

# KIC 012266099

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012266099-01	OBS	8077.01	77.178377	146.919888	343.3	2.117	7.2	7.8	0.75	4840	1.70	2.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012266099-01	OBS	PC	0.34	0	0	0	0	CENT_FEW_MEAS

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

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

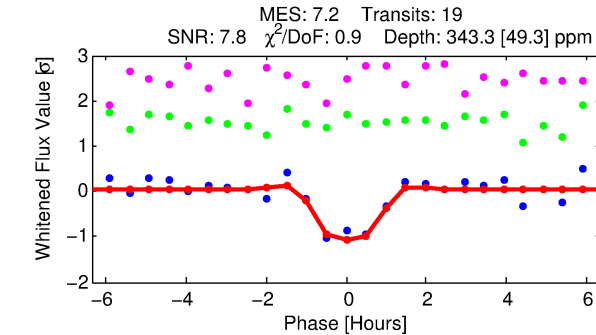
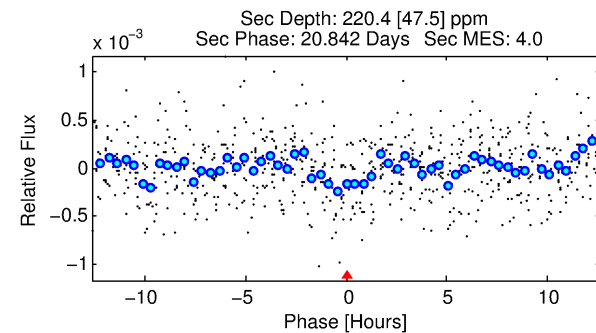
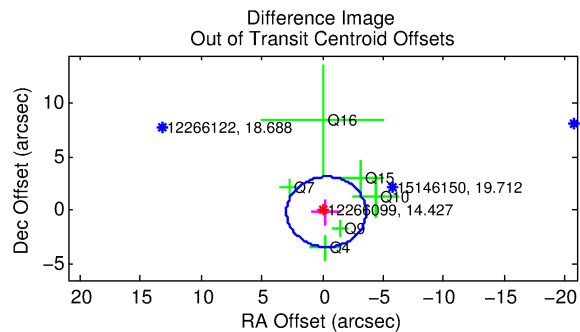
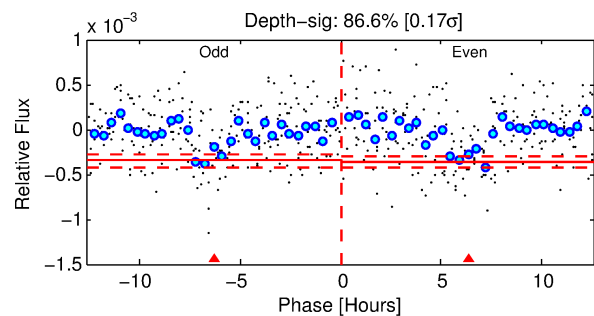
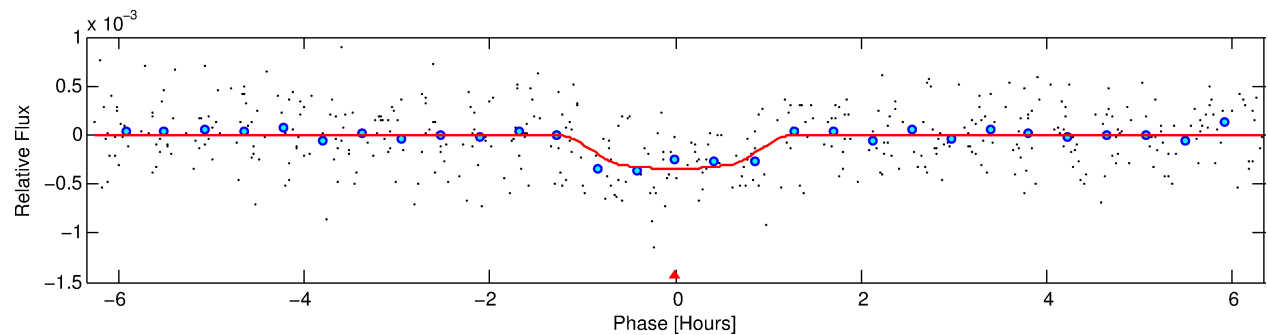
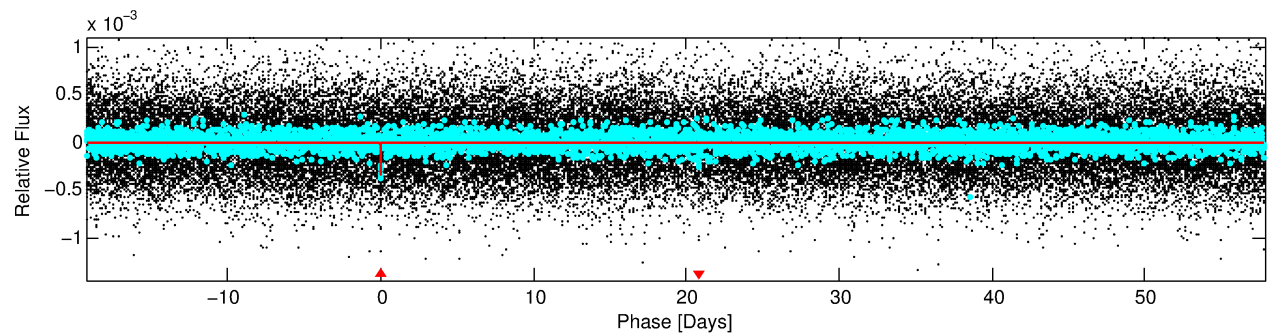
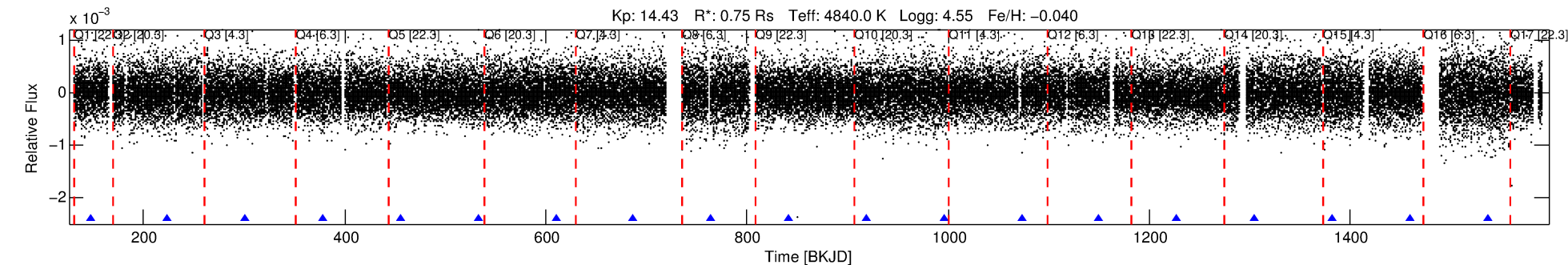
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012266099-01

No Significant Match Found

# DV One-Page Summary

KIC: 12266099 Candidate: 1 of 1 Period: 77.178 d



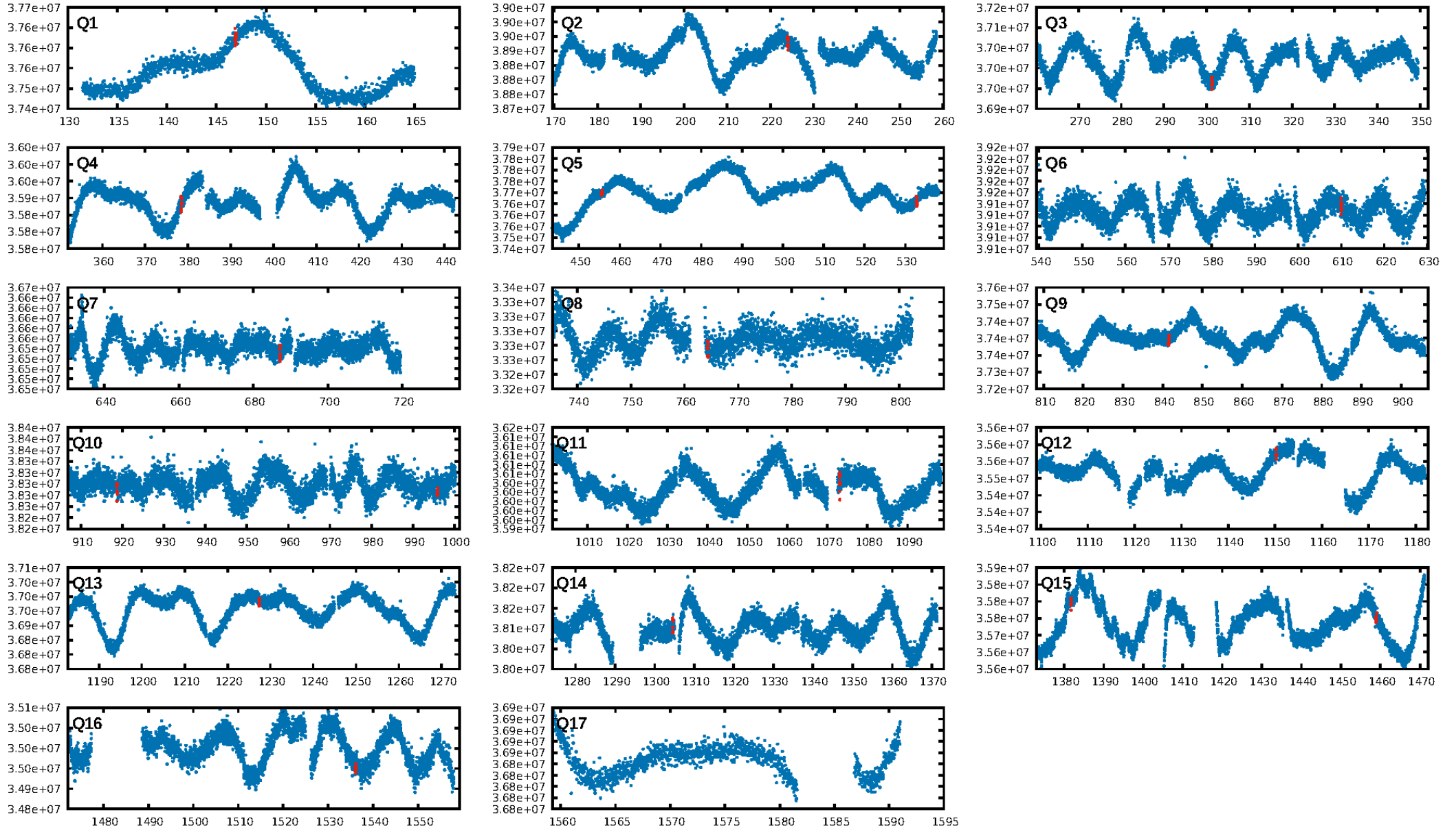
## DV Fit Results:

Period = 77.17838 [0.00067] d  
Epoch = 146.9199 [0.0070] BKJD  
Rp/R\* = 0.0208 [0.0181]  
a/R\* = 133.89 [441.17]  
b = 0.90 [0.72]  
Seff = 2.71 [0.46]  
Teq = 327 [14] K  
Rp = 1.70 [1.49] Re  
a = 0.3192 [0.0261] AU  
Ag = 4259.01 [7476.36] [0.57 $\sigma$ ]  
Teffp = 4085 [1793] K [2.10 $\sigma$ ]

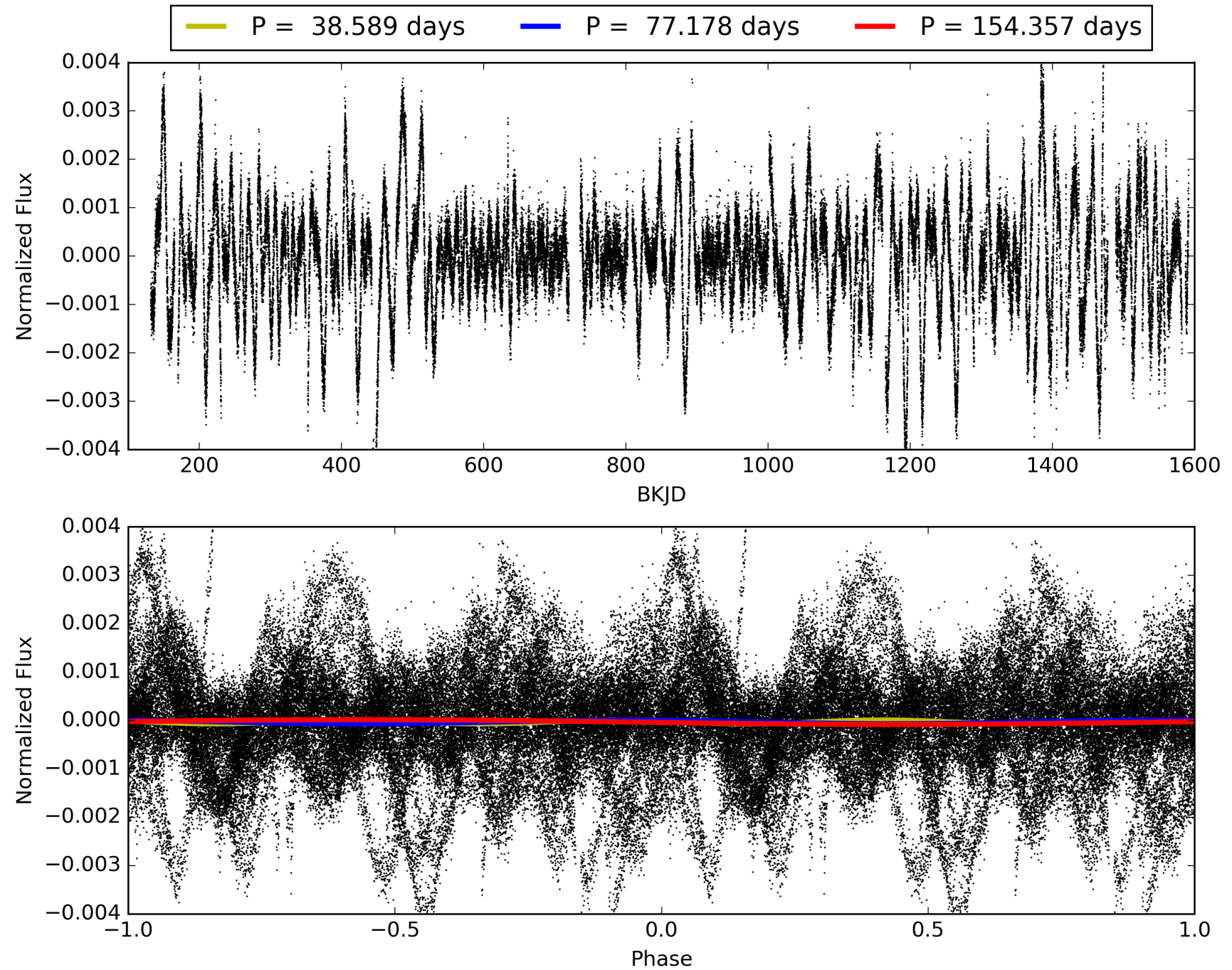
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 84.1%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 2.50e-12**  
RollingBand-fgt: 1.00 [18/18]  
GhostDiagnostic-chr: 1.746  
Centroid-sig: 77.3%  
Centroid-so: 0.378 arcsec [0.21 $\sigma$ ]  
OotOffset-rm: 0.336 arcsec [0.31 $\sigma$ ]  
KicOffset-rm: 0.319 arcsec [0.26 $\sigma$ ]  
OotOffset-st: 1/2/2/1 [6]  
KicOffset-st: 1/2/2/1 [6]  
DiffImageQuality-fgm: 0.33 [2/6]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 012266099-01, PDC Light Curves

