

KIC 009402670

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})
009402670-01	OBS	5667.01	0.536529	132.030315	68.9	4.057	17.3	14.5	1.03	6140	0.87	7559.46

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009402670-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_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 009402670-01

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
009402670-01	9402670	009402709-01	9402709	1:1	52.9	5	-12	13.44	15.66	0.36	Direct-PRF	1	2.40	0.28

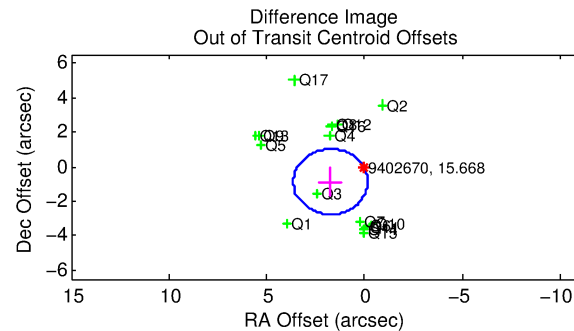
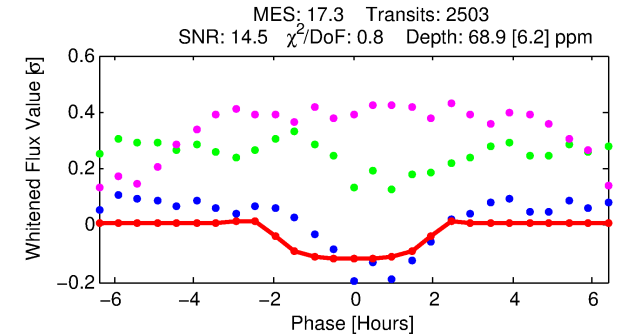
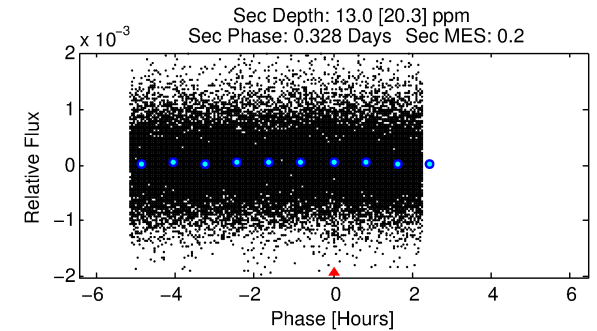
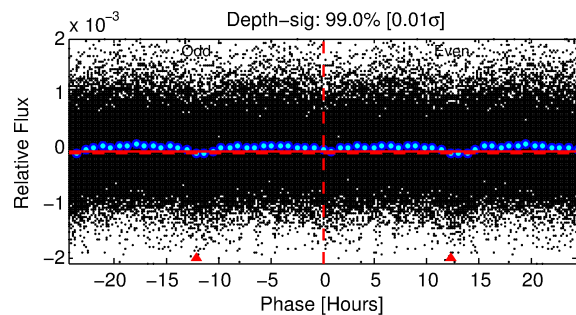
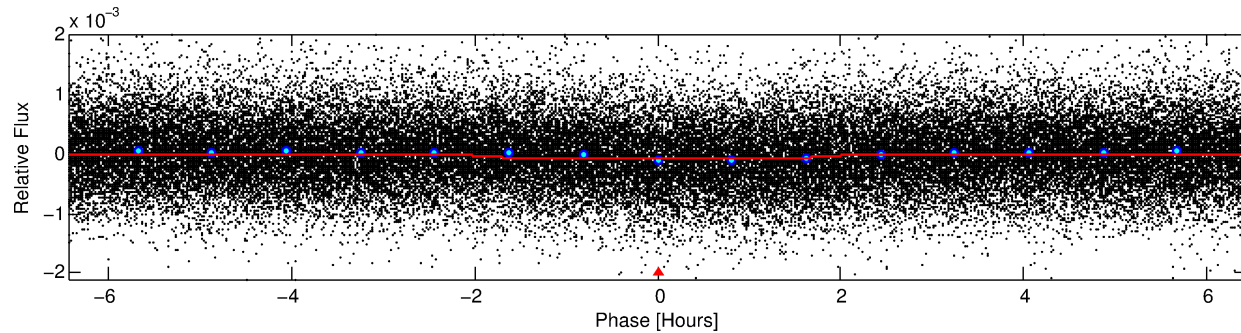
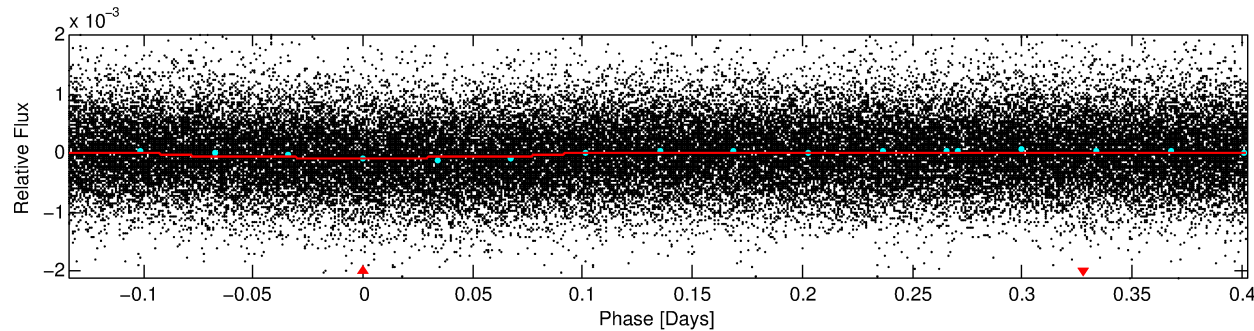
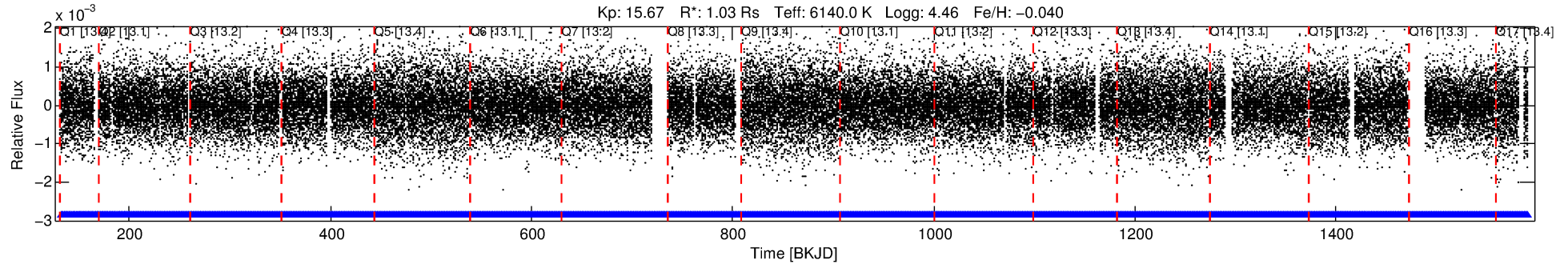
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 9402670 Candidate: 1 of 1 Period: 0.537 d

KOI: K05667.01 Corr: 0.805

Kp: 15.67 R*: 1.03 Rs Teff: 6140.0 K Logg: 4.46 Fe/H: -0.040



DV Fit Results:

Period = 0.53653 [0.00001] d
Epoch = 132.0303 [0.0031] BKJD
Rp/R* = 0.0078 [0.0075]
a/R* = 1.17 [1.48]
b = 0.44 [8.83]
Seff = 7559.46 [3115.20]
Teff = 2378 [245] K
Rp = 0.87 [0.89] Re
a = 0.0133 [0.0035] AU
Ag = 1.68 [4.24] [0.16σ]
Teffp = 4187 [2610] K [0.69σ]

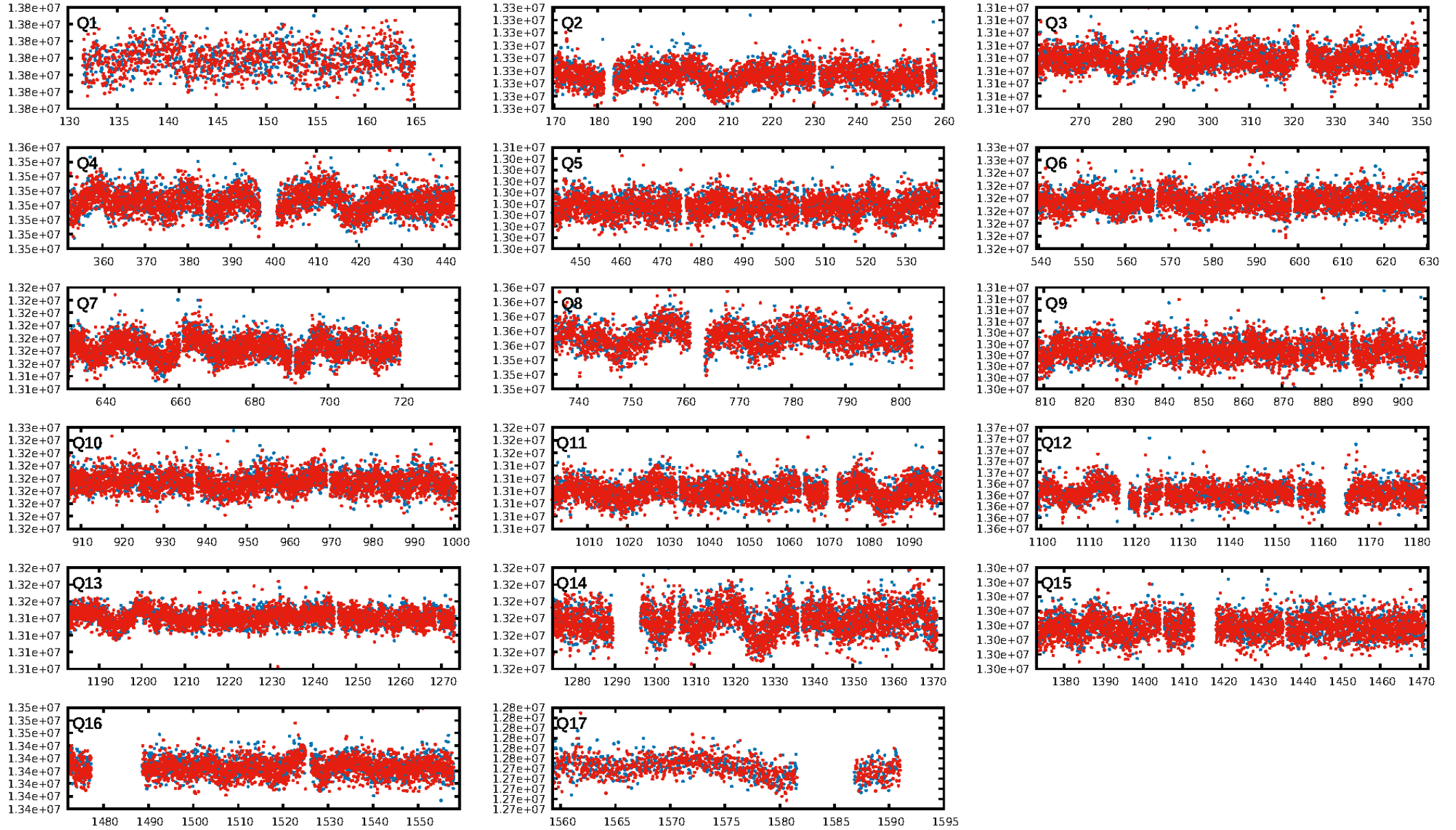
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.30e-31
RollingBand-fgt: 1.00 [2390/2390]
GhostDiagnostic-chr: 0.8629
Centroid-sig: 0.0%
Centroid-so: 3.212 arcsec [3.43σ]
OotOffset-rm: 1.962 arcsec [3.11σ]
KicOffset-rm: 1.917 arcsec [3.06σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.59 [10/17]
DiffImageOverlap-fno: 1.00 [17/17]

