

# KIC 006451368

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006451368-01	OBS	7780.01	5.336030	132.611087	50.3	3.817	8.7	8.8	2.03	6742	1.68	1826.87

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006451368-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

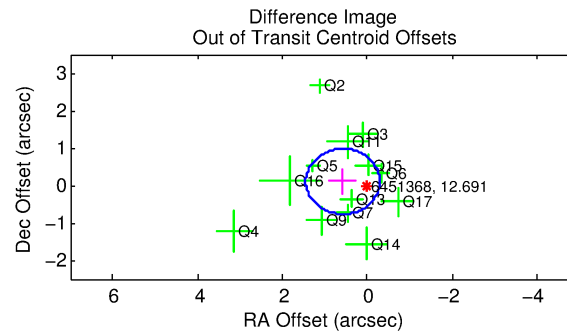
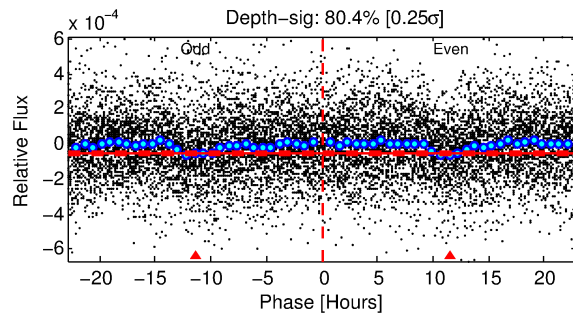
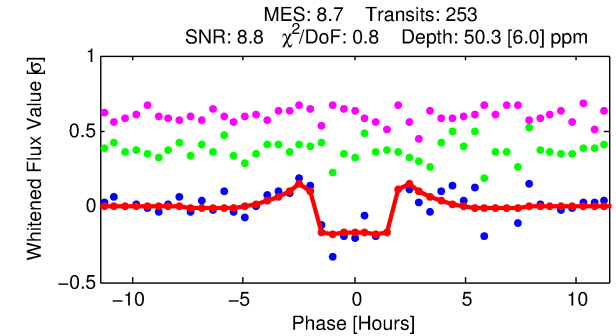
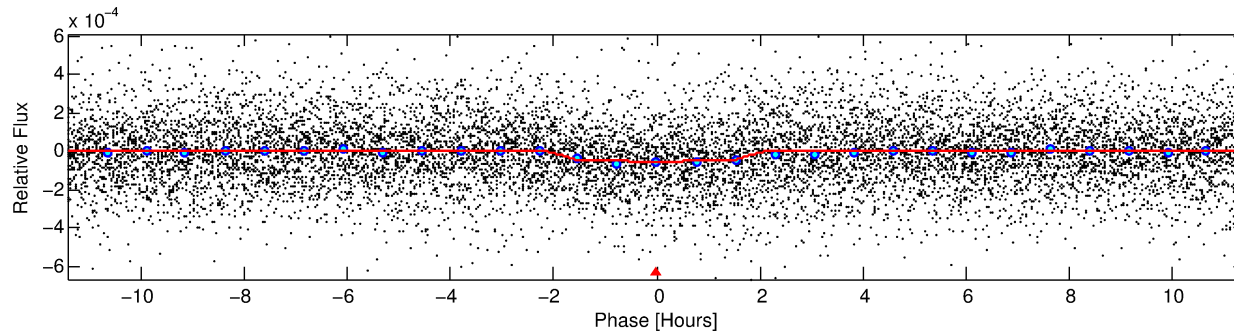
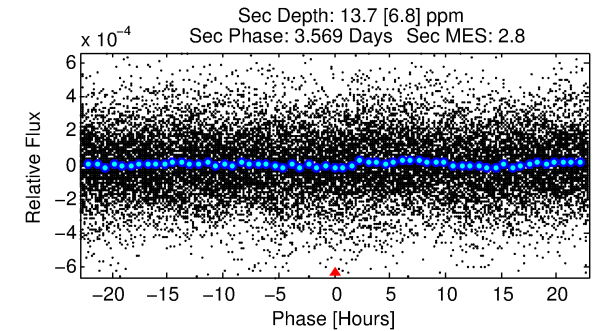
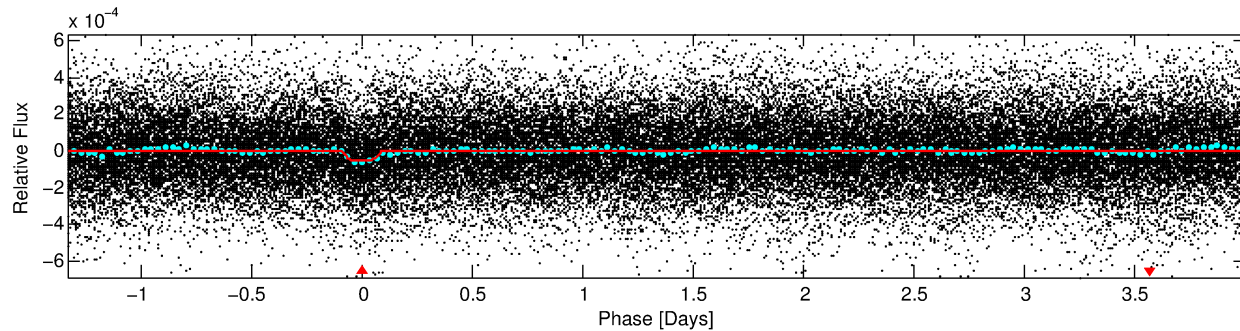
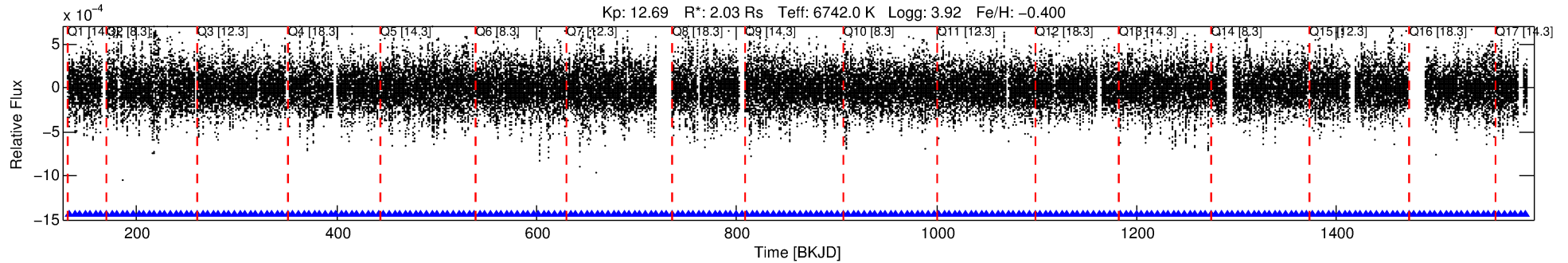
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006451368-01

No Significant Match Found

# DV One-Page Summary

KIC: 6451368 Candidate: 1 of 1 Period: 5.336 d



## DV Fit Results:

Period = 5.33603 [0.00003] d  
Epoch = 132.6111 [0.0035] BKJD  
Rp/R\* = 0.0076 [0.0019]  
a/R\* = 4.92 [6.88]  
b = 0.90 [0.31]  
Seff = 1826.87 [880.79]  
Teq = 1667 [201] K  
Rp = 1.68 [0.67] Re  
a = 0.0647 [0.0190] AU  
Ag = 11.18 [9.47] [1.07σ]  
Teffp = 4713 [845] K [3.51σ]

