

# KIC 008302450

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008302450-01	OBS	1144.01	2.441988	132.132993	215.3	2.848	21.8	23.2	0.80	5970	1.39	639.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008302450-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008302450-01

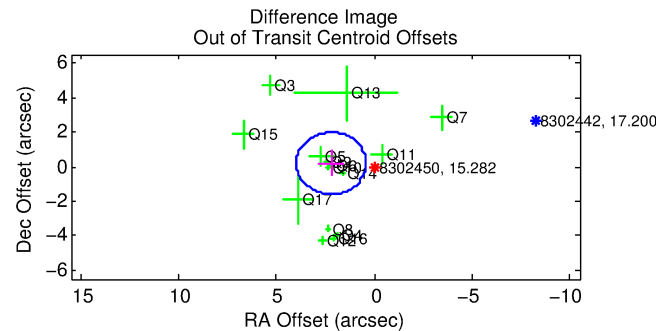
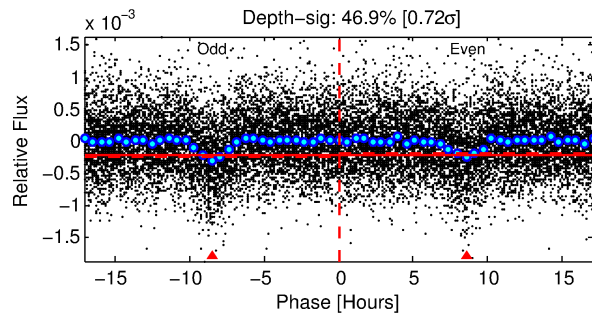
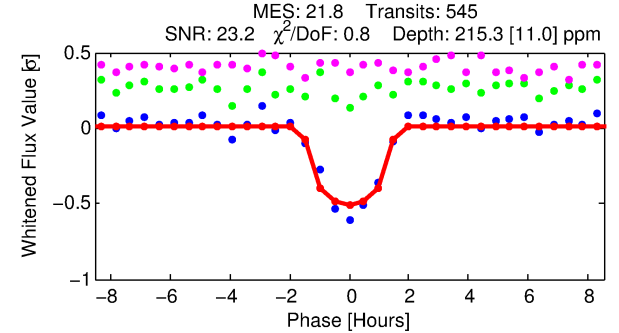
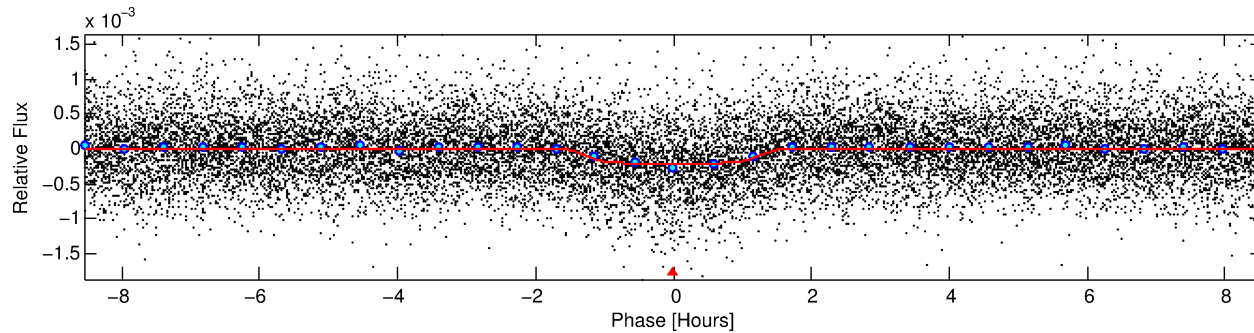
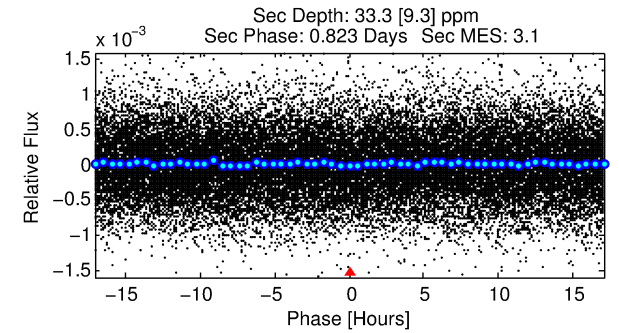
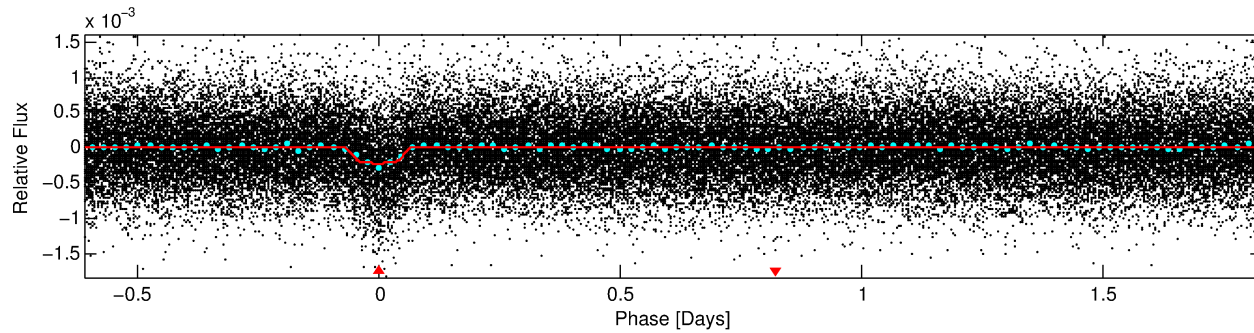
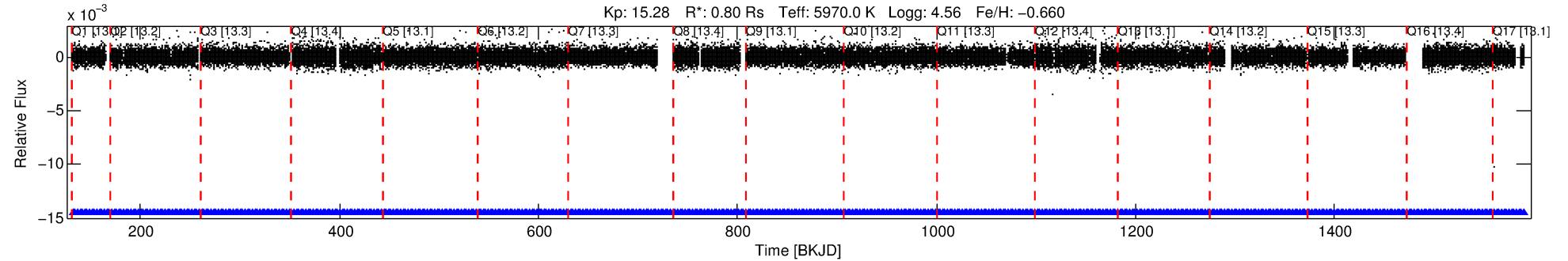
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008302450-01	8302450	008302455-01	8302455	1:1	73.9	11	-15	11.54	15.29	444.92	Direct-PRF	0	0.06	0.05

**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: 8302450 Candidate: 1 of 1 Period: 2.442 d

KOI: K01144.01 Corr: 0.981



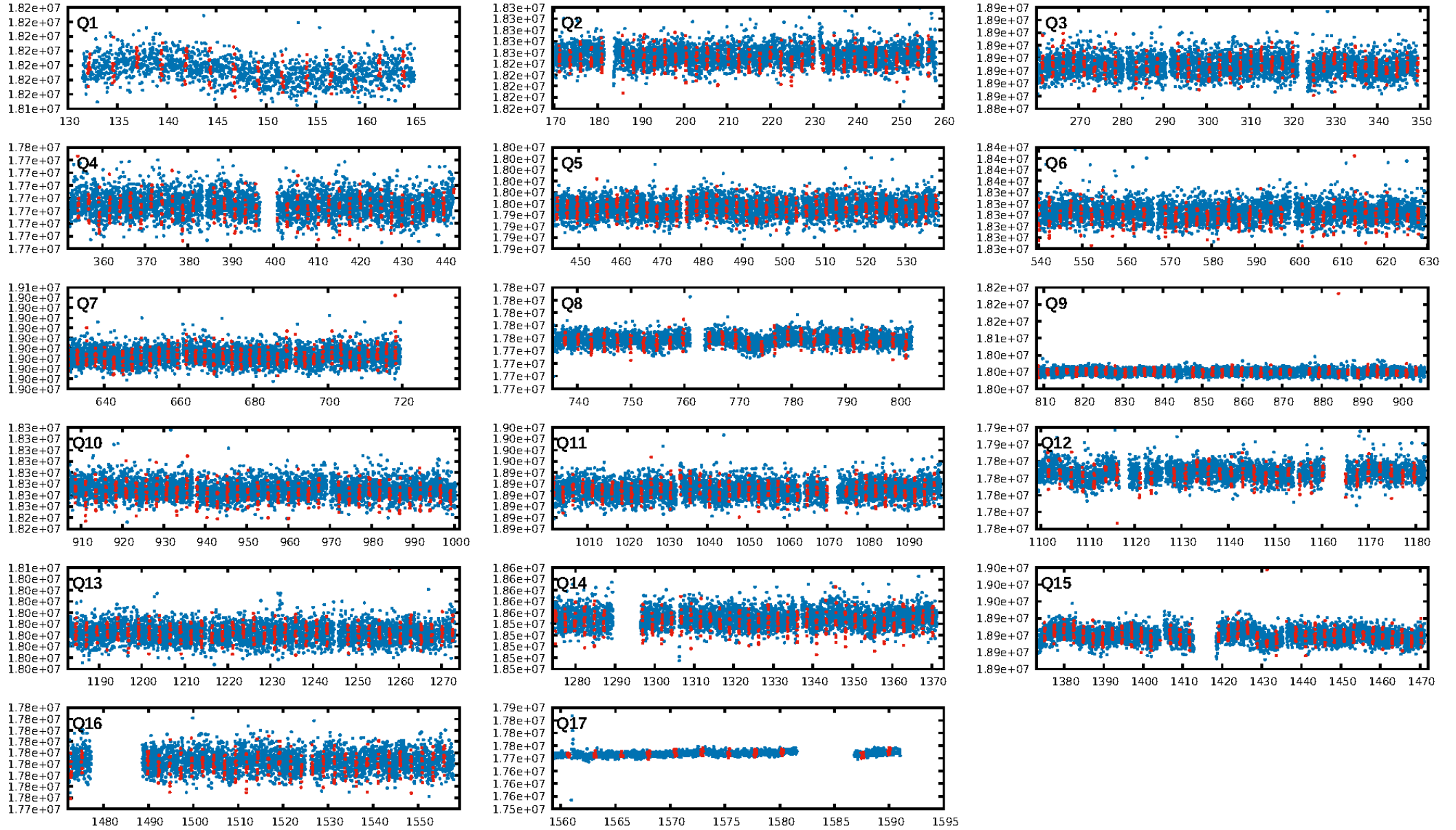
## DV Fit Results:

Period = 2.44199 [0.00001] d  
Epoch = 132.1330 [0.0019] BKJD  
Rp/R\* = 0.0160 [0.0027]  
a/R\* = 3.03 [2.44]  
b = 0.92 [0.16]  
Seff = 639.36 [215.66]  
Teff = 1282 [108] K  
Rp = 1.39 [0.41] Re  
a = 0.0336 [0.0071] AU  
Ag = 10.65 [5.74] [1.68 $\sigma$ ]  
Teffp = 3581 [405] K [5.48 $\sigma$ ]

