

KIC 006058816

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})
006058816-01	OBS	3500.01	73.750381	188.521754	229.8	13.635	22.6	23.8	2.48	6056	4.12	49.85
006058816-02	OBS	3500.02	4.748279	135.795430	32.6	4.985	9.5	9.6	2.48	6056	1.67	1932.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006058816-01	OBS	PC	0.93	0	0	0	0	NO_COMMENT
006058816-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT

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

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

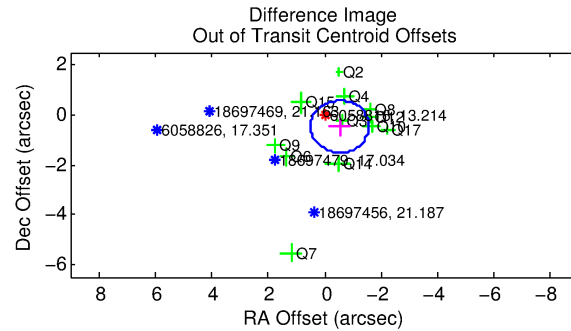
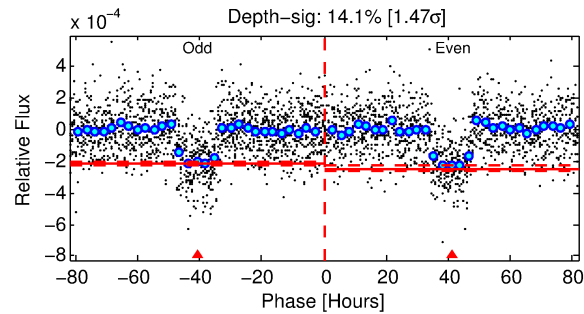
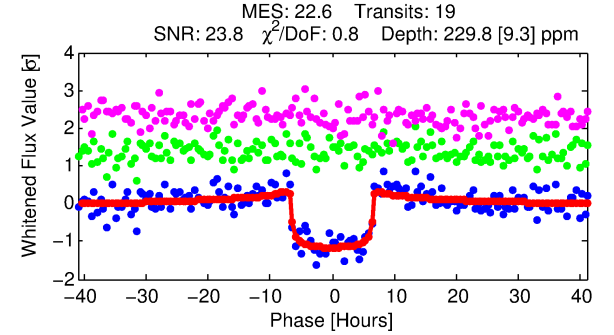
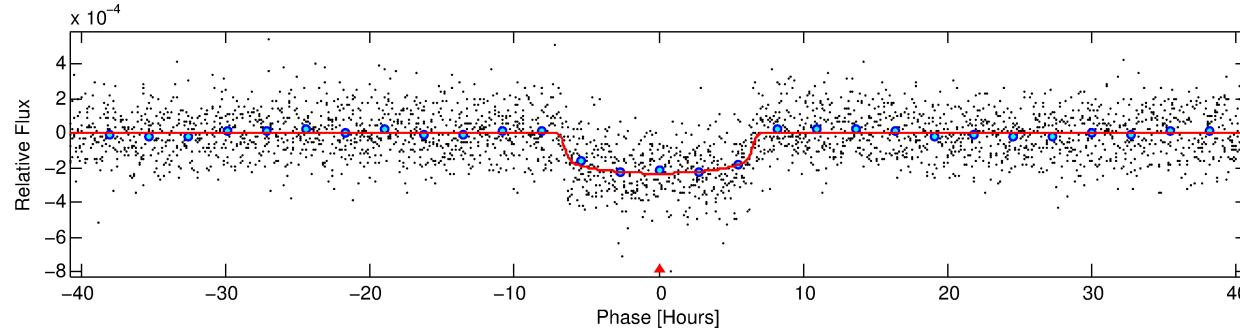
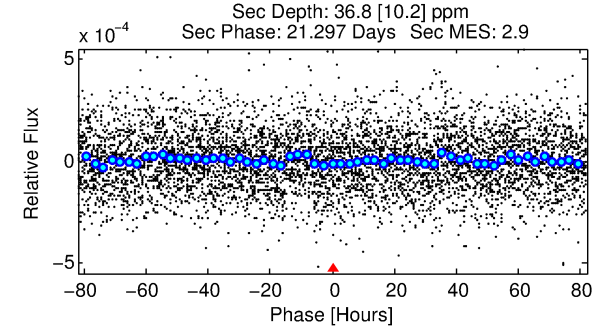
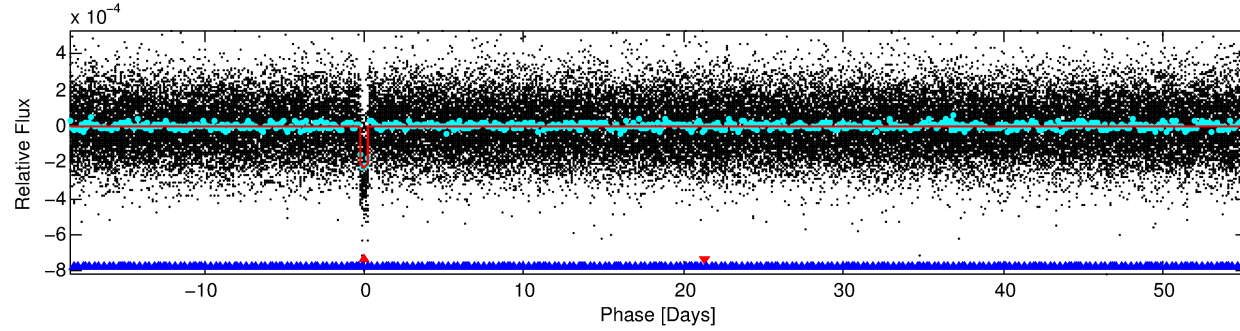
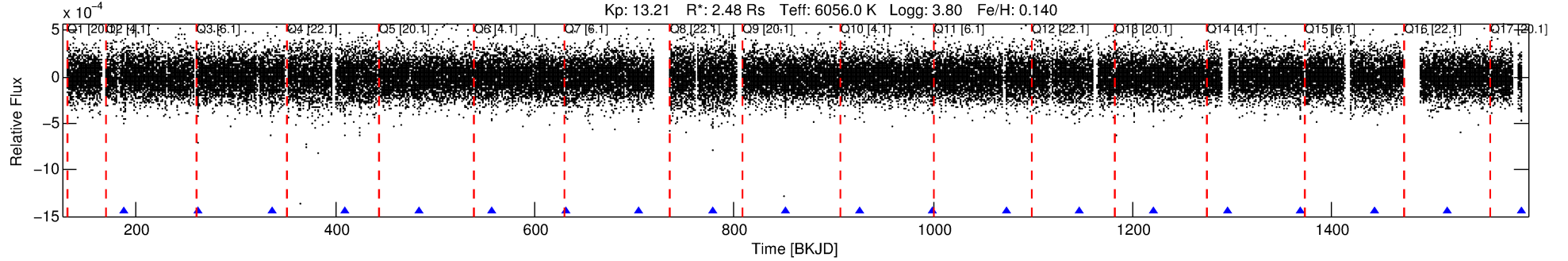
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006058816-01

No Significant Match Found

DV One-Page Summary

KIC: 6058816 Candidate: 1 of 2 Period: 73.750 d
KOI: K03500.01 Corr: 0.985



DV Fit Results:

Period = 73.75038 [0.00061] d
Epoch = 188.5218 [0.0069] BKJD
Rp/R* = 0.0152 [0.0015]
a/R* = 27.06 [12.70]
b = 0.78 [0.24]
Seff = 49.85 [24.80]
Teff = 678 [84] K
Rp = 4.12 [1.48] Re
a = 0.3857 [0.1227] AU
Ag = 177.02 [106.24] [1.66σ]
Teffp = 3821 [329] K [9.26σ]

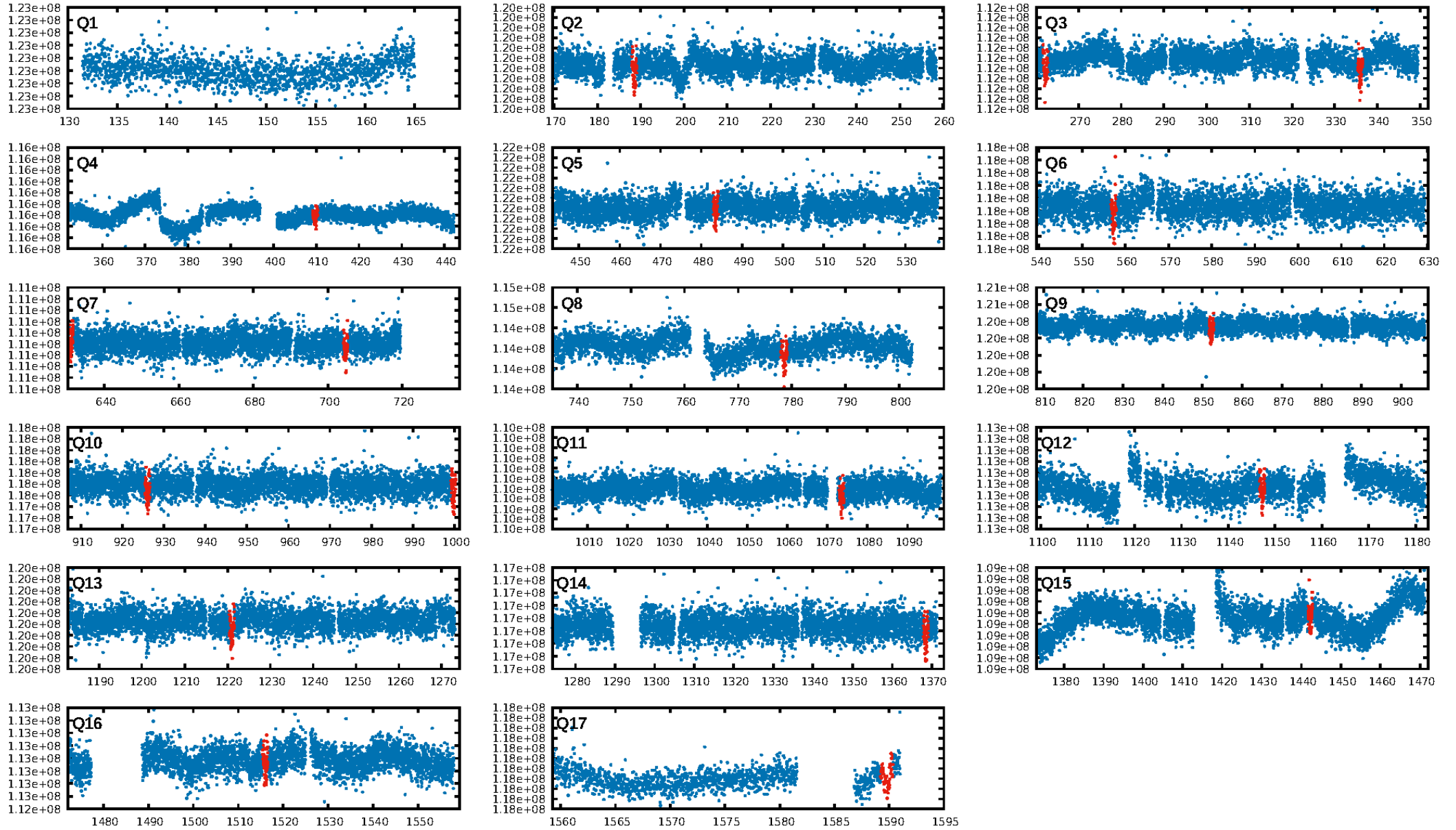
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [114.07σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 31.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.11e-103
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: 63.21
Centroid-sig: 27.9%
Centroid-so: 0.513 arcsec [1.22σ]
OotOffset-rm: 0.710 arcsec [2.05σ]
KicOffset-rm: 0.629 arcsec [1.84σ]
OotOffset-st: 4/3/3/2 [12]
KicOffset-st: 4/3/3/2 [12]
DiffImageQuality-fgm: 0.92 [11/12]
DiffImageOverlap-fno: 0.54 [7/13]

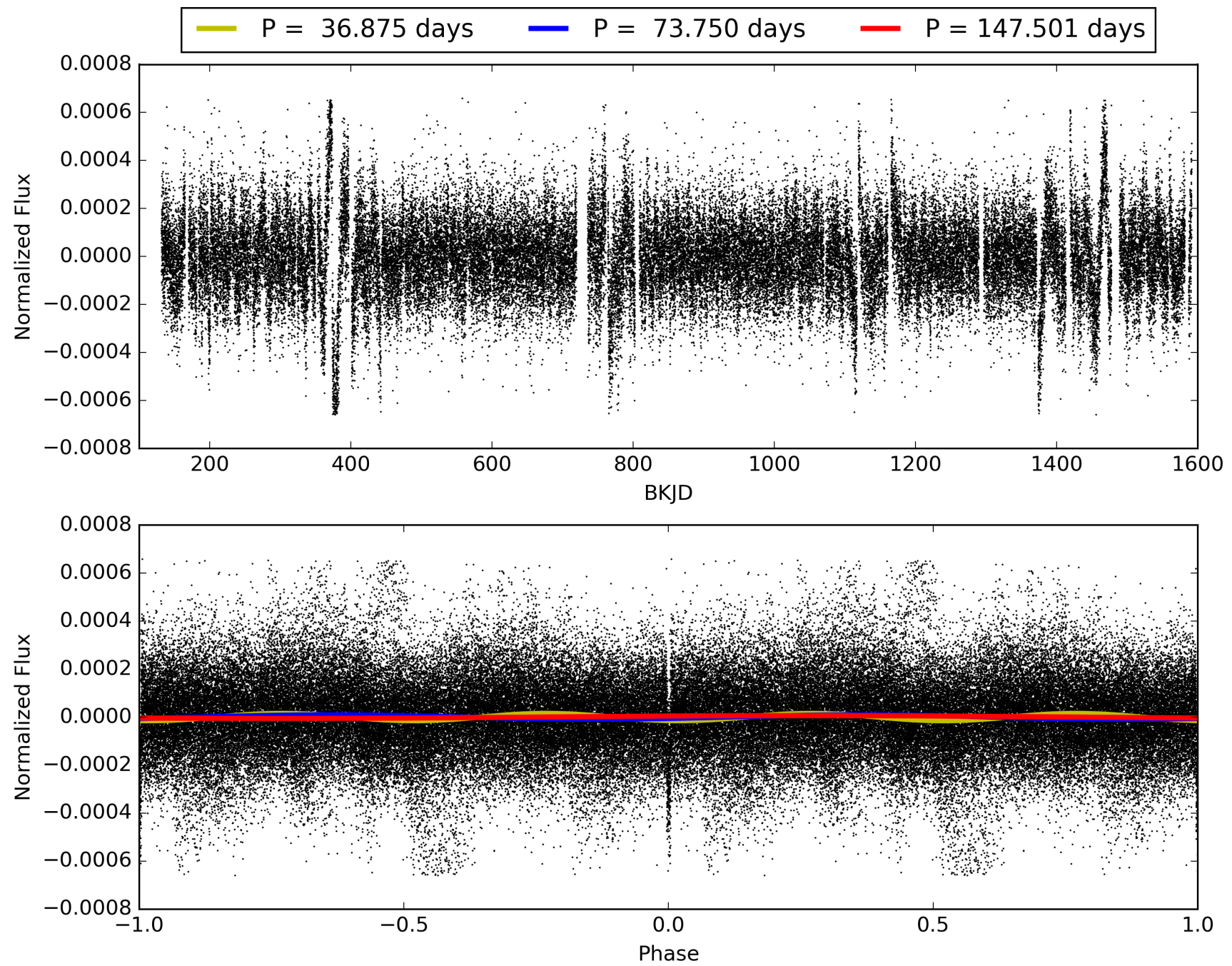
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:24:00 Z

