

# KIC 004073707

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004073707-01	OBS	3525.01	3.141016	131.677454	189676.8	7.877	8773.9	6101.2	0.98	6074	56.61	668.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004073707-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS

**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.

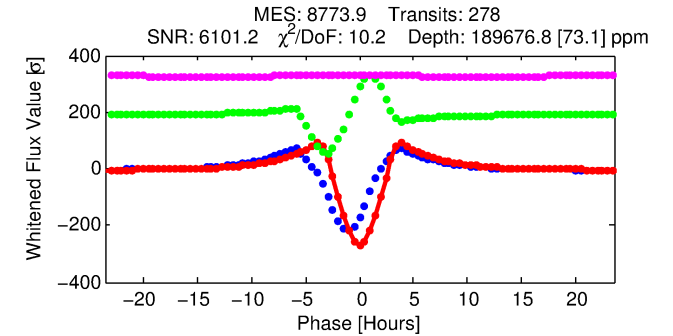
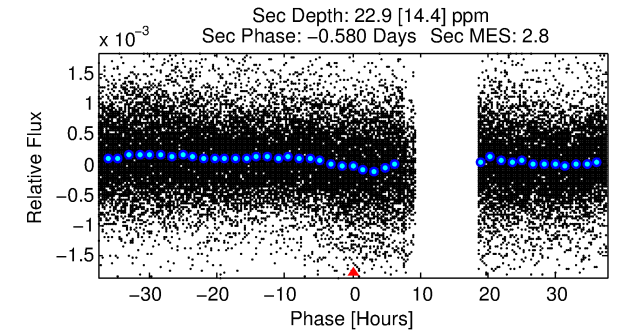
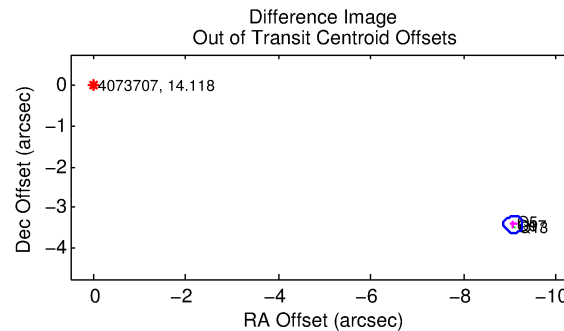
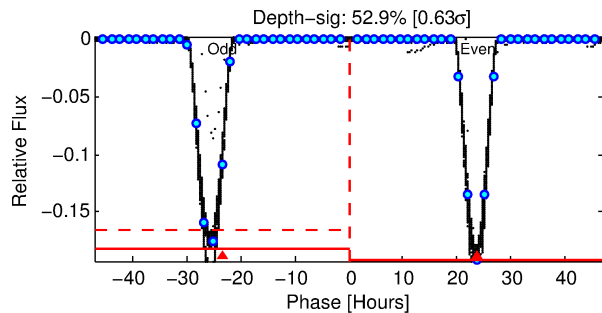
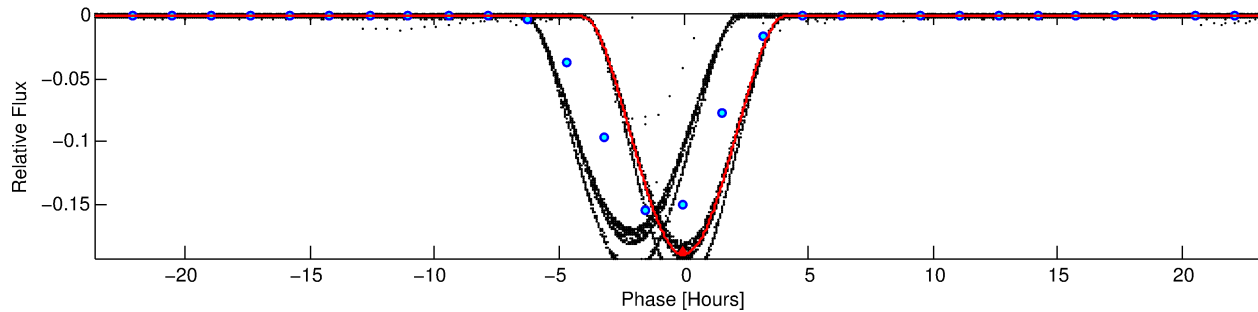
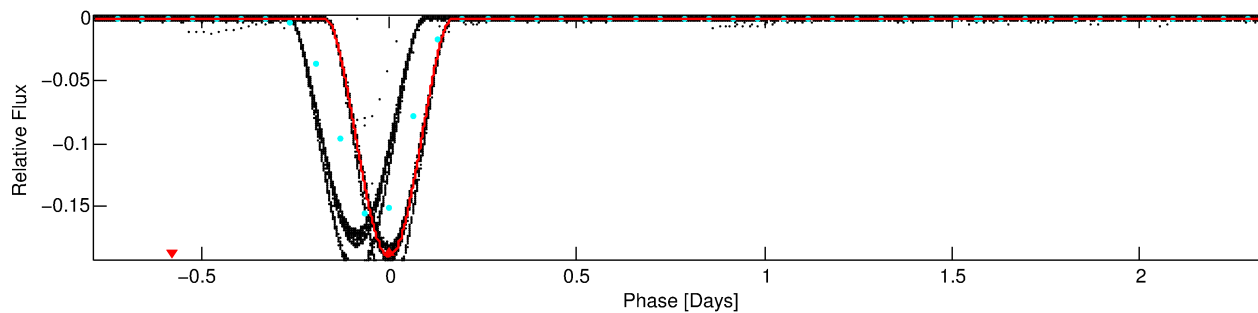
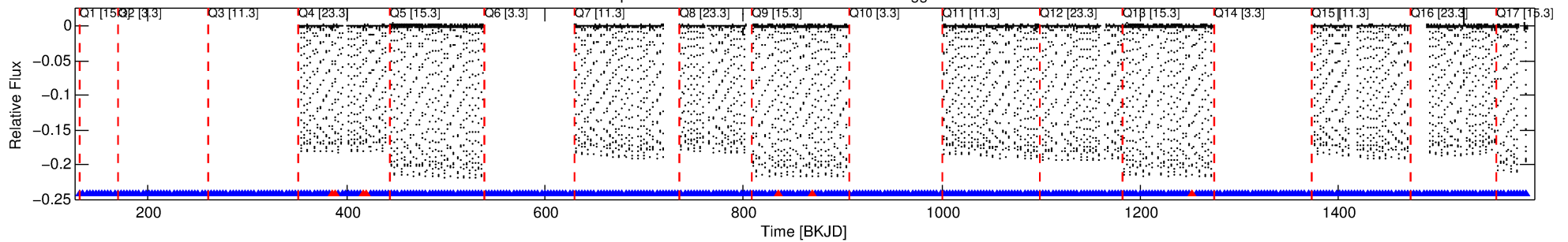
## Ephemeris Match Information For 004073707-01

No Significant Match Found

# DV One-Page Summary

KIC: 4073707 Candidate: 1 of 1 Period: 3.141 d  
KOI: K03525 Corr: No Ephemeris Match

Kp: 14.12 R\*: 0.98 Rs Teff: 6074.0 K Logg: 4.45 Fe/H: -0.260



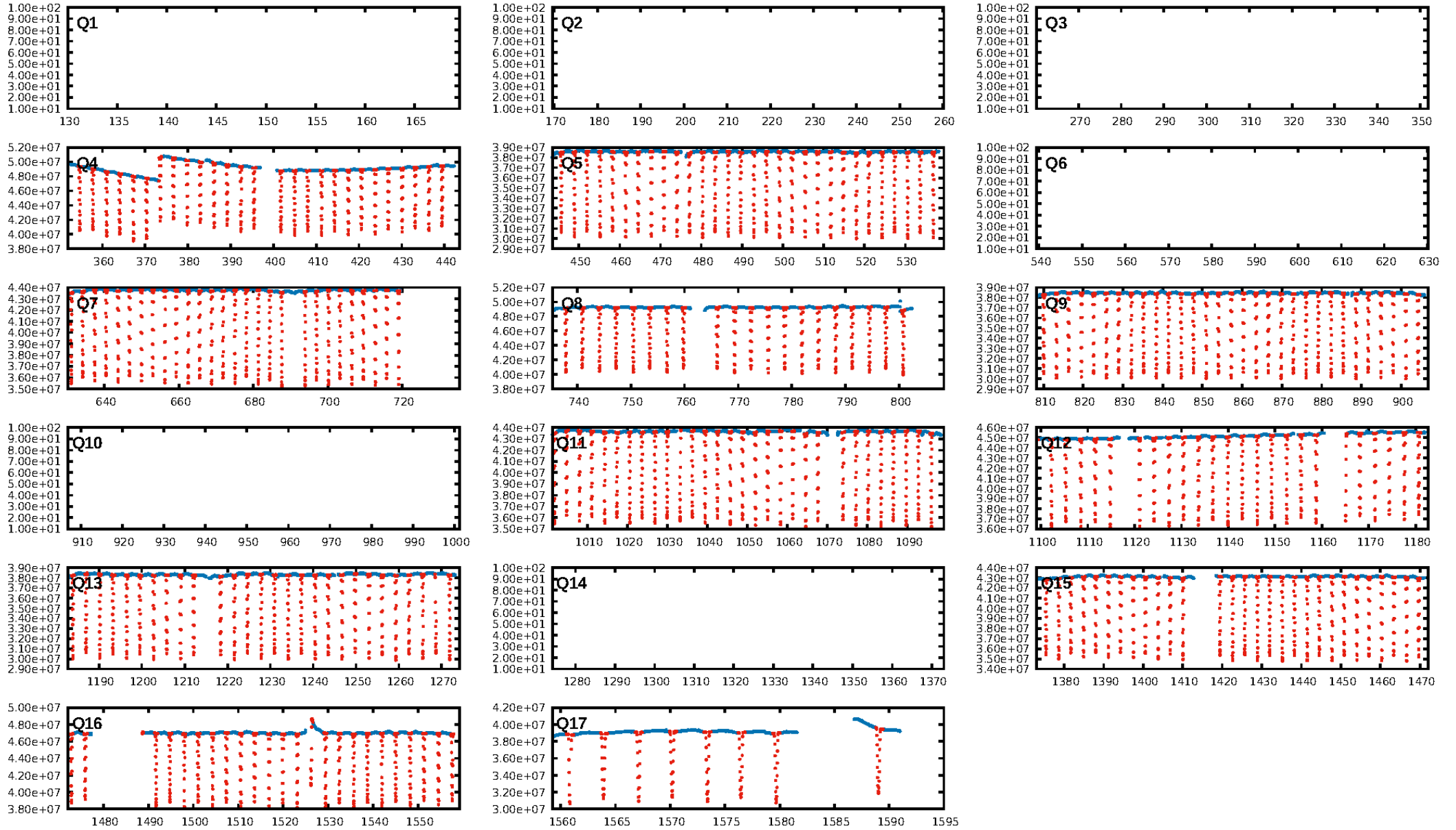
## DV Fit Results:

Period = 3.14102 [0.00000] d  
Epoch = 131.6775 [0.0000] BKJD  
Rp/R\* = 0.5315 [0.0249]  
a/R\* = 4.13 [0.03]  
b = 0.80 [0.04]  
Seff = 668.34 [263.08]  
Teq = 1297 [128] K  
Rp = 56.61 [17.37] Re  
a = 0.0417 [0.0105] AU  
Ag = 0.01 [0.01] [-198.11σ]  
Teffp = 576 [95] K [-4.54σ]

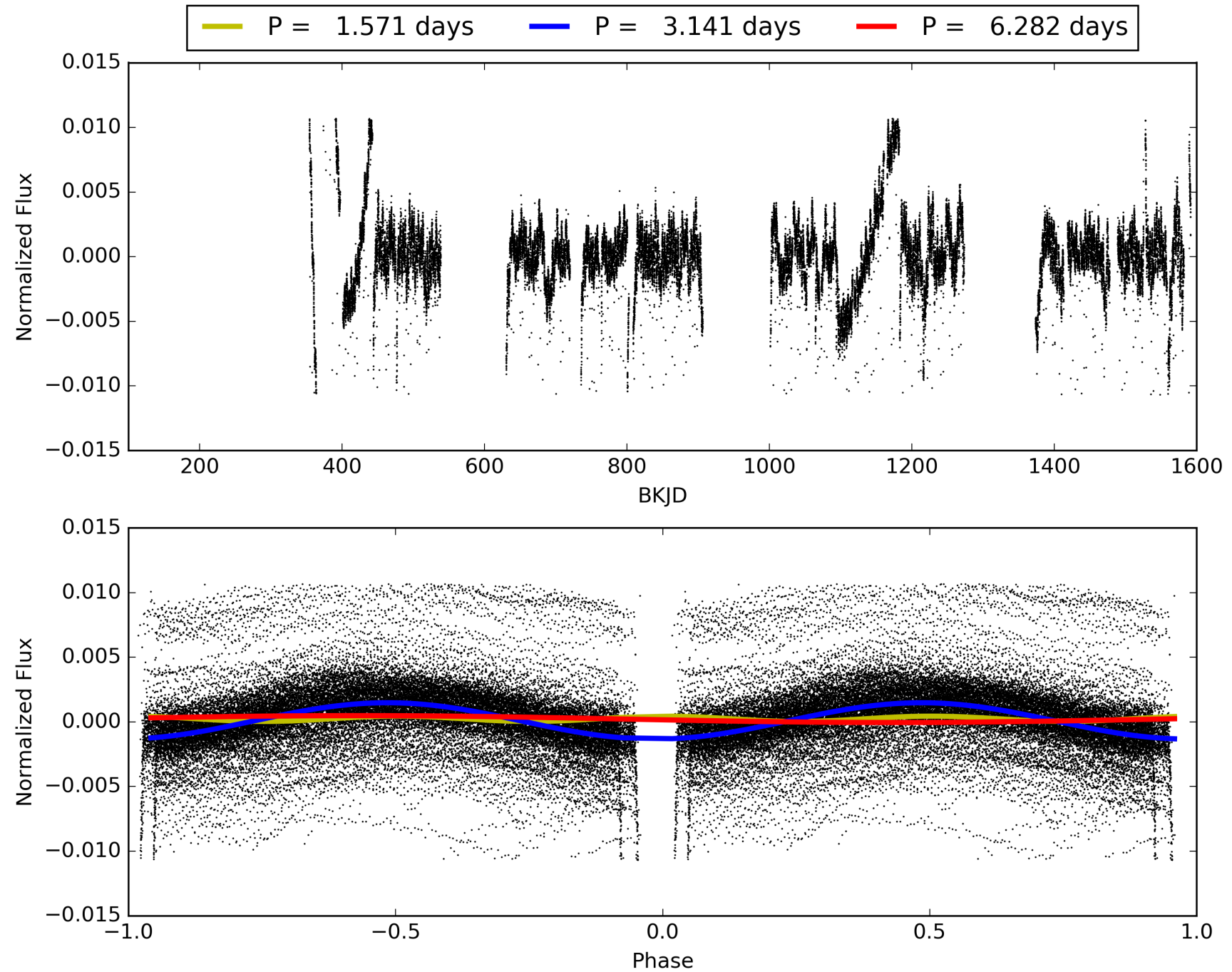
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.97 [263/270]  
GhostDiagnostic-chr: 3.52  
Centroid-sig: 0.0%  
Centroid-so: 2.295 arcsec [3719.80σ]  
OotOffset-rm: 9.699 arcsec [141.81σ]  
KicOffset-rm: 0.054 arcsec [0.79σ]  
OotOffset-st: 0/0/0/4 [4]  
KicOffset-st: 0/3/4/4 [11]  
DiffImageQuality-fgm: 1.00 [11/11]  
DiffImageOverlap-fno: 1.00 [11/11]

