

KIC 006450613

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})
006450613-01	OBS	No	390.994895	322.592072	739.6	3.699	16.5	16.0	8.98	5008	29.42	22.09
006450613-02	OBS	No	369.569945	331.884976	640.4	5.874	15.0	13.2	8.98	5008	28.83	23.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006450613-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—INCONSISTENT_TRANS—CENT_SATURATED
006450613-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

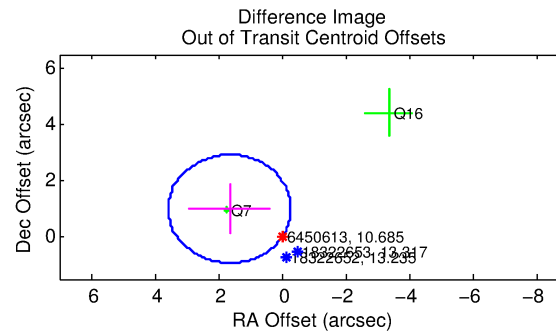
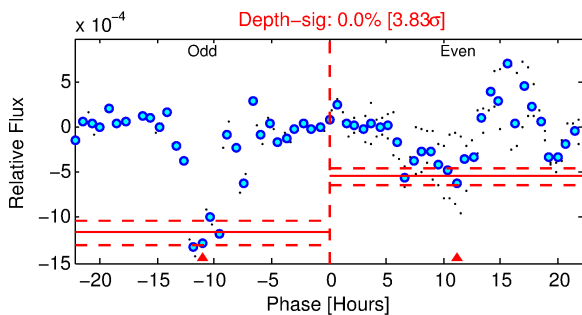
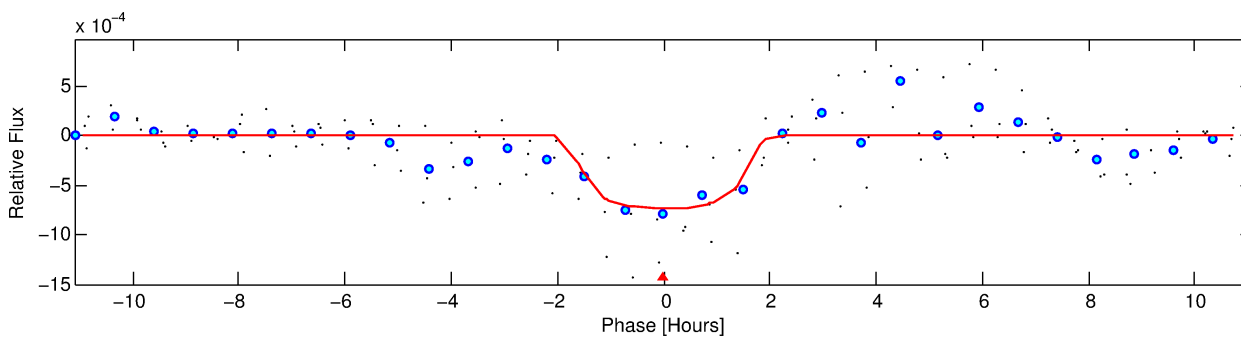
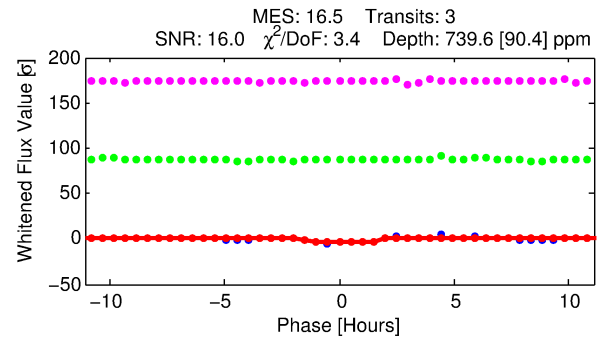
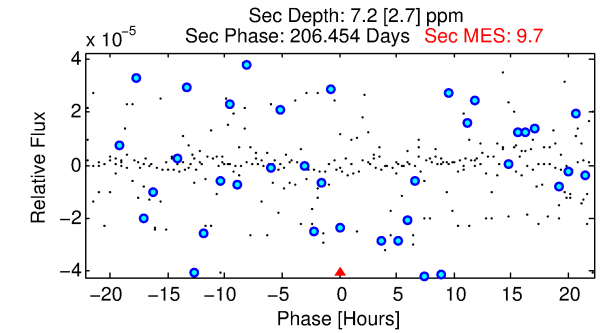
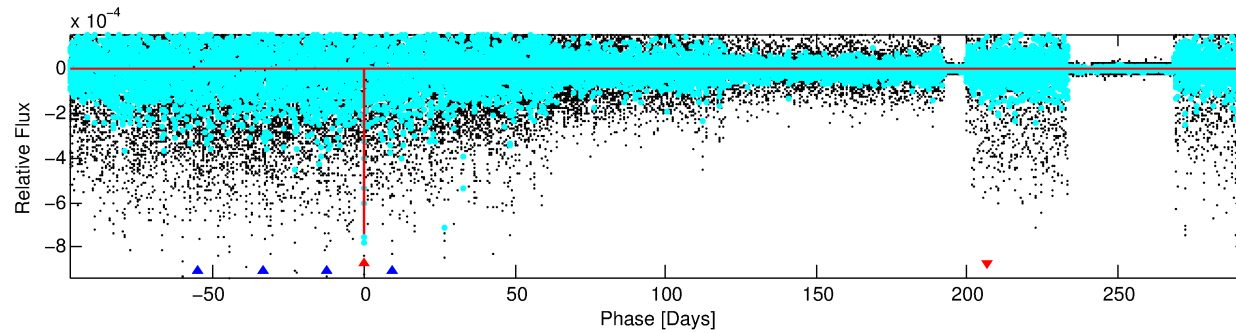
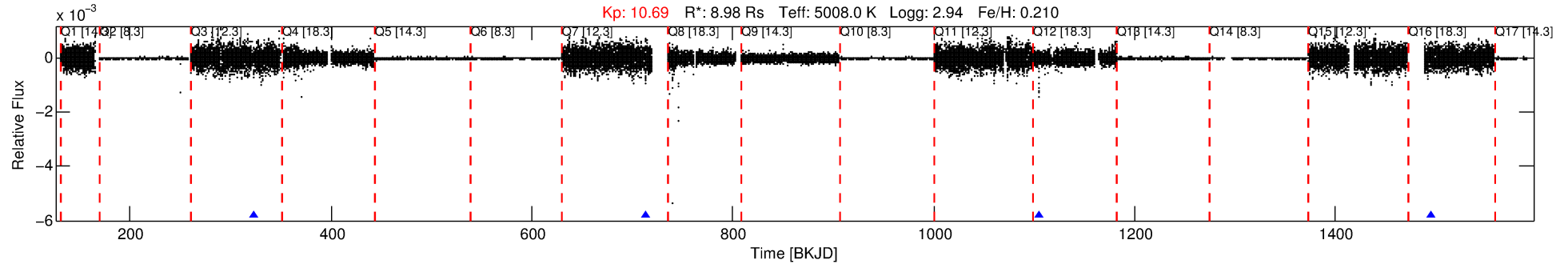
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006450613-01

No Significant Match Found

DV One-Page Summary

KIC: 6450613 Candidate: 1 of 2 Period: 390.995 d



DV Fit Results:

Period = 390.99490 [0.00561] d
Epoch = 322.5921 [0.0126] BKJD
Rp/R* = 0.0300 [0.0078]
a/R* = 419.87 [400.81]
b = 0.89 [0.23]
Seff = 22.09 [9.43]
Teq = 553 [59] K
Rp = 29.42 [13.41] Re
a = 1.4344 [0.4281] AU
Ag = 9.48 [7.24] [1.17]
Teffp = 1500 [245] K [3.76]

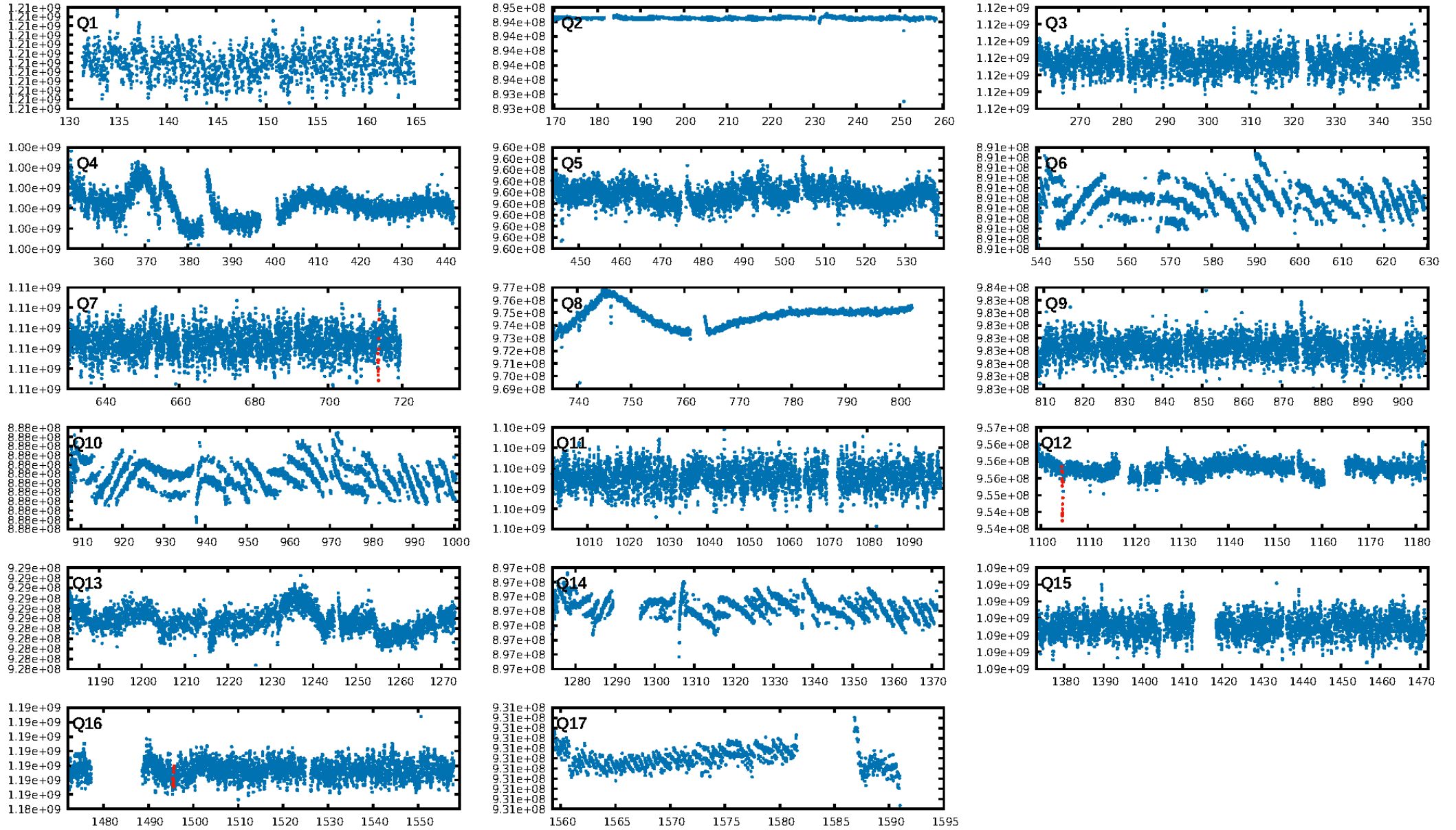
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [74.07]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -15.33
Centroid-sig: 0.0%
Centroid-so: 5.323 arcsec [9.73]
OotOffset-rm: 1.925 arcsec [3.00]
KicOffset-rm: 1.950 arcsec [3.56]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [3/3]

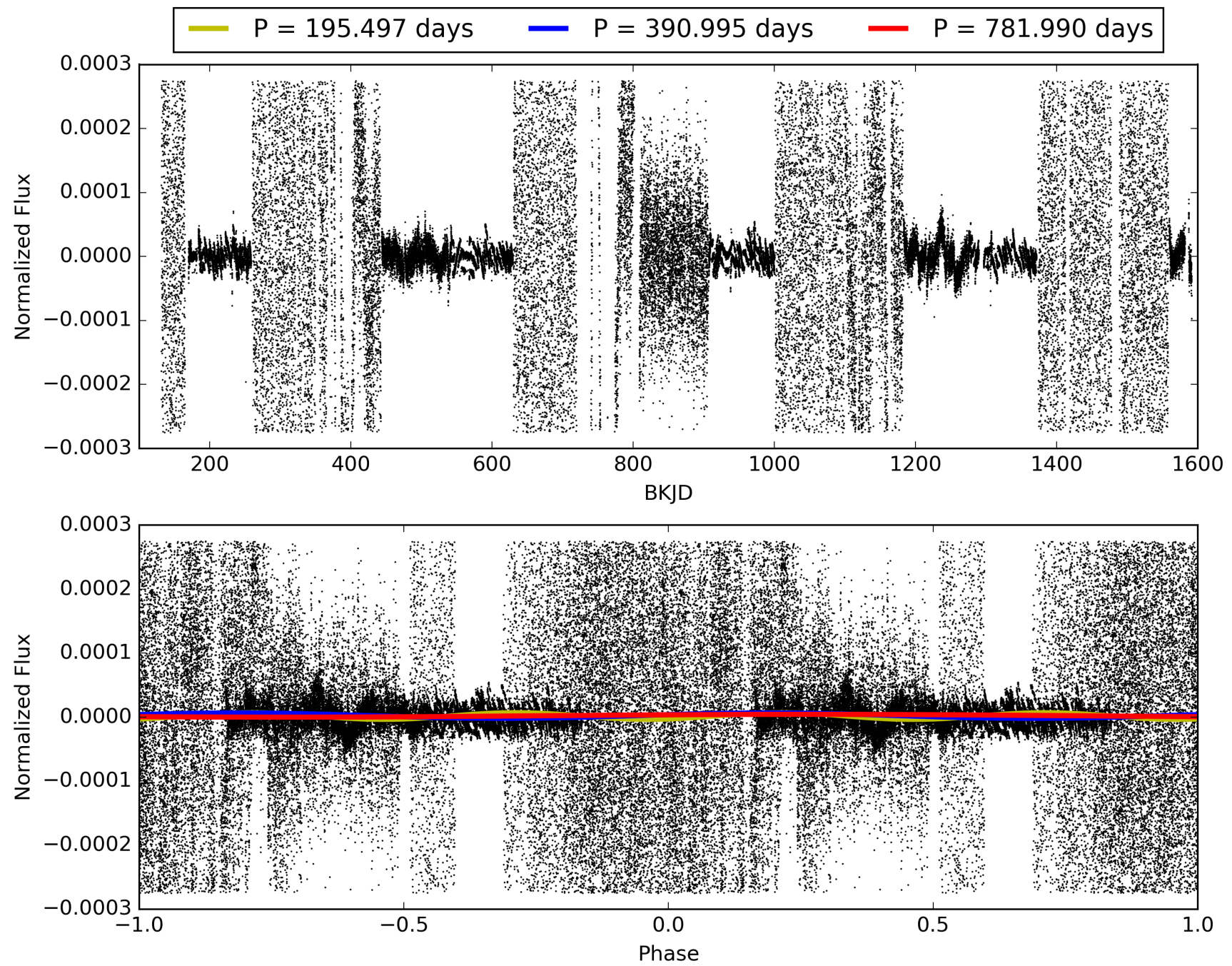
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 07:44:17 Z

