

KIC 012418724

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})
012418724-01	OBS	1516.01	20.553352	139.560491	672.5	5.299	33.7	35.9	1.11	6325	3.23	74.59

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012418724-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

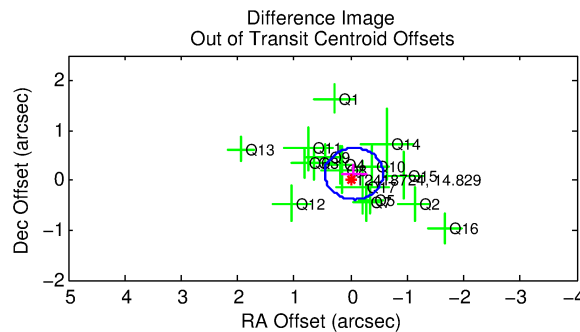
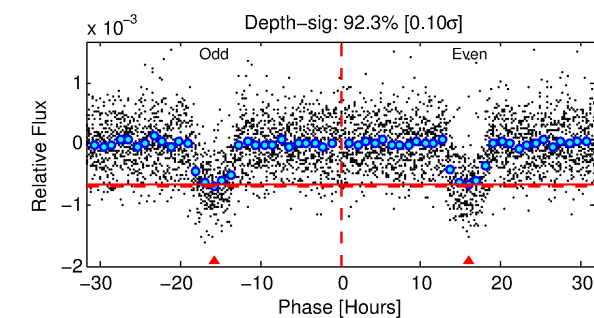
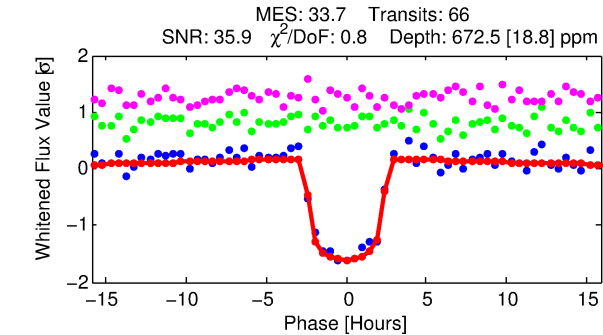
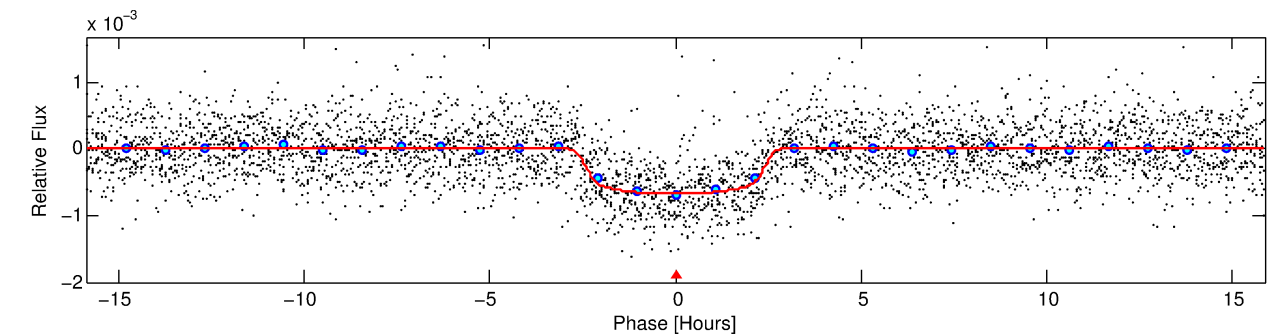
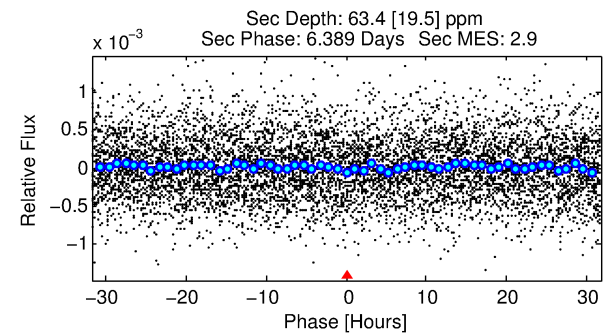
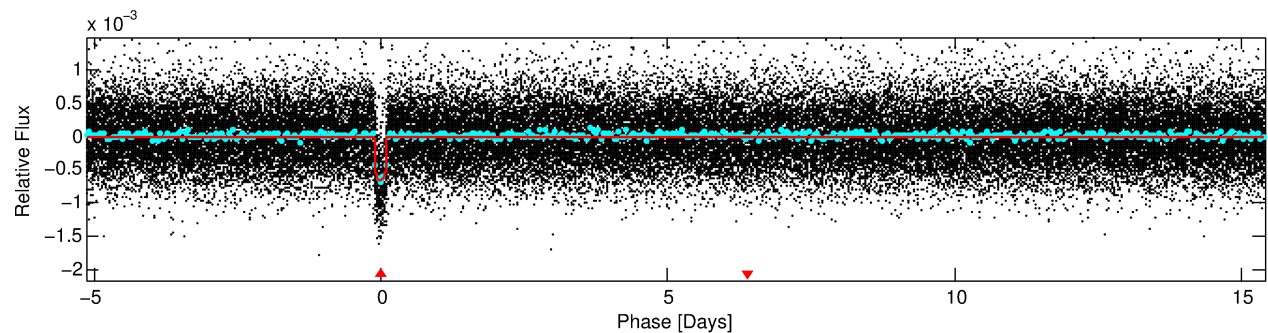
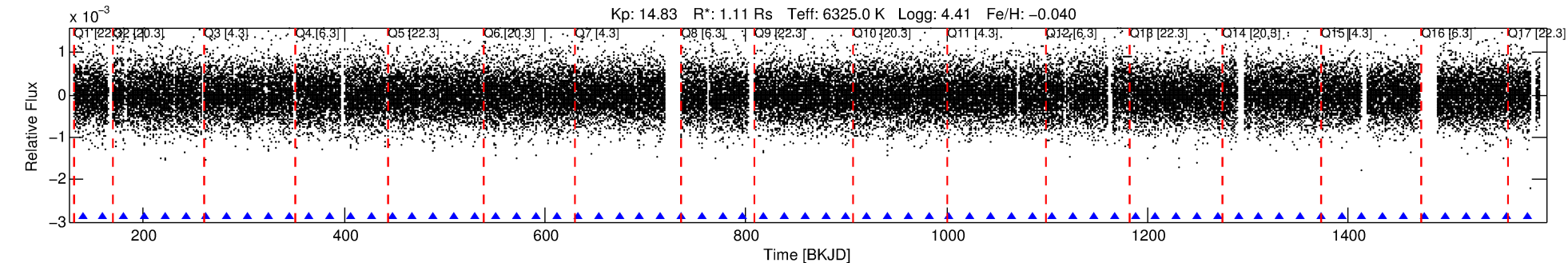
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012418724-01

No Significant Match Found

DV One-Page Summary

KIC: 12418724 Candidate: 1 of 1 Period: 20.553 d
KOI: K01516.01 Corr: 0.981



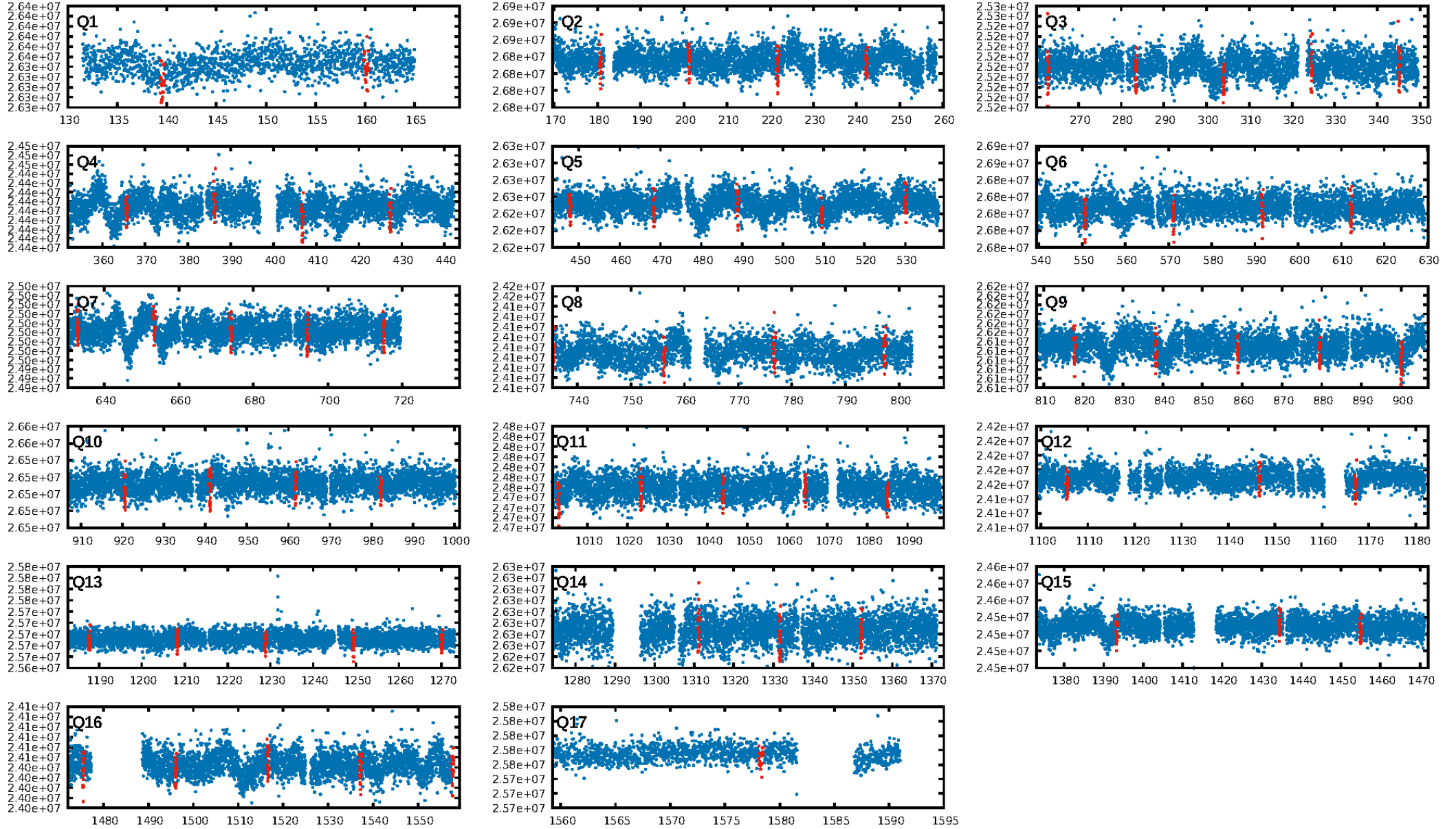
DV Fit Results:

