

# KIC 004247791

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004247791-01	OBS	0028.01	2.050433	133.289399	119646.3	8.062	11200.8	6545.1	1.51	5923	72.68	2376.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004247791-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—CENT_SATURATED

**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.

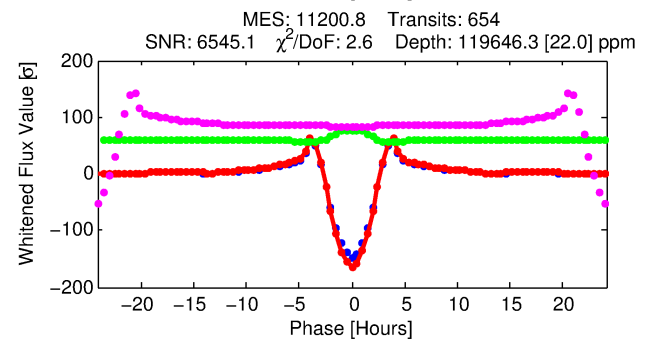
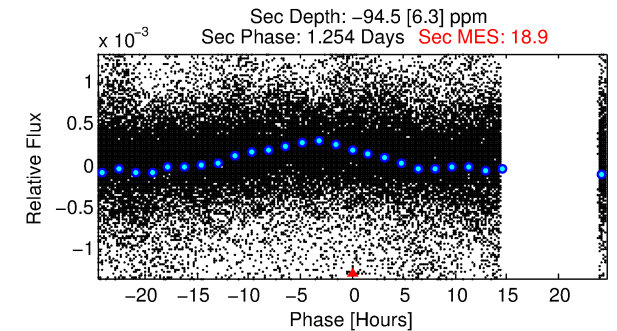
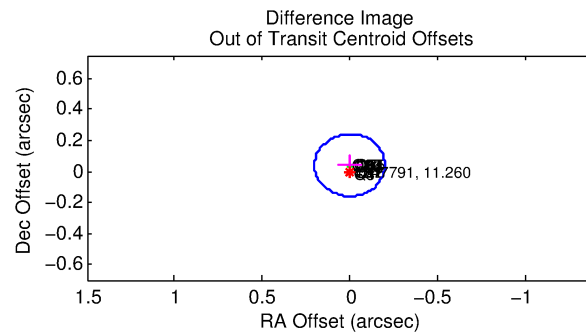
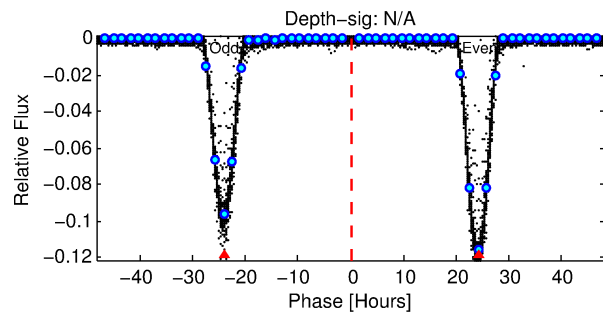
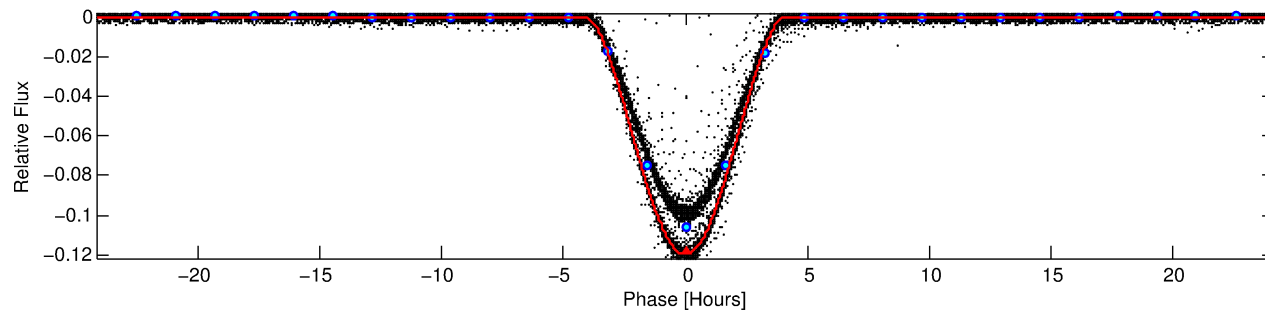
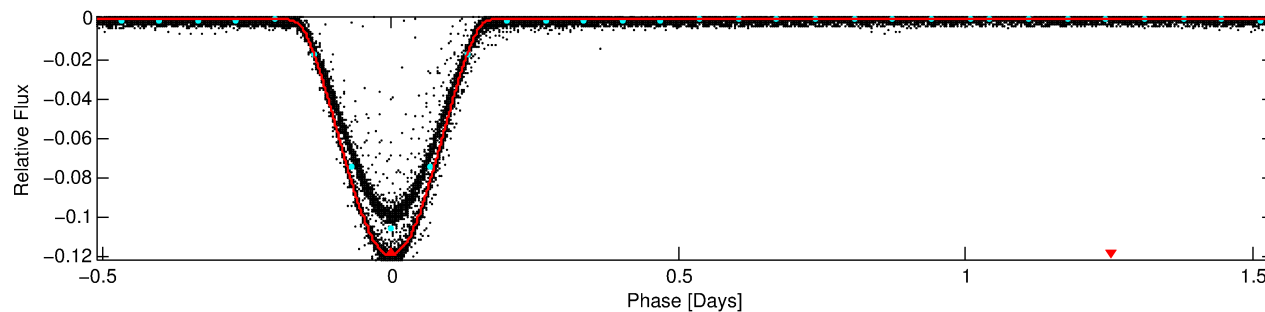
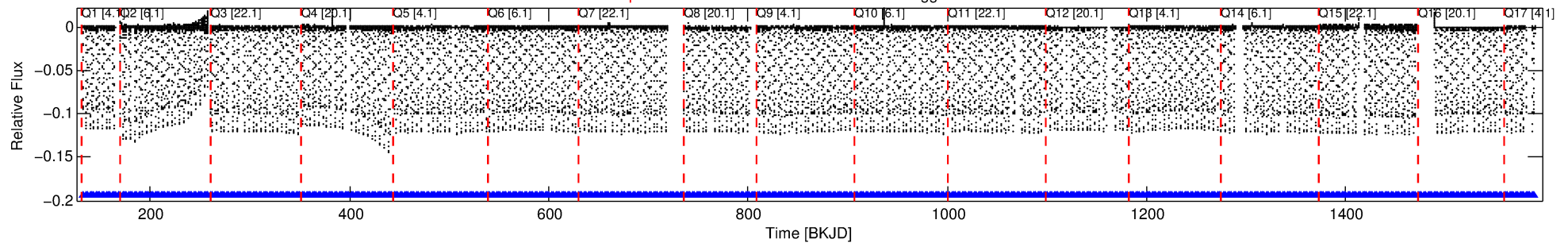
## Ephemeris Match Information For 004247791-01

No Significant Match Found

# DV One-Page Summary

KIC: 4247791 Candidate: 1 of 1 Period: 2.050 d  
KOI: K00028 Corr: No Ephemeris Match

Kp: 11.26 R\*: 1.51 Rs Teff: 5923.0 K Logg: 4.12 Fe/H: 0.060



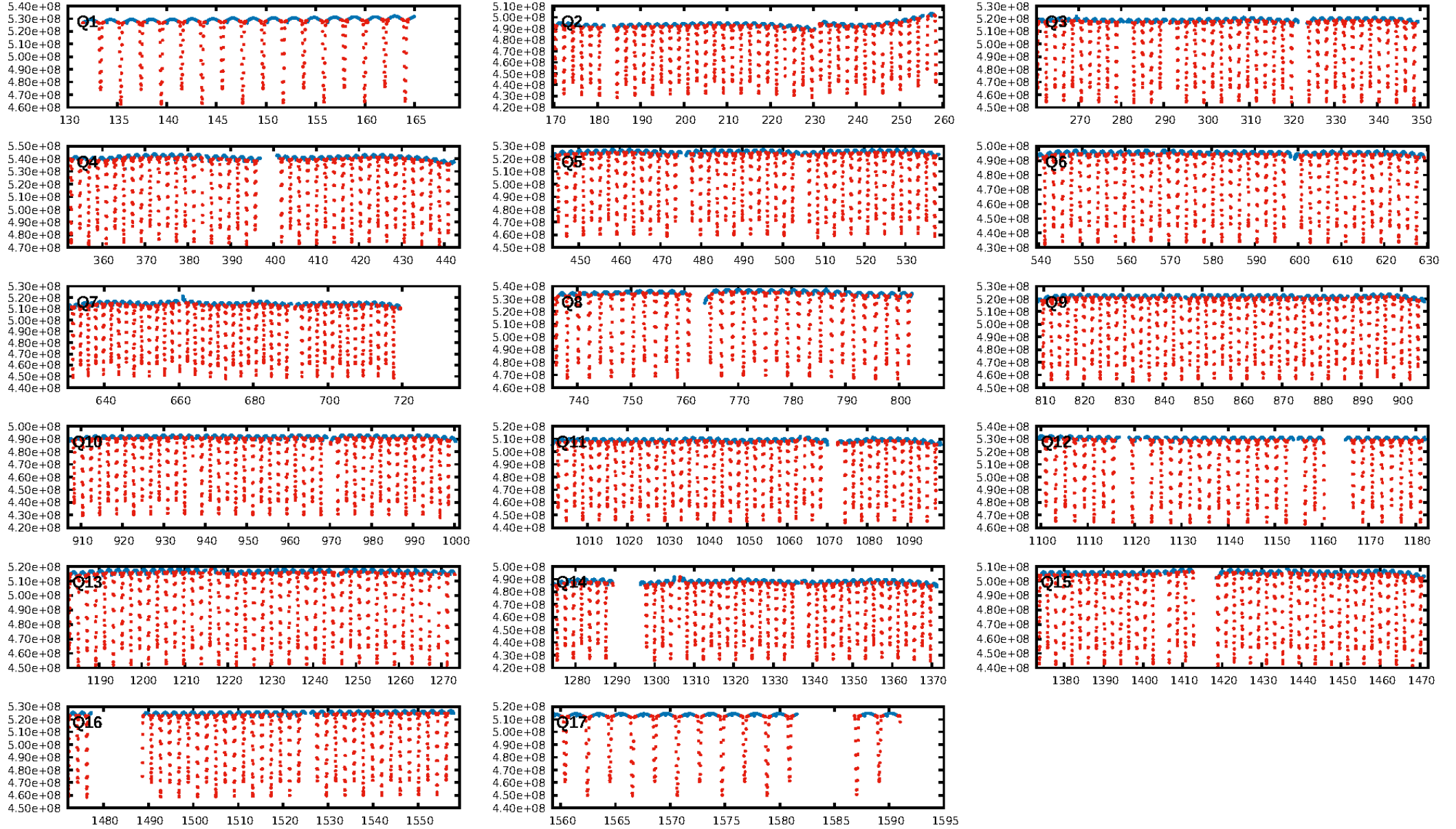
## DV Fit Results:

