

KIC 008635938

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})
008635938-01	OBS	3498.01	43.799208	158.865877	201.4	18.282	28.5	26.5	2.23	5611	6.57	63.91
008635938-02	OBS	No	43.798492	172.588168	238.0	6.655	29.2	21.6	2.23	5611	7.11	63.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008635938-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—EPHEM_MATCH
008635938-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—EPHEM_MATCH

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 008635938-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
008635938-01	8635938	008700506-02	8700506	1:1	313.4	79	0	13.48	12.96	2040.80	Col-Anomaly	0	1.39	0.86

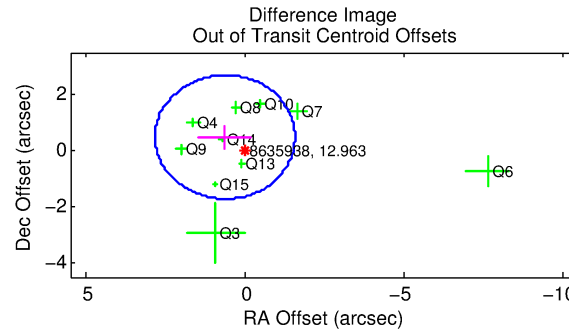
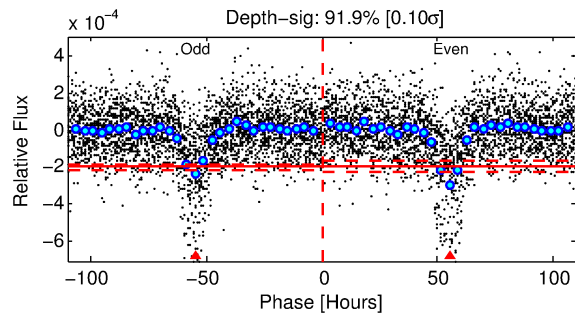
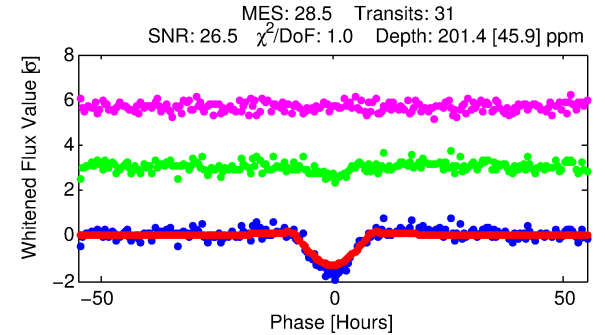
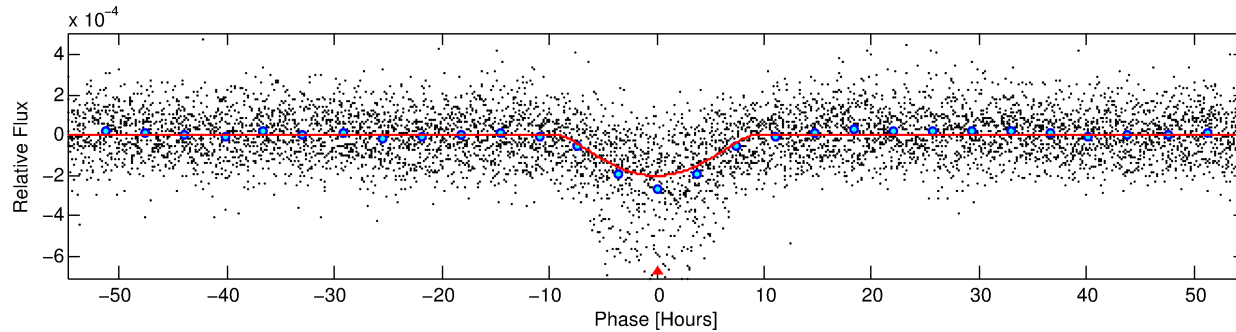
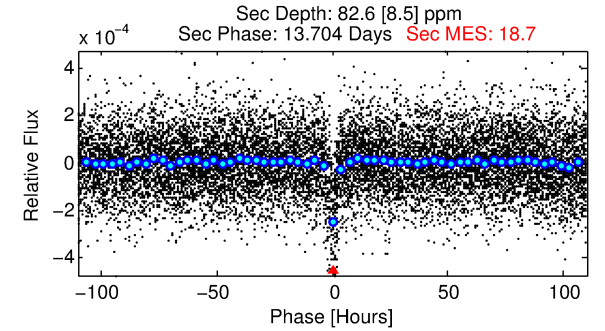
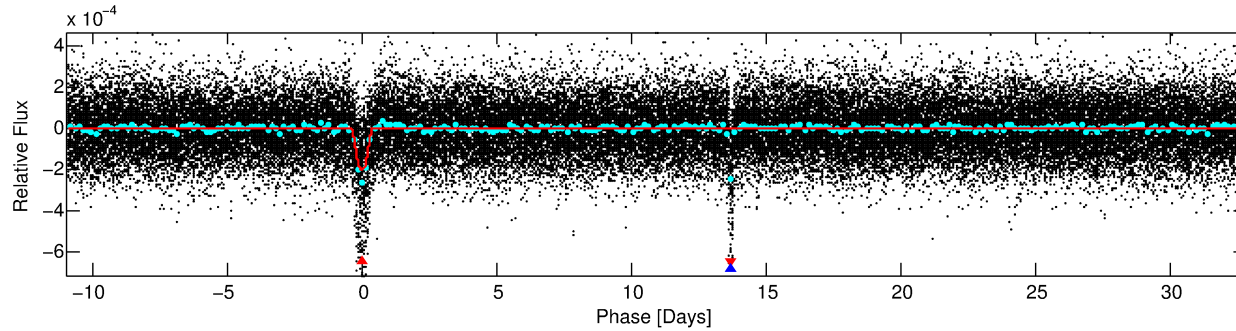
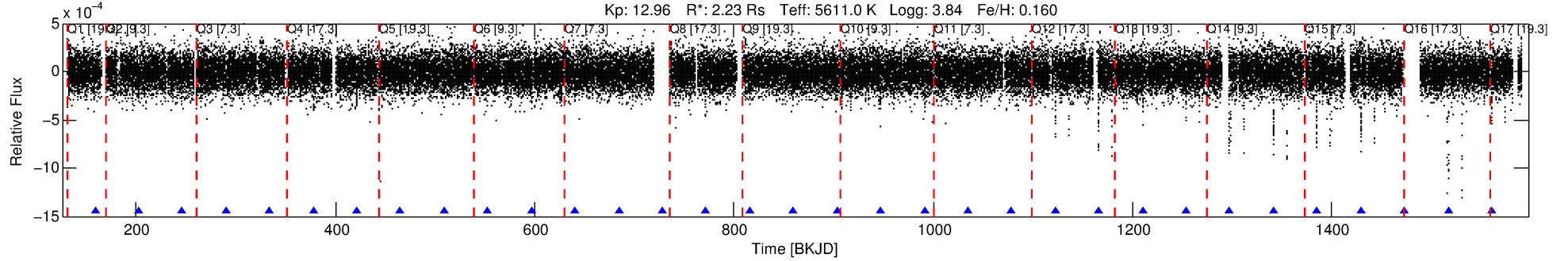
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 8635938 Candidate: 1 of 2 Period: 43.799 d

KOI: K03498 Corr: No Ephemeris Match

Kp: 12.96 R*: 2.23 Rs Teff: 5611.0 K Logg: 3.84 Fe/H: 0.160



DV Fit Results:

Period = 43.79921 [0.00082] d
Epoch = 158.8659 [0.0148] BKJD
Rp/R* = 0.0270 [0.0332]
a/R* = 4.40 [1.34]
b = 1.00 [0.04]
Seff = 63.91 [38.04]
Teq = 721 [107] K
Rp = 6.57 [8.42] Re
a = 0.2625 [0.0937] AU
Ag = 72.51 [183.23] [0.39σ]
Teffp = 3253 [2003] K [1.26σ]

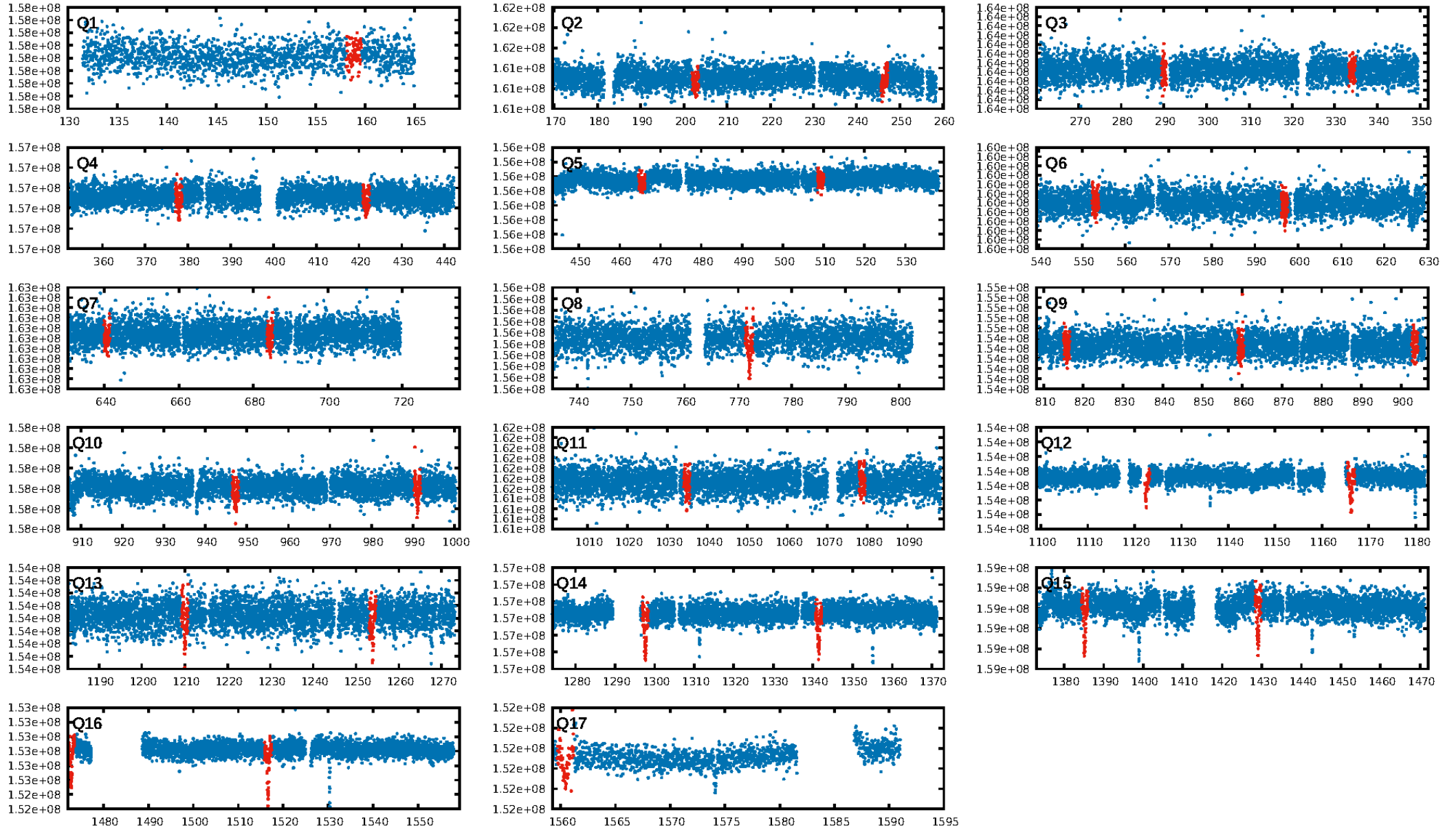
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.18e-152
RollingBand-fgt: 1.00 [29/29]
GhostDiagnostic-chr: -10.45
Centroid-sig: 0.0%
Centroid-so: 1.357 arcsec [3.92σ]
OotOffset-rm: 0.797 arcsec [1.09σ]
KicOffset-rm: 0.644 arcsec [0.86σ]
OotOffset-st: 3/3/2/2 [10]
KicOffset-st: 3/3/2/2 [10]
DiffImageQuality-fgm: 0.90 [9/10]
DiffImageOverlap-fno: 1.00 [14/14]

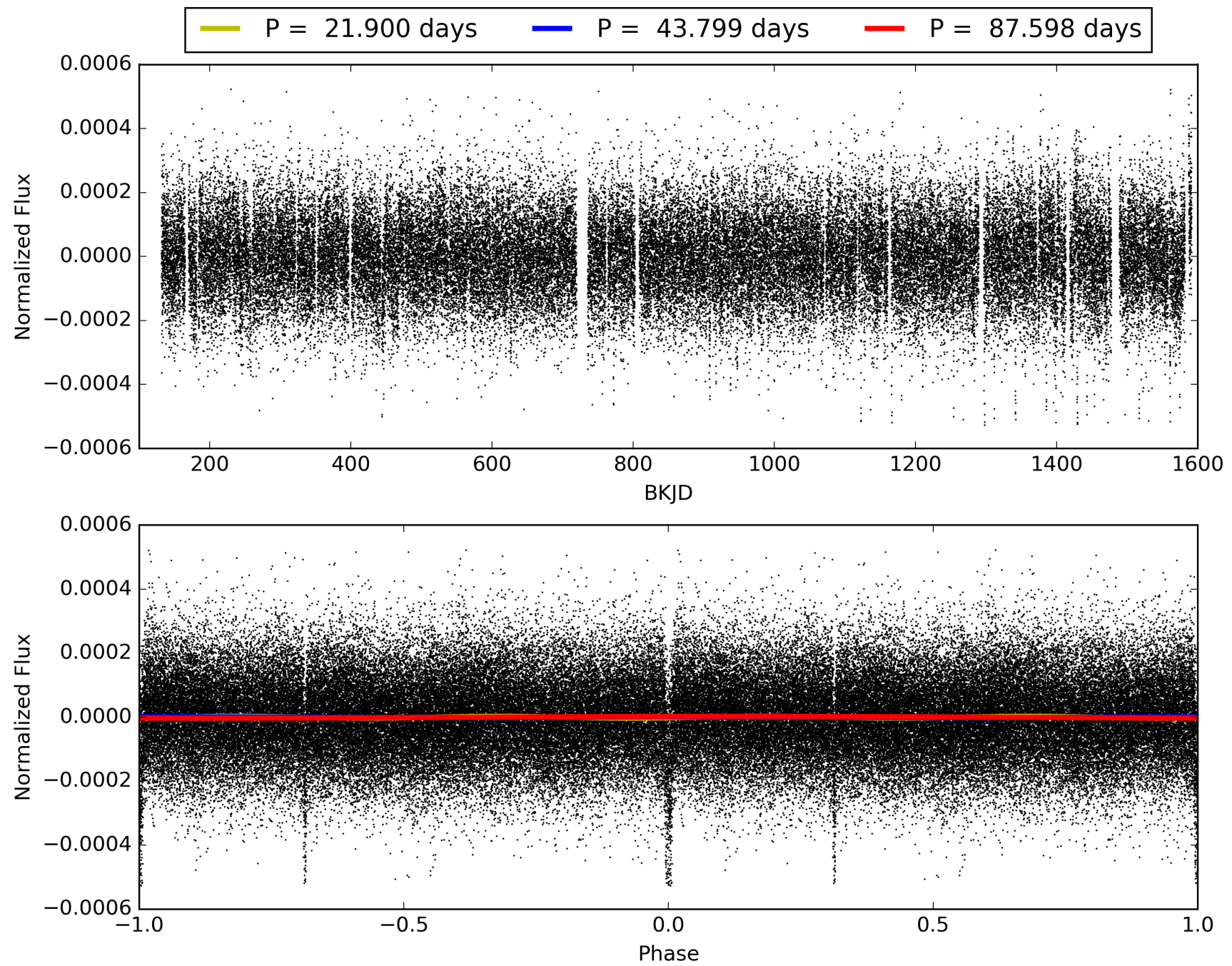
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008635938-01, PDC Light Curves

