

KIC 002994666

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})
002994666-01	OBS	No	320.987060	363.690086	1134.1	2.557	8.7	5.7	1.02	6089	3.48	1.42
002994666-02	OBS	No	392.389285	136.075334	1601.0	3.789	8.6	6.9	1.02	6089	4.67	1.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002994666-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_MEAS
002994666-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

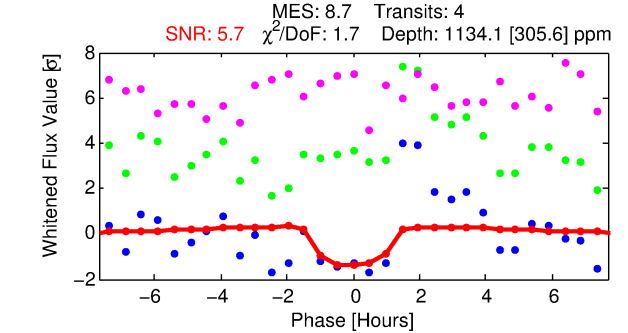
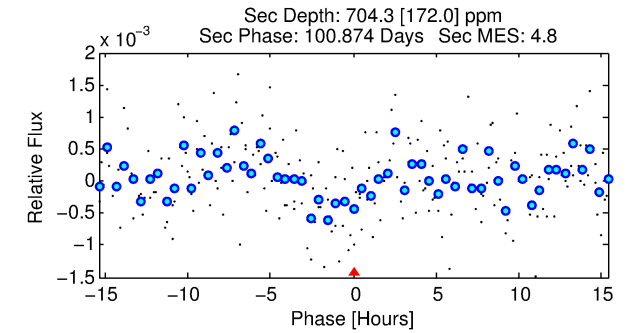
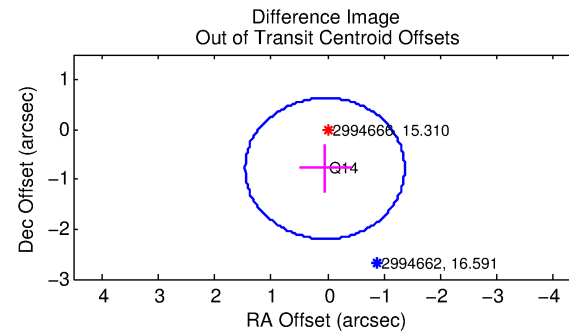
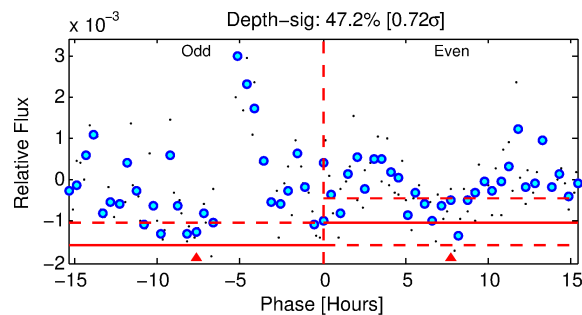
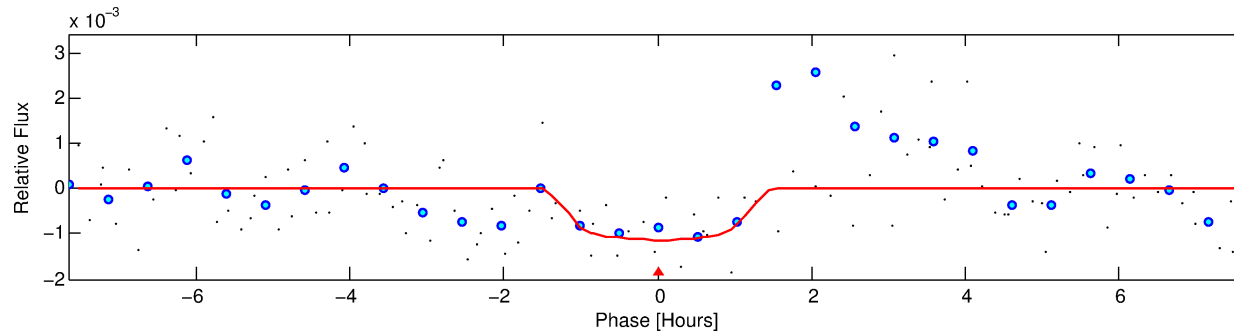
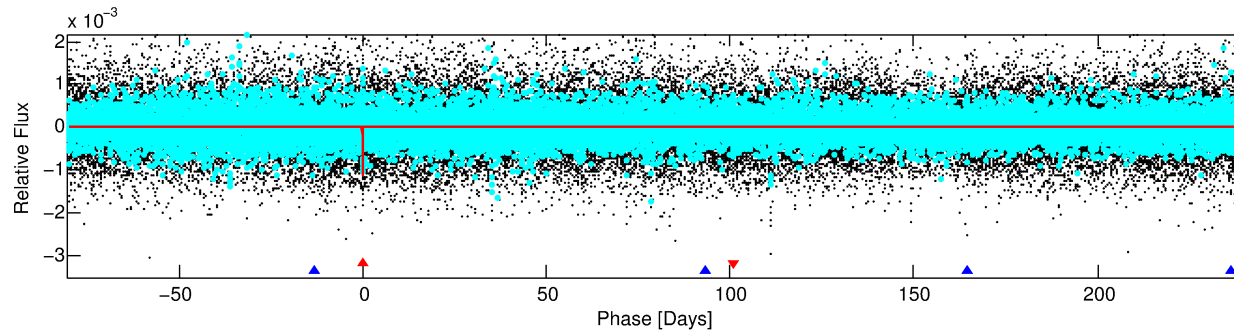
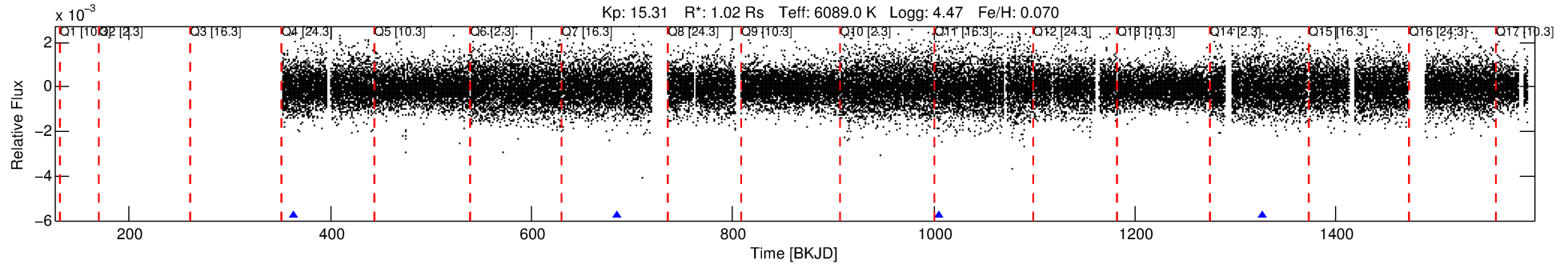
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002994666-01

No Significant Match Found

DV One-Page Summary

KIC: 2994666 Candidate: 1 of 2 Period: 320.987 d



DV Fit Results:

Period = 320.98706 [0.00691] d
Epoch = 363.6901 [0.0111] BKJD
Rp/R* = 0.0311 [0.1844]
a/R* = 939.25 [26129.88]
b = 0.32 [78.20]
Seff = 1.42 [0.61]
Teq = 278 [30] K
Rp = 3.48 [20.63] Re
a = 0.9540 [0.2643] AU
Ag = 29177.32 [346065.38] [0.08 σ]
Teffp = 5624 [16667] K [0.32 σ]

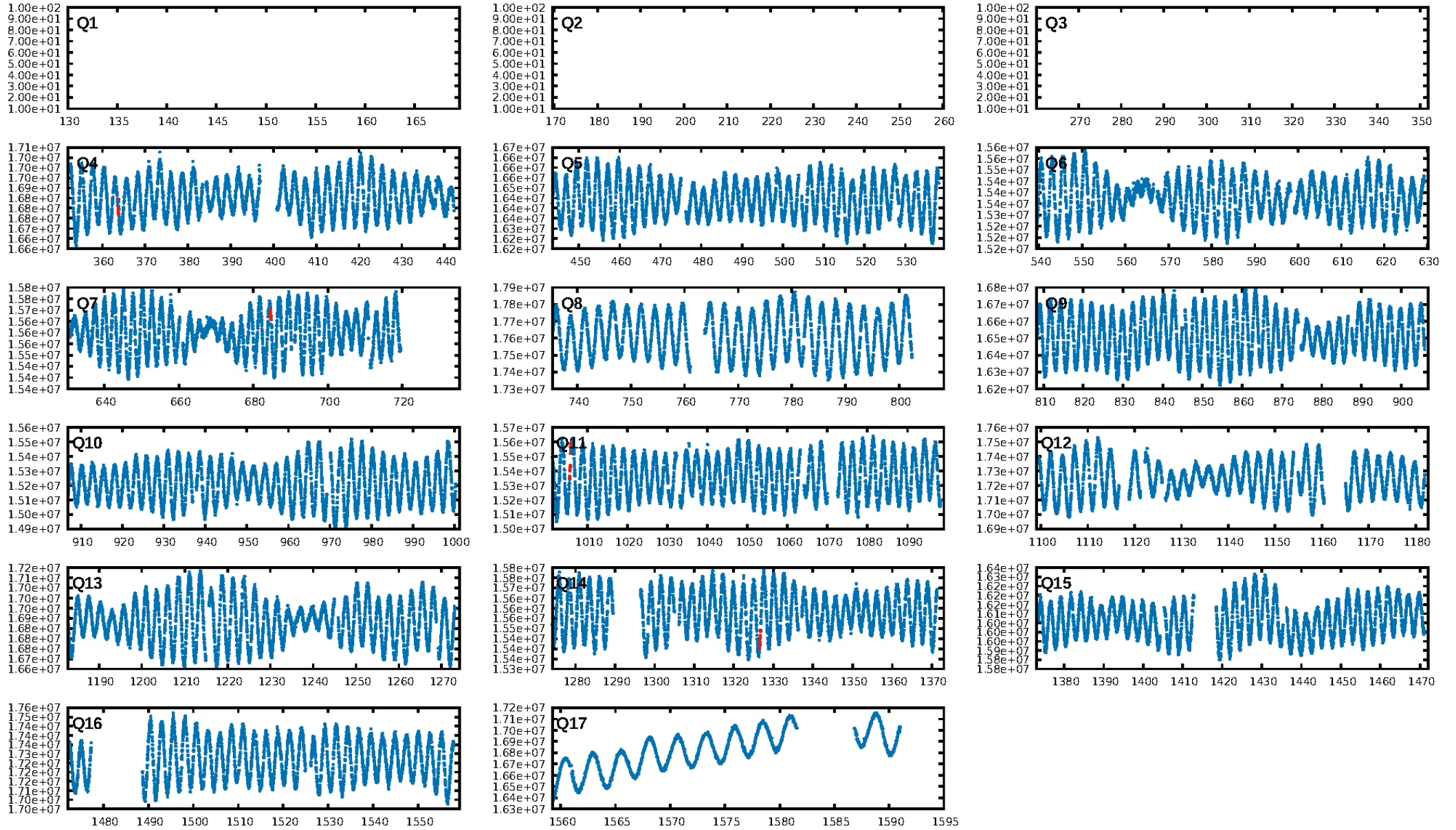
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [374.85 σ]
ModelChiSquare2-sig: 15.0%
ModelChiSquareGof-sig: 80.6%
Bootstrap-pfa: 1.07e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 5.1
Centroid-sig: 51.3%
Centroid-so: 1.042 arcsec [0.69 σ]
OotOffset-rm: 0.789 arcsec [1.68 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-rm: 0.908 arcsec [1.96 σ]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [4/4]

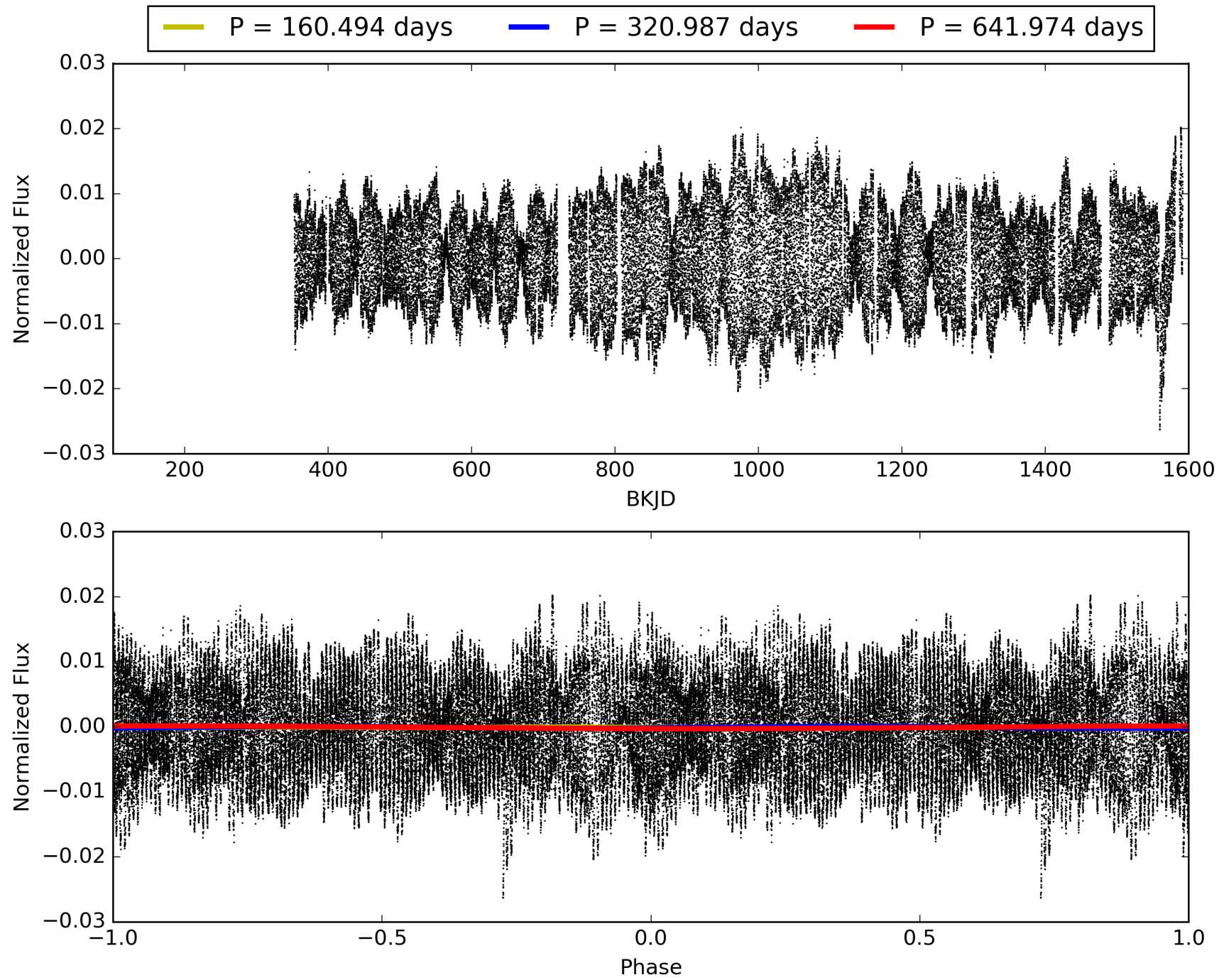
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:59:57 Z

