

# KIC 003116004

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003116004-01	OBS	No	316.866387	171.680813	917.3	12.498	8.1	8.6	0.86	6084	2.67	1.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003116004-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQU_ALT—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.

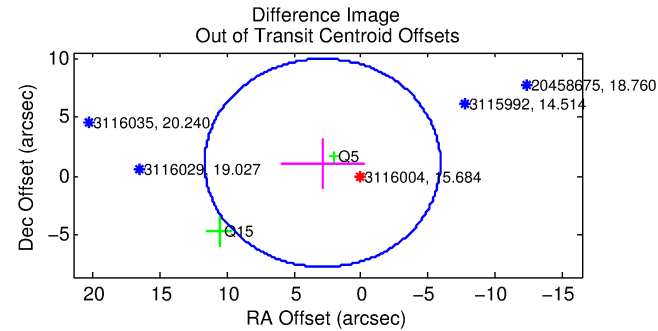
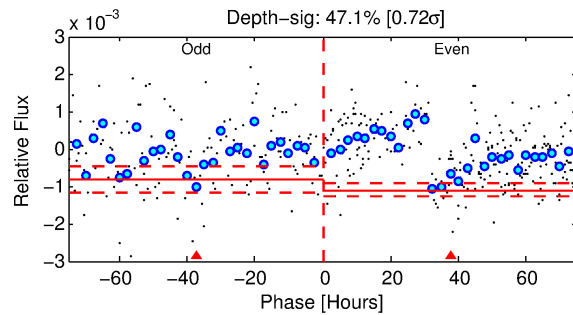
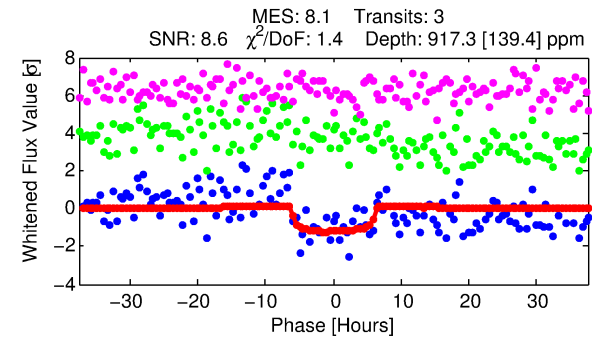
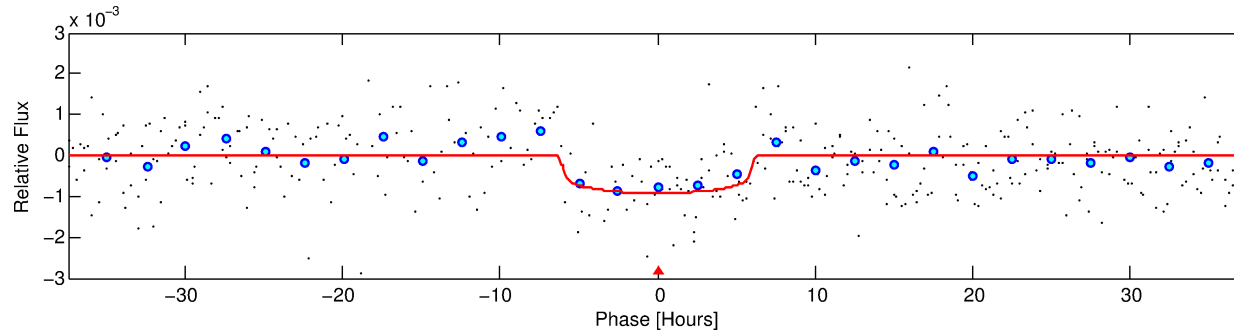
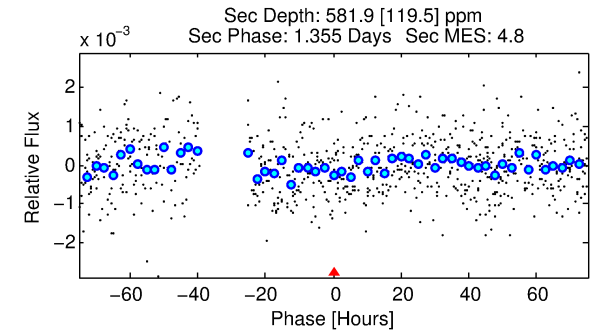
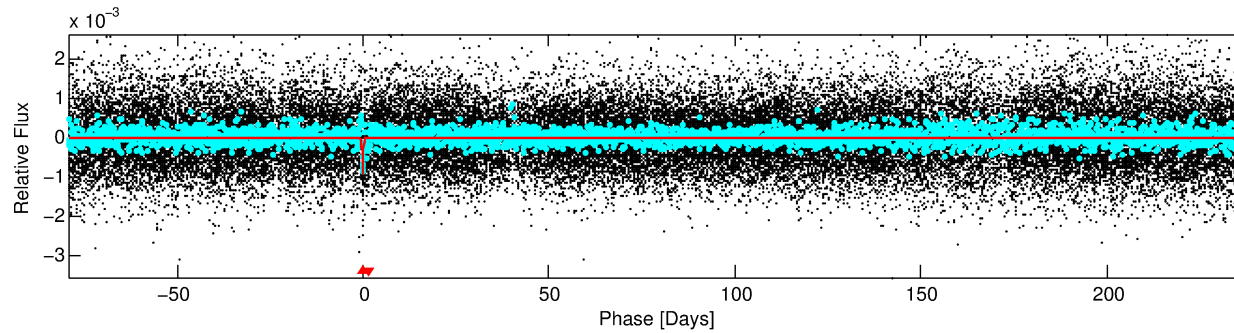
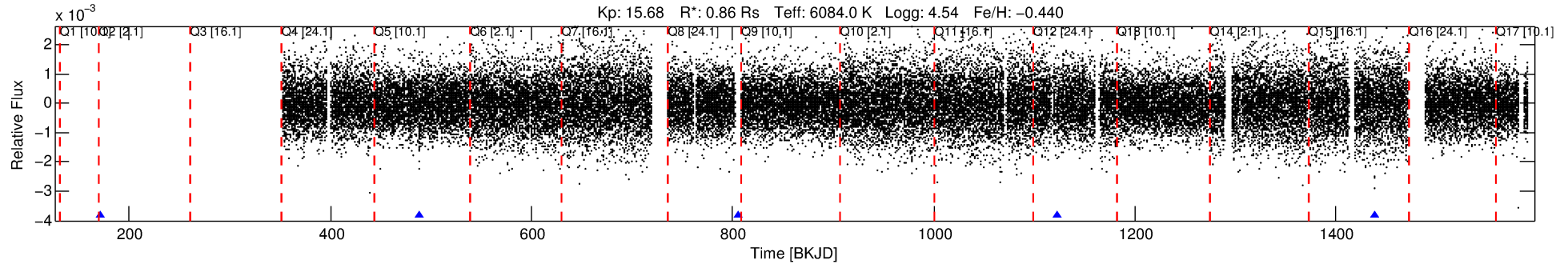
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003116004-01

No Significant Match Found

# DV One-Page Summary

KIC: 3116004 Candidate: 1 of 1 Period: 316.866 d



## DV Fit Results:

Period = 316.86639 [0.01108] d  
Epoch = 171.6808 [0.0287] BKJD  
Rp/R\* = 0.0283 [0.0249]  
a/R\* = 181.23 [804.24]  
b = 0.43 [8.54]  
Seff = 1.15 [0.46]  
Teq = 264 [27] K  
Rp = 2.67 [2.48] Re  
a = 0.8932 [0.2280] AU  
Ag = 35861.71 [64930.26] [0.55σ]  
Teffp = 5613 [2496] K [2.14σ]