Period = 20.55335 [0.00007] d
Epoch = 139.5605 [0.0028] BKJD
Rp/R* = 0.0266 [0.0021]
a/R* = 18.00 [7.27]
b = 0.83 [0.16]
Seff = 74.59 [30.35]
Teff = 749 [76] K
Rp = 3.23 [1.06] Re
a = 0.1542 [0.0409] AU
Ag = 79.44 [41.03] [1.91 σ]
Teffp = 3459 [322] K [8.18 σ]

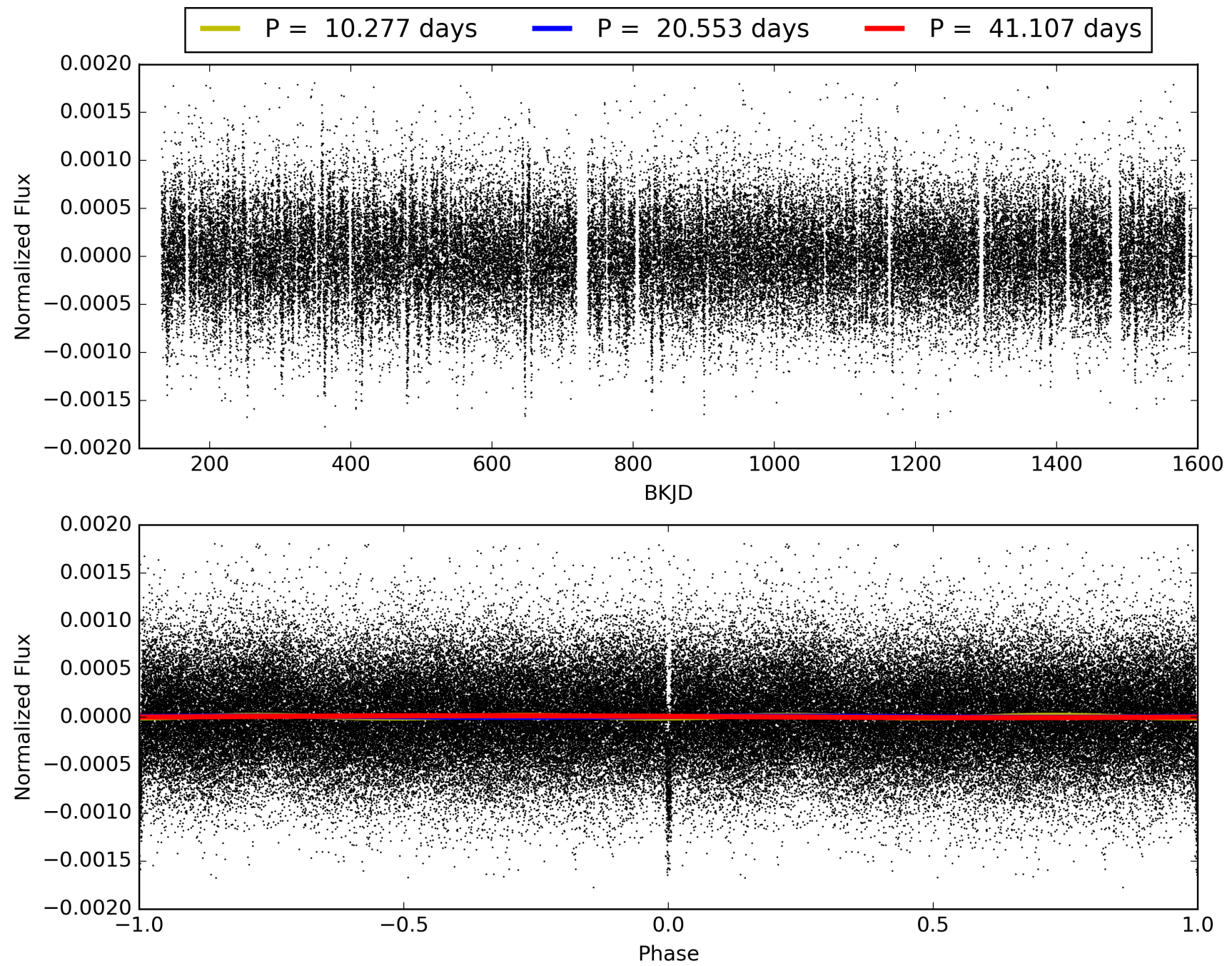
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 97.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.76e-242
RollingBand-fgt: 1.00 [63/63]
GhostDiagnostic-chr: 3.452
Centroid-sig: 80.7%
Centroid-so: 0.888 arcsec [2.07 σ]
OotOffset-rm: 0.139 arcsec [0.81 σ]
KicOffset-rm: 0.159 arcsec [0.74 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 012418724-01, PDC Light Curves