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

TCE 002994666-01, PDC Light Curves

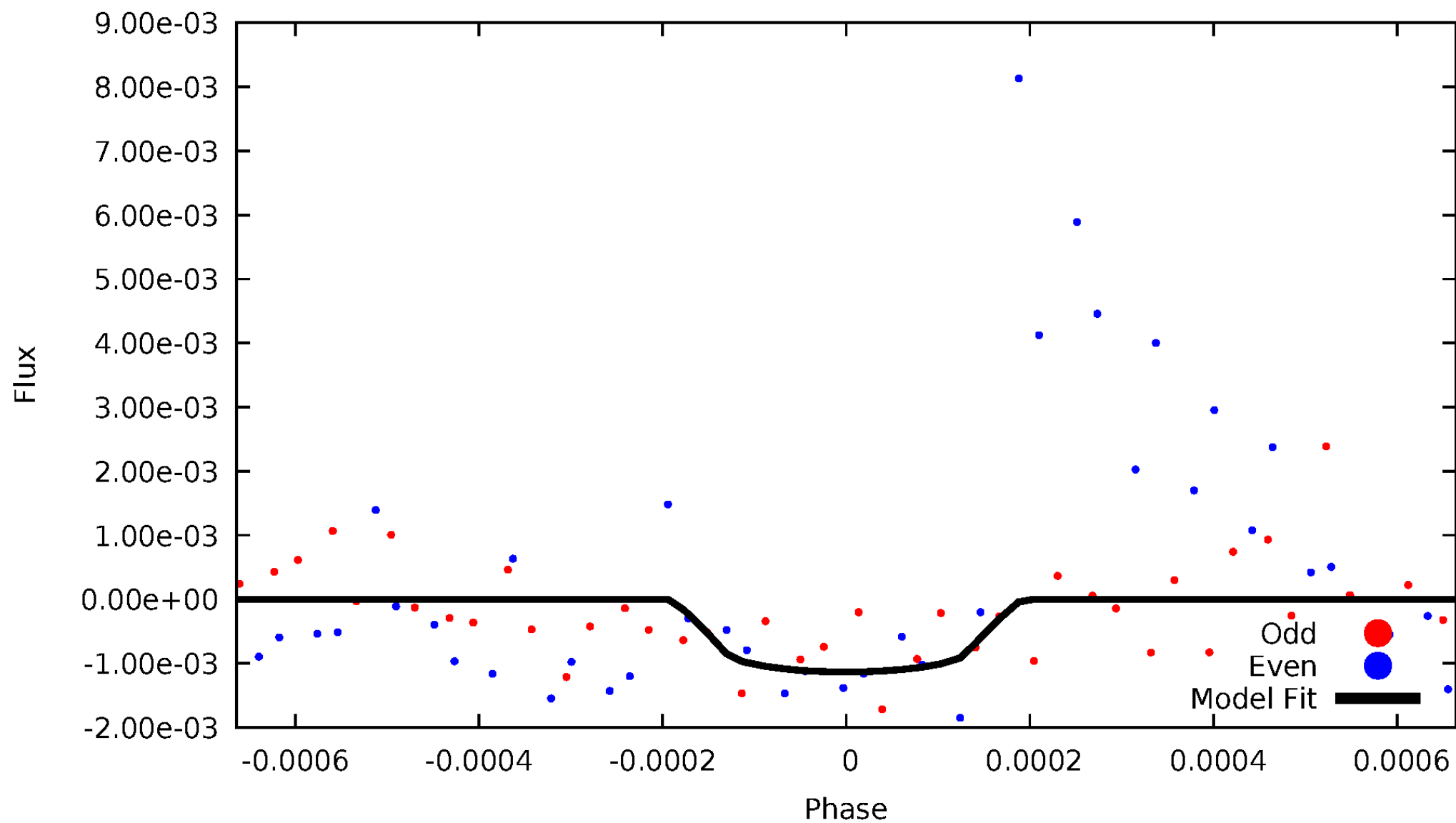


TCE 002994666-01



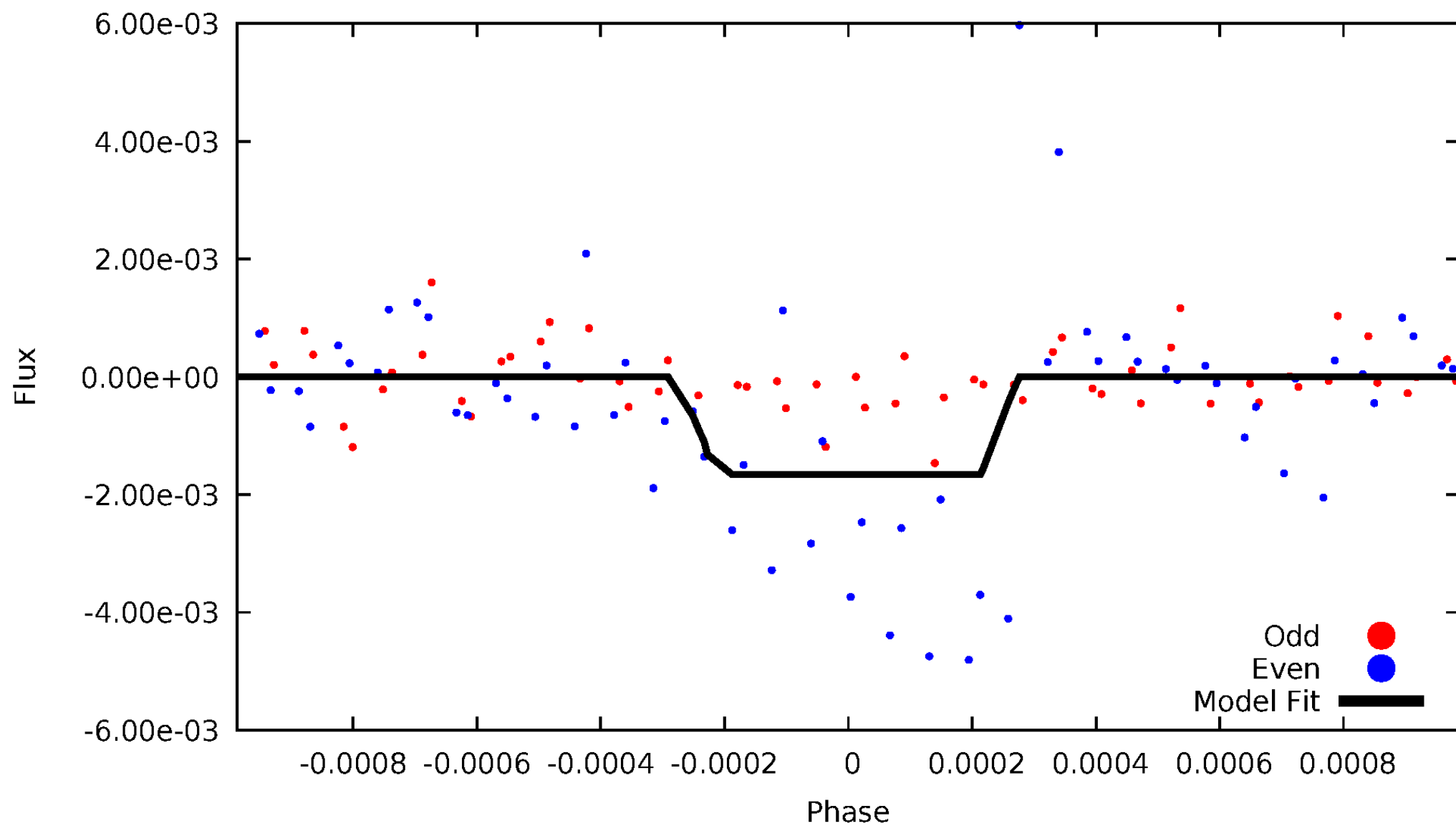
DV Odd/Even

TCE 002994666-01



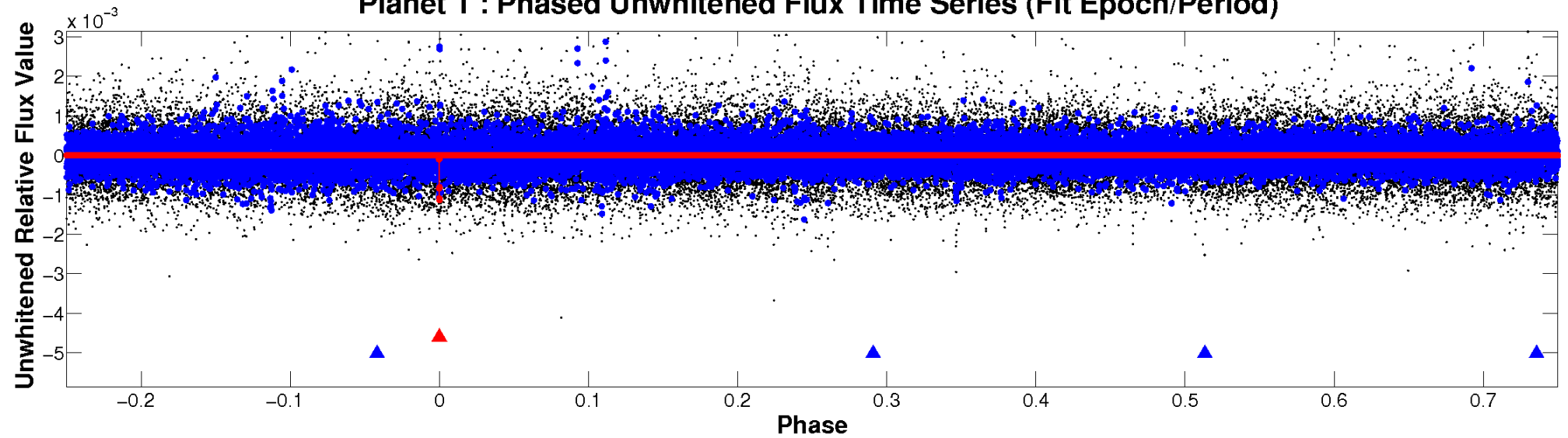
ALT Odd/Even

TCE 002994666-01

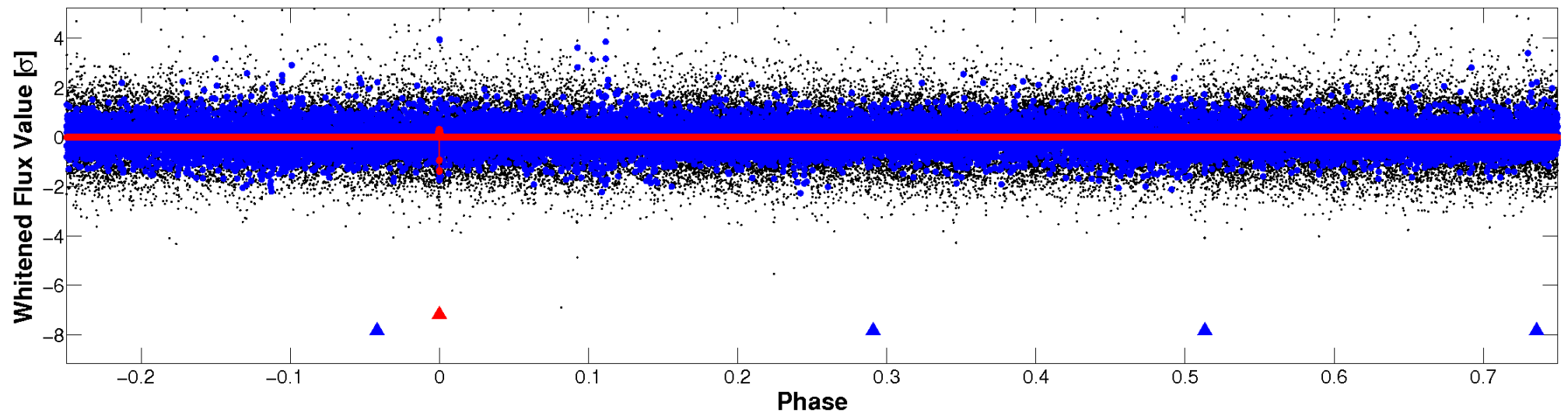


Non-Whitened Vs. Whitened Light Curve

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

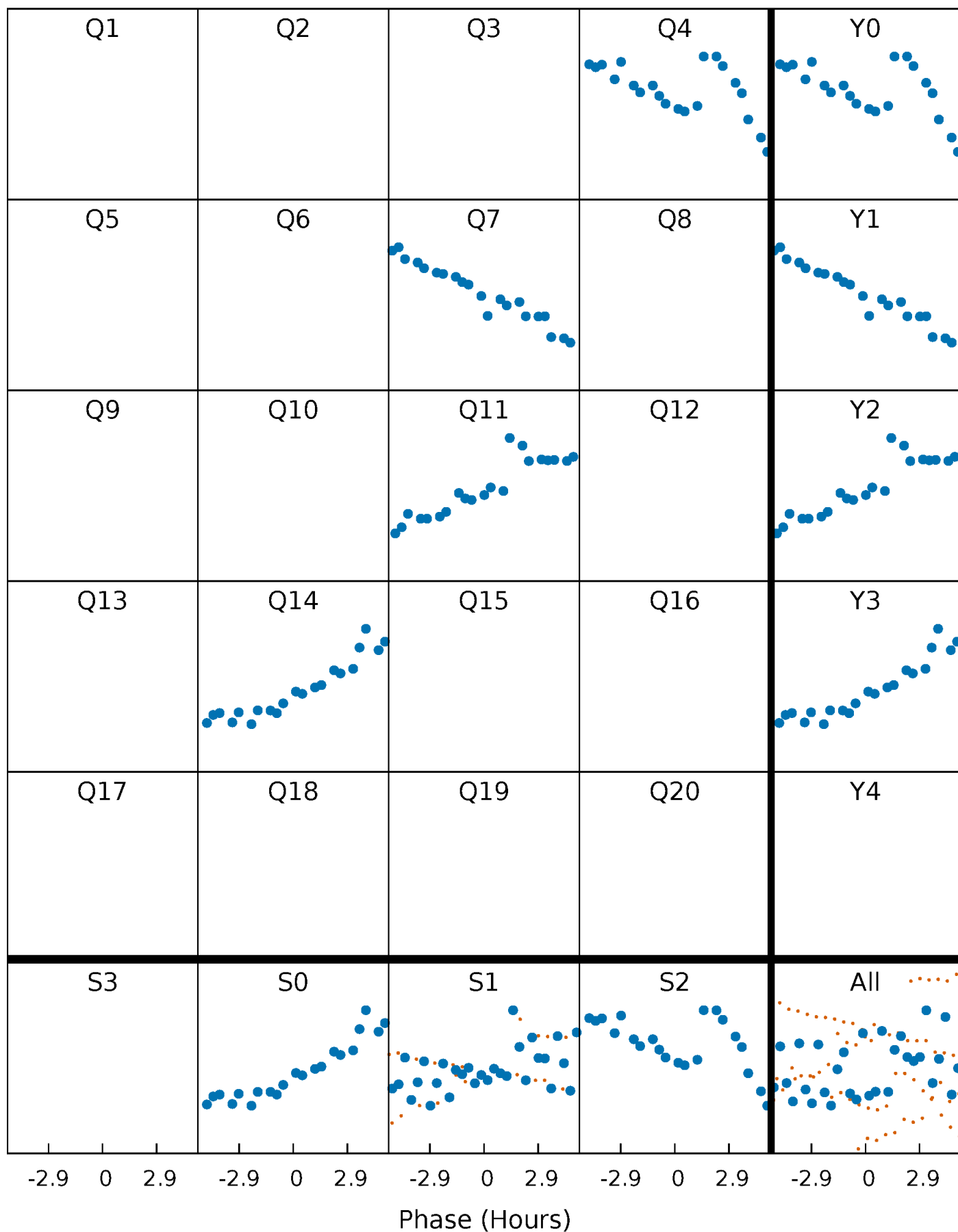


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



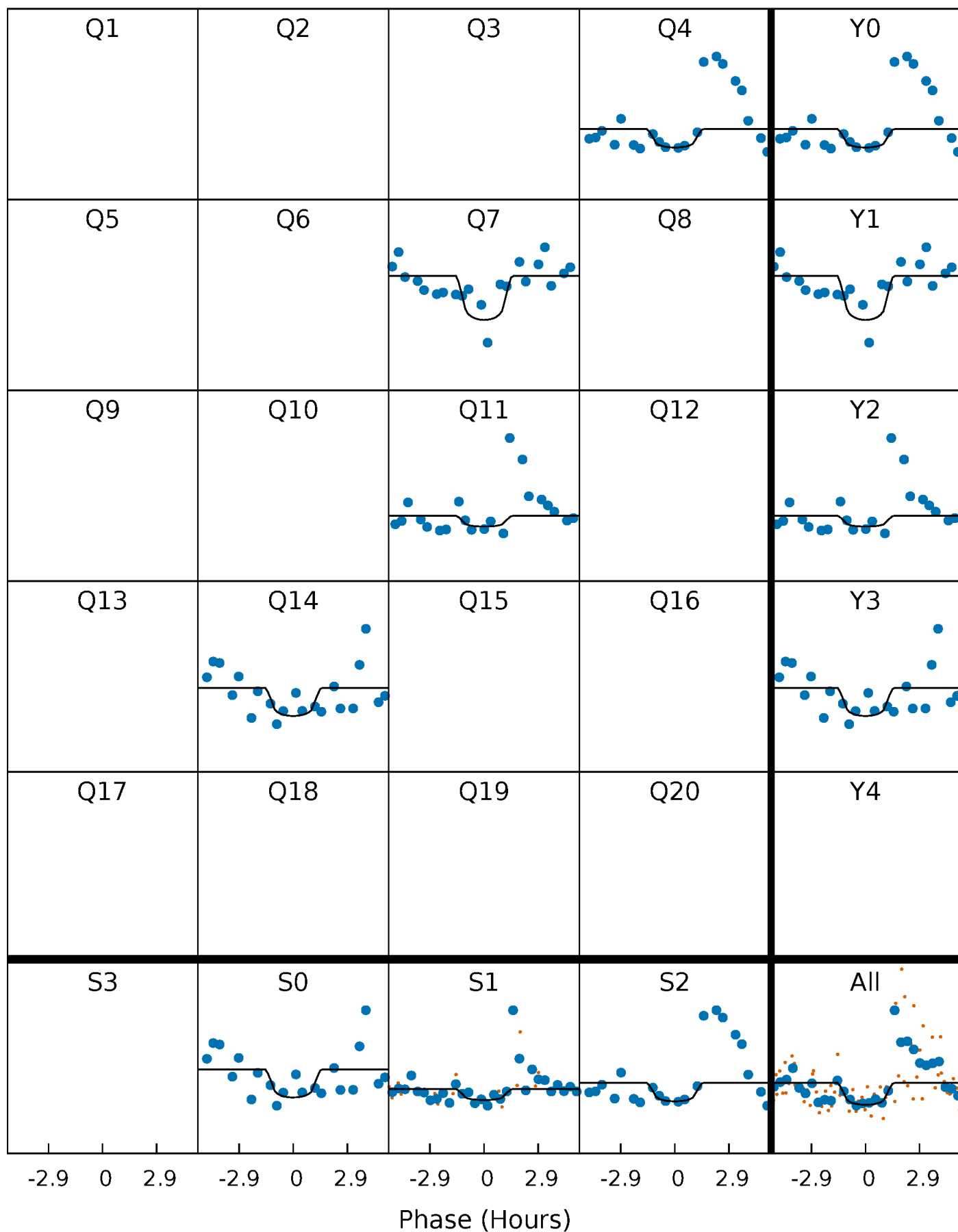
PDC Quarter-Phased Transit Curves

TCE 002994666-01 P=320.987060 Days $T_0=363.690086$ (BKJD)