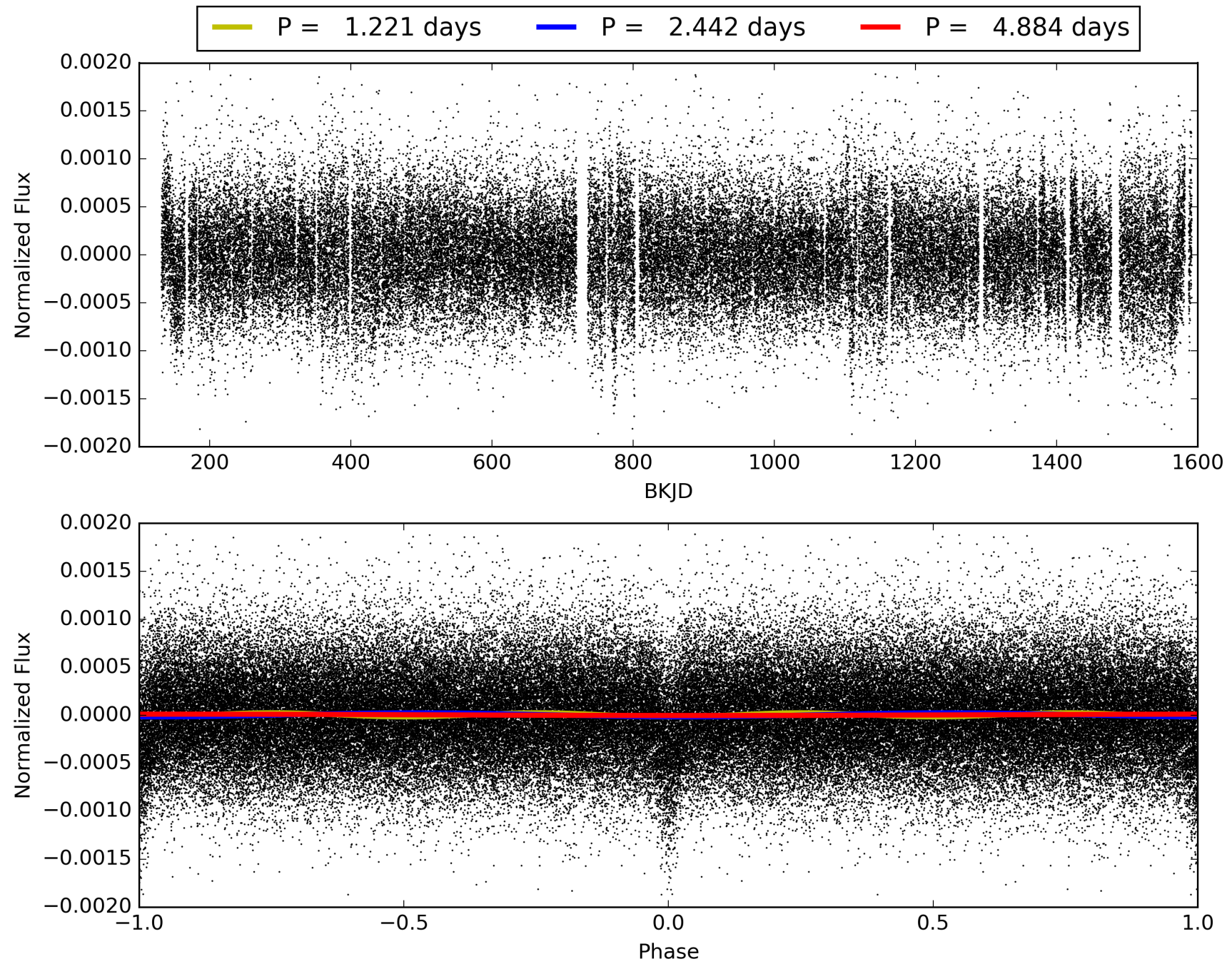
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.89e-101  
RollingBand-fgt: 1.00 [520/520]  
GhostDiagnostic-chr: 0.1535  
Centroid-sig: 0.0%  
Centroid-so: 1.380 arcsec [2.33 $\sigma$ ]  
OotOffset-rm: 2.221 arcsec [3.73 $\sigma$ ]  
KicOffset-rm: 2.567 arcsec [4.40 $\sigma$ ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 0.00 [0/15]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008302450-01, PDC Light Curves



