

KIC 006681473

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})
006681473-01	OBS	5312.01	396.039377	471.232548	973.1	17.154	22.1	23.0	2.88	5327	14.68	4.44
006681473-02	OBS	No	315.961838	267.870069	188.5	22.501	7.8	8.2	2.88	5327	4.70	6.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006681473-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE—CENT_UNRESOLVED_OFFSET
006681473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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 006681473-01

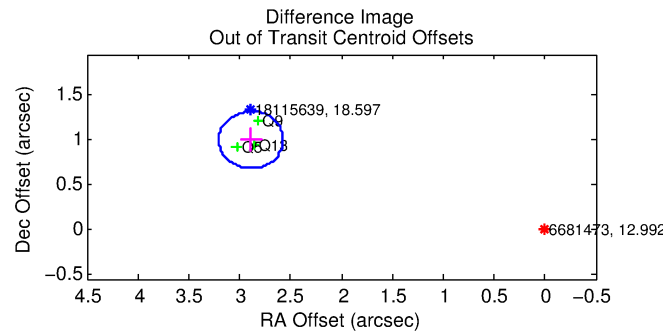
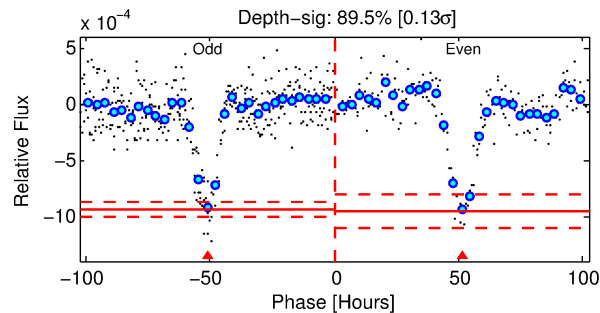
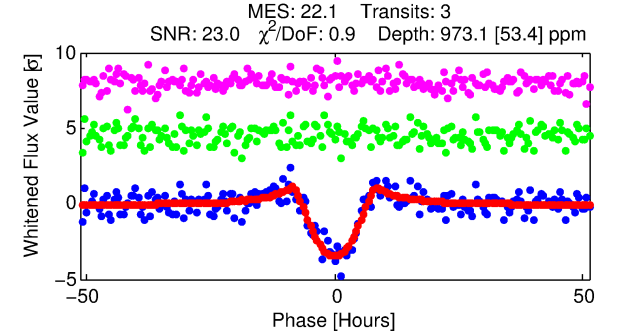
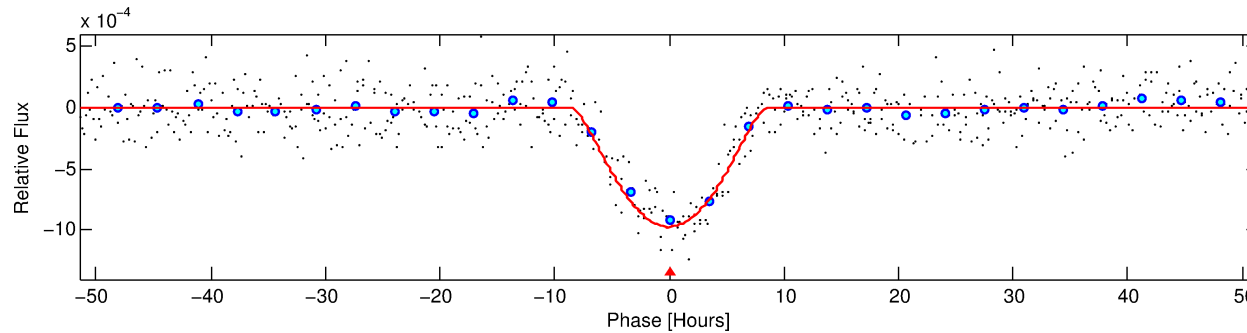
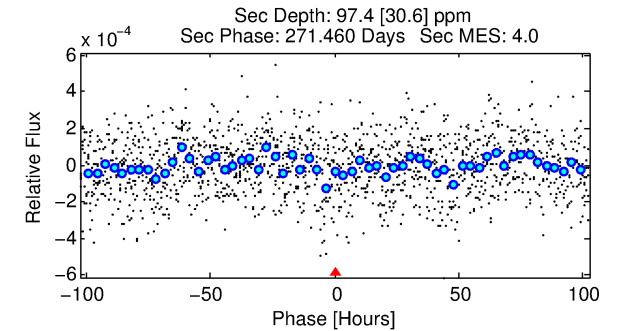
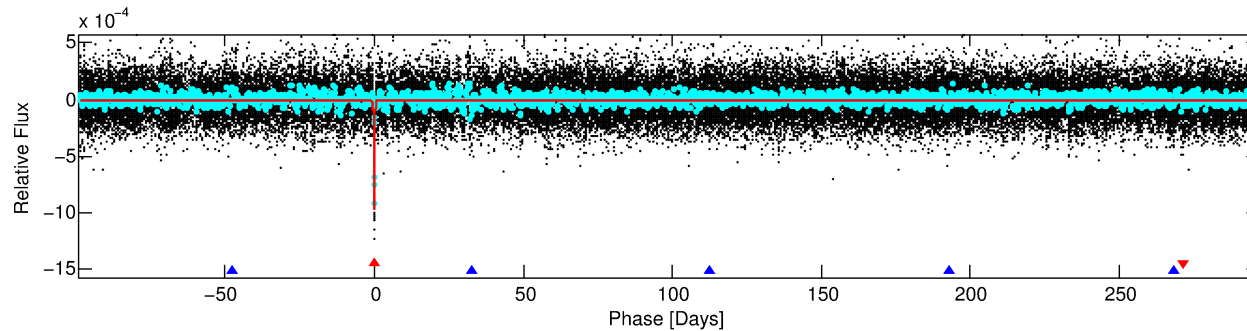
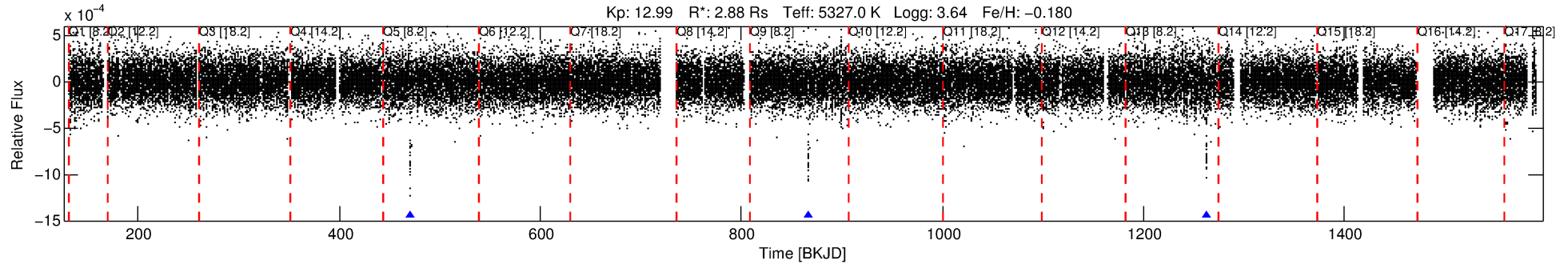
No Significant Match Found

DV One-Page Summary

KIC: 6681473 Candidate: 1 of 2 Period: 396.039 d

KOI: K05312.01 Corr: 0.971

Kp: 12.99 R*: 2.88 Rs Teff: 5327.0 K Logg: 3.64 Fe/H: -0.180



DV Fit Results:

Period = 396.03938 [0.00892] d
Epoch = 471.2325 [0.0108] BKJD
Rp/R* = 0.0467 [0.0220]
a/R* = 63.12 [10.06]
b = 0.98 [0.04]
Seff = 4.44 [1.72]
Teq = 370 [36] K
Rp = 14.68 [8.23] Re
a = 1.1614 [0.2940] AU
Ag = 335.54 [355.34] [0.94σ]
Teffp = 2450 [614] K [3.38σ]

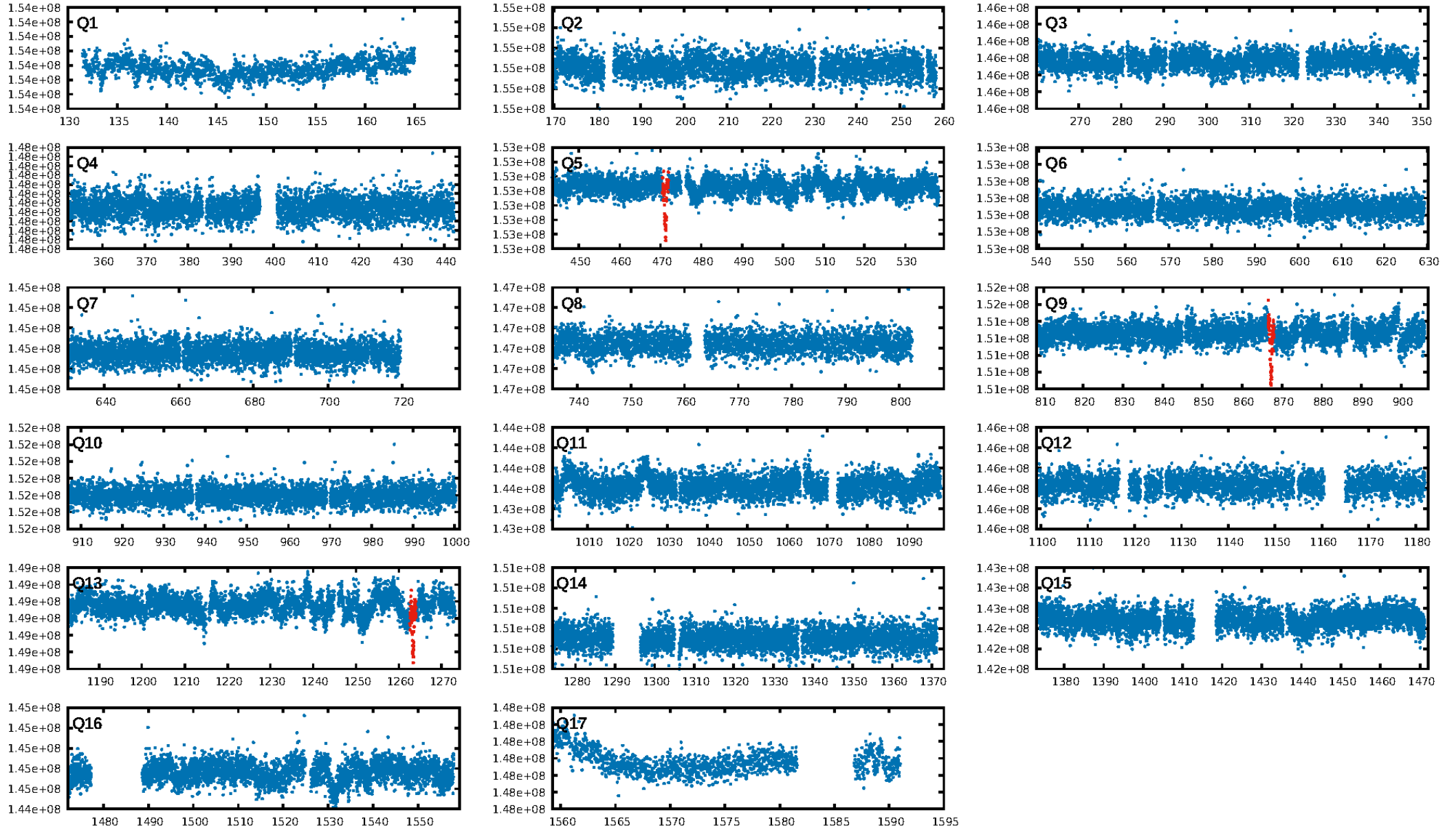
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.92σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 64.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.96e-79
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.123
Centroid-sig: 0.0%
Centroid-so: 3.912 arcsec [12.11σ]
OotOffset-rm: 3.057 arcsec [28.92σ]
KicOffset-rm: 3.045 arcsec [24.88σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

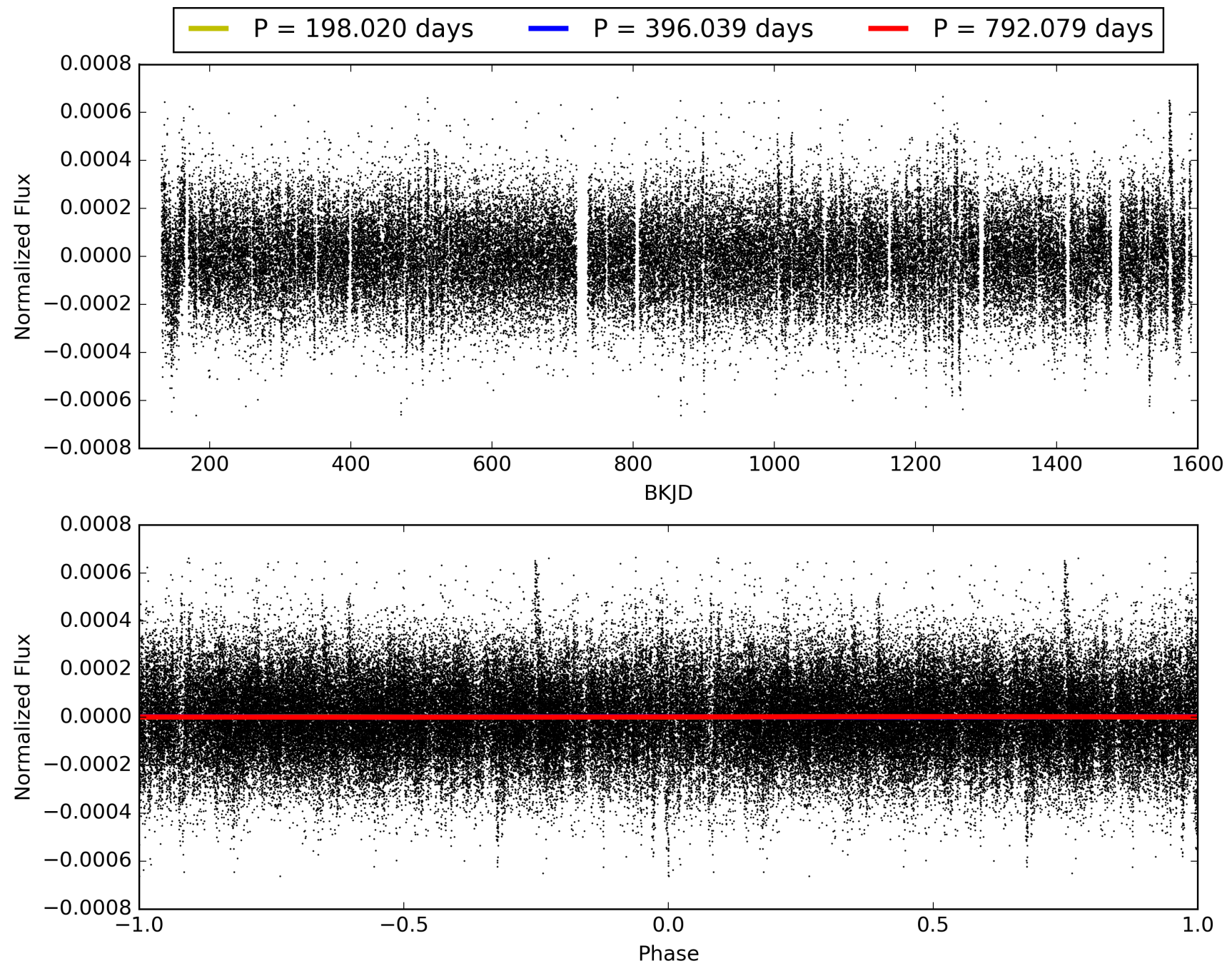
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:17:24 Z

