

# KIC 008415377

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008415377-01	OBS	No	481.928267	431.452377	130.9	9.915	9.4	8.4	1.23	6181	1.60	1.32

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008415377-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—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.

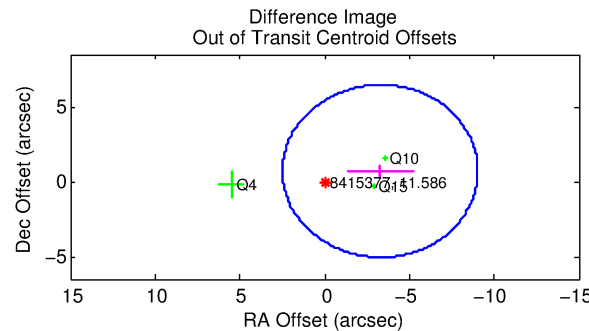
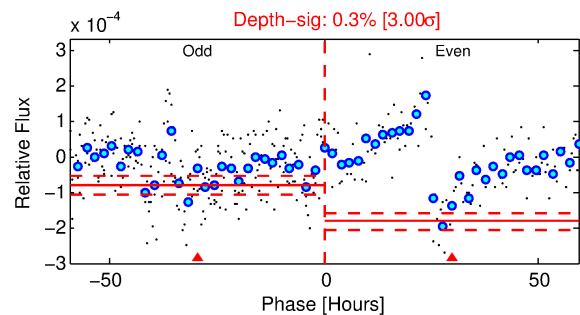
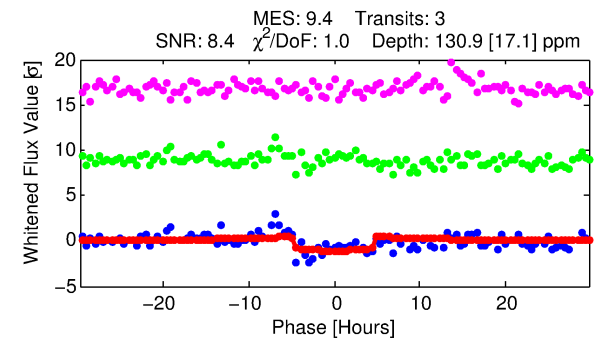
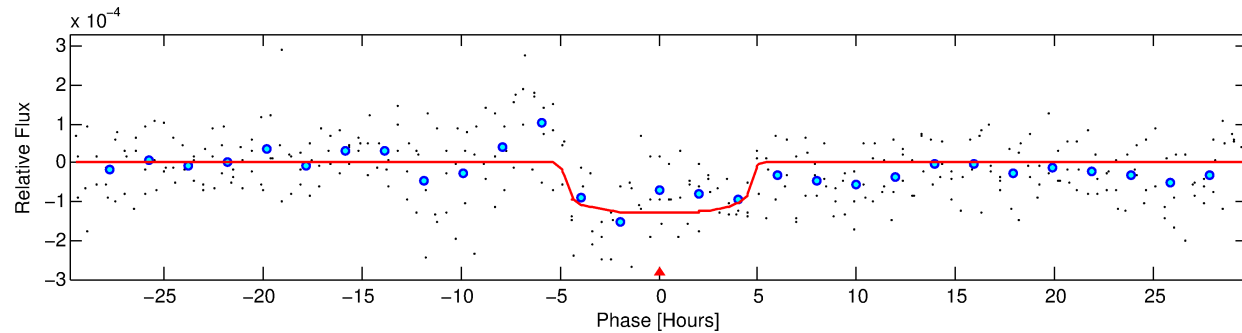
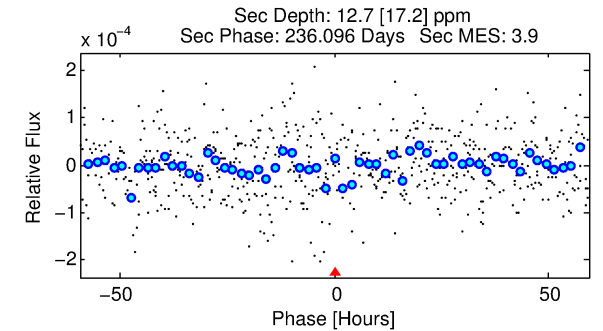
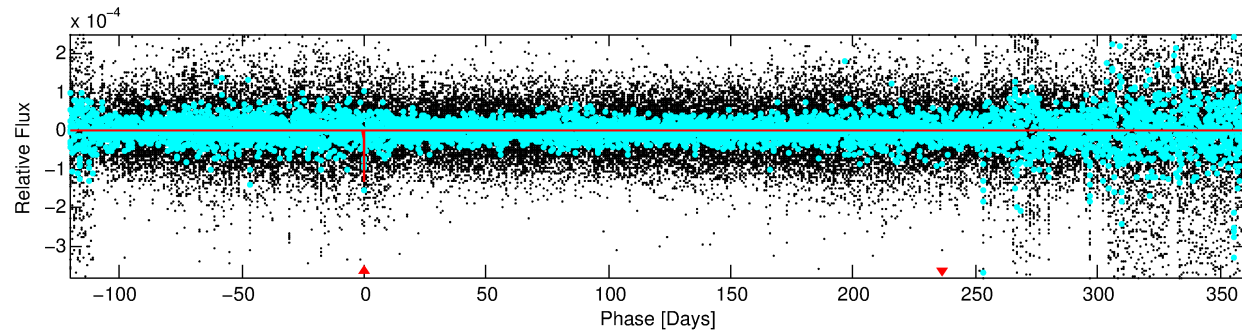
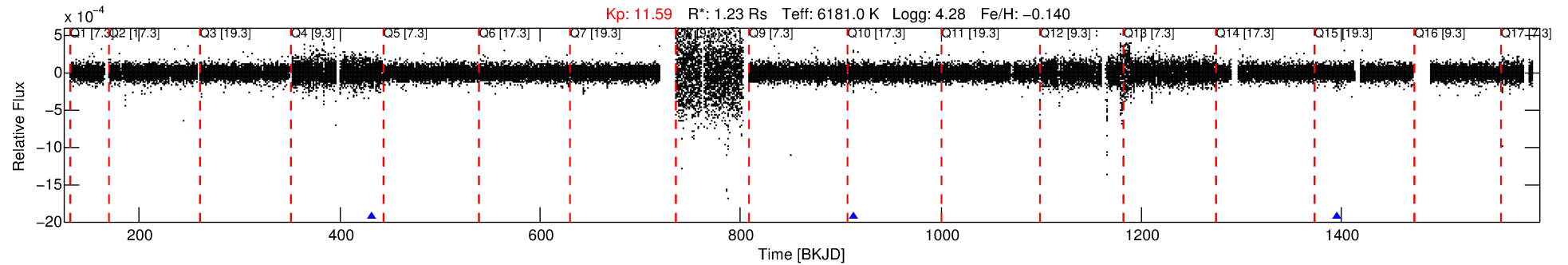
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008415377-01

No Significant Match Found

# DV One-Page Summary

KIC: 8415377 Candidate: 1 of 1 Period: 481.928 d



## DV Fit Results:

Period = 481.92827 [0.01040] d  
Epoch = 431.4524 [0.0133] BKJD  
Rp/R\* = 0.0119 [0.0027]  
a/R\* = 199.44 [222.47]  
b = 0.86 [0.35]  
Seff = 1.32 [0.50]  
Teq = 273 [26] K  
Rp = 1.60 [0.60] Re  
a = 1.2206 [0.3011] AU  
Ag = 4075.17 [5986.65] [0.68σ]  
Teffp = 3377 [1208] K [2.57σ]

