

# KIC 004567531

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004567531-01	OBS	No	2.117005	132.541878	75.2	6.736	8.4	9.6	1.96	6715	1.98	4915.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004567531-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

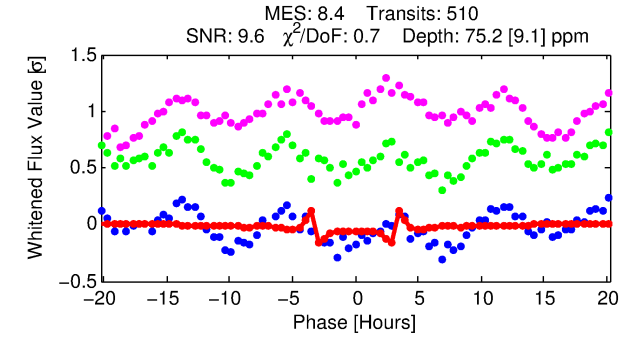
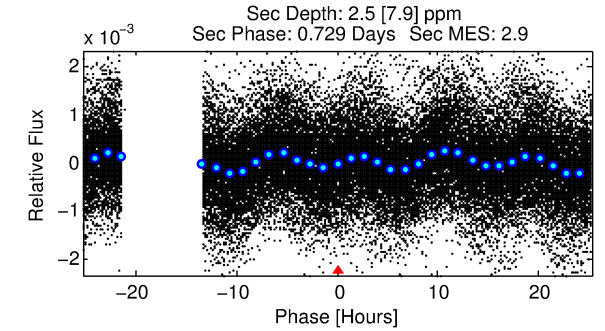
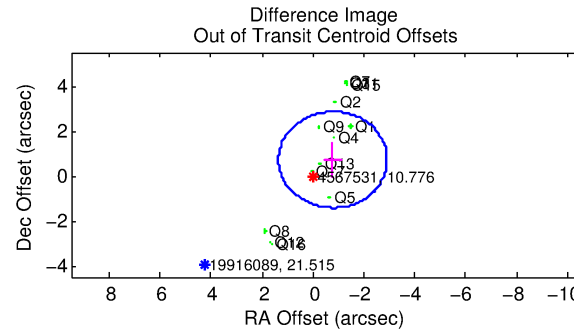
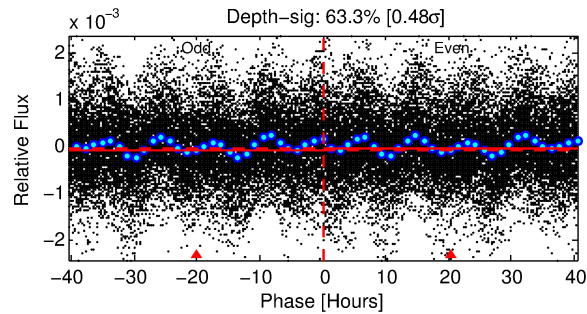
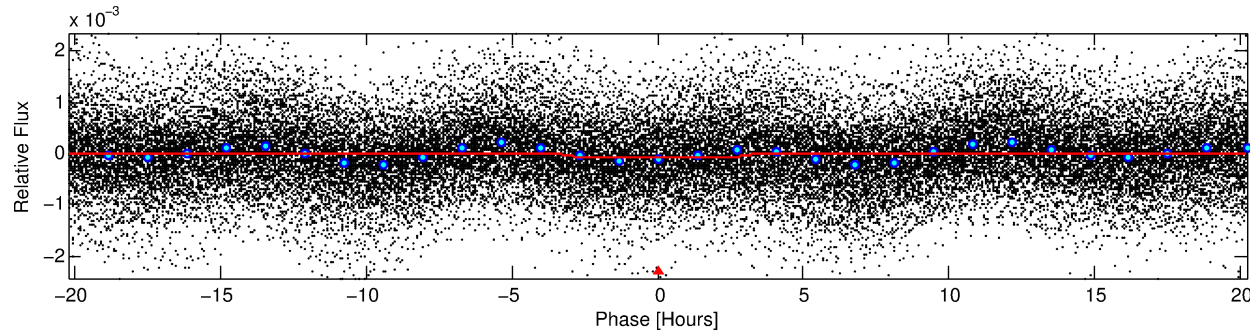
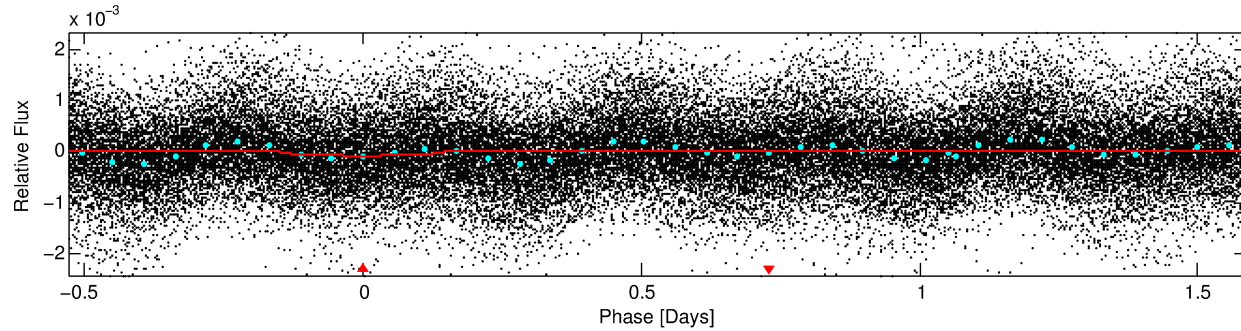
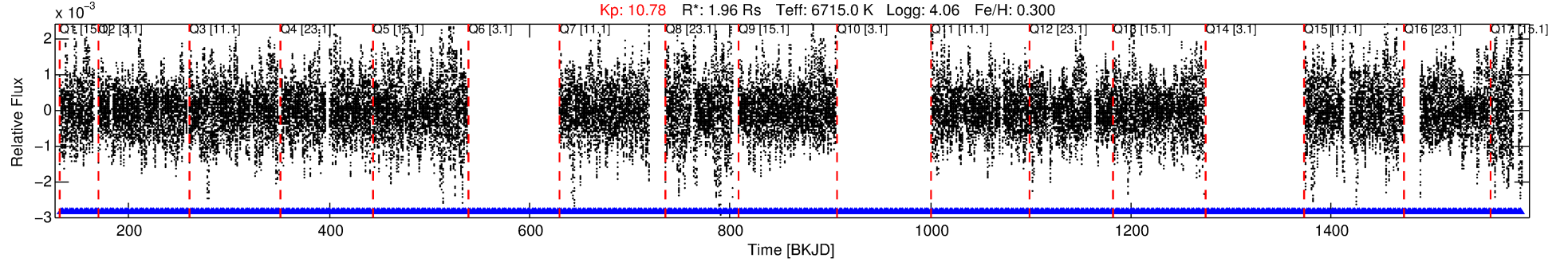
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004567531-01

No Significant Match Found

# DV One-Page Summary

KIC: 4567531 Candidate: 1 of 1 Period: 2.117 d



## DV Fit Results:

Period = 2.11700 [0.00001] d  
Epoch = 132.5419 [0.0015] BKJD  
 $R_p/R^* = 0.0093$  [0.0009]  
 $a/R^* = 1.45$  [0.25]  
 $b = 0.90$  [0.07]  
 $\text{Seff} = 4915.27$  [1913.85]  
 $T_{\text{eq}} = 2135$  [208] K  
 $R_p = 1.98$  [0.61]  $R_e$   
 $a = 0.0376$  [0.0092] AU  
 $\text{Ag} = 0.50$  [1.59]  $[-0.31\sigma]$   
 $T_{\text{eff}} = 2779$  [2190] K [0.29 $\sigma$ ]

