

# KIC 012108312

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012108312-01	OBS	1492.01	0.705440	131.698460	86.8	1.048	10.0	17.2	0.83	5717	0.91	2885.85

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012108312-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_ALT—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 012108312-01

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	$\sigma_P$	$\sigma_T$
012108312-01	12108312	012108333-pri	12108333	1:1	21.4	-1	5	13.23	14.35	4020.70	Direct-PRF	0	1.17	0.85

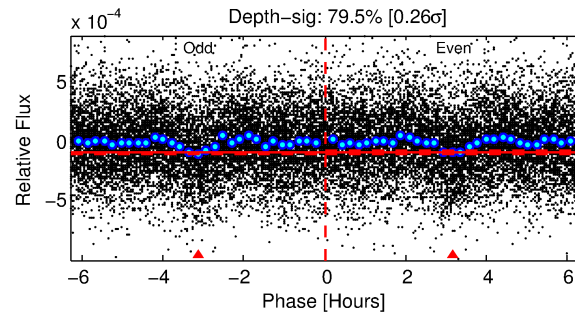
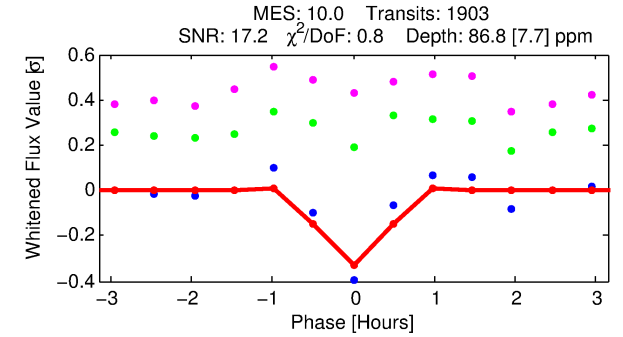
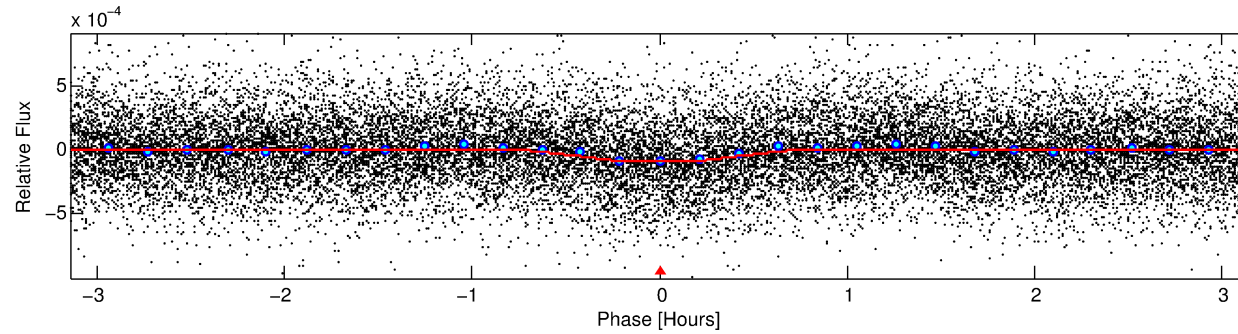
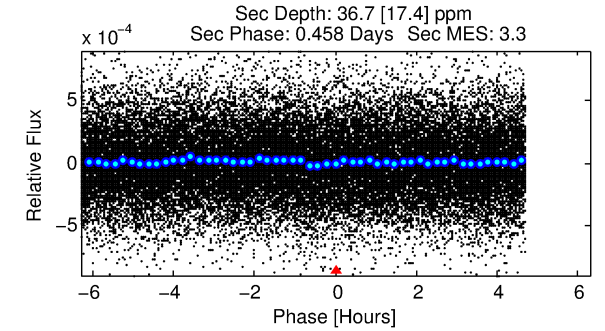
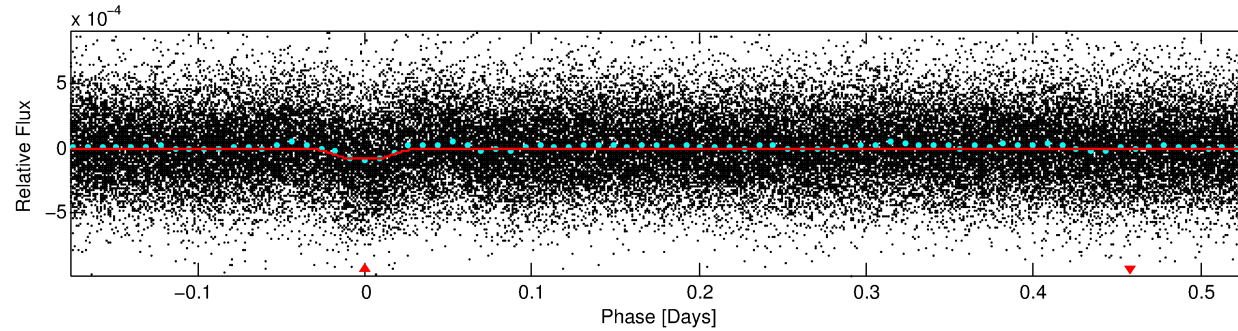
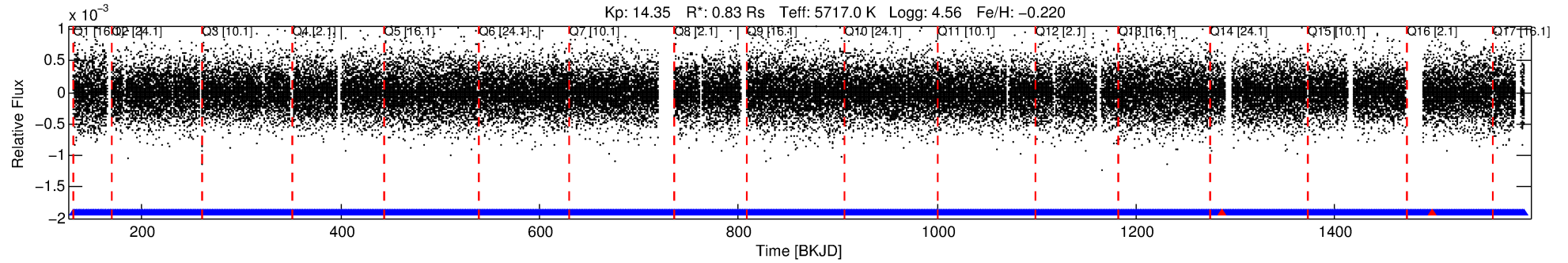
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  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: 12108312 Candidate: 1 of 1 Period: 0.705 d

KOI: K01492 Corr: No Ephemeris Match

Kp: 14.35 R\*: 0.83 Rs Teff: 5717.0 K Logg: 4.56 Fe/H: -0.220



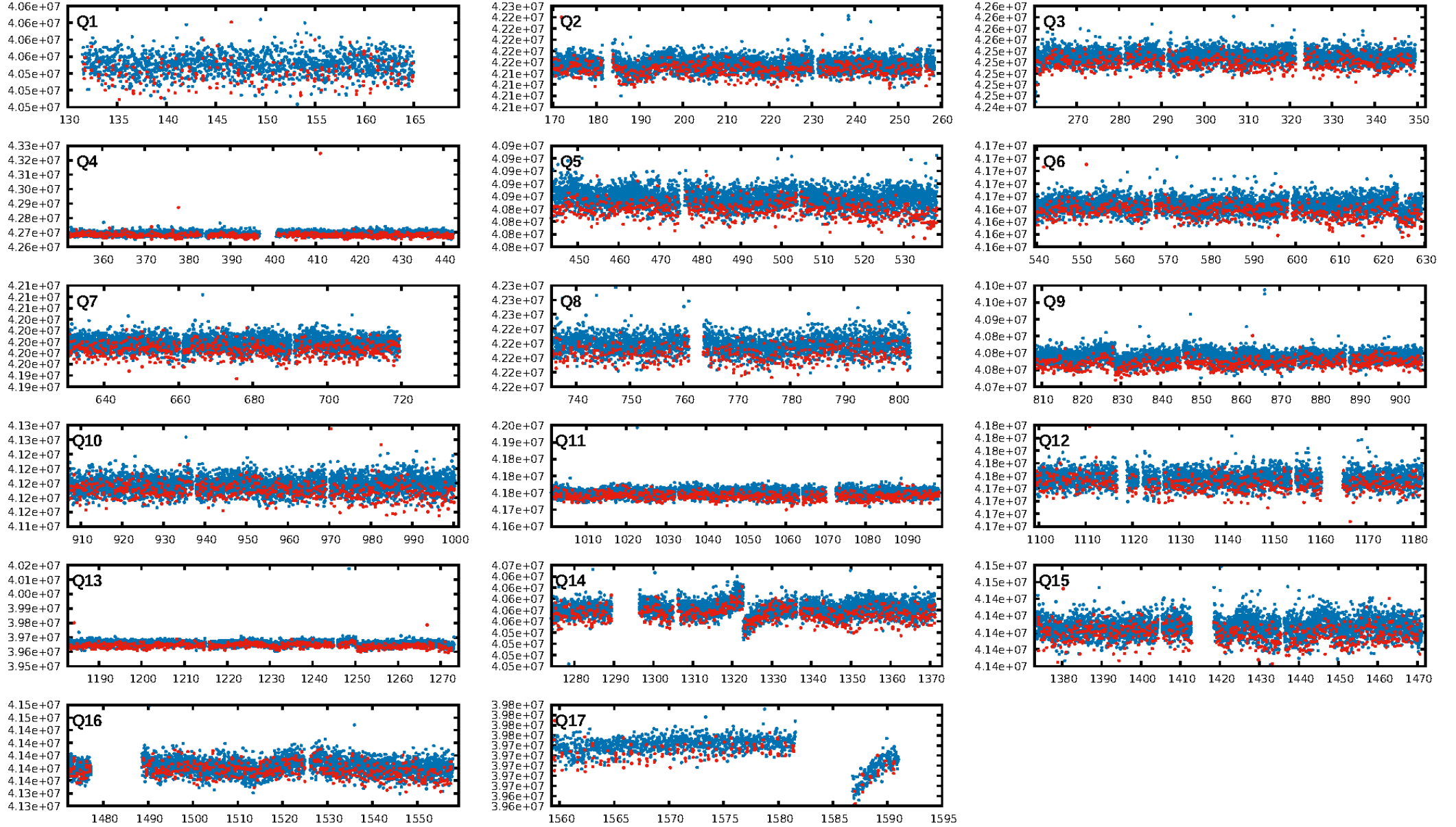
## DV Fit Results:

Period = 0.70544 [0.00001] d  
Epoch = 131.6985 [0.0010] BKJD  
Rp/R\* = 0.0101 [0.0032]  
a/R\* = 2.61 [3.31]  
b = 0.89 [0.35]  
Seff = 2885.85 [943.04]  
Teq = 1869 [153] K  
Rp = 0.91 [0.36] Re  
a = 0.0150 [0.0031] AU  
Ag = 5.47 [4.59] [0.97 $\sigma$ ]  
Teffp = 4418 [876] K [2.87 $\sigma$ ]

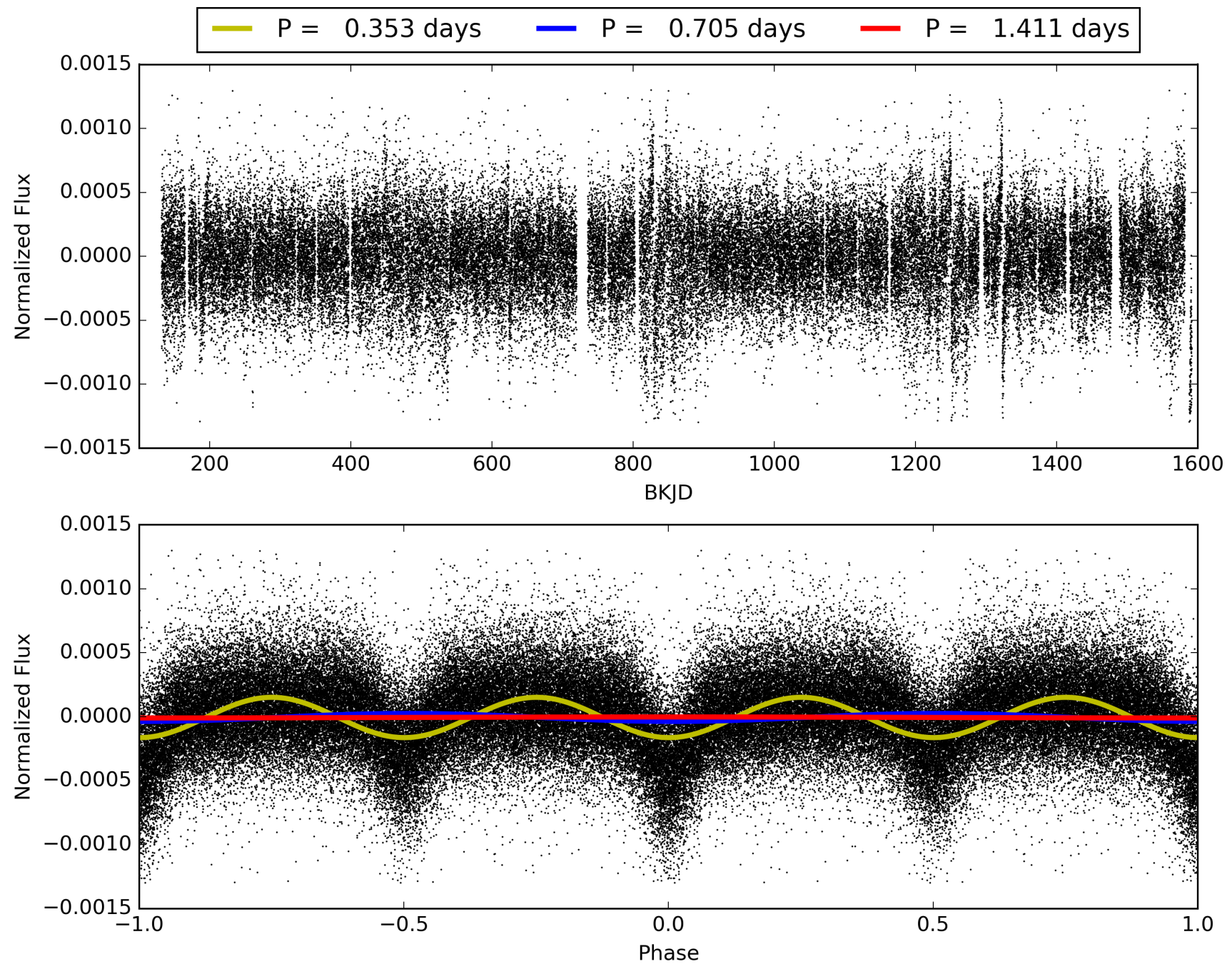
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.39e-24  
RollingBand-fgt: 1.00 [1816/1818]  
GhostDiagnostic-chr: -0.1619  
Centroid-sig: 0.0%  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 012108312-01, PDC Light Curves



