

# KIC 007451399

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007451399-01	OBS	No	575.898860	339.884040	316.4	18.598	8.3	7.8	0.93	6086	1.77	0.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007451399-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_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.

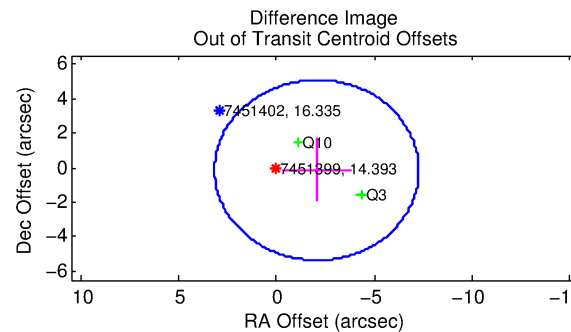
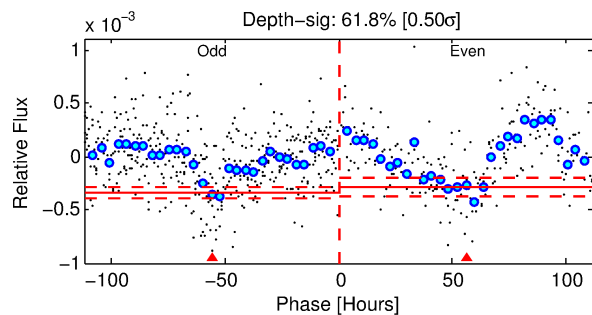
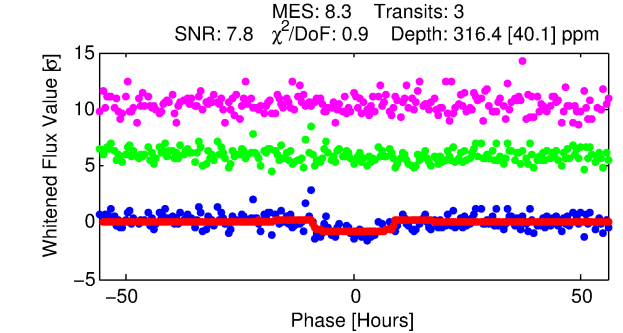
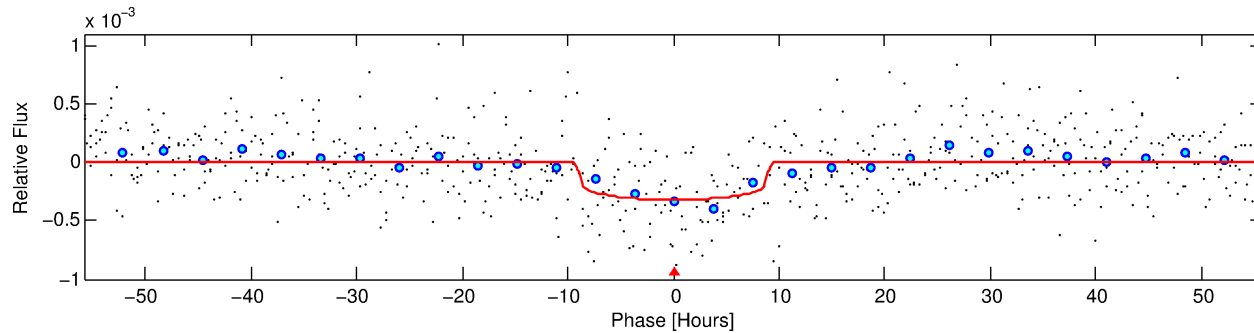
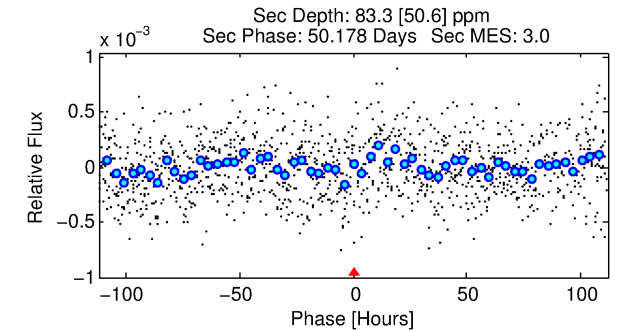
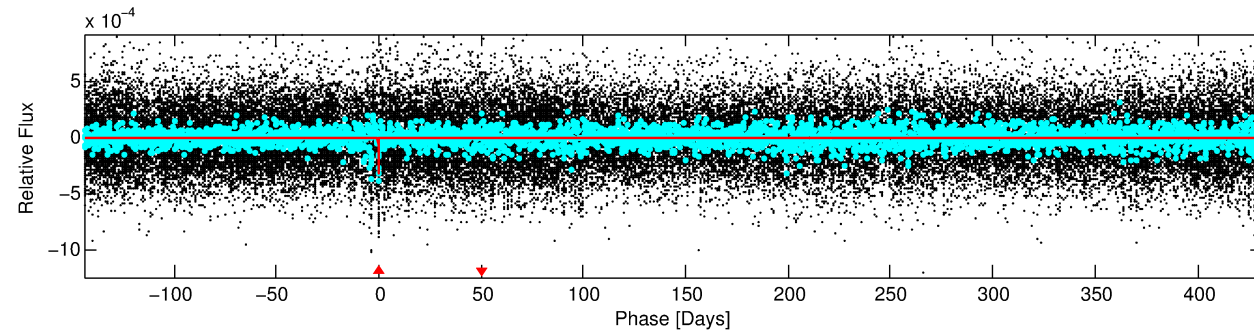
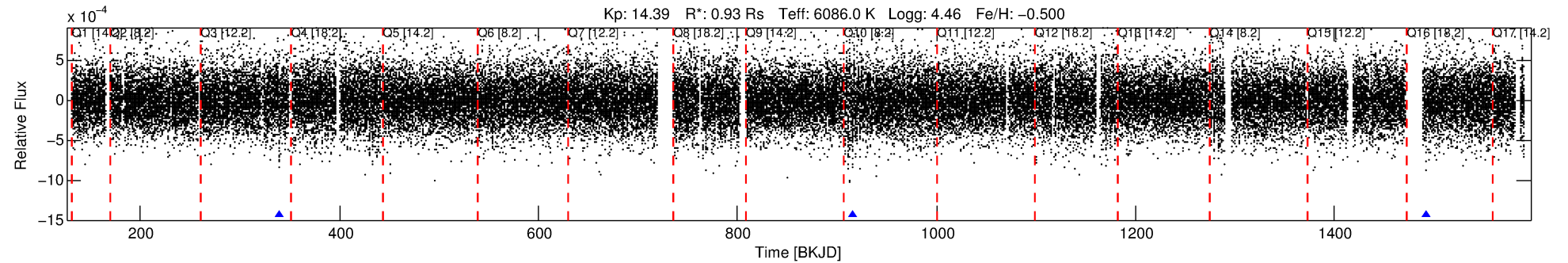
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007451399-01

No Significant Match Found

# DV One-Page Summary

KIC: 7451399 Candidate: 1 of 1 Period: 575.899 d



## DV Fit Results:

Period = 575.89886 [0.01608] d  
Epoch = 339.8840 [0.0199] BKJD  
Rp/R\* = 0.0176 [0.0043]  
a/R\* = 168.94 [201.60]  
b = 0.72 [0.79]  
Seff = 0.61 [0.23]  
Teq = 226 [21] K  
Rp = 1.77 [0.65] Re  
a = 1.3103 [0.3075] AU  
Ag = 25057.77 [21337.44] [1.17σ]  
Teffp = 4388 [867] K [4.80σ]

