

# KIC 011752908

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011752908-01	OBS	2651.01	6.383095	132.312514	993.9	1.857	17.6	20.5	0.71	5262	2.71	91.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011752908-01	OBS	FP	0.00	0	0	0	1	CENT_KIC_POS—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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011752908-01

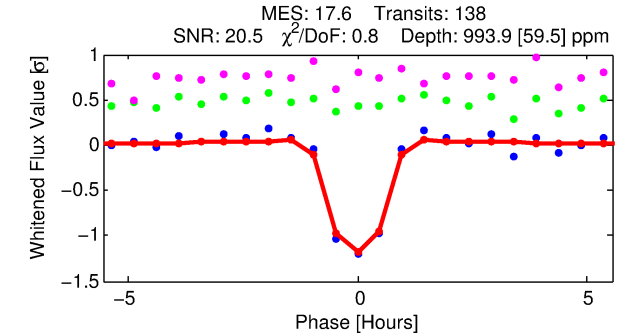
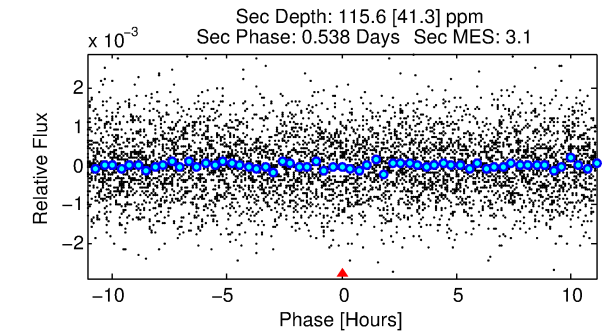
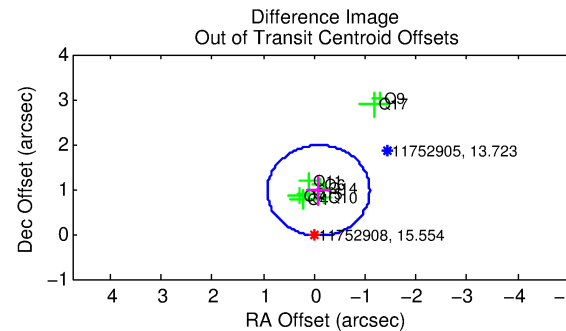
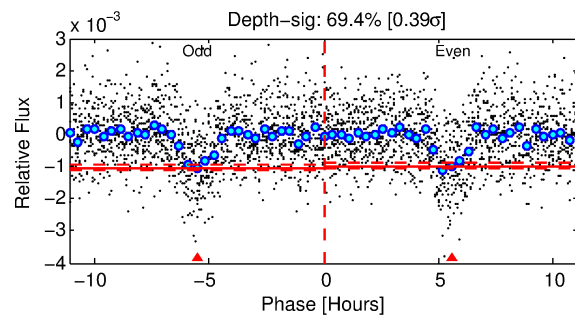
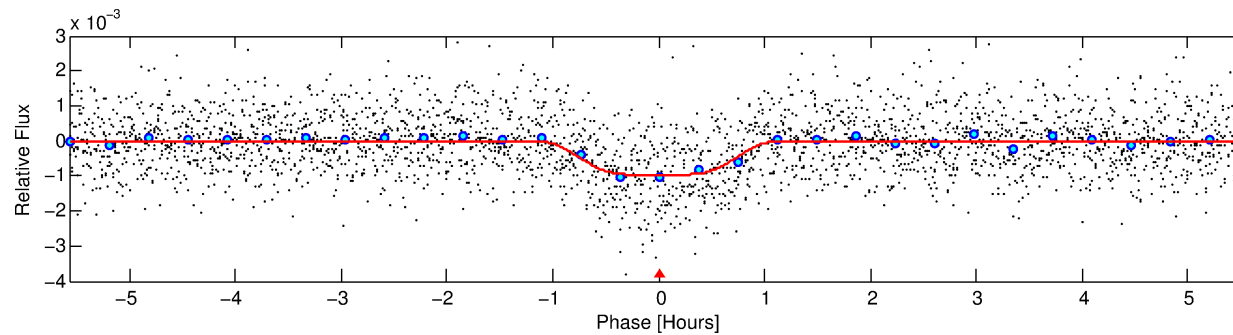
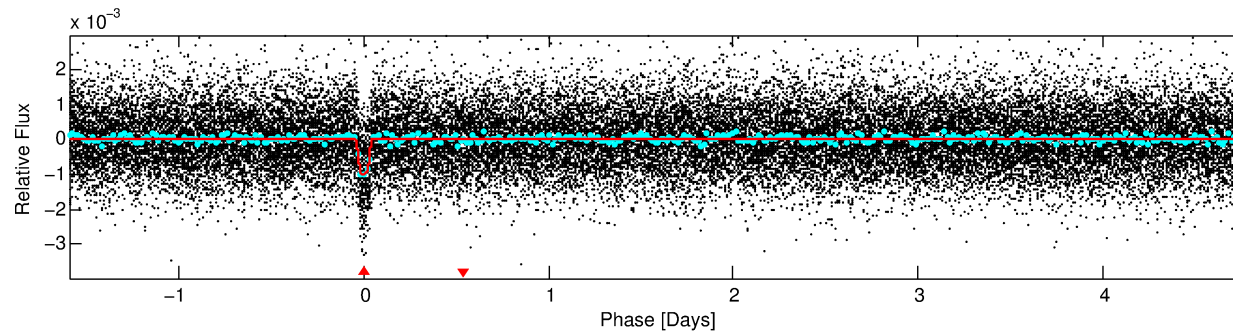
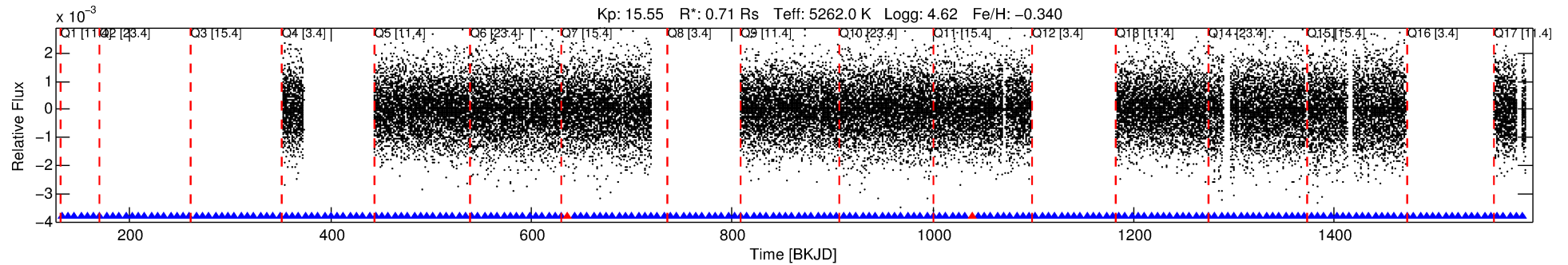
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
011752908-01	11752908	011752906-01	11752906	1:1	5.1	1	1	15.25	15.55	2.39	Direct-PRF	0	0.42	0.22

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ 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.  $\sigma_P$  and  $\sigma_T$  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  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 11752908 Candidate: 1 of 1 Period: 6.383 d

KOI: K02651.01 Corr: 0.941



## DV Fit Results:

Period = 6.38309 [0.00002] d  
Epoch = 132.3125 [0.0023] BKJD  
Rp/R\* = 0.0349 [0.0065]  
a/R\* = 13.47 [10.03]  
b = 0.90 [0.16]  
Seff = 91.04 [20.44]  
Teq = 788 [44] K  
Rp = 2.72 [0.67] Re  
a = 0.0620 [0.0079] AU  
Ag = 33.18 [18.08] [1.78 $\sigma$ ]  
Teff = 2923 [390] K [5.43 $\sigma$ ]

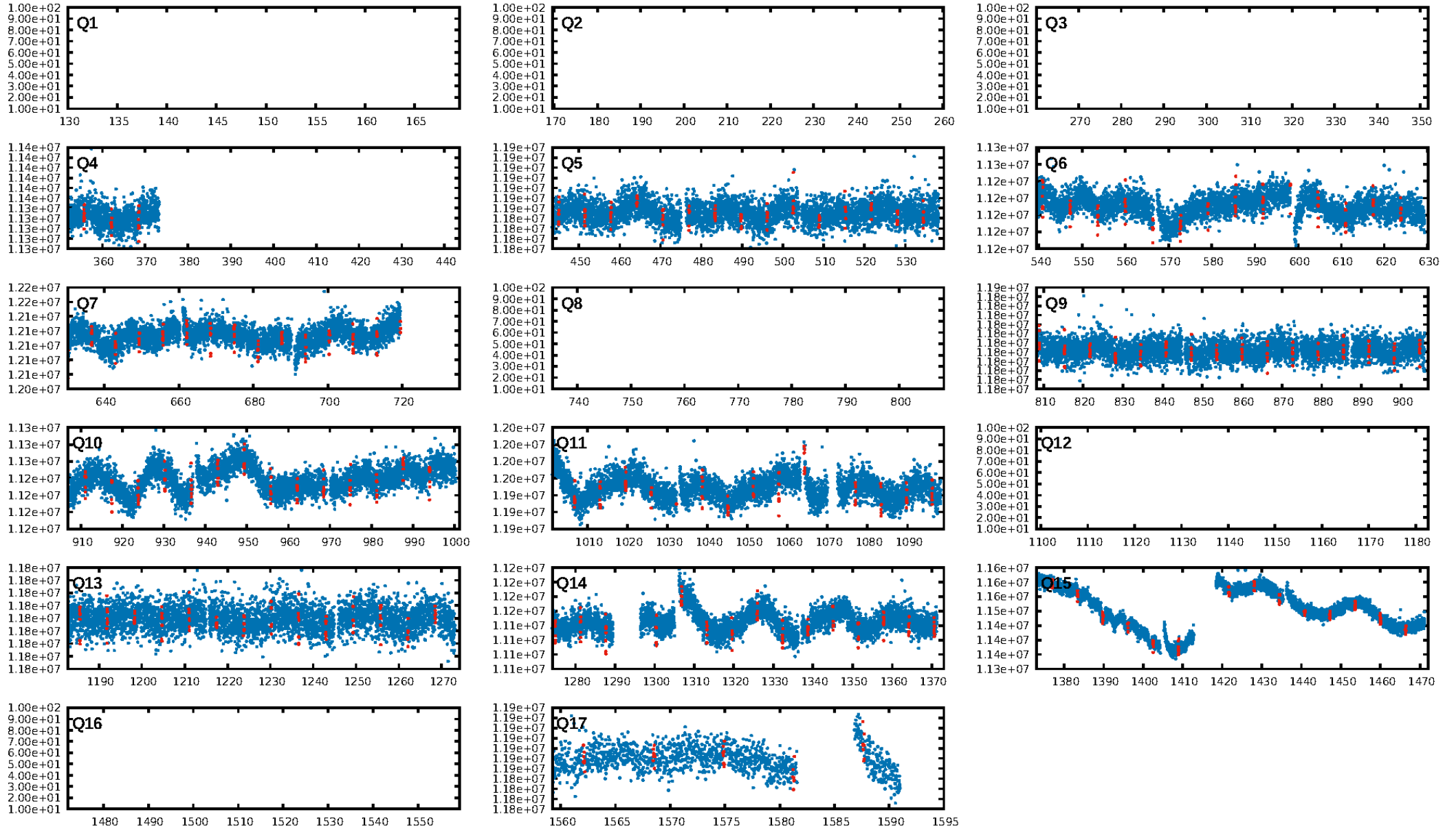
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.29e-66  
RollingBand-fgt: 0.98 [128/130]  
GhostDiagnostic-chr: 0.3625  
Centroid-sig: 0.0%  
Centroid-so: 4.061 arcsec [13.59 $\sigma$ ]  
OotOffset-rm: 0.970 arcsec [2.89 $\sigma$ ]  
OotOffset-st: 3/3/1/2 [9]  
KicOffset-rm: 5.013 arcsec [52.75 $\sigma$ ]  
KicOffset-st: 3/3/1/2 [9]  
DiffImageQuality-fgm: 1.00 [9/9]  
DiffImageOverlap-fno: 1.00 [11/11]