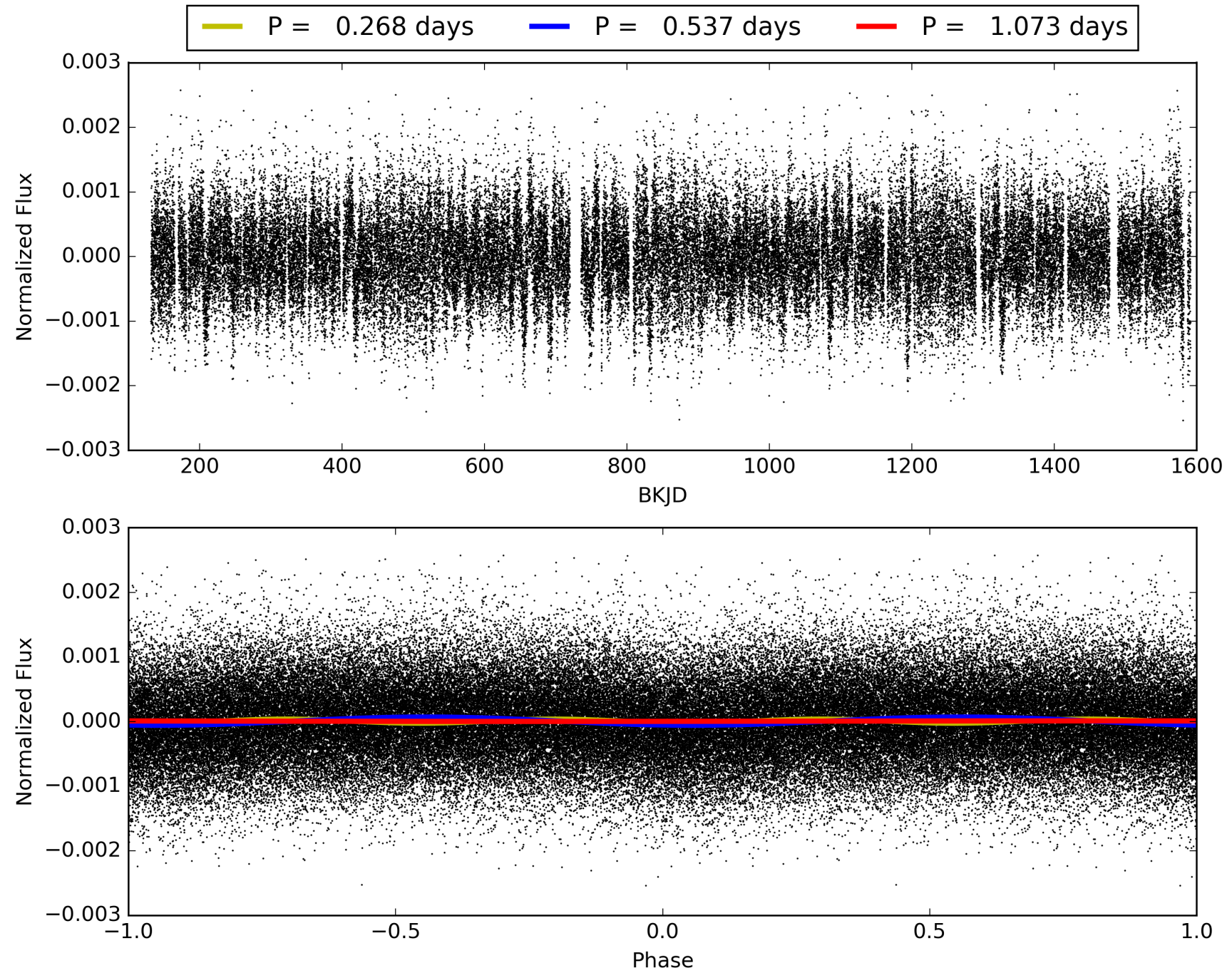
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:29:38 Z

