

KIC 009640907

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R _★ (R _☉)	T _★ (K)	R _p (R _⊕)	S _p (S _⊕)
009640907-01	OBS	4172.01	2.178135	132.027341	218.6	2.226	12.8	13.9	1.07	6194	1.88	1260.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009640907-01	OBS	FP	0.00	0	0	1	1	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 009640907-01

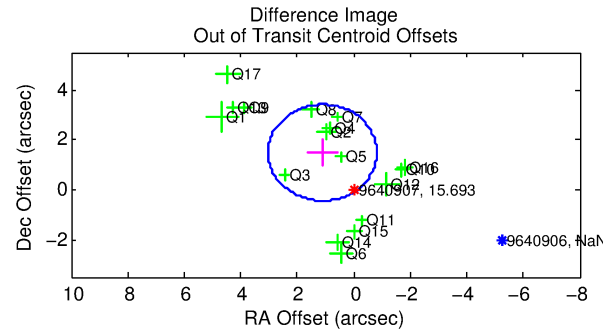
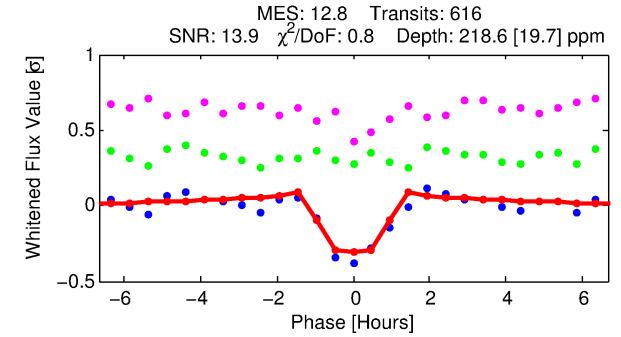
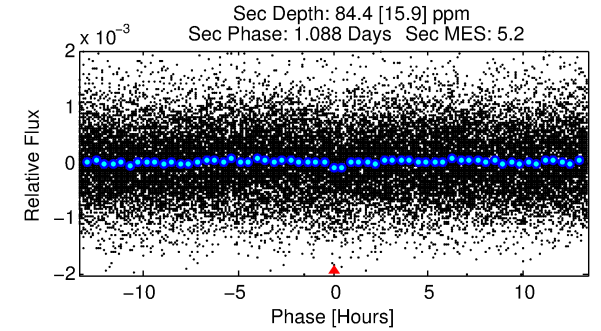
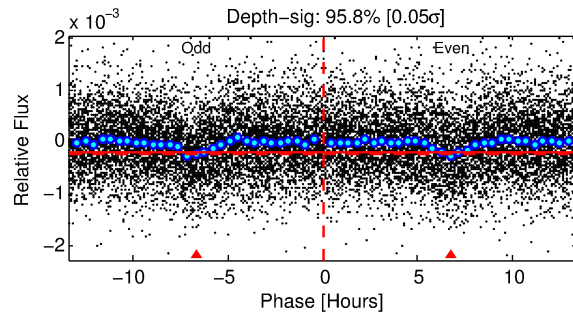
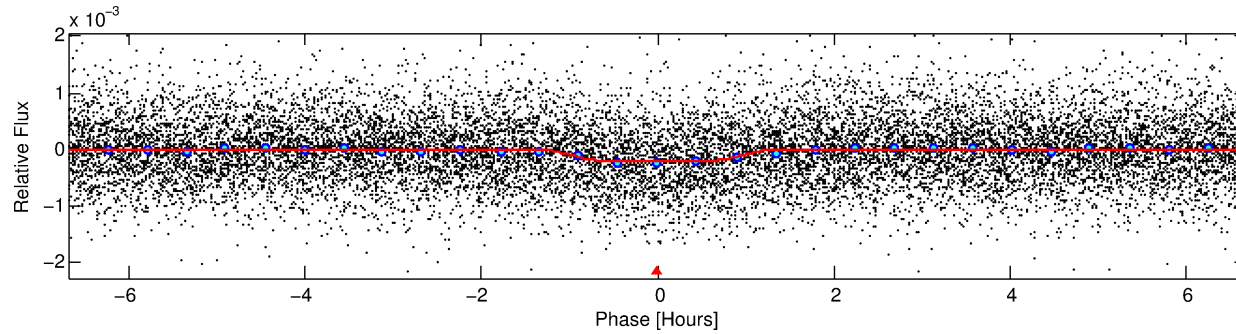
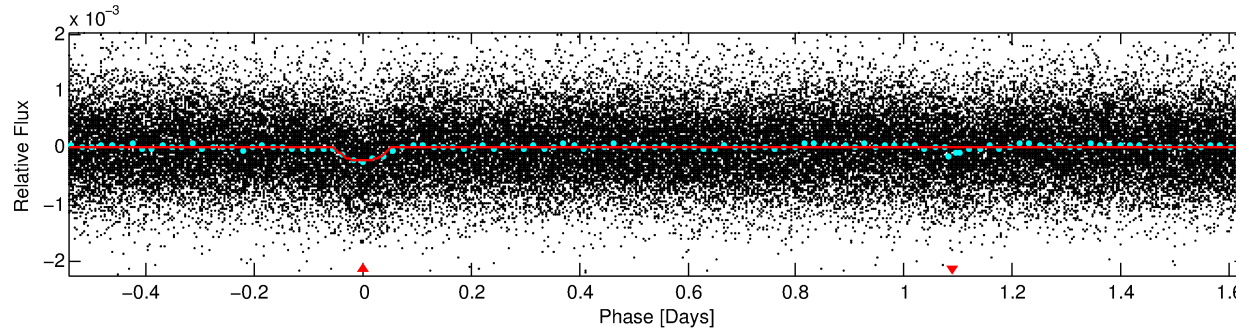
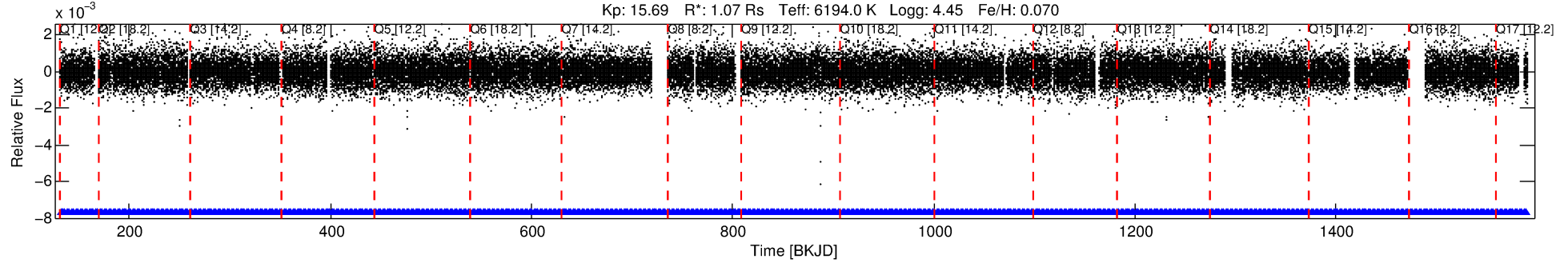
TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist (″)	ΔRow	ΔCol	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ _P	σ _T
009640907-01	9640907	FL-Lyr-pri	9641031	1:1	170.1	30	-30	9.18	15.70	1986.60	Direct-PRF	0	0.61	0.28

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ 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 σ_P < 5.0 and σ_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: 9640907 Candidate: 1 of 1 Period: 2.178 d
KOI: K04172 Corr: No Ephemeris Match

Kp: 15.69 R*: 1.07 Rs Teff: 6194.0 K Logg: 4.45 Fe/H: 0.070



DV Fit Results:

Period = 2.17813 [0.00001] d
Epoch = 132.0273 [0.0020] BKJD
Rp/R* = 0.0161 [0.0051]
a/R* = 3.53 [5.30]
b = 0.91 [0.32]
Seff = 1260.81 [549.50]
Teq = 1519 [166] K
Rp = 1.88 [0.87] Re
a = 0.0346 [0.0097] AU
Ag = 15.73 [12.16] [1.21σ]
Teffp = 4679 [797] K [3.88σ]