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

TCE 006681473-01, PDC Light Curves

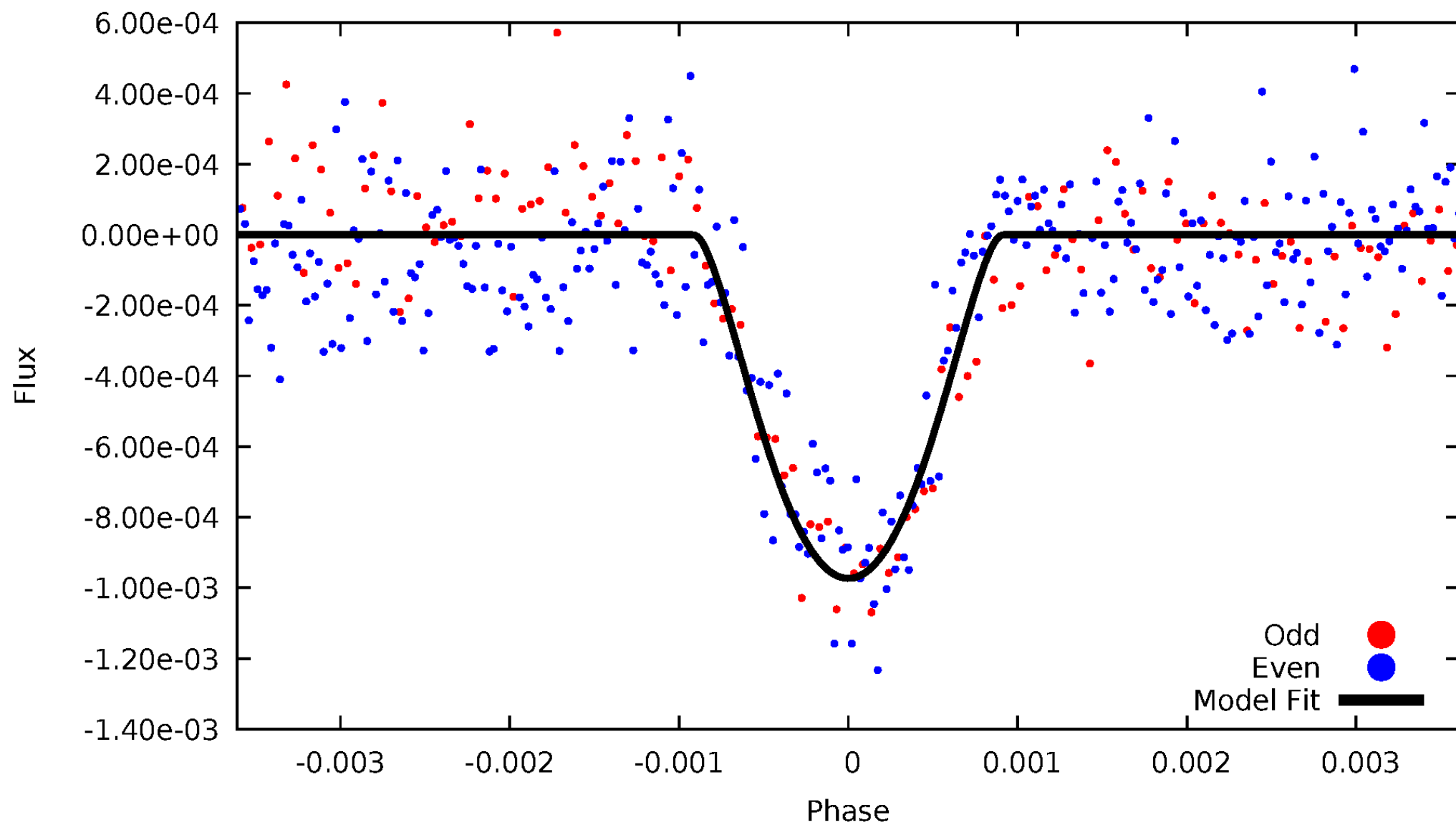


TCE 006681473-01



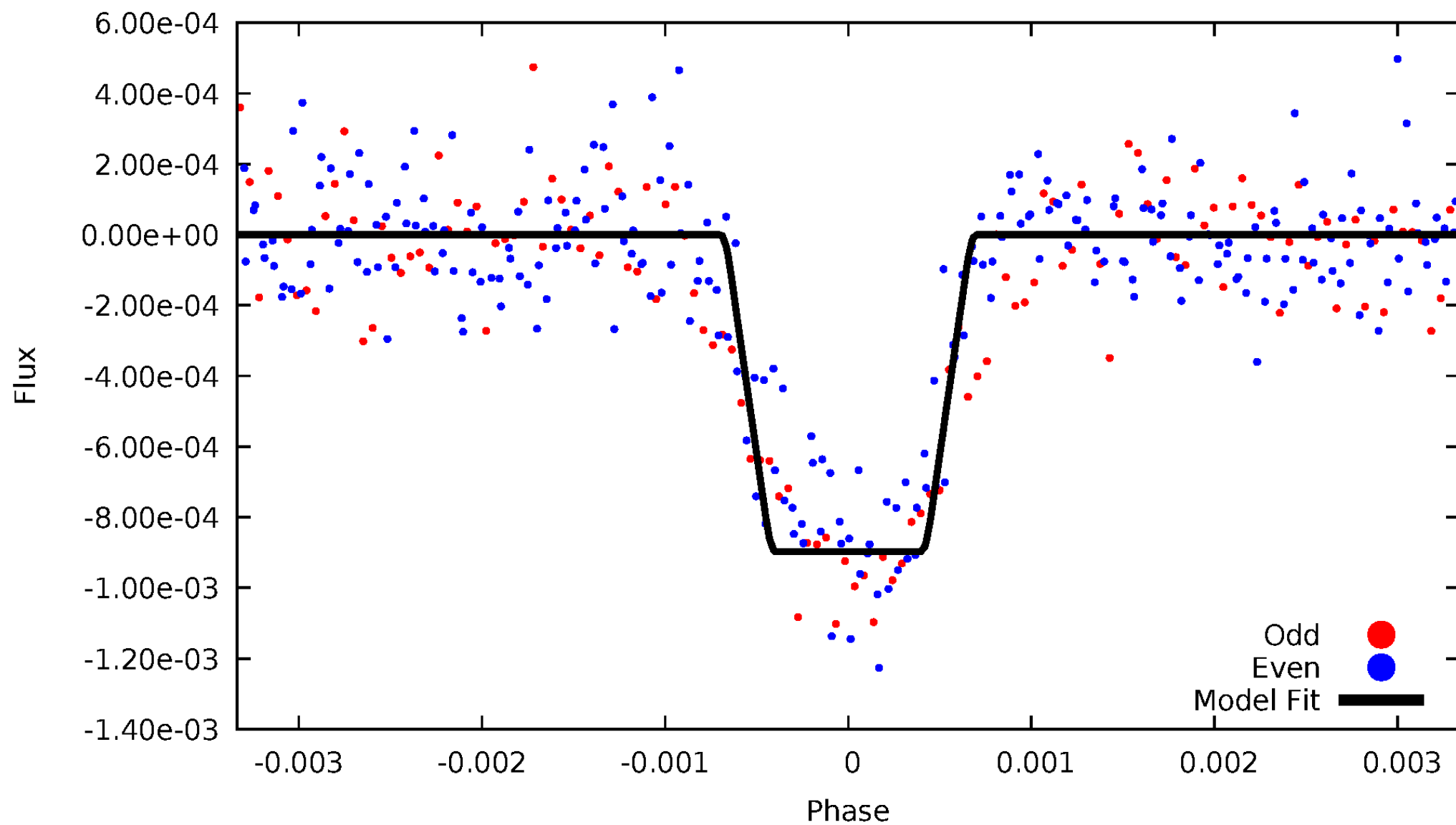
DV Odd/Even

TCE 006681473-01



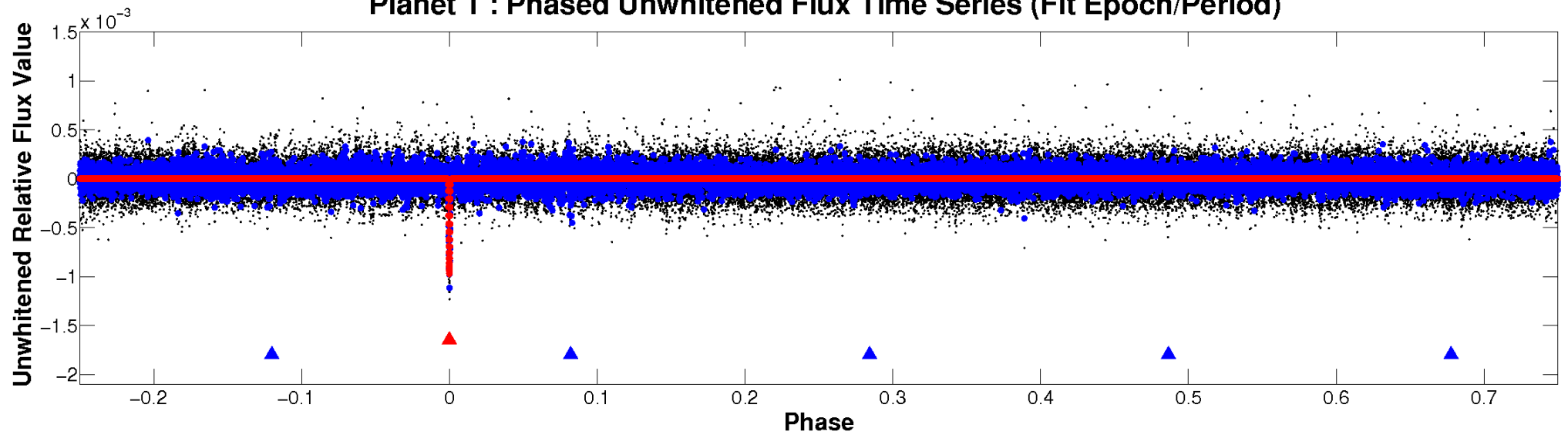
ALT Odd/Even

TCE 006681473-01

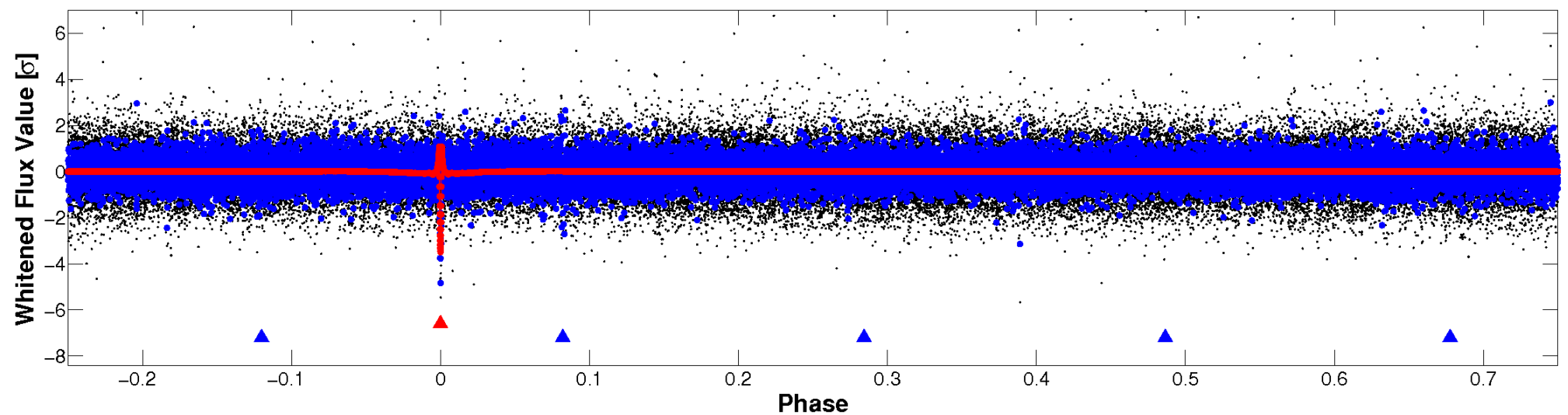


Non-Whitened Vs. Whitened Light Curve

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

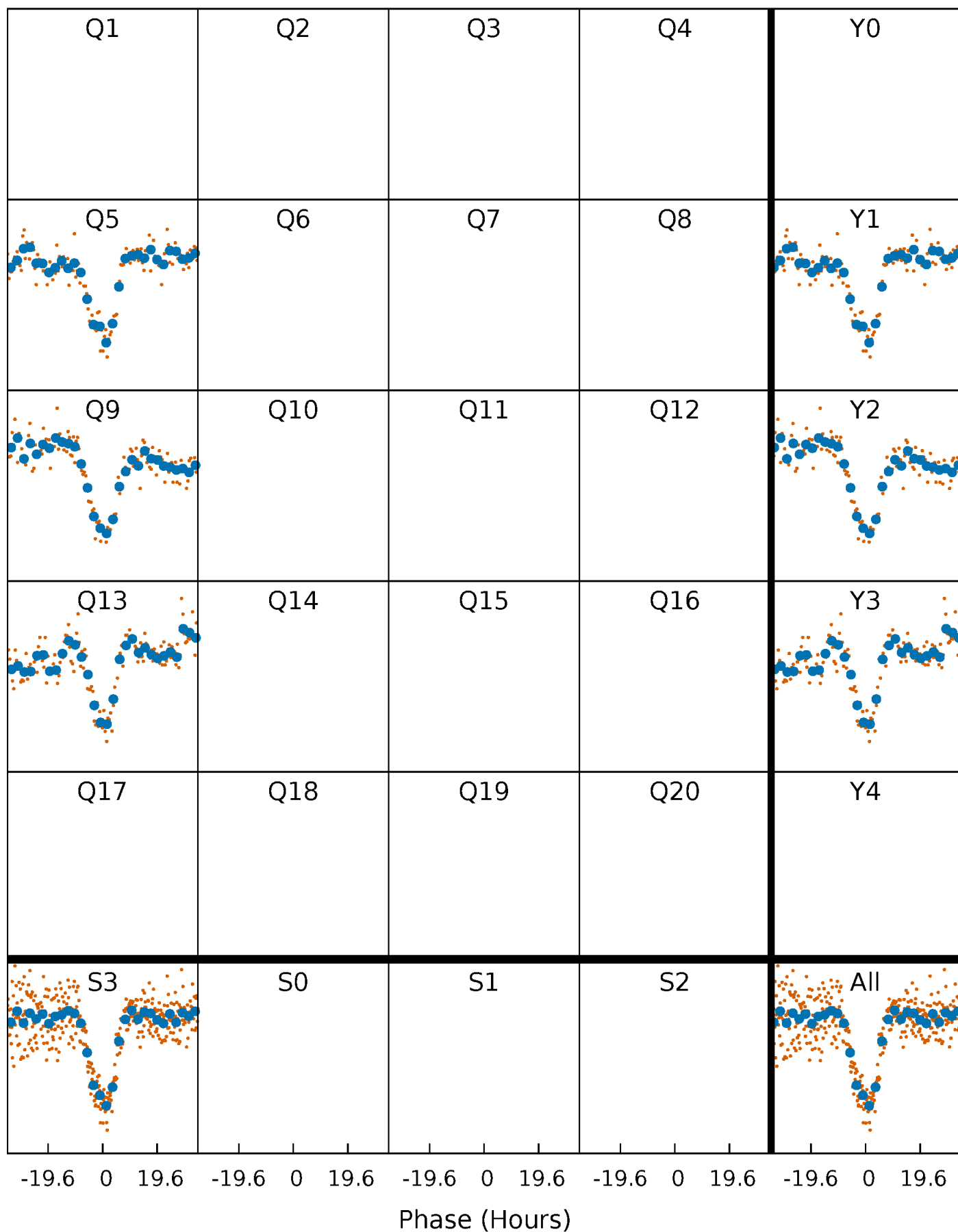


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



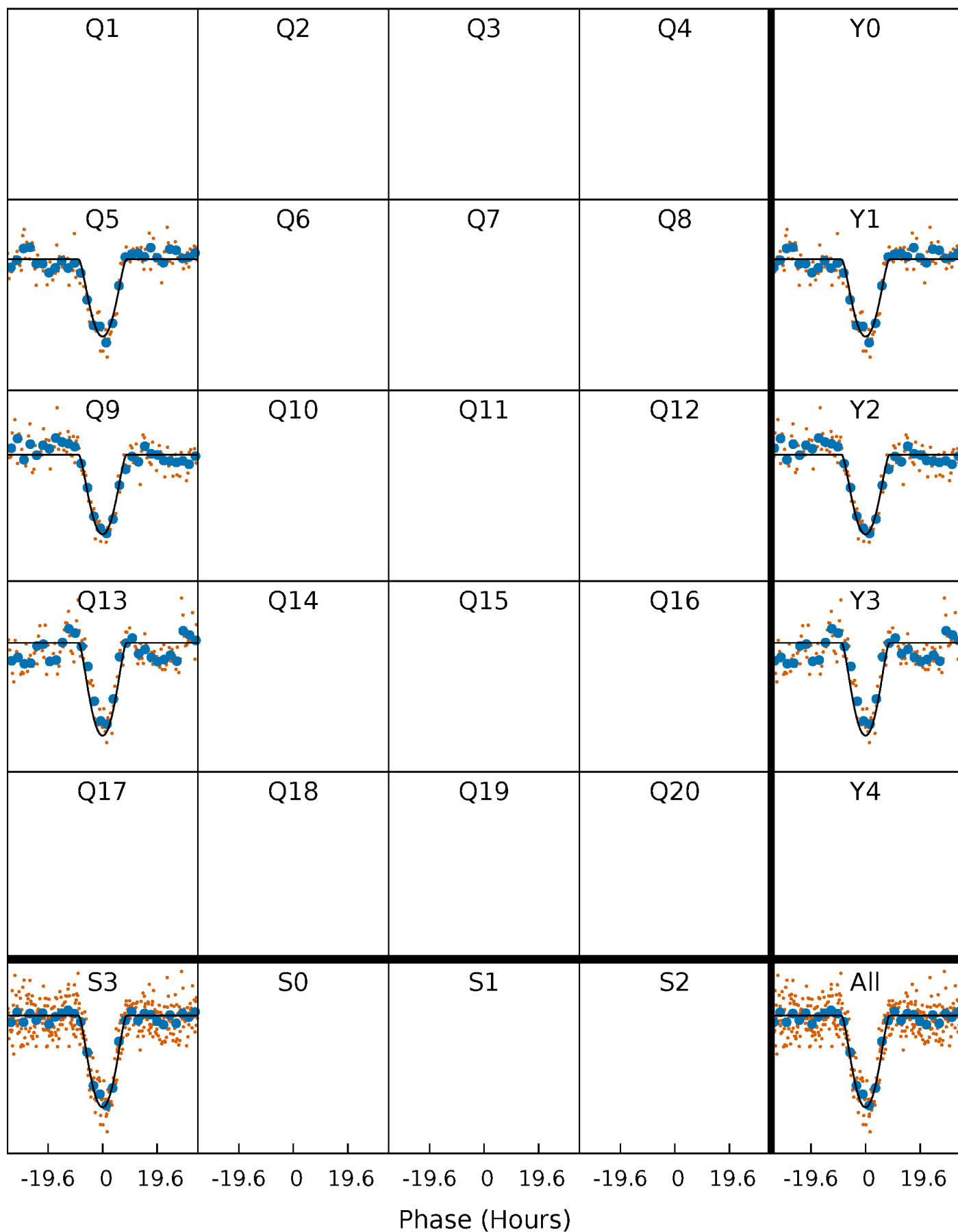
PDC Quarter-Phased Transit Curves

TCE 006681473-01 P=396.039377 Days $T_0=471.232548$ (BKJD)