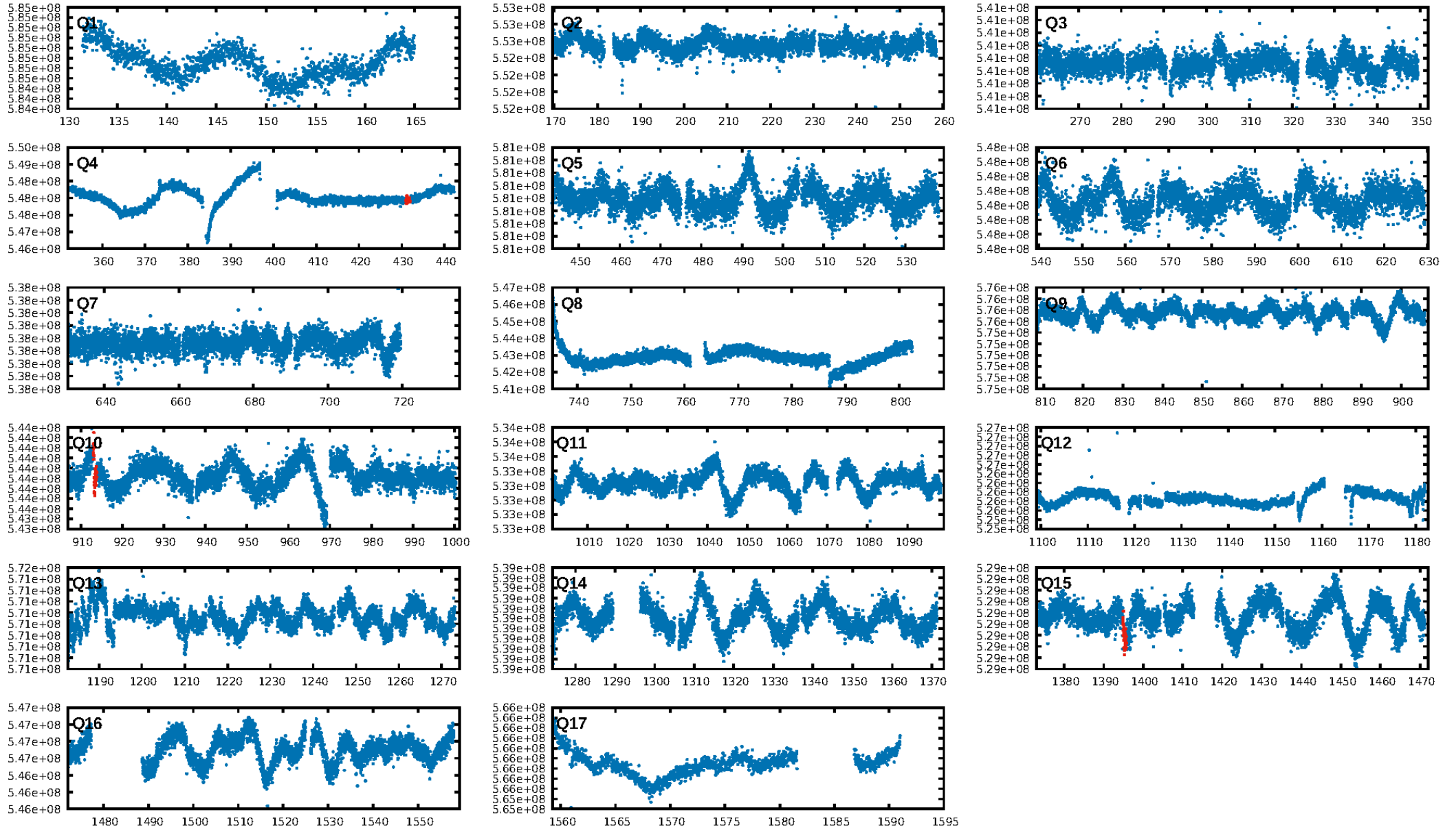
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 30.0%  
ModelChiSquareGof-sig: 93.2%  
**Bootstrap-pfa: 2.42e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.311  
Centroid-sig: 84.9%  
Centroid-so: 0.257 arcsec [0.23σ]  
OotOffset-rm: 3.352 arcsec [1.75σ]  
KicOffset-rm: 3.626 arcsec [1.75σ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

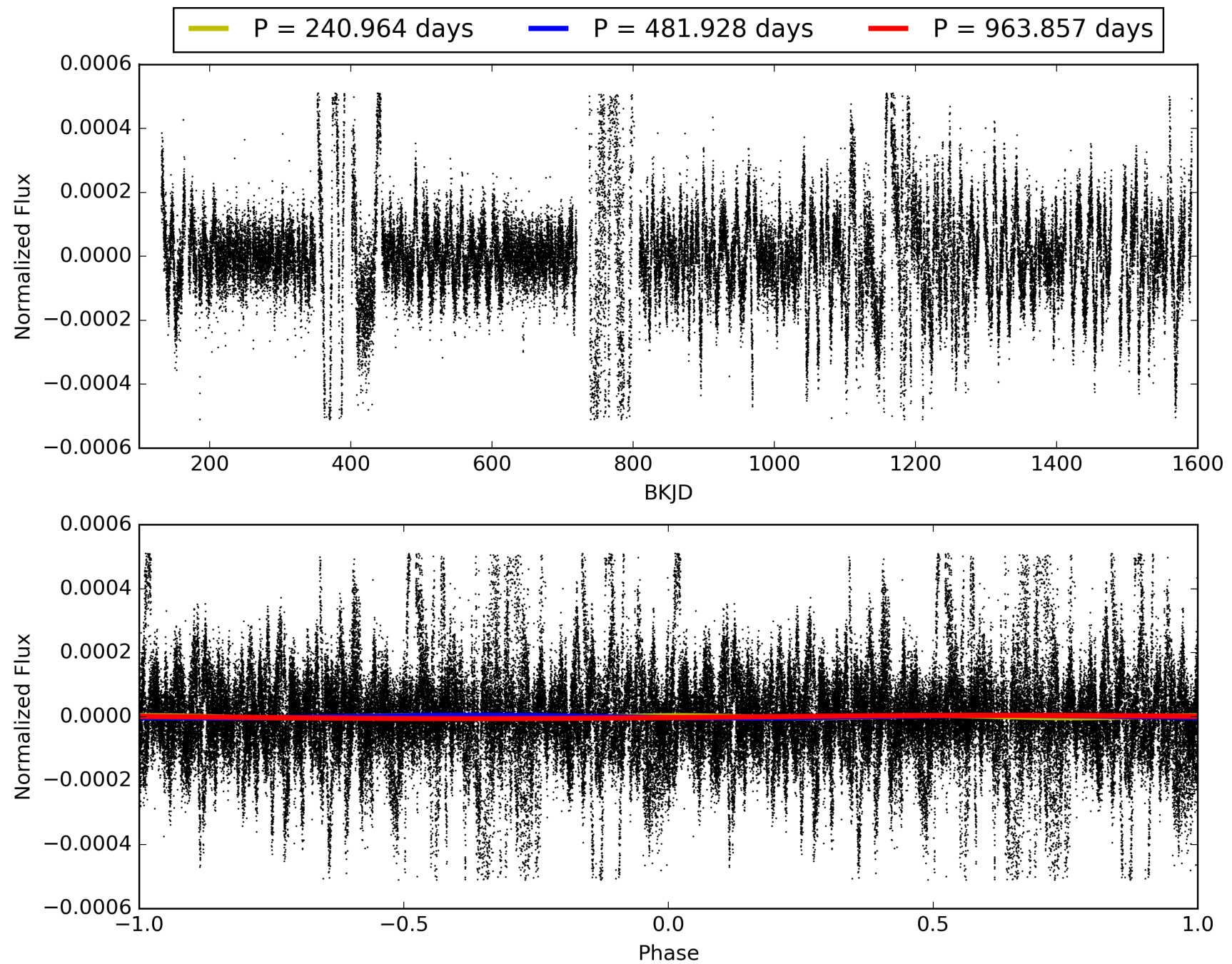
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:27:12 Z