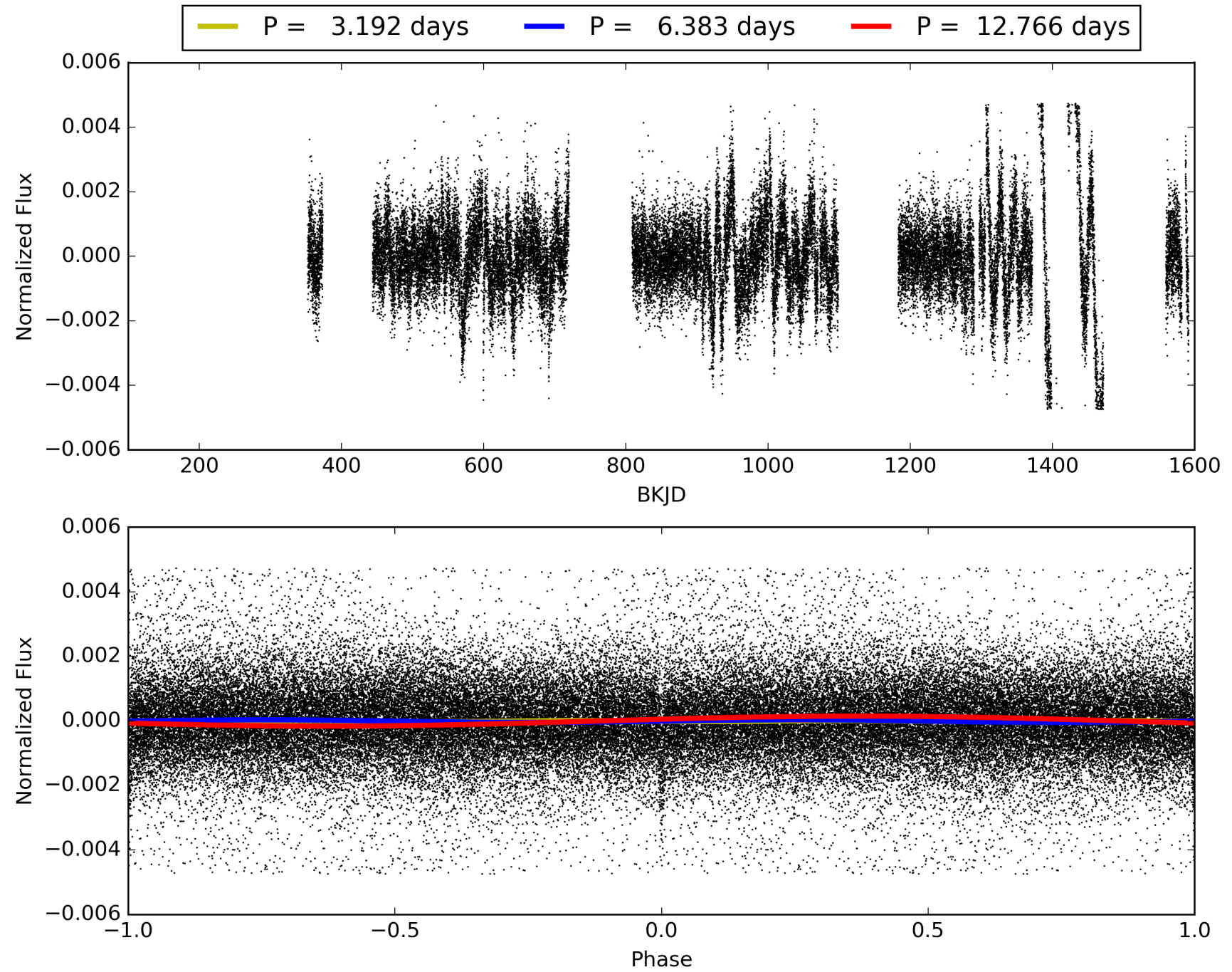
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:40:53 Z