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

TCE 006058816-01, PDC Light Curves

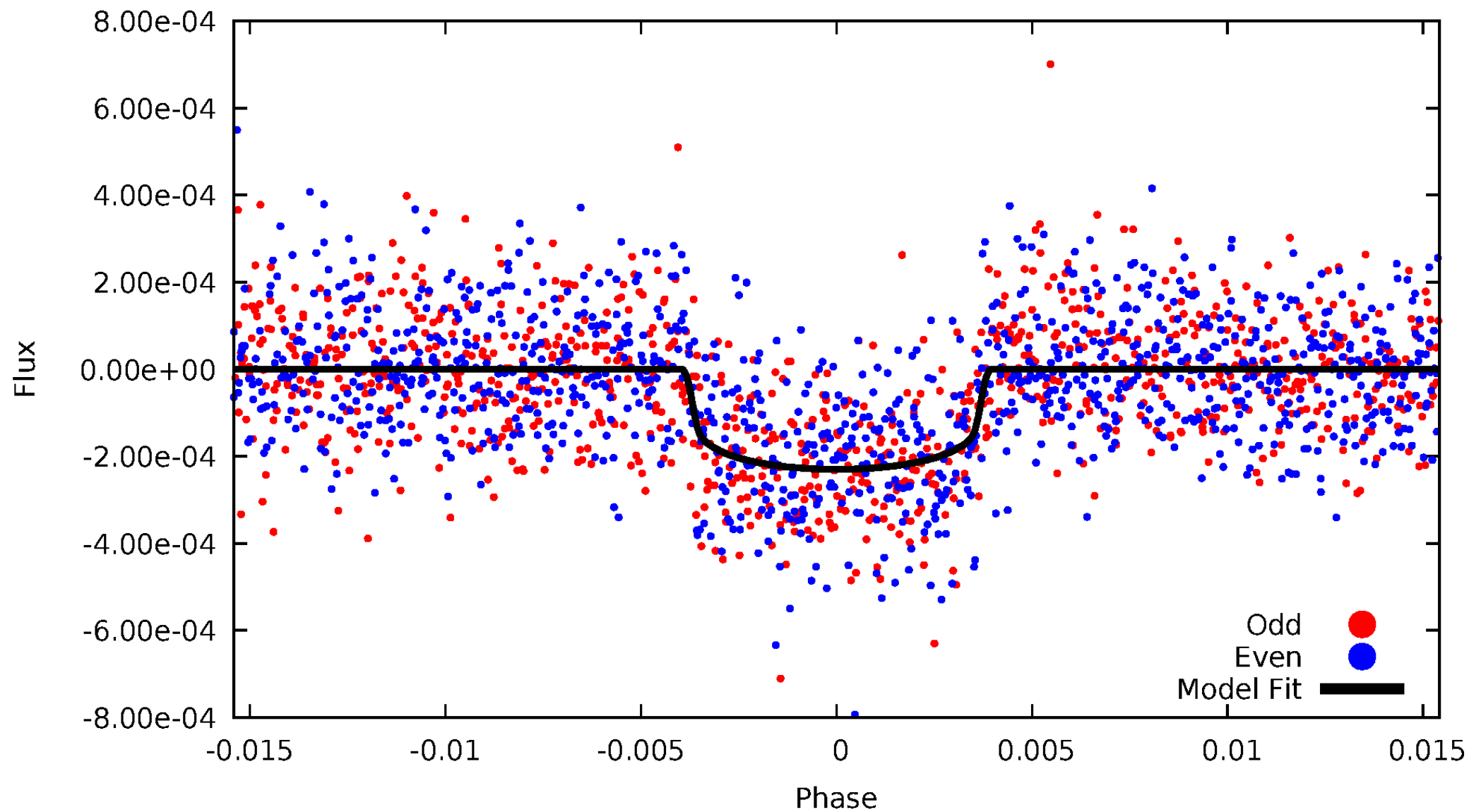


TCE 006058816-01



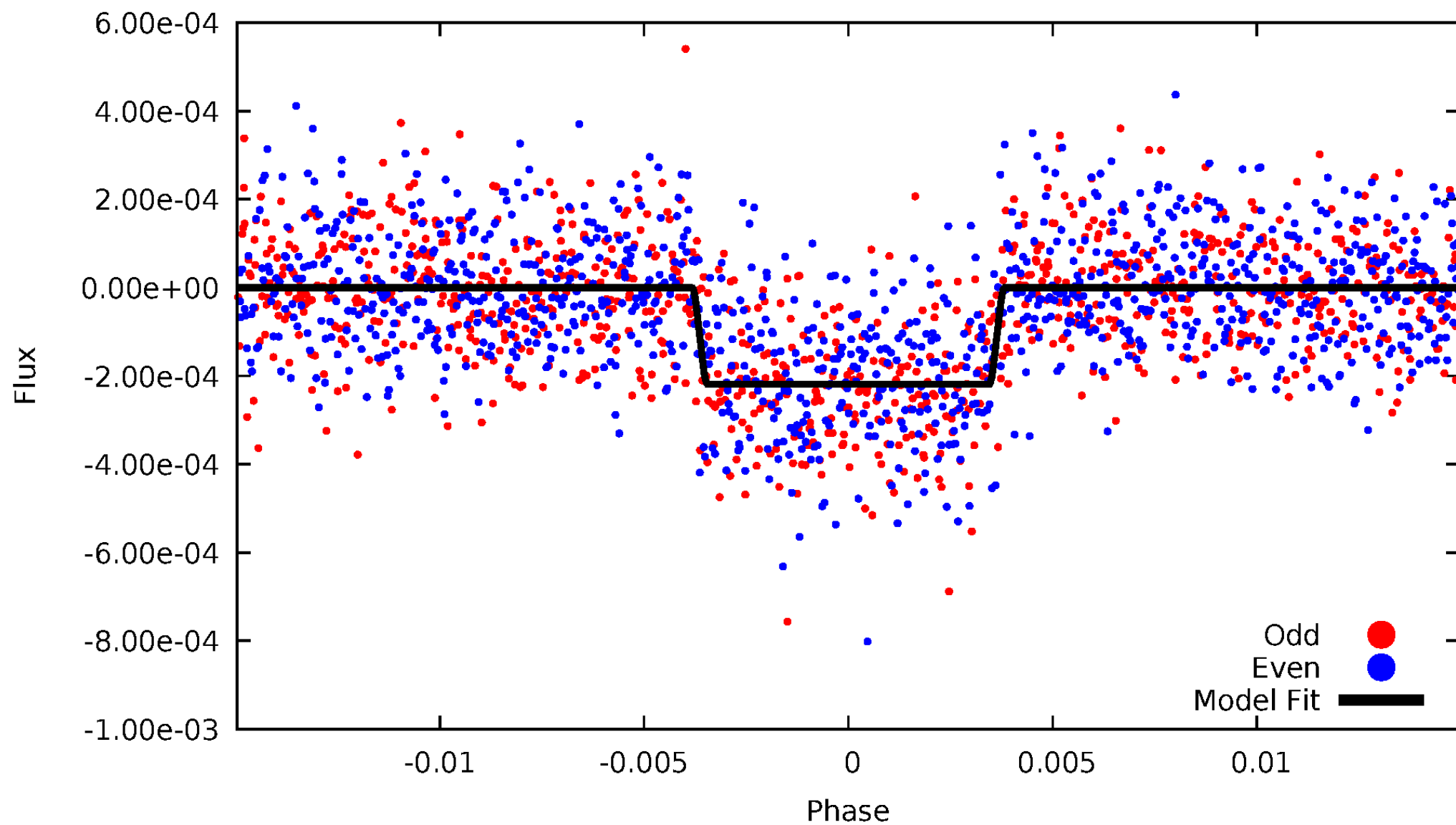
DV Odd/Even

TCE 006058816-01



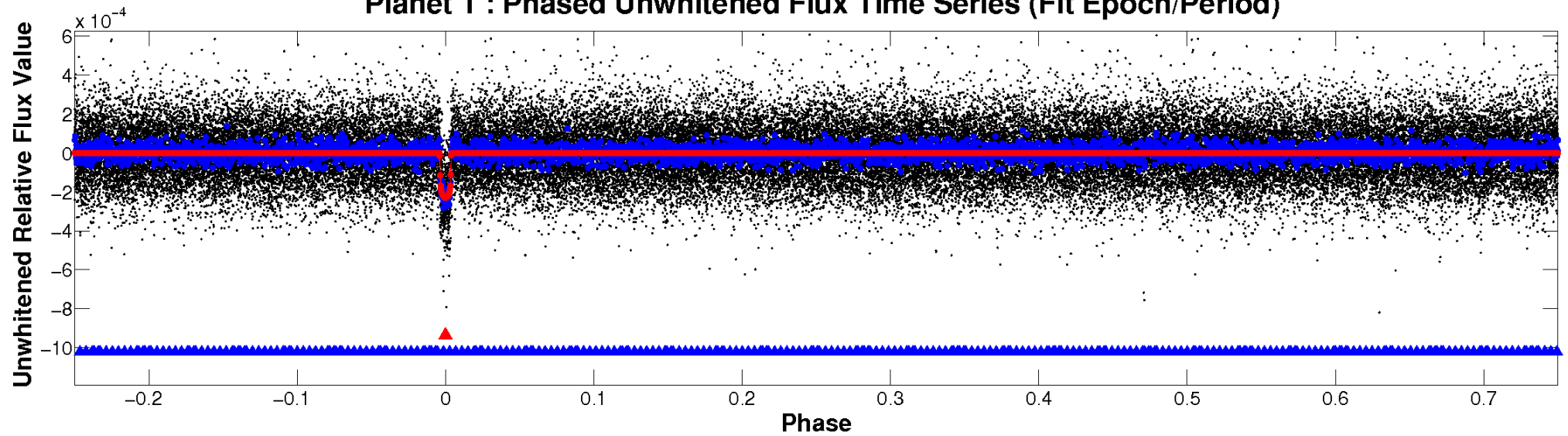
ALT Odd/Even

TCE 006058816-01

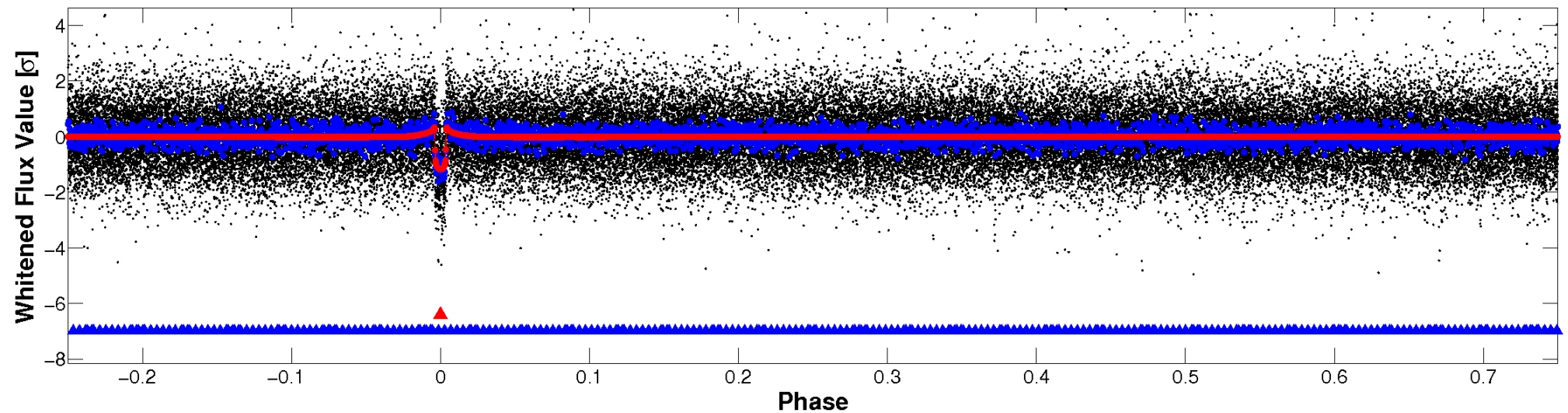


Non-Whitened Vs. Whitened Light Curve

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

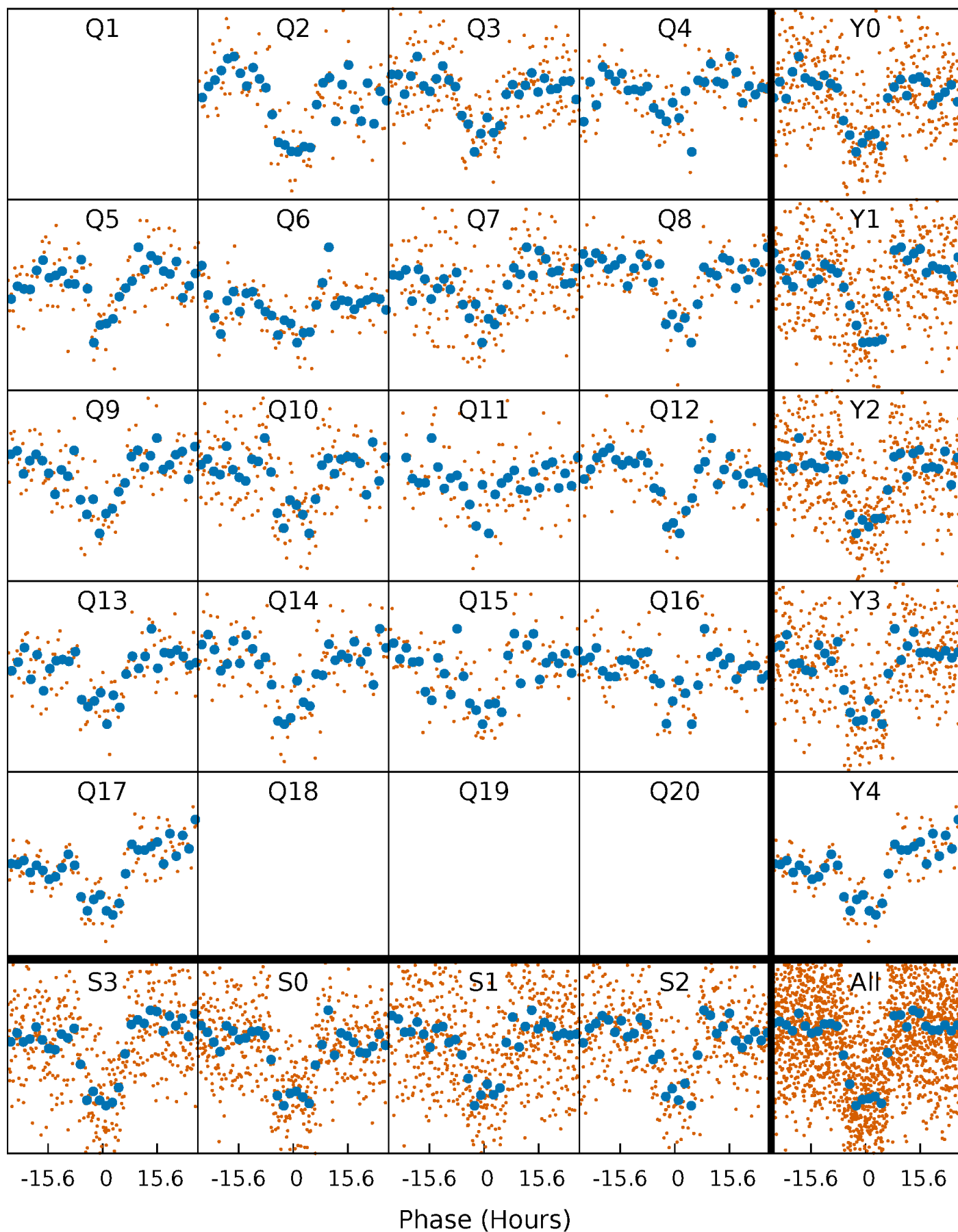


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



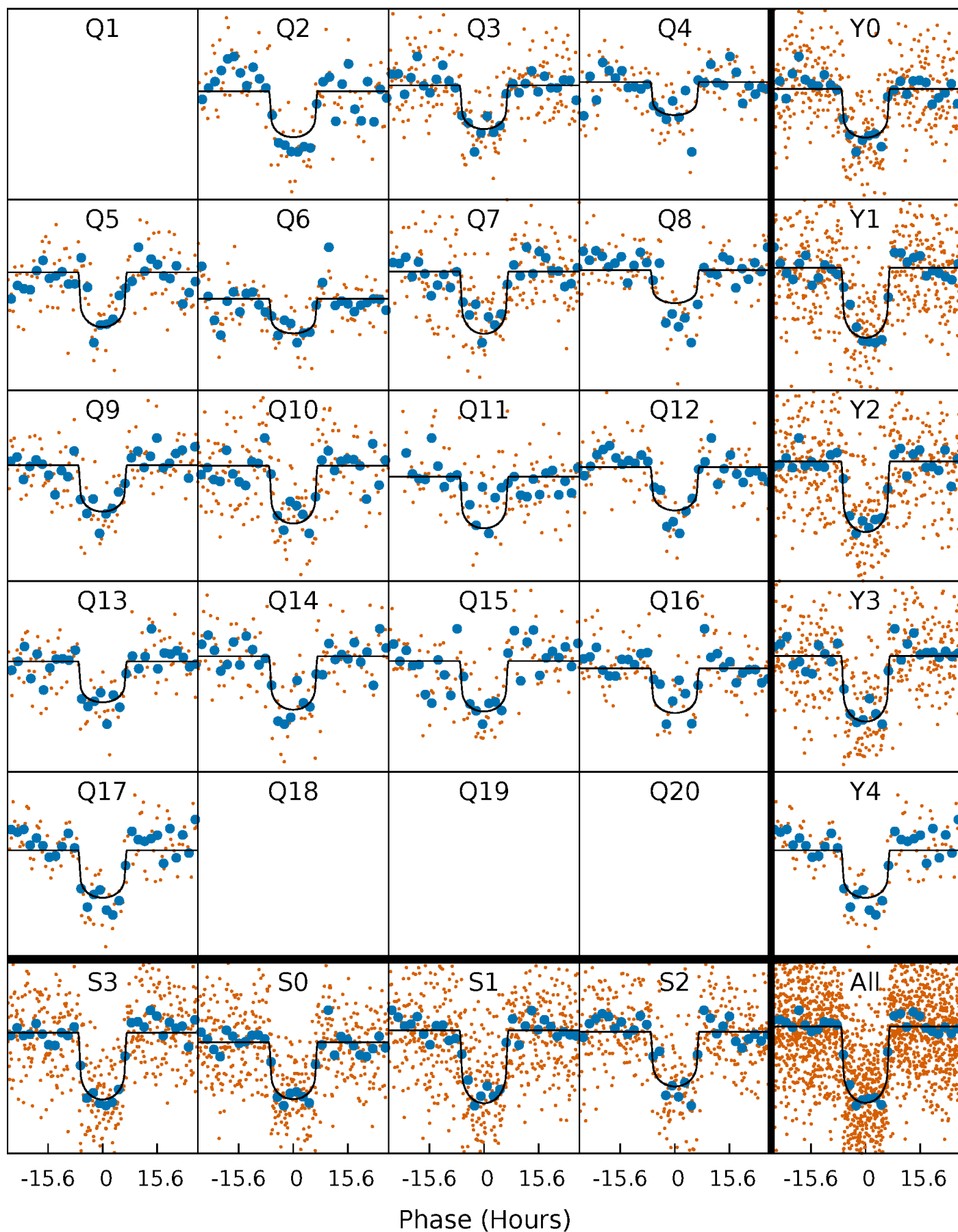
PDC Quarter-Phased Transit Curves

TCE 006058816-01 P= 73.750381 Days $T_0=188.521754$ (BKJD)



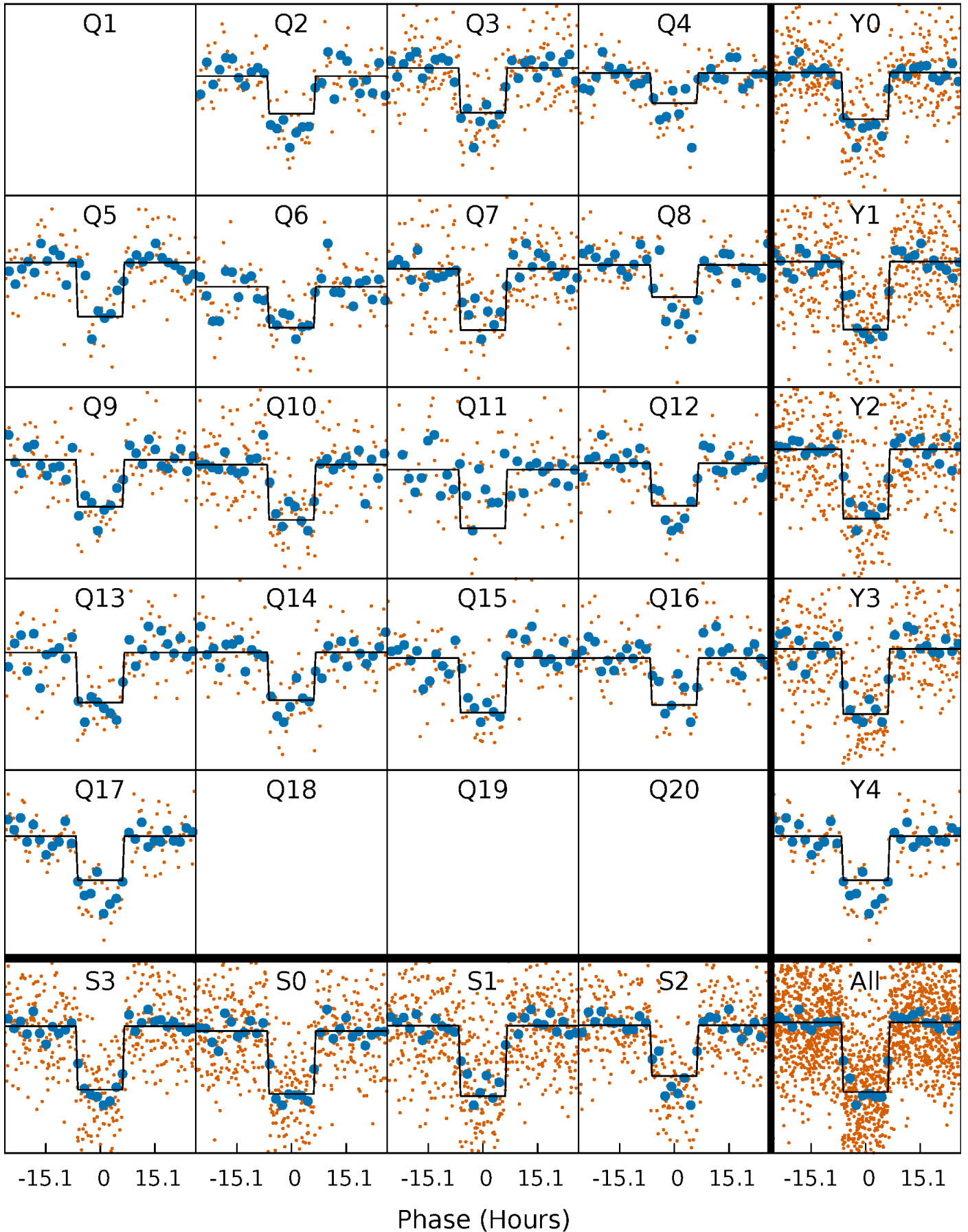
DV Quarter-Phased Transit Curves

TCE 006058816-01 P= 73.750381 Days $T_0=188.521754$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

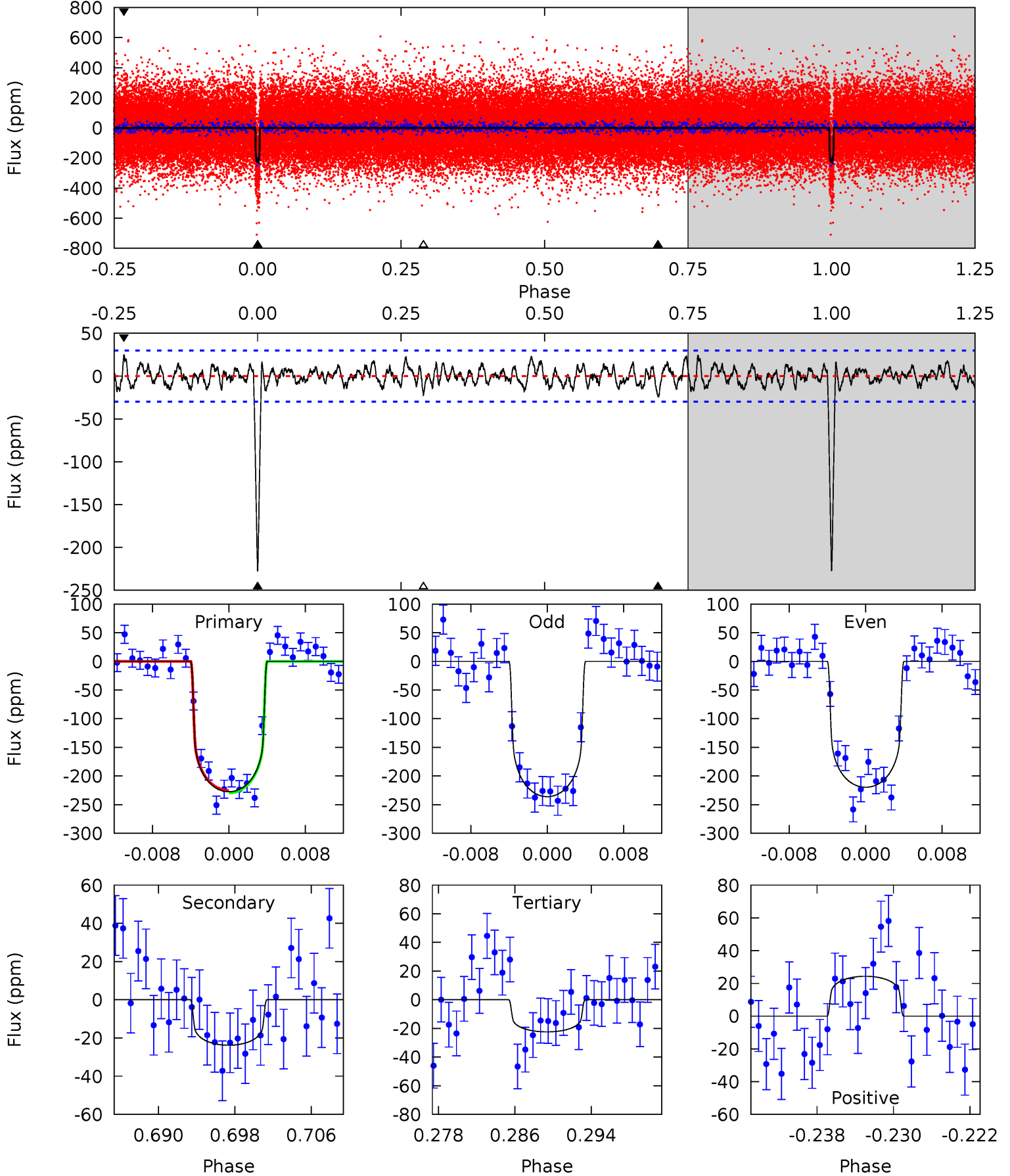
TCE 006058816-01 P= 73.749810 Days $T_0=188.526214$ (BKJD)