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

# TCE 008415377-01, PDC Light Curves

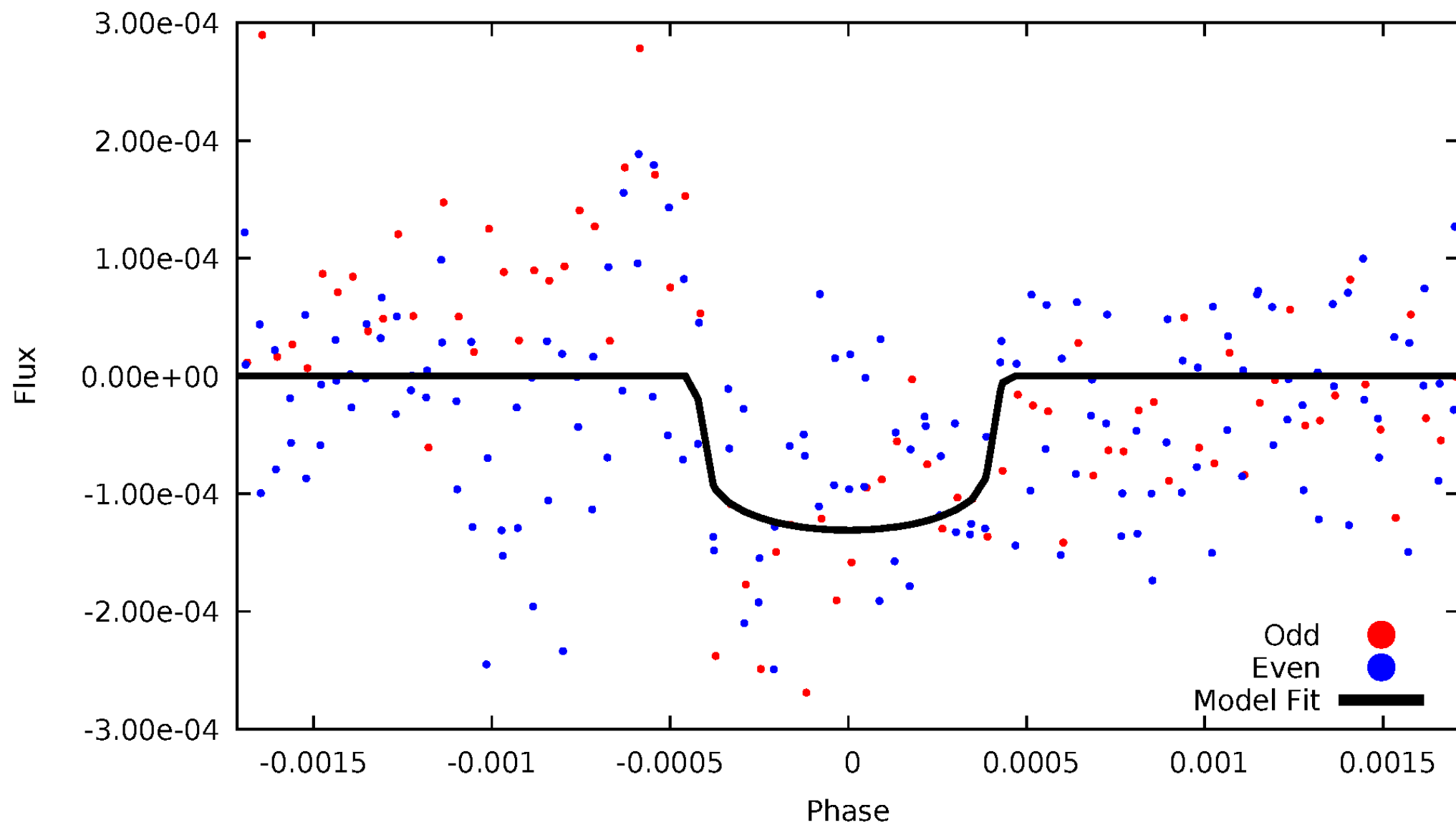


TCE 008415377-01



