

KIC 003231137

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})
003231137-01	OBS	0382.01	3.900139	133.371032	458.3	3.604	73.3	61.8	0.95	6407	2.76	583.55
003231137-02	OBS	No	3.900053	135.334344	50.8	2.525	7.9	8.3	0.95	6407	0.78	583.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003231137-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
003231137-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—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 003231137-01

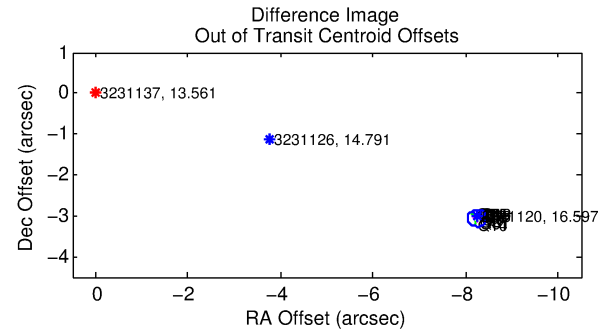
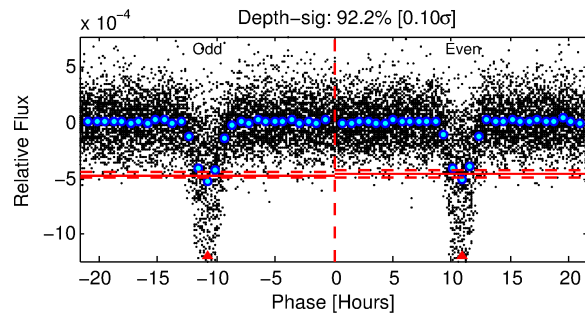
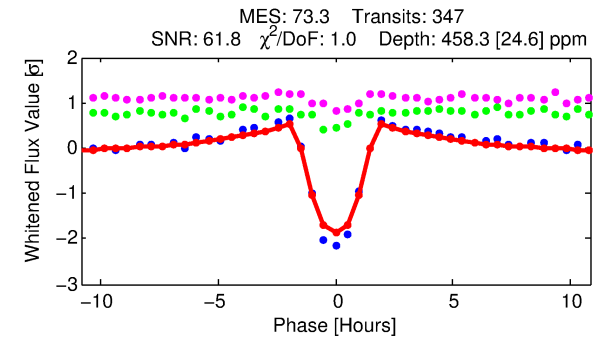
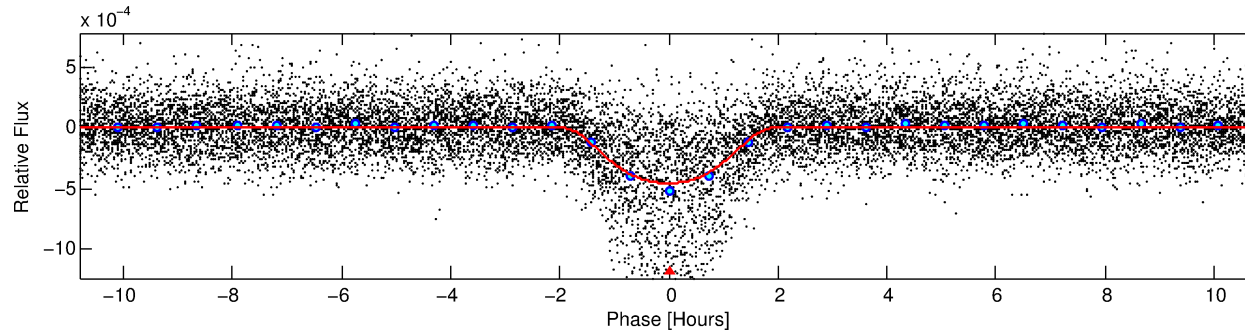
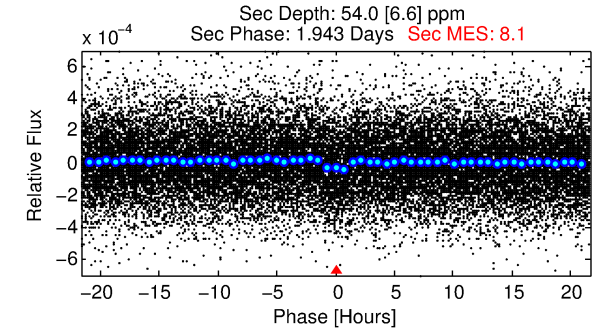
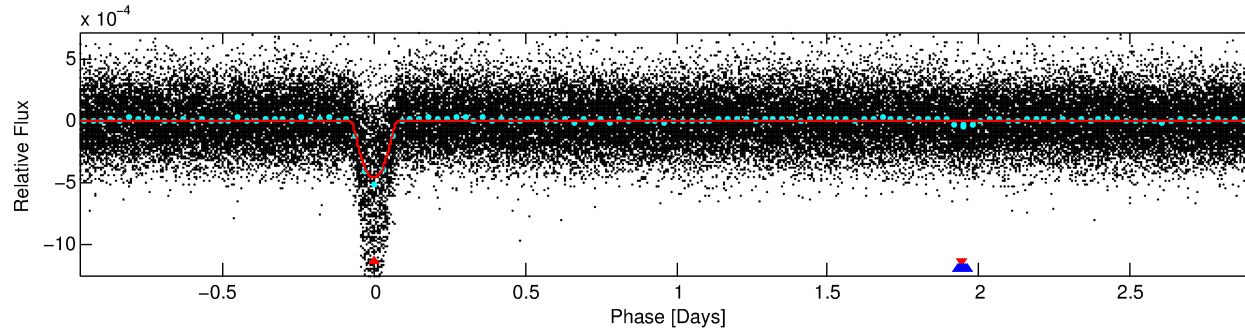
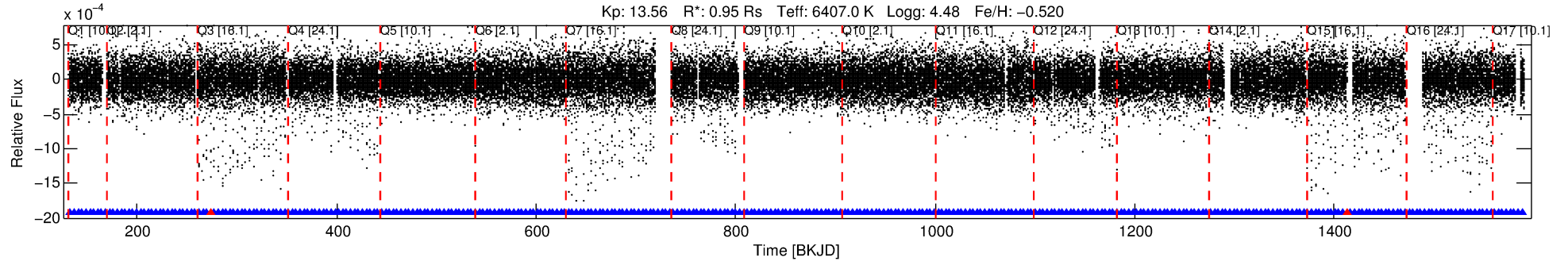
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003231137-01	3231137	3643.01	3231120	1:1	8.7	1	2	16.60	13.56	305.02	Direct-PRF	0	0.41	0.41

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: 3231137 Candidate: 1 of 2 Period: 3.900 d
KOI: K00382.01 Corr: 0.978

Kp: 13.56 R*: 0.95 Rs Teff: 6407.0 K Logg: 4.48 Fe/H: -0.520



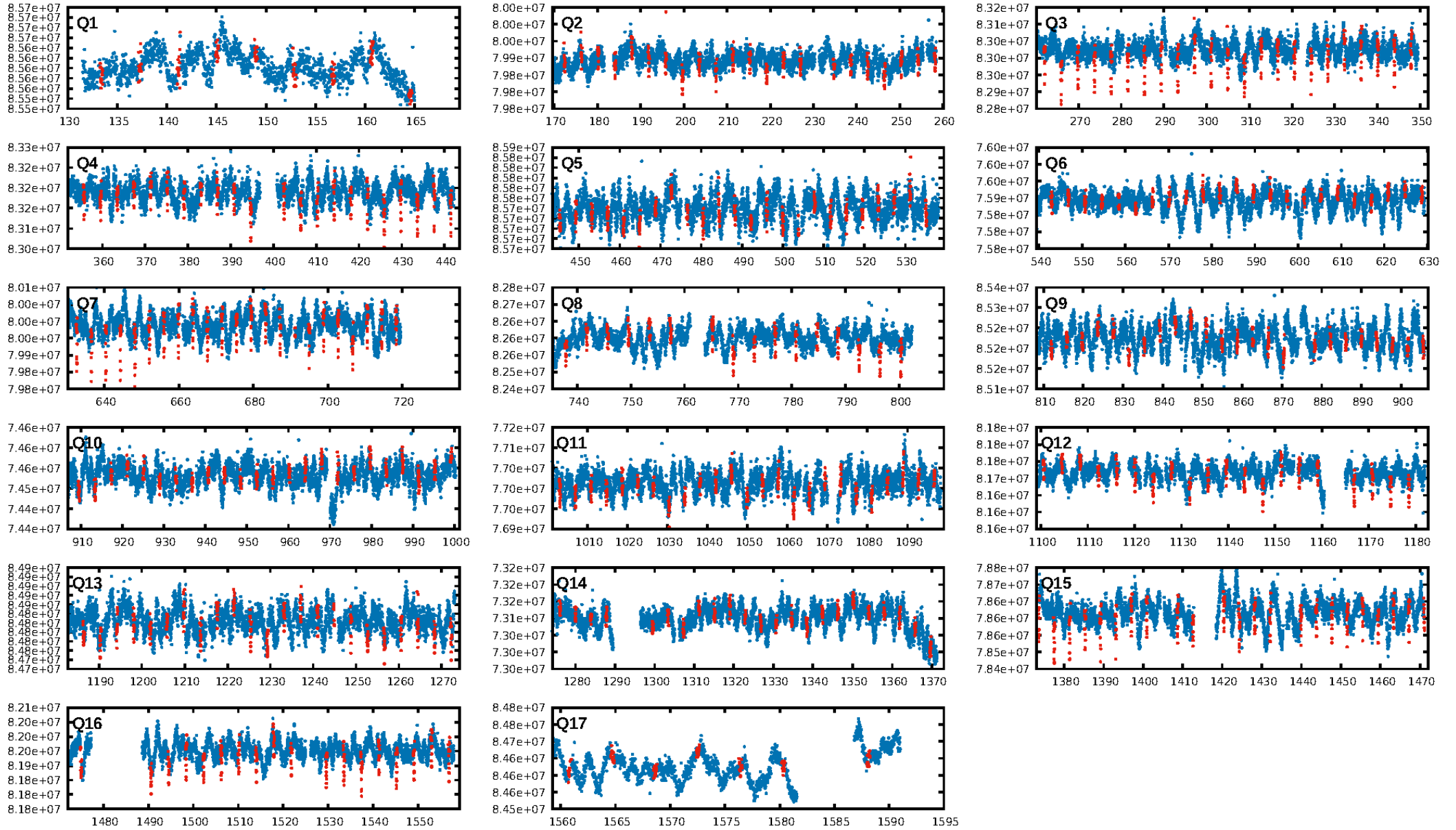
DV Fit Results:

Period = 3.90014 [0.00001] d
Epoch = 133.3710 [0.0010] BKJD
Rp/R* = 0.0265 [0.0016]
a/R* = 2.76 [0.12]
b = 0.98 [0.00]
Seff = 583.55 [230.61]
Teq = 1253 [124] K
Rp = 2.76 [0.84] Re
a = 0.0486 [0.0124] AU
Ag = 9.17 [3.80] [2.15σ]
Teff = 3372 [177] K [9.82σ]

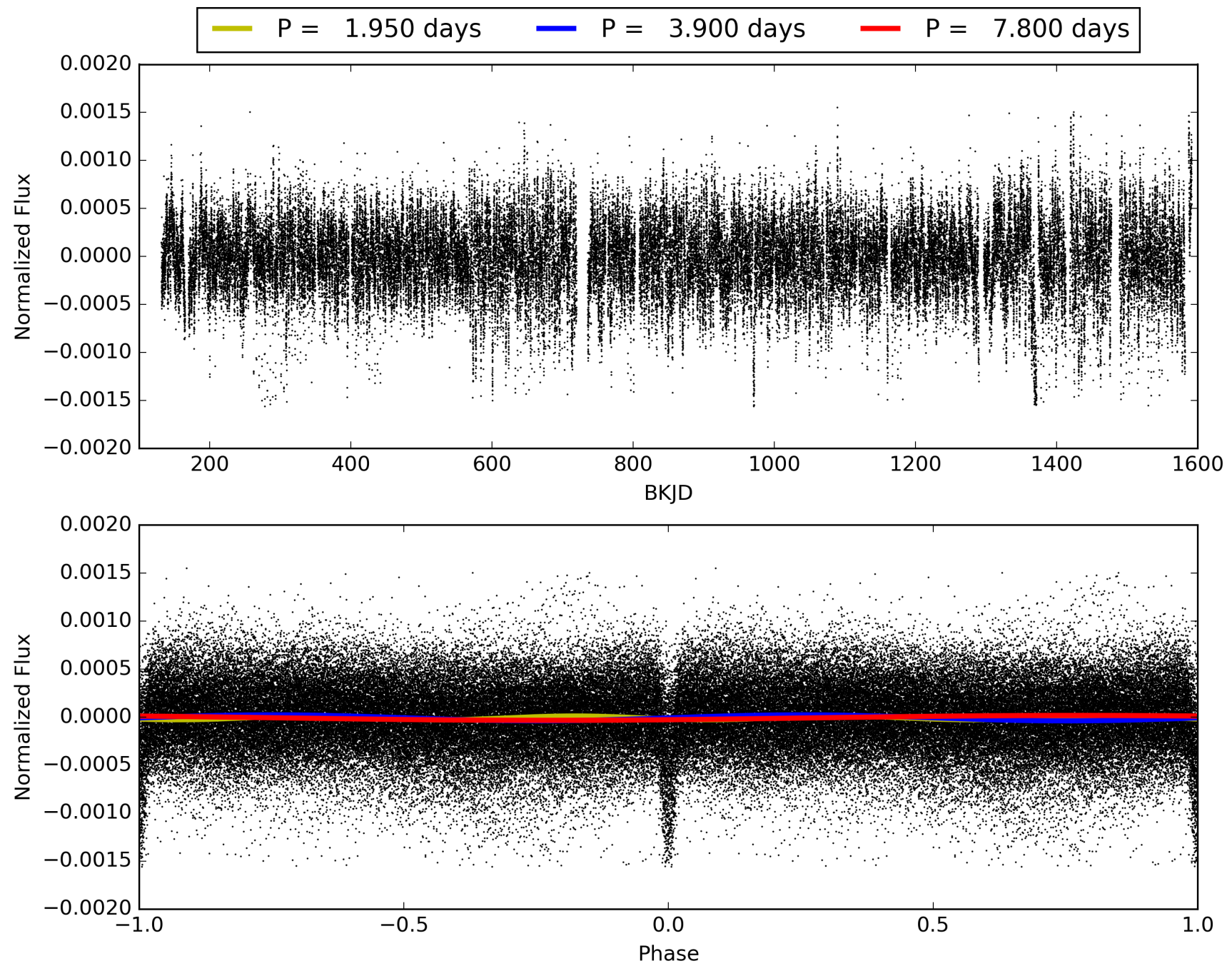
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [329/331]
GhostDiagnostic-chr: -0.6672
Centroid-sig: 0.0%
Centroid-so: 52.769 arcsec [316.01σ]
OotOffset-rm: 8.791 arcsec [128.52σ]
KicOffset-rm: 8.880 arcsec [131.57σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 003231137-01, PDC Light Curves

