

# KIC 003228804

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
003228804-01	OBS	3996.01	0.730926	132.231335	88.7	2.556	19.9	17.8	0.83	5514	0.94	2363.65

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003228804-01	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.

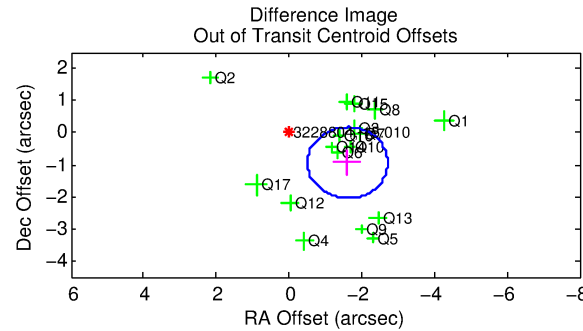
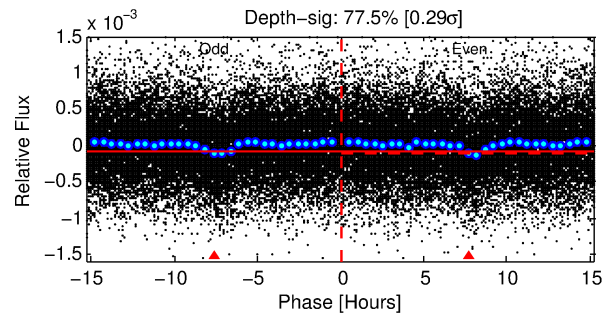
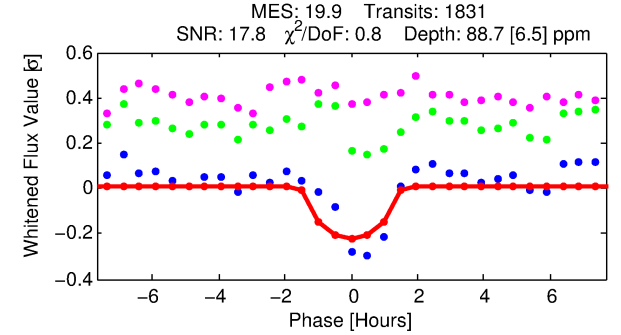
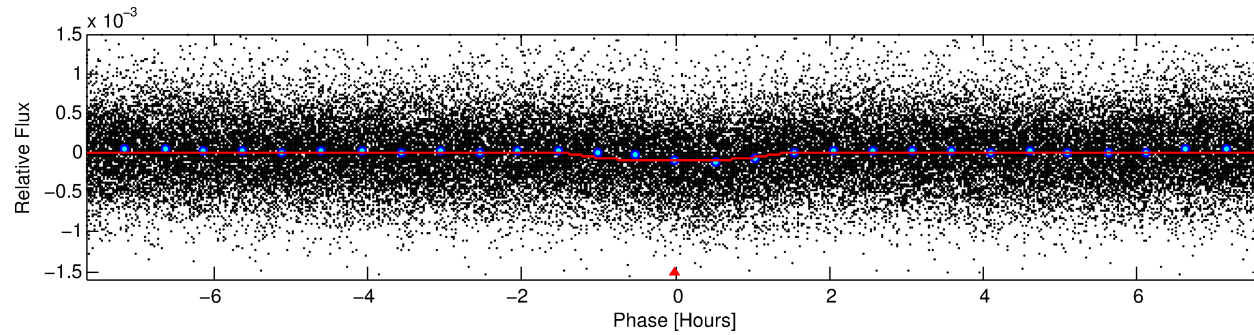
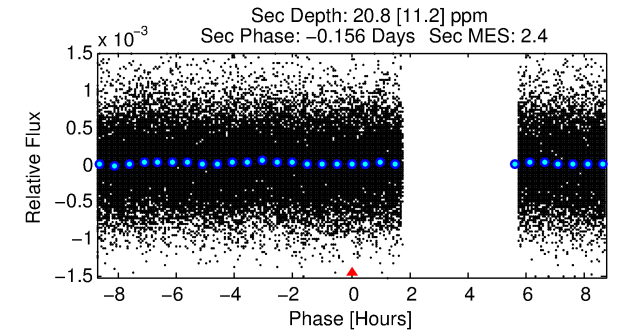
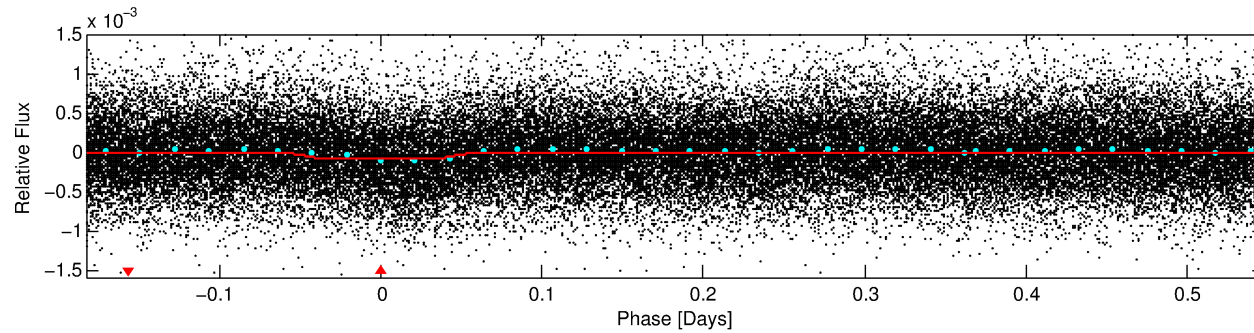
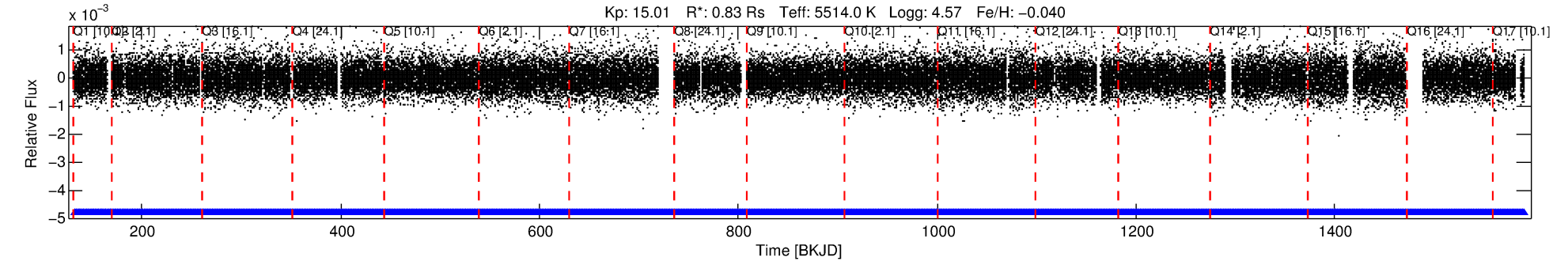
## Ephemeris Match Information For 003228804-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
003228804-01	3228804	V404-Lyr-pri	3228863	1:1	61.4	4	-14	11.82	15.01	5858.10	Direct-PRF	0	2.32	0.33

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 3228804 Candidate: 1 of 1 Period: 0.731 d  
KOI: K03996.01 Corr: 0.770



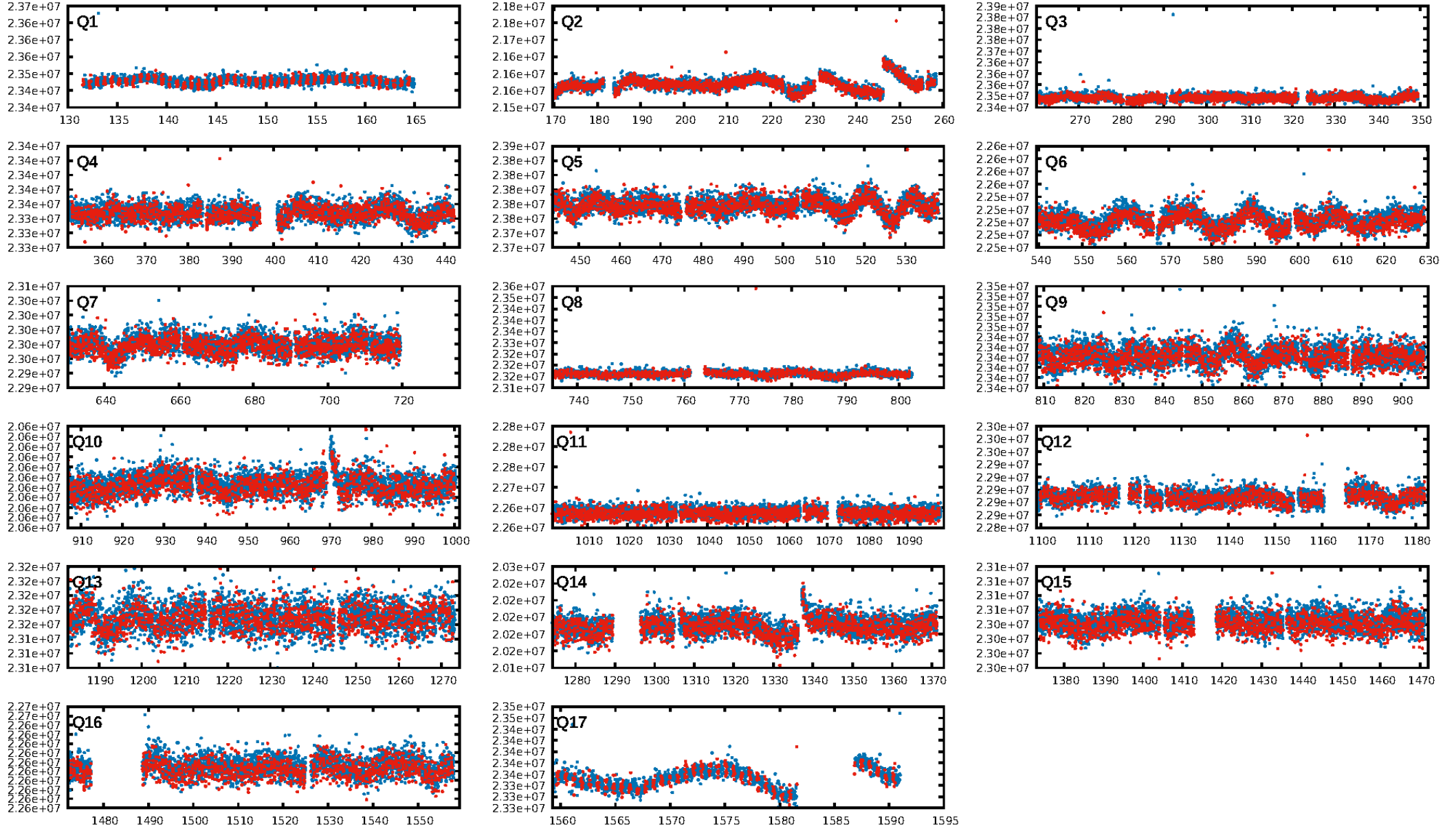
## DV Fit Results:

Period = 0.73093 [0.00001] d  
Epoch = 132.2313 [0.0018] BKJD  
Rp/R\* = 0.0104 [0.0049]  
a/R\* = 1.36 [1.33]  
b = 0.91 [0.43]  
Seff = 2363.65 [683.18]  
Teq = 1778 [128] K  
Rp = 0.94 [0.48] Re  
a = 0.0155 [0.0028] AU  
Ag = 3.10 [3.44] [0.61σ]  
Teffp = 3648 [990] K [1.87σ]