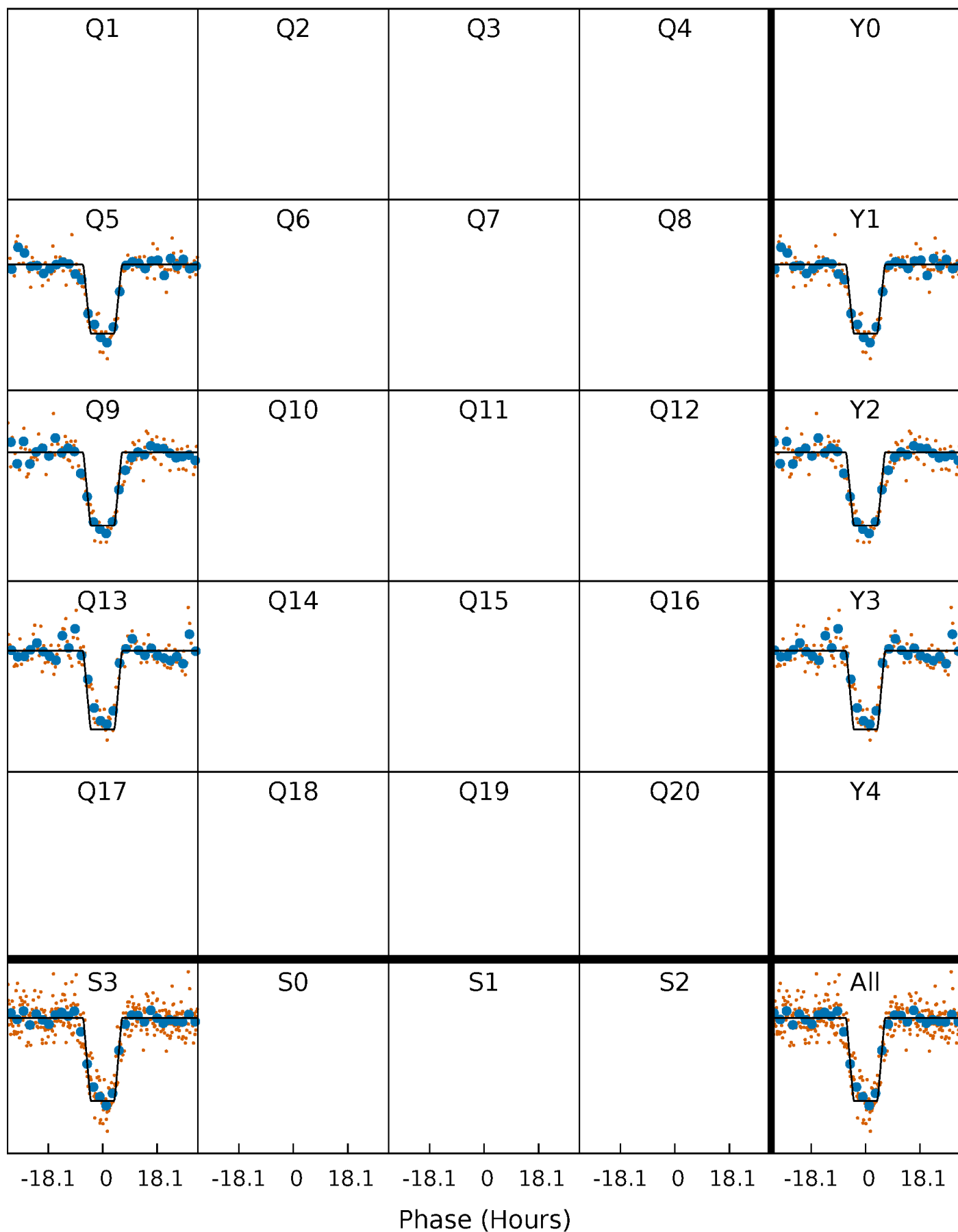
DV Quarter-Phased Transit Curves

TCE 006681473-01 P=396.039377 Days $T_0=471.232548$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

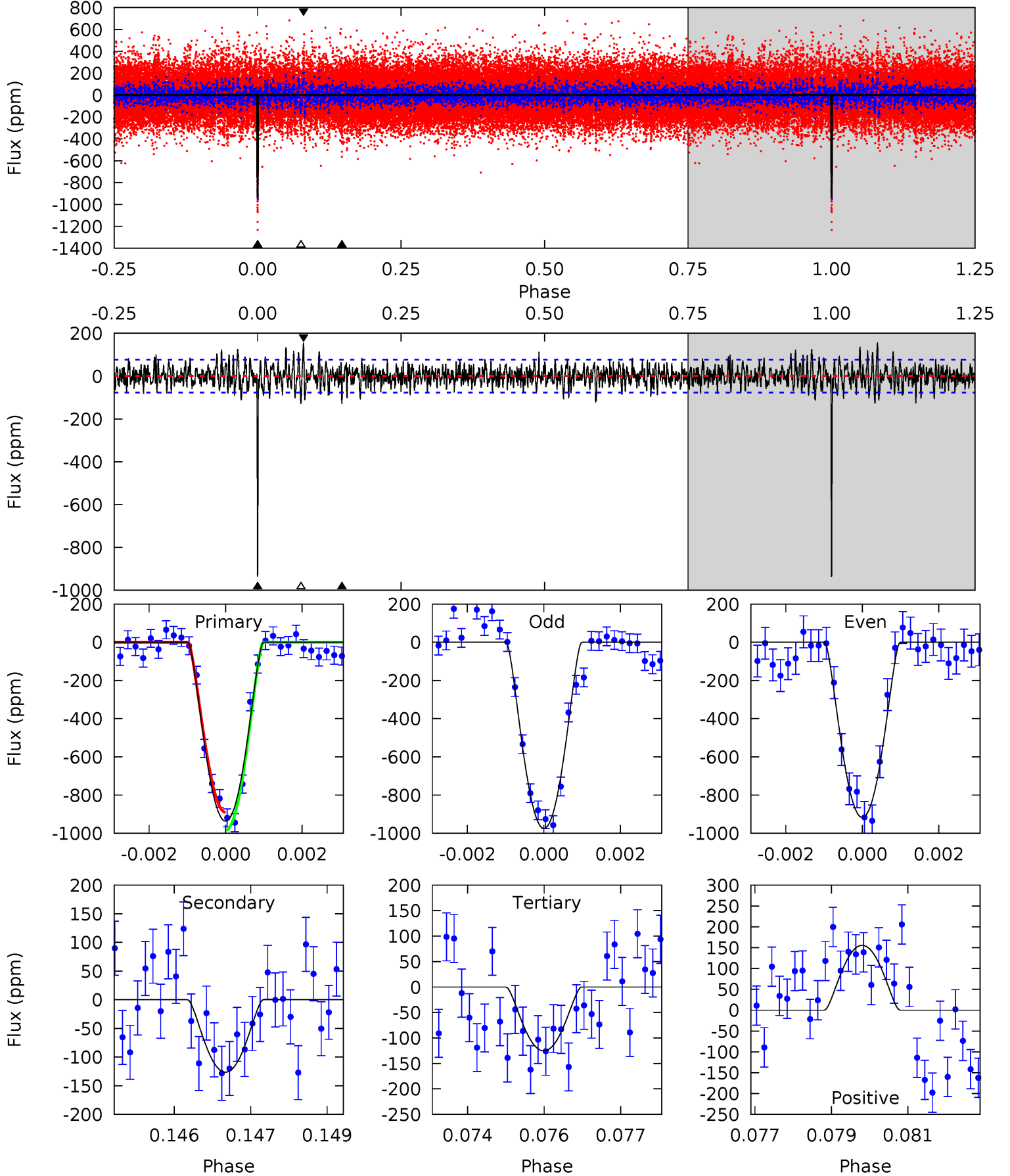
TCE 006681473-01 P=396.036449 Days $T_0=471.235333$ (BKJD)



DV Model-Shift Uniqueness Test

006681473-01, $P = 396.039377$ Days, $E = 75.193171$ Days

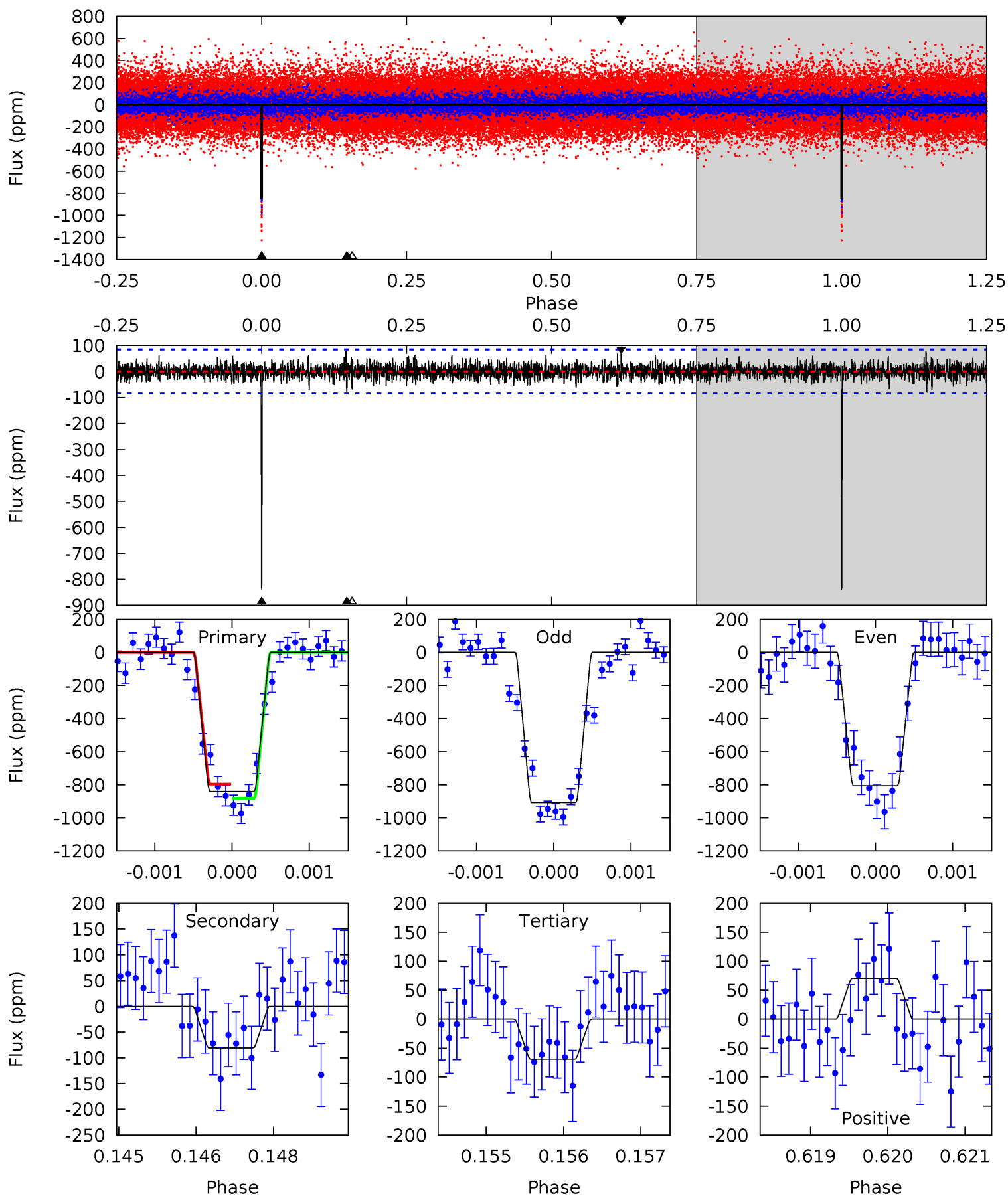
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
65.3	8.81	8.74	10.8	5.34	3.11	2.50	56.5	54.4	0.07	-2.03	1.89	0.96	0.14	3.23



Alt Model-Shift Uniqueness Test

006681473-01, P = 396.036449 Days, E = 75.198884 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.5	5.14	4.39	4.51	5.39	3.20	1.22	49.1	48.9	0.76	0.64	3.06	0.93	0.09	2.73



Stellar Parameters For KIC 006681473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5327^{+148}_{-167}	$3.643^{+0.198}_{-0.162}$	$-0.180^{+0.250}_{-0.300}$	$2.882^{+0.583}_{-0.875}$	$1.332^{+0.149}_{-0.348}$	$0.078^{+0.099}_{-0.033}$
	+3%/-3%	+5%/-4%	+139%/-167%	+20%/-30%	+11%/-26%	+126%/-42%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006681473-01 / KOI 5312.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-126 ± 14	$14.76^{+7.79}_{-6.66}$	519^{+36}_{-35}	3178^{+651}_{-353}	412^{+1003}_{-231}
Alt.	-81 ± 16	$9.89^{+6.83}_{-5.55}$	520^{+33}_{-37}	3311^{+1115}_{-460}	576^{+2448}_{-384}

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

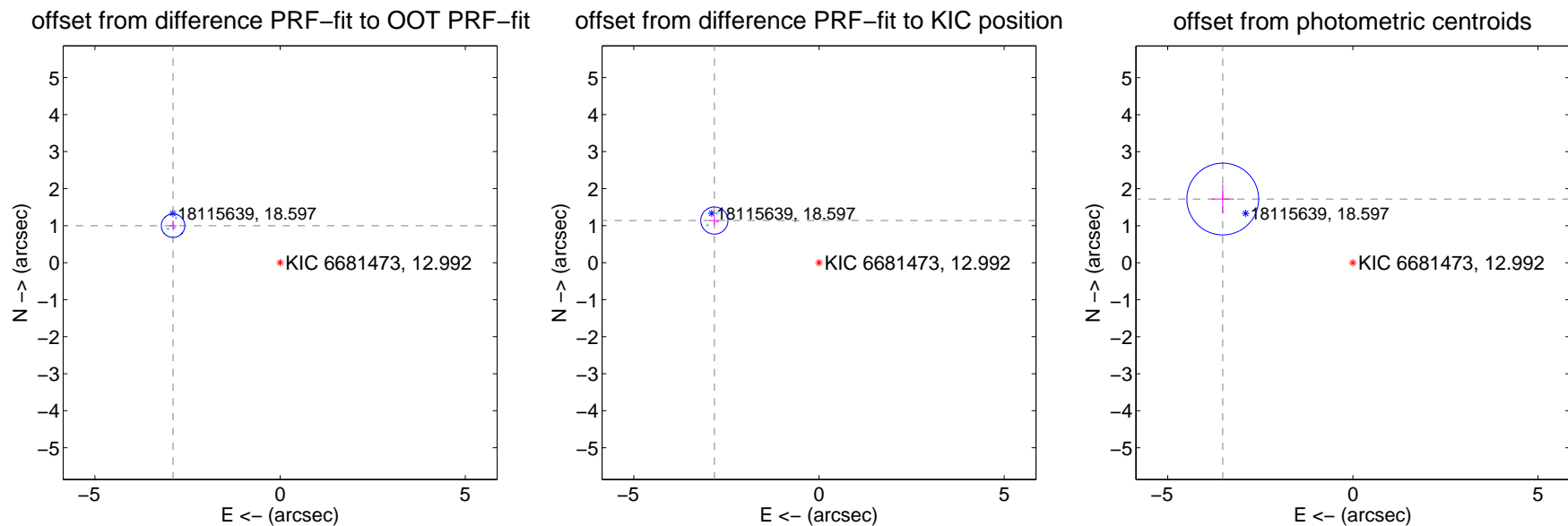
DV Centroid Data

Supplemental centroid analysis for 006681473-01. Kepler magnitude: 12.99. Transit SNR 22.99

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.057 ± 0.106	28.92	2.890 ± 0.102	0.998 ± 0.130
PRF-fit source offset from KIC position	3.045 ± 0.122	24.88	2.824 ± 0.122	1.137 ± 0.122
photometric centroid source offset	3.91 ± 0.32	12.11	3.51 ± 0.30	1.72 ± 0.39

