

# KIC 004285107

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004285107-01	OBS	1333.01	2.242985	133.461226	266.0	3.506	41.0	46.7	0.73	5462	1.68	439.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004285107-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004285107-01

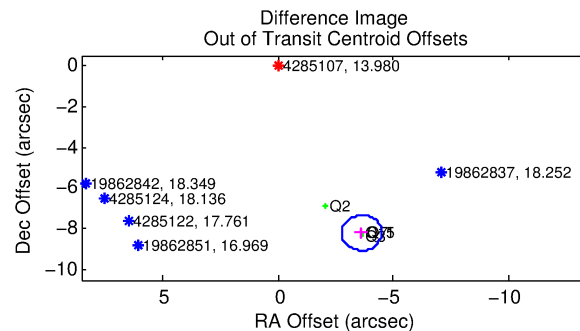
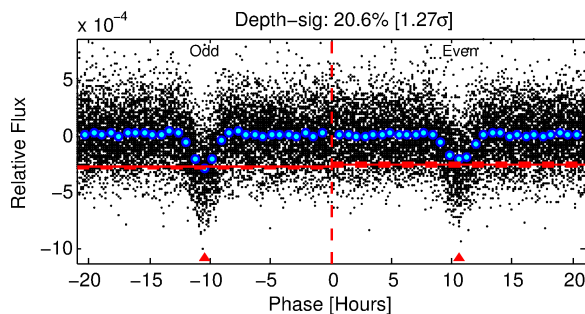
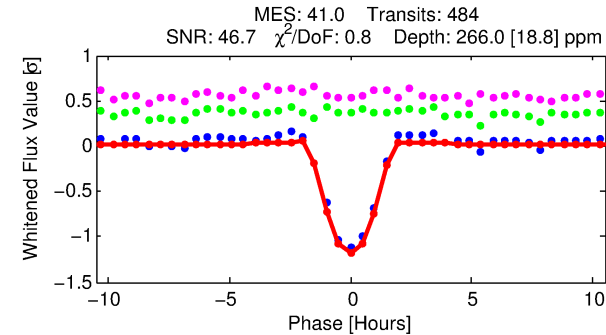
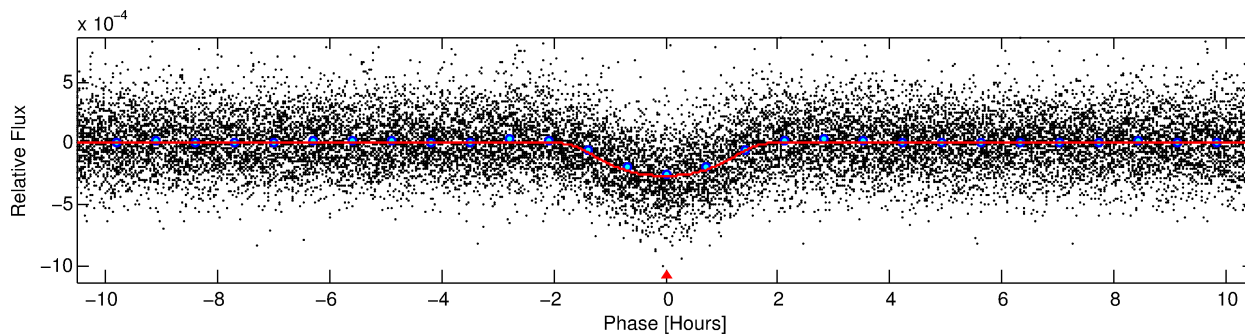
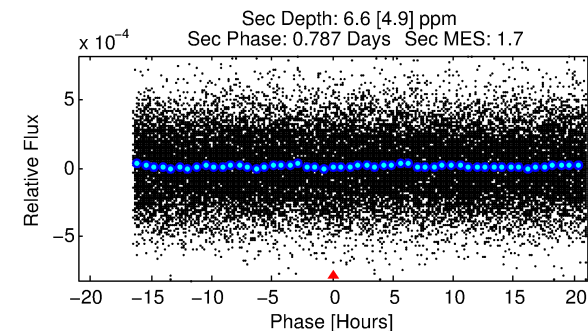
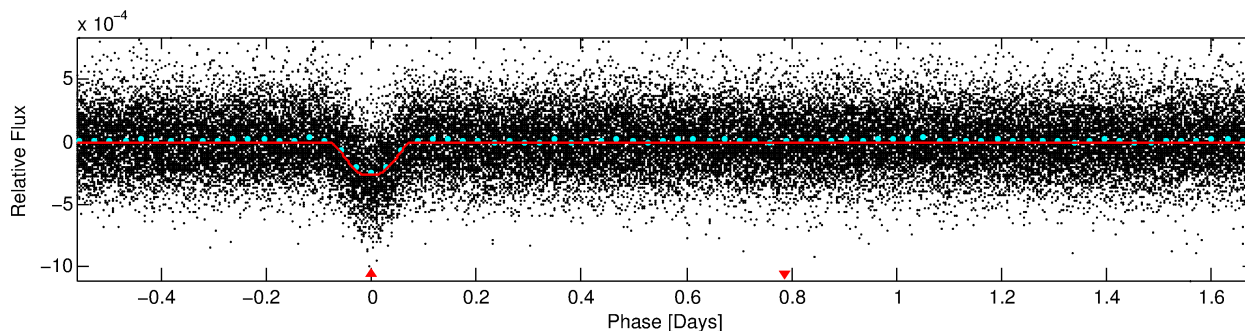
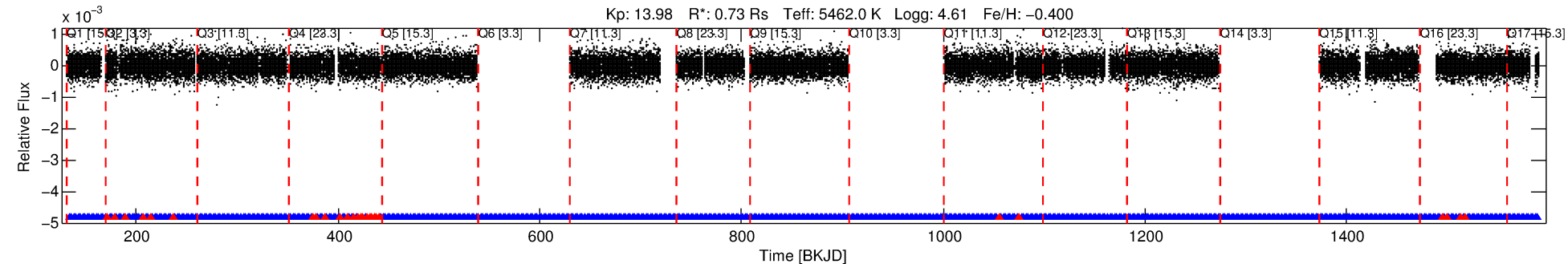
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
004285107-01	4285107	6112.01	4285087	1:1	19.0	2	-4	12.79	13.99	1064.40	Direct-PRF	0	0.92	0.57

**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: 4285107 Candidate: 1 of 1 Period: 2.243 d  
KOI: K01333.01 Corr: 0.940

Kp: 13.98 R\*: 0.73 Rs Teff: 5462.0 K Logg: 4.61 Fe/H: -0.400



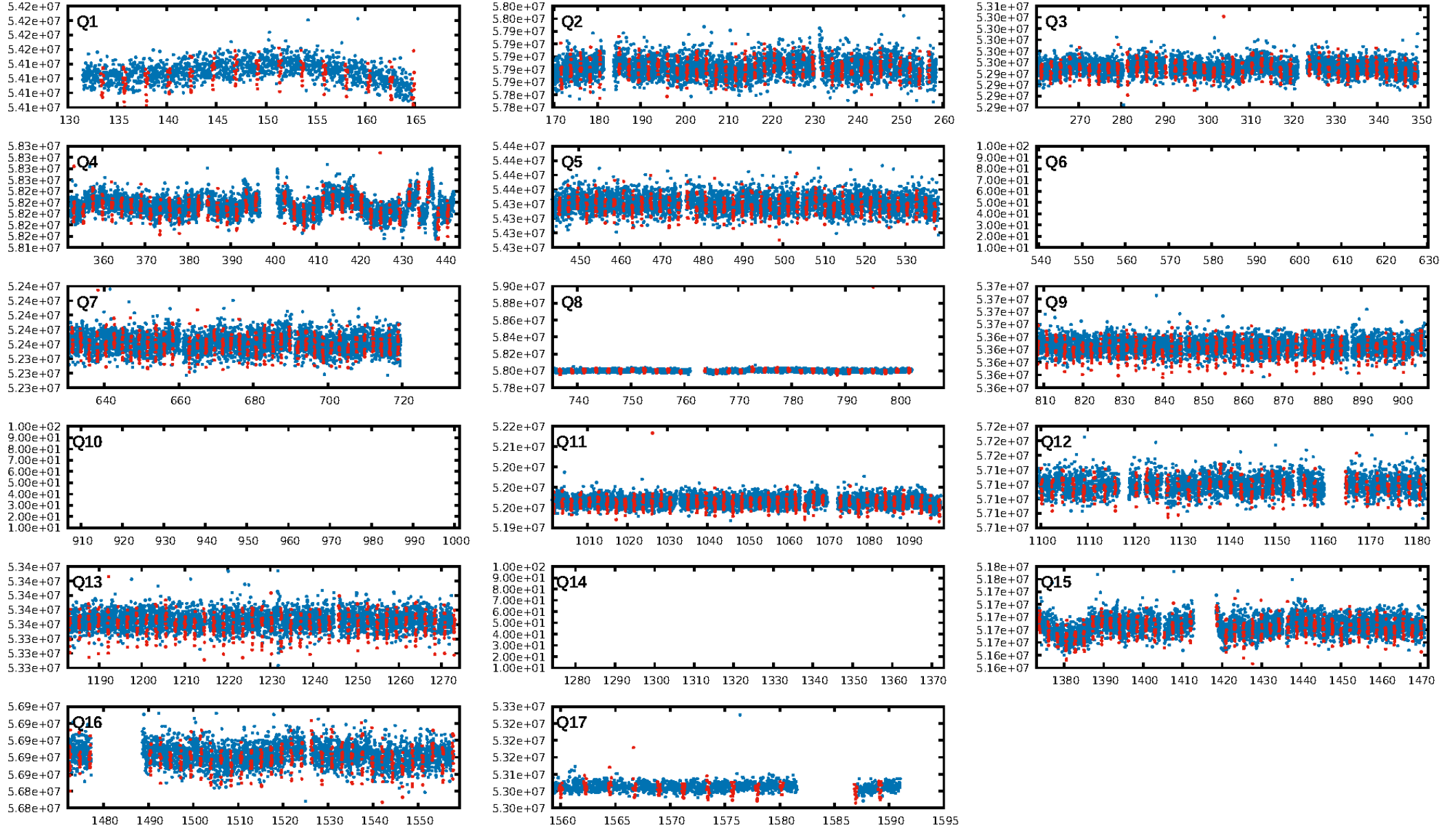
## DV Fit Results:

Period = 2.24299 [0.00000] d  
Epoch = 133.4612 [0.0013] BKJD  
Rp/R\* = 0.0210 [0.0013]  
a/R\* = 1.71 [0.08]  
b = 0.98 [0.00]  
Seff = 439.41 [111.80]  
Teq = 1167 [74] K  
Rp = 1.68 [0.34] Re  
a = 0.0312 [0.0050] AU  
Ag = 1.25 [0.99] [0.26σ]  
Teff = 1910 [365] K [1.99σ]

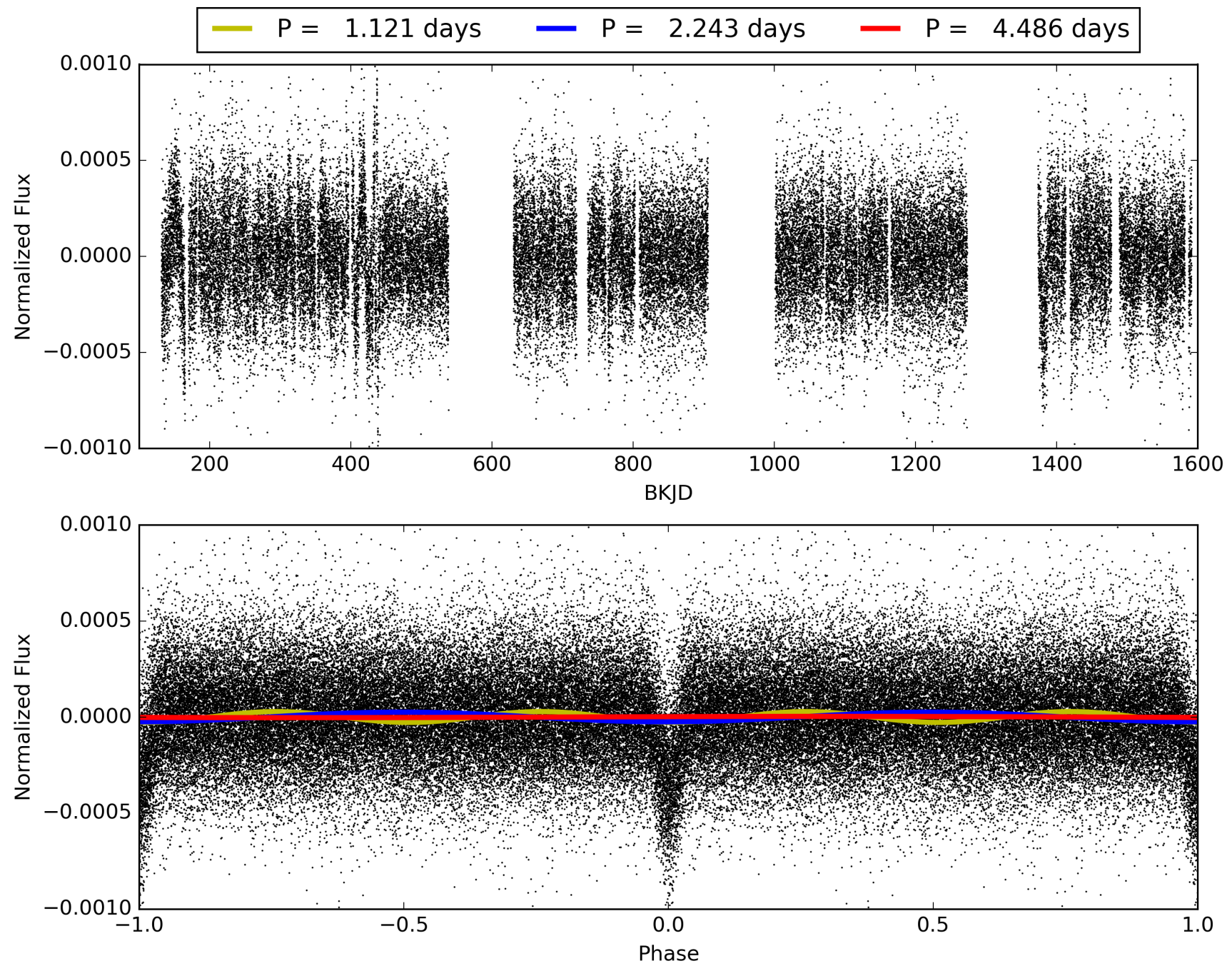
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.94 [430/457]  
GhostDiagnostic-chr: -0.5237  
Centroid-sig: 0.0%  
Centroid-so: 108.716 arcsec [322.56σ]  
OotOffset-rm: 8.954 arcsec [31.09σ]  
KicOffset-rm: 9.152 arcsec [24.51σ]  
OotOffset-st: 1/4/0/0 [5]  
KicOffset-st: 1/4/0/0 [5]  
DiffImageQuality-fgm: 1.00 [5/5]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 004285107-01, PDC Light Curves

