

# KIC 008108813

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008108813-02	OBS	No	622.922321	202.662038	159.3	21.142	8.1	9.6	1.23	6700	1.74	1.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008108813-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

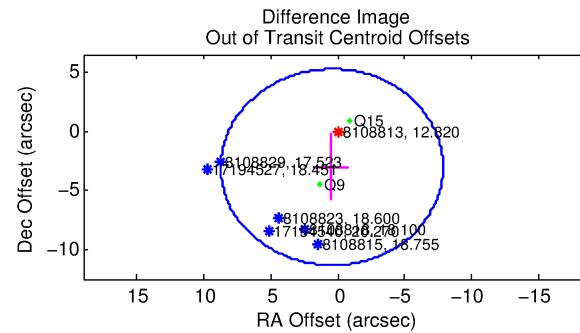
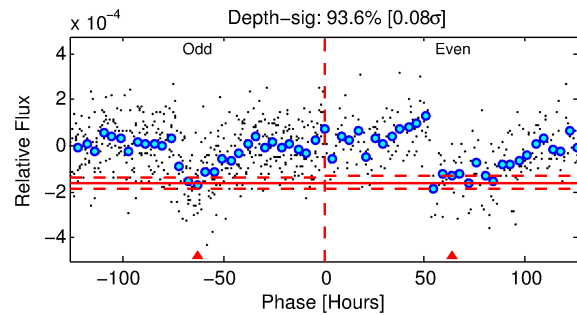
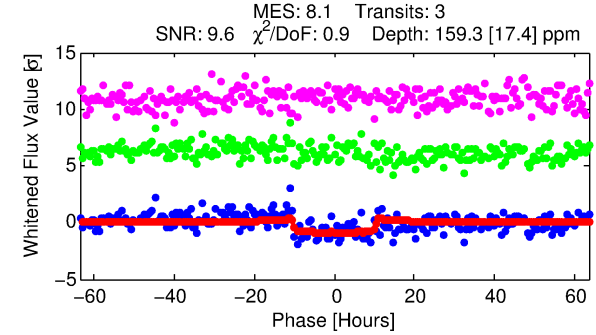
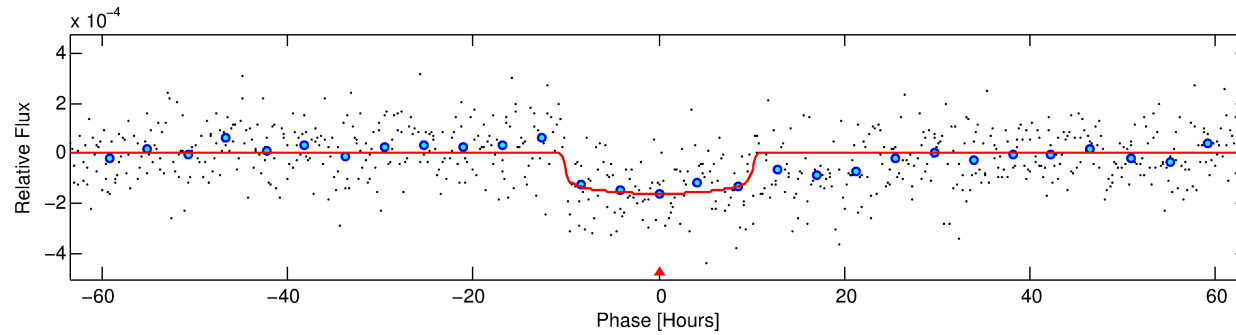
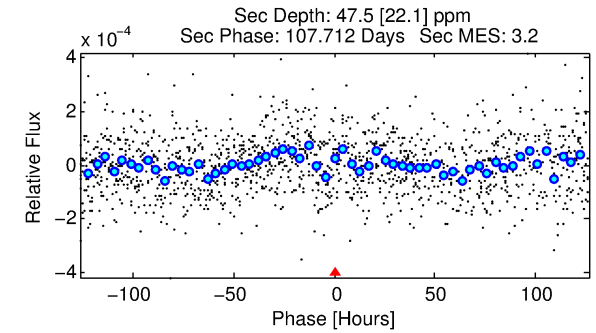
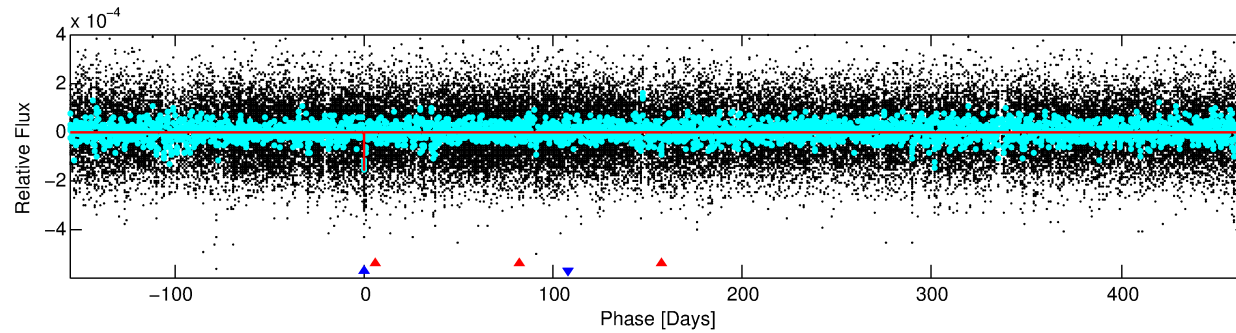
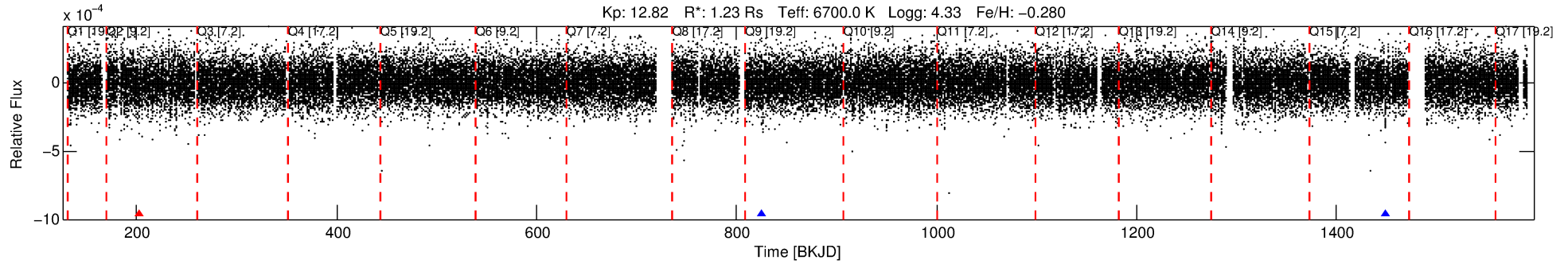
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008108813-02

No Significant Match Found

# DV One-Page Summary

KIC: 8108813 Candidate: 2 of 2 Period: 622.922 d



## DV Fit Results:

Period = 622.92232 [0.01748] d  
Epoch = 202.6620 [0.0200] BKJD  
Rp/R\* = 0.0129 [0.0019]  
a/R\* = 131.70 [101.26]  
b = 0.83 [0.30]  
Seff = 1.20 [0.47]  
Teq = 267 [26] K  
Rp = 1.74 [0.62] Re  
a = 1.5134 [0.3994] AU  
Ag = 19840.61 [13182.16] [1.51σ]  
Teffp = 4896 [694] K [6.67σ]