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

# TCE 011752908-01, PDC Light Curves

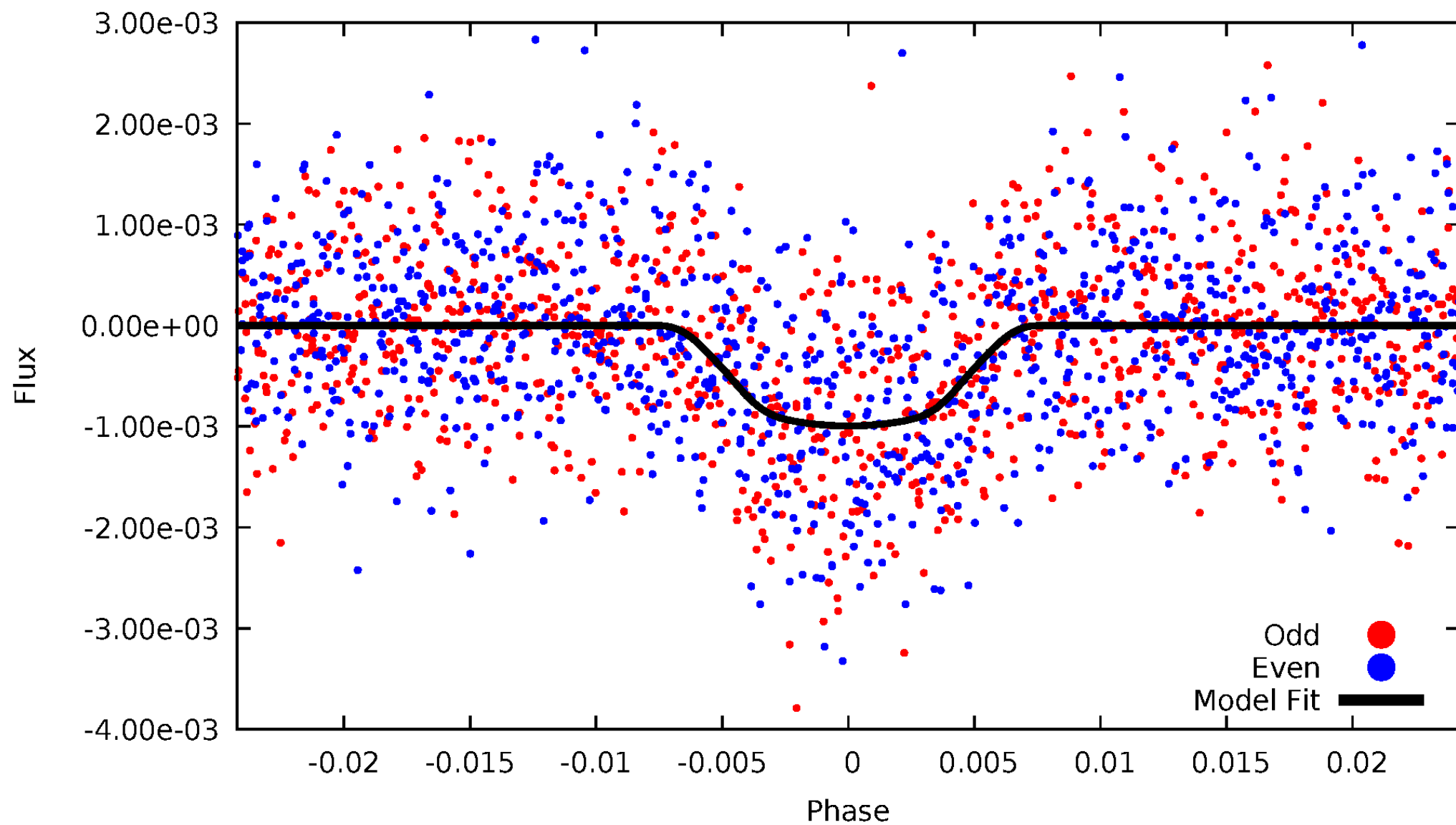


# TCE 011752908-01



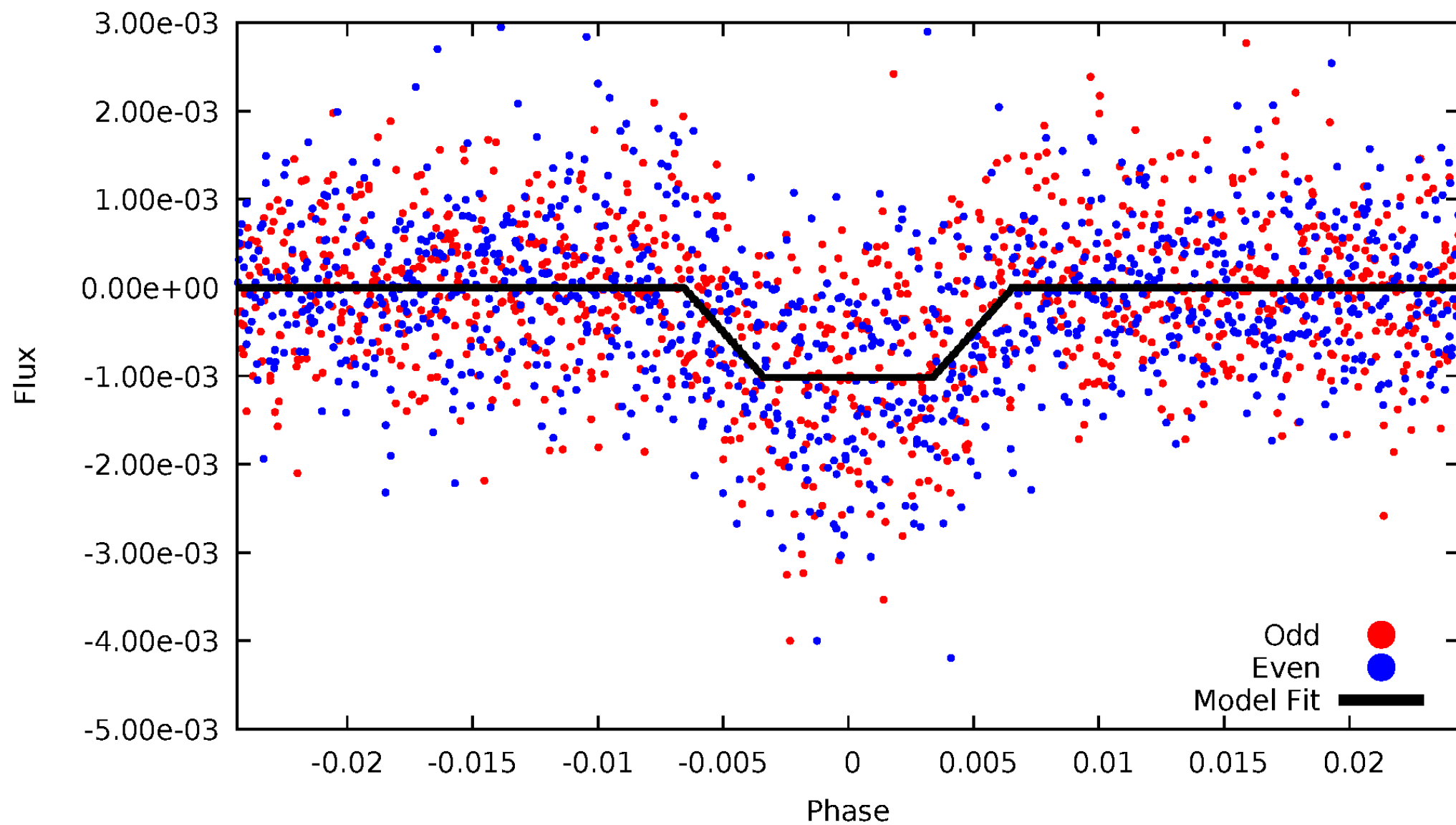
# DV Odd/Even

TCE 011752908-01



# ALT Odd/Even

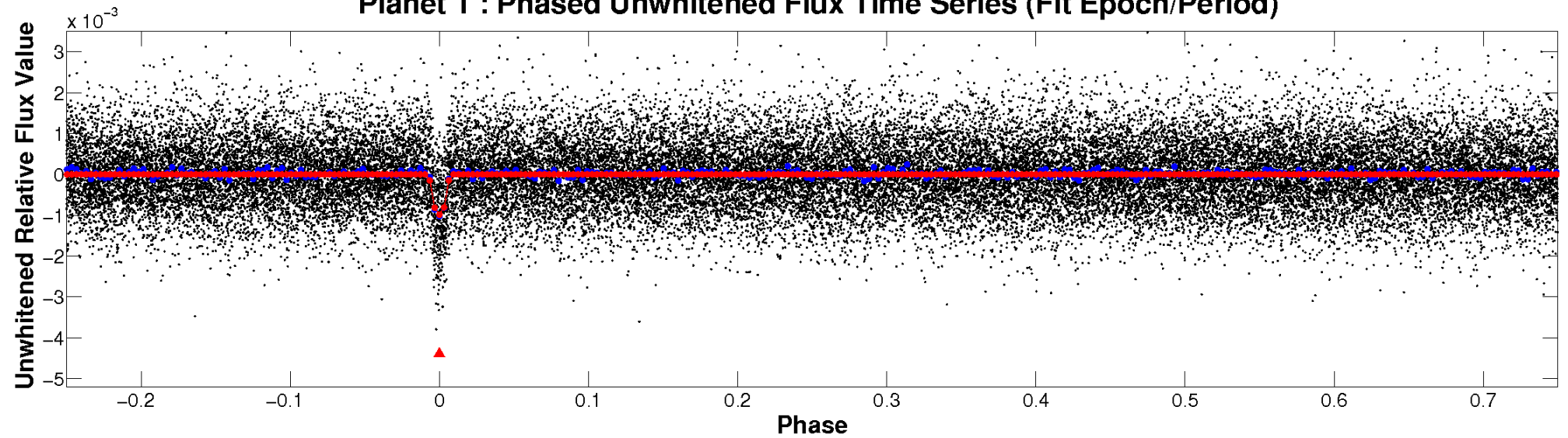
TCE 011752908-01



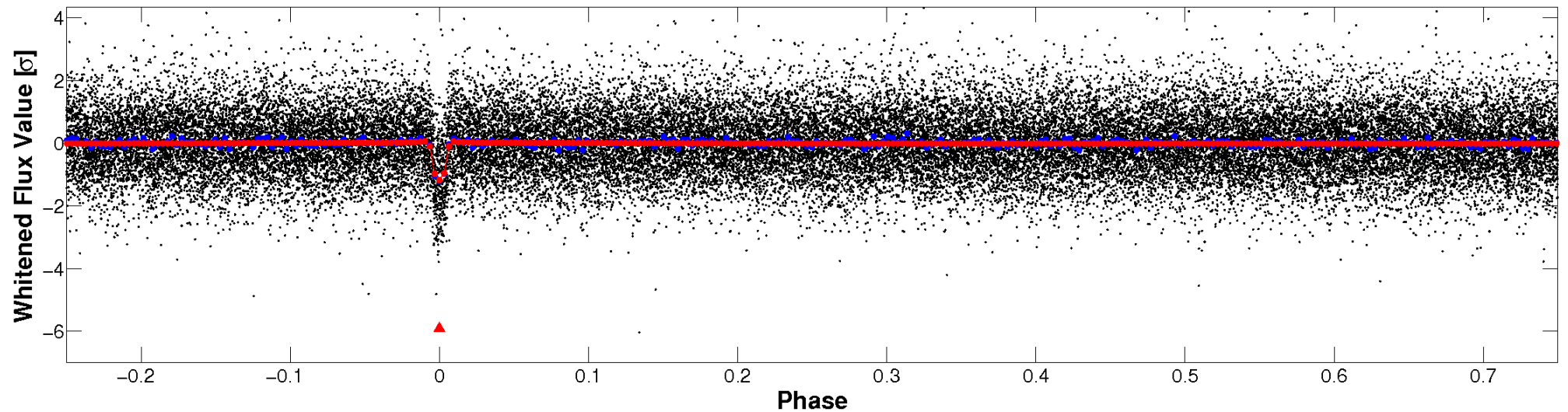


# Non-Whitened Vs. Whitened Light Curve

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

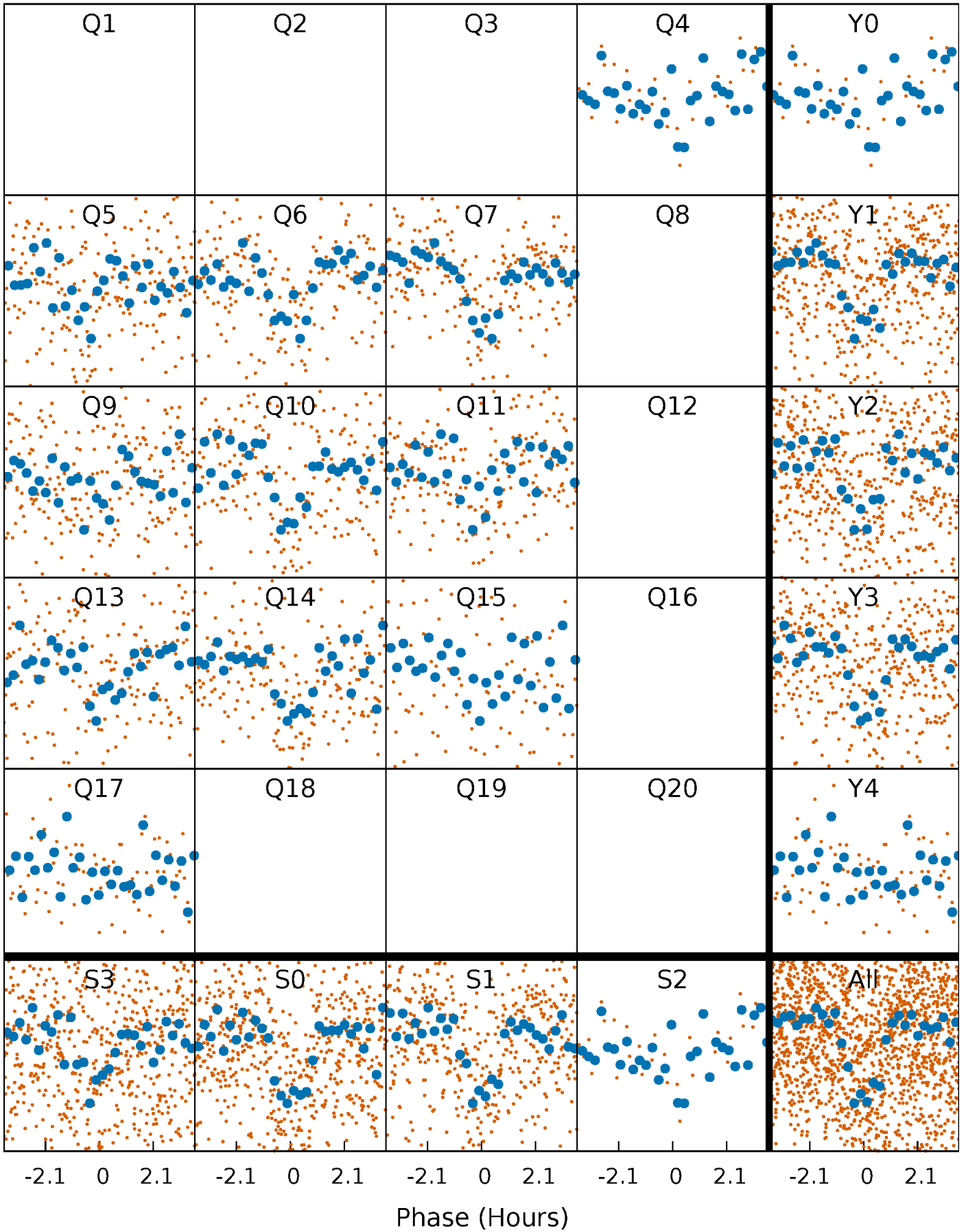


