

# KIC 007031448

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007031448-01	OBS	No	0.566810	131.828074	11.9	5.239	7.4	9.3	0.84	5580	0.29	3860.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031448-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—CENT_UNRESOLVED_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.

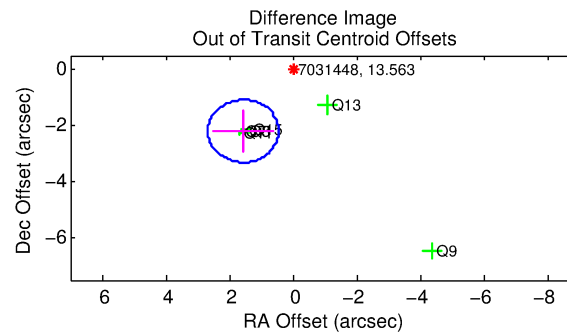
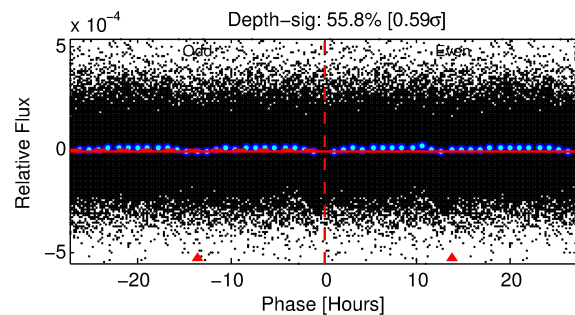
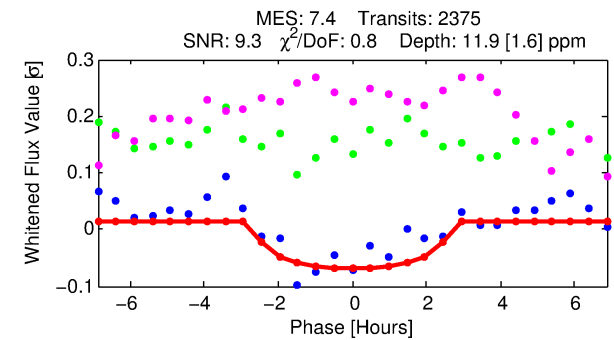
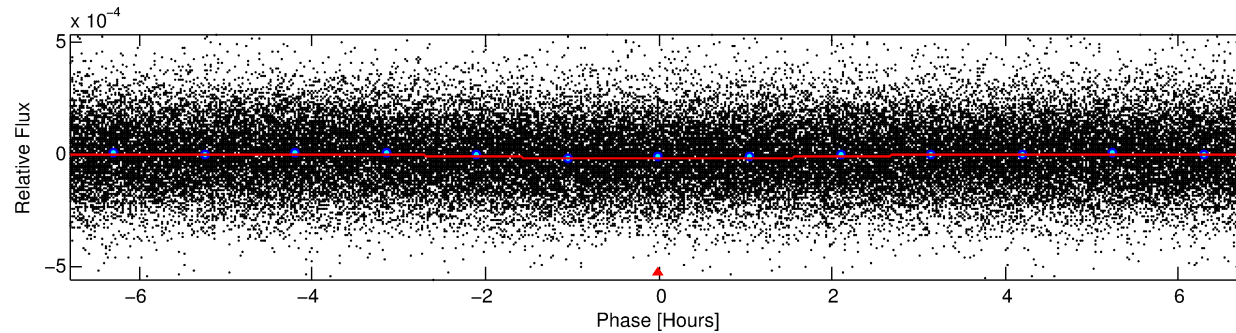
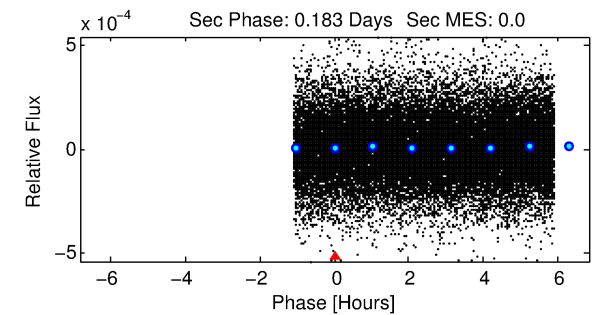
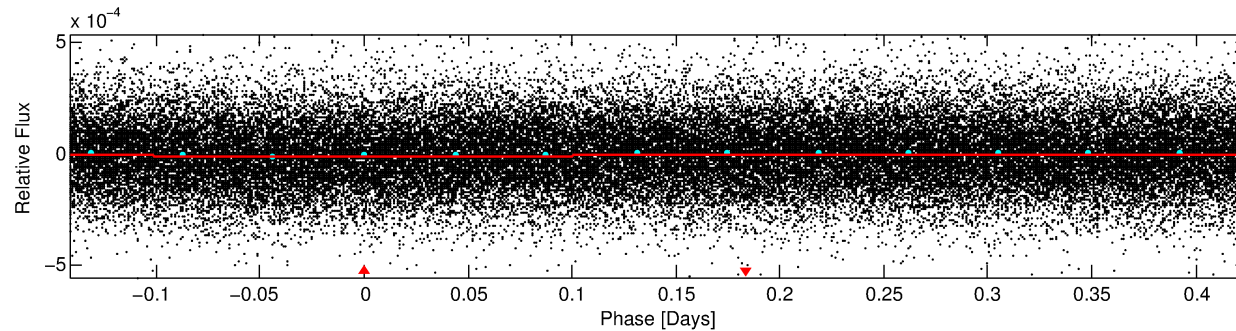
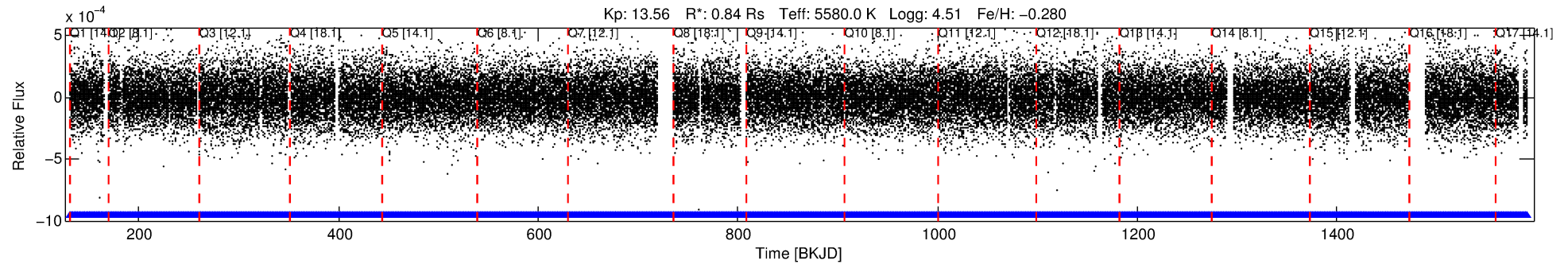
## Ephemeris Match Information For 007031448-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007031448-01	7031448	RR-Lyr-pri	7198959	1:1	1229.2	113	-288	7.86	13.56	51941.00	Direct-PRF	0	3.57	24.99

**Notes:** P<sub>1</sub>:P<sub>2</sub> 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<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.  $\sigma_P$  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: 7031448 Candidate: 1 of 1 Period: 0.567 d



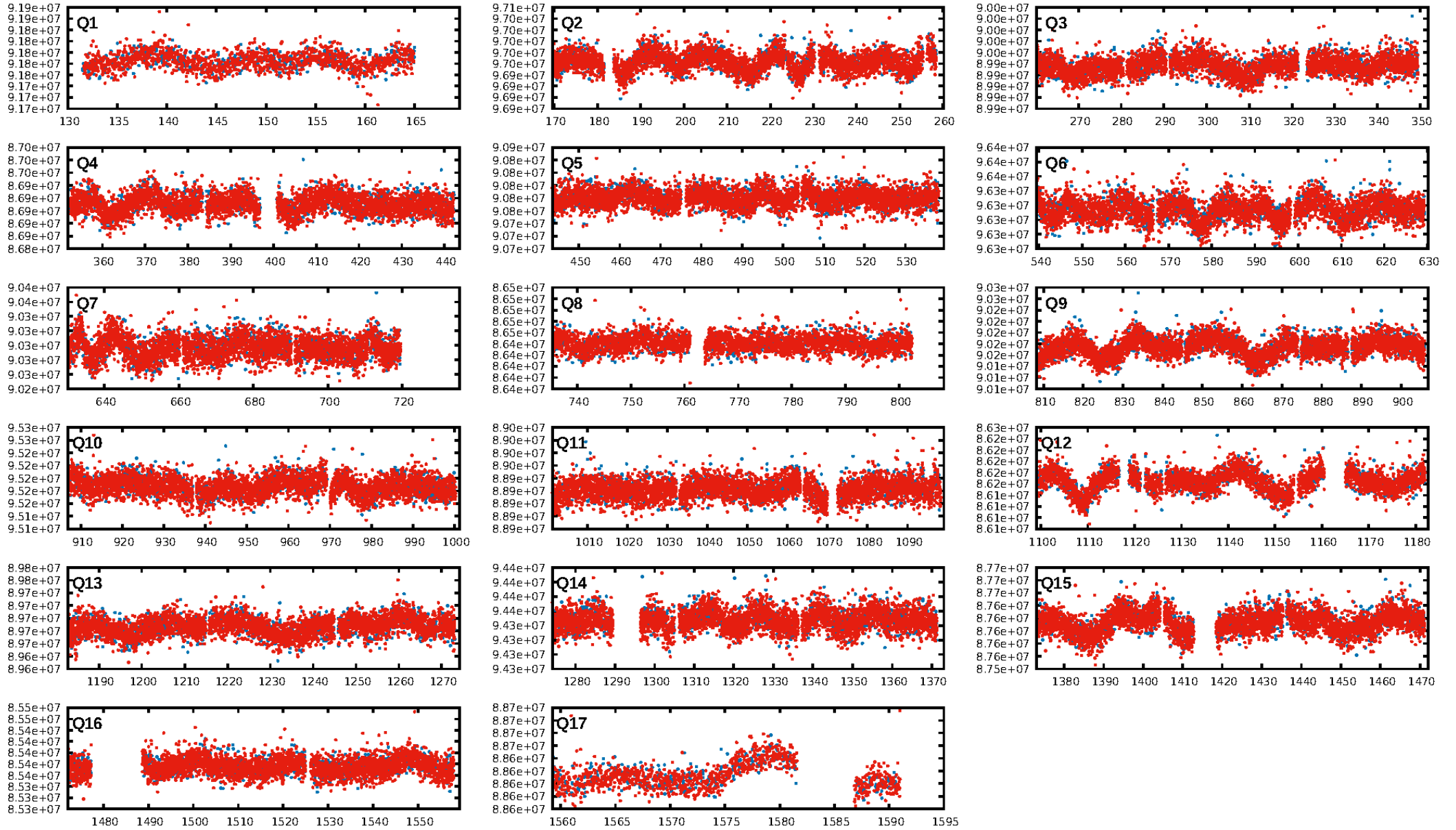
## DV Fit Results:

Period = 0.56681 [0.00001] d  
Epoch = 131.8281 [0.0057] BKJD  
Rp/R\* = 0.0032 [0.0036]  
a/R\* = 1.06 [0.58]  
b = 0.38 [11.16]  
Seff = 3860.90 [1128.91]  
Teff = 2010 [147] K  
Rp = 0.29 [0.33] Re  
a = 0.0126 [0.0023] AU  
Ag = N/A  
Teffp = N/A

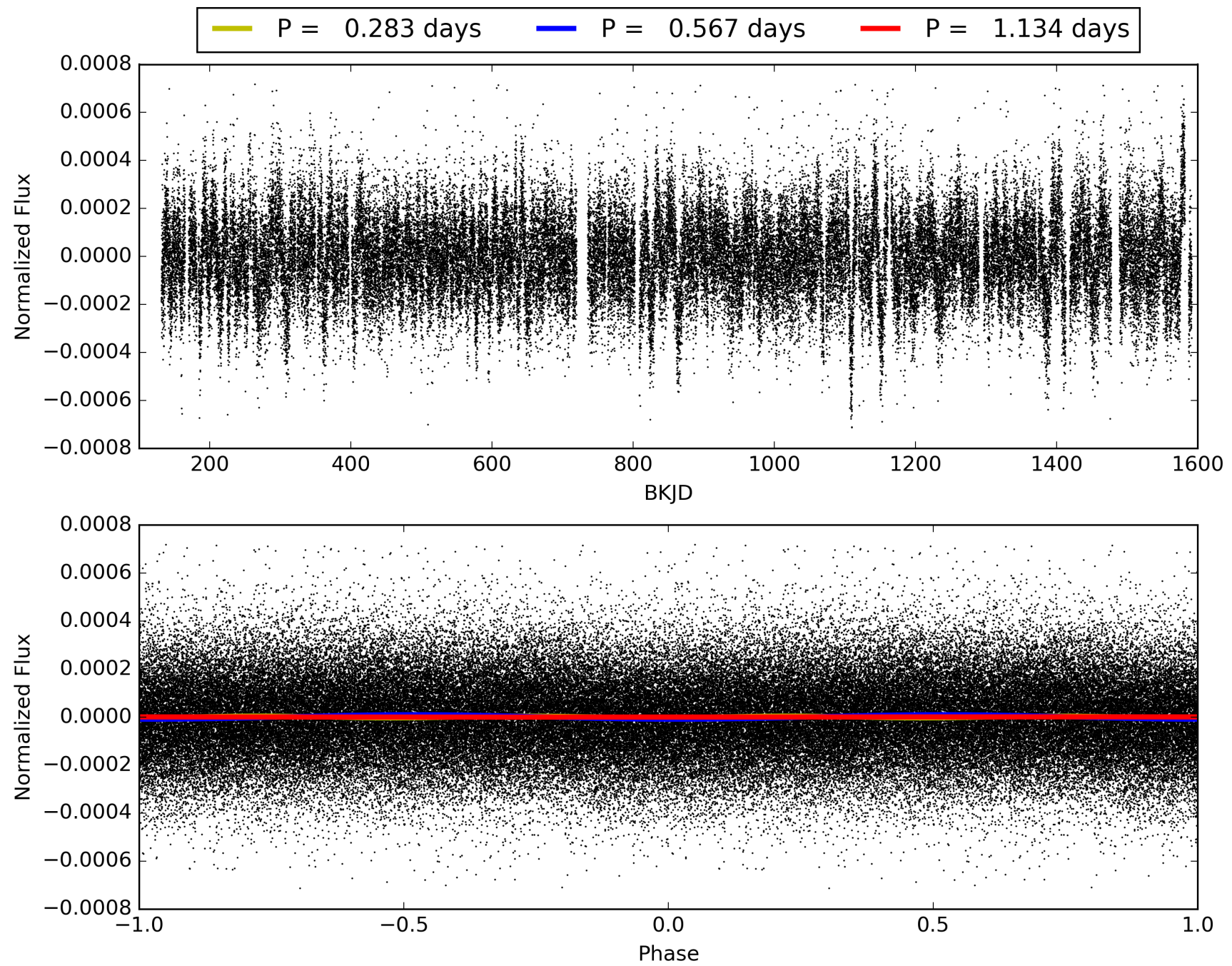
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2269/2269]  
GhostDiagnostic-chr: -3.38e-05  
Centroid-sig: 0.0%  
Centroid-so: 3.049 arcsec [2.75σ]  
OotOffset-rm: 2.696 arcsec [7.26σ]  
KicOffset-rm: 2.557 arcsec [8.05σ]  
OotOffset-st: 0/4/0/2 [6]  
KicOffset-st: 0/4/0/2 [6]  
DiffImageQuality-fgm: 0.67 [4/6]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007031448-01, PDC Light Curves