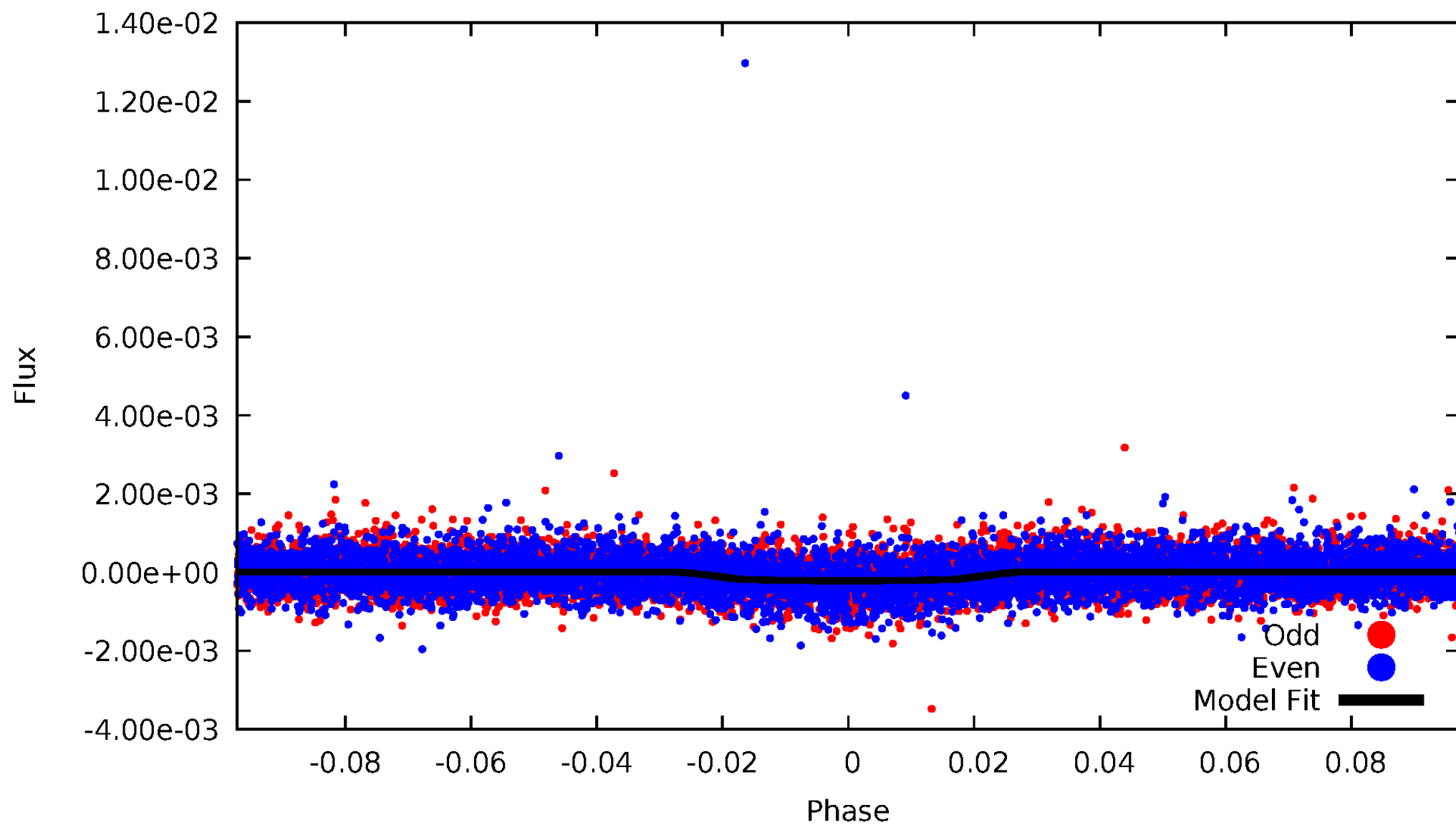
TCE 008302450-01





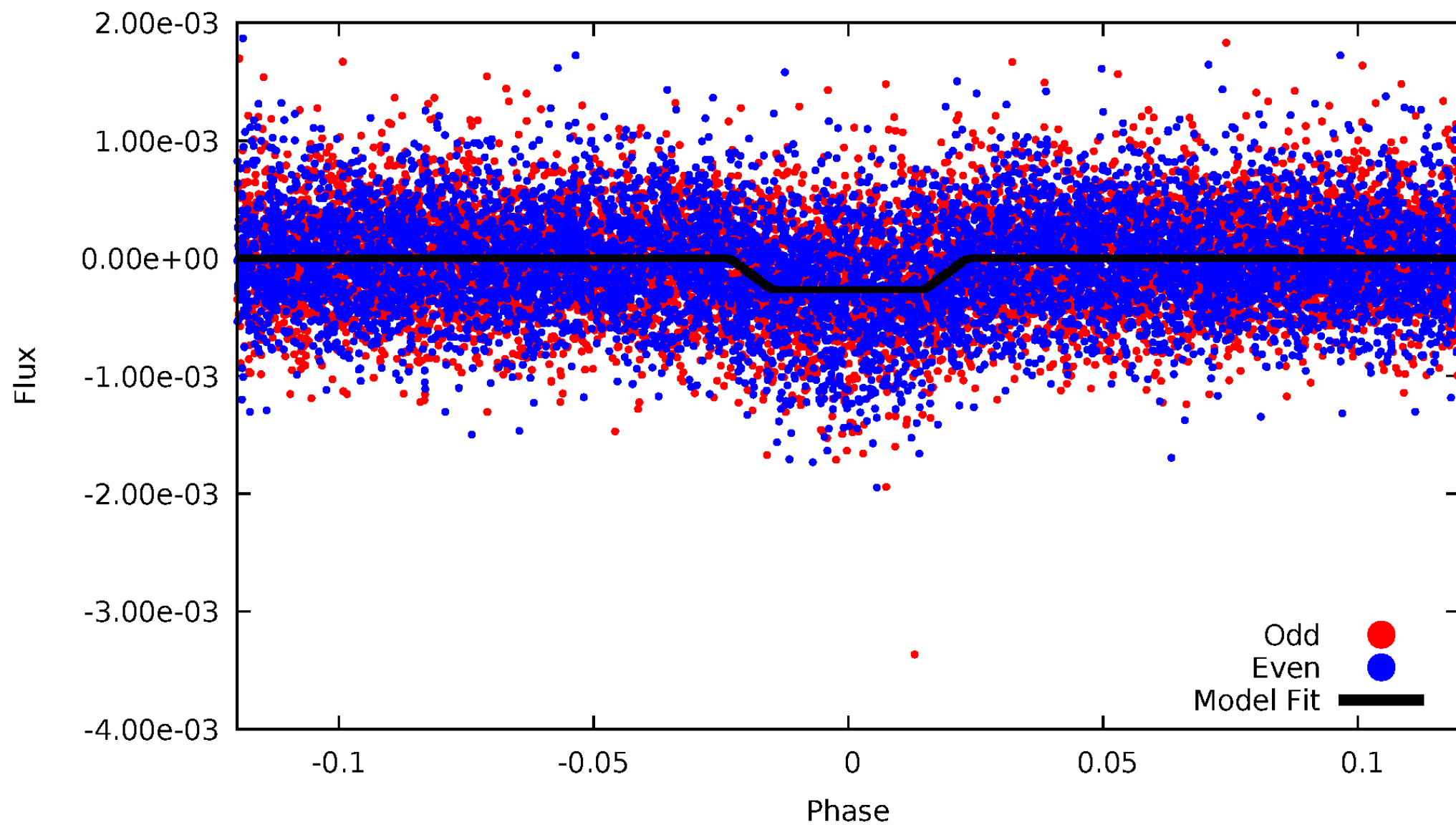
# DV Odd/Even

TCE 008302450-01



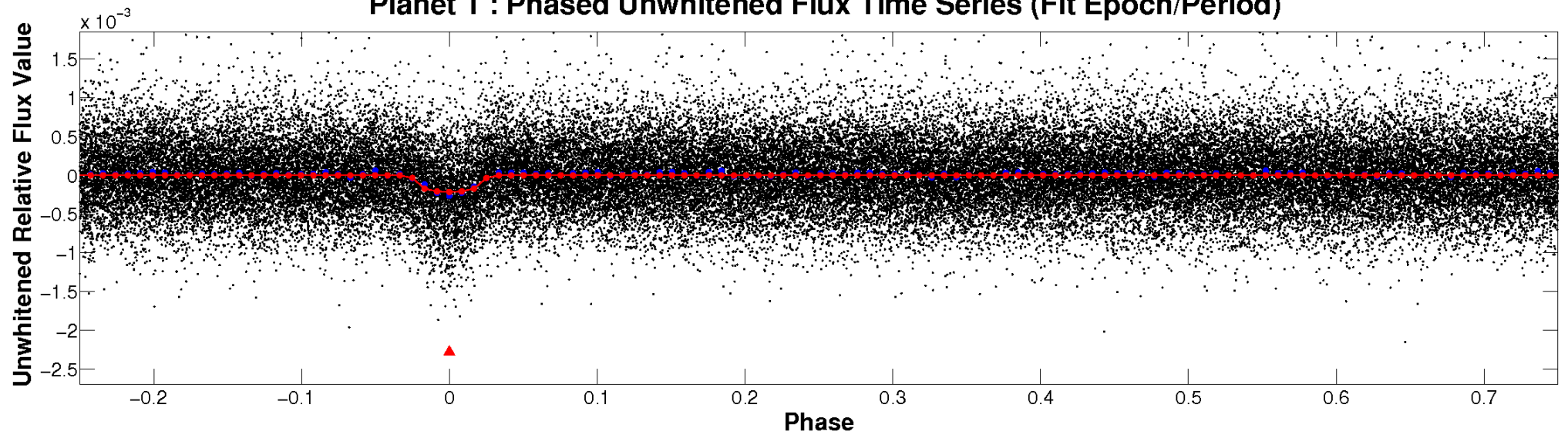
# ALT Odd/Even

TCE 008302450-01

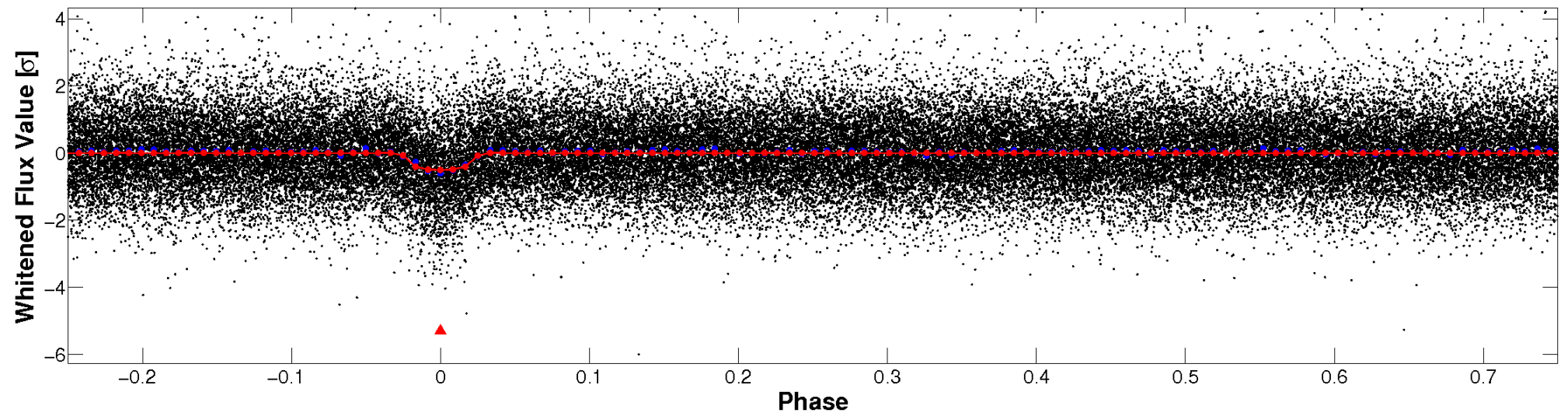


# Non-Whitened Vs. Whitened Light Curve

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

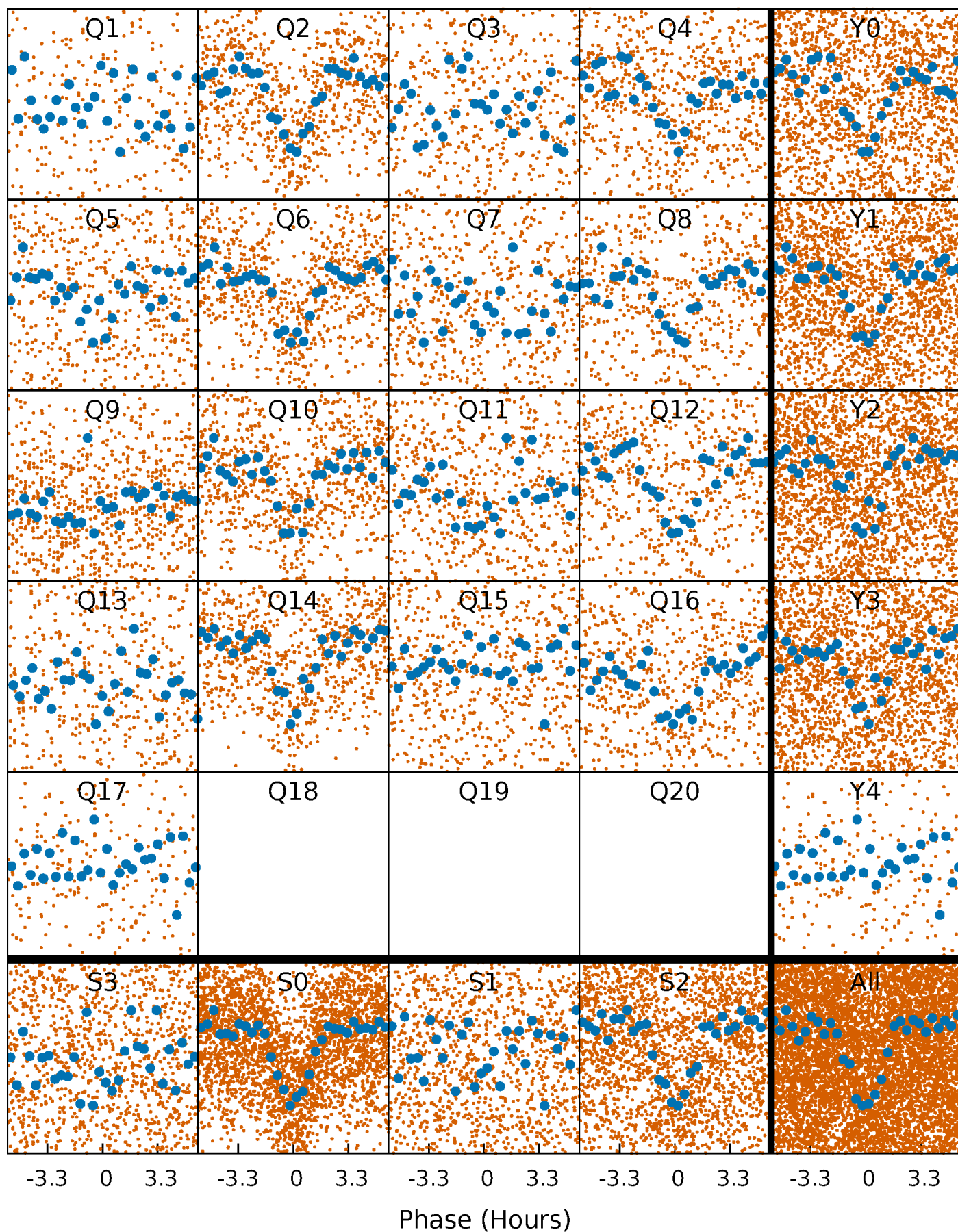


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

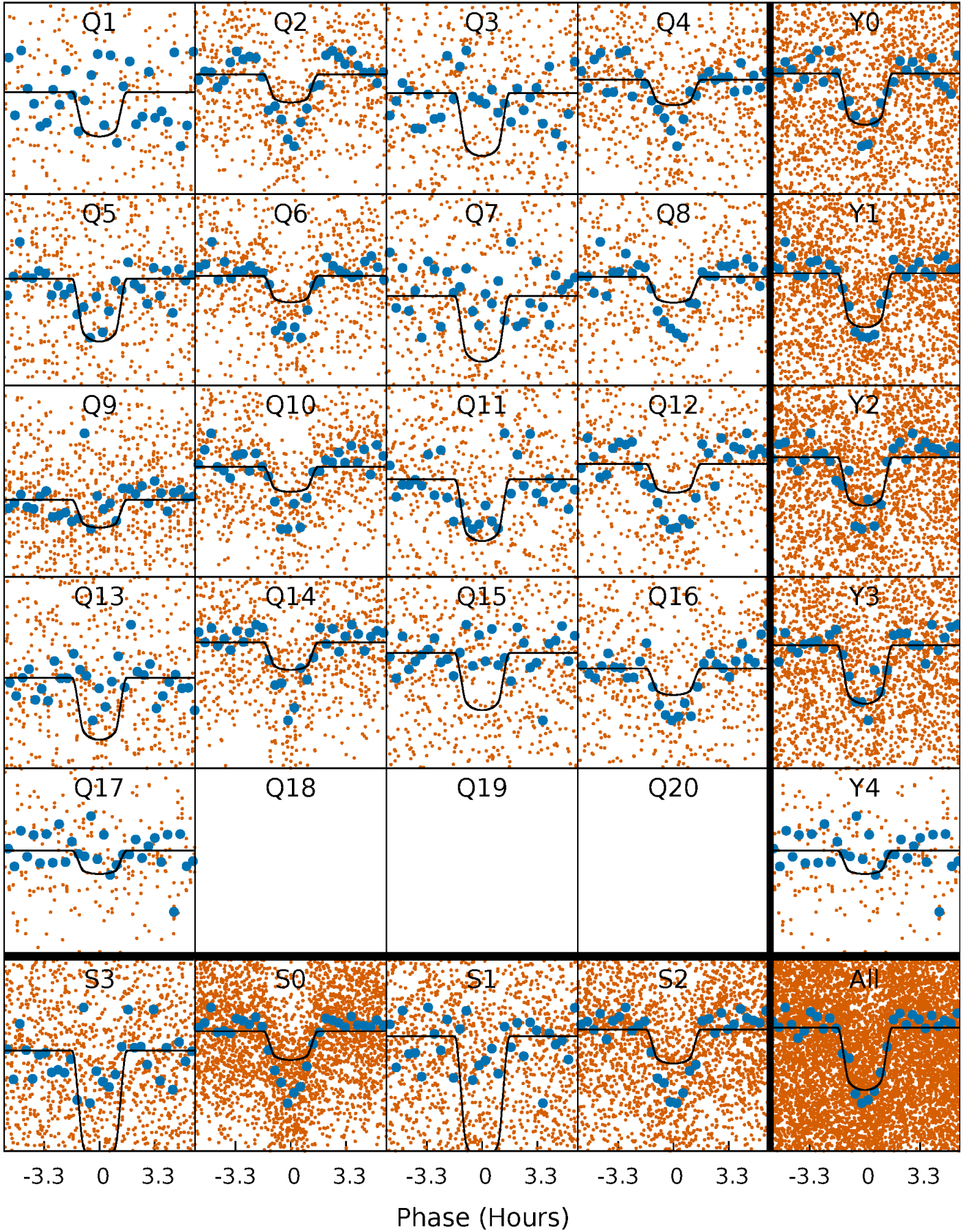
TCE 008302450-01 P= 2.441988 Days  $T_0=132.132993$  (BKJD)





