

# KIC 006451125

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006451125-01	OBS	8121.01	72.655100	170.592614	430.4	5.877	10.7	12.5	1.96	6793	7.80	56.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006451125-01	OBS	FP	0.00	0	0	1	0	CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

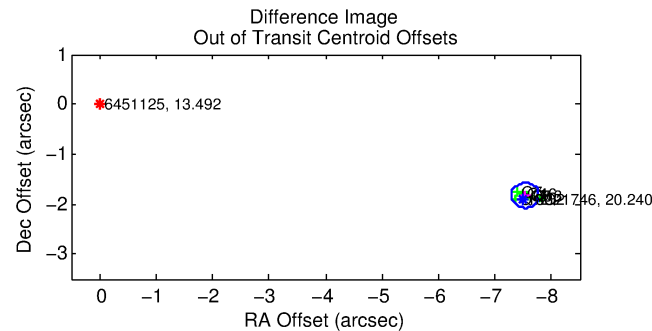
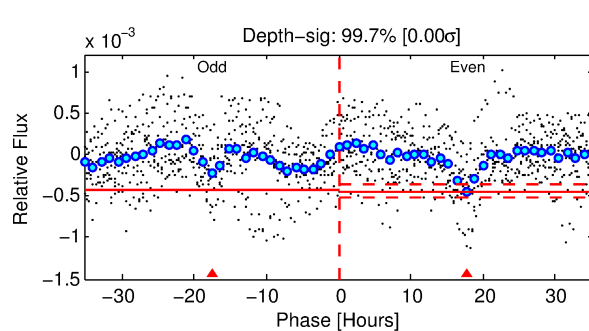
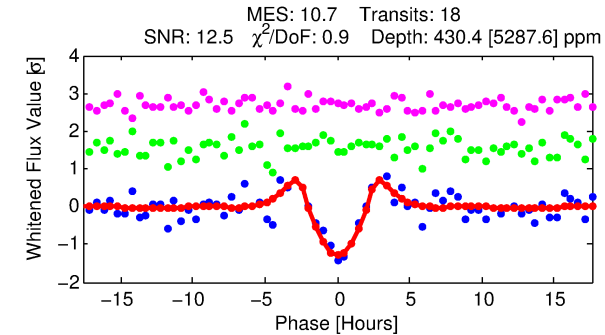
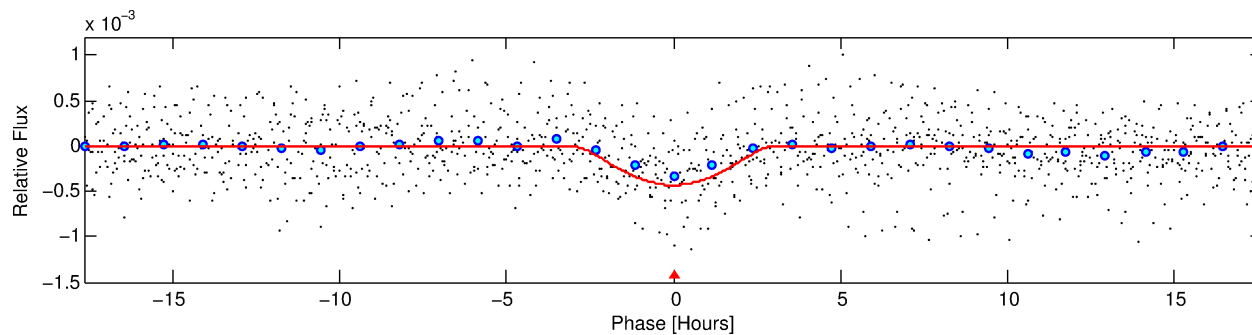
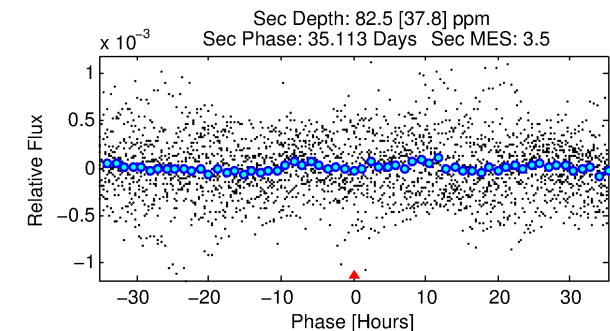
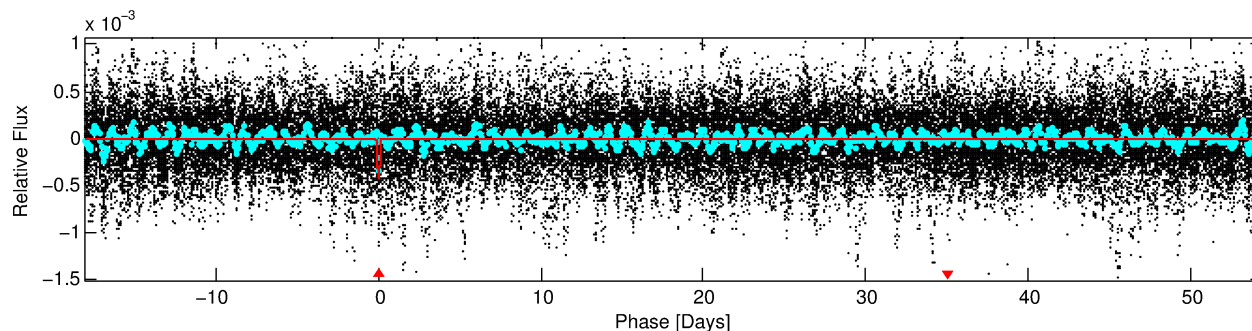
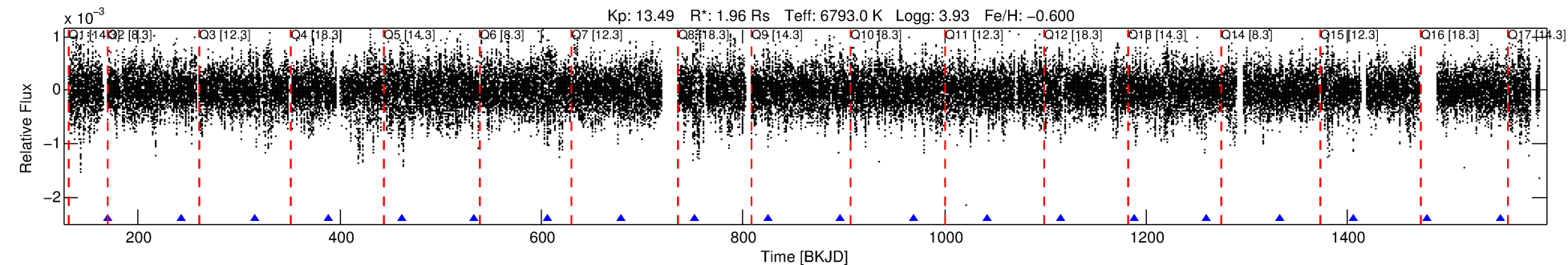
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006451125-01

No Significant Match Found

# DV One-Page Summary

KIC: 6451125 Candidate: 1 of 1 Period: 72.655 d



## DV Fit Results:

Period = 72.65510 [0.00064] d  
Epoch = 170.5926 [0.0069] BKJD  
Rp/R\* = 0.0365 [0.0512]  
a/R\* = 25.75 [9.45]  
b = 1.00 [0.38]  
Seff = 56.44 [28.82]  
Teq = 699 [89] K  
Rp = 7.80 [11.24] Re  
a = 0.3603 [0.1114] AU  
Ag = 96.98 [280.43] [0.34σ]  
Teffp = 3391 [2417] K [1.11σ]

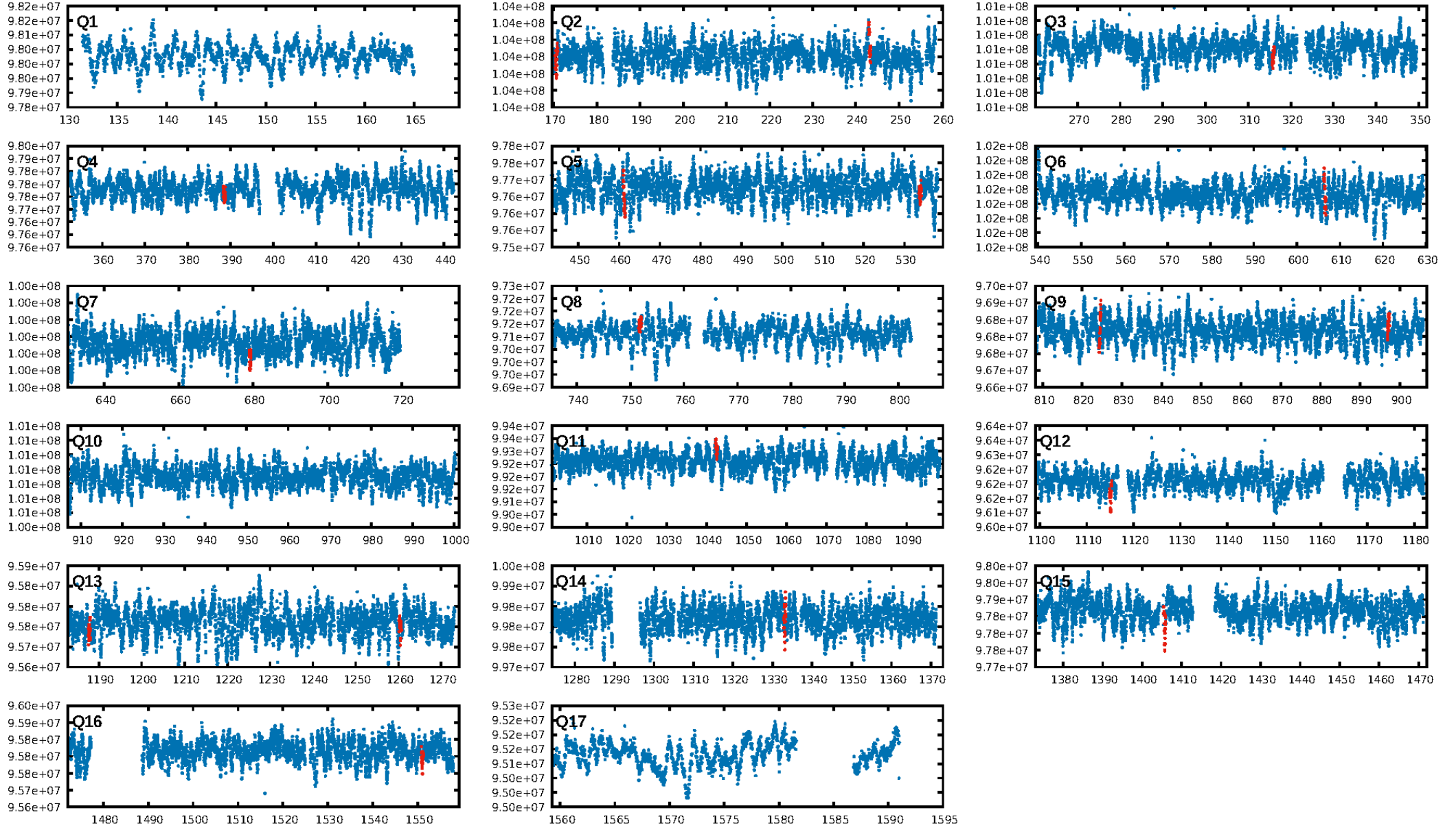
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 20.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.98e-26  
RollingBand-fgt: 1.00 [18/18]  
GhostDiagnostic-chr: 0.08404  
Centroid-sig: 0.0%  
Centroid-so: 20.235 arcsec [46.34σ]  
OotOffset-rm: 7.745 arcsec [93.31σ]  
KicOffset-rm: 7.760 arcsec [105.88σ]  
OotOffset-st: 1/1/4/2 [8]  
KicOffset-st: 1/1/4/2 [8]  
DiffImageQuality-fgm: 1.00 [8/8]  
DiffImageOverlap-fno: 1.00 [13/13]