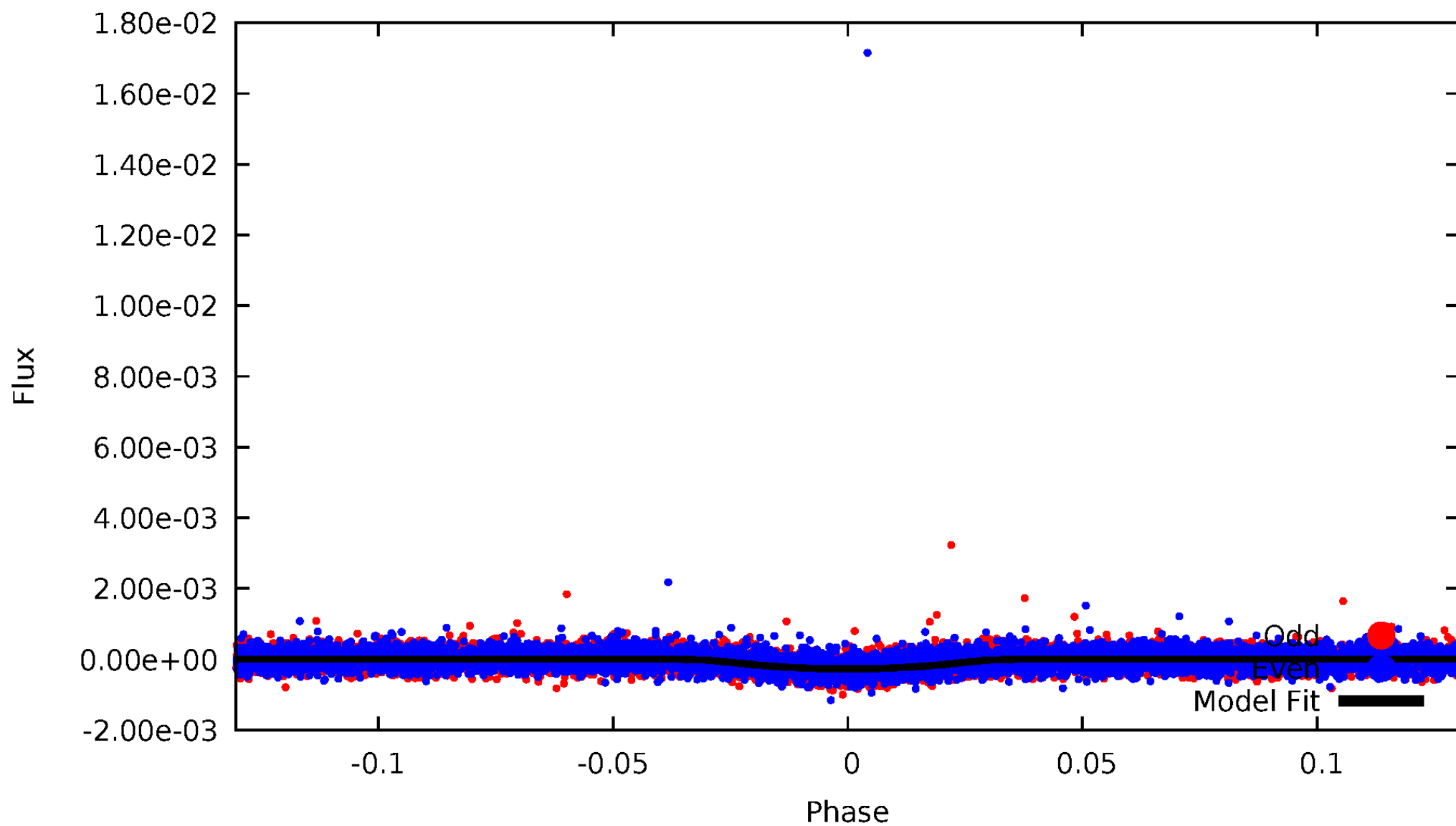


TCE 004285107-01



# DV Odd/Even

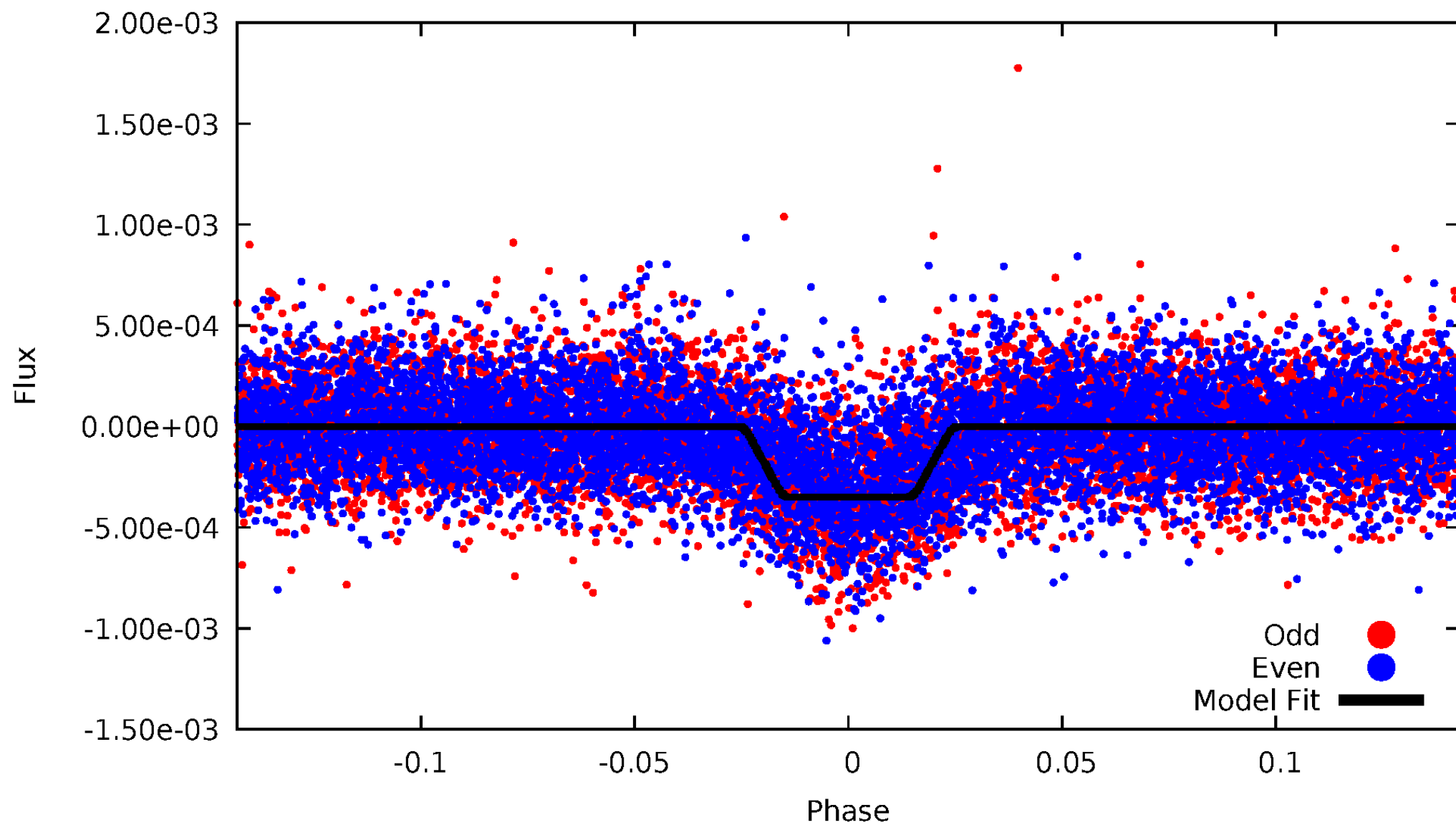
TCE 004285107-01



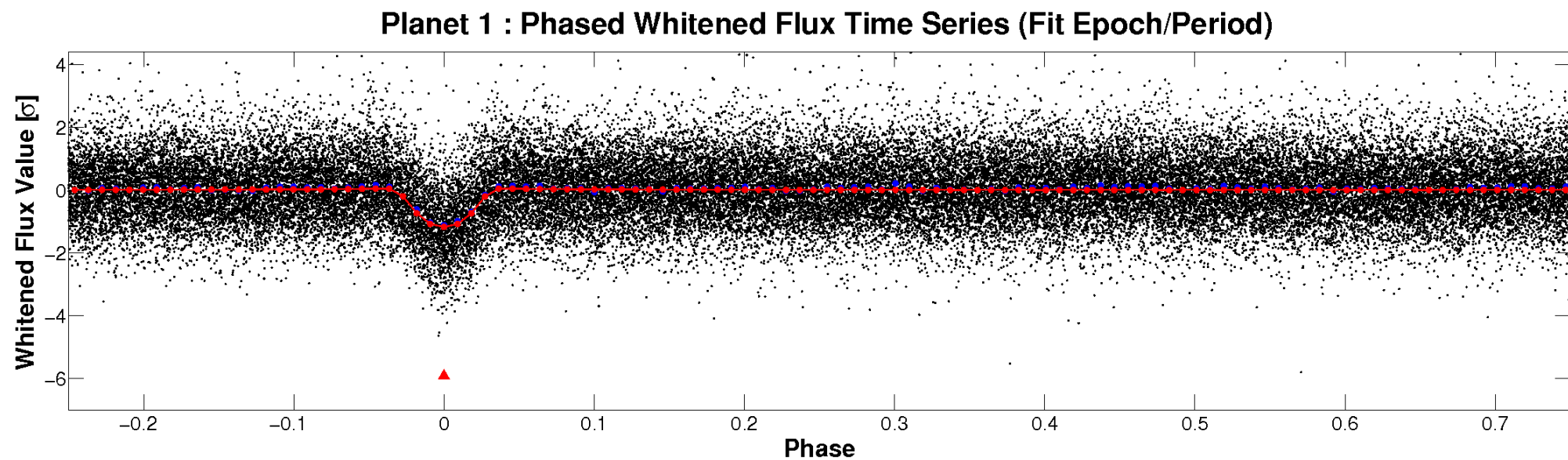
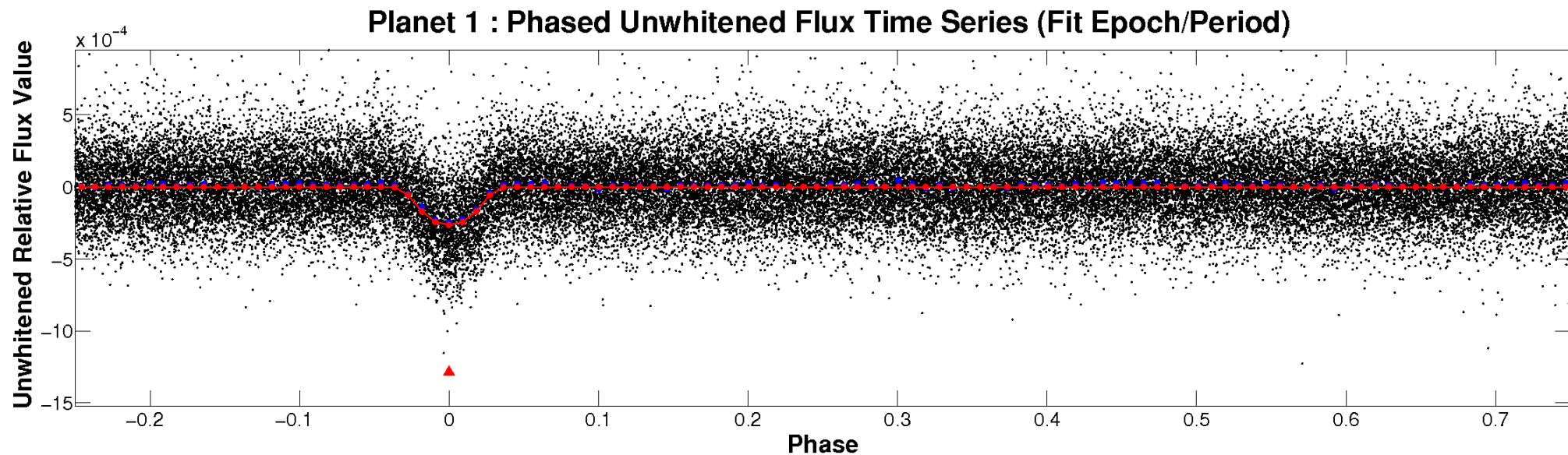