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

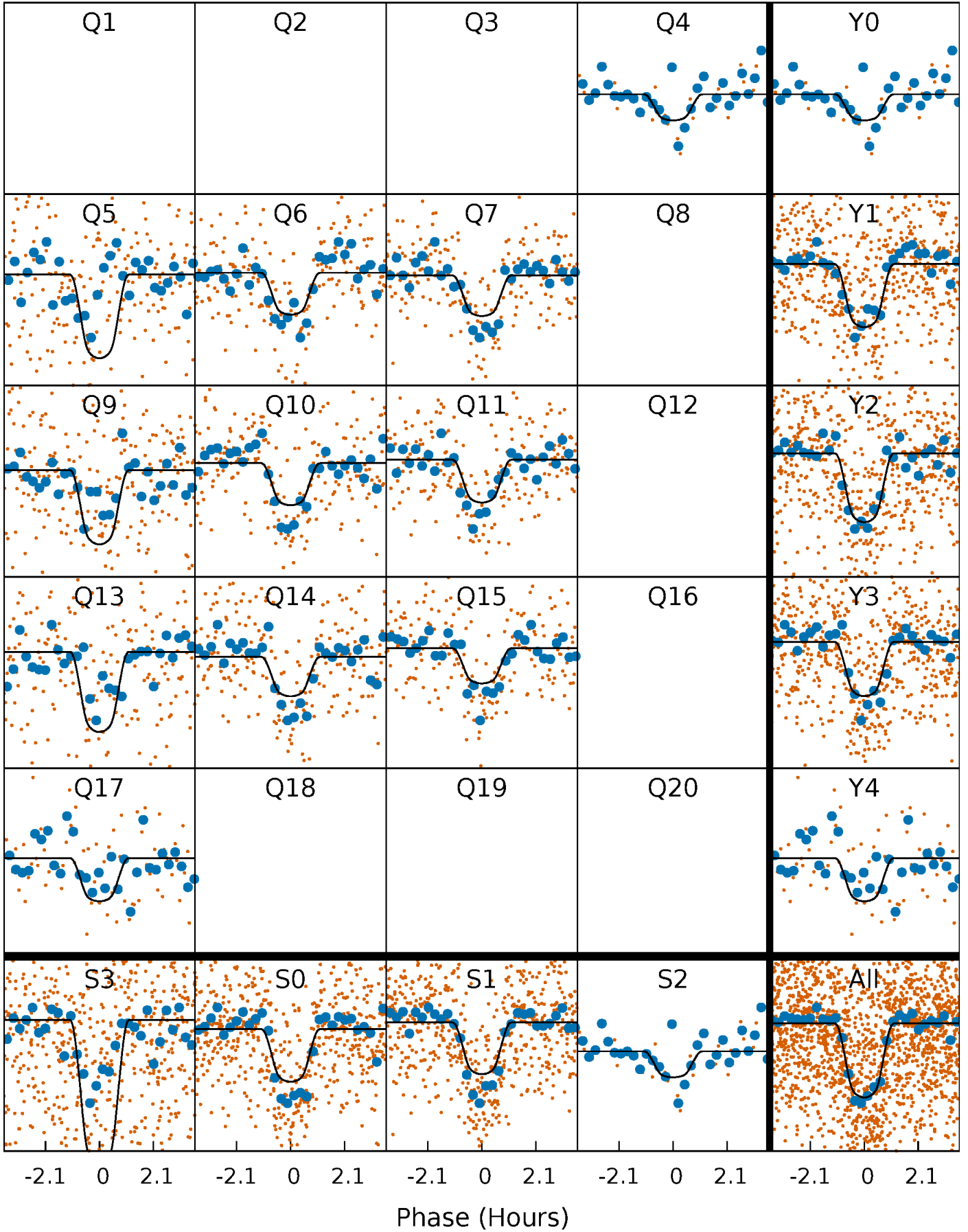
TCE 011752908-01 P= 6.383095 Days  $T_0=132.312514$  (BKJD)





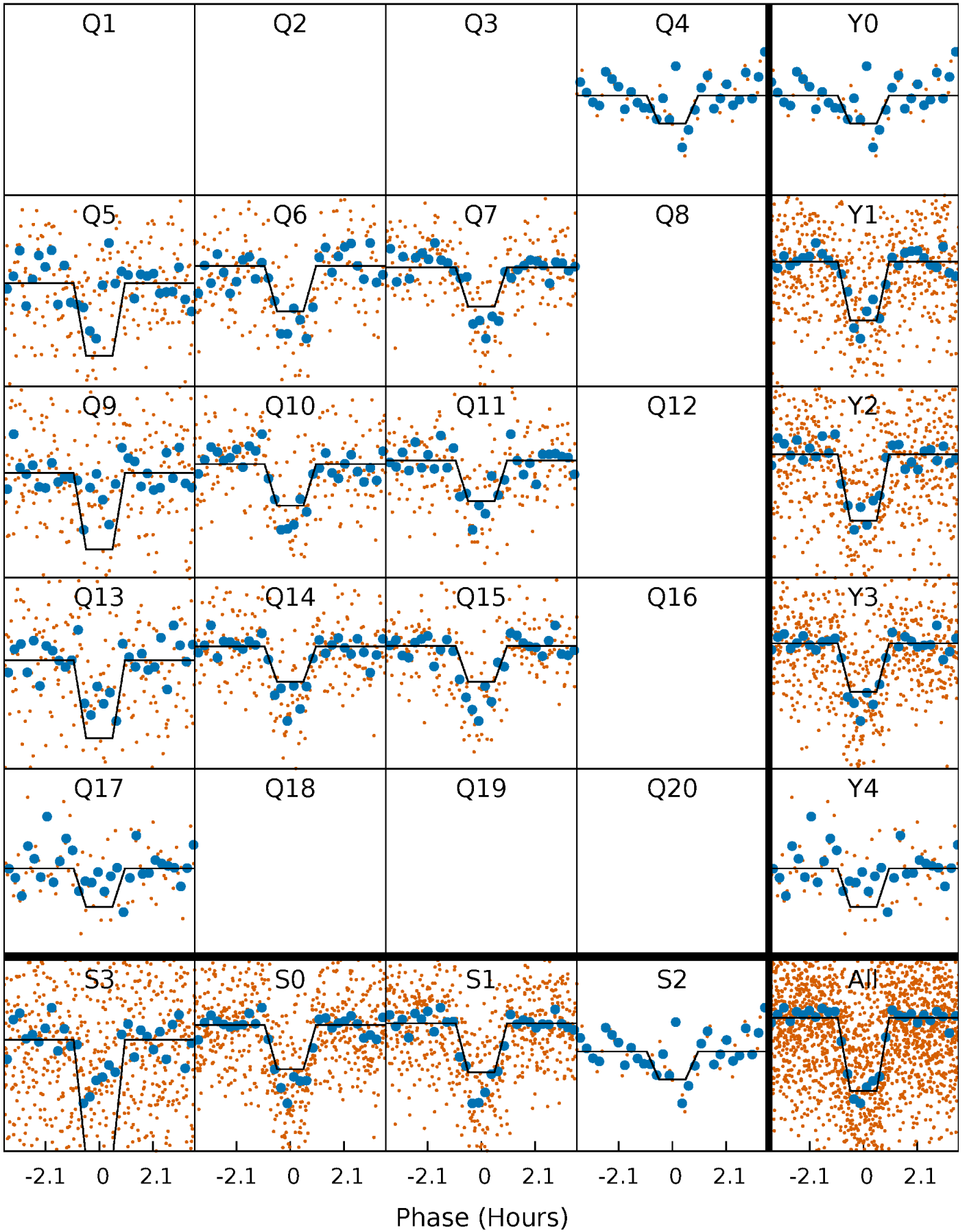
# DV Quarter-Phased Transit Curves

TCE 011752908-01   P= 6.383095 Days    $T_0=132.312514$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

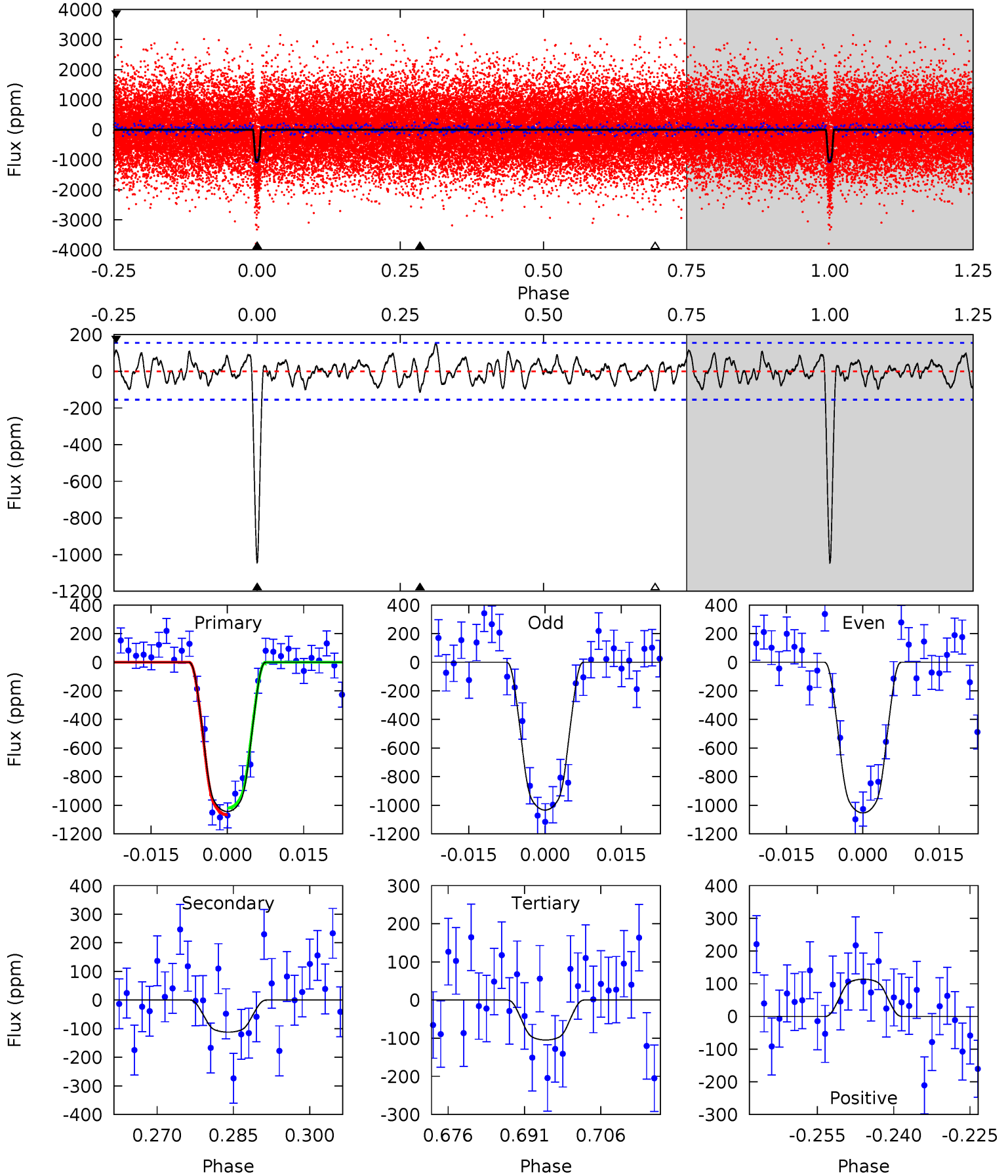
TCE 011752908-01 P= 6.383190 Days  $T_0=132.300480$  (BKJD)