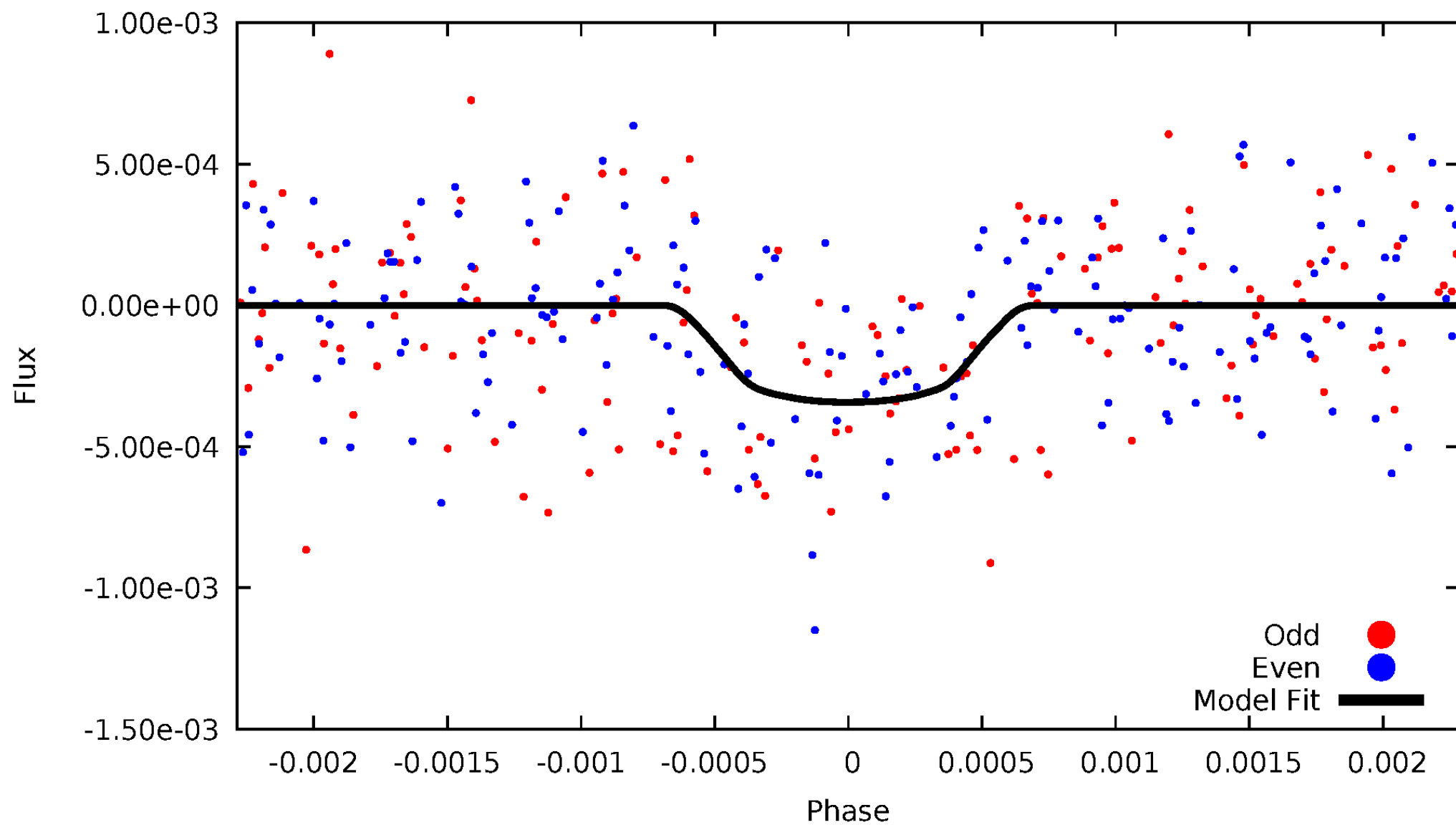


# TCE 012266099-01



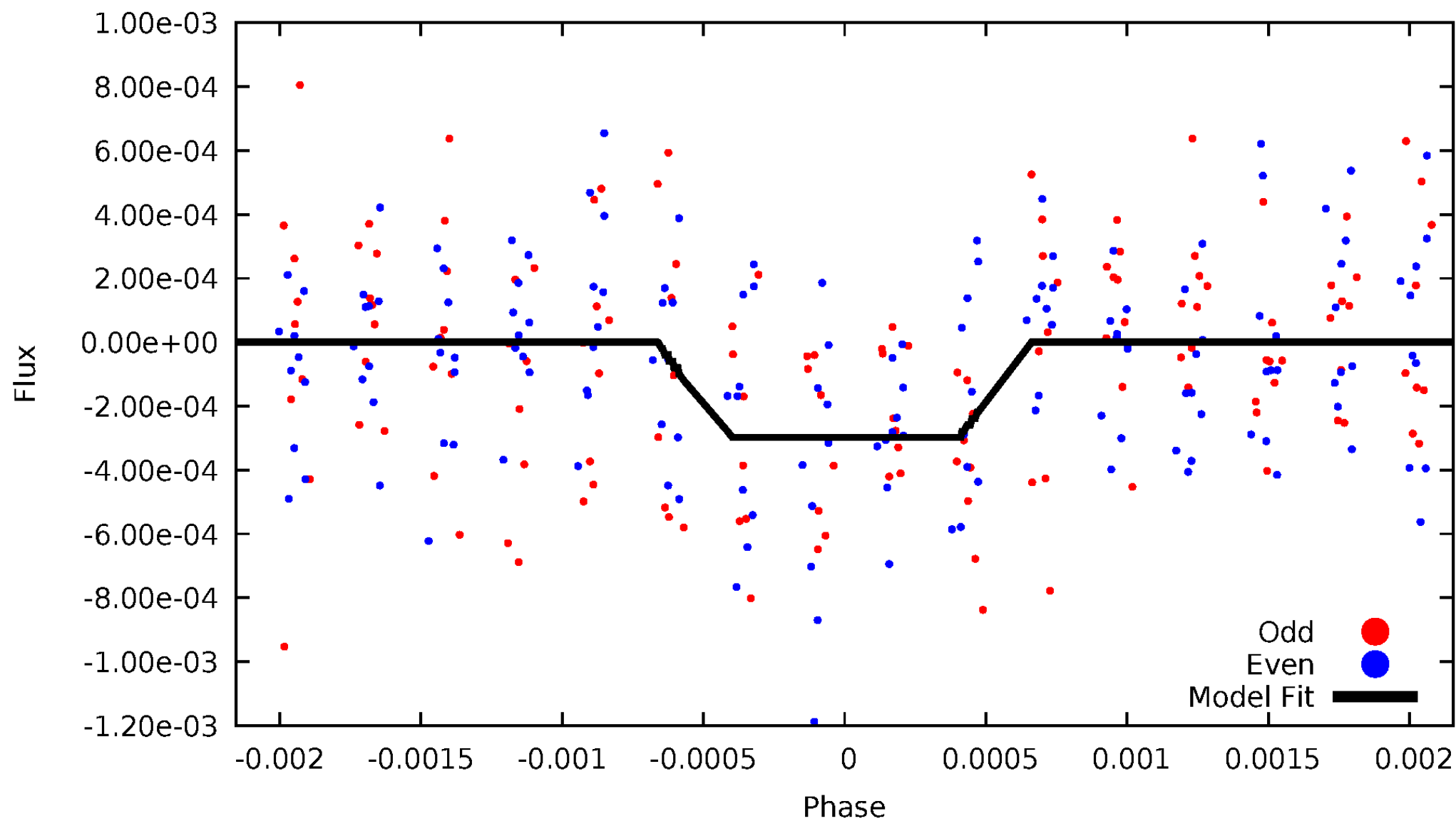
# DV Odd/Even

TCE 012266099-01



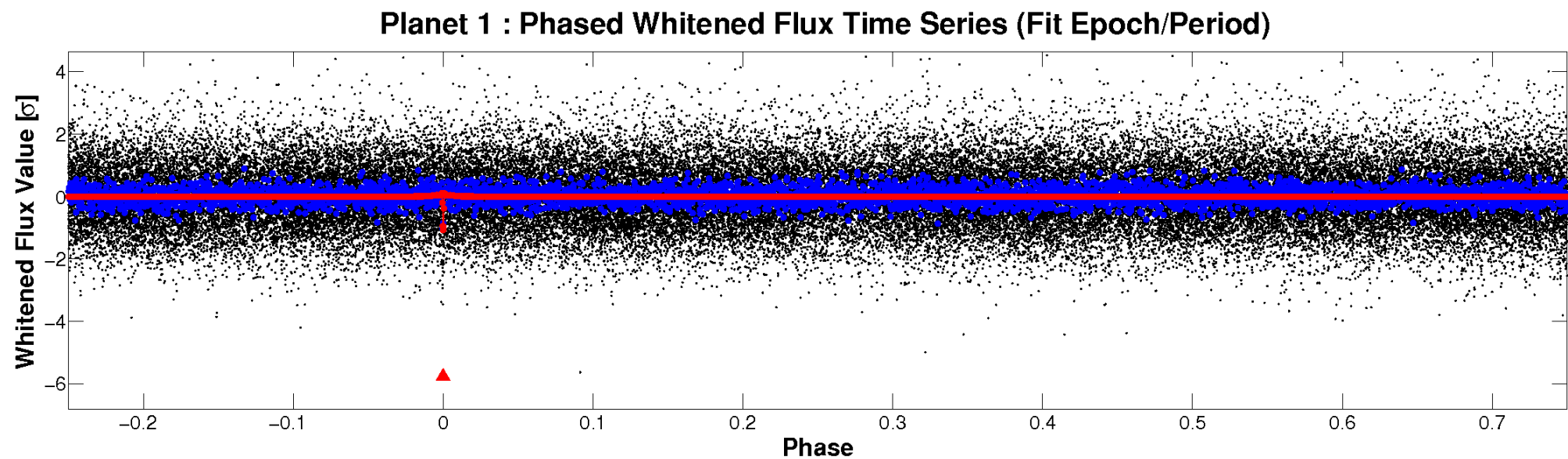
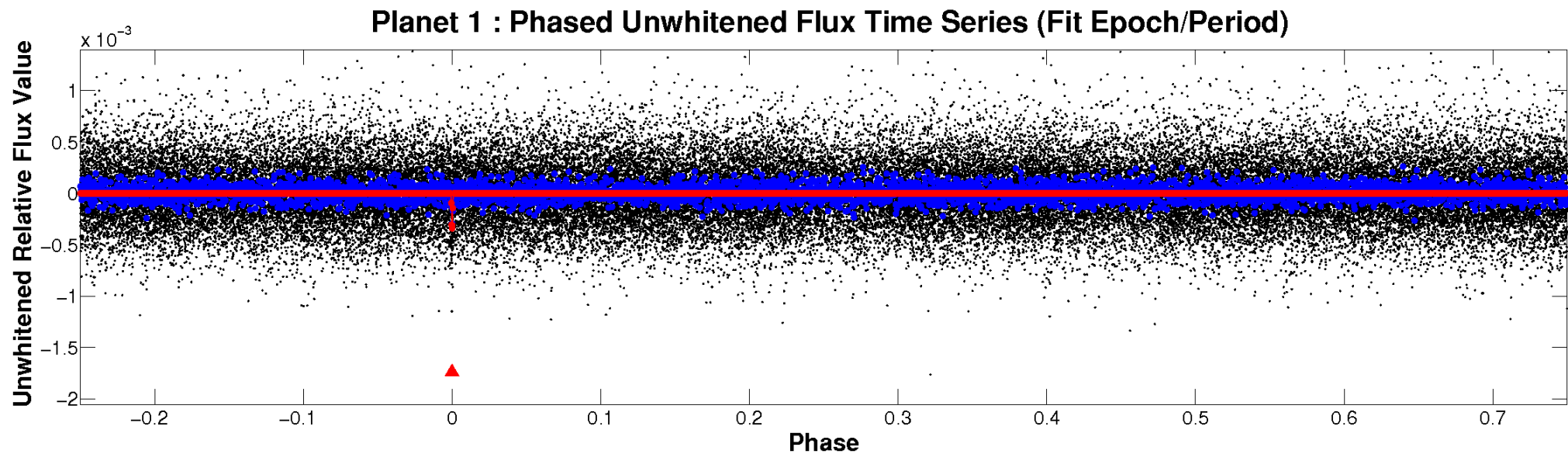
# ALT Odd/Even

