

# KIC 012402792

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012402792-01	OBS	No	515.224073	310.733411	208.3	9.684	7.3	6.8	1.10	6017	1.75	0.88

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012402792-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—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.

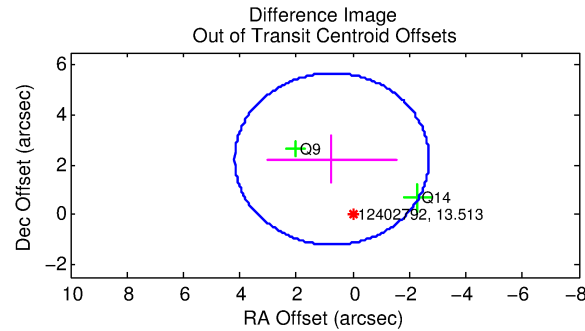
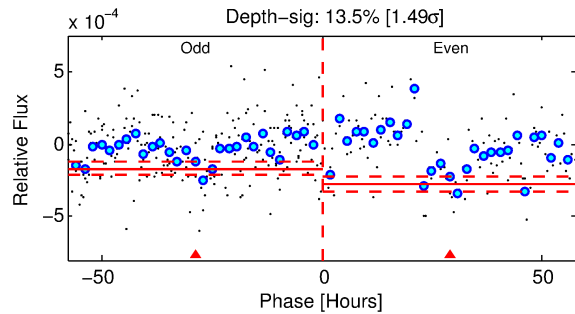
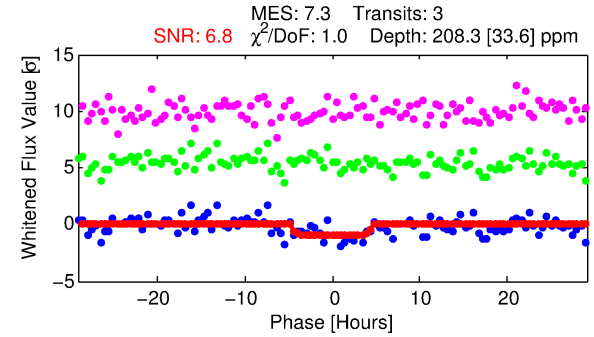
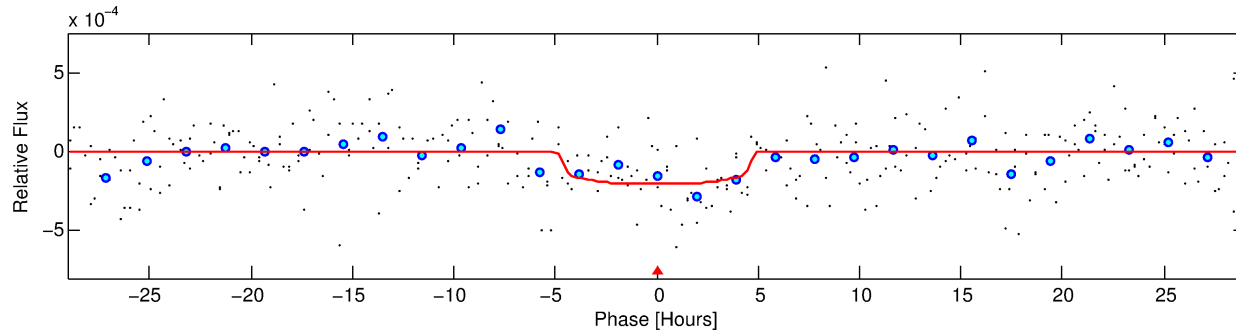
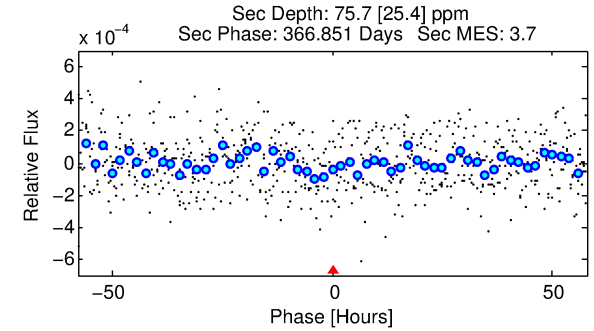
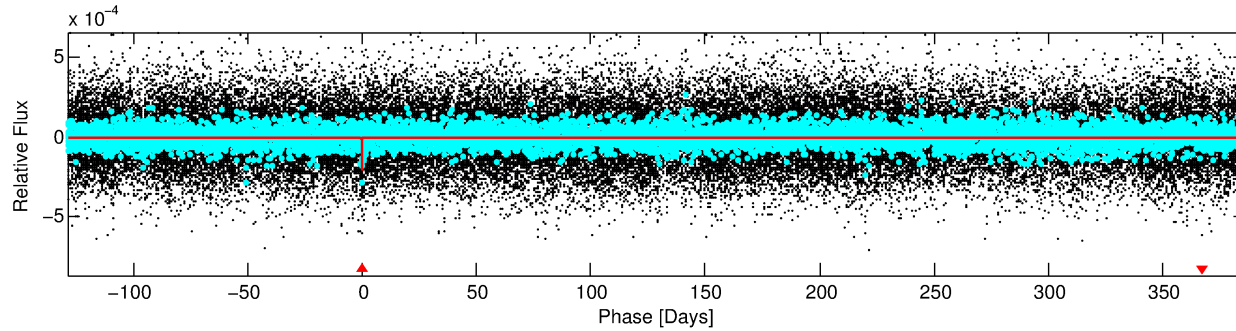
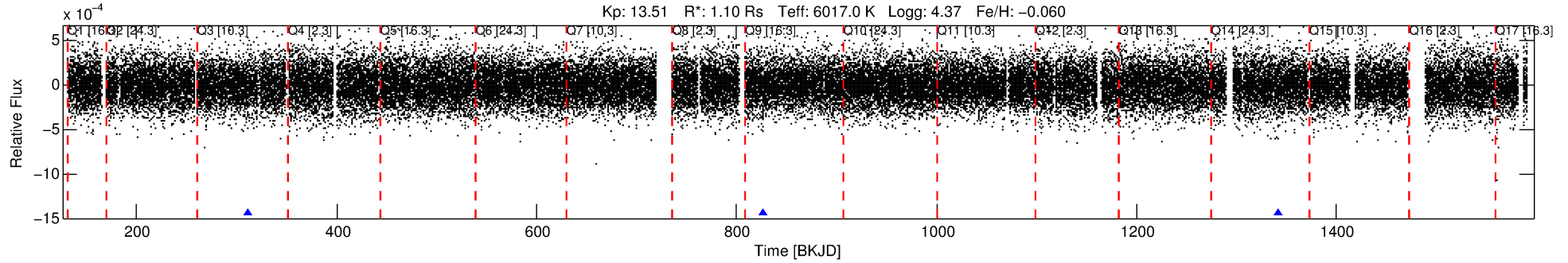
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012402792-01

No Significant Match Found

# DV One-Page Summary

KIC: 12402792 Candidate: 1 of 1 Period: 515.224 d



## DV Fit Results:

Period = 515.22407 [0.01708] d  
Epoch = 310.7334 [0.0210] BKJD  
Rp/R\* = 0.0147 [0.0071]  
a/R\* = 252.45 [592.59]  
b = 0.80 [1.05]  
Seff = 0.88 [0.35]  
Teq = 247 [24] K  
Rp = 1.75 [1.01] Re  
a = 1.2674 [0.3258] AU  
Ag = 21749.78 [23683.73] [0.92σ]  
Teffp = 4635 [1196] K [3.67σ]