# TCE 004073707-01, PDC Light Curves

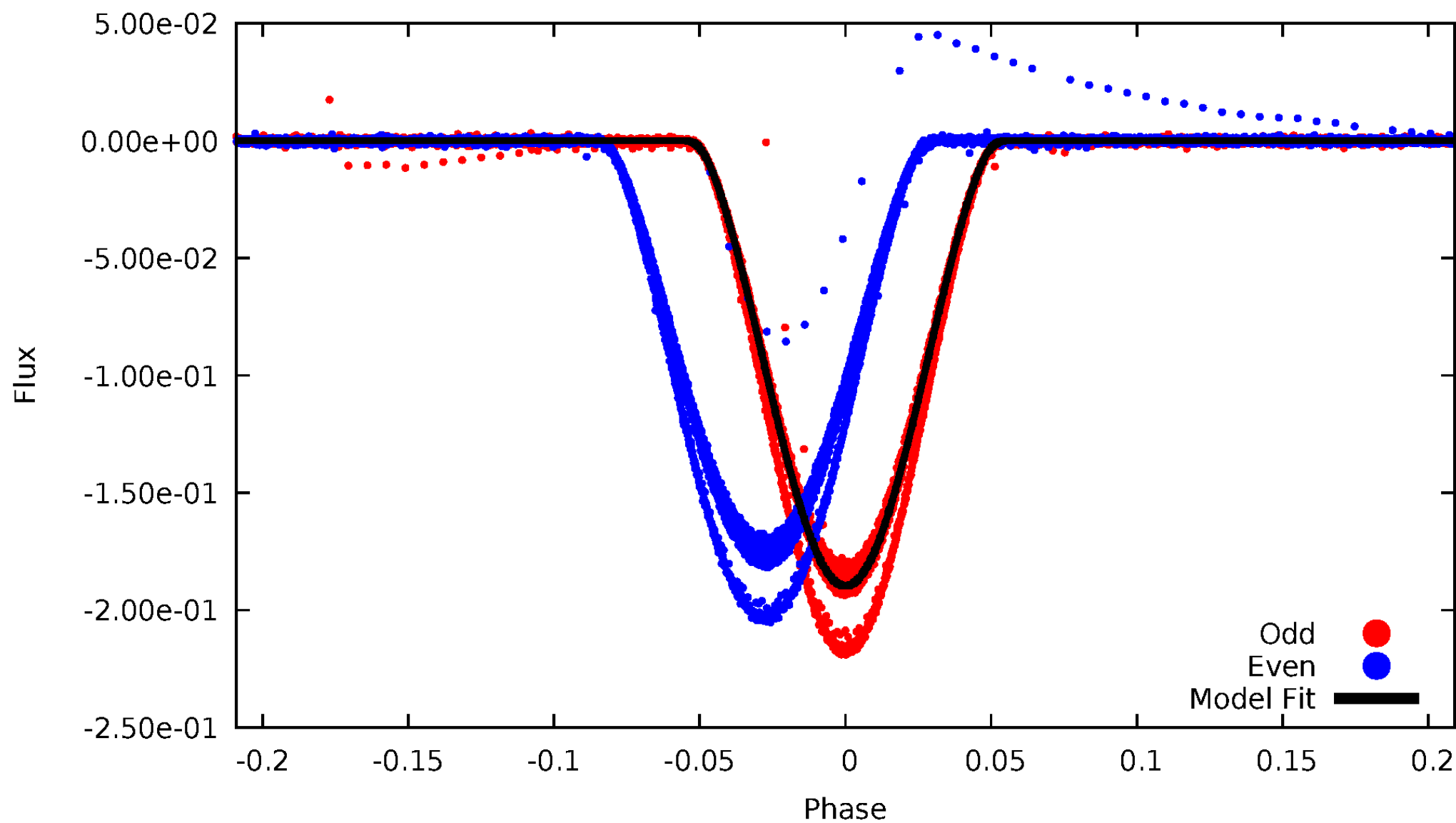


TCE 004073707-01



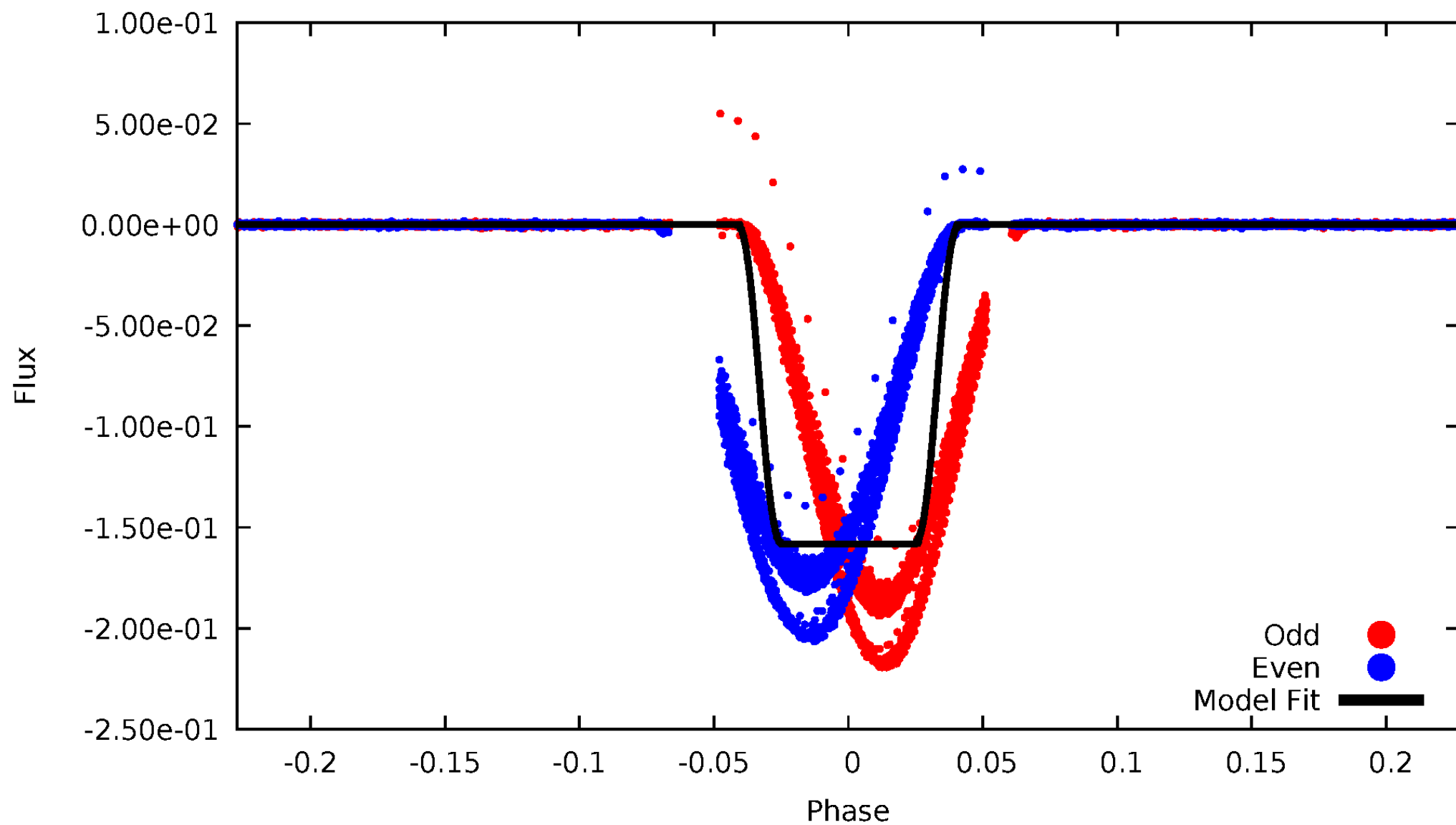
# DV Odd/Even

TCE 004073707-01



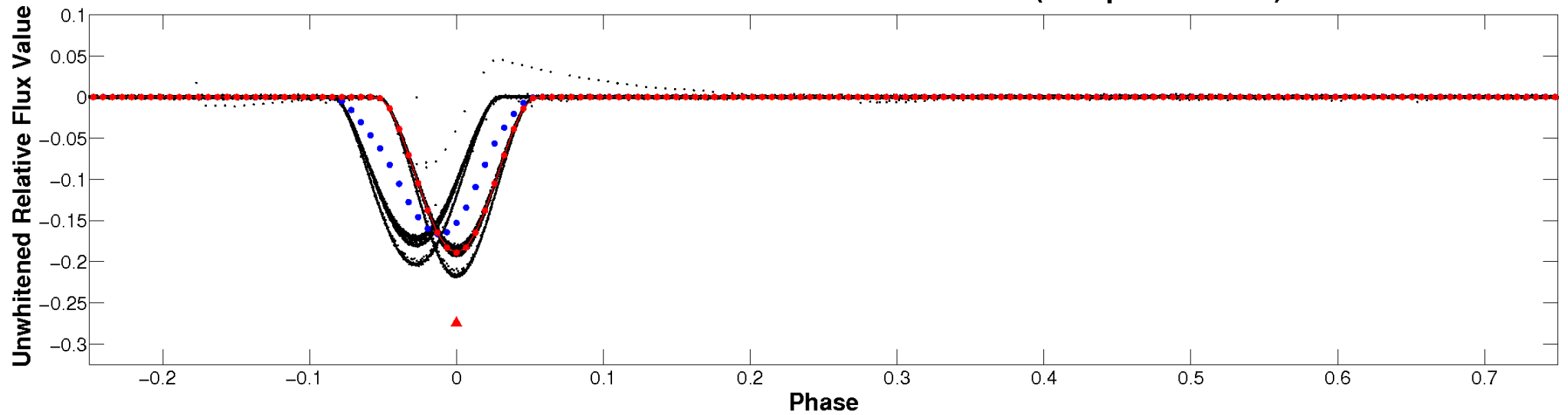
# ALT Odd/Even

TCE 004073707-01

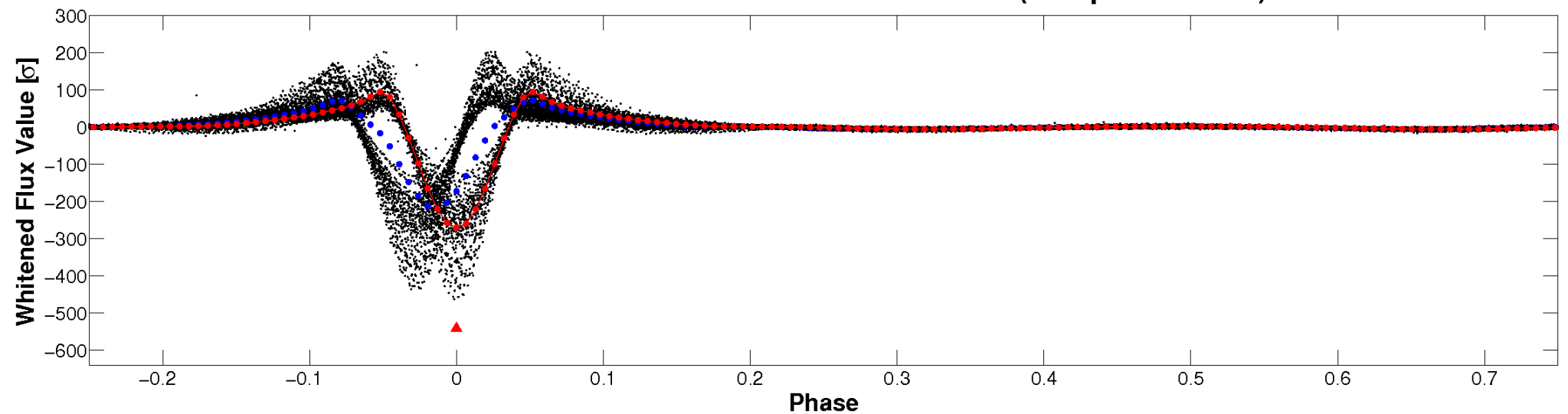


# Non-Whitened Vs. Whitened Light Curve

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