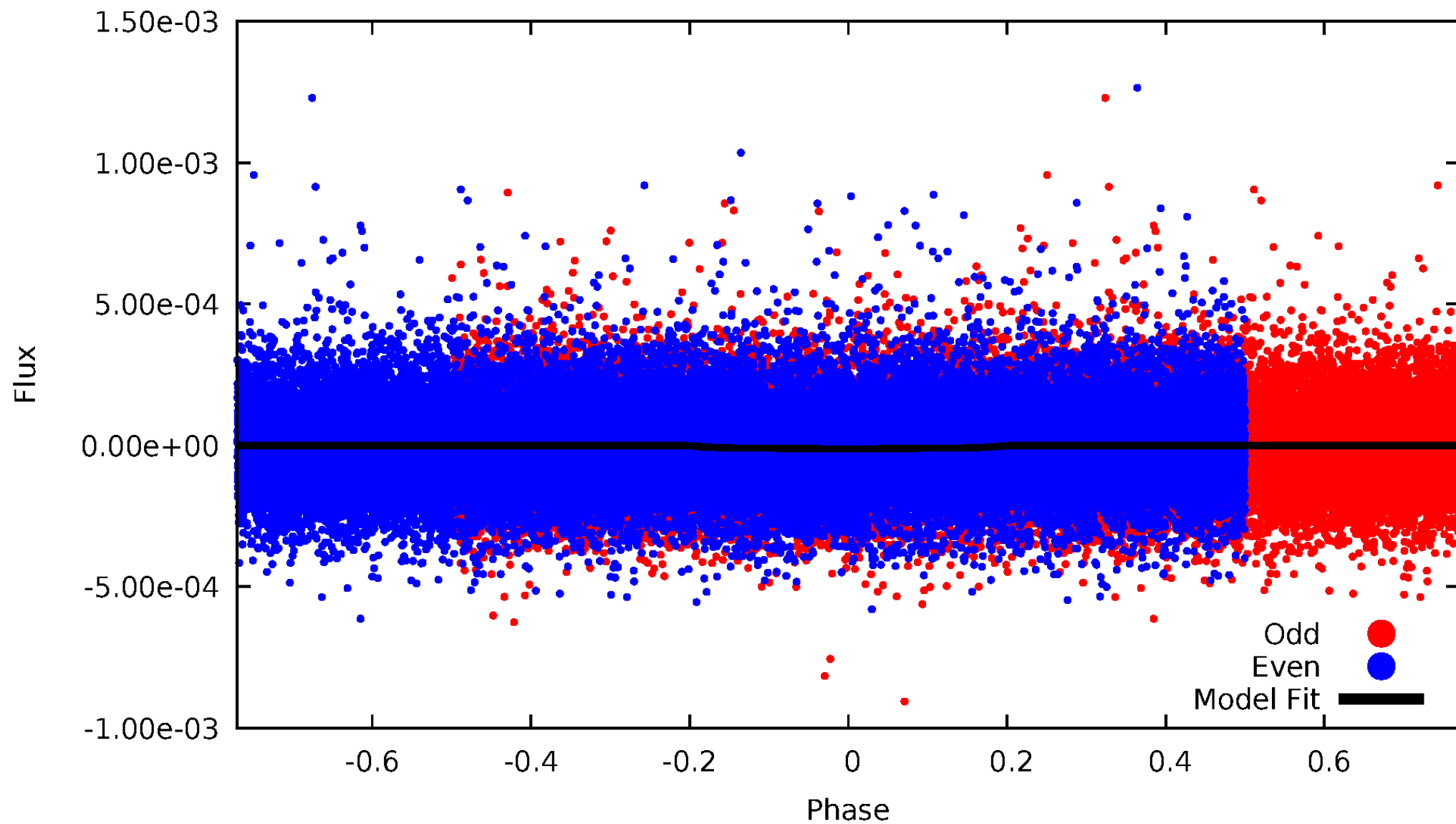
TCE 007031448-01





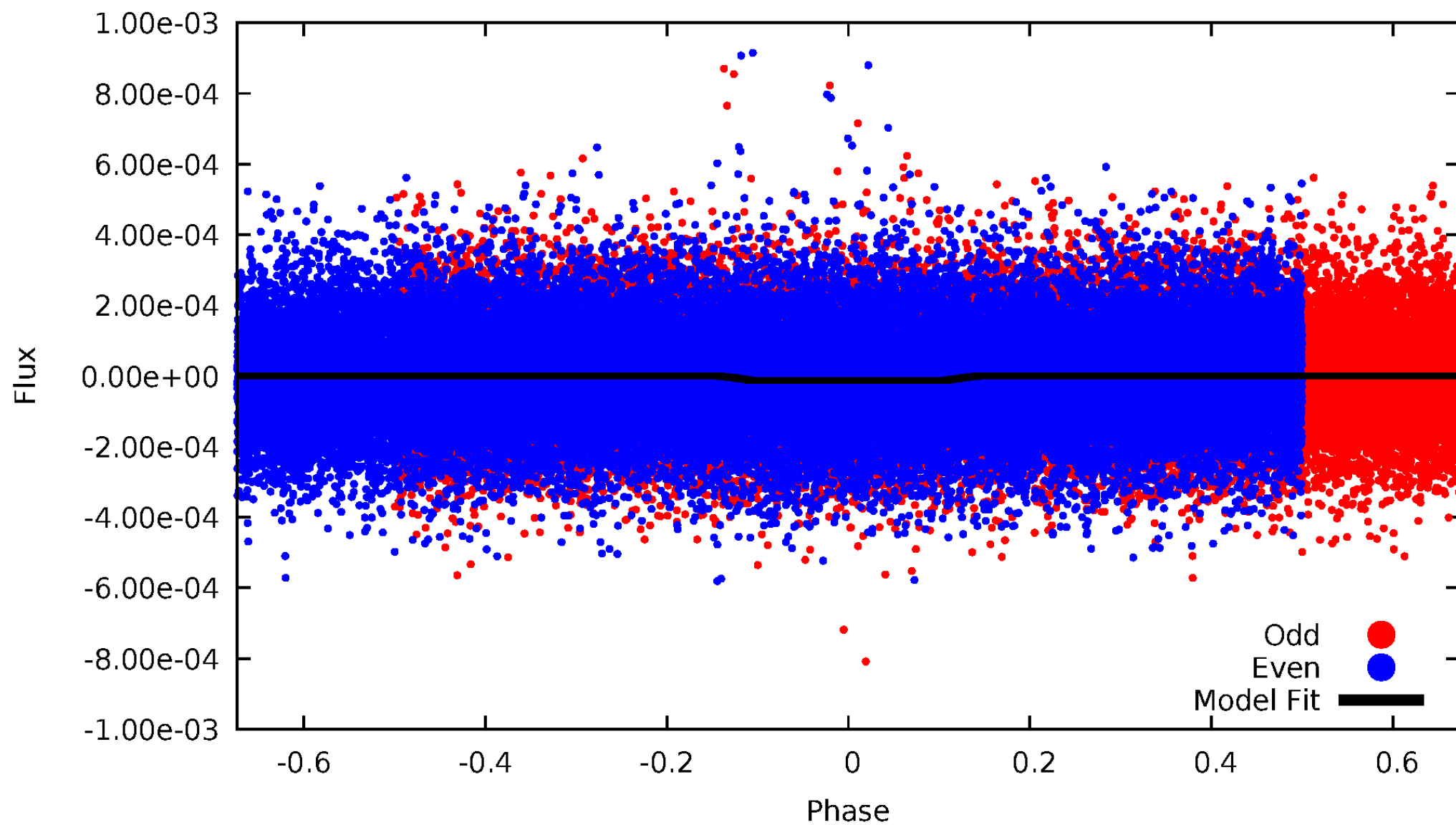
# DV Odd/Even

TCE 007031448-01



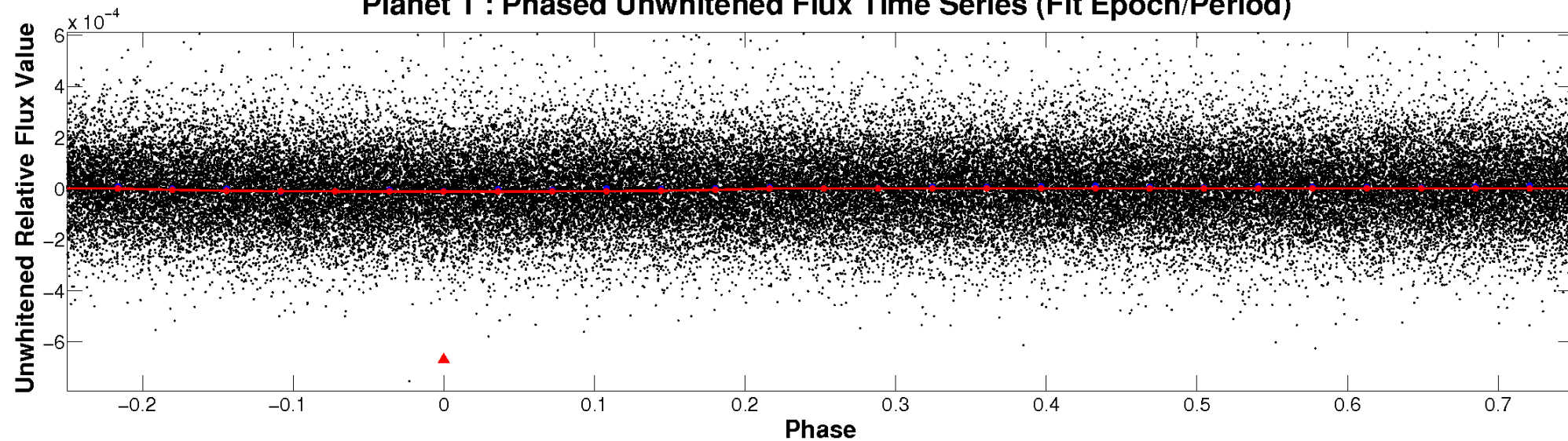
# ALT Odd/Even

TCE 007031448-01

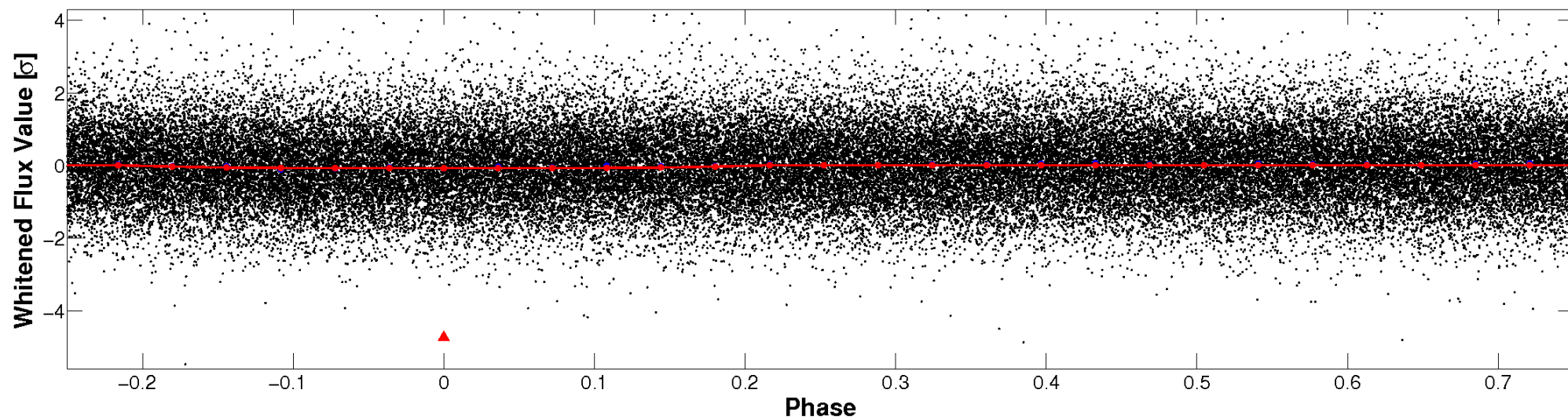


# Non-Whitened Vs. Whitened Light Curve

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

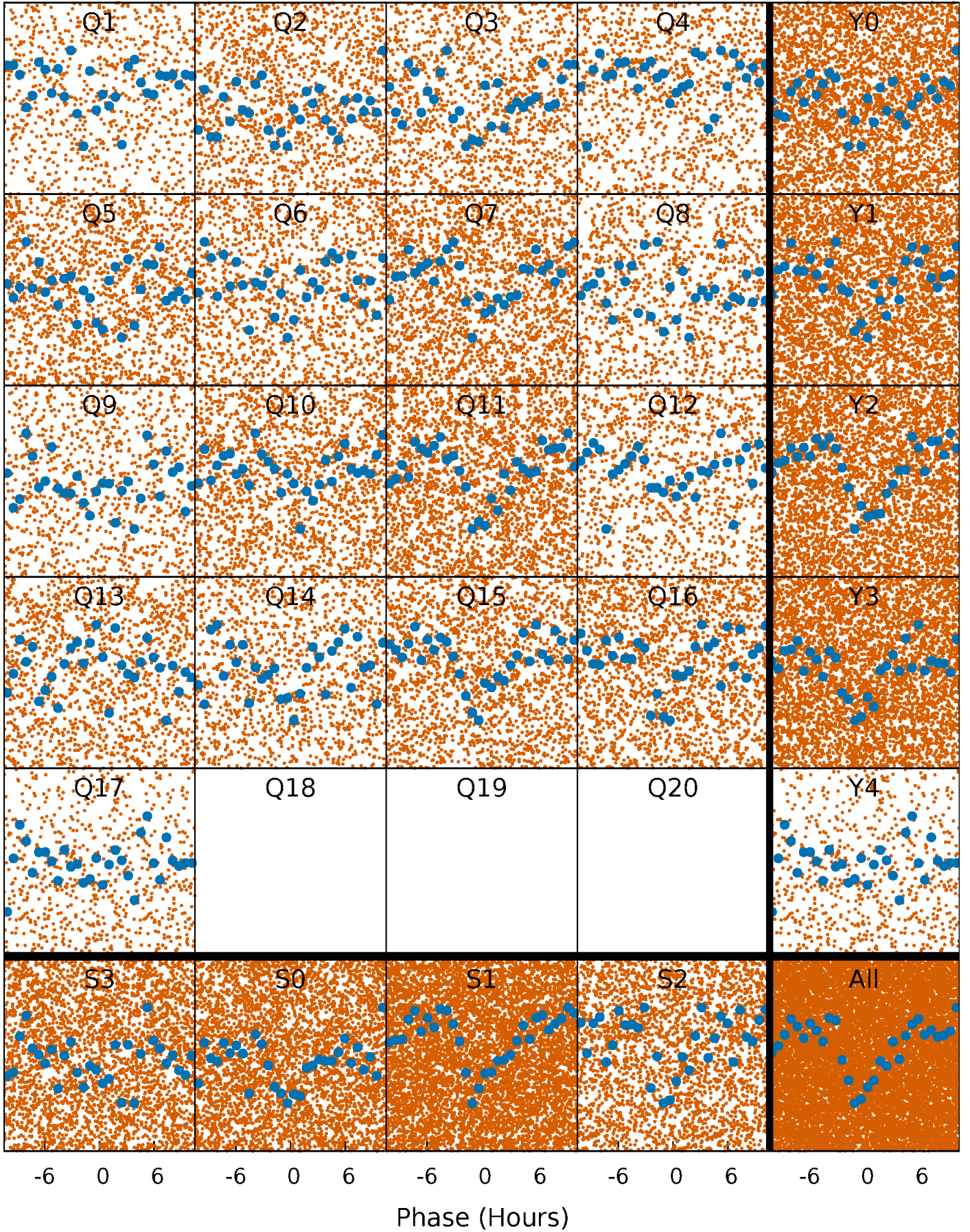