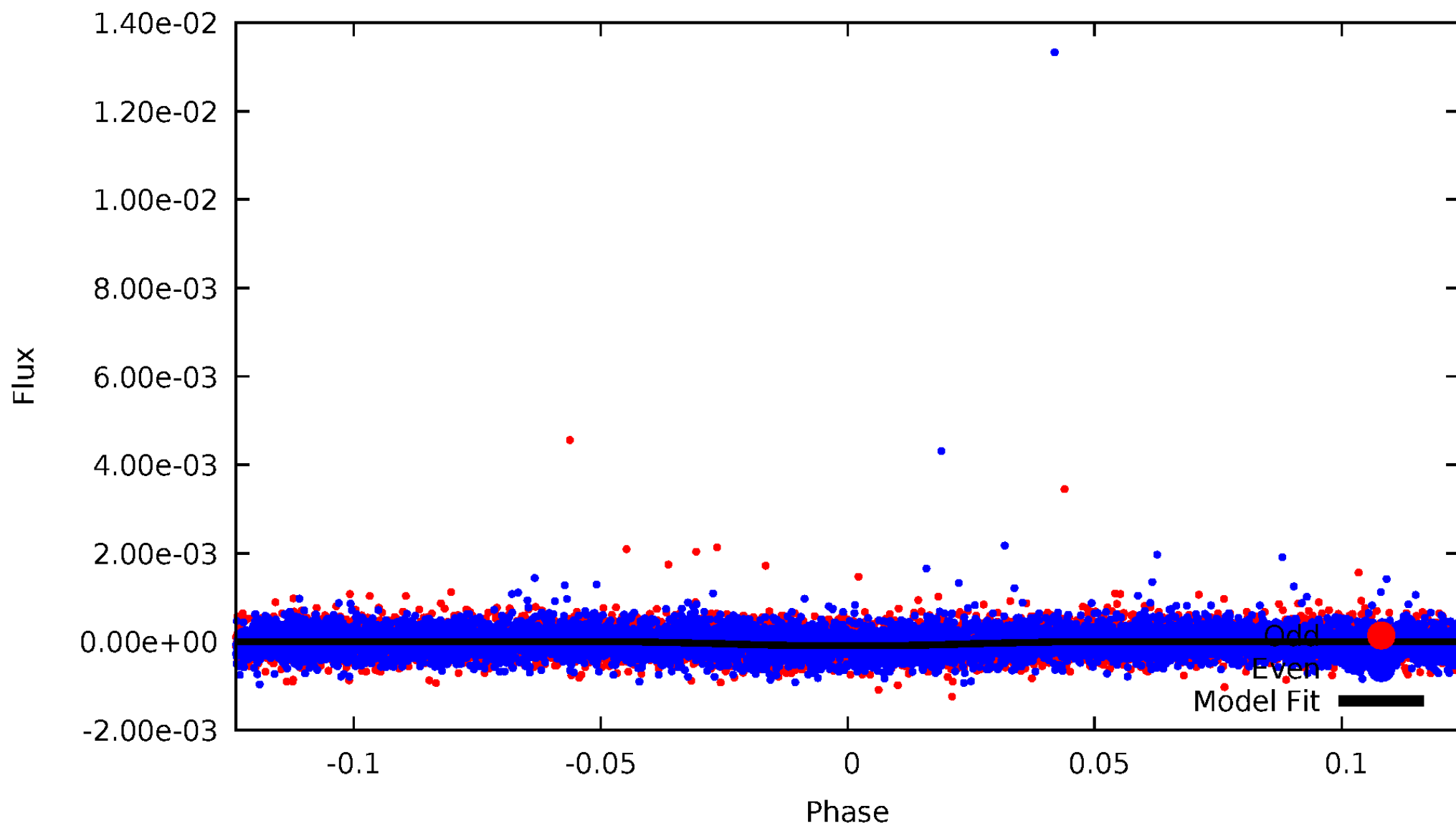
# TCE 012108312-01





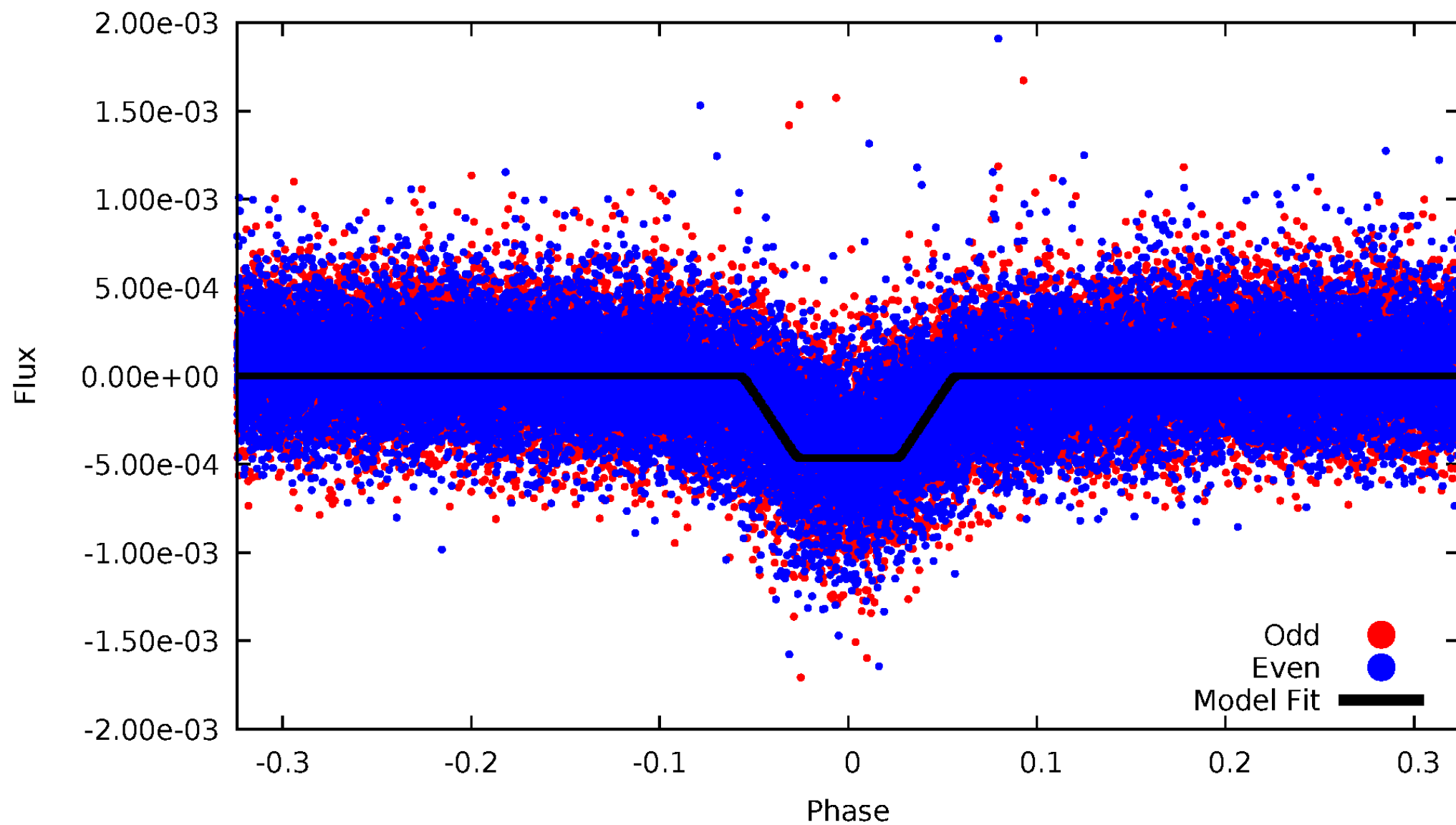
# DV Odd/Even

TCE 012108312-01

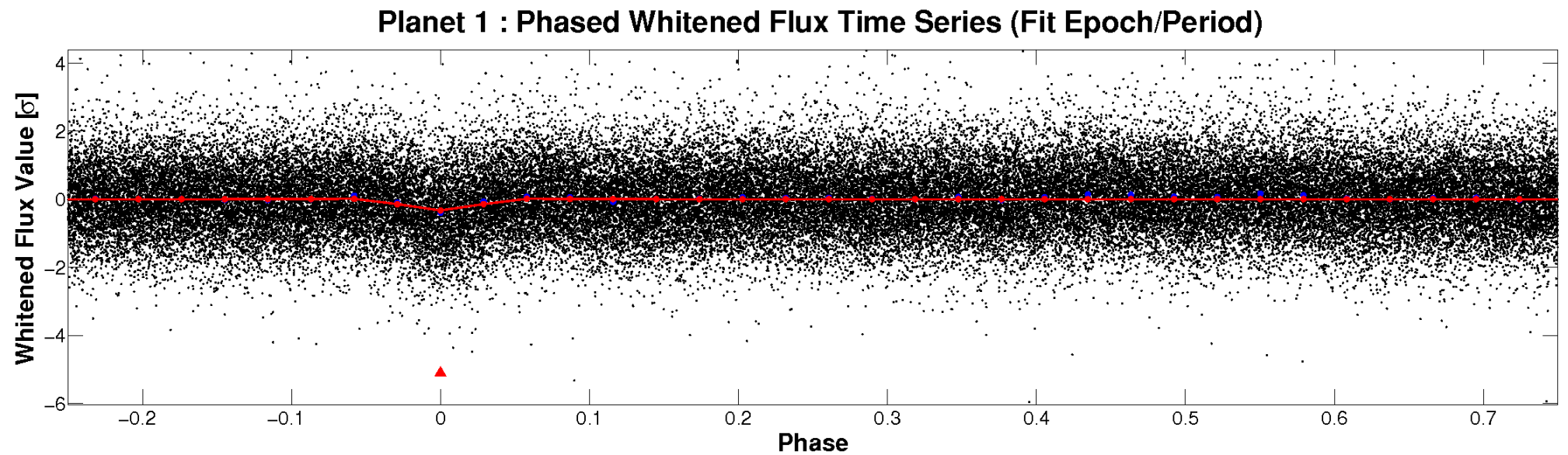
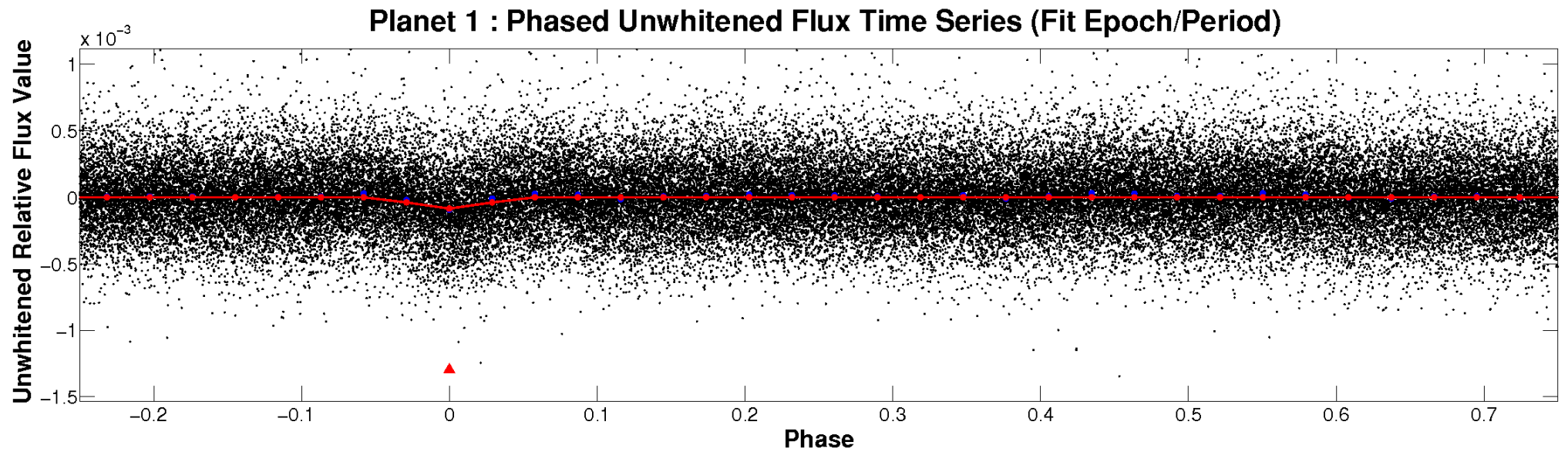


