

# KIC 006545051

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006545051-01	OBS	2777.01	1.995667	132.859189	187.5	4.543	18.1	19.4	0.77	5235	1.14	461.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006545051-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

**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 006545051-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
006545051-01	6545051	006545018-pri	6545018	1:2	22.8	0	-6	13.75	15.74	1472.30	Direct-PRF	0	4.53	1.34

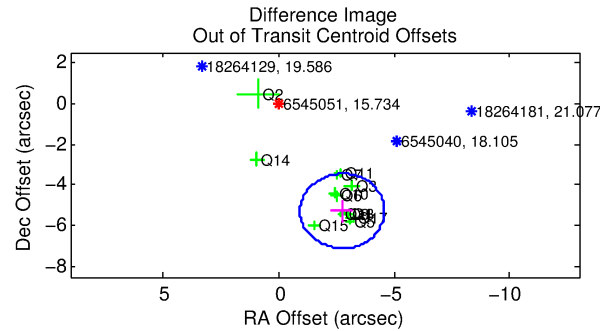
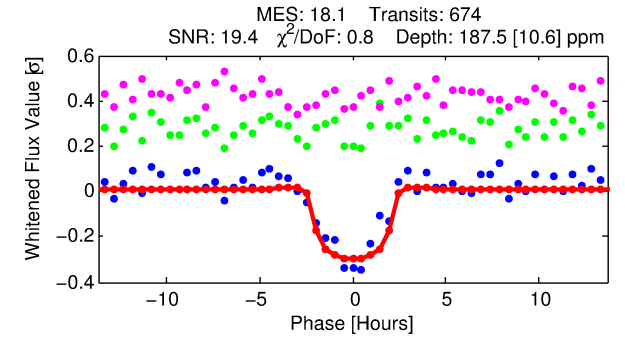
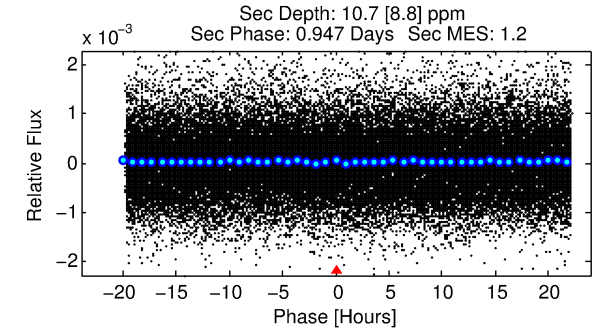
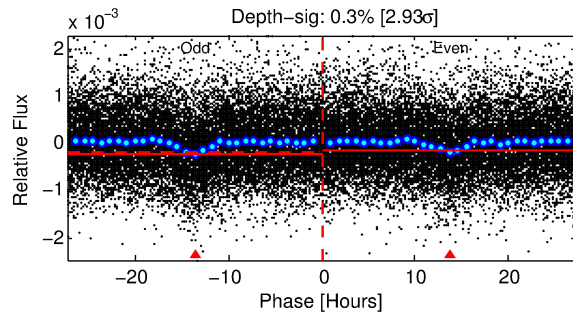
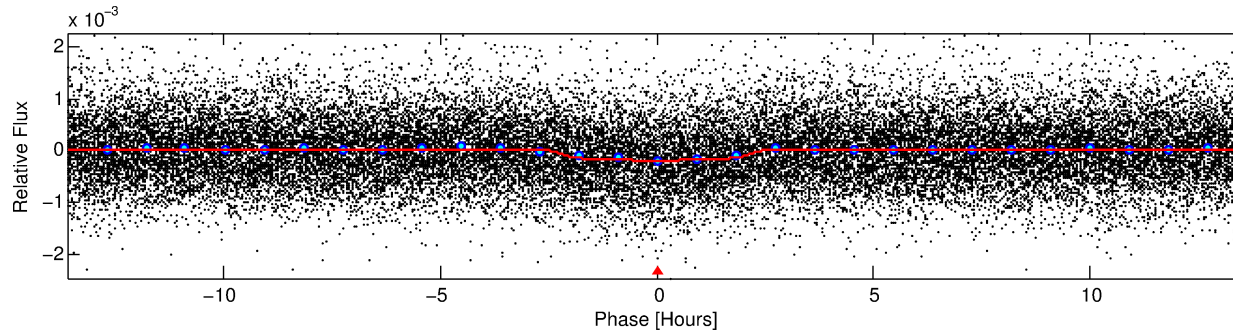
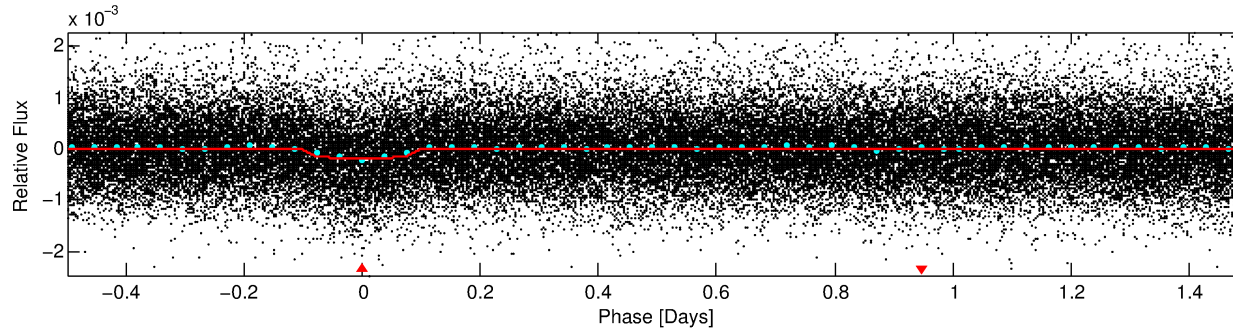
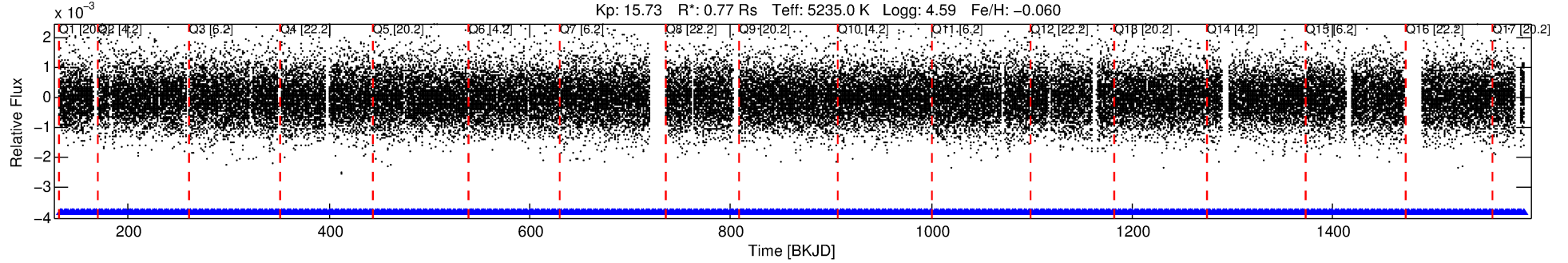
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 6545051 Candidate: 1 of 1 Period: 1.996 d

KOI: K02777.01 Corr: 0.990

Kp: 15.73 R\*: 0.77 Rs Teff: 5235.0 K Logg: 4.59 Fe/H: -0.060



## DV Fit Results:

Period = 1.99567 [0.00001] d  
Epoch = 132.8592 [0.0031] BKJD  
Rp/R\* = 0.0135 [0.0069]  
a/R\* = 2.50 [4.05]  
b = 0.73 [1.25]  
Seff = 461.83 [99.19]  
Teq = 1182 [63] K  
Rp = 1.14 [0.60] Re  
a = 0.0294 [0.0036] AU  
Ag = 3.91 [5.17] [0.56σ]  
Teffp = 2570 [846] K [1.64σ]