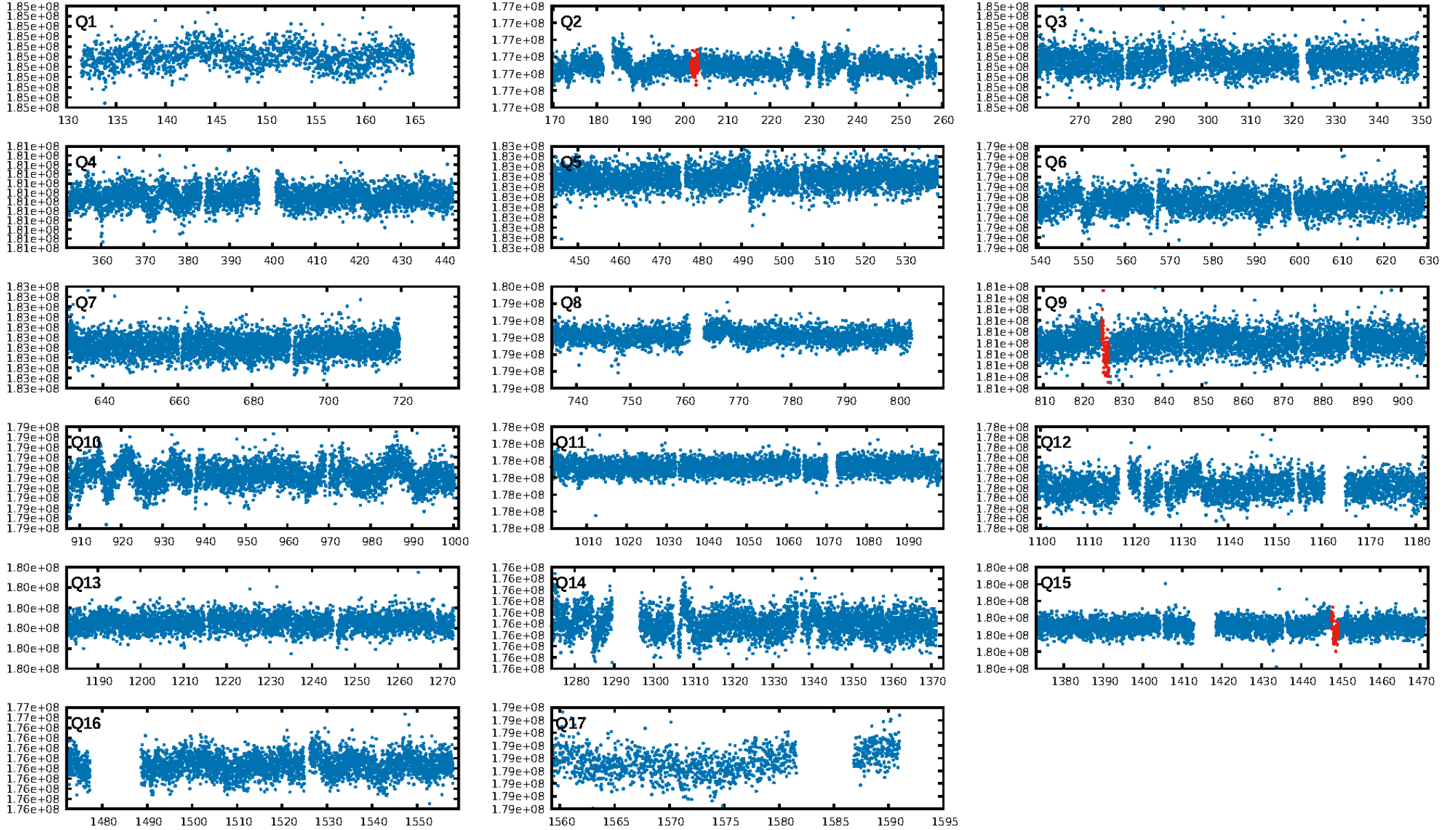
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [79.49σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 15.7%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 2.12e-09**  
**RollingBand-fgt: 0.67 [2/3]**  
GhostDiagnostic-chr: -1.873  
Centroid-sig: 89.7%  
Centroid-so: 0.445 arcsec [0.30σ]  
OotOffset-rm: 3.072 arcsec [1.11σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-rm: 3.005 arcsec [1.09σ]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [3/3]

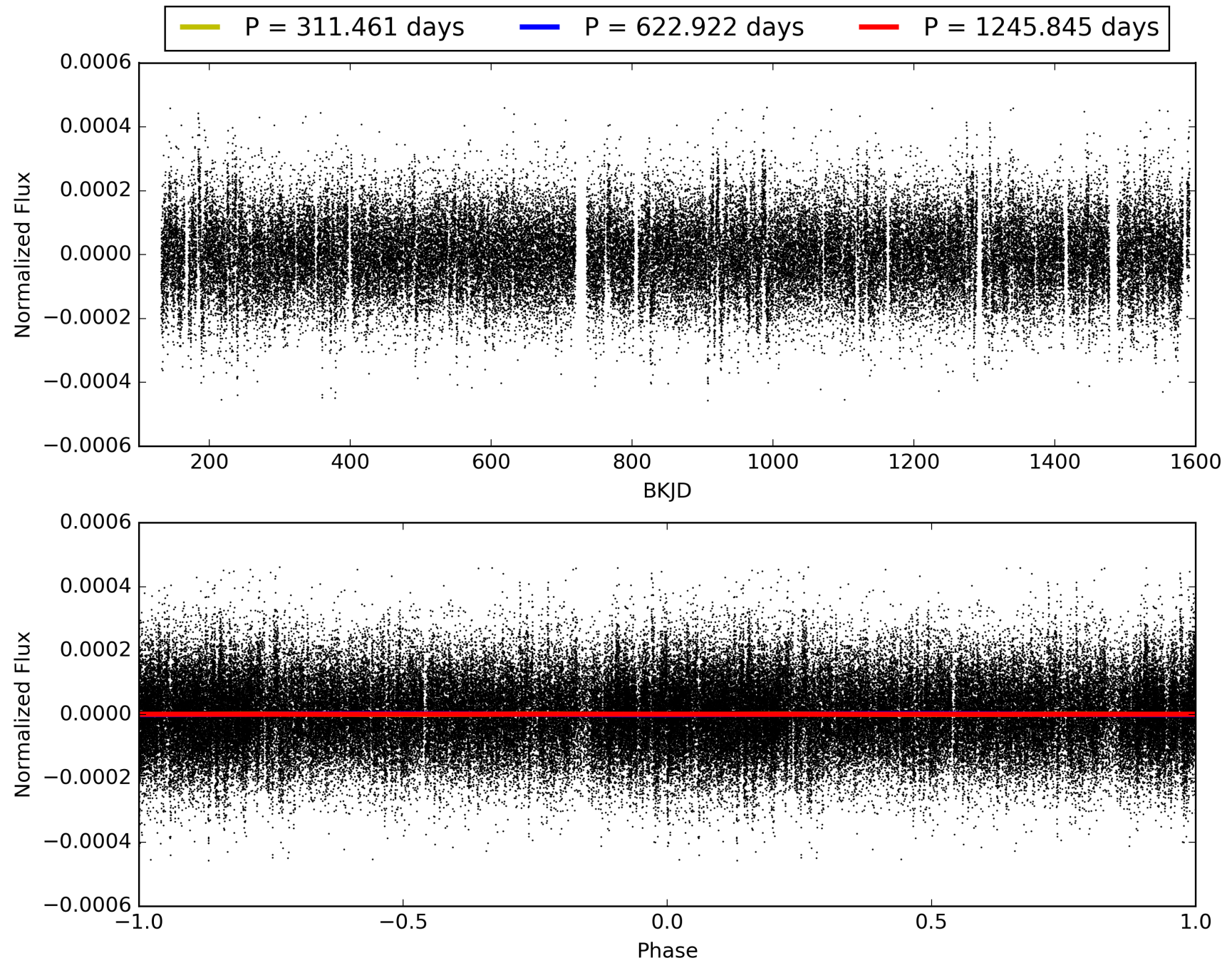
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 06:04:24 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008108813-02, PDC Light Curves

