

# KIC 009289828

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009289828-01	OBS	No	221.210027	208.849169	146.4	15.935	7.4	7.6	1.75	6233	2.32	7.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009289828-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—CENT_FEW_DIFFS

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

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

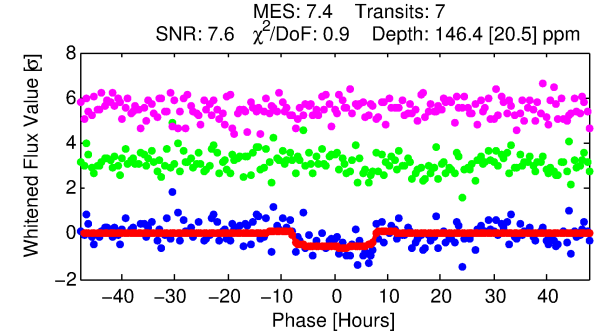
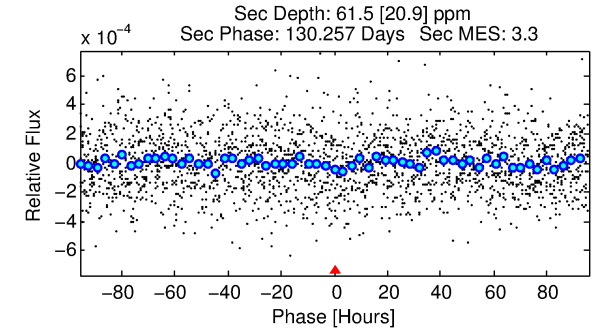
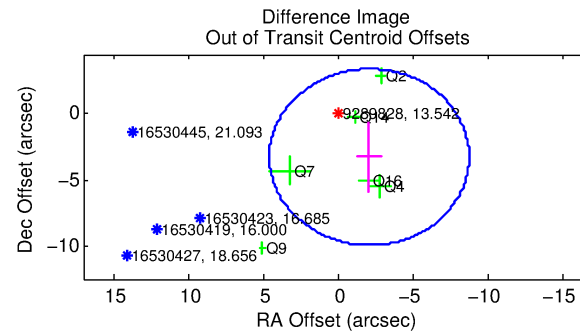
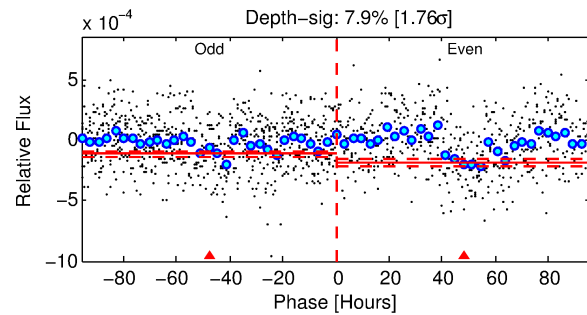
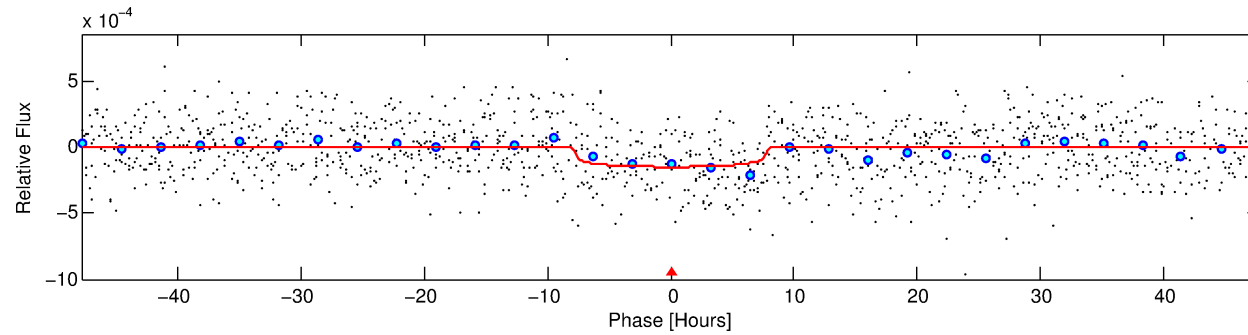
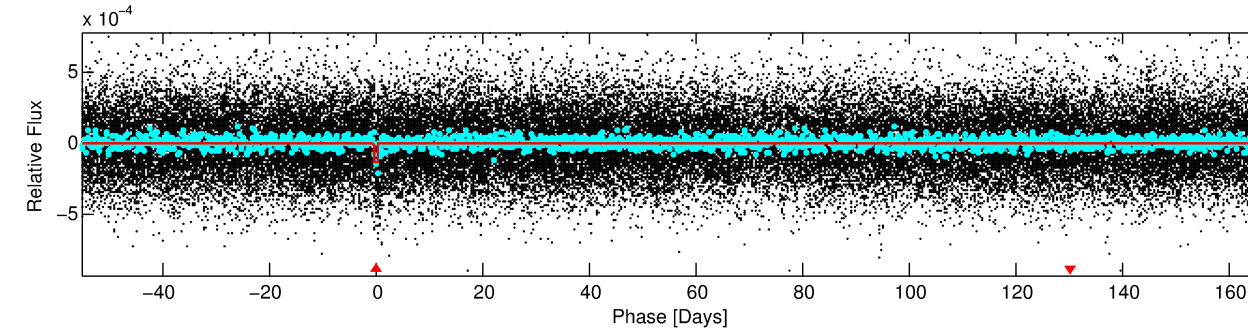
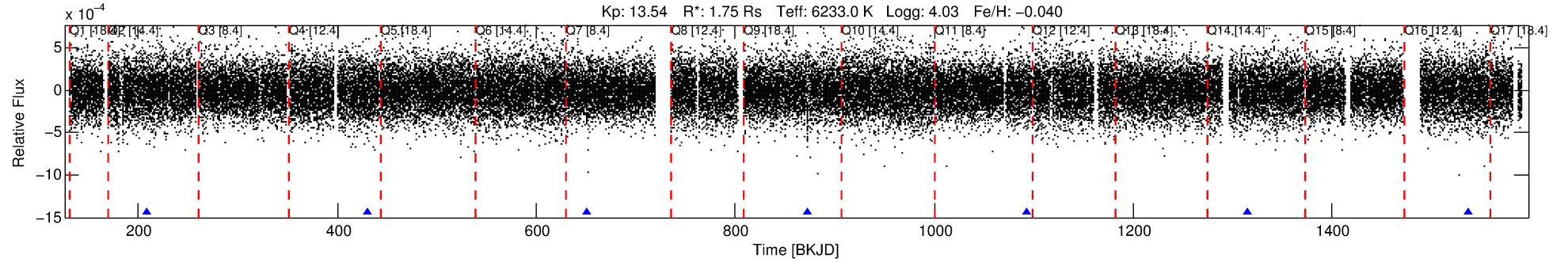
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009289828-01

No Significant Match Found

# DV One-Page Summary

KIC: 9289828 Candidate: 1 of 1 Period: 221.210 d



## DV Fit Results:

Period = 221.21003 [0.00726] d  
Epoch = 208.8492 [0.0262] BKJD  
Rp/R\* = 0.0121 [0.0045]  
a/R\* = 68.91 [129.94]  
b = 0.78 [0.97]  
Seff = 7.17 [4.13]  
Teq = 417 [60] K  
Rp = 2.32 [1.17] Re  
a = 0.7611 [0.2600] AU  
Ag = 3631.94 [3569.47] [1.02 $\sigma$ ]  
Teffp = 5009 [1034] K [4.43 $\sigma$ ]

