

KIC 006421503

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})
006421503-01	OBS	3990.01	2.158368	131.912457	223.1	4.423	19.7	21.2	0.66	5272	1.30	350.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421503-01	OBS	FP	0.00	0	0	1	1	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 006421503-01

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
006421503-01	6421503	006421483-pri	6421483	1:1	20.3	4	4	13.02	15.24	557.85	Direct-PRF	0	1.08	1.31

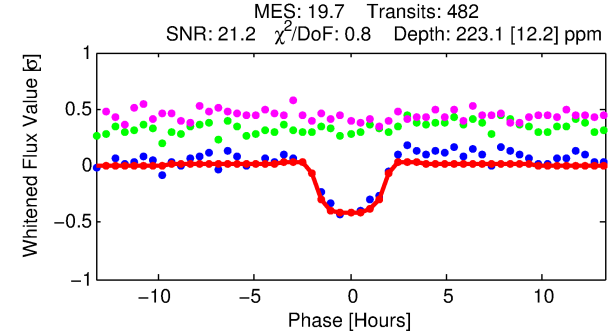
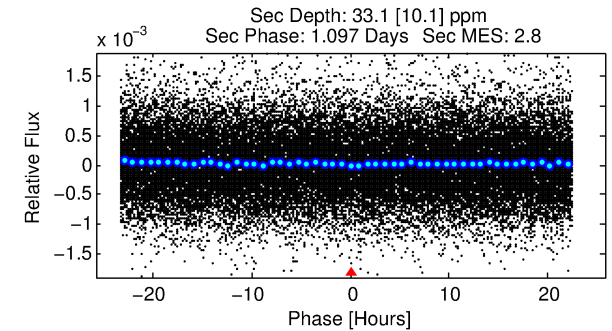
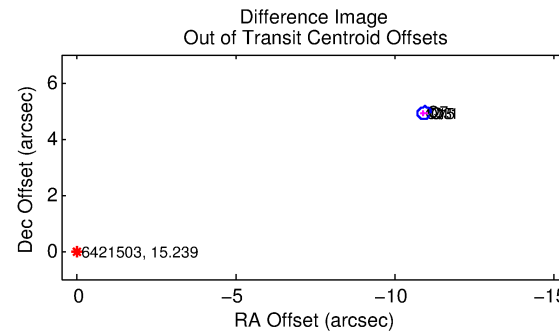
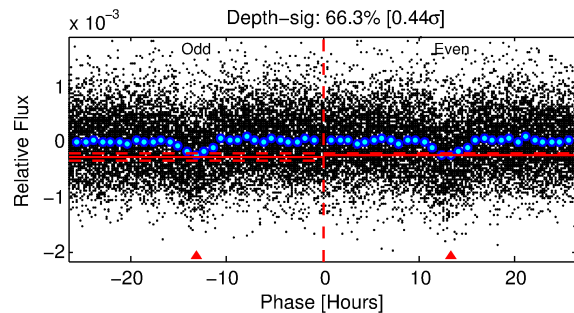
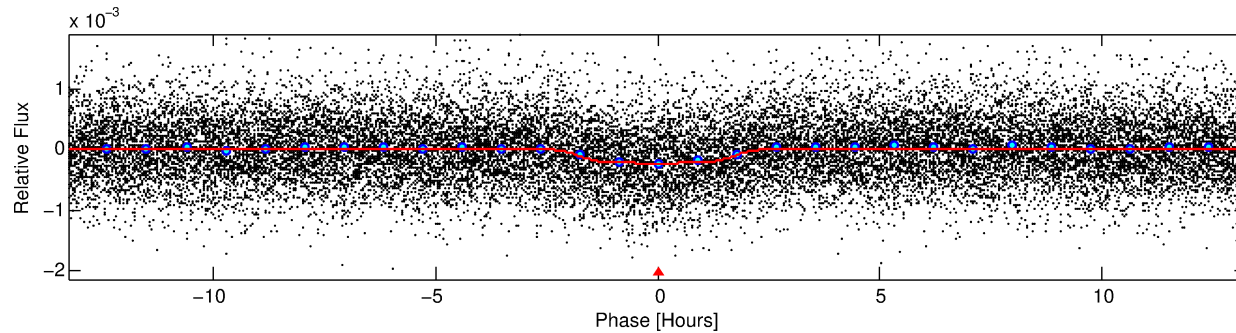
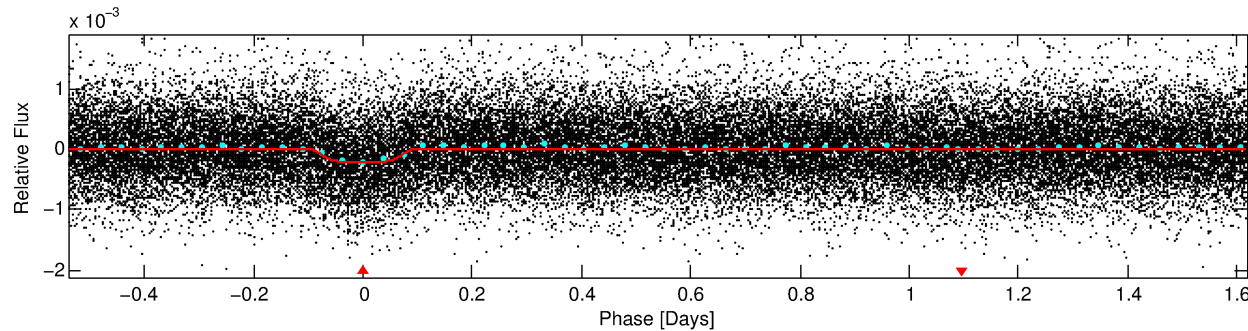
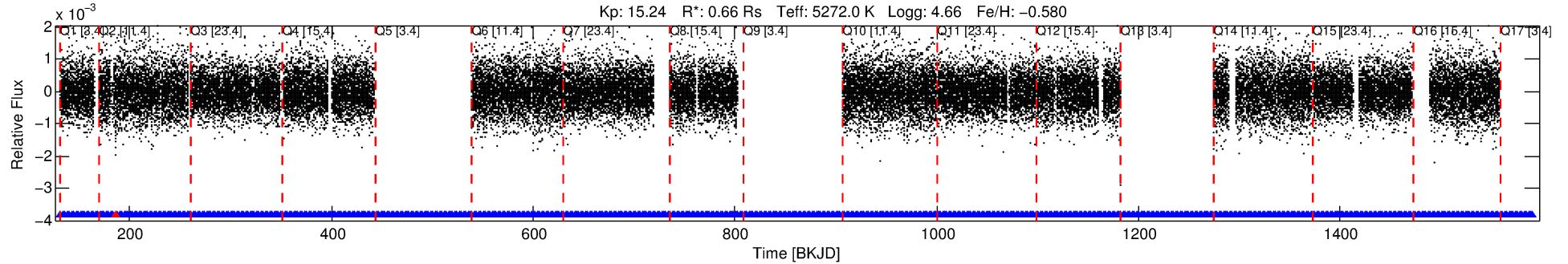
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 6421503 Candidate: 1 of 1 Period: 2.158 d

KOI: K03990.01 Corr: 0.809

Kp: 15.24 R*: 0.66 Rs Teff: 5272.0 K Logg: 4.66 Fe/H: -0.580



DV Fit Results:

Period = 2.15837 [0.00001] d
Epoch = 131.9125 [0.0030] BKJD
Rp/R* = 0.0180 [0.0010]
a/R* = 1.60 [0.21]
b = 0.96 [0.02]
Seff = 350.38 [68.39]
Teq = 1103 [54] K
Rp = 1.30 [0.18] Re
a = 0.0294 [0.0032] AU
Ag = 9.35 [3.36] [2.49σ]
Teffp = 2983 [257] K [7.15σ]