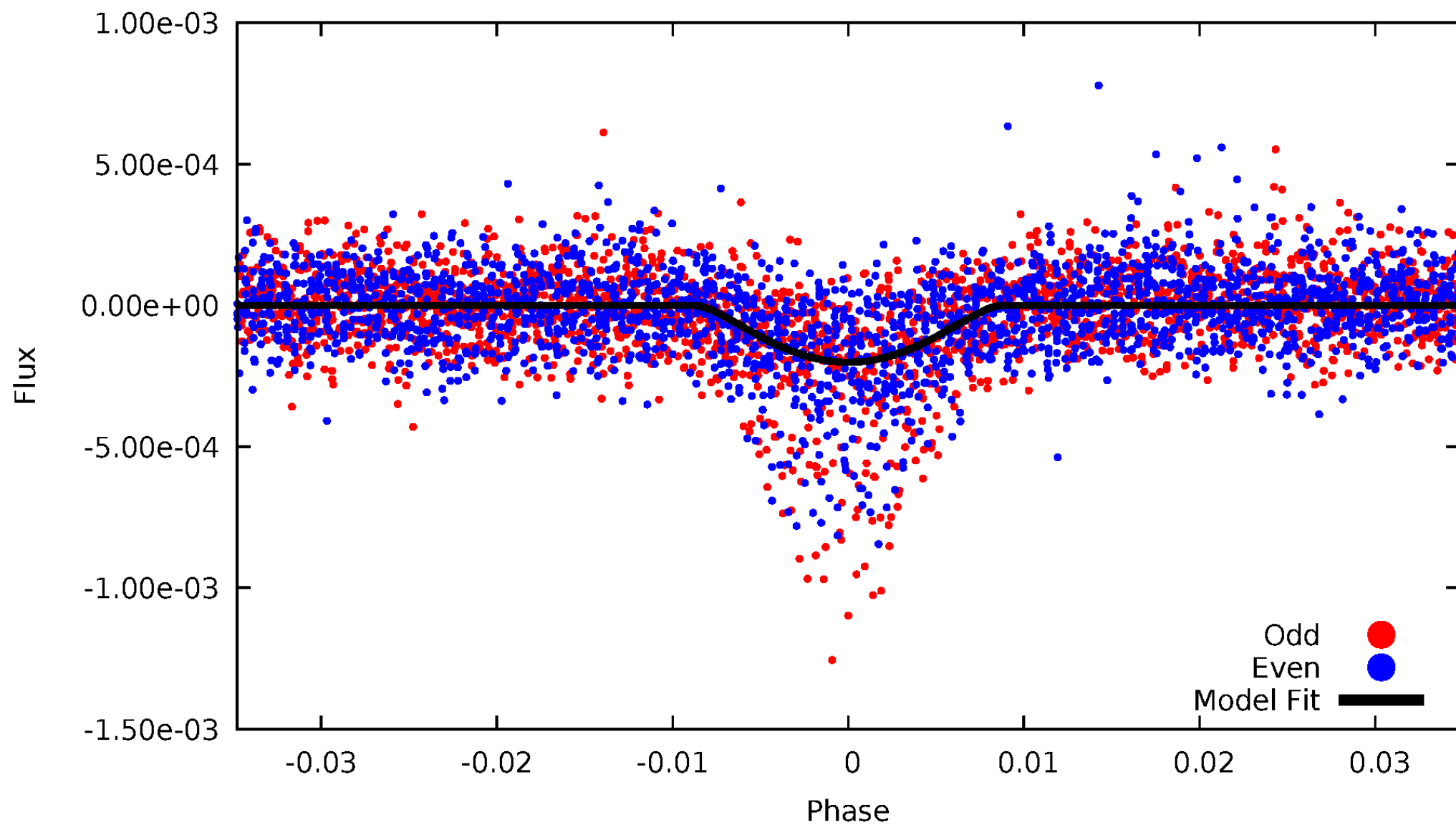


TCE 008635938-01



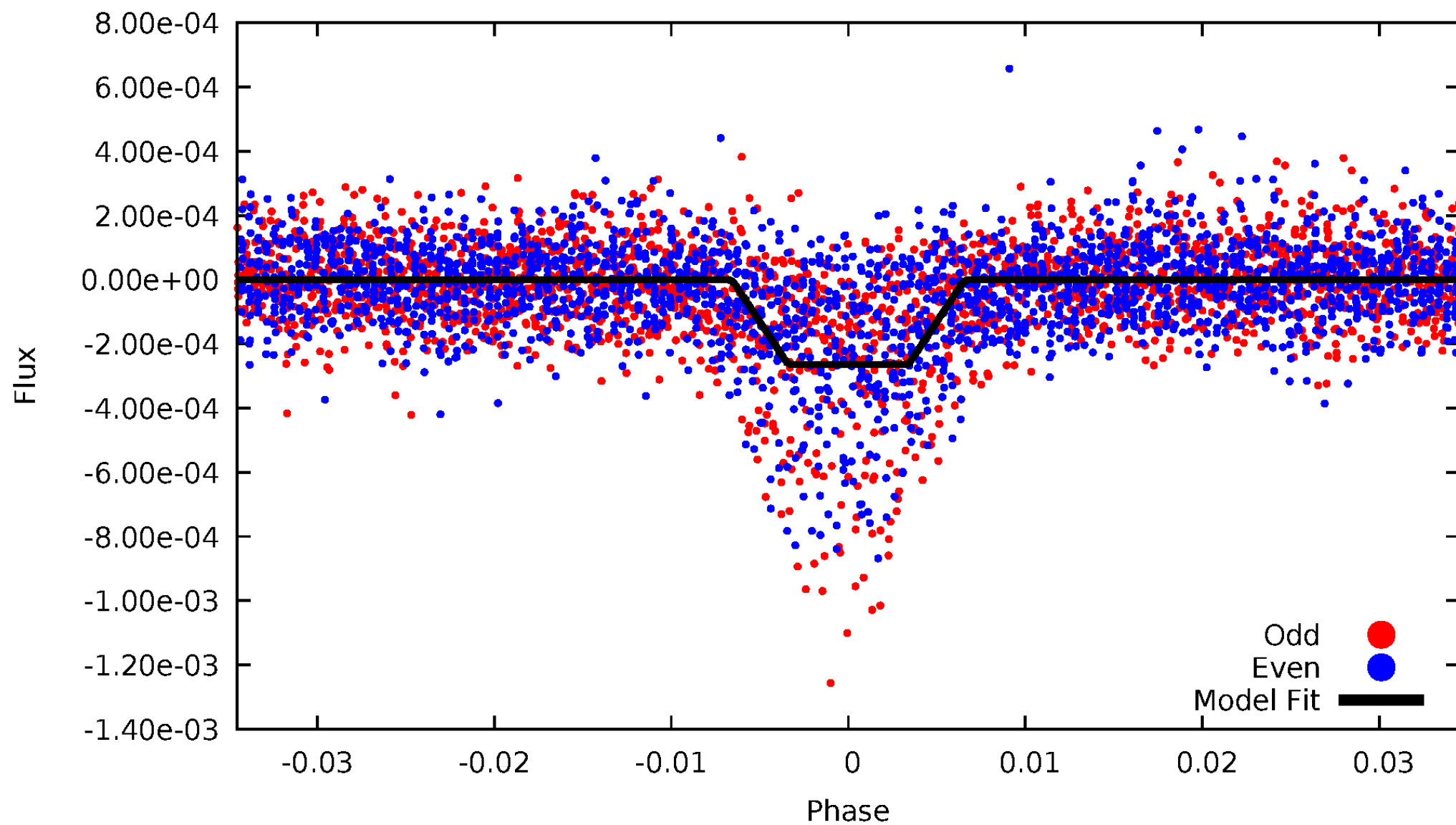
DV Odd/Even

TCE 008635938-01



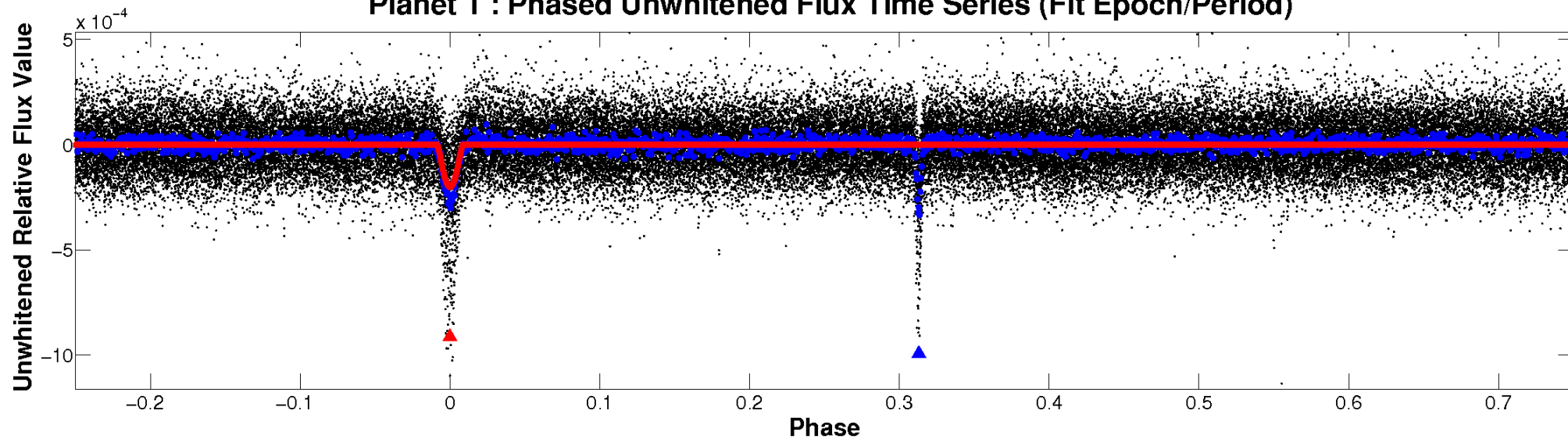
ALT Odd/Even

TCE 008635938-01

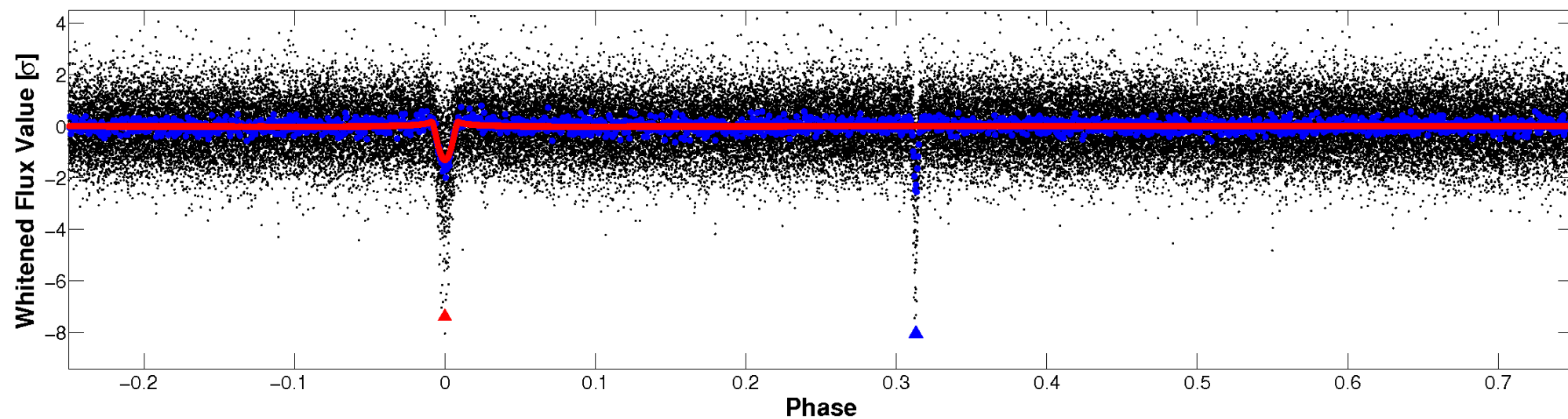


Non-Whitened Vs. Whitened Light Curve

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

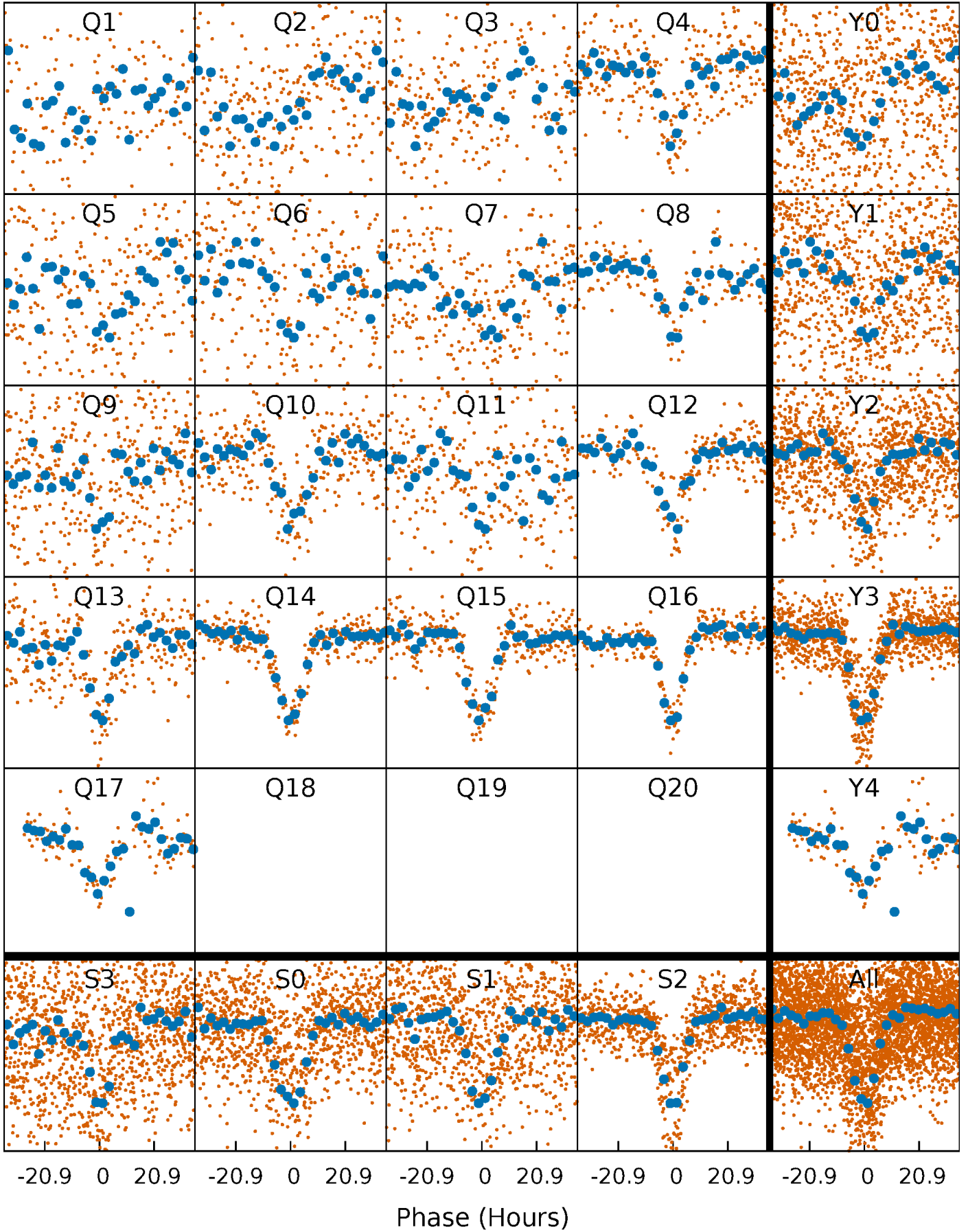


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



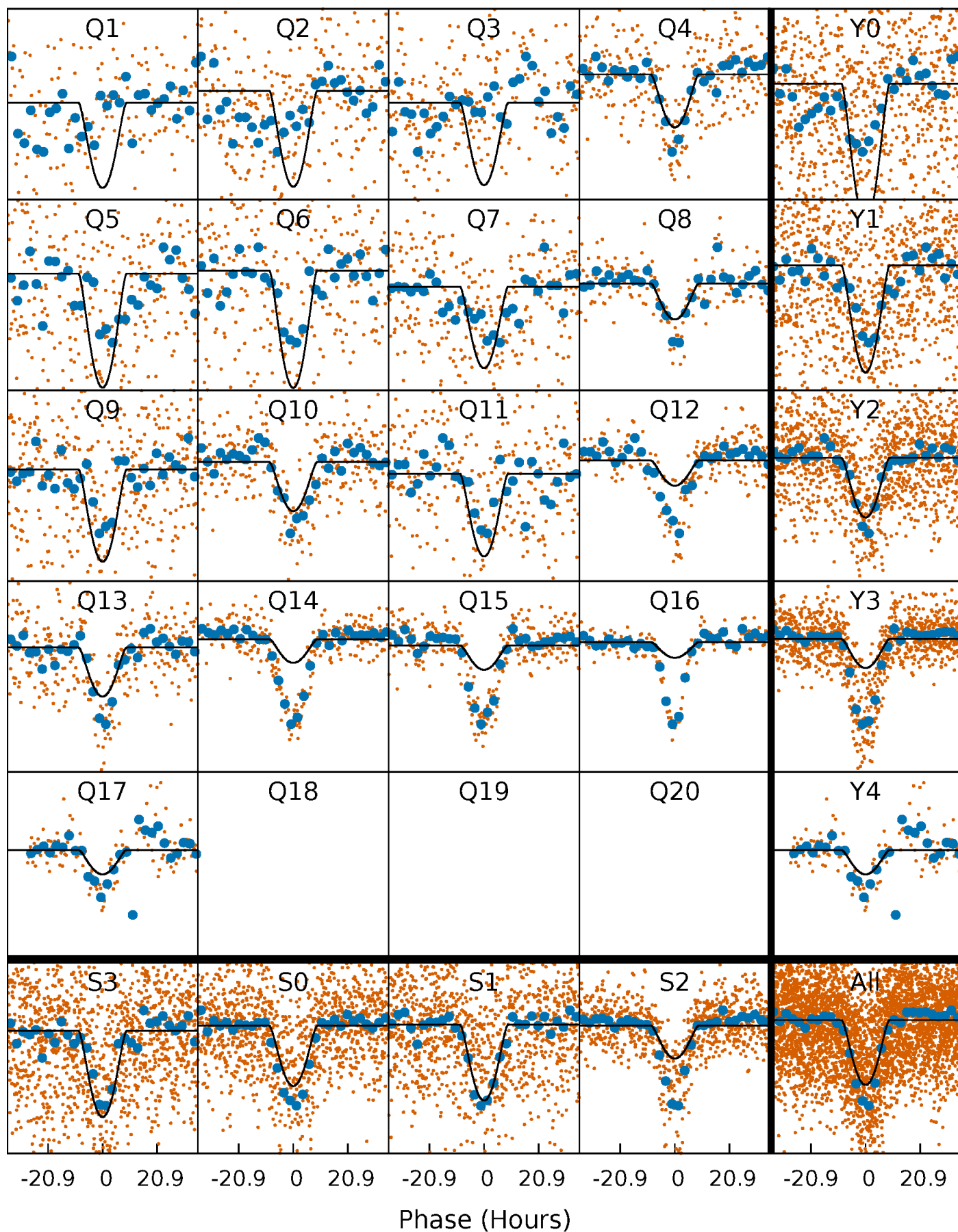
PDC Quarter-Phased Transit Curves

TCE 008635938-01 P= 43.799208 Days $T_0=158.865877$ (BKJD)



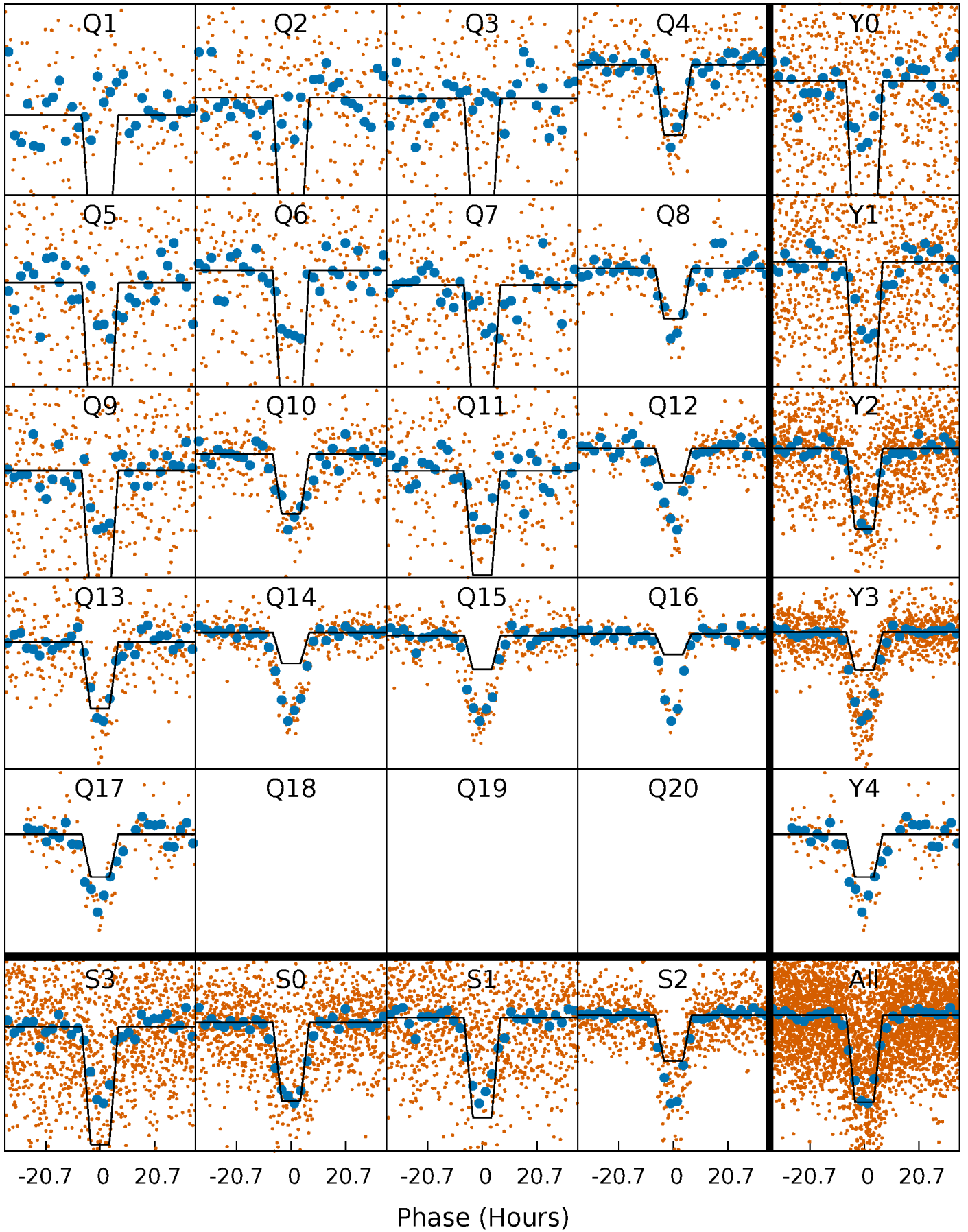
DV Quarter-Phased Transit Curves

TCE 008635938-01 P= 43.799208 Days $T_0=158.865877$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