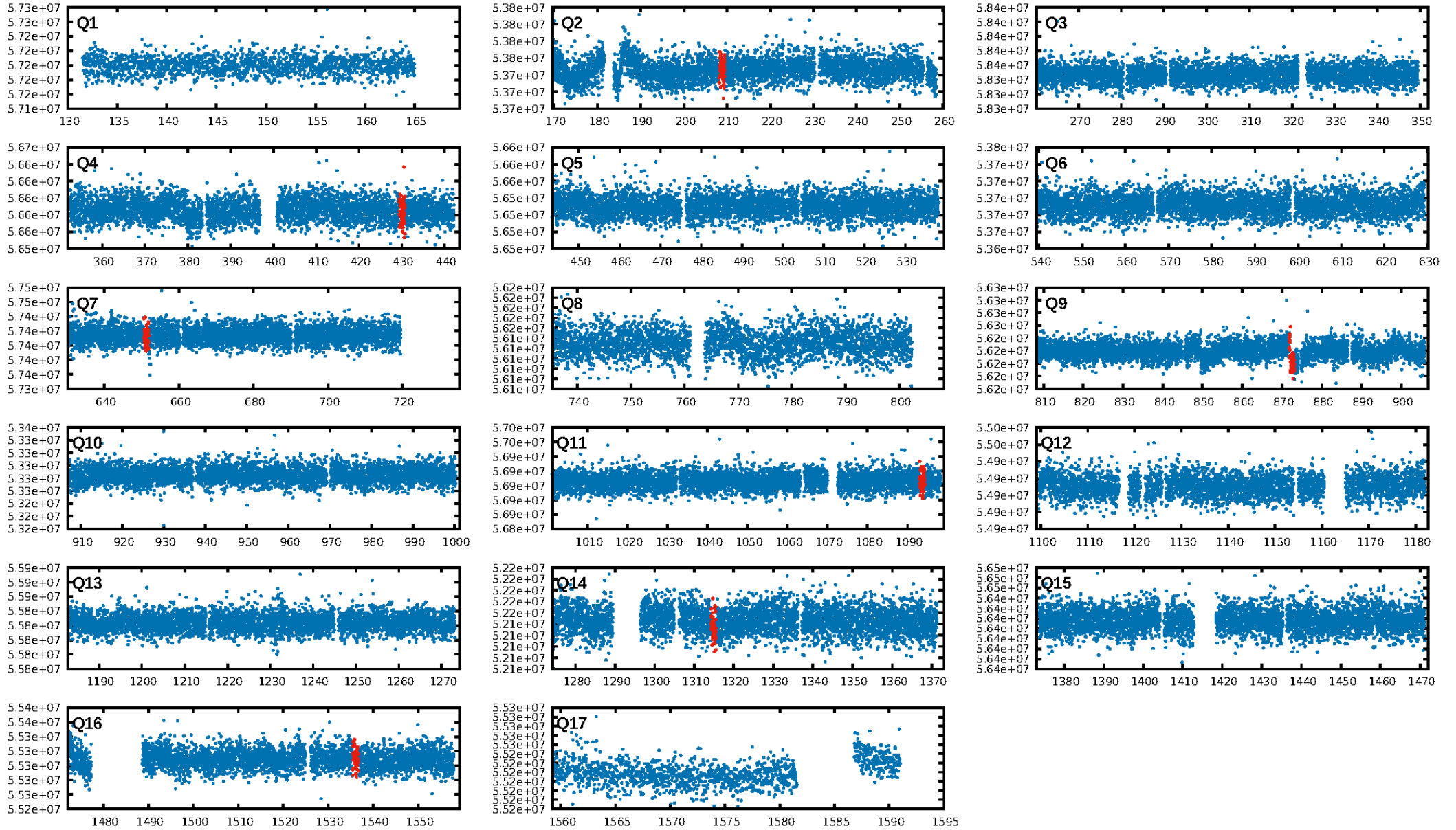
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.84e-10  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: -2.603  
Centroid-sig: 5.2%  
Centroid-so: 2.779 arcsec [1.06 $\sigma$ ]  
OotOffset-rm: 3.900 arcsec [1.75 $\sigma$ ]  
KicOffset-rm: 3.921 arcsec [1.72 $\sigma$ ]  
OotOffset-st: 2/1/2/1 [6]  
KicOffset-st: 2/1/2/1 [6]  
DiffImageQuality-fgm: 0.17 [1/6]  
DiffImageOverlap-fno: 1.00 [6/6]

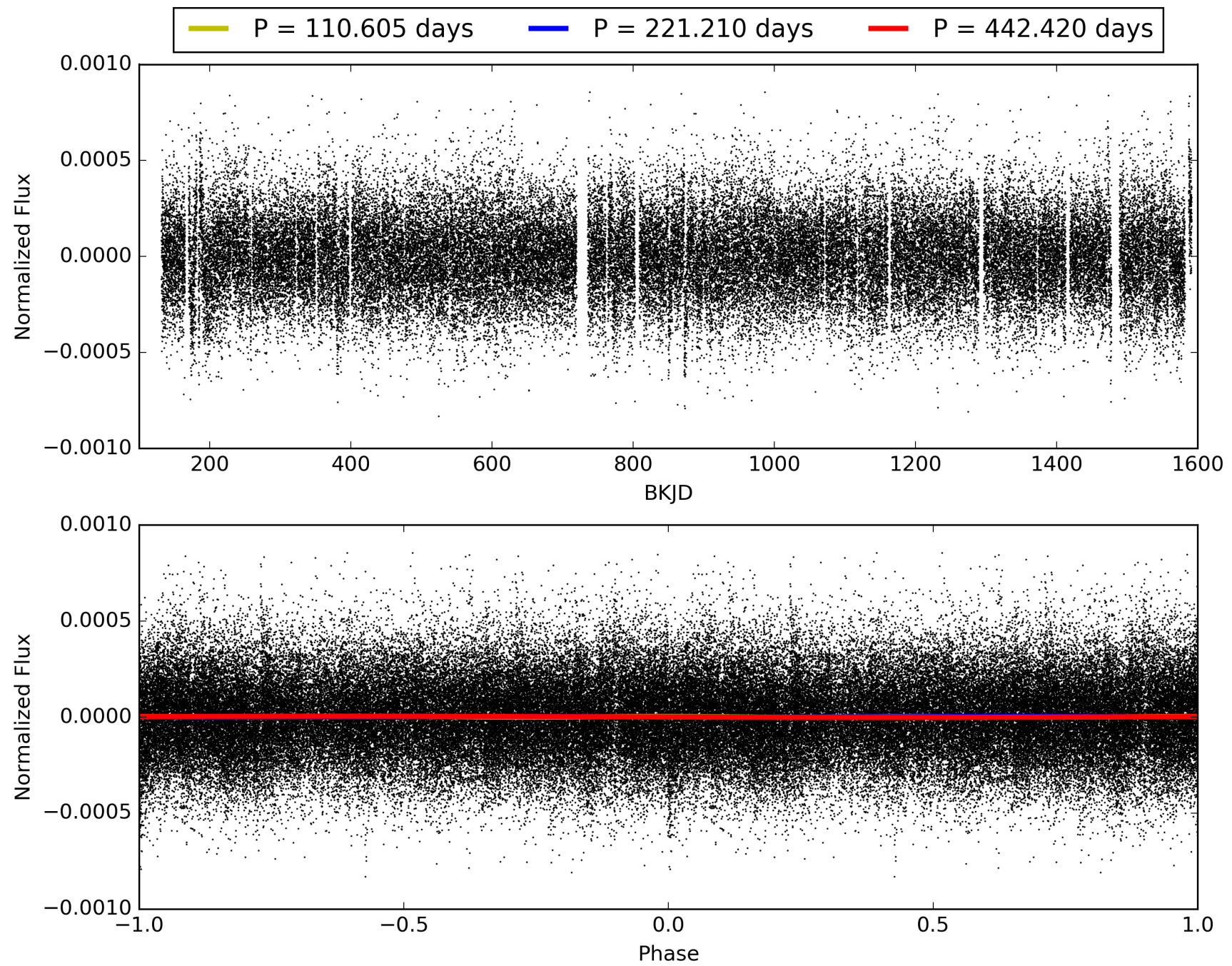
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:03:40 Z