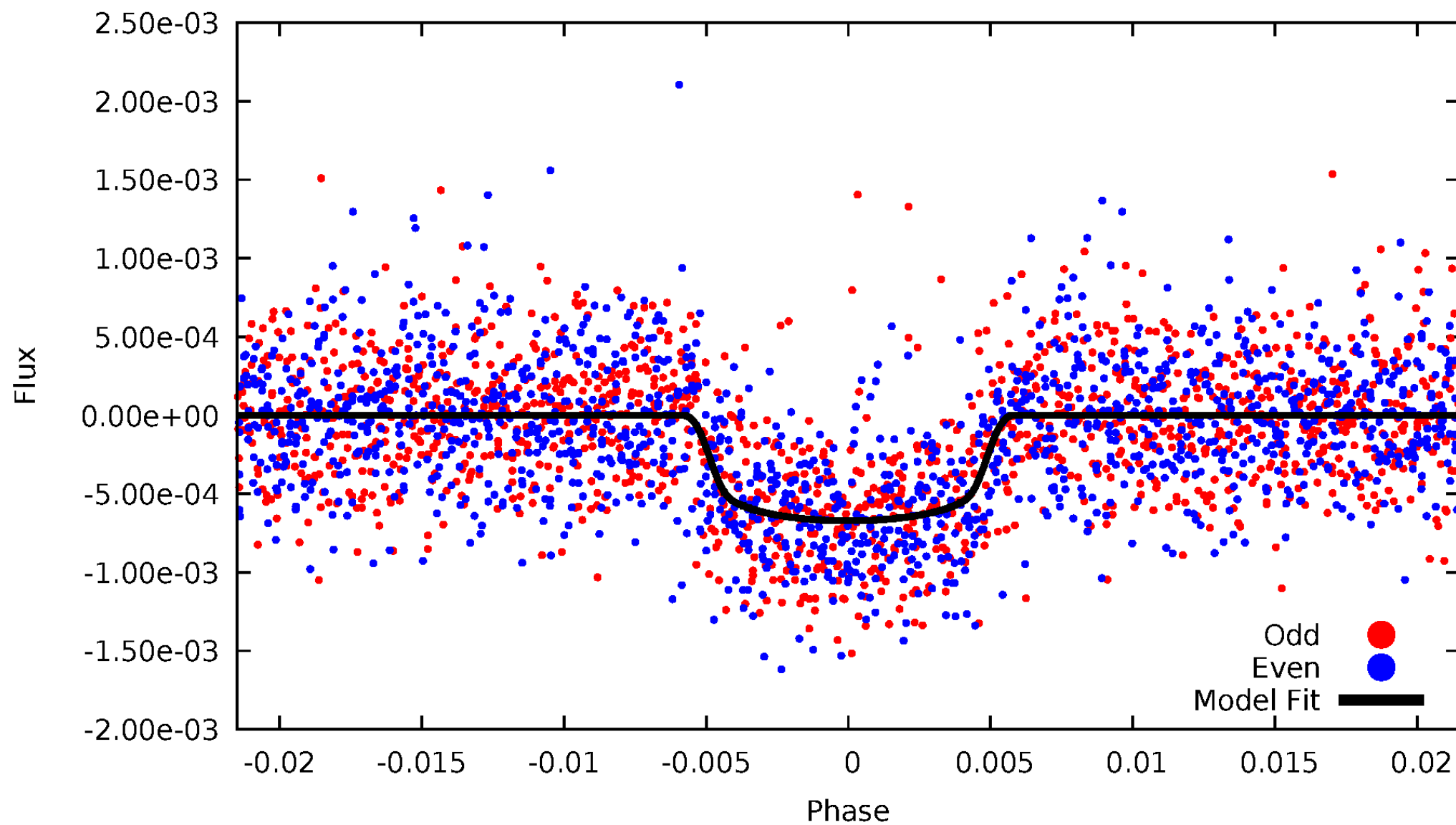


TCE 012418724-01



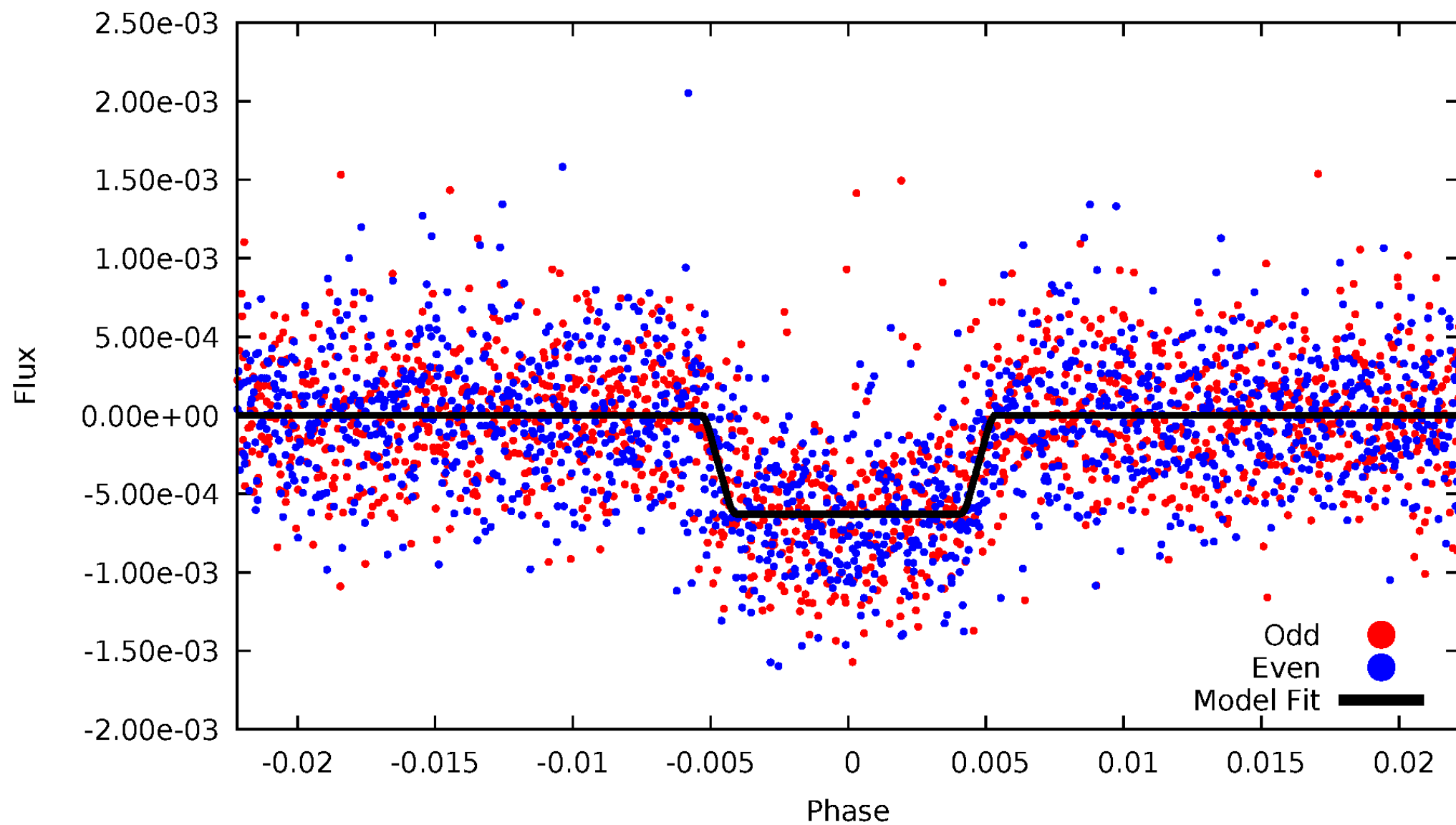
DV Odd/Even

TCE 012418724-01



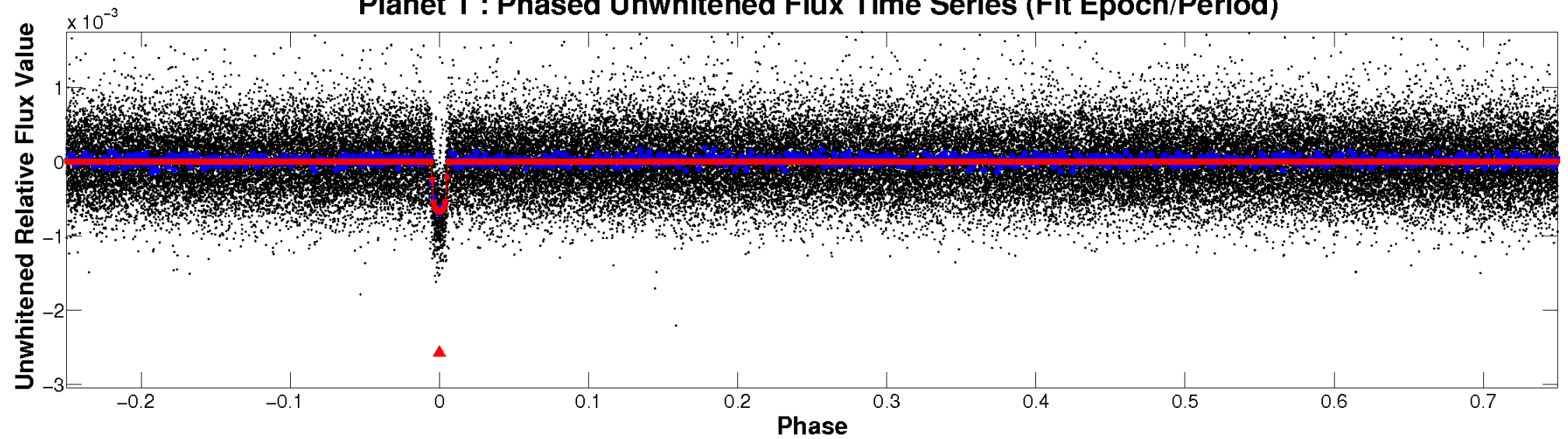
ALT Odd/Even

TCE 012418724-01

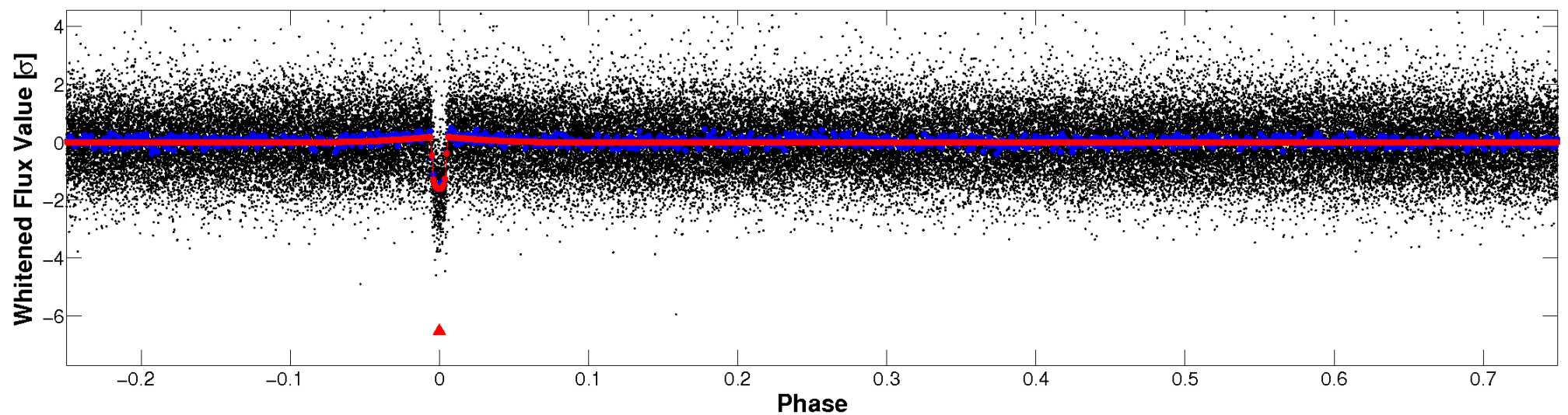


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

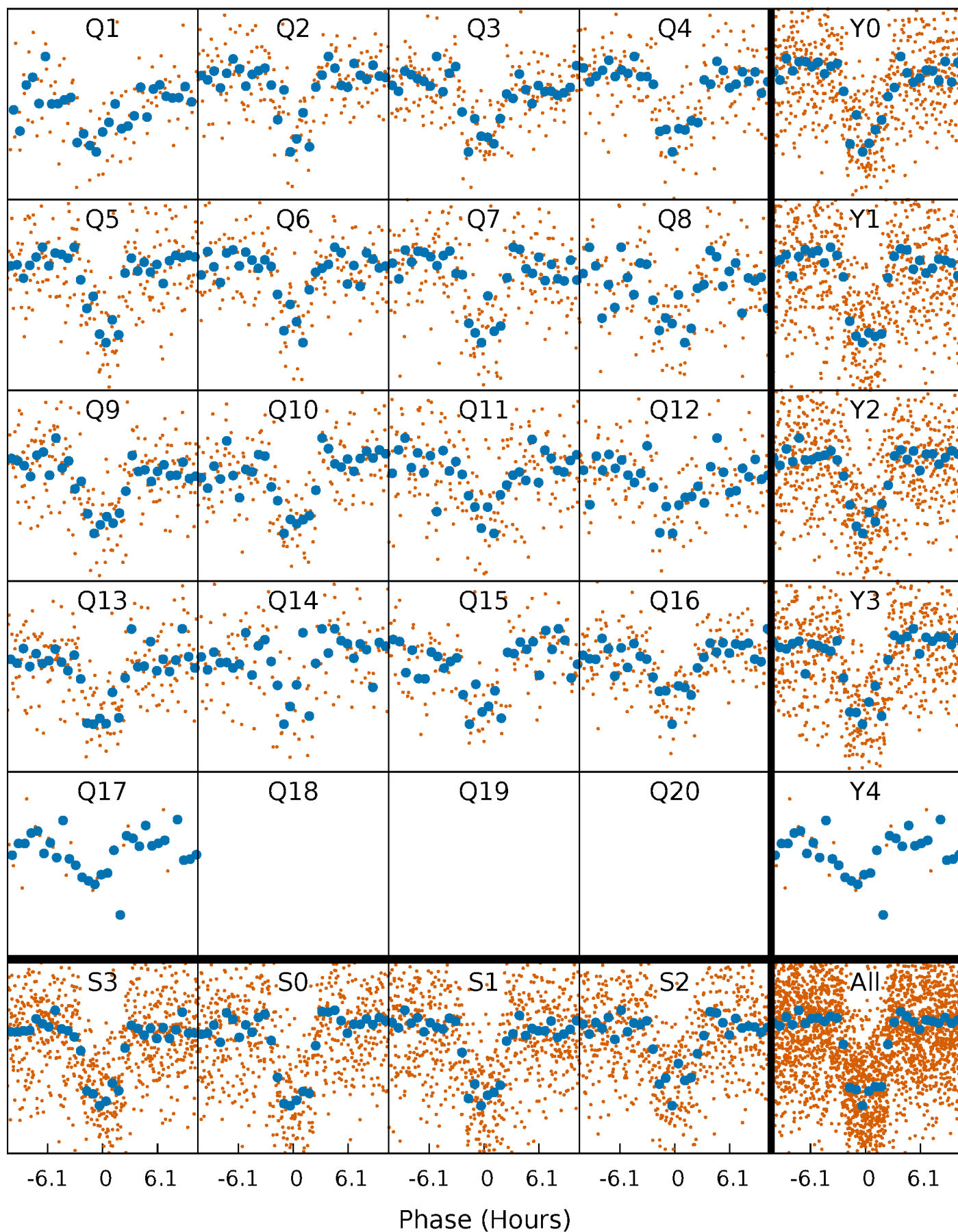


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