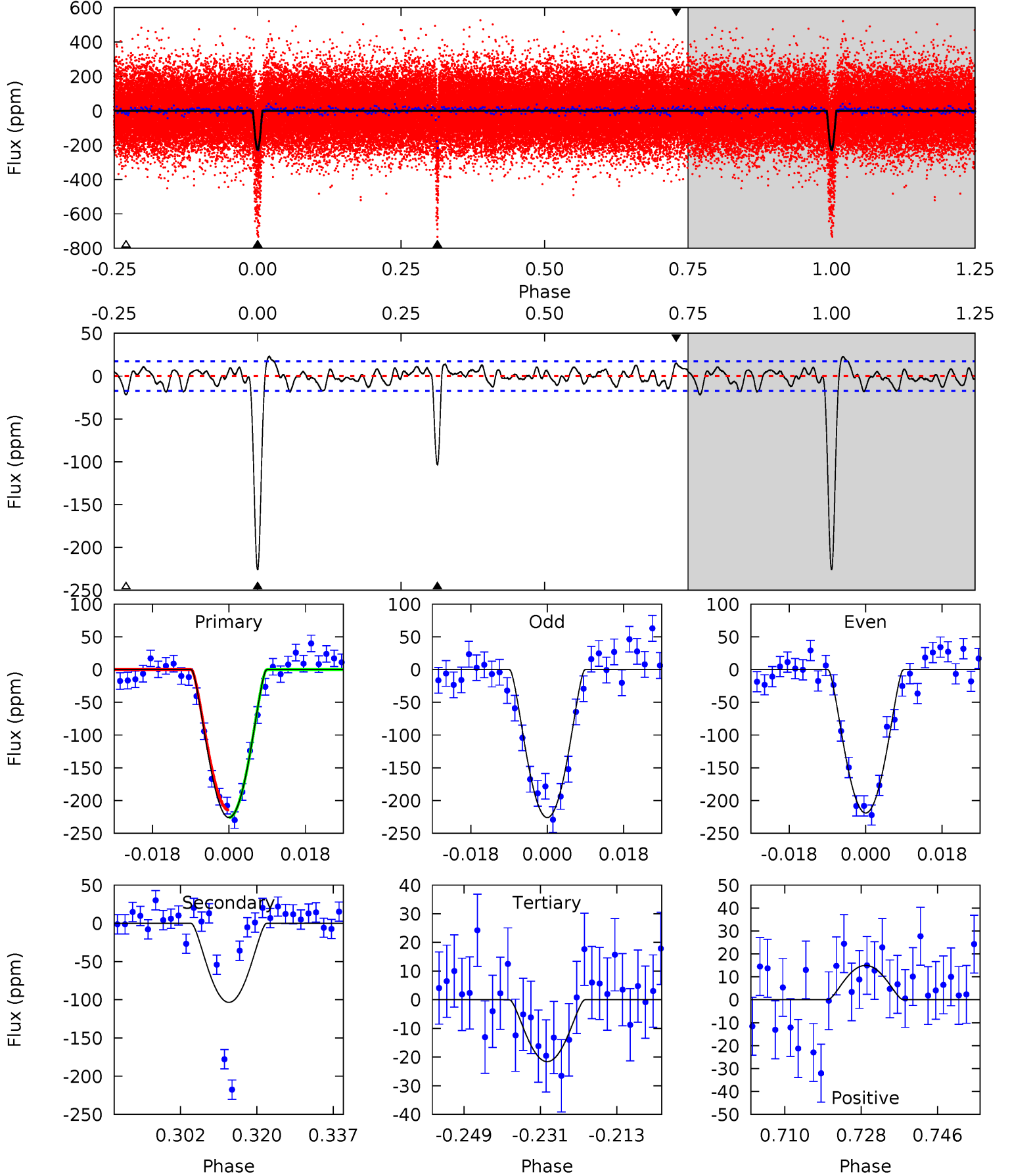
TCE 008635938-01 P= 43.799457 Days $T_0=158.861093$ (BKJD)



DV Model-Shift Uniqueness Test

008635938-01, $P = 43.799208$ Days, $E = 115.066669$ Days

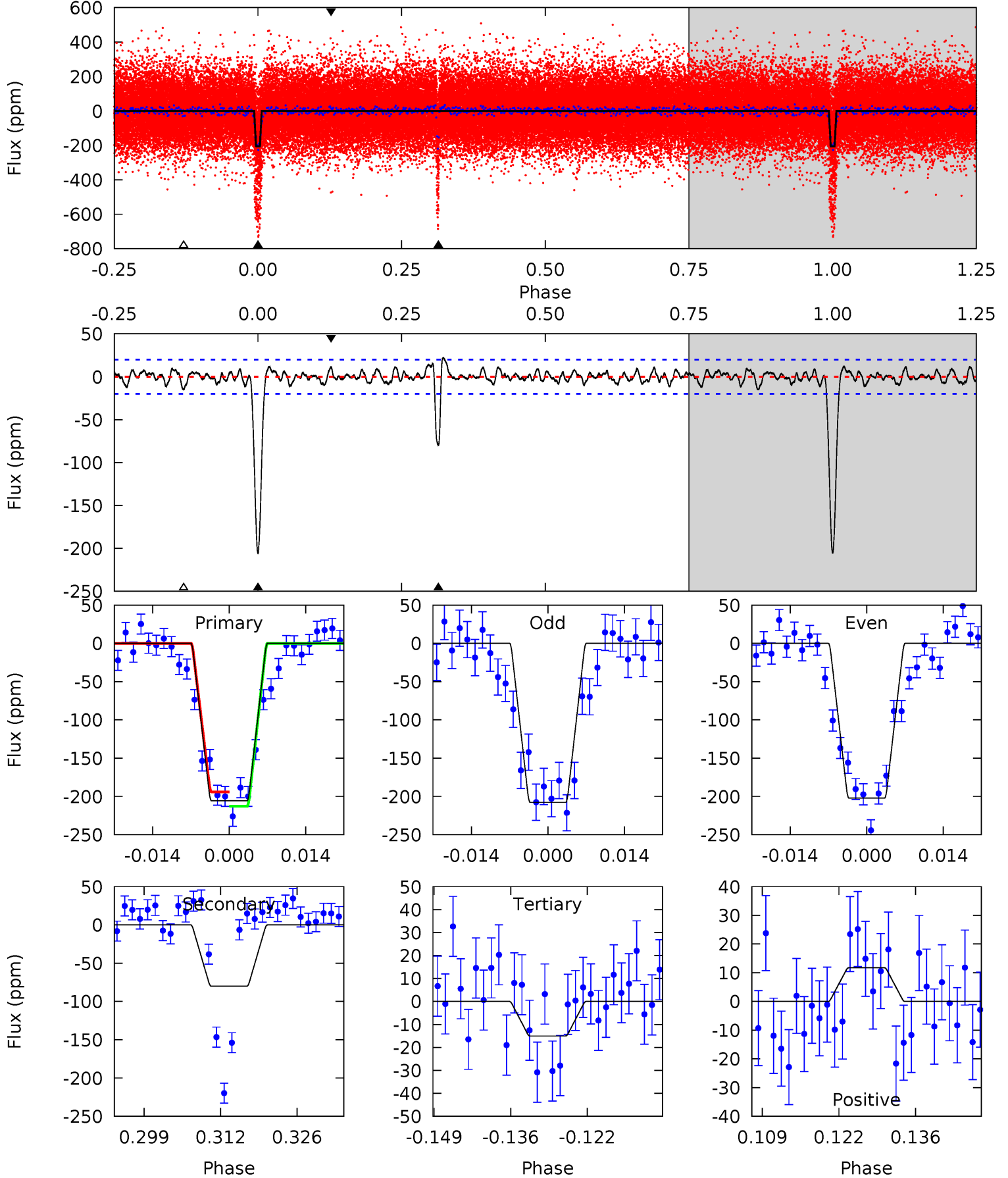
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
63.6	29.1	6.08	4.21	4.91	2.37	2.07	57.6	59.4	23.0	24.9	0.98	1.74	0.09	1.62



Alt Model-Shift Uniqueness Test

008635938-01, P = 43.799457 Days, E = 115.061636 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
51.3	20.0	3.75	2.93	4.97	2.47	1.24	47.5	48.4	16.2	17.0	0.69	1.74	0.10	2.32



Stellar Parameters For KIC 008635938

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5611^{+186}_{-152}	$3.842^{+0.344}_{-0.108}$	$0.160^{+0.250}_{-0.250}$	$2.227^{+0.371}_{-0.803}$	$1.259^{+0.140}_{-0.260}$	$0.161^{+0.380}_{-0.054}$
	+3%/-3%	+9%/-3%	+156%/-156%	+17%/-36%	+11%/-21%	+237%/-33%
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 008635938-01 / KOI 3498.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-103 ± 4	$7.92^{+6.89}_{-5.06}$	989^{+64}_{-87}	3502^{+1482}_{-586}	63^{+394}_{-45}
Alt.	-80 ± 4	$6.62^{+6.56}_{-4.58}$	994^{+62}_{-95}	3527^{+1954}_{-628}	70^{+652}_{-53}

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

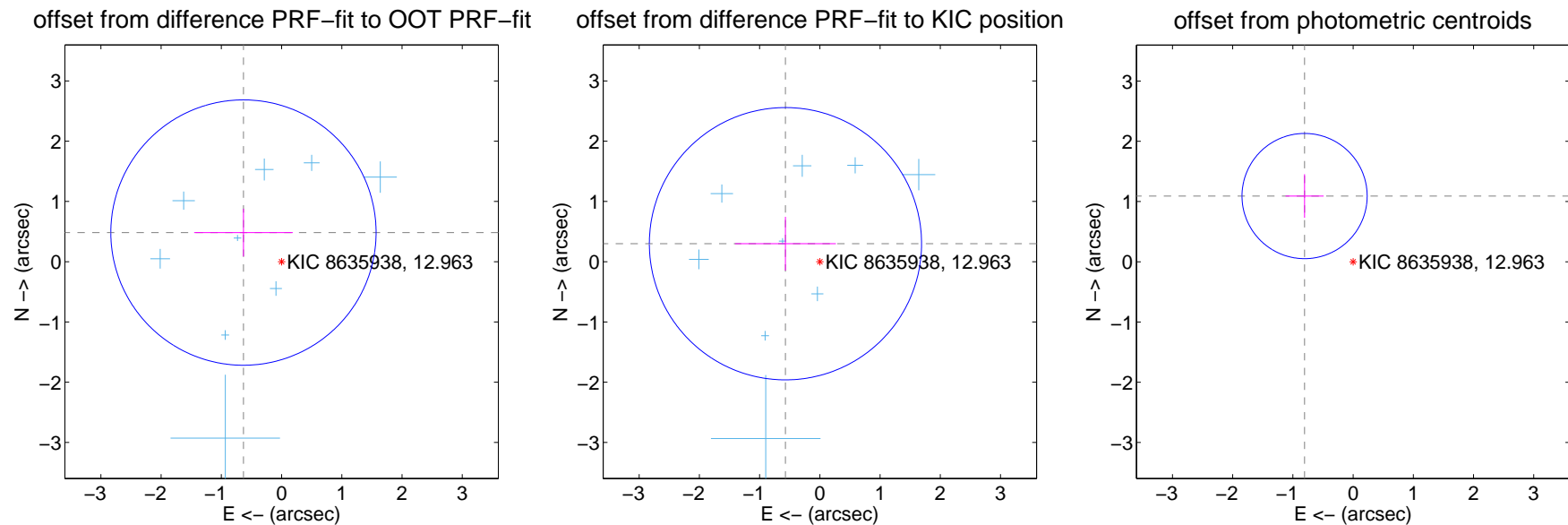
DV Centroid Data

Supplemental centroid analysis for 008635938-01. Kepler magnitude: 12.96. Transit SNR 26.52

There are 9 quarters with good PRF difference image offsets

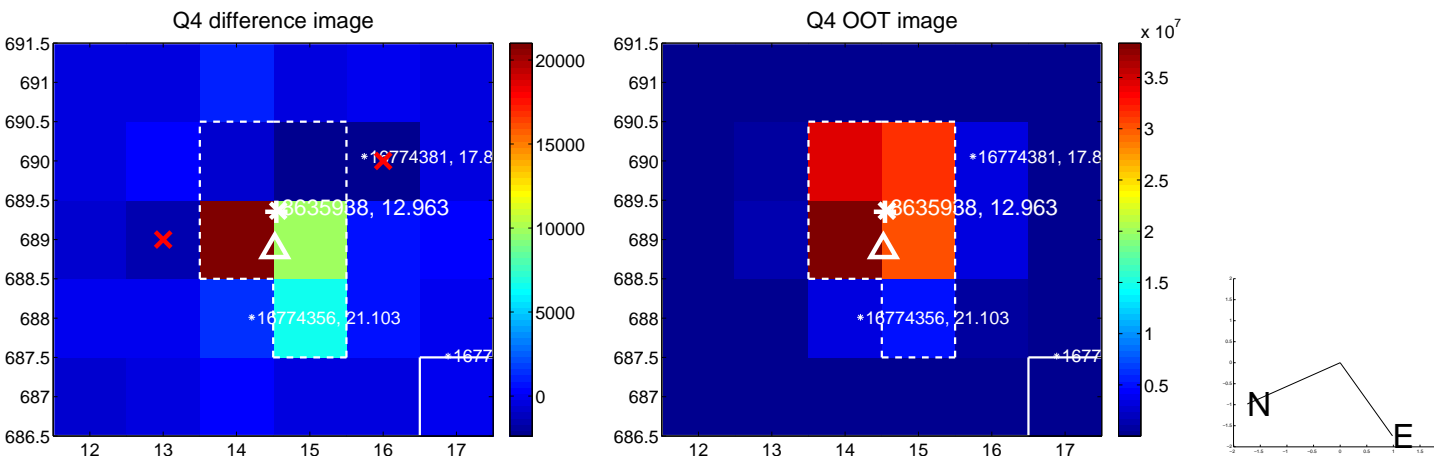
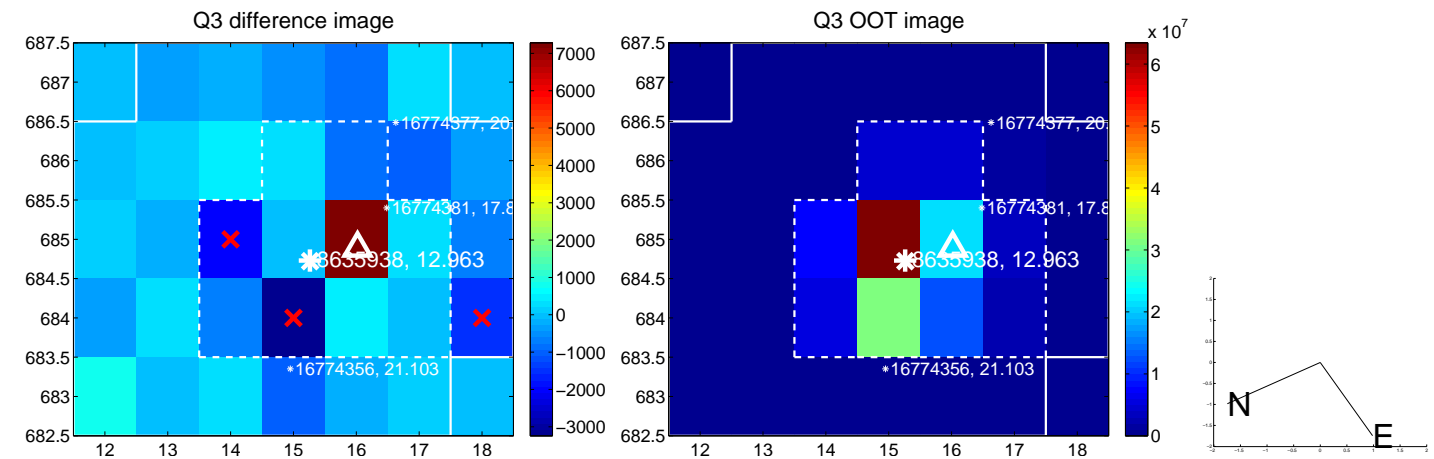
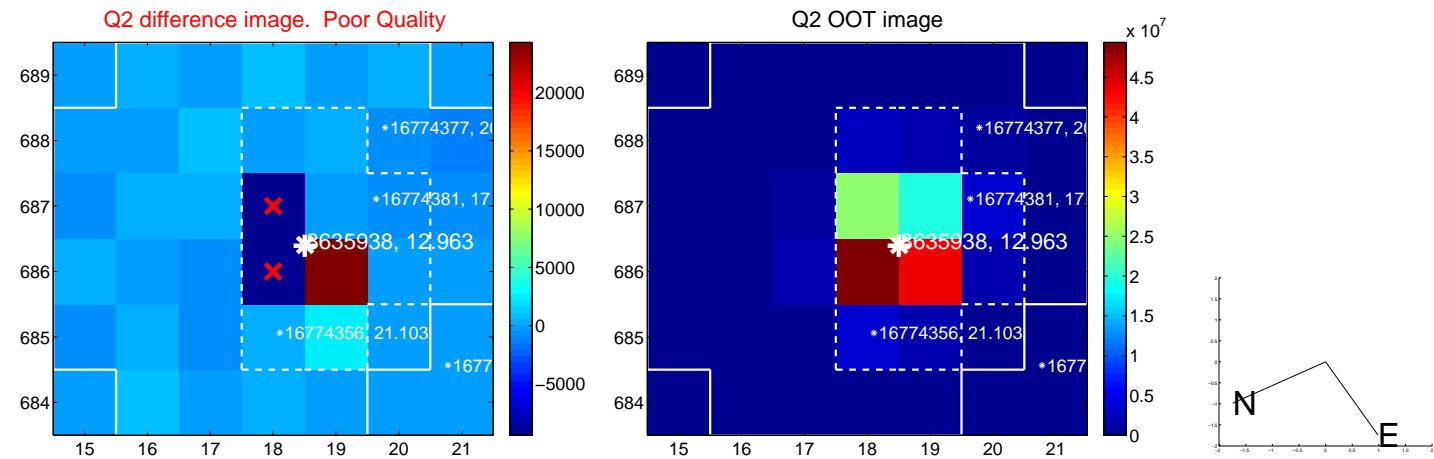
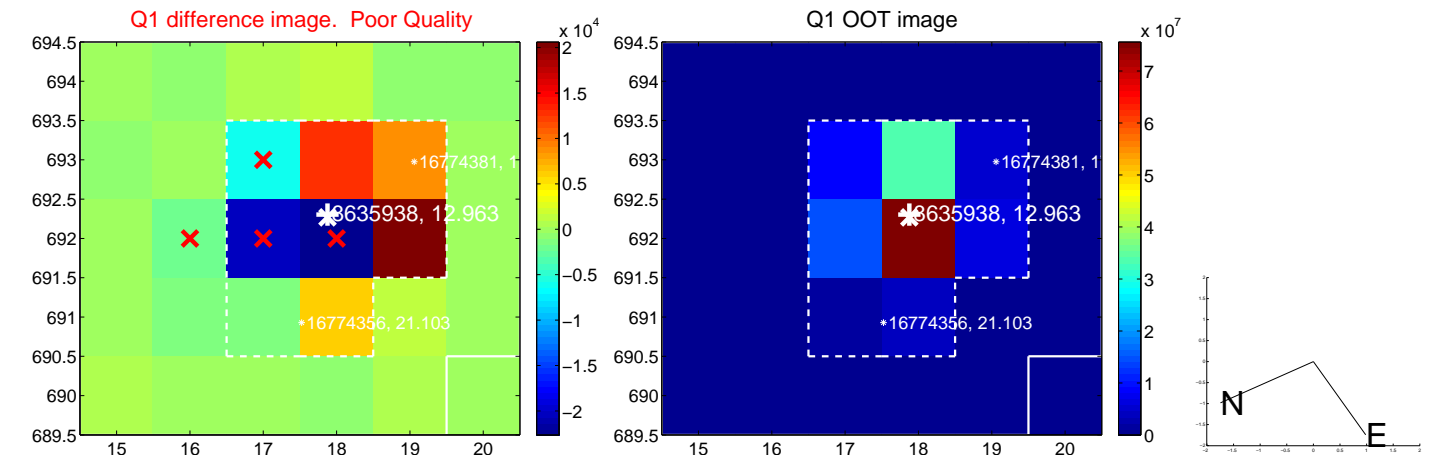
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.797 ± 0.734	1.09	0.633 ± 0.819	0.484 ± 0.396
PRF-fit source offset from KIC position	0.644 ± 0.753	0.86	0.571 ± 0.838	0.298 ± 0.446
photometric centroid source offset	1.36 ± 0.35	3.92	0.81 ± 0.32	1.09 ± 0.36

