

# KIC 010227501

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010227501-01	OBS	0985.01	2.002810	131.769694	240.1	2.297	22.4	25.4	0.89	5346	1.66	698.88

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010227501-01	OBS	FP	0.00	0	0	1	0	CENT_UNRESOLVED_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.

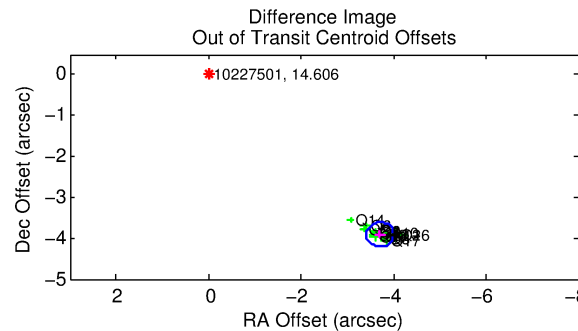
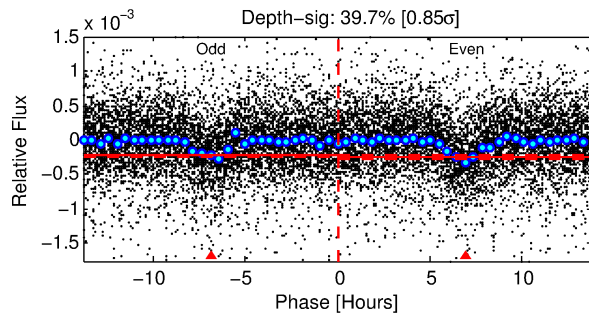
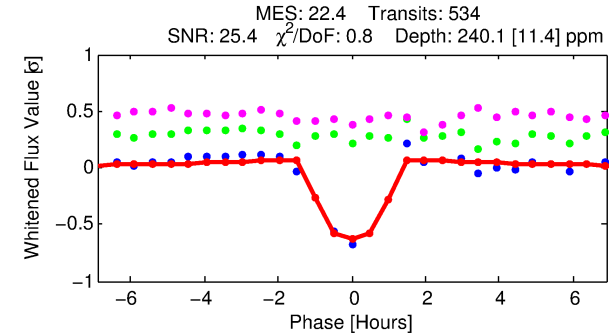
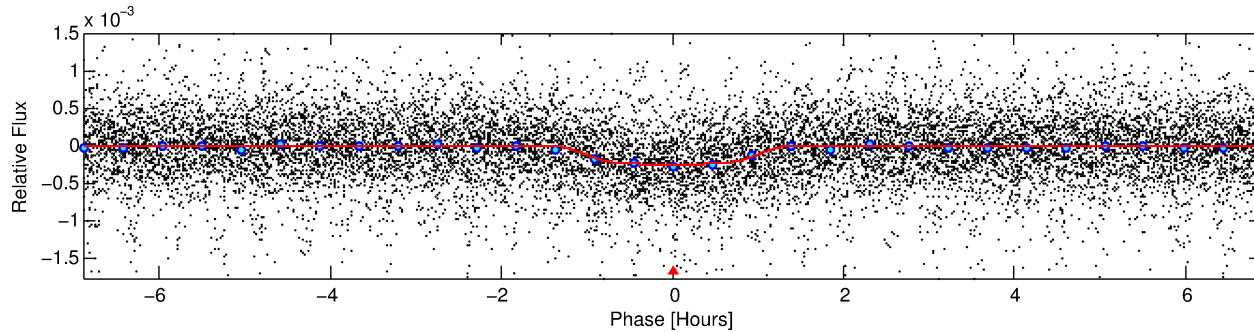
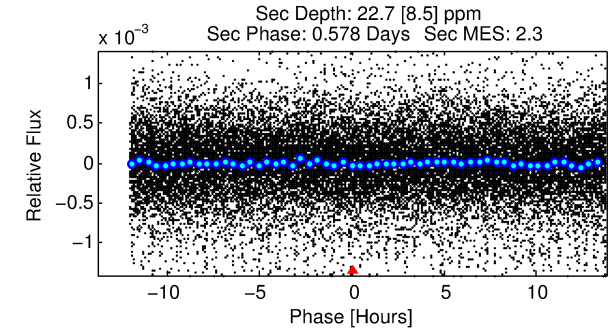
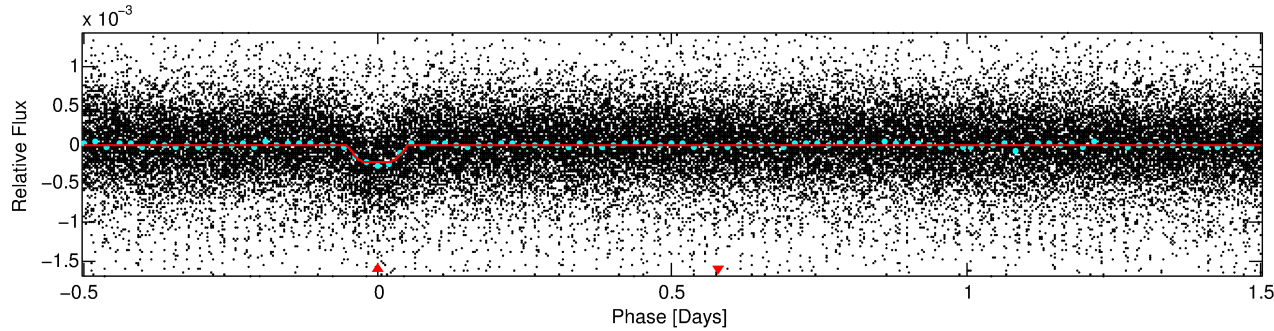
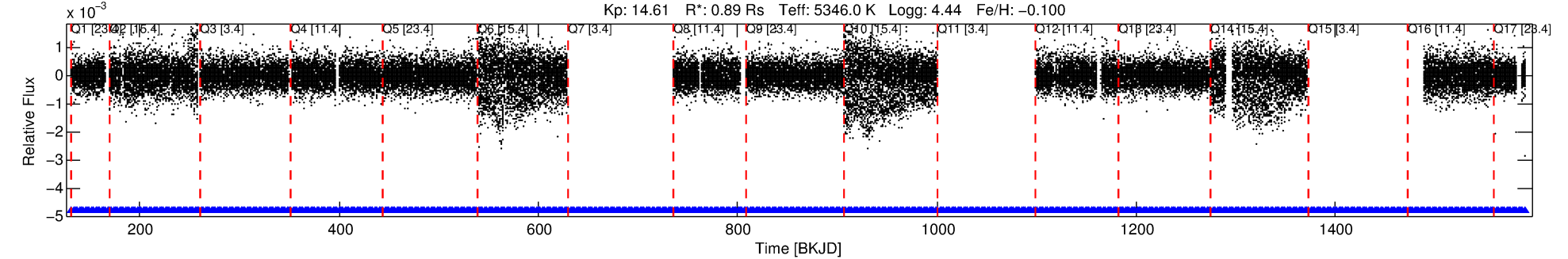
## Ephemeris Match Information For 010227501-01

No Significant Match Found

# DV One-Page Summary

KIC: 10227501 Candidate: 1 of 1 Period: 2.003 d  
KOI: K00985.01 Corr: 0.941

Kp: 14.61 R\*: 0.89 Rs Teff: 5346.0 K Logg: 4.44 Fe/H: -0.100



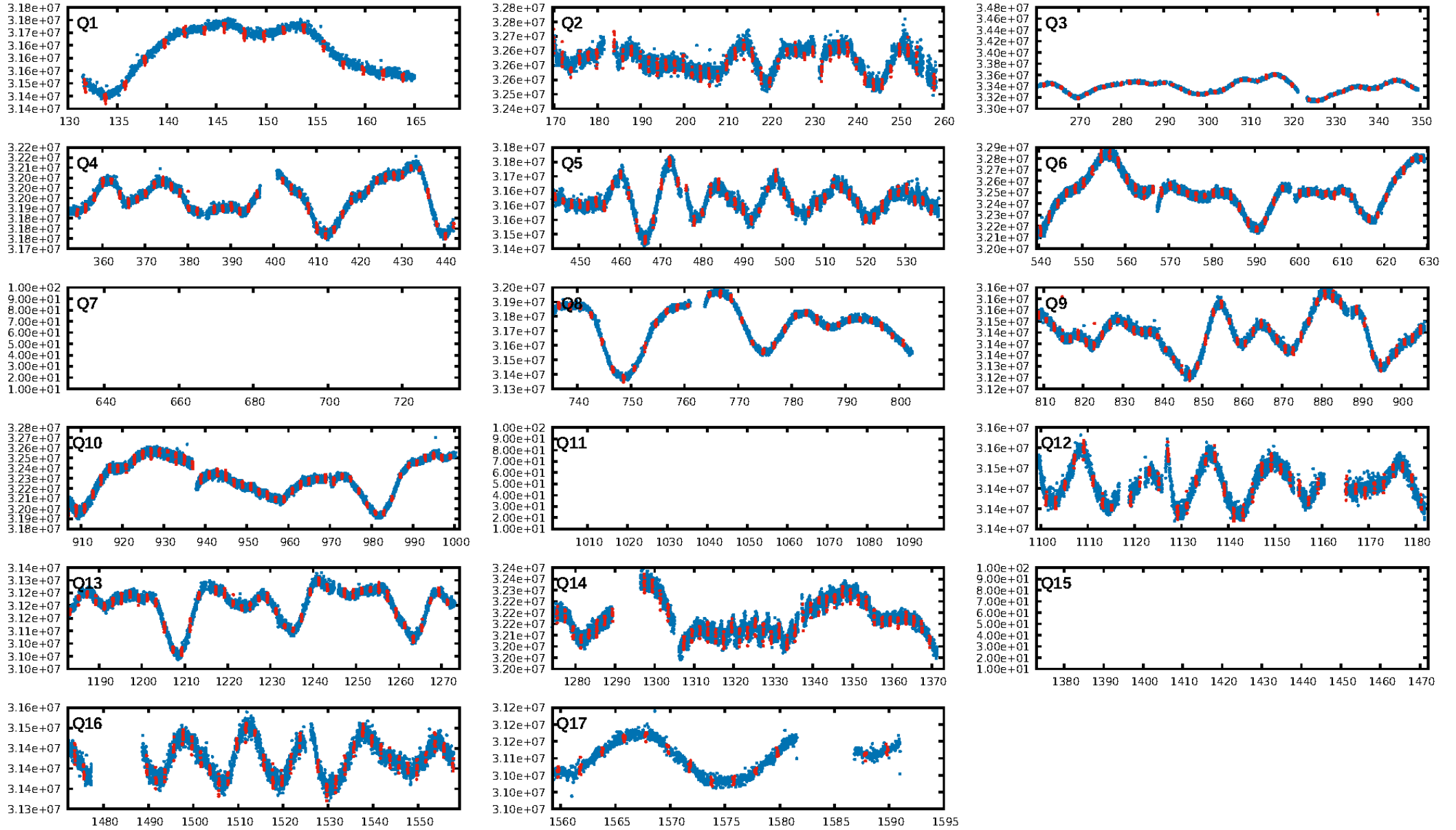
## DV Fit Results:

Period = 2.00281 [0.00001] d  
Epoch = 131.7697 [0.0013] BKJD  
Rp/R\* = 0.0171 [0.0048]  
a/R\* = 3.32 [3.69]  
b = 0.90 [0.27]  
Seff = 698.88 [230.10]  
Teq = 1311 [108] K  
Rp = 1.66 [0.58] Re  
a = 0.0289 [0.0056] AU  
Ag = 3.77 [2.82] [0.98σ]  
Teffp = 2825 [488] K [3.03σ]

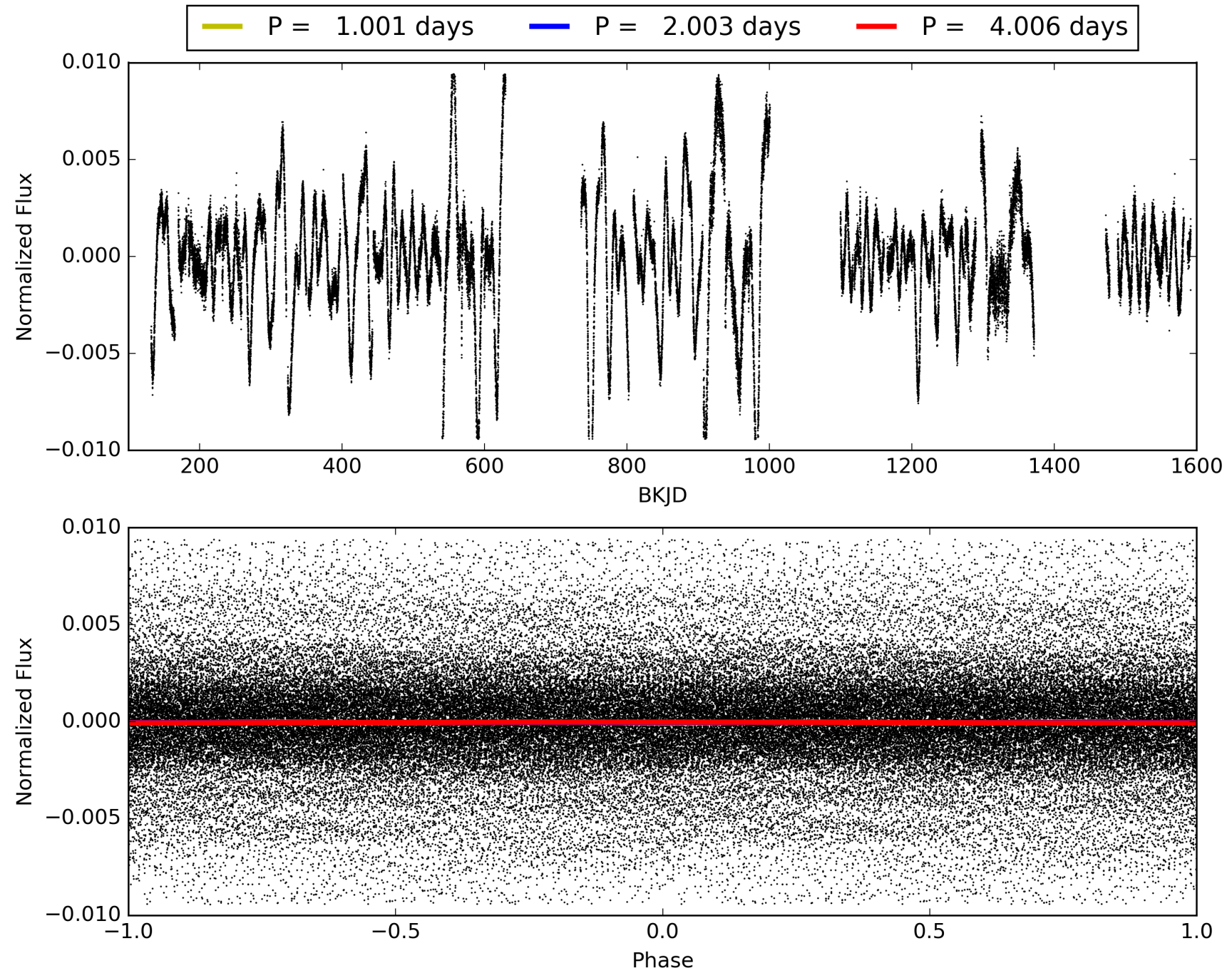
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.13e-106  
RollingBand-fgt: 1.00 [504/504]  
GhostDiagnostic-chr: -0.07697  
Centroid-sig: 0.0%  
Centroid-so: 14.935 arcsec [29.18σ]  
OotOffset-rm: 5.387 arcsec [54.65σ]  
KicOffset-rm: 5.408 arcsec [62.82σ]  
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 010227501-01, PDC Light Curves