DV Model-Shift Uniqueness Test

006058816-01, P = 73.750381 Days, E = 114.771373 Days

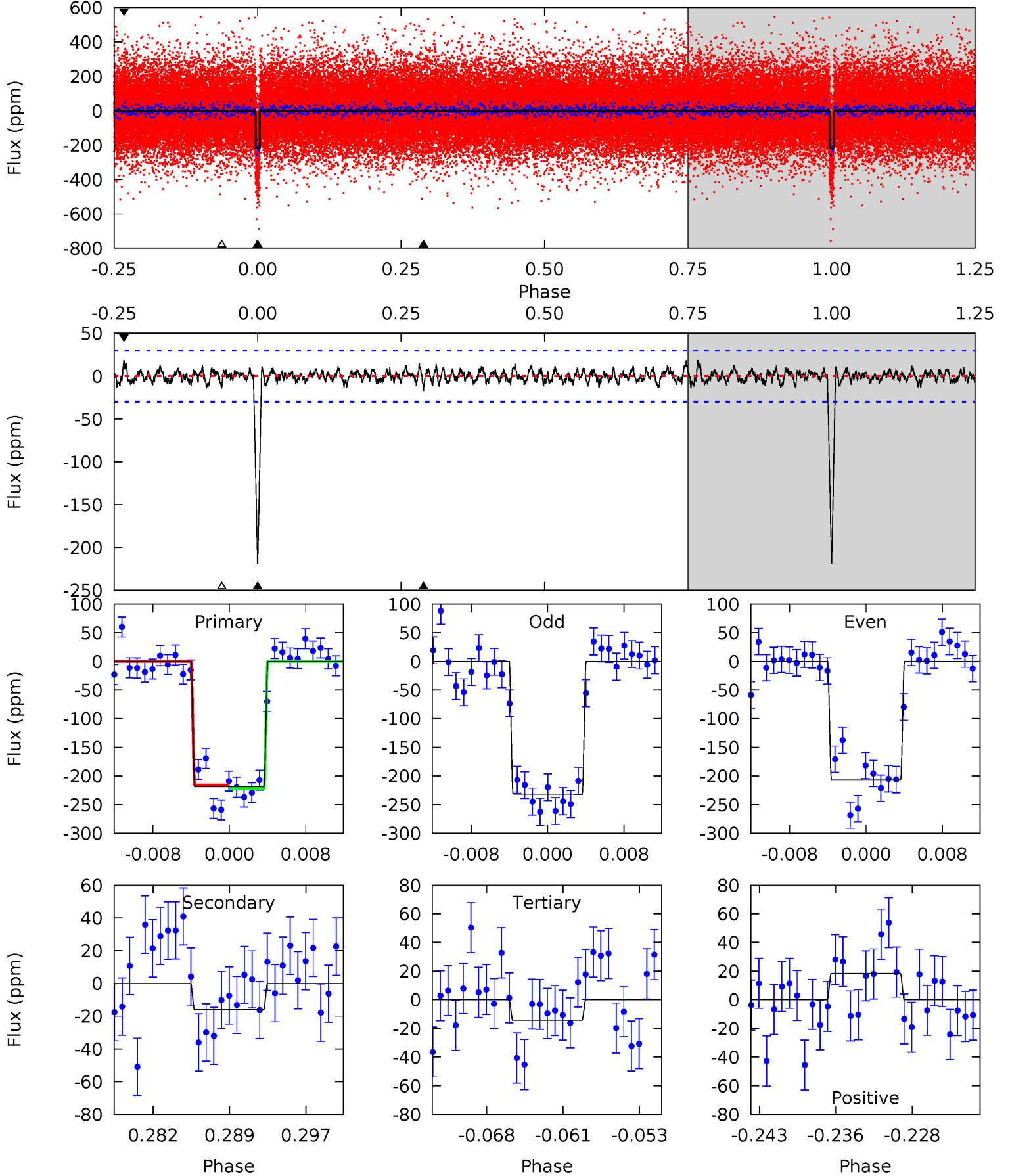
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.6	4.04	3.80	4.13	5.07	2.65	1.41	34.8	34.5	0.24	-0.09	1.39	1.00	0.10	0.33



Alt Model-Shift Uniqueness Test

006058816-01, $P = 73.749810$ Days, $E = 114.776404$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.3	2.76	2.44	3.13	5.08	2.67	0.91	34.9	34.2	0.31	-0.38	2.10	1.01	0.08	0.52



Stellar Parameters For KIC 006058816

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6056^{+81}_{-81}	$3.797^{+0.285}_{-0.095}$	$0.140^{+0.150}_{-0.100}$	$2.481^{+0.343}_{-0.859}$	$1.408^{+0.151}_{-0.226}$	$0.130^{+0.241}_{-0.039}$
	+1%/-1%	+8%/-3%	+107%/-71%	+14%/-35%	+11%/-16%	+185%/-30%
Source	SPE90	FLK73	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006058816-01 / KOI 3500.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-24 ± 6	$3.97^{+0.62}_{-0.72}$	934^{+45}_{-72}	3811^{+213}_{-218}	124^{+67}_{-42}
Alt.	-16 ± 6	$3.90^{+0.58}_{-0.70}$	940^{+43}_{-84}	3606^{+234}_{-303}	90^{+53}_{-40}

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

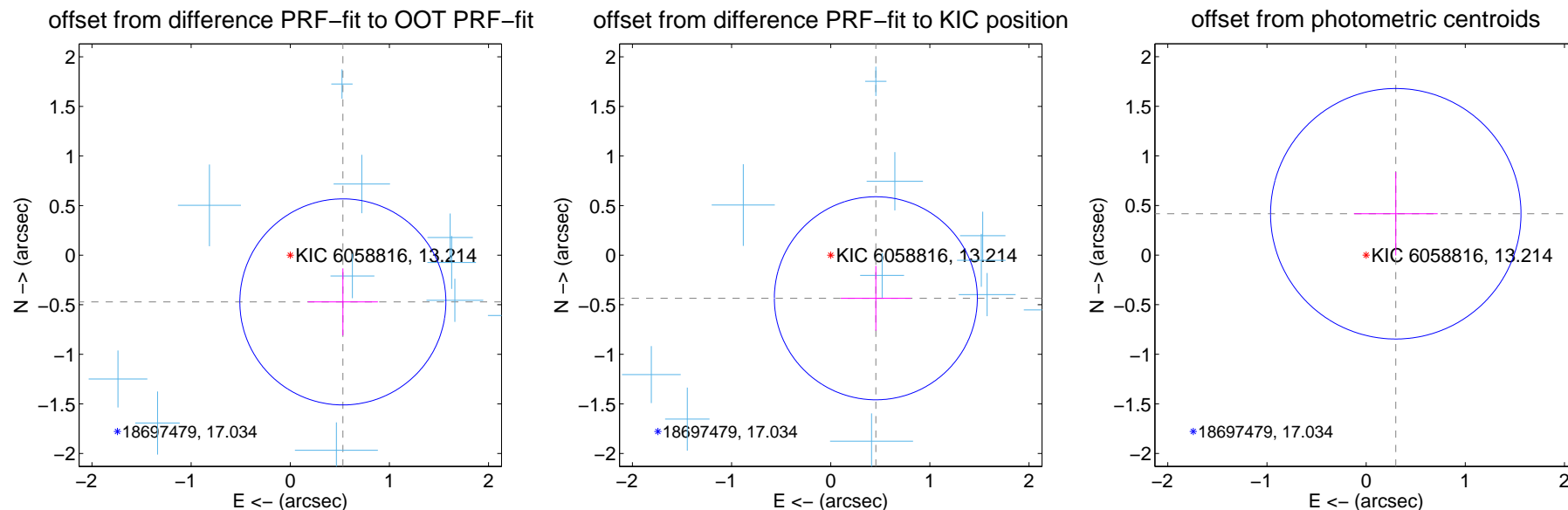
DV Centroid Data

Supplemental centroid analysis for 006058816-01. Kepler magnitude: 13.21. Transit SNR 23.84

There are 11 quarters with good PRF difference image offsets

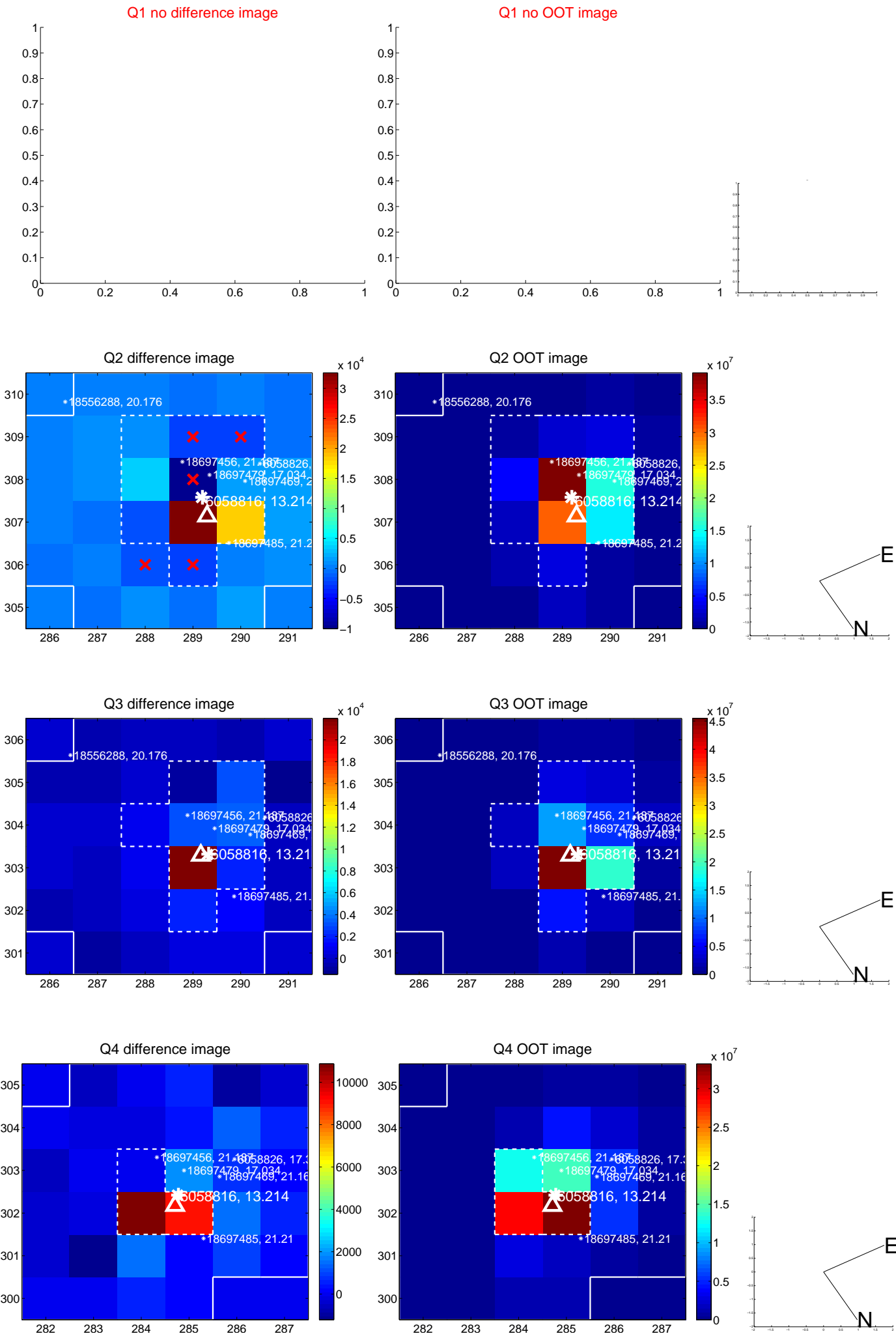
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.710 ± 0.346	2.05	-0.531 ± 0.353	-0.472 ± 0.338
PRF-fit source offset from KIC position	0.629 ± 0.341	1.84	-0.455 ± 0.354	-0.435 ± 0.327
photometric centroid source offset	0.51 ± 0.42	1.22	-0.30 ± 0.42	0.42 ± 0.42

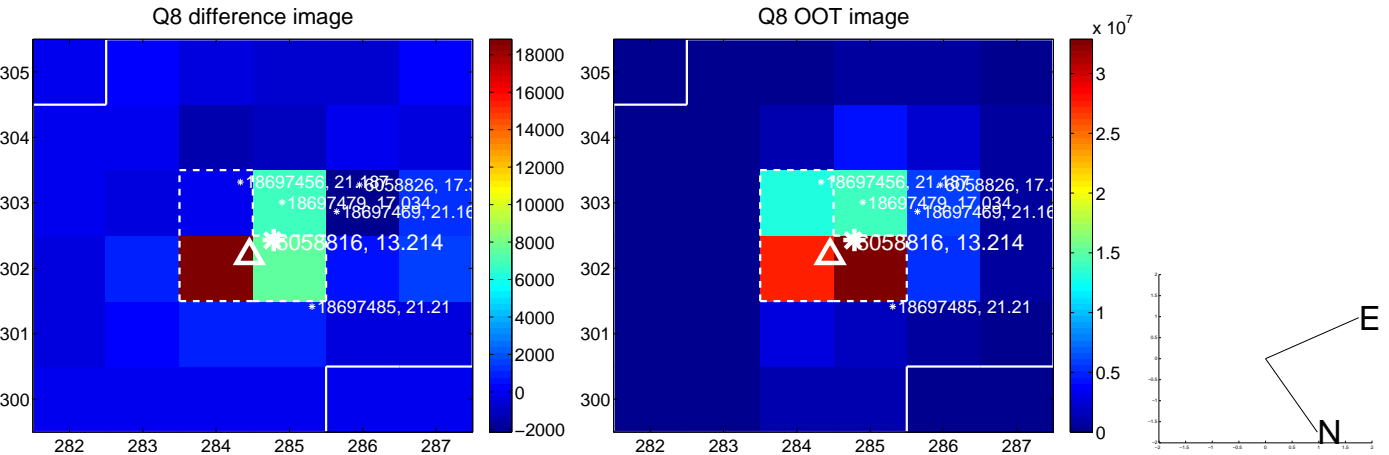
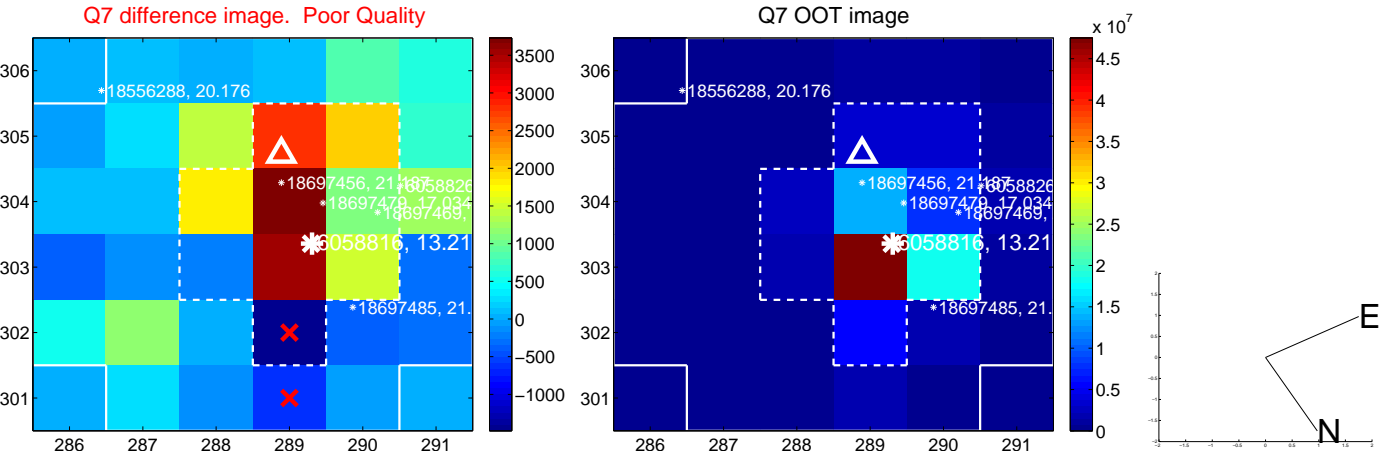
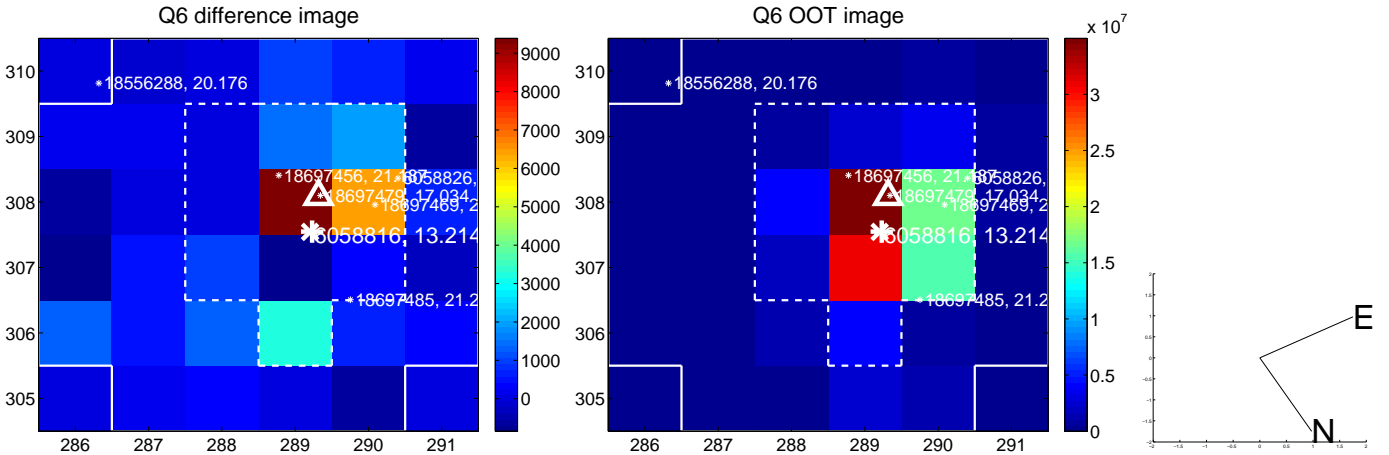
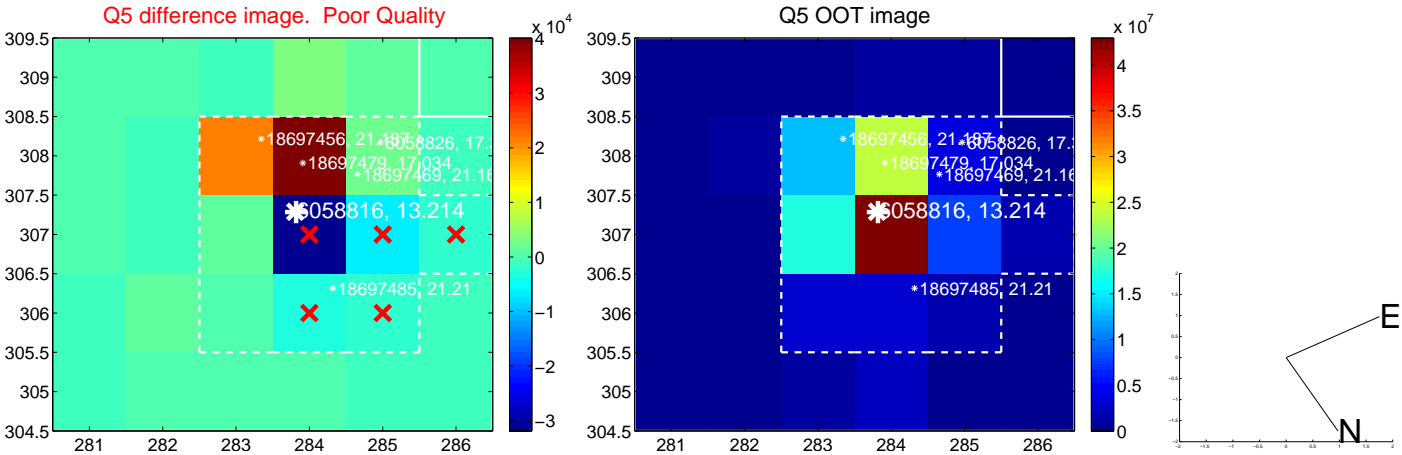