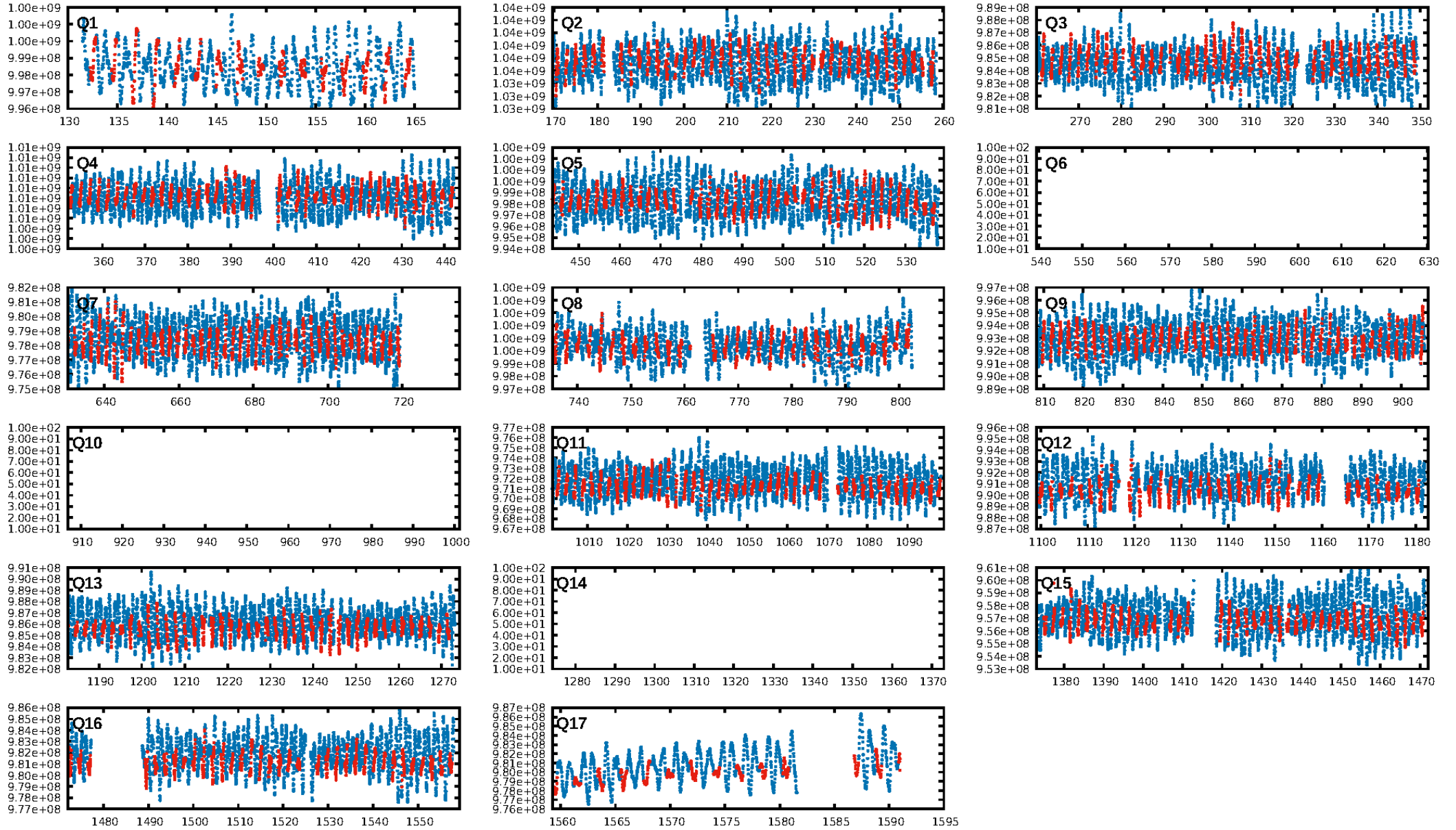
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.19e-19  
RollingBand-fgt: 1.00 [481/481]  
**GhostDiagnostic-chr: 0.9652**  
Centroid-sig: 5.2%  
Centroid-so: 0.266 arcsec [0.97 $\sigma$ ]  
OotOffset-rm: 1.066 arcsec [1.50 $\sigma$ ]  
KicOffset-rm: 1.020 arcsec [1.40 $\sigma$ ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.64 [9/14]  
DiffImageOverlap-fno: 1.00 [14/14]

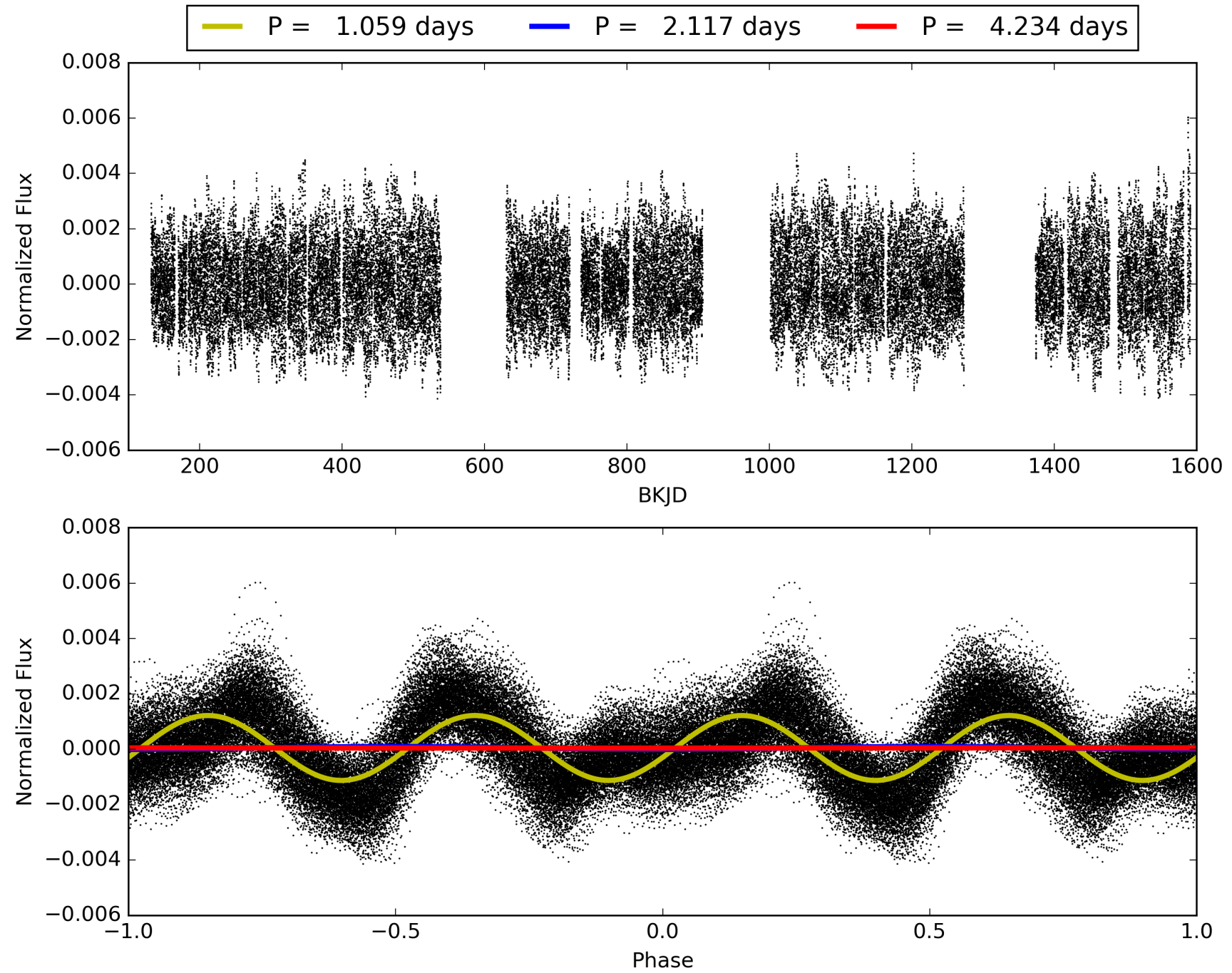
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:48:31 Z