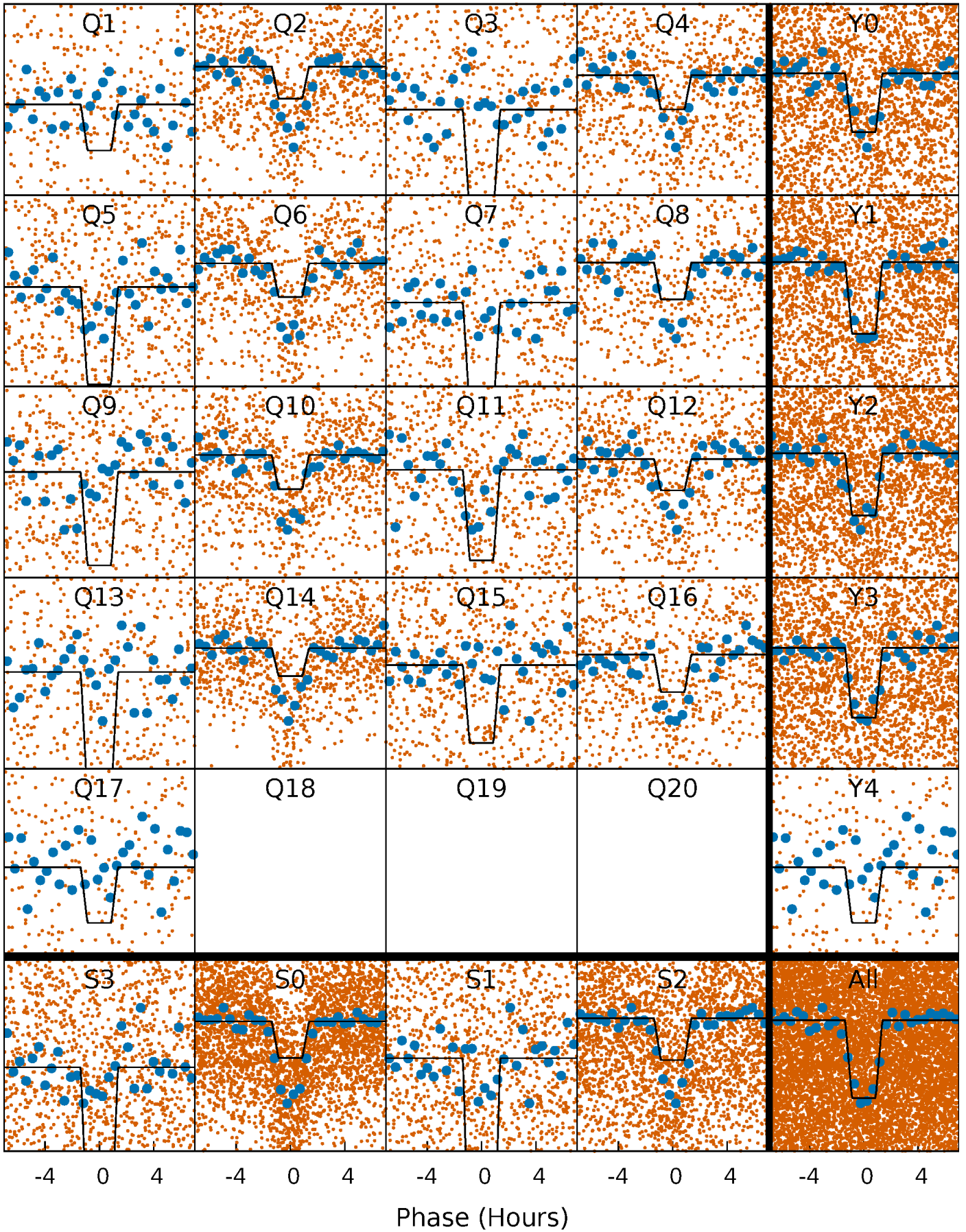
# DV Quarter-Phased Transit Curves

TCE 008302450-01 P= 2.441988 Days  $T_0=132.132993$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

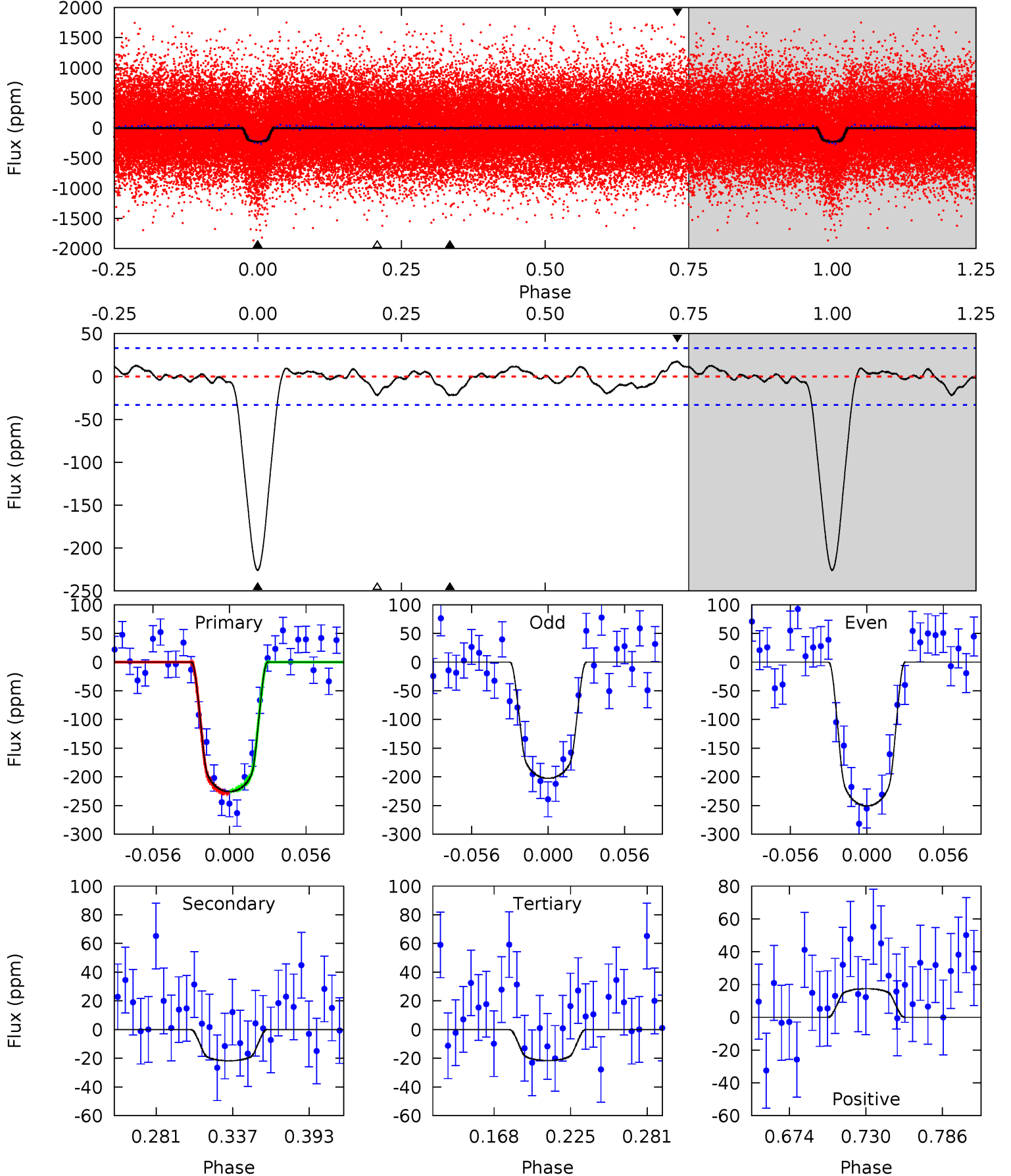
TCE 008302450-01 P= 2.441997 Days  $T_0=132.129720$  (BKJD)



# DV Model-Shift Uniqueness Test

008302450-01, P = 2.441988 Days, E = 129.691005 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
31.9	3.08	3.06	2.46	4.68	1.91	1.12	28.9	29.5	0.03	0.62	3.41	1.08	0.07	0.31