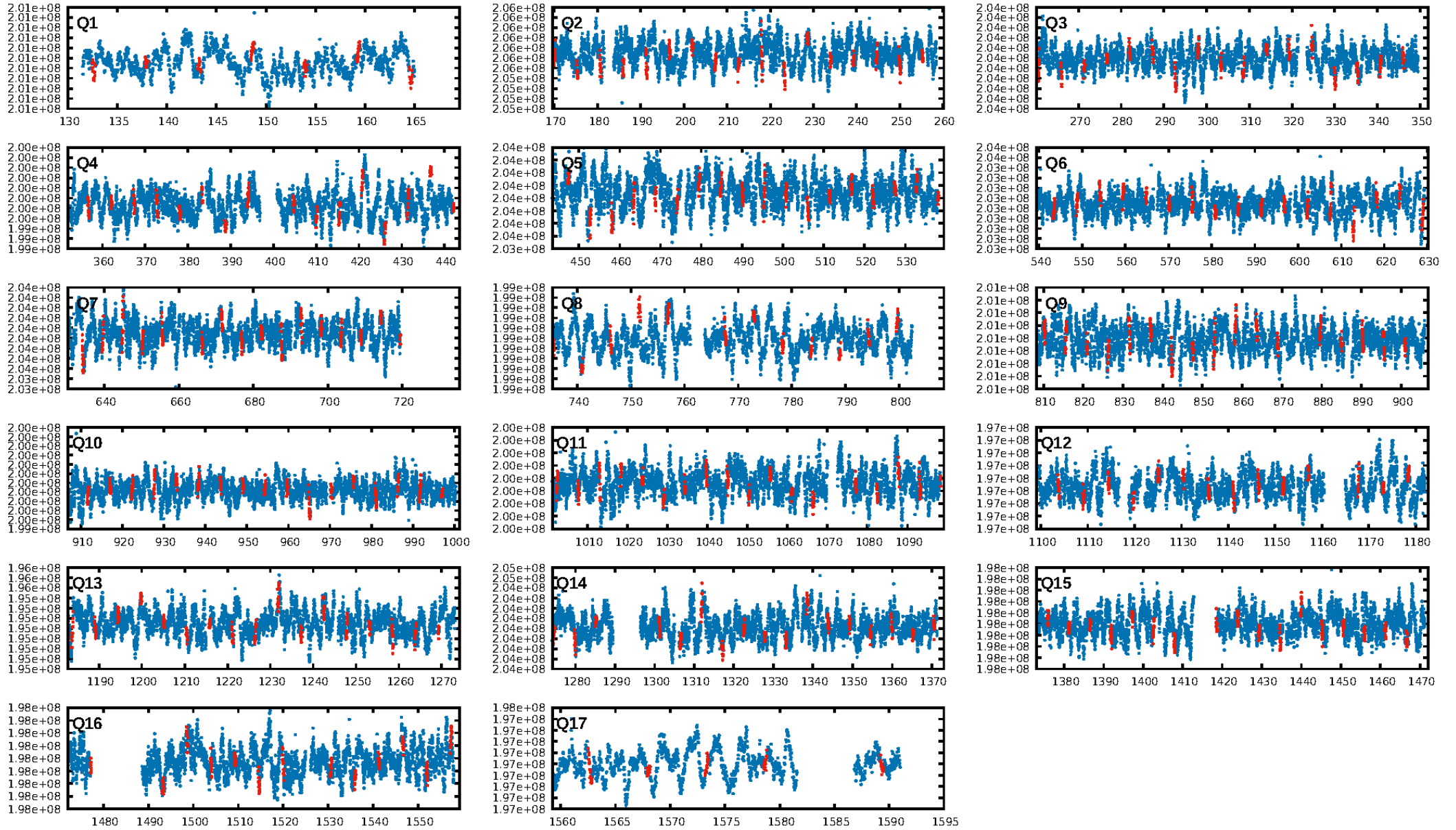
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 6.29e-18  
RollingBand-fgt: 1.00 [241/241]  
GhostDiagnostic-chr: 1.209  
Centroid-sig: 26.1%  
Centroid-so: 0.626 arcsec [1.19σ]  
OotOffset-rm: 0.586 arcsec [2.02σ]  
KicOffset-rm: 0.452 arcsec [1.61σ]  
OotOffset-st: 3/4/2/4 [13]  
KicOffset-st: 3/4/2/4 [13]  
DiffImageQuality-fgm: 0.92 [12/13]  
DiffImageOverlap-fno: 1.00 [17/17]

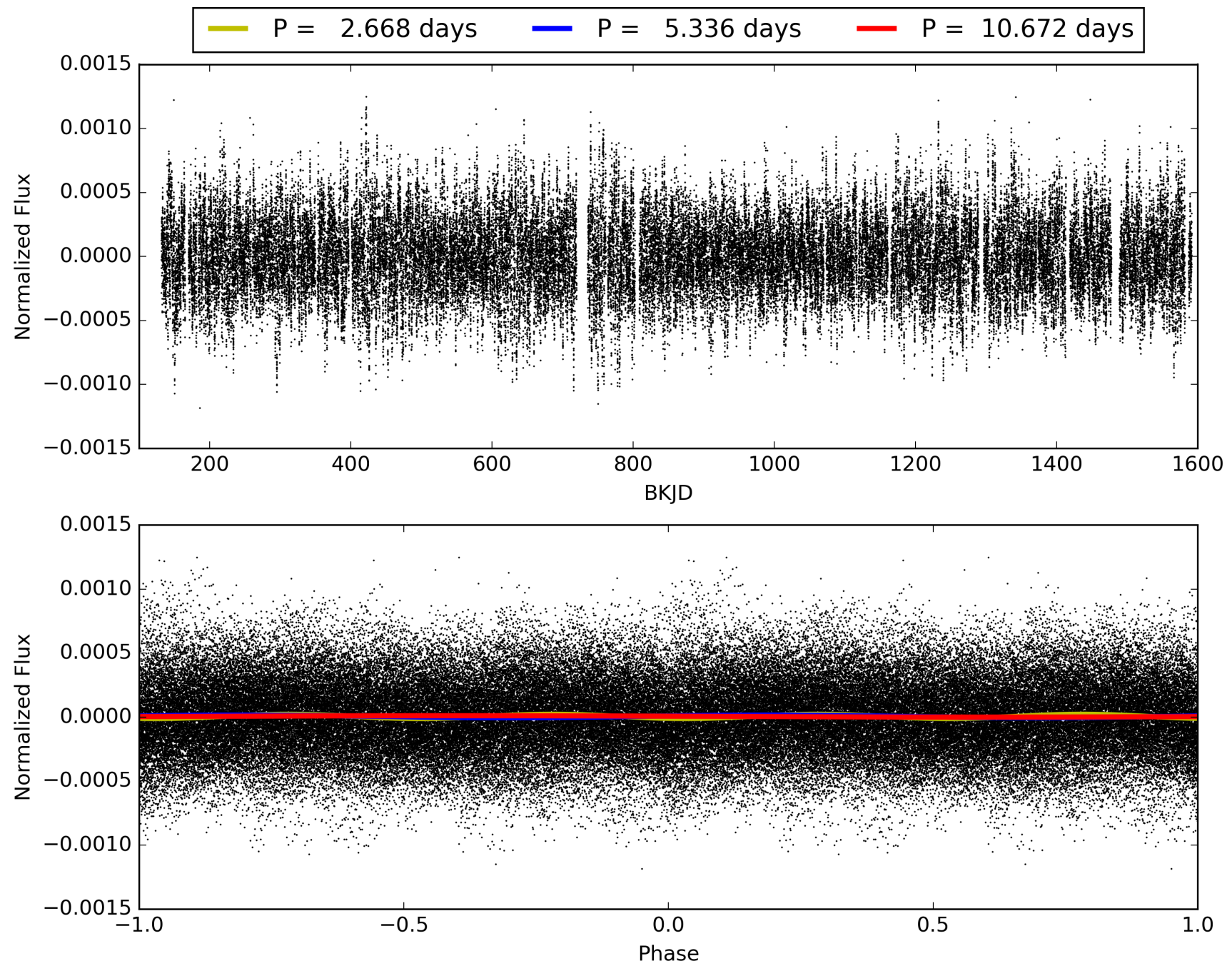
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:09:54 Z