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

# TCE 004567531-01, PDC Light Curves



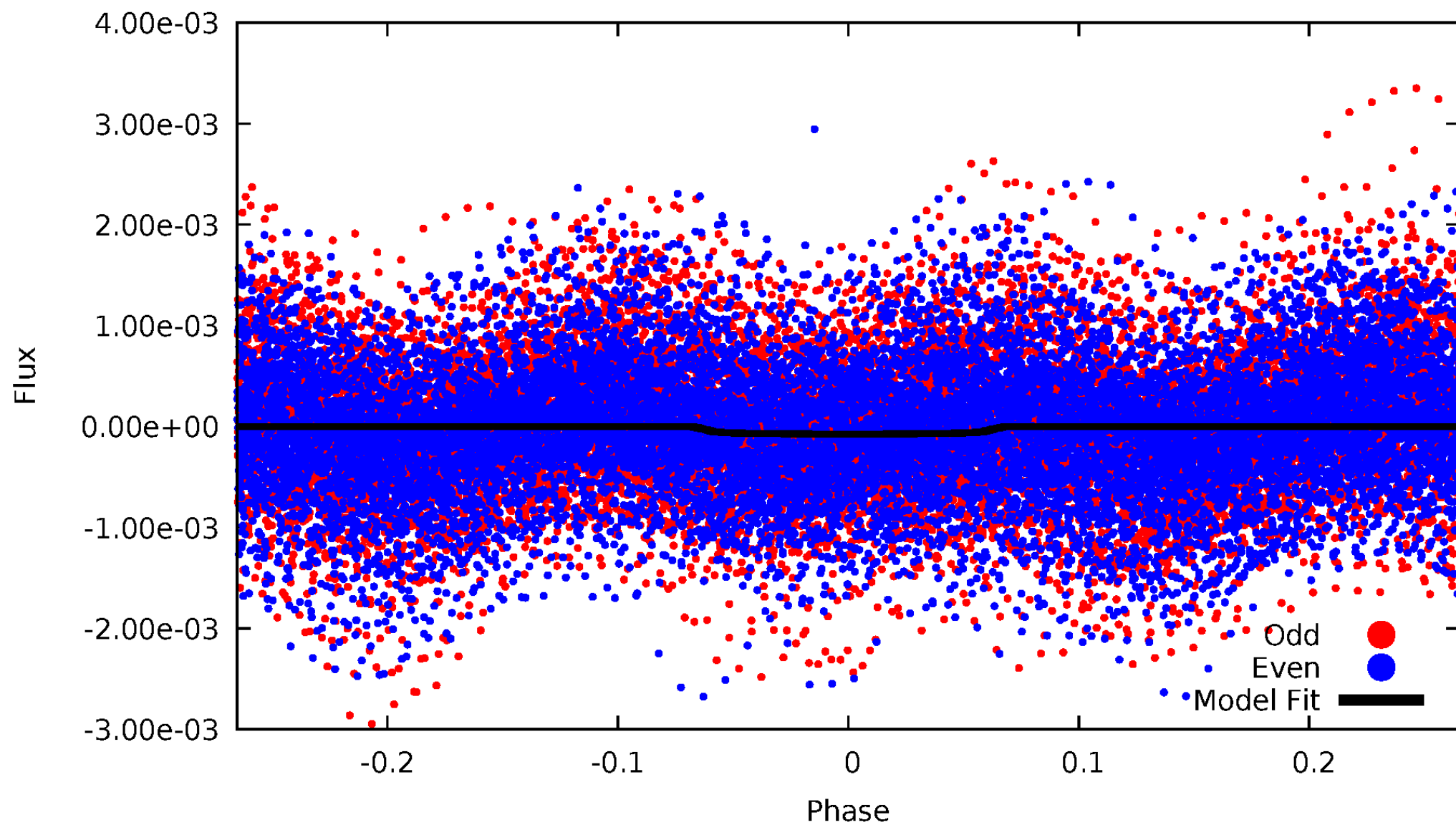
TCE 004567531-01





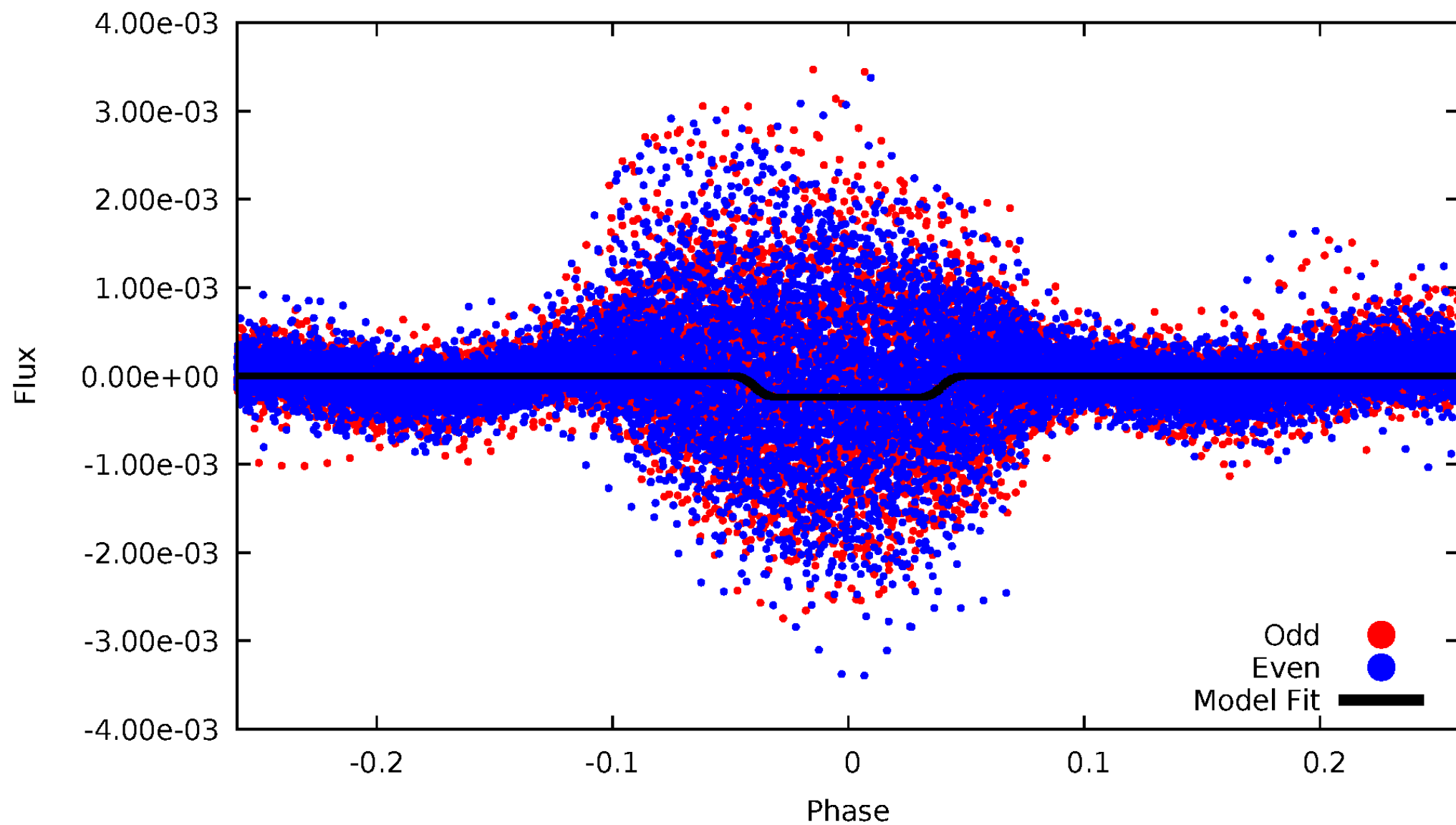
# DV Odd/Even

TCE 004567531-01



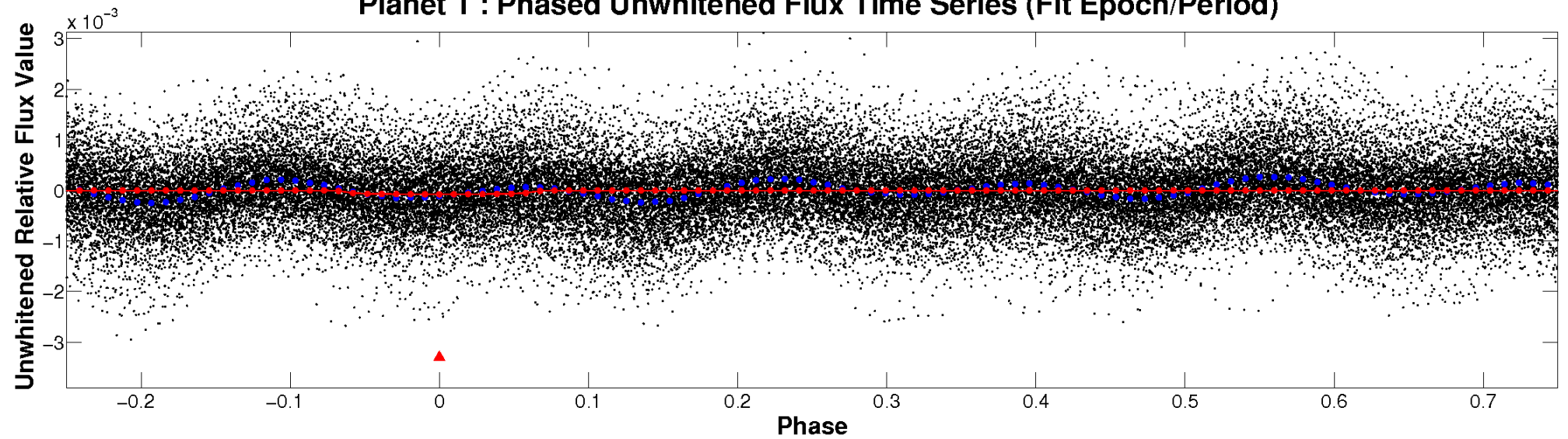
# ALT Odd/Even

TCE 004567531-01