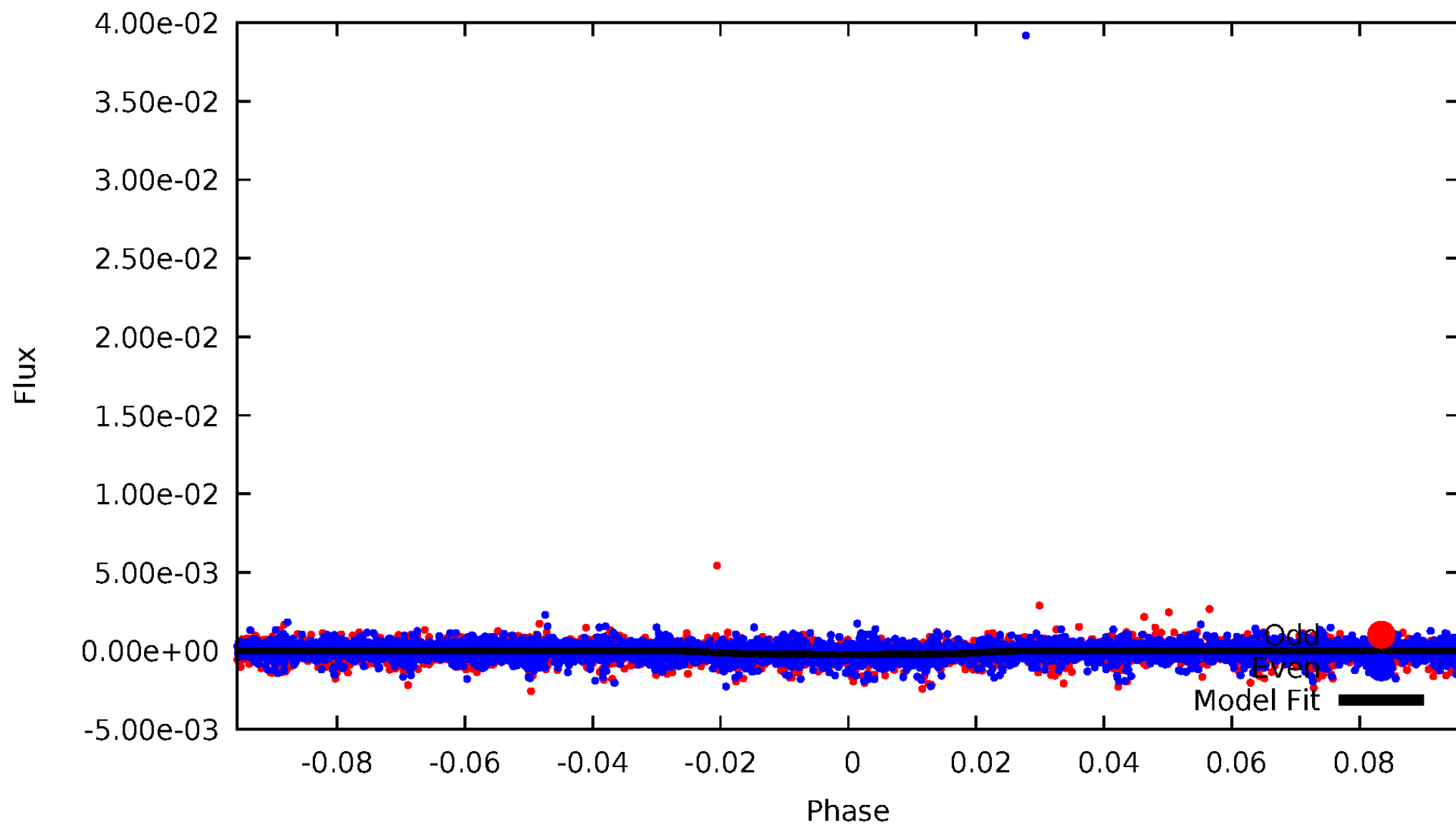


TCE 010227501-01



# DV Odd/Even

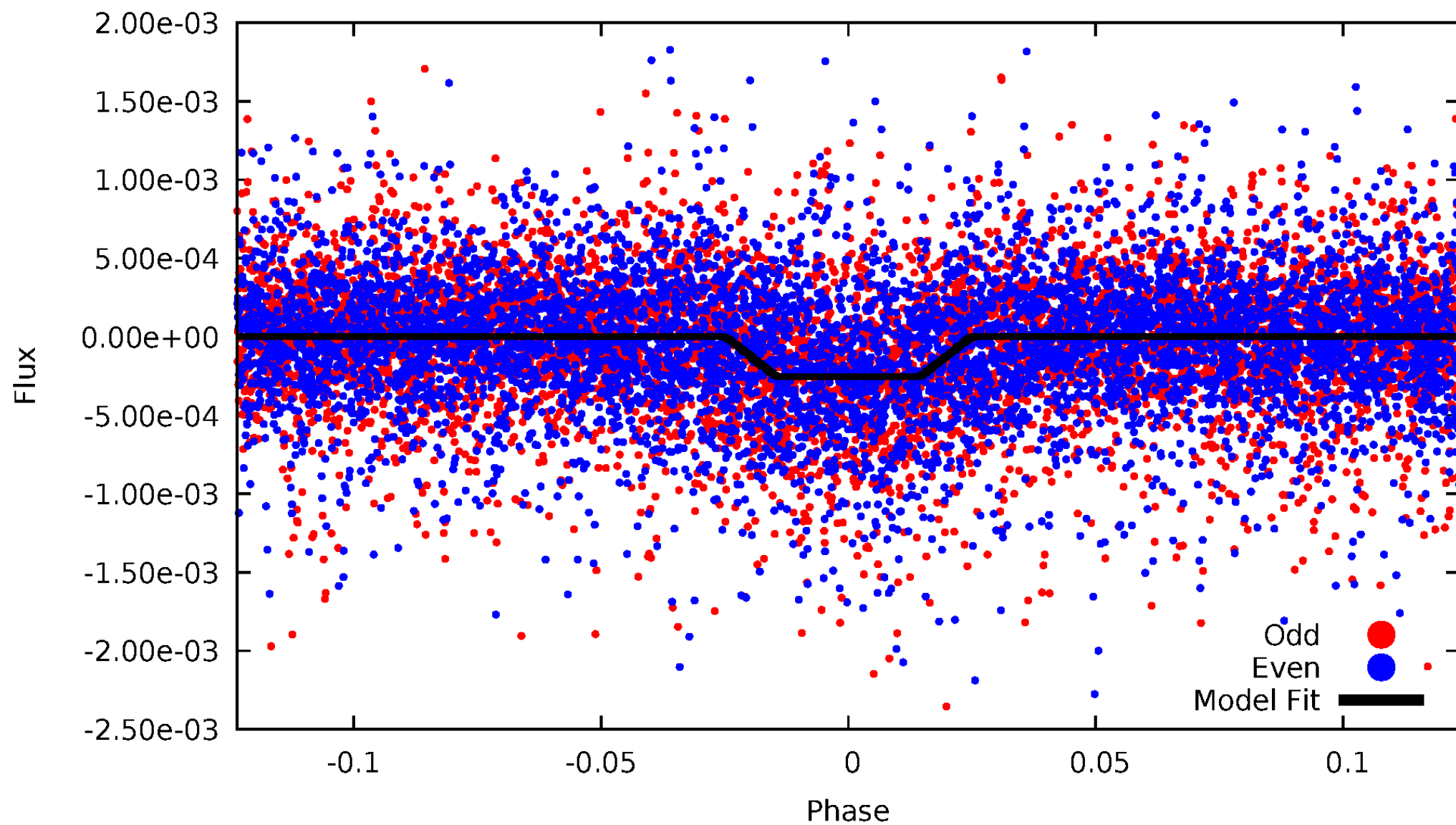
TCE 010227501-01





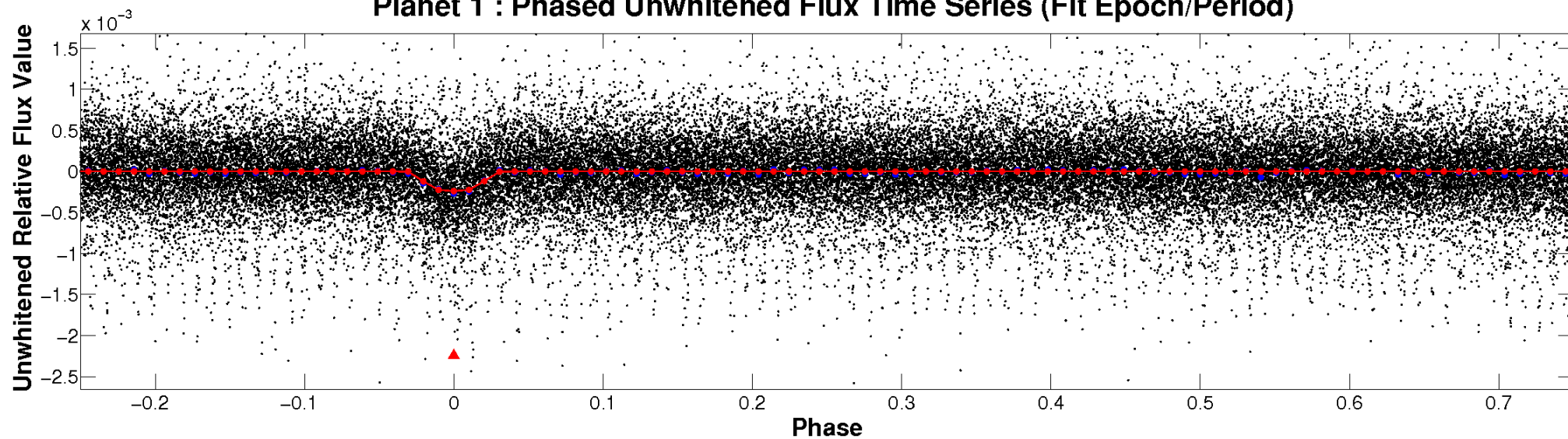
# ALT Odd/Even

TCE 010227501-01

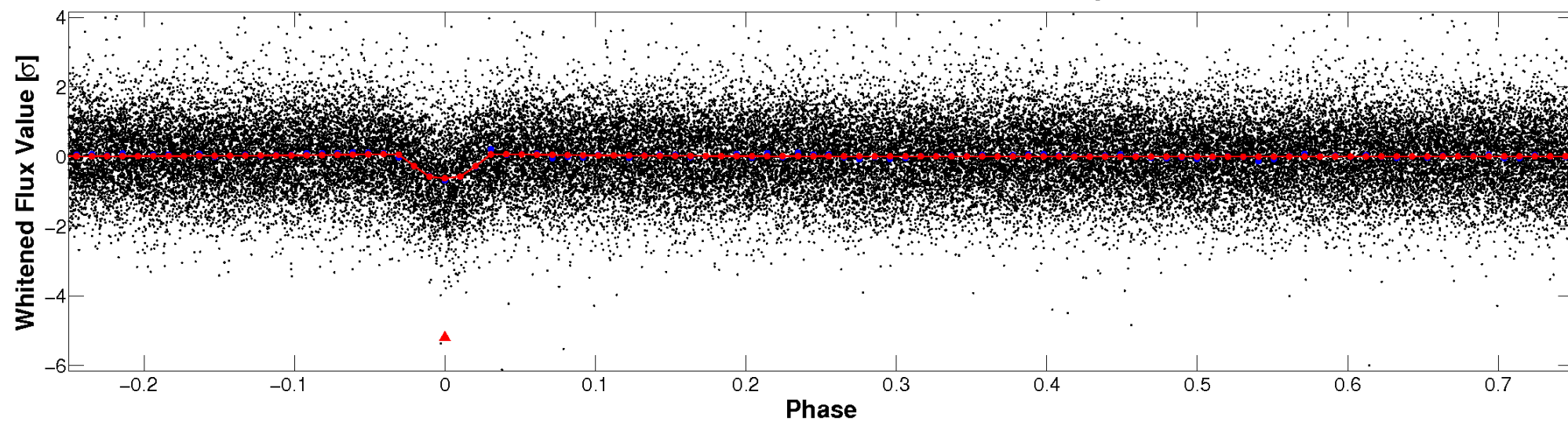


# Non-Whitened Vs. Whitened Light Curve

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

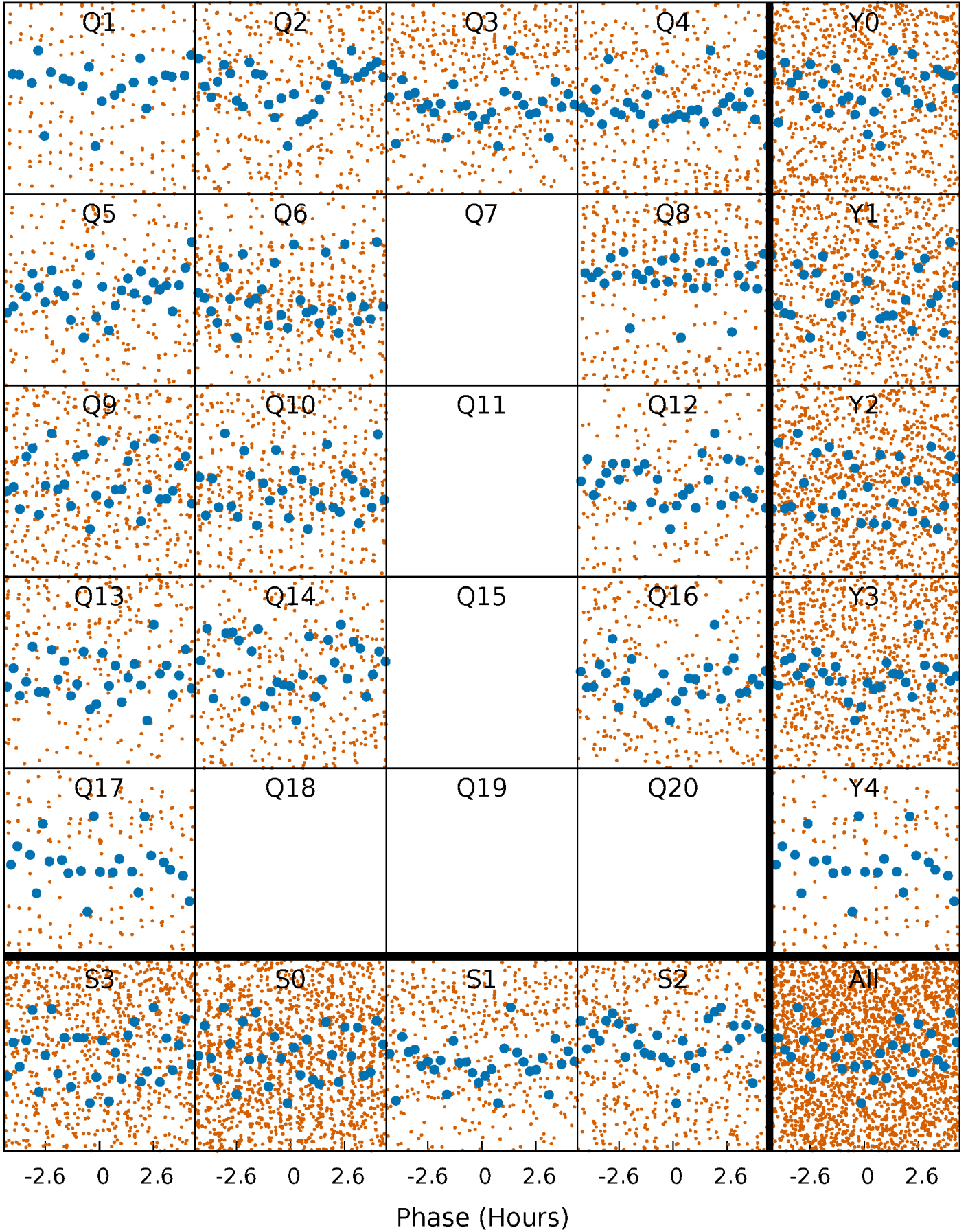


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