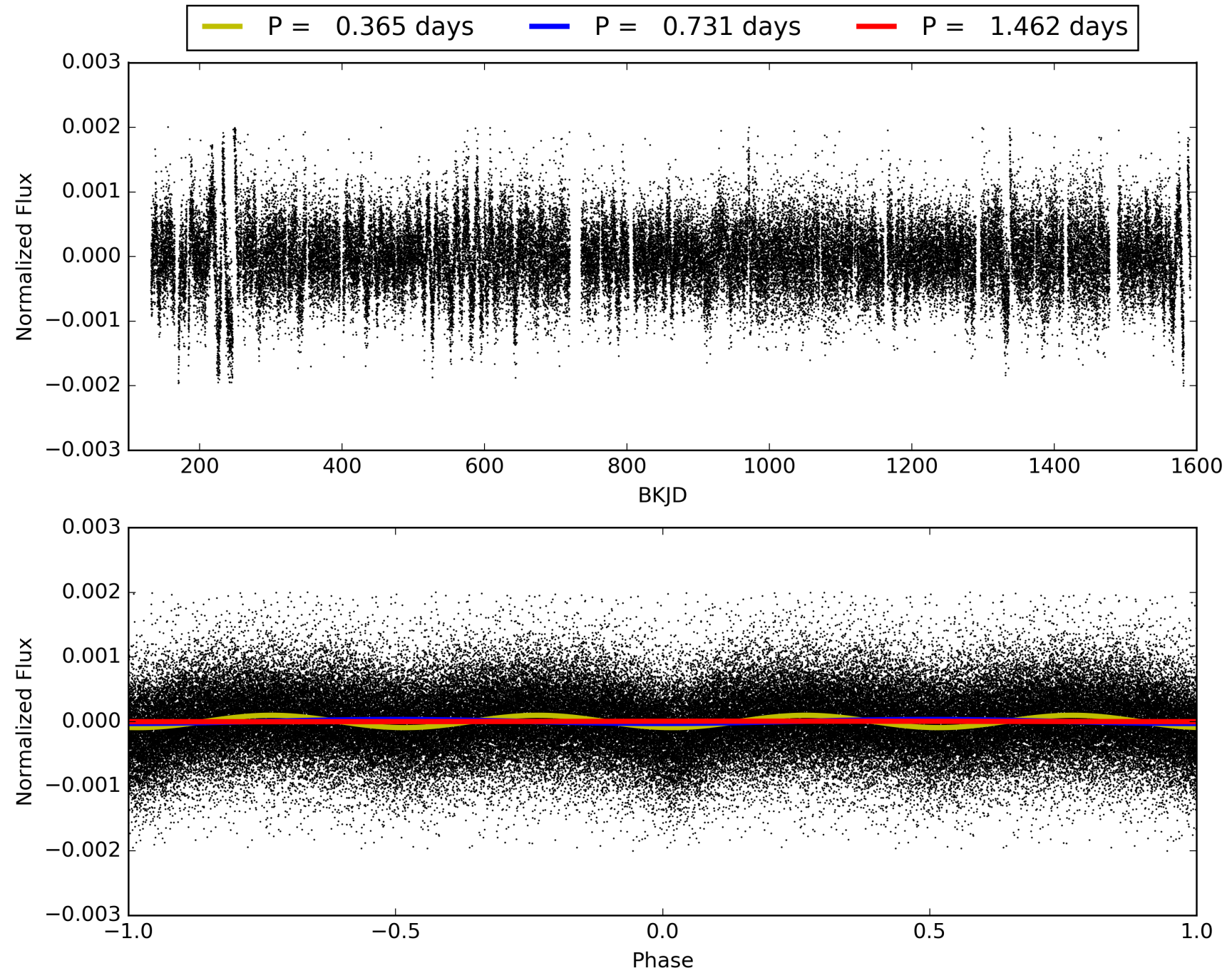
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.02e-82  
RollingBand-fgt: 1.00 [1749/1749]  
GhostDiagnostic-chr: 0.0224  
Centroid-sig: 0.2%  
Centroid-so: 0.863 arcsec [1.17σ]  
OotOffset-rm: 1.861 arcsec [5.05σ]  
KicOffset-rm: 1.875 arcsec [5.10σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 003228804-01, PDC Light Curves