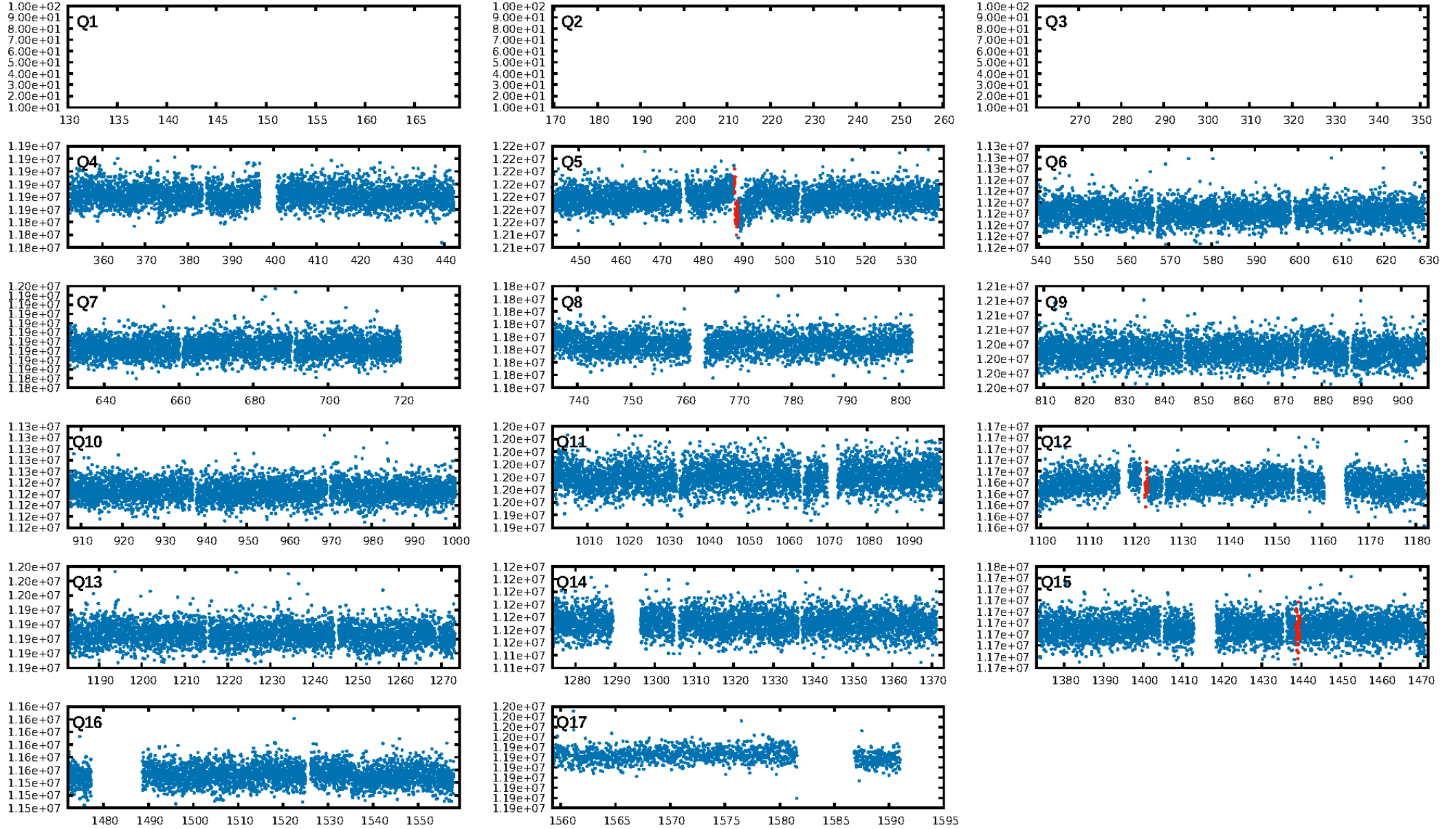
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.5%  
ModelChiSquareGof-sig: 98.8%  
Bootstrap-pfa: 6.08e-16  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1573  
Centroid-sig: 16.0%  
Centroid-so: 1.326 arcsec [1.03σ]  
OotOffset-rm: 3.090 arcsec [1.05σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-rm: 2.654 arcsec [4.64σ]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

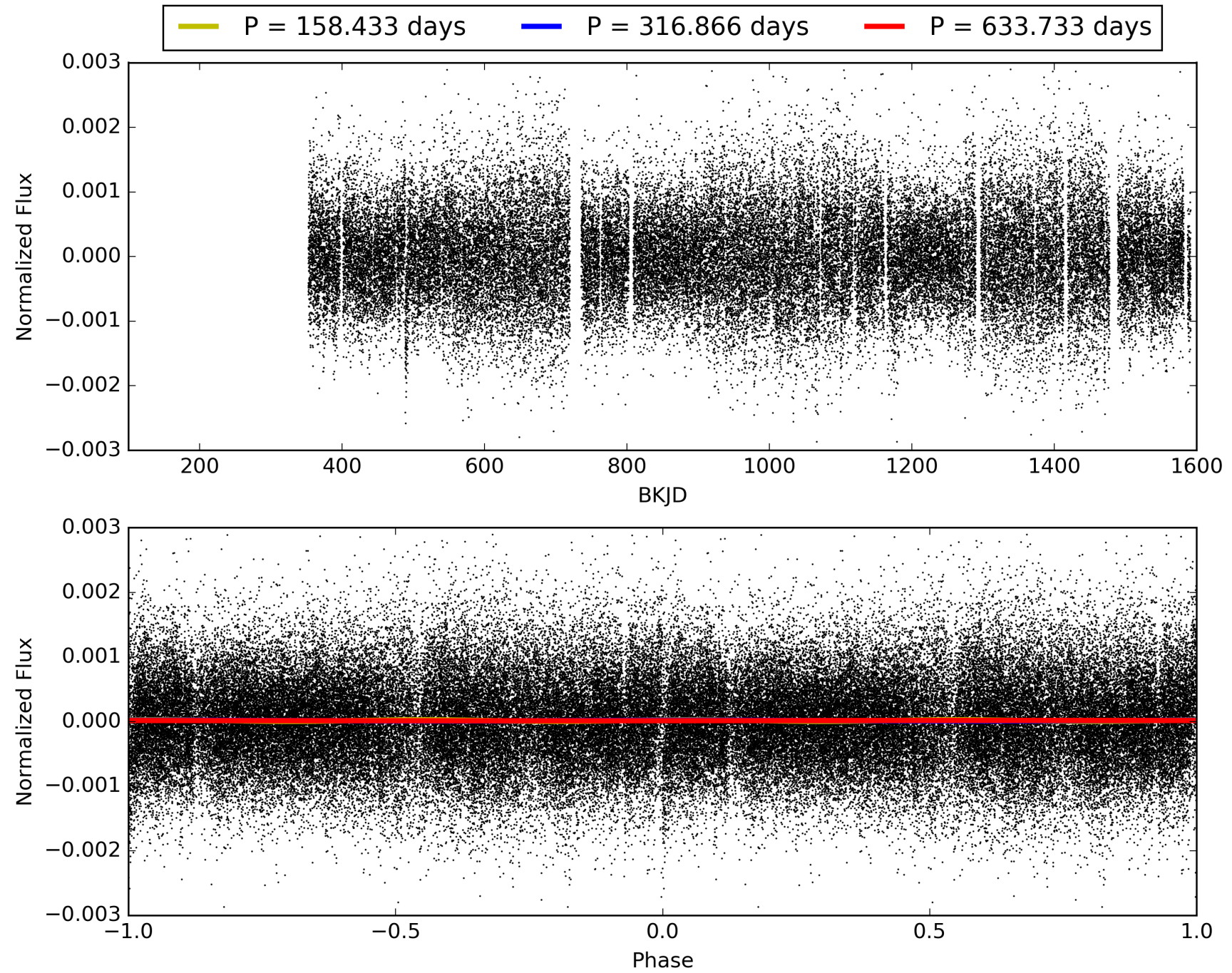
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:32:54 Z

