

KIC 003446451

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})
003446451-01	OBS	1735.01	1.284688	131.914119	62.3	1.204	17.4	25.2	2.58	7089	2.39	19877.69
003446451-02	OBS	No	1.284683	132.560027	35.4	1.214	12.6	14.9	2.58	7089	1.80	19877.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003446451-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003446451-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—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 003446451-01

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
003446451-01	3446451	3736.01	3547315	2:1	10.6	3	1	16.64	12.31	716.37	Direct-PRF	0	1.66	0.27

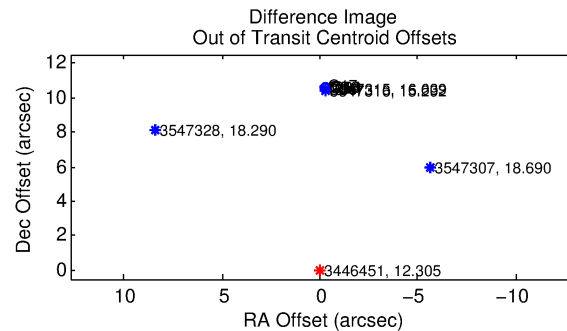
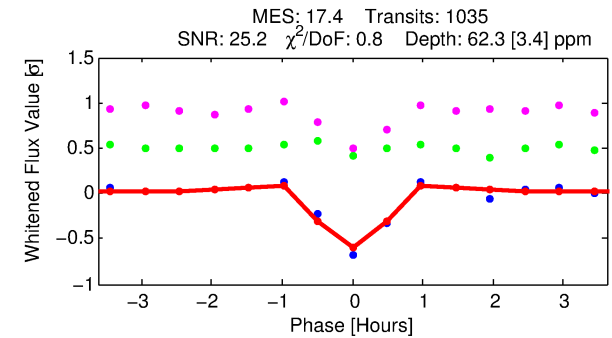
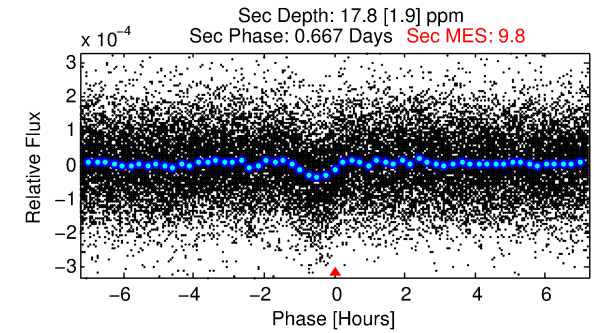
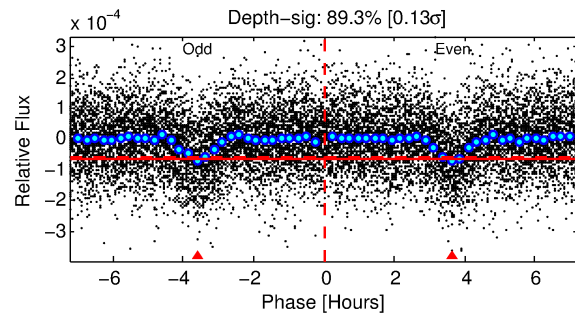
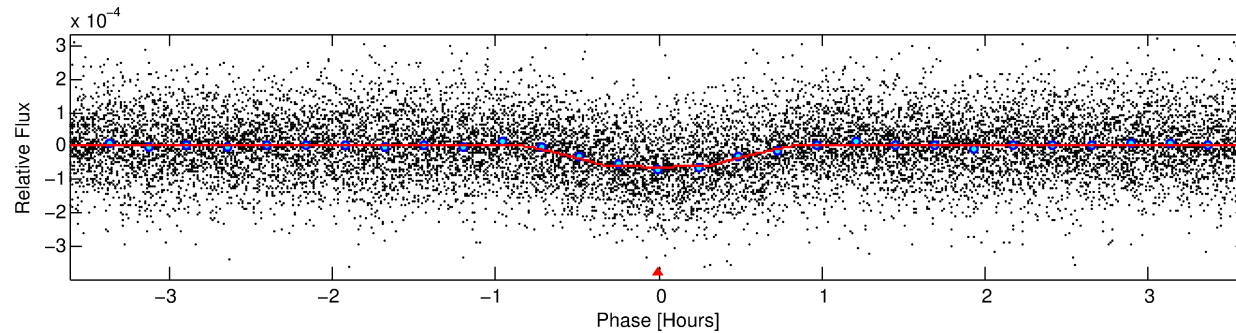
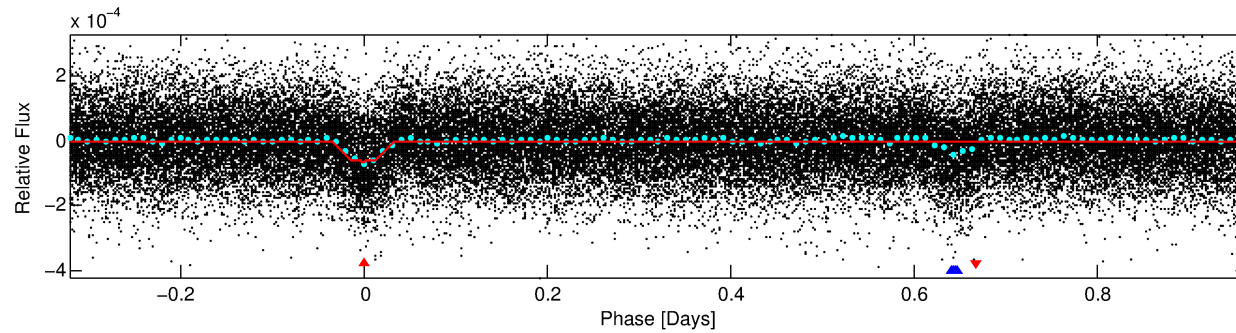
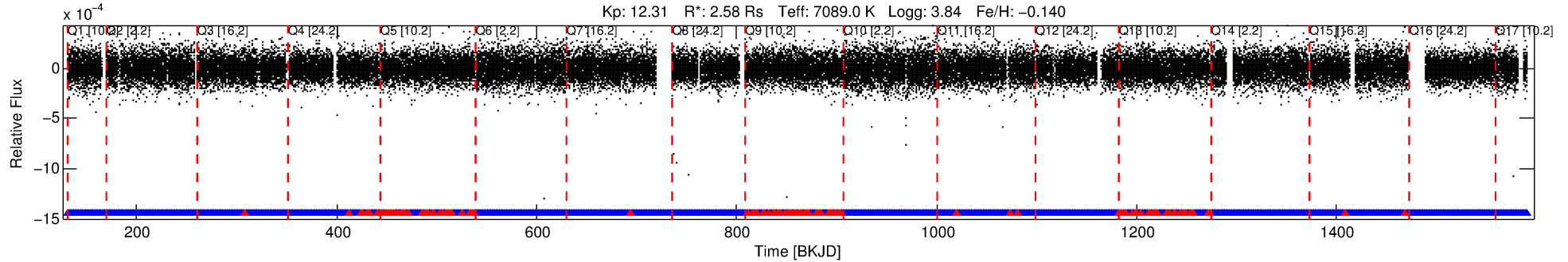
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 3446451 Candidate: 1 of 2 Period: 1.285 d

KOI: K01735 Corr: No Ephemeris Match

Kp: 12.31 R*: 2.58 Rs Teff: 7089.0 K Logg: 3.84 Fe/H: -0.140



DV Fit Results:

Period = 1.28469 [0.00000] d
Epoch = 131.9141 [0.0007] BKJD
Rp/R* = 0.0085 [0.0013]
a/R* = 3.81 [3.12]
b = 0.90 [0.19]
Seff = 19877.69 [9390.86]
Teq = 3028 [358] K
Rp = 2.39 [0.85] Re
a = 0.0276 [0.0081] AU
Ag = 1.30 [0.72] [0.41σ]
Teff = 4995 [436] K [3.49σ]

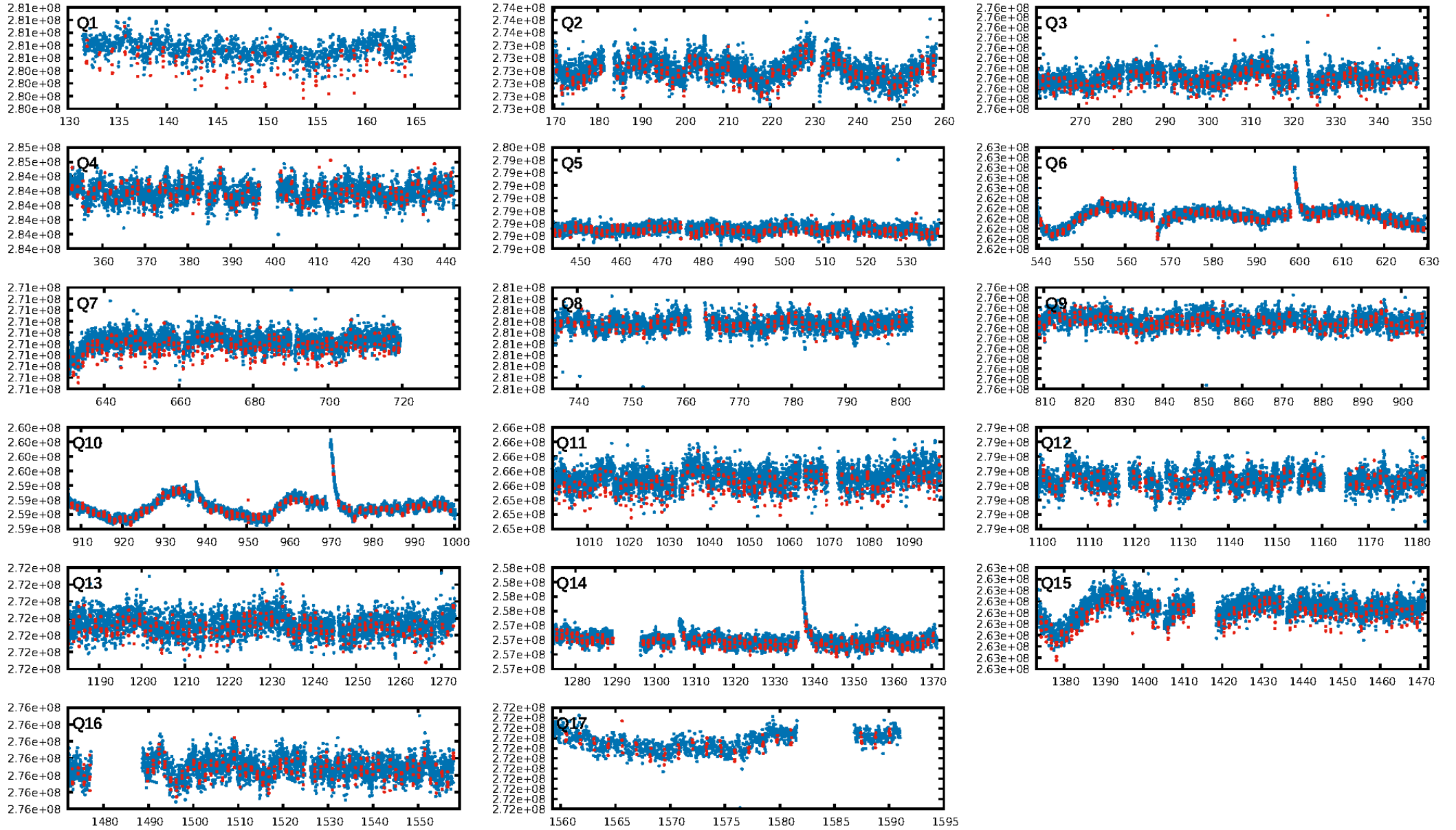
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 1.80e-61
RollingBand-fgt: 0.88 [872/989]
GhostDiagnostic-chr: -0.1869
Centroid-sig: 0.0%
Centroid-so: 86.606 arcsec [179.30σ]
OotOffset-rm: 10.591 arcsec [152.28σ]
KicOffset-rm: 10.559 arcsec [153.35σ]
OotOffset-st: 4/4/0/5 [13]
KicOffset-st: 4/4/0/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [17/17]

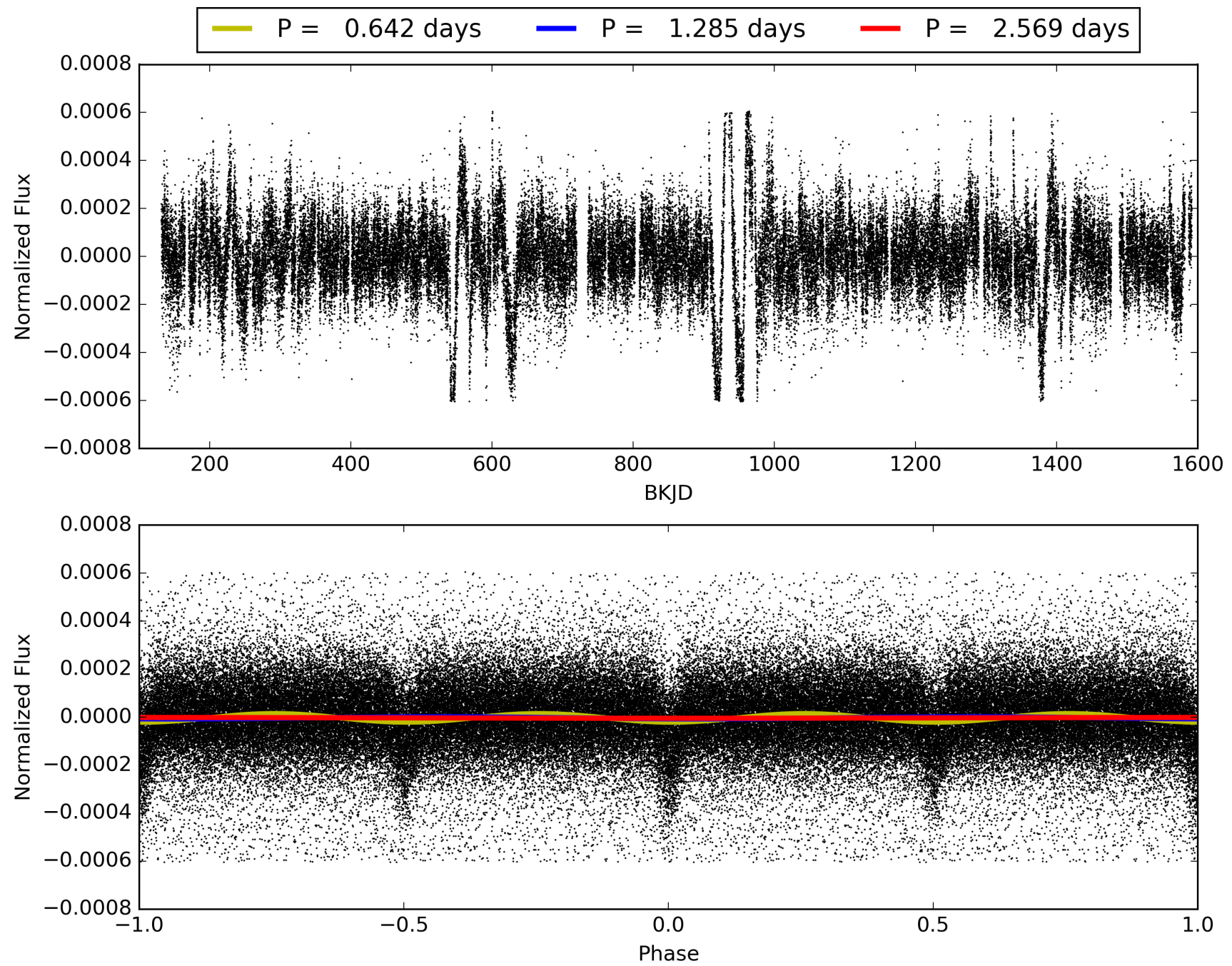
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:49:42 Z