# DV Model-Shift Uniqueness Test

011752908-01, P = 6.383095 Days, E = 132.312514 Days

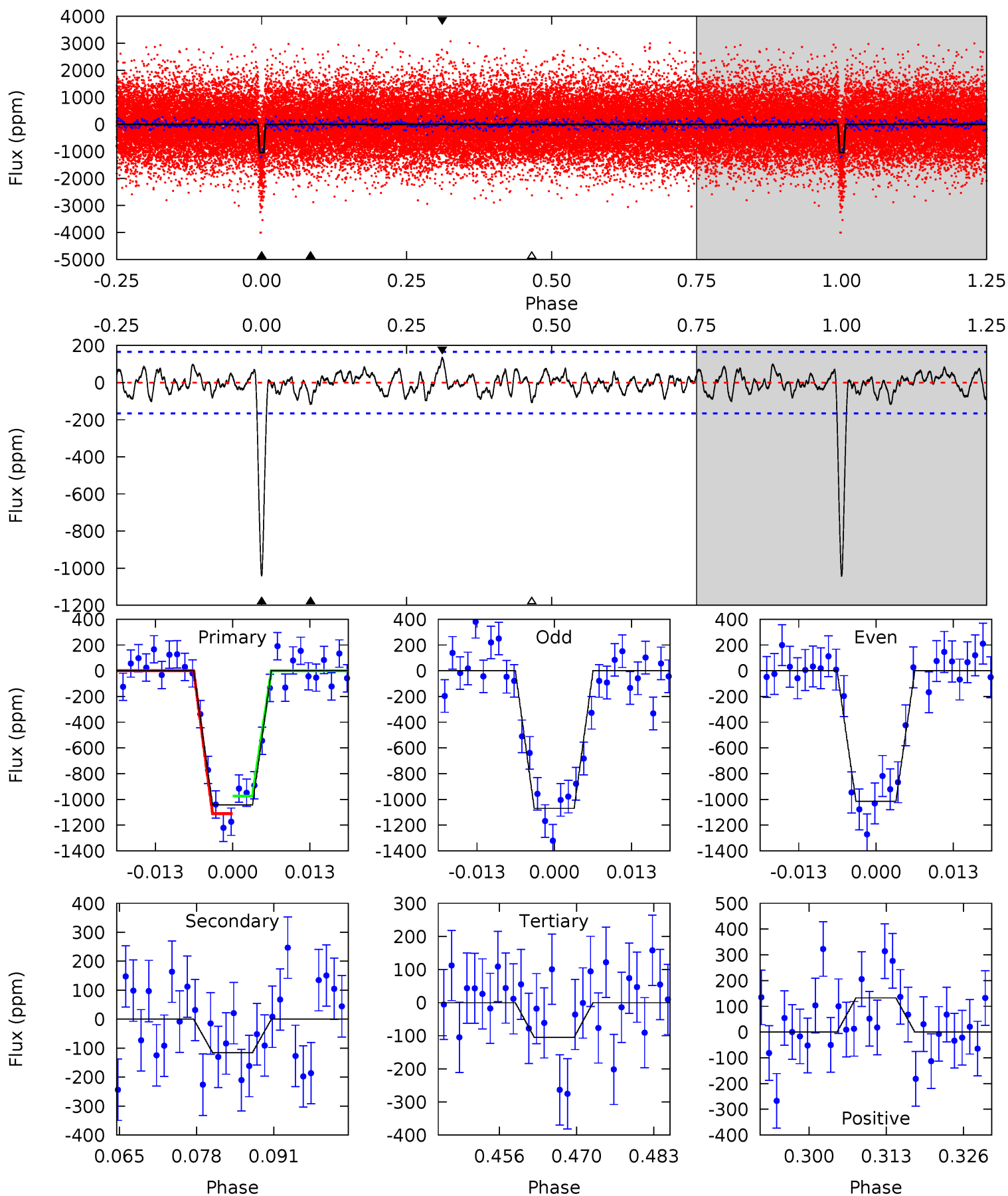
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.3	3.57	3.34	3.63	4.95	2.43	1.48	29.9	29.6	0.23	-0.05	0.32	1.08	0.13	0.74



# Alt Model-Shift Uniqueness Test

011752908-01, P = 6.383190 Days, E = 132.300480 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.3	3.46	3.14	3.98	4.98	2.48	1.26	28.1	27.3	0.32	-0.52	0.82	1.05	0.11	2.05



### Stellar Parameters For KIC 011752908

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5262^{+184}_{-184}$	$4.623^{+0.032}_{-0.091}$	$-0.340^{+0.300}_{-0.300}$	$0.714^{+0.114}_{-0.061}$	$0.786^{+0.076}_{-0.084}$	$3.044^{+0.520}_{-0.880}$
	+3%/-3%	+1%/-2%	+88%/-88%	+16%/-9%	+10%/-11%	+17%/-29%
Source	KIC0	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 011752908-01 / KOI 2651.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-112 \pm 31$	$2.77^{+0.55}_{-0.51}$	$1112^{+54}_{-48}$	$3375^{+283}_{-235}$	$30^{+19}_{-11}$
Alt.	$-115 \pm 33$	$2.51^{+0.57}_{-0.52}$	$1114^{+49}_{-51}$	$3486^{+367}_{-271}$	$37^{+28}_{-15}$

$T_{max}$  = 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

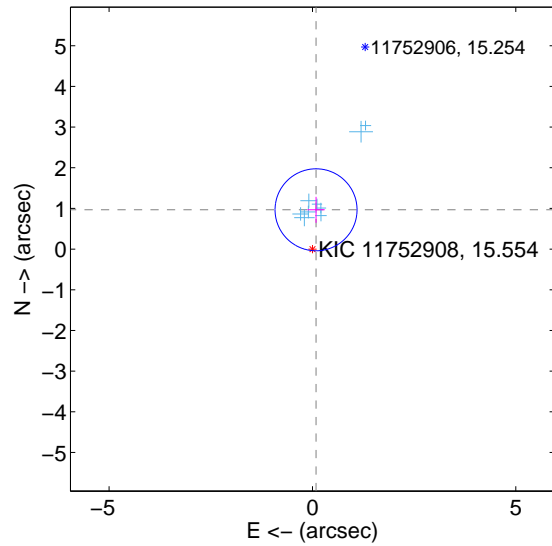
Supplemental centroid analysis for 011752908-01. Kepler magnitude: 15.55. Transit SNR 20.52

There are 9 quarters with good PRF difference image offsets

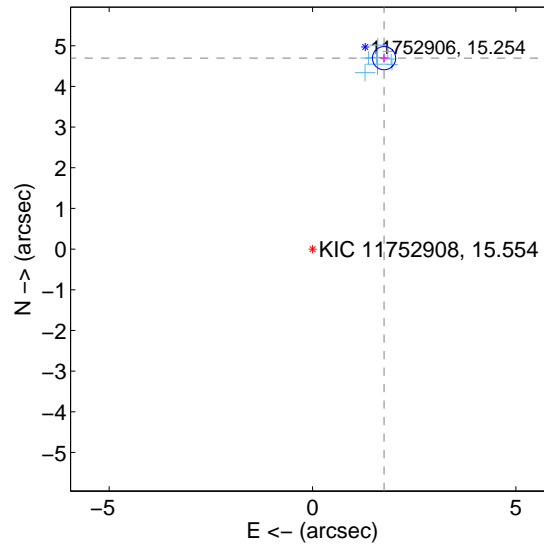
The direct PRF centroid is offset from the target star catalog position by about 1.71 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.970 \pm 0.336$	2.89	$-0.089 \pm 0.215$	$0.966 \pm 0.320$
PRF-fit source offset from KIC position	$5.013 \pm 0.095$	52.75	$-1.758 \pm 0.105$	$4.694 \pm 0.094$
photometric centroid source offset	$4.06 \pm 0.30$	13.59	$-1.58 \pm 0.29$	$3.74 \pm 0.30$

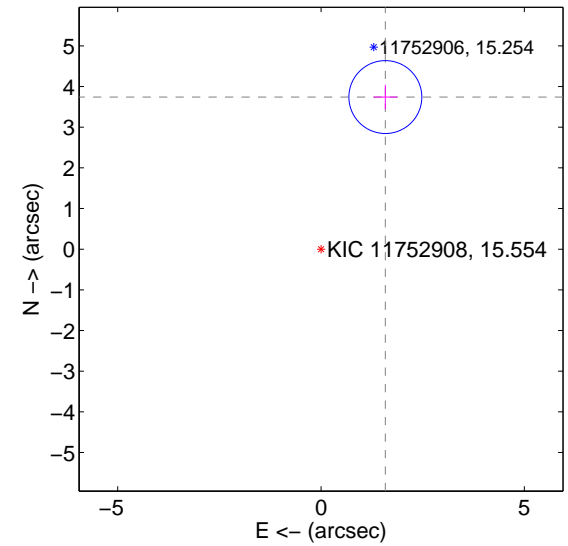
offset from difference PRF-fit to OOT PRF-fit