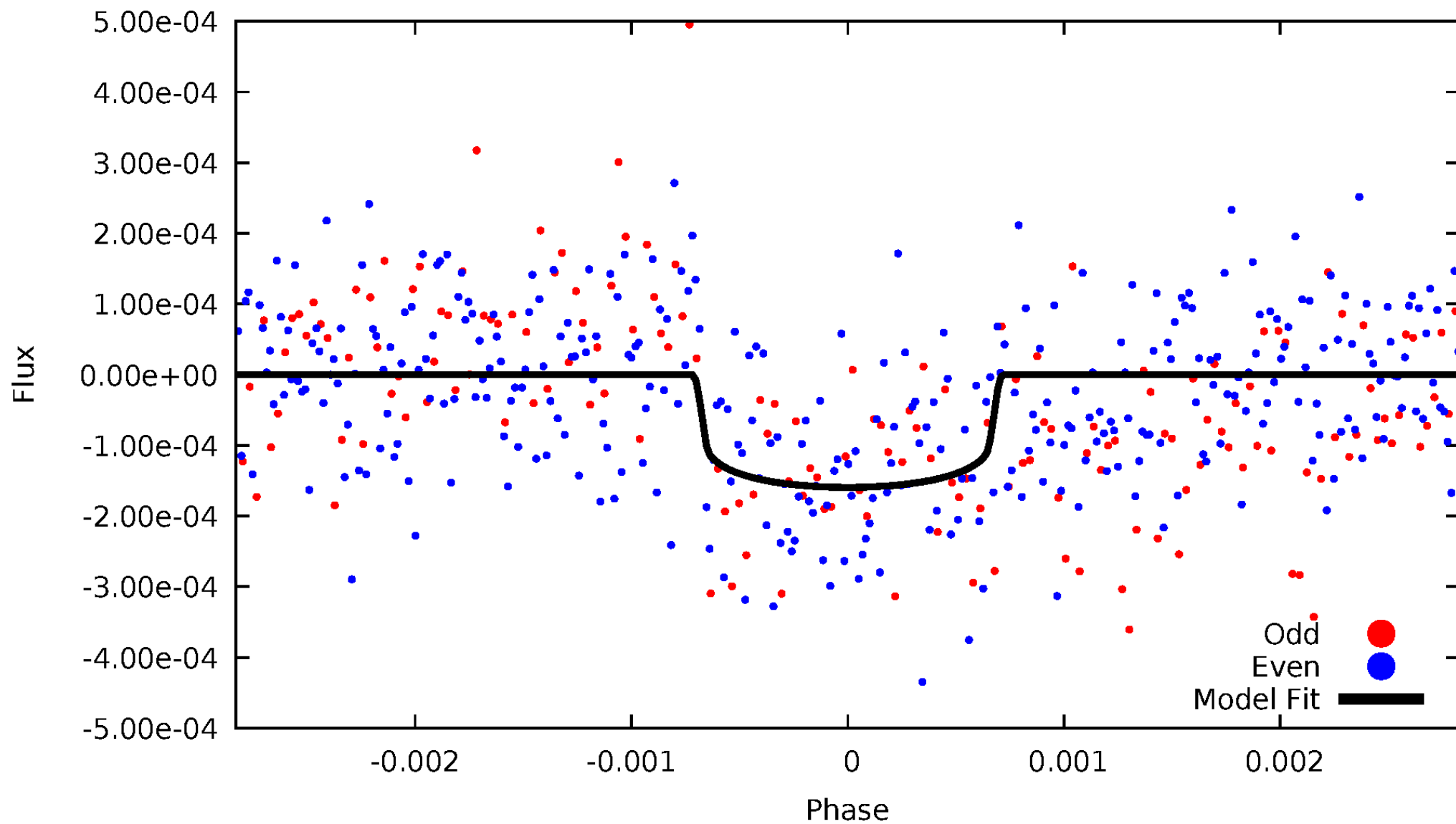


# TCE 008108813-02



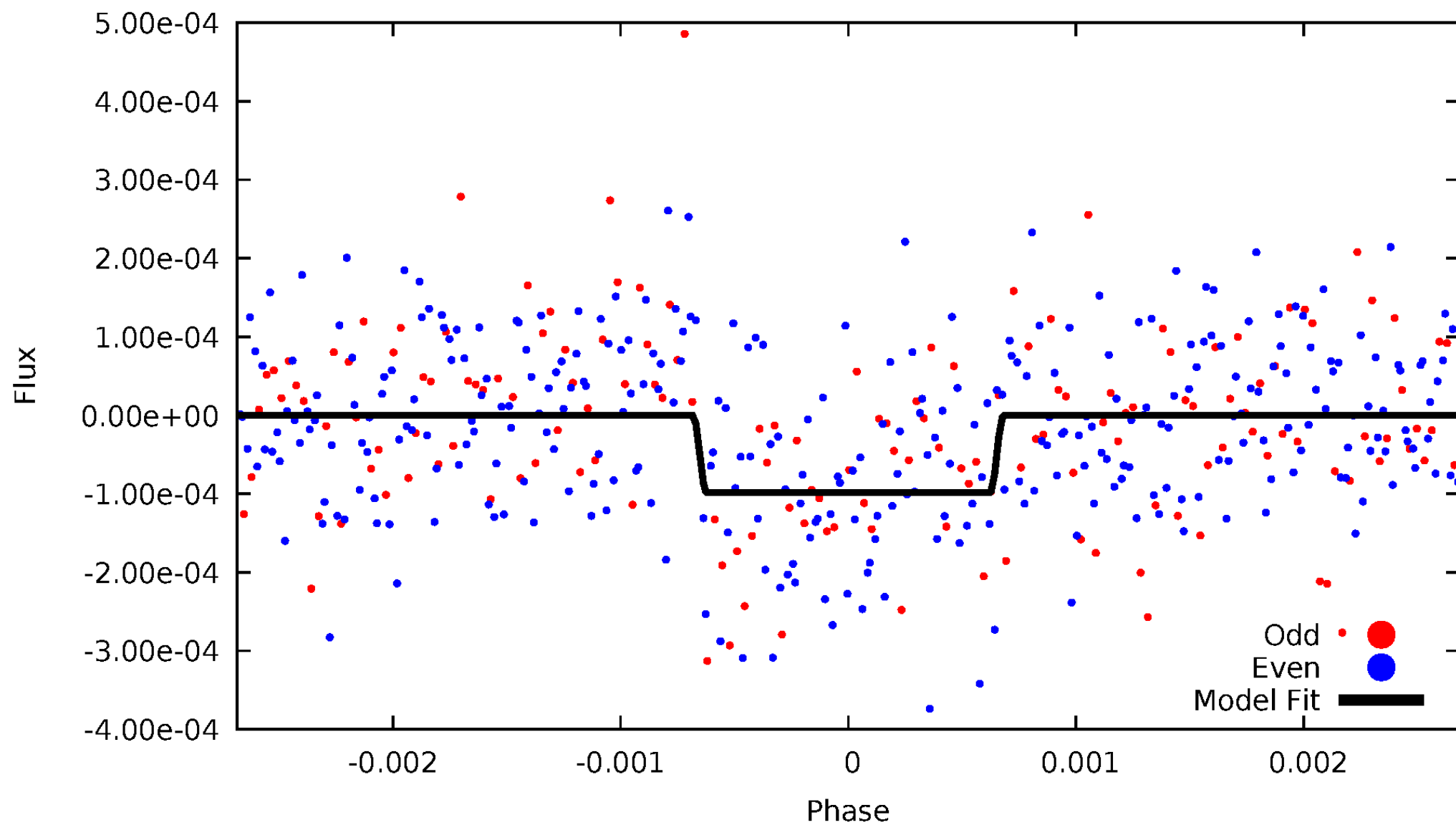
# DV Odd/Even

TCE 008108813-02



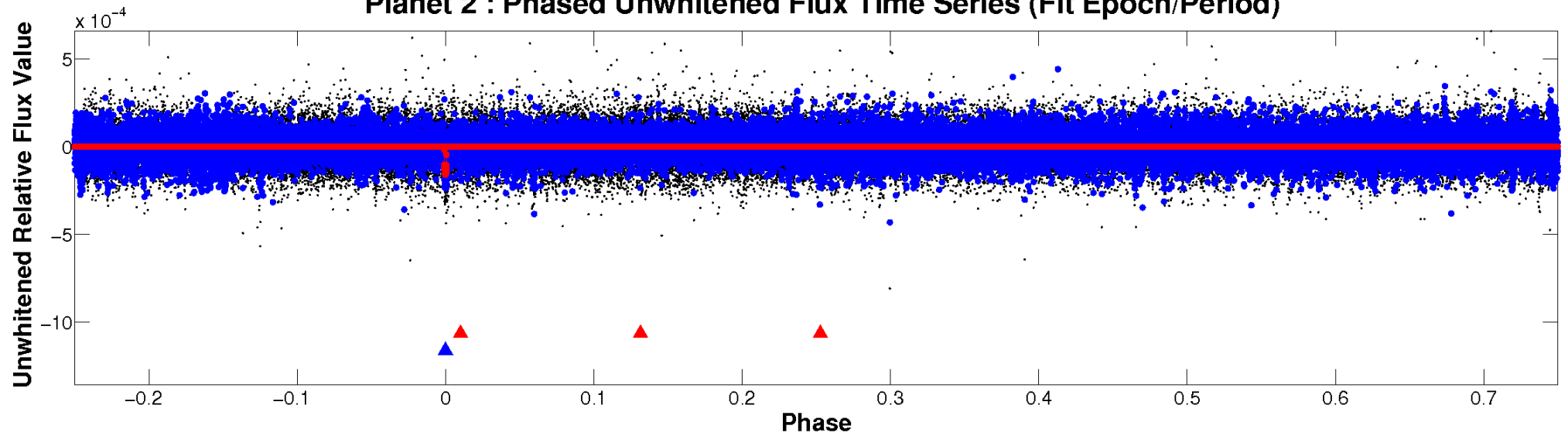
# ALT Odd/Even

TCE 008108813-02

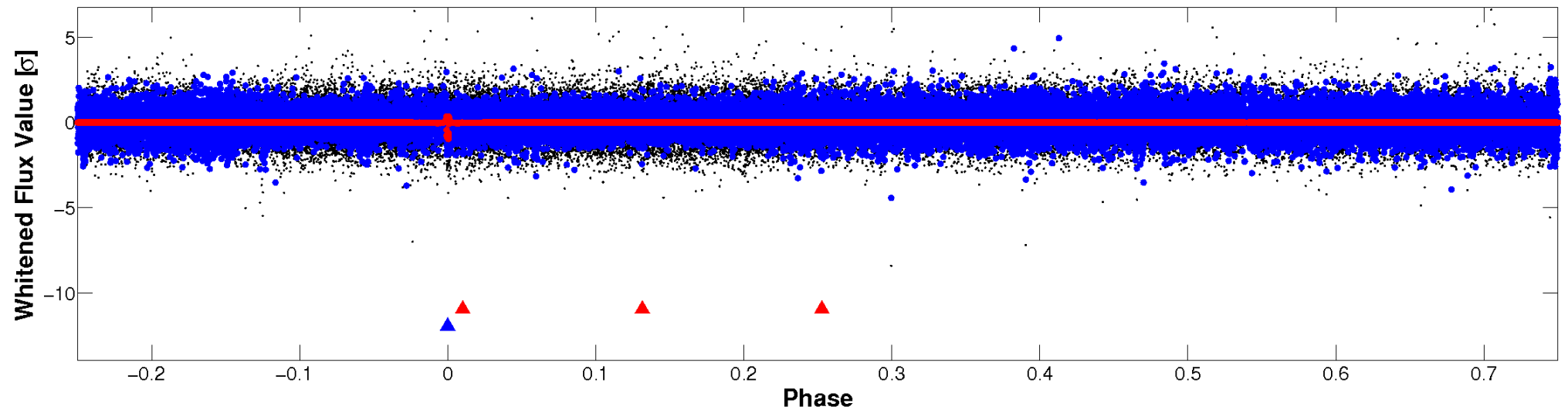


# Non-Whitened Vs. Whitened Light Curve

**Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**



