

KIC 012023078

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})
012023078-01	OBS	2888.01	0.623435	131.993252	63.2	0.961	17.2	21.7	2.87	5385	2.76	25425.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012023078-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—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.

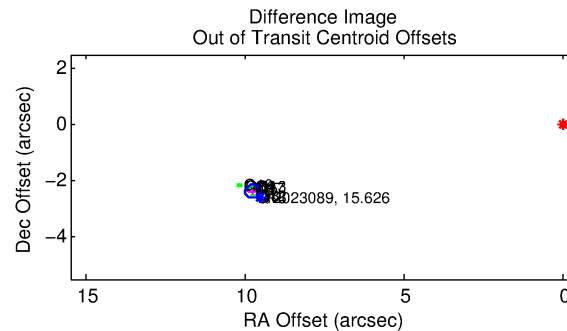
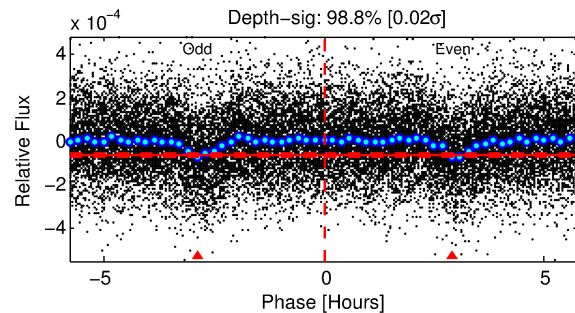
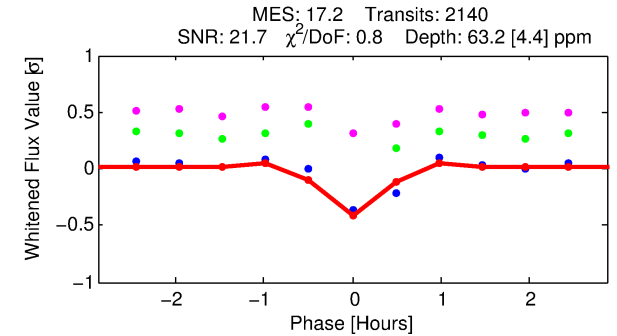
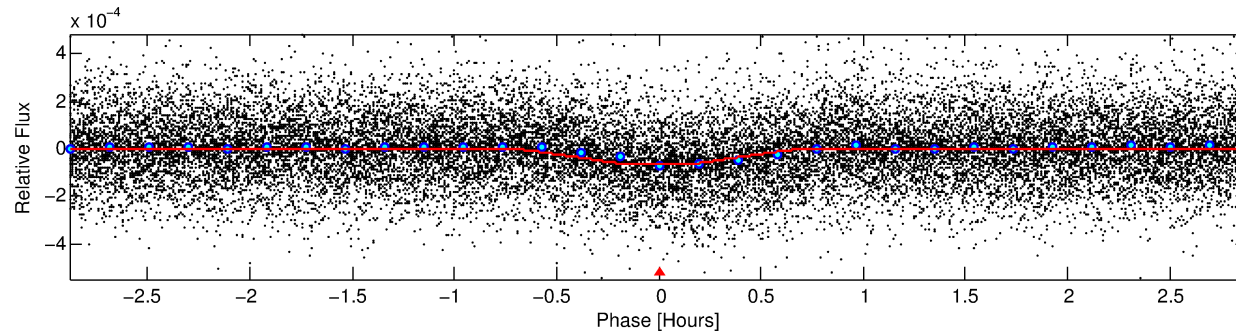
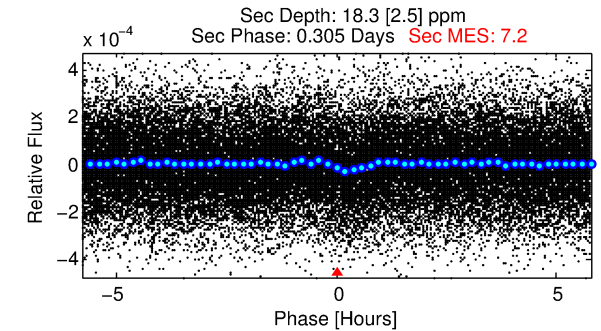
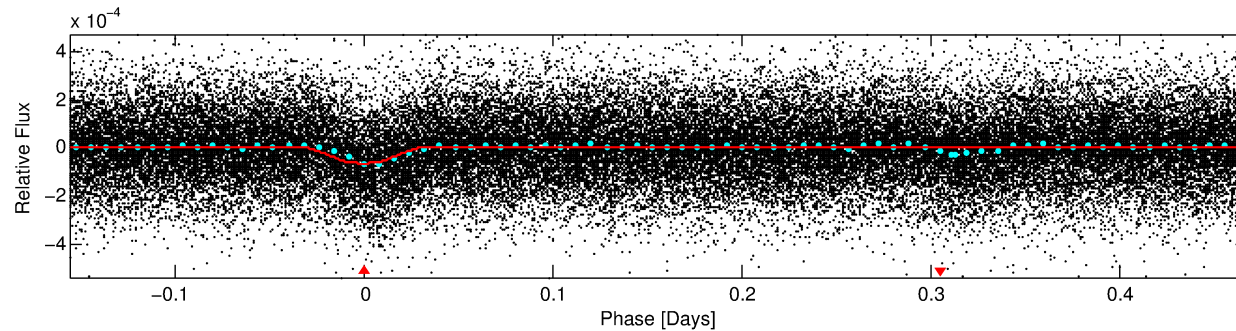
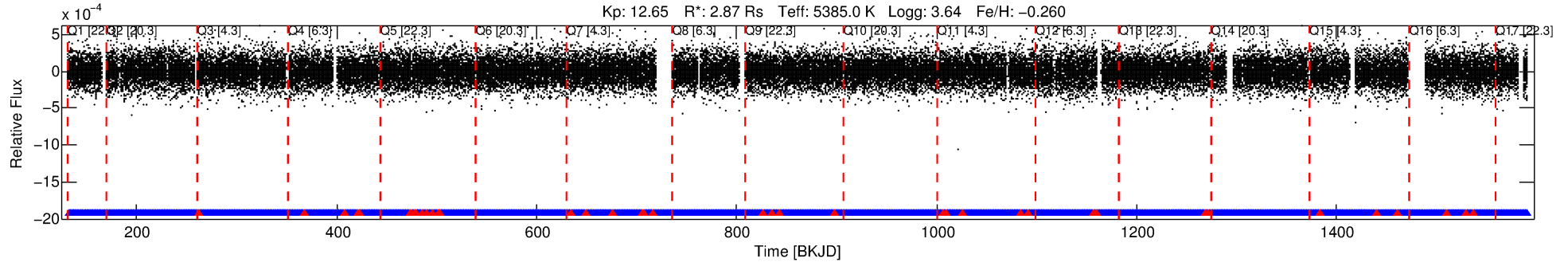
Ephemeris Match Information For 012023078-01

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
012023078-01	12023078	012023089-pri	12023089	1:1	9.8	1	-2	15.63	12.65	347.62	Direct-PRF	0	1.21	0.47

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: 12023078 Candidate: 1 of 1 Period: 0.623 d
KOI: K02888.01 Corr: 0.807



