

# KIC 002441161

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002441161-01	OBS	3642.01	2.192010	132.216102	112140.7	3.067	1443.7	1032.4	0.69	5306	32.60	370.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002441161-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—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.

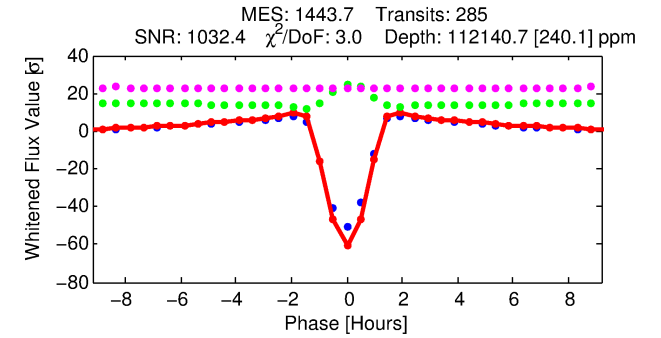
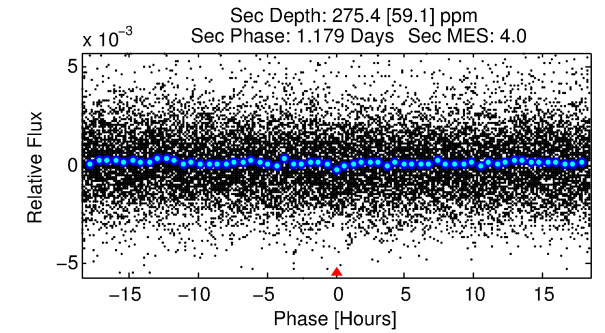
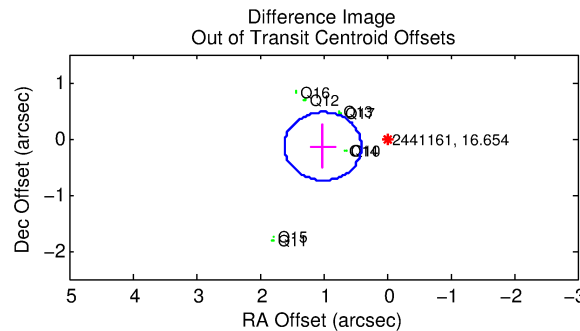
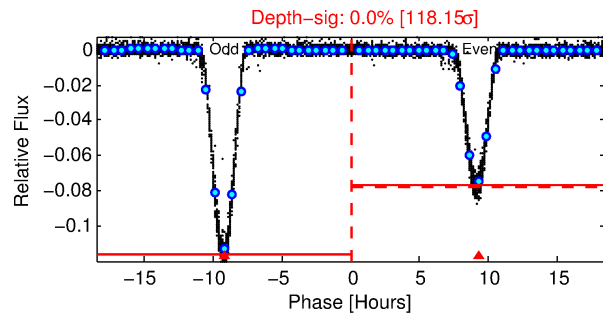
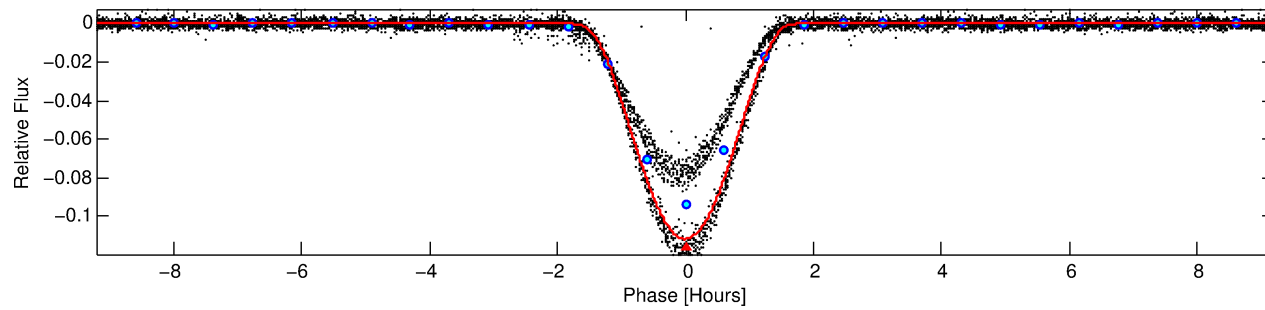
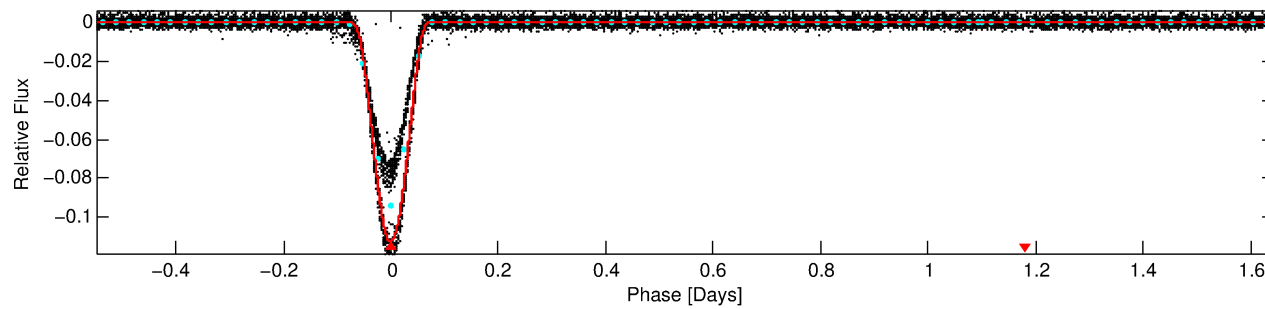
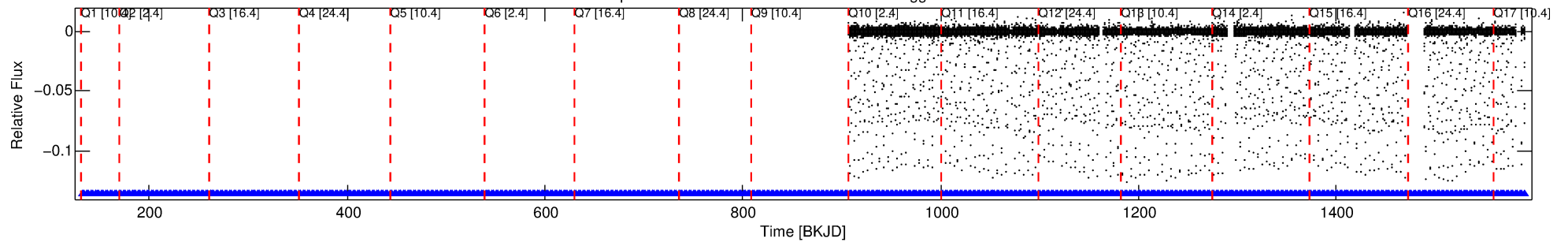
## Ephemeris Match Information For 002441161-01

No Significant Match Found

# DV One-Page Summary

KIC: 2441161 Candidate: 1 of 1 Period: 2.192 d  
KOI: K03642.01 Corr: 0.989

Kp: 16.65 R\*: 0.69 Rs Teff: 5306.0 K Logg: 4.64 Fe/H: -0.480



## DV Fit Results:

Period = 2.19201 [0.00000] d  
Epoch = 132.2161 [0.0001] BKJD  
Rp/R\* = 0.4349 [0.0500]  
a/R\* = 6.31 [0.03]  
b = 0.87 [0.08]  
Seff = 370.52 [84.61]  
Teq = 1119 [64] K  
Rp = 32.60 [6.35] Re  
a = 0.0301 [0.0039] AU  
Ag = 0.13 [0.05] [-18.62σ]  
Teffp = 1037 [89] K [-0.75σ]