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

# TCE 003116004-01, PDC Light Curves

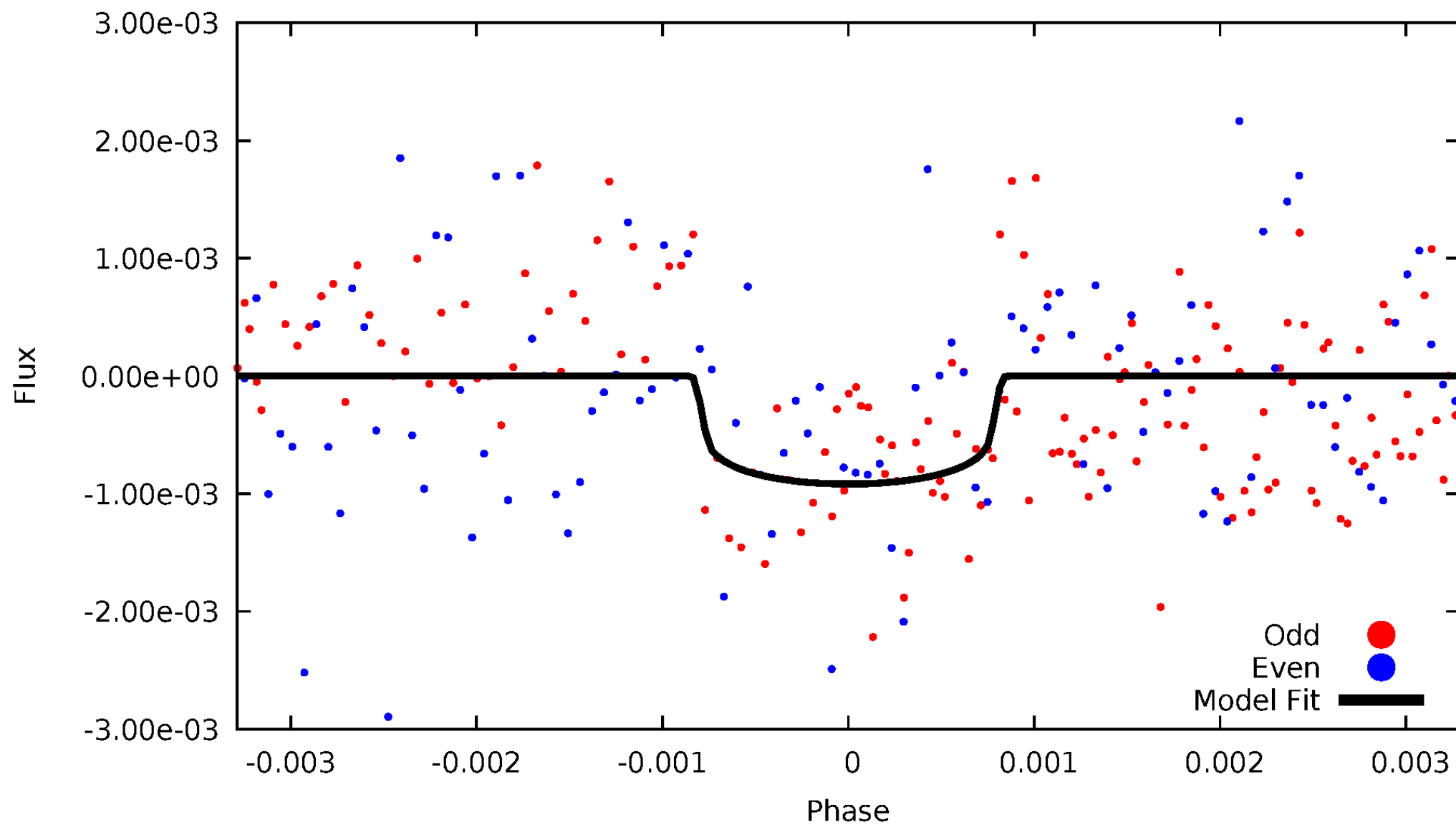


TCE 003116004-01



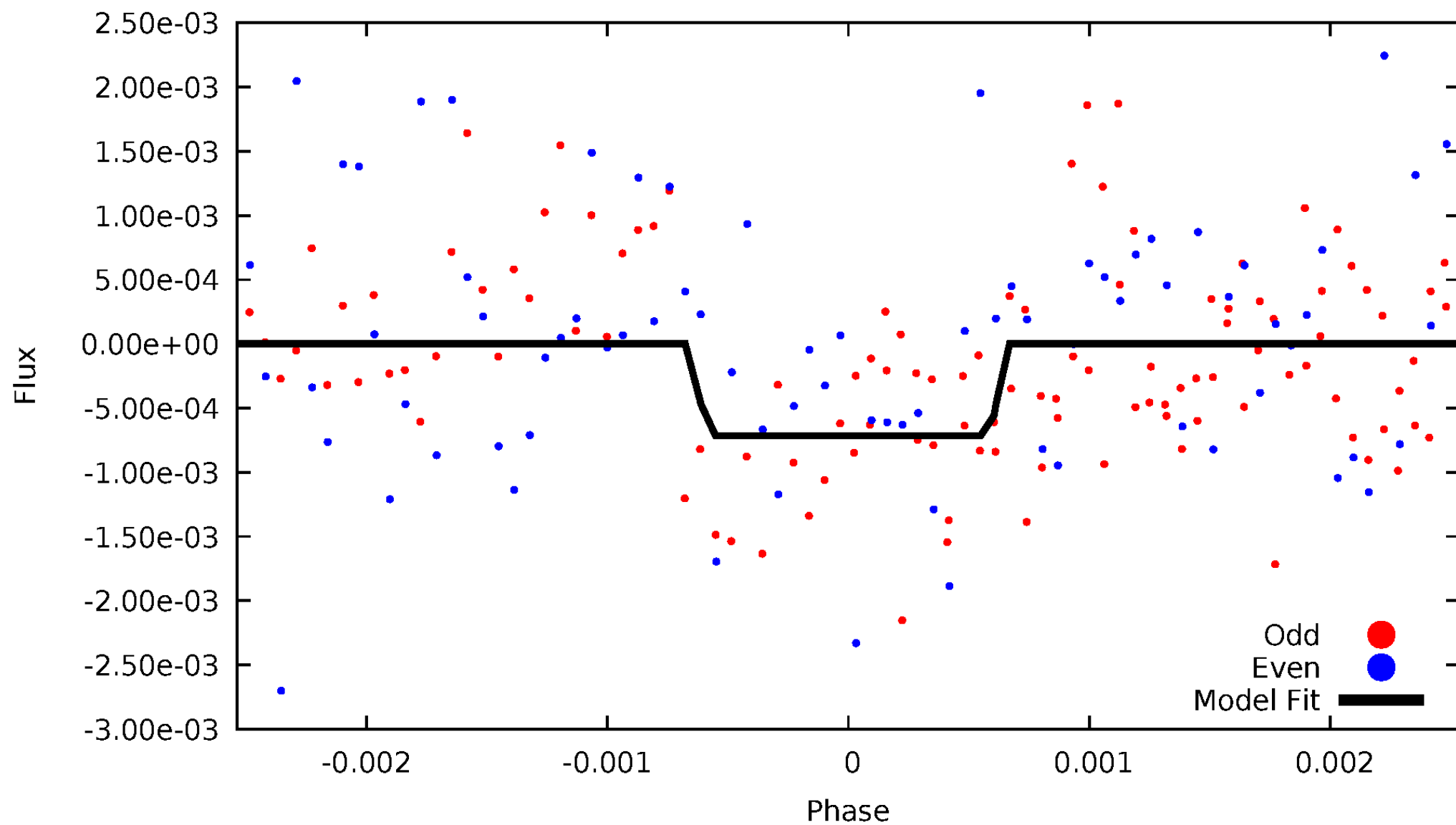
# DV Odd/Even

TCE 003116004-01



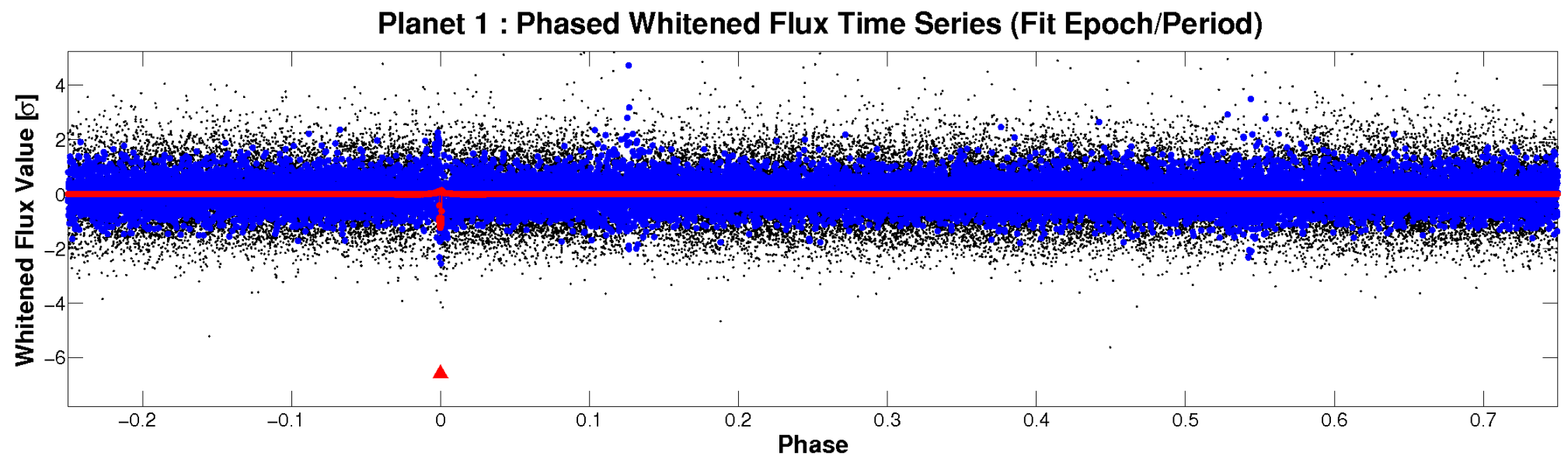