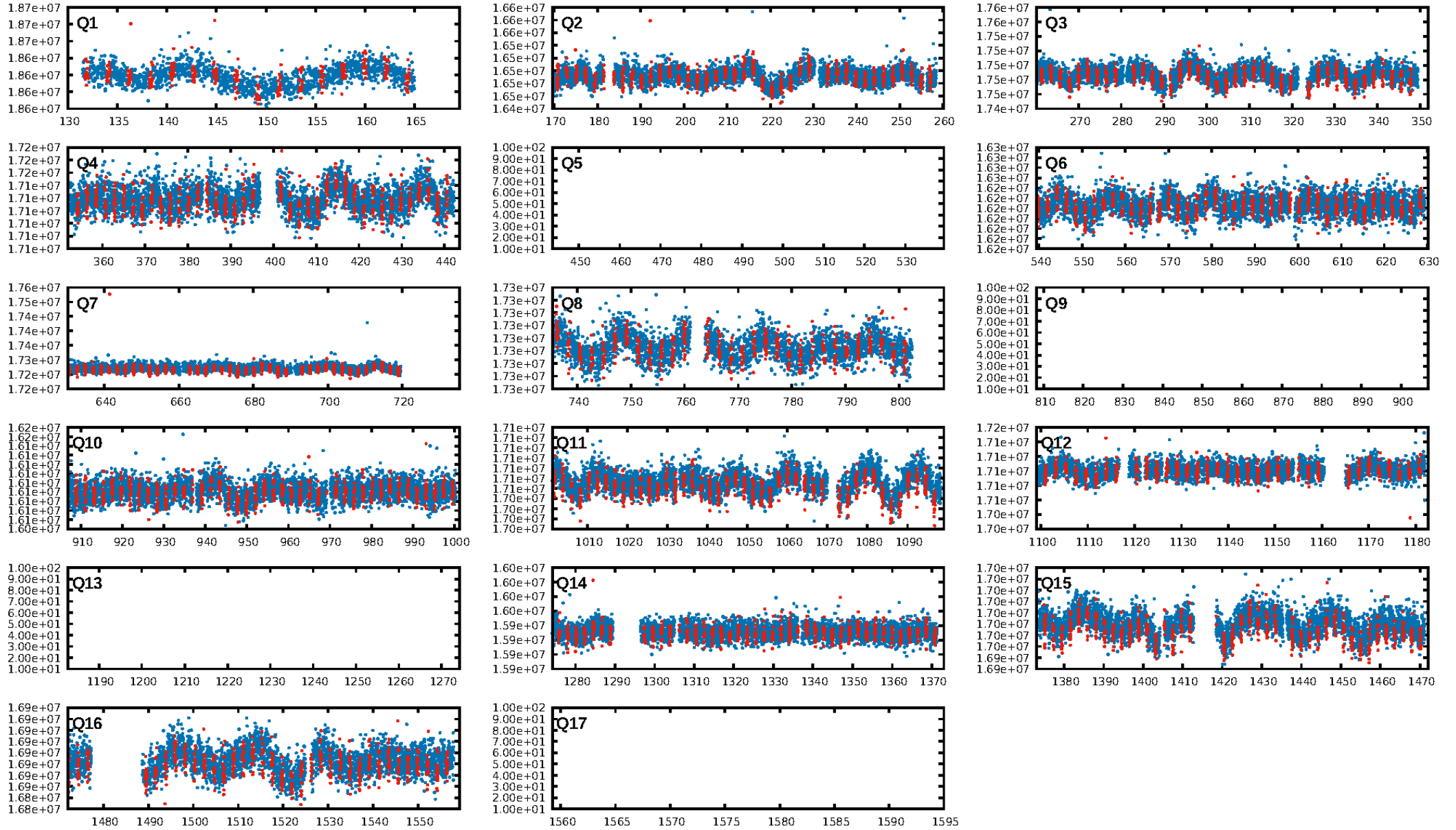
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.52e-79
RollingBand-fgt: 1.00 [465/466]
GhostDiagnostic-chr: -0.8175
Centroid-sig: 0.0%
Centroid-so: 18.758 arcsec [23.40σ]
OotOffset-rm: 11.955 arcsec [162.45σ]
KicOffset-rm: 11.948 arcsec [166.12σ]
OotOffset-st: 0/4/0/0 [4]
KicOffset-st: 0/4/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [13/13]

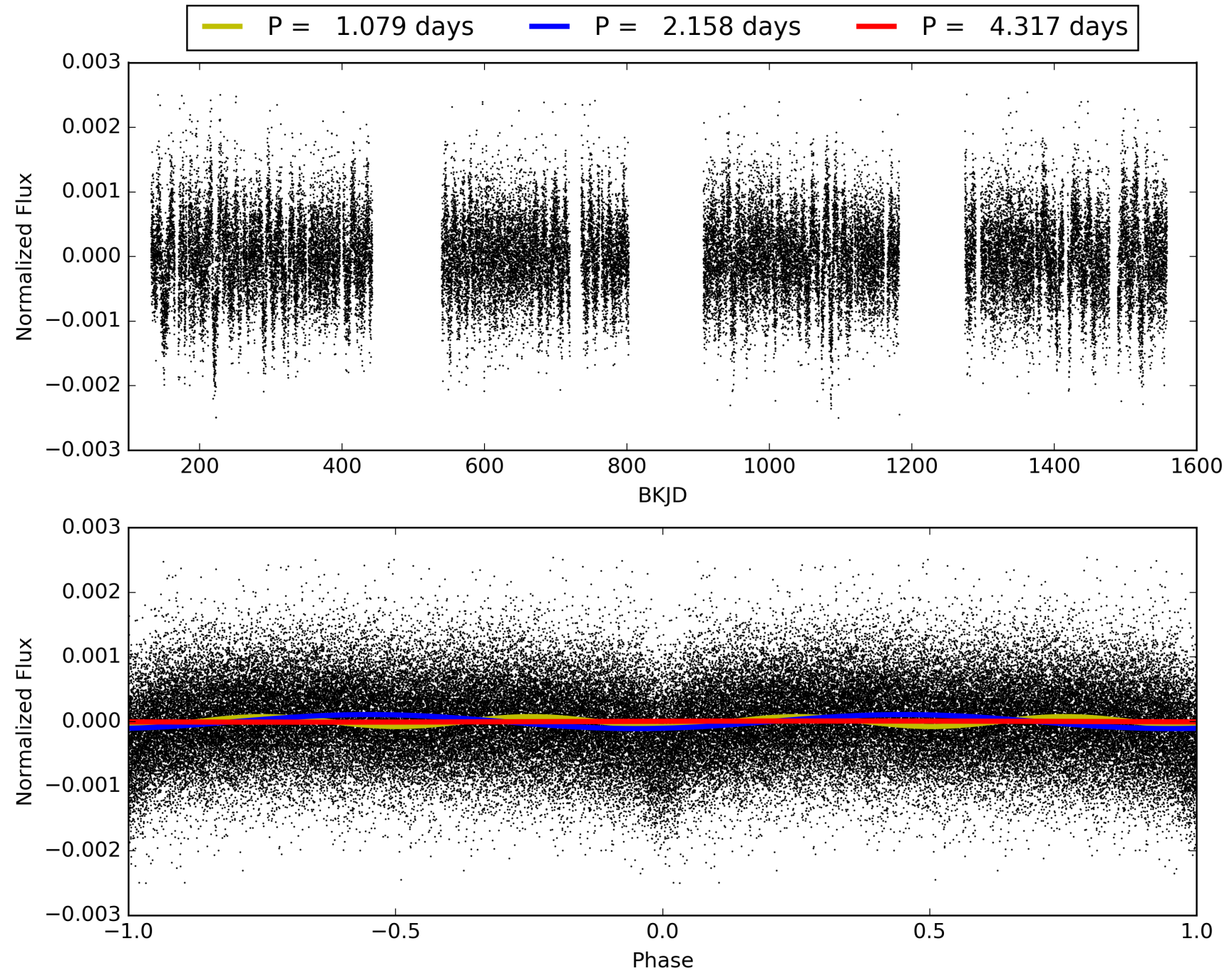
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:45:56 Z