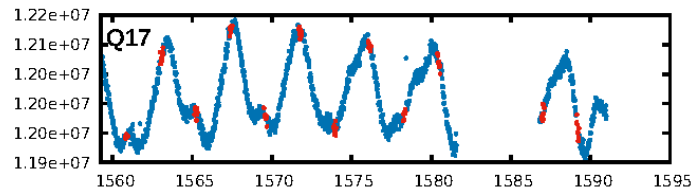
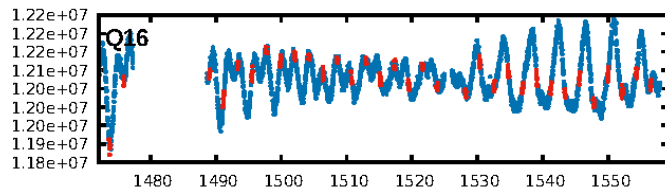
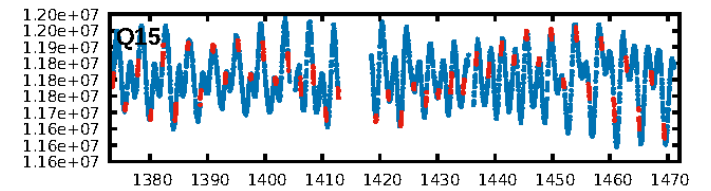
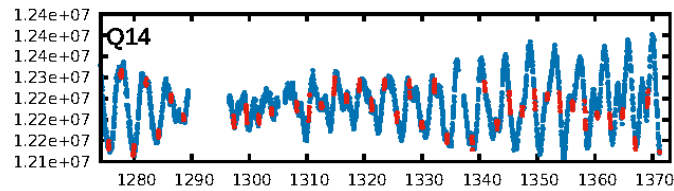
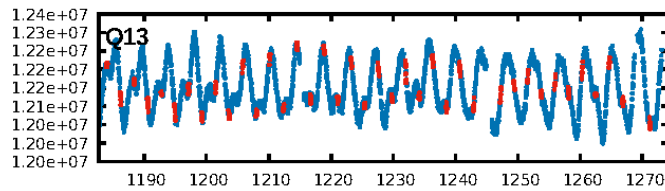
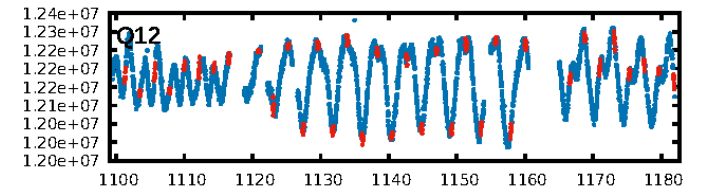
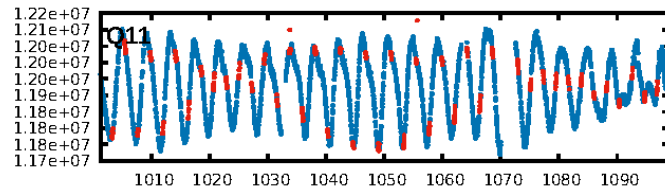
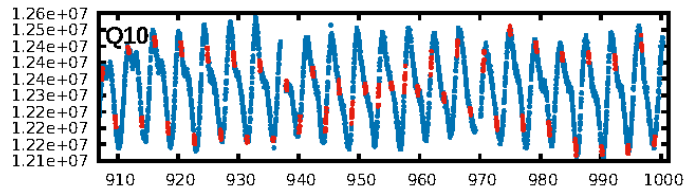
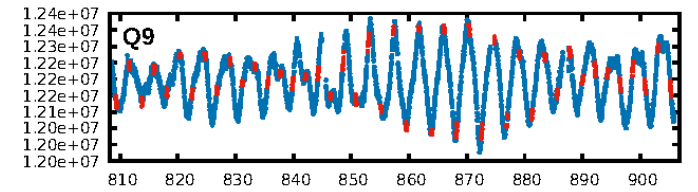
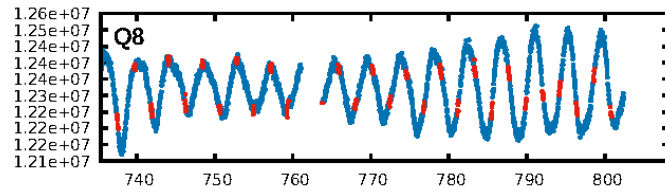
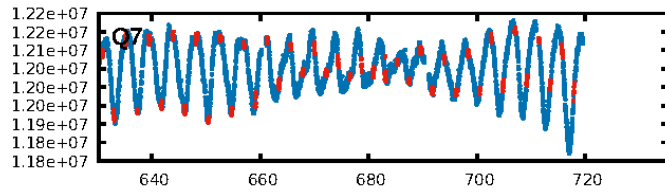
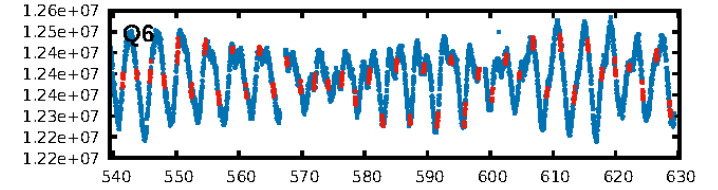
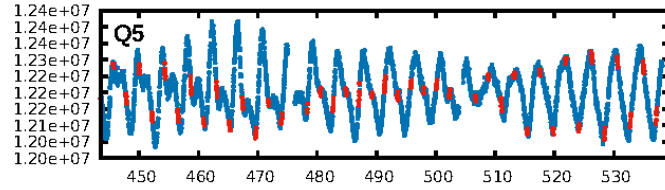
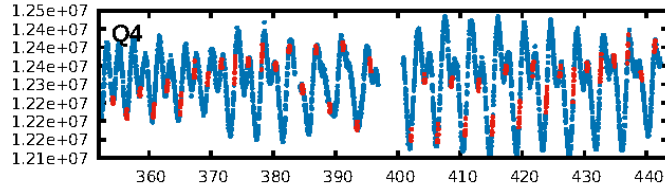
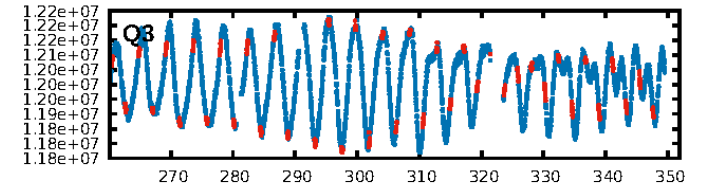
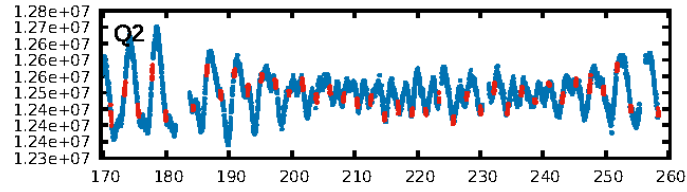
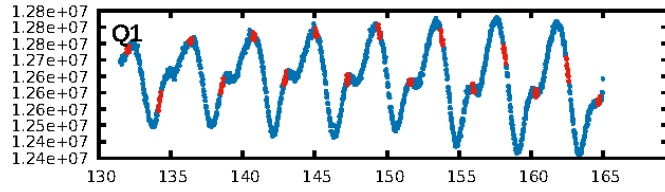
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.66e-36
RollingBand-fgt: 1.00 [588/588]
GhostDiagnostic-chr: 0.1832
Centroid-sig: 0.3%
Centroid-so: 1.766 arcsec [2.04σ]
OotOffset-rm: 1.851 arcsec [2.88σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: **1.862 arcsec [3.17σ]**
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.24 [4/17]
DiffImageOverlap-fno: 1.00 [17/17]

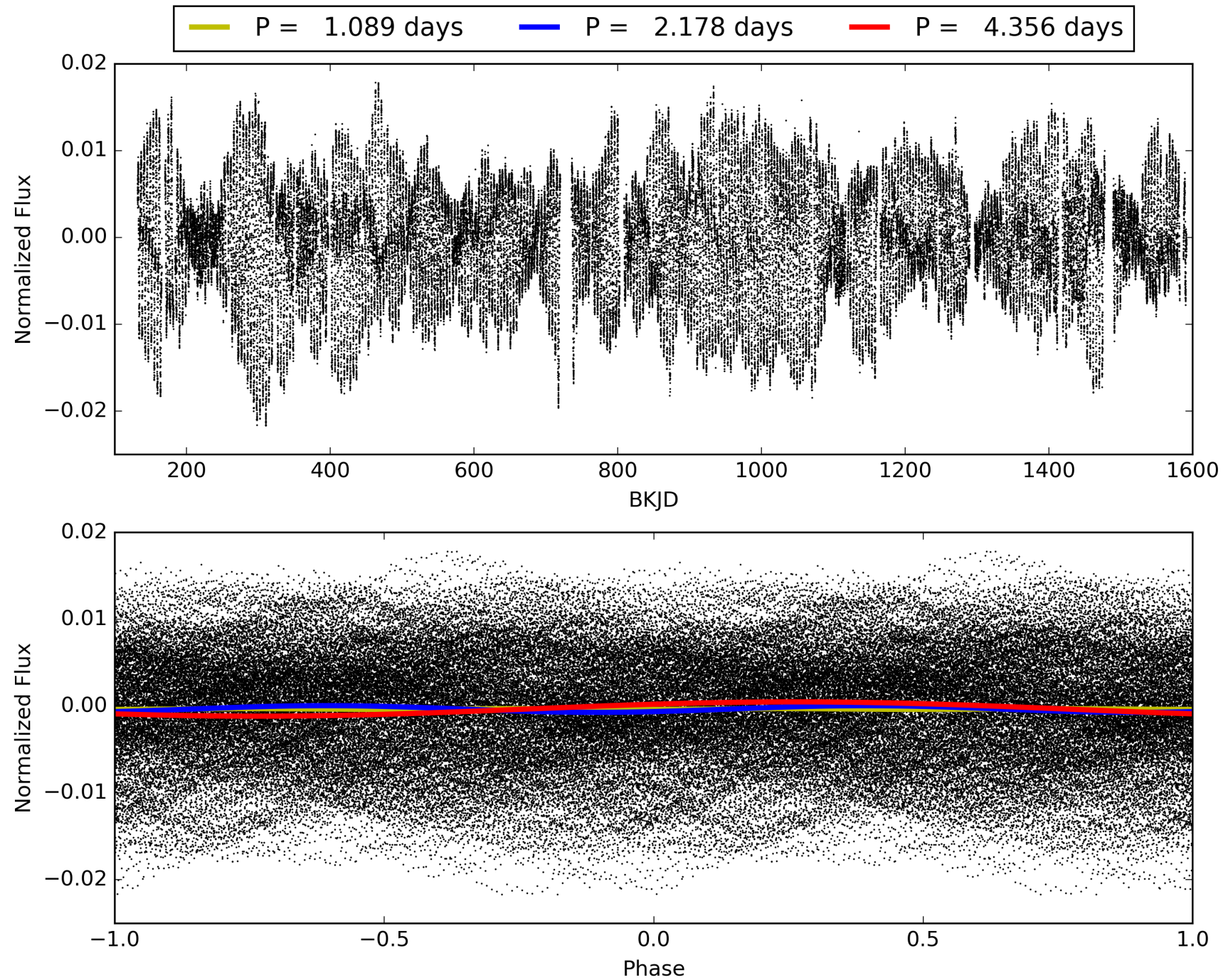
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:58:32 Z

