

# KIC 010149023

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010149023-01	OBS	1081.01	9.956400	134.293672	516.3	5.408	28.4	31.6	1.05	6161	4.69	158.85

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010149023-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED

**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.

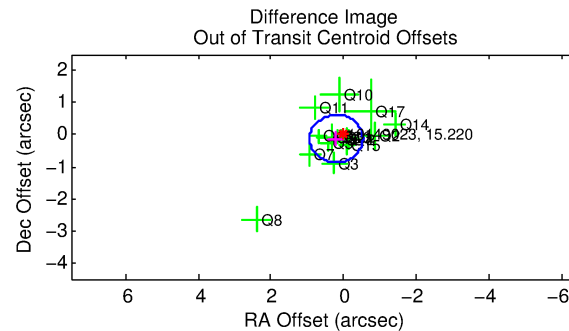
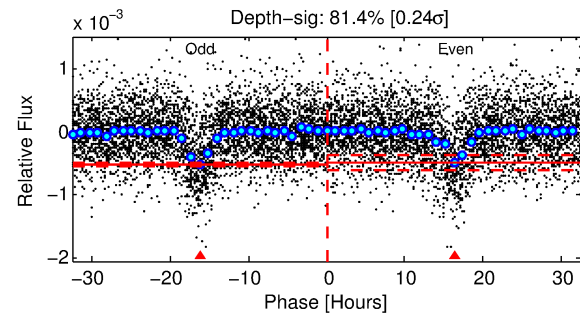
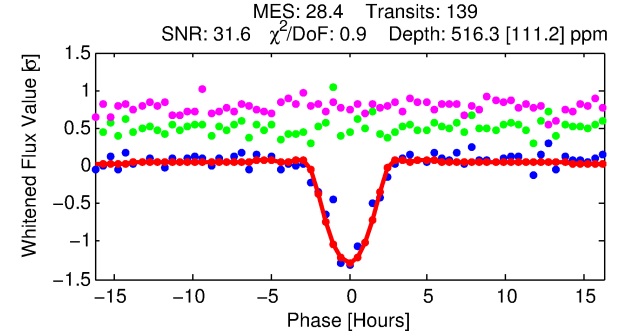
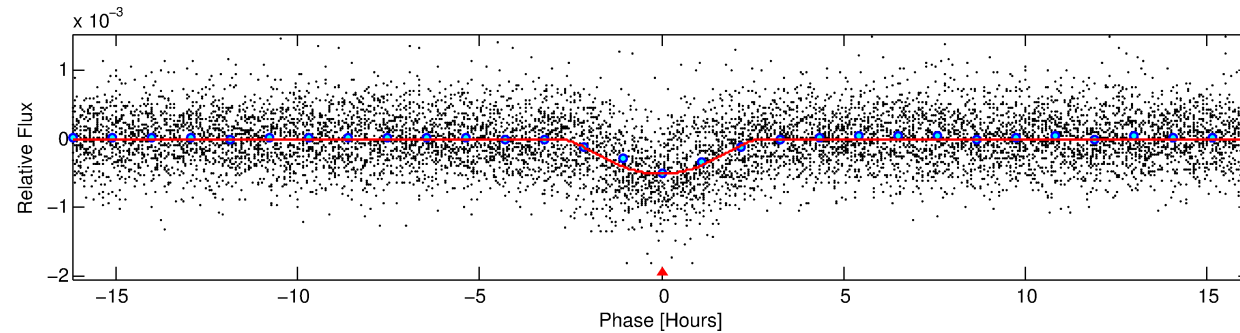
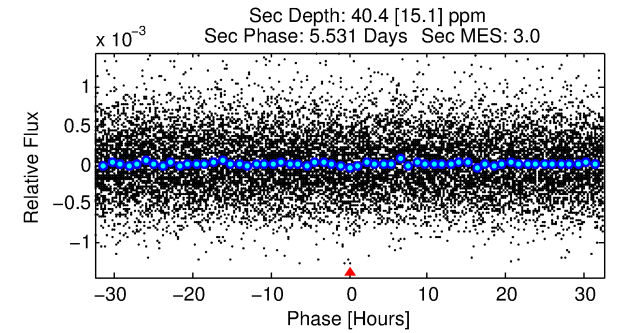
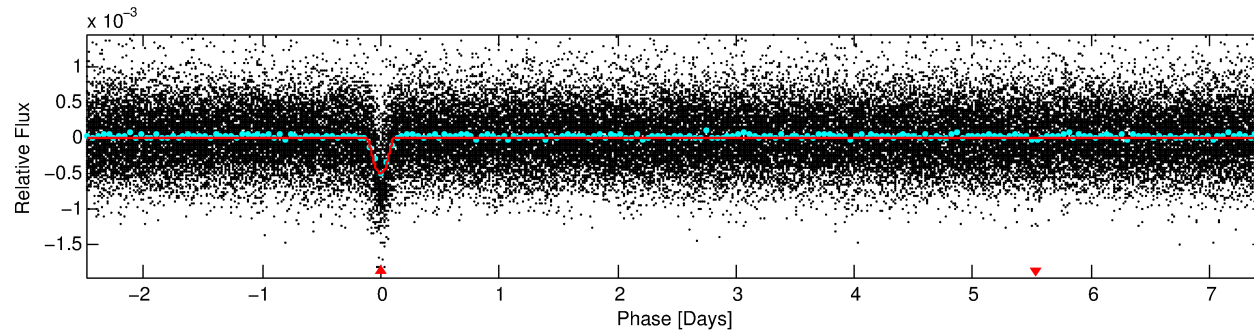
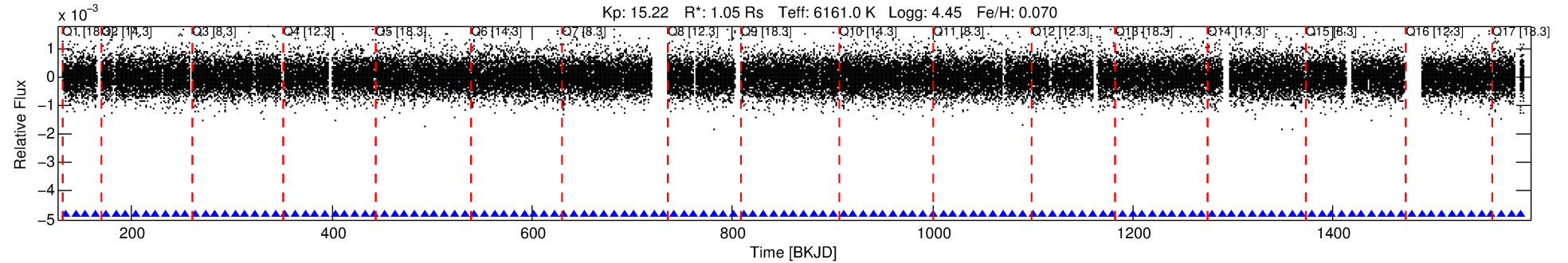
## Ephemeris Match Information For 010149023-01

No Significant Match Found

# DV One-Page Summary

KIC: 10149023 Candidate: 1 of 1 Period: 9.956 d

KOI: K01081.01 Corr: 0.967



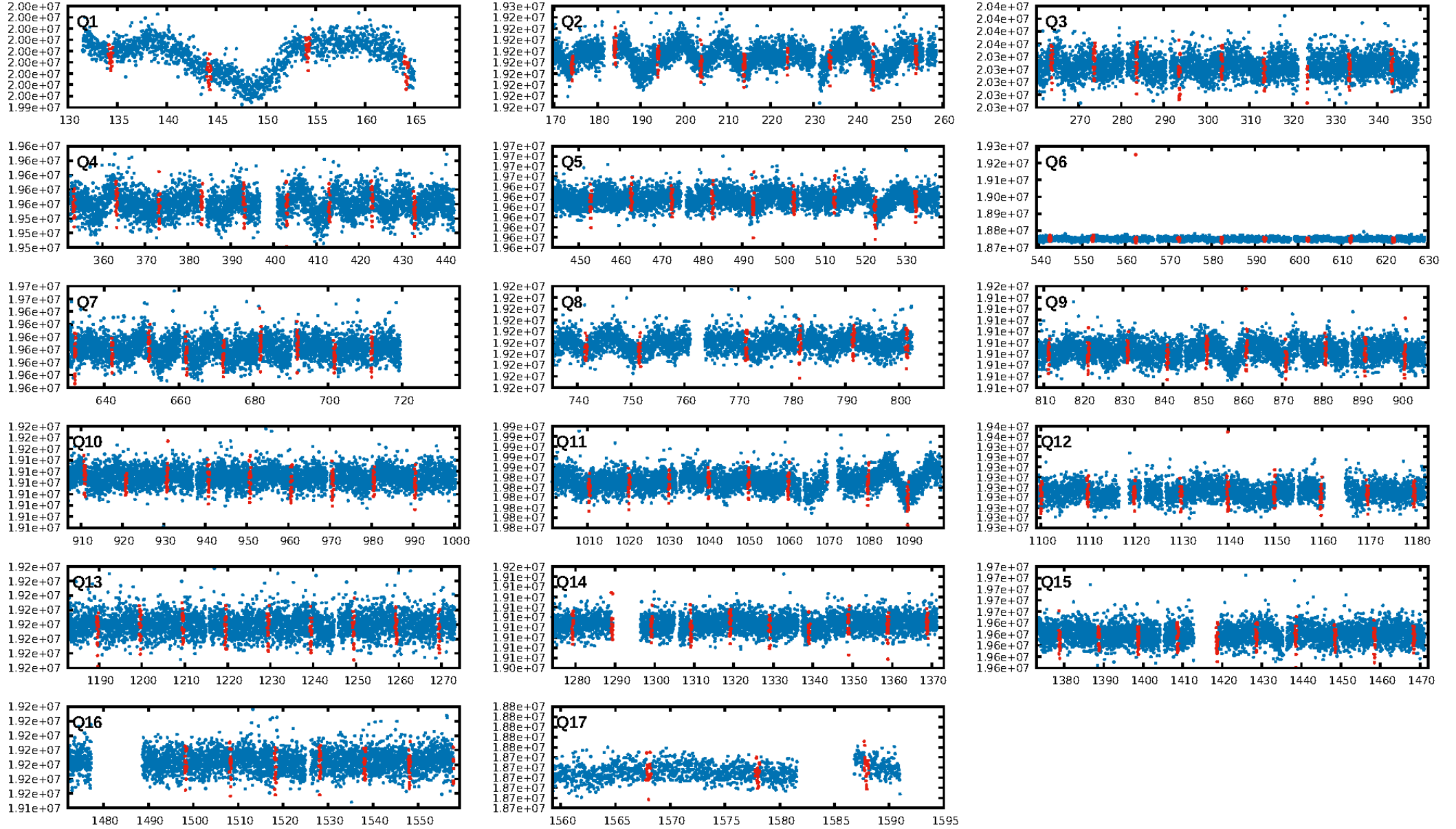
## DV Fit Results:

Period = 9.95640 [0.00005] d  
Epoch = 134.2937 [0.0040] BKJD  
Rp/R\* = 0.0408 [0.0518]  
a/R\* = 4.19 [1.25]  
b = 1.00 [0.08]  
Seff = 158.85 [61.08]  
Teff = 905 [87] K  
Rp = 4.69 [6.10] Re  
a = 0.0949 [0.0231] AU  
Ag = 9.10 [23.55] [0.34σ]  
Teffp = 2431 [1561] K [0.98σ]

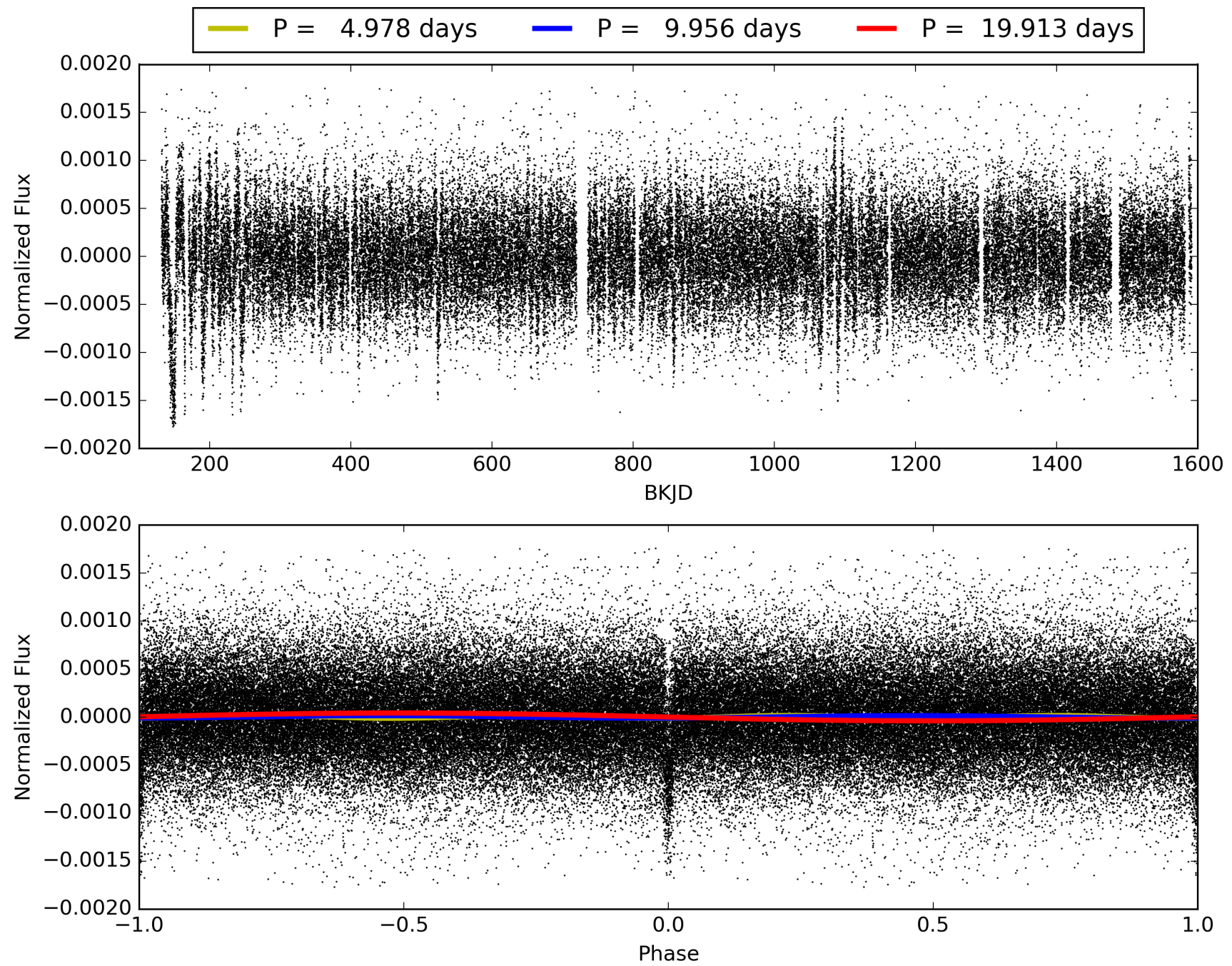
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 98.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.78e-171  
RollingBand-fgt: 1.00 [132/132]  
GhostDiagnostic-chr: 5.524  
Centroid-sig: 47.7%  
Centroid-so: 1.135 arcsec [2.48σ]  
OotOffset-rm: 0.242 arcsec [0.98σ]  
KicOffset-rm: 0.219 arcsec [0.84σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.94 [15/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 010149023-01, PDC Light Curves