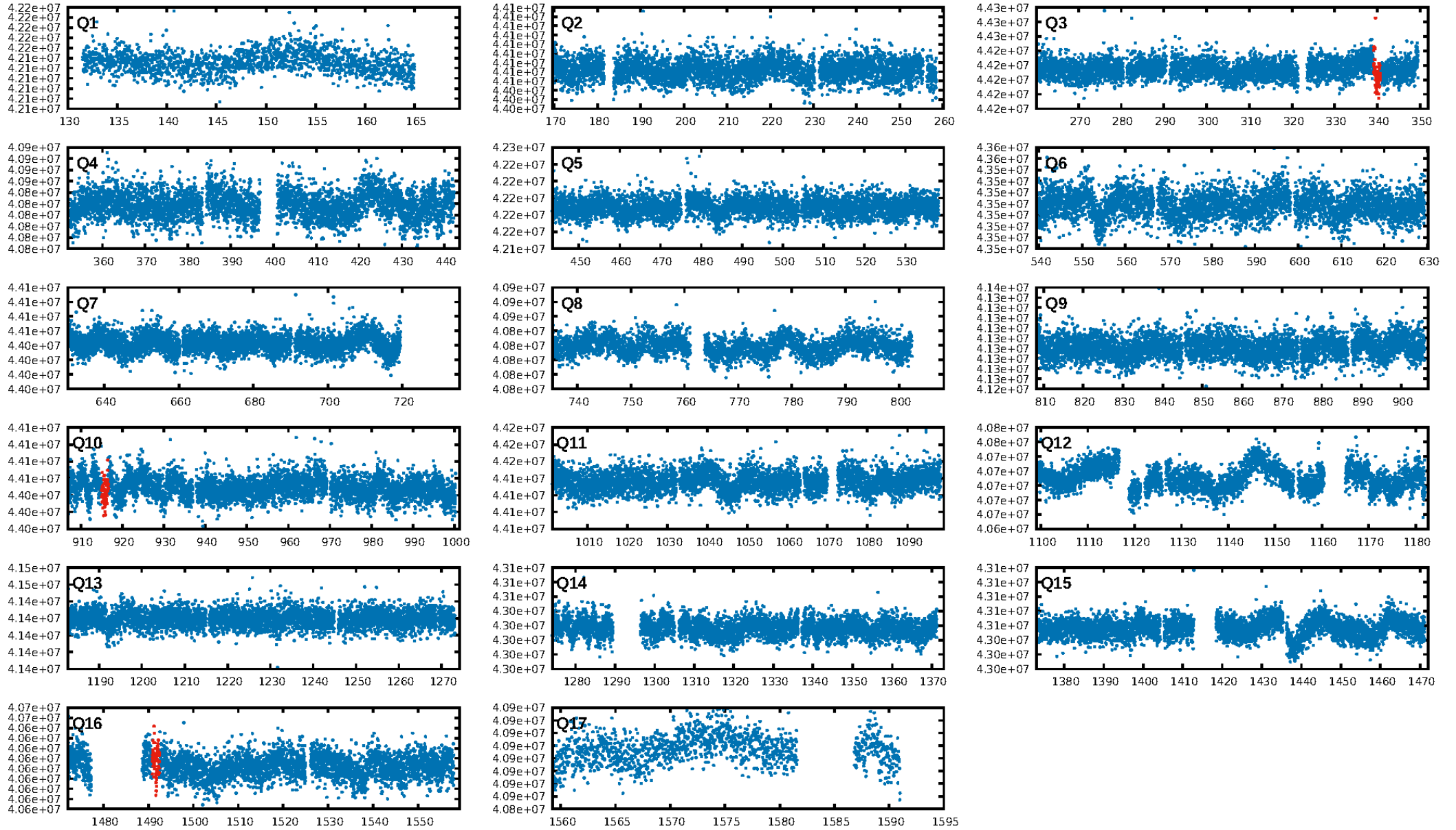
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 20.1%  
ModelChiSquareGof-sig: 99.8%  
**Bootstrap-pfa: 7.68e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.589  
**Centroid-sig: 0.0%**  
Centroid-so: 4.365 arcsec [2.83σ]  
OotOffset-rm: 2.060 arcsec [1.18σ]  
KicOffset-rm: 1.866 arcsec [1.12σ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

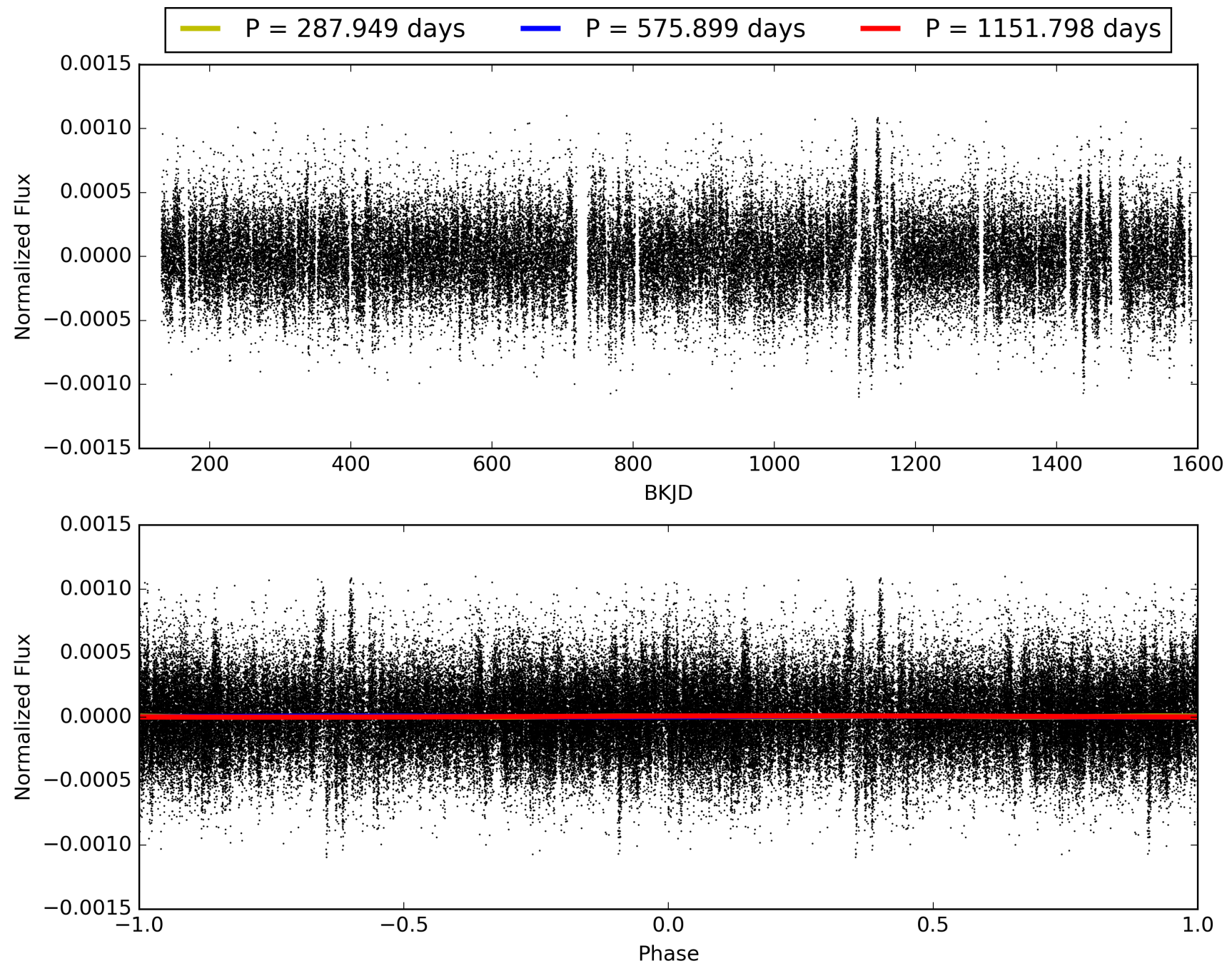
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 03:29:20 Z