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

TCE 009640907-01, PDC Light Curves

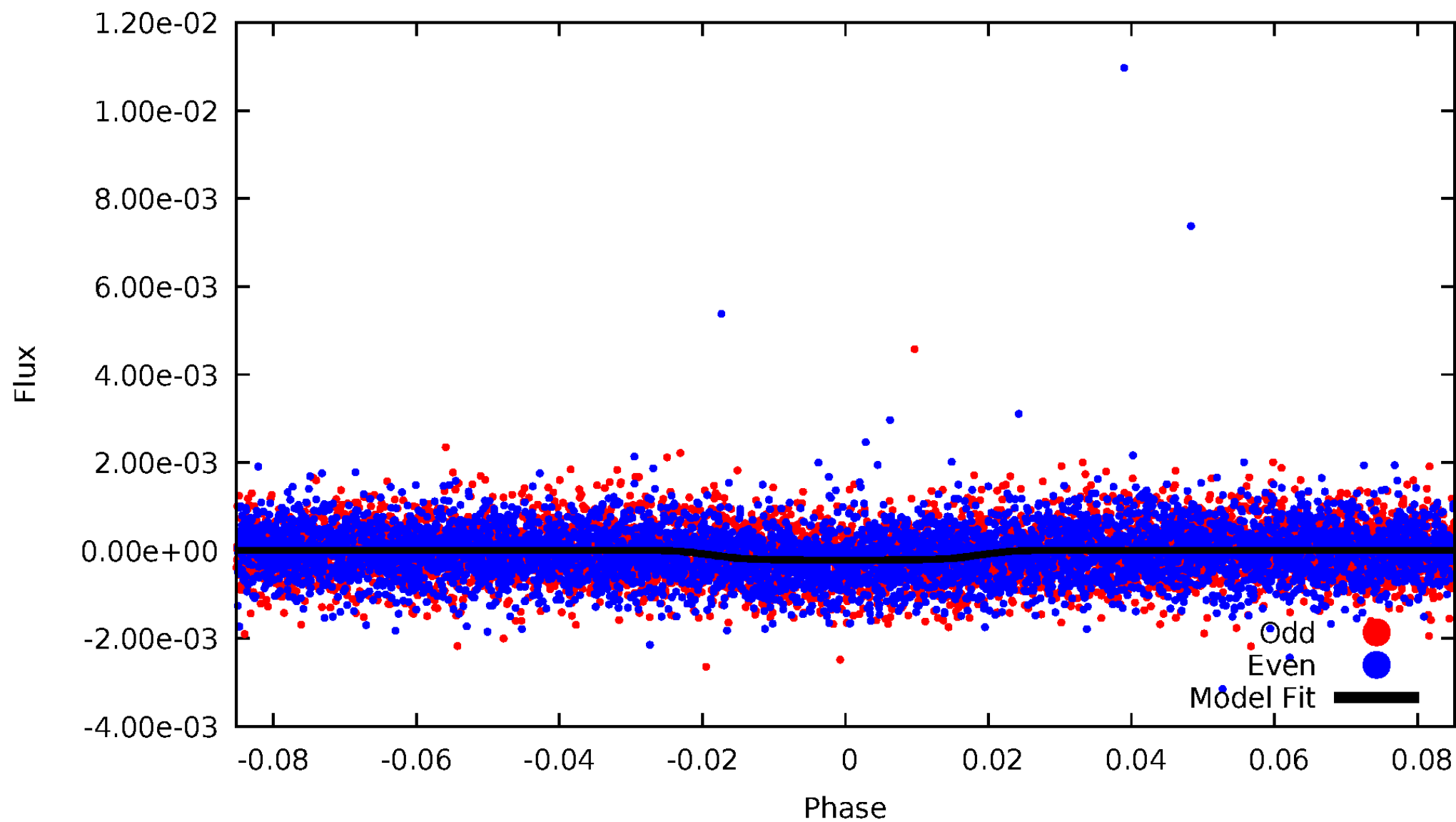


TCE 009640907-01



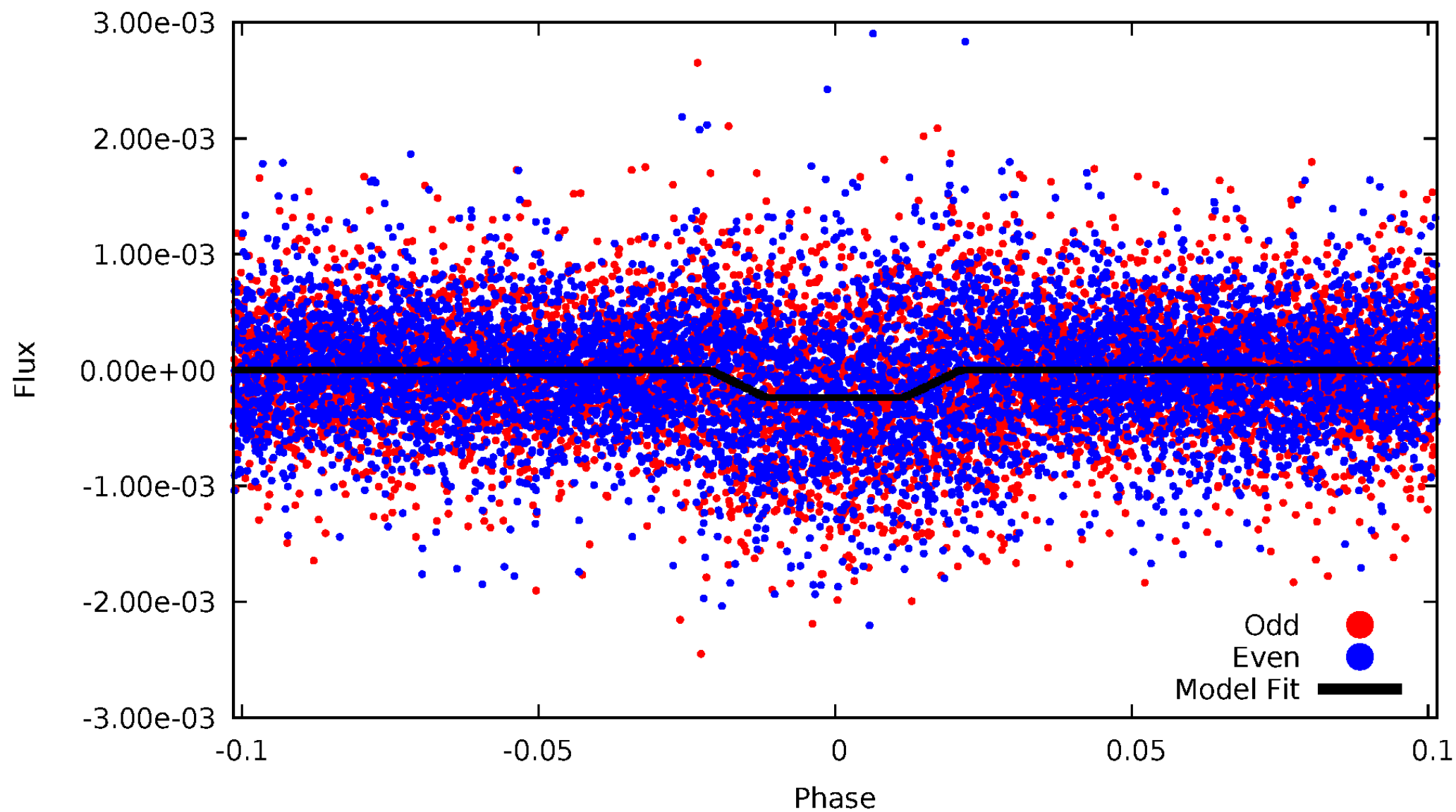
DV Odd/Even

TCE 009640907-01

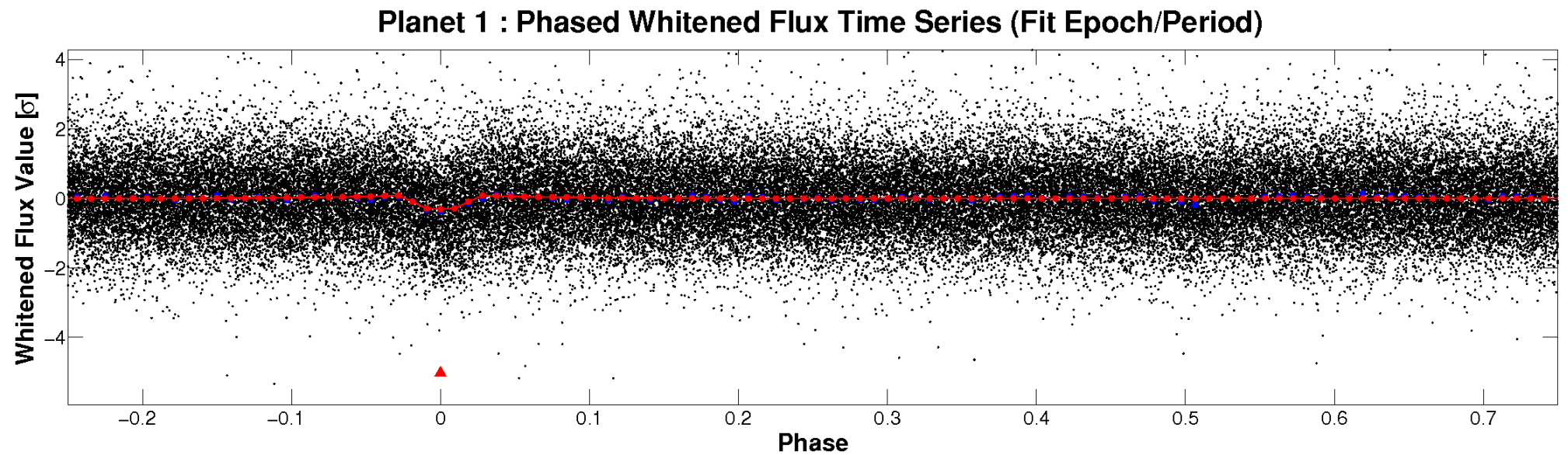
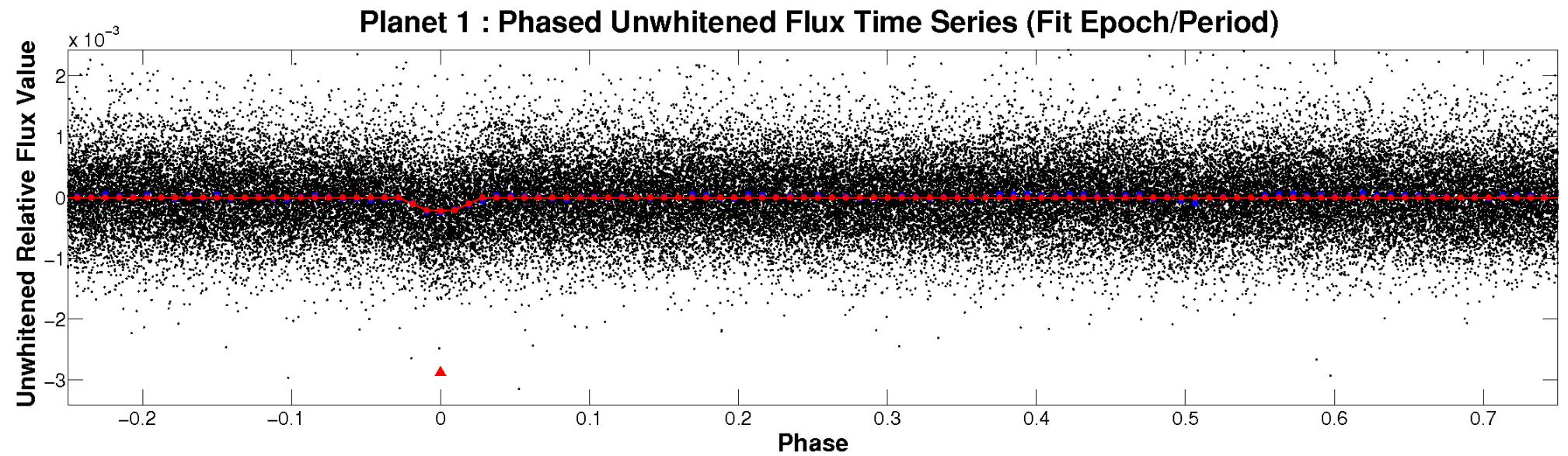