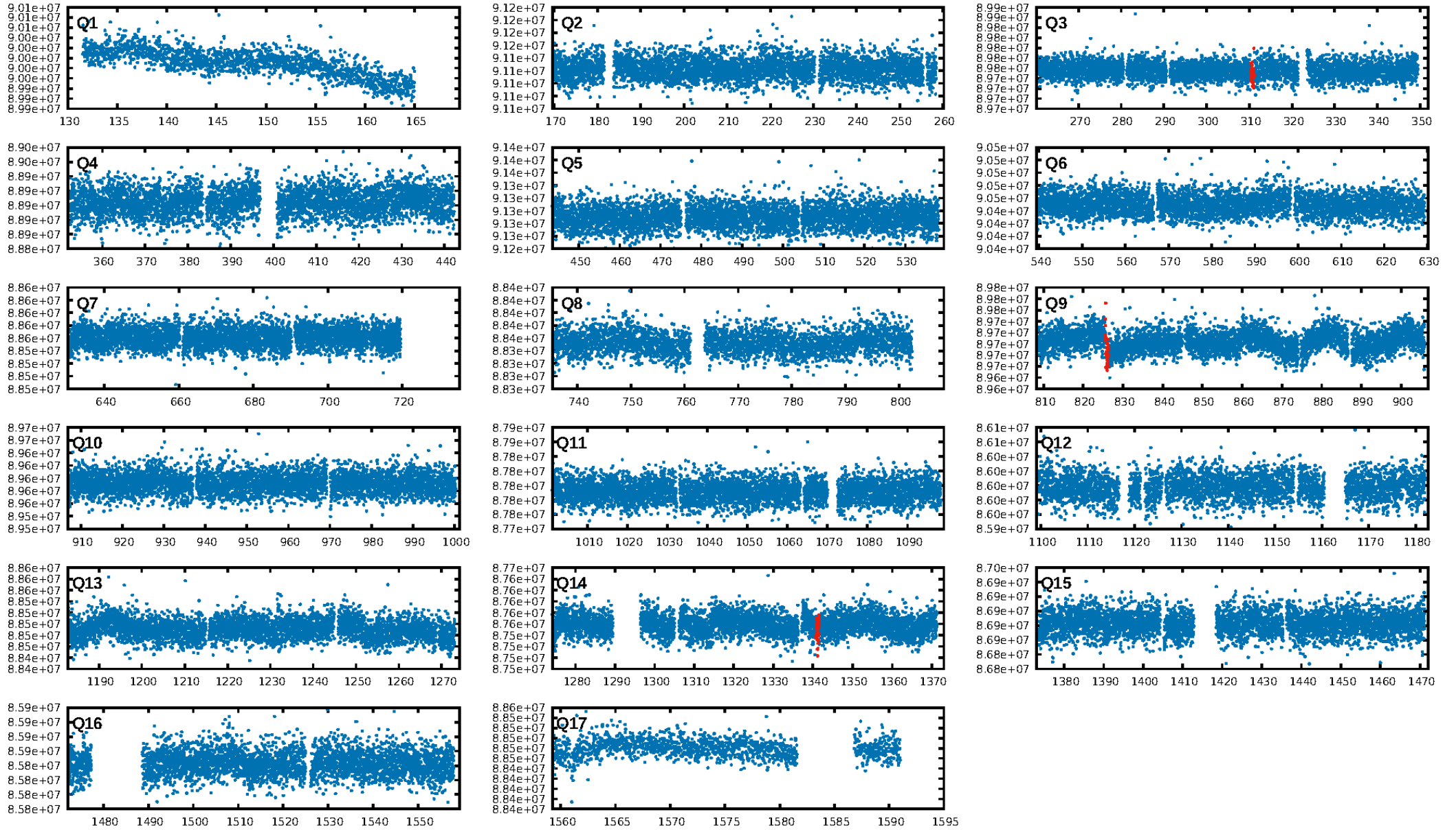
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 25.1%  
ModelChiSquareGof-sig: 99.8%  
**Bootstrap-pfa: 2.83e-12**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 4.692  
Centroid-sig: 27.6%  
Centroid-so: 1.818 arcsec [1.07σ]  
OotOffset-rm: 2.345 arcsec [2.05σ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-rm: 2.276 arcsec [1.71σ]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [3/3]

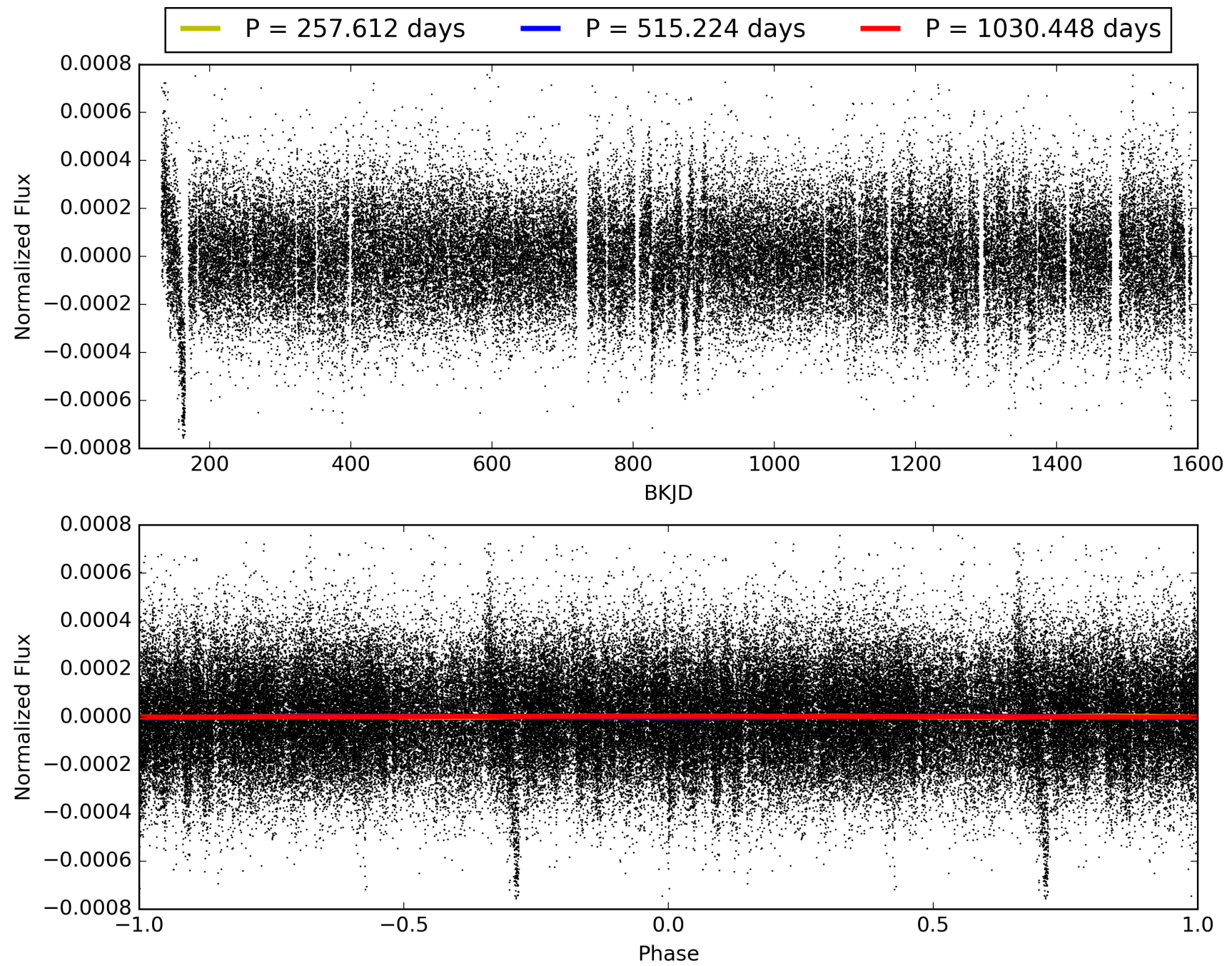
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 19:31:03 Z

