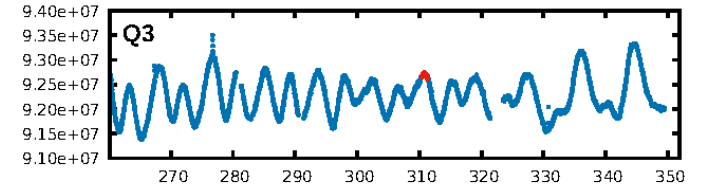
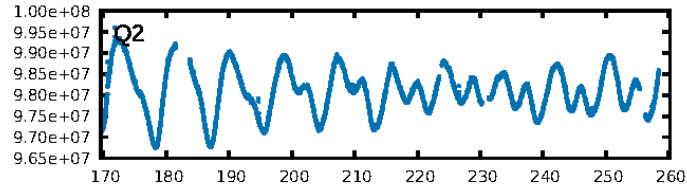
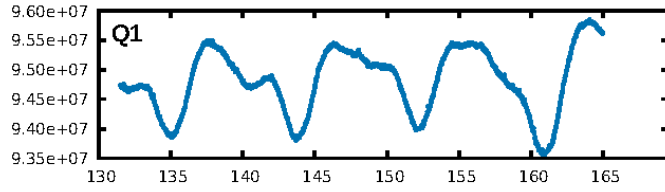
ShortPeriod-sig: 100.0% [36.71 σ]
LongPeriod-sig: 100.0% [113.91 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.55e-09
RollingBand-fgt: 0.50 [1/2]
GhostDiagnostic-chr: 2.599

Centroid-sig: 67.4%
Centroid-so: 2.103 arcsec [0.50 σ]
OotOffset-rm: 2.733 arcsec [1.21 σ]
KicOffset-rm: 2.785 arcsec [1.21 σ]
OotOffset-st: 0/1/0/2 [3]
KicOffset-st: 0/1/0/2 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.50 [2/4]

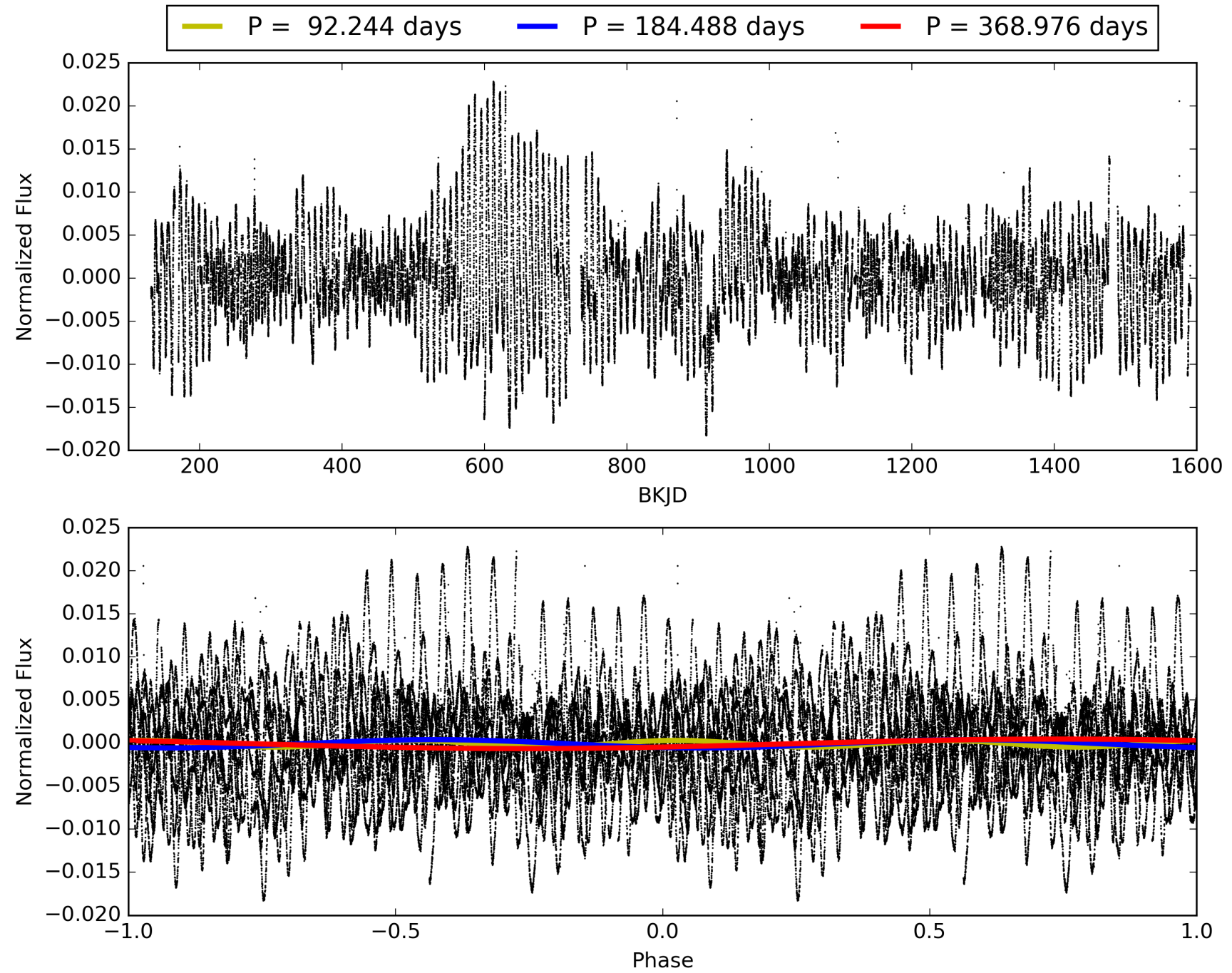
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:41:55 Z

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

TCE 007816999-08, PDC Light Curves

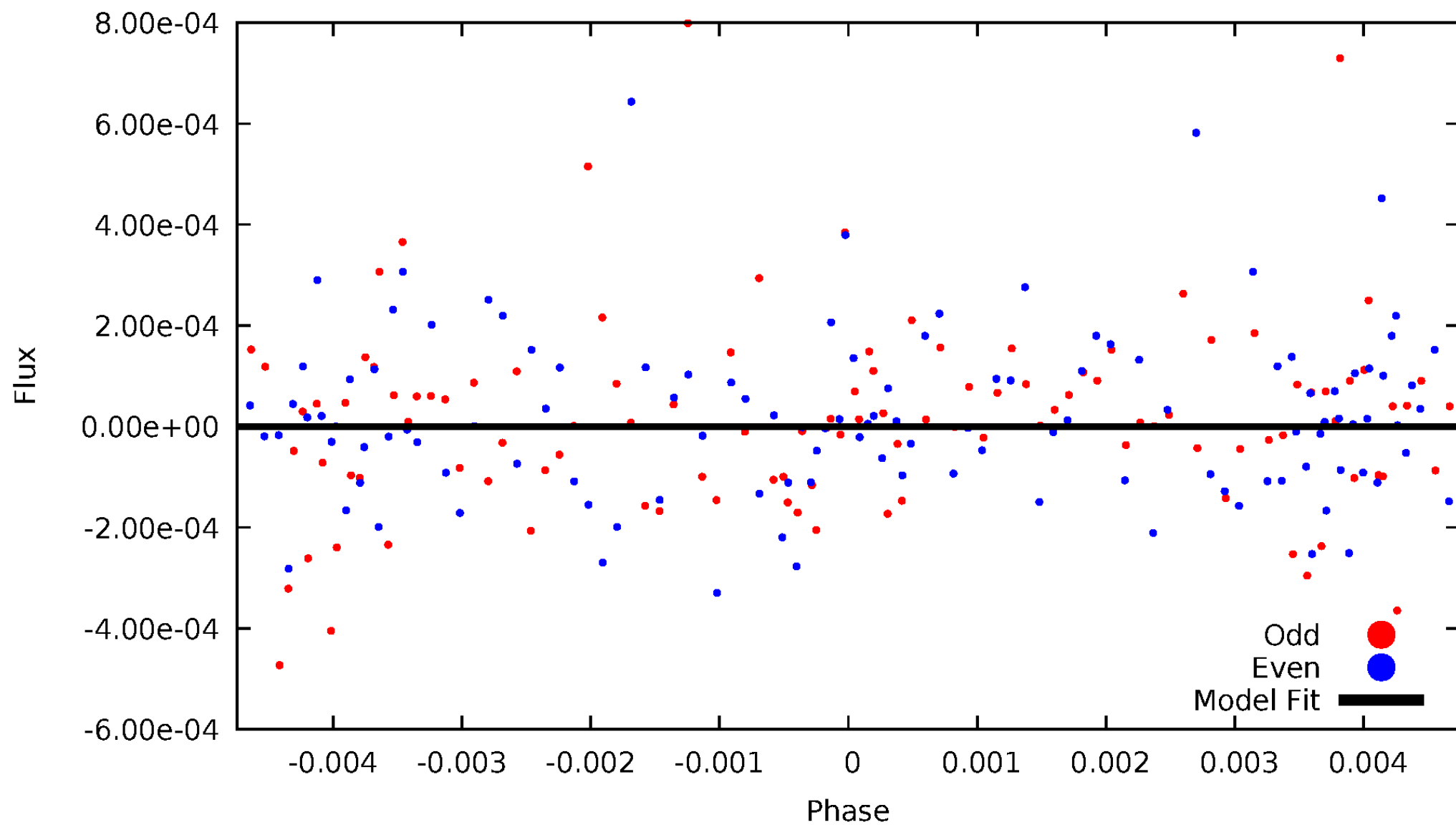


TCE 007816999-08



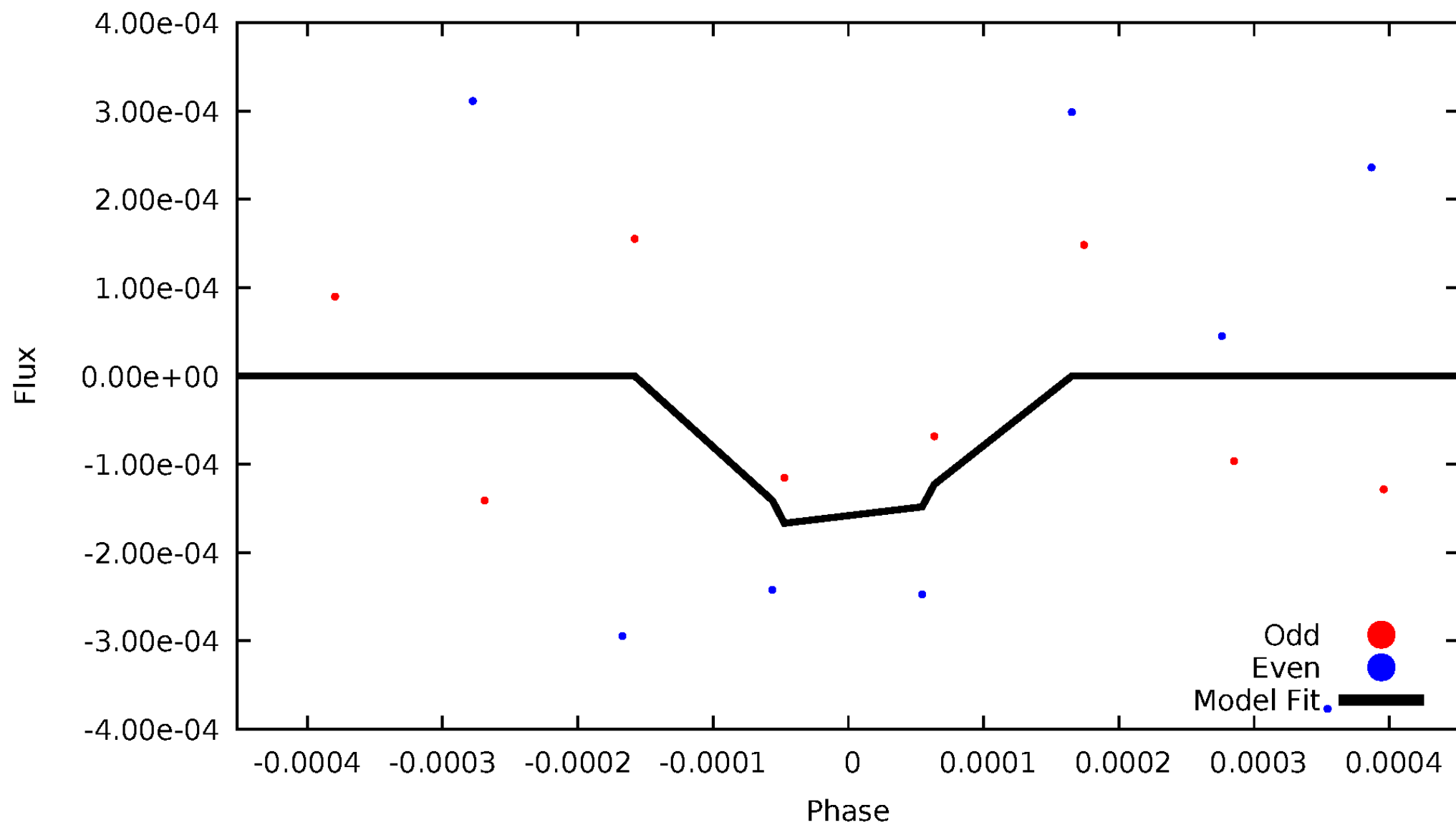
DV Odd/Even

TCE 007816999-08



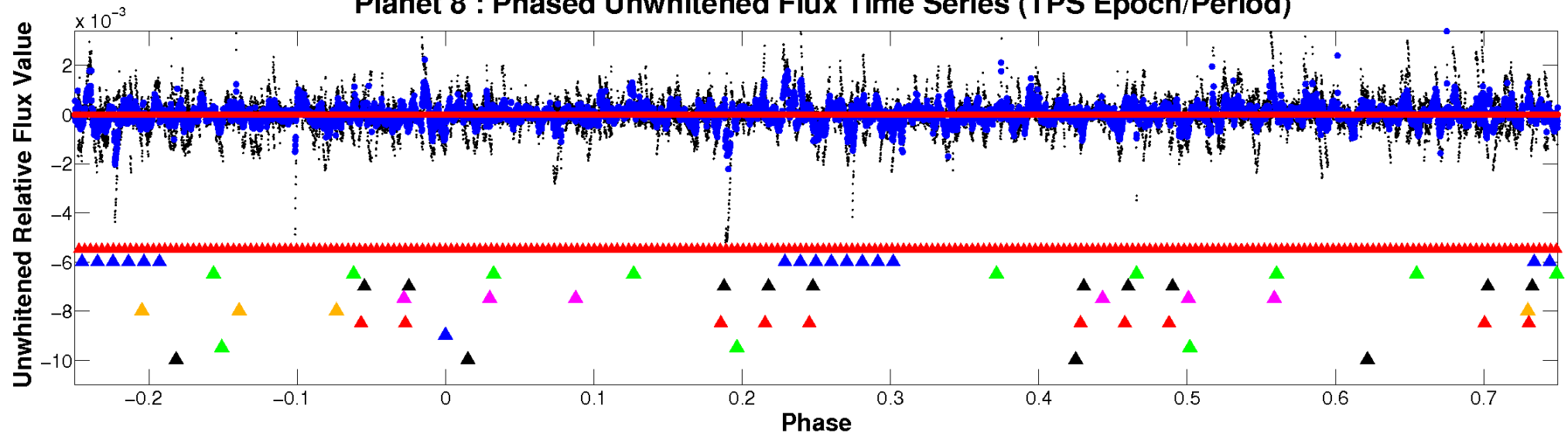
ALT Odd/Even

TCE 007816999-08

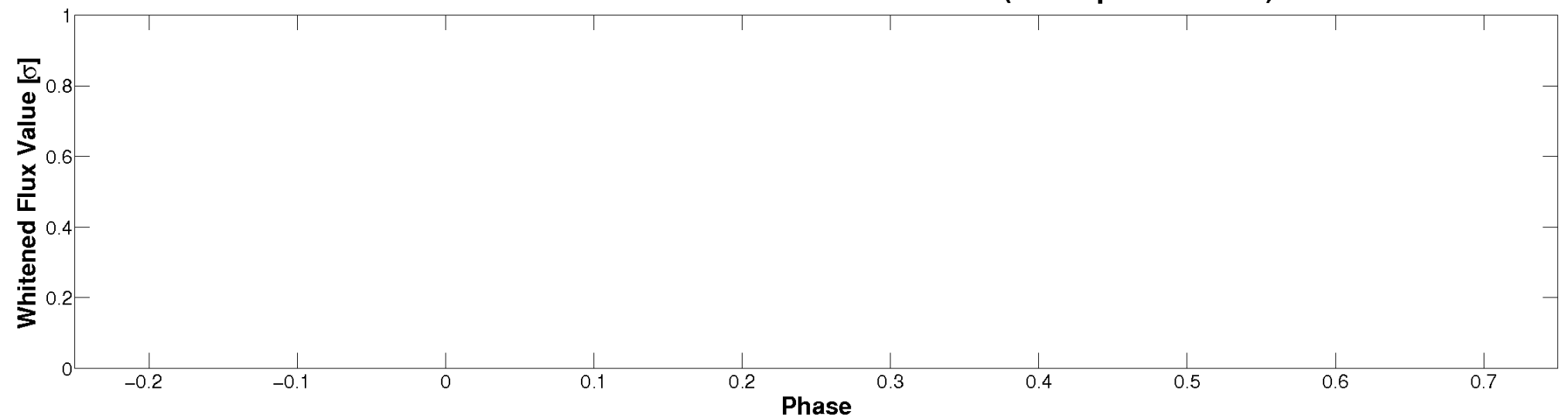


Non-Whitened Vs. Whitened Light Curve

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

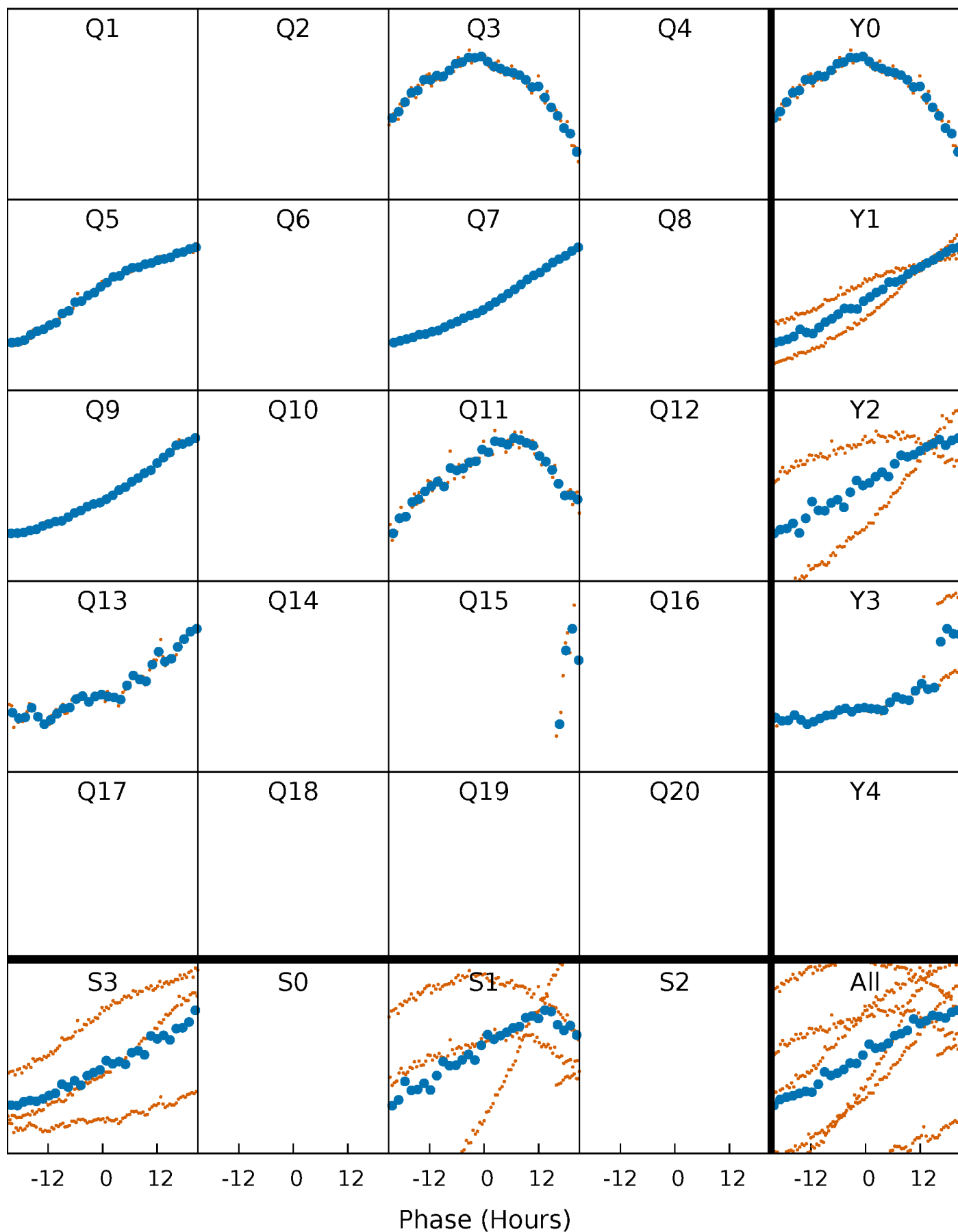


Planet 8 : Phased Whitened Flux Time Series (TPS Epoch/Period)



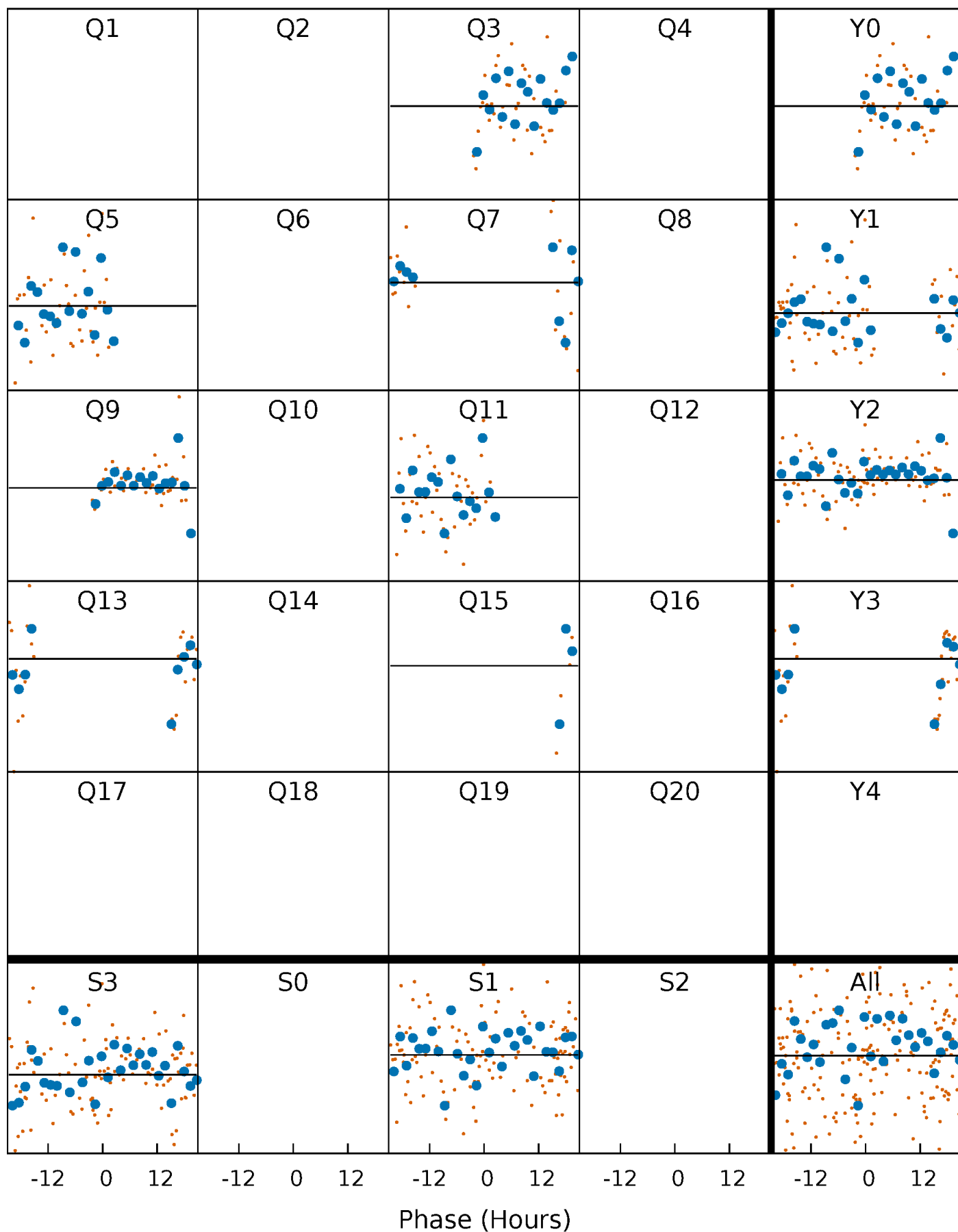
PDC Quarter-Phased Transit Curves

TCE 007816999-08 P=184.487802 Days $T_0=310.869972$ (BKJD)



