

# KIC 008316503

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008316503-01	OBS	7019.01	5.065330	134.981931	155422.3	4.902	13902.0	11593.4	1.29	6350	60.49	707.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008316503-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—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.

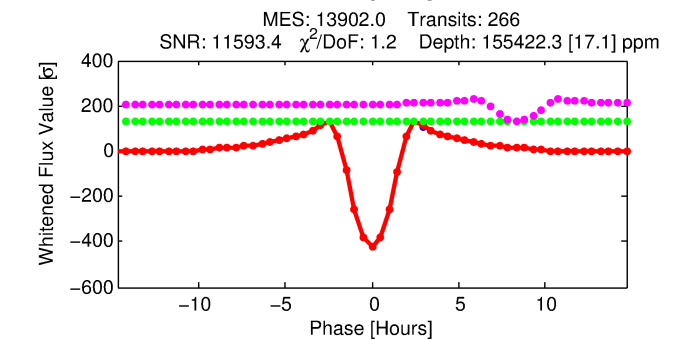
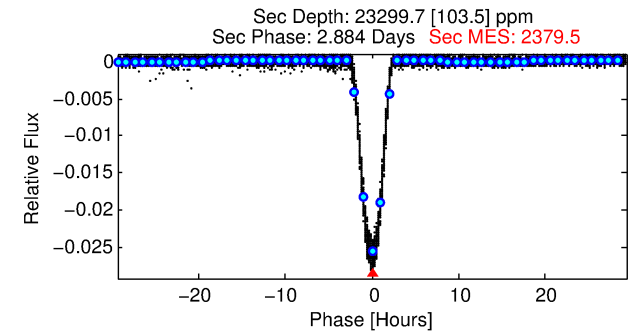
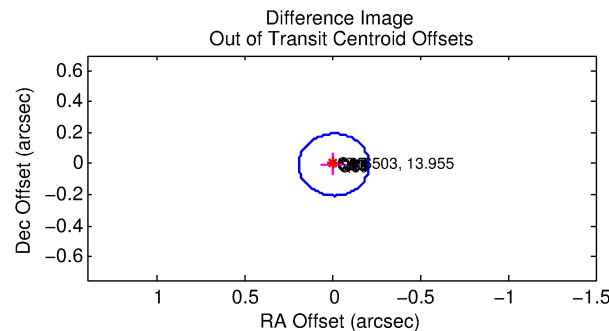
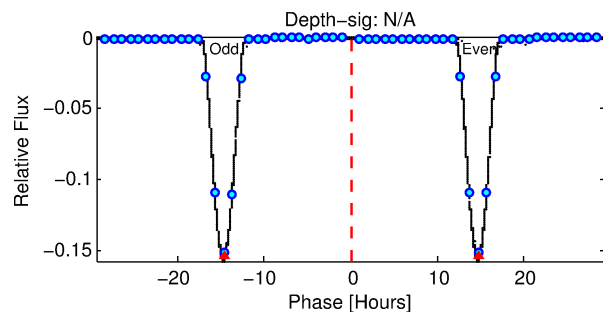
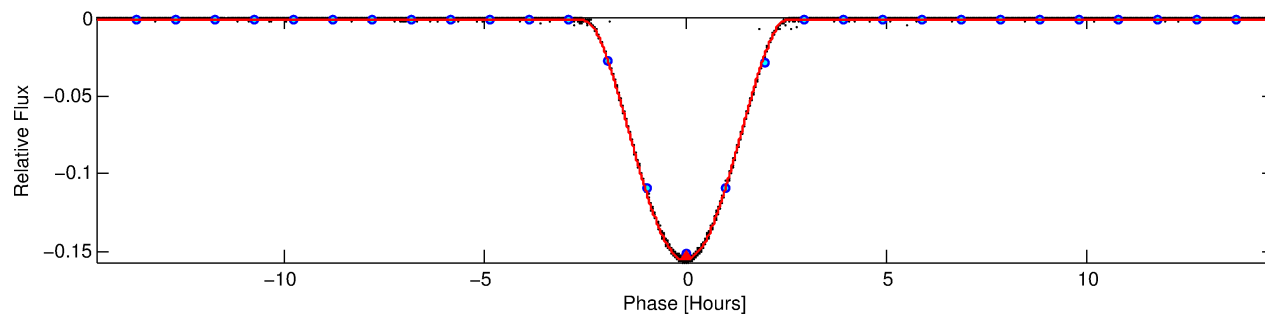
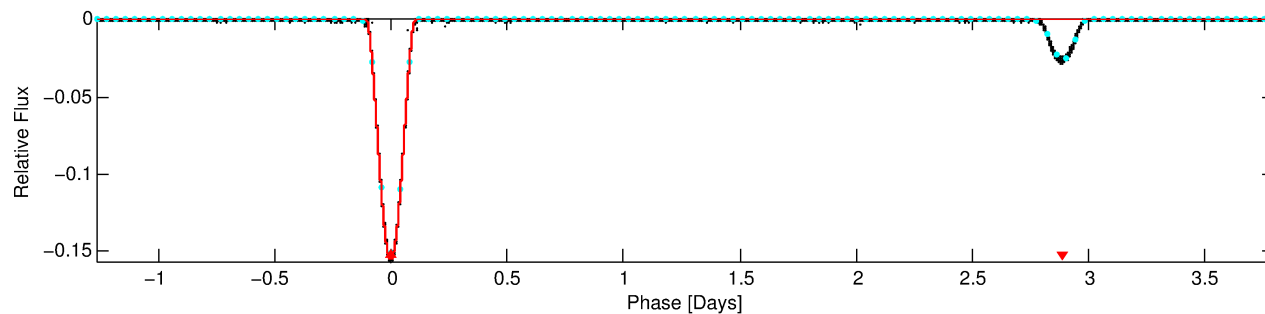
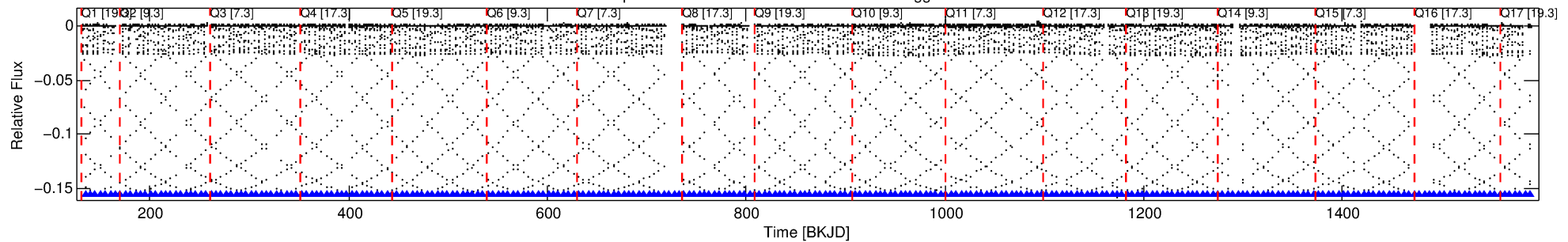
## Ephemeris Match Information For 008316503-01

No Significant Match Found

# DV One-Page Summary

KIC: 8316503 Candidate: 1 of 1 Period: 5.065 d  
KOI: K07019.01 Corr: 1.000

Kp: 13.95 R\*: 1.29 Rs Teff: 6350.0 K Logg: 4.23 Fe/H: -0.340



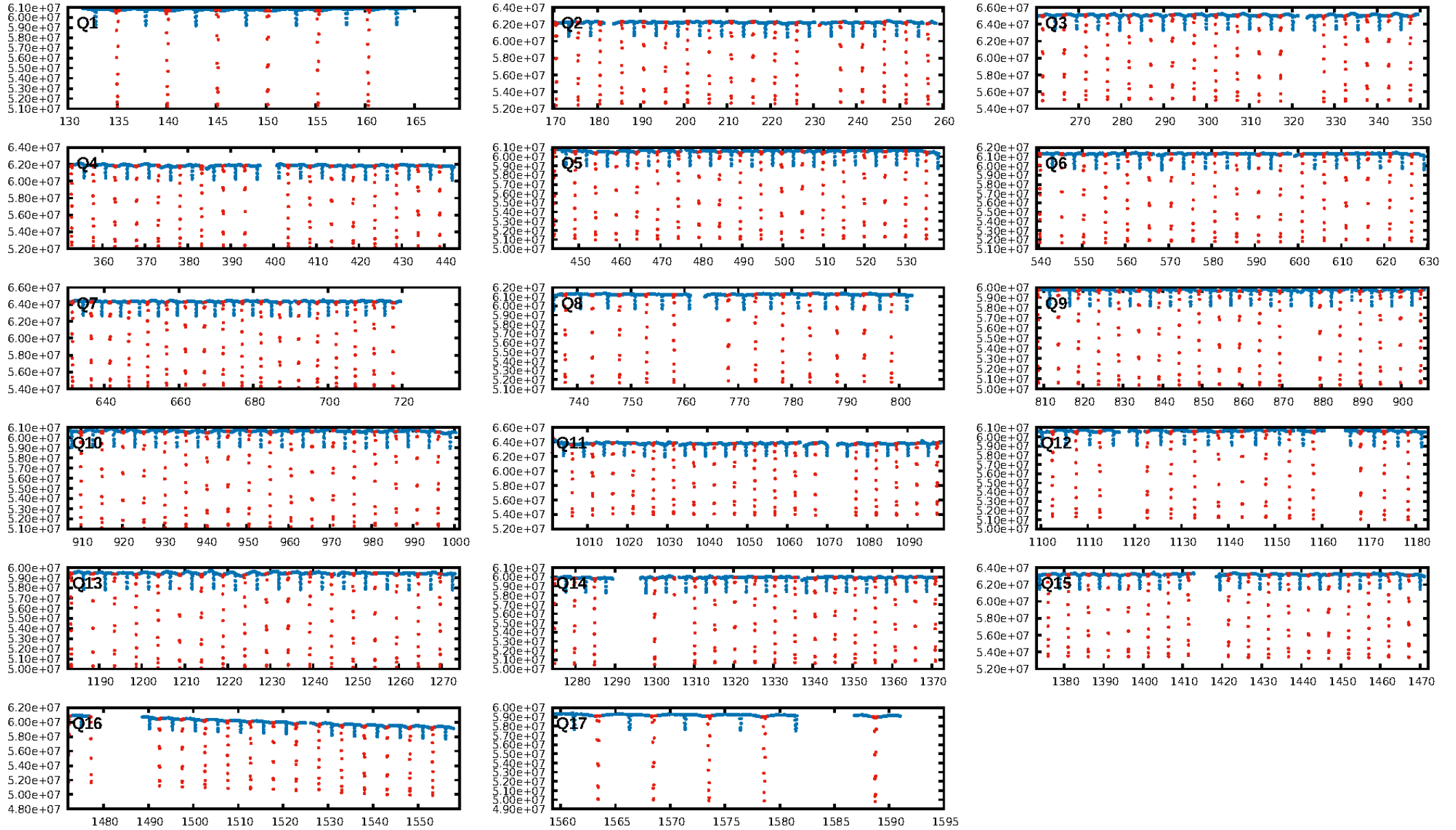
## DV Fit Results:

Period = 5.06533 [0.00000] d  
Epoch = 134.9819 [0.0000] BKJD  
Rp/R\* = 0.4311 [0.0005]  
a/R\* = 9.78 [0.00]  
b = 0.73 [0.00]  
Seff = 707.96 [257.87]  
Teq = 1315 [120] K  
Rp = 60.49 [16.98] Re  
a = 0.0583 [0.0137] AU  
Ag = 11.92 [4.05] [2.69σ]  
Teffp = 3779 [123] K [14.33σ]