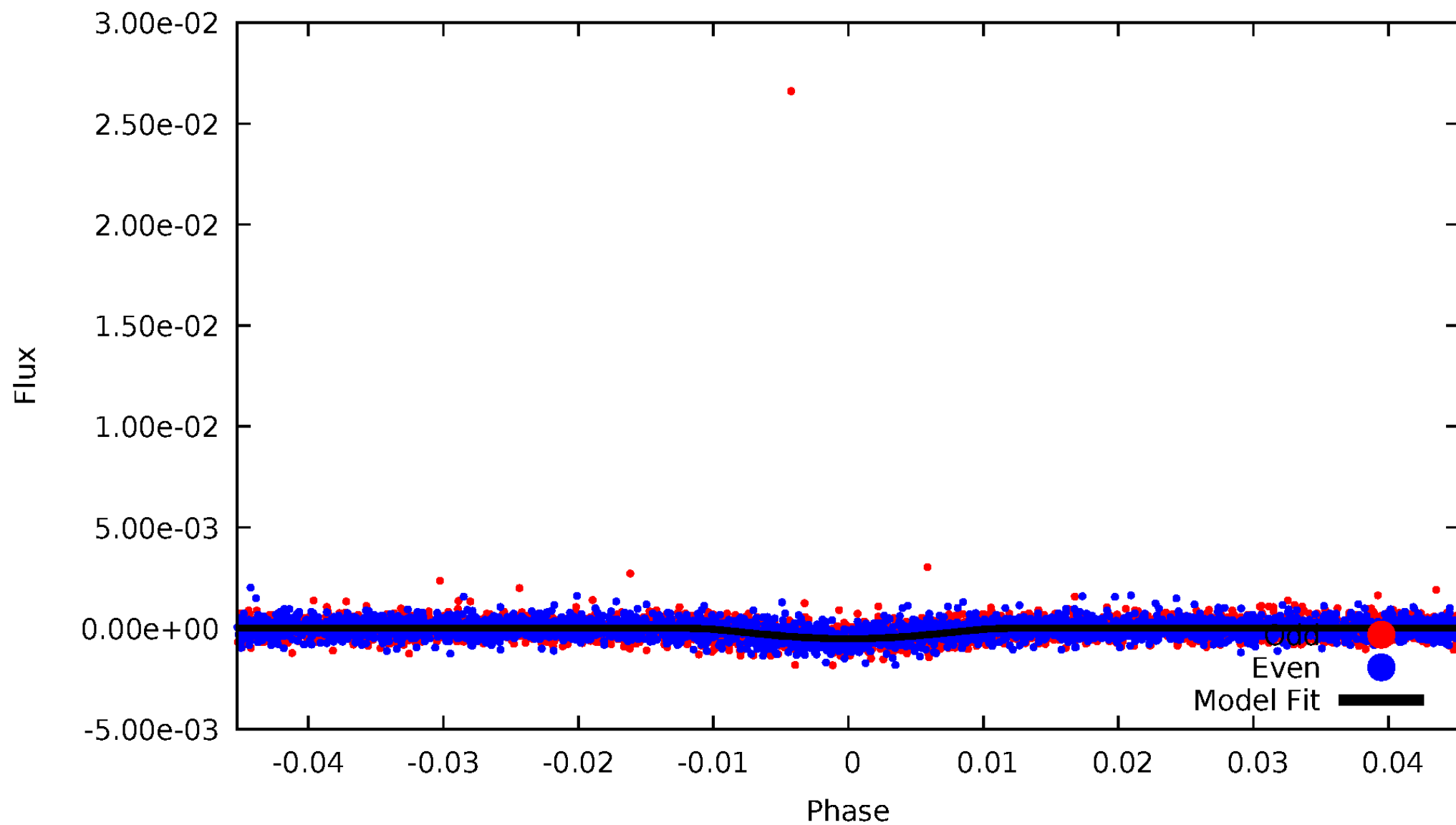


# TCE 010149023-01



# DV Odd/Even

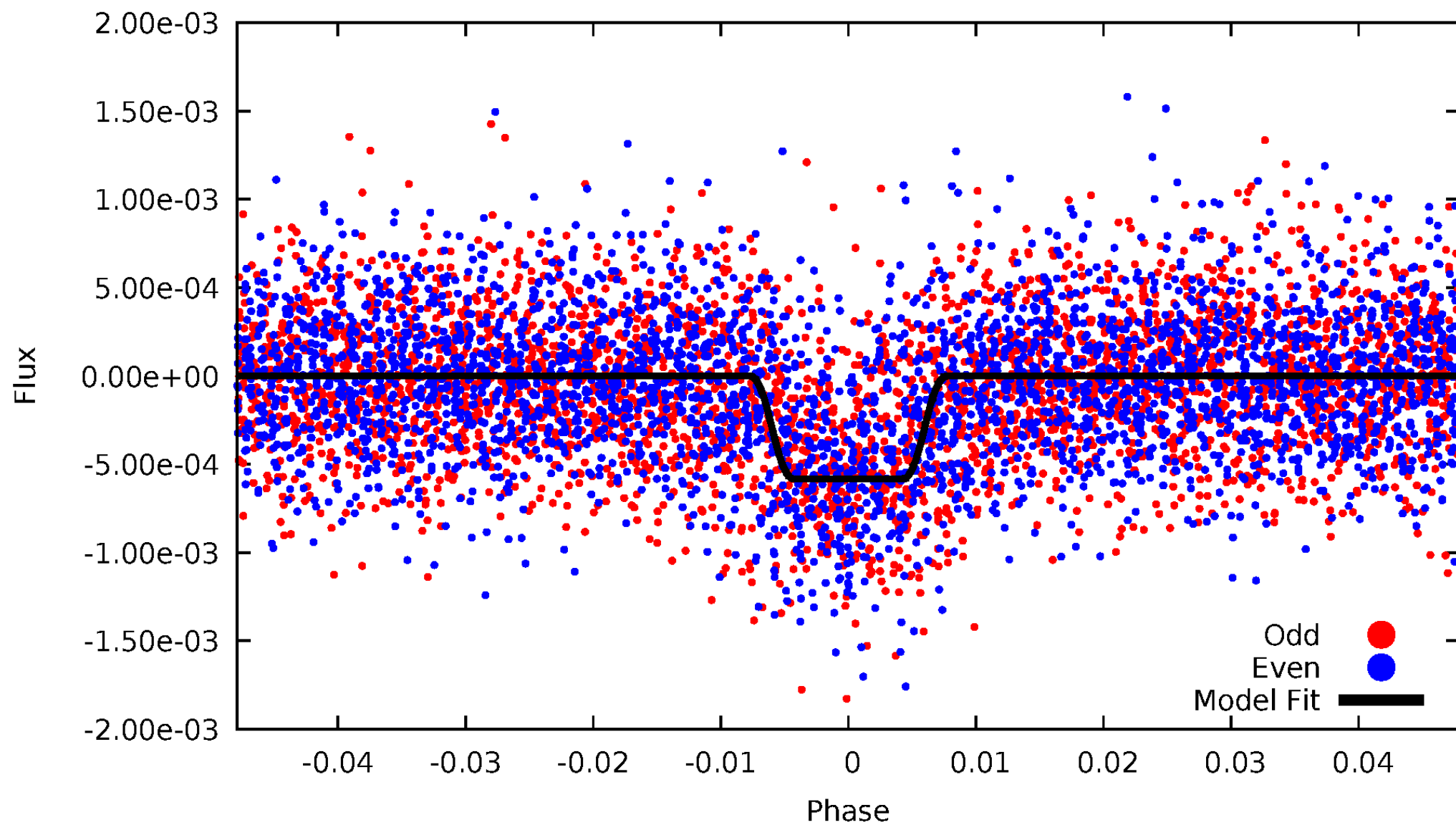
TCE 010149023-01





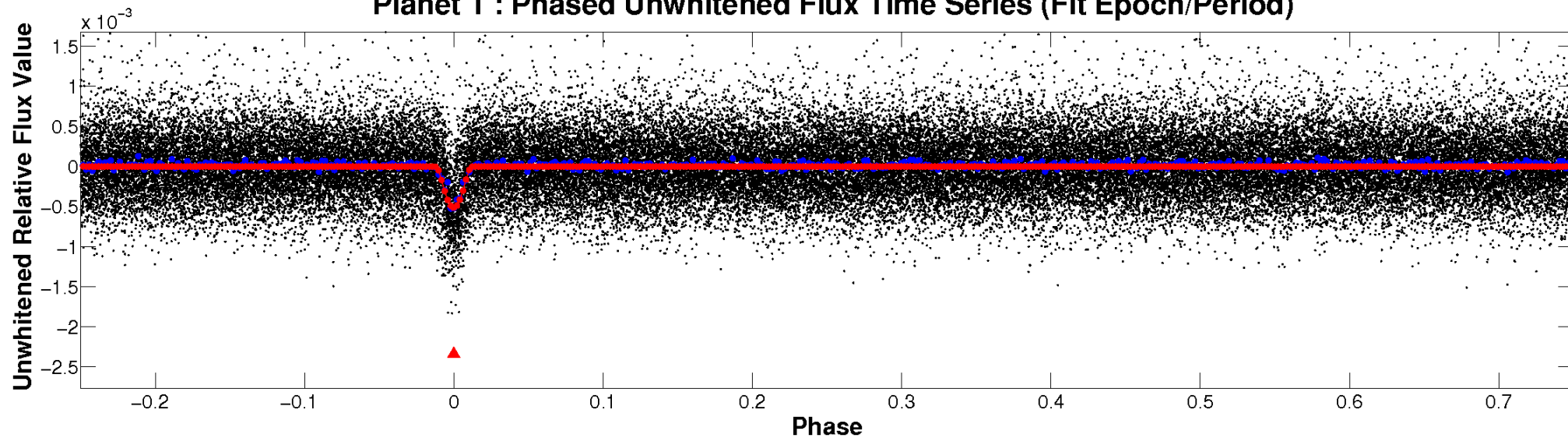
# ALT Odd/Even

TCE 010149023-01

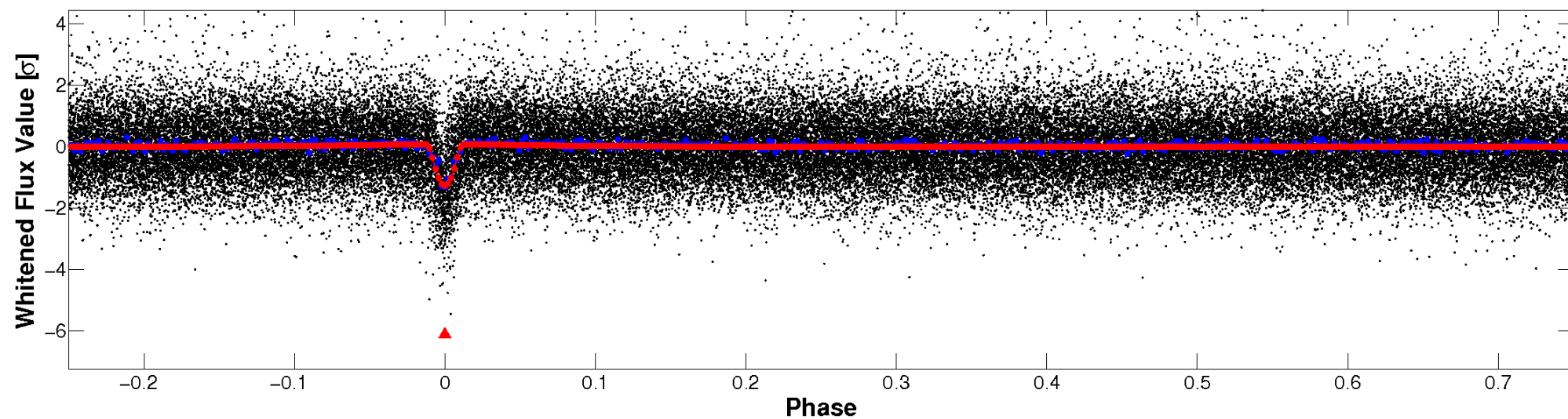


# Non-Whitened Vs. Whitened Light Curve

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

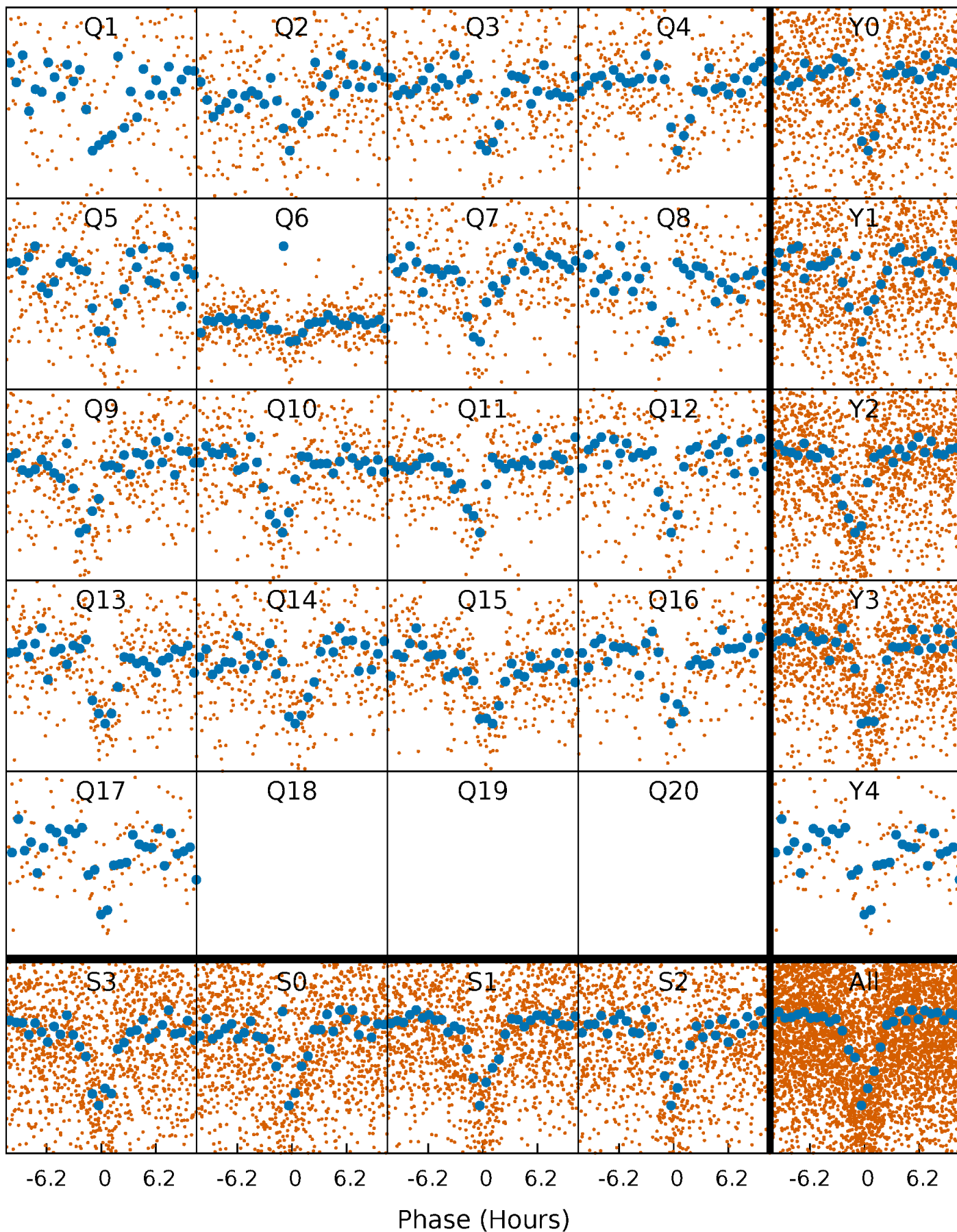