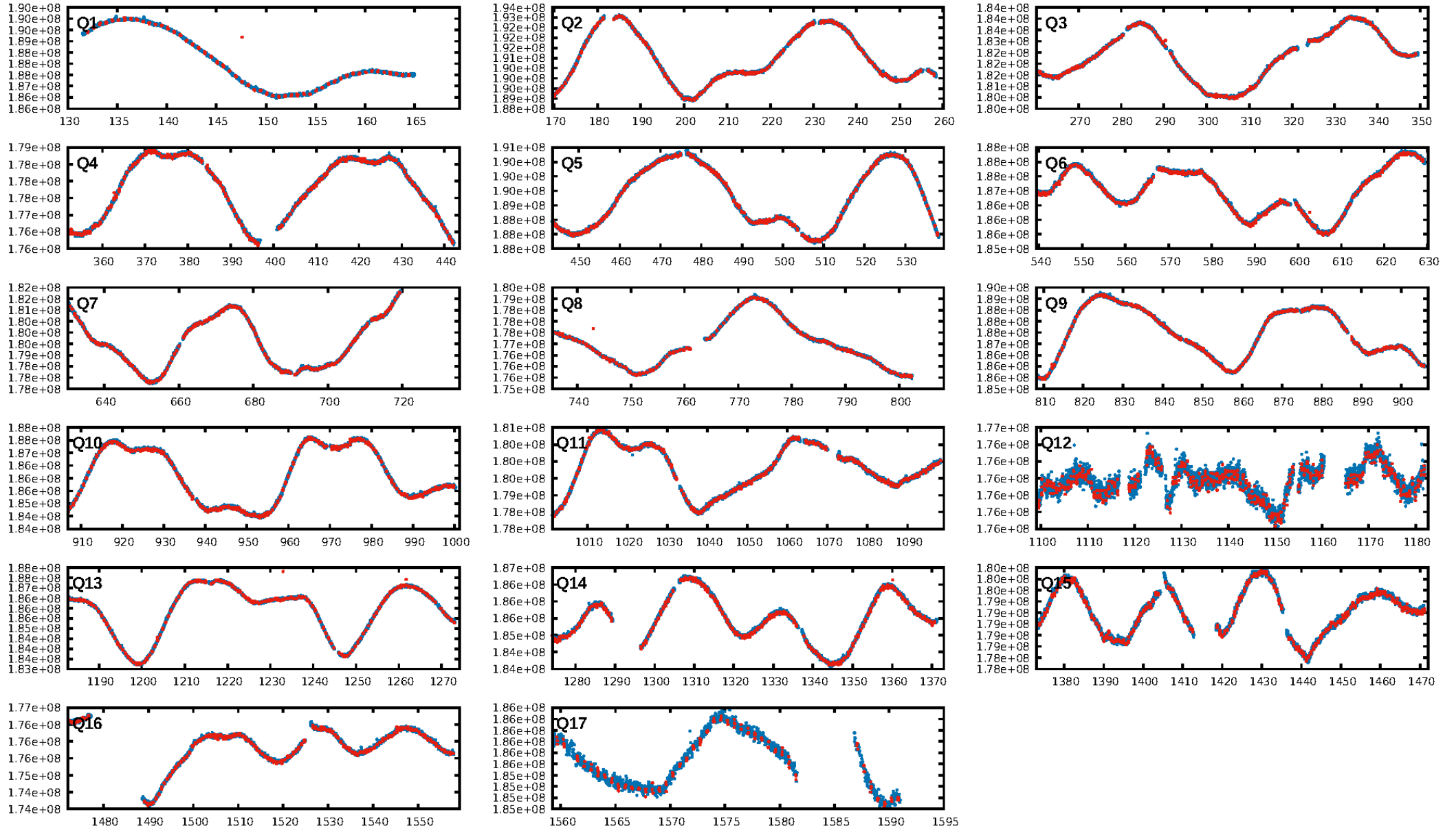
DV Fit Results:

Period = 0.62343 [0.00001] d
Epoch = 131.9933 [0.0007] BKJD
Rp/R* = 0.0088 [0.0015]
a/R* = 2.44 [1.57]
b = 0.90 [0.17]
Seff = 25425.62 [35706.58]
Teq = 3220 [1130] K
Rp = 2.76 [1.89] Re
a = 0.0156 [0.0125] AU
Ag = 0.32 [0.47] [-1.45σ]
Teff = 3754 [371] K [0.45σ]

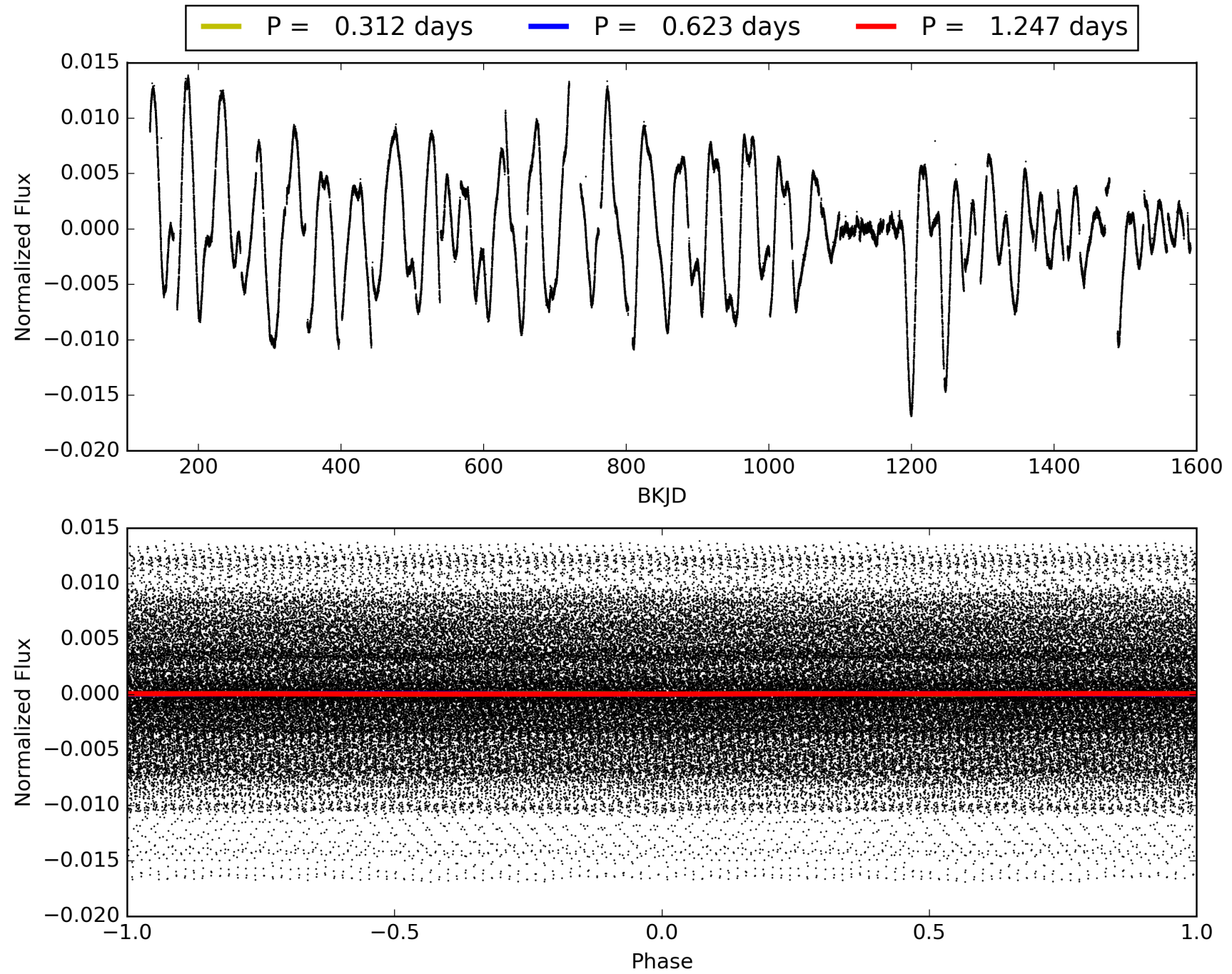
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: 3.67e-55
RollingBand-fgt: 0.98 [2006/2045]
GhostDiagnostic-chr: -0.1104
Centroid-sig: 0.0%
Centroid-so: N/A
OotOffset-rm: 10.069 arcsec [129.97σ]
KicOffset-rm: 9.994 arcsec [118.60σ]
OotOffset-st: 4/0/4/5 [13]
KicOffset-st: 4/0/4/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 012023078-01, PDC Light Curves

