

# KIC 004157488

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004157488-01	OBS	6390.01	2.598710	132.567571	90728.2	6.802	11115.3	7300.6	1.53	6248	71.43	2400.29

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004157488-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—MOD_ODDEVEN_DV—MOD_ODDEVEN_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.

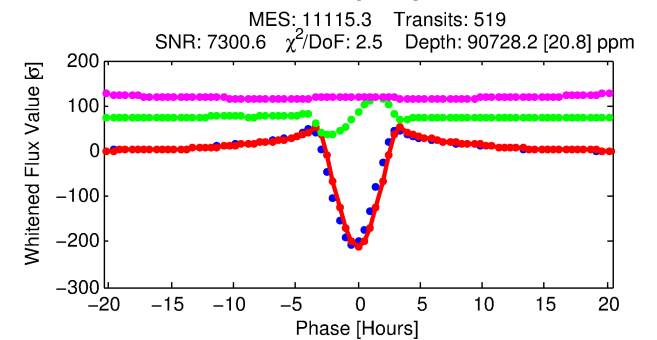
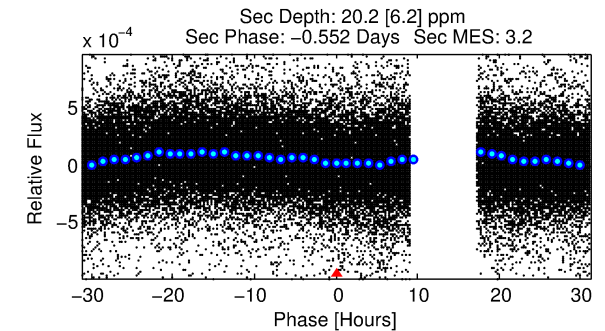
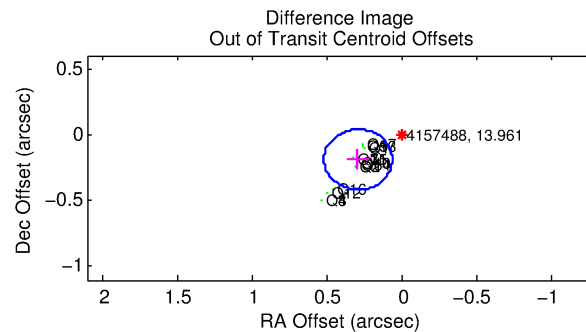
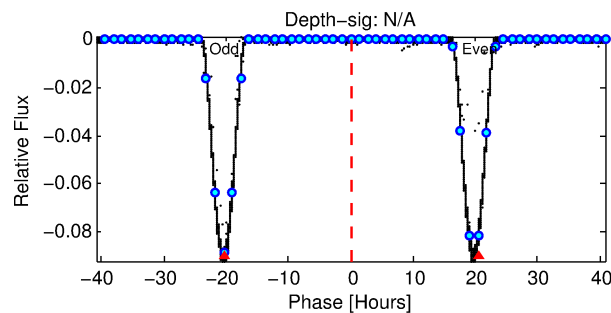
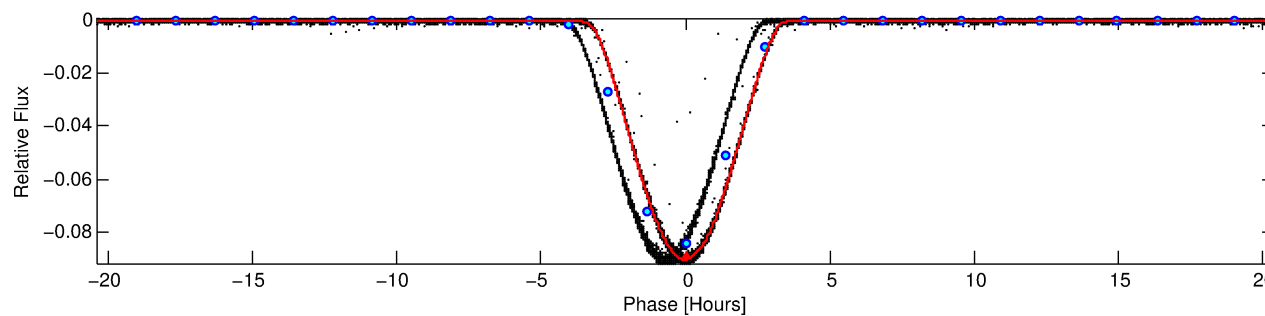
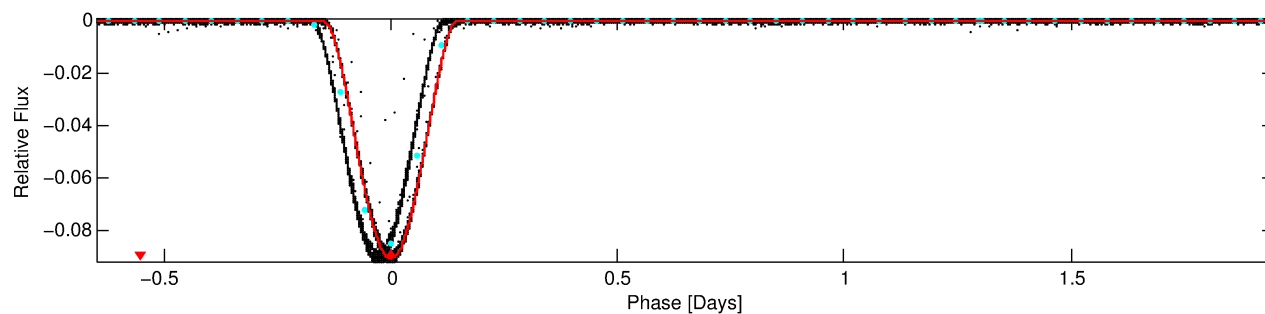
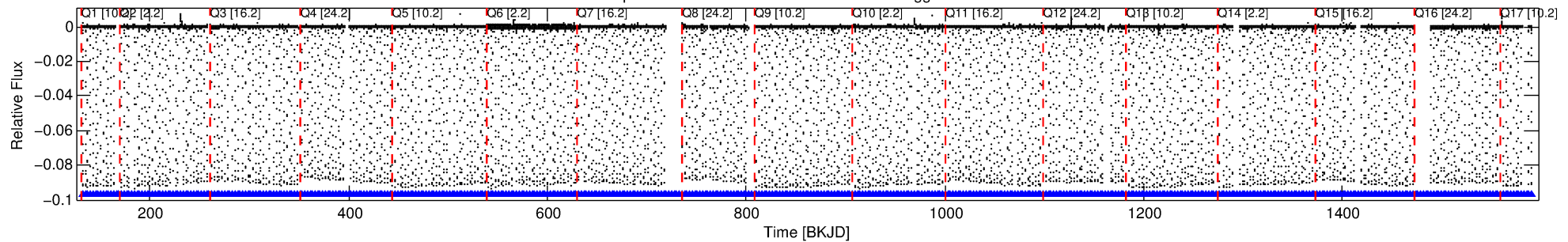
## Ephemeris Match Information For 004157488-01

No Significant Match Found

# DV One-Page Summary

KIC: 4157488 Candidate: 1 of 1 Period: 2.599 d  
KOI: K06390 Corr: No Ephemeris Match

Kp: 13.96 R\*: 1.53 Rs Teff: 6248.0 K Logg: 4.05 Fe/H: -0.580



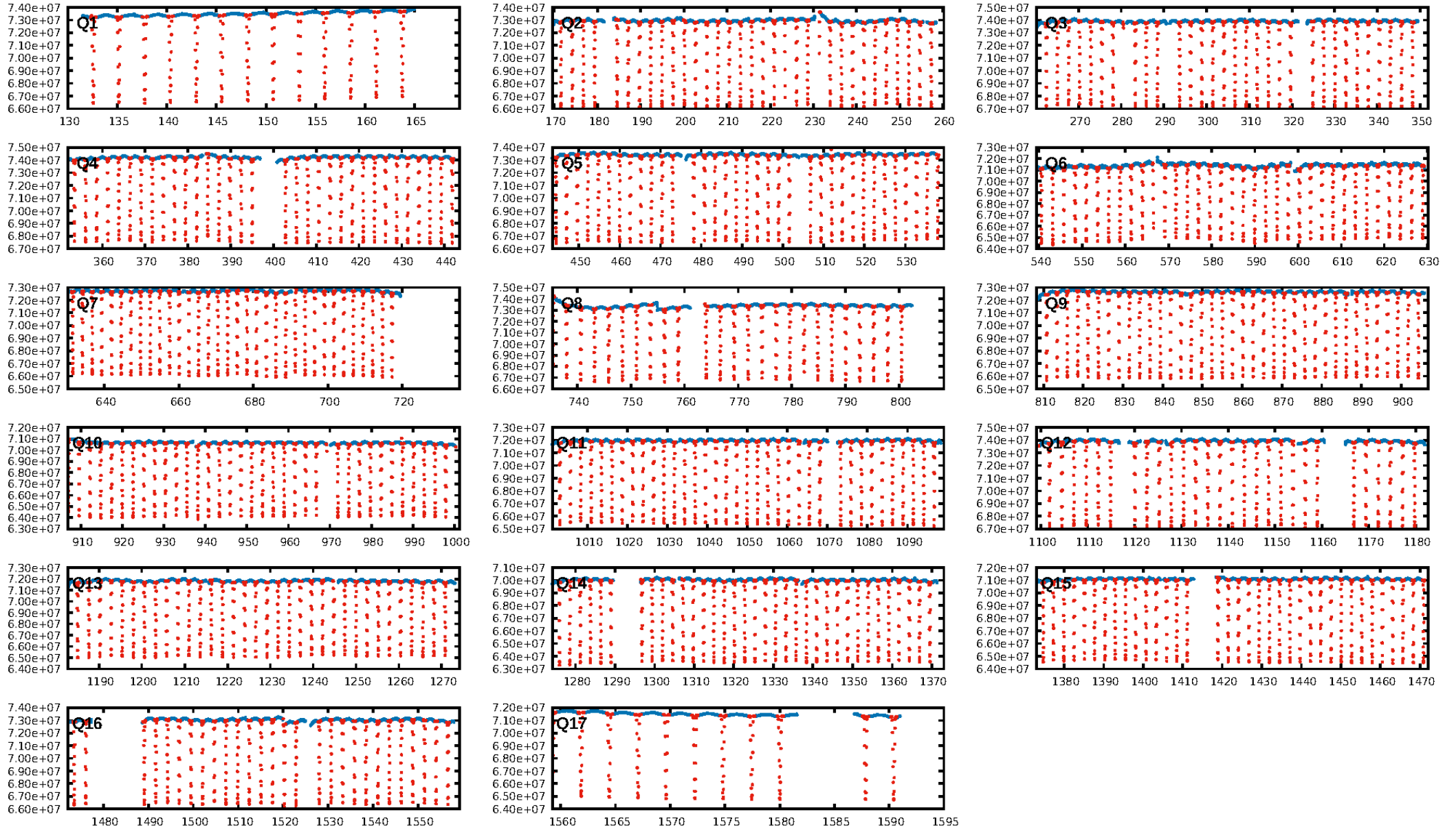
## DV Fit Results:

Period = 2.59871 [0.00000] d  
Epoch = 132.5676 [0.0000] BKJD  
Rp/R\* = 0.4284 [0.0056]  
a/R\* = 3.32 [0.00]  
b = 0.95 [0.01]  
Seff = 2400.29 [1638.56]  
Teff = 1785 [305] K  
Rp = 71.43 [27.04] Re  
a = 0.0364 [0.0146] AU  
Ag = 0.00 [0.00] [-466.38σ]  
Teffp = 640 [53] K [-3.70σ]

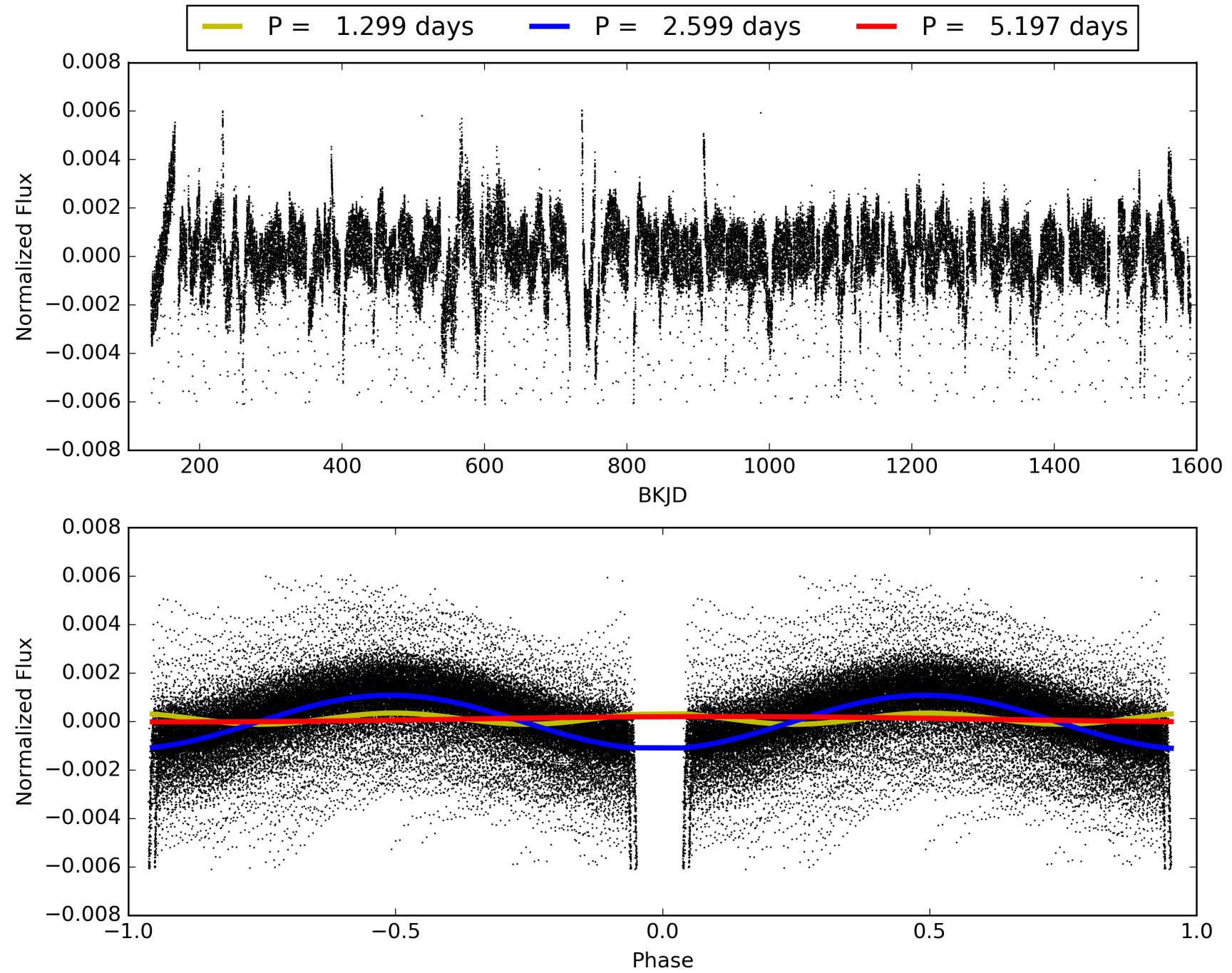
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [495/495]  
GhostDiagnostic-chr: 3.474  
Centroid-sig: 0.0%  
Centroid-so: 0.114 arcsec [151.21σ]  
OotOffset-rm: 0.344 arcsec [4.54σ]  
KicOffset-rm: 0.137 arcsec [2.02σ]  
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 004157488-01, PDC Light Curves