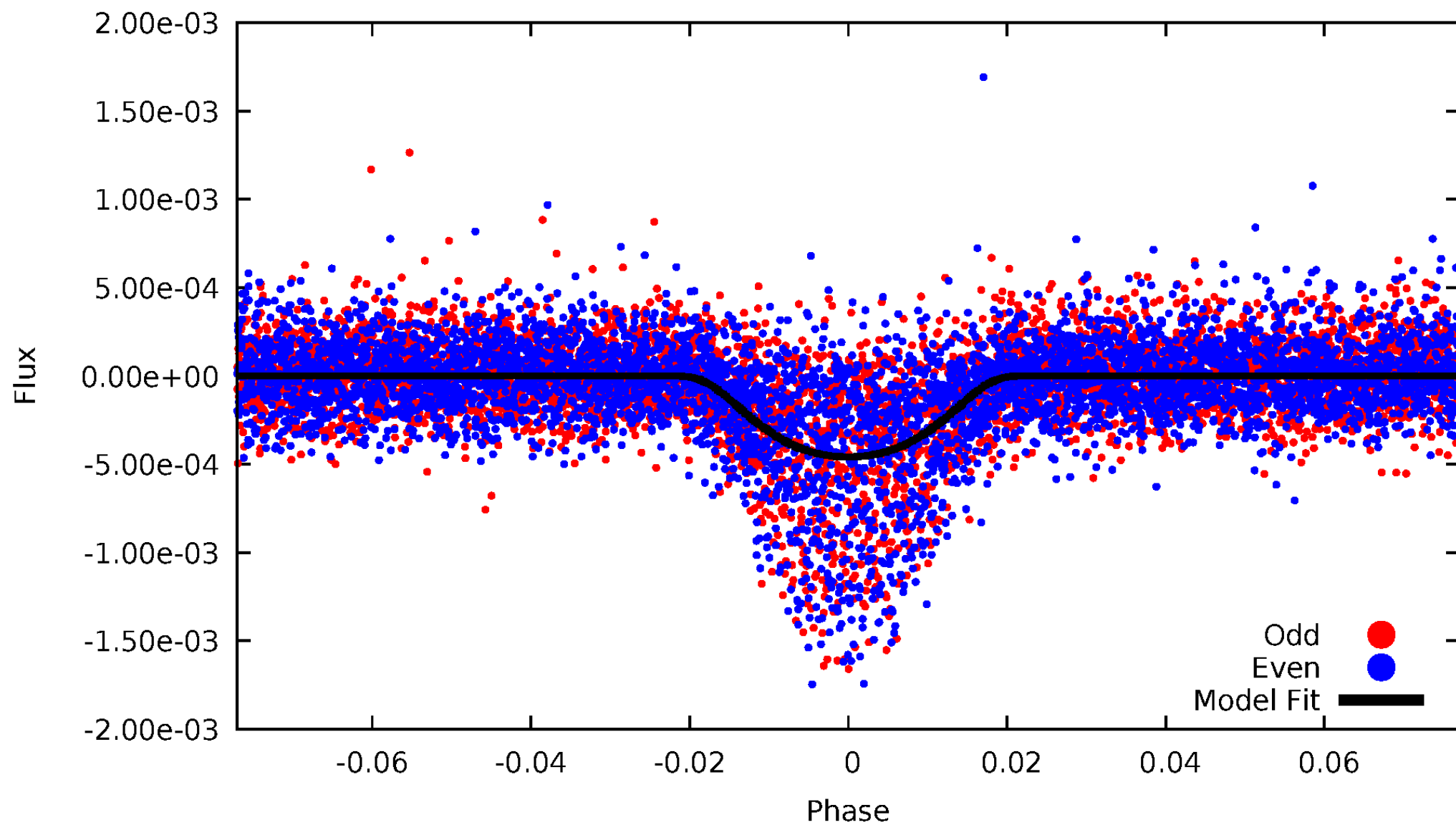


TCE 003231137-01



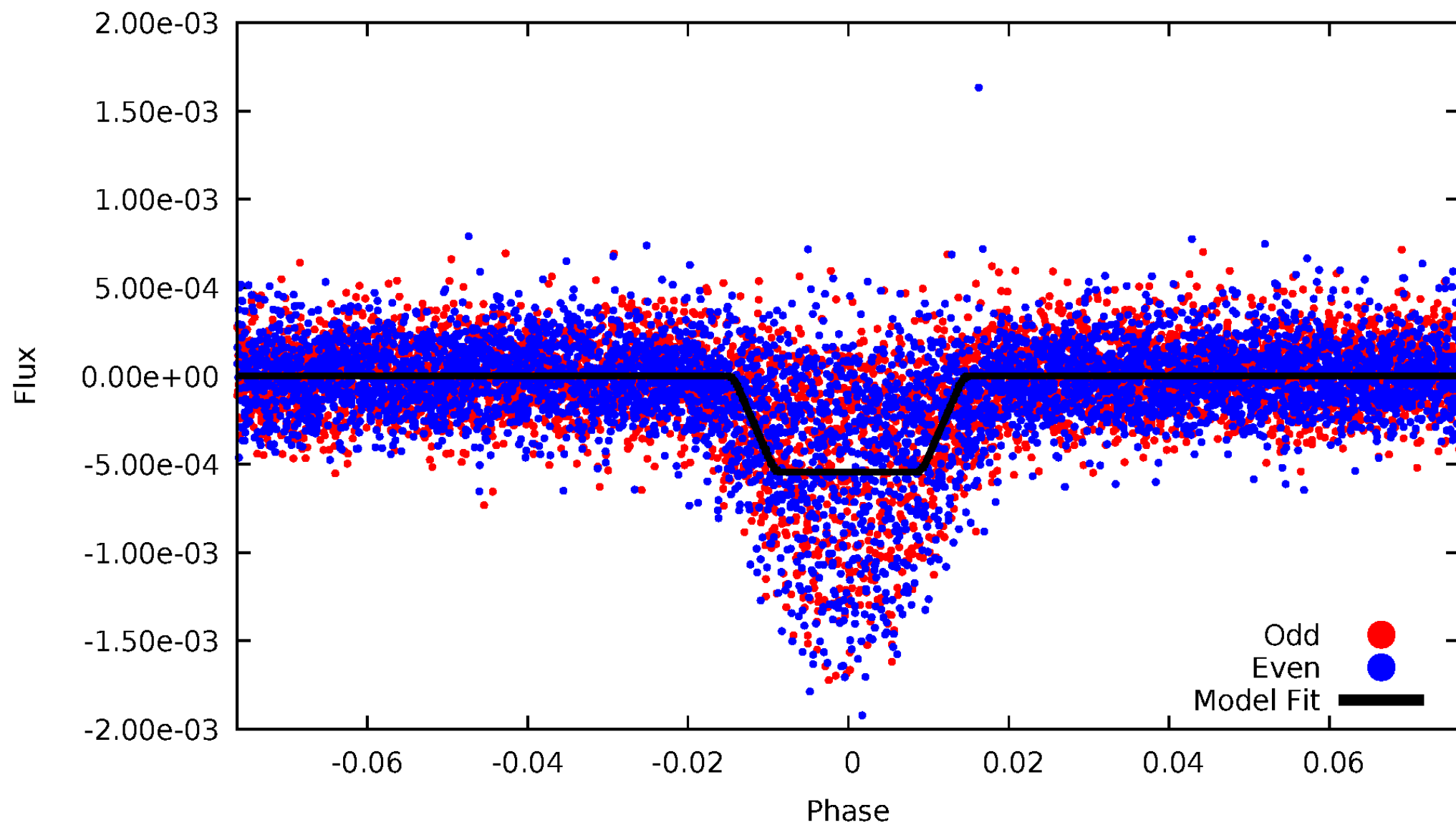
DV Odd/Even

TCE 003231137-01



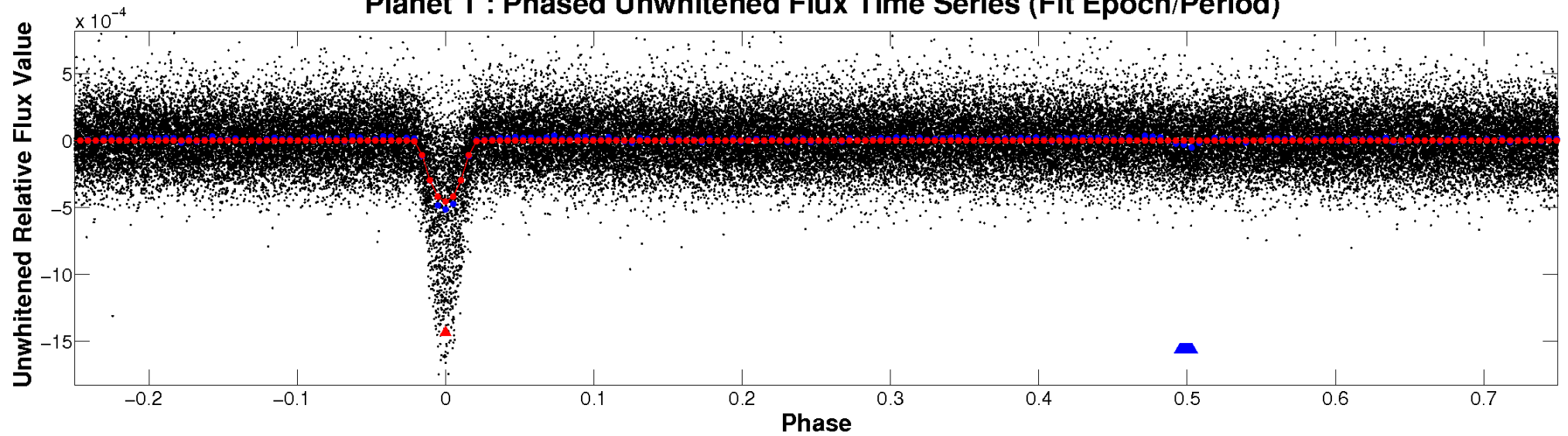
ALT Odd/Even

TCE 003231137-01

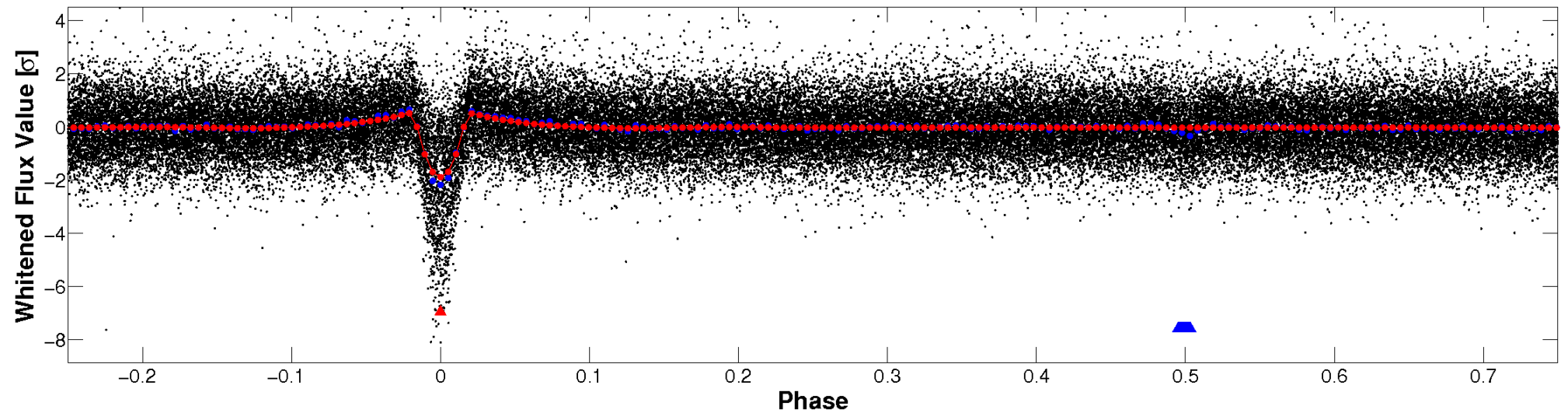


Non-Whitened Vs. Whitened Light Curve

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

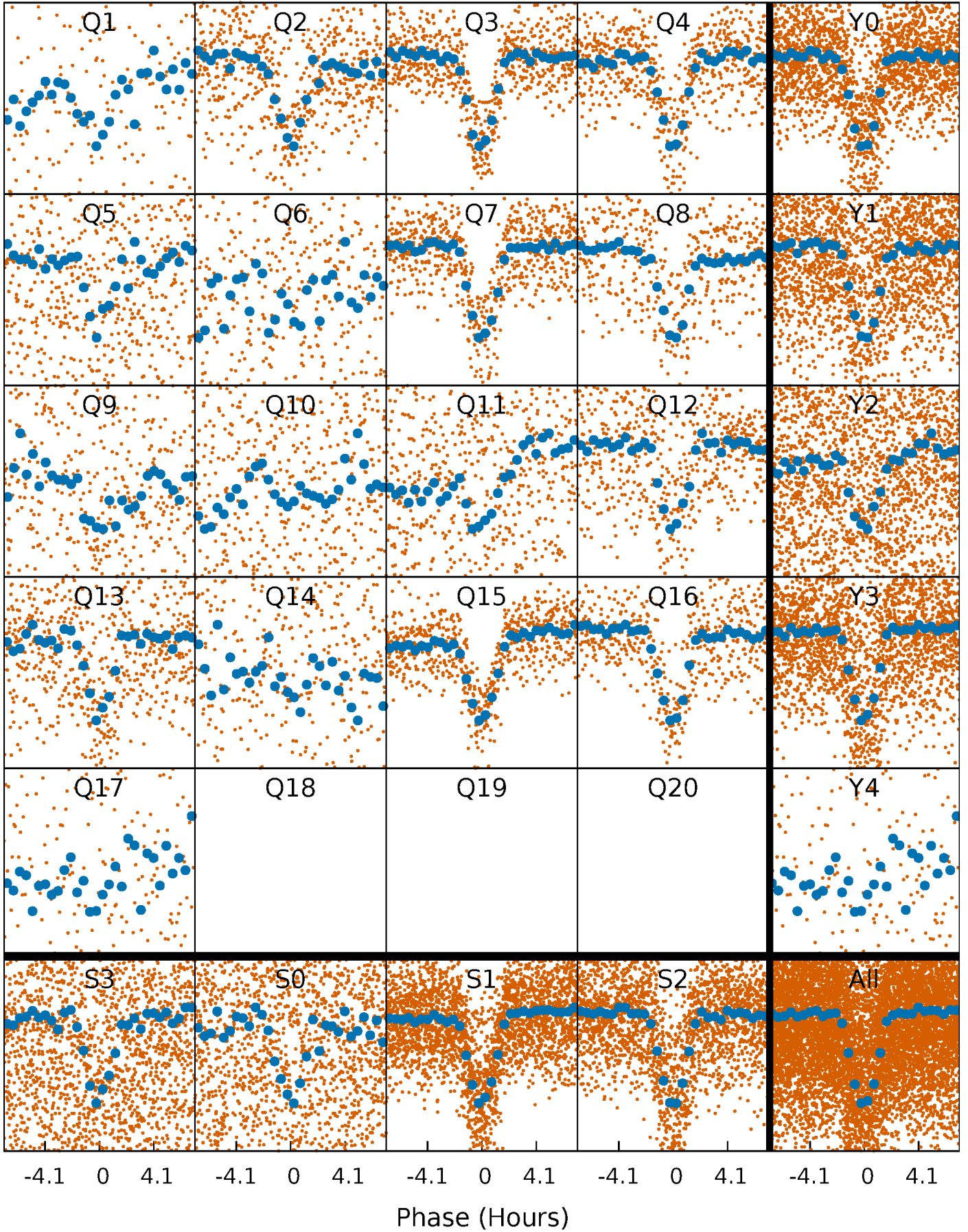


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



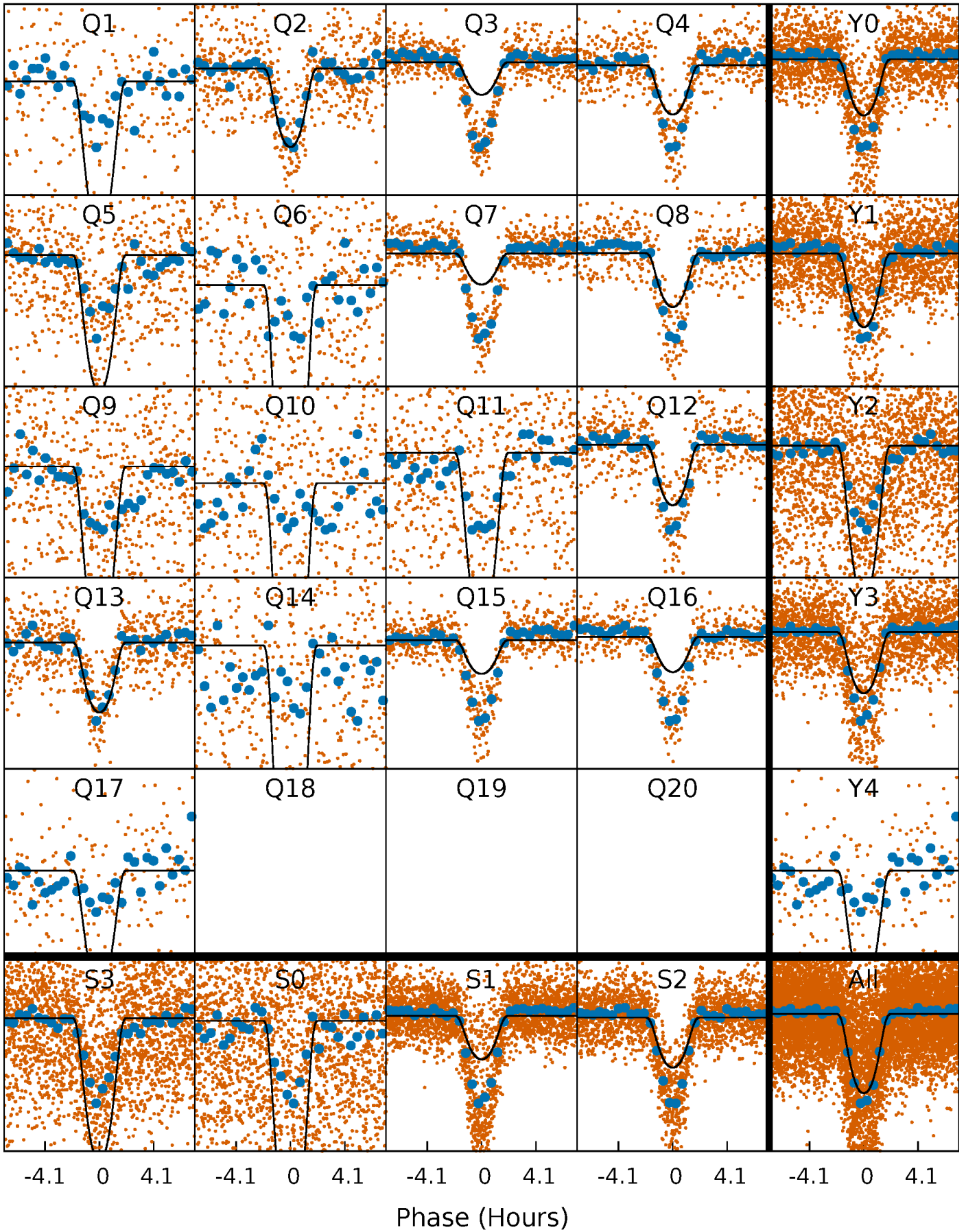
PDC Quarter-Phased Transit Curves

TCE 003231137-01 P= 3.900139 Days $T_0=133.371032$ (BKJD)



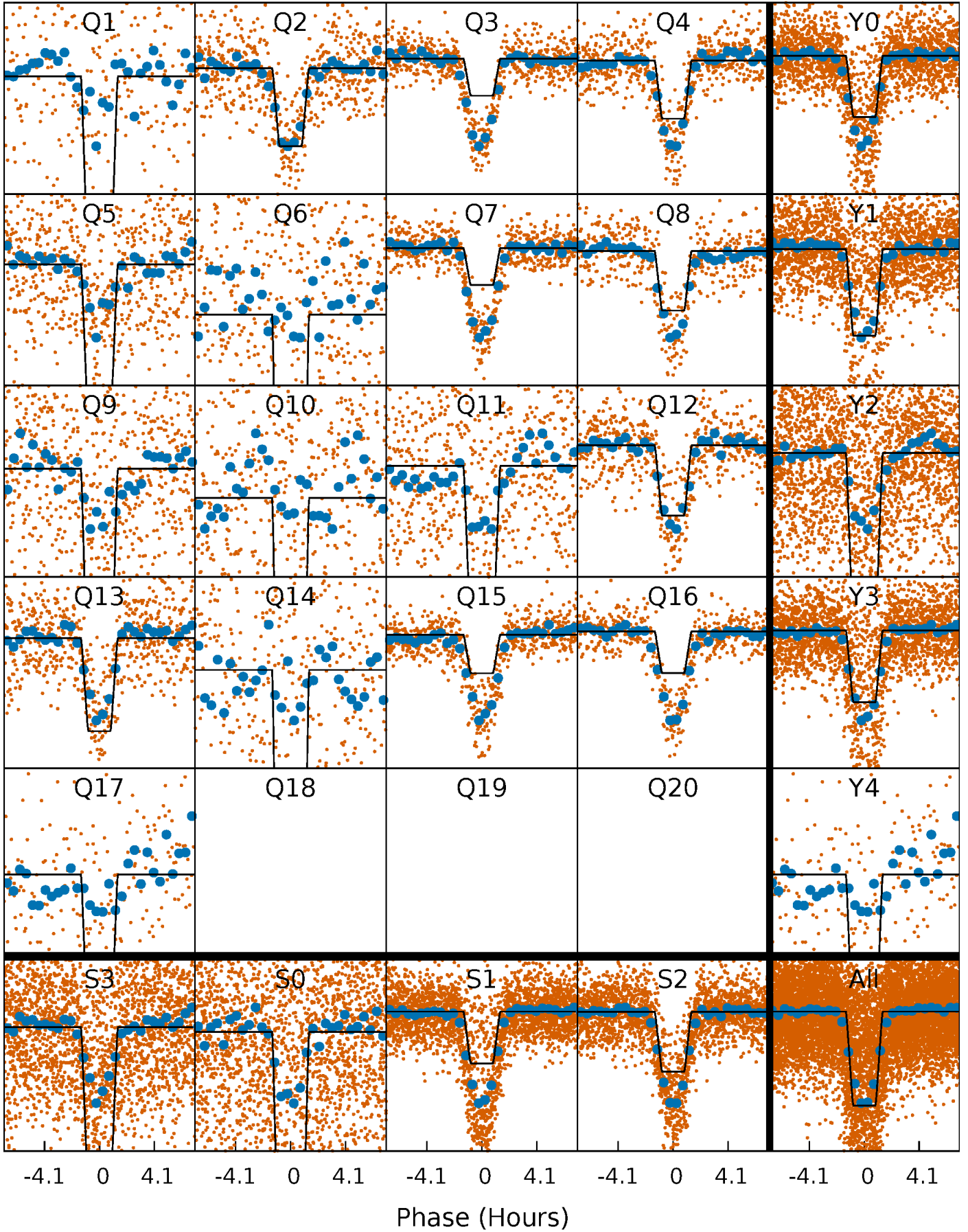
DV Quarter-Phased Transit Curves

TCE 003231137-01 P= 3.900139 Days $T_0=133.371032$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