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

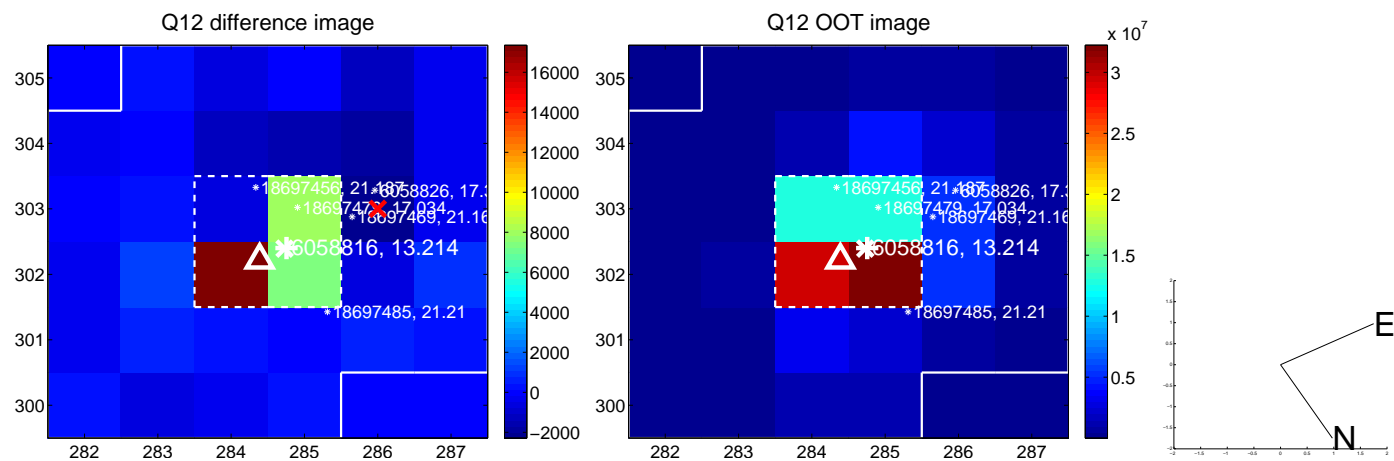
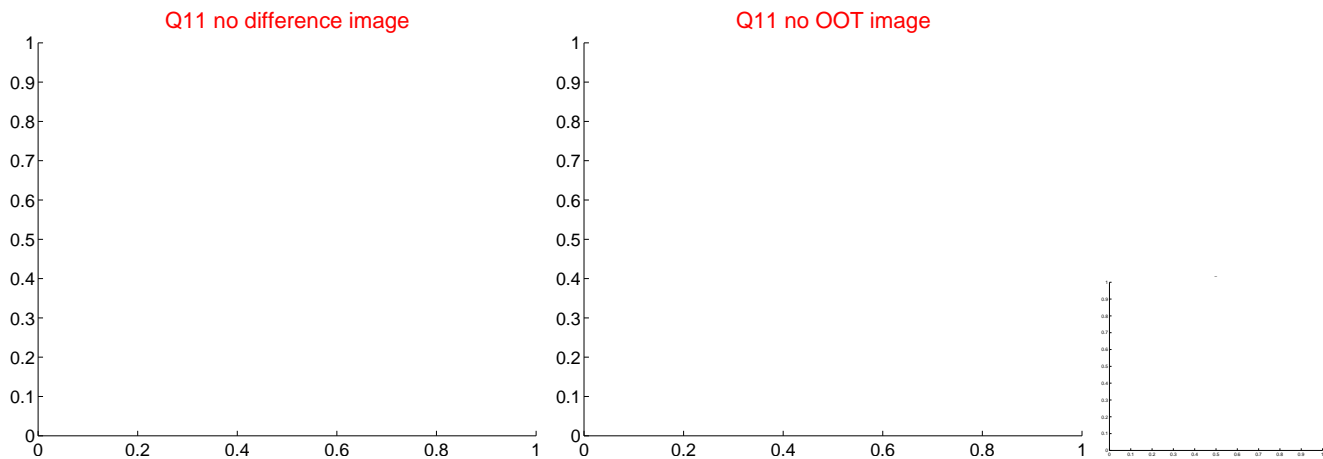
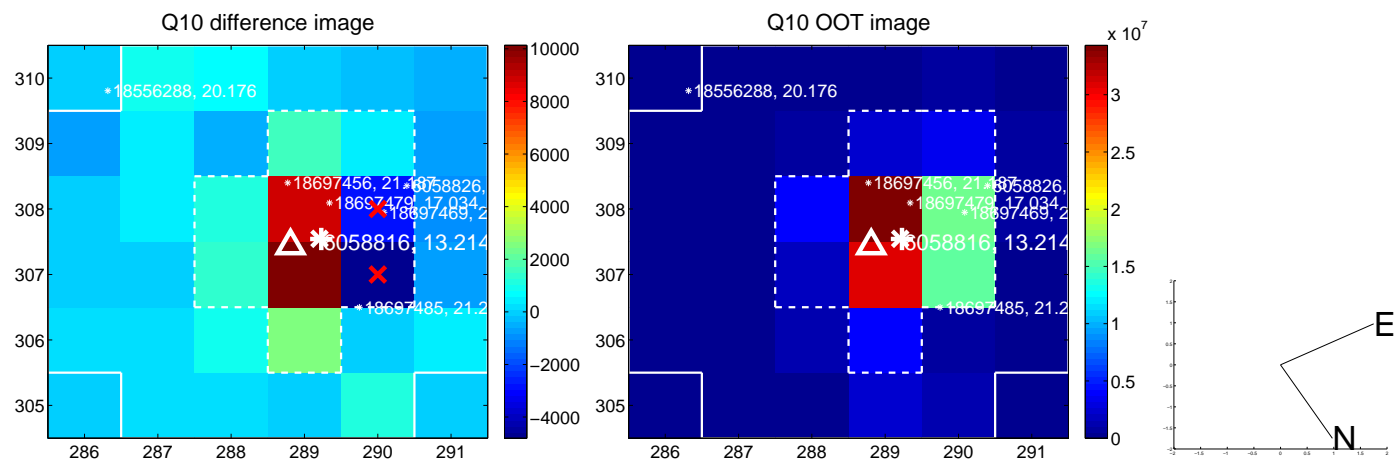
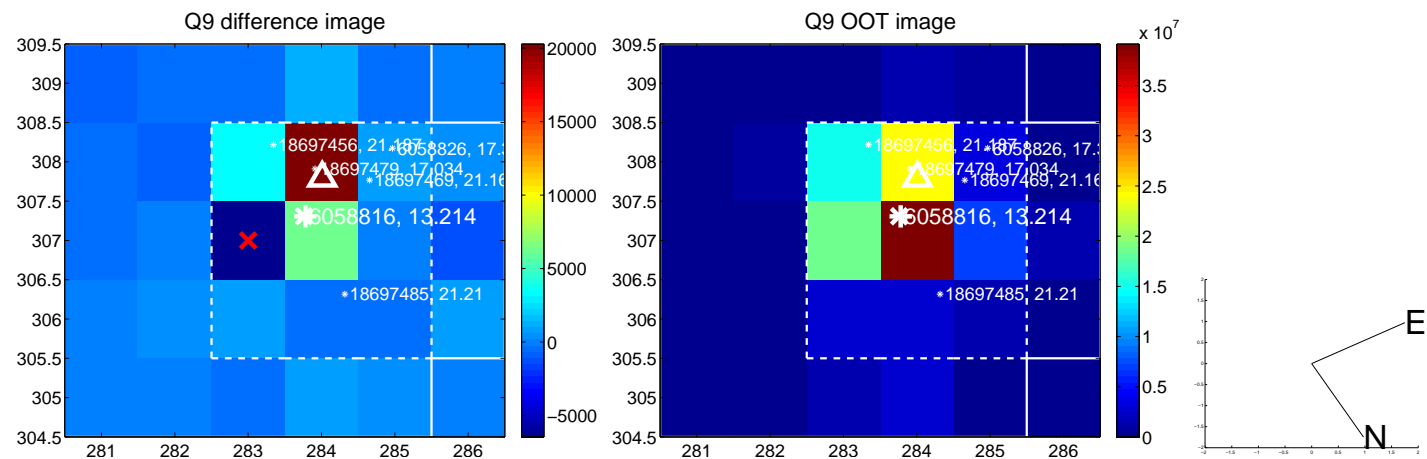
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

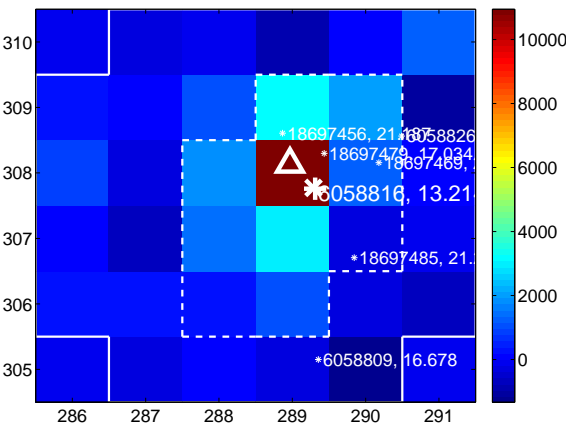
Q13 no difference image



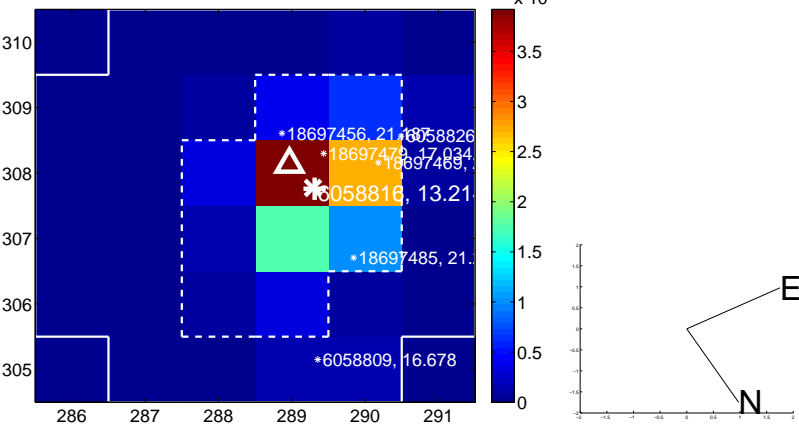
Q13 no OOT image



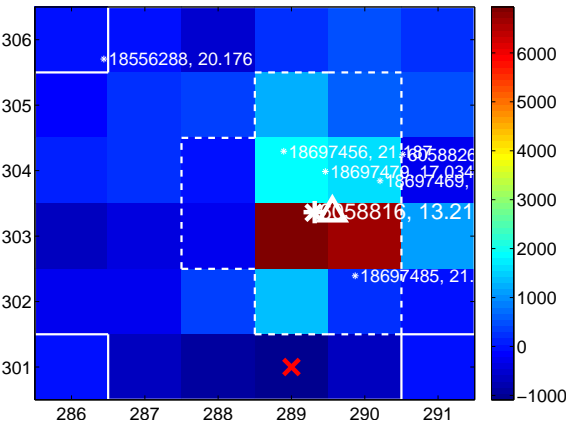
Q14 difference image



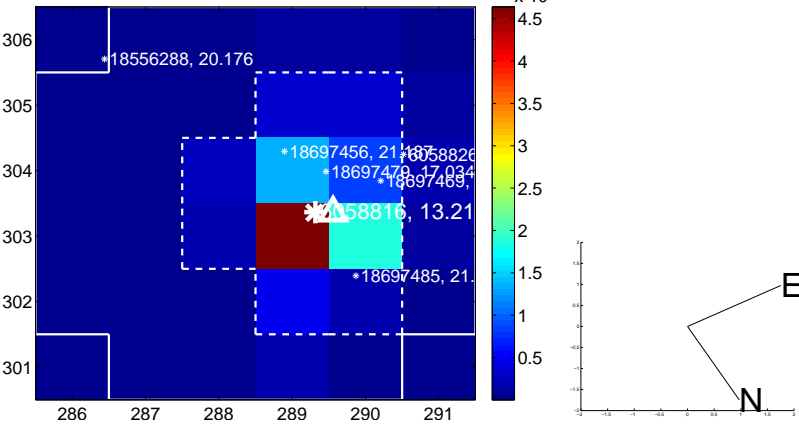
Q14 OOT image



Q15 difference image



Q15 OOT image



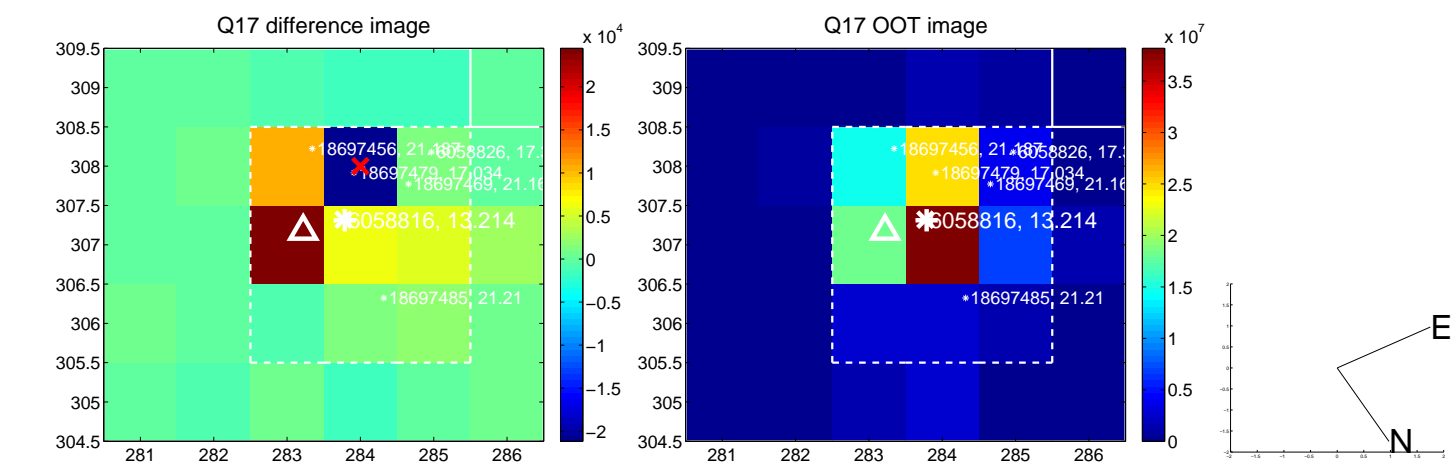
Q16 no difference image



Q16 no OOT image

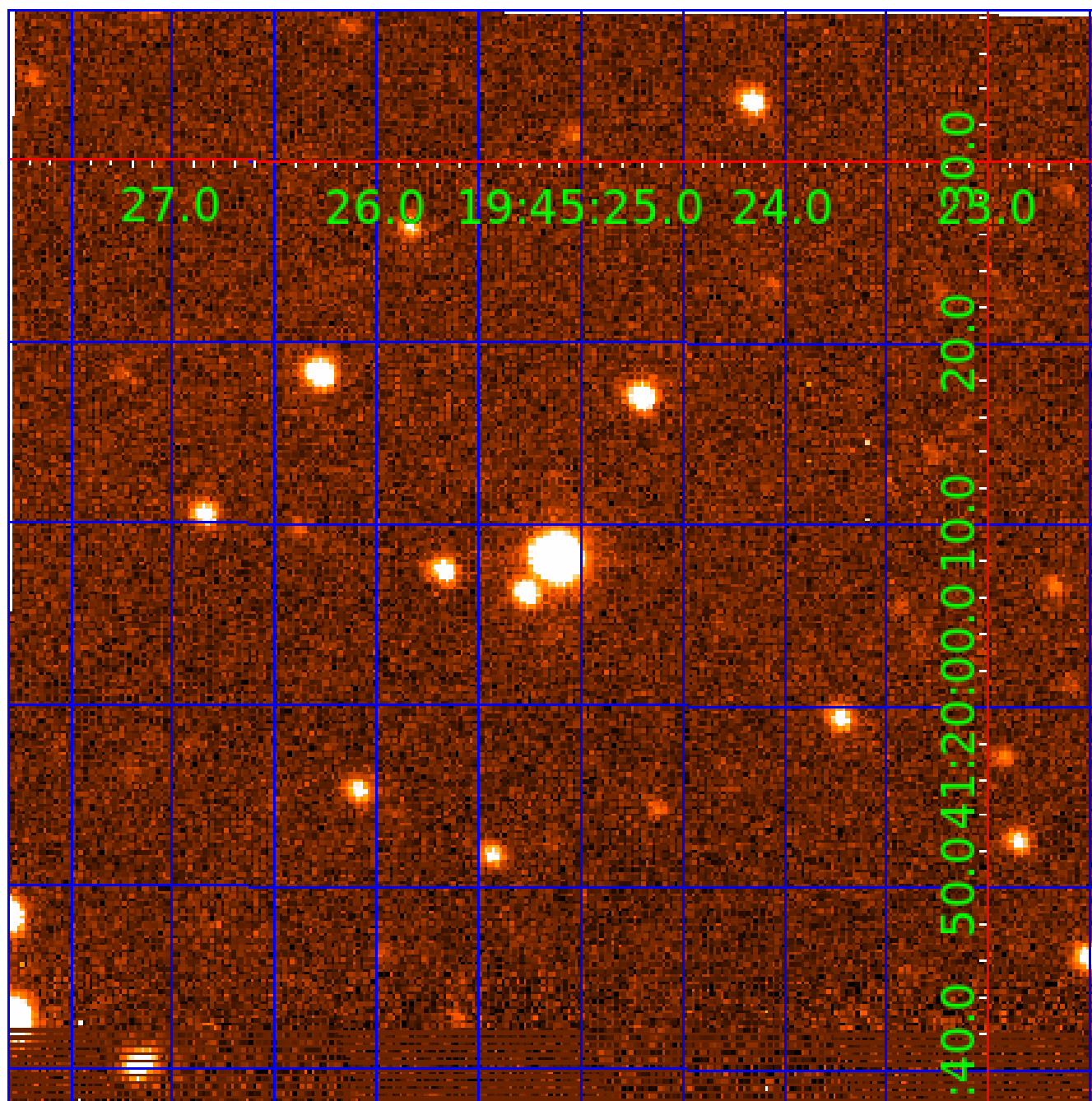


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006058816

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})
006058816-01	OBS	3500.01	73.750381	188.521754	229.8	13.635	22.6	23.8	2.48	6056	4.12	49.85
006058816-02	OBS	3500.02	4.748279	135.795430	32.6	4.985	9.5	9.6	2.48	6056	1.67	1932.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006058816-01	OBS	PC	0.93	0	0	0	0	NO_COMMENT
006058816-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT

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

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

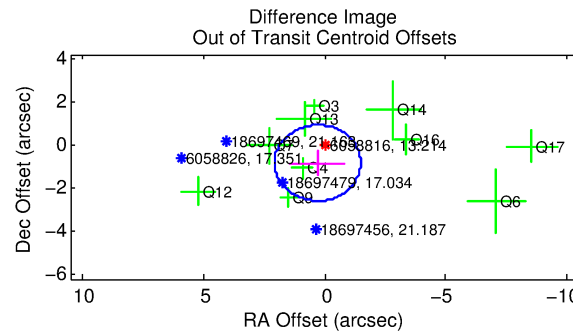
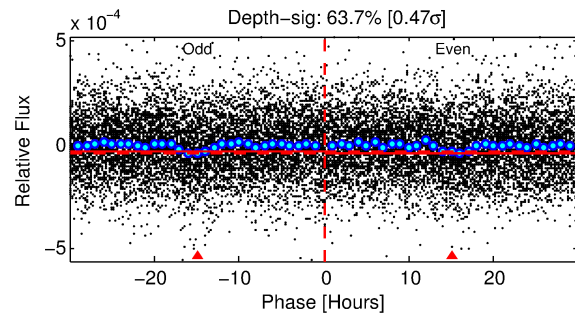
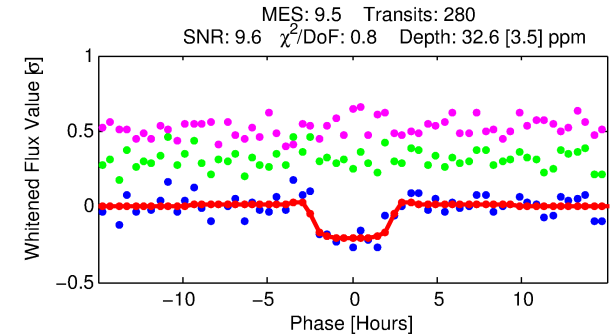
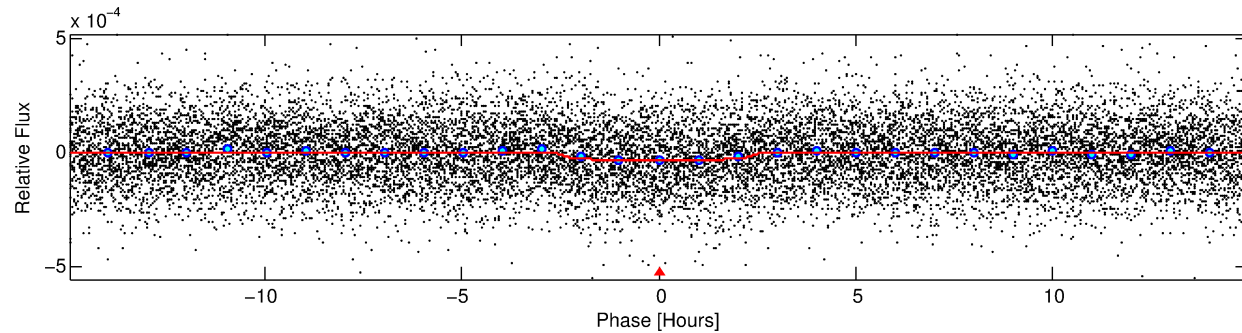
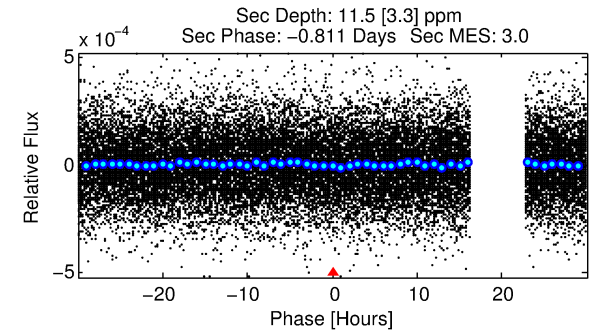
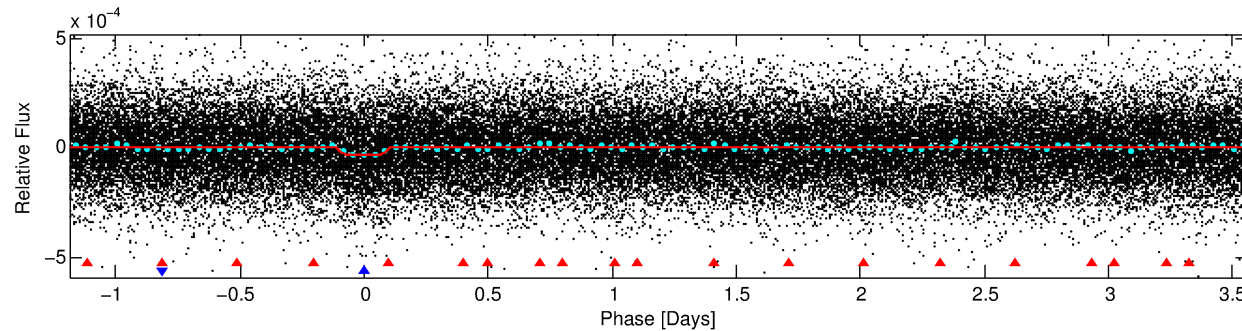
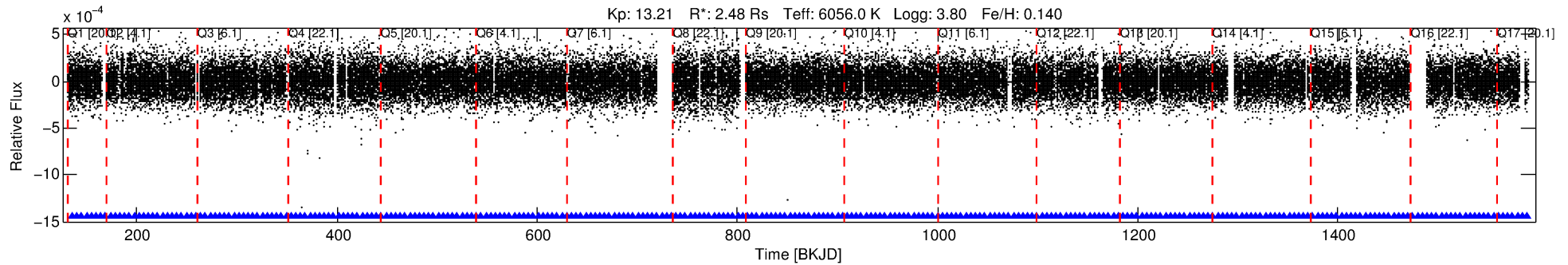
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006058816-02