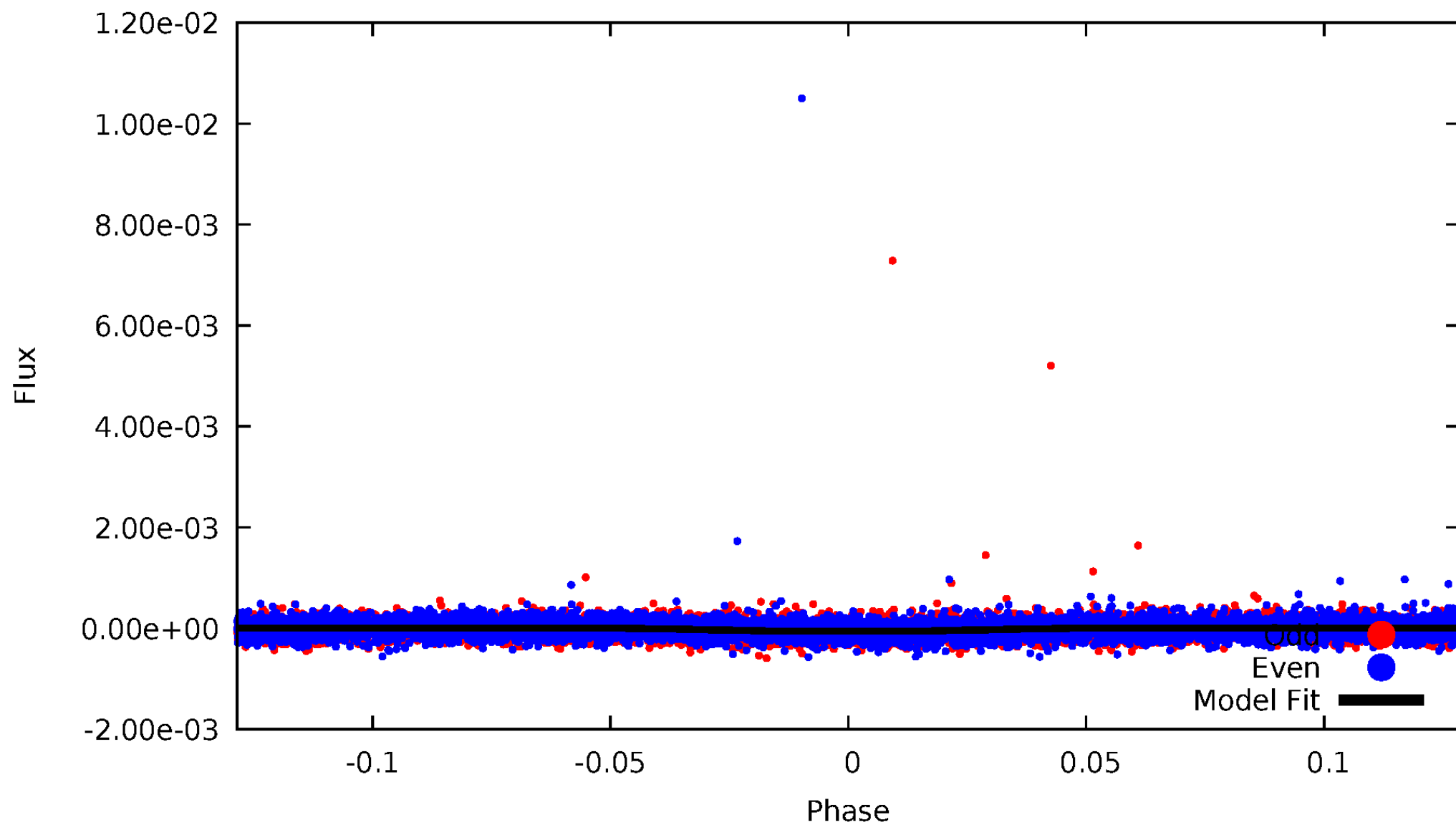


TCE 012023078-01



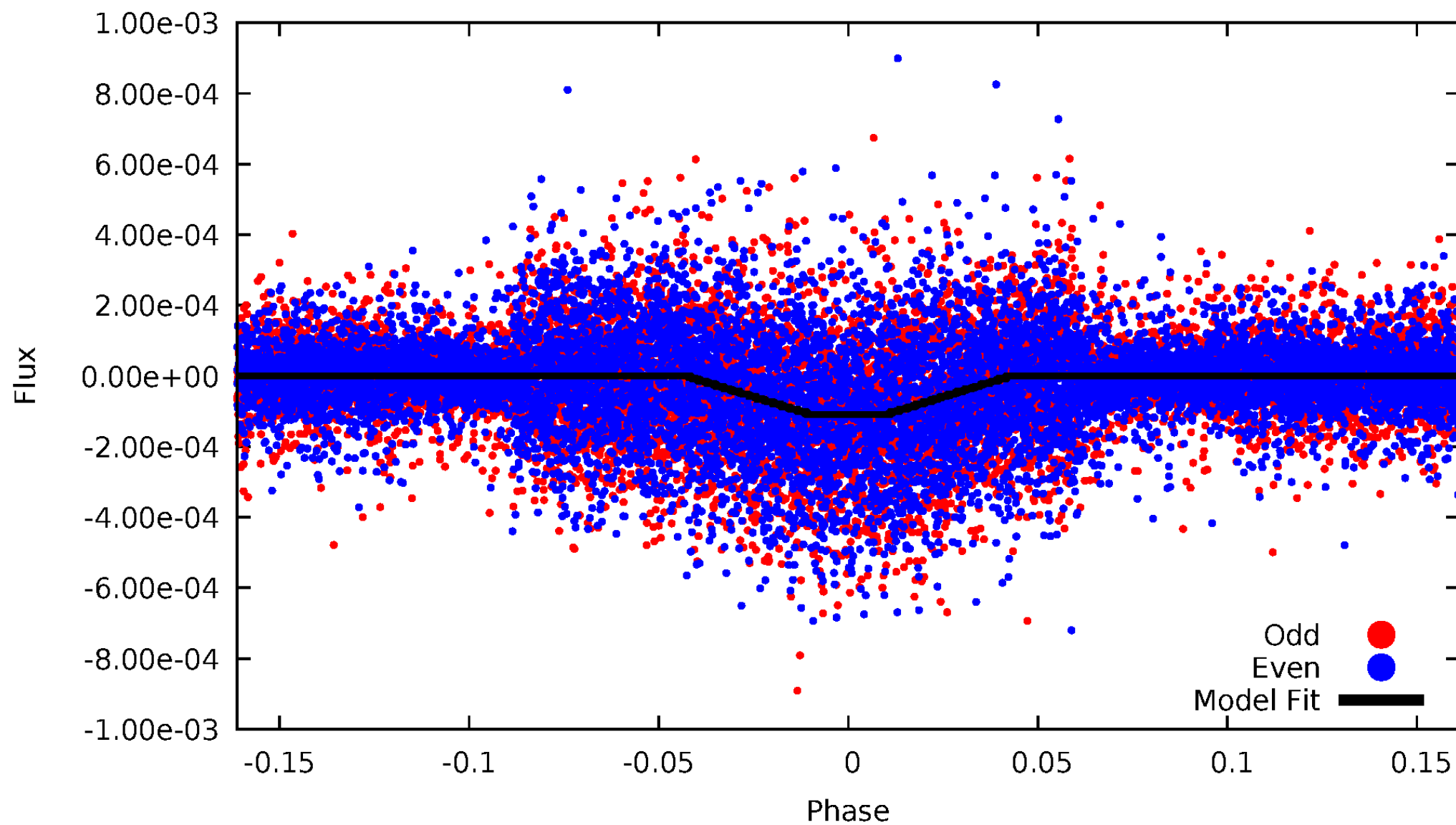
DV Odd/Even

TCE 012023078-01

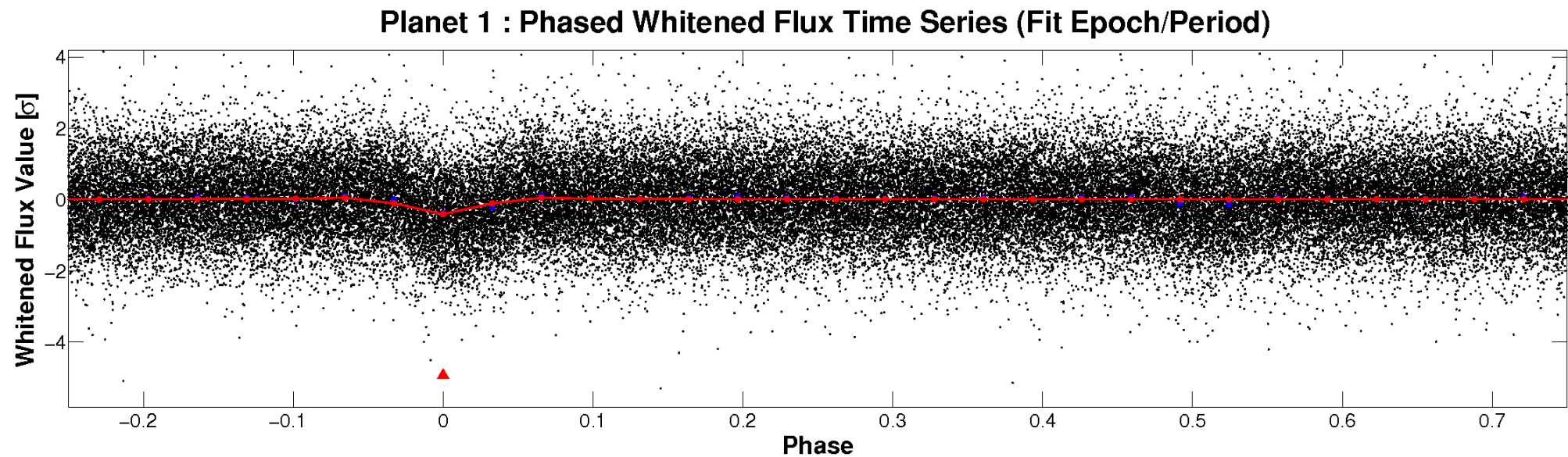
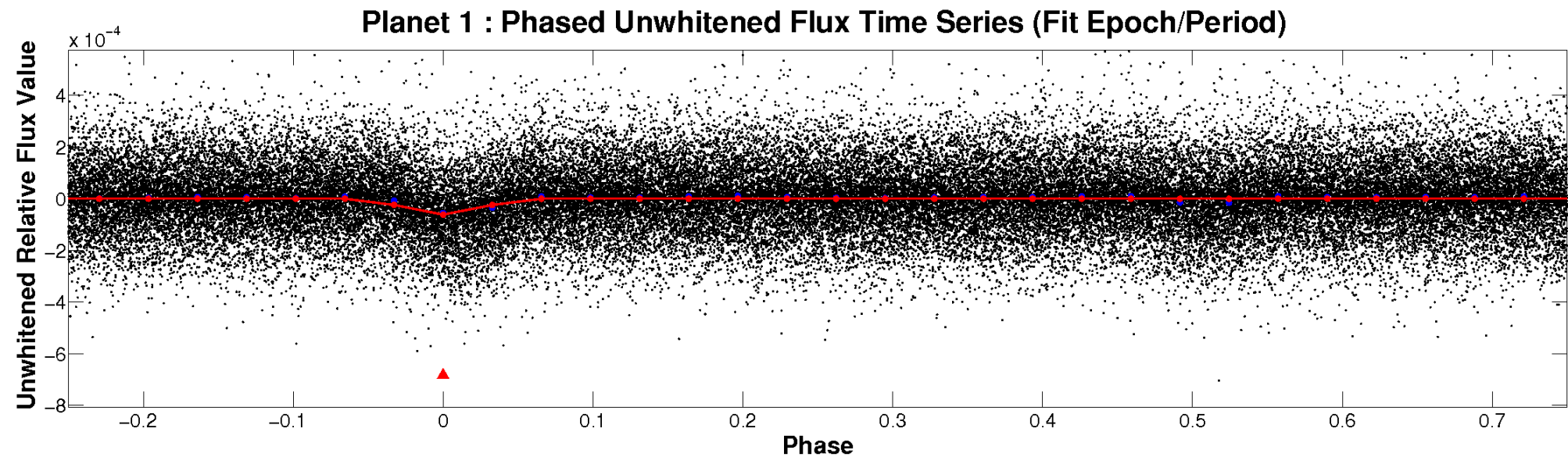