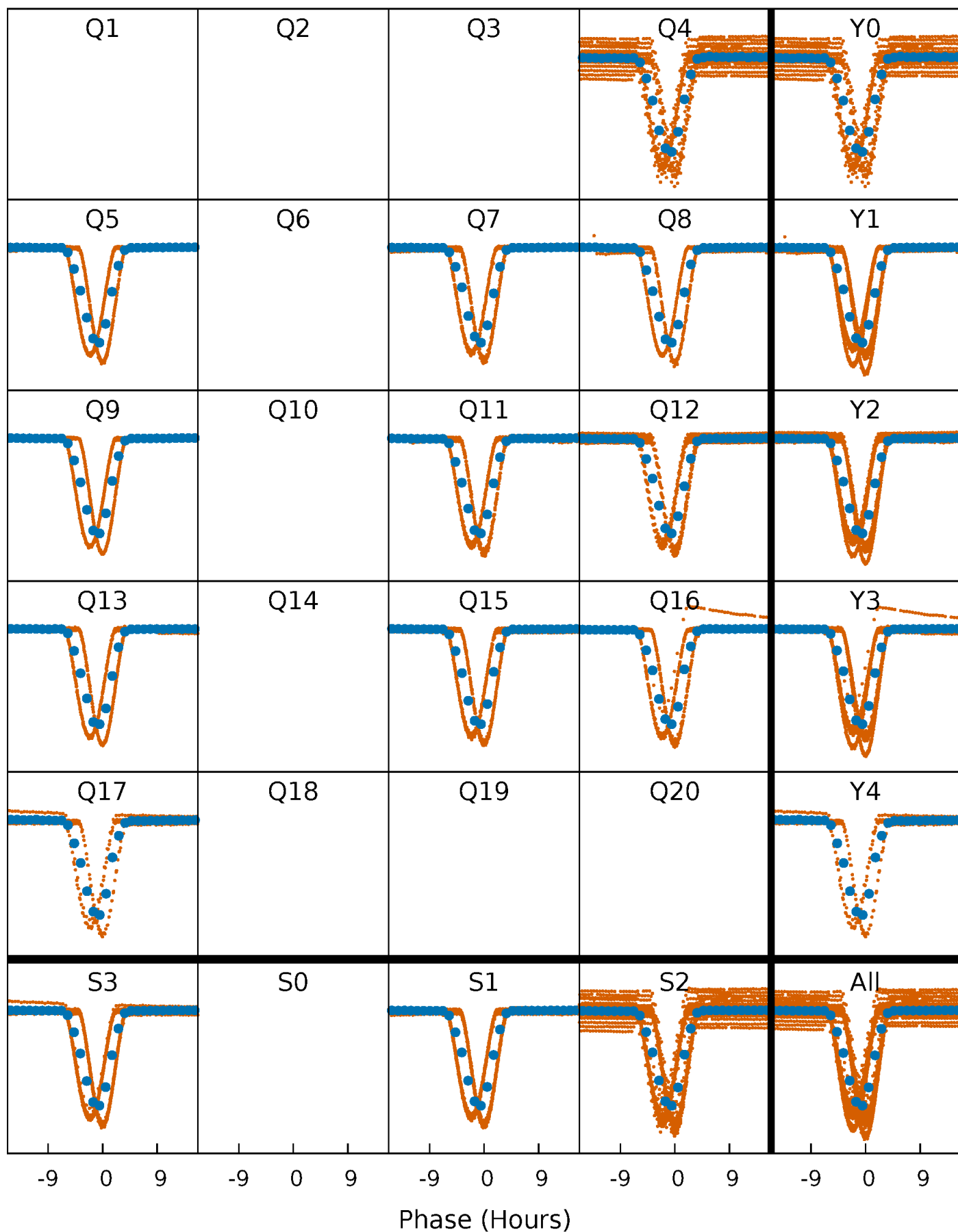


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

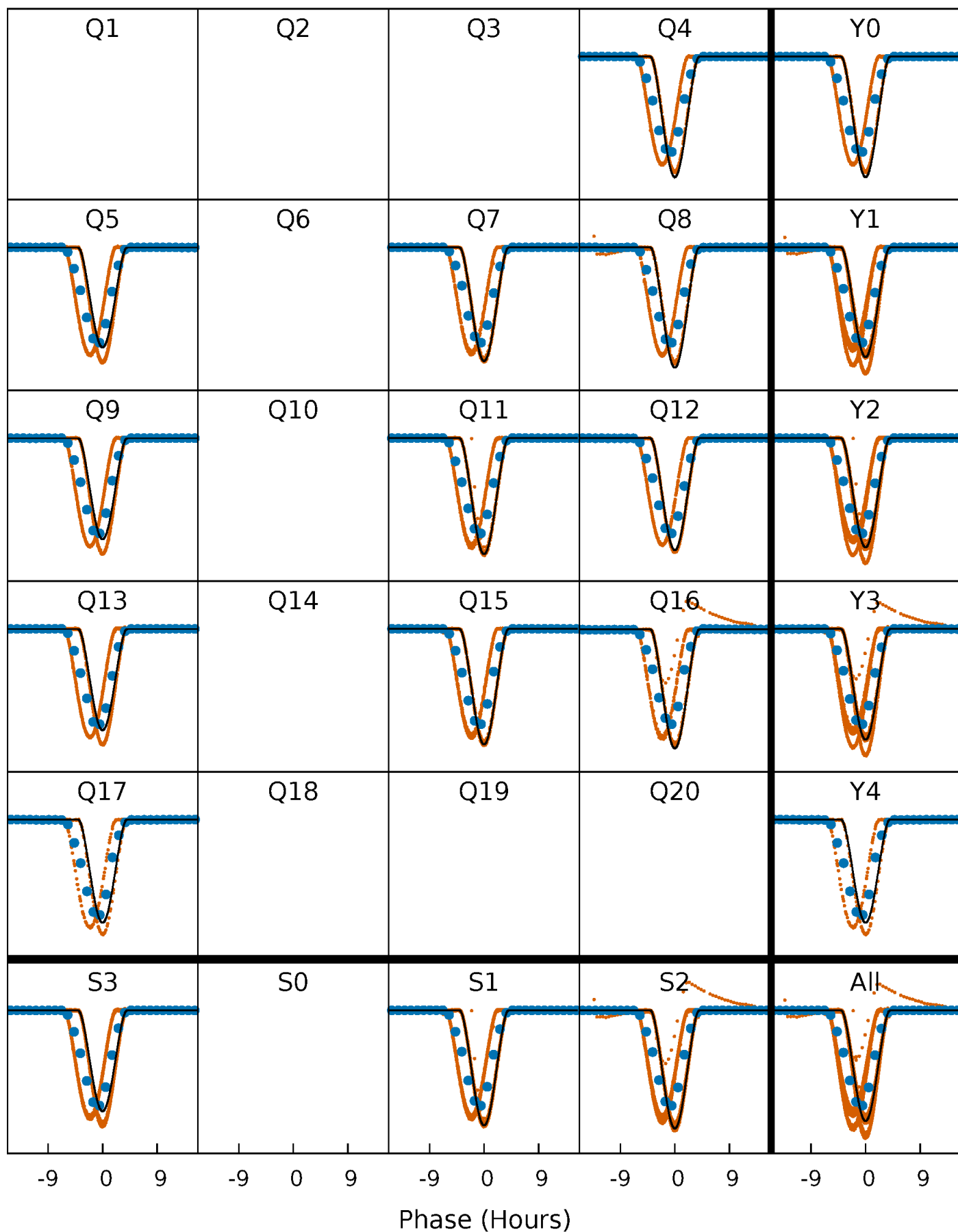
TCE 004073707-01 P= 3.141016 Days  $T_0=131.677454$  (BKJD)





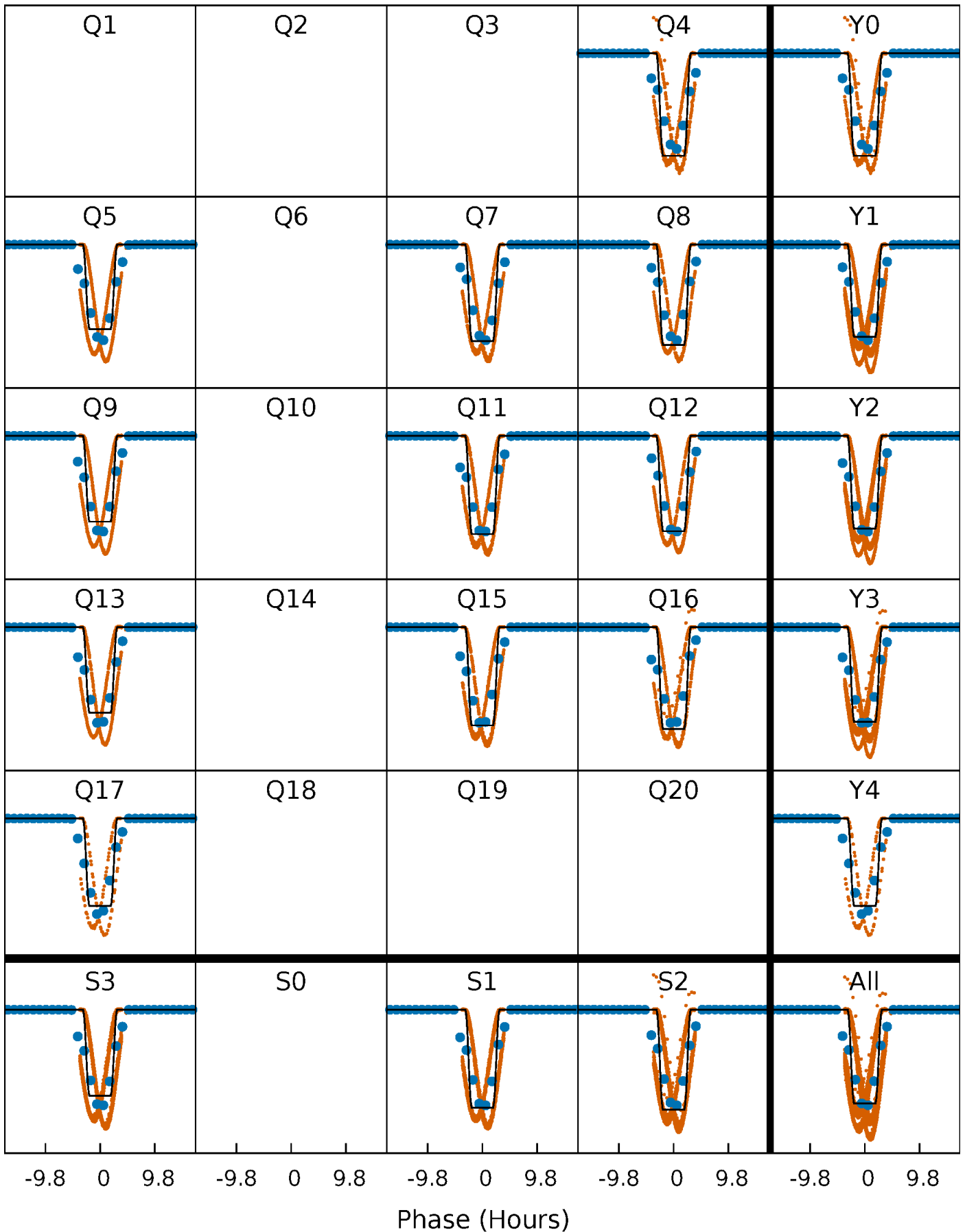
# DV Quarter-Phased Transit Curves

TCE 004073707-01 P= 3.141016 Days  $T_0=131.677454$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