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

# TCE 012402792-01, PDC Light Curves

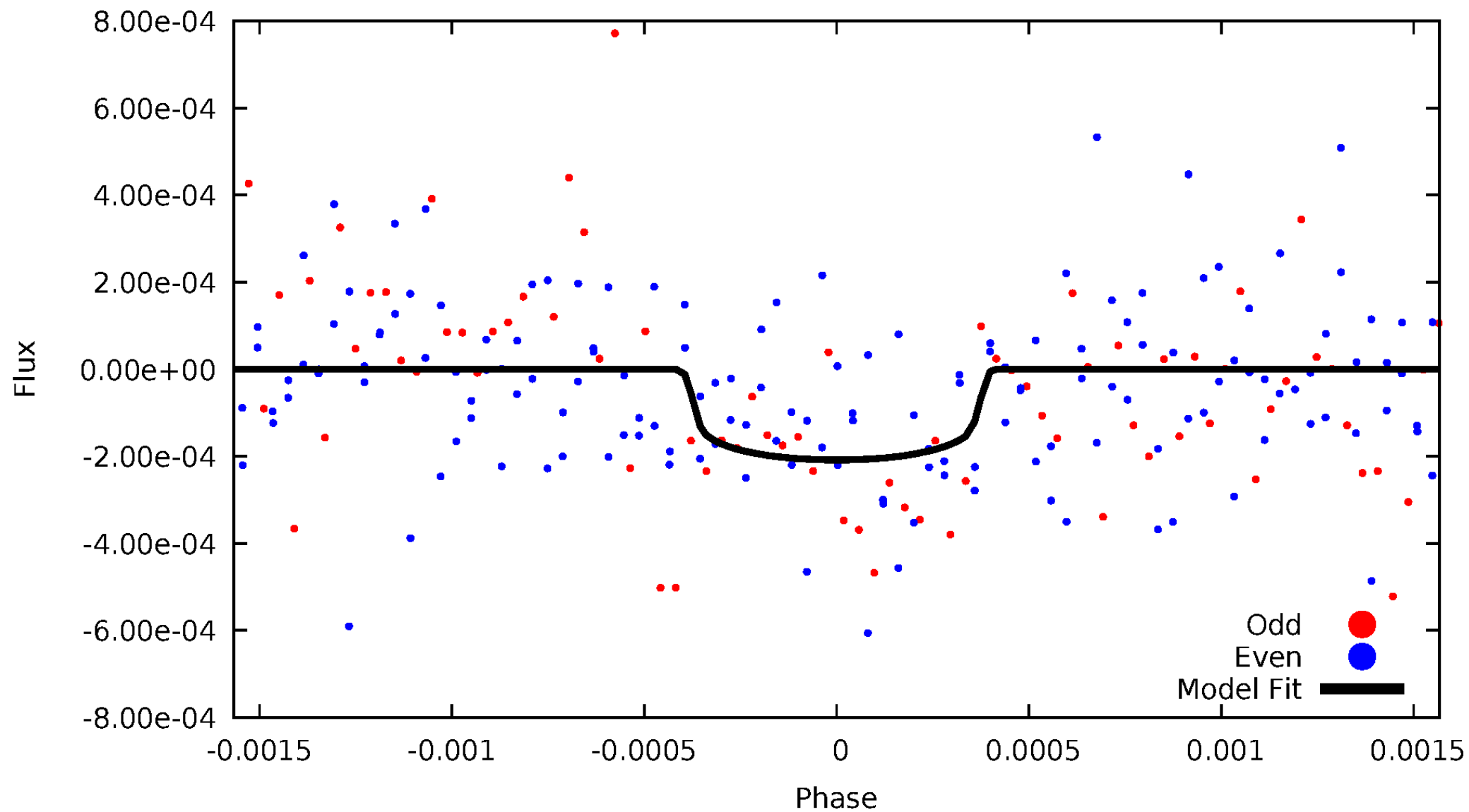


TCE 012402792-01



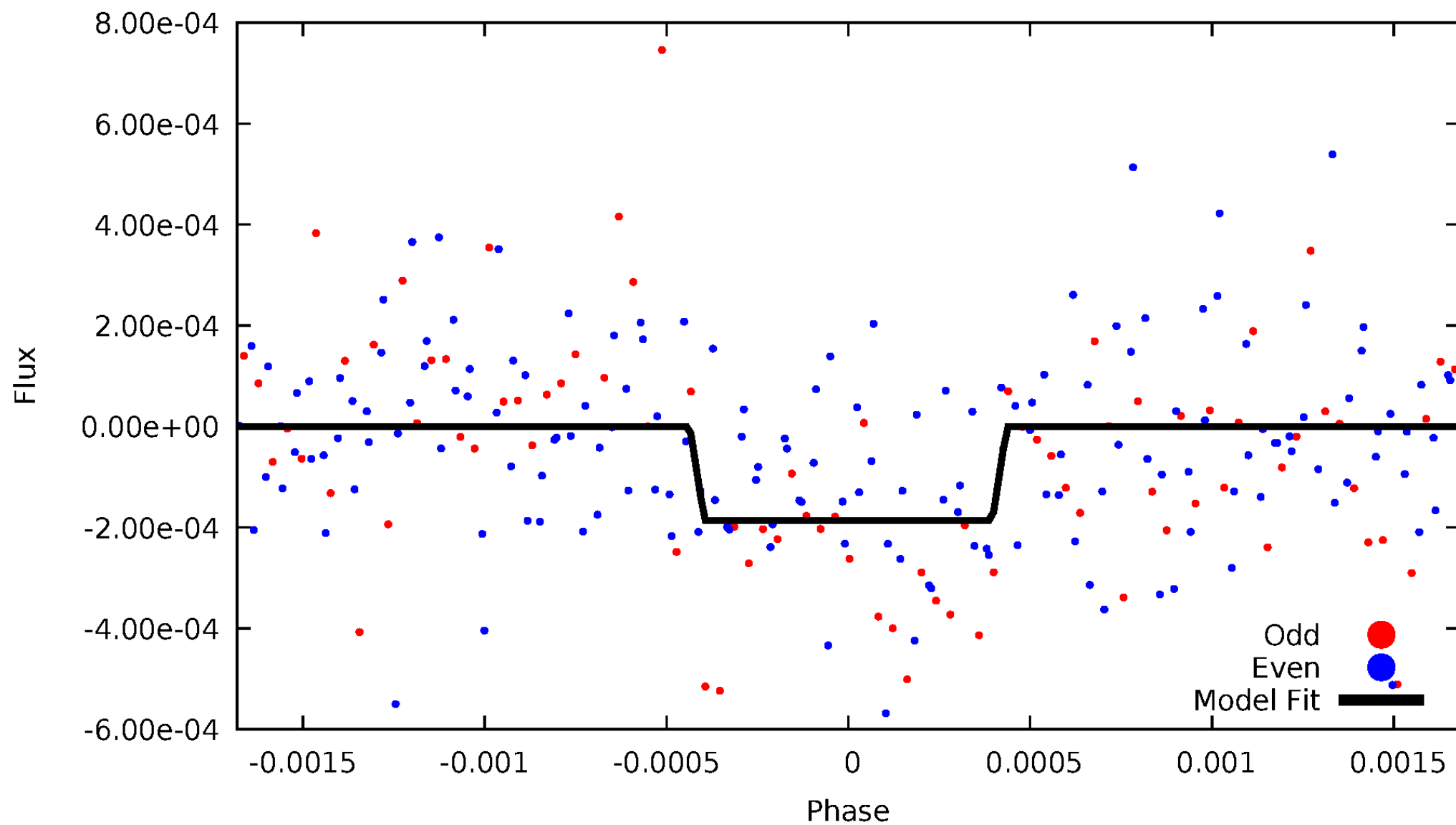
# DV Odd/Even

TCE 012402792-01



# ALT Odd/Even

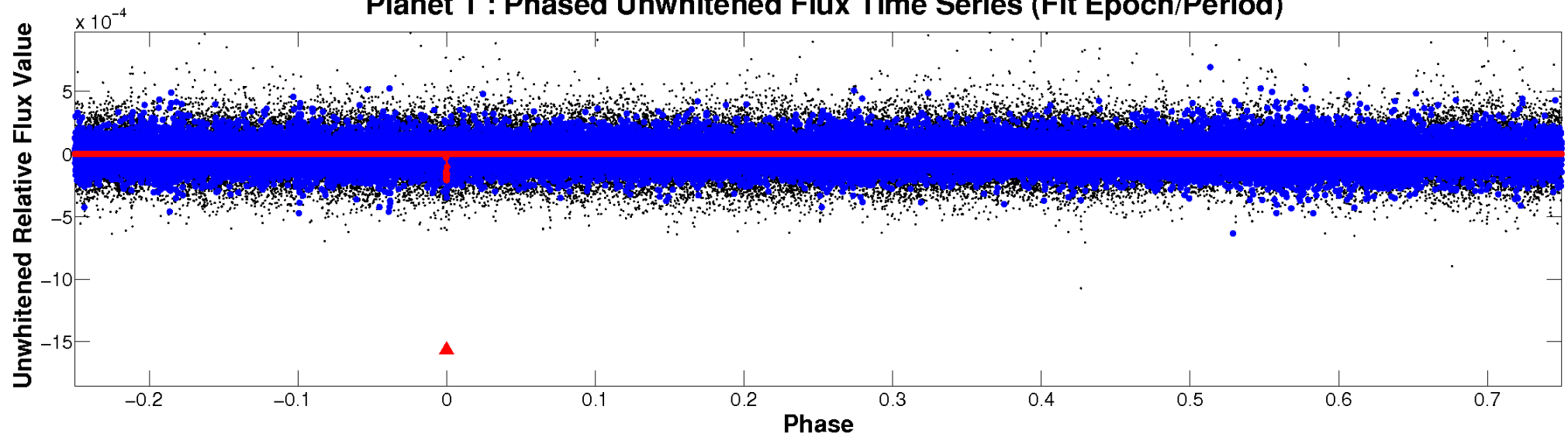
TCE 012402792-01