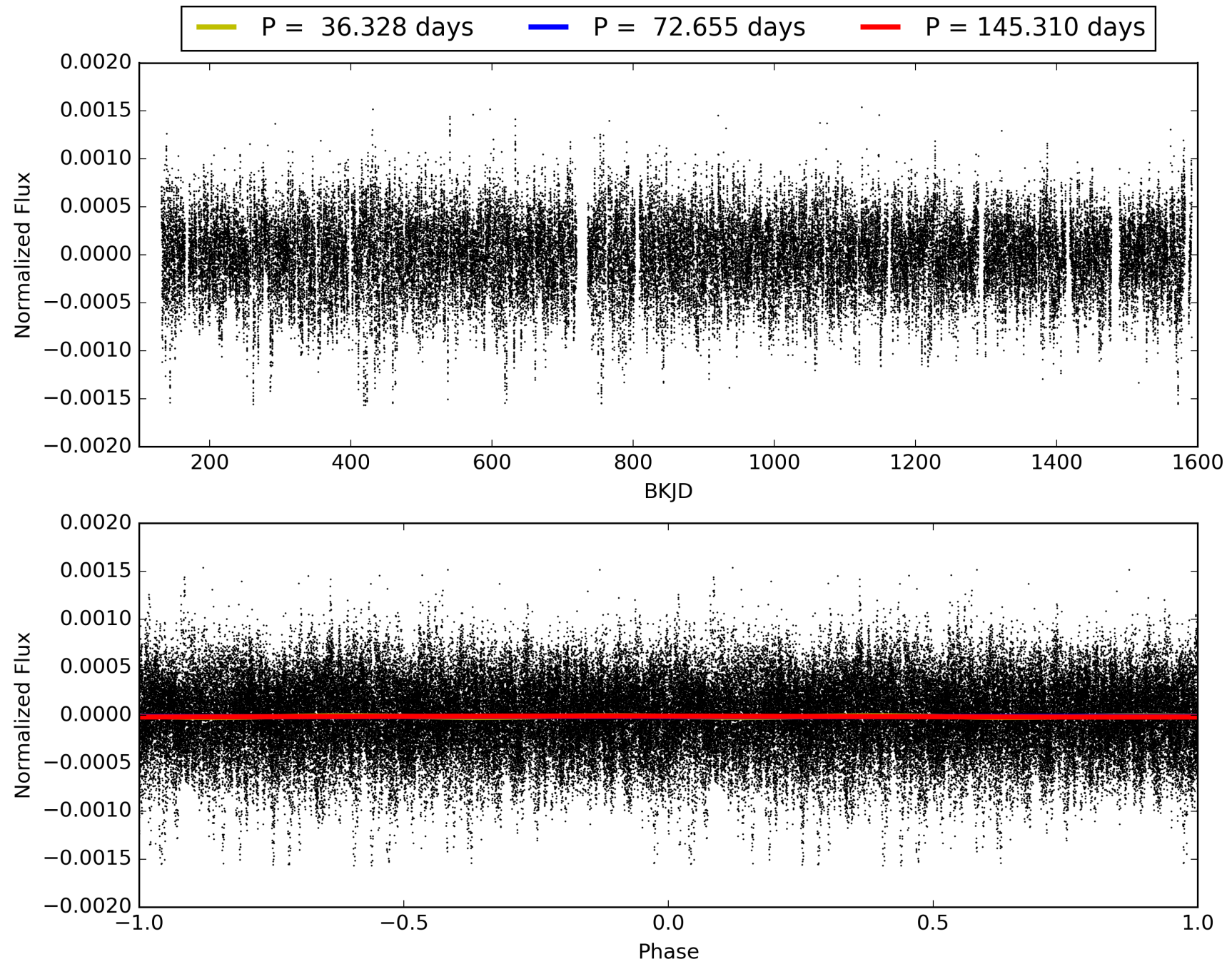
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:07:56 Z