No Significant Match Found

DV One-Page Summary

KIC: 6058816 Candidate: 2 of 2 Period: 4.748 d
KOI: K03500.02 Corr: 0.904



DV Fit Results:

Period = 4.74828 [0.00005] d
Epoch = 135.7954 [0.0072] BKJD
Rp/R* = 0.0062 [0.0026]
a/R* = 3.40 [6.82]
b = 0.90 [0.47]
Seff = 1932.00 [961.23]
Teff = 1691 [210] K
Rp = 1.67 [0.91] Re
a = 0.0620 [0.0197] AU
Ag = 8.66 [8.82] [0.87σ]
Teffp = 4484 [1001] K [2.73σ]

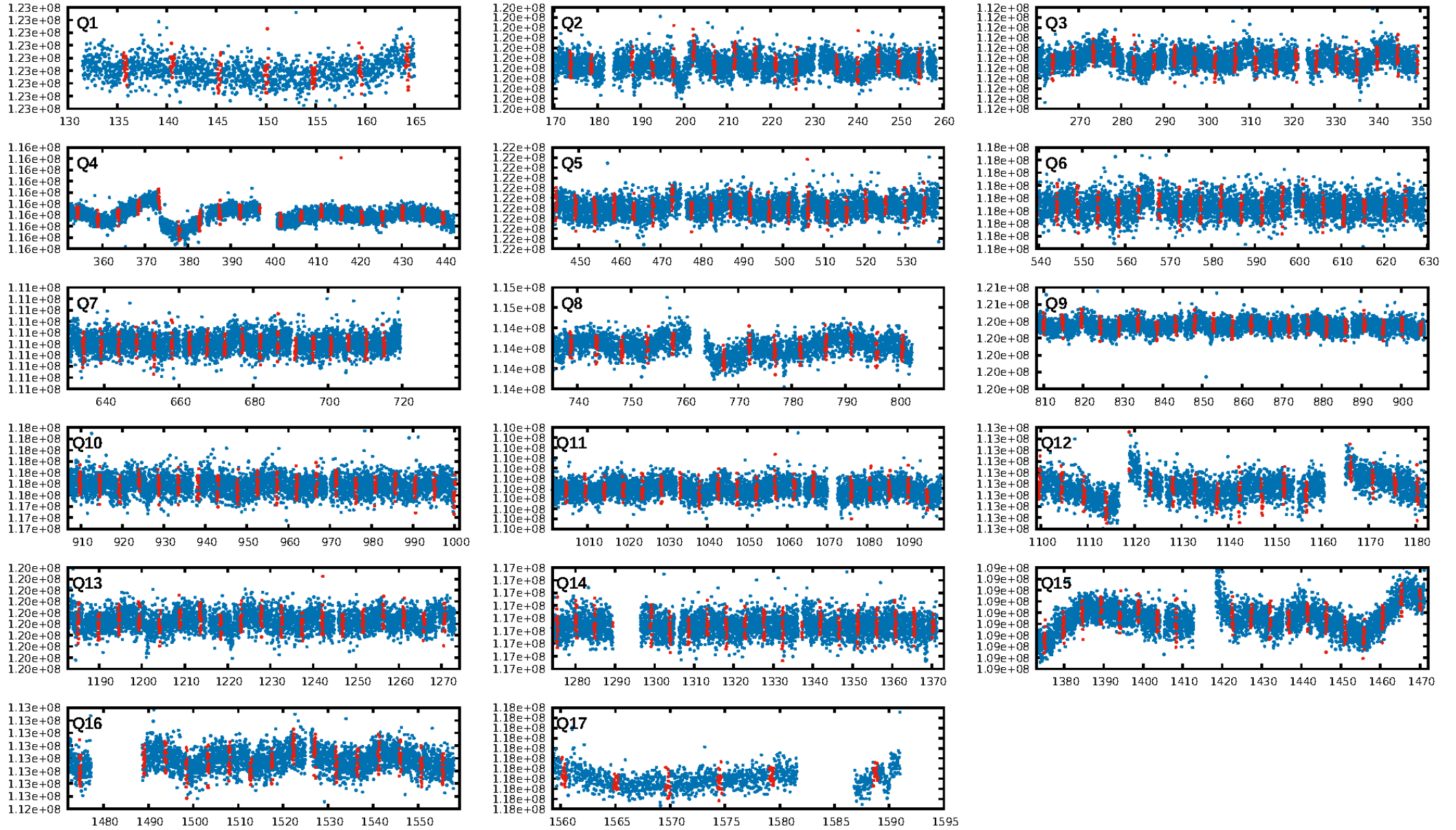
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [114.07σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.60e-21
RollingBand-fgt: 1.00 [267/267]
GhostDiagnostic-chr: 3.002
Centroid-sig: 1.9%
Centroid-so: 1.812 arcsec [1.62σ]
OotOffset-rm: 0.878 arcsec [1.48σ]
KicOffset-rm: 0.857 arcsec [1.06σ]
OotOffset-st: 2/2/3/3 [10]
KicOffset-st: 2/2/3/3 [10]
DiffImageQuality-fgm: 0.40 [4/10]
DiffImageOverlap-fno: 1.00 [17/17]

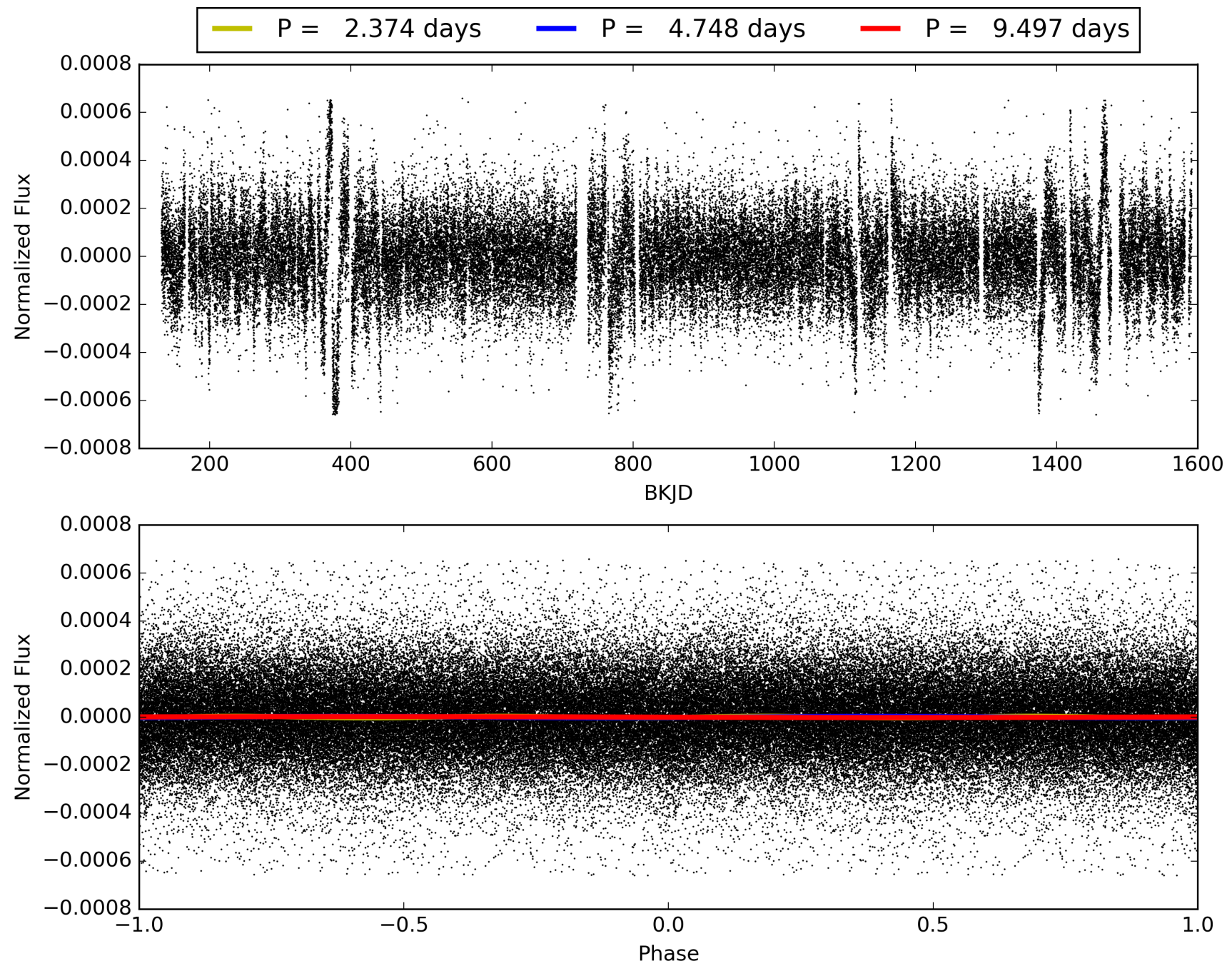
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:24:06 Z