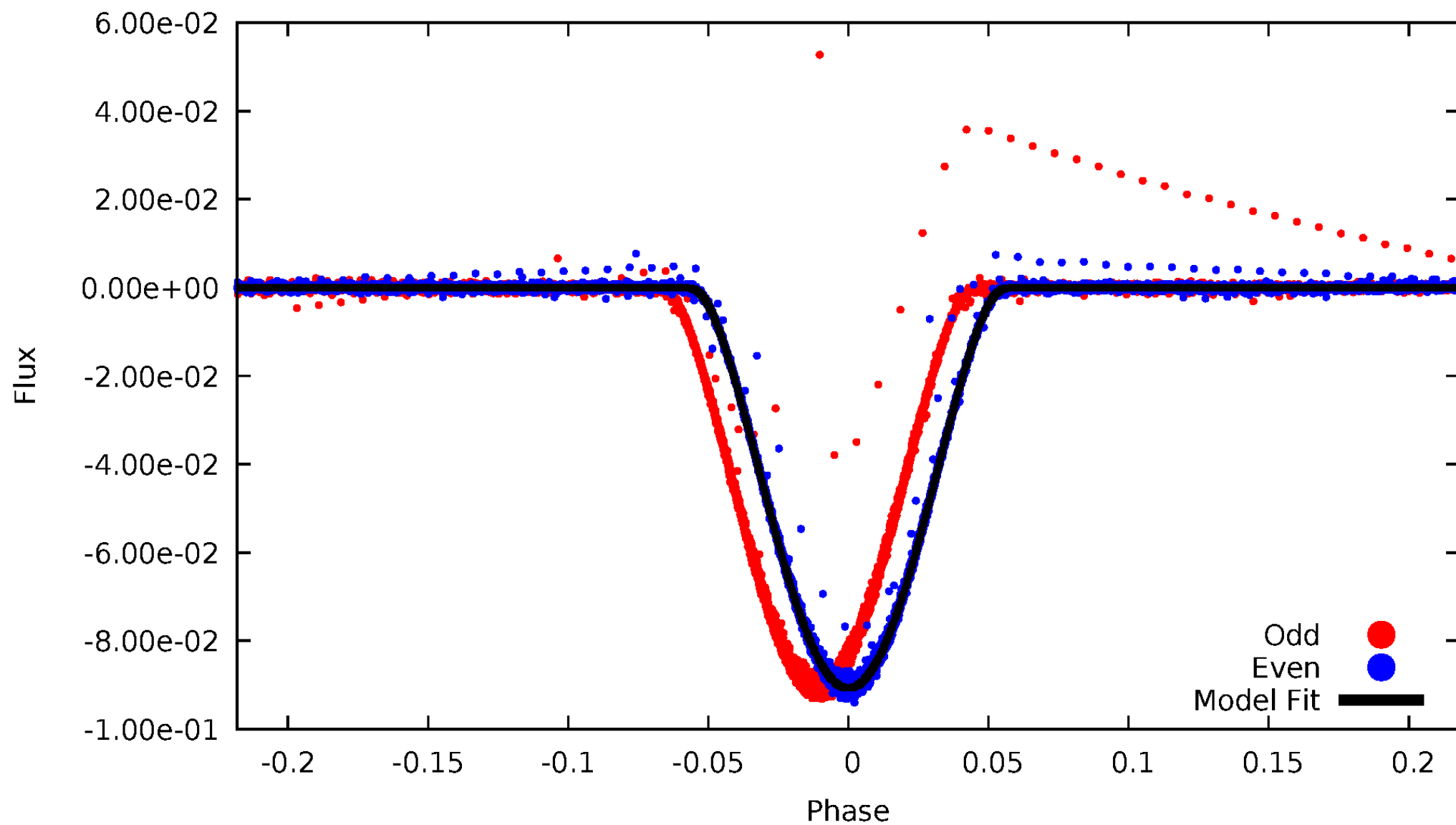


TCE 004157488-01



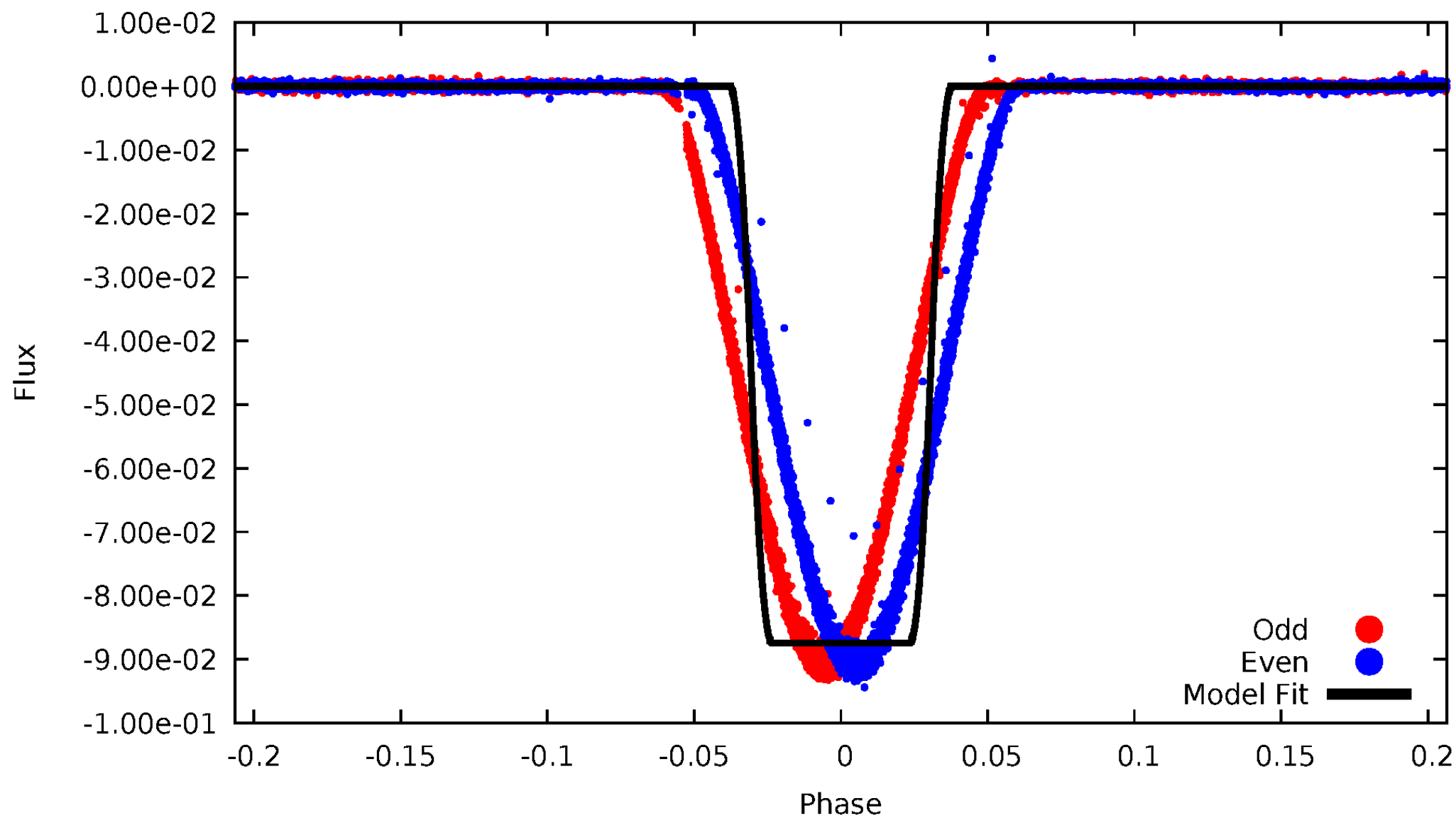
# DV Odd/Even

TCE 004157488-01



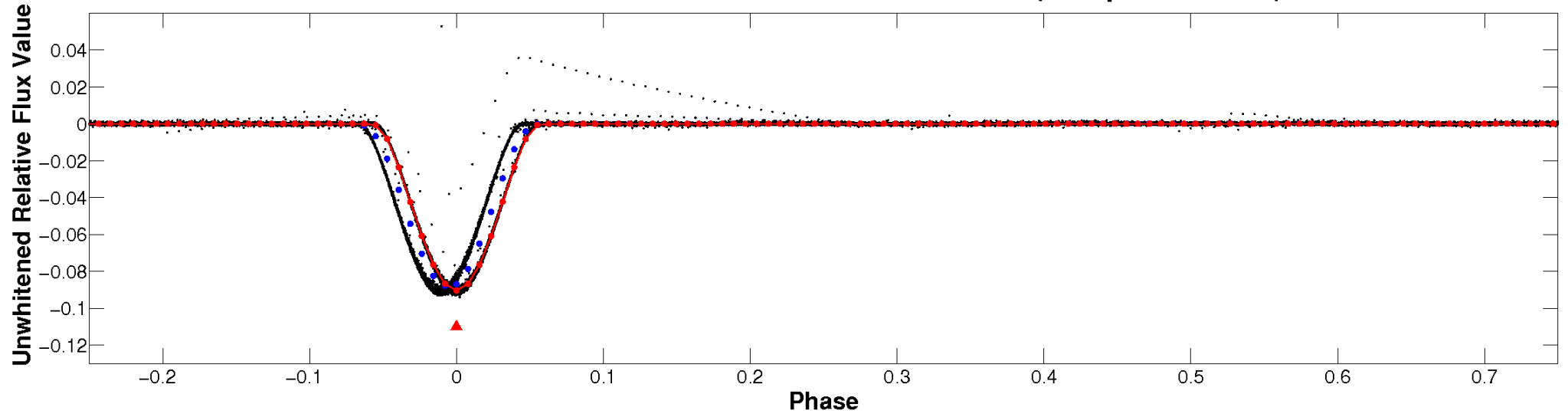
# ALT Odd/Even

TCE 004157488-01

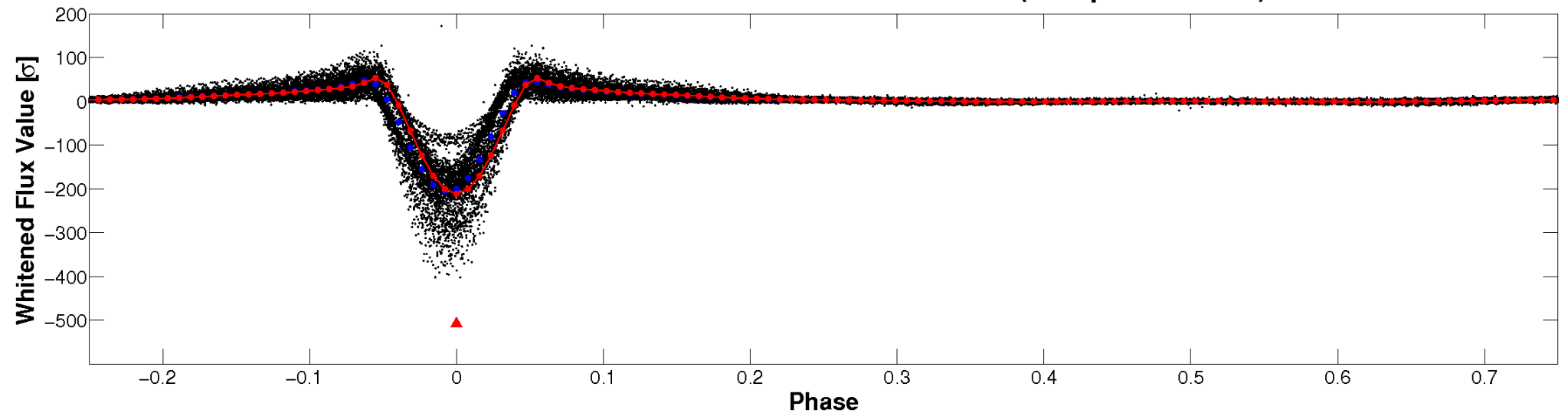


# Non-Whitened Vs. Whitened Light Curve

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