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

TCE 009402670-01, PDC Light Curves

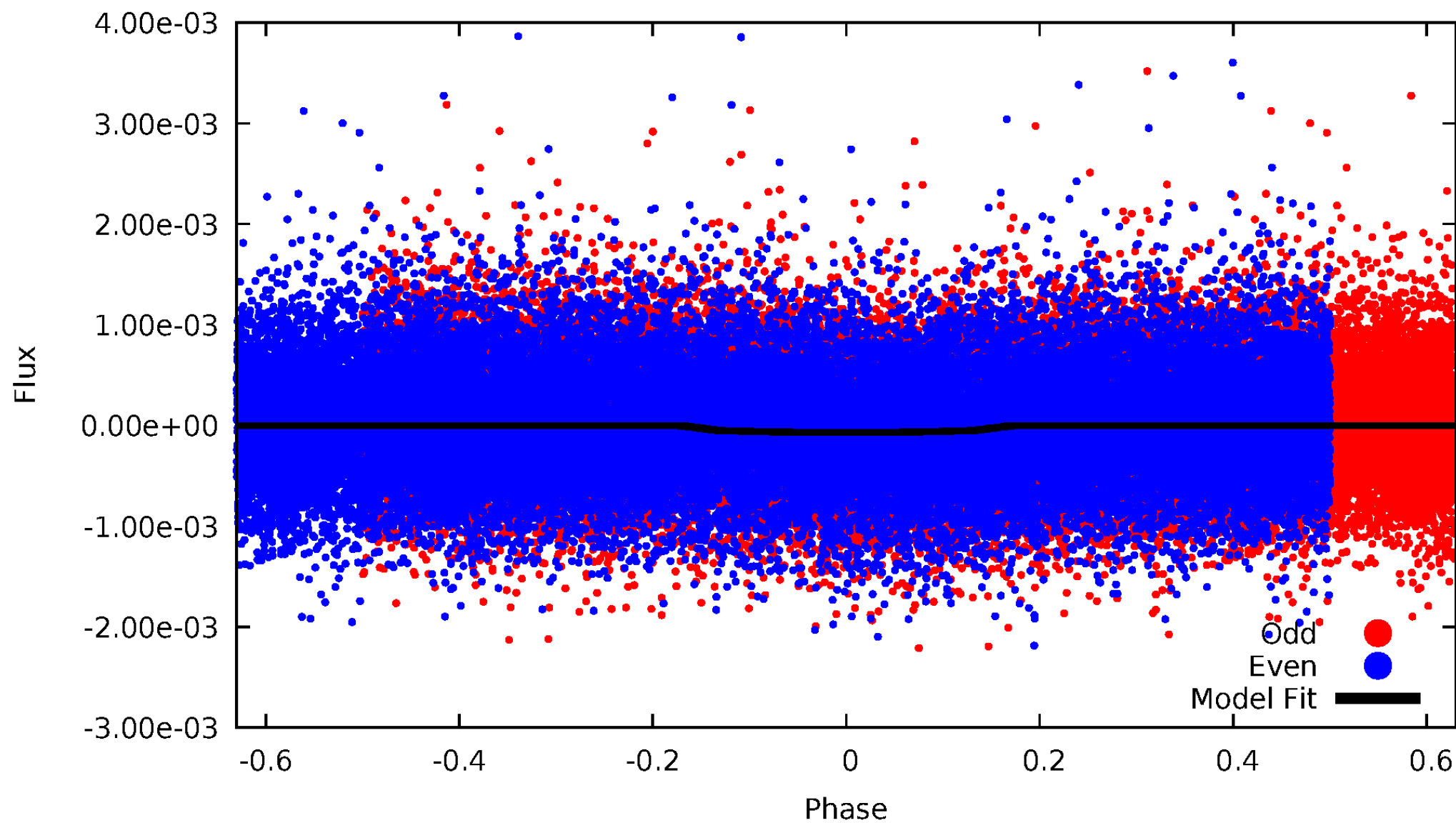


TCE 009402670-01



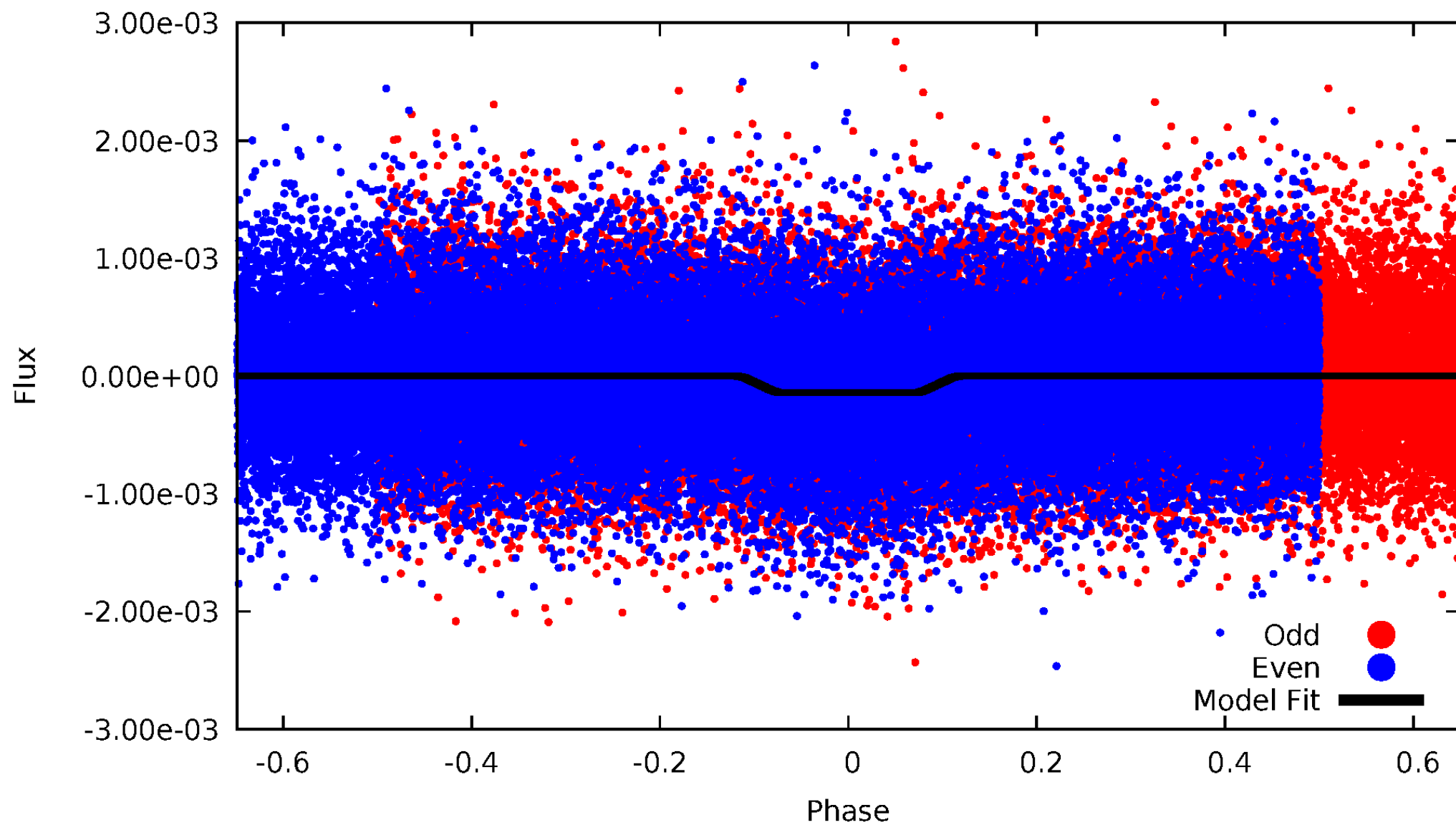
DV Odd/Even

TCE 009402670-01

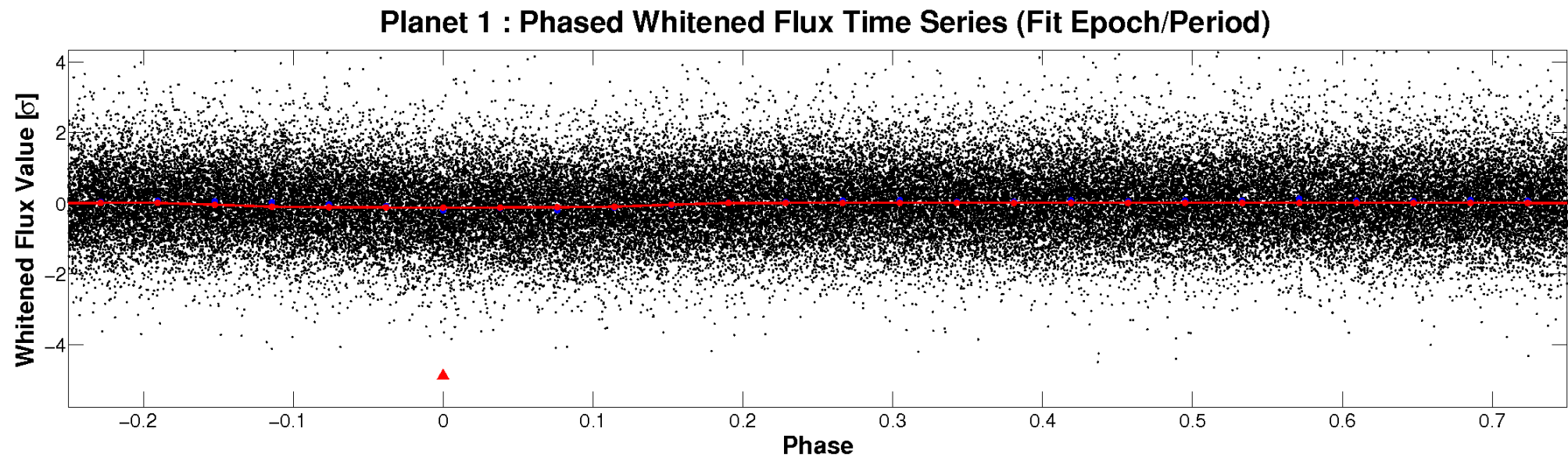
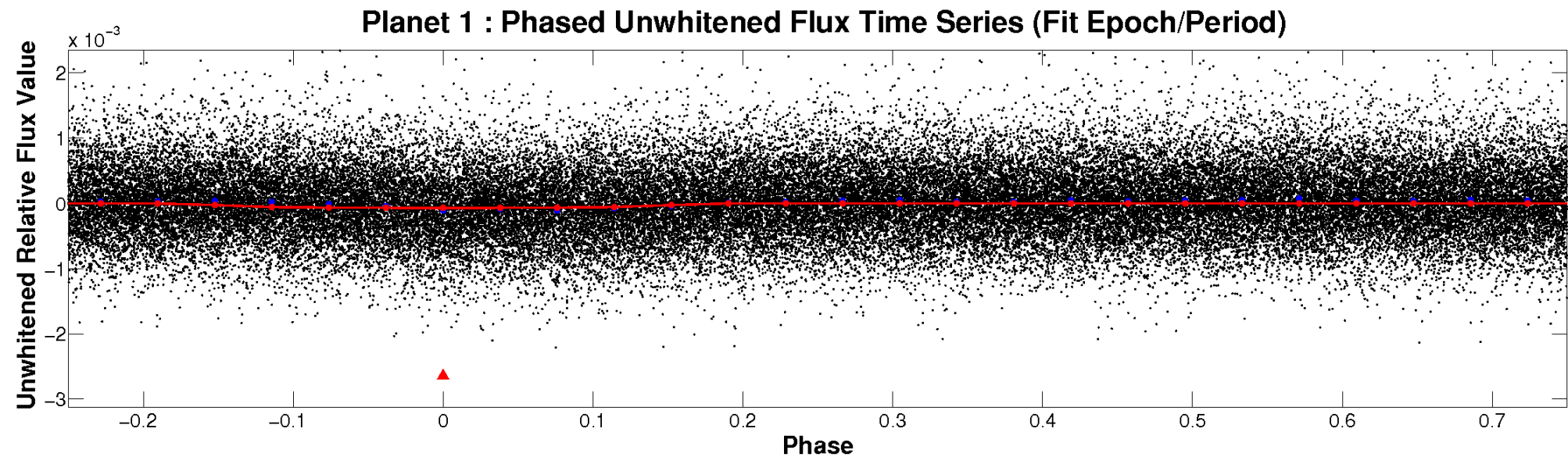


ALT Odd/Even

TCE 009402670-01

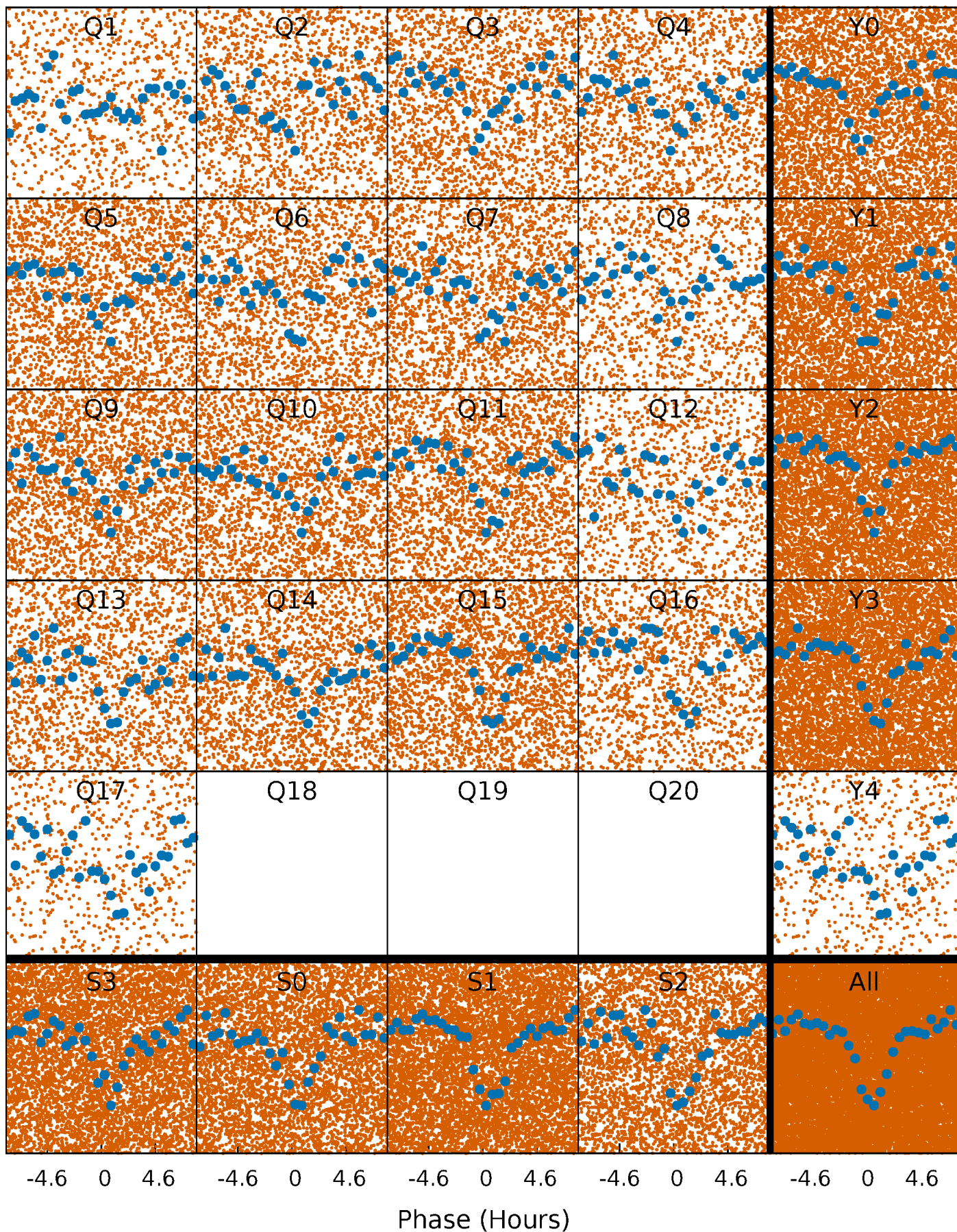


Non-Whitened Vs. Whitened Light Curve



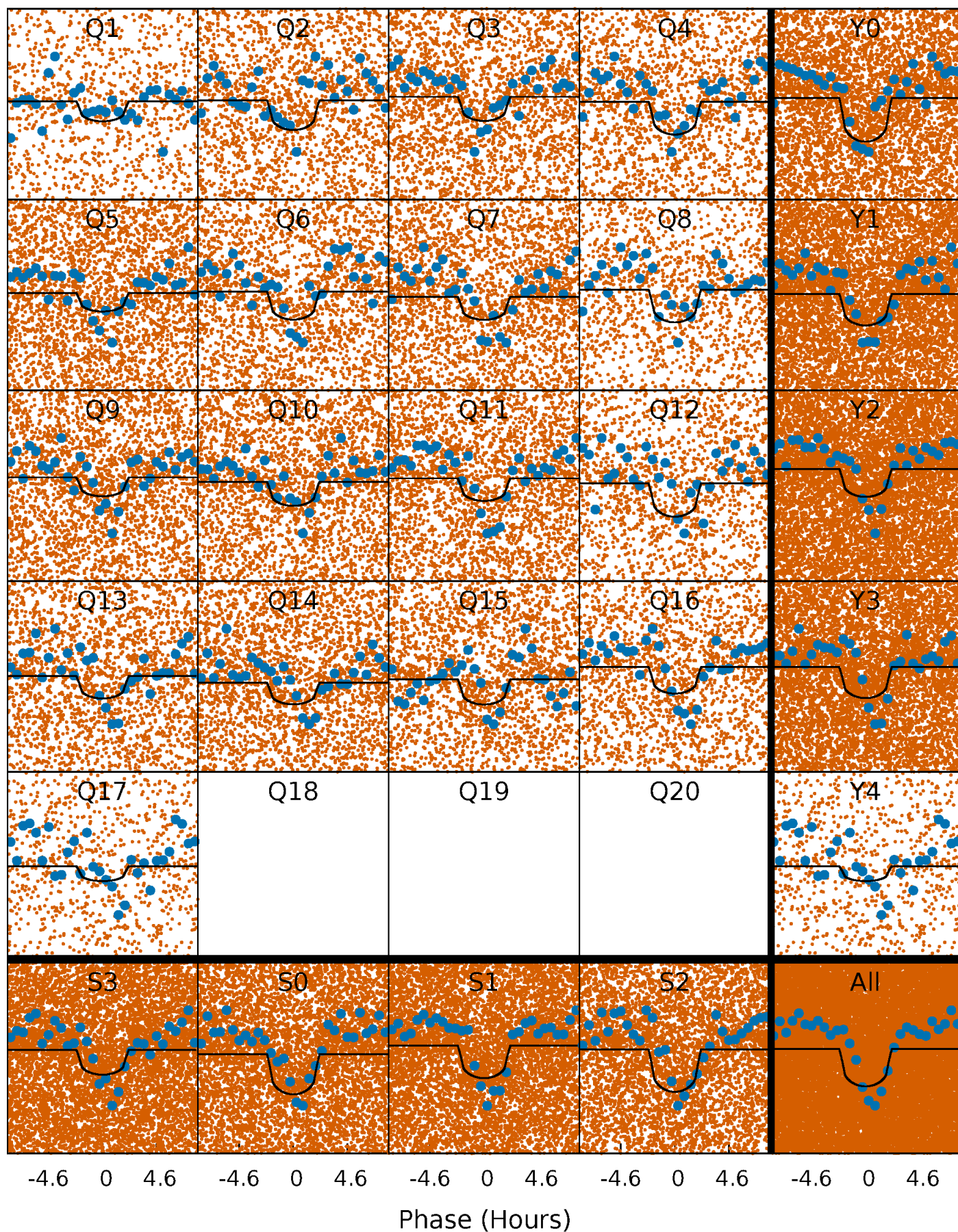
PDC Quarter-Phased Transit Curves

TCE 009402670-01 P= 0.536529 Days $T_0=132.030315$ (BKJD)