ALT Odd/Even

TCE 009640907-01

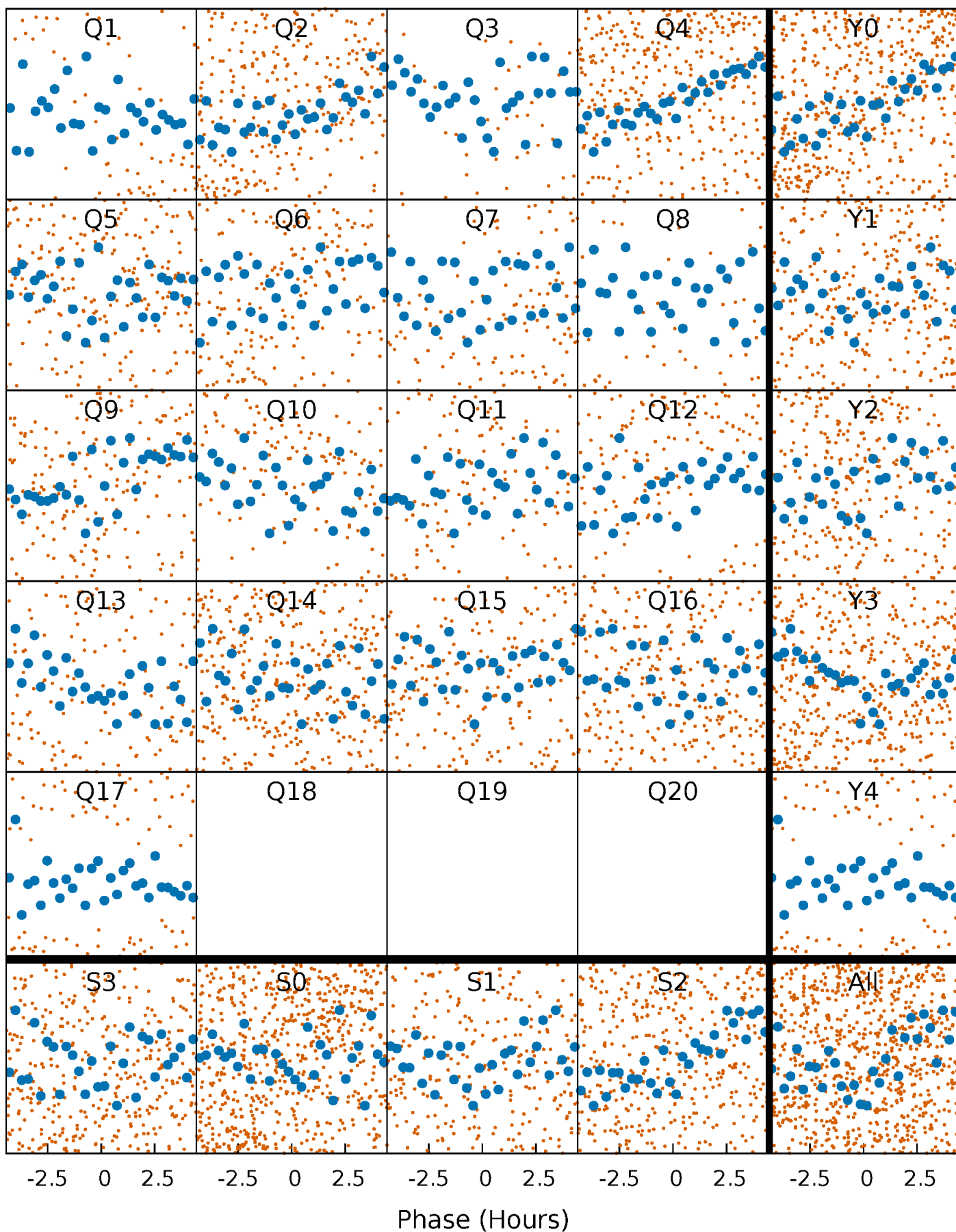


Non-Whitened Vs. Whitened Light Curve



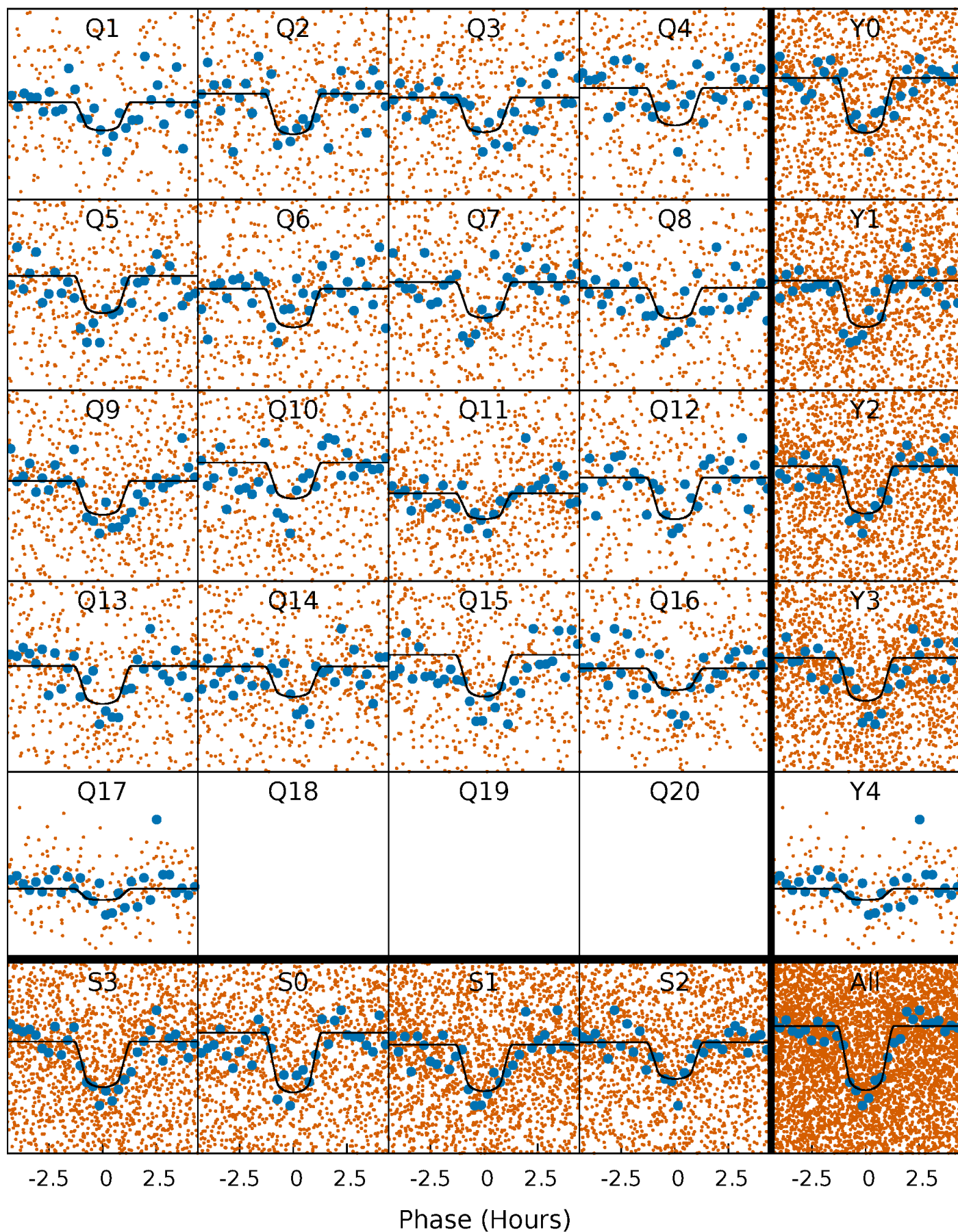
PDC Quarter-Phased Transit Curves

TCE 009640907-01 P= 2.178135 Days $T_0=132.027341$ (BKJD)



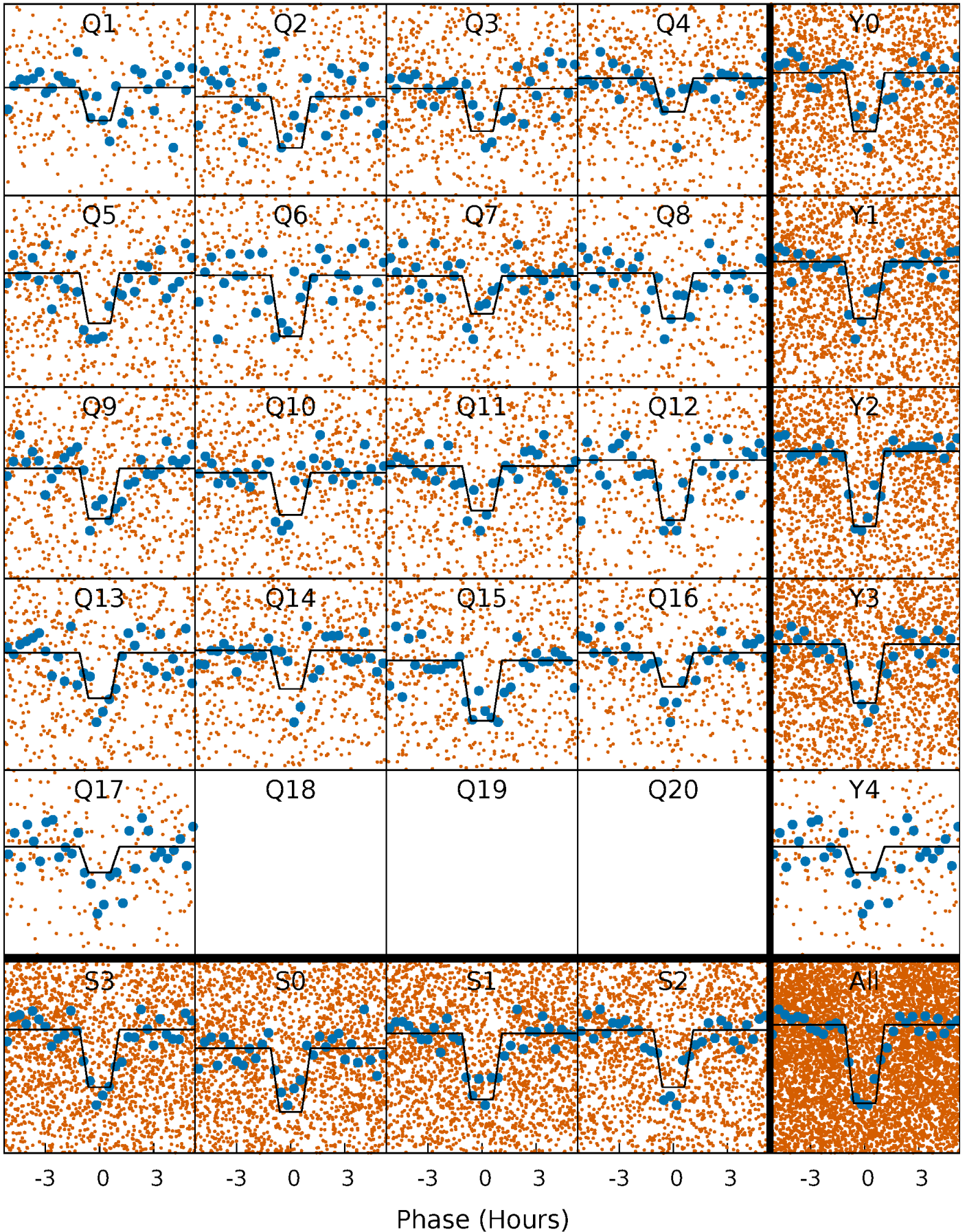
DV Quarter-Phased Transit Curves

TCE 009640907-01 P= 2.178135 Days $T_0=132.027341$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

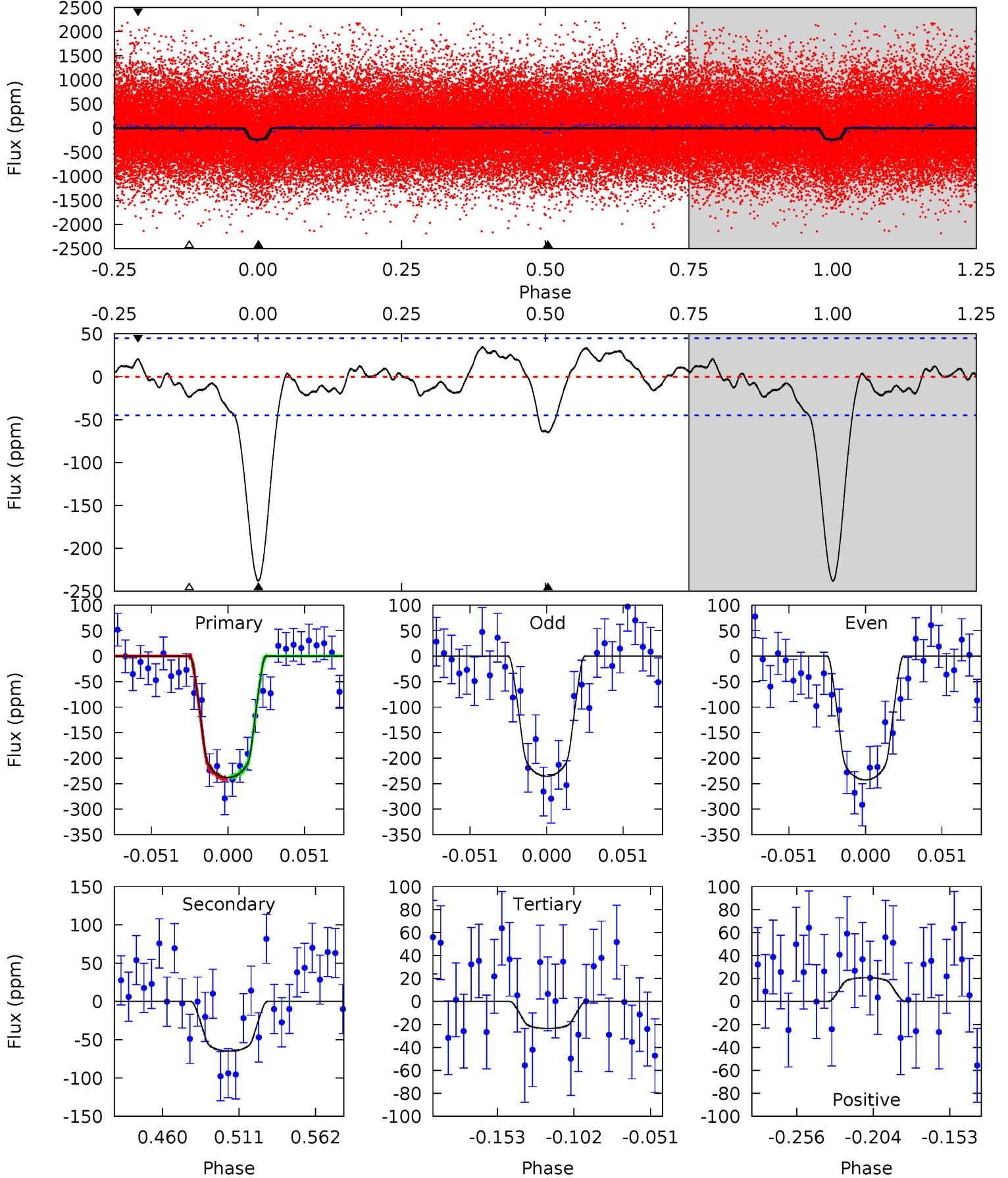
TCE 009640907-01 P= 2.178167 Days $T_0=132.017991$ (BKJD)