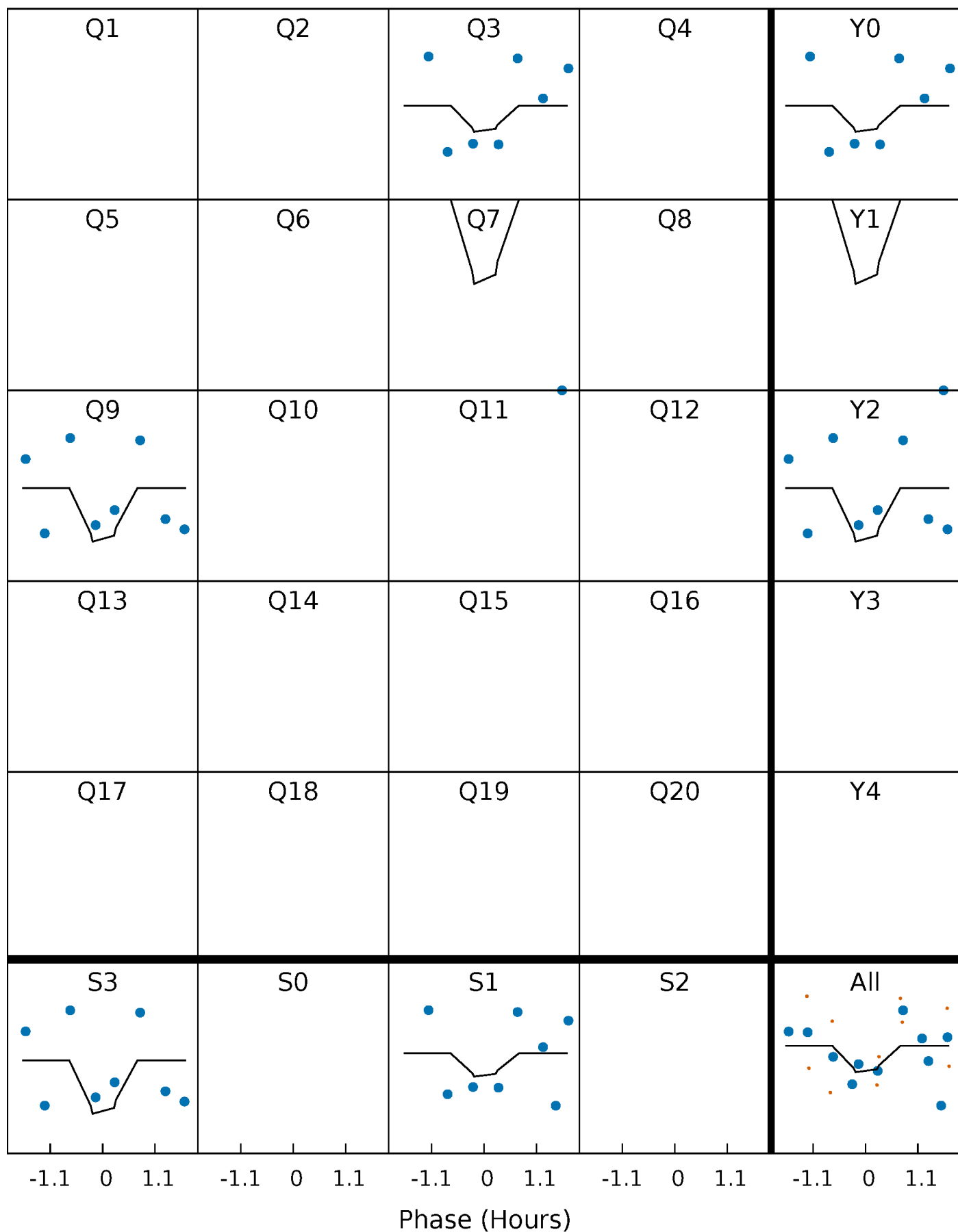
DV Quarter-Phased Transit Curves

TCE 007816999-08 P=184.487802 Days $T_0=310.869972$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

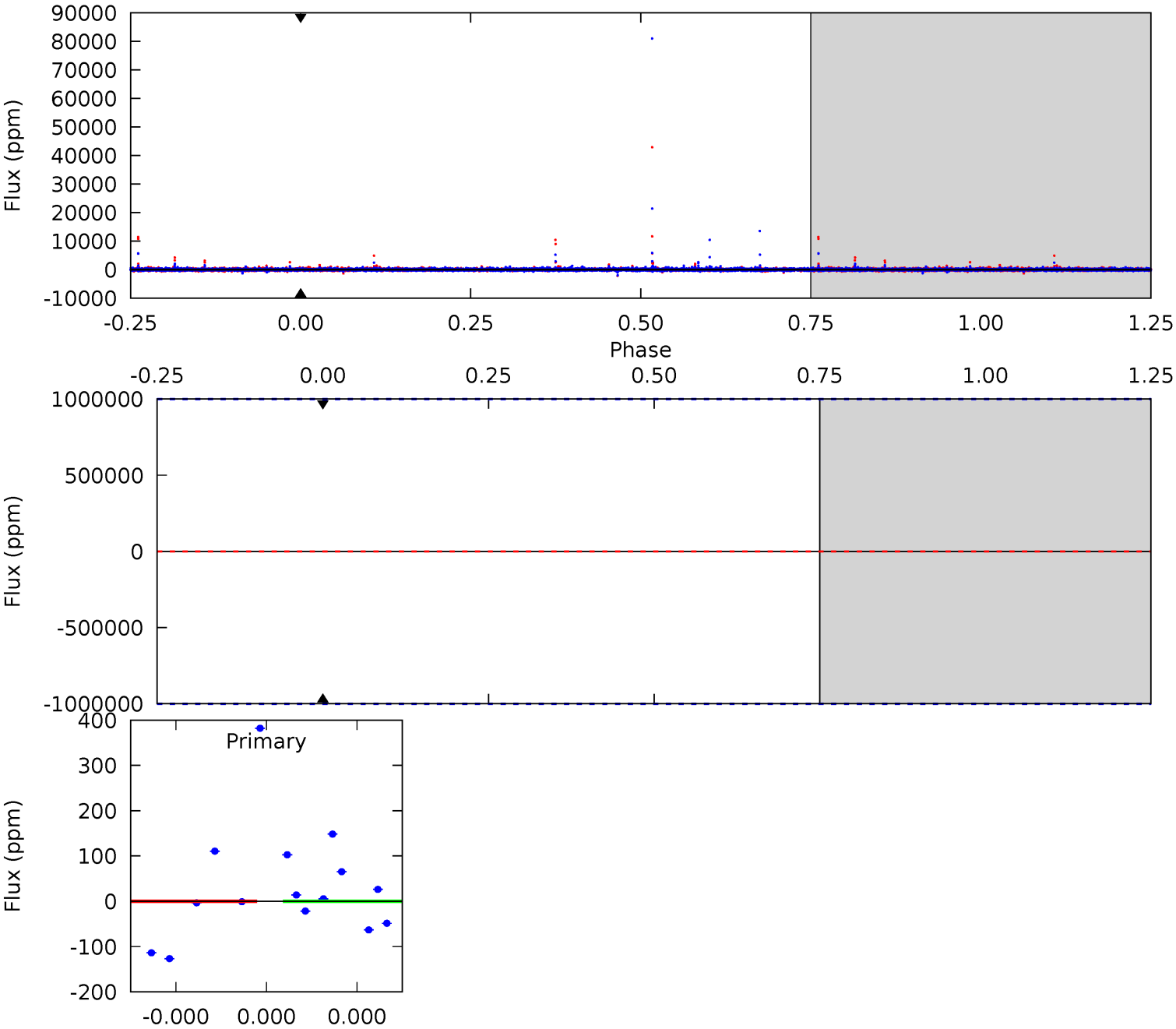
TCE 007816999-08 P=184.487802 Days $T_0=311.419237$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-08, P = 184.487802 Days, E = 126.382170 Days

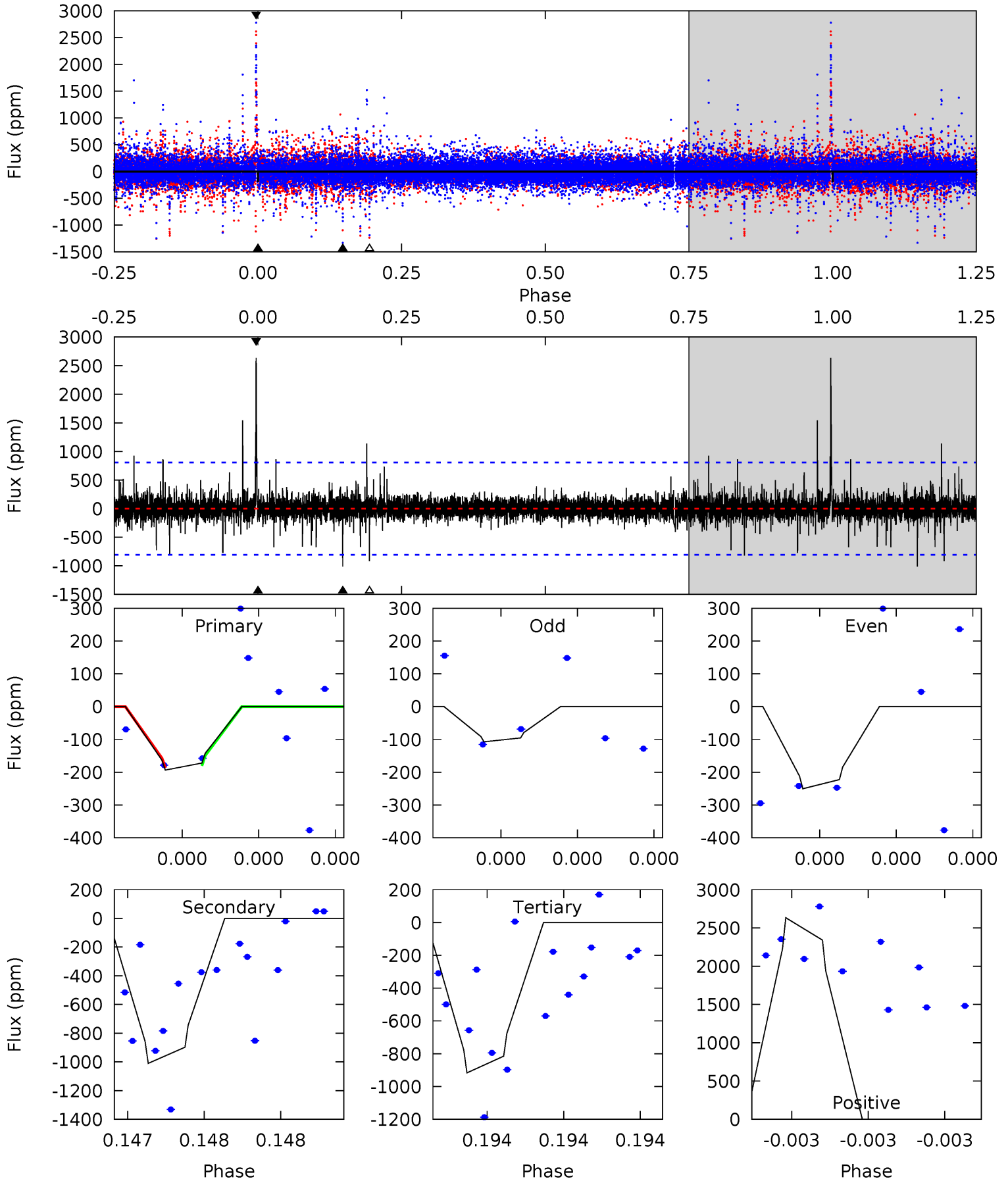
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

007816999-08, P = 184.487802 Days, E = 126.931435 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.37	7.17	6.50	18.7	5.72	3.70	0.97	-5.13	-17.3	0.66	-11.5	0.38	1.00	0.72	0.00



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$6.33^{+7.02}_{-4.43}$	369^{+18}_{-16}	-4165^{+21164}_{-11756}	$-8677.054^{+838552.439}_{-753222.903}$
Alt.	-1010 ± 141	$6.18^{+6.79}_{-4.32}$	369^{+18}_{-15}	3792^{+2278}_{-763}	4923^{+48916}_{-3770}

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 $A_{obs} \gg 1.0$

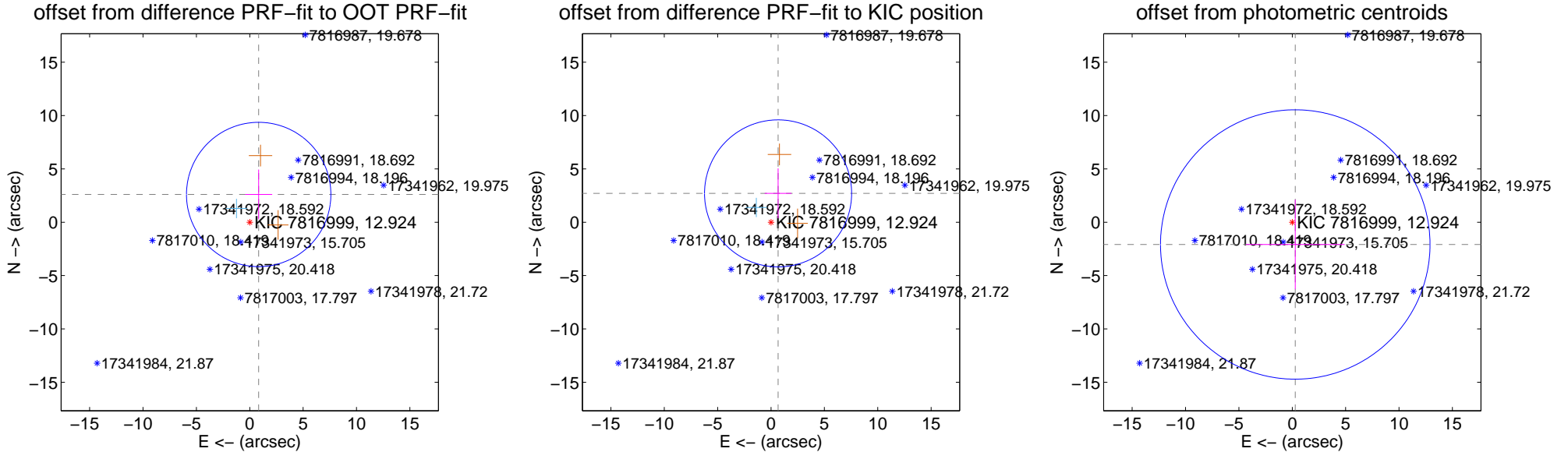
DV Centroid Data

Supplemental centroid analysis for 007816999-08. Kepler magnitude: 12.92. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.733 ± 2.254	1.21	-0.835 ± 1.267	2.602 ± 2.332
PRF-fit source offset from KIC position	2.785 ± 2.296	1.21	-0.662 ± 1.253	2.705 ± 2.344
photometric centroid source offset	2.10 ± 4.21	0.50	-0.28 ± 4.62	-2.08 ± 4.20

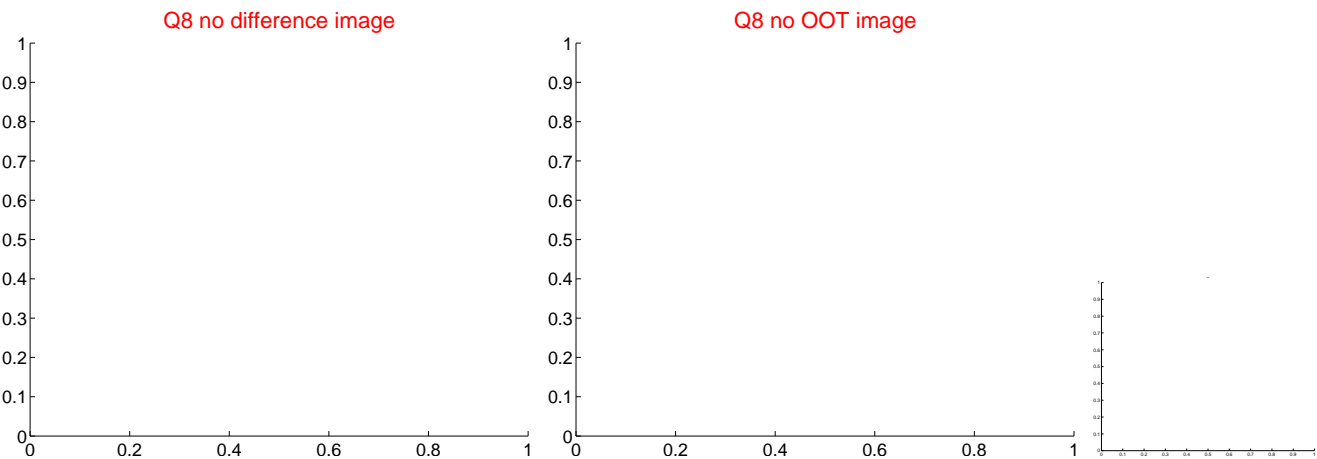
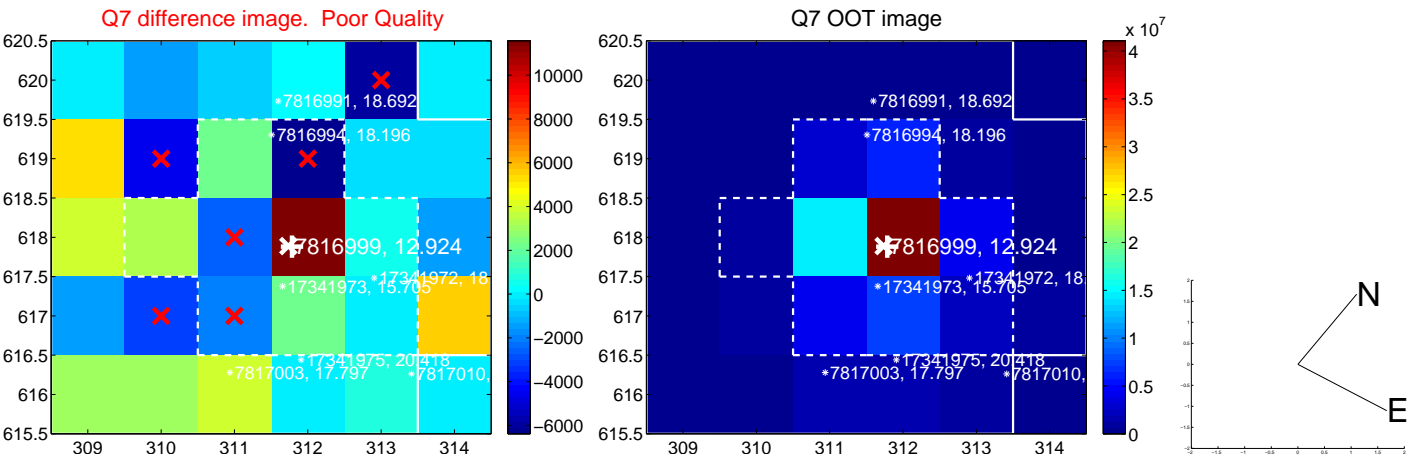
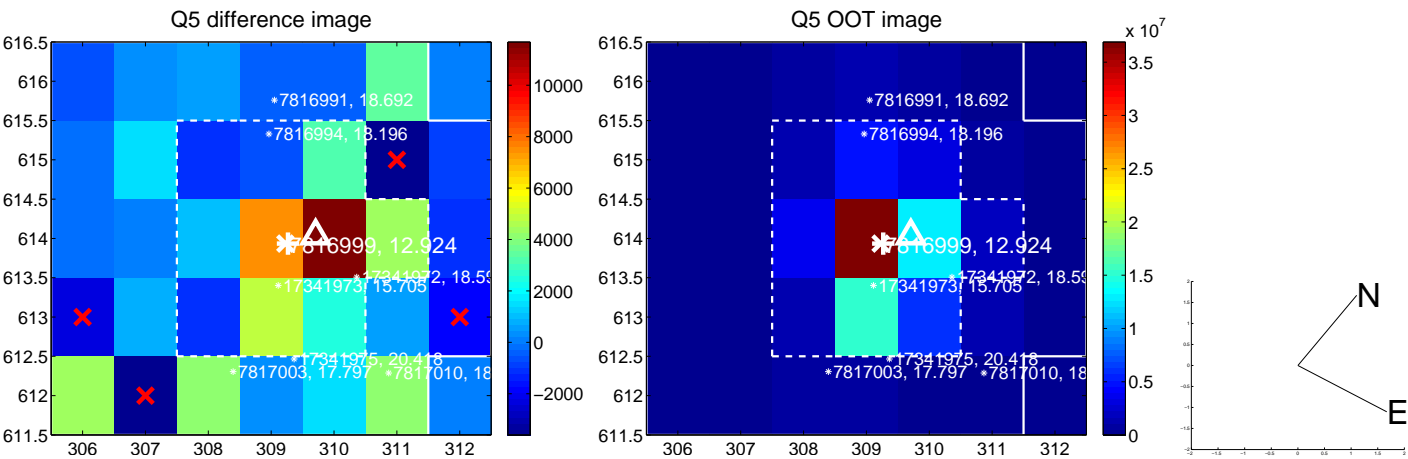


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

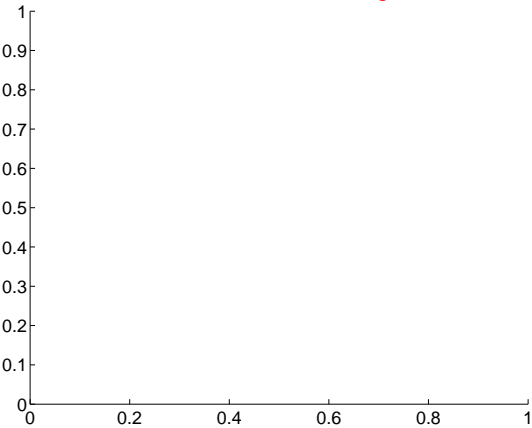
Q9 no difference image



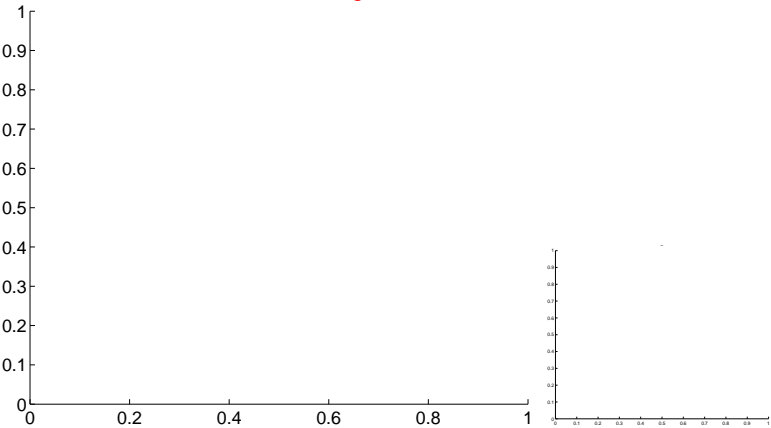
Q9 no OOT image



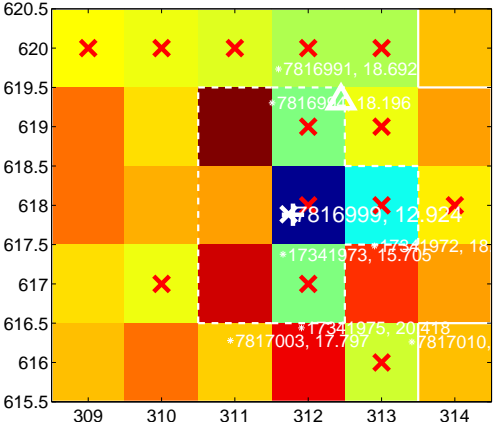
Q10 no difference image



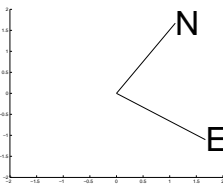
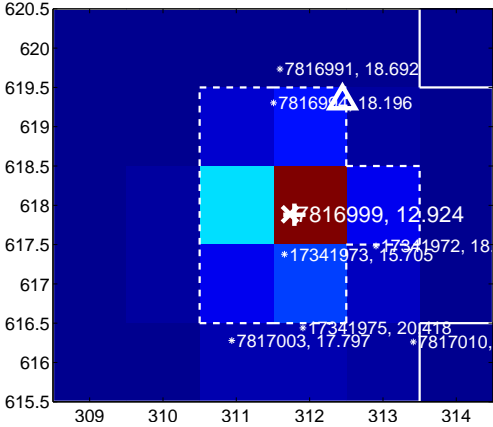
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