TCE 012266099-01



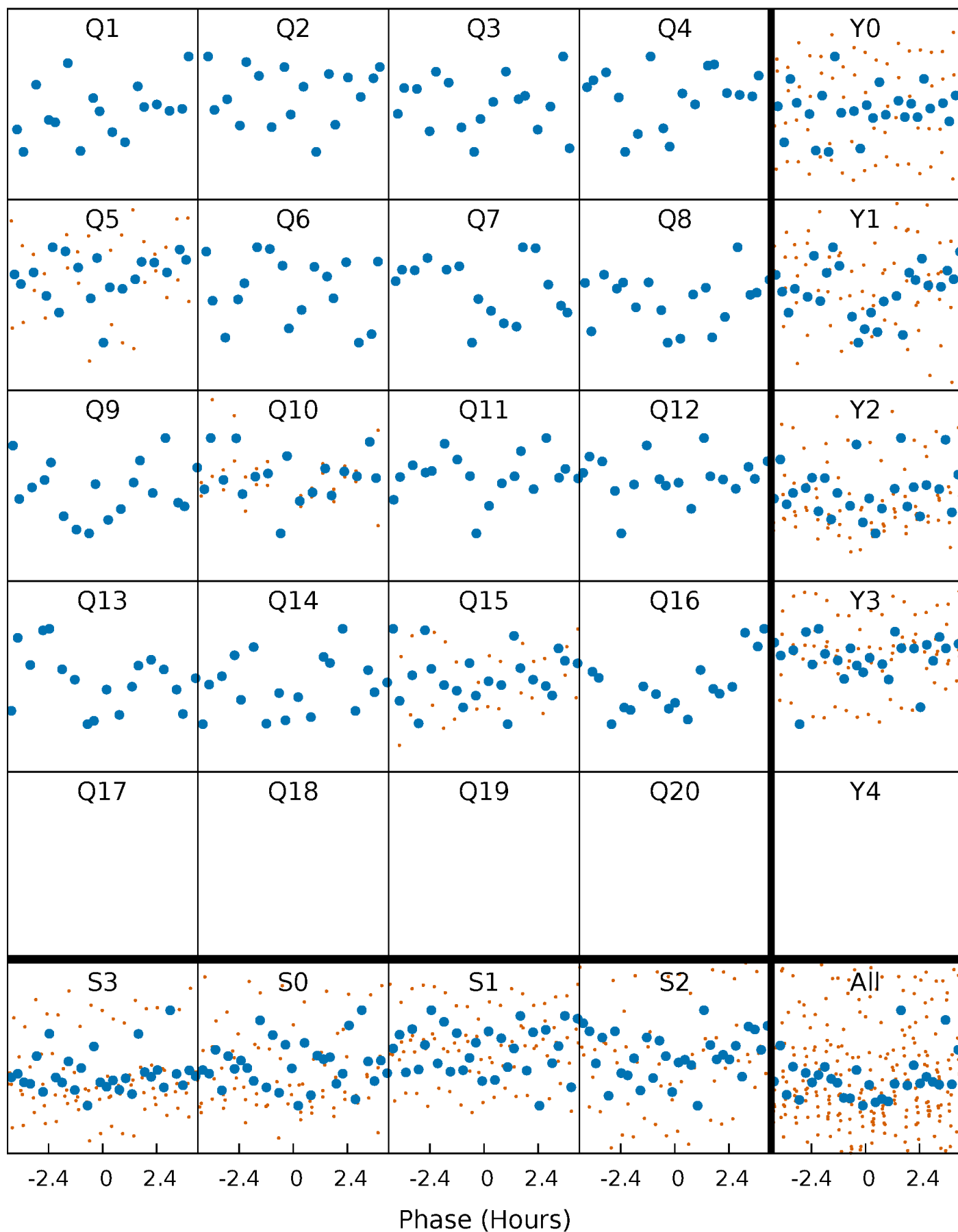


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

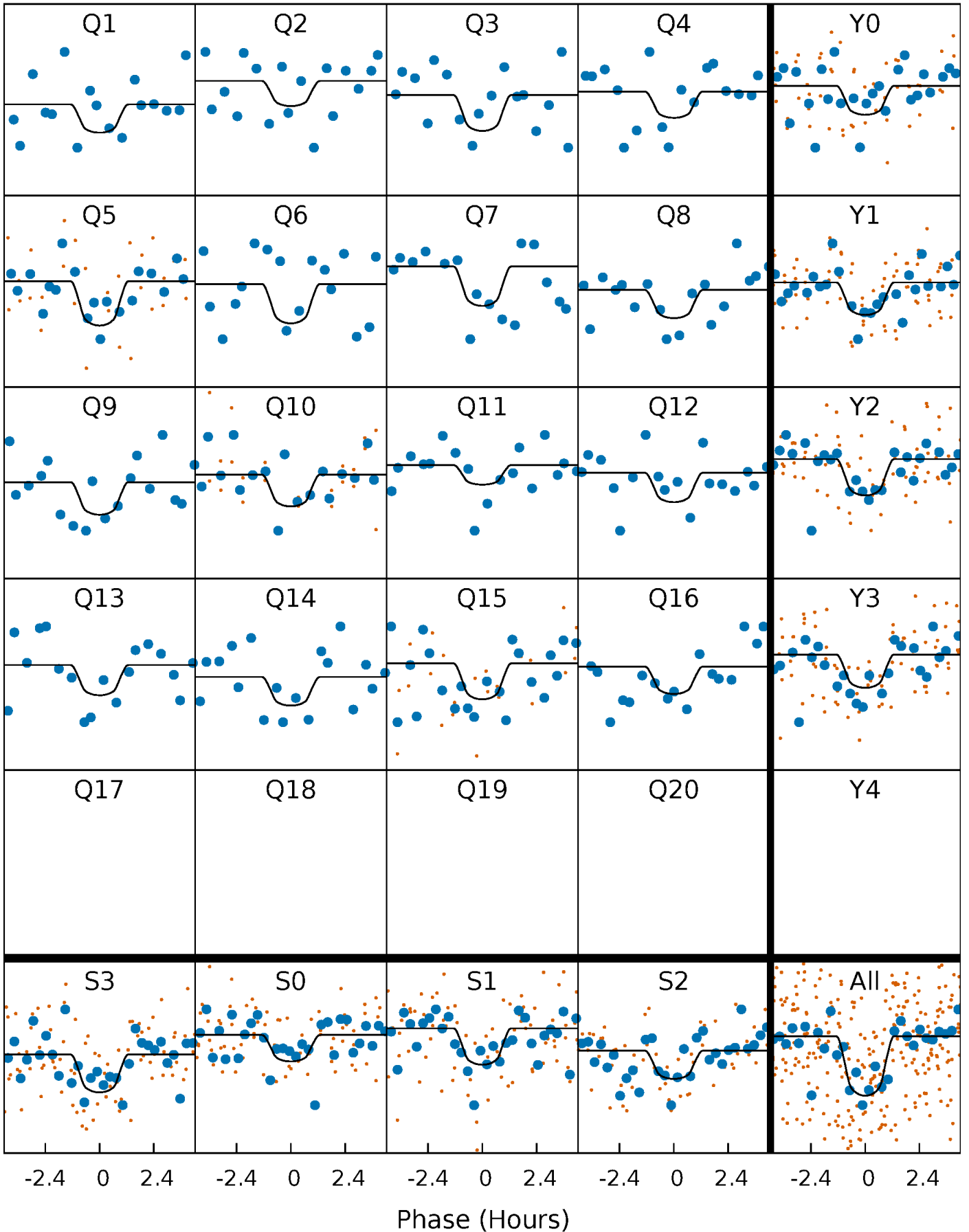
TCE 012266099-01 P= 77.178377 Days  $T_0=146.919888$  (BKJD)





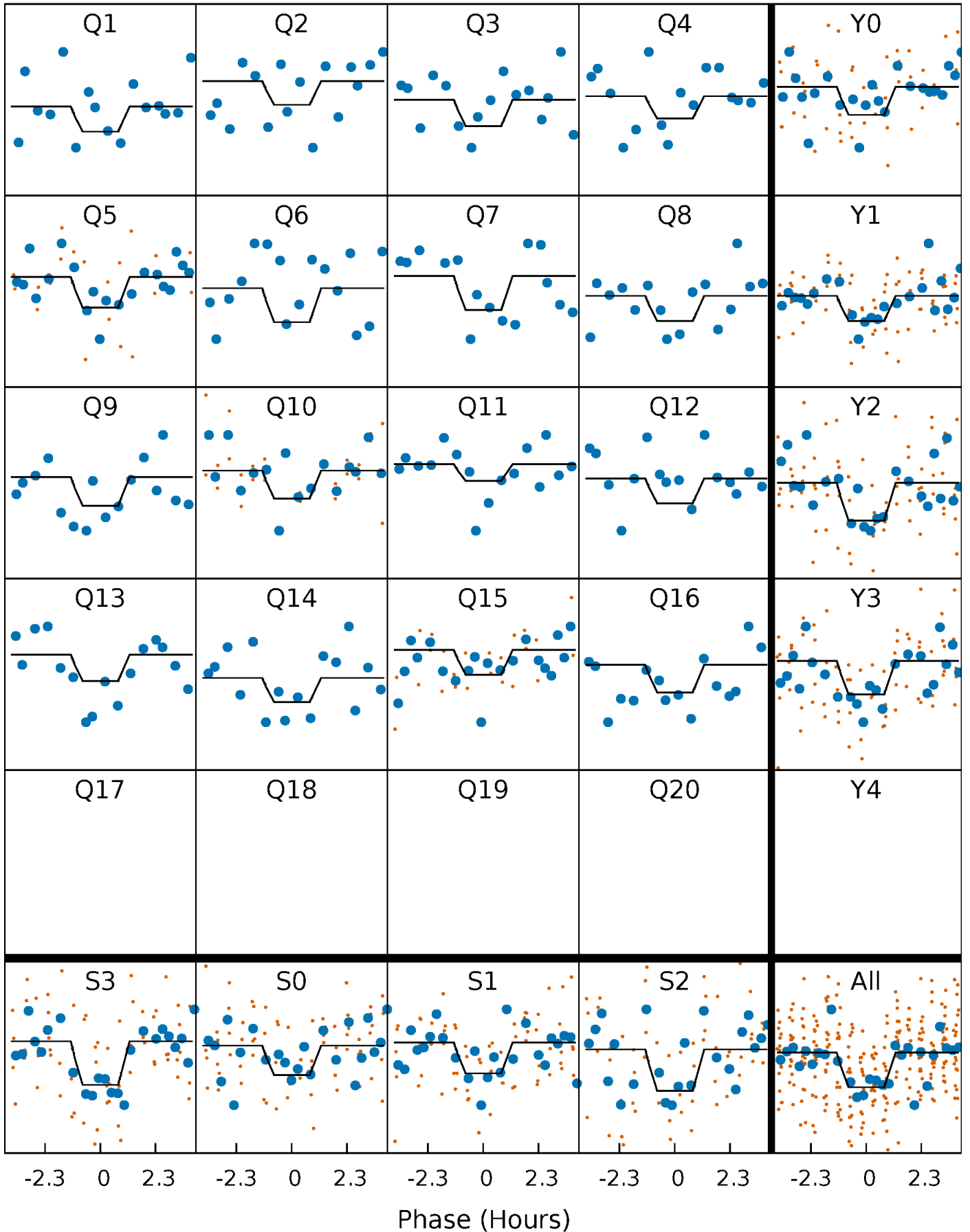
# DV Quarter-Phased Transit Curves

TCE 012266099-01 P= 77.178377 Days  $T_0=146.919888$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