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

TCE 006058816-02, PDC Light Curves

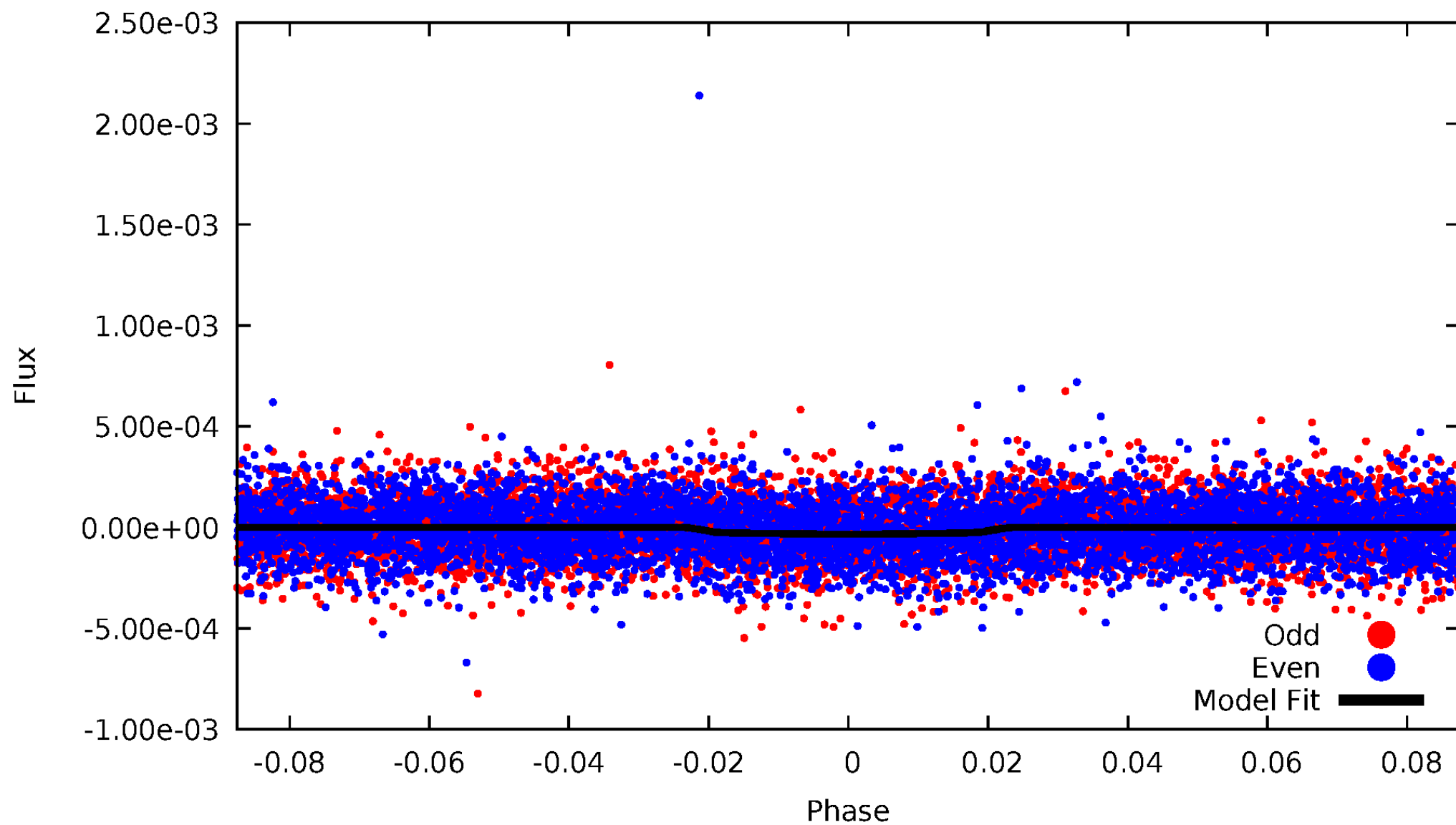


TCE 006058816-02



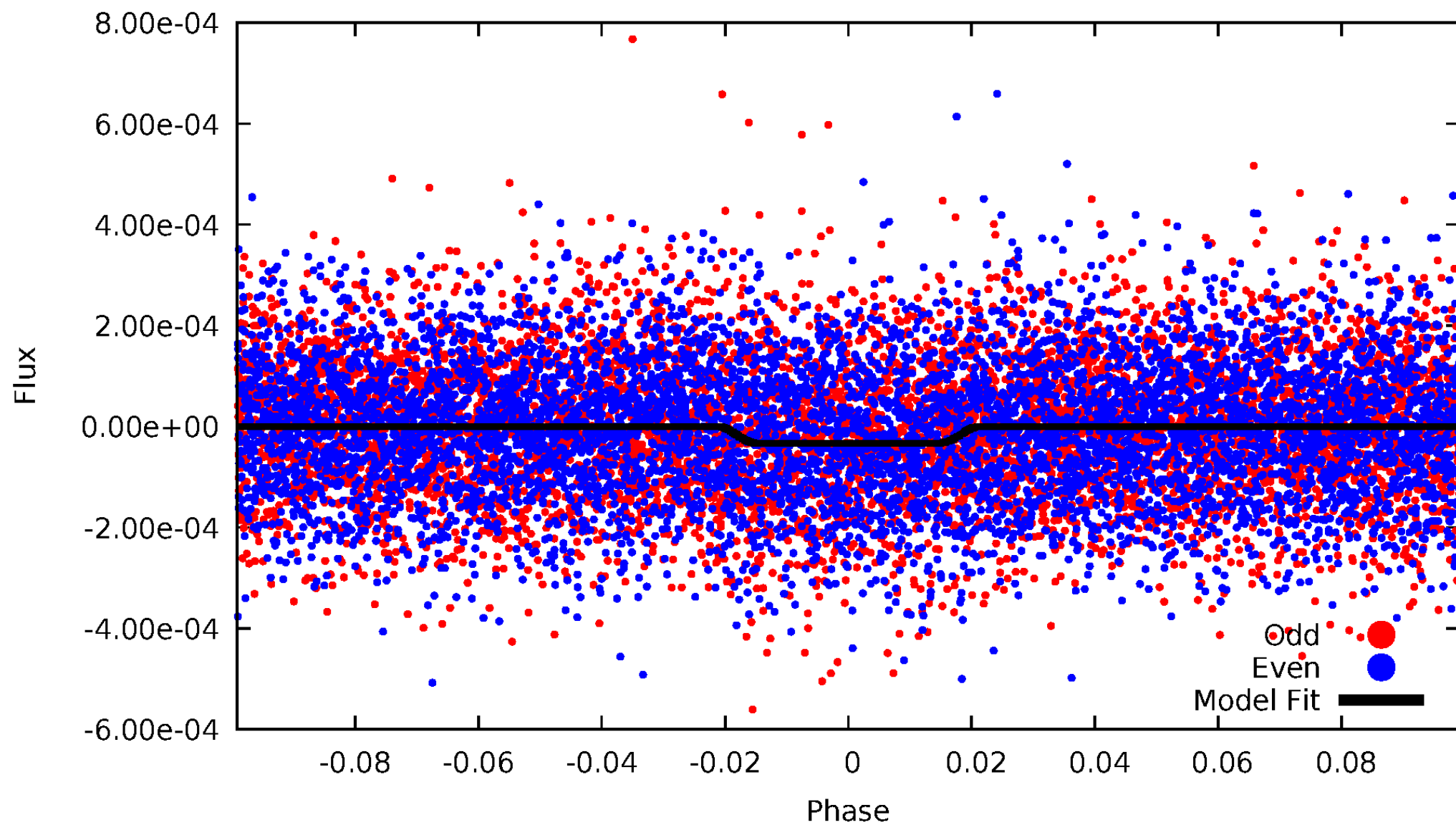
DV Odd/Even

TCE 006058816-02



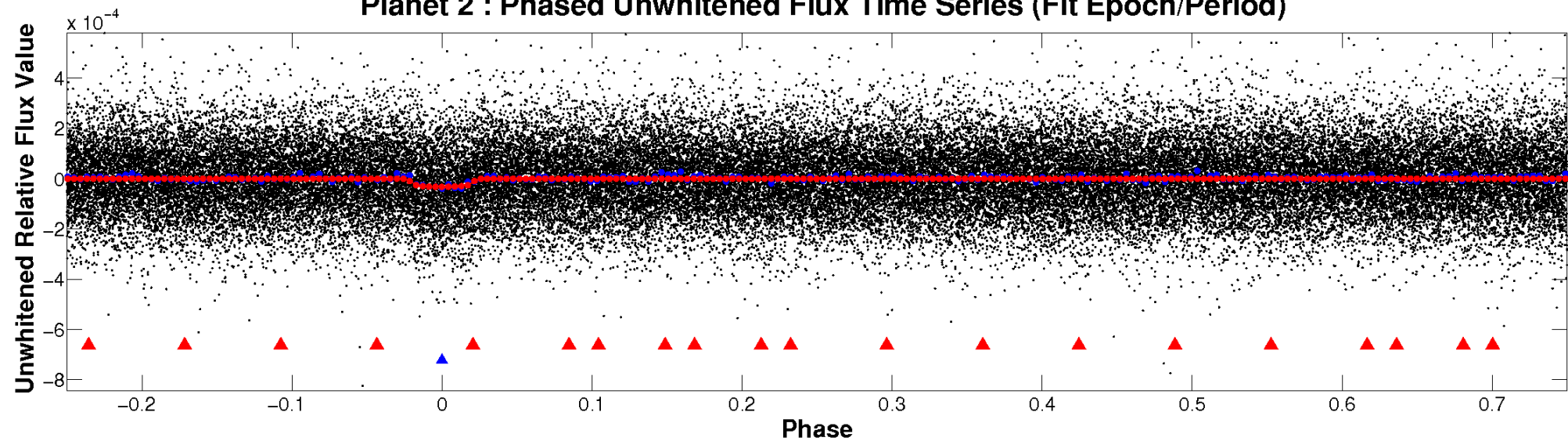
ALT Odd/Even

TCE 006058816-02

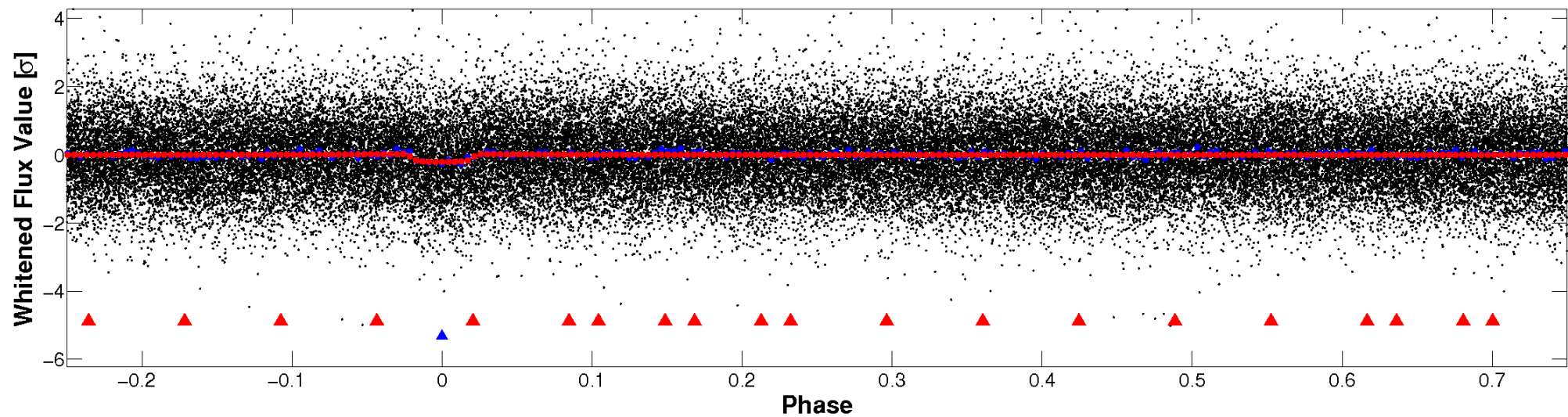


Non-Whitened Vs. Whitened Light Curve

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

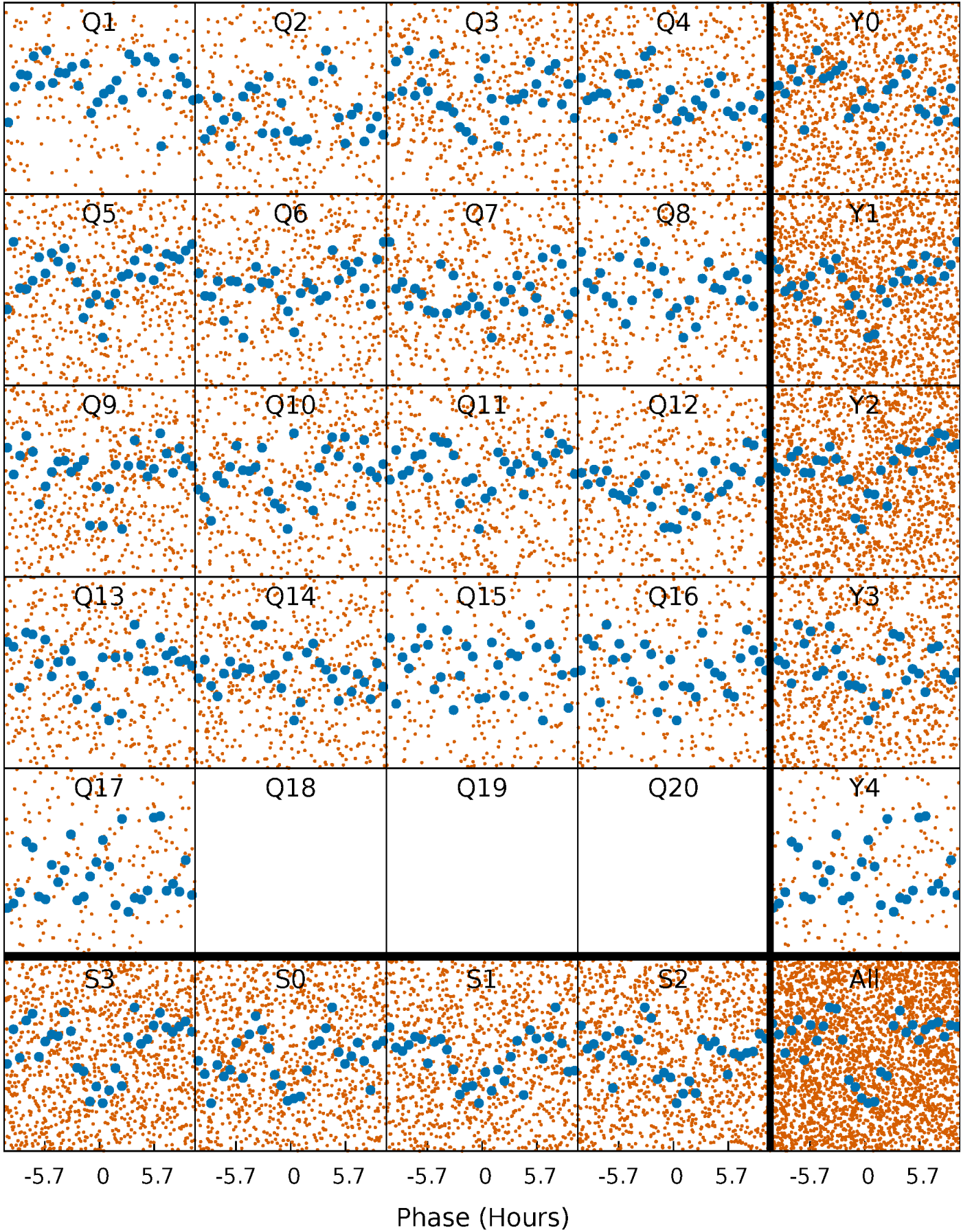


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



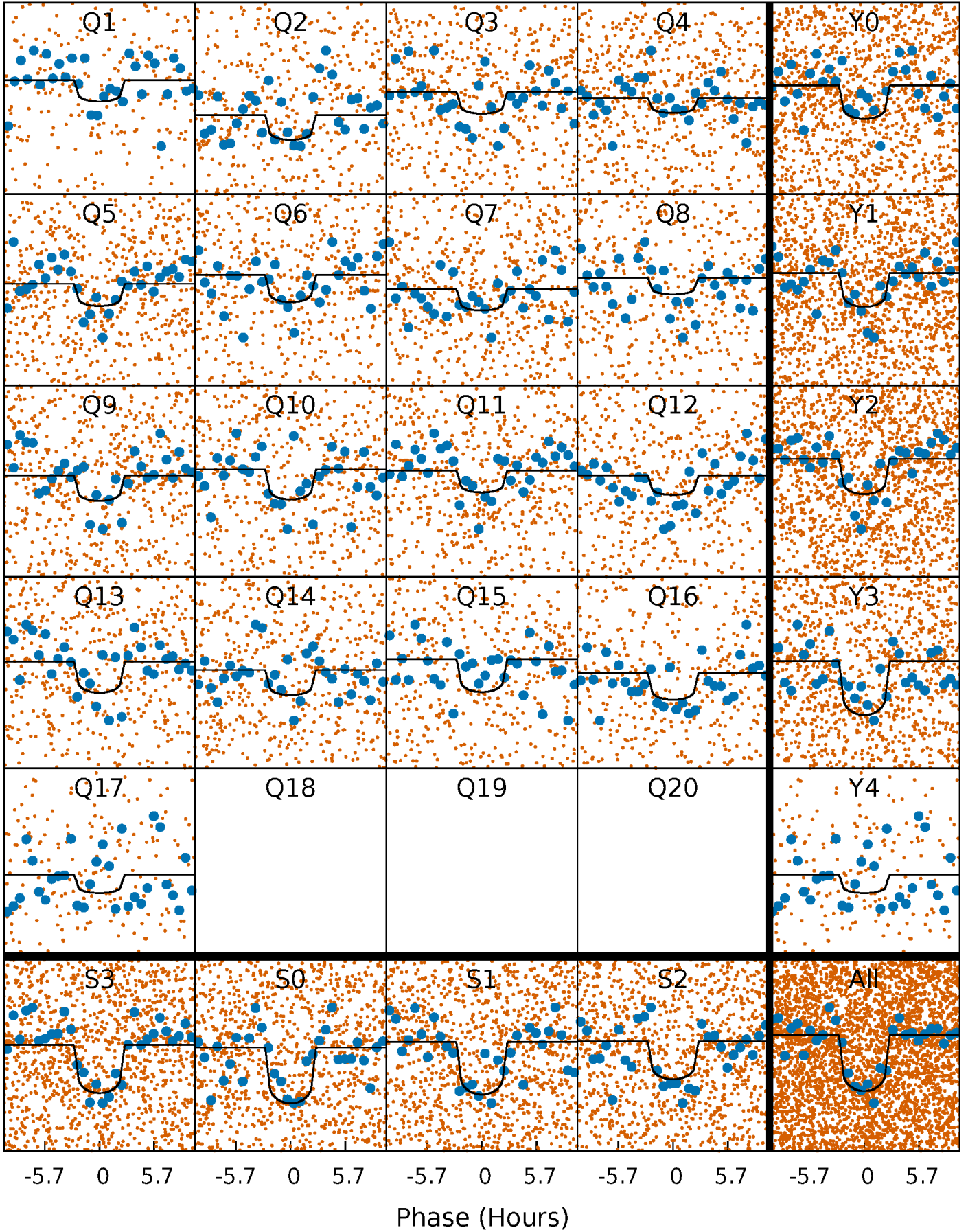
PDC Quarter-Phased Transit Curves

TCE 006058816-02 P= 4.748279 Days $T_0=135.795430$ (BKJD)



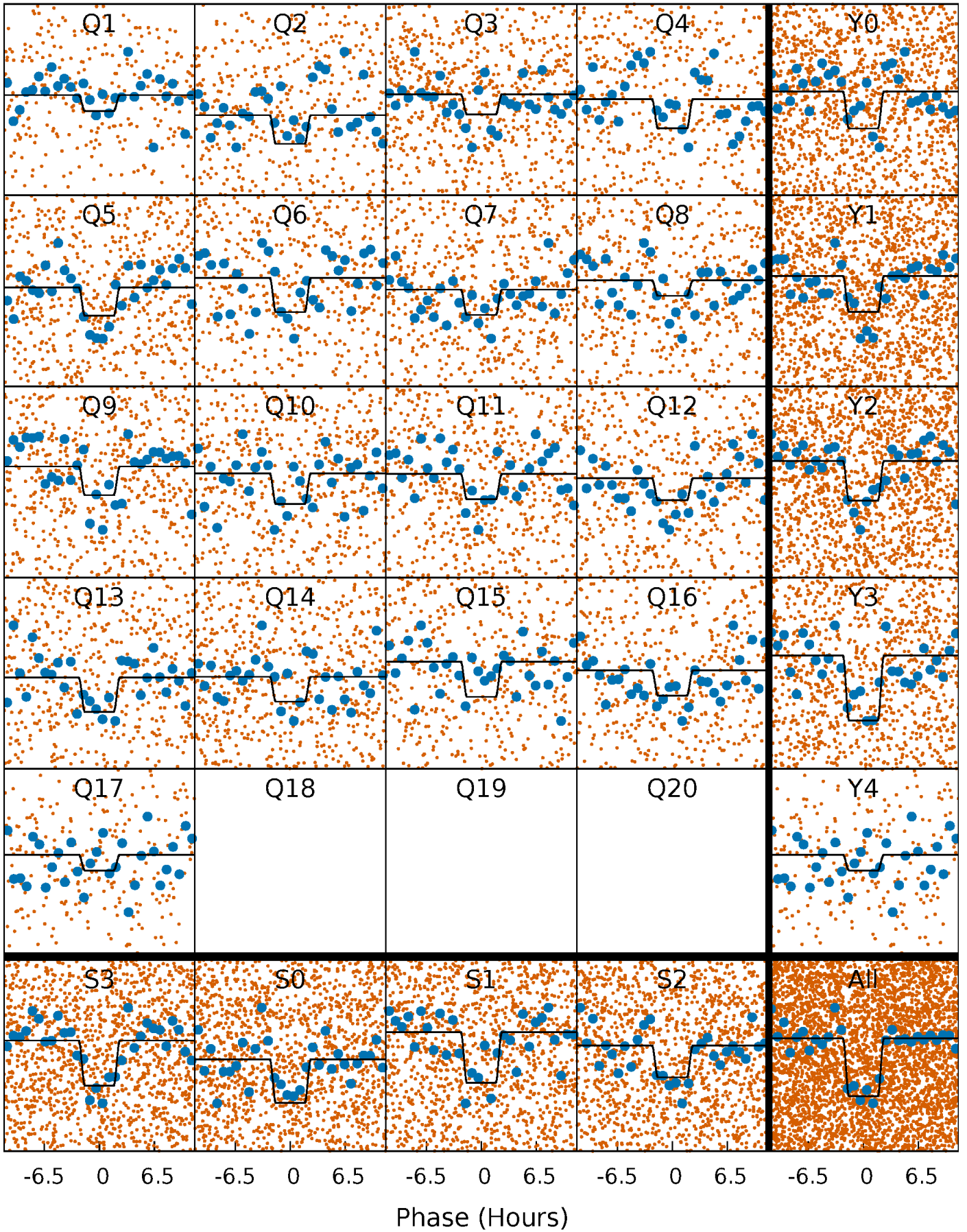
DV Quarter-Phased Transit Curves

TCE 006058816-02 P= 4.748279 Days $T_0=135.795430$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

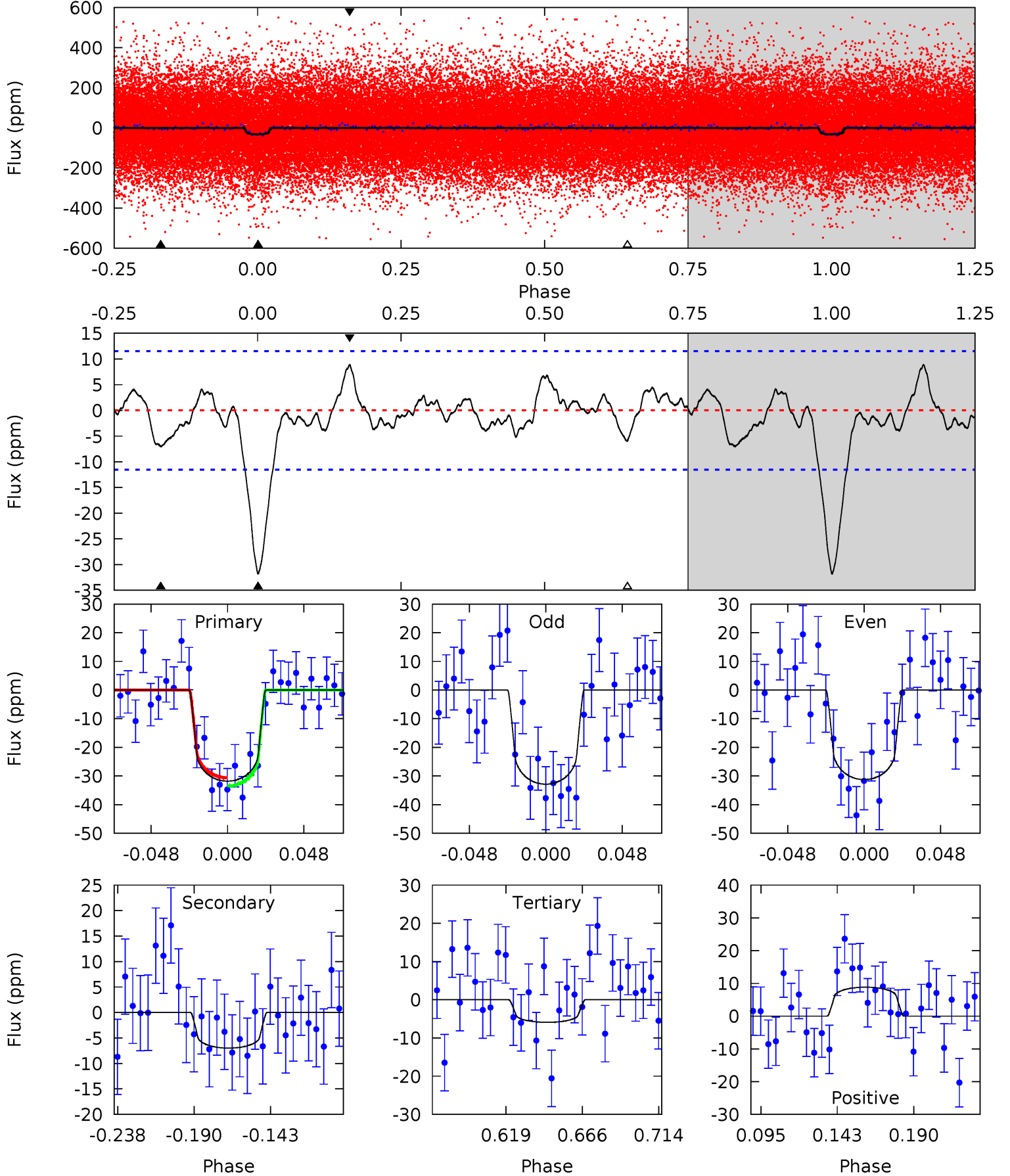
TCE 006058816-02 P= 4.748274 Days $T_0=135.799690$ (BKJD)



DV Model-Shift Uniqueness Test

006058816-02, P = 4.748279 Days, E = 131.047151 Days

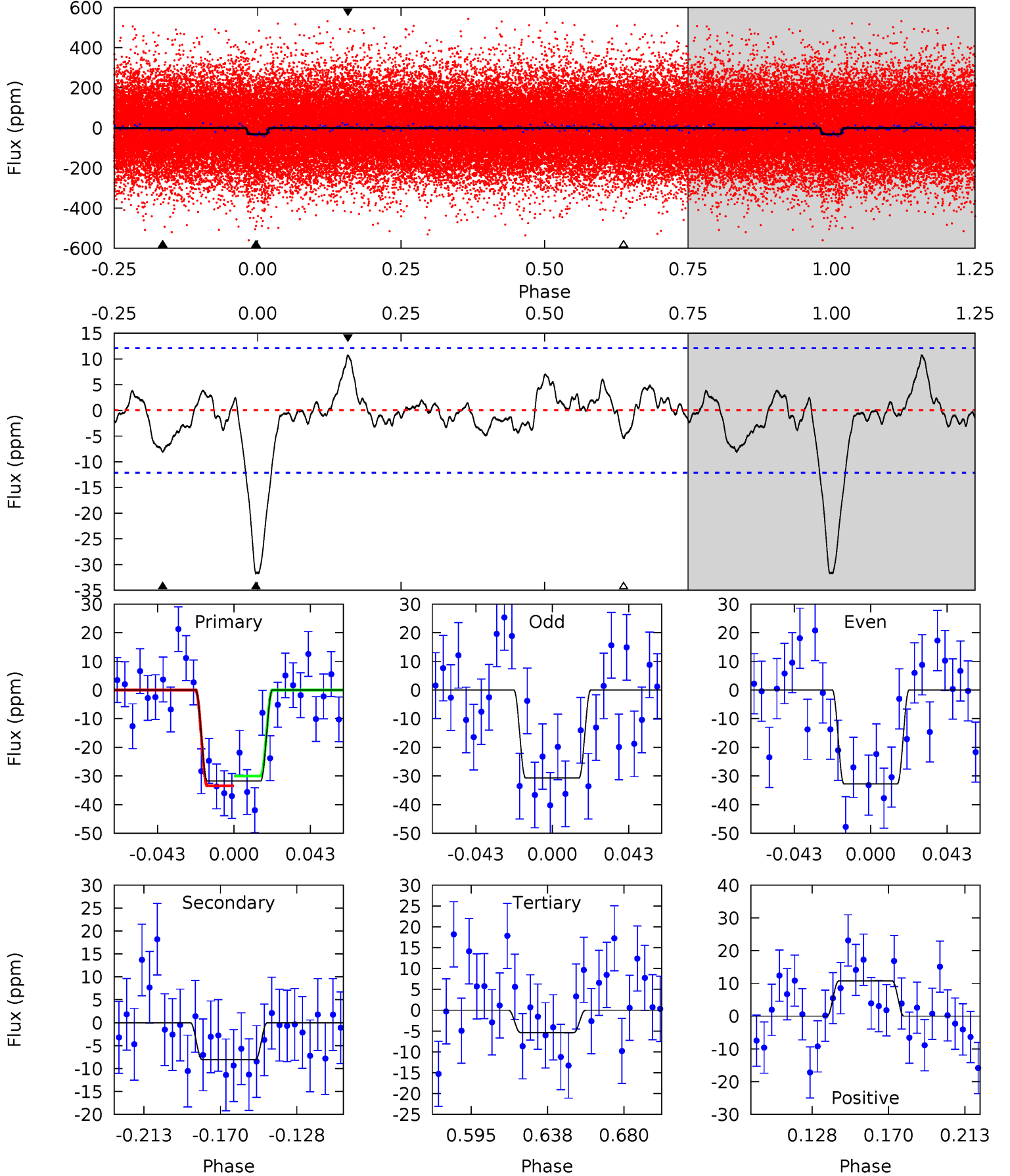
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	2.86	2.41	3.62	4.72	1.98	1.14	10.6	9.39	0.45	-0.75	0.33	1.04	0.22	0.60



Alt Model-Shift Uniqueness Test

006058816-02, P = 4.748274 Days, E = 131.051416 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	3.15	2.10	4.20	4.74	2.03	1.11	10.3	8.20	1.05	-1.05	0.40	1.03	0.25	0.67



Stellar Parameters For KIC 006058816

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6056^{+81}_{-81}	$3.797^{+0.285}_{-0.095}$	$0.140^{+0.150}_{-0.100}$	$2.481^{+0.343}_{-0.859}$	$1.408^{+0.151}_{-0.226}$	$0.130^{+0.241}_{-0.039}$
	+1%/-1%	+8%/-3%	+107%/-71%	+14%/-35%	+11%/-16%	+185%/-30%
Source	SPE90	FLK73	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006058816-02 / KOI 3500.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-7 ± 2	$1.56^{+0.76}_{-0.68}$	2339^{+105}_{-189}	4127^{+1244}_{-558}	$5.582^{+13.727}_{-3.184}$
Alt.	-8 ± 3	$1.51^{+0.71}_{-0.67}$	2339^{+113}_{-203}	4345^{+1189}_{-615}	$7.098^{+16.664}_{-4.013}$