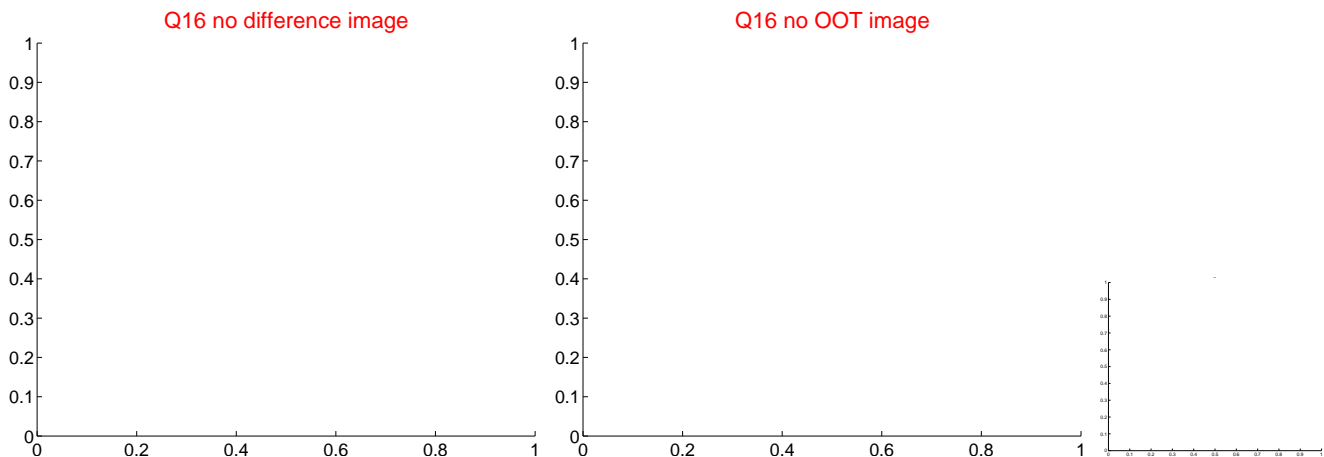
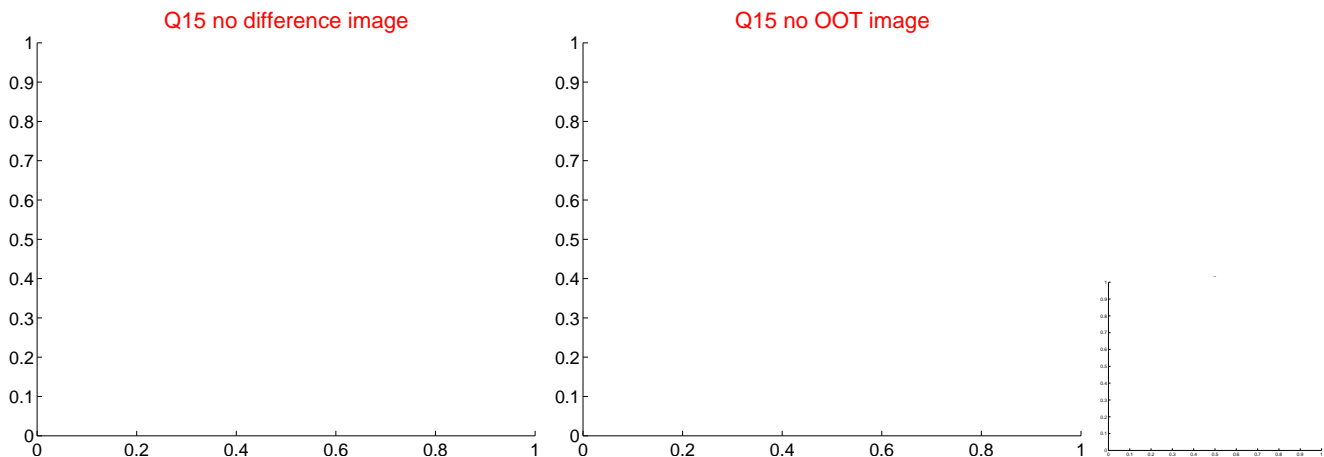
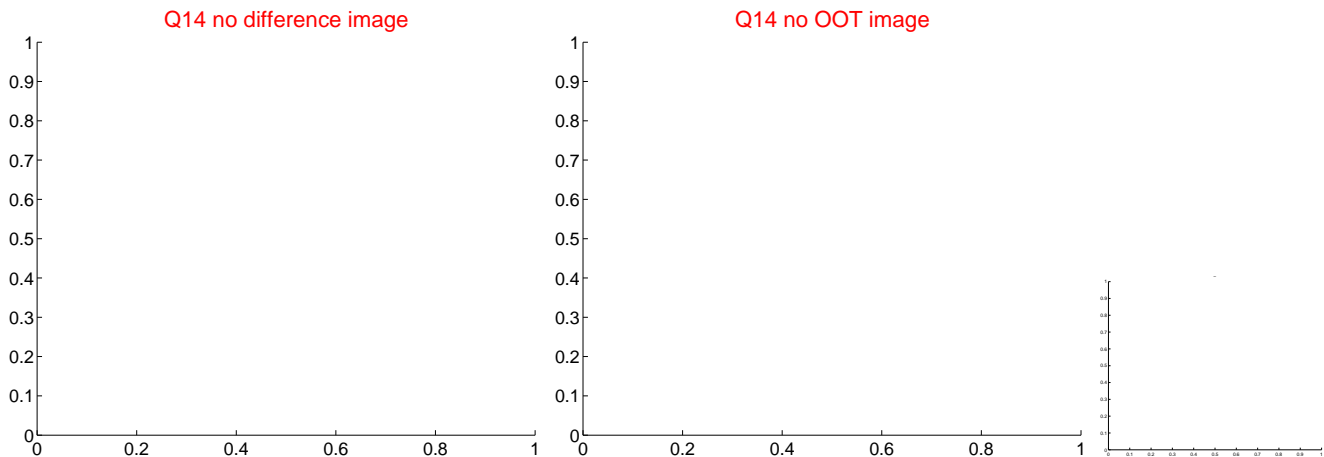
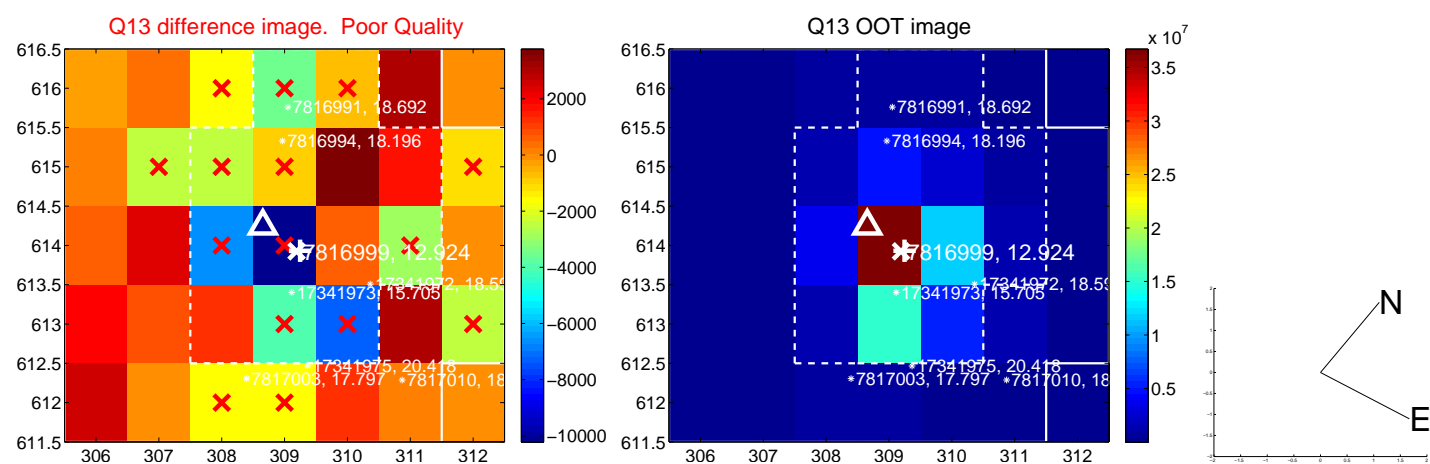
Q12 no difference image



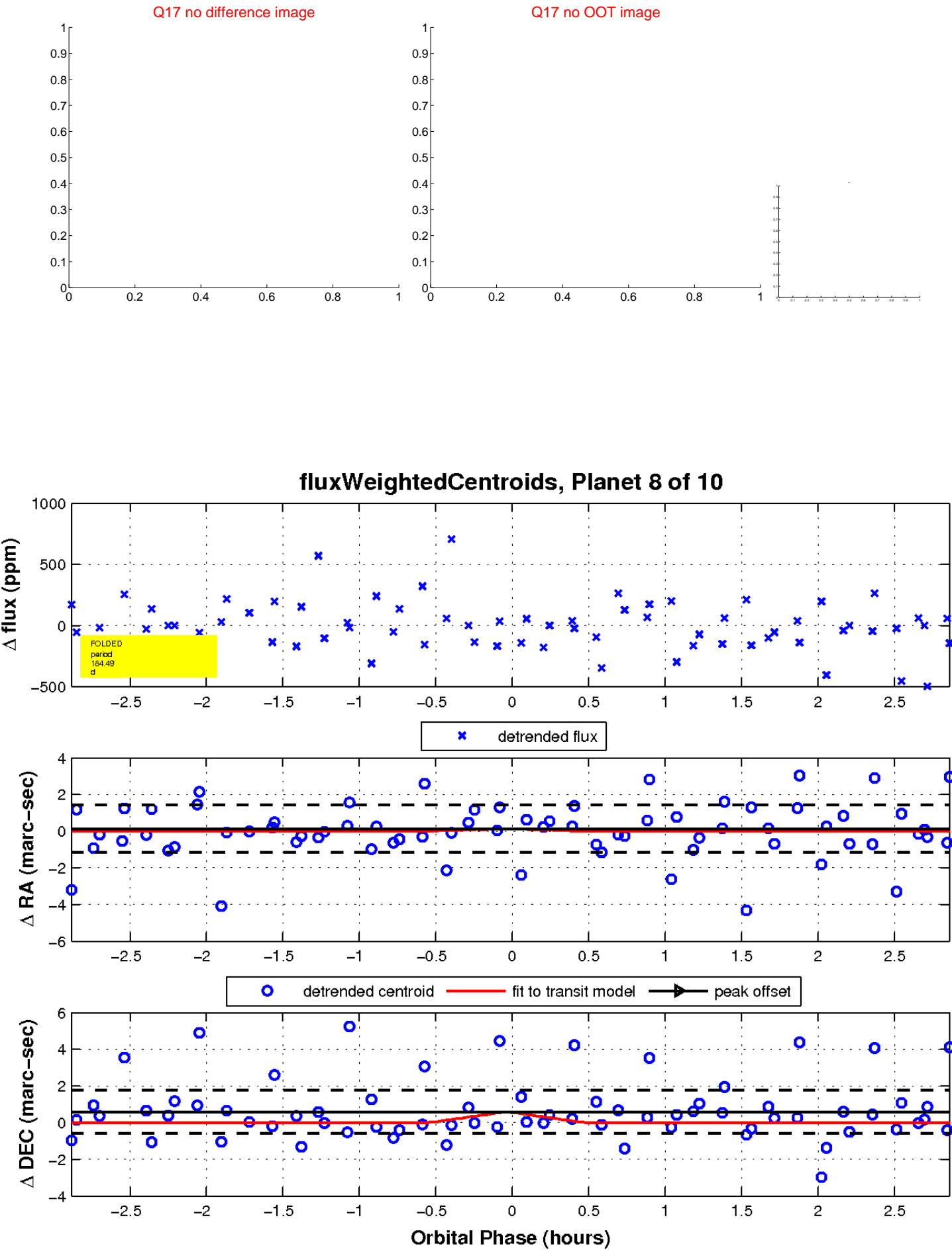
Q12 no OOT image



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

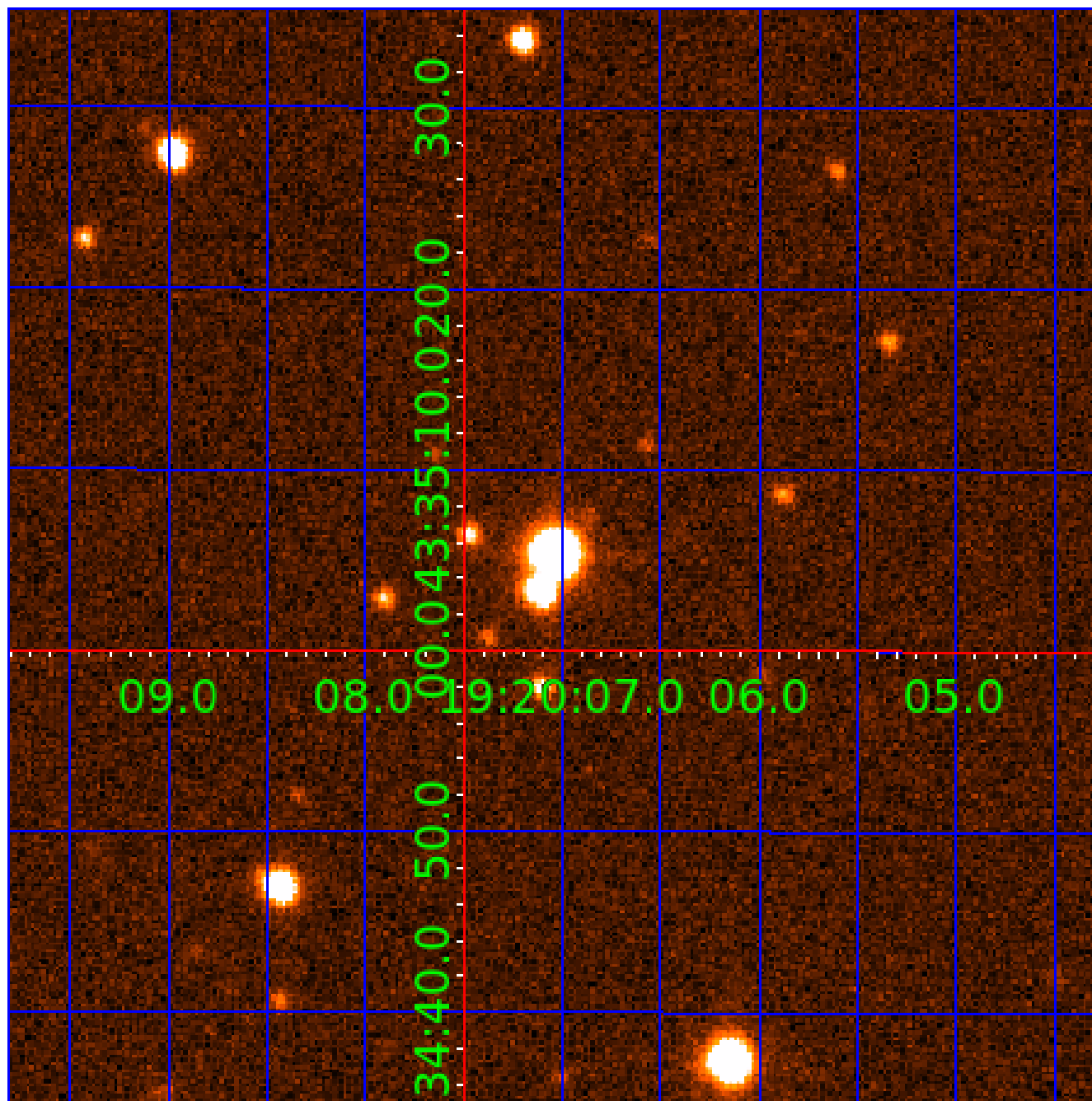


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007816999

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})
007816999-01	OBS	No	2.136986	132.767769	43.1	9.731	8.2	7.5	0.79	5159	0.55	430.37
007816999-02	OBS	No	93.206905	168.604896	220.5	3.296	14.0	3.5	0.79	5159	1.30	2.80
007816999-03	OBS	No	167.068223	149.790427	544.8	4.413	12.6	6.7	0.79	5159	2.29	1.29
007816999-04	OBS	No	139.746572	205.777922	193.8	6.194	12.3	2.9	0.79	5159	1.31	1.63
007816999-05	OBS	No	271.391733	142.572361	217.2	15.000	10.7	-1.0	0.79	5159	1.13	0.67
007816999-06	OBS	No	356.878727	481.792582	362.9	5.646	11.3	4.6	0.79	5159	2.01	0.47
007816999-08	OBS	No	184.487802	310.869972	253.1	10.500	10.4	-1.0	0.79	5159	1.22	1.13
007816999-09	OBS	No	489.387806	531.611891	588.2	6.569	9.1	6.0	0.79	5159	2.08	0.31
007816999-10	OBS	No	332.678790	313.662559	329.7	7.500	9.7	-1.0	0.79	5159	1.40	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

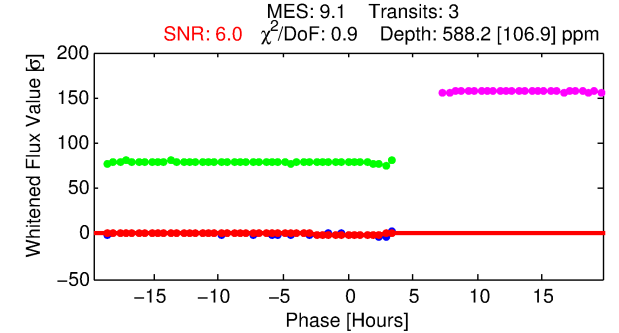
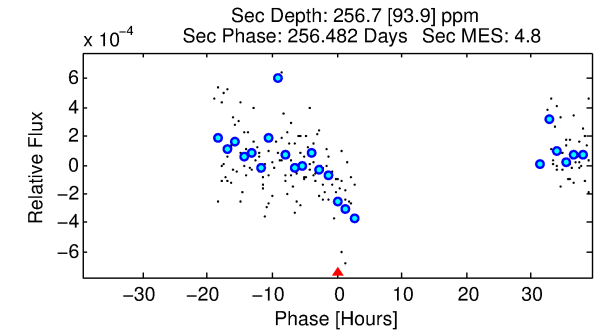
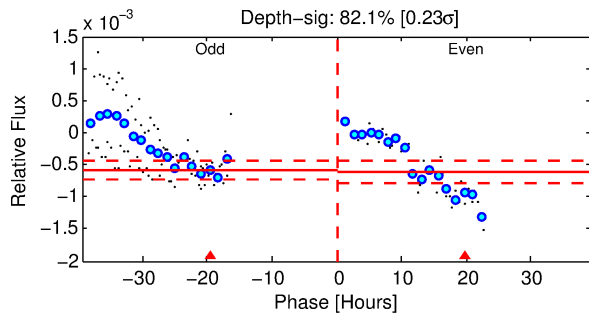
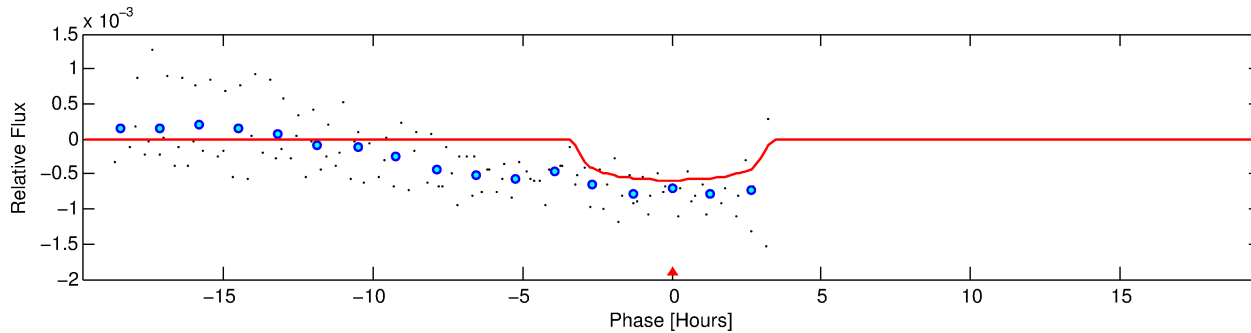
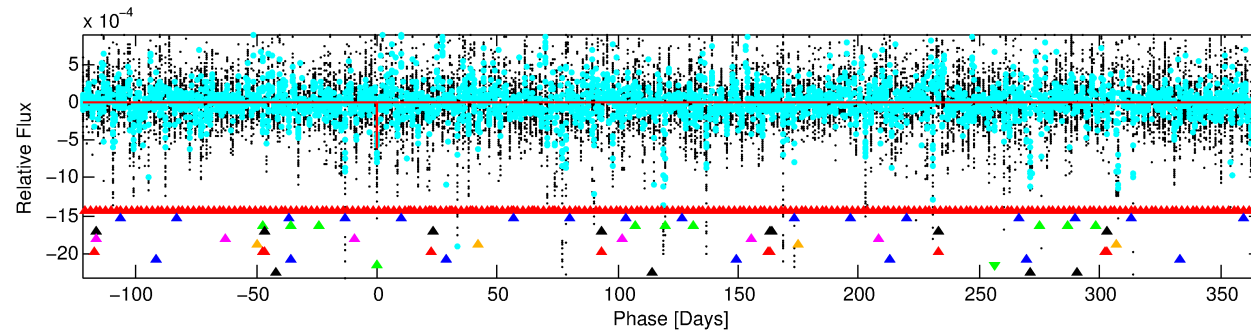
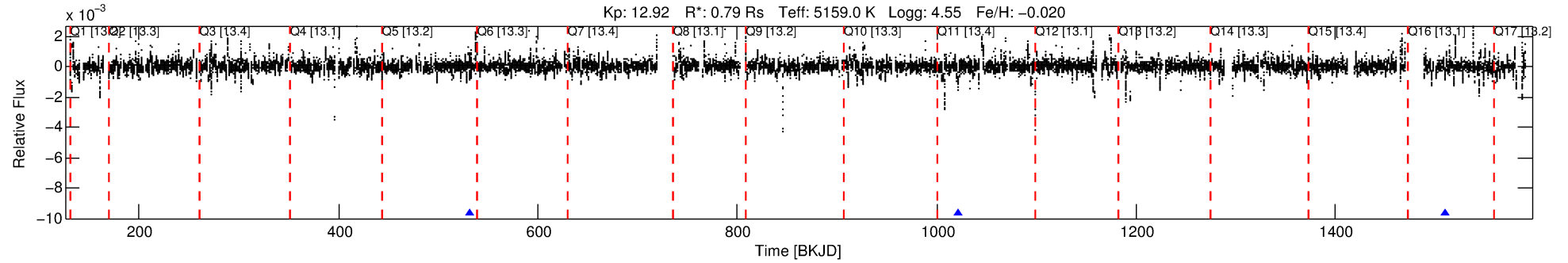
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-09

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 9 of 10 Period: 489.388 d



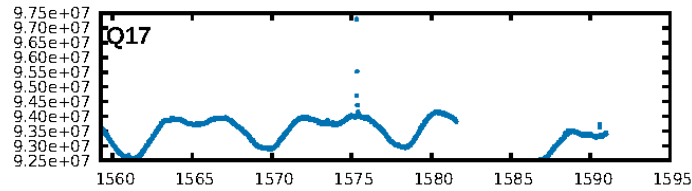
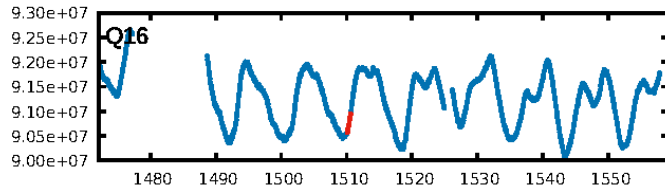
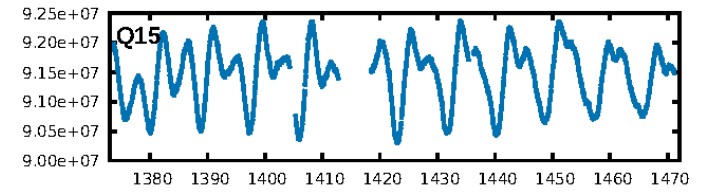
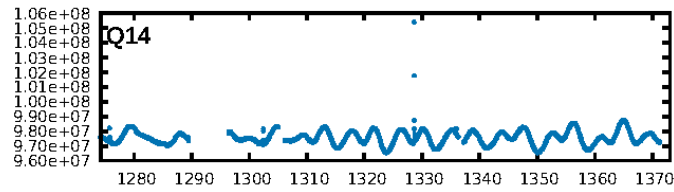
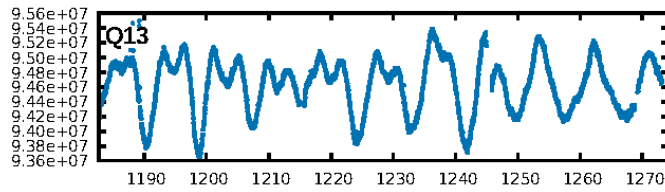
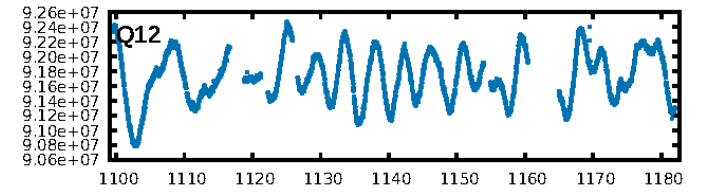
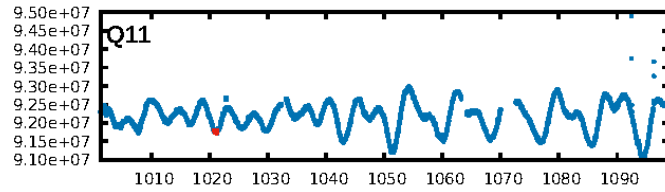
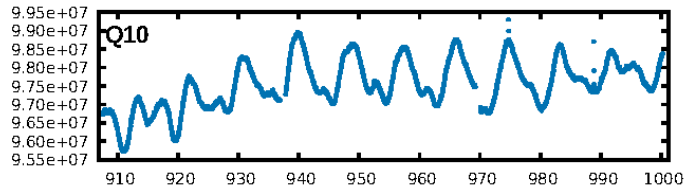
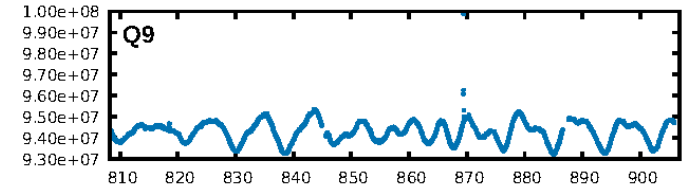
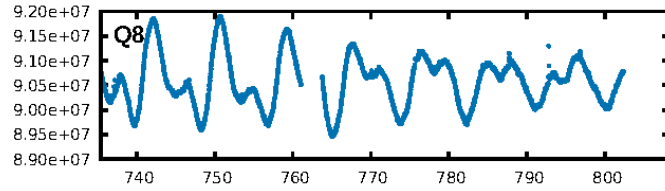
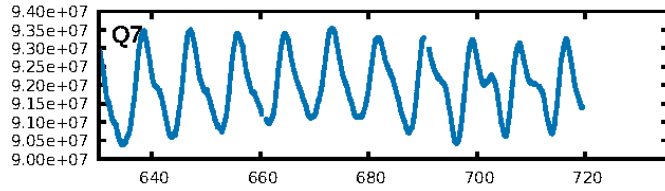
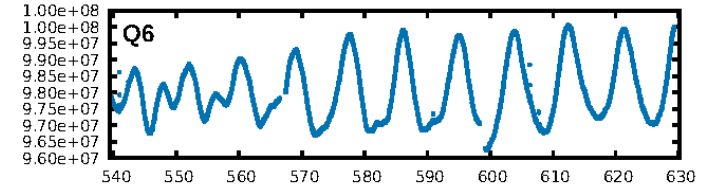
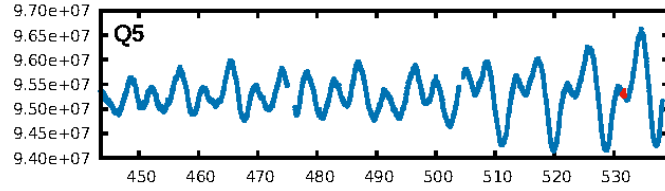
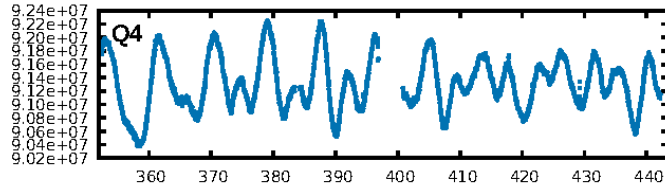
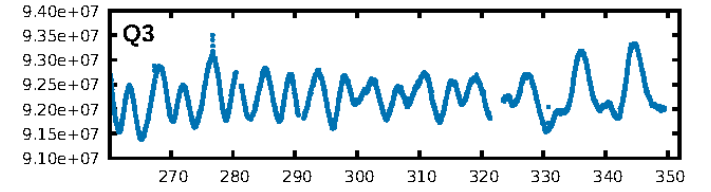
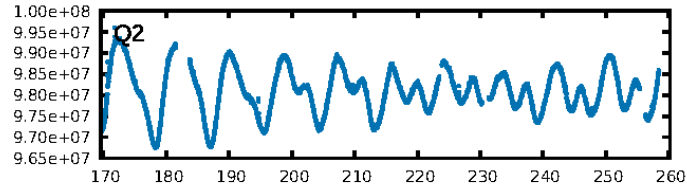
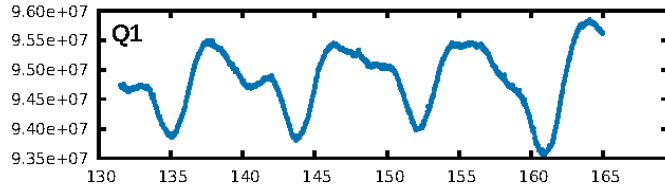
DV Fit Results:

Period = 489.38781 [0.00758] d
Epoch = 531.6119 [0.0077] BKJD
Rp/R* = 0.0241 [0.0147]
a/R* = 400.52 [889.86]
b = 0.74 [1.36]
Seff = 0.31 [0.07]
Teq = 190 [10] K
Rp = 2.08 [1.30] Re
a = 1.1356 [0.1222] AU
Ag = 42080.41 [53897.56] [0.78 σ]
Teffp = 4204 [1346] K [2.98 σ]

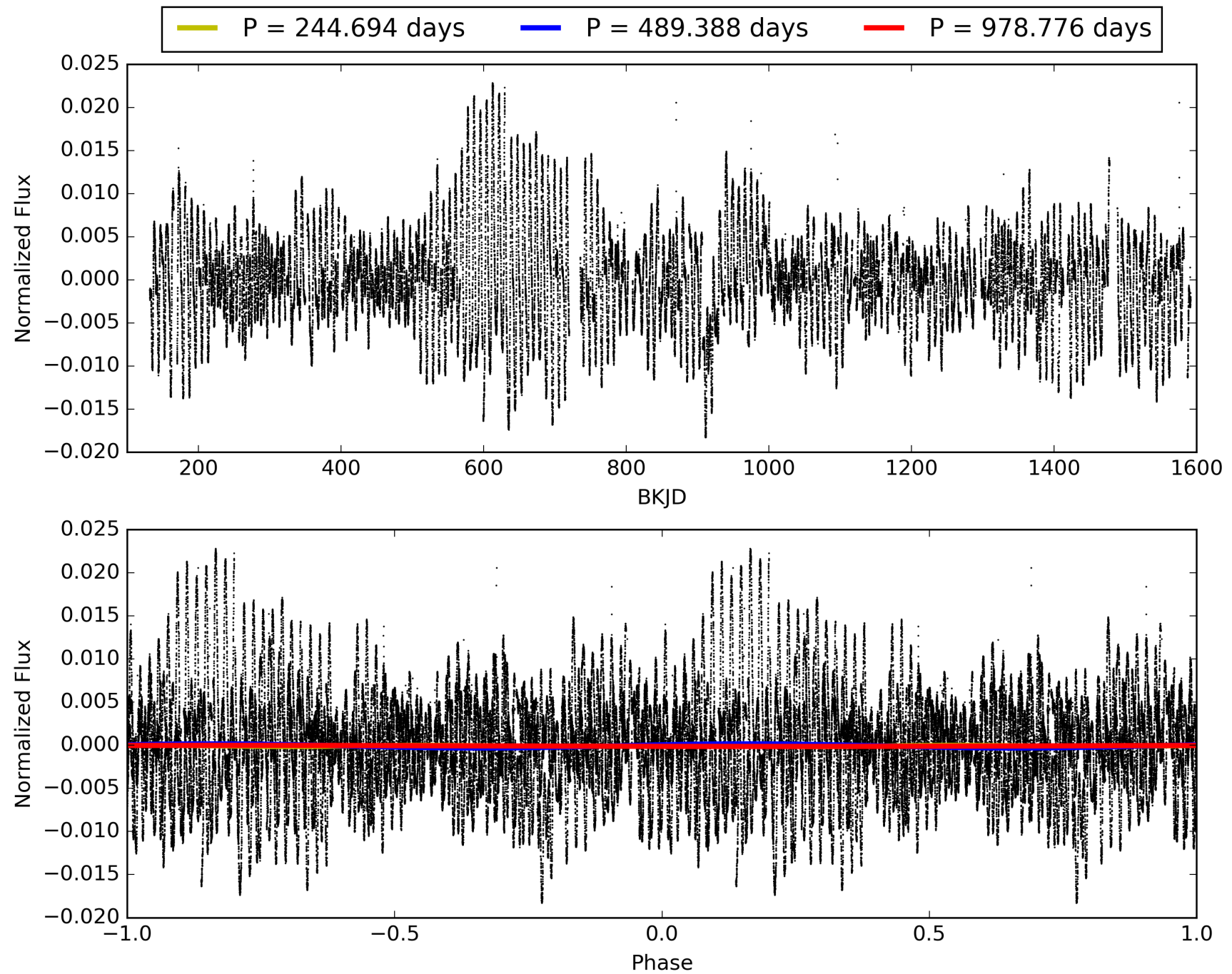
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [367.16 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 85.8%
ModelChiSquareGof-sig: 98.7%
Bootstrap-pfa: 6.68e-07
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.929
Centroid-sig: 88.8%
Centroid-so: 0.127 arcsec [0.14 σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [1/1]

TCE 007816999-09, PDC Light Curves

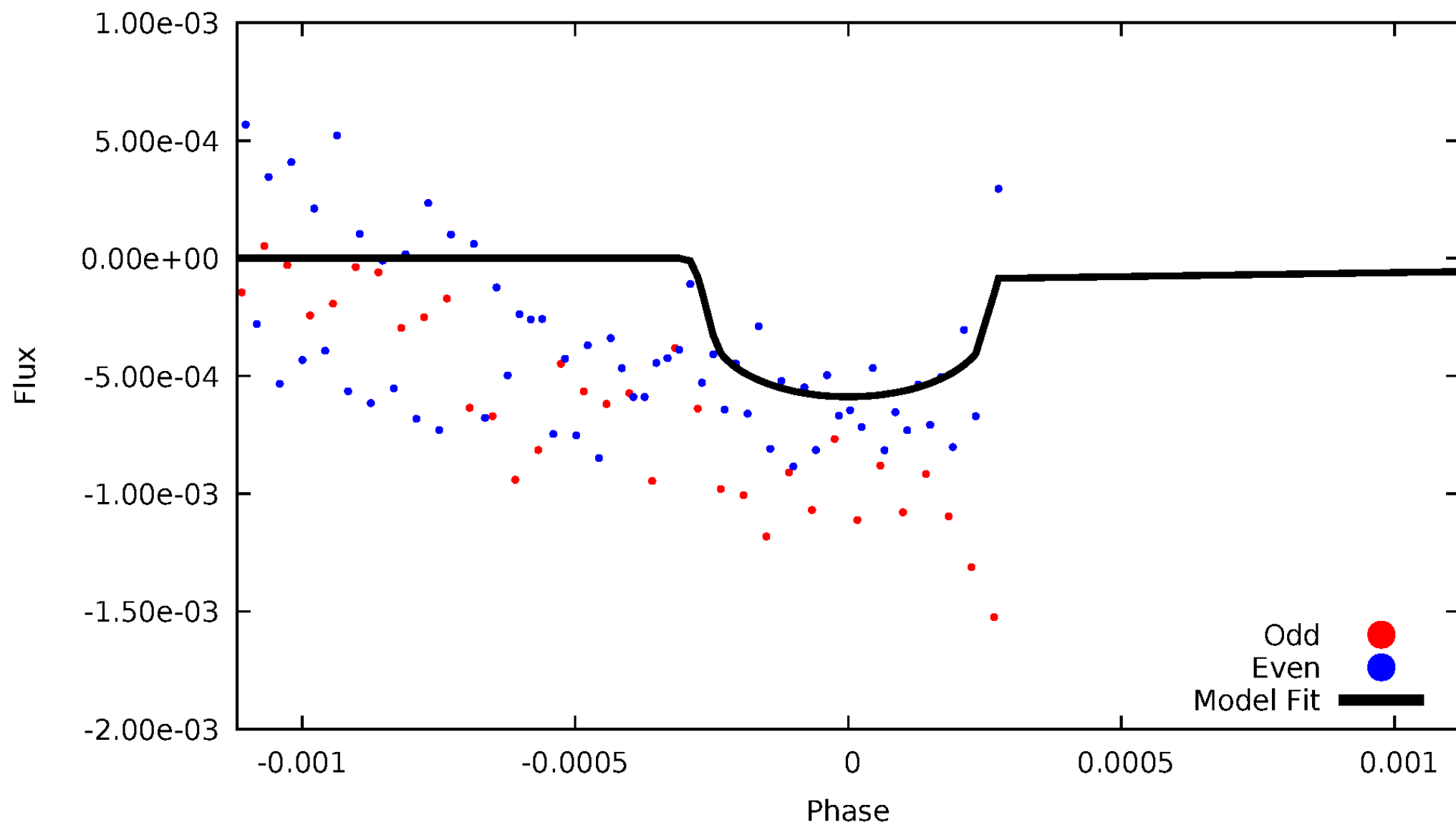


TCE 007816999-09



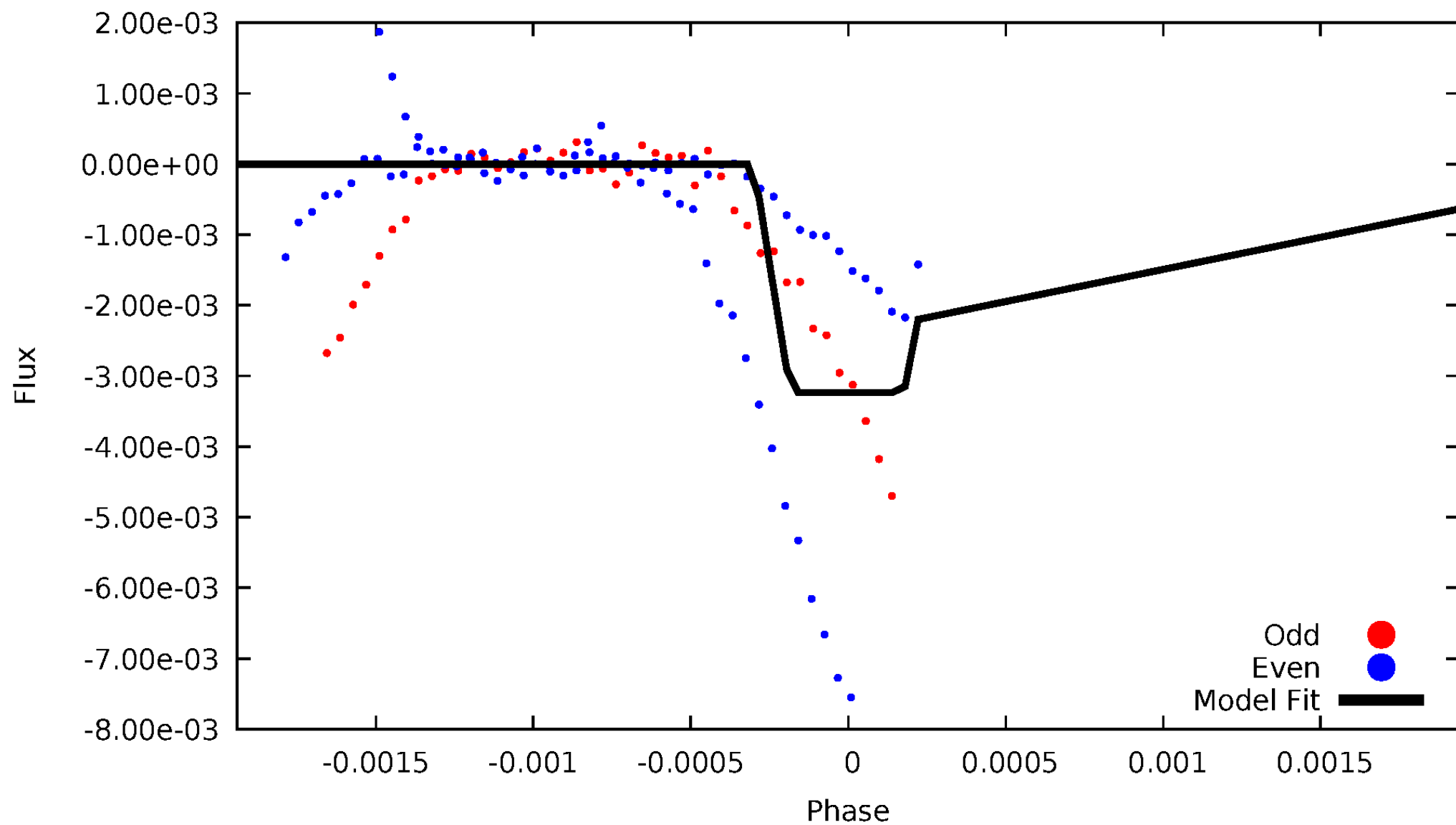
DV Odd/Even

TCE 007816999-09



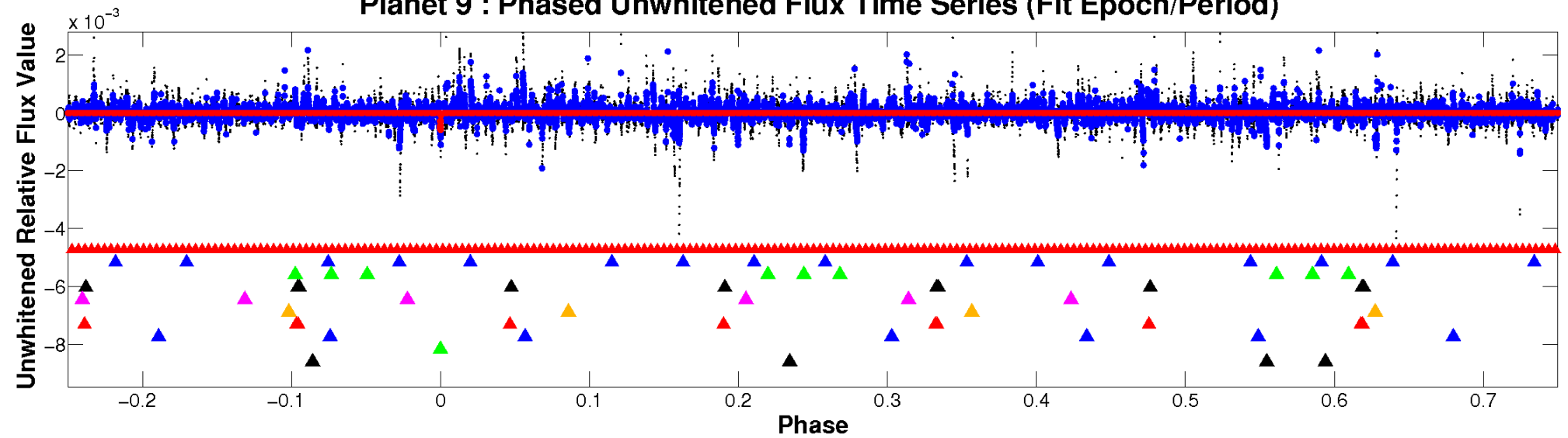
ALT Odd/Even

TCE 007816999-09

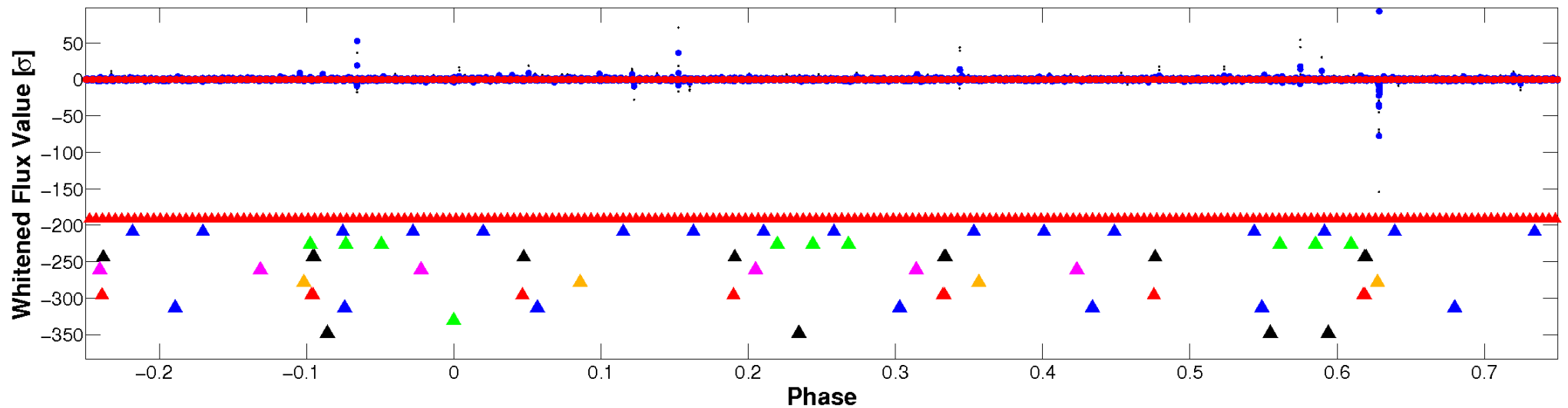


Non-Whitened Vs. Whitened Light Curve

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

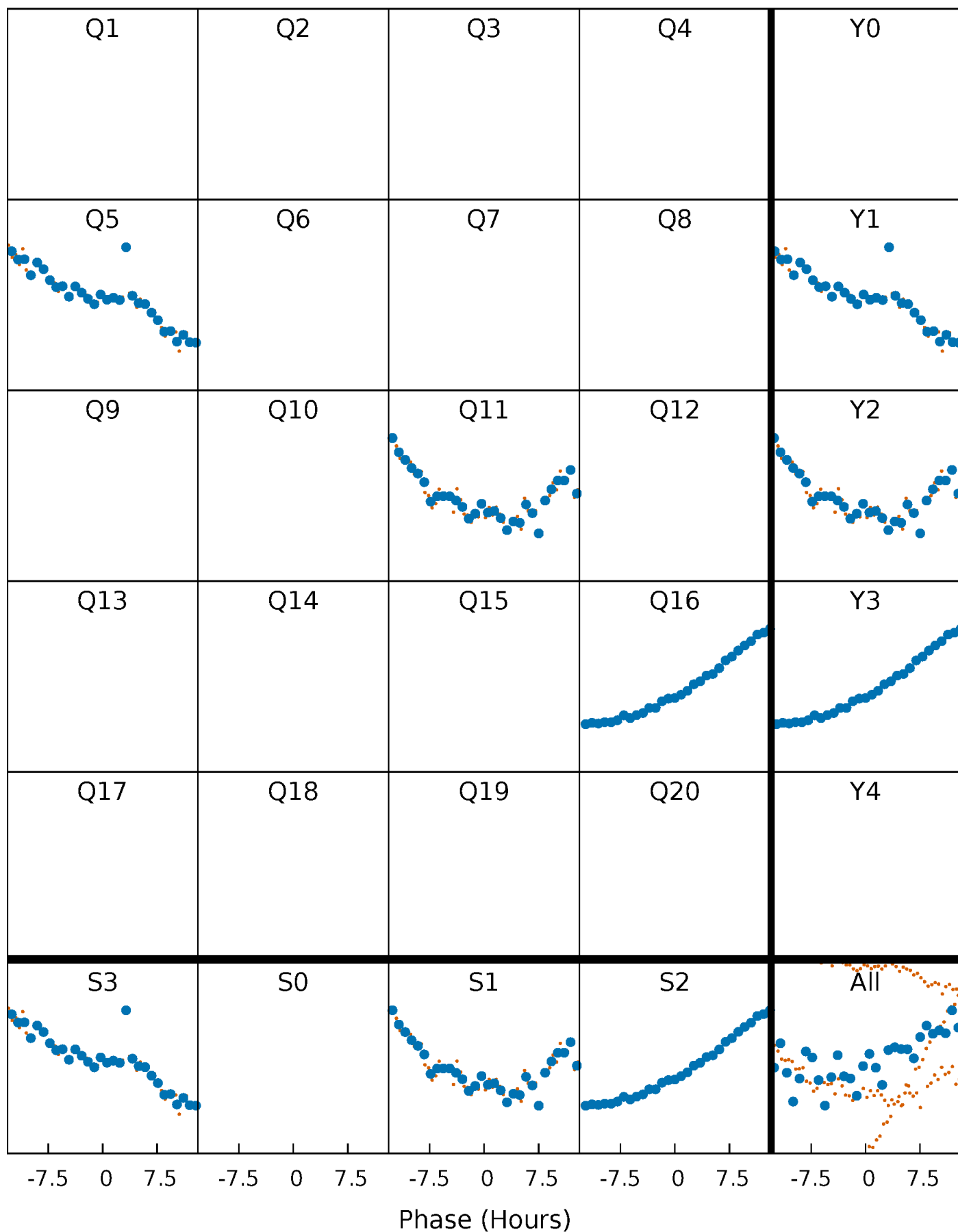


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



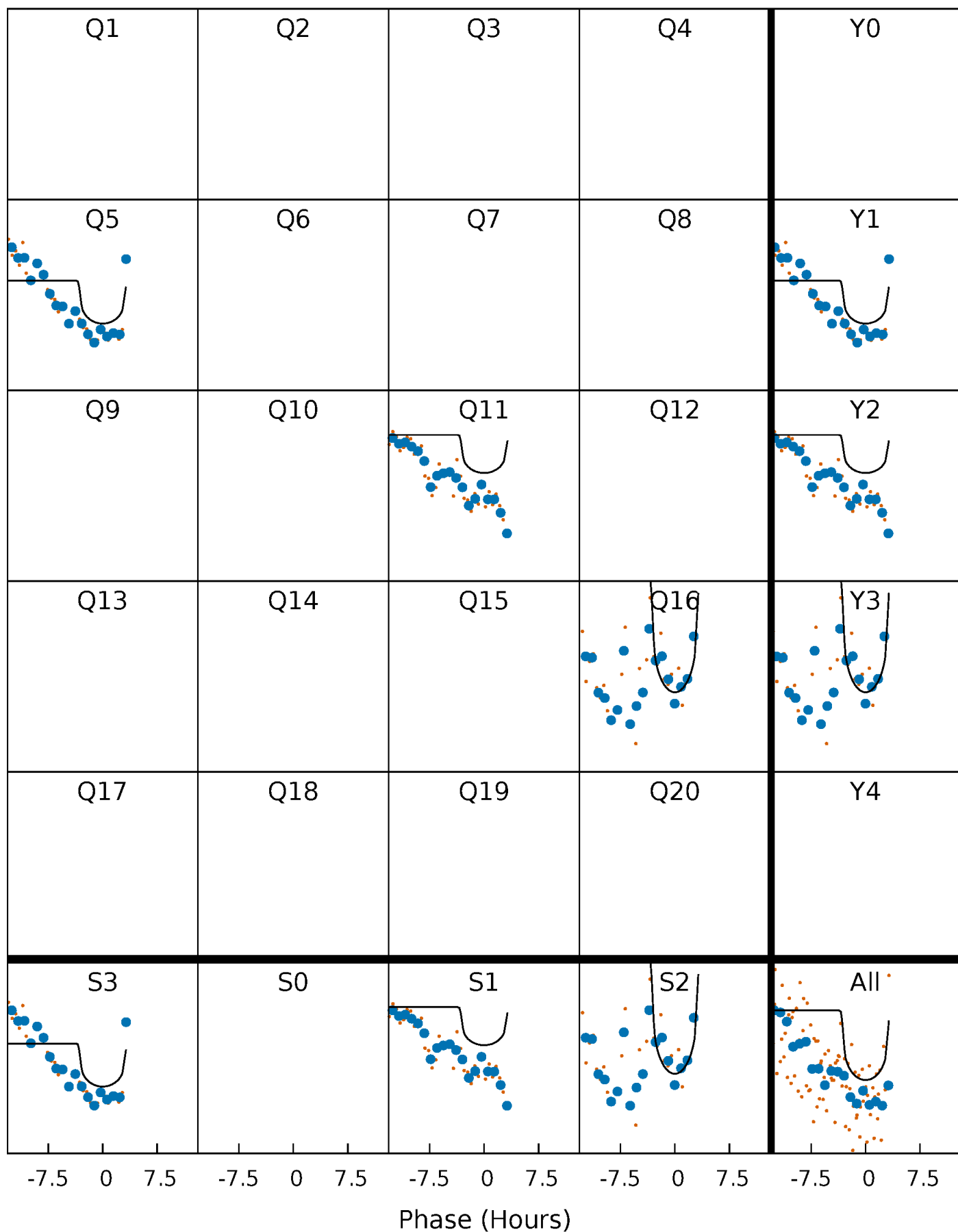
PDC Quarter-Phased Transit Curves

TCE 007816999-09 P=489.387806 Days $T_0=531.611891$ (BKJD)