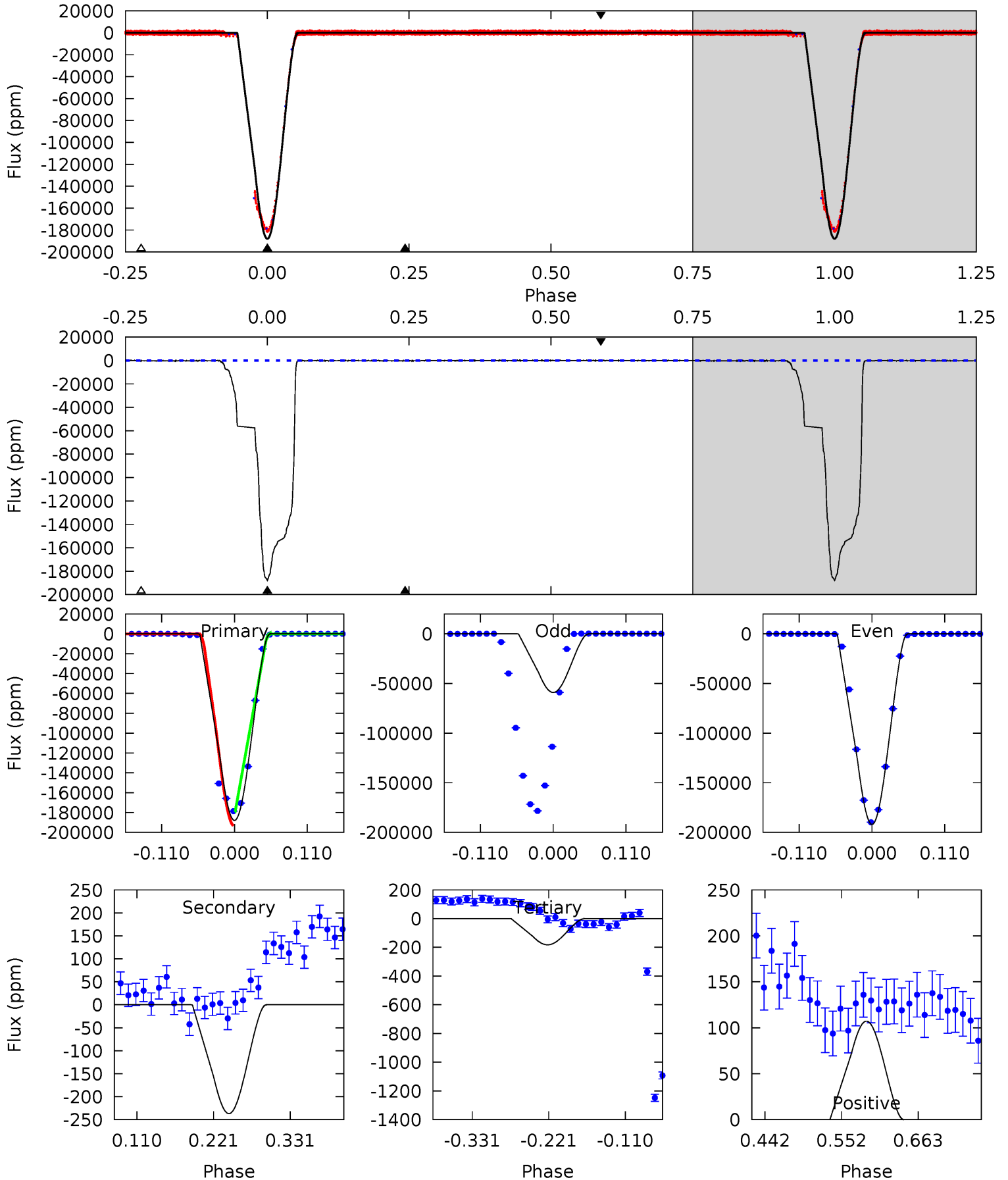
TCE 004073707-01 P= 3.141047 Days  $T_0=131.629605$  (BKJD)



# DV Model-Shift Uniqueness Test

004073707-01, P = 3.141016 Days, E = 131.677454 Days

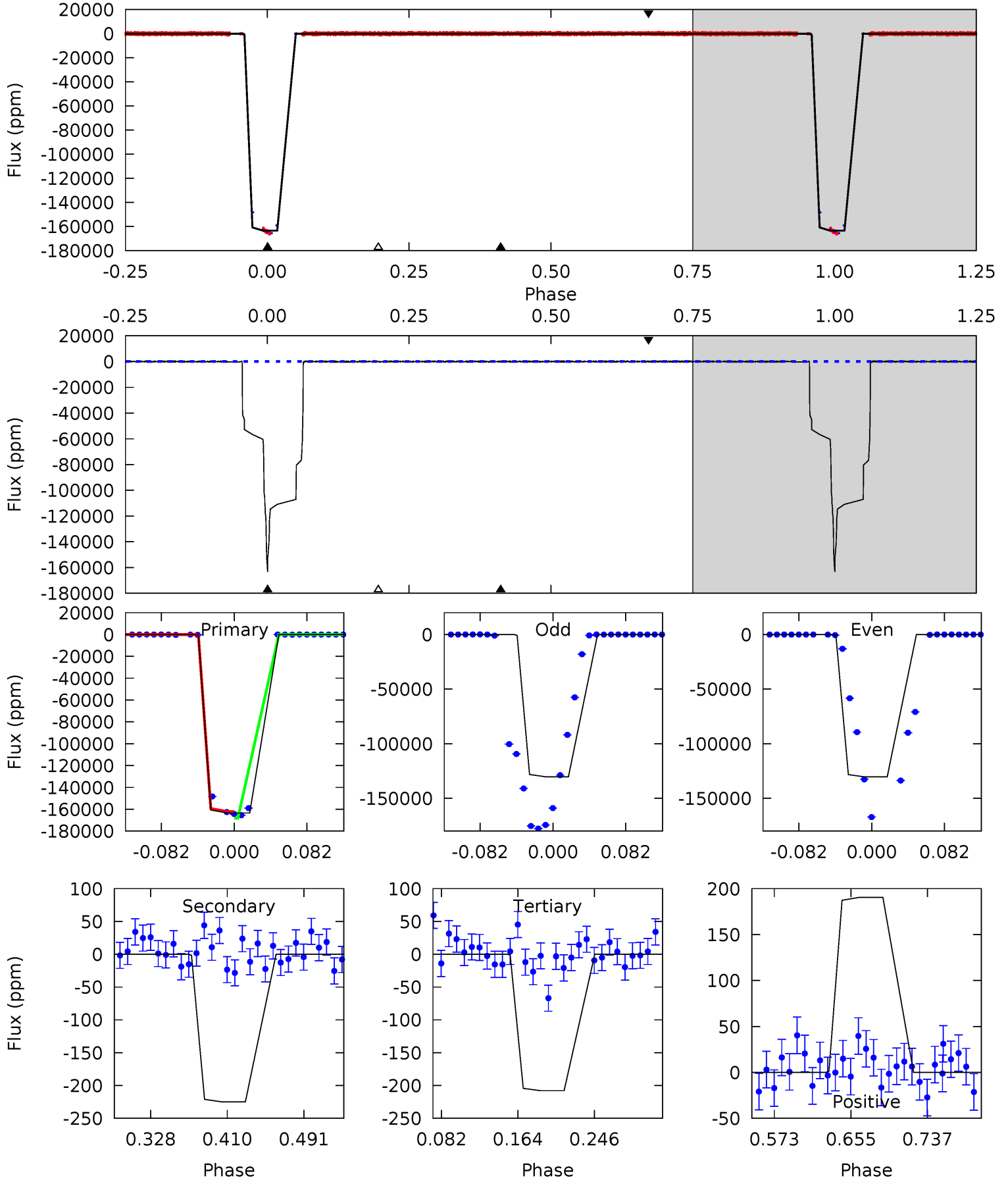
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7455	9.41	7.24	4.25	4.54	1.60	3.79	7447	7450	2.17	5.15	5649	0.94	0.00	0



# Alt Model-Shift Uniqueness Test

004073707-01, P = 3.141047 Days, E = 131.629605 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
2993	4.12	3.81	3.49	4.61	1.74	1.05	2989	2989	0.31	0.63	2.22	1.02	0.00	0



### Stellar Parameters For KIC 004073707

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6074^{+190}_{-233}$	$4.450^{+0.084}_{-0.196}$	$-0.260^{+0.300}_{-0.300}$	$0.976^{+0.296}_{-0.127}$	$0.979^{+0.142}_{-0.129}$	$1.484^{+0.553}_{-0.782}$
	+3%/-4%	+2%/-4%	+115%/-115%	+30%/-13%	+15%/-13%	+37%/-53%
Source	KIC0	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 004073707-01 / KOI 3525.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-237 \pm 25$	$57.57^{+8.37}_{-5.30}$	$1835^{+128}_{-98}$	$-2323^{+66}_{-91}$	$0.066^{+0.016}_{-0.014}$
Alt.	$-225 \pm 55$	$42.97^{+7.54}_{-4.72}$	$1833^{+135}_{-106}$	$-2266^{+102}_{-115}$	$0.113^{+0.040}_{-0.038}$

$T_{\text{max}}$  = 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

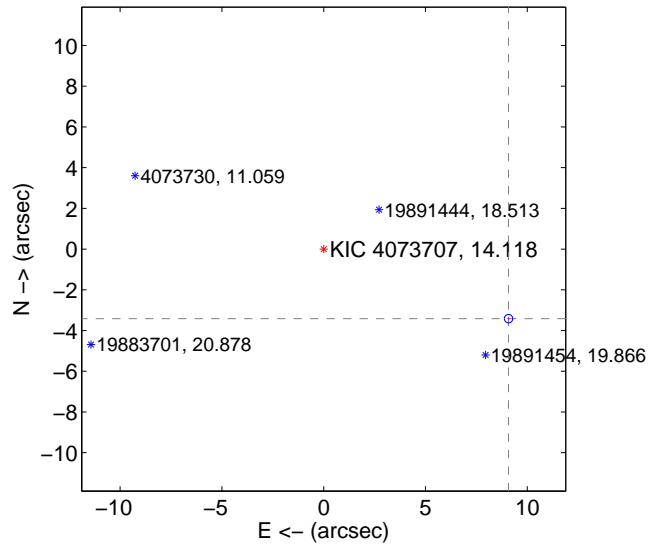
Supplemental centroid analysis for 004073707-01. Kepler magnitude: 14.12. Transit SNR 6101.16