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

TCE 003446451-01, PDC Light Curves

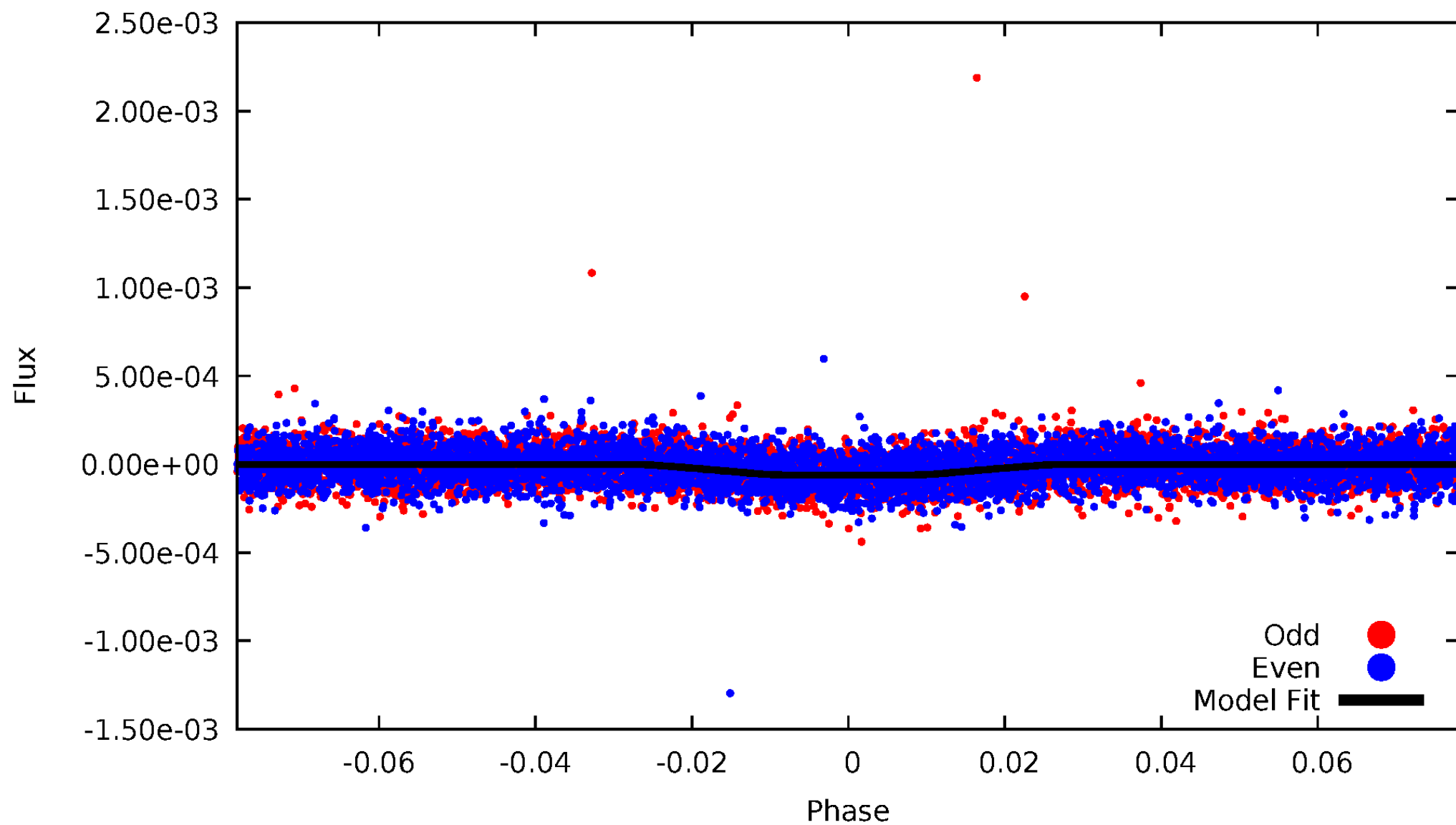


TCE 003446451-01



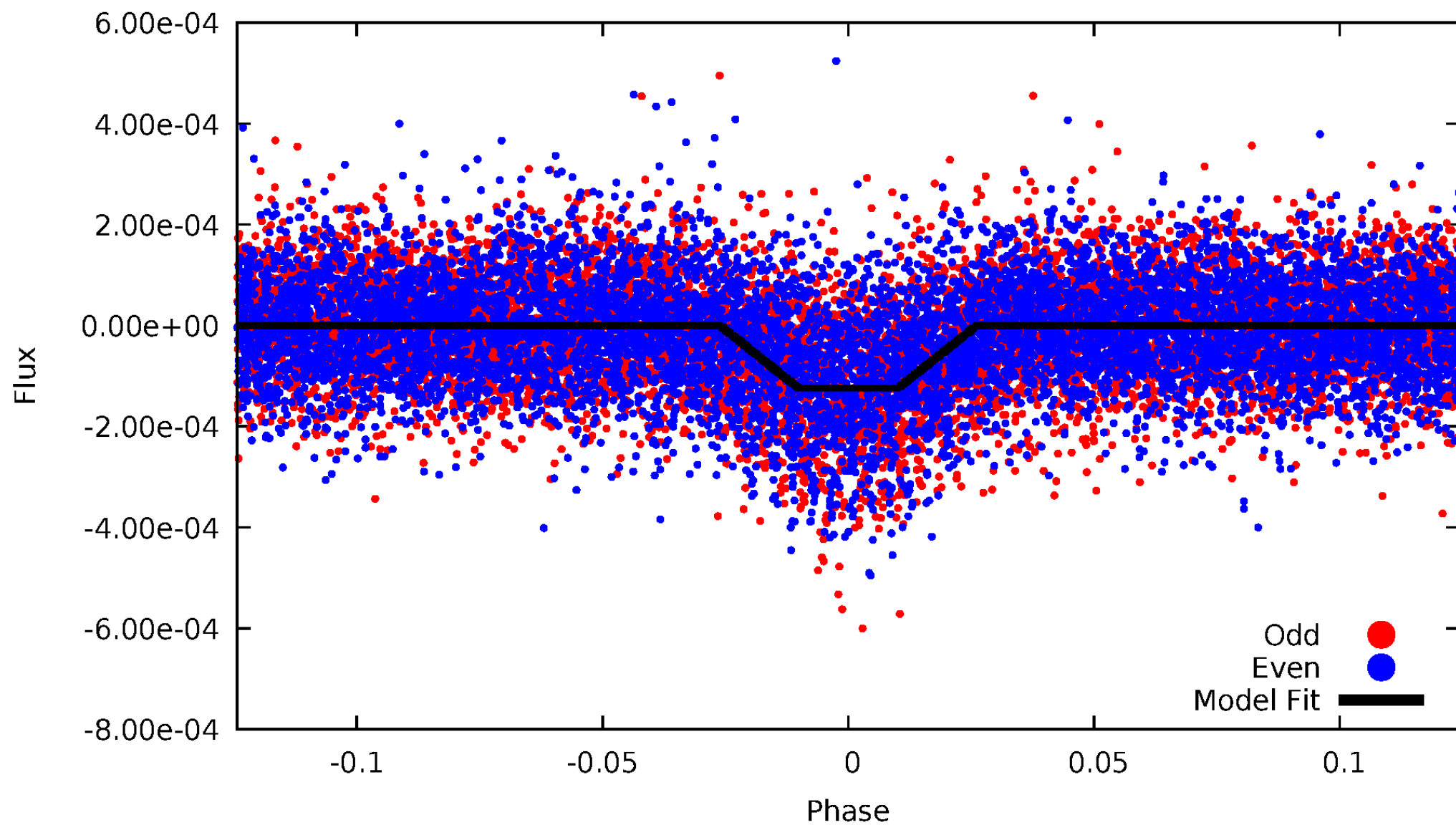
DV Odd/Even

TCE 003446451-01

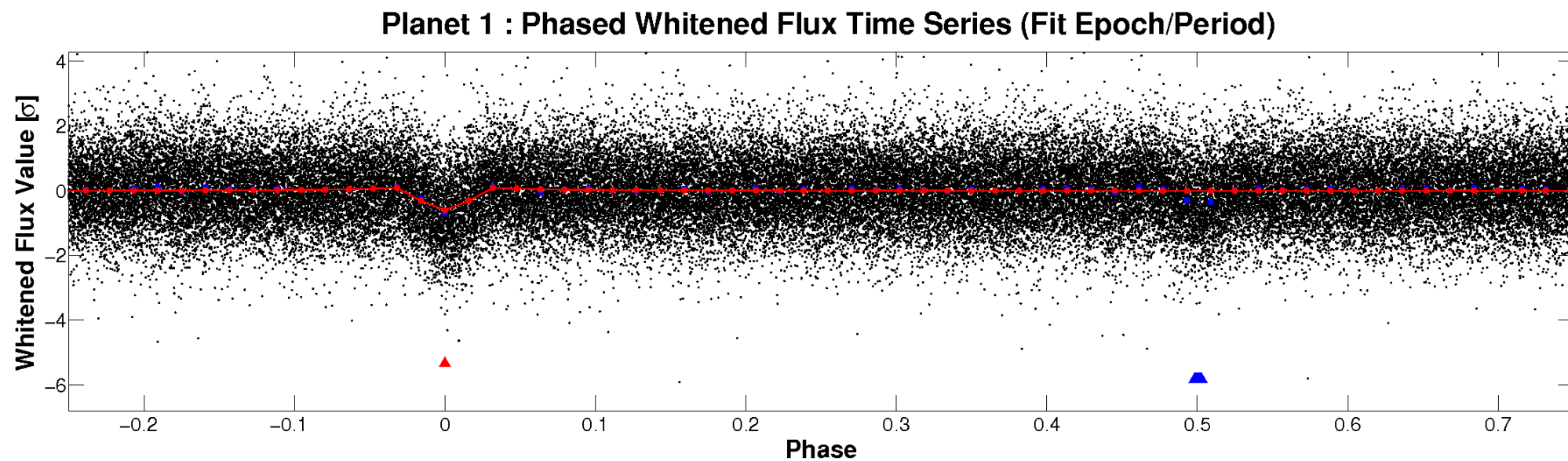
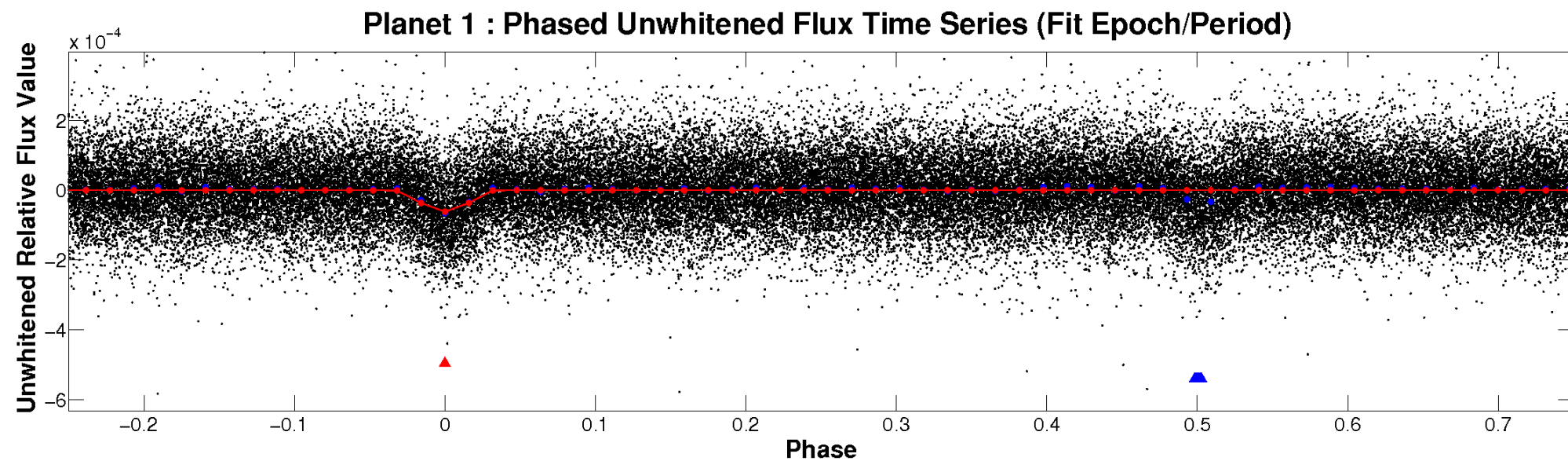


ALT Odd/Even

TCE 003446451-01

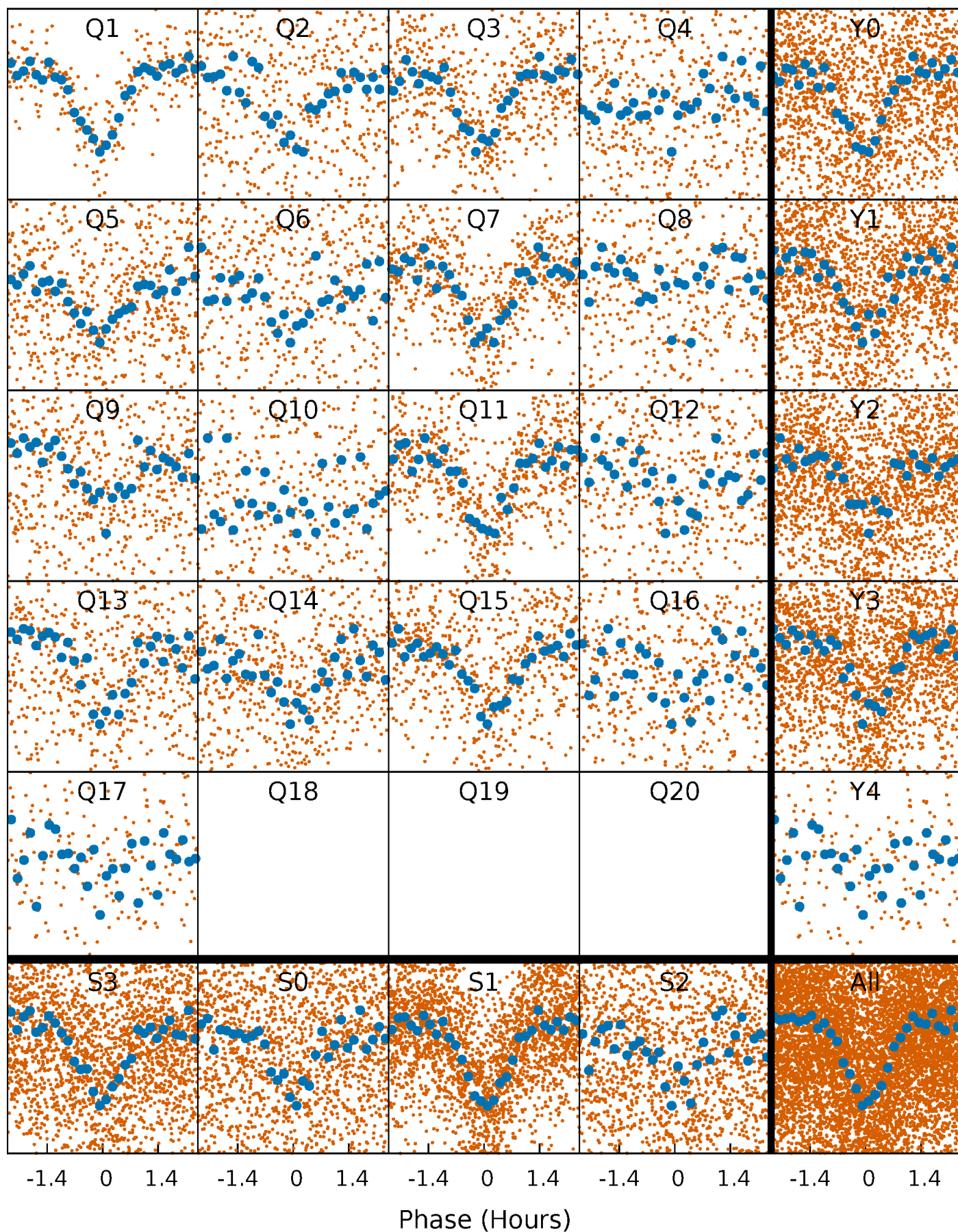


Non-Whitened Vs. Whitened Light Curve



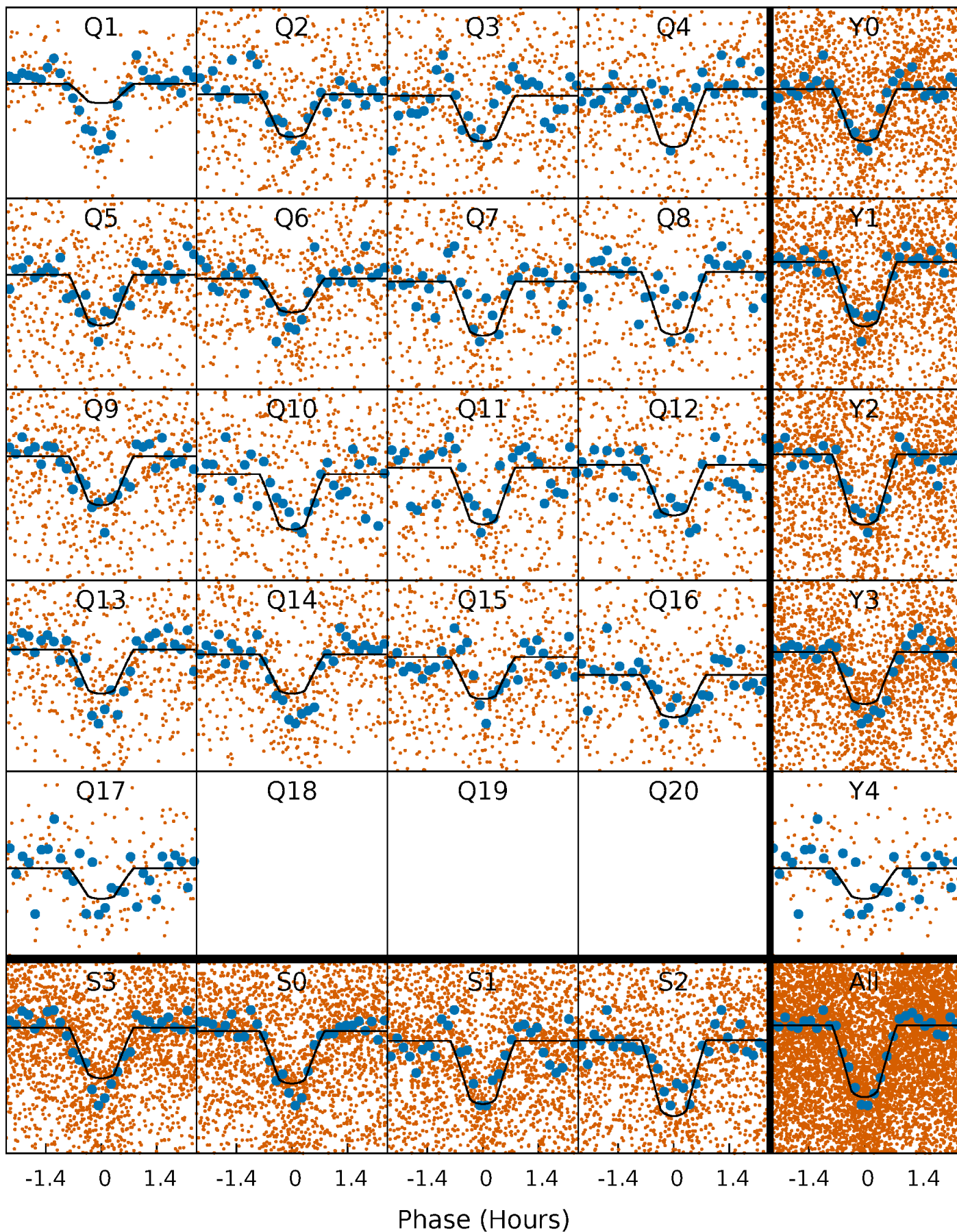
PDC Quarter-Phased Transit Curves

TCE 003446451-01 P= 1.284688 Days $T_0=131.914119$ (BKJD)