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- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

Q1 no difference image



Q1 no OOT image



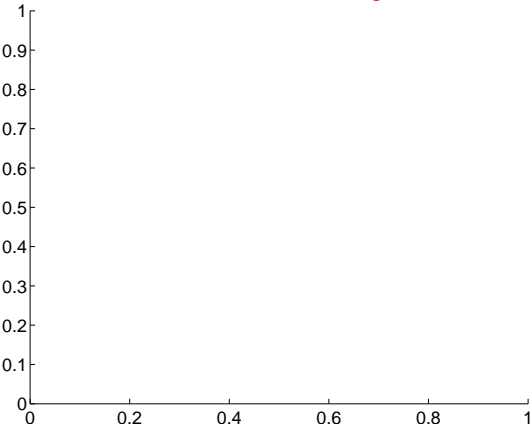
Q2 no difference image



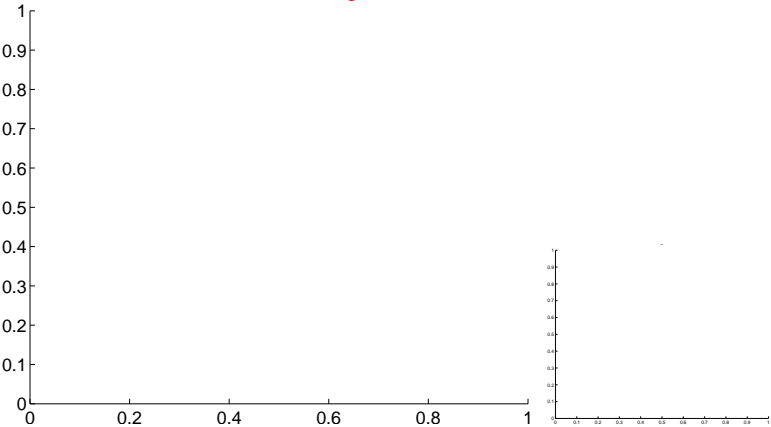
Q2 no OOT image



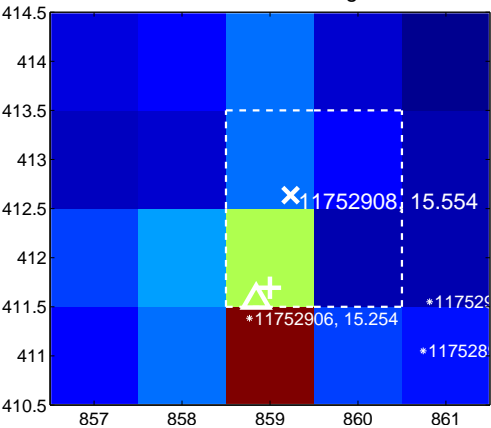
Q3 no difference image



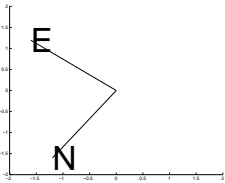
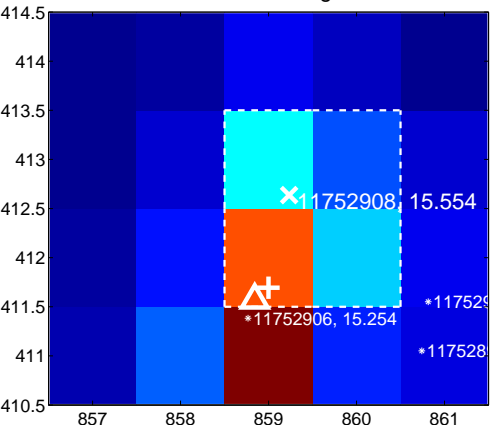
Q3 no OOT image



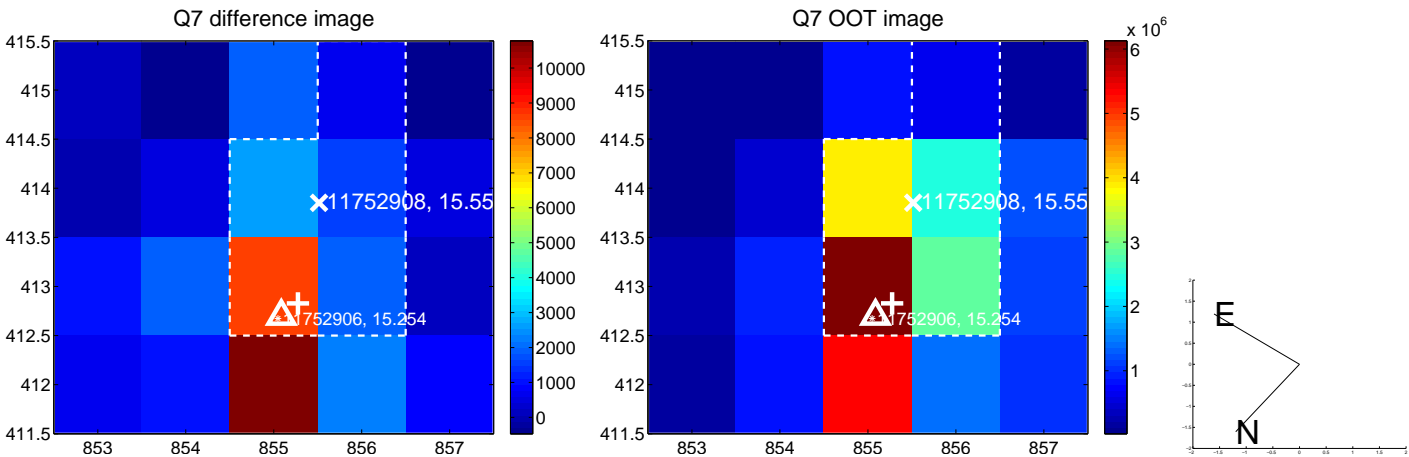
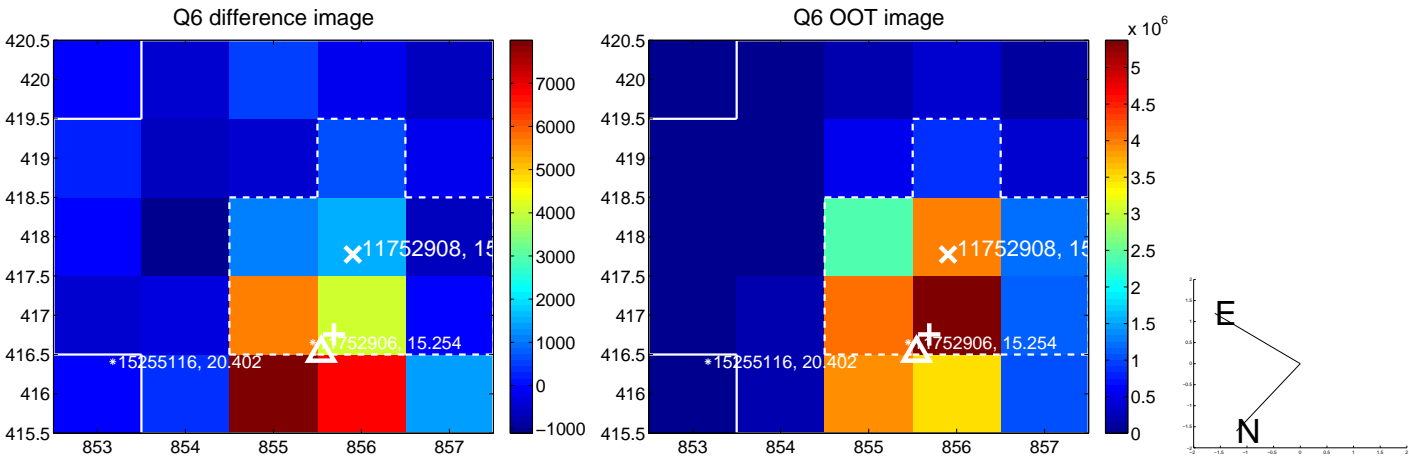
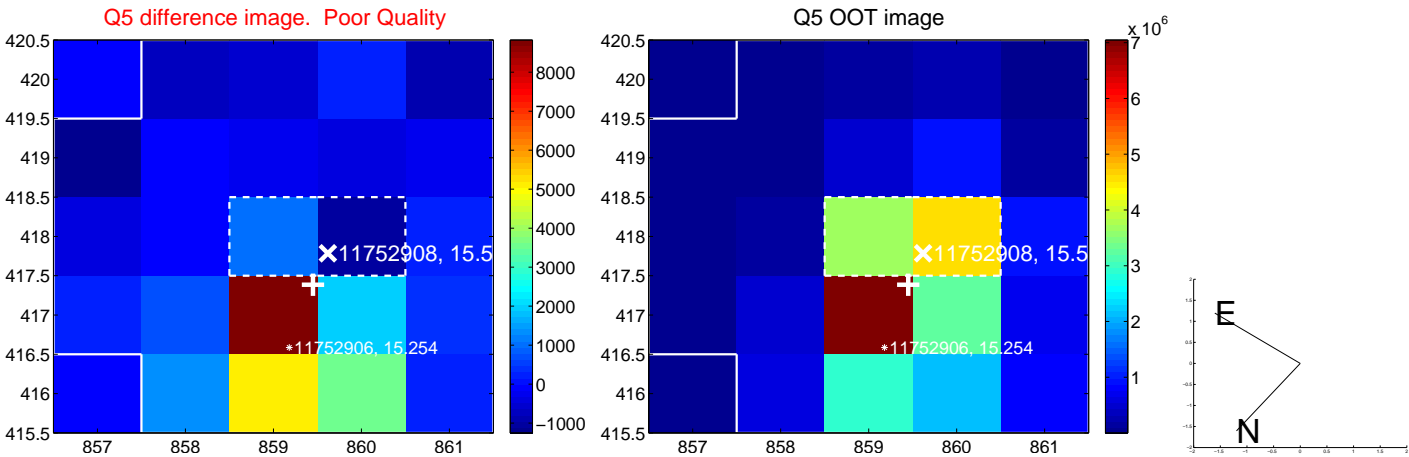
Q4 difference image