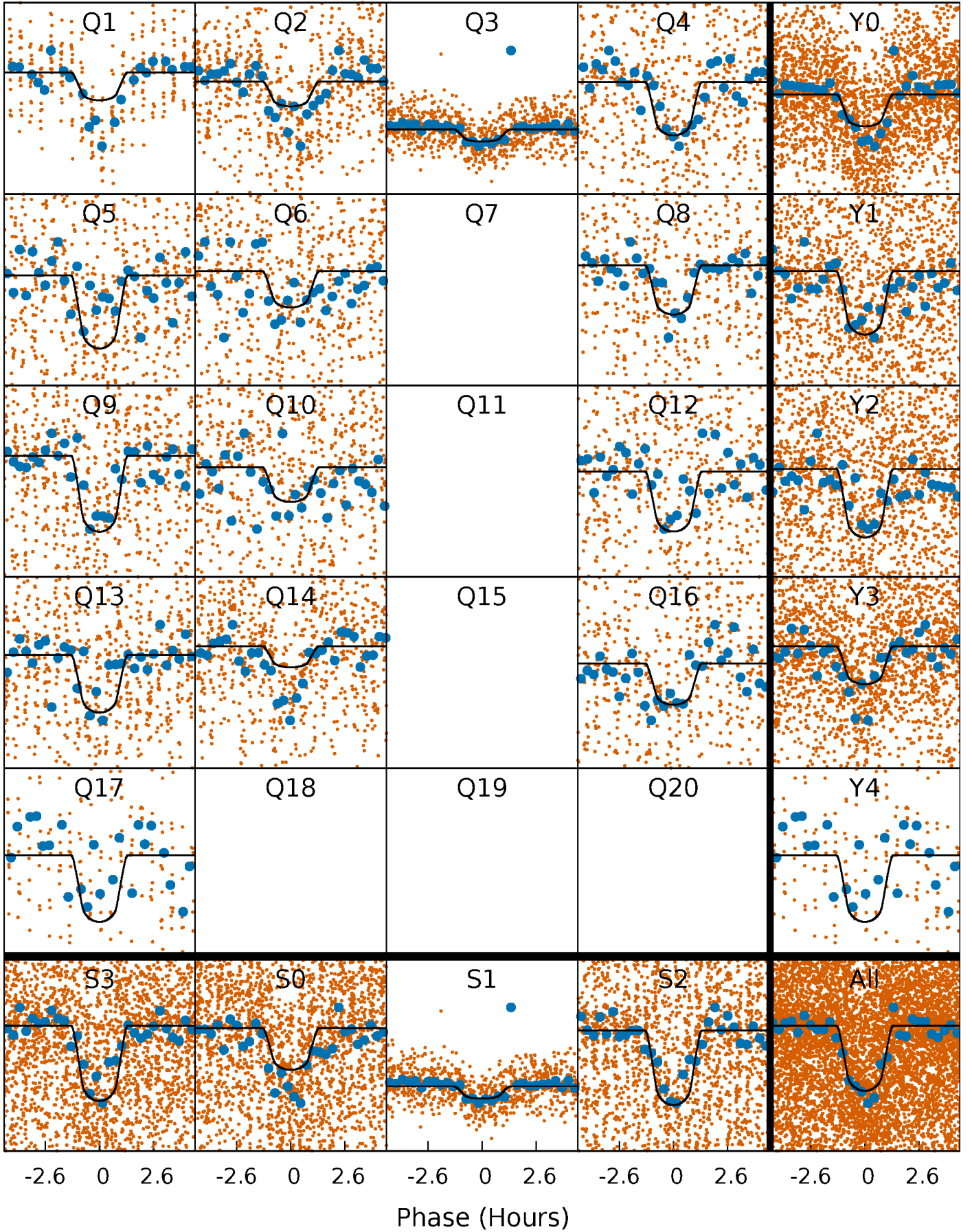
TCE 010227501-01   P= 2.002810 Days    $T_0=131.769694$  (BKJD)





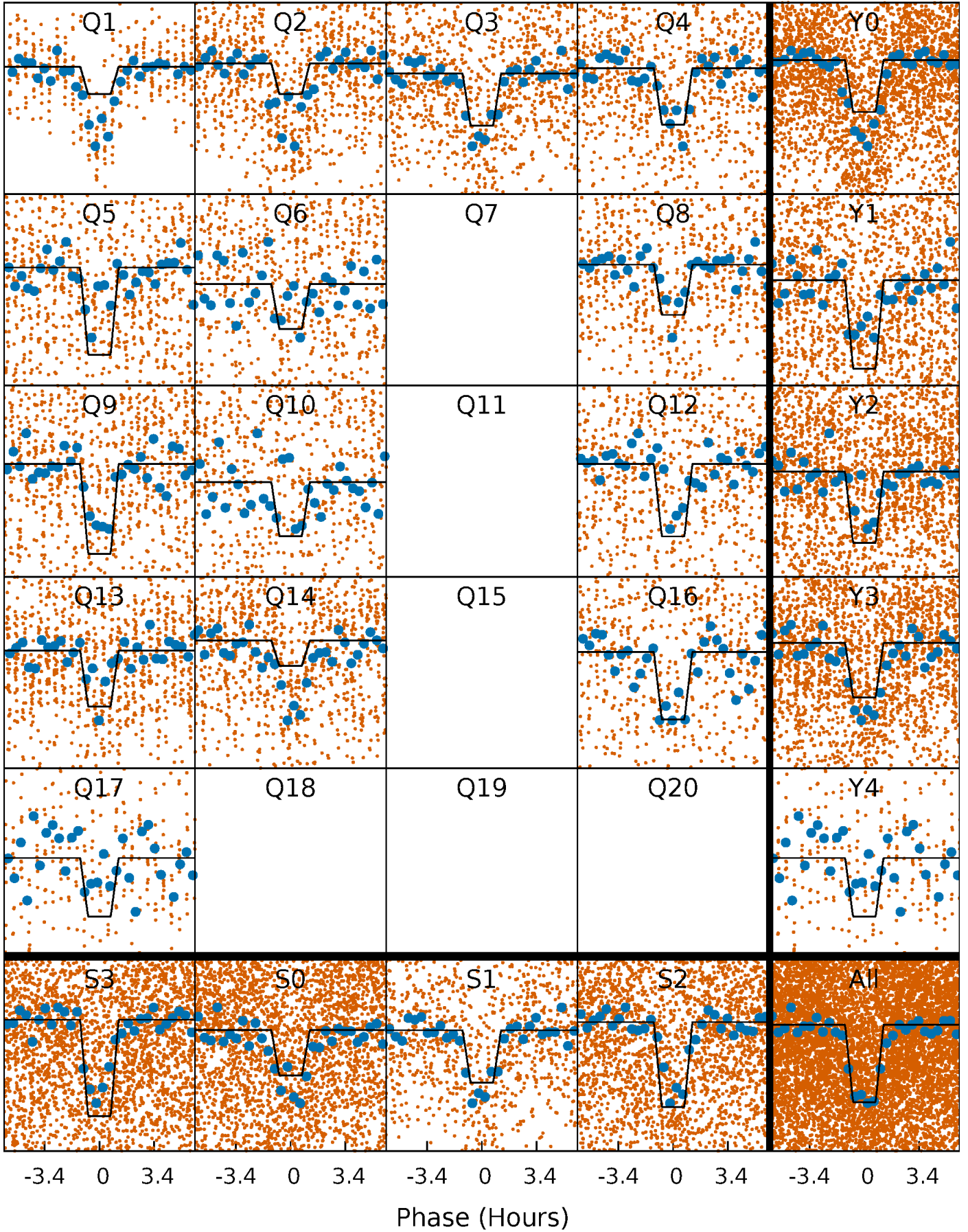
# DV Quarter-Phased Transit Curves

TCE 010227501-01   P= 2.002810 Days    $T_0=131.769694$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

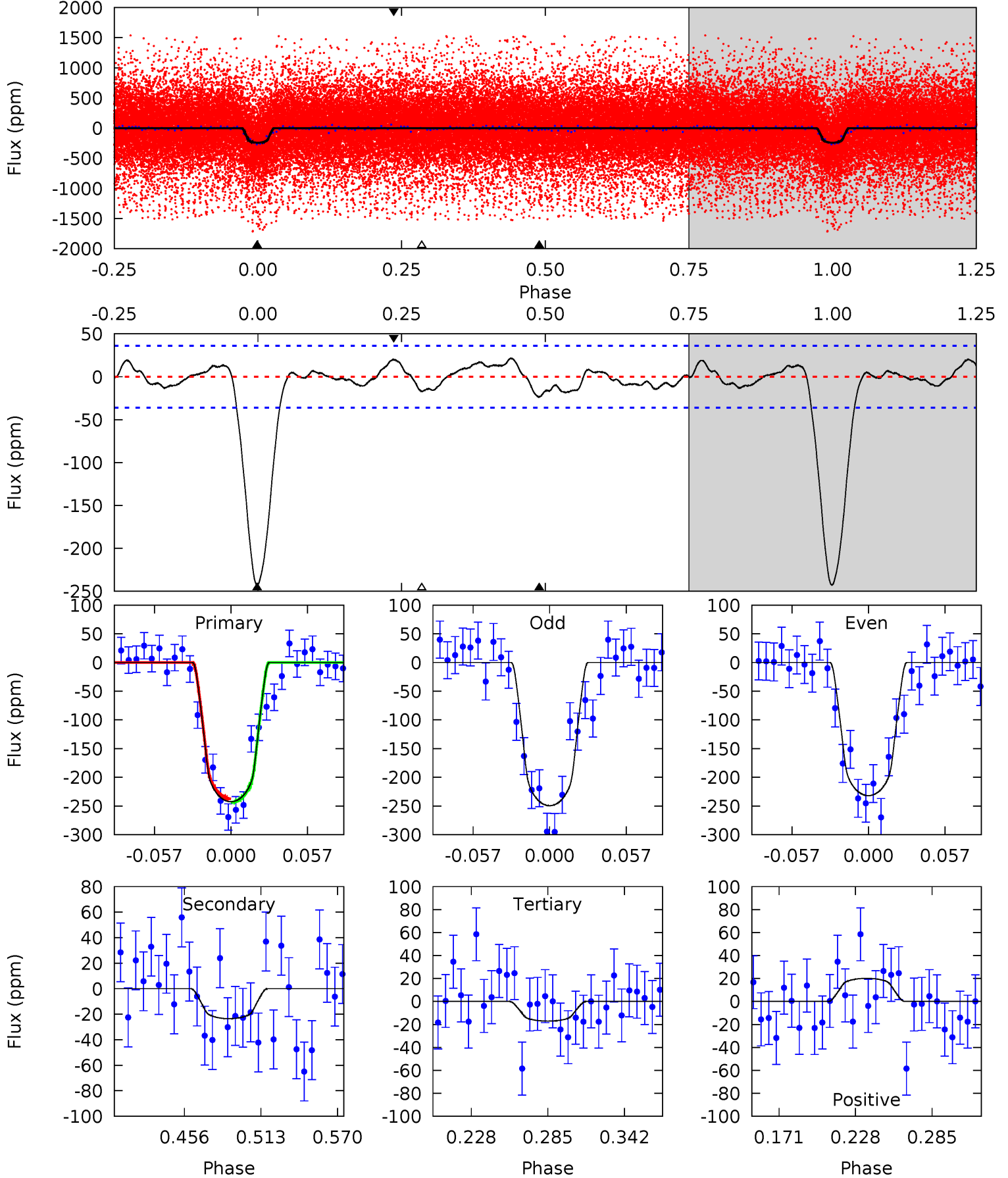
TCE 010227501-01 P= 2.002764 Days  $T_0=131.782720$  (BKJD)



