

# KIC 010028535

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010028535-01	OBS	2493.01	0.663085	131.980817	332.0	1.120	29.2	37.1	0.77	5172	1.49	1890.74

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010028535-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

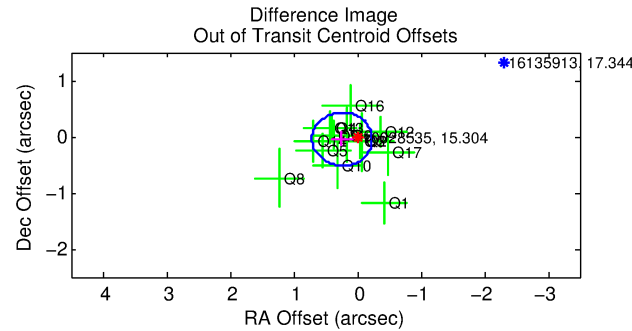
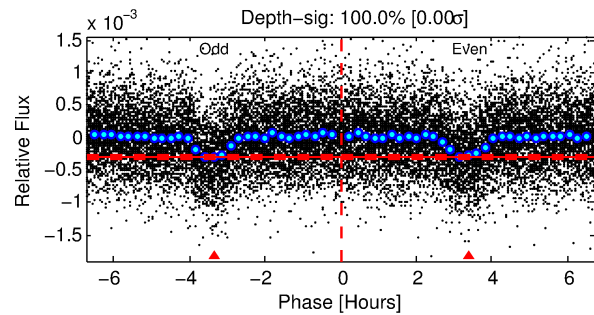
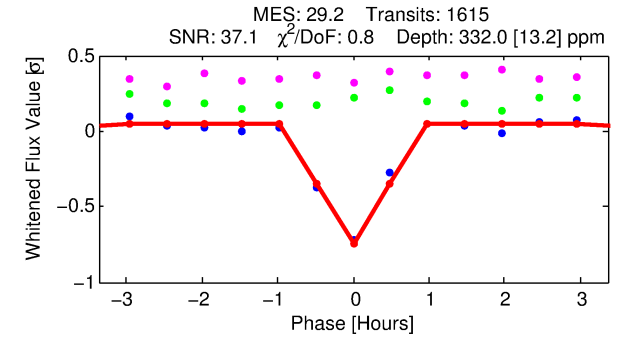
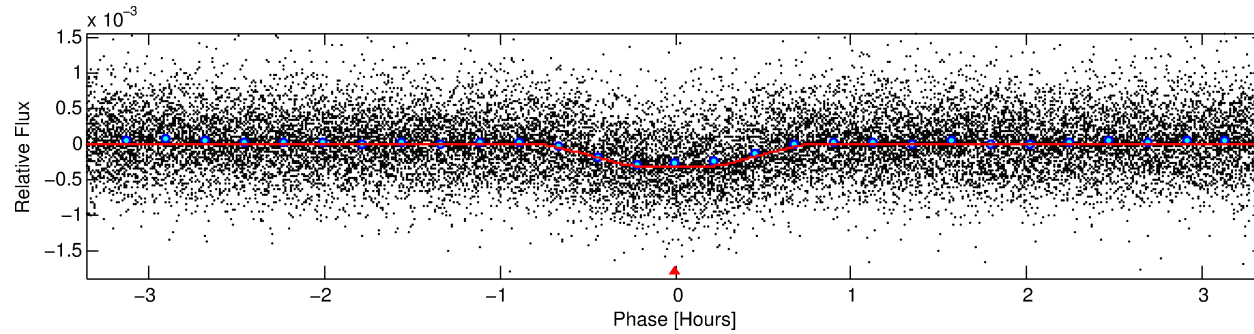
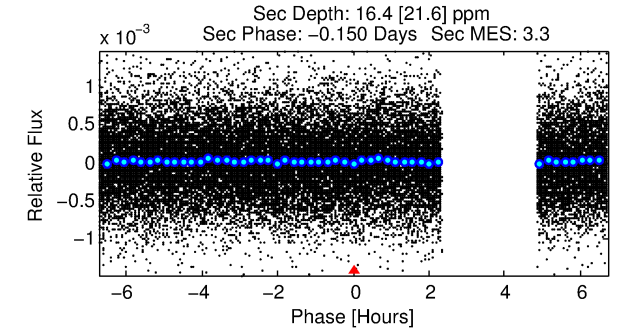
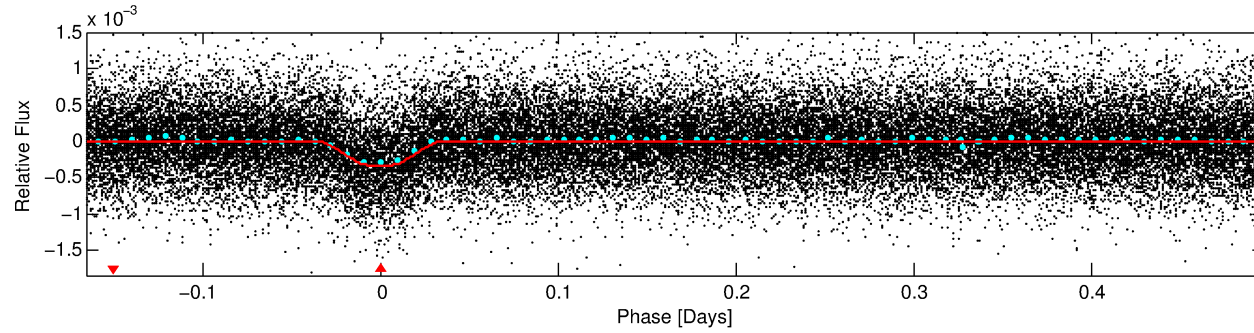
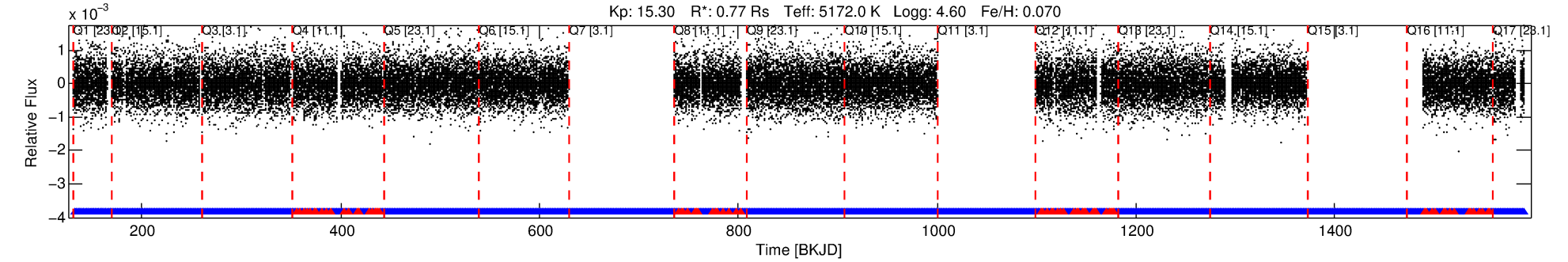
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010028535-01

No Significant Match Found

# DV One-Page Summary

KIC: 10028535 Candidate: 1 of 1 Period: 0.663 d  
KOI: K02493.01 Corr: 0.968



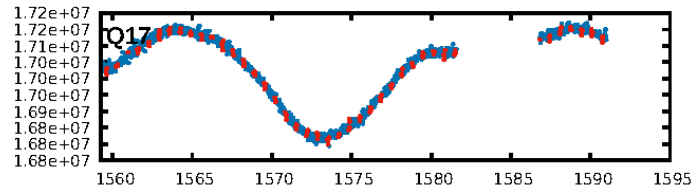
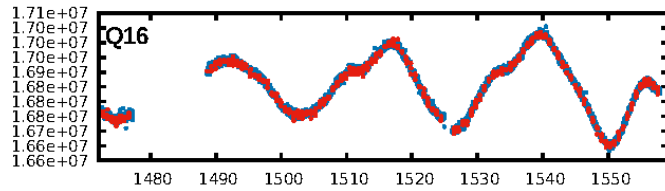
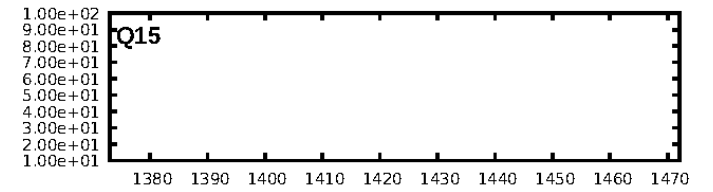
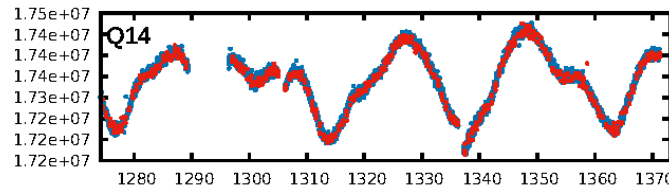
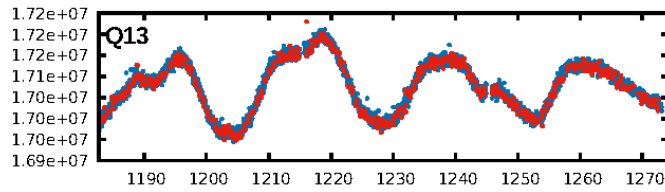
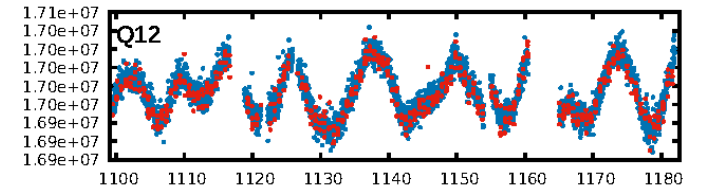
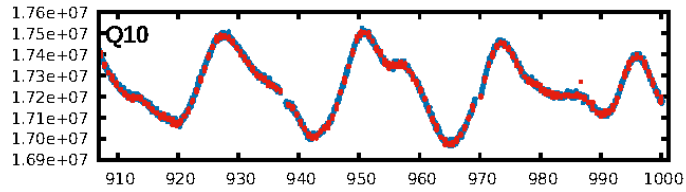
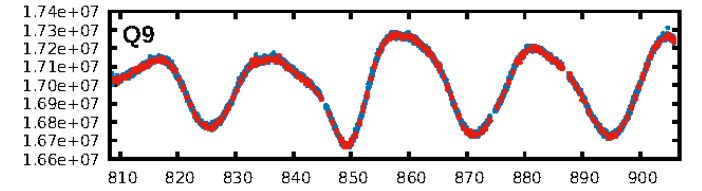
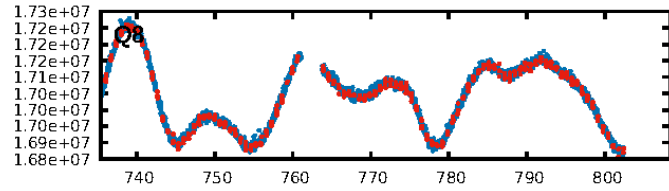
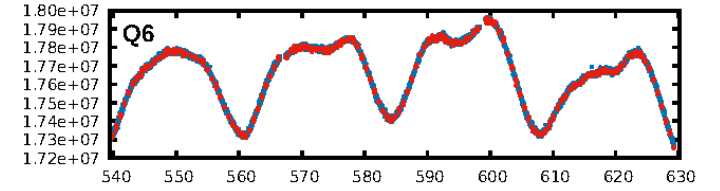
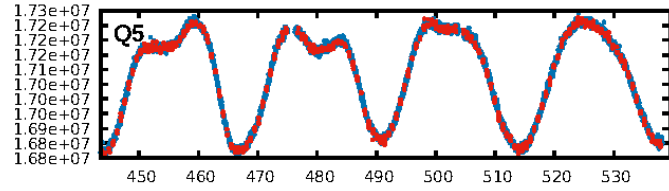
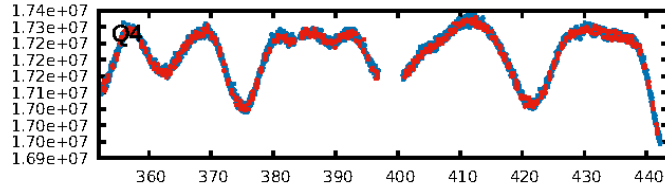
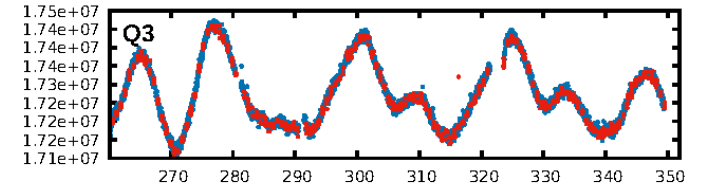
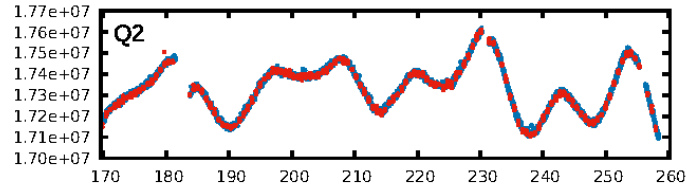
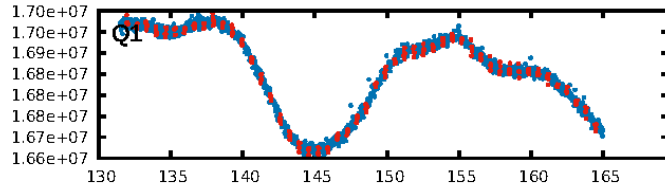
## DV Fit Results:

Period = 0.66309 [0.00000] d  
Epoch = 131.9808 [0.0005] BKJD  
Rp/R\* = 0.0178 [0.0040]  
a/R\* = 3.56 [2.66]  
b = 0.67 [0.68]  
Seff = 1890.74 [423.44]  
Teff = 1681 [94] K  
Rp = 1.49 [0.41] Re  
a = 0.0141 [0.0018] AU  
Ag = 0.81 [1.14] [-0.17σ]  
Teffp = 2466 [865] K [0.90σ]

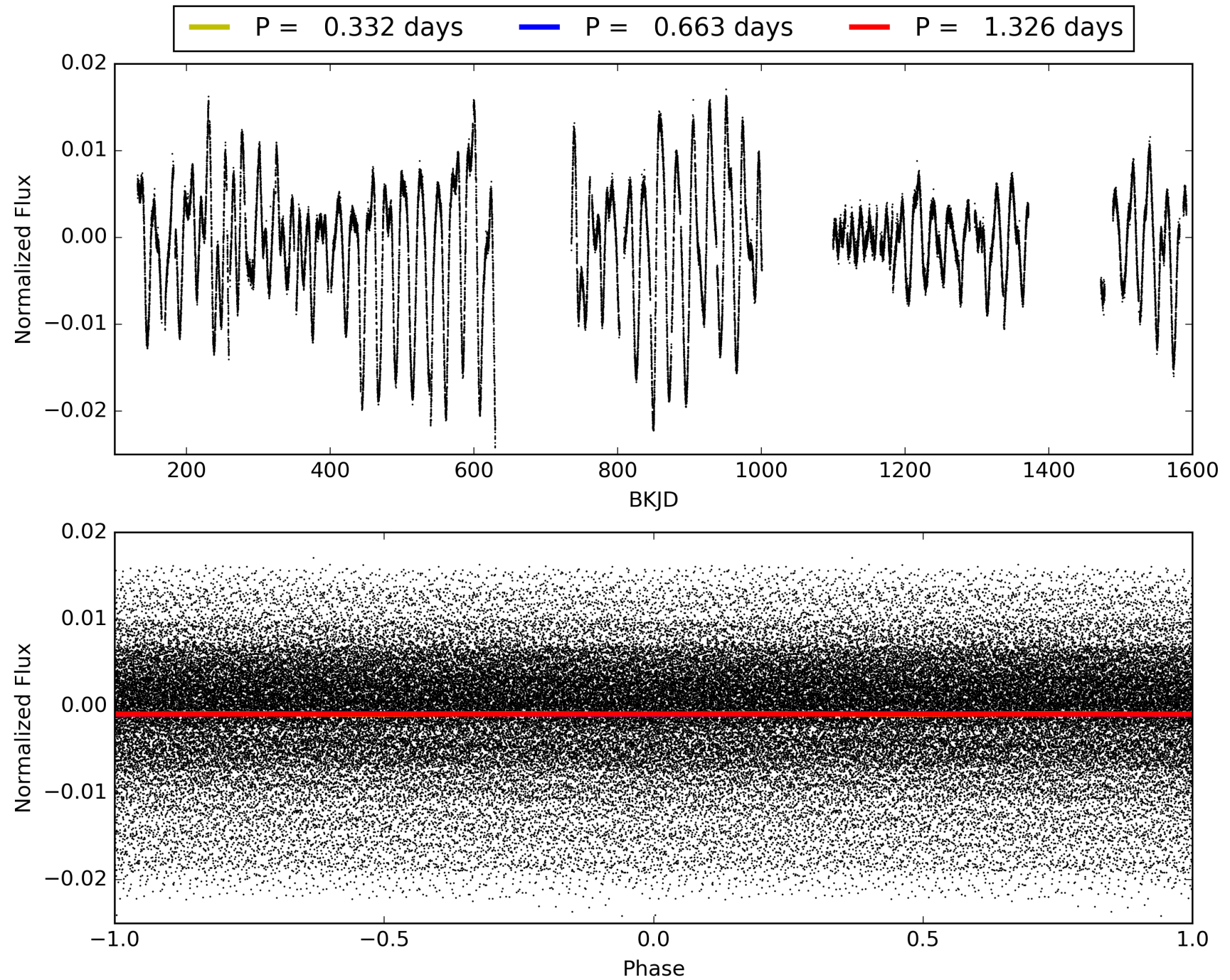
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.09e-164  
RollingBand-fgt: 0.95 [1446/1525]  
GhostDiagnostic-chr: 2.266  
Centroid-sig: 4.1%  
Centroid-so: 0.466 arcsec [1.22σ]  
OotOffset-rm: 0.243 arcsec [1.53σ]  
KicOffset-rm: 0.126 arcsec [0.98σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 010028535-01, PDC Light Curves