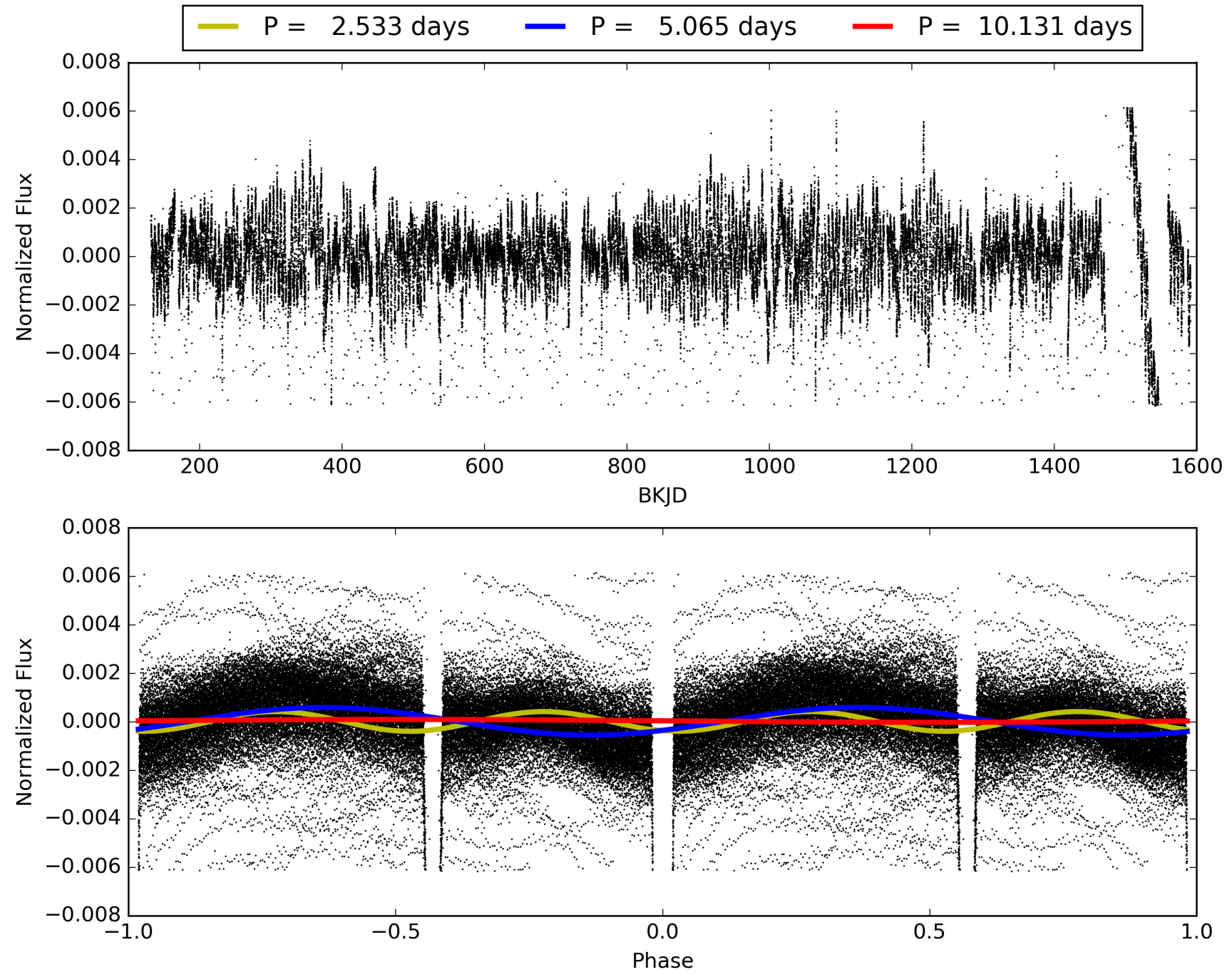
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [255/255]  
GhostDiagnostic-chr: 6.805  
Centroid-sig: 0.0%  
Centroid-so: 0.072 arcsec [124.47σ]  
OotOffset-rm: 0.009 arcsec [0.14σ]  
KicOffset-rm: 0.021 arcsec [0.29σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008316503-01, PDC Light Curves