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

# TCE 007451399-01, PDC Light Curves

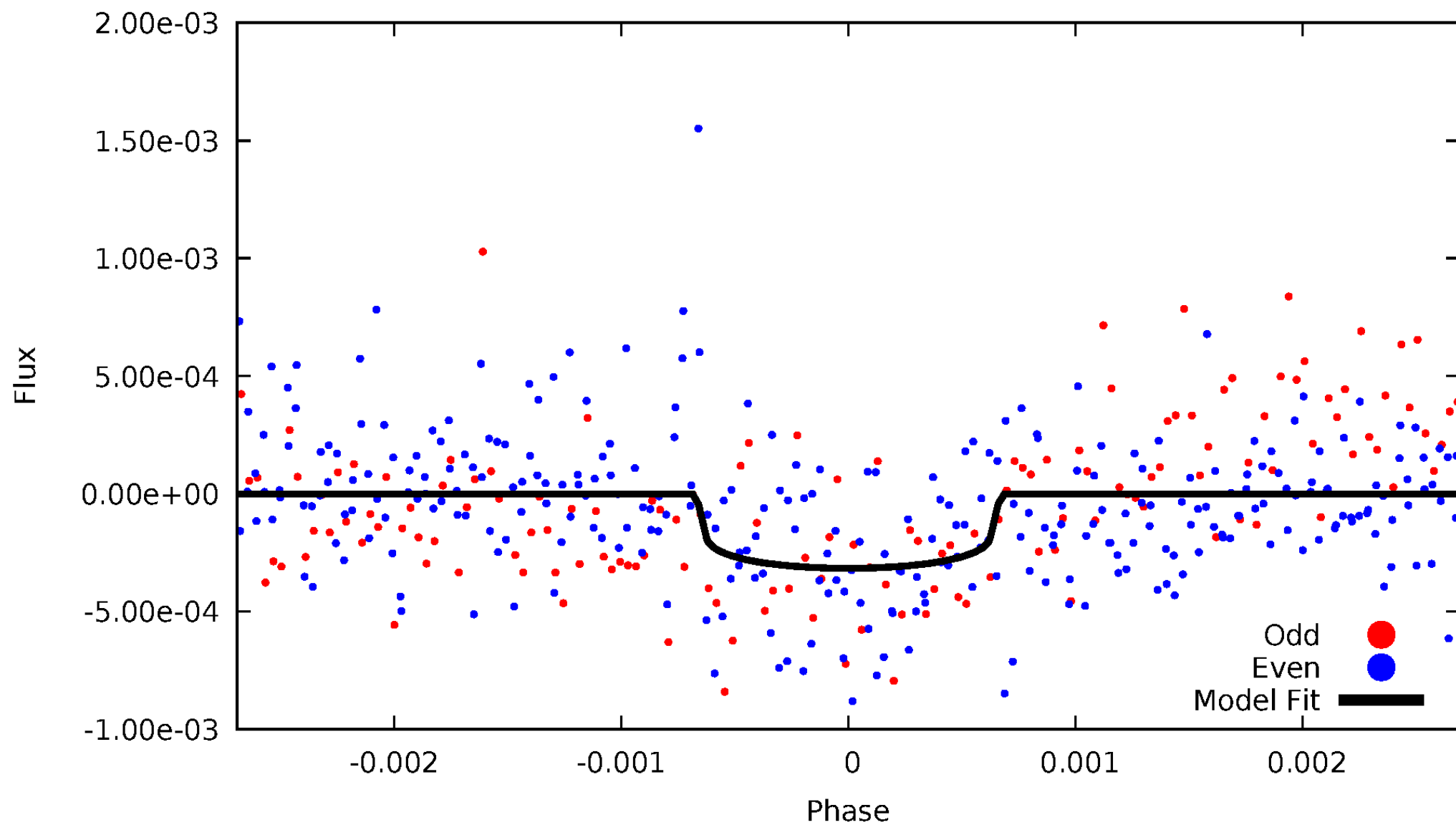


TCE 007451399-01



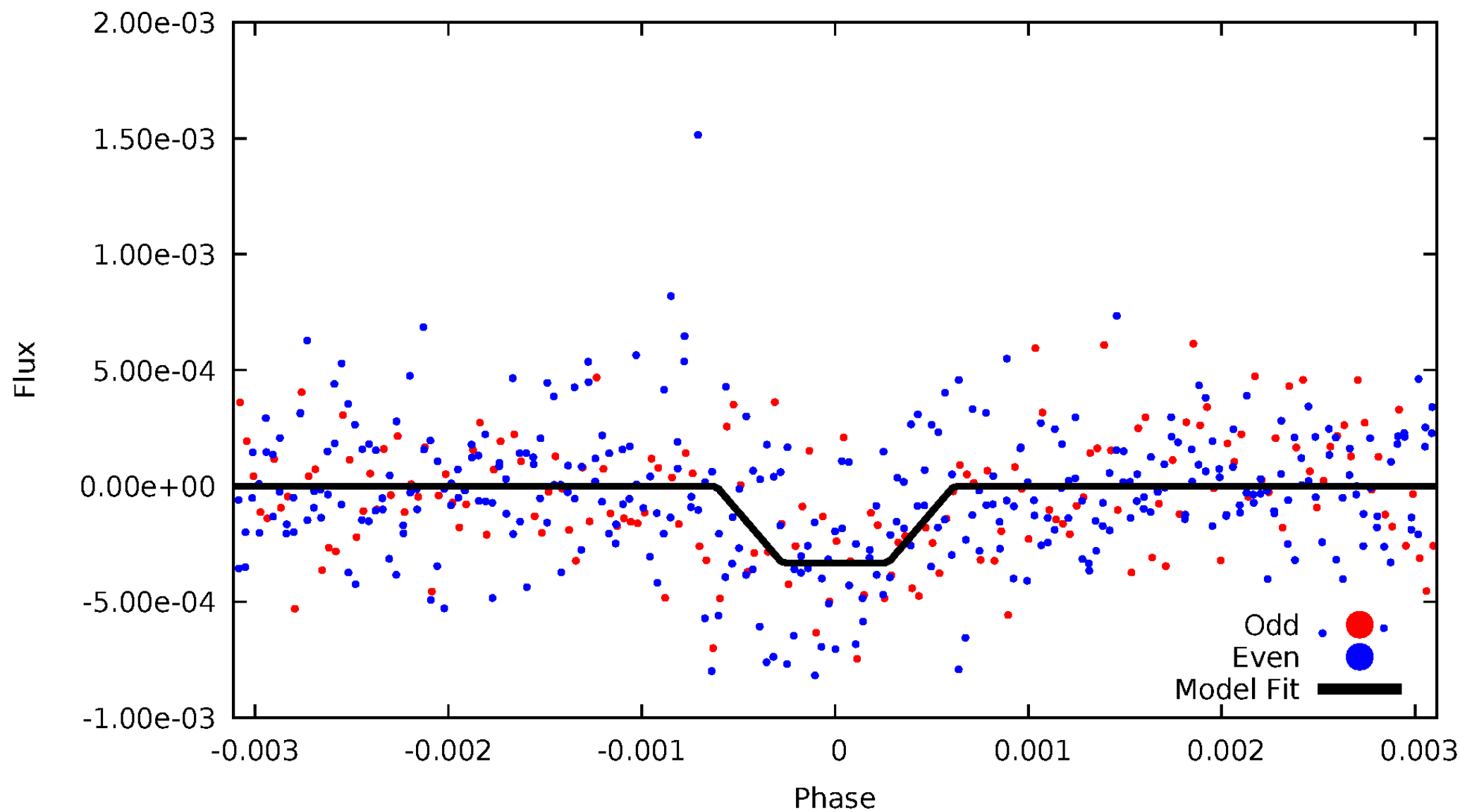
# DV Odd/Even

TCE 007451399-01



# ALT Odd/Even

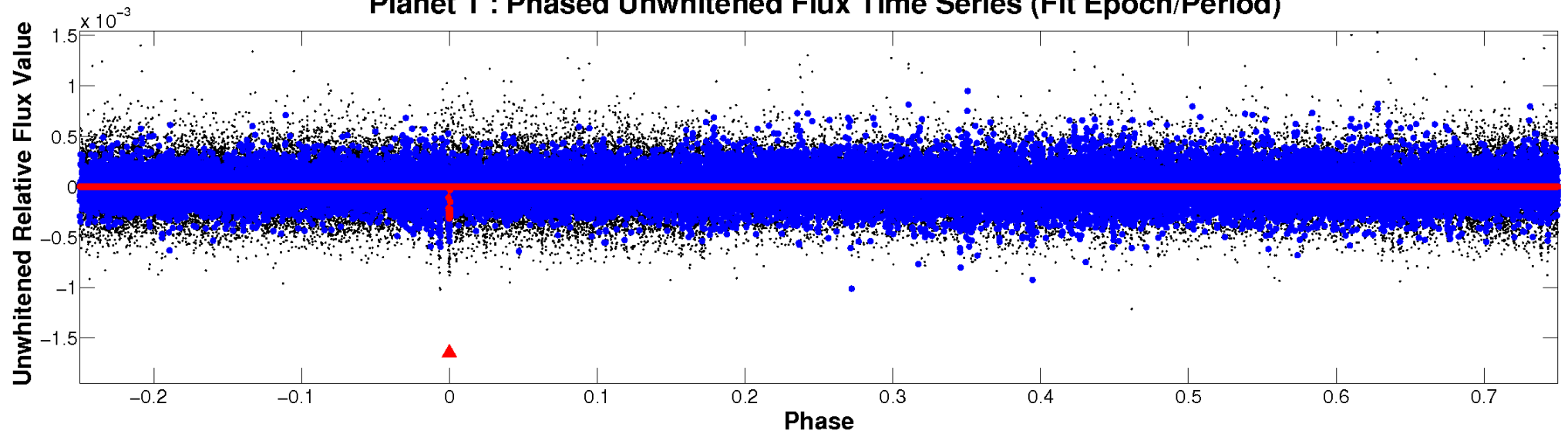
TCE 007451399-01



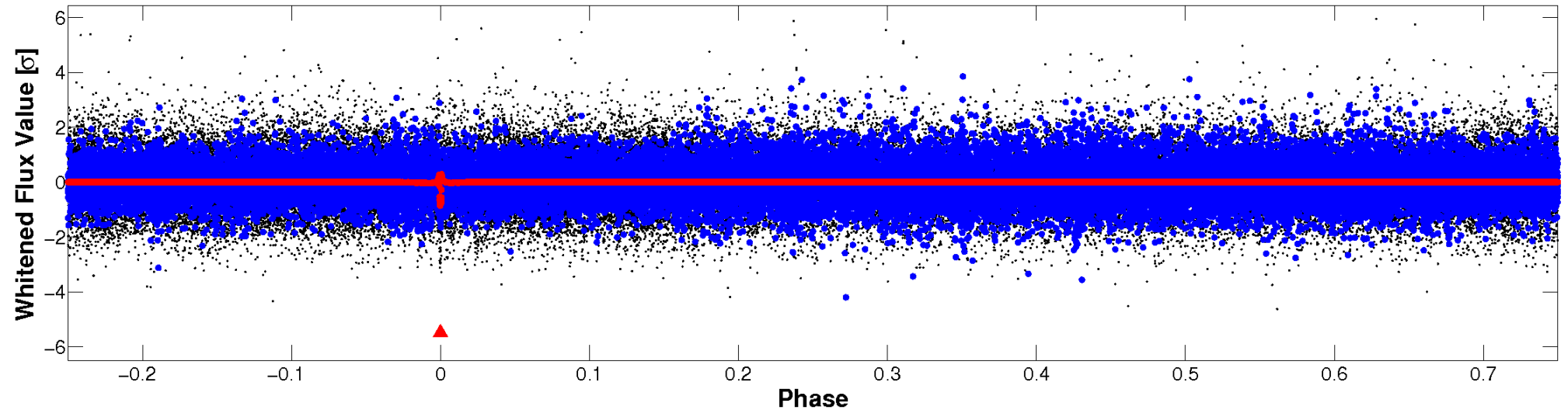