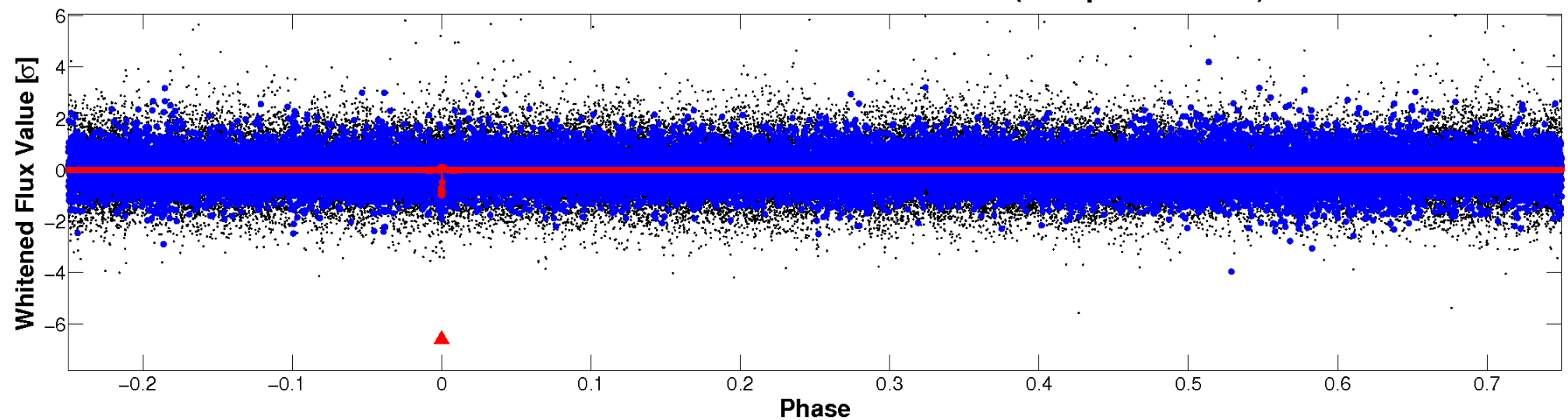


# Non-Whitened Vs. Whitened Light Curve

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

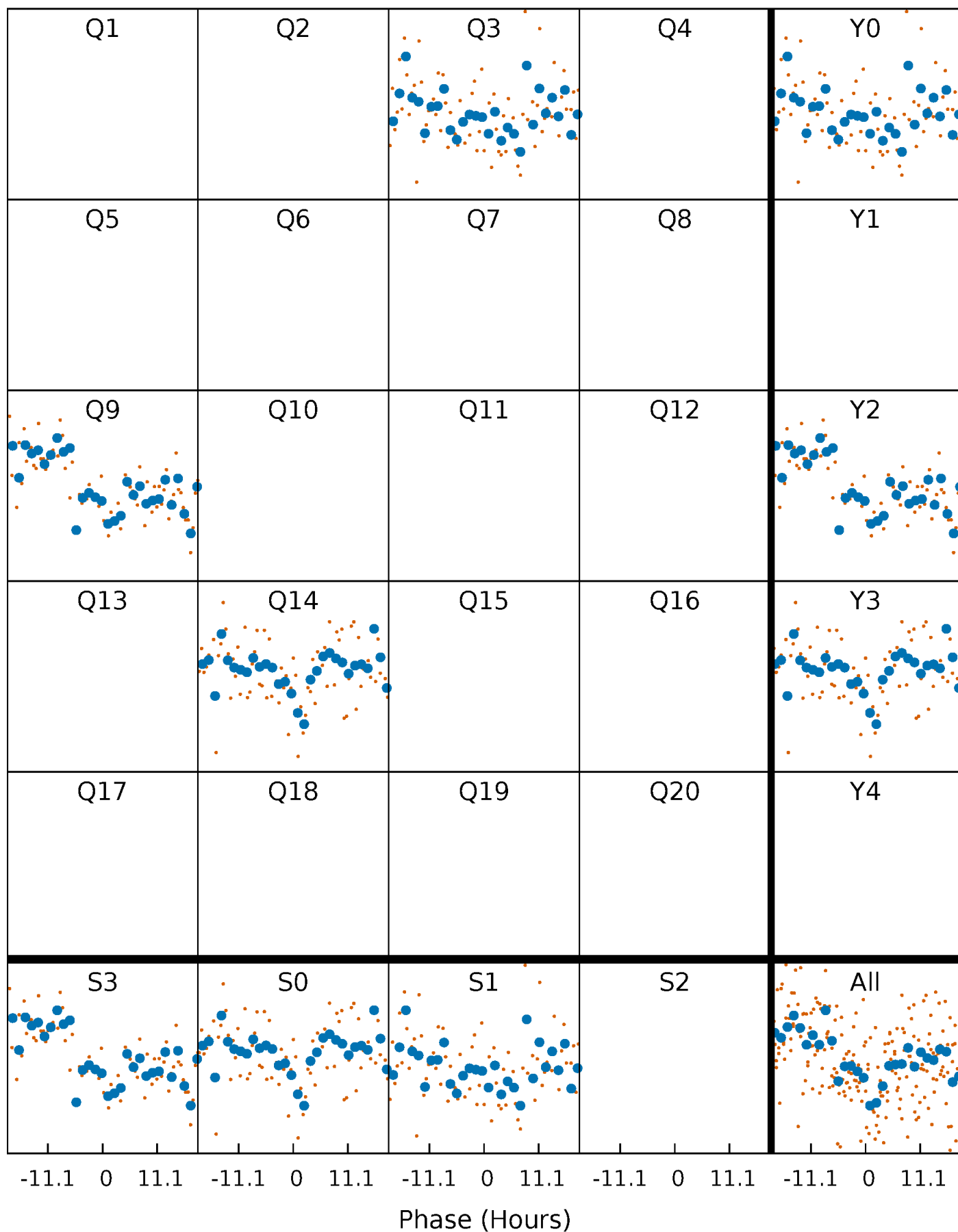


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

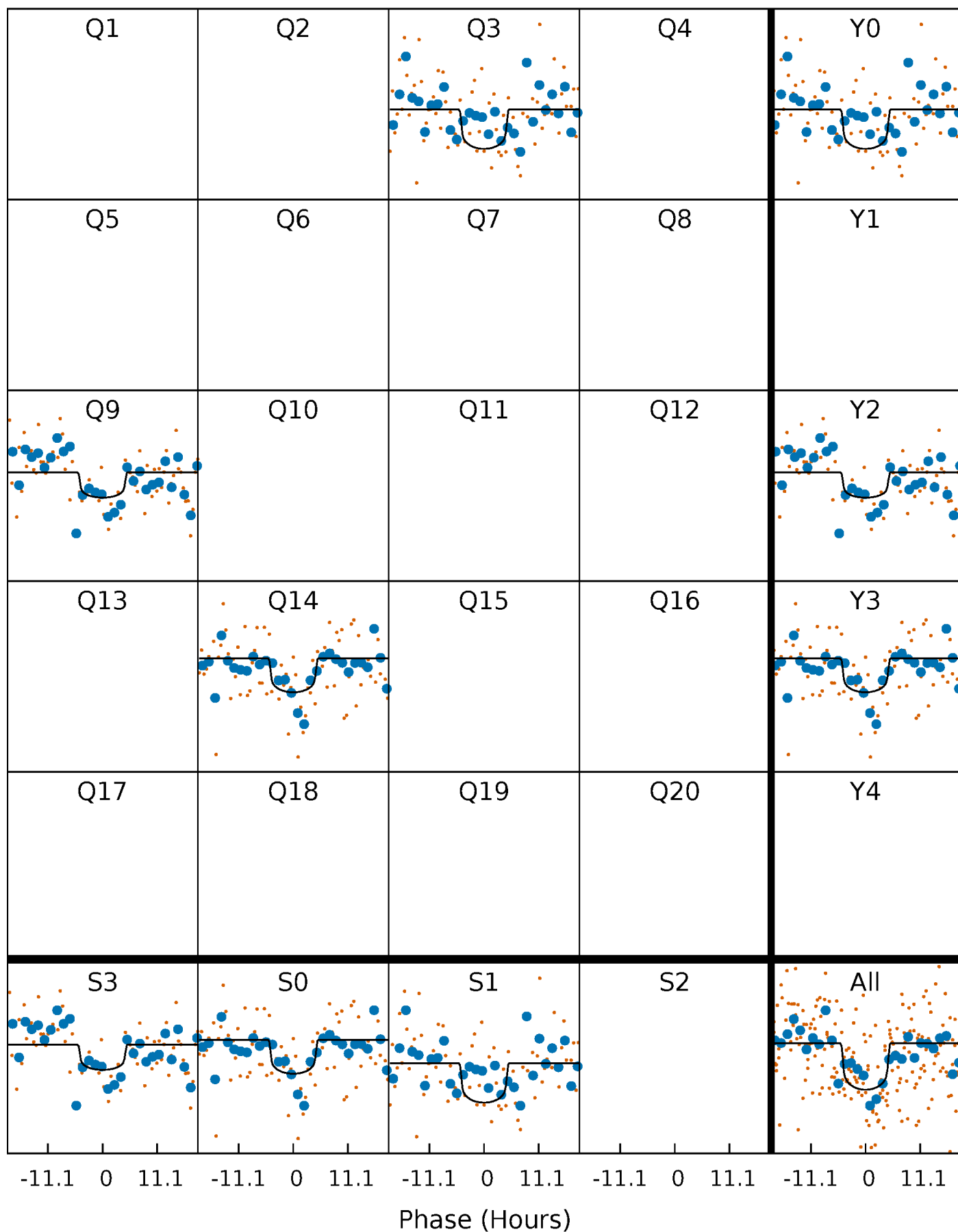
TCE 012402792-01 P=515.224073 Days  $T_0=310.733411$  (BKJD)