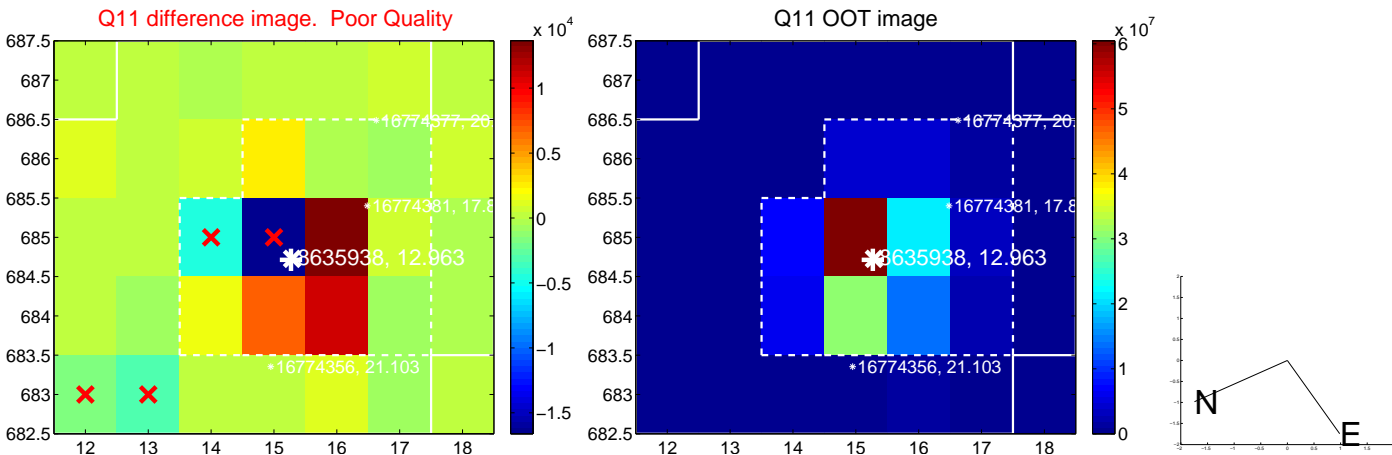
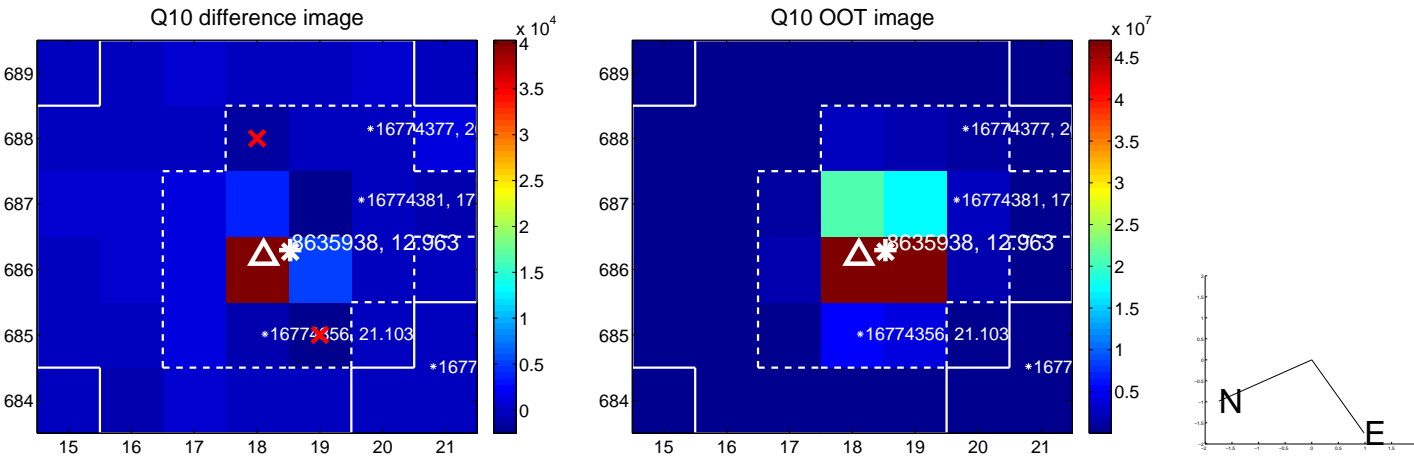
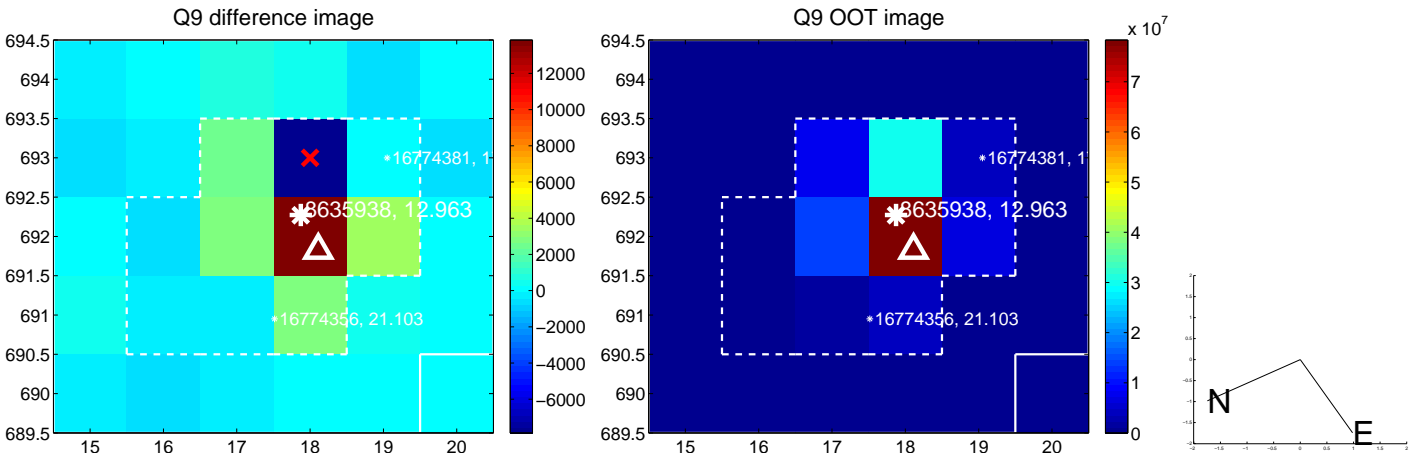


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

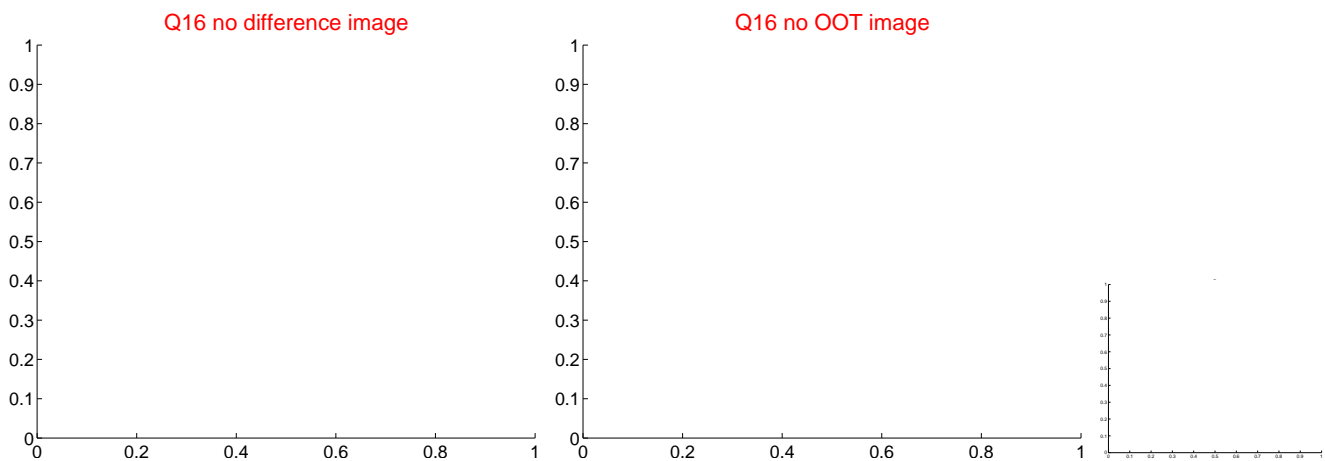
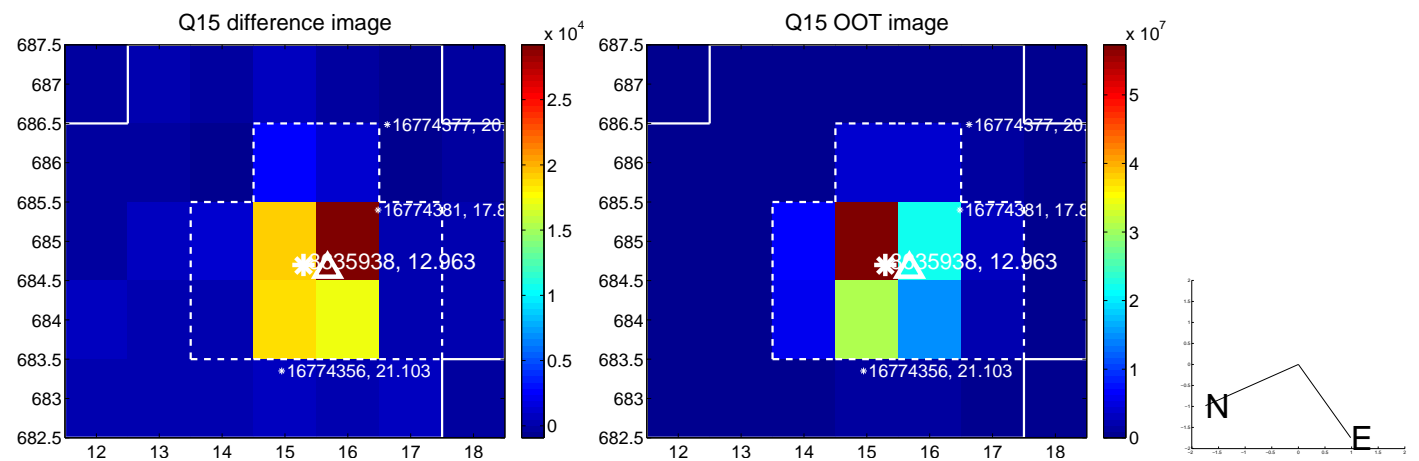
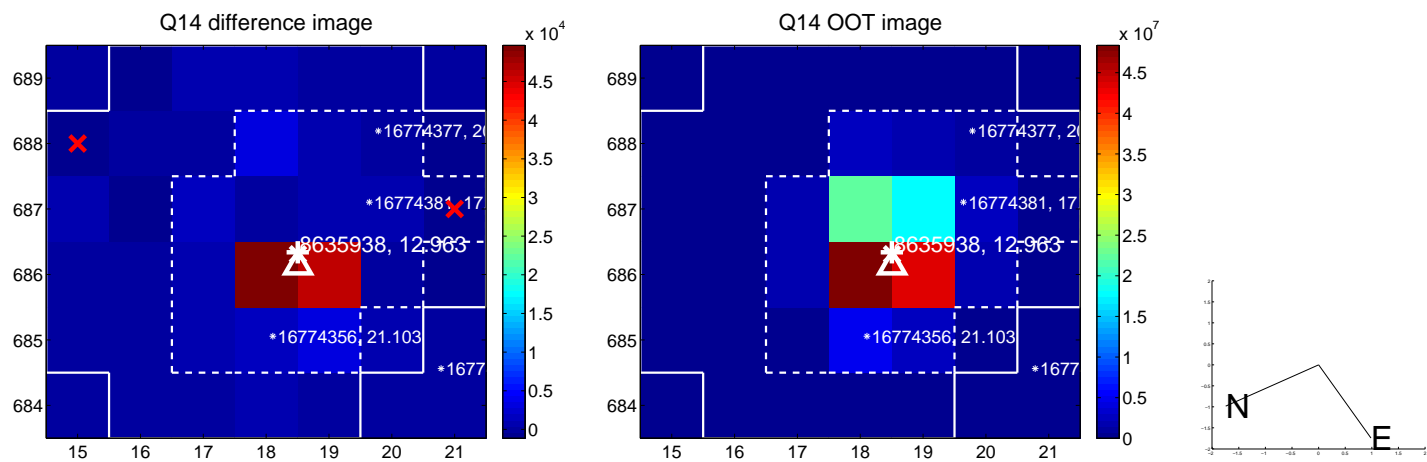
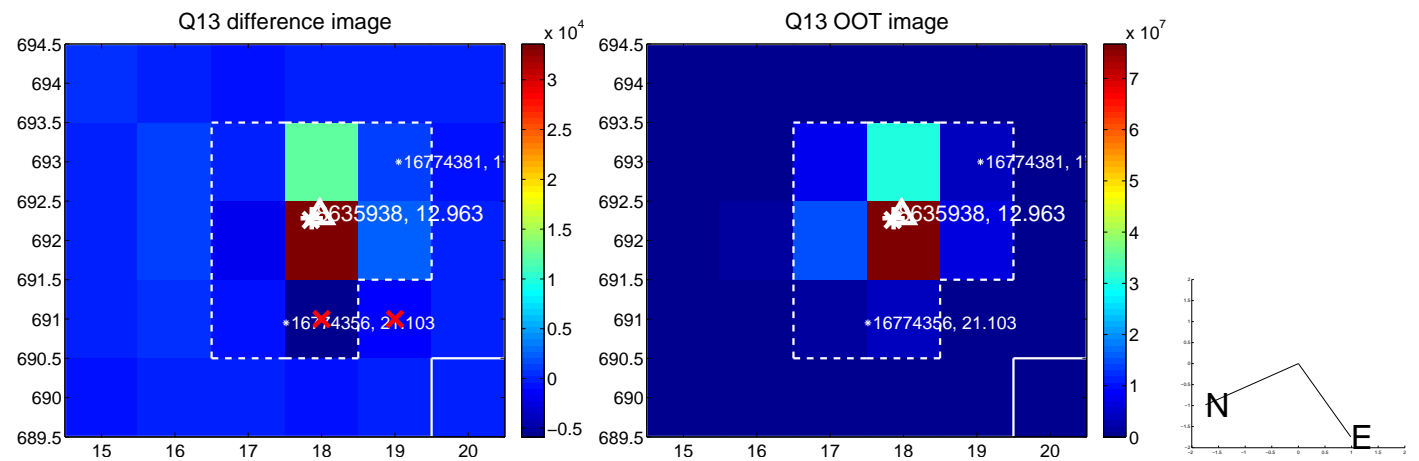
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



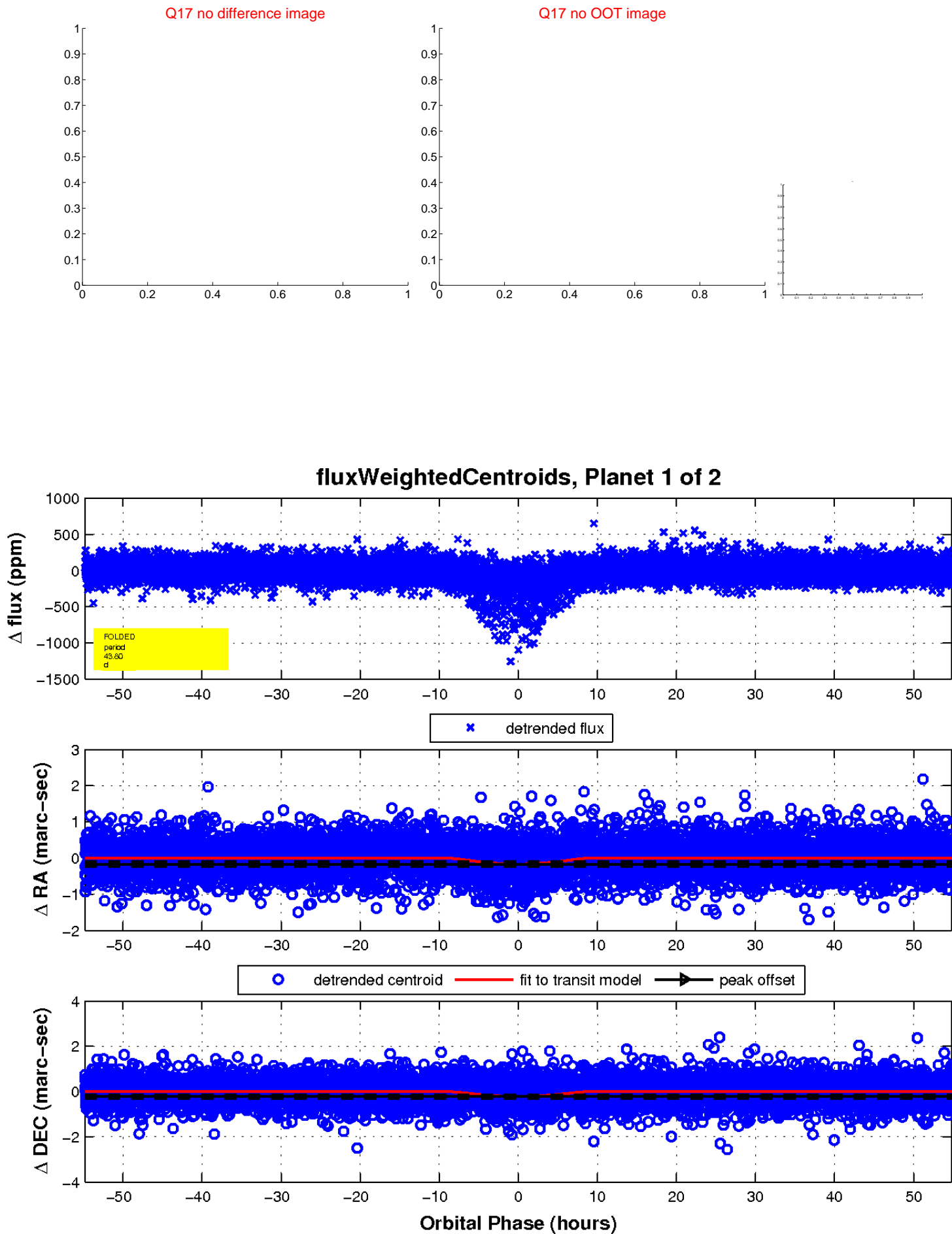
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