ALT Odd/Even

TCE 012023078-01

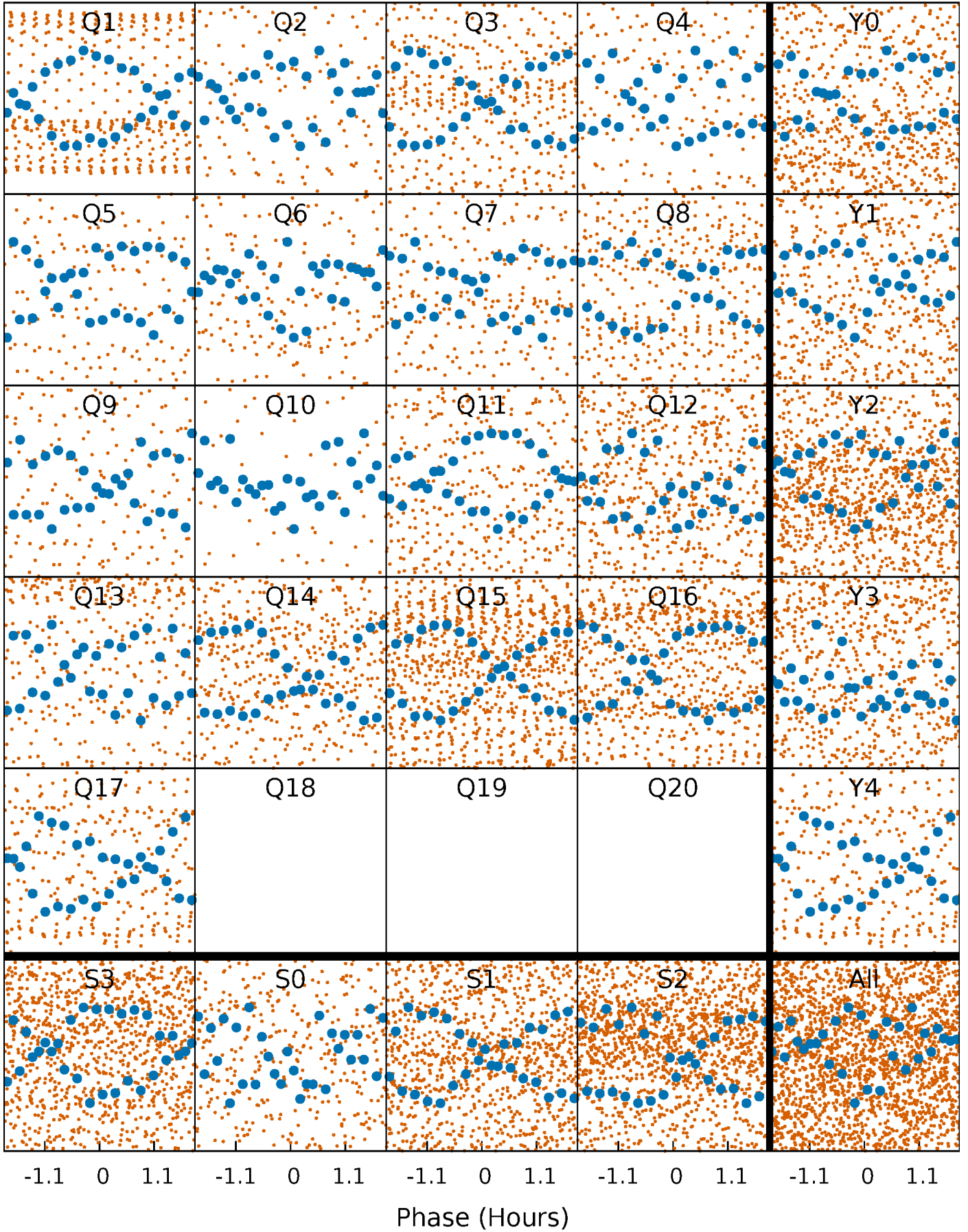


Non-Whitened Vs. Whitened Light Curve



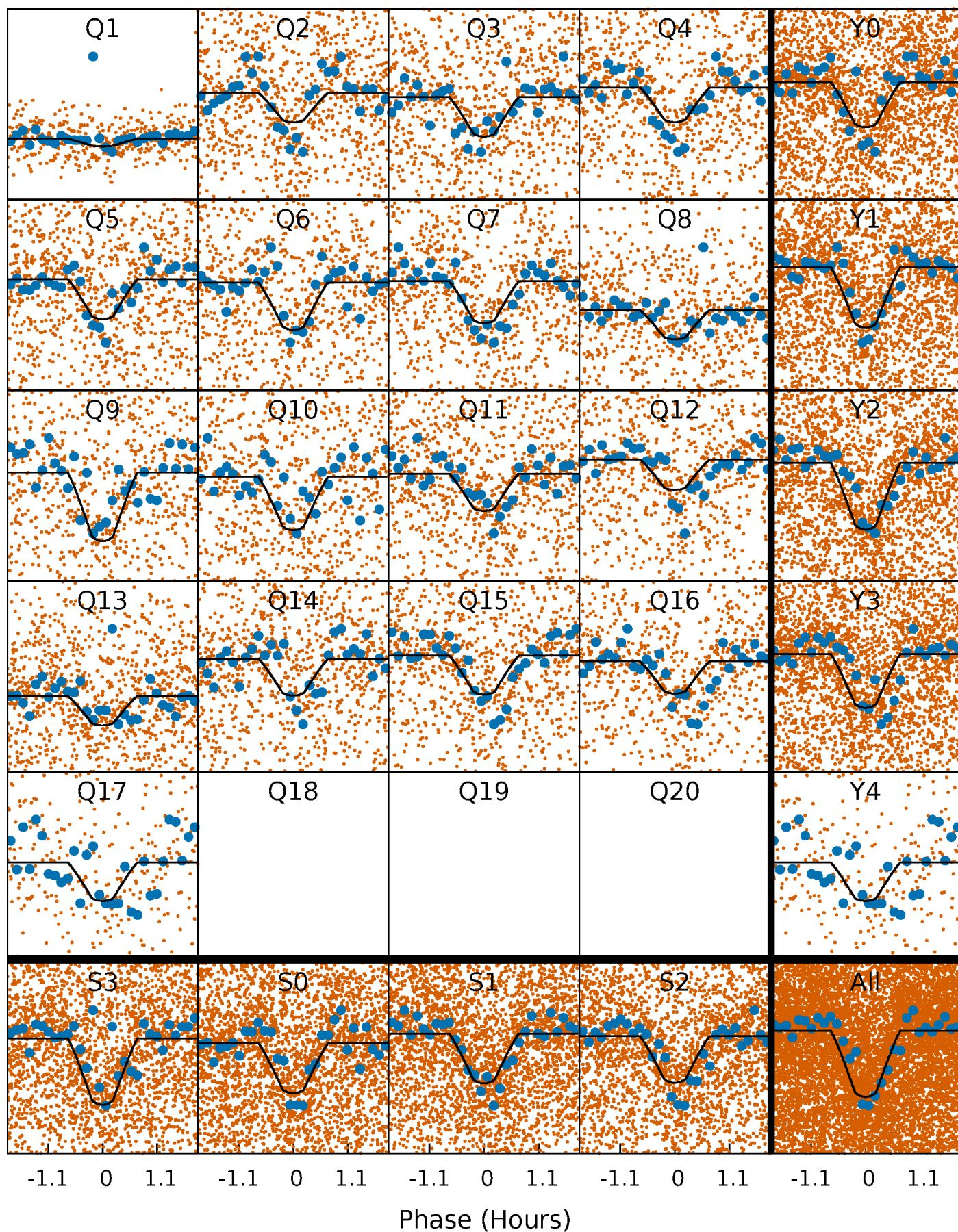
PDC Quarter-Phased Transit Curves

TCE 012023078-01 P= 0.623435 Days $T_0=131.993252$ (BKJD)