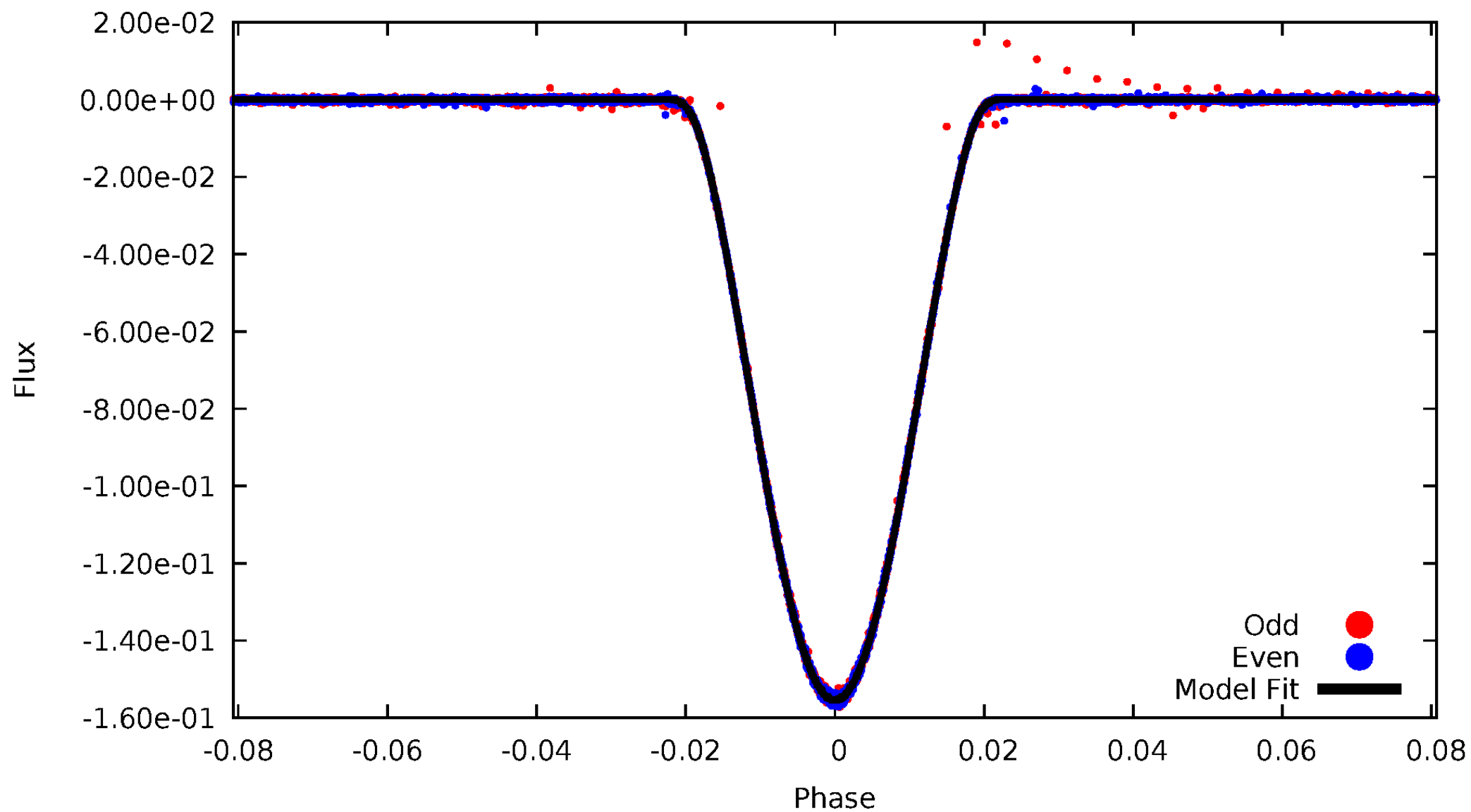


TCE 008316503-01



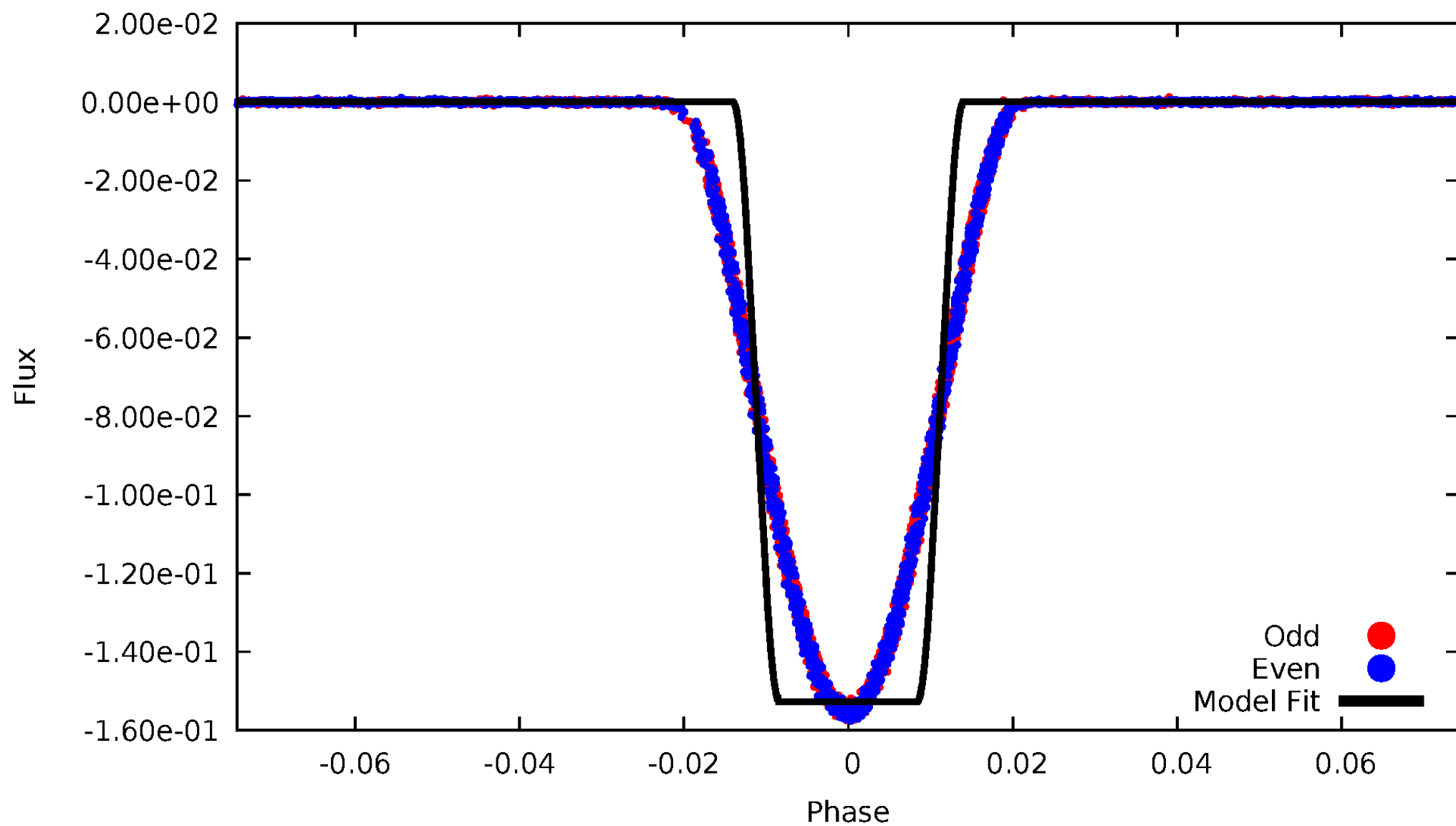
DV Odd/Even

TCE 008316503-01



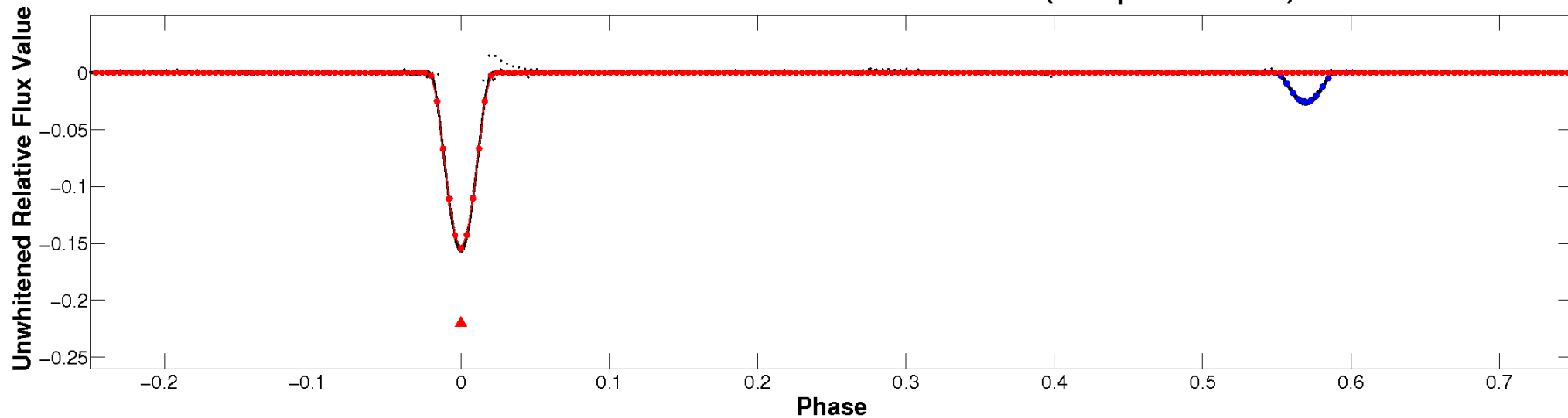
# ALT Odd/Even

TCE 008316503-01

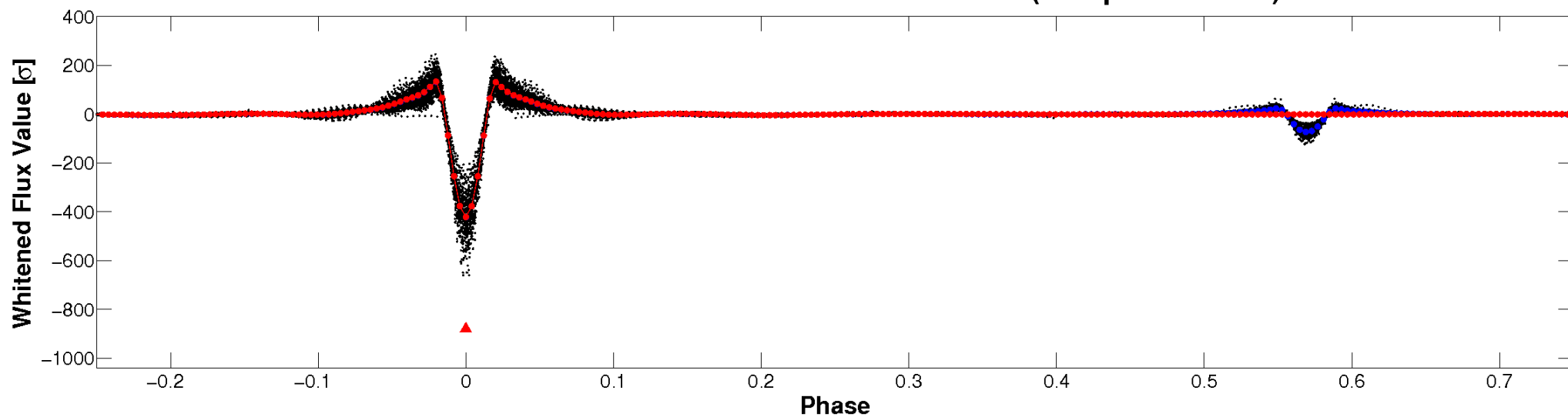


# Non-Whitened Vs. Whitened Light Curve

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

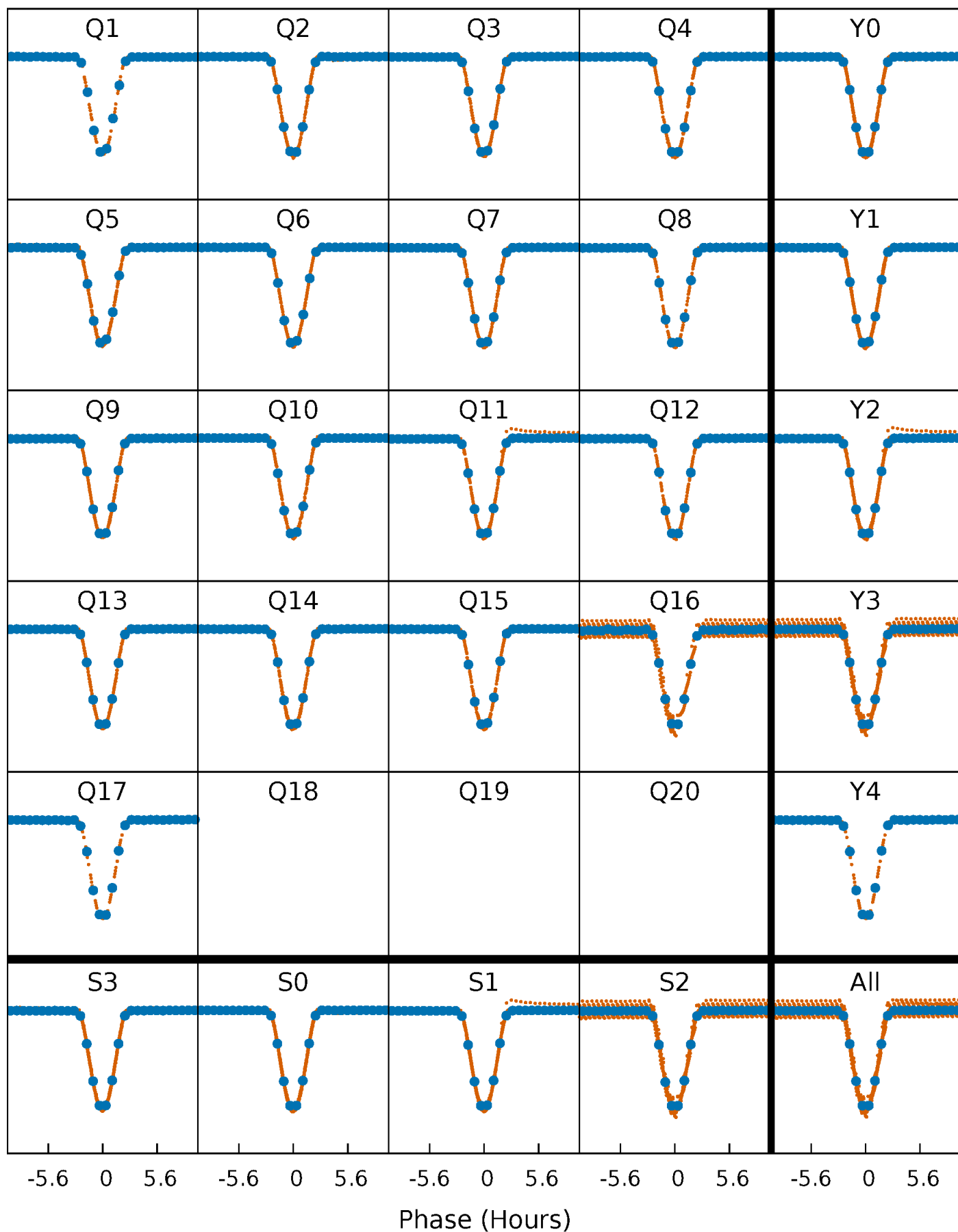


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

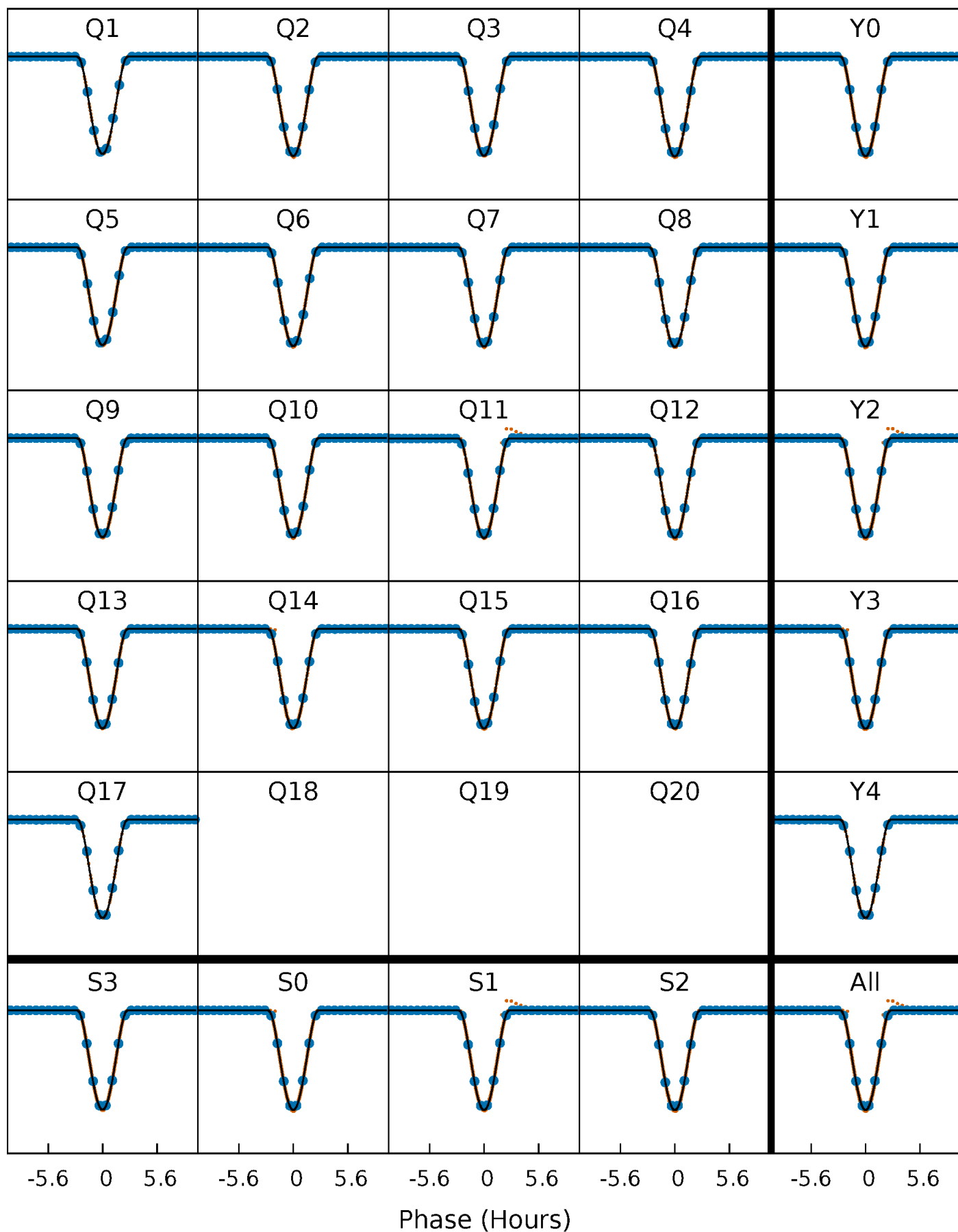
TCE 008316503-01 P= 5.065330 Days  $T_0=134.981931$  (BKJD)





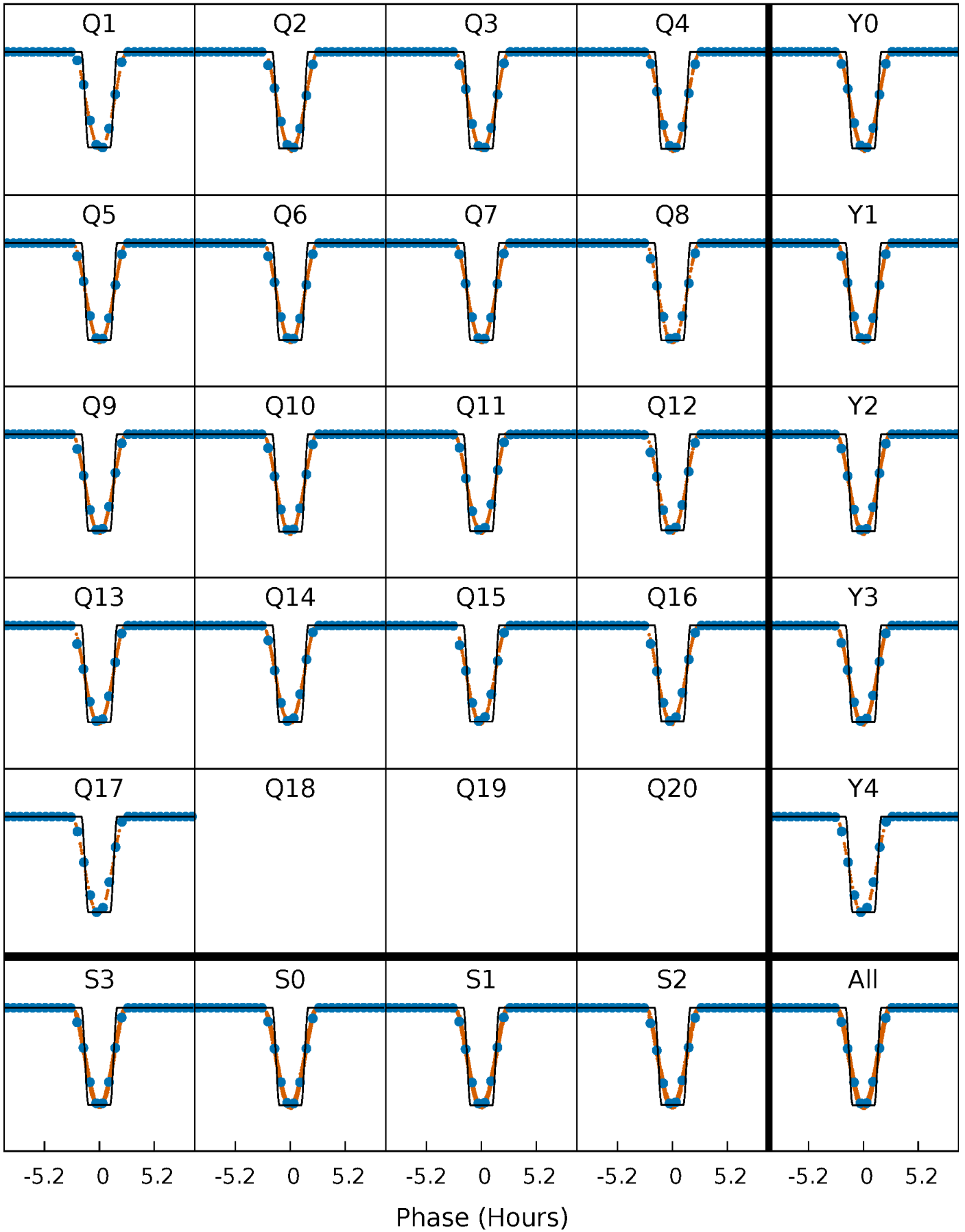
# DV Quarter-Phased Transit Curves

TCE 008316503-01 P= 5.065330 Days  $T_0=134.981931$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