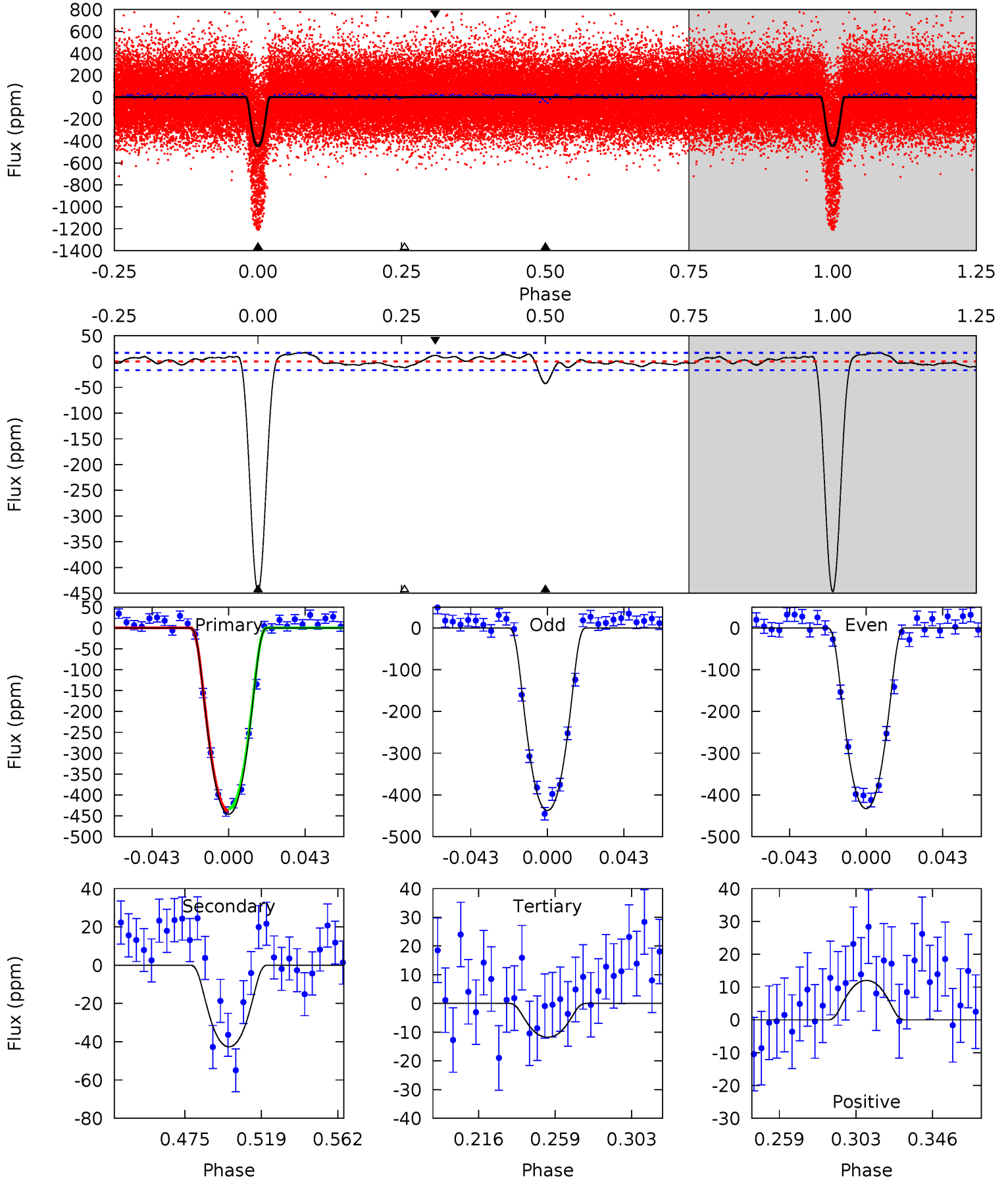
TCE 003231137-01 P= 3.900121 Days $T_0=133.374343$ (BKJD)



DV Model-Shift Uniqueness Test

003231137-01, P = 3.900139 Days, E = 129.470893 Days

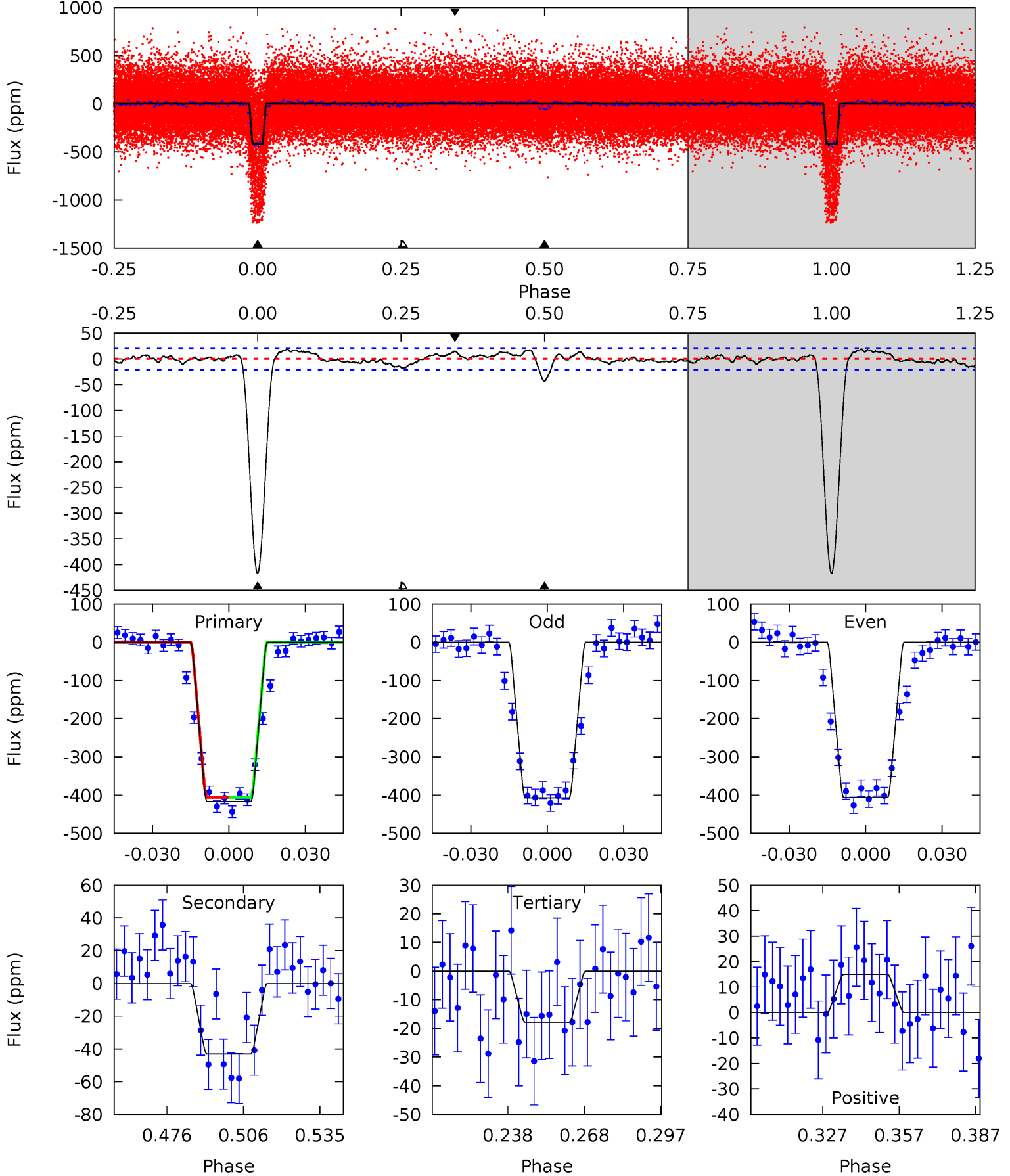
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
125.5	12.0	3.30	3.38	4.74	2.02	1.96	122.2	122.1	8.68	8.61	0.64	1.29	0.04	0.75



Alt Model-Shift Uniqueness Test

003231137-01, P = 3.900121 Days, E = 129.474222 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
94.4	9.76	4.05	3.38	4.81	2.17	1.65	90.3	91.0	5.71	6.39	0.09	1.24	0.04	0



Stellar Parameters For KIC 003231137

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6407^{+160}_{-192}	$4.480^{+0.052}_{-0.208}$	$-0.520^{+0.300}_{-0.300}$	$0.955^{+0.286}_{-0.095}$	$1.006^{+0.121}_{-0.121}$	$1.626^{+0.449}_{-0.848}$
	+2%/-3%	+1%/-5%	+58%/-58%	+30%/-10%	+12%/-12%	+28%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003231137-01 / KOI 0382.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-43 ± 4	$2.83^{+0.48}_{-0.29}$	1777^{+137}_{-78}	3589^{+110}_{-109}	$6.686^{+1.572}_{-1.682}$
Alt.	-43 ± 4	$2.50^{+0.43}_{-0.27}$	1781^{+133}_{-79}	3756^{+139}_{-119}	$8.576^{+2.427}_{-2.182}$

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 $A_{obs} \gg 1.0$

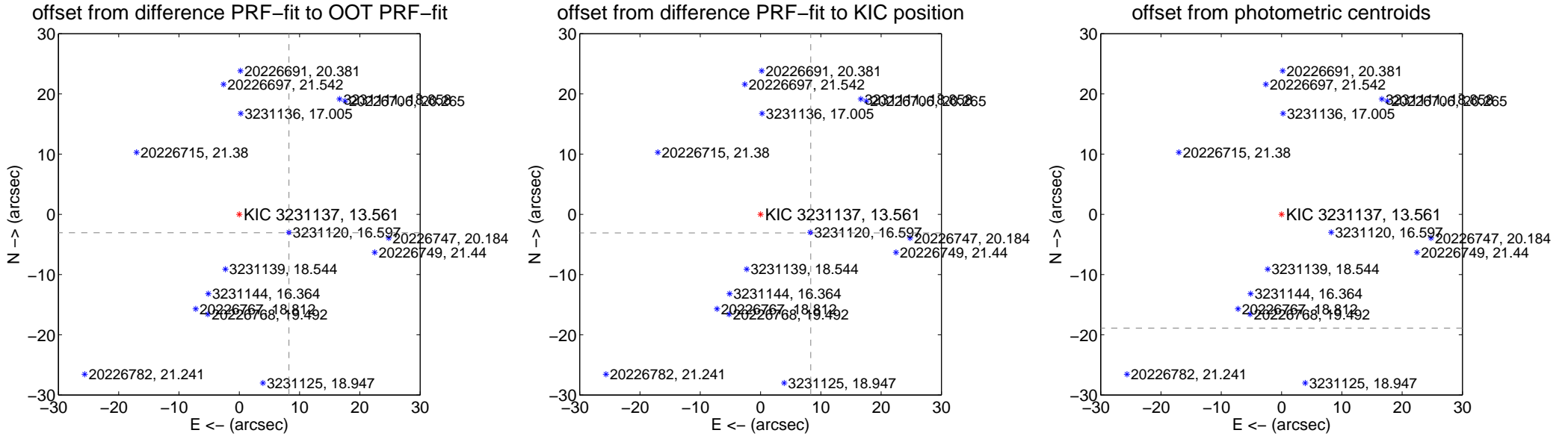
DV Centroid Data

Supplemental centroid analysis for 003231137-01. Kepler magnitude: 13.56. Transit SNR 61.77

There are 17 quarters with good PRF difference image offsets

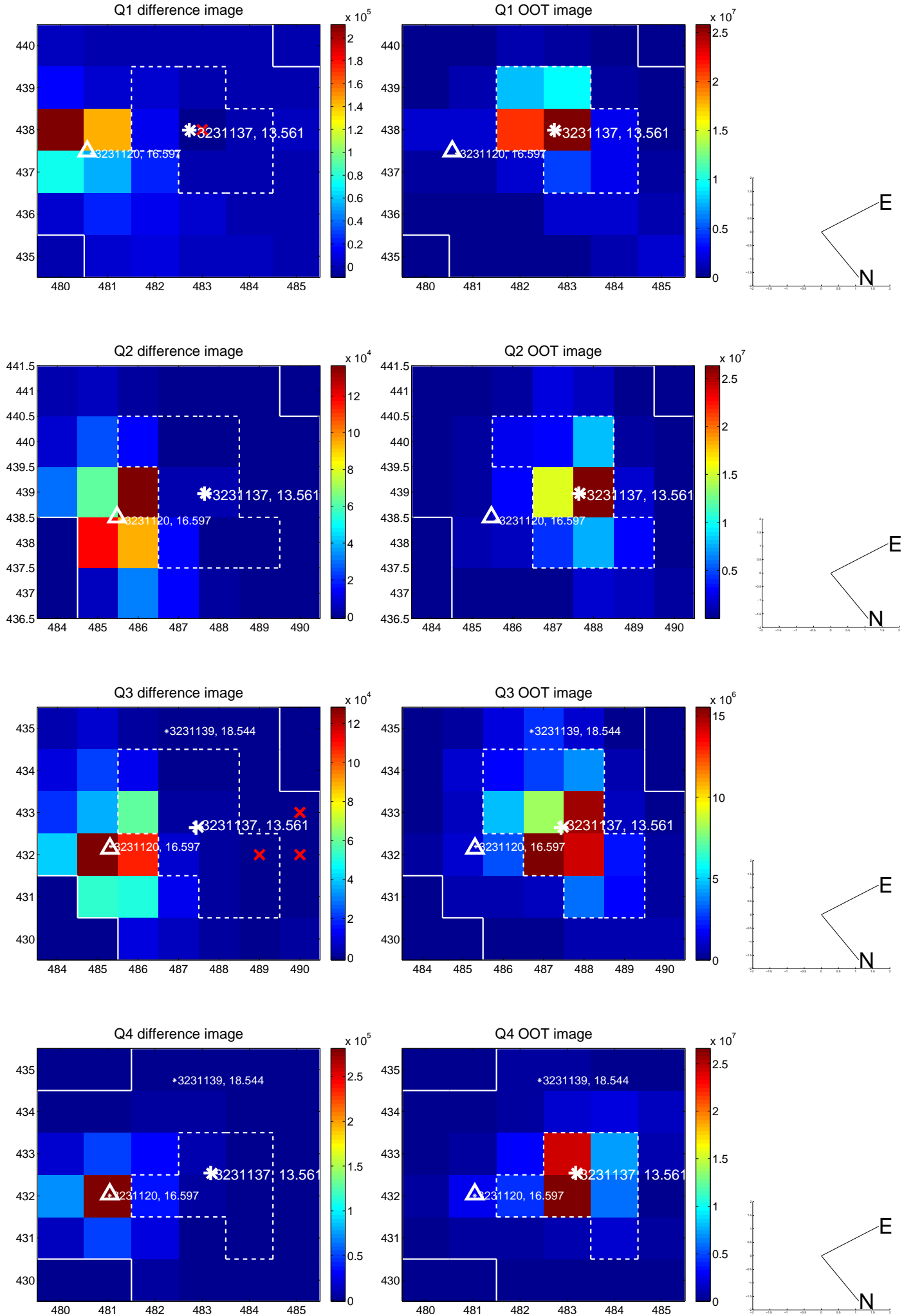
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.791 ± 0.068	128.52	-8.240 ± 0.068	-3.062 ± 0.071
PRF-fit source offset from KIC position	8.880 ± 0.067	131.57	-8.327 ± 0.067	-3.084 ± 0.068
photometric centroid source offset	52.77 ± 0.17	316.01	-49.28 ± 0.17	-18.89 ± 0.16