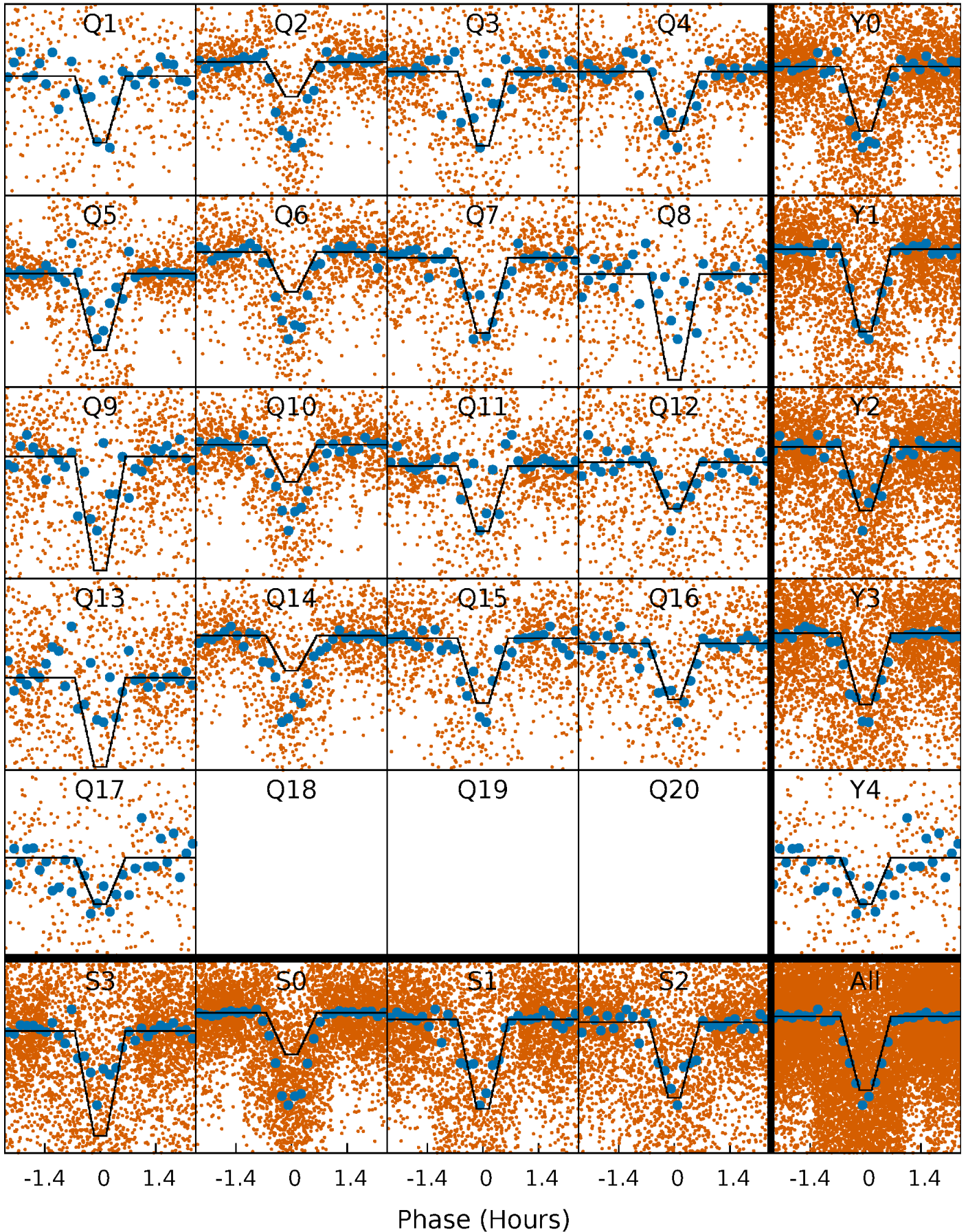
DV Quarter-Phased Transit Curves

TCE 012023078-01 P= 0.623435 Days $T_0=131.993252$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

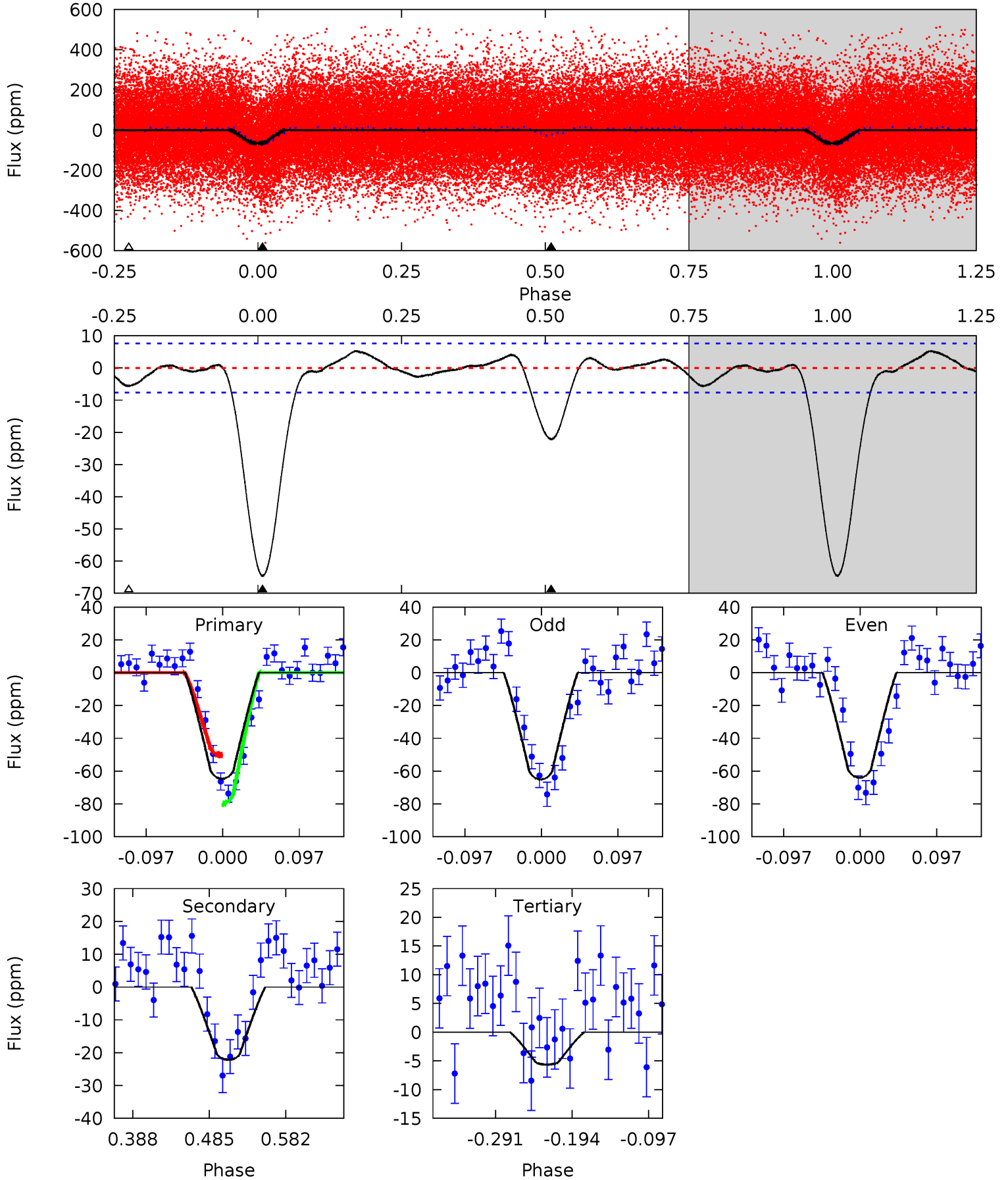
TCE 012023078-01 P= 0.623442 Days $T_0=131.990150$ (BKJD)