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

# TCE 009289828-01, PDC Light Curves

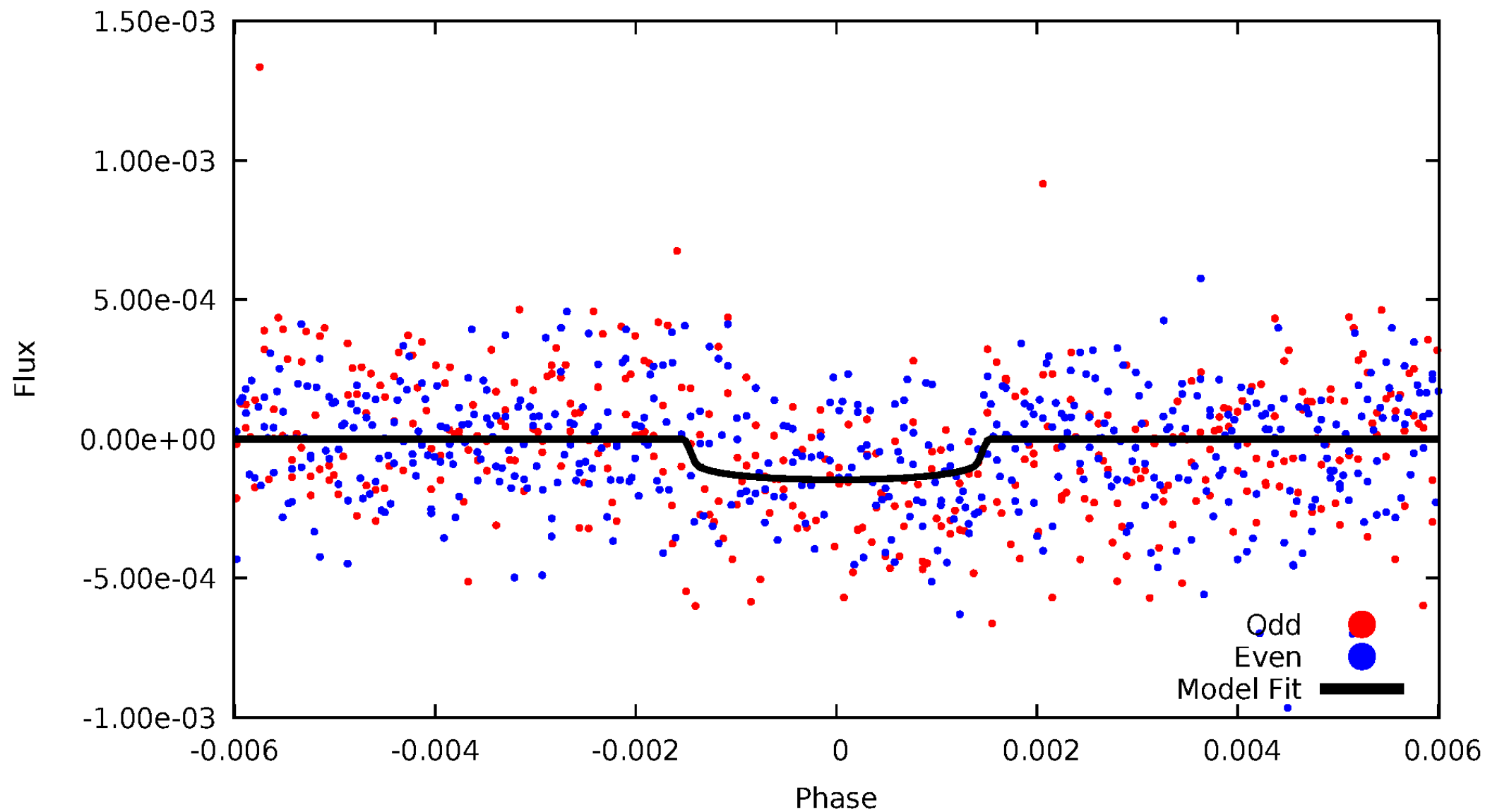


TCE 009289828-01