There are 11 quarters with good PRF difference image offsets

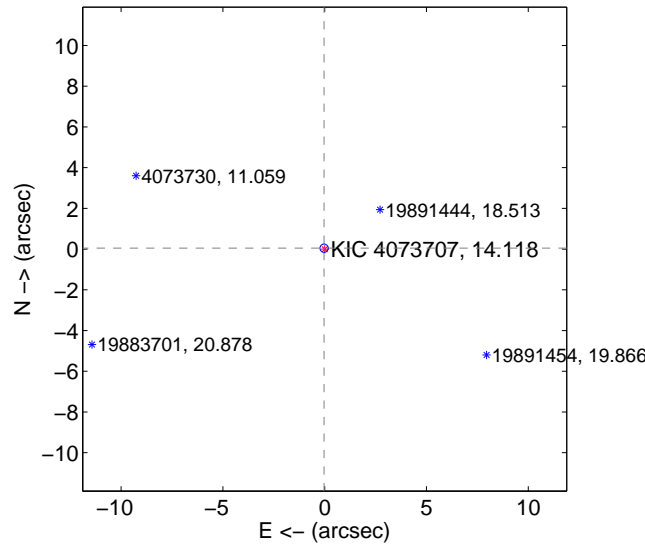
The OOT PRF centroid is offset from the target star catalog position by about 9.69 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$9.699 \pm 0.068$	141.81	$-9.078 \pm 0.068$	$-3.416 \pm 0.074$
PRF-fit source offset from KIC position	$0.054 \pm 0.068$	0.79	$0.029 \pm 0.067$	$0.045 \pm 0.068$
photometric centroid source offset	$2.30 \pm 0.00$	3719.80	$2.28 \pm 0.00$	$0.30 \pm 0.00$

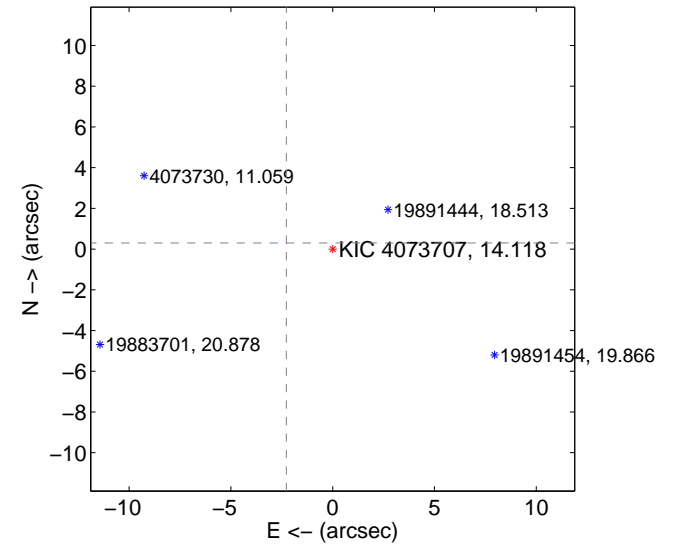
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