**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



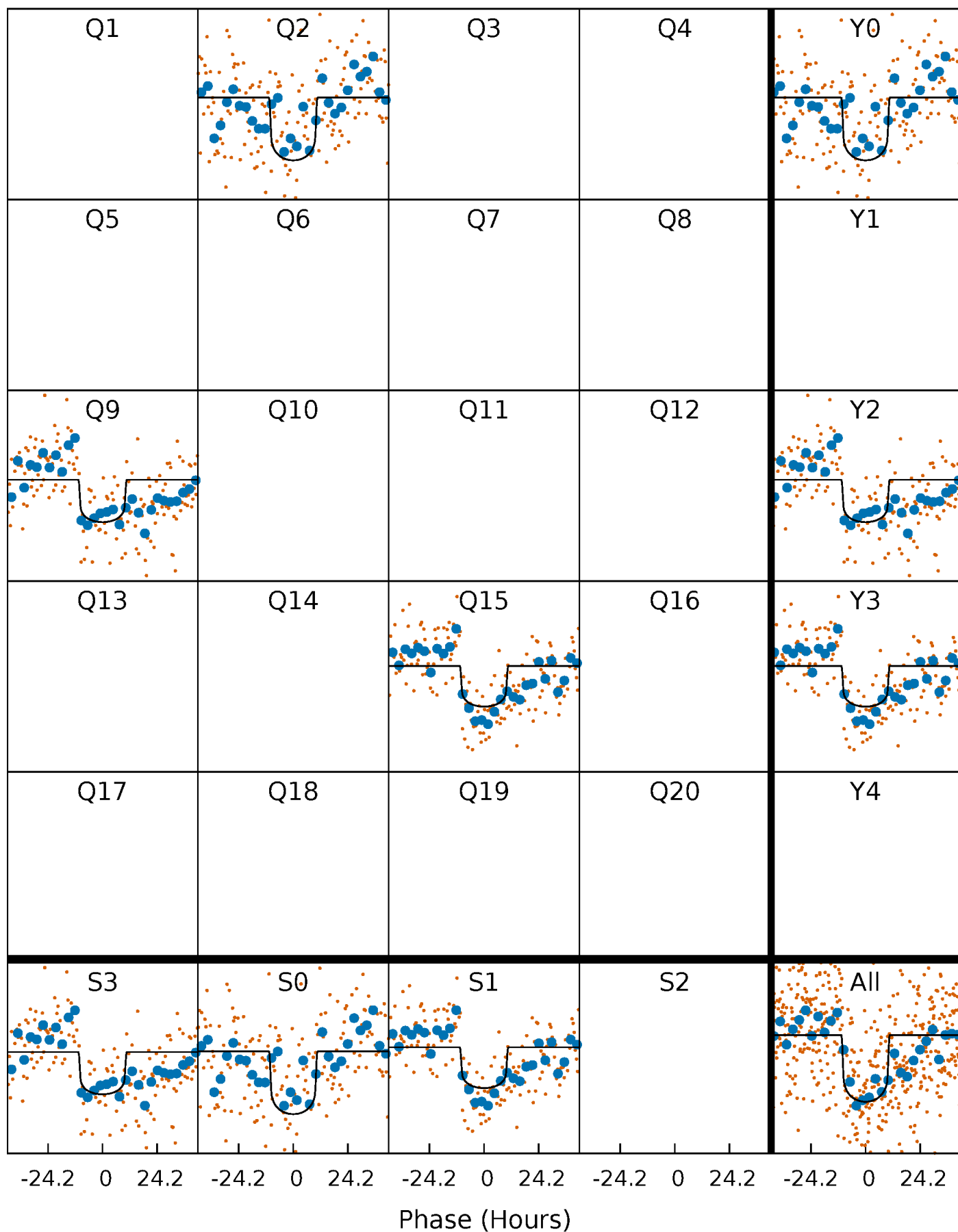
# PDC Quarter-Phased Transit Curves

TCE 008108813-02 P=622.922321 Days  $T_0=202.662038$  (BKJD)



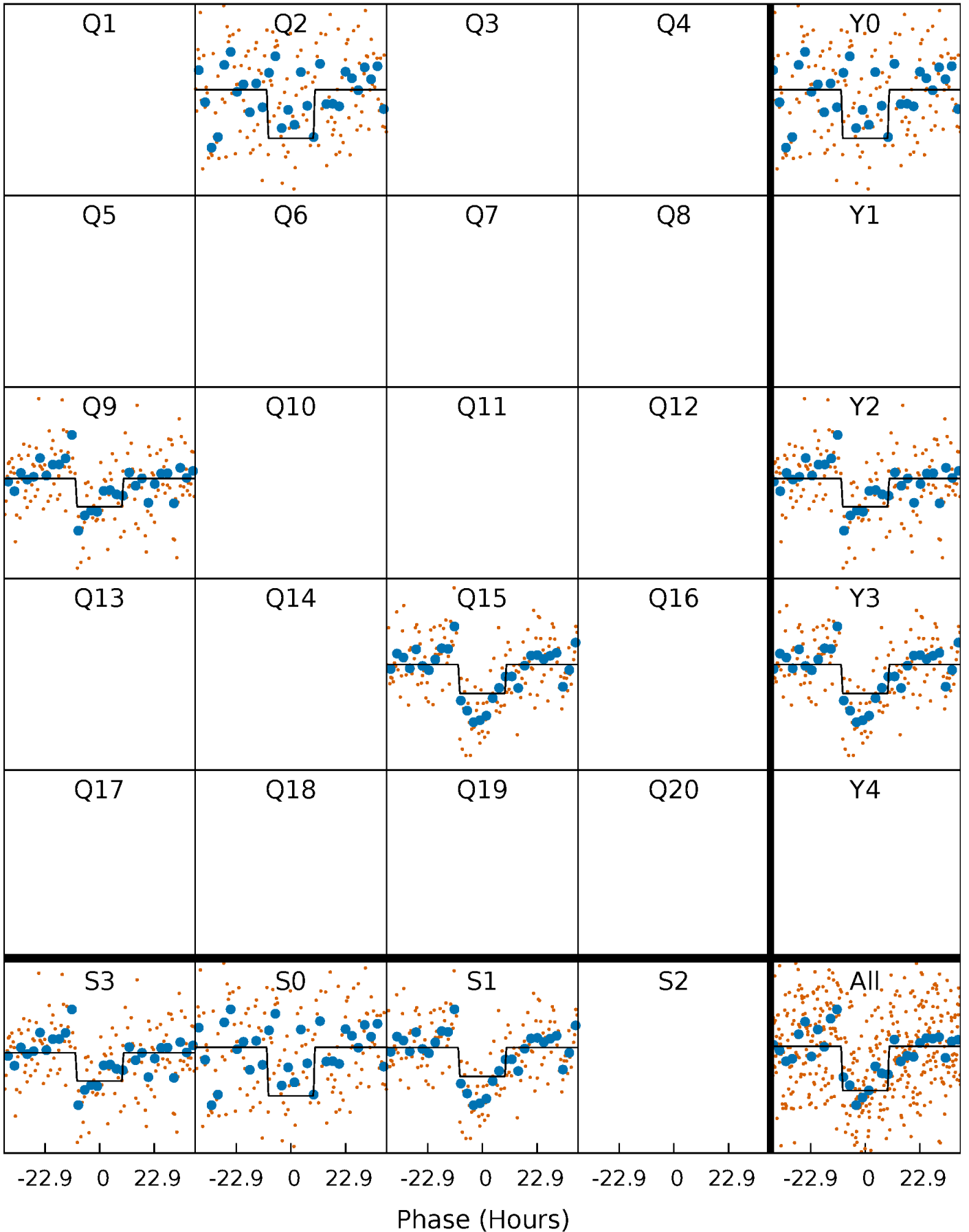
# DV Quarter-Phased Transit Curves

TCE 008108813-02 P=622.922321 Days  $T_0=202.662038$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