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

# TCE 006451125-01, PDC Light Curves

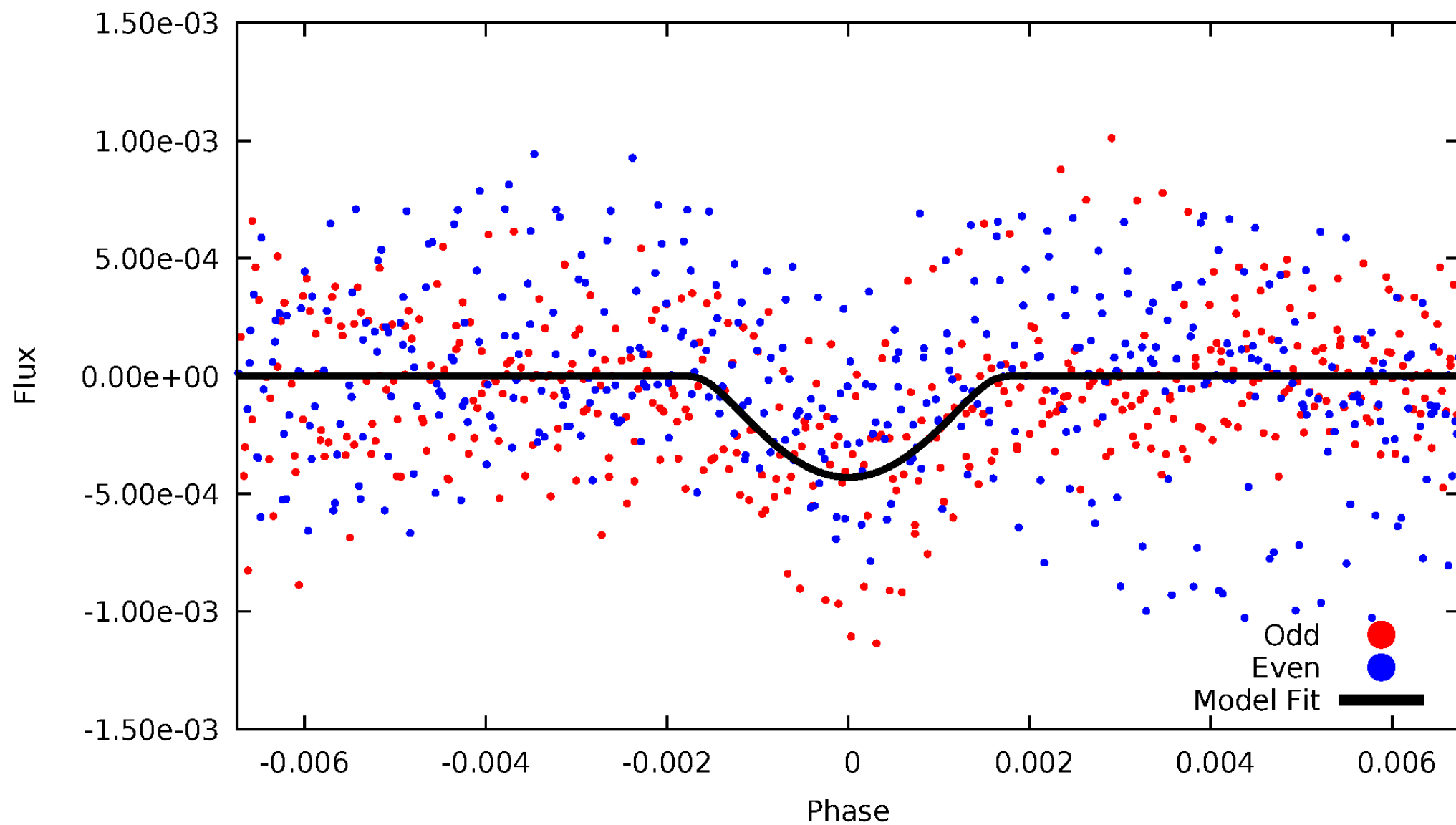


TCE 006451125-01



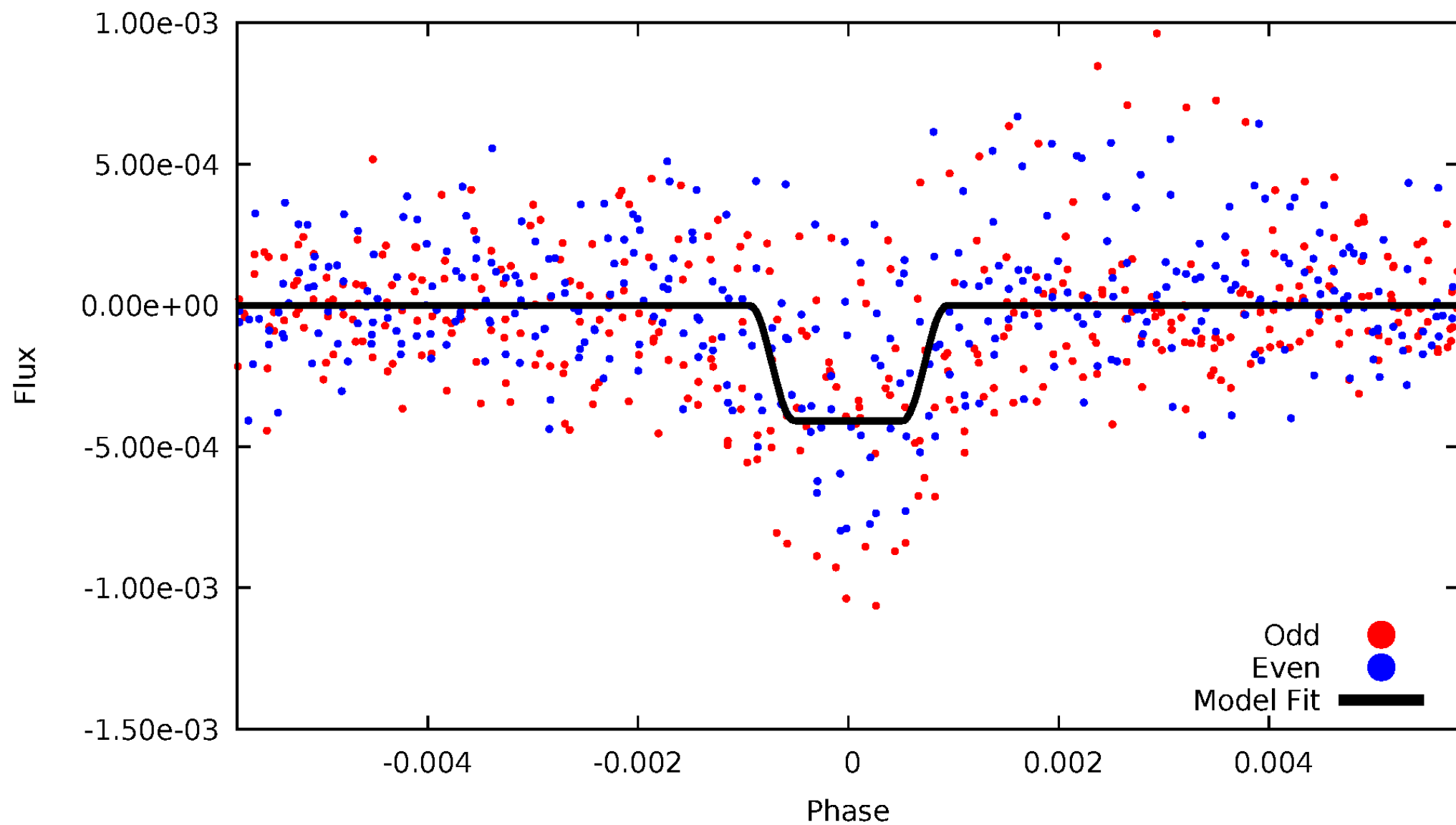
# DV Odd/Even

TCE 006451125-01



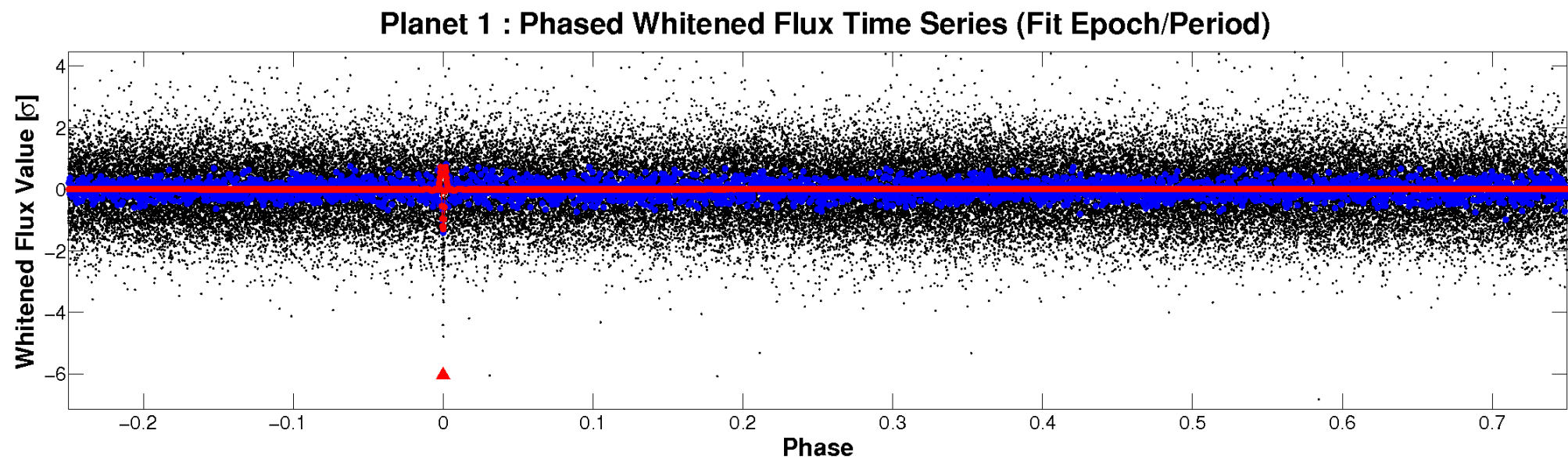
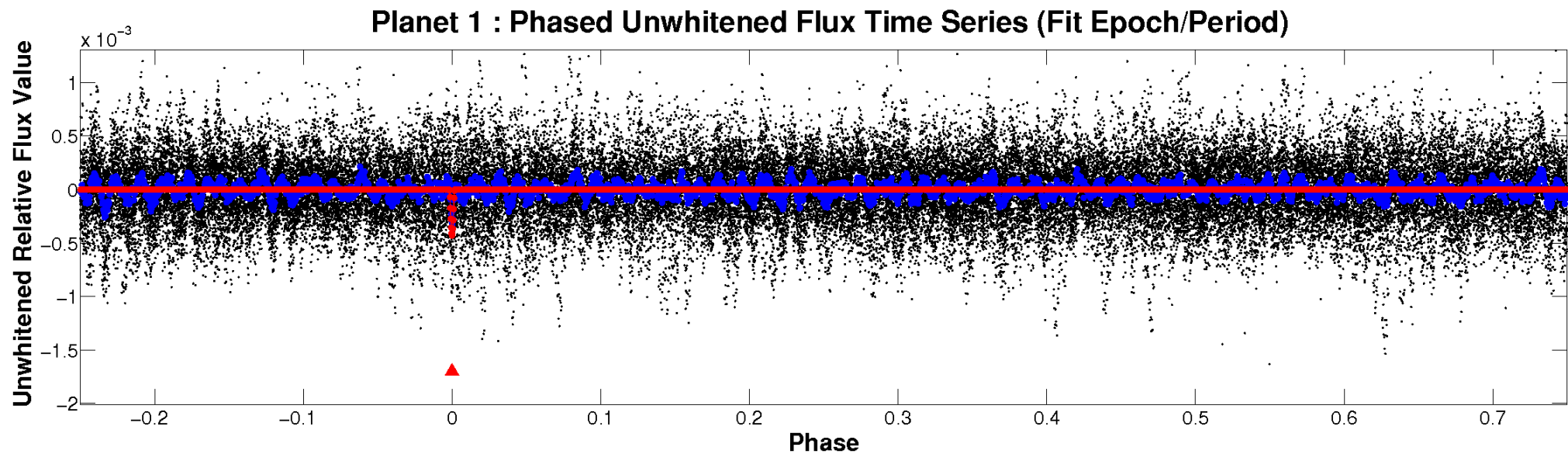
# ALT Odd/Even