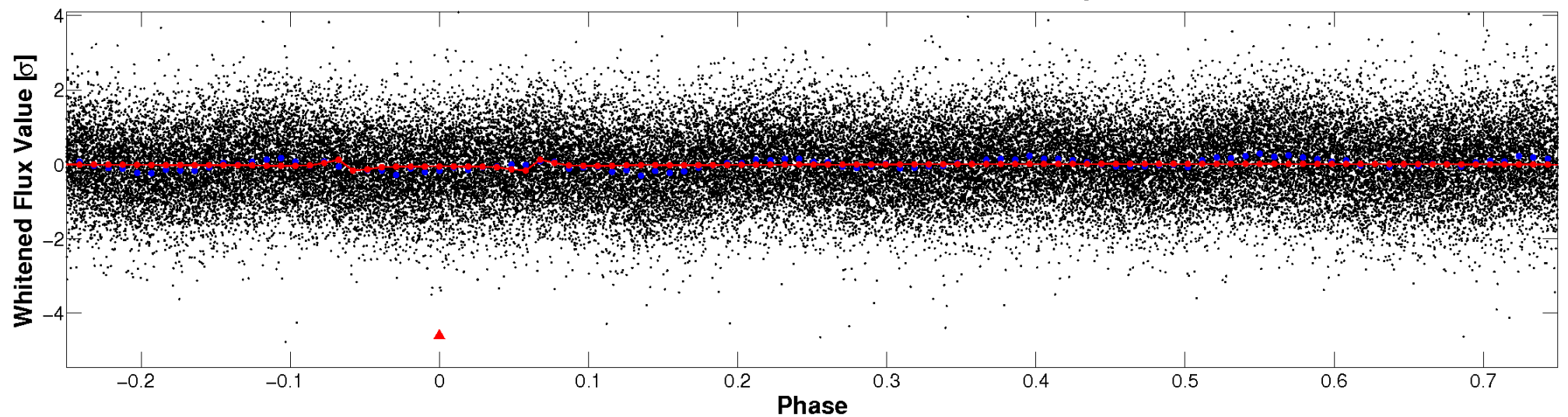


# Non-Whitened Vs. Whitened Light Curve

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

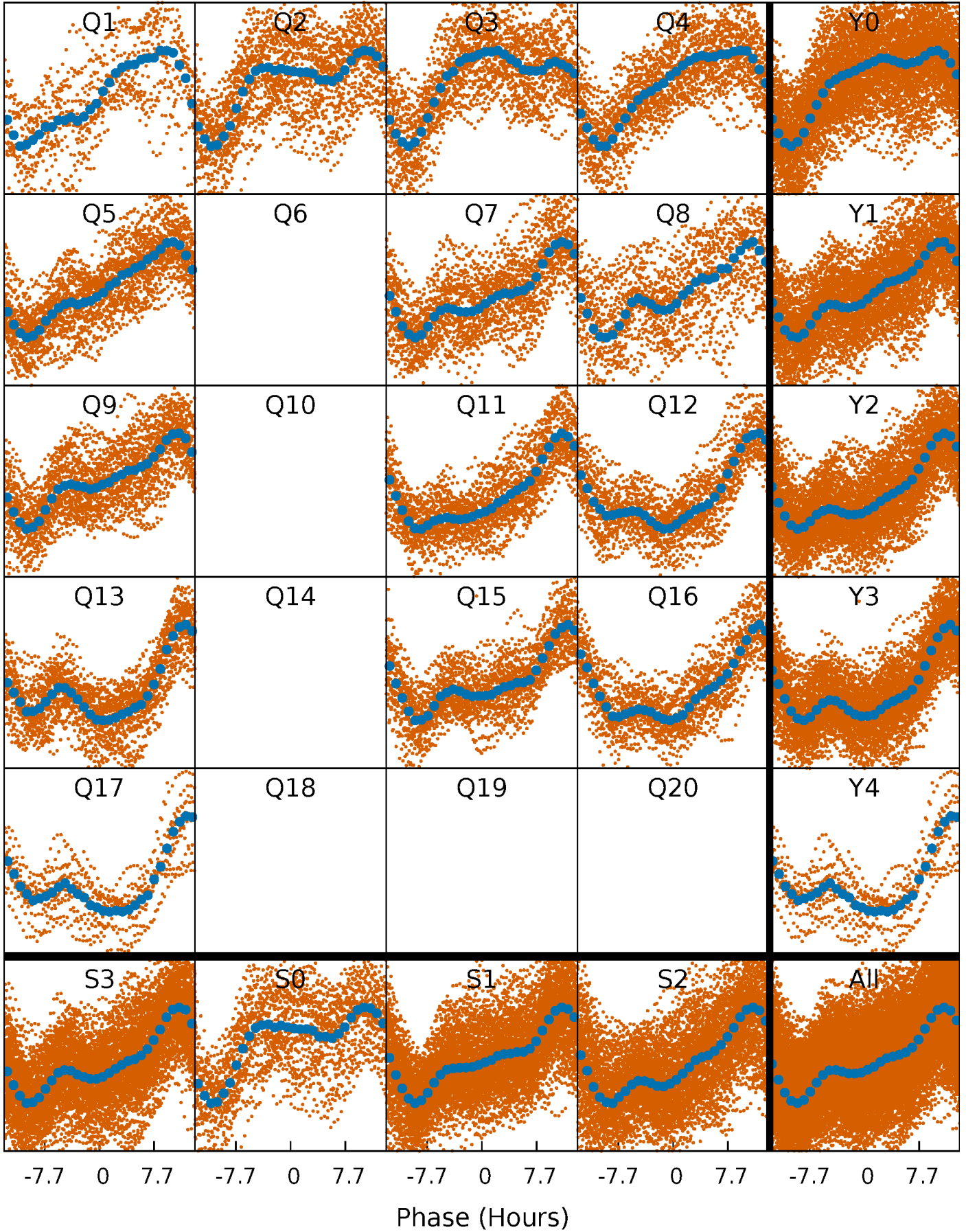


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

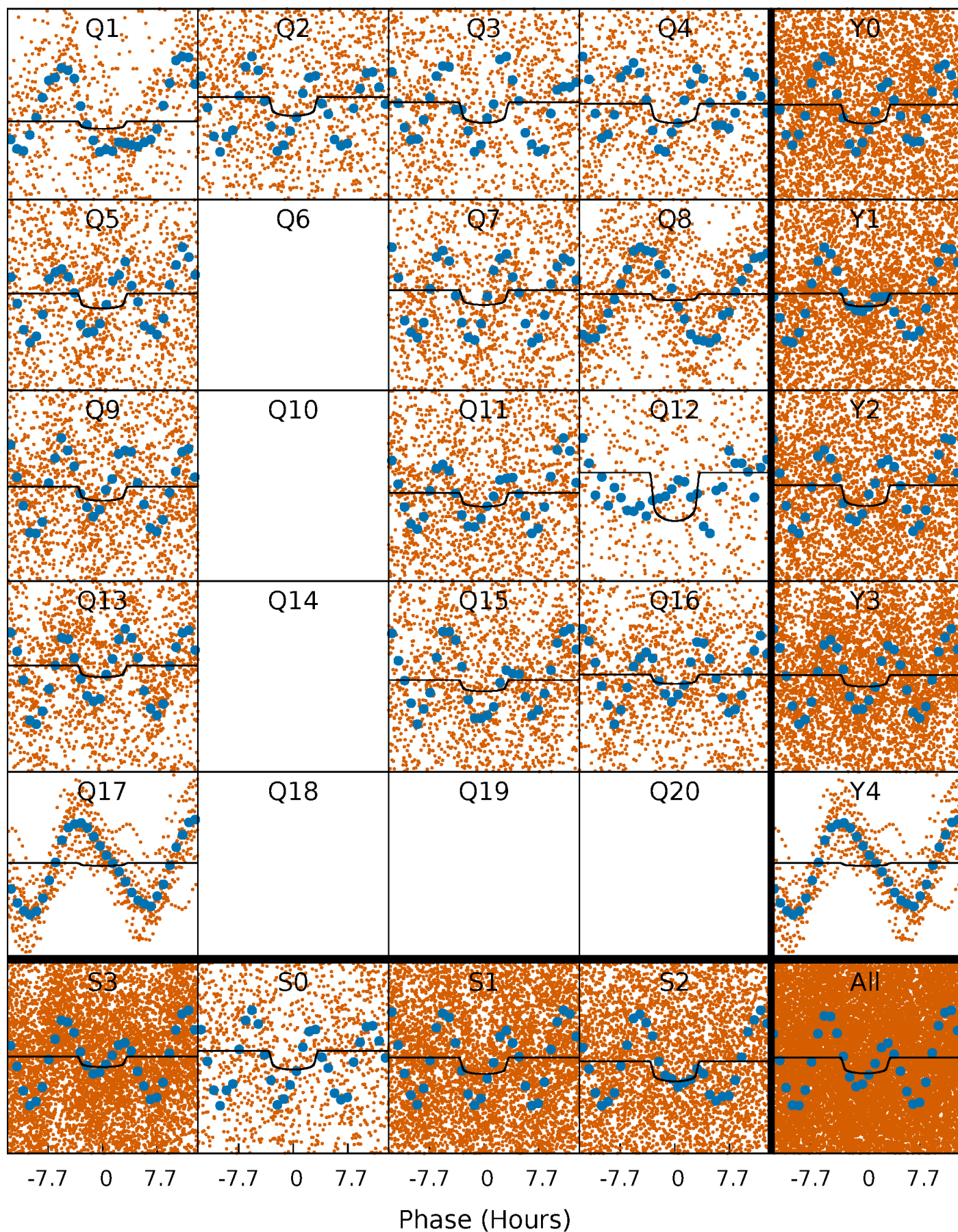
TCE 004567531-01   P= 2.117005 Days    $T_0=132.541878$  (BKJD)