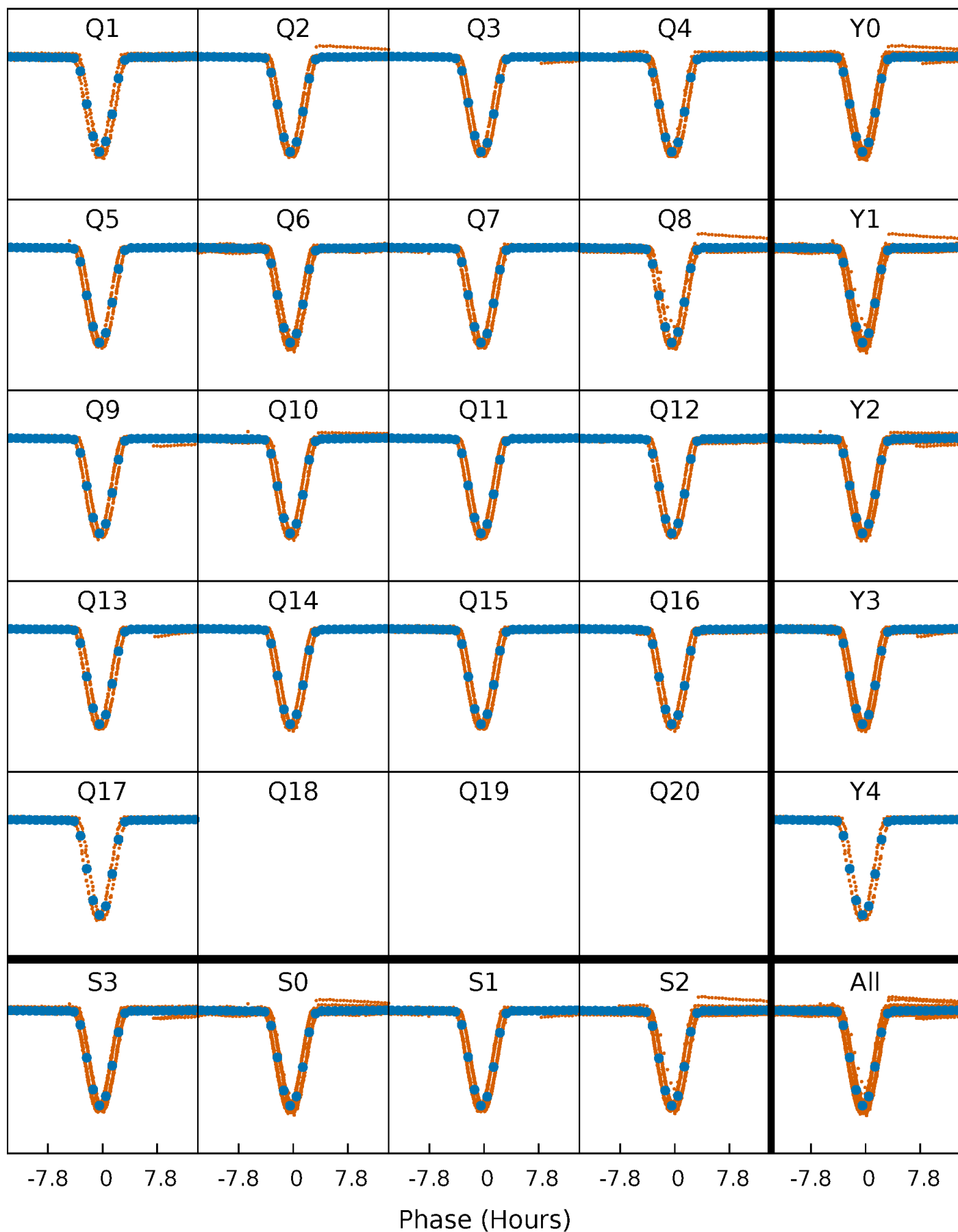


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

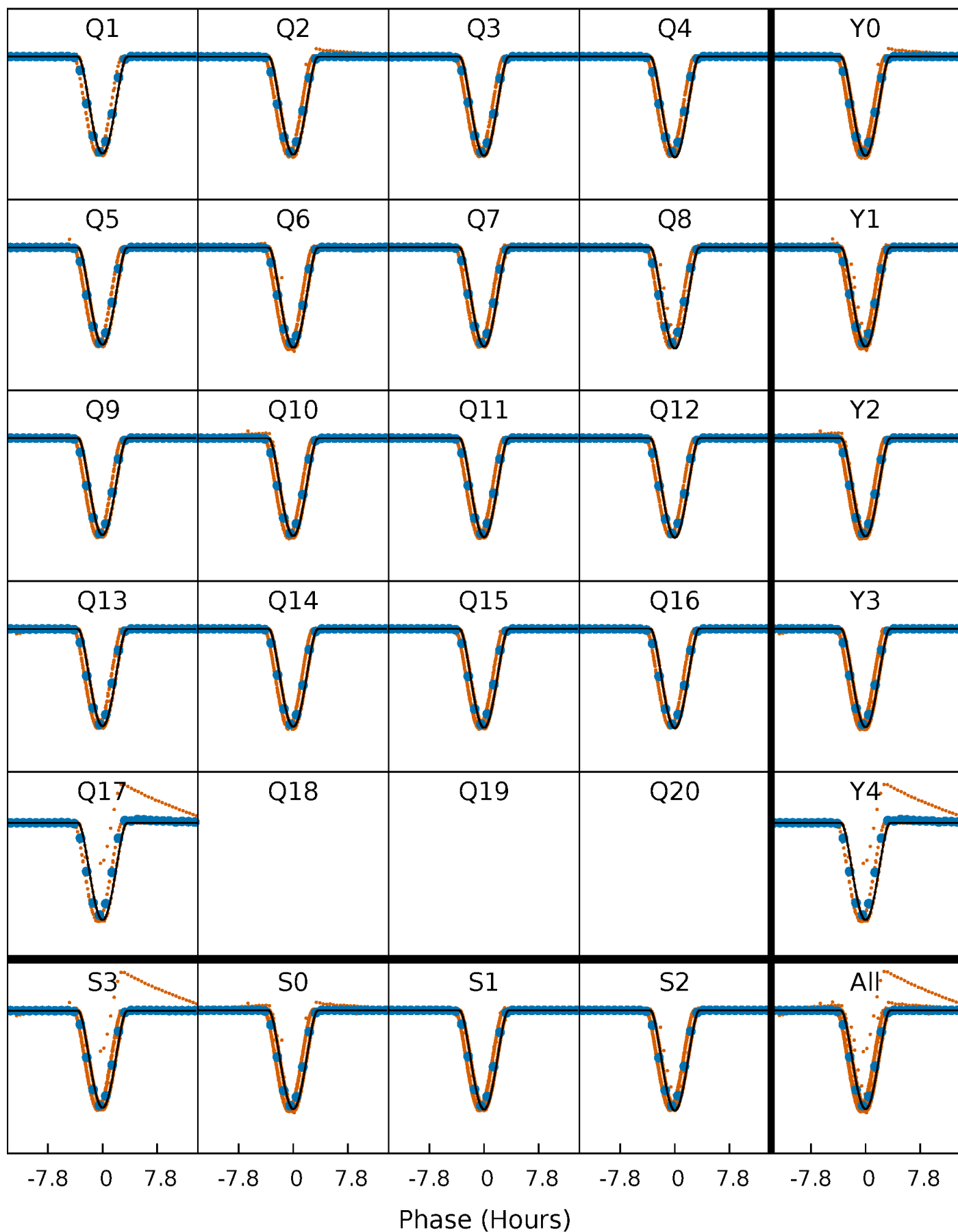
TCE 004157488-01 P= 2.598710 Days  $T_0=132.567571$  (BKJD)





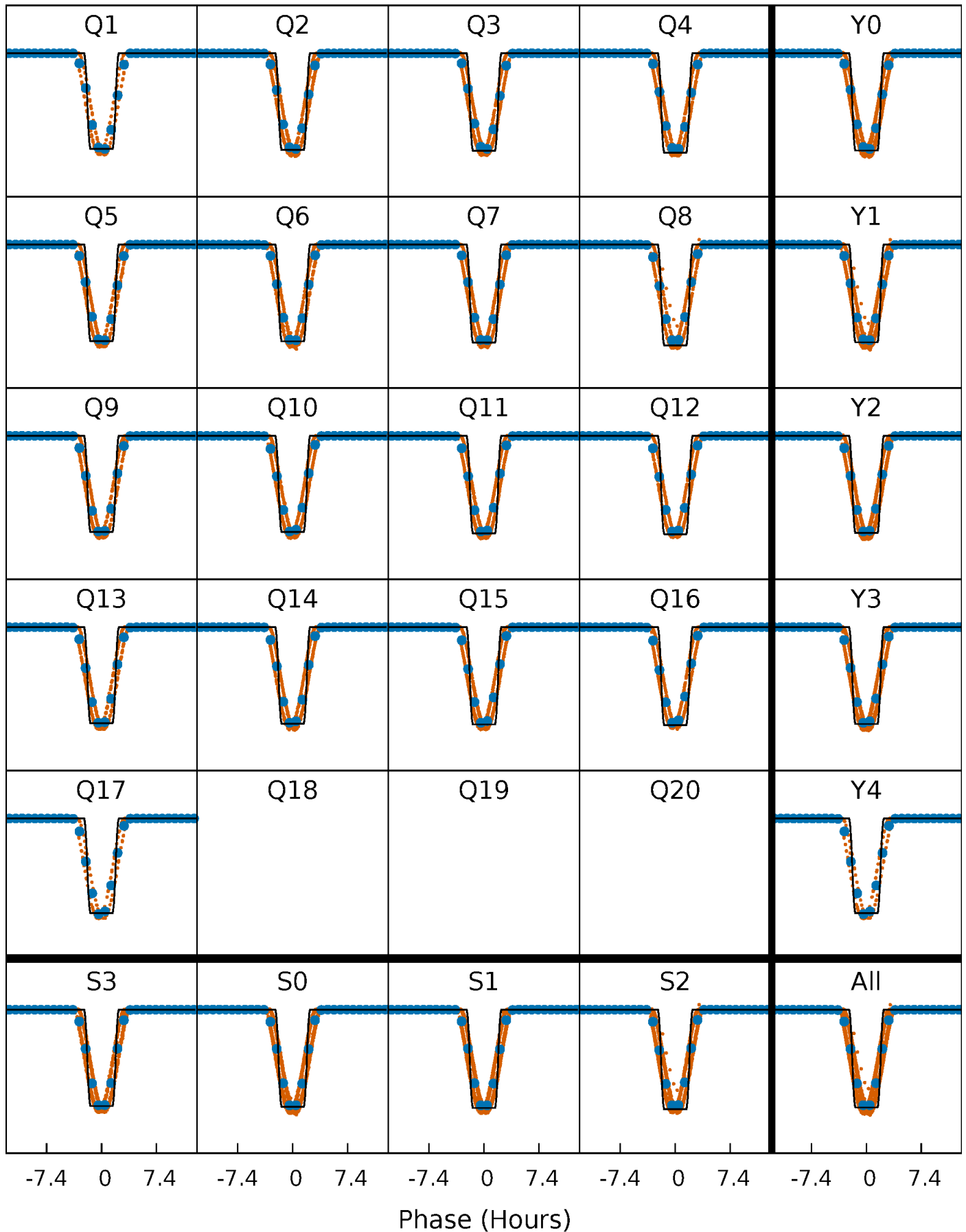
# DV Quarter-Phased Transit Curves

TCE 004157488-01 P= 2.598710 Days  $T_0=132.567571$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