DV Model-Shift Uniqueness Test

009640907-01, P = 2.178135 Days, E = 129.849206 Days

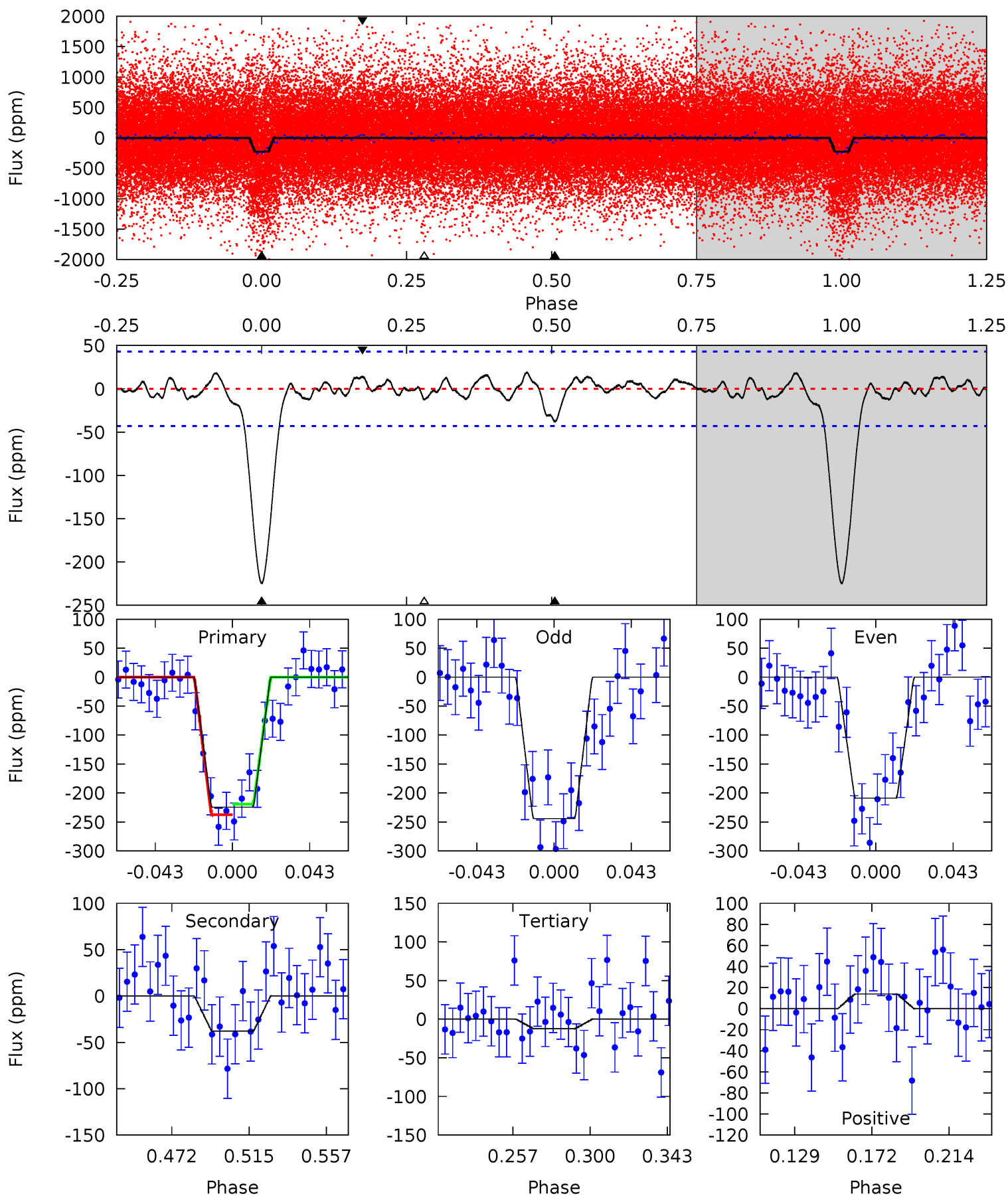
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.9	6.78	2.46	2.17	4.70	1.95	1.72	22.4	22.7	4.32	4.61	0.38	0.94	0.13	0.15



Alt Model-Shift Uniqueness Test

009640907-01, P = 2.178167 Days, E = 129.839824 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.7	4.15	1.34	1.53	4.74	2.02	0.84	23.3	23.2	2.81	2.62	1.94	1.21	0.08	1.00



Stellar Parameters For KIC 009640907

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6194^{+195}_{-260}	$4.445^{+0.054}_{-0.216}$	$0.070^{+0.250}_{-0.300}$	$1.069^{+0.365}_{-0.122}$	$1.161^{+0.142}_{-0.158}$	$1.340^{+0.308}_{-0.761}$
	+3%/-4%	+1%/-5%	+357%/-429%	+34%/-11%	+12%/-14%	+23%/-57%
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 009640907-01 / KOI 4172.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-65 ± 10	$2.02^{+0.67}_{-0.69}$	2169^{+169}_{-125}	4465^{+839}_{-479}	10^{+14}_{-5}
Alt.	-38 ± 9	$1.89^{+0.70}_{-0.66}$	2170^{+160}_{-115}	4110^{+798}_{-473}	$6.443^{+10.067}_{-3.089}$

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 $A_{obs} \gg 1.0$

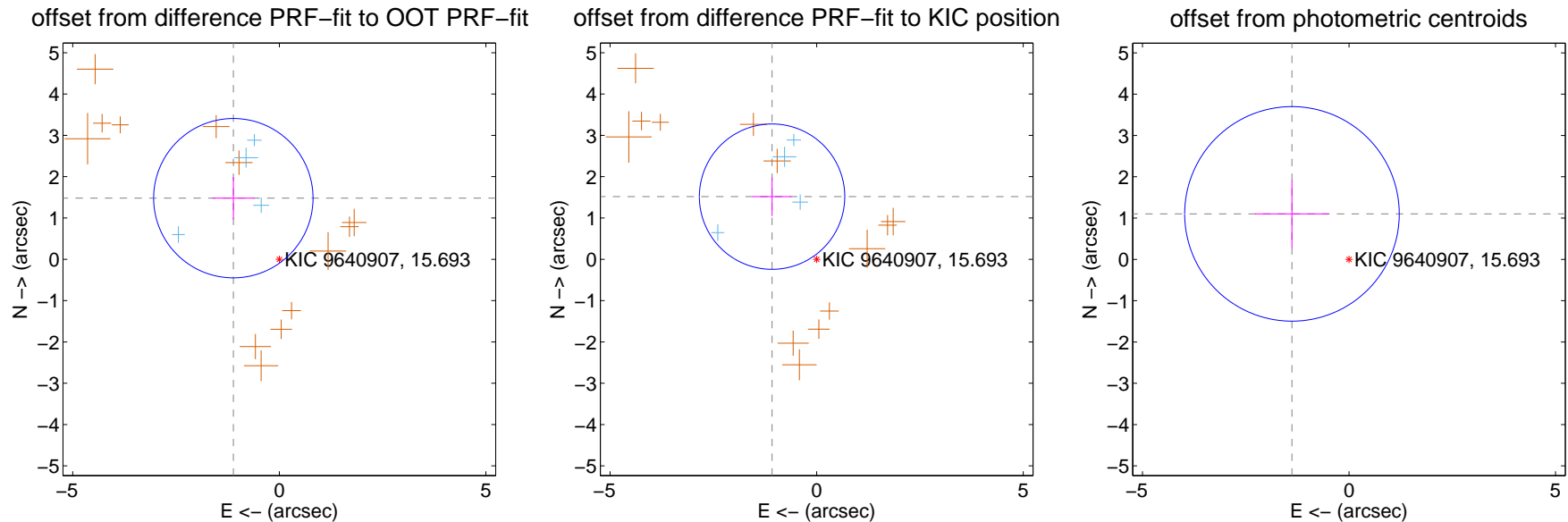
DV Centroid Data

Supplemental centroid analysis for 009640907-01. Kepler magnitude: 15.69. Transit SNR 13.92