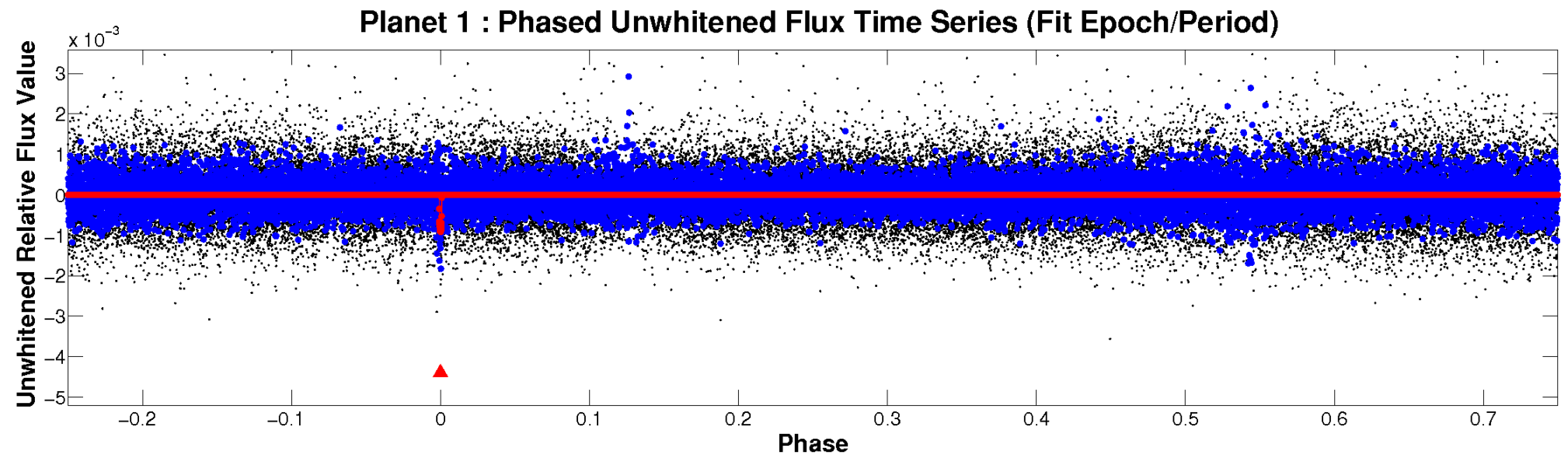
# ALT Odd/Even

TCE 003116004-01





# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

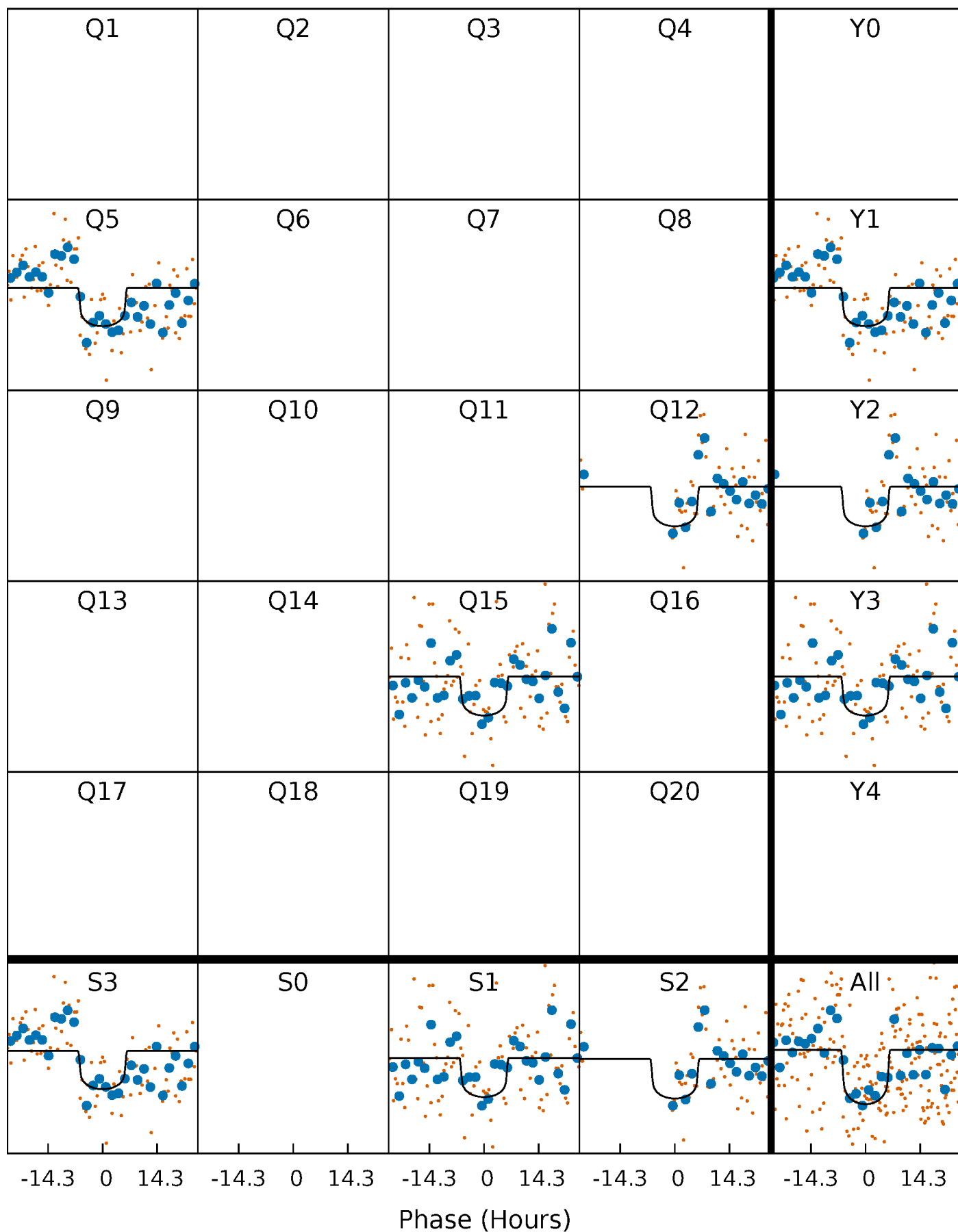
TCE 003116004-01 P=316.866387 Days  $T_0=171.680813$  (BKJD)