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

TCE 006421503-01, PDC Light Curves

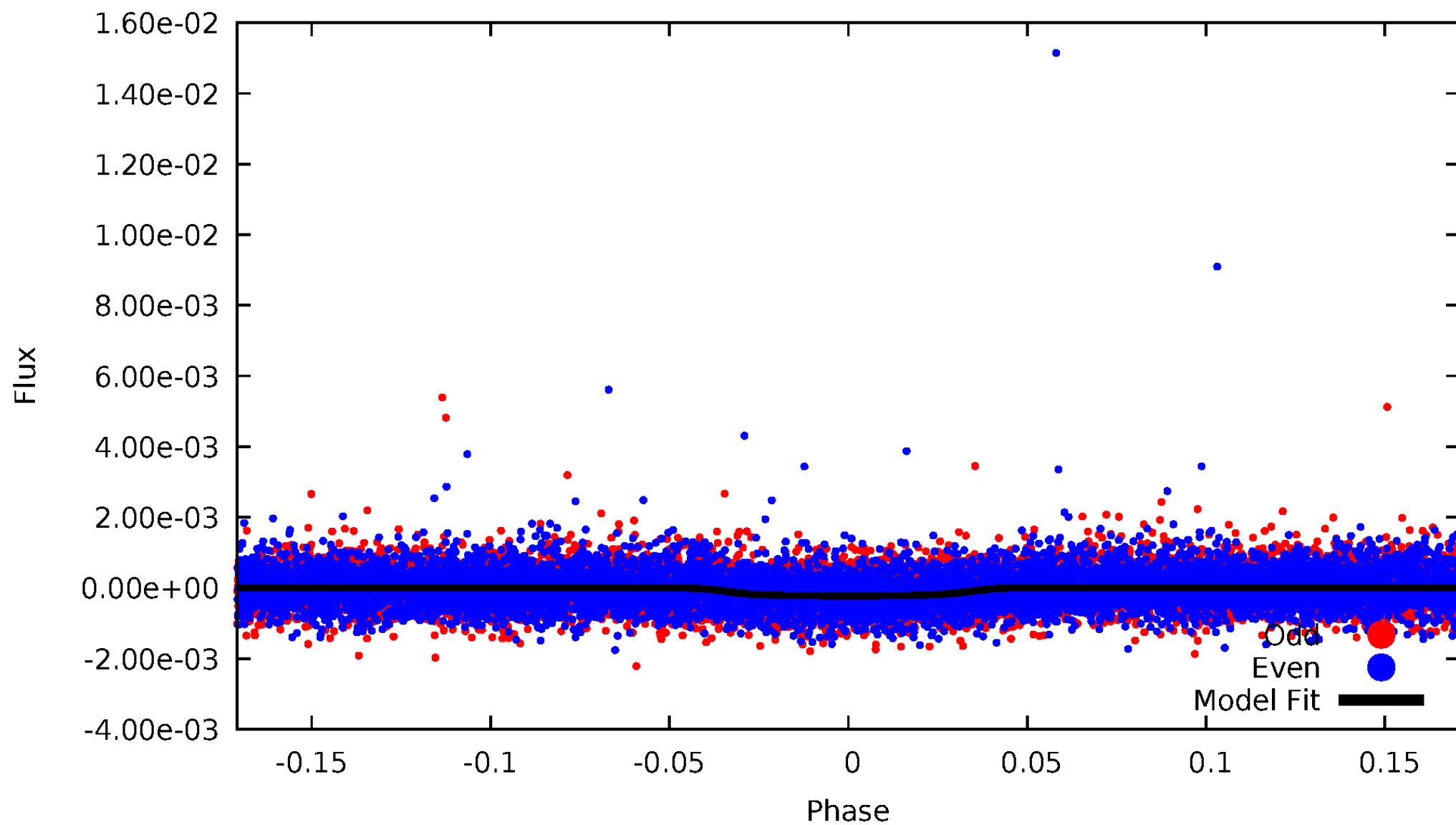


TCE 006421503-01



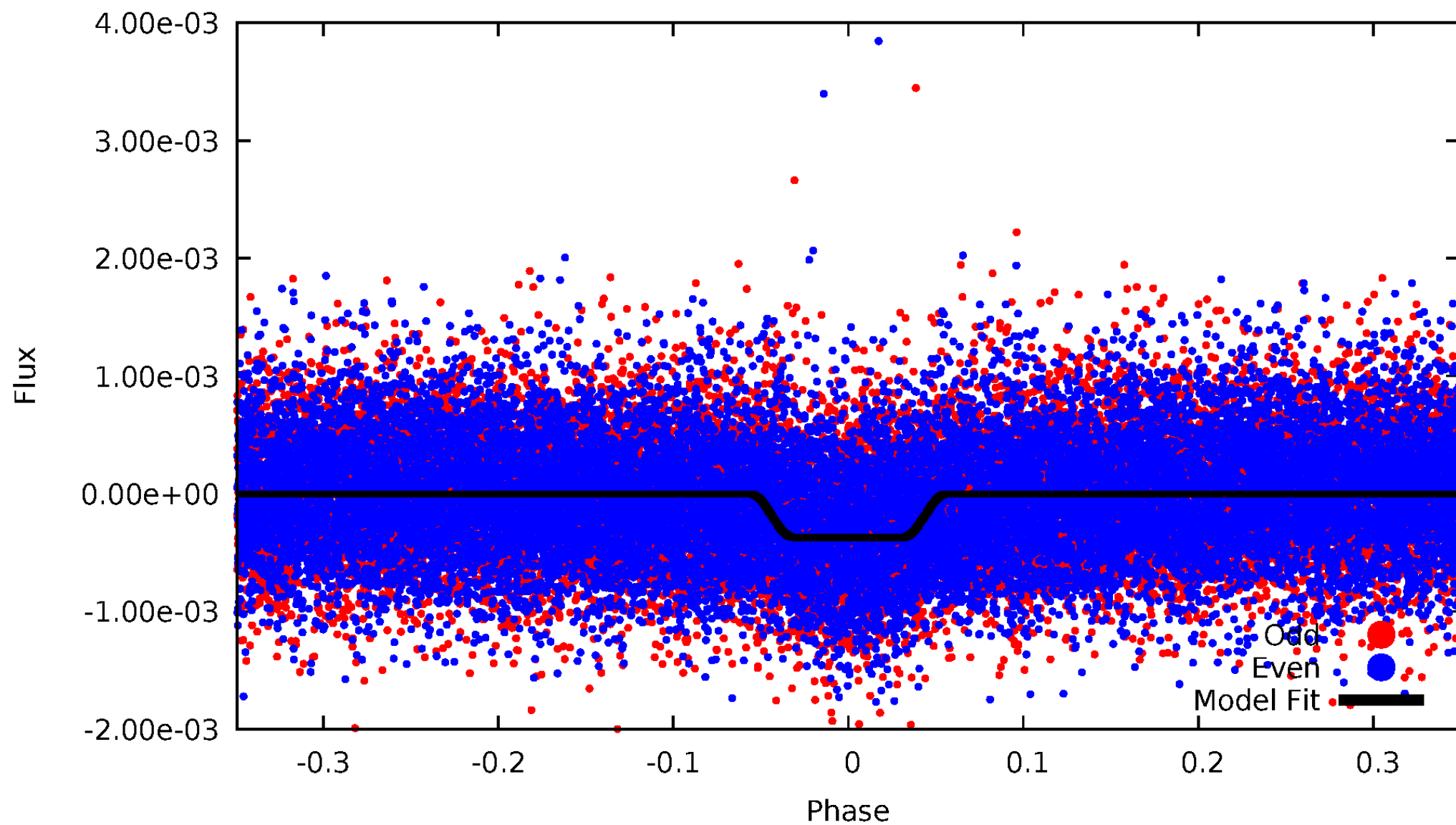
DV Odd/Even

TCE 006421503-01

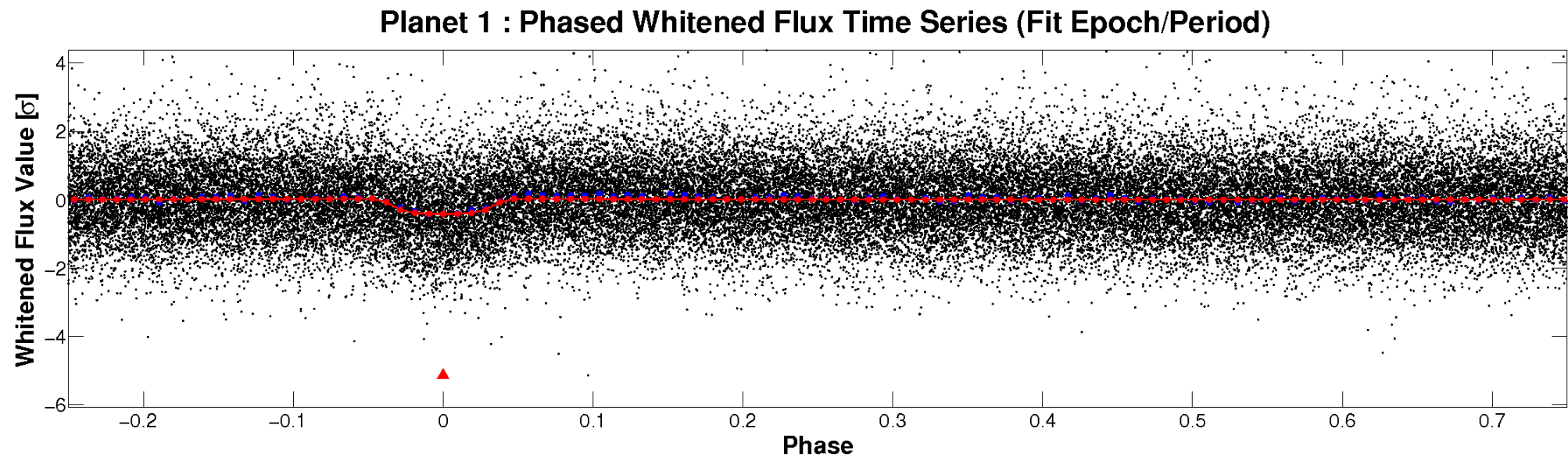
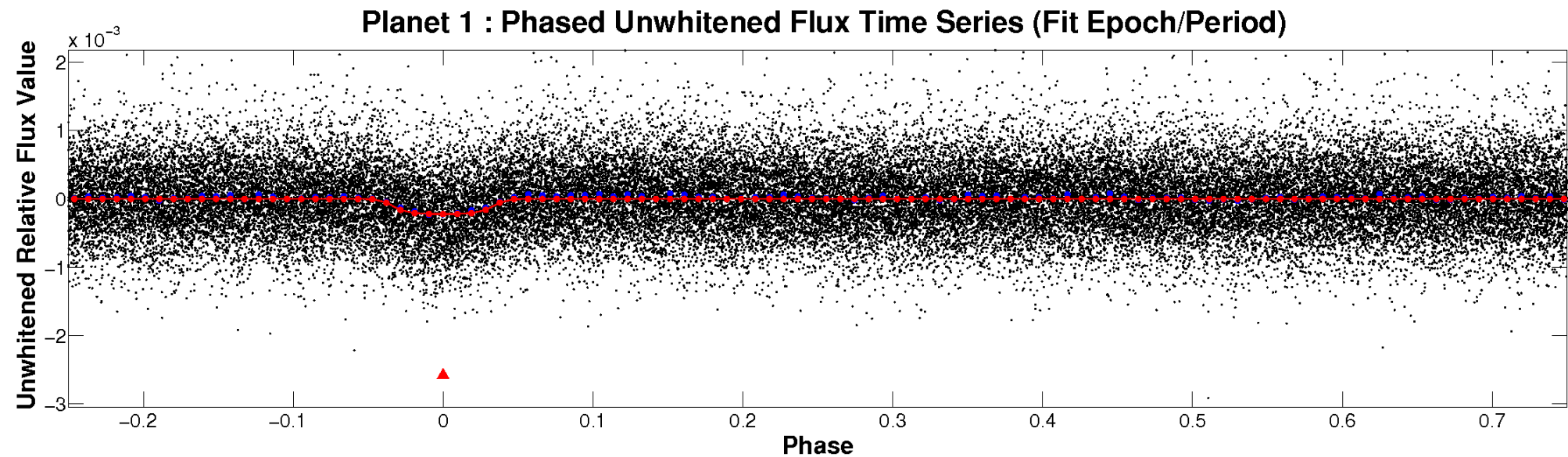