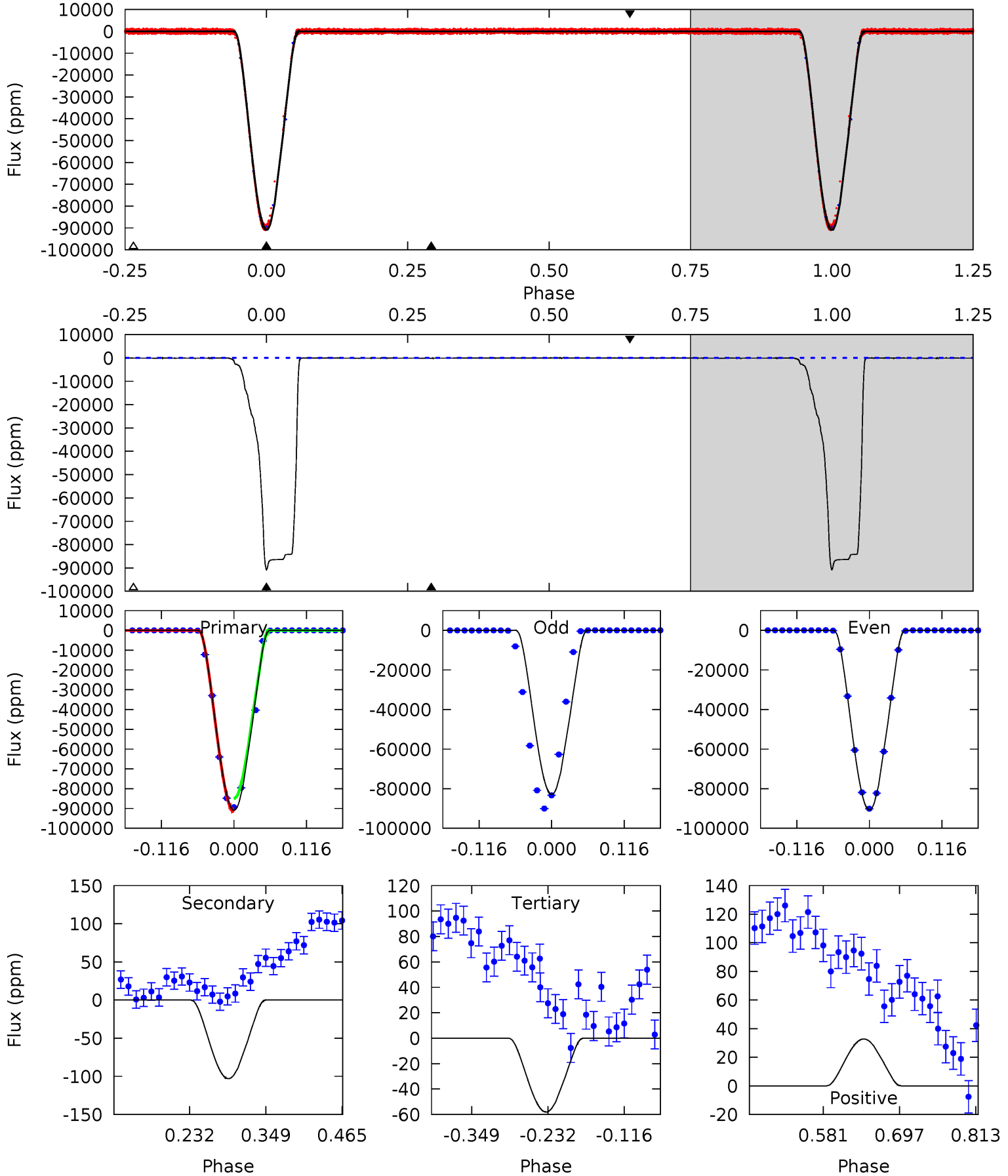
TCE 004157488-01 P= 2.598720 Days  $T_0=132.550815$  (BKJD)



# DV Model-Shift Uniqueness Test

004157488-01, P = 2.598710 Days, E = 129.968861 Days

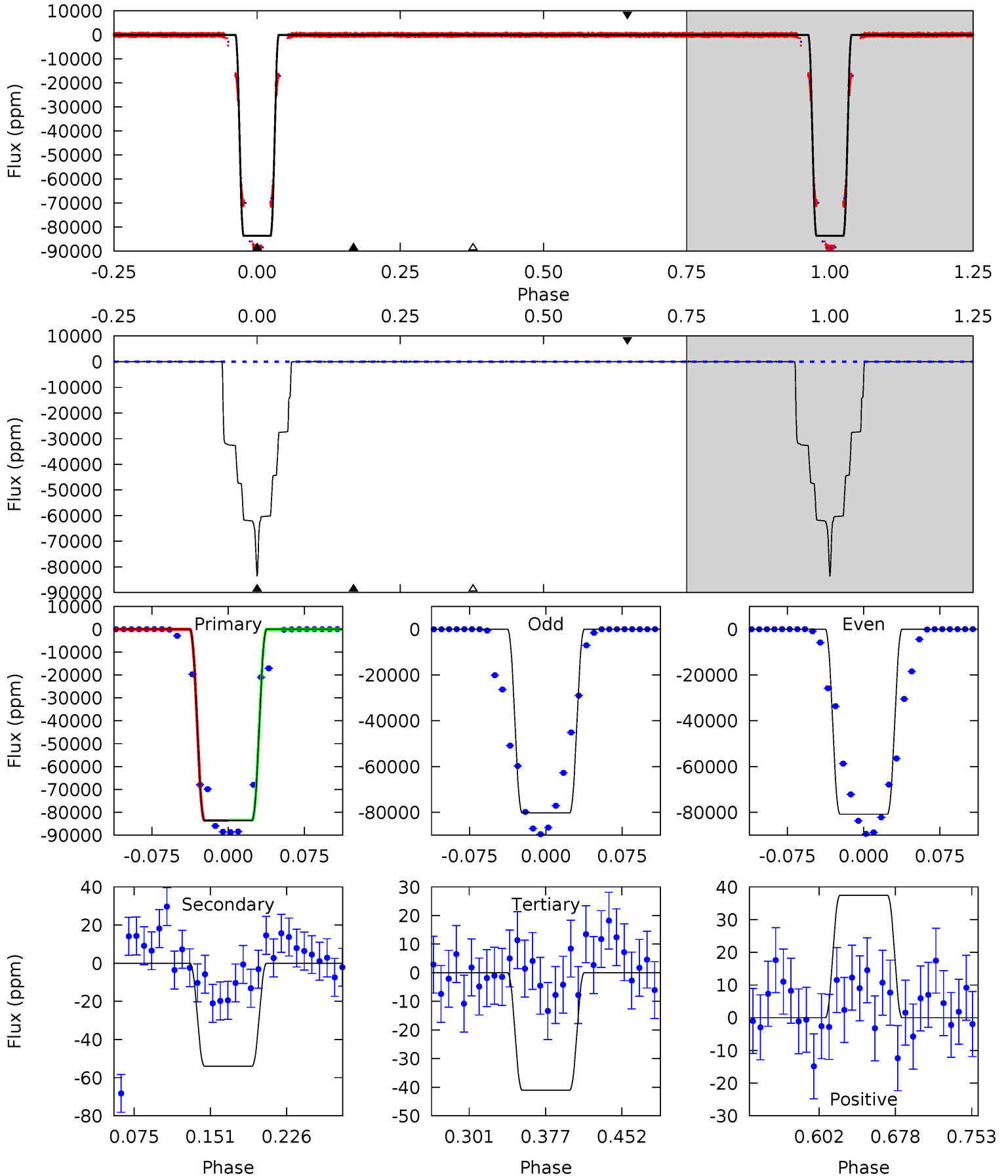
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11048	12.5	7.06	3.98	4.53	1.57	5.72	11041	11044	5.47	8.54	1051	0.99	0.00	0



# Alt Model-Shift Uniqueness Test

004157488-01, P = 2.598720 Days, E = 129.952095 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
7722	4.99	3.79	3.46	4.62	1.78	1.12	7719	7719	1.20	1.53	44.6	1.00	0.00	0



### Stellar Parameters For KIC 004157488

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6248^{+197}_{-197}$	$4.050^{+0.405}_{-0.162}$	$-0.580^{+0.300}_{-0.300}$	$1.528^{+0.385}_{-0.578}$	$0.955^{+0.139}_{-0.114}$	$0.377^{+1.098}_{-0.168}$
	+3%/-3%	+10%/-4%	+52%/-52%	+25%/-38%	+15%/-12%	+291%/-45%
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 004157488-01 / KOI 6390.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-103 \pm 8$	$71.33^{+10.42}_{-15.54}$	$2475^{+190}_{-280}$	$-2760^{+174}_{-118}$	$0.015^{+0.009}_{-0.004}$
Alt.	$-54 \pm 11$	$48.14^{+7.50}_{-10.04}$	$2454^{+190}_{-266}$	$-2749^{+167}_{-116}$	$0.017^{+0.010}_{-0.005}$

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

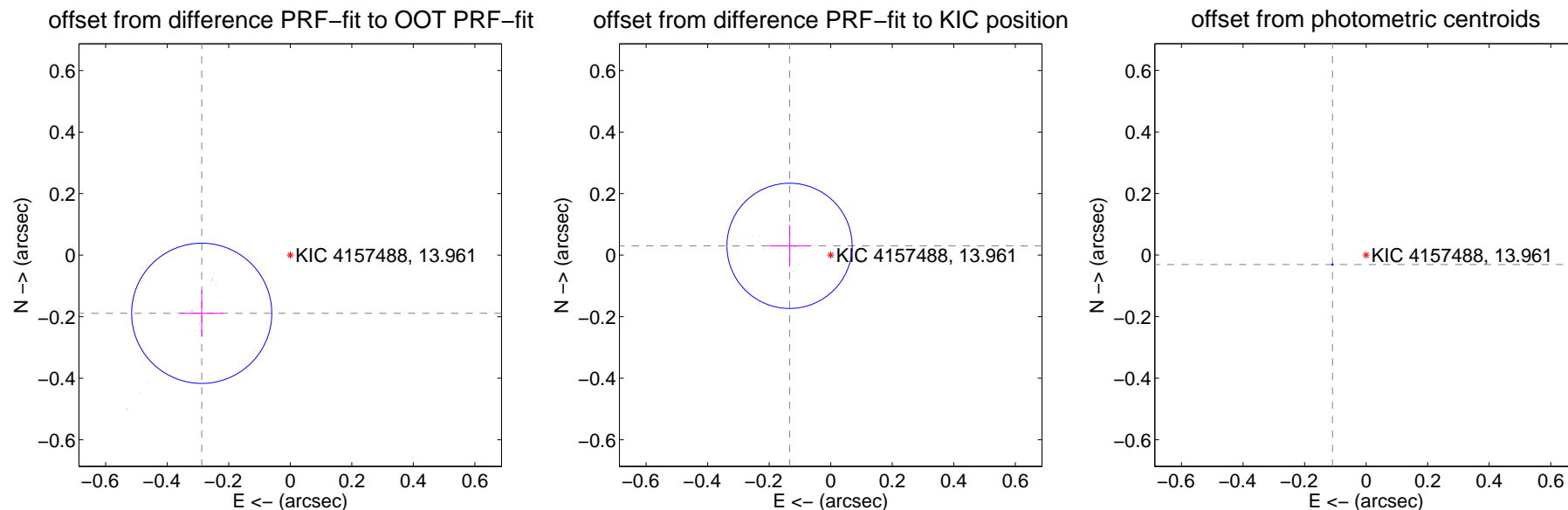
## DV Centroid Data

Supplemental centroid analysis for 004157488-01. Kepler magnitude: 13.96. Transit SNR 7300.61