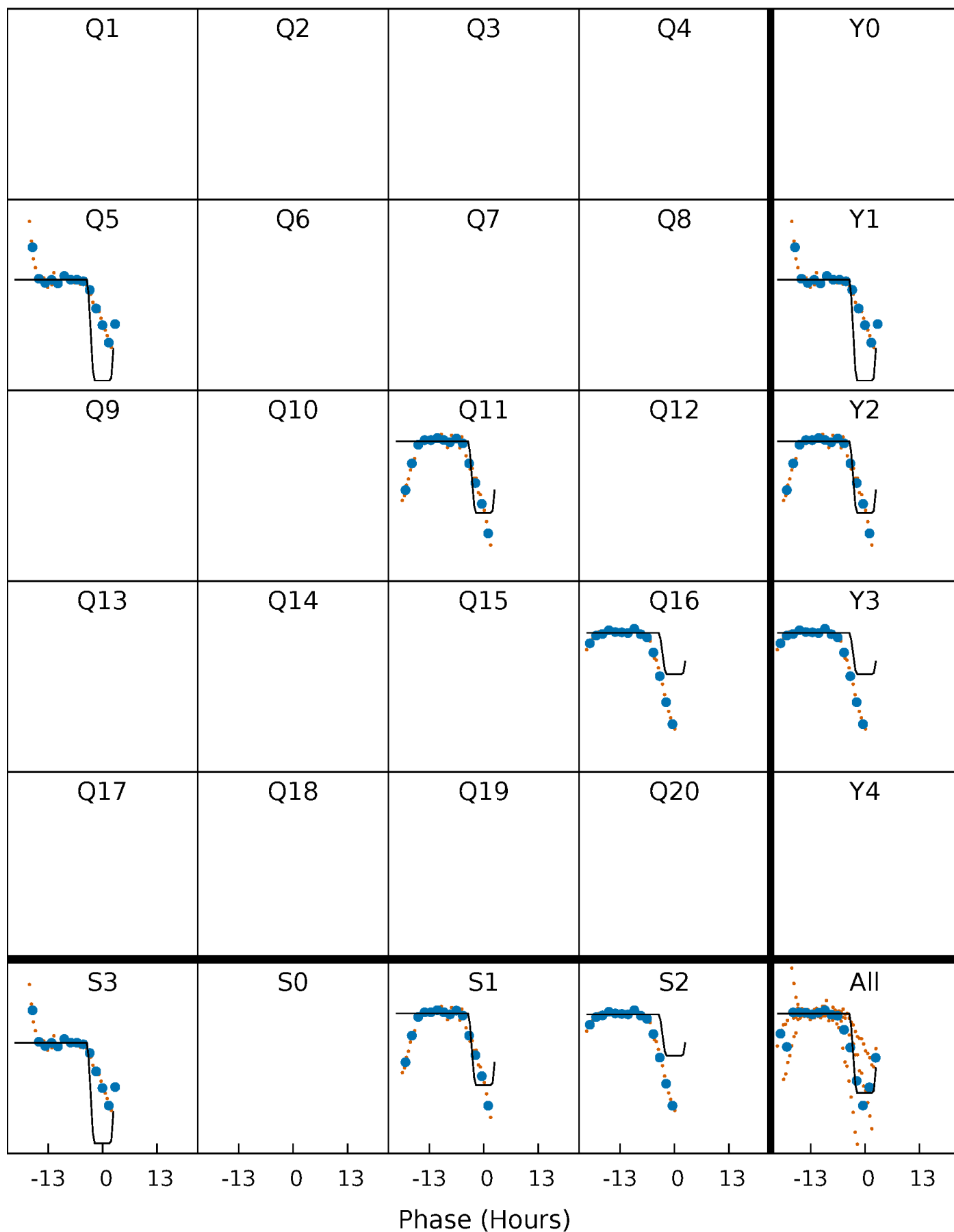
DV Quarter-Phased Transit Curves

TCE 007816999-09 $P=489.387806$ Days $T_0=531.611891$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

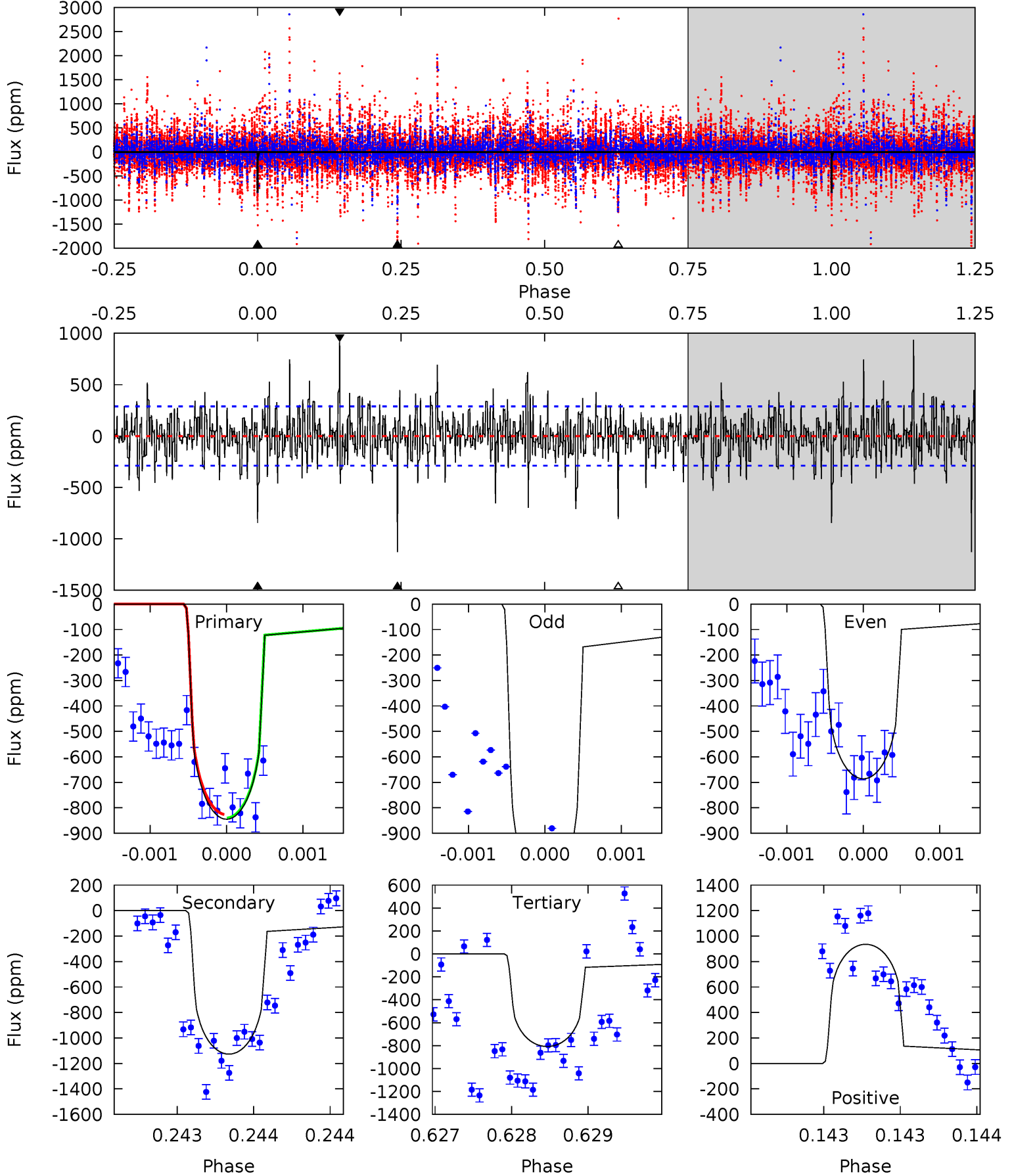
TCE 007816999-09 P=489.424629 Days $T_0=531.637796$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-09, $P = 489.387806$ Days, $E = 42.224085$ Days

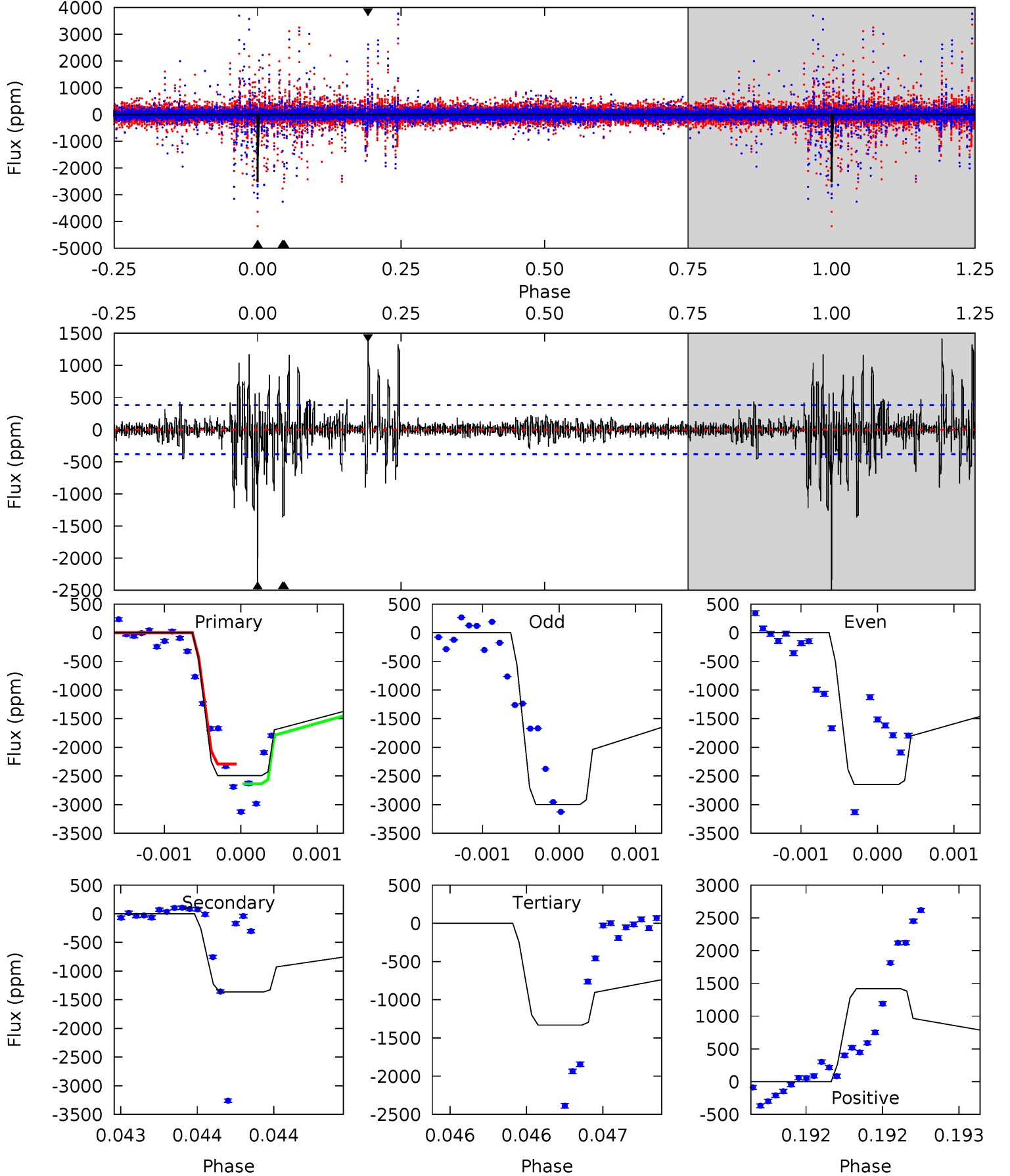
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	21.8	15.6	18.1	5.56	3.45	3.18	0.72	-1.75	6.16	3.70	3.16	1.02	0.45	0.13



Alt Model-Shift Uniqueness Test

007816999-09, P = 489.424629 Days, E = 42.213167 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.3	19.9	19.4	20.7	5.57	3.48	1.79	16.9	15.6	0.48	-0.83	2.74	1.23	0.36	2.50



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1127 ± 52	$2.09^{+1.23}_{-1.10}$	266^{+14}_{-10}	6034^{+3392}_{-1206}	$180494^{+618575}_{-109583}$
Alt.	-1363 ± 69	$4.94^{+1.28}_{-1.20}$	267^{+12}_{-12}	4347^{+545}_{-372}	39672^{+29961}_{-14993}

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

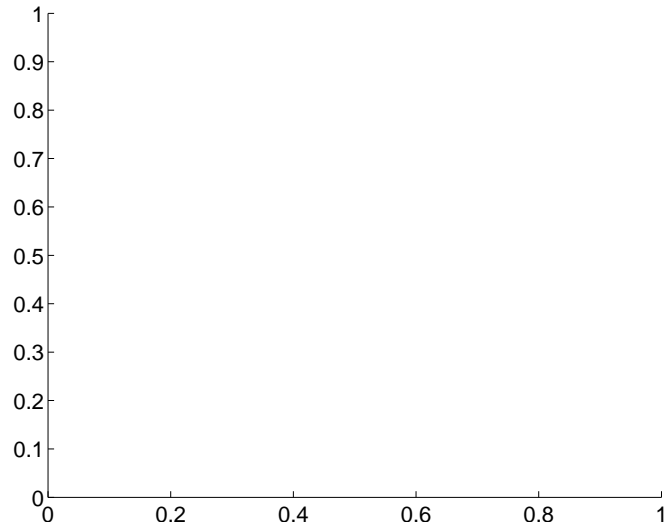
Supplemental centroid analysis for 007816999-09. Kepler magnitude: 12.92. Transit SNR 5.98

There are 0 quarters with good PRF difference image offsets

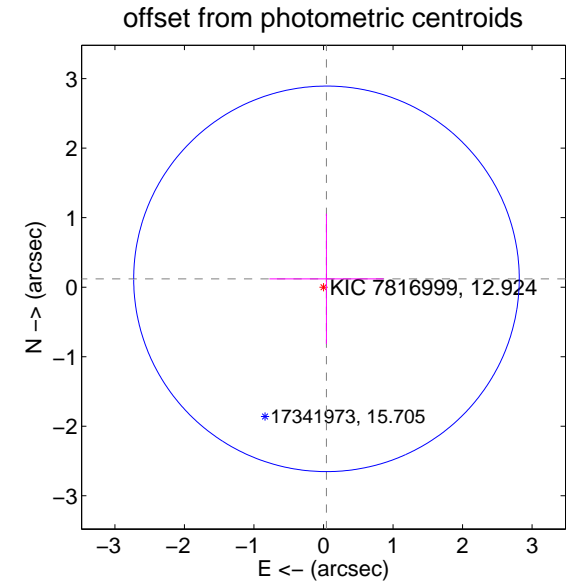
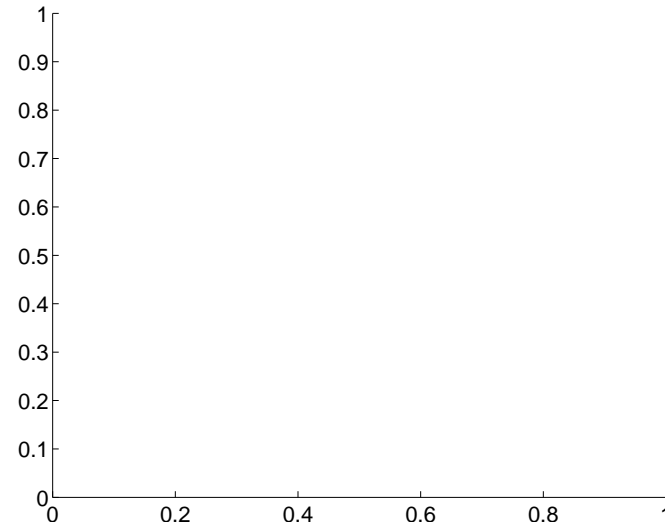
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	0.13 ± 0.92	0.14	-0.04 ± 0.82	0.12 ± 0.94

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC

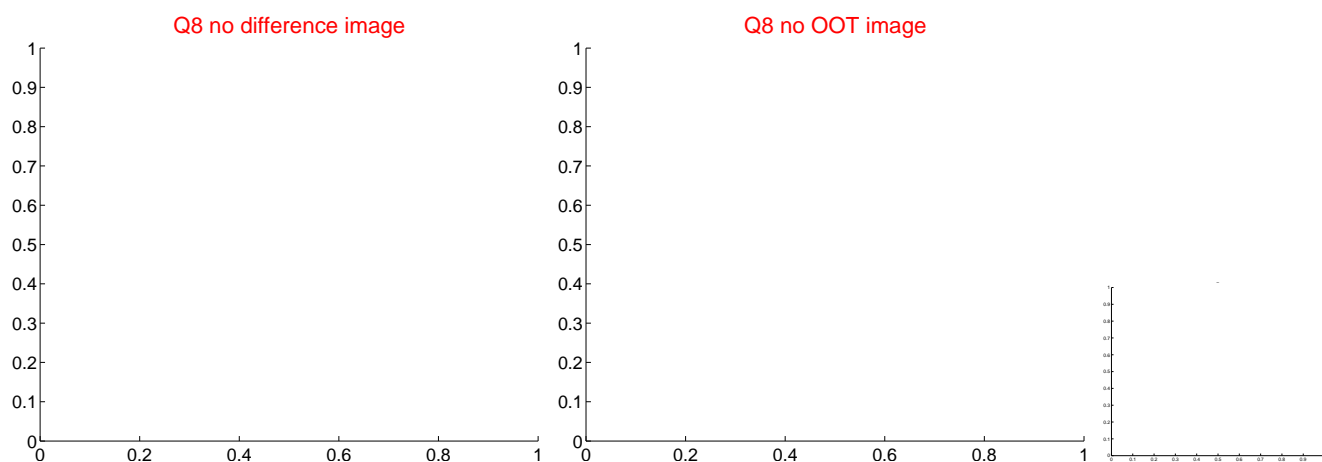
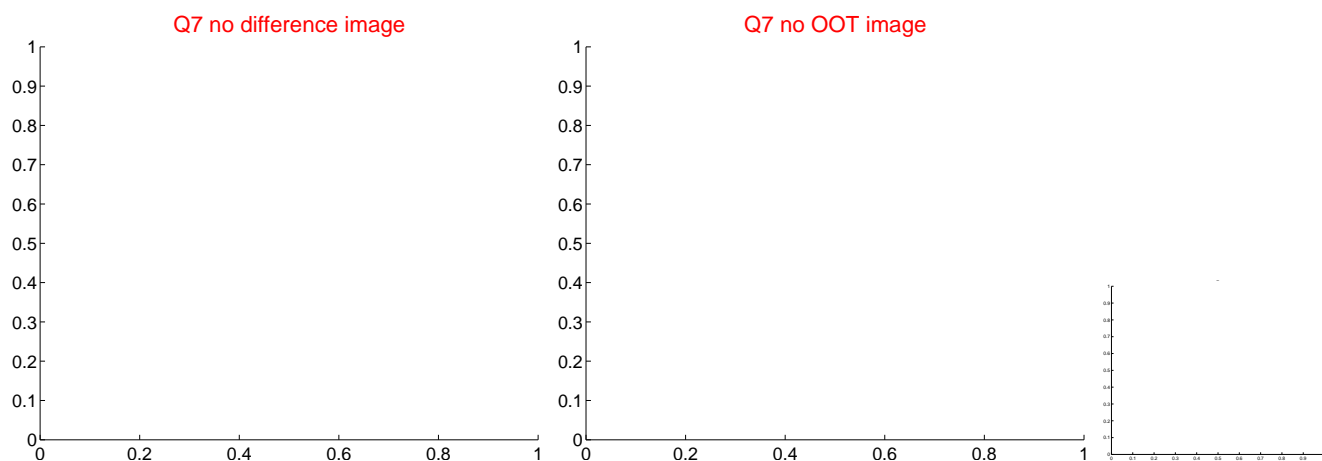
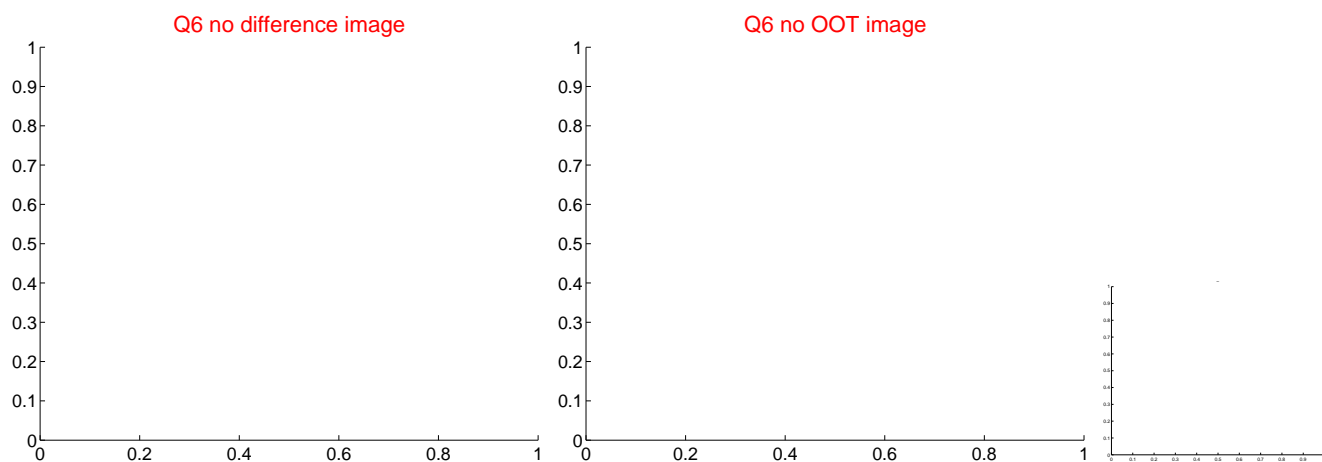
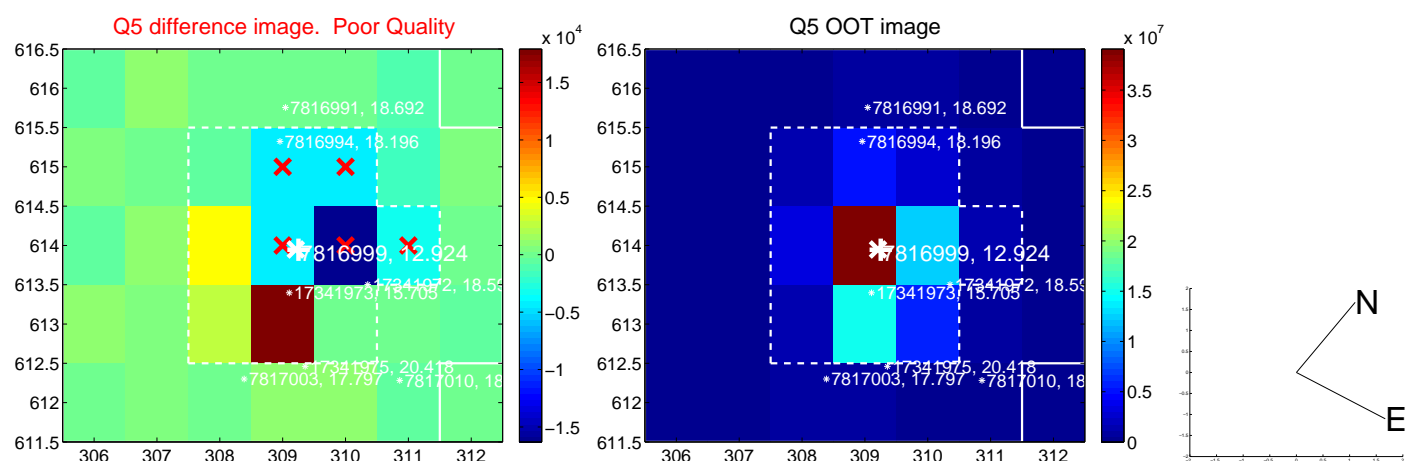


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



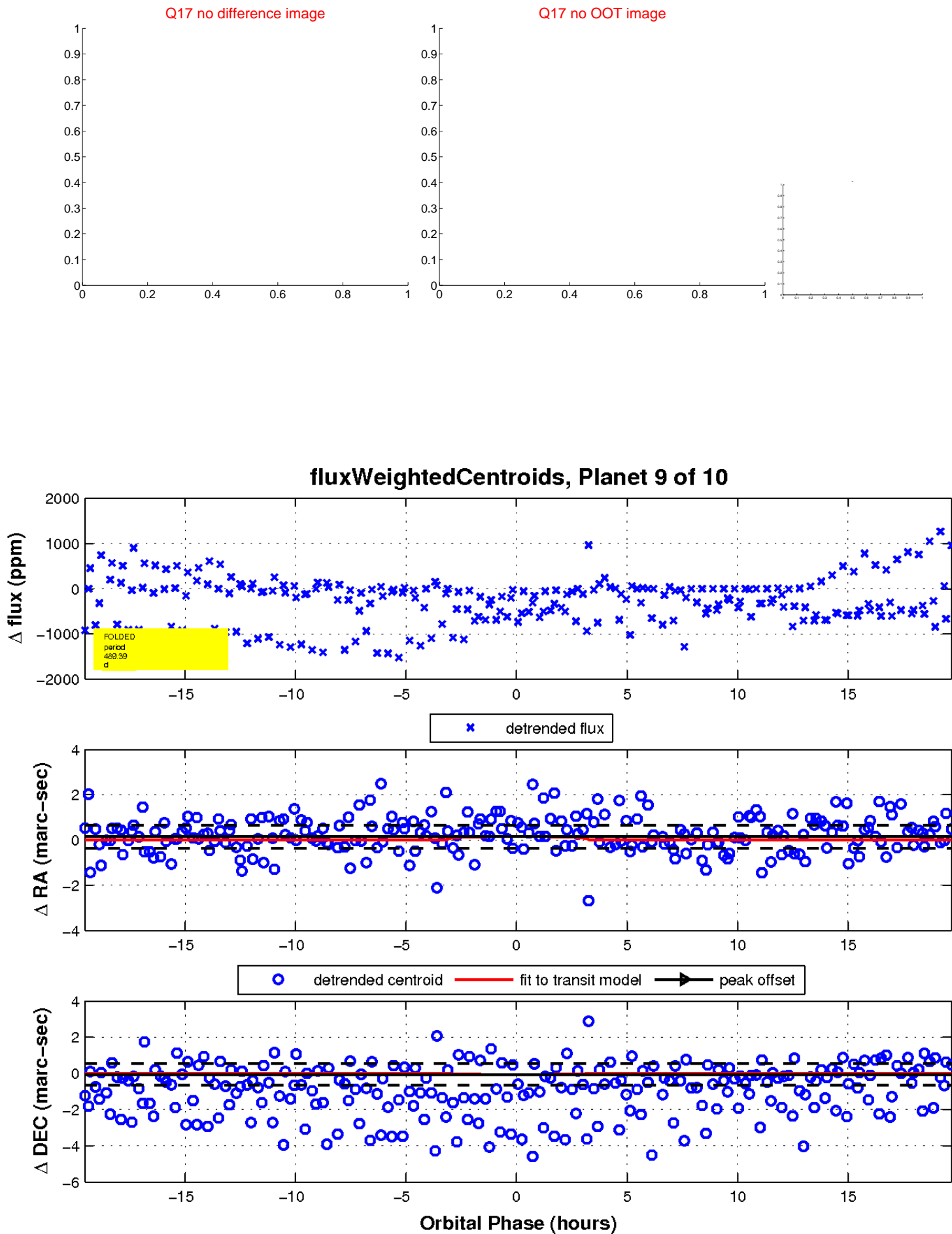
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