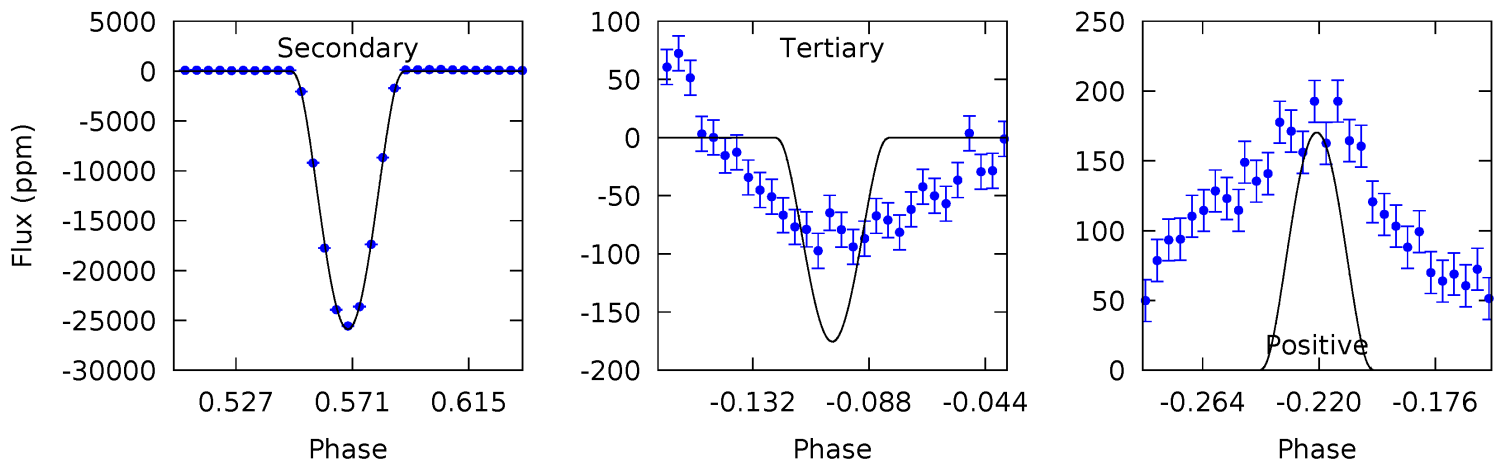
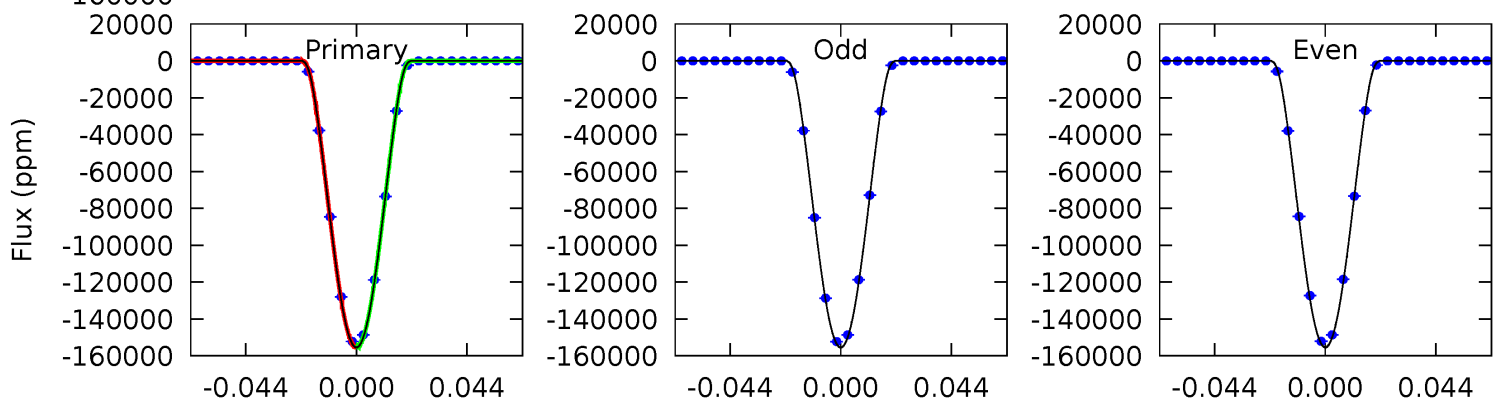
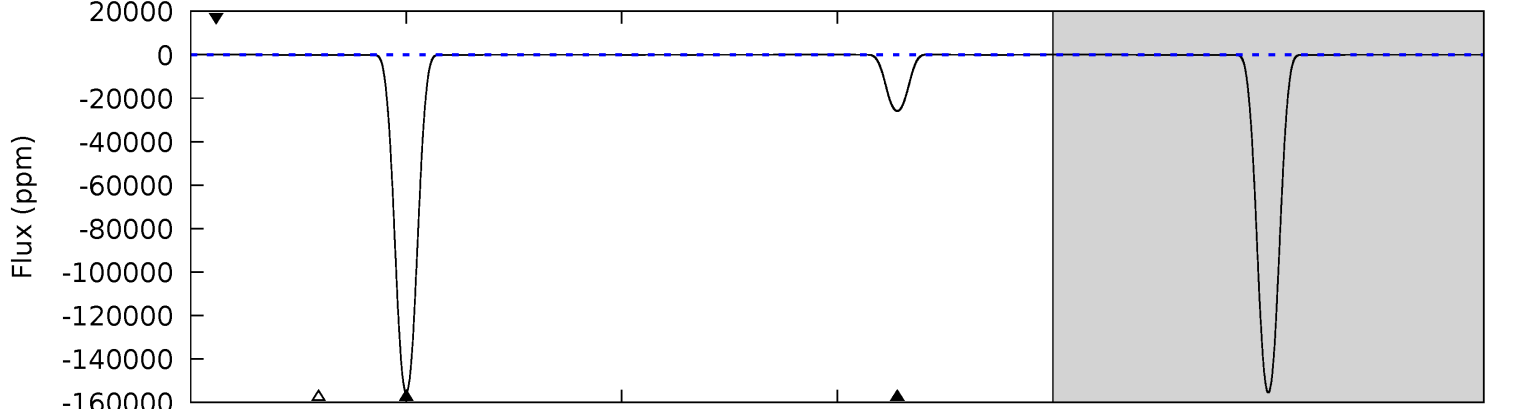
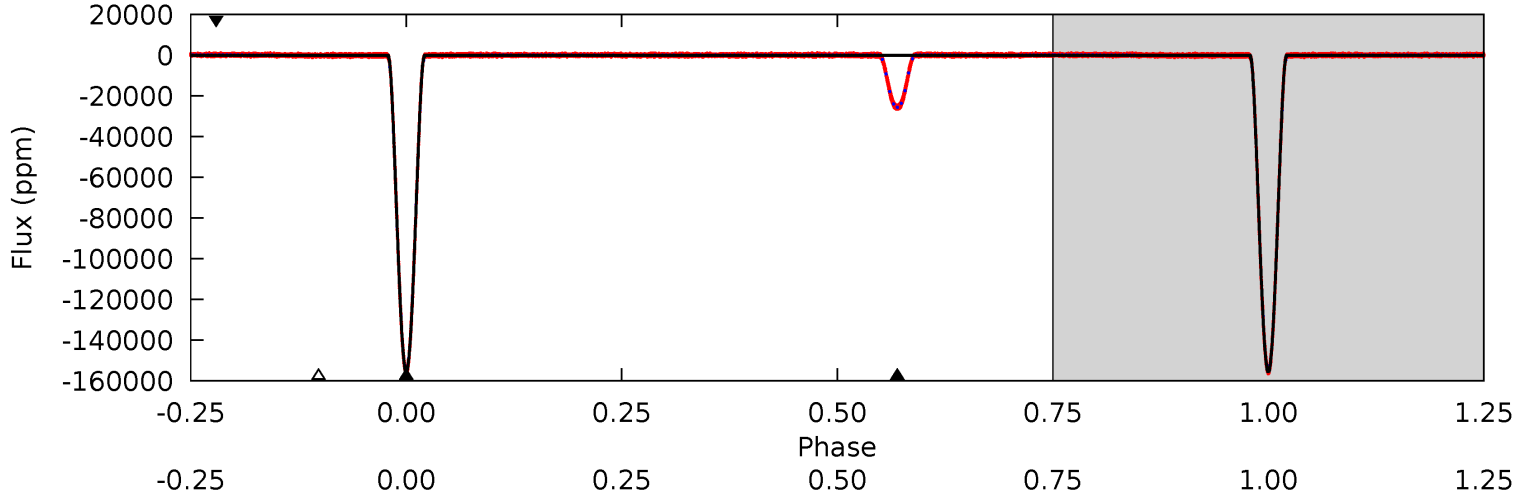
TCE 008316503-01 P= 5.065355 Days  $T_0=134.978434$  (BKJD)