# Non-Whitened Vs. Whitened Light Curve

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

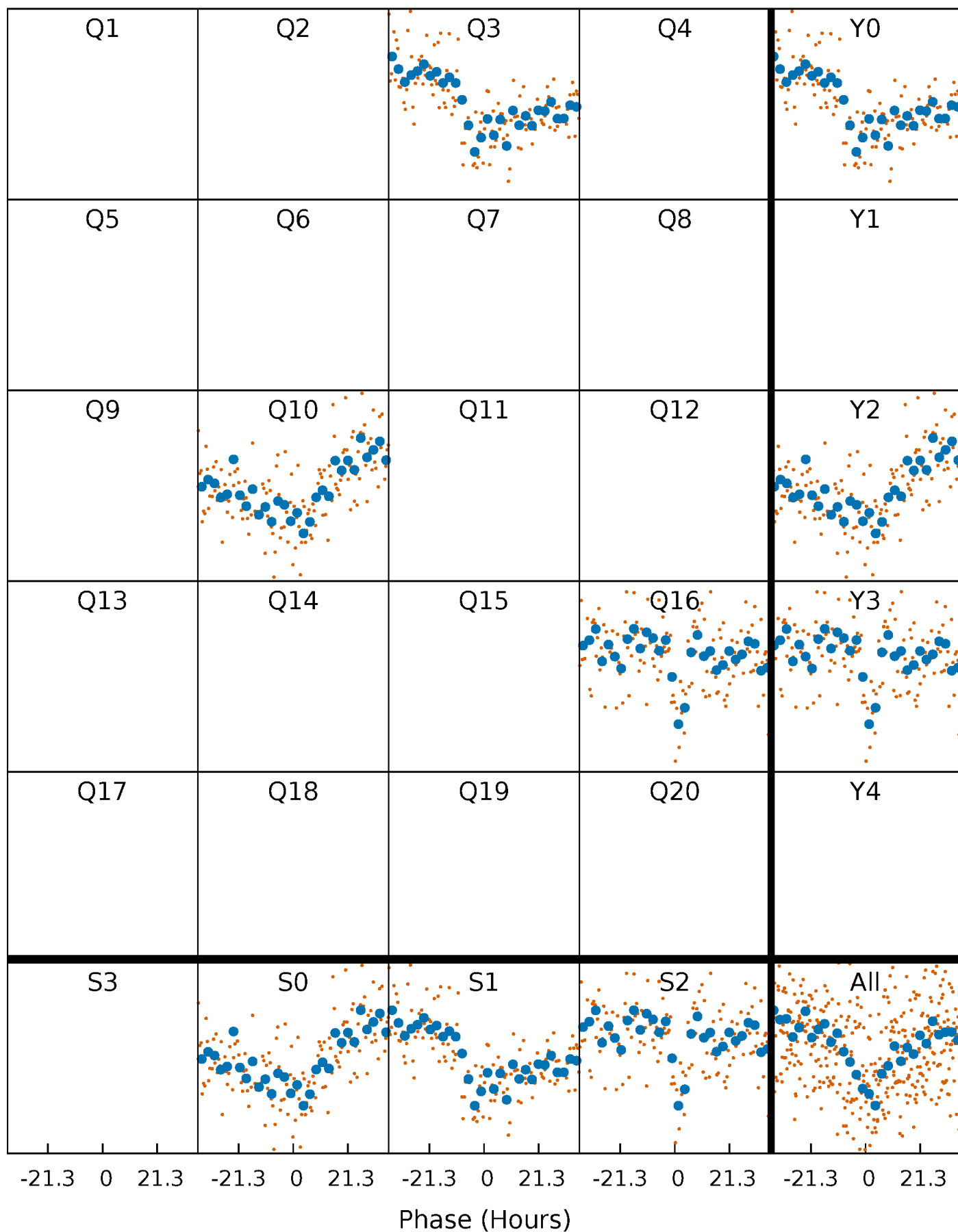


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

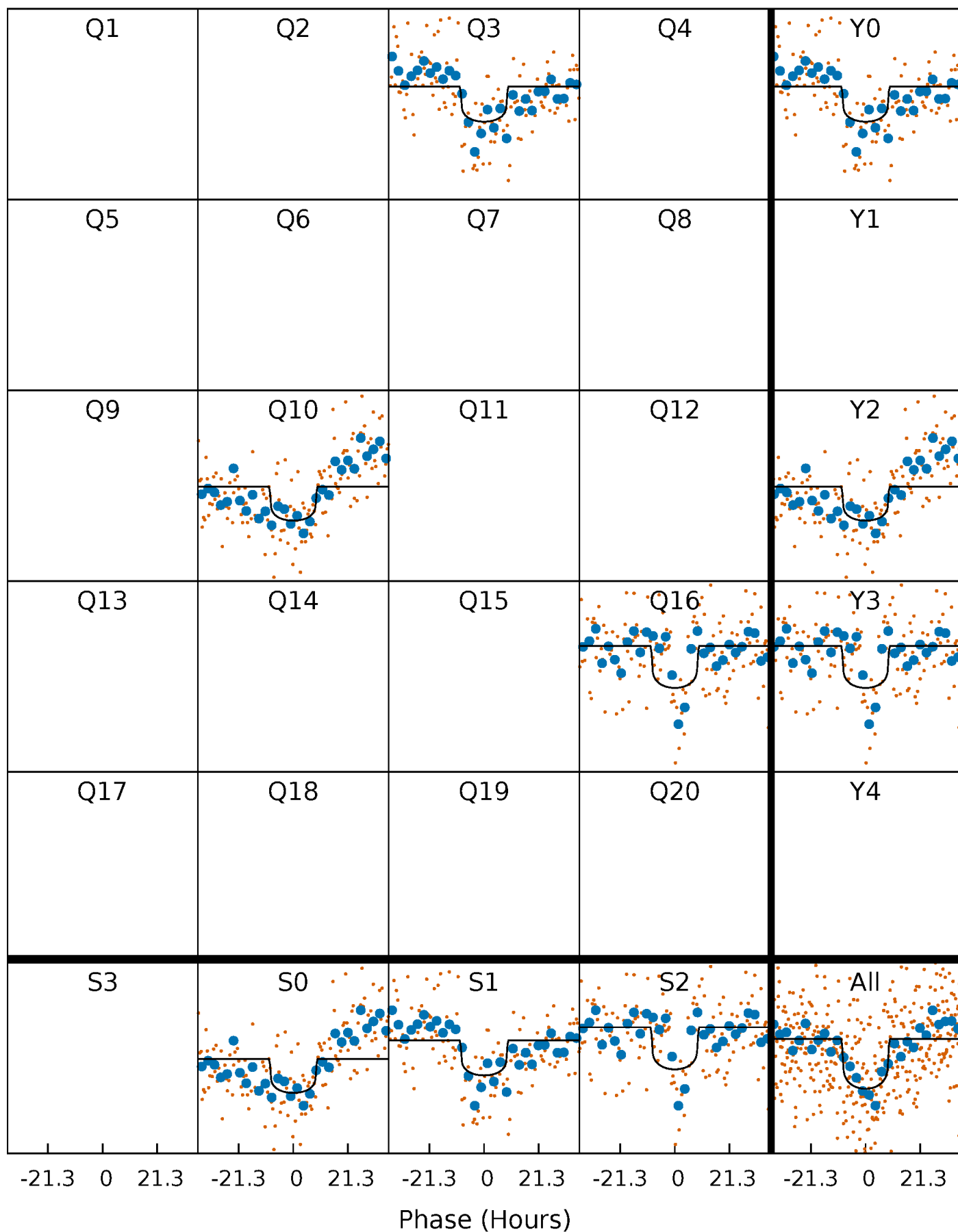
TCE 007451399-01 P=575.898860 Days  $T_0=339.884040$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 007451399-01     $P=575.898860$  Days     $T_0=339.884040$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