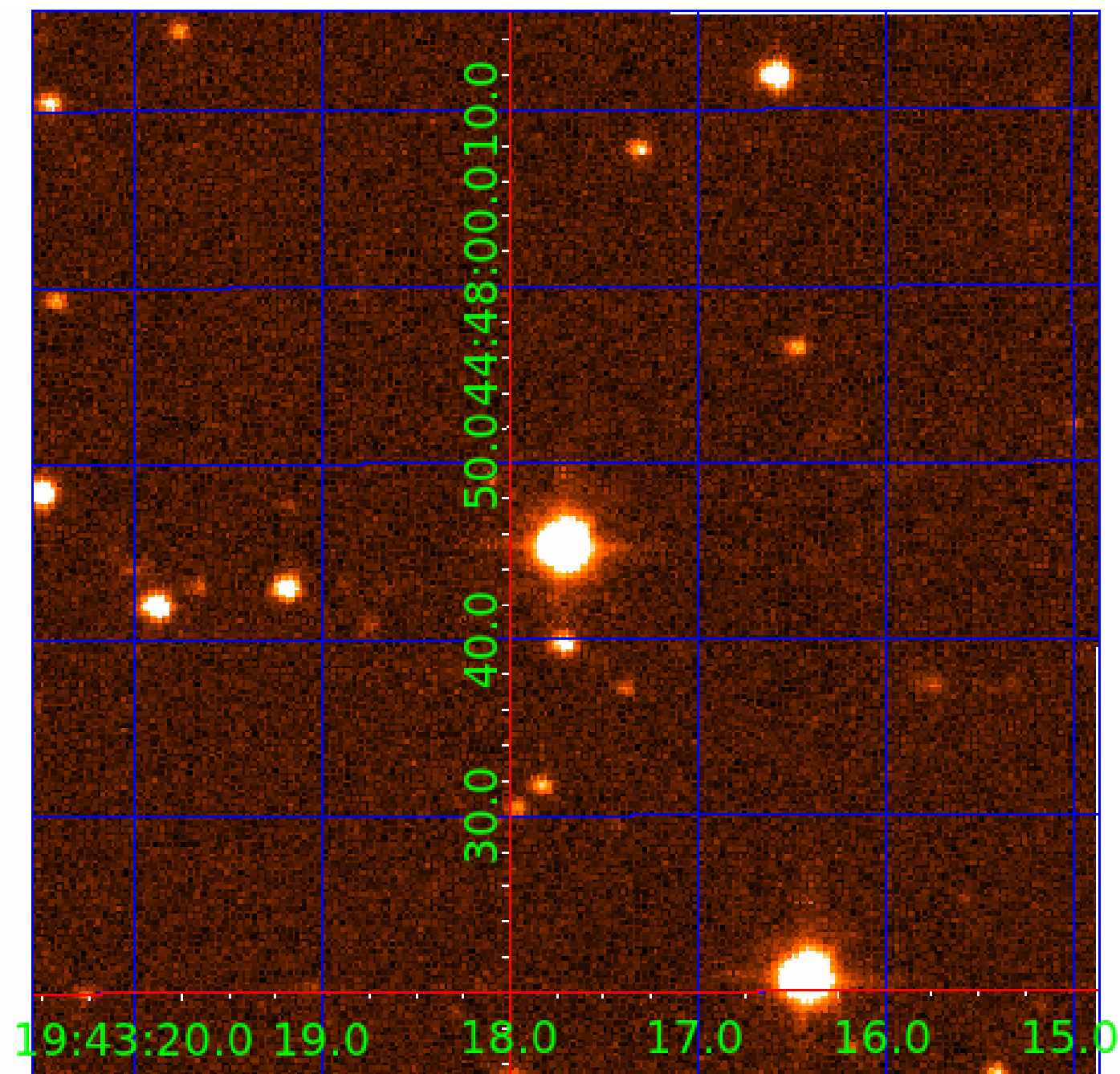


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008635938

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})
008635938-01	OBS	3498.01	43.799208	158.865877	201.4	18.282	28.5	26.5	2.23	5611	6.57	63.91
008635938-02	OBS	No	43.798492	172.588168	238.0	6.655	29.2	21.6	2.23	5611	7.11	63.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008635938-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—EPHEM_MATCH
008635938-02	OBS	FP	0.00	1	1	0	1	IS_SEC_TCE—EPHEM_MATCH

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.

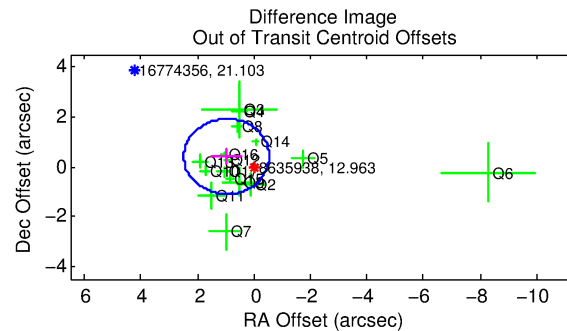
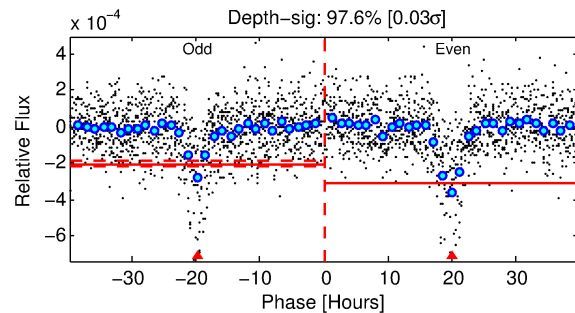
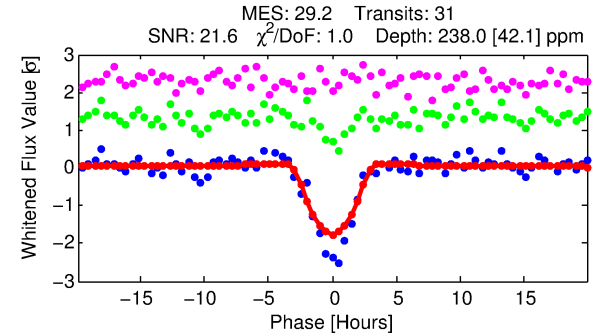
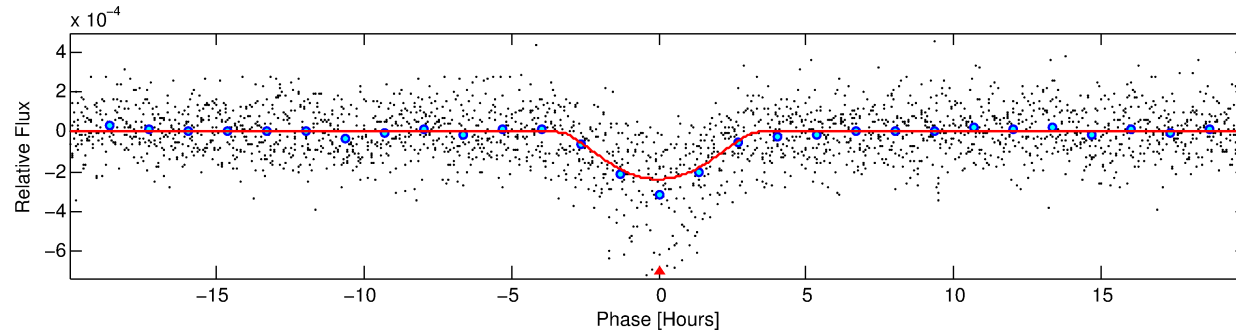
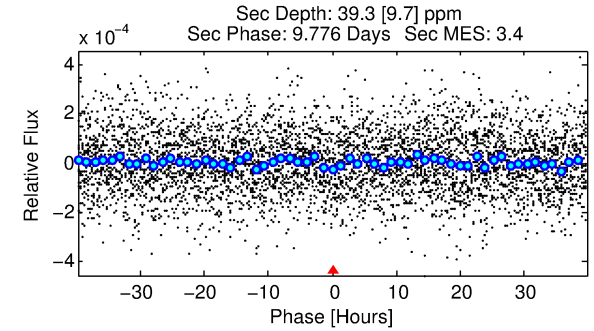
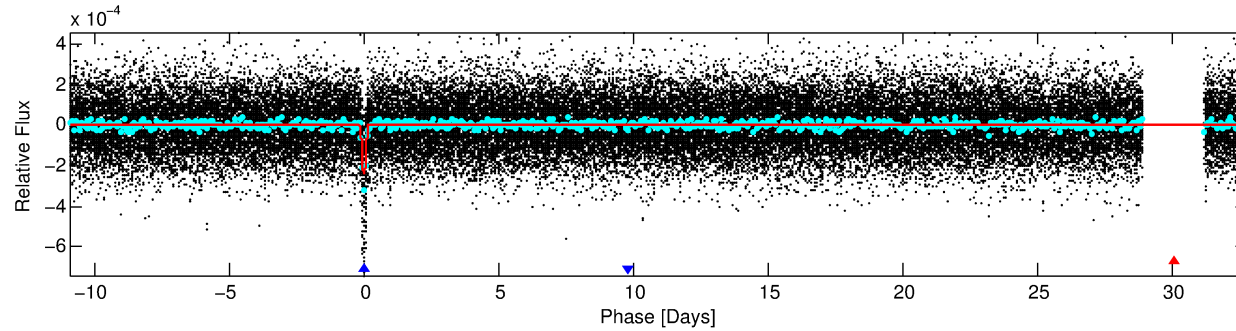
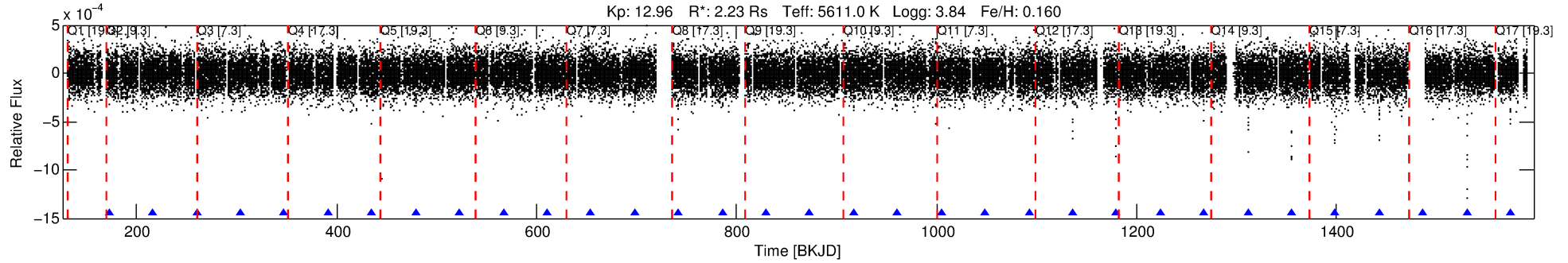
Ephemeris Match Information For 008635938-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
008635938-02	8635938	008700506-01	8700506	1:1	313.4	79	0	13.48	12.96	1792.30	Col-Anomaly	0	0.58	0.40

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 8635938 Candidate: 2 of 2 Period: 43.798 d
KOI: K03498.01 Corr: 0.982



DV Fit Results:

Period = 43.79849 [0.00039] d
Epoch = 172.5882 [0.0072] BKJD
Rp/R* = 0.0292 [0.0537]
a/R* = 12.30 [5.88]
b = 1.00 [0.07]
Seff = 63.91 [38.04]
Teff = 721 [107] K
Rp = 7.11 [13.30] Re
a = 0.2625 [0.0937] AU
Ag = 29.52 [110.02] [0.26σ]
Teffp = 2598 [2393] K [0.78σ]

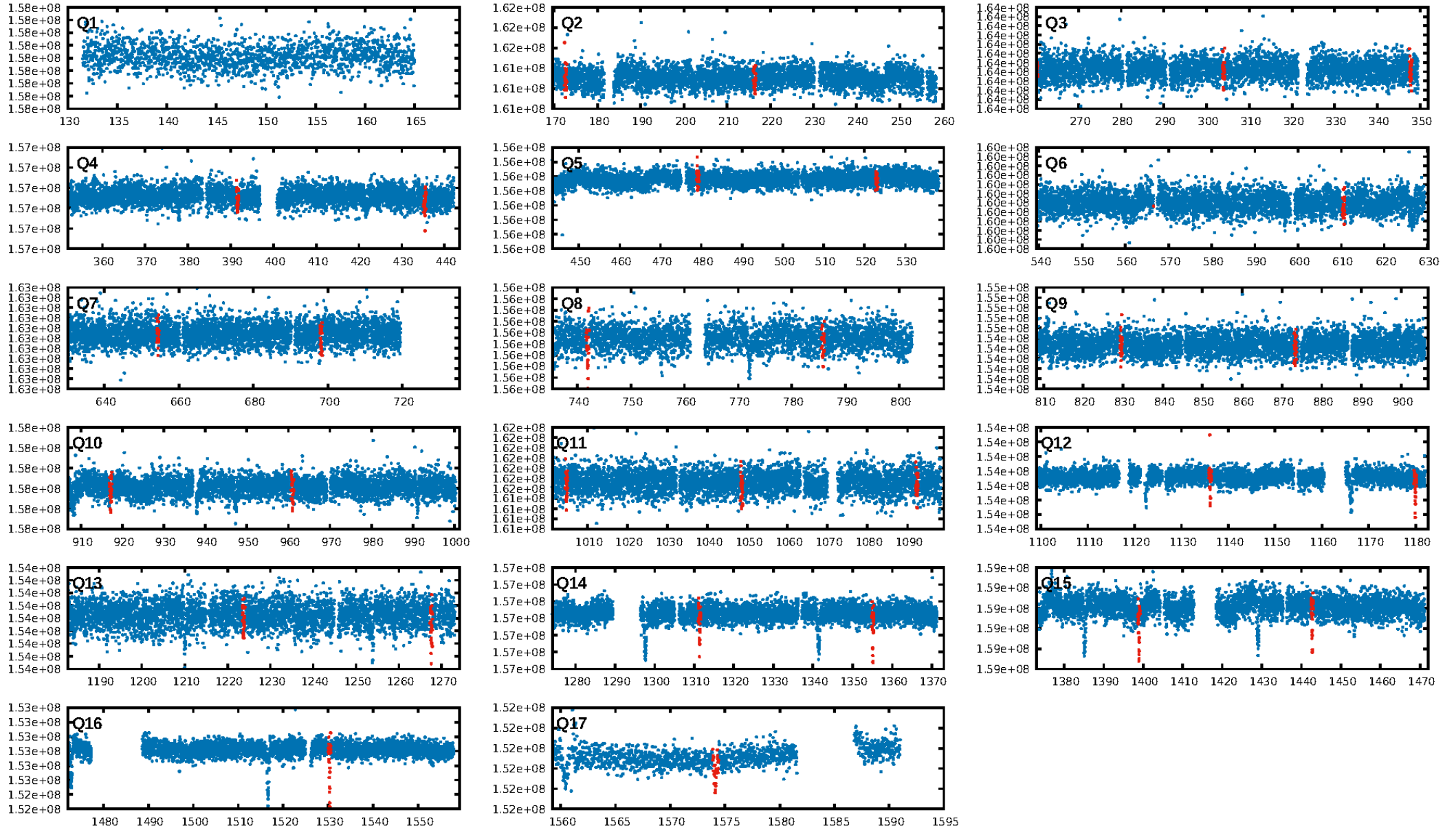
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.04e-175
RollingBand-fgt: 1.00 [30/30]
GhostDiagnostic-chr: -55.02
Centroid-sig: 0.0%
Centroid-so: 1.650 arcsec [3.94σ]
OotOffset-rm: 1.053 arcsec [2.10σ]
KicOffset-rm: 1.024 arcsec [2.05σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 1.00 [16/16]

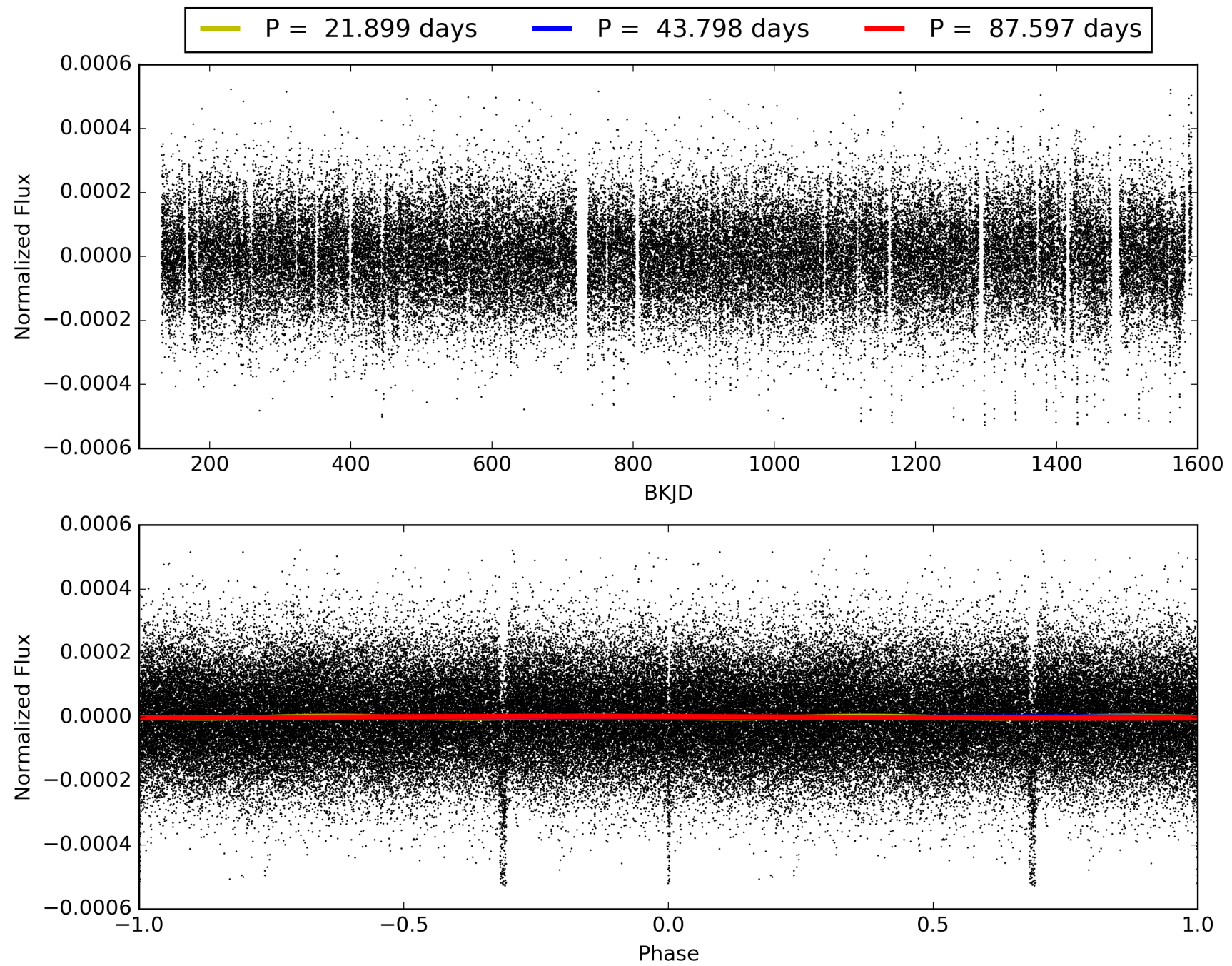
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:11:37 Z