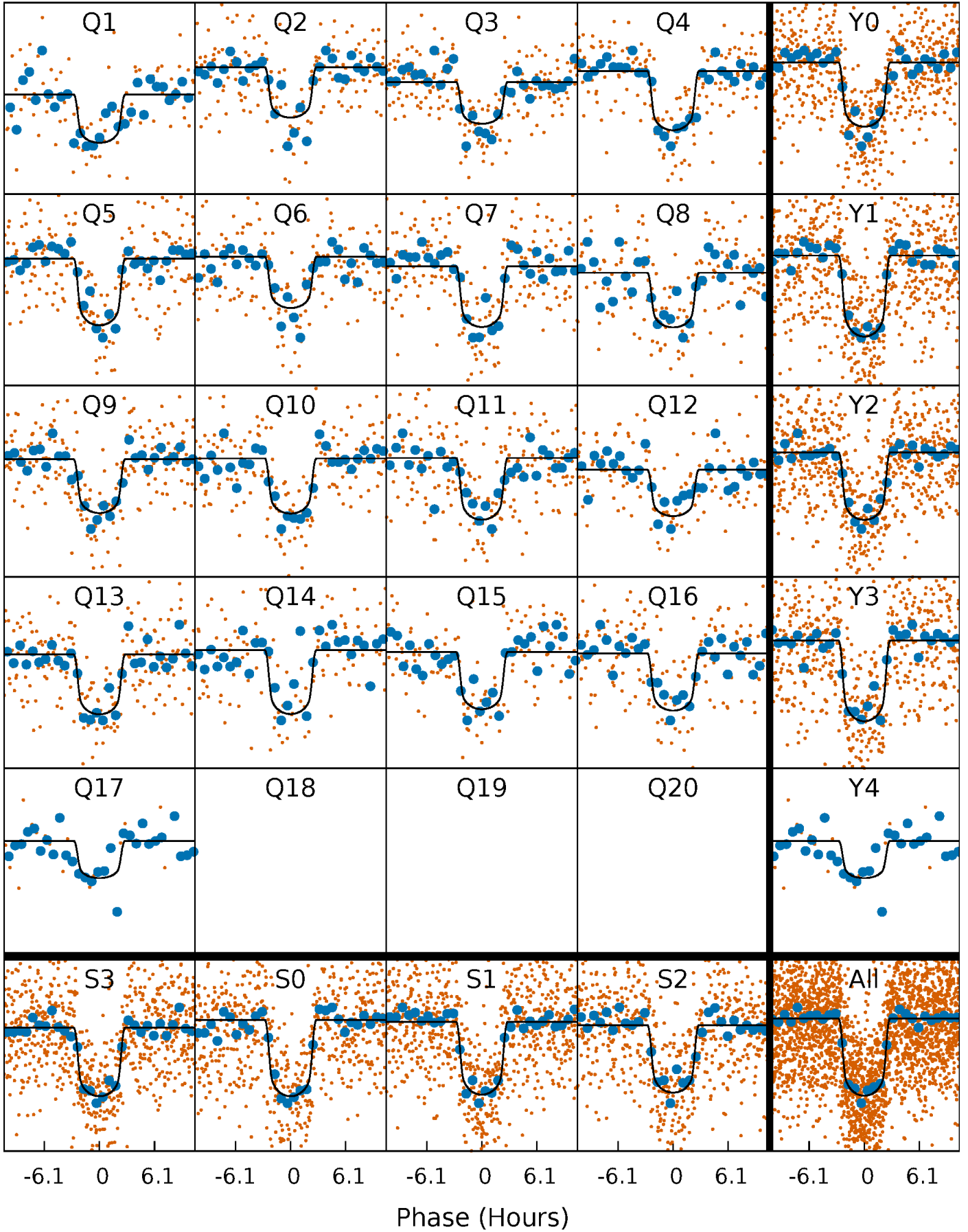
PDC Quarter-Phased Transit Curves

TCE 012418724-01 P= 20.553352 Days $T_0=139.560491$ (BKJD)



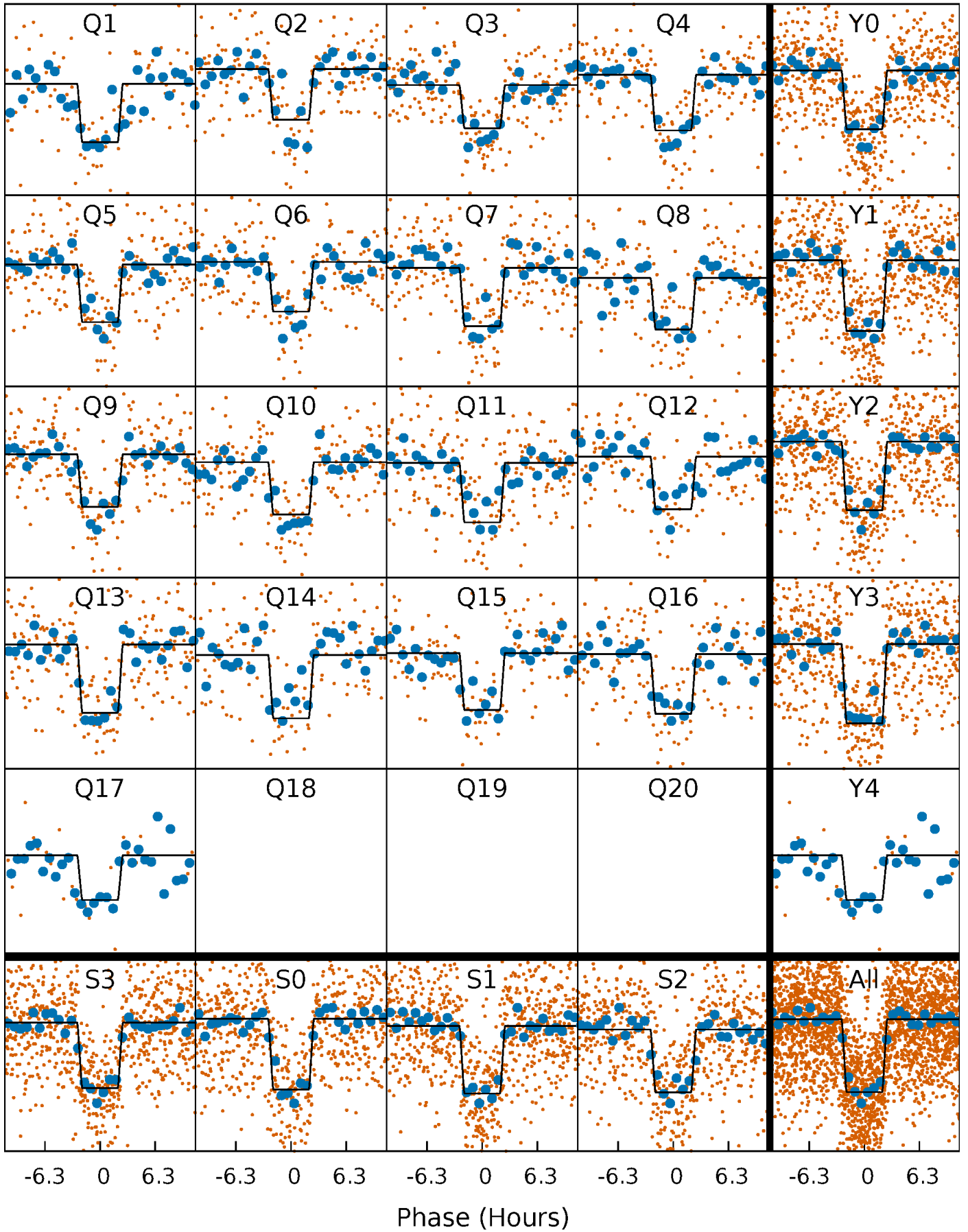
DV Quarter-Phased Transit Curves

TCE 012418724-01 P= 20.553352 Days $T_0=139.560491$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

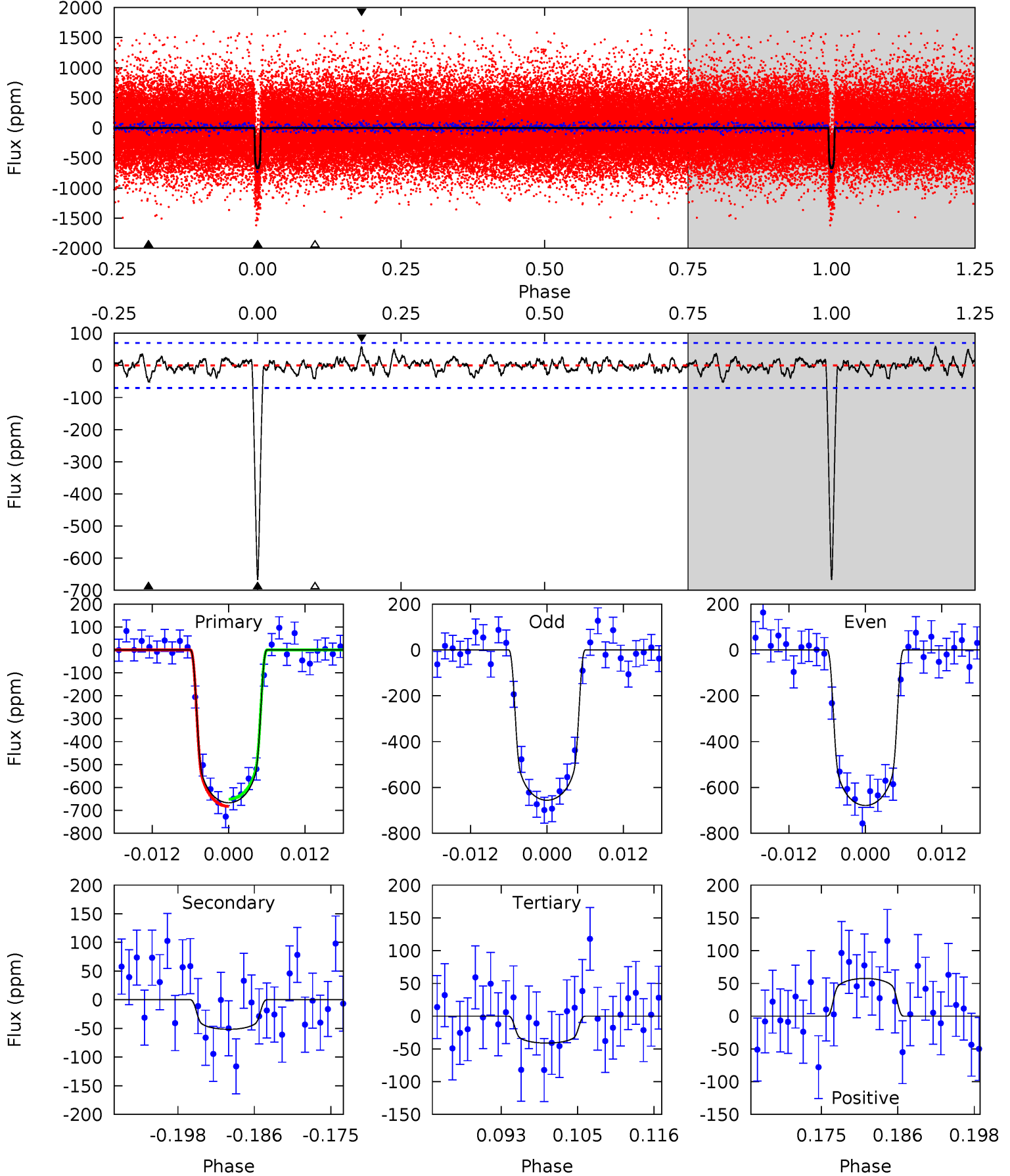
TCE 012418724-01 P= 20.553484 Days $T_0=139.556968$ (BKJD)