There are 4 quarters with good PRF difference image offsets

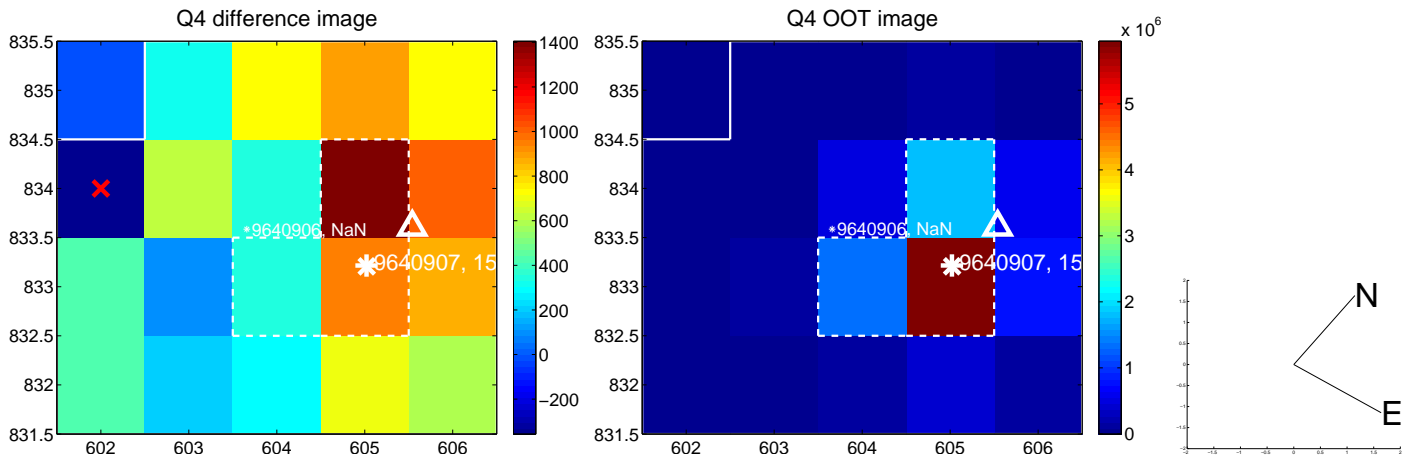
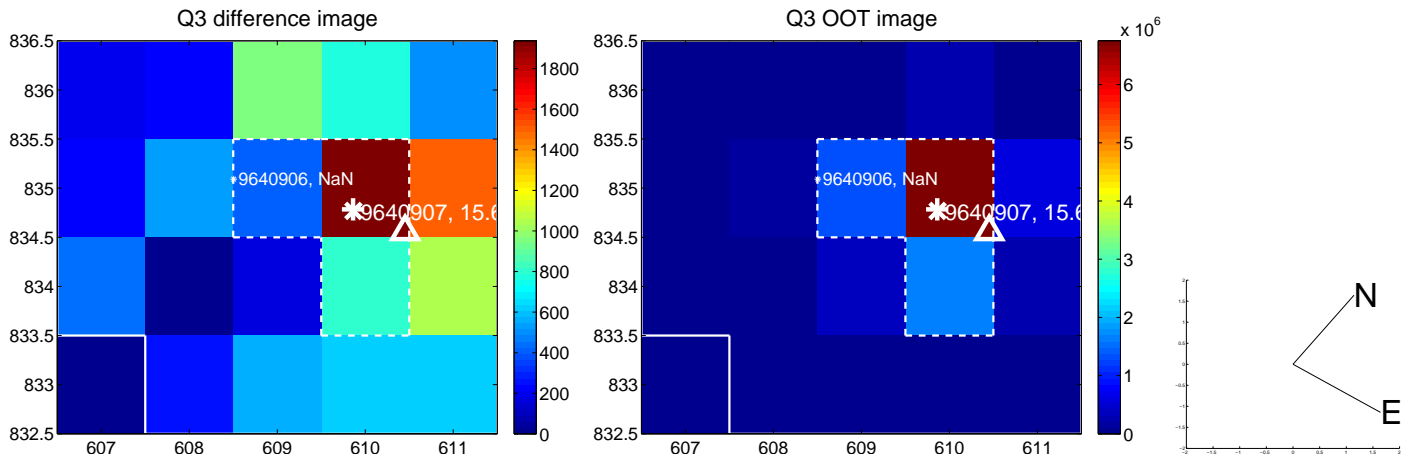
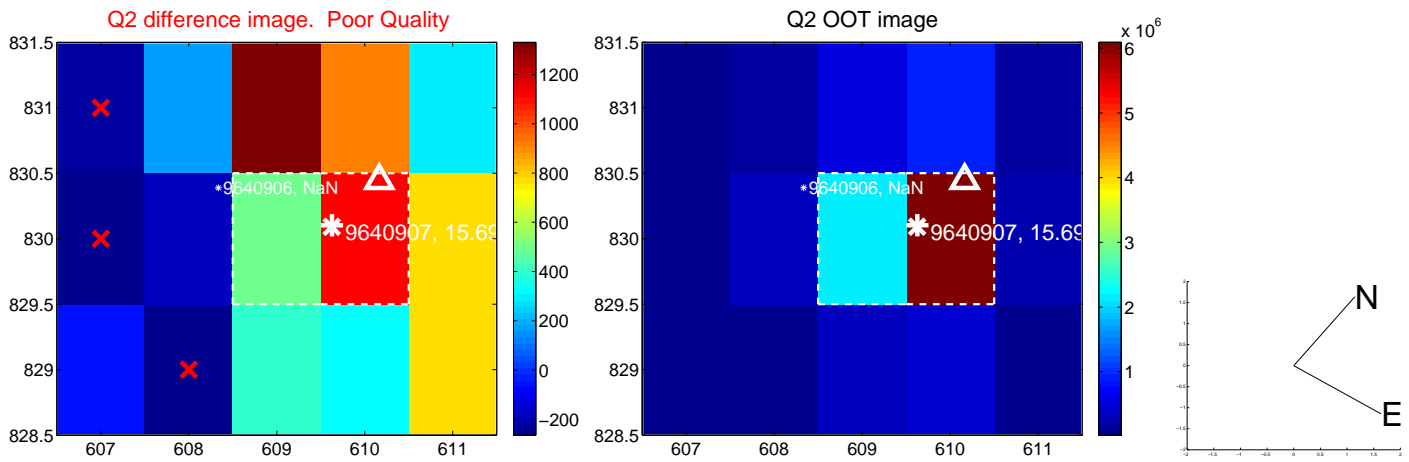
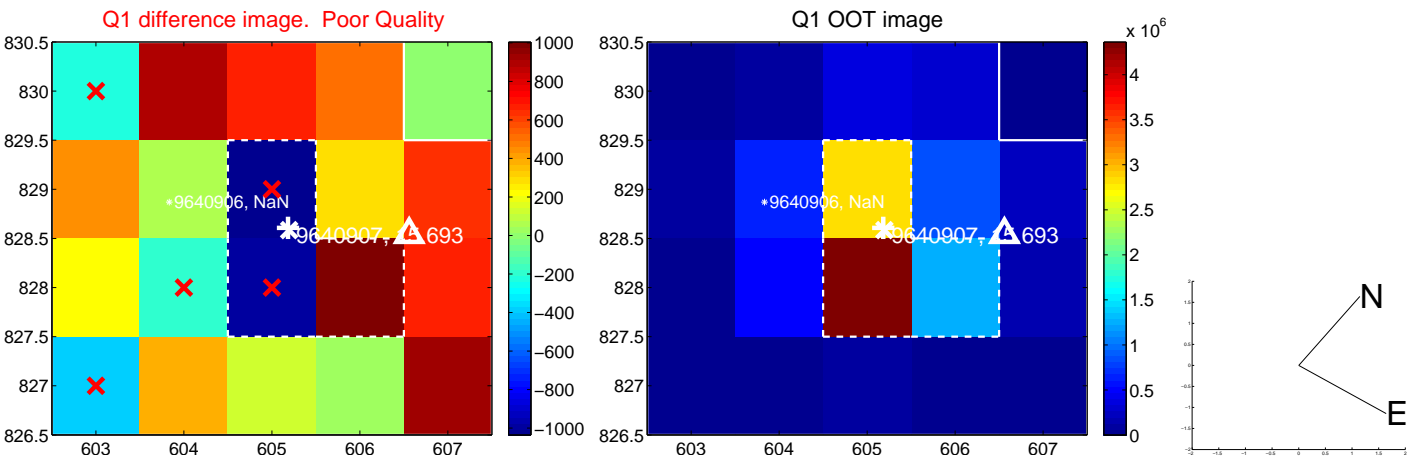
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.851 ± 0.643	2.88	1.113 ± 0.511	1.480 ± 0.512
PRF-fit source offset from KIC position	1.862 ± 0.586	3.17	1.079 ± 0.469	1.517 ± 0.470
photometric centroid source offset	1.77 ± 0.87	2.04	1.38 ± 0.90	1.10 ± 0.81

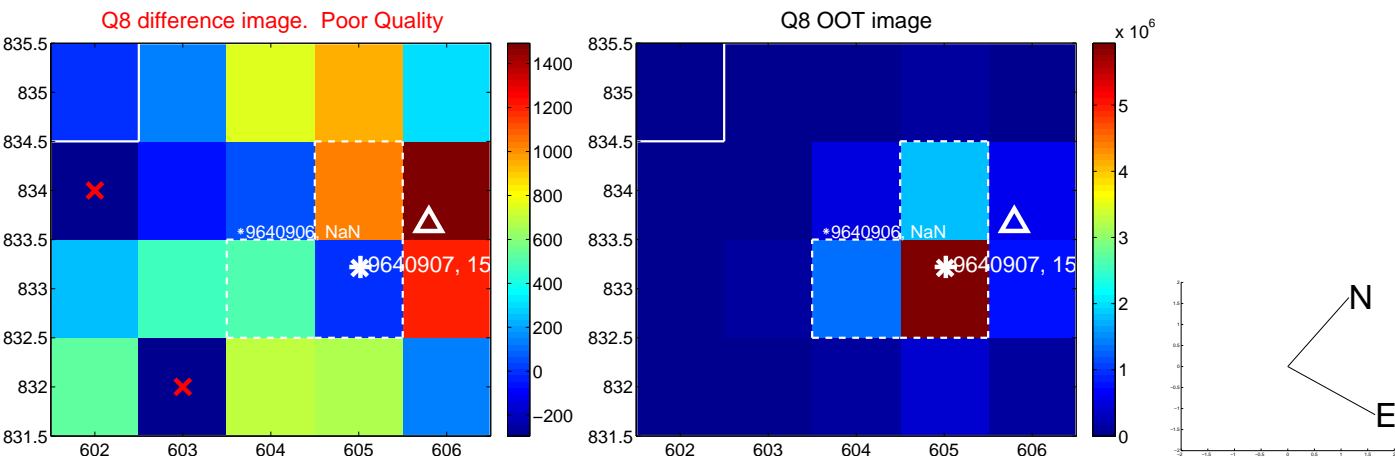
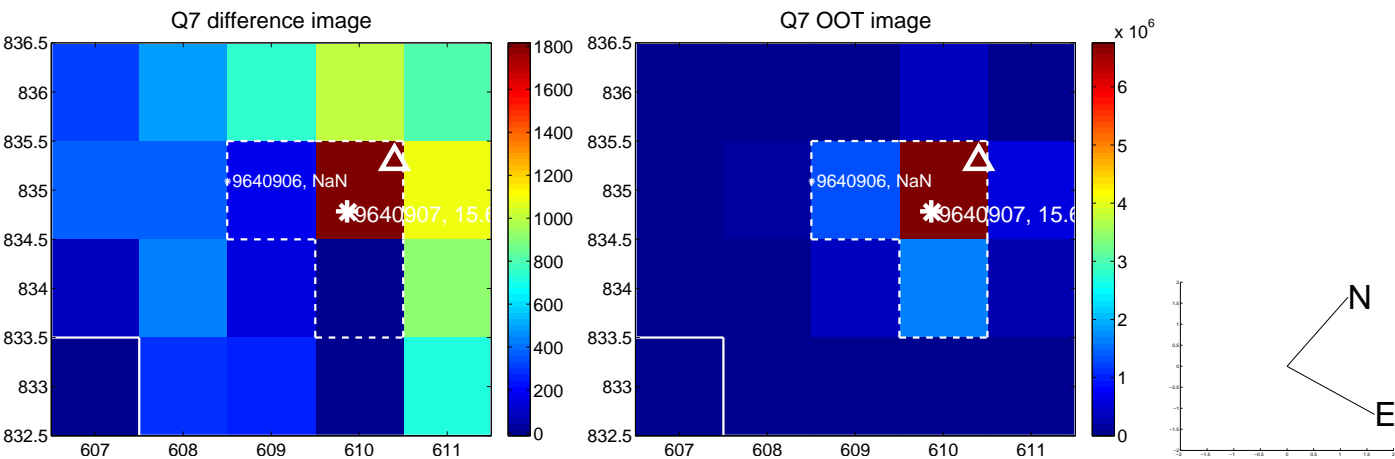
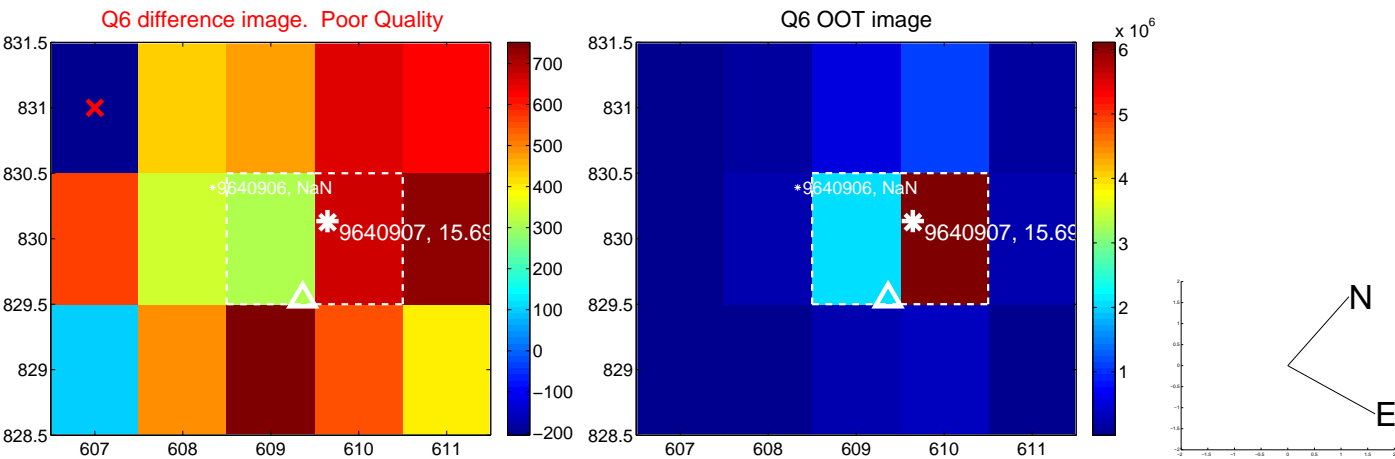
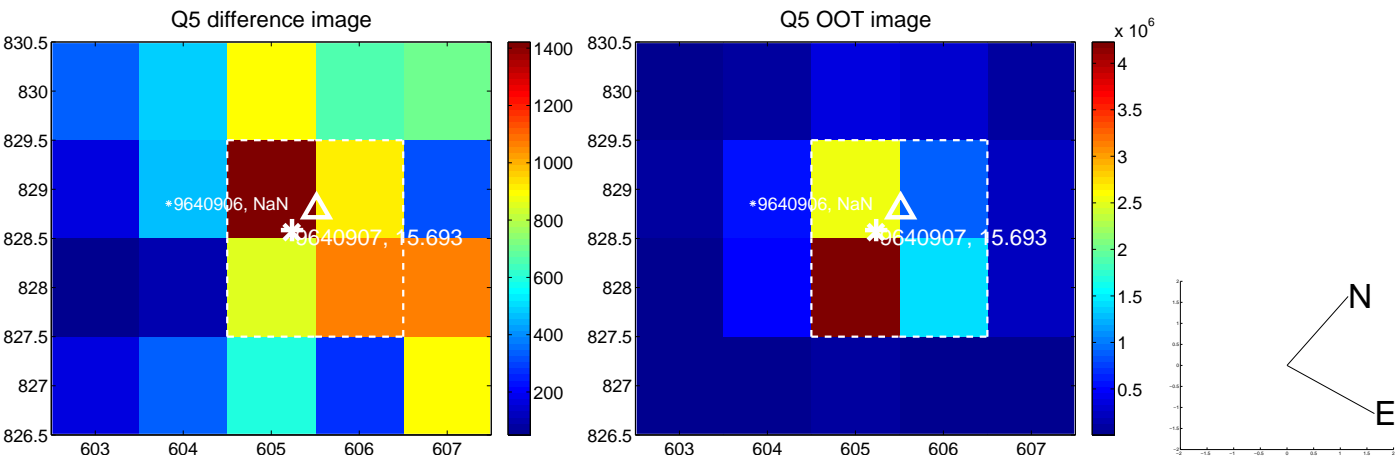