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

TCE 008635938-02, PDC Light Curves

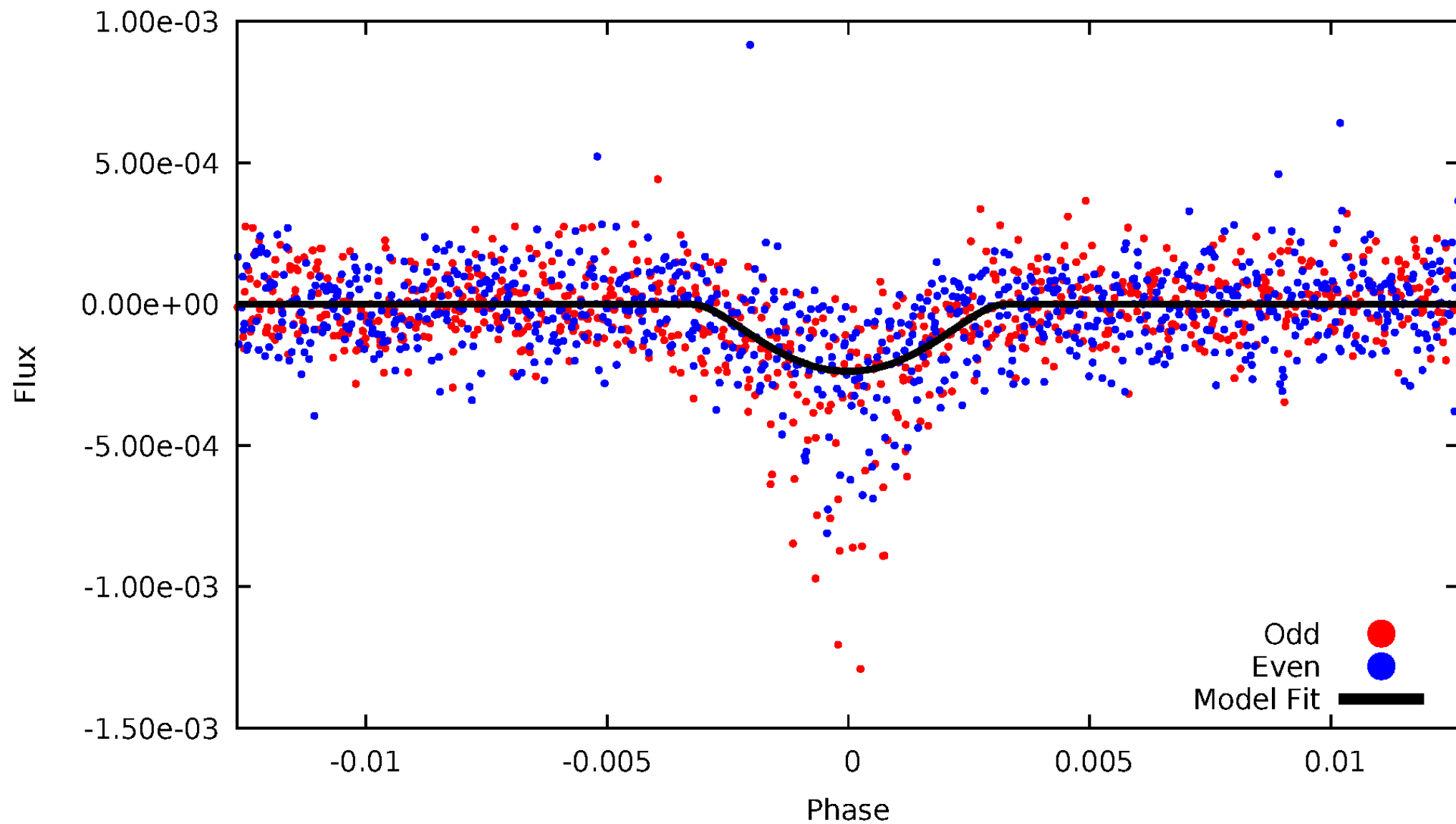


TCE 008635938-02



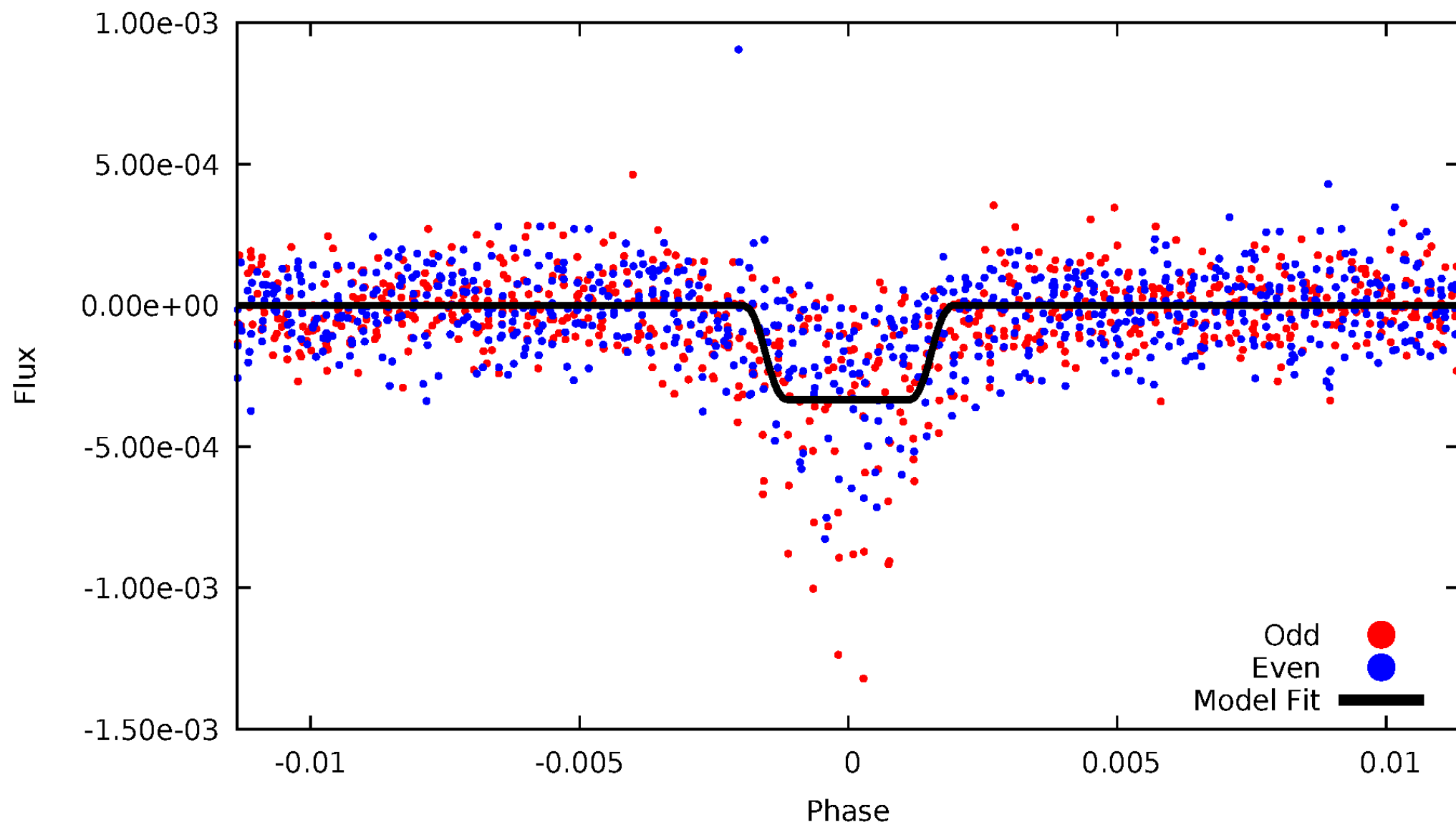
DV Odd/Even

TCE 008635938-02



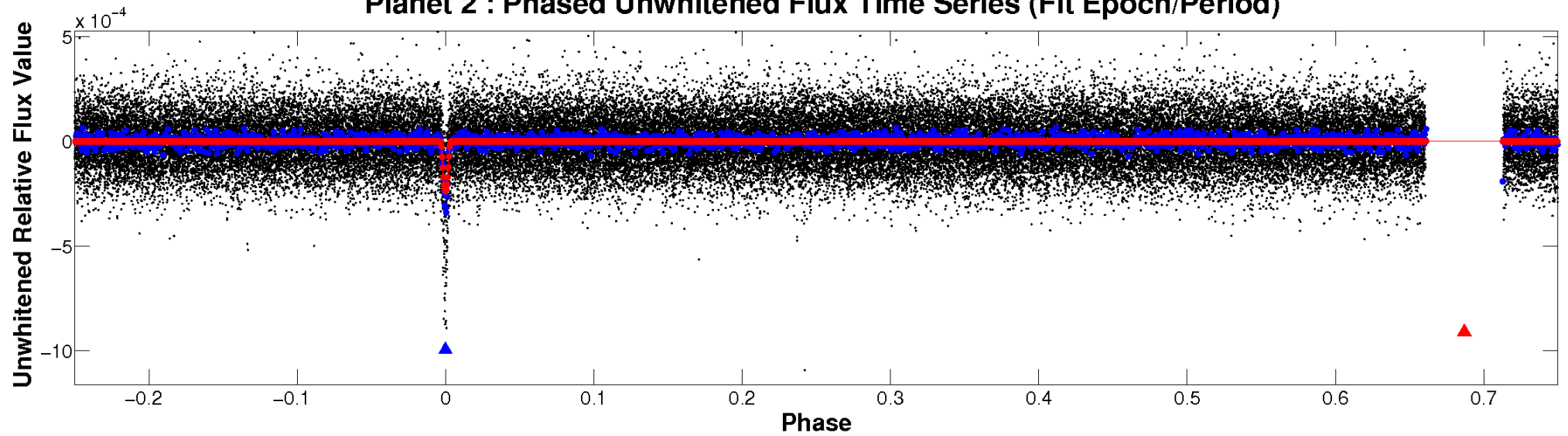
ALT Odd/Even

TCE 008635938-02

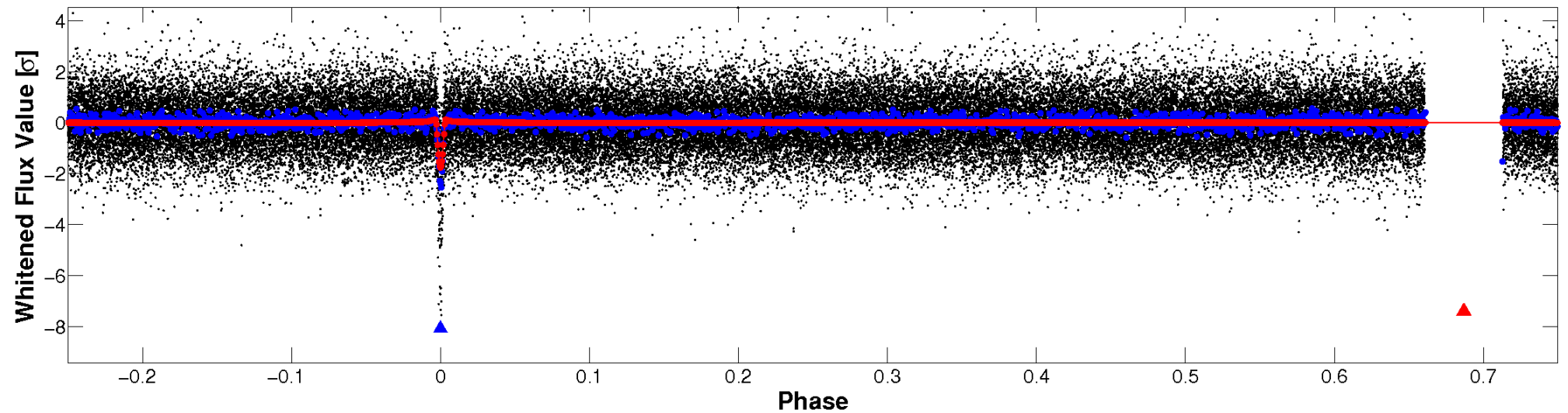


Non-Whitened Vs. Whitened Light Curve

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

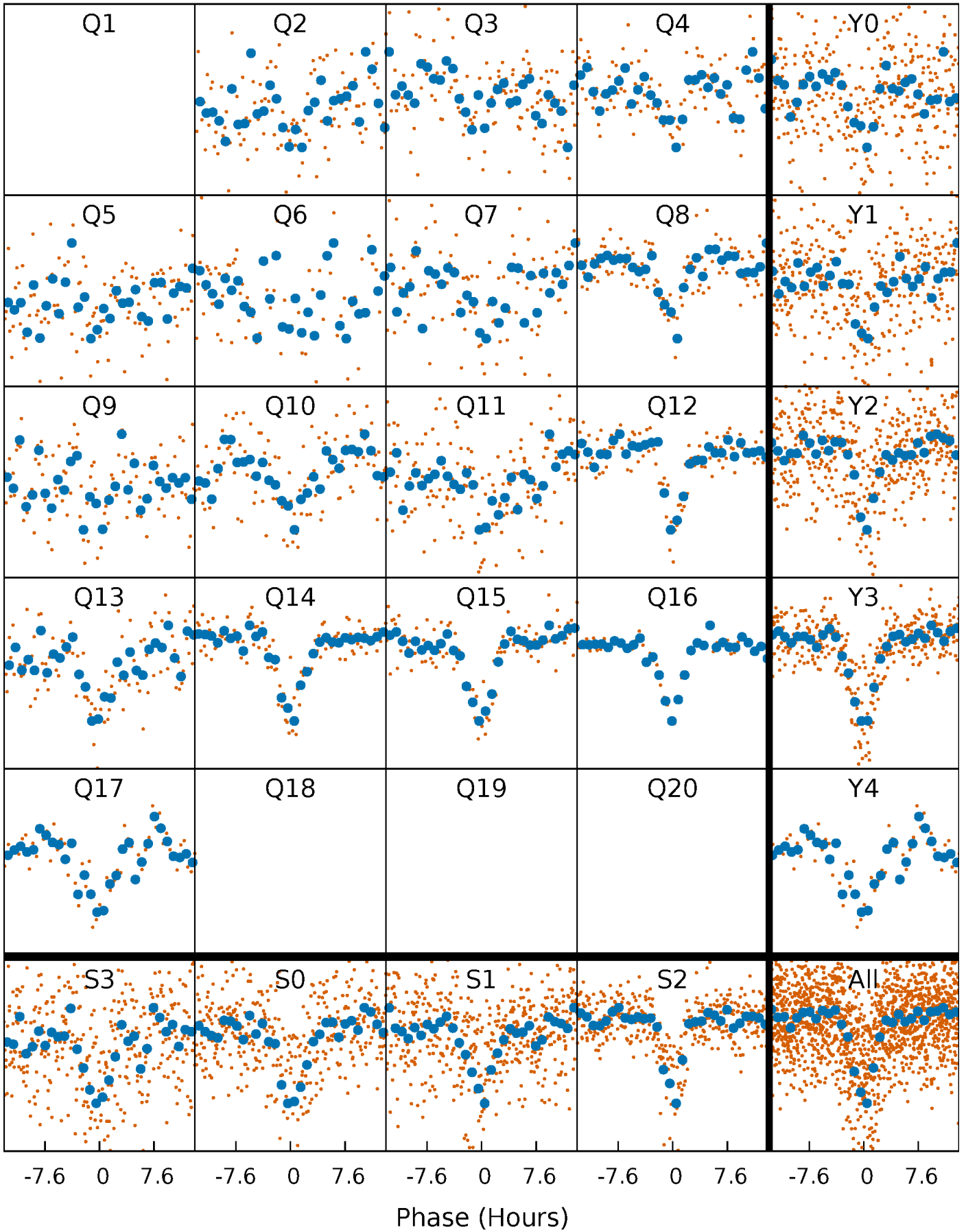


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



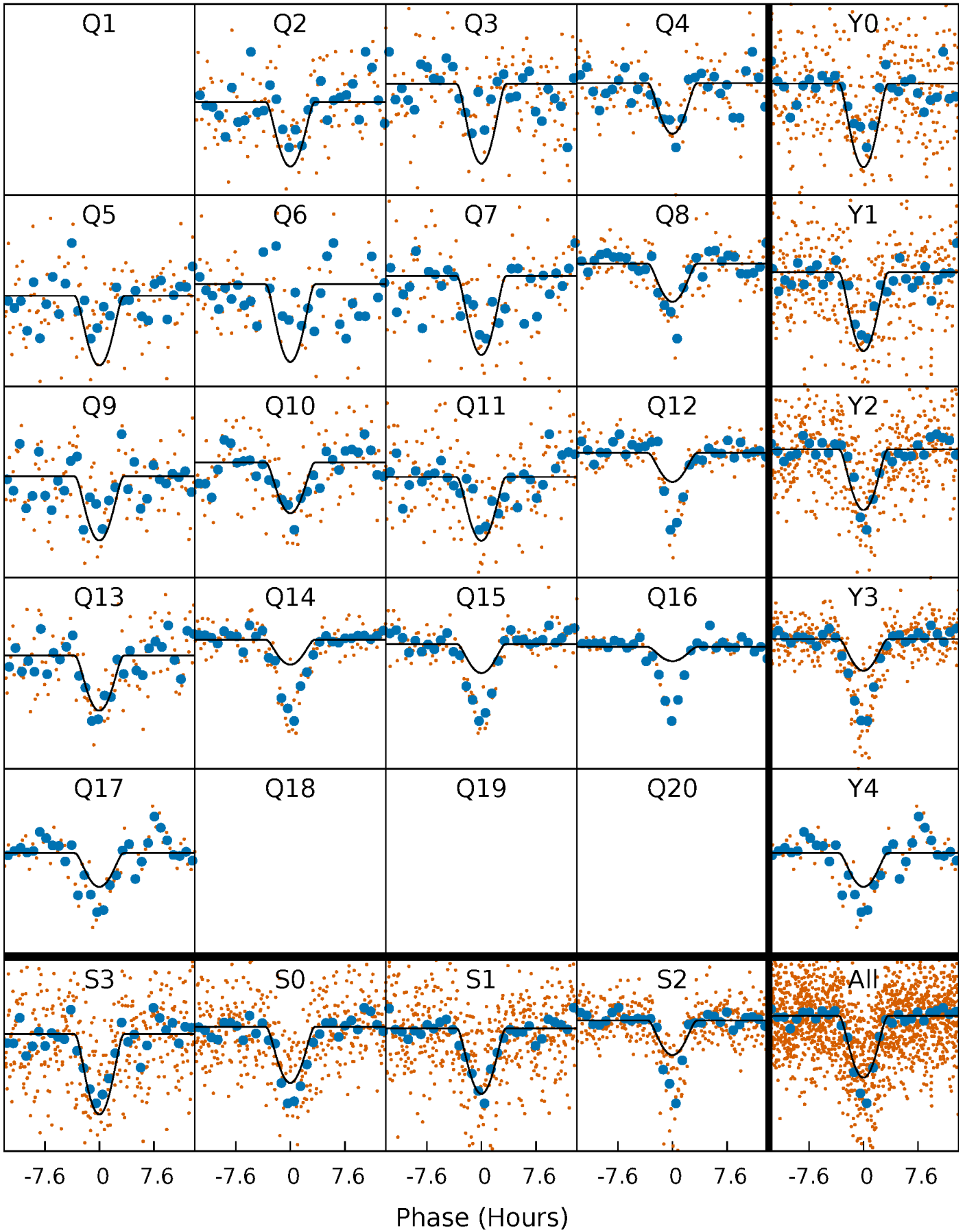
PDC Quarter-Phased Transit Curves

TCE 008635938-02 P= 43.798492 Days $T_0=172.588168$ (BKJD)