TCE 006451125-01



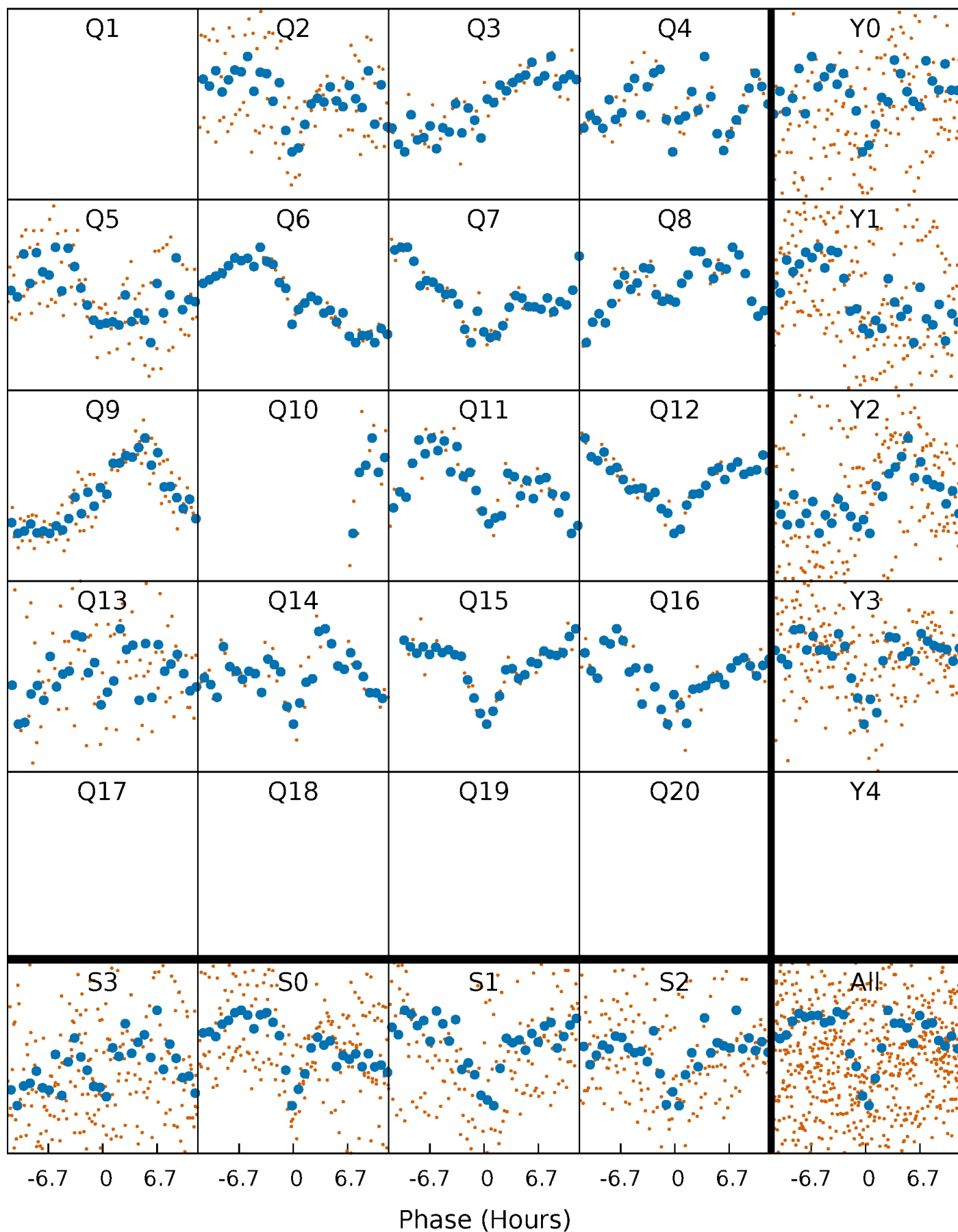


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

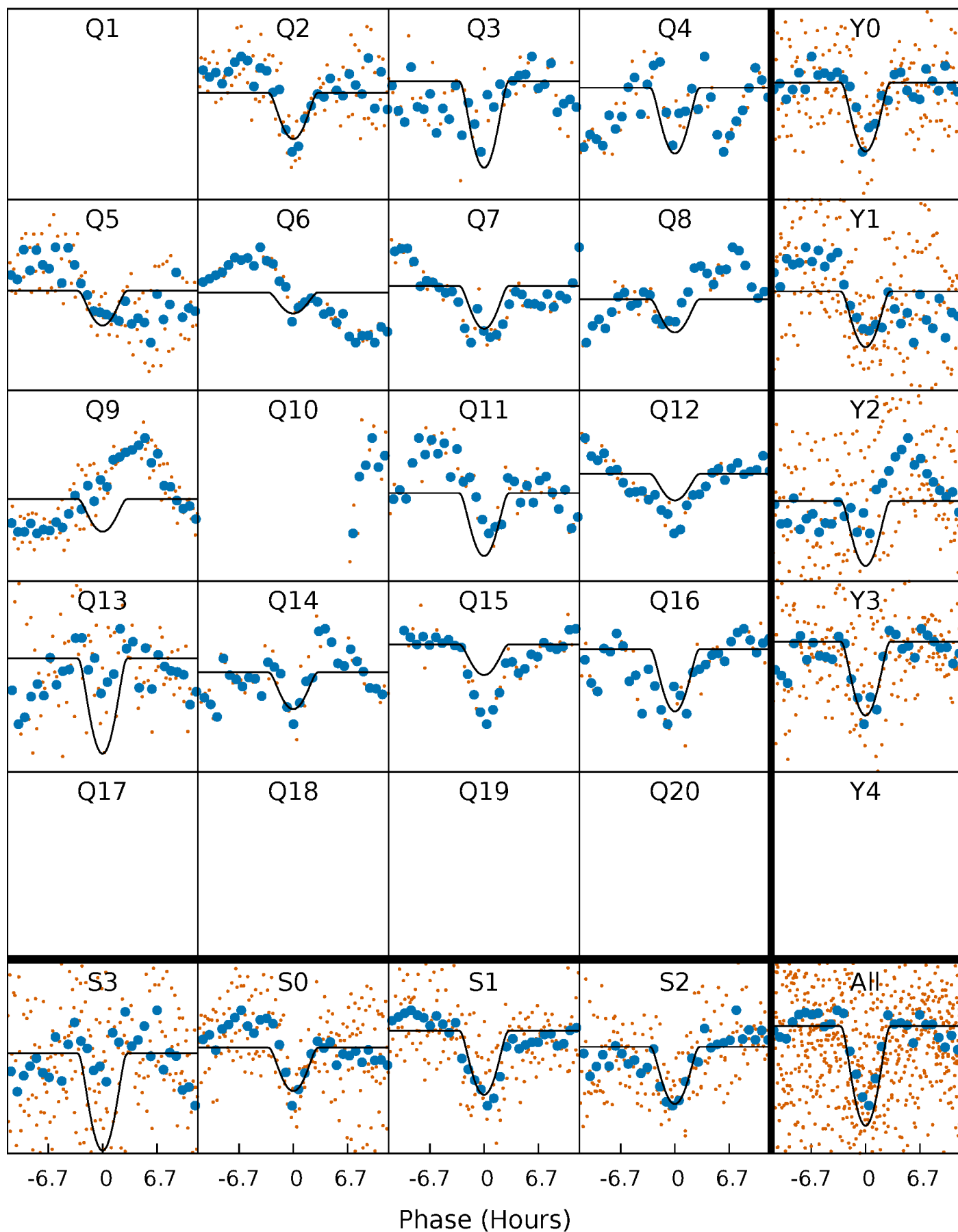
TCE 006451125-01 P= 72.655100 Days  $T_0=170.592614$  (BKJD)





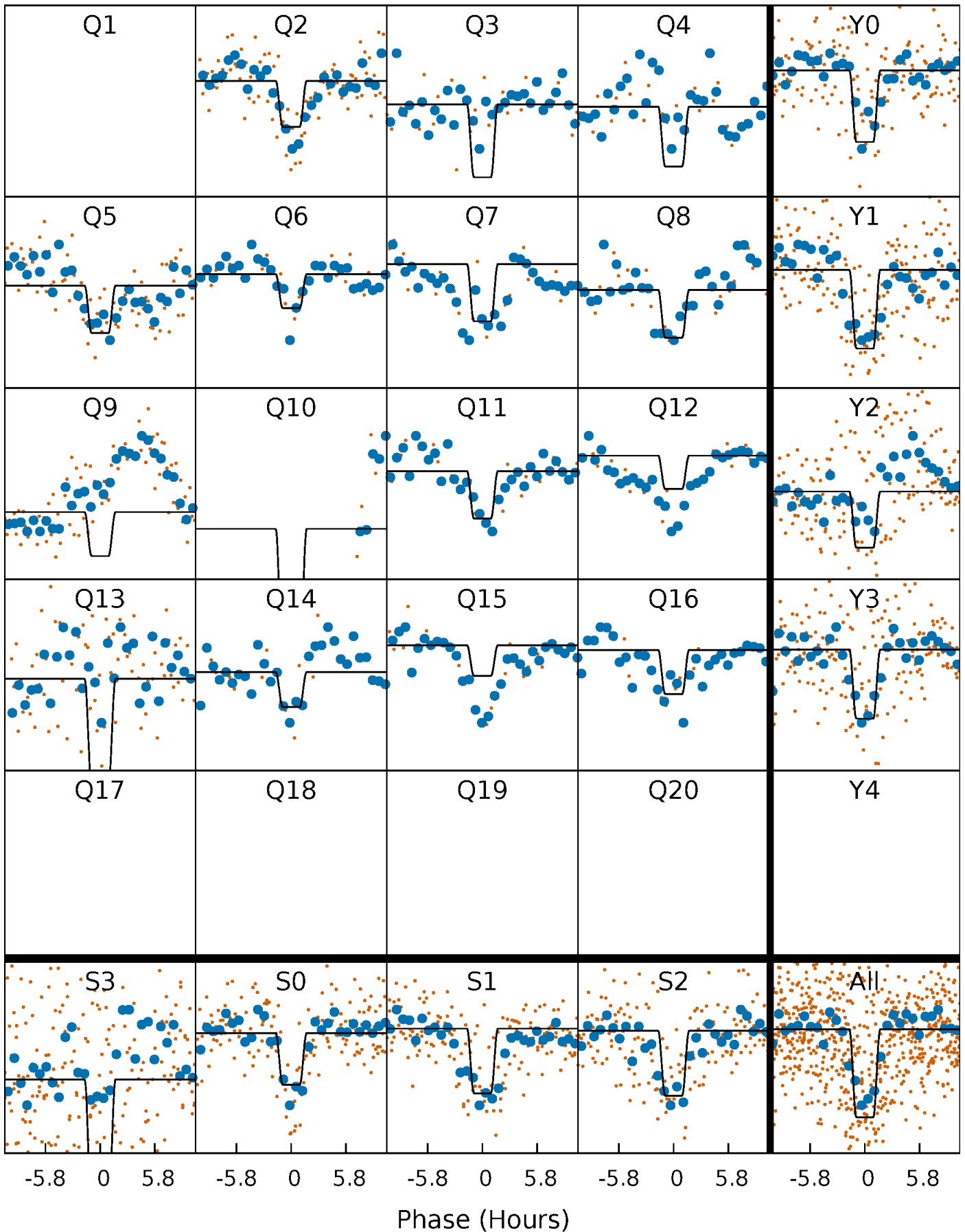
# DV Quarter-Phased Transit Curves

TCE 006451125-01 P= 72.655100 Days  $T_0=170.592614$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