Period = 2.05043 [0.00000] d  
Epoch = 133.2894 [0.0000] BKJD  
Rp/R\* = 0.4411 [0.0019]  
a/R\* = 2.50 [0.00]  
b = 0.86 [0.00]  
Seff = 2376.39 [1189.93]  
Teq = 1780 [223] K  
Rp = 72.68 [21.33] Re  
a = 0.0325 [0.0096] AU  
Ag = N/A  
Teffp = N/A

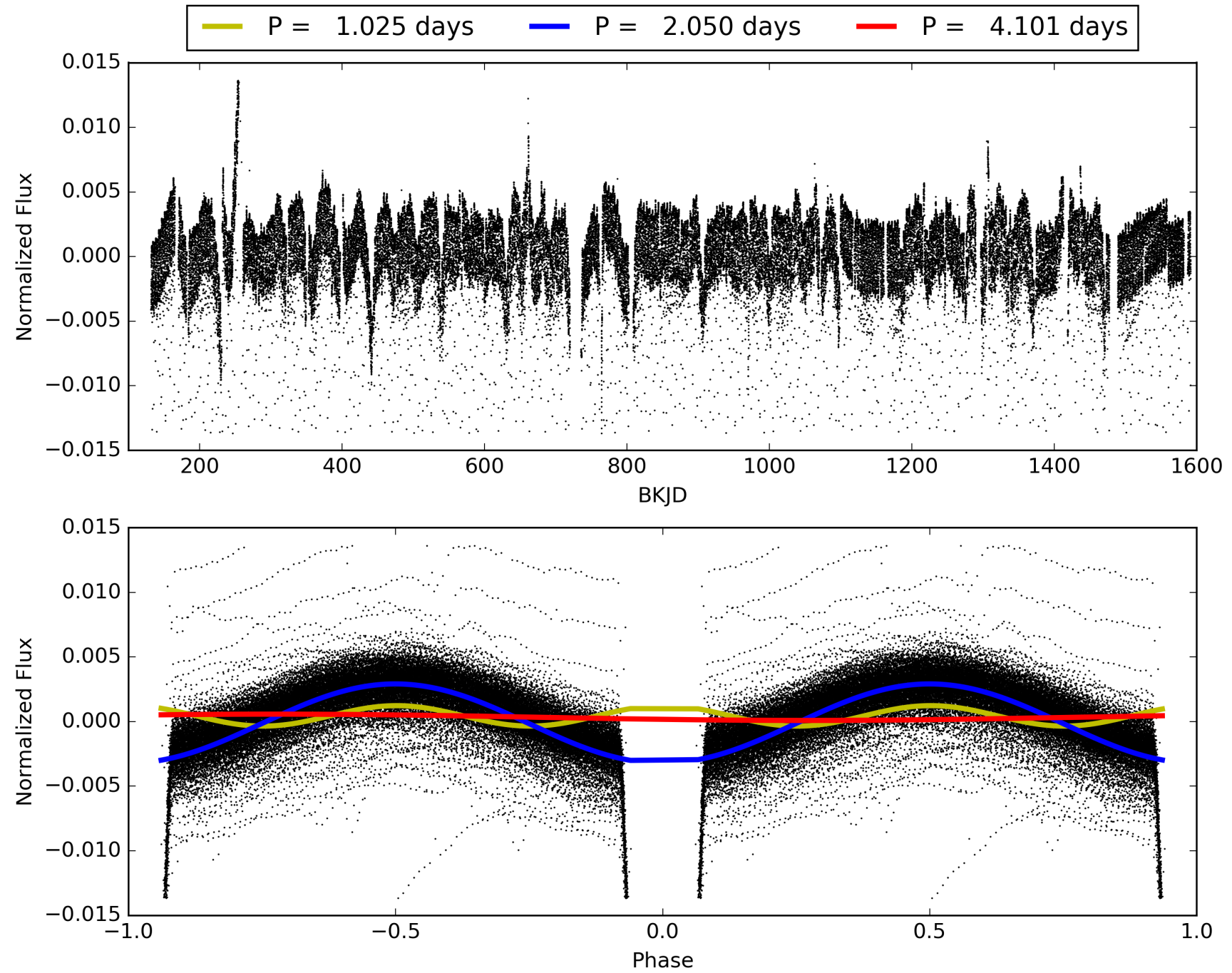
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [624/624]  
GhostDiagnostic-chr: 1.608  
Centroid-sig: 0.0%  
Centroid-so: 0.163 arcsec [666.01σ]  
OotOffset-rm: 0.041 arcsec [0.61σ]  
KicOffset-rm: 0.032 arcsec [0.47σ]  
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 004247791-01, PDC Light Curves