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

TCE 006450613-01, PDC Light Curves

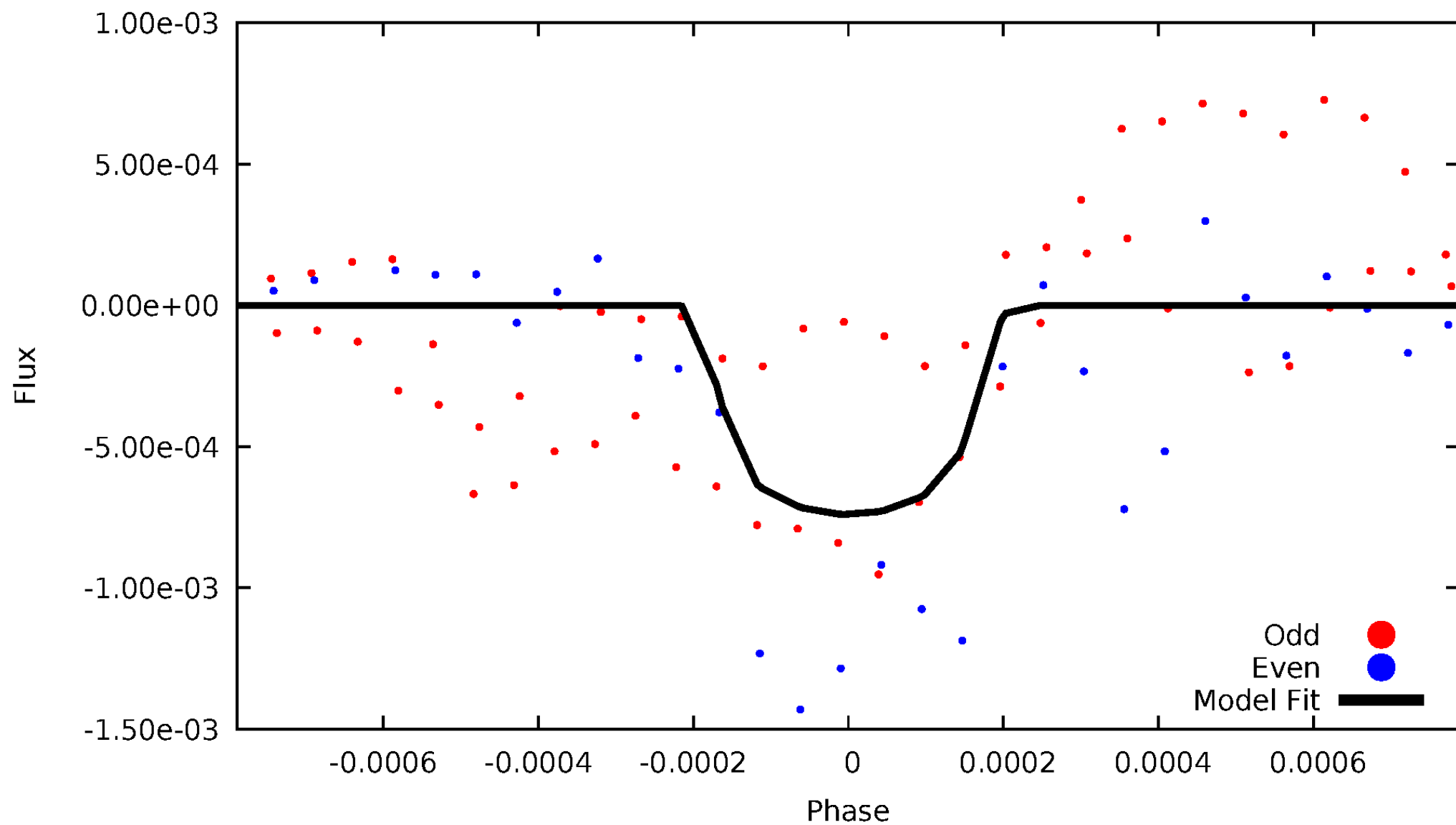


TCE 006450613-01



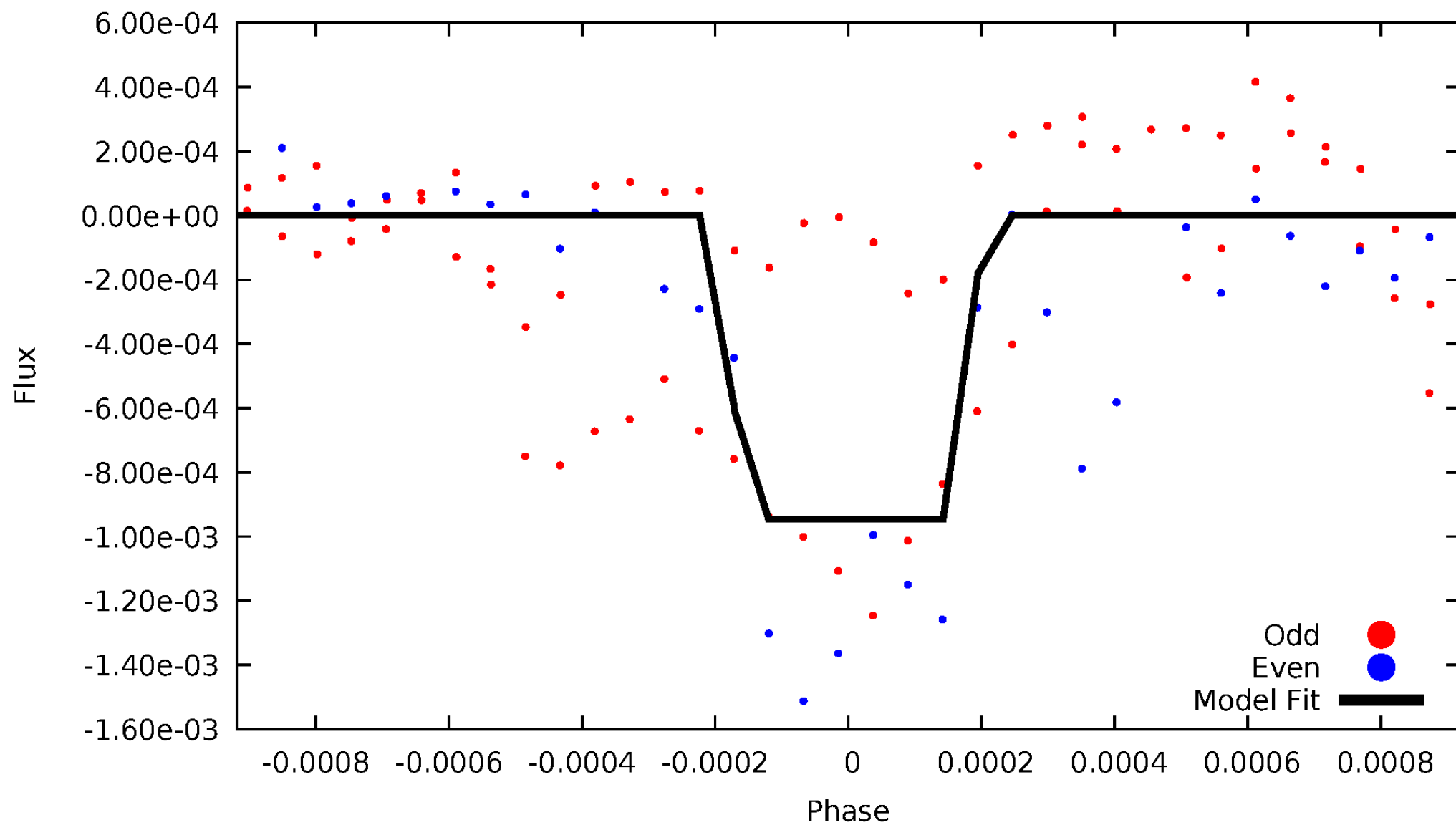
DV Odd/Even

TCE 006450613-01



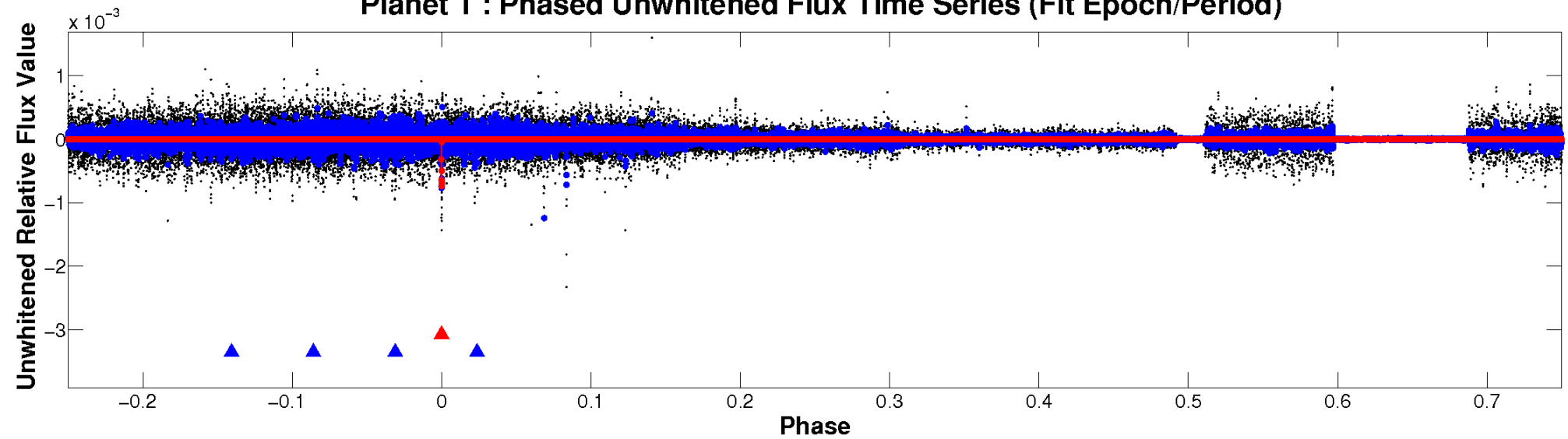
ALT Odd/Even

TCE 006450613-01

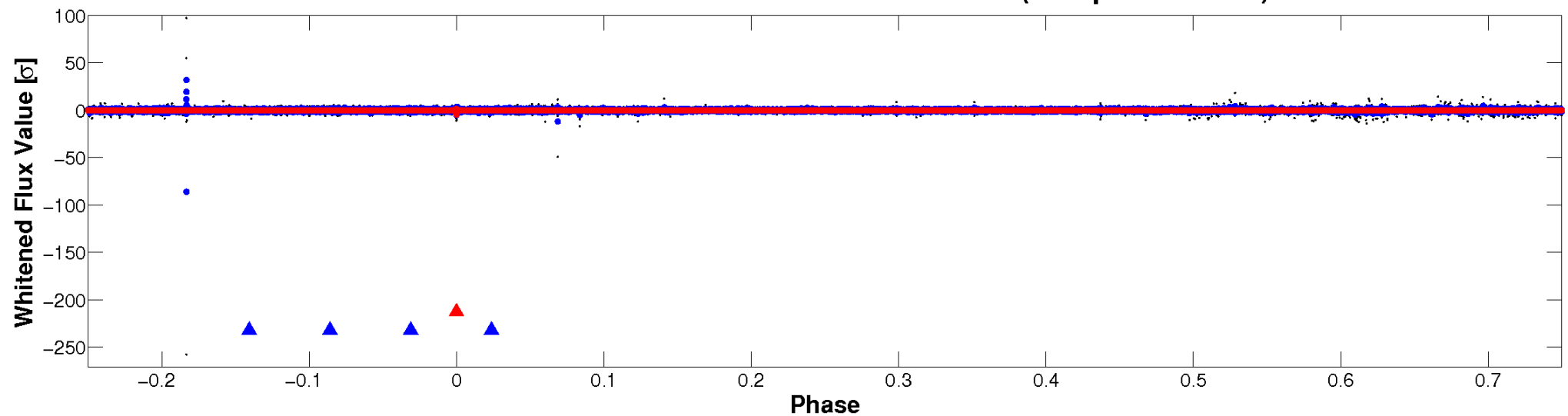


Non-Whitened Vs. Whitened Light Curve

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

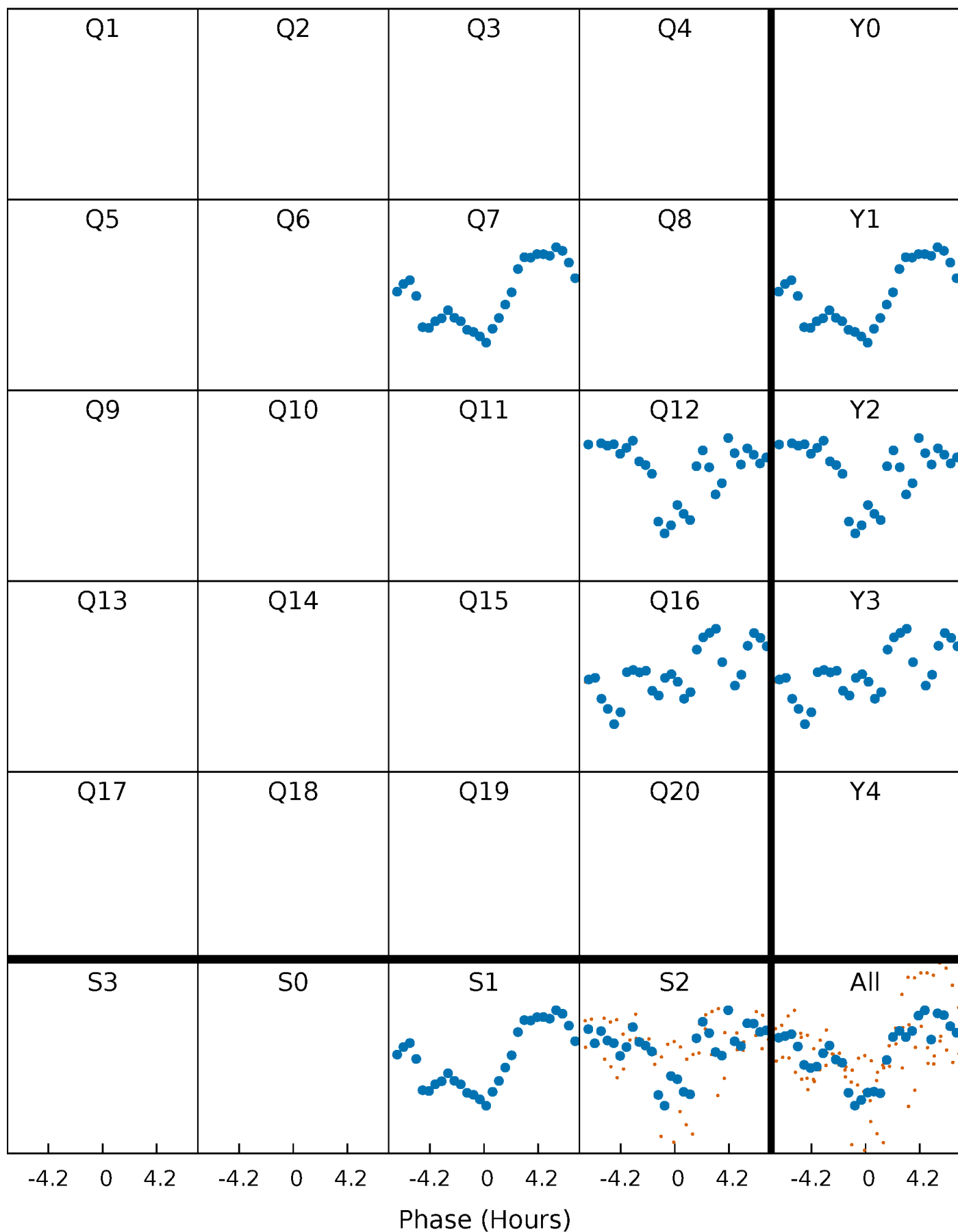


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



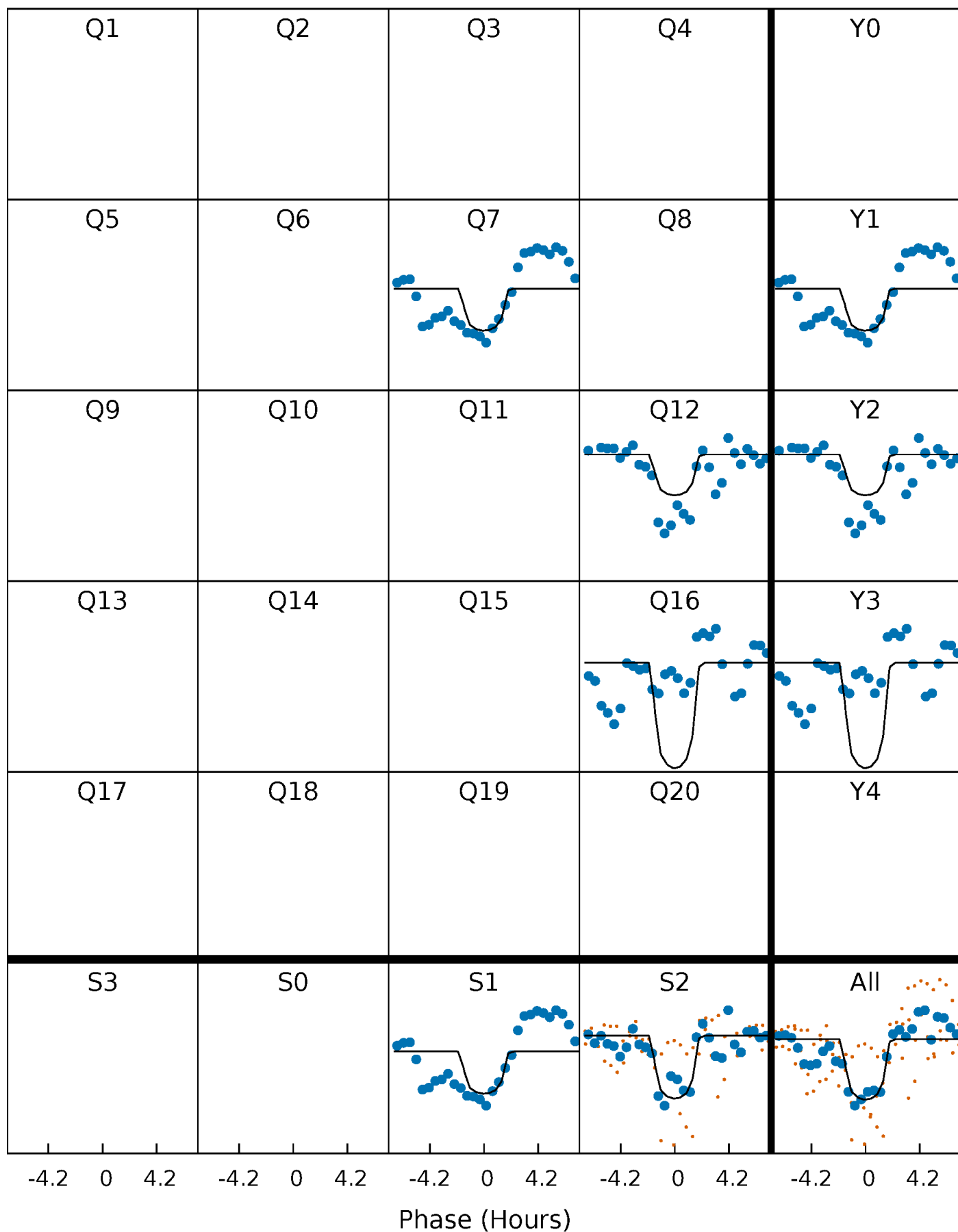
PDC Quarter-Phased Transit Curves

TCE 006450613-01 P=390.994895 Days $T_0=322.592072$ (BKJD)