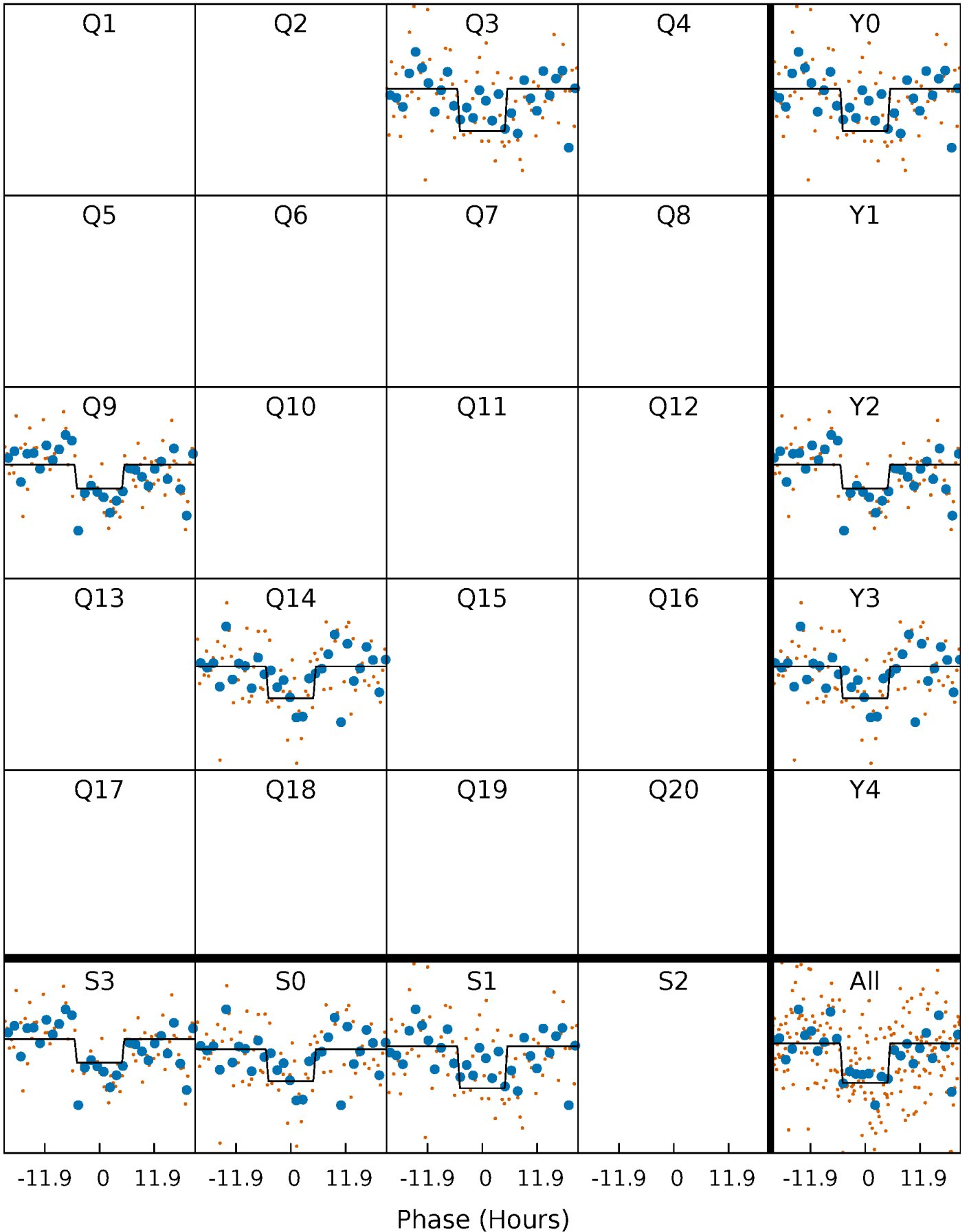
# DV Quarter-Phased Transit Curves

TCE 012402792-01 P=515.224073 Days  $T_0=310.733411$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

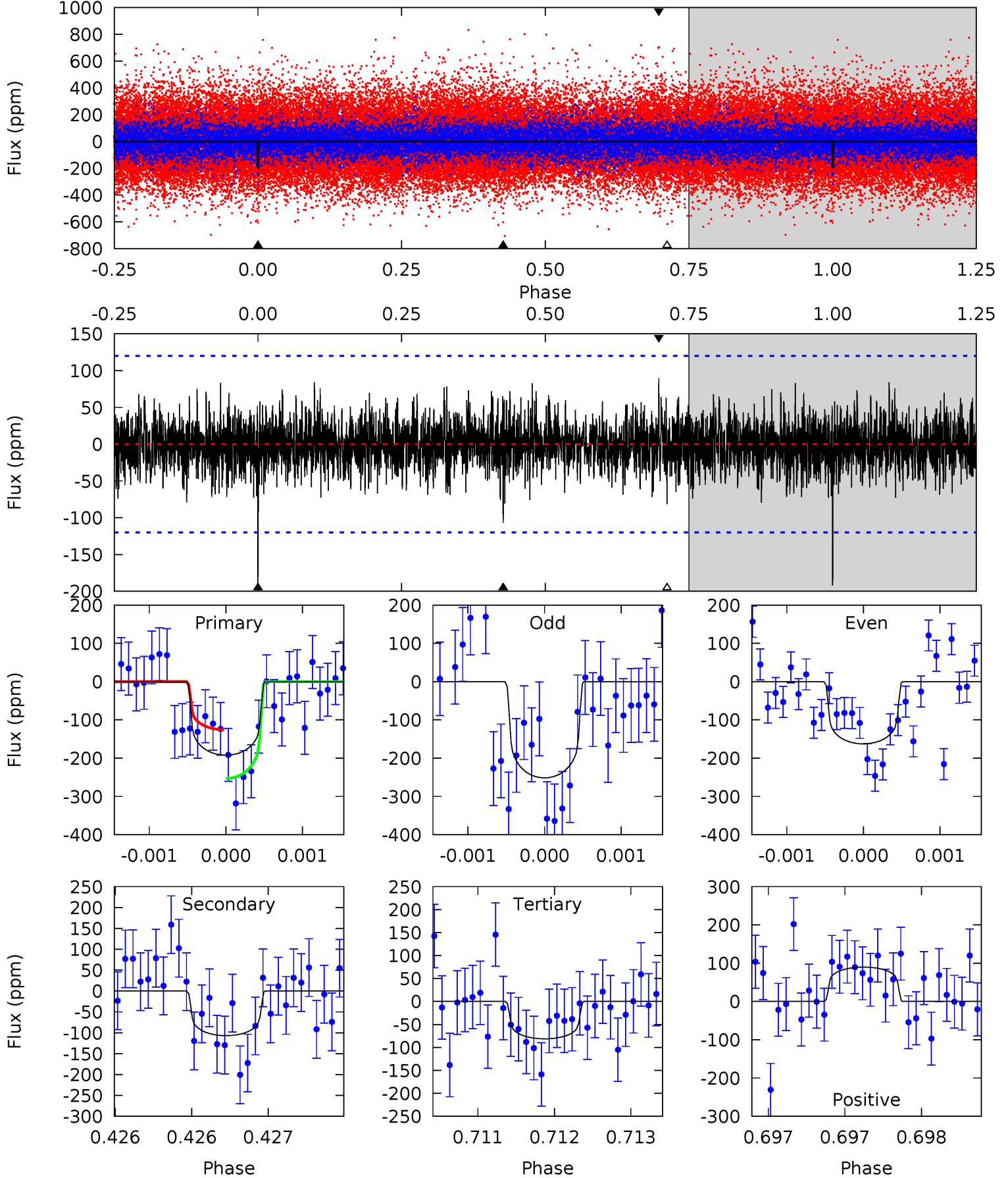
TCE 012402792-01 P=515.245838 Days  $T_0=310.678660$  (BKJD)