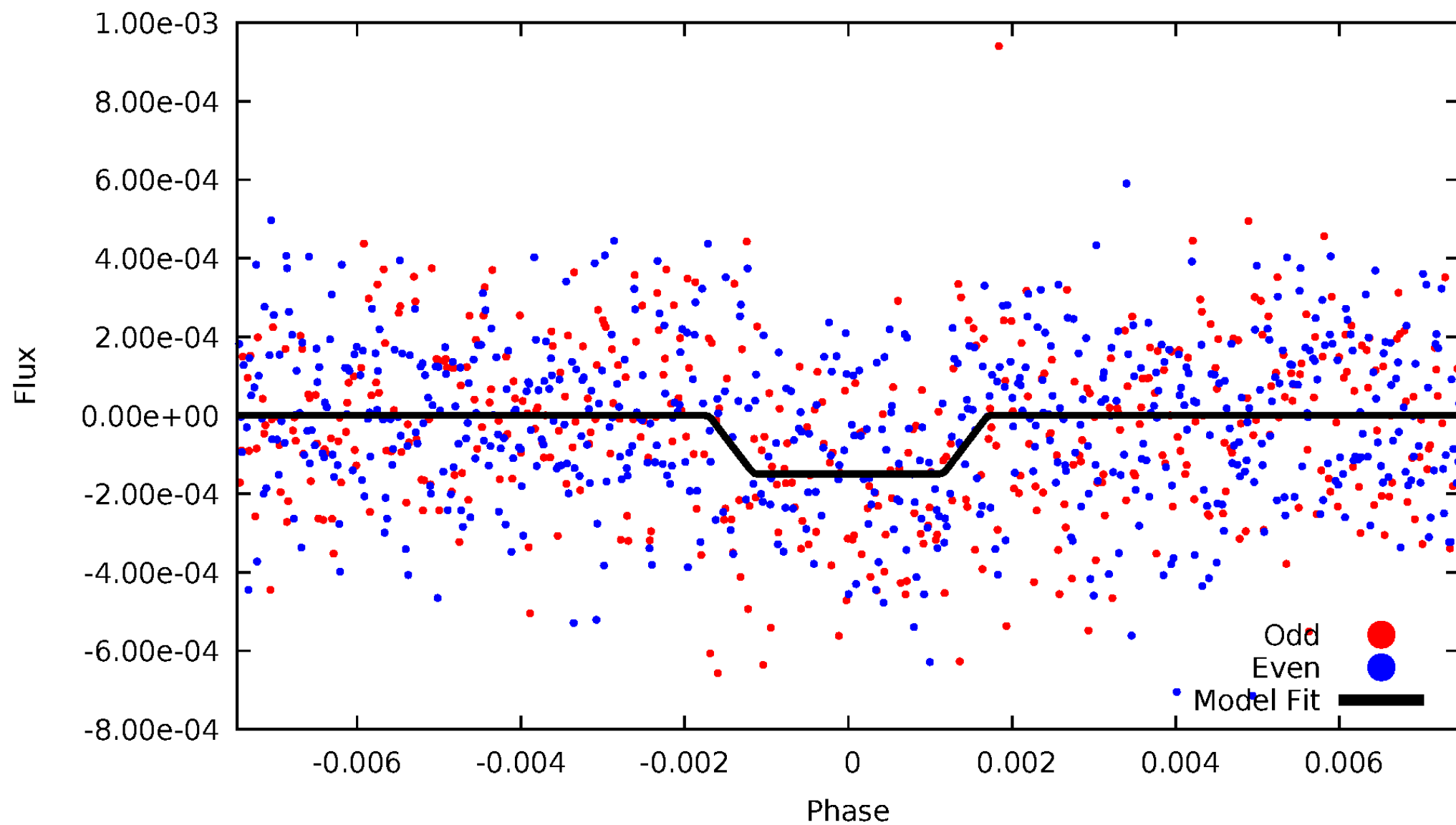
# DV Odd/Even

TCE 009289828-01

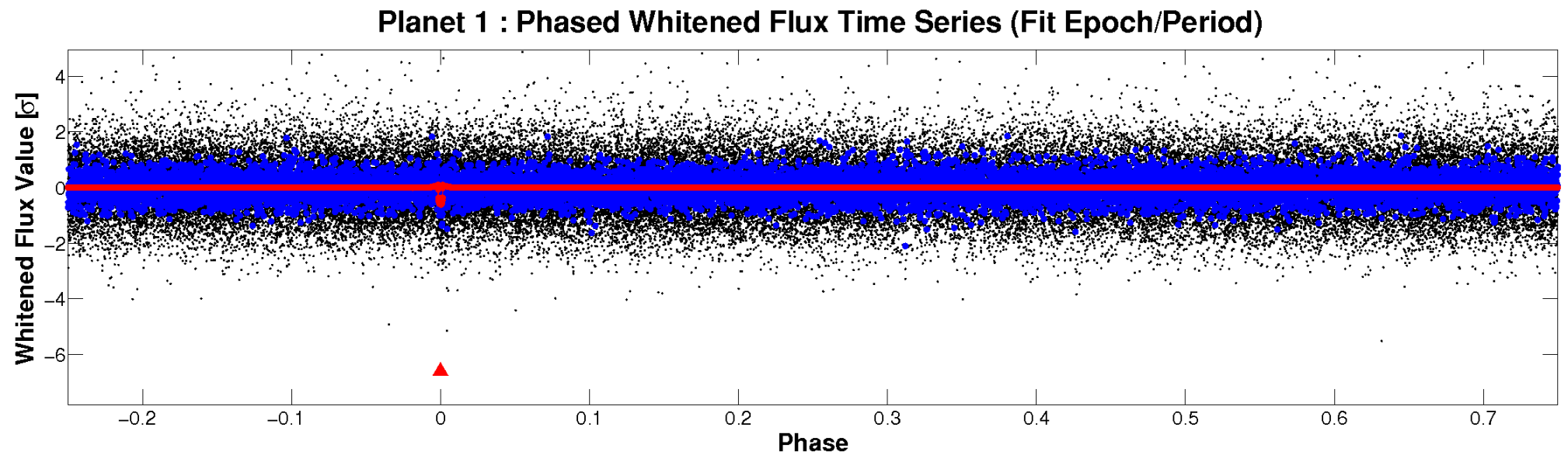
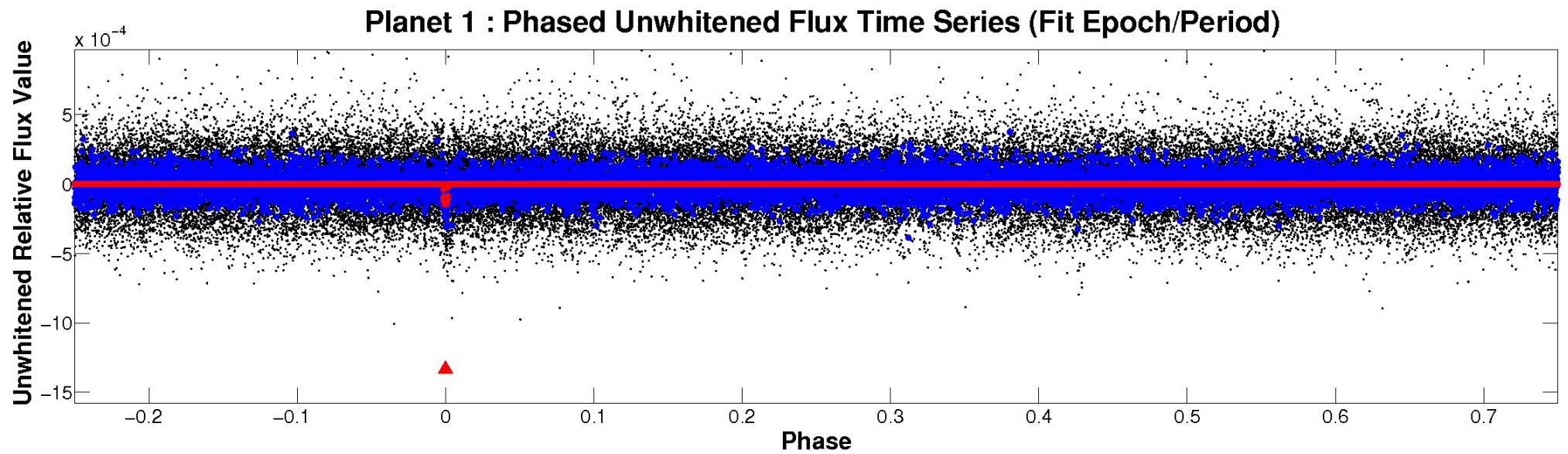