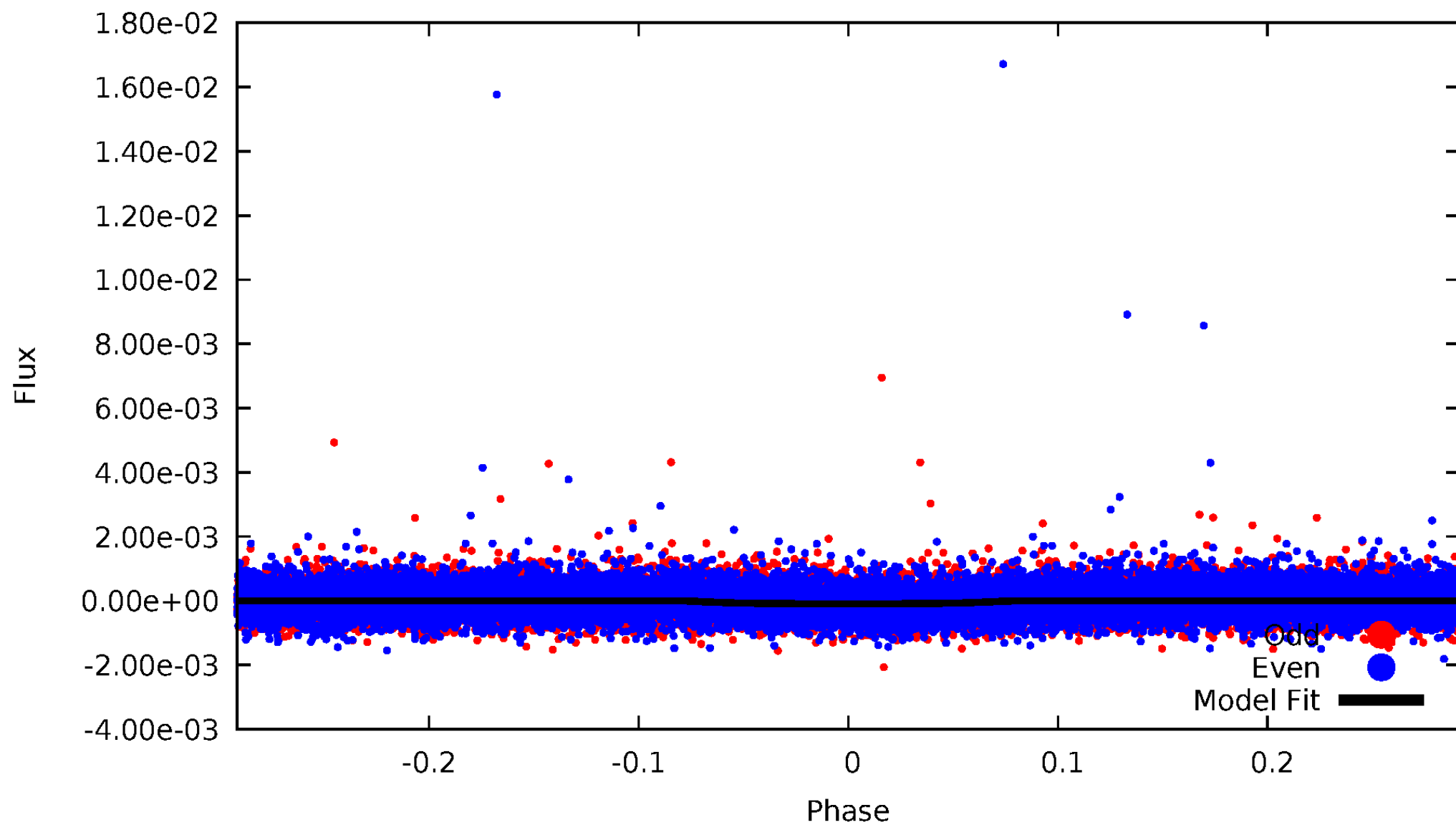


TCE 003228804-01



# DV Odd/Even

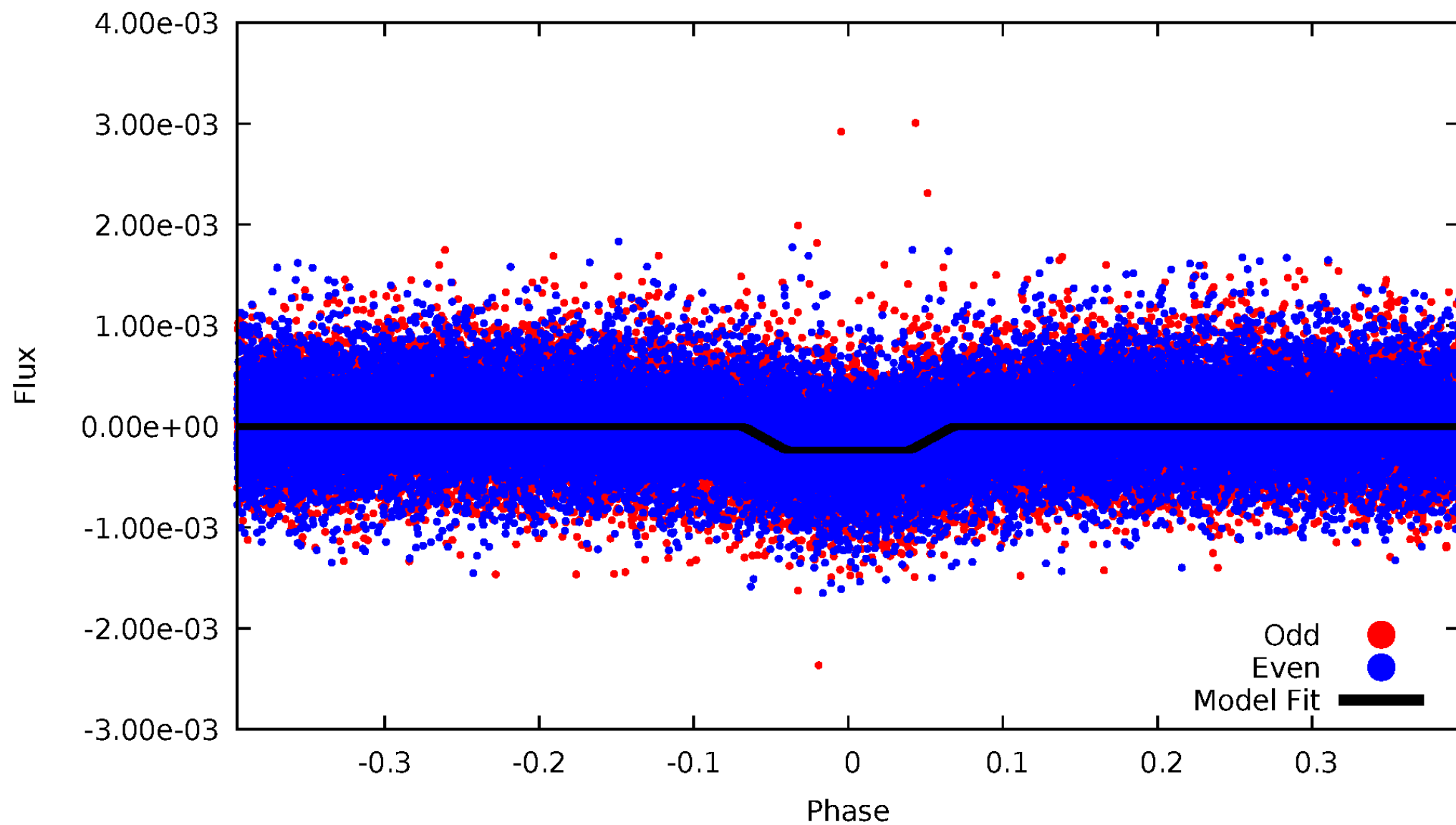
TCE 003228804-01





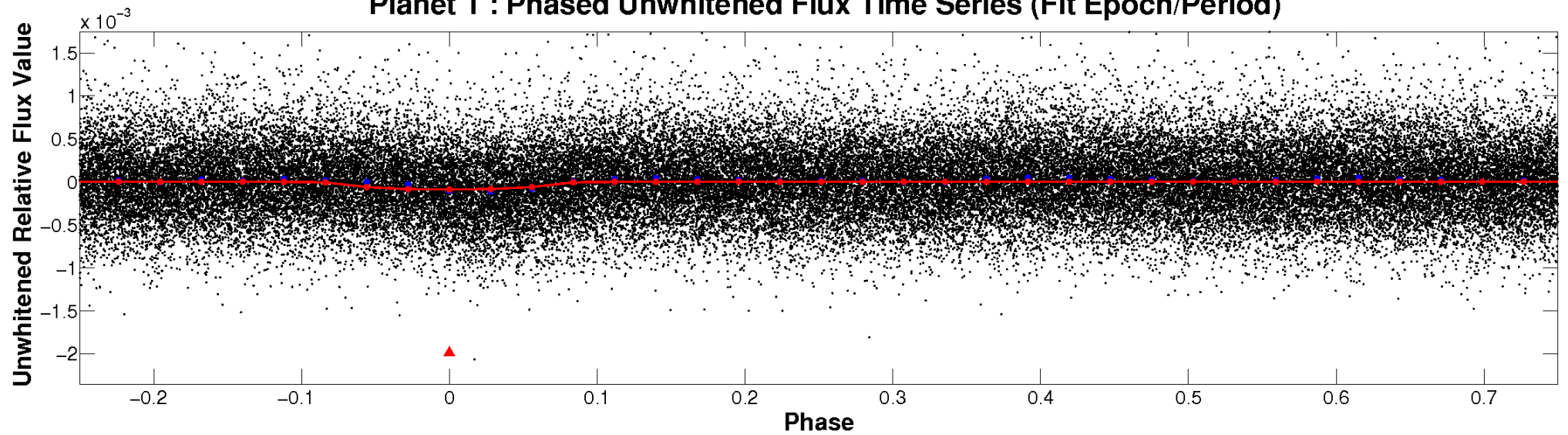
# ALT Odd/Even

TCE 003228804-01

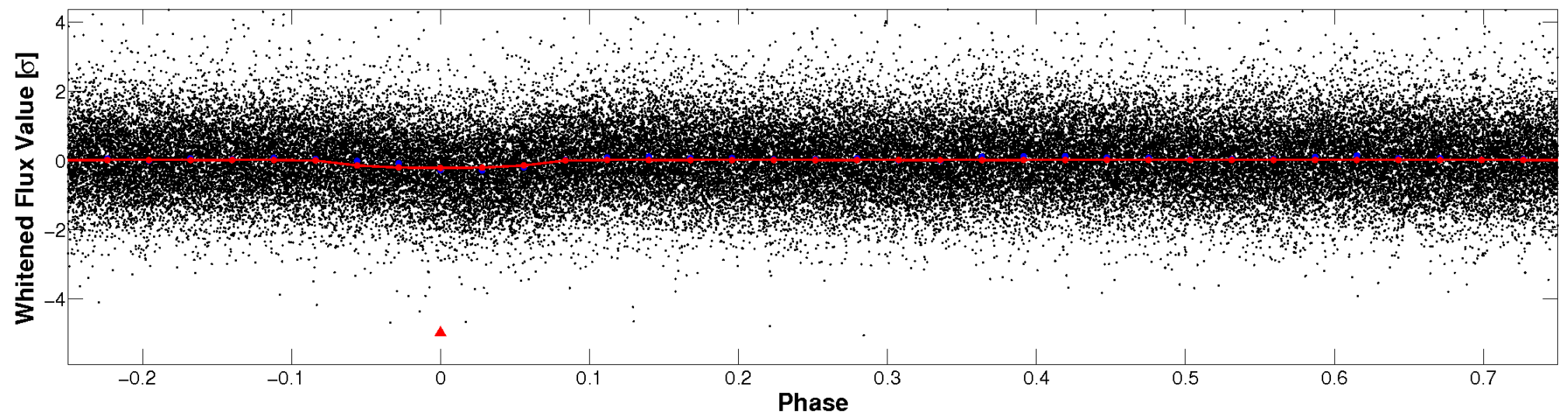


# Non-Whitened Vs. Whitened Light Curve

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

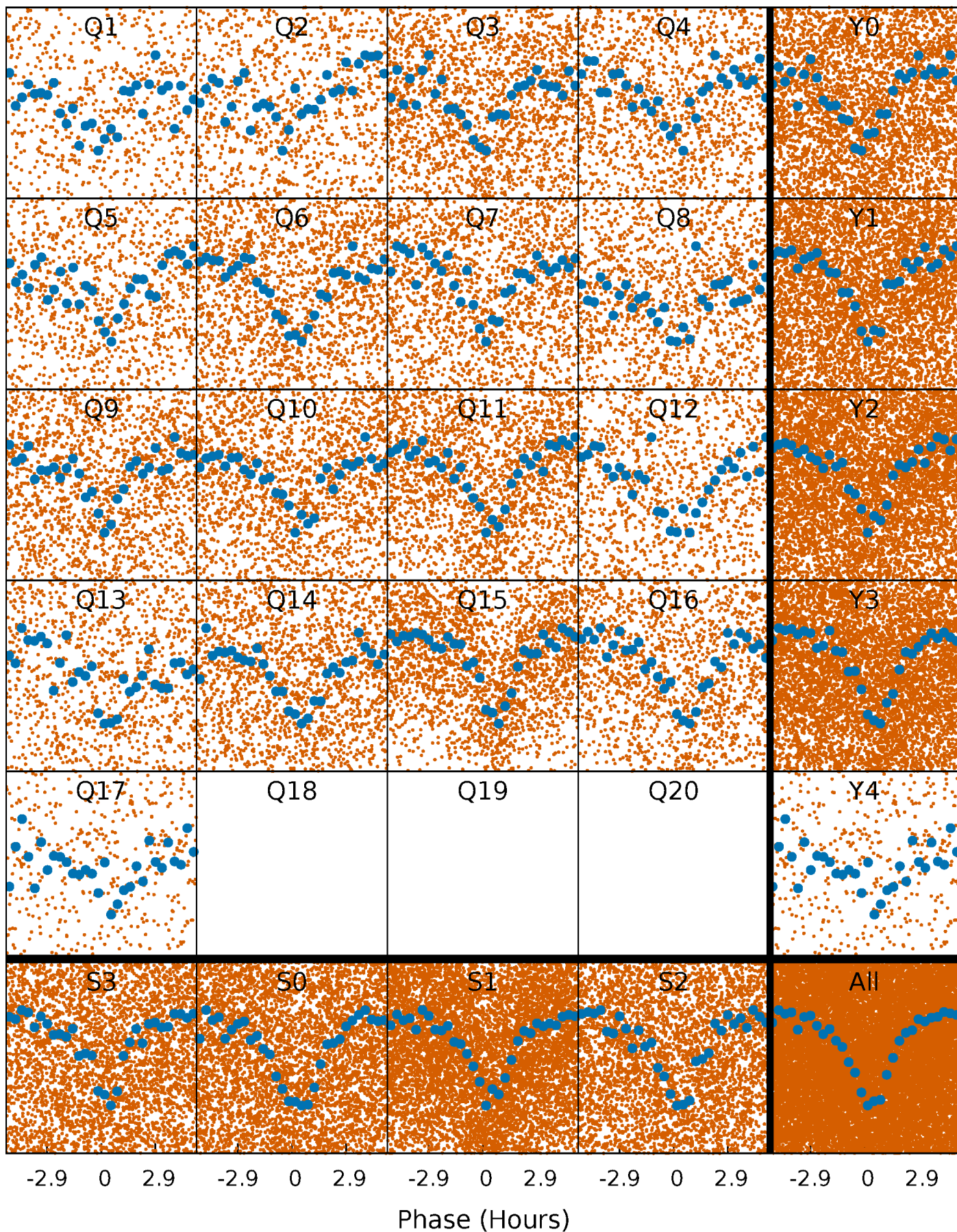


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

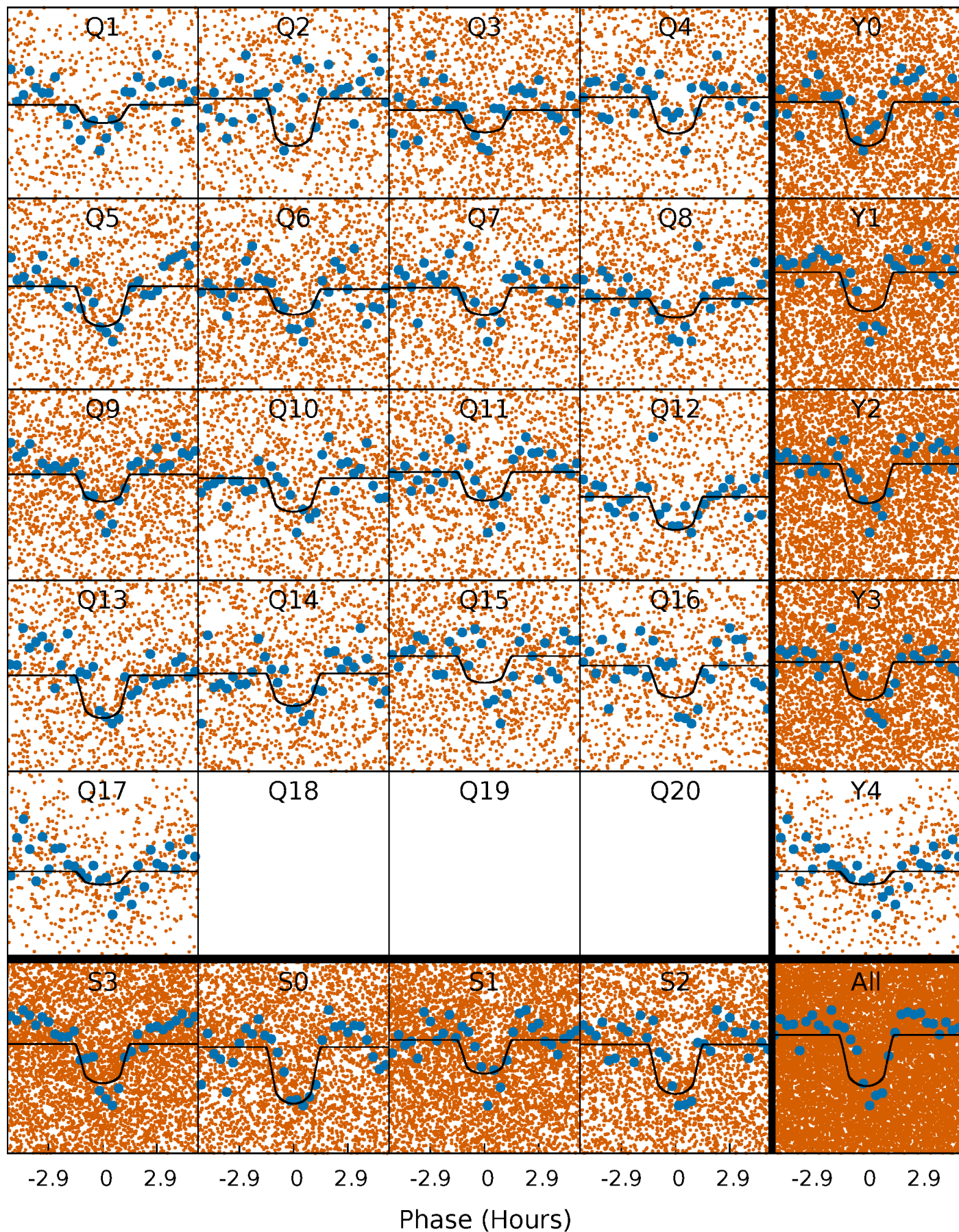
TCE 003228804-01 P= 0.730926 Days  $T_0=132.231335$  (BKJD)