# ALT Odd/Even

TCE 012108312-01

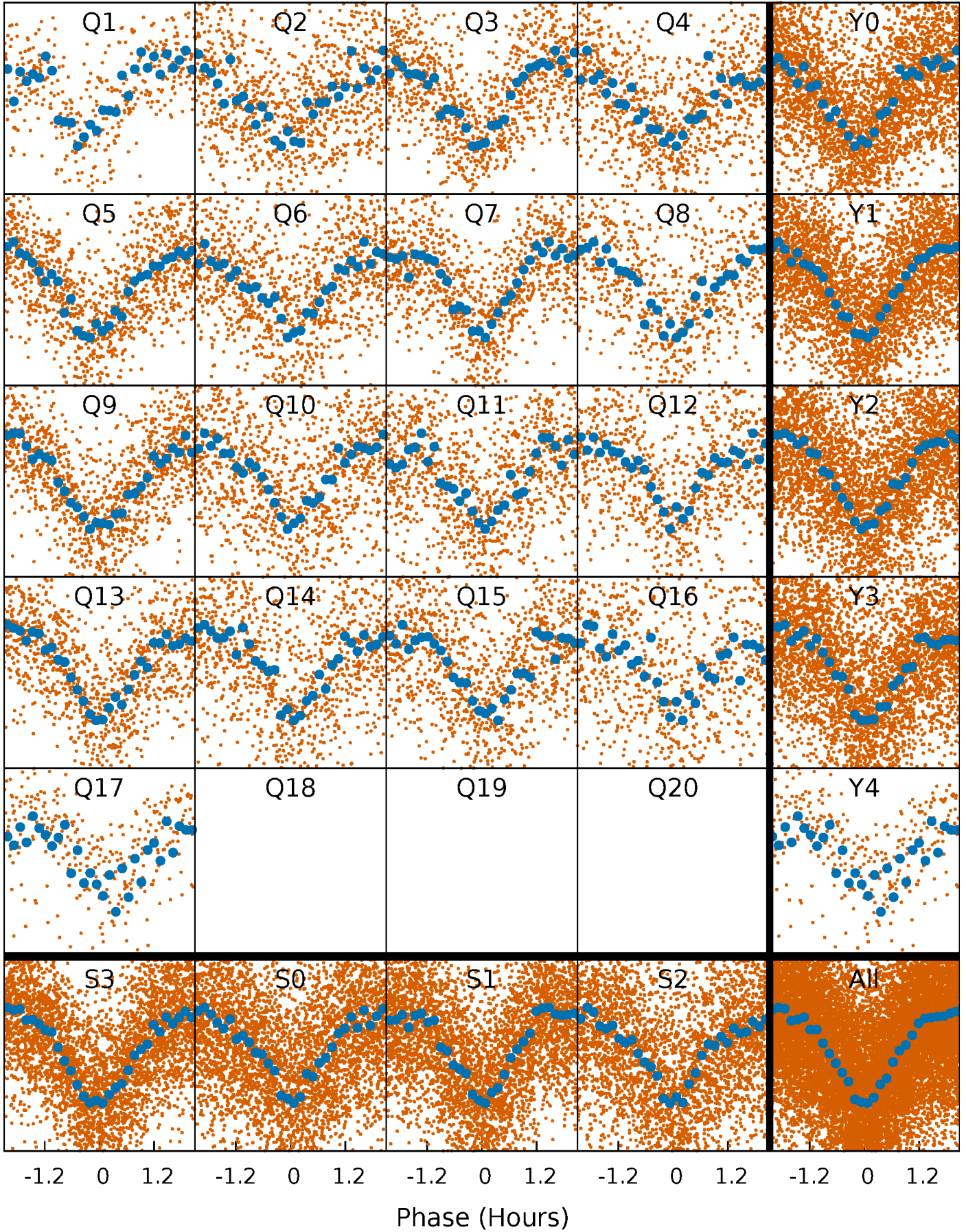


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

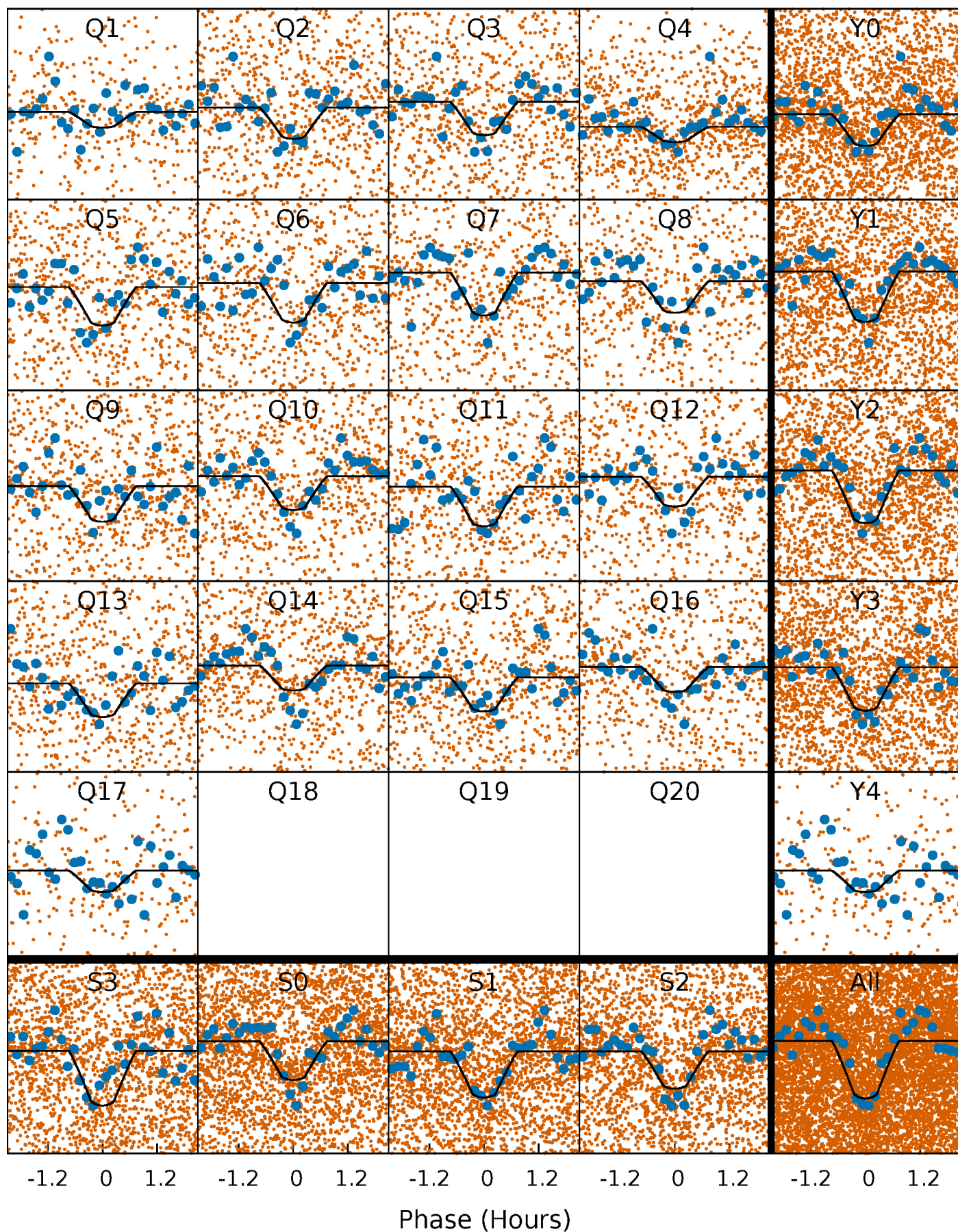
TCE 012108312-01 P= 0.705440 Days  $T_0=131.698460$  (BKJD)





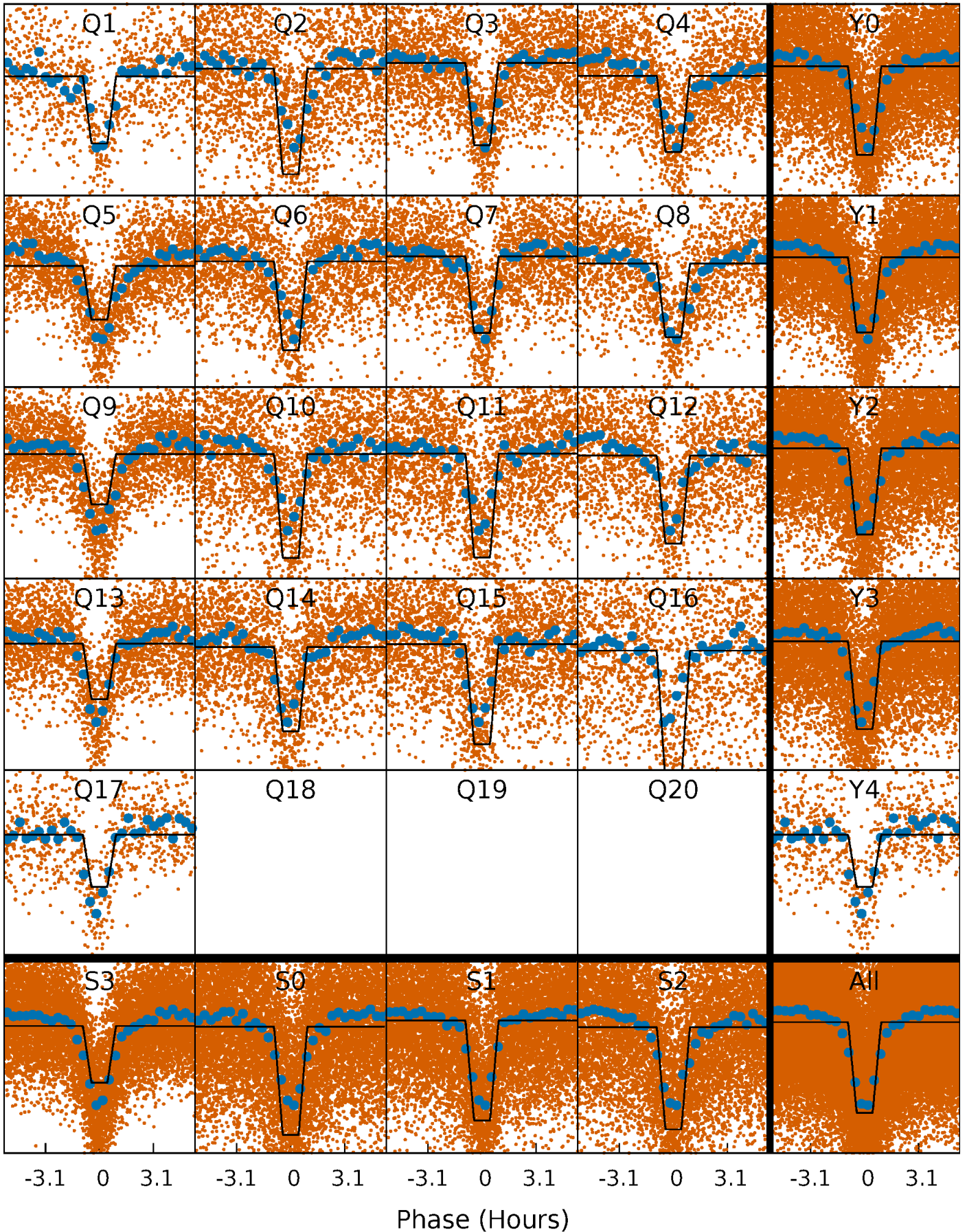
# DV Quarter-Phased Transit Curves

TCE 012108312-01   P= 0.705440 Days    $T_0=131.698460$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 012108312-01 P= 0.705458 Days  $T_0=131.680925$  (BKJD)