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

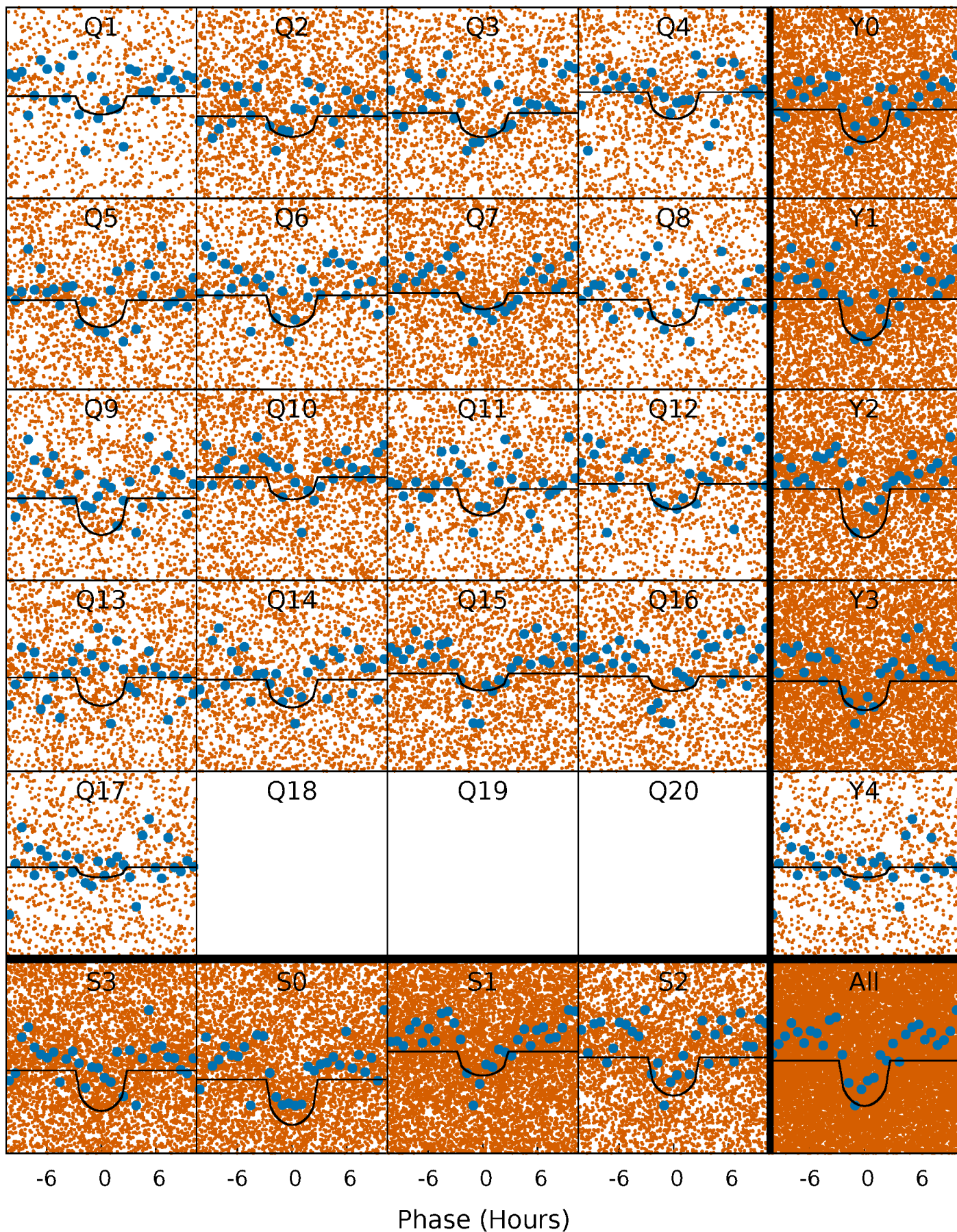
TCE 007031448-01 P= 0.566810 Days  $T_0=131.828074$  (BKJD)





# DV Quarter-Phased Transit Curves

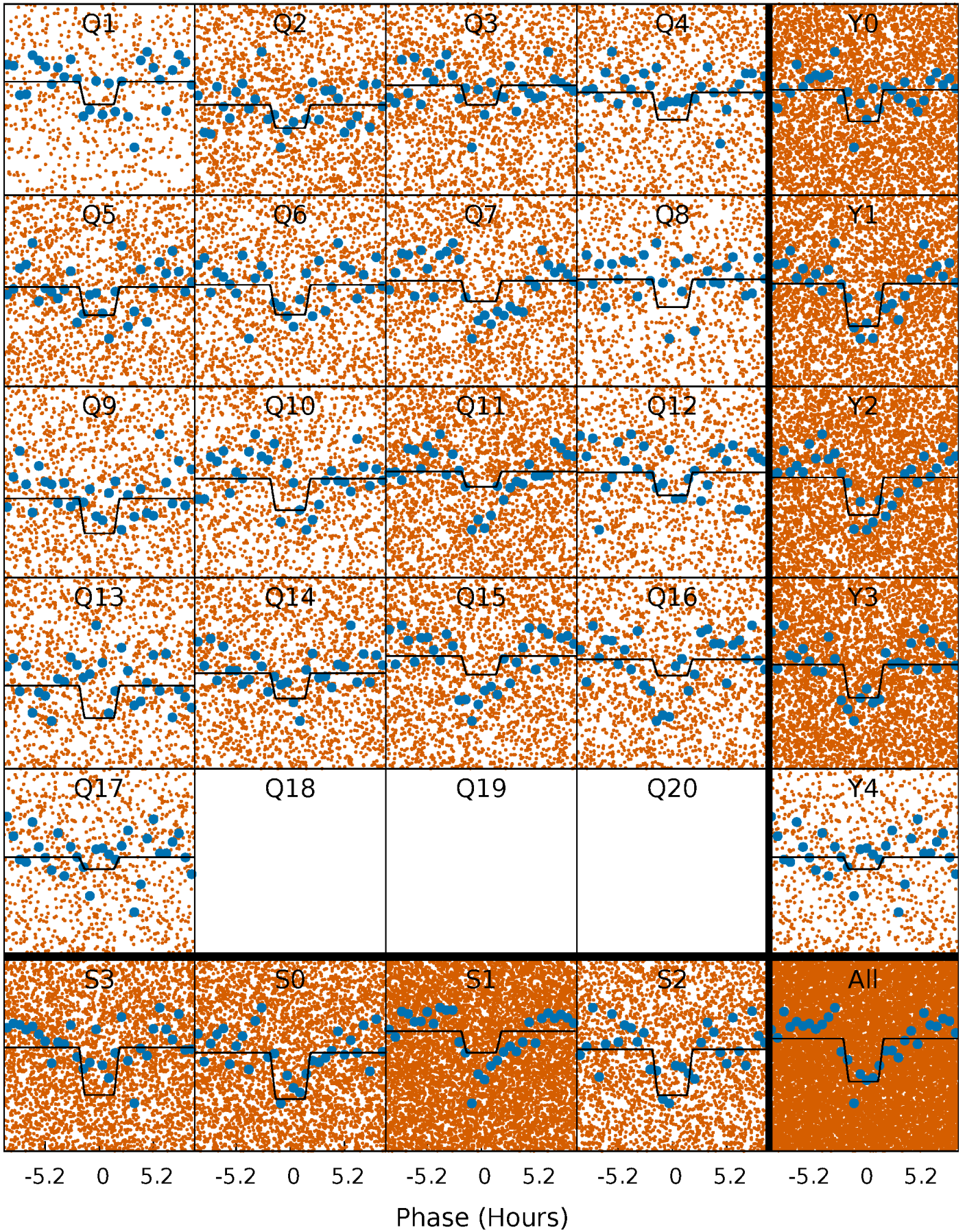
TCE 007031448-01 P= 0.566810 Days  $T_0=131.828074$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

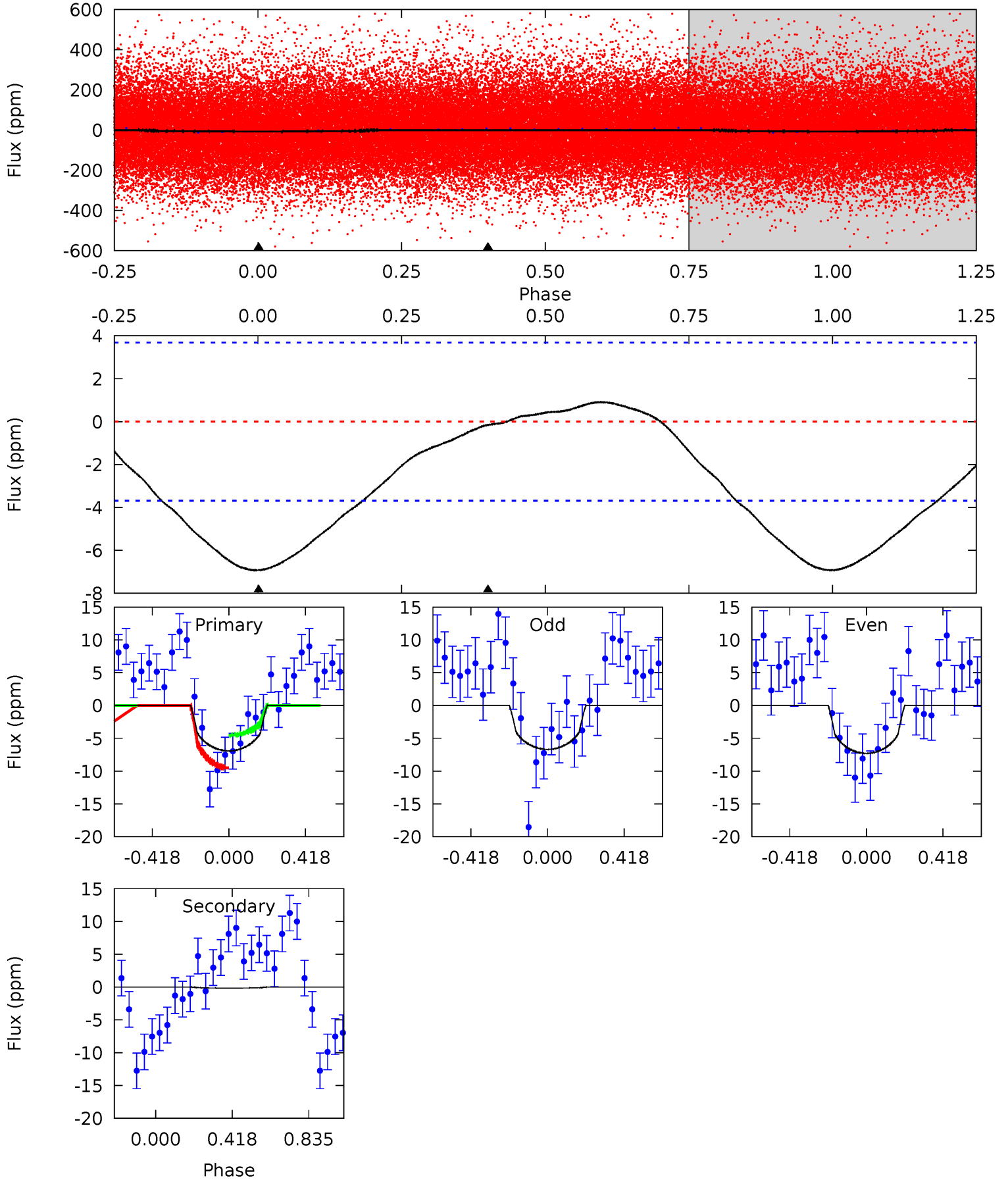
TCE 007031448-01 P= 0.566821 Days  $T_0=131.799765$  (BKJD)