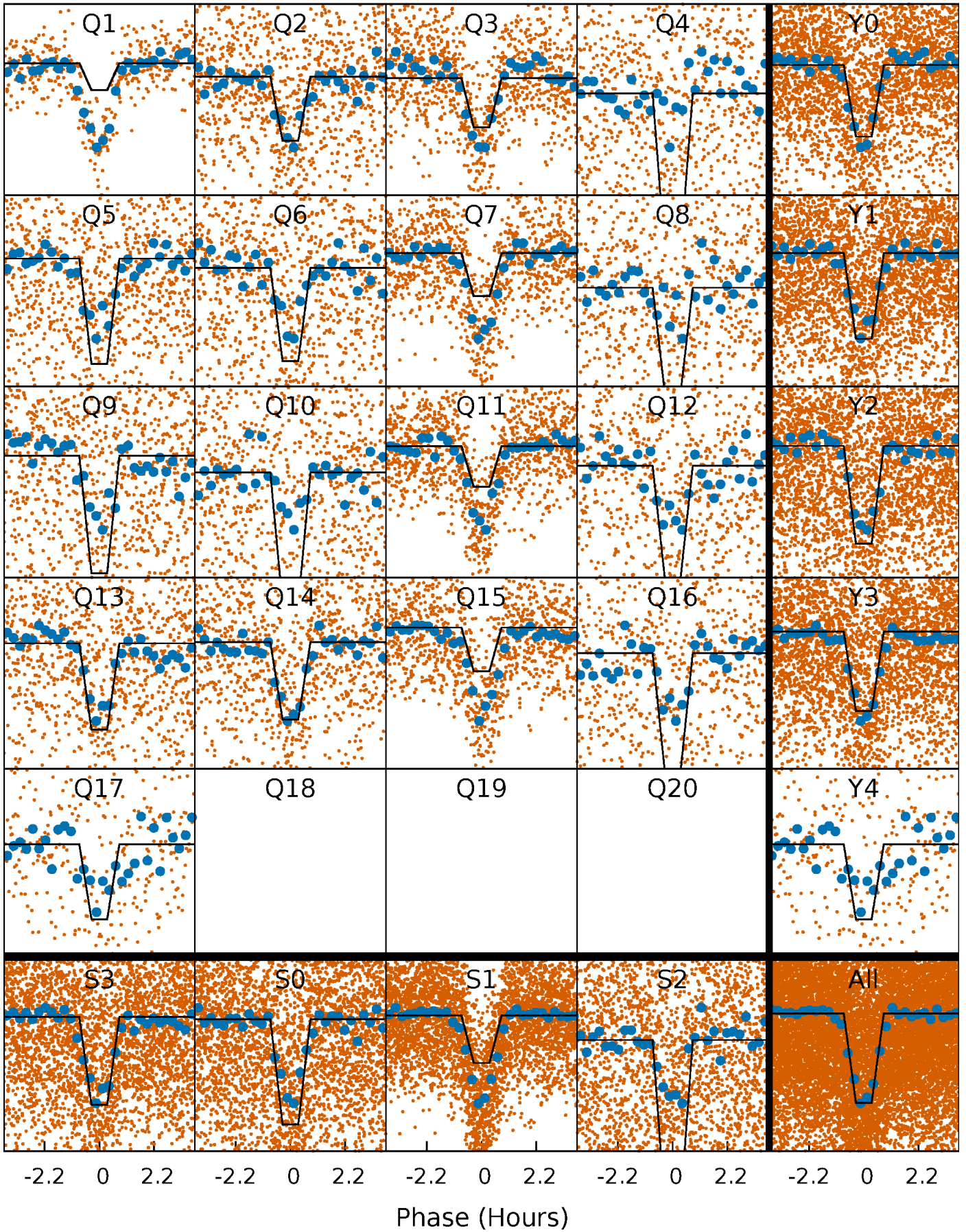
DV Quarter-Phased Transit Curves

TCE 003446451-01 P= 1.284688 Days $T_0=131.914119$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

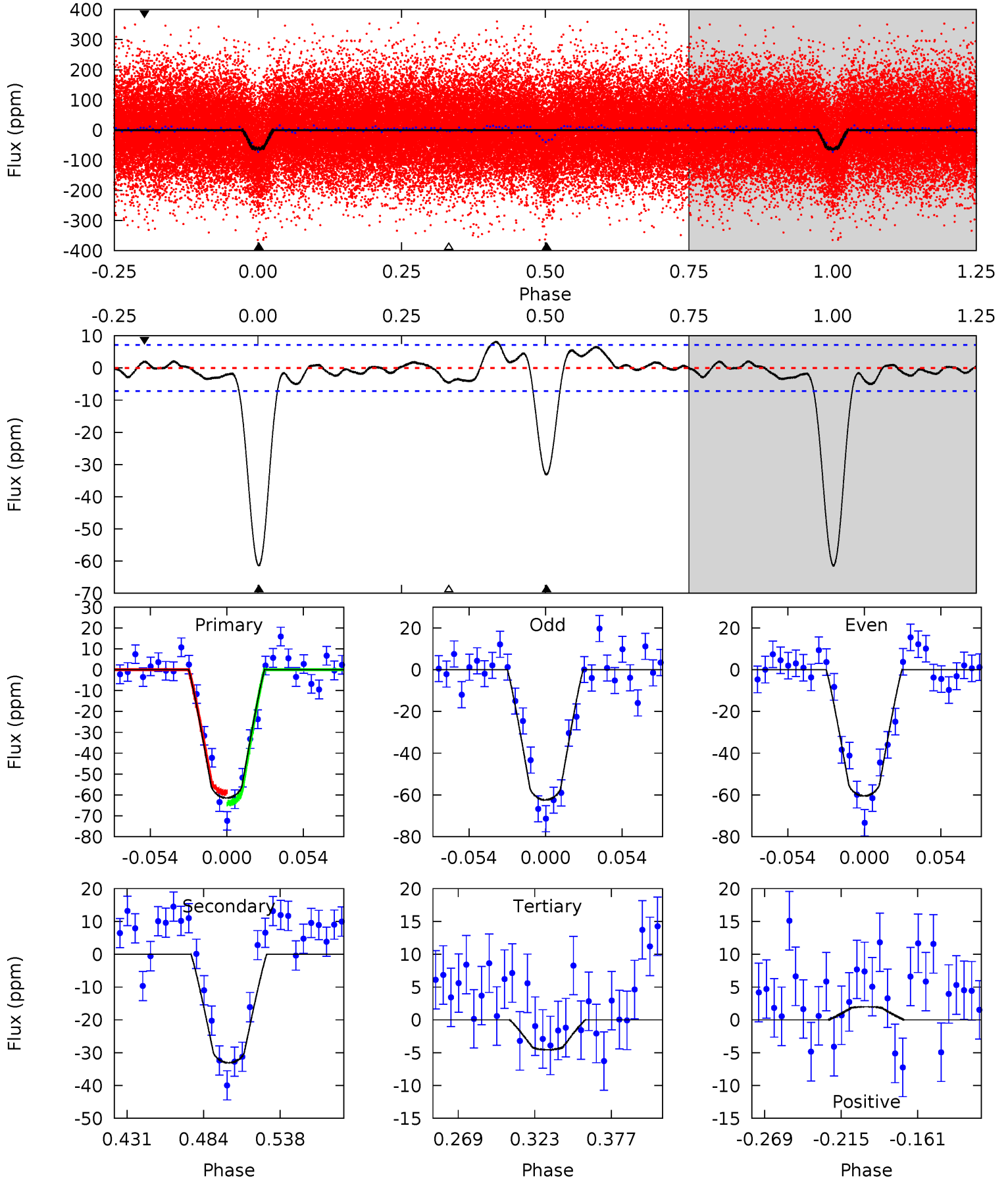
TCE 003446451-01 P= 1.284694 Days $T_0=131.912428$ (BKJD)



DV Model-Shift Uniqueness Test

003446451-01, P = 1.284688 Days, E = 130.629431 Days

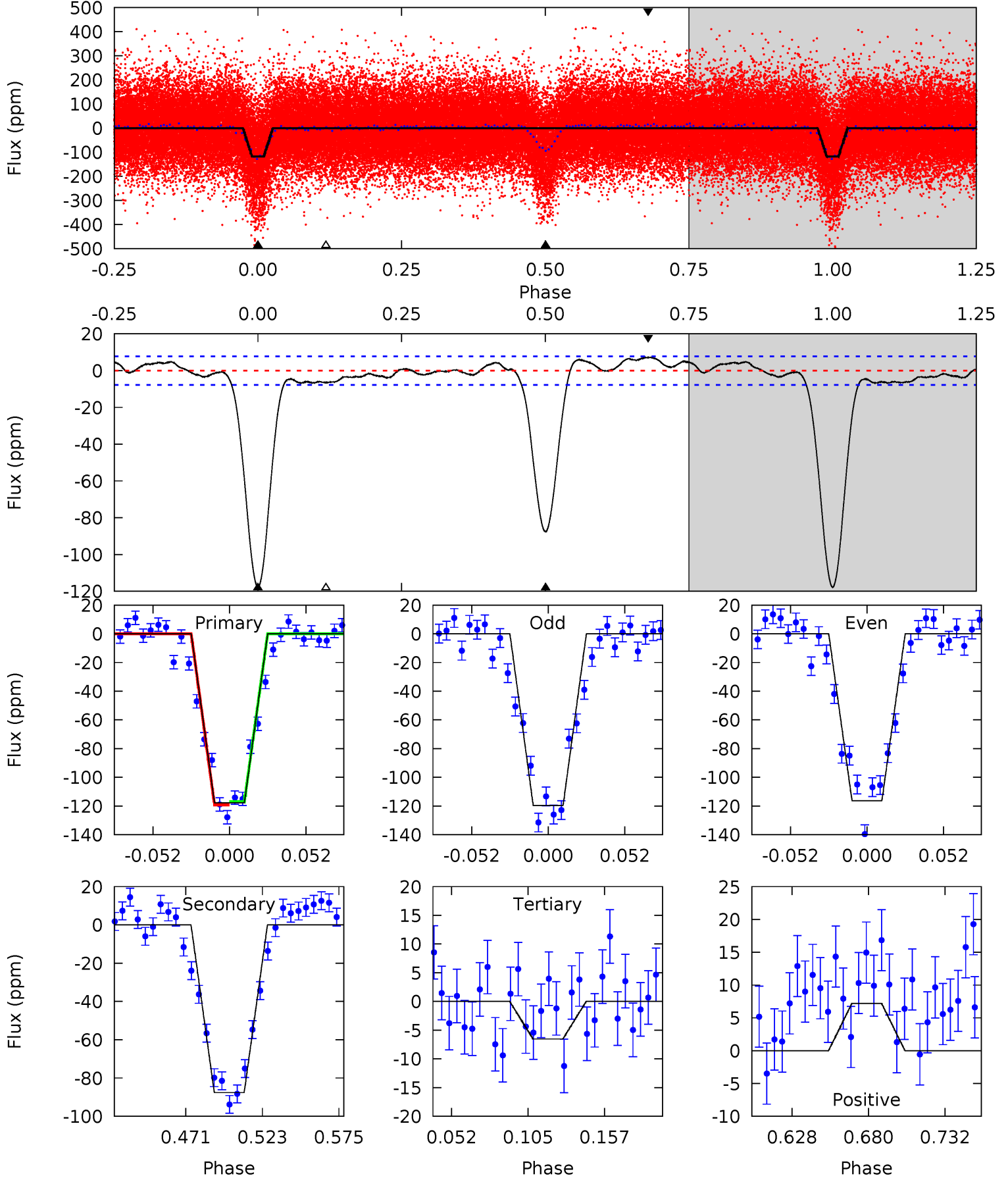
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.2	21.6	2.98	1.30	4.69	1.93	1.74	37.2	38.9	18.7	20.3	0.63	1.01	0.12	1.68



Alt Model-Shift Uniqueness Test

003446451-01, P = 1.284694 Days, E = 130.627734 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.1	52.9	3.94	4.33	4.70	1.94	2.22	67.1	66.7	48.9	48.5	1.01	1.04	0.06	0.71



Stellar Parameters For KIC 003446451

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7089^{+172}_{-246}	$3.842^{+0.259}_{-0.111}$	$-0.140^{+0.250}_{-0.300}$	$2.584^{+0.447}_{-0.830}$	$1.693^{+0.156}_{-0.339}$	$0.138^{+0.250}_{-0.046}$
	+2%/-3%	+7%/-3%	+179%/-214%	+17%/-32%	+9%/-20%	+181%/-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 003446451-01 / KOI 1735.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-33 ± 2	$2.28^{+0.50}_{-0.46}$	4166^{+258}_{-338}	5633^{+540}_{-474}	$2.655^{+1.383}_{-0.840}$
Alt.	-88 ± 2	$3.00^{+0.57}_{-0.55}$	4190^{+226}_{-337}	6303^{+495}_{-389}	$3.990^{+1.844}_{-1.133}$

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

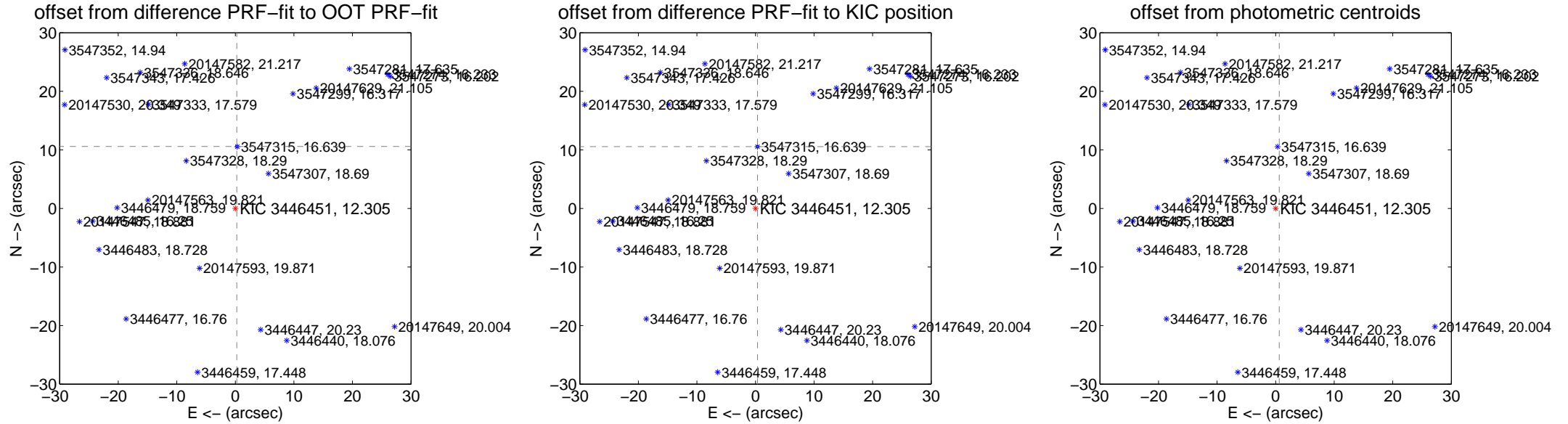
DV Centroid Data

Supplemental centroid analysis for 003446451-01. Kepler magnitude: 12.30. Transit SNR 25.18

There are 13 quarters with good PRF difference image offsets

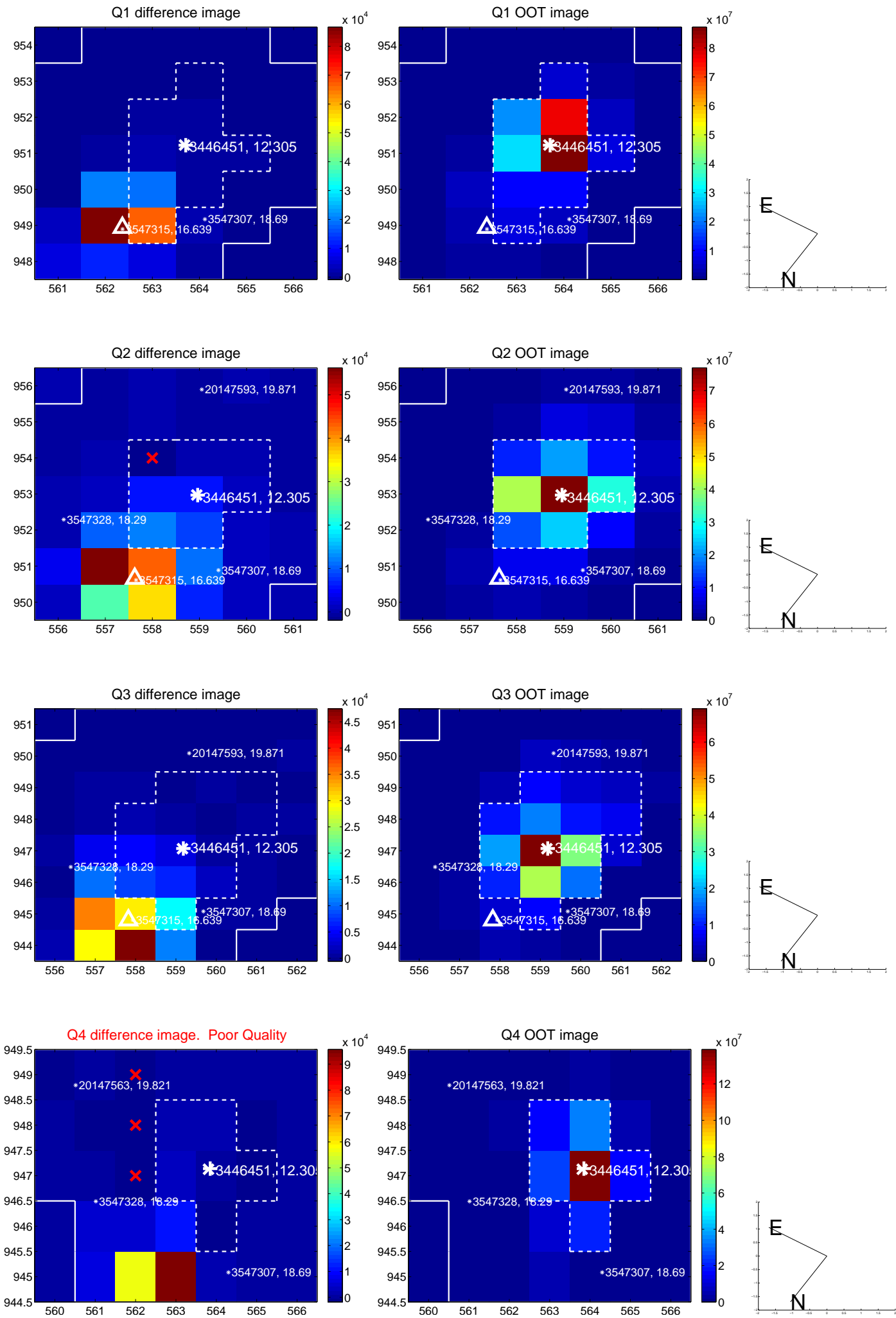
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	10.591 \pm 0.070	152.28	-0.254 \pm 0.071	10.588 \pm 0.069
PRF-fit source offset from KIC position	10.559 \pm 0.069	153.35	-0.348 \pm 0.072	10.553 \pm 0.069
photometric centroid source offset	86.61 \pm 0.48	179.30	-0.62 \pm 0.32	86.60 \pm 0.48