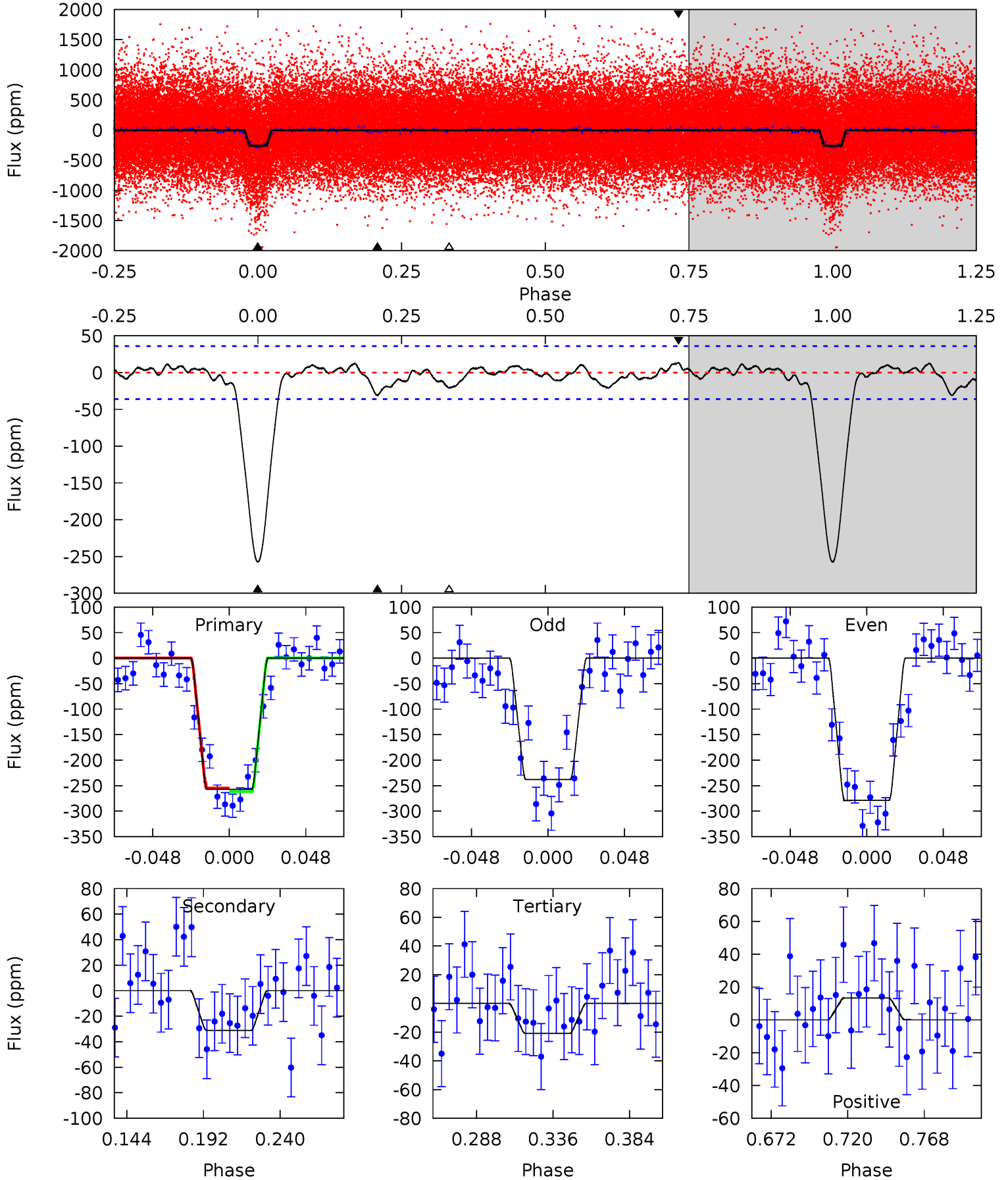




# Alt Model-Shift Uniqueness Test

008302450-01, P = 2.441997 Days, E = 129.687723 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
33.8	4.08	2.73	1.75	4.72	1.98	1.01	31.0	32.0	1.34	2.33	2.67	1.14	0.05	0.46





### Stellar Parameters For KIC 008302450

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5970^{+161}_{-179}$	$4.564^{+0.044}_{-0.176}$	$-0.660^{+0.300}_{-0.300}$	$0.796^{+0.194}_{-0.065}$	$0.847^{+0.087}_{-0.079}$	$2.363^{+0.538}_{-1.082}$
	+3%/-3%	+1%/-4%	+45%/-45%	+24%/-8%	+10%/-9%	+23%/-46%
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 008302450-01 / KOI 1144.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-22 \pm 7$	$1.42^{+0.30}_{-0.26}$	$1819^{+102}_{-74}$	$3618^{+344}_{-285}$	$6.383^{+4.380}_{-2.621}$
Alt.	$-31 \pm 8$	$1.48^{+0.28}_{-0.28}$	$1822^{+111}_{-76}$	$3812^{+323}_{-282}$	$8.469^{+4.998}_{-3.216}$

$T_{max}$  = 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

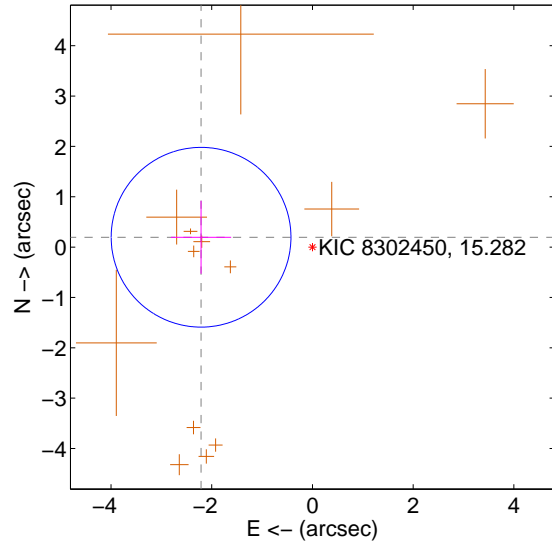
Supplemental centroid analysis for 008302450-01. Kepler magnitude: 15.28. Transit SNR 23.25

There are 0 quarters with good PRF difference image offsets

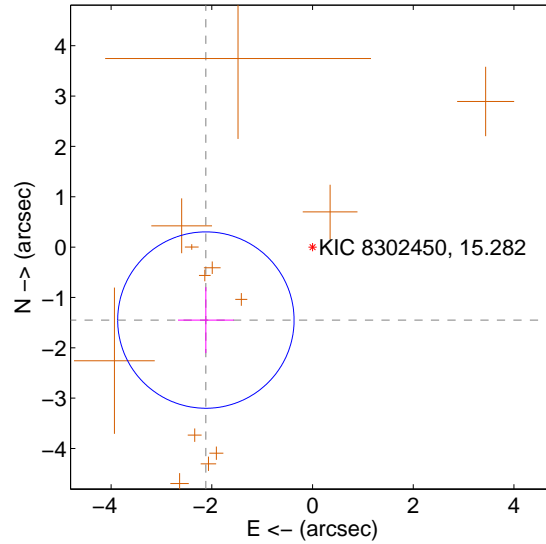
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.221 \pm 0.595$	3.73	$2.212 \pm 0.598$	$0.196 \pm 0.724$
PRF-fit source offset from KIC position	$2.567 \pm 0.584$	4.40	$2.118 \pm 0.554$	$-1.450 \pm 0.655$
photometric centroid source offset	$1.38 \pm 0.59$	2.33	$1.22 \pm 0.58$	$-0.65 \pm 0.65$

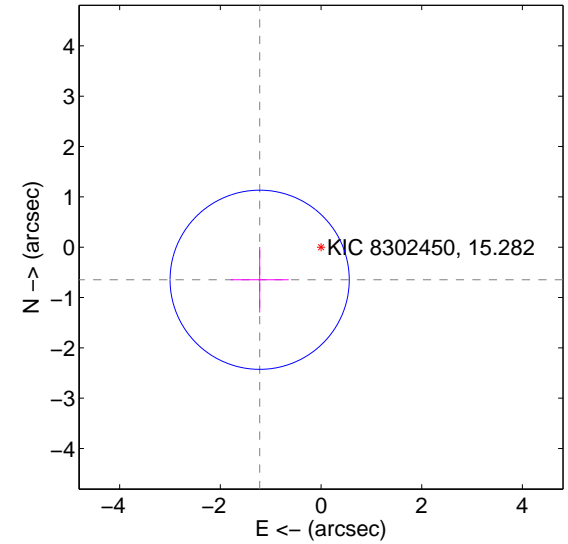
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

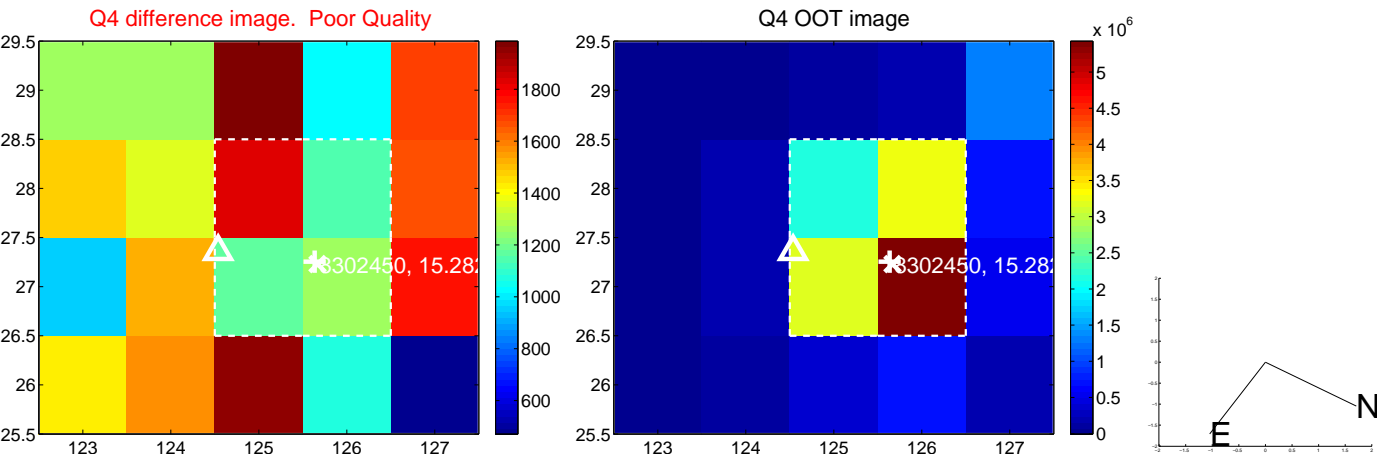
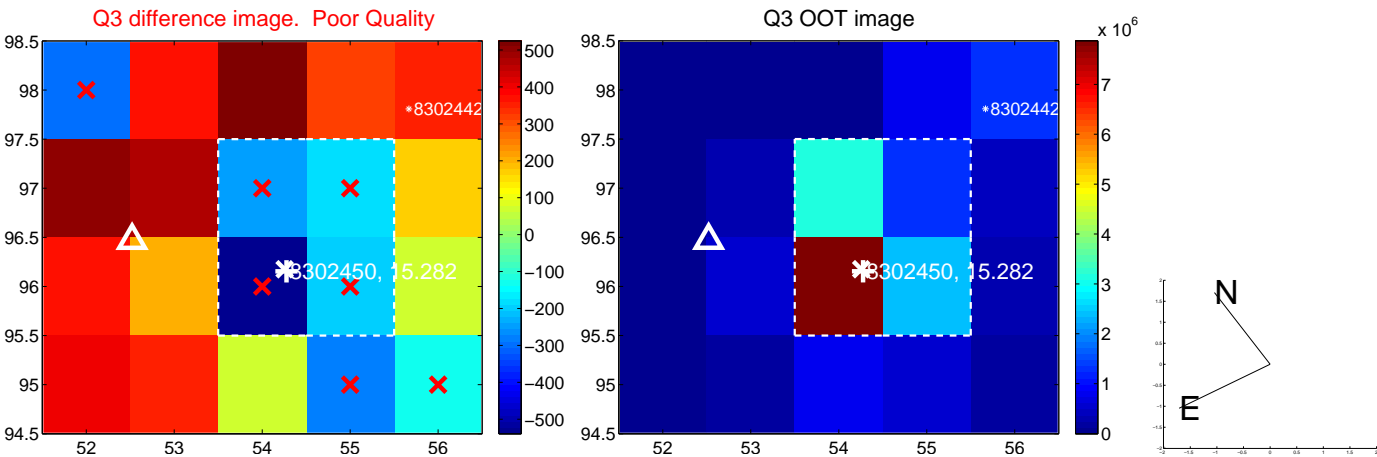
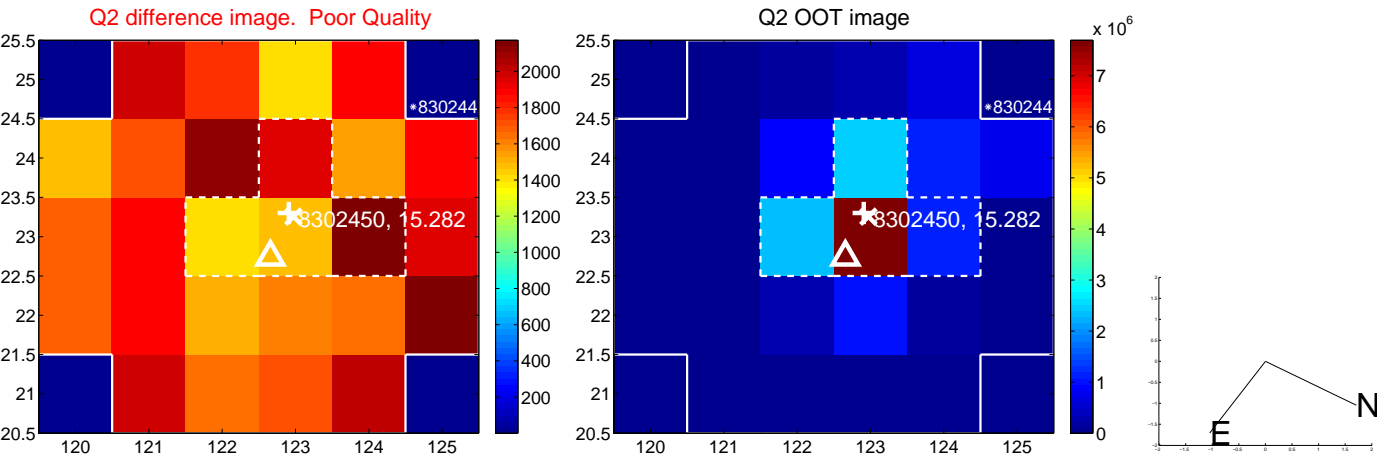
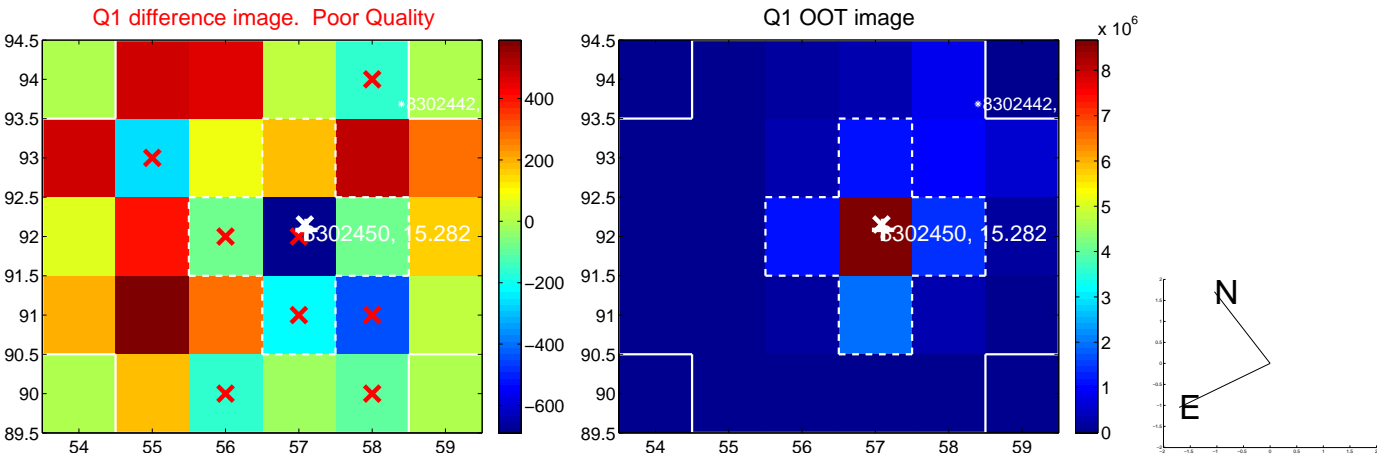