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

# TCE 006451368-01, PDC Light Curves



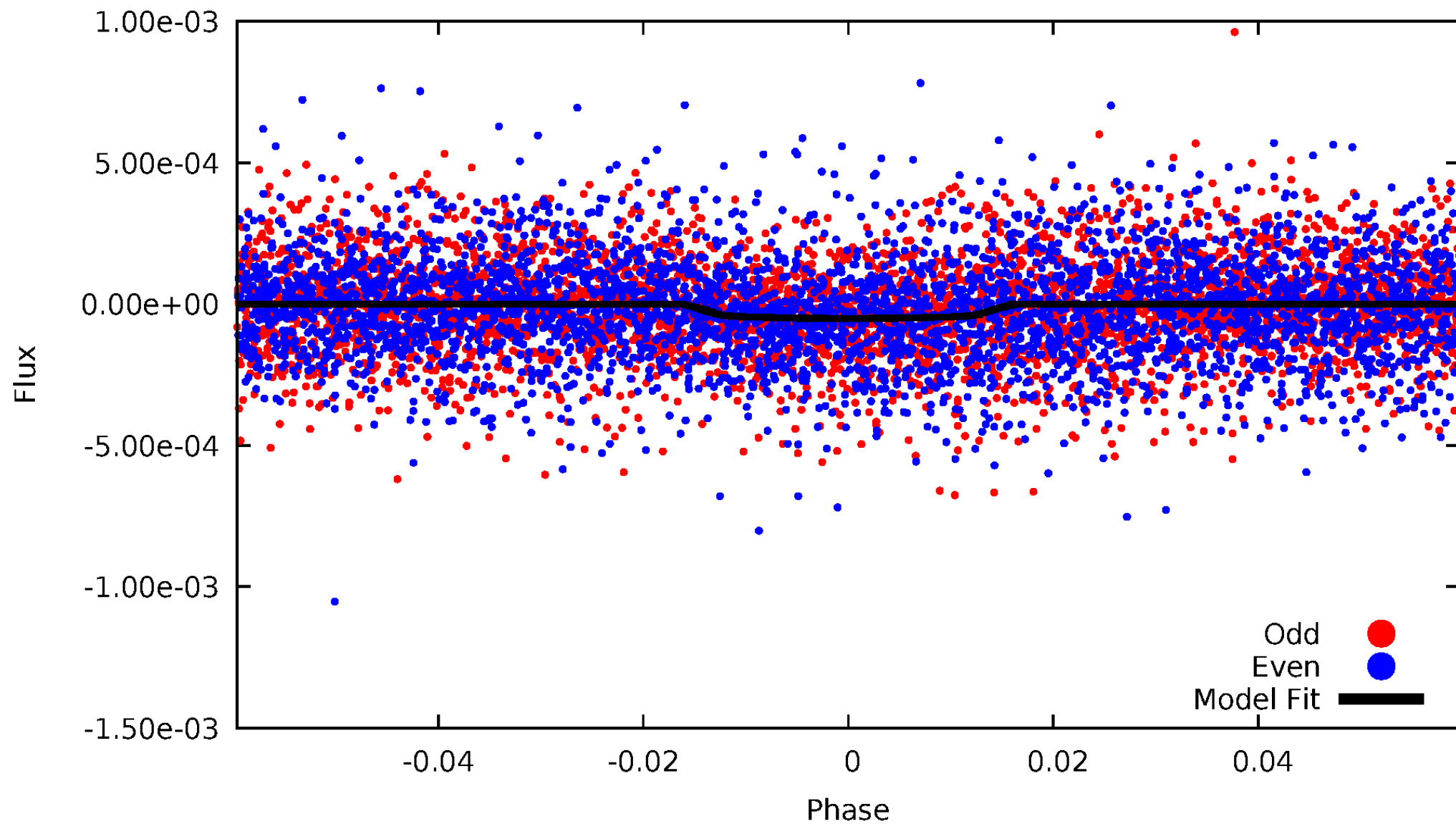
TCE 006451368-01





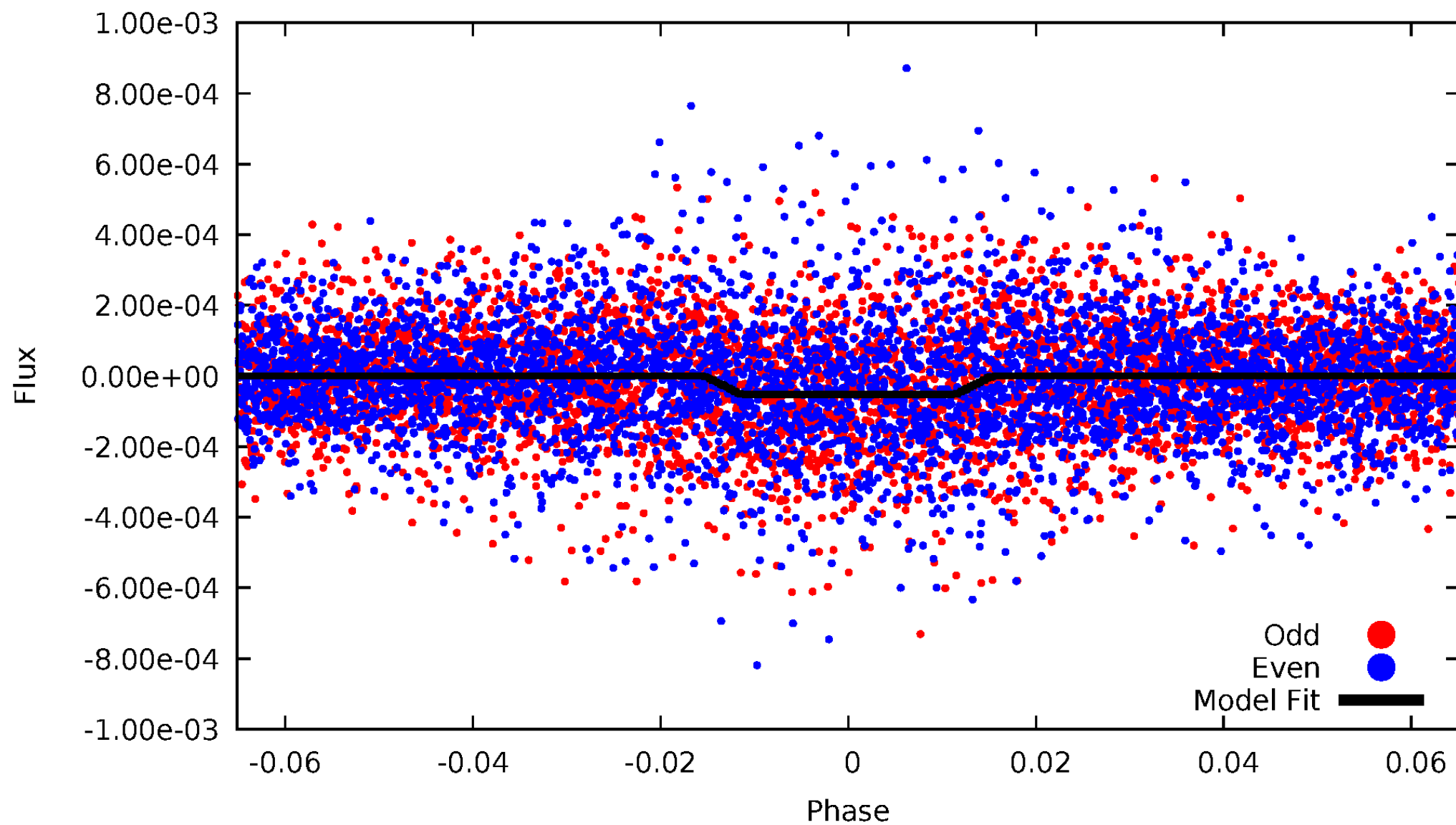
# DV Odd/Even

TCE 006451368-01



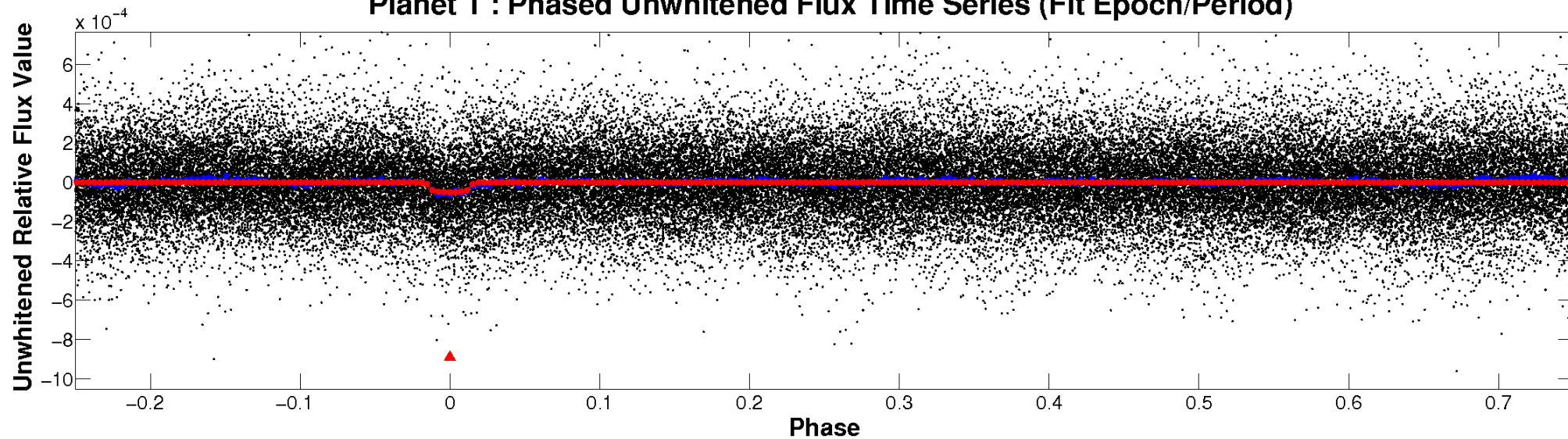
# ALT Odd/Even

TCE 006451368-01