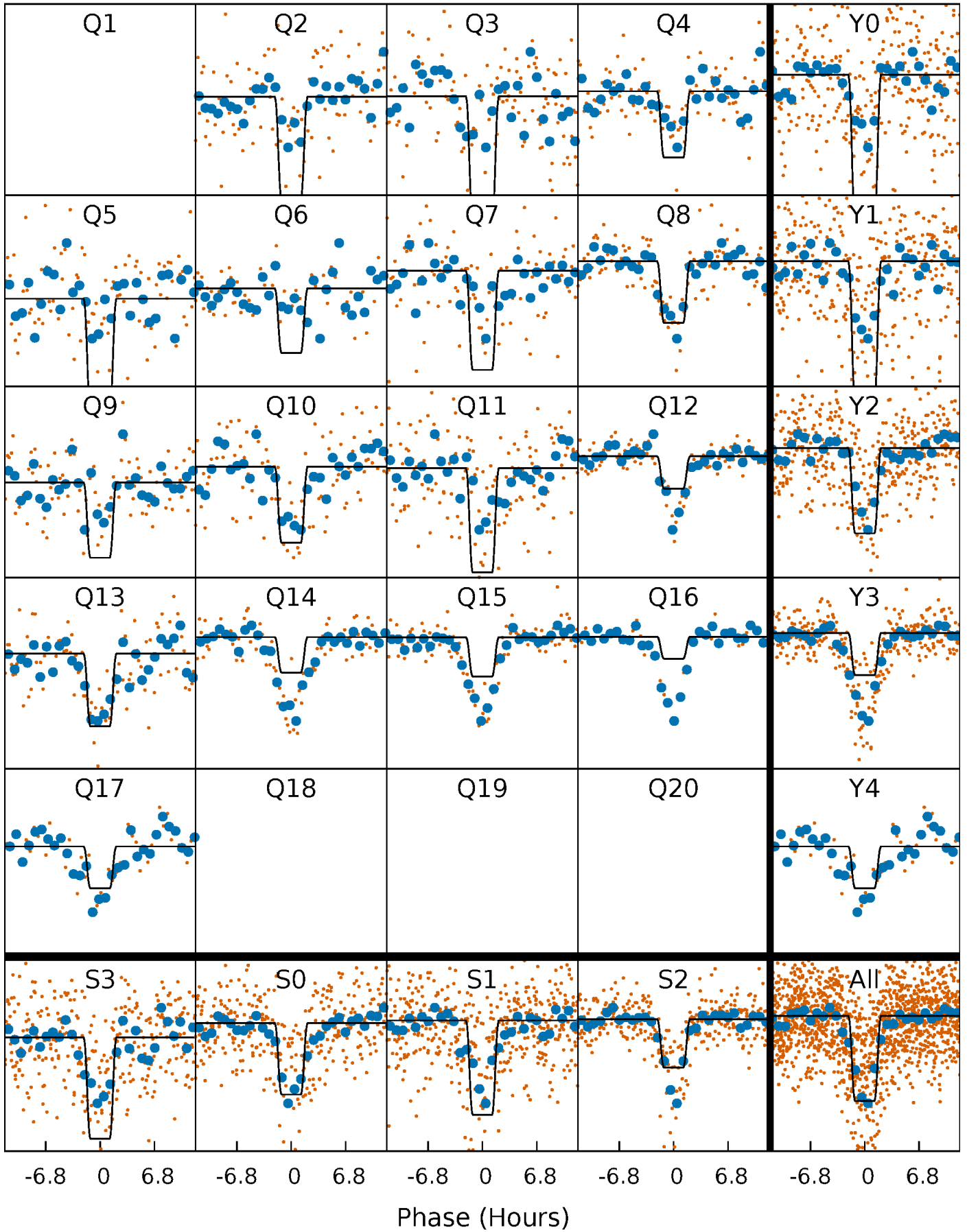
DV Quarter-Phased Transit Curves

TCE 008635938-02 P= 43.798492 Days $T_0=172.588168$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

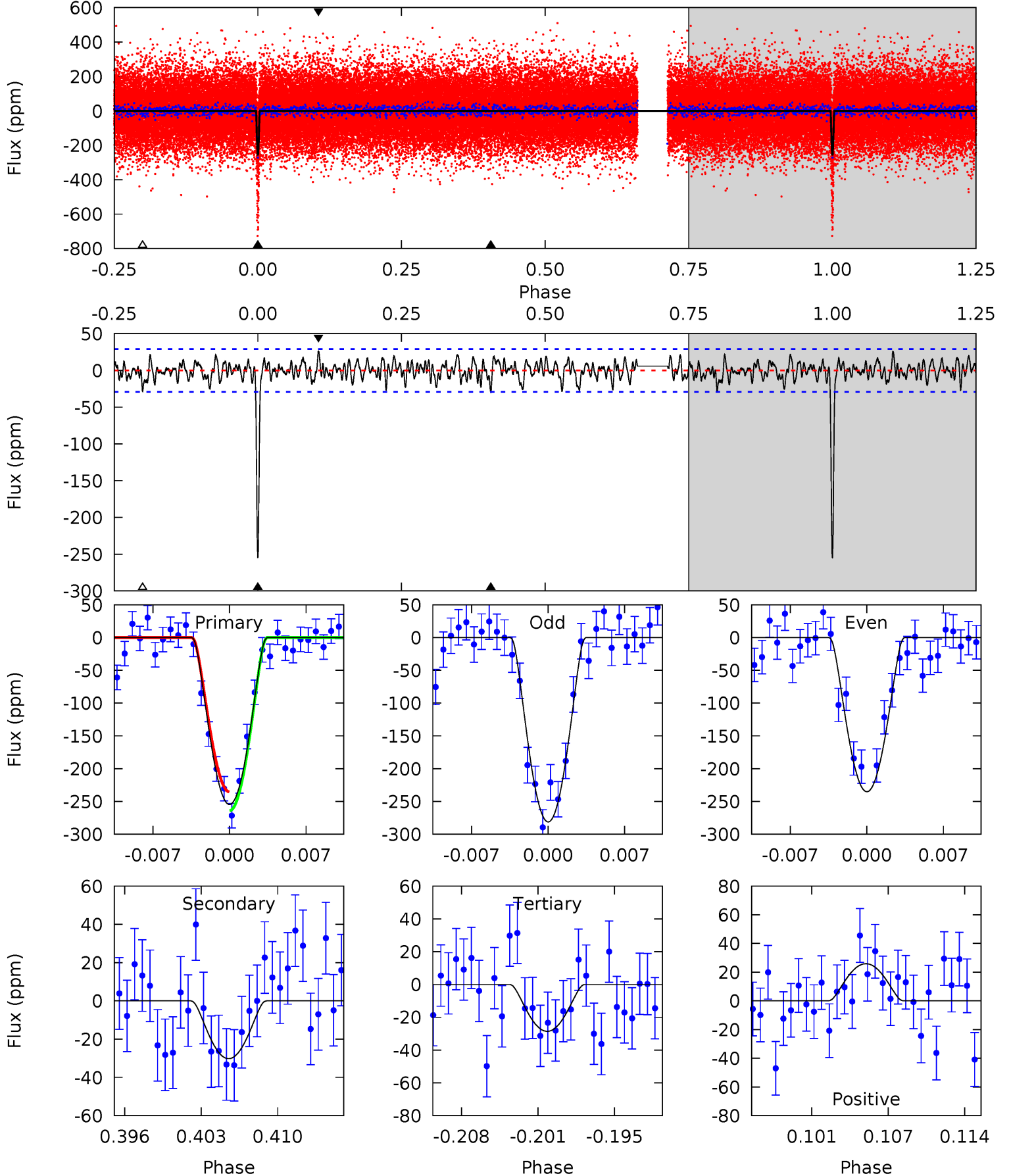
TCE 008635938-02 P= 43.798329 Days $T_0=172.592062$ (BKJD)



DV Model-Shift Uniqueness Test

008635938-02, $P = 43.798492$ Days, $E = 128.789676$ Days

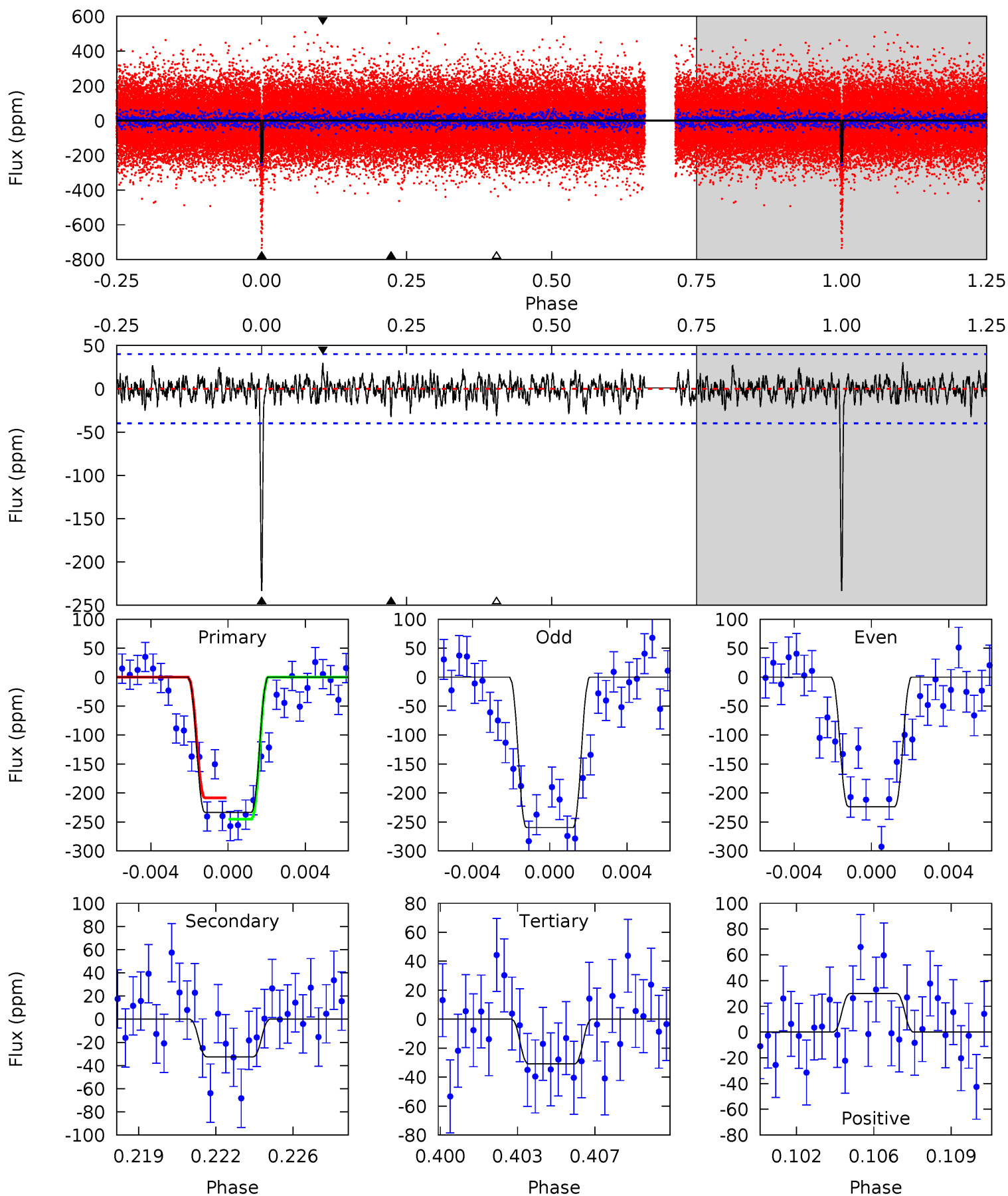
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.6	5.29	5.01	4.54	5.10	2.71	1.67	39.6	40.1	0.29	0.76	4.04	1.53	0.09	2.51



Alt Model-Shift Uniqueness Test

008635938-02, $P = 43.798329$ Days, $E = 128.793733$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.4	4.23	4.02	3.89	5.21	2.90	1.21	26.4	26.5	0.21	0.34	2.39	1.56	0.11	2.40



Stellar Parameters For KIC 008635938

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5611^{+186}_{-152}	$3.842^{+0.344}_{-0.108}$	$0.160^{+0.250}_{-0.250}$	$2.227^{+0.371}_{-0.803}$	$1.259^{+0.140}_{-0.260}$	$0.161^{+0.380}_{-0.054}$
	+3%/-3%	+9%/-3%	+156%/-156%	+17%/-36%	+11%/-21%	+237%/-33%
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 008635938-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-30 ± 6	$11.47^{+11.21}_{-7.77}$	996^{+62}_{-90}	2634^{+982}_{-430}	$8.767^{+72.250}_{-6.593}$
Alt.	-32 ± 8	$10.00^{+10.06}_{-6.86}$	991^{+67}_{-96}	2745^{+1269}_{-434}	12^{+119}_{-9}

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

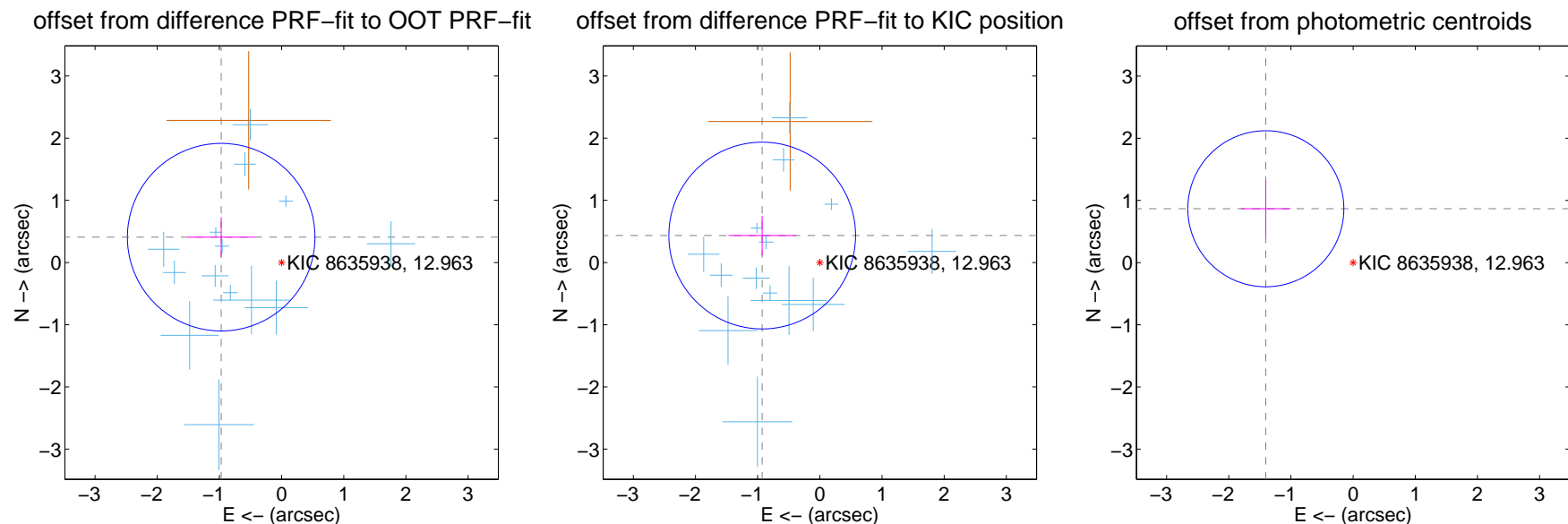
DV Centroid Data

Supplemental centroid analysis for 008635938-02. Kepler magnitude: 12.96. Transit SNR 21.59

There are 14 quarters with good PRF difference image offsets

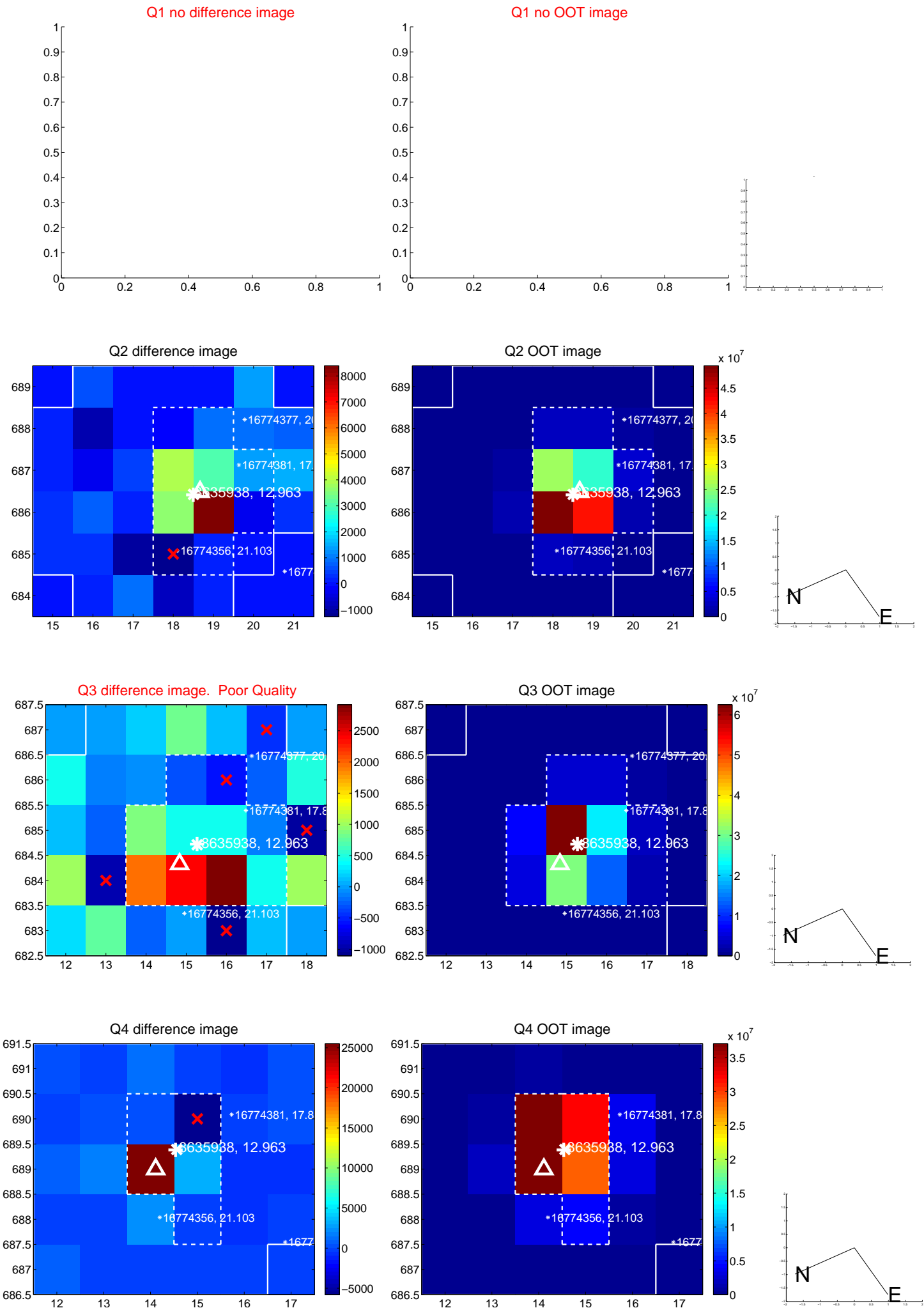
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.053 ± 0.503	2.10	0.971 ± 0.542	0.408 ± 0.322
PRF-fit source offset from KIC position	1.024 ± 0.500	2.05	0.927 ± 0.542	0.434 ± 0.318
photometric centroid source offset	1.65 ± 0.42	3.94	1.40 ± 0.40	0.87 ± 0.46