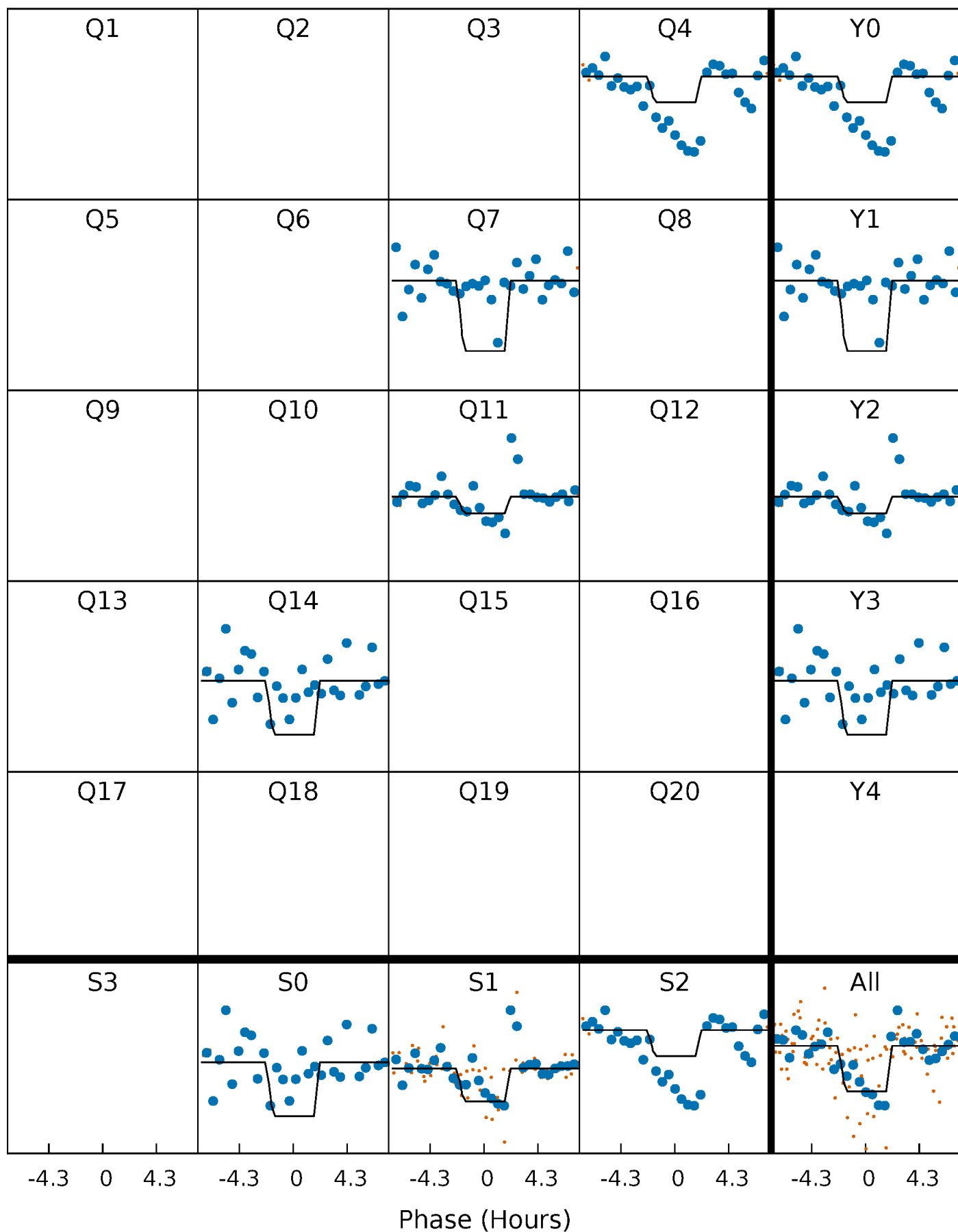
DV Quarter-Phased Transit Curves

TCE 002994666-01 P=320.987060 Days $T_0=363.690086$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

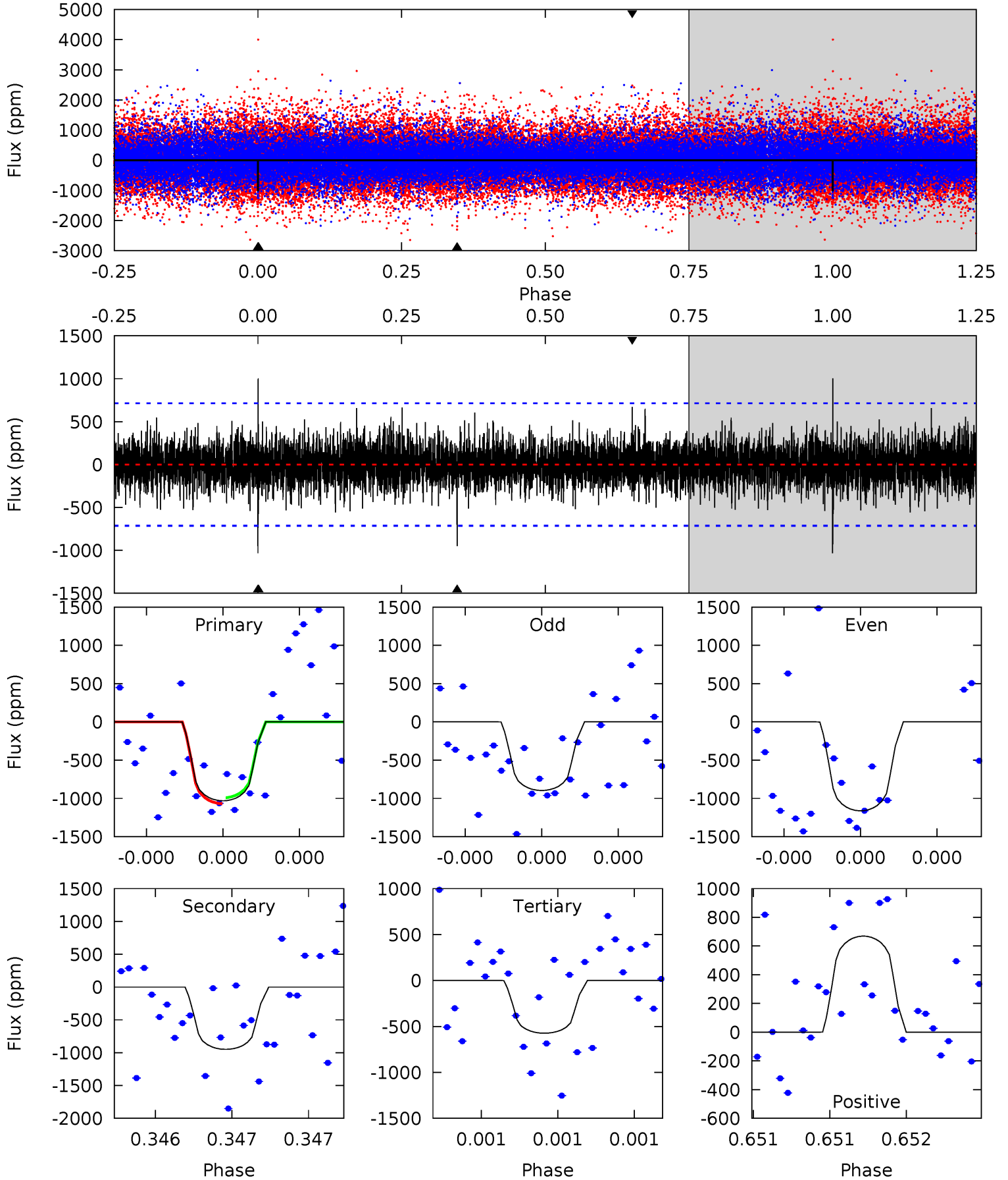
TCE 002994666-01 P=320.990794 Days $T_0=363.654147$ (BKJD)



DV Model-Shift Uniqueness Test

002994666-01, P = 320.987060 Days, E = 42.703026 Days

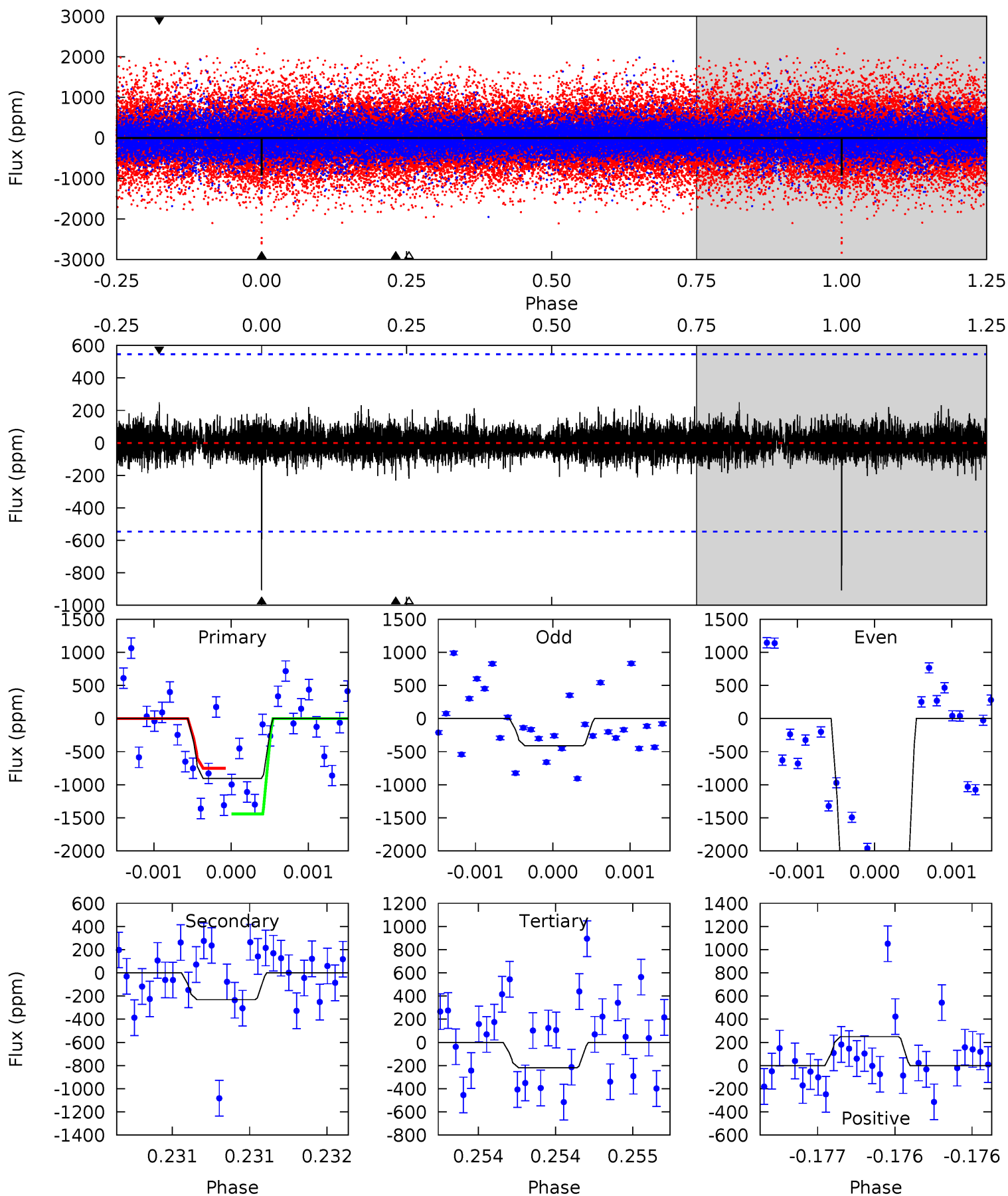
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.13	7.48	4.52	5.27	5.63	3.56	1.28	3.60	2.85	2.96	2.21	1.04	1.01	0.49	0.30



Alt Model-Shift Uniqueness Test

002994666-01, $P = 320.990794$ Days, $E = 42.663353$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.25	2.36	2.24	2.54	5.57	3.47	0.55	7.01	6.70	0.12	-0.18	14.6	1.43	0.22	3.53



Stellar Parameters For KIC 002994666

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6089^{+193}_{-257}	$4.468^{+0.054}_{-0.216}$	$0.070^{+0.250}_{-0.300}$	$1.024^{+0.341}_{-0.114}$	$1.125^{+0.135}_{-0.166}$	$1.475^{+0.424}_{-0.782}$
	+3%/-4%	+1%/-5%	+357%/-429%	+33%/-11%	+12%/-15%	+29%/-53%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002994666-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-950 ± 127	$15.59^{+16.88}_{-10.55}$	399^{+31}_{-22}	3436^{+1884}_{-653}	1839^{+17613}_{-1400}
Alt.	-232 ± 98	$17.24^{+17.74}_{-11.76}$	398^{+31}_{-21}	2709^{+1102}_{-474}	354^{+3565}_{-280}

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

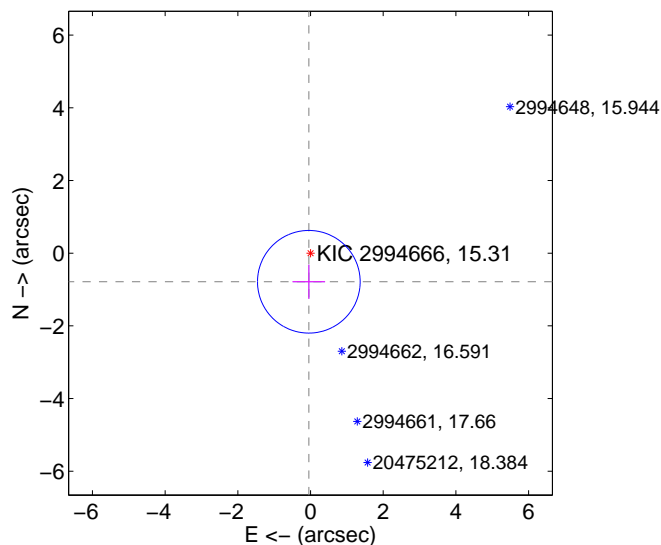
Supplemental centroid analysis for 002994666-01. Kepler magnitude: 15.31. Transit SNR 5.68

There are 1 quarters with good PRF difference image offsets

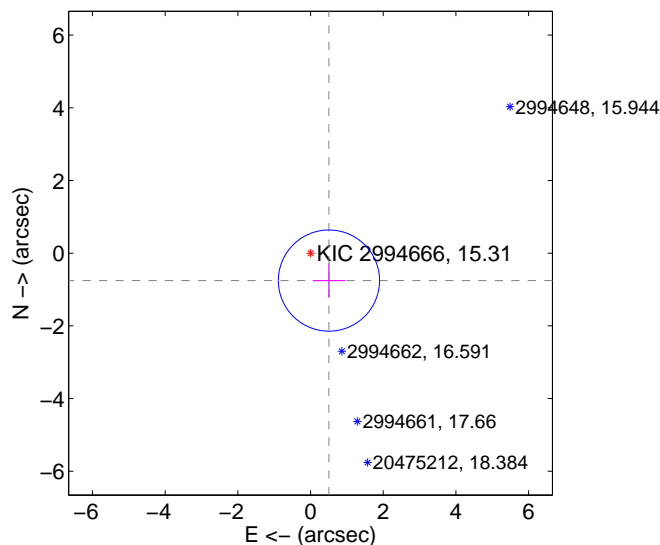
The direct PRF centroid is offset from the target star catalog position by about 0.55 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.789 ± 0.471	1.68	0.047 ± 0.449	-0.787 ± 0.471
PRF-fit source offset from KIC position	0.908 ± 0.464	1.96	-0.506 ± 0.449	-0.754 ± 0.471
photometric centroid source offset	1.04 ± 1.50	0.69	-0.64 ± 1.61	-0.82 ± 1.44

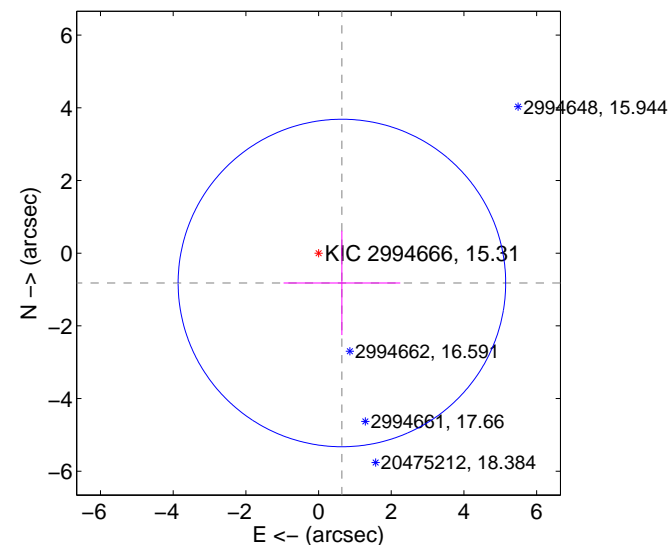
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