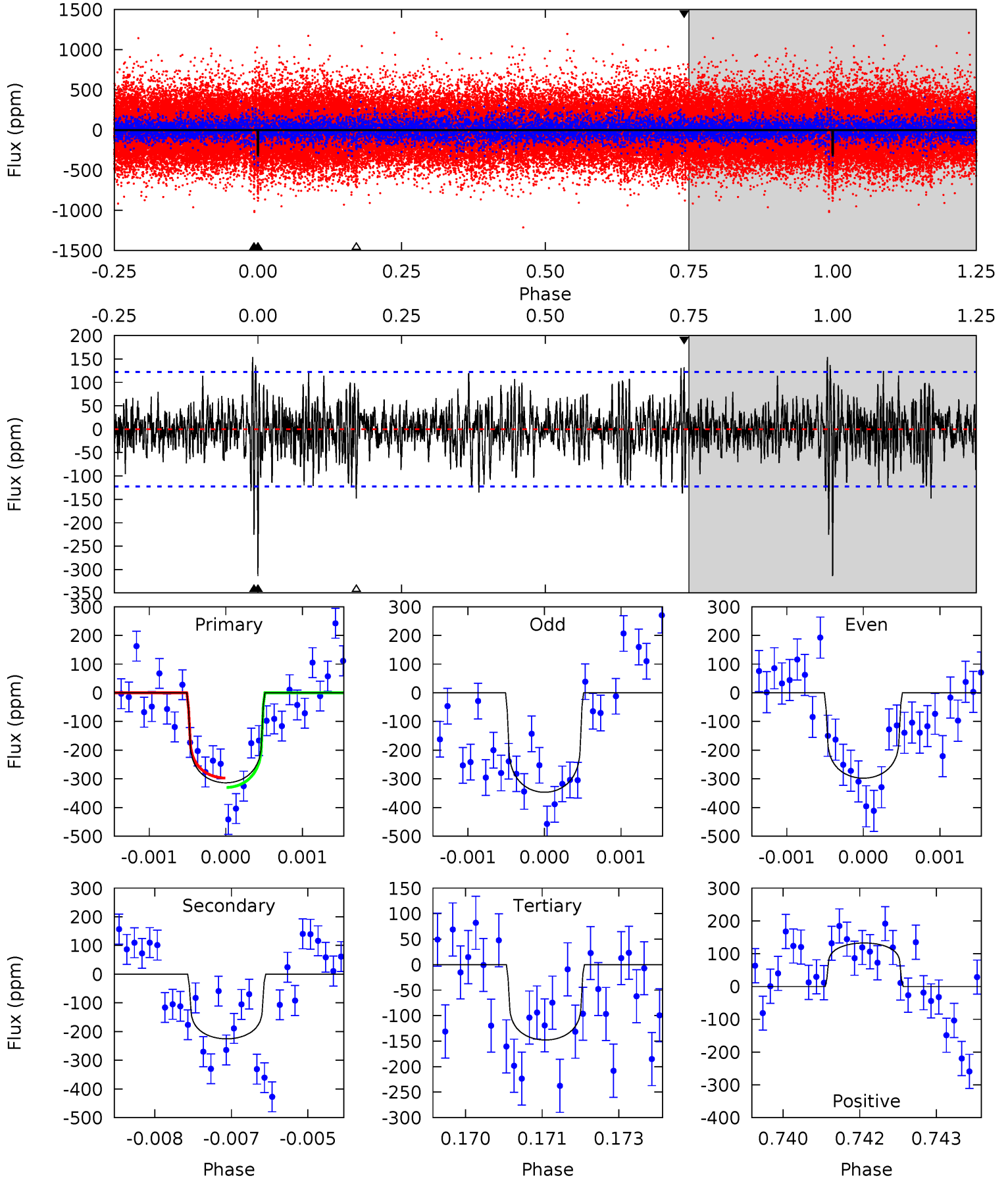
TCE 007451399-01     $P=575.919889$  Days     $T_0=339.912546$  (BKJD)



# DV Model-Shift Uniqueness Test

007451399-01, P = 575.898860 Days, E = 339.884040 Days

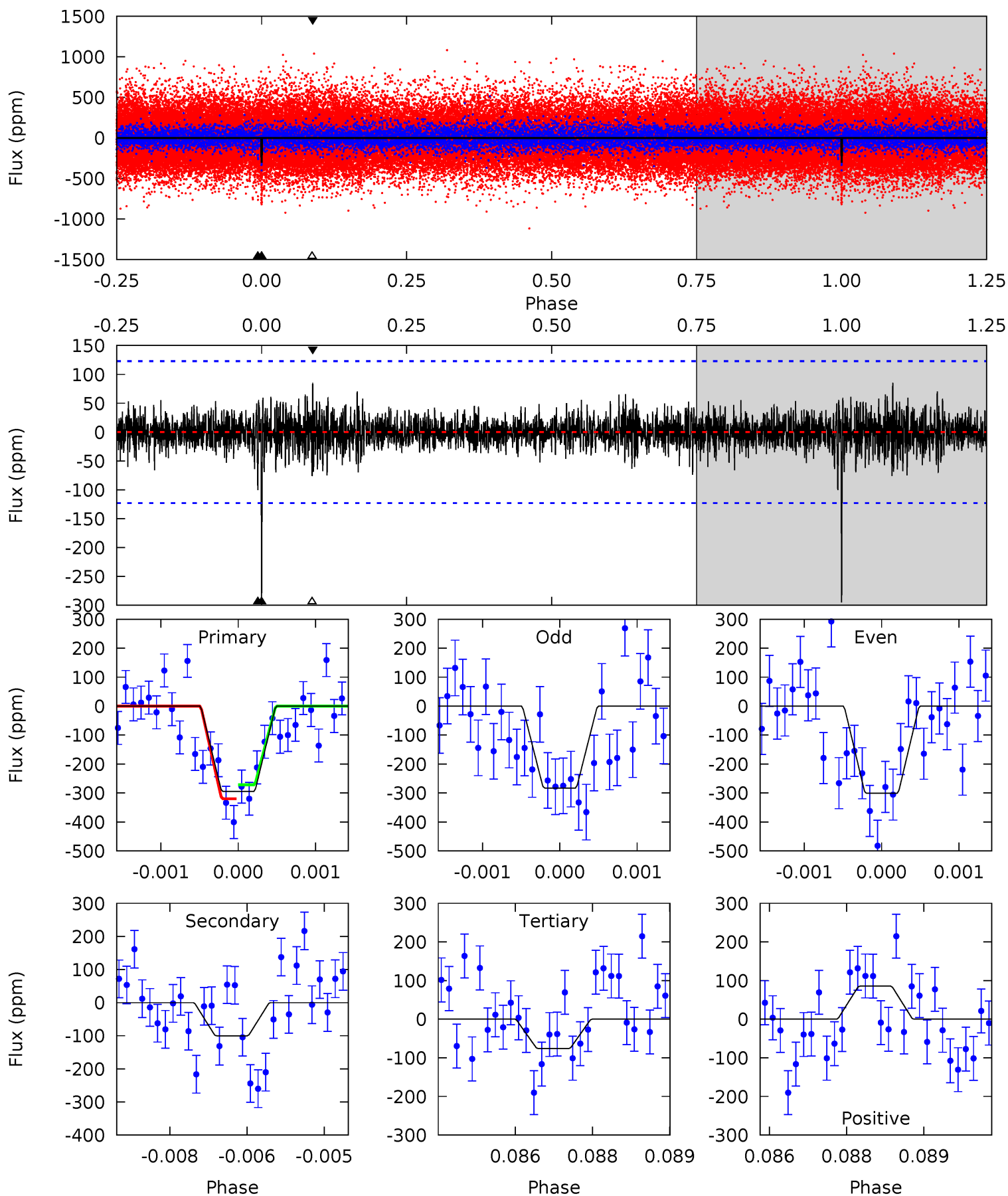
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	9.93	6.51	5.84	5.40	3.21	1.73	7.32	7.99	3.42	4.09	1.01	0.90	0.33	0.72