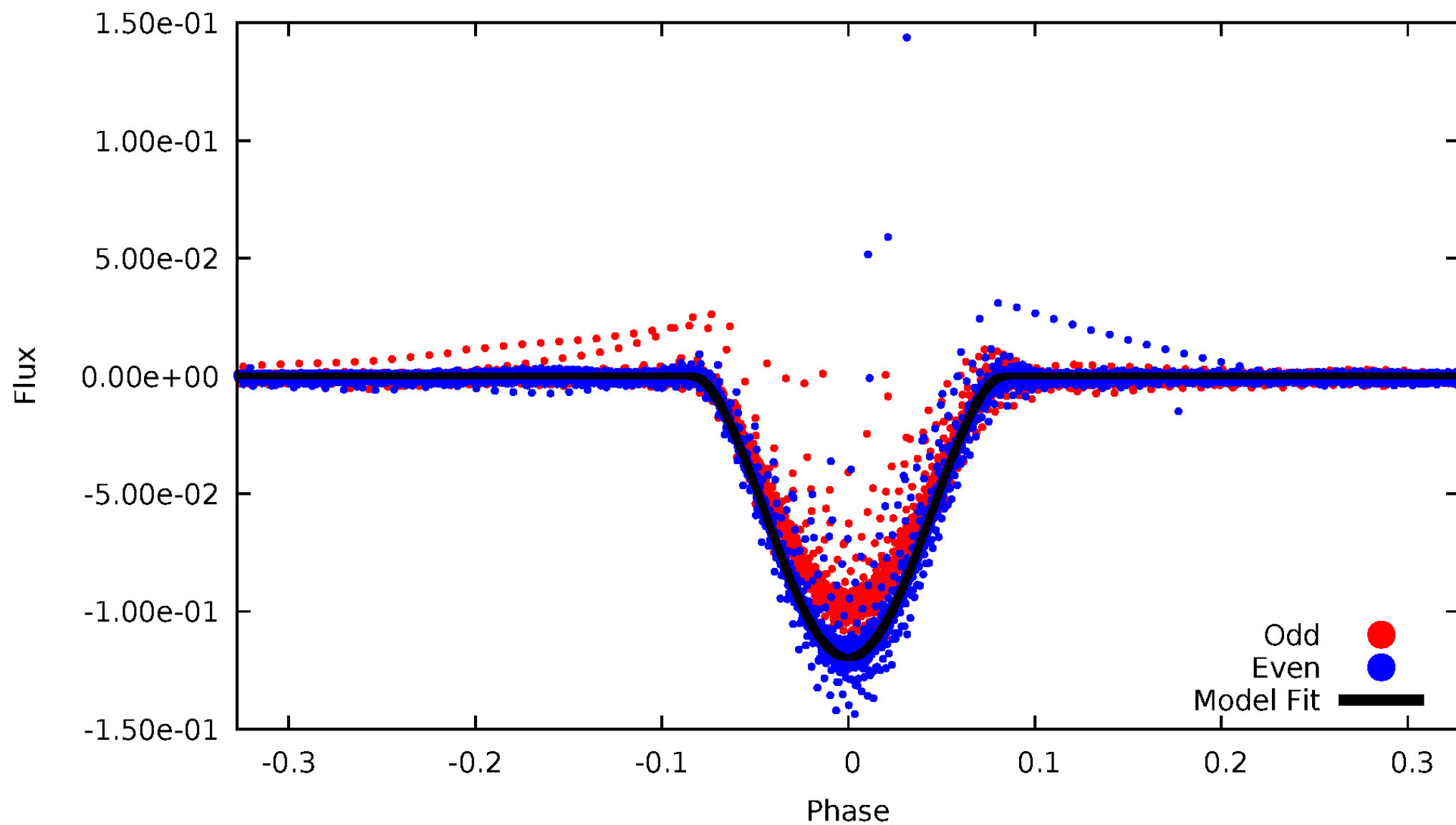


TCE 004247791-01



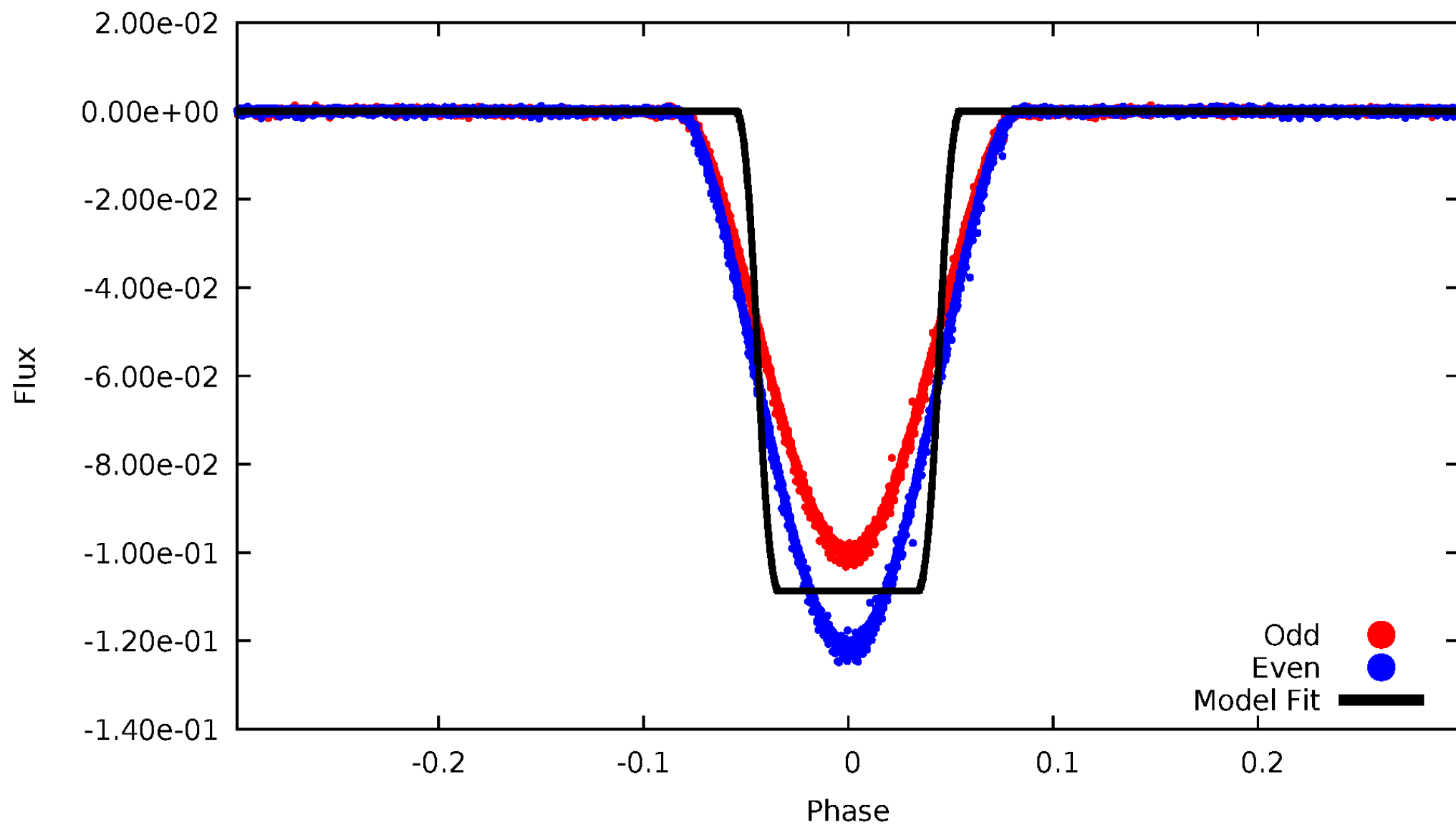
# DV Odd/Even

TCE 004247791-01



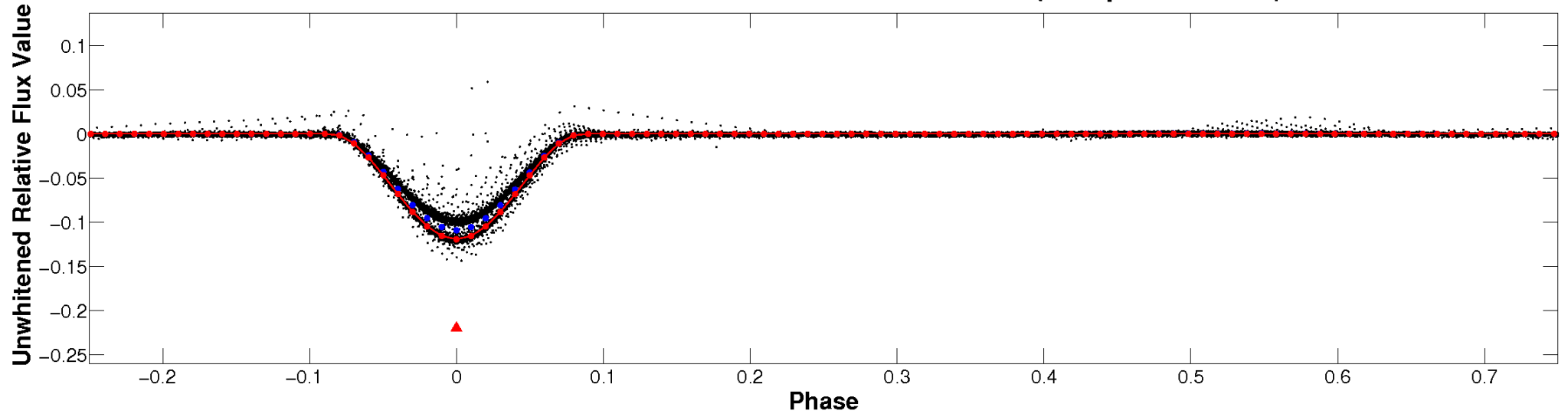
# ALT Odd/Even

TCE 004247791-01

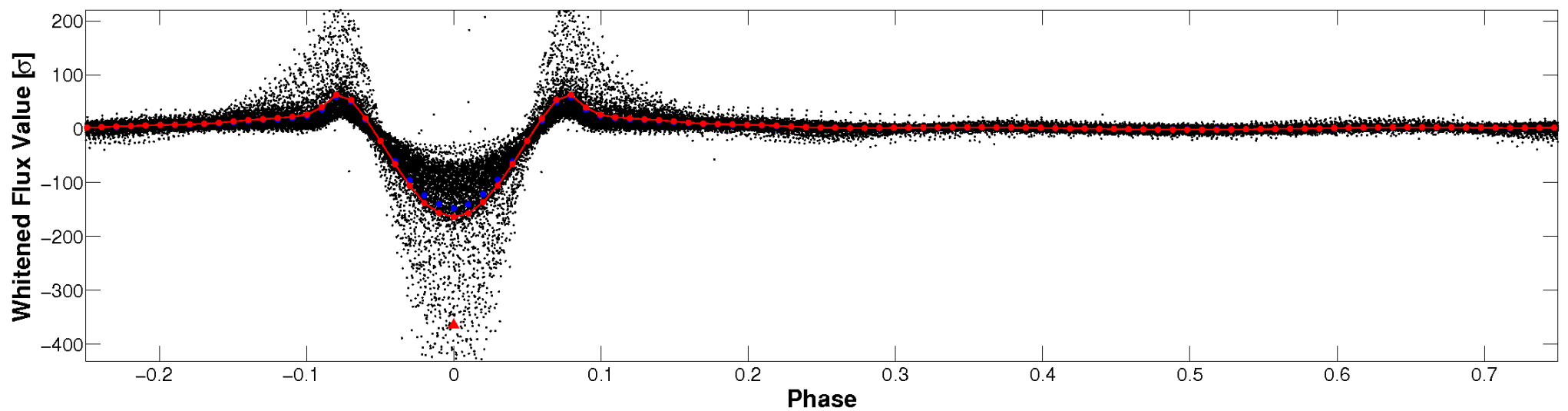