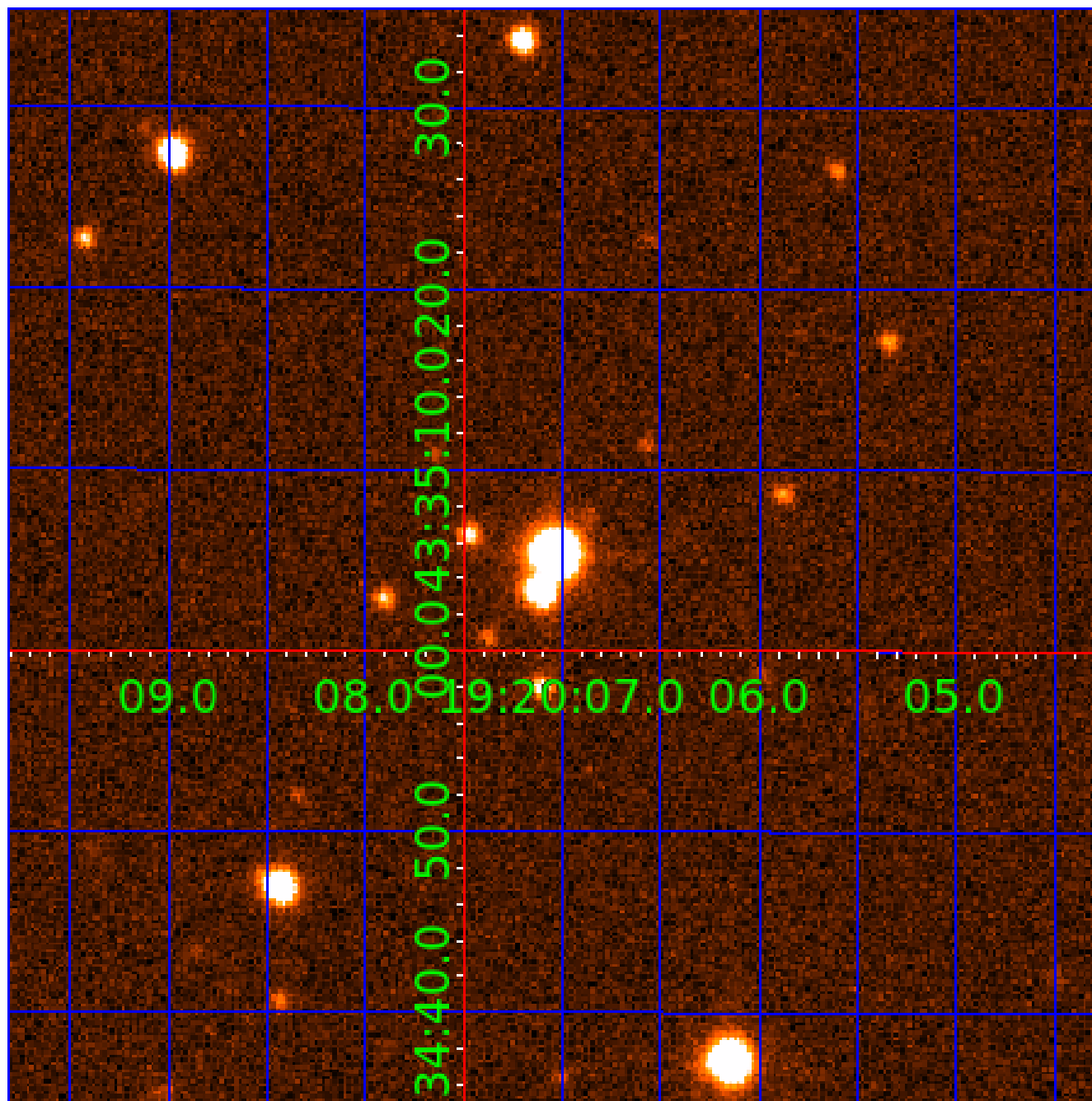


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007816999

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})
007816999-01	OBS	No	2.136986	132.767769	43.1	9.731	8.2	7.5	0.79	5159	0.55	430.37
007816999-02	OBS	No	93.206905	168.604896	220.5	3.296	14.0	3.5	0.79	5159	1.30	2.80
007816999-03	OBS	No	167.068223	149.790427	544.8	4.413	12.6	6.7	0.79	5159	2.29	1.29
007816999-04	OBS	No	139.746572	205.777922	193.8	6.194	12.3	2.9	0.79	5159	1.31	1.63
007816999-05	OBS	No	271.391733	142.572361	217.2	15.000	10.7	-1.0	0.79	5159	1.13	0.67
007816999-06	OBS	No	356.878727	481.792582	362.9	5.646	11.3	4.6	0.79	5159	2.01	0.47
007816999-08	OBS	No	184.487802	310.869972	253.1	10.500	10.4	-1.0	0.79	5159	1.22	1.13
007816999-09	OBS	No	489.387806	531.611891	588.2	6.569	9.1	6.0	0.79	5159	2.08	0.31
007816999-10	OBS	No	332.678790	313.662559	329.7	7.500	9.7	-1.0	0.79	5159	1.40	0.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007816999-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
007816999-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—INCONSISTENT_TRANS
007816999-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
007816999-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
007816999-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—CENT_NOFITS—HALO_GHOST
007816999-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007816999-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007816999-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
007816999-10	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS—HALO_GHOST

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

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

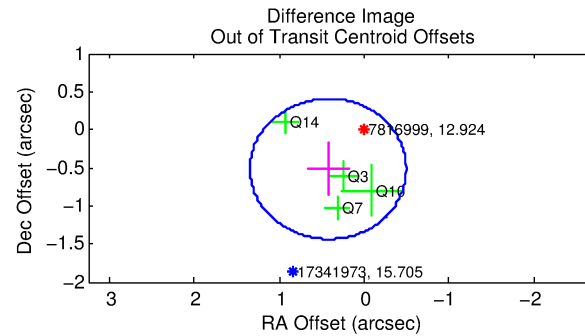
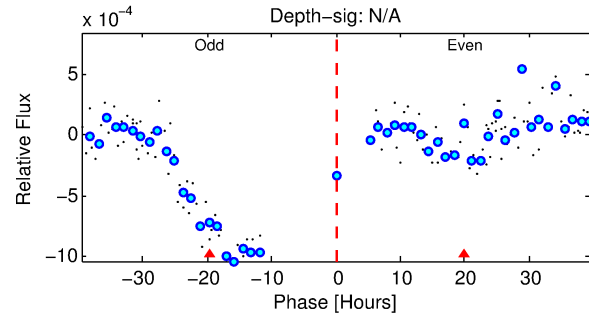
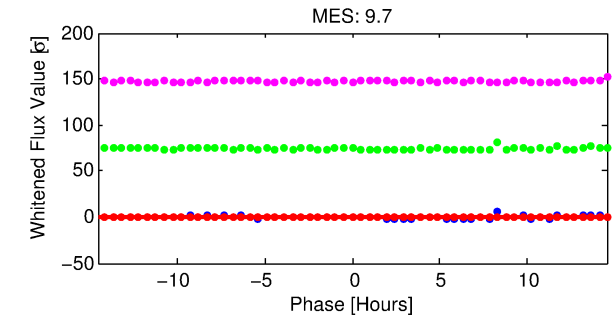
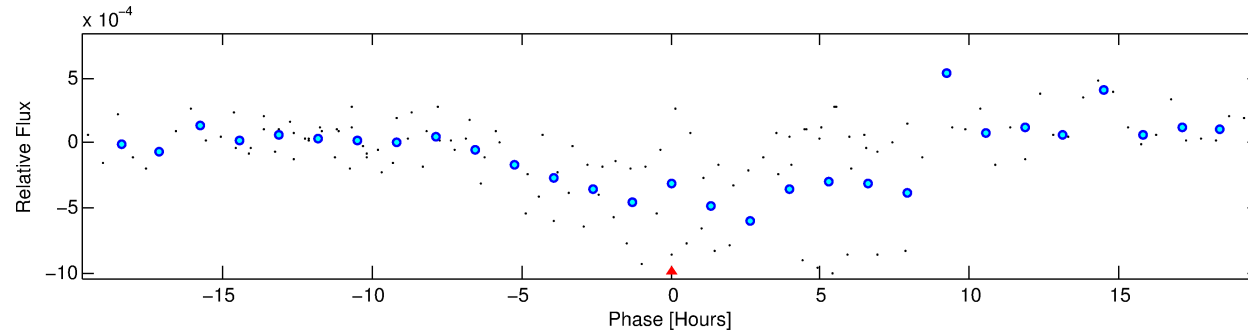
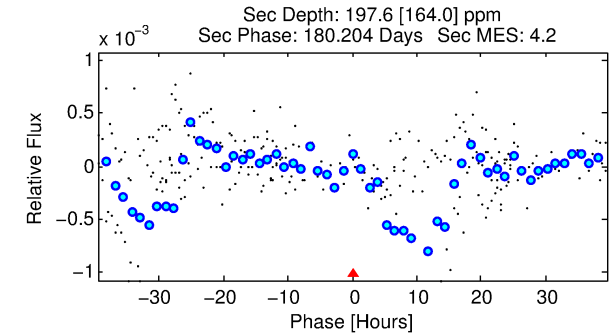
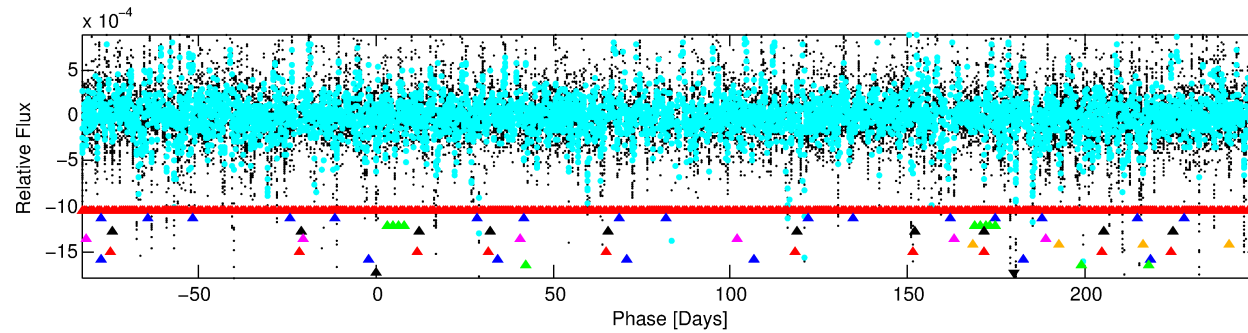
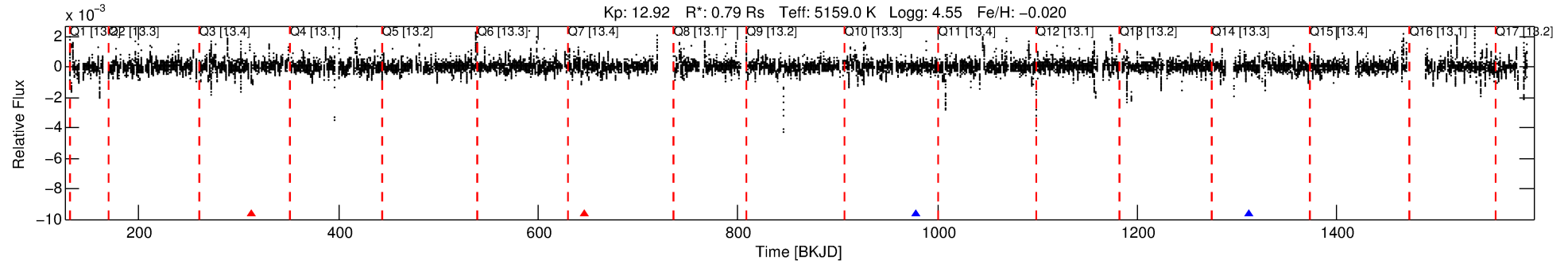
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007816999-10

No Significant Match Found

DV One-Page Summary

KIC: 7816999 Candidate: 10 of 10 Period: 332.679 d



TPS TCE Results:

Period = 332.67879 d
Epoch = 313.6626 BKJD

DV fit results are unavailable

DV Diagnostic Results:

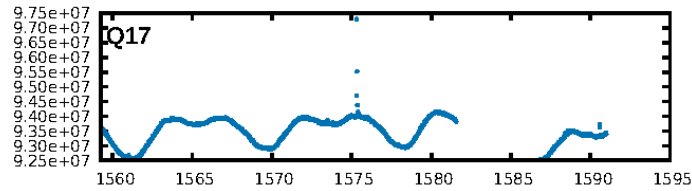
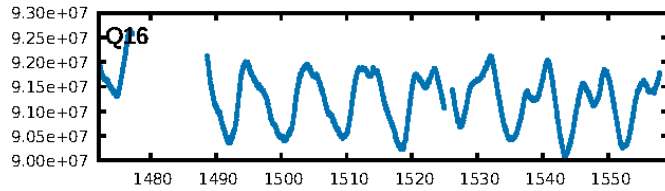
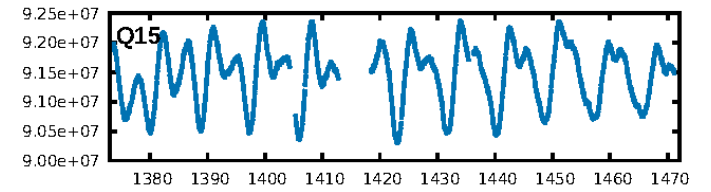
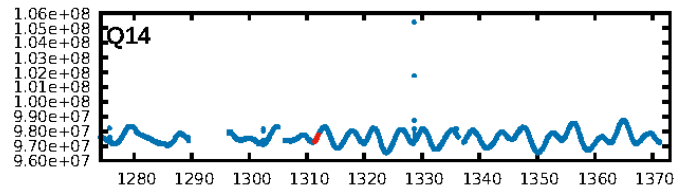
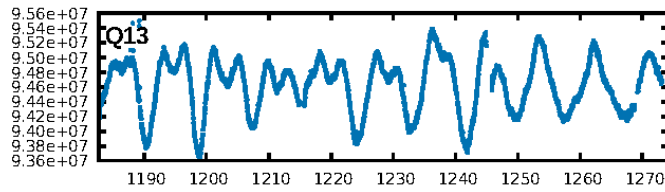
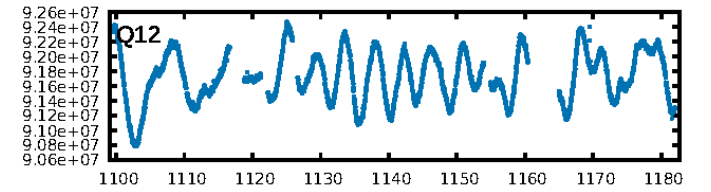
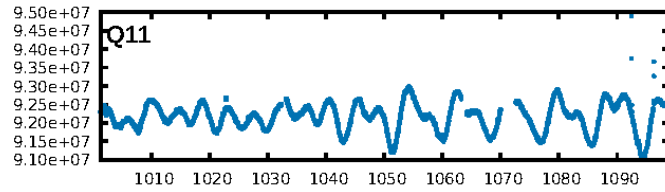
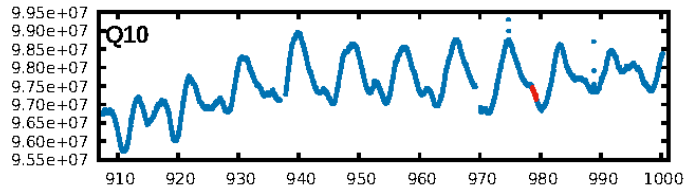
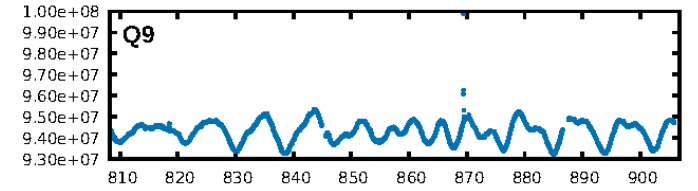
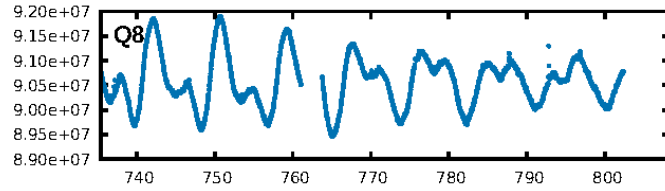
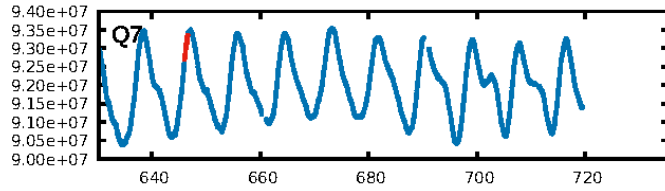
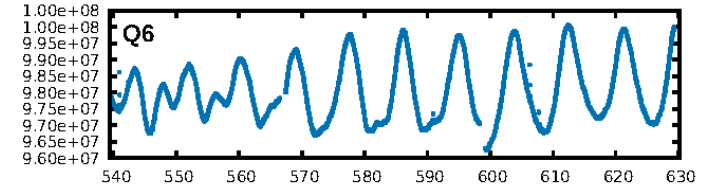
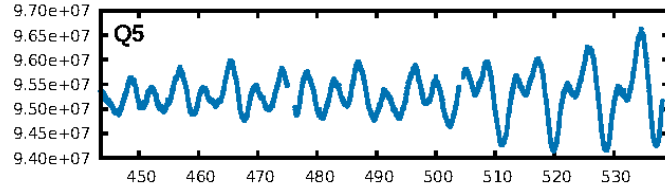
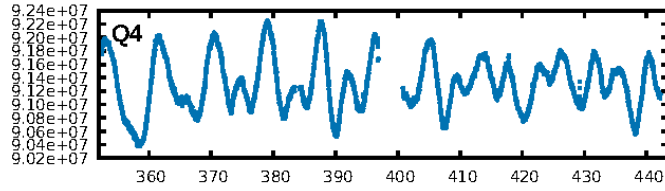
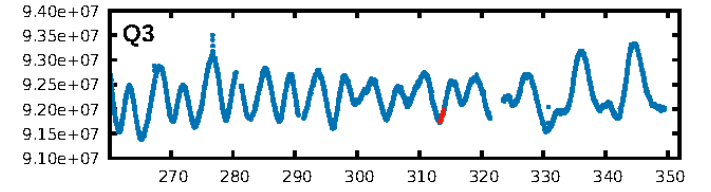
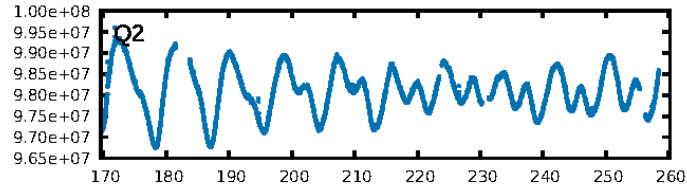
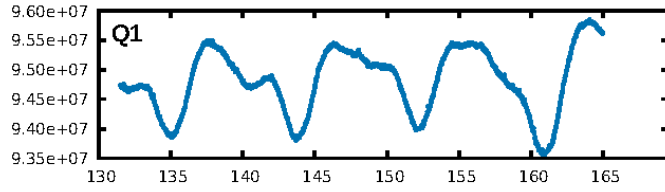
ShortPeriod-sig: 100.0% [87.71 σ]
LongPeriod-sig: 100.0% [61.87 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.48e-08
RollingBand-fgt: 0.33 [1/3]
GhostDiagnostic-chr: 0.1878

Centroid-sig: 28.3%
Centroid-so: 2.103 arcsec [0.91 σ]
OotOffset-rm: 0.665 arcsec [2.16 σ]
KicOffset-rm: 0.739 arcsec [2.81 σ]
OotOffset-st: 2/2/0/0 [4]
KicOffset-st: 2/2/0/0 [4]
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DiffImageOverlap-fno: 0.50 [2/4]

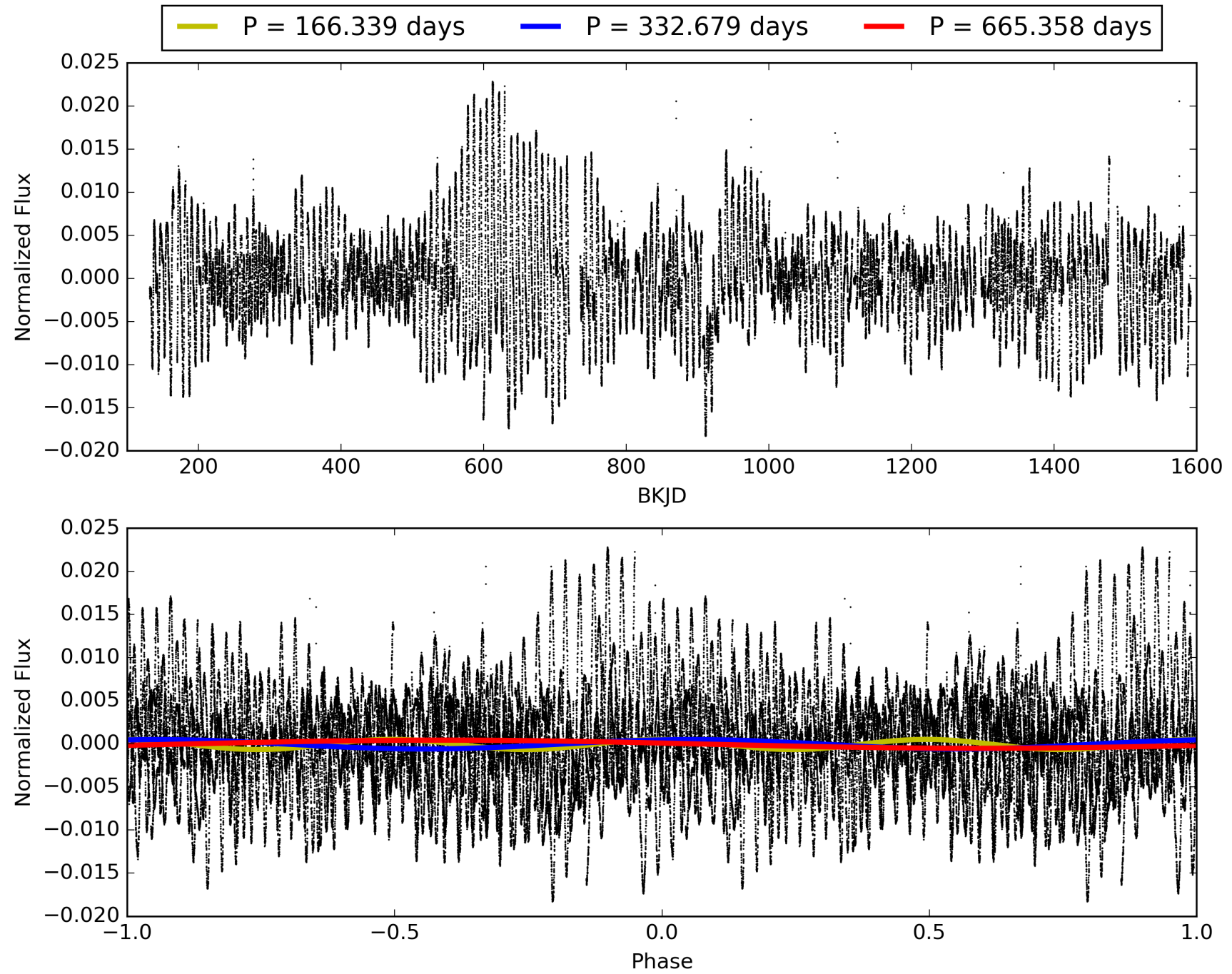
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:42:08 Z