ALT Odd/Even

TCE 006421503-01

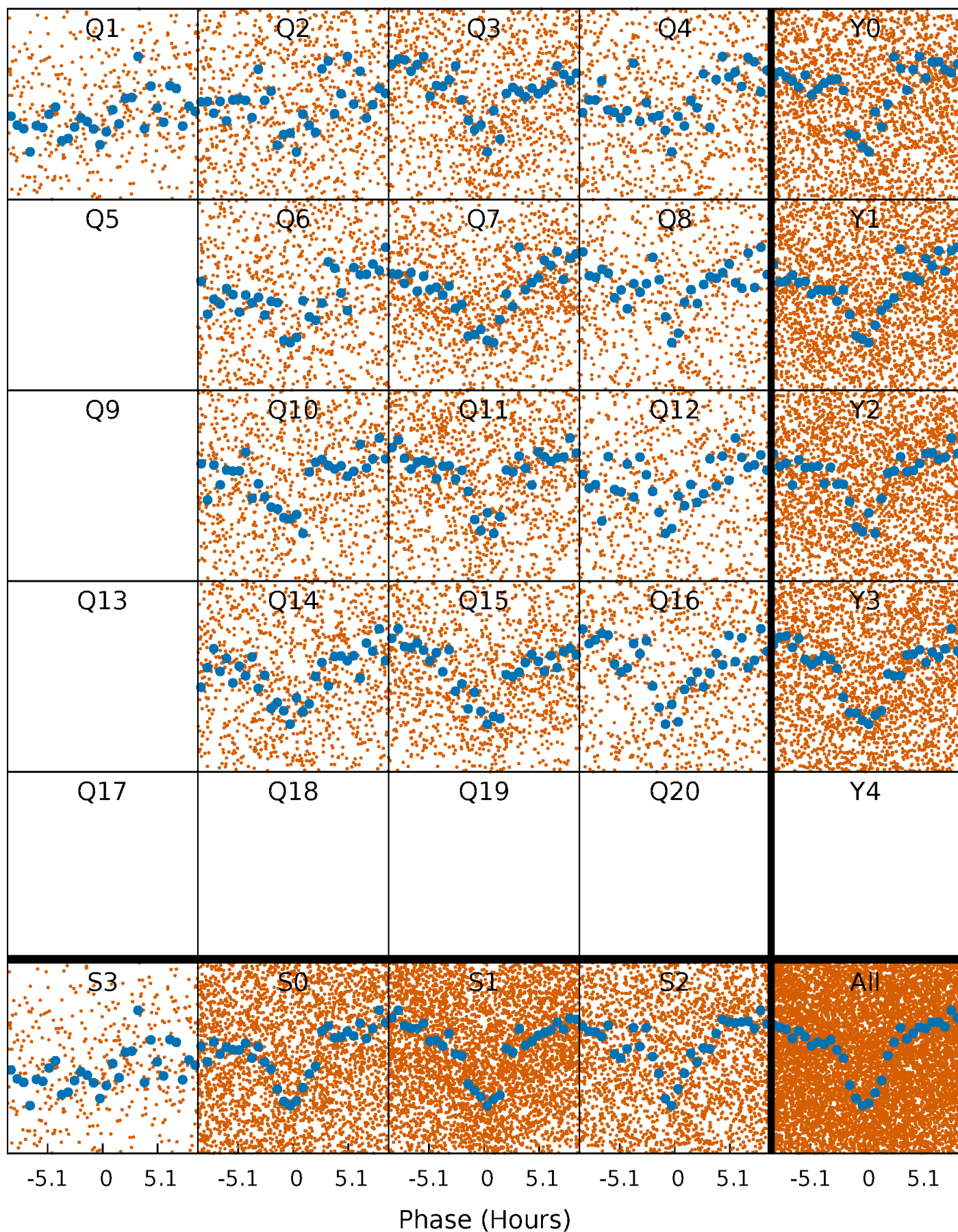


Non-Whitened Vs. Whitened Light Curve



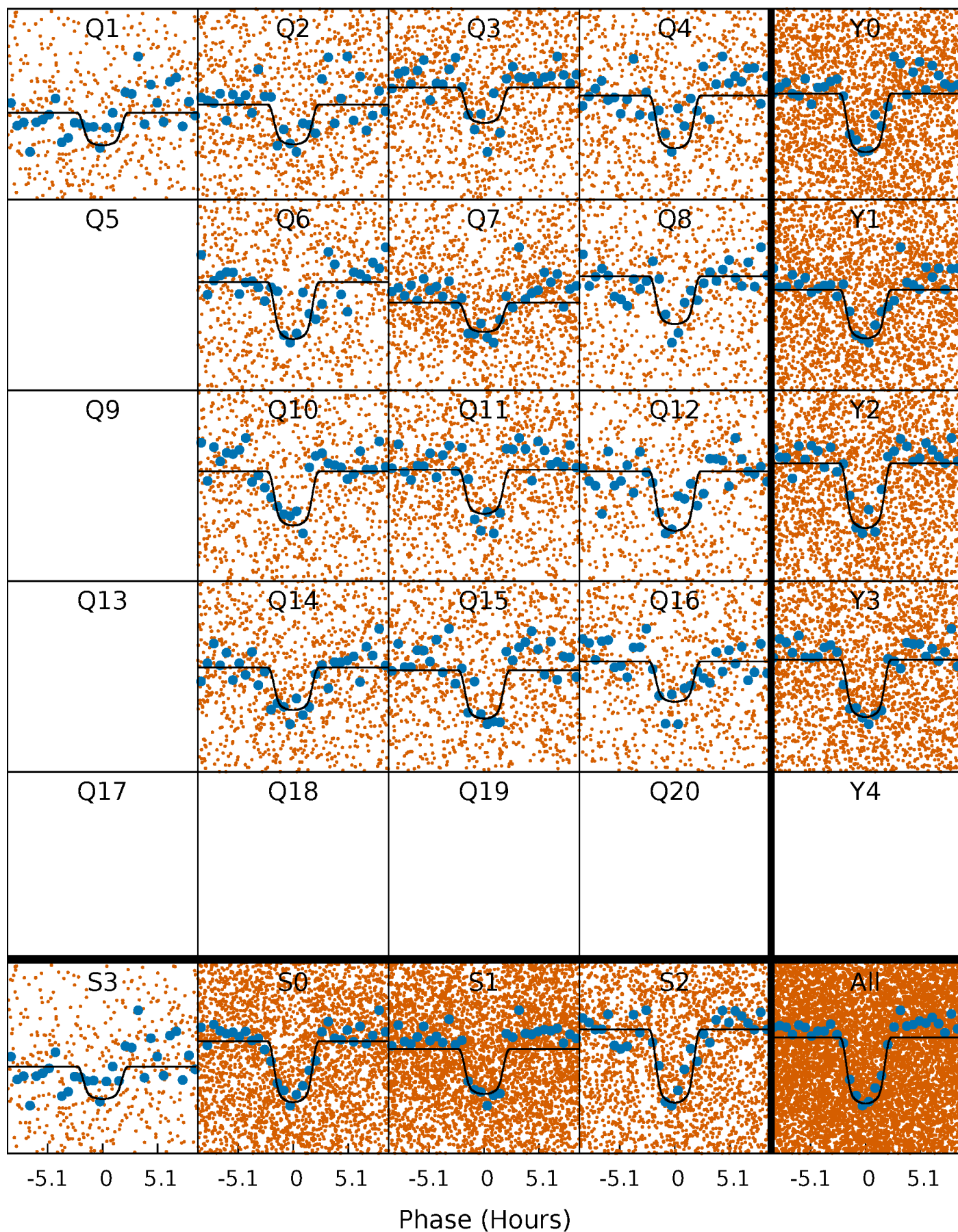
PDC Quarter-Phased Transit Curves

TCE 006421503-01 P= 2.158368 Days $T_0=131.912457$ (BKJD)