# Non-Whitened Vs. Whitened Light Curve

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

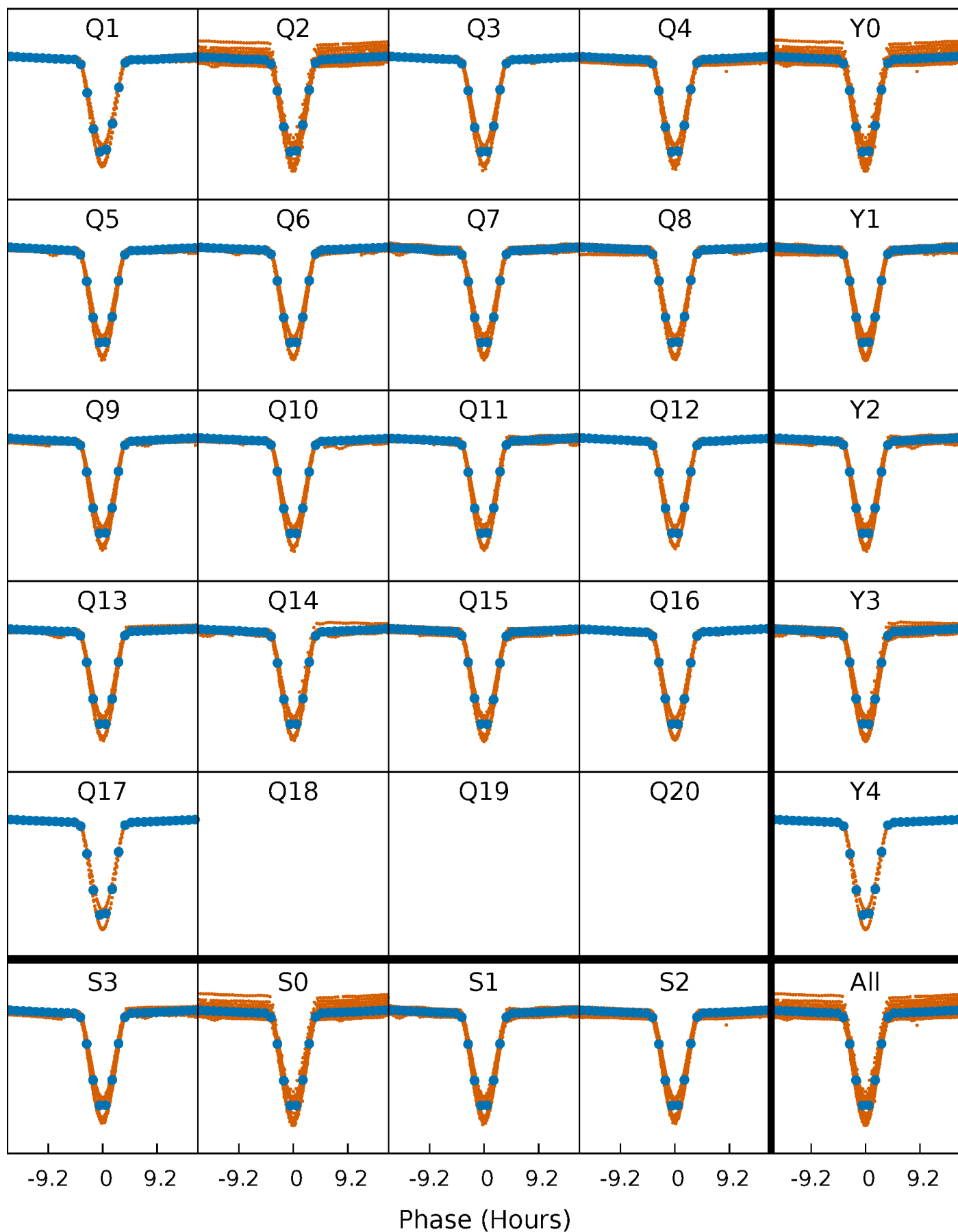


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

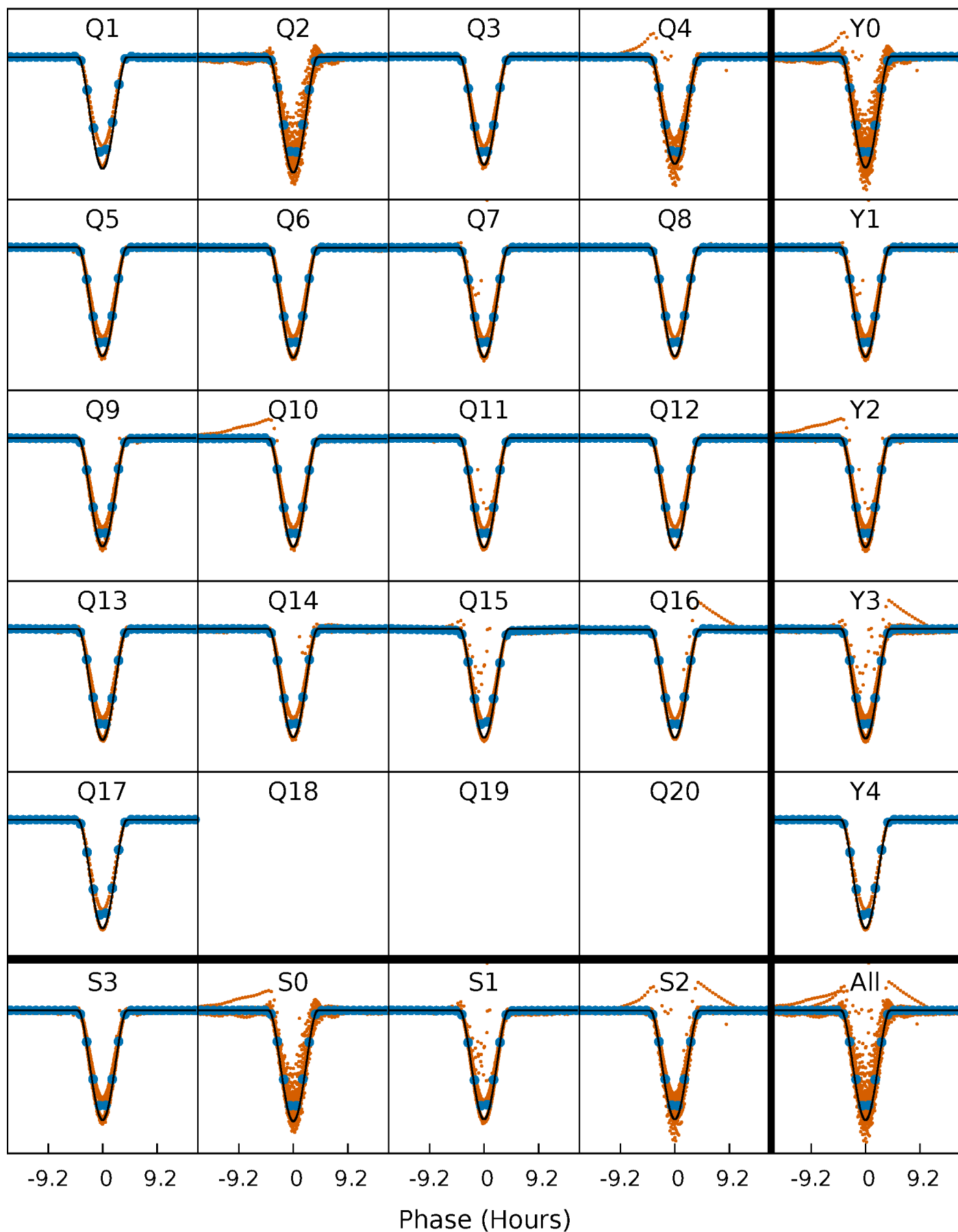
TCE 004247791-01 P= 2.050433 Days  $T_0=133.289399$  (BKJD)