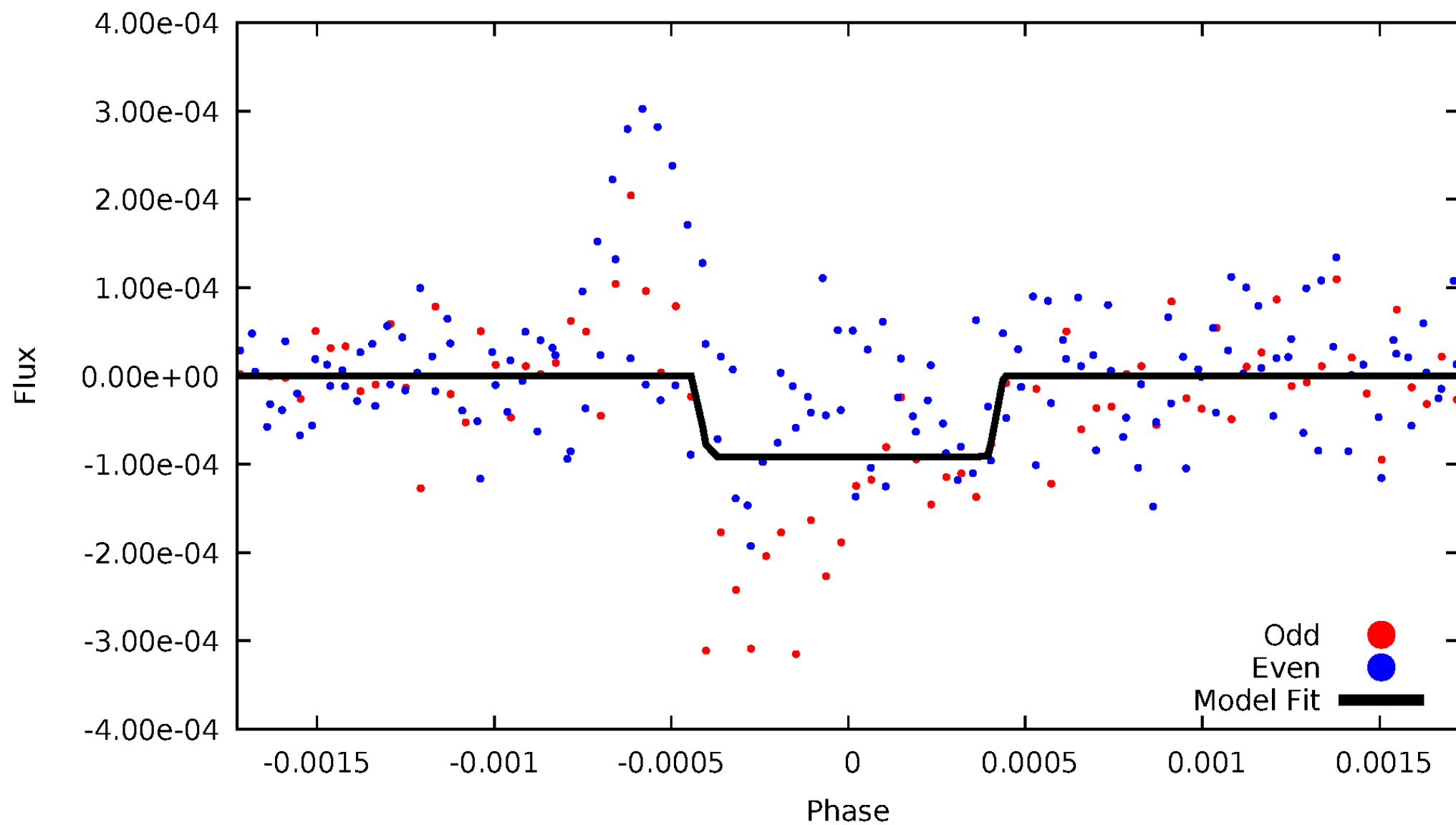
# DV Odd/Even

TCE 008415377-01

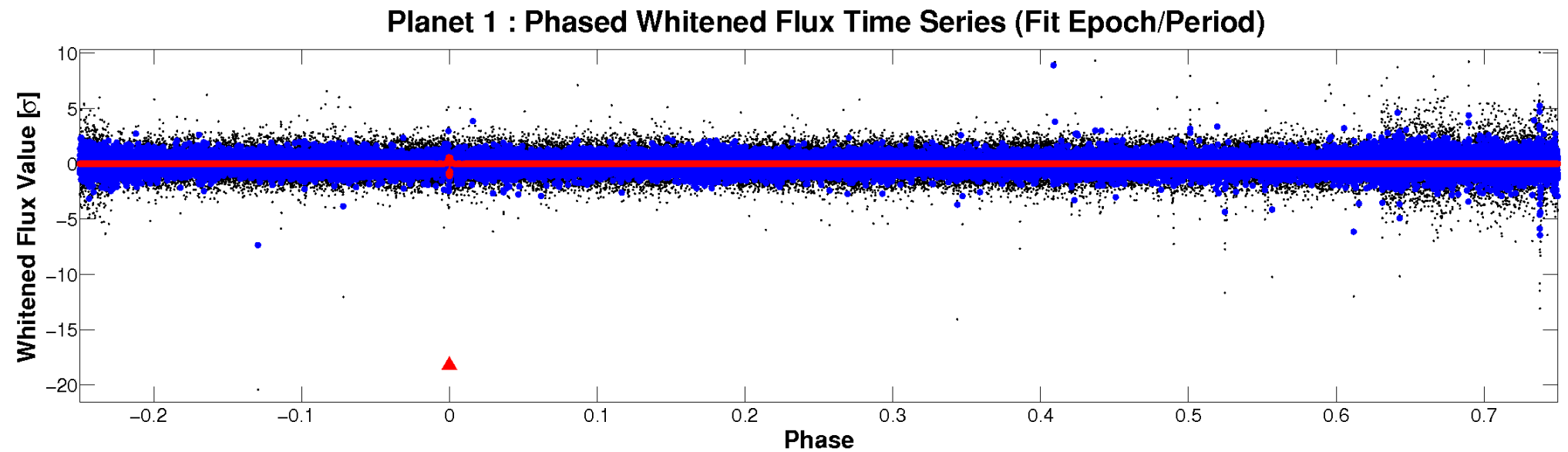
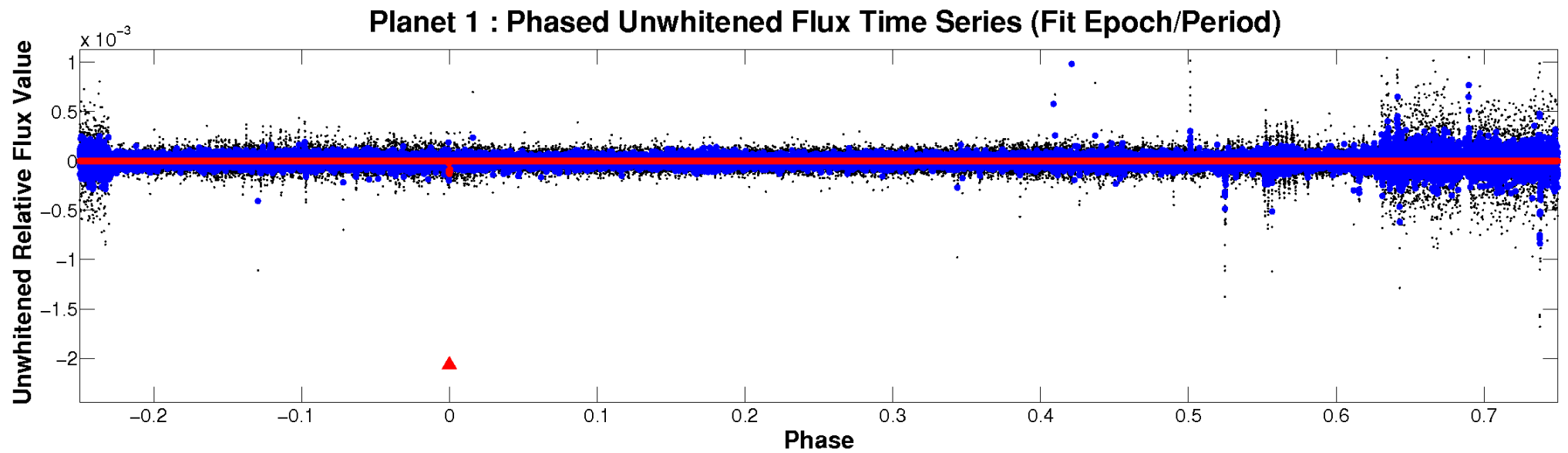