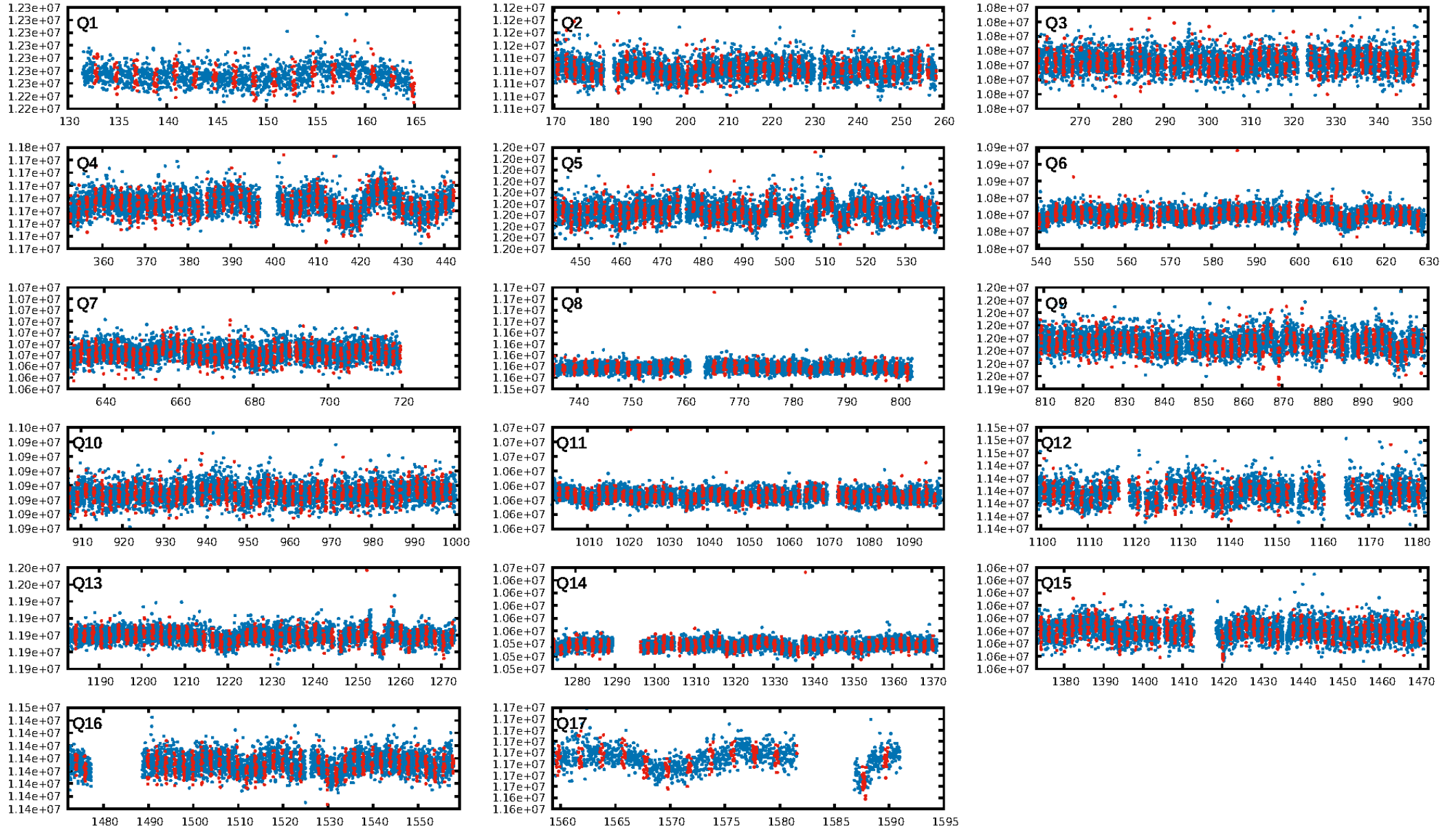
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 1.32e-71  
RollingBand-fgt: 1.00 [644/644]  
GhostDiagnostic-chr: -0.1398  
Centroid-sig: 0.0%  
Centroid-so: 11.862 arcsec [13.87σ]  
OotOffset-rm: 5.946 arcsec [9.76σ]  
KicOffset-rm: 5.909 arcsec [10.13σ]  
OotOffset-st: 4/4/0/5 [13]  
KicOffset-st: 4/4/0/5 [13]  
DiffImageQuality-fgm: 0.77 [10/13]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:59:12 Z

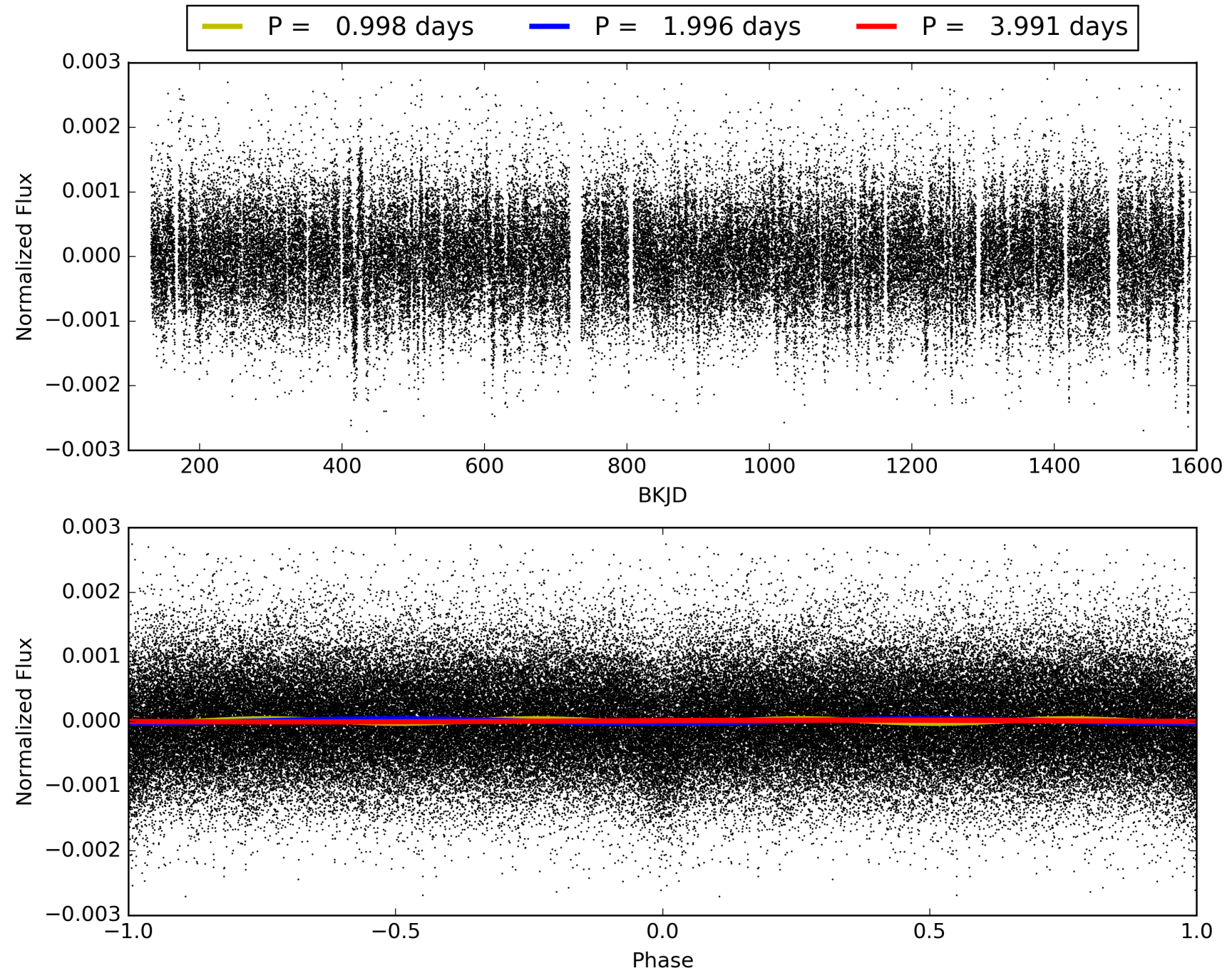
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006545051-01, PDC Light Curves