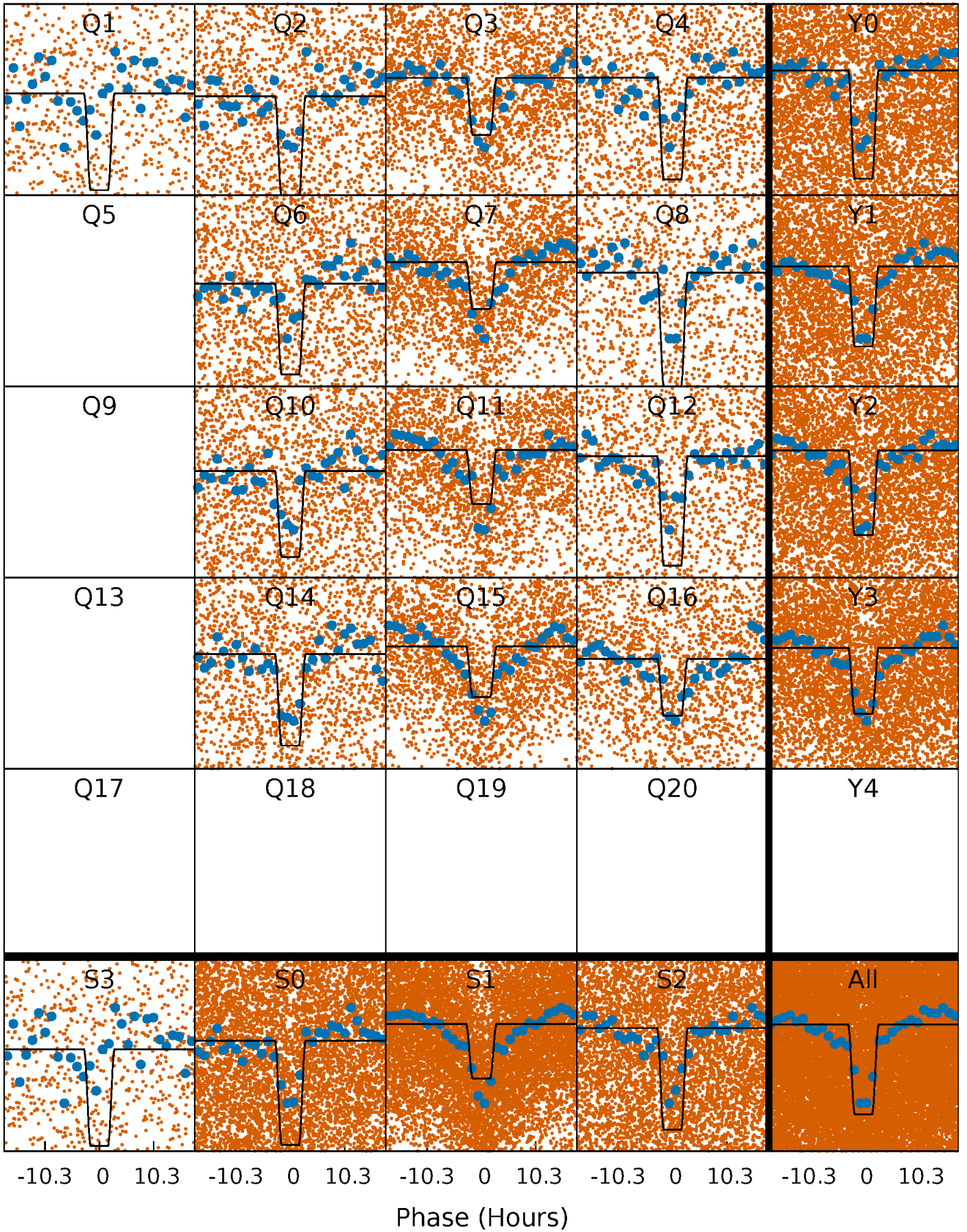
DV Quarter-Phased Transit Curves

TCE 006421503-01 P= 2.158368 Days $T_0=131.912457$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

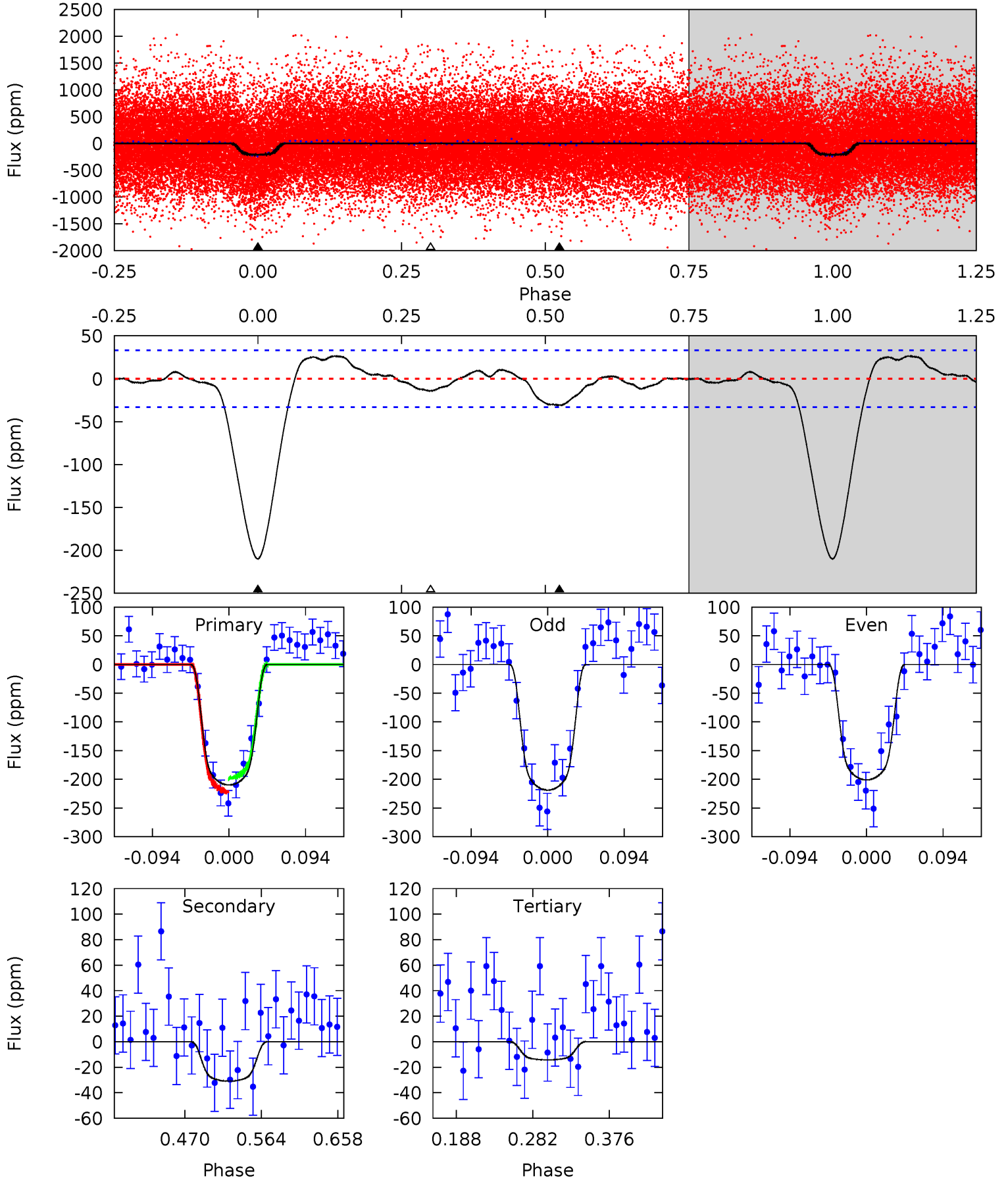
TCE 006421503-01 P= 2.158342 Days $T_0=131.916331$ (BKJD)



DV Model-Shift Uniqueness Test

006421503-01, P = 2.158368 Days, E = 129.754089 Days

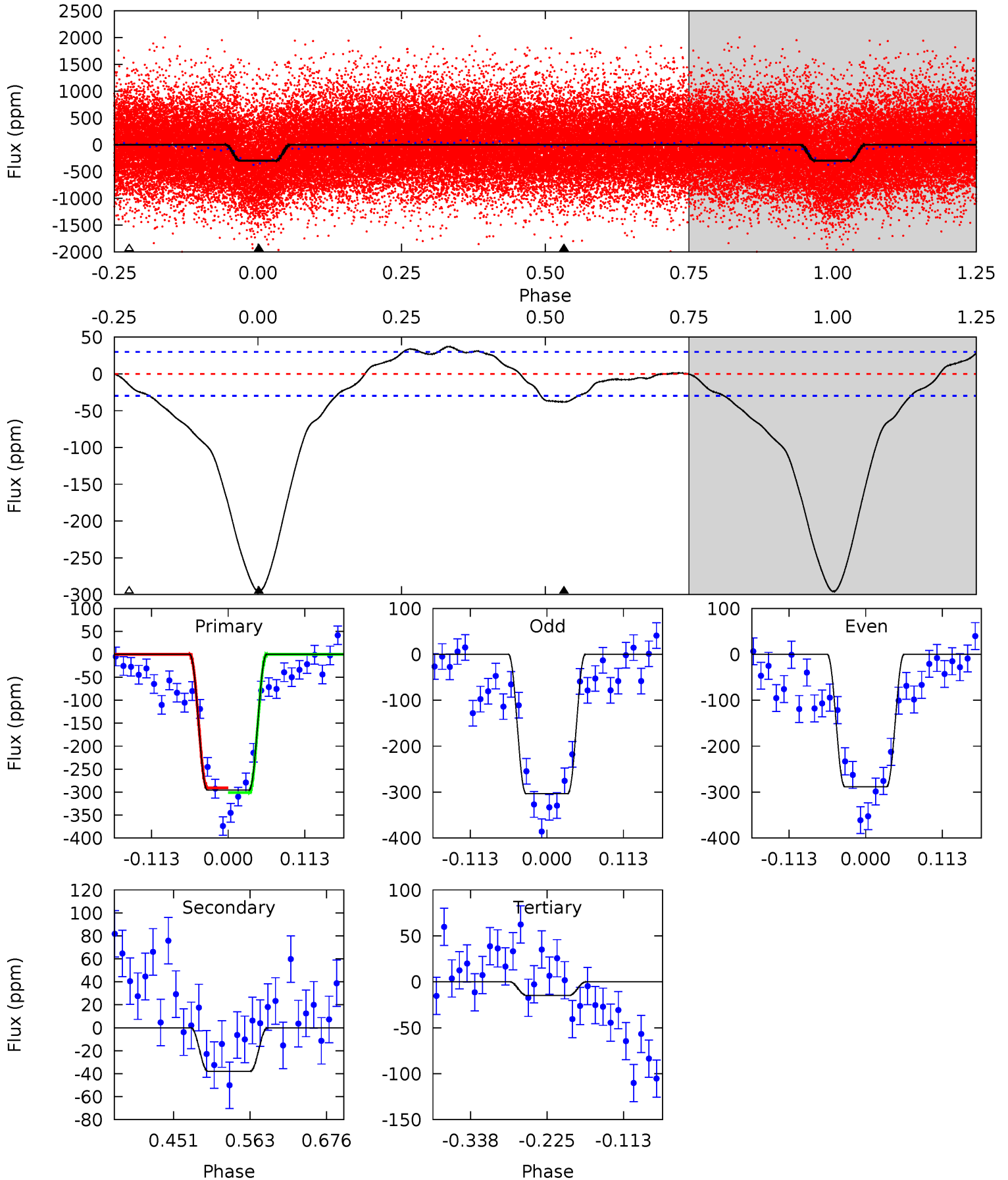
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.0	4.27	1.97	0	4.58	1.67	1.38	27.1	29.0	2.31	4.27	1.24	0.99	0.11	1.63