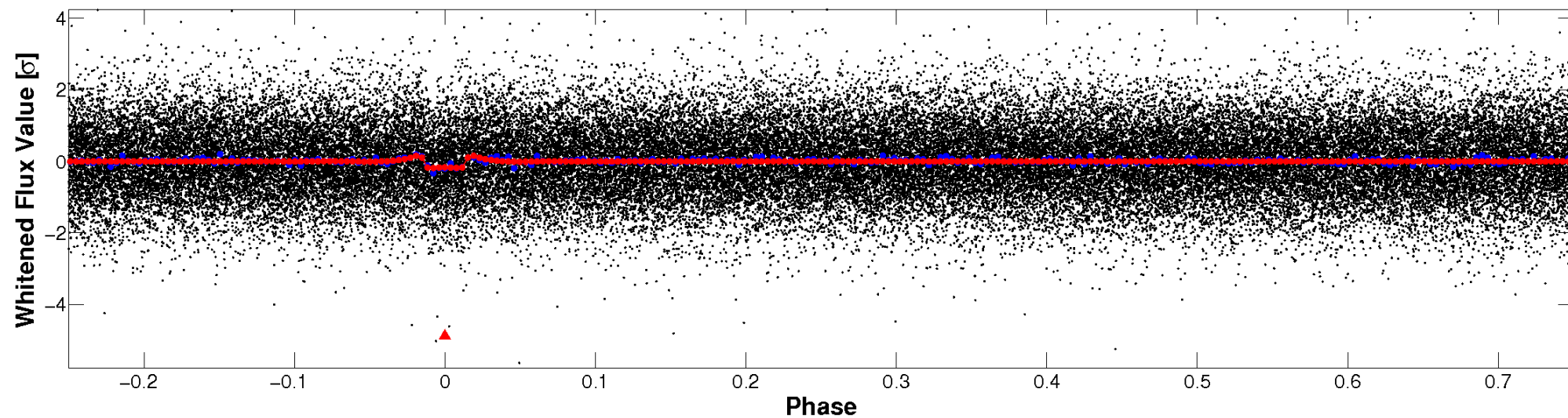


# Non-Whitened Vs. Whitened Light Curve

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

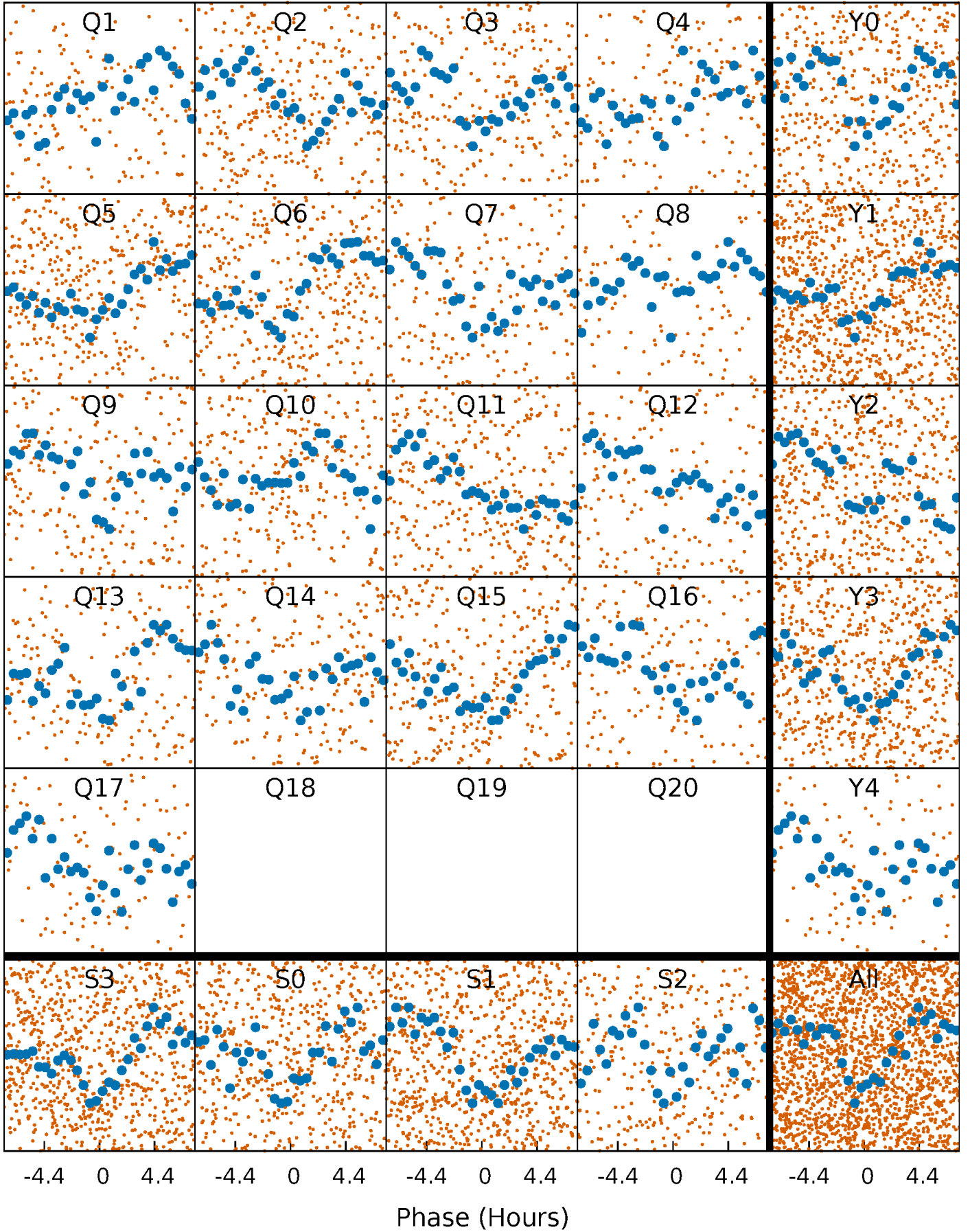


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

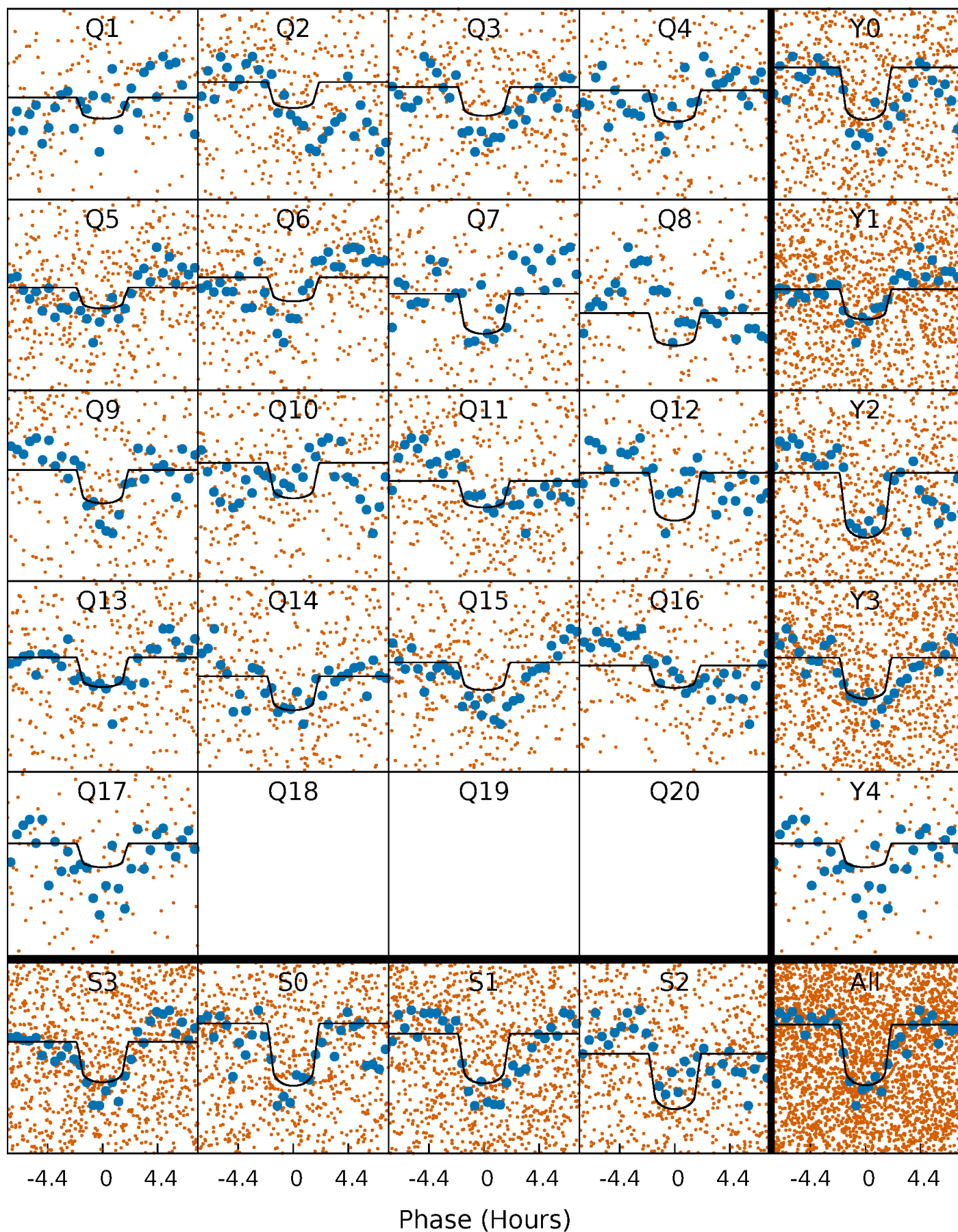
TCE 006451368-01 P= 5.336030 Days  $T_0=132.611087$  (BKJD)