# DV Quarter-Phased Transit Curves

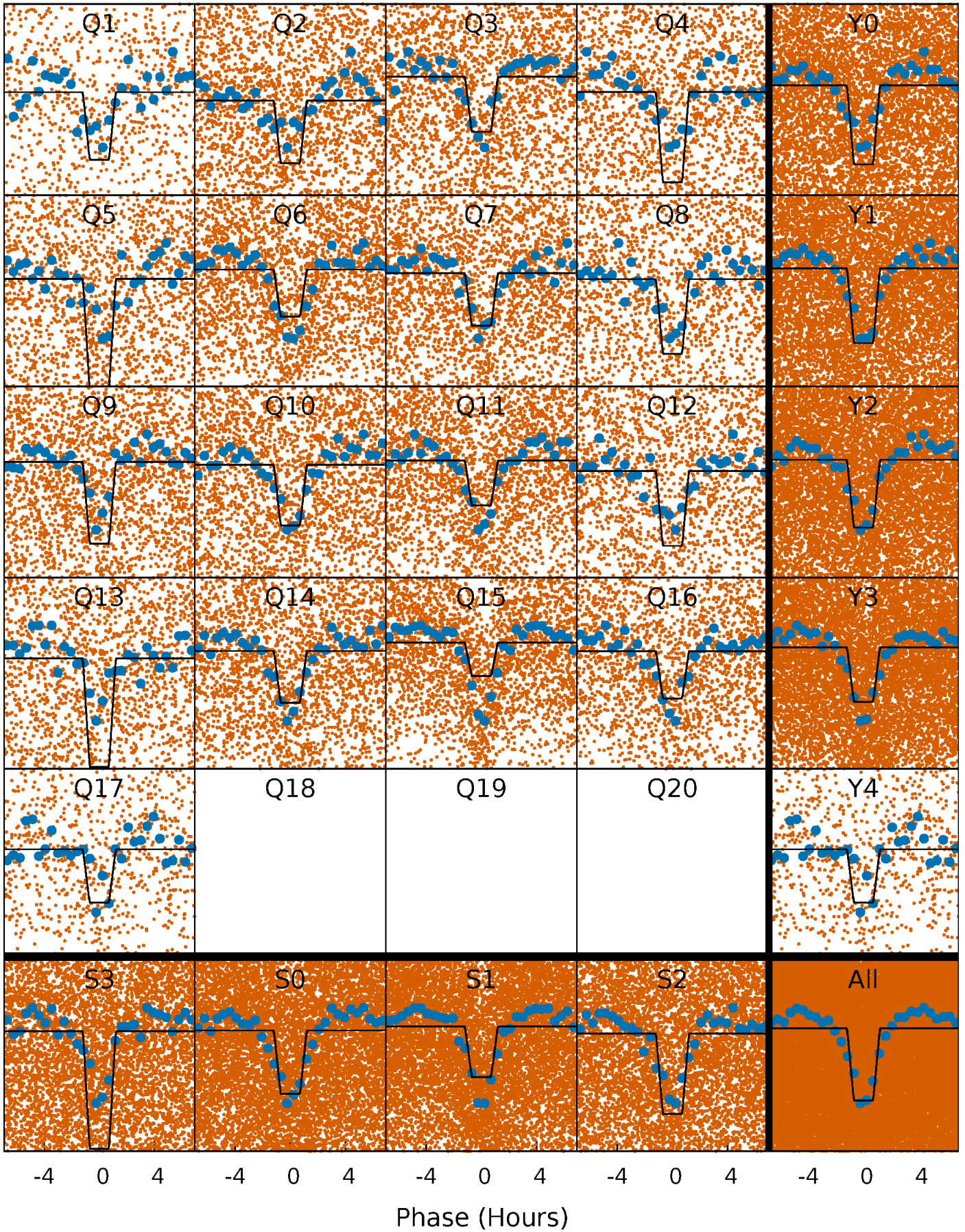
TCE 003228804-01 P= 0.730926 Days  $T_0=132.231335$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

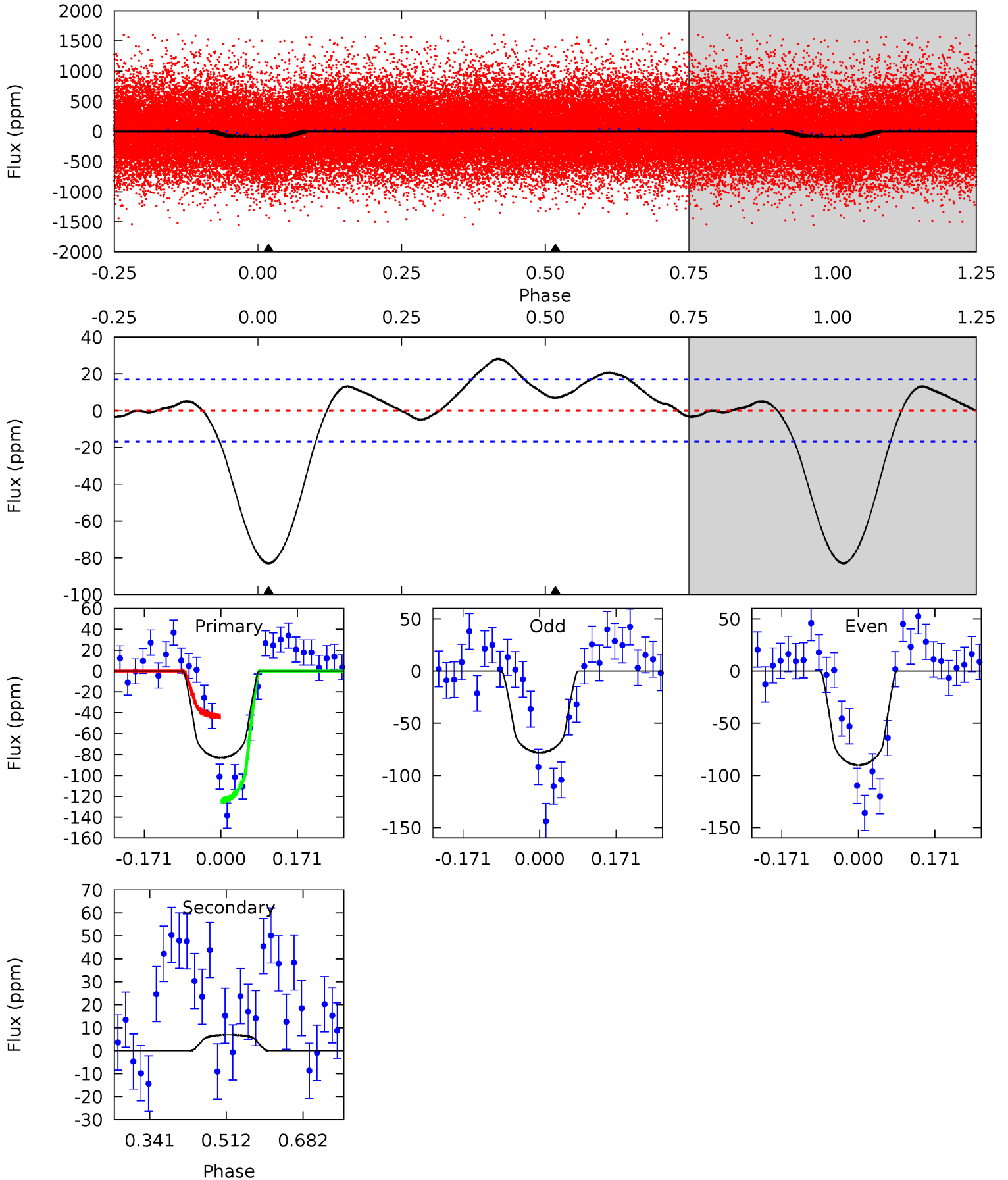
TCE 003228804-01   P= 0.730945 Days    $T_0=132.224731$  (BKJD)



# DV Model-Shift Uniqueness Test

003228804-01, P = 0.730926 Days, E = 131.500409 Days

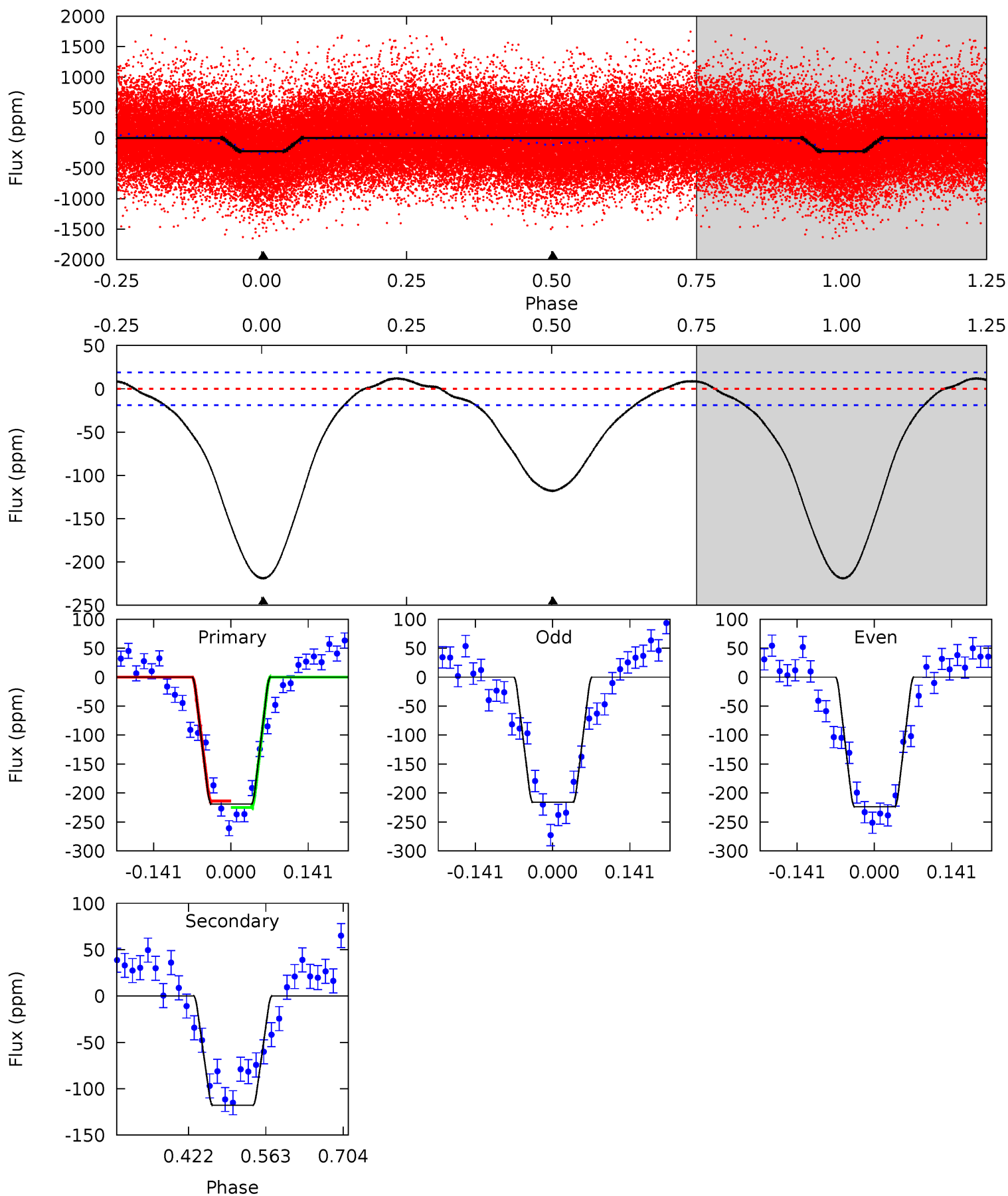
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.9	-1.84	0	0	4.45	1.37	0.93	21.9	21.9	-1.84	-1.84	1.59	0.91	0.25	10.7