# DV Model-Shift Uniqueness Test

010227501-01, P = 2.002810 Days, E = 129.766884 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
31.5	3.05	2.22	2.61	4.68	1.90	1.22	29.3	28.9	0.83	0.44	1.14	1.07	0.08	0.40

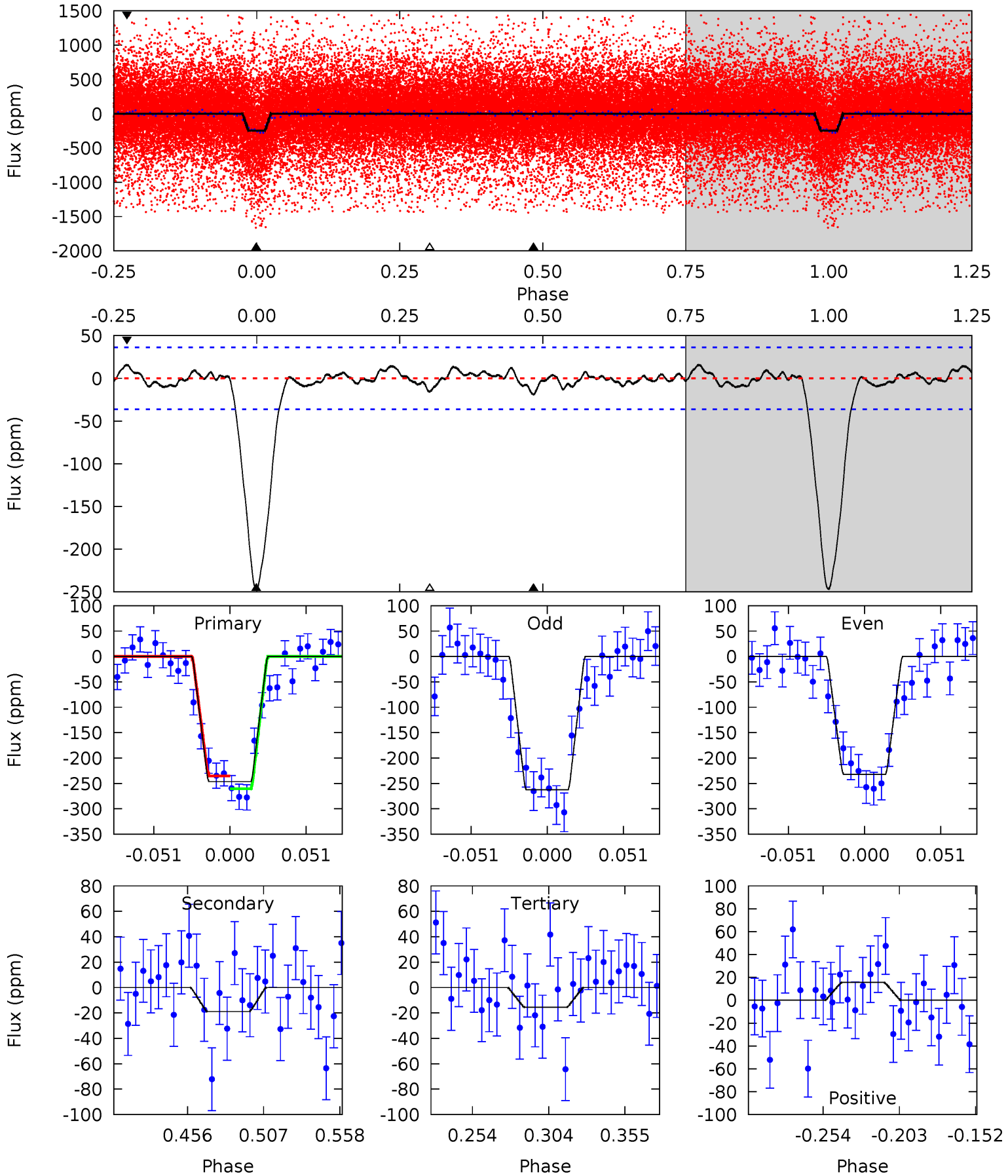




# Alt Model-Shift Uniqueness Test

010227501-01, P = 2.002764 Days, E = 129.779956 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
32.0	2.46	2.02	2.02	4.71	1.95	0.80	30.0	30.0	0.44	0.44	1.99	1.14	0.06	1.64



### Stellar Parameters For KIC 010227501

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5346^{+159}_{-159}$	$4.440^{+0.135}_{-0.180}$	$-0.100^{+0.300}_{-0.300}$	$0.892^{+0.179}_{-0.119}$	$0.799^{+0.113}_{-0.061}$	$1.586^{+0.883}_{-0.705}$
	+3%/-3%	+3%/-4%	+300%/-300%	+20%/-13%	+14%/-8%	+56%/-44%
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 010227501-01 / KOI 0985.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-24 \pm 8$	$1.70^{+0.57}_{-0.52}$	$1843^{+123}_{-99}$	$3281^{+465}_{-318}$	$3.552^{+4.634}_{-1.770}$
Alt.	$-19 \pm 8$	$1.53^{+0.51}_{-0.51}$	$1834^{+117}_{-96}$	$3279^{+491}_{-404}$	$3.593^{+4.910}_{-1.981}$

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



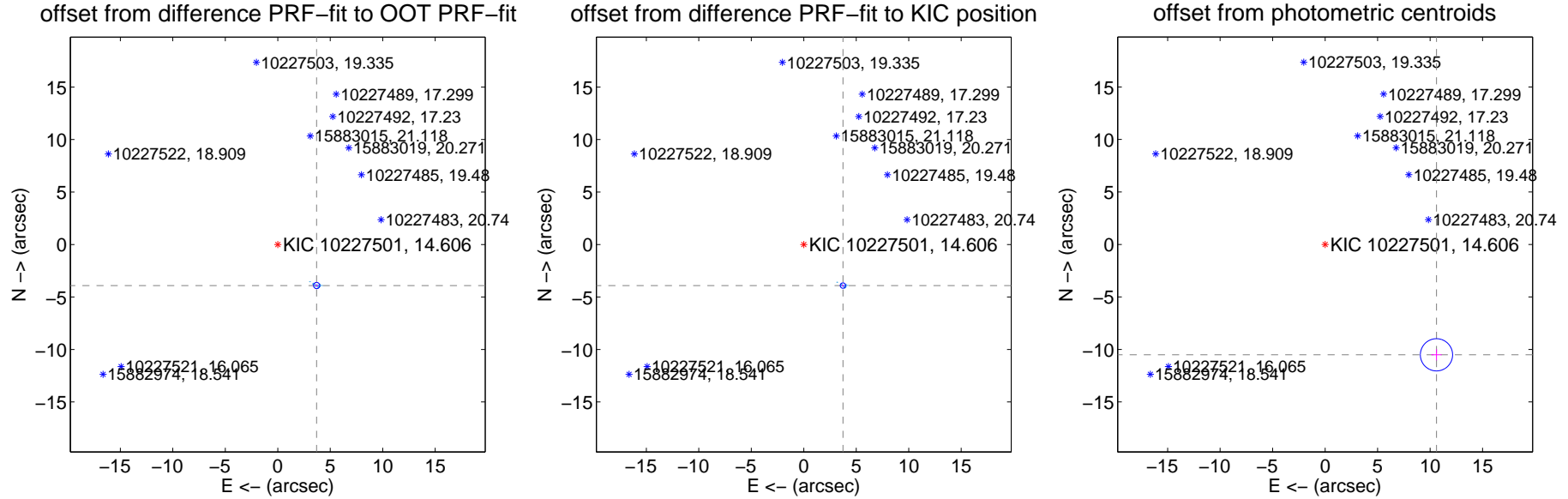
## DV Centroid Data

Supplemental centroid analysis for 010227501-01. Kepler magnitude: 14.61. Transit SNR 25.43

There are 14 quarters with good PRF difference image offsets

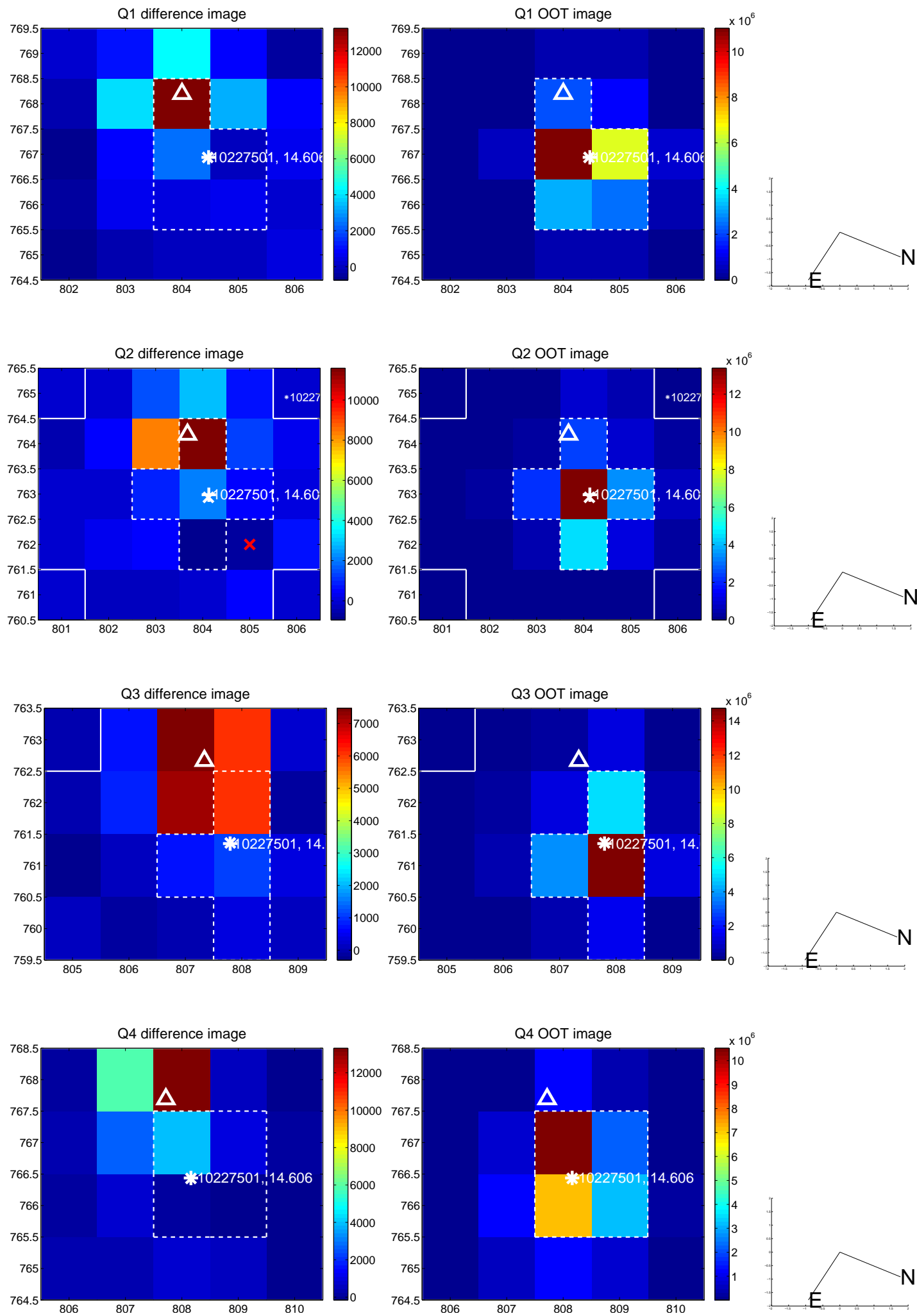
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.387 \pm 0.099$	54.65	$-3.704 \pm 0.097$	$-3.911 \pm 0.076$
PRF-fit source offset from KIC position	$5.408 \pm 0.086$	62.82	$-3.733 \pm 0.085$	$-3.913 \pm 0.073$
photometric centroid source offset	$14.94 \pm 0.51$	29.18	$-10.61 \pm 0.49$	$-10.51 \pm 0.53$