# DV Model-Shift Uniqueness Test

007031448-01, P = 0.566810 Days, E = 131.261264 Days

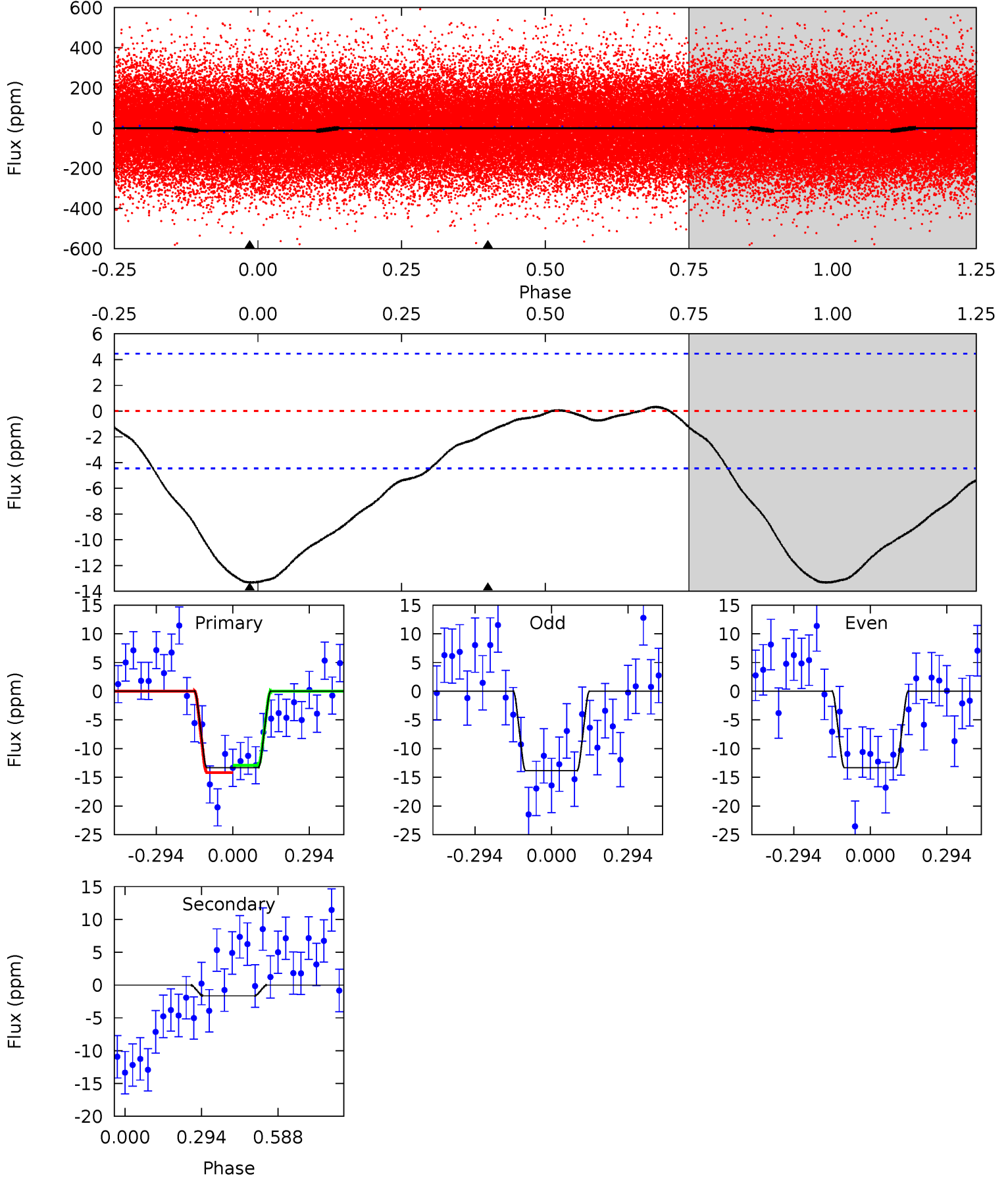
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.99	0.18	0	0	4.26	0.81	0.69	7.99	7.99	0.18	0.18	0.36	1.12	0.12	2.92



# Alt Model-Shift Uniqueness Test

007031448-01, P = 0.566821 Days, E = 131.232944 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
13.0	1.60	0	0	4.33	1.05	0.31	13.0	13.0	1.60	1.60	0.26	1.07	0.02	0.62





### Stellar Parameters For KIC 007031448

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5580^{+150}_{-150}$	$4.508^{+0.081}_{-0.150}$	$-0.280^{+0.300}_{-0.300}$	$0.839^{+0.182}_{-0.084}$	$0.829^{+0.100}_{-0.072}$	$1.975^{+0.632}_{-0.790}$
	+3%/-3%	+2%/-3%	+107%/-107%	+22%/-10%	+12%/-9%	+32%/-40%
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 007031448-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	-0±1	$0.37^{+0.31}_{-0.23}$	$2828^{+168}_{-125}$	$-2871^{+6432}_{-636}$	$0.076^{+1.200}_{-0.620}$
Alt.	-2±1	$0.40^{+0.32}_{-0.25}$	$2830^{+148}_{-136}$	$3139^{+1728}_{-5772}$	$0.734^{+5.176}_{-0.550}$

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

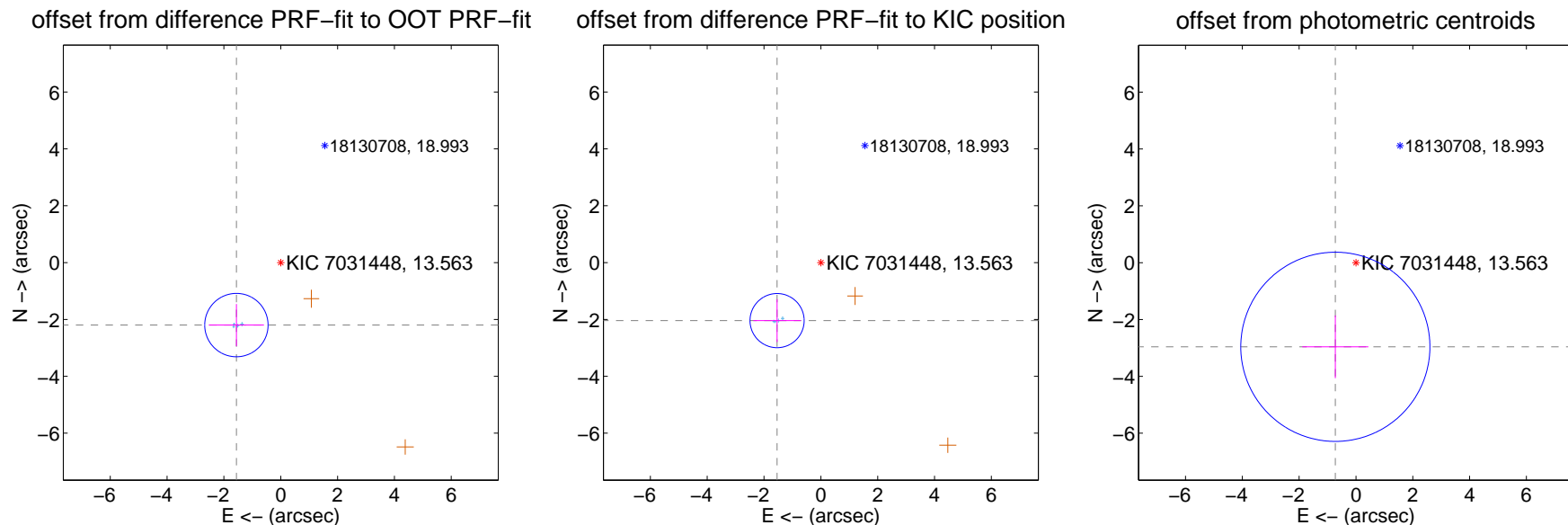
## DV Centroid Data

Supplemental centroid analysis for 007031448-01. Kepler magnitude: 13.56. Transit SNR 9.32