# Alt Model-Shift Uniqueness Test

007451399-01,  $P = 575.919889$  Days,  $E = 339.912546$  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	4.41	3.35	3.76	5.41	3.22	0.92	9.64	9.22	1.07	0.65	0.37	1.04	0.22	1.06



### Stellar Parameters For KIC 007451399

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6086^{+163}_{-200}$	$4.462^{+0.081}_{-0.189}$	$-0.500^{+0.300}_{-0.300}$	$0.925^{+0.256}_{-0.110}$	$0.903^{+0.109}_{-0.089}$	$1.608^{+0.651}_{-0.786}$
	+3%/-3%	+2%/-4%	+60%/-60%	+28%/-12%	+12%/-10%	+41%/-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 007451399-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-225 \pm 23$	$1.84^{+0.54}_{-0.49}$	$319^{+22}_{-17}$	$5597^{+900}_{-583}$	$62127^{+50102}_{-25380}$
Alt.	$-100 \pm 23$	$1.91^{+0.56}_{-0.45}$	$318^{+25}_{-15}$	$4628^{+623}_{-444}$	$25282^{+20983}_{-10466}$

$T_{\text{max}}$  = 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

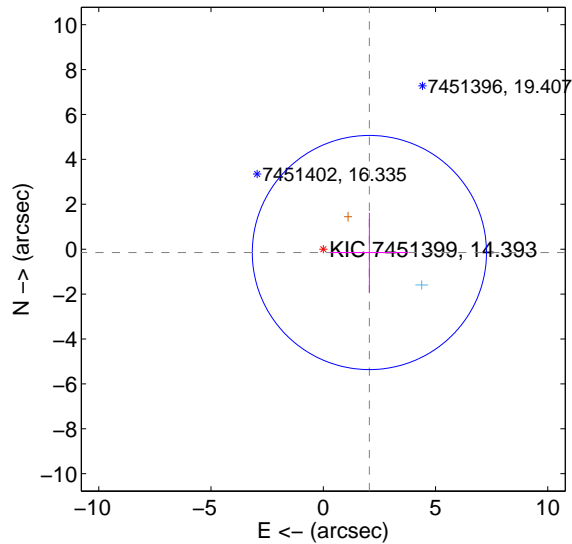
Supplemental centroid analysis for 007451399-01. Kepler magnitude: 14.39. Transit SNR 7.82

There are 1 quarters with good PRF difference image offsets

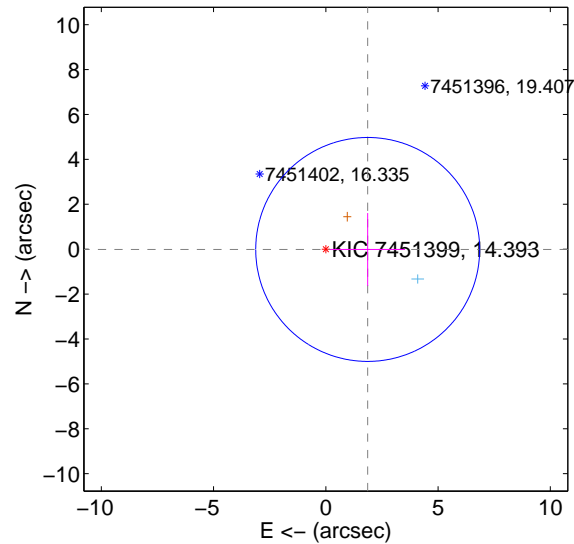
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.060 \pm 1.739$	1.18	$-2.055 \pm 1.739$	$-0.149 \pm 1.775$
PRF-fit source offset from KIC position	$1.866 \pm 1.663$	1.12	$-1.866 \pm 1.663$	$-0.012 \pm 1.623$
photometric centroid source offset	$4.36 \pm 1.54$	2.83	$-4.22 \pm 1.55$	$-1.13 \pm 1.44$

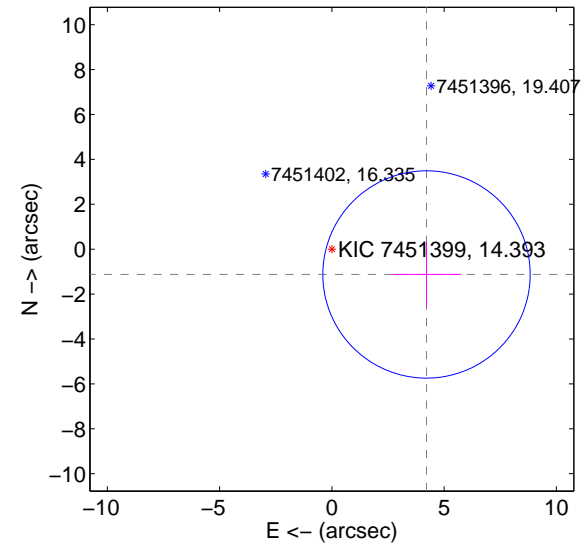
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