DV Model-Shift Uniqueness Test

012418724-01, P = 20.553352 Days, E = 119.007139 Days

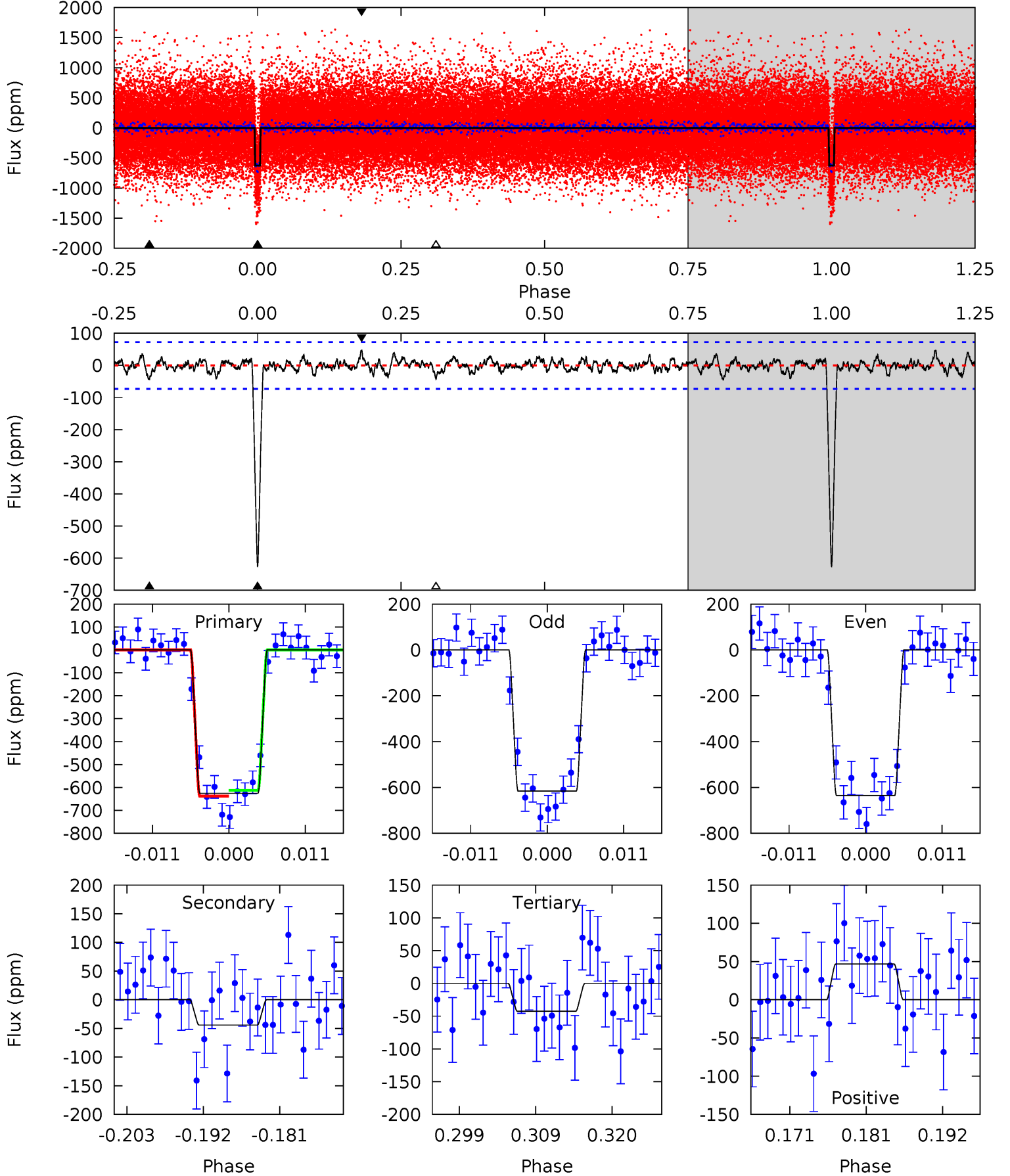
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
47.6	3.68	2.94	4.11	5.00	2.52	1.09	44.7	43.5	0.75	-0.43	0.82	0.98	0.08	1.11



Alt Model-Shift Uniqueness Test

012418724-01, P = 20.553484 Days, E = 119.003484 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.1	3.03	2.93	3.22	5.01	2.55	0.93	40.1	39.8	0.10	-0.19	0.66	0.95	0.07	0.86



Stellar Parameters For KIC 012418724

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6325^{+174}_{-217}	$4.409^{+0.065}_{-0.208}$	$-0.040^{+0.250}_{-0.300}$	$1.112^{+0.353}_{-0.118}$	$1.157^{+0.157}_{-0.157}$	$1.184^{+0.331}_{-0.618}$
	+3%/-3%	+1%/-5%	+625%/-750%	+32%/-11%	+14%/-14%	+28%/-52%
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 012418724-01 / KOI 1516.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-52 ± 14	$3.34^{+0.62}_{-0.41}$	1064^{+83}_{-56}	3678^{+202}_{-230}	57^{+27}_{-20}
Alt.	-44 ± 15	$3.13^{+0.56}_{-0.37}$	1062^{+82}_{-48}	3674^{+220}_{-263}	56^{+28}_{-22}

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

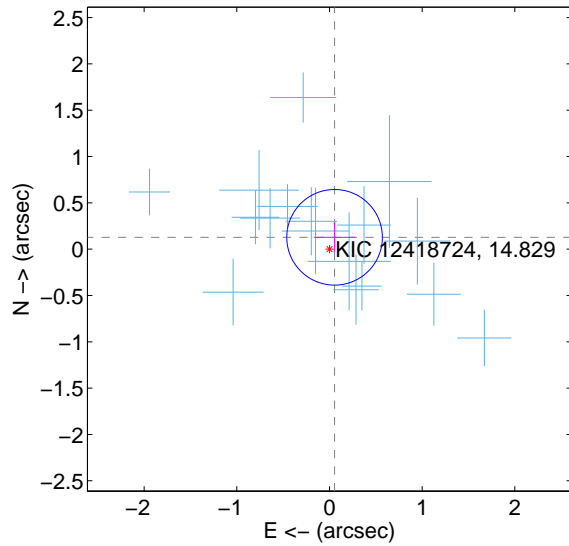
Supplemental centroid analysis for 012418724-01. Kepler magnitude: 14.83. Transit SNR 35.92

There are 17 quarters with good PRF difference image offsets

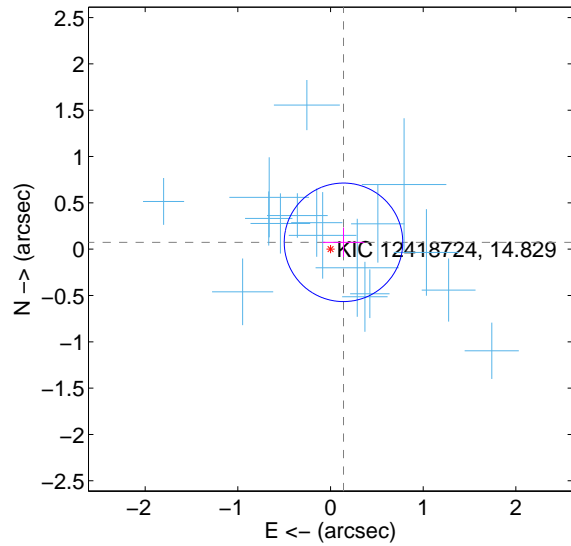
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.139 ± 0.172	0.81	-0.055 ± 0.223	0.128 ± 0.161
PRF-fit source offset from KIC position	0.159 ± 0.213	0.74	-0.140 ± 0.226	0.074 ± 0.158
photometric centroid source offset	0.89 ± 0.43	2.07	0.49 ± 0.39	0.74 ± 0.44

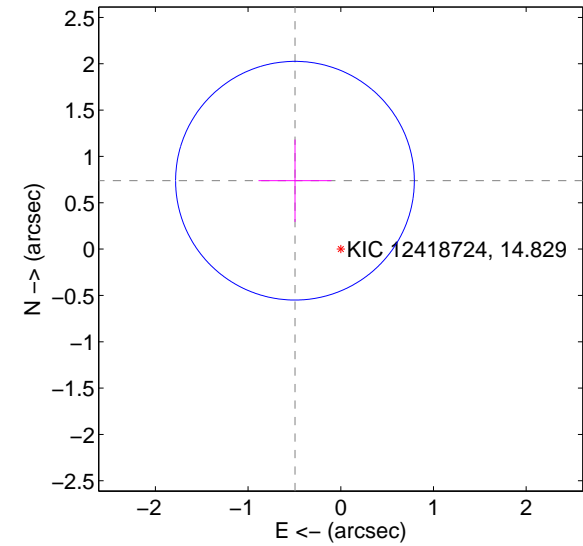
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