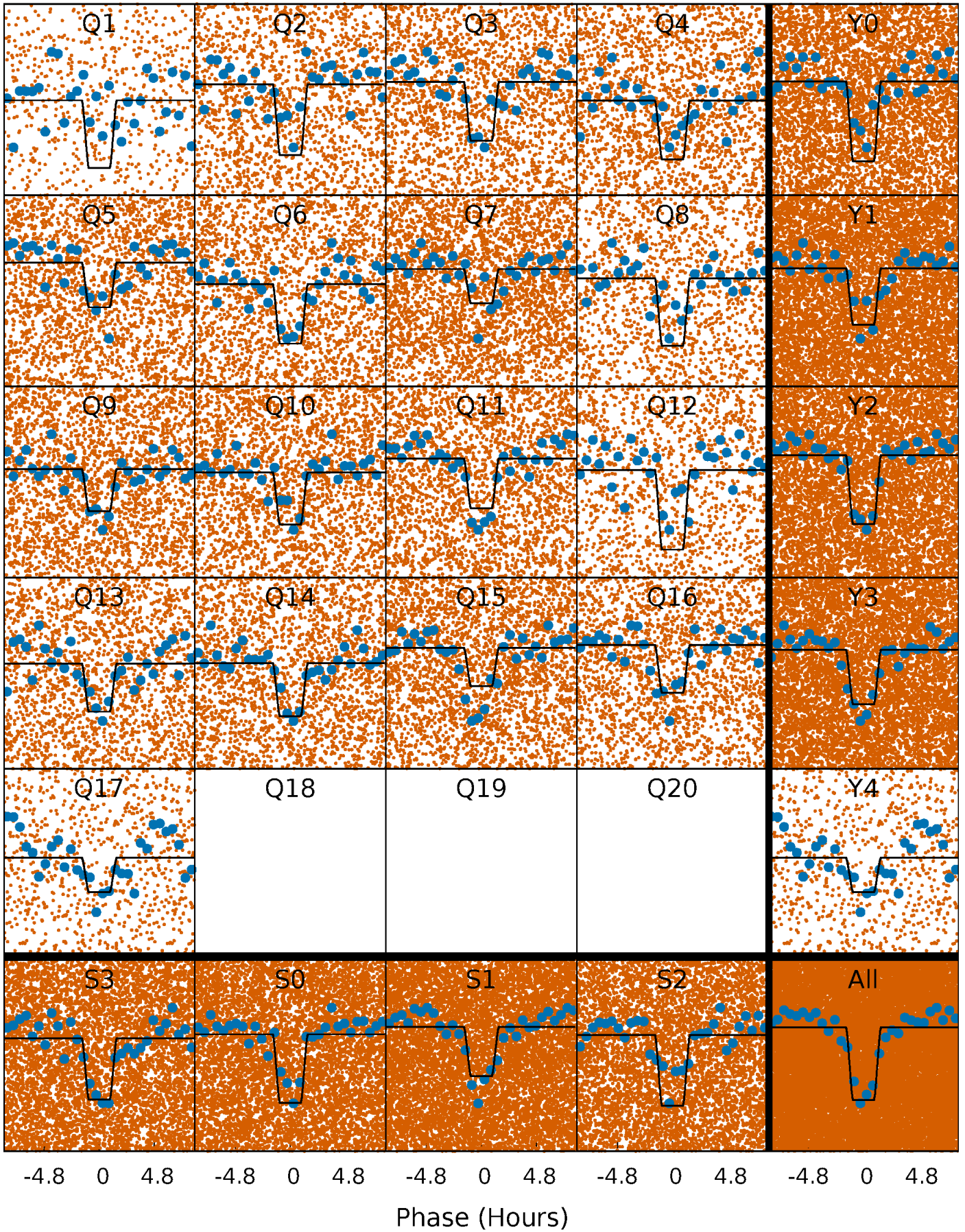
DV Quarter-Phased Transit Curves

TCE 009402670-01 P= 0.536529 Days $T_0=132.030315$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

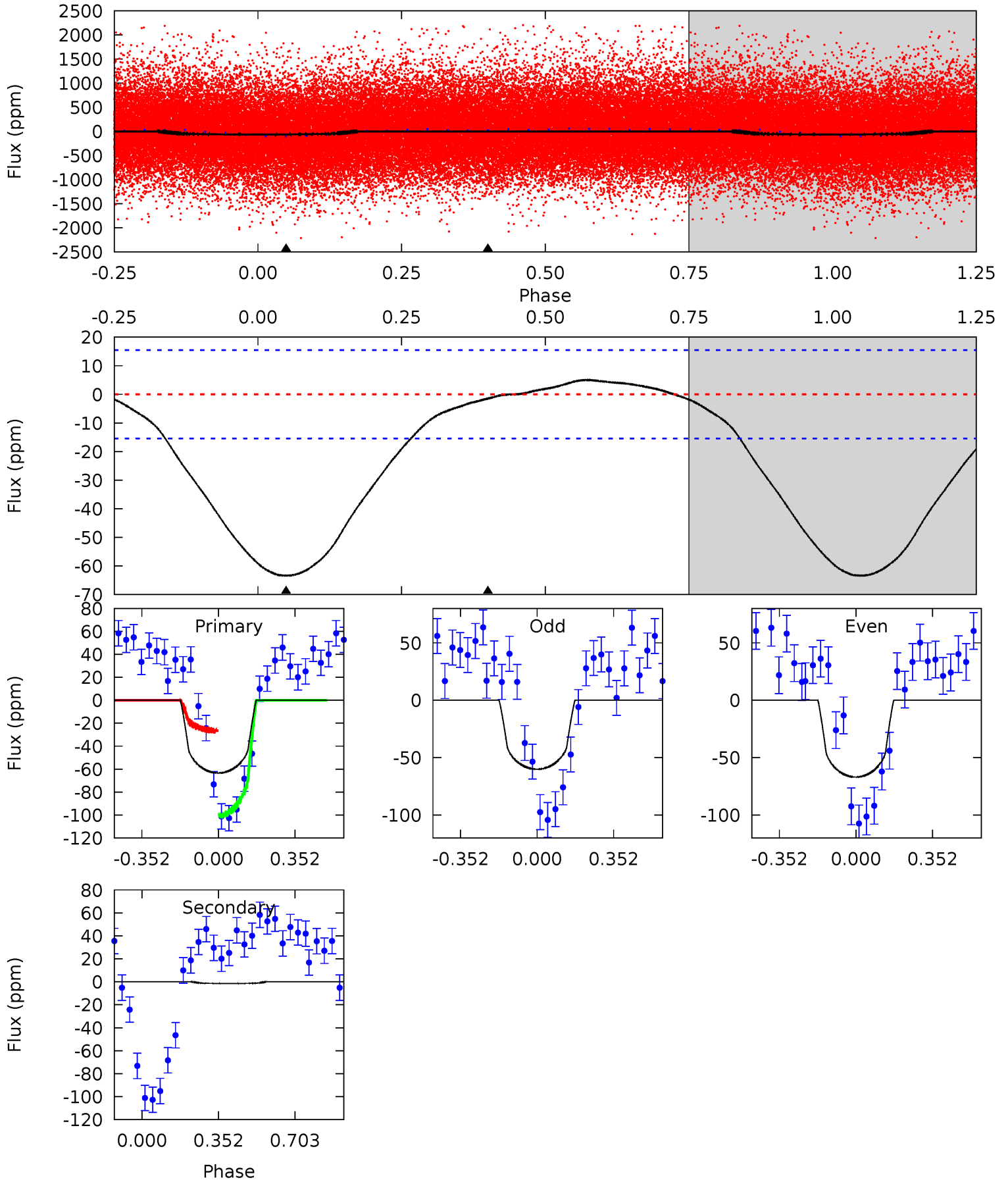
TCE 009402670-01 P= 0.536557 Days $T_0=132.014660$ (BKJD)



DV Model-Shift Uniqueness Test

009402670-01, P = 0.536529 Days, E = 131.493786 Days

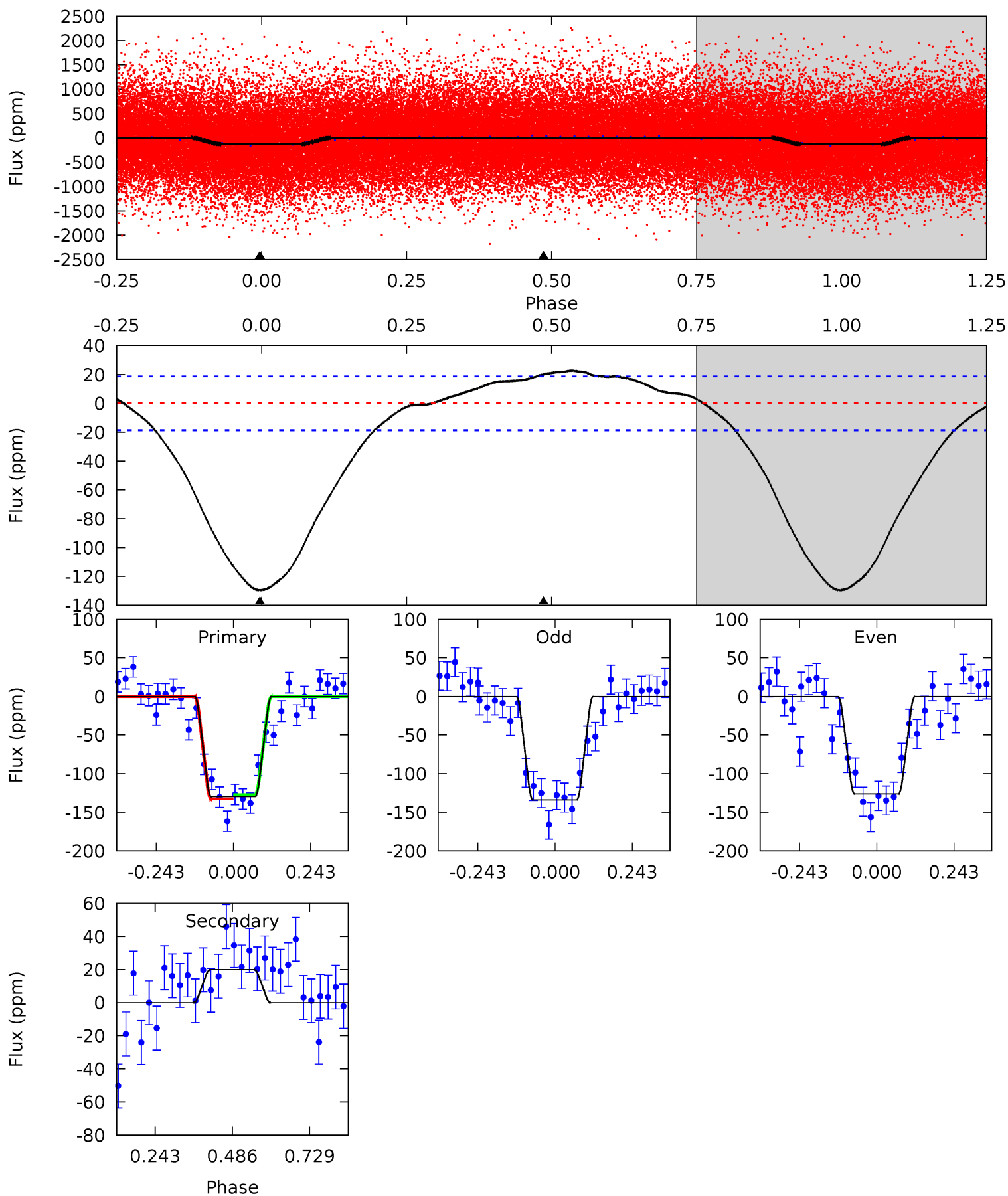
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	0.42	0	0	4.29	0.93	0.55	17.6	17.6	0.42	0.42	0.96	1.03	0.07	10.4