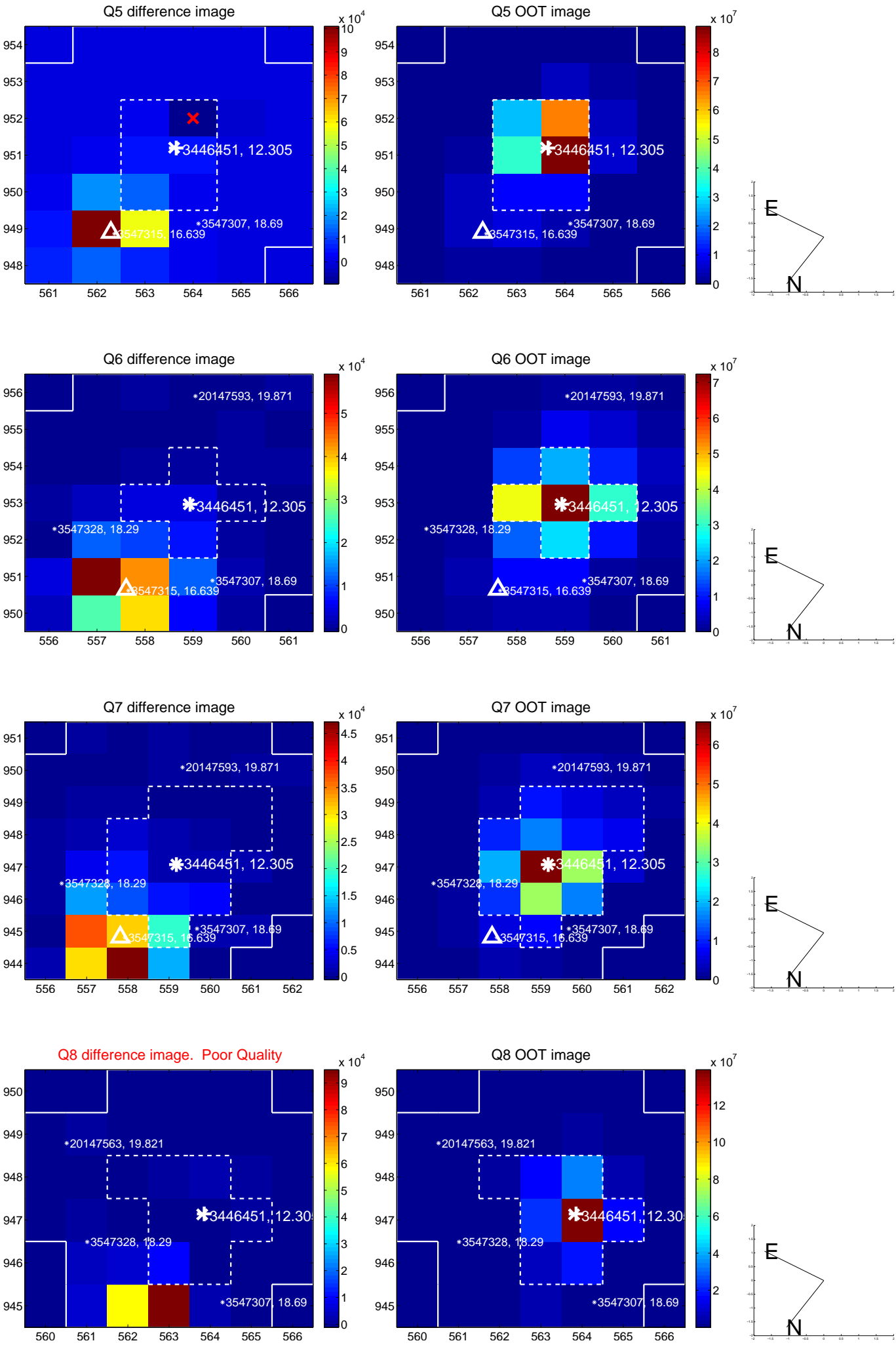


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

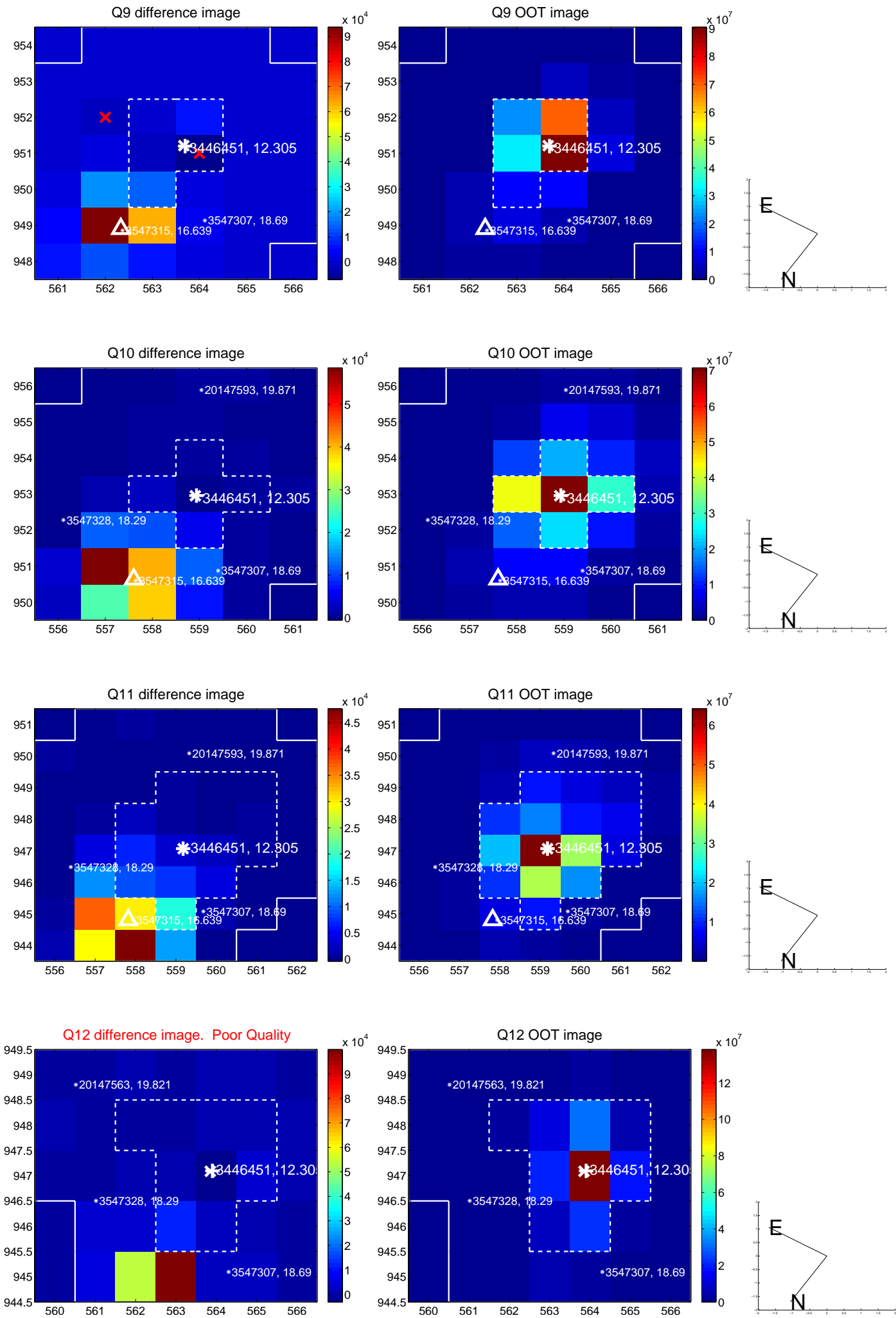
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



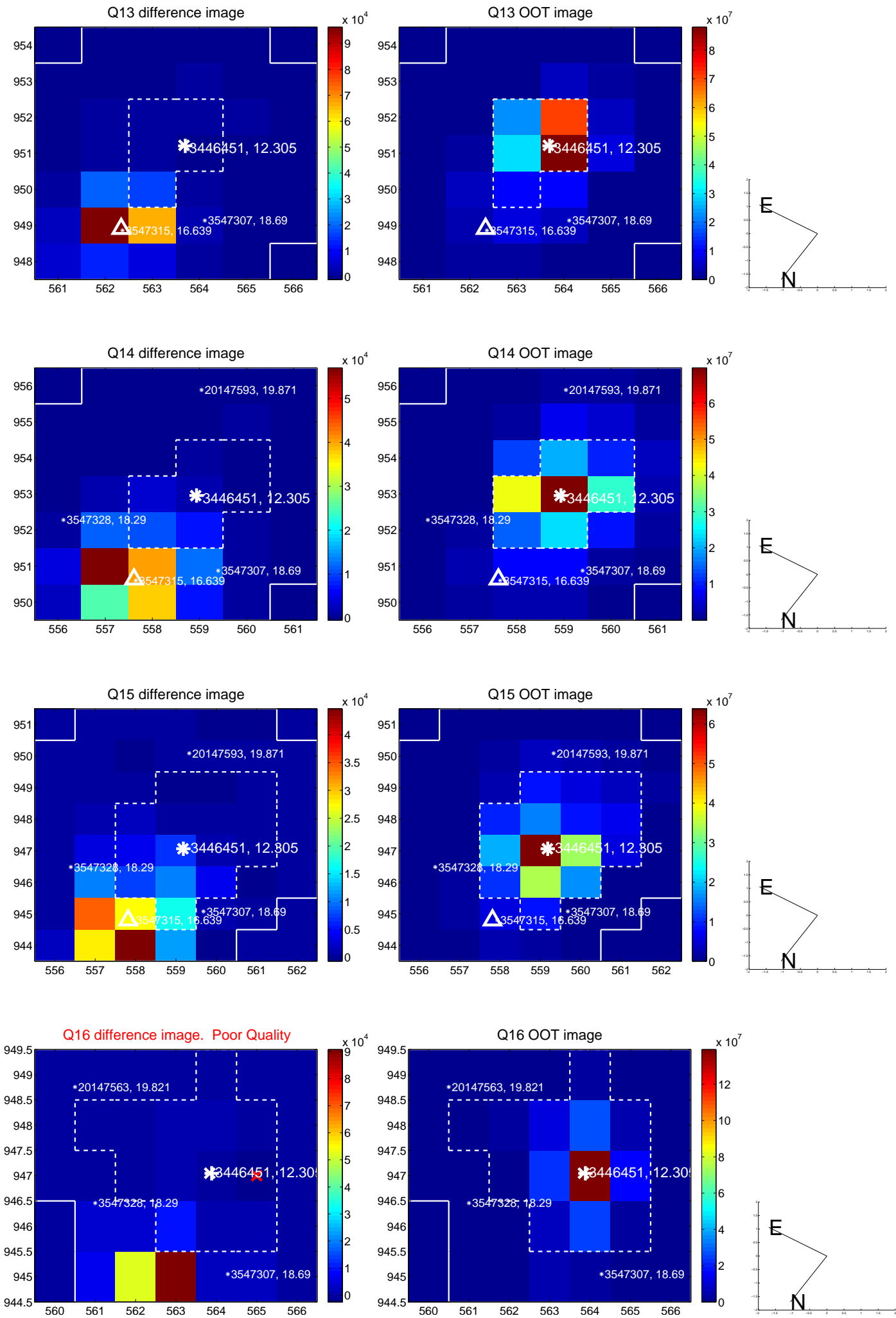
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



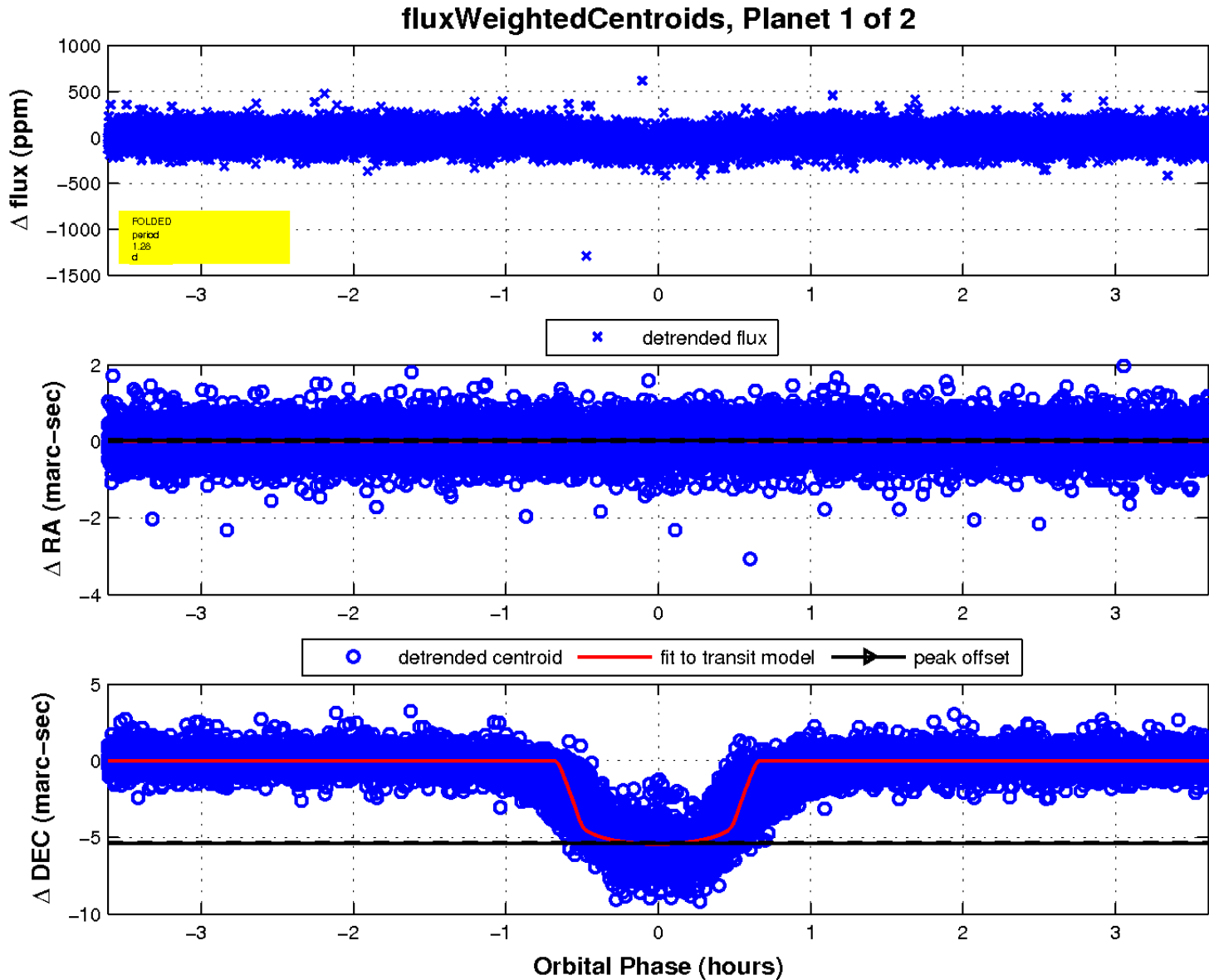
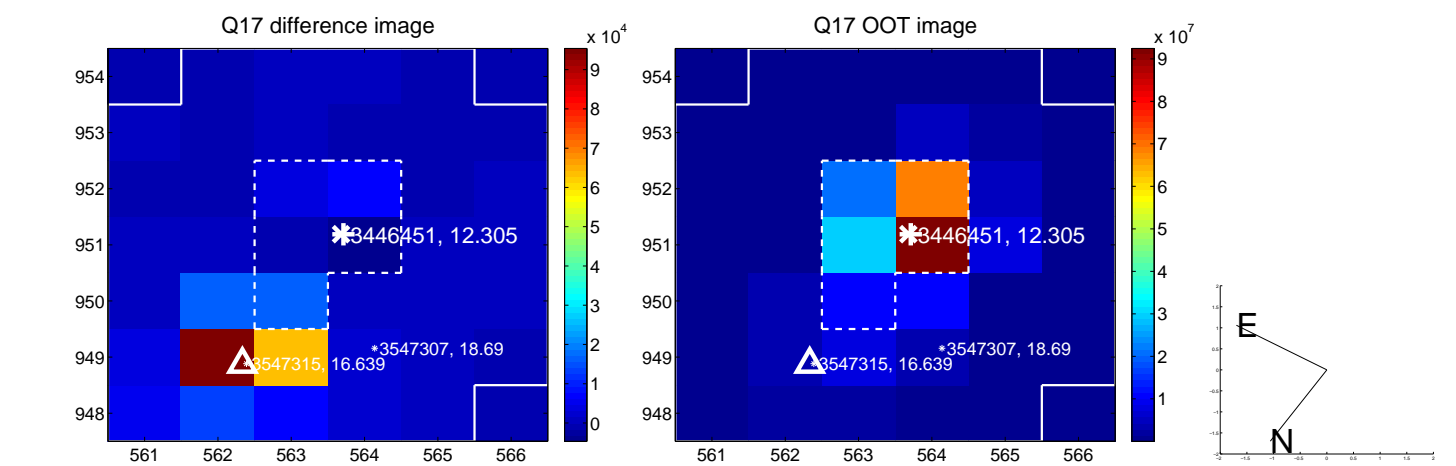
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



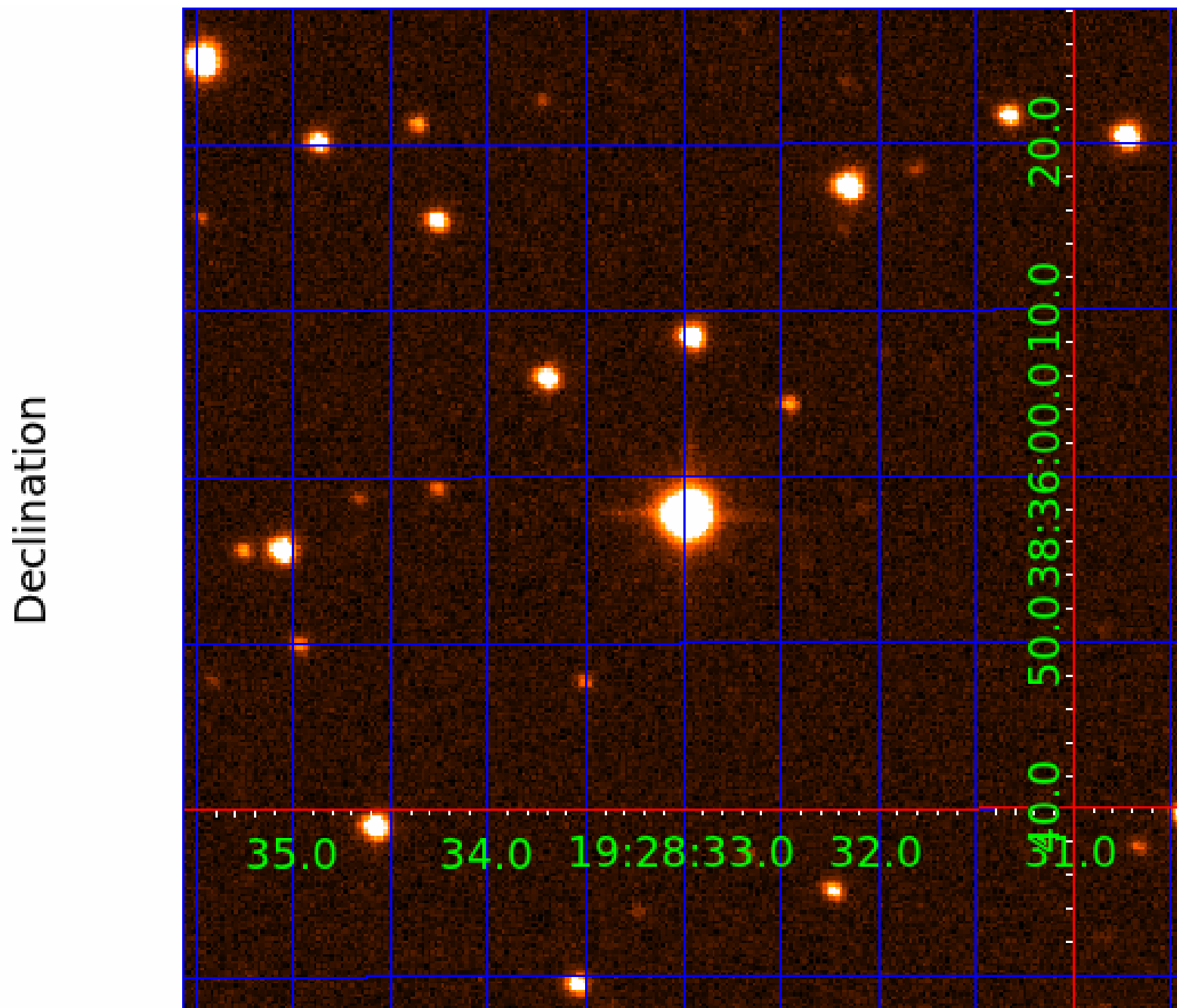
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 003446451

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})
003446451-01	OBS	1735.01	1.284688	131.914119	62.3	1.204	17.4	25.2	2.58	7089	2.39	19877.69
003446451-02	OBS	No	1.284683	132.560027	35.4	1.214	12.6	14.9	2.58	7089	1.80	19877.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003446451-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
003446451-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—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.