# ALT Odd/Even

TCE 008415377-01

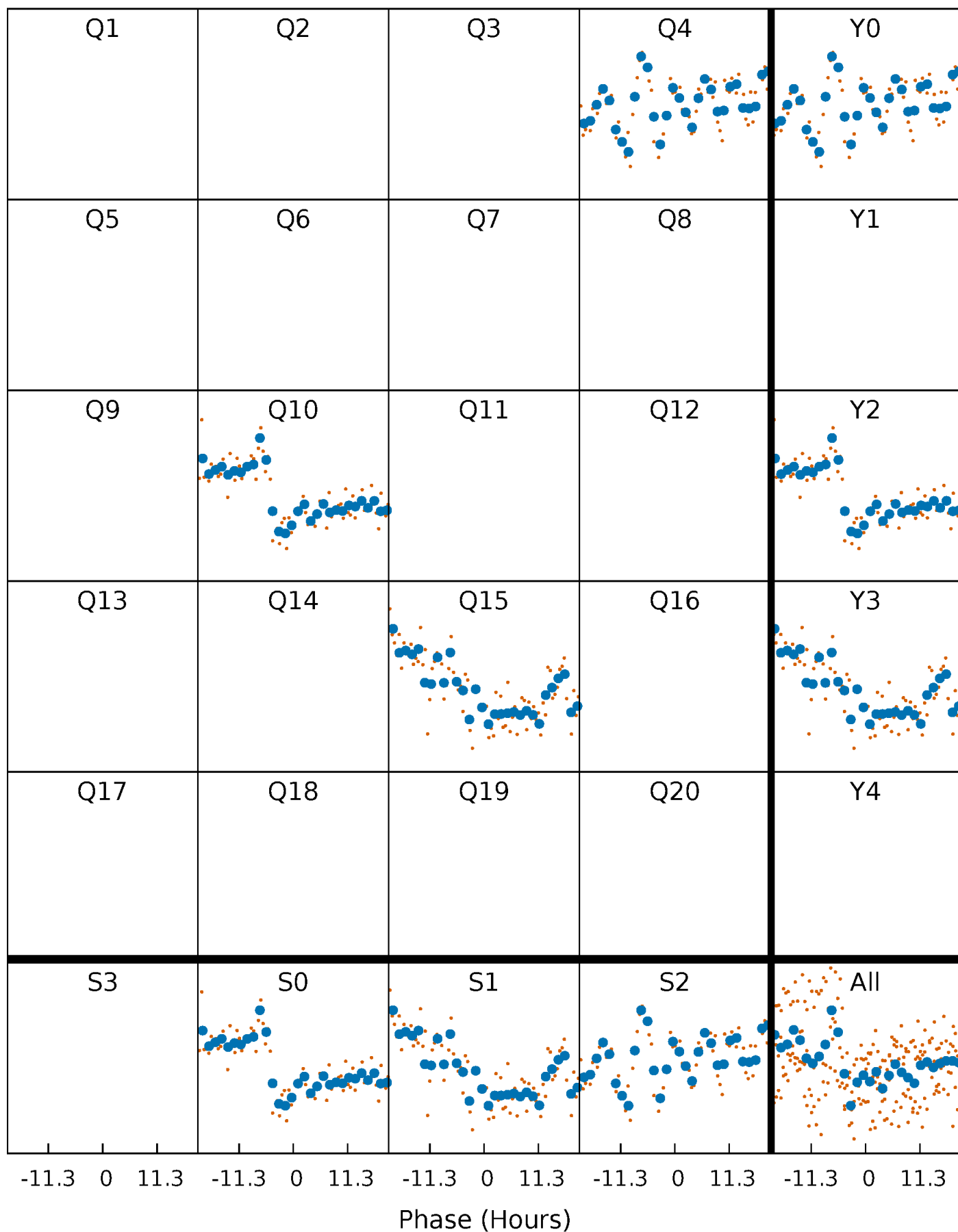


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

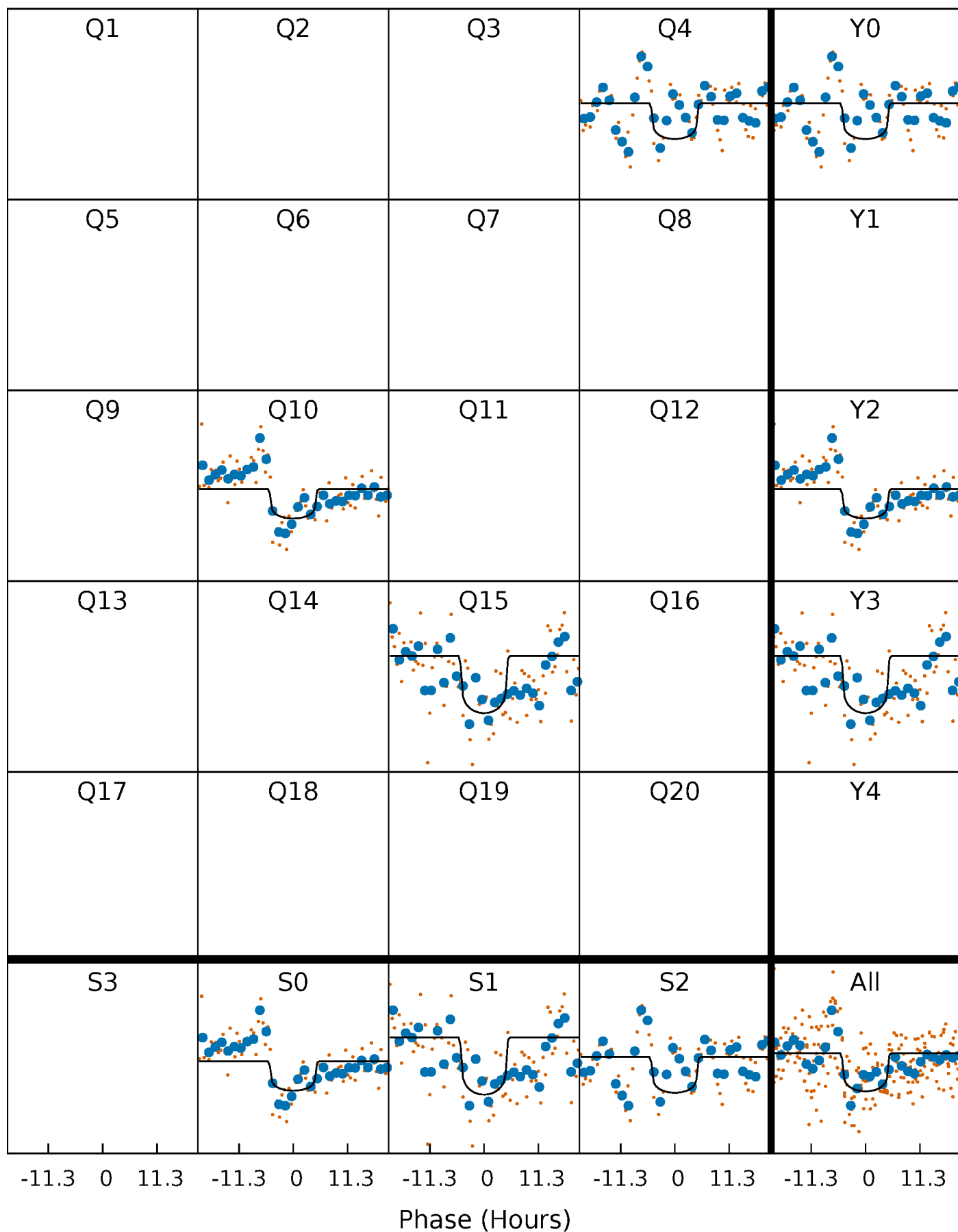
TCE 008415377-01 P=481.928267 Days  $T_0=431.452377$  (BKJD)





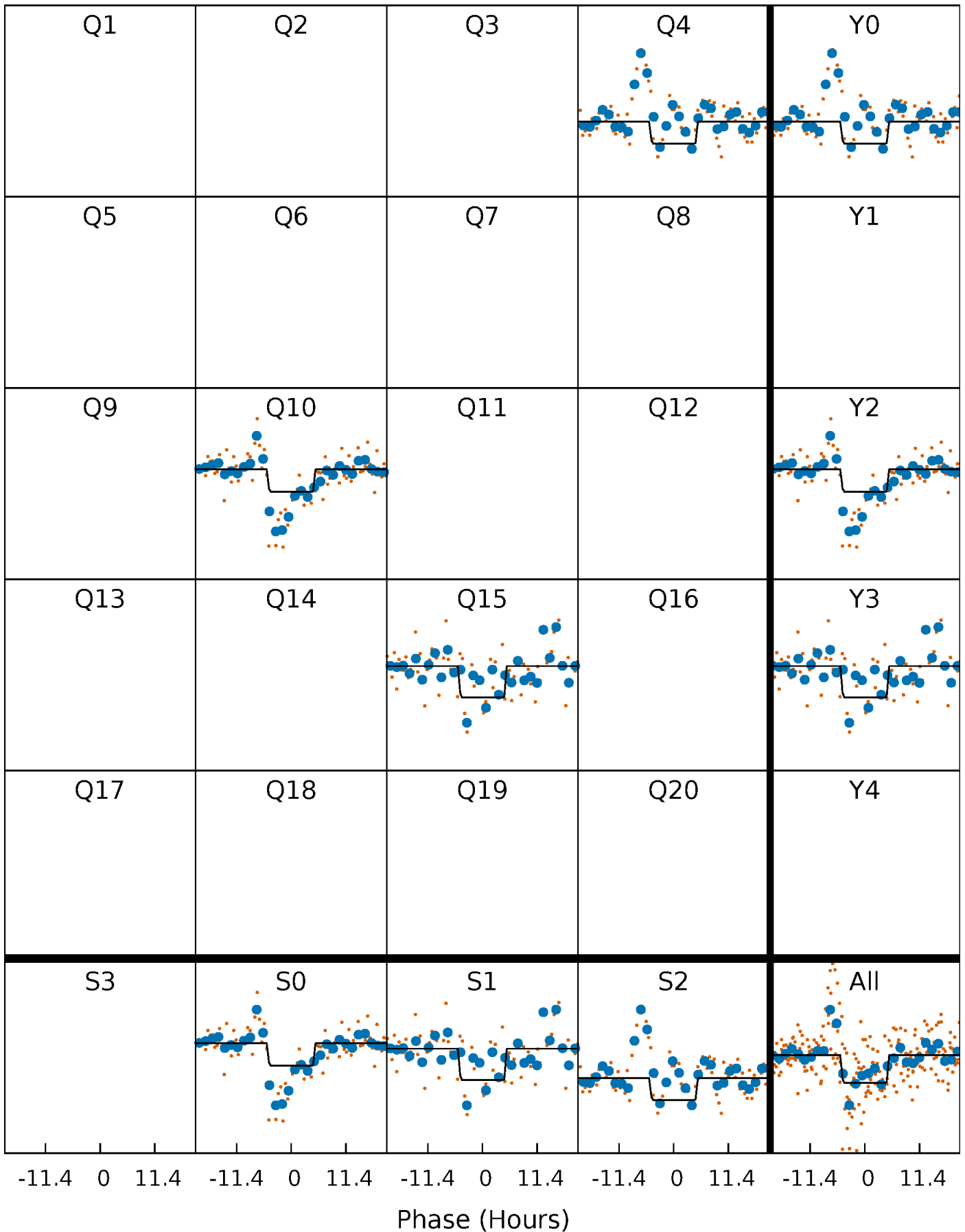
# DV Quarter-Phased Transit Curves

TCE 008415377-01 P=481.928267 Days  $T_0=431.452377$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