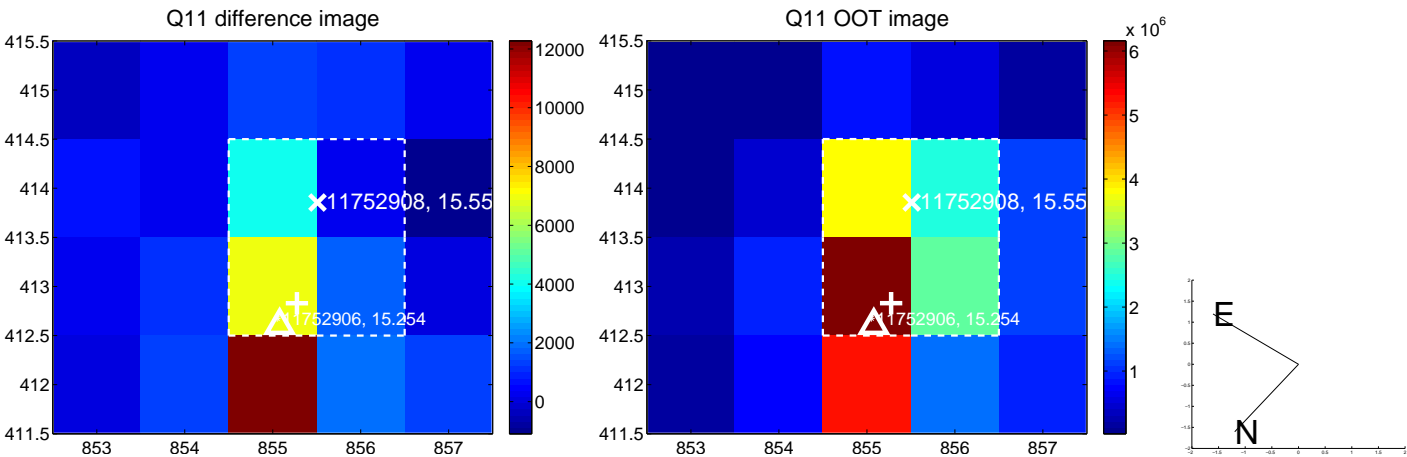
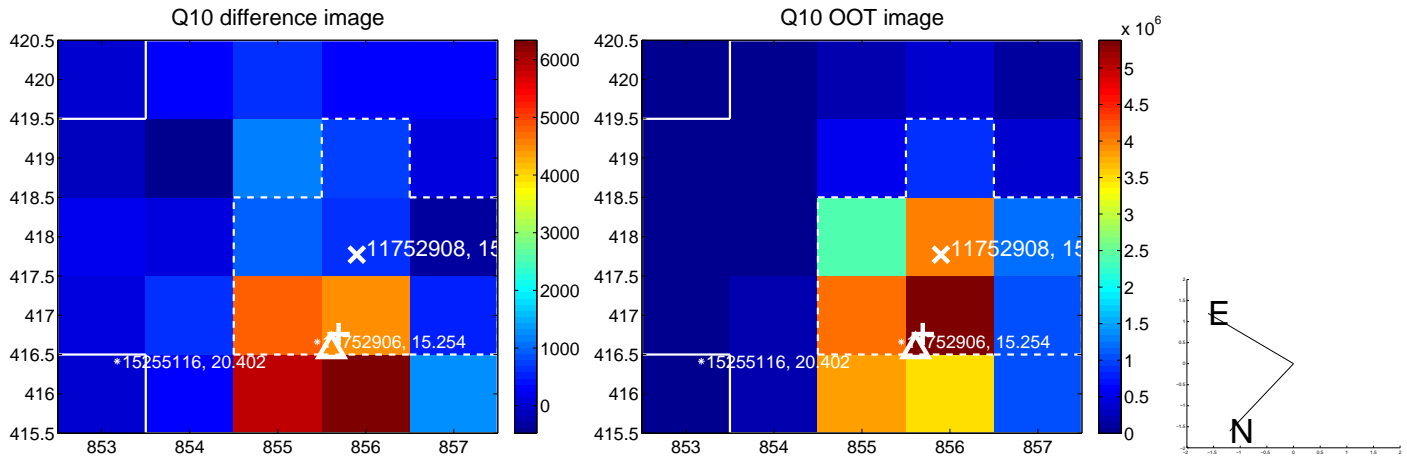
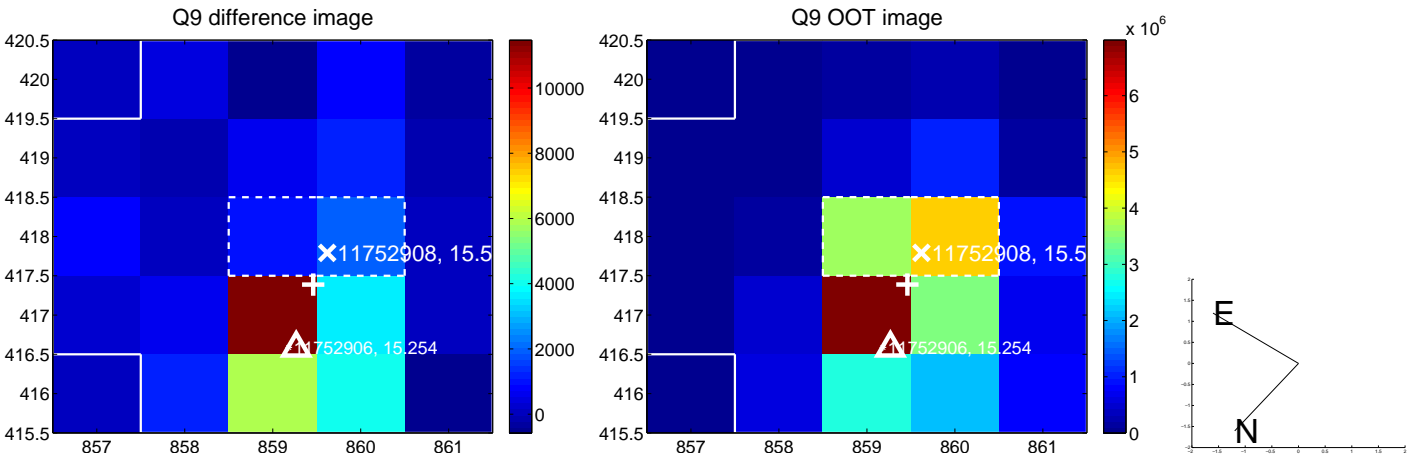
Q4 OOT image