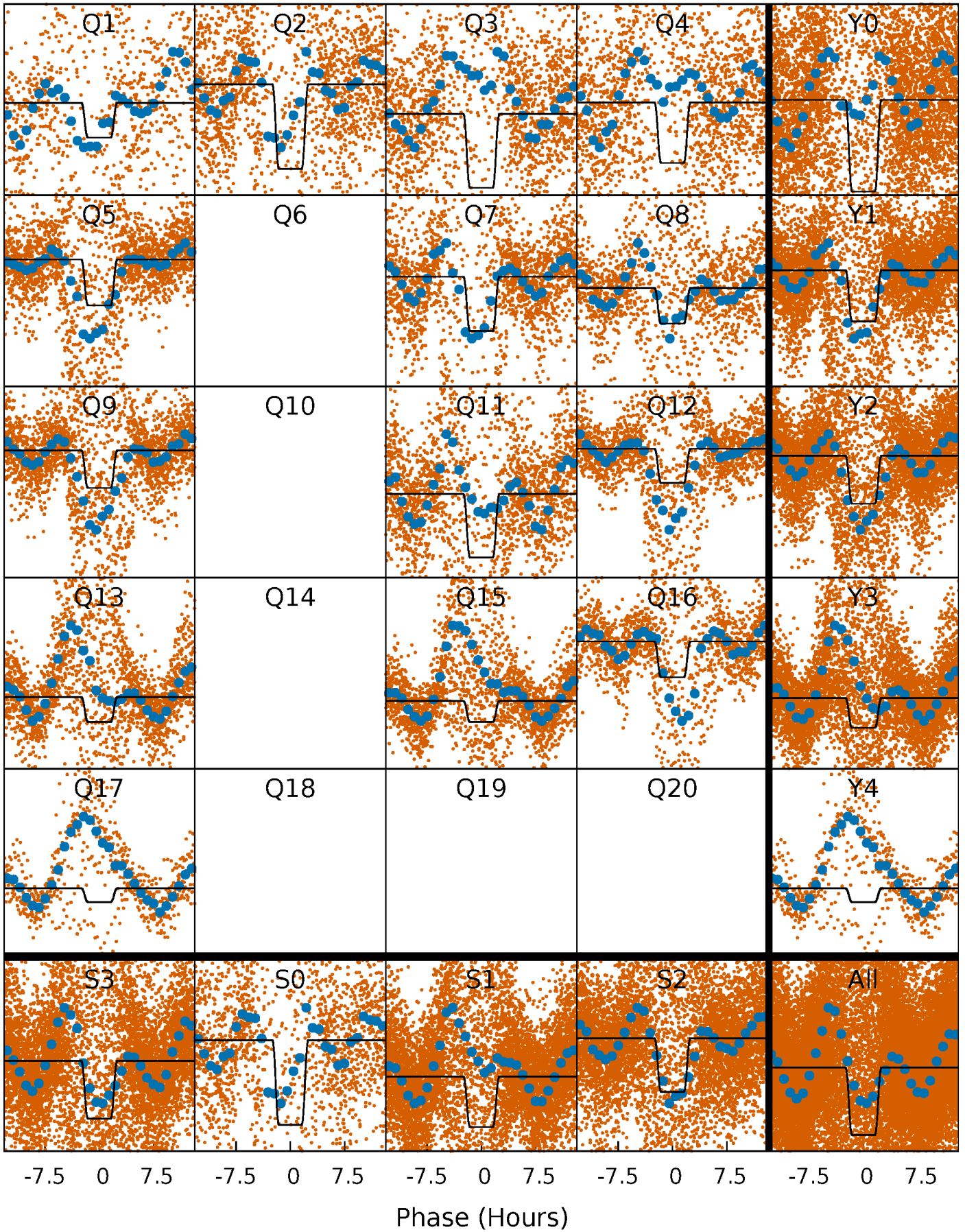
# DV Quarter-Phased Transit Curves

TCE 004567531-01 P= 2.117005 Days  $T_0=132.541878$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

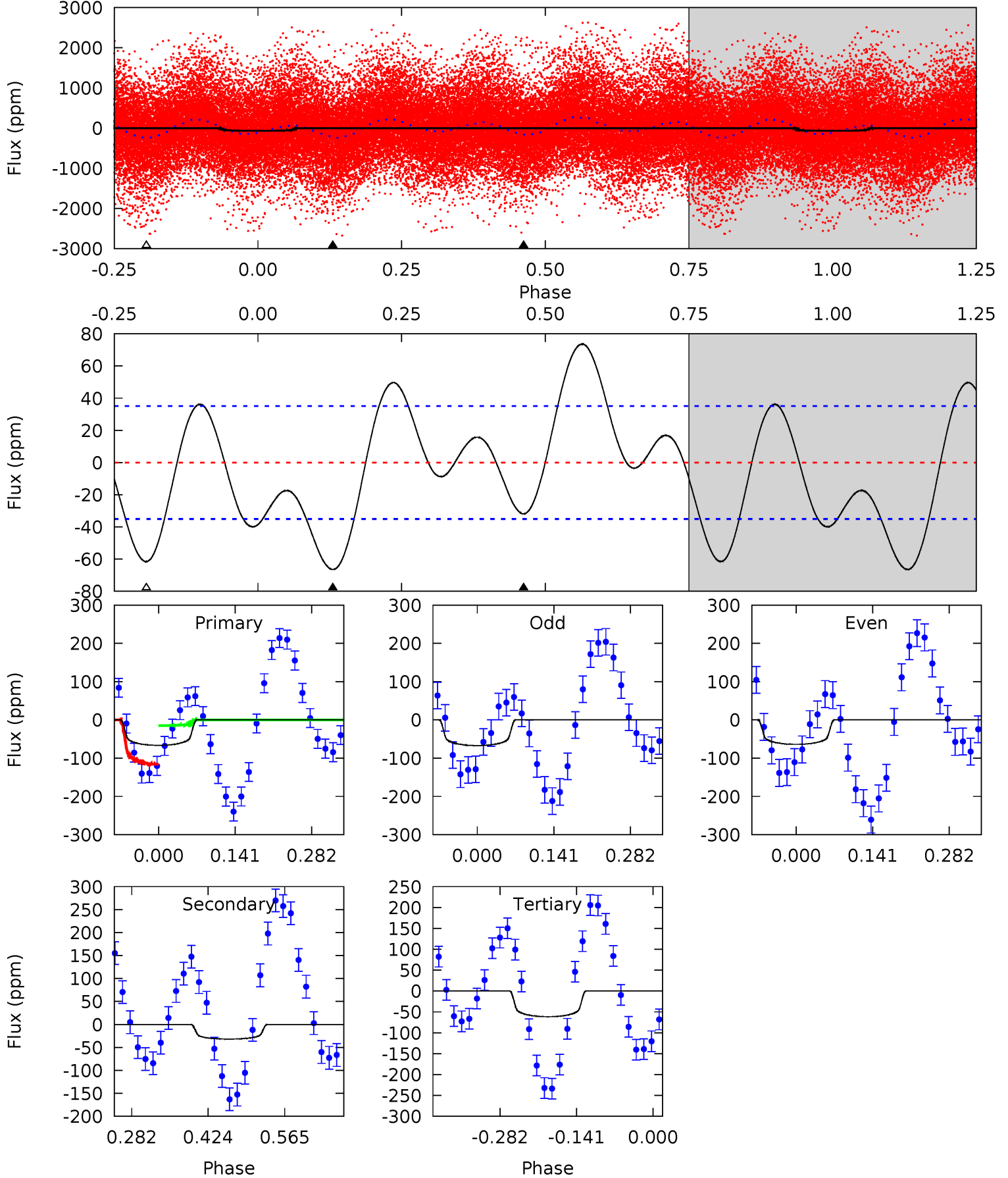
TCE 004567531-01 P= 2.116919 Days  $T_0=132.541022$  (BKJD)



# DV Model-Shift Uniqueness Test

004567531-01, P = 2.117005 Days, E = 130.424873 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
8.51	4.08	7.87	0	4.49	1.47	3.49	0.63	8.51	-3.79	4.08	0.21	1.00	0.53	6.60