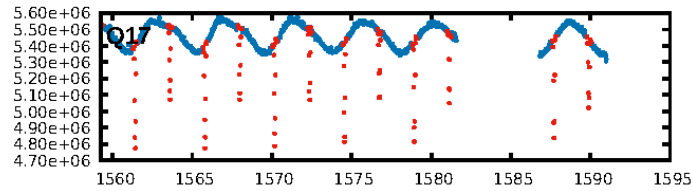
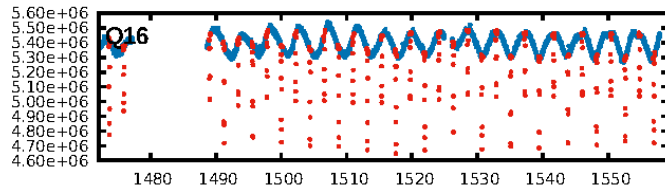
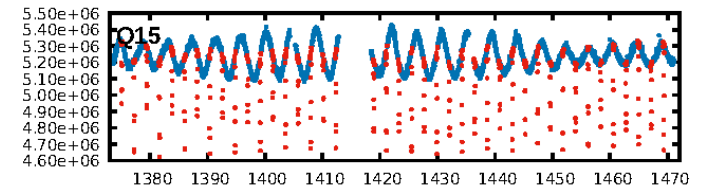
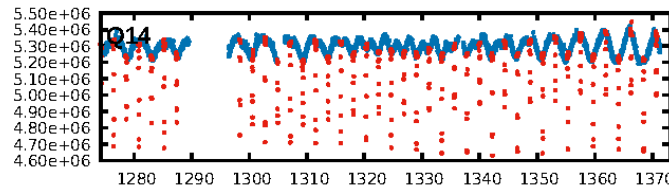
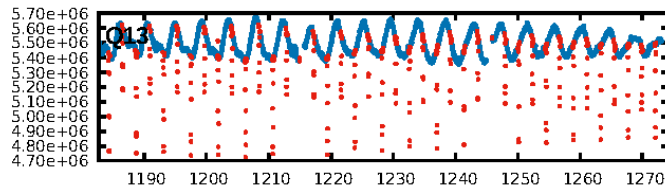
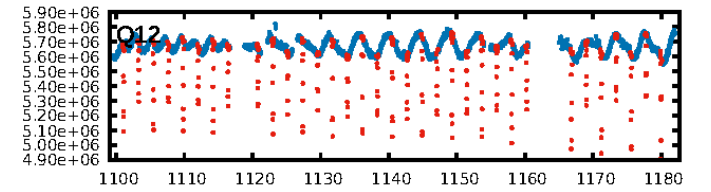
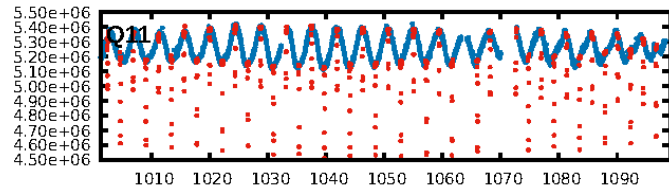
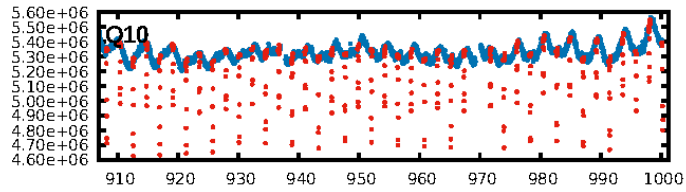
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [272/272]  
GhostDiagnostic-chr: 3.219  
Centroid-sig: 0.0%  
Centroid-so: 0.839 arcsec [206.19σ]  
OOTOffset-rm: 1.017 arcsec [5.03σ]  
KicOffset-rm: 0.120 arcsec [1.63σ]  
OOTOffset-st: 2/2/2/2 [8]  
KicOffset-st: 2/2/2/2 [8]  
DiffImageQuality-fgm: 1.00 [8/8]  
DiffImageOverlap-fno: 1.00 [8/8]

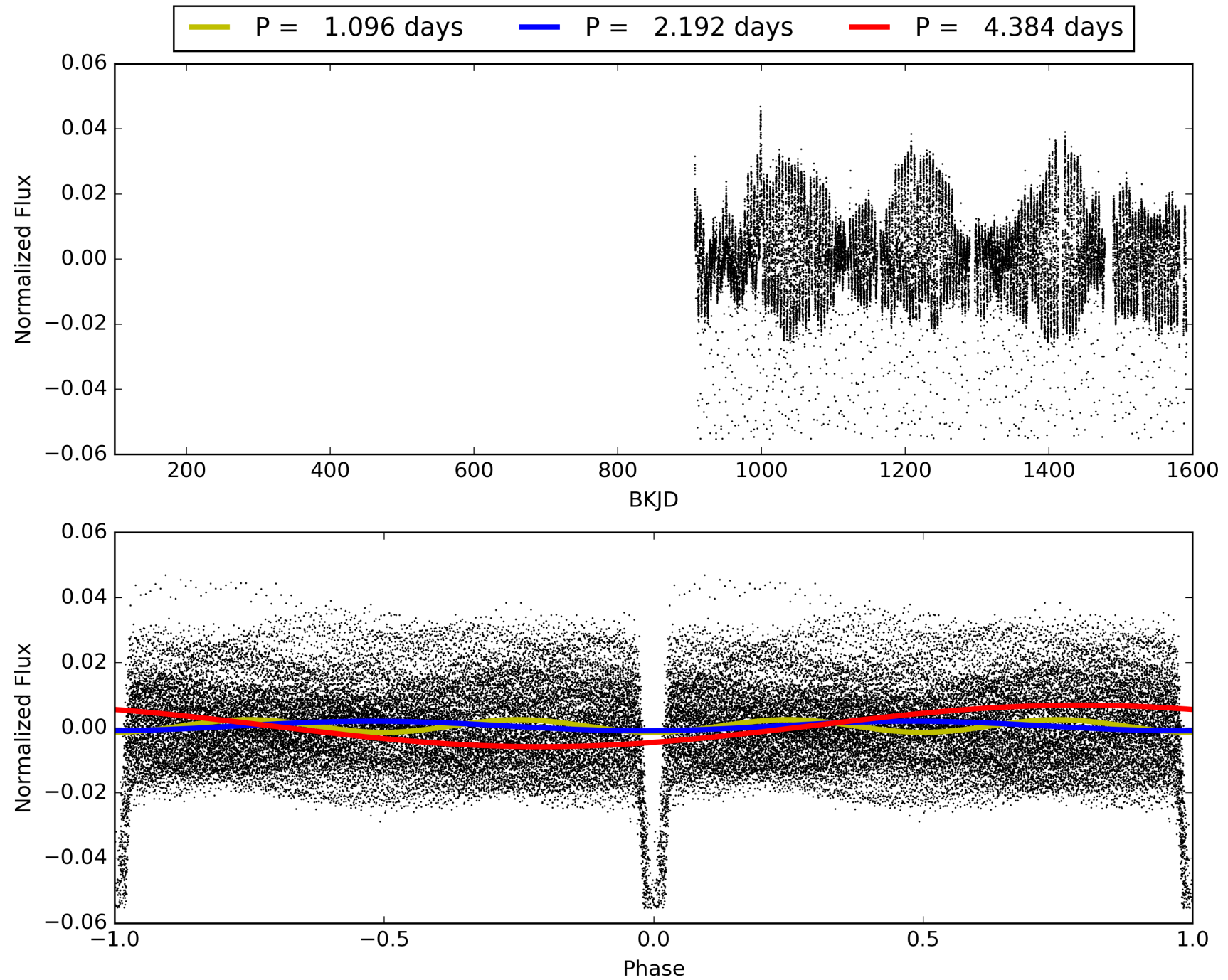
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:18:48 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 002441161-01, PDC Light Curves