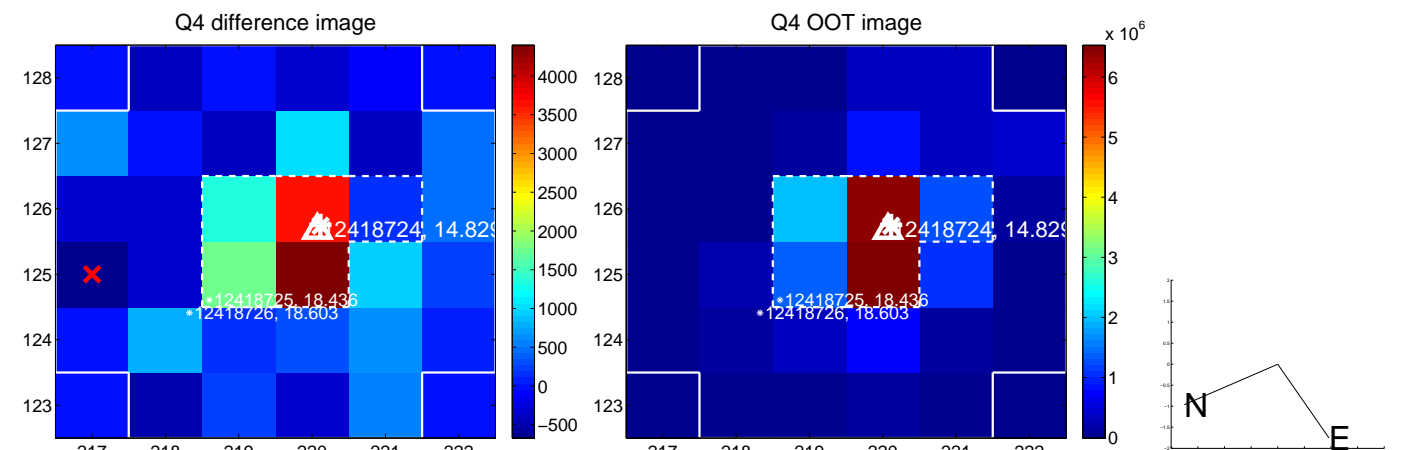
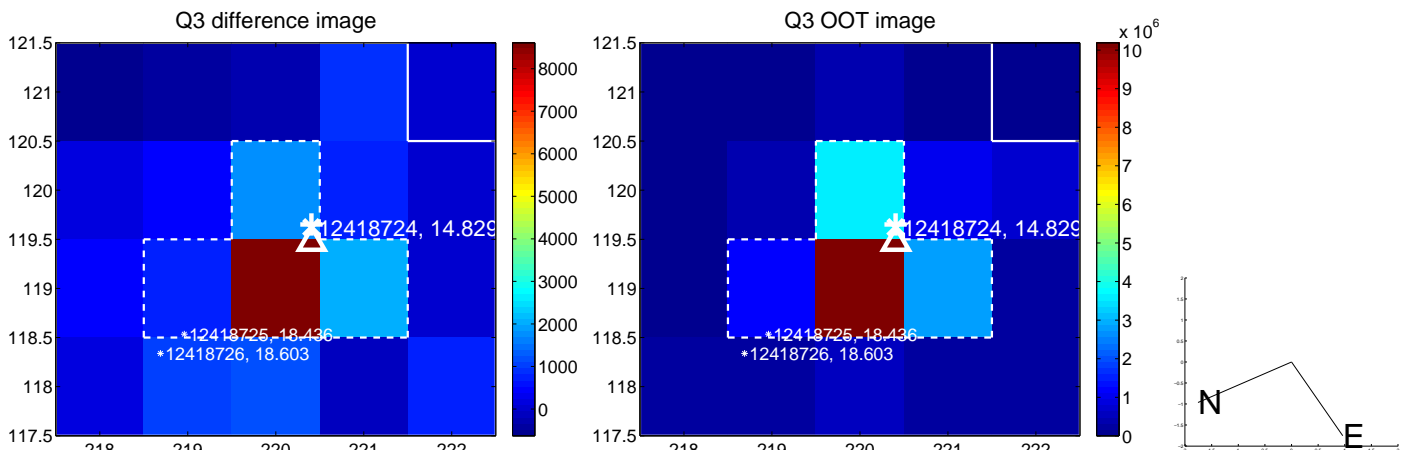
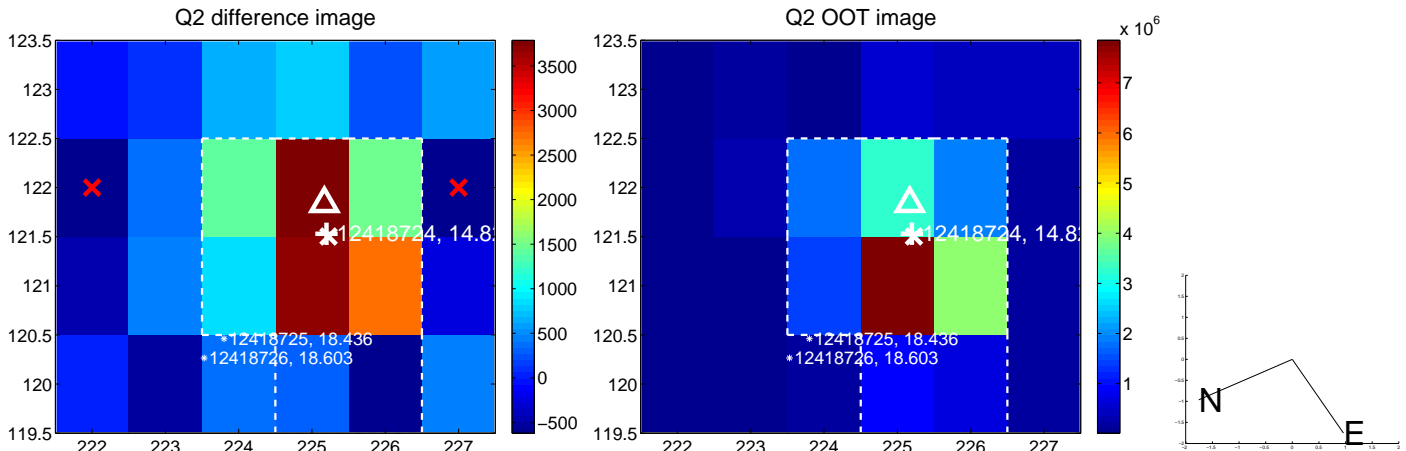
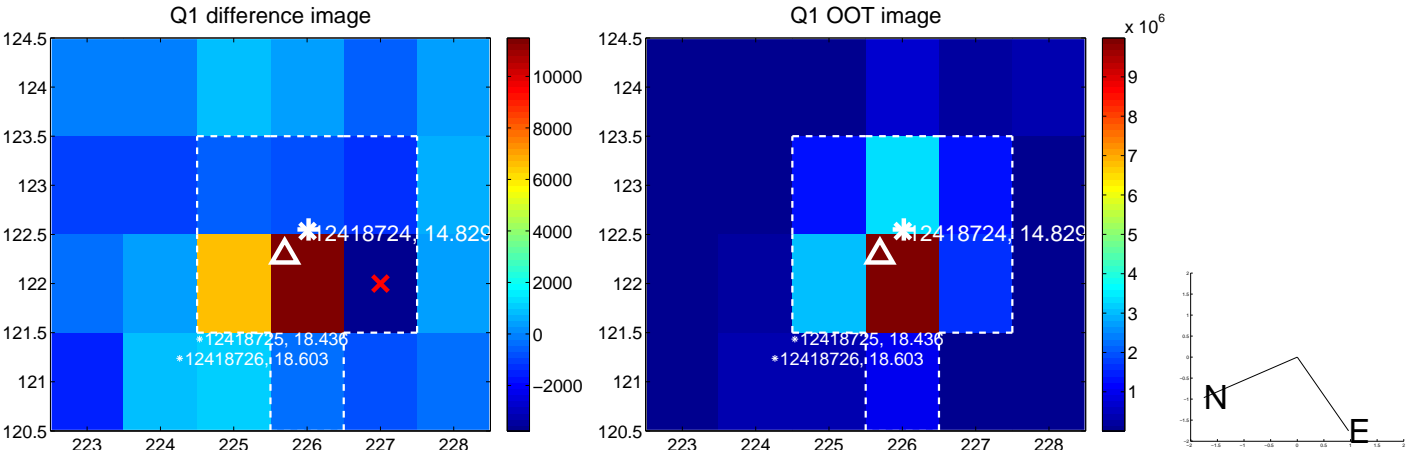