offset from photometric centroids

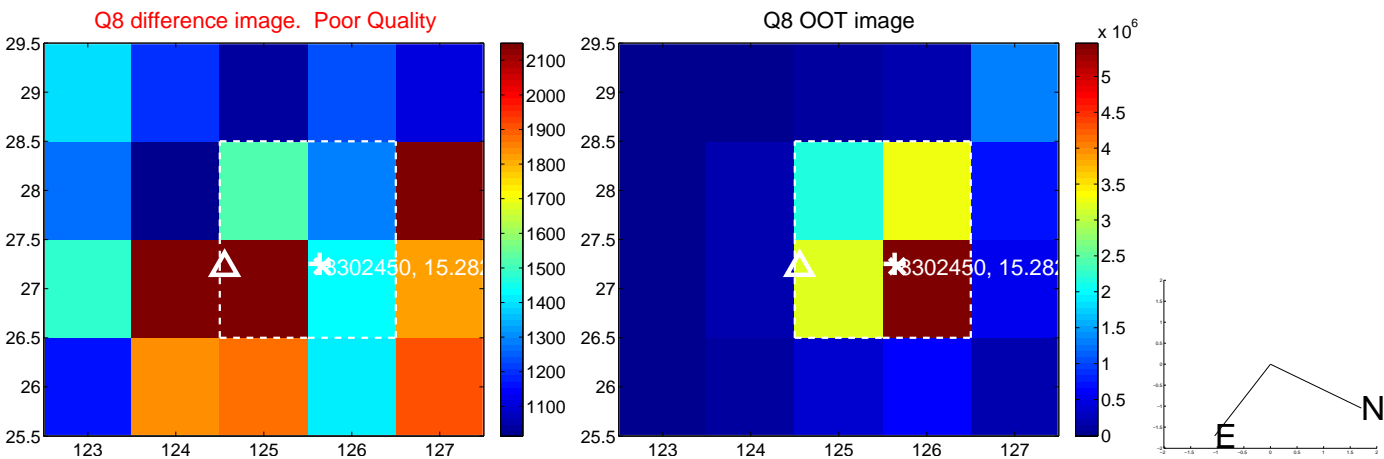
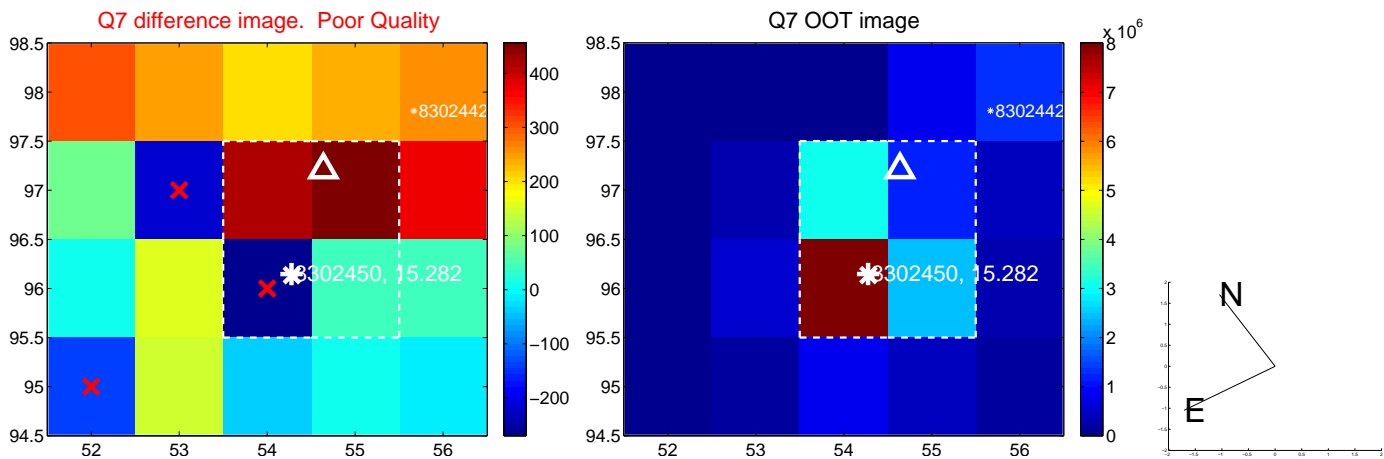
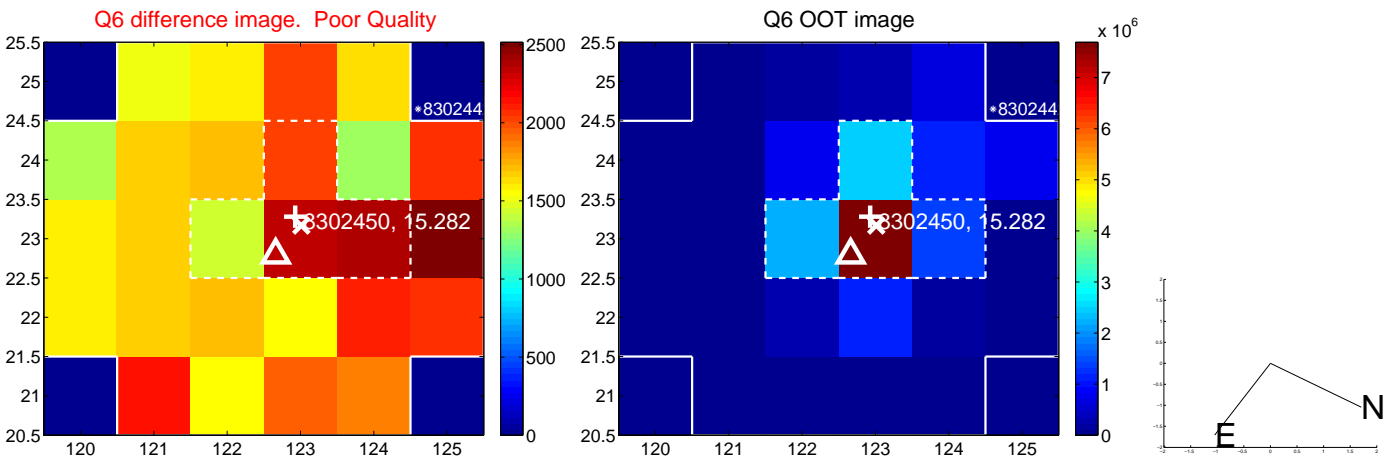
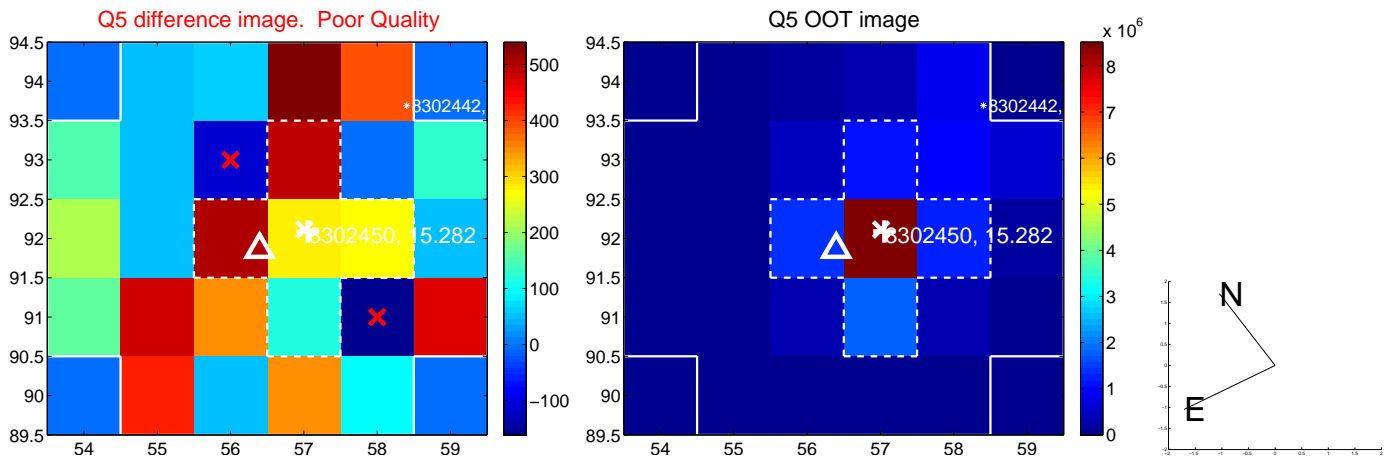