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

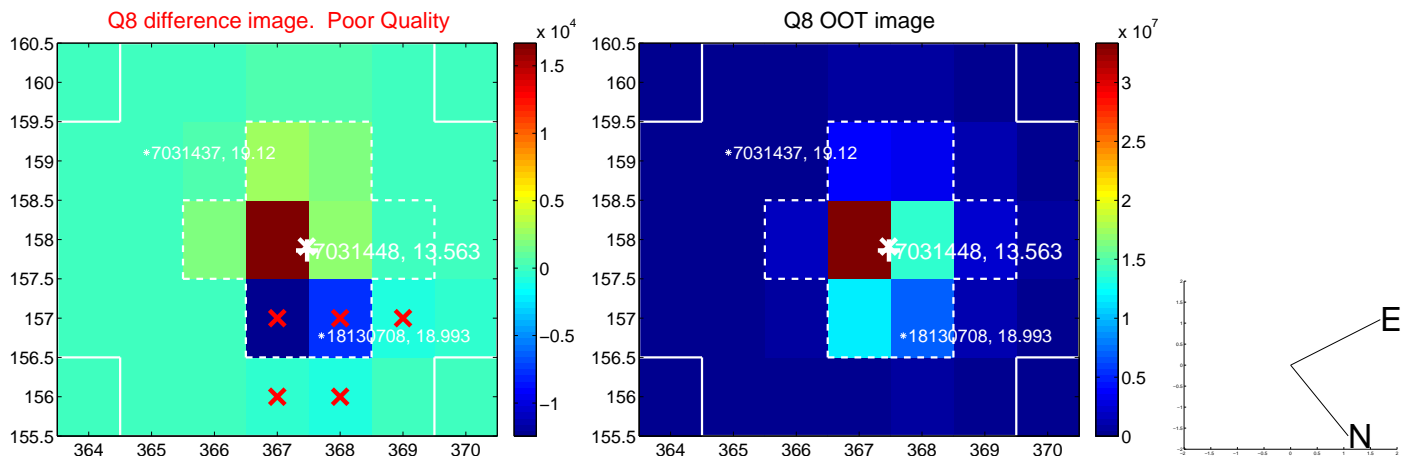
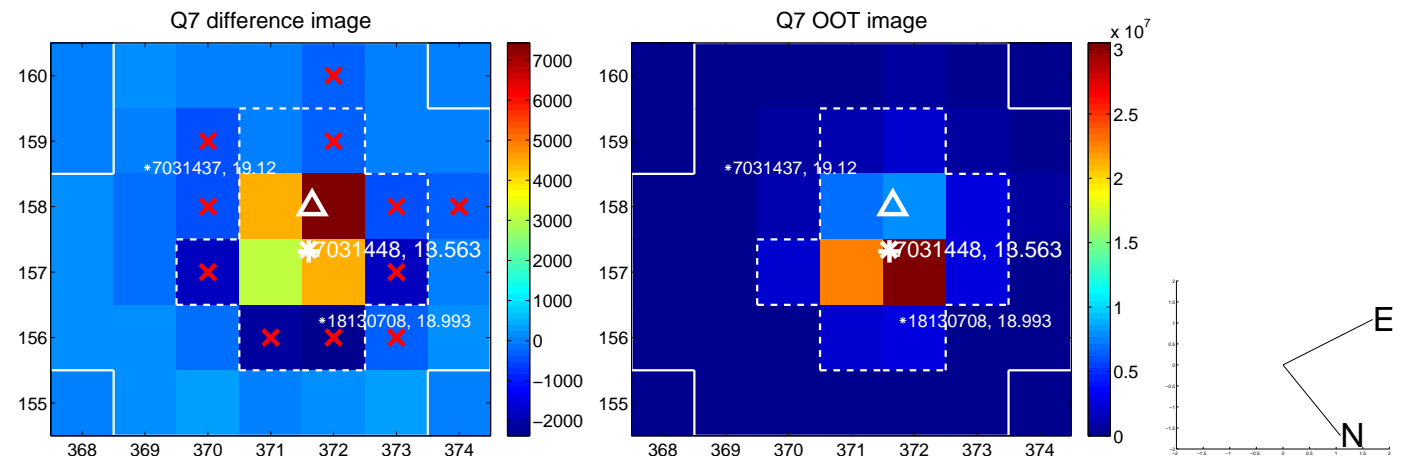
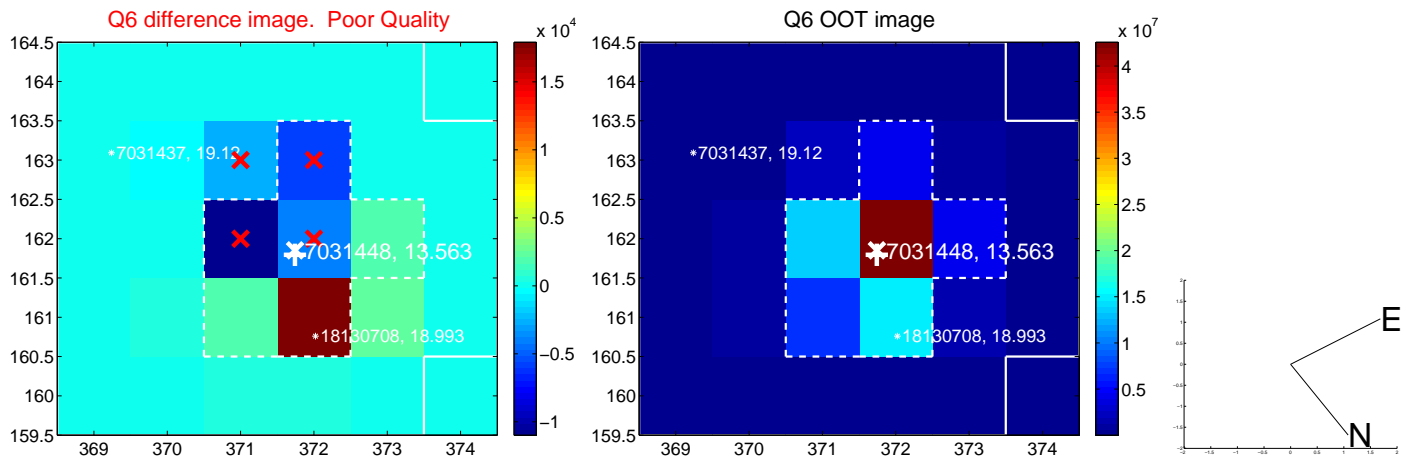
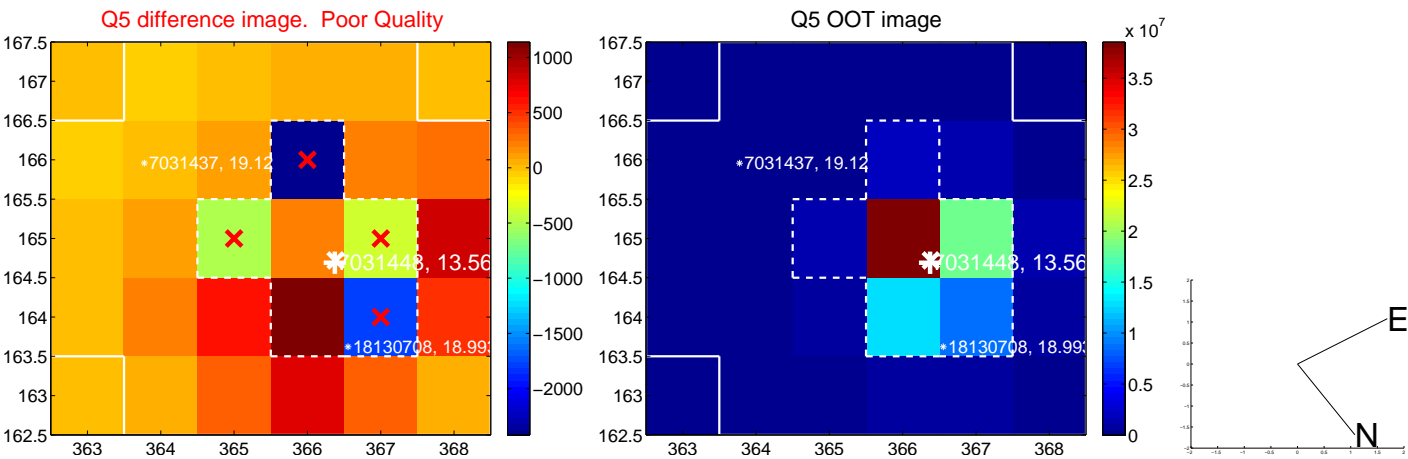
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.696 \pm 0.372$	7.26	$1.561 \pm 0.968$	$-2.198 \pm 0.742$
PRF-fit source offset from KIC position	$2.557 \pm 0.318$	8.05	$1.541 \pm 0.836$	$-2.041 \pm 0.753$
photometric centroid source offset	$3.05 \pm 1.11$	2.75	$0.73 \pm 1.16$	$-2.96 \pm 1.11$



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.