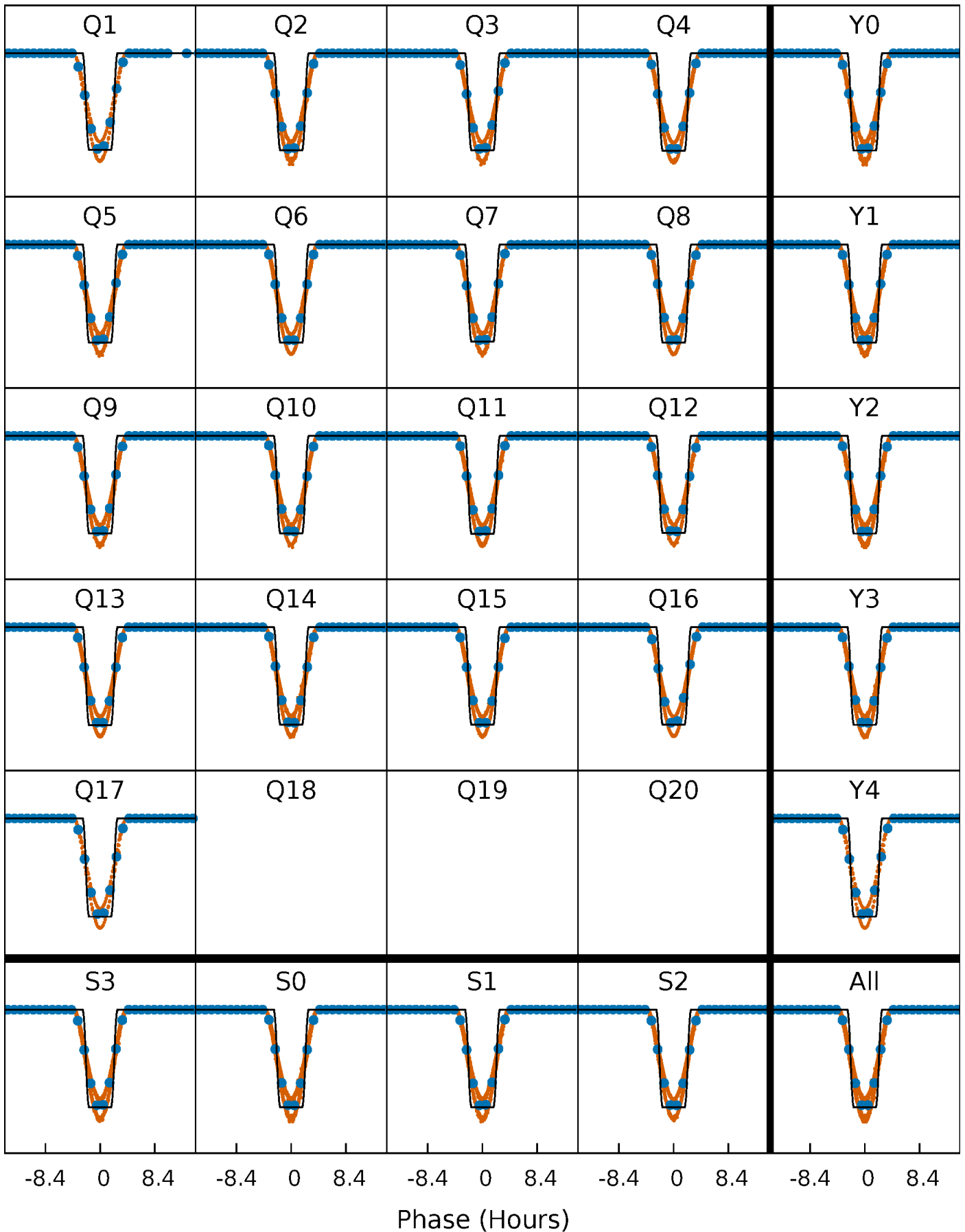
# DV Quarter-Phased Transit Curves

TCE 004247791-01 P= 2.050433 Days  $T_0=133.289399$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

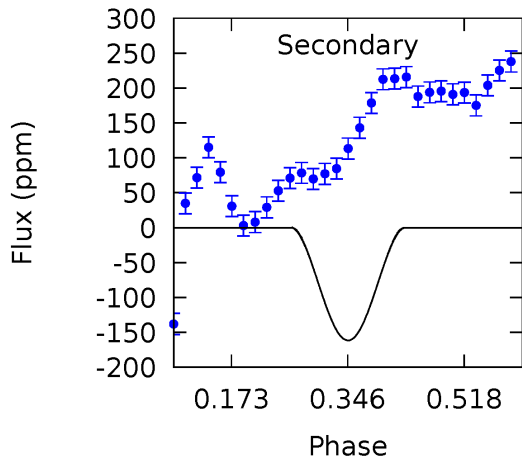
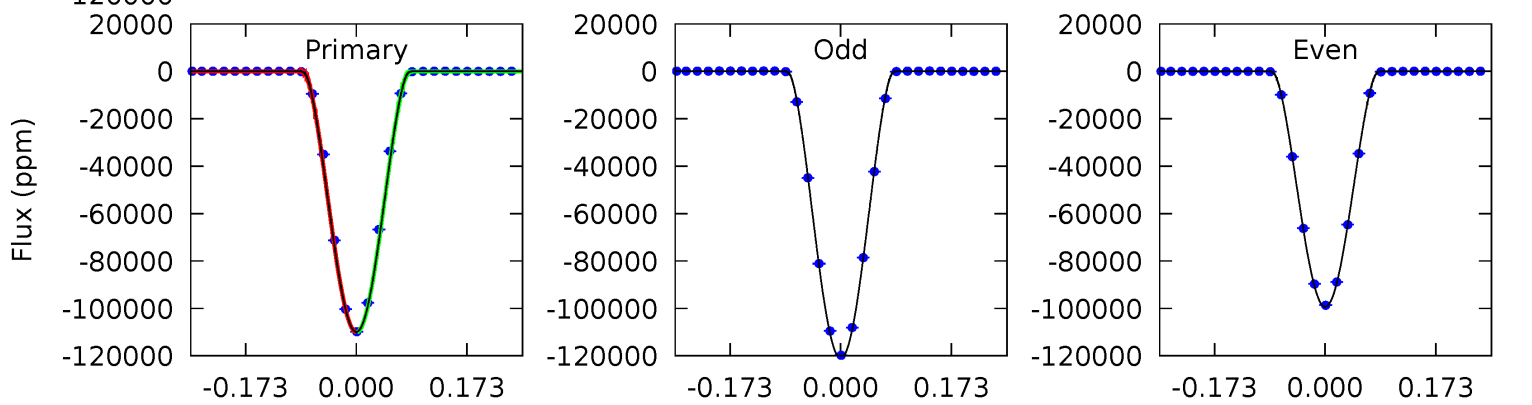
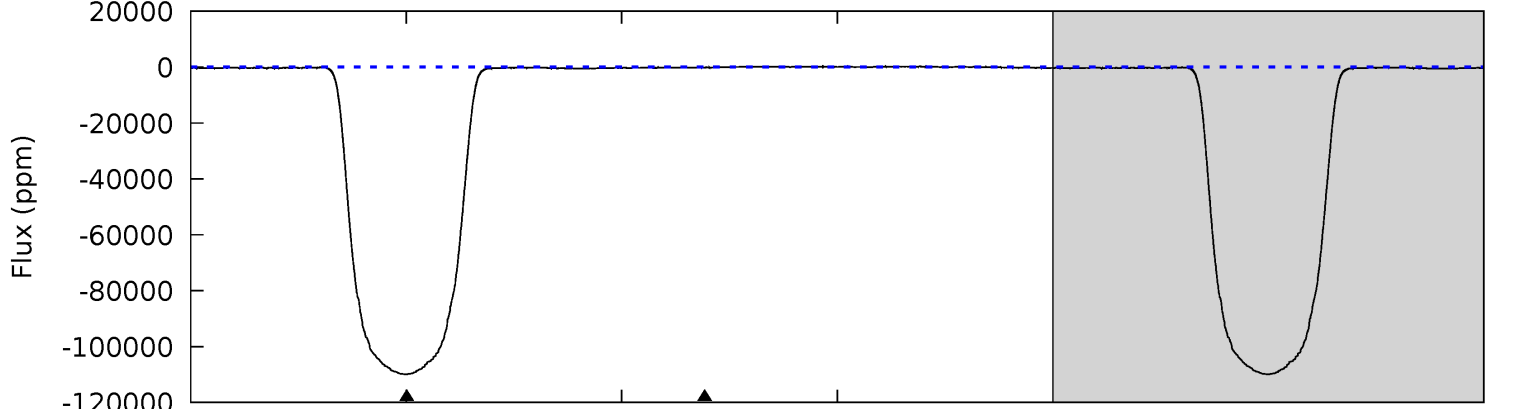
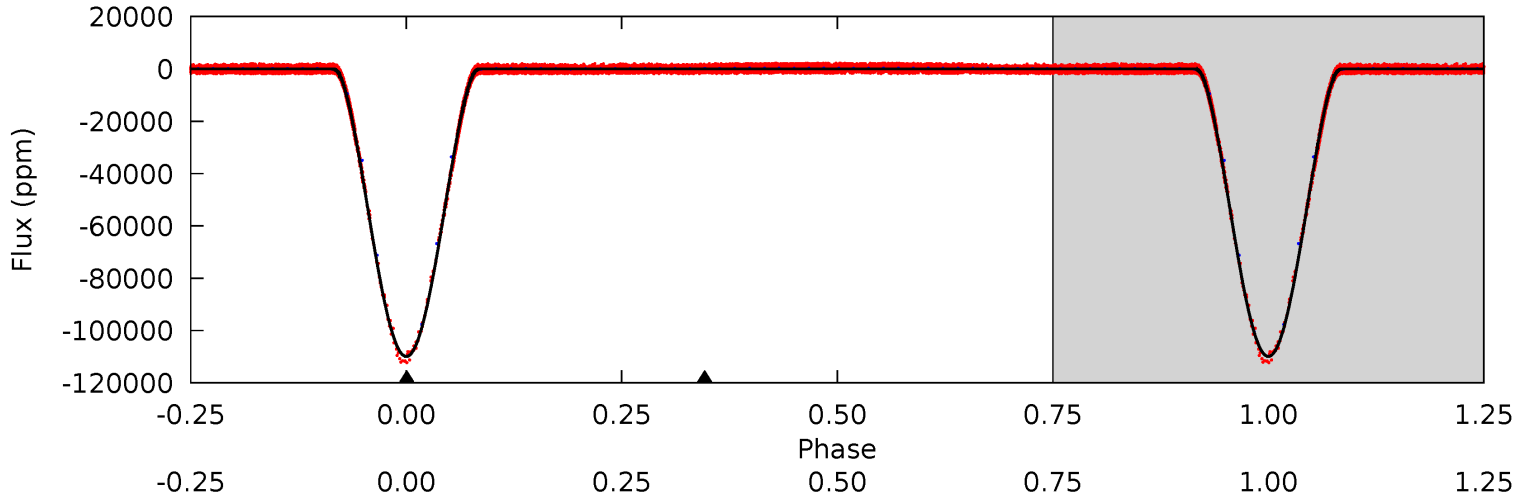
TCE 004247791-01   P= 2.050433 Days    $T_0=133.289622$  (BKJD)