DV Model-Shift Uniqueness Test

012023078-01, P = 0.623435 Days, E = 131.369817 Days

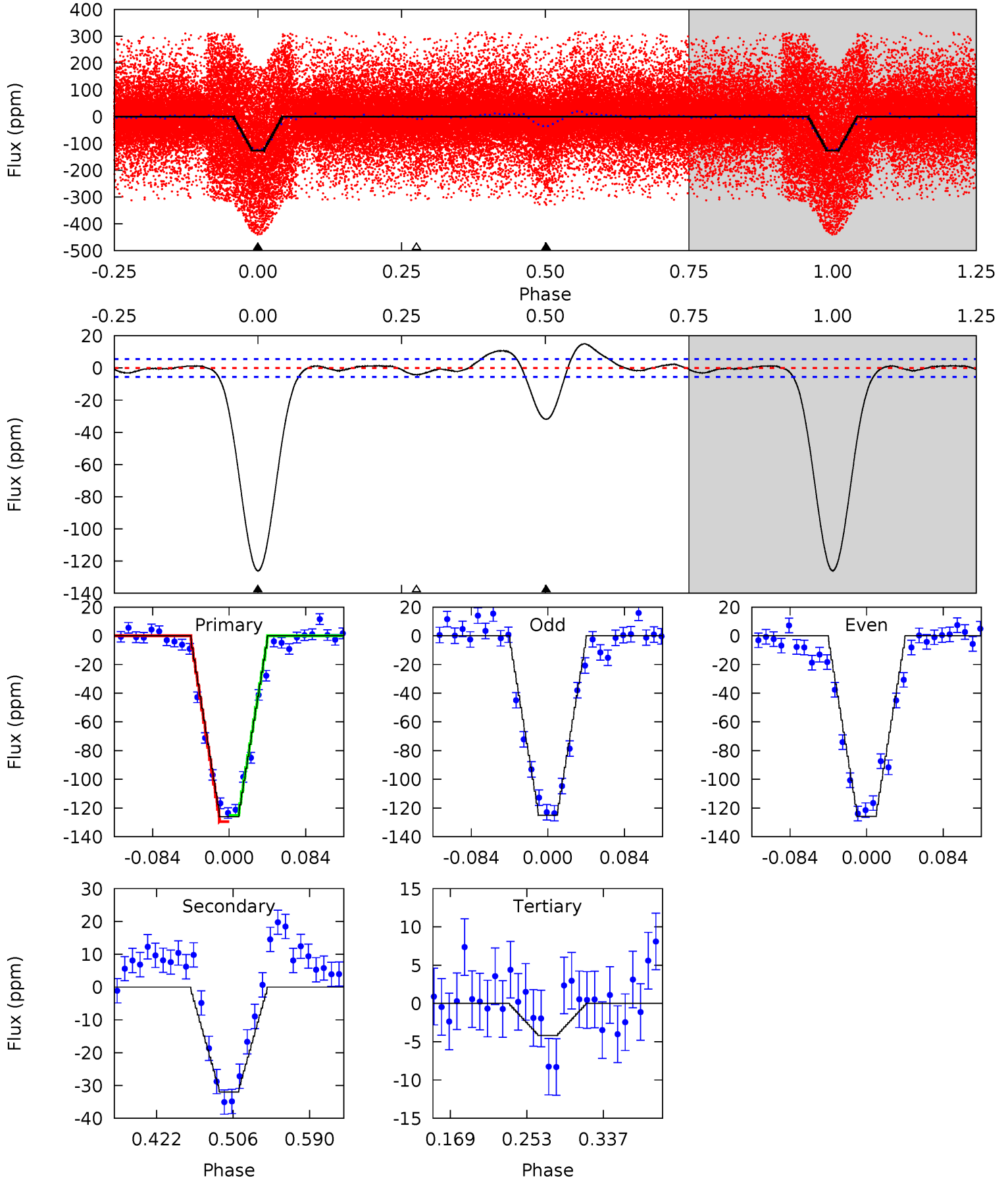
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.8	13.3	3.39	0	4.57	1.66	1.35	35.4	38.8	9.90	13.3	0.33	0.95	0.08	8.92



Alt Model-Shift Uniqueness Test

012023078-01, P = 0.623442 Days, E = 131.366708 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
105.0	26.6	3.48	0	4.60	1.73	2.42	101.5	105.0	23.1	26.6	0.37	1.01	0.11	0



Stellar Parameters For KIC 012023078

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5385^{+177}_{-161}	$3.639^{+0.864}_{-0.216}$	$-0.260^{+0.350}_{-0.300}$	$2.871^{+0.880}_{-1.906}$	$1.309^{+0.190}_{-0.442}$	$0.078^{+1.763}_{-0.042}$
	+3%/-3%	+24%/-6%	+135%/-115%	+31%/-66%	+15%/-34%	+2263%/-54%
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 012023078-01 / KOI 2888.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-22 ± 2	$2.46^{+0.95}_{-0.96}$	4409^{+471}_{-868}	3536^{+633}_{-6575}	$0.475^{+0.745}_{-0.219}$
Alt.	-32 ± 1	$3.04^{+0.94}_{-1.01}$	4421^{+455}_{-710}	3504^{+581}_{-6318}	$0.460^{+0.505}_{-0.186}$

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

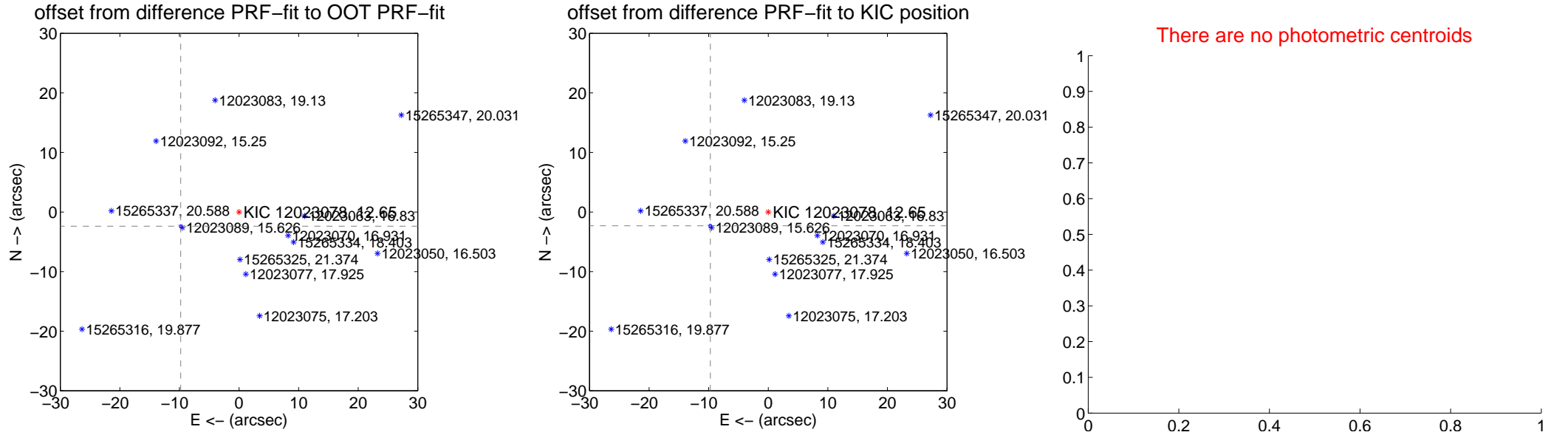
DV Centroid Data

Supplemental centroid analysis for 012023078-01. Kepler magnitude: 12.65. Transit SNR 21.70