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

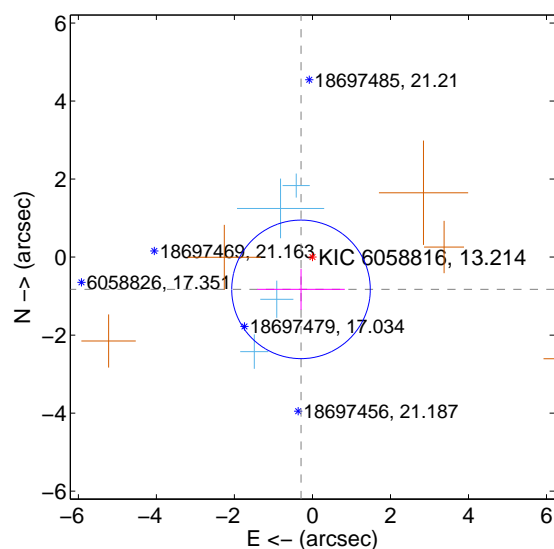
Supplemental centroid analysis for 006058816-02. Kepler magnitude: 13.21. Transit SNR 9.59

There are 4 quarters with good PRF difference image offsets

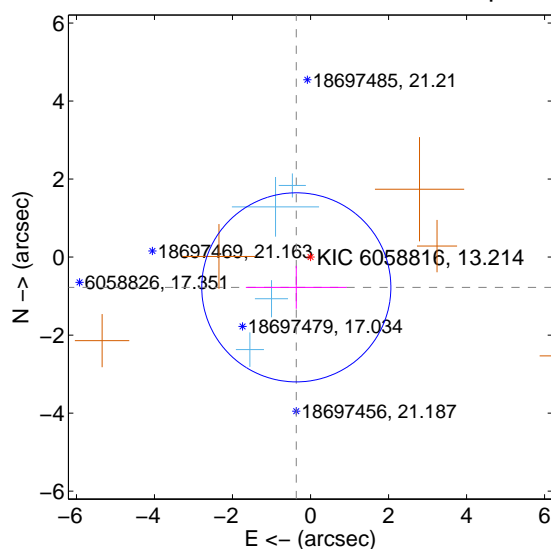
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.878 ± 0.592	1.48	0.293 ± 1.122	-0.827 ± 0.527
PRF-fit source offset from KIC position	0.857 ± 0.808	1.06	0.364 ± 1.292	-0.775 ± 0.551
photometric centroid source offset	1.81 ± 1.12	1.62	-0.69 ± 1.09	1.68 ± 1.12

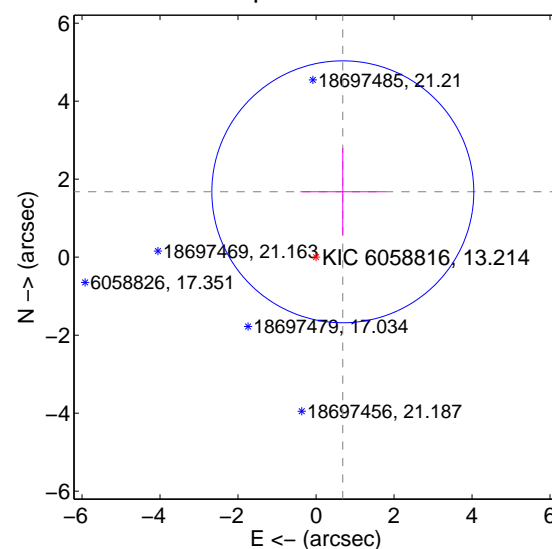
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

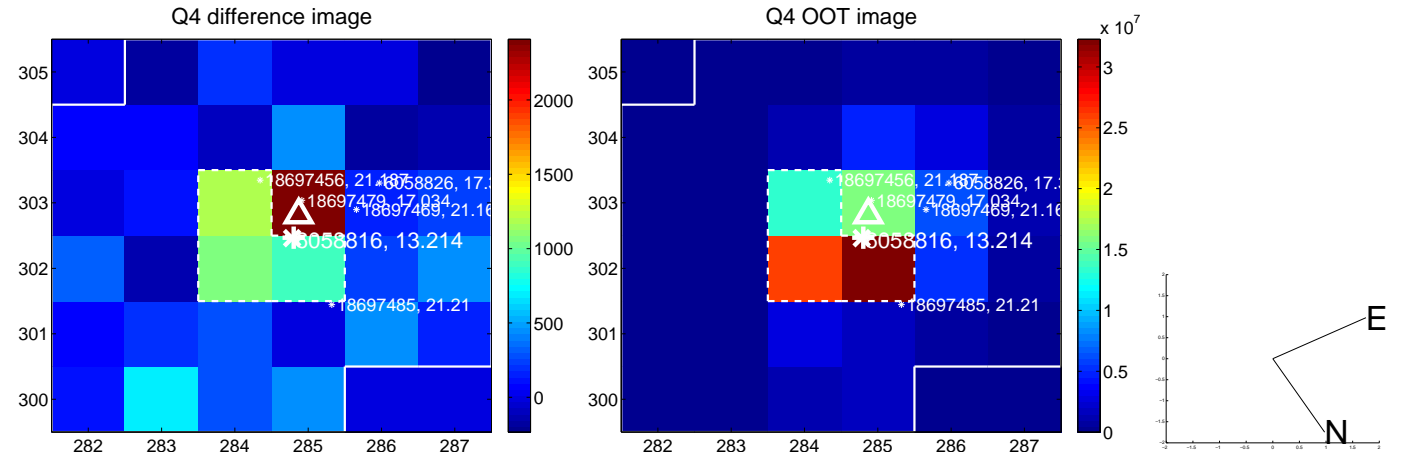
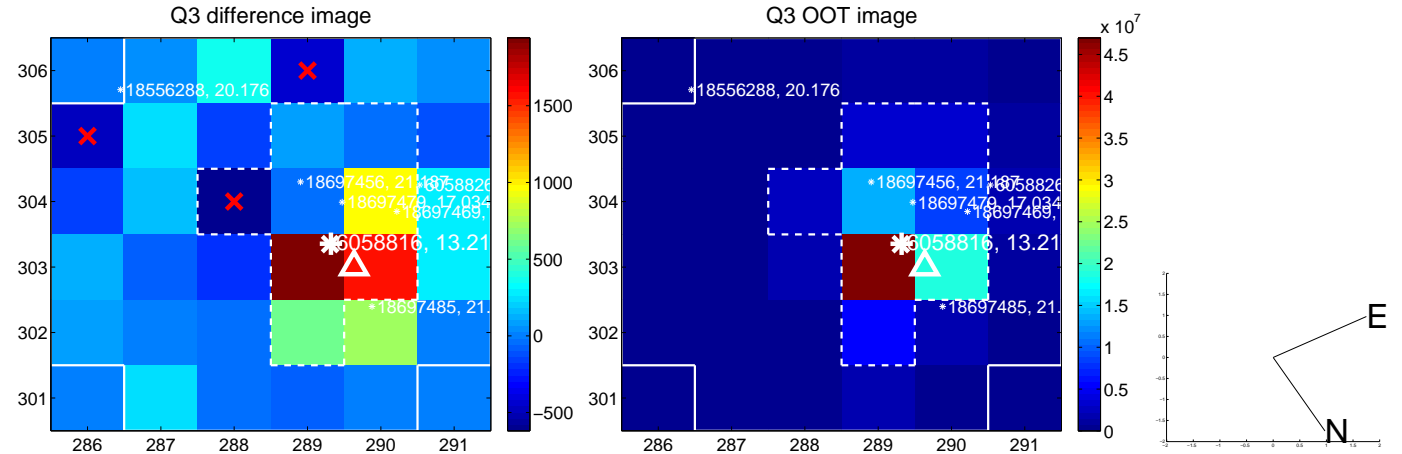
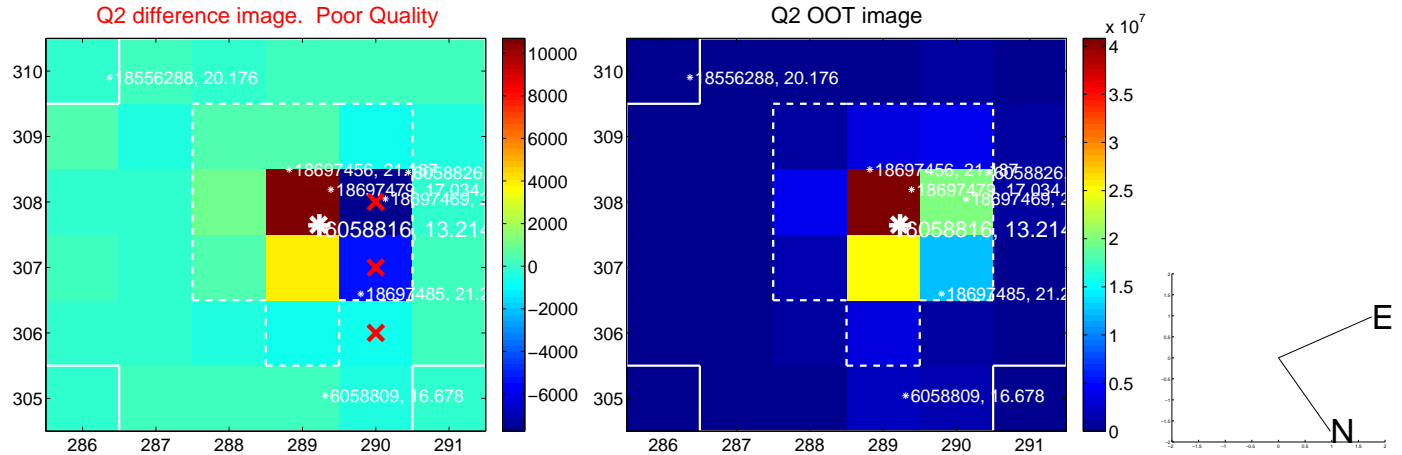
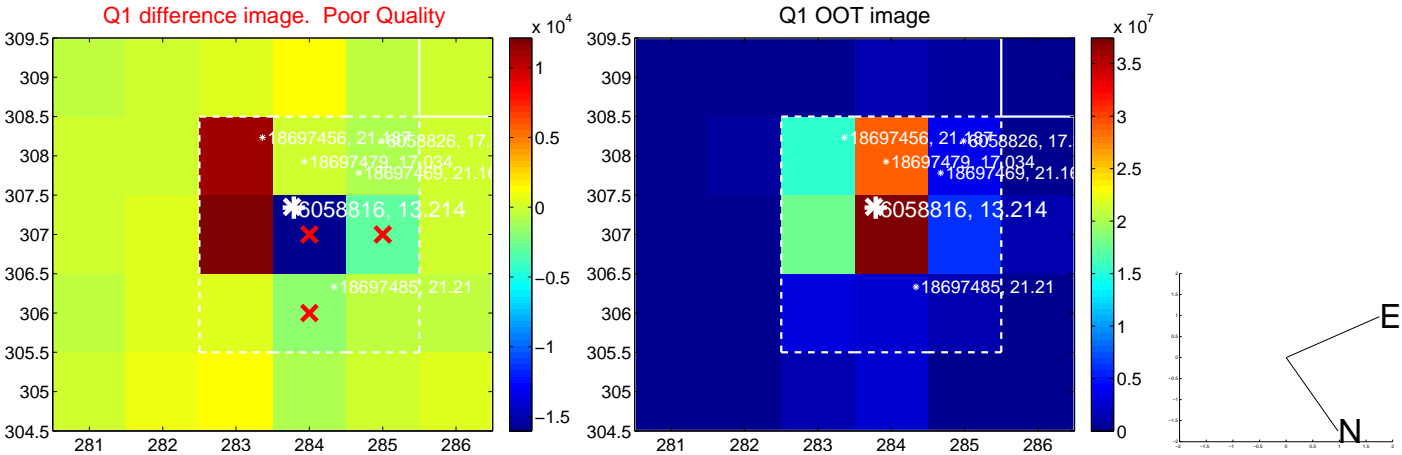


offset from photometric centroids

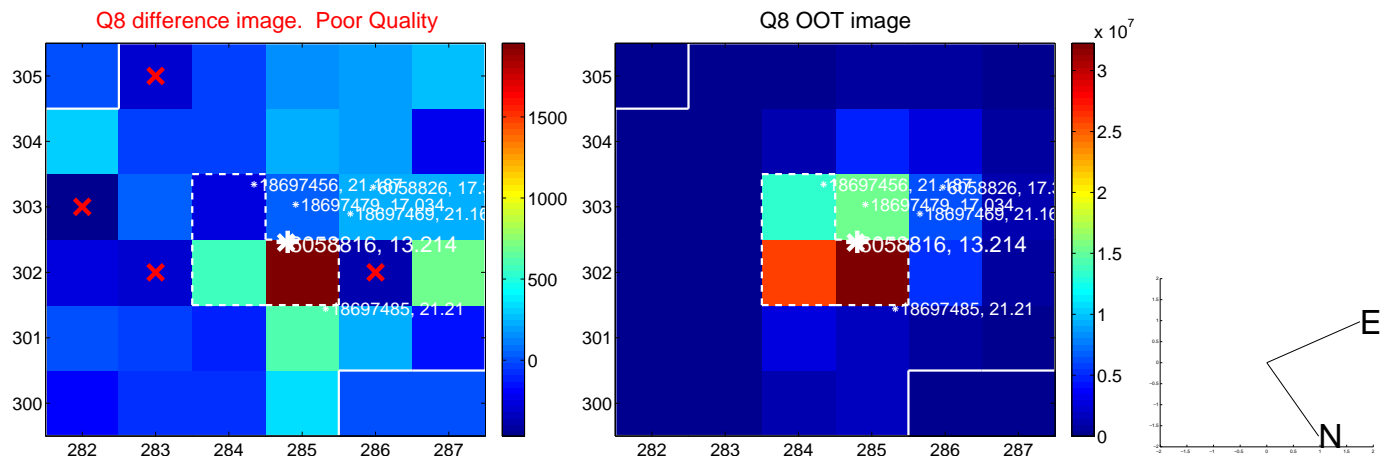
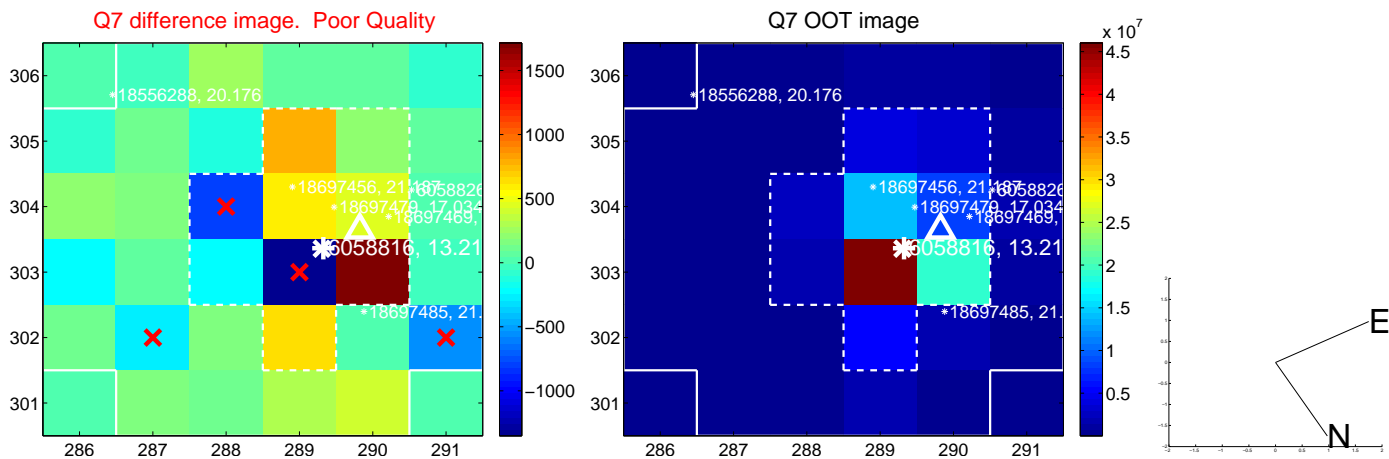
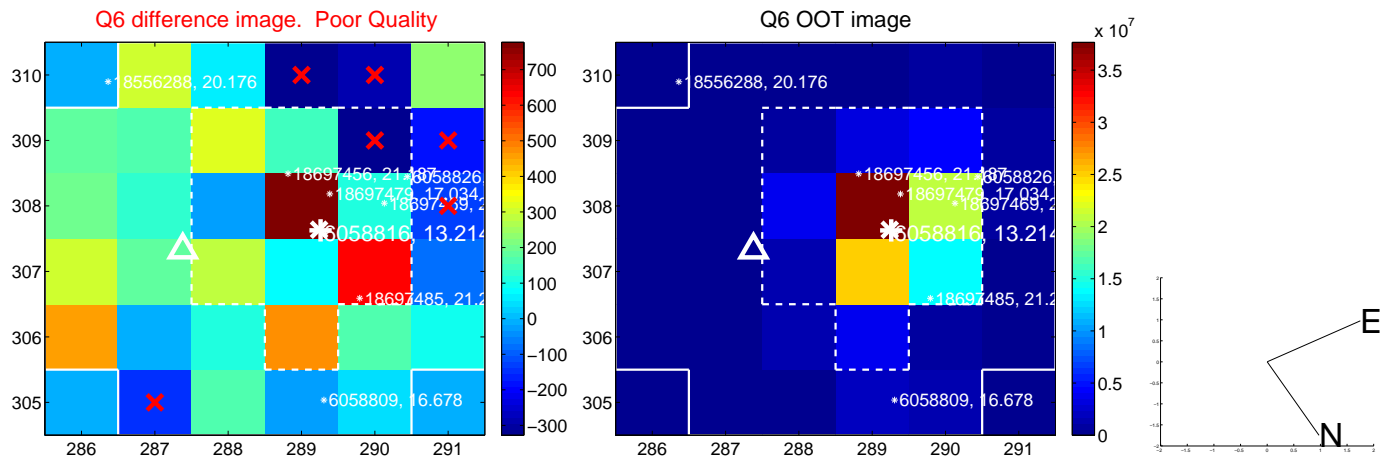
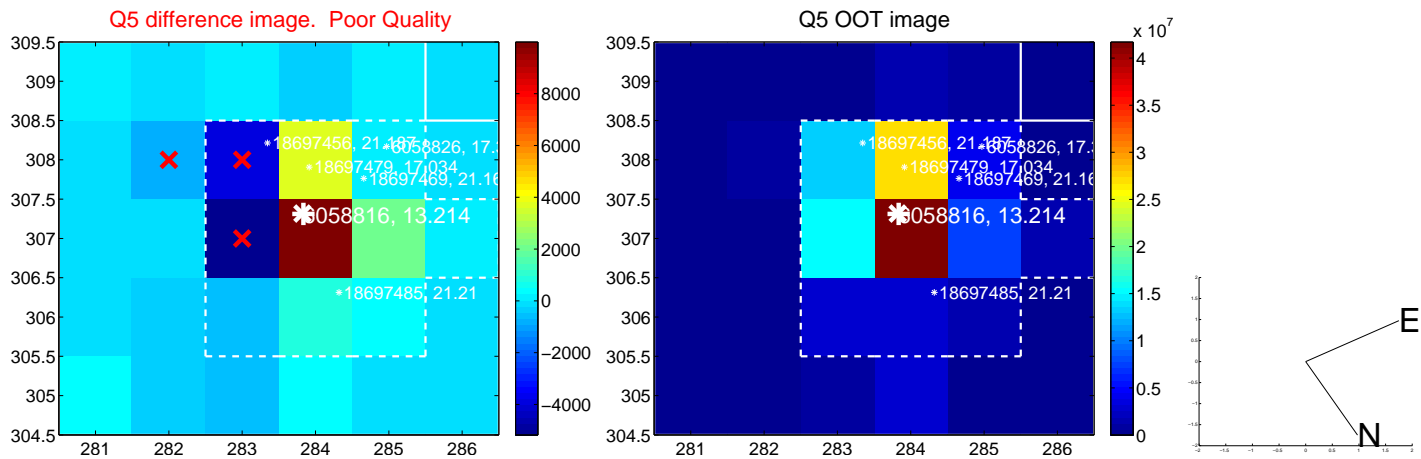