# ALT Odd/Even

TCE 004285107-01

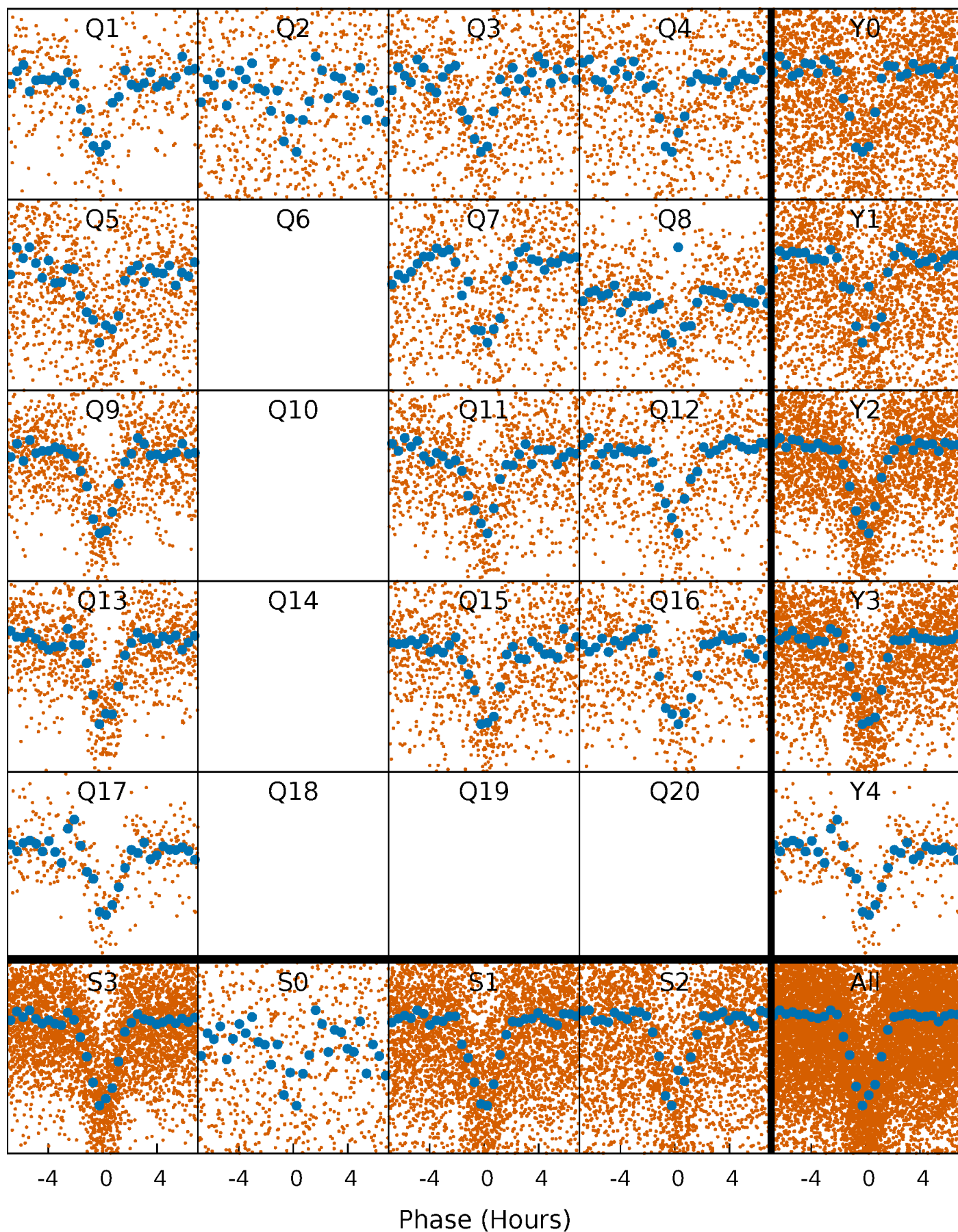


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

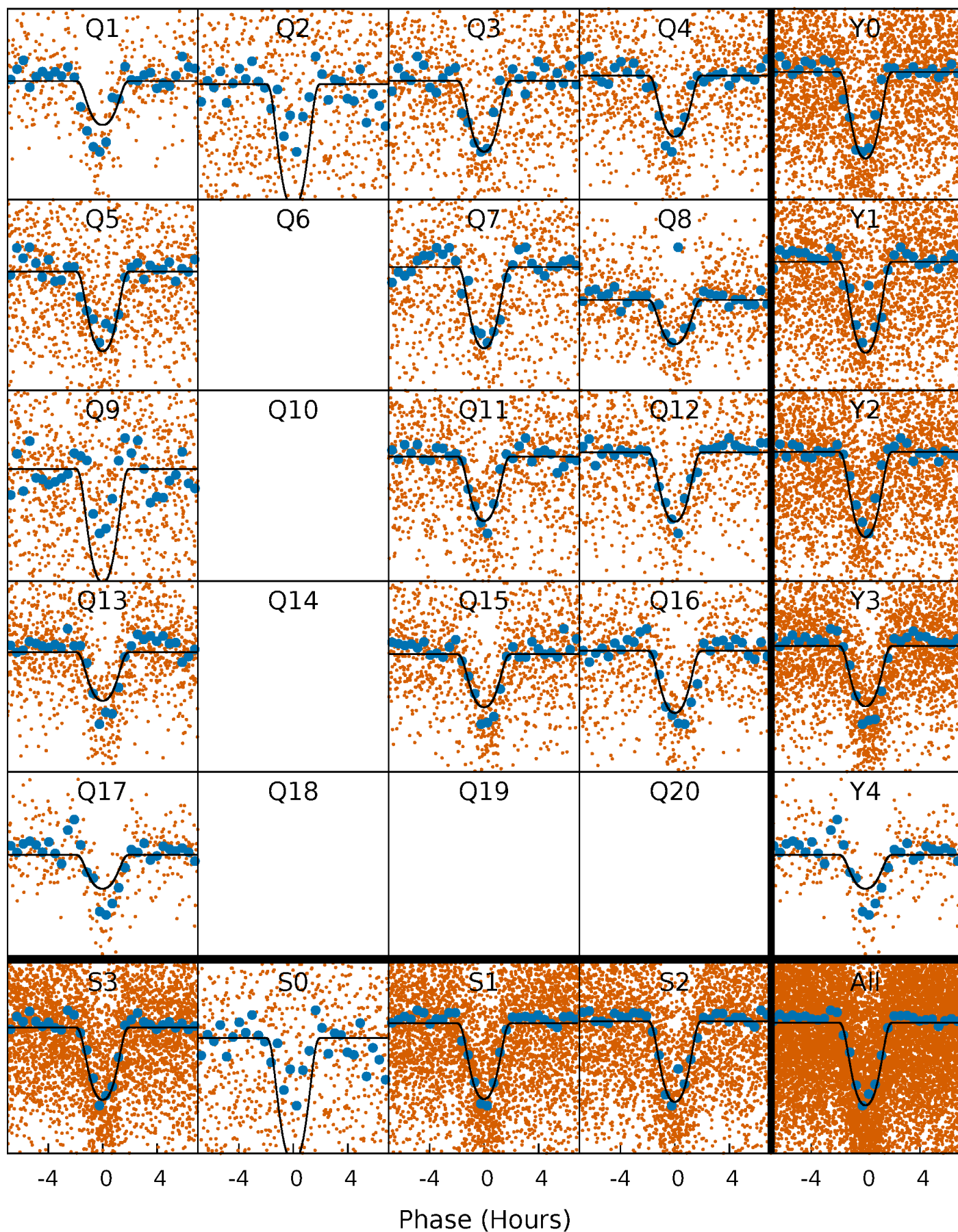
TCE 004285107-01   P= 2.242985 Days    $T_0=133.461226$  (BKJD)





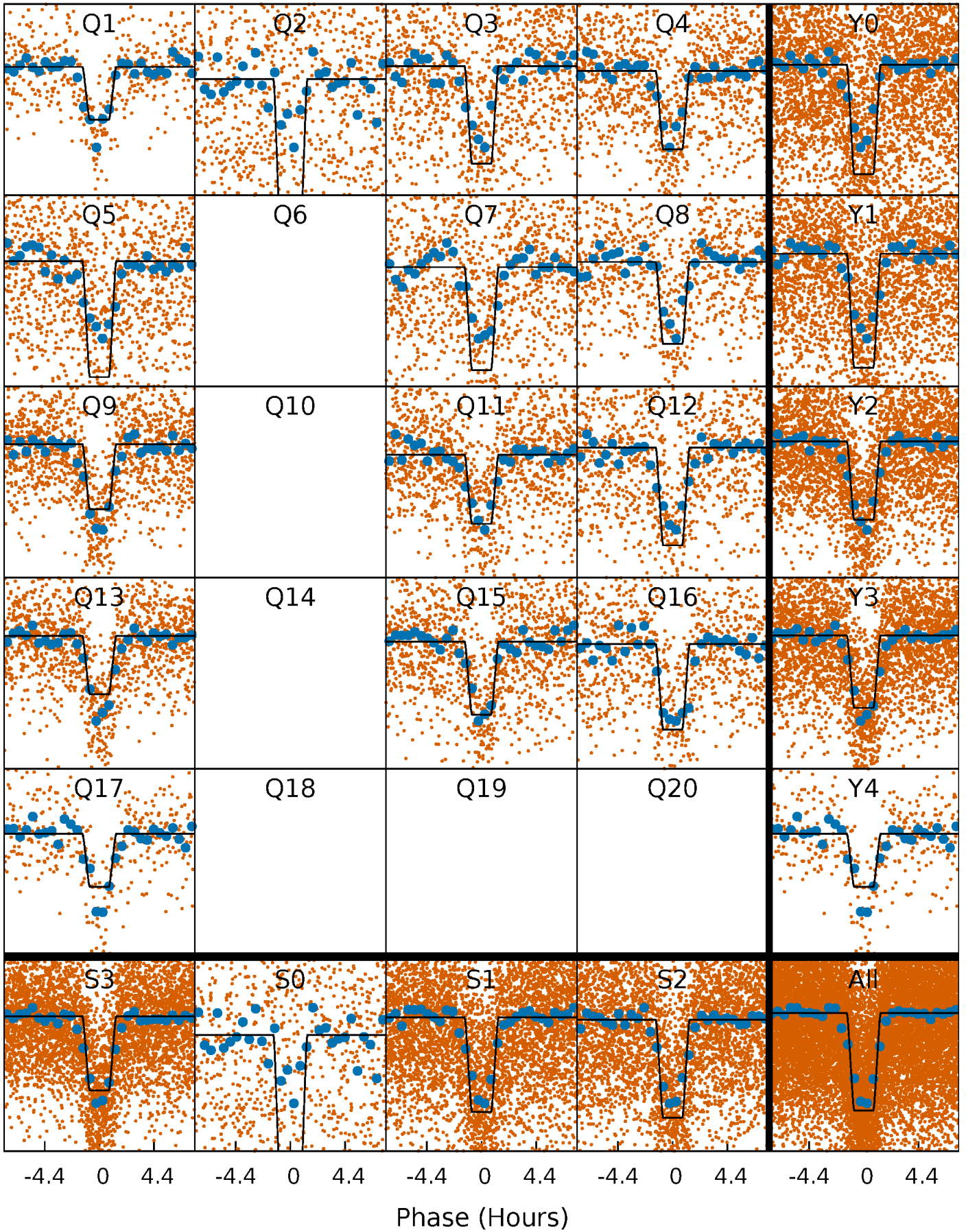
# DV Quarter-Phased Transit Curves

TCE 004285107-01   P= 2.242985 Days    $T_0=133.461226$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

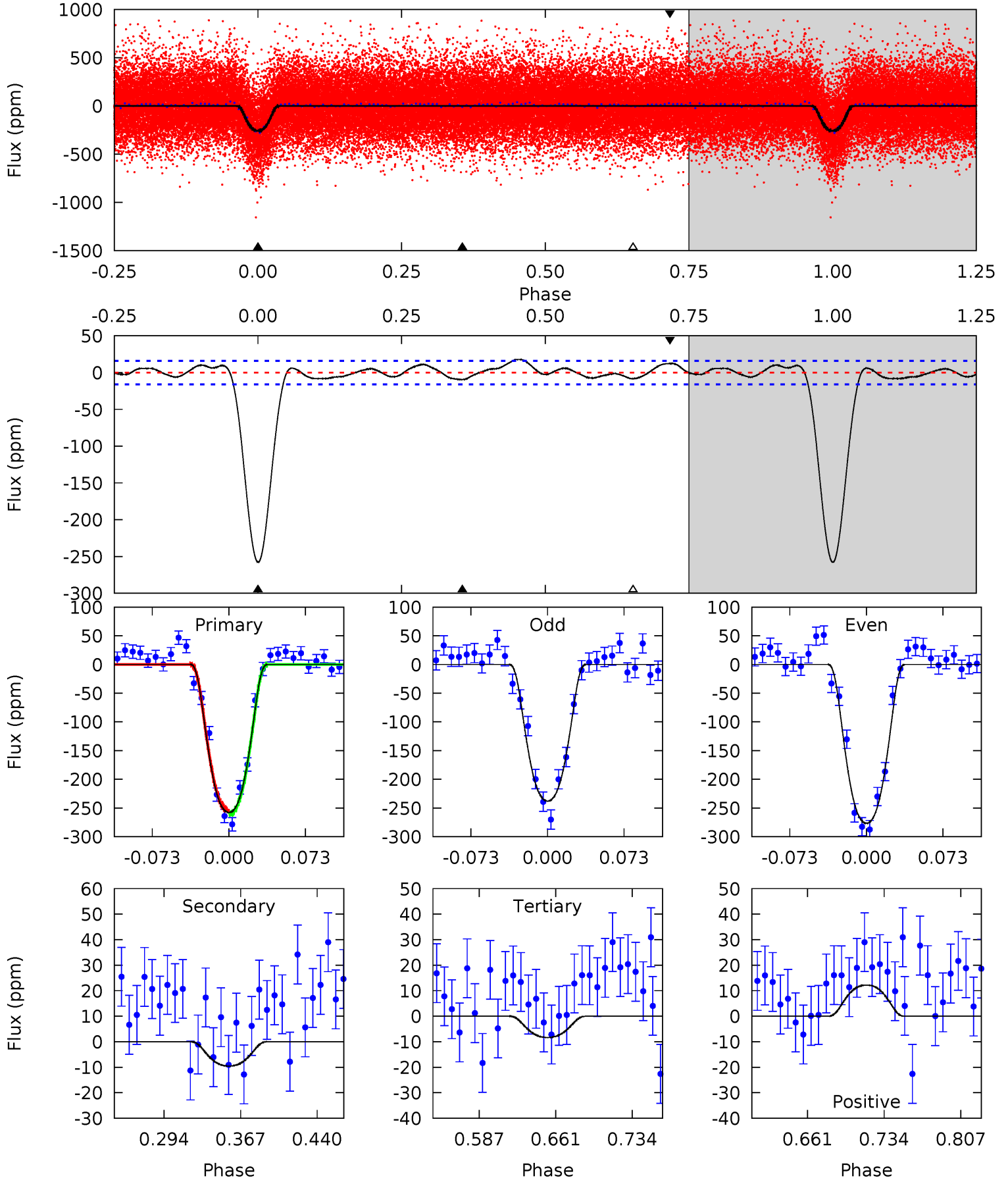
TCE 004285107-01 P= 2.243001 Days  $T_0=133.455536$  (BKJD)