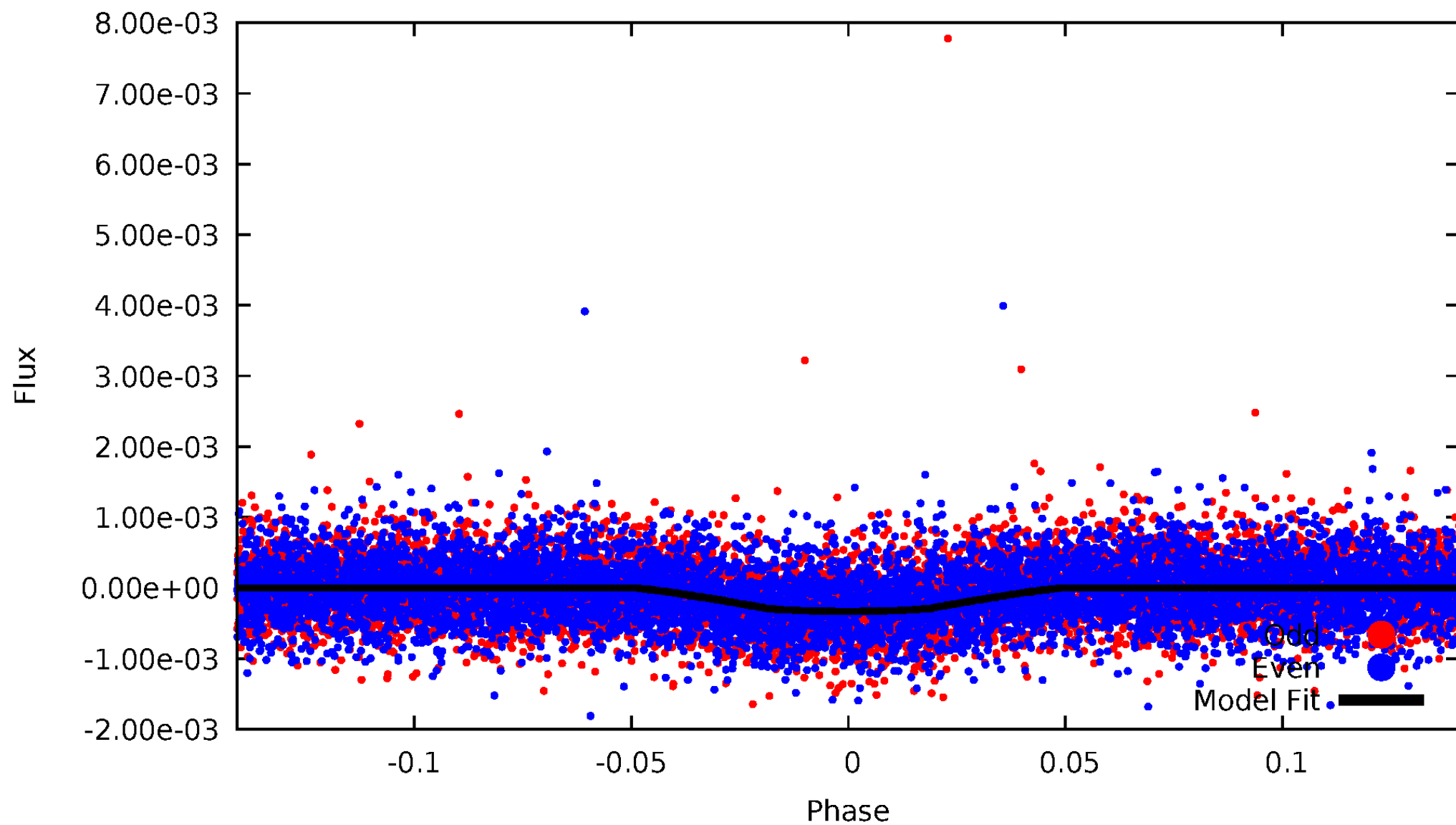


TCE 010028535-01



# DV Odd/Even

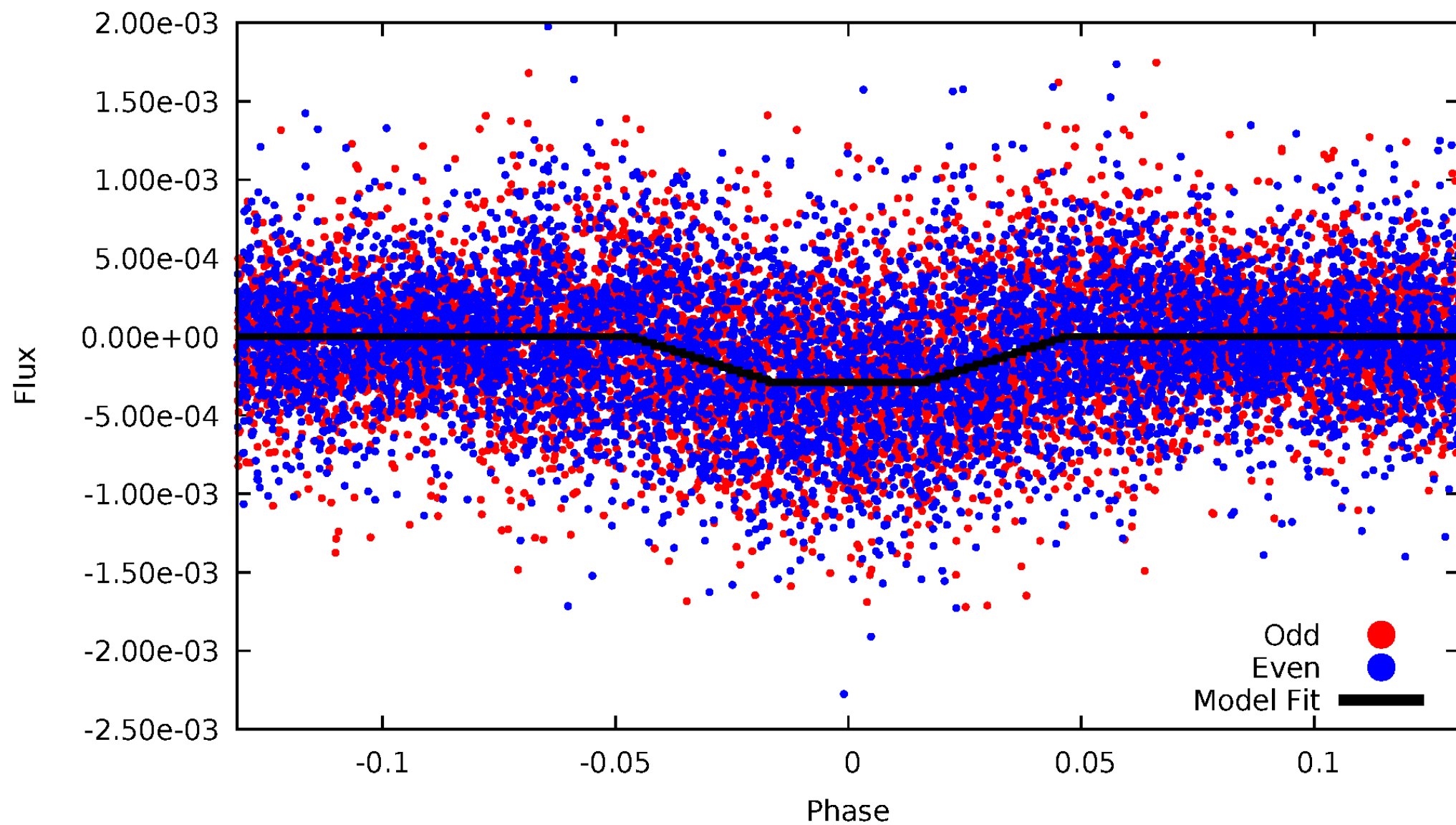
TCE 010028535-01



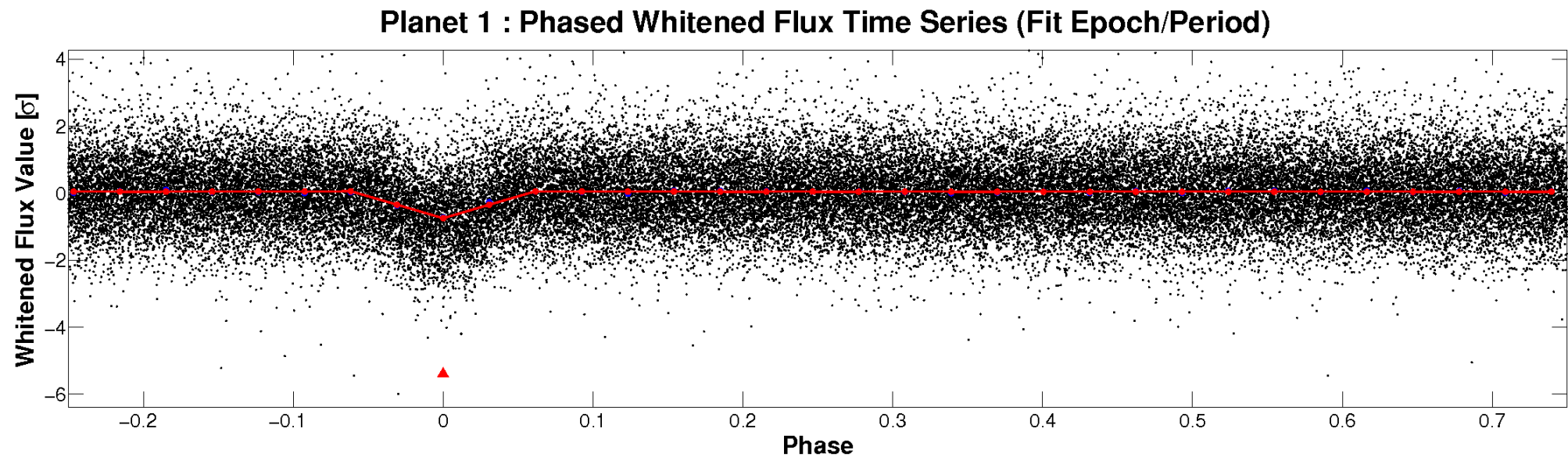
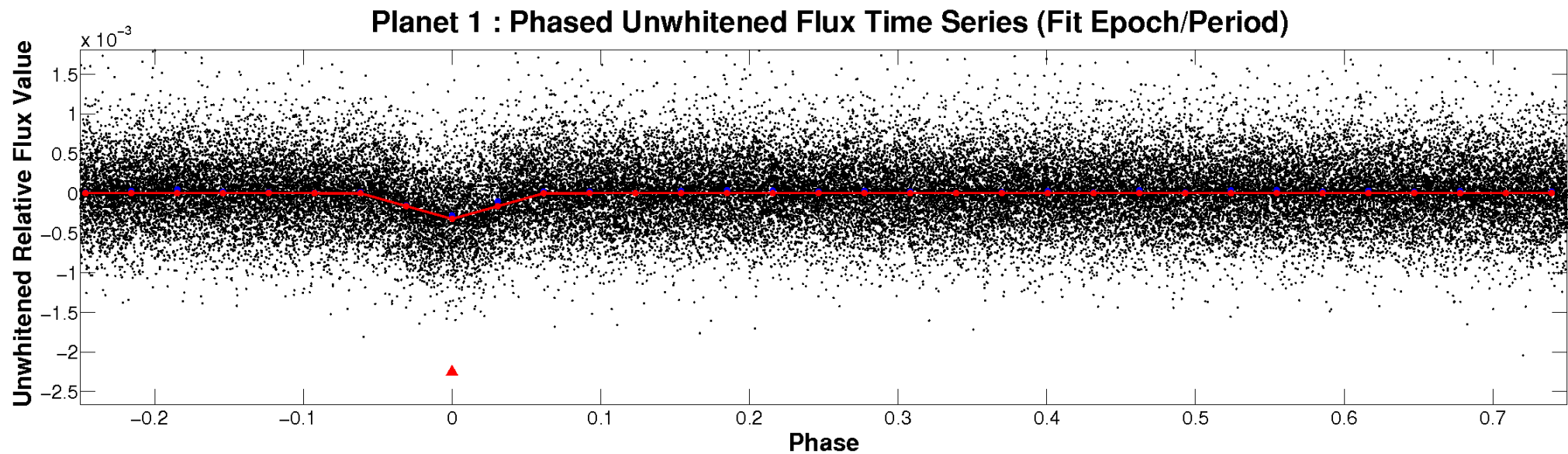