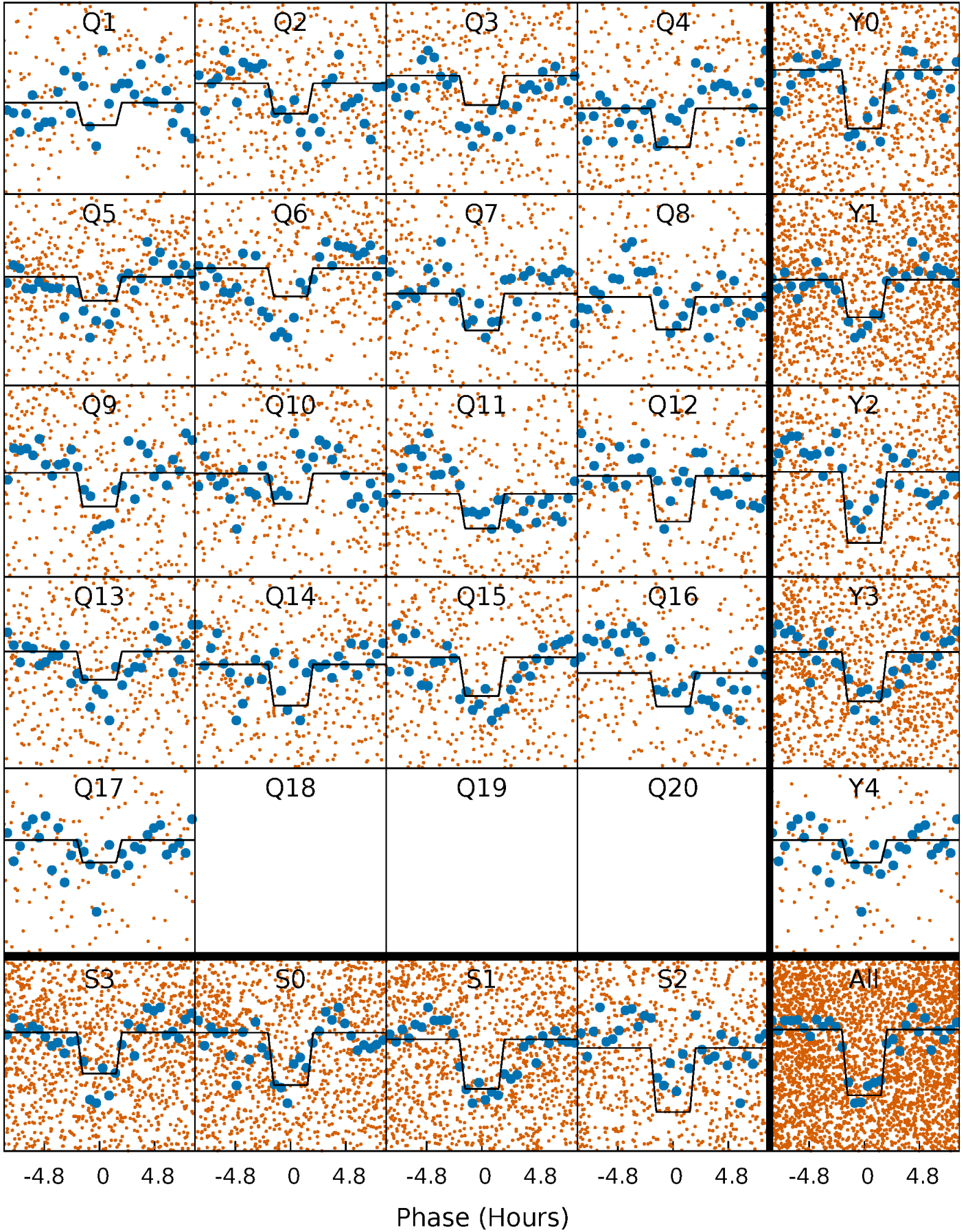
# DV Quarter-Phased Transit Curves

TCE 006451368-01 P= 5.336030 Days  $T_0=132.611087$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

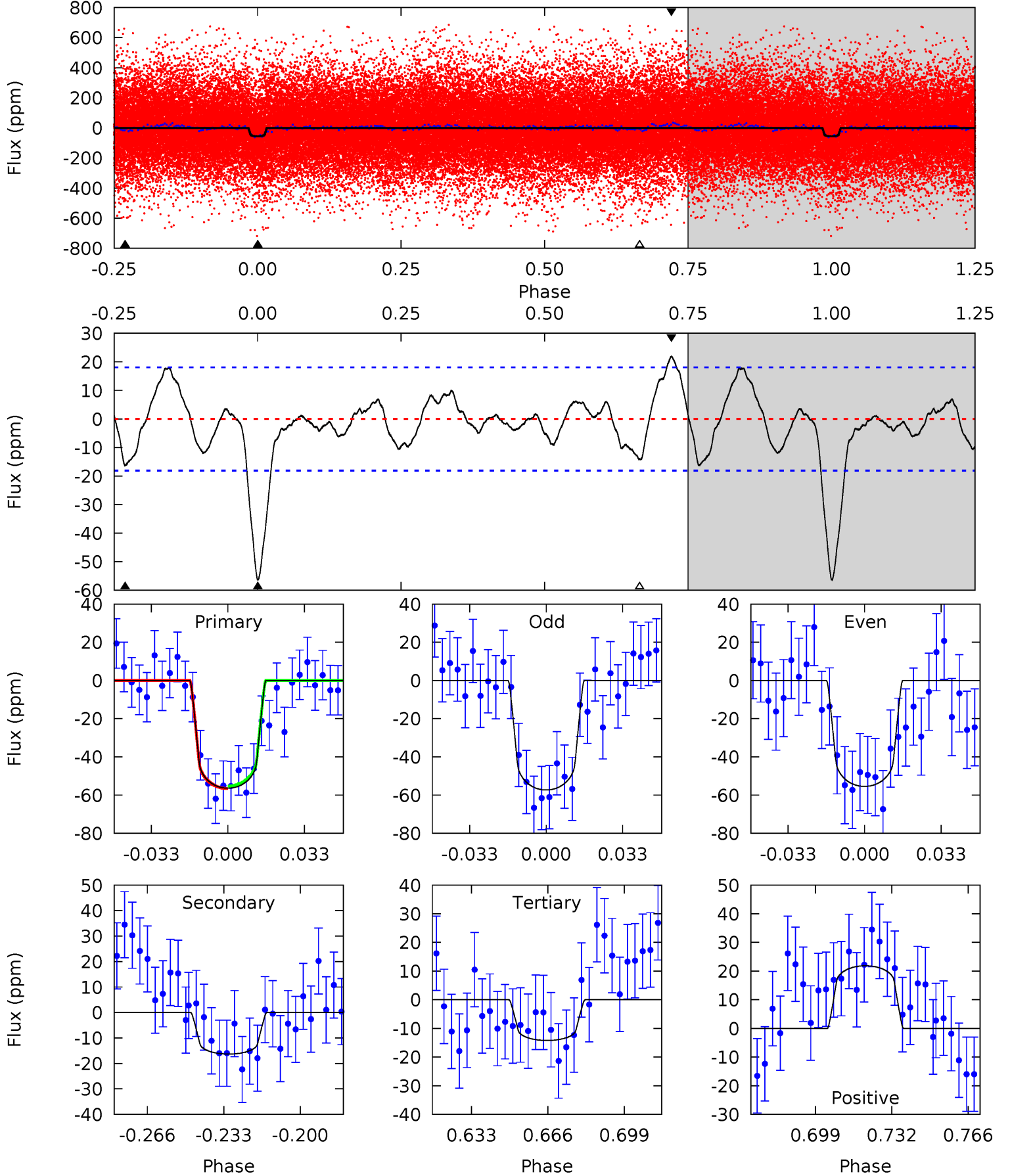
TCE 006451368-01 P= 5.335987 Days  $T_0=132.620365$  (BKJD)



# DV Model-Shift Uniqueness Test

006451368-01, P = 5.336030 Days, E = 127.275057 Days

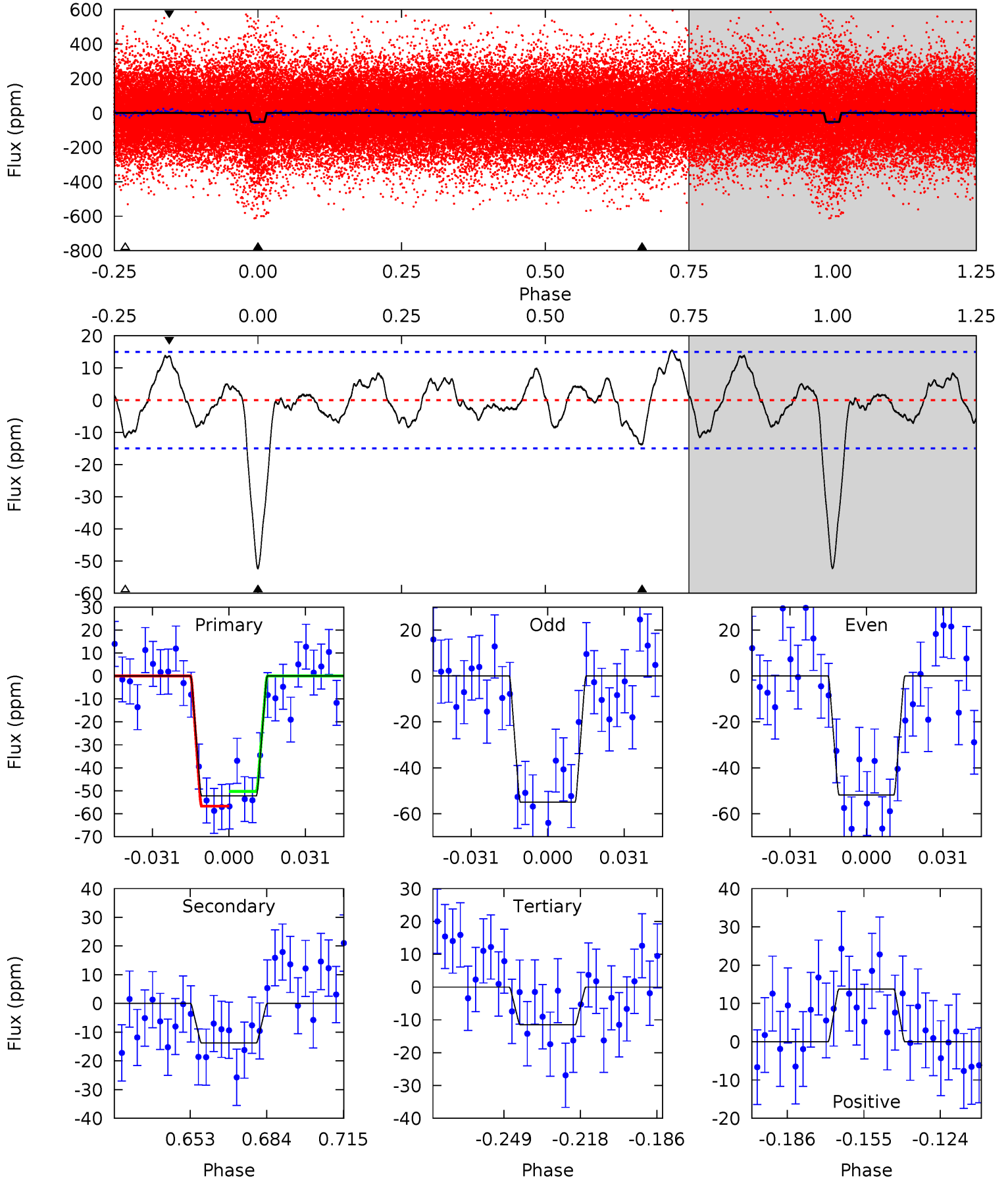
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.9	4.32	3.76	5.79	4.79	2.13	1.91	11.2	9.15	0.56	-1.47	0.25	1.09	0.28	0.17