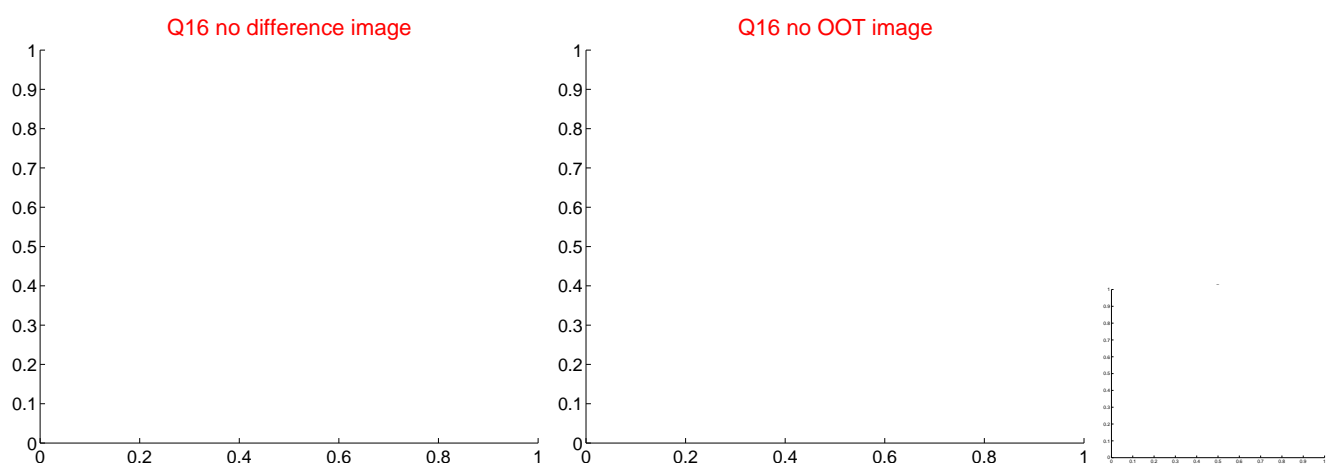
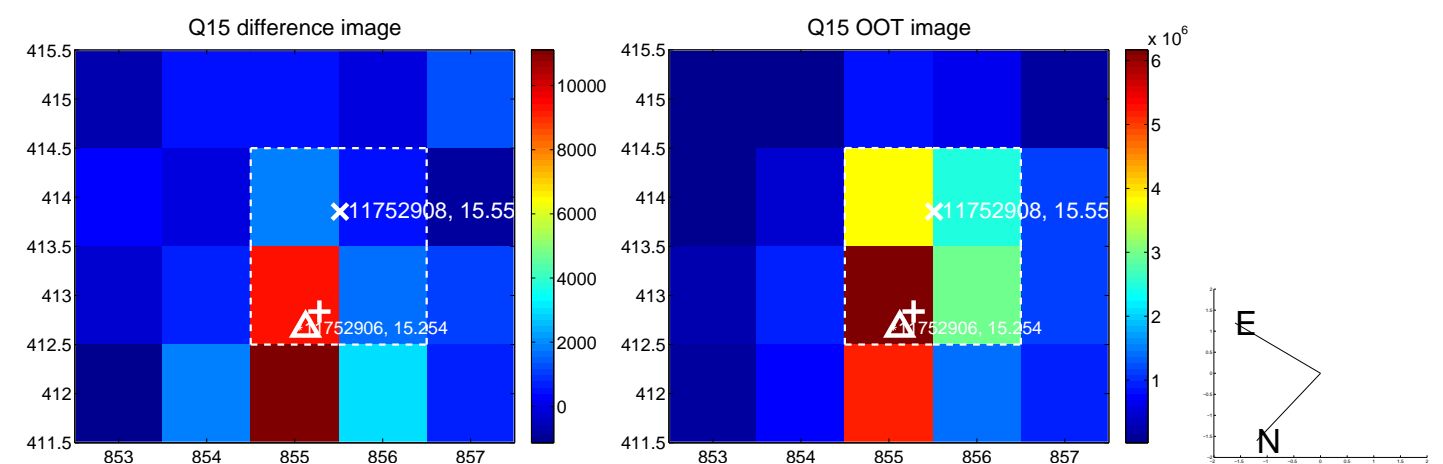
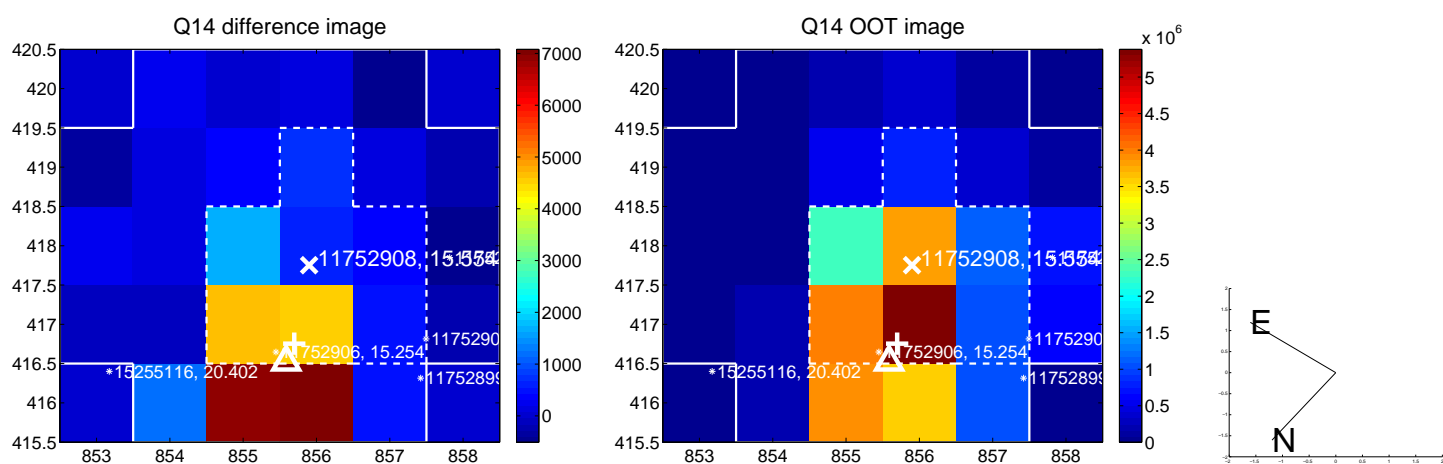
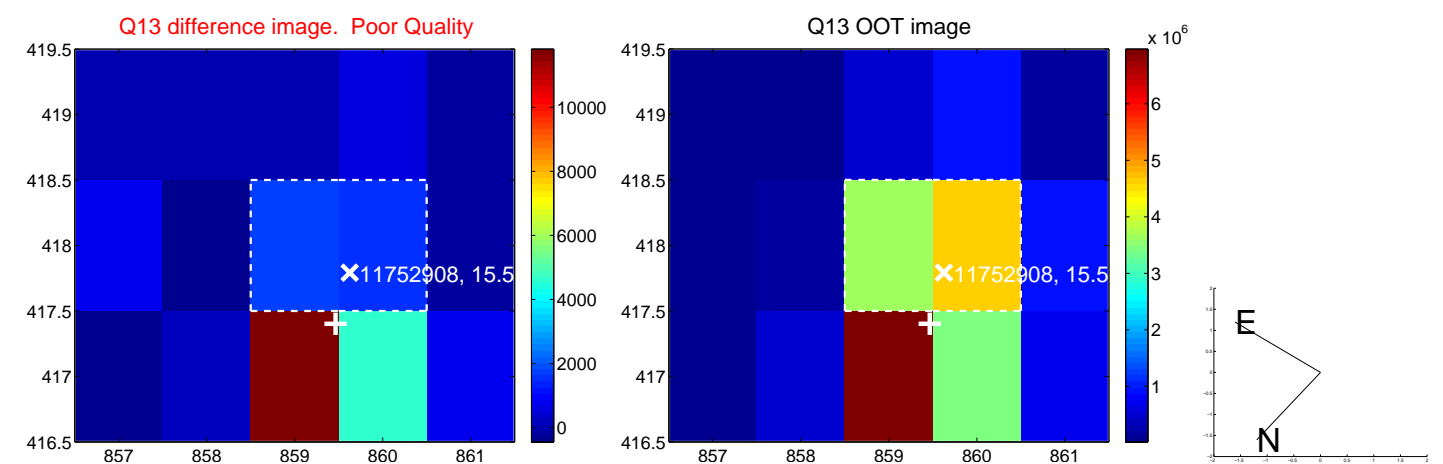
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

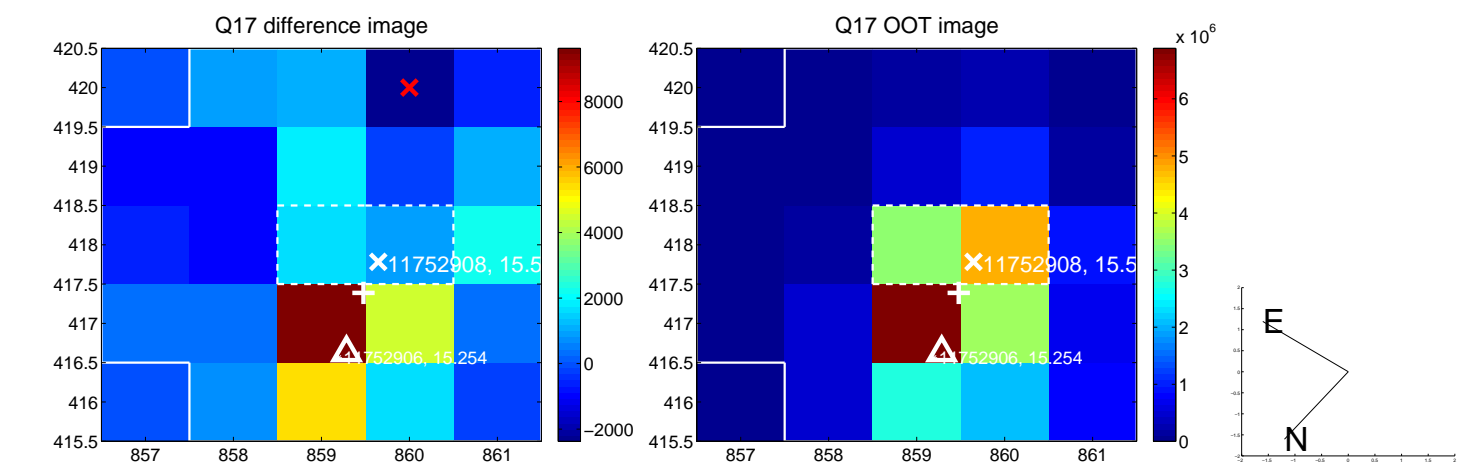


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

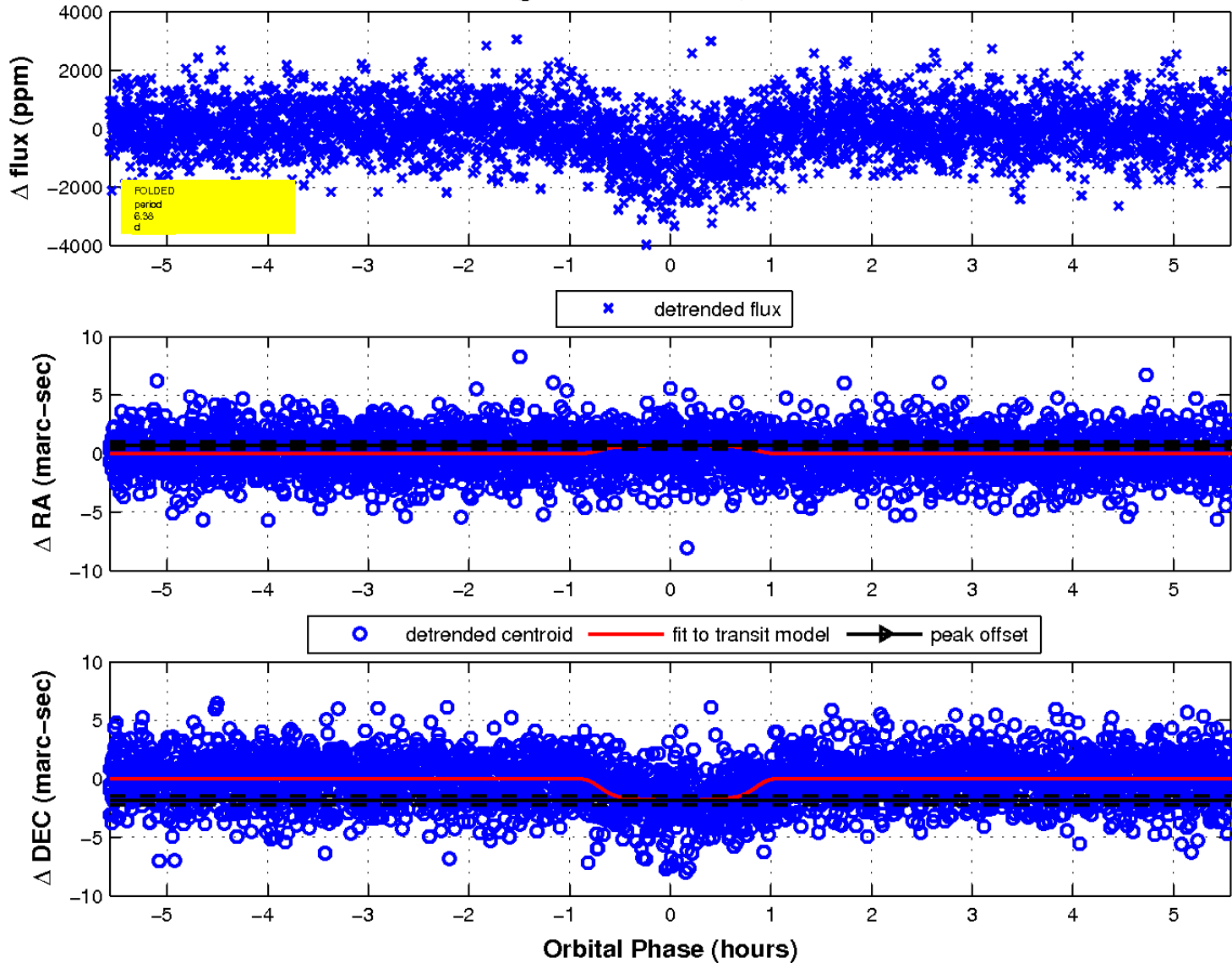




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