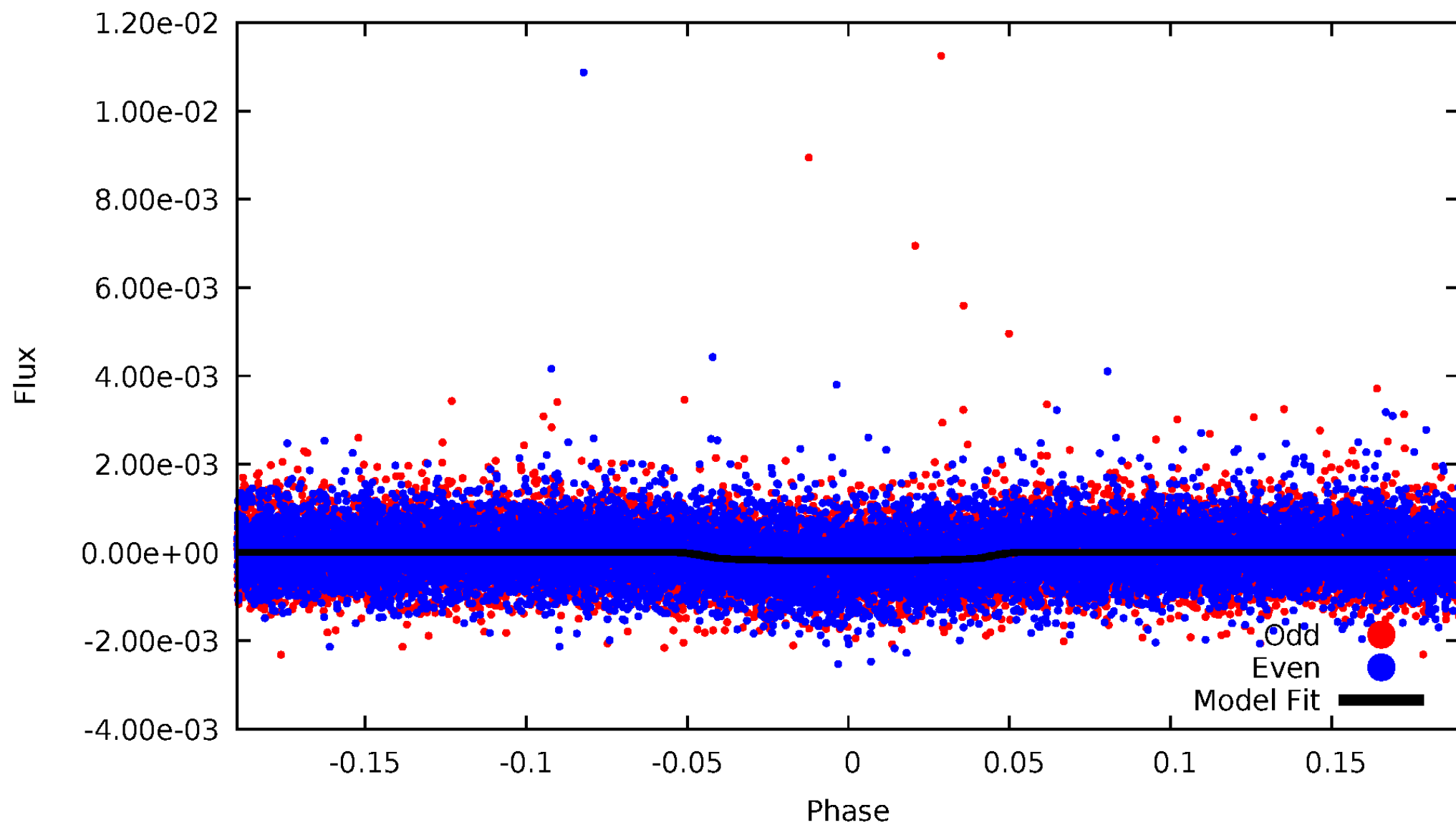


TCE 006545051-01



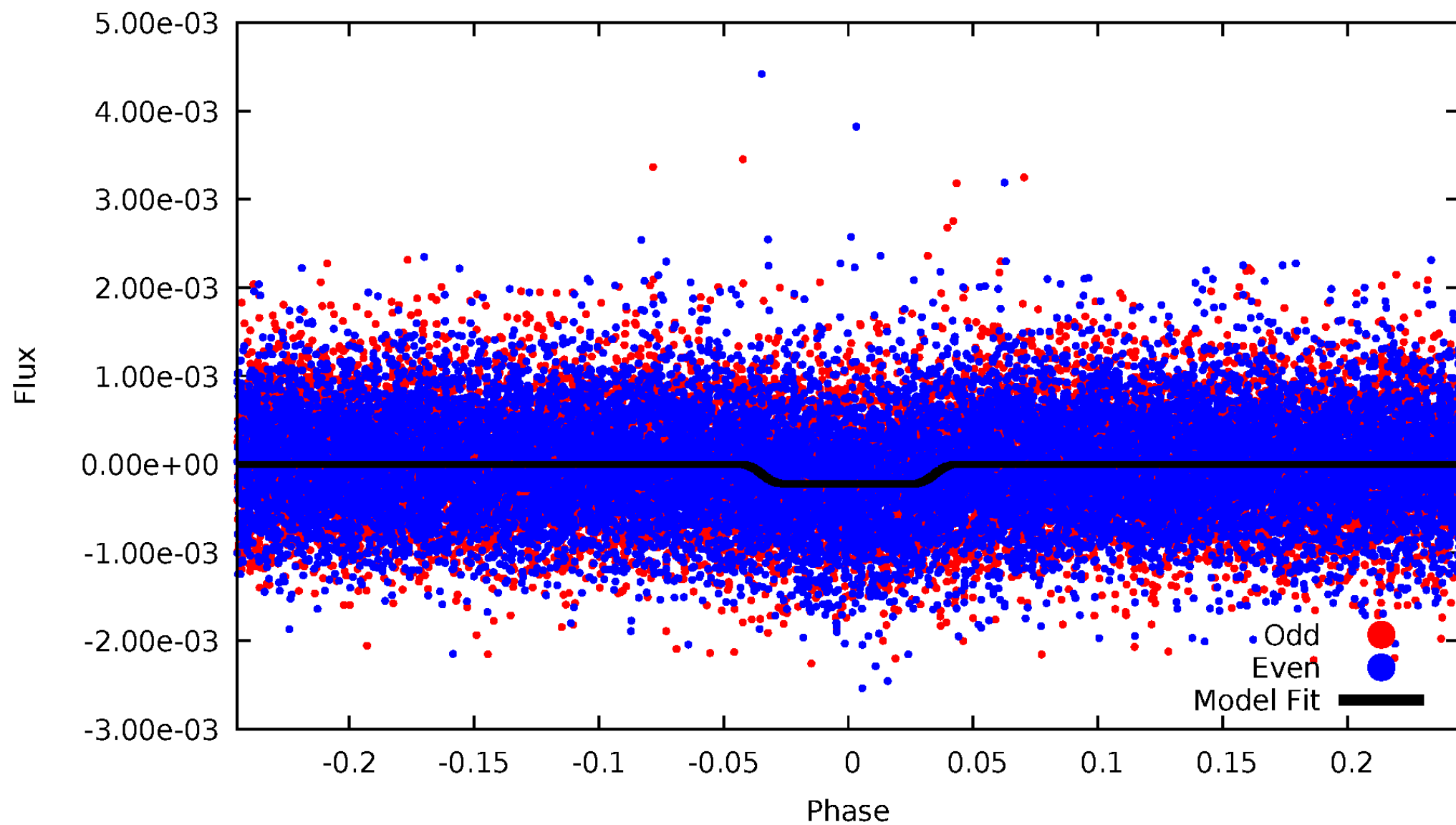
# DV Odd/Even

TCE 006545051-01



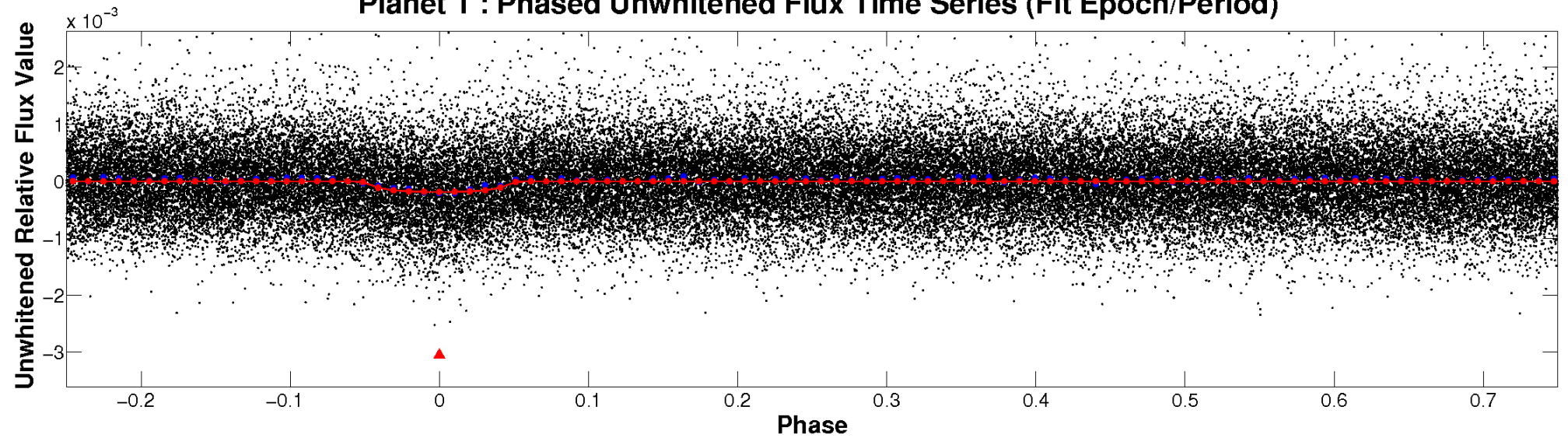
# ALT Odd/Even

TCE 006545051-01

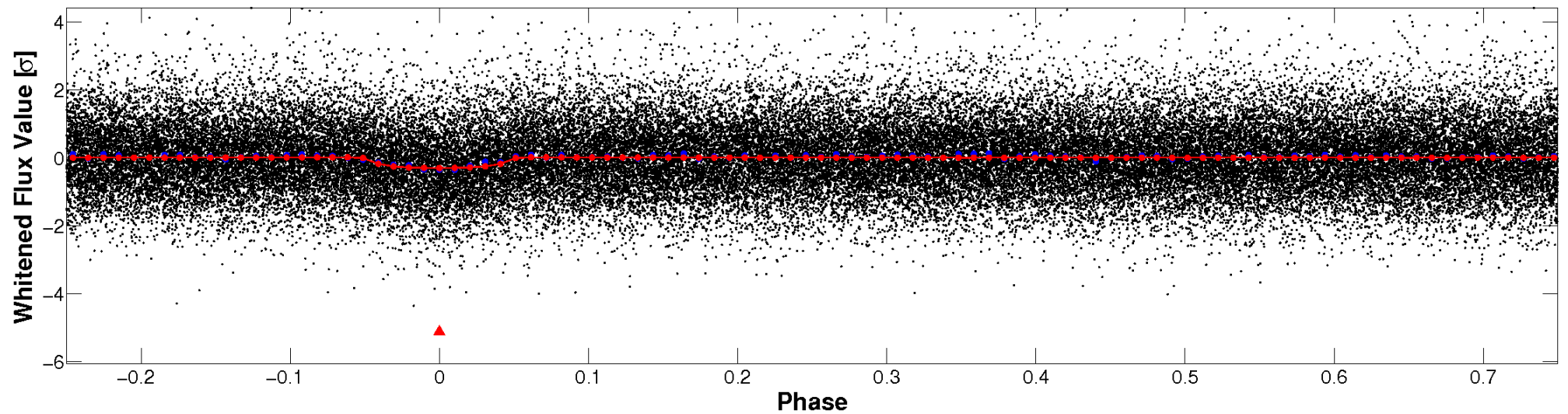


# Non-Whitened Vs. Whitened Light Curve

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



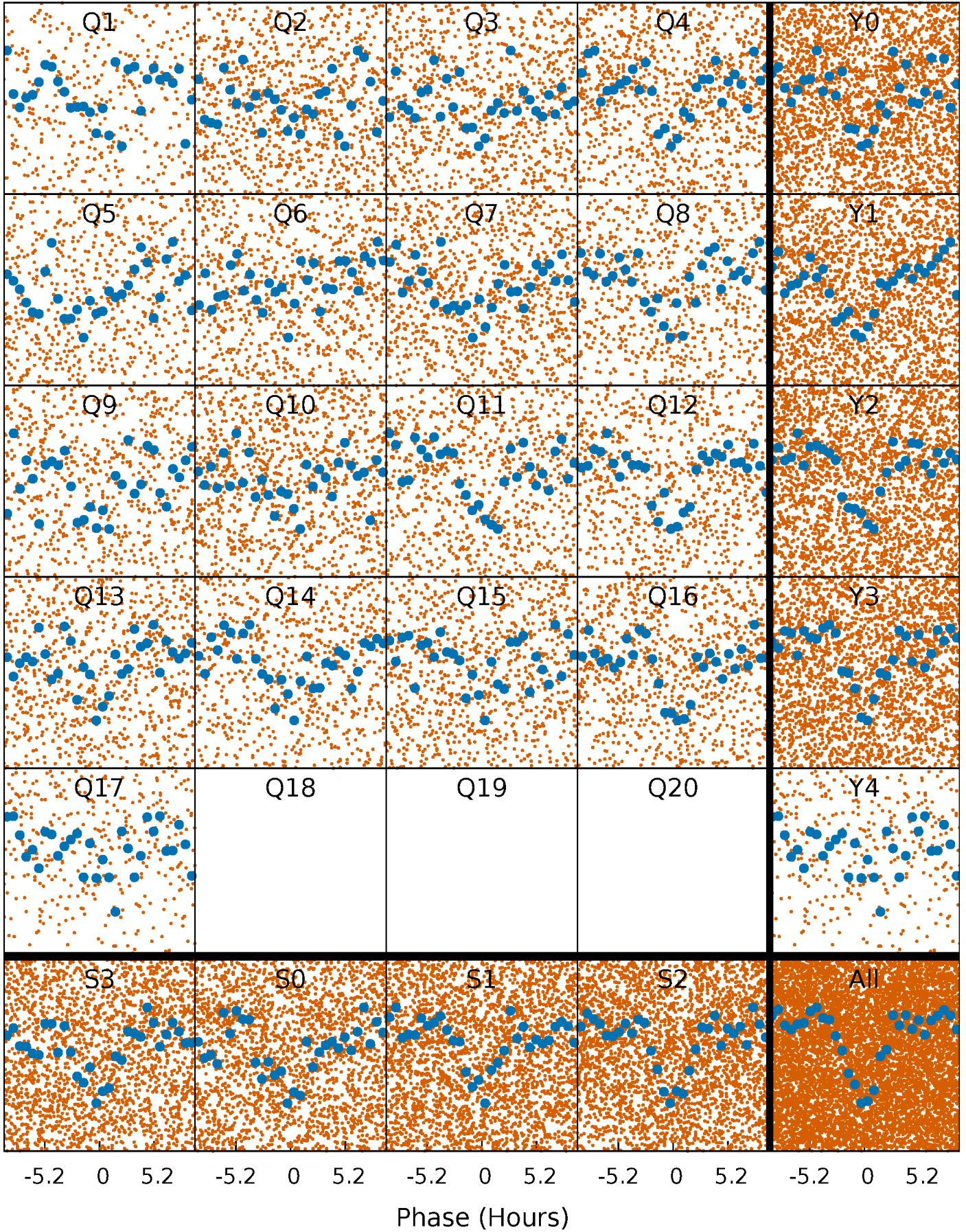