# Alt Model-Shift Uniqueness Test

003228804-01, P = 0.730945 Days, E = 131.493786 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
52.2	28.1	0	0	4.49	1.47	2.52	52.2	52.2	28.1	28.1	0.95	1.02	0.05	1.31





### Stellar Parameters For KIC 003228804

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5514^{+166}_{-166}$	$4.569^{+0.036}_{-0.144}$	$-0.040^{+0.300}_{-0.300}$	$0.826^{+0.176}_{-0.070}$	$0.926^{+0.074}_{-0.111}$	$2.312^{+0.417}_{-0.904}$
	+3%/-3%	+1%/-3%	+750%/-750%	+21%/-8%	+8%/-12%	+18%/-39%
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 003228804-01 / KOI 3996.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$7 \pm 4$	$1.00^{+0.50}_{-0.44}$	$2525^{+136}_{-103}$	$-3426^{+347}_{-681}$	$-0.872^{+0.585}_{-2.144}$
Alt.	$-118 \pm 4$	$1.40^{+0.46}_{-0.46}$	$2526^{+147}_{-104}$	$4778^{+928}_{-542}$	$7.801^{+9.378}_{-3.368}$

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

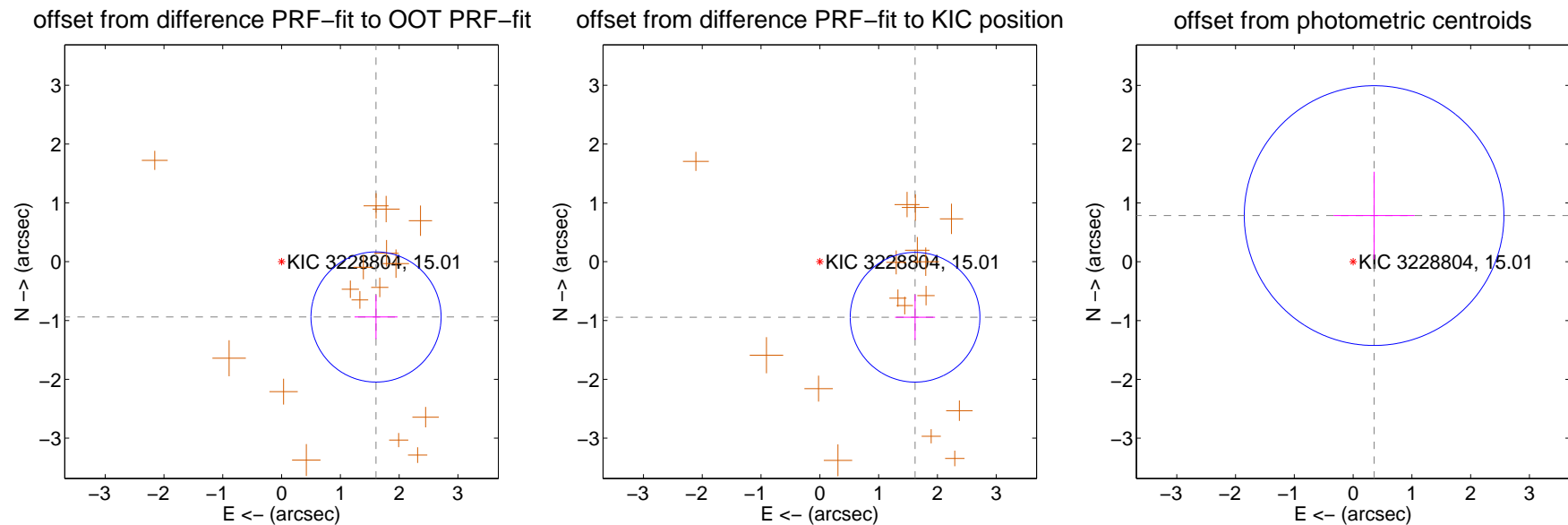
## DV Centroid Data

Supplemental centroid analysis for 003228804-01. Kepler magnitude: 15.01. Transit SNR 17.78

There are 0 quarters with good PRF difference image offsets

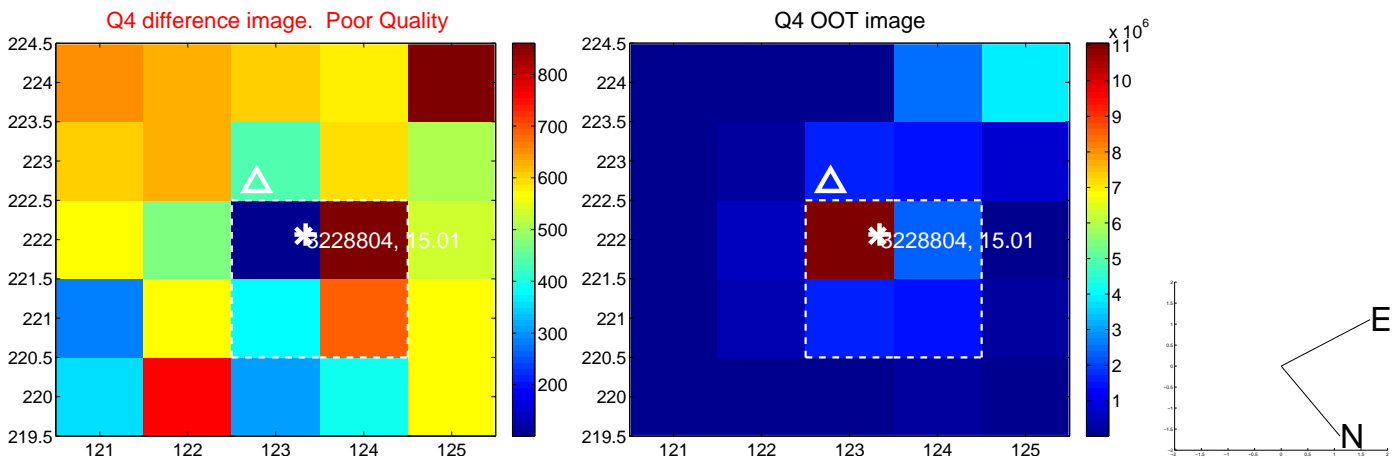
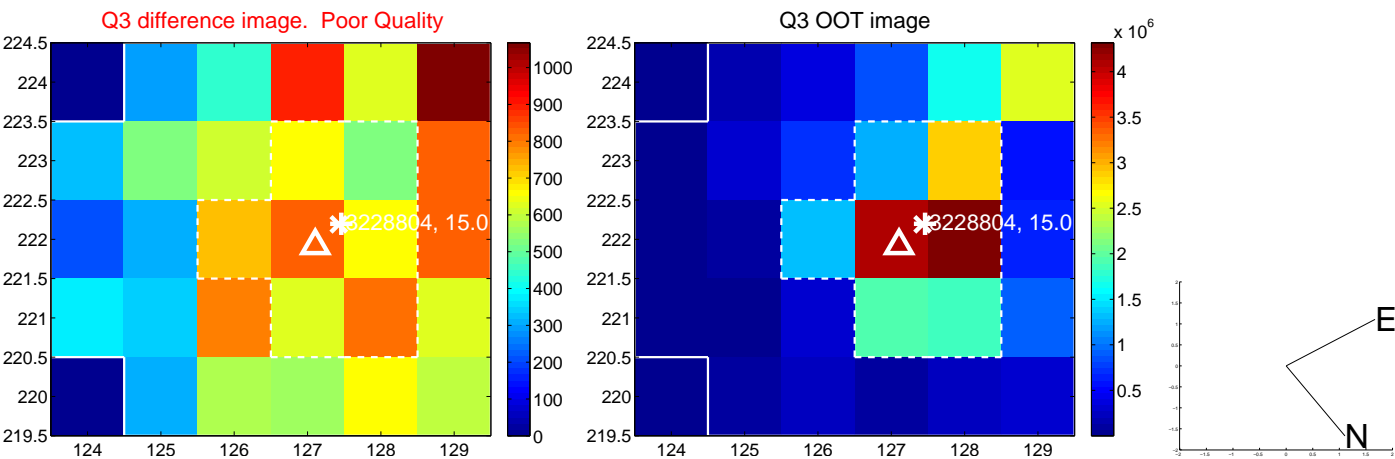
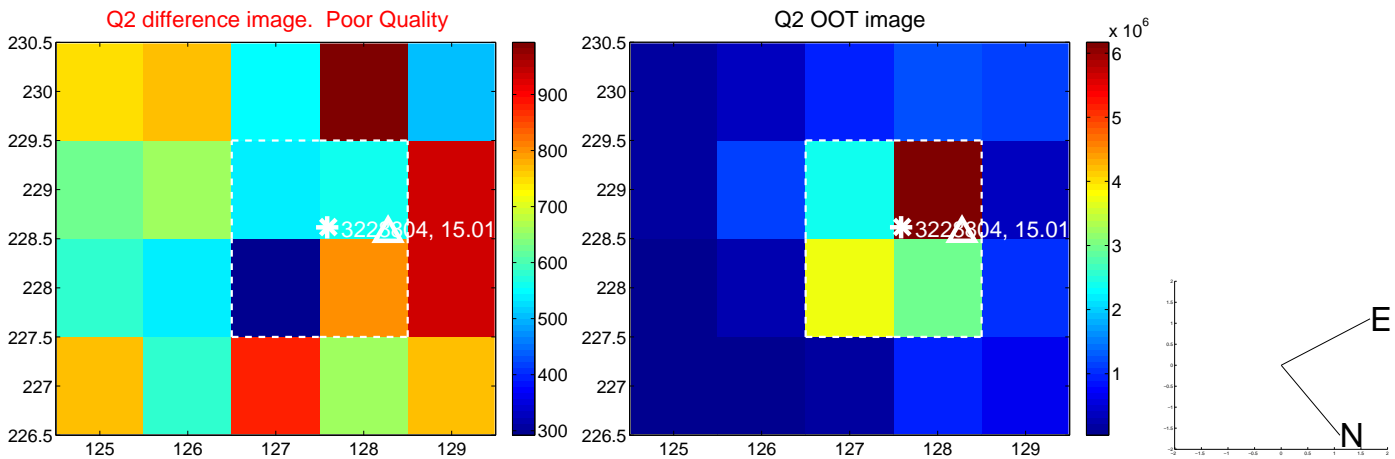
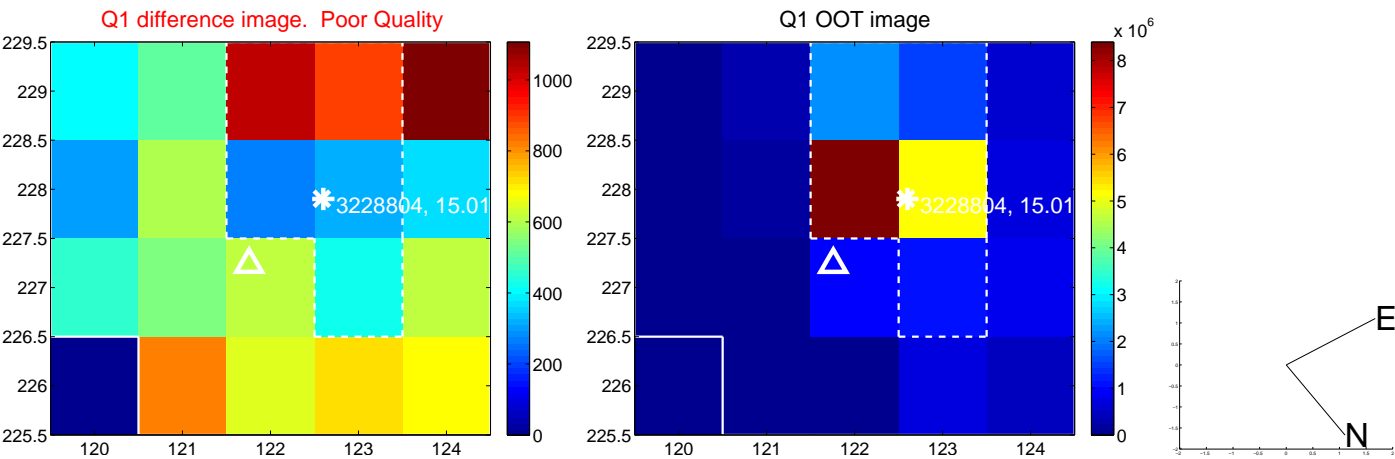
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.861 \pm 0.369$	5.05	$-1.607 \pm 0.366$	$-0.940 \pm 0.374$
PRF-fit source offset from KIC position	$1.875 \pm 0.368$	5.10	$-1.620 \pm 0.341$	$-0.944 \pm 0.384$
photometric centroid source offset	$0.86 \pm 0.74$	1.17	$-0.36 \pm 0.69$	$0.79 \pm 0.75$