There are 13 quarters with good PRF difference image offsets

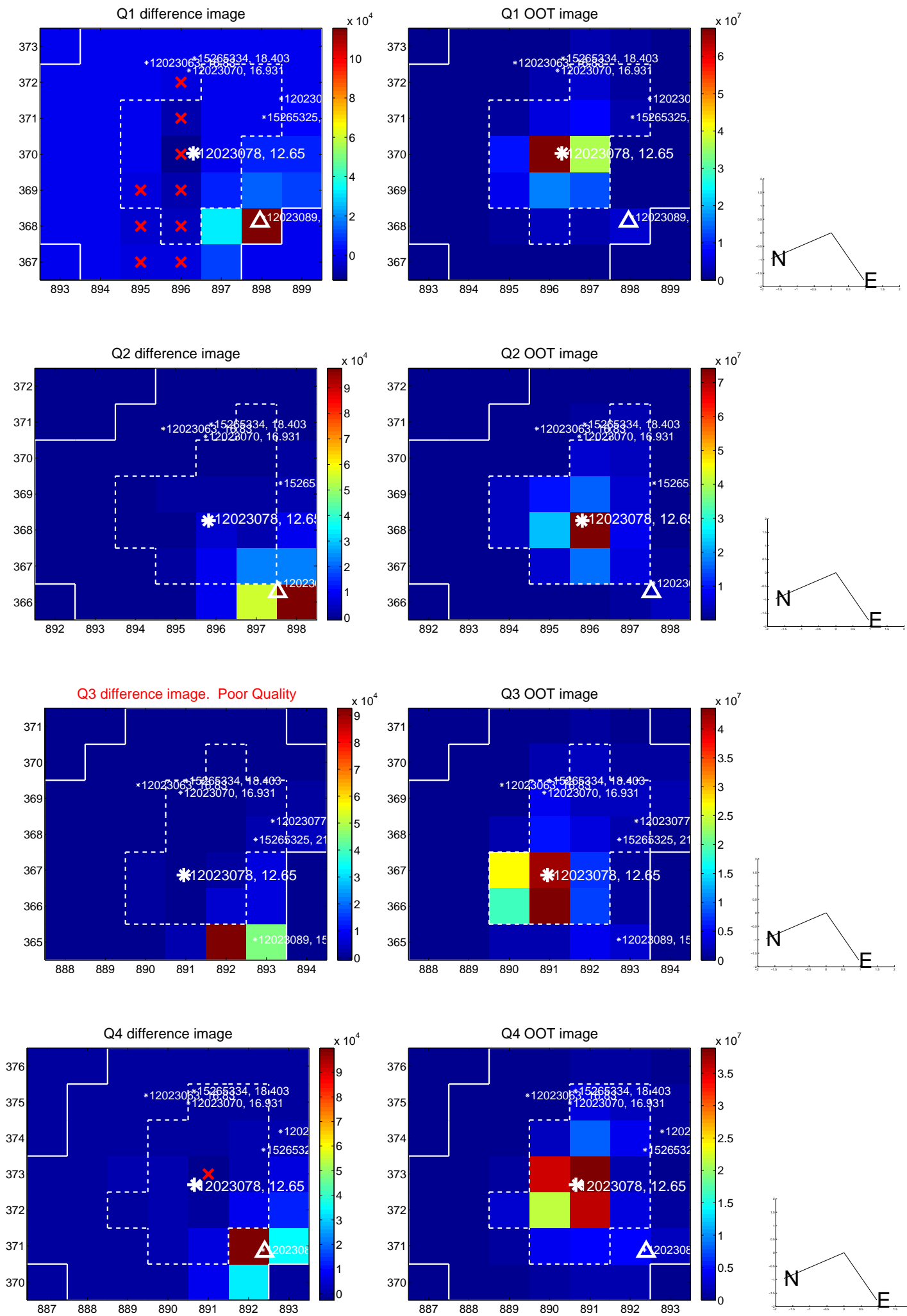
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	10.069 \pm 0.077	129.97	9.784 \pm 0.080	-2.381 \pm 0.080
PRF-fit source offset from KIC position	9.994 \pm 0.084	118.60	9.723 \pm 0.087	-2.311 \pm 0.075
photometric centroid source offset	—	—	—	—

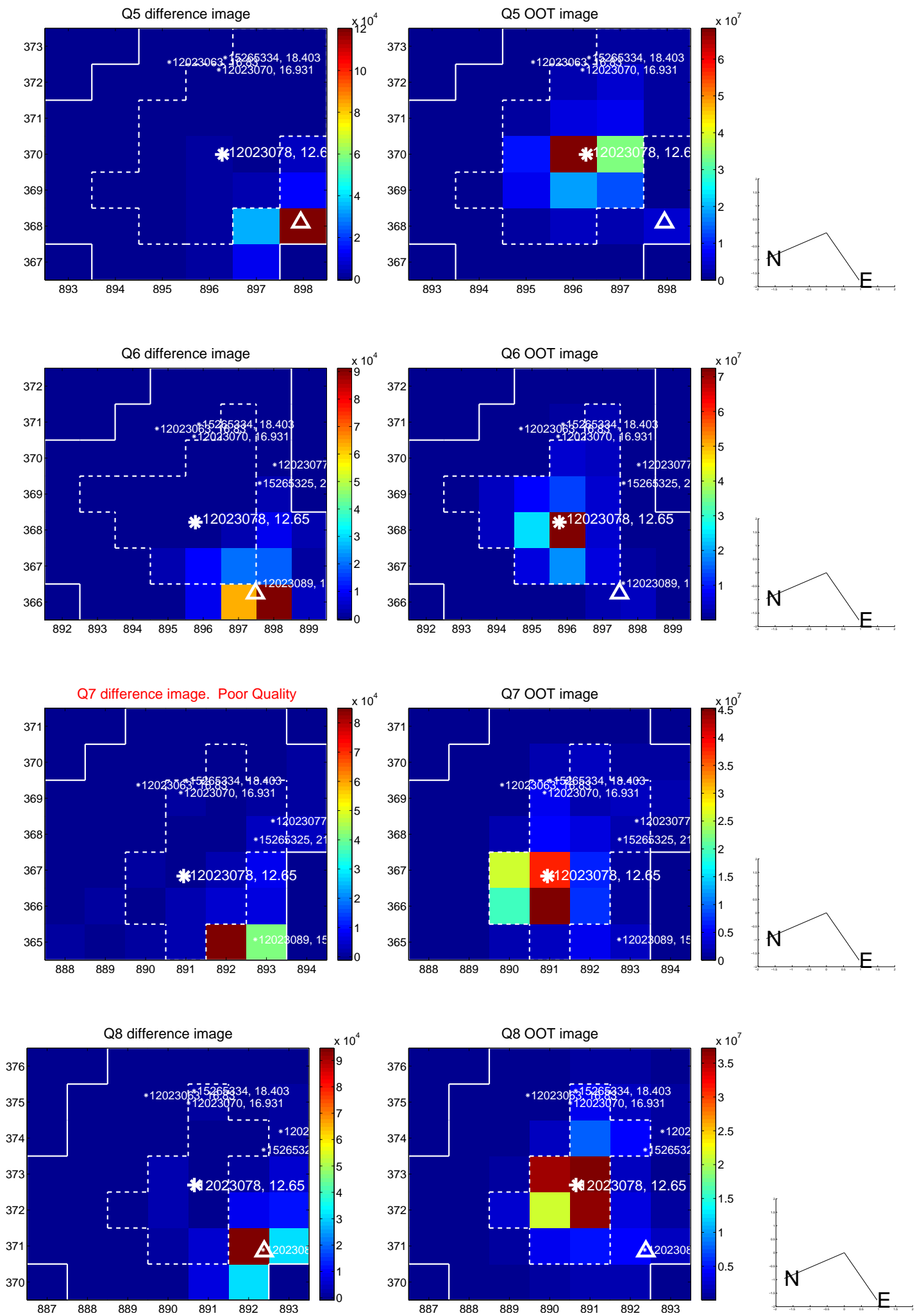


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

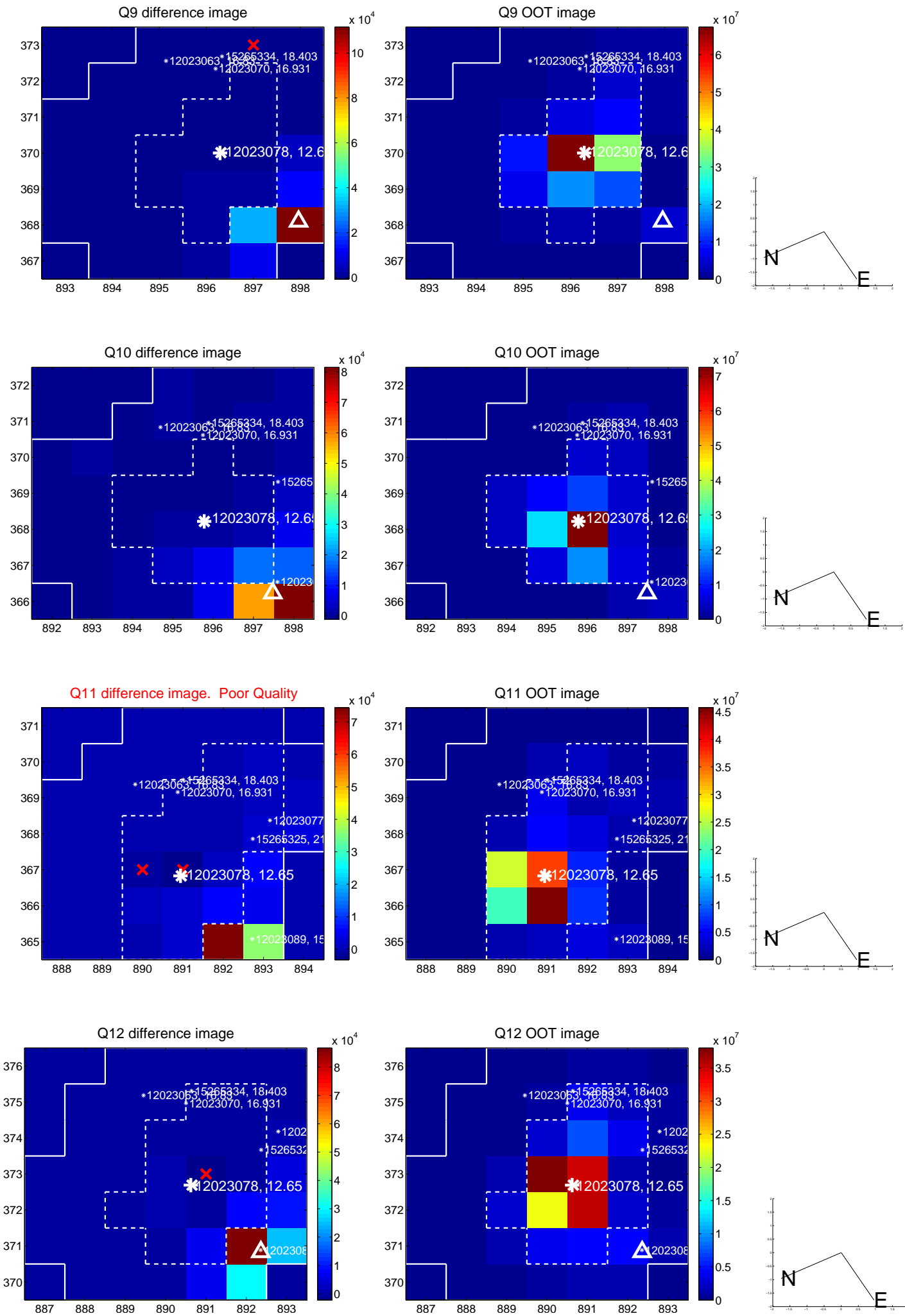
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