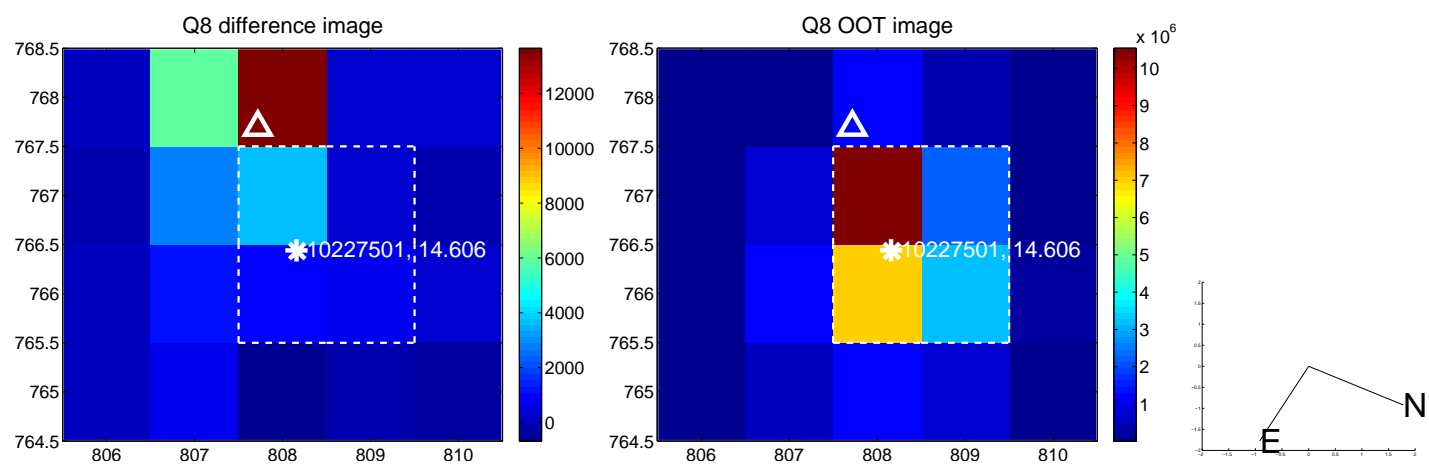
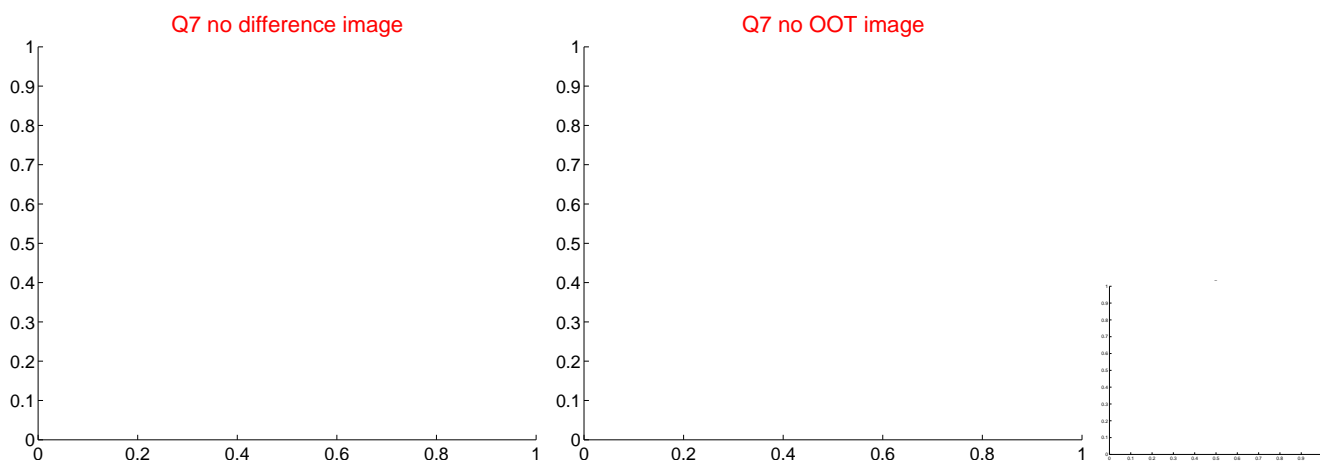
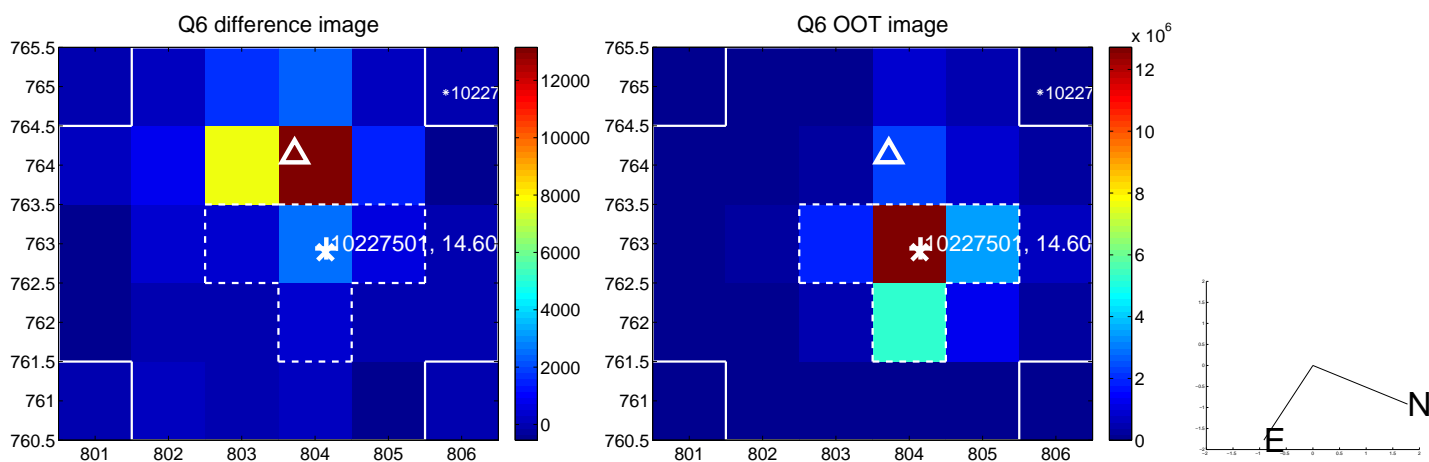
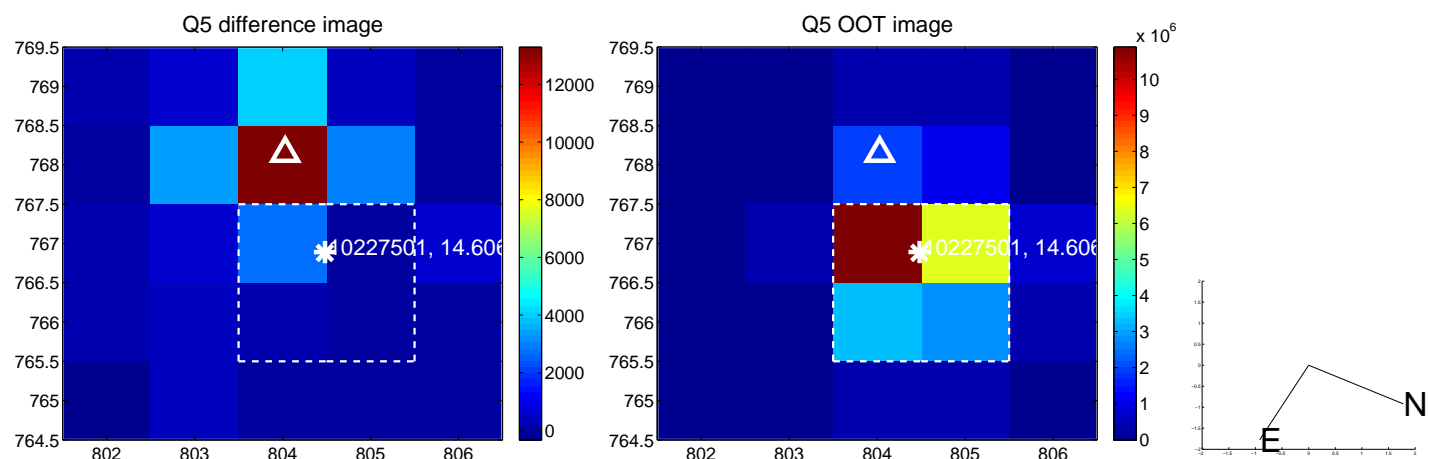