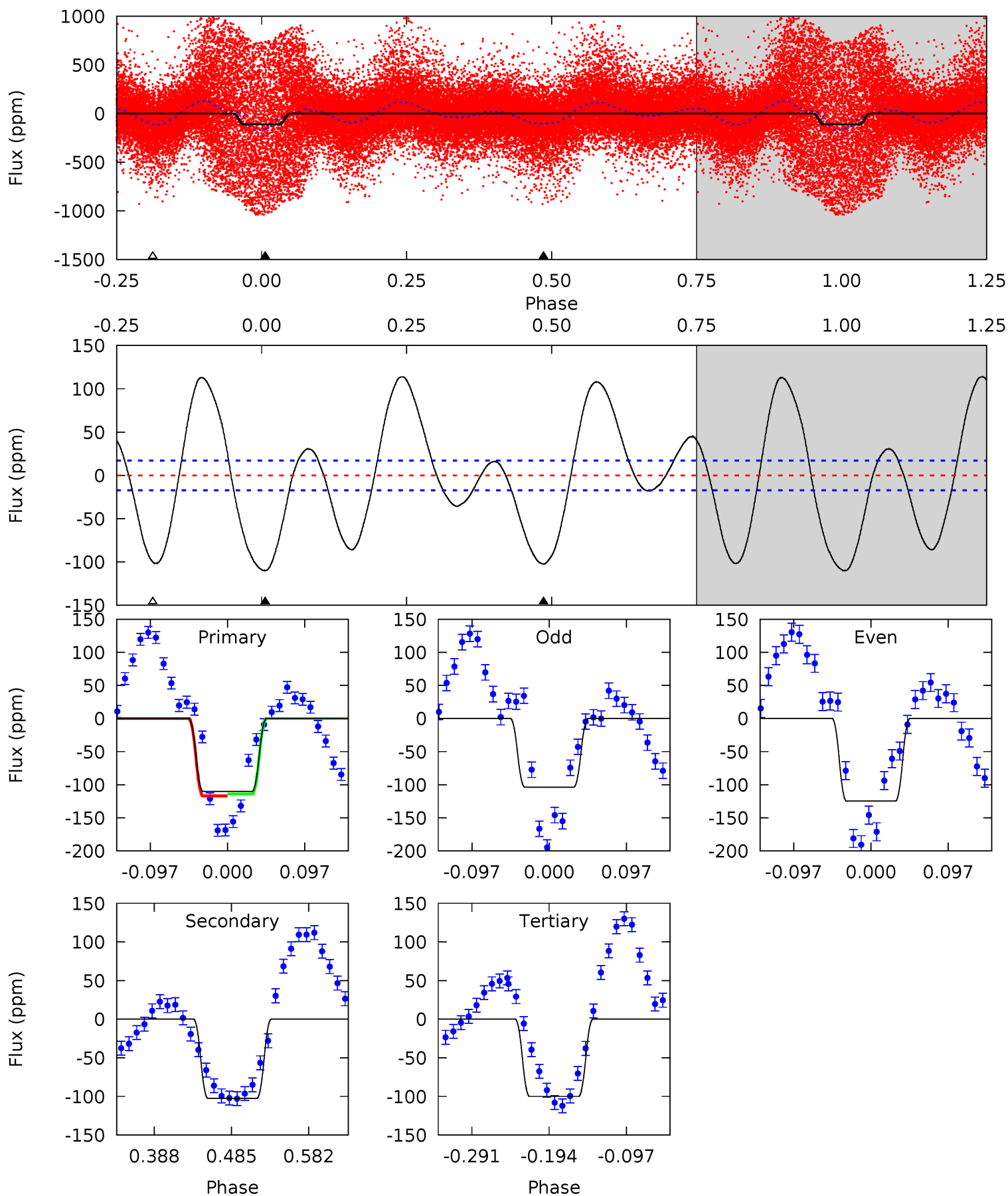




# Alt Model-Shift Uniqueness Test

004567531-01, P = 2.116919 Days, E = 130.424103 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
29.4	27.3	26.7	0	4.57	1.66	15.8	2.70	29.4	0.64	27.3	2.81	0.75	0.51	0





### Stellar Parameters For KIC 004567531

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6715^{+162}_{-278}$	$4.056^{+0.190}_{-0.190}$	$0.300^{+0.150}_{-0.350}$	$1.955^{+0.580}_{-0.522}$	$1.586^{+0.188}_{-0.281}$	$0.299^{+0.337}_{-0.161}$
	+2%/-4%	+5%/-5%	+50%/-117%	+30%/-27%	+12%/-18%	+113%/-54%
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 004567531-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-32 \pm 8$	$1.98^{+0.36}_{-0.33}$	$2980^{+245}_{-232}$	$5159^{+464}_{-386}$	$6.232^{+3.074}_{-2.241}$
Alt.	$-102 \pm 4$	$3.32^{+0.54}_{-0.51}$	$2983^{+229}_{-220}$	$5375^{+203}_{-206}$	$7.162^{+2.688}_{-1.836}$

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

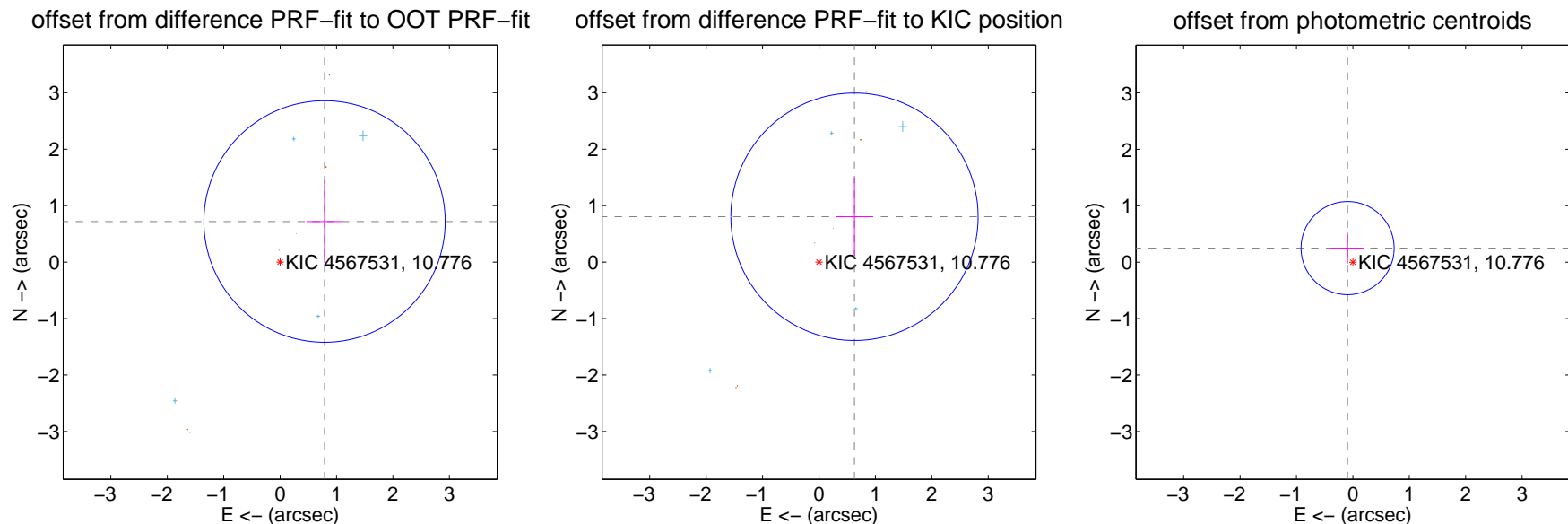
## DV Centroid Data

Supplemental centroid analysis for 004567531-01. **Kepler magnitude: 10.78.** Transit SNR 9.62