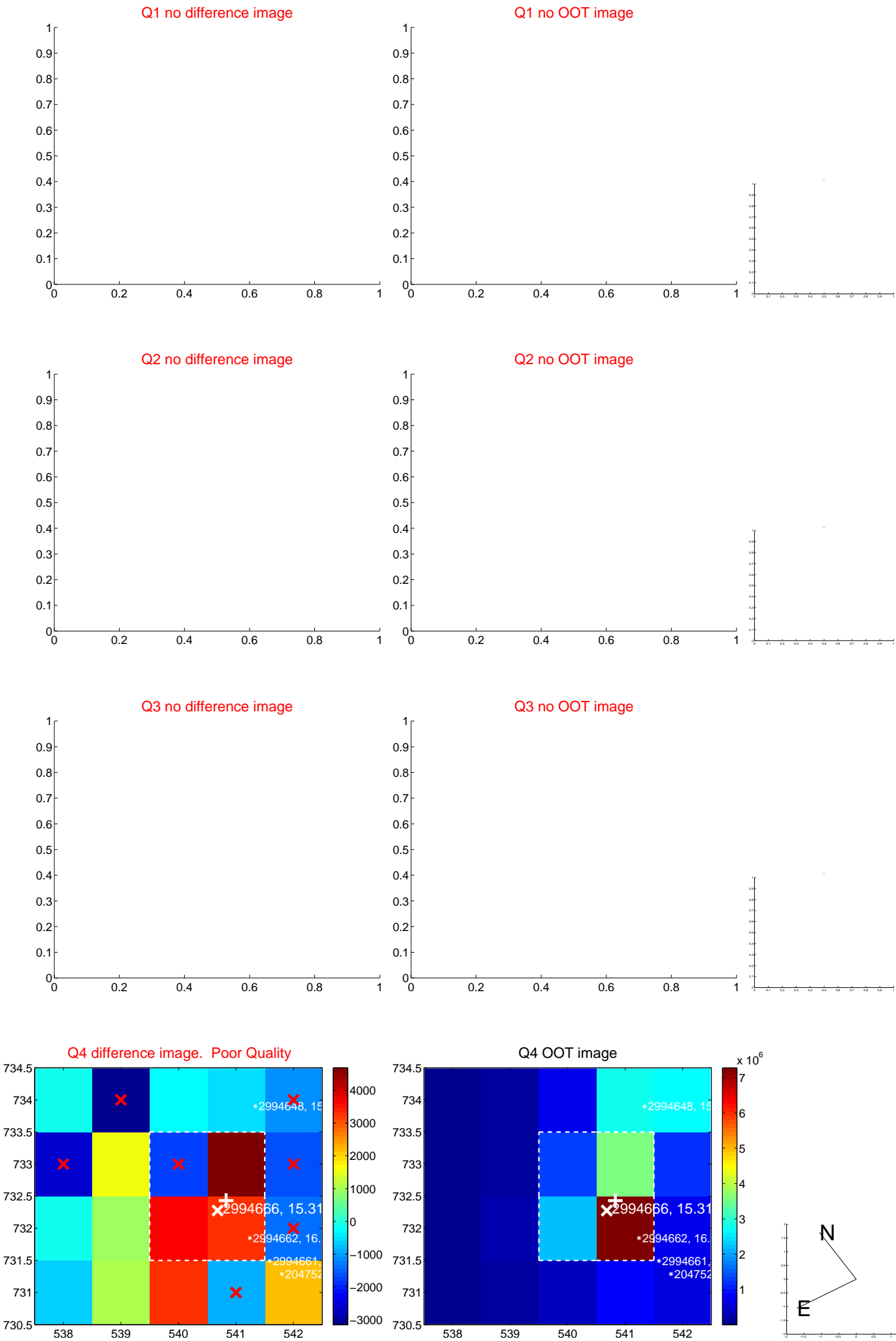


offset from photometric centroids

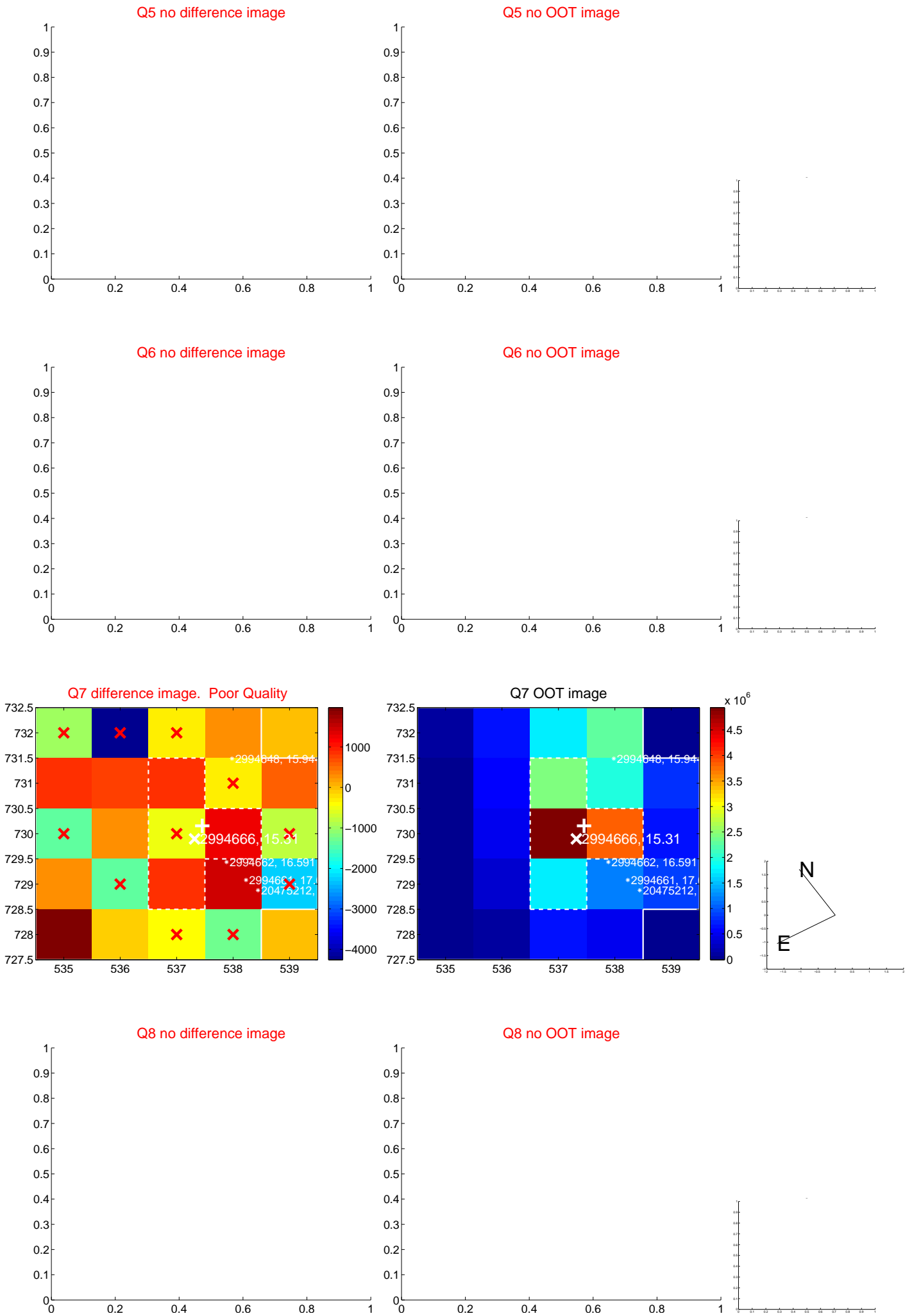


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

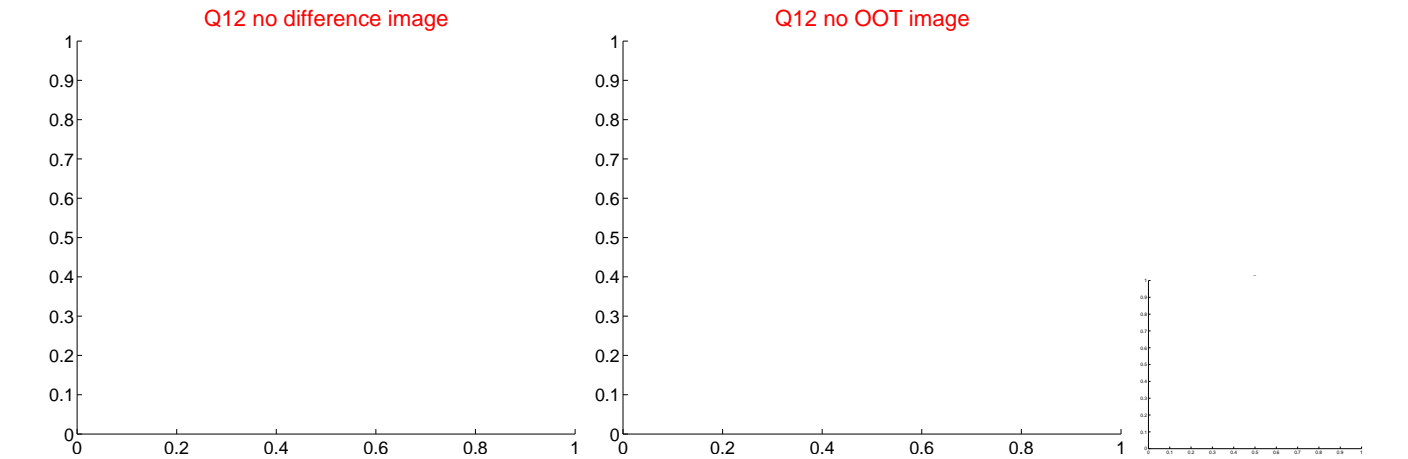
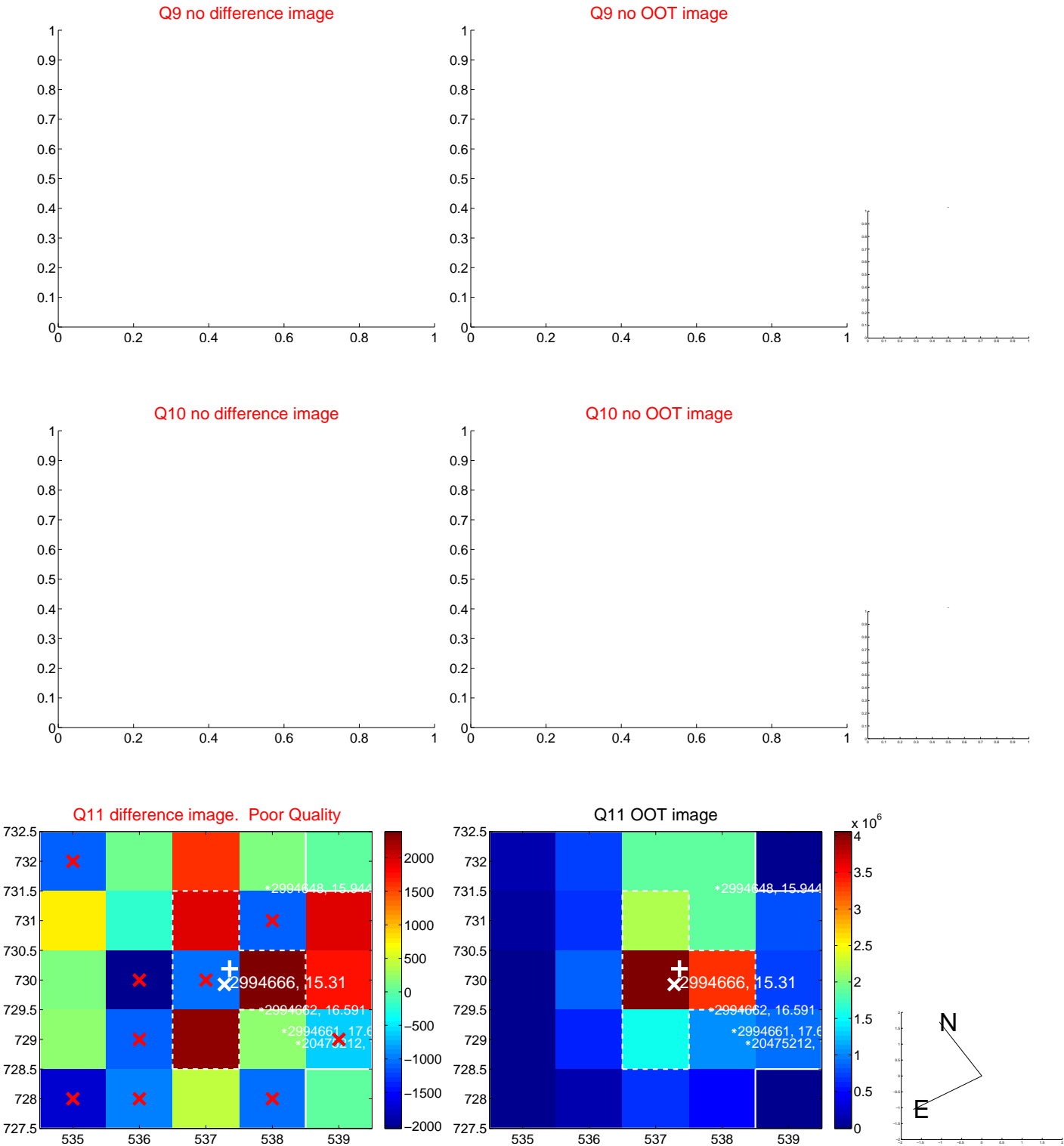
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

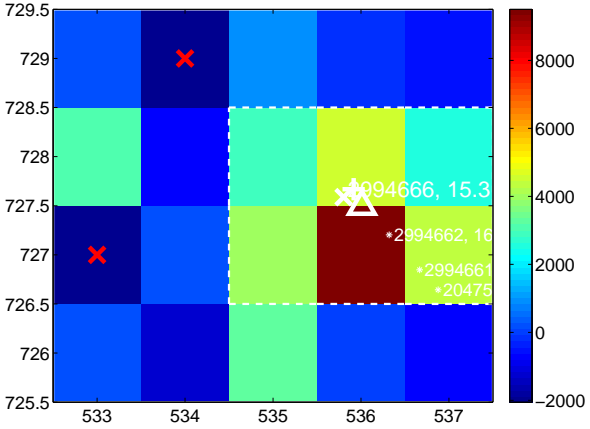
Q13 no difference image



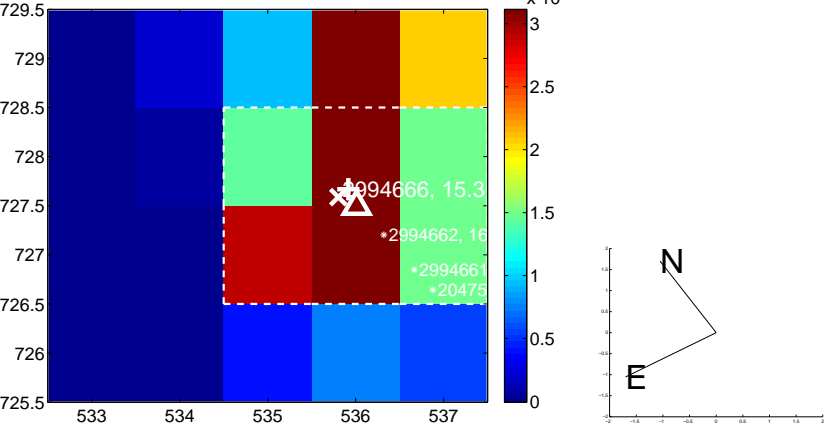
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