# ALT Odd/Even

TCE 009289828-01

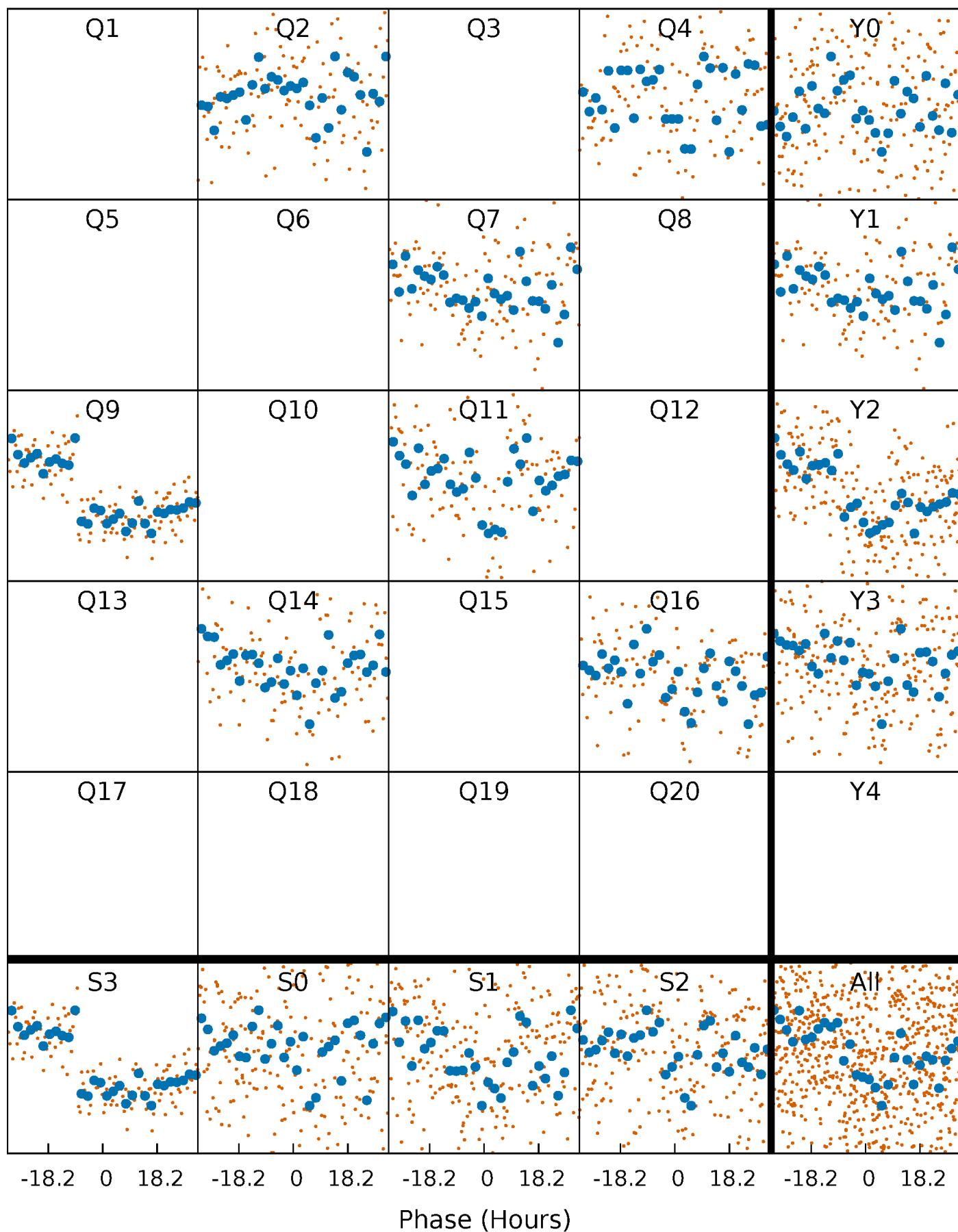


# Non-Whitened Vs. Whitened Light Curve



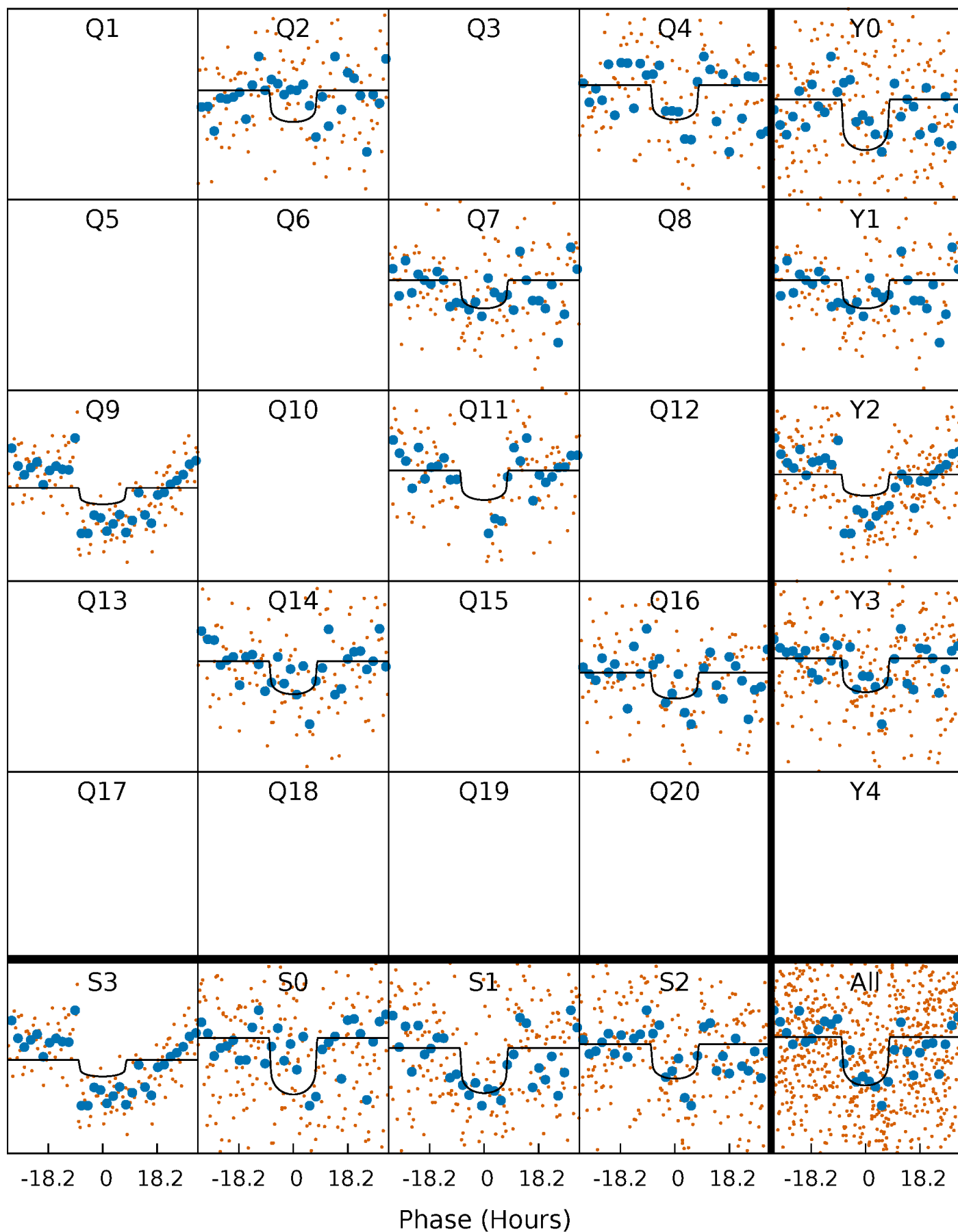
# PDC Quarter-Phased Transit Curves

TCE 009289828-01 P=221.210027 Days  $T_0=208.849169$  (BKJD)



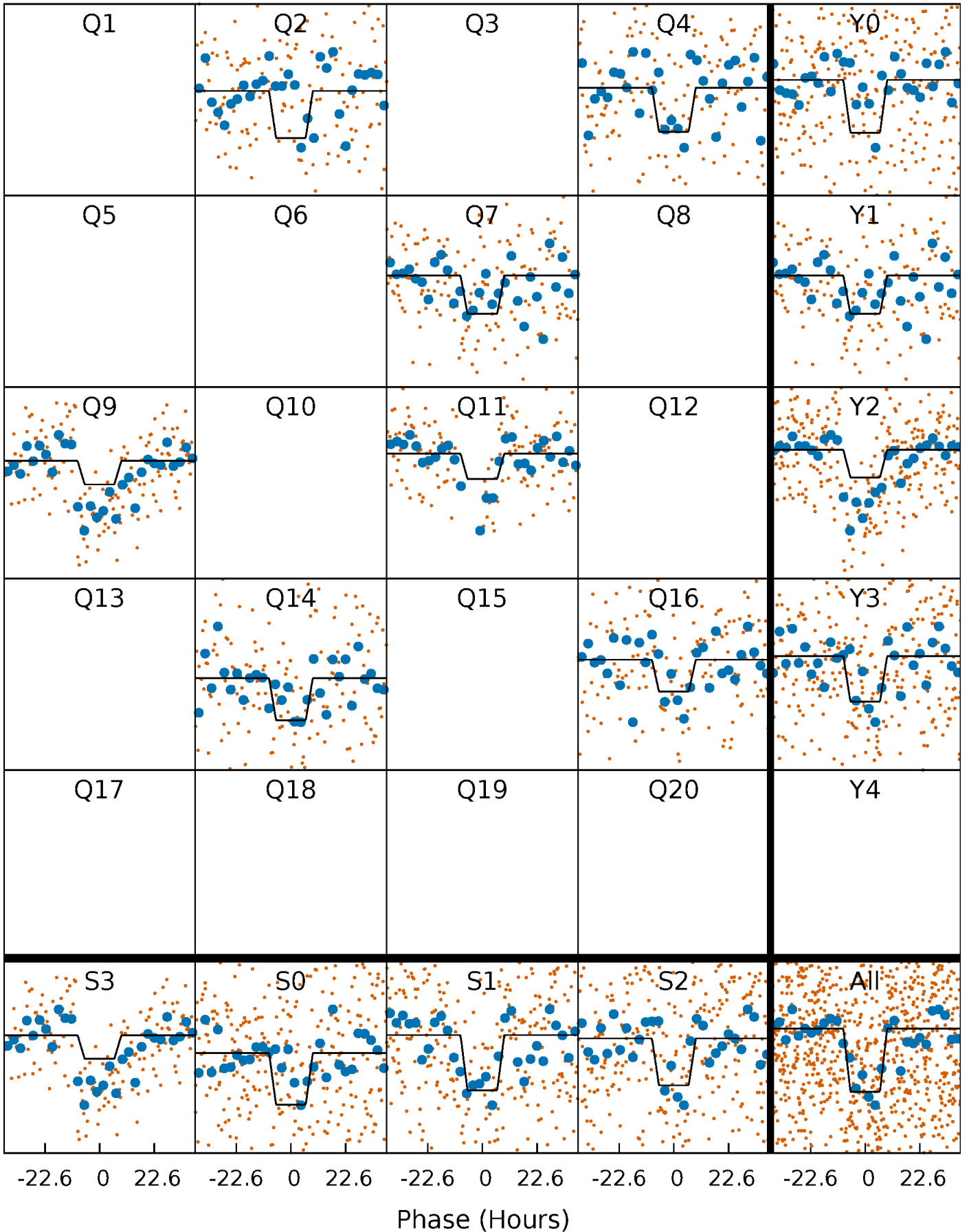
# DV Quarter-Phased Transit Curves

TCE 009289828-01 P=221.210027 Days  $T_0=208.849169$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