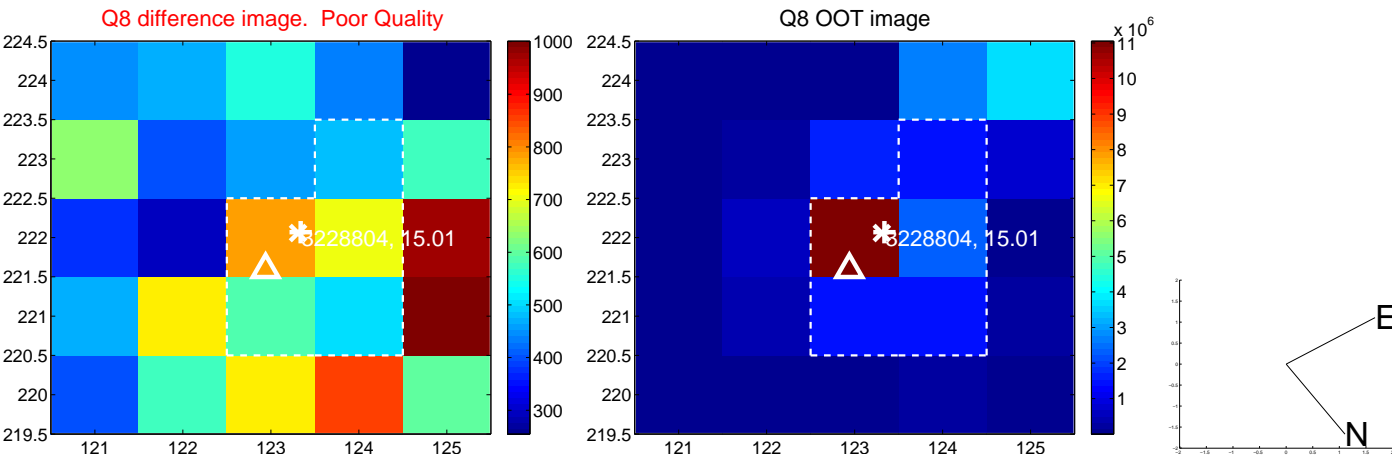
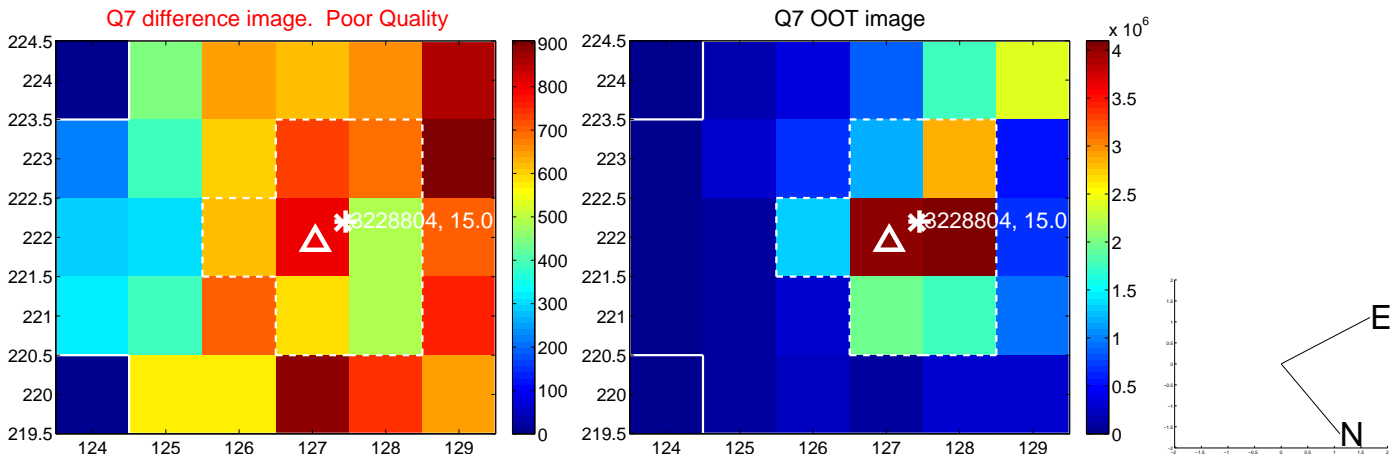
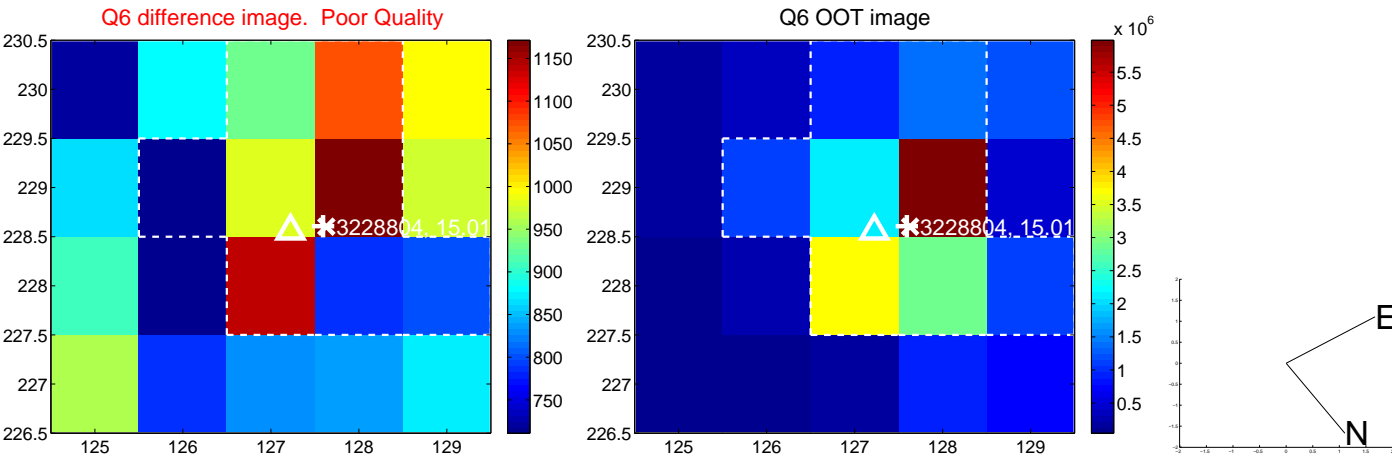
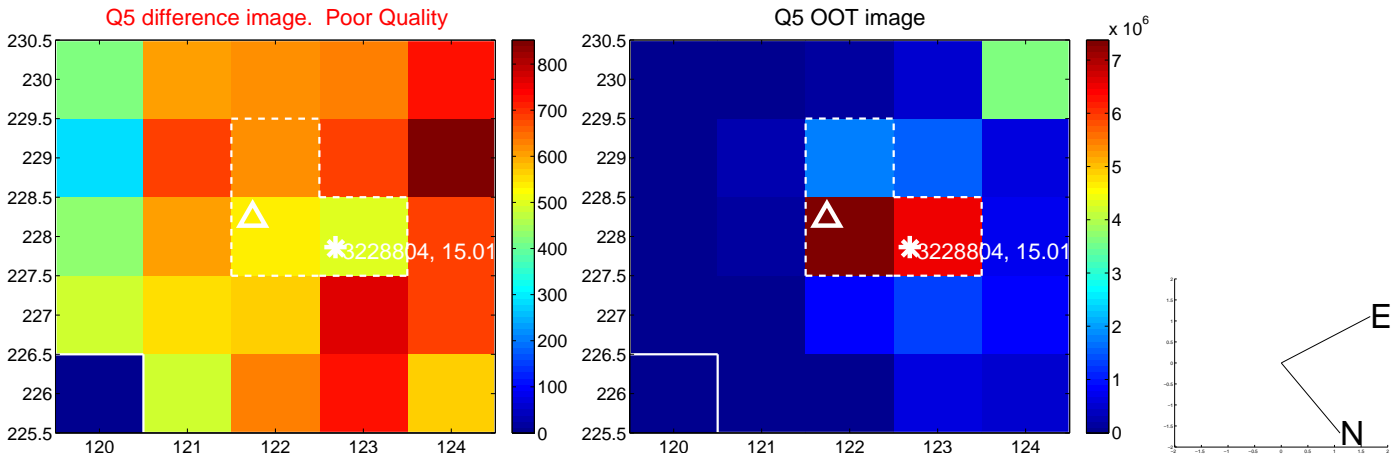