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

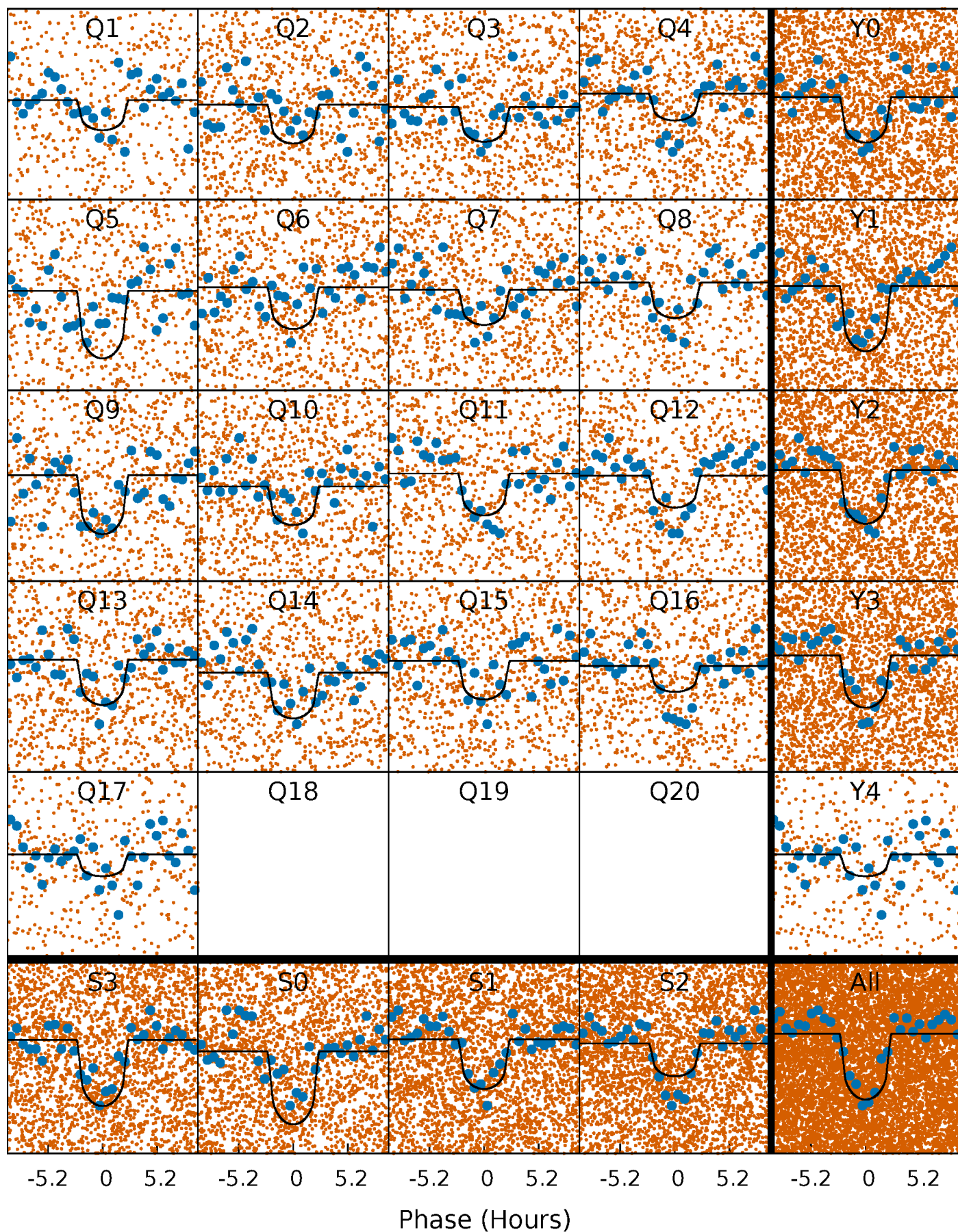
TCE 006545051-01 P= 1.995667 Days  $T_0=132.859189$  (BKJD)





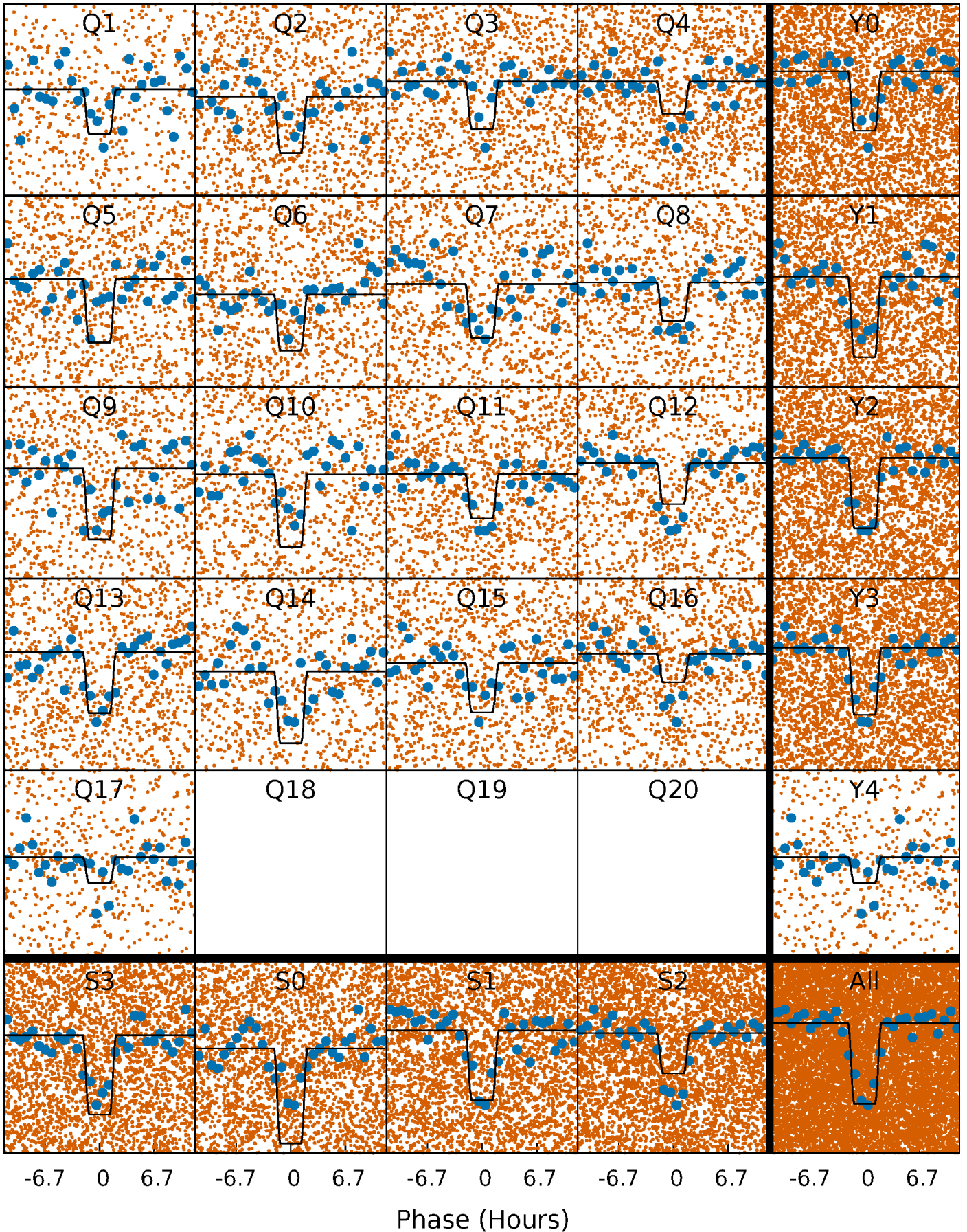
# DV Quarter-Phased Transit Curves

TCE 006545051-01 P= 1.995667 Days  $T_0=132.859189$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006545051-01 P= 1.995723 Days  $T_0=132.833853$  (BKJD)