offset from photometric centroids

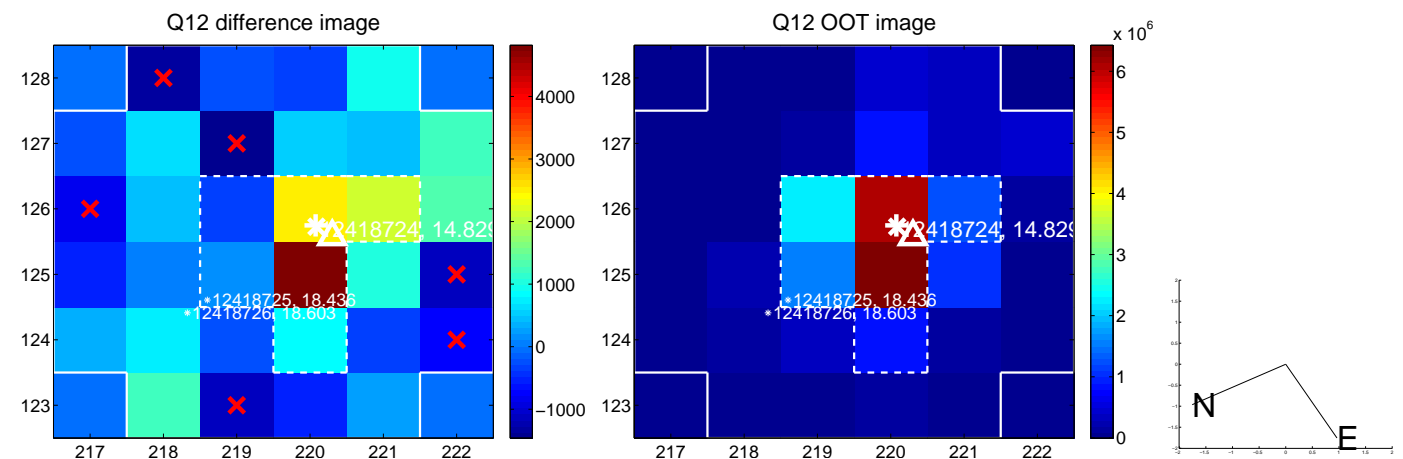
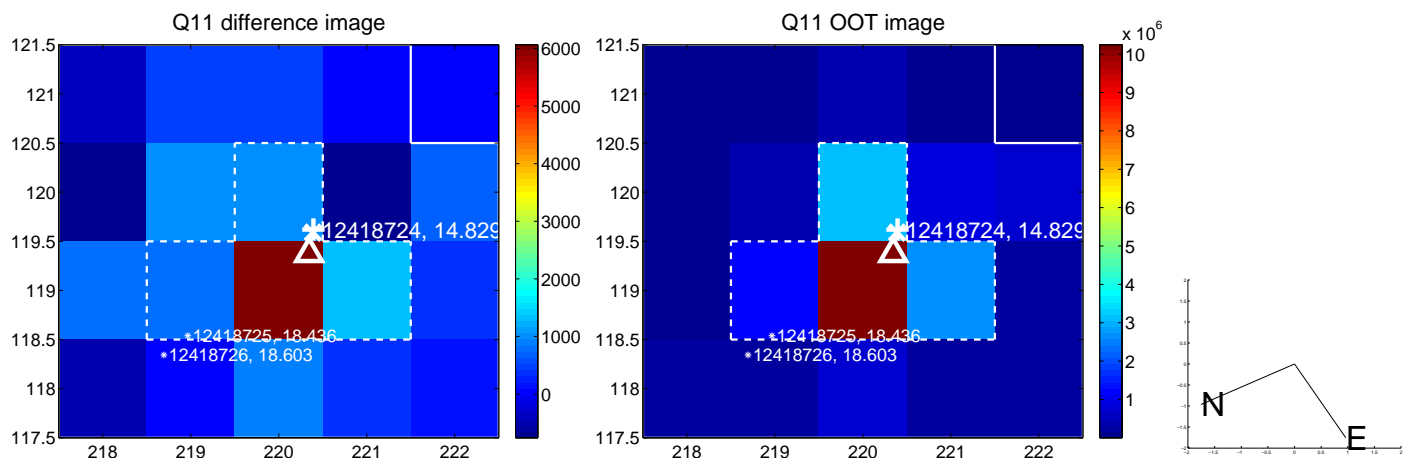
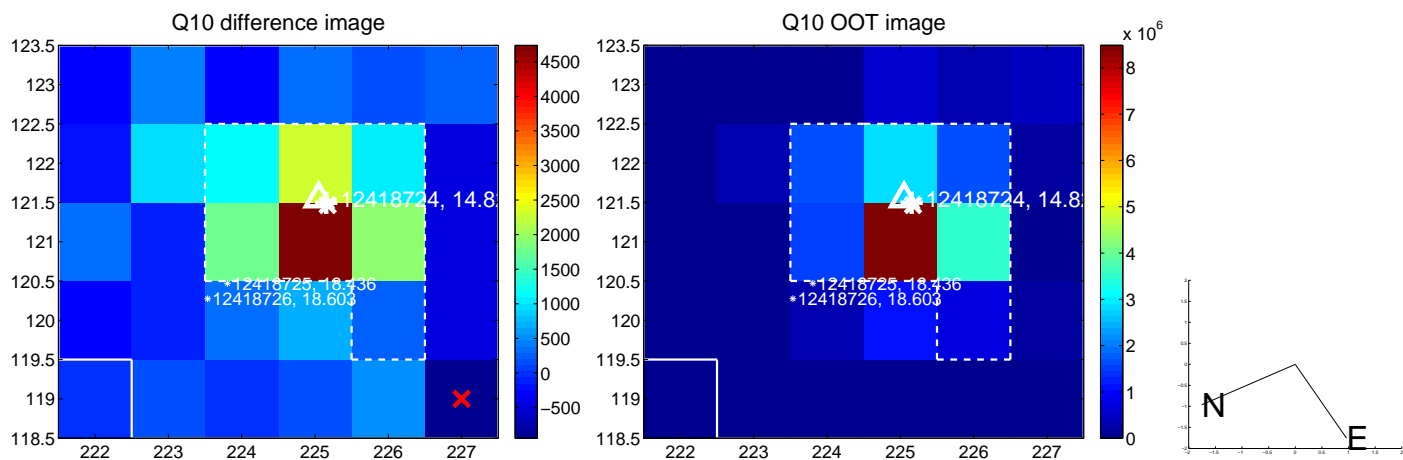
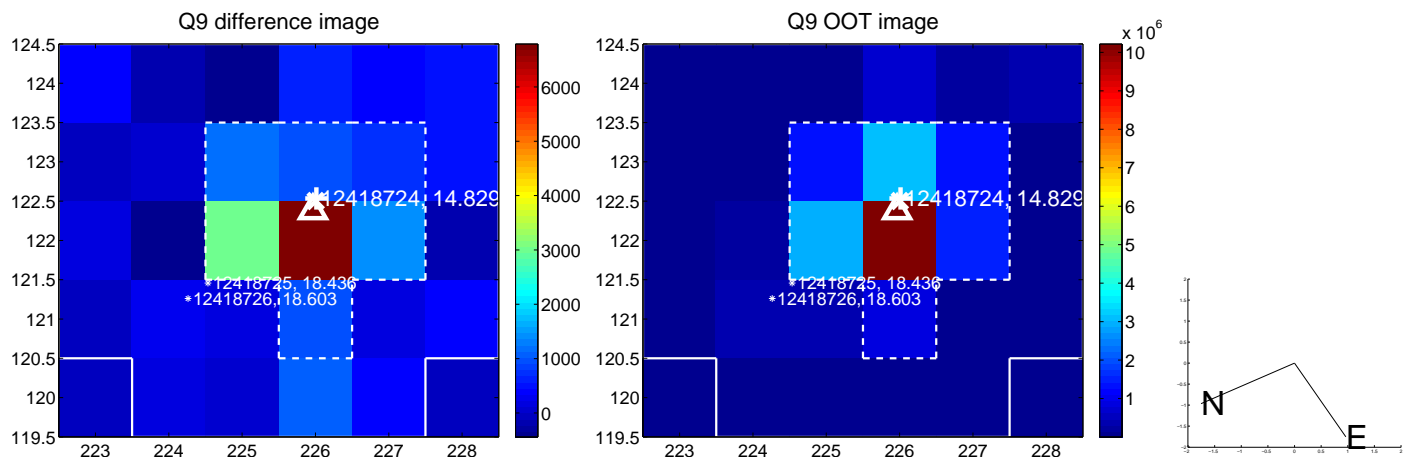