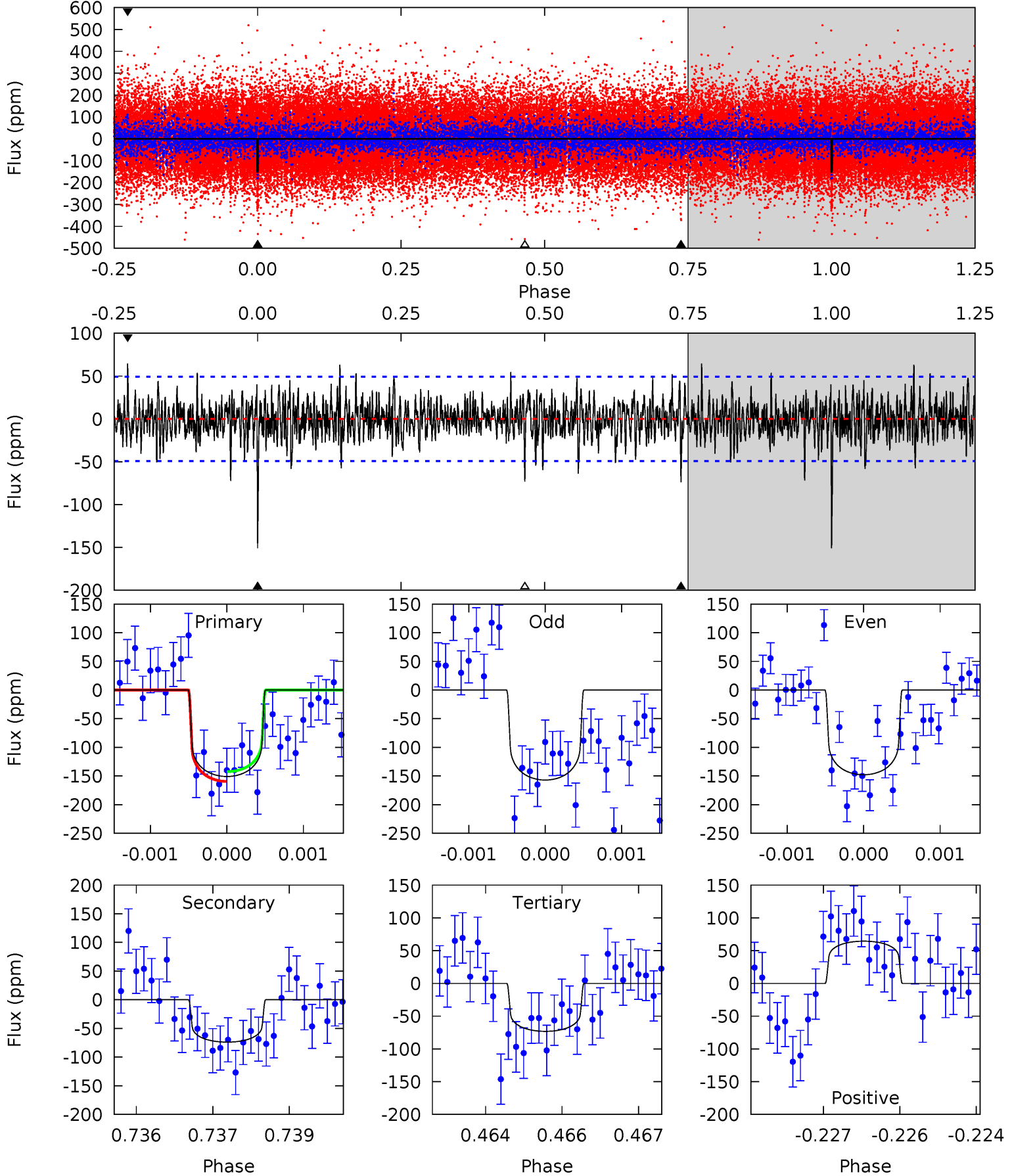
TCE 008108813-02 P=622.923888 Days  $T_0=202.651852$  (BKJD)



# DV Model-Shift Uniqueness Test

008108813-02, P = 622.922321 Days, E = 202.662038 Days

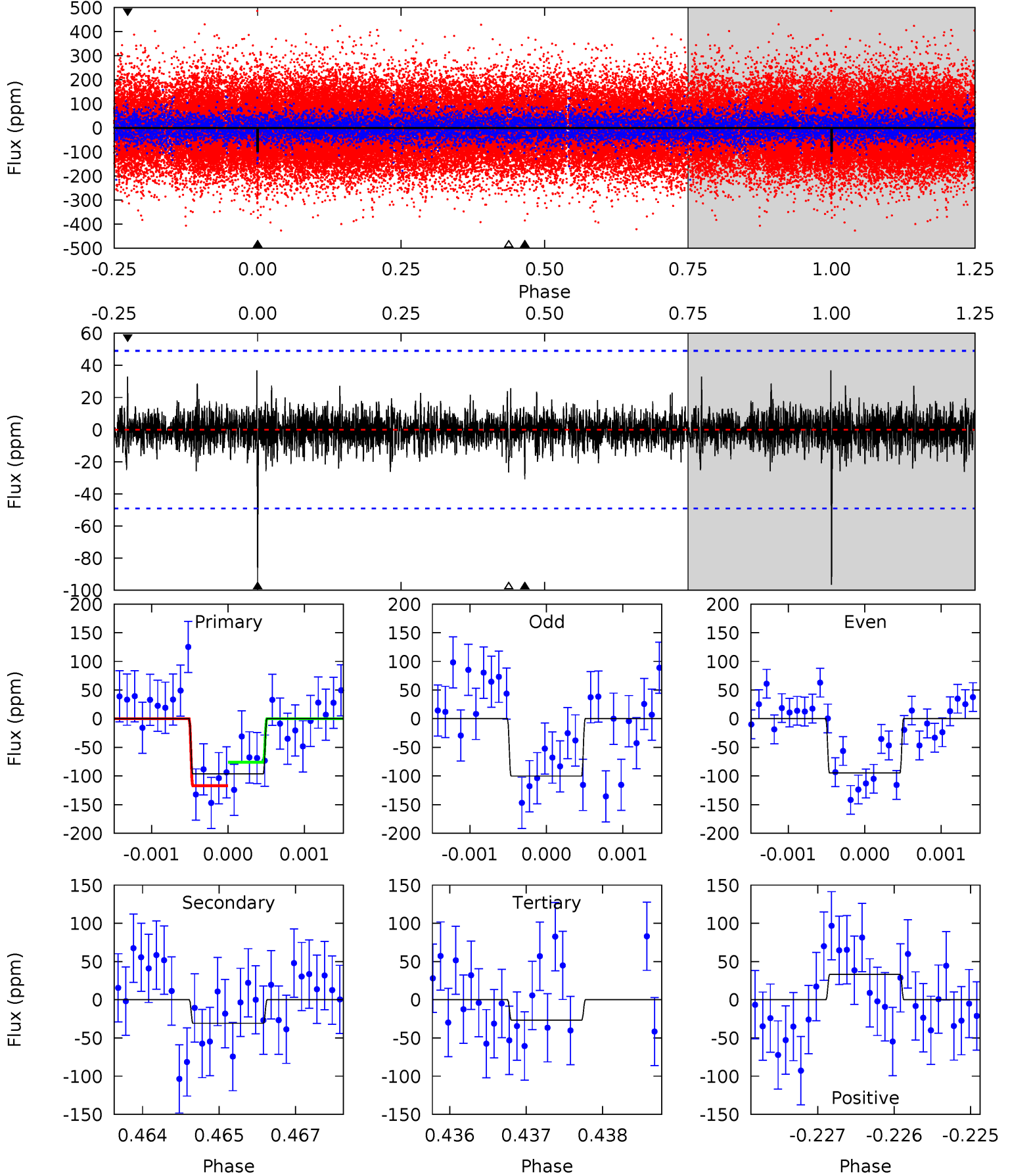
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	8.09	8.02	7.05	5.39	3.19	1.88	8.50	9.46	0.07	1.03	0.48	0.96	0.30	0.94



# Alt Model-Shift Uniqueness Test

008108813-02, P = 622.923888 Days, E = 202.651852 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
10.6	3.39	2.92	3.63	5.40	3.21	0.77	7.70	6.99	0.47	-0.24	0.29	0.96	0.28	2.26



### Stellar Parameters For KIC 008108813

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$6700^{+160}_{-220}$	$4.332^{+0.084}_{-0.196}$	$-0.280^{+0.250}_{-0.300}$	$1.233^{+0.401}_{-0.172}$	$1.198^{+0.183}_{-0.167}$	$0.901^{+0.322}_{-0.456}$
	+2%/-3%	+2%/-5%	+89%/-107%	+33%/-14%	+15%/-14%	+36%/-51%
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 008108813-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-74 \pm 9$	$1.81^{+0.35}_{-0.35}$	$377^{+27}_{-19}$	$5477^{+485}_{-403}$	$27617^{+15367}_{-8379}$
Alt.	$-31 \pm 9$	$1.37^{+0.36}_{-0.30}$	$377^{+26}_{-20}$	$5042^{+608}_{-487}$	$19782^{+13554}_{-8302}$

$T_{max}$  = 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

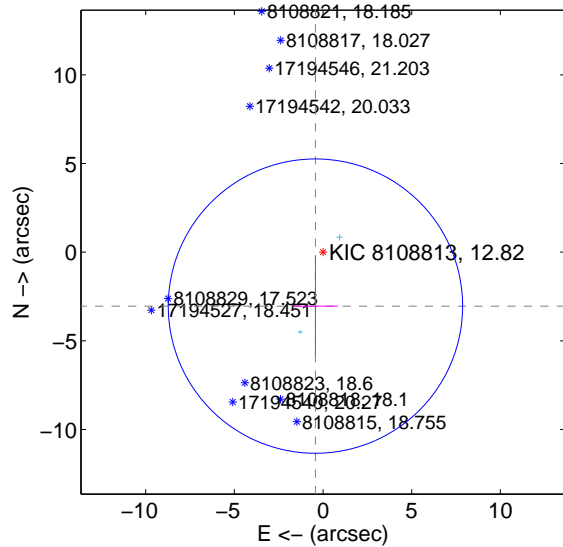
Supplemental centroid analysis for 008108813-02. Kepler magnitude: 12.82. Transit SNR 9.62