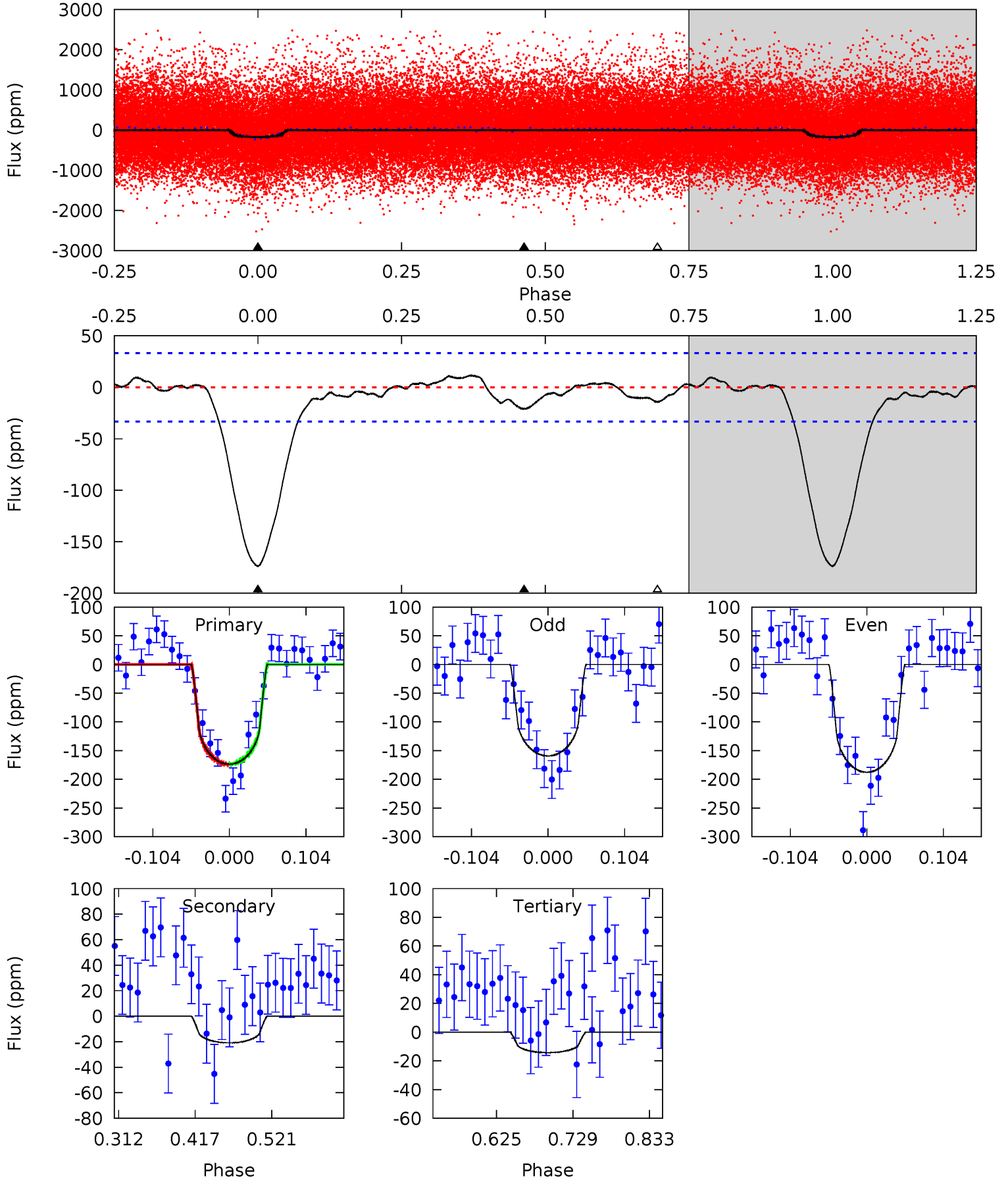




# DV Model-Shift Uniqueness Test

006545051-01, P = 1.995667 Days, E = 130.863522 Days

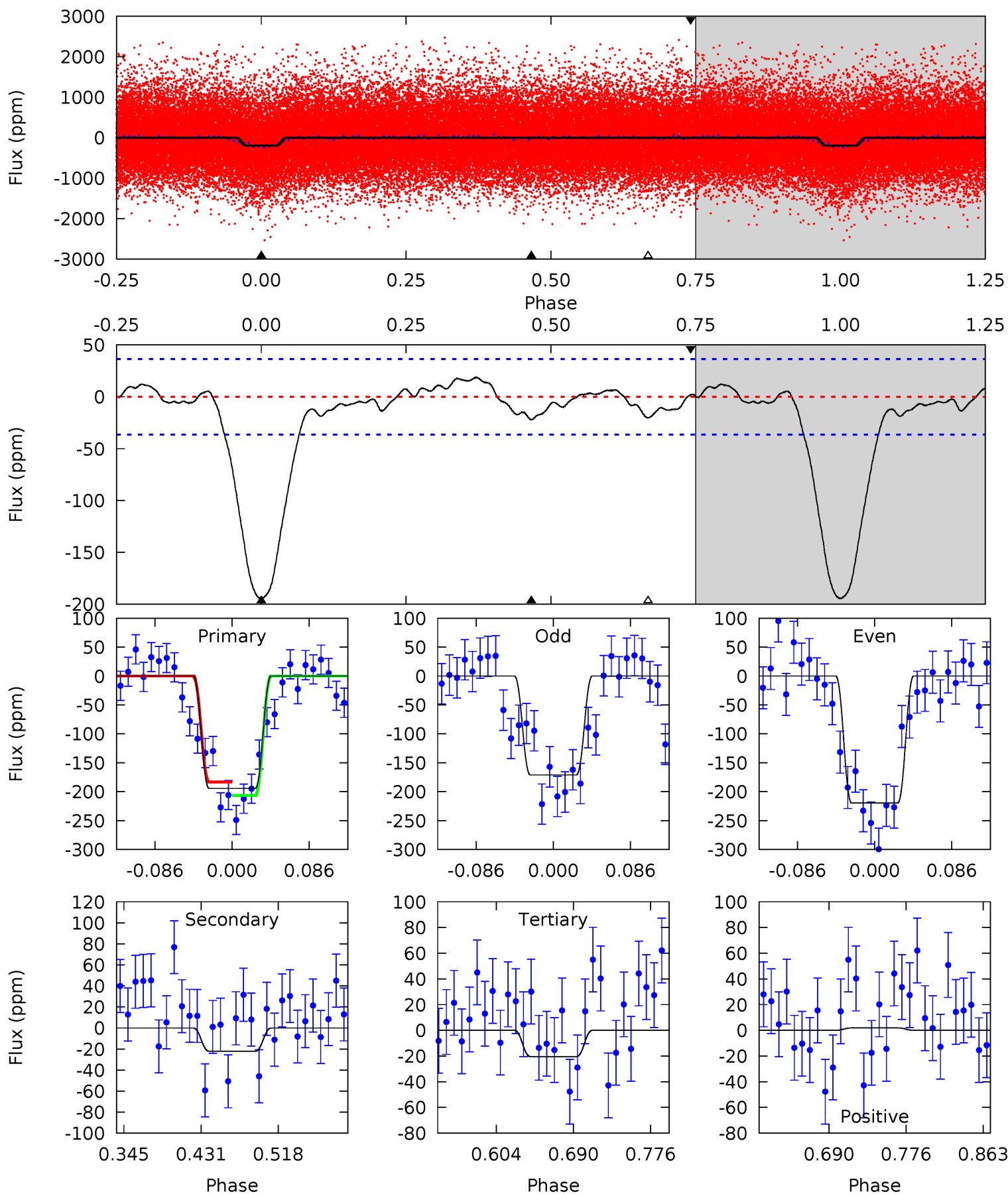
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.8	2.86	1.96	0	4.56	1.63	0.86	21.8	23.8	0.91	2.86	1.96	0.95	0.06	0.06



# Alt Model-Shift Uniqueness Test

006545051-01, P = 1.995723 Days, E = 130.838130 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
24.5	2.79	2.58	0.24	4.60	1.72	1.19	21.9	24.3	0.22	2.56	3.04	1.00	0.09	1.47





### Stellar Parameters For KIC 006545051

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5235^{+158}_{-158}$	$4.595^{+0.032}_{-0.097}$	$-0.060^{+0.300}_{-0.300}$	$0.771^{+0.112}_{-0.060}$	$0.862^{+0.070}_{-0.093}$	$2.644^{+0.453}_{-0.814}$
	+3%/-3%	+1%/-2%	+500%/-500%	+15%/-8%	+8%/-11%	+17%/-31%
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 006545051-01 / KOI 2777.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-21 \pm 7$	$1.15^{+0.56}_{-0.54}$	$1669^{+74}_{-59}$	$3471^{+890}_{-485}$	$7.468^{+18.974}_{-4.636}$
Alt.	$-22 \pm 8$	$1.28^{+0.64}_{-0.55}$	$1672^{+71}_{-64}$	$3361^{+852}_{-436}$	$5.934^{+14.519}_{-3.478}$