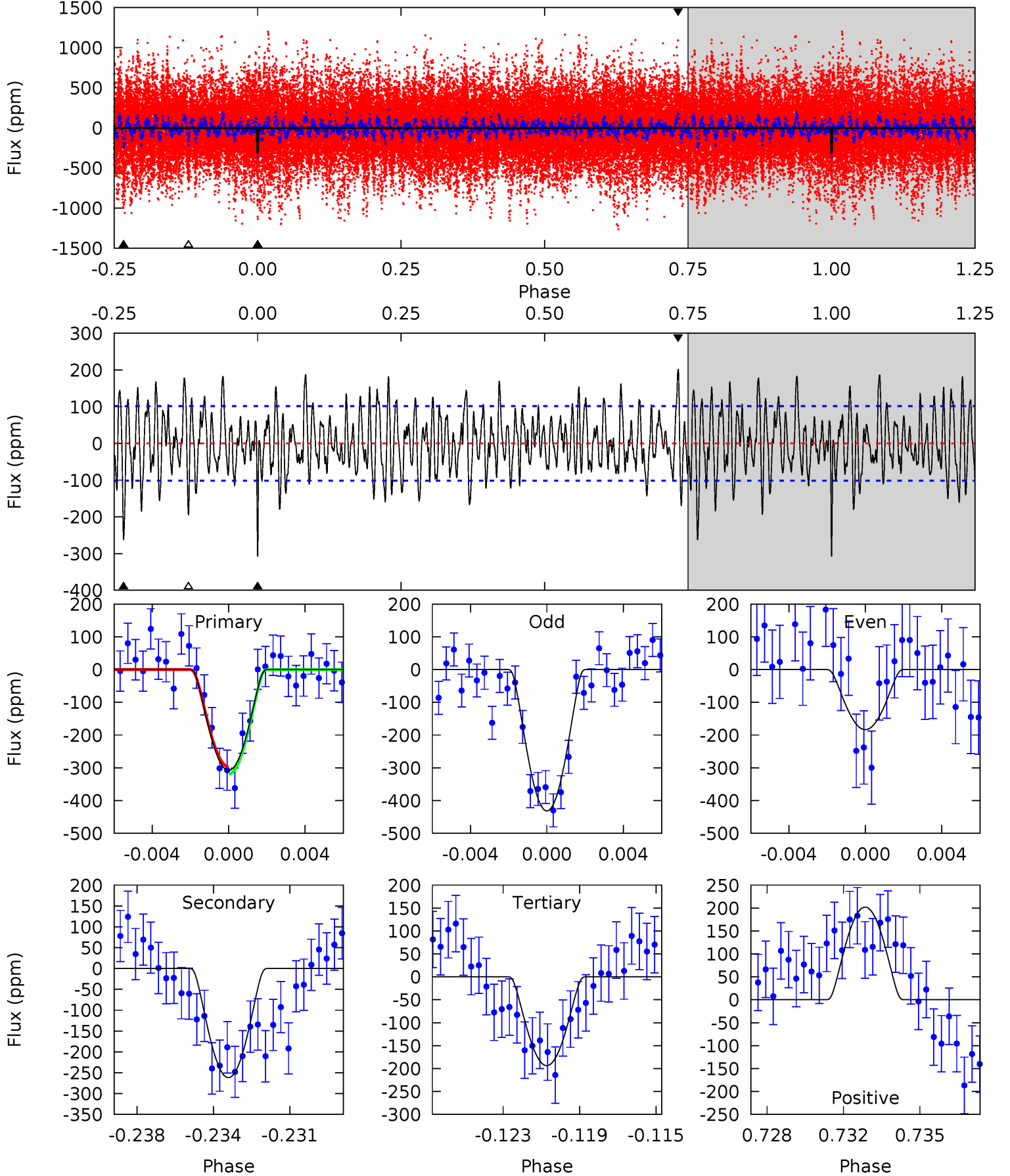
TCE 006451125-01 P= 72.655808 Days  $T_0=170.584161$  (BKJD)



# DV Model-Shift Uniqueness Test

006451125-01, P = 72.655100 Days, E = 97.937514 Days

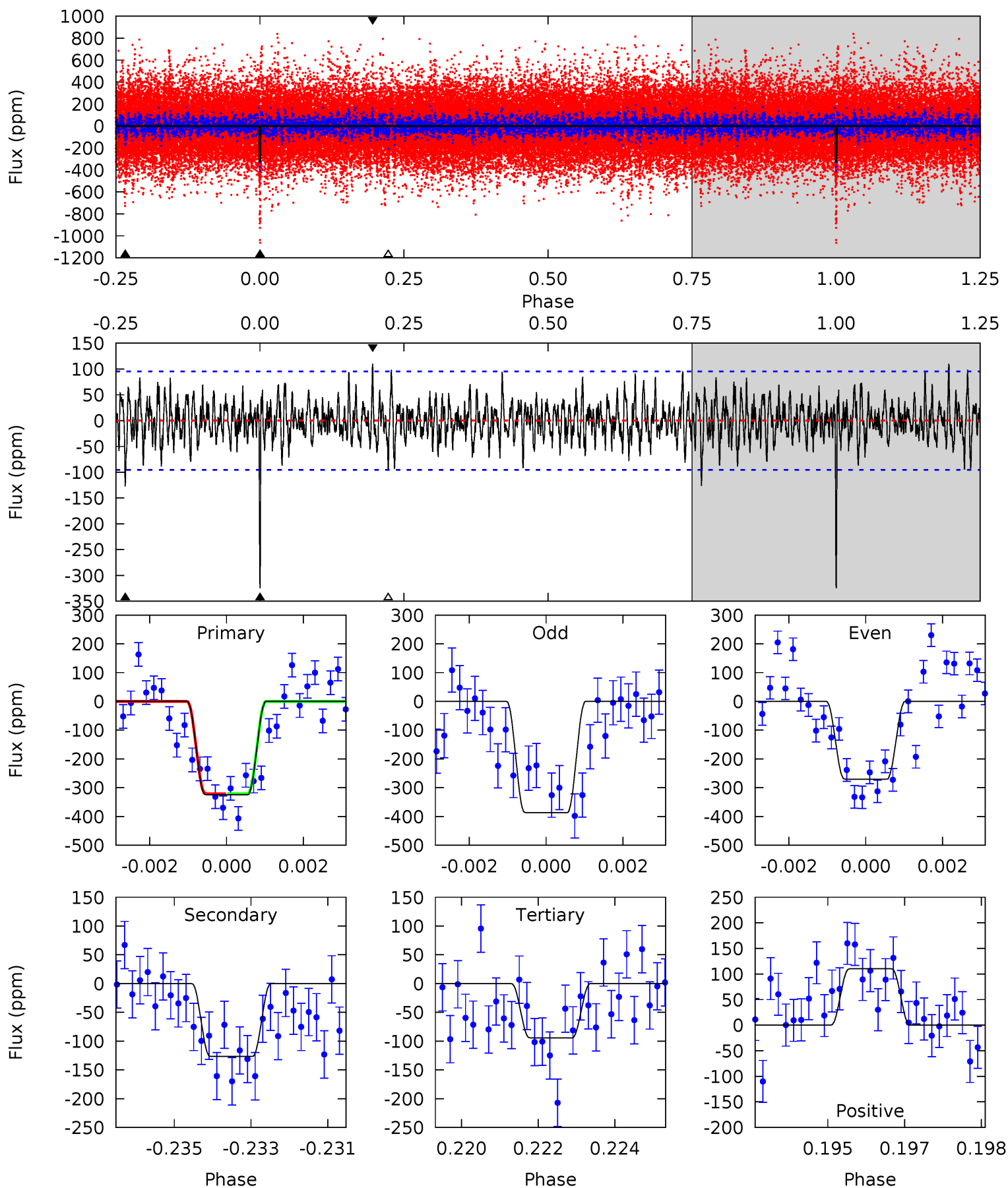
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	13.5	9.95	10.4	5.22	2.91	3.66	5.86	5.42	3.51	3.07	6.39	1.32	0.40	0.58



# Alt Model-Shift Uniqueness Test

006451125-01, P = 72.655808 Days, E = 97.928353 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
18.2	7.10	5.29	6.18	5.34	3.12	1.74	12.9	12.0	1.80	0.92	3.27	0.92	0.25	0.01



### Stellar Parameters For KIC 006451125

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6793^{+170}_{-204}$	$3.926^{+0.292}_{-0.097}$	$-0.600^{+0.300}_{-0.300}$	$1.960^{+0.365}_{-0.626}$	$1.181^{+0.189}_{-0.189}$	$0.221^{+0.399}_{-0.079}$
	+3%/-3%	+7%/-2%	+50%/-50%	+19%/-32%	+16%/-16%	+181%/-36%
Source	PHO1	FLK73	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 006451125-01 / KOI 8121.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-262 \pm 19$	$9.87^{+9.30}_{-6.16}$	$957^{+57}_{-77}$	$4150^{+2104}_{-778}$	$183^{+1163}_{-131}$
Alt.	$-127 \pm 18$	$8.80^{+8.82}_{-5.61}$	$962^{+60}_{-82}$	$3829^{+1994}_{-754}$	$117^{+814}_{-89}$

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

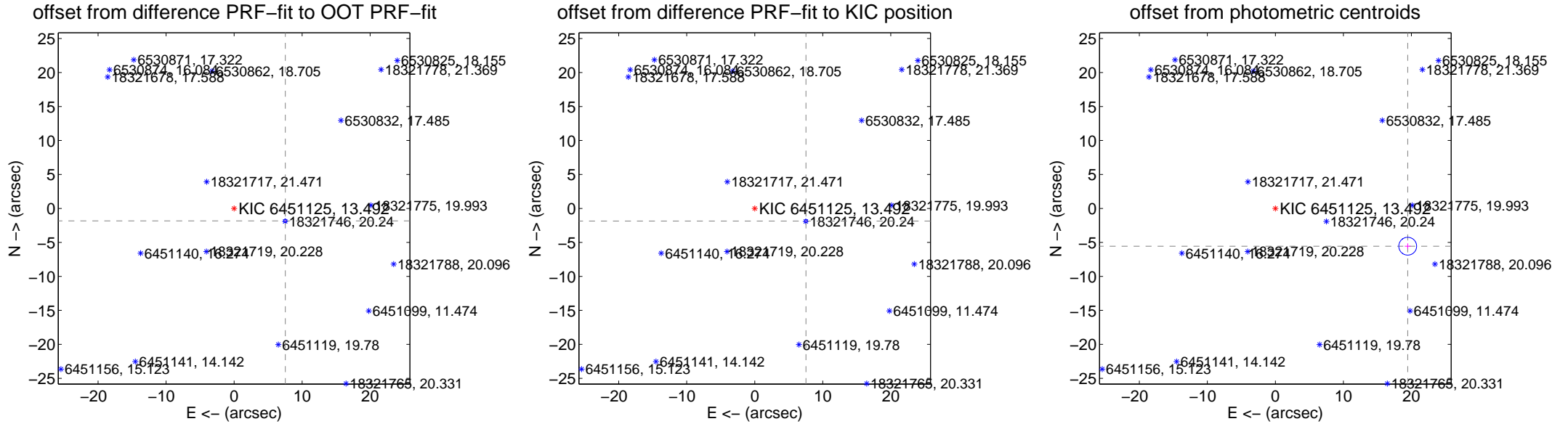
## DV Centroid Data

Supplemental centroid analysis for 006451125-01. Kepler magnitude: 13.49. Transit SNR 12.53