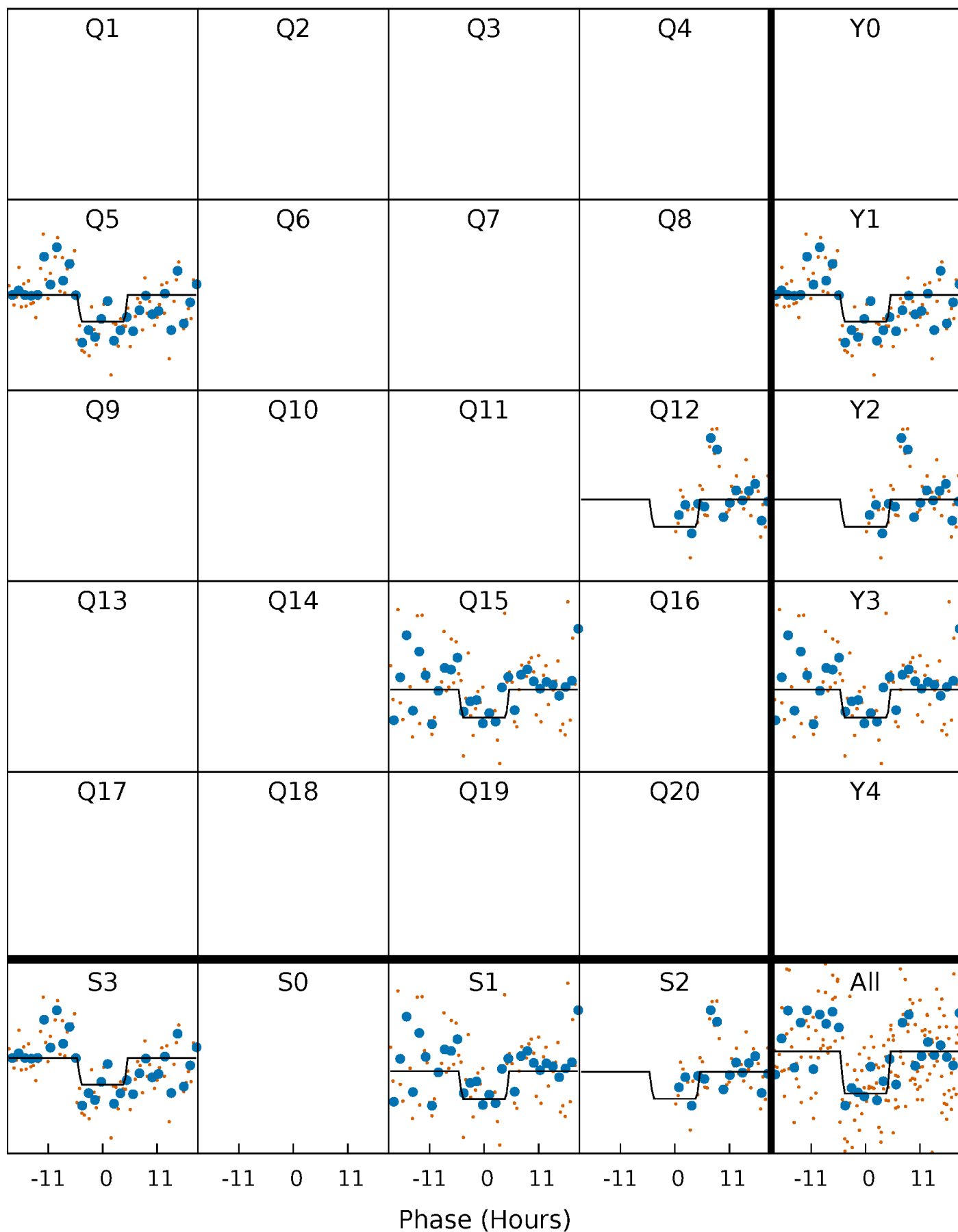
# DV Quarter-Phased Transit Curves

TCE 003116004-01 P=316.866387 Days  $T_0=171.680813$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

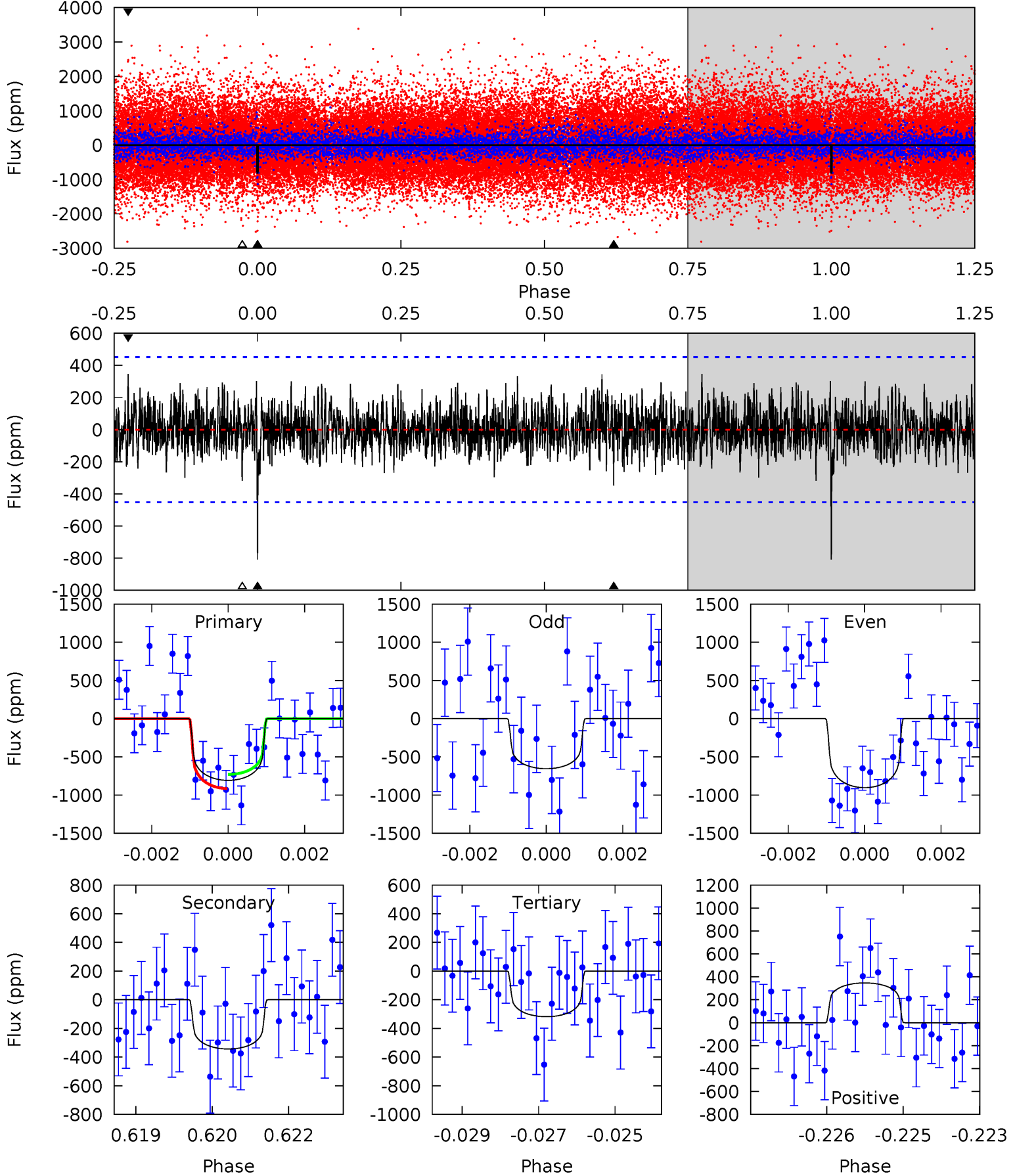
TCE 003116004-01 P=316.863215 Days  $T_0=171.655025$  (BKJD)