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

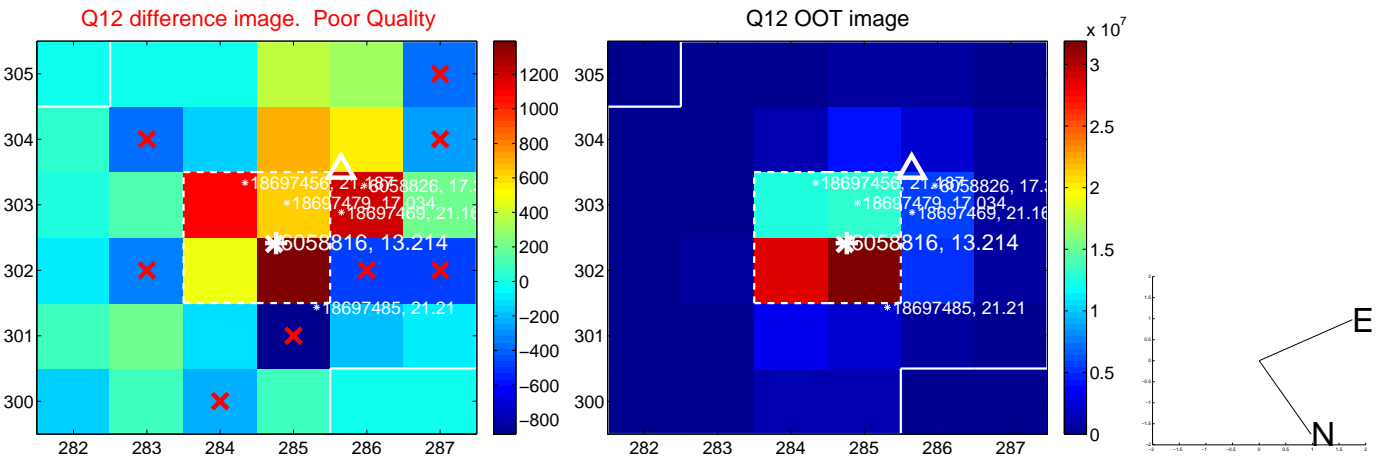
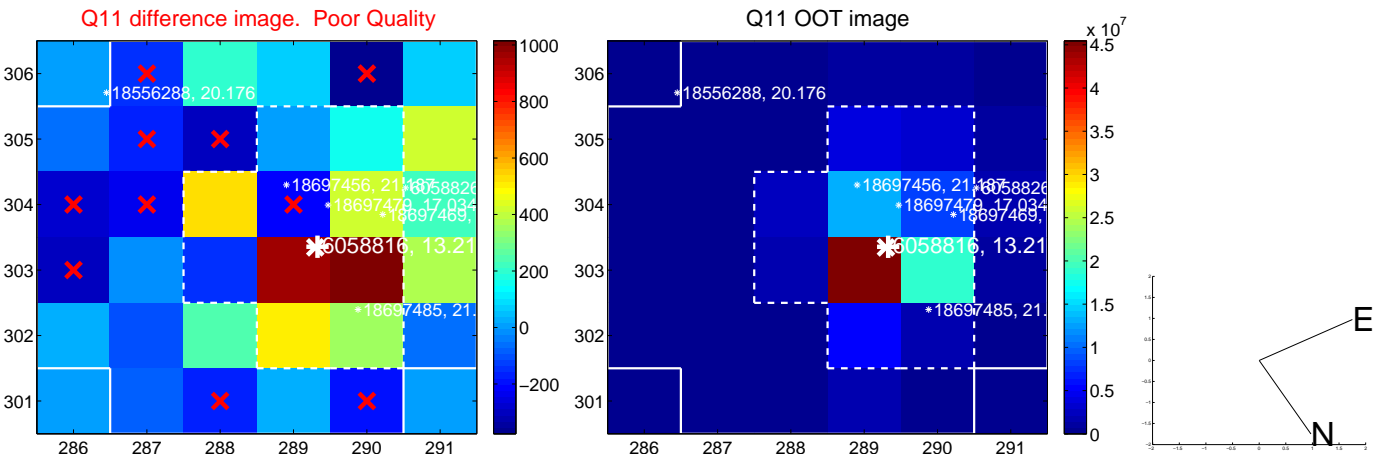
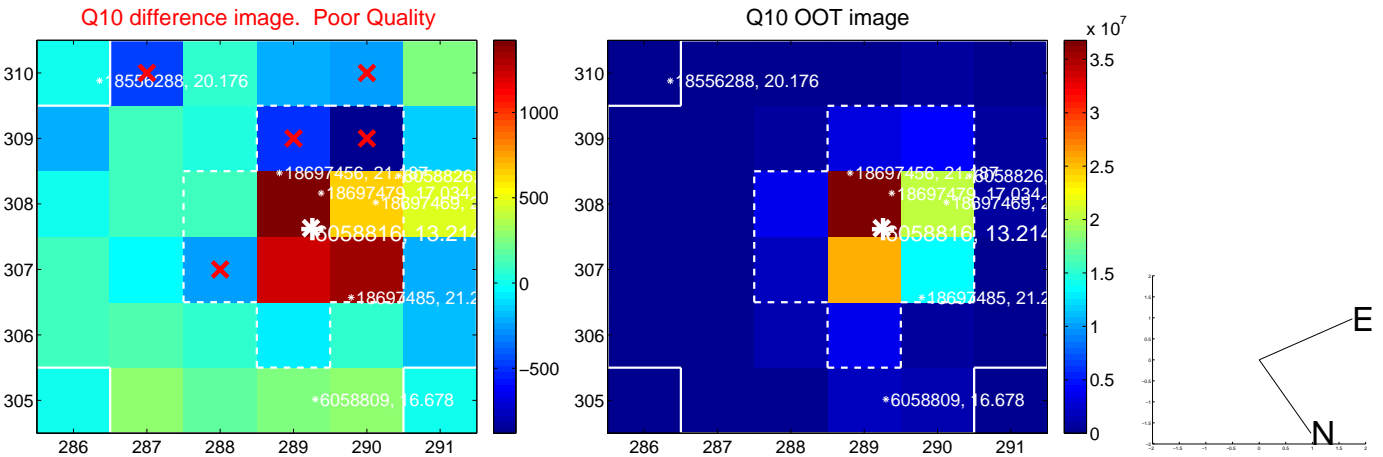
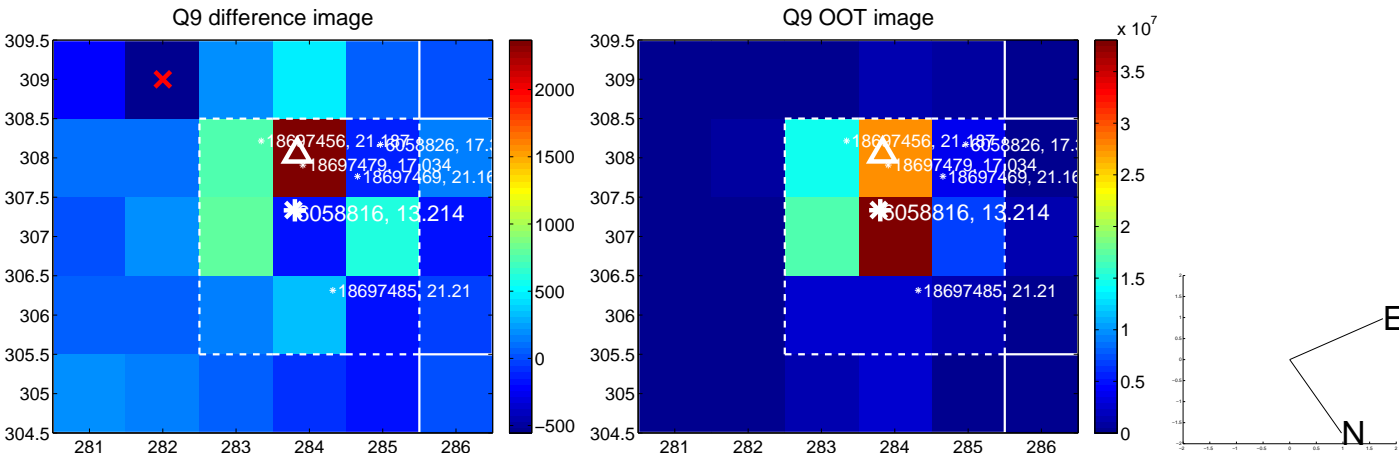
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



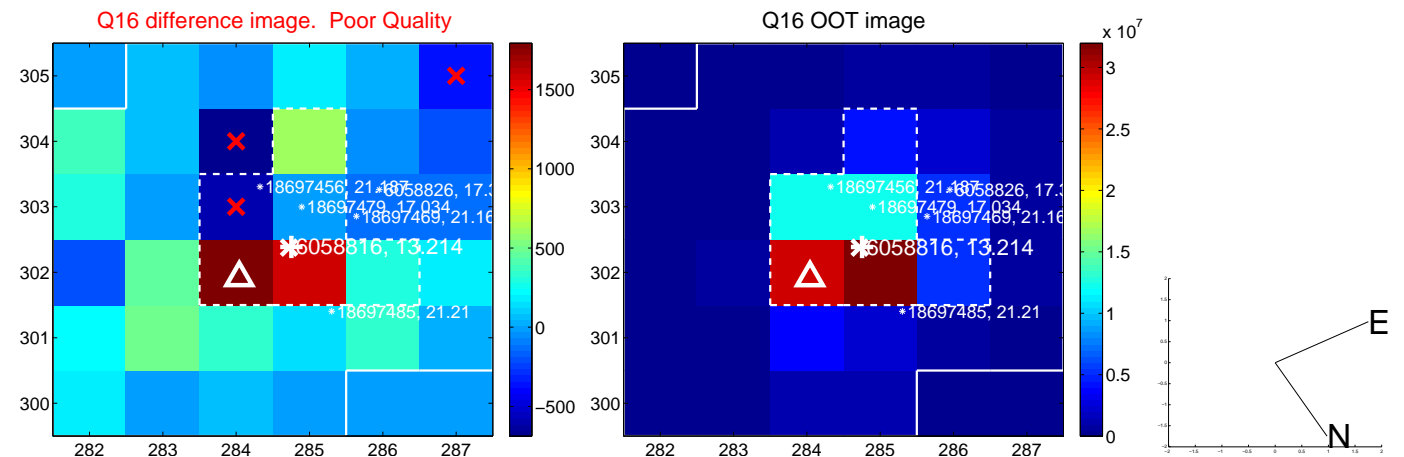
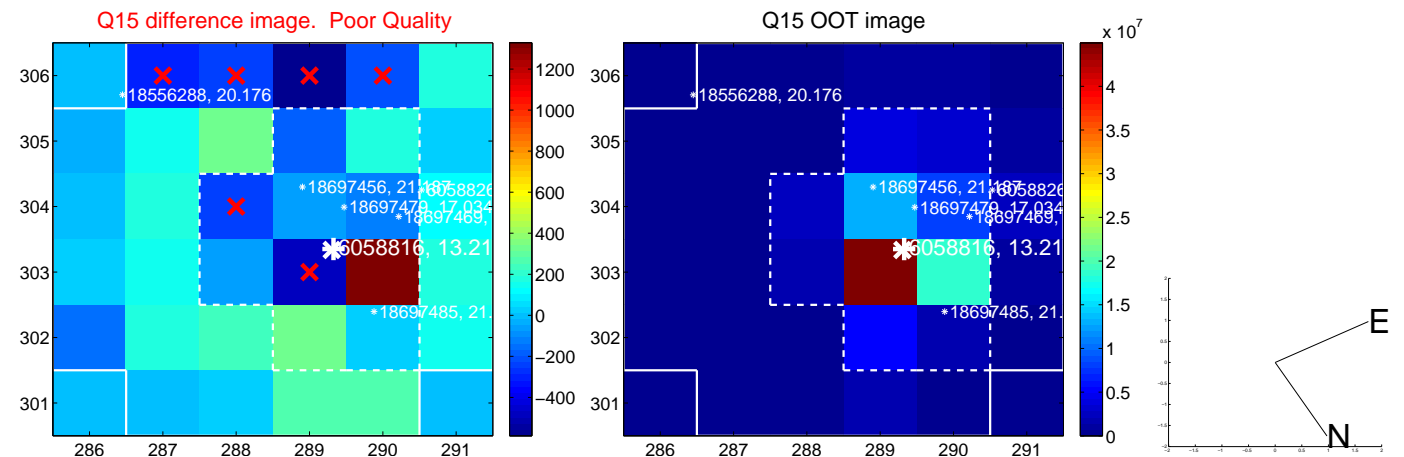
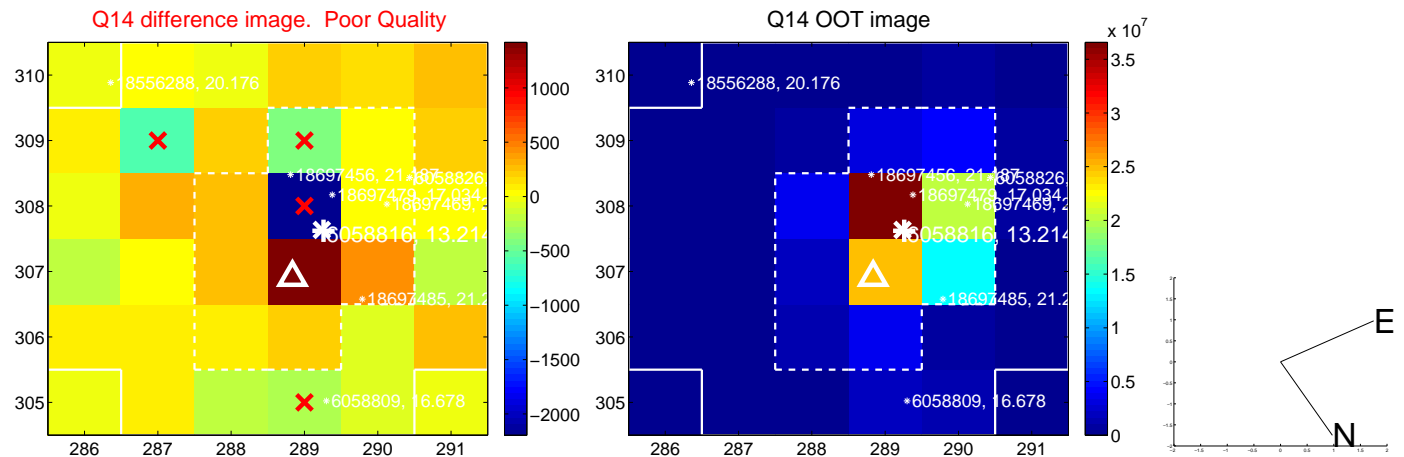
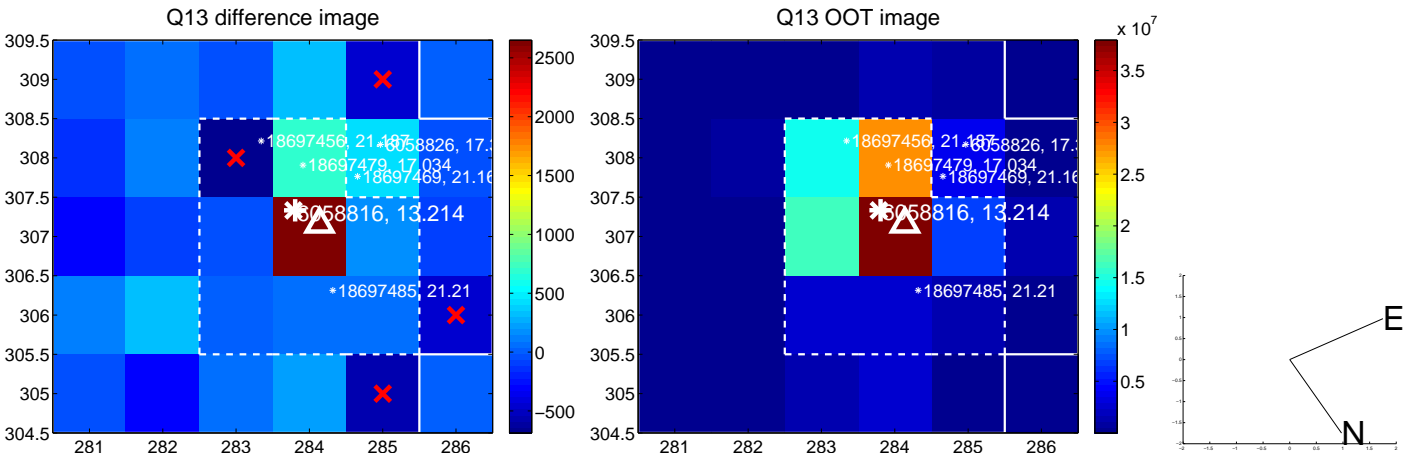
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



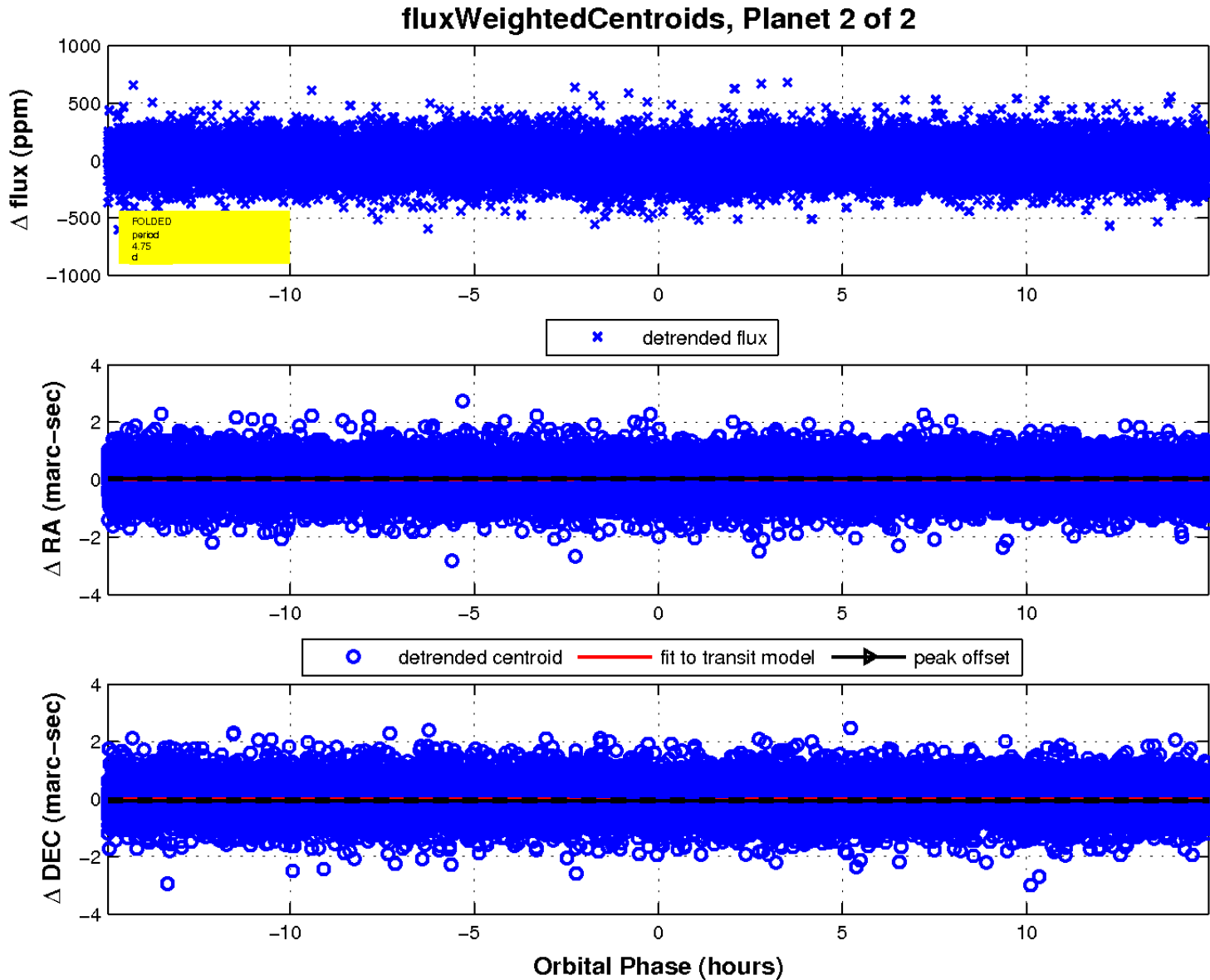
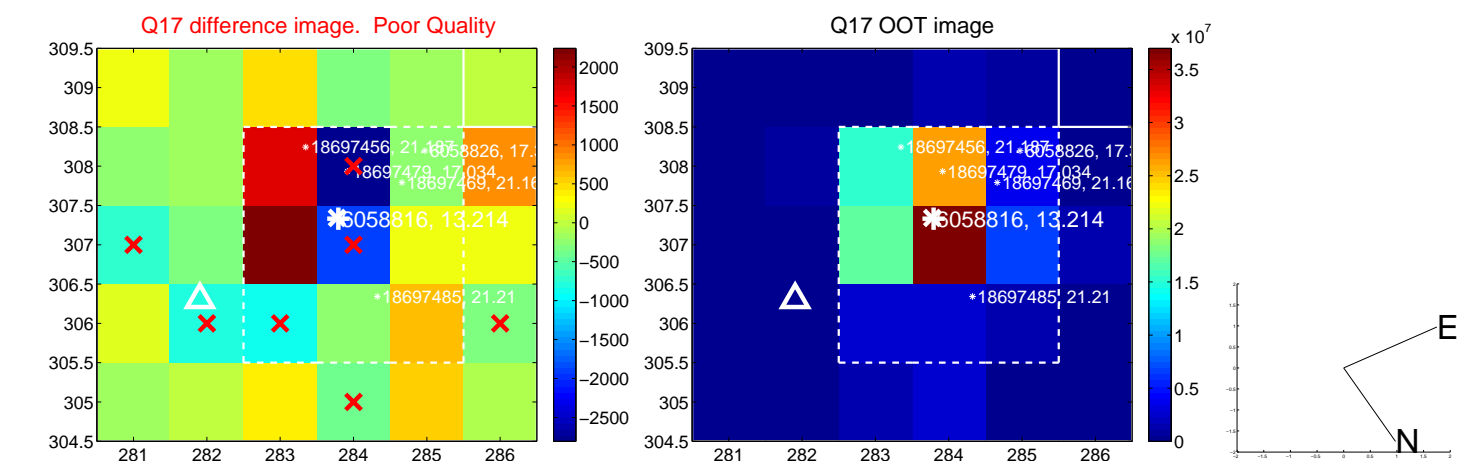
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