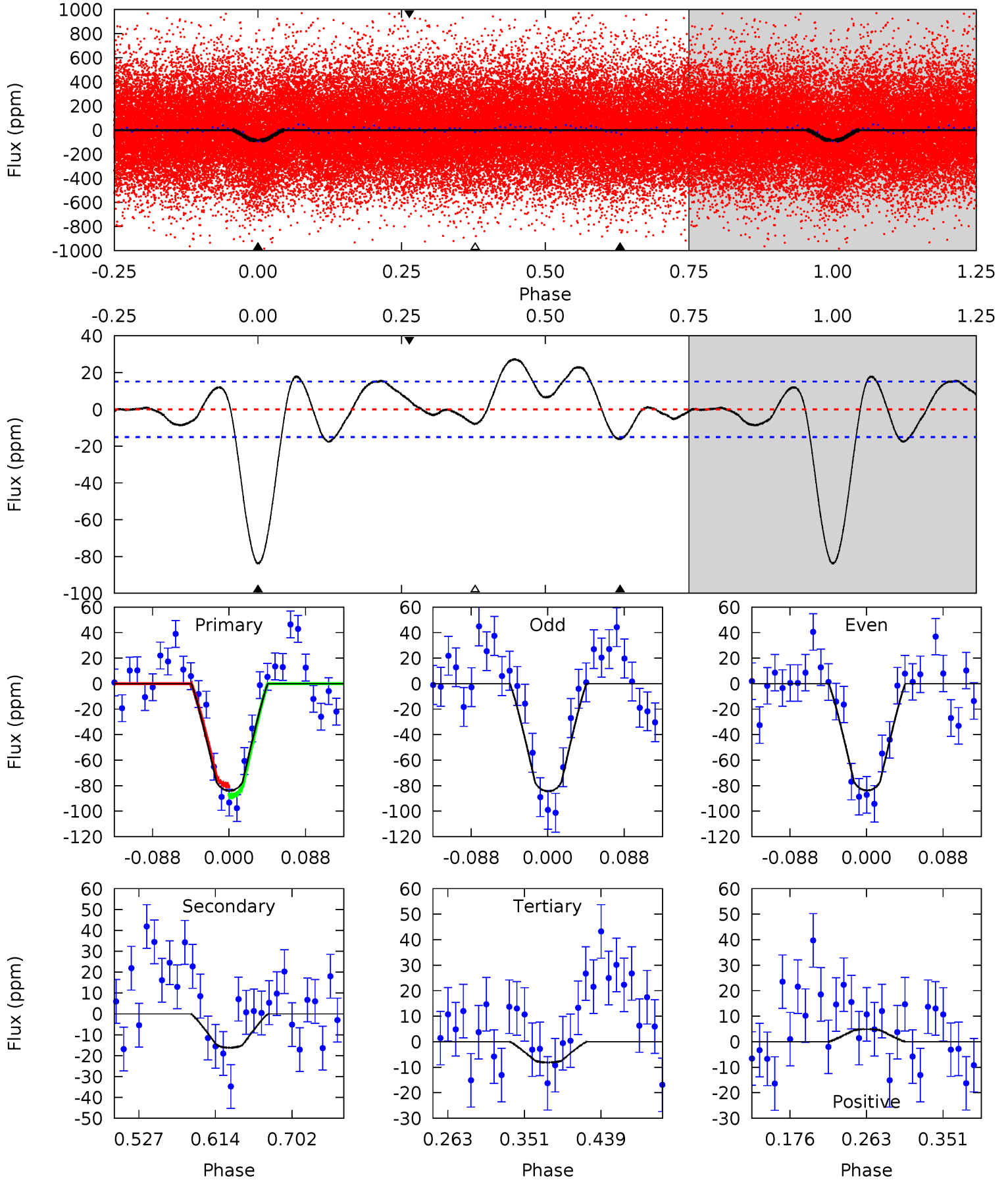




# DV Model-Shift Uniqueness Test

012108312-01, P = 0.705440 Days, E = 130.993020 Days

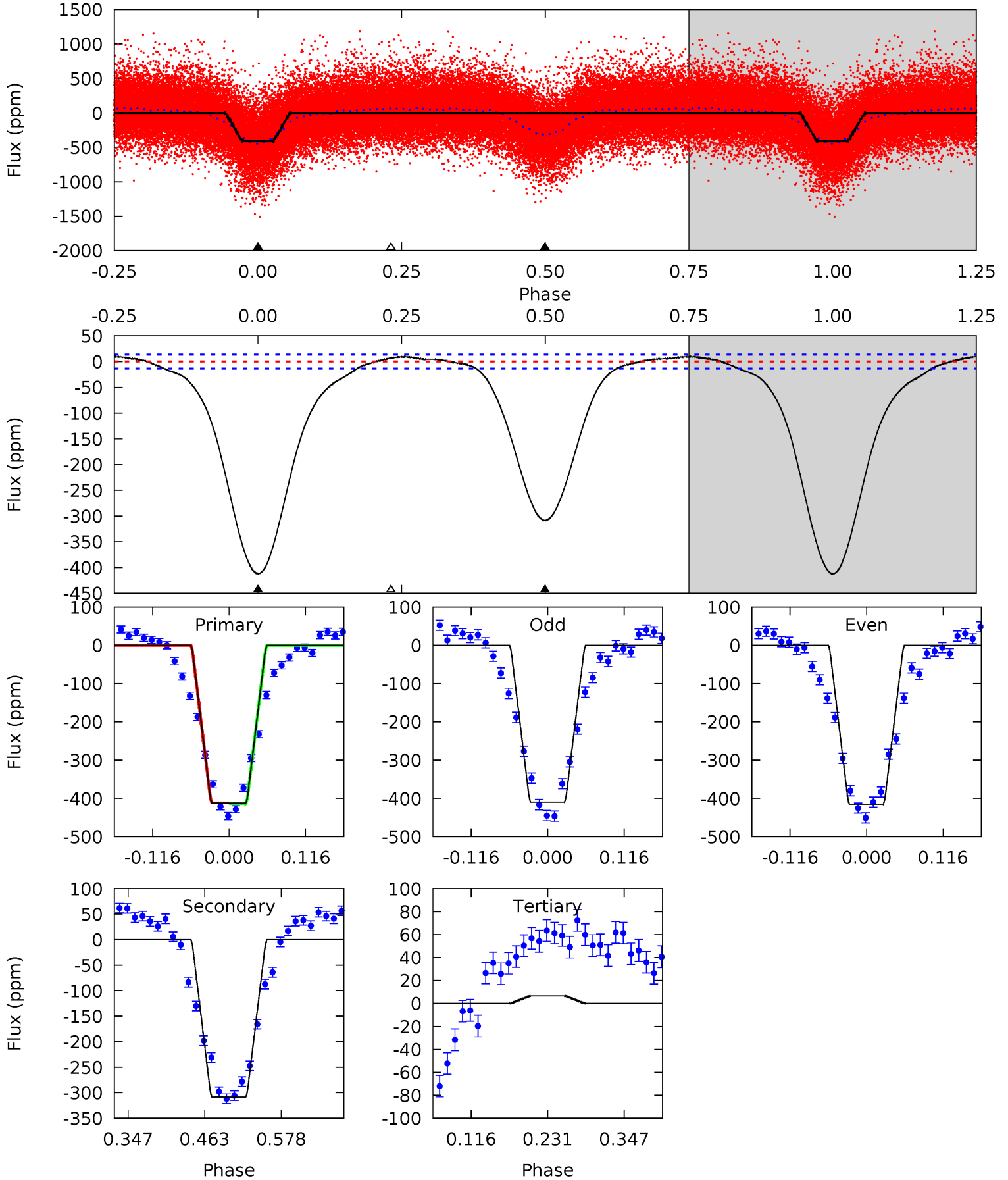
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.6	4.93	2.47	1.50	4.59	1.71	3.08	23.1	24.1	2.46	3.43	0.10	0.95	0.25	1.26



# Alt Model-Shift Uniqueness Test

012108312-01, P = 0.705458 Days, E = 130.975467 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
138.0	103.2	-2.19	0	4.53	1.57	4.91	140.2	138.0	105.4	103.2	0.96	1.03	0.02	0.29





### Stellar Parameters For KIC 012108312

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5717^{+155}_{-172}$	$4.564^{+0.042}_{-0.168}$	$-0.220^{+0.300}_{-0.300}$	$0.826^{+0.199}_{-0.080}$	$0.917^{+0.090}_{-0.110}$	$2.288^{+0.492}_{-1.010}$
	+3%/-3%	+1%/-4%	+136%/-136%	+24%/-10%	+10%/-12%	+21%/-44%
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 012108312-01 / KOI 1492.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-16 \pm 3$	$0.93^{+0.35}_{-0.30}$	$2657^{+138}_{-110}$	$3851^{+681}_{-458}$	$2.258^{+2.666}_{-1.074}$
Alt.	$-308 \pm 3$	$2.01^{+0.38}_{-0.35}$	$2653^{+152}_{-106}$	$5170^{+438}_{-345}$	$9.410^{+4.020}_{-2.719}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming A=0.3)  
 $A_{\text{obs}}$  = 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  $A_{\text{obs}} \gg 1.0$

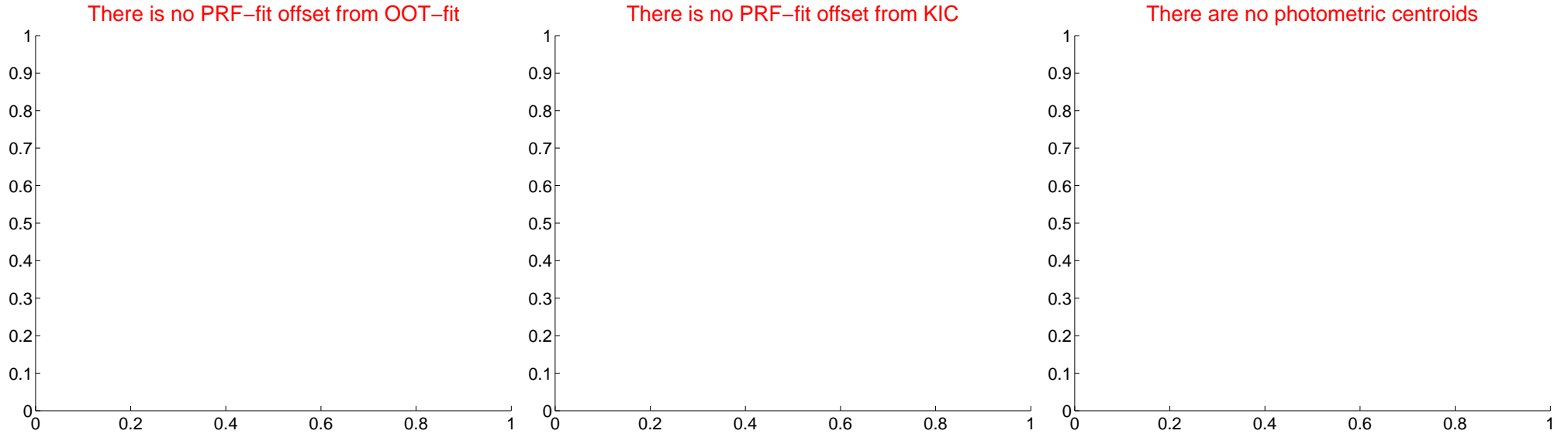
## DV Centroid Data

Supplemental centroid analysis for 012108312-01. Kepler magnitude: 14.35. Transit SNR 17.24

There are 0 quarters with good PRF difference image offsets

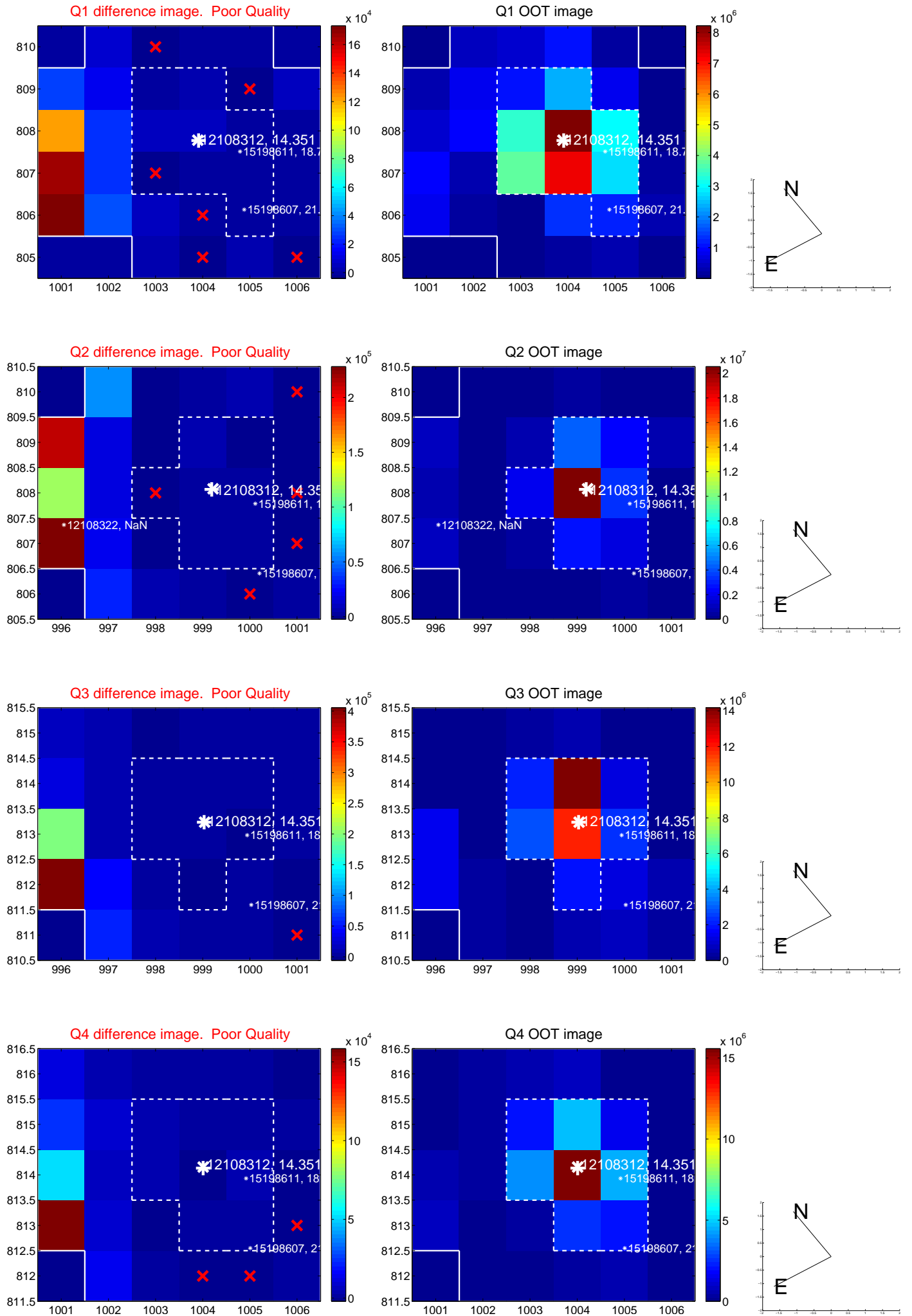
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—