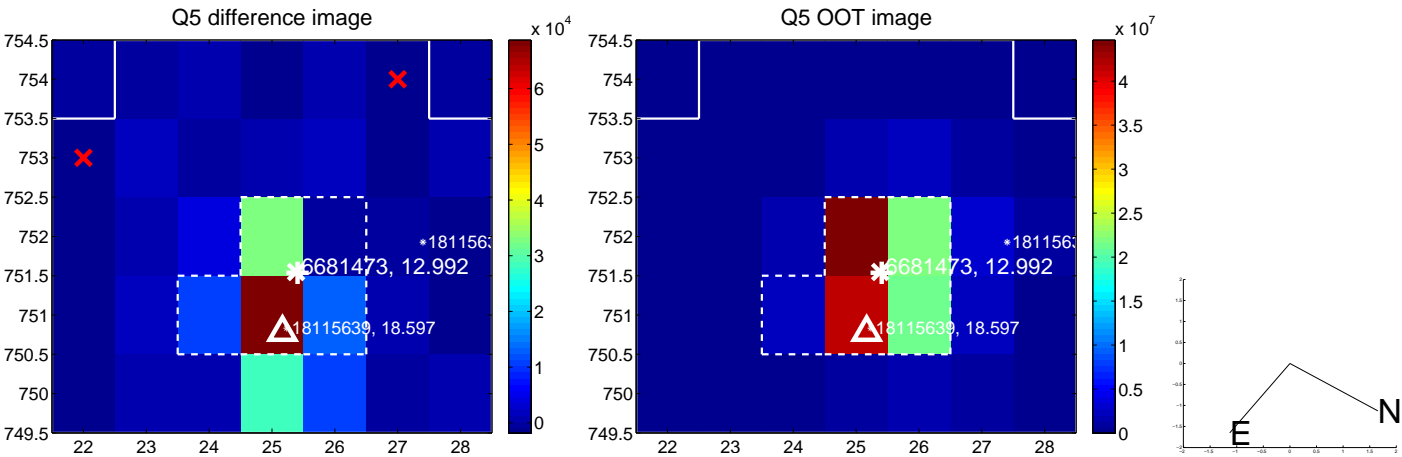


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

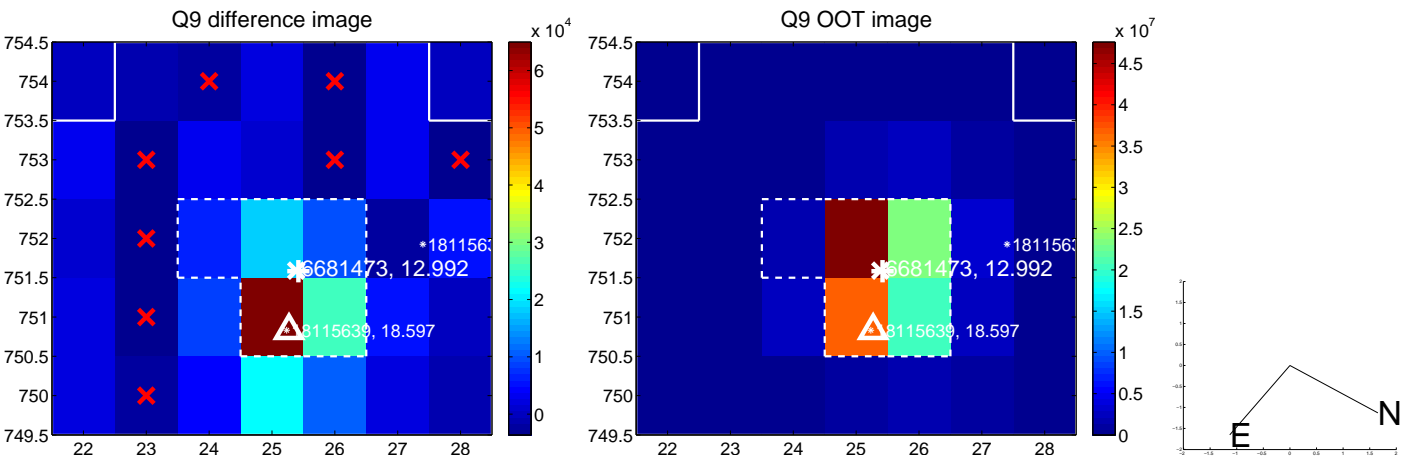
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



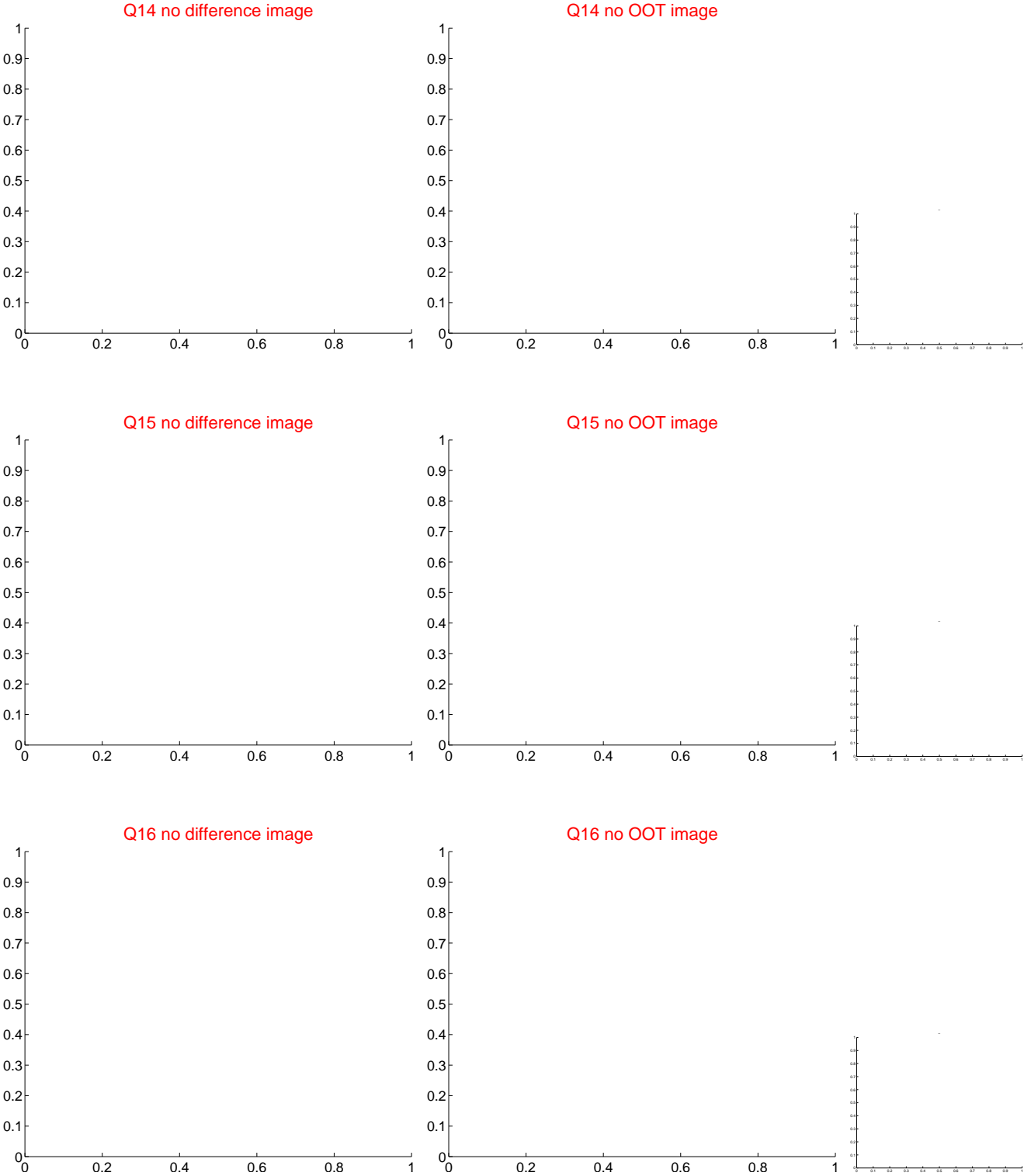
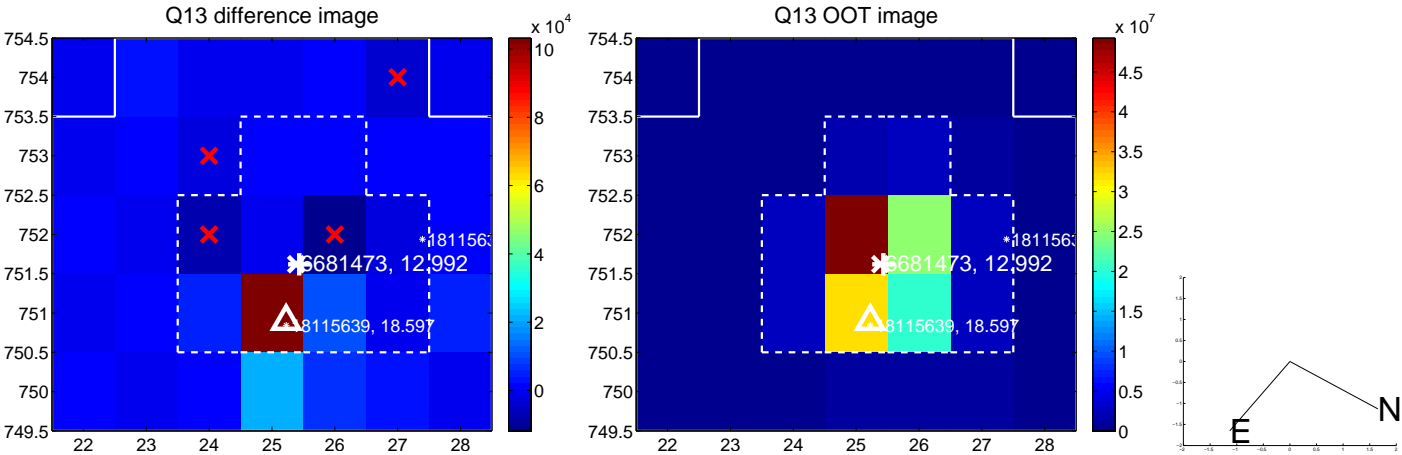
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



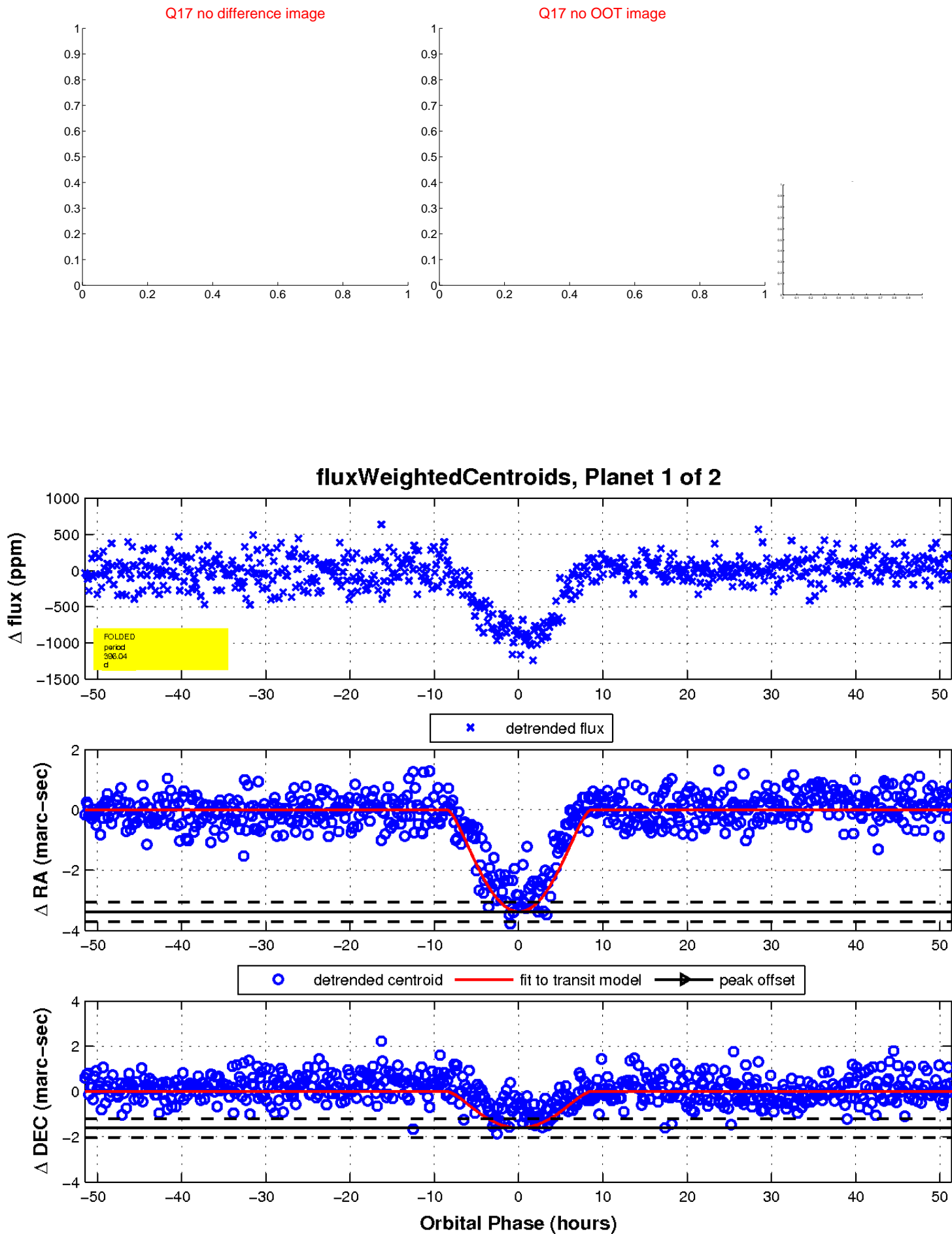
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



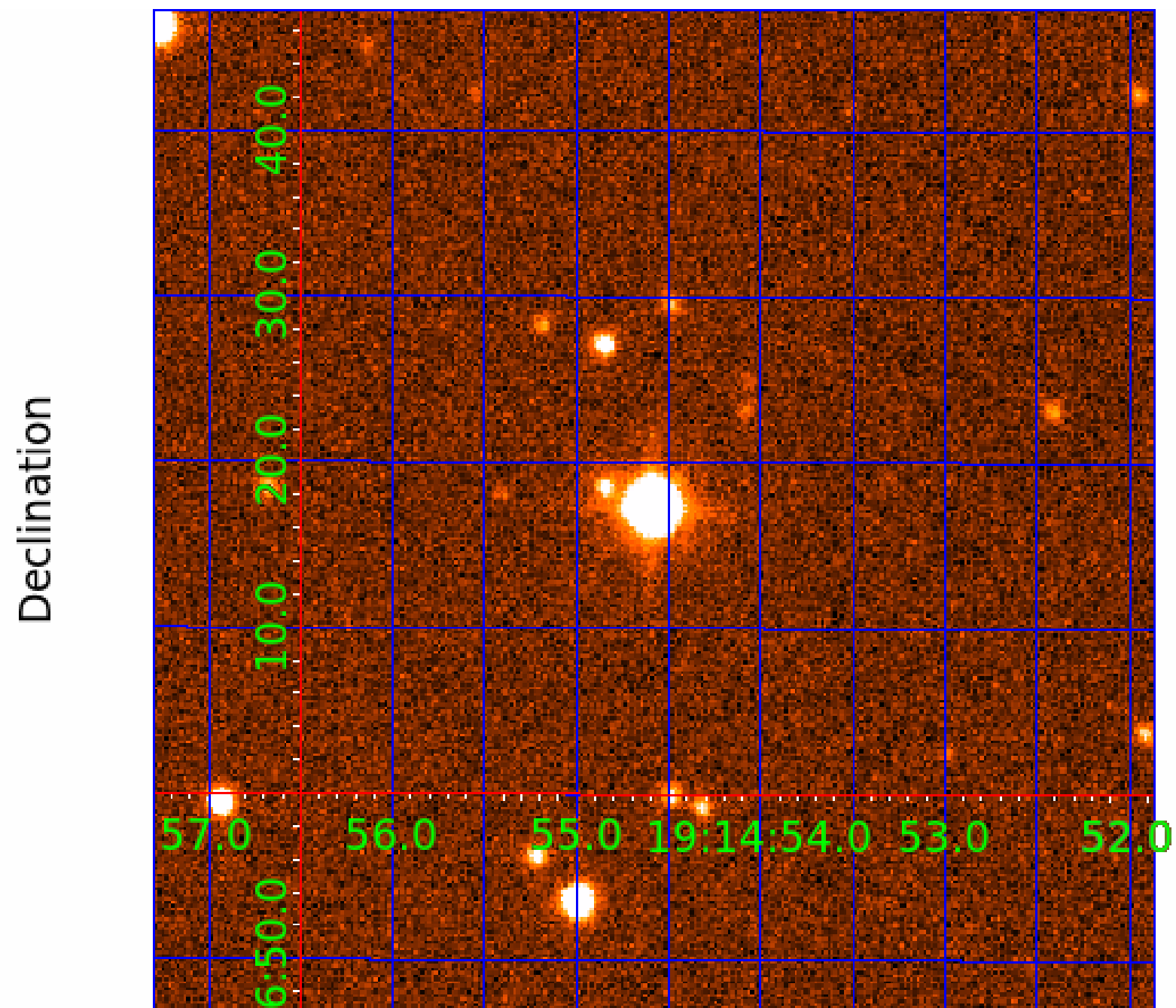
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 006681473

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})
006681473-01	OBS	5312.01	396.039377	471.232548	973.1	17.154	22.1	23.0	2.88	5327	14.68	4.44
006681473-02	OBS	No	315.961838	267.870069	188.5	22.501	7.8	8.2	2.88	5327	4.70	6.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006681473-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE—CENT_UNRESOLVED_OFFSET
006681473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