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

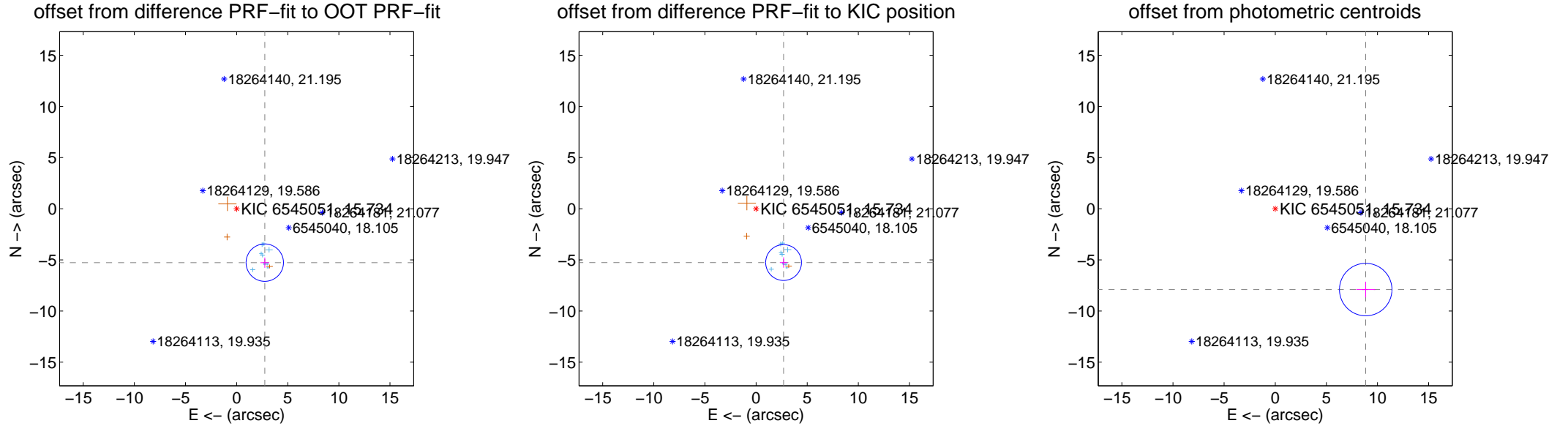
## DV Centroid Data

Supplemental centroid analysis for 006545051-01. Kepler magnitude: 15.73. Transit SNR 19.38

There are 10 quarters with good PRF difference image offsets

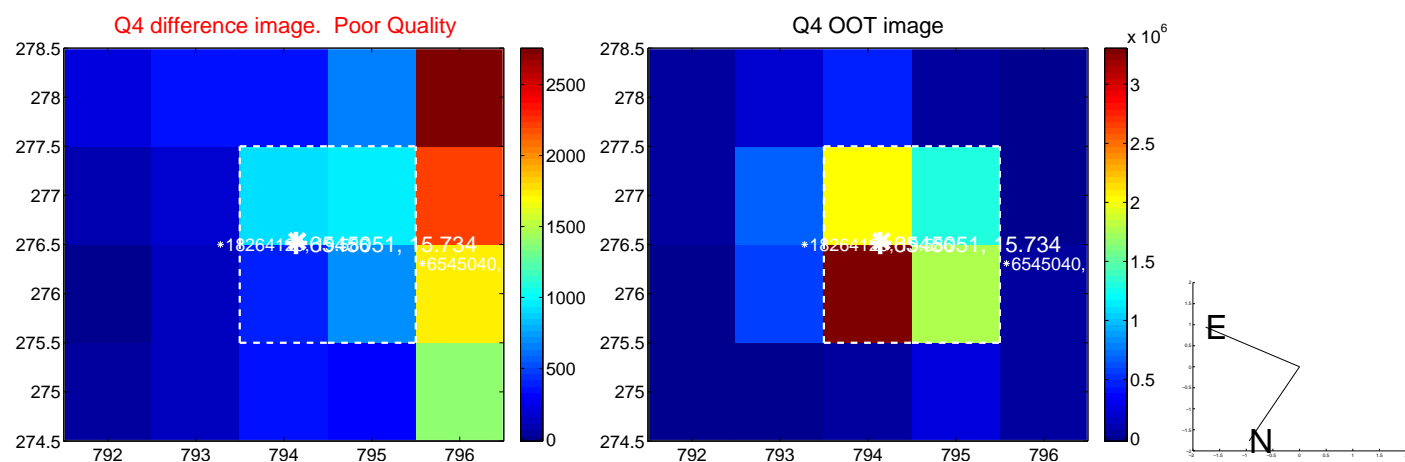
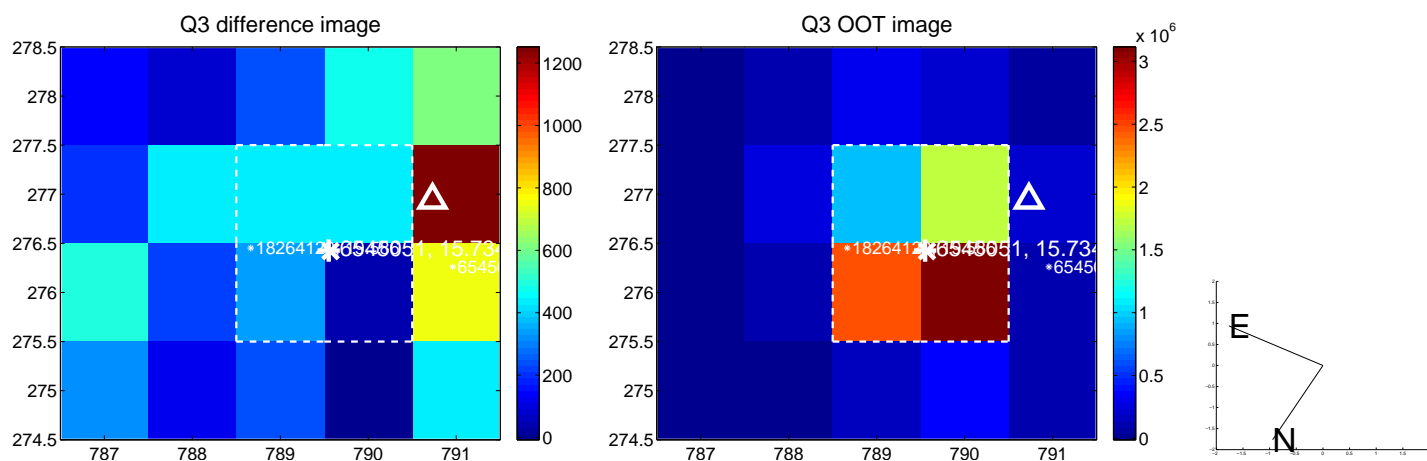
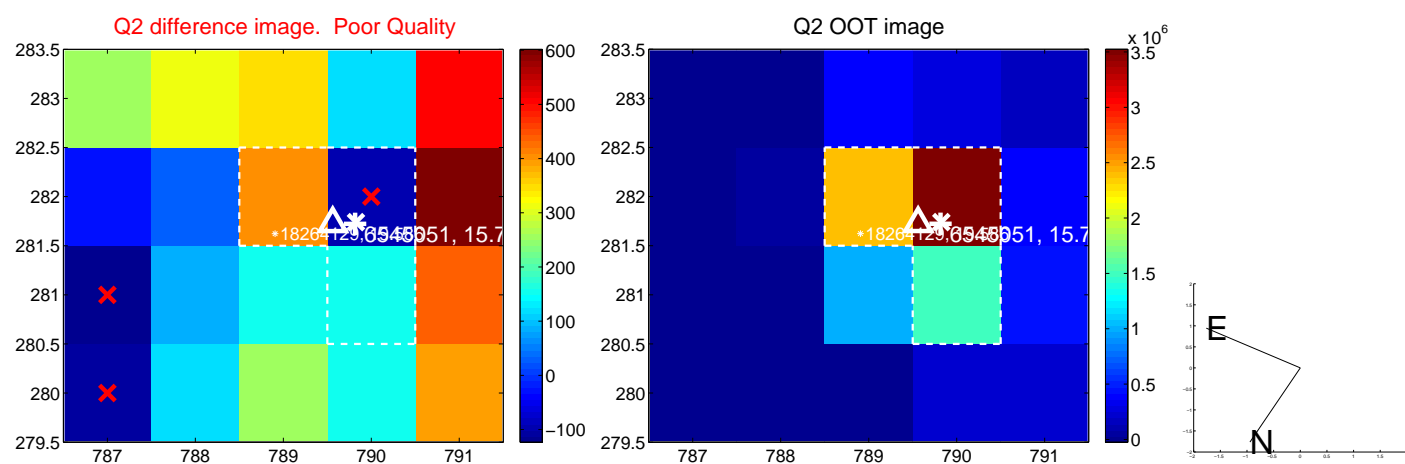
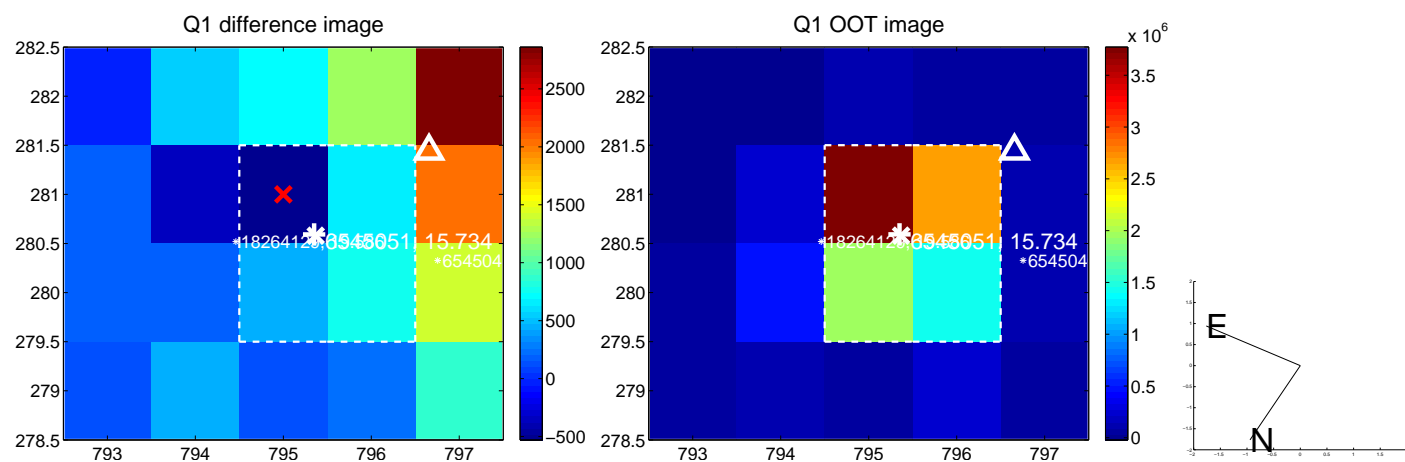
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.946 \pm 0.609$	9.76	$-2.754 \pm 0.431$	$-5.270 \pm 0.499$
PRF-fit source offset from KIC position	$5.909 \pm 0.583$	10.13	$-2.690 \pm 0.370$	$-5.261 \pm 0.505$
photometric centroid source offset	$11.86 \pm 0.86$	13.87	$-8.85 \pm 0.92$	$-7.90 \pm 0.77$