# DV Model-Shift Uniqueness Test

004247791-01, P = 2.050433 Days, E = 131.238966 Days

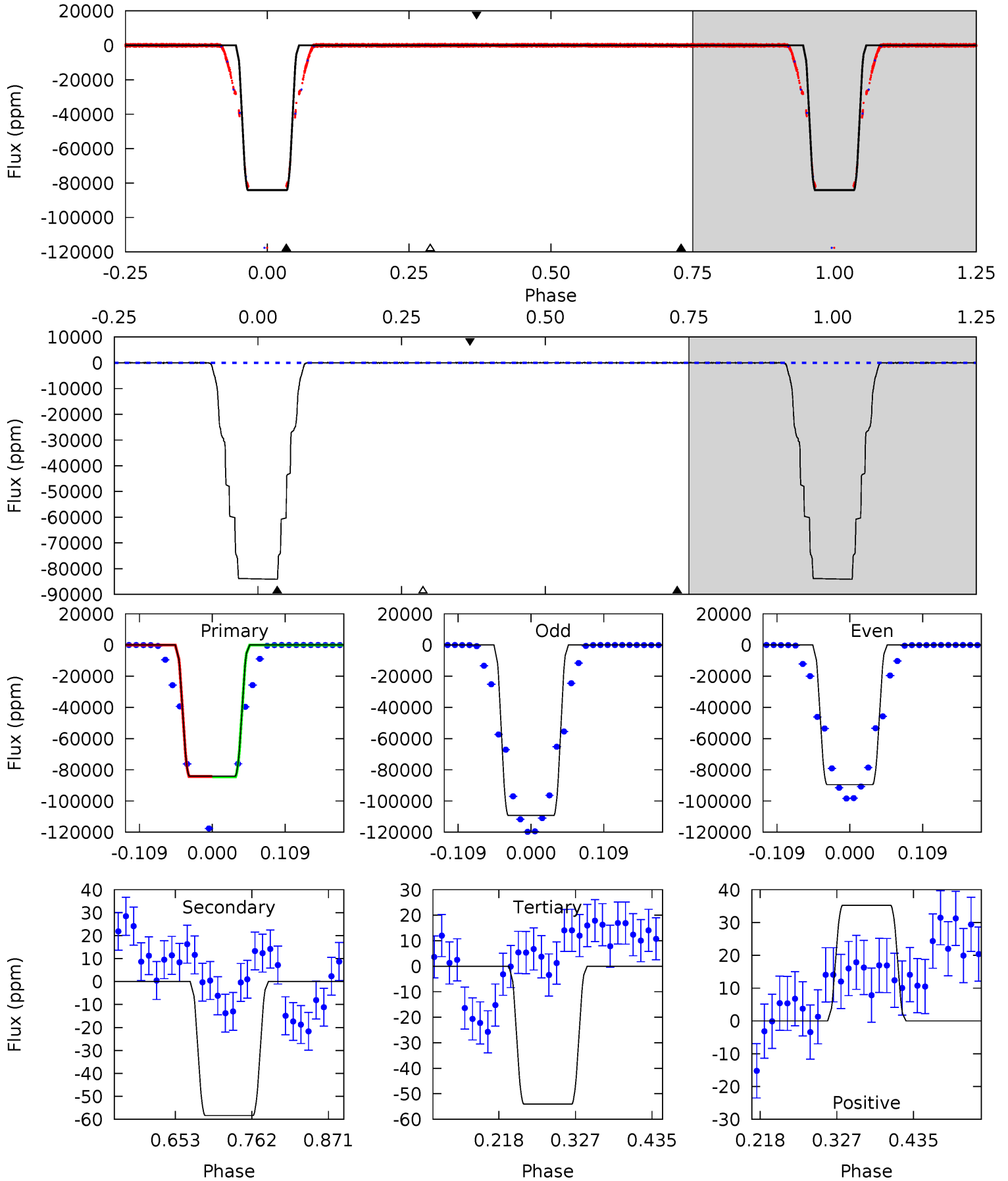
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11664	17.2	0	0	4.45	1.36	20.4	11664	11664	17.2	17.2	2055	1.02	0.00	0



# Alt Model-Shift Uniqueness Test

004247791-01, P = 2.050433 Days, E = 131.239189 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
4962	3.44	3.19	2.08	4.55	1.60	9.74	4959	4960	0.25	1.36	2970	1.04	0.00	0



### Stellar Parameters For KIC 004247791

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5923^{+187}_{-208}$	$4.118^{+0.286}_{-0.154}$	$0.060^{+0.250}_{-0.300}$	$1.510^{+0.399}_{-0.443}$	$1.090^{+0.163}_{-0.148}$	$0.446^{+0.845}_{-0.194}$
	+3%/-4%	+7%/-4%	+417%/-500%	+26%/-29%	+15%/-14%	+189%/-44%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 004247791-01 / KOI 0028.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-162 \pm 9$	$72.06^{+10.88}_{-11.36}$	$2463^{+185}_{-207}$	$-2750^{+133}_{-115}$	$0.018^{+0.007}_{-0.005}$
Alt.	$-58 \pm 17$	$53.30^{+7.43}_{-9.11}$	$2454^{+193}_{-226}$	$-2753^{+141}_{-116}$	$0.012^{+0.007}_{-0.004}$

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

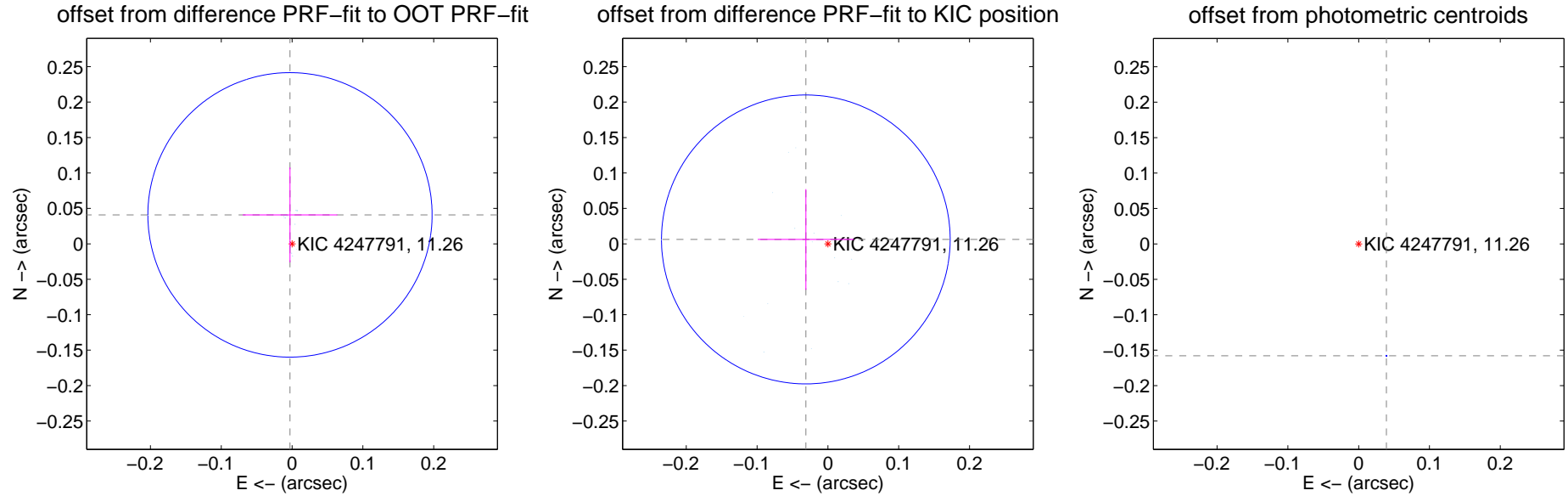
## DV Centroid Data

Supplemental centroid analysis for 004247791-01. **Kepler magnitude: 11.26.** Transit SNR 6545.06