# DV Model-Shift Uniqueness Test

012402792-01, P = 515.224073 Days, E = 310.733411 Days

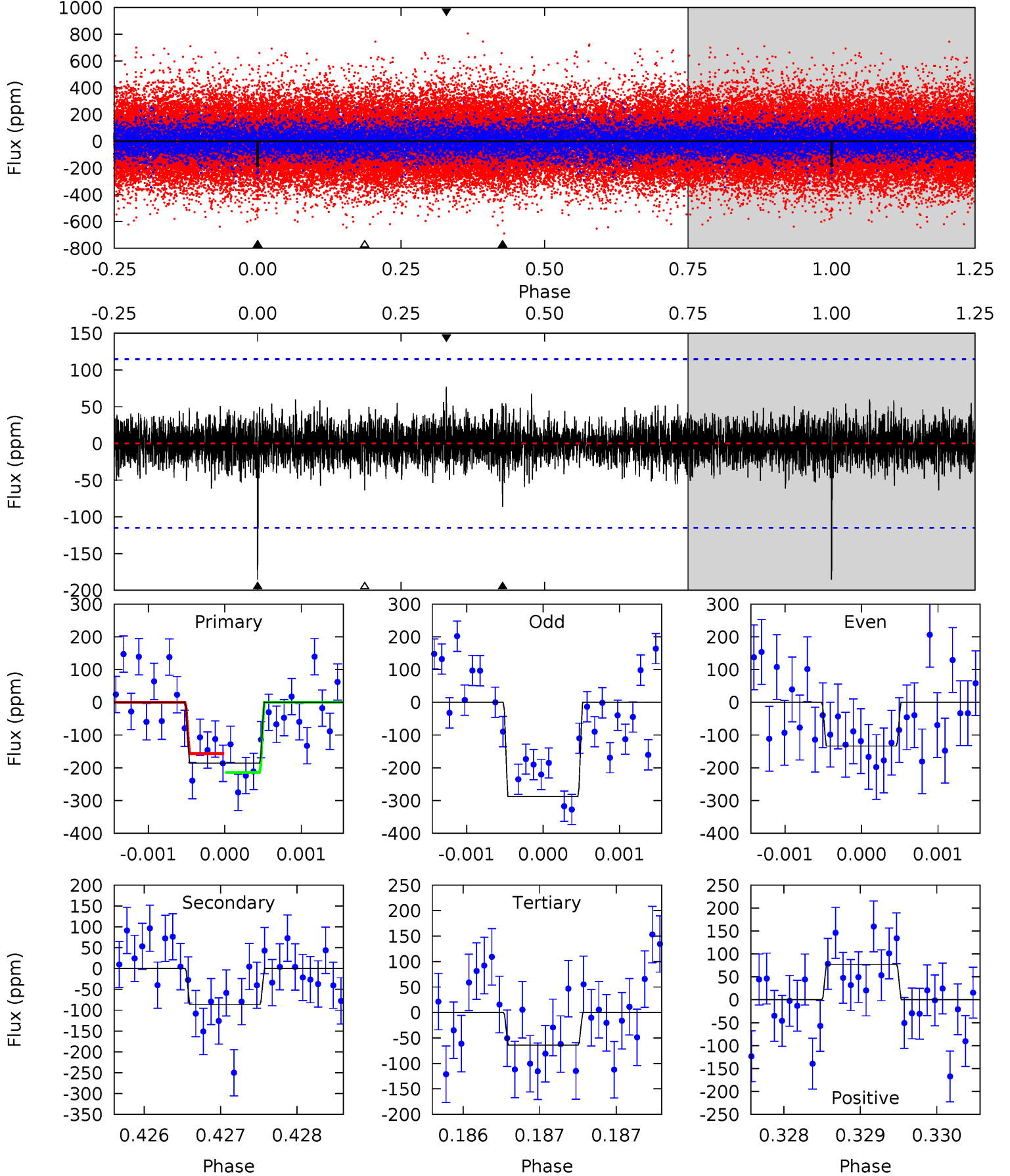
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.79	4.89	3.73	4.11	5.49	3.35	1.11	5.07	4.69	1.17	0.79	1.95	0.81	0.32	2.91



# Alt Model-Shift Uniqueness Test

012402792-01, P = 515.245838 Days, E = 310.678660 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
8.85	4.12	3.04	3.68	5.48	3.34	0.82	5.81	5.17	1.08	0.45	3.53	1.10	0.29	1.37



### Stellar Parameters For KIC 012402792

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6017^{+162}_{-198}$	$4.368^{+0.108}_{-0.201}$	$-0.060^{+0.250}_{-0.300}$	$1.096^{+0.338}_{-0.182}$	$1.023^{+0.153}_{-0.126}$	$1.093^{+0.611}_{-0.557}$
	+3%/-3%	+2%/-5%	+417%/-500%	+31%/-17%	+15%/-12%	+56%/-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 012402792-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-107 \pm 22$	$1.83^{+0.92}_{-0.88}$	$349^{+23}_{-20}$	$5064^{+1924}_{-764}$	$27554^{+76049}_{-15611}$
Alt.	$-86 \pm 21$	$1.69^{+0.92}_{-0.82}$	$347^{+27}_{-17}$	$4996^{+1844}_{-791}$	$26716^{+72327}_{-16433}$

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

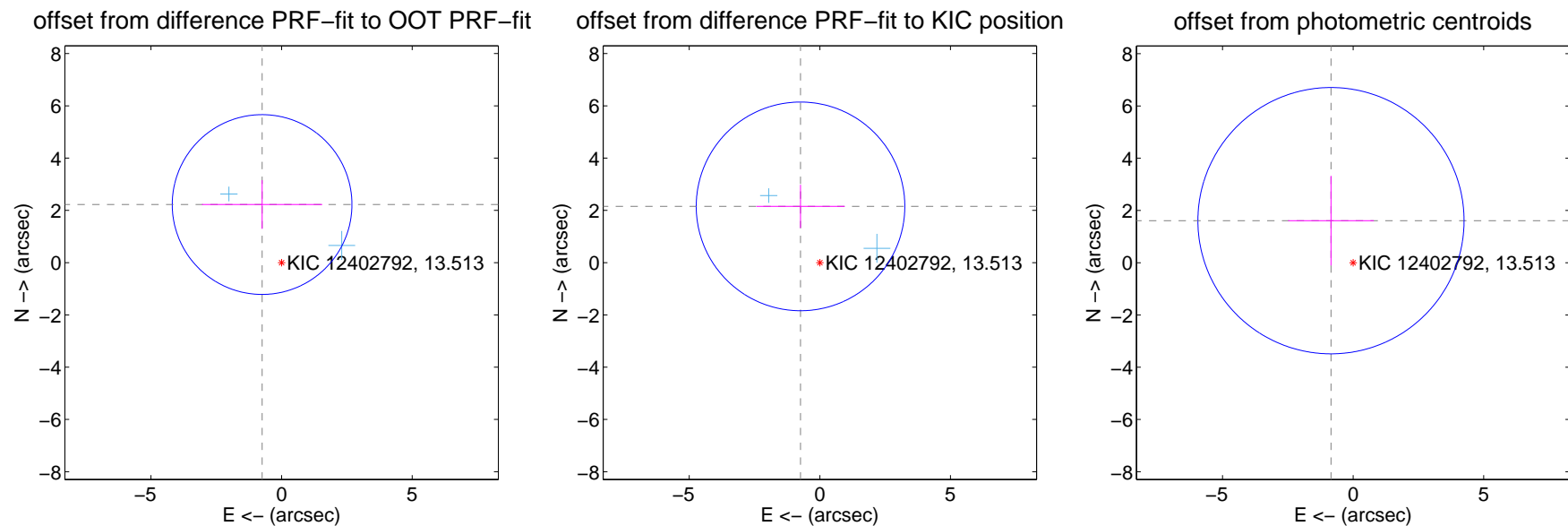
## DV Centroid Data

Supplemental centroid analysis for 012402792-01. Kepler magnitude: 13.51. Transit SNR 6.77

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.345 \pm 1.147$	2.05	$0.746 \pm 2.301$	$2.223 \pm 0.931$
PRF-fit source offset from KIC position	$2.276 \pm 1.331$	1.71	$0.740 \pm 1.693$	$2.153 \pm 0.827$
photometric centroid source offset	$1.82 \pm 1.70$	1.07	$0.85 \pm 1.64$	$1.61 \pm 1.71$



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.