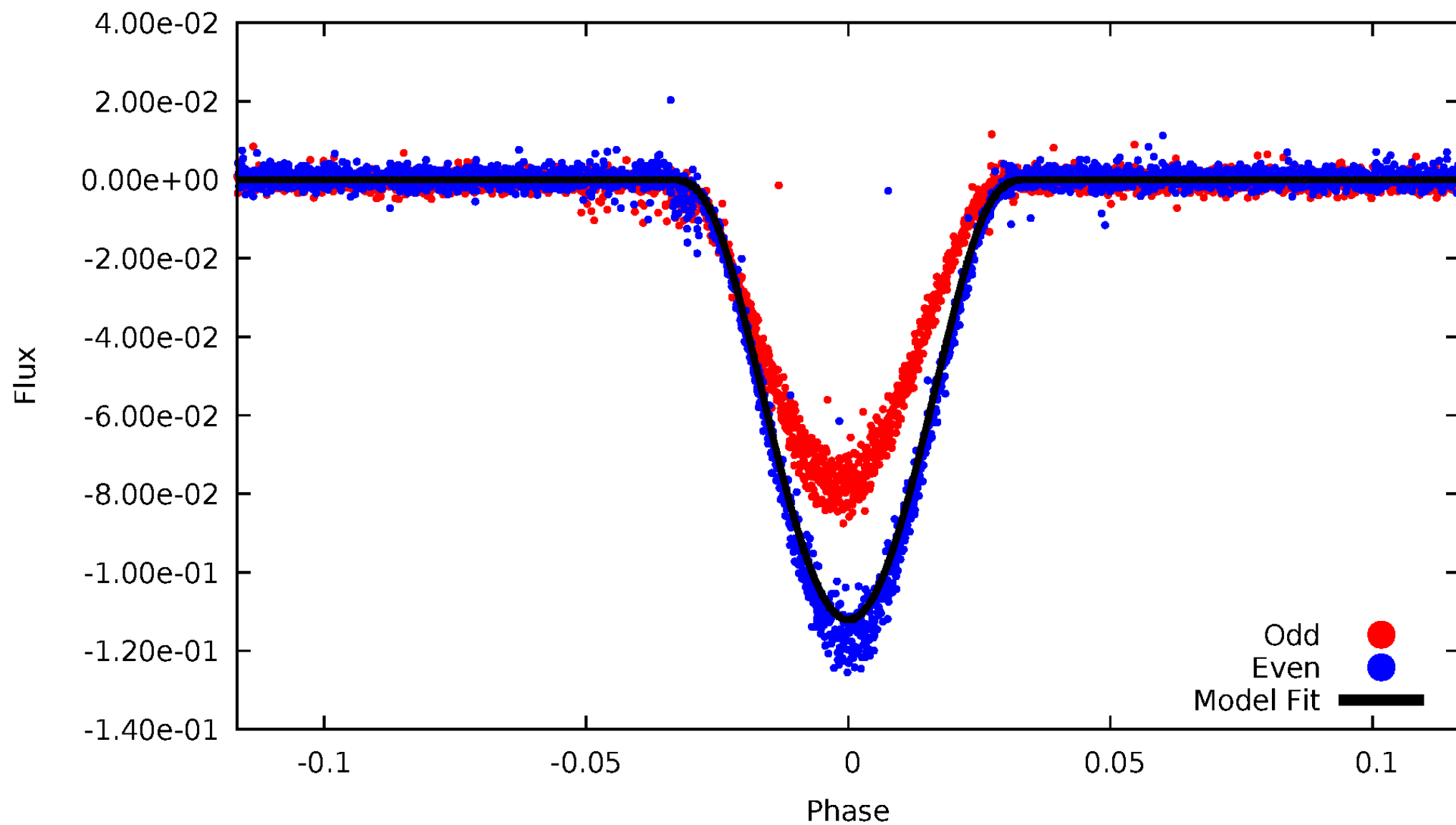


TCE 002441161-01



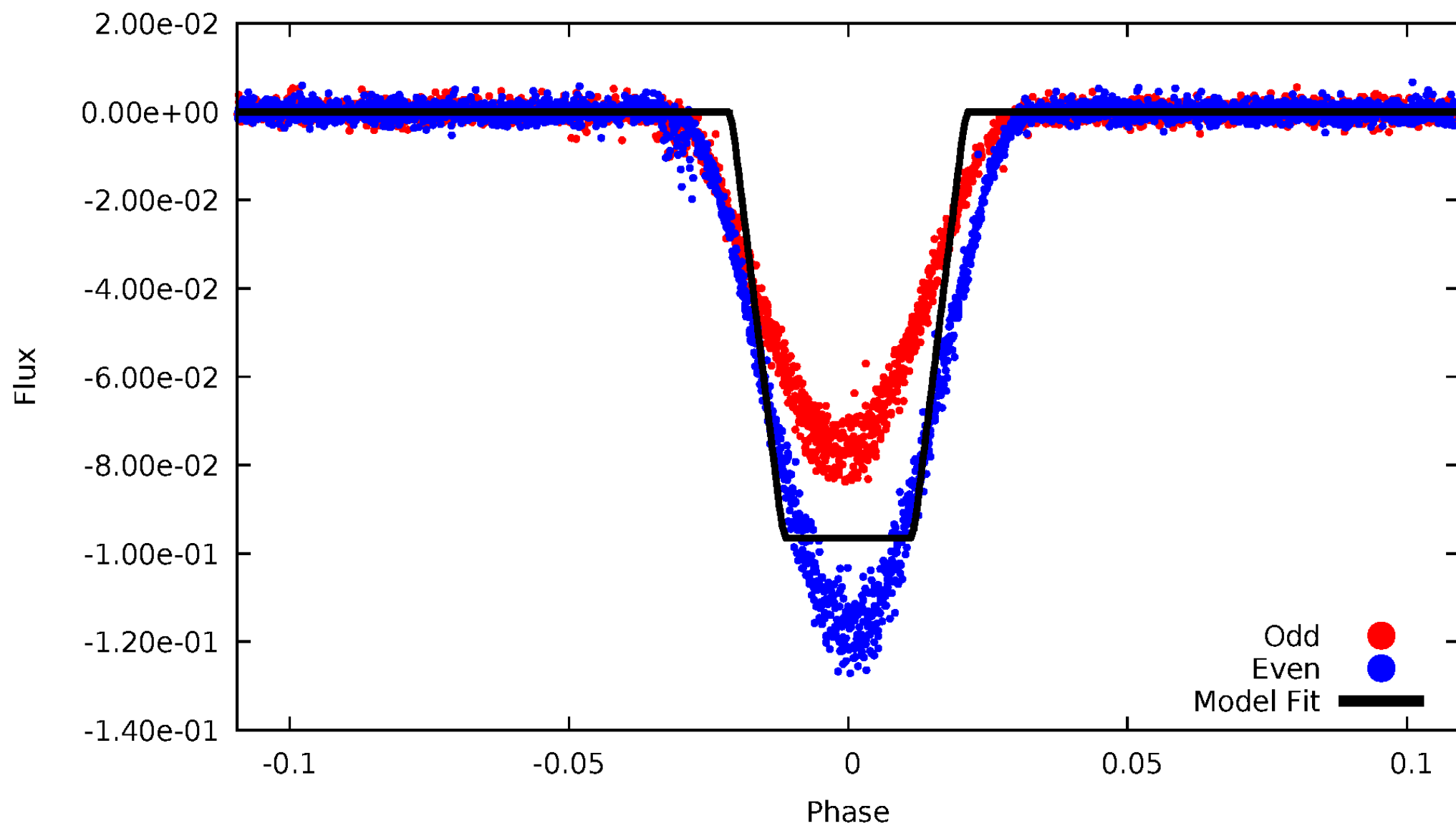
# DV Odd/Even

TCE 002441161-01



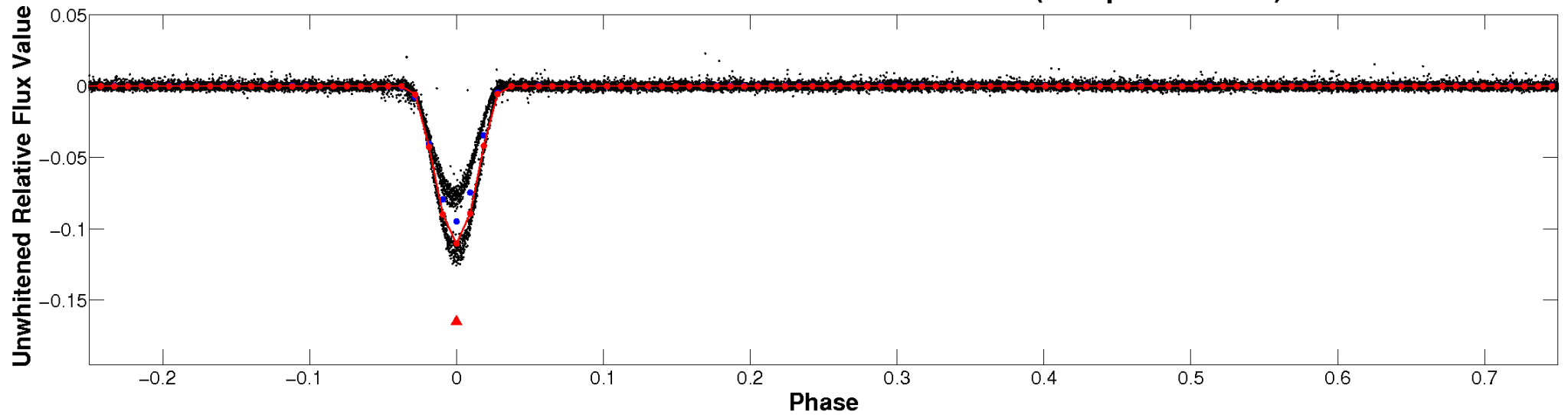
# ALT Odd/Even

TCE 002441161-01

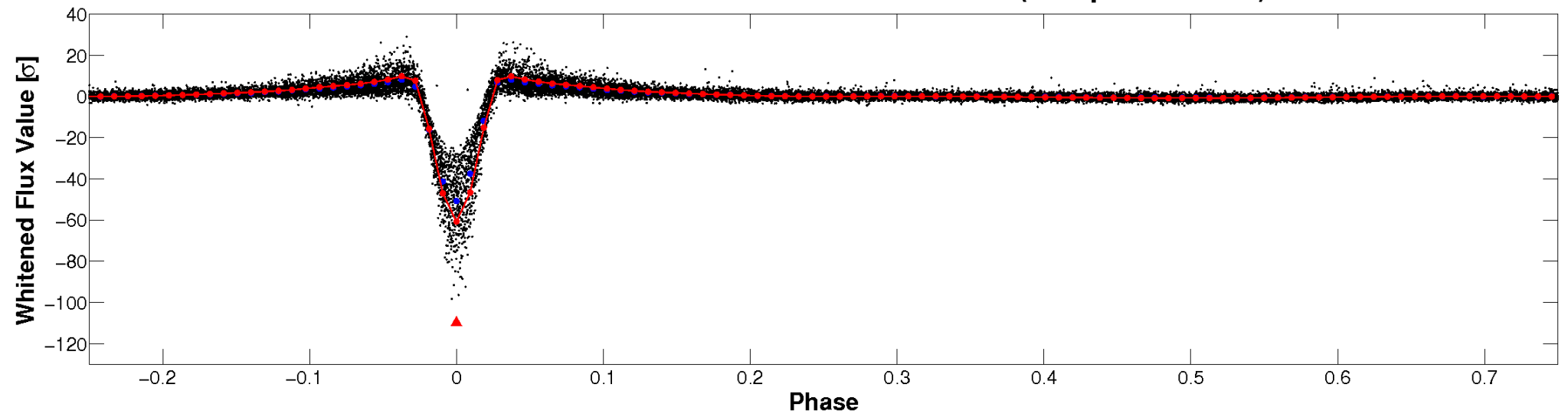