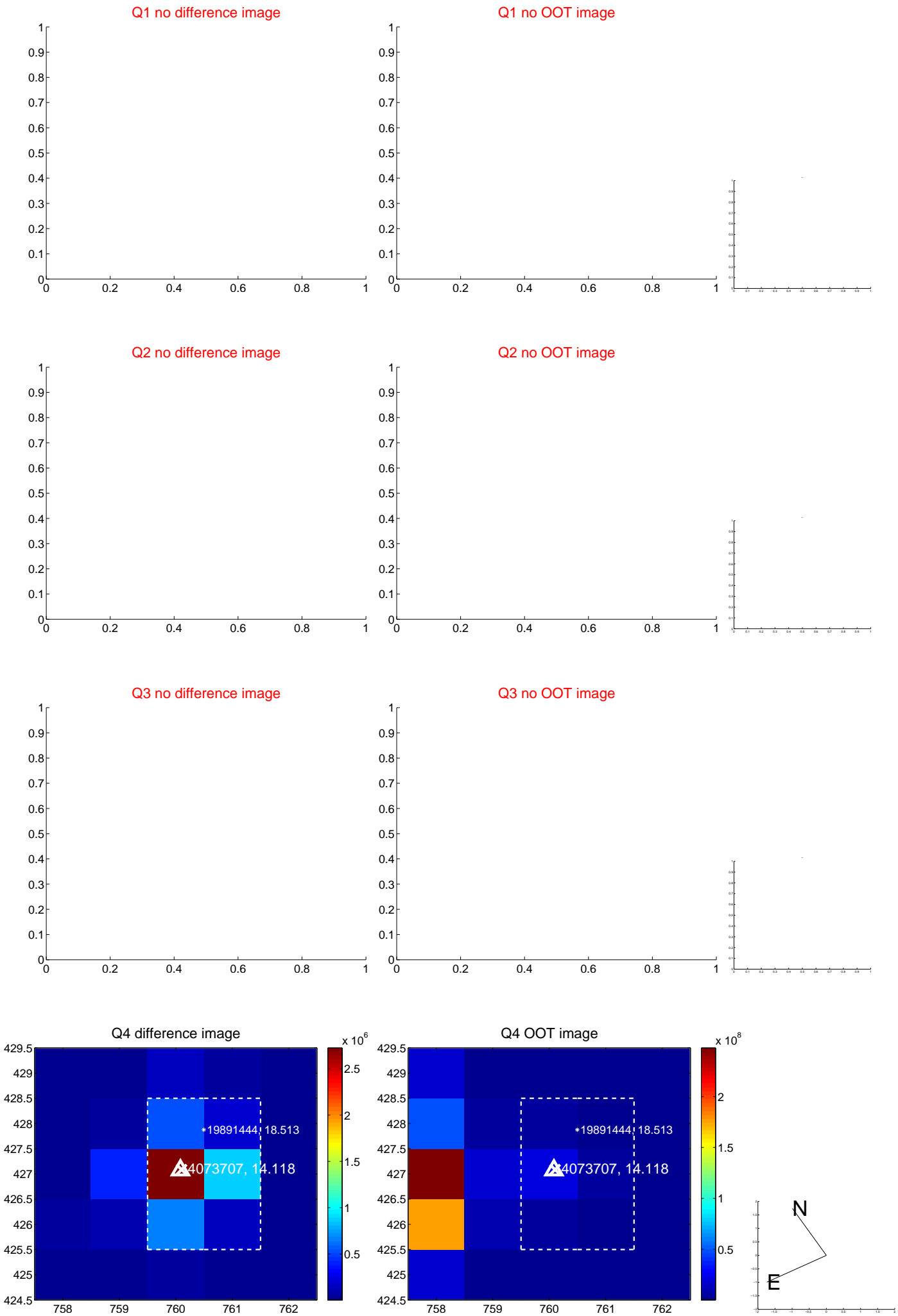


offset from photometric centroids

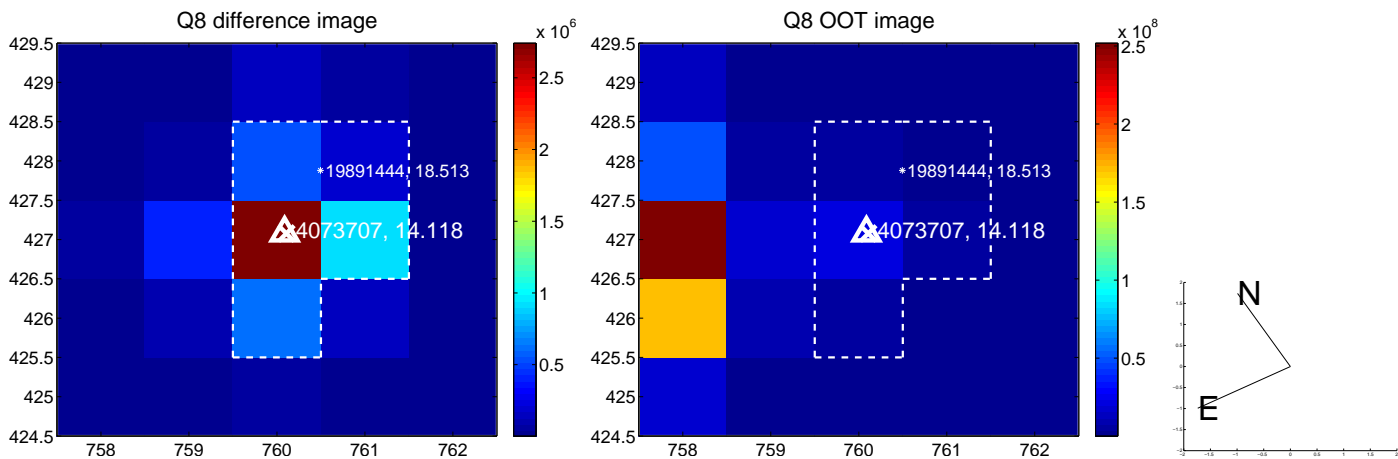
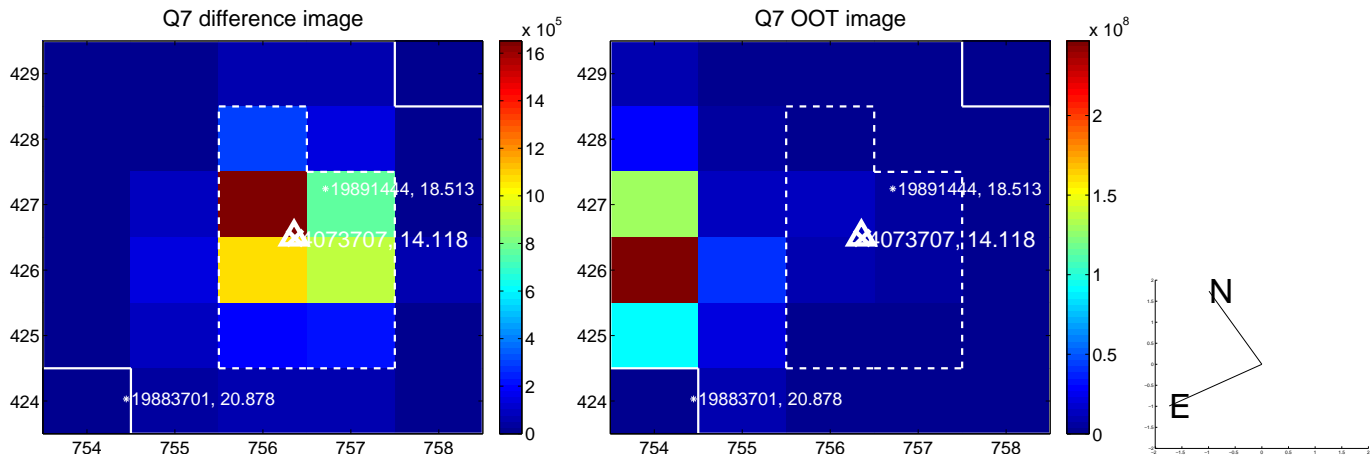
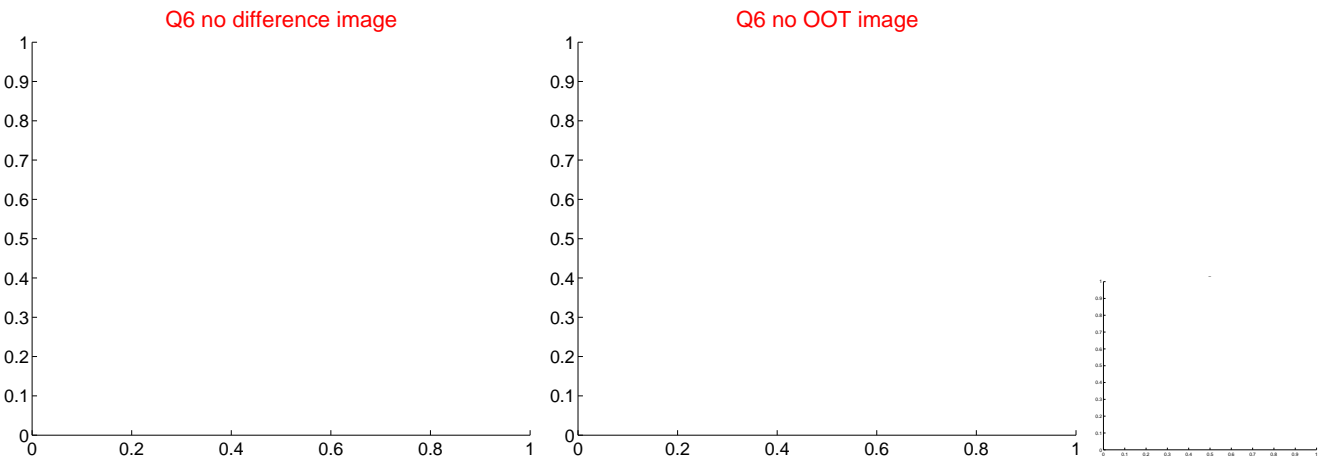
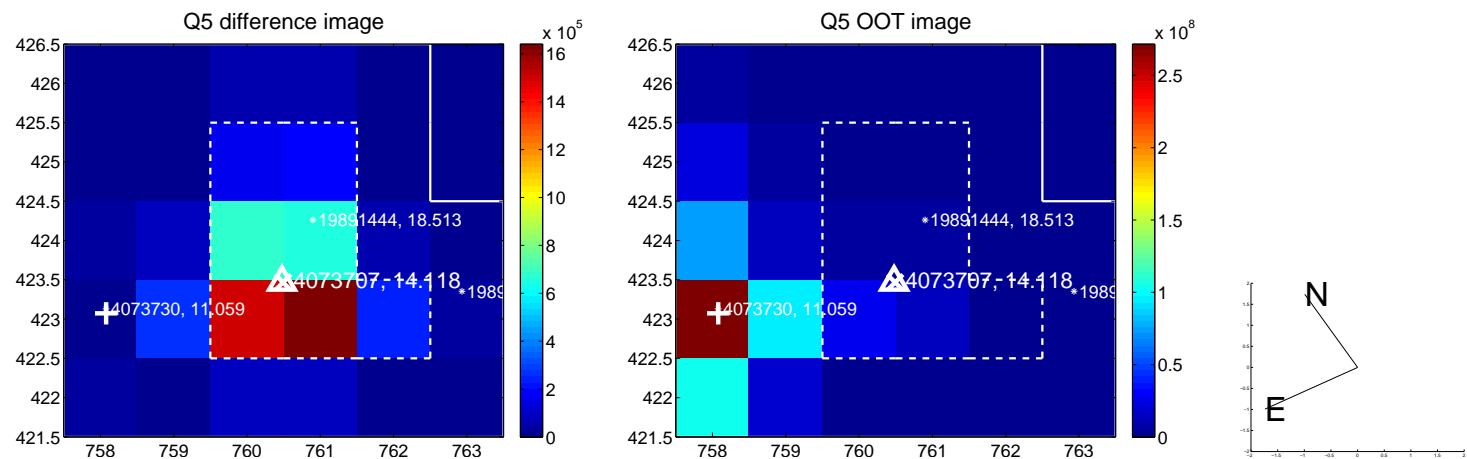


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

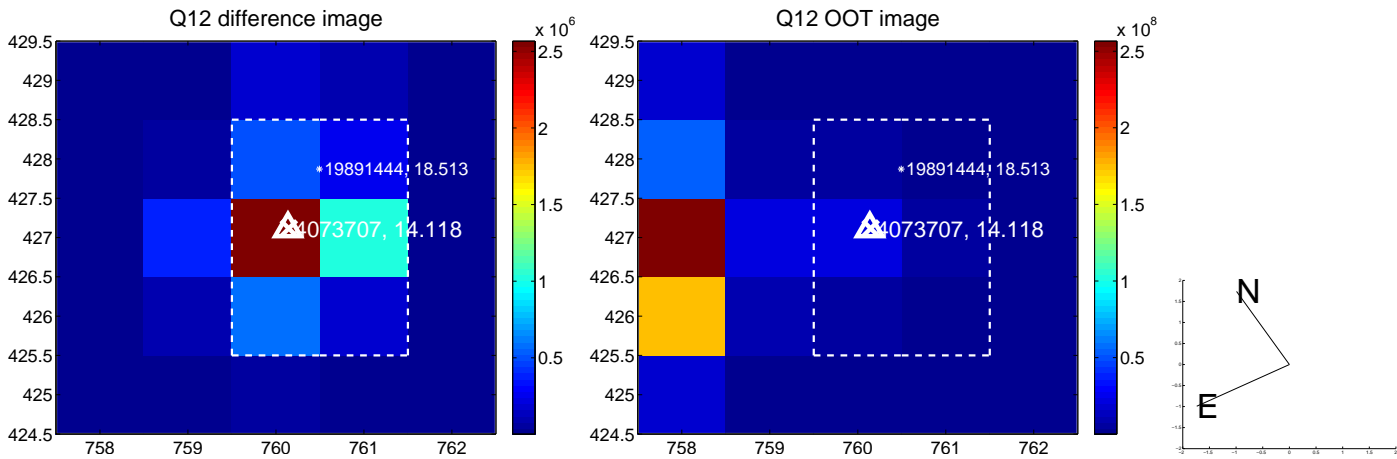
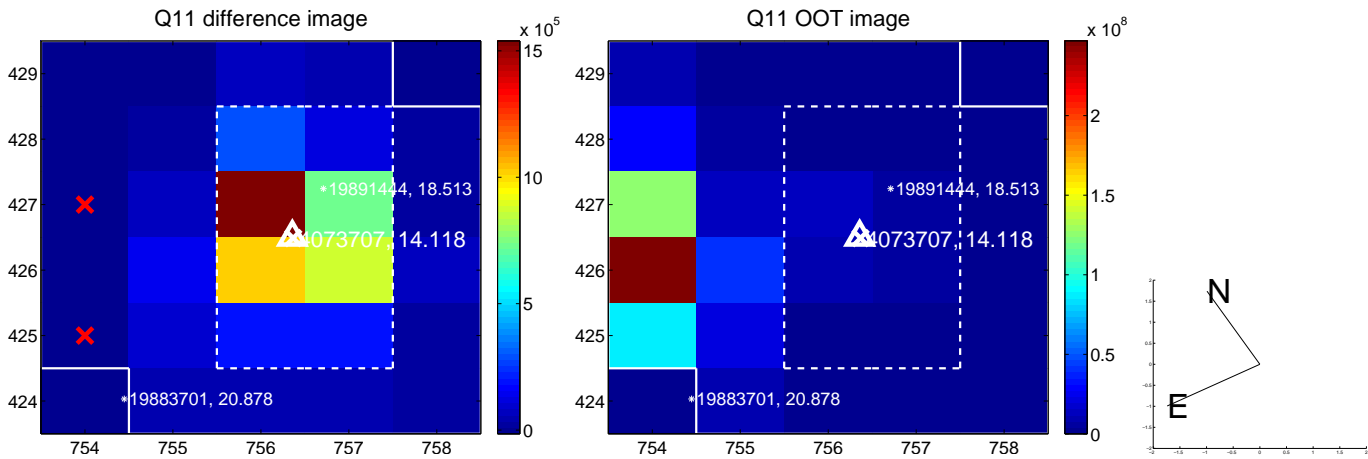
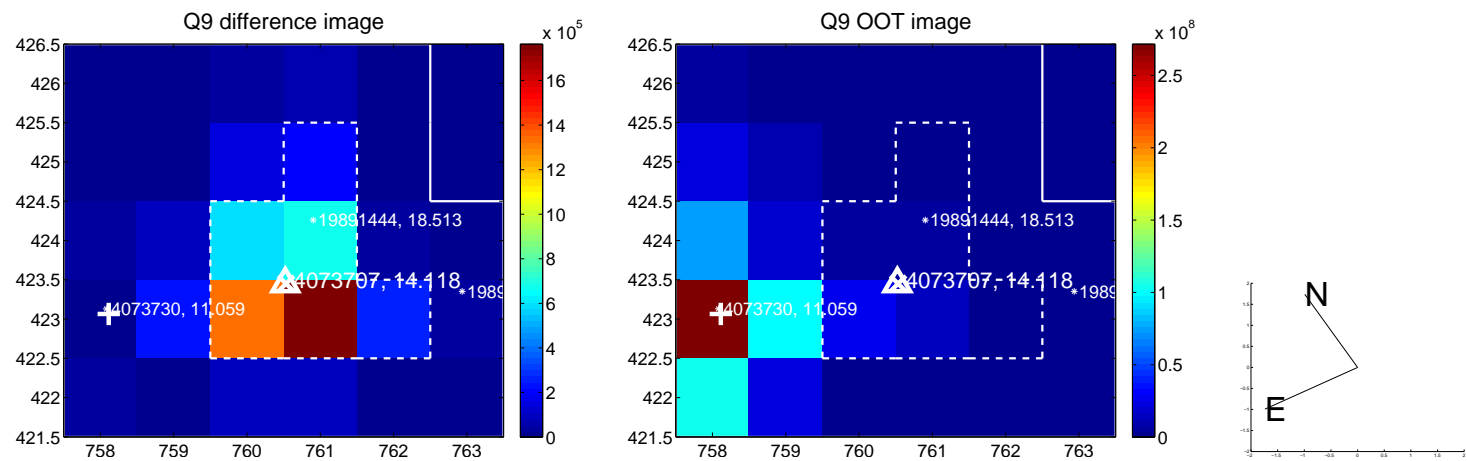