There are 17 quarters with good PRF difference image offsets

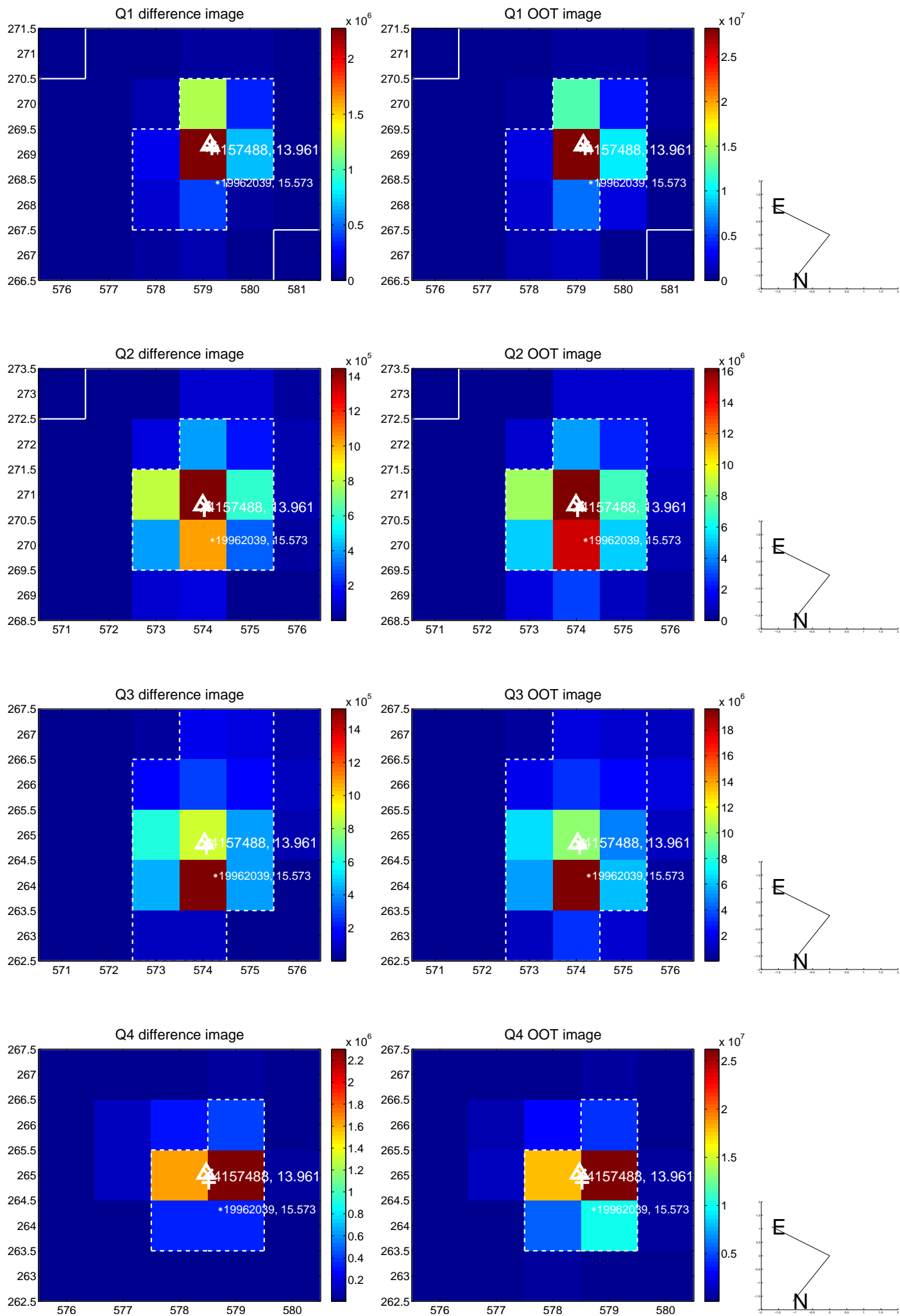
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>0.344 <math>\pm</math> 0.076</b>	<b>4.54</b>	0.288 $\pm$ 0.070	-0.189 $\pm$ 0.074
PRF-fit source offset from KIC position	0.137 $\pm$ 0.068	2.02	0.134 $\pm$ 0.068	0.030 $\pm$ 0.067
photometric centroid source offset	<b>0.11 <math>\pm</math> 0.00</b>	<b>151.21</b>	0.11 $\pm$ 0.00	-0.03 $\pm$ 0.00

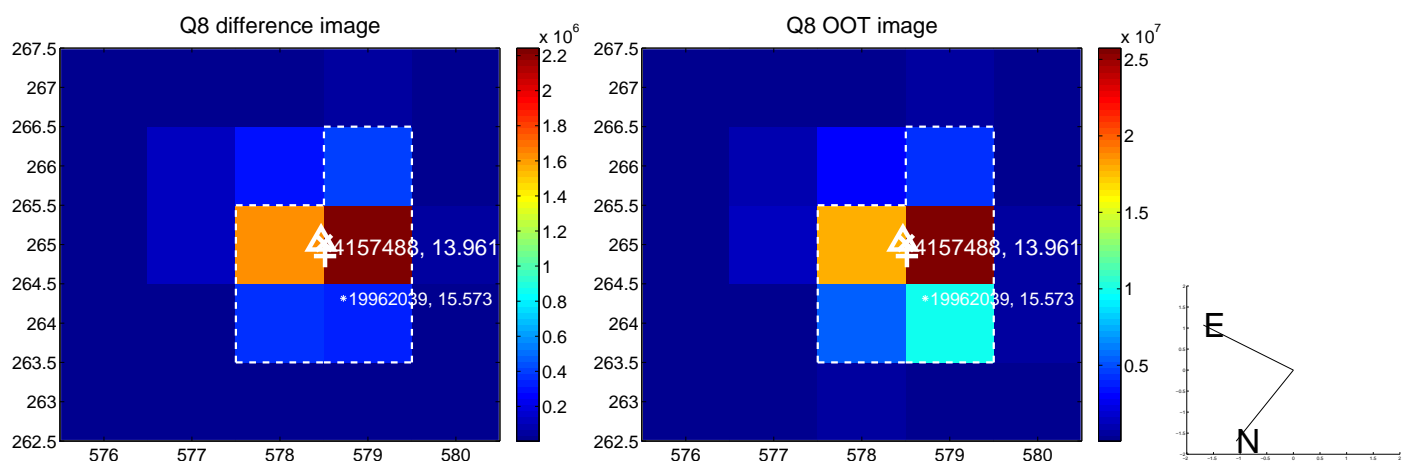
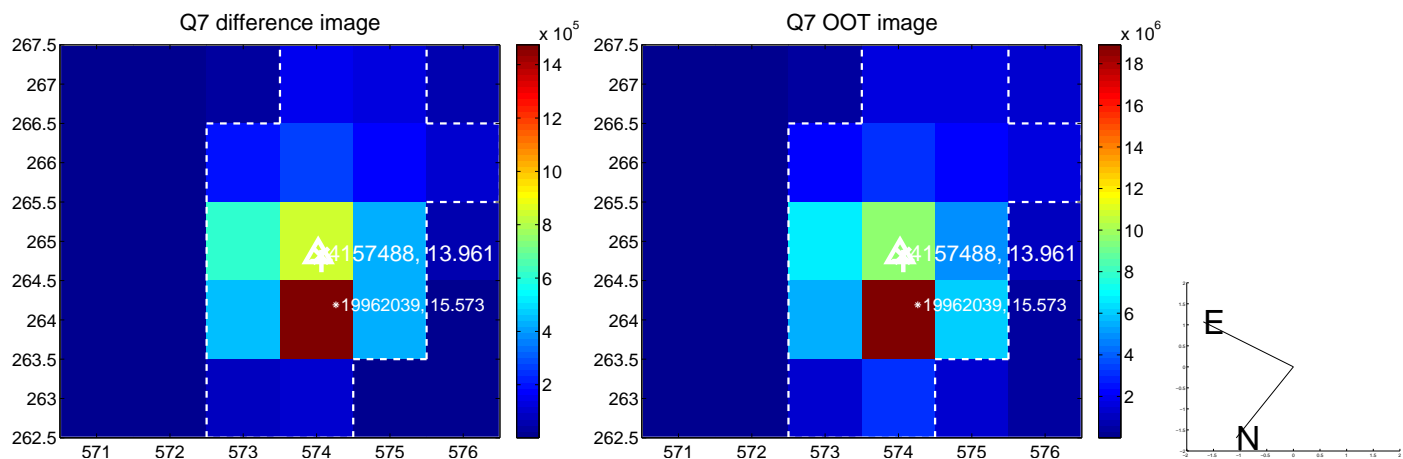
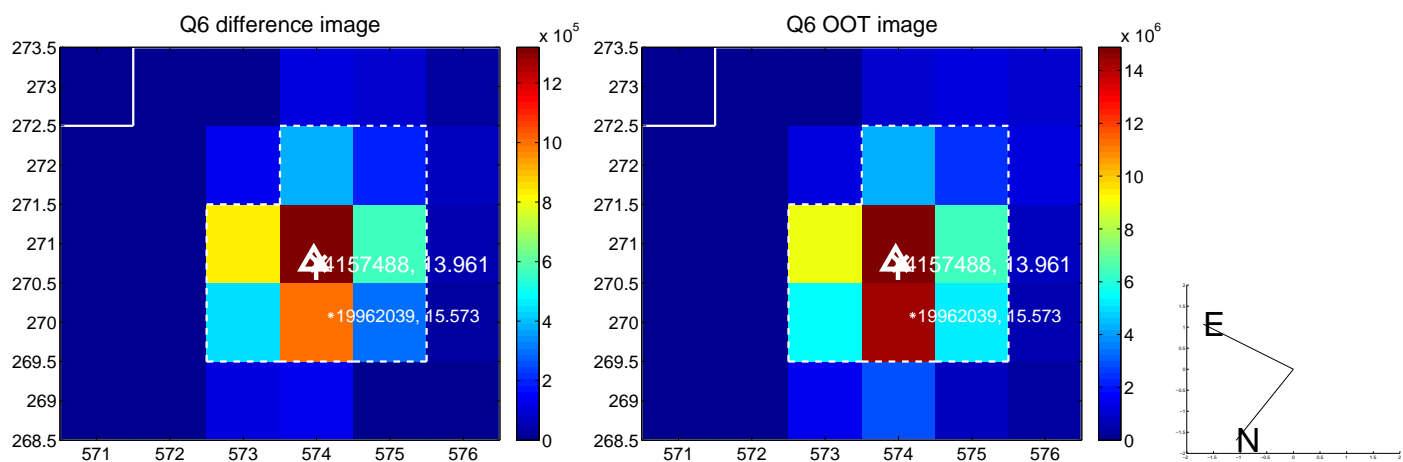
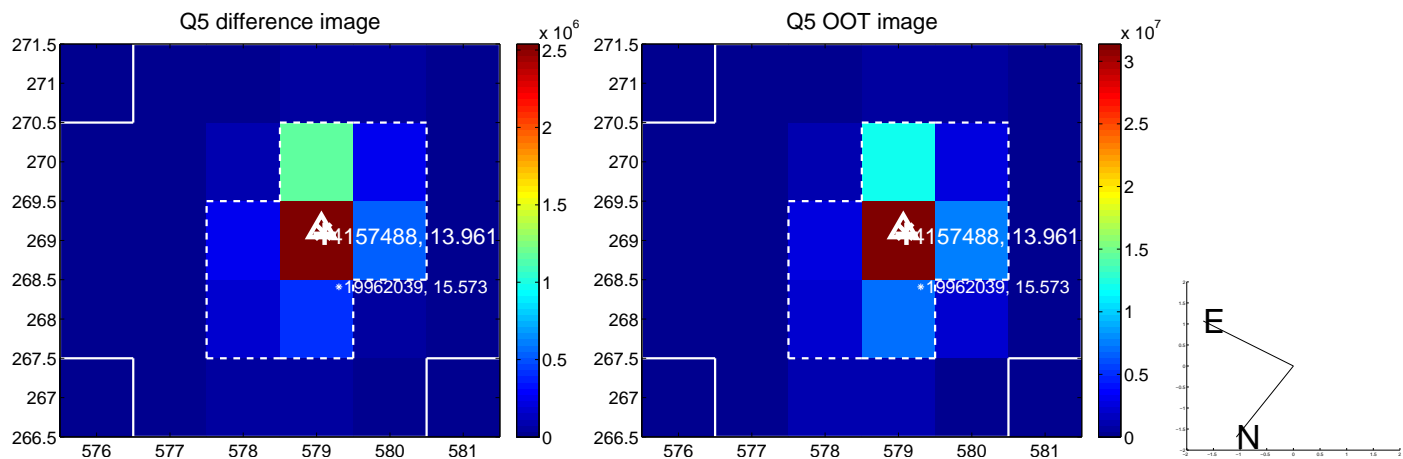