There are 8 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

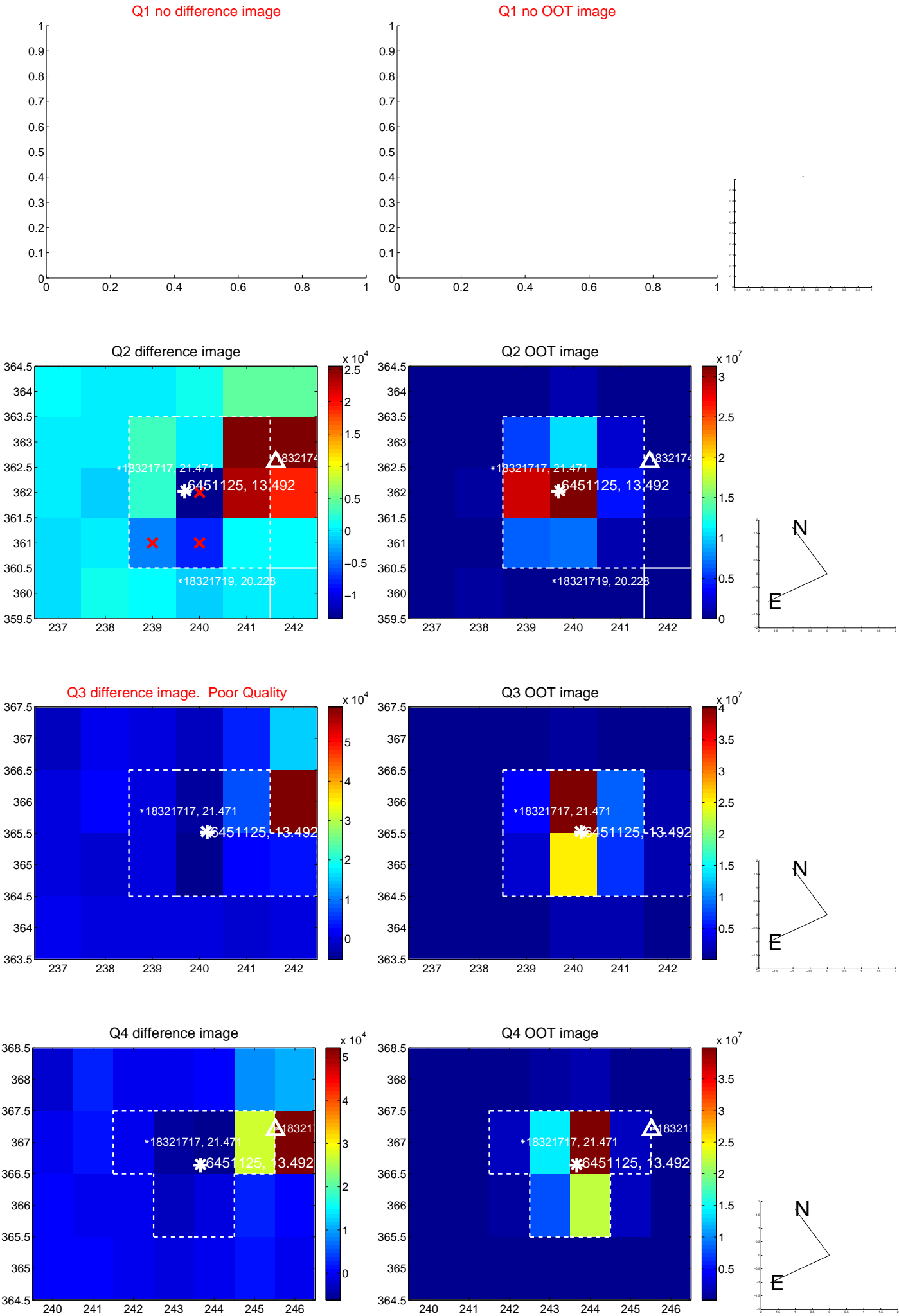
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>7.745 <math>\pm</math> 0.083</b>	<b>93.31</b>	-7.526 $\pm$ 0.083	-1.827 $\pm$ 0.068
PRF-fit source offset from KIC position	<b>7.760 <math>\pm</math> 0.073</b>	<b>105.88</b>	-7.534 $\pm$ 0.074	-1.858 $\pm$ 0.069
photometric centroid source offset	<b>20.24 <math>\pm</math> 0.44</b>	<b>46.34</b>	-19.46 $\pm$ 0.44	-5.56 $\pm$ 0.41



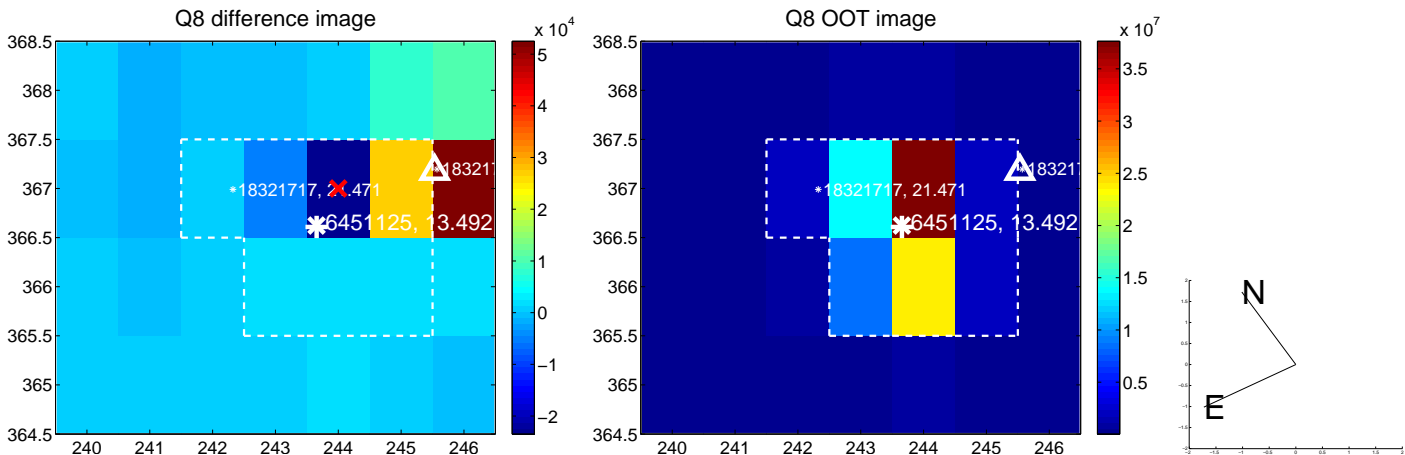
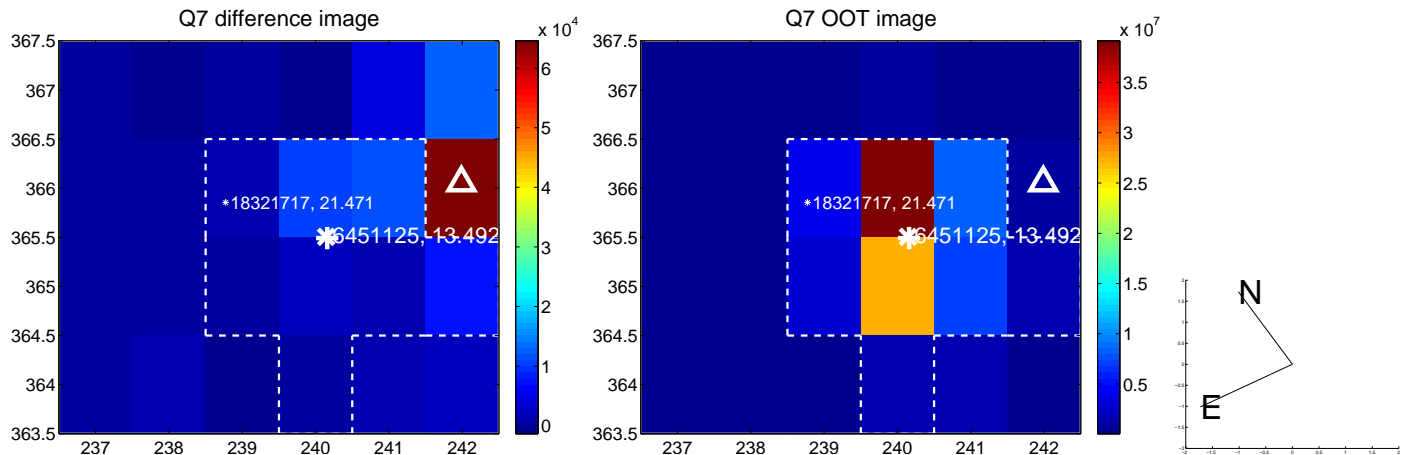
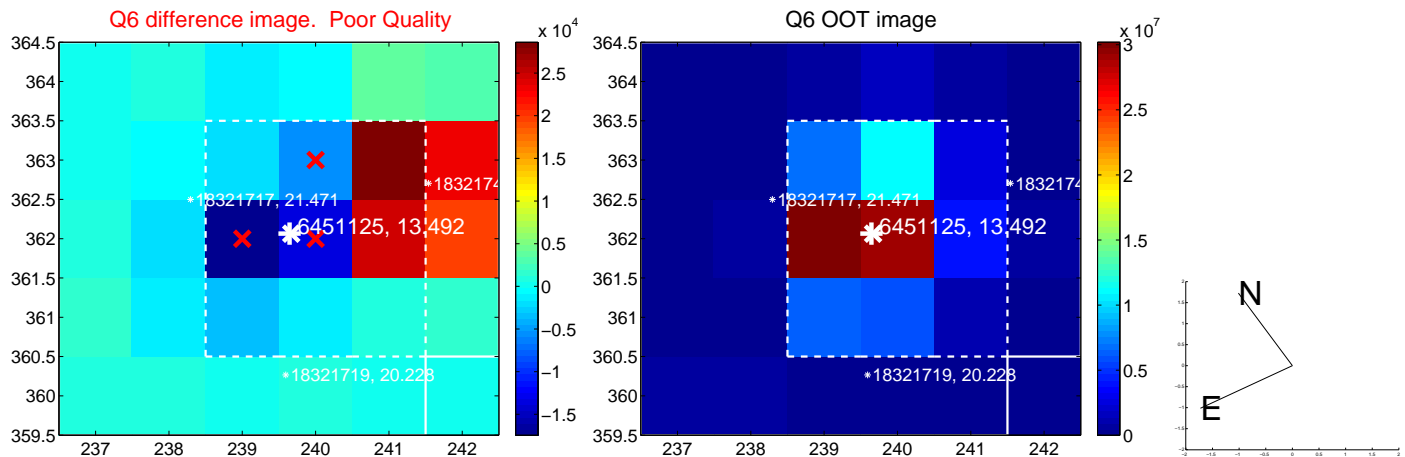
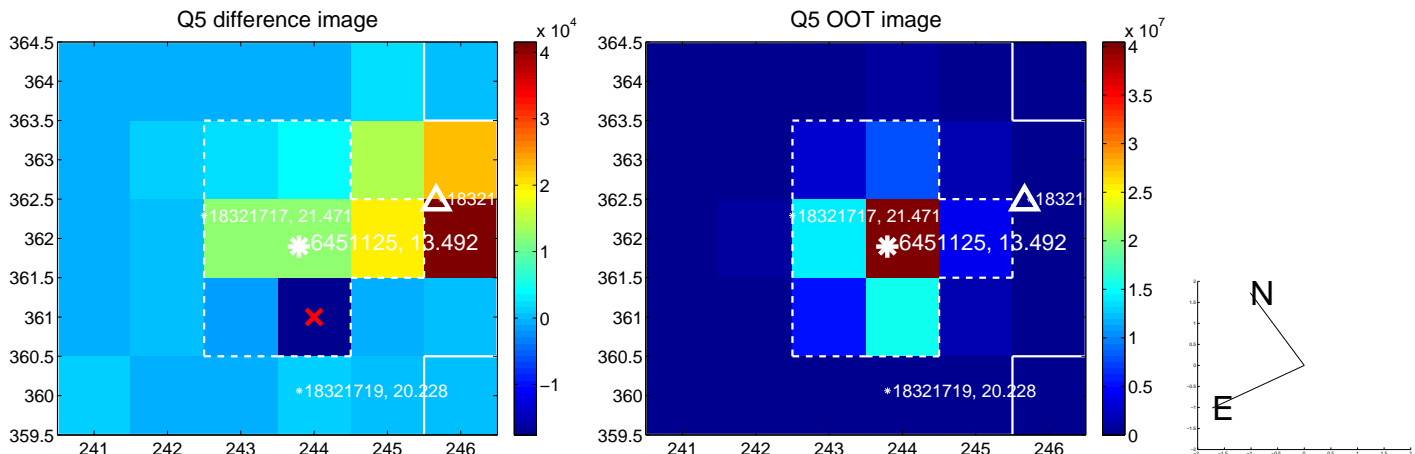
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