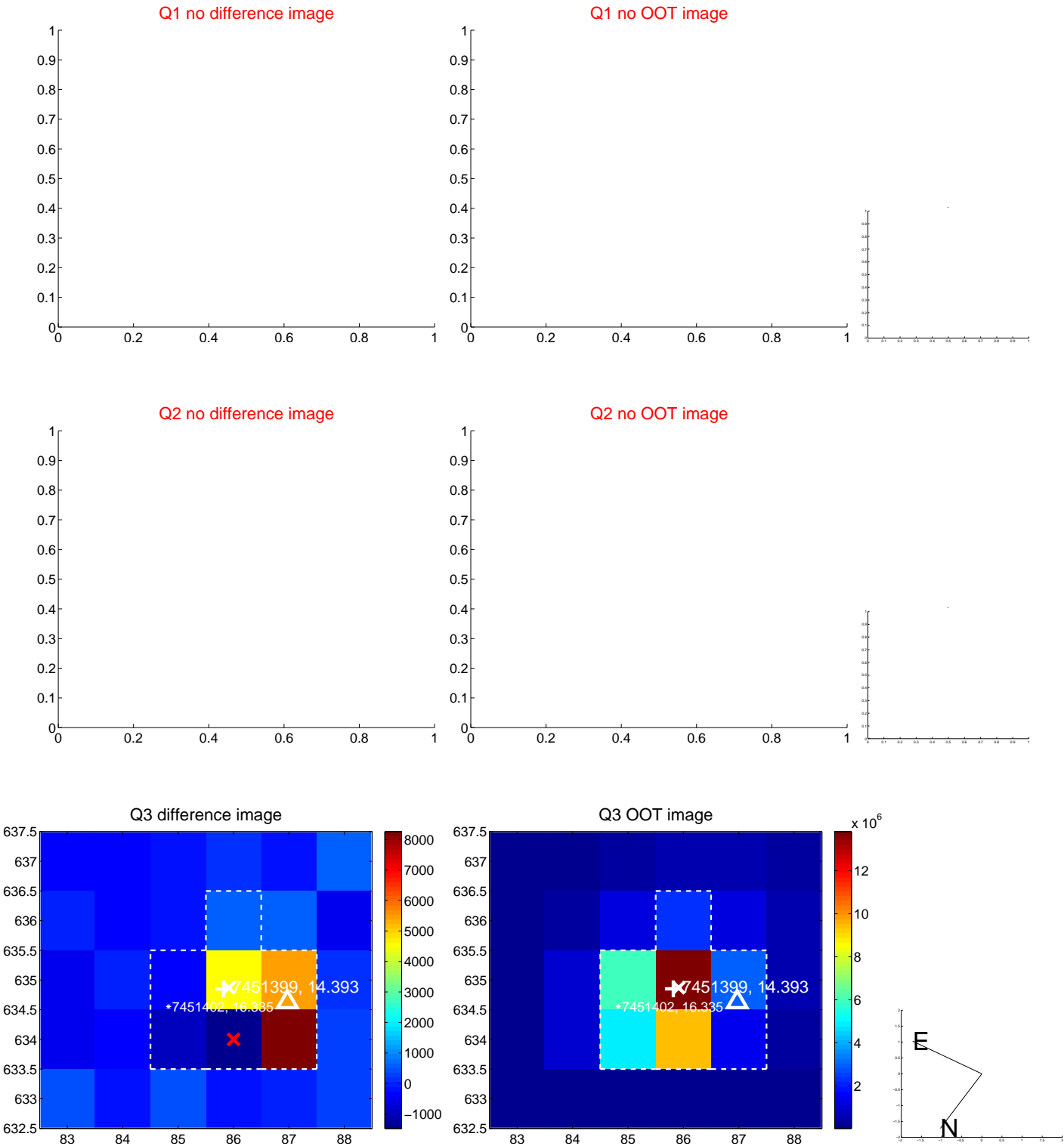


offset from photometric centroids



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.

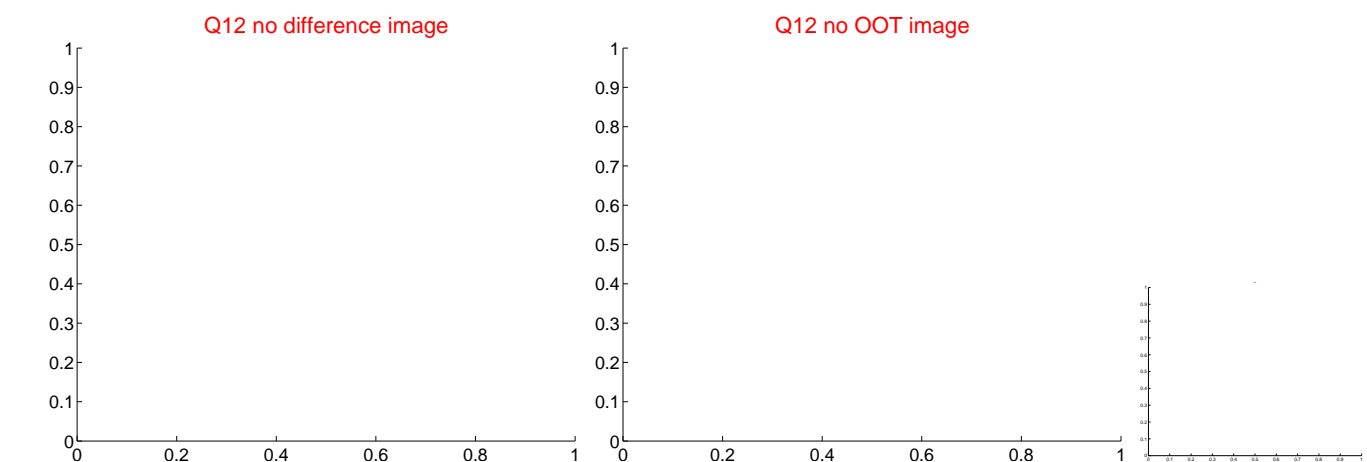
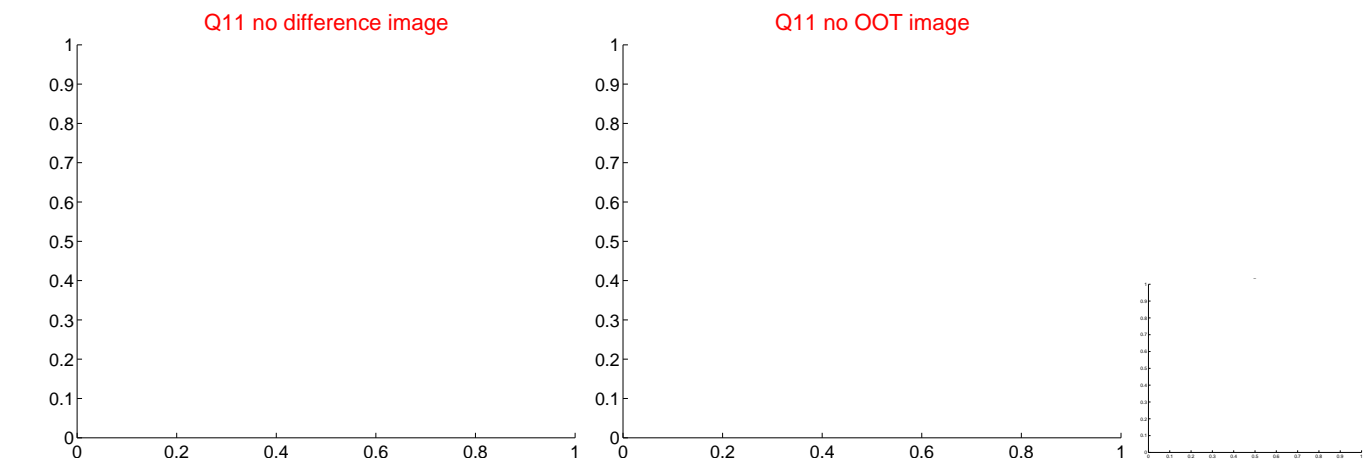
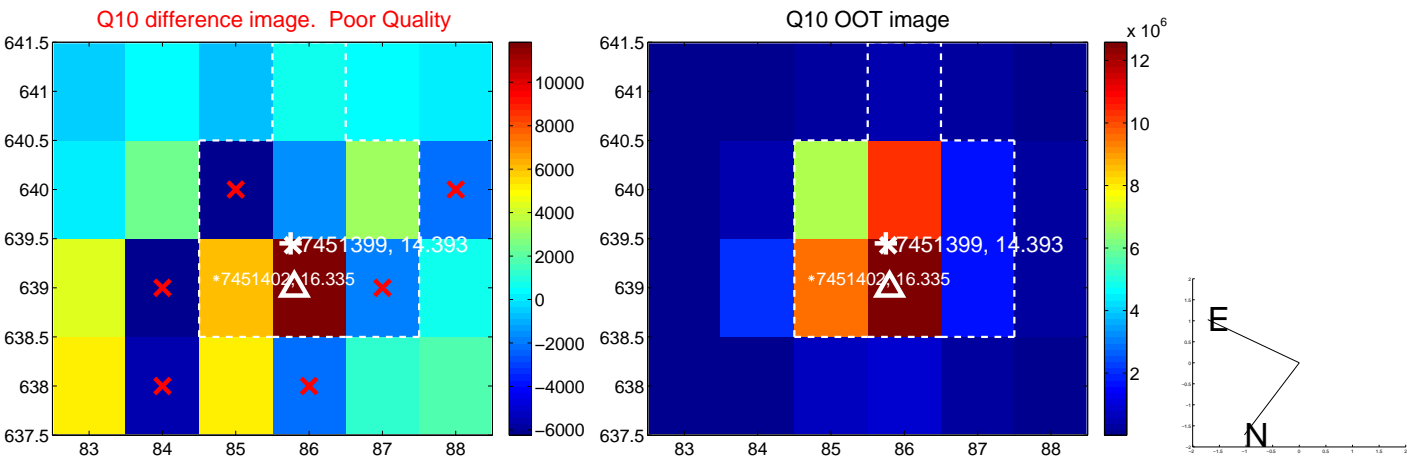
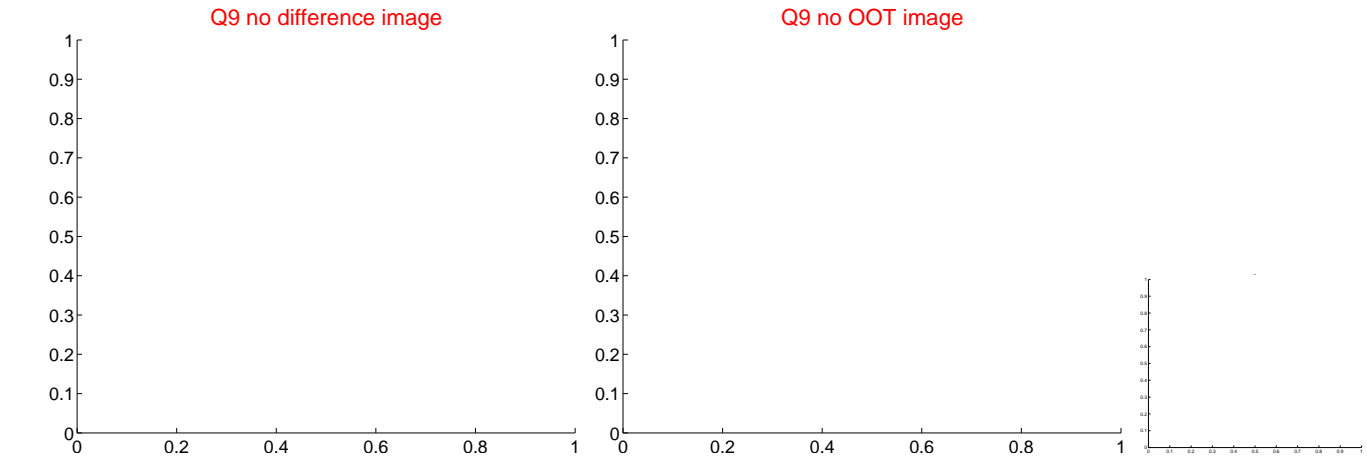