# DV Model-Shift Uniqueness Test

004285107-01, P = 2.242985 Days, E = 131.218241 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
74.2	2.74	2.40	3.51	4.63	1.79	1.89	71.8	70.7	0.34	-0.77	5.55	0.93	0.07	0.95

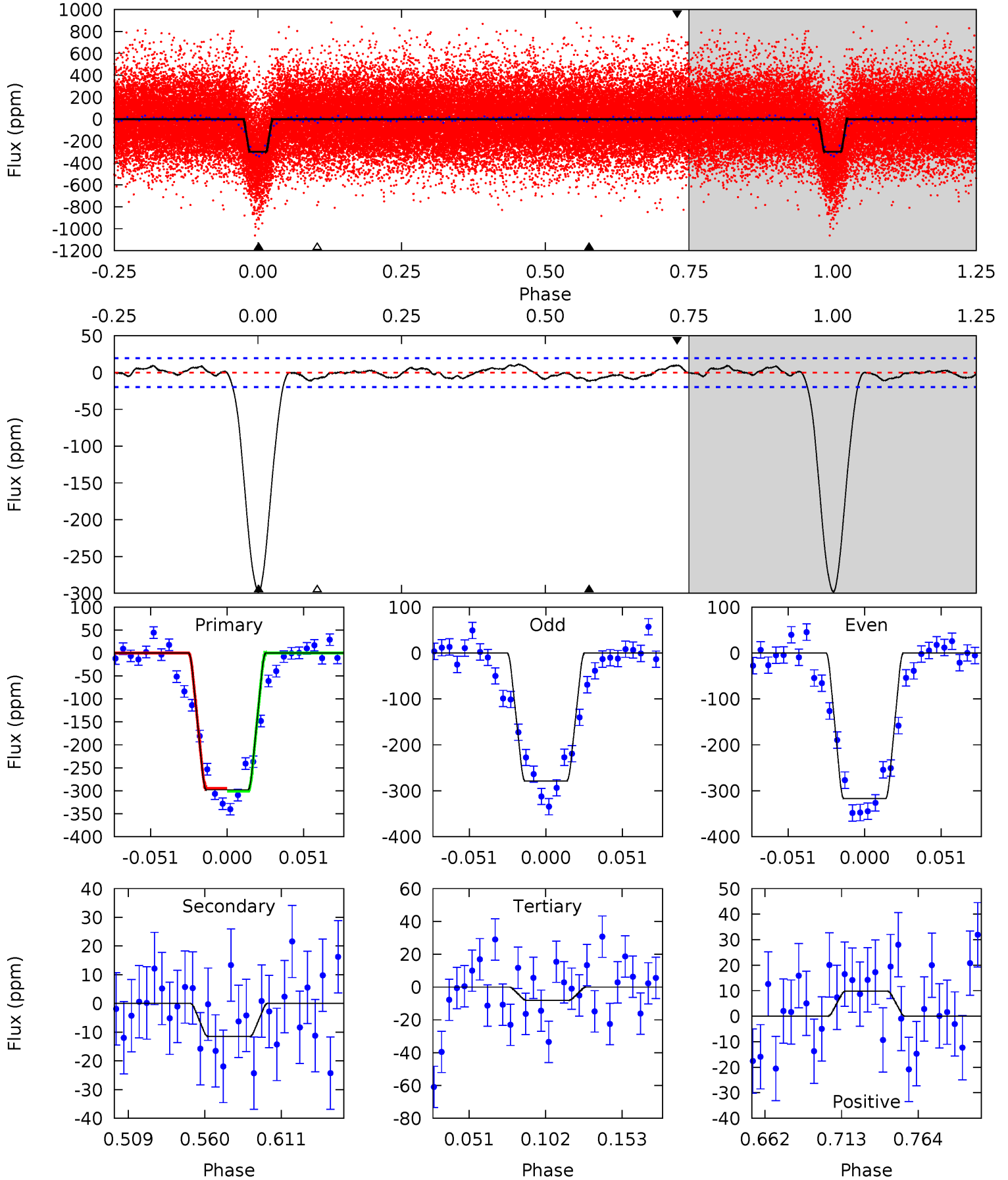




# Alt Model-Shift Uniqueness Test

004285107-01, P = 2.243001 Days, E = 131.212535 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
71.5	2.75	1.96	2.36	4.70	1.95	1.25	69.6	69.2	0.79	0.40	4.59	0.97	0.04	0.81





### Stellar Parameters For KIC 004285107

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5462^{+162}_{-146}$	$4.614^{+0.030}_{-0.120}$	$-0.400^{+0.300}_{-0.300}$	$0.732^{+0.142}_{-0.061}$	$0.812^{+0.083}_{-0.083}$	$2.918^{+0.473}_{-1.060}$
	+3%/-3%	+1%/-3%	+75%/-75%	+19%/-8%	+10%/-10%	+16%/-36%
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 004285107-01 / KOI 1333.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-10 \pm 3$	$1.73^{+0.19}_{-0.16}$	$1667^{+80}_{-65}$	$2752^{+169}_{-221}$	$1.645^{+0.778}_{-0.631}$
Alt.	$-11 \pm 4$	$1.54^{+0.18}_{-0.14}$	$1659^{+81}_{-62}$	$2925^{+177}_{-200}$	$2.536^{+1.115}_{-1.032}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

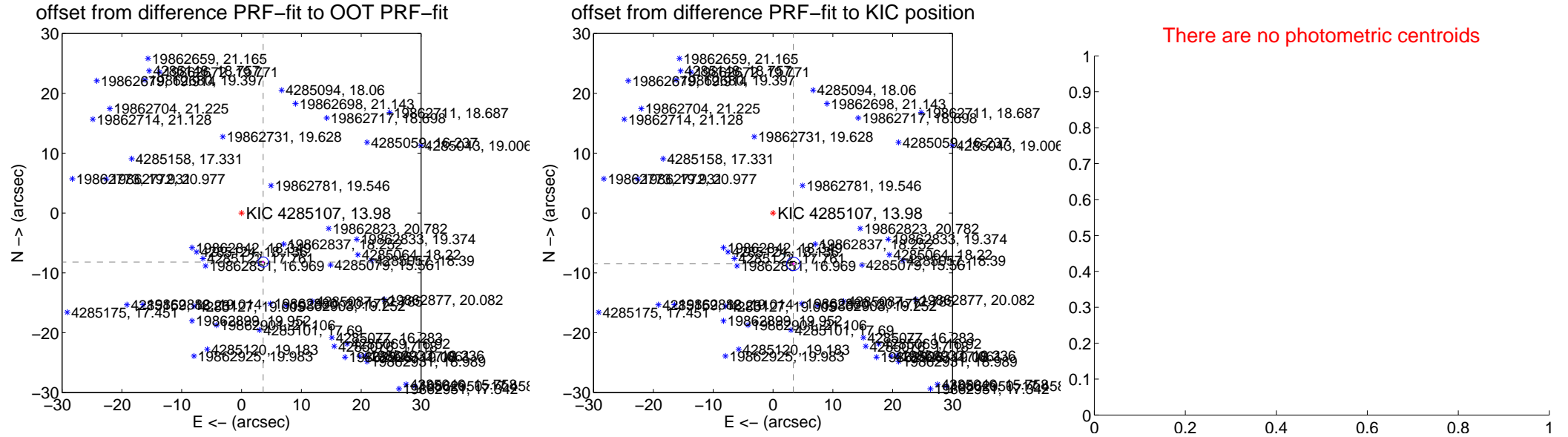
## DV Centroid Data

Supplemental centroid analysis for 004285107-01. Kepler magnitude: 13.98. Transit SNR 46.74