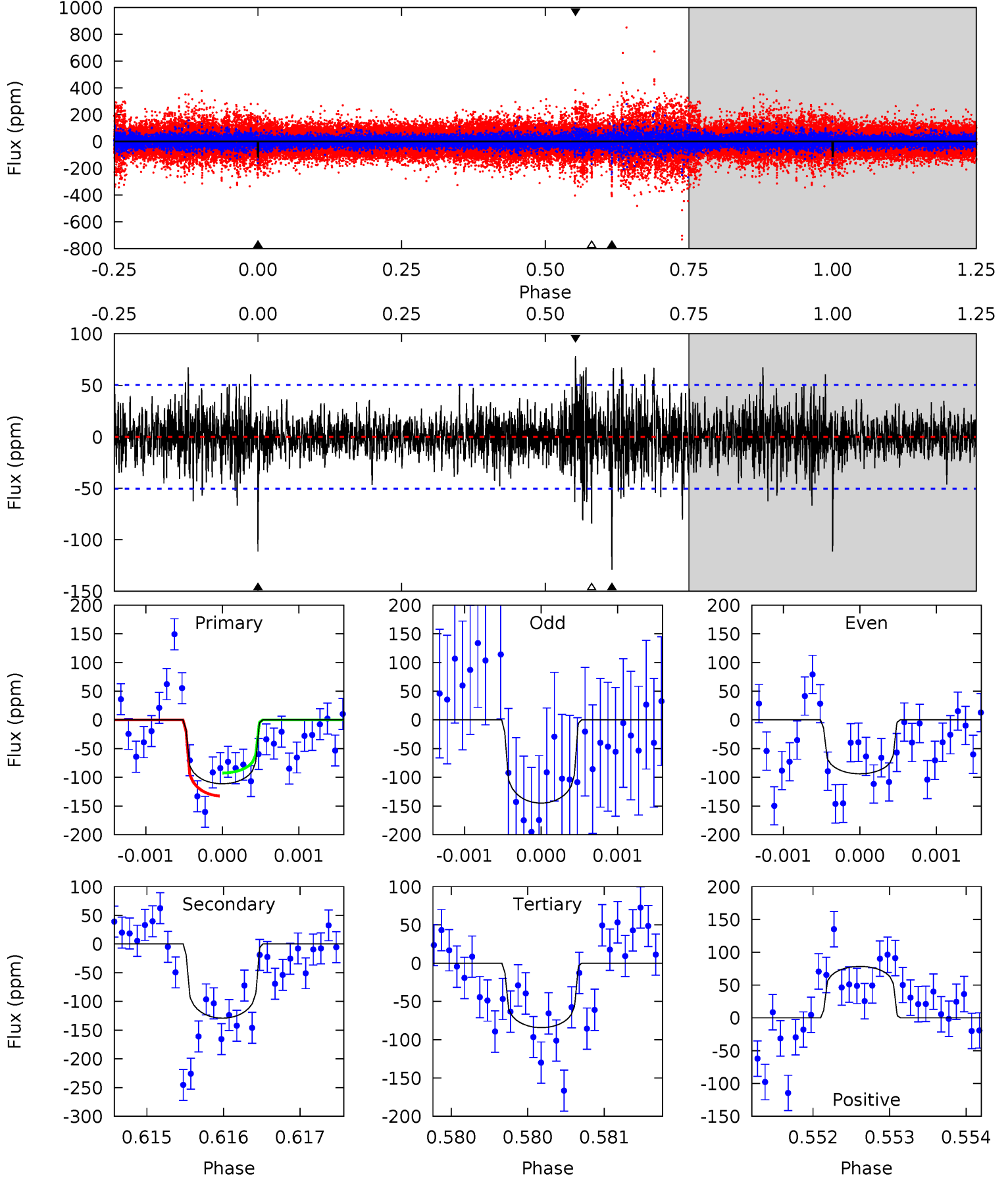
TCE 008415377-01 P=481.945946 Days  $T_0=431.448913$  (BKJD)



# DV Model-Shift Uniqueness Test

008415377-01, P = 481.928267 Days, E = 431.452377 Days

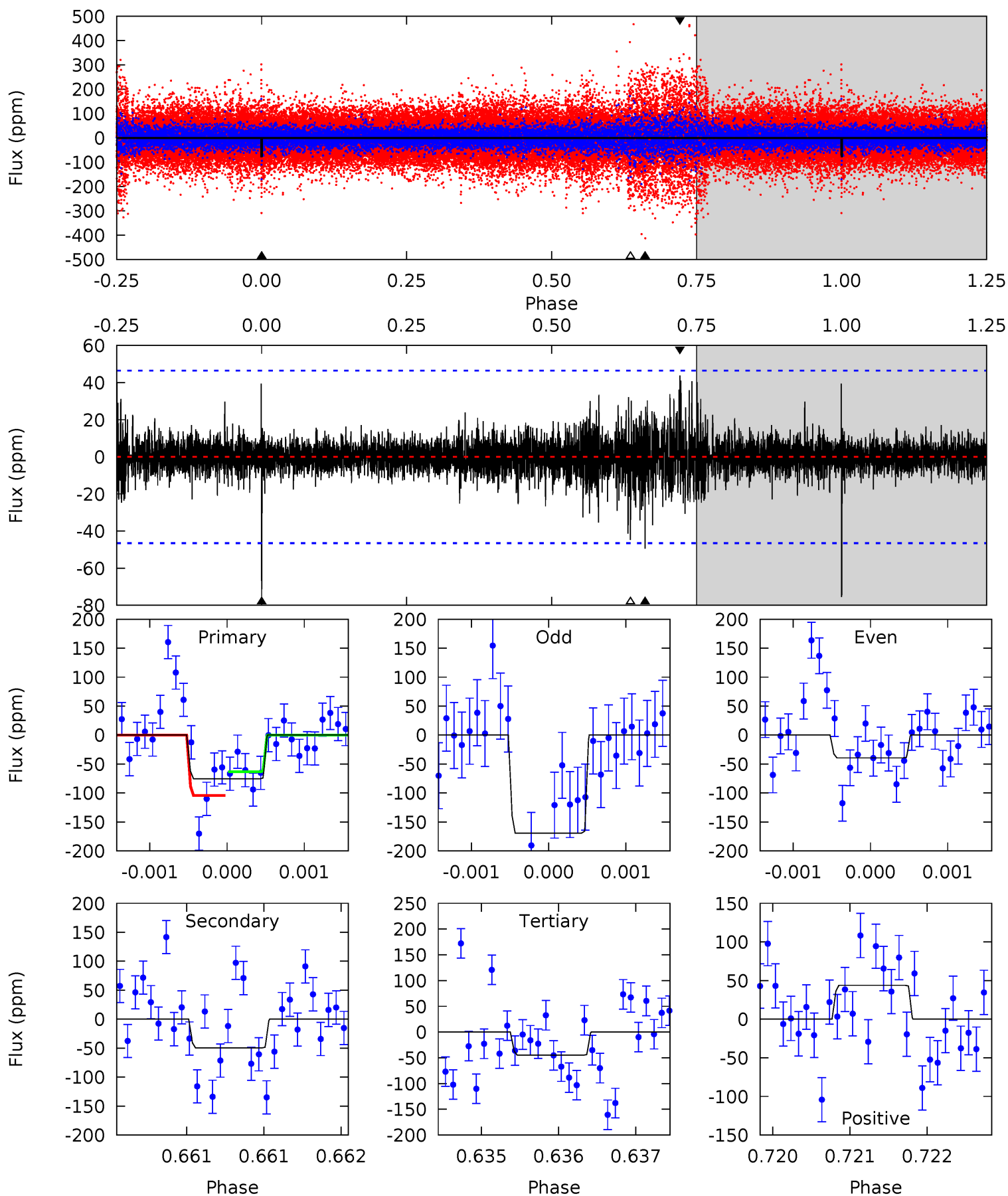
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	14.0	9.14	8.51	5.47	3.32	1.87	2.94	3.57	4.87	5.50	2.18	0.90	0.38	2.09



# Alt Model-Shift Uniqueness Test

008415377-01, P = 481.945946 Days, E = 431.448913 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
8.90	5.84	5.28	5.17	5.48	3.34	0.88	3.63	3.73	0.56	0.67	6.03	1.47	0.37	2.41



### Stellar Parameters For KIC 008415377

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6181^{+166}_{-185}$	$4.279^{+0.158}_{-0.193}$	$-0.140^{+0.250}_{-0.300}$	$1.227^{+0.363}_{-0.242}$	$1.044^{+0.168}_{-0.122}$	$0.795^{+0.594}_{-0.388}$
	+3%/-3%	+4%/-5%	+179%/-214%	+30%/-20%	+16%/-12%	+75%/-49%
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 008415377-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-129 \pm 9$	$1.58^{+0.51}_{-0.38}$	$381^{+28}_{-24}$	$6057^{+894}_{-618}$	$42363^{+31712}_{-17296}$
Alt.	$-50 \pm 8$	$1.28^{+0.46}_{-0.39}$	$384^{+30}_{-24}$	$5372^{+986}_{-627}$	$24299^{+28315}_{-11063}$

$T_{\text{max}}$  = 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

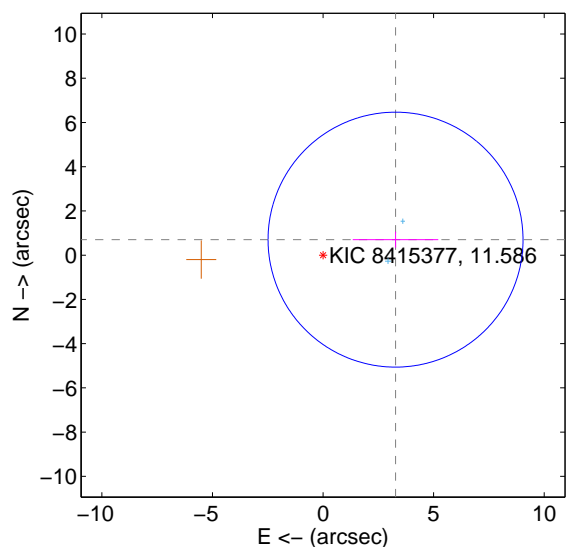
Supplemental centroid analysis for 008415377-01. **Kepler magnitude: 11.59.** Transit SNR 8.40