# Alt Model-Shift Uniqueness Test

006451368-01, P = 5.335987 Days, E = 127.284378 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
16.7	4.42	3.70	4.42	4.80	2.16	1.81	13.0	12.3	0.72	-0.00	0.49	0.94	0.23	1.03





### Stellar Parameters For KIC 006451368

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6742^{+163}_{-204}$	$3.925^{+0.273}_{-0.117}$	$-0.400^{+0.300}_{-0.250}$	$2.032^{+0.417}_{-0.626}$	$1.267^{+0.203}_{-0.203}$	$0.213^{+0.355}_{-0.072}$
	+2%/-3%	+7%/-3%	+75%/-62%	+21%/-31%	+16%/-16%	+167%/-34%
Source	PHO1	FLK73	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 006451368-01 / KOI 7780.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-16 \pm 4$	$1.59^{+0.47}_{-0.46}$	$2286^{+153}_{-192}$	$4993^{+771}_{-525}$	$15^{+15}_{-6}$
Alt.	$-14 \pm 3$	$1.52^{+0.50}_{-0.46}$	$2287^{+156}_{-193}$	$4882^{+727}_{-498}$	$14^{+14}_{-6}$

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

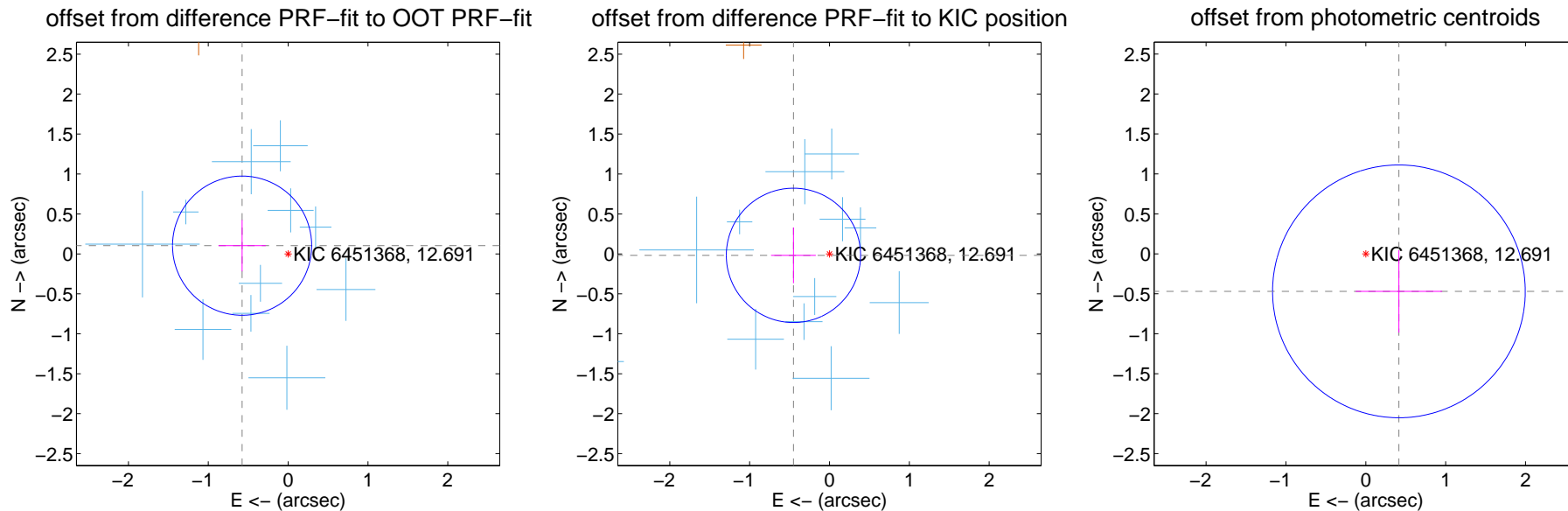
## DV Centroid Data

Supplemental centroid analysis for 006451368-01. Kepler magnitude: 12.69. Transit SNR 8.79

There are 12 quarters with good PRF difference image offsets

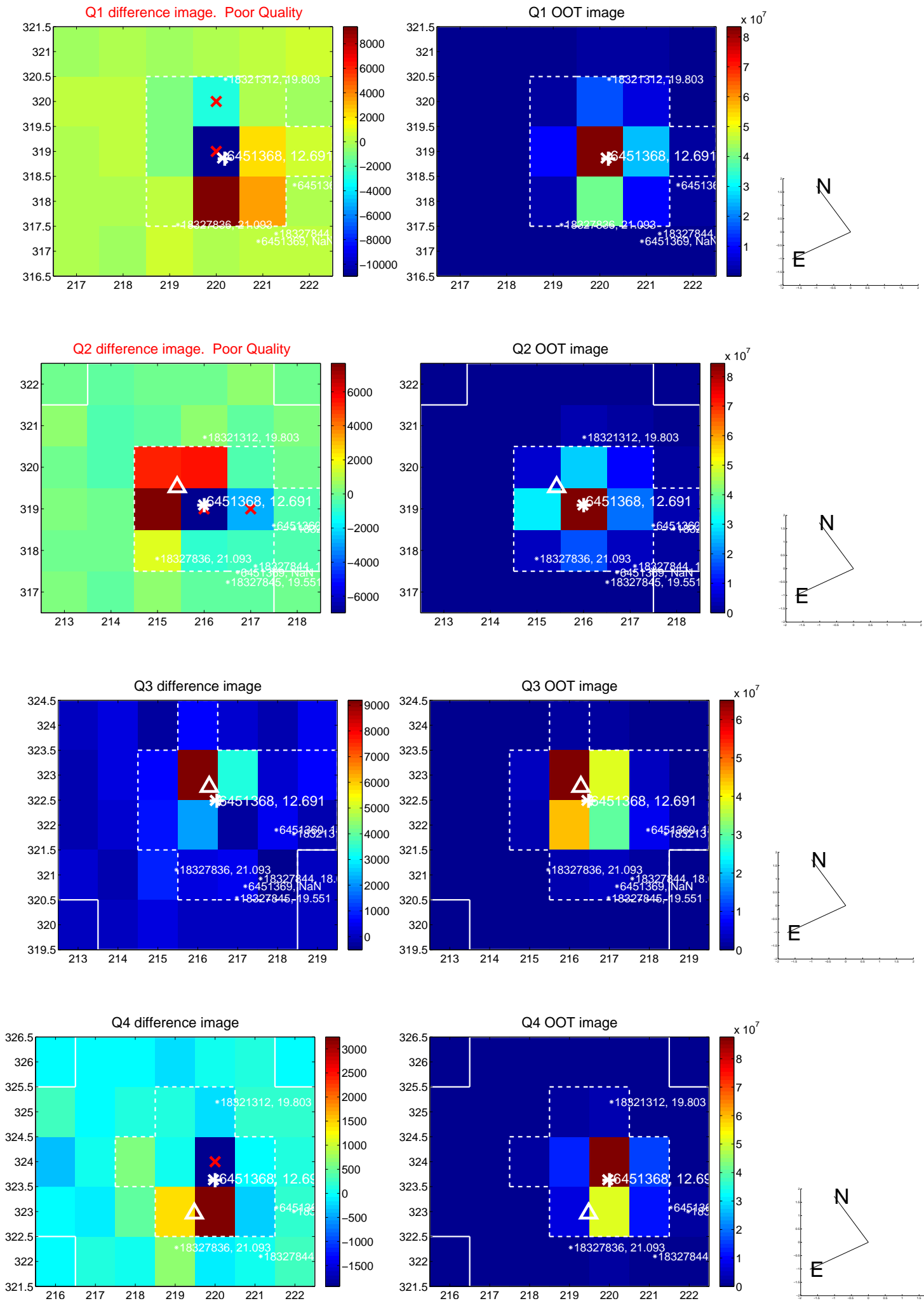
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.586 \pm 0.290$	2.02	$0.576 \pm 0.296$	$0.103 \pm 0.322$
PRF-fit source offset from KIC position	$0.452 \pm 0.280$	1.61	$0.451 \pm 0.281$	$-0.018 \pm 0.348$
photometric centroid source offset	$0.63 \pm 0.53$	1.19	$-0.41 \pm 0.54$	$-0.47 \pm 0.52$