Alt Model-Shift Uniqueness Test

006421503-01, P = 2.158342 Days, E = 129.757989 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.0	5.79	2.28	0	4.54	1.59	4.56	42.7	45.0	3.52	5.79	1.13	1.04	0.11	0.78



Stellar Parameters For KIC 006421503

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5272^{+157}_{-141}	$4.659^{+0.028}_{-0.083}$	$-0.580^{+0.300}_{-0.300}$	$0.662^{+0.087}_{-0.047}$	$0.732^{+0.070}_{-0.070}$	$3.549^{+0.498}_{-0.936}$
	+3%/-3%	+1%/-2%	+52%/-52%	+13%/-7%	+10%/-10%	+14%/-26%
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 006421503-01 / KOI 3990.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-31 ± 7	$1.33^{+0.12}_{-0.10}$	1561^{+61}_{-52}	3398^{+159}_{-160}	$8.287^{+2.516}_{-2.162}$
Alt.	-38 ± 7	$1.42^{+0.12}_{-0.10}$	1562^{+61}_{-54}	3443^{+134}_{-135}	$8.866^{+2.331}_{-1.857}$

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

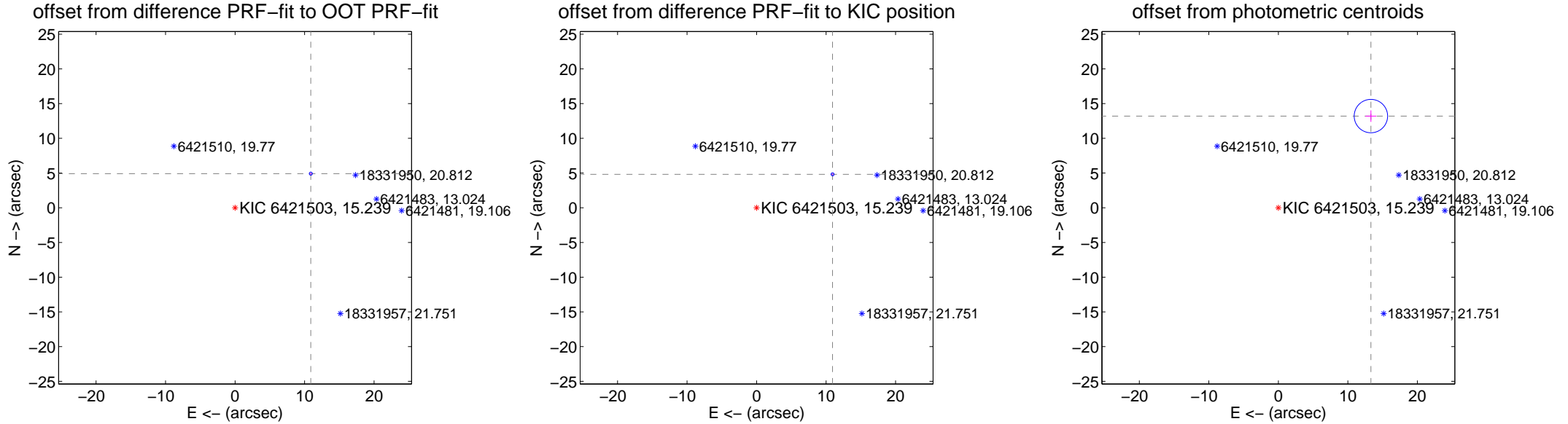
DV Centroid Data

Supplemental centroid analysis for 006421503-01. Kepler magnitude: 15.24. Transit SNR 21.18

There are 4 quarters with good PRF difference image offsets

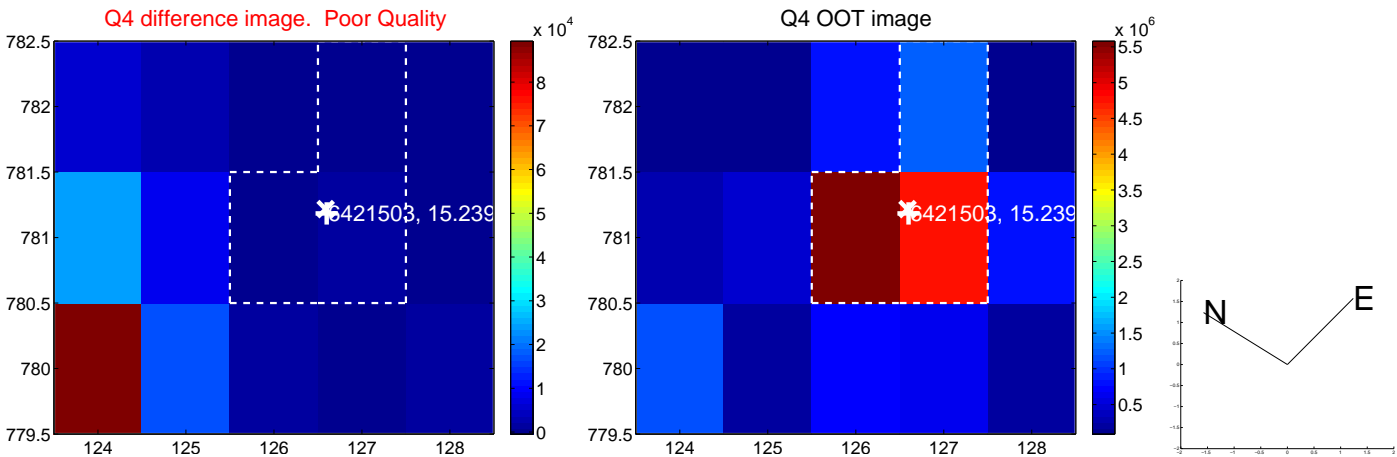
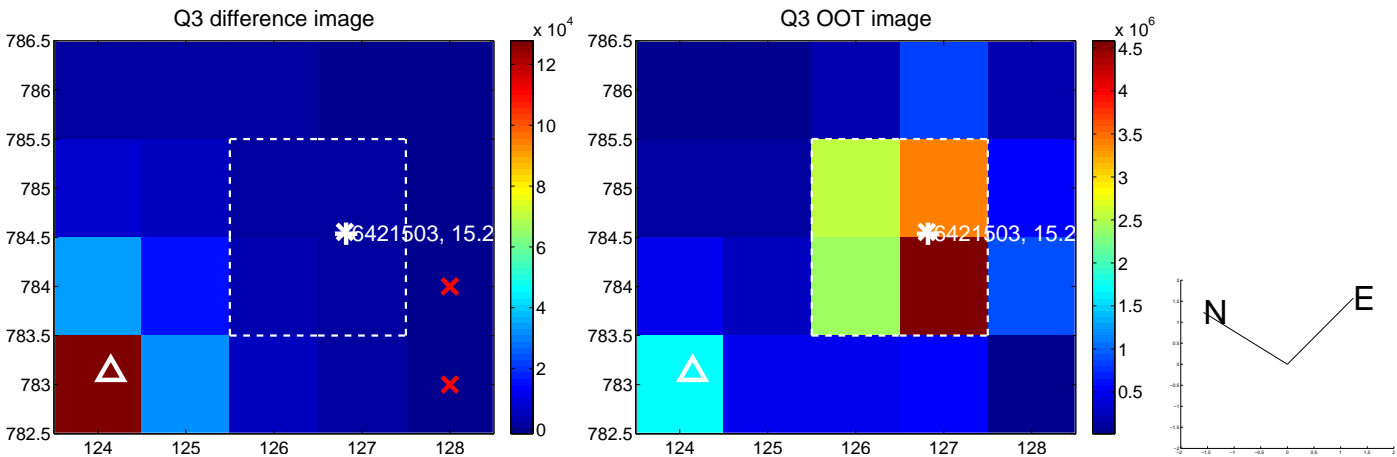
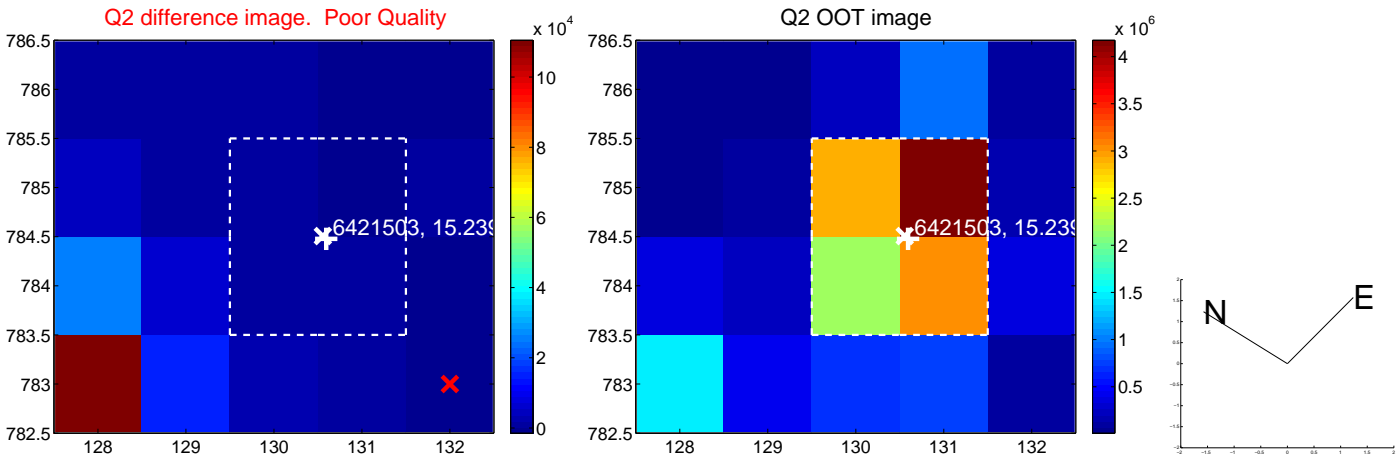
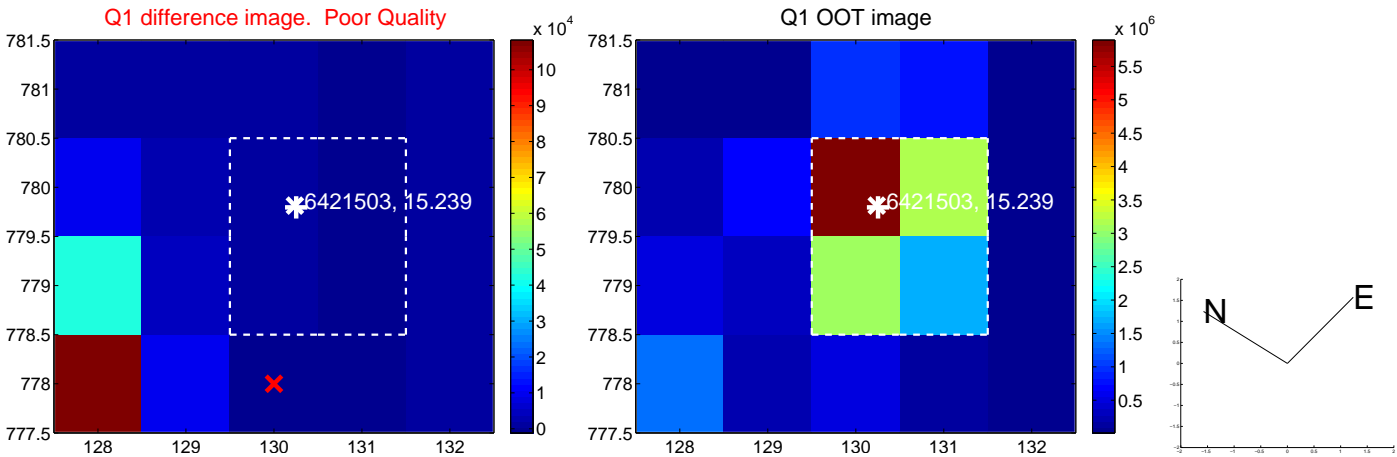
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	11.955 \pm 0.074	162.45	-10.899 \pm 0.075	4.915 \pm 0.068
PRF-fit source offset from KIC position	11.948 \pm 0.072	166.12	-10.934 \pm 0.072	4.817 \pm 0.069
photometric centroid source offset	18.76 \pm 0.80	23.40	-13.32 \pm 0.77	13.21 \pm 0.83