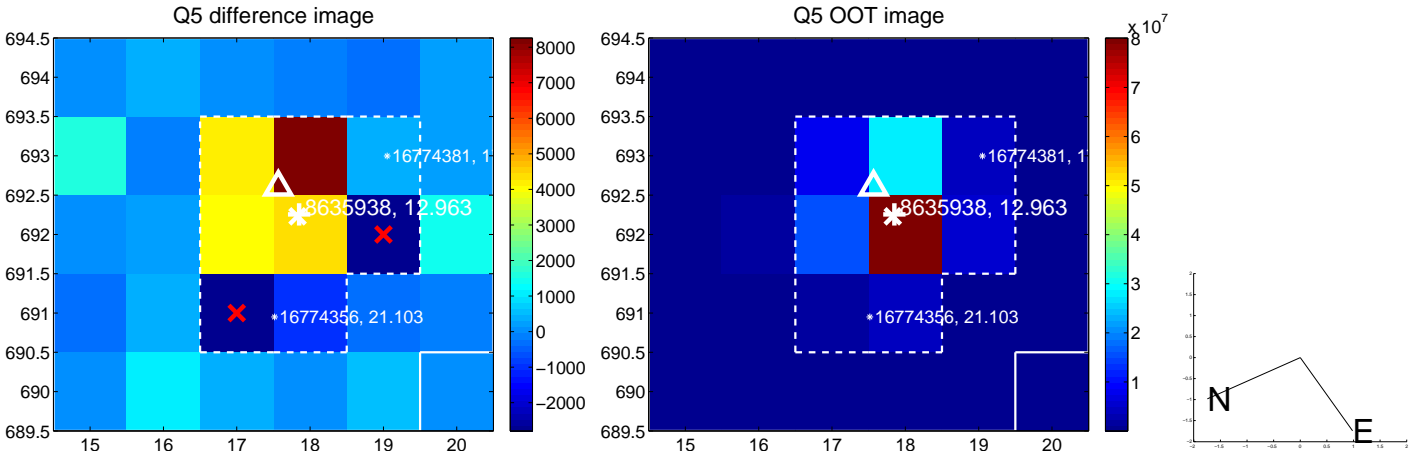


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

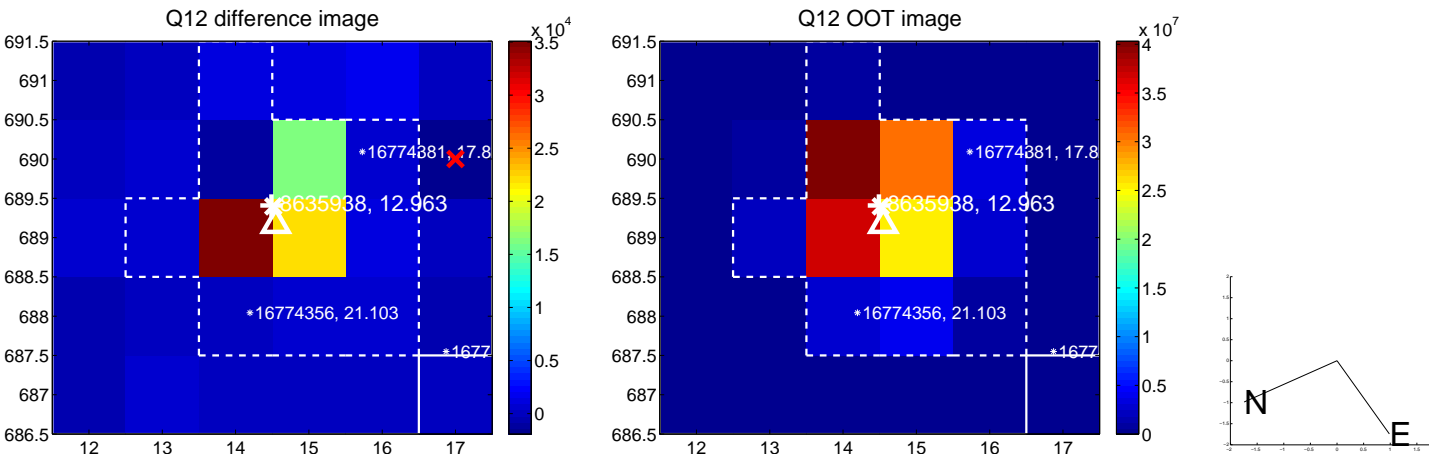
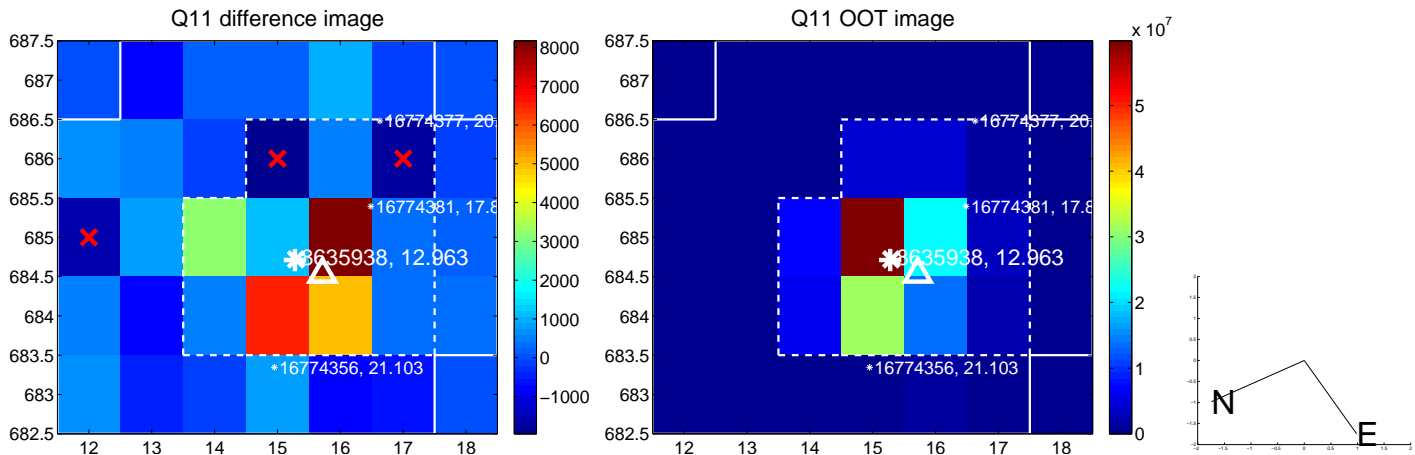
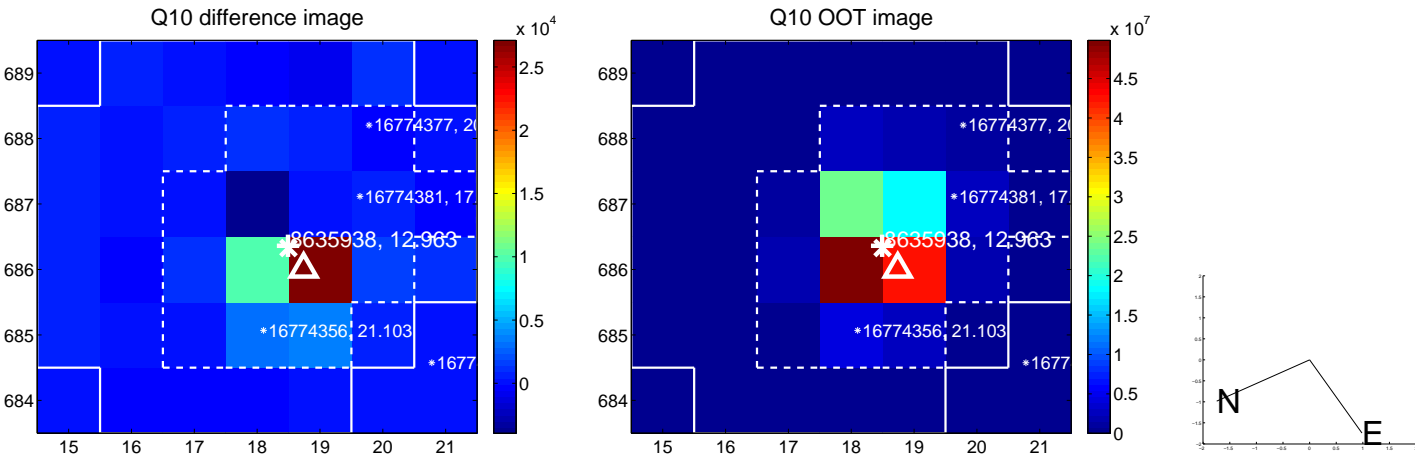
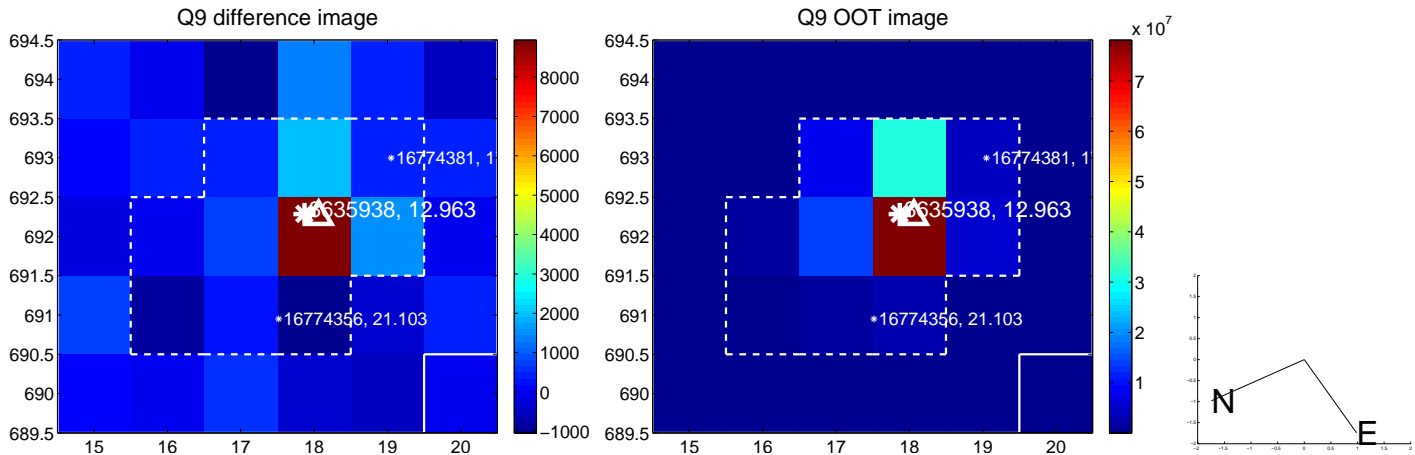
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



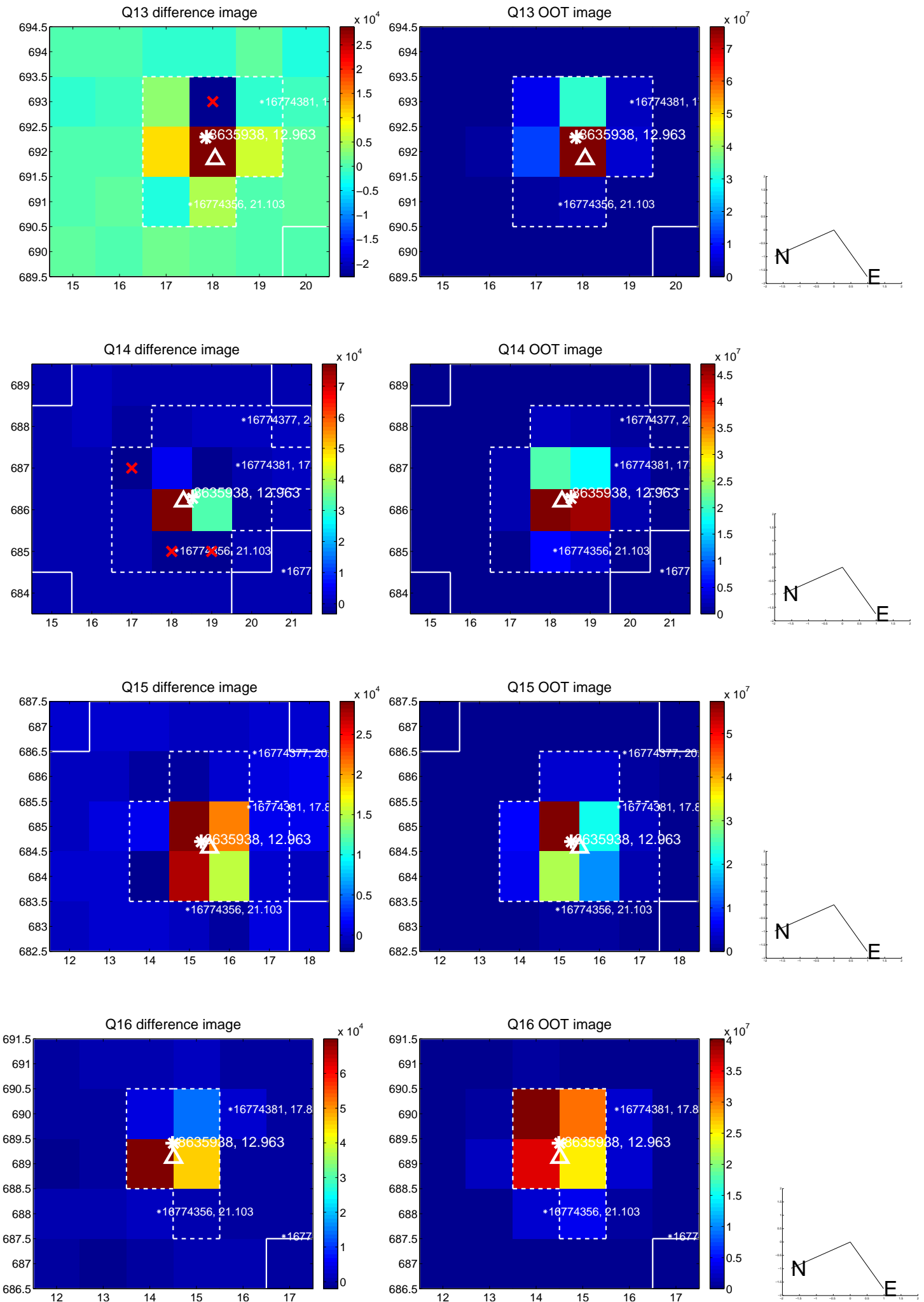
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



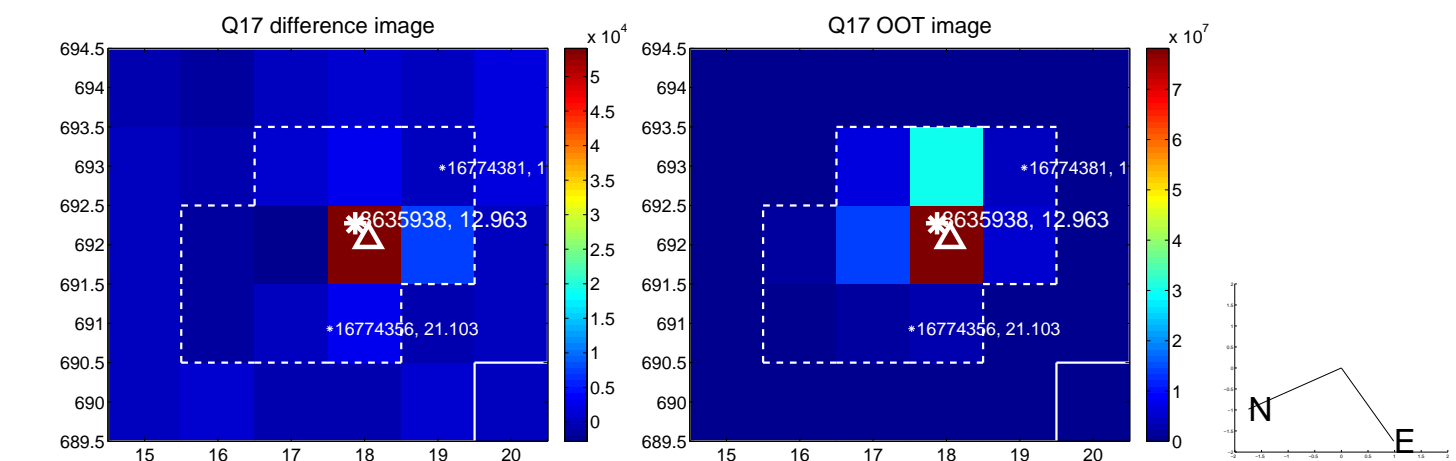
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



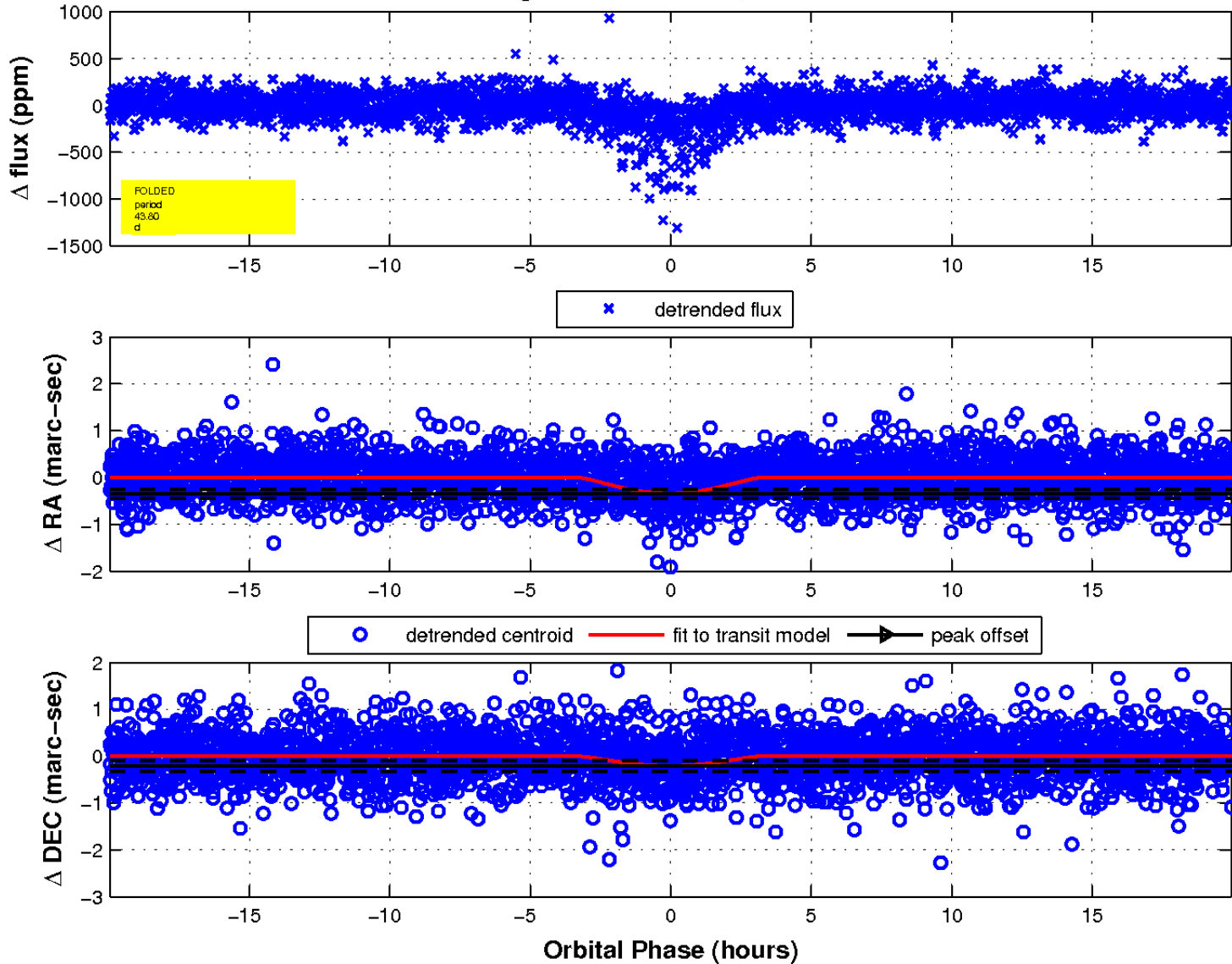
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