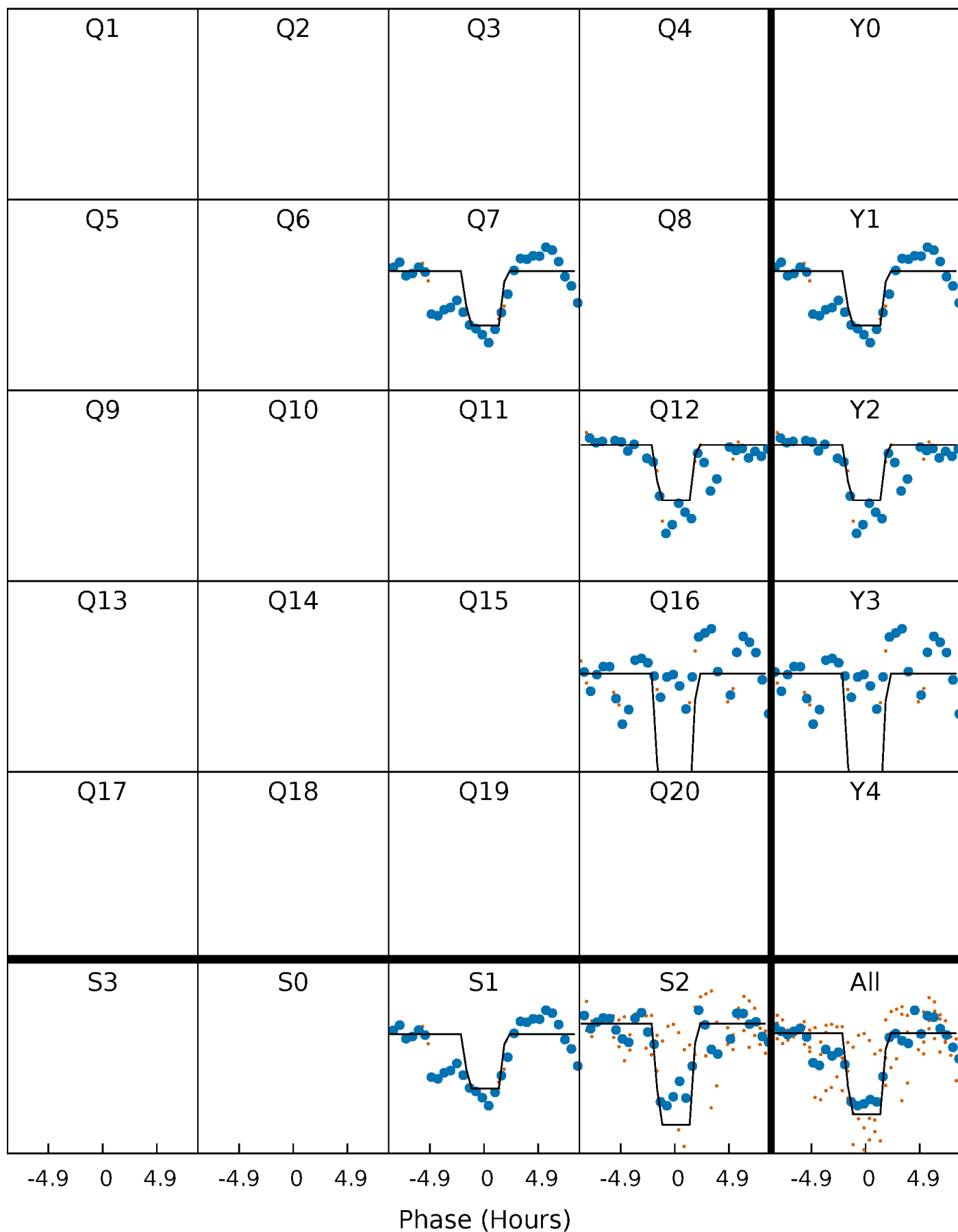
DV Quarter-Phased Transit Curves

TCE 006450613-01 P=390.994895 Days $T_0=322.592072$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

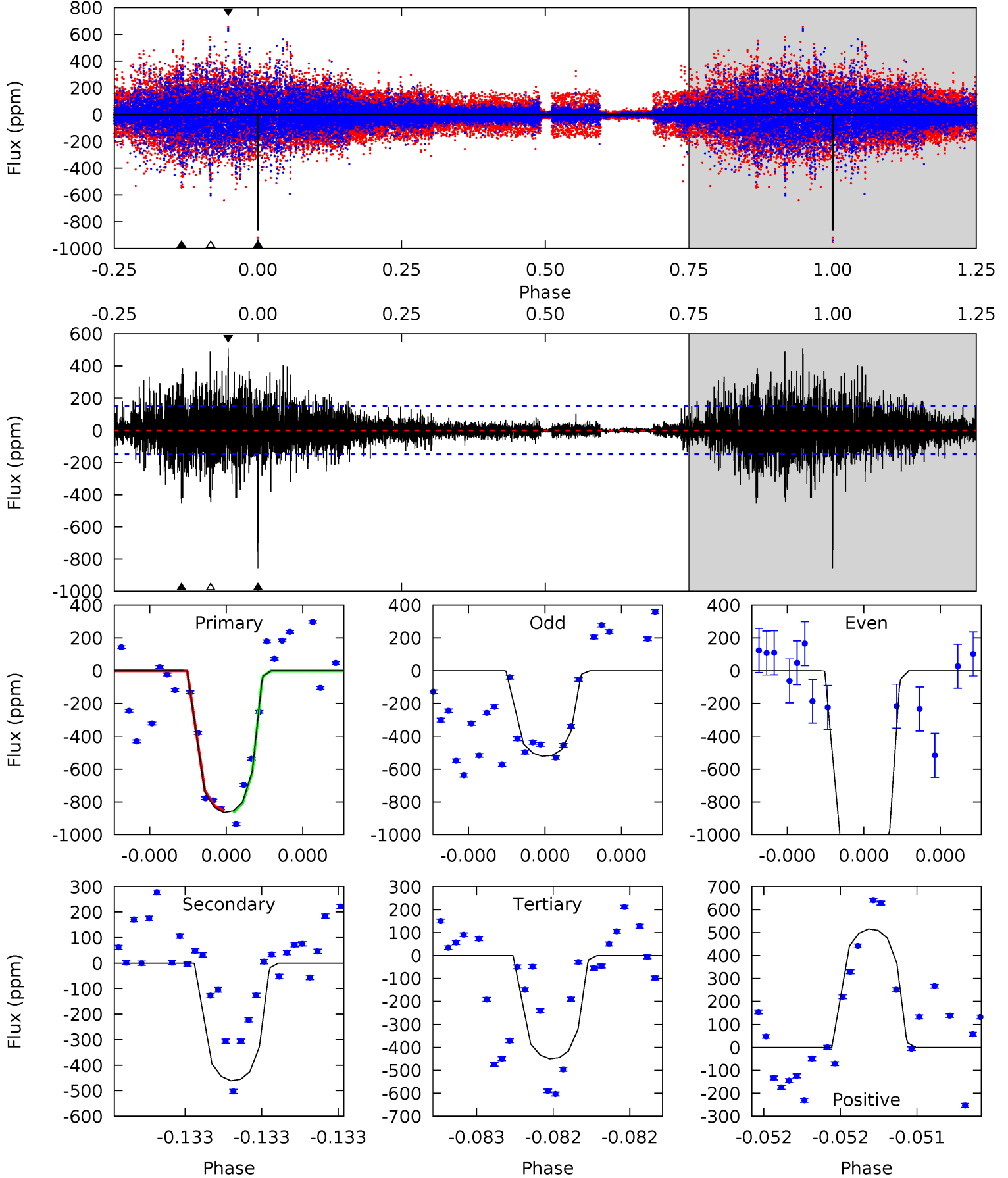
TCE 006450613-01 P=390.996171 Days $T_0=322.591574$ (BKJD)



DV Model-Shift Uniqueness Test

006450613-01, P = 390.994895 Days, E = 322.592072 Days

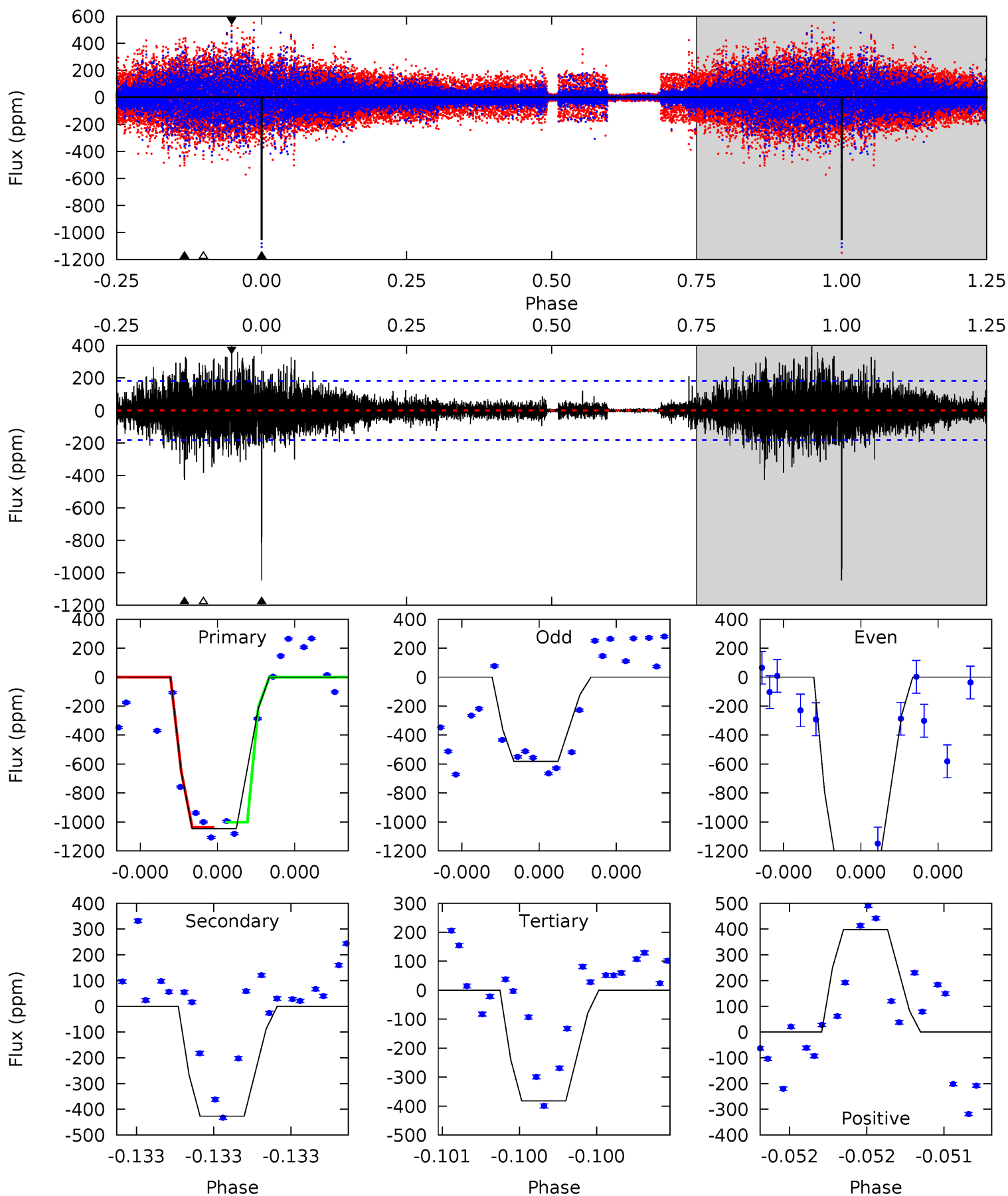
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.0	17.0	16.6	19.1	5.60	3.53	2.33	15.4	12.9	0.41	-2.03	13.7	0.88	0.37	0



Alt Model-Shift Uniqueness Test

006450613-01, P = 390.996171 Days, E = 322.591574 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.3	13.2	11.8	12.3	5.63	3.56	1.68	20.5	20.0	1.38	0.89	12.6	0.76	0.28	0



Stellar Parameters For KIC 006450613

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5008^{+39}_{-139}	$2.942^{+0.214}_{-0.175}$	$0.210^{+0.150}_{-0.200}$	$8.980^{+2.747}_{-3.357}$	$2.572^{+0.197}_{-1.119}$	$0.005^{+0.008}_{-0.002}$
	+1%/-3%	+7%/-6%	+71%/-95%	+31%/-37%	+8%/-44%	+164%/-47%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 006450613-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-455 ± 27	$28.13^{+10.25}_{-8.55}$	768^{+58}_{-63}	4346^{+551}_{-360}	615^{+596}_{-276}
Alt.	-427 ± 32	$28.66^{+10.05}_{-8.38}$	767^{+58}_{-59}	4235^{+533}_{-344}	541^{+544}_{-224}

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

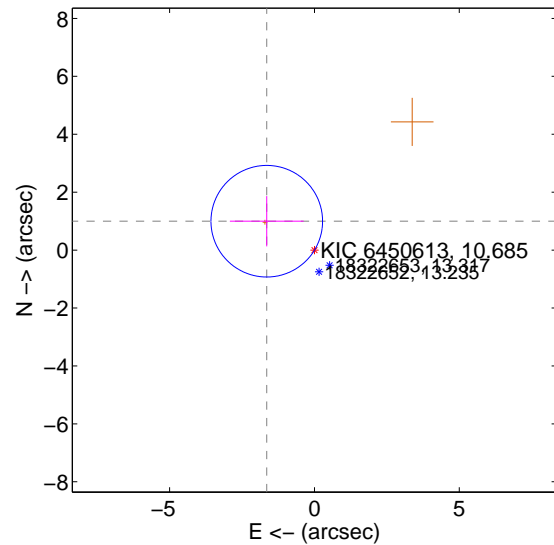
Supplemental centroid analysis for 006450613-01. **Kepler magnitude: 10.69.** Transit SNR 16.03