There are 17 quarters with good PRF difference image offsets

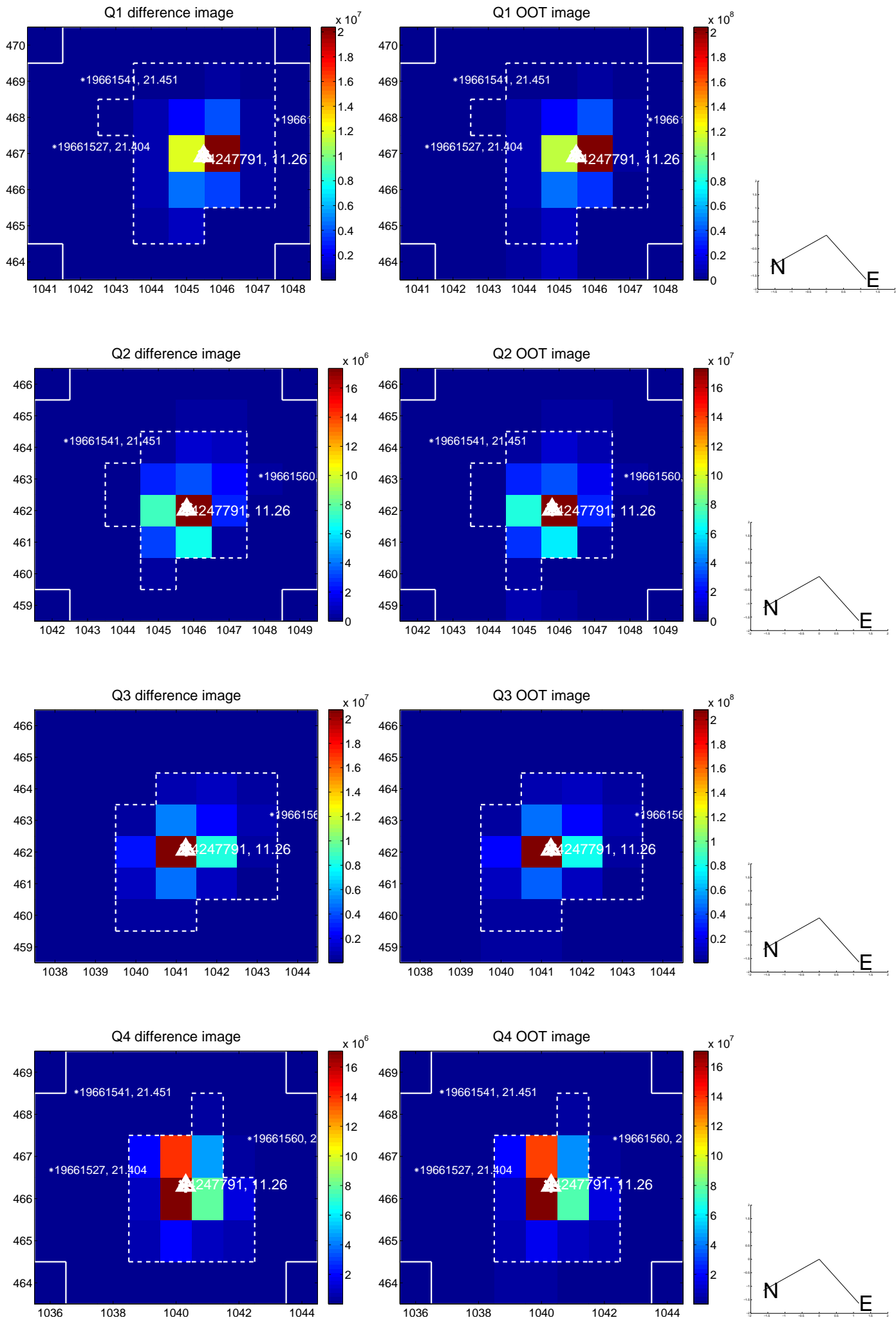
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.041 \pm 0.067$	0.61	$0.003 \pm 0.067$	$0.041 \pm 0.067$
PRF-fit source offset from KIC position	$0.032 \pm 0.068$	0.47	$0.031 \pm 0.068$	$0.006 \pm 0.071$
photometric centroid source offset	<b><math>0.16 \pm 0.00</math></b>	<b>666.01</b>	$-0.04 \pm 0.00$	$-0.16 \pm 0.00$