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

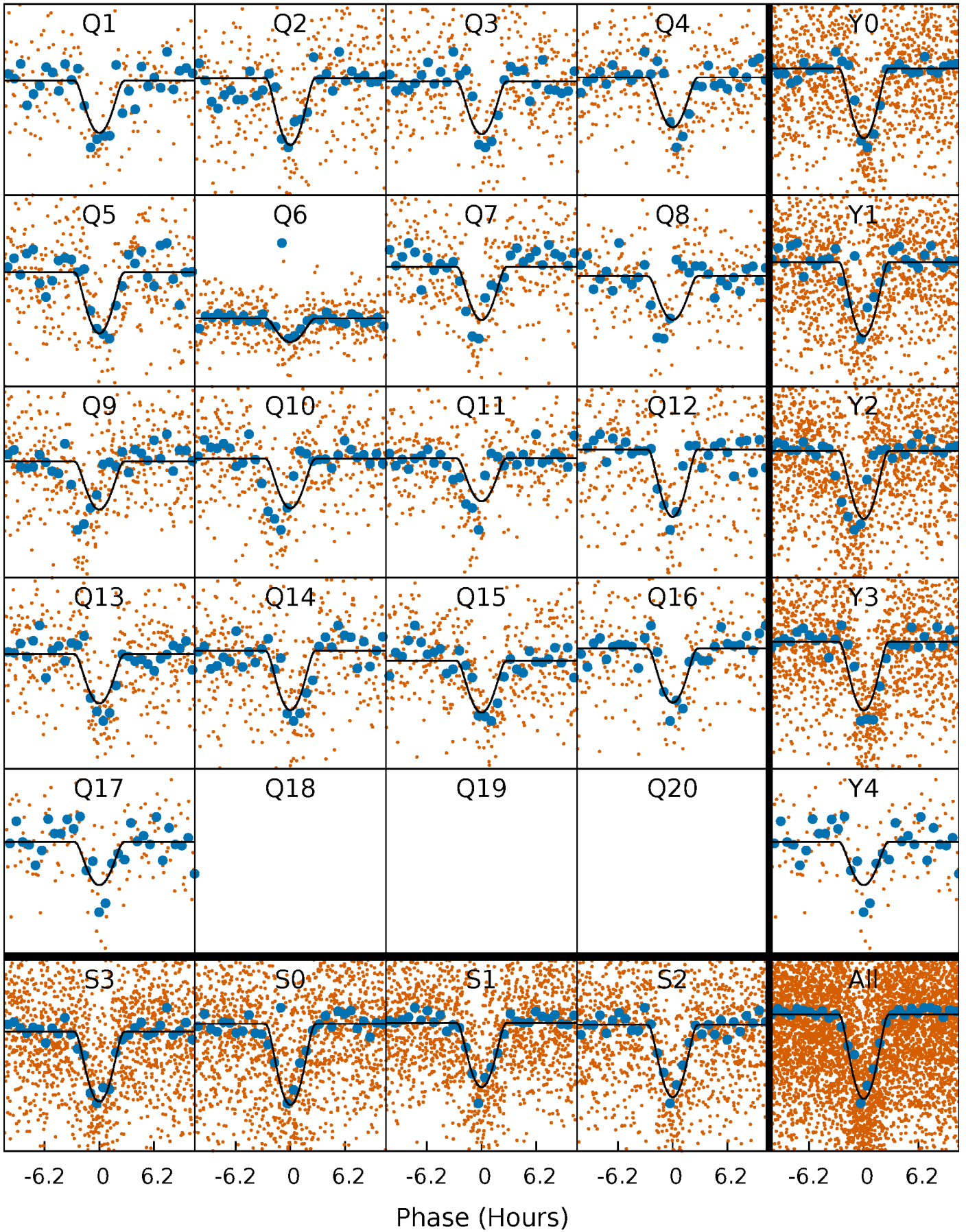
TCE 010149023-01 P= 9.956400 Days  $T_0=134.293672$  (BKJD)





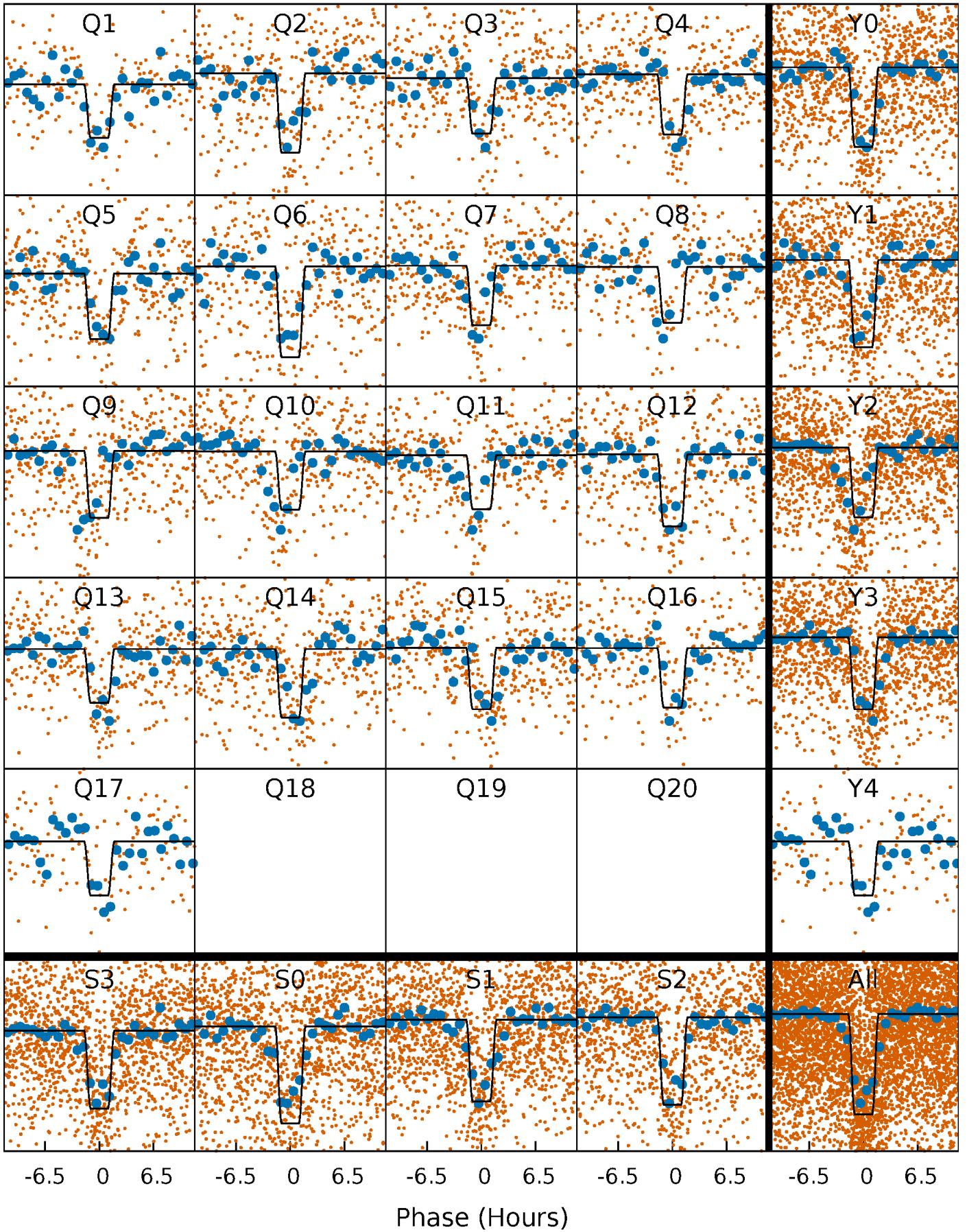
# DV Quarter-Phased Transit Curves

TCE 010149023-01 P= 9.956400 Days  $T_0=134.293672$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

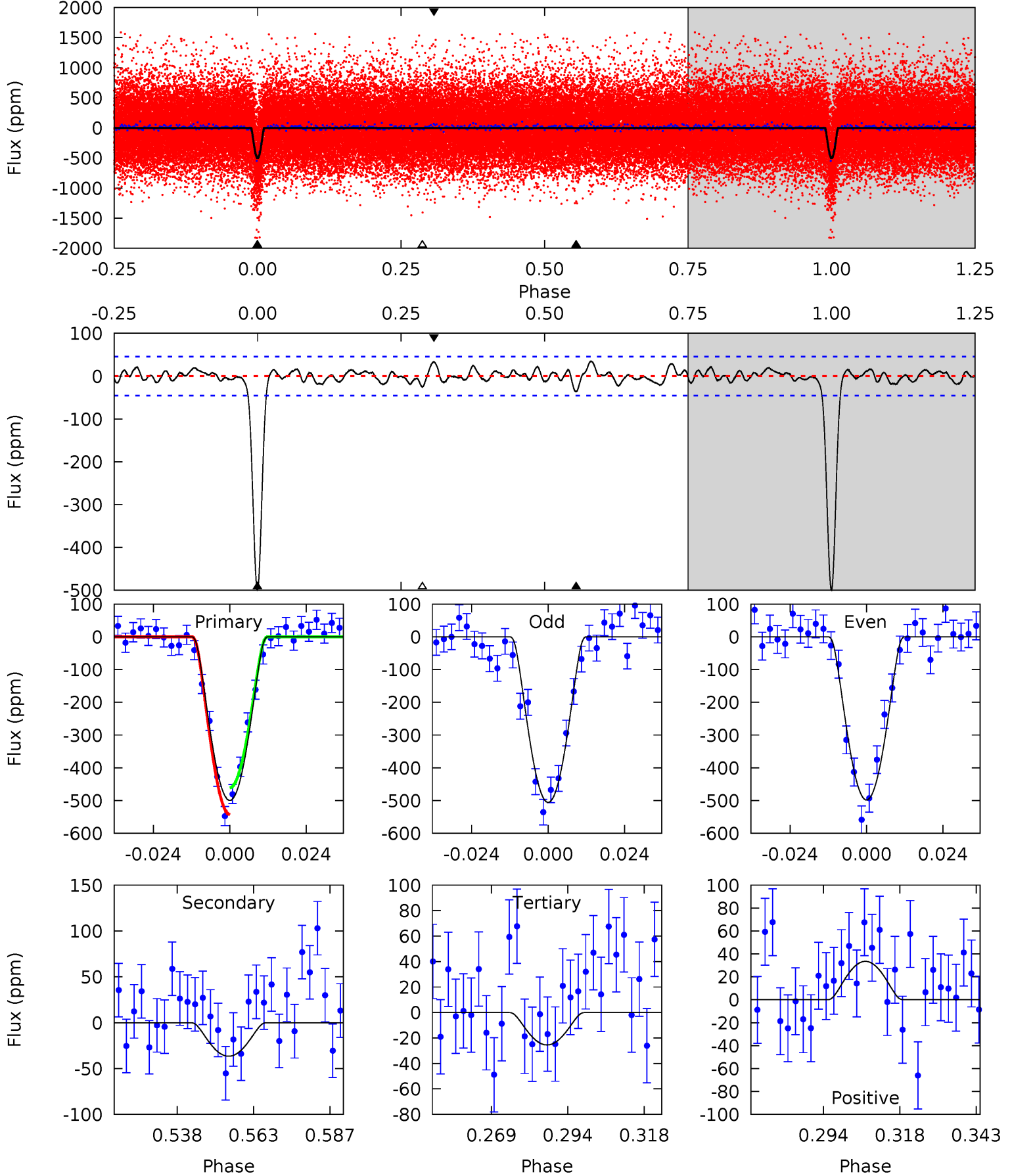
TCE 010149023-01   P= 9.956272 Days    $T_0=134.299228$  (BKJD)