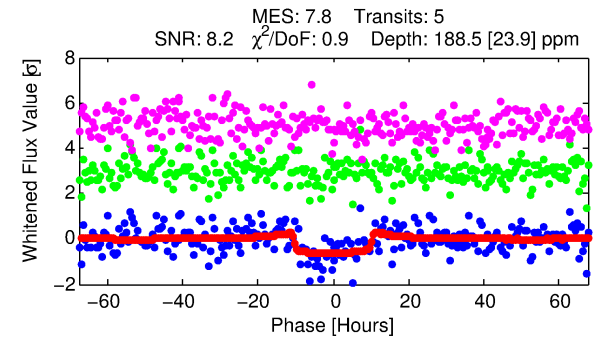
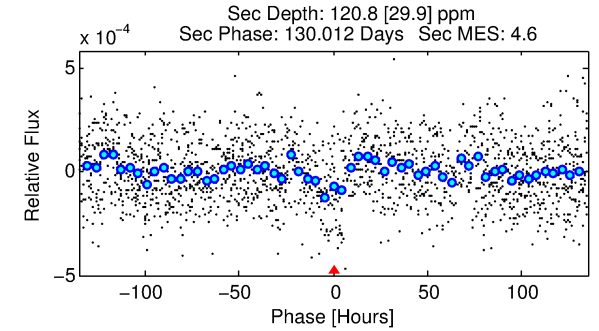
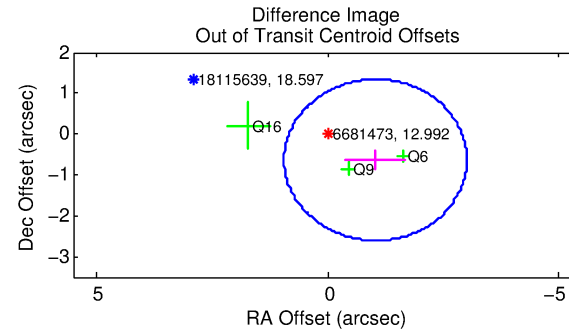
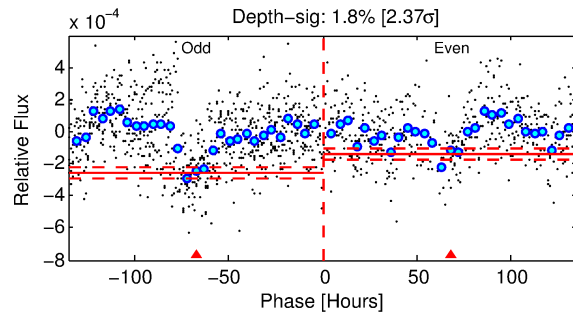
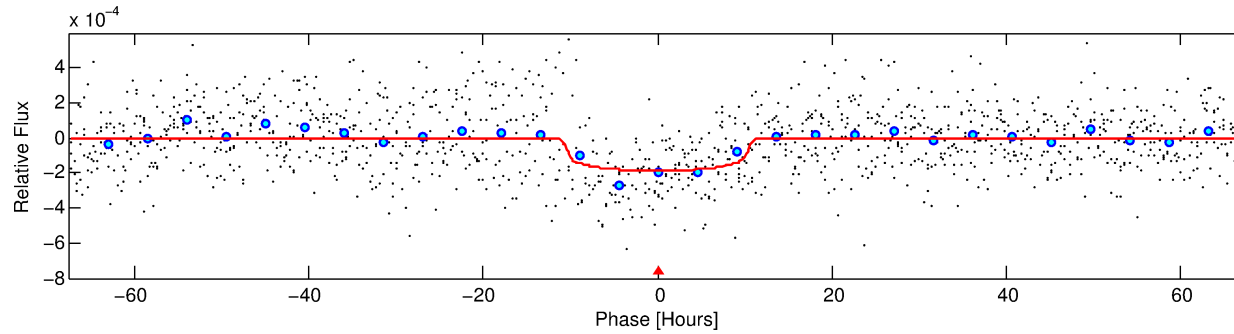
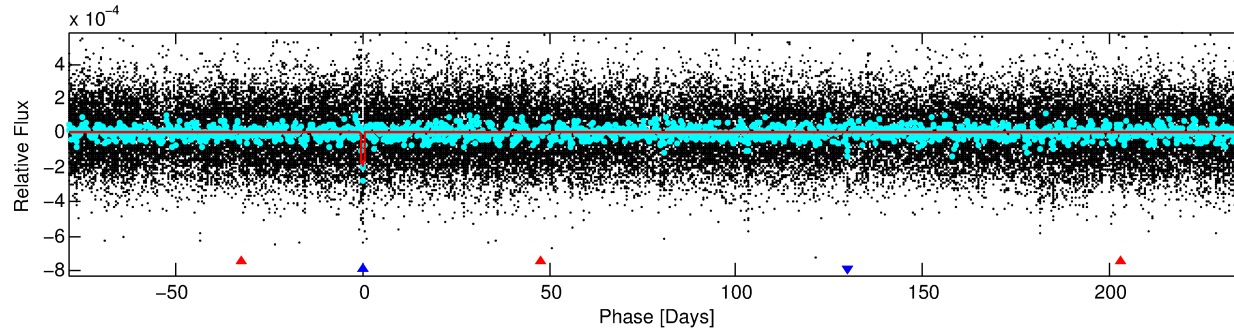
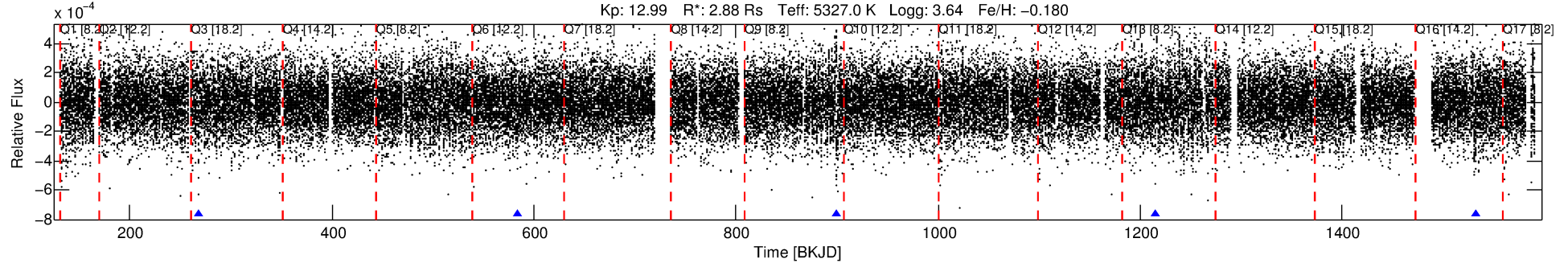
Ephemeris Match Information For 006681473-02

No Significant Match Found

DV One-Page Summary

KIC: 6681473 Candidate: 2 of 2 Period: 315.962 d
KOI: K05312 Corr: No Ephemeris Match

Kp: 12.99 R*: 2.88 Rs Teff: 5327.0 K Logg: 3.64 Fe/H: -0.180



DV Fit Results:

Period = 315.96184 [0.01289] d
Epoch = 267.8701 [0.0337] BKJD
Rp/R* = 0.0150 [0.0021]
a/R* = 52.22 [28.85]
b = 0.89 [0.13]
Seff = 6.00 [2.32]
Teq = 399 [39] K
Rp = 4.70 [1.58] Re
a = 0.9990 [0.2529] AU
Ag = 2999.09 [1578.56] [1.90σ]
Teffp = 4567 [456] K [9.11σ]

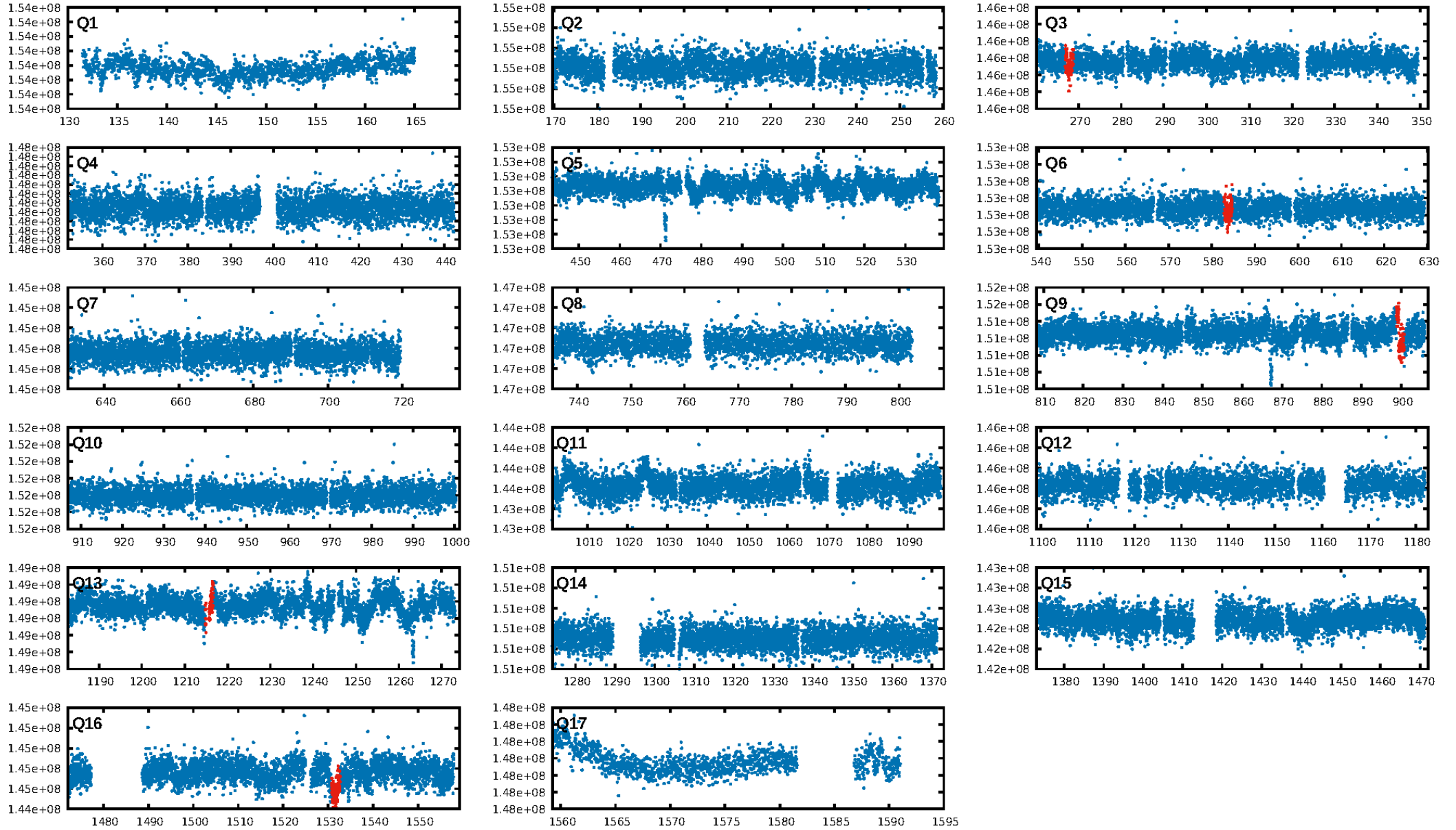
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [67.92σ]
ModelChiSquare2-sig: 11.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.54e-13
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -2.042
Centroid-sig: 91.1%
Centroid-so: 0.229 arcsec [0.22σ]
OotOffset-rm: 1.215 arcsec [1.85σ]
KicOffset-rm: 1.212 arcsec [2.15σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

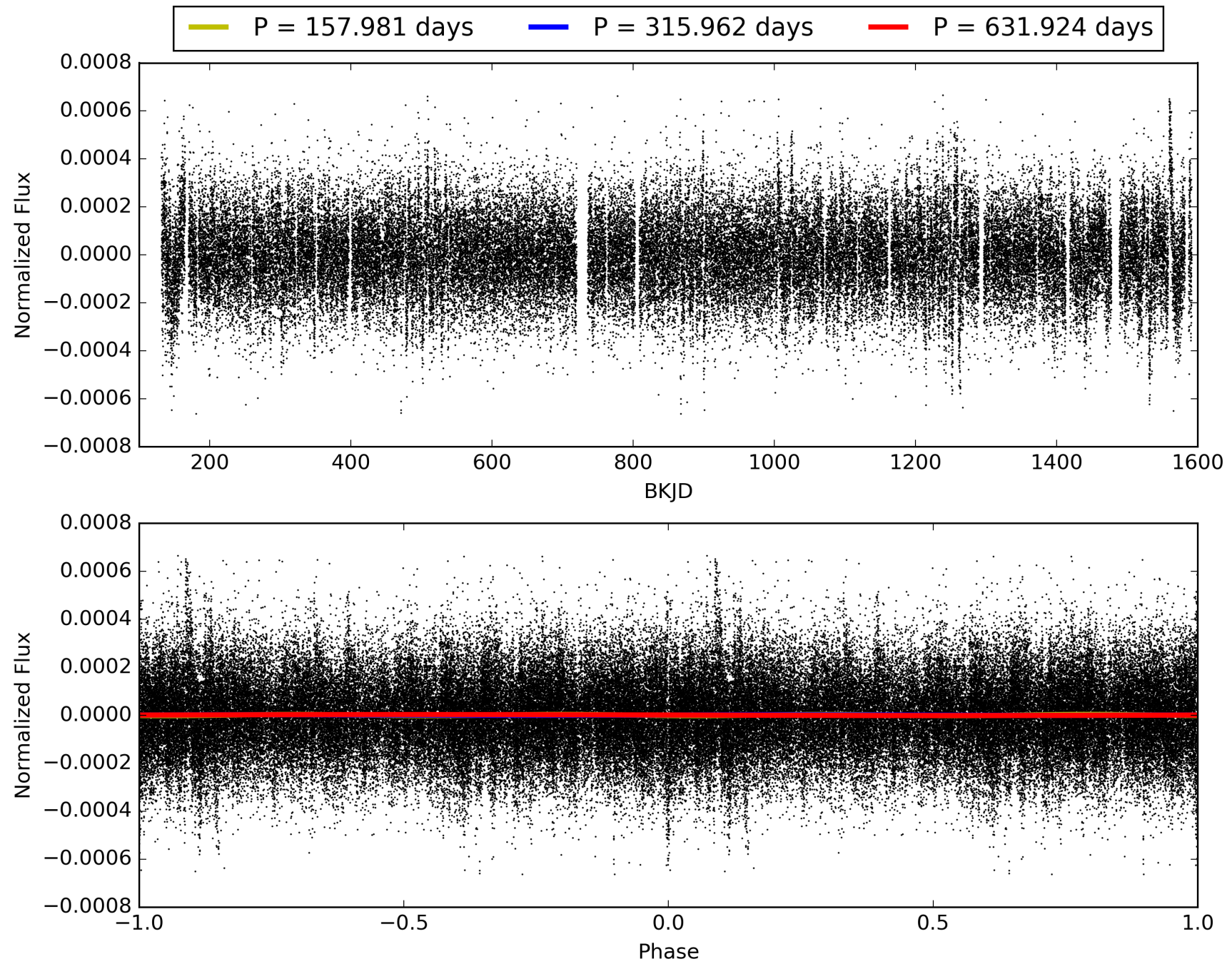
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:17:32 Z