There are 2 quarters with good PRF difference image offsets

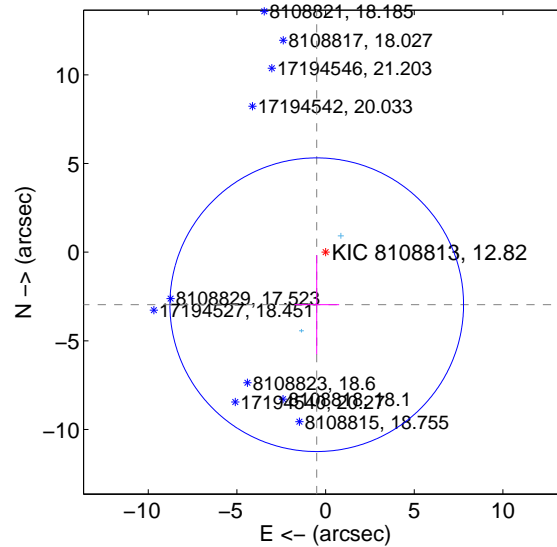
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.072 \pm 2.766$	1.11	$0.429 \pm 1.264$	$-3.042 \pm 2.788$
PRF-fit source offset from KIC position	$3.005 \pm 2.760$	1.09	$0.499 \pm 1.264$	$-2.964 \pm 2.791$
photometric centroid source offset	$0.44 \pm 1.47$	0.30	$-0.33 \pm 1.51$	$0.30 \pm 1.42$

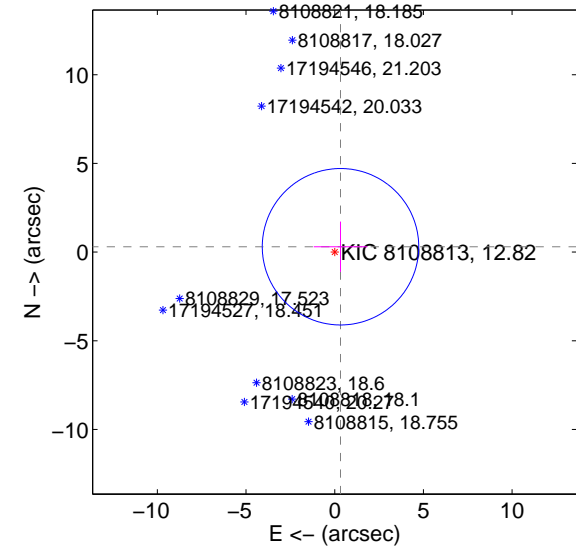
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