# DV Model-Shift Uniqueness Test

010149023-01, P = 9.956400 Days, E = 124.337272 Days

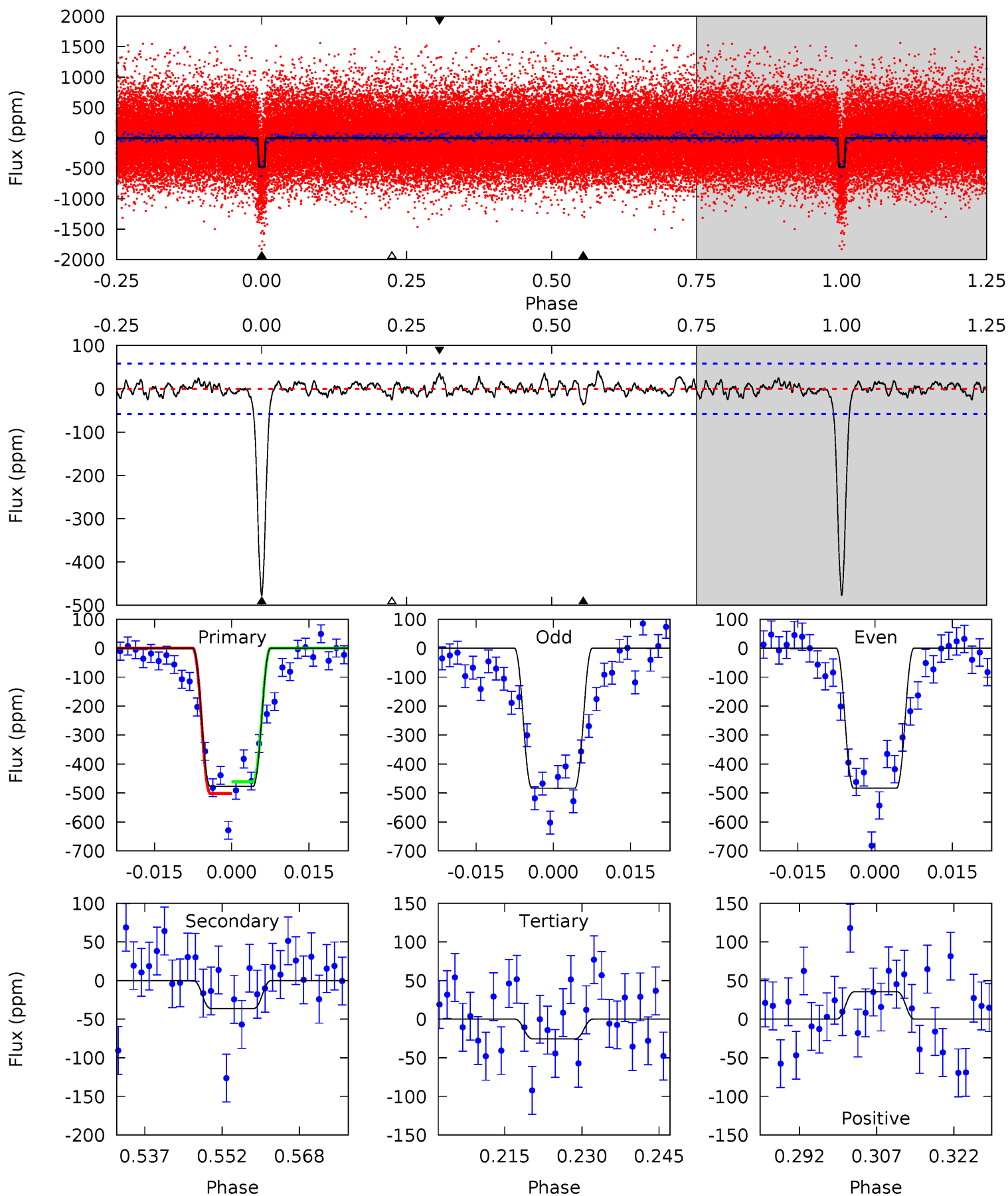
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.4	3.91	2.72	3.58	4.85	2.25	1.18	50.7	49.8	1.19	0.33	0.39	0.89	0.06	4.37



# Alt Model-Shift Uniqueness Test

010149023-01, P = 9.956272 Days, E = 124.342956 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
40.5	3.08	2.16	3.01	4.94	2.42	0.96	38.3	37.5	0.92	0.07	0.01	0.97	0.08	1.70



### Stellar Parameters For KIC 010149023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6161^{+172}_{-236}$	$4.454^{+0.048}_{-0.192}$	$0.070^{+0.200}_{-0.350}$	$1.053^{+0.306}_{-0.122}$	$1.150^{+0.127}_{-0.170}$	$1.388^{+0.355}_{-0.684}$
	+3%/-4%	+1%/-4%	+286%/-500%	+29%/-12%	+11%/-15%	+26%/-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 010149023-01 / KOI 1081.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-37 \pm 9$	$6.31^{+5.71}_{-4.03}$	$1292^{+85}_{-65}$	$2801^{+1075}_{-498}$	$4.506^{+30.070}_{-3.336}$
Alt.	$-36 \pm 12$	$5.49^{+4.77}_{-3.82}$	$1290^{+79}_{-65}$	$2913^{+1319}_{-517}$	$5.829^{+53.124}_{-4.294}$

$T_{\text{max}}$  = 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

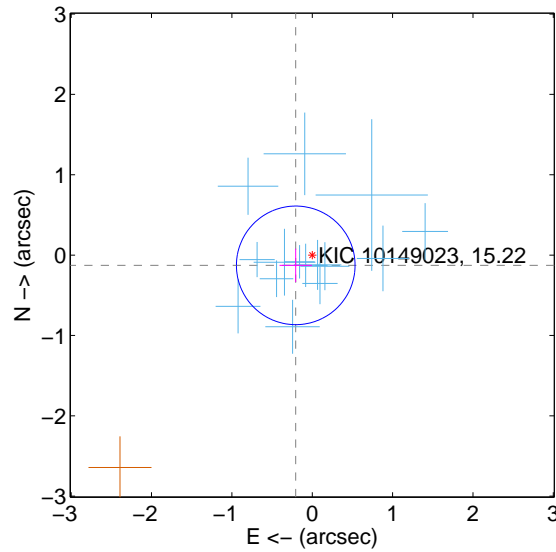
Supplemental centroid analysis for 010149023-01. Kepler magnitude: 15.22. Transit SNR 31.59

There are 15 quarters with good PRF difference image offsets

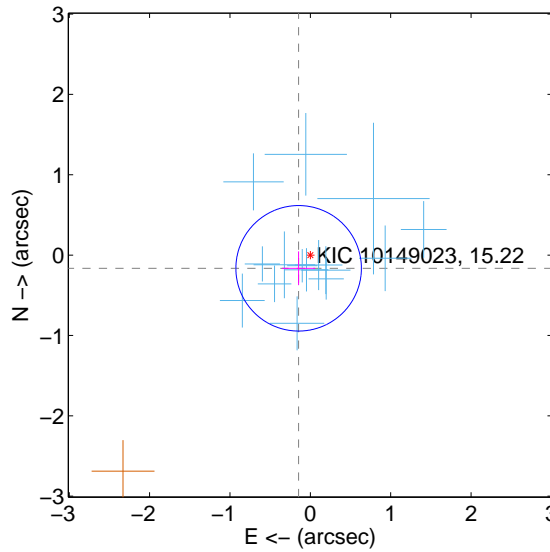
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.242 \pm 0.246$	0.98	$0.205 \pm 0.201$	$-0.128 \pm 0.209$
PRF-fit source offset from KIC position	$0.219 \pm 0.260$	0.84	$0.145 \pm 0.207$	$-0.164 \pm 0.210$
photometric centroid source offset	$1.14 \pm 0.46$	2.48	$-0.41 \pm 0.37$	$1.06 \pm 0.47$

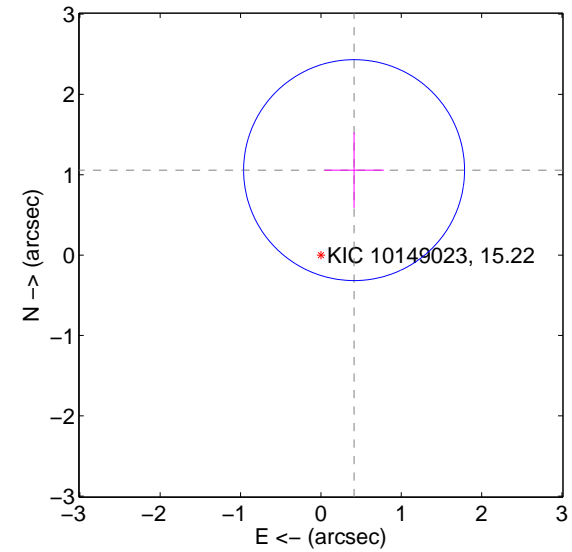
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