# ALT Odd/Even

TCE 010028535-01

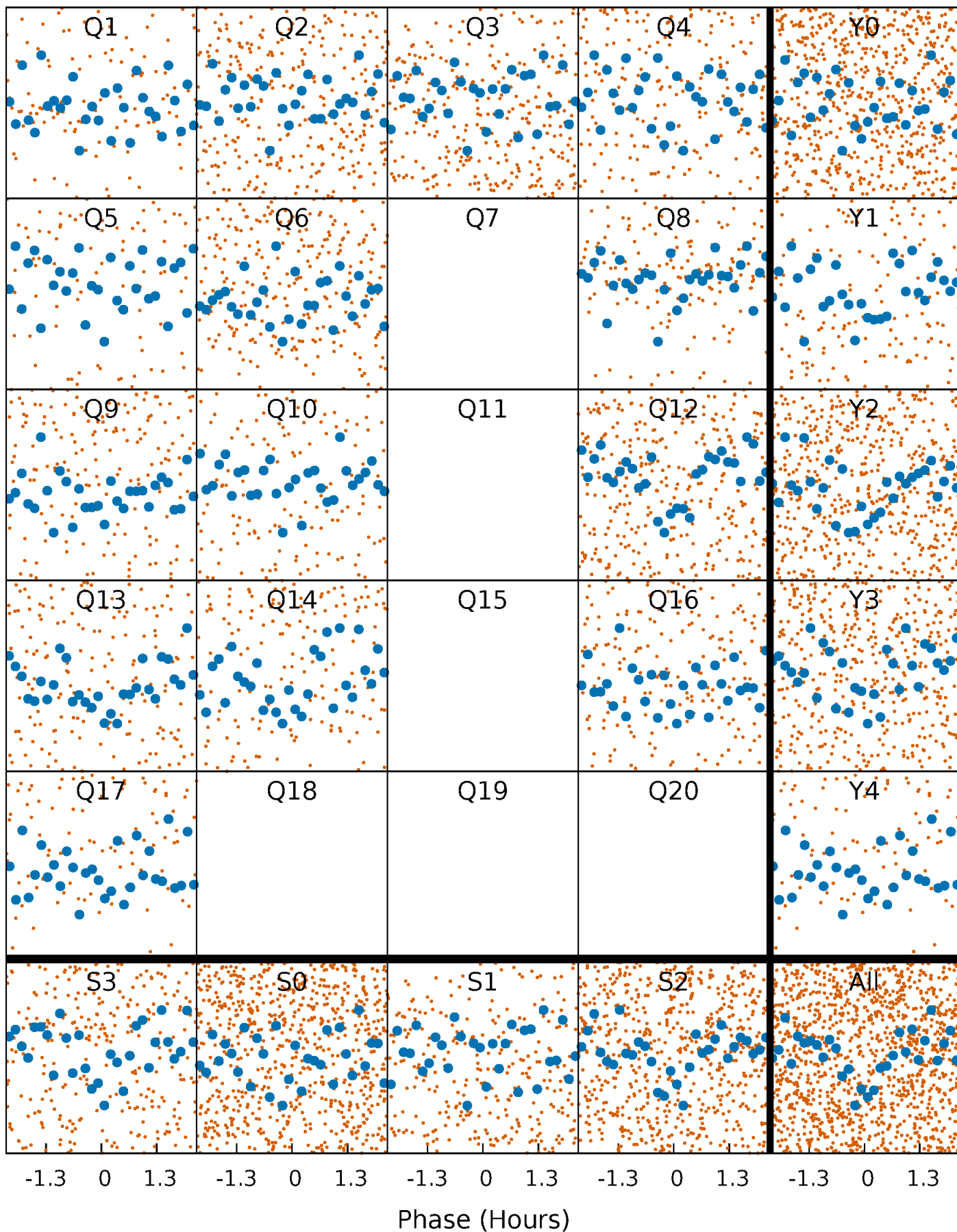


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

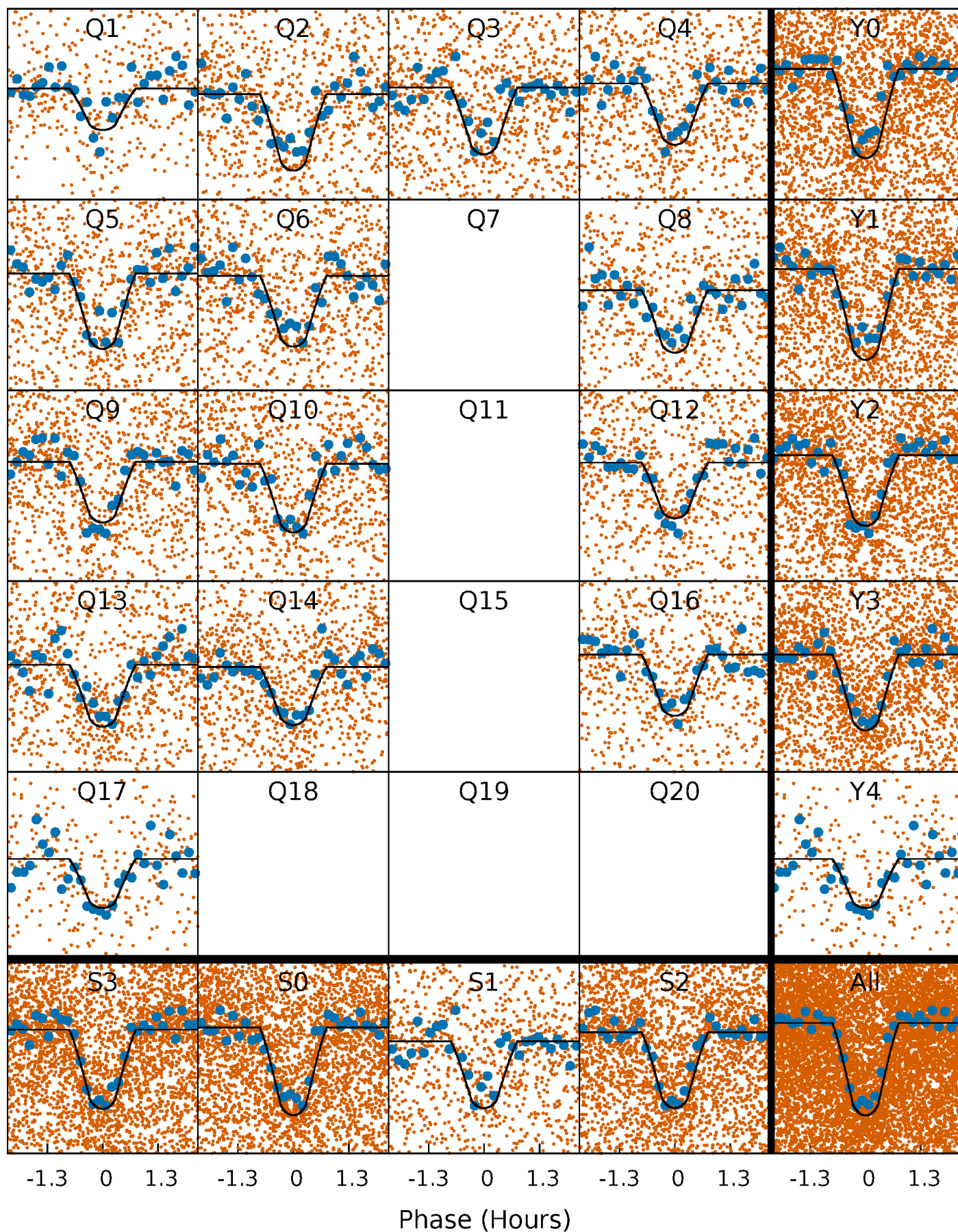
TCE 010028535-01 P= 0.663085 Days  $T_0=131.980817$  (BKJD)





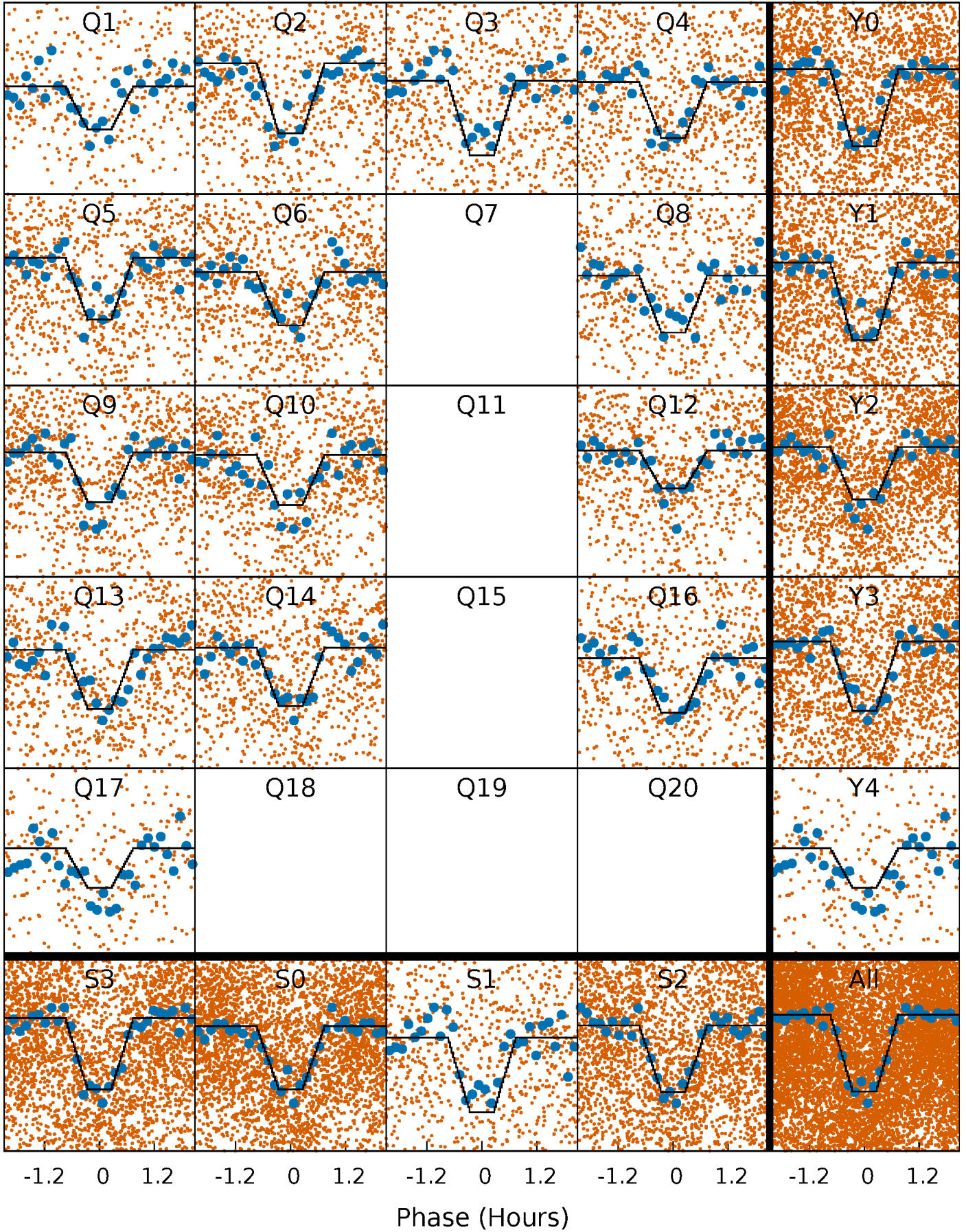
# DV Quarter-Phased Transit Curves

TCE 010028535-01 P= 0.663085 Days  $T_0=131.980817$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