Q1 no difference image



Q1 no OOT image



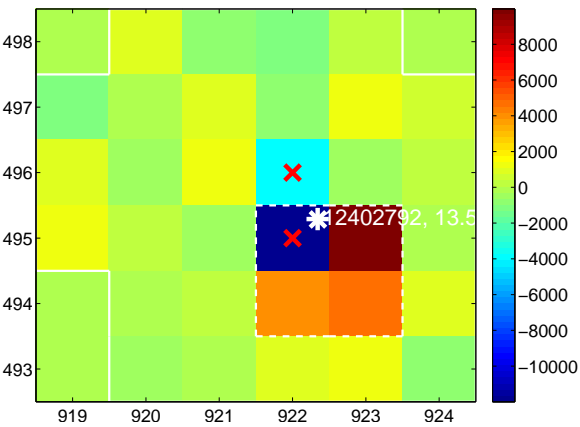
Q2 no difference image



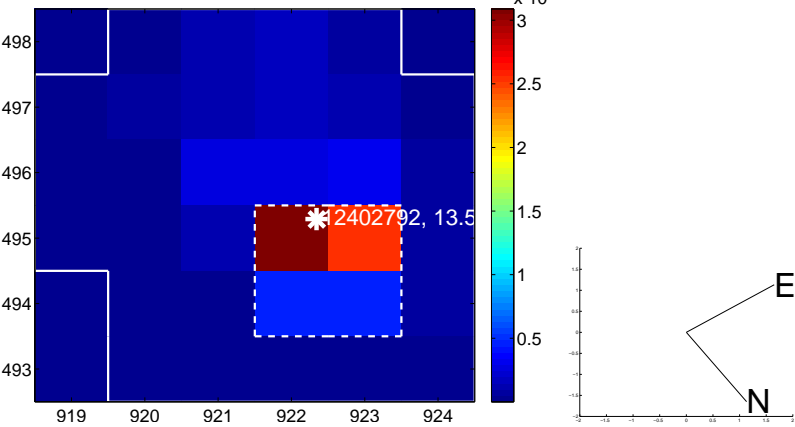
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image