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

TCE 007816999-10, PDC Light Curves

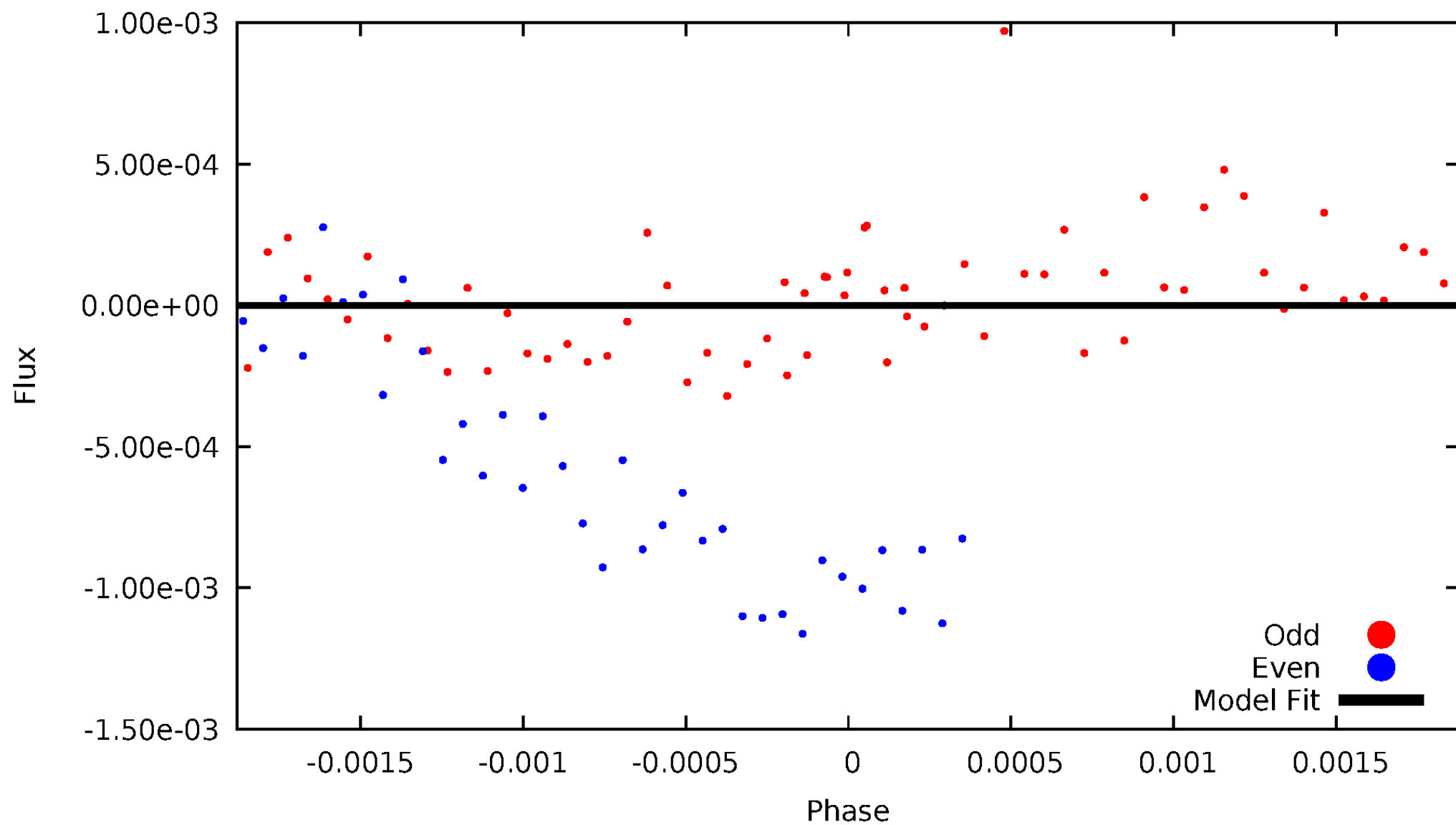


TCE 007816999-10



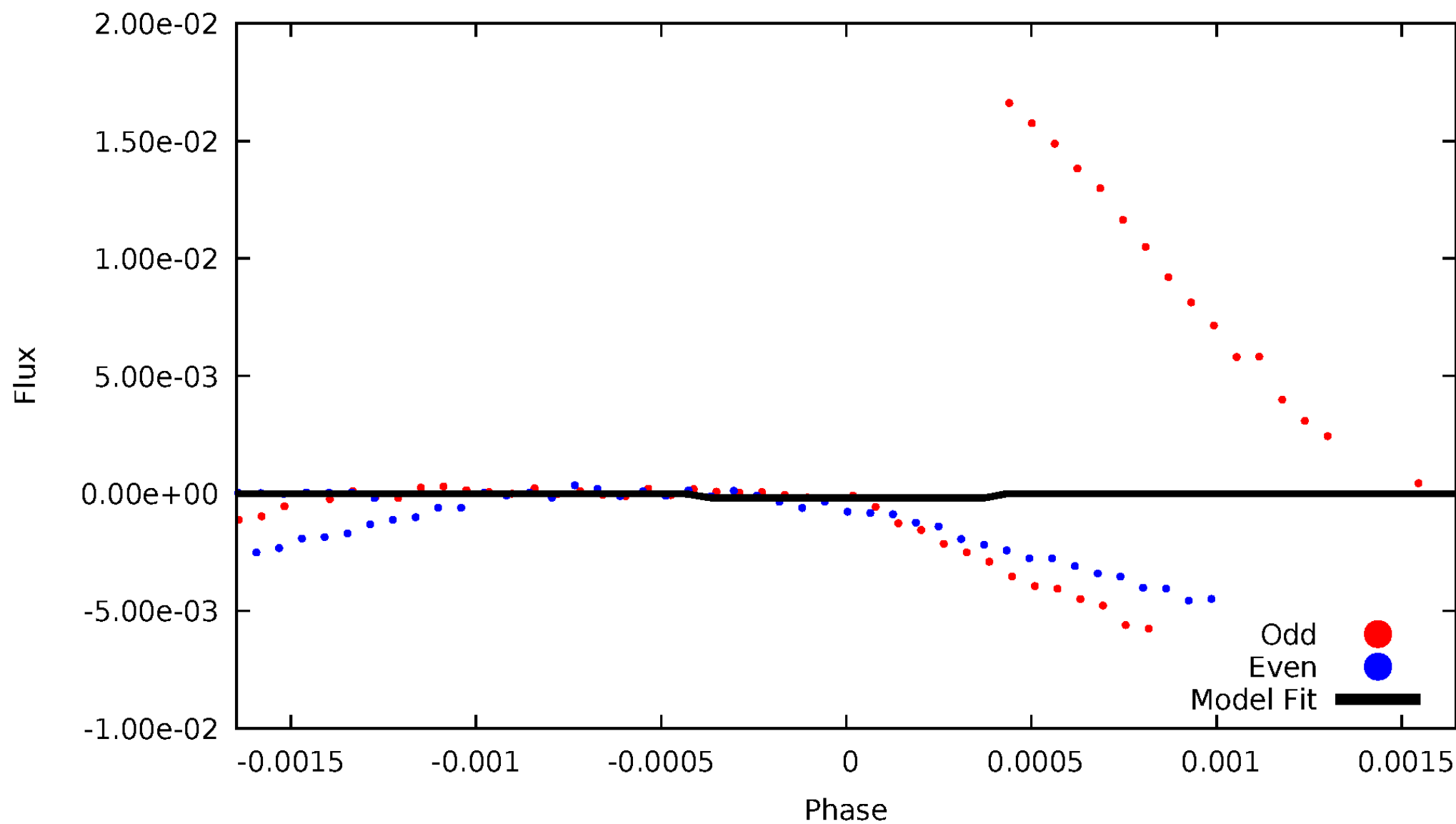
DV Odd/Even

TCE 007816999-10



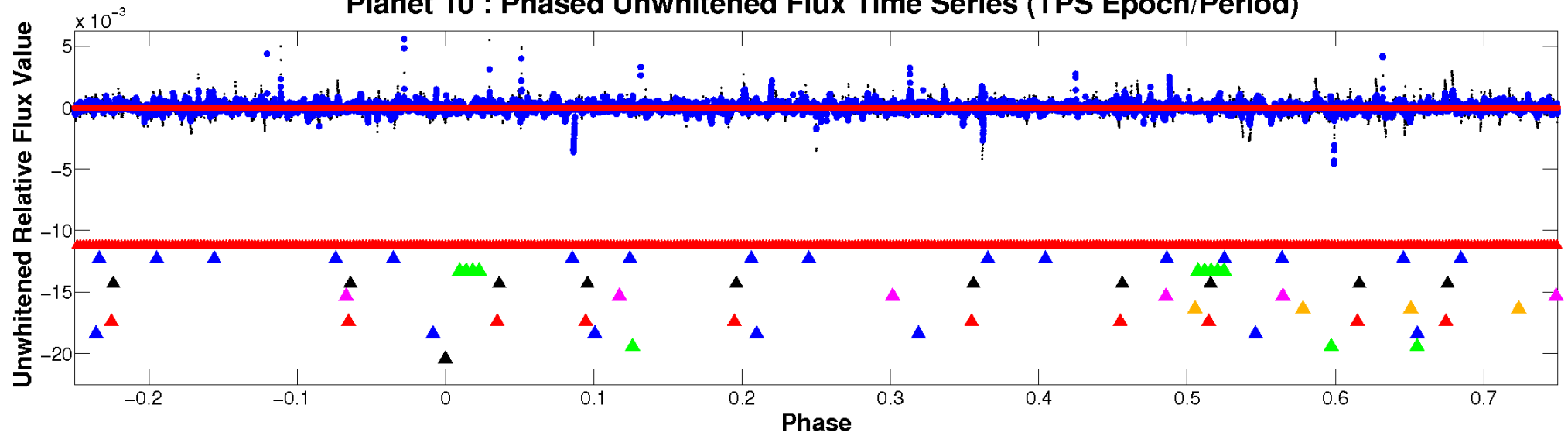
ALT Odd/Even

TCE 007816999-10

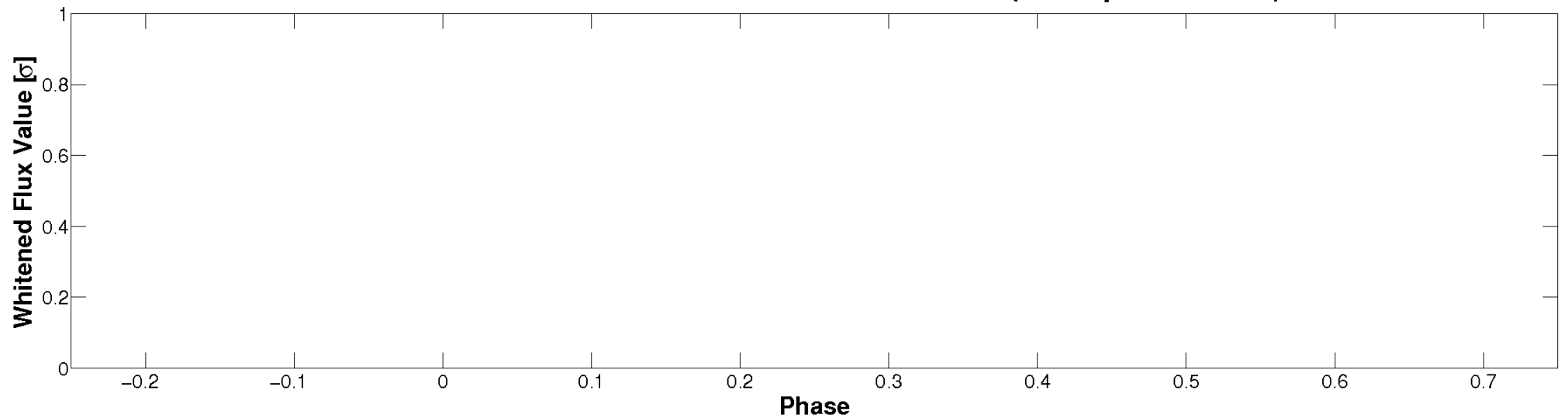


Non-Whitened Vs. Whitened Light Curve

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

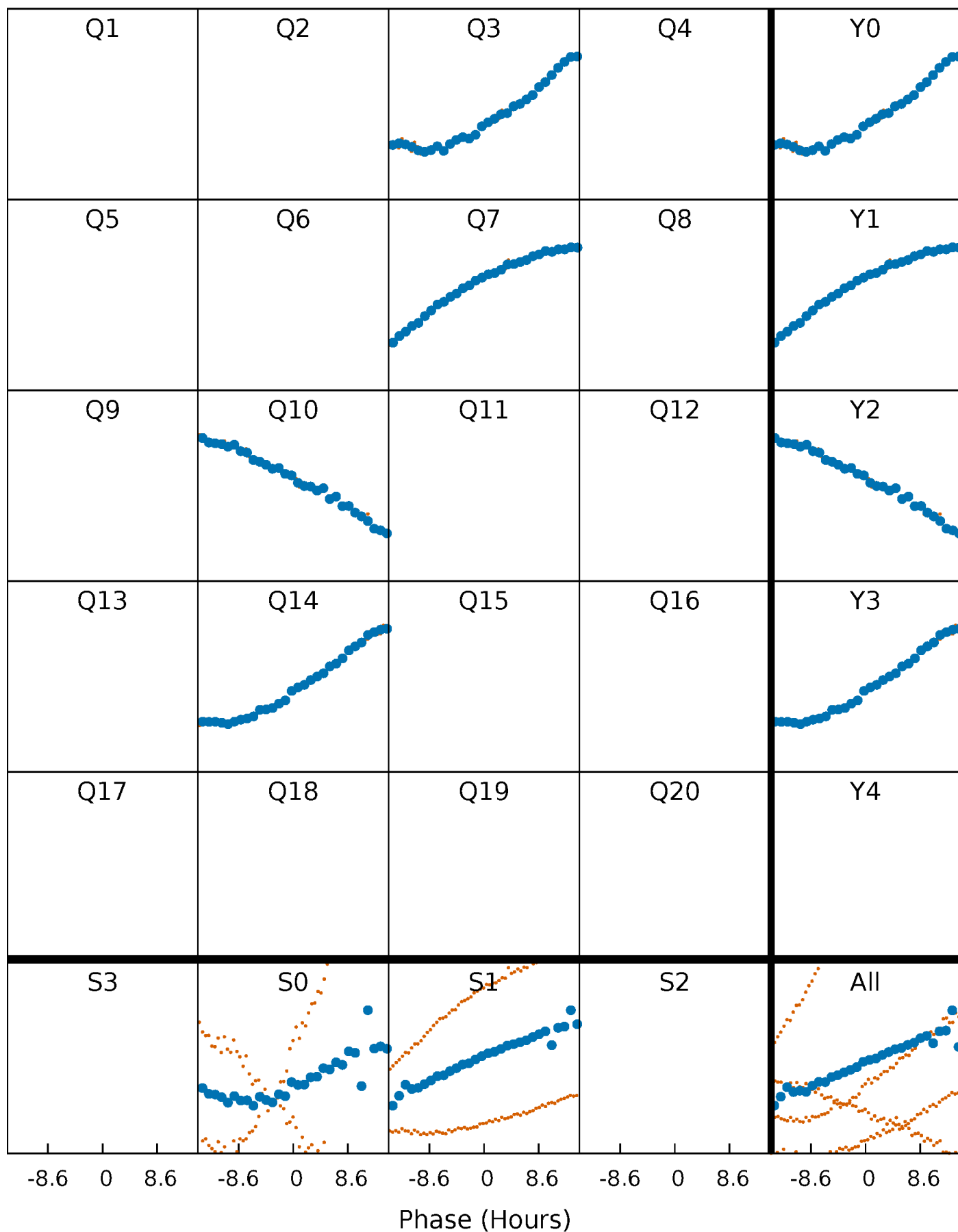


Planet 10 : Phased Whitened Flux Time Series (TPS Epoch/Period)



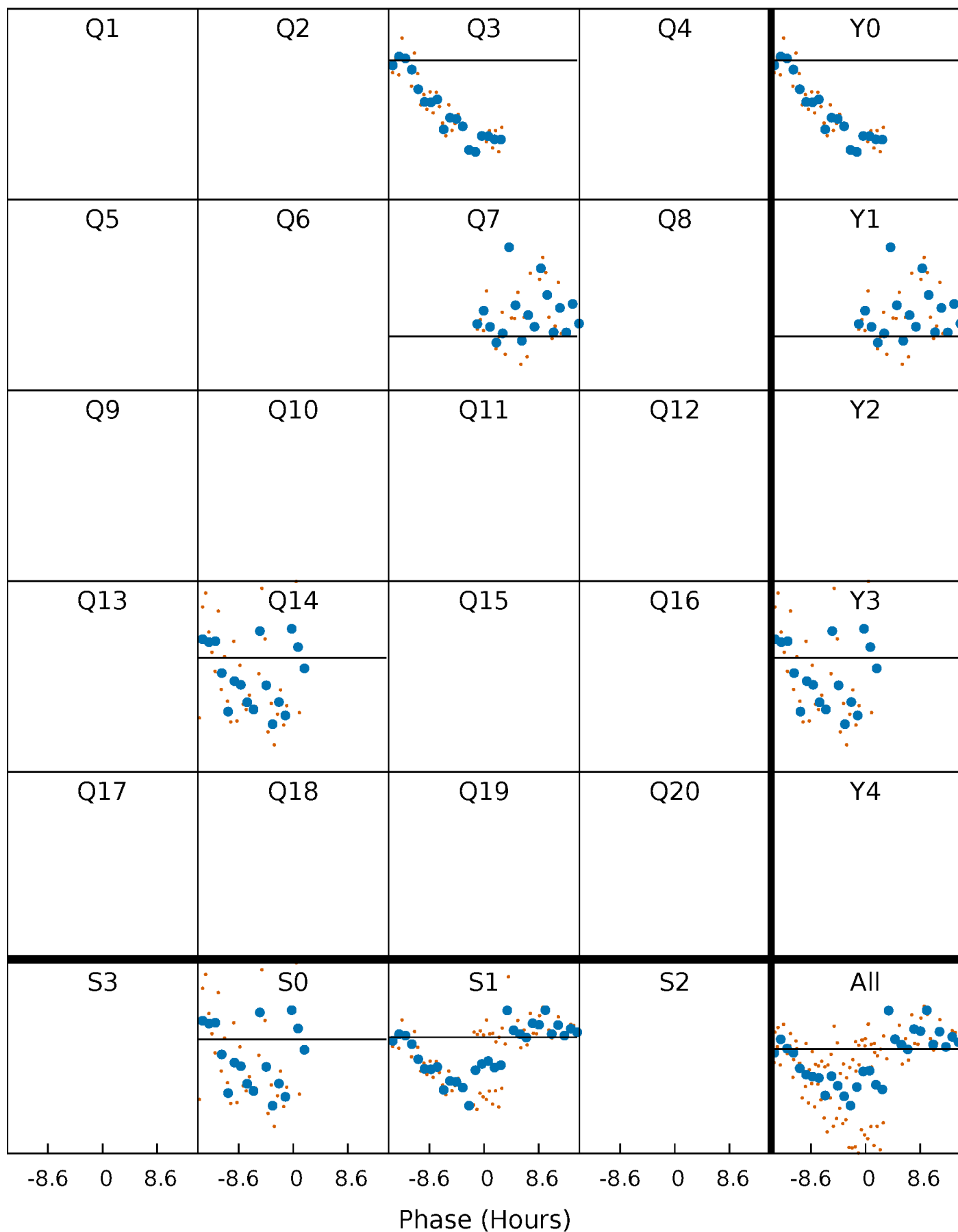
PDC Quarter-Phased Transit Curves

TCE 007816999-10 P=332.678790 Days $T_0=313.662559$ (BKJD)



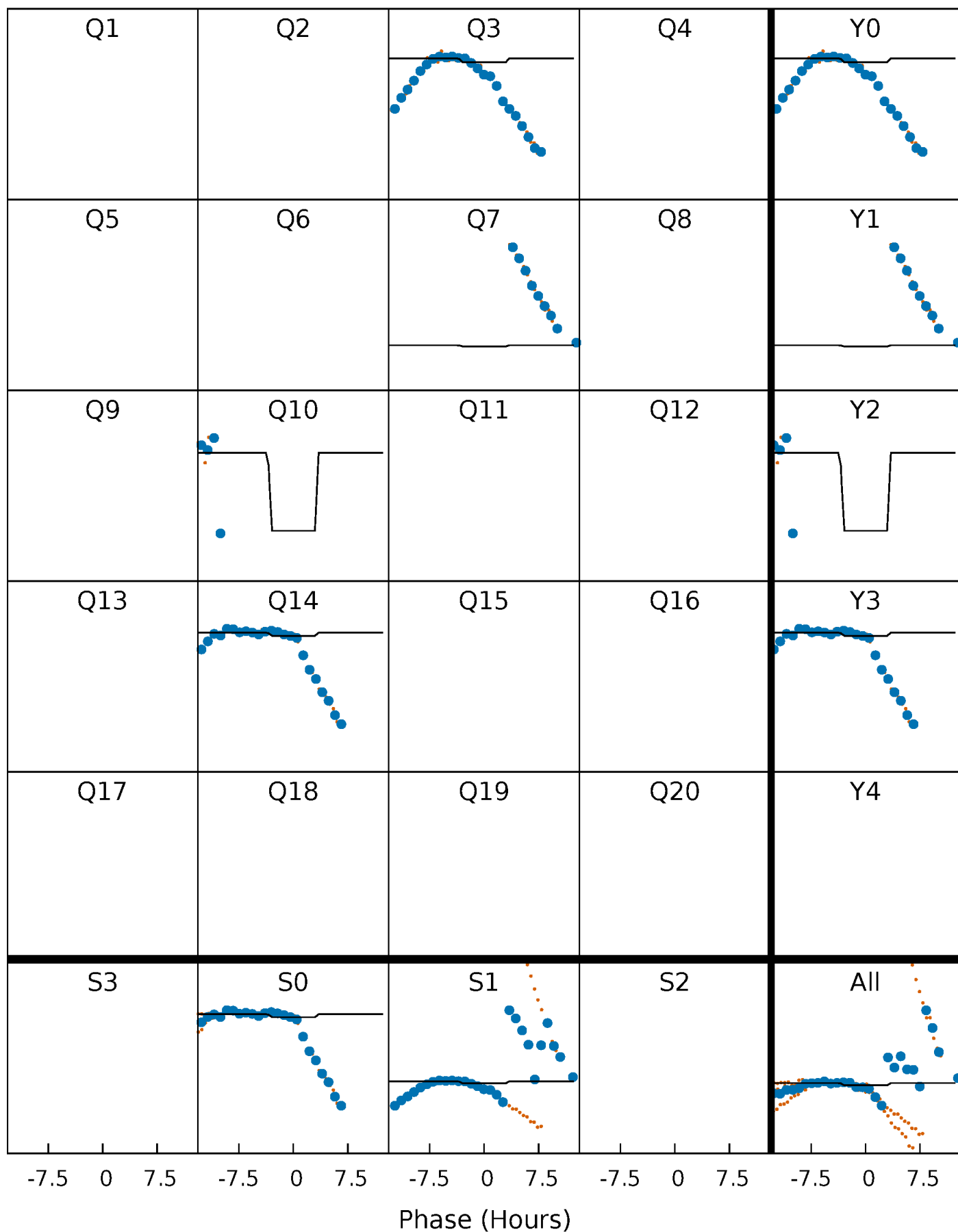
DV Quarter-Phased Transit Curves

TCE 007816999-10 P=332.678790 Days $T_0=313.662559$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

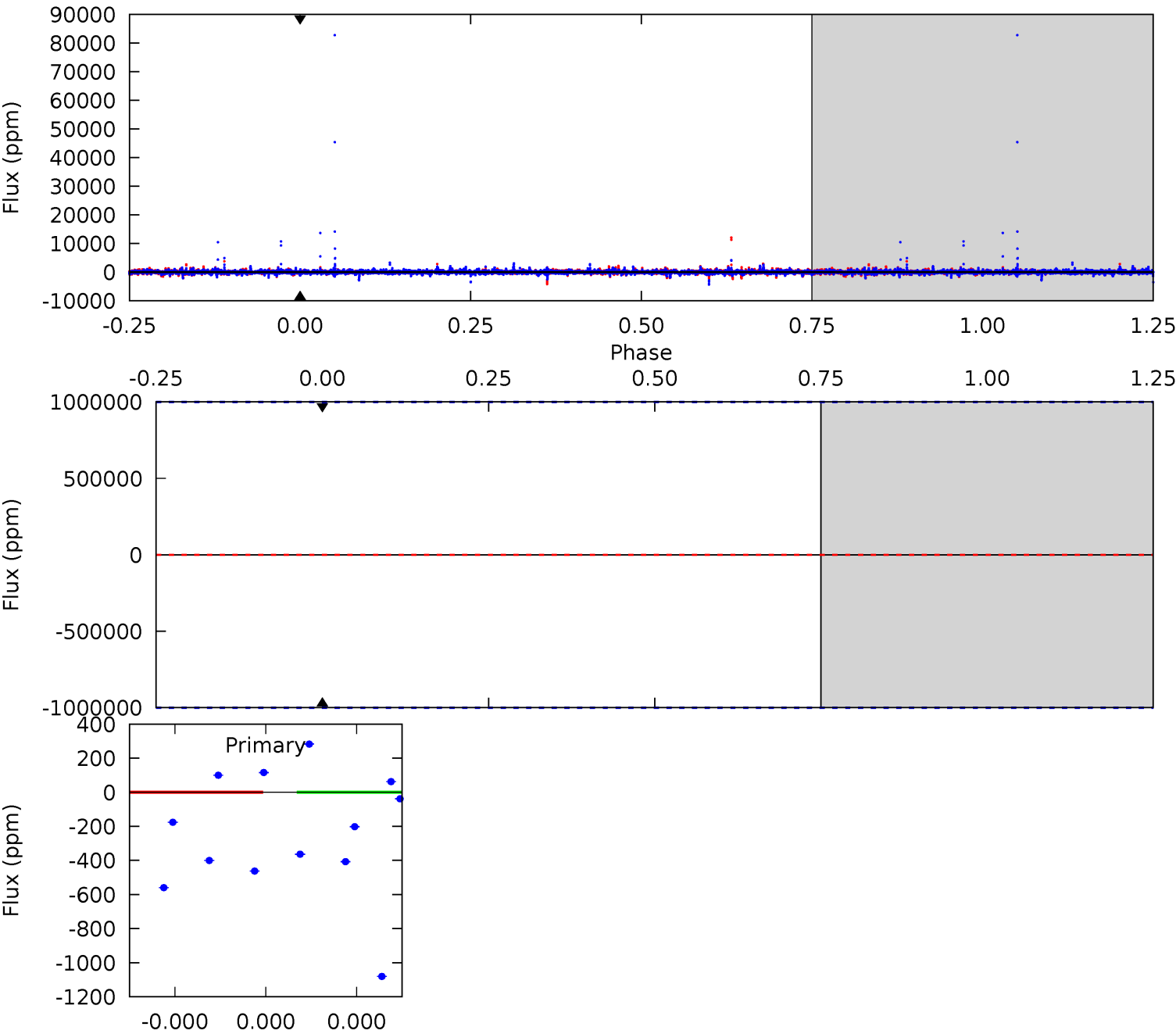
TCE 007816999-10 P=332.678790 Days $T_0=313.450947$ (BKJD)



DV Model-Shift Uniqueness Test

007816999-10, P = 332.678790 Days, E = 313.662559 Days

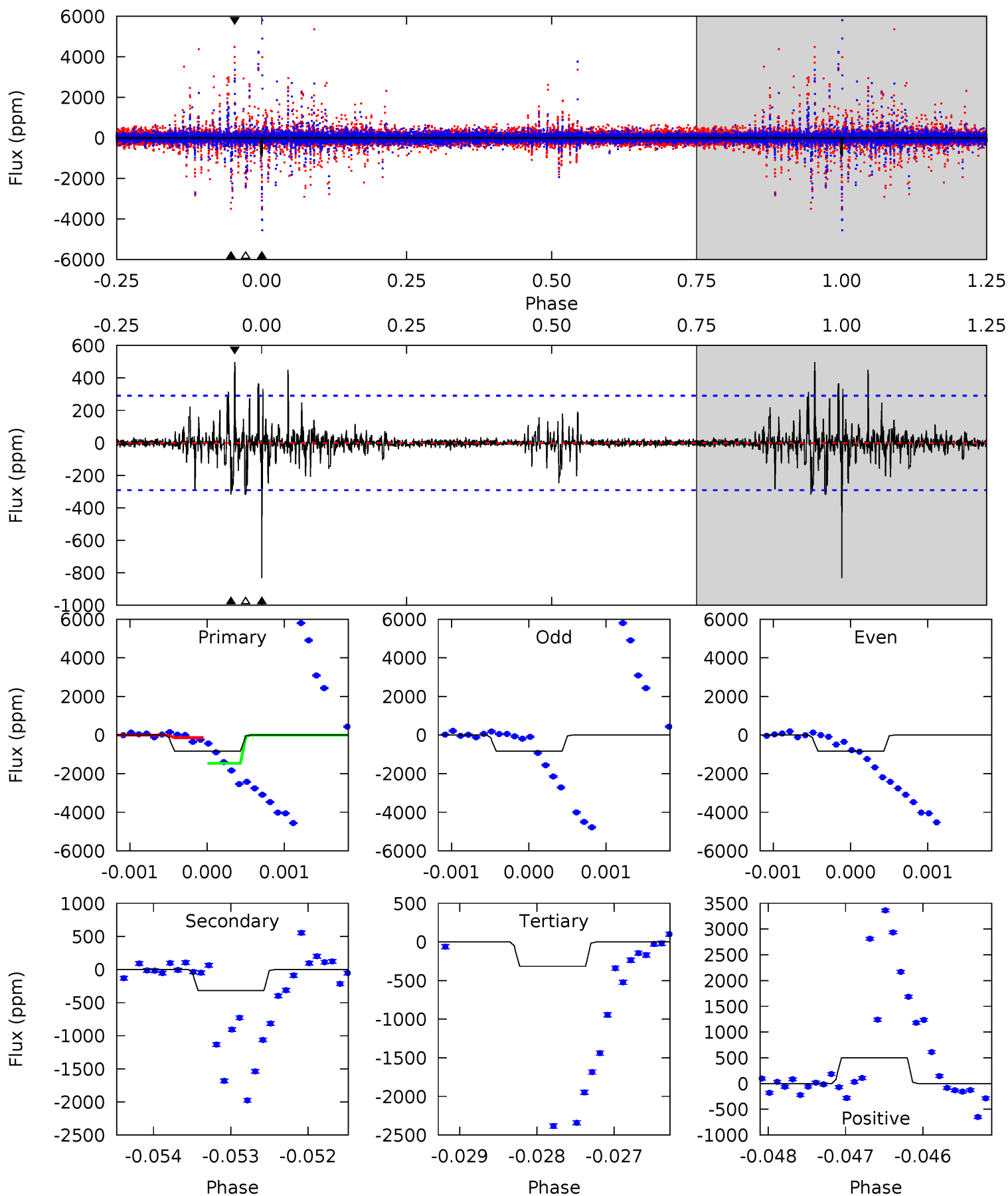
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