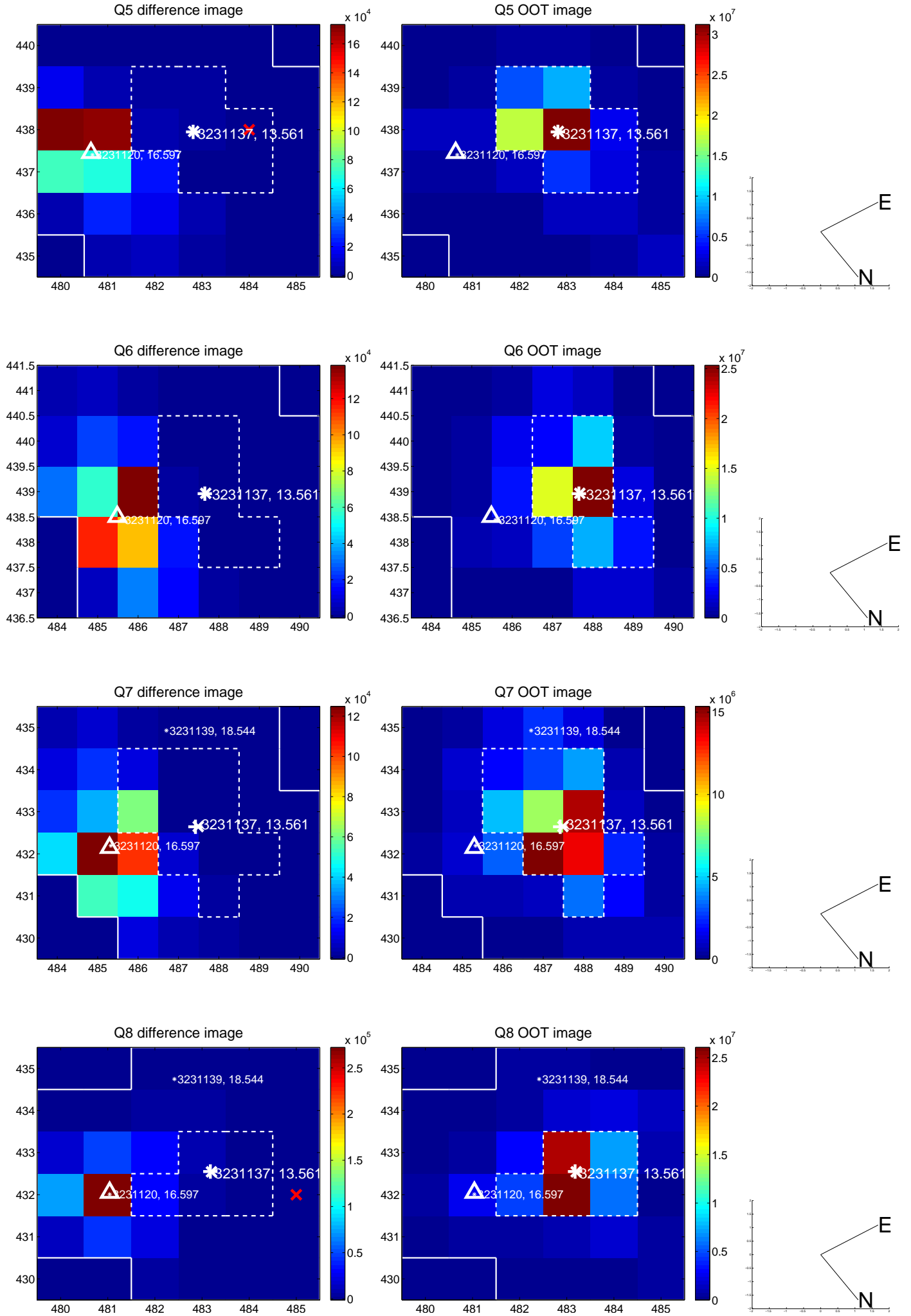


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

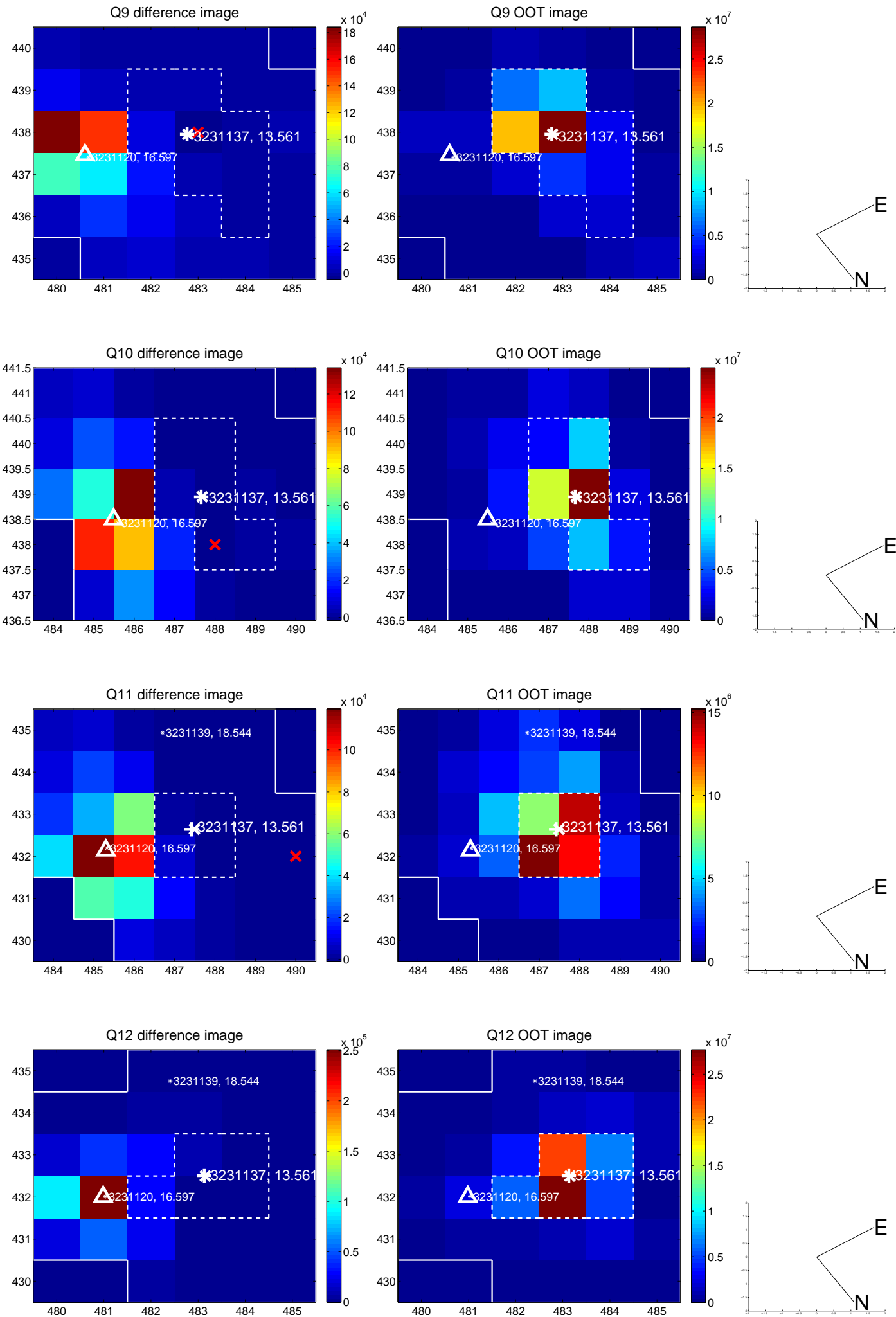
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



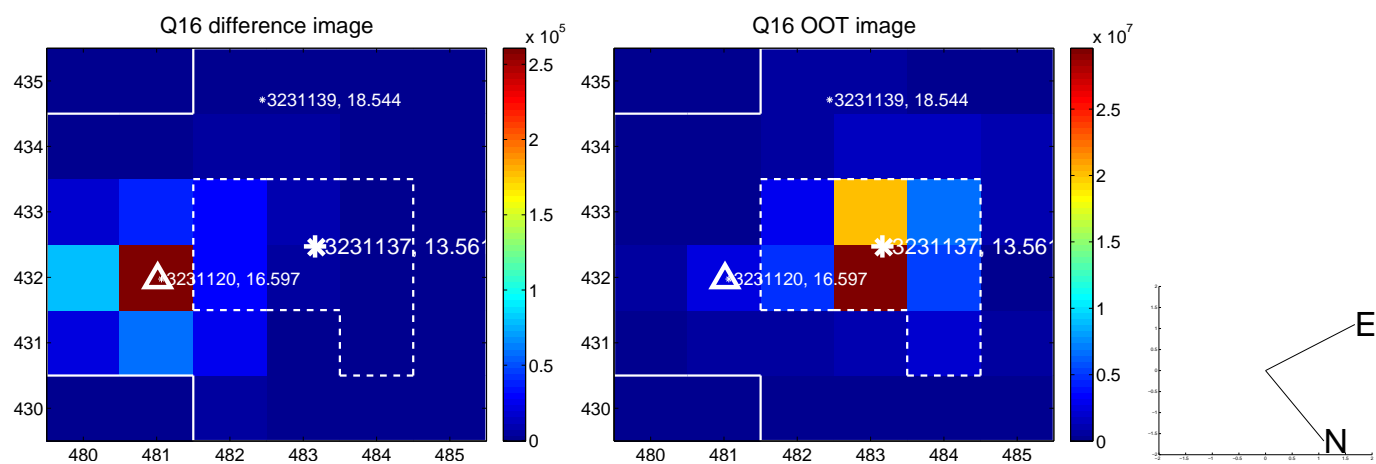
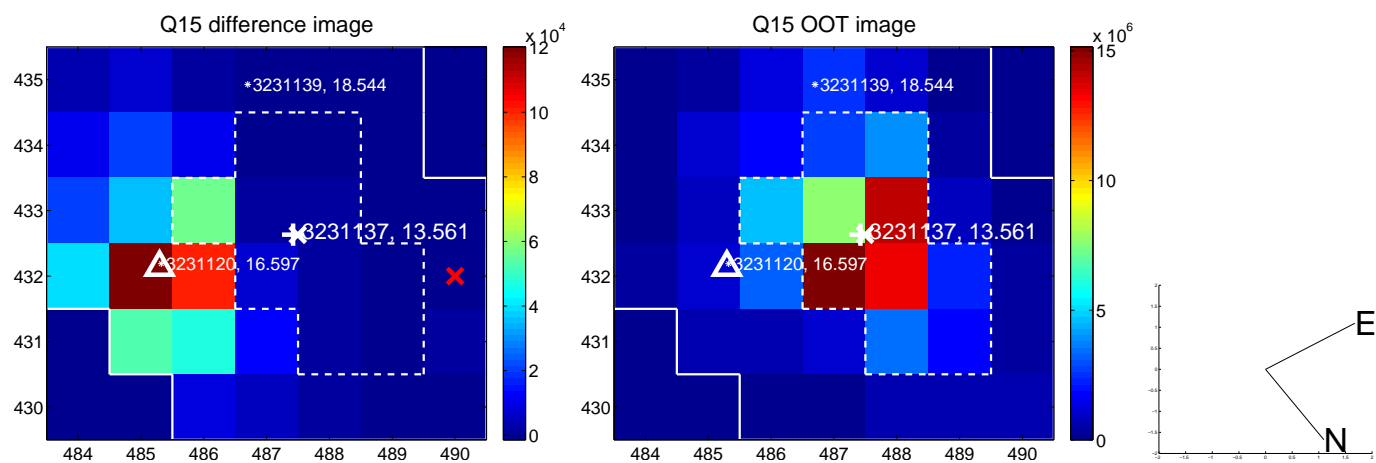
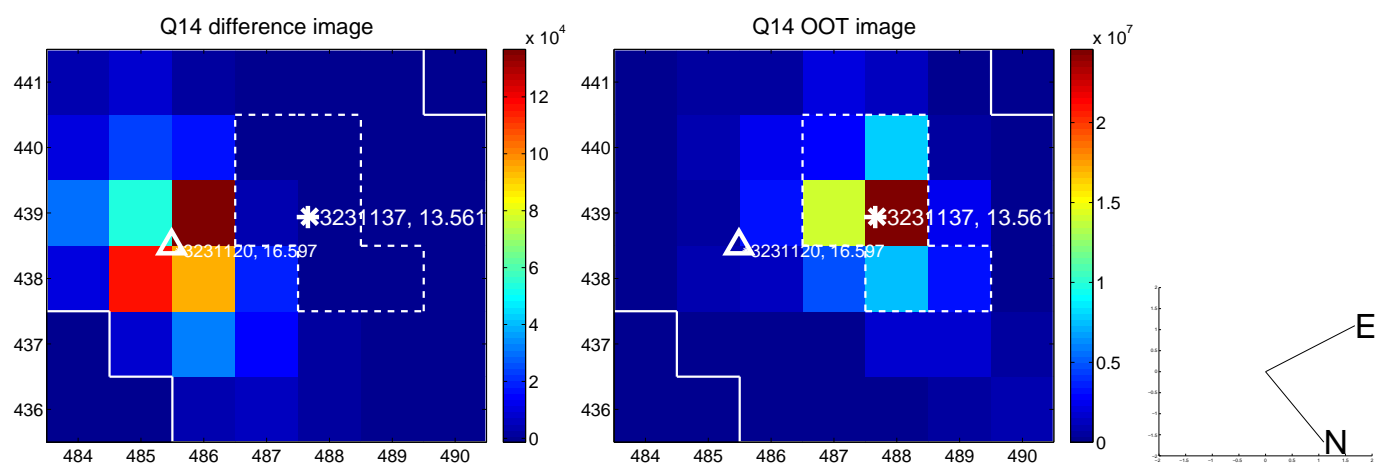
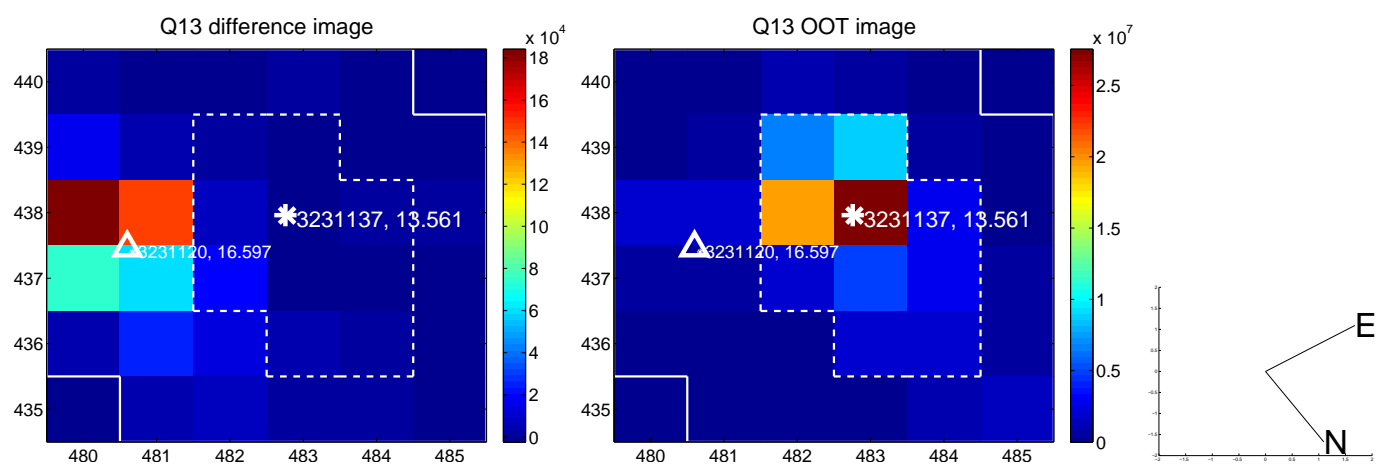
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



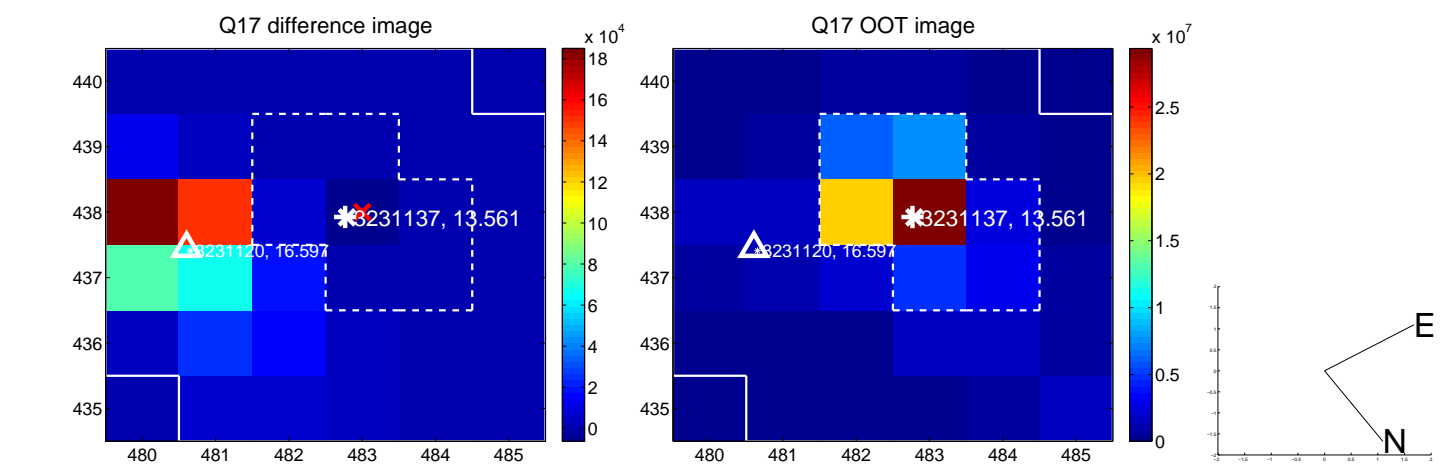
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



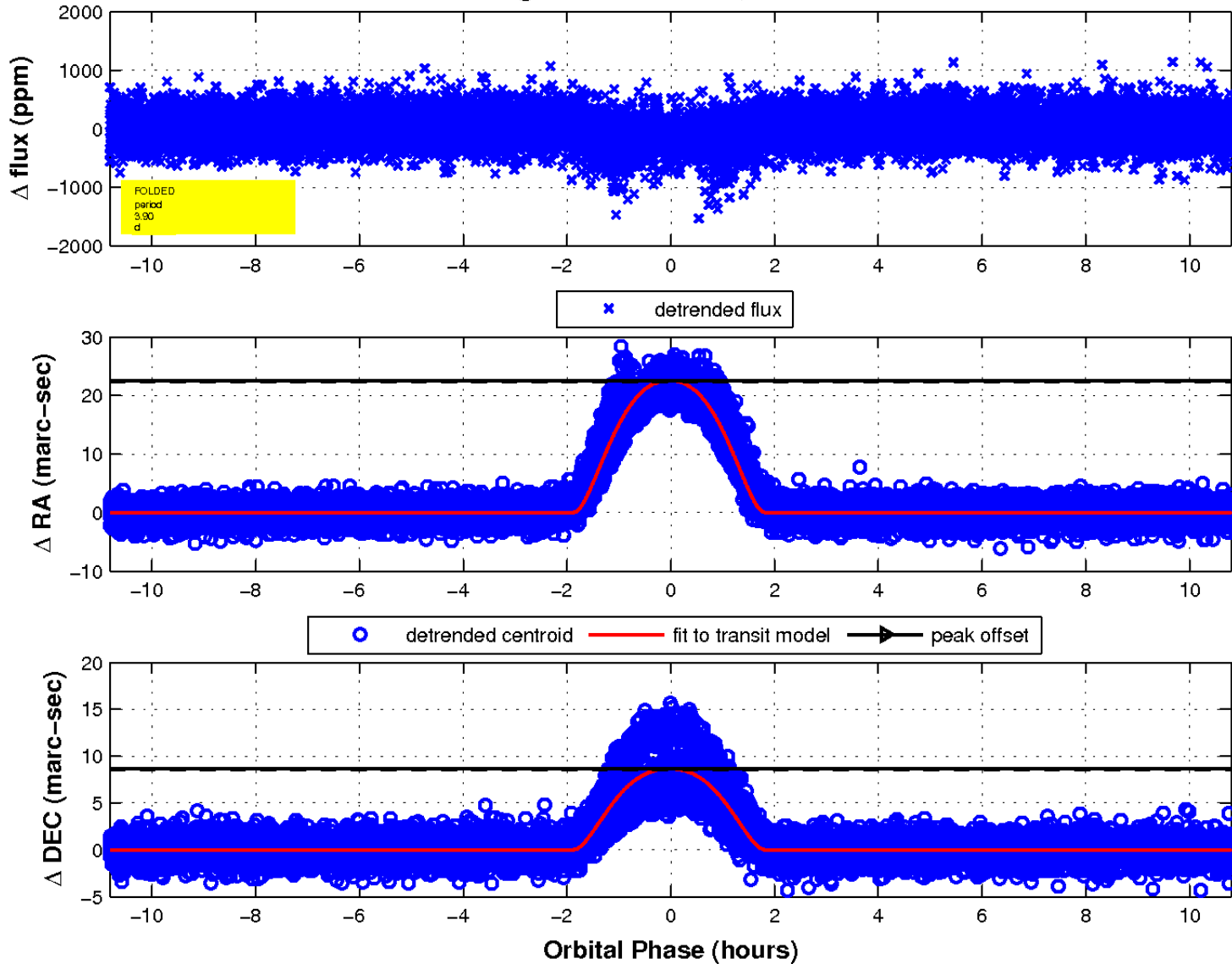
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