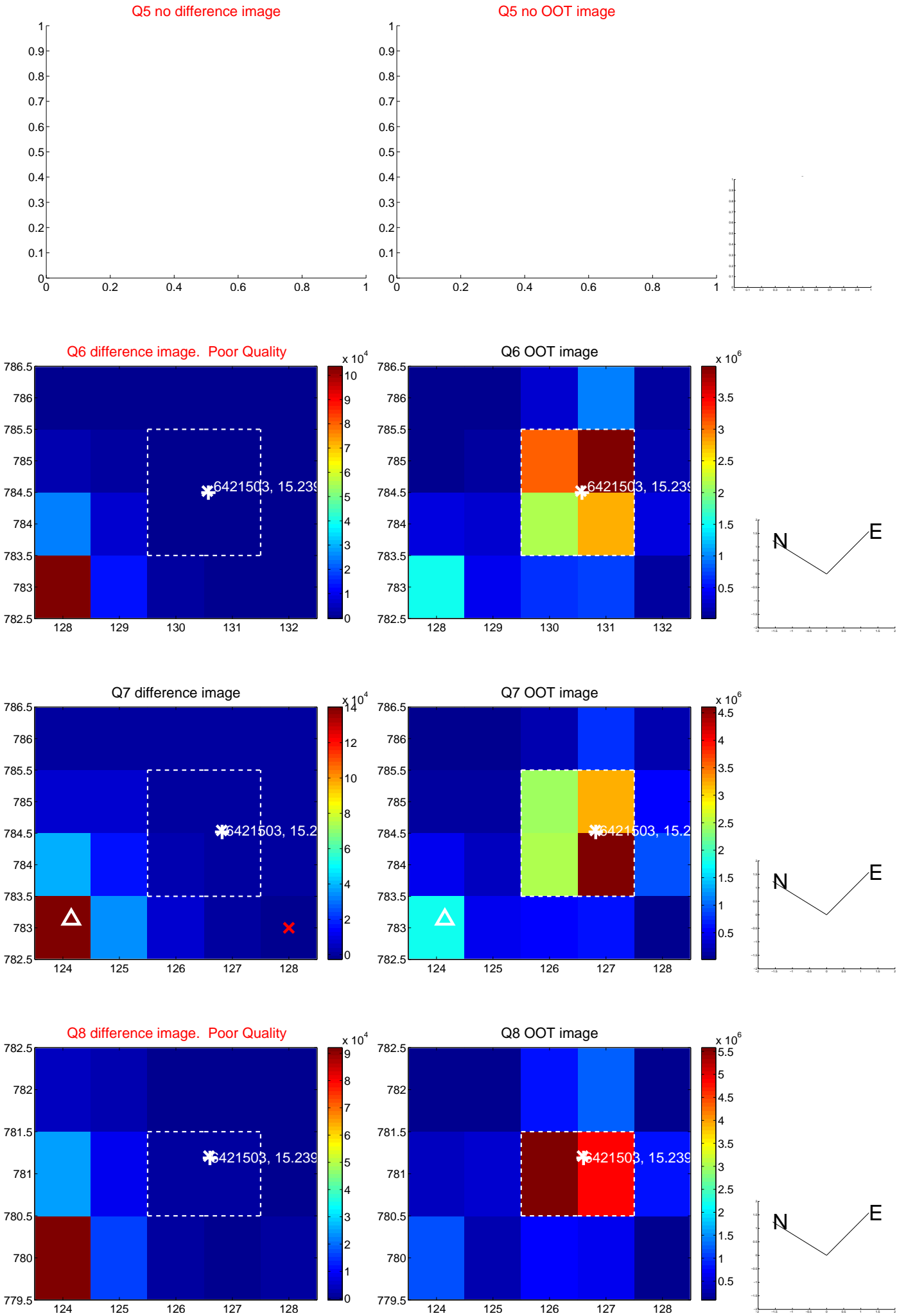


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

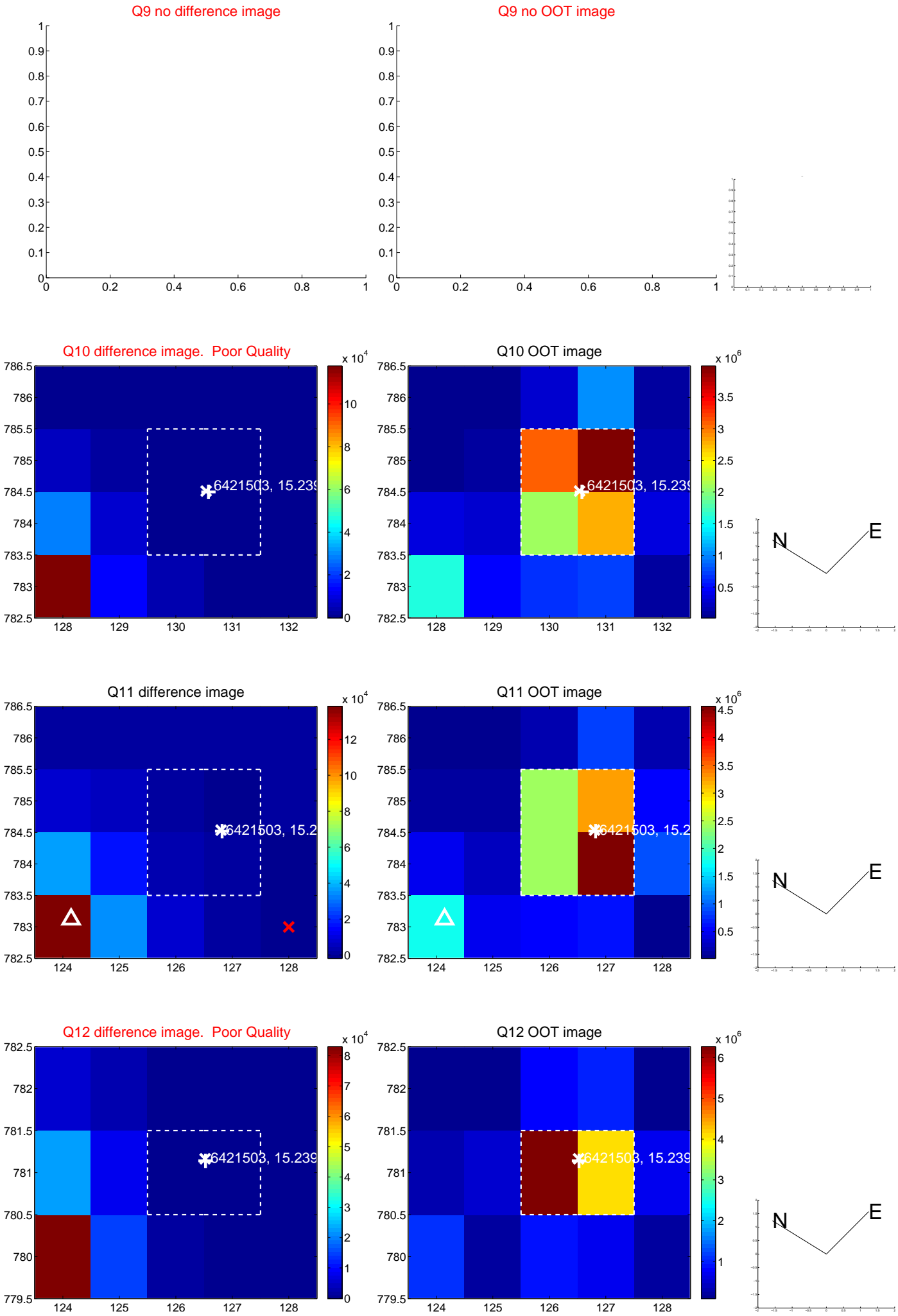
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