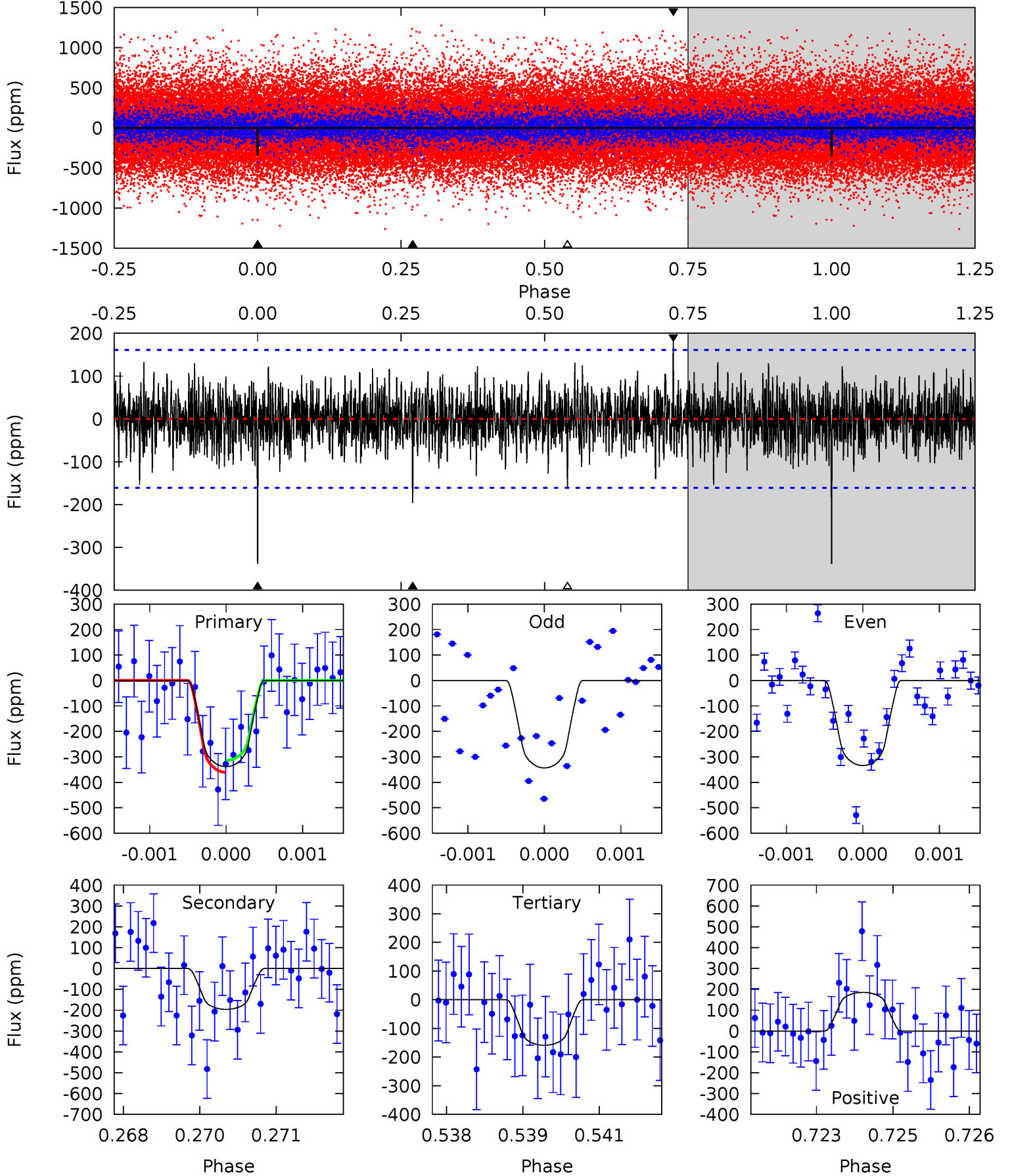
TCE 012266099-01   P= 77.177964 Days    $T_0=146.923503$  (BKJD)



# DV Model-Shift Uniqueness Test

012266099-01,  $P = 77.178377$  Days,  $E = 69.741511$  Days

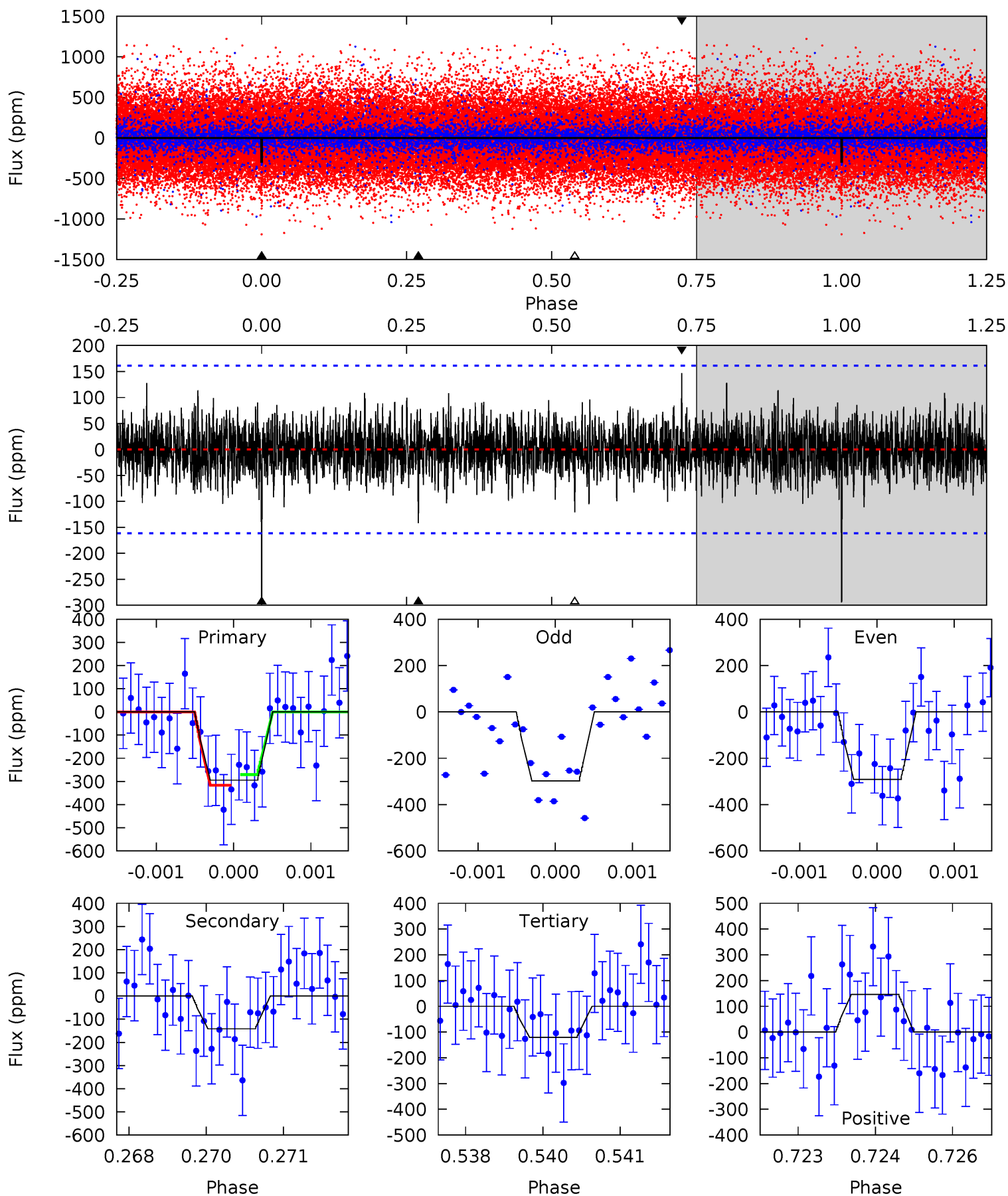
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	6.57	5.32	6.22	5.39	3.20	1.45	6.02	5.13	1.25	0.36	0.16	0.92	0.35	0.79



# Alt Model-Shift Uniqueness Test

012266099-01, P = 77.177964 Days, E = 69.745539 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
9.86	4.74	4.05	4.91	5.40	3.21	1.14	5.82	4.95	0.69	-0.17	0.11	1.05	0.33	0.76



### Stellar Parameters For KIC 012266099

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4840^{+145}_{-130}$	$4.551^{+0.066}_{-0.039}$	$-0.040^{+0.300}_{-0.300}$	$0.749^{+0.053}_{-0.072}$	$0.727^{+0.083}_{-0.053}$	$2.441^{+0.693}_{-0.332}$
	+3%/-3%	+1%/-1%	+750%/-750%	+7%/-10%	+11%/-7%	+28%/-14%
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 012266099-01 / KOI 8077.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-196 \pm 30$	$1.89^{+1.50}_{-1.17}$	$456^{+16}_{-17}$	$4016^{+1863}_{-749}$	$3167^{+16365}_{-2230}$
Alt.	$-142 \pm 30$	$1.77^{+1.36}_{-1.10}$	$456^{+16}_{-15}$	$3868^{+1872}_{-667}$	$2524^{+15691}_{-1729}$

$T_{max}$  = 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

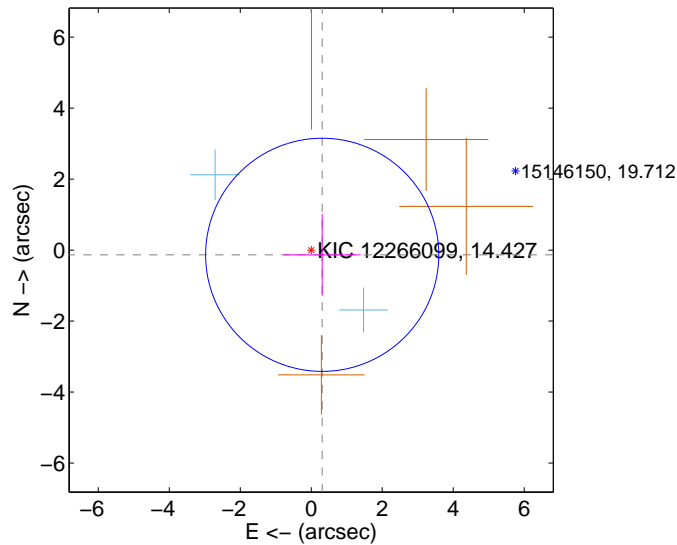
Supplemental centroid analysis for 012266099-01. Kepler magnitude: 14.43. Transit SNR 7.83