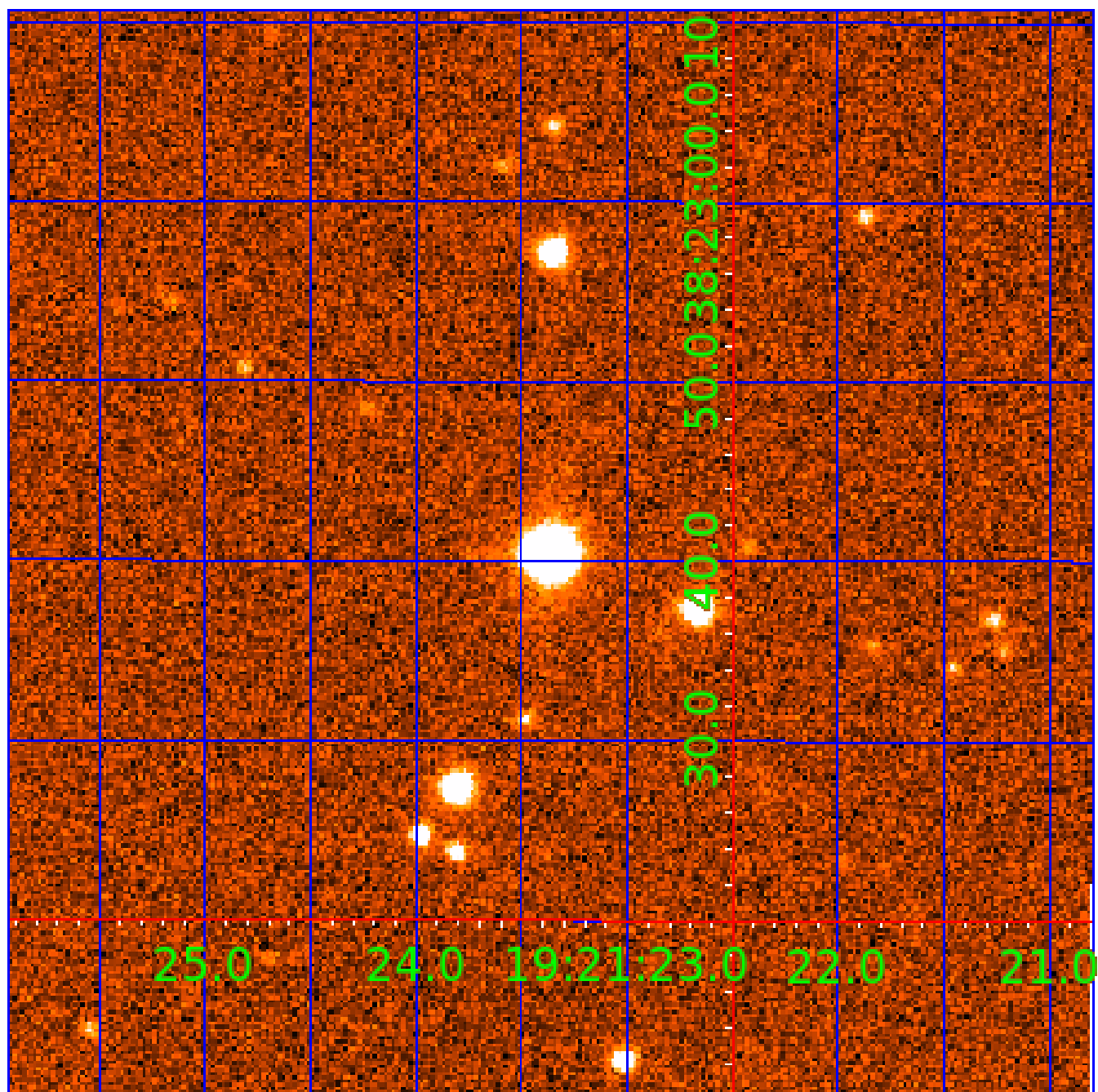


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 003231137

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})
003231137-01	OBS	0382.01	3.900139	133.371032	458.3	3.604	73.3	61.8	0.95	6407	2.76	583.55
003231137-02	OBS	No	3.900053	135.334344	50.8	2.525	7.9	8.3	0.95	6407	0.78	583.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003231137-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
003231137-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—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 003231137-02

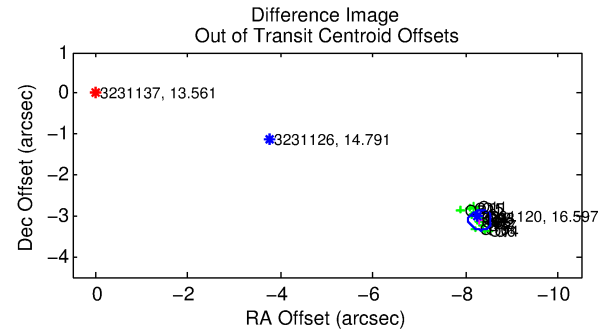
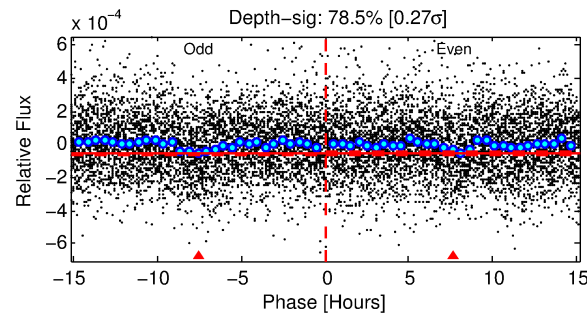
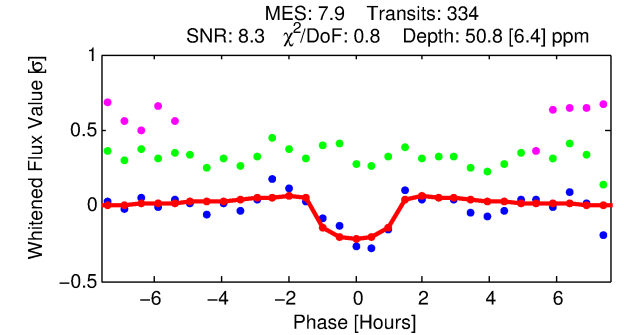
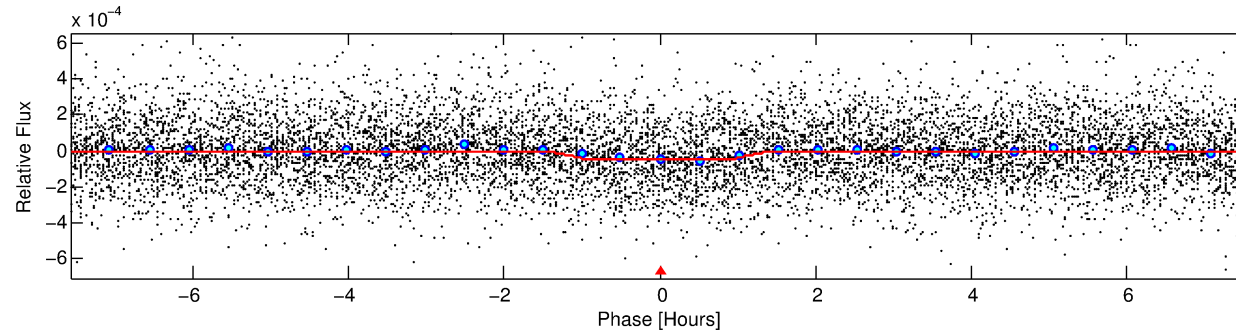
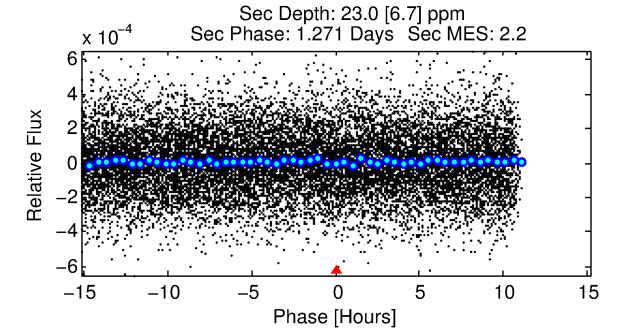
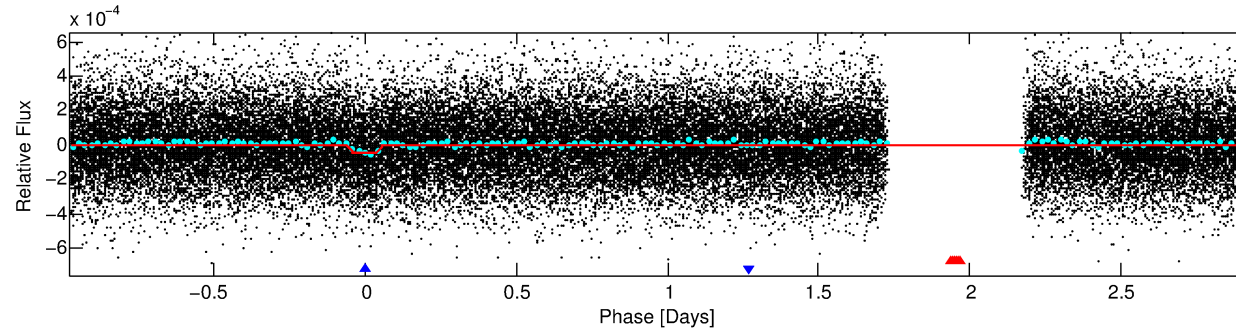
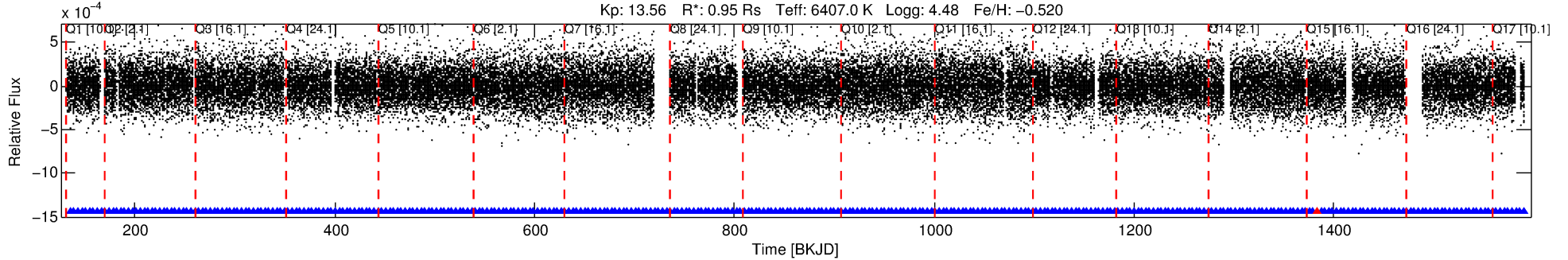
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
003231137-02	3231137	003231120-02	3231120	2:1	8.7	1	2	16.60	13.56	184.75	Direct-PRF	0	1.26	0.15

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: 3231137 Candidate: 2 of 2 Period: 3.900 d
KOI: K00382 Corr: No Ephemeris Match

Kp: 13.56 R*: 0.95 Rs Teff: 6407.0 K Logg: 4.48 Fe/H: -0.520



DV Fit Results:

Period = 3.90005 [0.00003] d
Epoch = 135.3343 [0.0042] BKJD
Rp/R* = 0.0074 [0.0032]
a/R* = 6.23 [15.00]
b = 0.86 [0.75]
Seff = 583.56 [230.62]
Teq = 1253 [124] K
Rp = 0.77 [0.41] Re
a = 0.0486 [0.0124] AU
Ag = 49.76 [49.41] [0.99σ]
Teff = 5146 [1192] K [3.25σ]

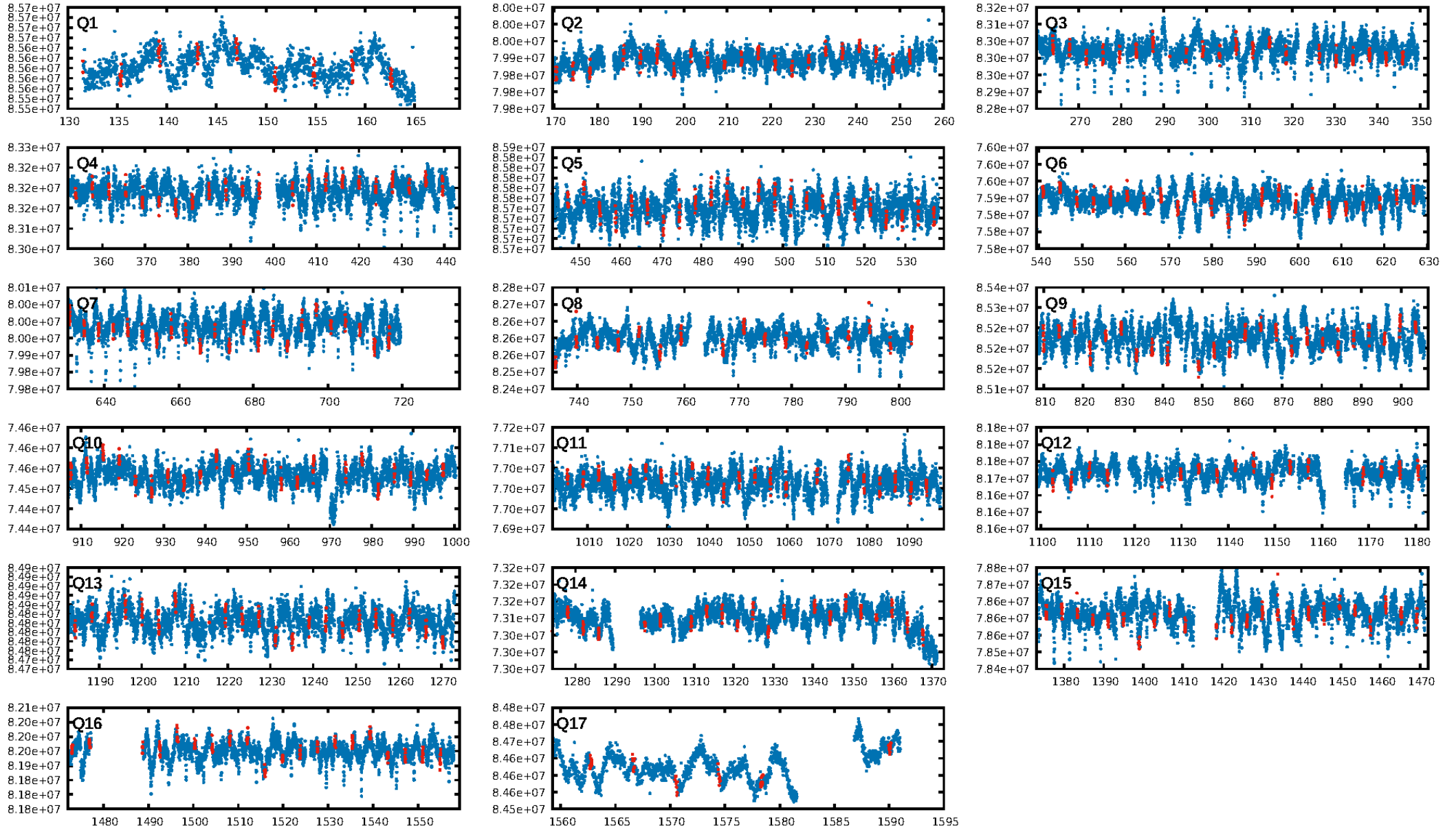
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.73e-15
RollingBand-fgt: 1.00 [319/320]
GhostDiagnostic-chr: -0.3535
Centroid-sig: 0.0%
Centroid-so: 34.498 arcsec [24.44σ]
OotOffset-rm: 8.875 arcsec [109.55σ]
KicOffset-rm: 8.960 arcsec [116.98σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

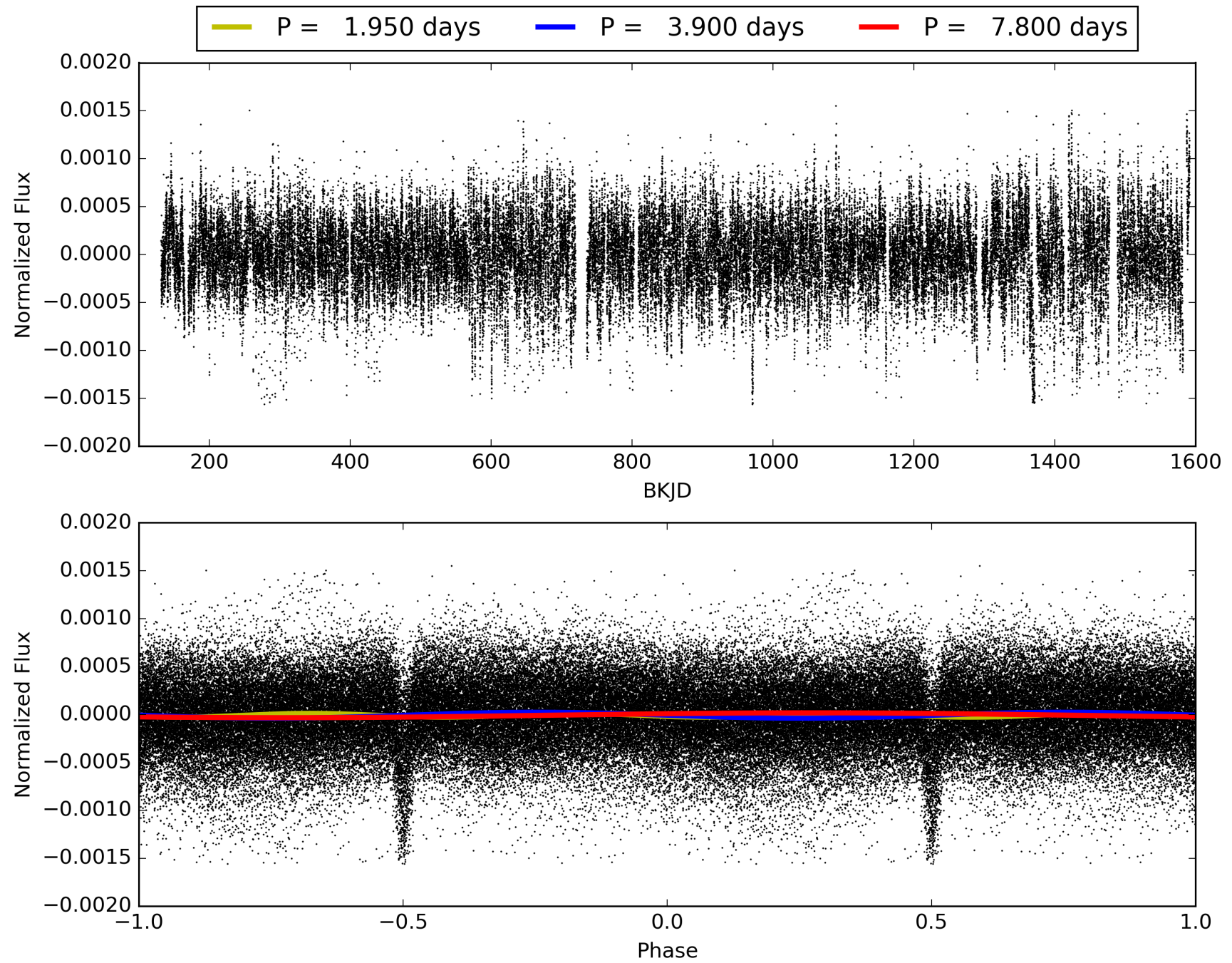
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:52:19 Z