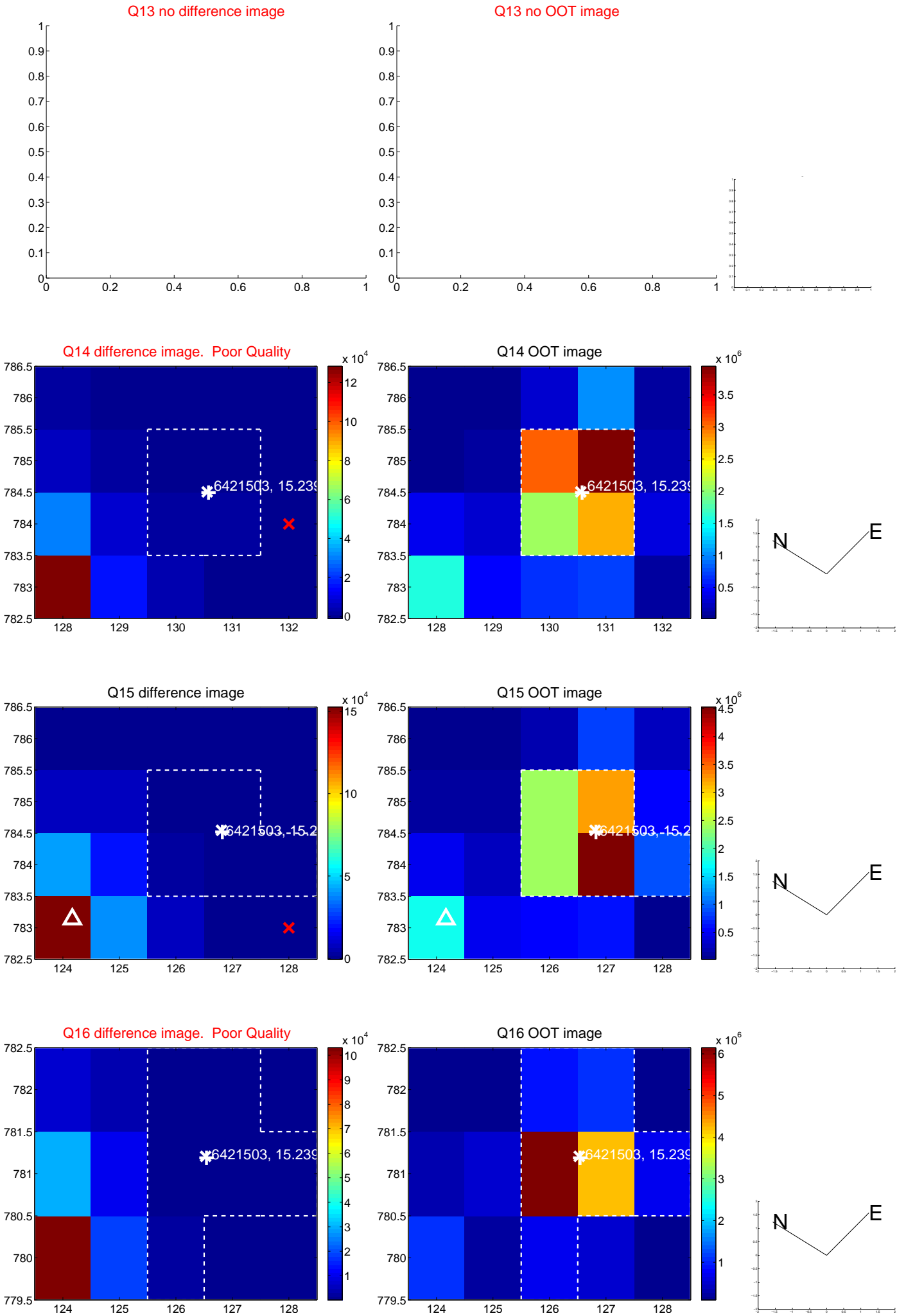
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



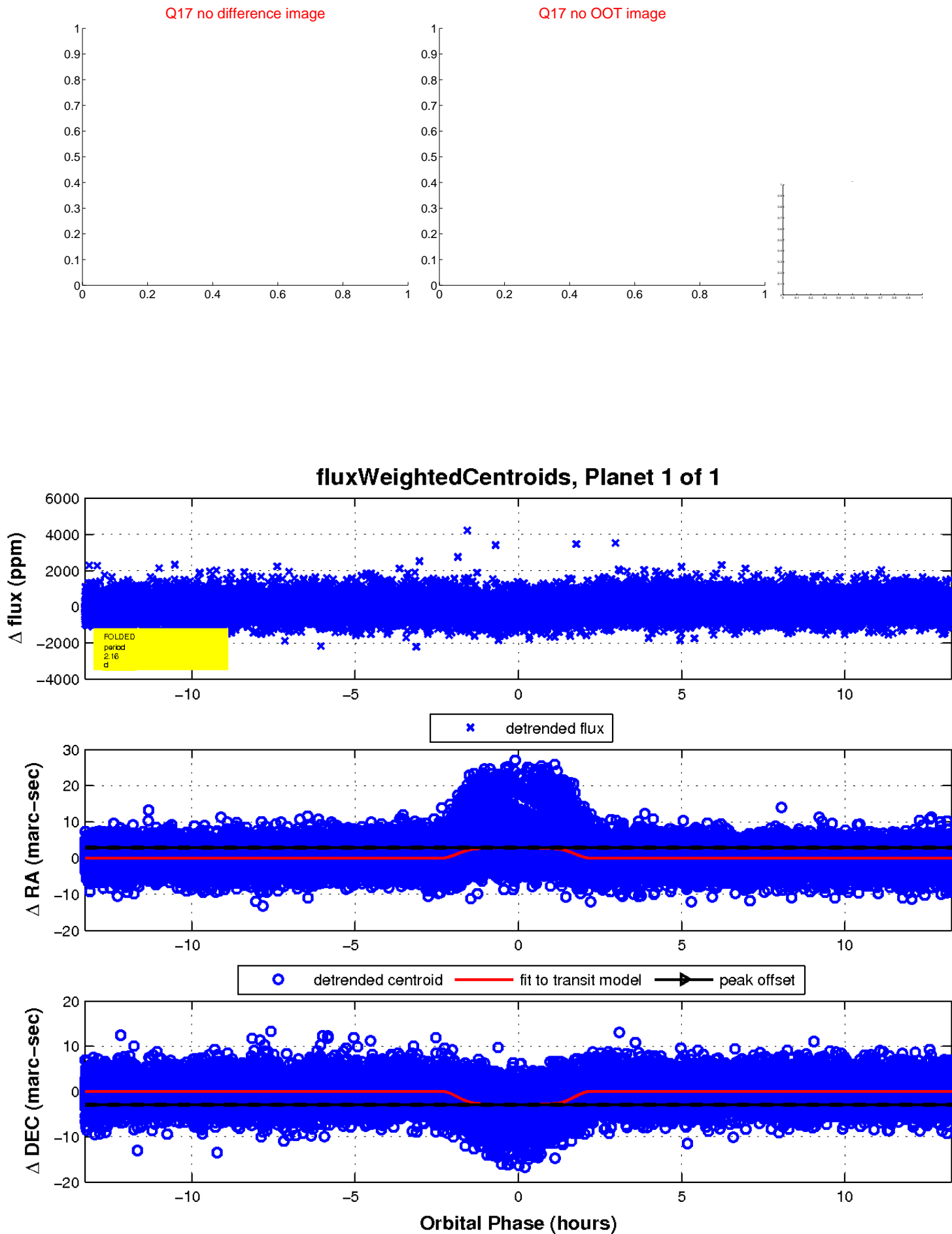
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