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

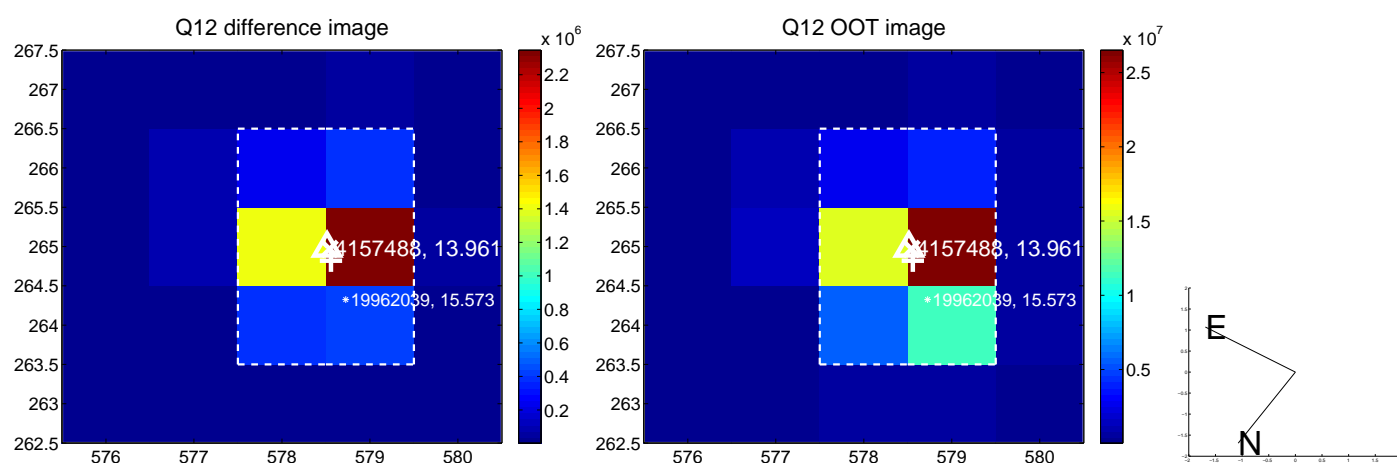
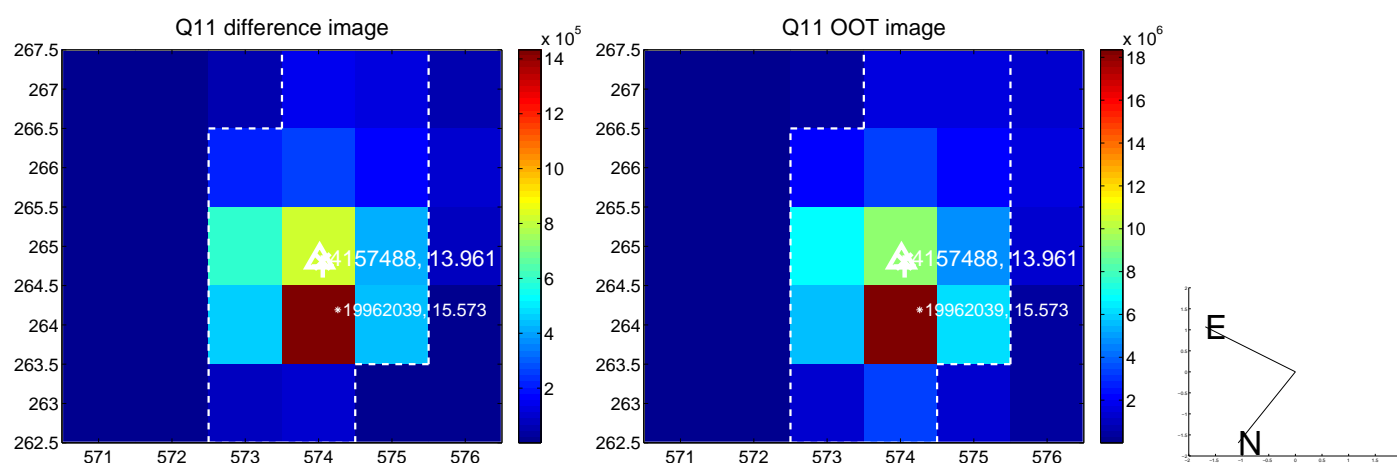
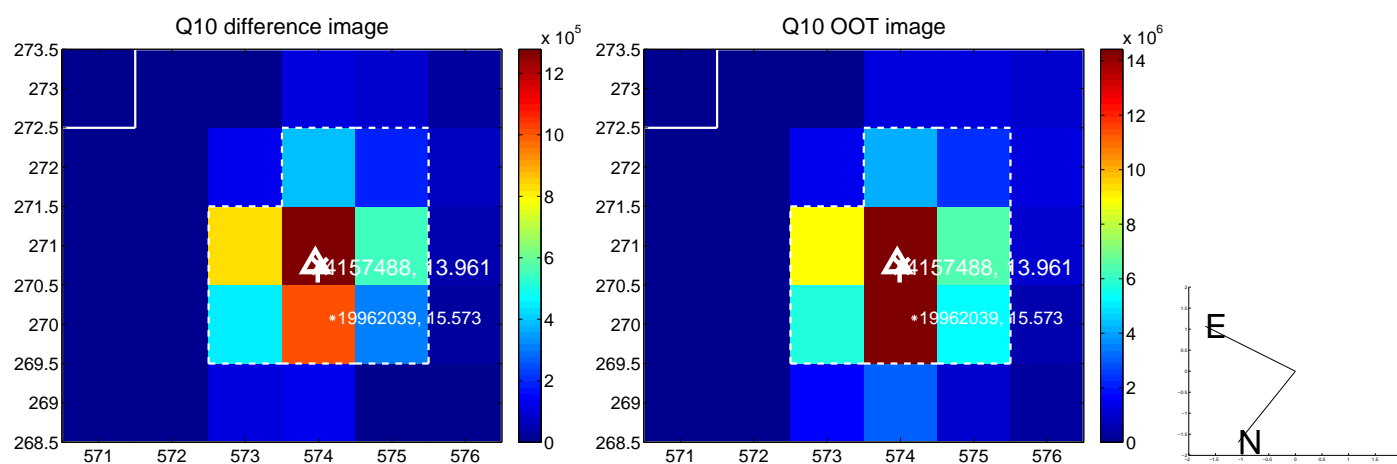
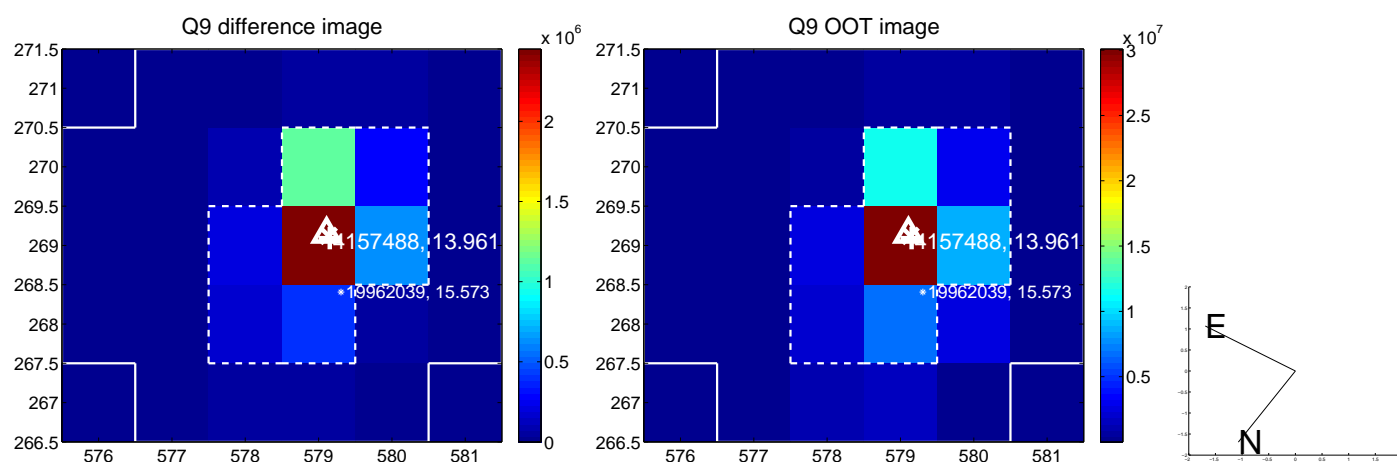