# Non-Whitened Vs. Whitened Light Curve

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

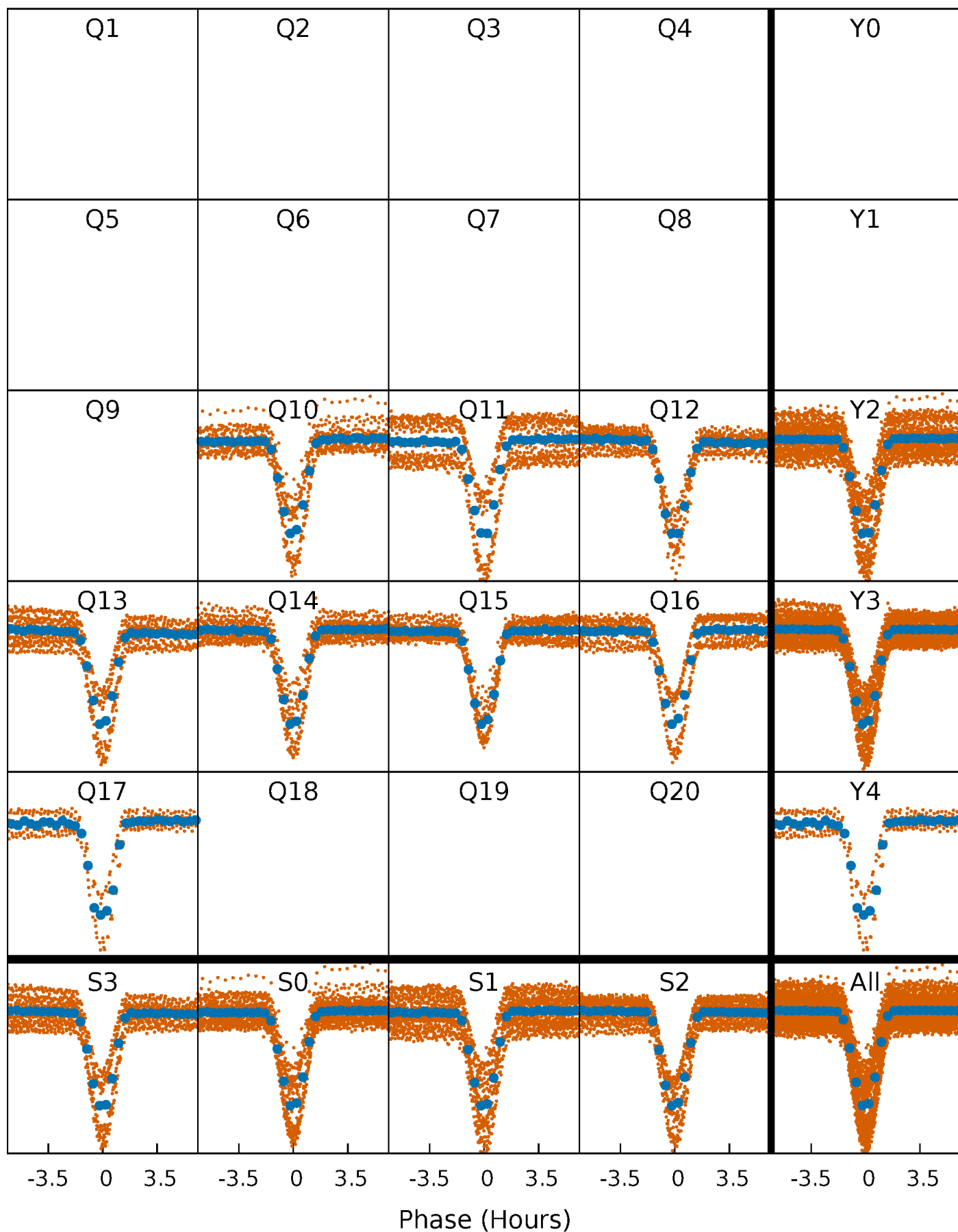


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

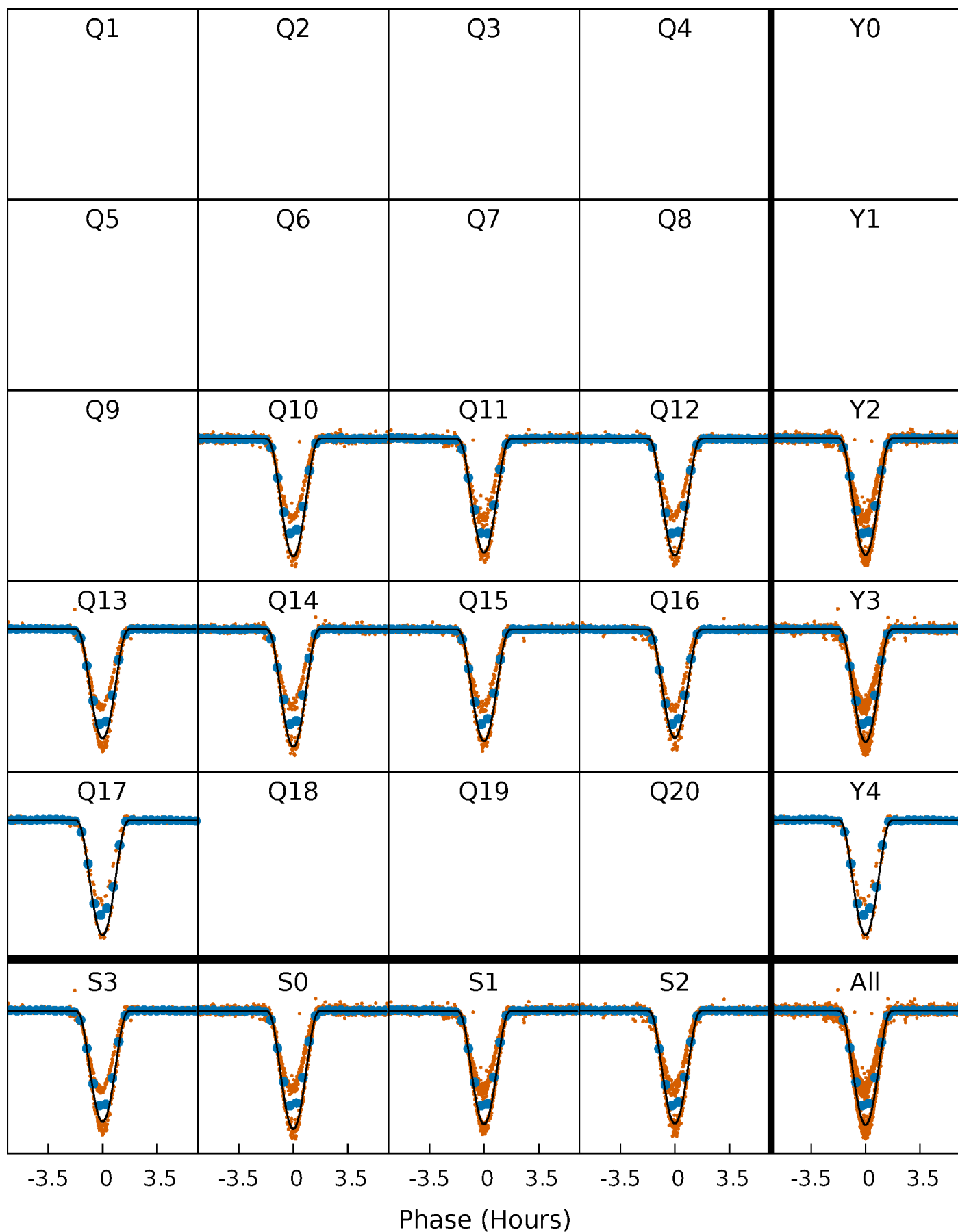
TCE 002441161-01 P= 2.192010 Days  $T_0=132.216102$  (BKJD)