# DV Model-Shift Uniqueness Test

008316503-01, P = 5.065330 Days, E = 129.916601 Days

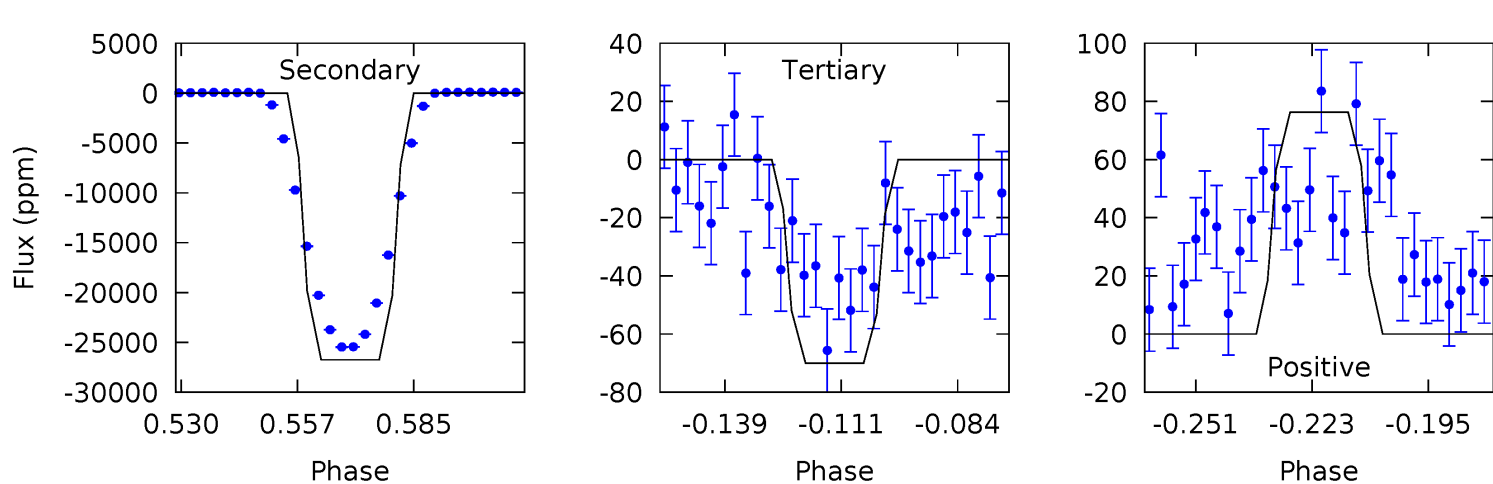
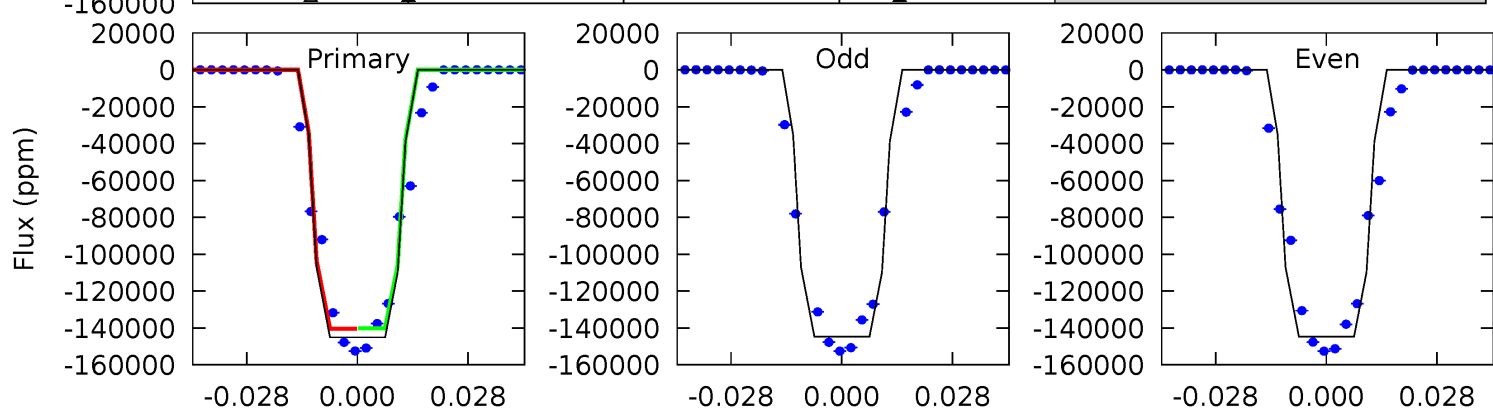
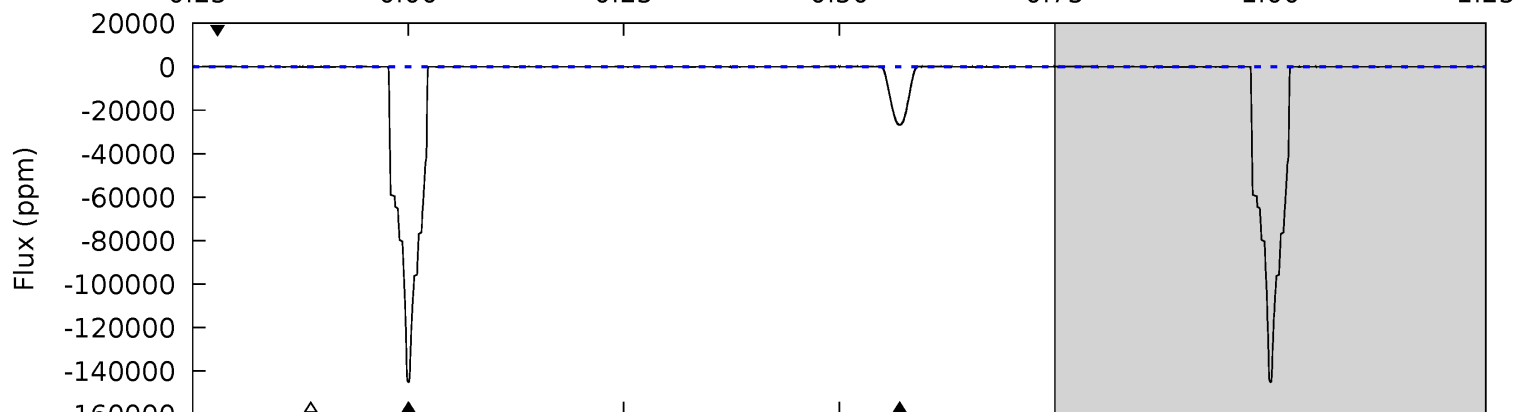
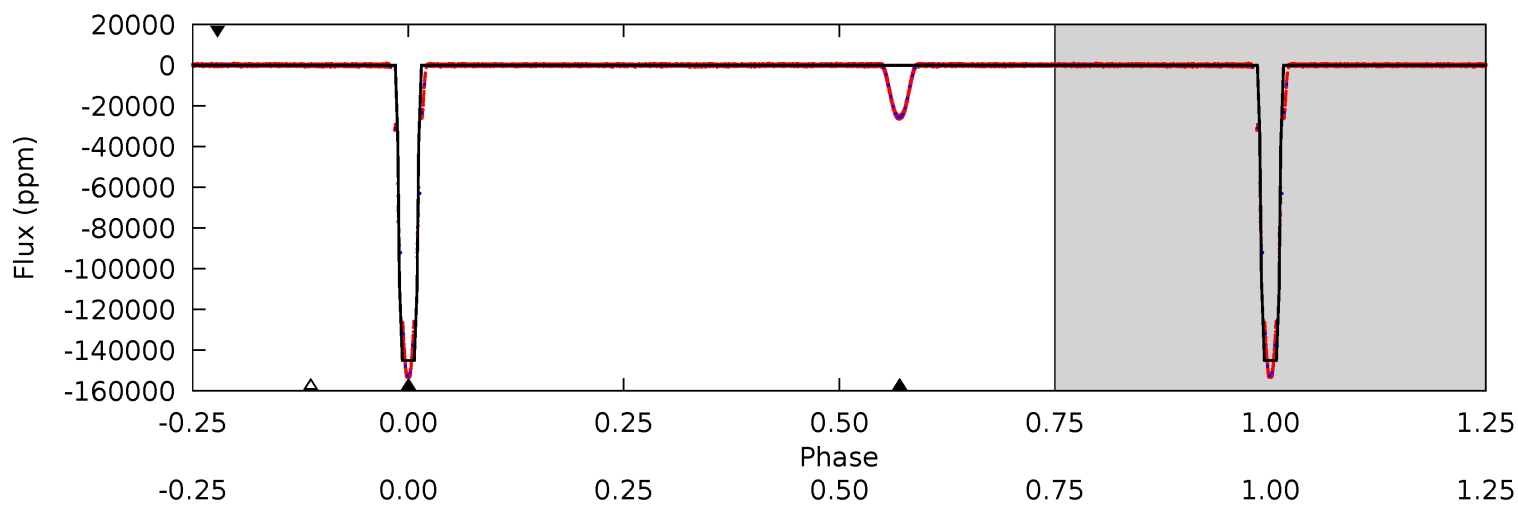
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30386	5058	34.3	33.3	4.73	2.01	13.9	30351	30352	5024	5025	3.62	0.99	0.00	0



# Alt Model-Shift Uniqueness Test

008316503-01, P = 5.065355 Days, E = 129.913079 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
10569	1949	5.10	5.55	4.83	2.20	1.87	10564	10563	1943	1943	1.56	1.00	0.00	0



### Stellar Parameters For KIC 008316503

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6350^{+170}_{-207}$	$4.233^{+0.185}_{-0.185}$	$-0.340^{+0.300}_{-0.300}$	$1.286^{+0.361}_{-0.263}$	$1.030^{+0.172}_{-0.129}$	$0.682^{+0.627}_{-0.322}$
	+3%/-3%	+4%/-4%	+88%/-88%	+28%/-20%	+17%/-13%	+92%/-47%
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 008316503-01 / KOI 7019.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-25877 \pm 5$	$60.33^{+9.09}_{-6.97}$	$1832^{+124}_{-123}$	$4158^{+78}_{-99}$	$14^{+4}_{-3}$
Alt.	$-26748 \pm 14$	$54.82^{+9.42}_{-7.00}$	$1833^{+145}_{-128}$	$4344^{+85}_{-110}$	$17^{+5}_{-4}$

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

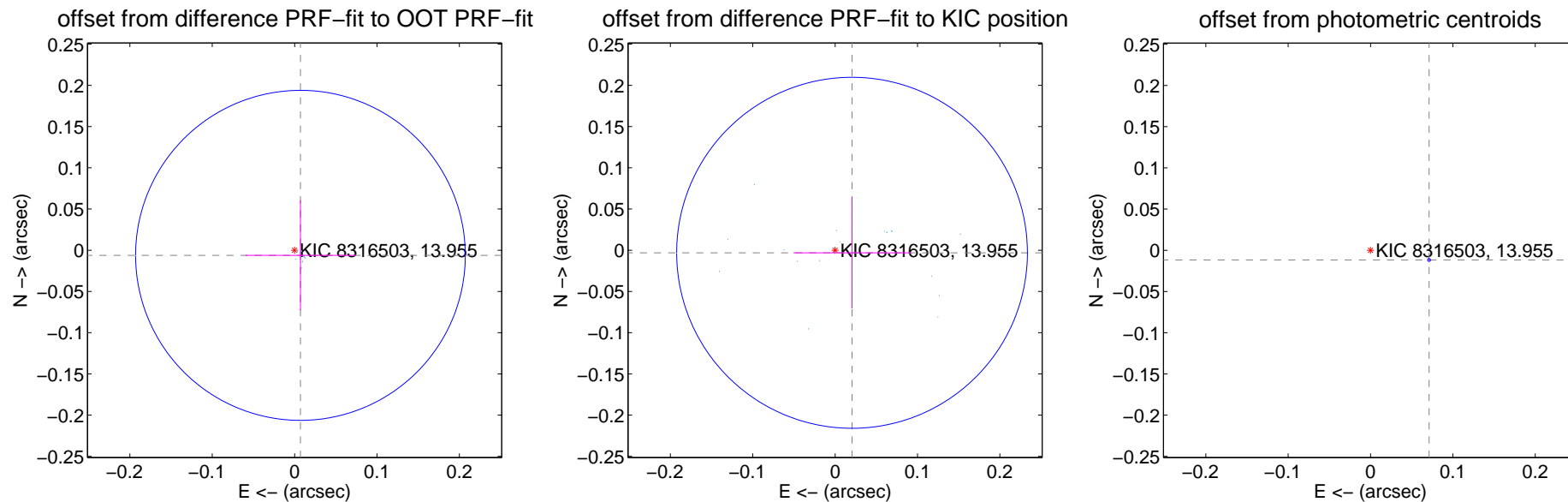
## DV Centroid Data

Supplemental centroid analysis for 008316503-01. Kepler magnitude: 13.96. Transit SNR 11593.37