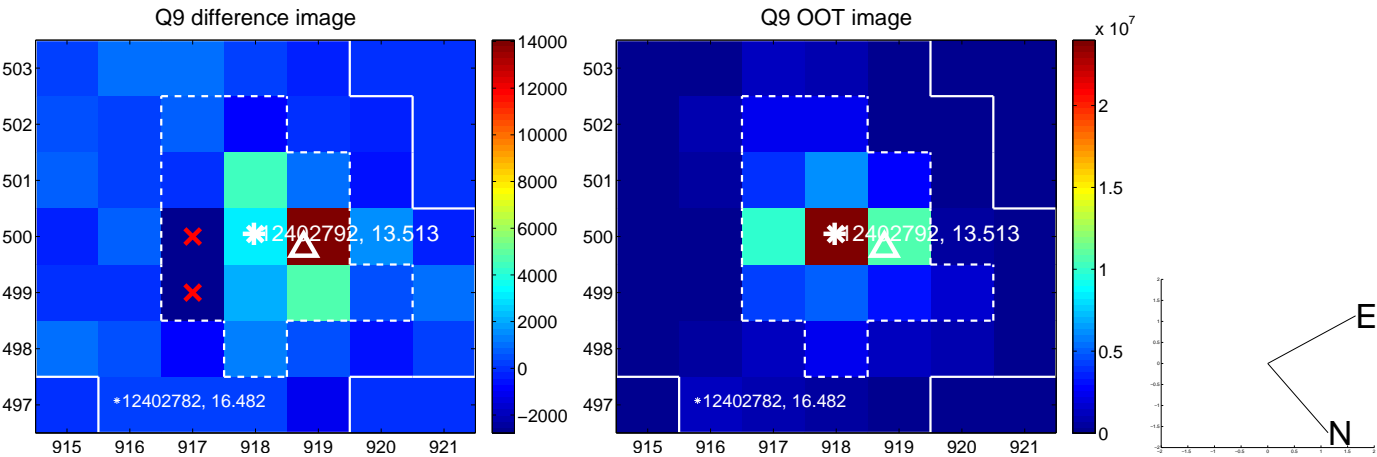




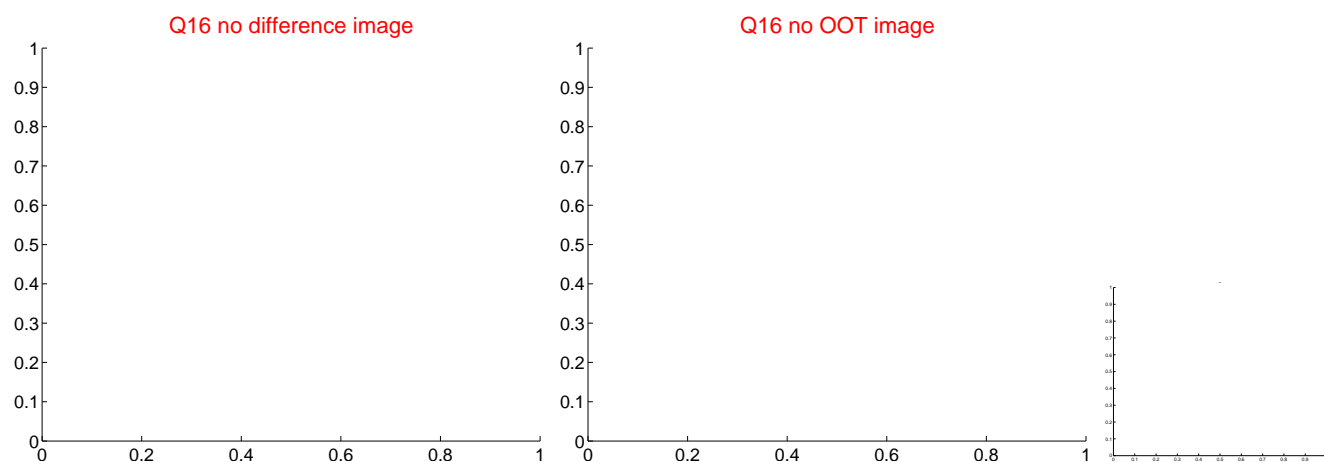
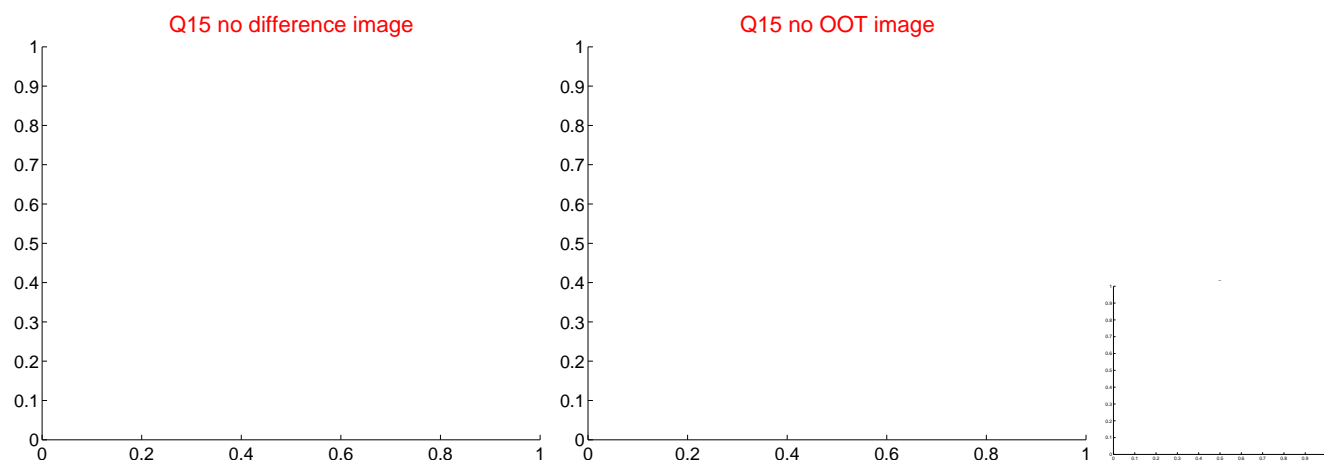
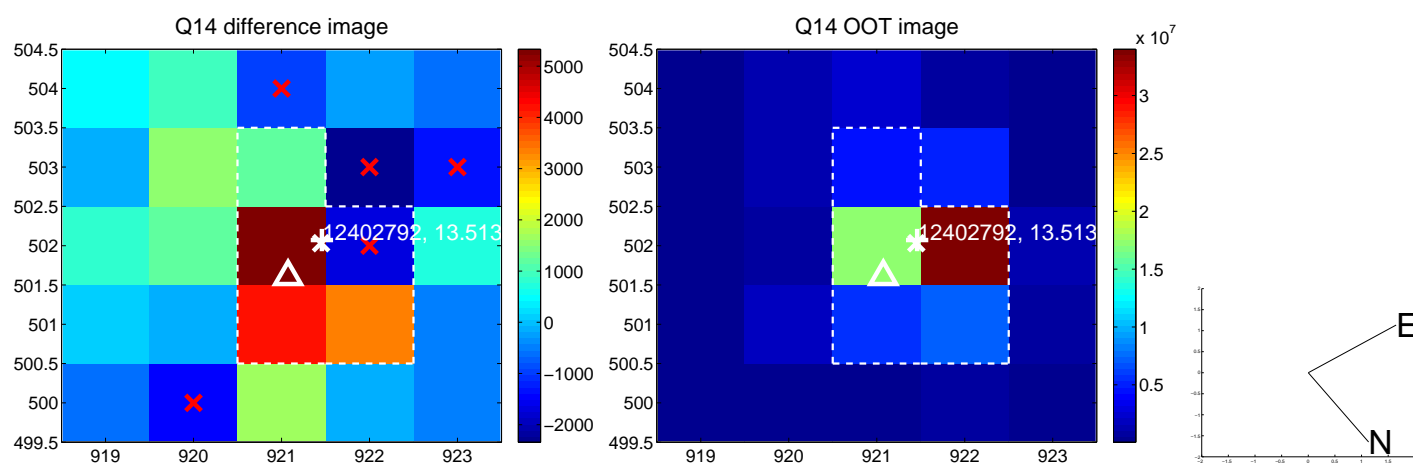
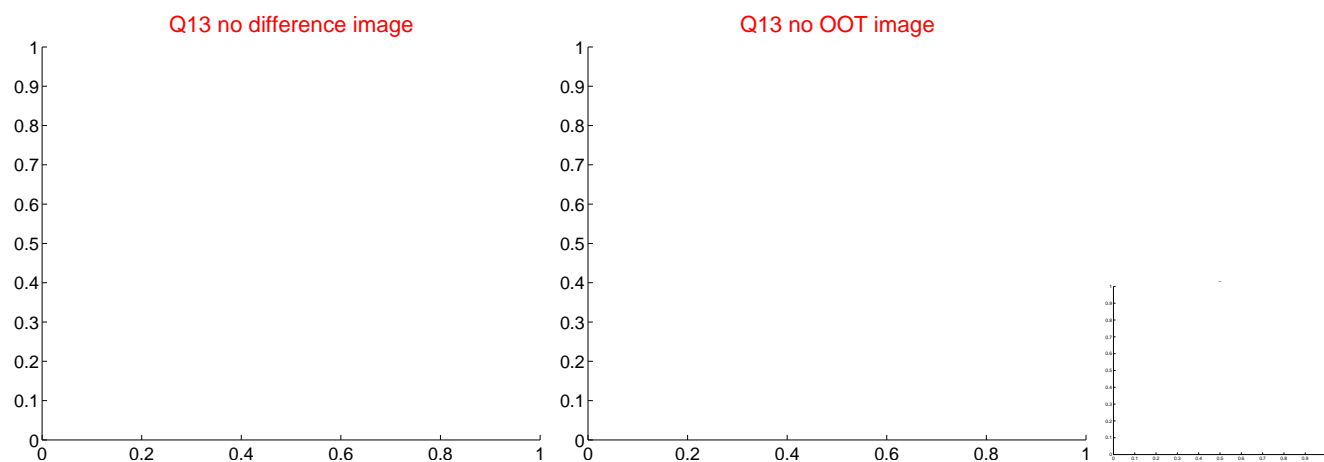
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



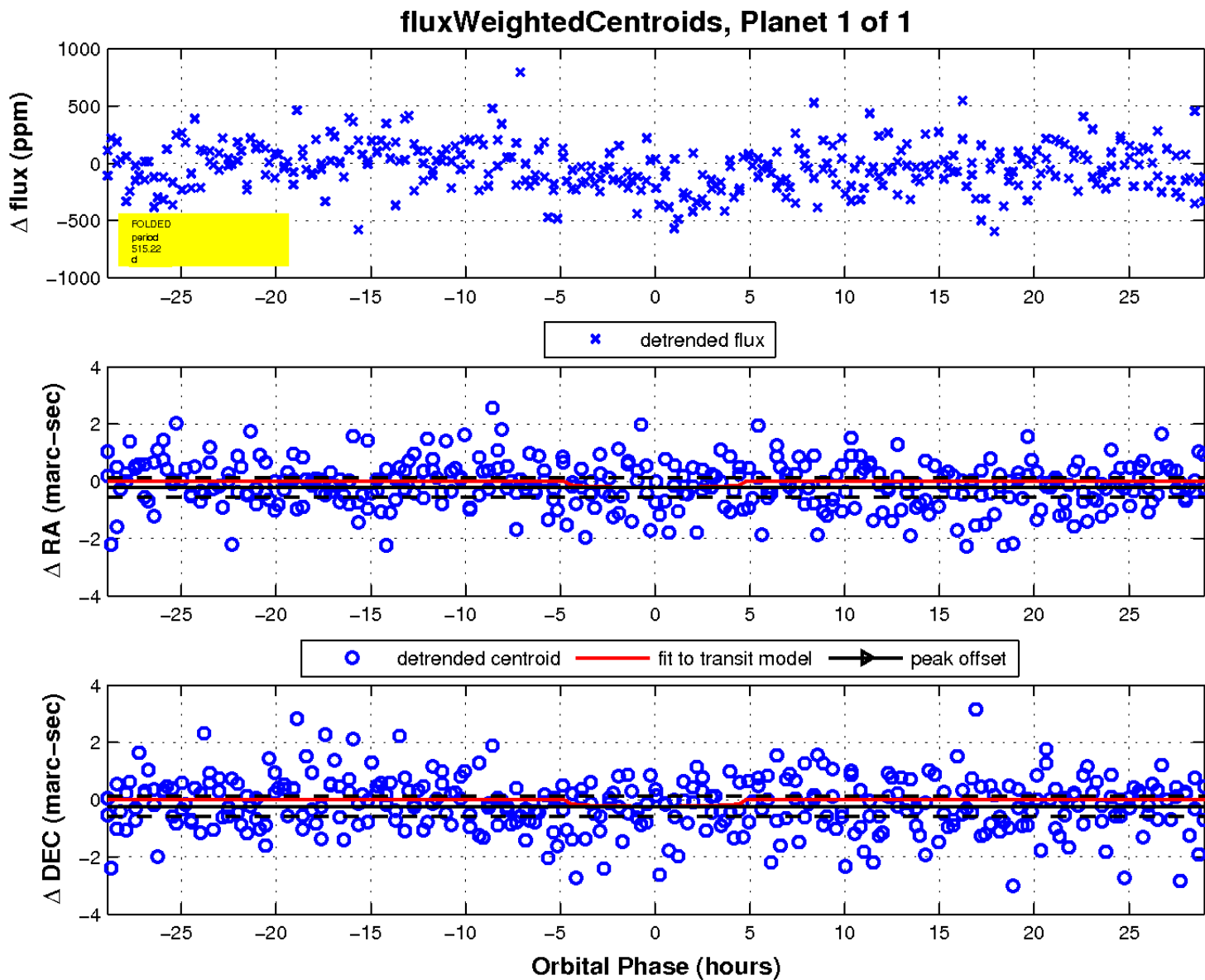
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