# DV Model-Shift Uniqueness Test

003116004-01, P = 316.866387 Days, E = 171.680813 Days

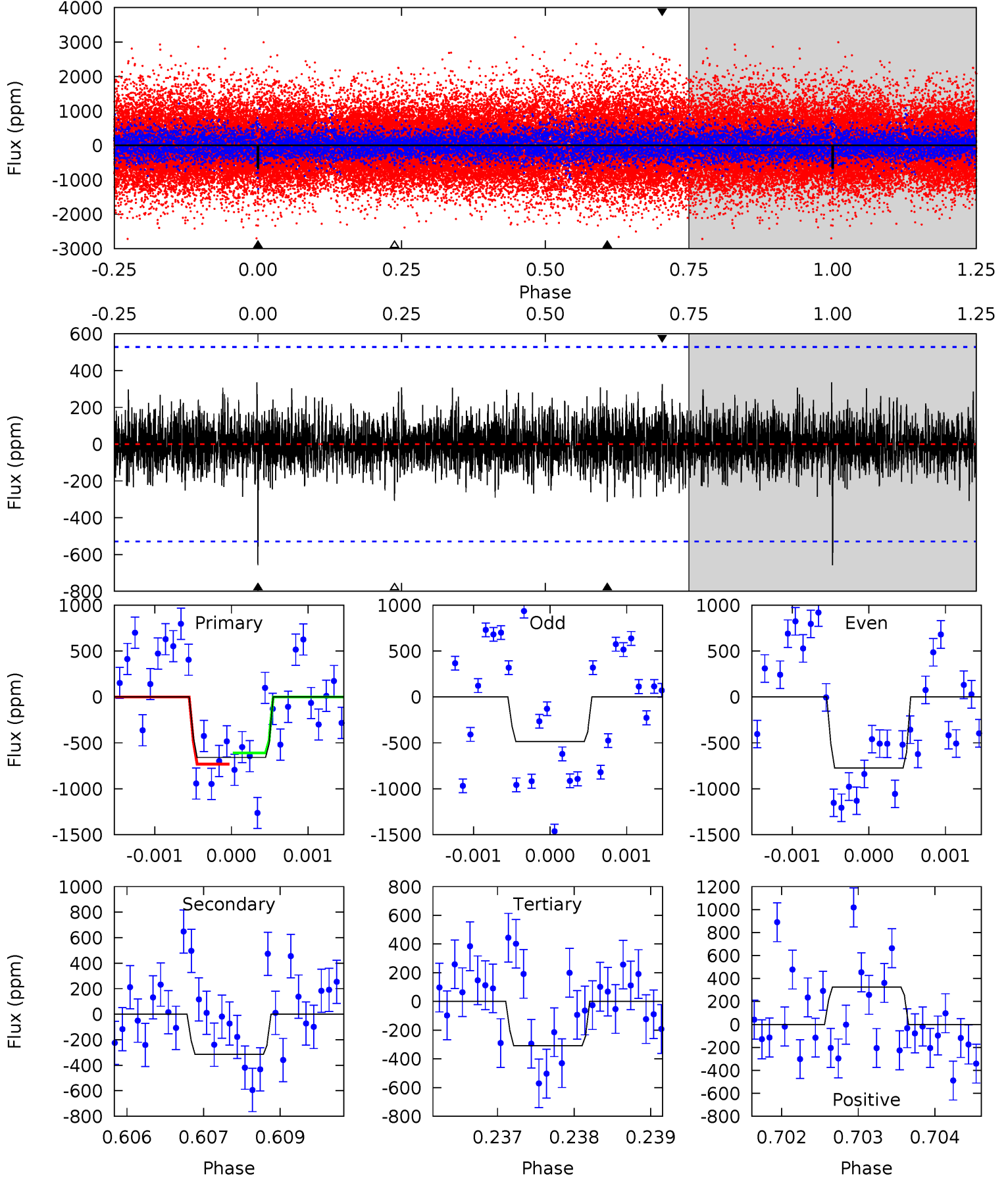
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.57	4.08	3.77	4.11	5.36	3.14	1.17	5.80	5.46	0.30	-0.04	1.44	1.20	0.30	1.07



# Alt Model-Shift Uniqueness Test

003116004-01, P = 316.863215 Days, E = 171.655025 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
6.74	3.21	3.15	3.34	5.41	3.23	0.89	3.59	3.40	0.05	-0.13	1.43	1.28	0.34	0.60



### Stellar Parameters For KIC 003116004

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6084^{+192}_{-235}$	$4.542^{+0.048}_{-0.204}$	$-0.440^{+0.300}_{-0.300}$	$0.863^{+0.261}_{-0.082}$	$0.944^{+0.106}_{-0.117}$	$2.071^{+0.425}_{-1.096}$
	+3%/-4%	+1%/-4%	+68%/-68%	+30%/-10%	+11%/-12%	+21%/-53%
Source	KIC0	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 003116004-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-344 \pm 84$	$3.18^{+2.20}_{-1.79}$	$375^{+25}_{-20}$	$4685^{+2312}_{-844}$	$14096^{+63822}_{-9290}$
Alt.	$-313 \pm 98$	$3.25^{+2.01}_{-2.04}$	$377^{+27}_{-19}$	$4584^{+2678}_{-808}$	$12240^{+78420}_{-7827}$

$T_{\text{max}}$  = 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

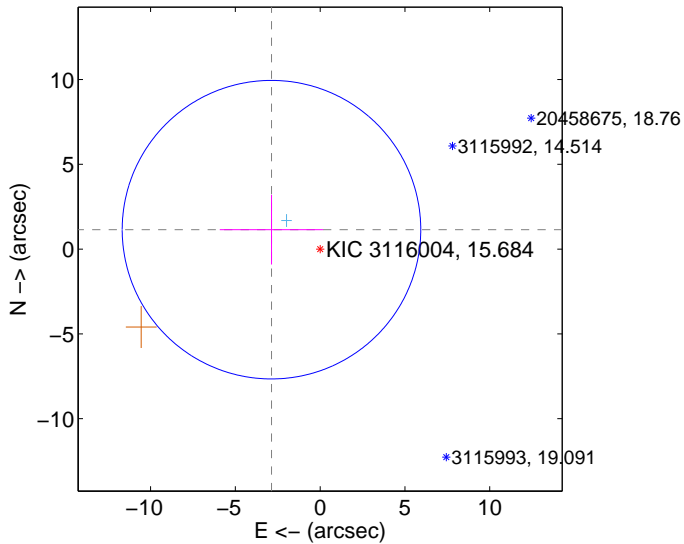
Supplemental centroid analysis for 003116004-01. Kepler magnitude: 15.68. Transit SNR 8.64

There are 1 quarters with good PRF difference image offsets

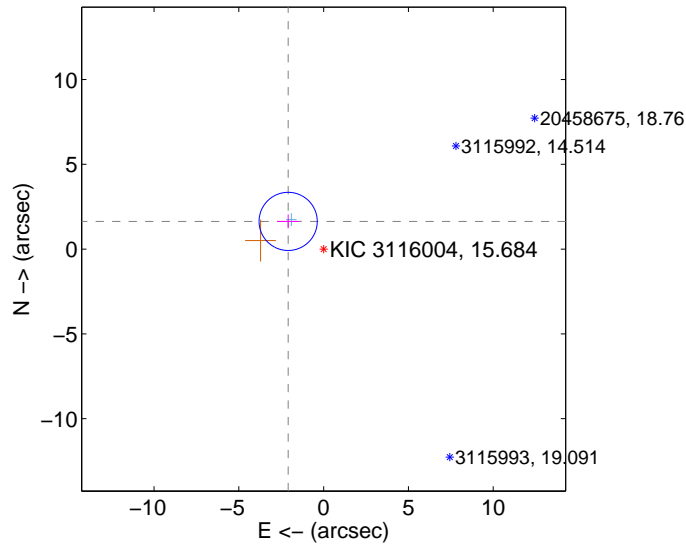
The OOT PRF centroid is offset from the target star catalog position by about 8.52 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.090 \pm 2.934$	1.05	$2.870 \pm 3.051$	$1.146 \pm 2.055$
PRF-fit source offset from KIC position	$2.654 \pm 0.572$	4.64	$2.091 \pm 0.651$	$1.633 \pm 0.410$
photometric centroid source offset	$1.33 \pm 1.28$	1.03	$-0.51 \pm 1.24$	$1.22 \pm 1.29$

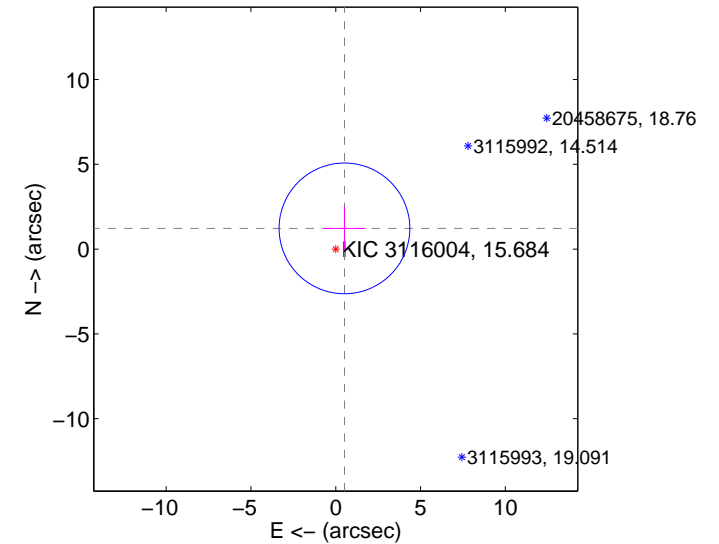
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