**There are 2 quarters with good PRF difference image offsets**

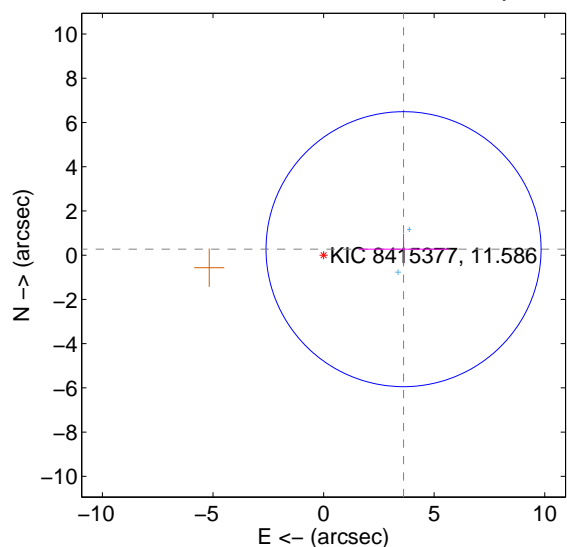
The direct PRF centroid is offset from the target star catalog position by about 0.66 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.352 \pm 1.921$	1.75	$-3.278 \pm 1.933$	$0.702 \pm 0.362$
PRF-fit source offset from KIC position	$3.626 \pm 2.072$	1.75	$-3.616 \pm 2.040$	$0.271 \pm 0.691$
photometric centroid source offset	$0.26 \pm 1.12$	0.23	$-0.26 \pm 1.12$	$-0.03 \pm 1.01$

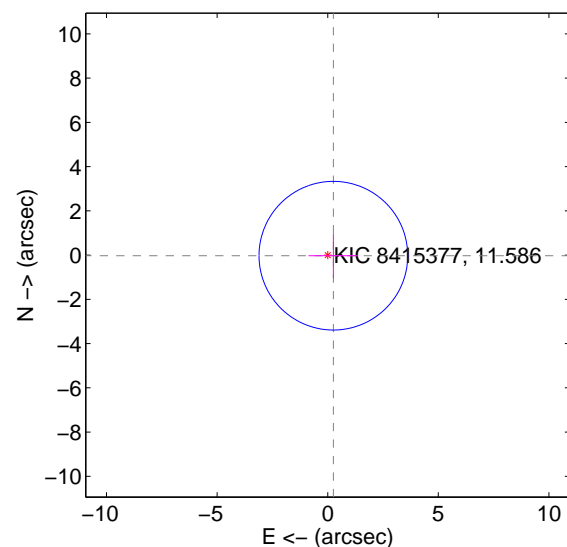
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

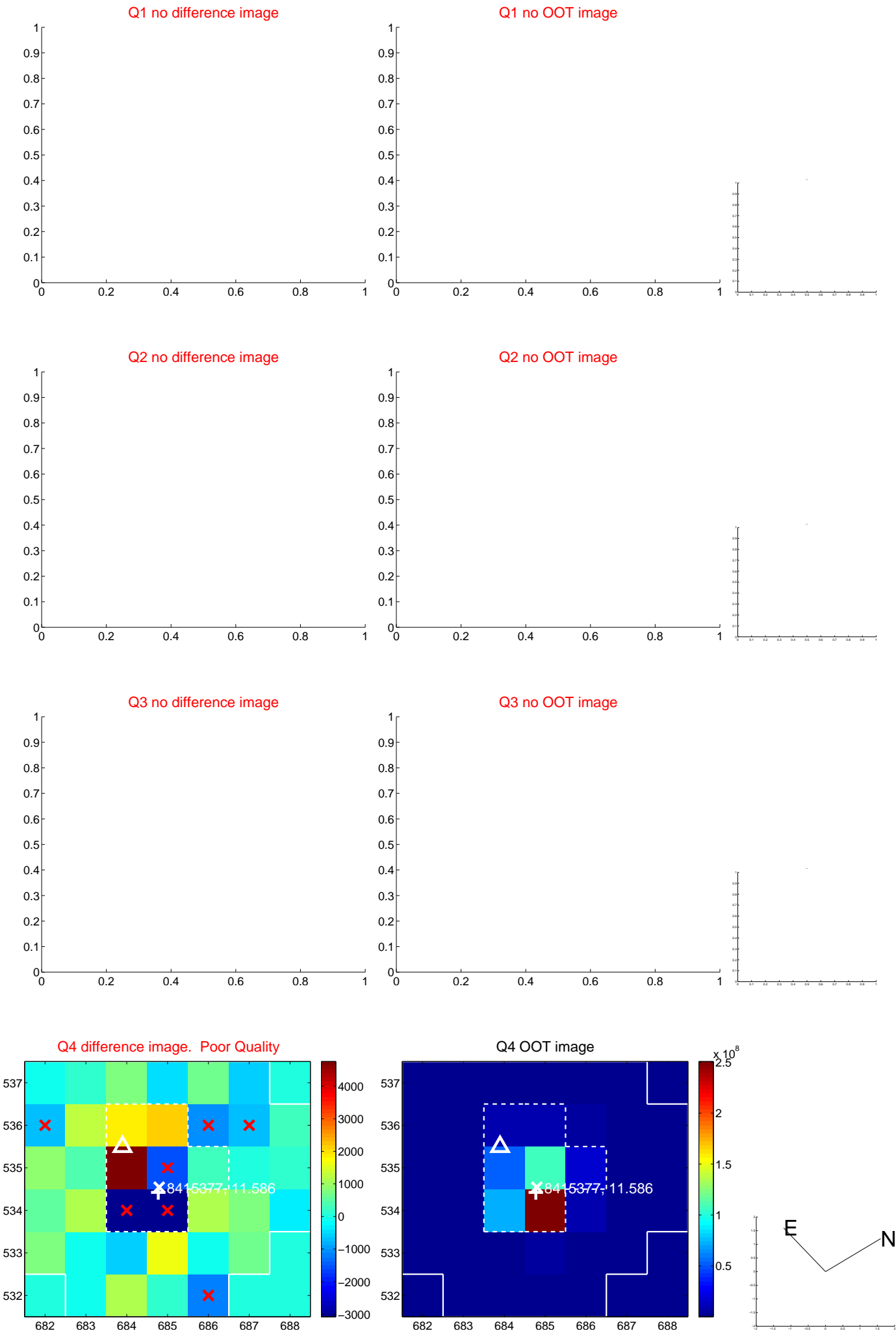


offset from photometric centroids



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.