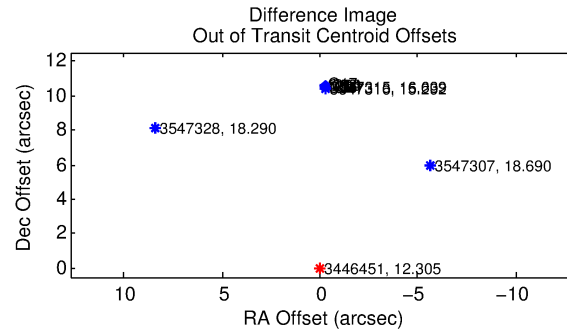
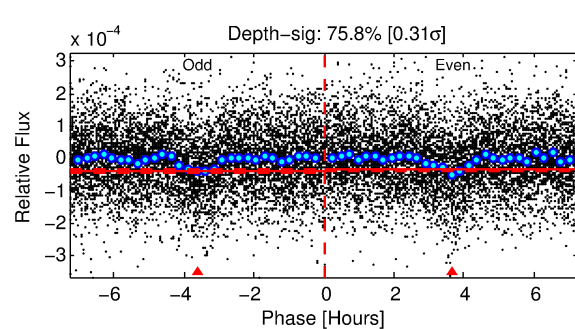
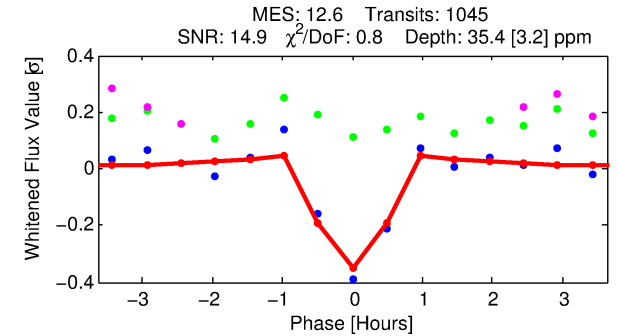
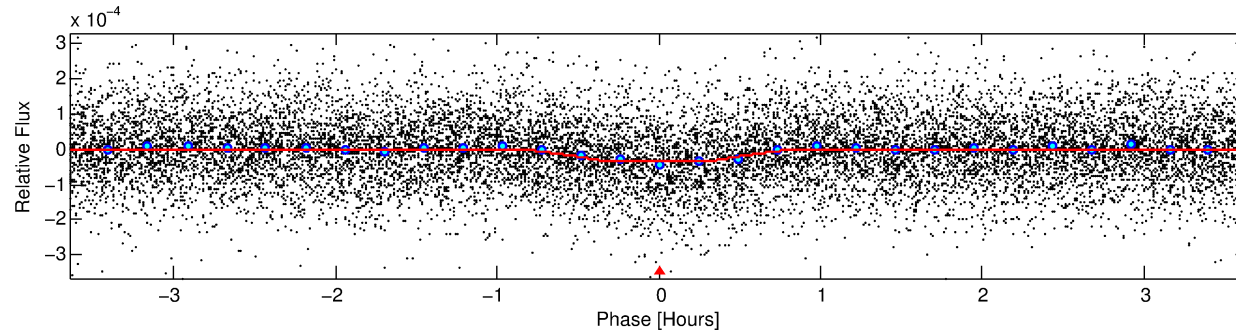
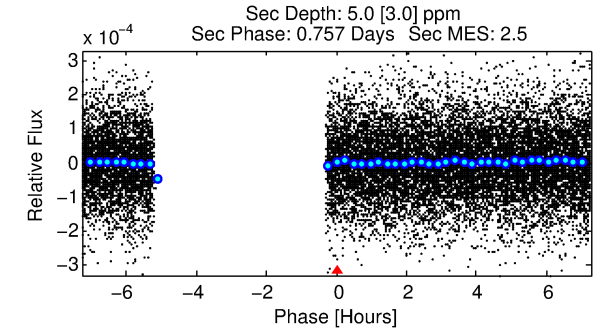
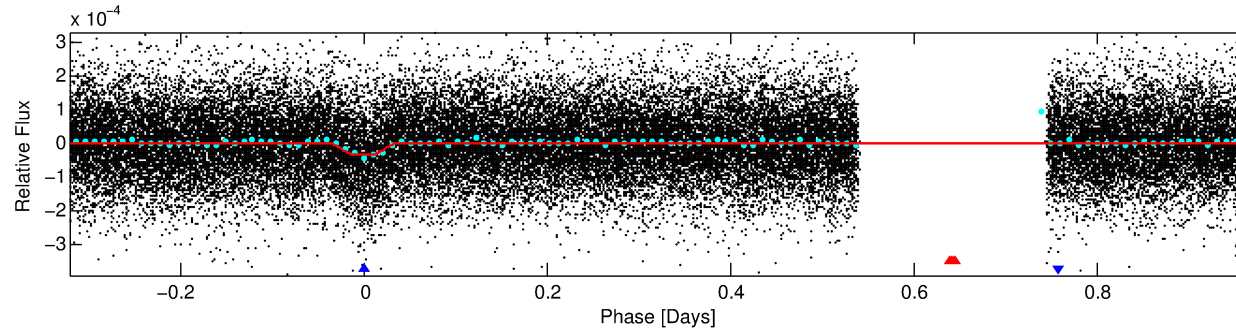
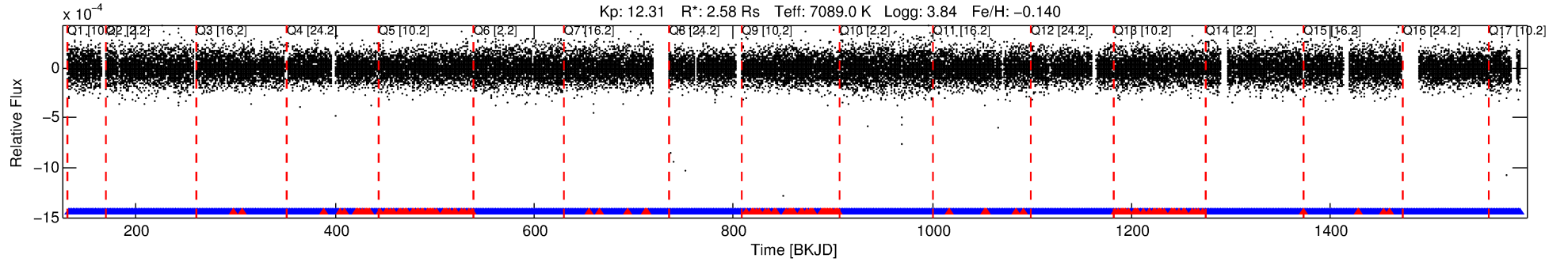
Ephemeris Match Information For 003446451-02

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
003446451-02	3446451	3736.01	3547315	2:1	10.6	3	1	16.64	12.31	1269.00	Direct-PRF	0	2.52	0.57

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: 3446451 Candidate: 2 of 2 Period: 1.285 d
KOI: K01735 Corr: No Ephemeris Match



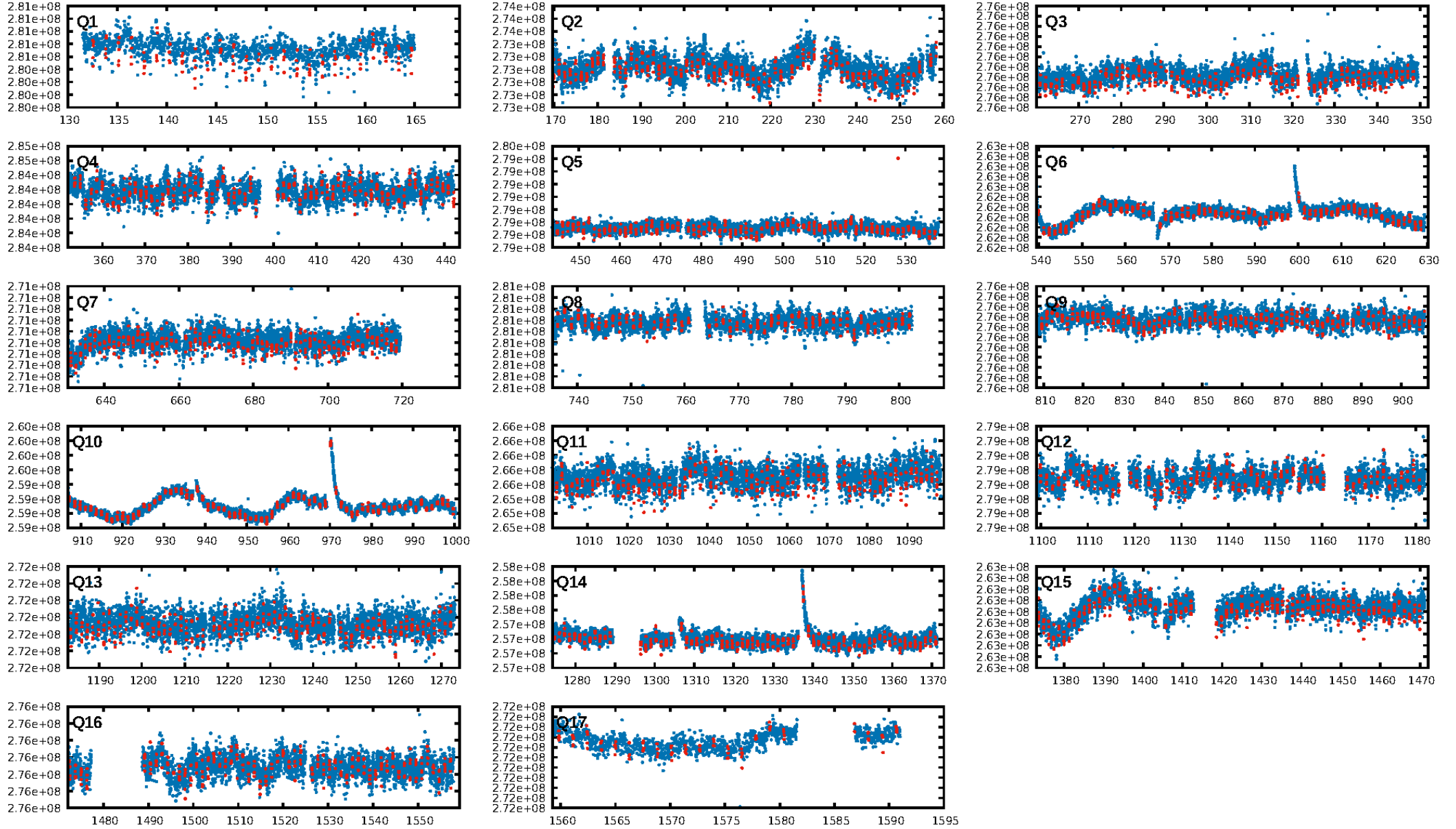
DV Fit Results:

Period = 1.28468 [0.00001] d
Epoch = 132.5600 [0.0012] BKJD
Rp/R* = 0.0064 [0.0010]
a/R* = 3.76 [3.04]
b = 0.90 [0.19]
Seff = 19877.79 [9390.91]
Teff = 3028 [358] K
Rp = 1.80 [0.64] Re
a = 0.0276 [0.0081] AU
Ag = 0.65 [0.52] [-0.67σ]
Teffp = 4198 [722] K [1.45σ]

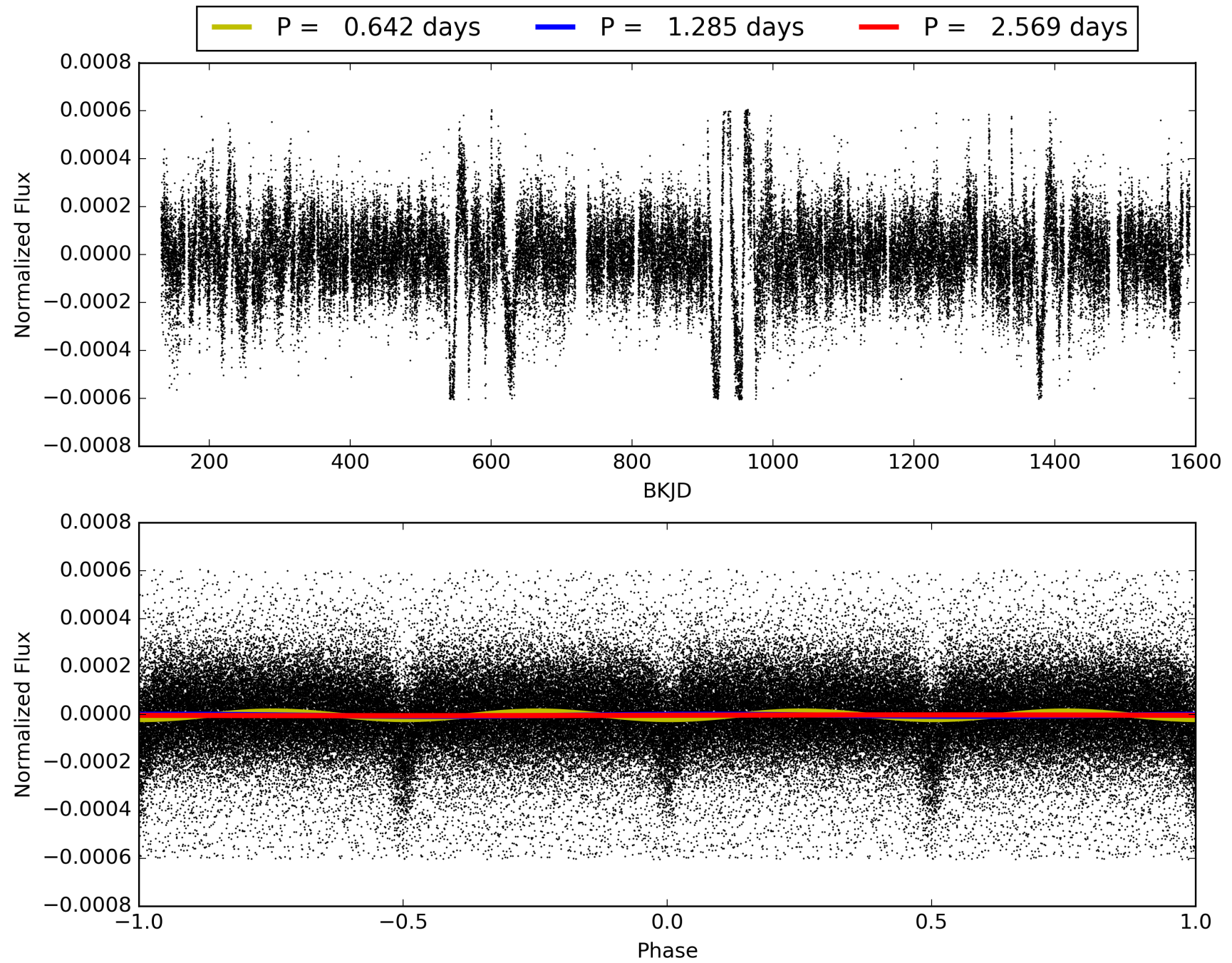
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.17e-34
RollingBand-fgt: 0.87 [873/998]
GhostDiagnostic-chr: -0.06688
Centroid-sig: 0.0%
Centroid-so: 85.460 arcsec [98.13σ]
OotOffset-rm: 10.566 arcsec [153.30σ]
KicOffset-rm: 10.537 arcsec [153.84σ]
OotOffset-st: 4/4/0/5 [13]
KicOffset-st: 4/4/0/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 003446451-02, PDC Light Curves