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

TCE 006681473-02, PDC Light Curves

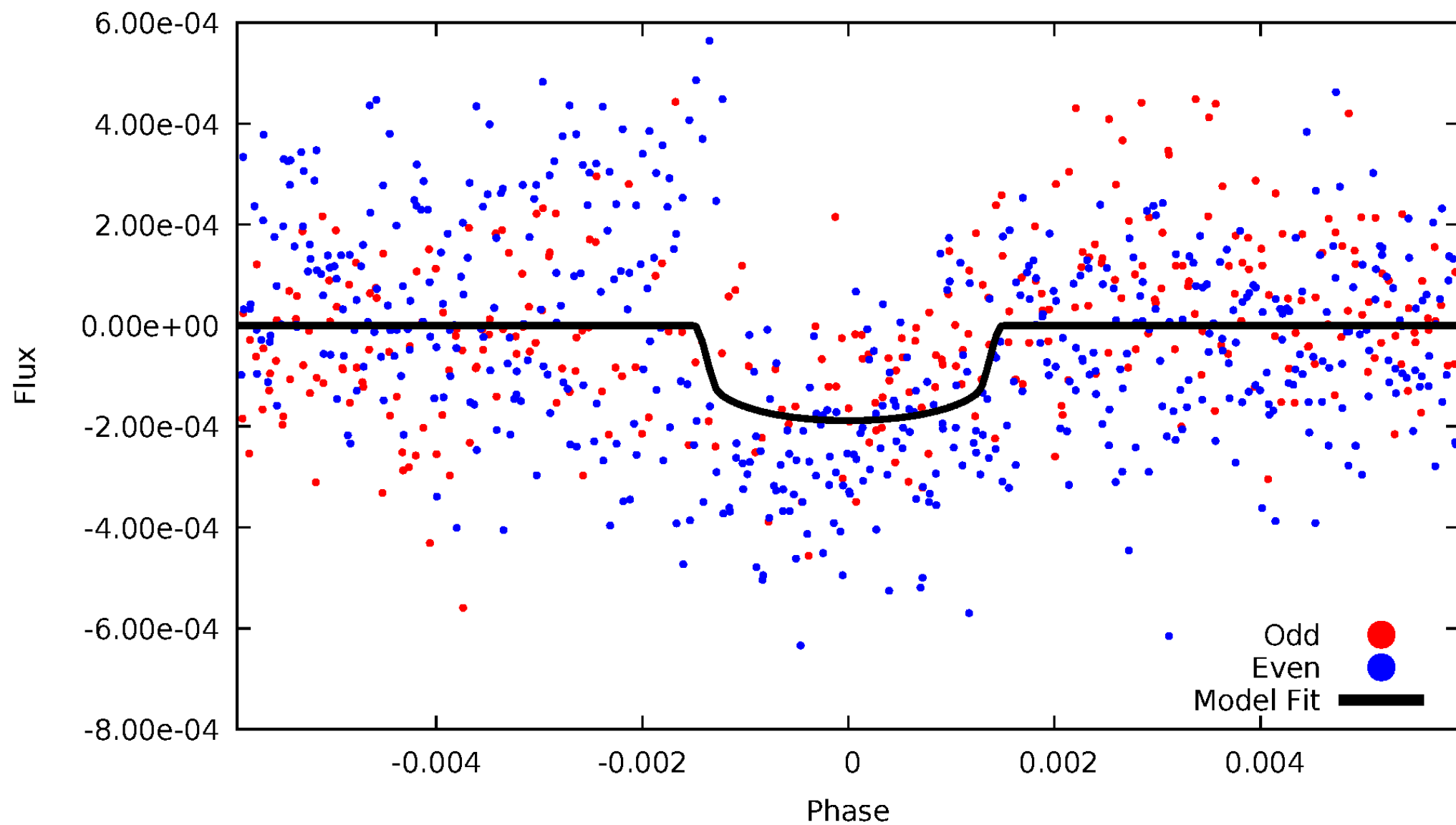


TCE 006681473-02



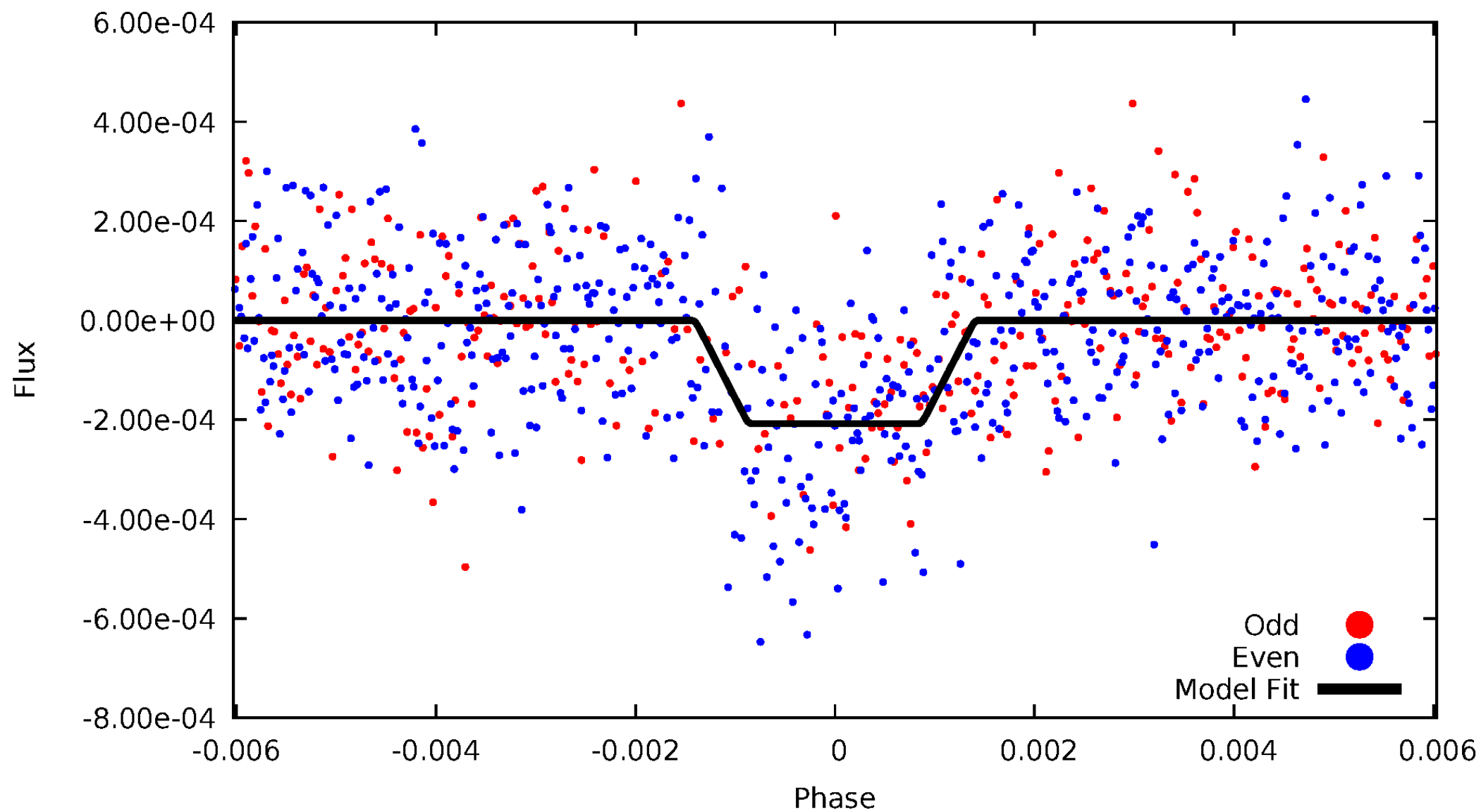
DV Odd/Even

TCE 006681473-02



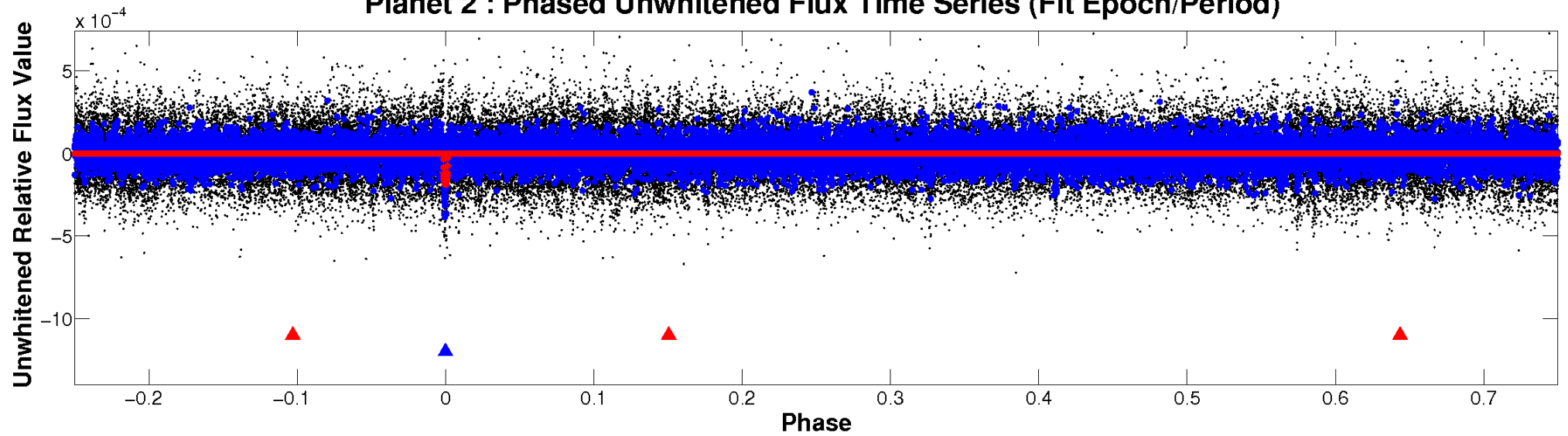
ALT Odd/Even

TCE 006681473-02

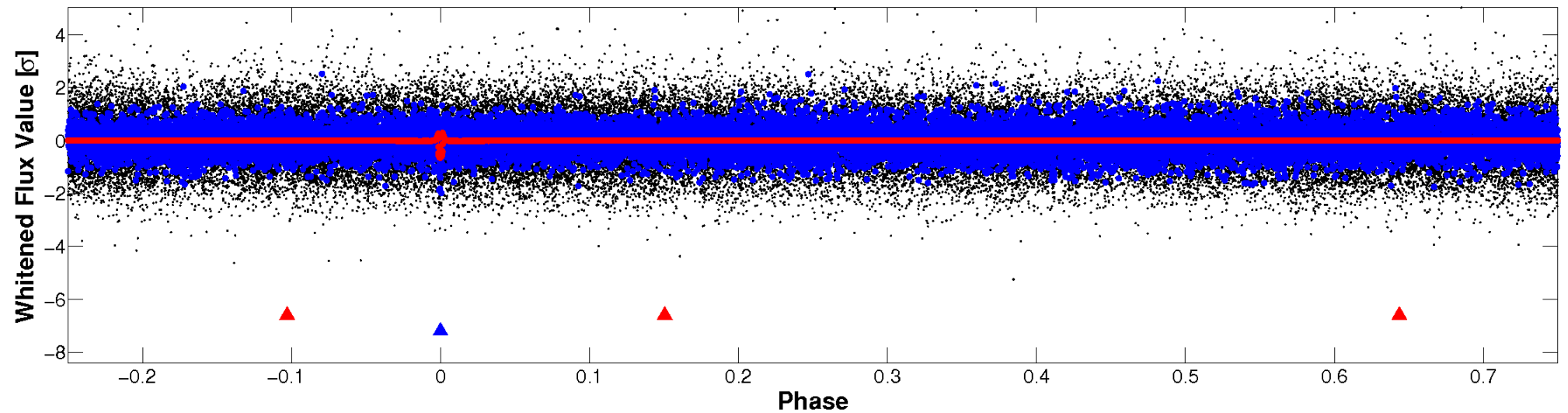


Non-Whitened Vs. Whitened Light Curve

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

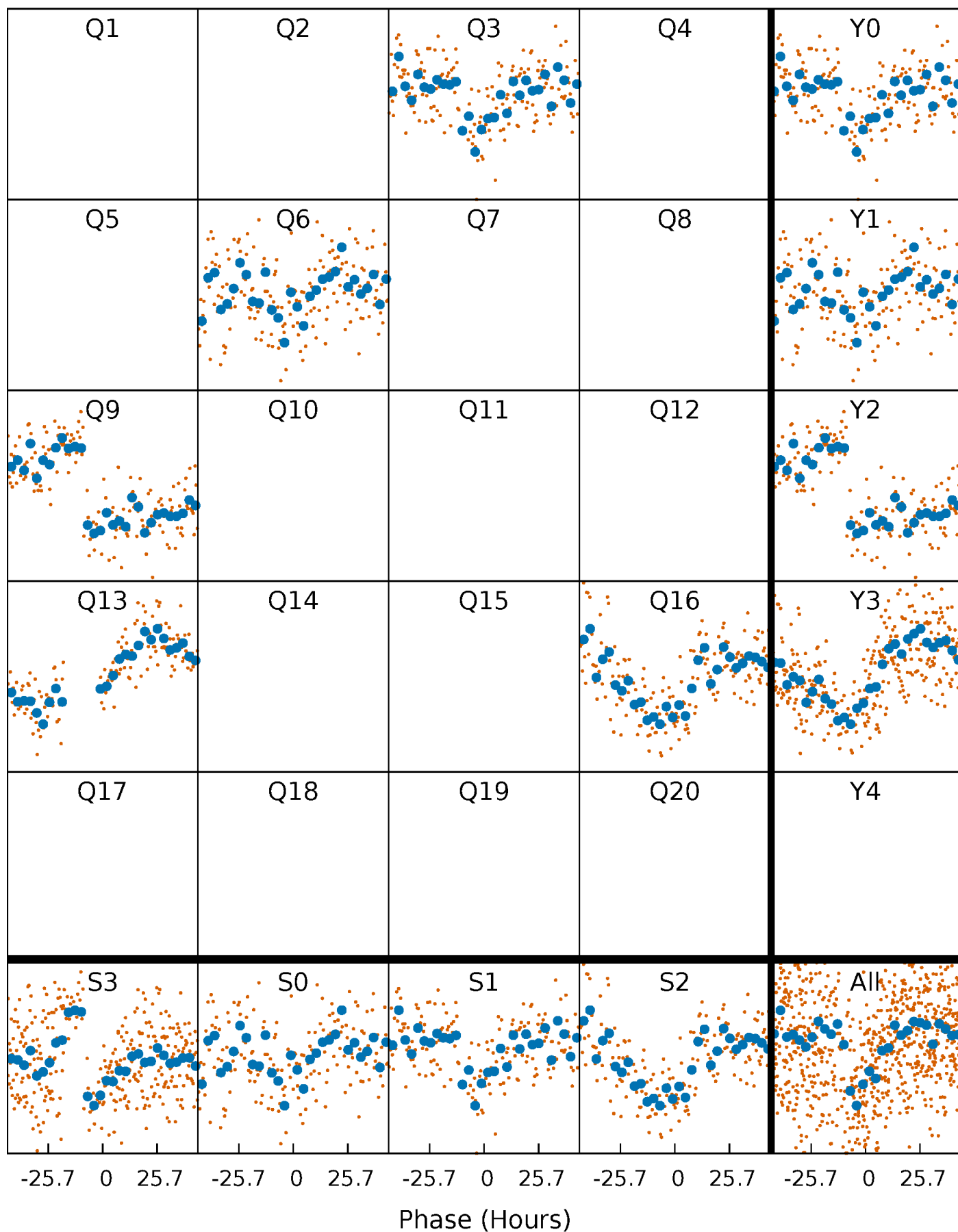


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



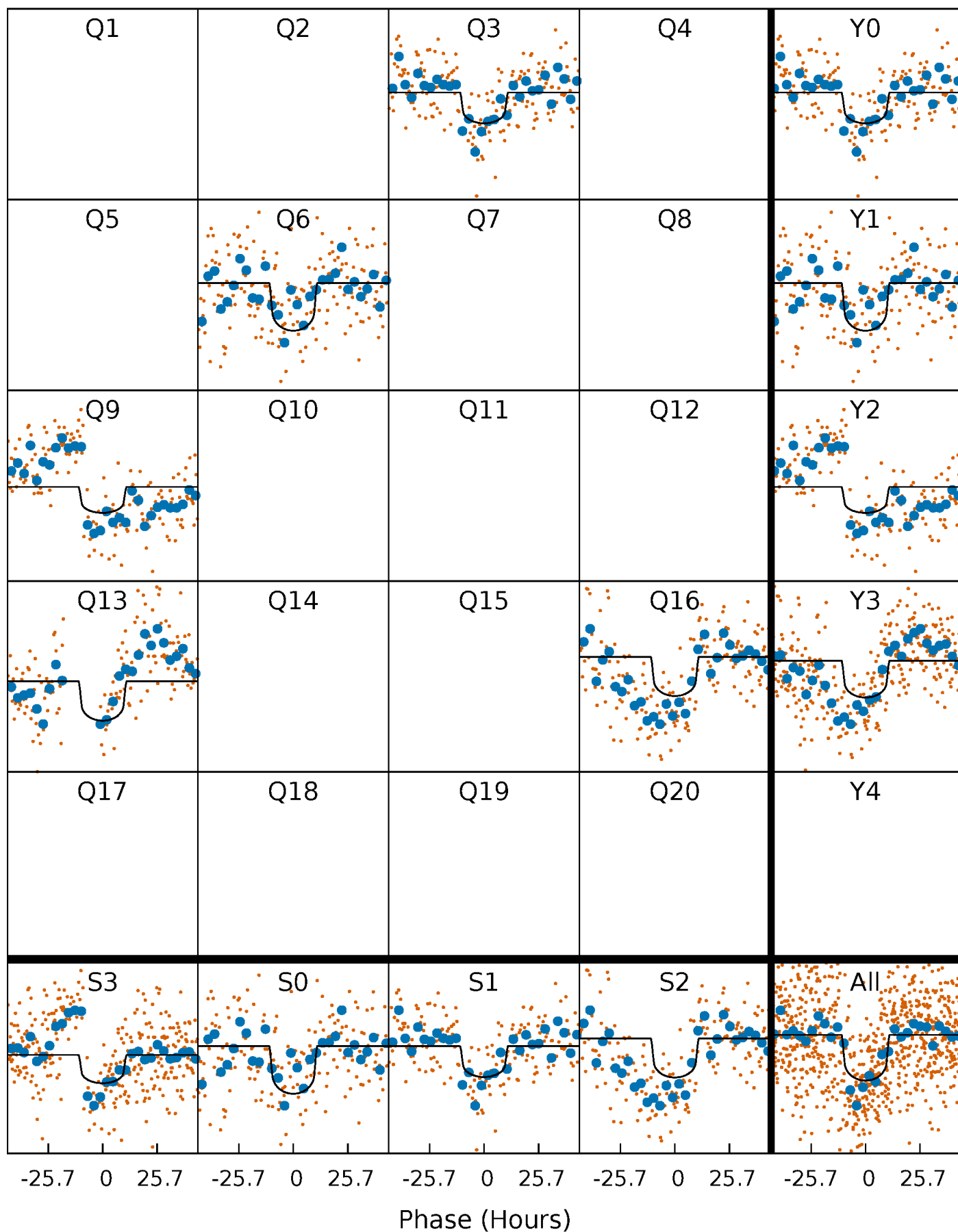
PDC Quarter-Phased Transit Curves

TCE 006681473-02 P=315.961838 Days $T_0=267.870069$ (BKJD)