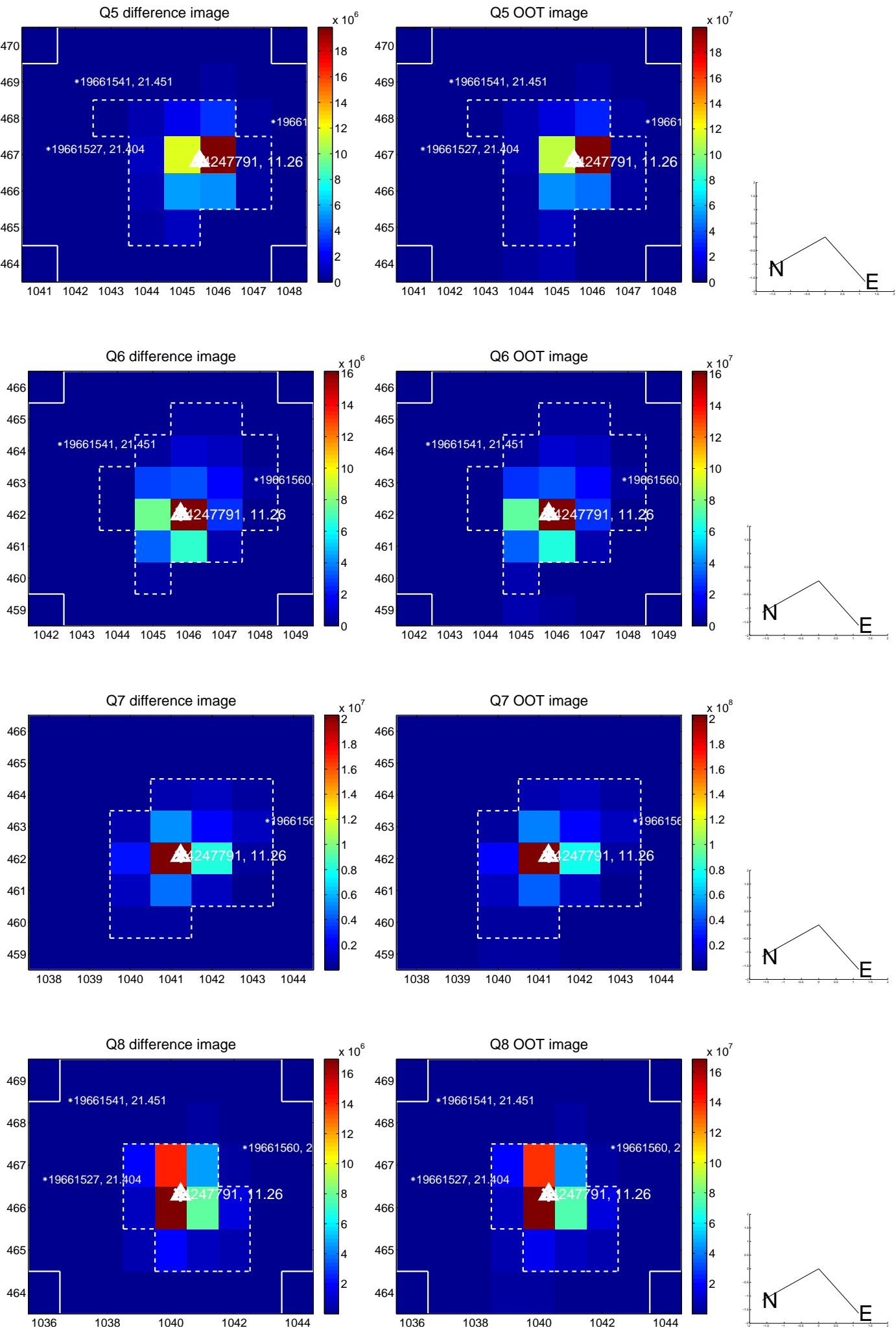


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

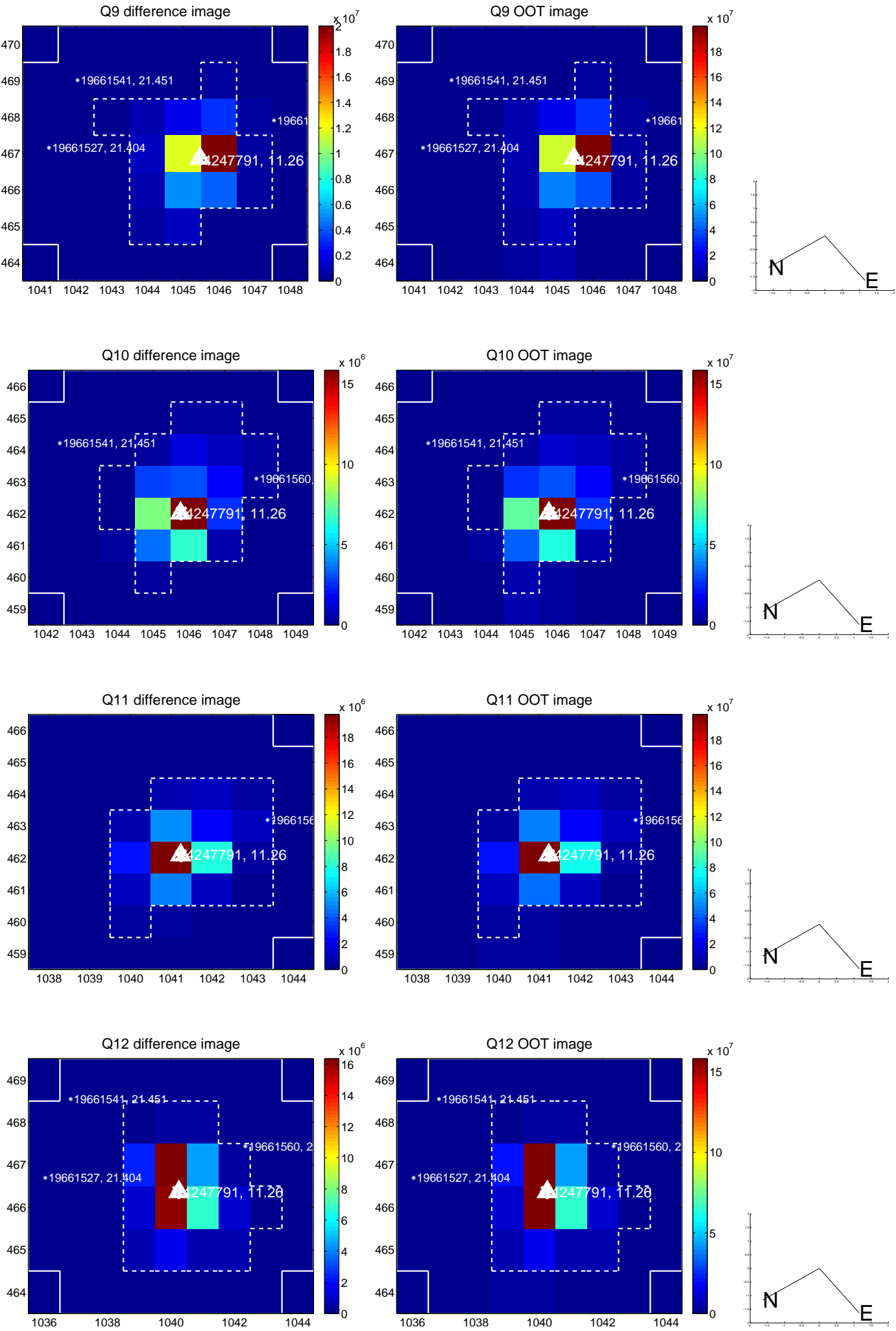


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

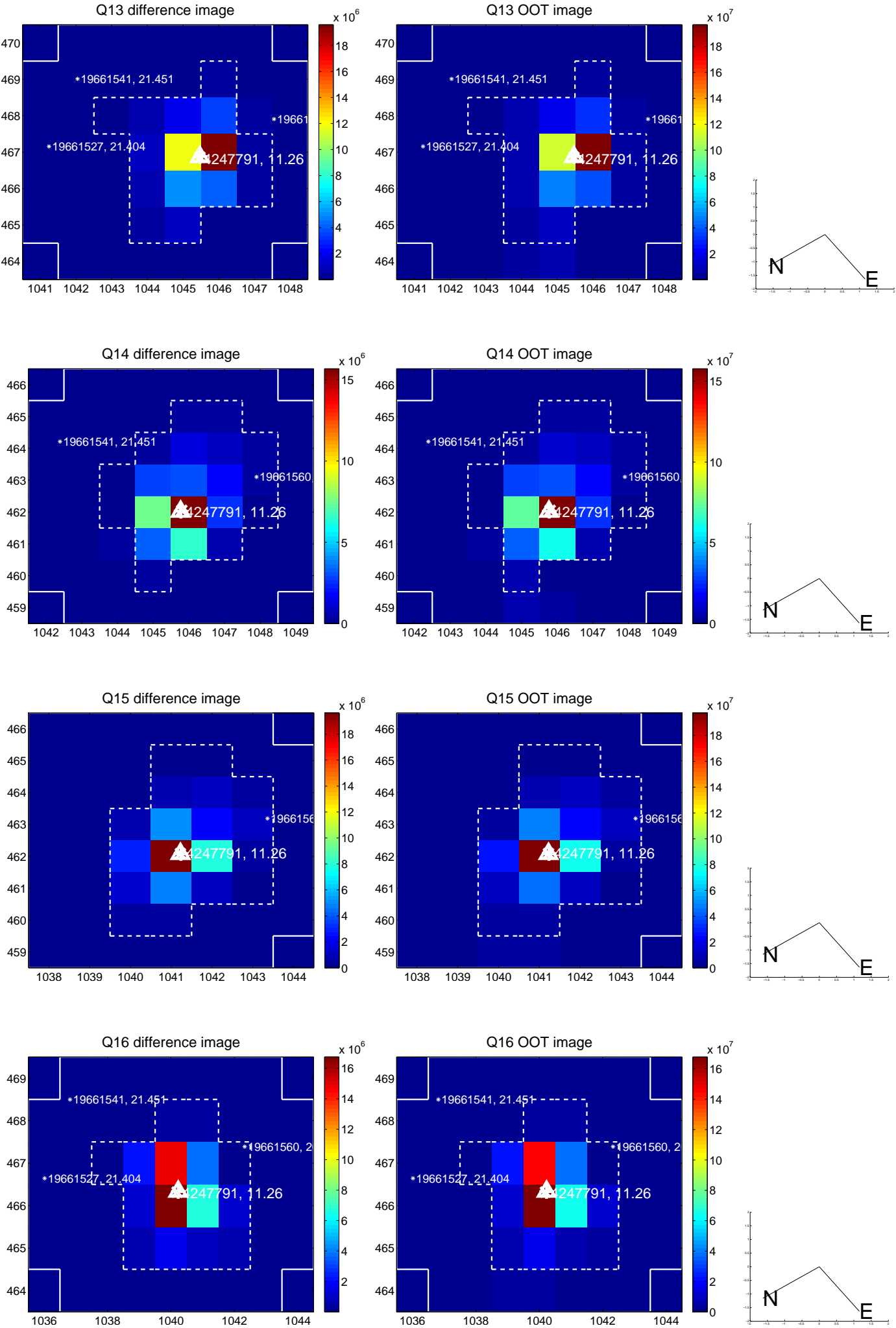




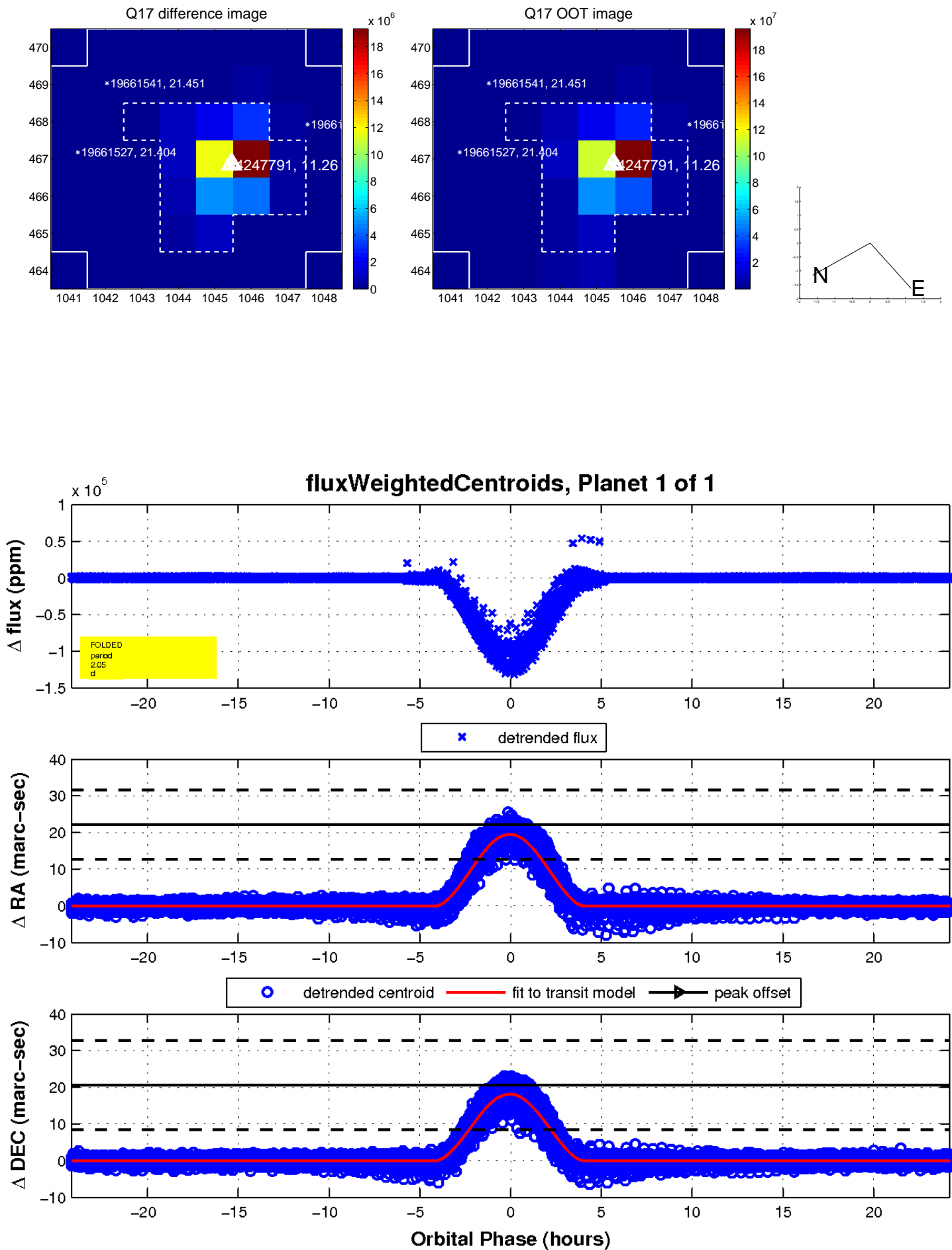
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