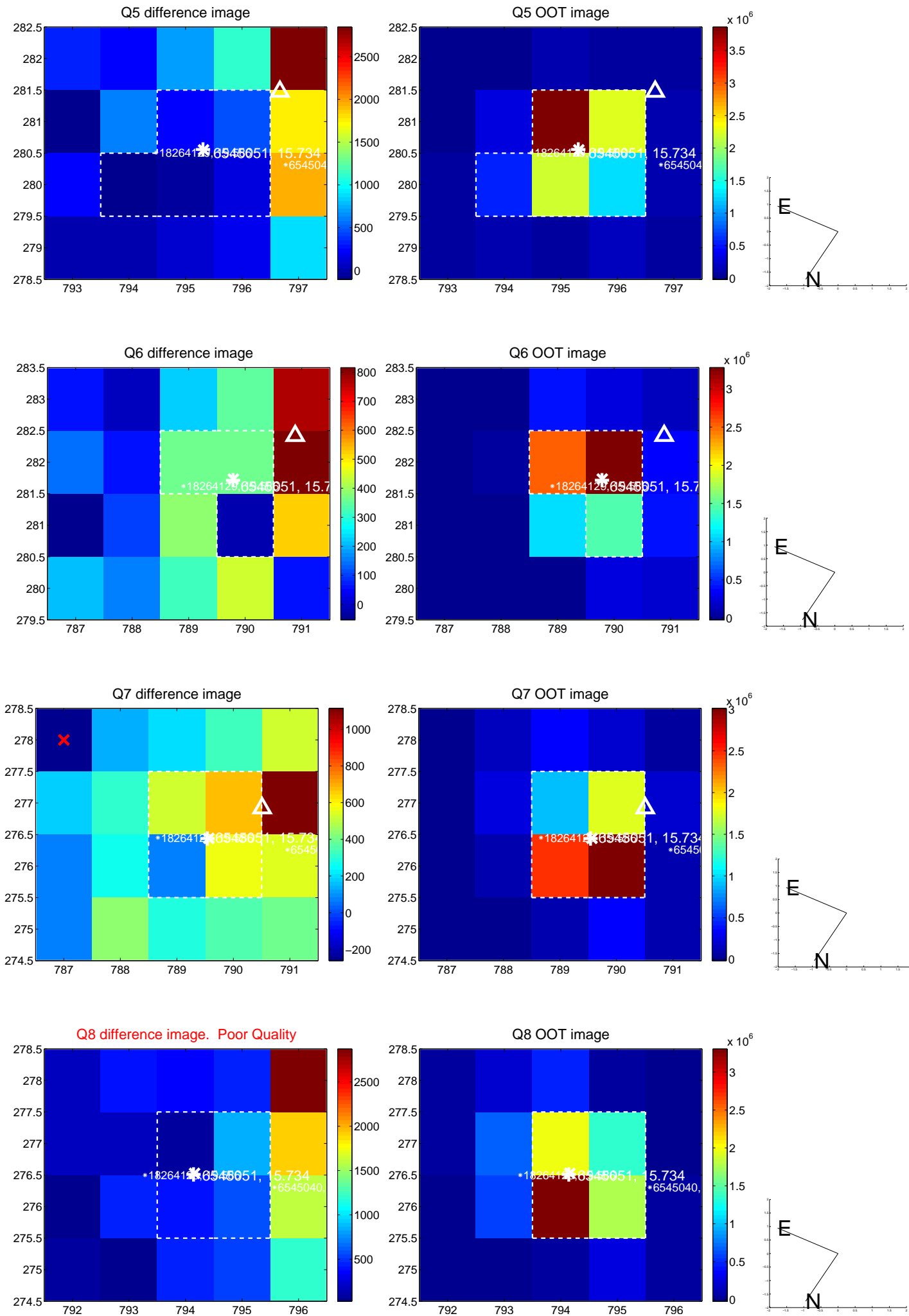


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

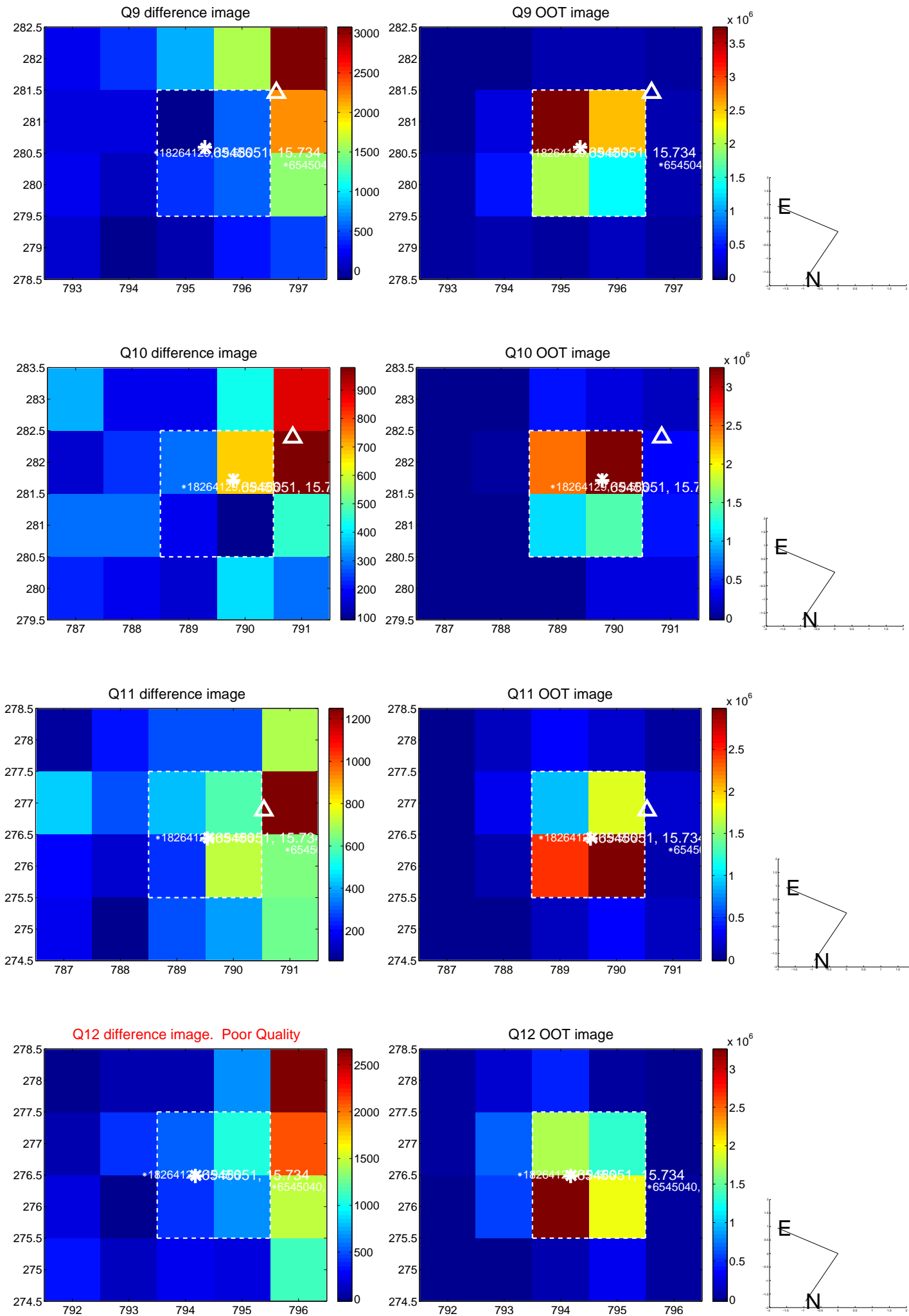


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