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

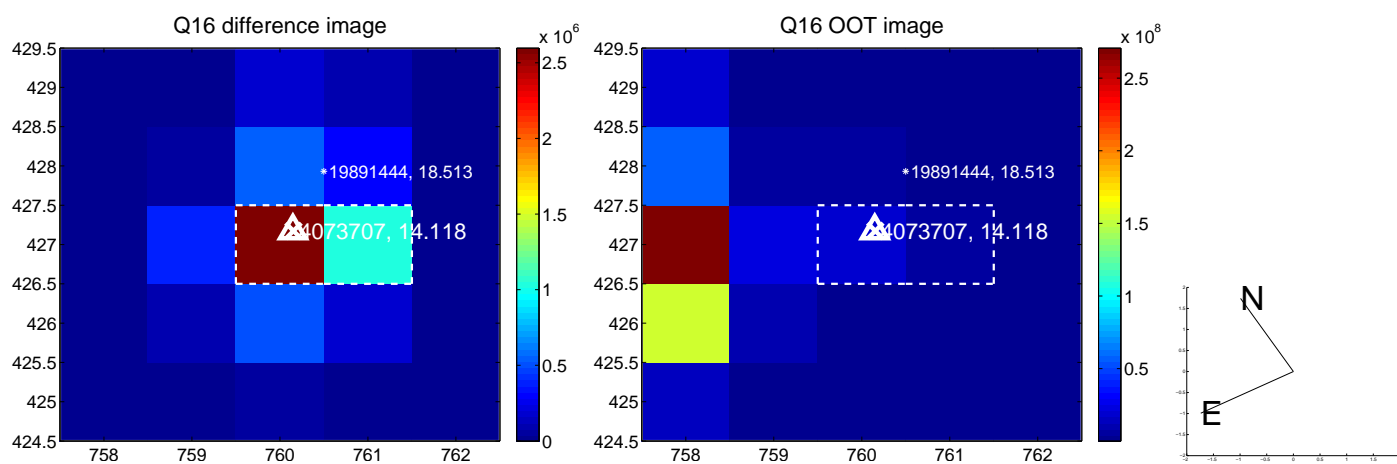
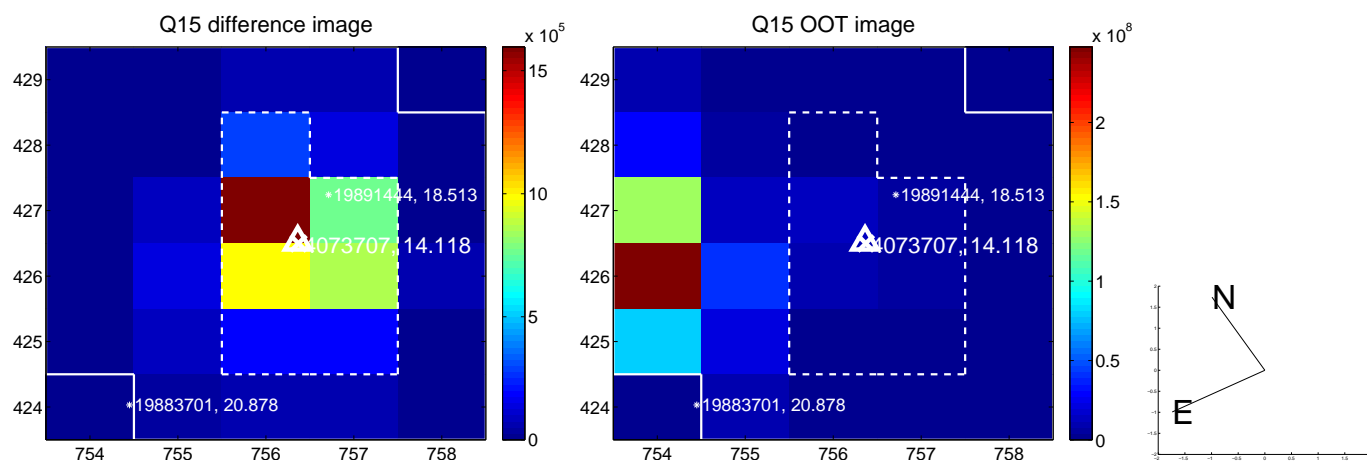
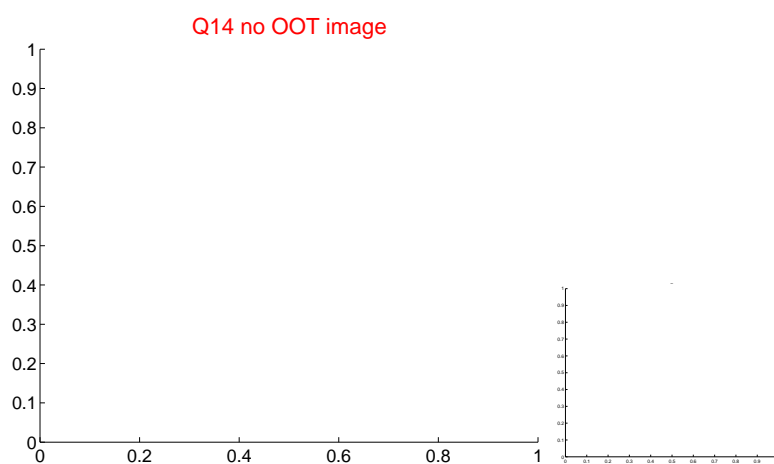
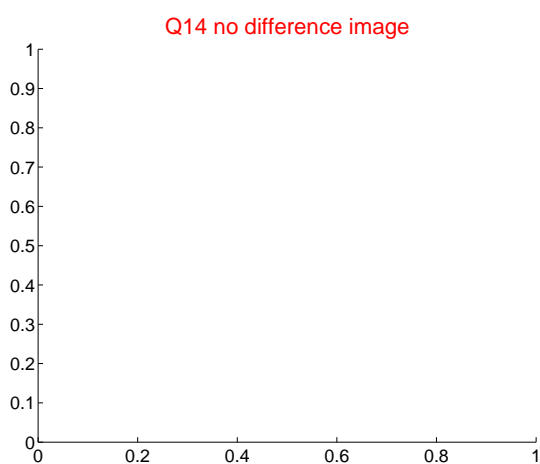
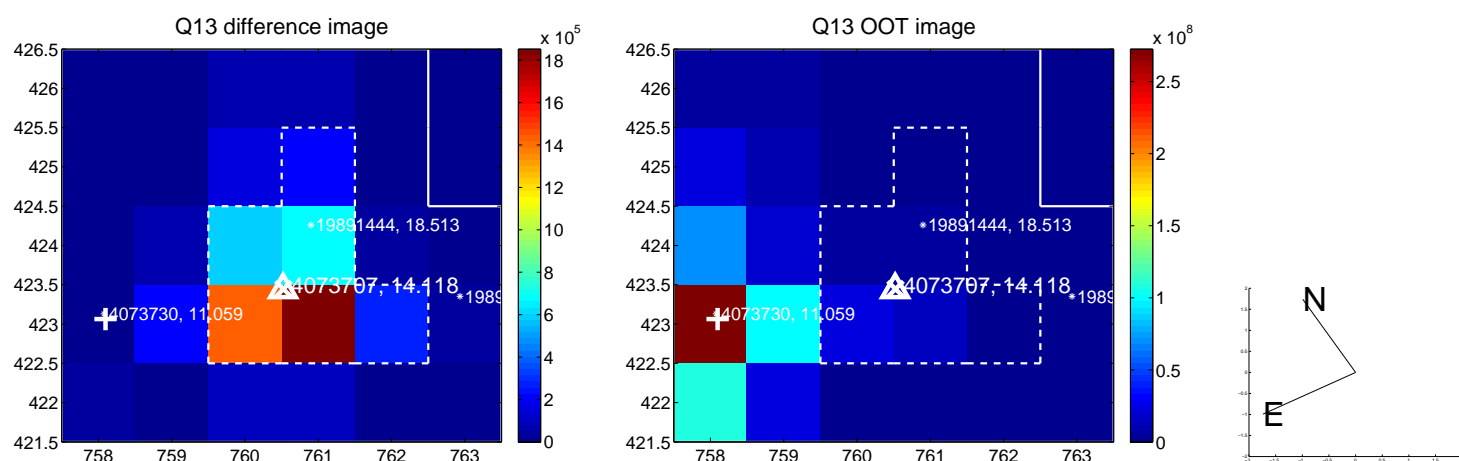




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