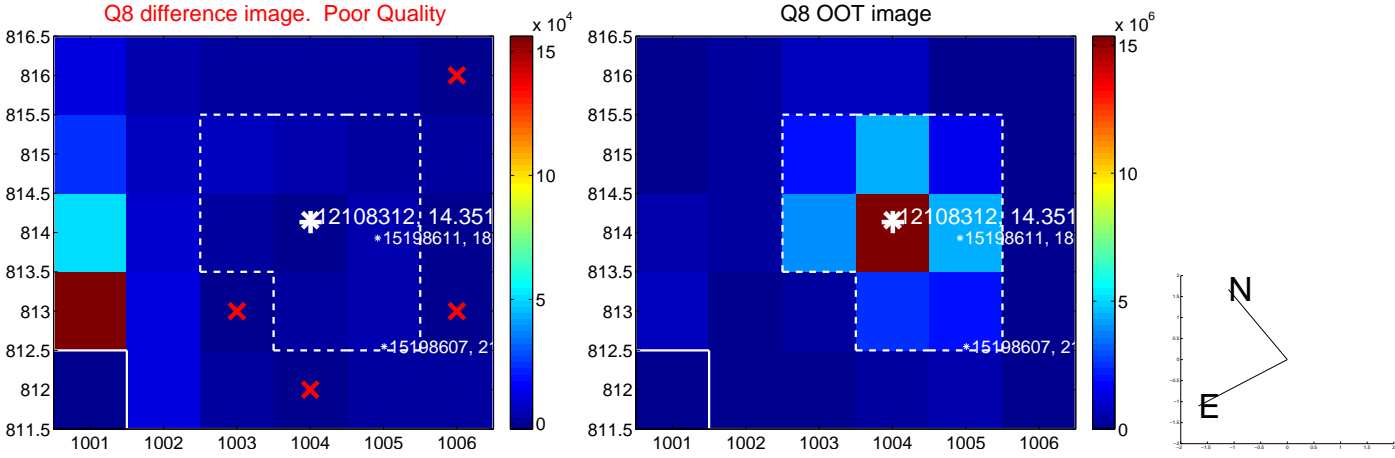
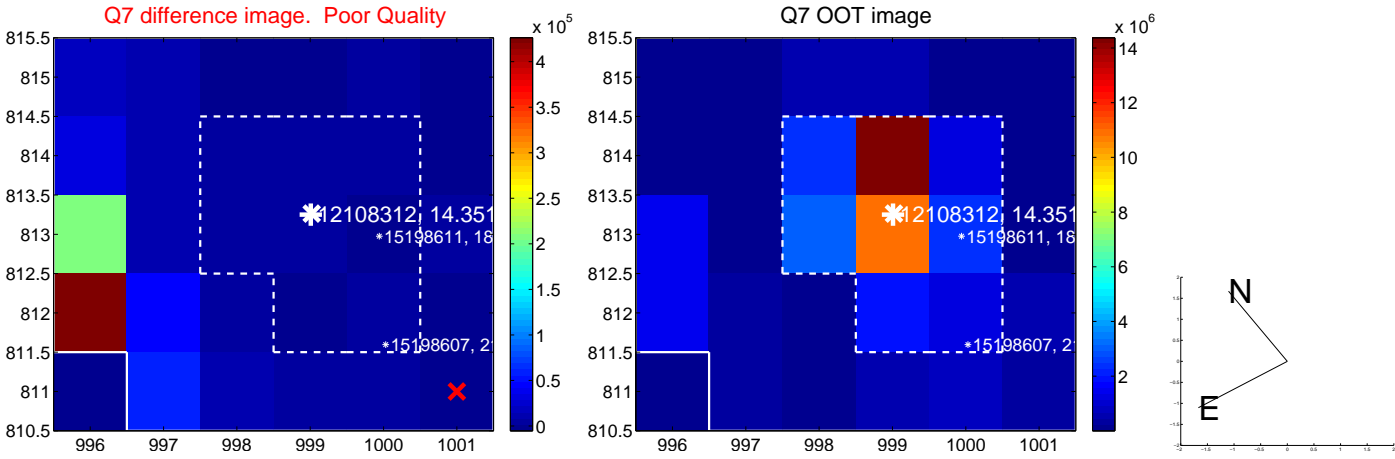
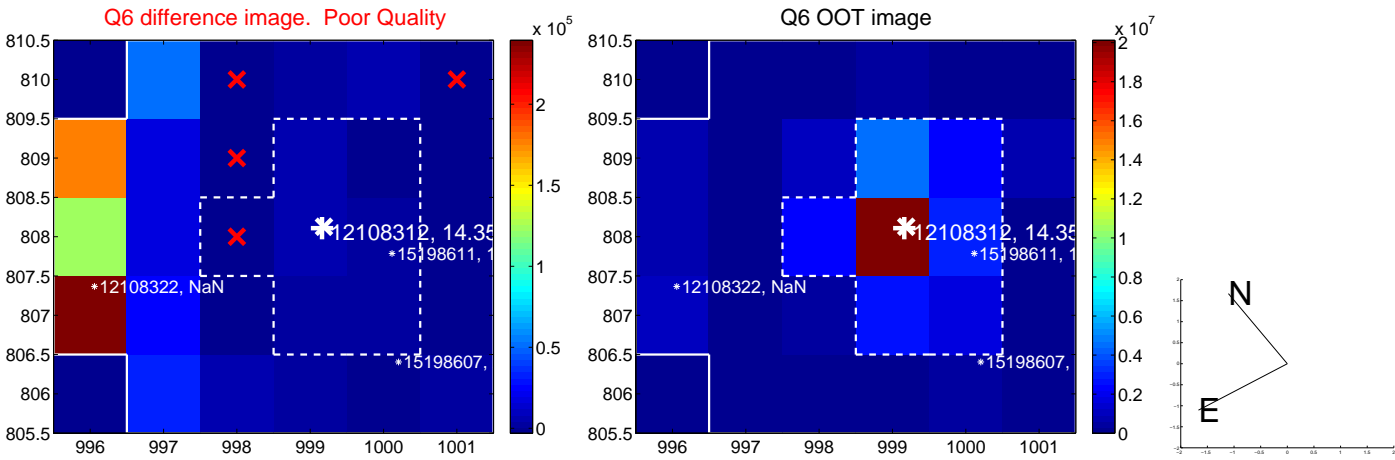
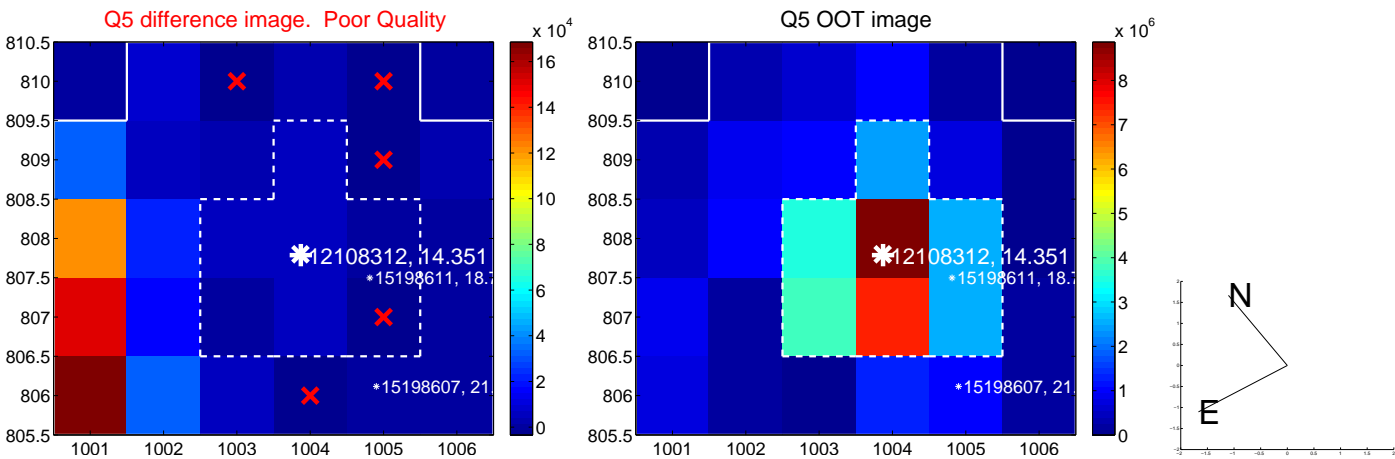