There are 5 quarters with good PRF difference image offsets

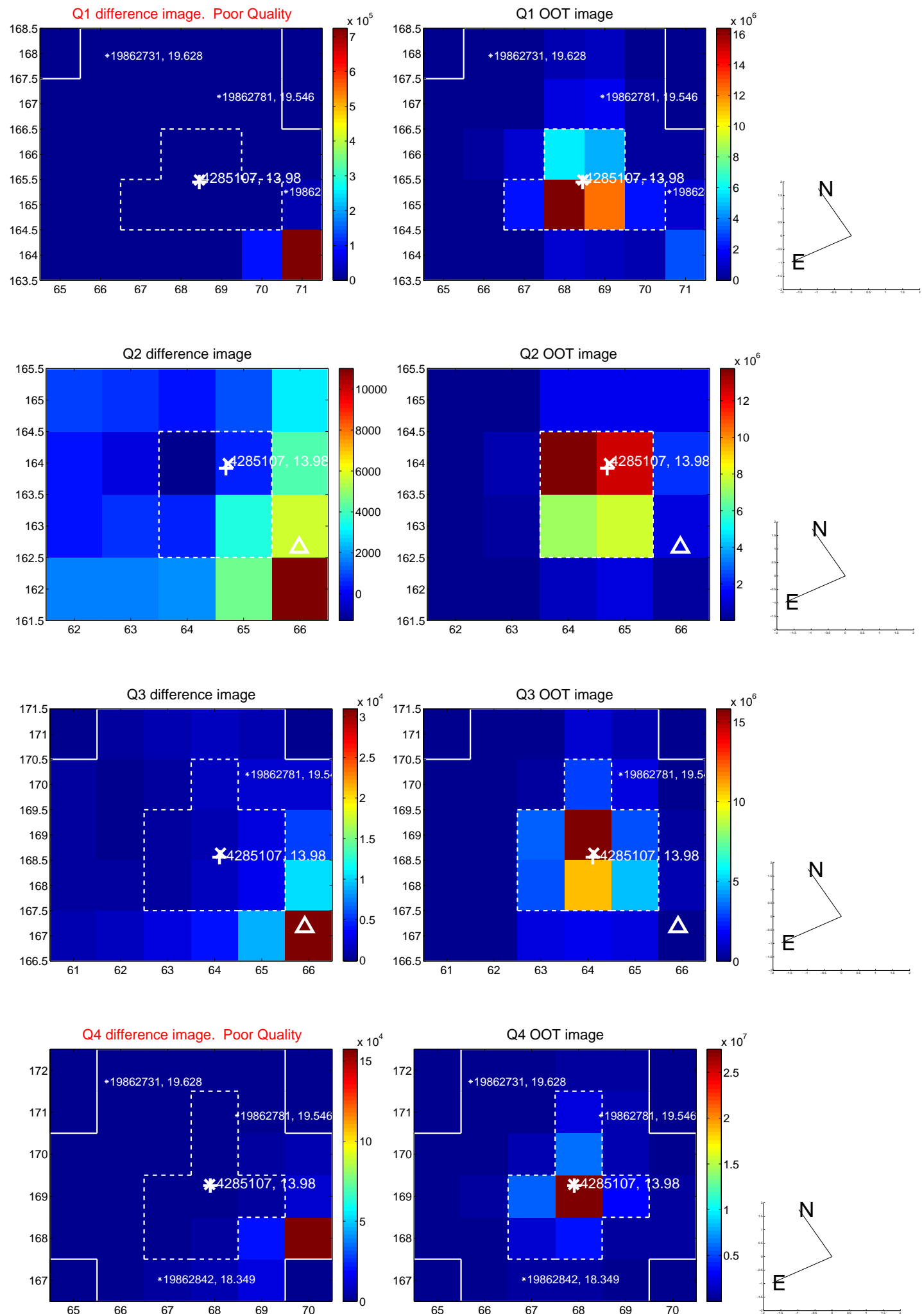
The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$8.954 \pm 0.288$	31.09	$-3.620 \pm 0.240$	$-8.190 \pm 0.215$
PRF-fit source offset from KIC position	$9.152 \pm 0.373$	24.51	$-3.403 \pm 0.311$	$-8.496 \pm 0.282$
photometric centroid source offset	—	—	—	—

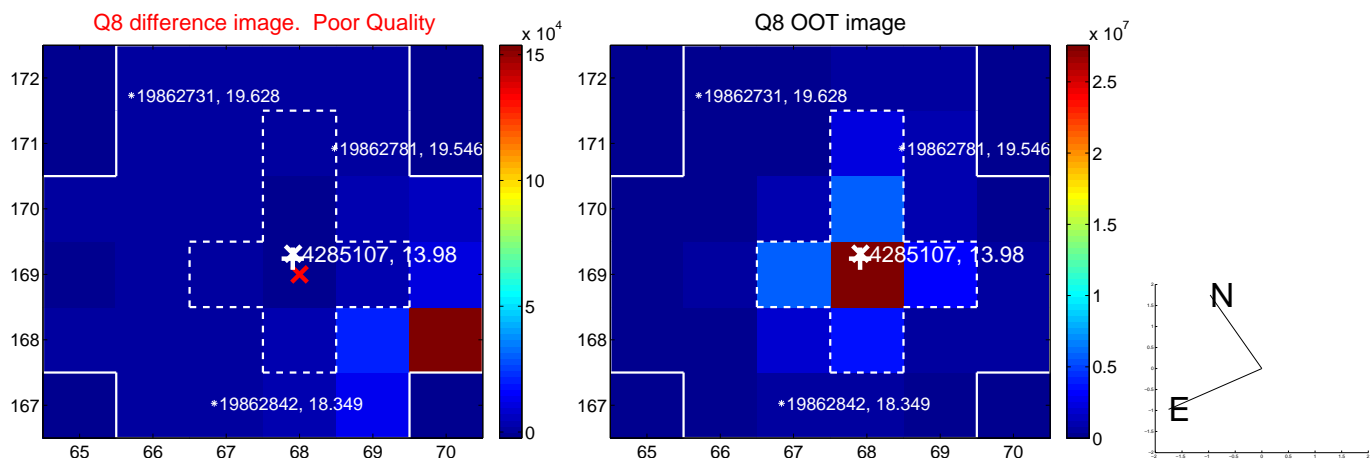
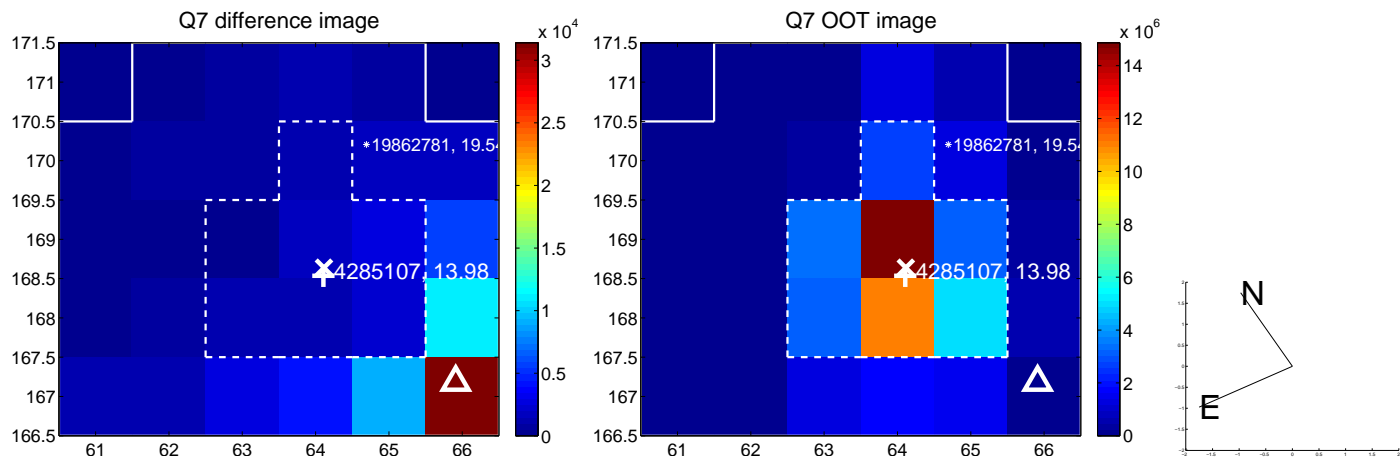
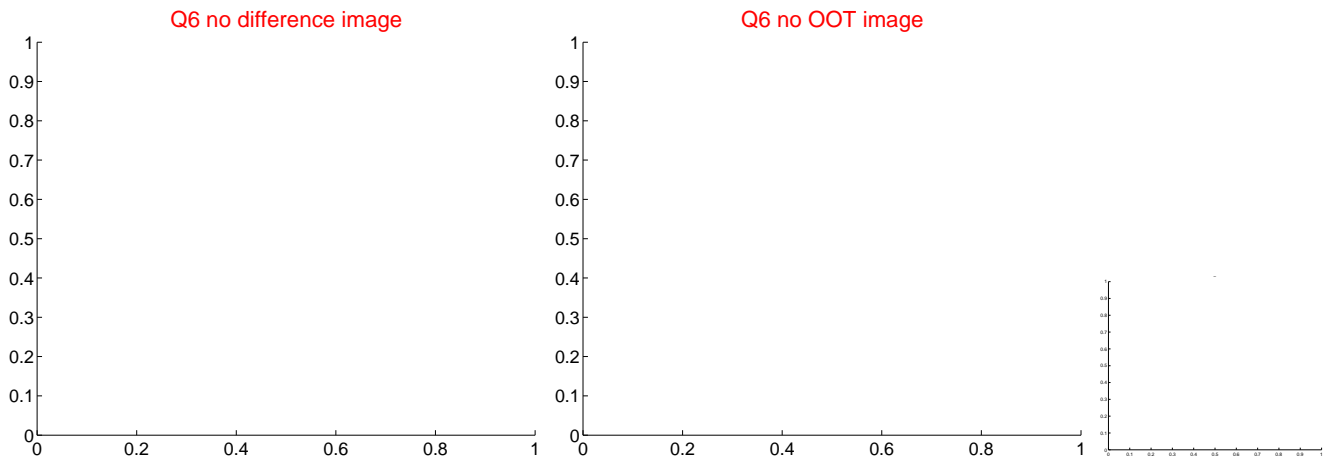
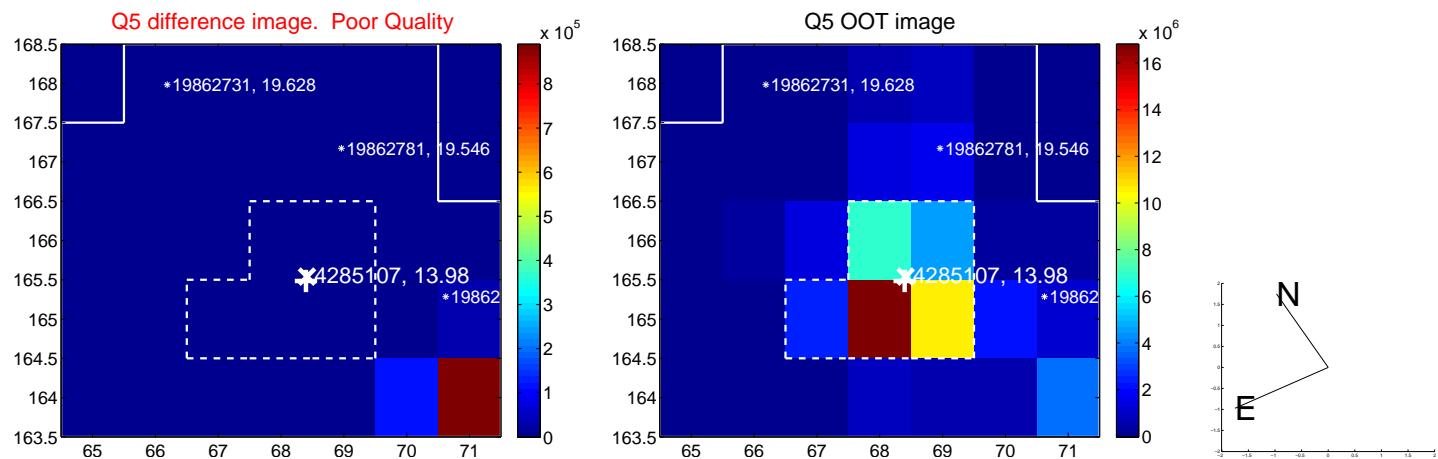