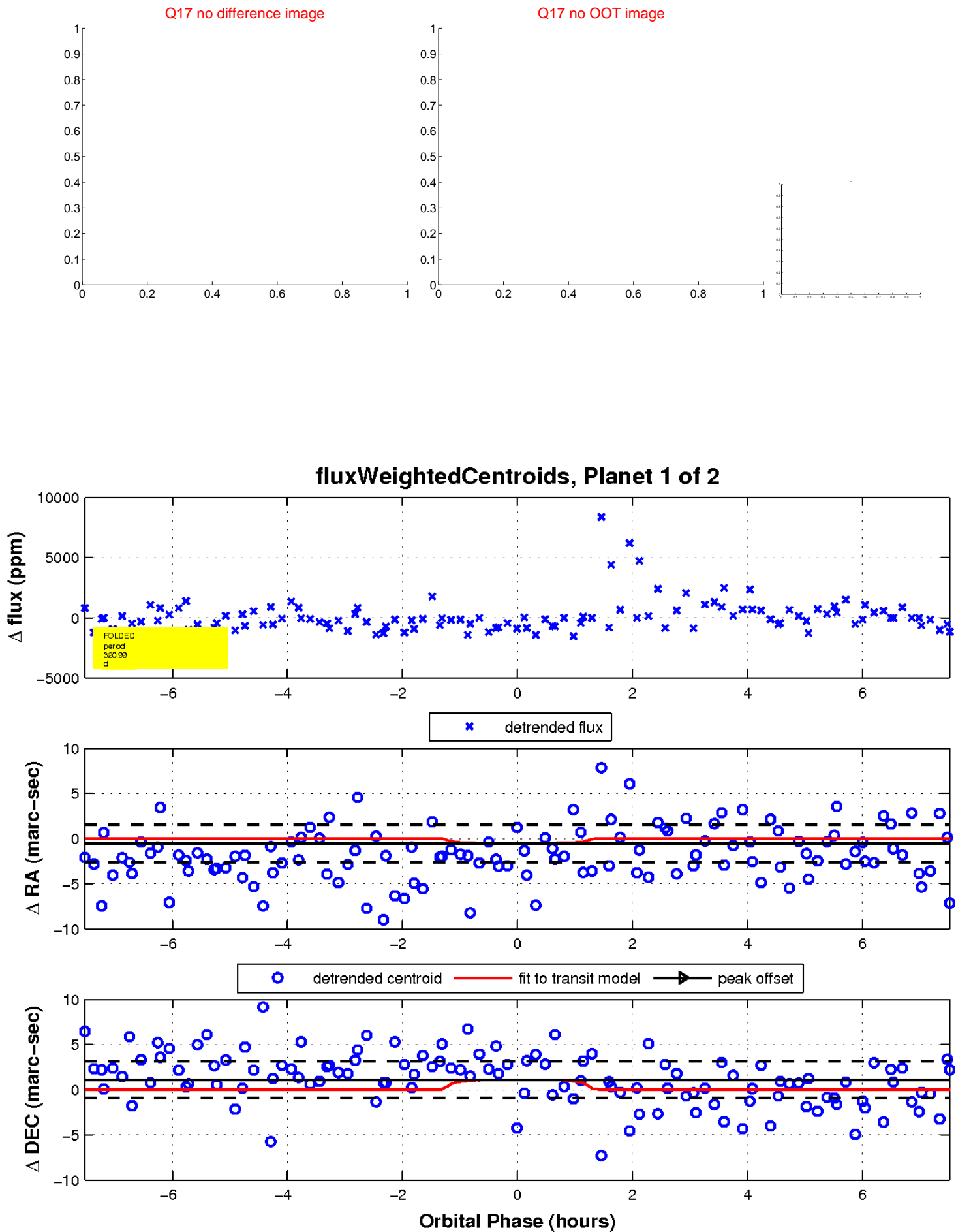
Q16 no difference image



Q16 no OOT image

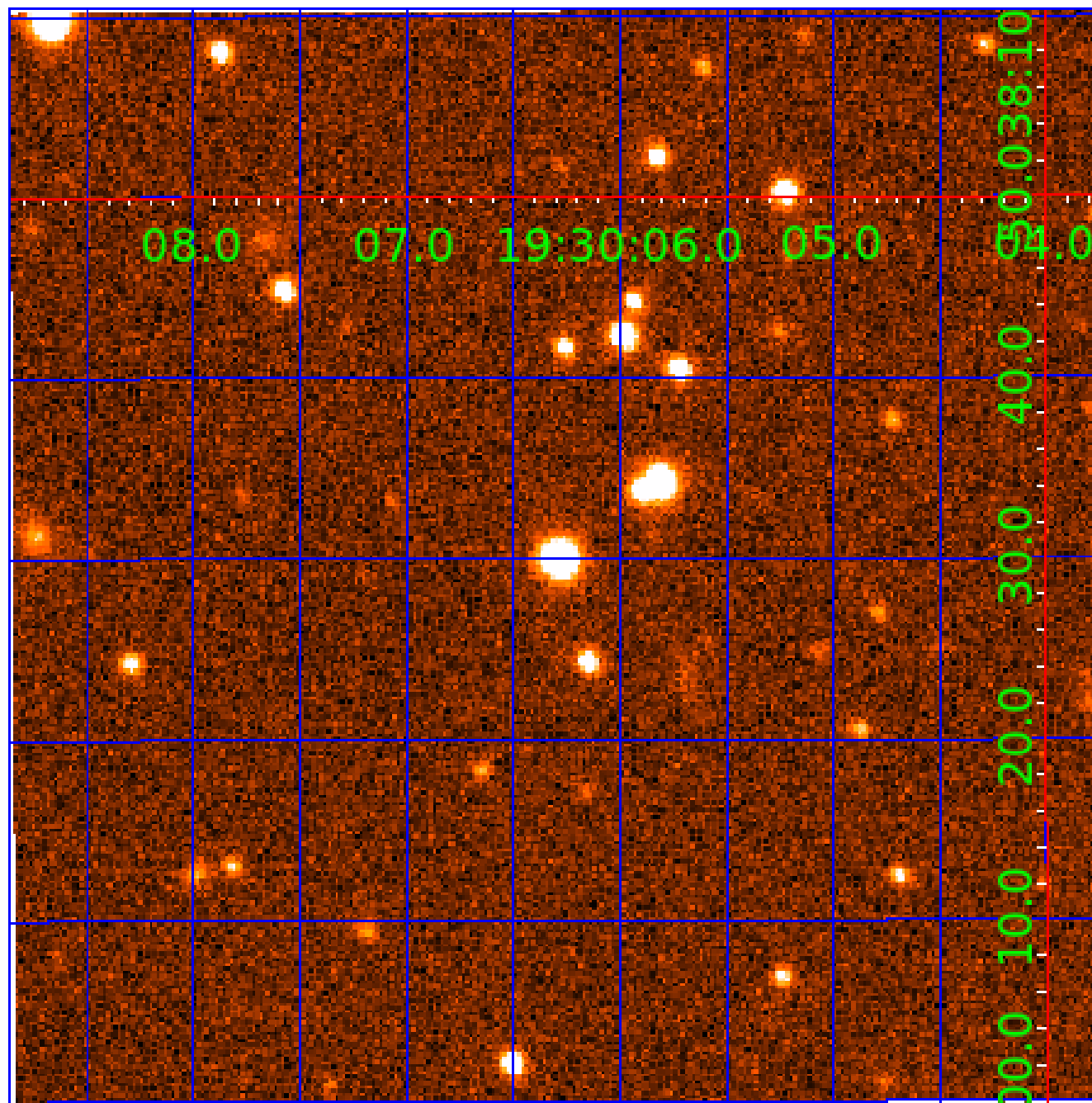


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002994666

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})
002994666-01	OBS	No	320.987060	363.690086	1134.1	2.557	8.7	5.7	1.02	6089	3.48	1.42
002994666-02	OBS	No	392.389285	136.075334	1601.0	3.789	8.6	6.9	1.02	6089	4.67	1.09

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002994666-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_MEAS
002994666-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

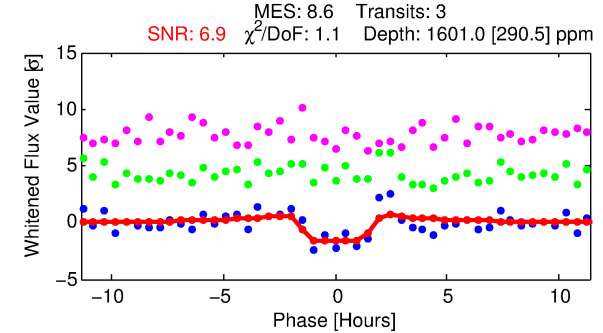
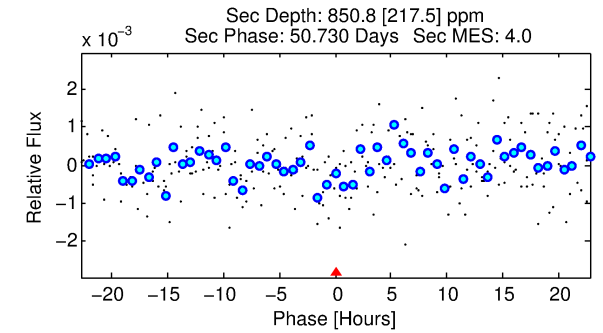
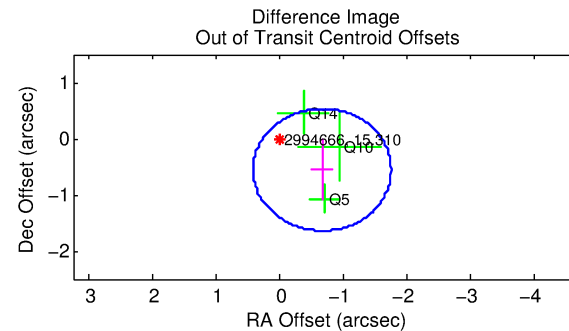
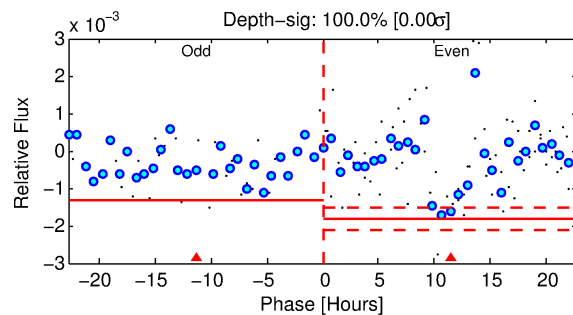
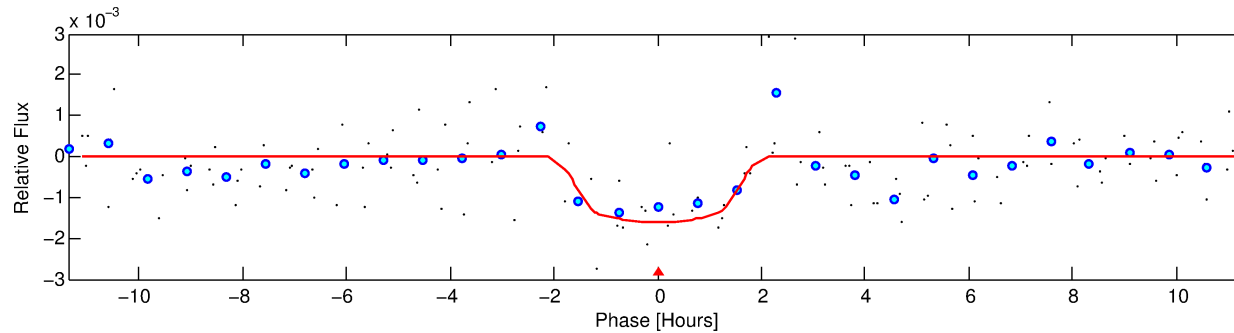
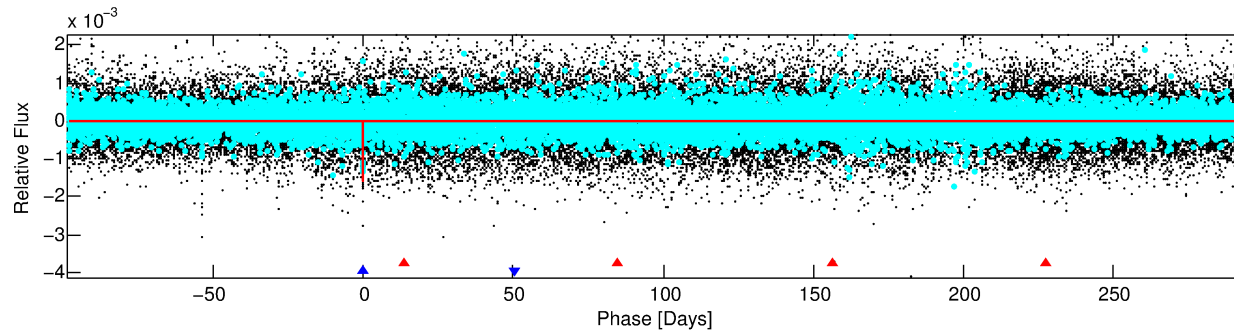
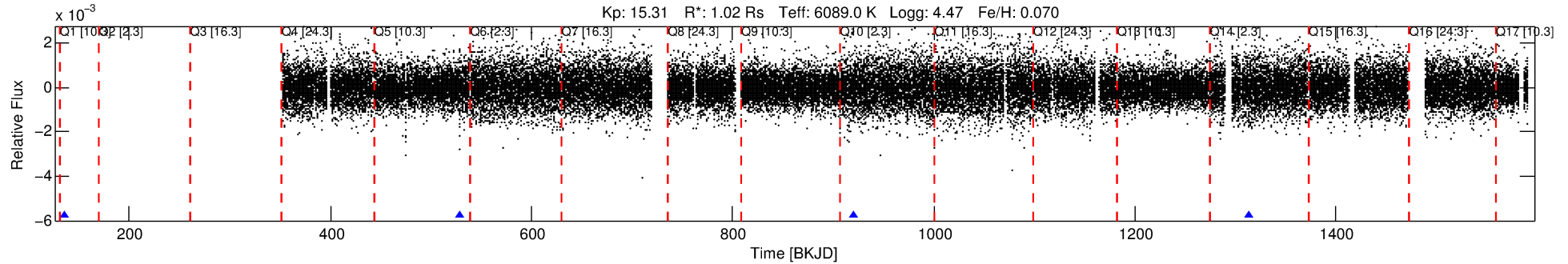
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002994666-02

No Significant Match Found

DV One-Page Summary

KIC: 2994666 Candidate: 2 of 2 Period: 392.389 d



DV Fit Results:

Period = 392.38929 [0.00783] d
Epoch = 136.0753 [0.0191] BKJD
Rp/R* = 0.0418 [0.0179]
a/R* = 476.77 [893.41]
b = 0.85 [0.63]
Seff = 1.09 [0.47]
Teq = 260 [28] K
Rp = 4.67 [2.54] Re
a = 1.0907 [0.3022] AU
Ag = 25560.69 [25077.69] [1.02σ]
Teffp = 5088 [1160] K [4.16σ]

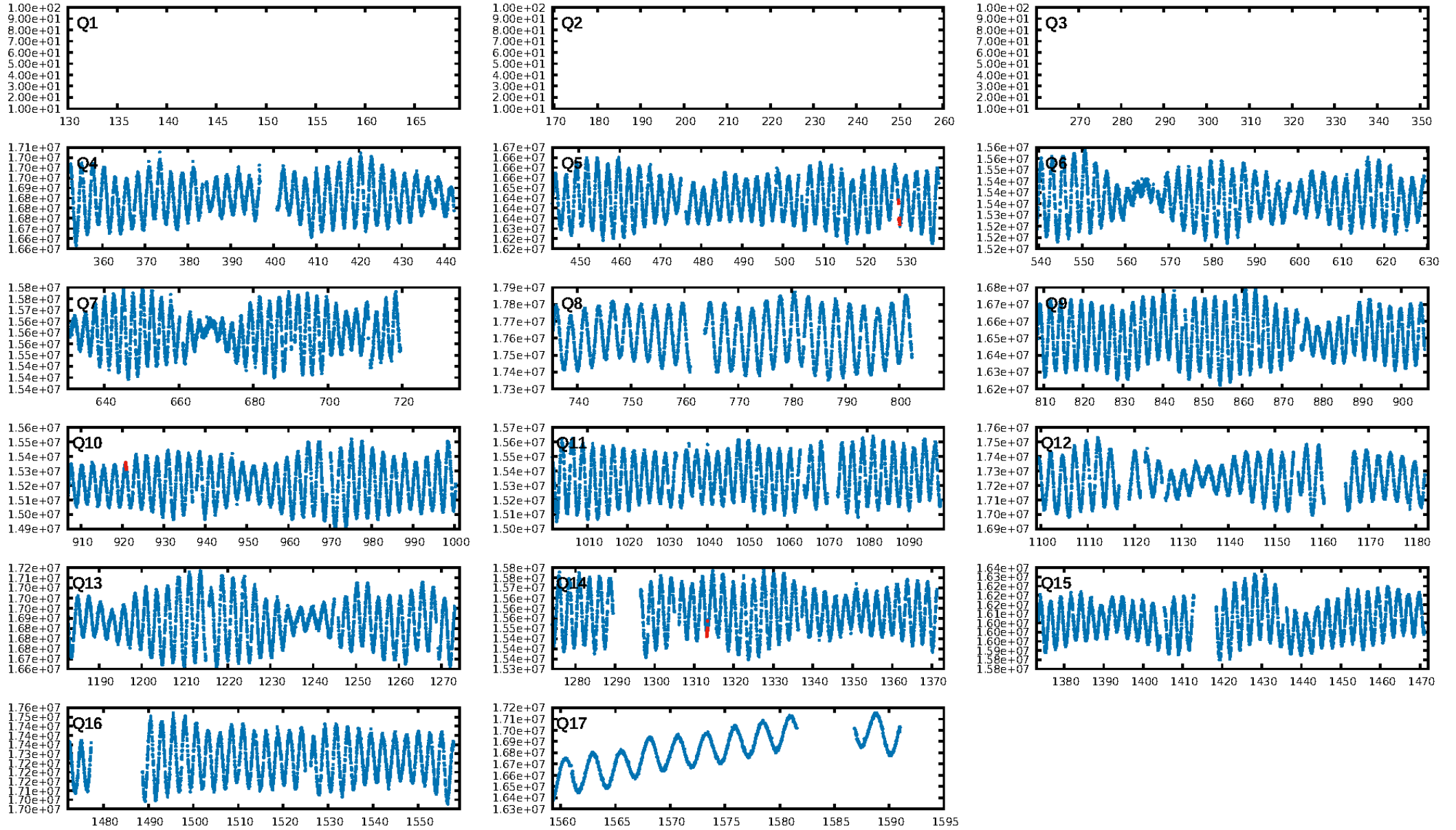
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [374.85σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 50.8%
ModelChiSquareGof-sig: 90.8%
Bootstrap-pfa: 7.07e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 33.31
Centroid-sig: 9.0%
Centroid-so: 2.893 arcsec [2.40σ]
OotOffset-rm: 0.867 arcsec [2.39σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-rm: **1.637 arcsec [5.43σ]**
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