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

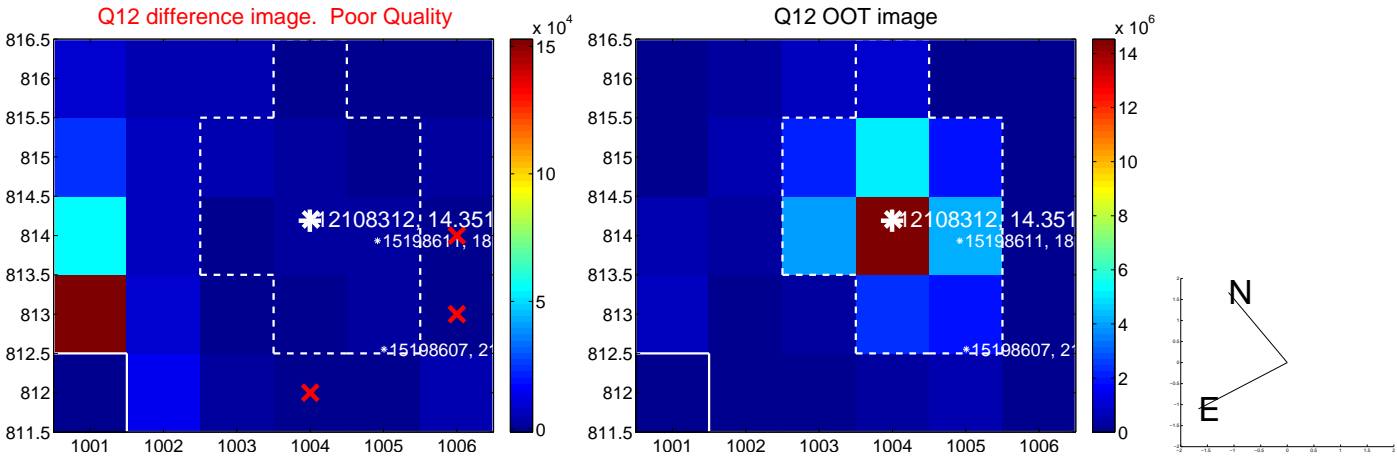
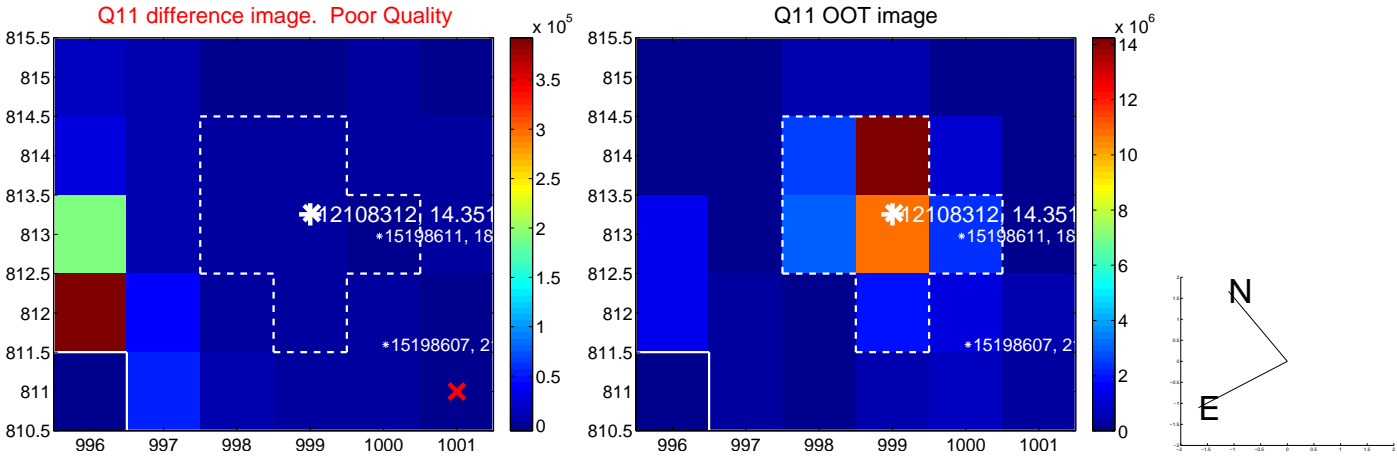
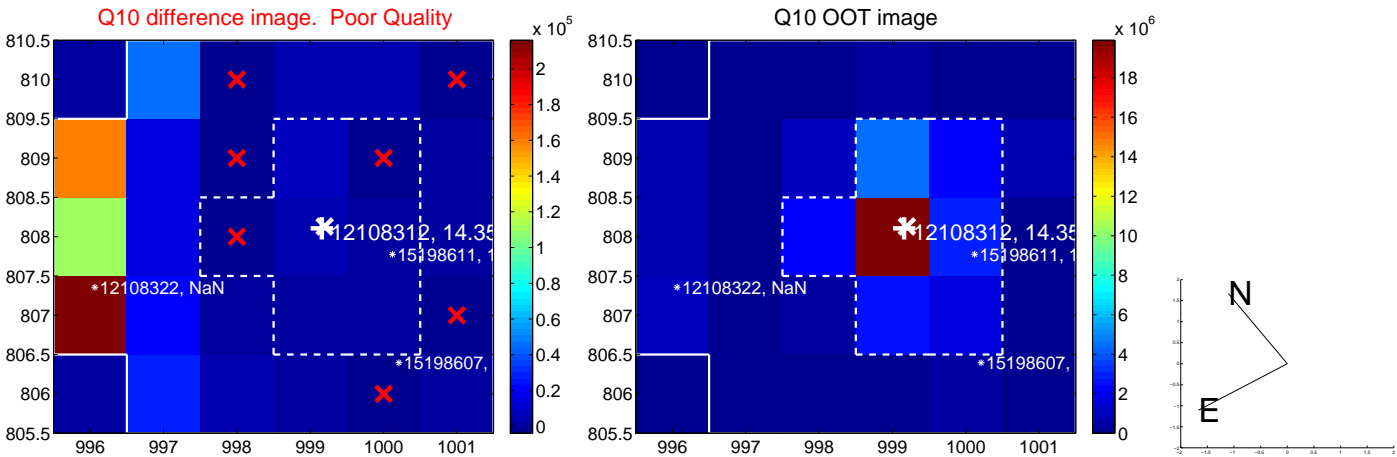
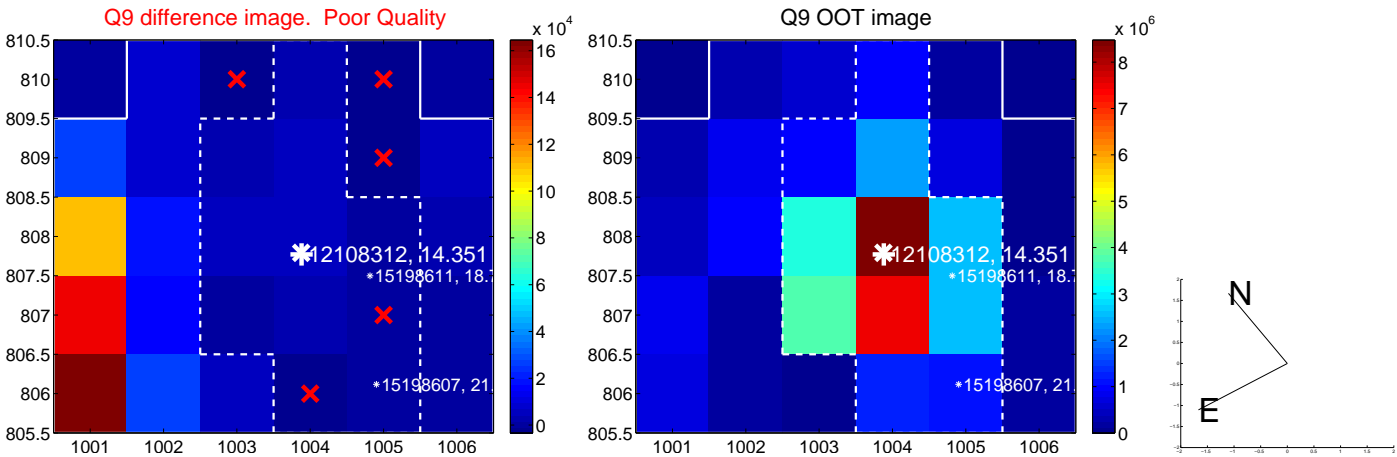