There are 0 quarters with good PRF difference image offsets

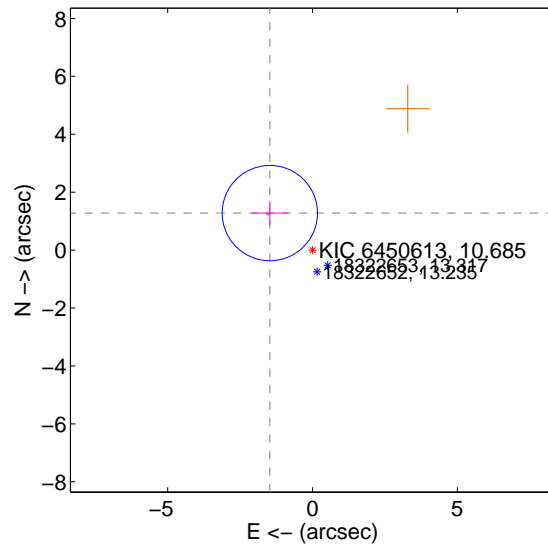
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.925 ± 0.642	3.00	1.646 ± 1.273	0.997 ± 0.869
PRF-fit source offset from KIC position	1.950 ± 0.548	3.56	1.473 ± 0.626	1.278 ± 0.424
photometric centroid source offset	5.32 ± 0.55	9.73	0.84 ± 0.28	-5.26 ± 0.55

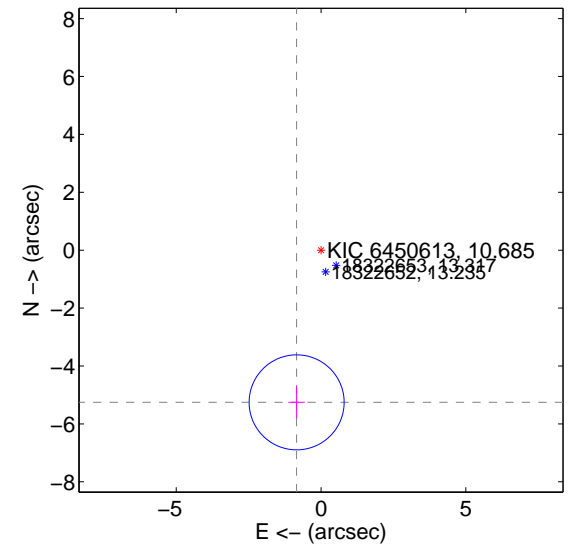
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

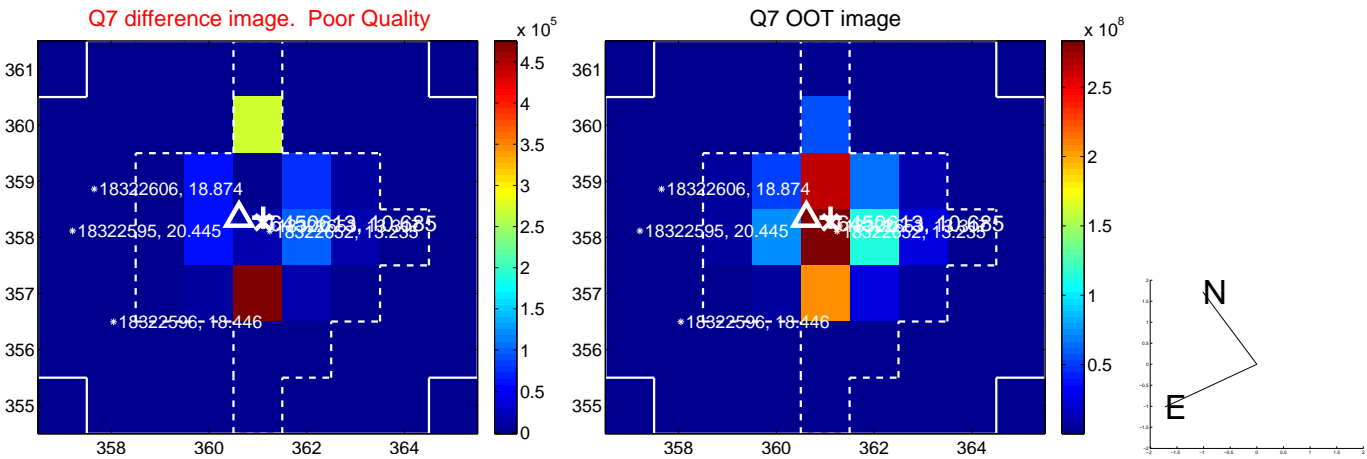


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

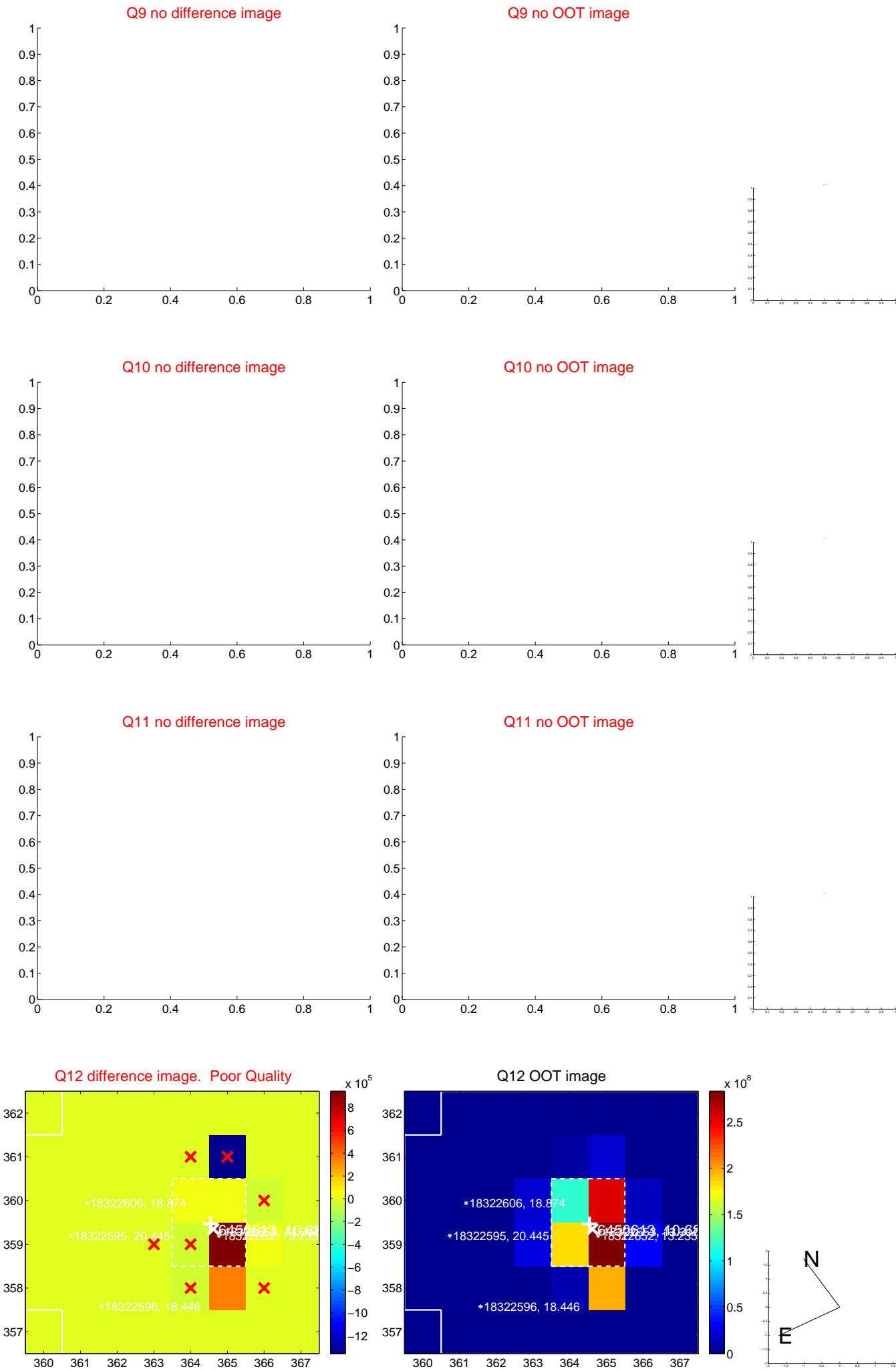
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



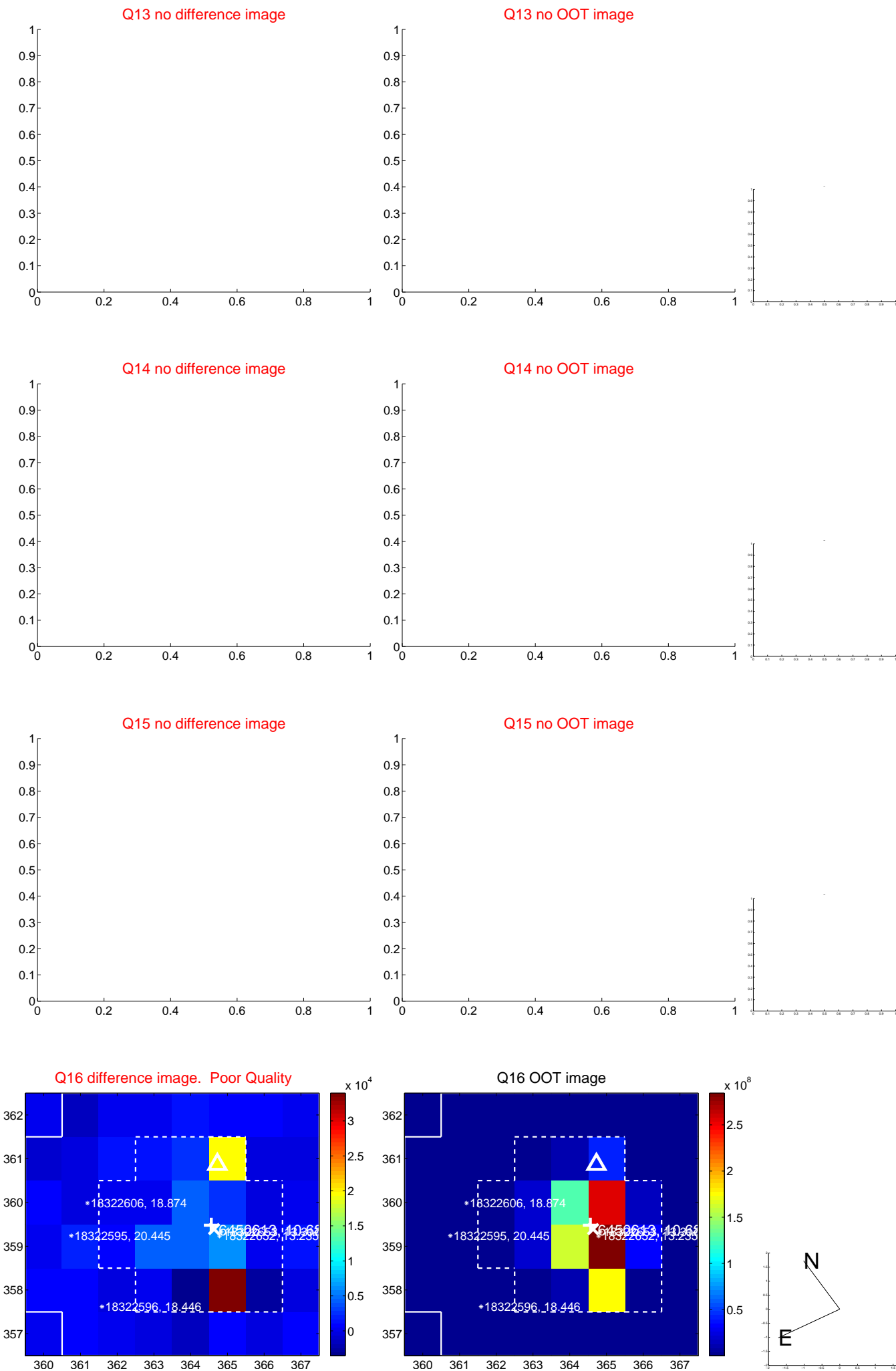
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



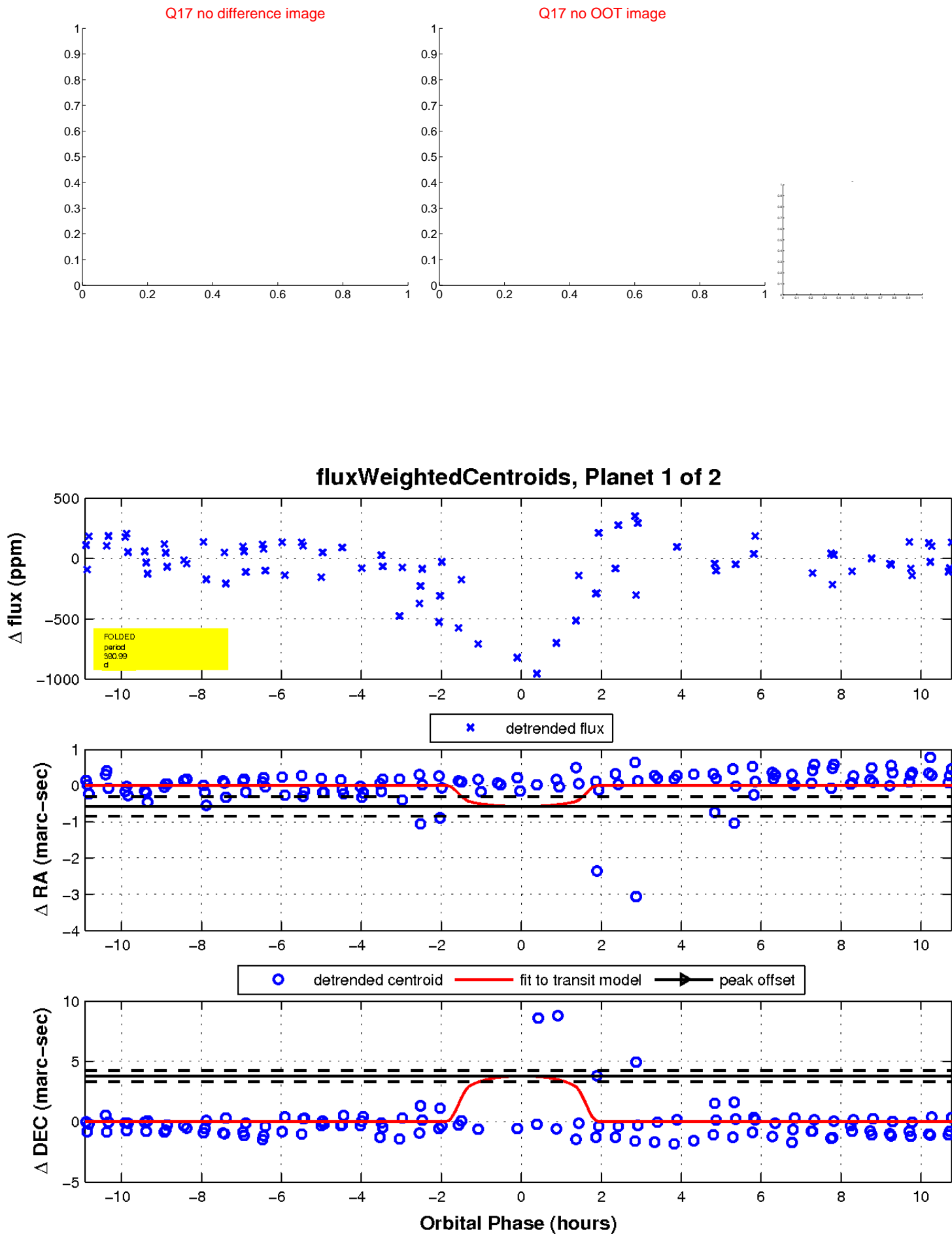
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