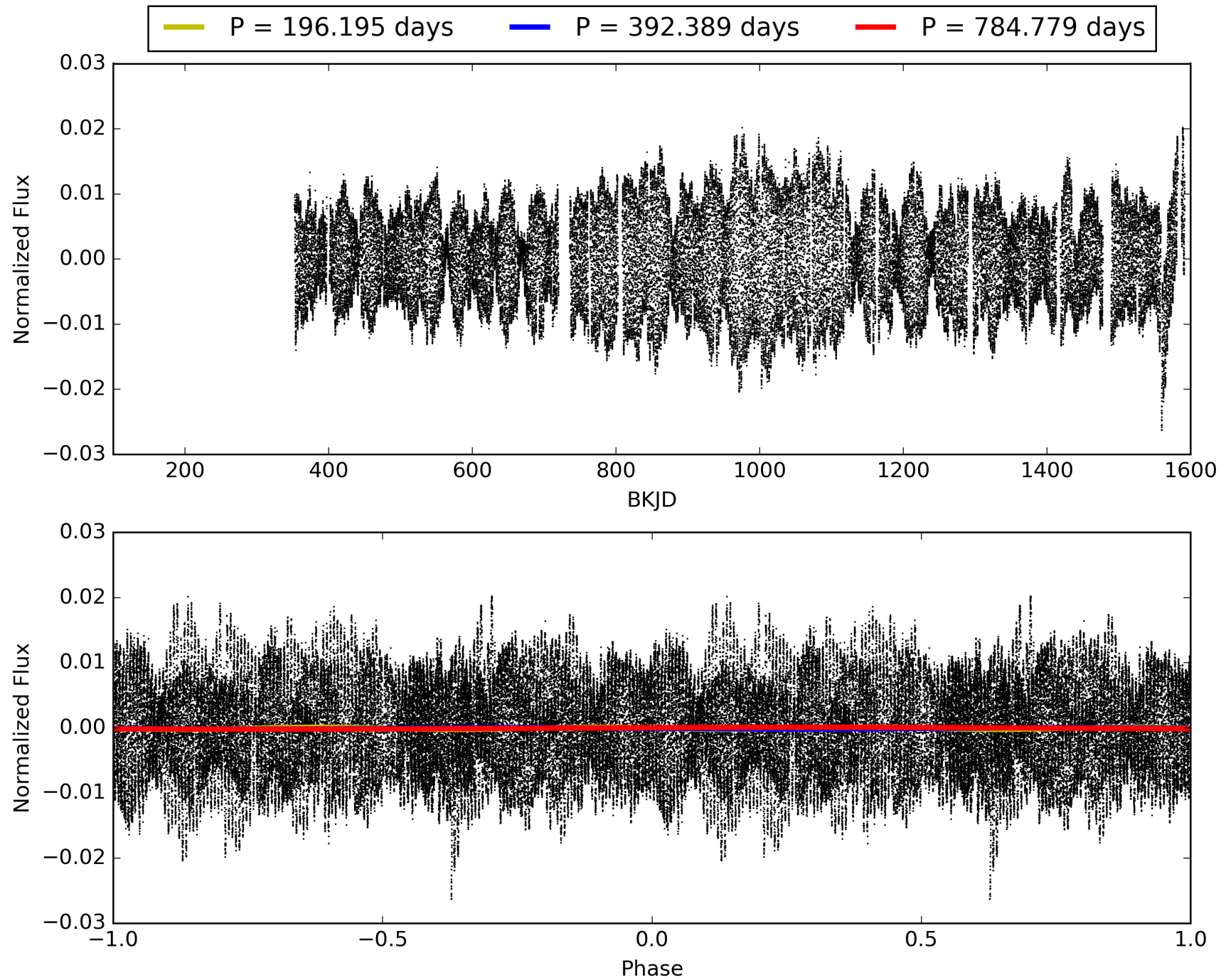
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:00:11 Z