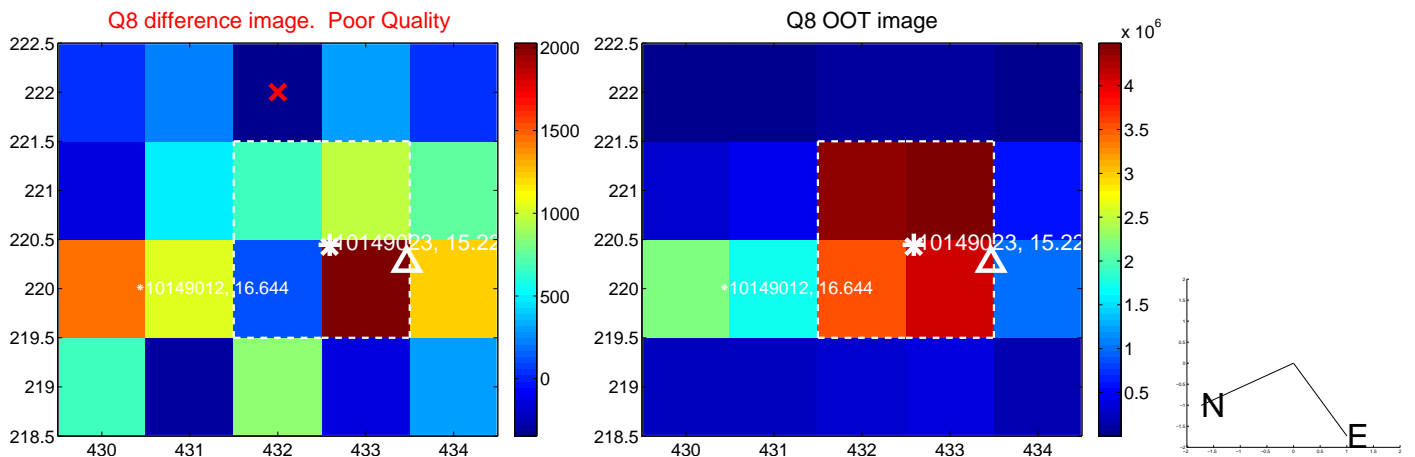
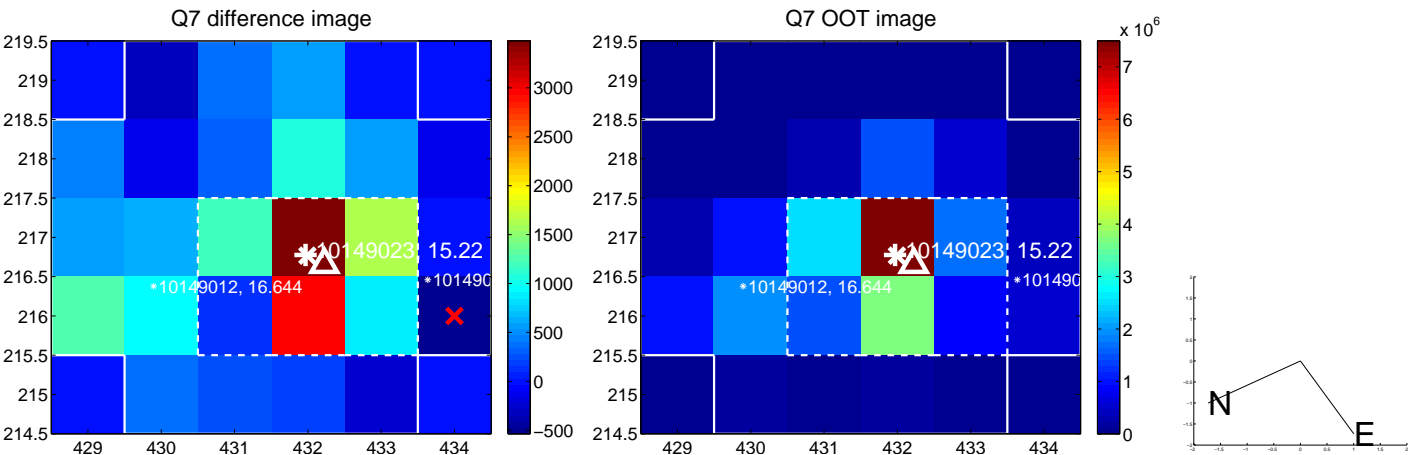
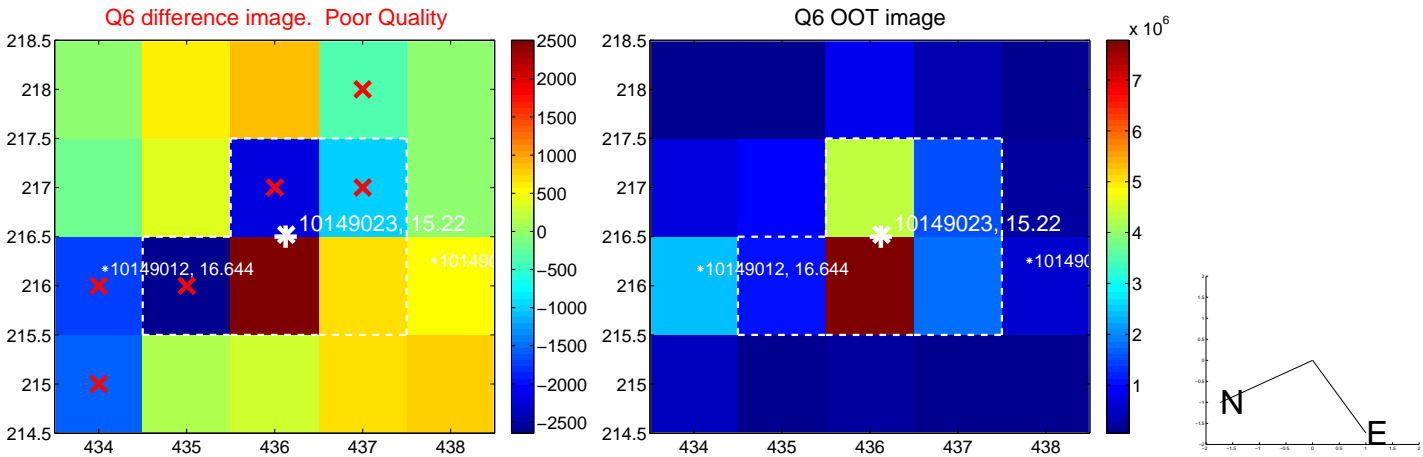
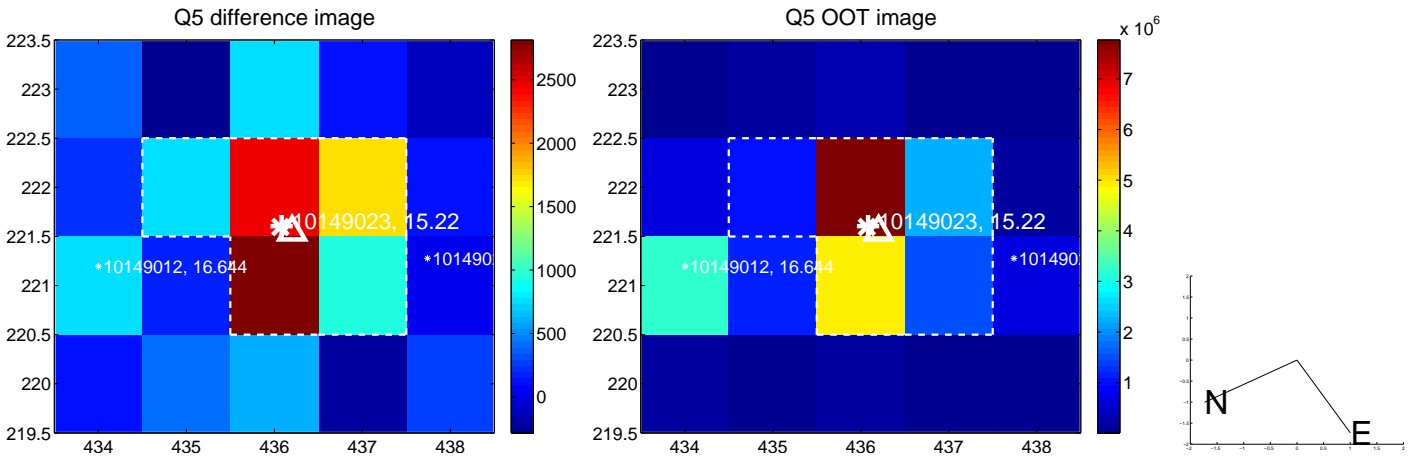
offset from photometric centroids