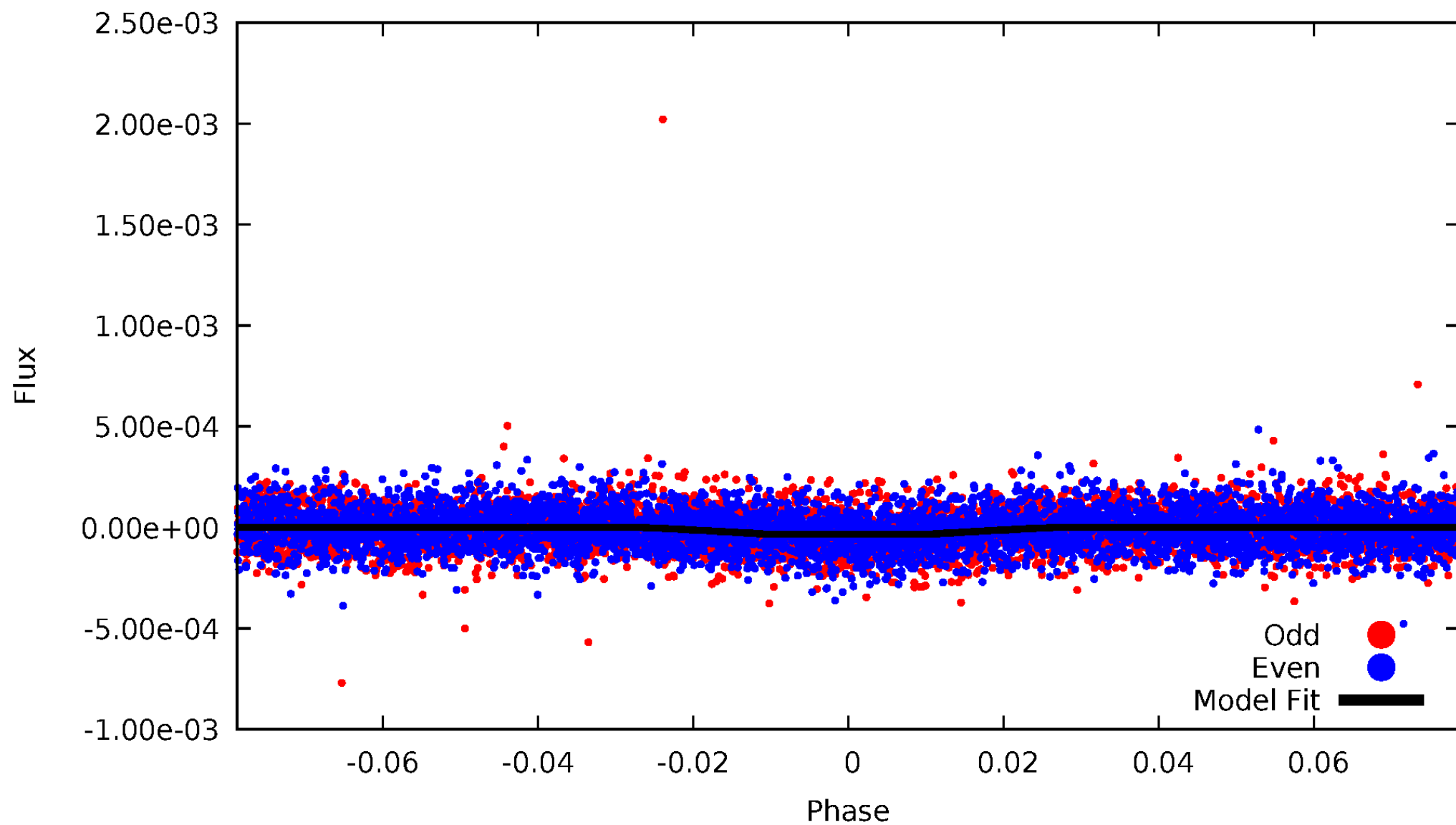


TCE 003446451-02



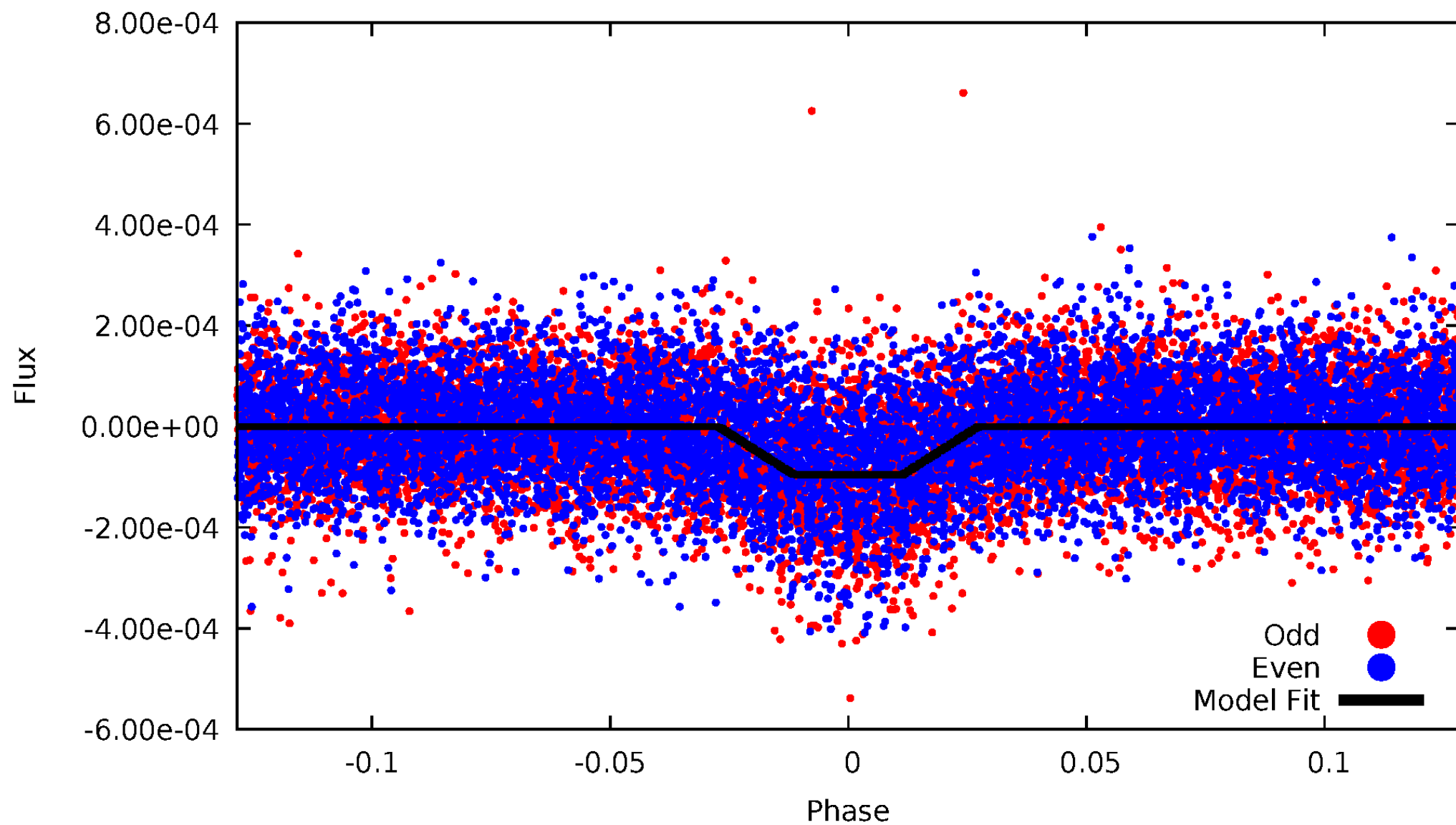
DV Odd/Even

TCE 003446451-02



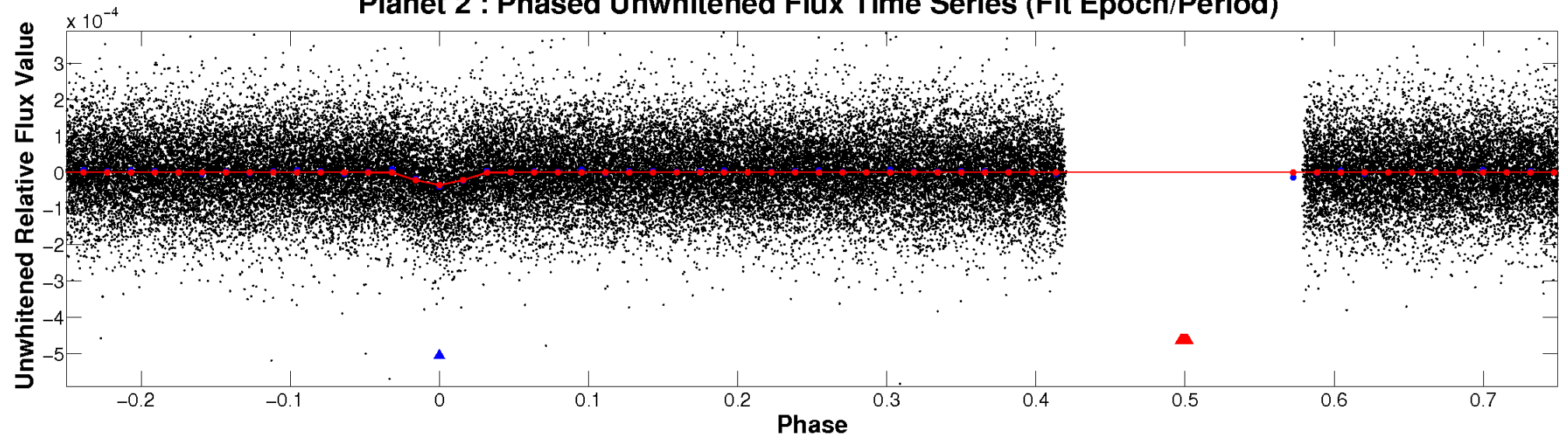
ALT Odd/Even

TCE 003446451-02

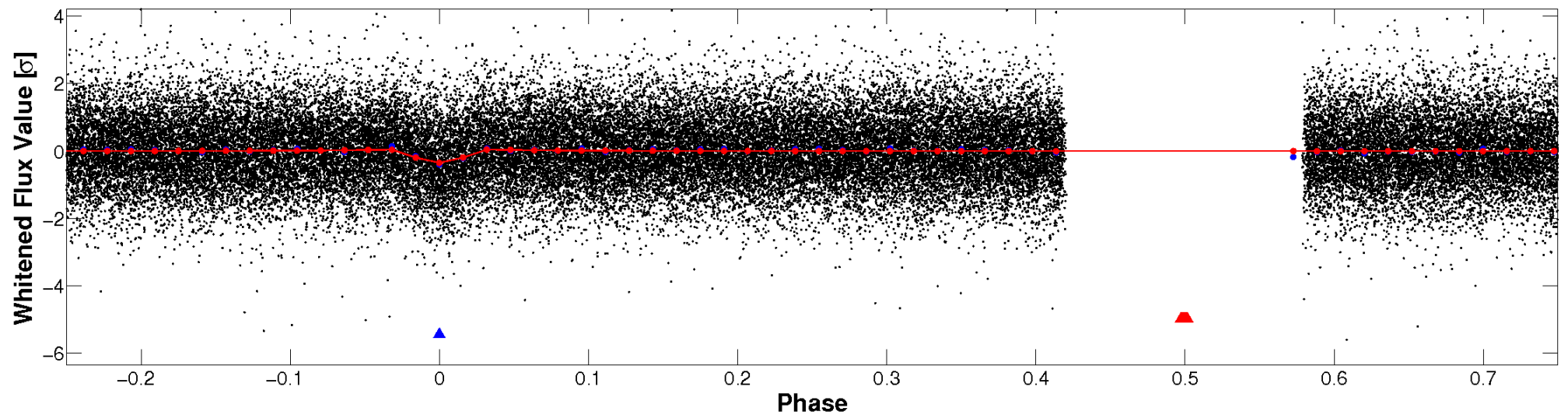


Non-Whitened Vs. Whitened Light Curve

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

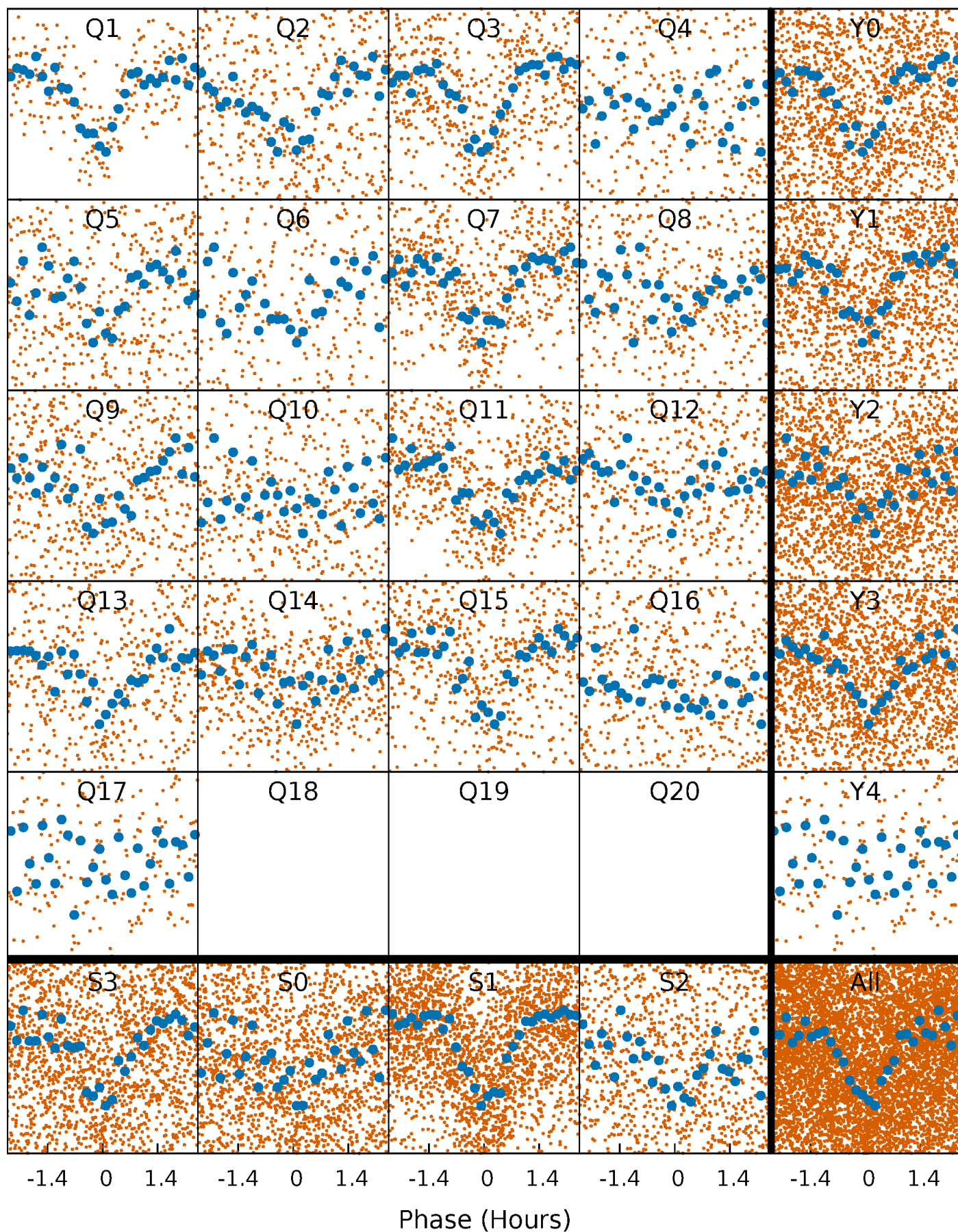


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



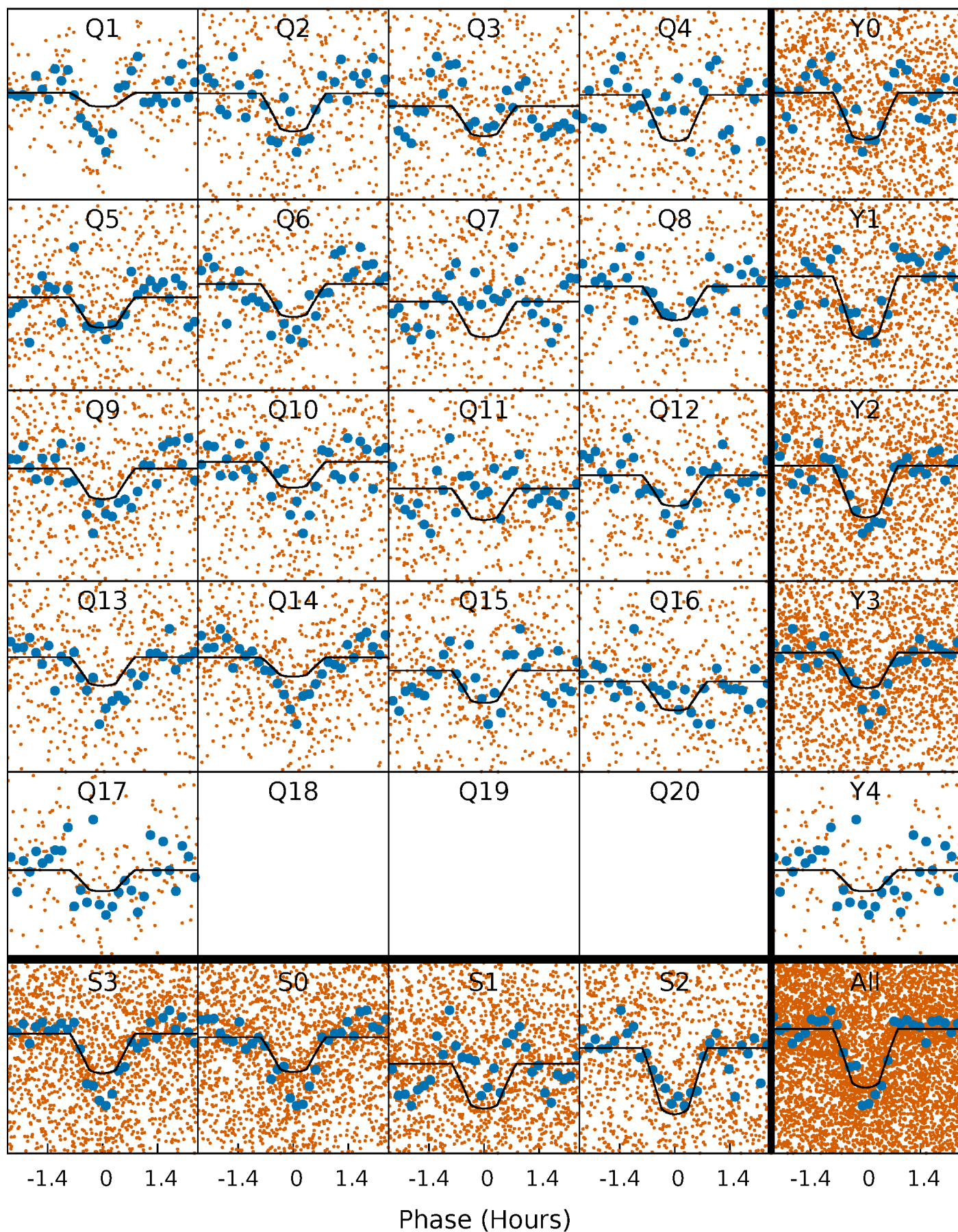
PDC Quarter-Phased Transit Curves

TCE 003446451-02 P= 1.284683 Days $T_0=132.560027$ (BKJD)