There are 2 quarters with good PRF difference image offsets

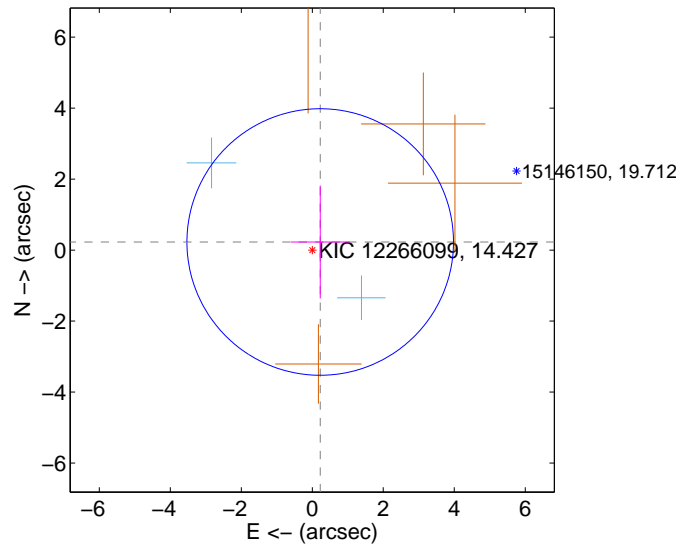
The direct PRF centroid is offset from the target star catalog position by about 0.47 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.336 \pm 1.095$	0.31	$-0.309 \pm 1.084$	$-0.133 \pm 1.153$
PRF-fit source offset from KIC position	$0.319 \pm 1.252$	0.26	$-0.223 \pm 0.827$	$0.228 \pm 1.591$
photometric centroid source offset	$0.38 \pm 1.77$	0.21	$-0.33 \pm 1.74$	$0.18 \pm 1.87$

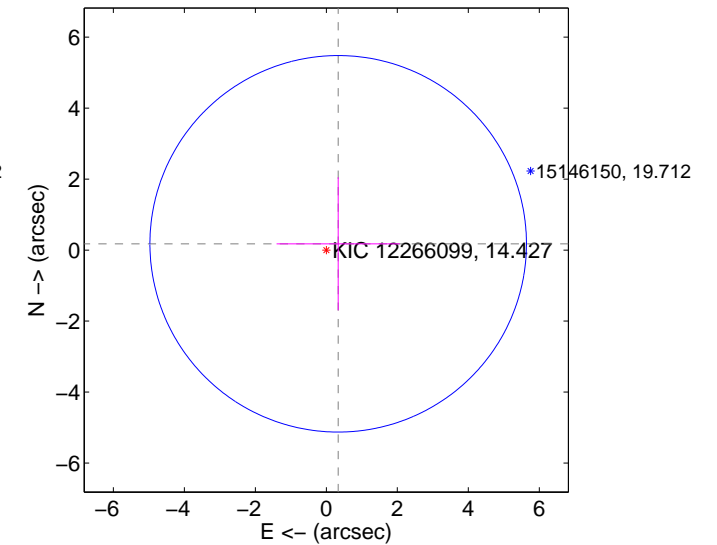
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



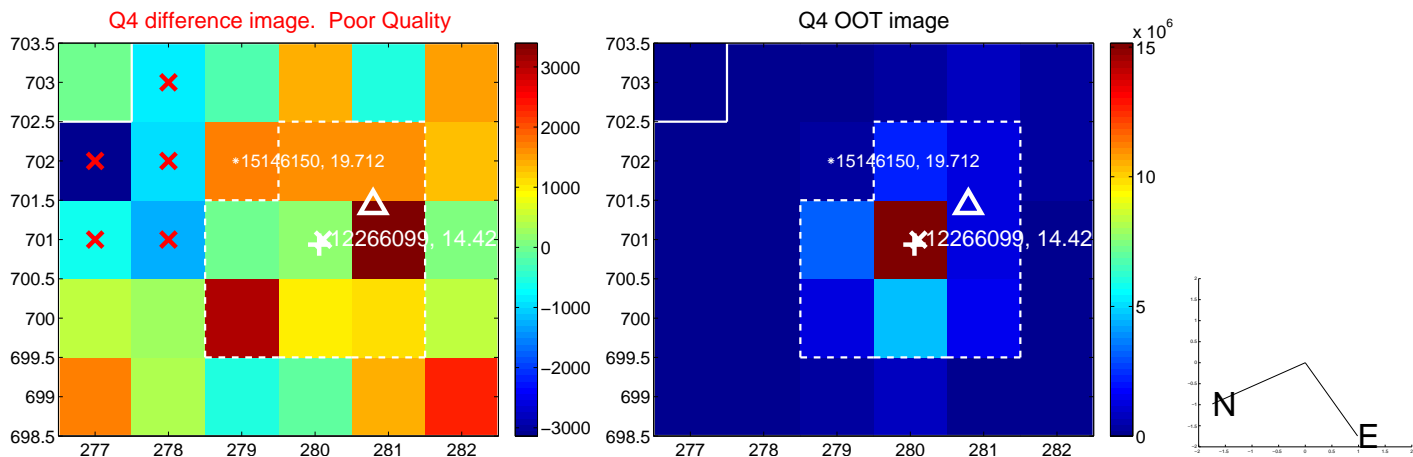
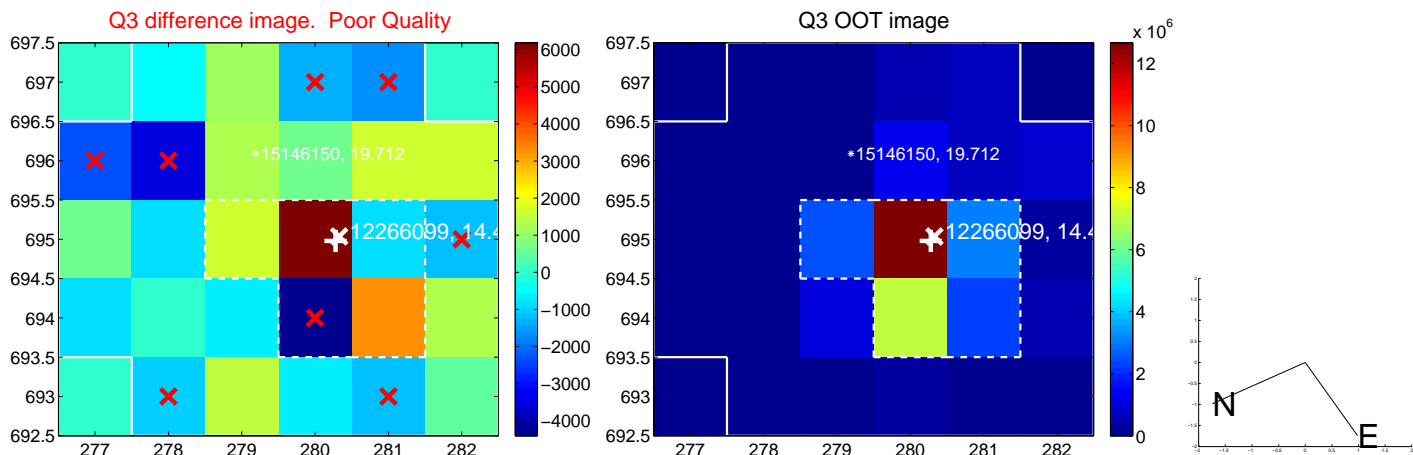
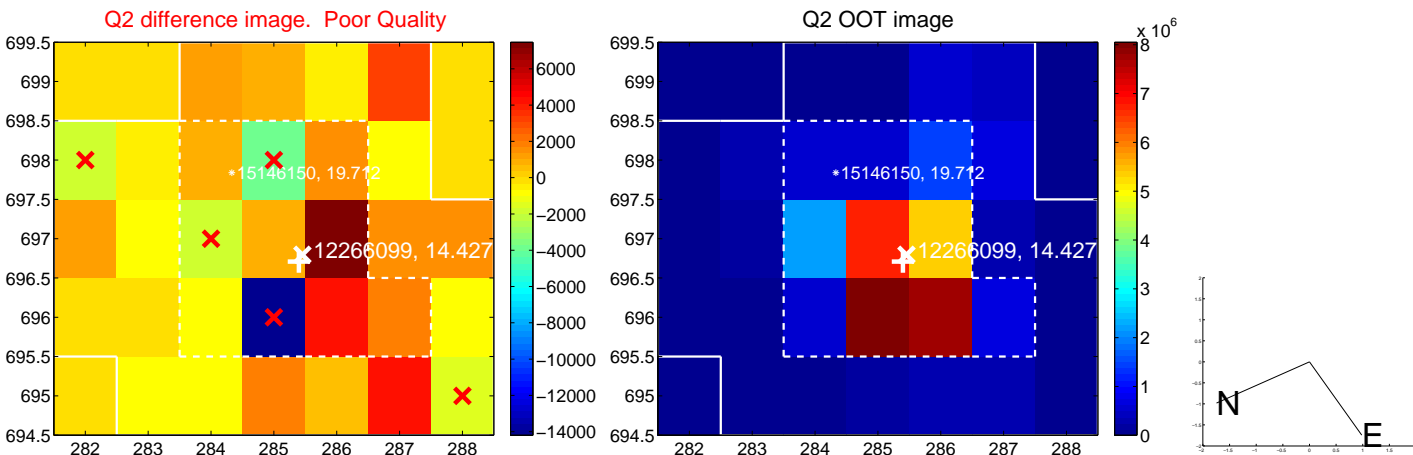
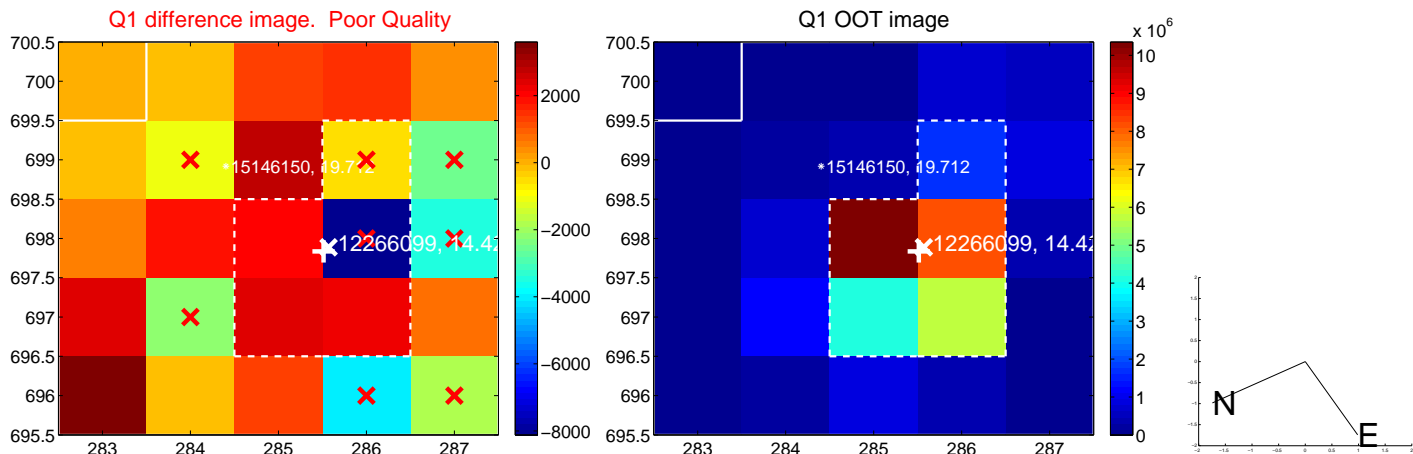
offset from photometric centroids