007816999-10, P = 332.678790 Days, E = 313.450947 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	5.97	5.95	9.39	5.48	3.33	0.87	9.72	6.28	0.02	-3.42	0.04	1.00	0.37	12.5



Stellar Parameters For KIC 007816999

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5159^{+196}_{-179}	$4.554^{+0.052}_{-0.078}$	$-0.020^{+0.300}_{-0.300}$	$0.790^{+0.106}_{-0.071}$	$0.815^{+0.082}_{-0.073}$	$2.327^{+0.589}_{-0.603}$
	+4%/-3%	+1%/-2%	+1500%/-1500%	+13%/-9%	+10%/-9%	+25%/-26%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 007816999-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$6.39^{+6.16}_{-4.36}$	303^{+14}_{-13}	3611^{+13270}_{-20320}	$8939^{+1951617}_{-1943181}$
Alt.	-317 ± 53	$6.58^{+6.51}_{-4.78}$	303^{+15}_{-12}	3130^{+1700}_{-559}	3219^{+37486}_{-2466}

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

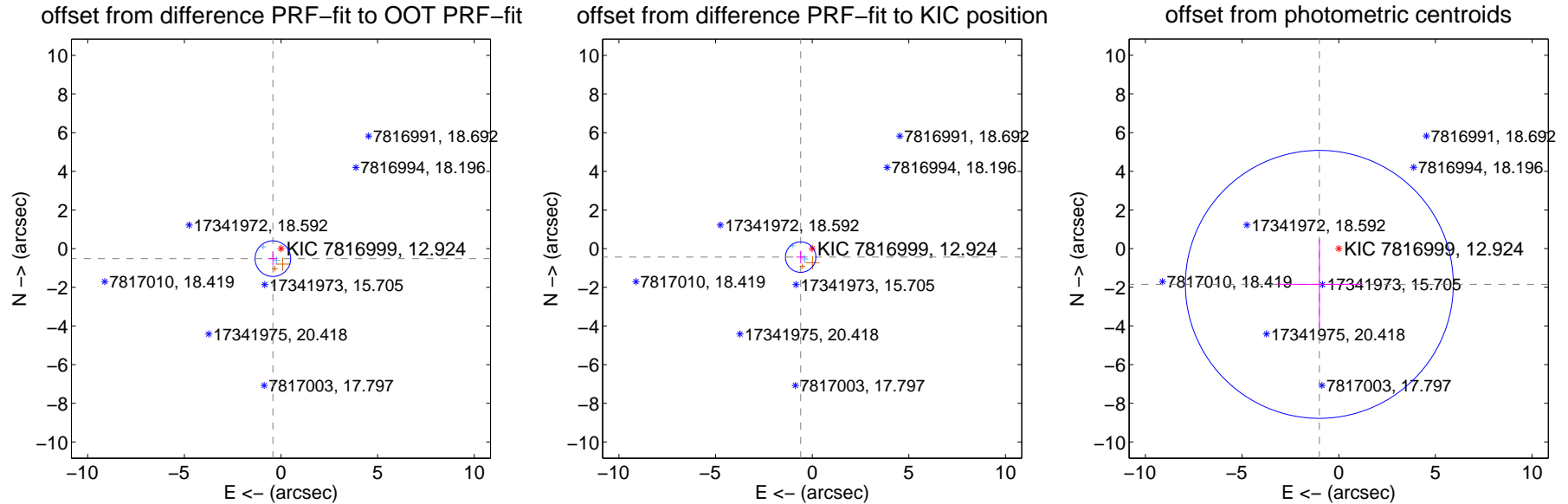
DV Centroid Data

Supplemental centroid analysis for 007816999-10. Kepler magnitude: 12.92. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

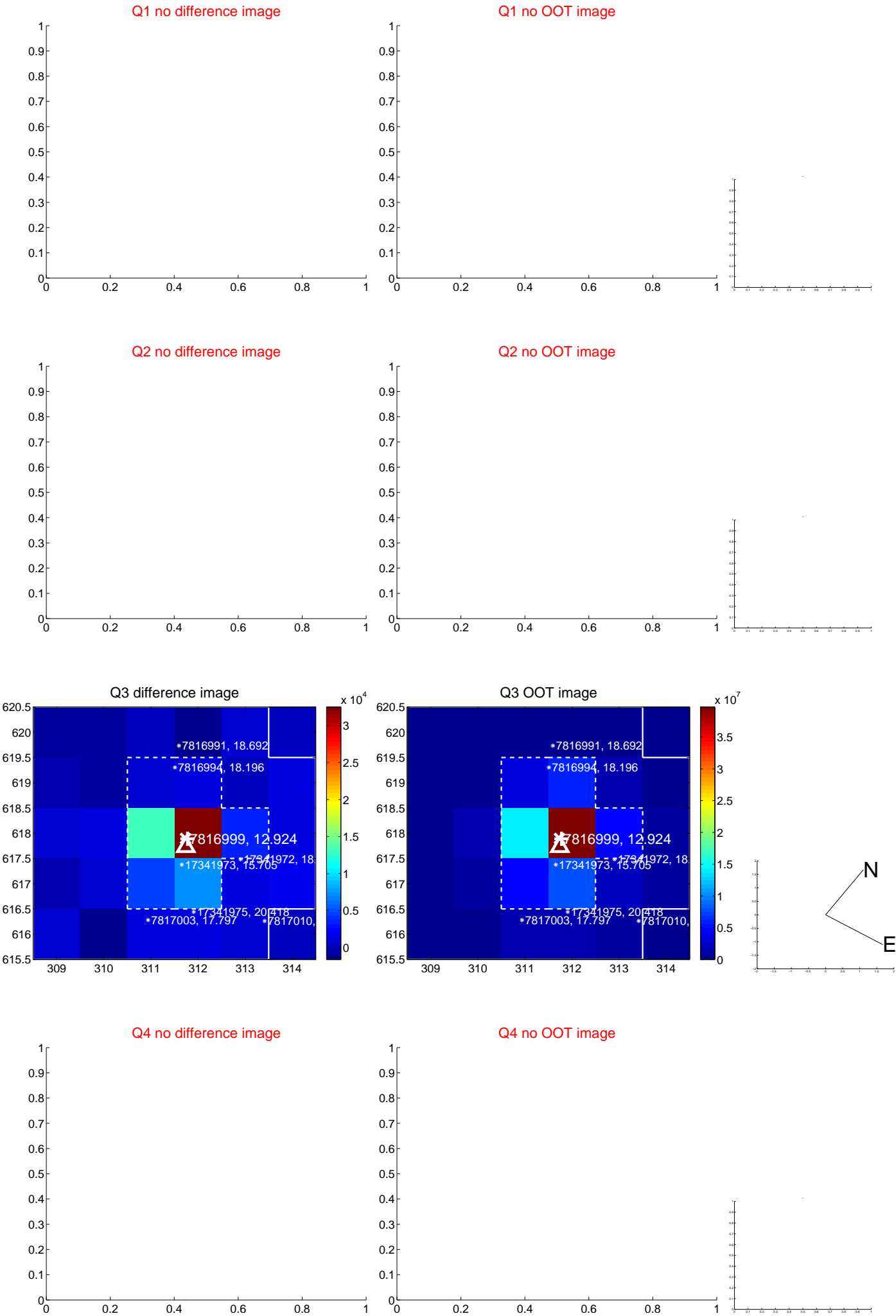
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.665 ± 0.307	2.16	0.420 ± 0.243	-0.515 ± 0.344
PRF-fit source offset from KIC position	0.739 ± 0.263	2.81	0.597 ± 0.223	-0.435 ± 0.325
photometric centroid source offset	2.10 ± 2.31	0.91	1.00 ± 2.23	-1.85 ± 2.33



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



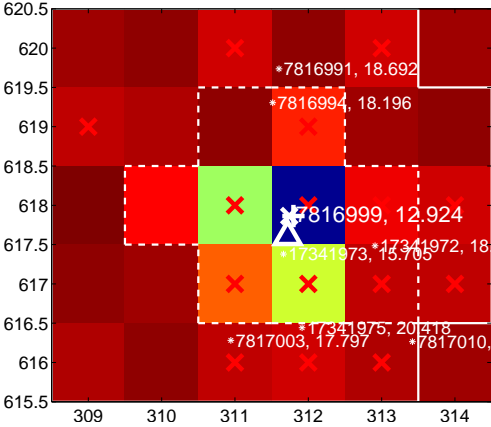
Q6 no difference image



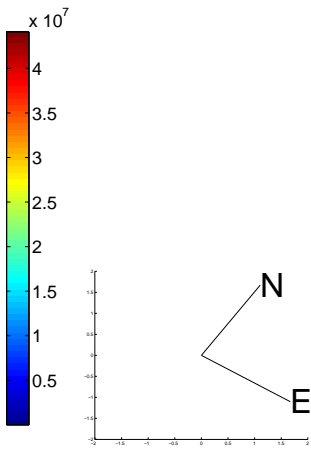
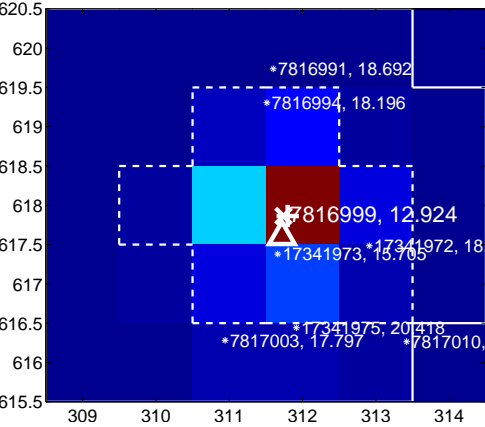
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



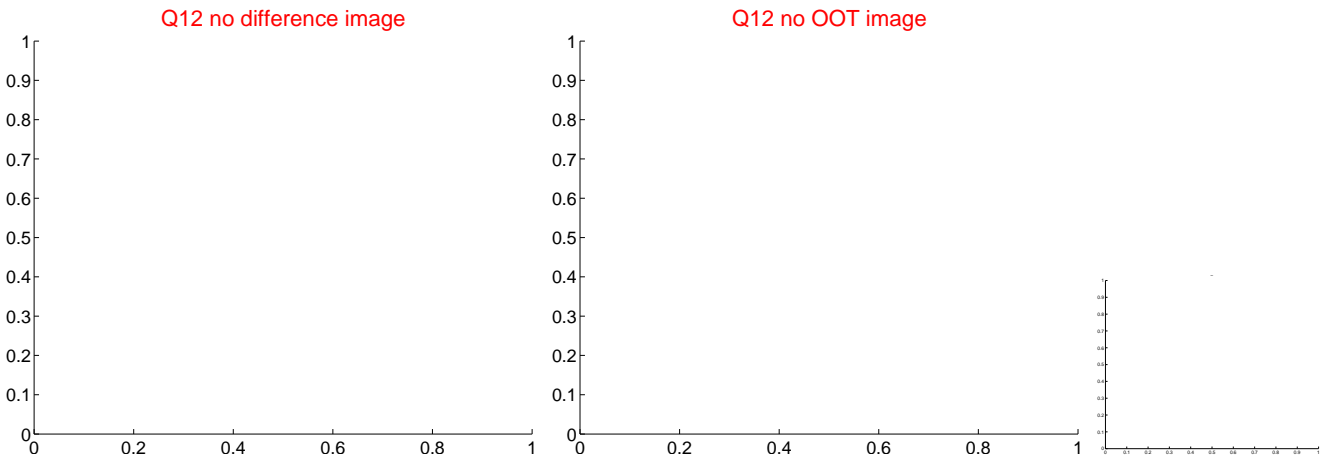
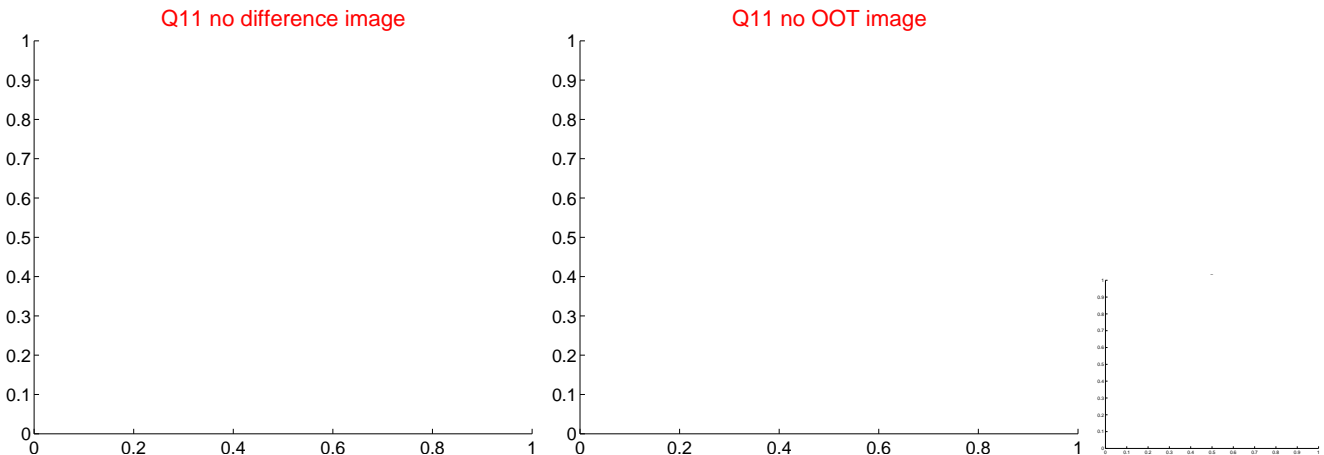
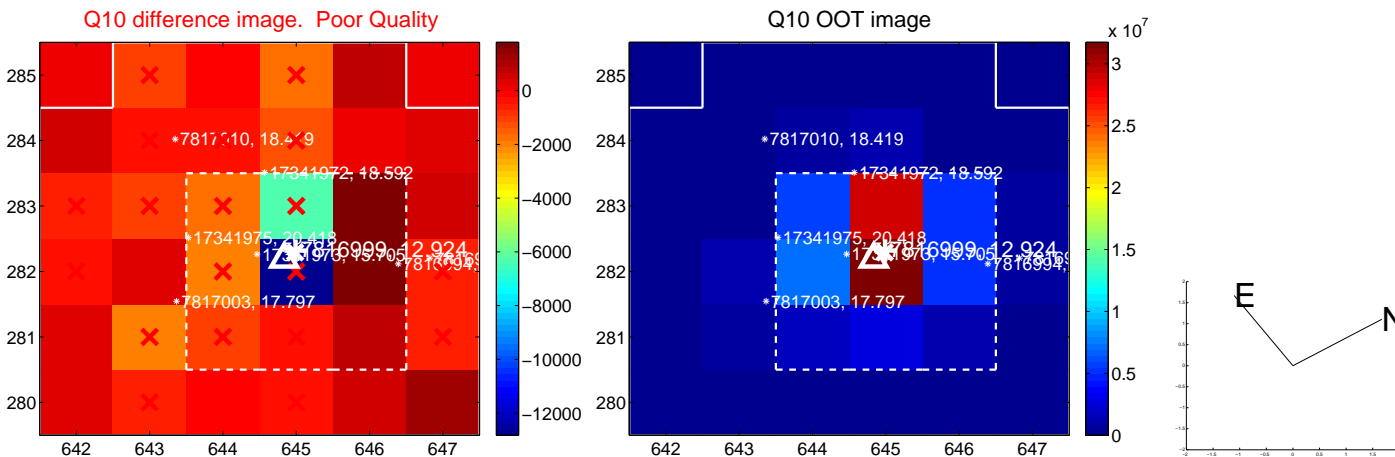
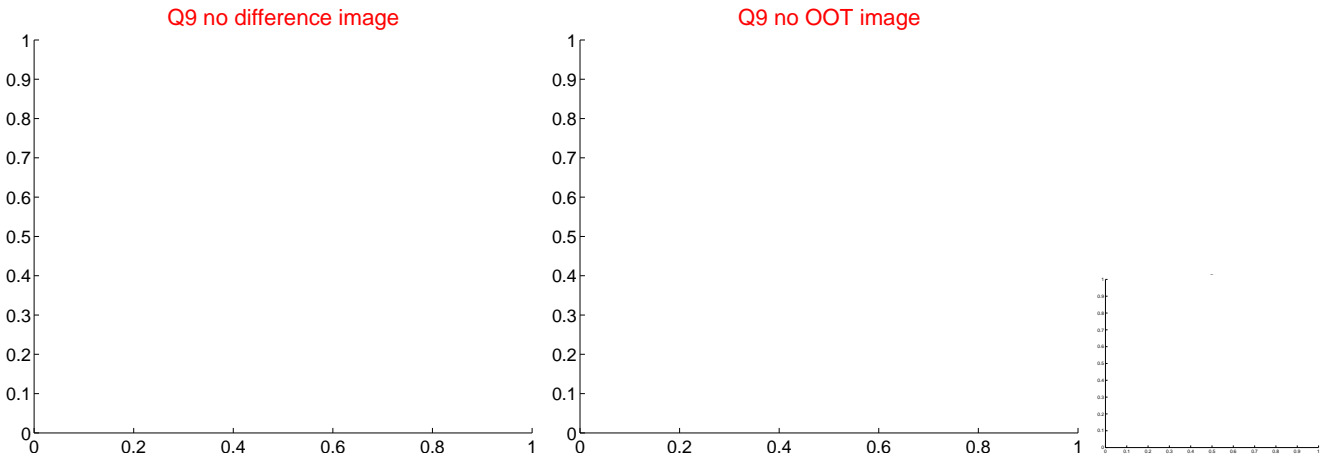
Q8 no difference image



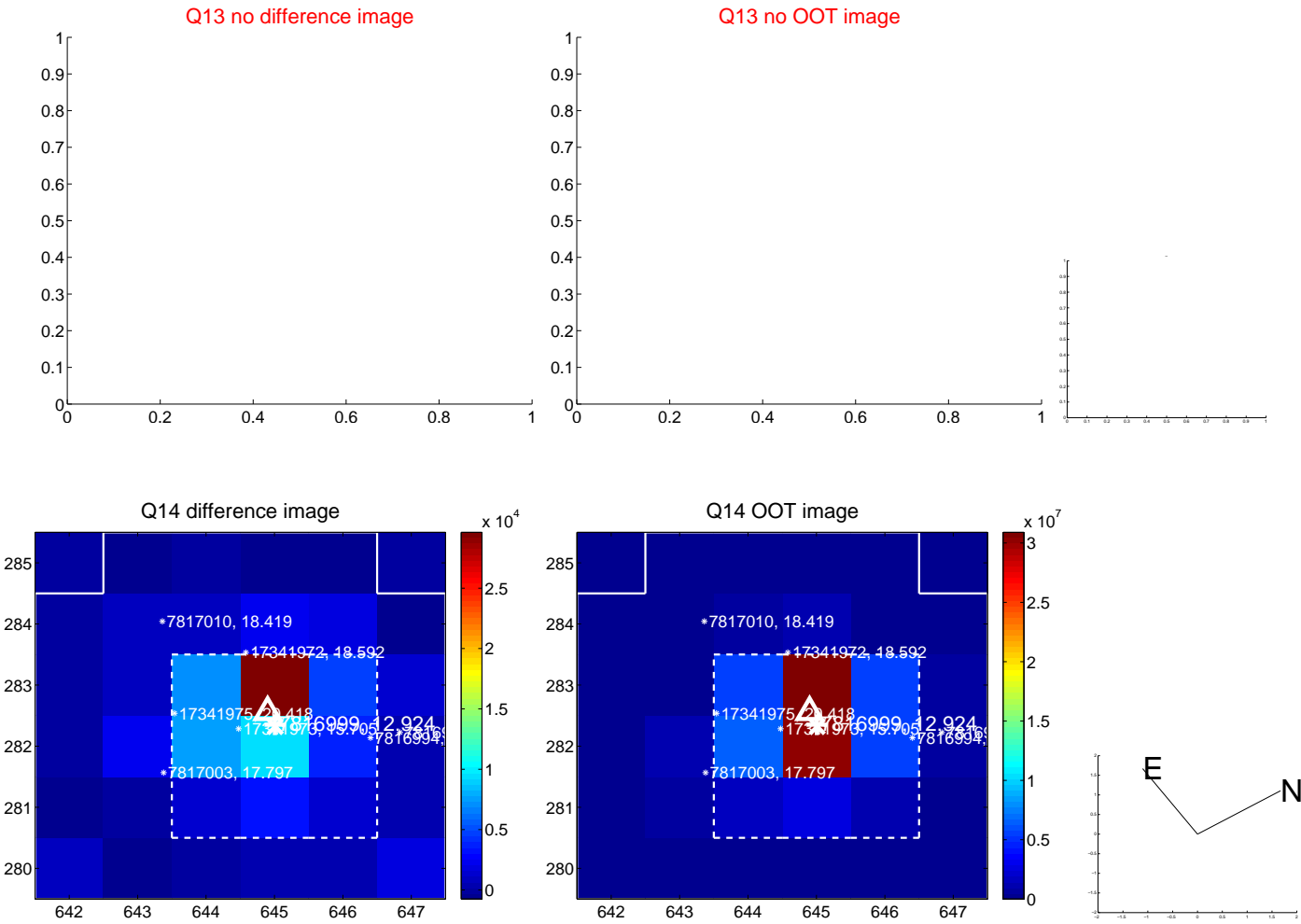
Q8 no OOT image



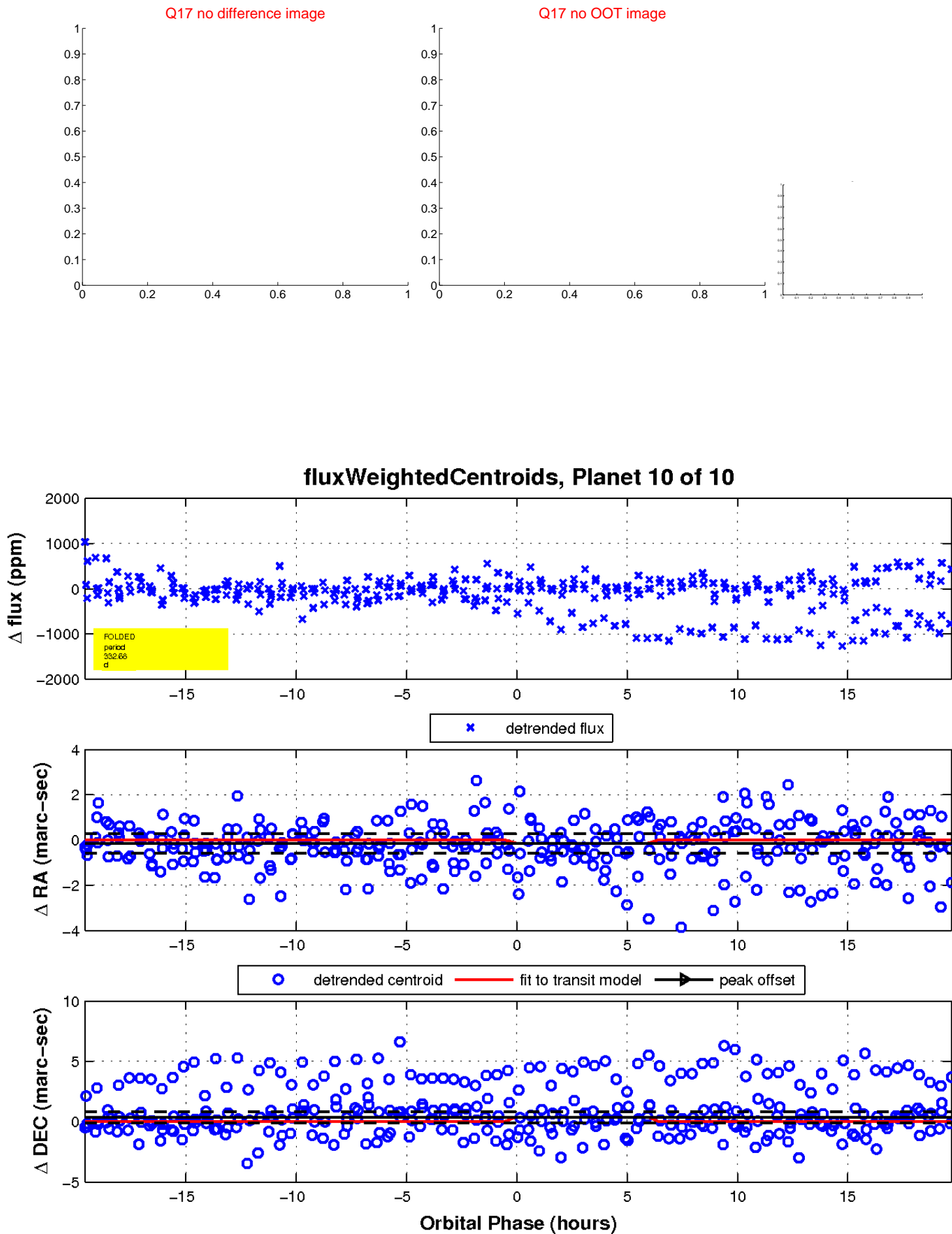
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



white \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