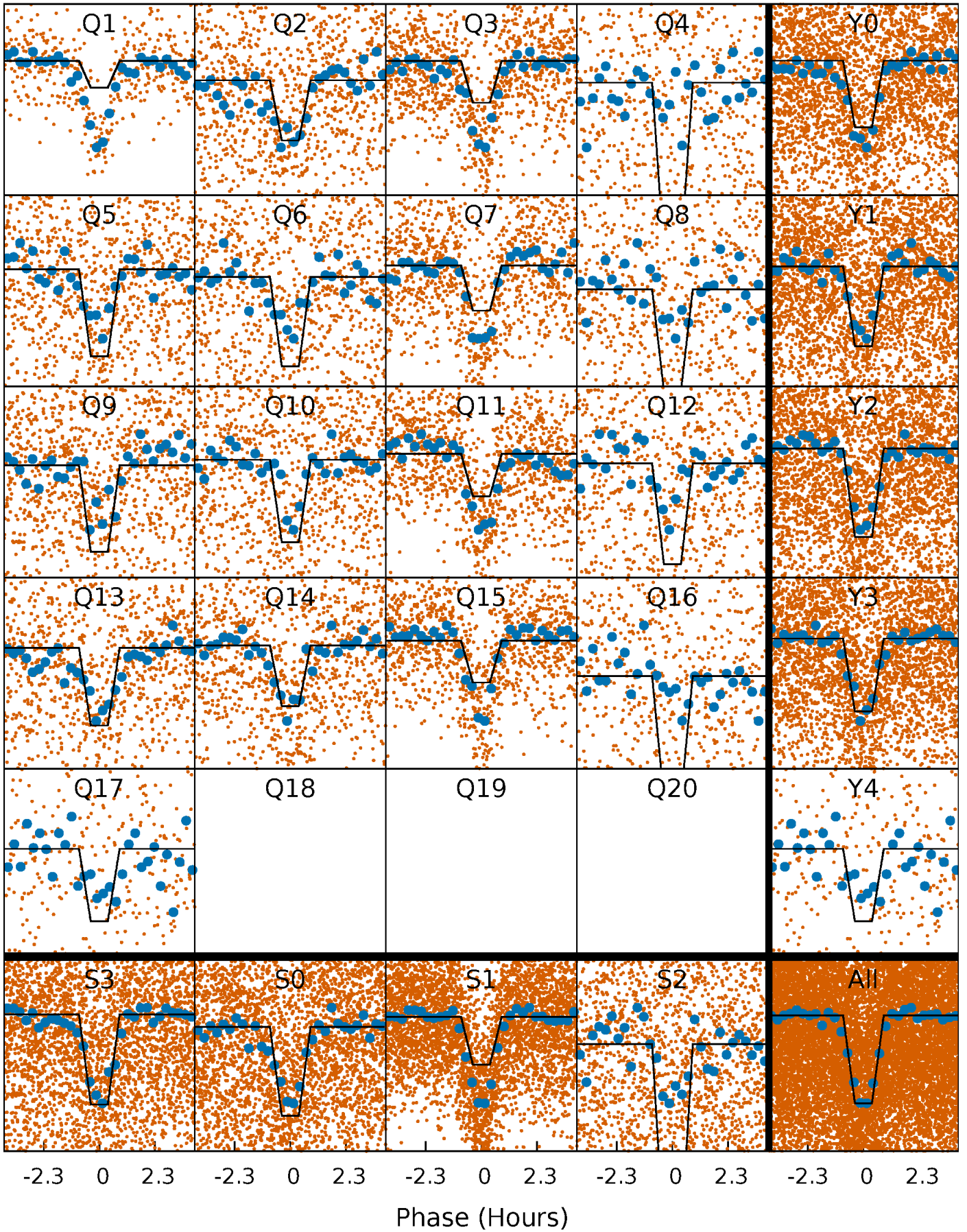
DV Quarter-Phased Transit Curves

TCE 003446451-02 P= 1.284683 Days $T_0=132.560027$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

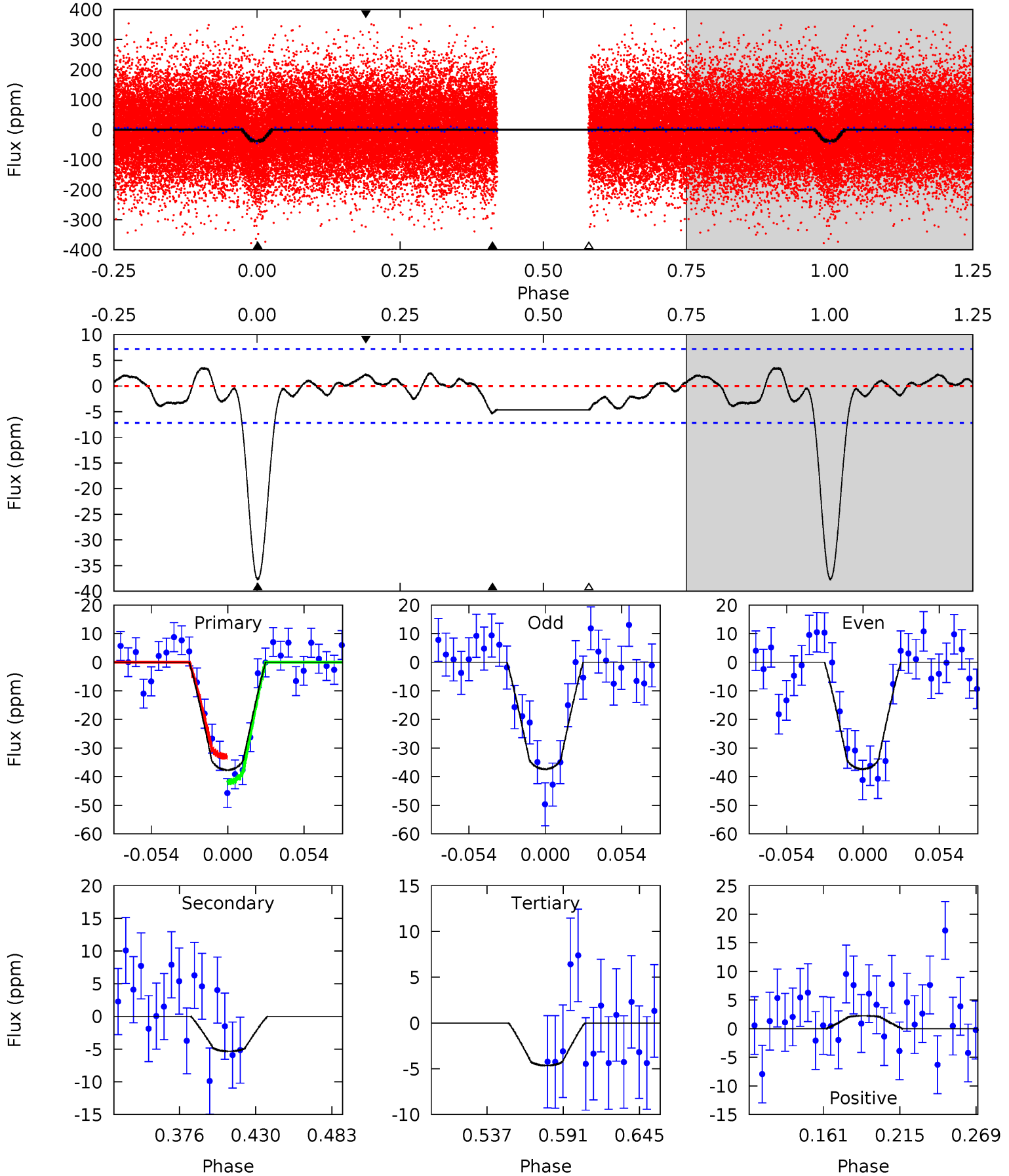
TCE 003446451-02 P= 1.284693 Days $T_0=132.555175$ (BKJD)



DV Model-Shift Uniqueness Test

003446451-02, P = 1.284683 Days, E = 131.275344 Days

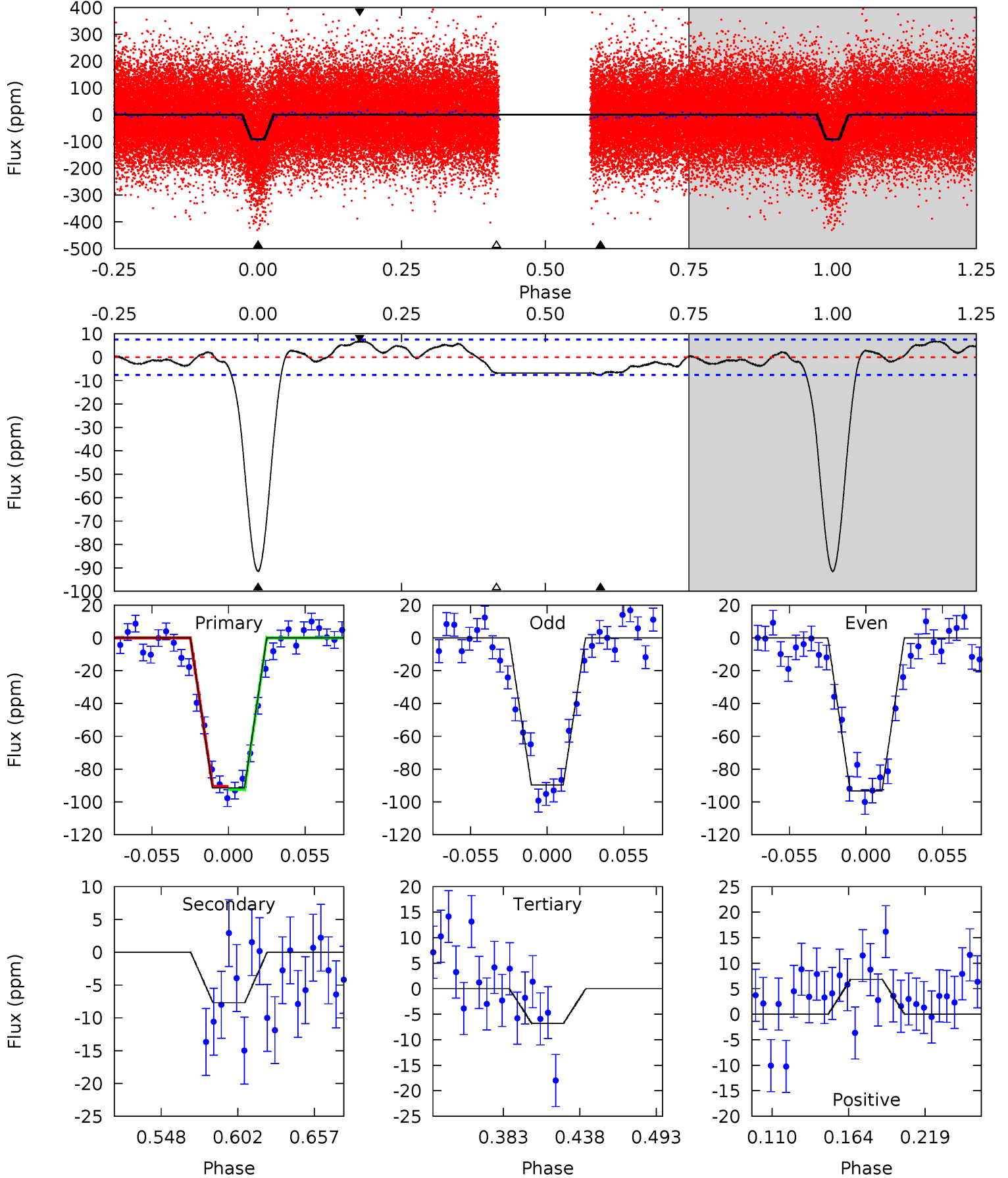
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.6	3.49	3.04	1.47	4.69	1.93	1.26	21.6	23.1	0.45	2.02	0.00	1.03	0.08	2.92



Alt Model-Shift Uniqueness Test

003446451-02, P = 1.284693 Days, E = 131.270482 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.4	4.74	4.18	4.20	4.69	1.92	2.02	52.2	52.2	0.55	0.54	1.08	1.03	0.07	0.62



Stellar Parameters For KIC 003446451

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7089^{+172}_{-246}	$3.842^{+0.259}_{-0.111}$	$-0.140^{+0.250}_{-0.300}$	$2.584^{+0.447}_{-0.830}$	$1.693^{+0.156}_{-0.339}$	$0.138^{+0.250}_{-0.046}$
	+2%/-3%	+7%/-3%	+179%/-214%	+17%/-32%	+9%/-20%	+181%/-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 003446451-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-5 ± 2	$1.74^{+0.39}_{-0.36}$	4195^{+236}_{-362}	3961^{+564}_{-602}	$0.718^{+0.522}_{-0.283}$
Alt.	-8 ± 2	$2.67^{+0.44}_{-0.46}$	4157^{+278}_{-288}	3356^{+439}_{-1193}	$0.445^{+0.212}_{-0.140}$

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 $A_{obs} \gg 1.0$

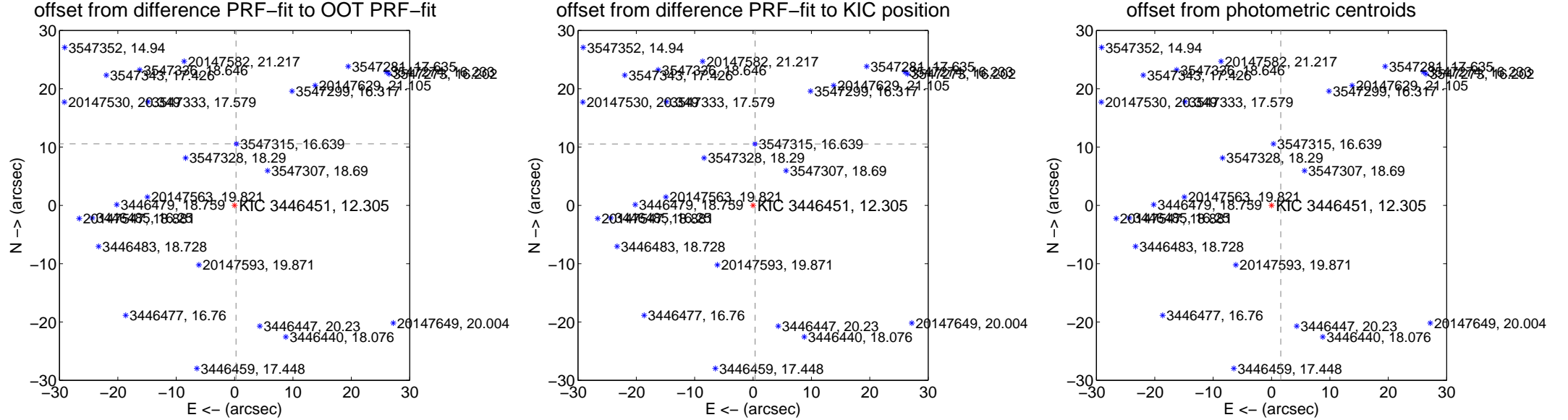
DV Centroid Data

Supplemental centroid analysis for 003446451-02. Kepler magnitude: 12.30. Transit SNR 14.88

There are 13 quarters with good PRF difference image offsets

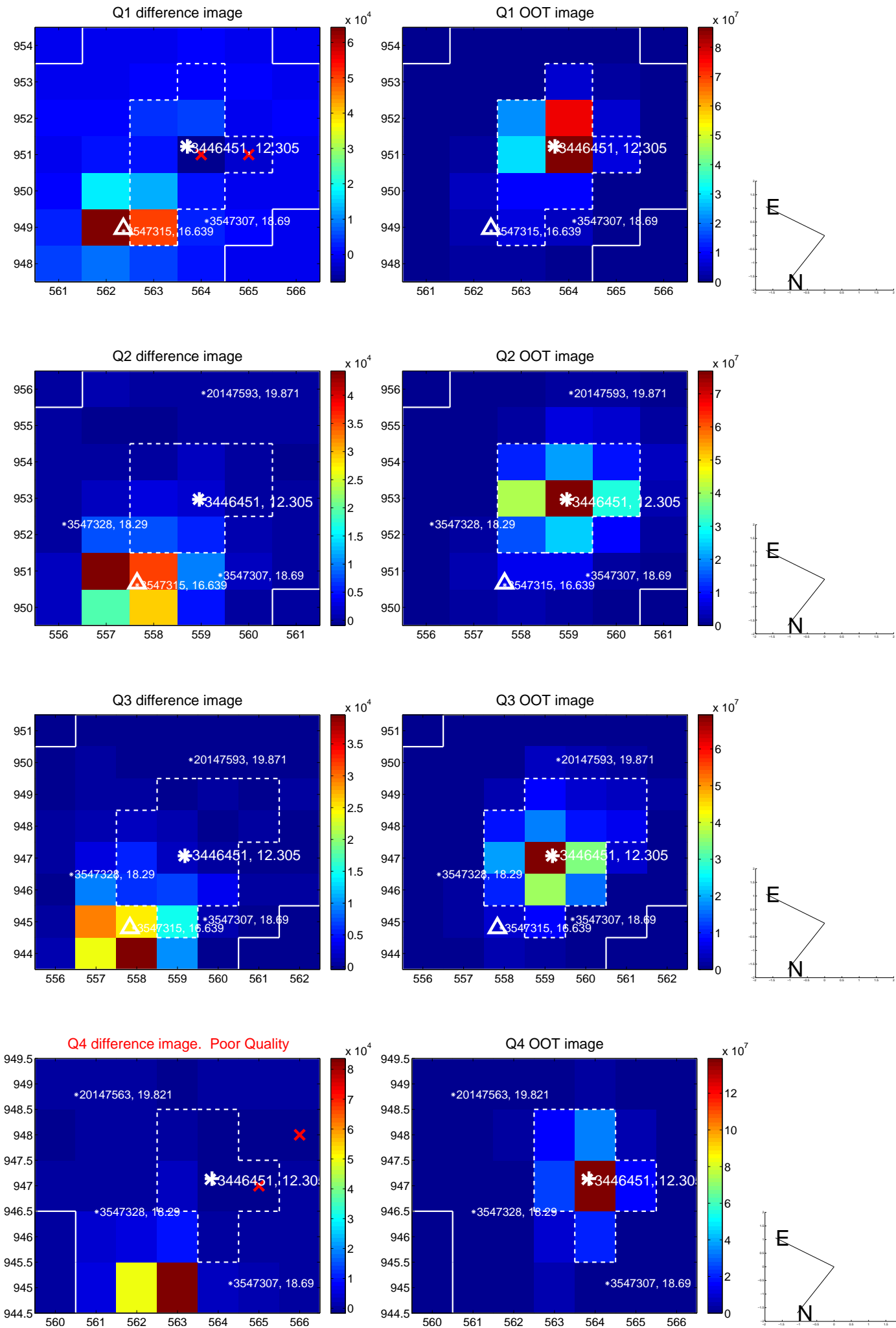
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	10.566 ± 0.069	153.30	-0.254 ± 0.071	10.563 ± 0.069
PRF-fit source offset from KIC position	10.537 ± 0.068	153.84	-0.353 ± 0.074	10.532 ± 0.068
photometric centroid source offset	85.46 ± 0.87	98.13	-1.58 ± 0.56	85.44 ± 0.87