Alt Model-Shift Uniqueness Test

009402670-01, P = 0.536557 Days, E = 131.478103 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.4	-4.68	0	0	4.37	1.17	1.14	30.4	30.4	-4.68	-4.68	0.89	1.03	0.15	0.63



Stellar Parameters For KIC 009402670

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6140^{+193}_{-236}	$4.455^{+0.052}_{-0.208}$	$-0.040^{+0.250}_{-0.300}$	$1.027^{+0.324}_{-0.108}$	$1.094^{+0.151}_{-0.135}$	$1.422^{+0.392}_{-0.732}$
	+3%/-4%	+1%/-5%	+625%/-750%	+32%/-11%	+14%/-12%	+28%/-51%
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 009402670-01 / KOI 5667.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1 ± 4	$1.08^{+0.83}_{-0.67}$	3384^{+253}_{-168}	-3150^{+7015}_{-456}	$0.091^{+0.934}_{-0.256}$
Alt.	20 ± 4	$1.38^{+0.96}_{-0.78}$	3395^{+233}_{-165}	-4263^{+488}_{-1575}	$-0.955^{+0.617}_{-4.570}$

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

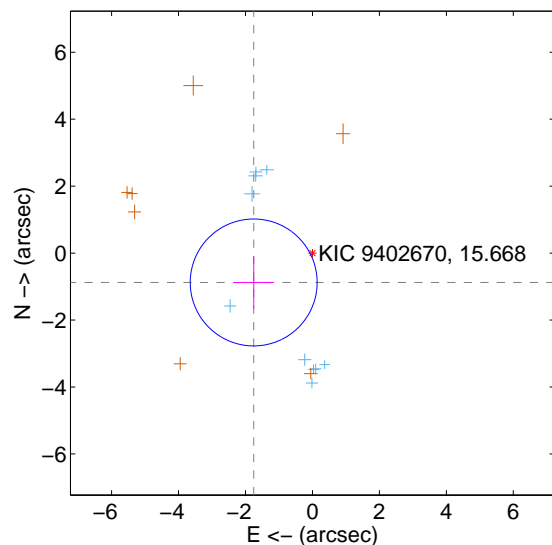
Supplemental centroid analysis for 009402670-01. Kepler magnitude: 15.67. Transit SNR 14.50

There are 10 quarters with good PRF difference image offsets

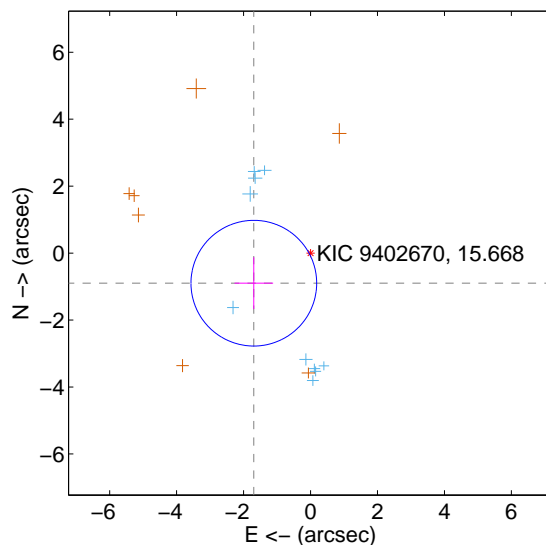
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.962 ± 0.632	3.11	1.755 ± 0.590	-0.877 ± 0.776
PRF-fit source offset from KIC position	1.917 ± 0.626	3.06	1.694 ± 0.577	-0.899 ± 0.774
photometric centroid source offset	3.21 ± 0.94	3.43	-2.32 ± 0.98	-2.22 ± 0.88

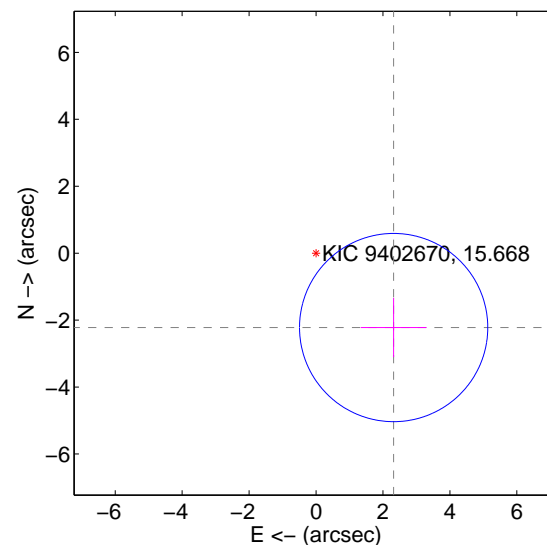
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

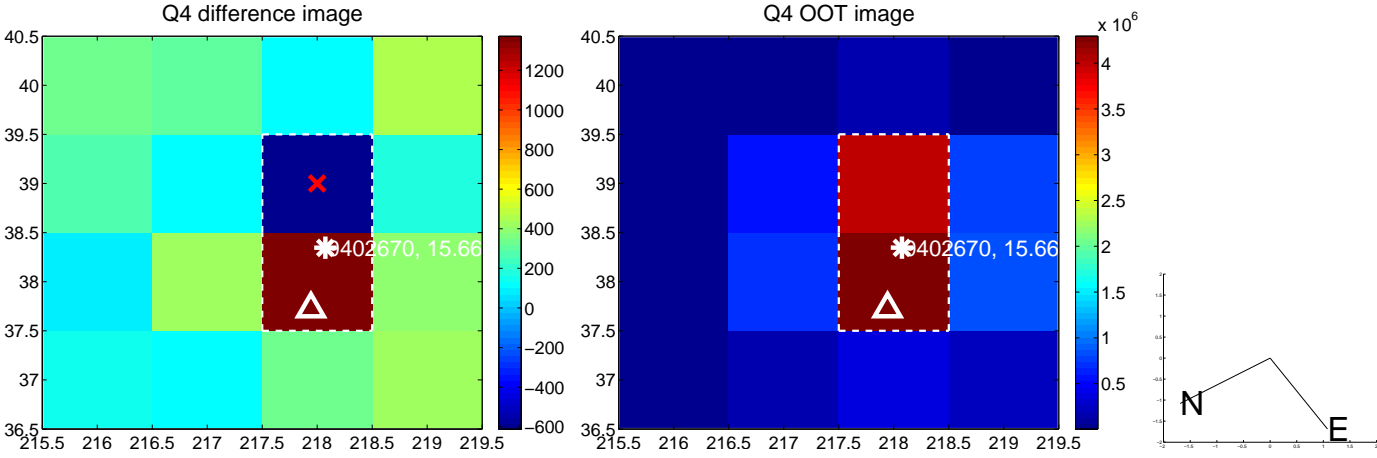
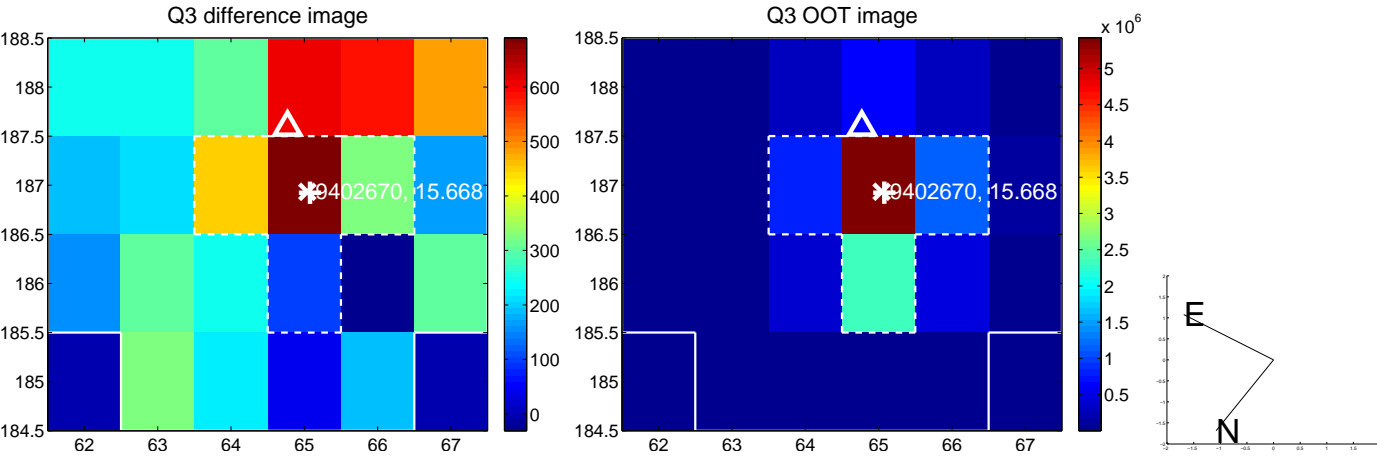
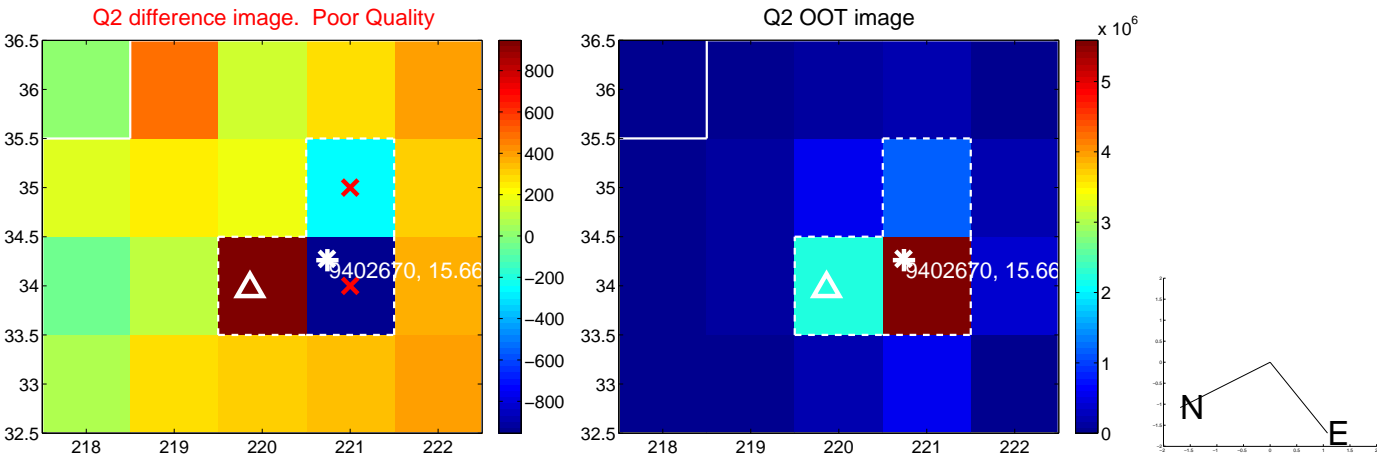
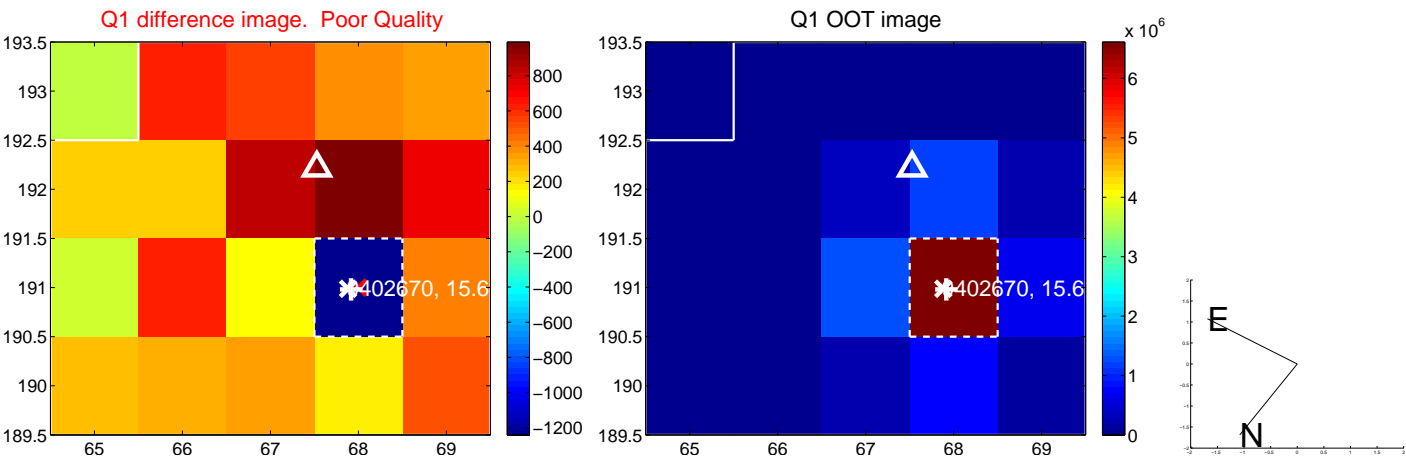