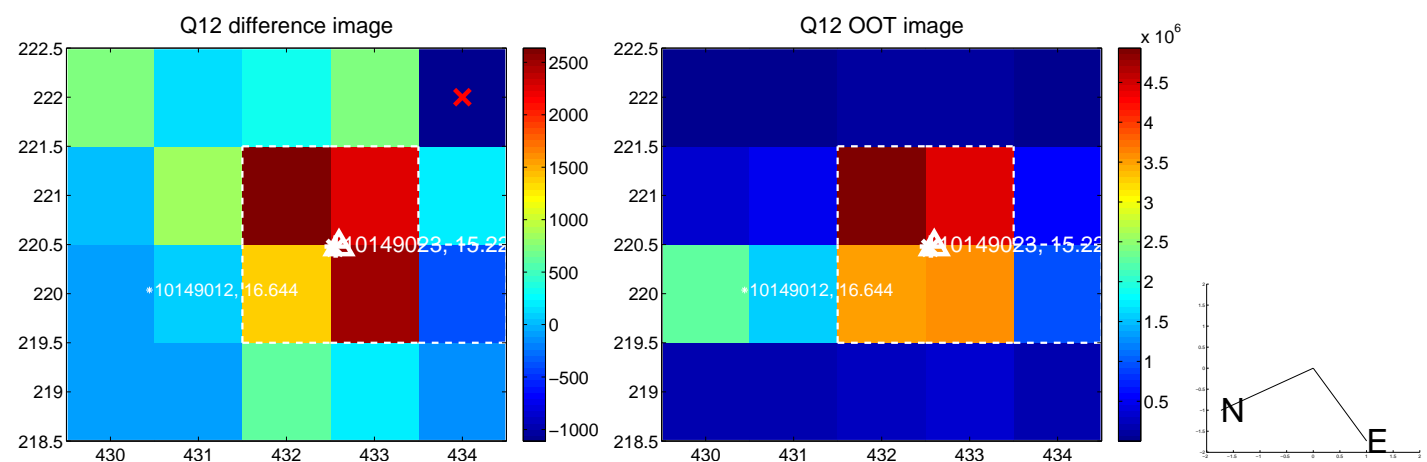
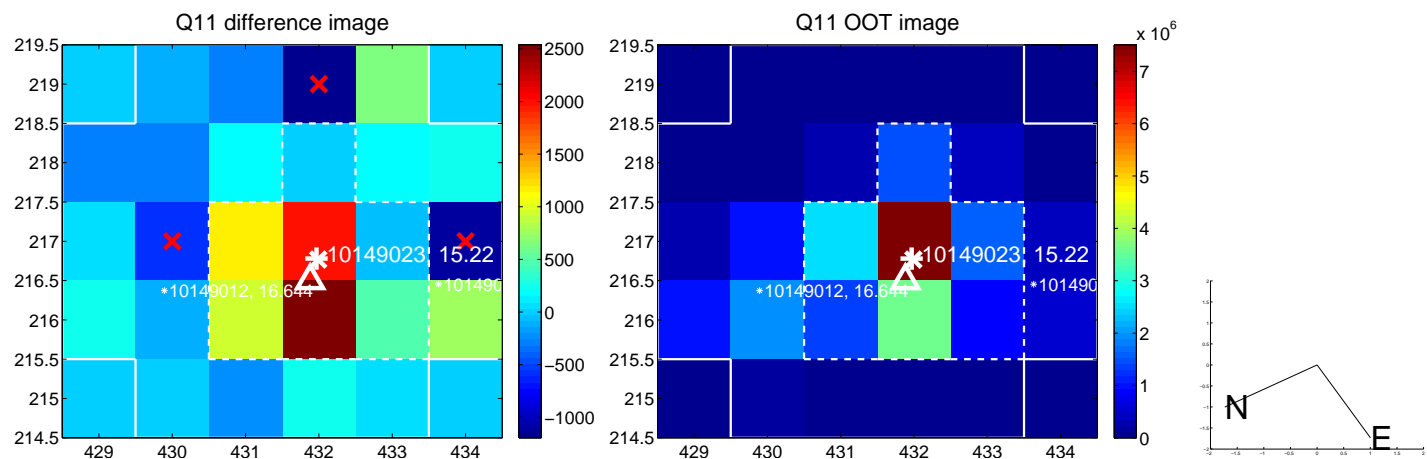
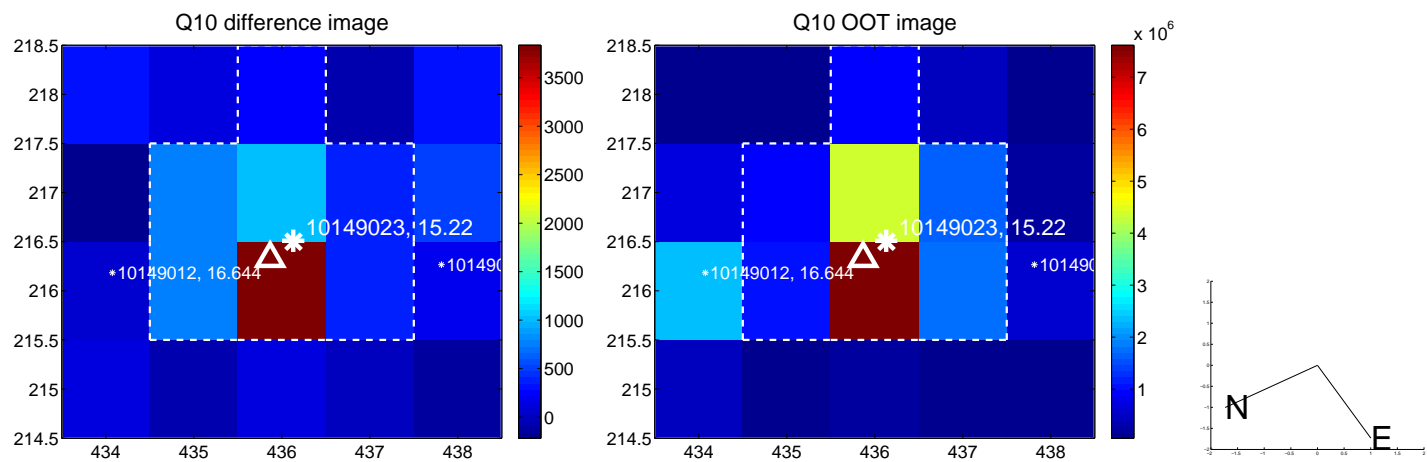
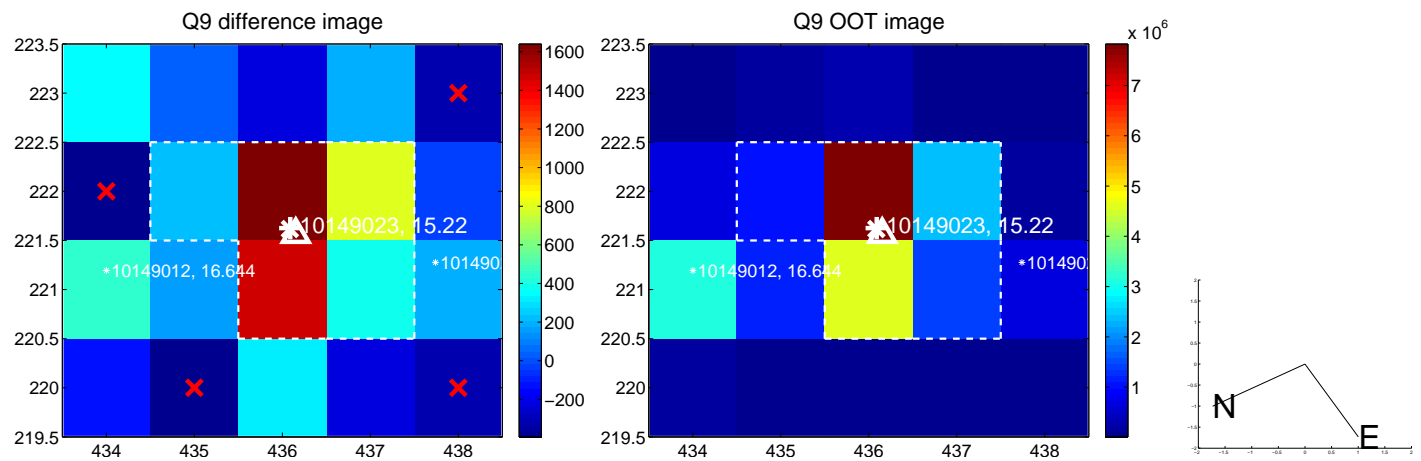
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