There are 17 quarters with good PRF difference image offsets

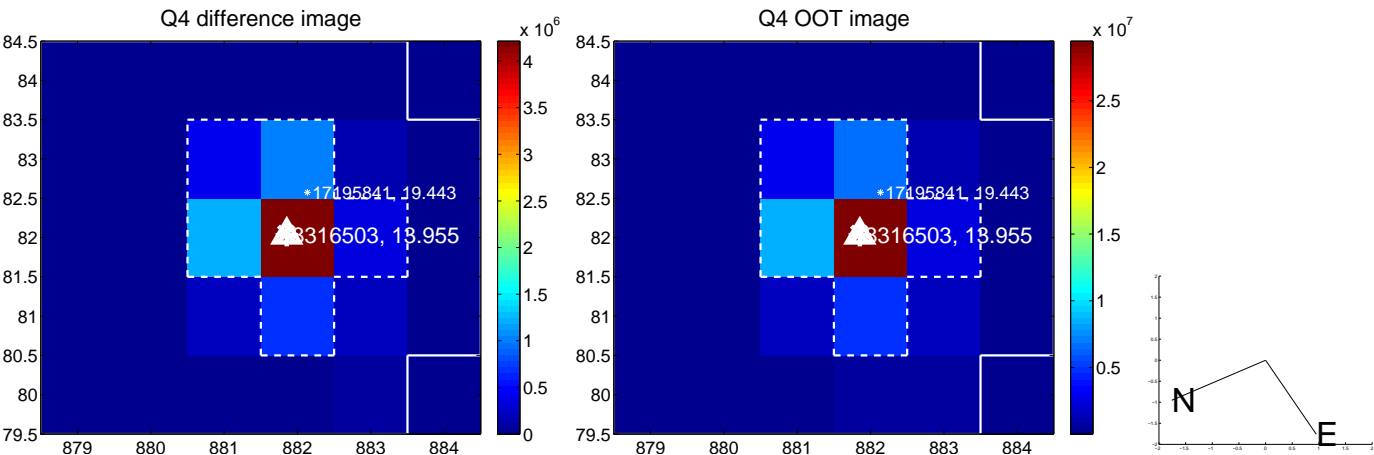
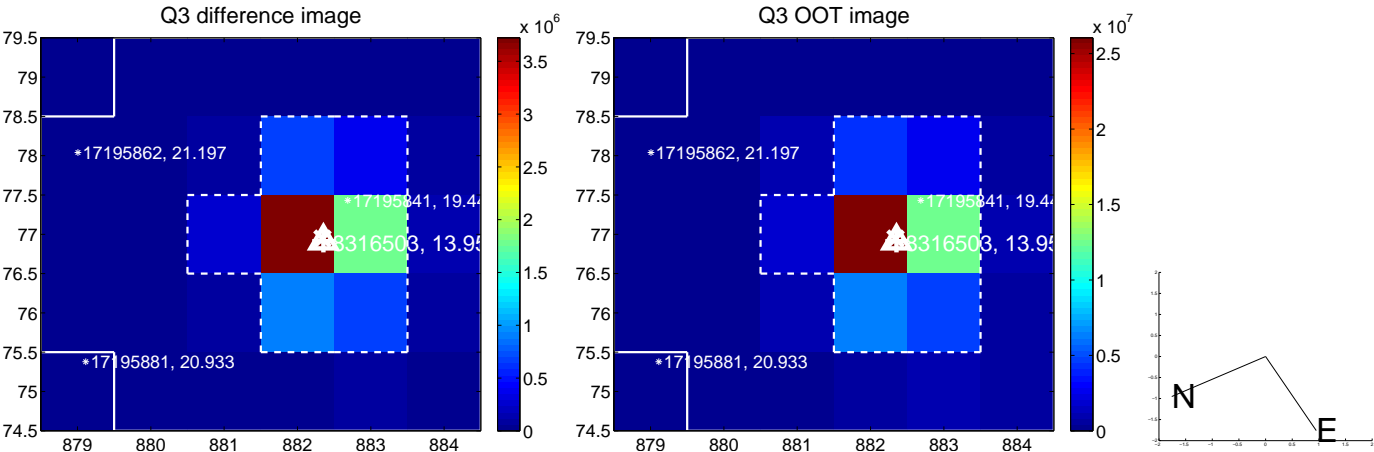
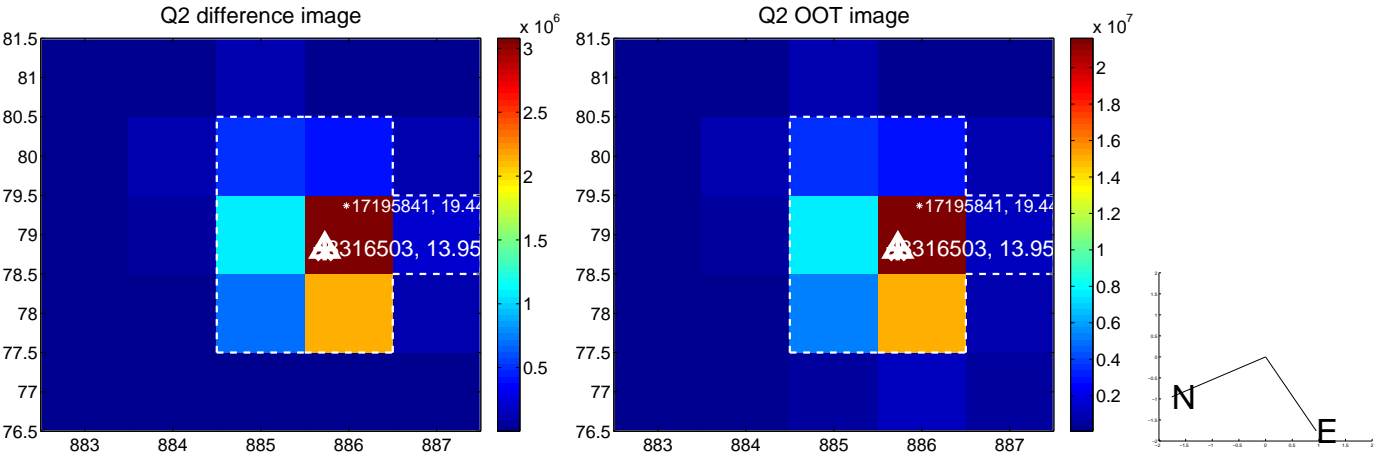
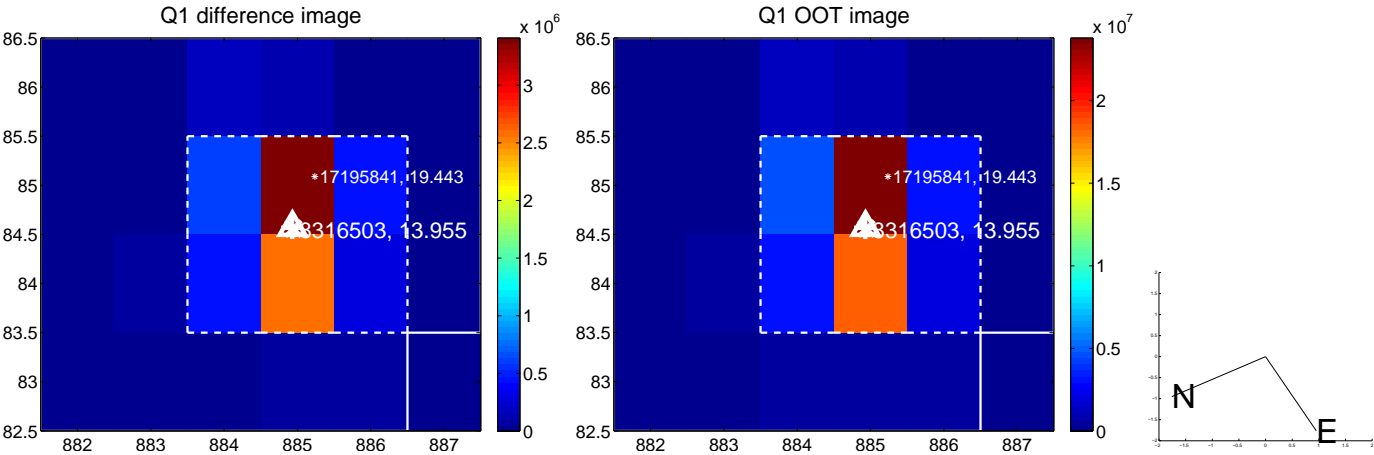
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.009 \pm 0.067$	0.14	$-0.007 \pm 0.067$	$-0.006 \pm 0.067$
PRF-fit source offset from KIC position	$0.021 \pm 0.071$	0.29	$-0.021 \pm 0.071$	$-0.003 \pm 0.067$
photometric centroid source offset	$0.07 \pm 0.00$	124.47	$-0.07 \pm 0.00$	$-0.01 \pm 0.00$

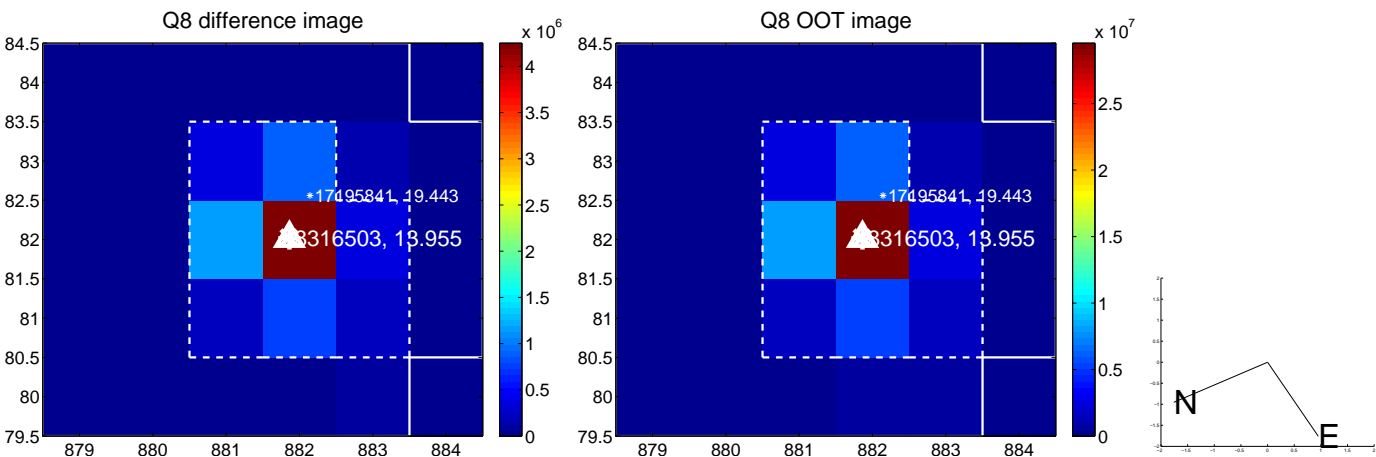
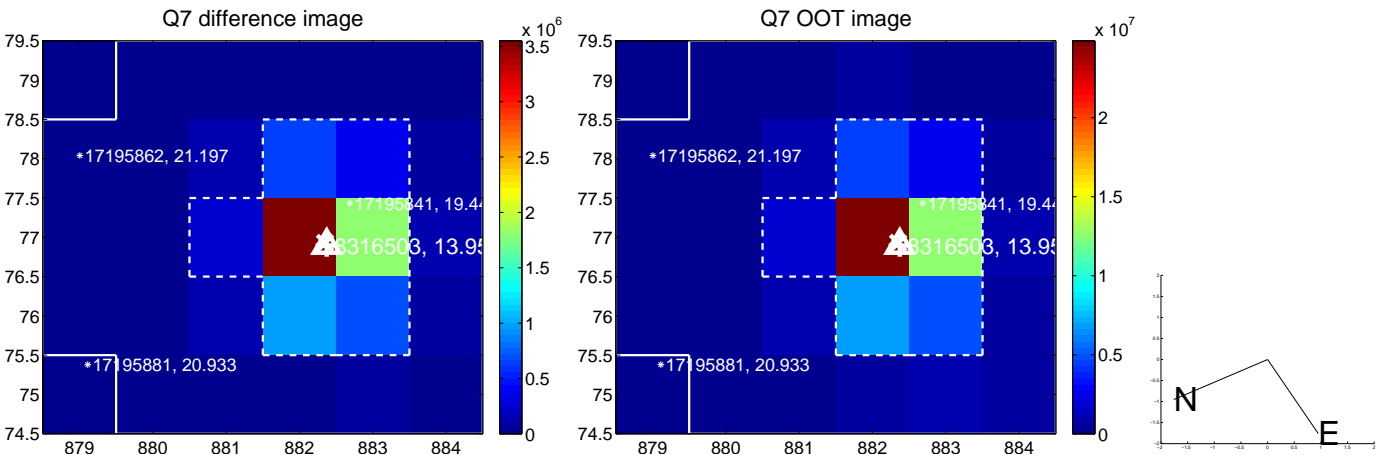
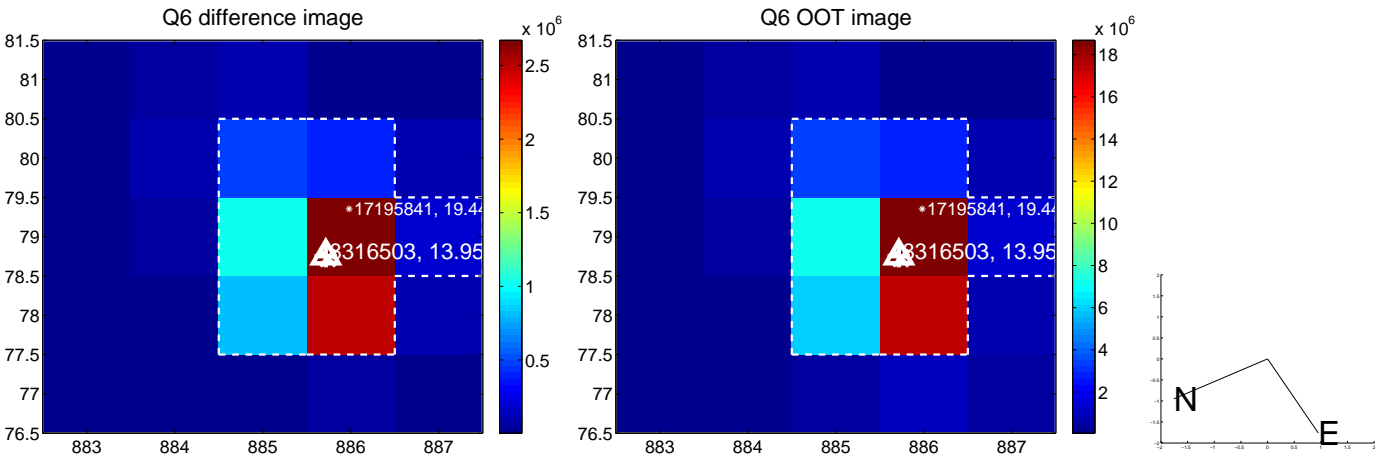
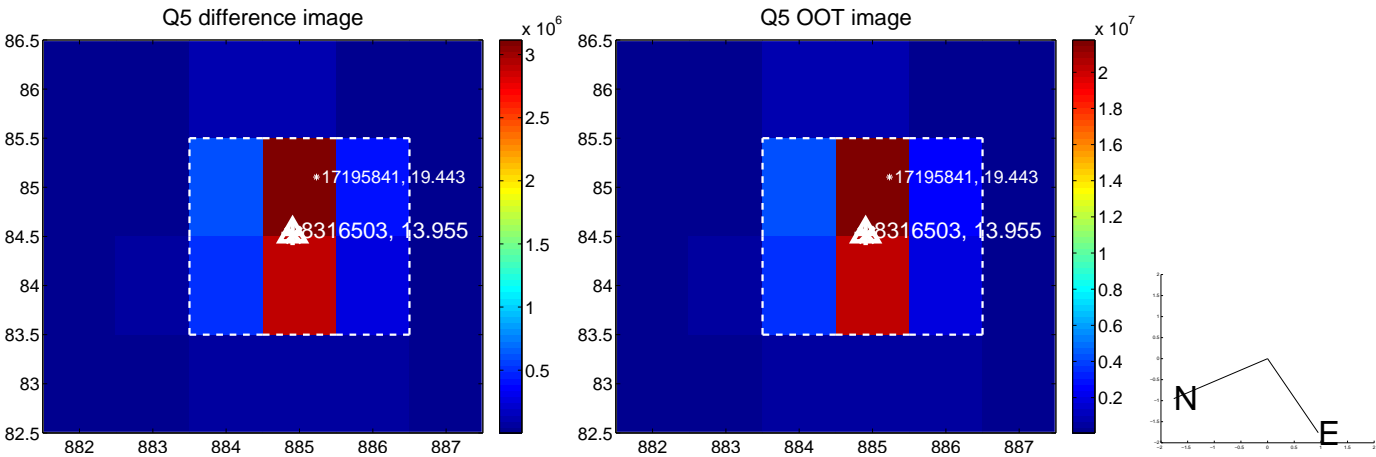