There are 9 quarters with good PRF difference image offsets

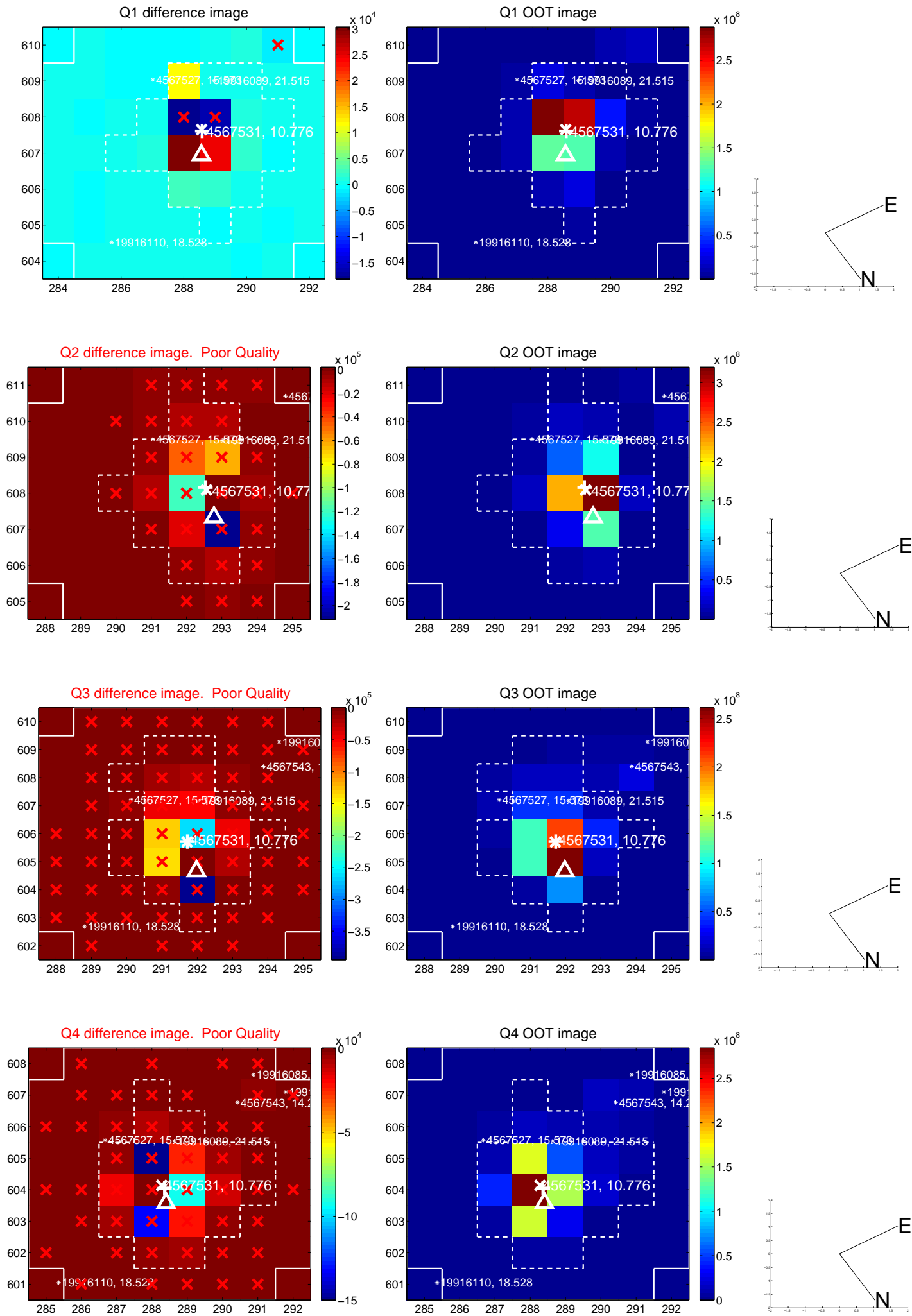
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.066 \pm 0.713$	1.50	$-0.787 \pm 0.323$	$0.719 \pm 0.730$
PRF-fit source offset from KIC position	$1.020 \pm 0.730$	1.40	$-0.629 \pm 0.327$	$0.803 \pm 0.694$
photometric centroid source offset	$0.27 \pm 0.27$	0.97	$0.09 \pm 0.29$	$0.25 \pm 0.27$