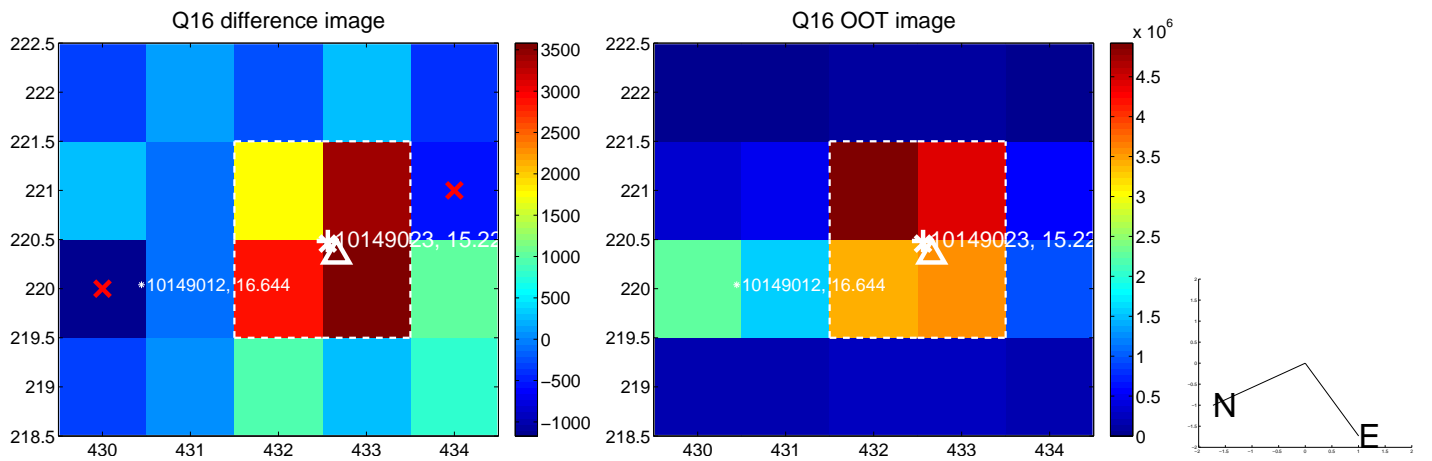
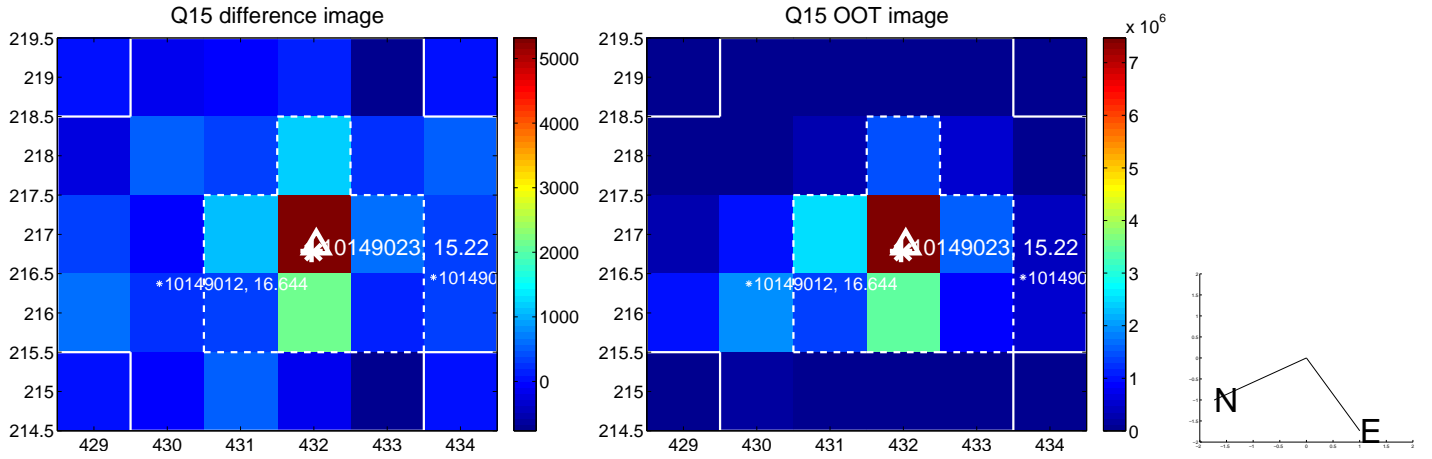
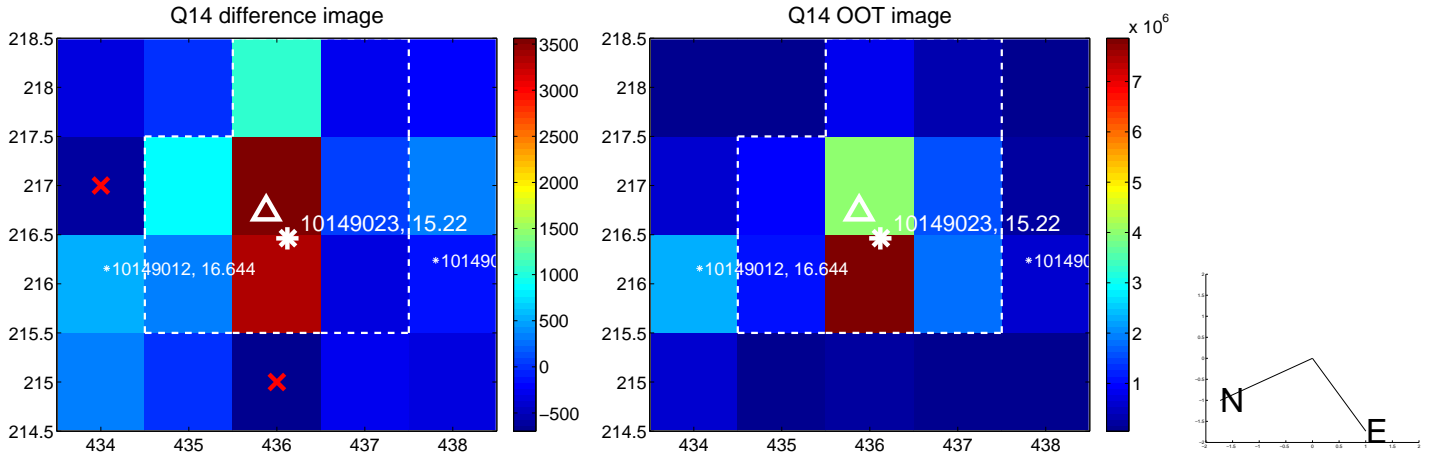
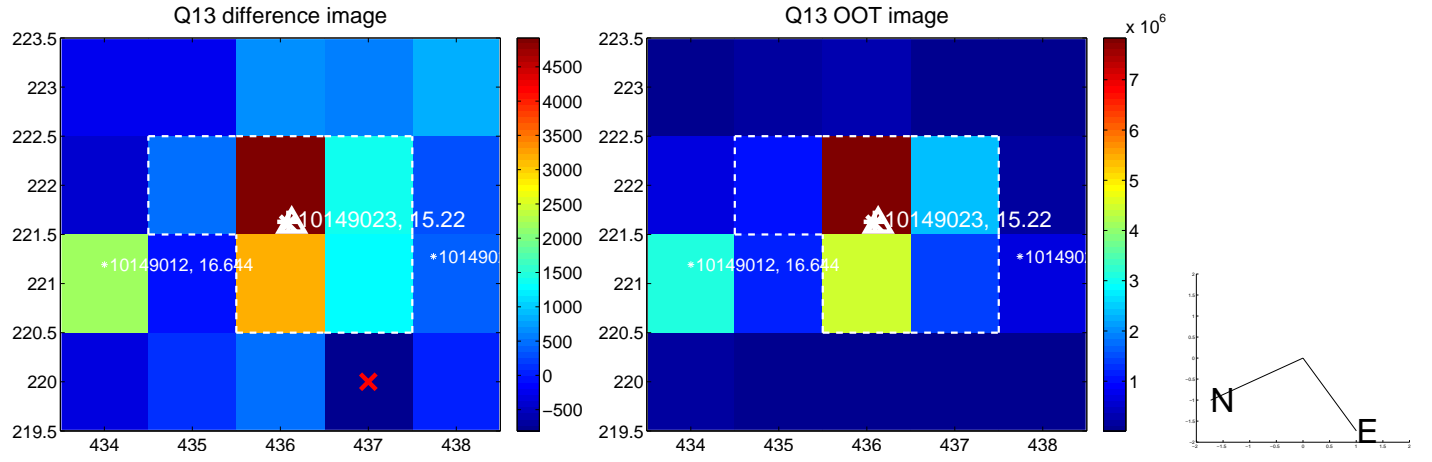
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

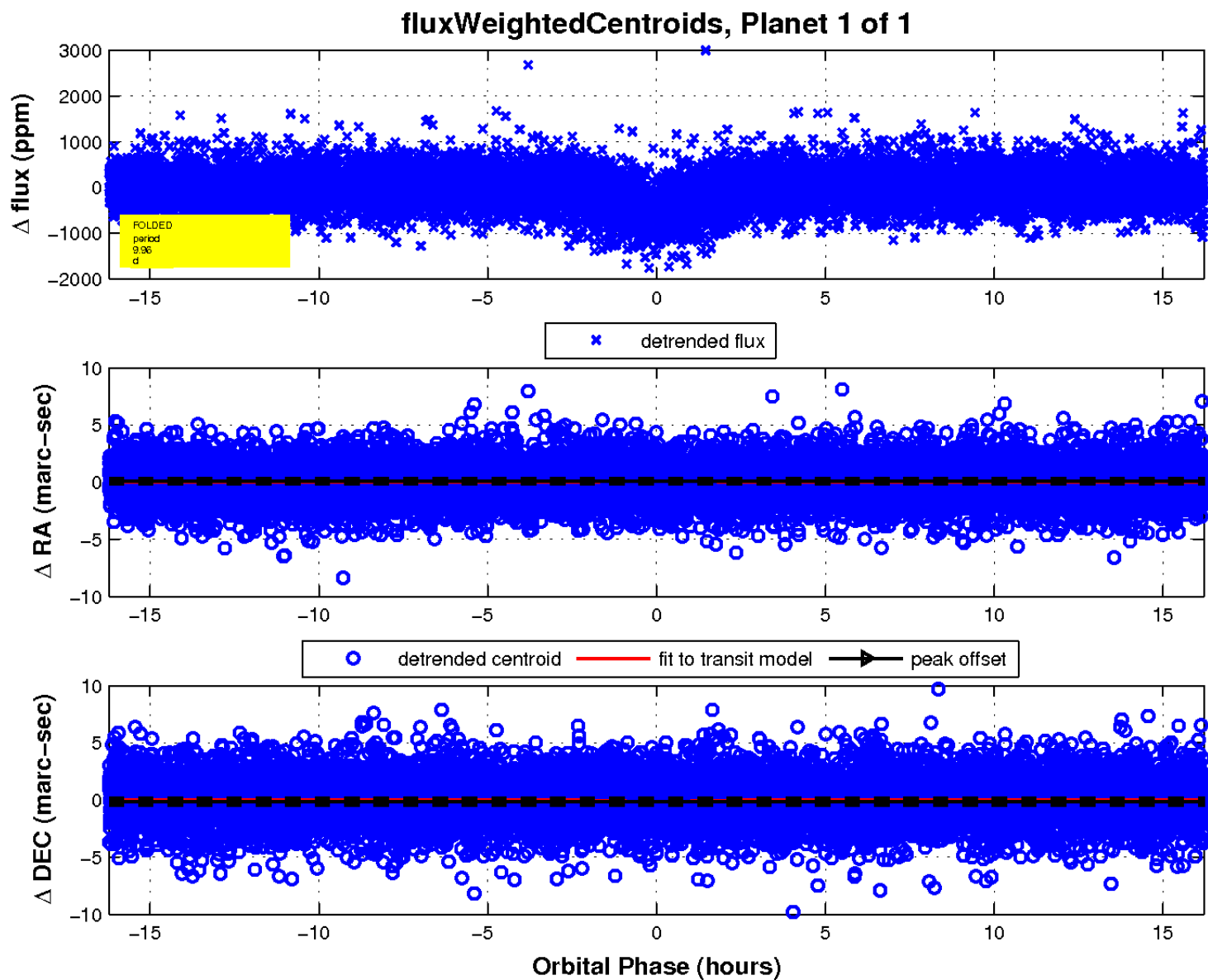
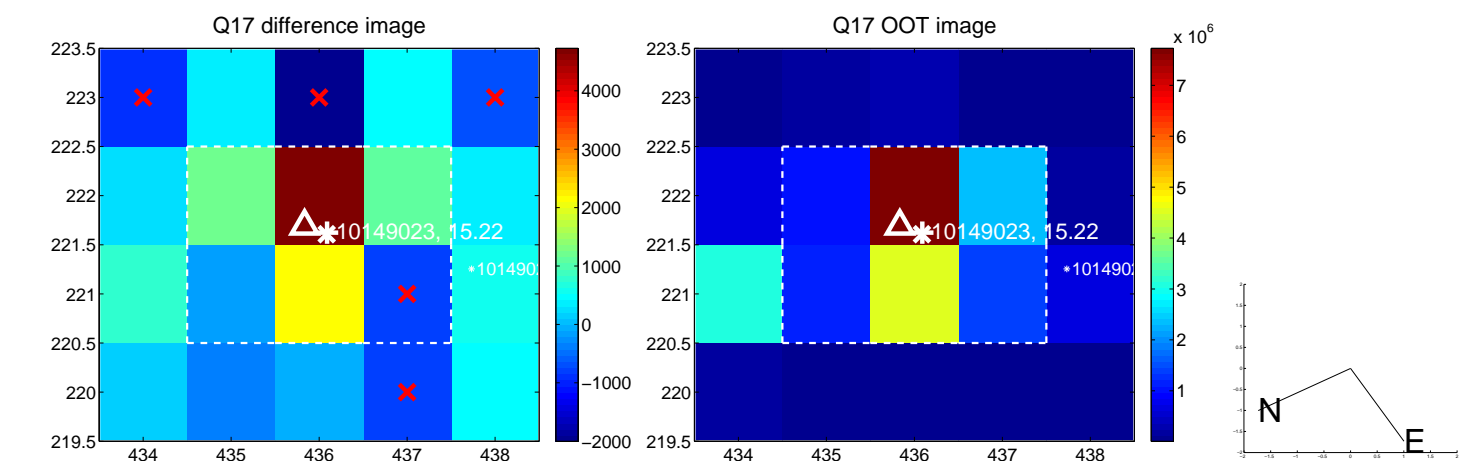


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