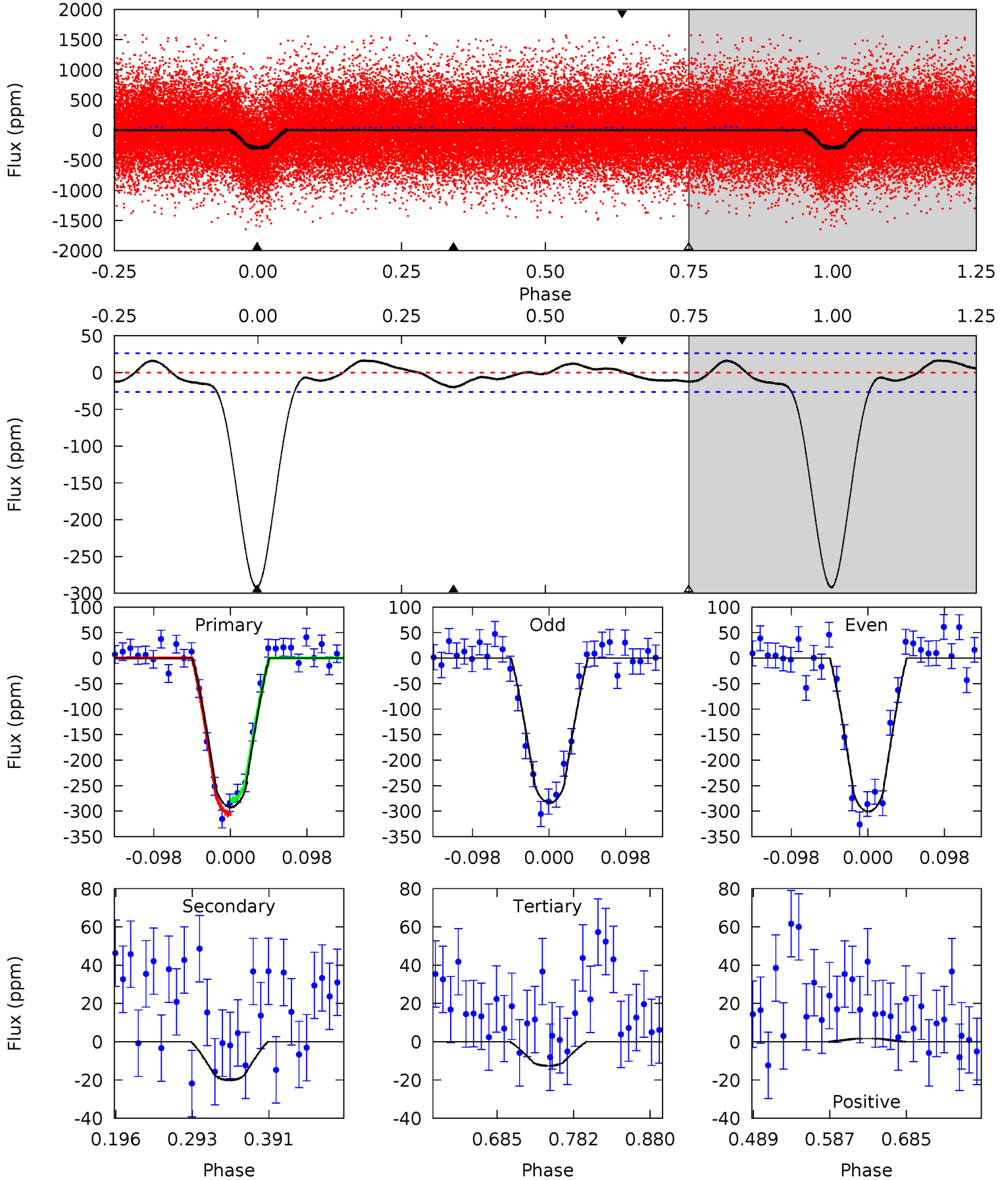
TCE 010028535-01 P= 0.663082 Days  $T_0=131.983397$  (BKJD)



# DV Model-Shift Uniqueness Test

010028535-01, P = 0.663085 Days, E = 131.317732 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
50.8	3.49	2.19	0.29	4.57	1.66	1.60	48.6	50.5	1.31	3.21	1.51	0.97	0.05	2.49

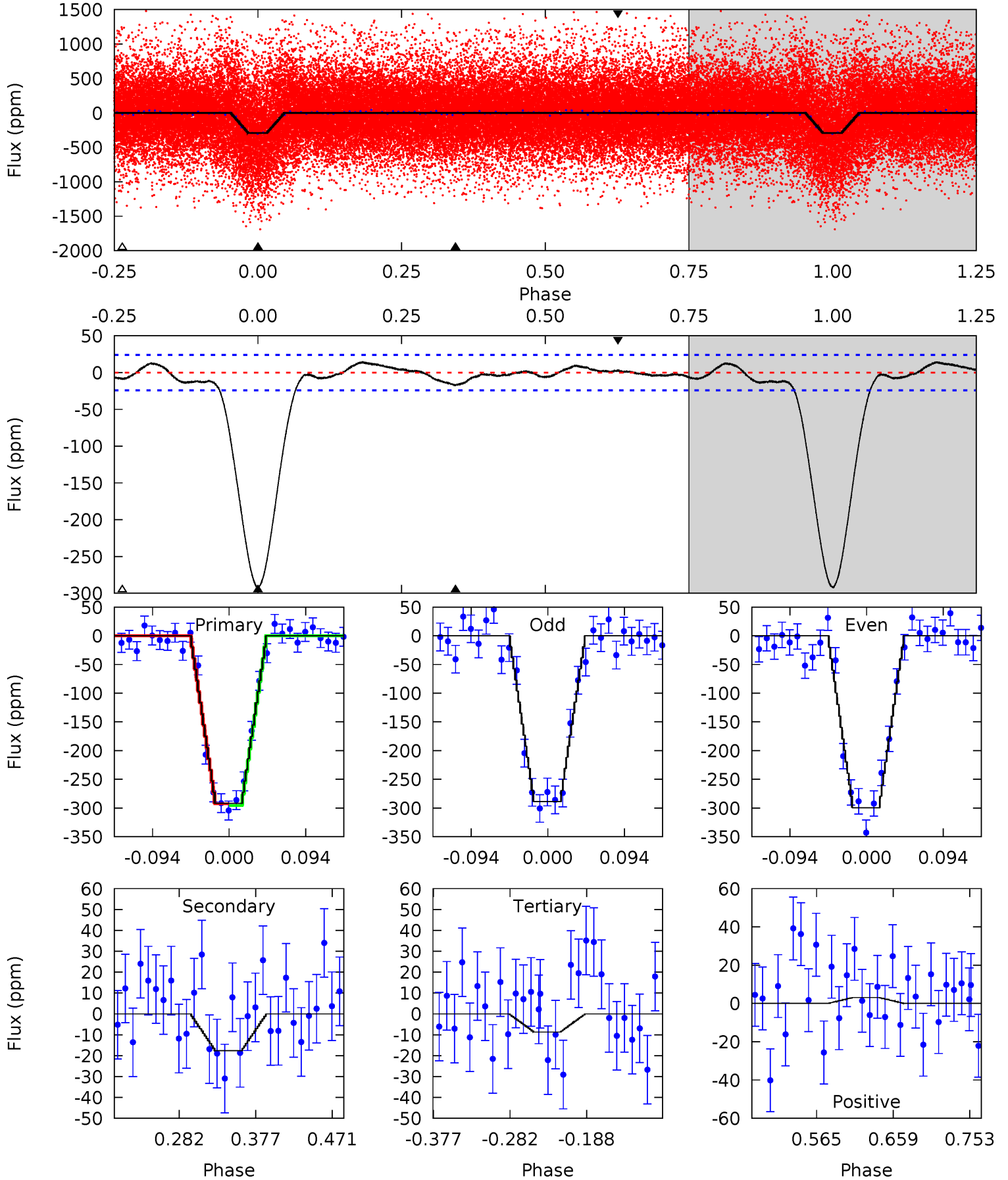




# Alt Model-Shift Uniqueness Test

010028535-01, P = 0.663082 Days, E = 131.320315 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
55.6	3.36	1.66	0.59	4.58	1.67	1.30	53.9	55.0	1.70	2.76	1.03	1.03	0.05	0.31



### Stellar Parameters For KIC 010028535

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5172^{+170}_{-154}$	$4.600^{+0.026}_{-0.097}$	$0.070^{+0.250}_{-0.300}$	$0.767^{+0.119}_{-0.055}$	$0.878^{+0.057}_{-0.092}$	$2.745^{+0.374}_{-0.923}$
	+3%/-3%	+1%/-2%	+357%/-429%	+16%/-7%	+6%/-10%	+14%/-34%
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 010028535-01 / KOI 2493.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-20 \pm 6$	$1.53^{+0.37}_{-0.36}$	$2385^{+105}_{-87}$	$3000^{+357}_{-387}$	$0.935^{+0.727}_{-0.413}$
Alt.	$-18 \pm 5$	$1.48^{+0.36}_{-0.38}$	$2393^{+98}_{-91}$	$2953^{+374}_{-356}$	$0.862^{+0.742}_{-0.353}$

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



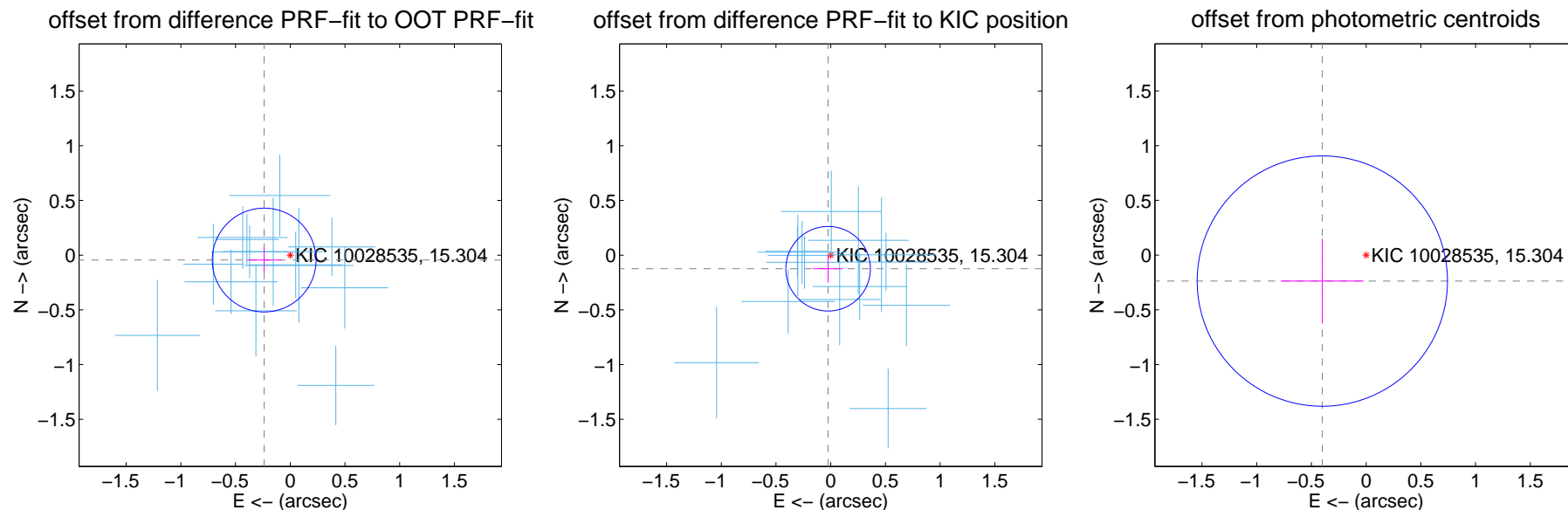
## DV Centroid Data

Supplemental centroid analysis for 010028535-01. Kepler magnitude: 15.30. Transit SNR 37.09