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

TCE 003231137-02, PDC Light Curves

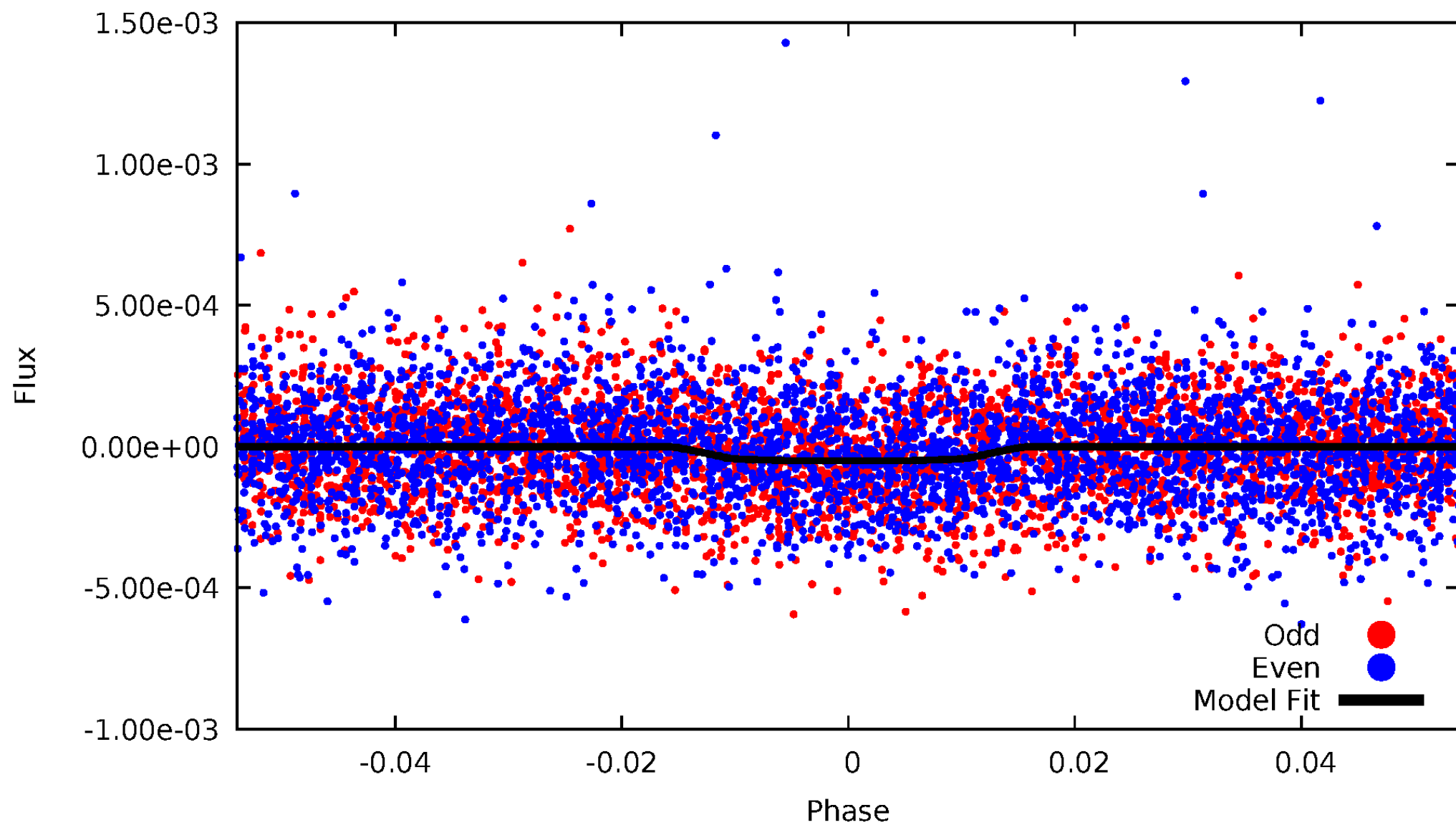


TCE 003231137-02



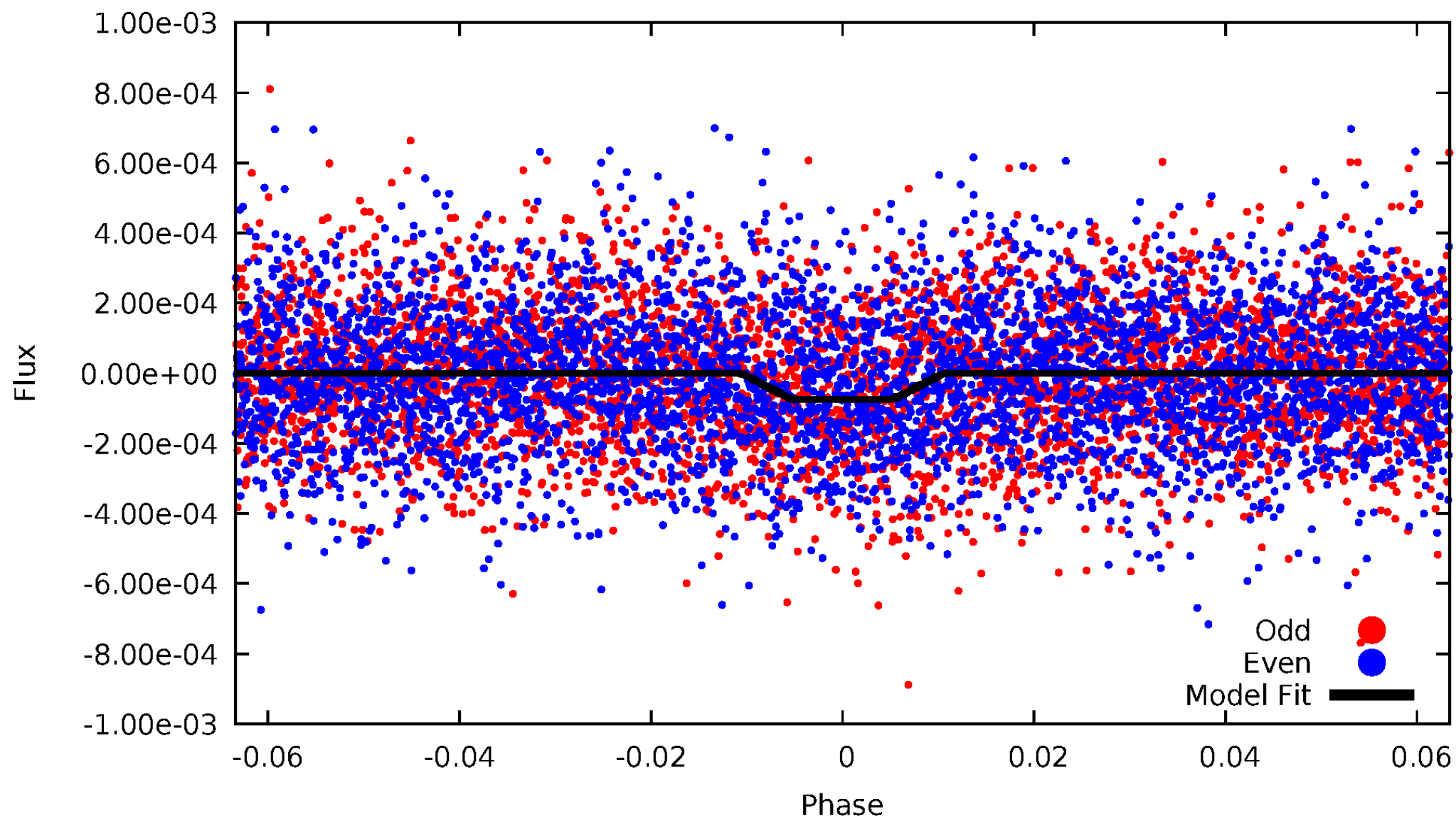
DV Odd/Even

TCE 003231137-02



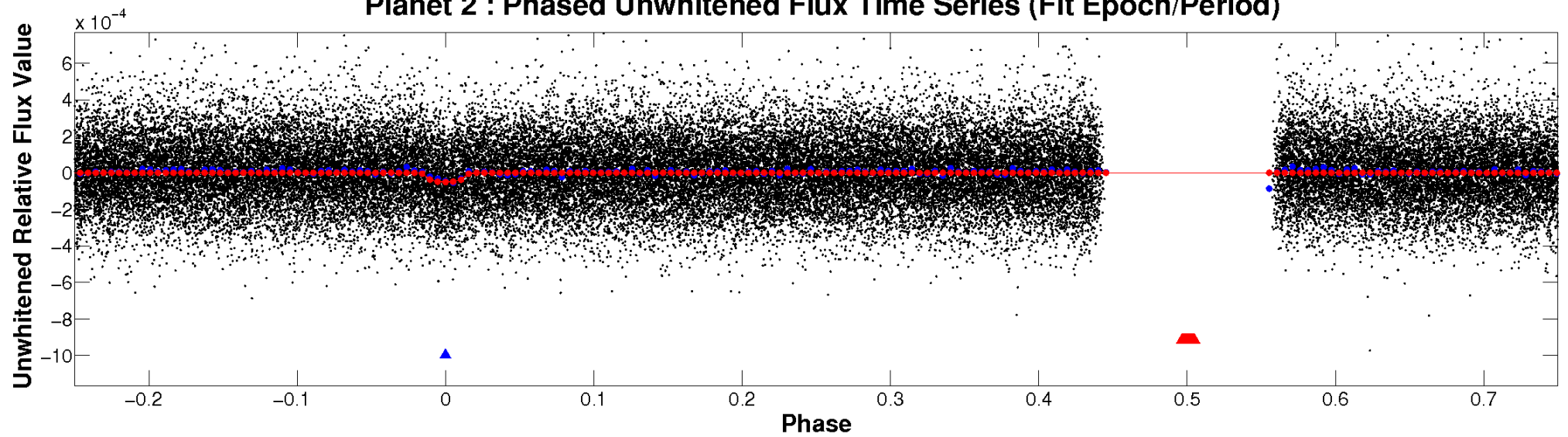
ALT Odd/Even

TCE 003231137-02

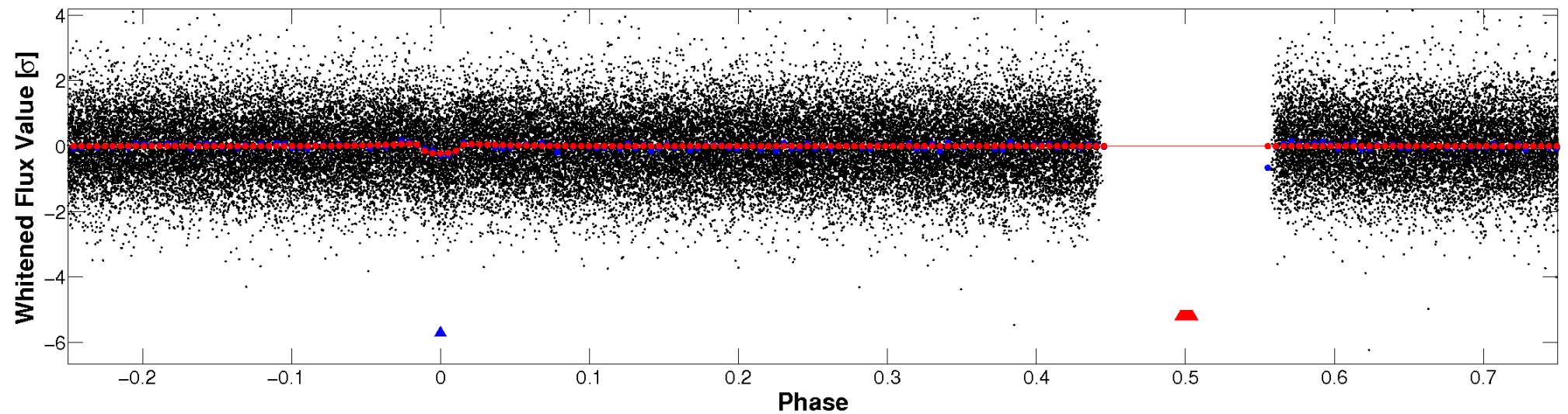


Non-Whitened Vs. Whitened Light Curve

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

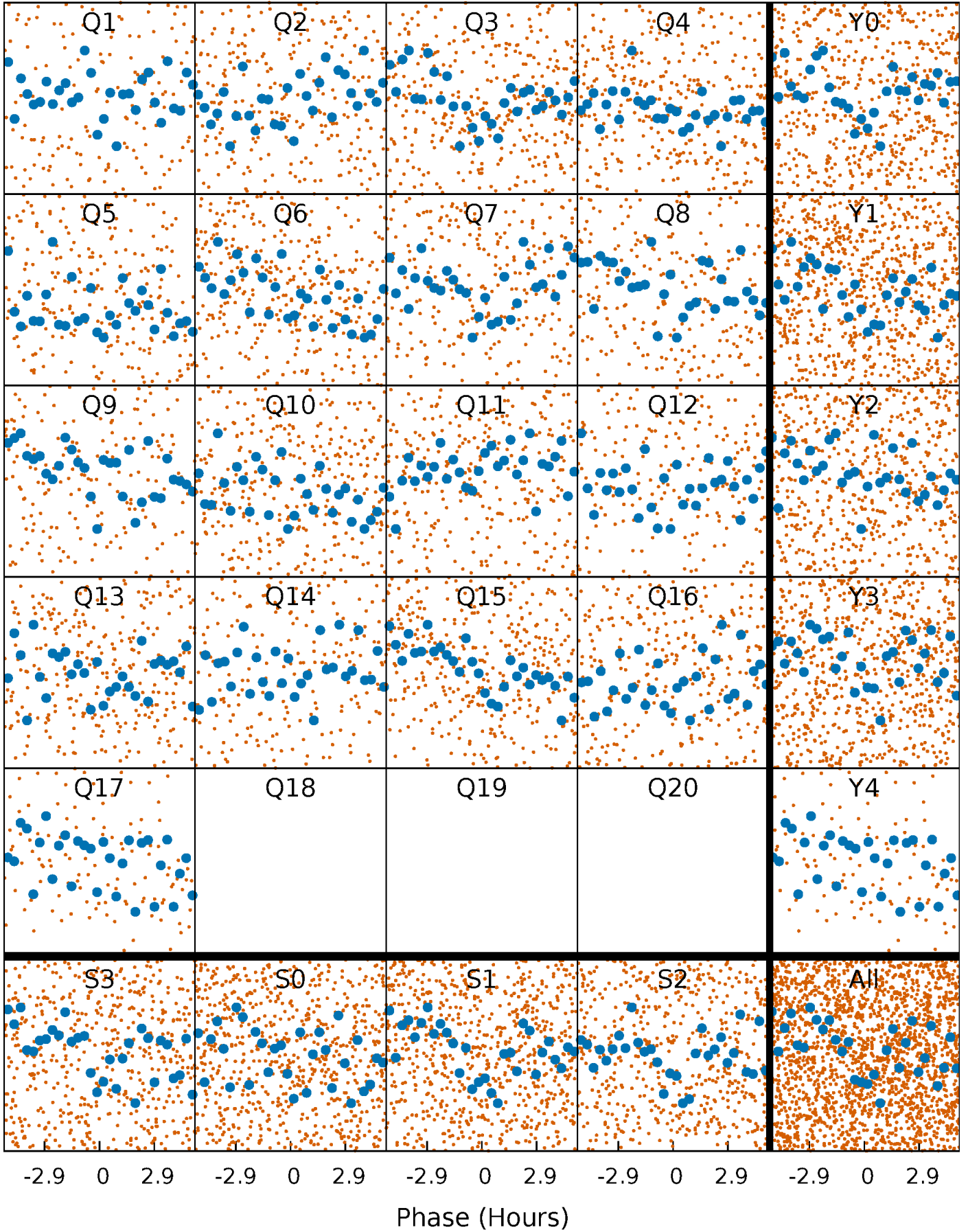


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



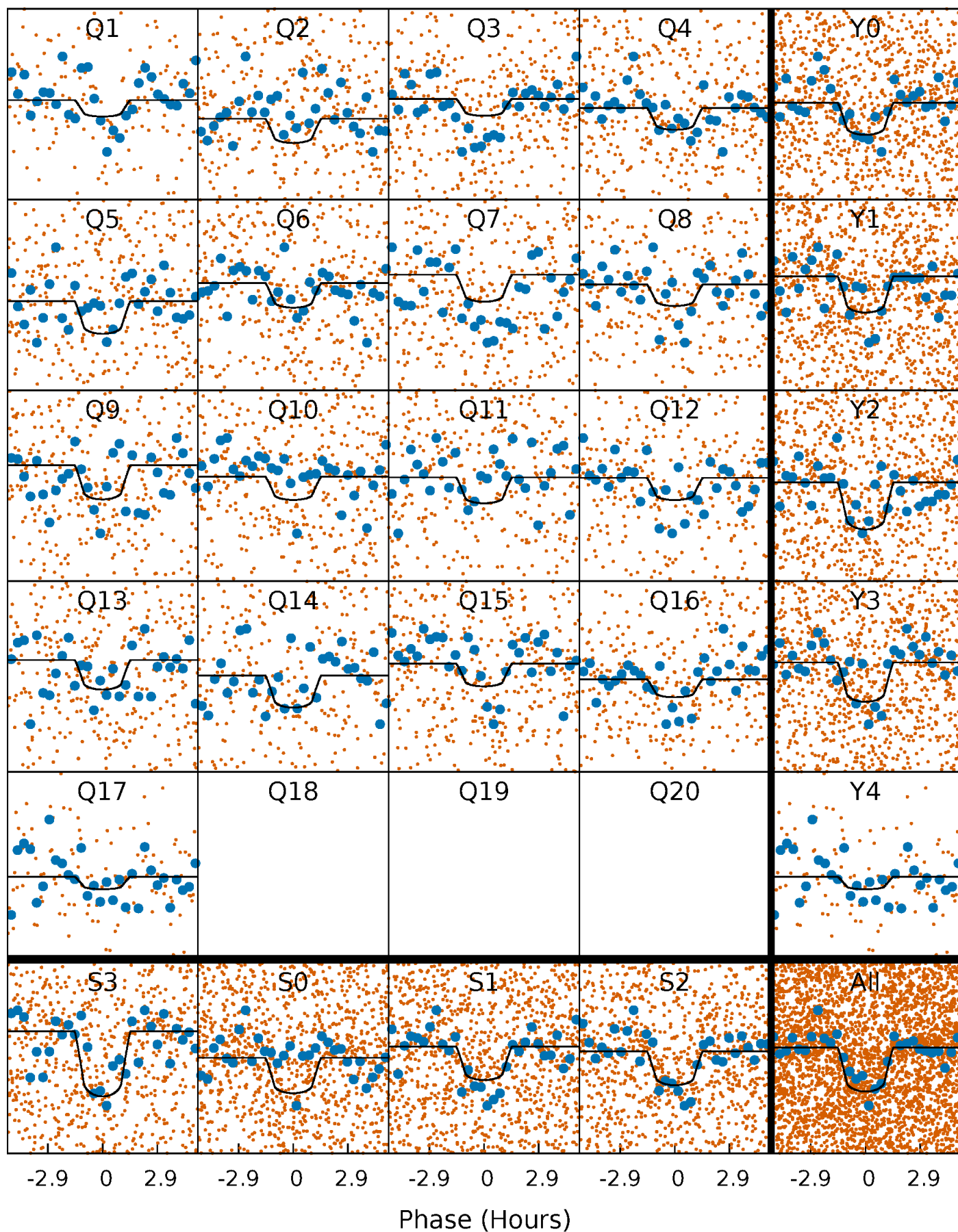
PDC Quarter-Phased Transit Curves

TCE 003231137-02 P= 3.900053 Days $T_0=135.334344$ (BKJD)