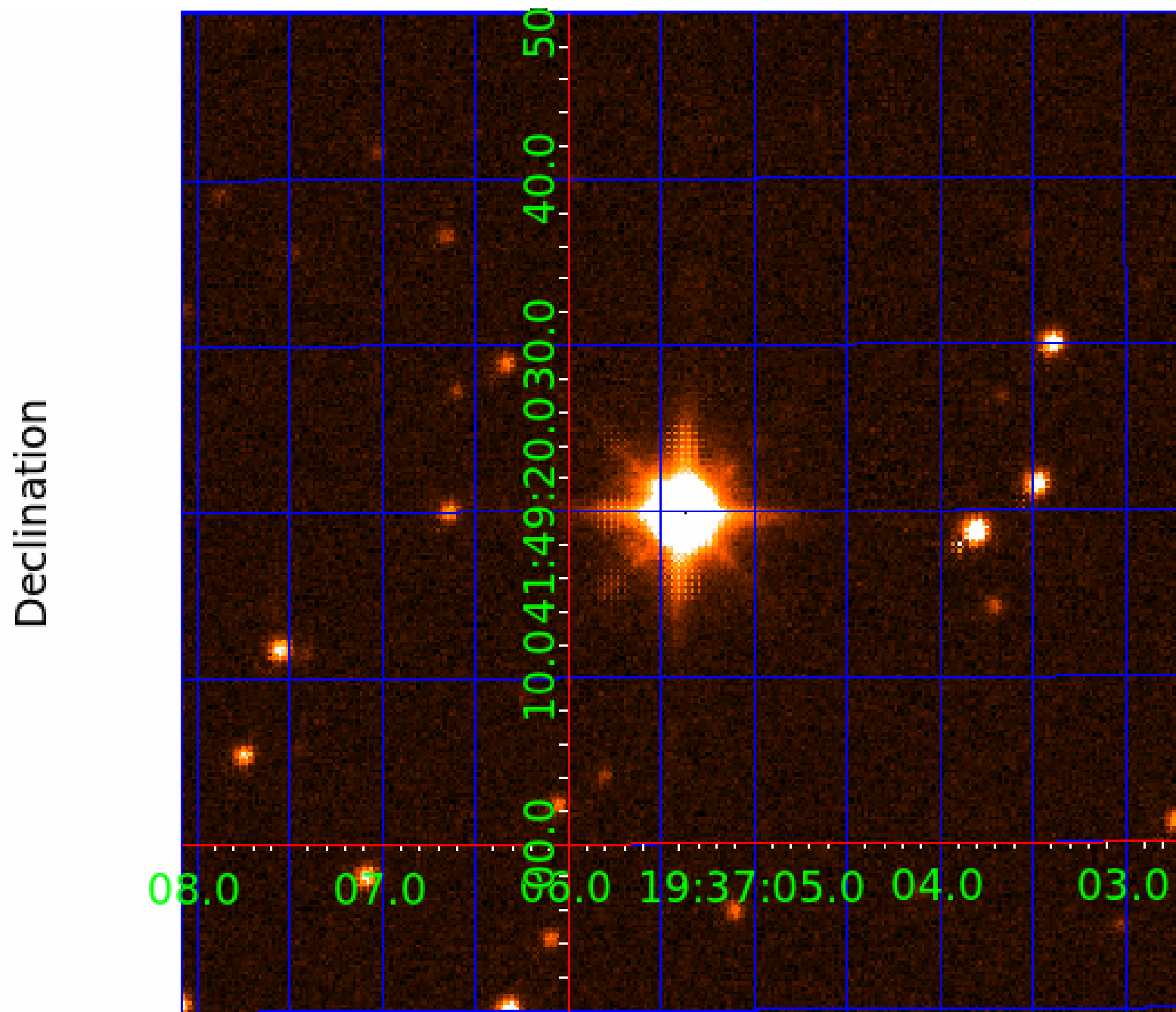
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006450613

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})
006450613-01	OBS	No	390.994895	322.592072	739.6	3.699	16.5	16.0	8.98	5008	29.42	22.09
006450613-02	OBS	No	369.569945	331.884976	640.4	5.874	15.0	13.2	8.98	5008	28.83	23.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006450613-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—INCONSISTENT_TRANS—CENT_SATURATED
006450613-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

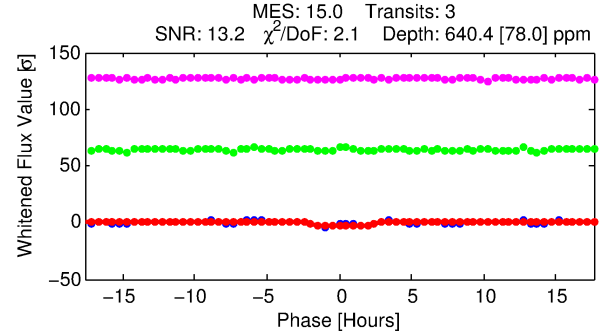
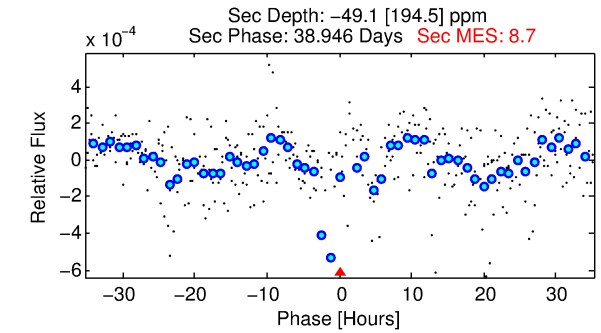
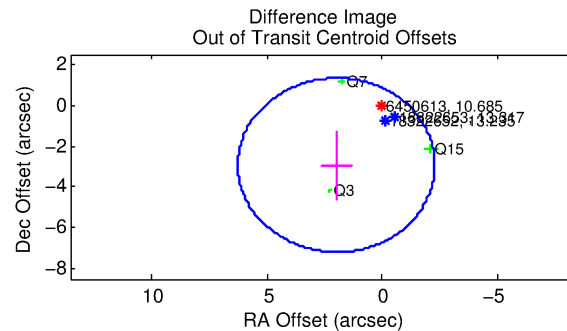
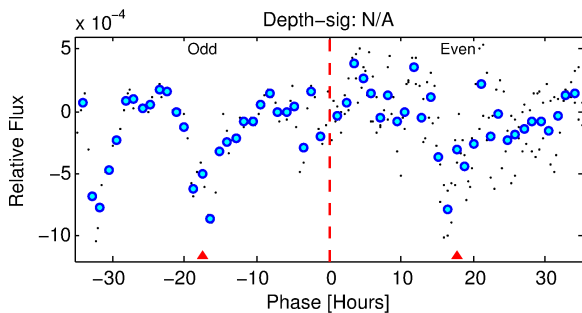
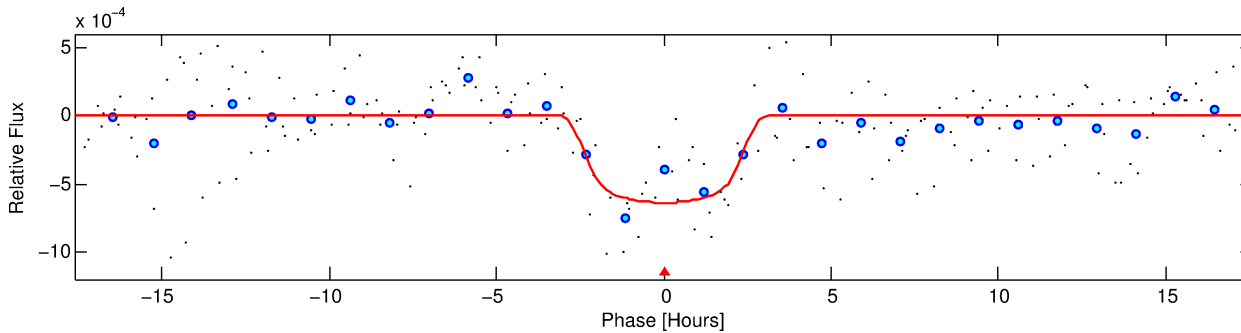
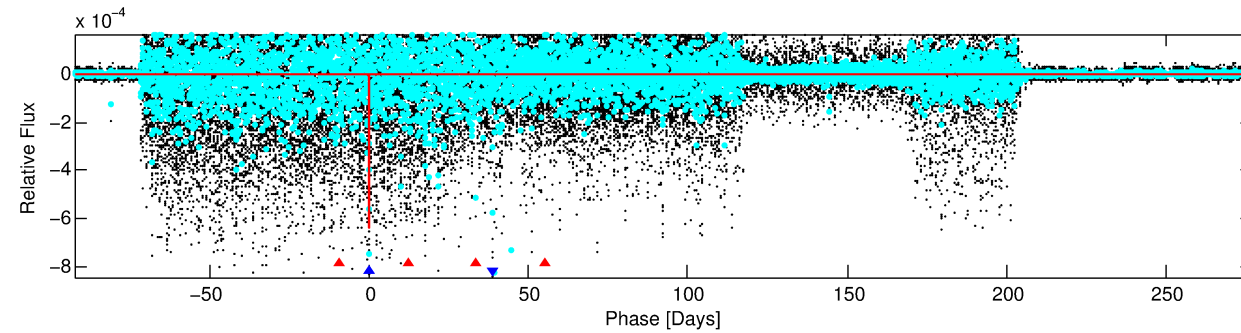
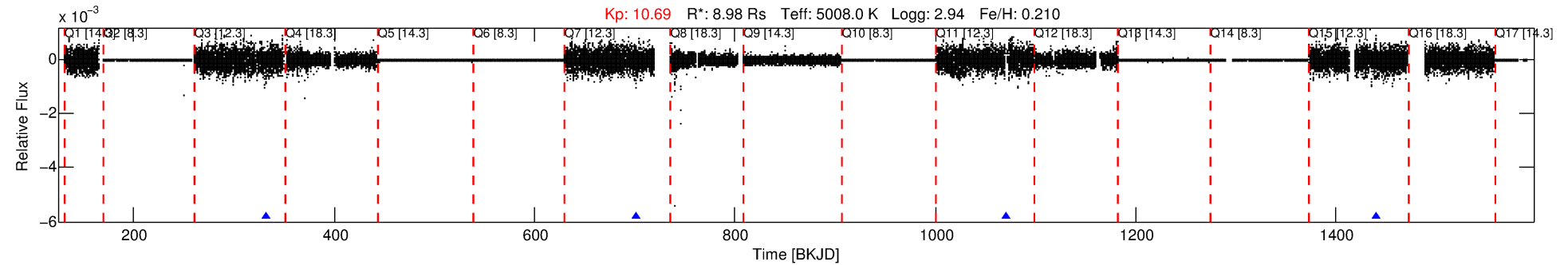
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006450613-02

No Significant Match Found

DV One-Page Summary

KIC: 6450613 Candidate: 2 of 2 Period: 369.570 d



DV Fit Results:

Period = 369.56994 [0.00423] d
Epoch = 331.8850 [0.0073] BKJD
Rp/R* = 0.0294 [0.0026]
a/R* = 213.13 [46.70]
b = 0.93 [0.03]
Seff = 23.81 [10.17]
Teq = 563 [60] K
Rp = 28.83 [11.07] Re
a = 1.3815 [0.4123] AU
Ag = N/A
Teffp = N/A

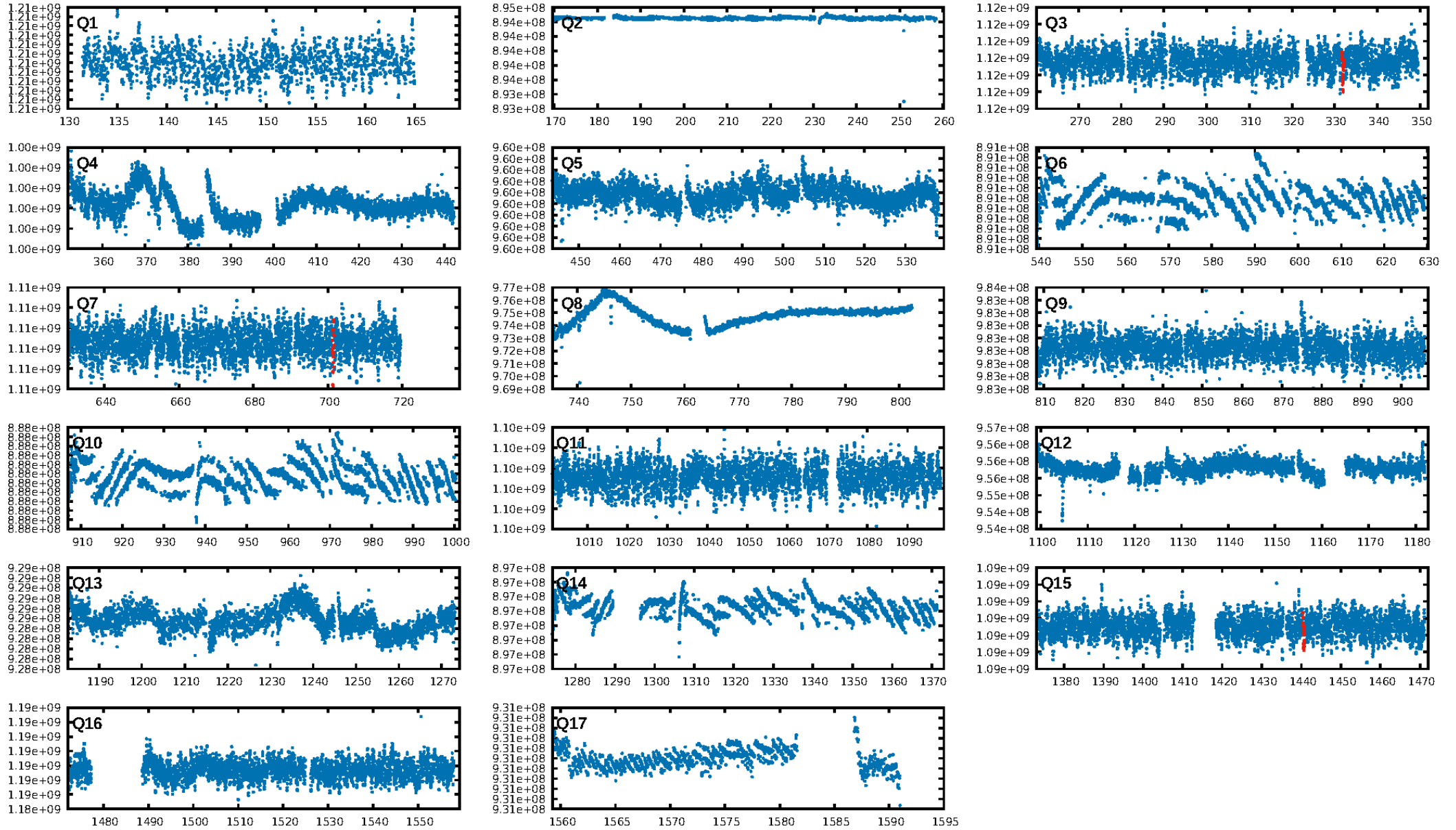
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [74.07σ]
ModelChiSquare2-sig: 40.2%
ModelChiSquareGof-sig: 3.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.374
Centroid-sig: 31.3%
Centroid-so: 0.458 arcsec [1.18σ]
OotOffset-rm: 3.540 arcsec [2.49σ]
KicOffset-rm: 3.187 arcsec [2.23σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

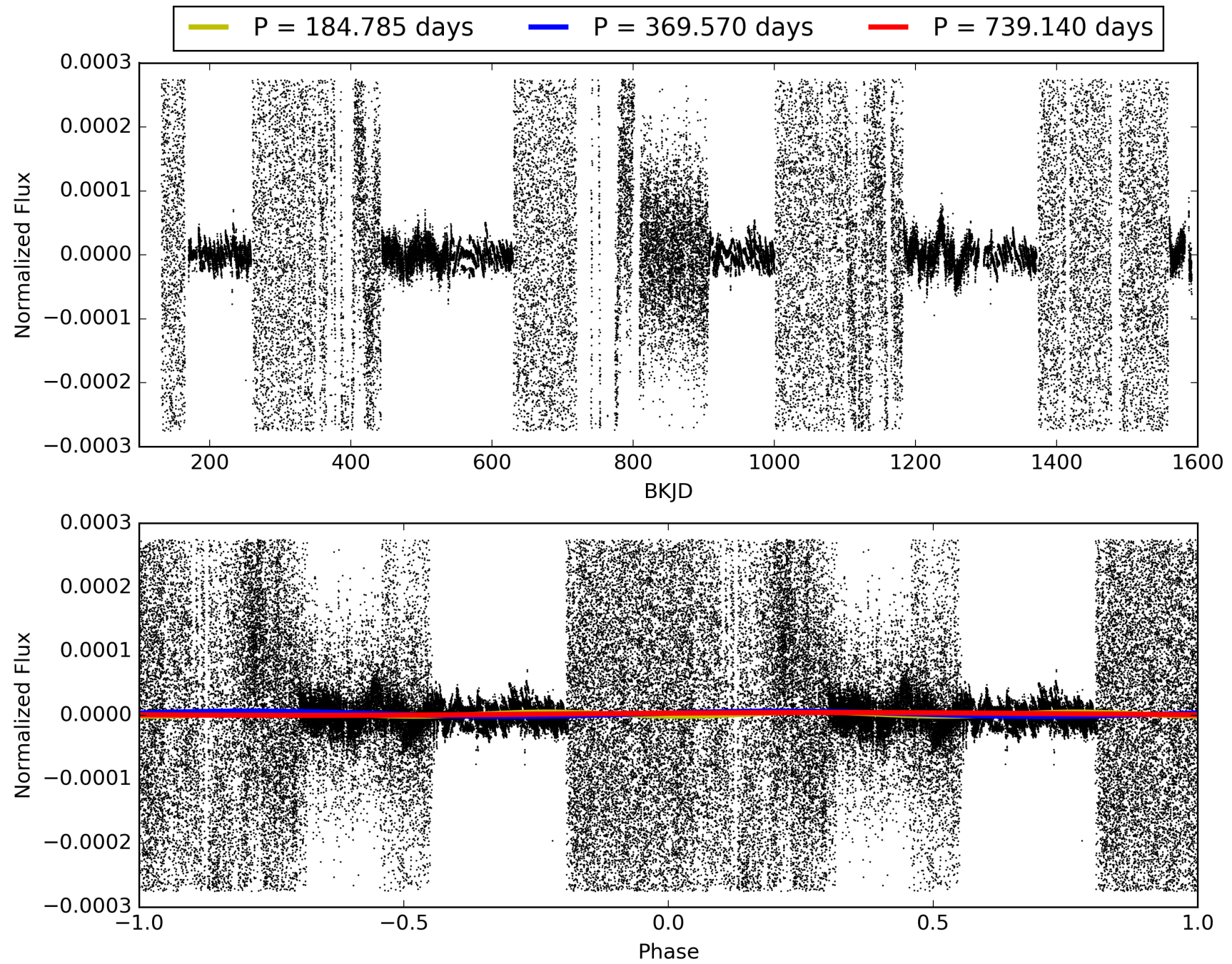
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 07:44:29 Z