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

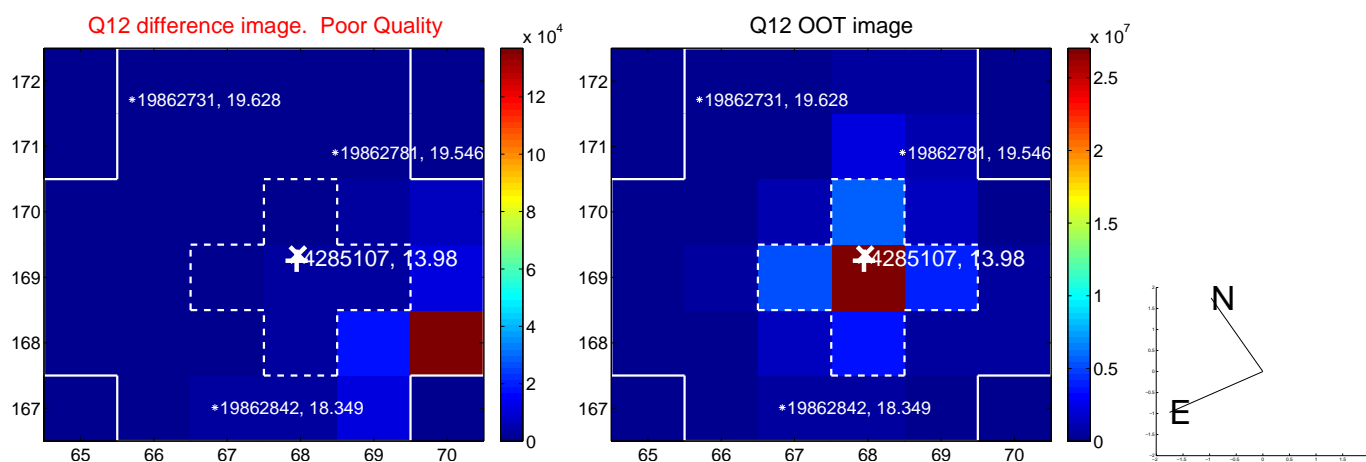
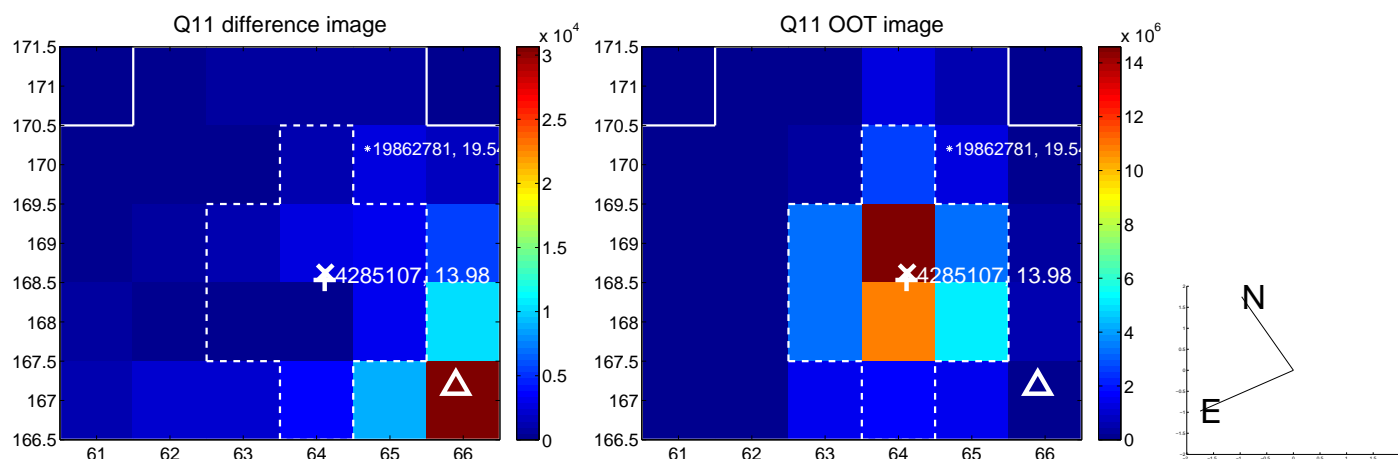
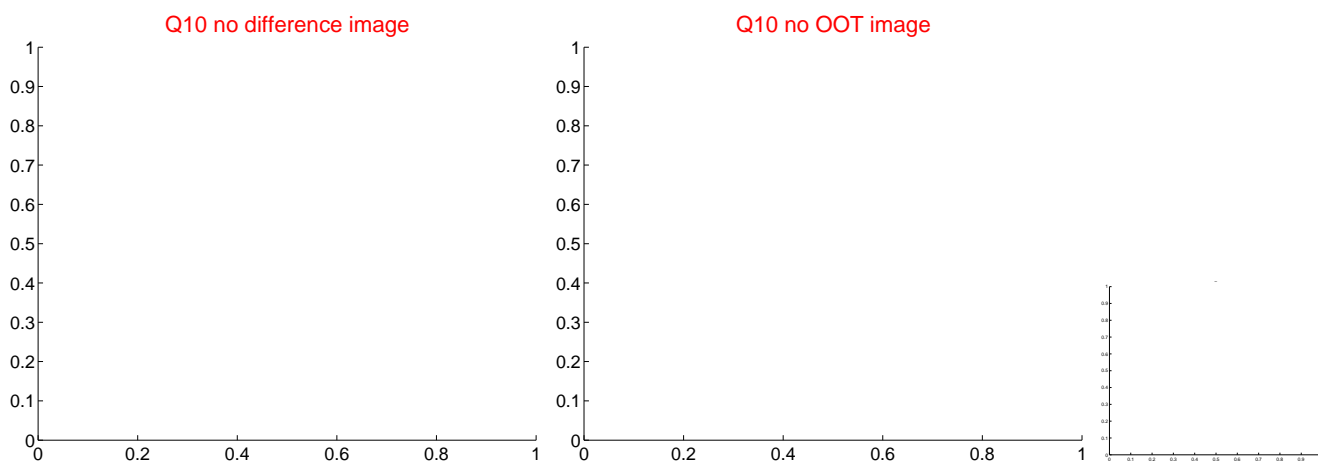
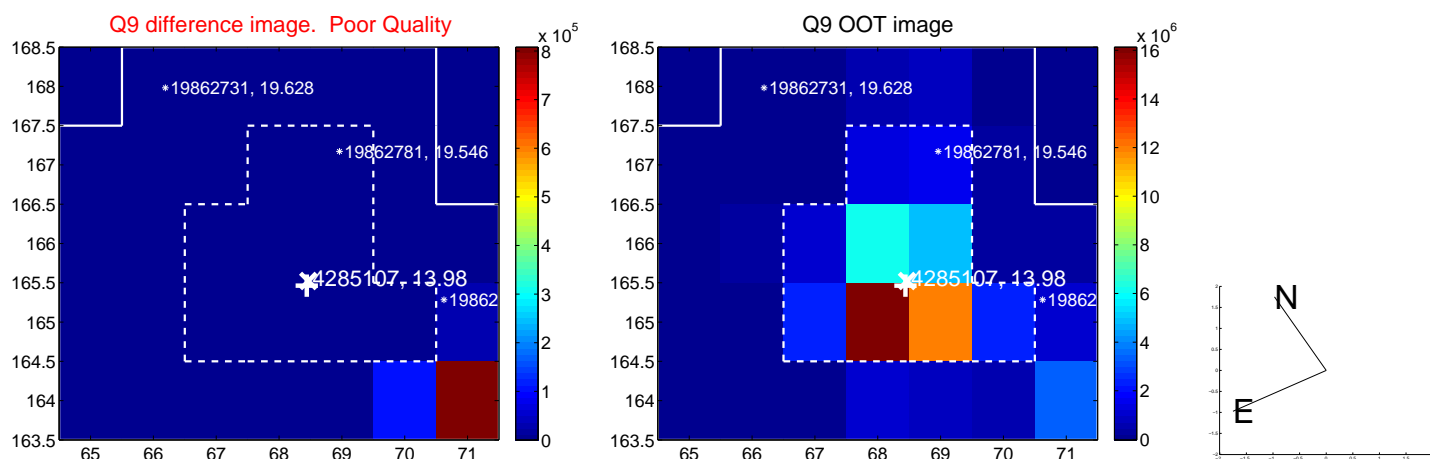