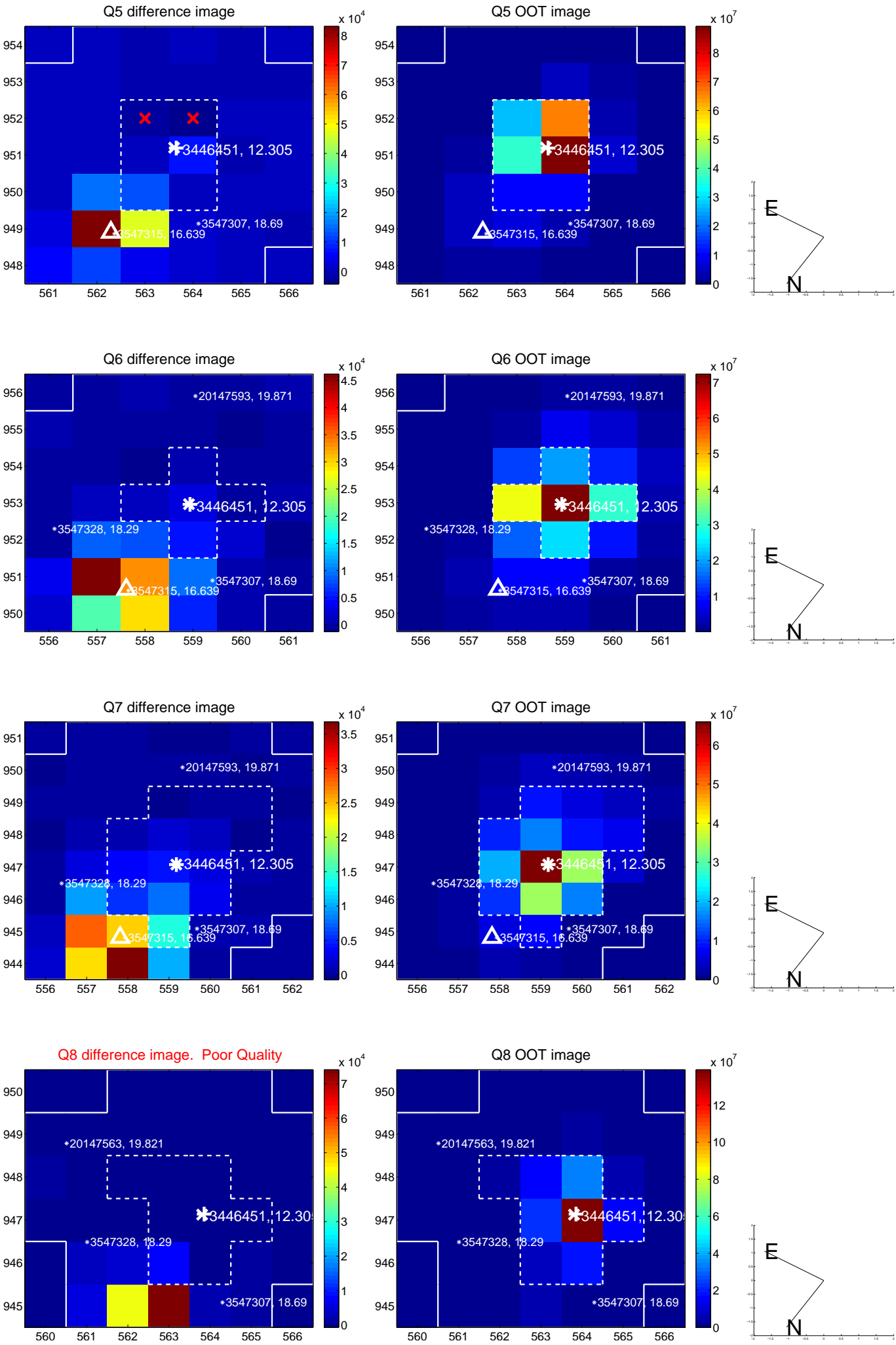


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

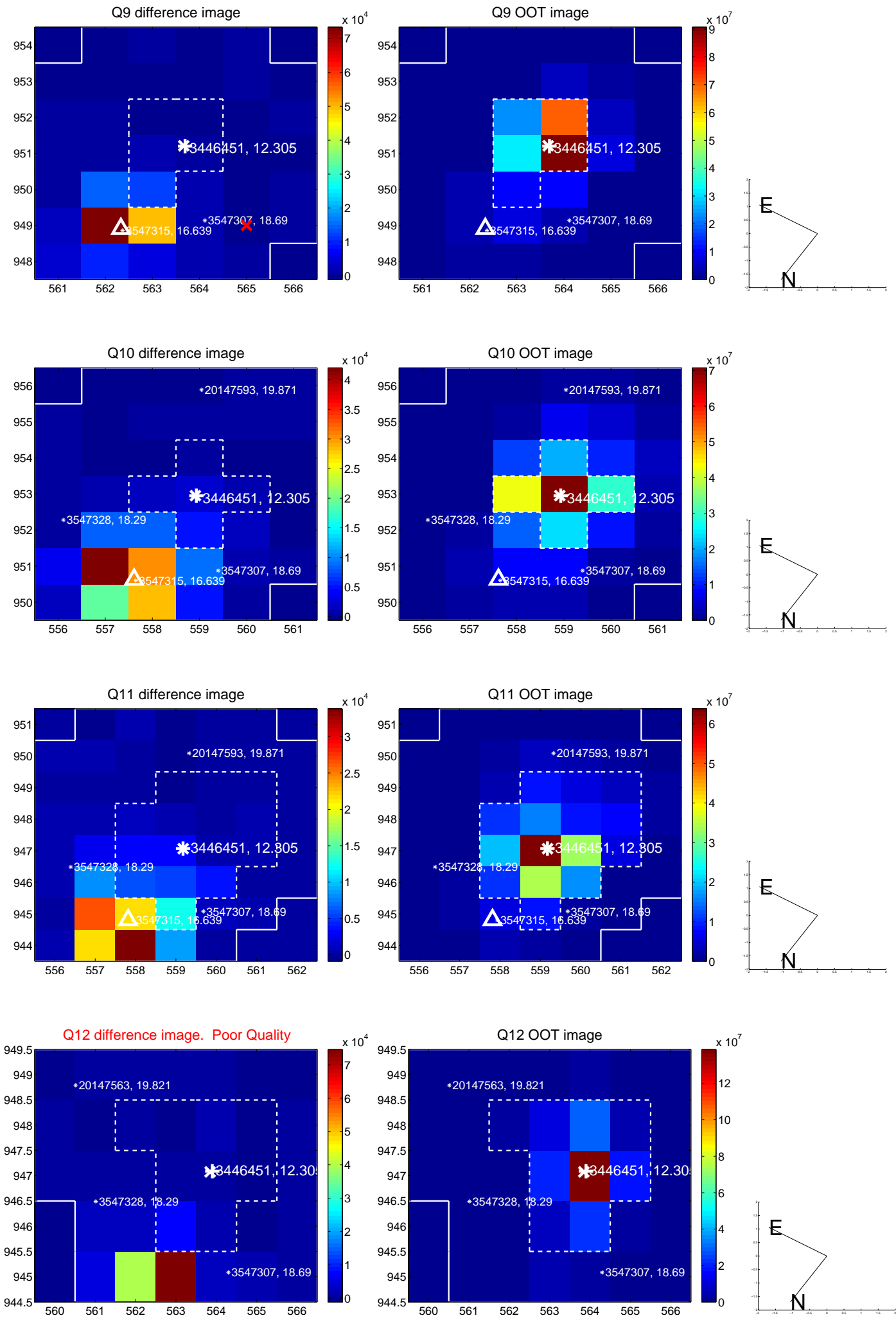
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



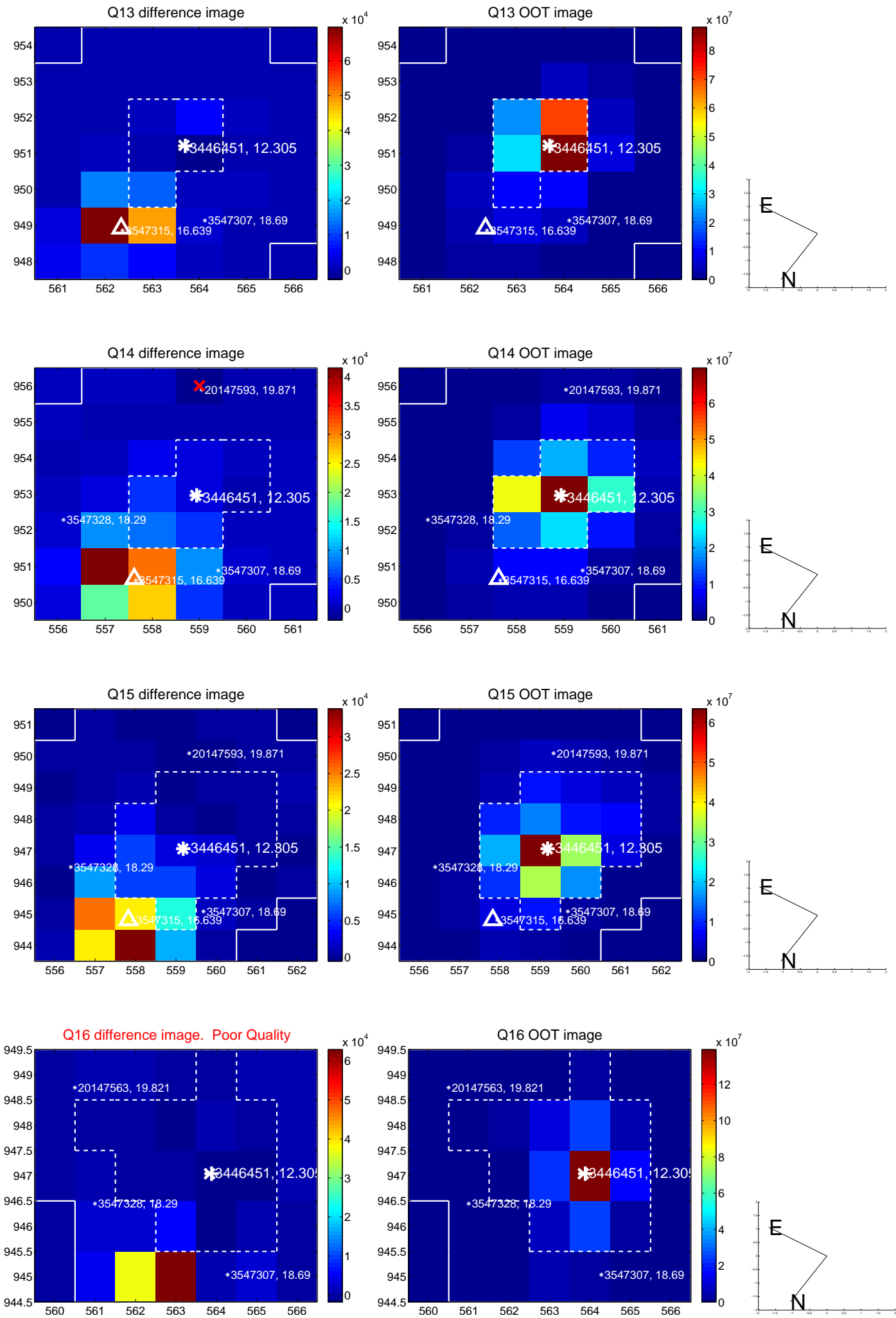
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



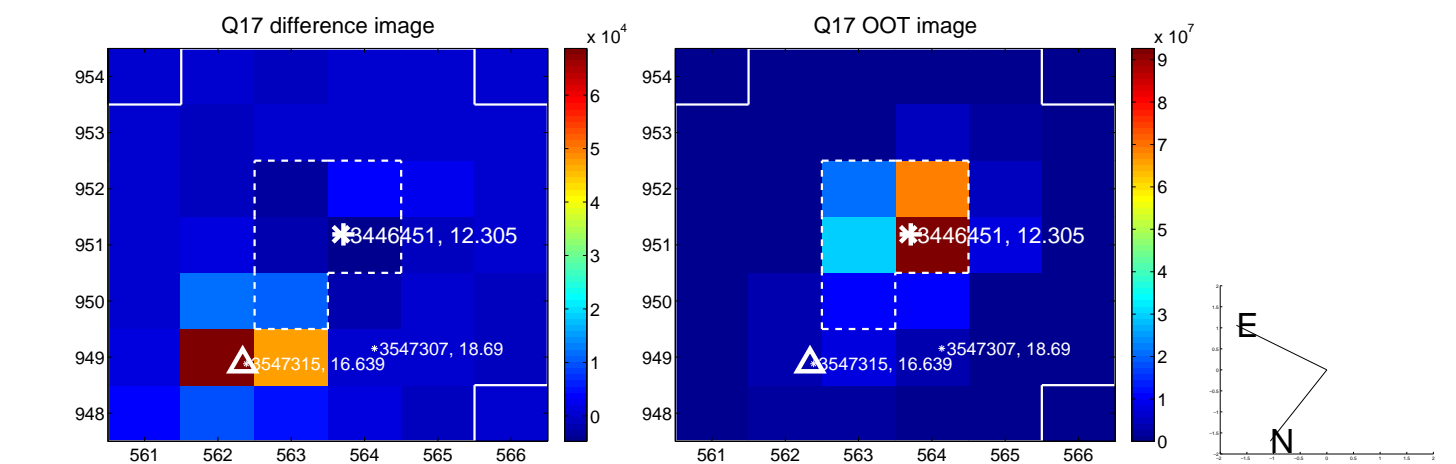
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



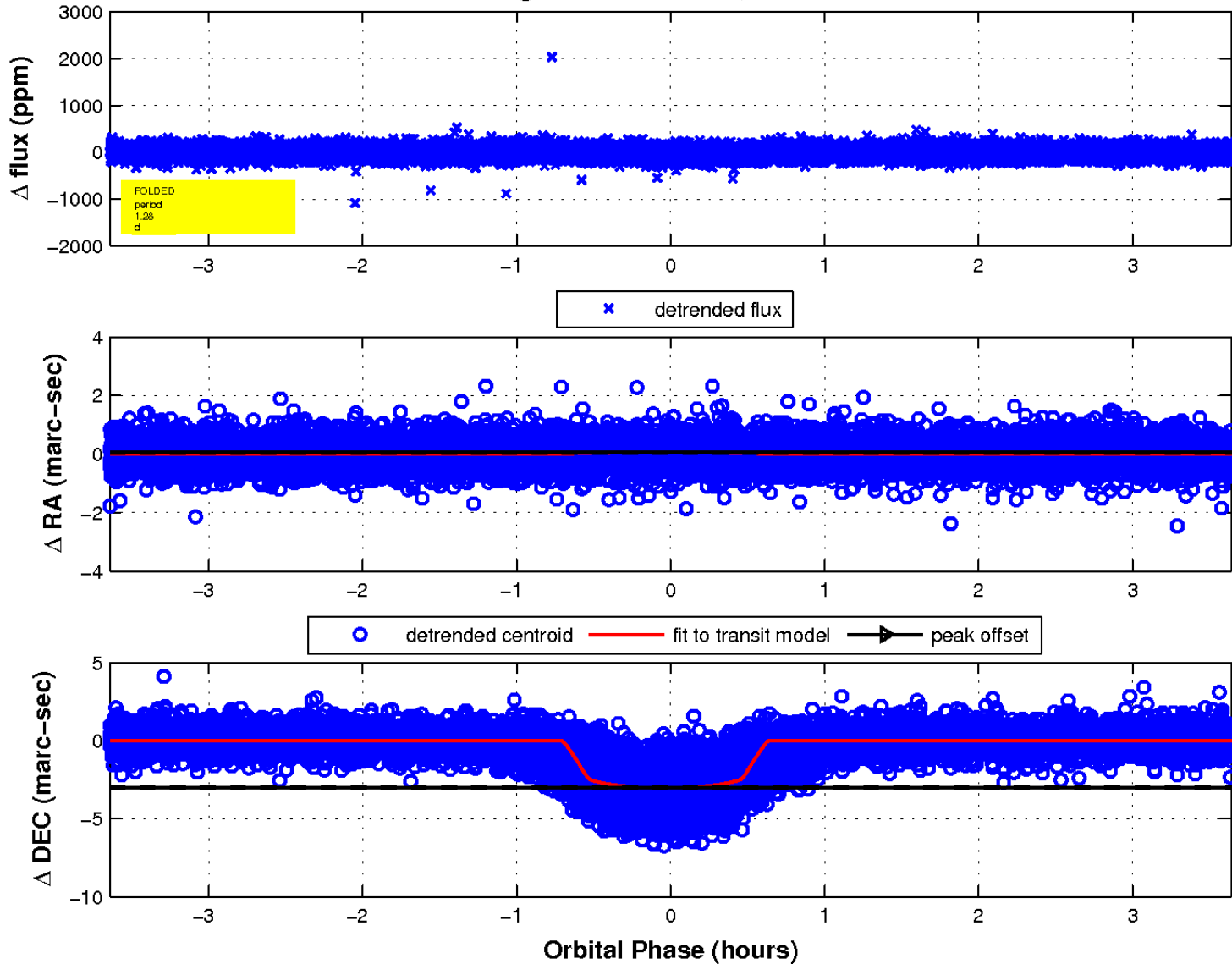
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