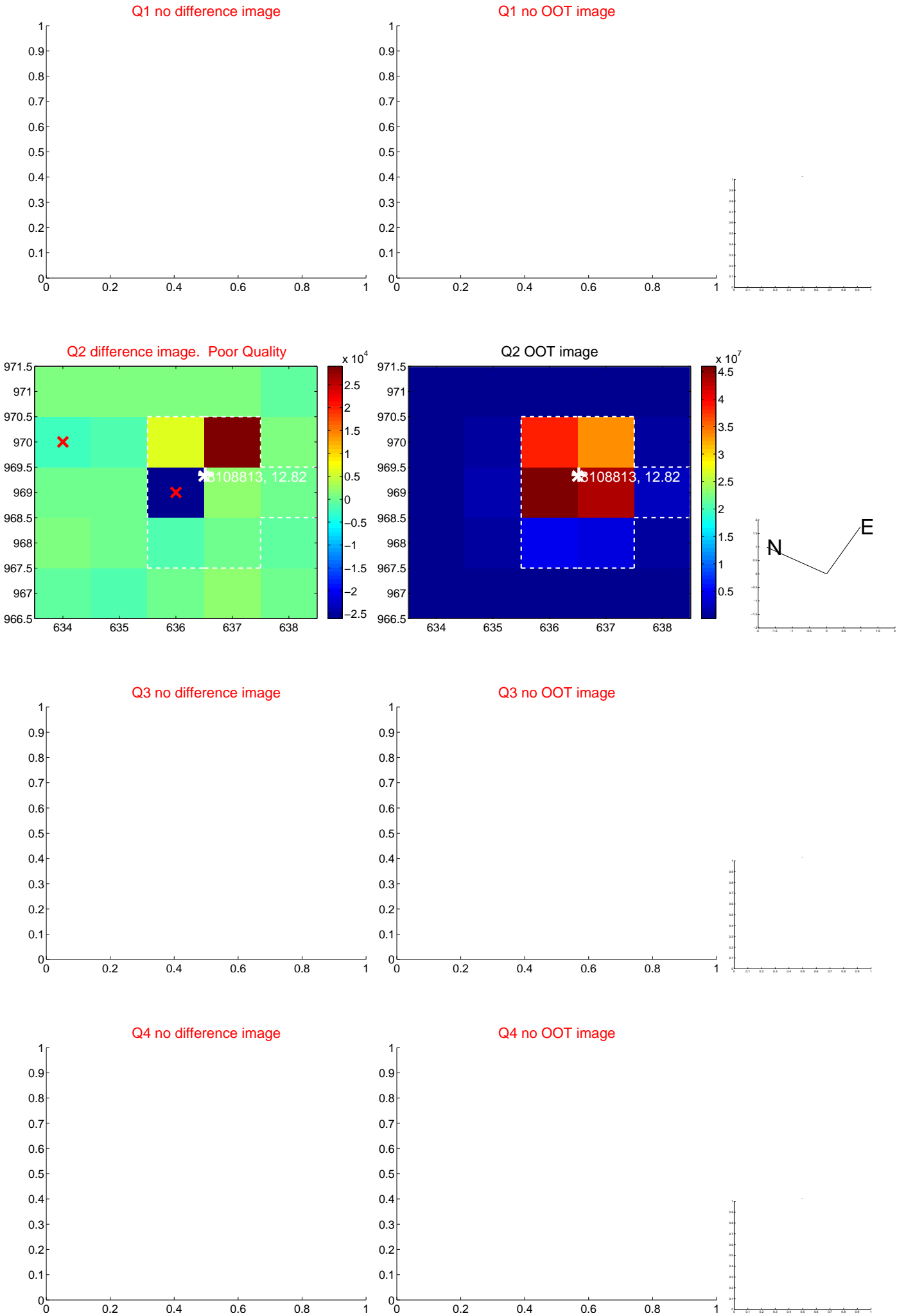


offset from photometric centroids

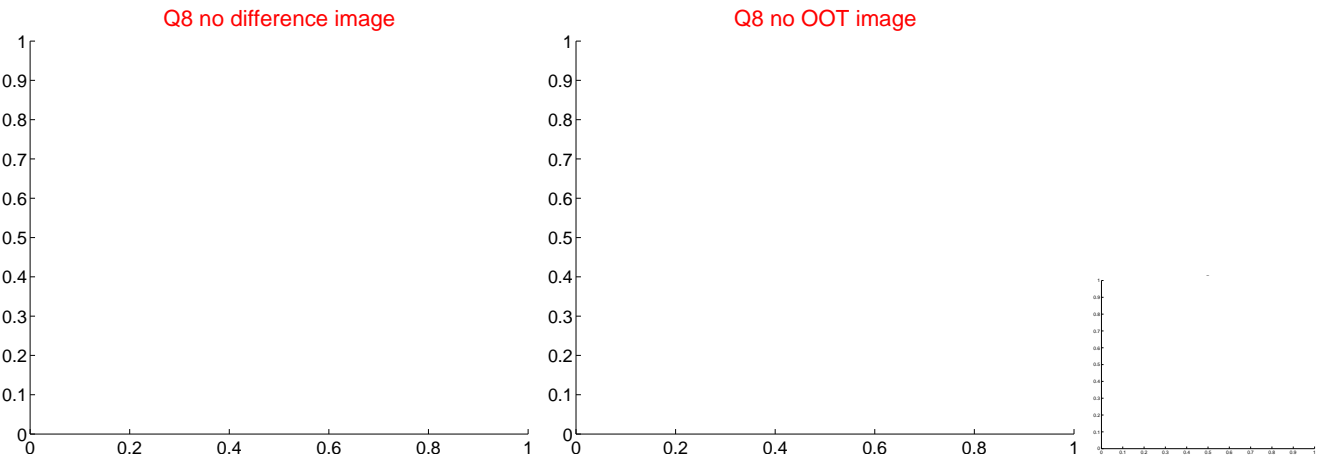


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

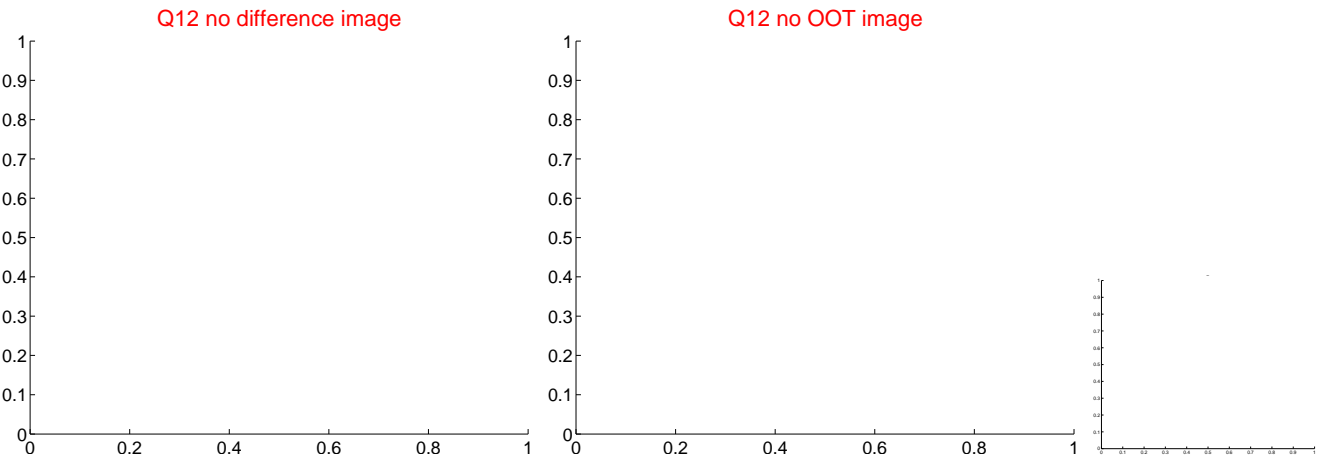
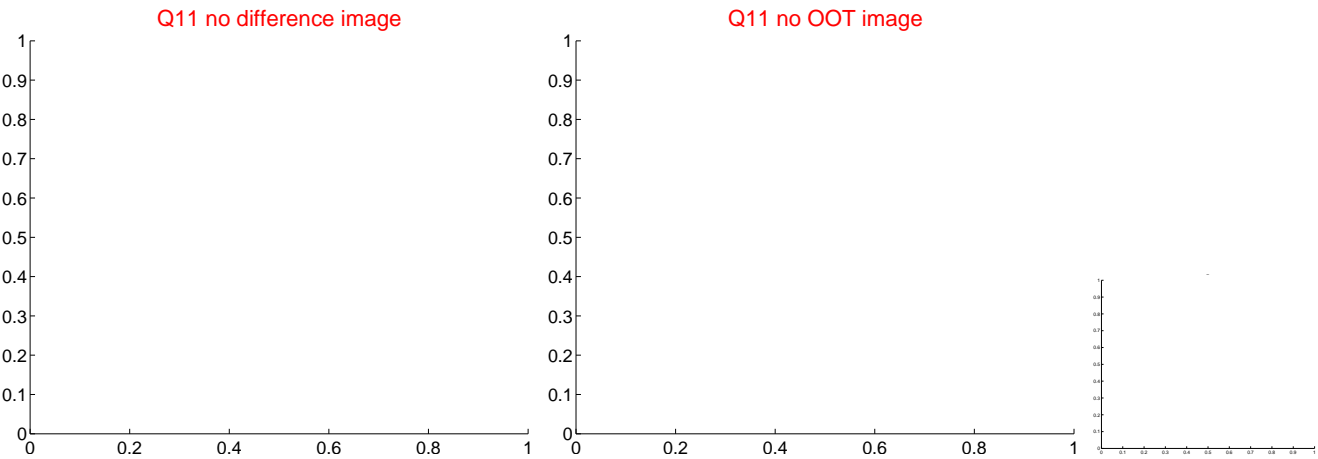
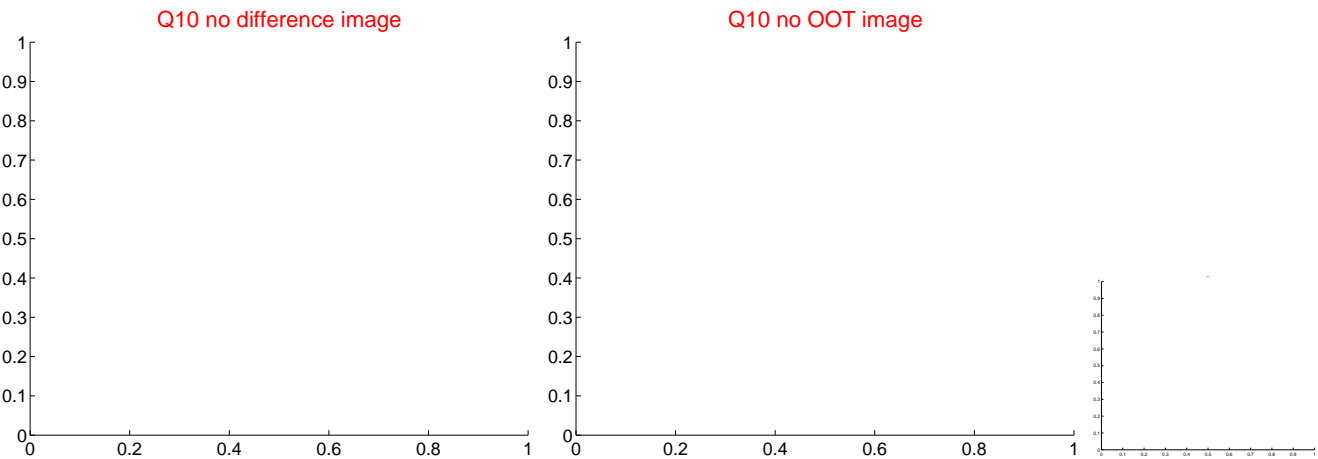
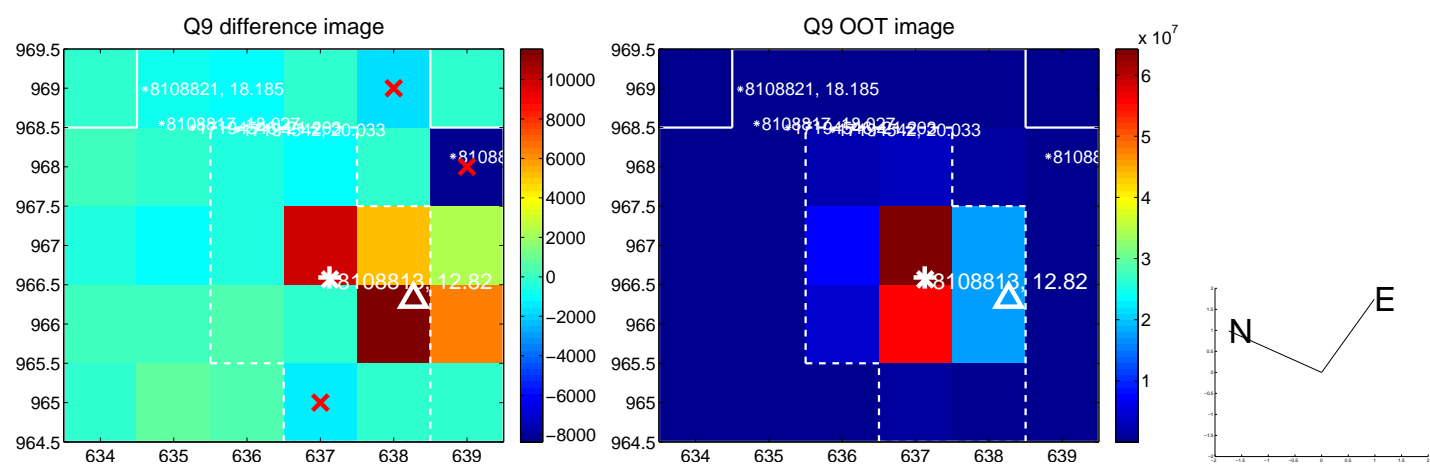
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