There are 14 quarters with good PRF difference image offsets

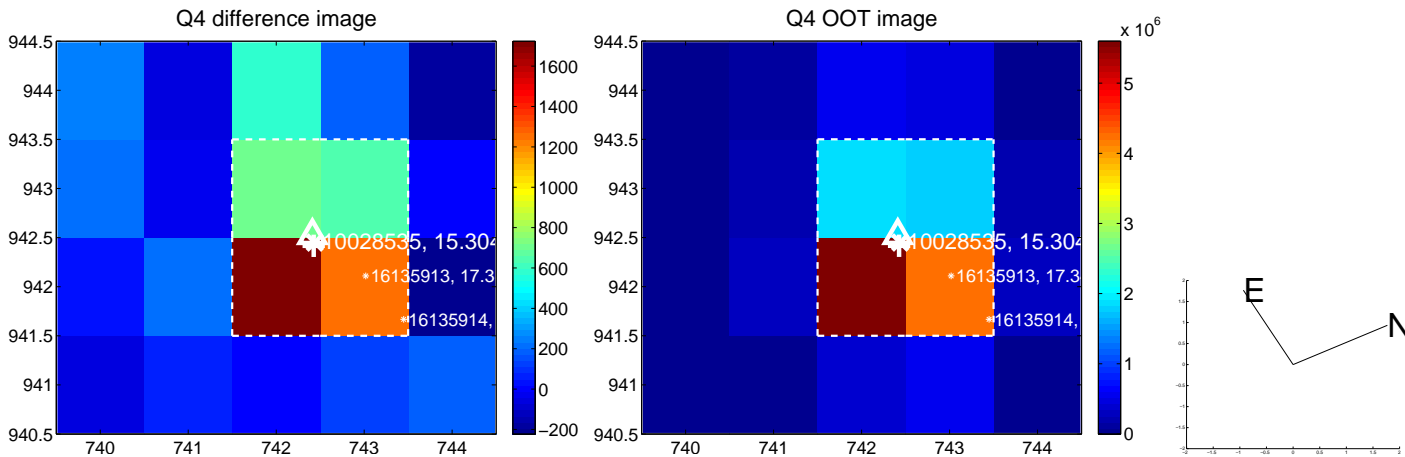
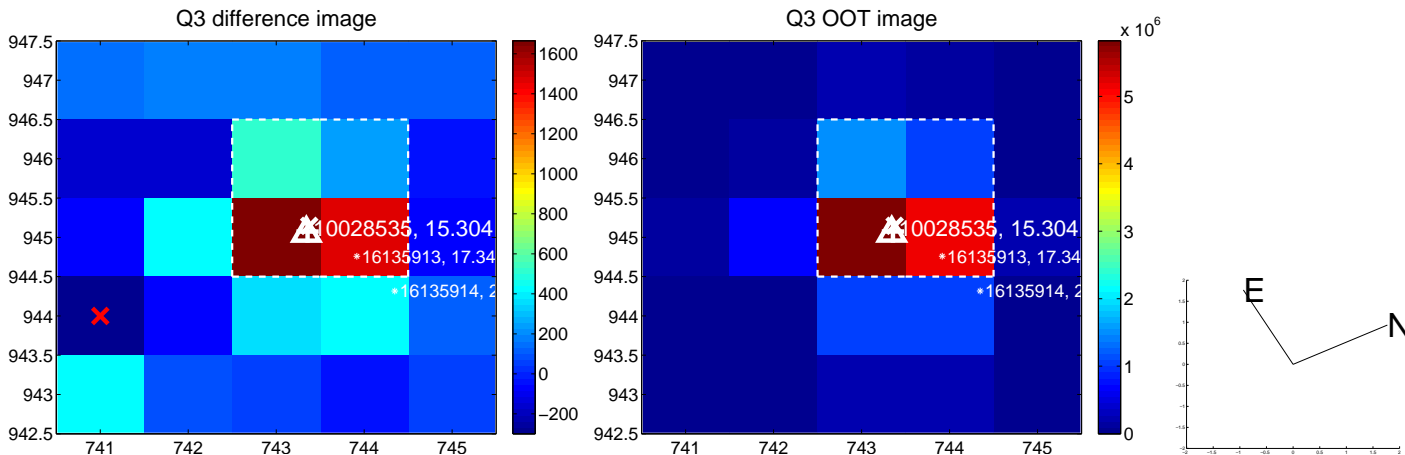
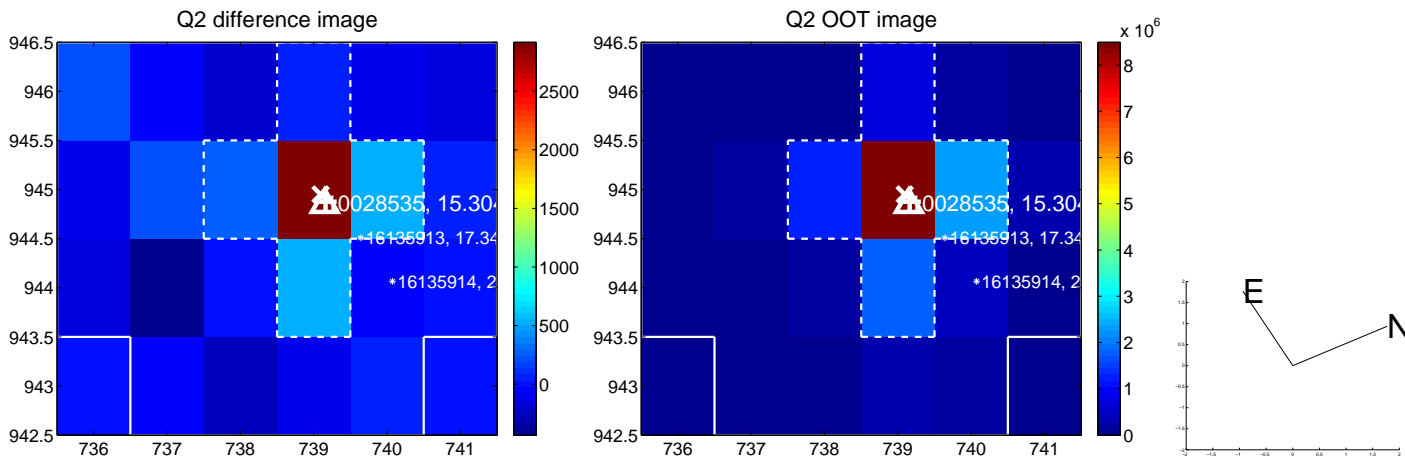
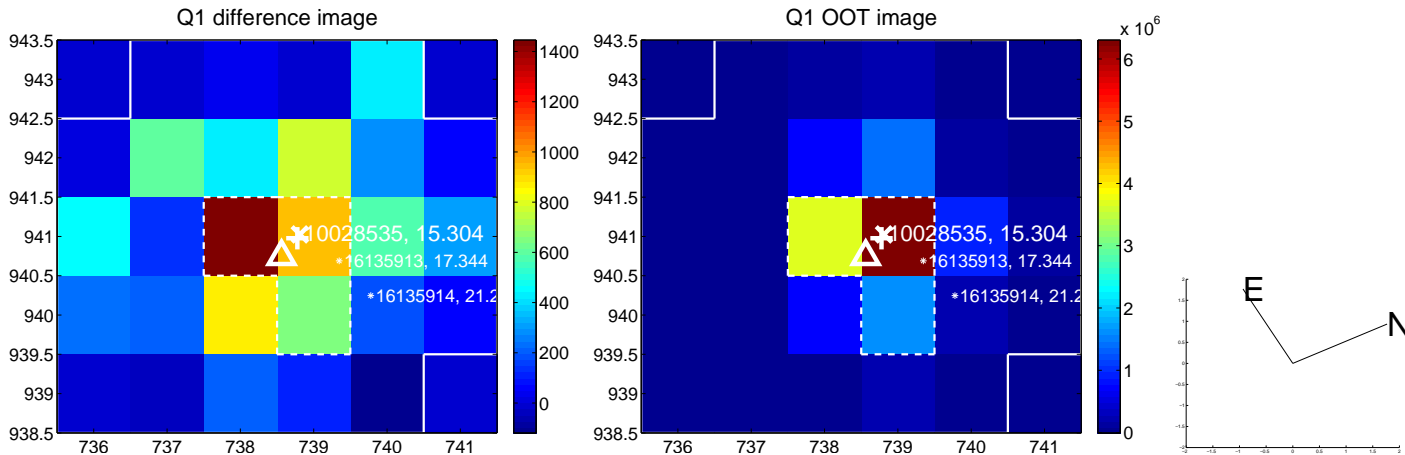
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.243 \pm 0.158$	1.53	$0.239 \pm 0.160$	$-0.045 \pm 0.113$
PRF-fit source offset from KIC position	$0.126 \pm 0.129$	0.98	$0.024 \pm 0.138$	$-0.124 \pm 0.126$
photometric centroid source offset	$0.47 \pm 0.38$	1.22	$0.40 \pm 0.38$	$-0.24 \pm 0.39$