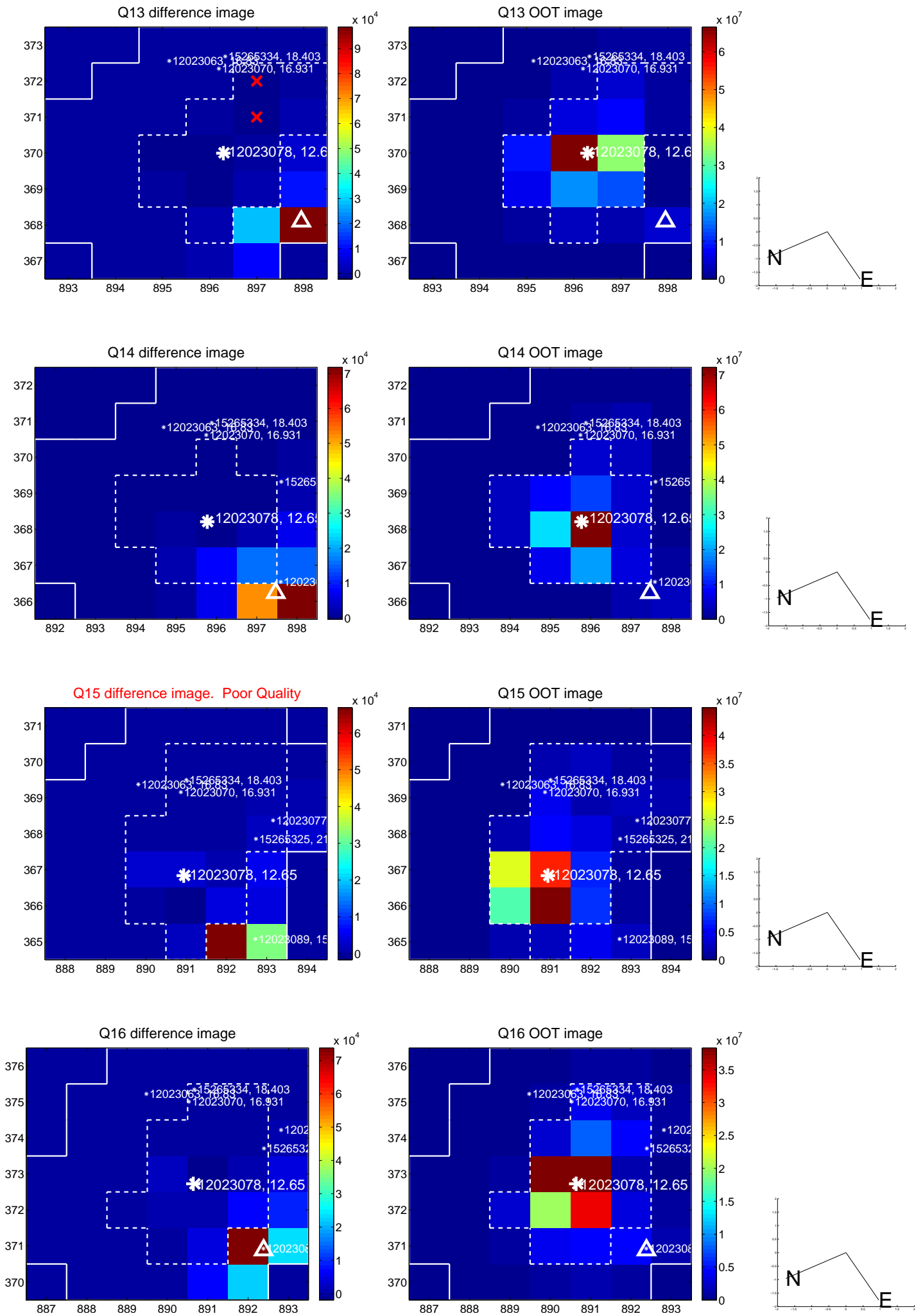
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



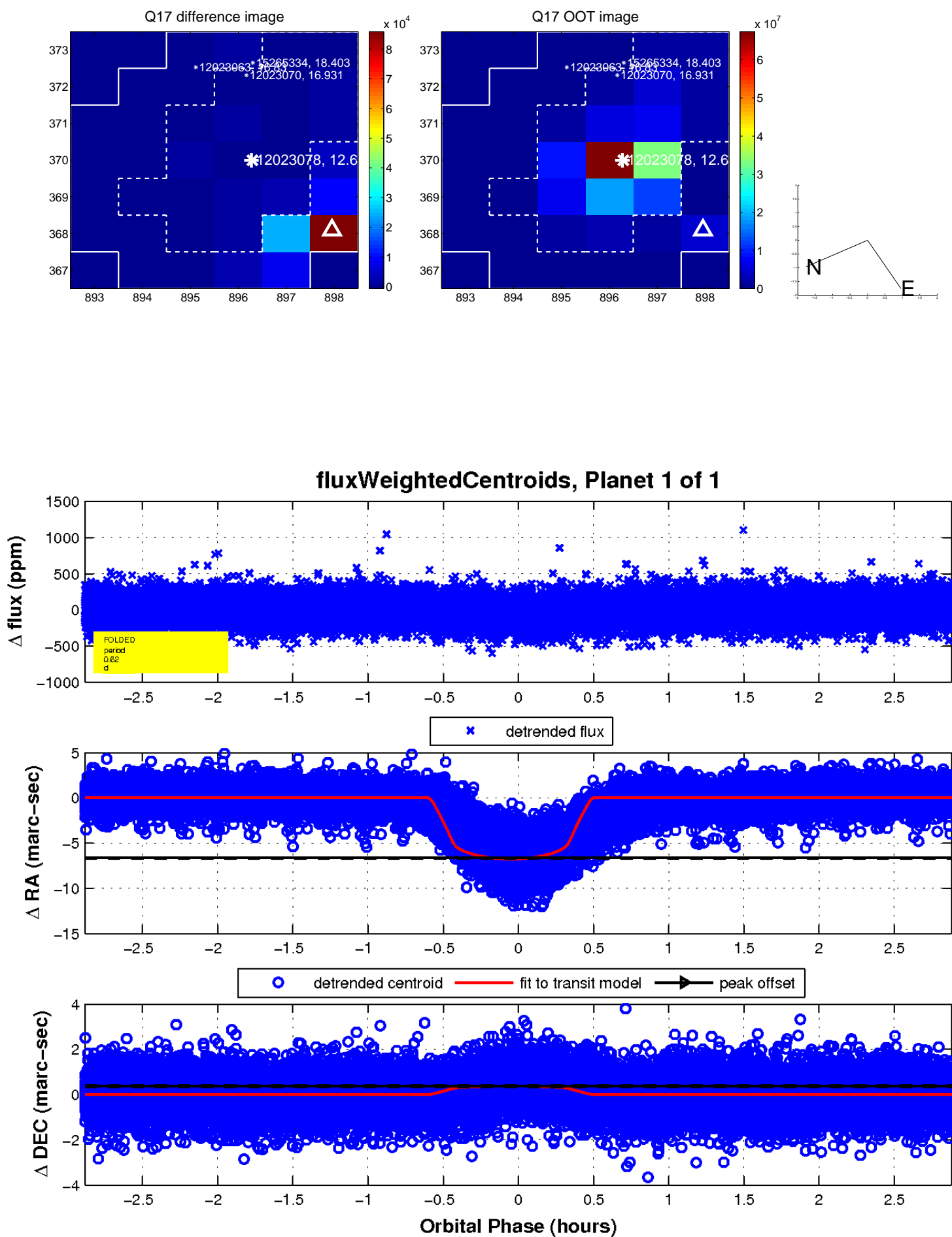
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