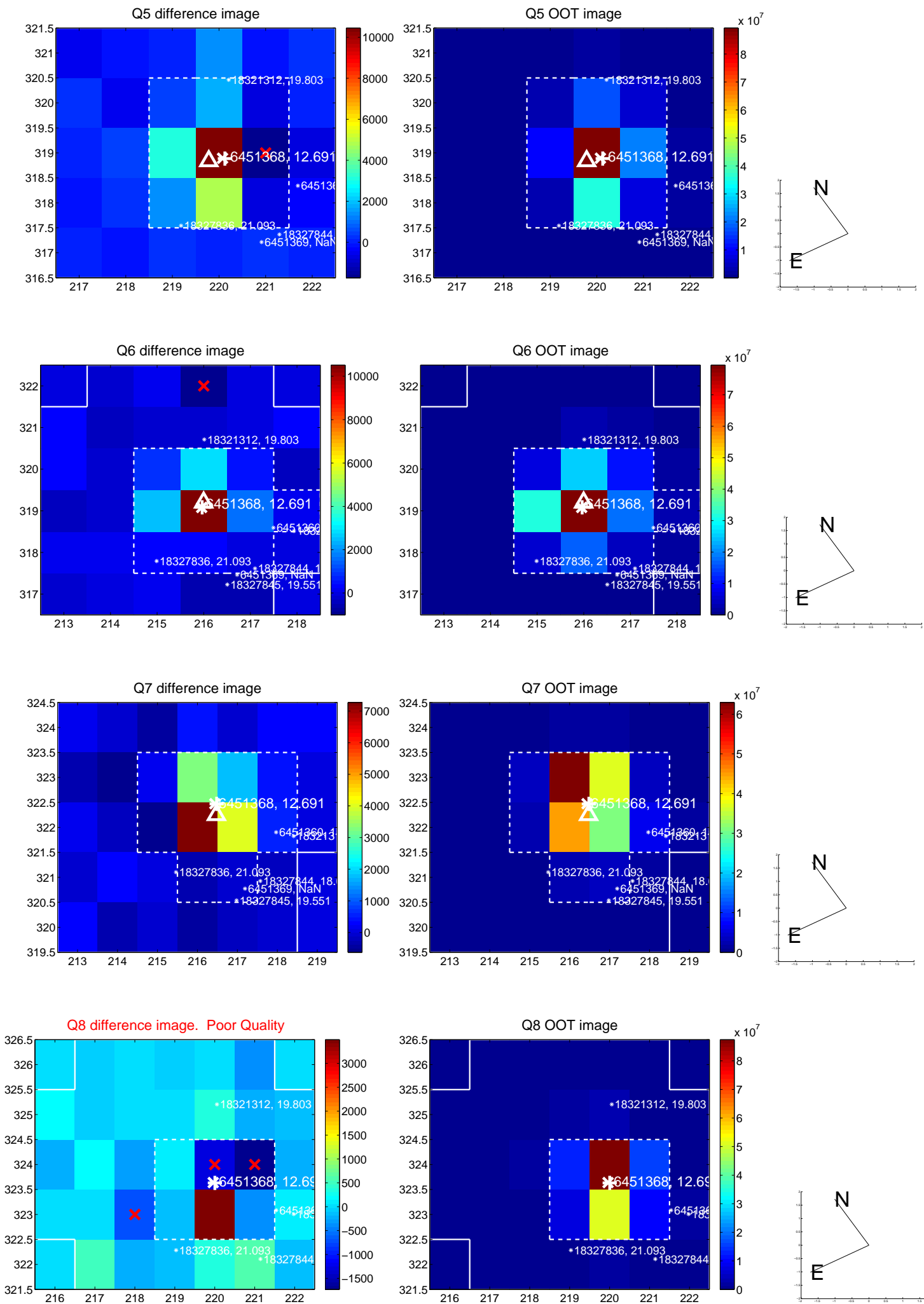


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

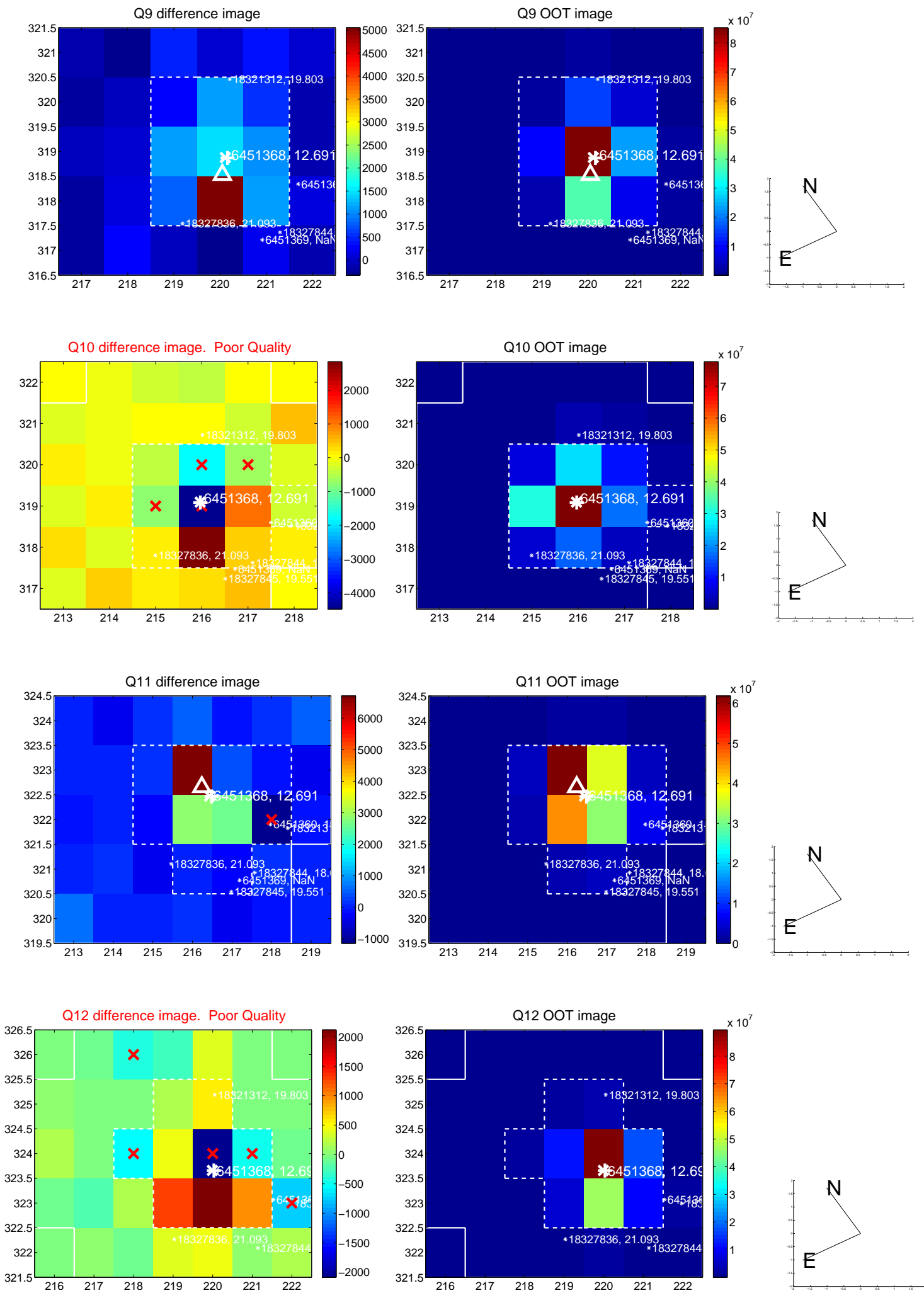


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