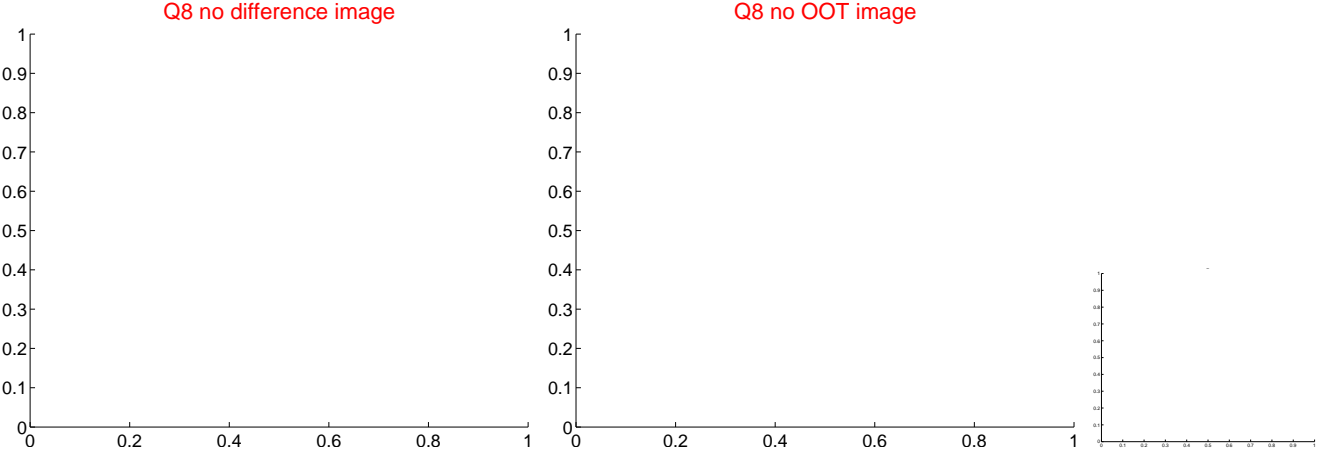
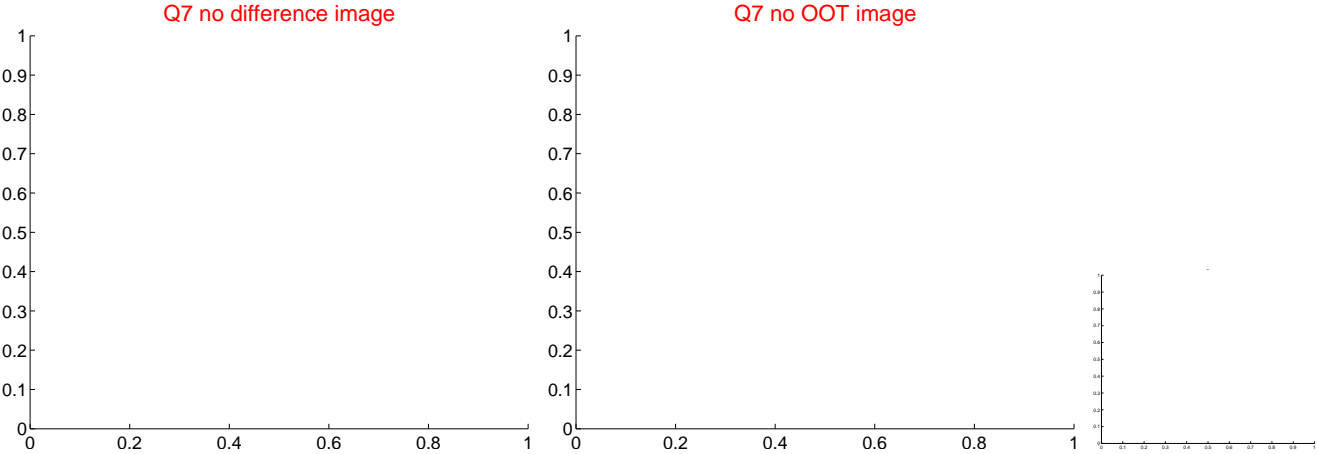
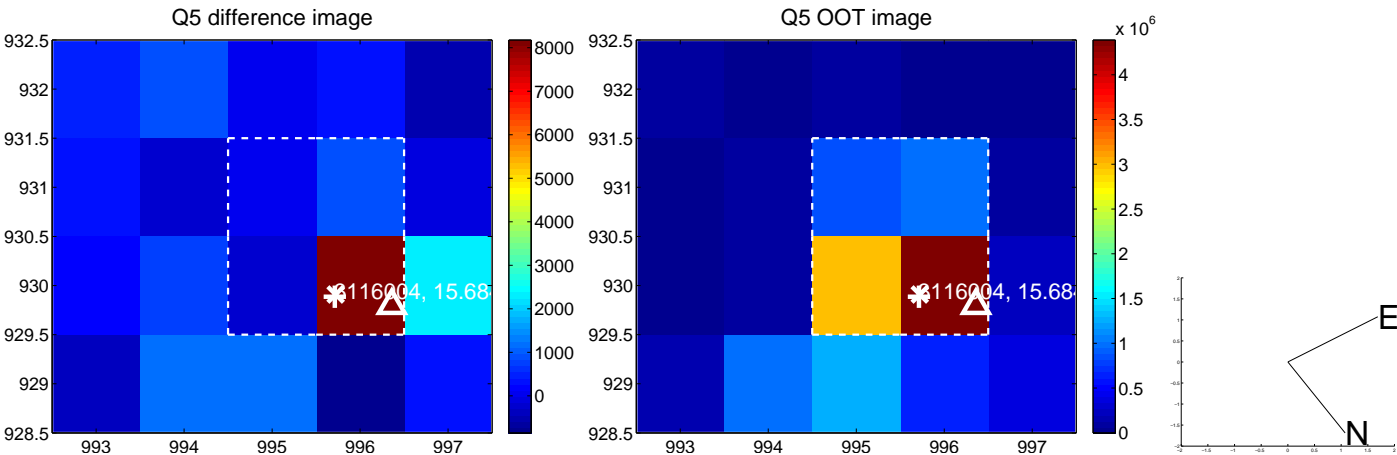
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