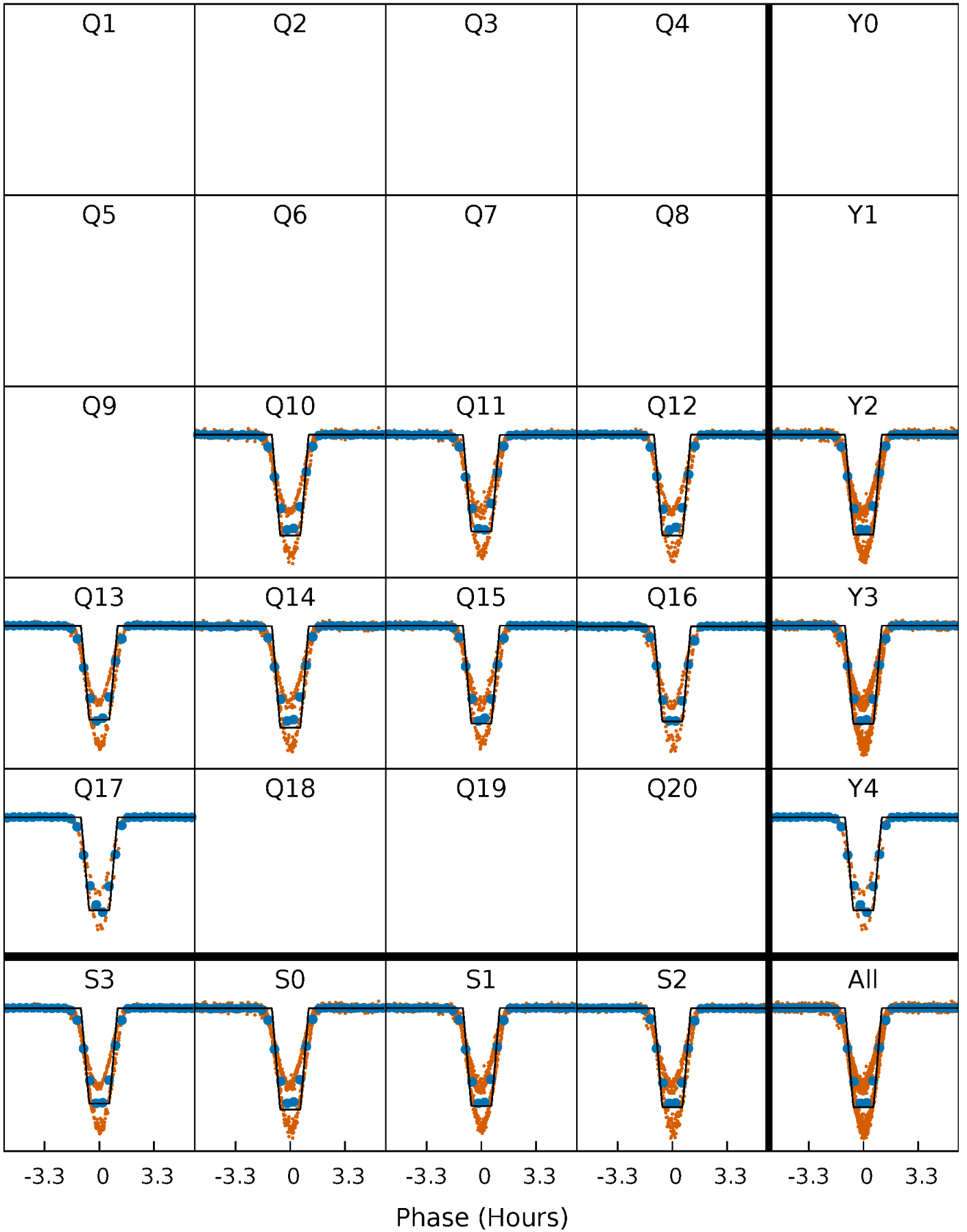
# DV Quarter-Phased Transit Curves

TCE 002441161-01 P= 2.192010 Days  $T_0=132.216102$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

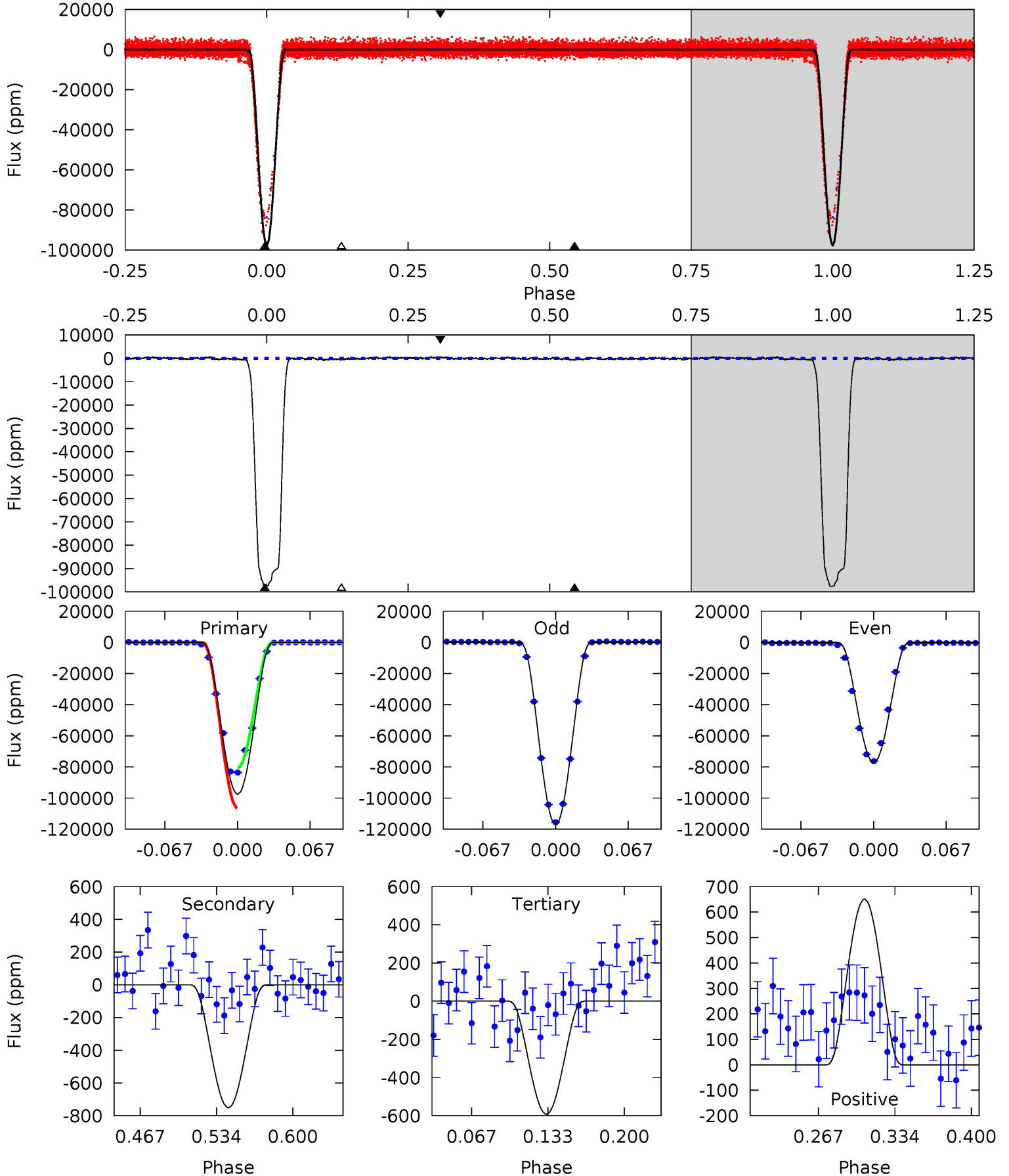
TCE 002441161-01   P= 2.192005 Days    $T_0=132.217626$  (BKJD)