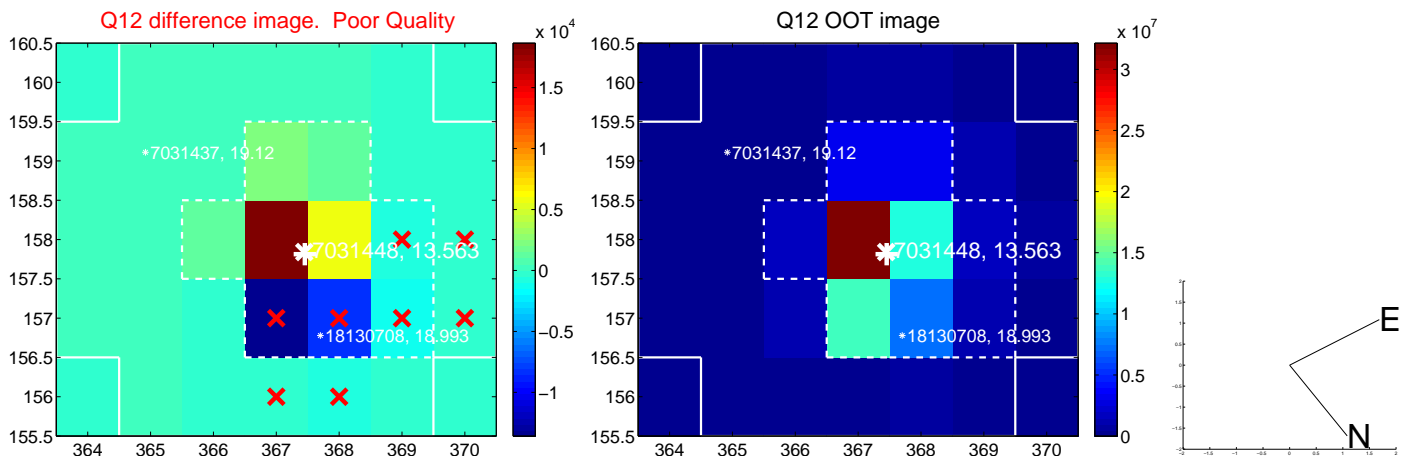
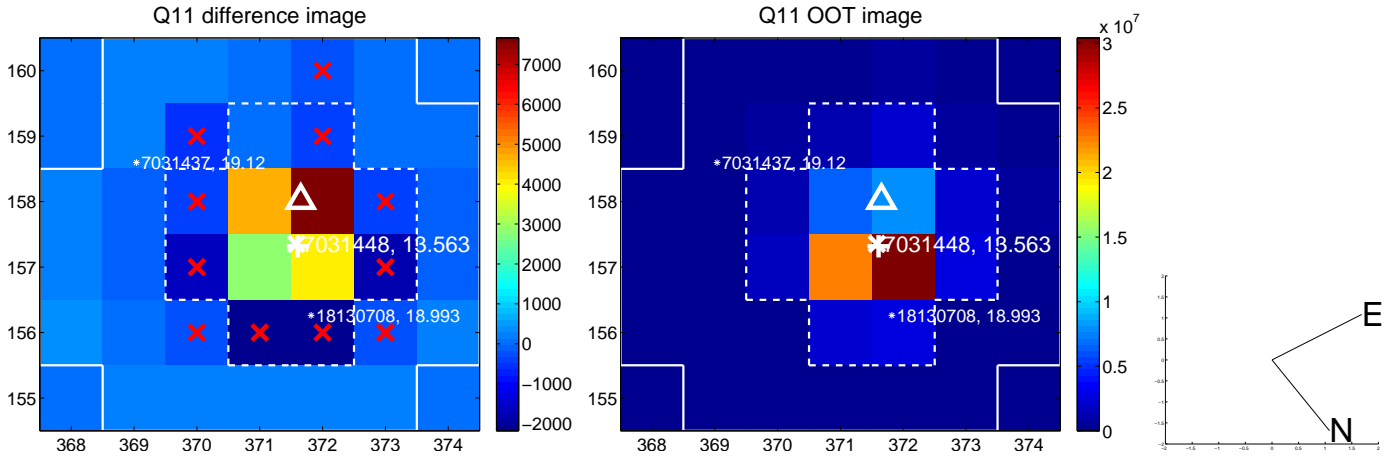
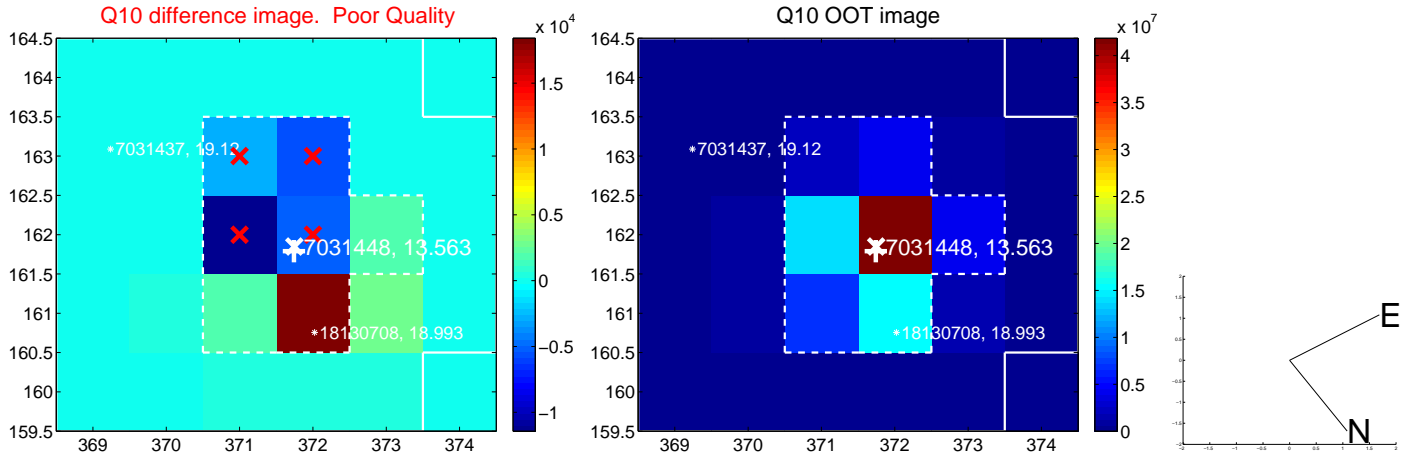
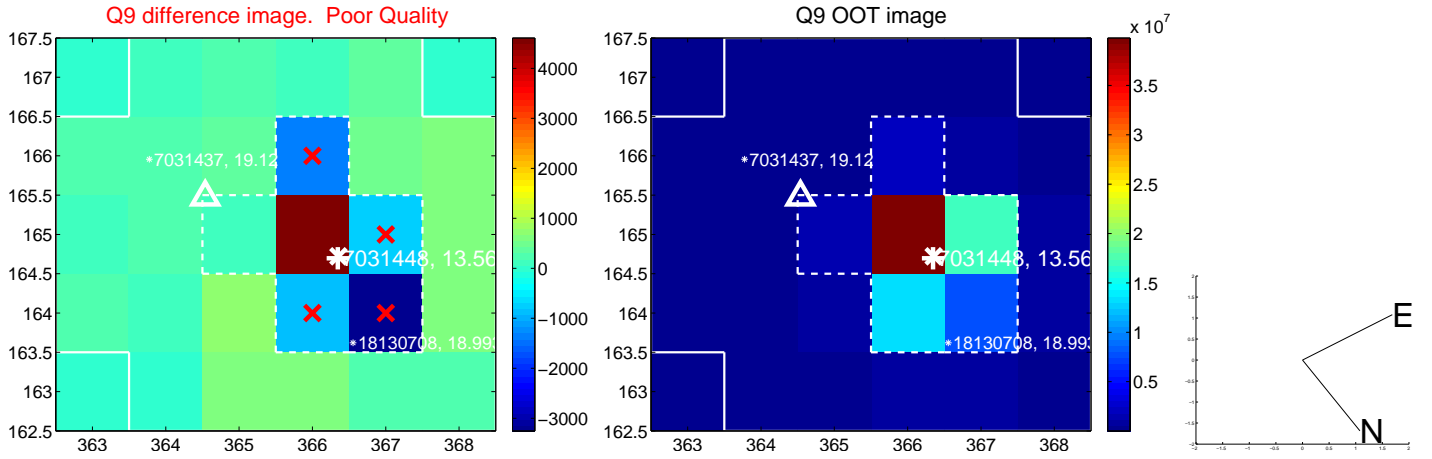