offset from photometric centroids

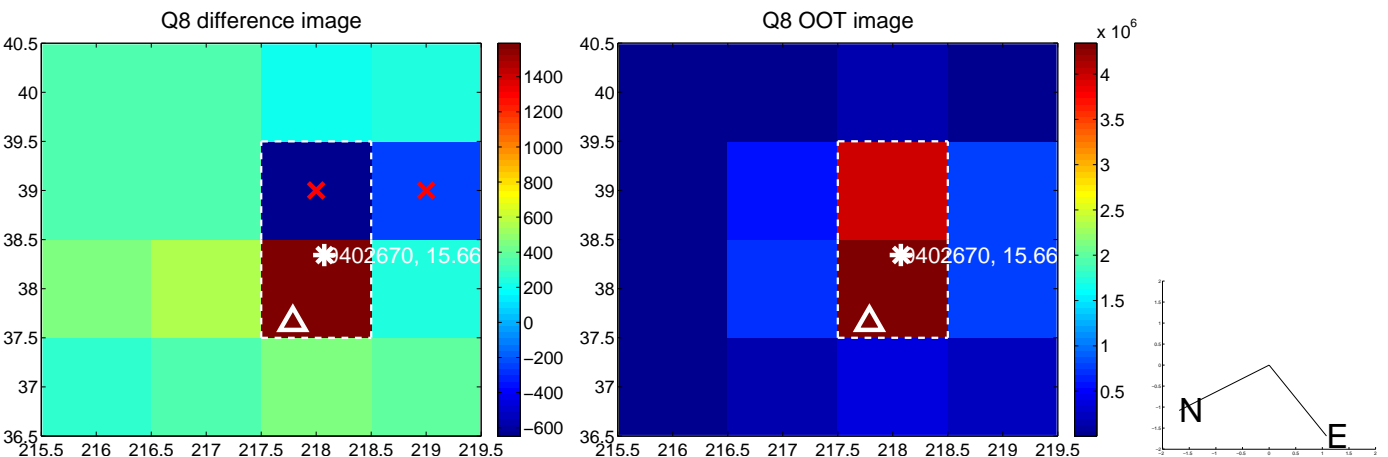
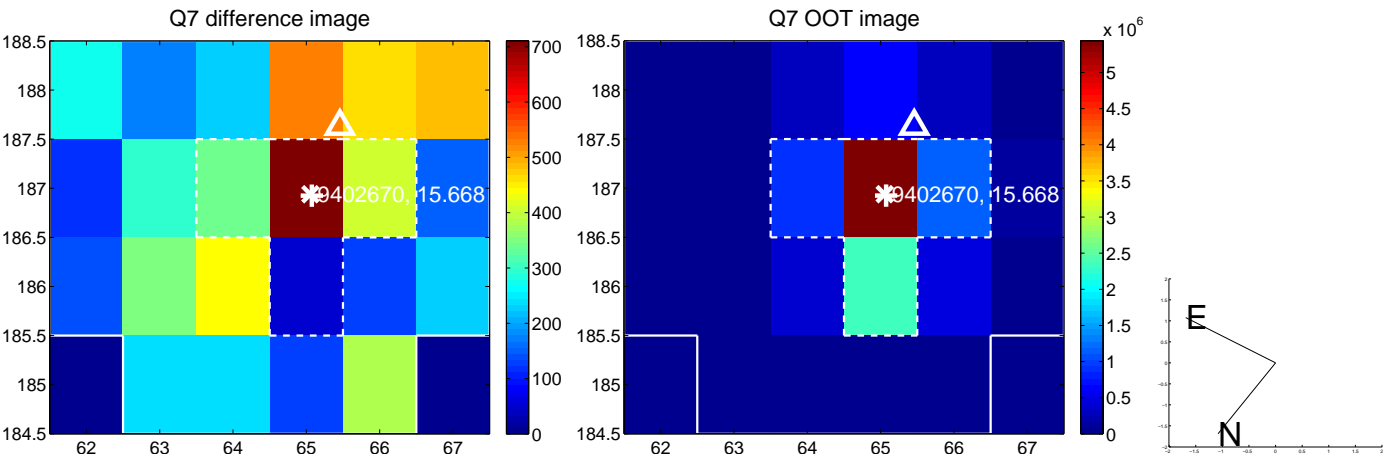
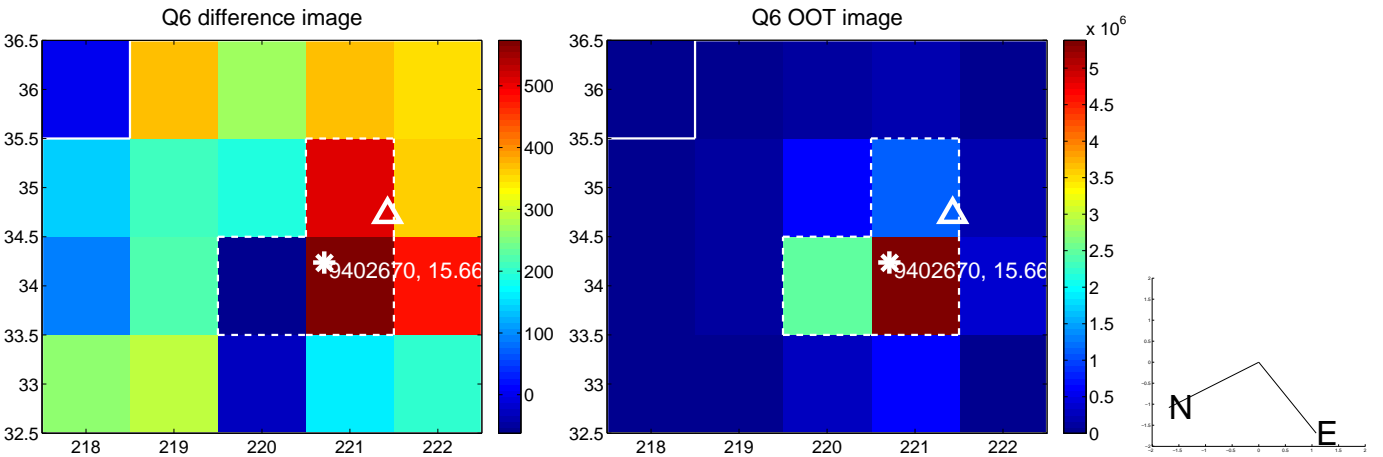
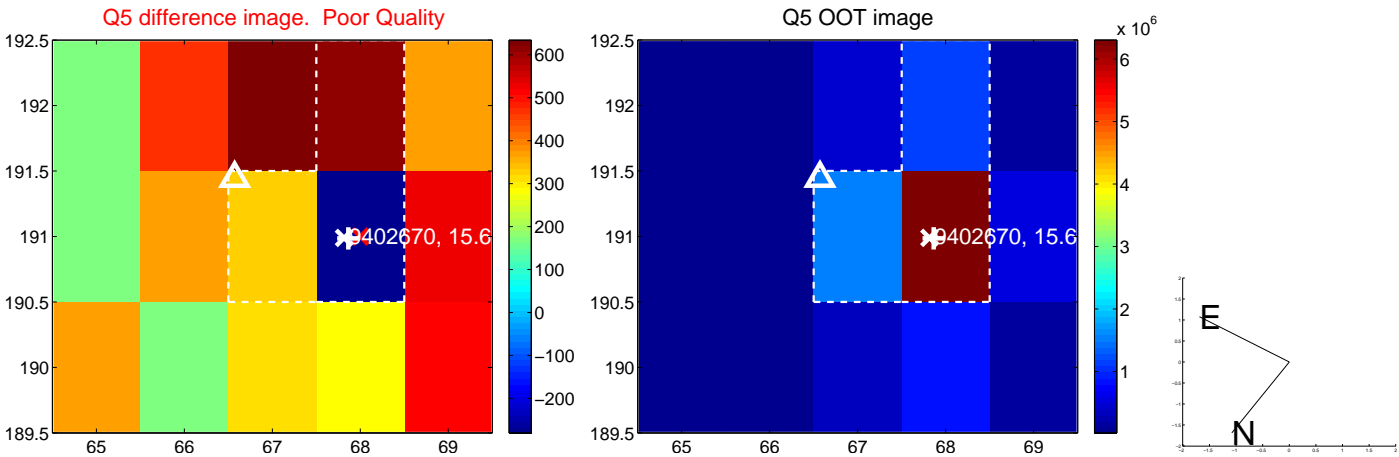