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

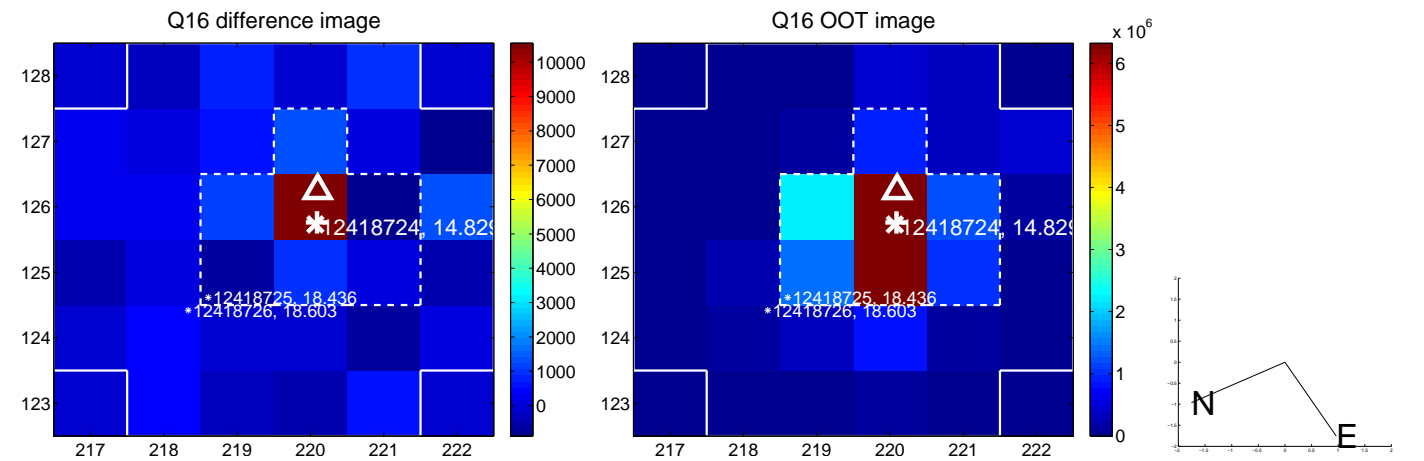
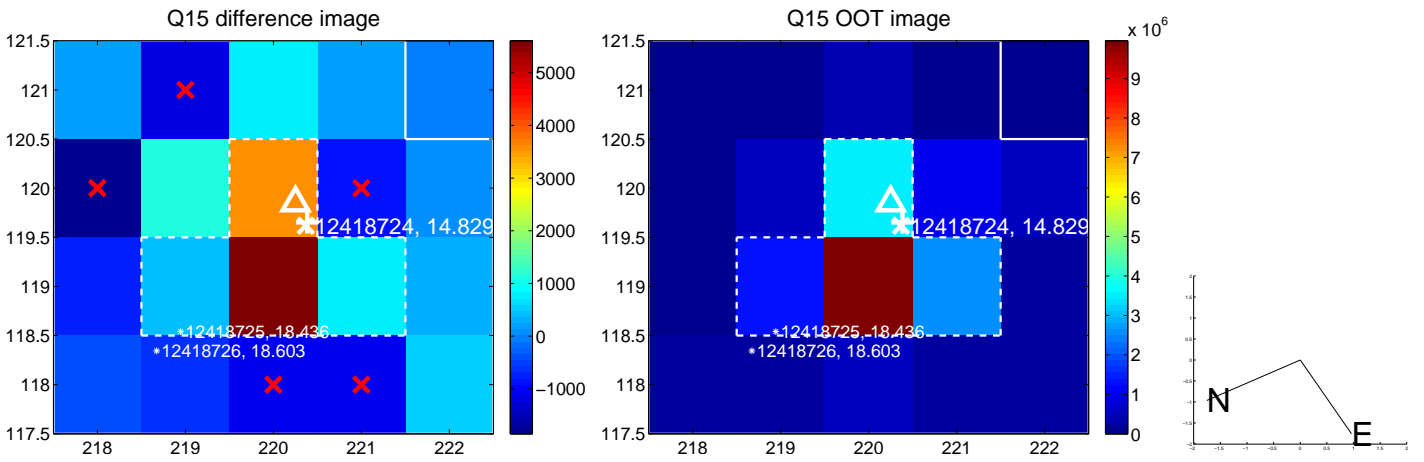
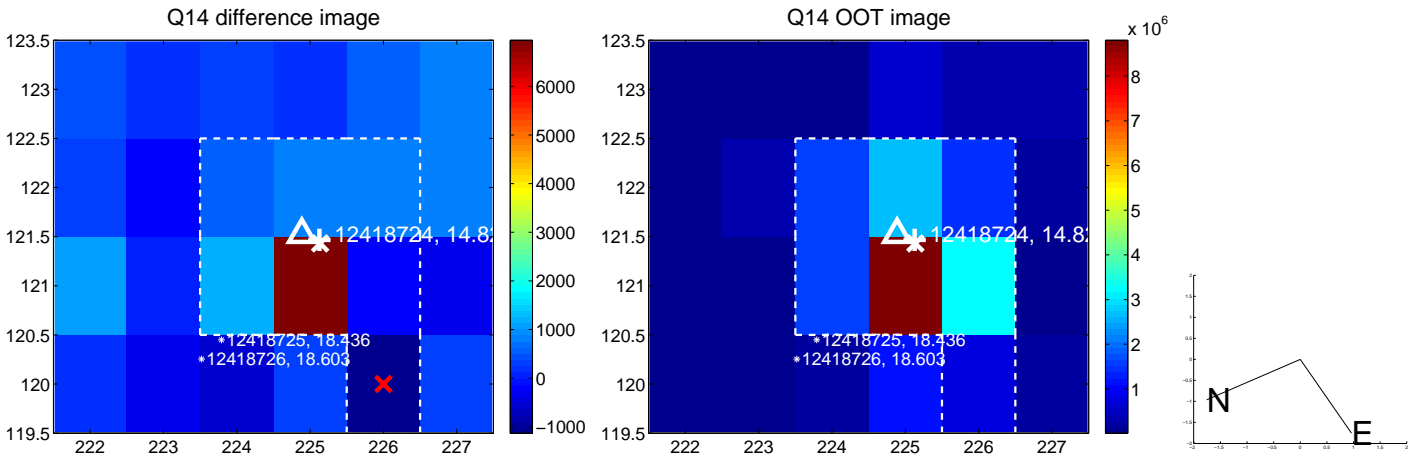
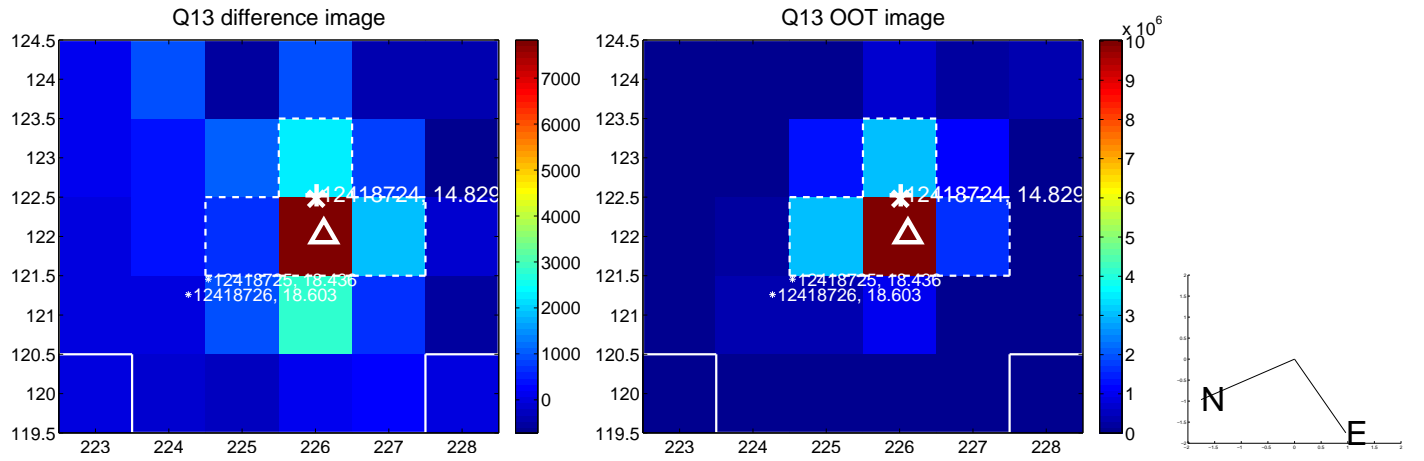
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



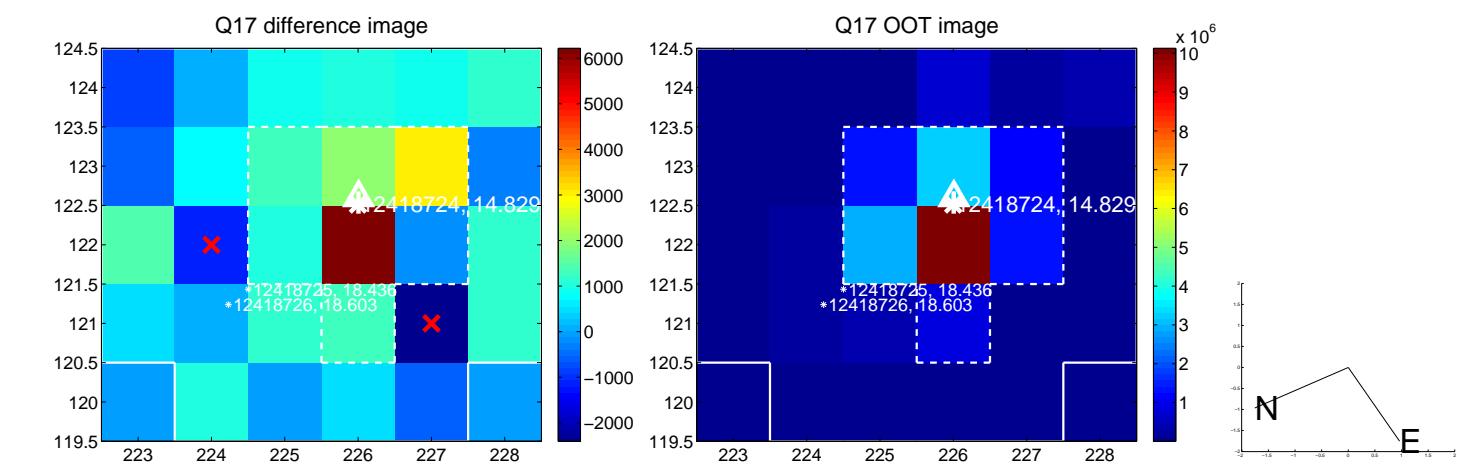
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



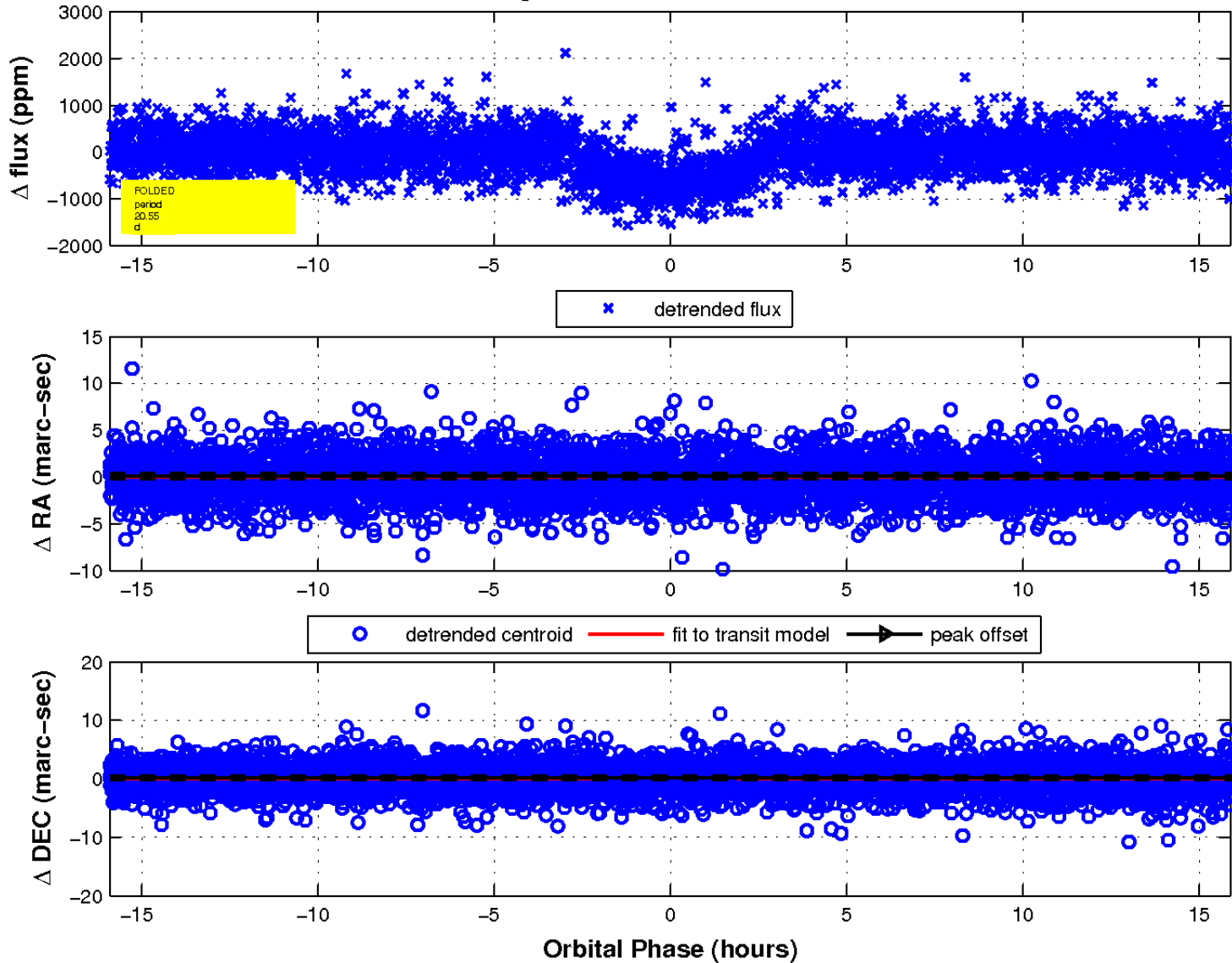
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