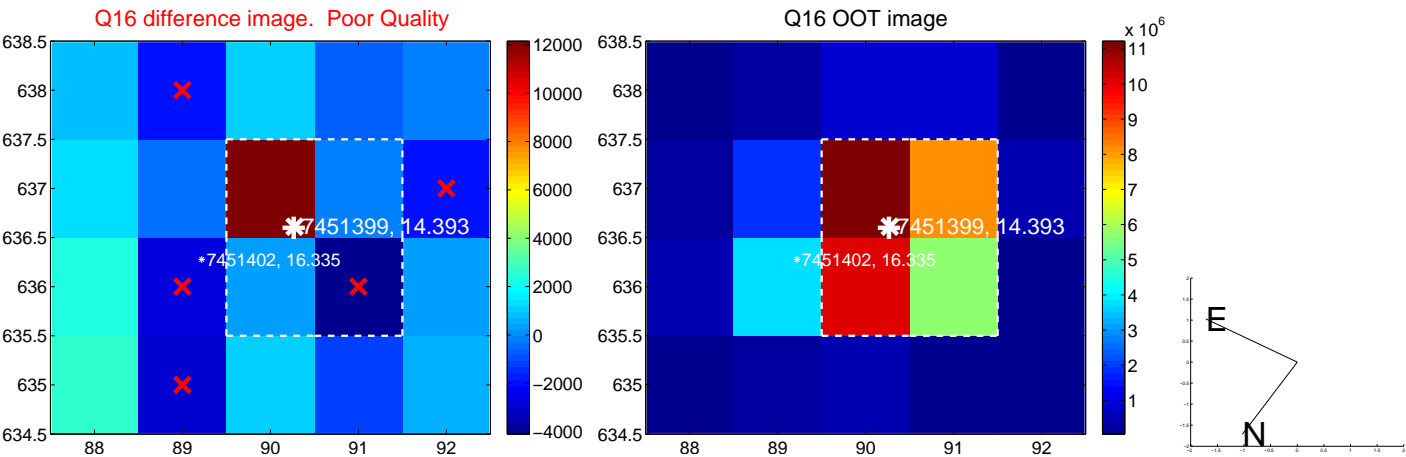
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



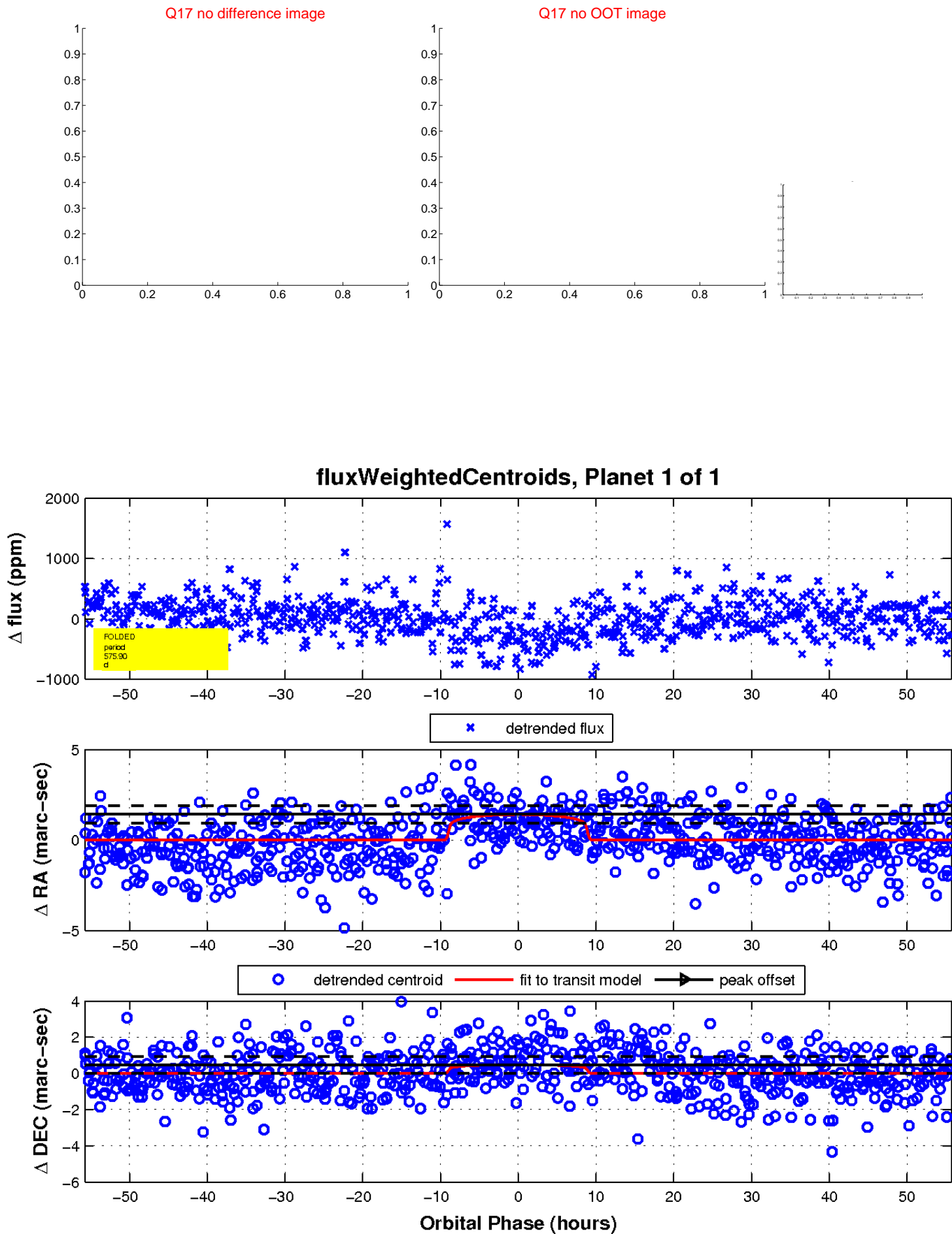
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white ×: 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.



UKIRT Image

Declination