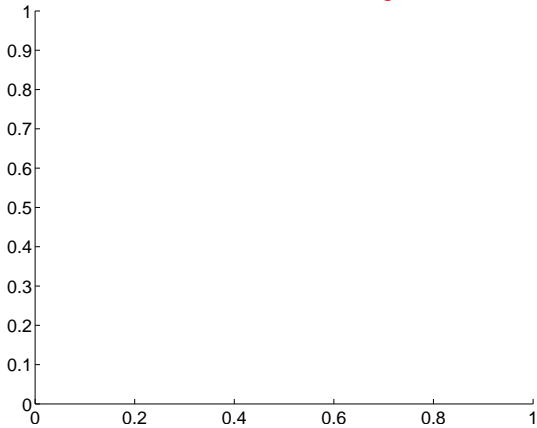


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

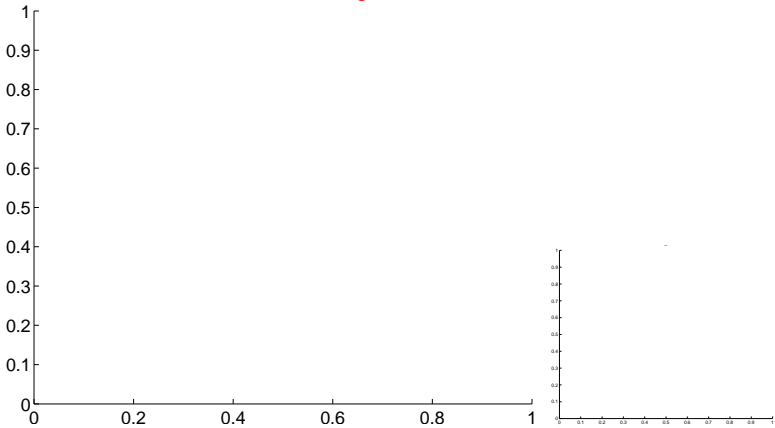


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

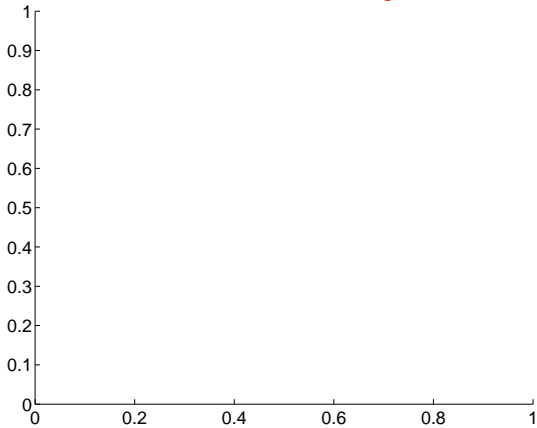
Q13 no difference image



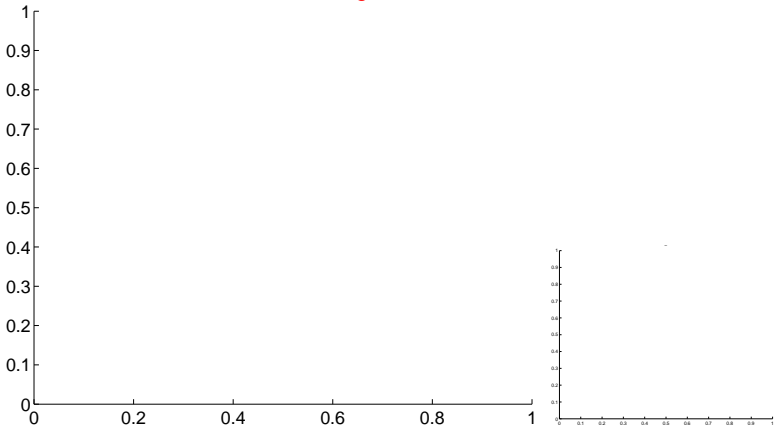
Q13 no OOT image



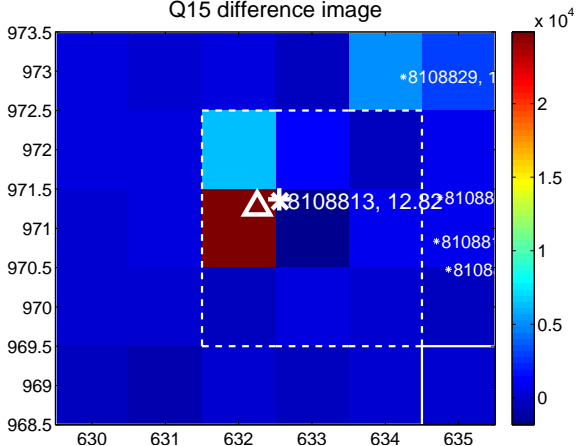
Q14 no difference image



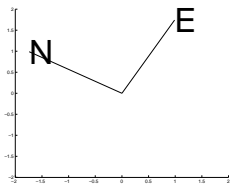
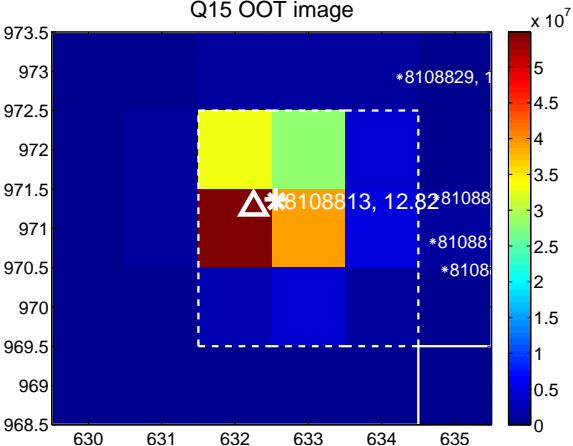
Q14 no OOT image



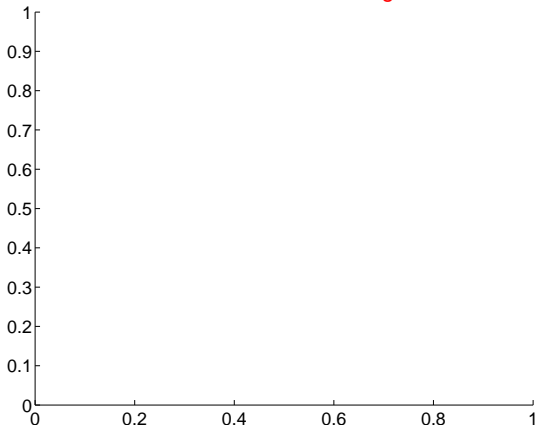
Q15 difference image



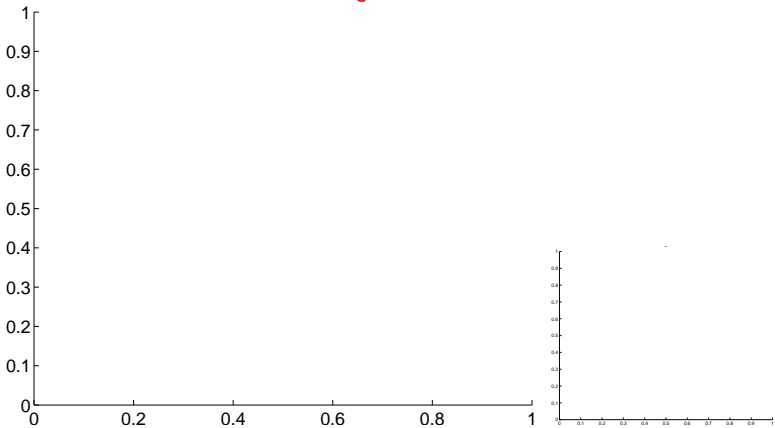
Q15 OOT image



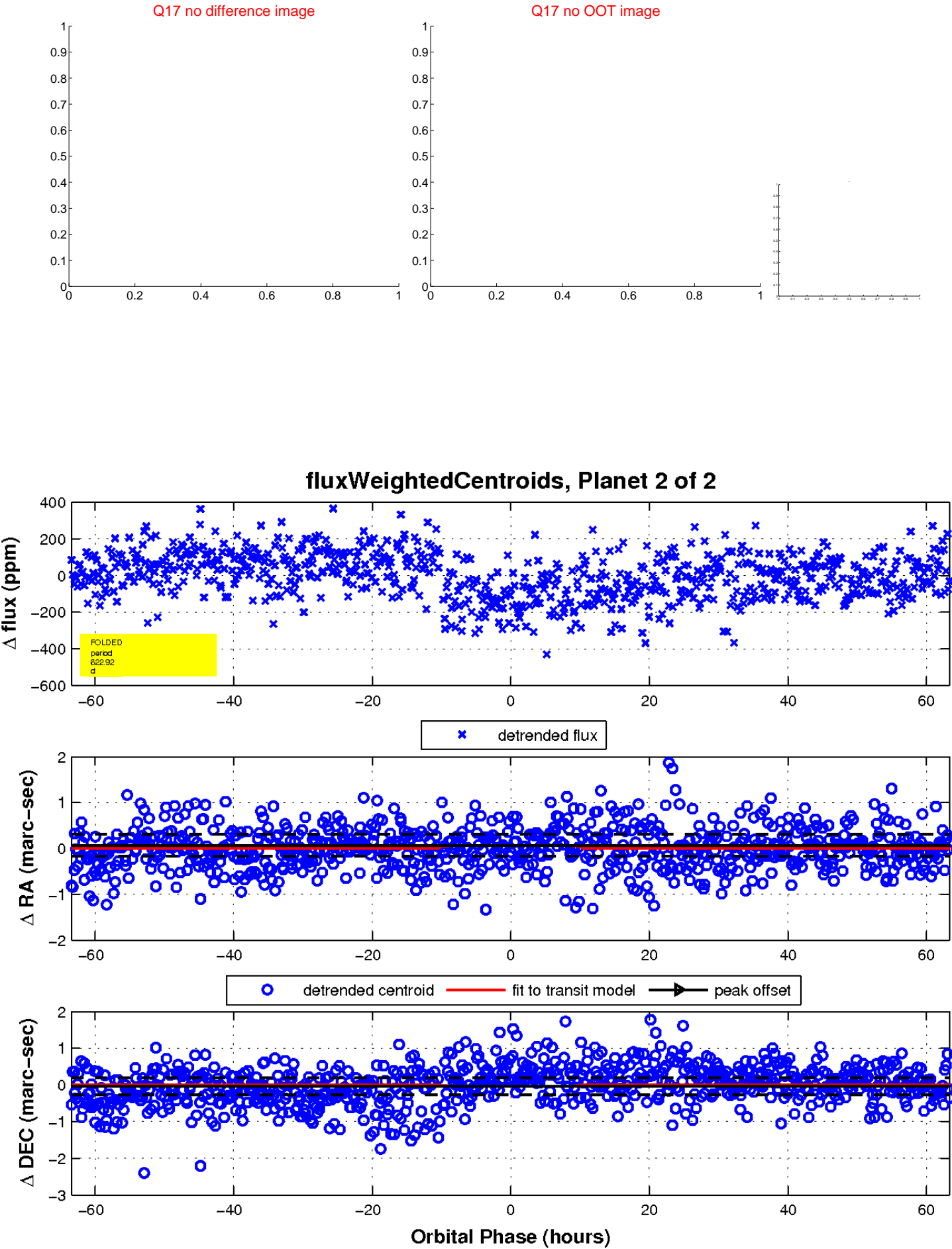
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