# DV Model-Shift Uniqueness Test

002441161-01, P = 2.192010 Days, E = 132.216102 Days

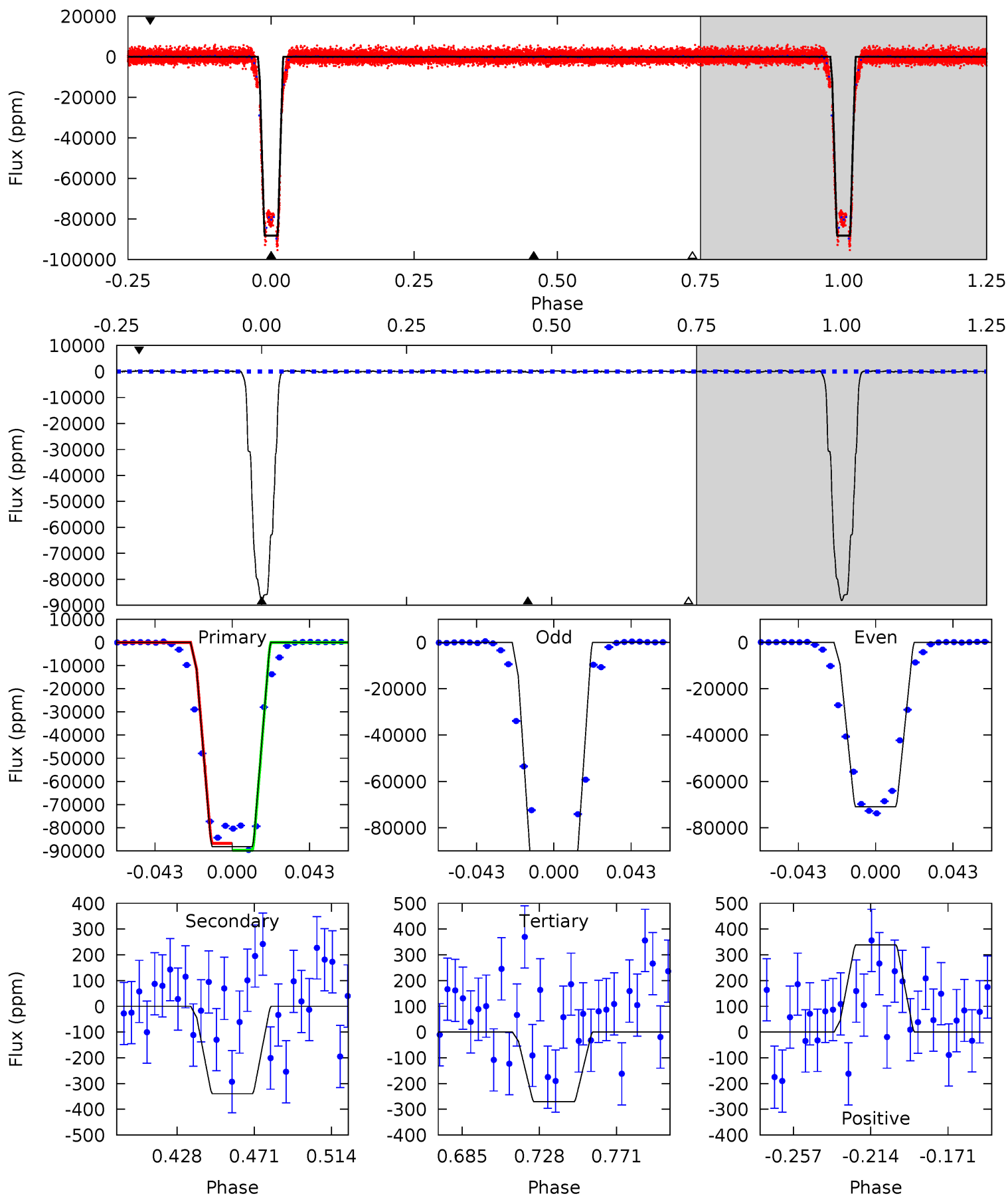
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1800	13.9	10.9	12.0	4.65	1.83	4.52	1789	1788	2.95	1.85	557.8	1.13	0.01	0



# Alt Model-Shift Uniqueness Test

002441161-01, P = 2.192005 Days, E = 132.217626 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
1055	4.06	3.24	4.05	4.74	2.03	1.43	1052	1051	0.82	0.01	321.9	1.12	0.00	0



### Stellar Parameters For KIC 002441161

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5306^{+185}_{-185}$	$4.642^{+0.030}_{-0.096}$	$-0.480^{+0.300}_{-0.300}$	$0.687^{+0.108}_{-0.046}$	$0.765^{+0.081}_{-0.072}$	$3.330^{+0.474}_{-1.038}$
	+3%/-3%	+1%/-2%	+62%/-62%	+16%/-7%	+11%/-9%	+14%/-31%
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 002441161-01 / KOI 3642.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-752 \pm 54$	$33.61^{+4.82}_{-4.44}$	$1587^{+69}_{-69}$	$1783^{+257}_{-3629}$	$0.332^{+0.105}_{-0.078}$
Alt.	$-339 \pm 84$	$24.14^{+3.91}_{-4.00}$	$1582^{+69}_{-65}$	$-1650^{+3679}_{-356}$	$0.286^{+0.141}_{-0.094}$

$T_{max}$  = 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

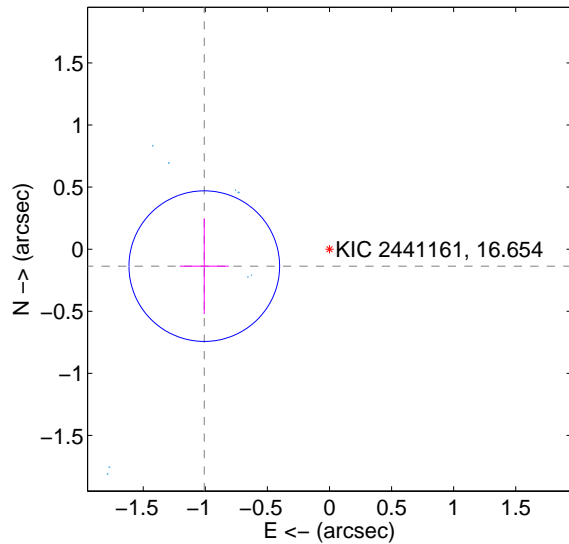
Supplemental centroid analysis for 002441161-01. Kepler magnitude: 16.65. Transit SNR 1032.37

There are 8 quarters with good PRF difference image offsets

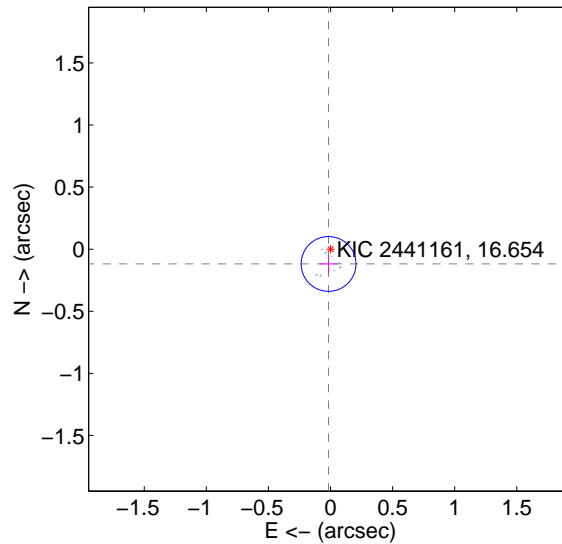
The direct PRF centroid is offset from the target star catalog position by about 1.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.017 \pm 0.202$	5.03	$1.008 \pm 0.197$	$-0.137 \pm 0.386$
PRF-fit source offset from KIC position	$0.120 \pm 0.074$	1.63	$0.016 \pm 0.071$	$-0.119 \pm 0.074$
photometric centroid source offset	$0.84 \pm 0.00$	206.19	$-0.68 \pm 0.00$	$-0.50 \pm 0.00$

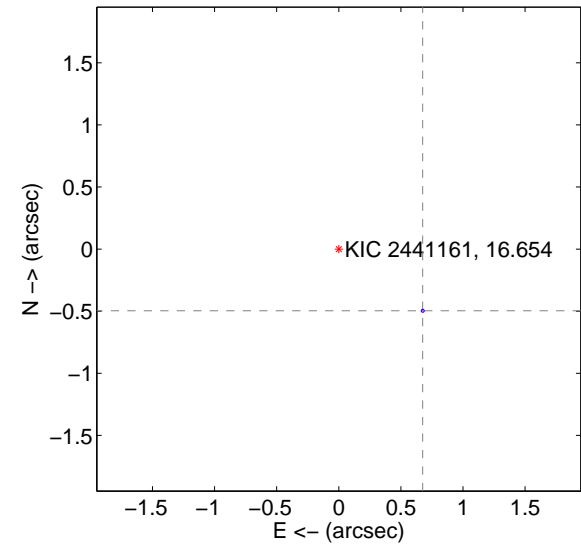
offset from difference PRF-fit to OOT PRF-fit



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.