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

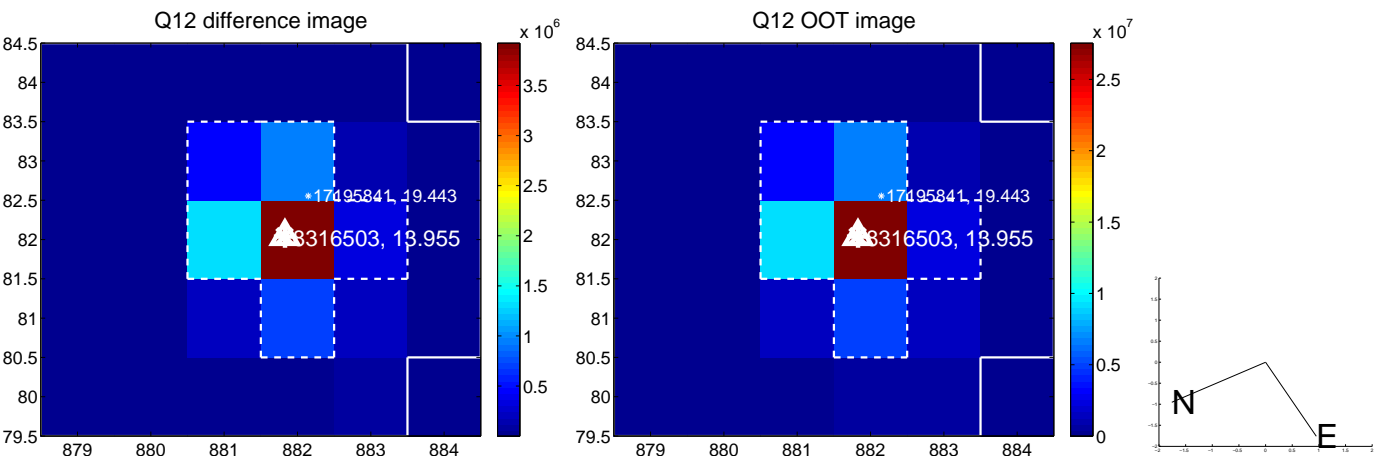
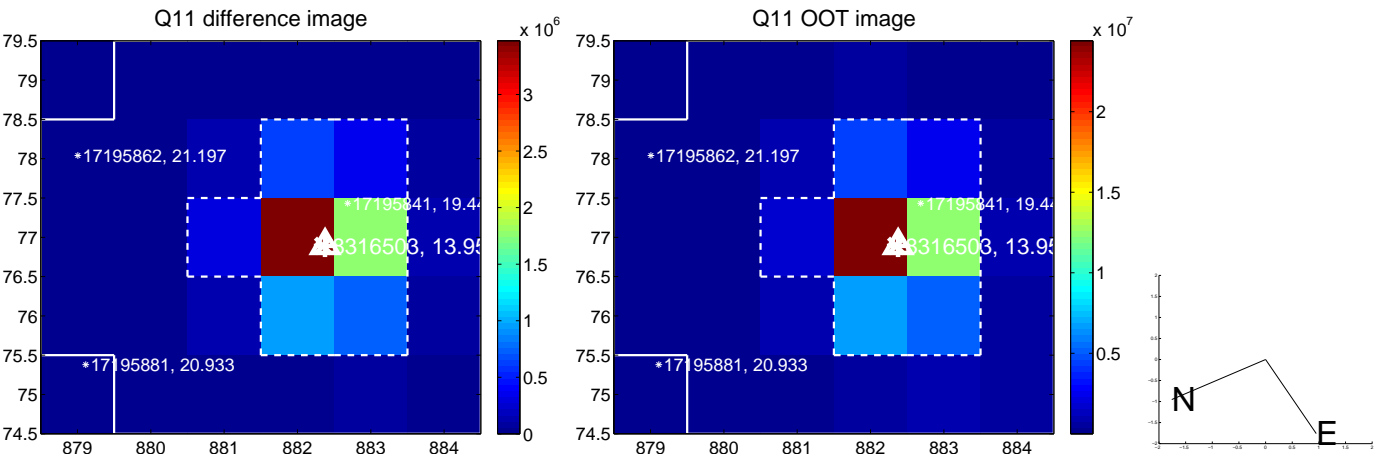
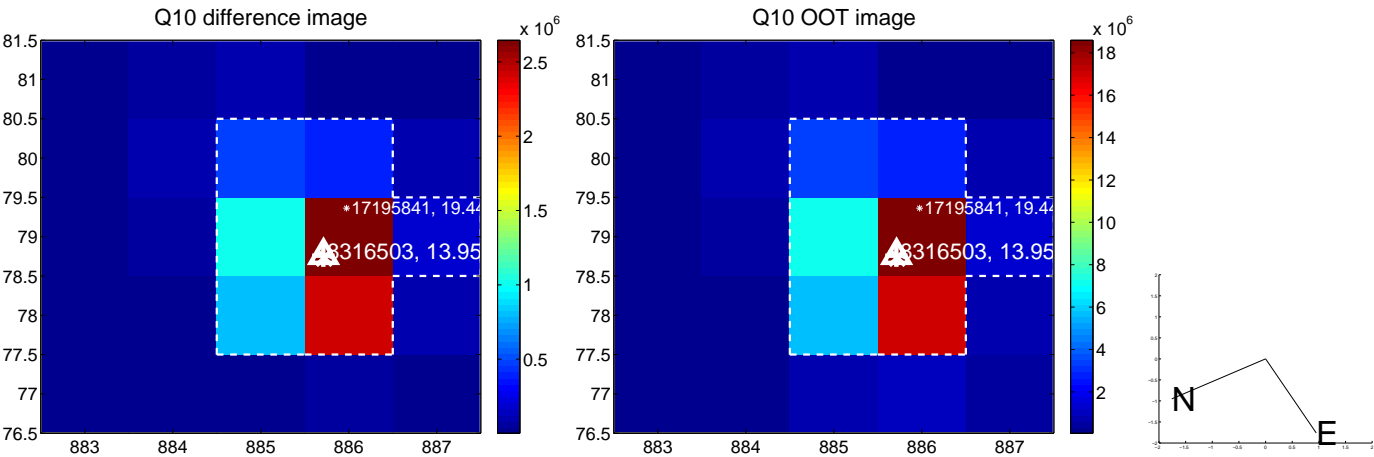
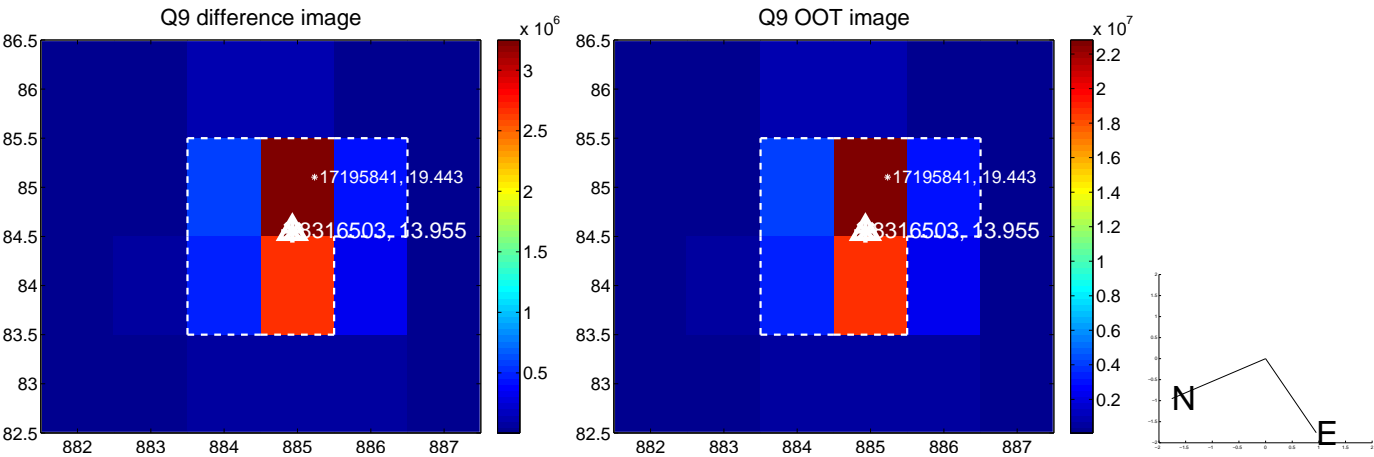