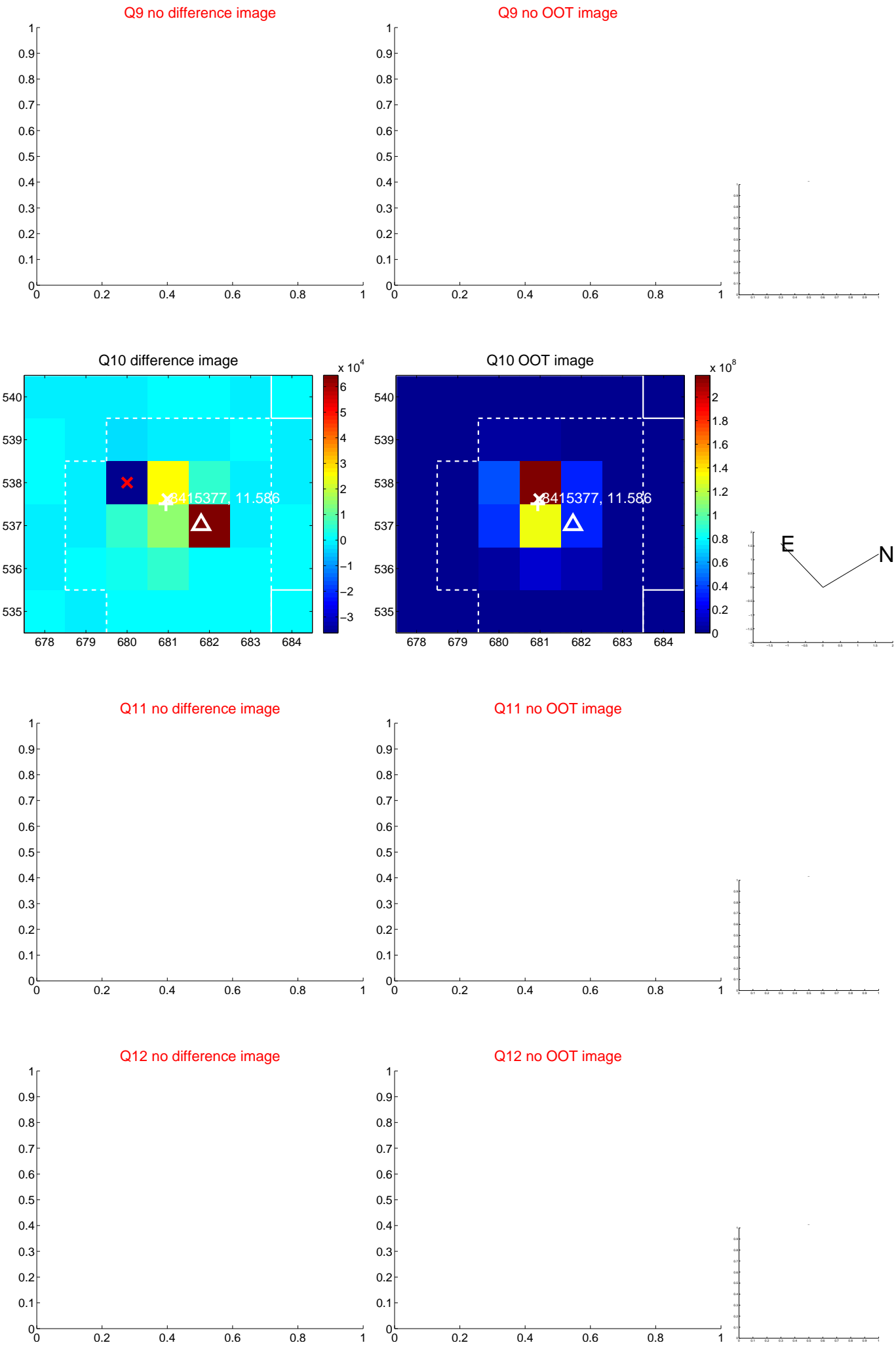


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





white  $\times$ : 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.

Q13 no difference image



Q13 no OOT image



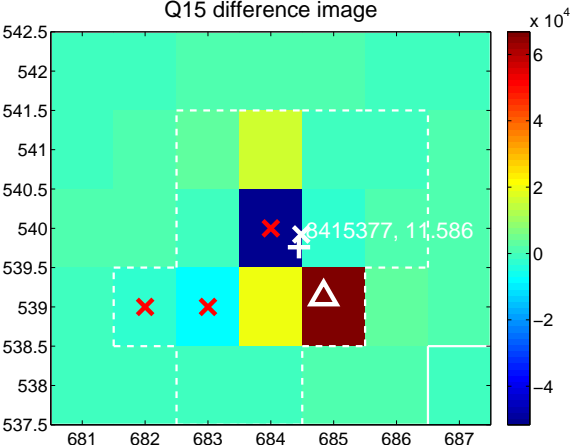
Q14 no difference image



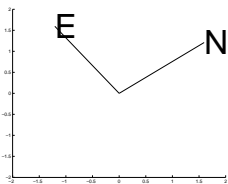
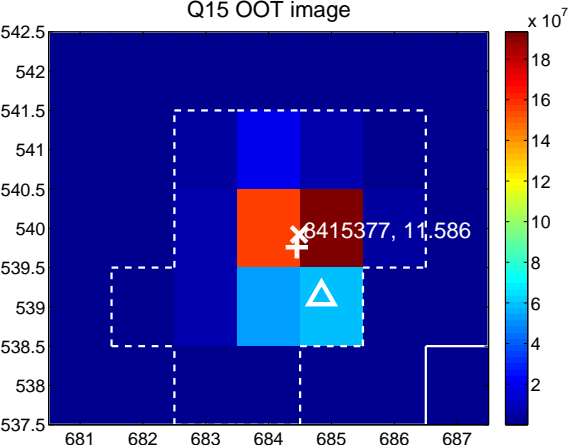
Q14 no OOT image



Q15 difference image



Q15 OOT image



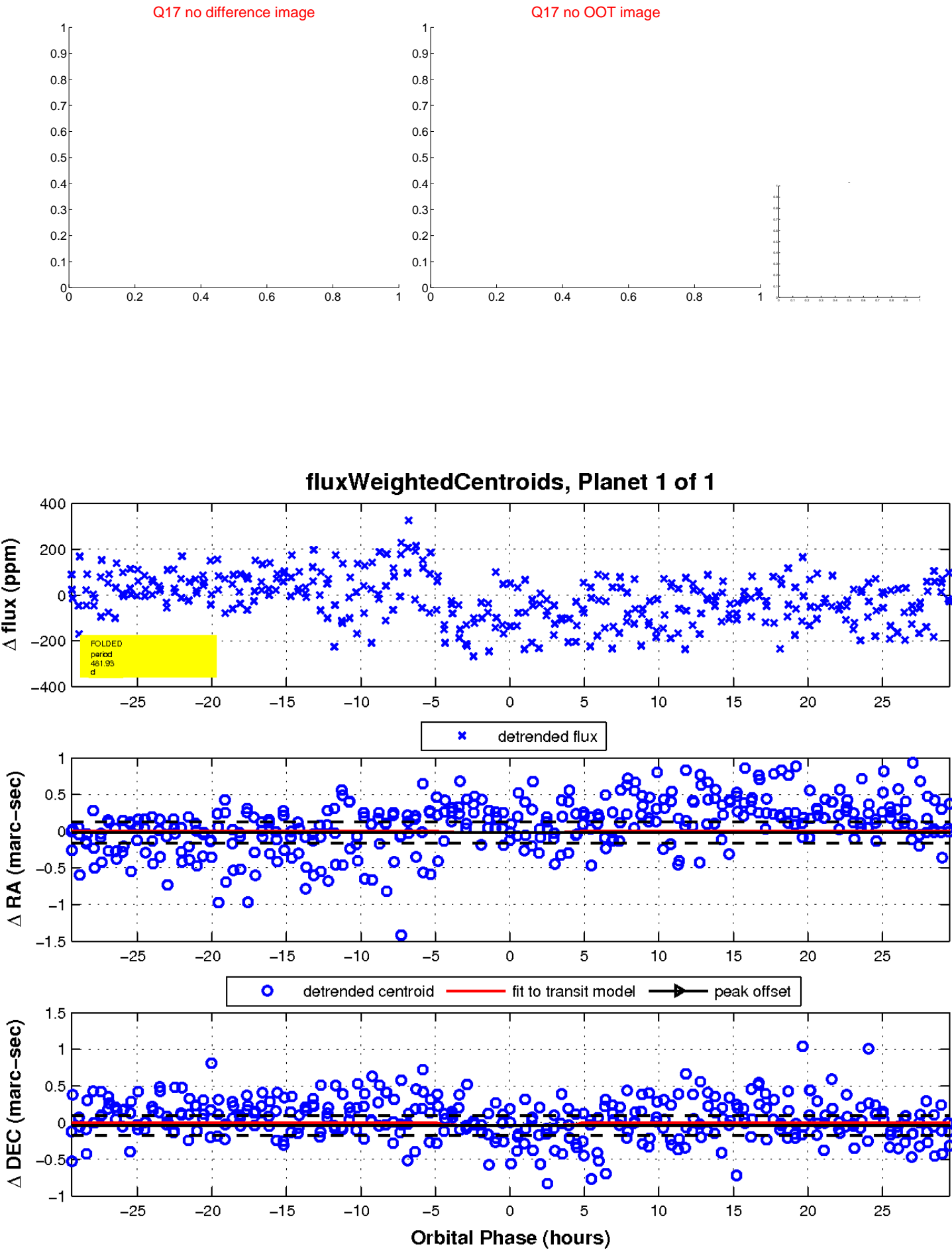
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