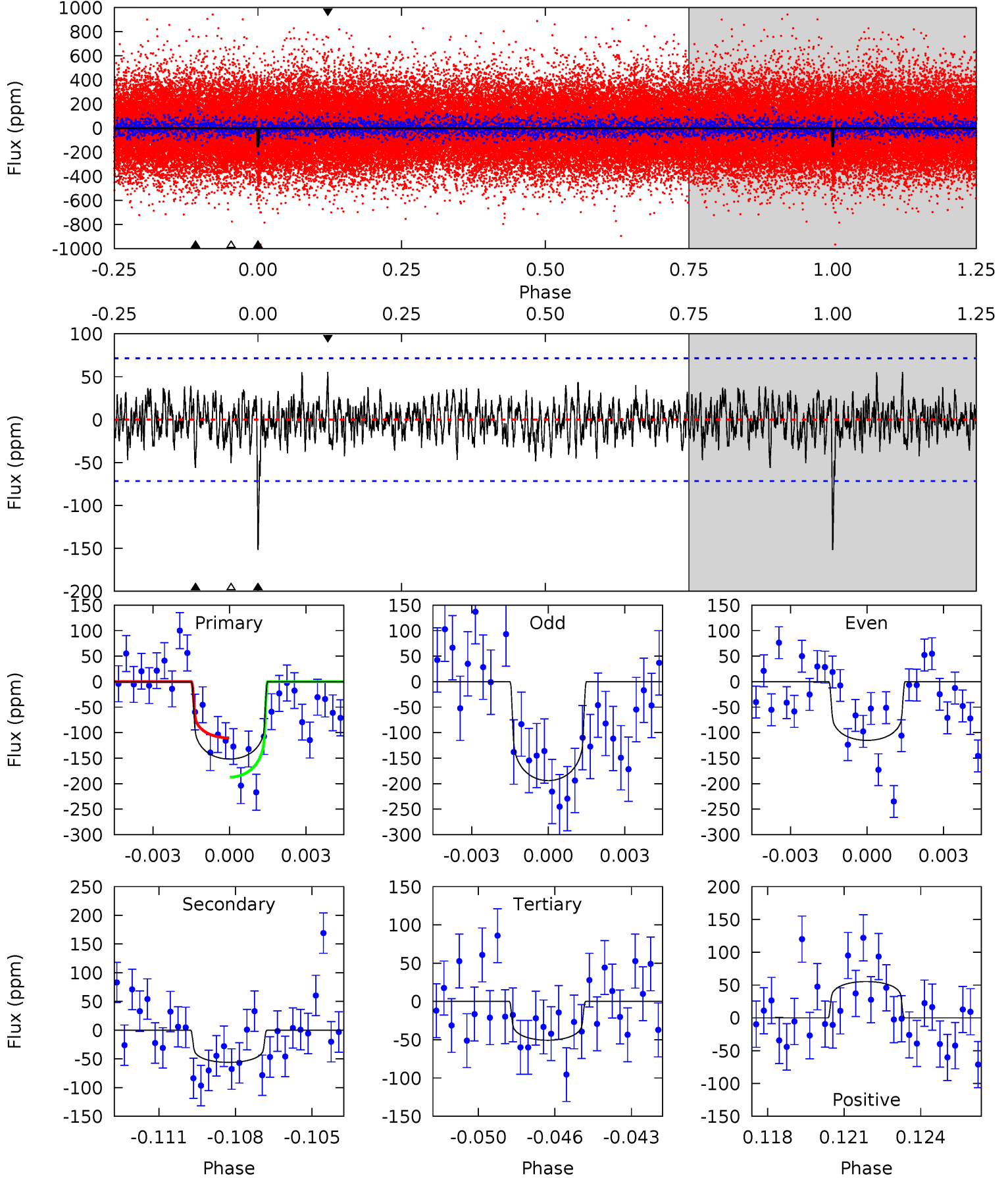
TCE 009289828-01 P=221.206909 Days  $T_0=208.900492$  (BKJD)



# DV Model-Shift Uniqueness Test

009289828-01, P = 221.210027 Days, E = 208.849169 Days

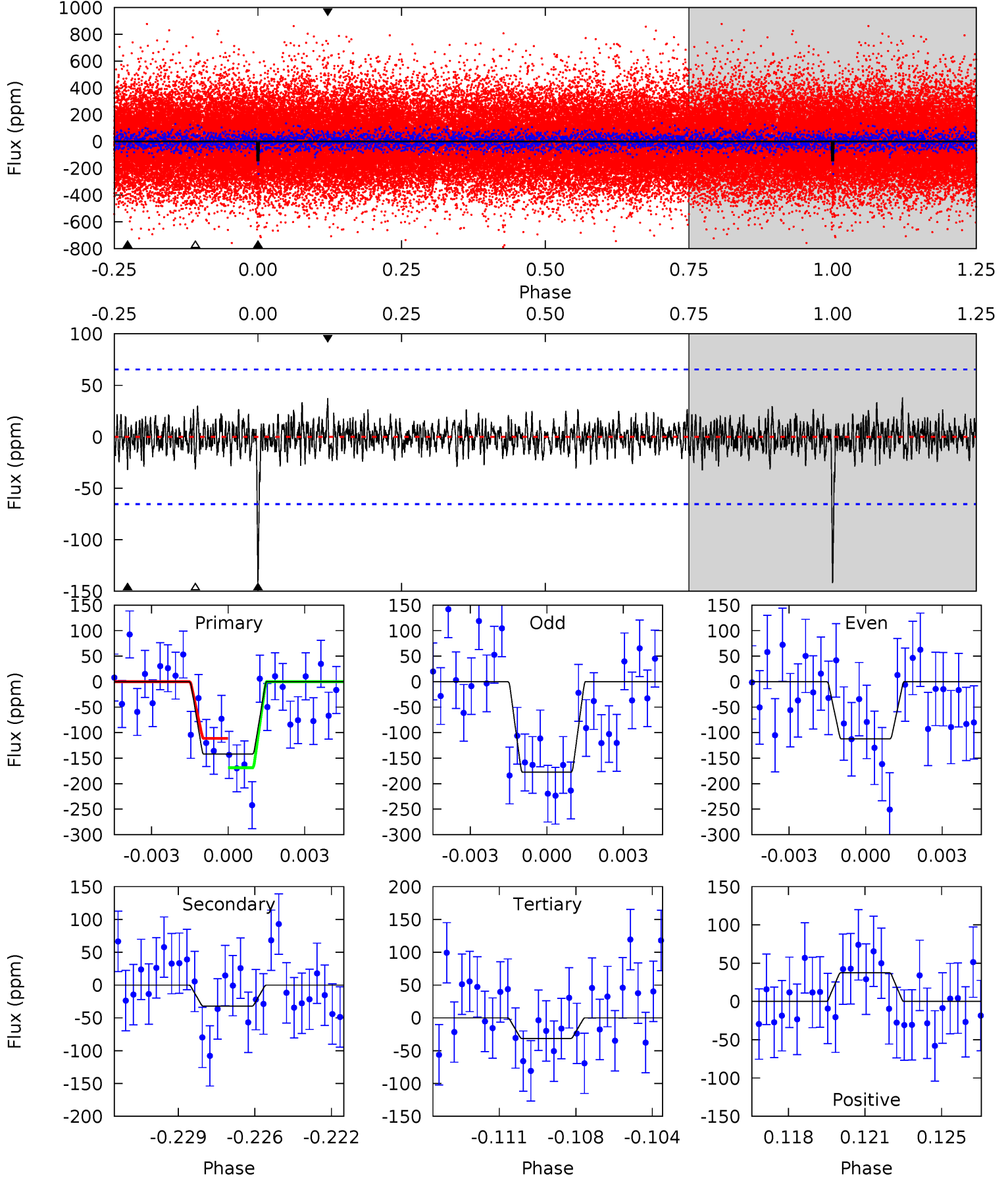
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	4.11	3.71	4.06	5.25	2.96	1.20	7.42	7.07	0.40	0.05	2.89	1.37	0.27	2.82



# Alt Model-Shift Uniqueness Test

009289828-01, P = 221.206909 Days, E = 208.900492 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
11.4	2.56	2.52	2.99	5.23	2.92	0.82	8.83	8.36	0.04	-0.43	2.61	1.57	0.21	2.29



### Stellar Parameters For KIC 009289828

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6233^{+198}_{-242}$	$4.030^{+0.329}_{-0.141}$	$-0.040^{+0.250}_{-0.300}$	$1.753^{+0.495}_{-0.605}$	$1.200^{+0.199}_{-0.199}$	$0.314^{+0.728}_{-0.139}$
	+3%/-4%	+8%/-3%	+625%/-750%	+28%/-35%	+17%/-17%	+232%/-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 009289828-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-56 \pm 14$	$2.11^{+1.05}_{-0.86}$	$569^{+52}_{-53}$	$5065^{+1259}_{-747}$	$4074^{+7016}_{-2332}$
Alt.	$-32 \pm 13$	$2.10^{+1.01}_{-0.83}$	$569^{+51}_{-52}$	$4435^{+1157}_{-619}$	$2143^{+4071}_{-1262}$

$T_{\text{max}}$  = 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

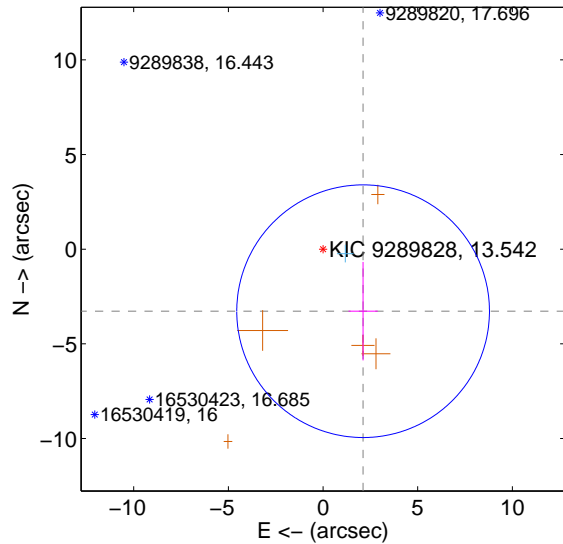
Supplemental centroid analysis for 009289828-01. Kepler magnitude: 13.54. Transit SNR 7.59