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

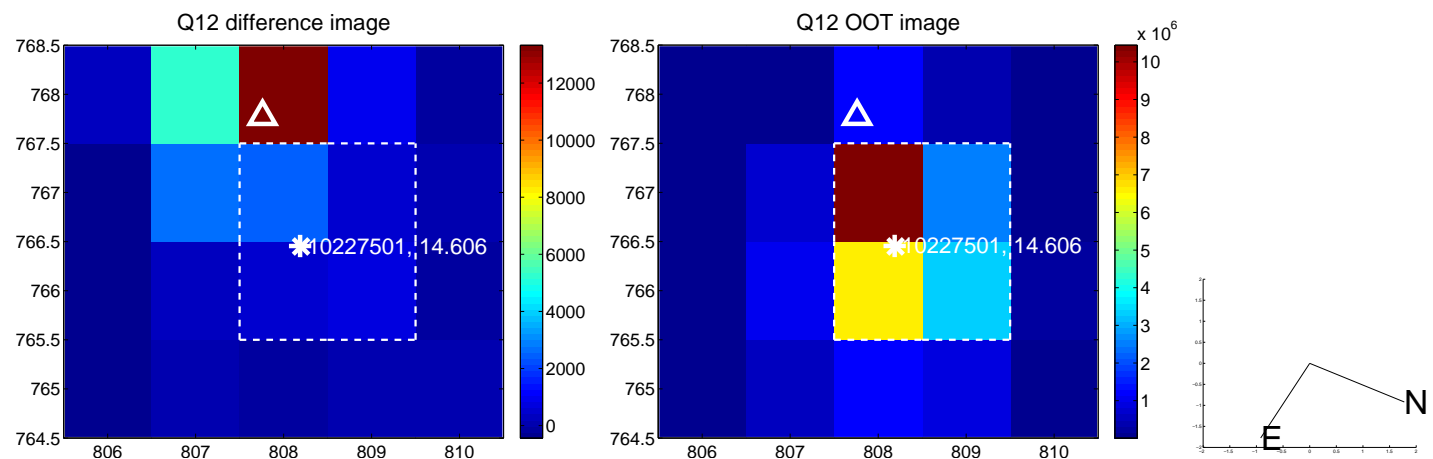
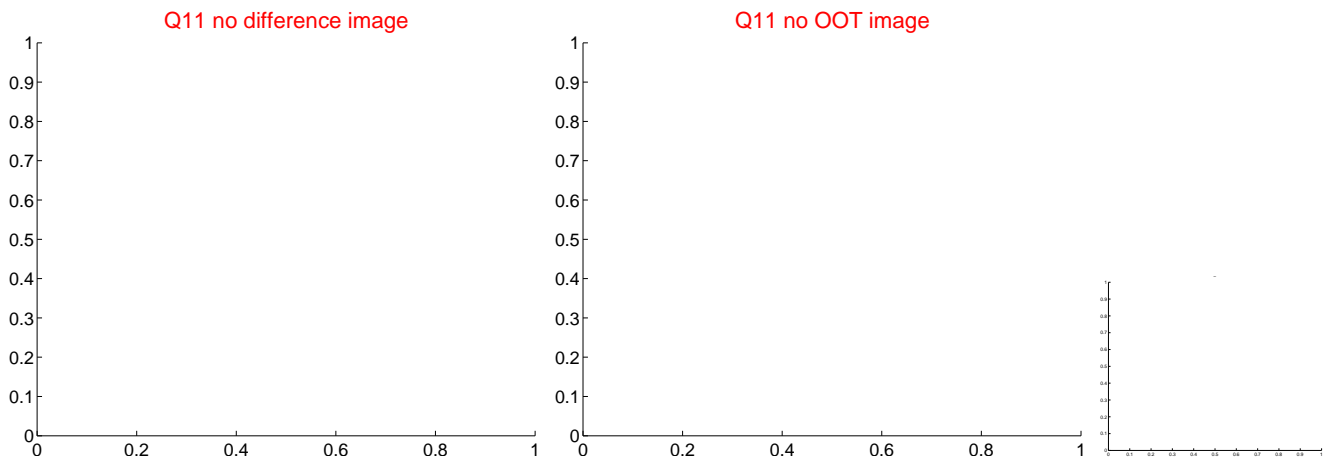
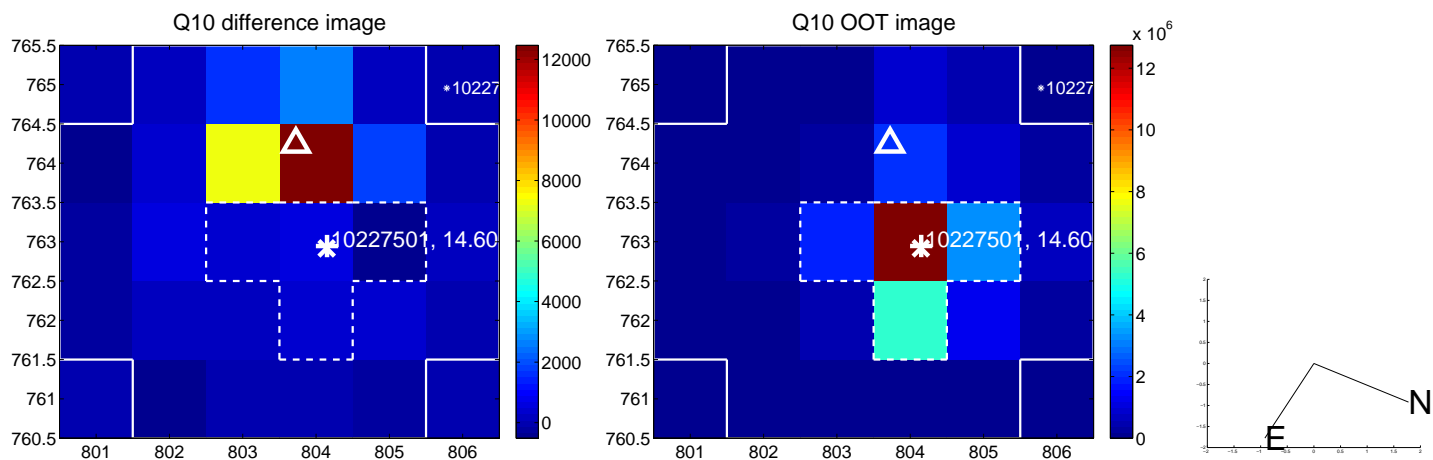
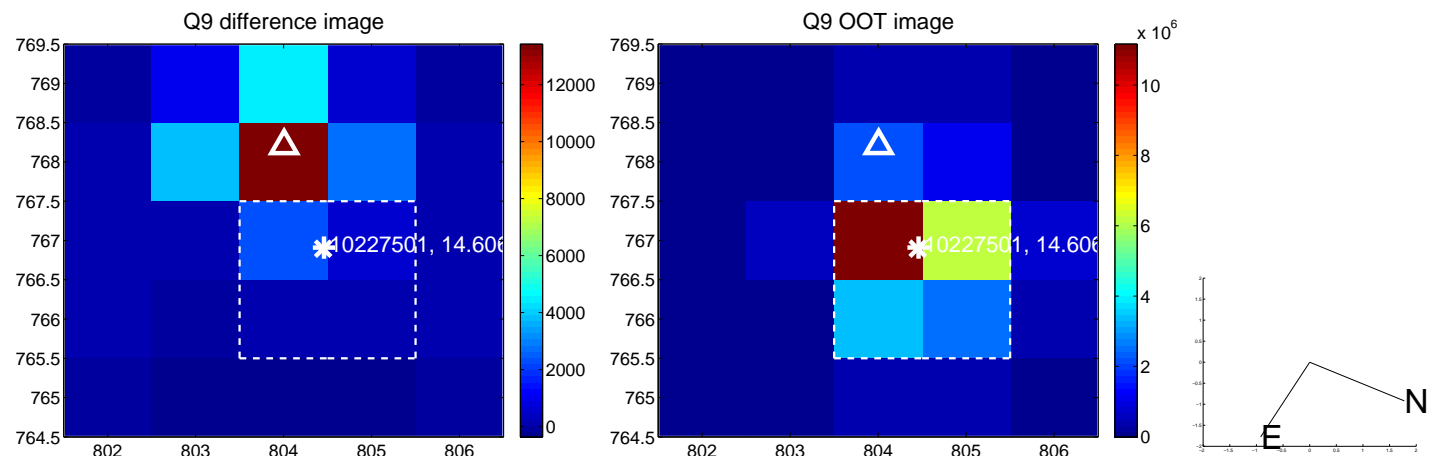
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