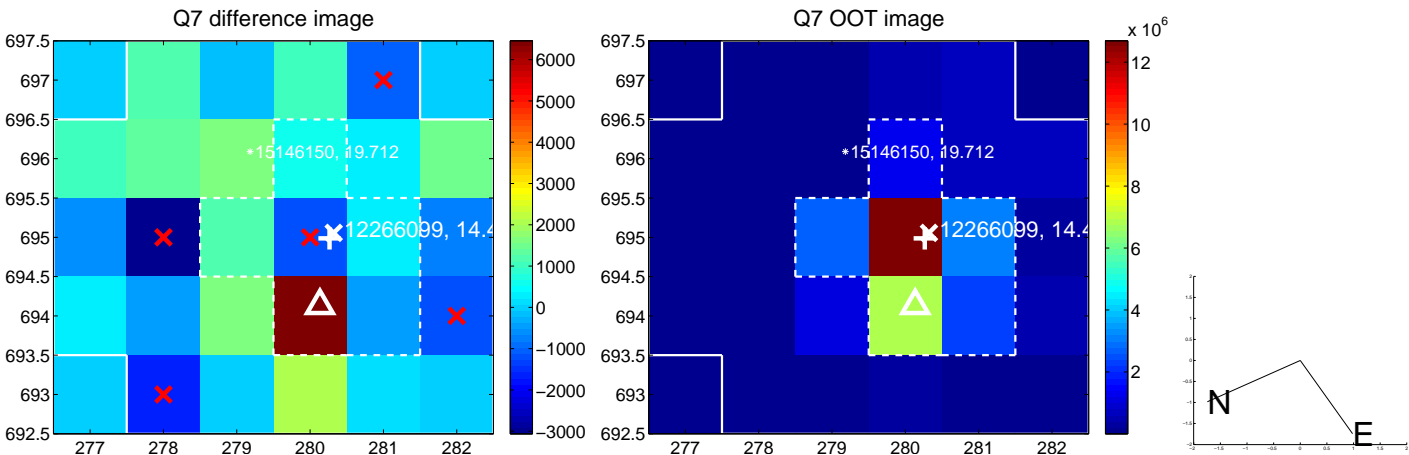
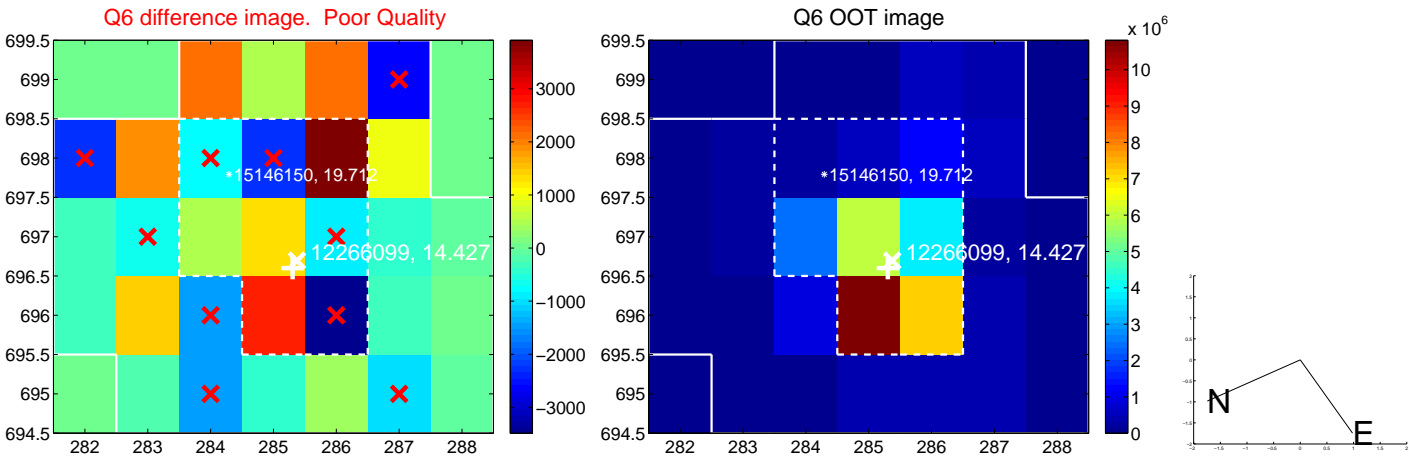
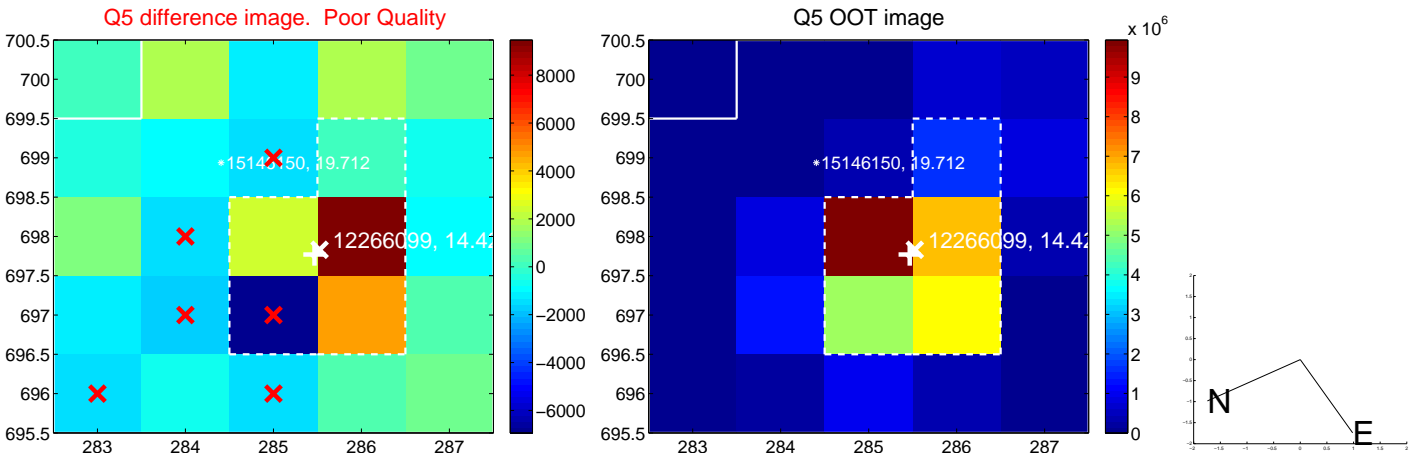
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