There are 1 quarters with good PRF difference image offsets

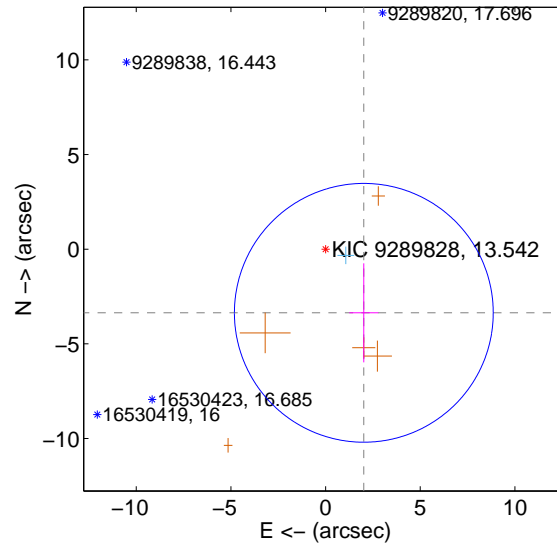
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.900 \pm 2.224$	1.75	$-2.116 \pm 0.770$	$-3.276 \pm 2.600$
PRF-fit source offset from KIC position	$3.921 \pm 2.278$	1.72	$-2.019 \pm 0.769$	$-3.361 \pm 2.617$
photometric centroid source offset	$2.78 \pm 2.62$	1.06	$0.10 \pm 1.85$	$2.78 \pm 2.62$

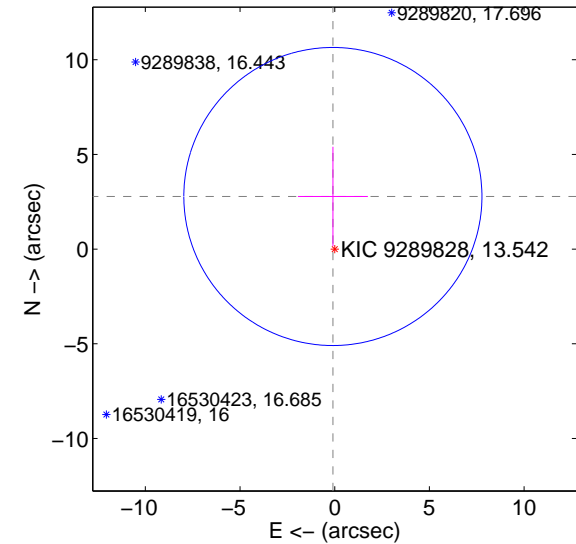
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



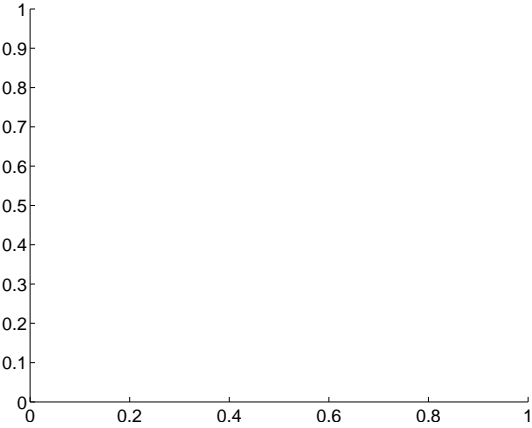
offset from photometric centroids



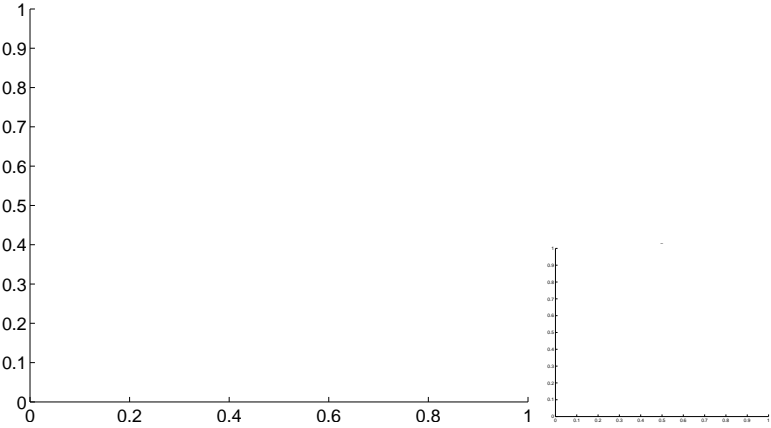
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs  $> 15,000$ , are from the UKIRT catalog.