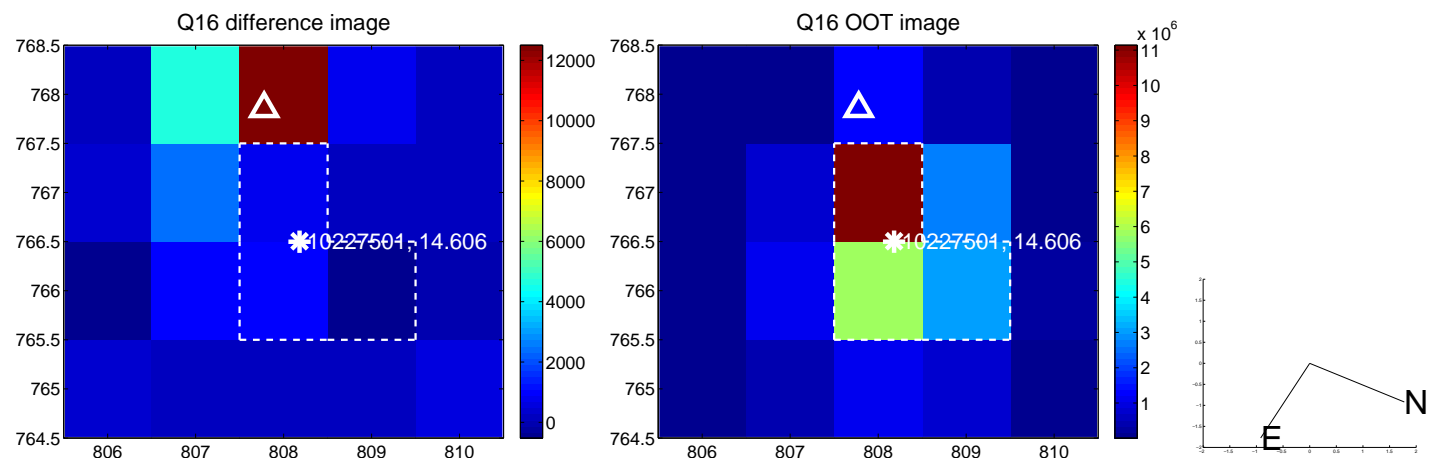
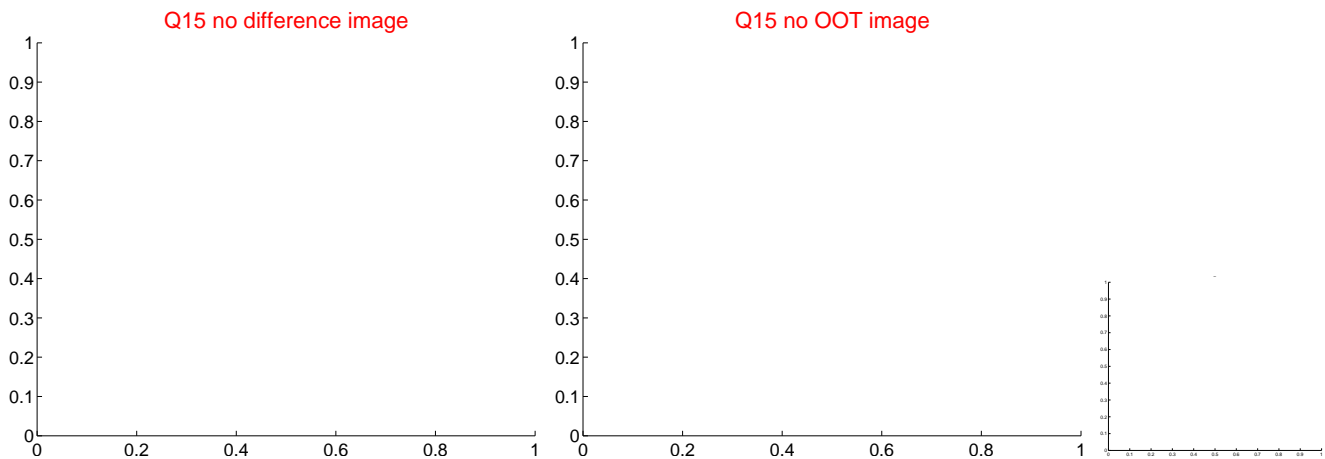
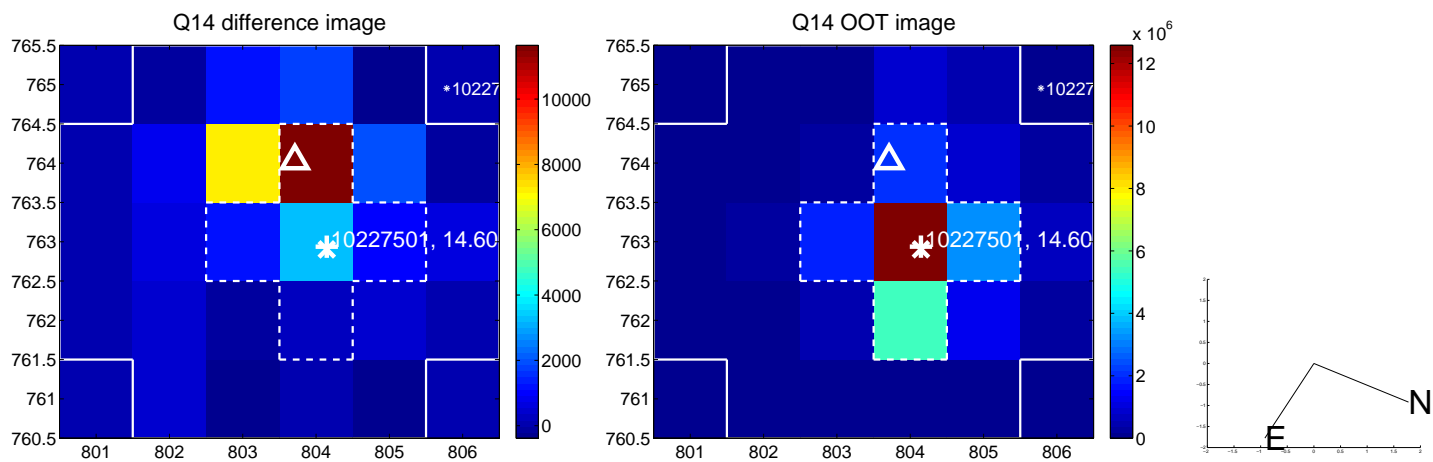
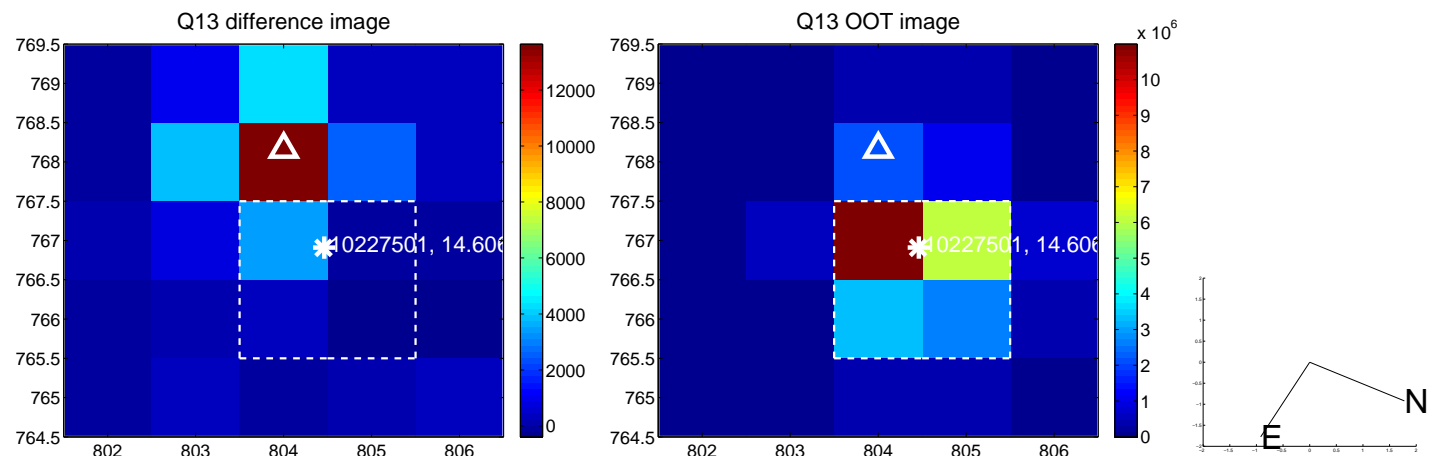
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

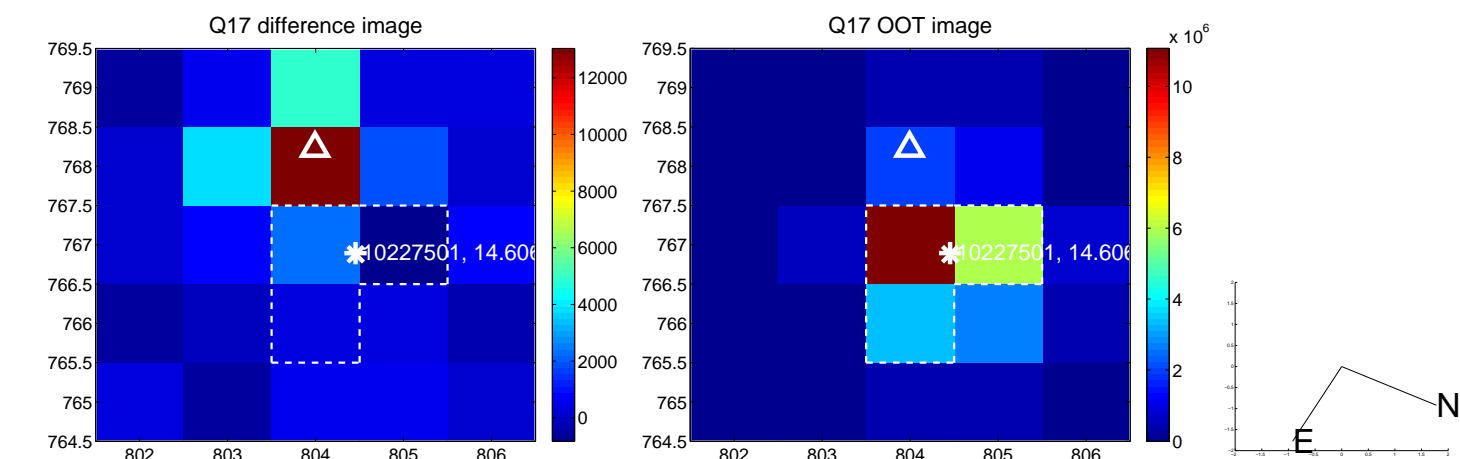


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

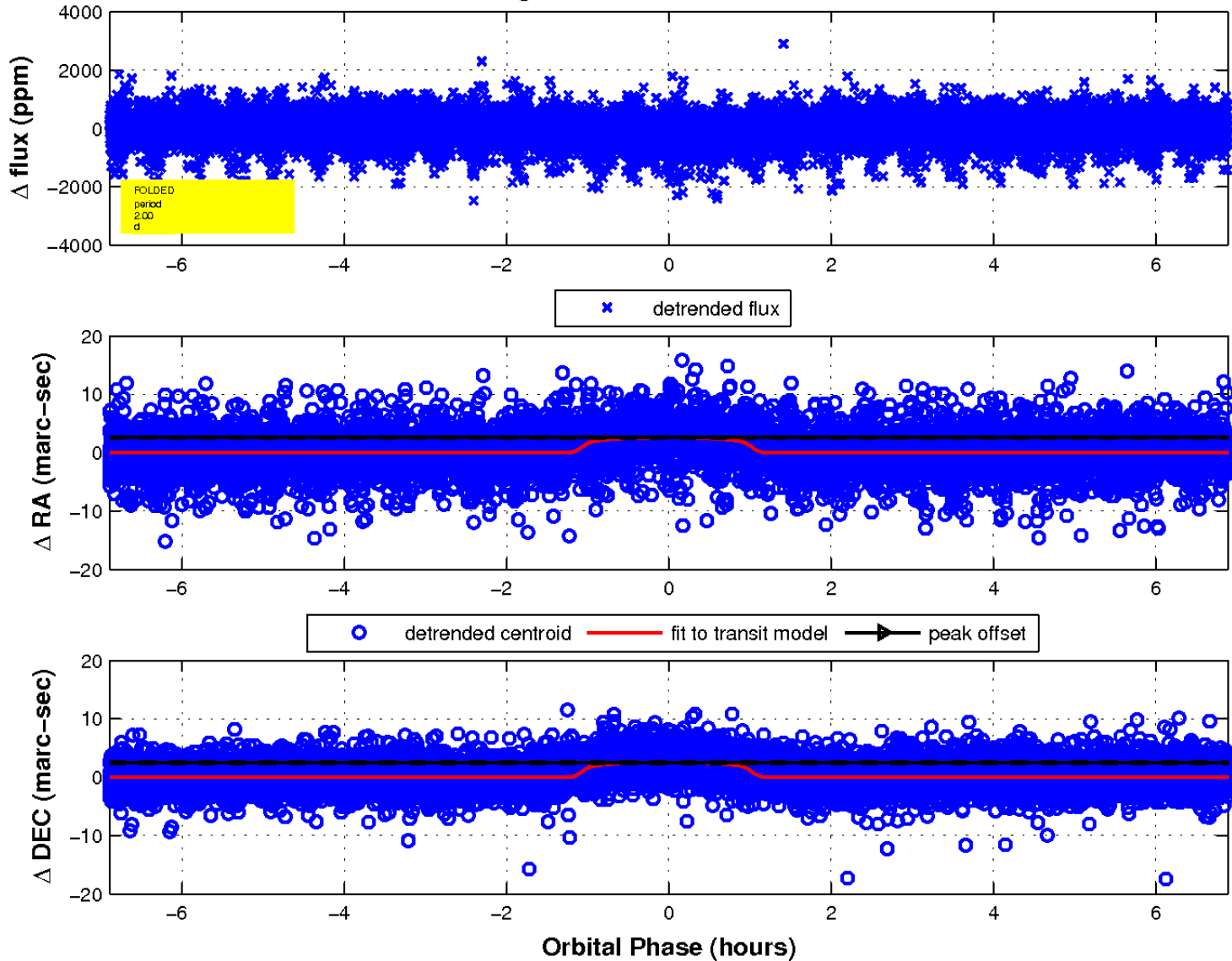




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