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

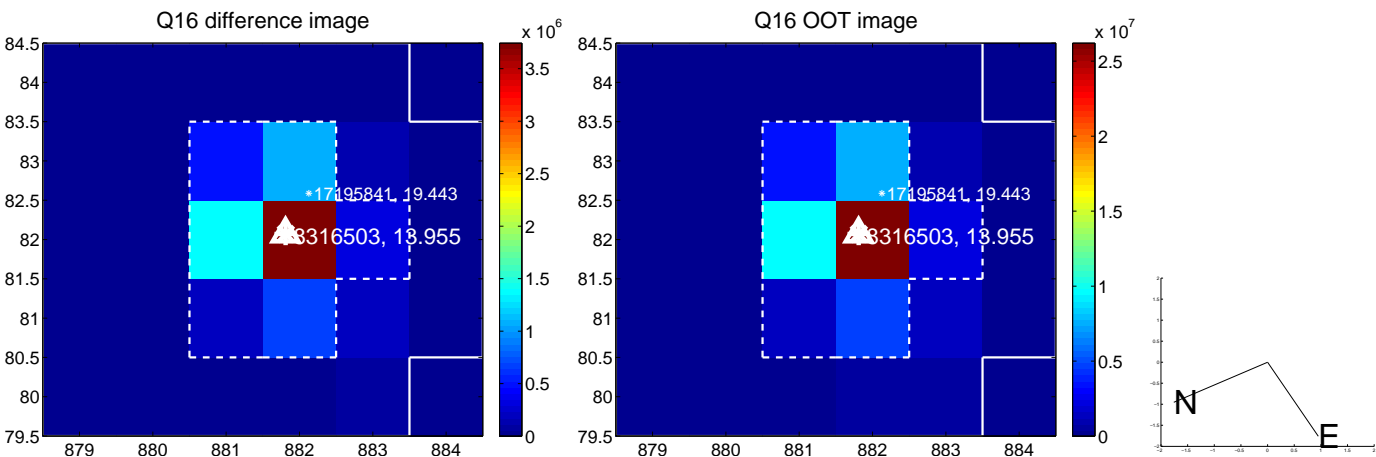
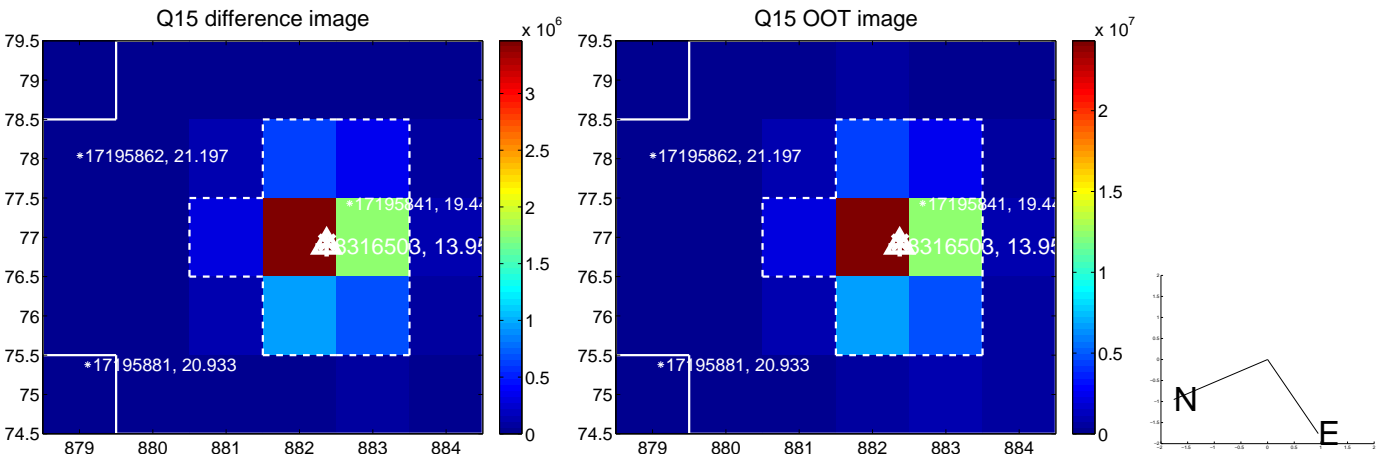
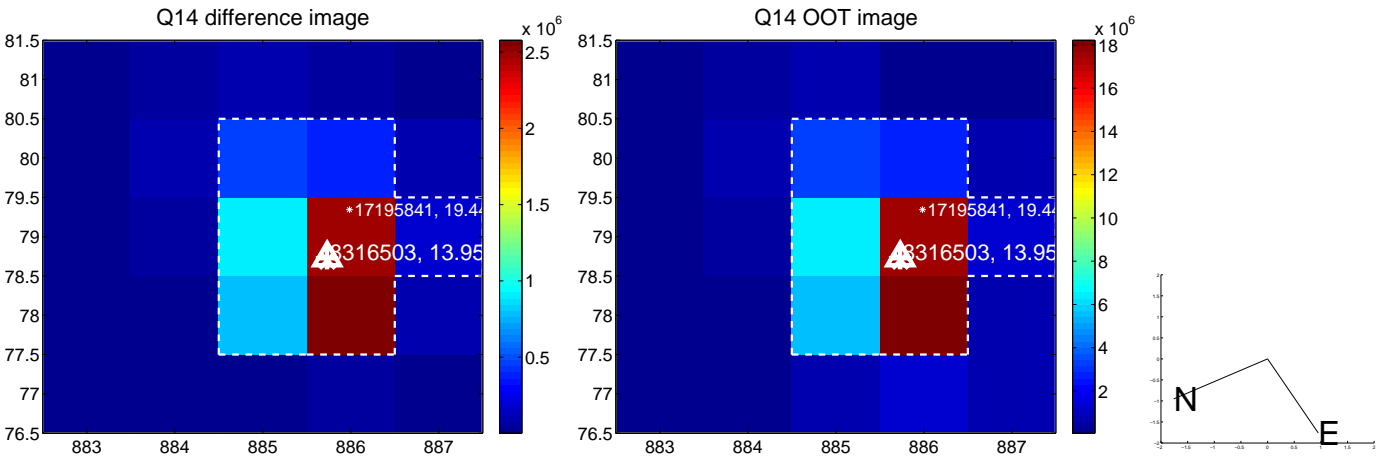
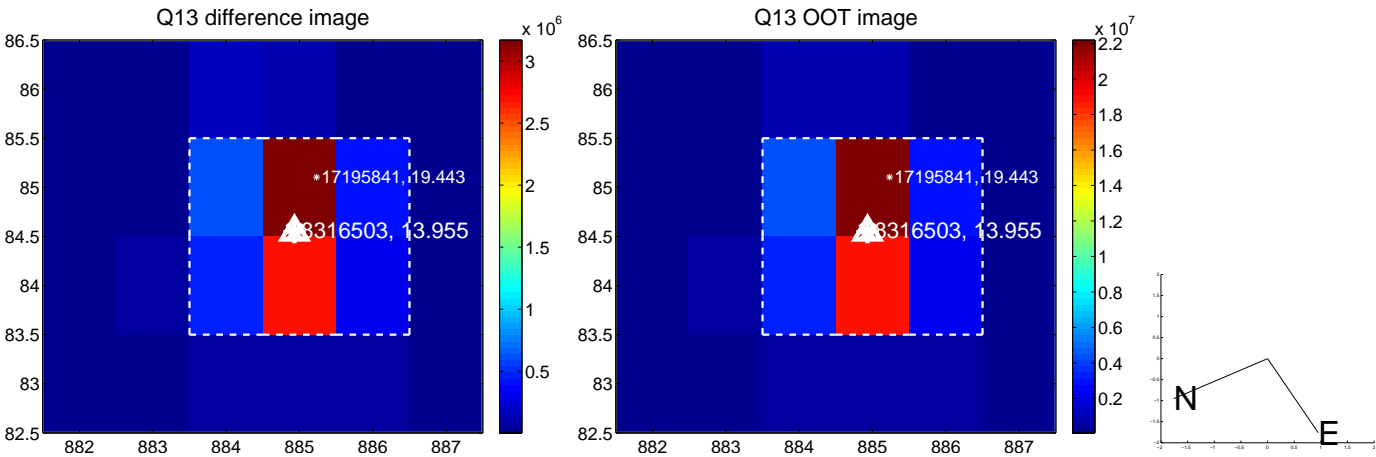




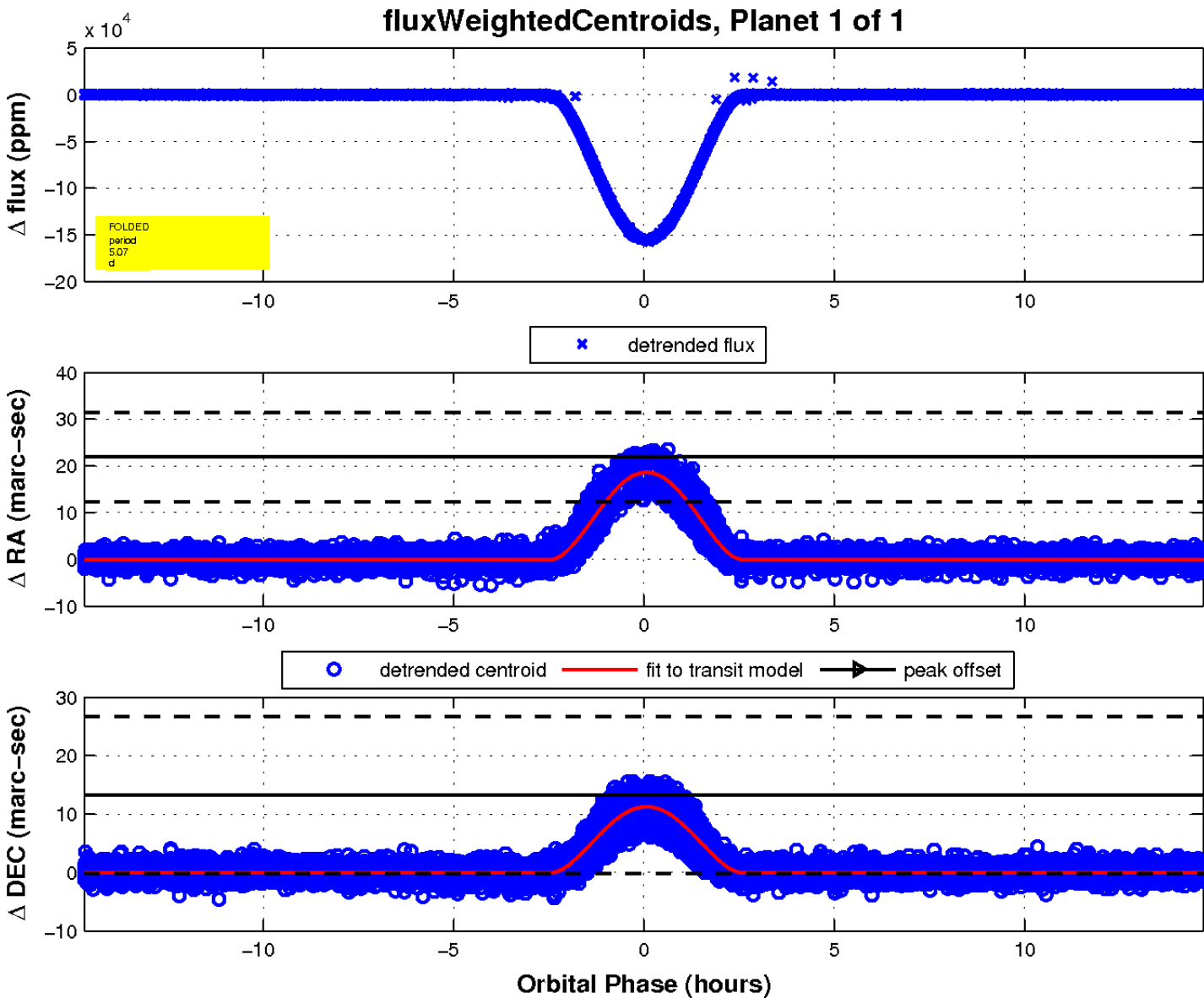
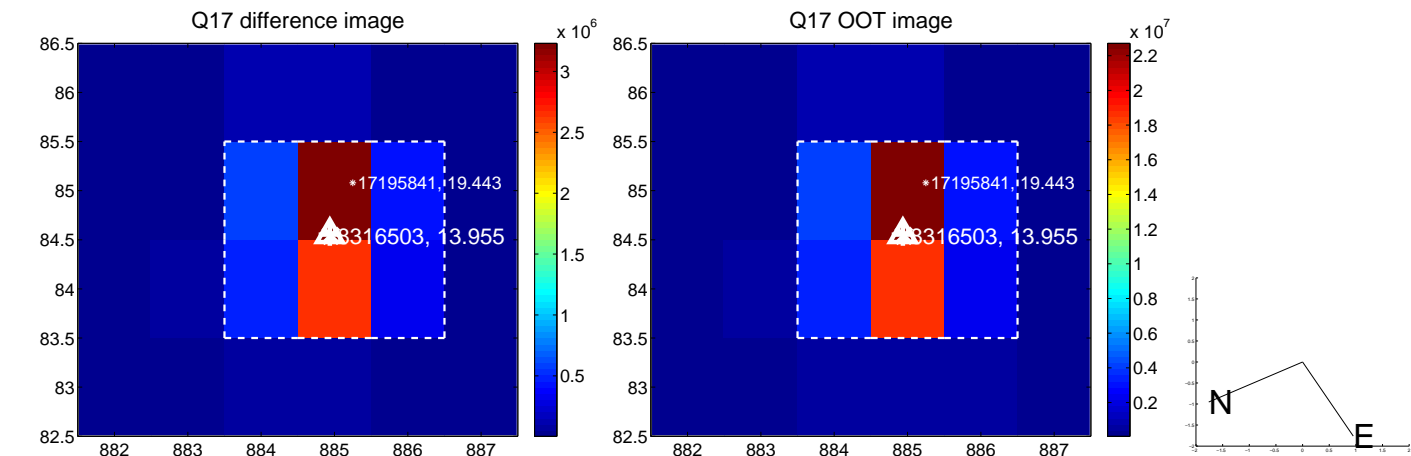
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