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

TCE 006450613-02, PDC Light Curves

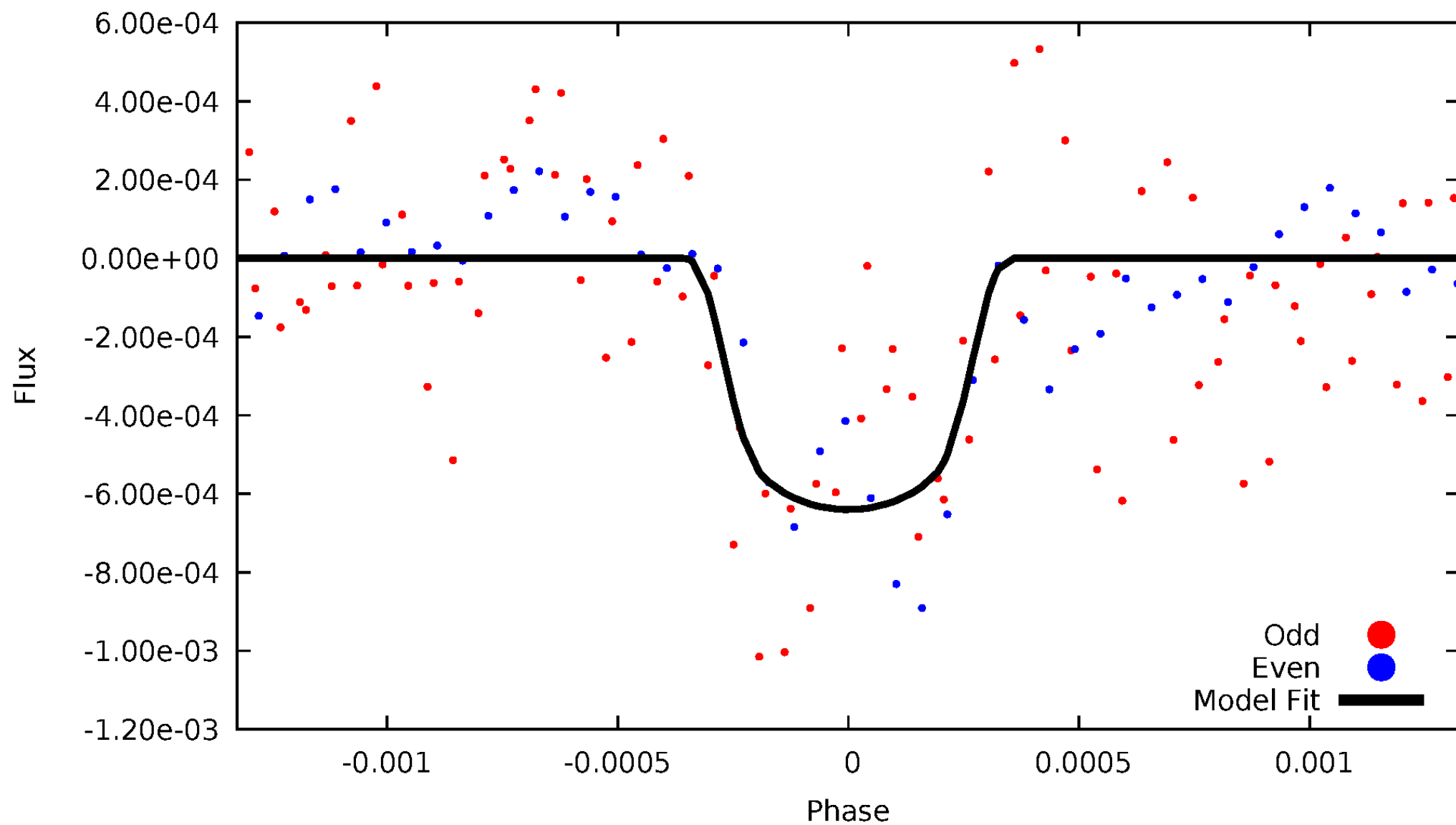


TCE 006450613-02



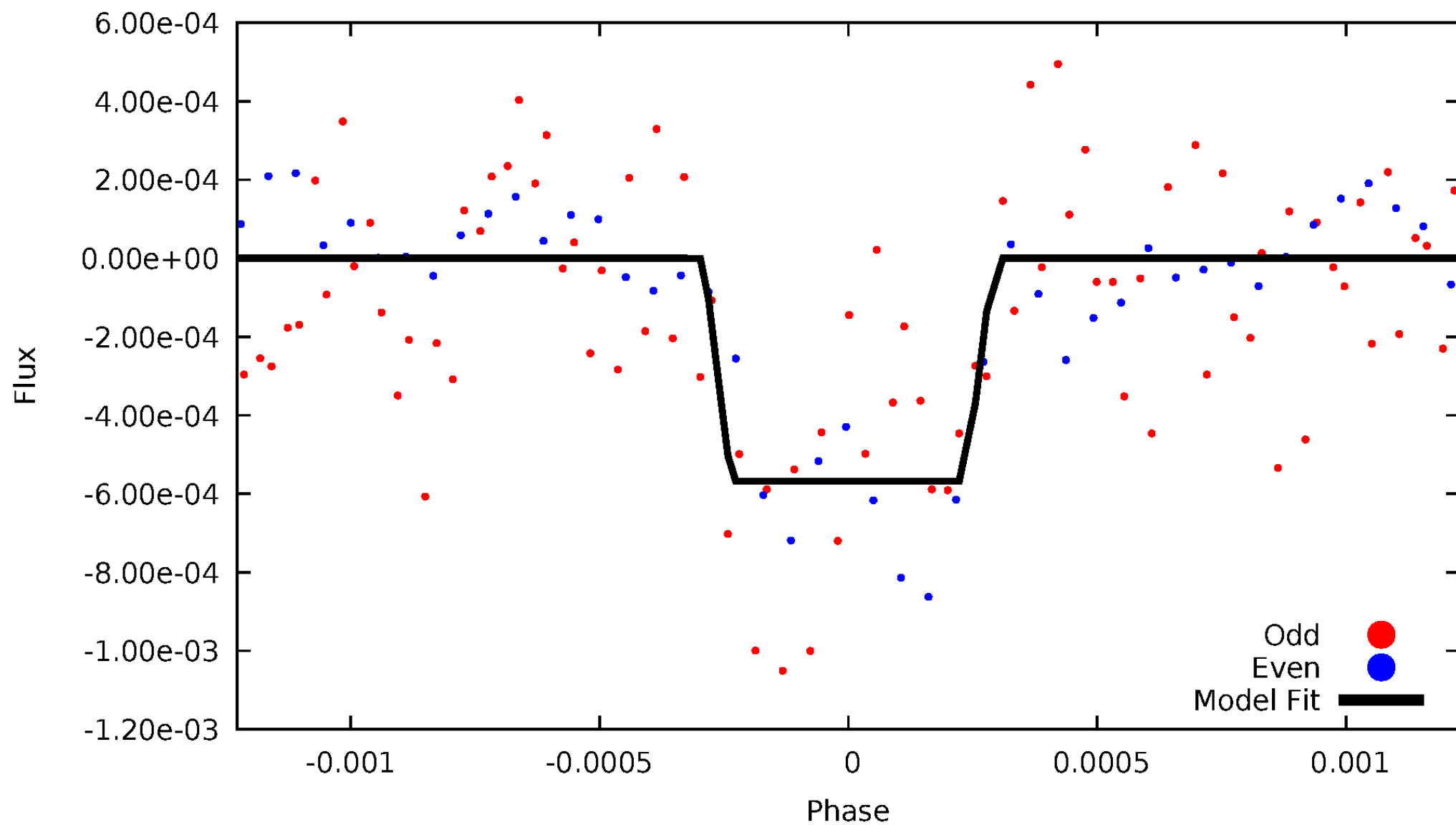
DV Odd/Even

TCE 006450613-02



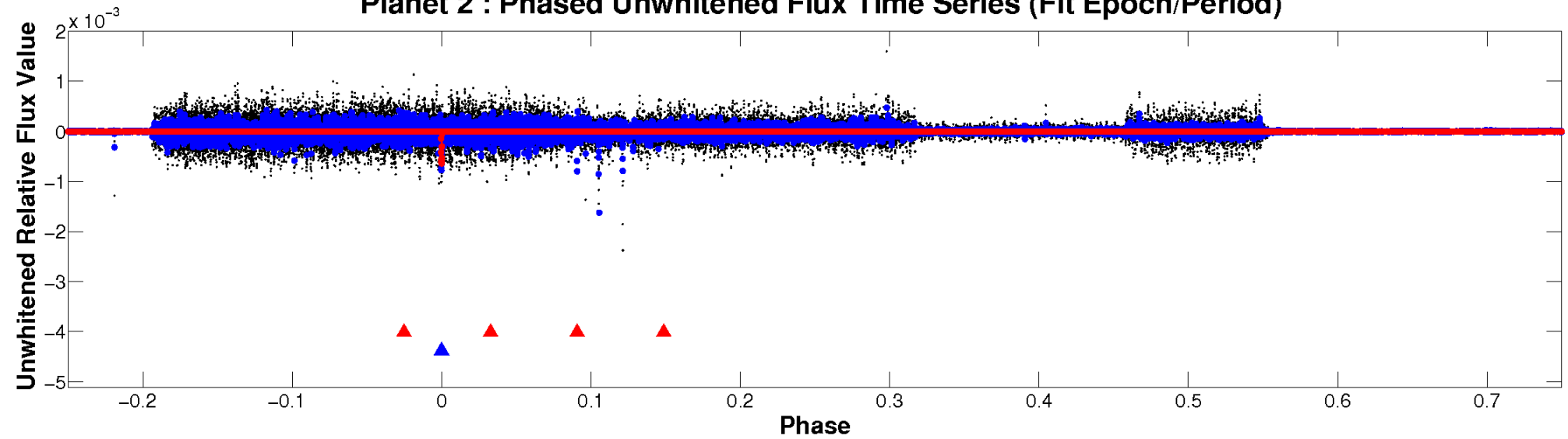
ALT Odd/Even

TCE 006450613-02

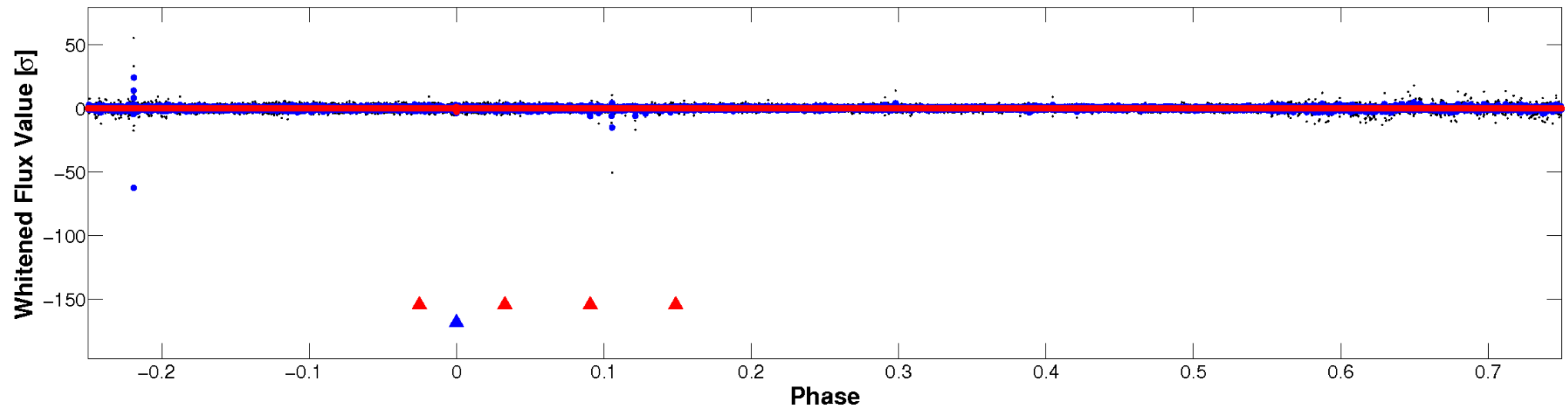


Non-Whitened Vs. Whitened Light Curve

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

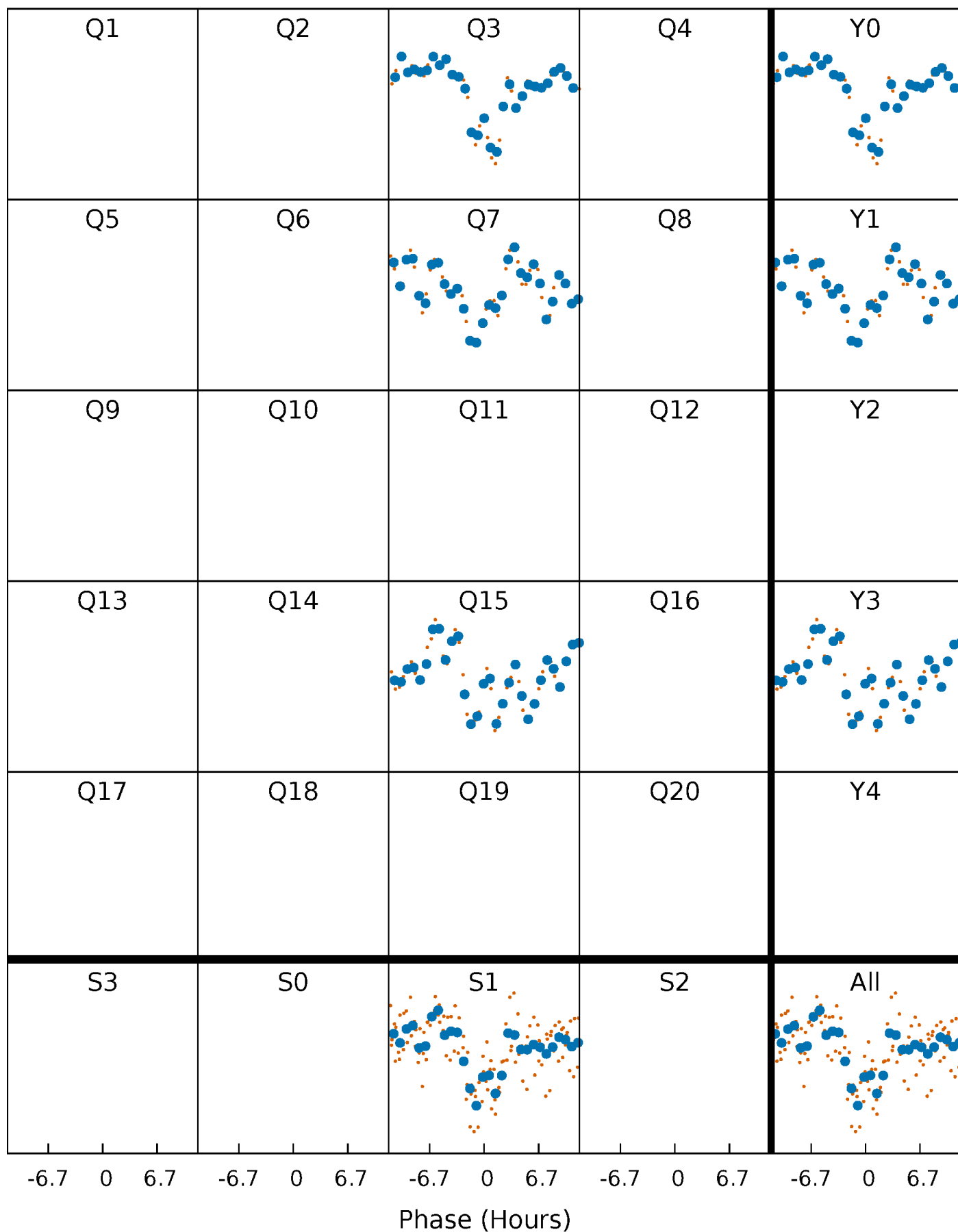


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



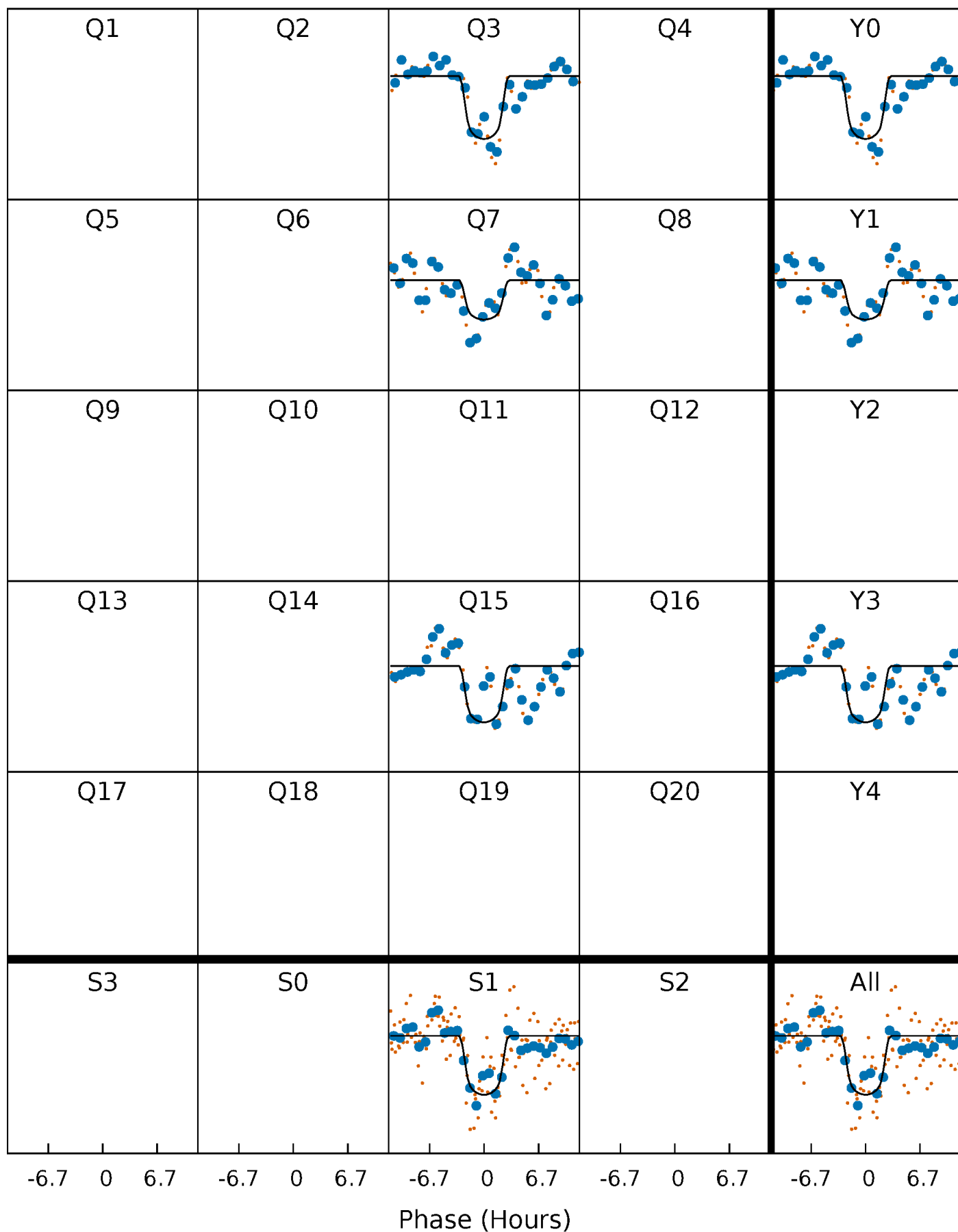
PDC Quarter-Phased Transit Curves