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

TCE 002994666-02, PDC Light Curves

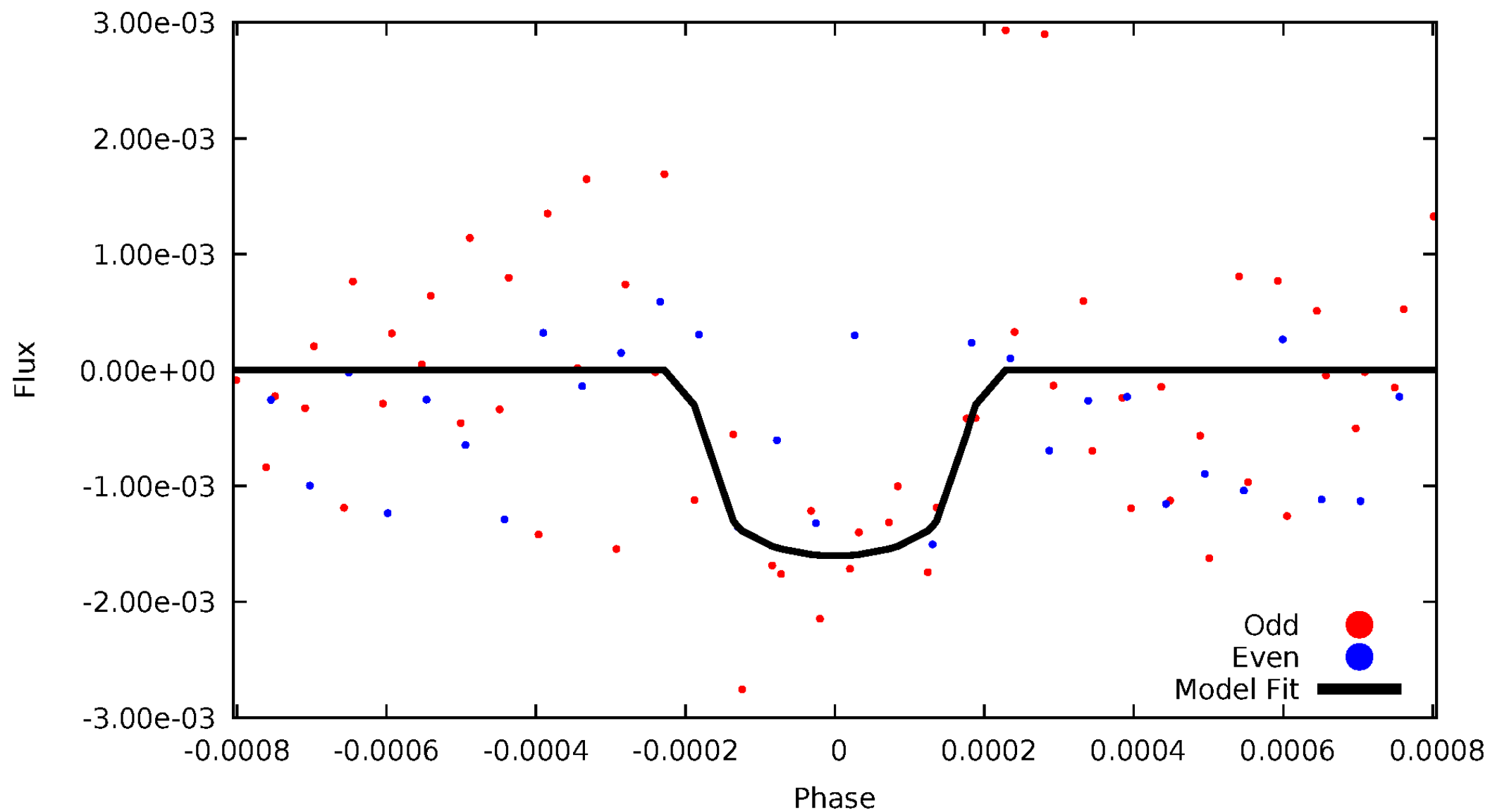


TCE 002994666-02



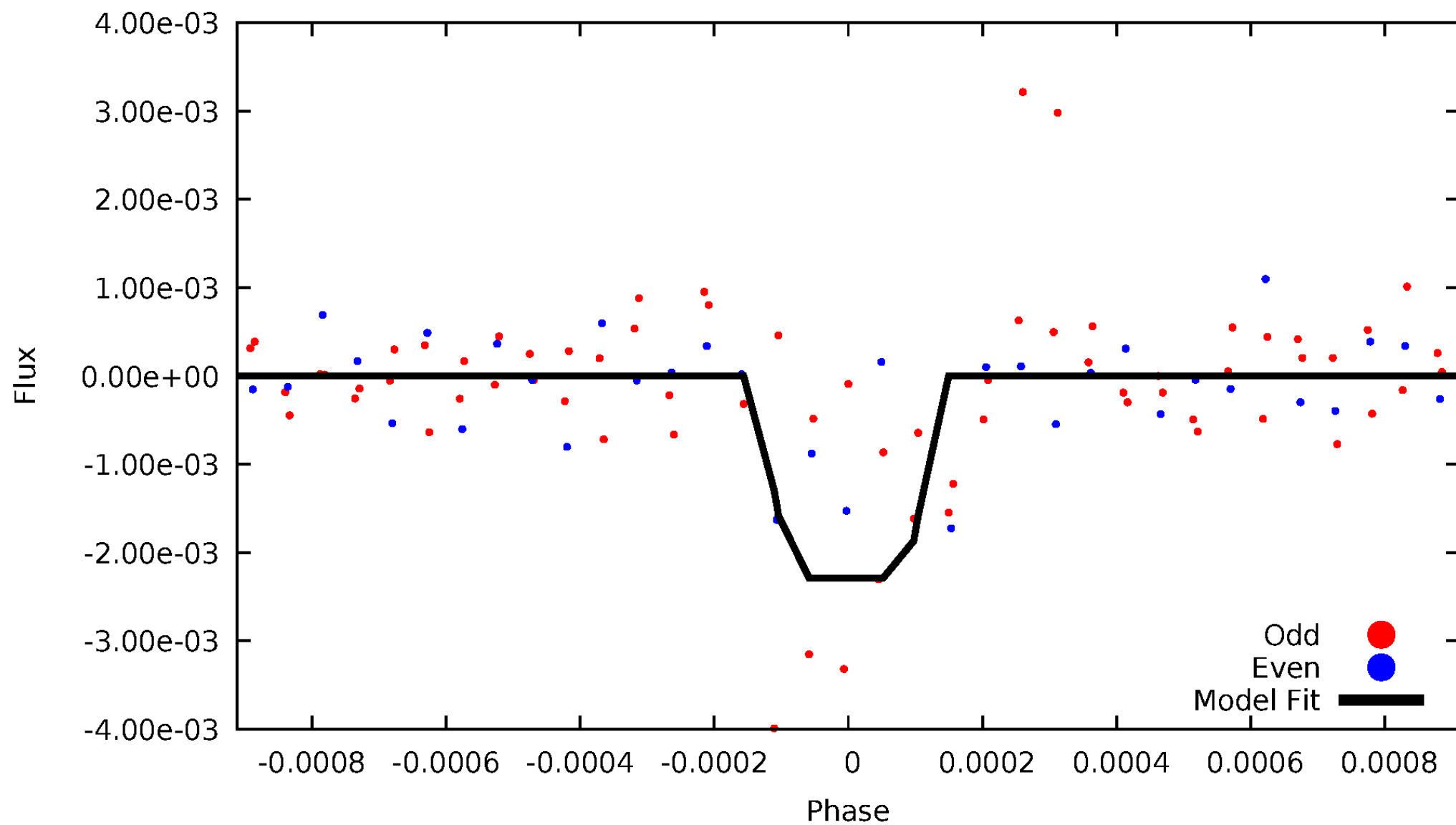
DV Odd/Even

TCE 002994666-02



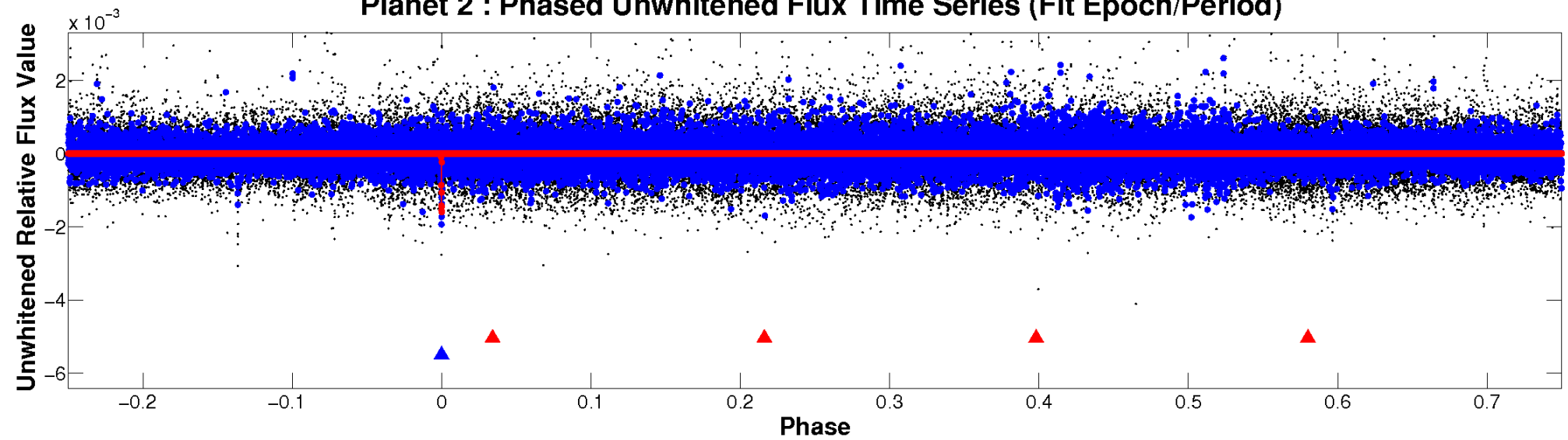
ALT Odd/Even

TCE 002994666-02

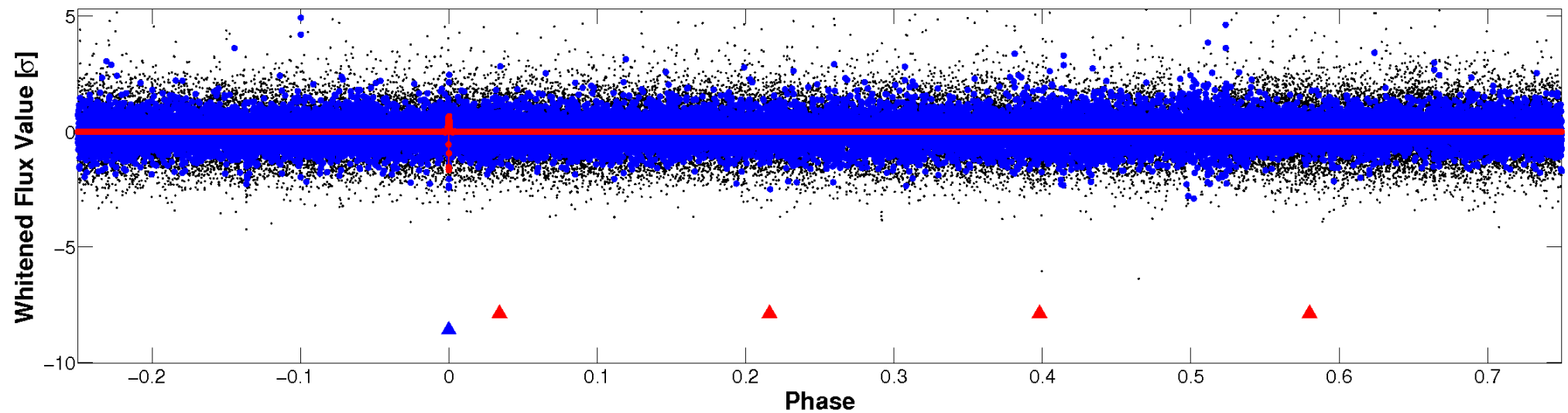


Non-Whitened Vs. Whitened Light Curve

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

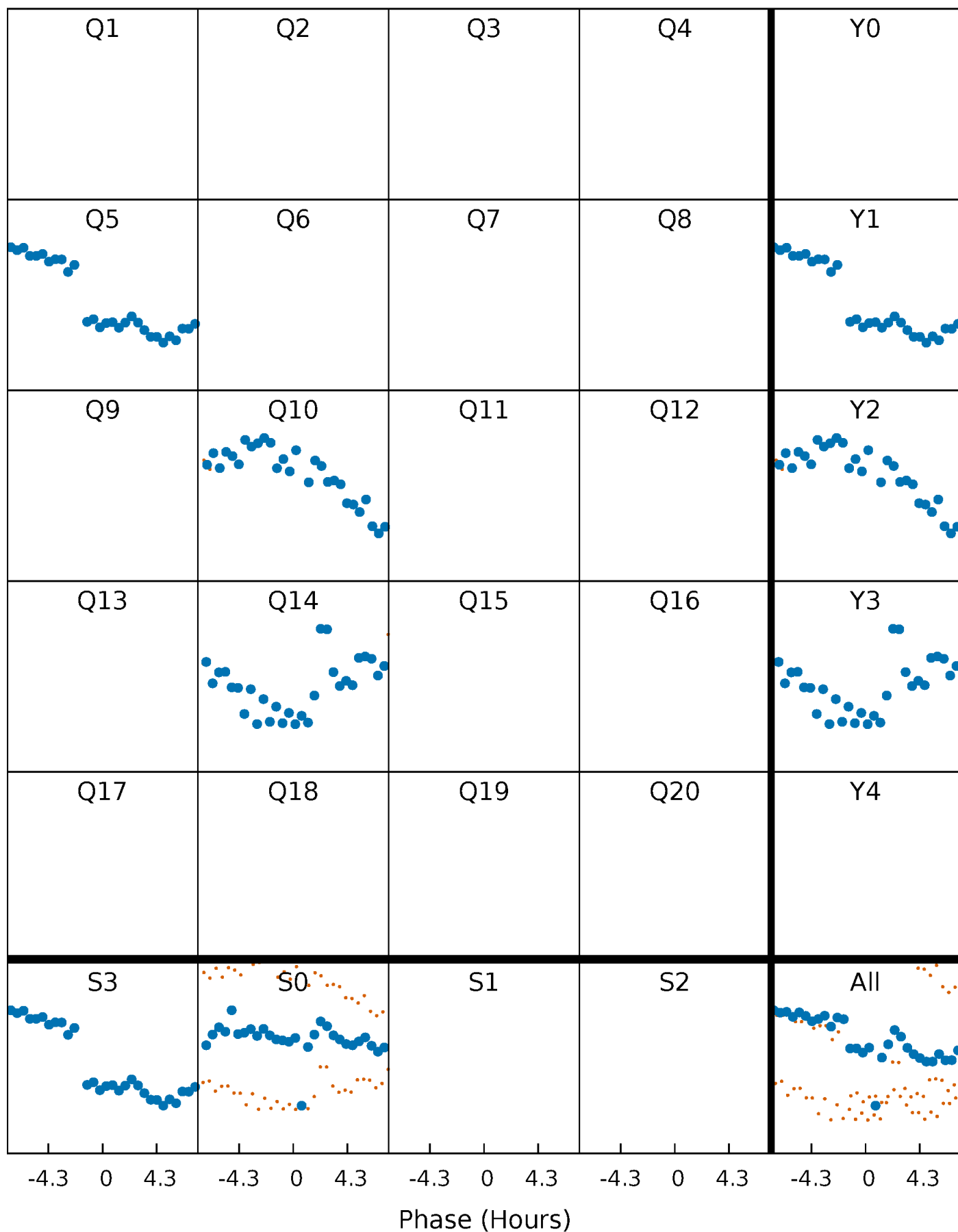


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



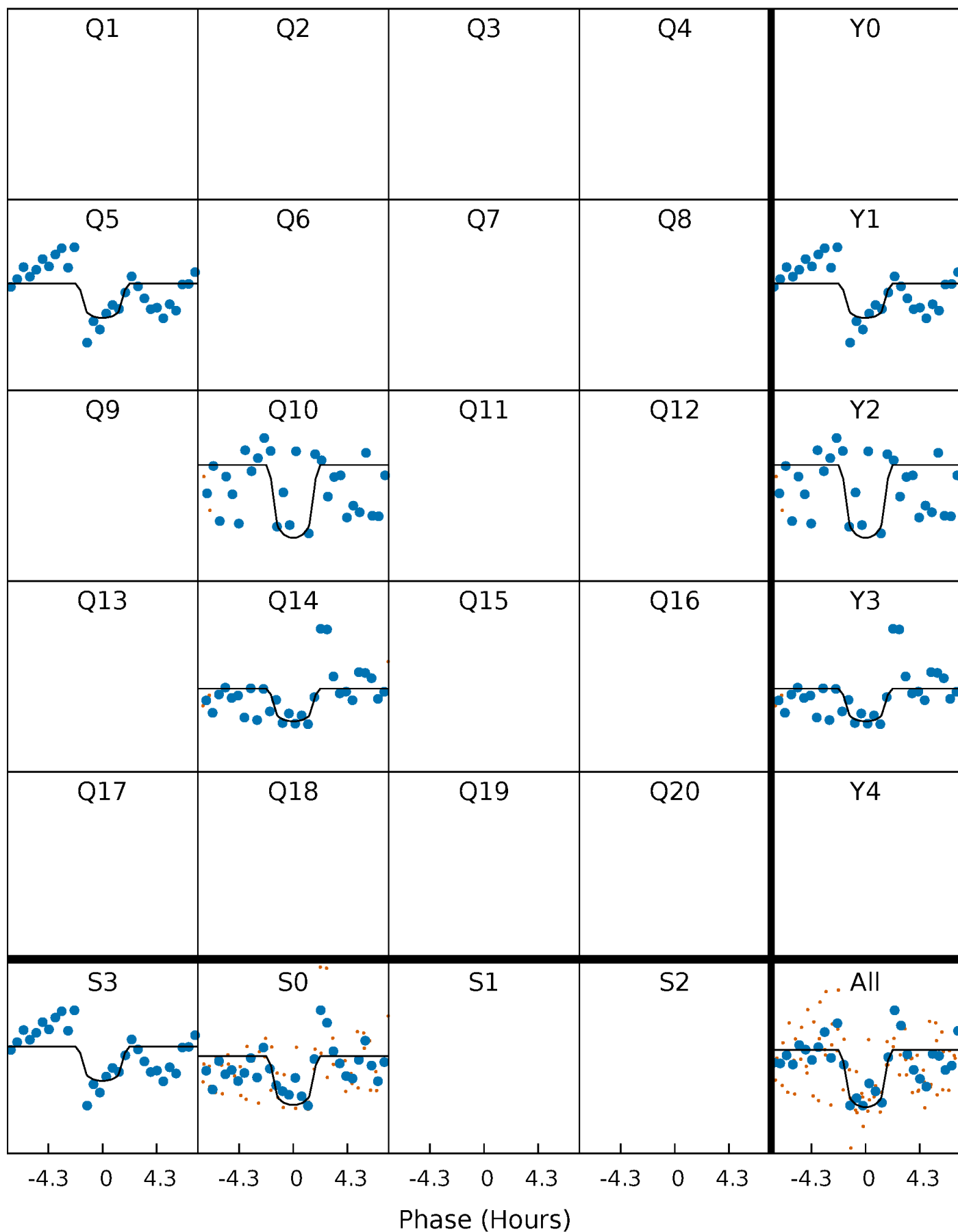
PDC Quarter-Phased Transit Curves

TCE 002994666-02 $P=392.389286$ Days $T_0=136.075334$ (BKJD)



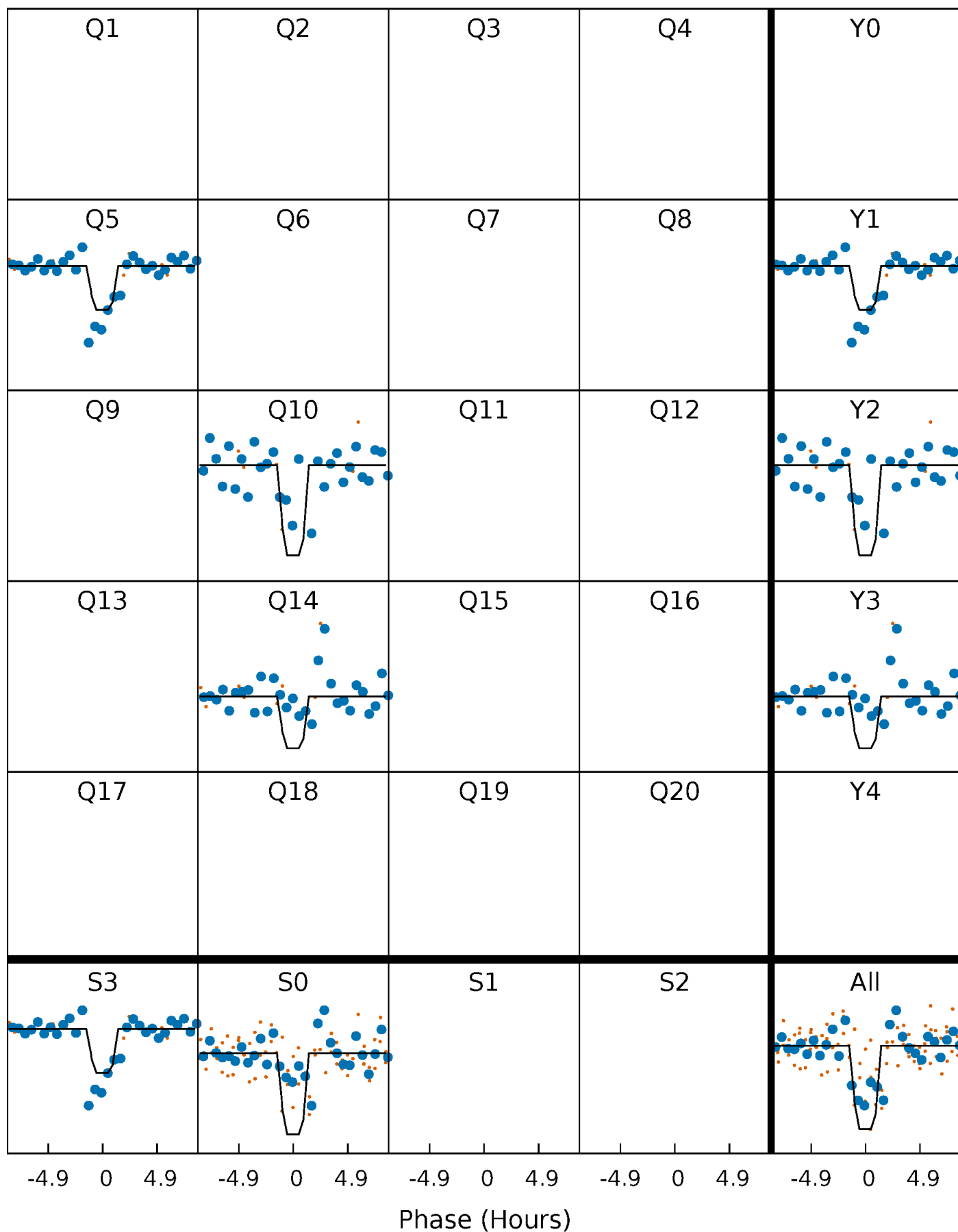
DV Quarter-Phased Transit Curves

TCE 002994666-02 P=392.389286 Days $T_0=136.075334$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

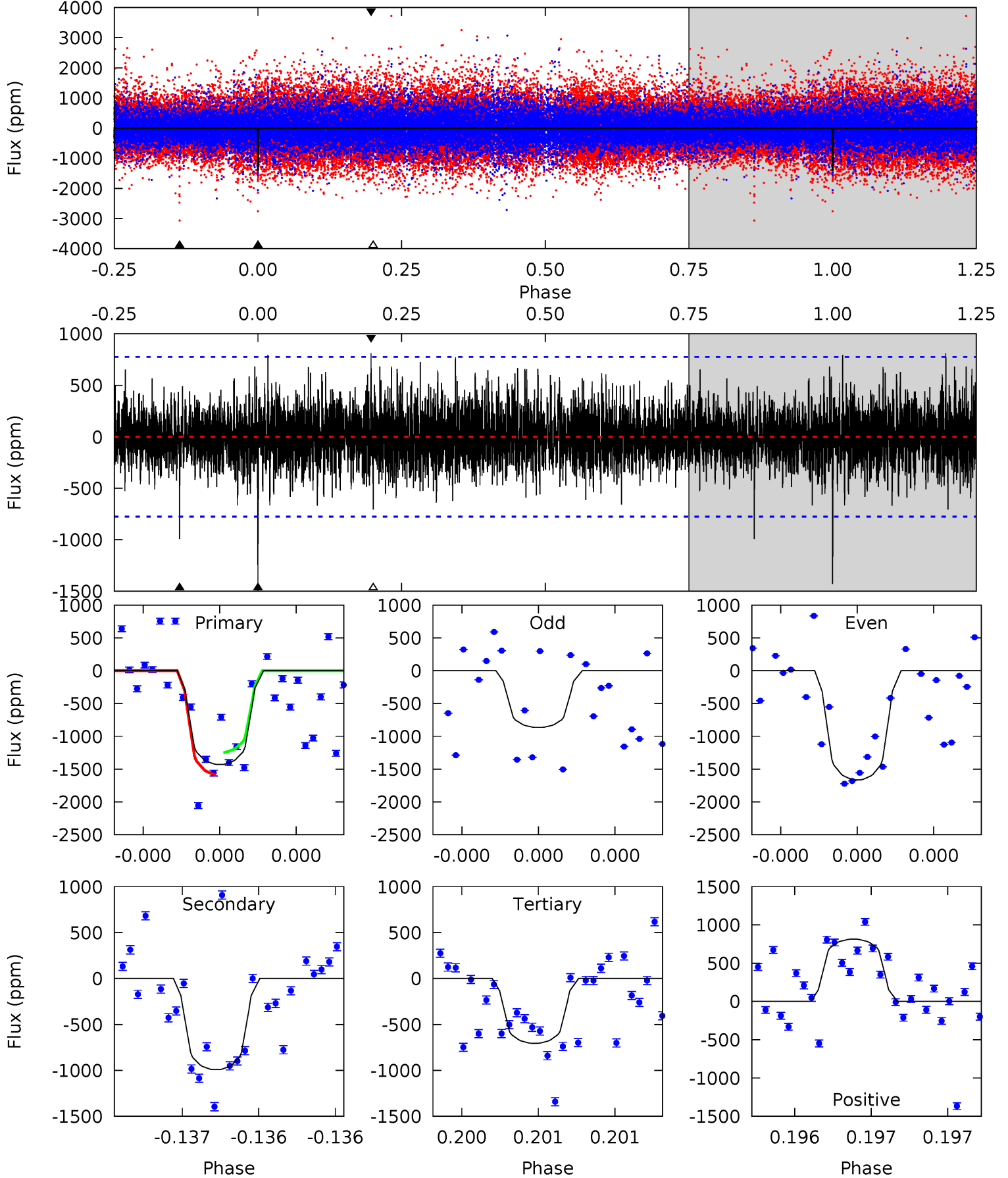
TCE 002994666-02 $P=392.385653$ Days $T_0=136.073704$ (BKJD)



DV Model-Shift Uniqueness Test

002994666-02, P = 392.389286 Days, E = 136.075334 Days

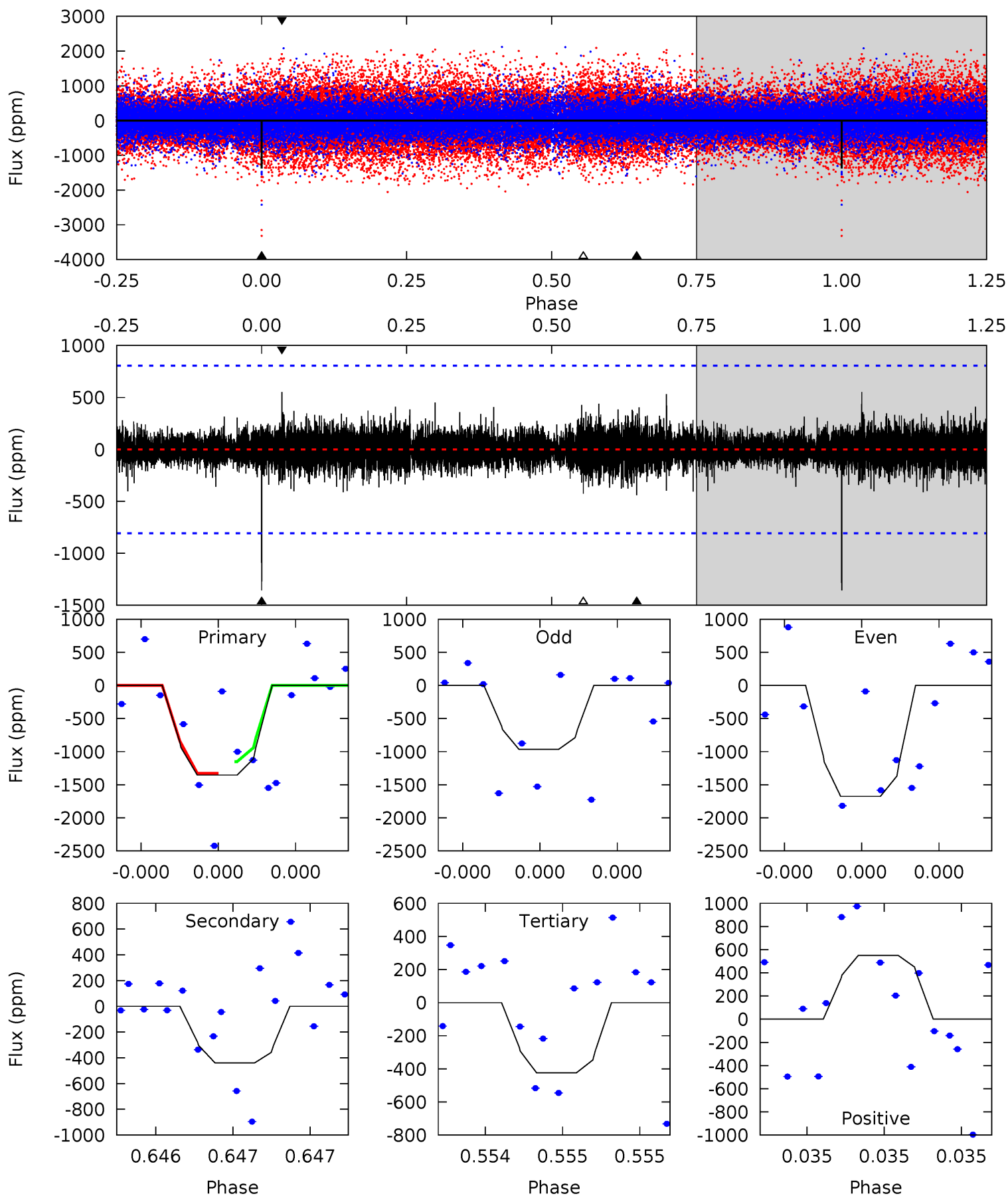
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	7.17	5.09	5.88	5.61	3.53	1.41	5.23	4.45	2.08	1.29	2.57	0.93	0.36	1.23



Alt Model-Shift Uniqueness Test

002994666-02, P = 392.385653 Days, E = 136.073704 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.60	3.11	3.00	3.91	5.72	3.70	0.68	6.60	5.70	0.11	-0.80	2.40	1.54	0.29	0.54



Stellar Parameters For KIC 002994666

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6089^{+193}_{-257}	$4.468^{+0.054}_{-0.216}$	$0.070^{+0.250}_{-0.300}$	$1.024^{+0.341}_{-0.114}$	$1.125^{+0.135}_{-0.166}$	$1.475^{+0.424}_{-0.782}$
	+3%/-4%	+1%/-5%	+357%/-429%	+33%/-11%	+12%/-15%	+29%/-53%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002994666-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-992 ± 138	$4.92^{+2.18}_{-2.05}$	371^{+31}_{-18}	5308^{+1639}_{-725}	26476^{+50416}_{-13666}
Alt.	-439 ± 141	$5.65^{+2.25}_{-2.11}$	371^{+30}_{-21}	4214^{+863}_{-493}	8159^{+13535}_{-4177}