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

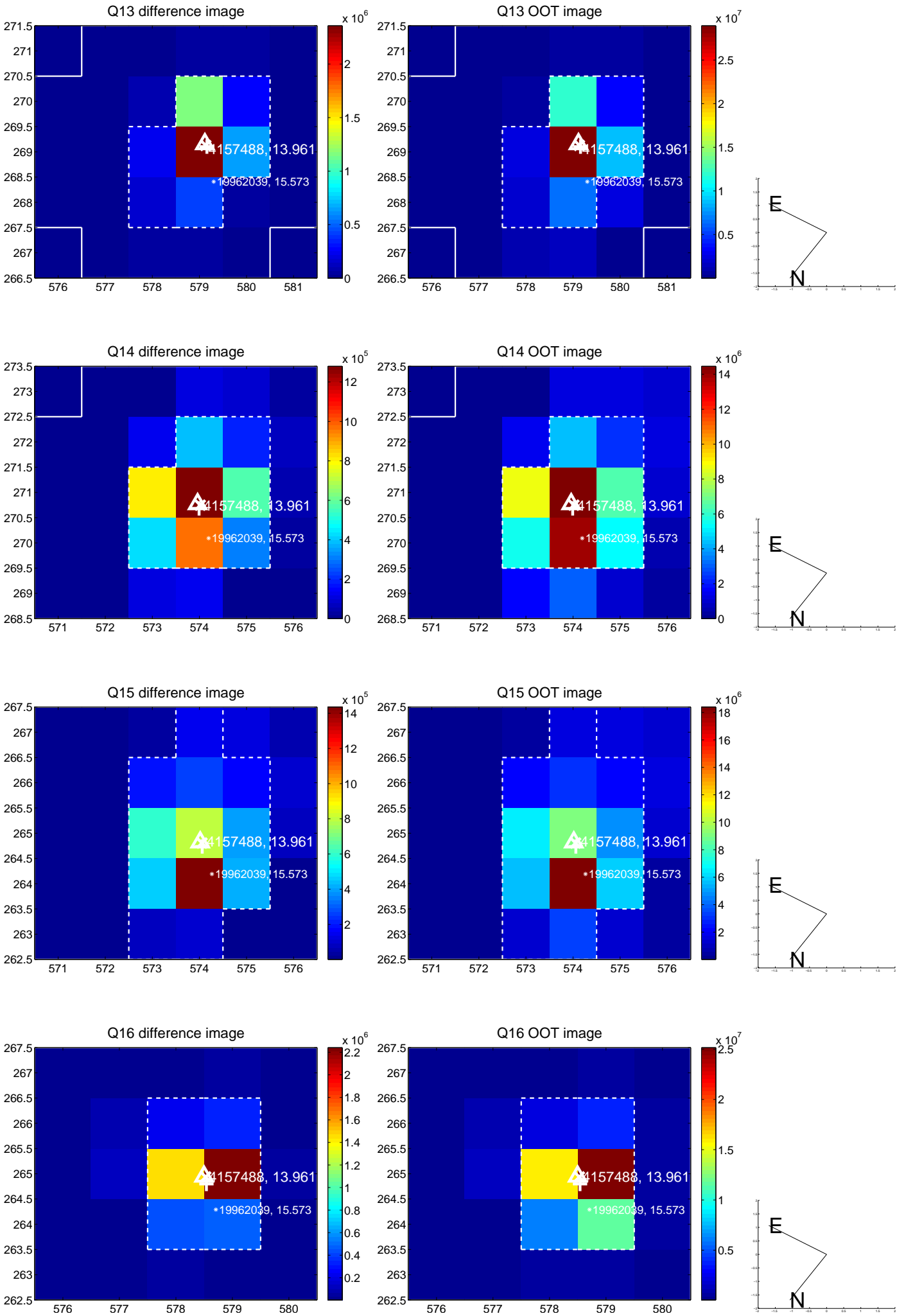




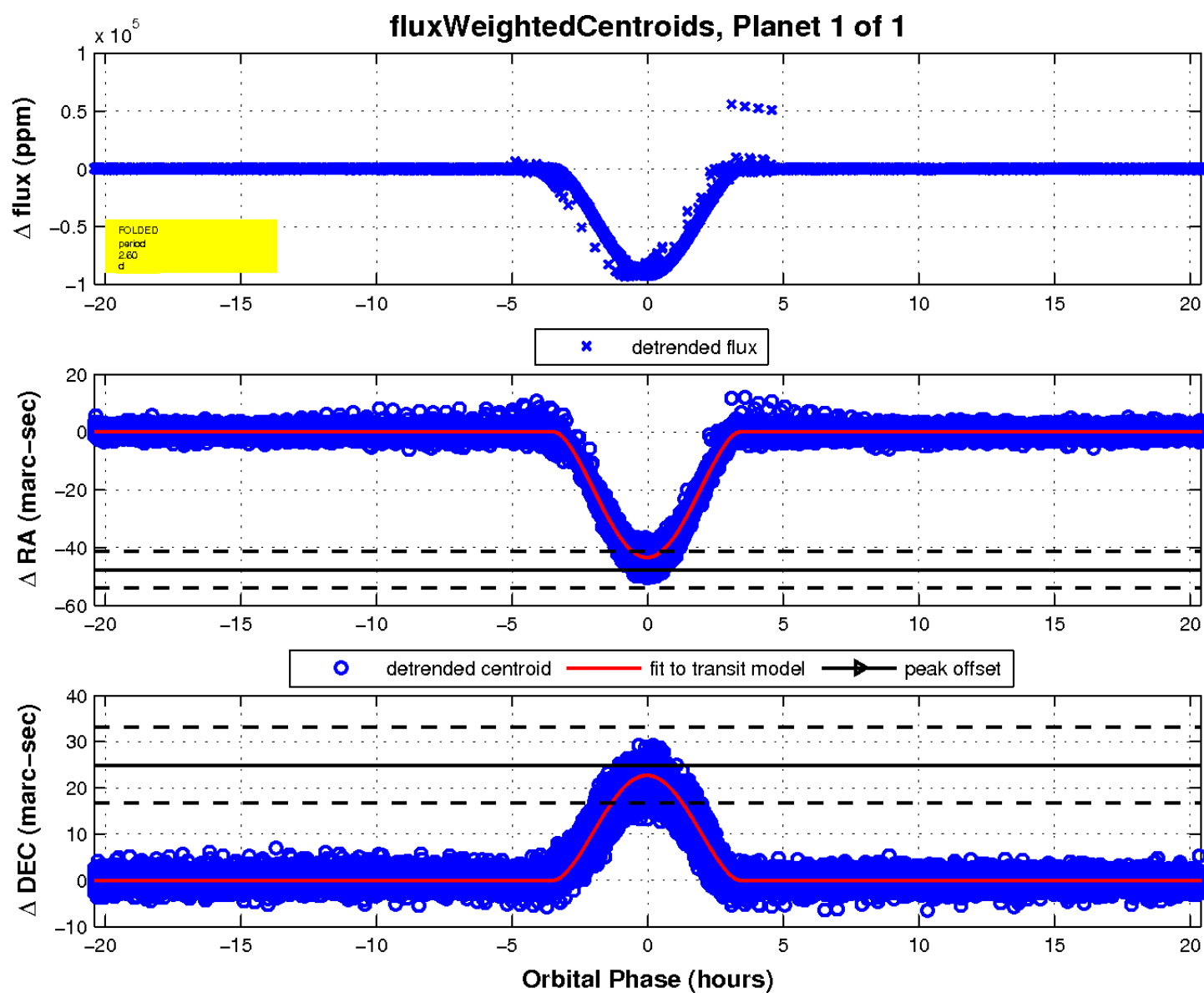
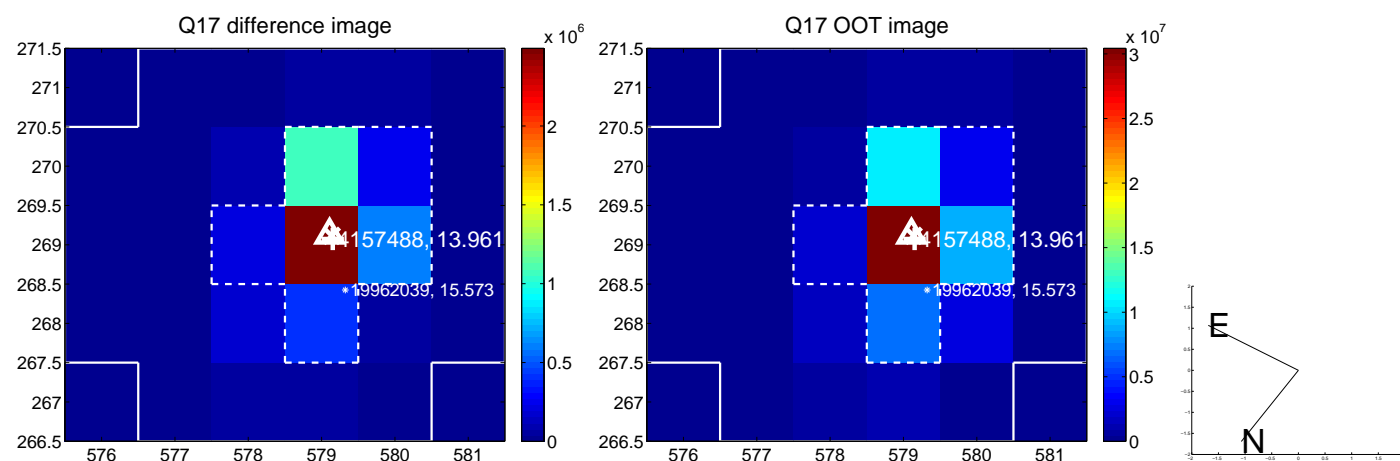
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