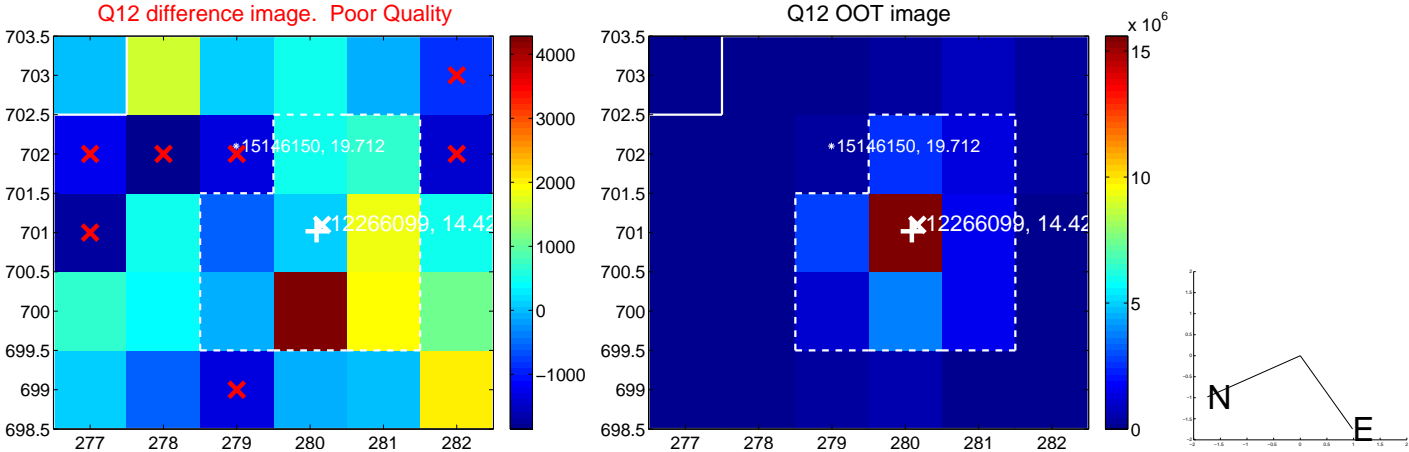
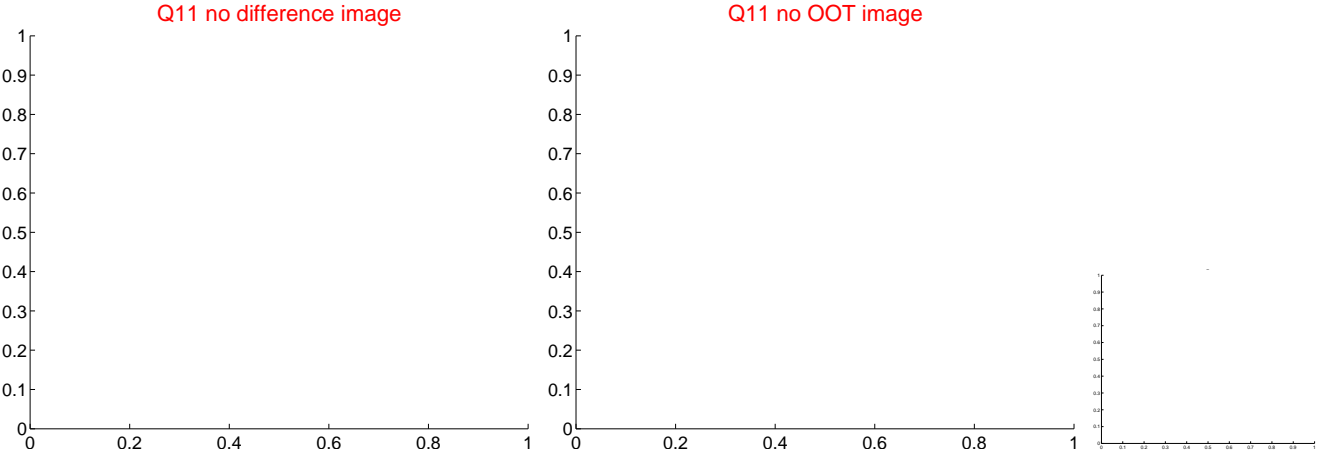
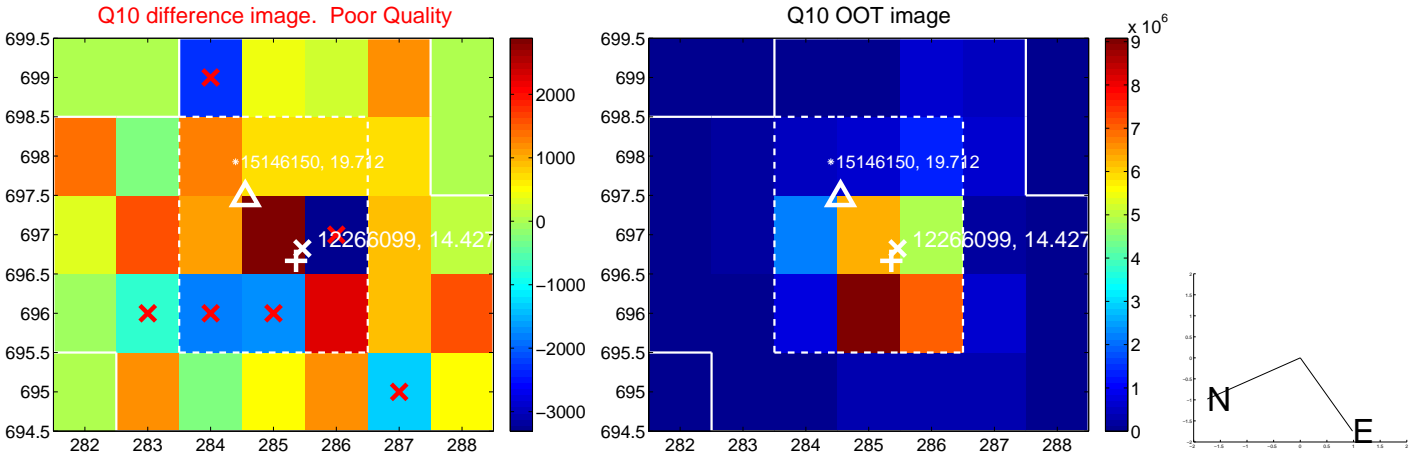
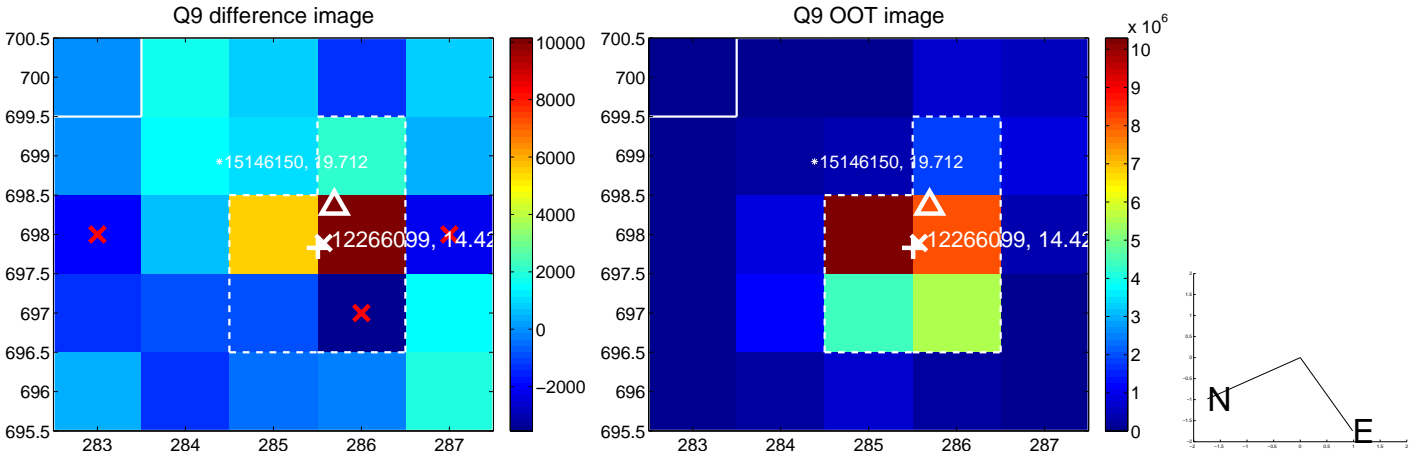
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

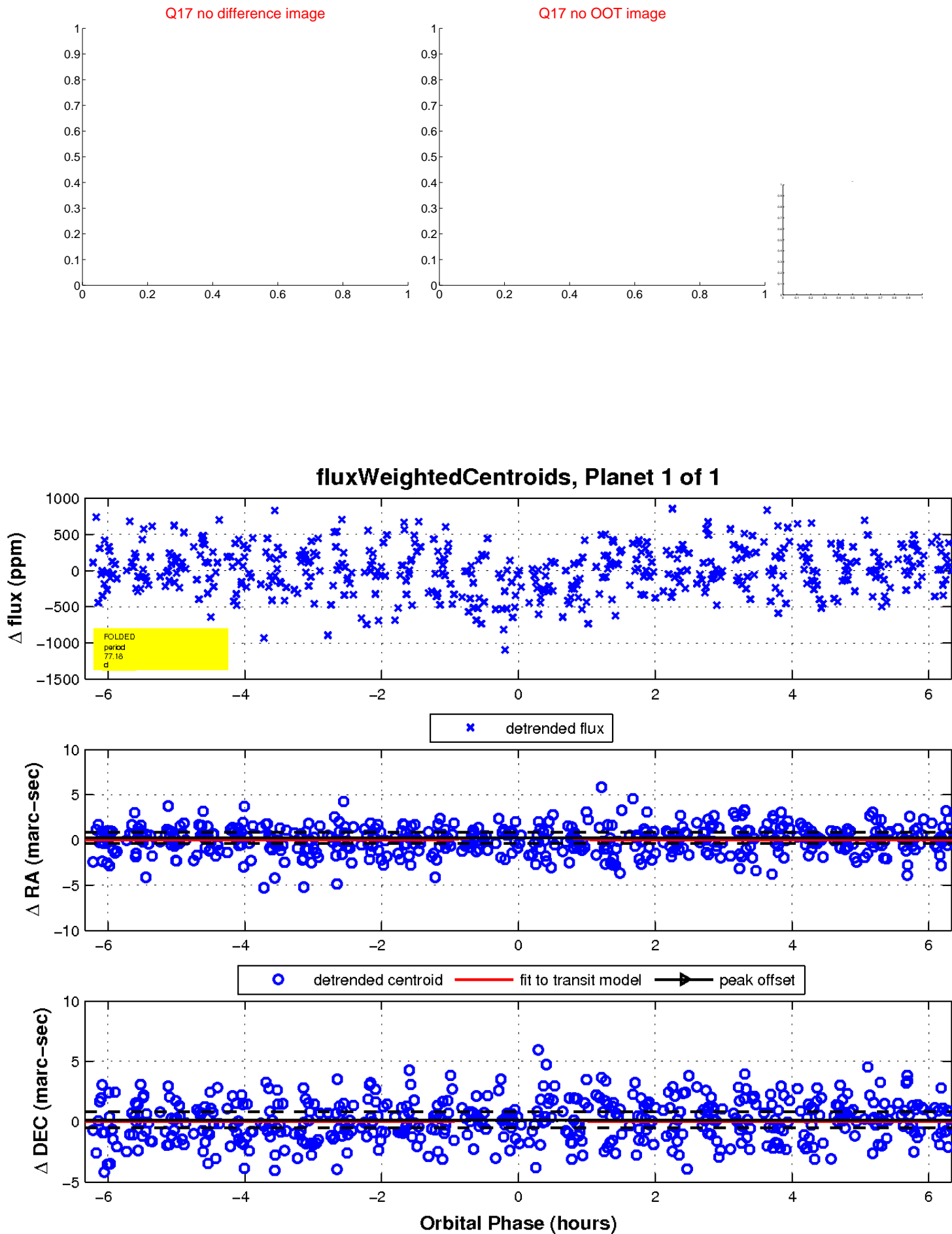


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