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

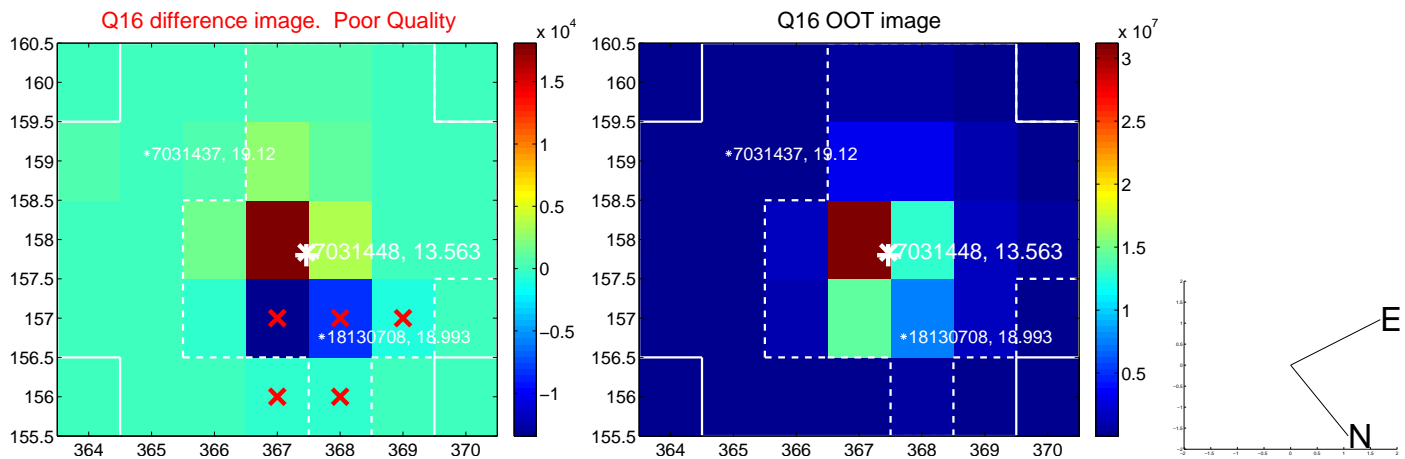
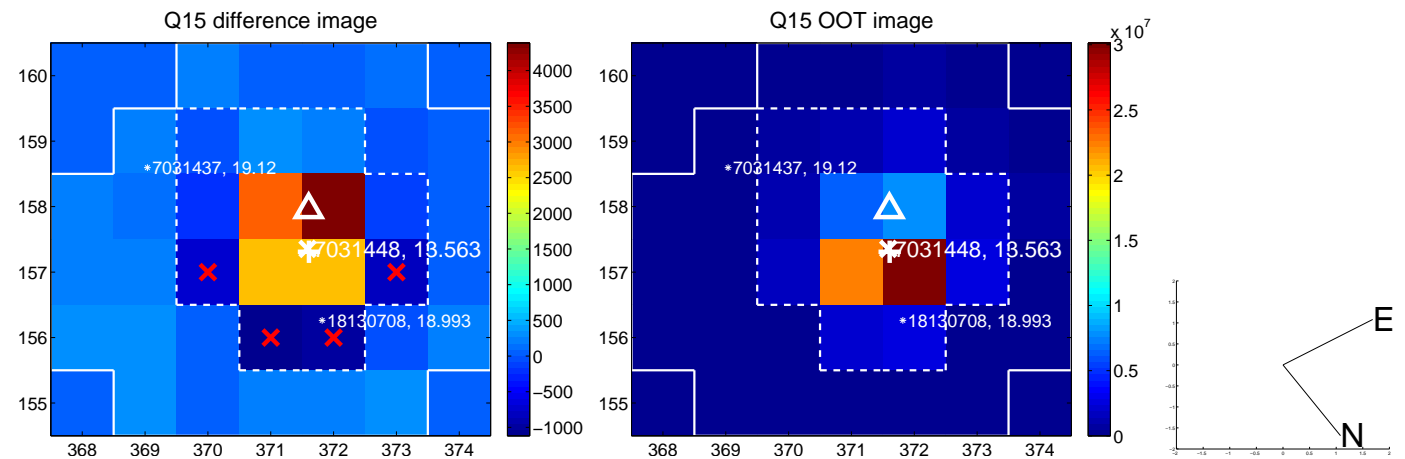
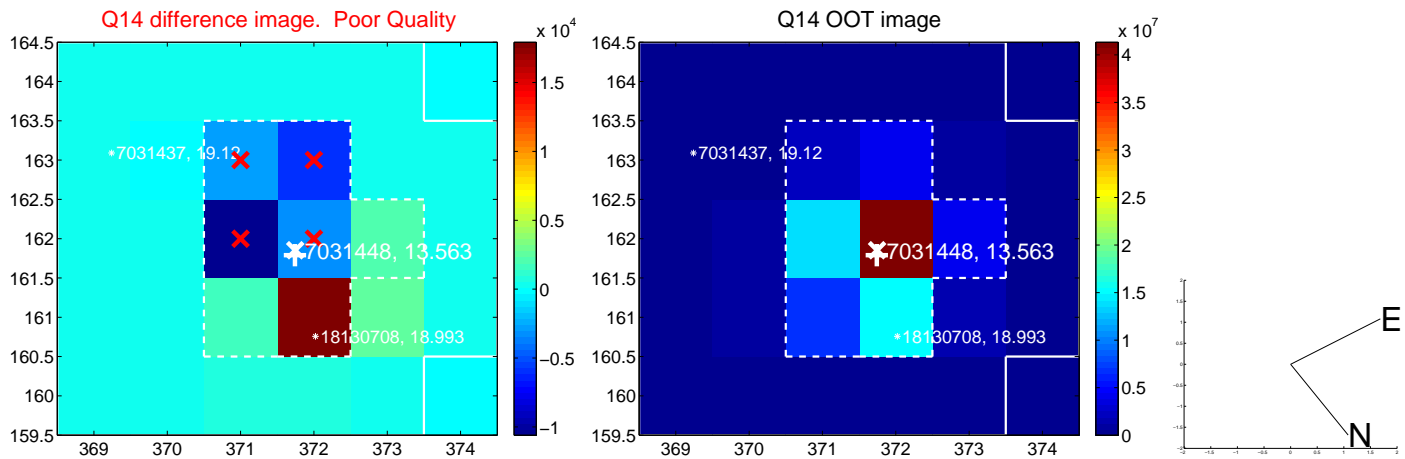
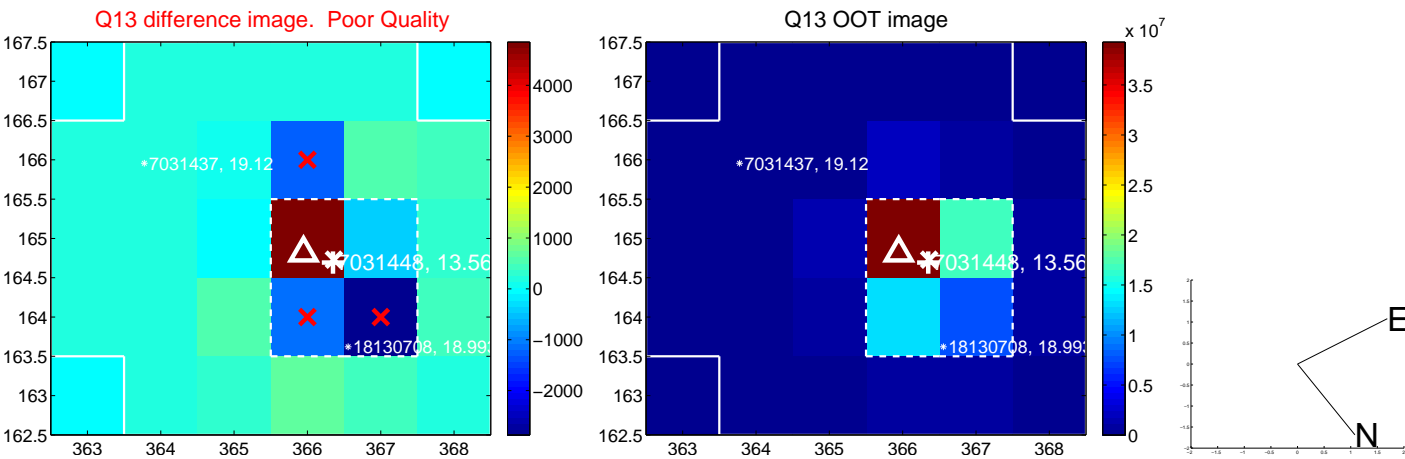




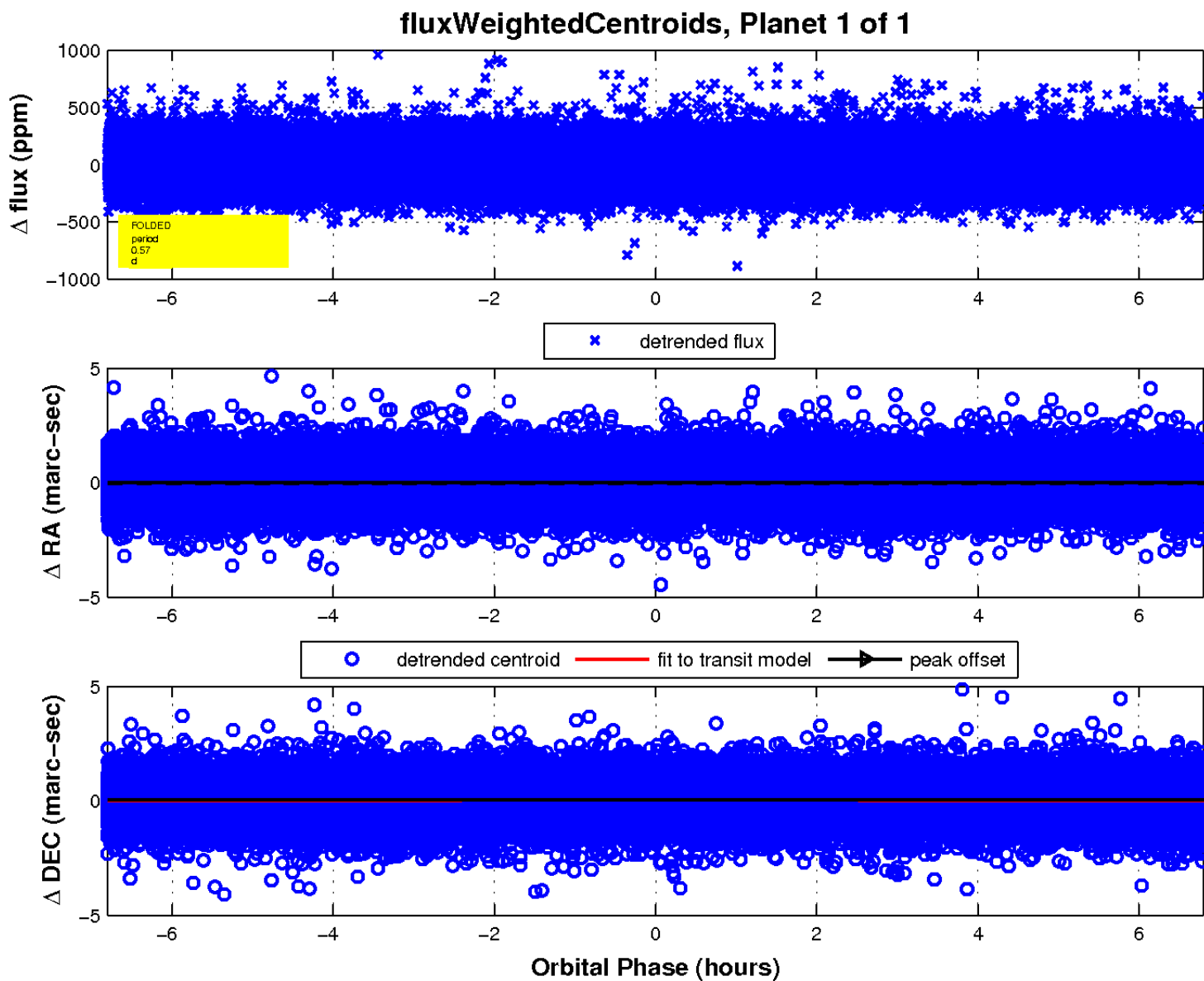
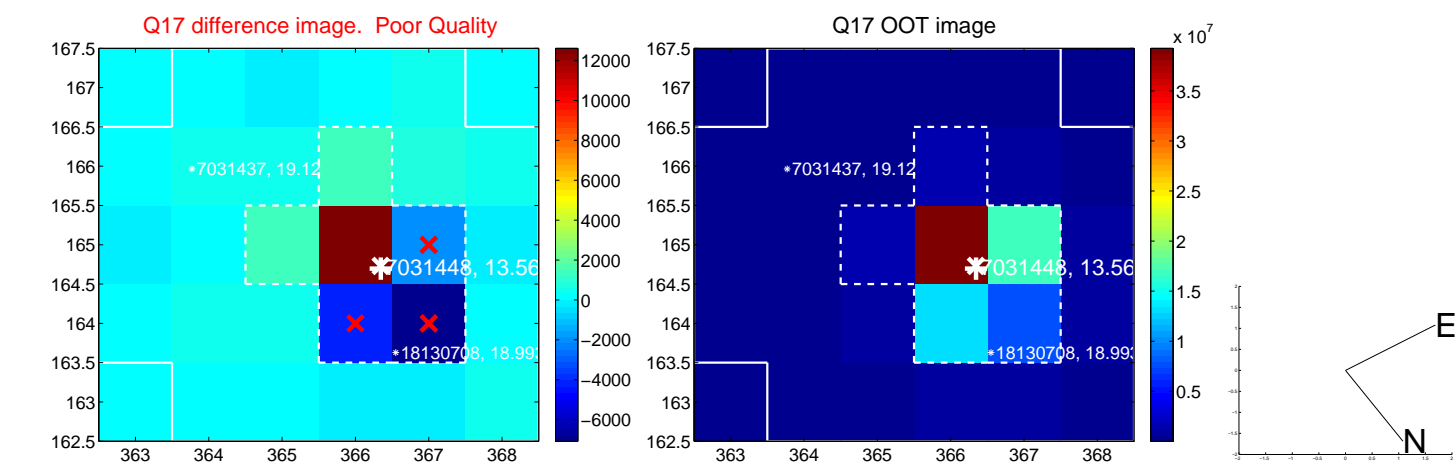
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