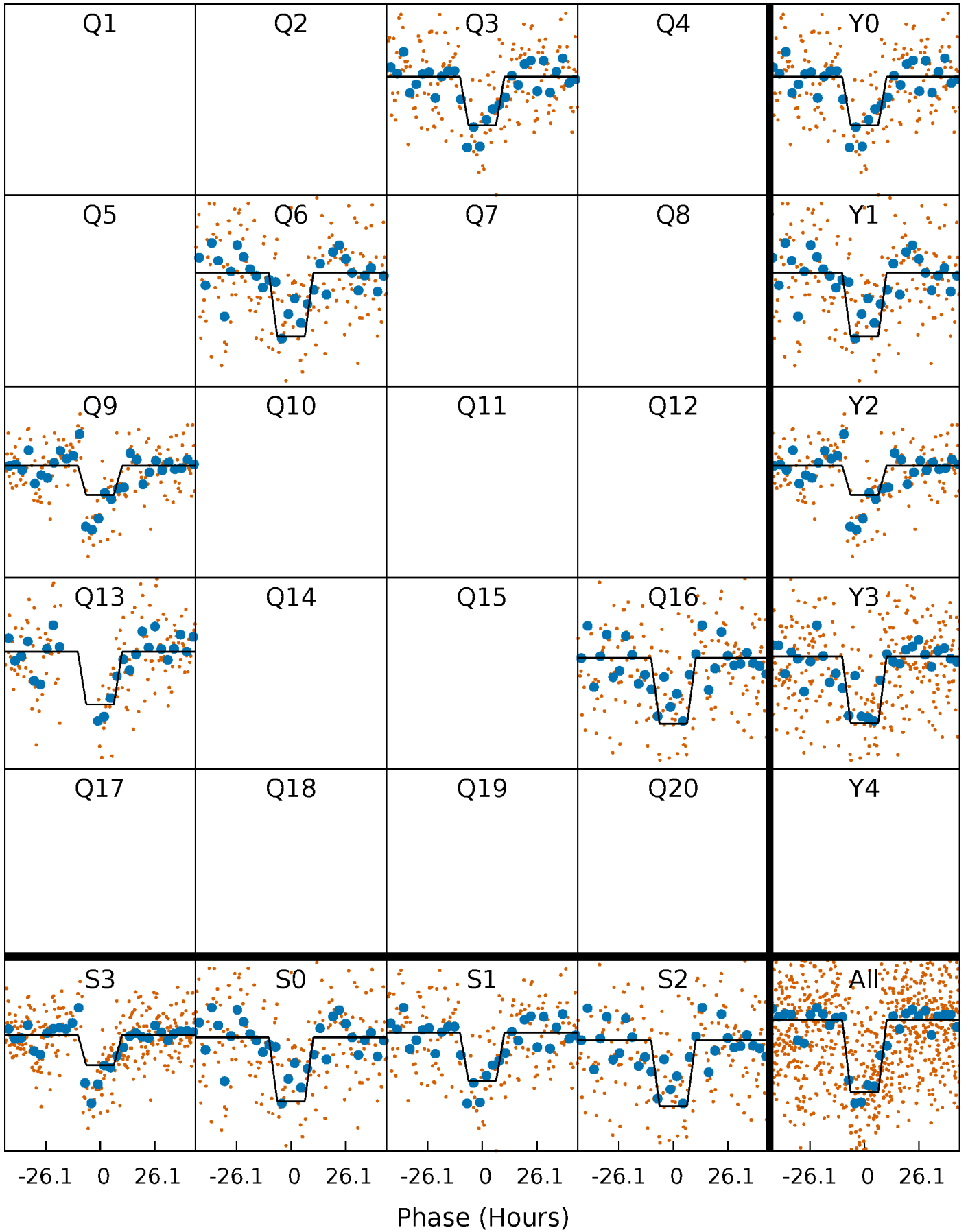
DV Quarter-Phased Transit Curves

TCE 006681473-02 $P=315.961838$ Days $T_0=267.870069$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

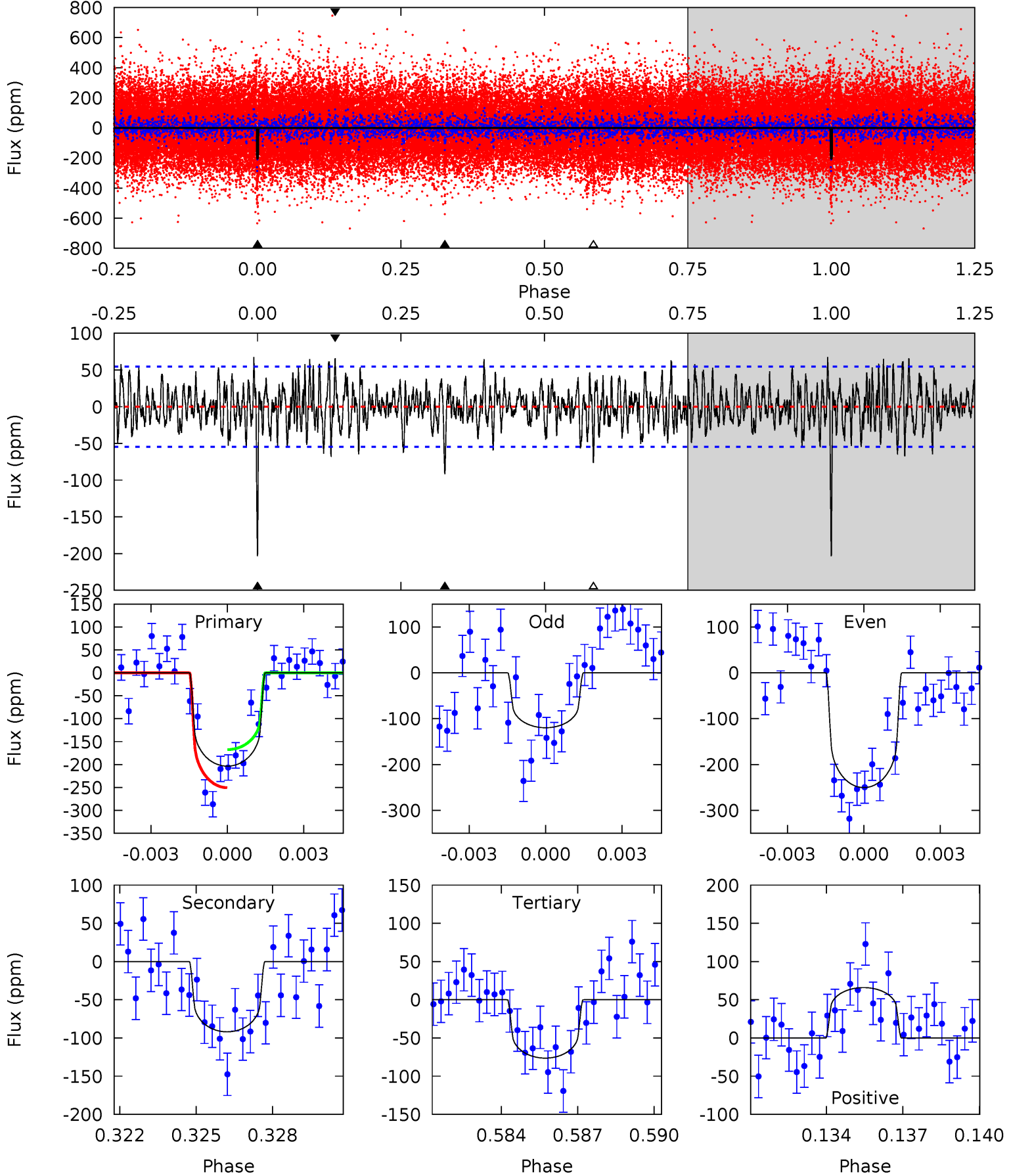
TCE 006681473-02 P=315.977761 Days $T_0=267.811220$ (BKJD)



DV Model-Shift Uniqueness Test

006681473-02, P = 315.961838 Days, E = 267.870069 Days

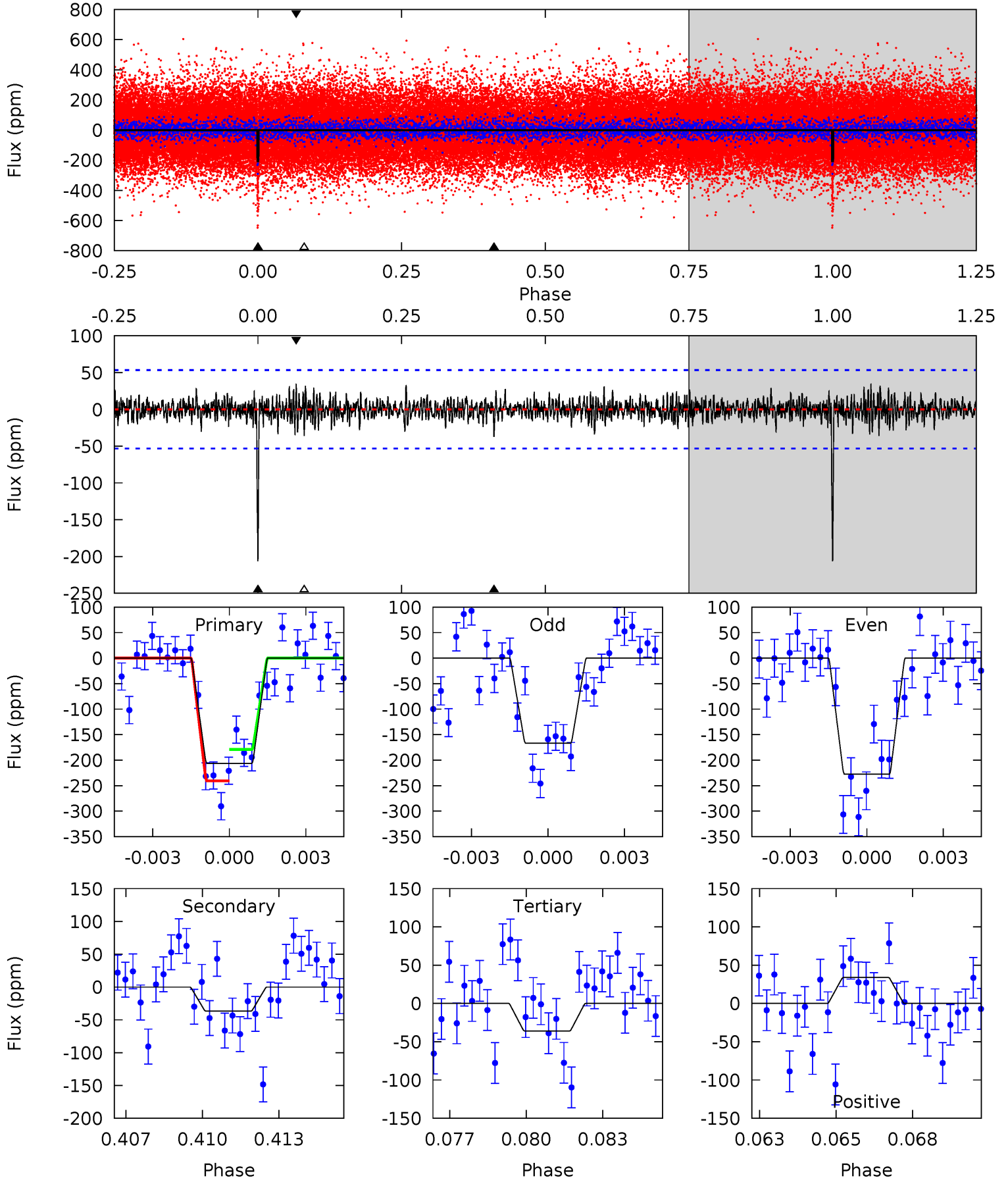
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.6	8.85	7.35	6.34	5.25	2.96	2.19	12.2	13.2	1.50	2.51	6.01	0.91	0.25	3.95



Alt Model-Shift Uniqueness Test

006681473-02, P = 315.977761 Days, E = 267.811220 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	3.62	3.54	3.35	5.26	2.98	0.97	16.8	17.0	0.08	0.27	2.85	0.97	0.14	3.01



Stellar Parameters For KIC 006681473

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5327^{+148}_{-167}	$3.643^{+0.198}_{-0.162}$	$-0.180^{+0.250}_{-0.300}$	$2.882^{+0.583}_{-0.875}$	$1.332^{+0.149}_{-0.348}$	$0.078^{+0.099}_{-0.033}$
	+3%/-3%	+5%/-4%	+139%/-167%	+20%/-30%	+11%/-26%	+126%/-42%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006681473-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-92 ± 10	$4.58^{+1.06}_{-0.88}$	556^{+38}_{-39}	4423^{+332}_{-253}	2328^{+1254}_{-770}
Alt.	-37 ± 10	$4.50^{+1.01}_{-0.94}$	559^{+38}_{-40}	3802^{+295}_{-264}	955^{+682}_{-372}

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

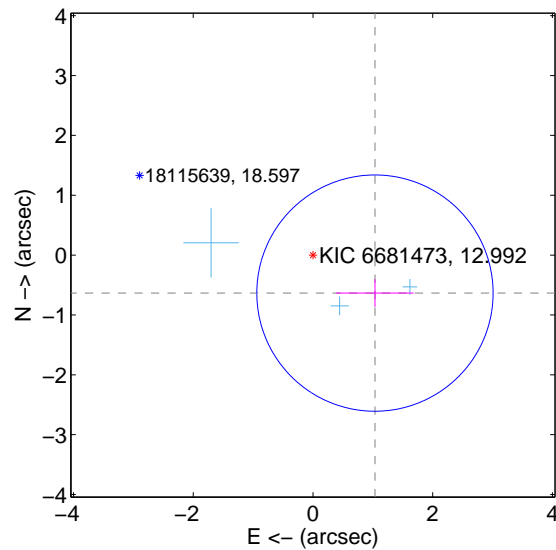
Supplemental centroid analysis for 006681473-02. Kepler magnitude: 12.99. Transit SNR 8.23

There are 3 quarters with good PRF difference image offsets

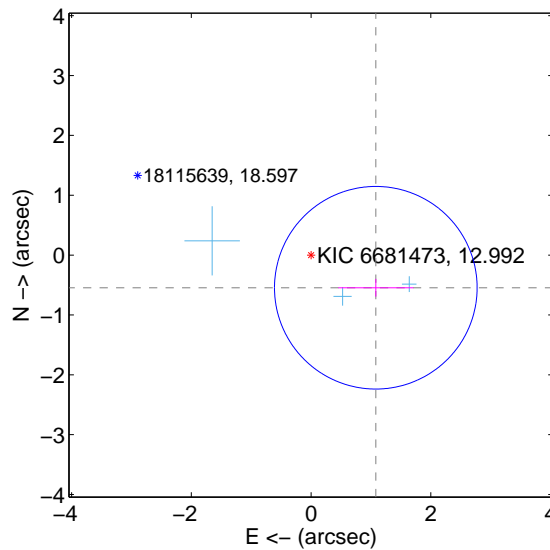
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.215 ± 0.658	1.85	-1.036 ± 0.648	-0.635 ± 0.232
PRF-fit source offset from KIC position	1.212 ± 0.564	2.15	-1.082 ± 0.628	-0.546 ± 0.149
photometric centroid source offset	0.23 ± 1.05	0.22	-0.22 ± 1.05	-0.07 ± 1.05

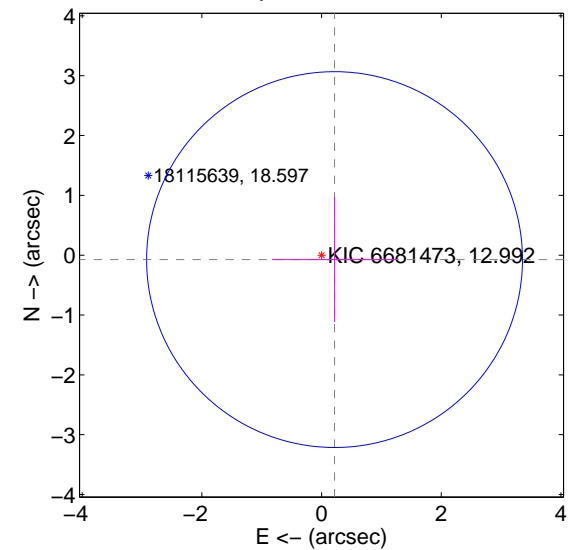
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