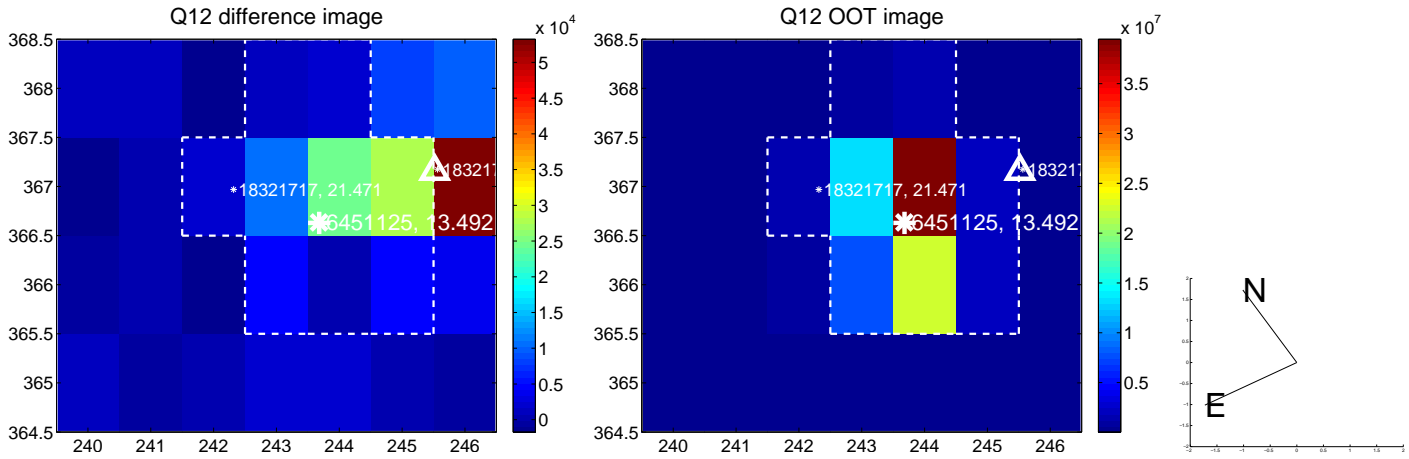
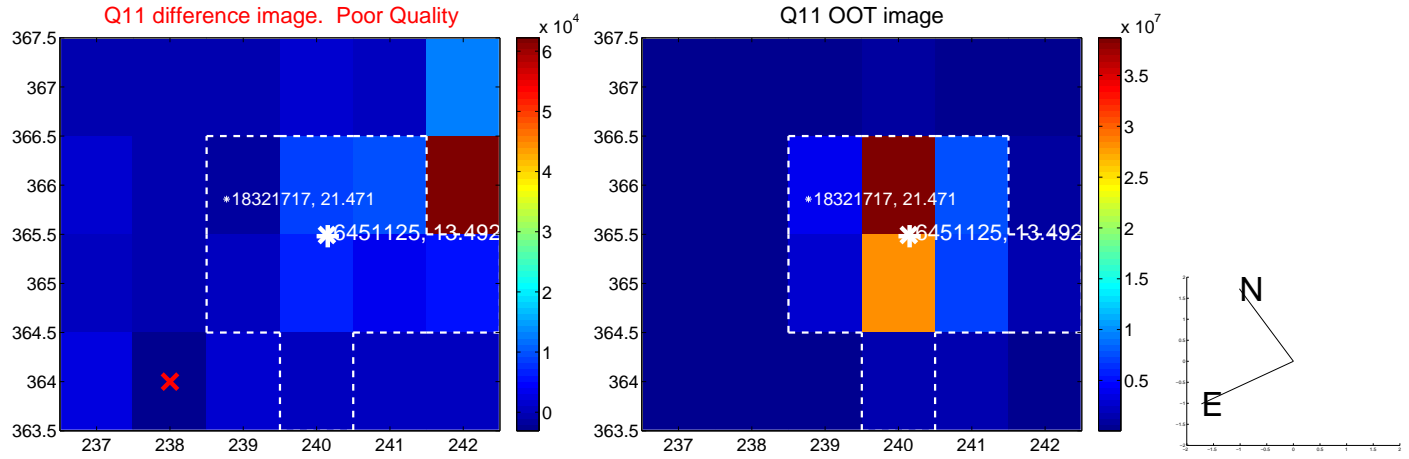
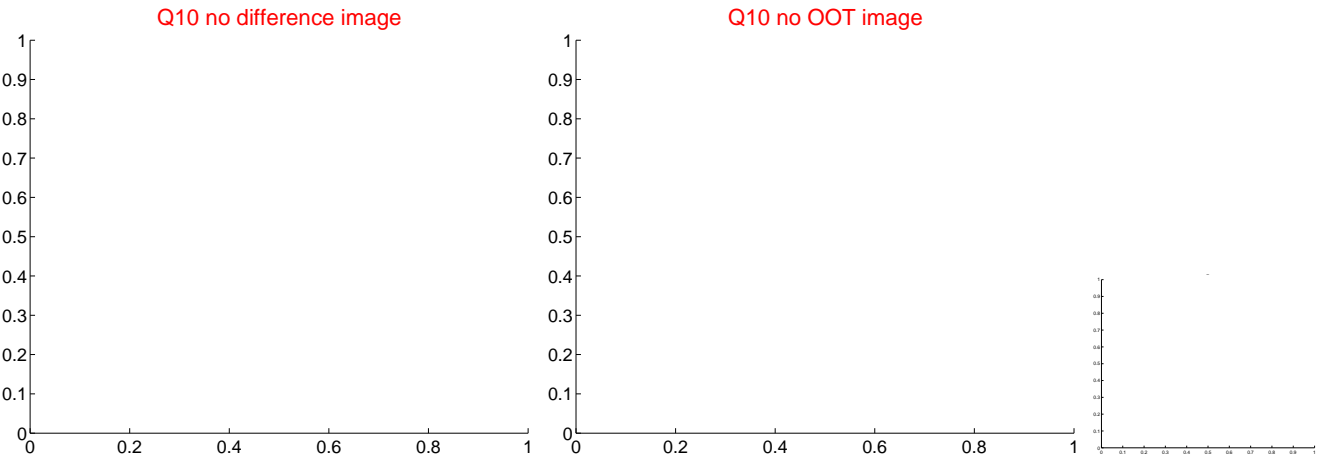
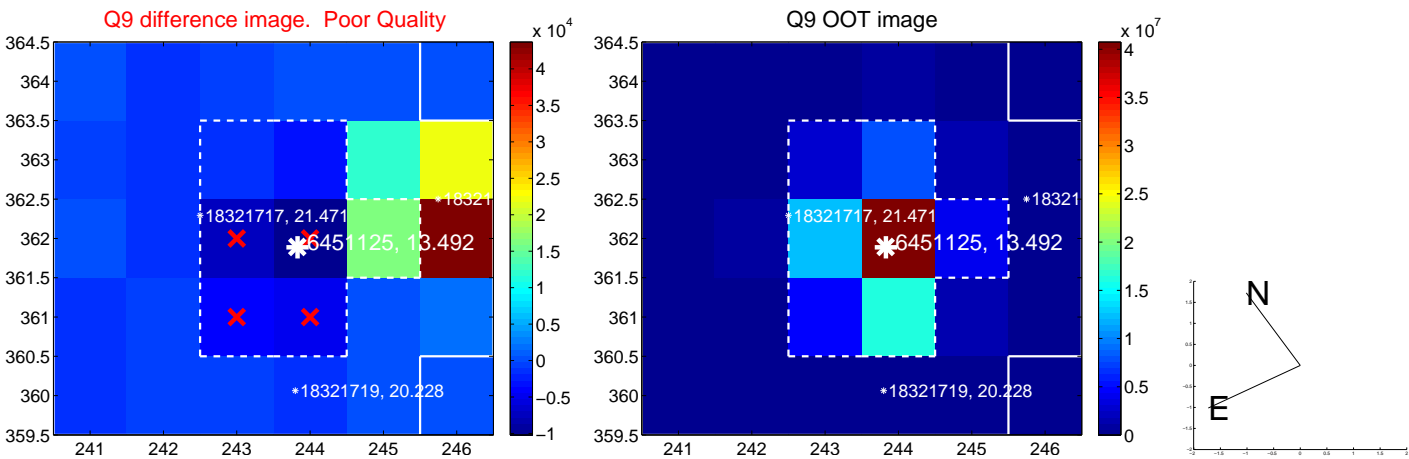
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