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

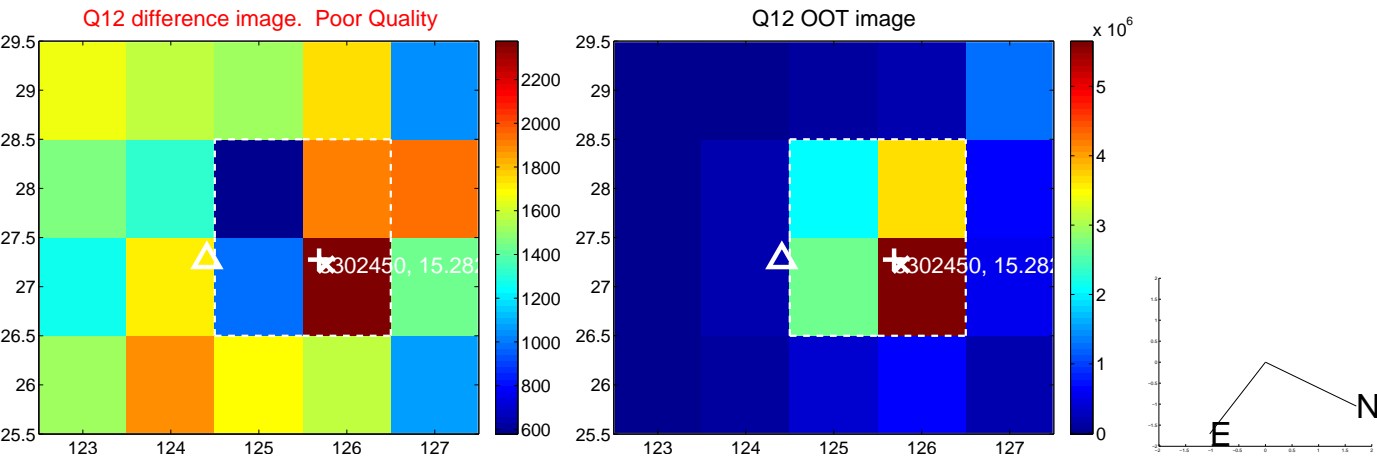
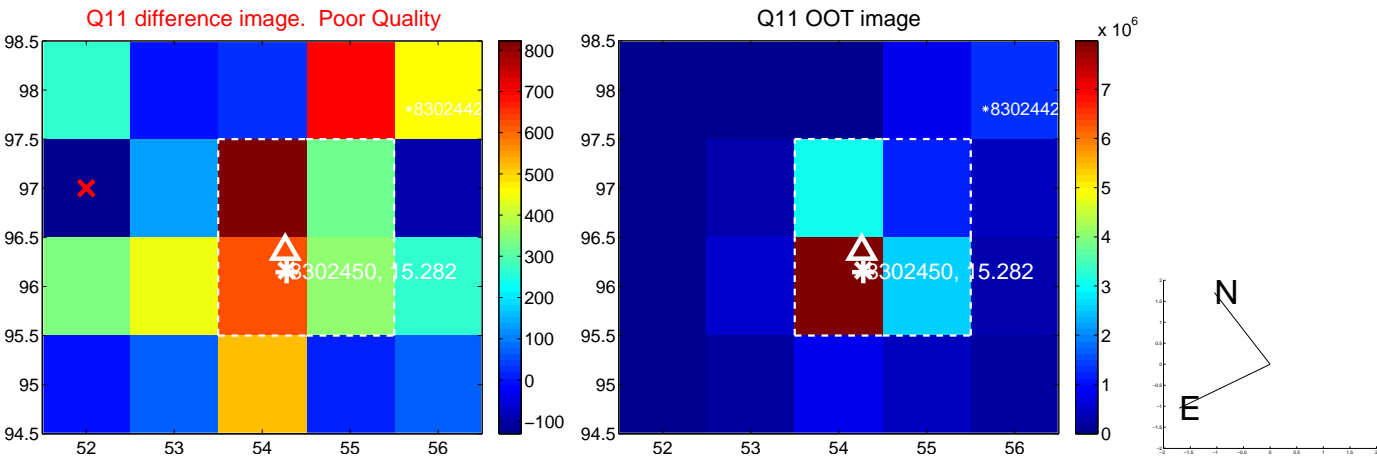
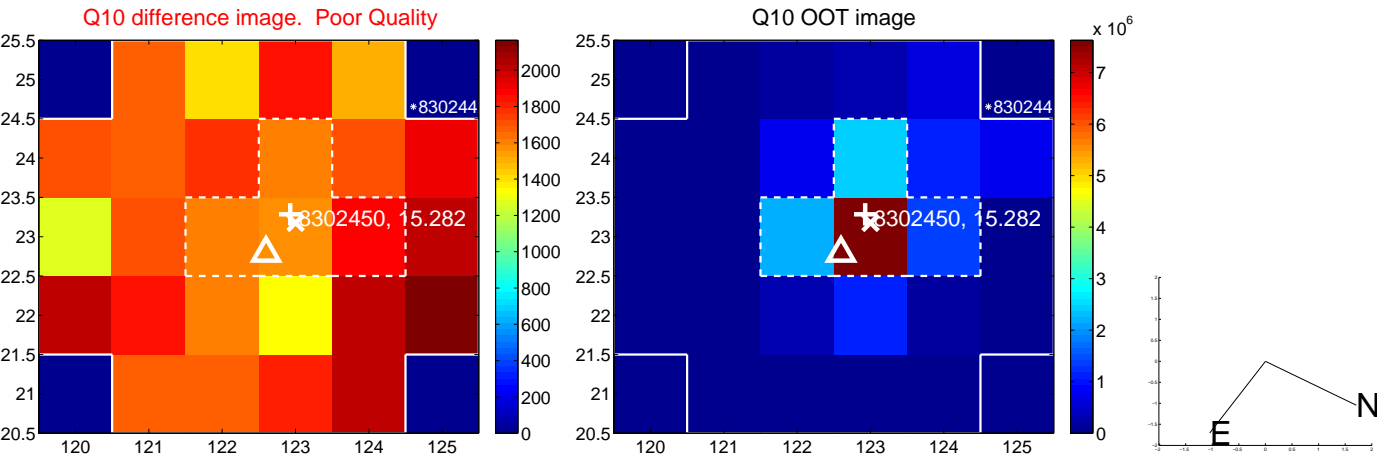
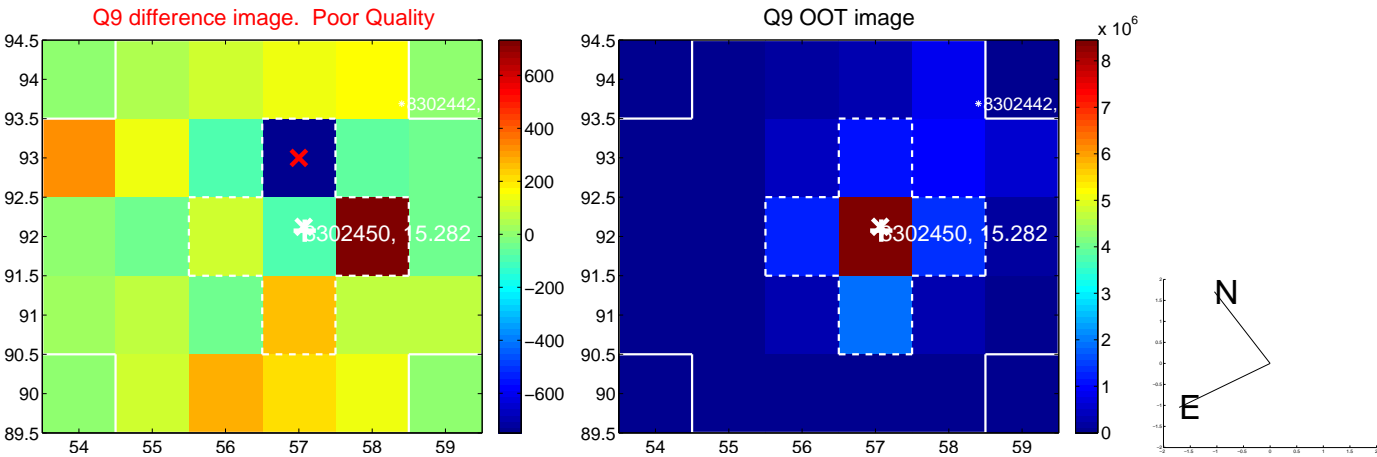