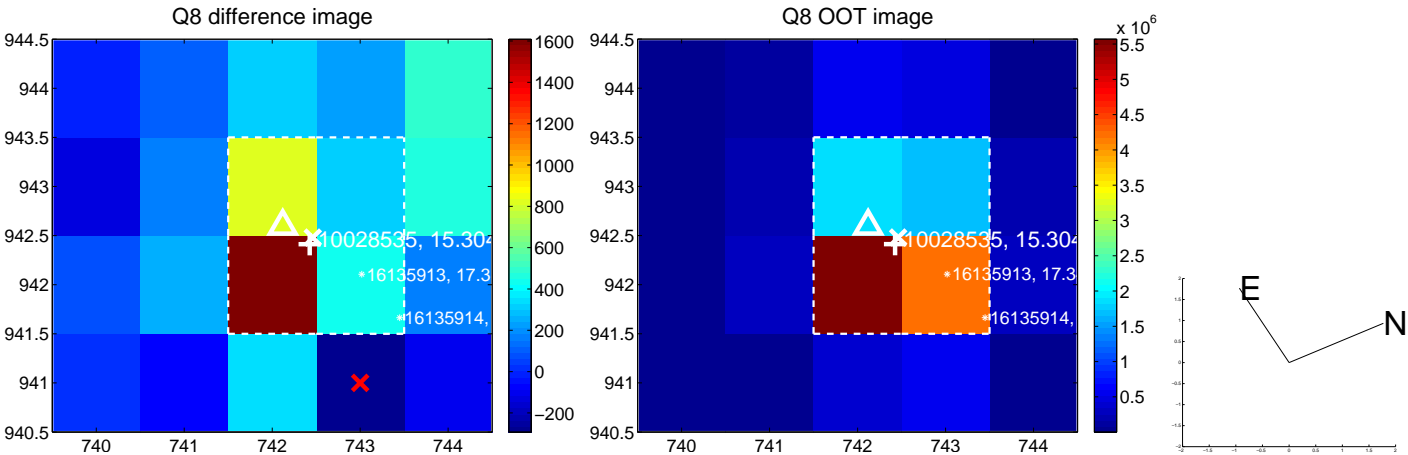
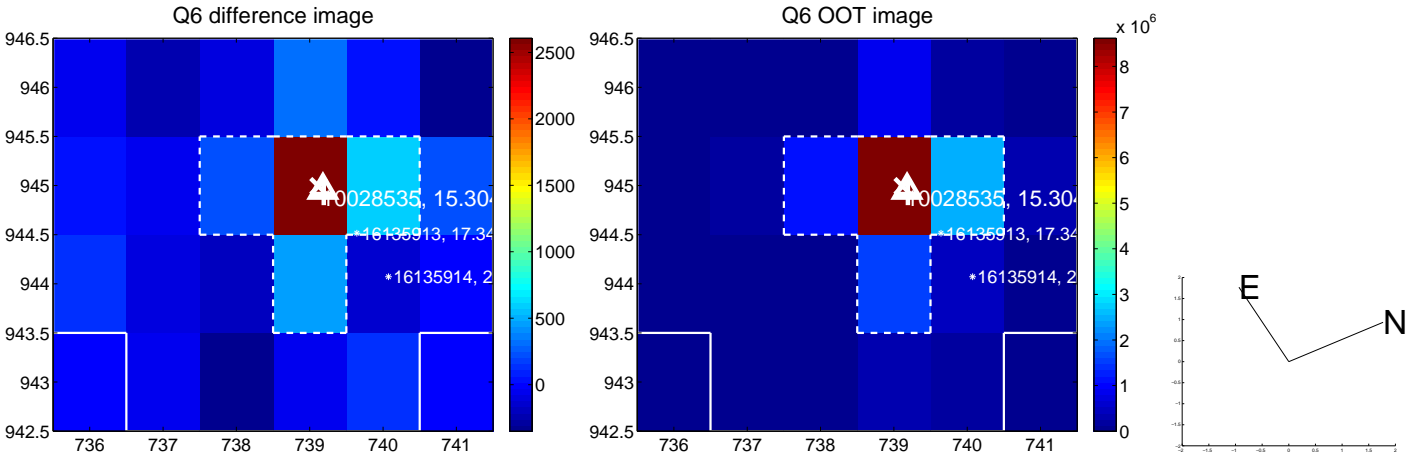
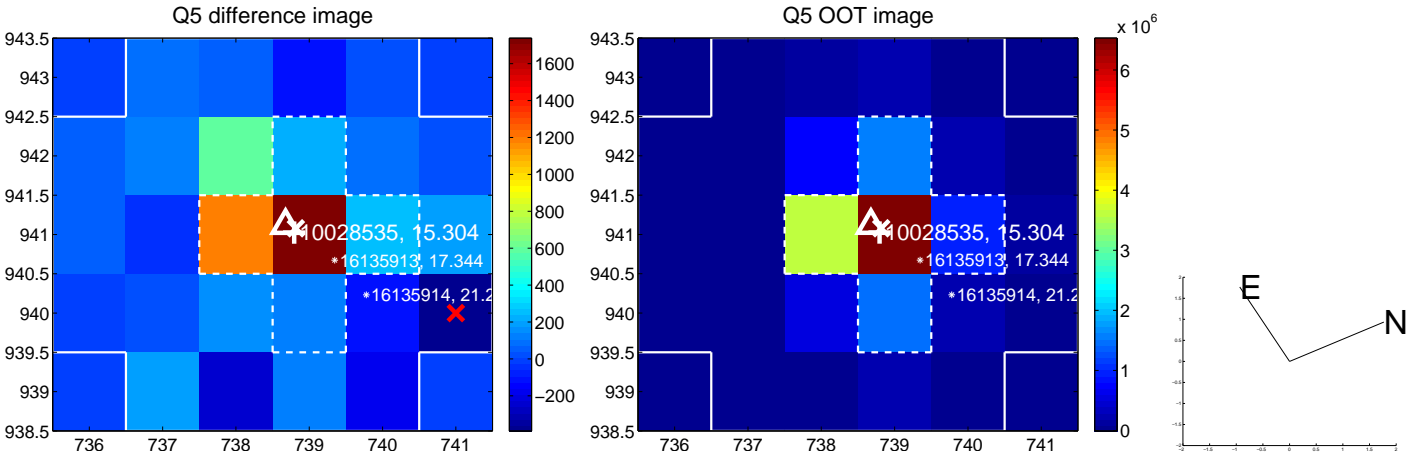


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

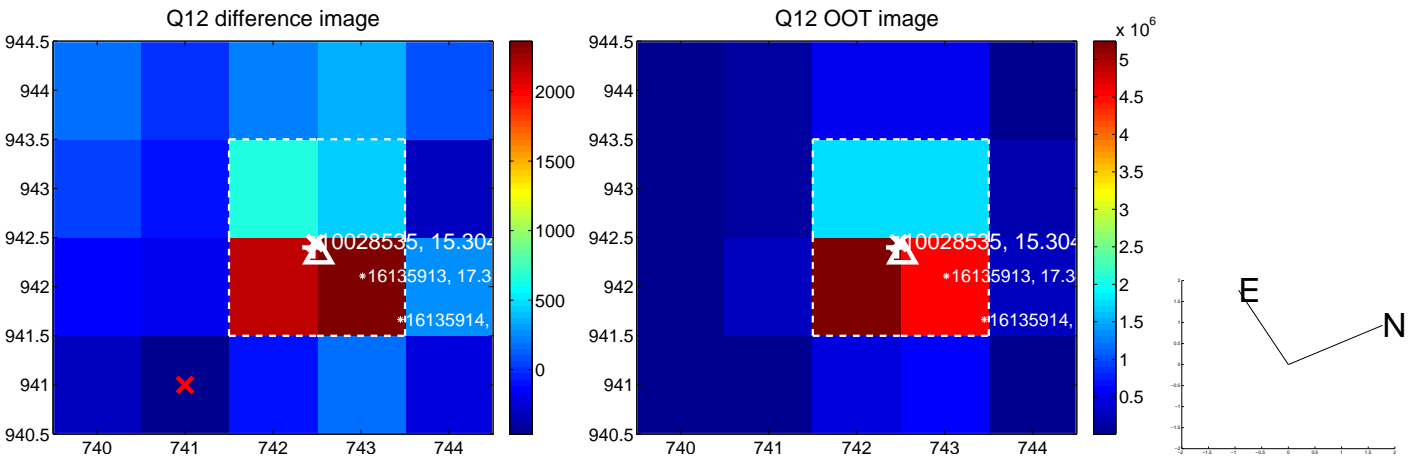
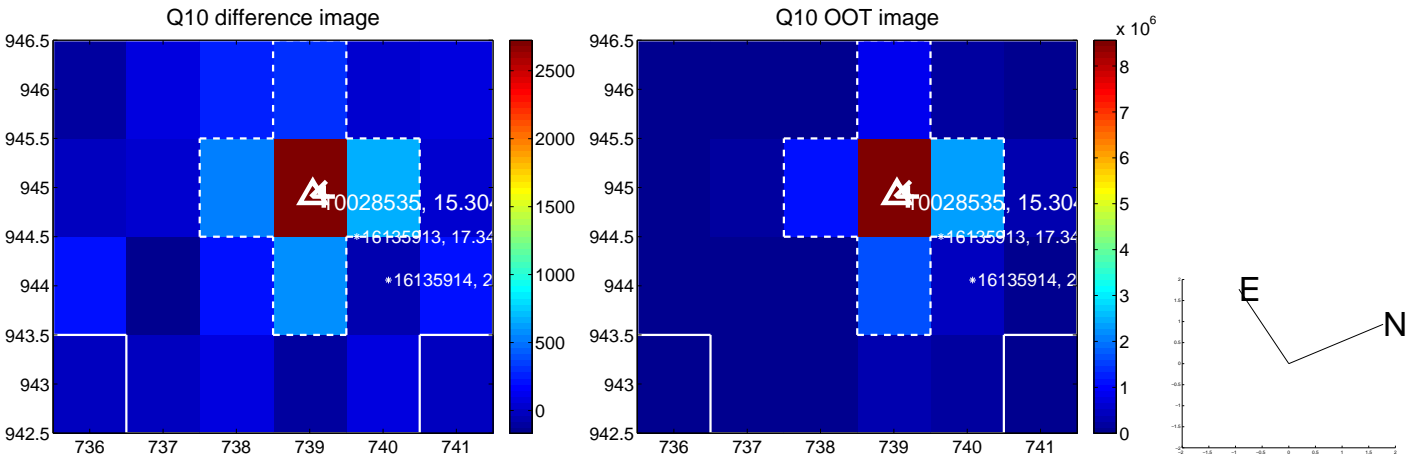
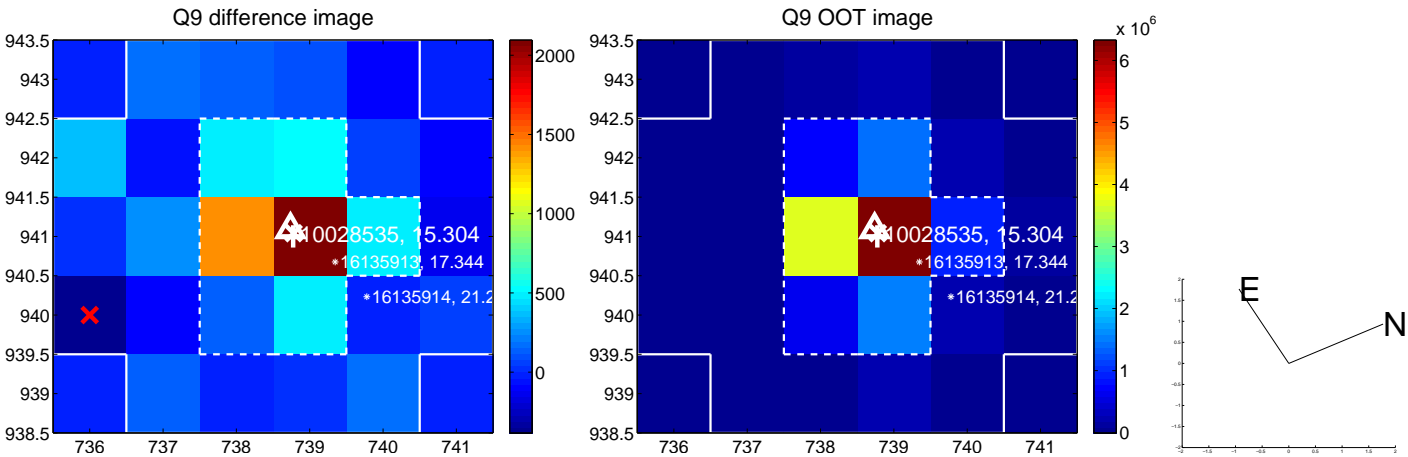
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