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

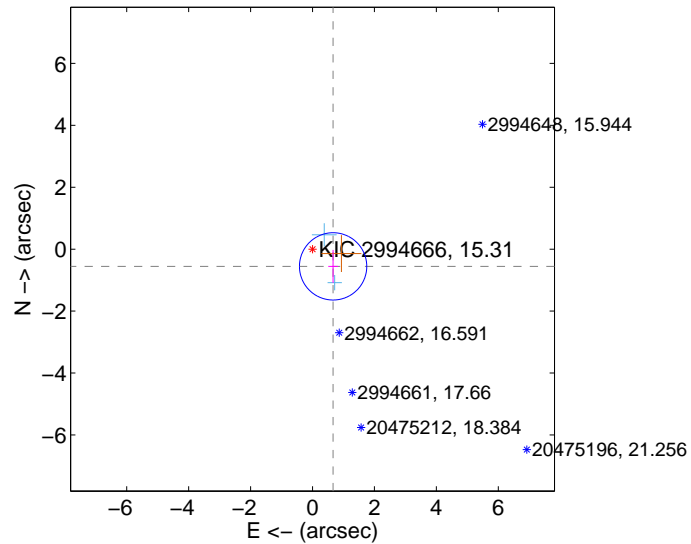
Supplemental centroid analysis for 002994666-02. Kepler magnitude: 15.31. Transit SNR 6.85

There are 2 quarters with good PRF difference image offsets

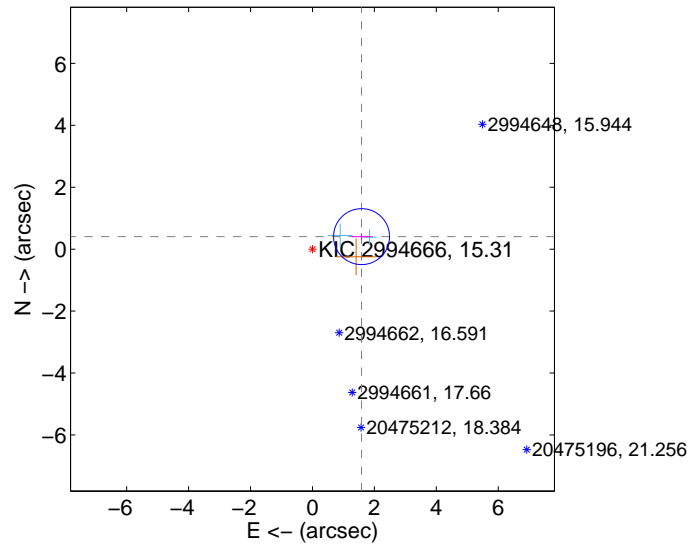
The direct PRF centroid is offset from the target star catalog position by about 0.52 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.867 ± 0.362	2.39	-0.665 ± 0.158	-0.556 ± 0.533
PRF-fit source offset from KIC position	1.637 ± 0.301	5.43	-1.586 ± 0.310	0.405 ± 0.102
photometric centroid source offset	2.89 ± 1.21	2.40	-2.88 ± 1.21	0.27 ± 0.89

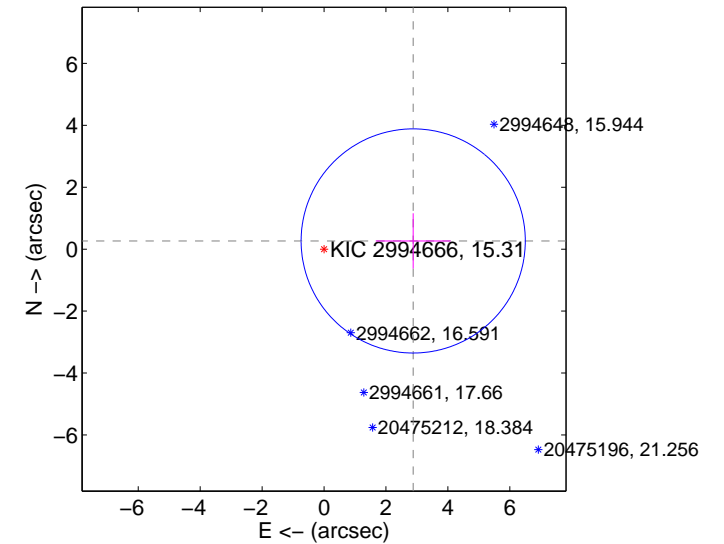
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

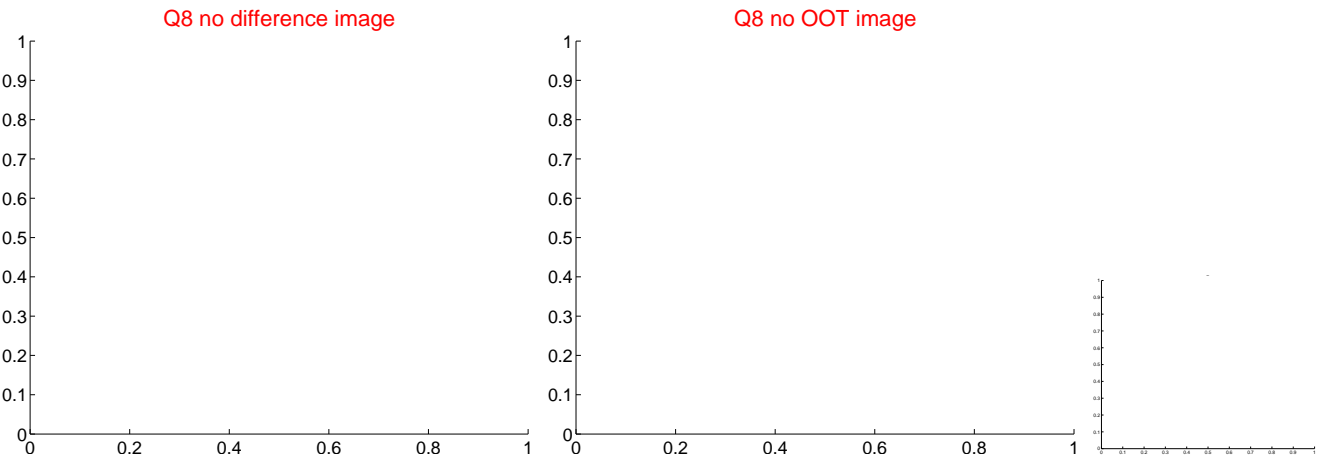
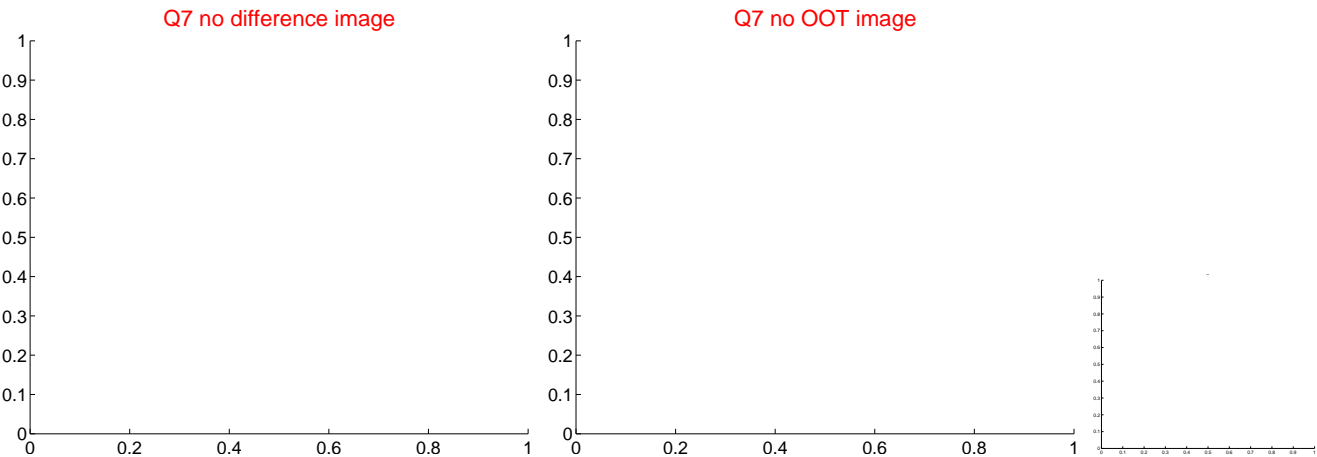
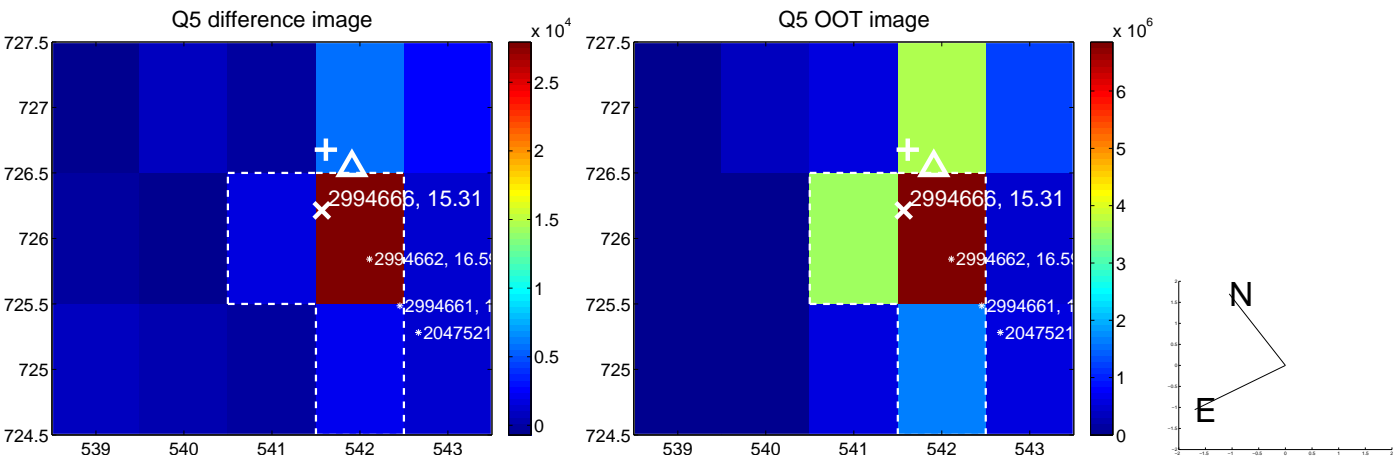


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

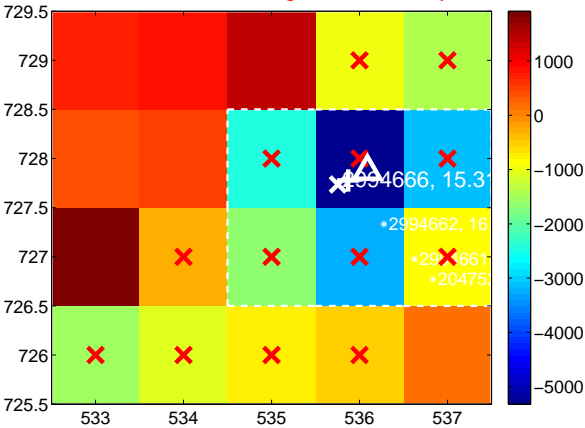
Q9 no difference image



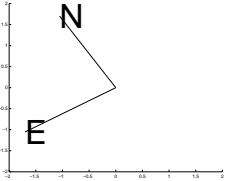
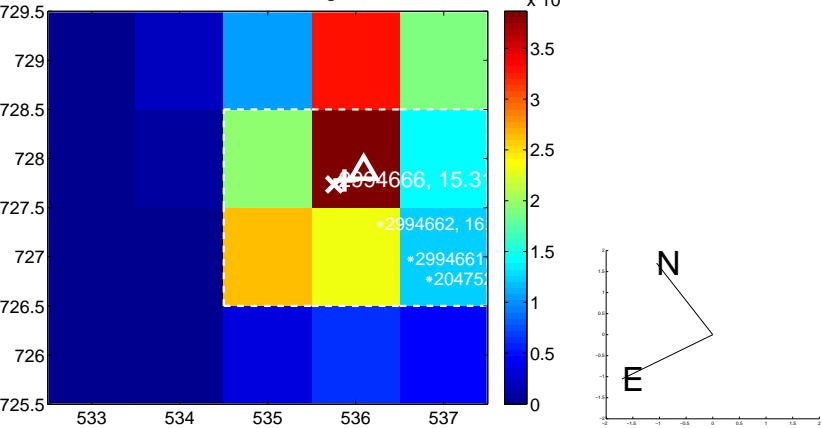
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

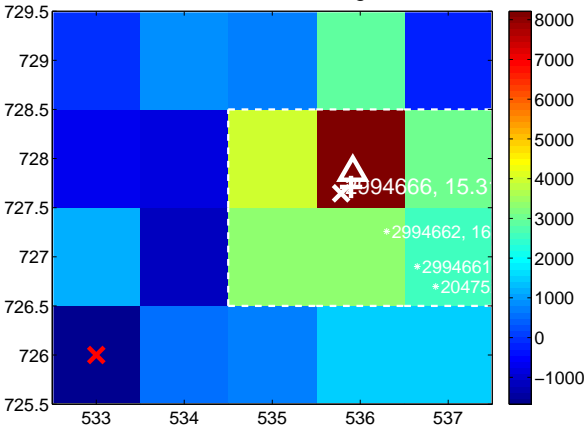
Q13 no difference image



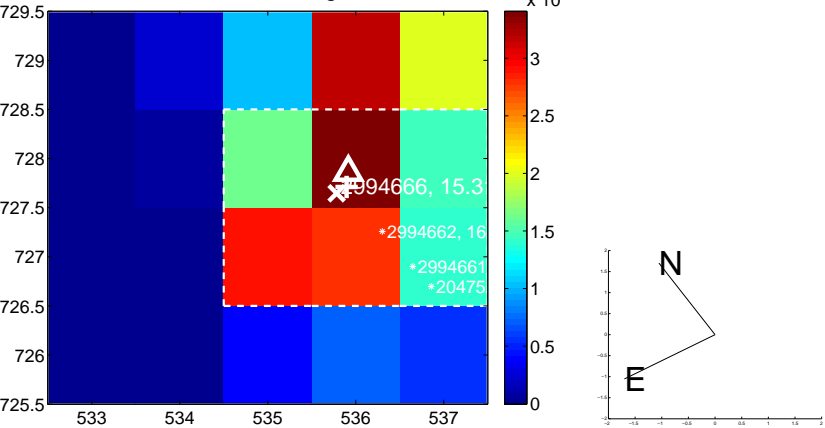
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



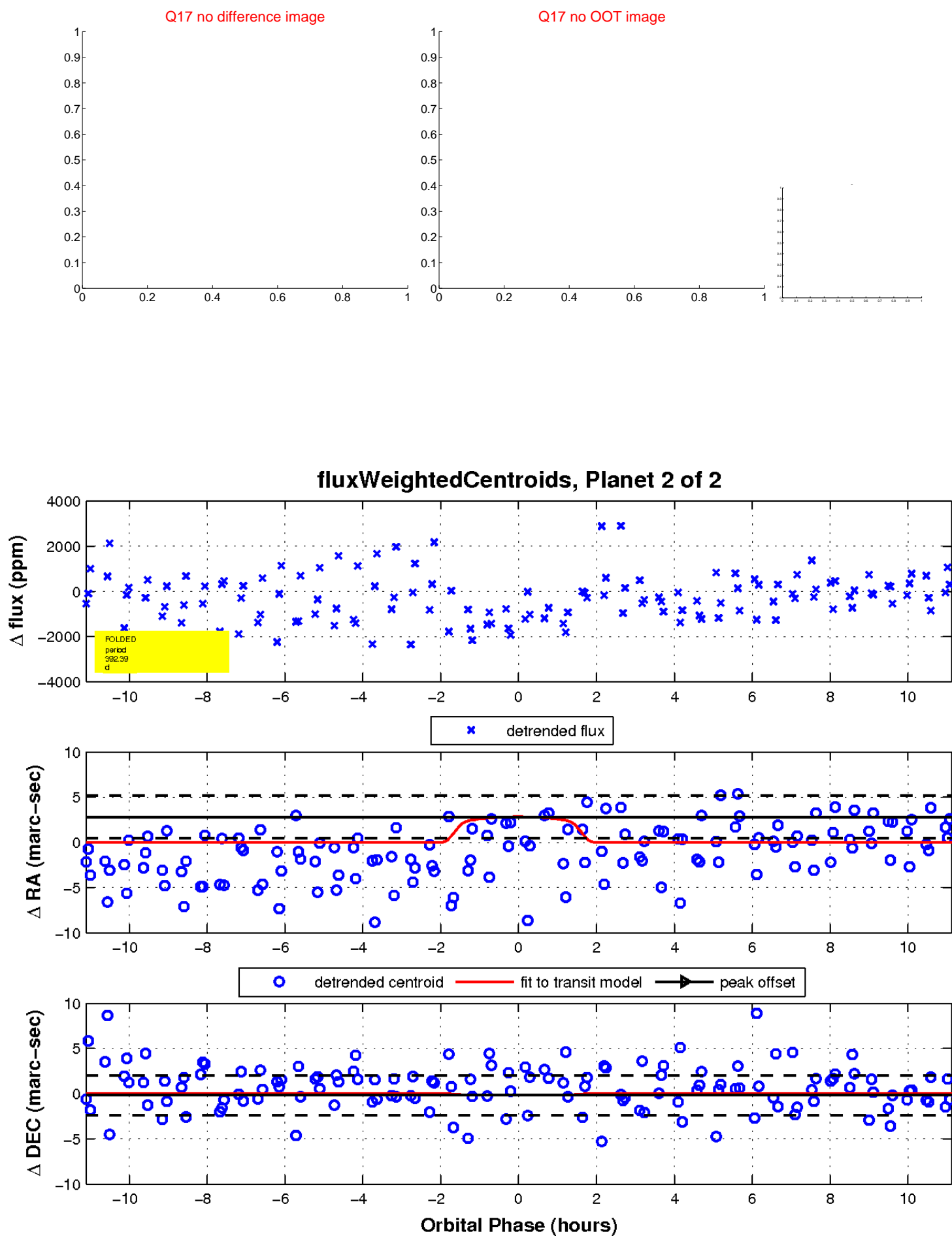
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