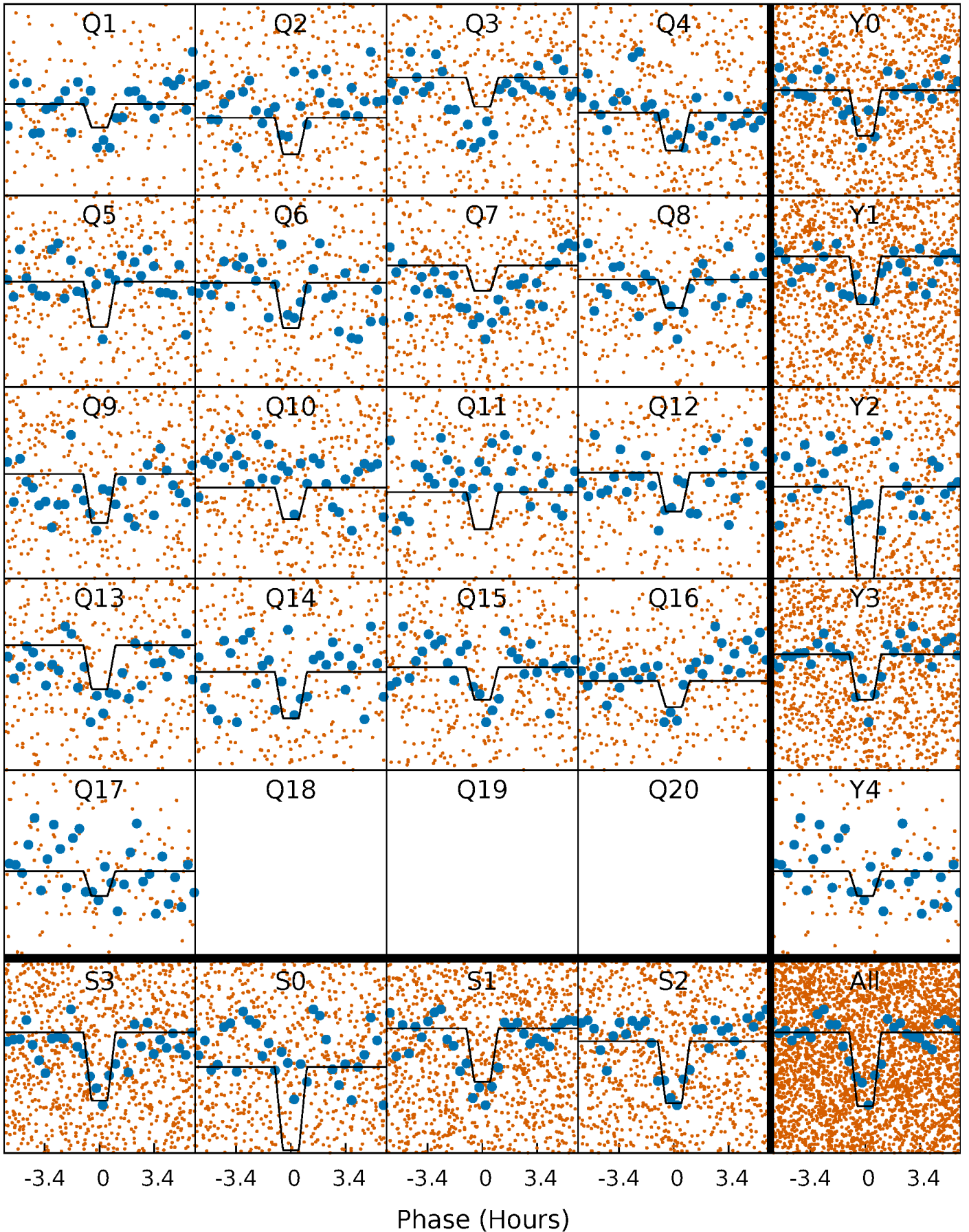
DV Quarter-Phased Transit Curves

TCE 003231137-02 P= 3.900053 Days $T_0=135.334344$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

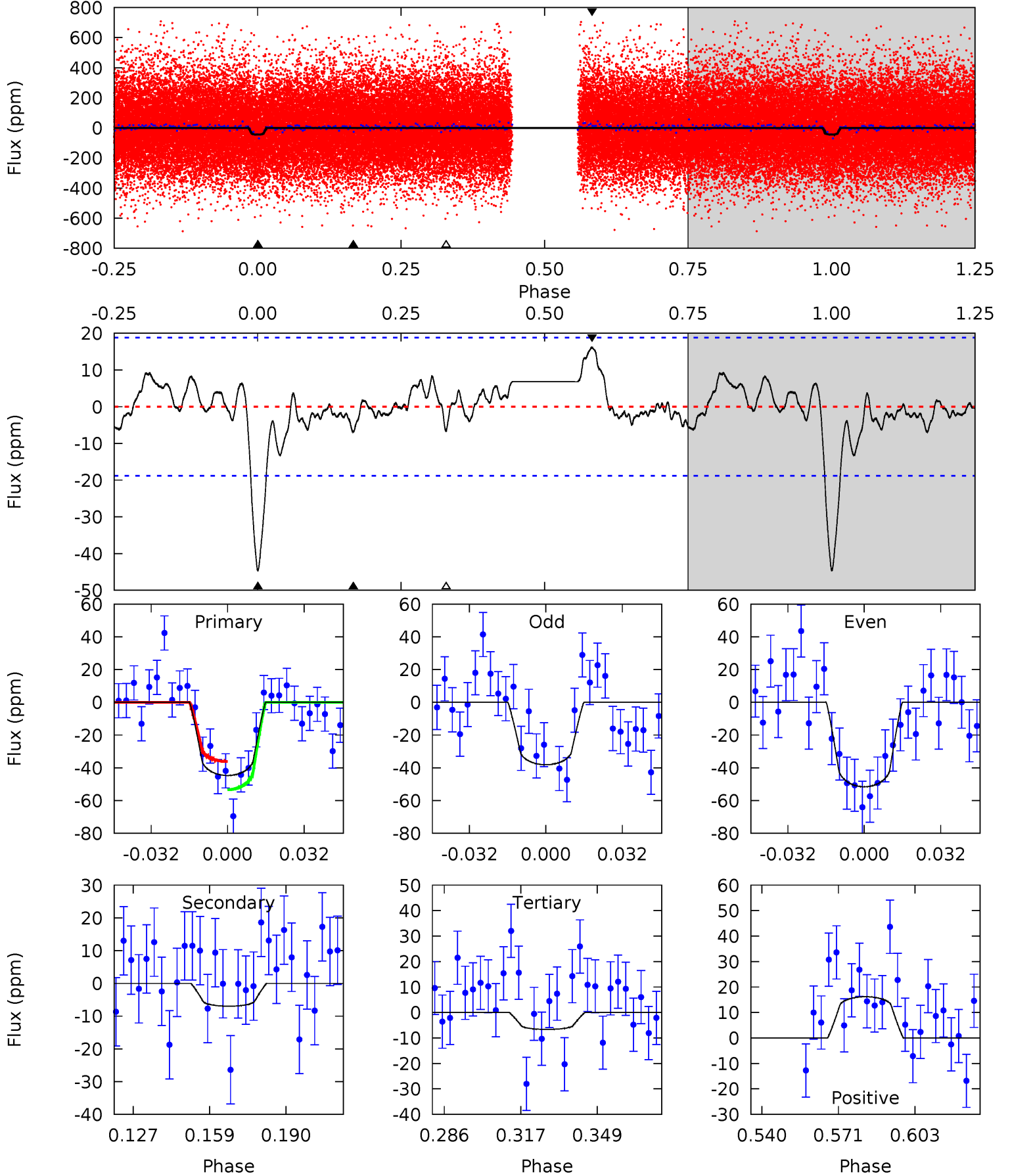
TCE 003231137-02 P= 3.900040 Days $T_0=135.342790$ (BKJD)



DV Model-Shift Uniqueness Test

003231137-02, P = 3.900053 Days, E = 131.434291 Days

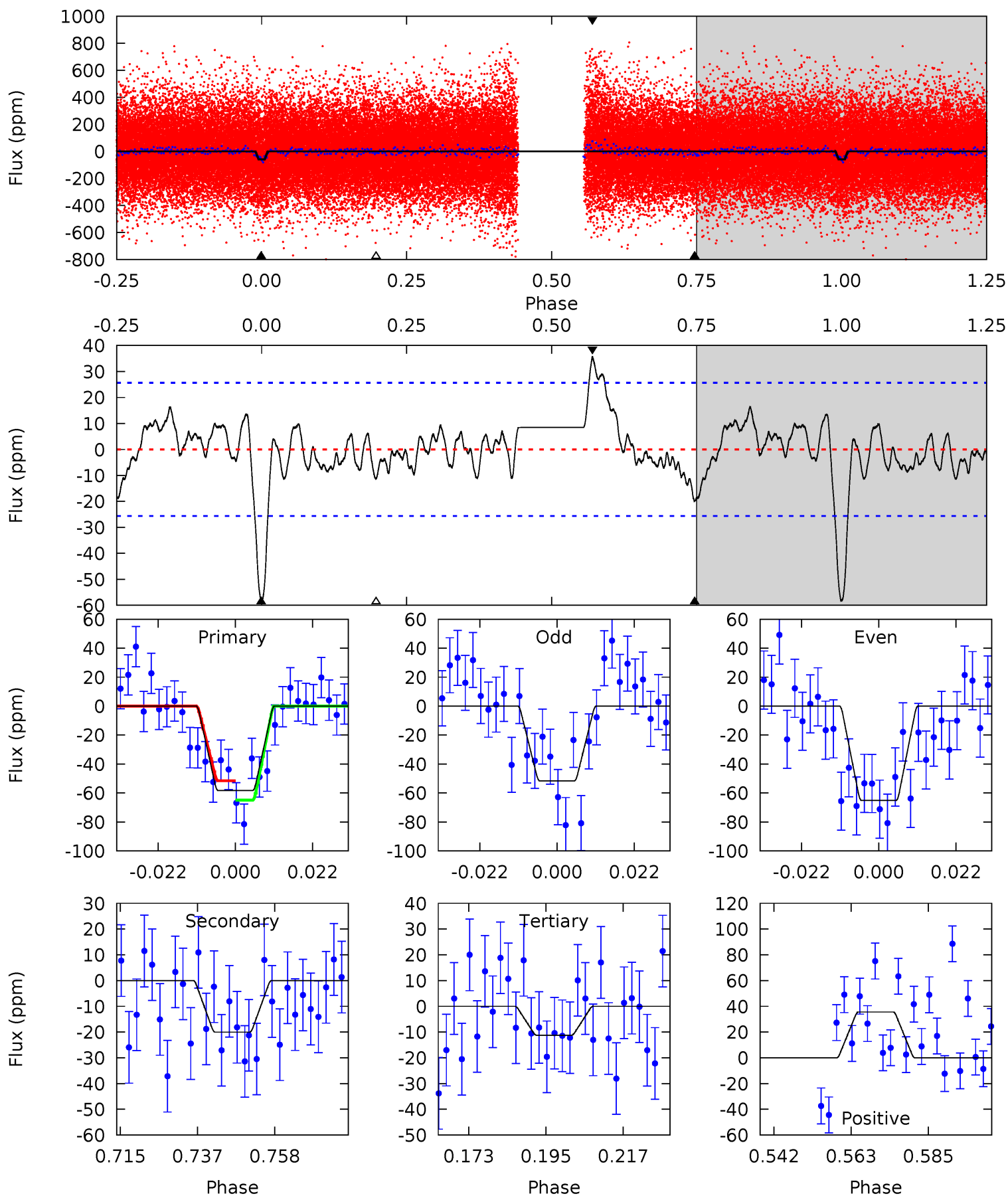
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	1.78	1.70	4.13	4.80	2.15	1.24	9.72	7.28	0.09	-2.35	1.72	0.85	0.27	2.21



Alt Model-Shift Uniqueness Test

003231137-02, P = 3.900040 Days, E = 131.442750 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	3.81	2.14	6.77	4.88	2.30	1.61	8.94	4.32	1.66	-2.96	1.30	0.92	0.38	1.29



Stellar Parameters For KIC 003231137

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6407^{+160}_{-192}	$4.480^{+0.052}_{-0.208}$	$-0.520^{+0.300}_{-0.300}$	$0.955^{+0.286}_{-0.095}$	$1.006^{+0.121}_{-0.121}$	$1.626^{+0.449}_{-0.848}$
	+2%/-3%	+1%/-5%	+58%/-58%	+30%/-10%	+12%/-12%	+28%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003231137-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-7 ± 4	$0.82^{+0.38}_{-0.33}$	1782^{+128}_{-83}	4020^{+1062}_{-687}	12^{+28}_{-8}
Alt.	-20 ± 5	$0.93^{+0.37}_{-0.35}$	1788^{+123}_{-85}	4739^{+1117}_{-602}	29^{+50}_{-15}

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 $A_{obs} \gg 1.0$

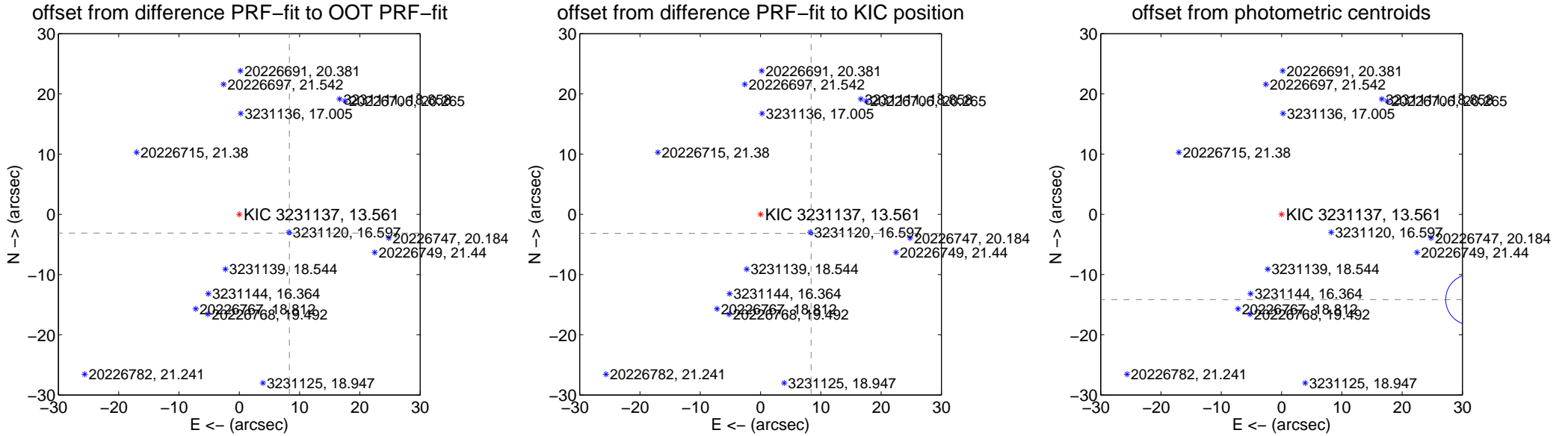
DV Centroid Data

Supplemental centroid analysis for 003231137-02. Kepler magnitude: 13.56. Transit SNR 8.27

There are 16 quarters with good PRF difference image offsets

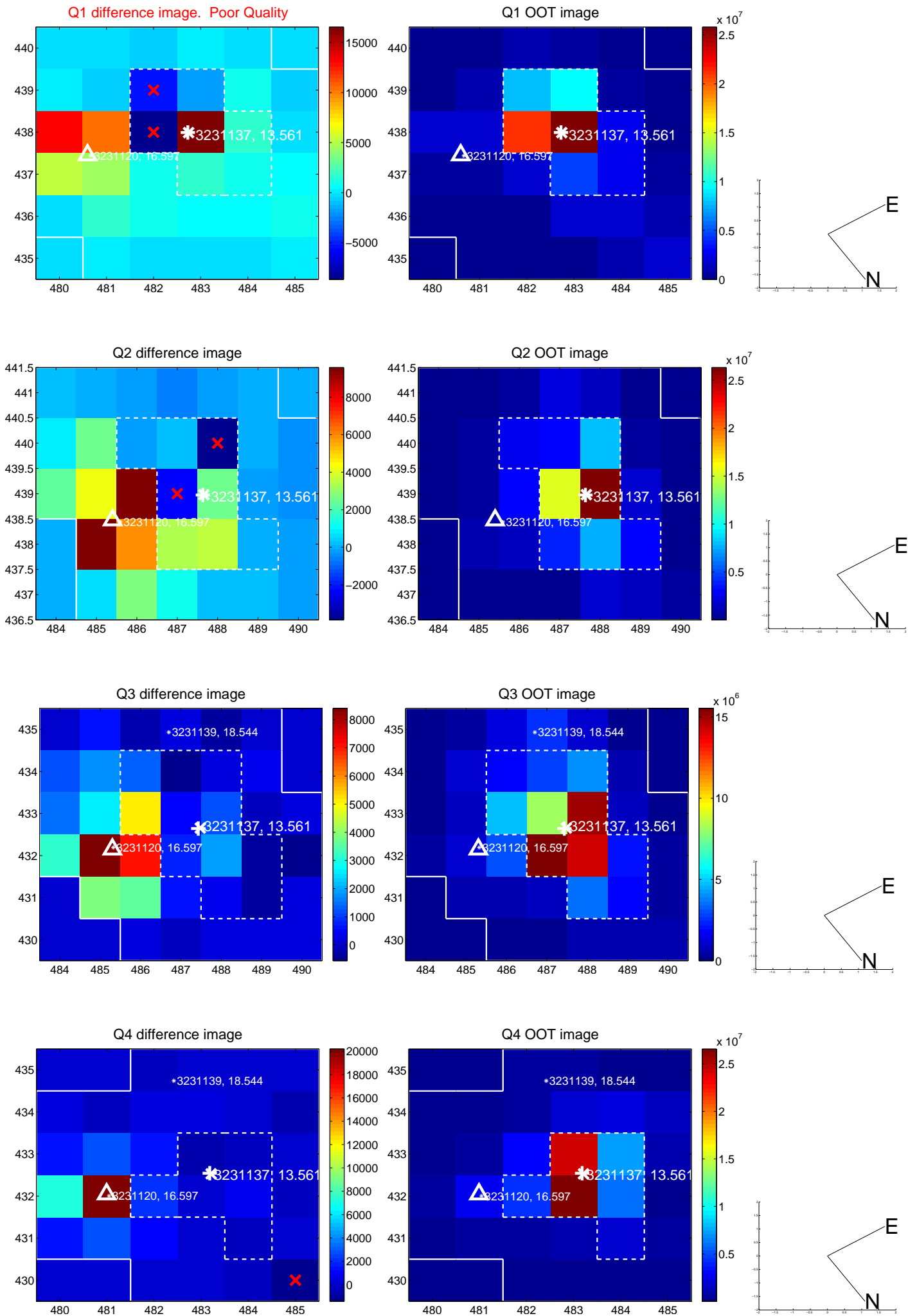
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.875 \pm 0.081	109.55	-8.312 \pm 0.076	-3.111 \pm 0.080
PRF-fit source offset from KIC position	8.960 \pm 0.077	116.98	-8.385 \pm 0.073	-3.160 \pm 0.077
photometric centroid source offset	34.50 \pm 1.41	24.44	-31.46 \pm 1.42	-14.16 \pm 1.38