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

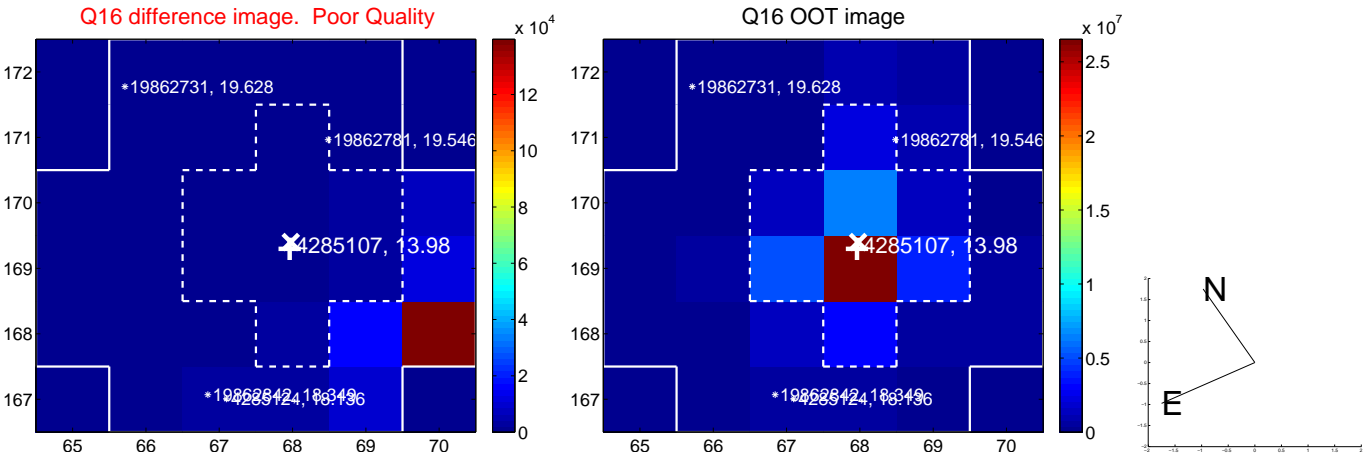
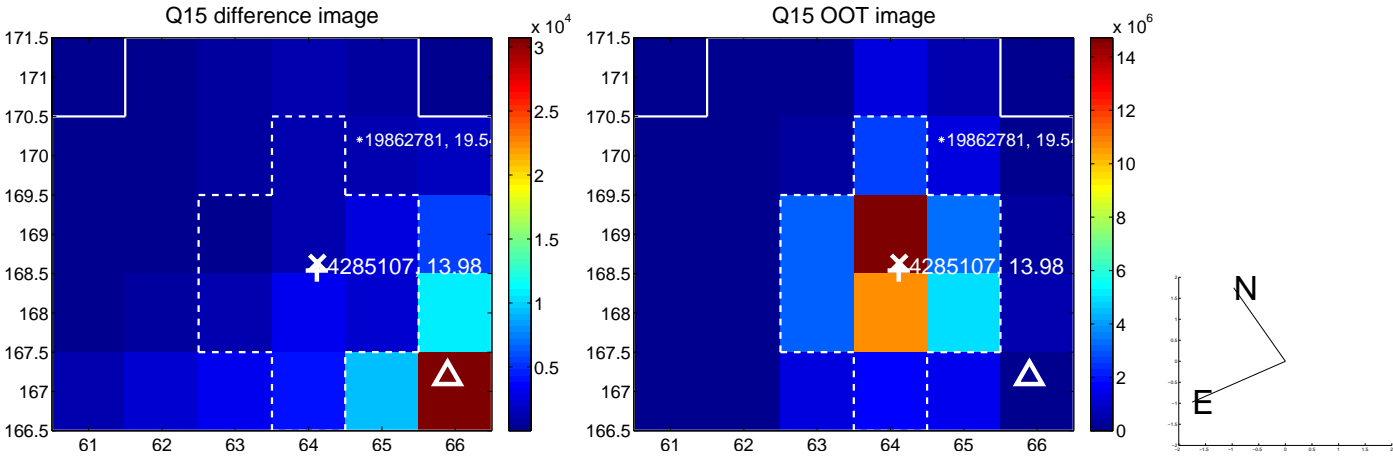
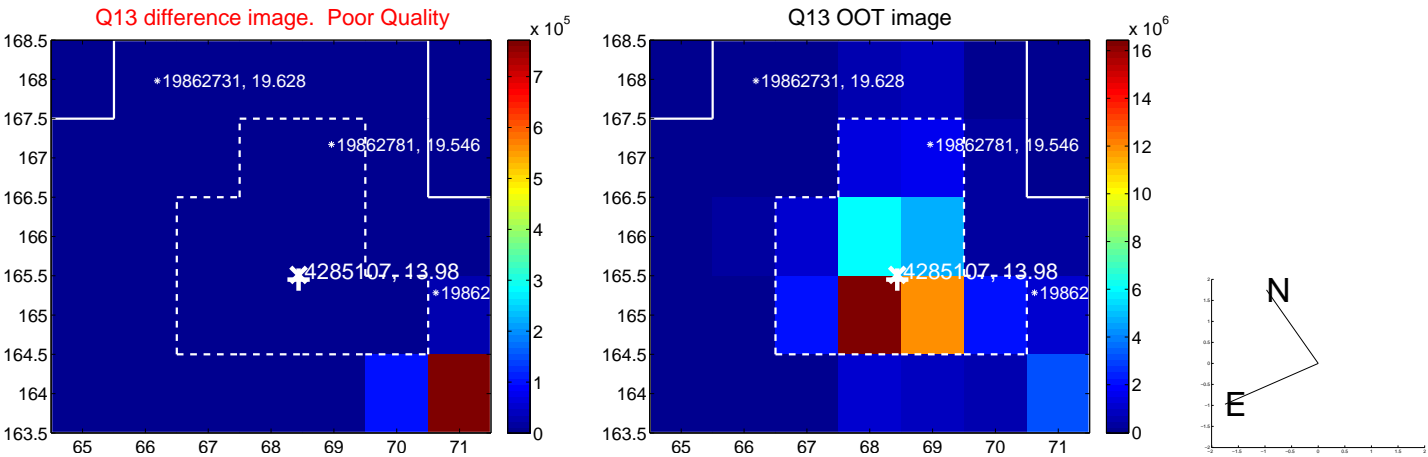




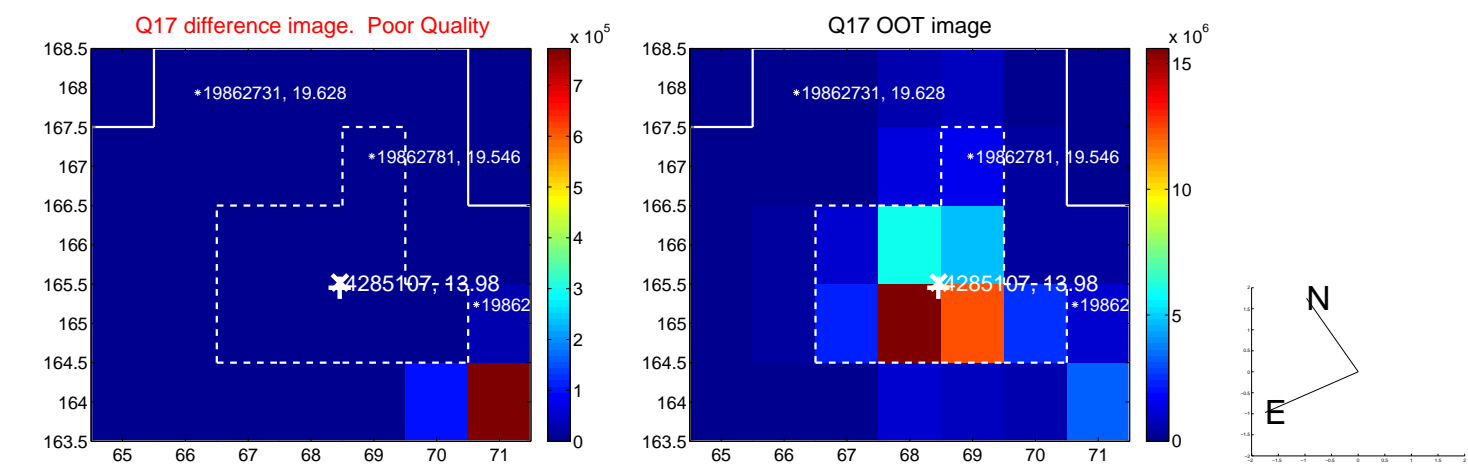
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



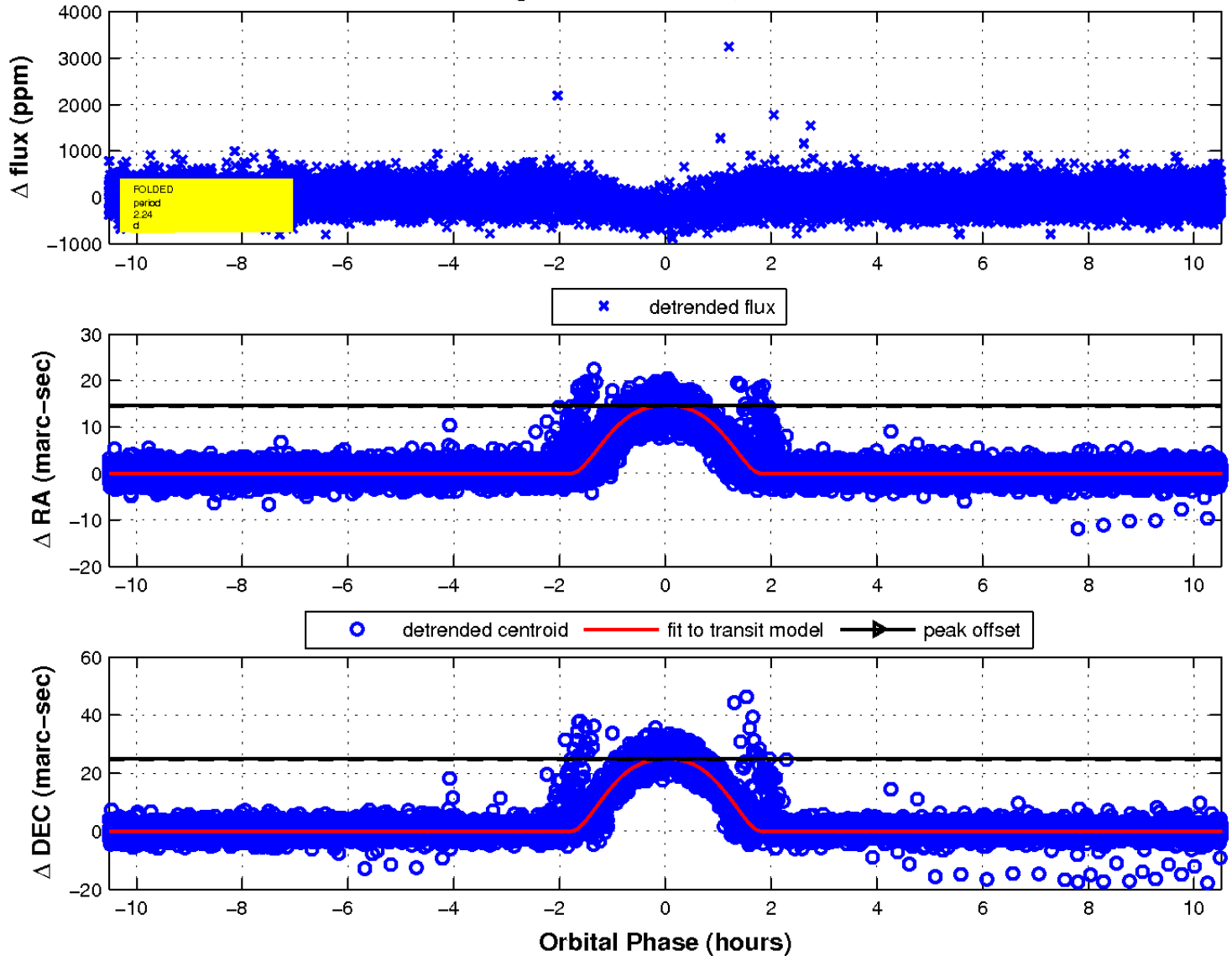
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