TCE 006450613-02 $P=369.569945$ Days $T_0=331.884976$ (BKJD)



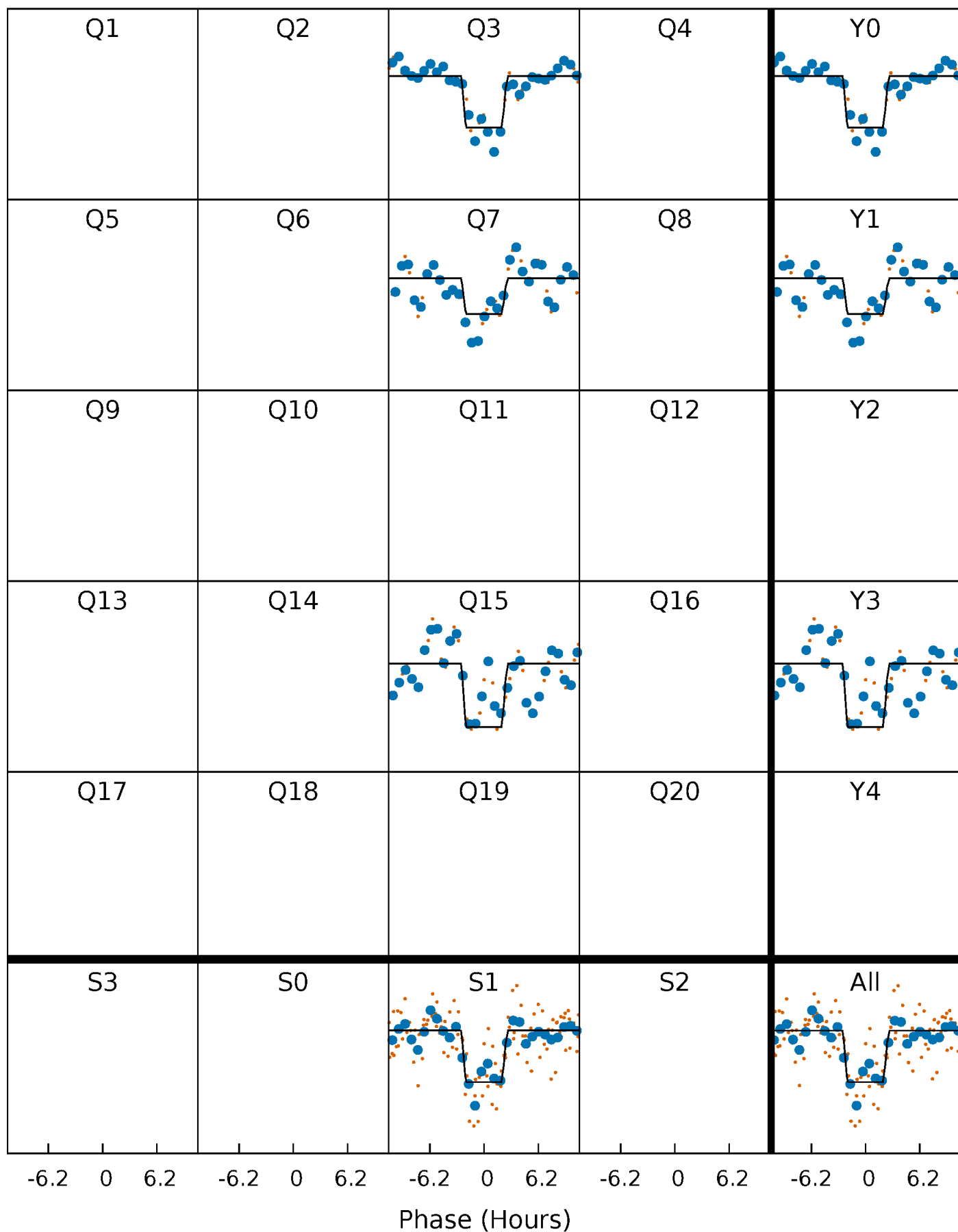
DV Quarter-Phased Transit Curves

TCE 006450613-02 $P=369.569945$ Days $T_0=331.884976$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

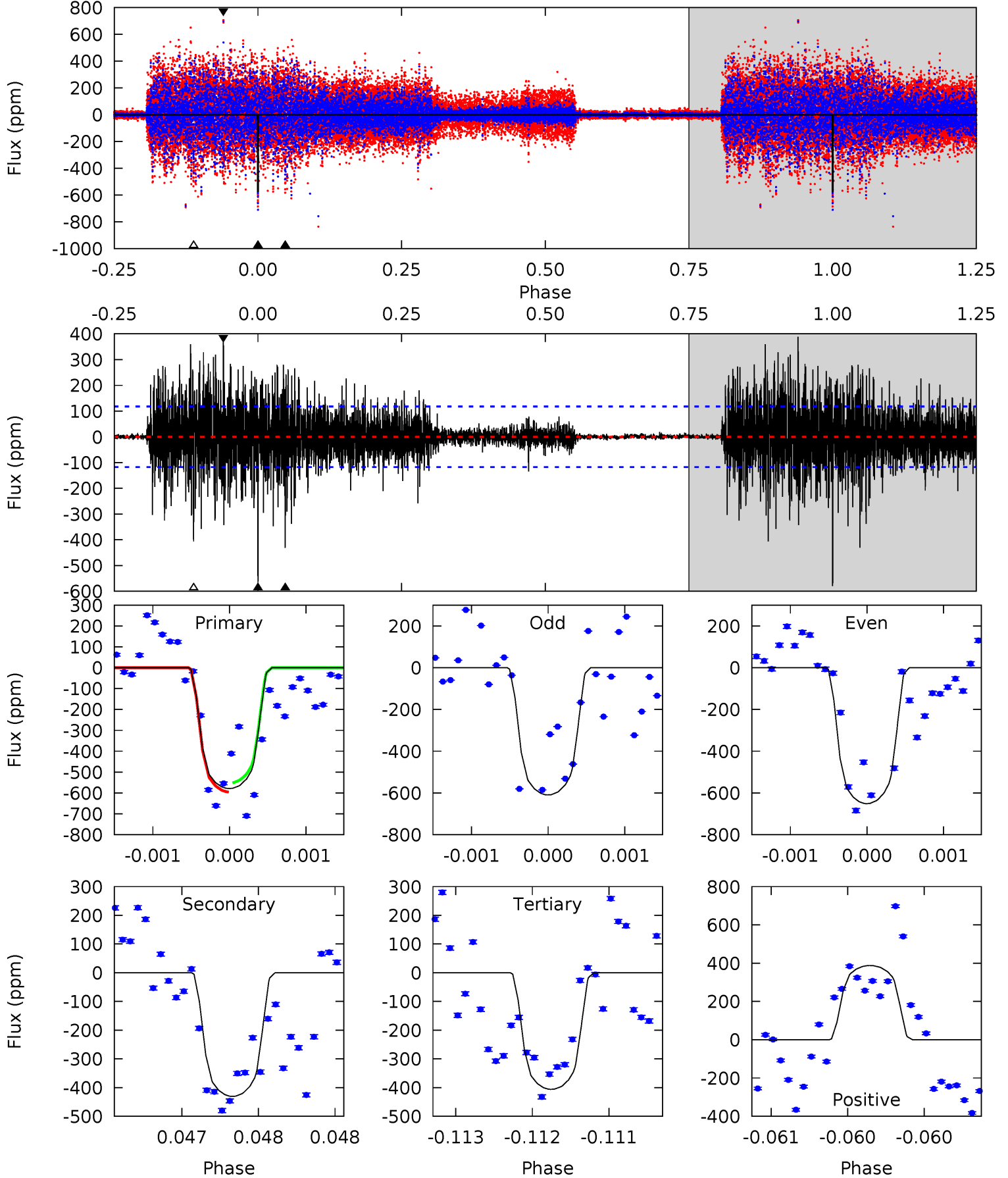
TCE 006450613-02 P=369.568177 Days $T_0=331.884372$ (BKJD)



DV Model-Shift Uniqueness Test

006450613-02, P = 369.569945 Days, E = 331.884976 Days

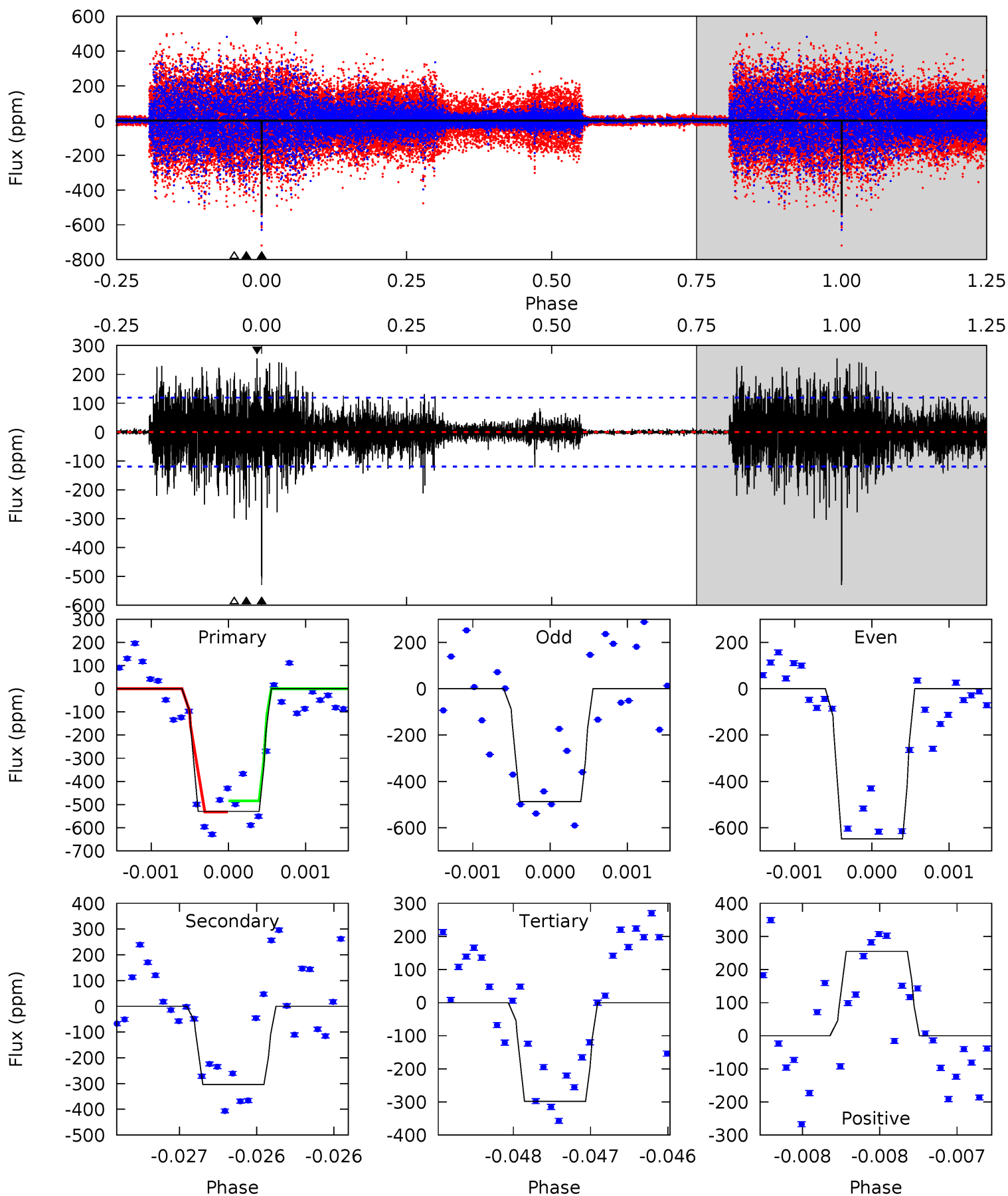
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.2	20.2	19.0	18.2	5.52	3.40	2.85	8.10	8.96	1.15	2.01	0.89	0.94	0.40	1.14