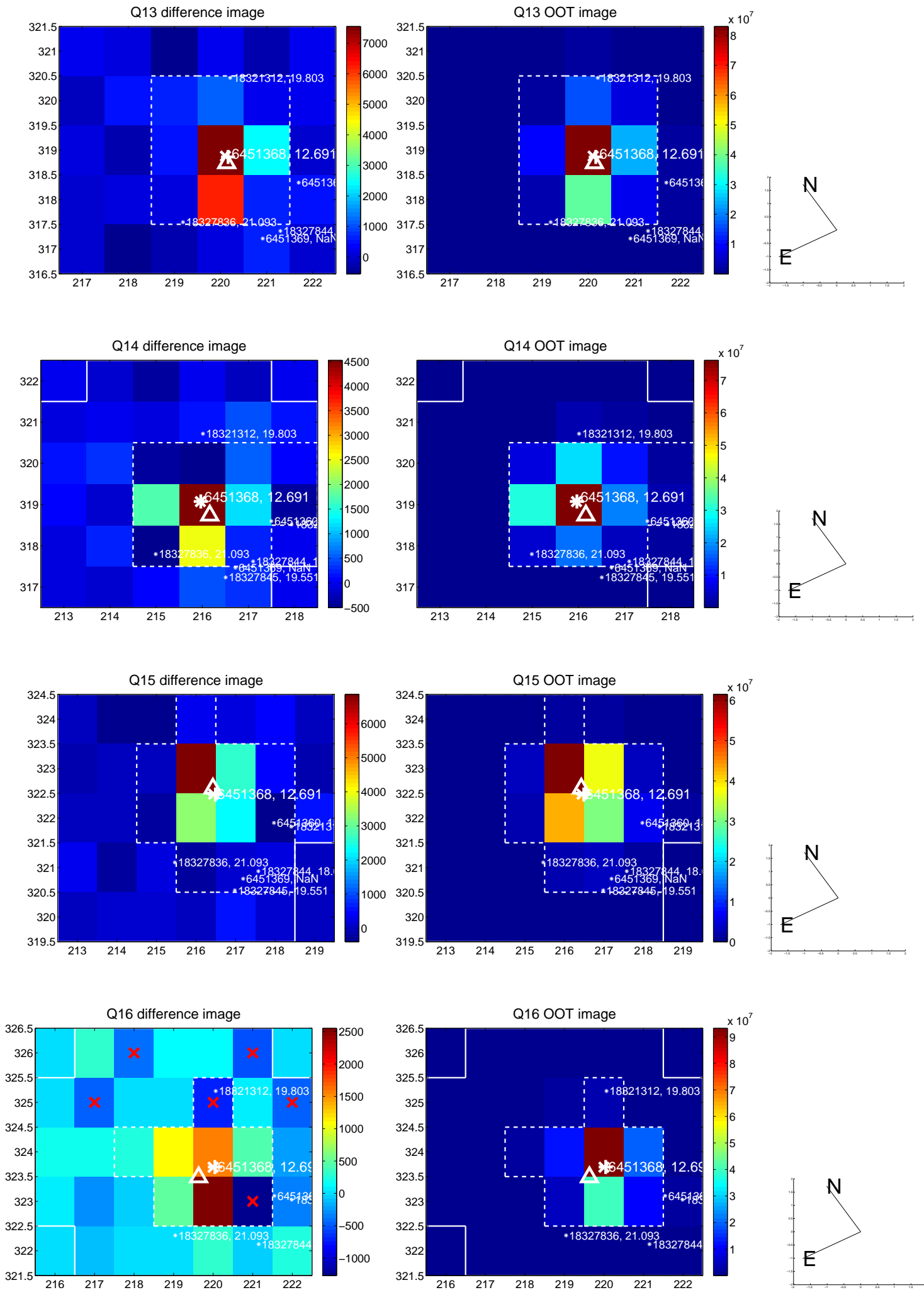




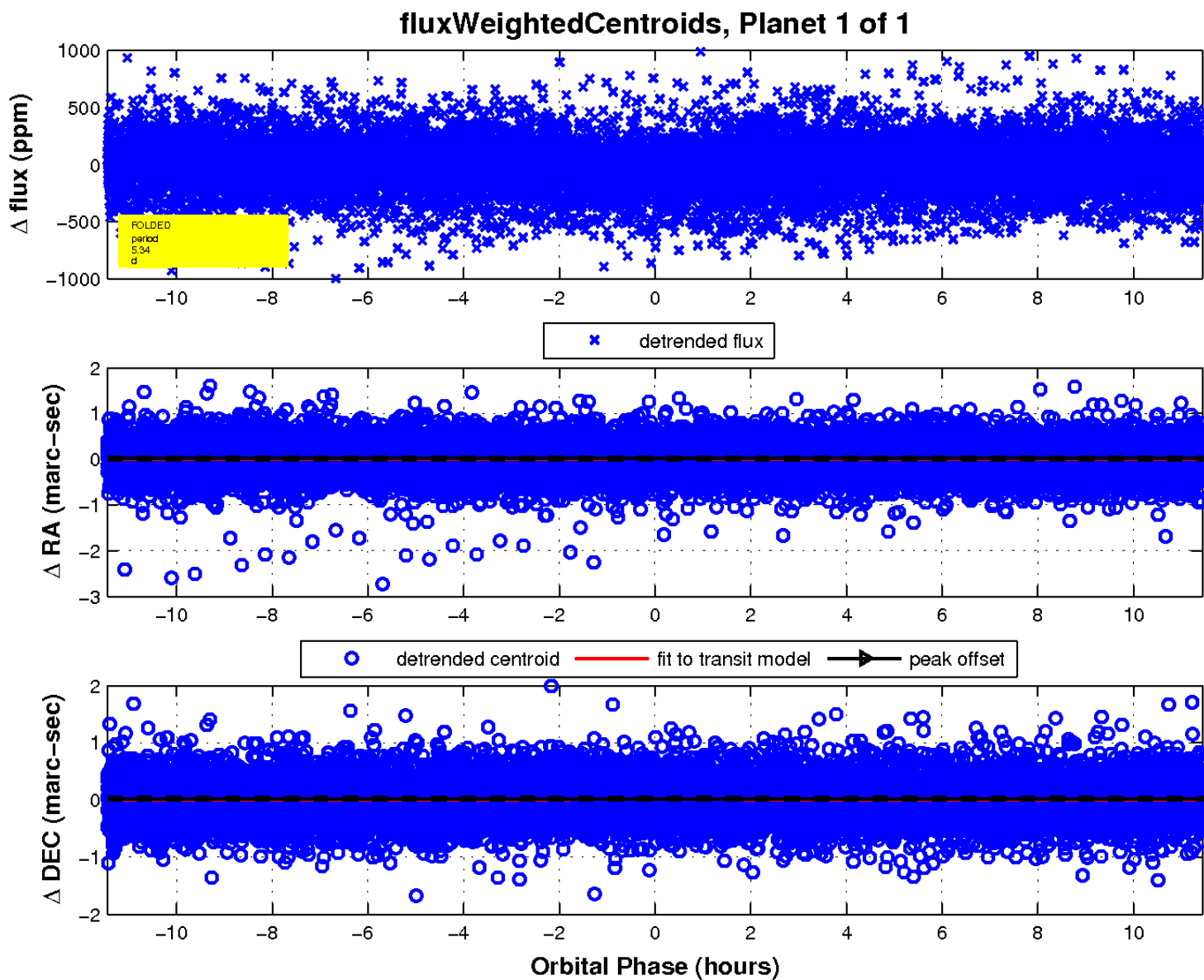
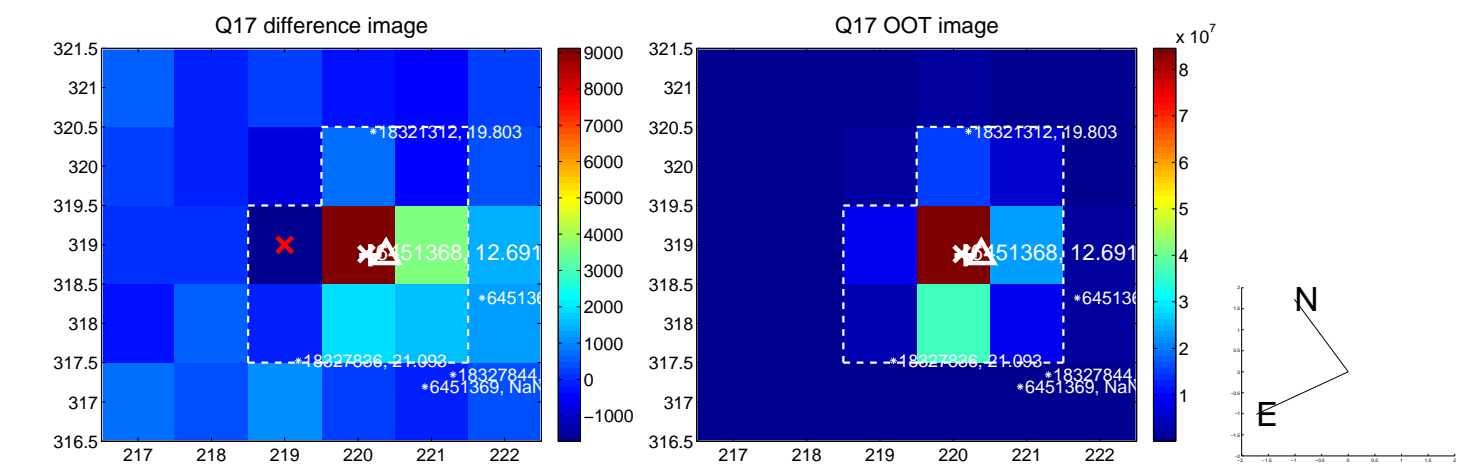
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