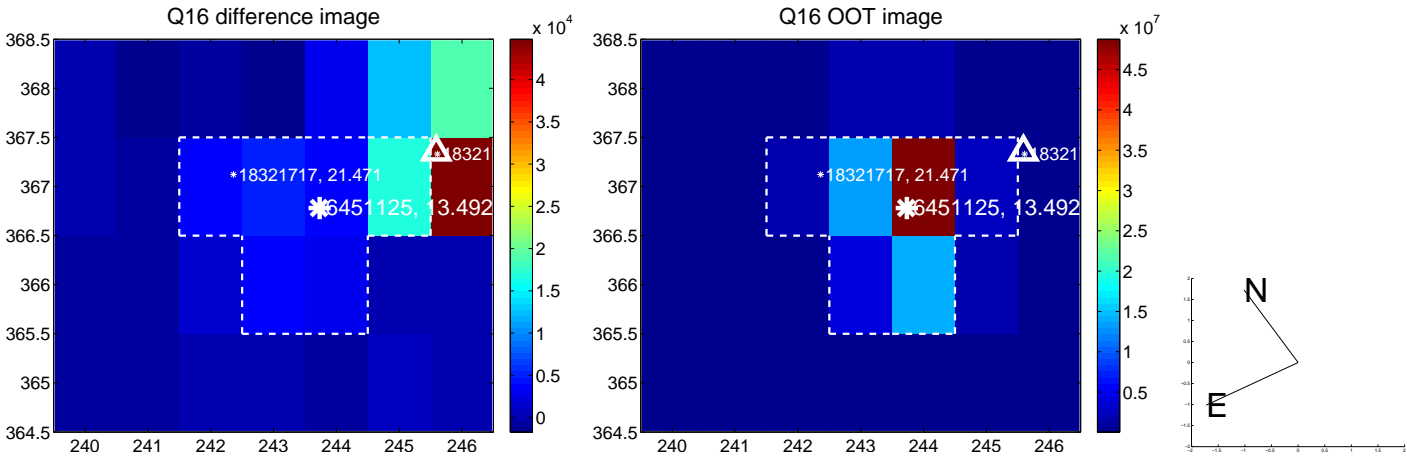
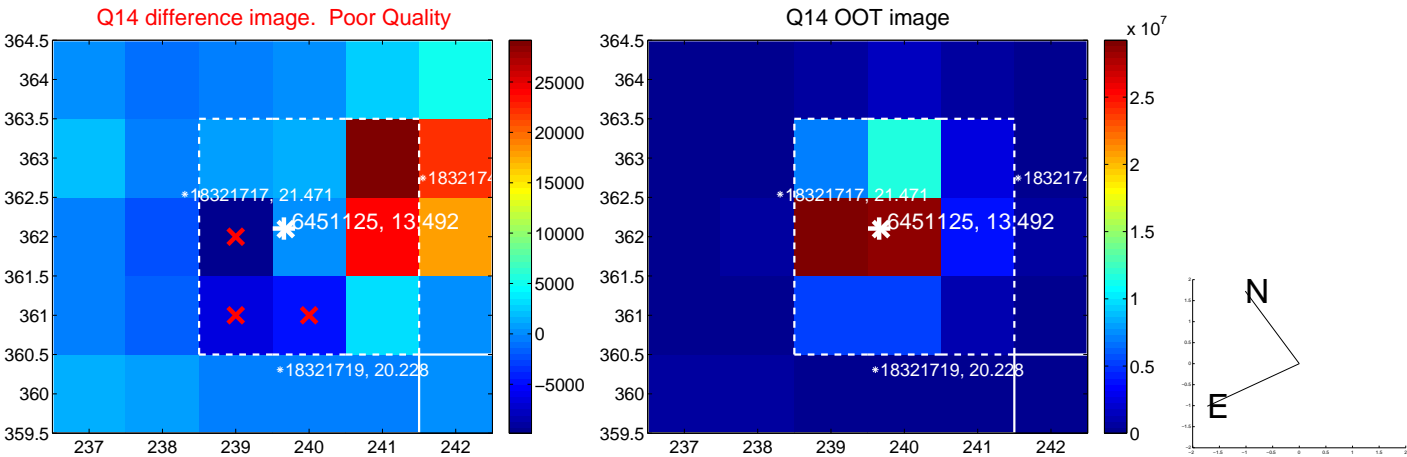
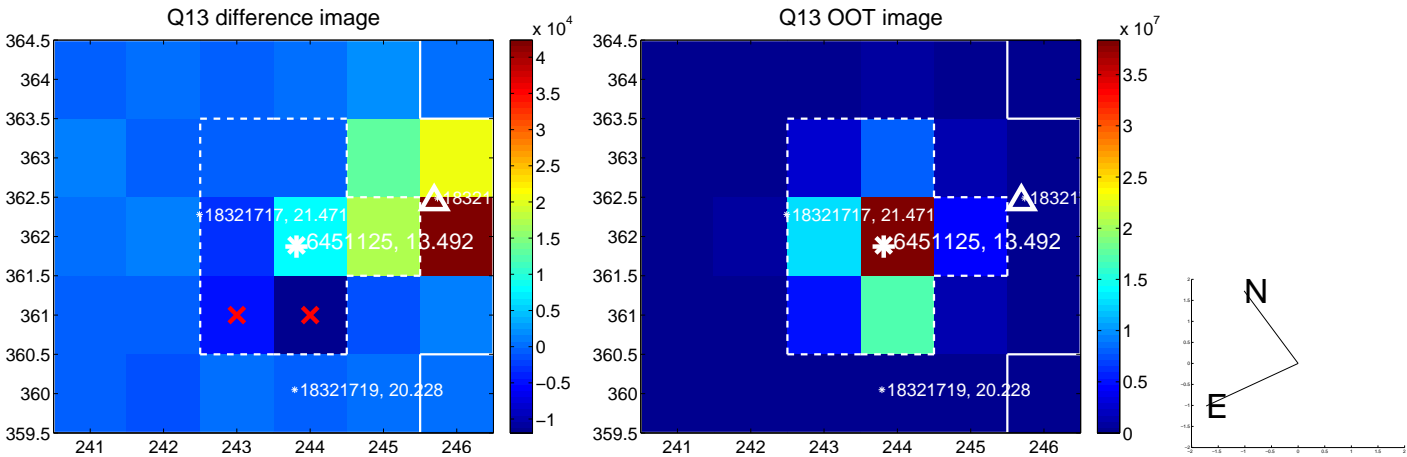
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



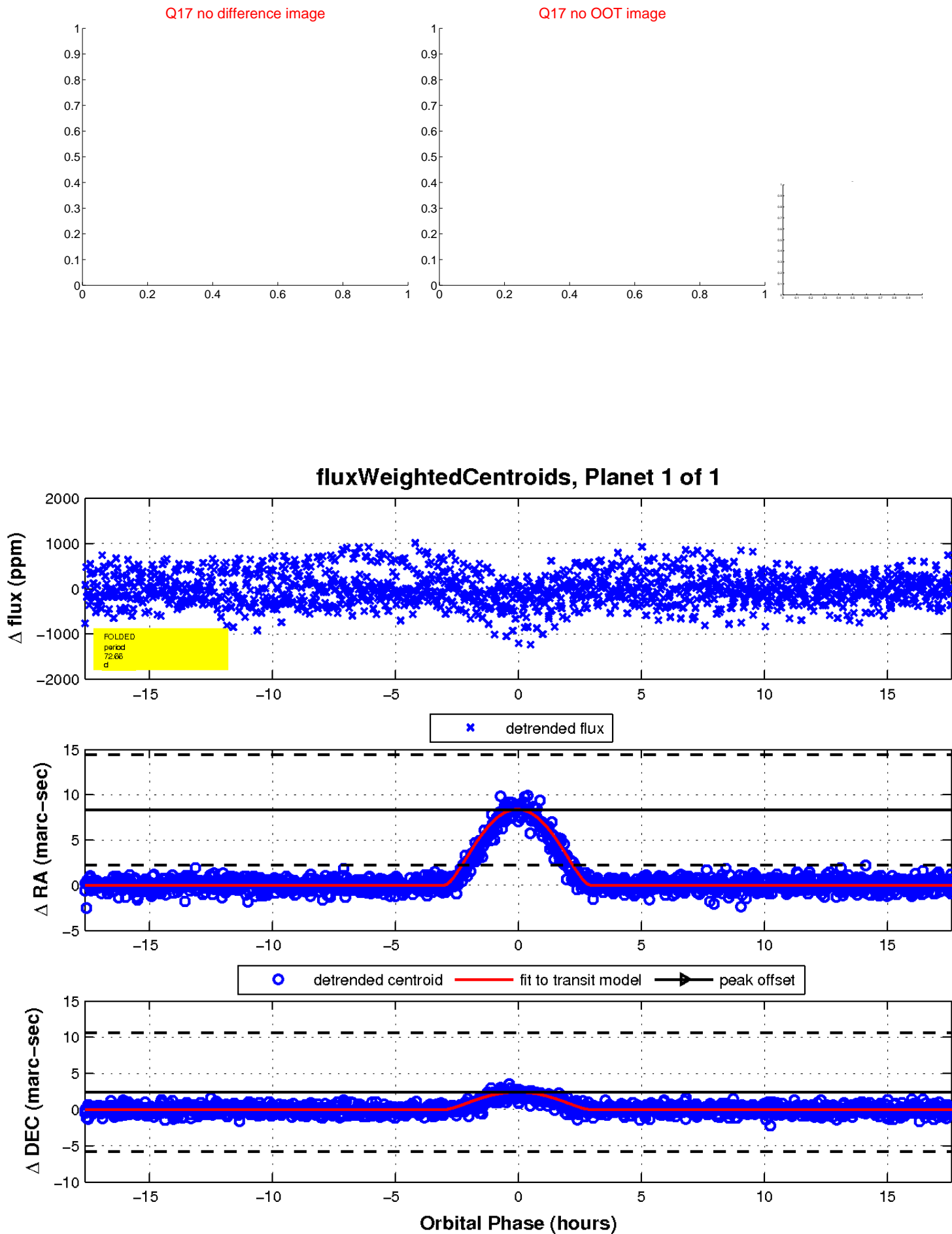
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