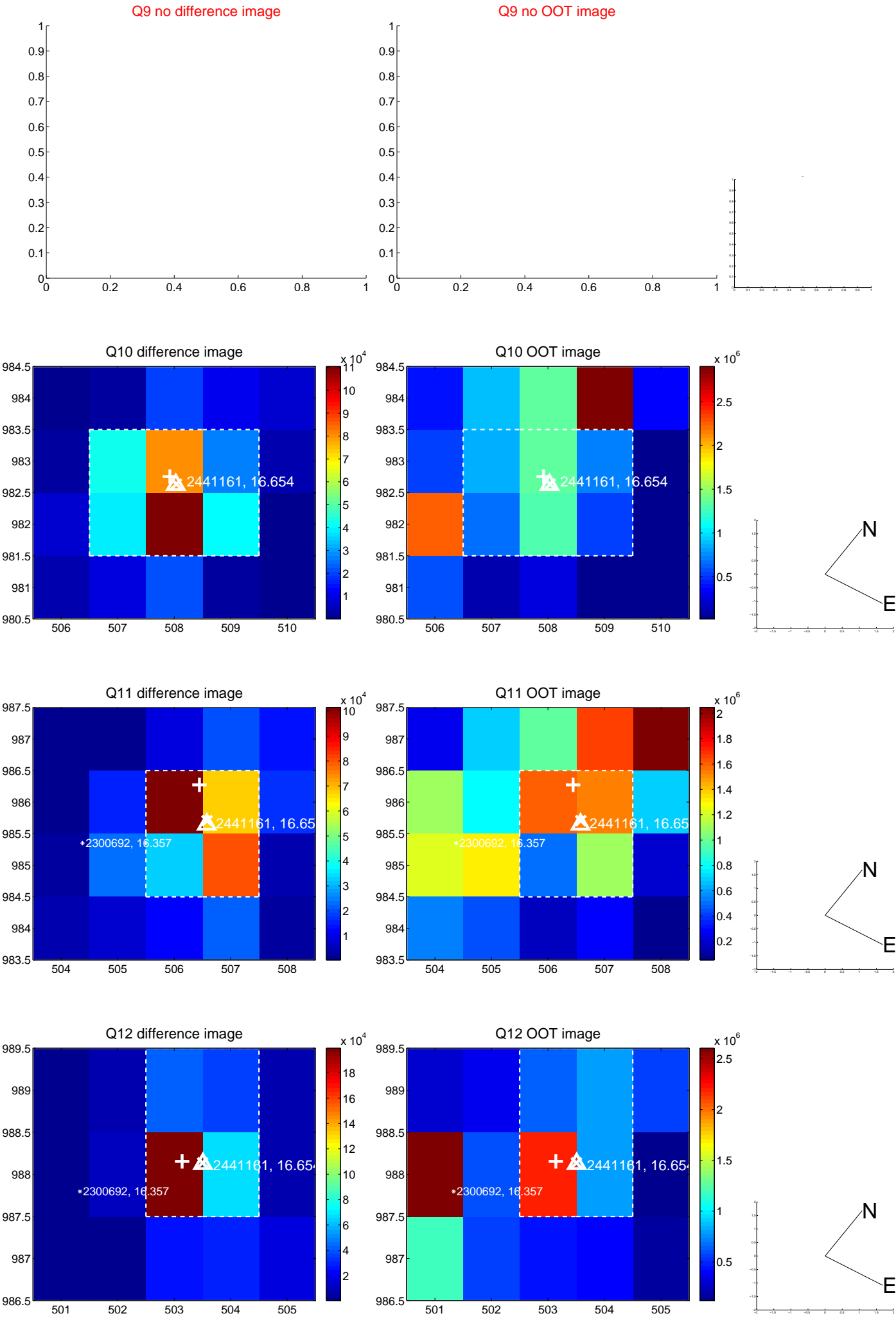


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

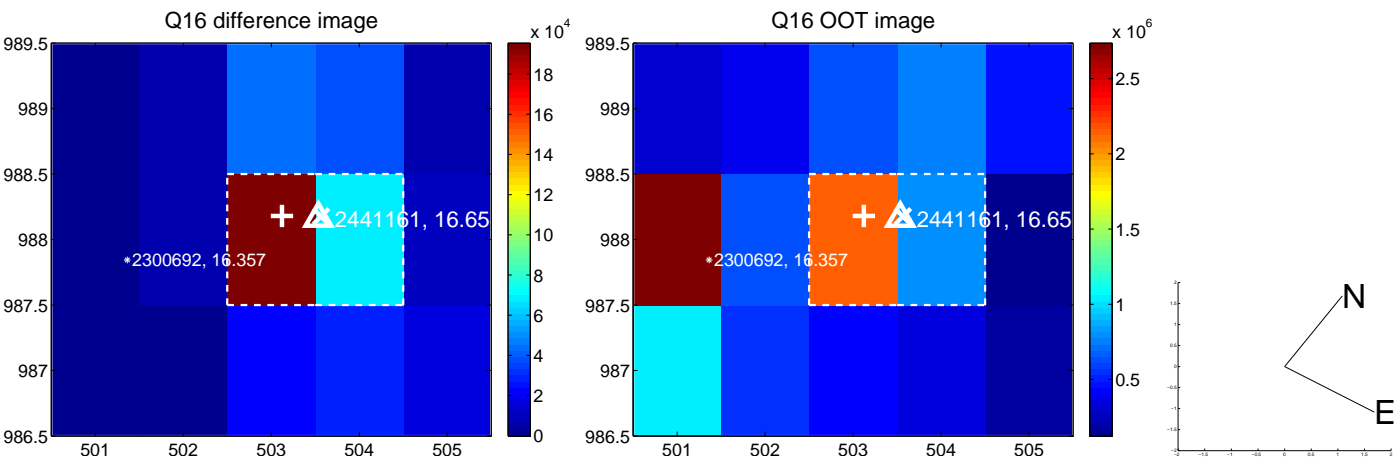
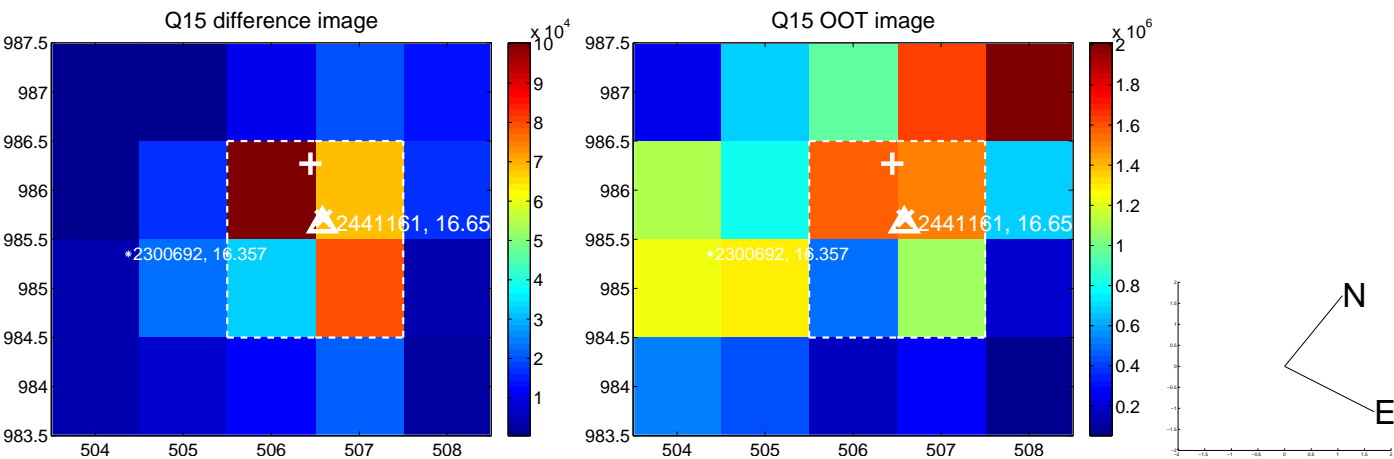