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

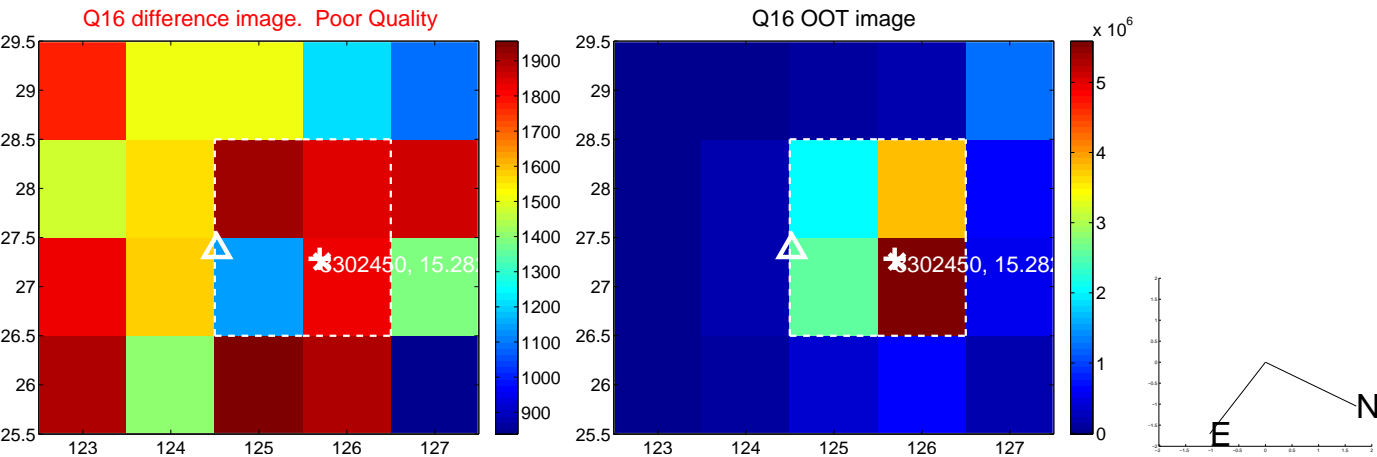
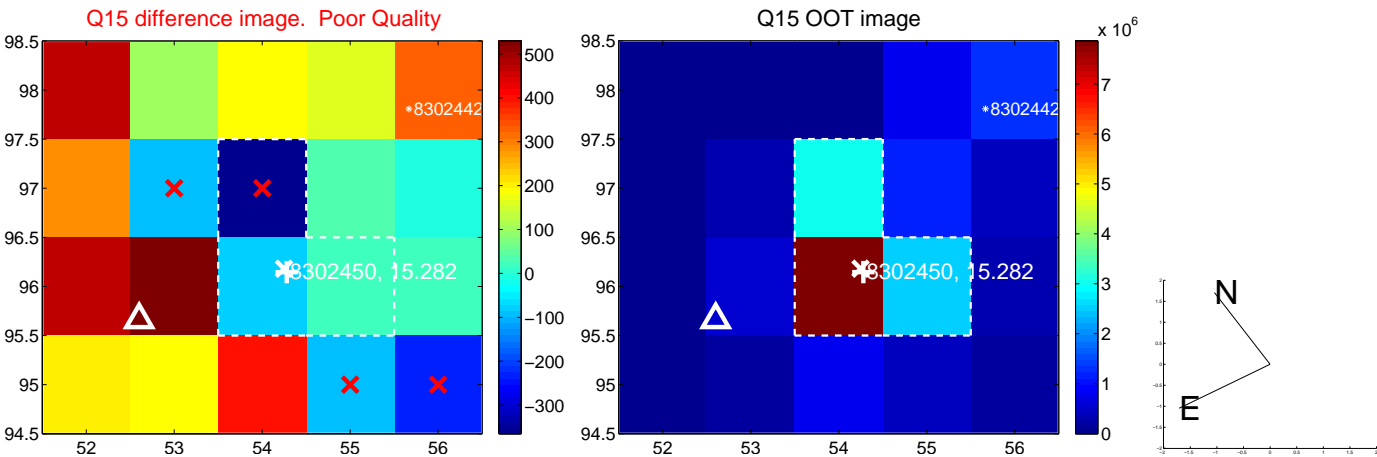
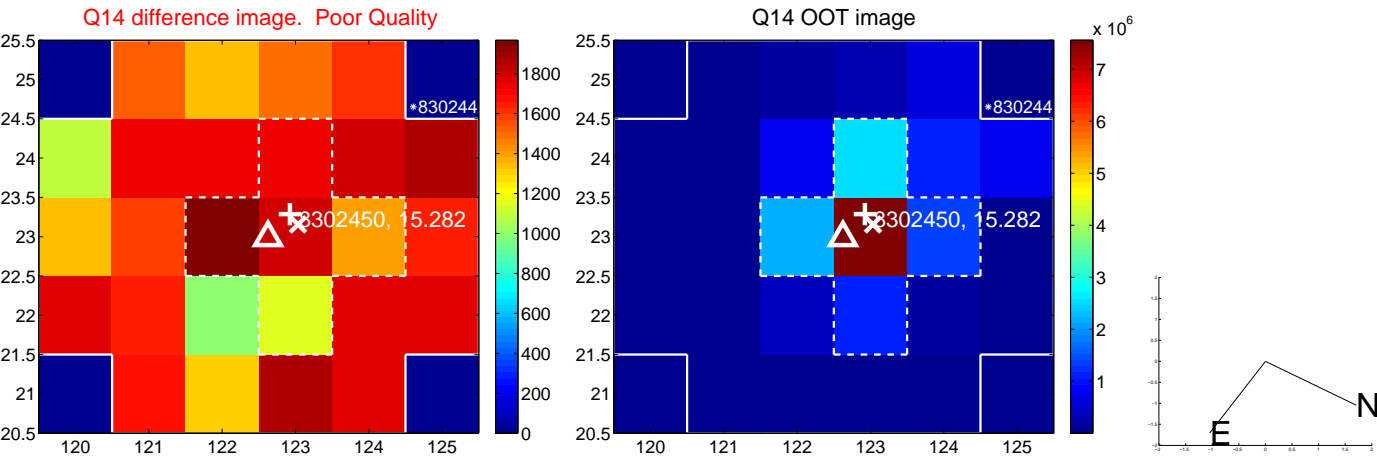
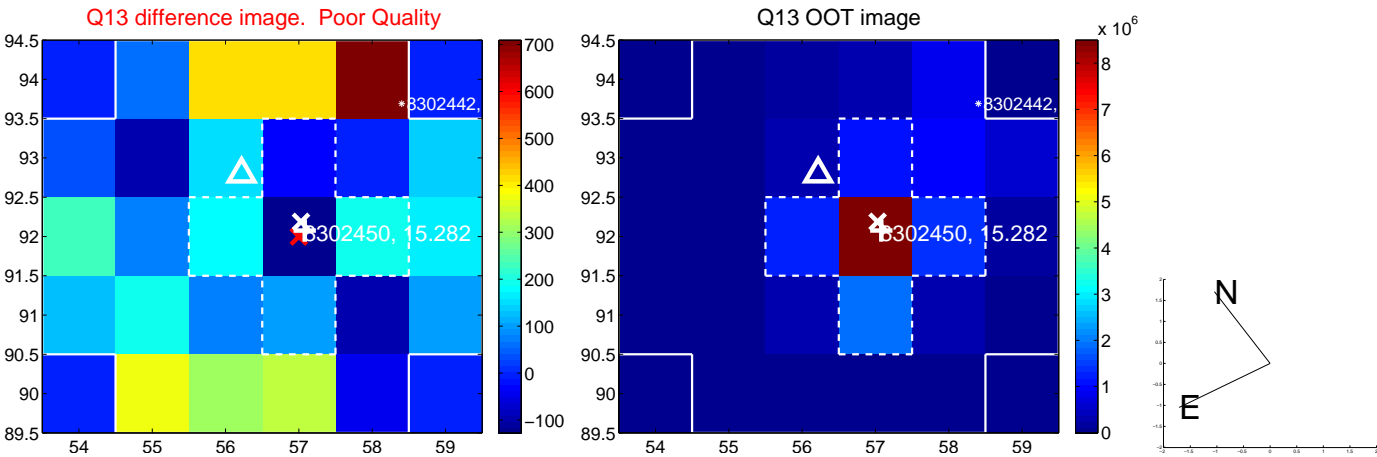




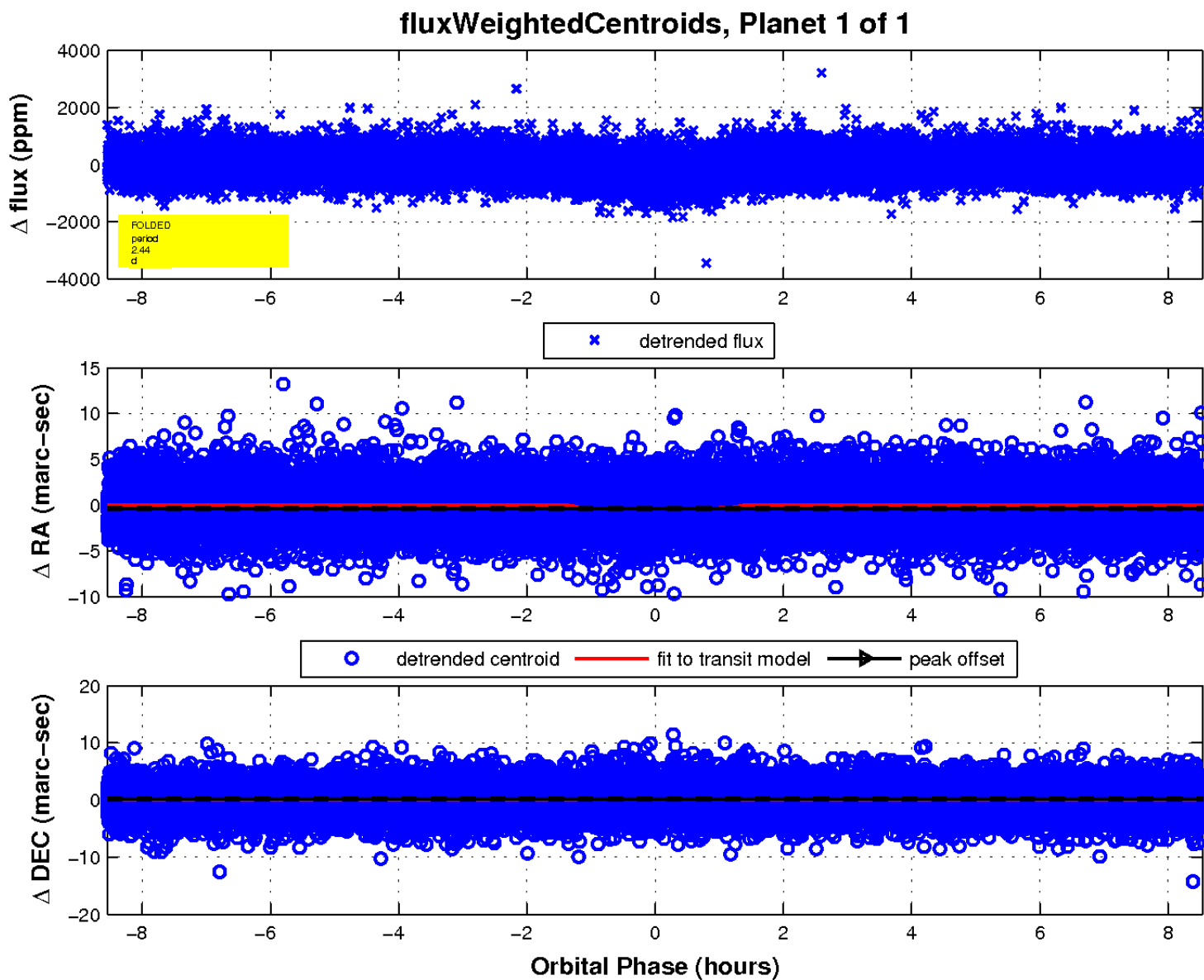
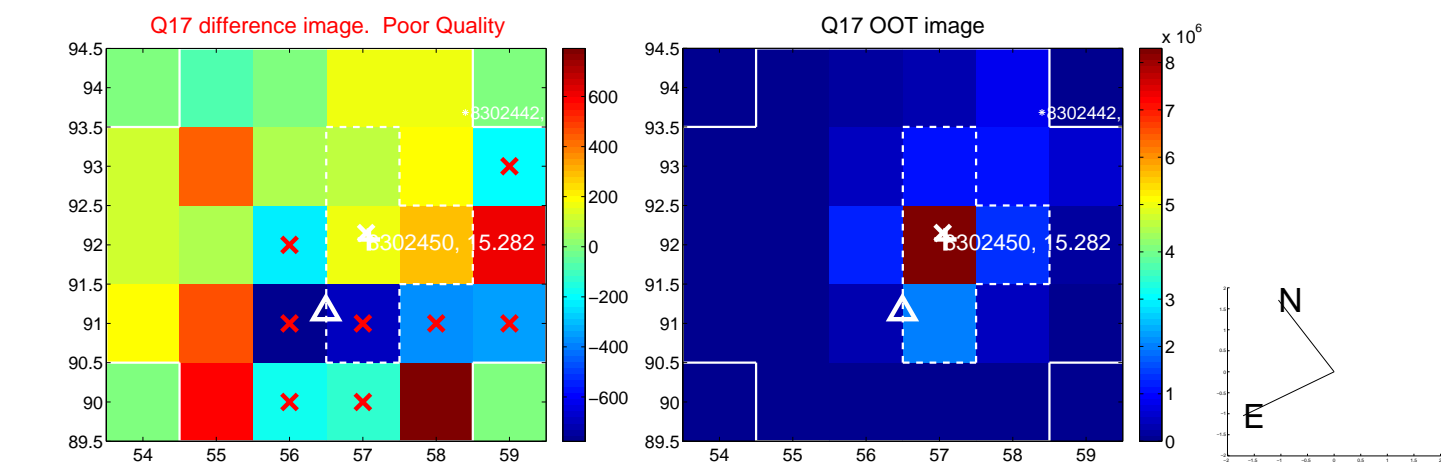
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