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

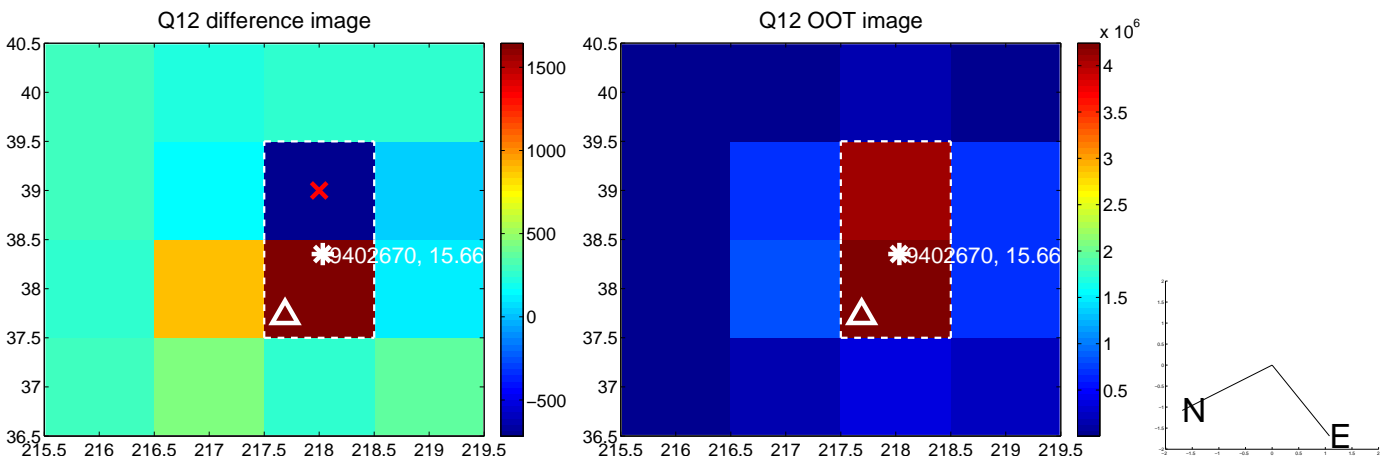
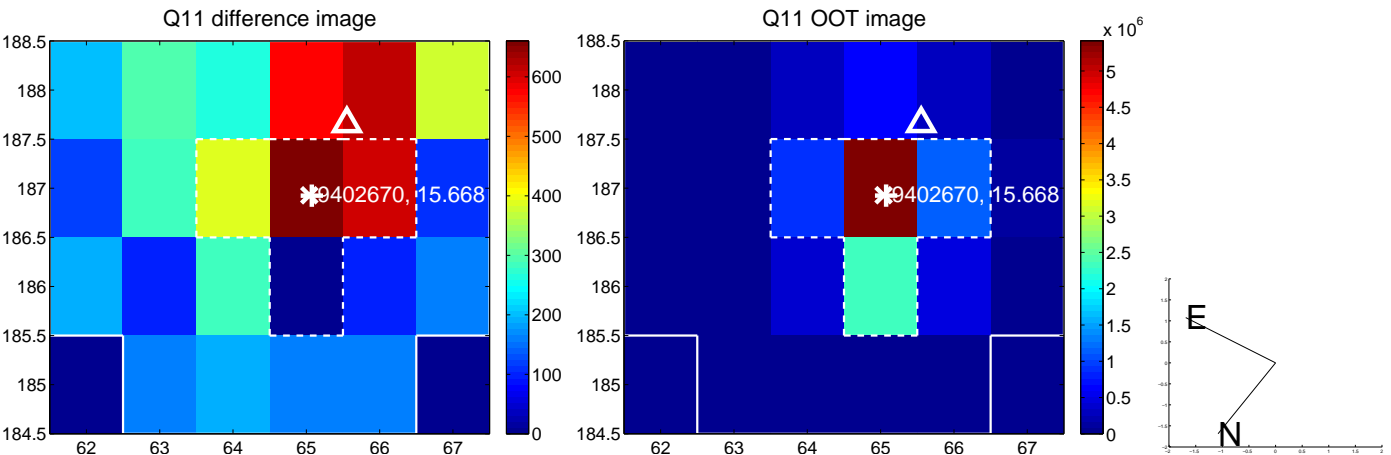
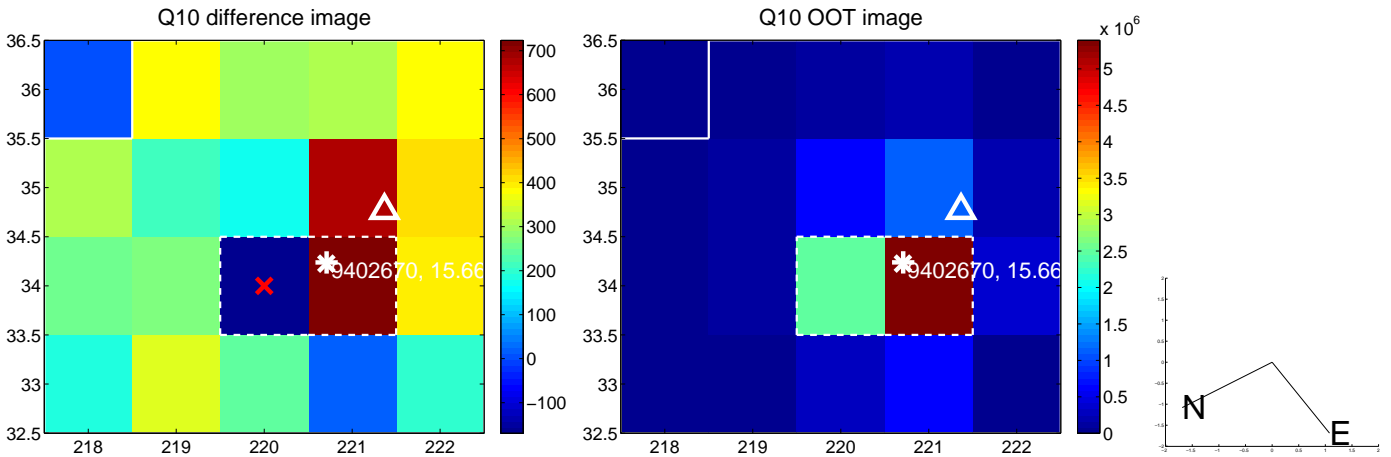
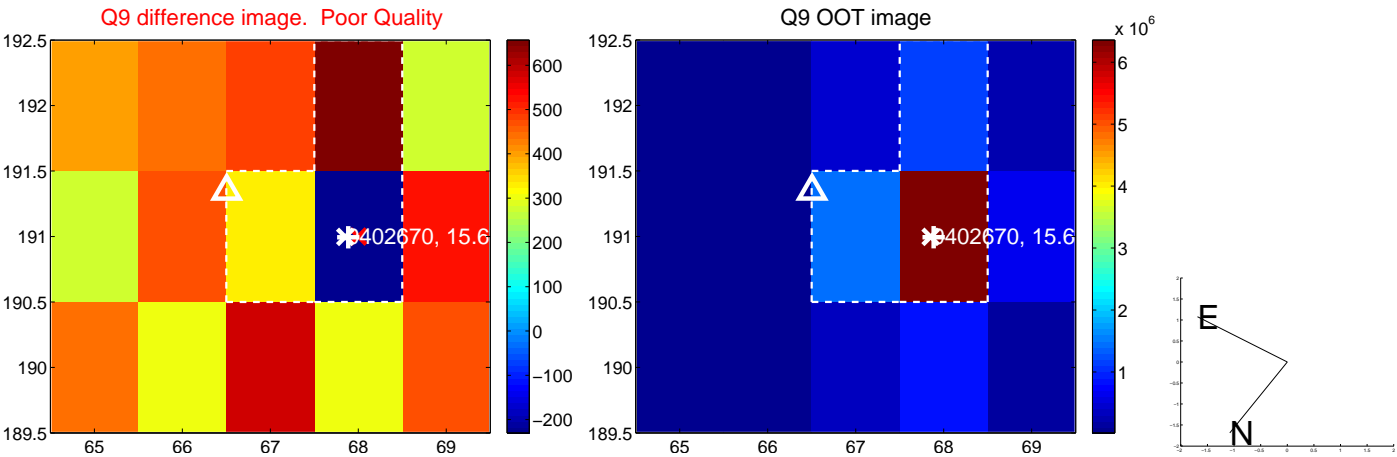
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