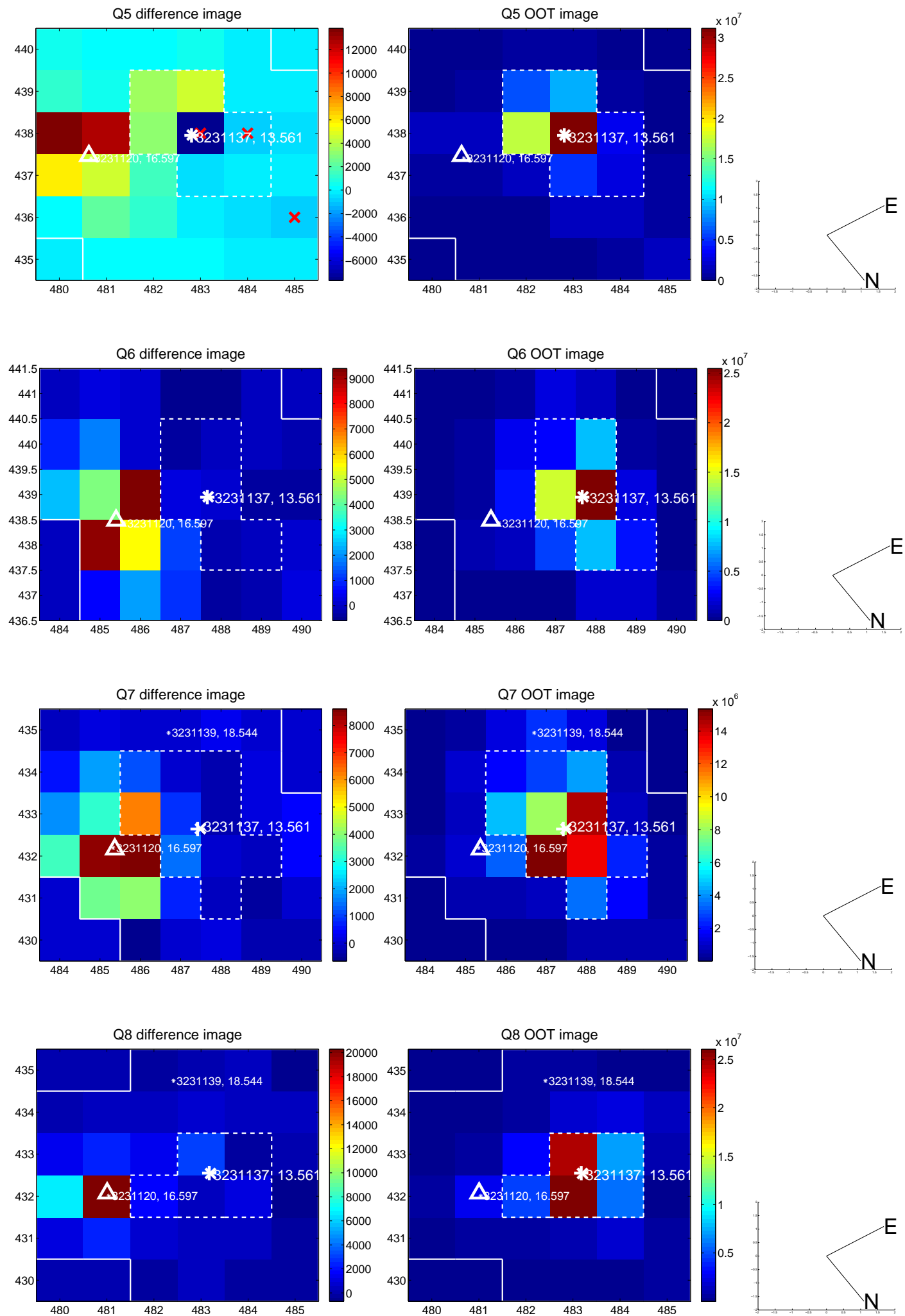


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

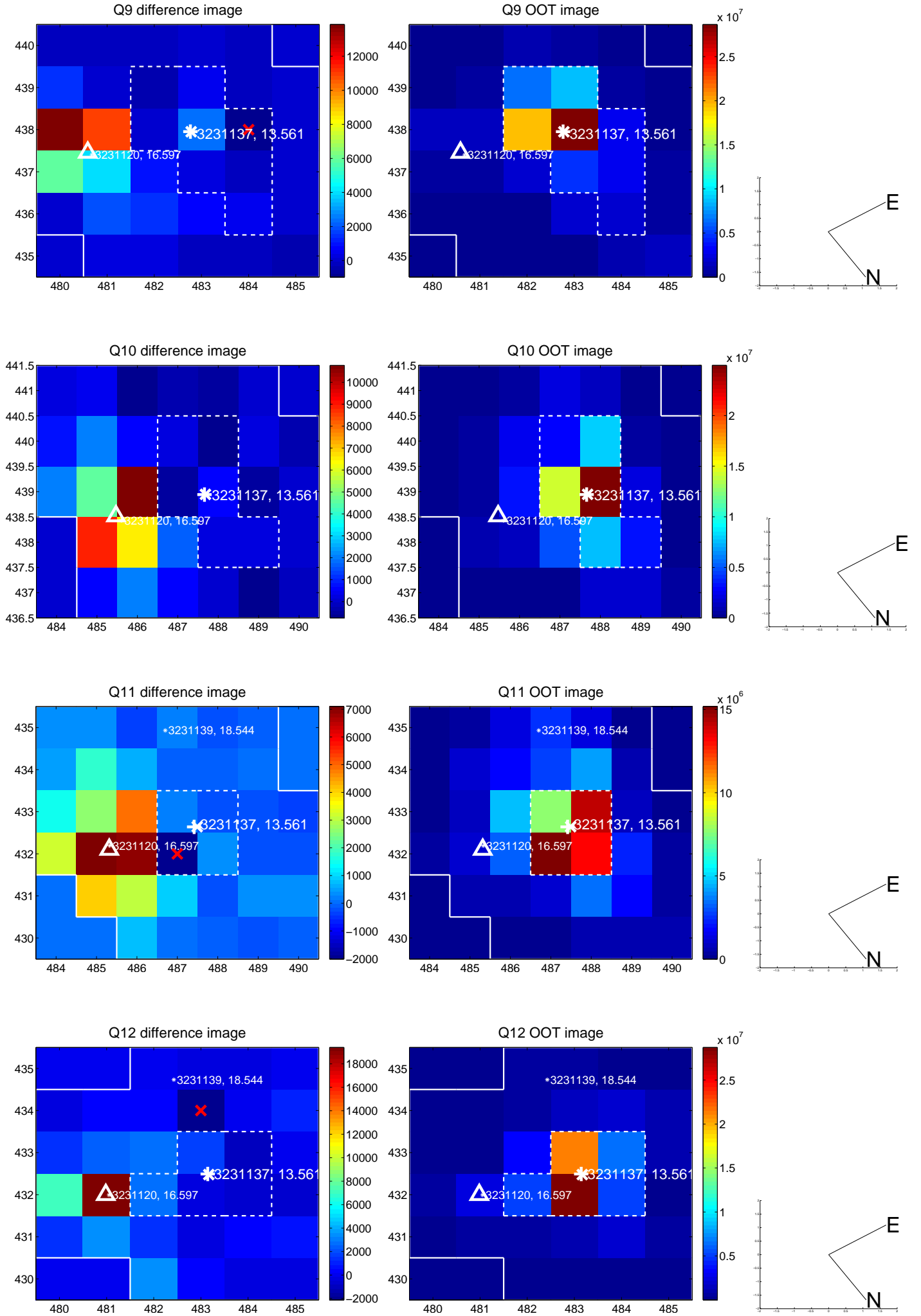
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



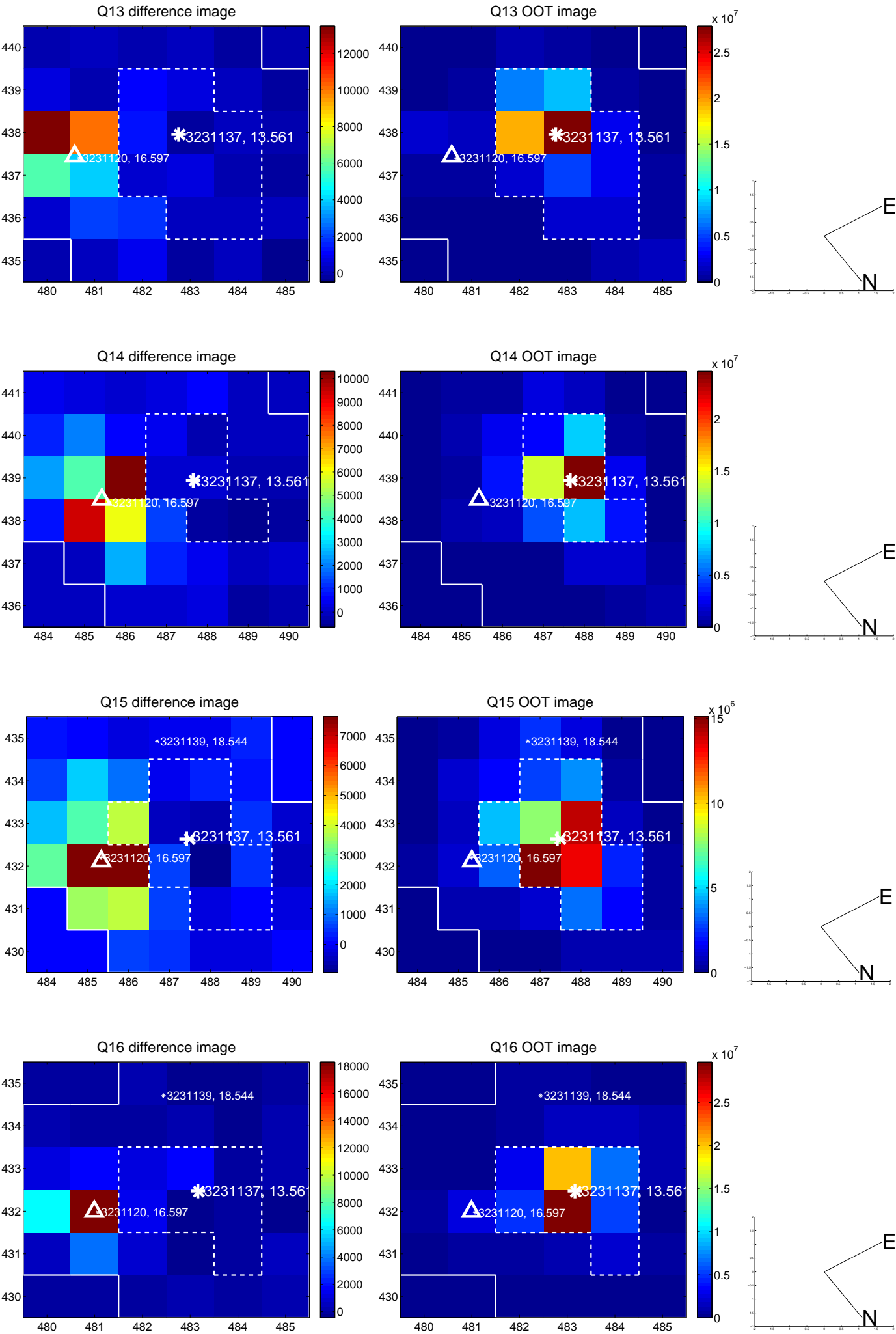
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



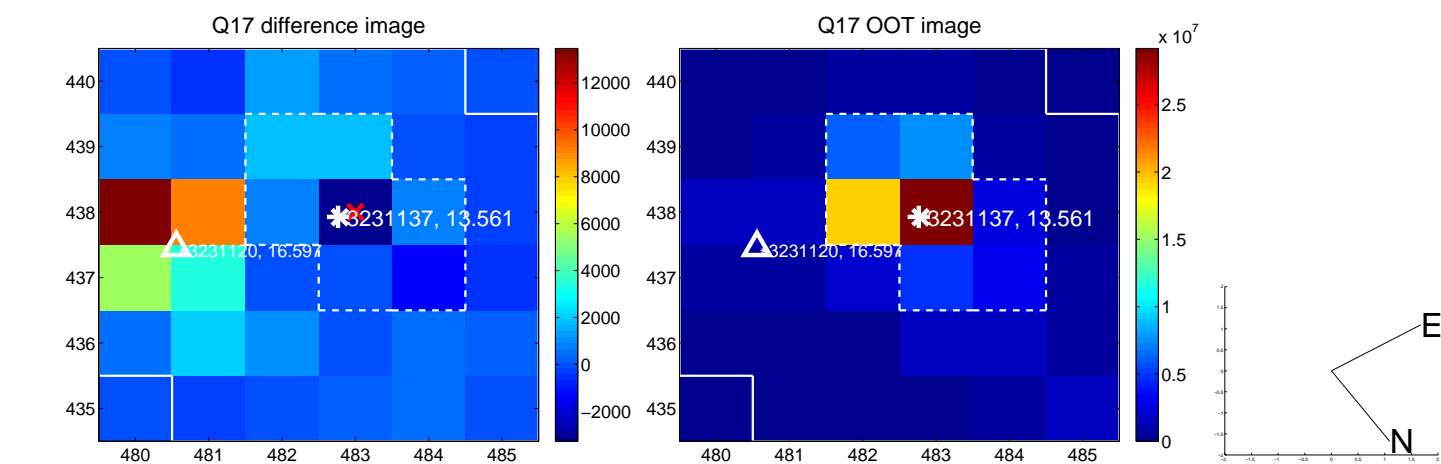
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



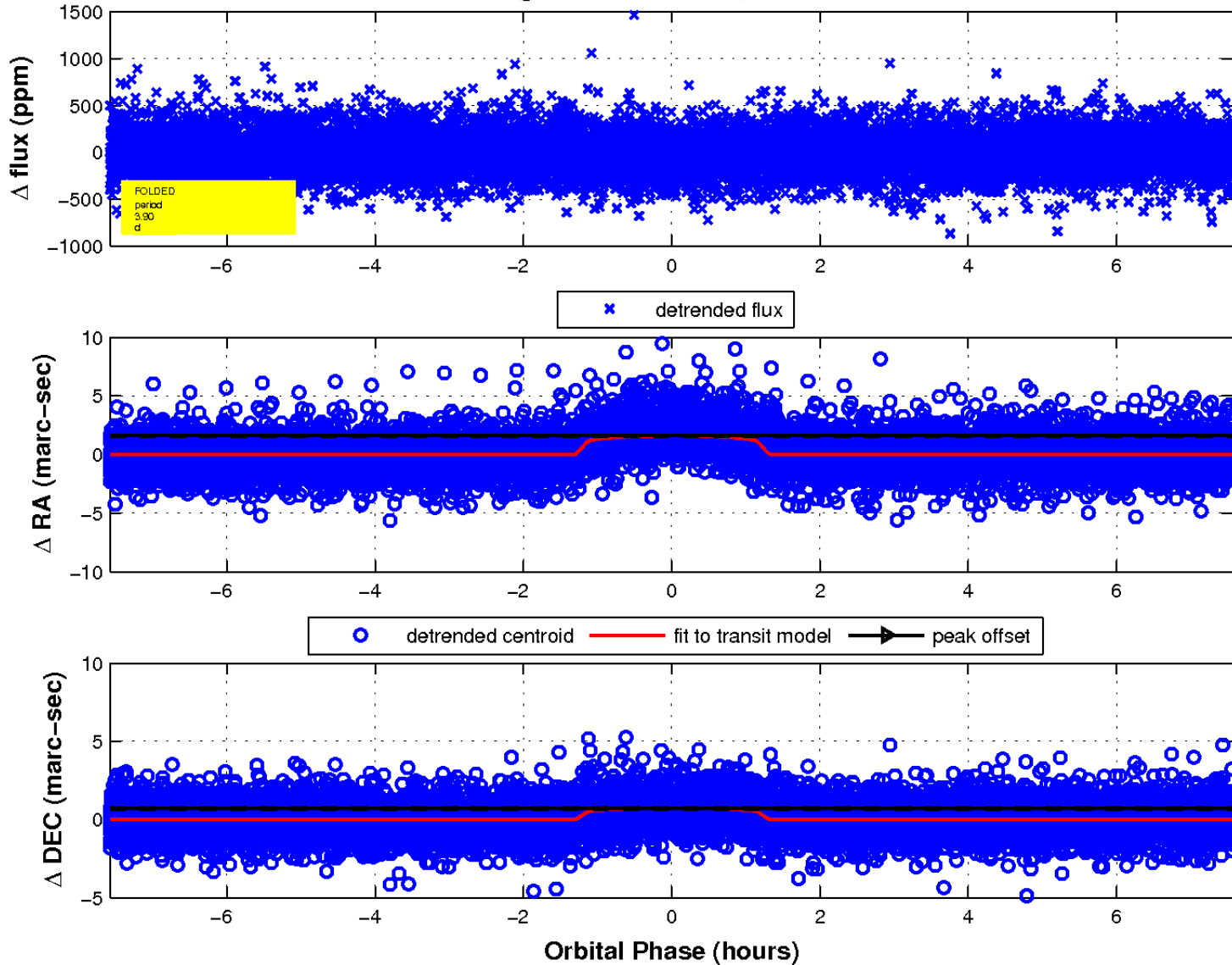
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