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

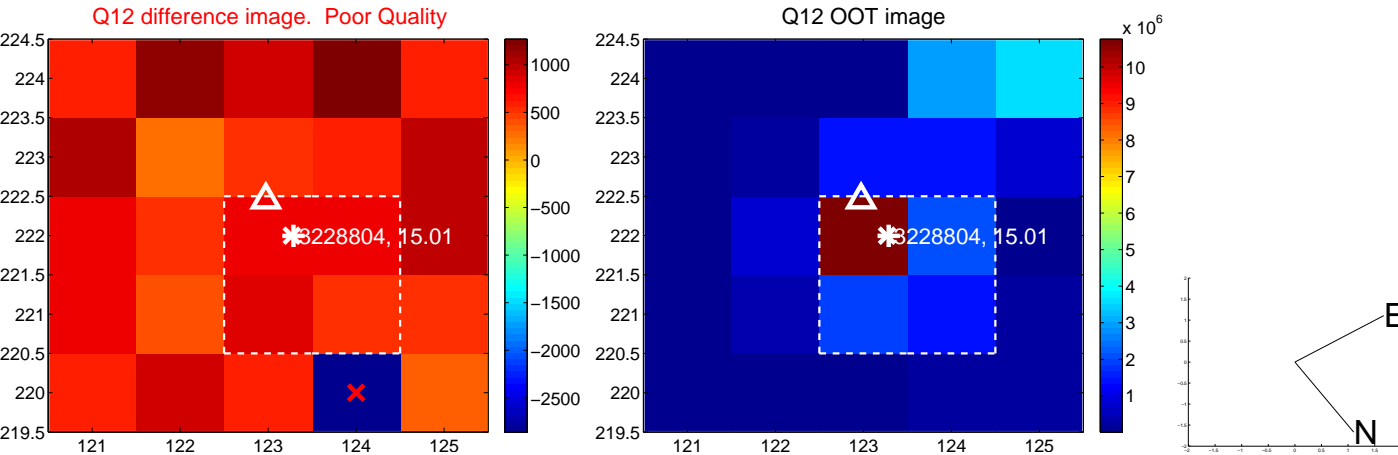
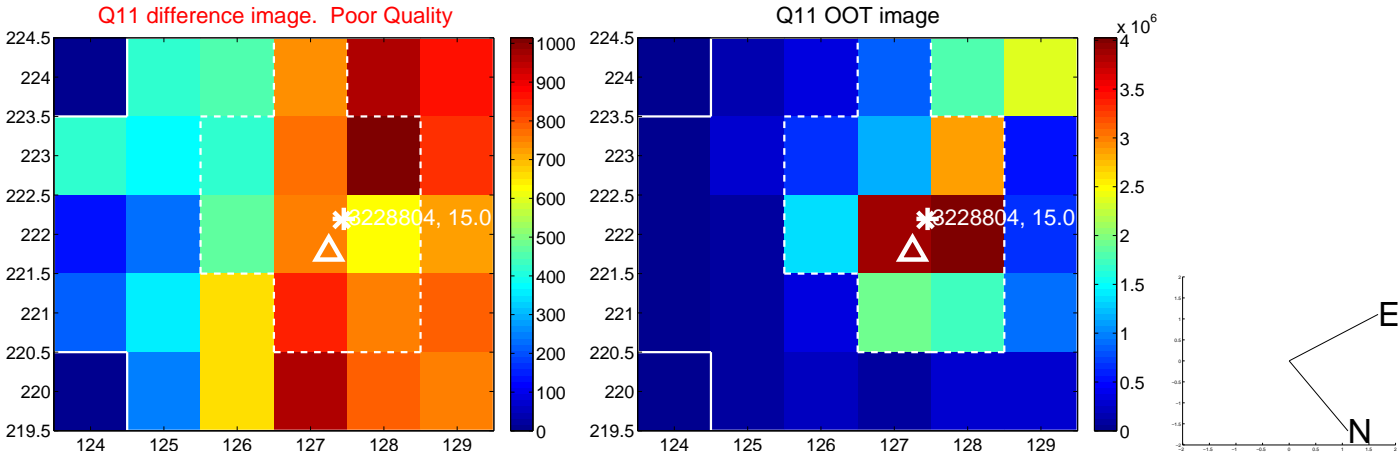
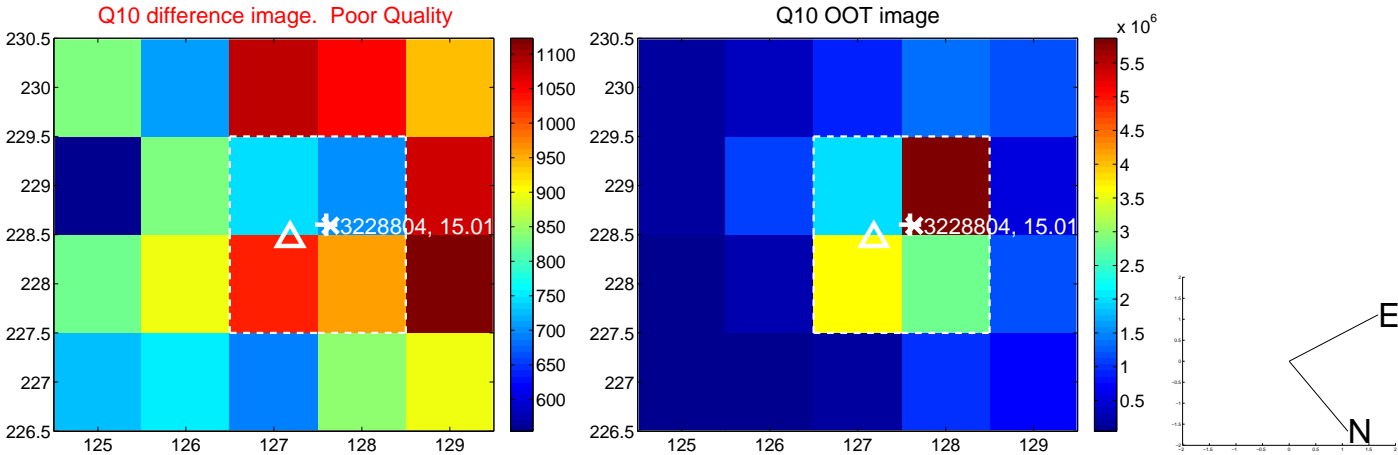
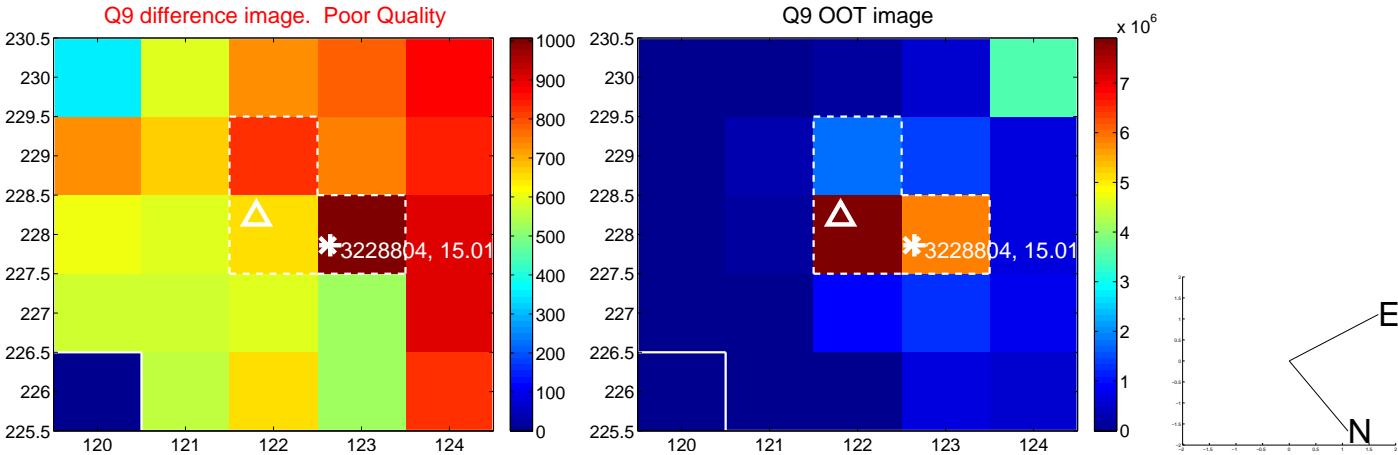