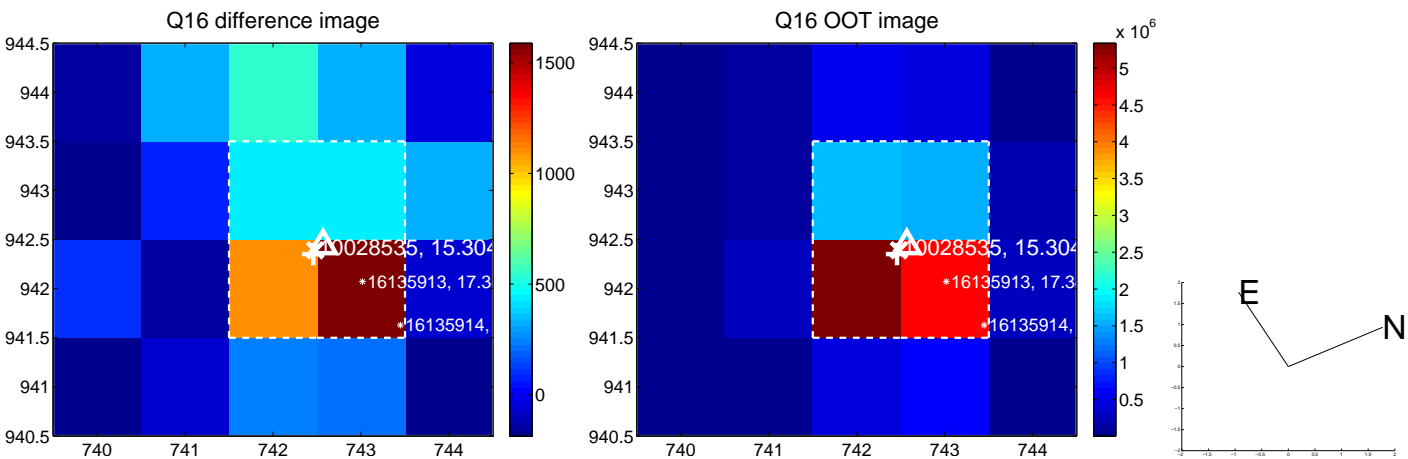
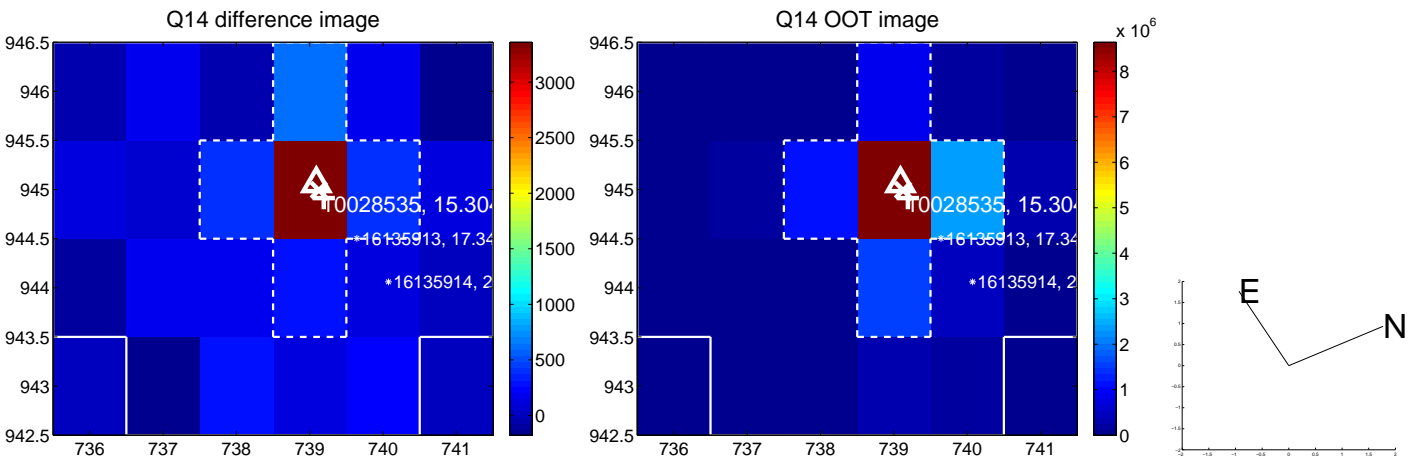
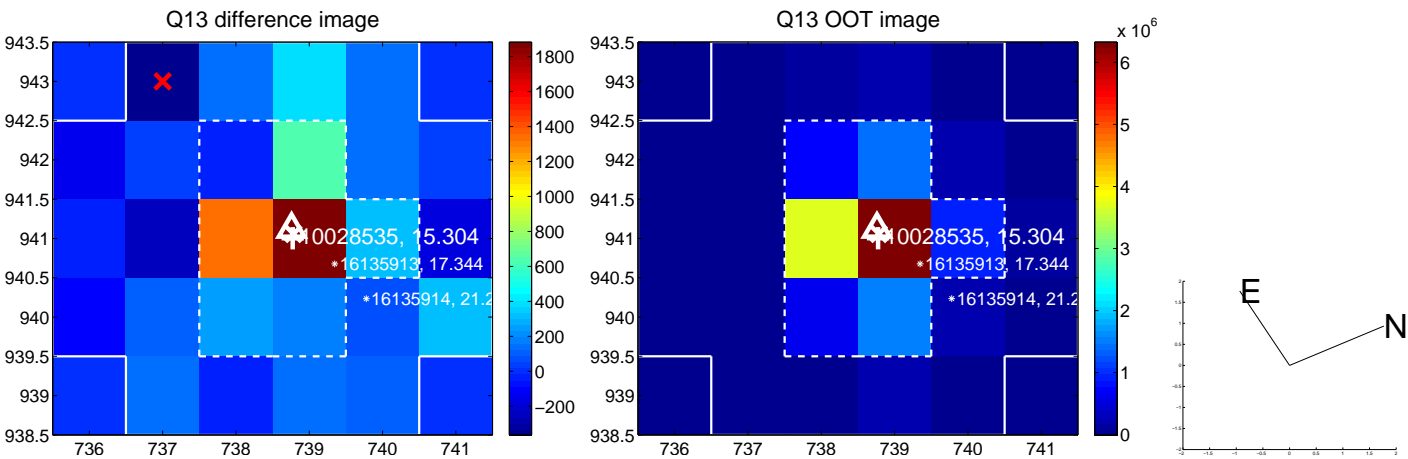
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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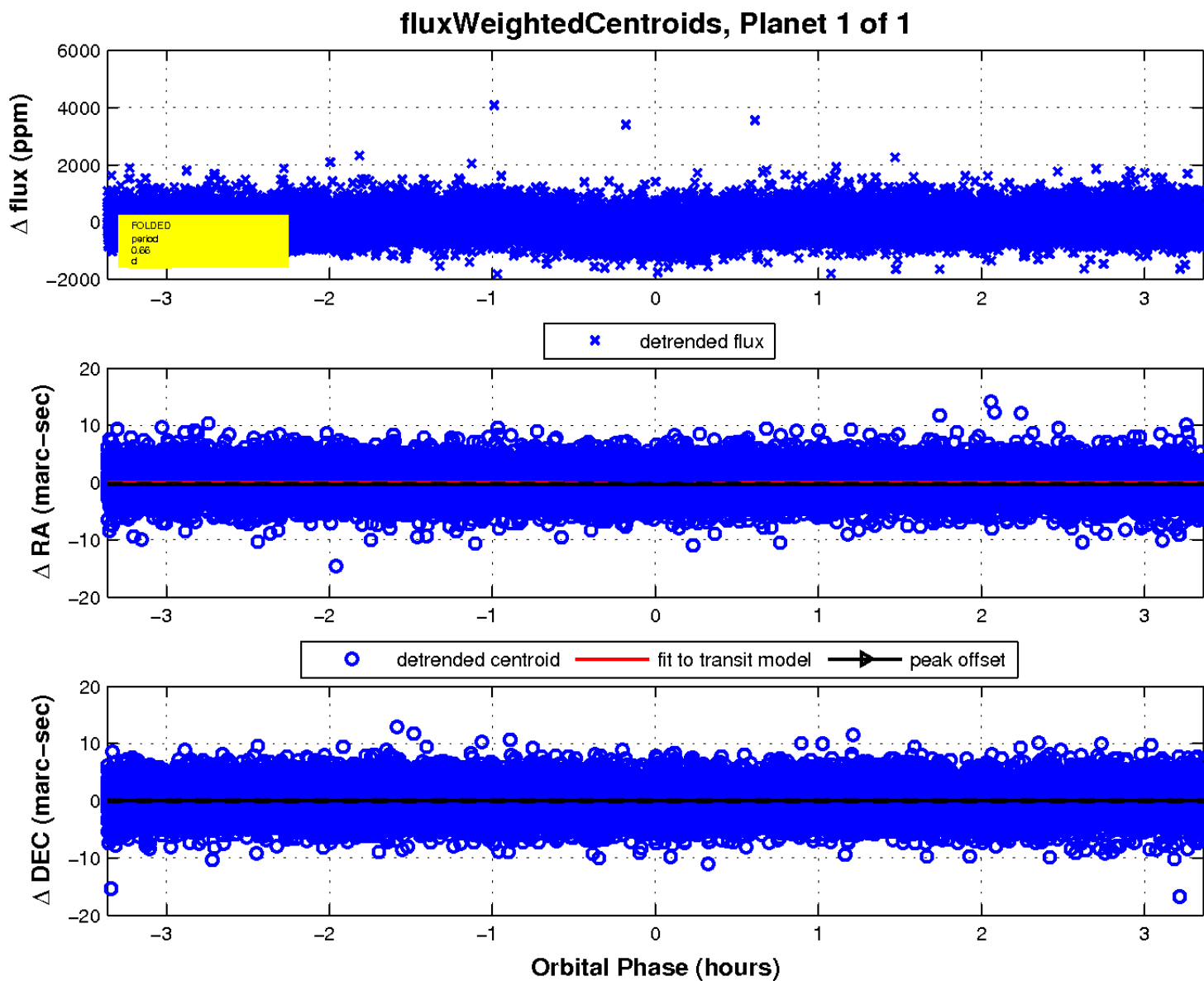
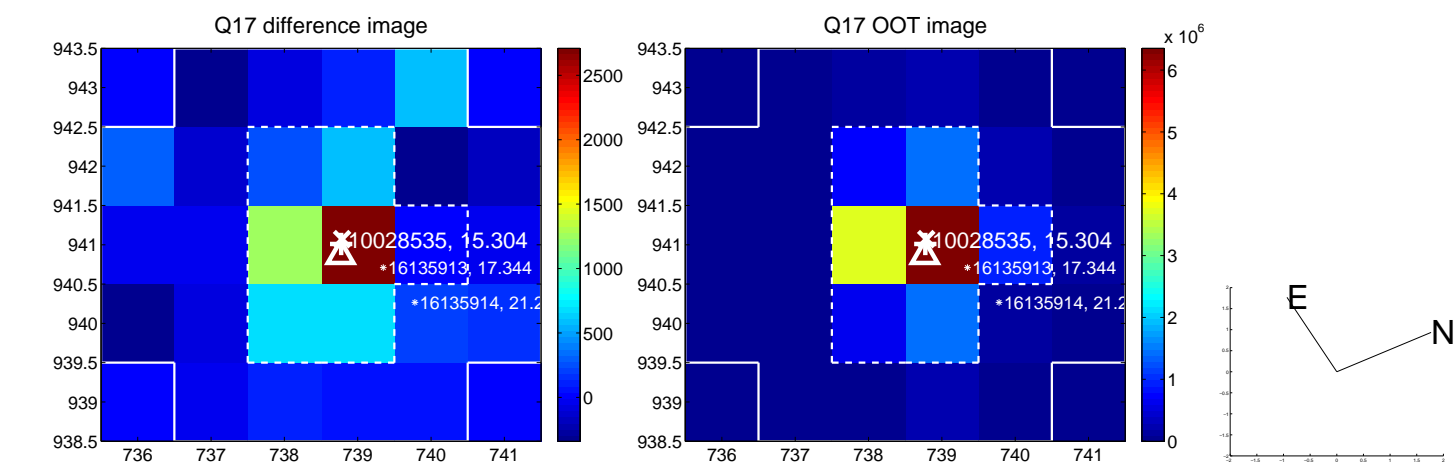


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



# UKIRT Image

Declination