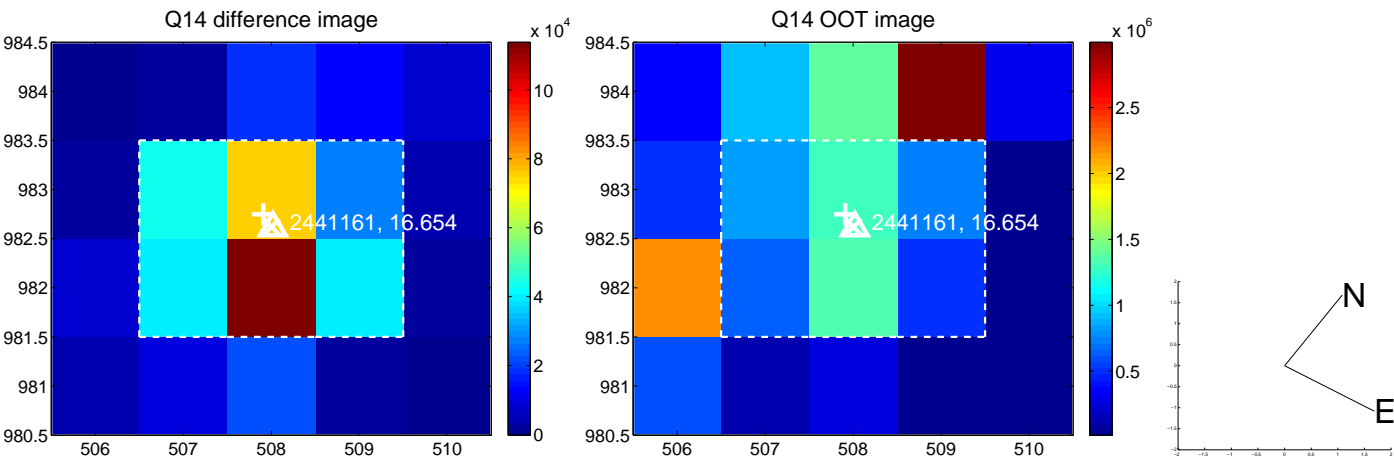
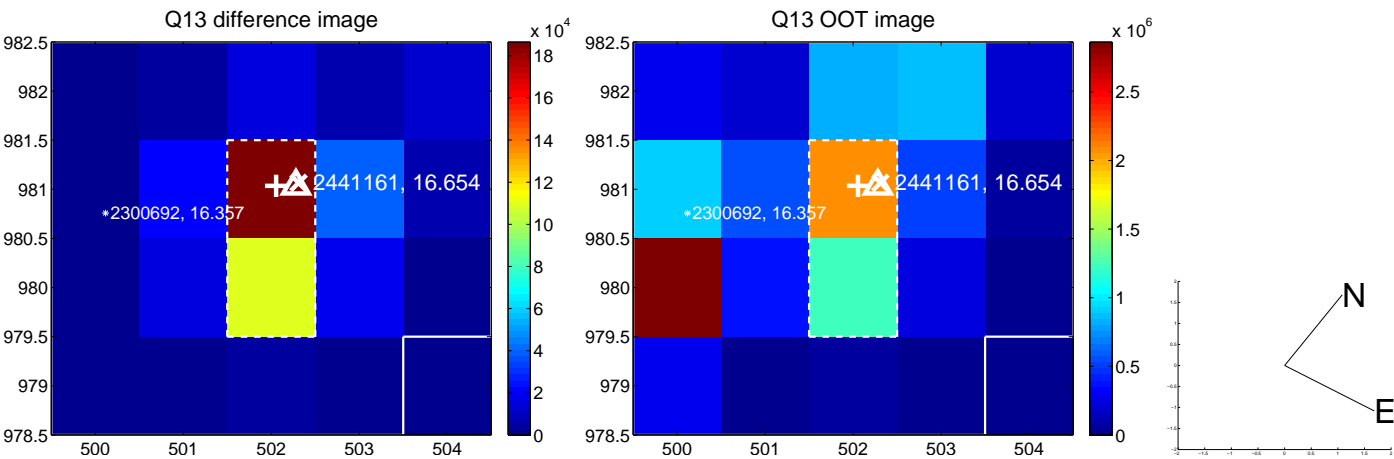




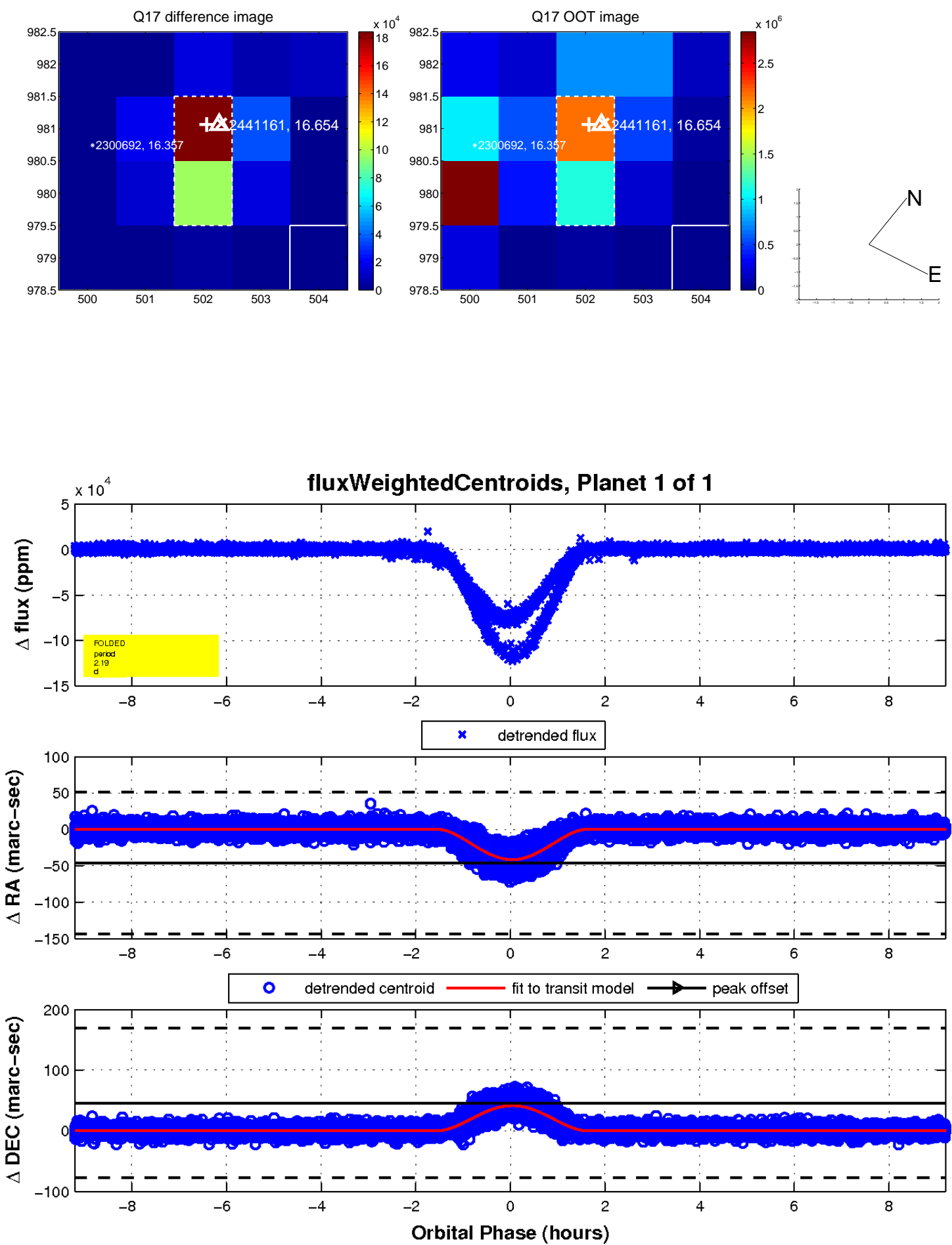
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