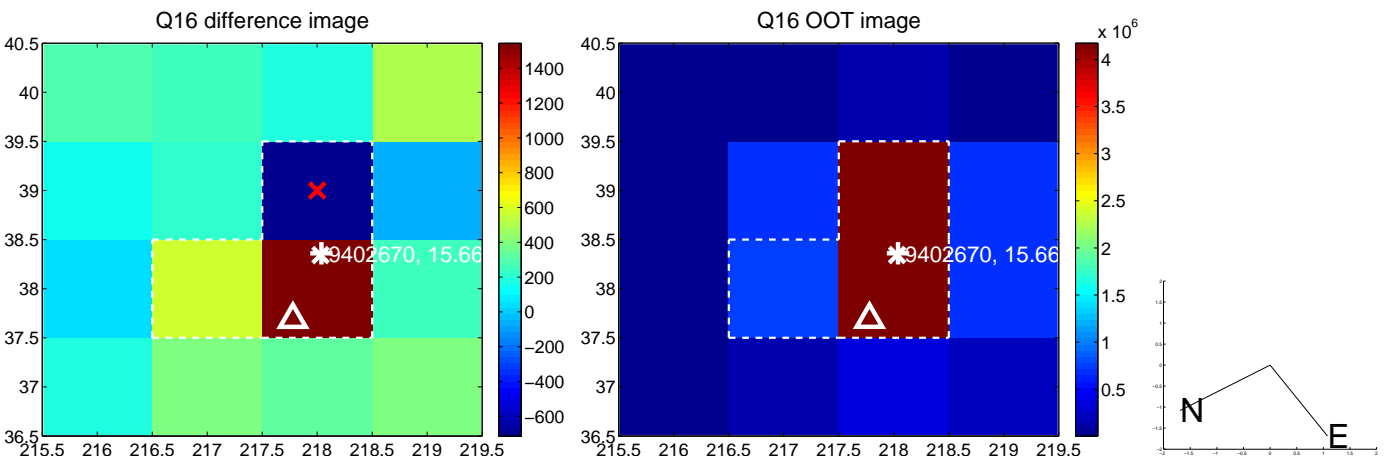
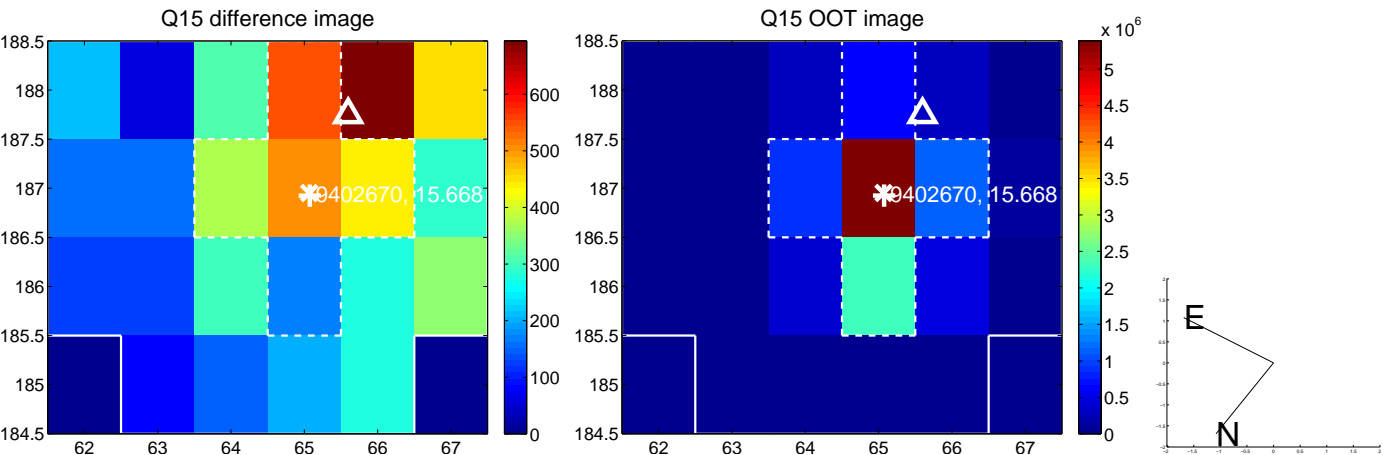
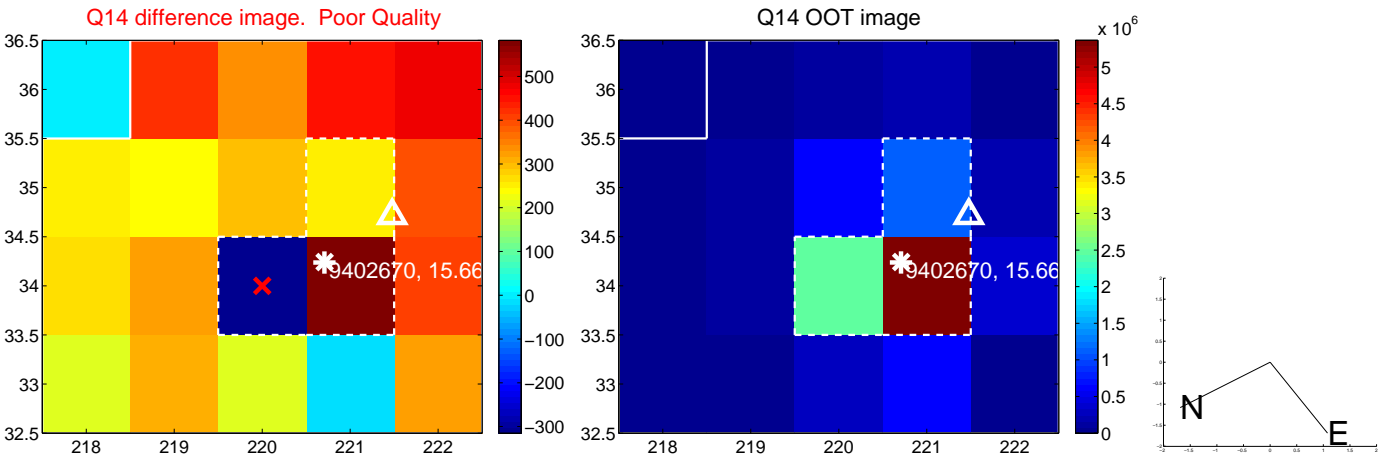
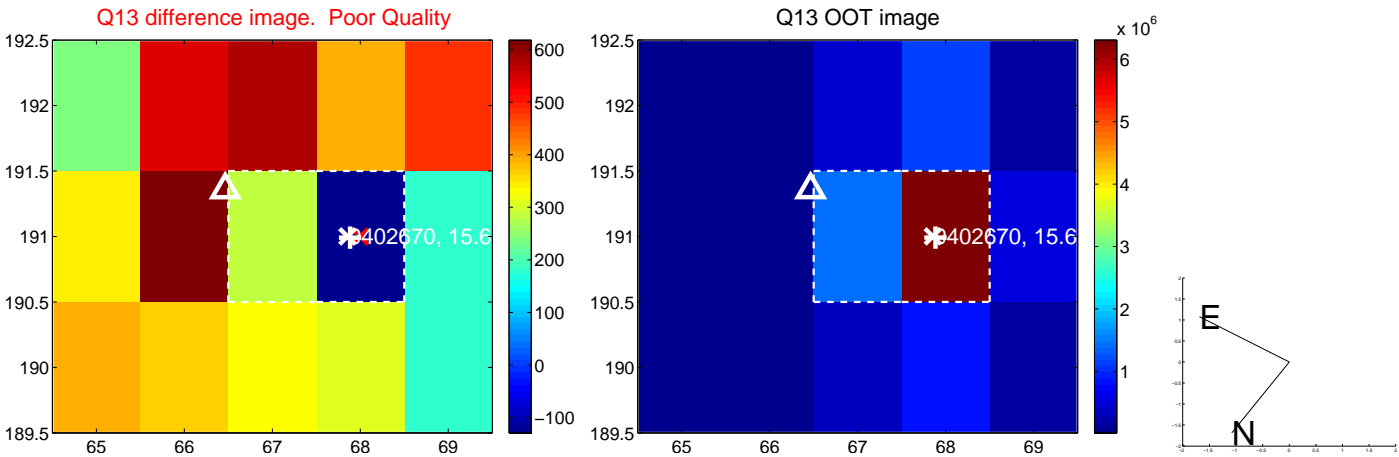
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



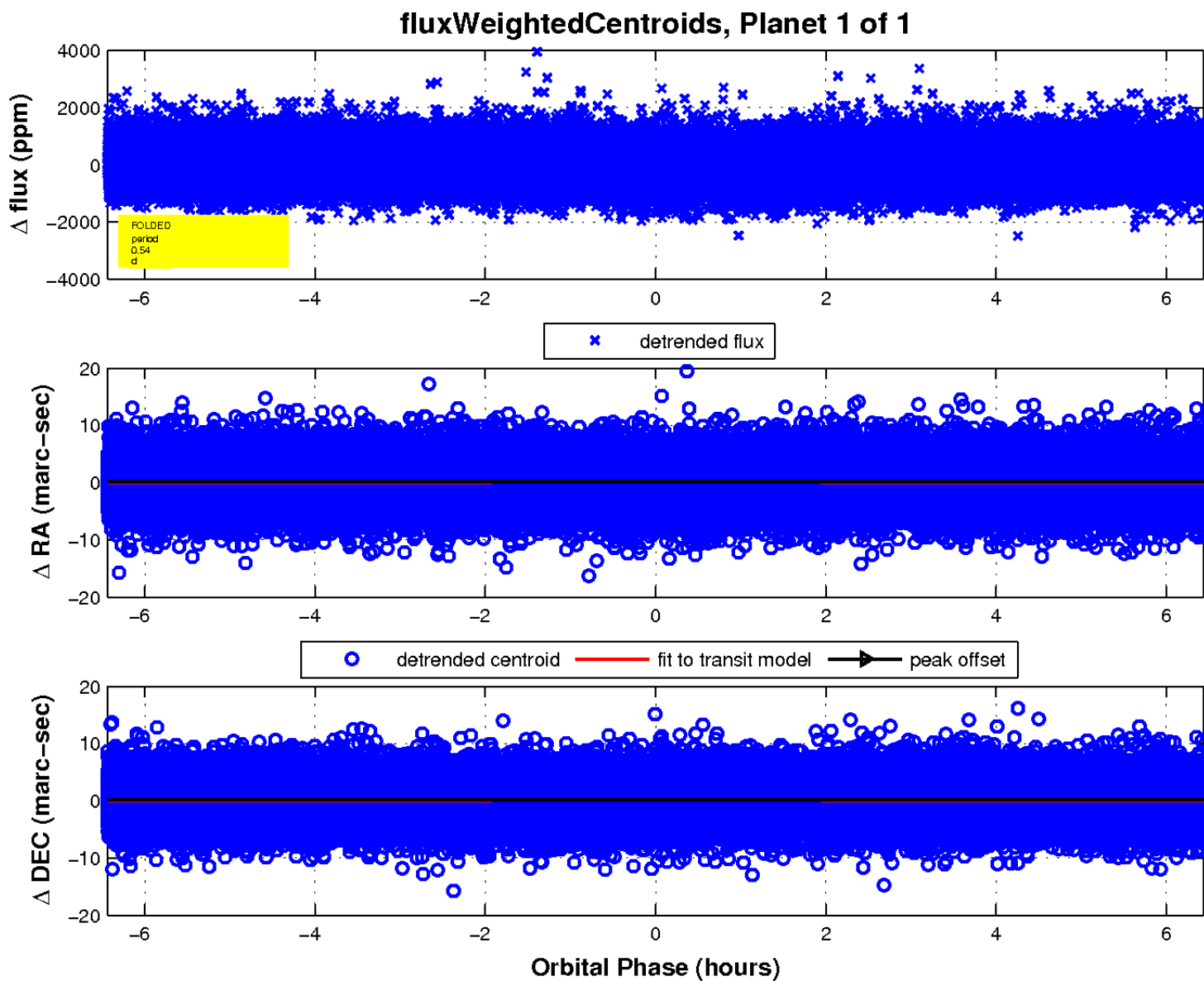
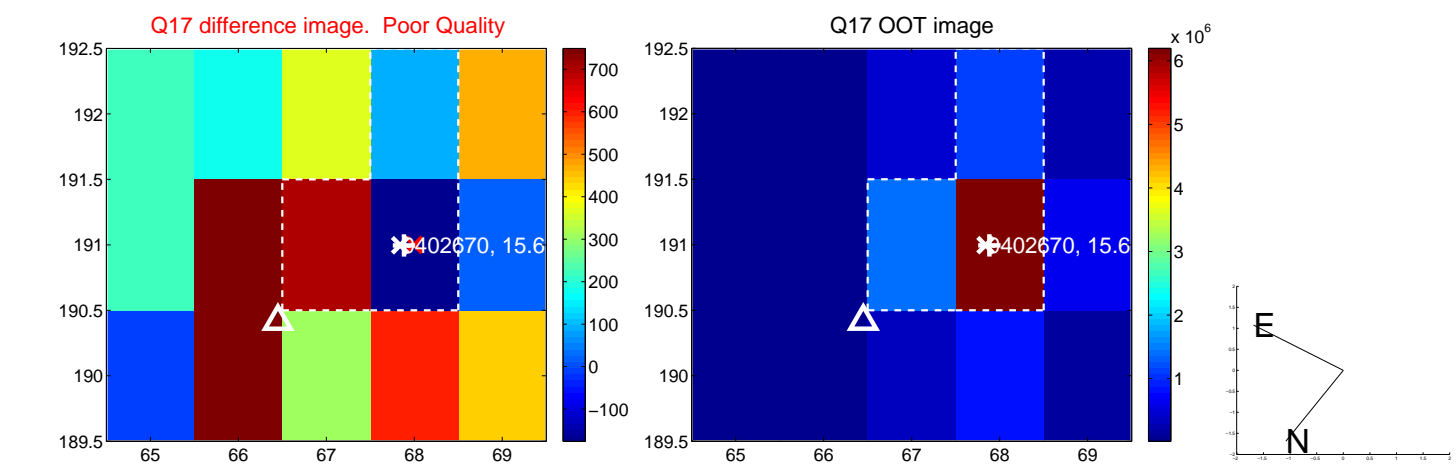
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