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

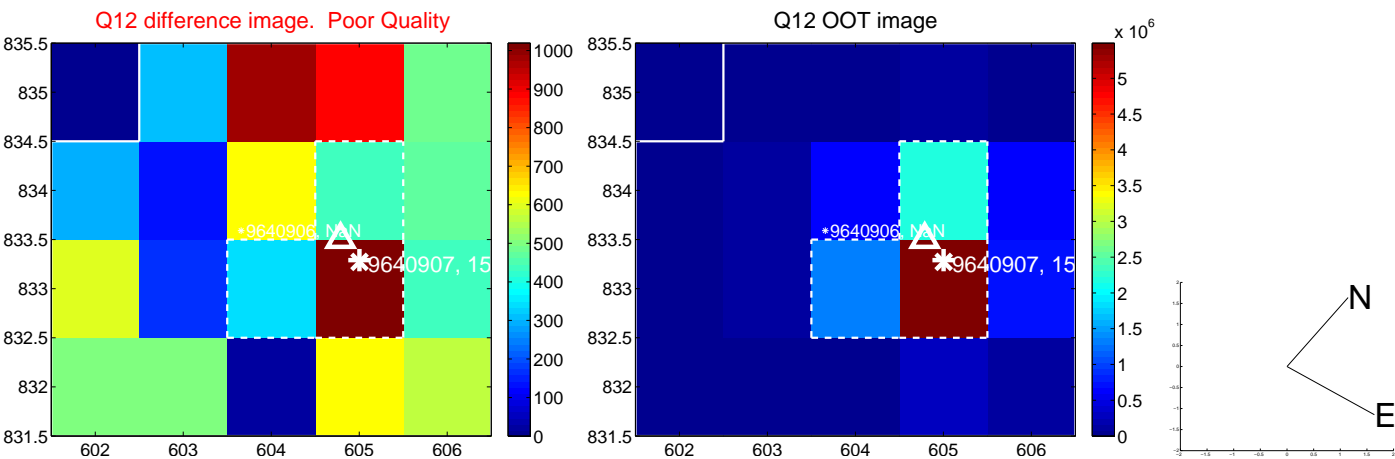
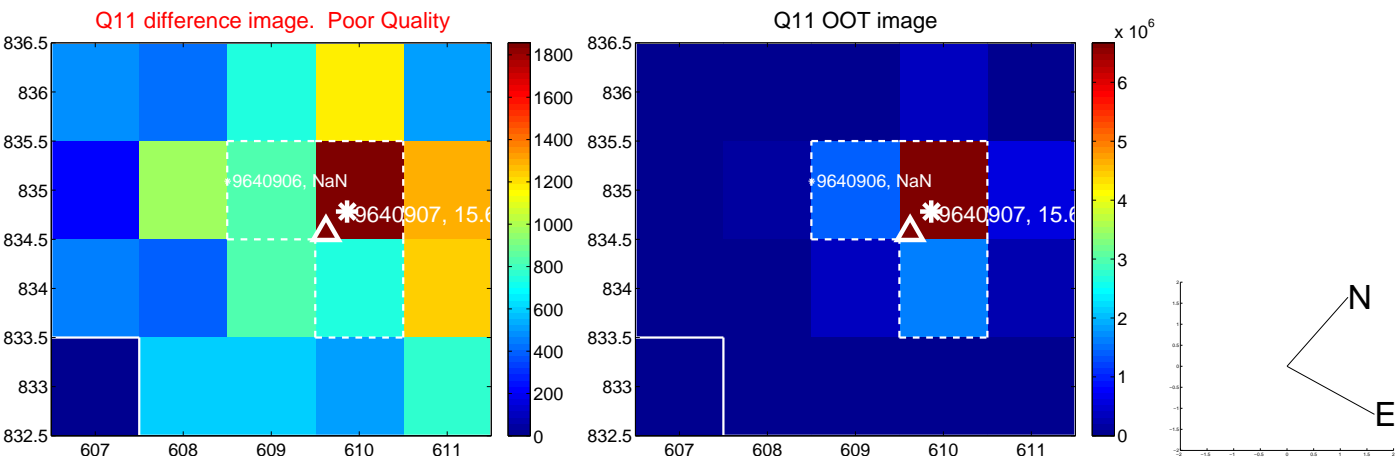
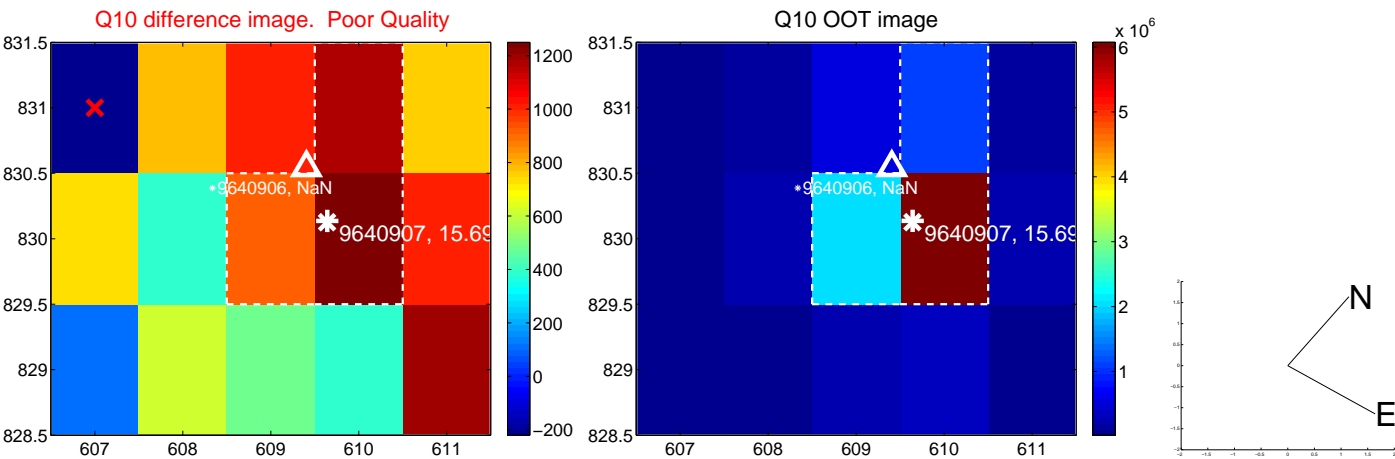
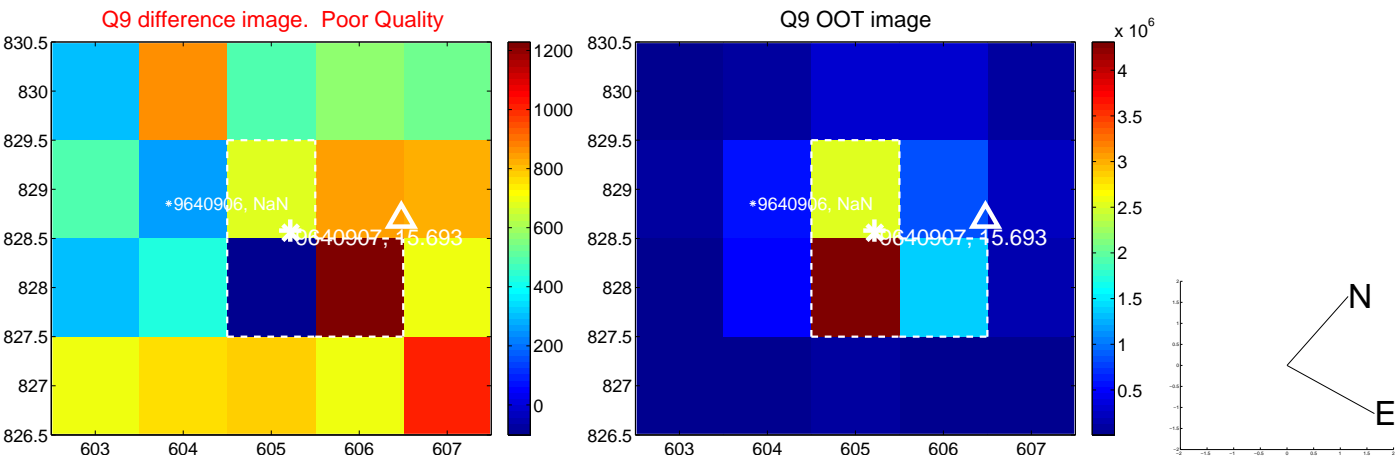
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