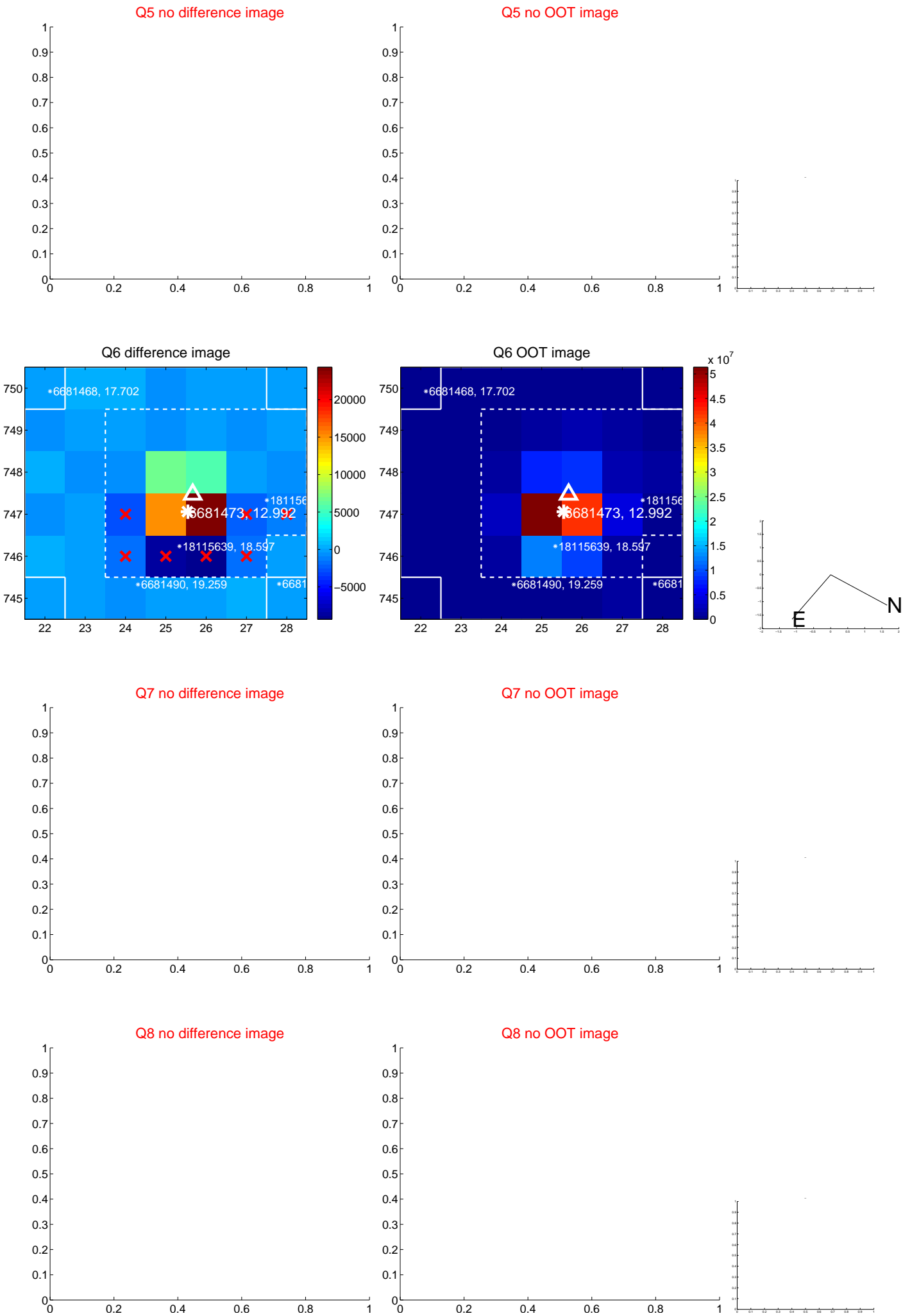


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

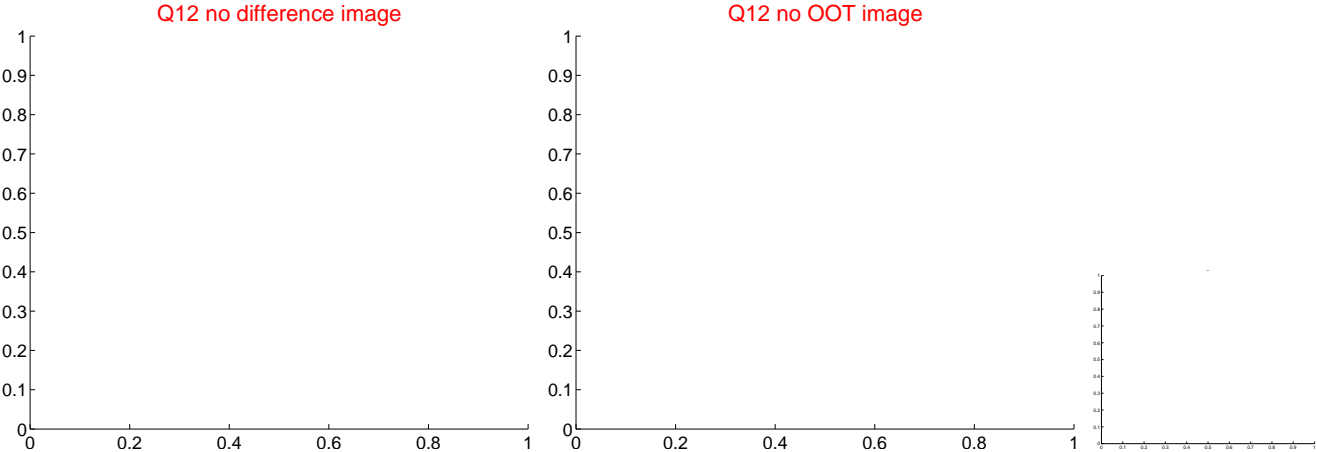
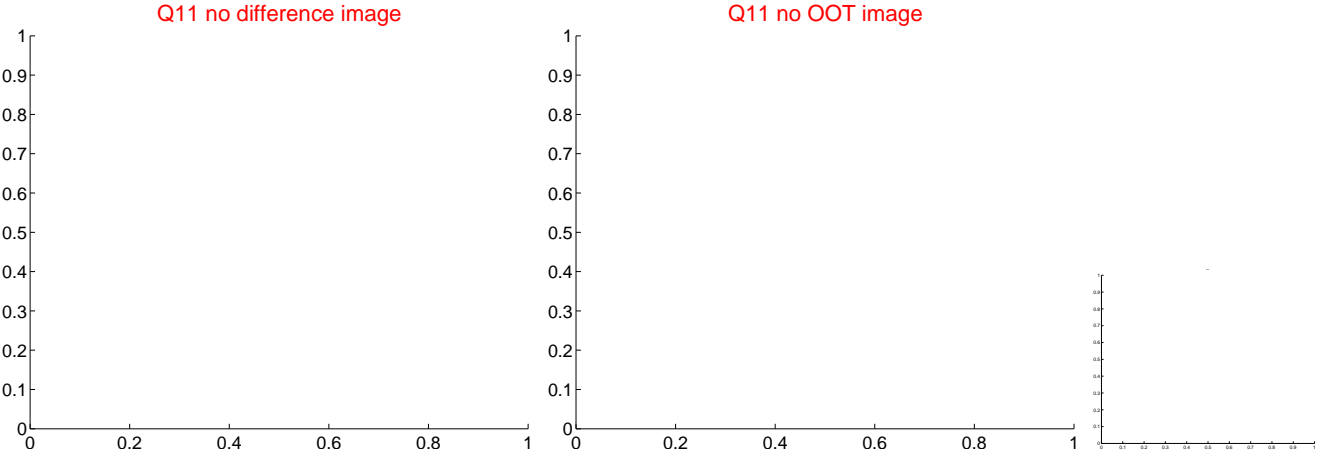
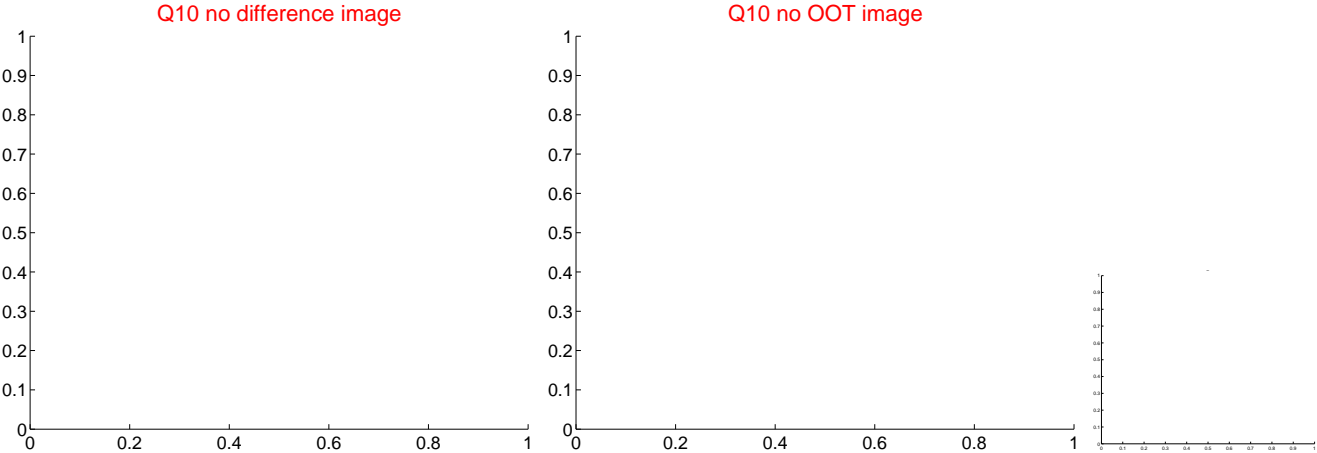
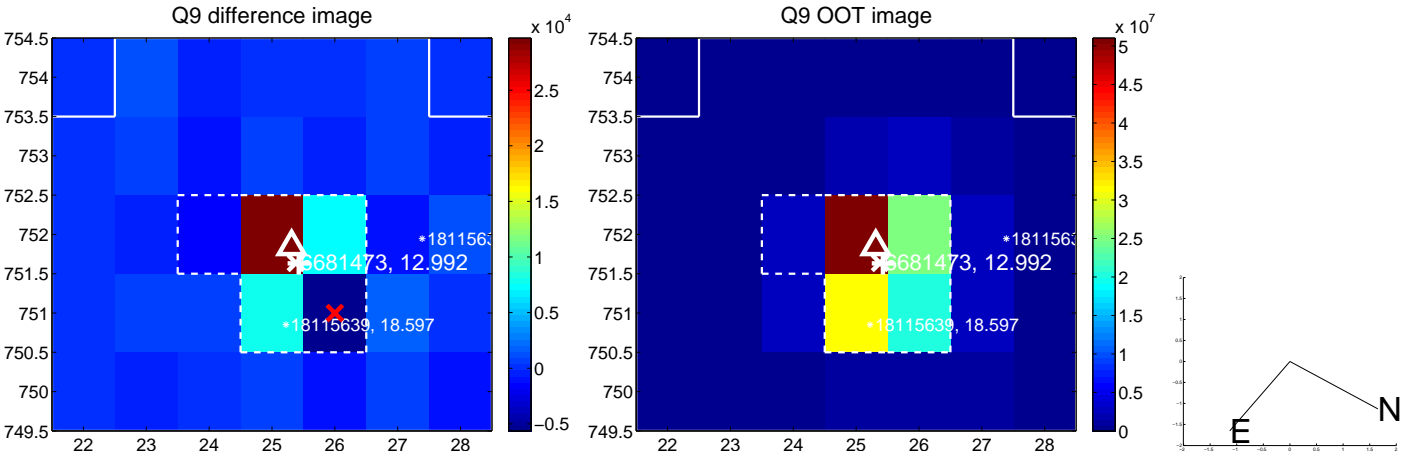
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



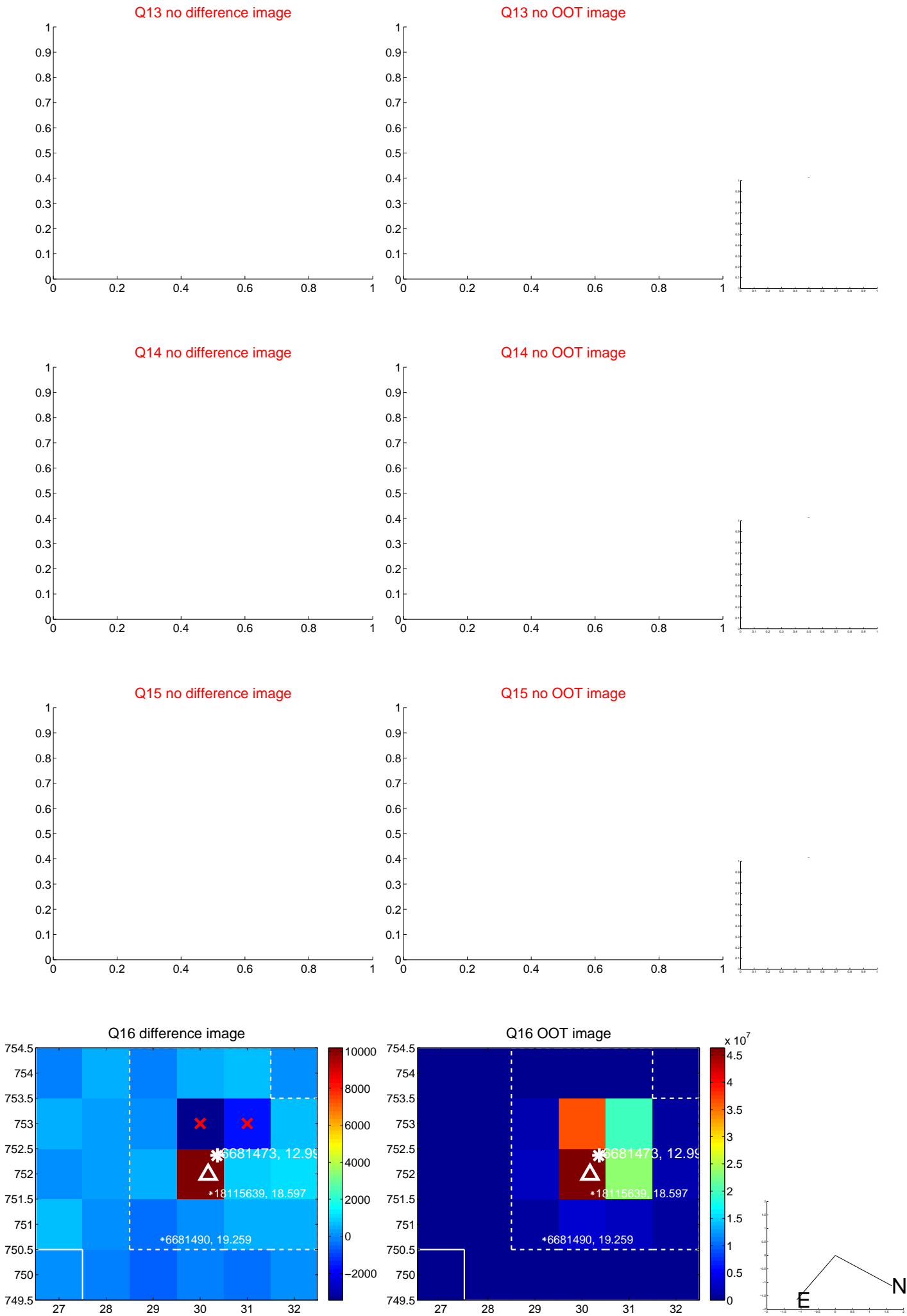
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



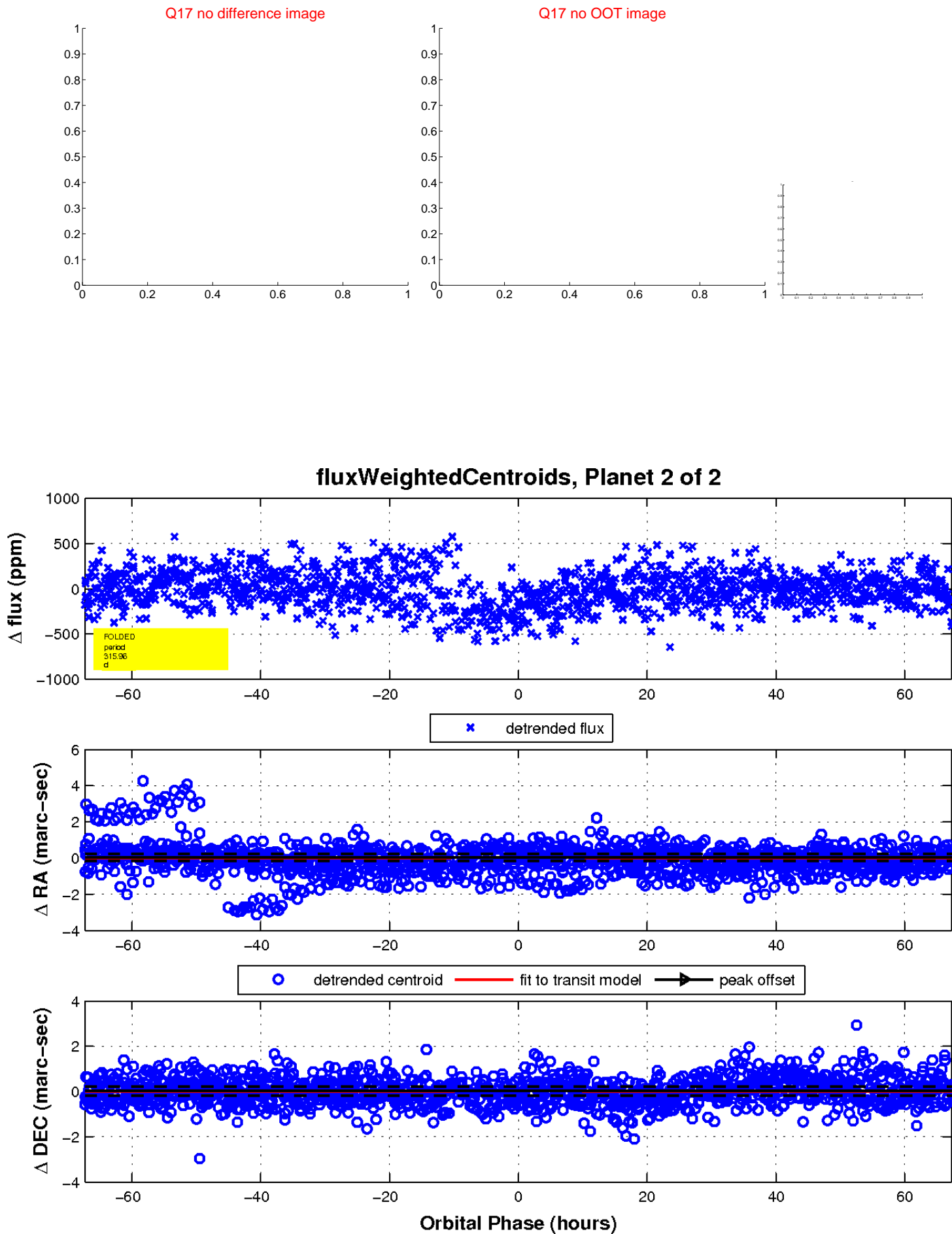
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