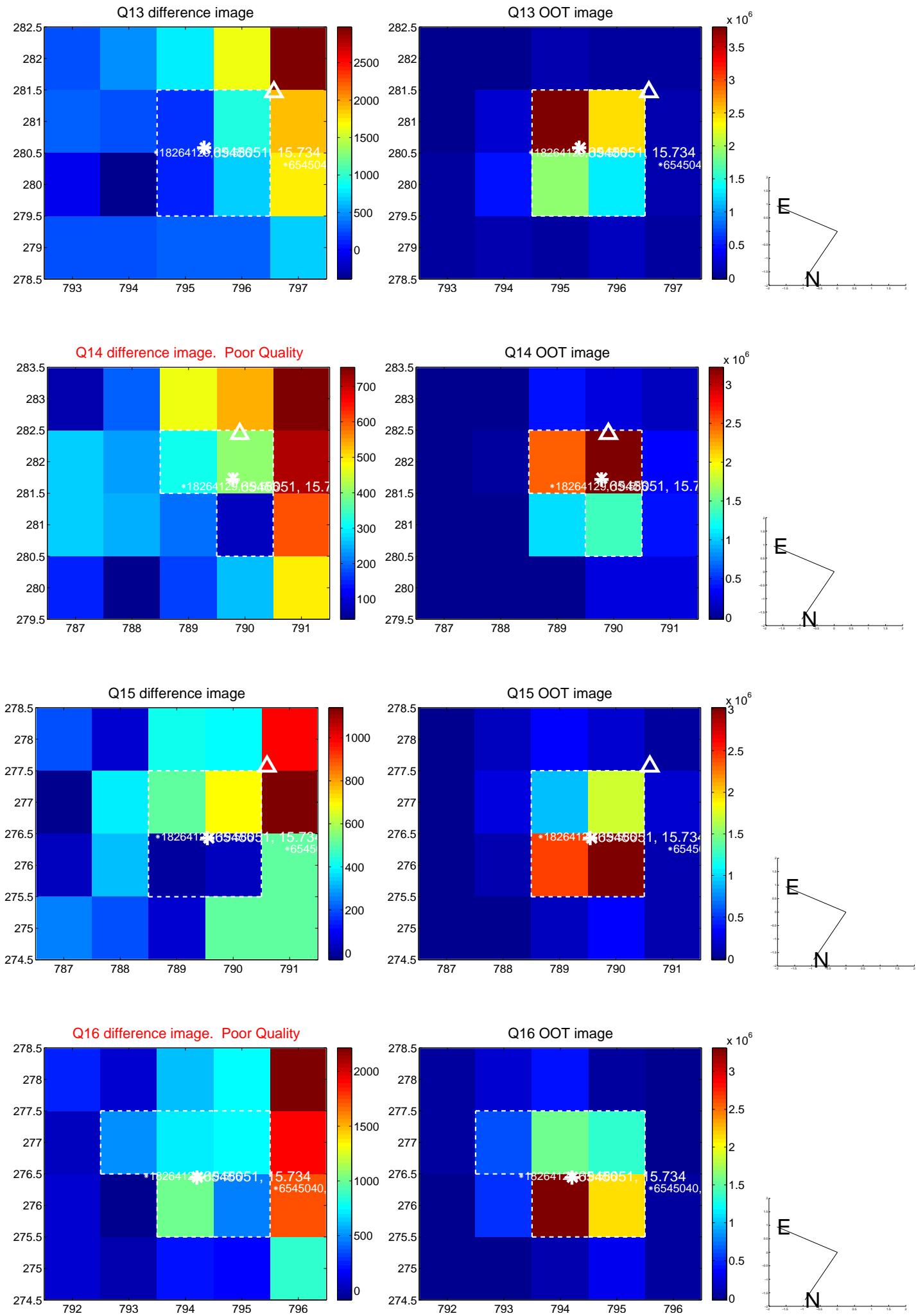




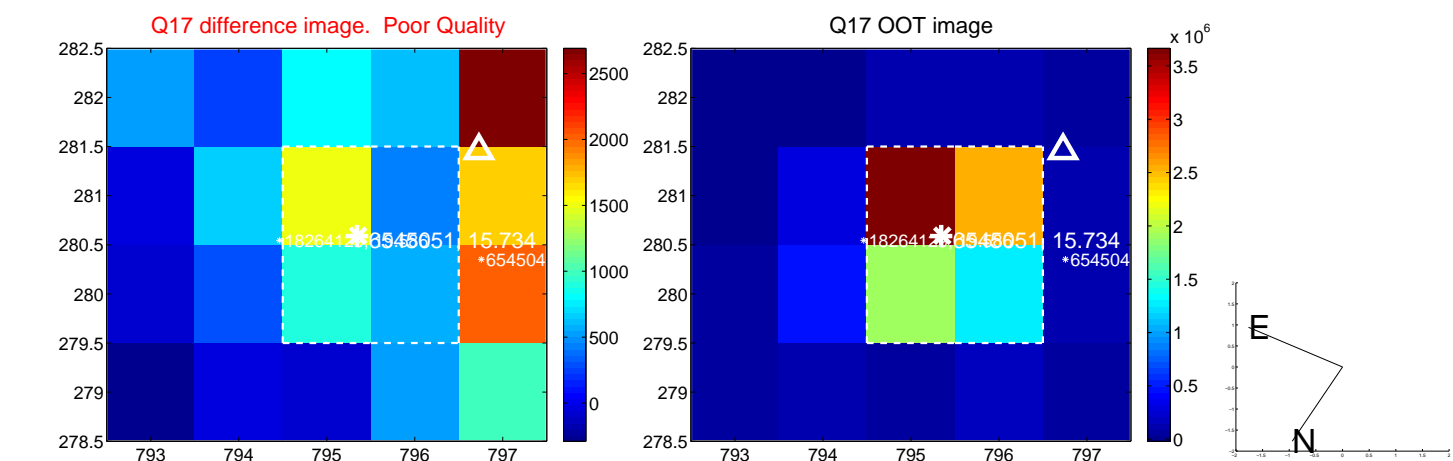
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



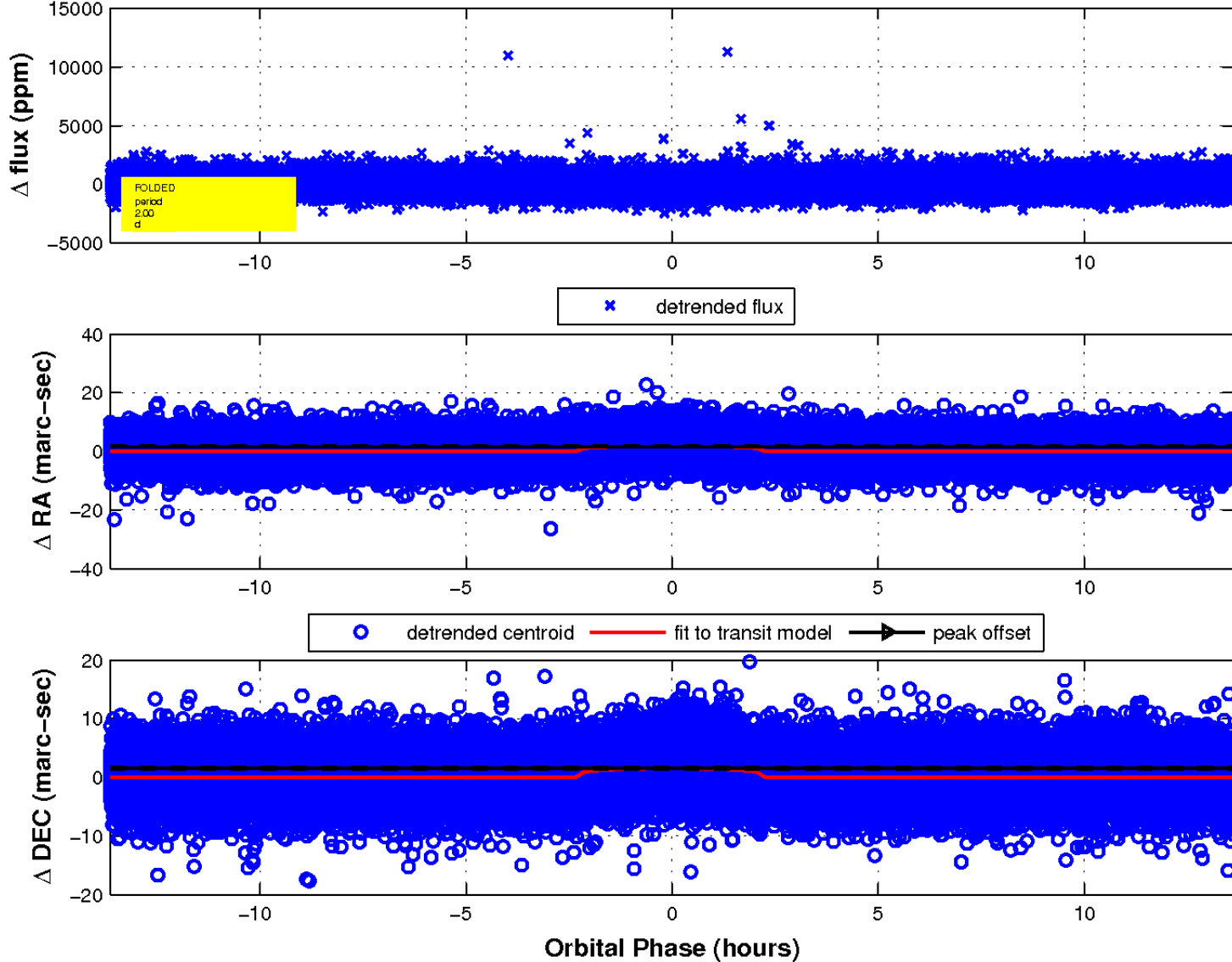
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