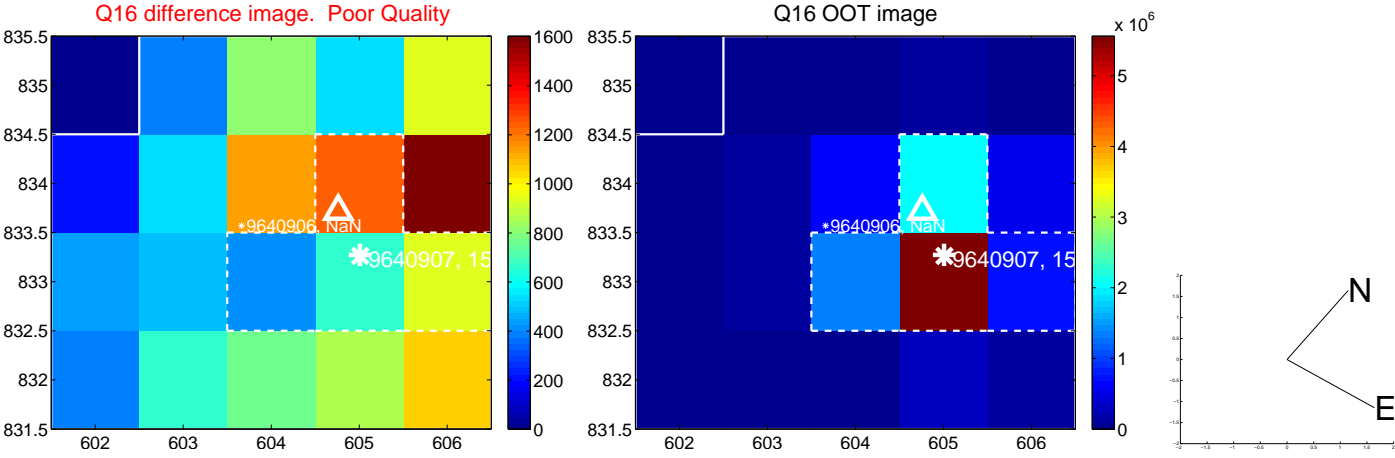
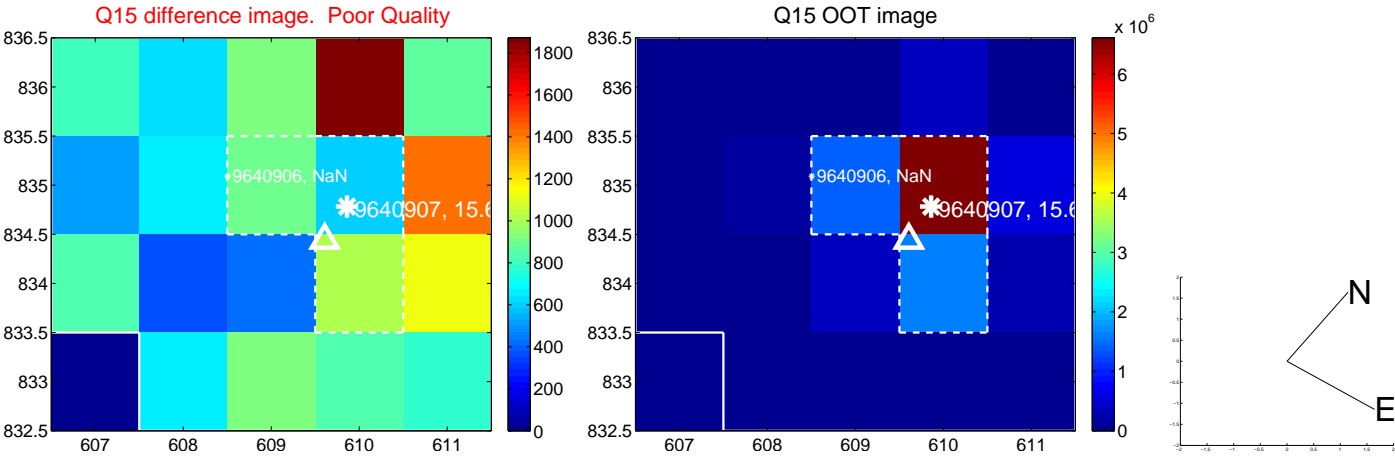
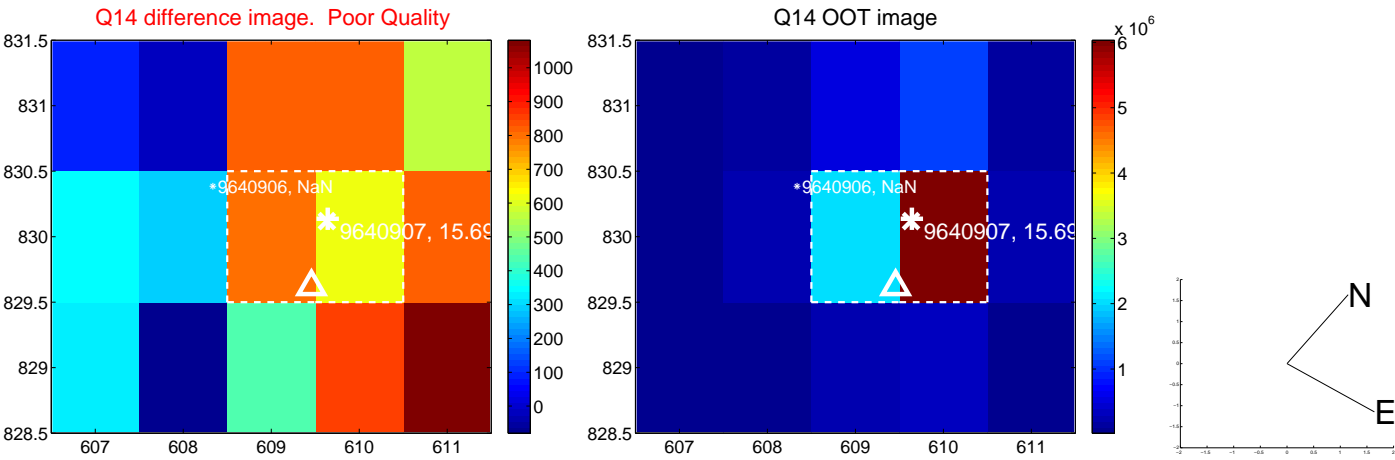
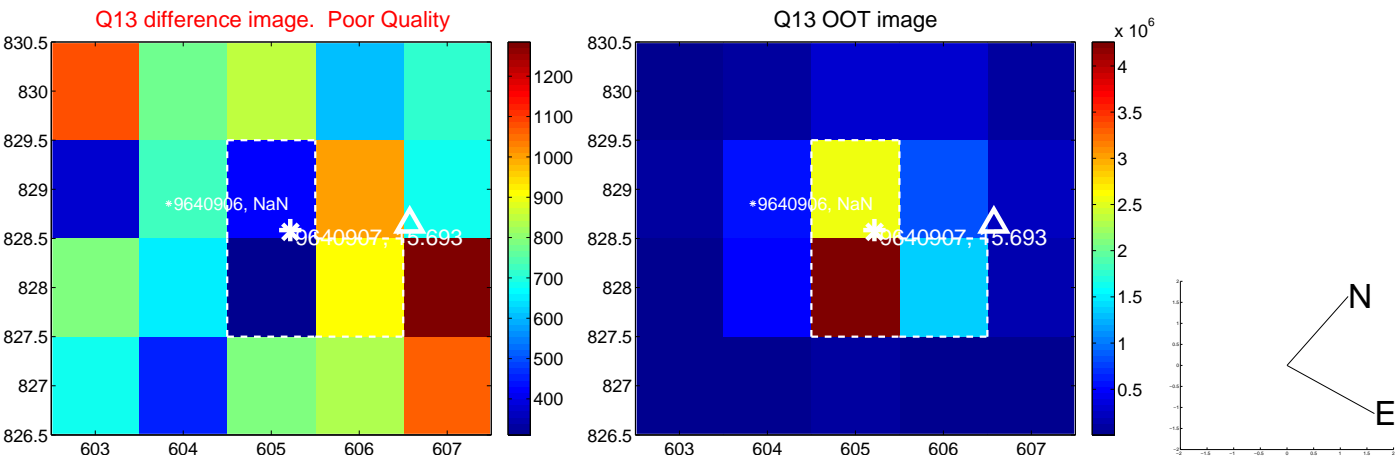
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



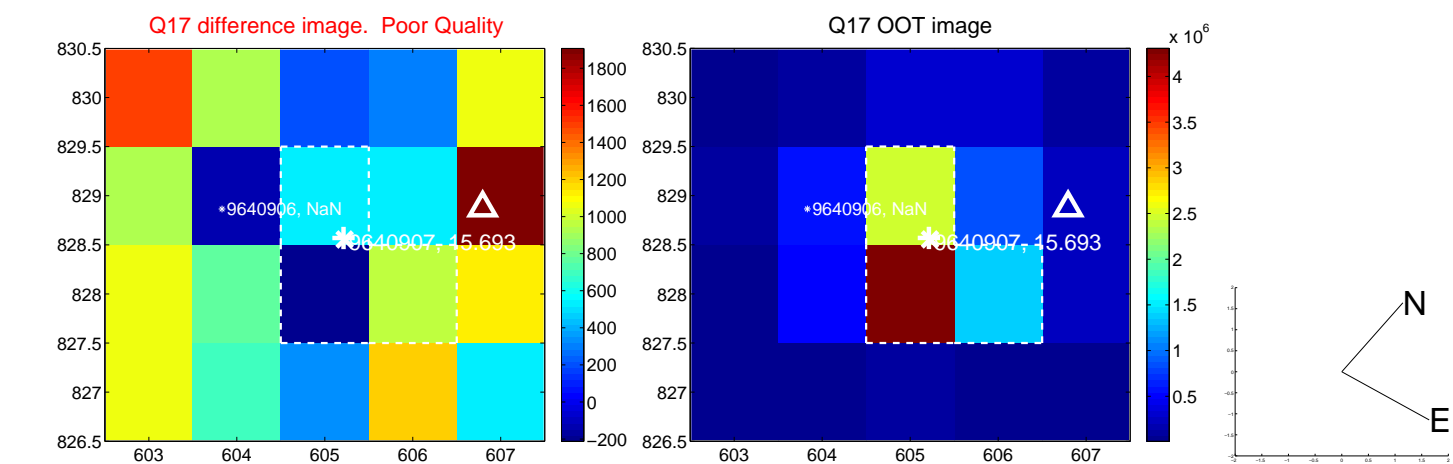
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



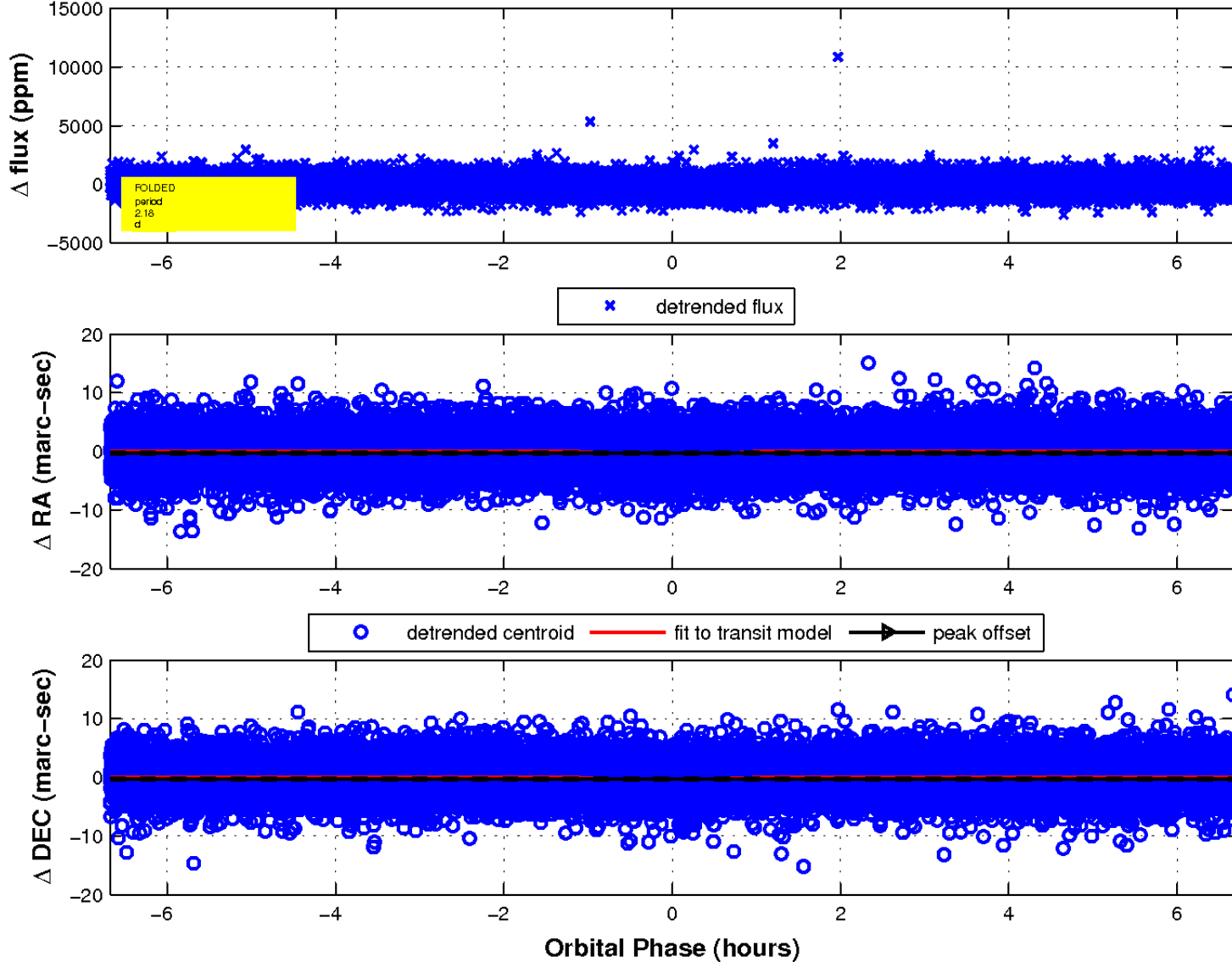
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