Alt Model-Shift Uniqueness Test

006450613-02, P = 369.568177 Days, E = 331.884372 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.6	14.2	13.9	11.9	5.55	3.45	2.01	10.8	12.8	0.28	2.29	3.61	0.93	0.32	1.23



Stellar Parameters For KIC 006450613

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5008^{+39}_{-139}	$2.942^{+0.214}_{-0.175}$	$0.210^{+0.150}_{-0.200}$	$8.980^{+2.747}_{-3.357}$	$2.572^{+0.197}_{-1.119}$	$0.005^{+0.008}_{-0.002}$
	+1%/-3%	+7%/-6%	+71%/-95%	+31%/-37%	+8%/-44%	+164%/-47%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 006450613-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-431 ± 21	$28.07^{+5.54}_{-5.76}$	778^{+60}_{-60}	4321^{+188}_{-159}	548^{+264}_{-152}
Alt.	-304 ± 21	$22.93^{+4.55}_{-4.63}$	781^{+59}_{-61}	4384^{+213}_{-194}	587^{+292}_{-172}

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

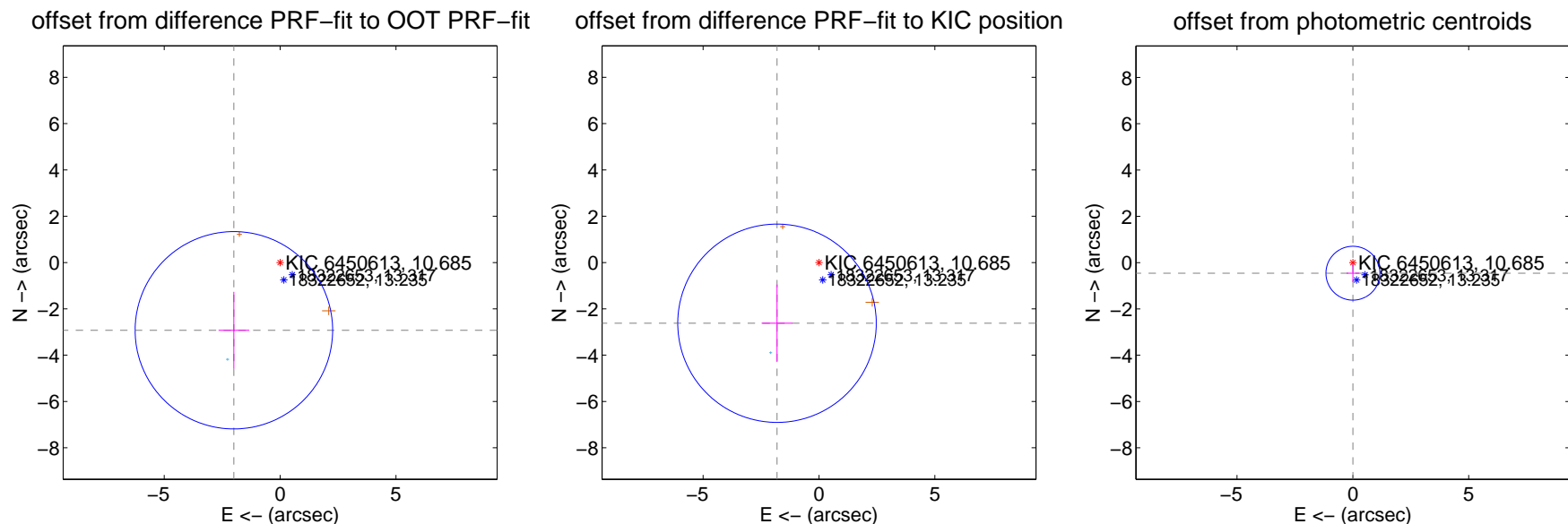
DV Centroid Data

Supplemental centroid analysis for 006450613-02. **Kepler magnitude: 10.69.** Transit SNR 13.17

There are 1 quarters with good PRF difference image offsets

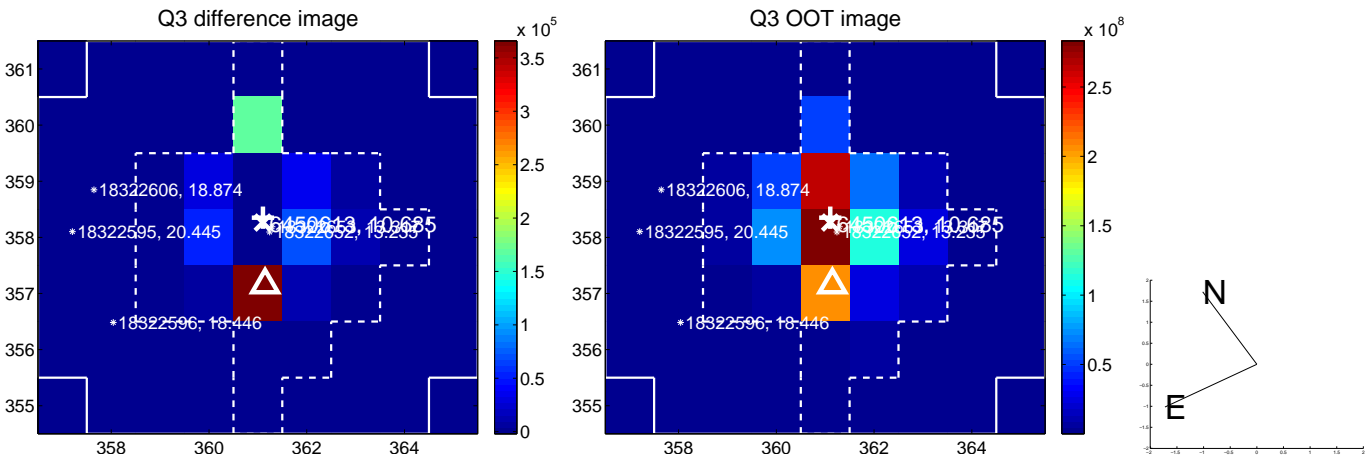
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.540 ± 1.420	2.49	1.994 ± 0.662	-2.925 ± 1.659
PRF-fit source offset from KIC position	3.187 ± 1.427	2.23	1.811 ± 0.664	-2.622 ± 1.673
photometric centroid source offset	0.46 ± 0.39	1.18	-0.00 ± 0.27	-0.46 ± 0.39

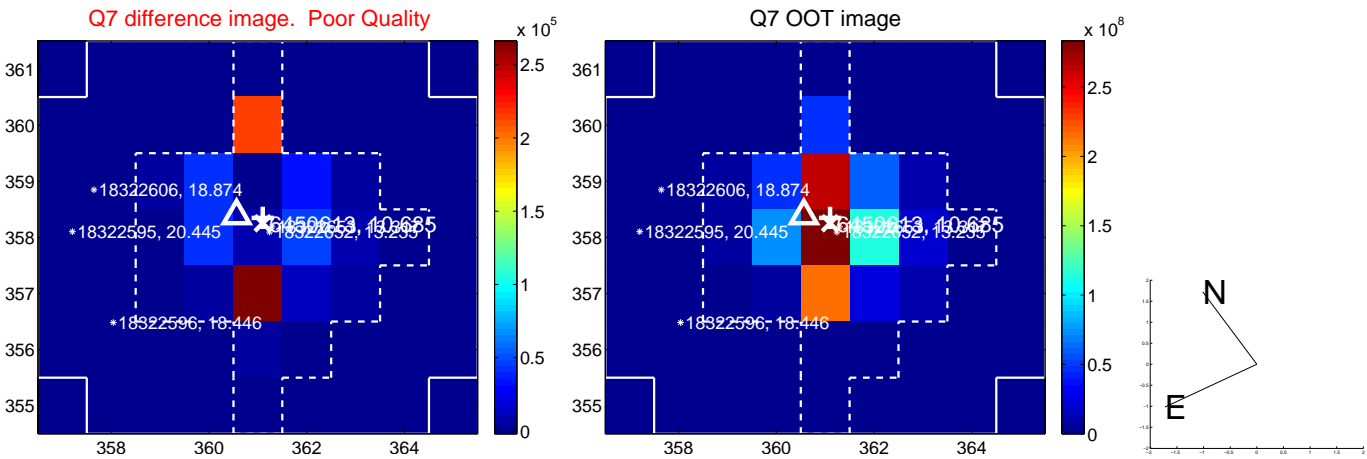


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



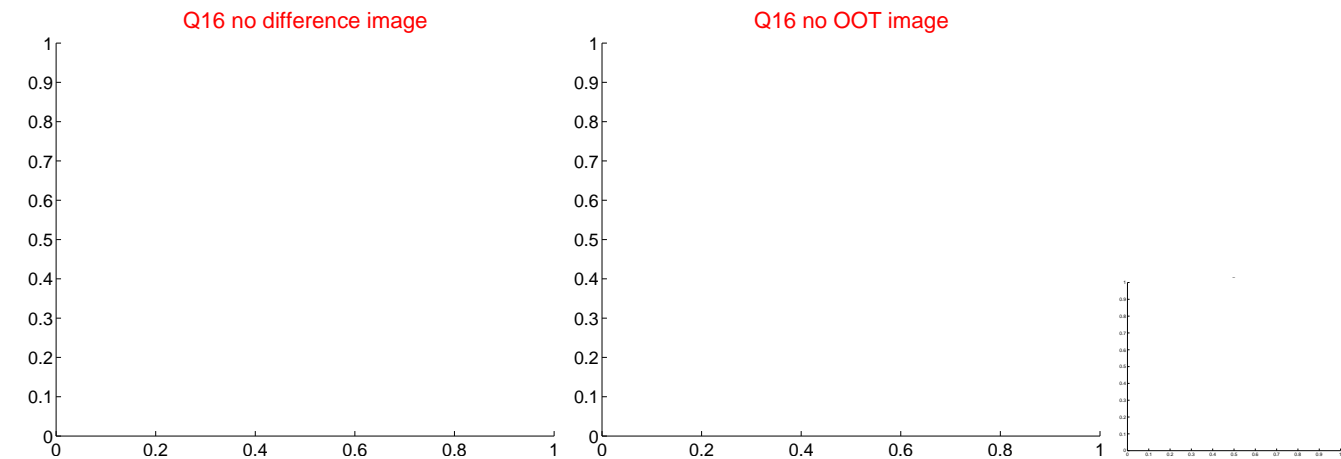
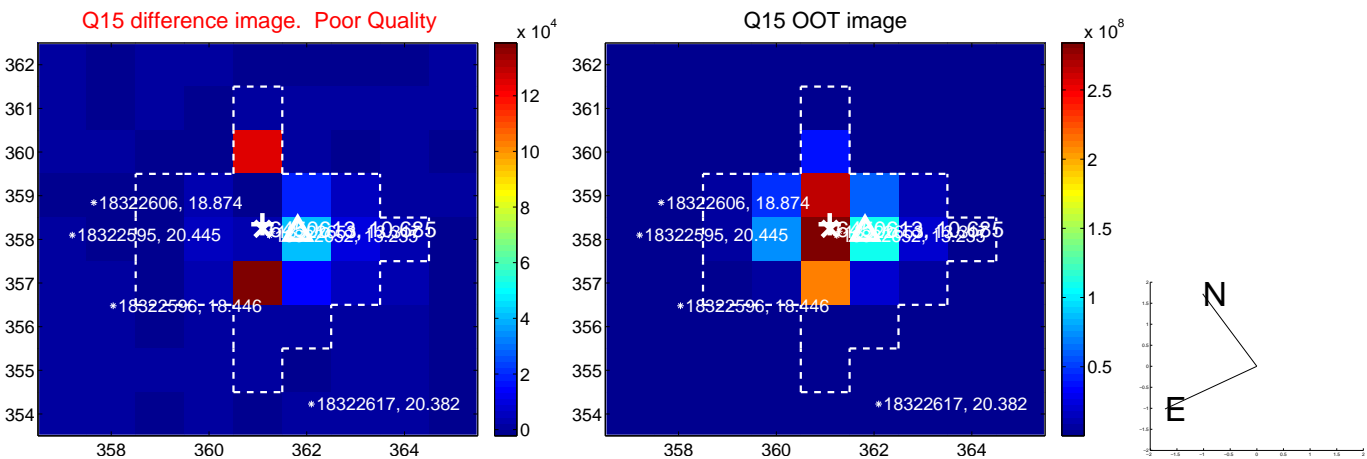
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



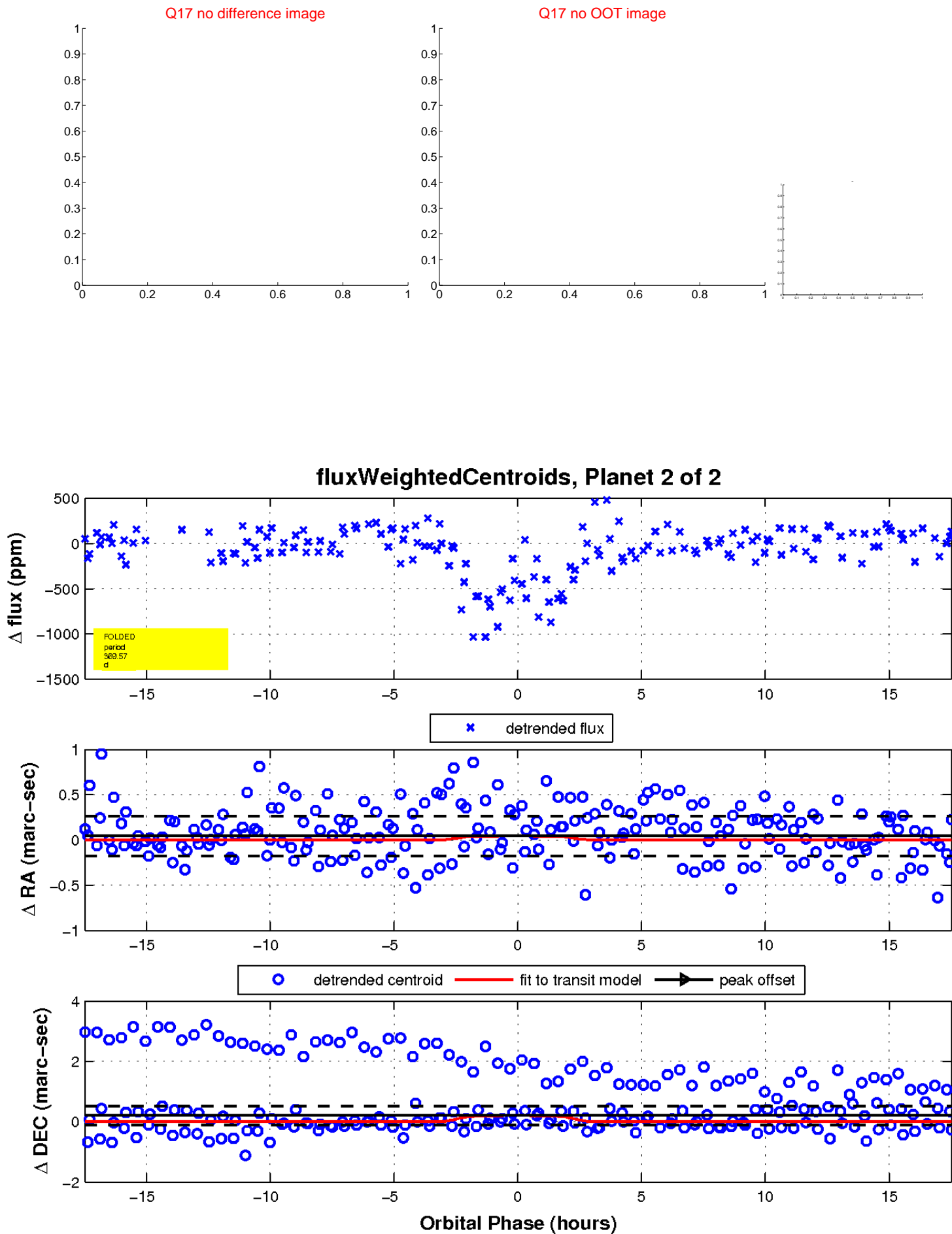
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