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

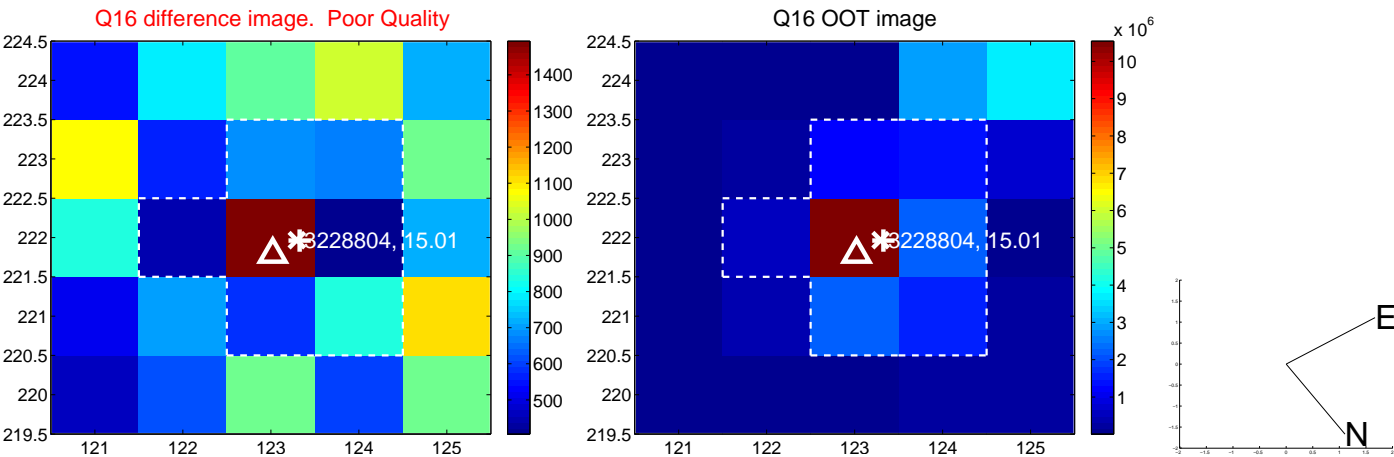
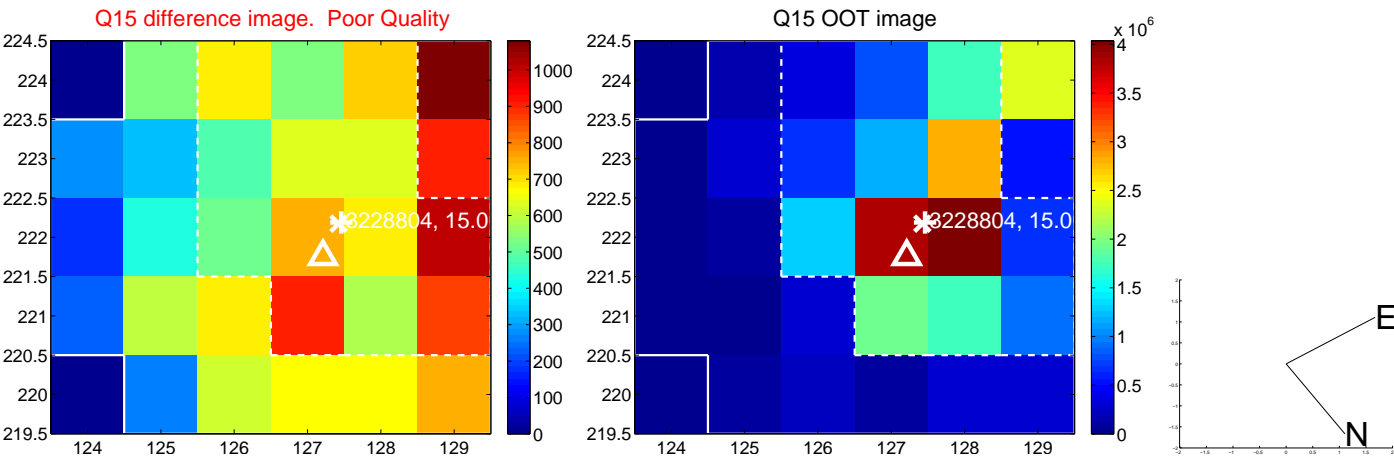
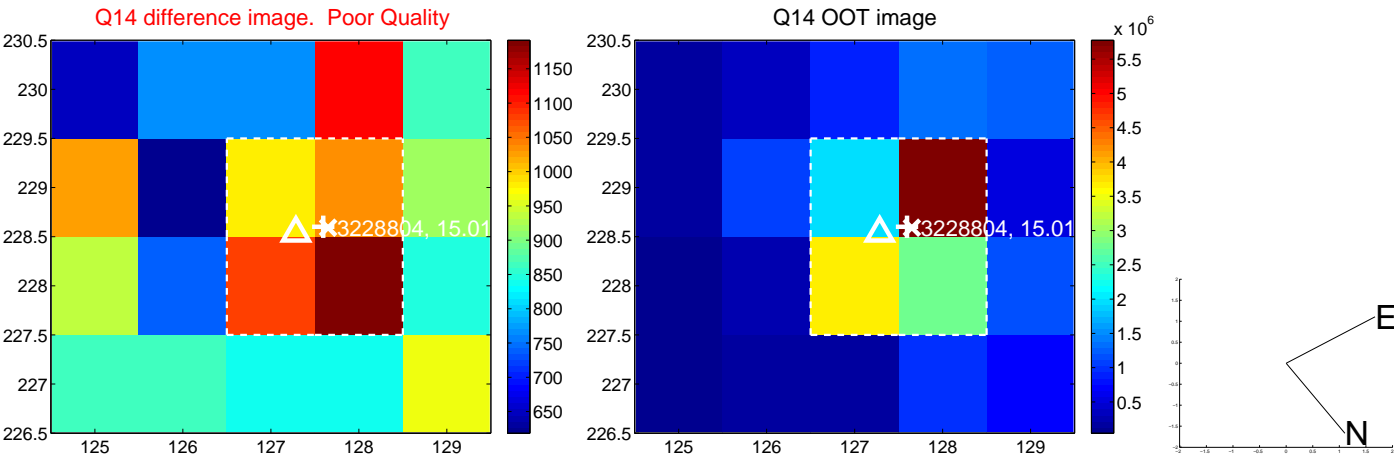
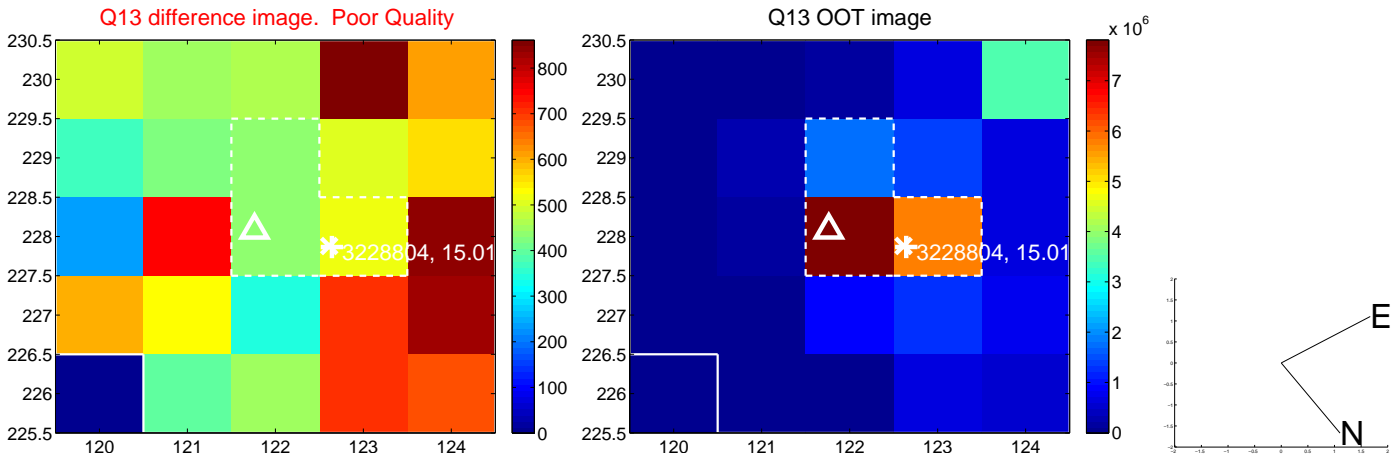




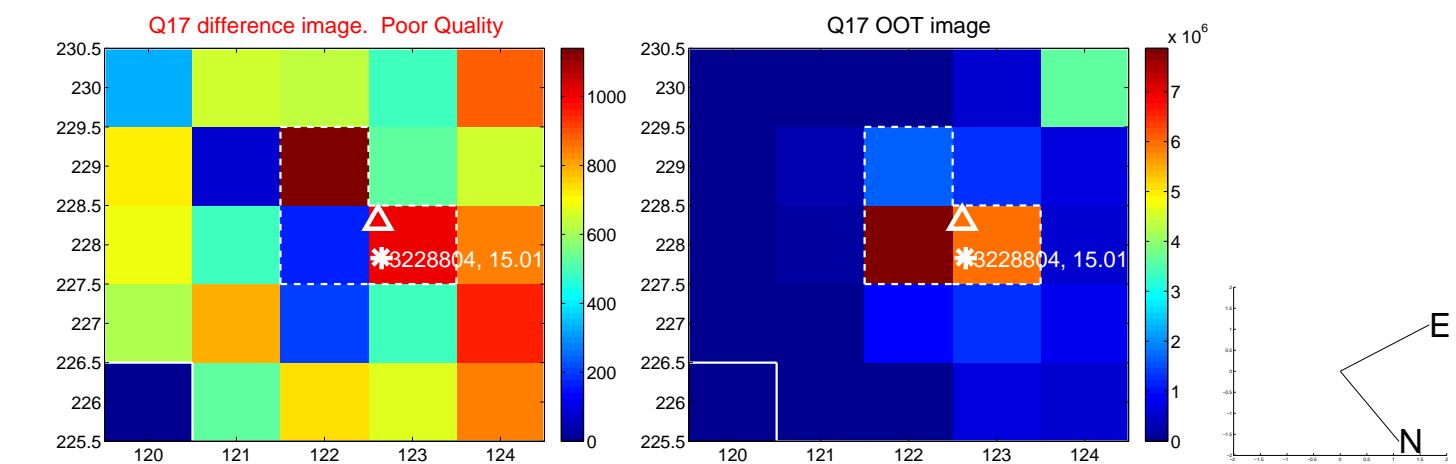
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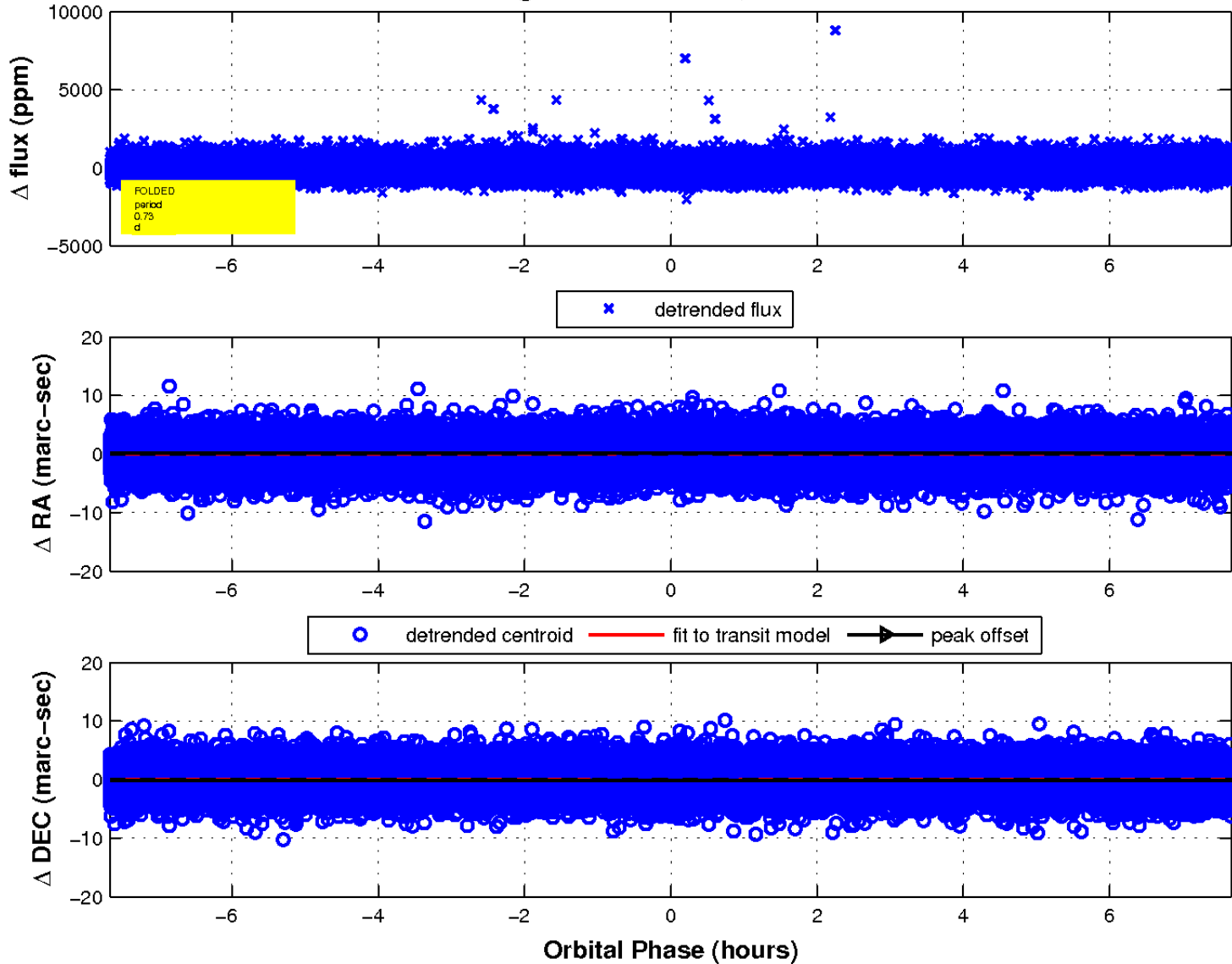
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