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

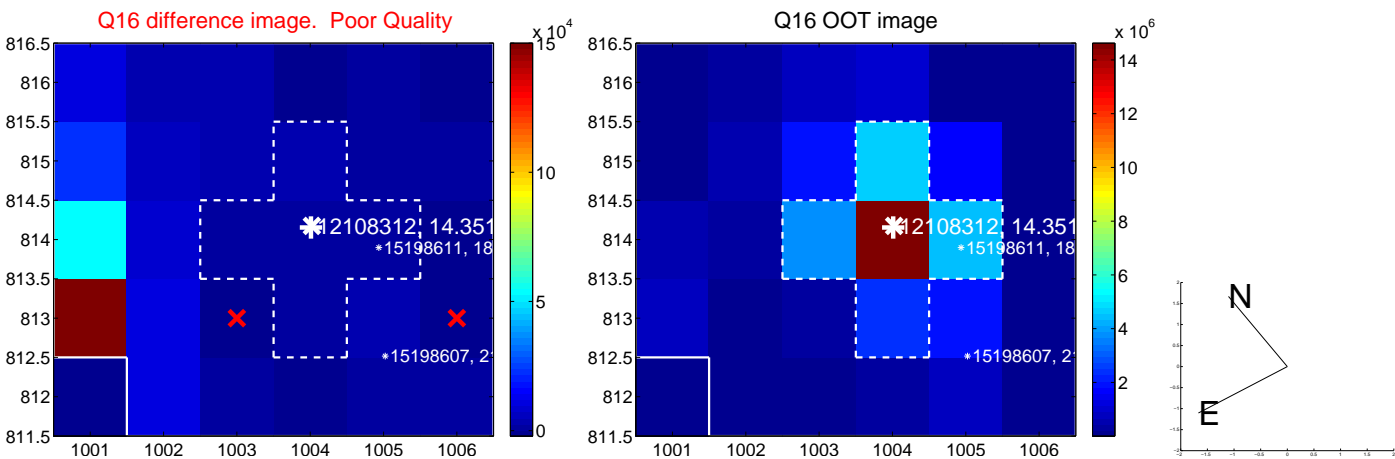
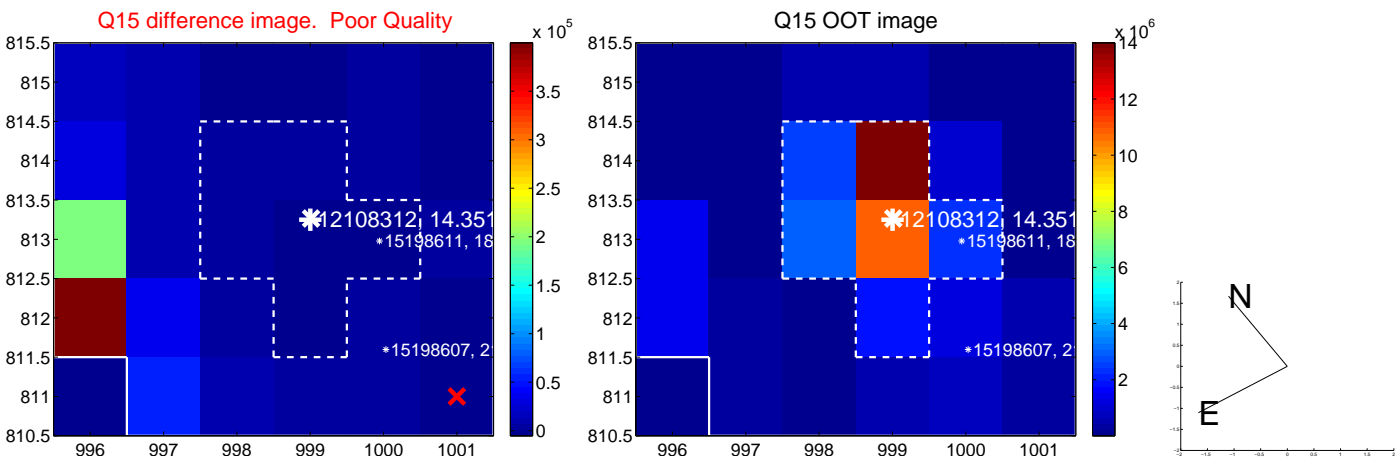
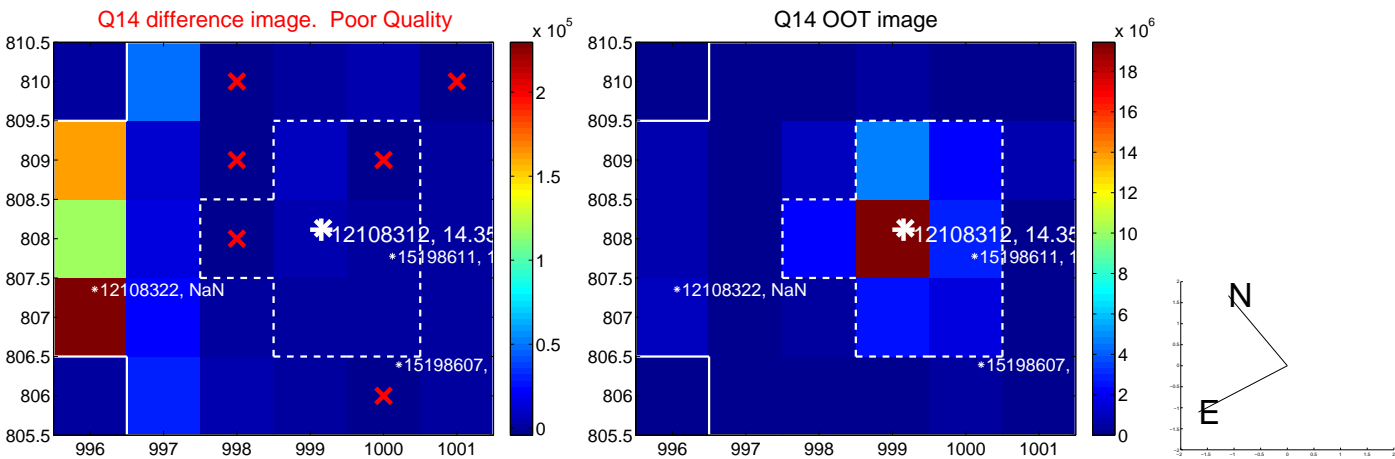
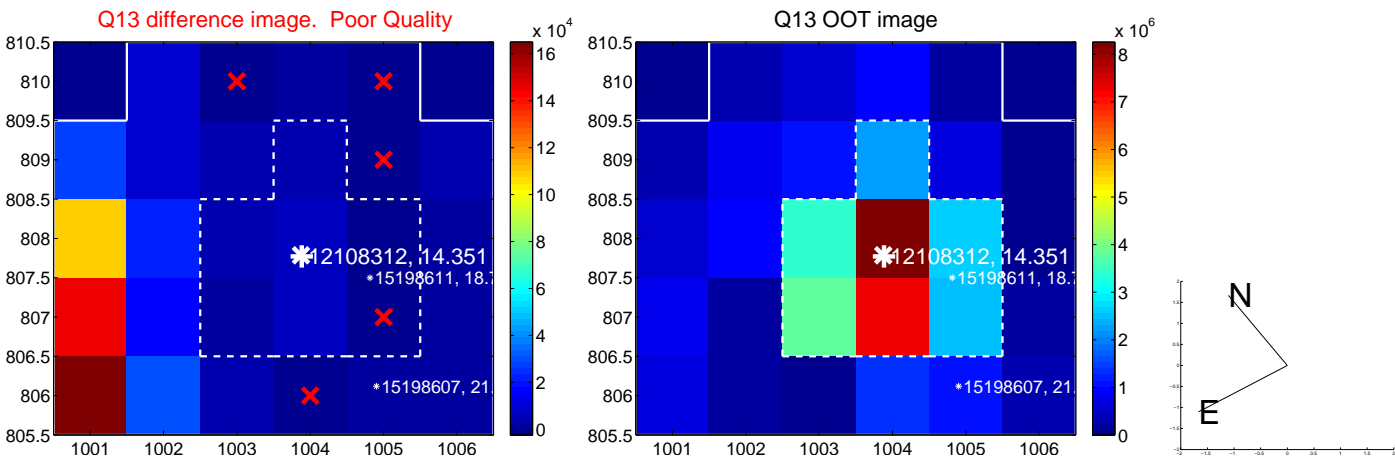




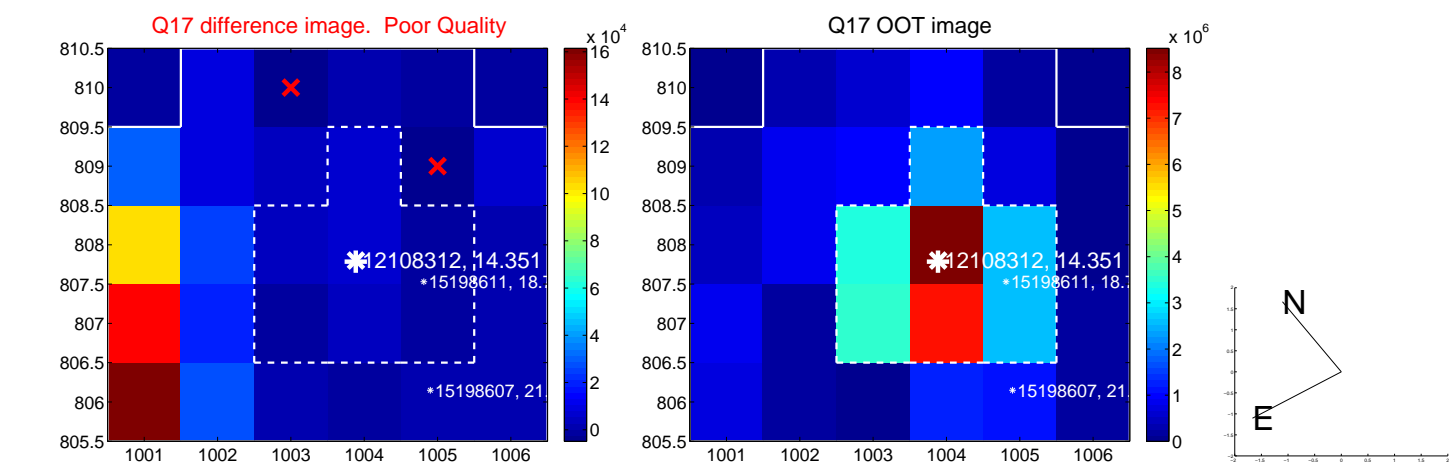
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



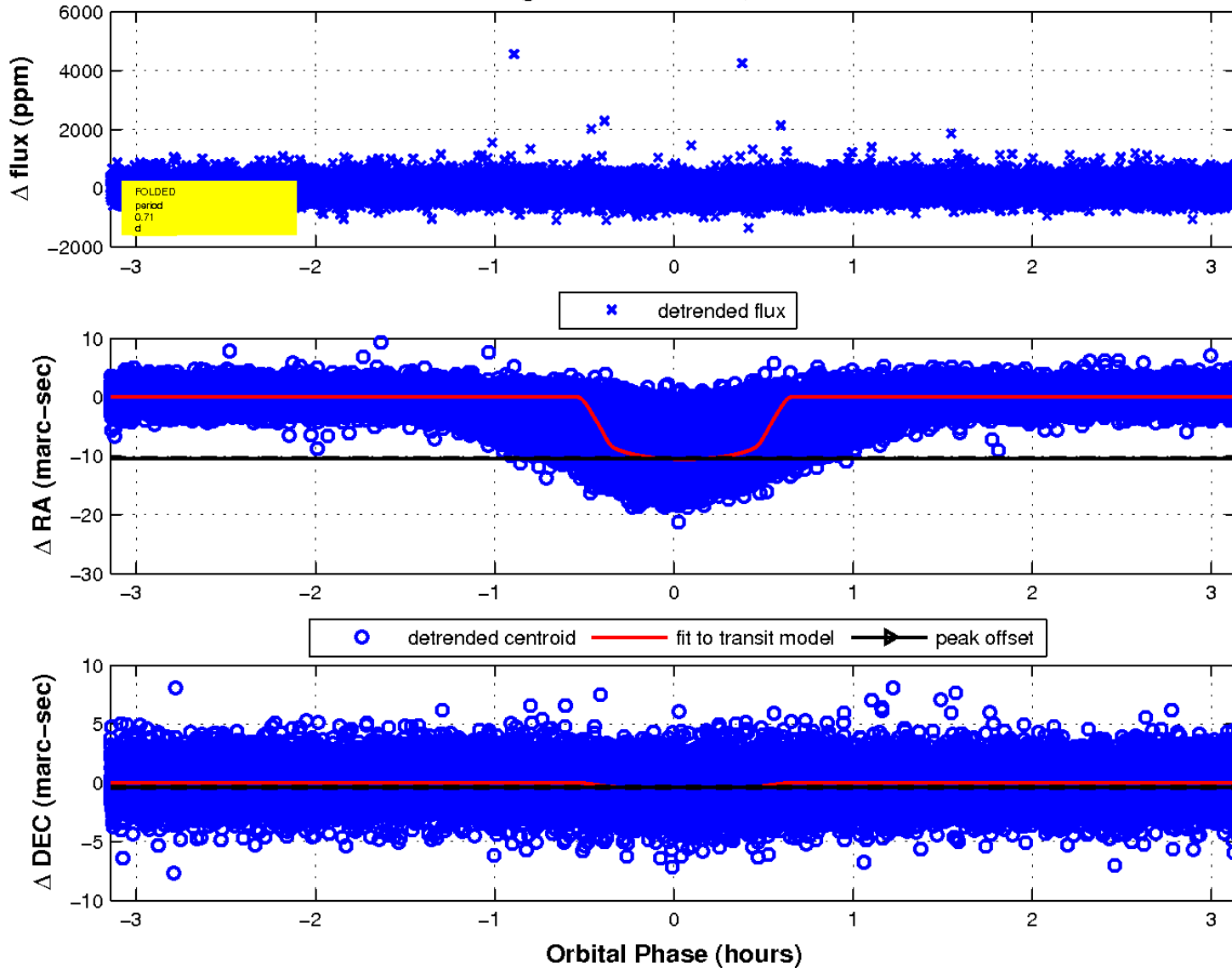
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