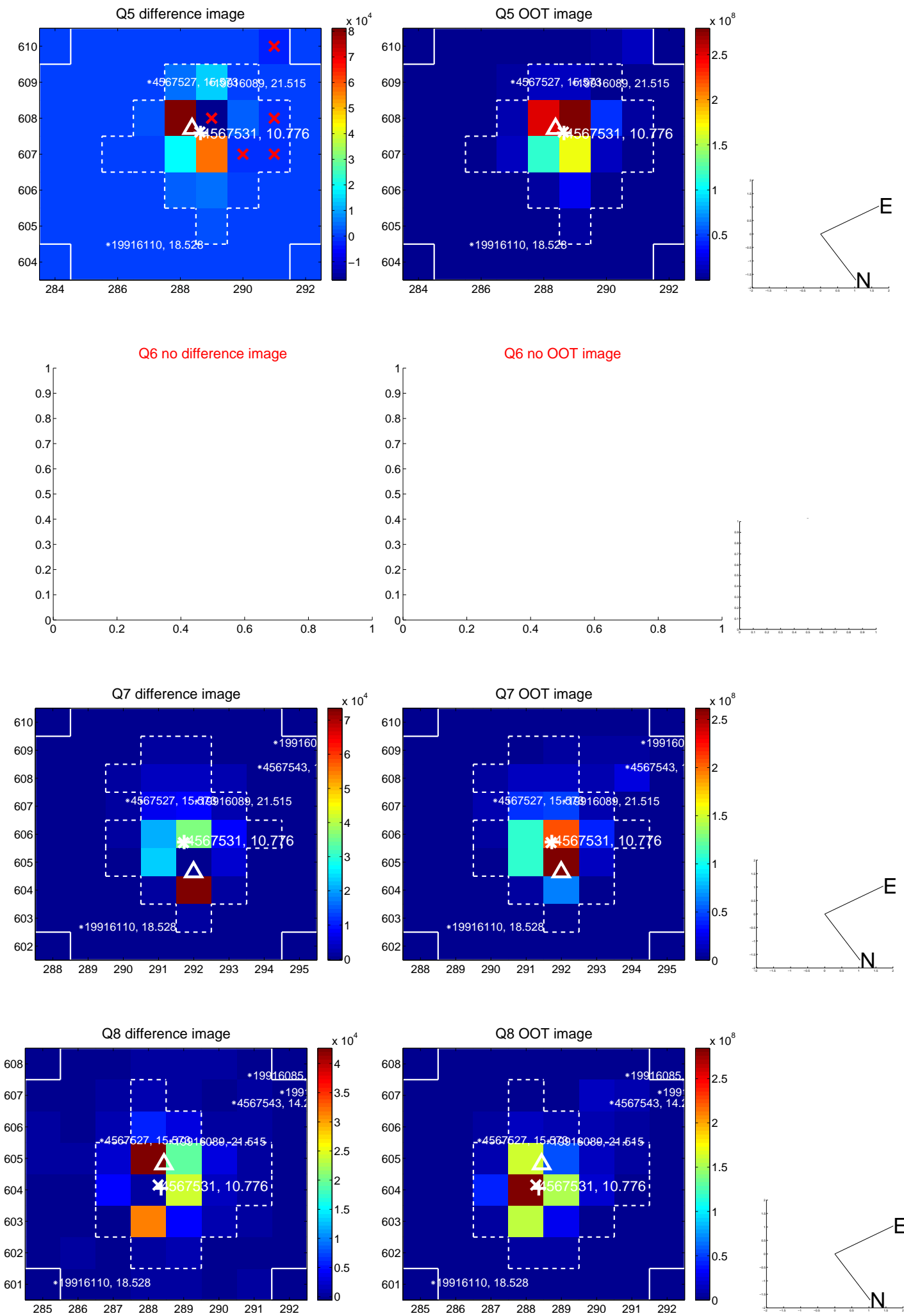


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

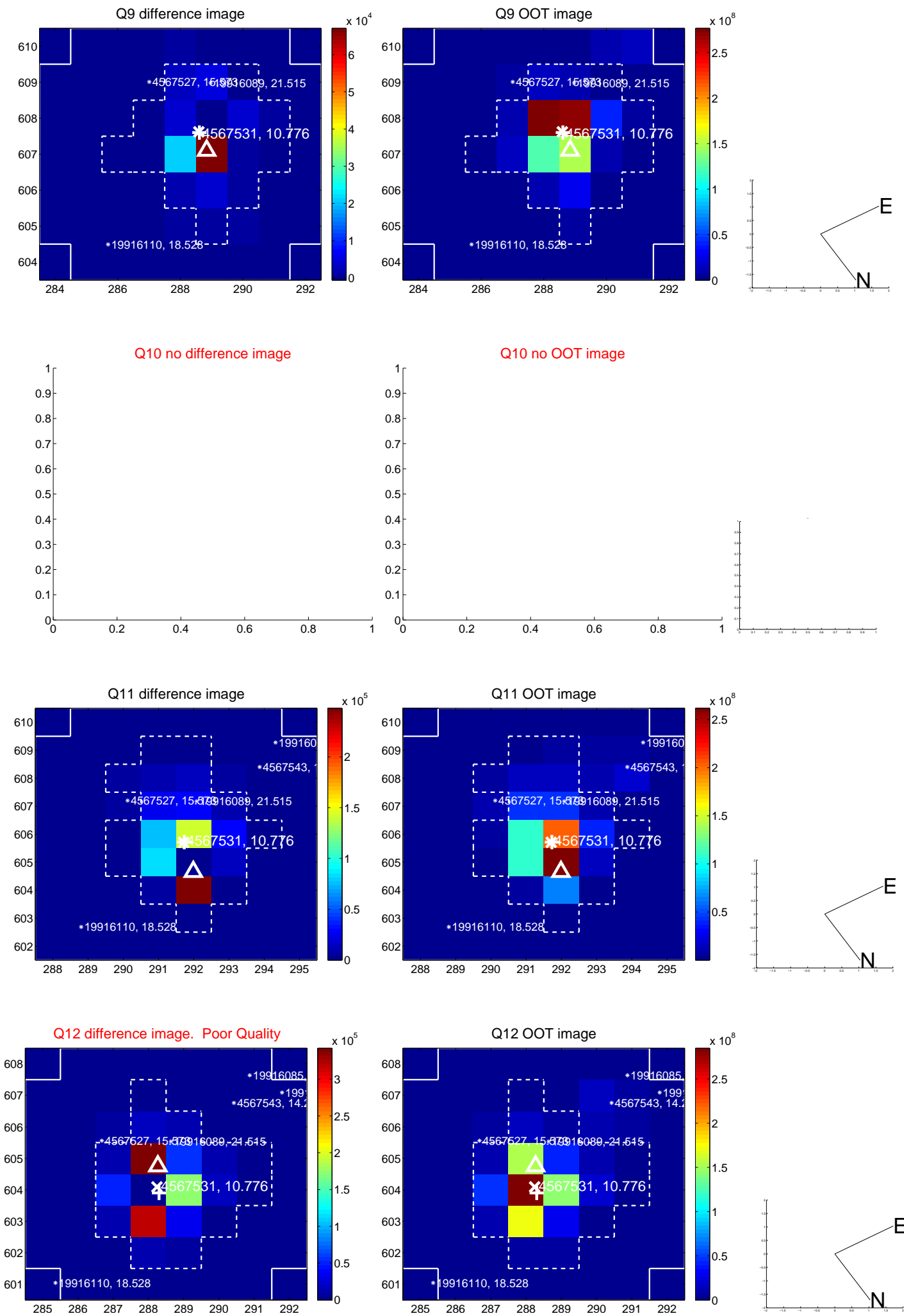


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

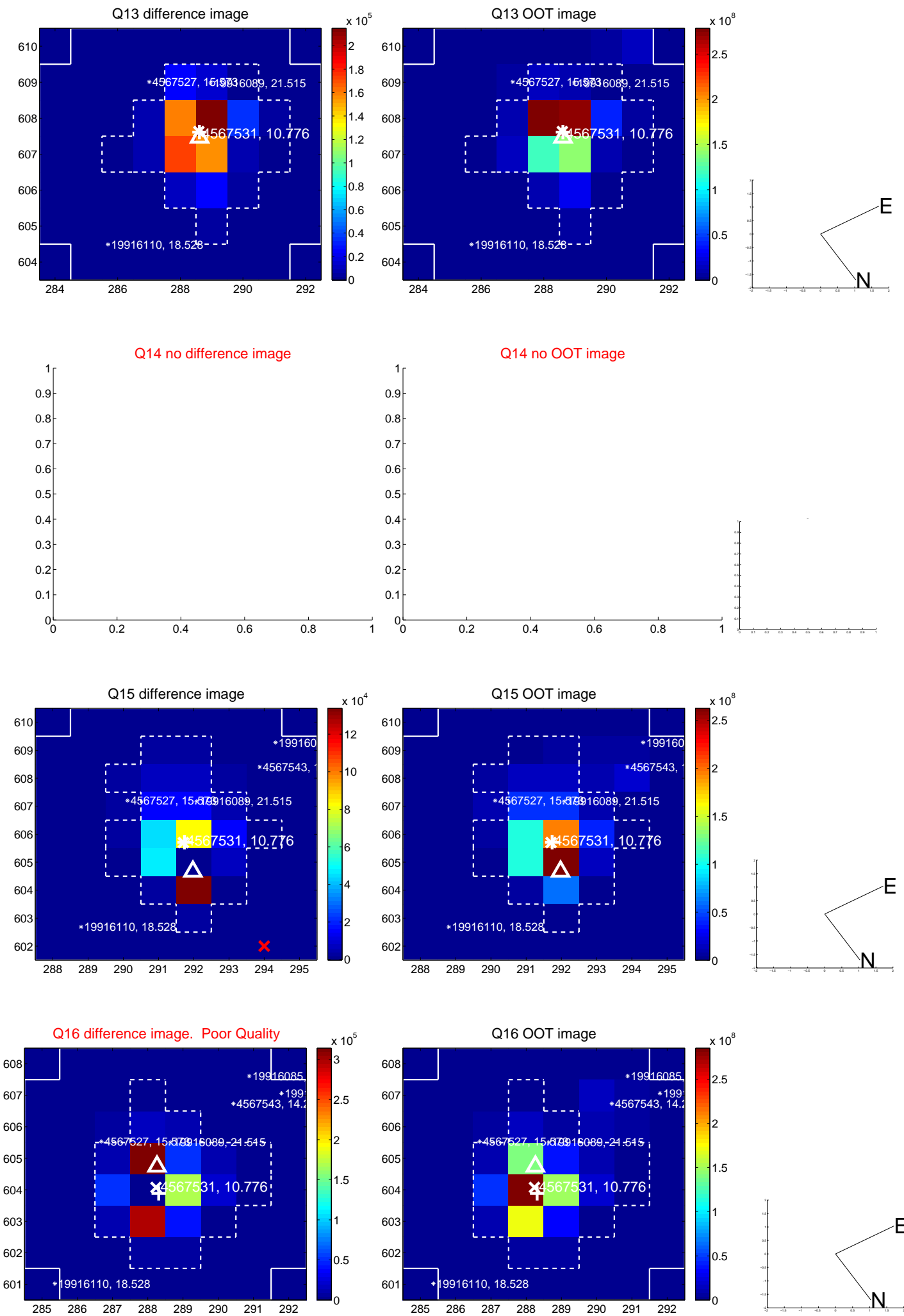




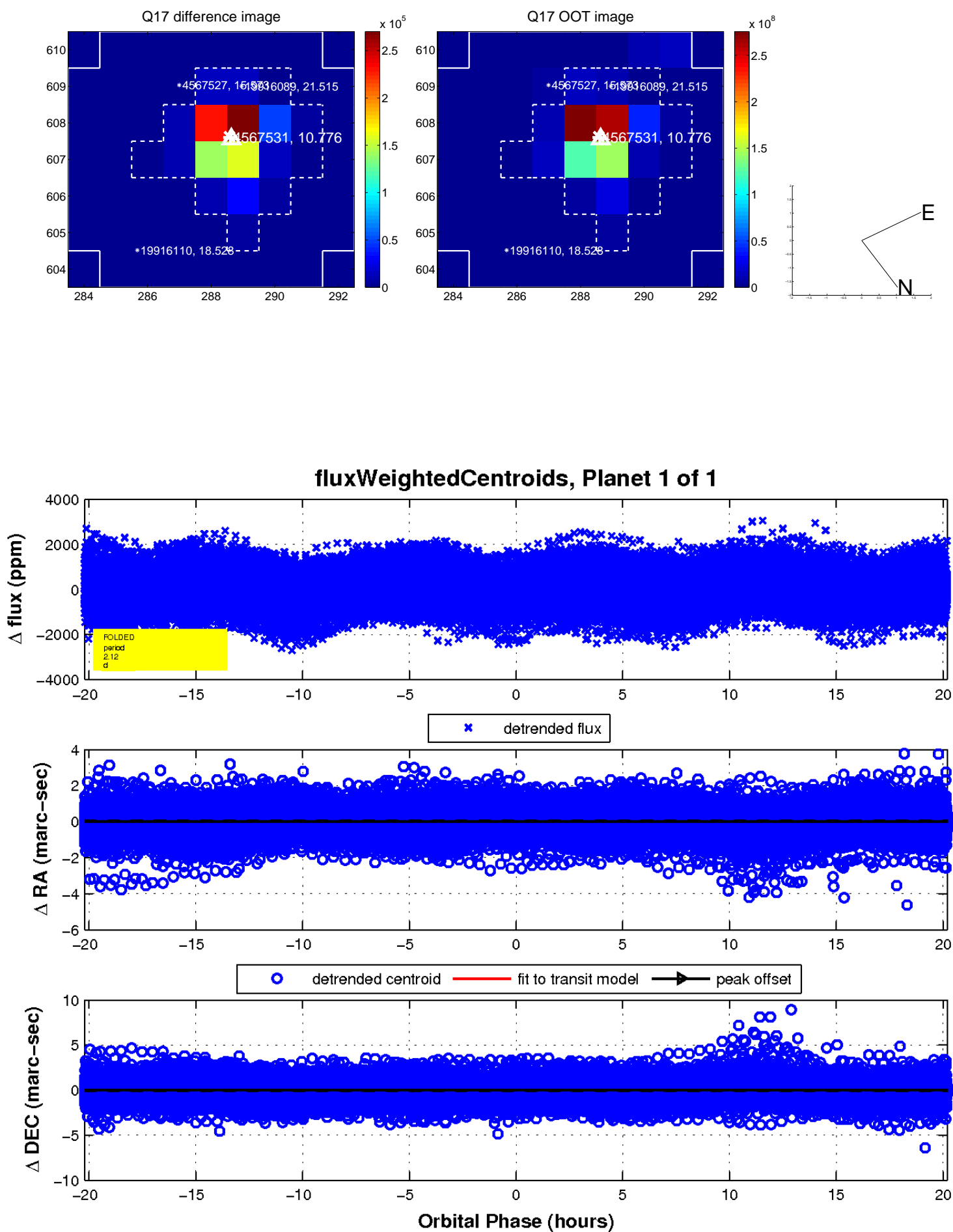
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