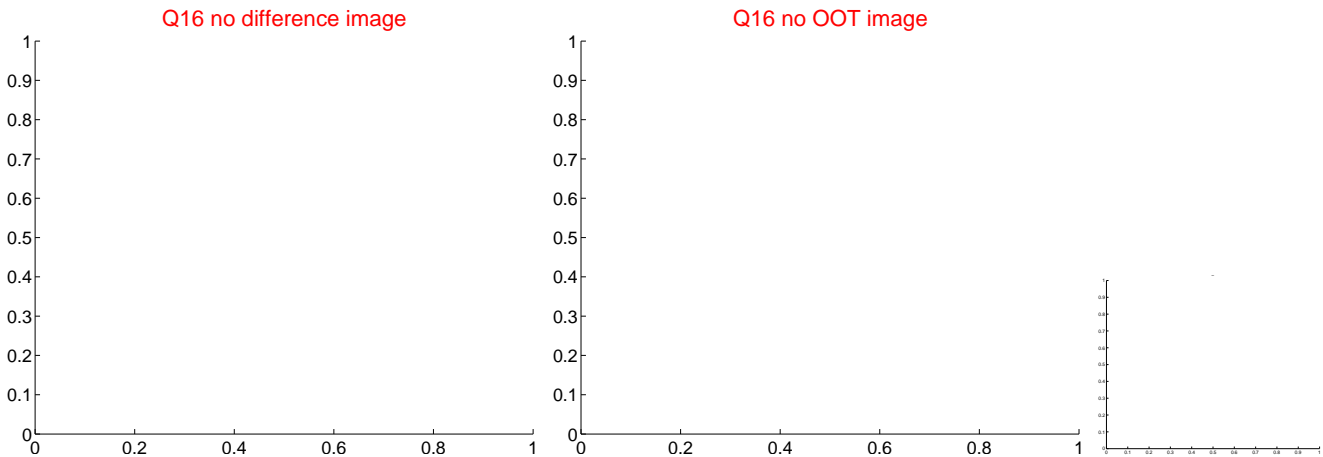
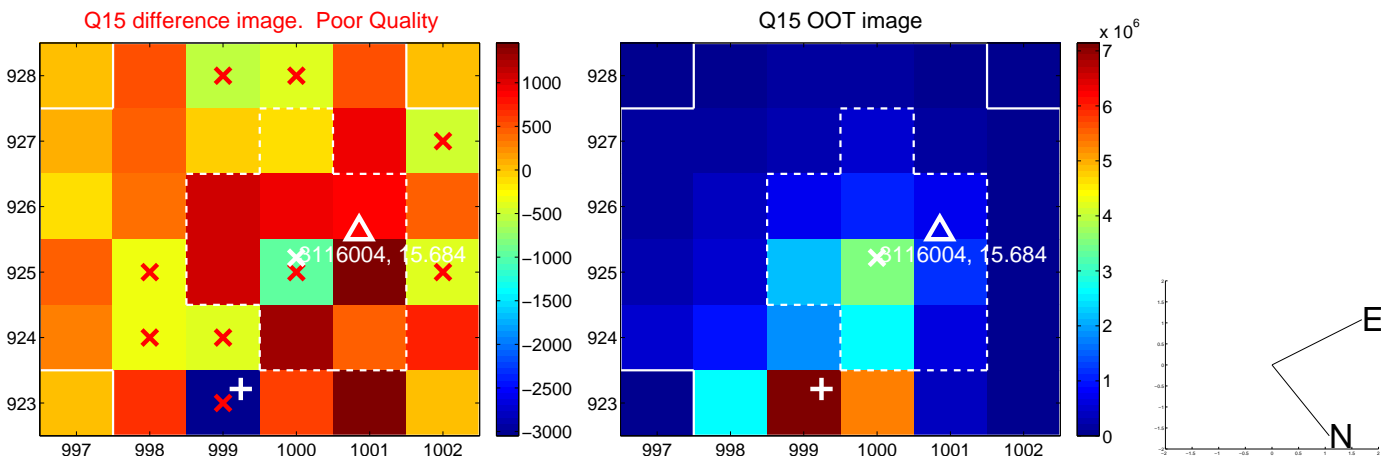
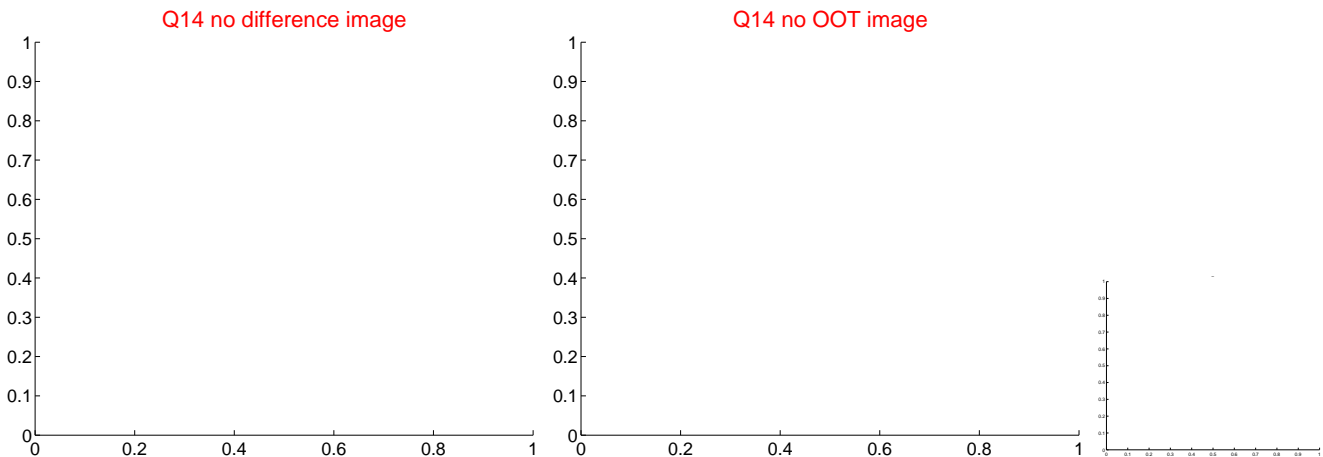
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



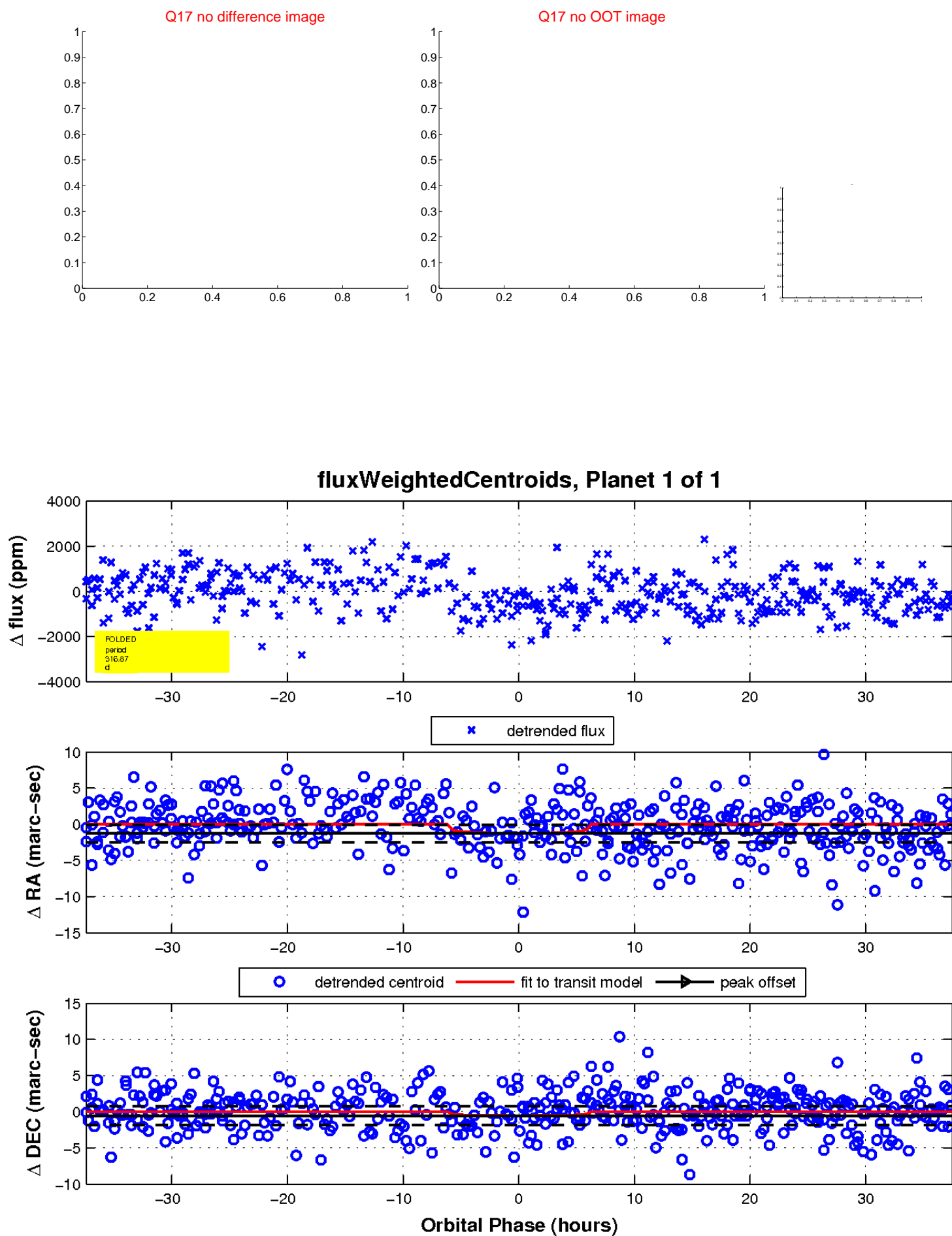
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