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

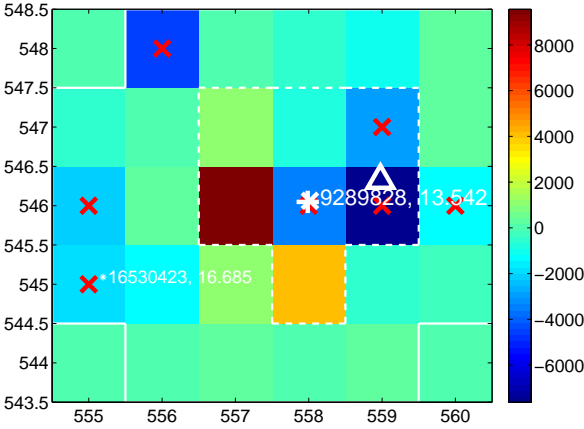
Q1 no difference image



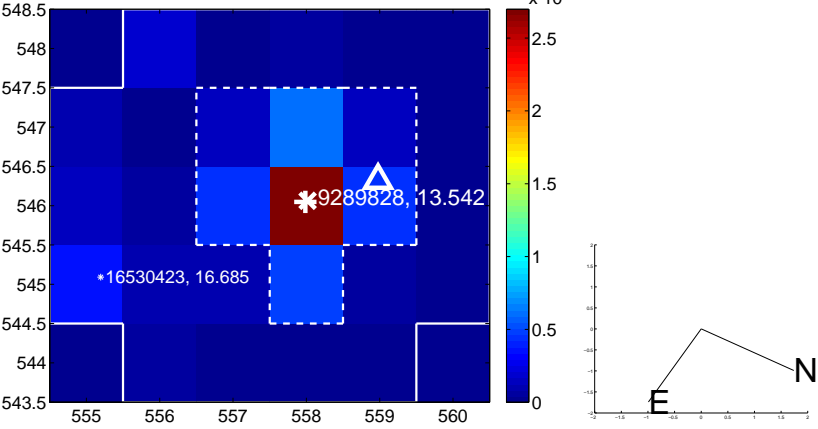
Q1 no OOT image



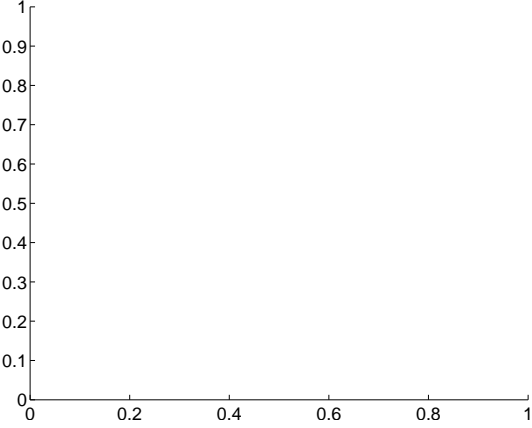
Q2 difference image. Poor Quality



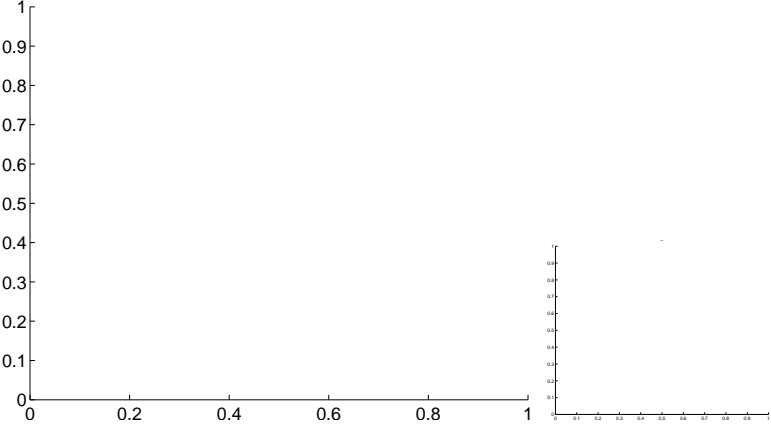
Q2 OOT image



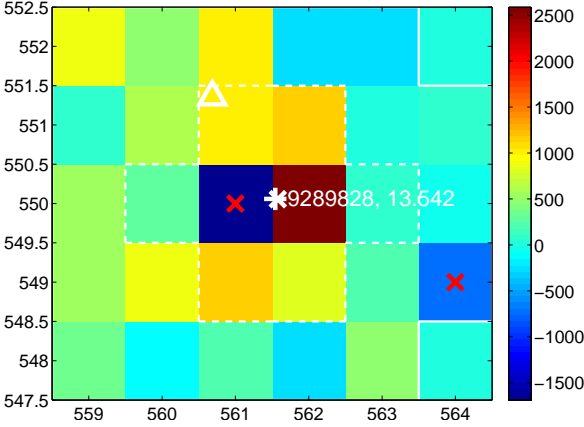
Q3 no difference image



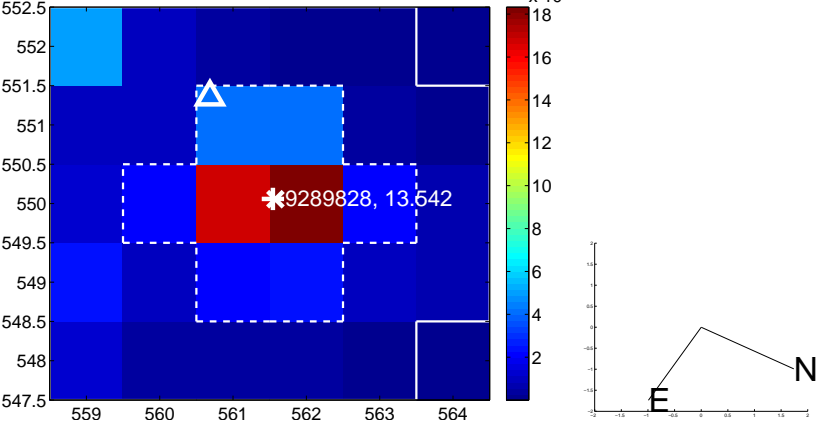
Q3 no OOT image



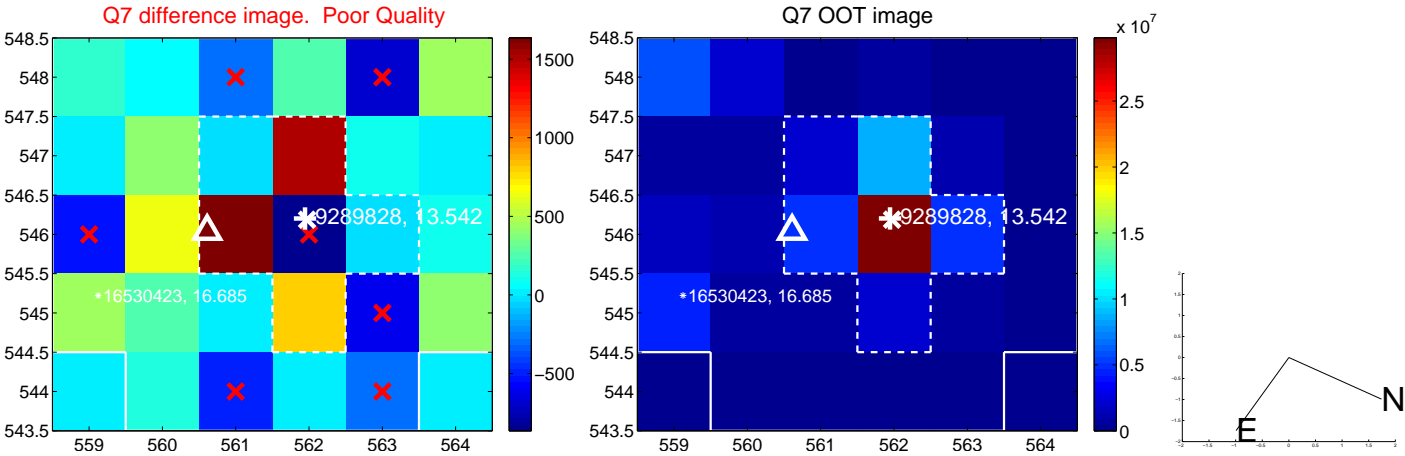
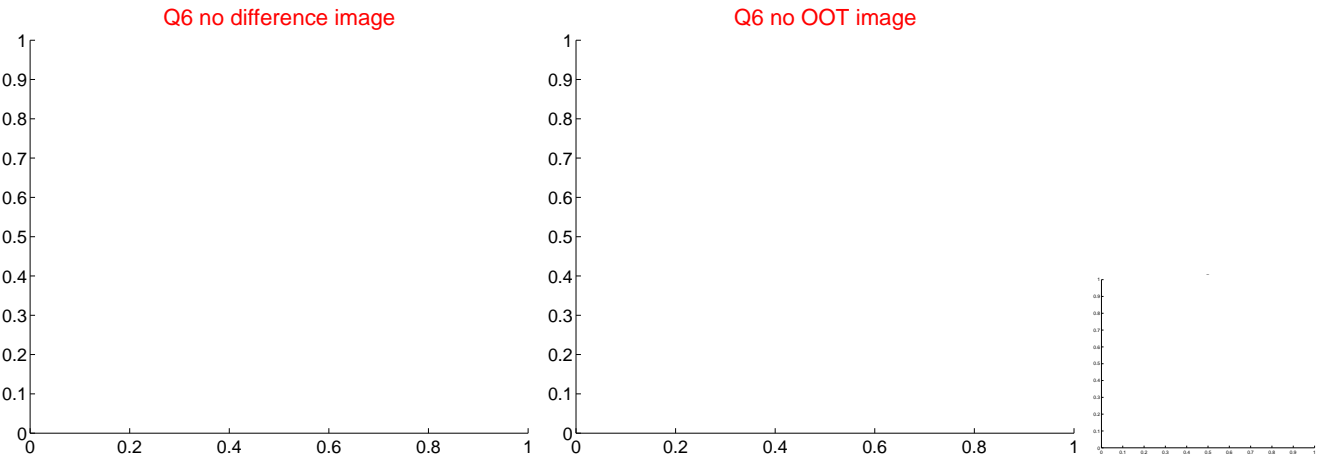
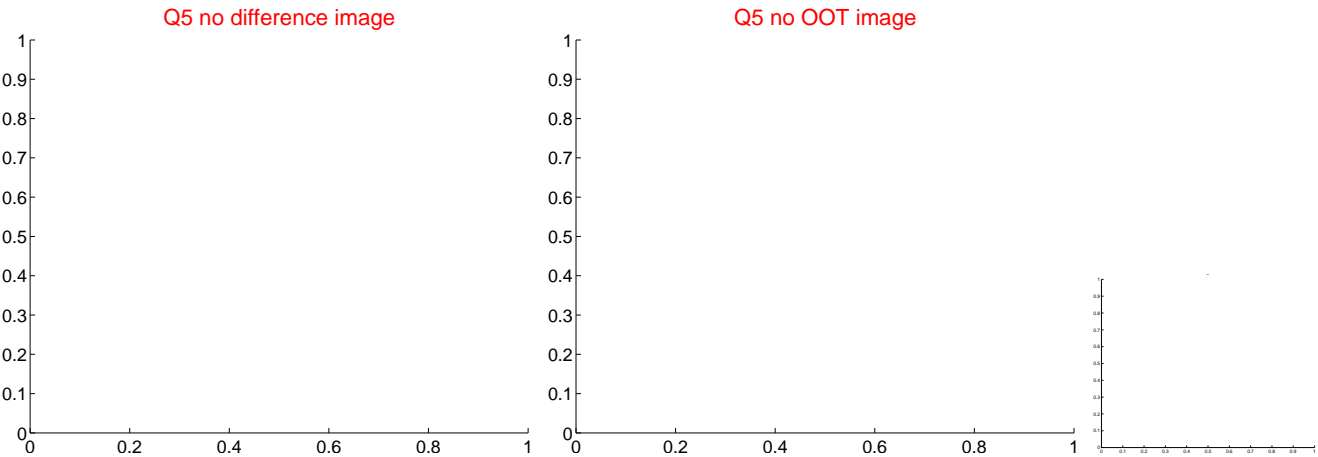
Q4 difference image. Poor Quality



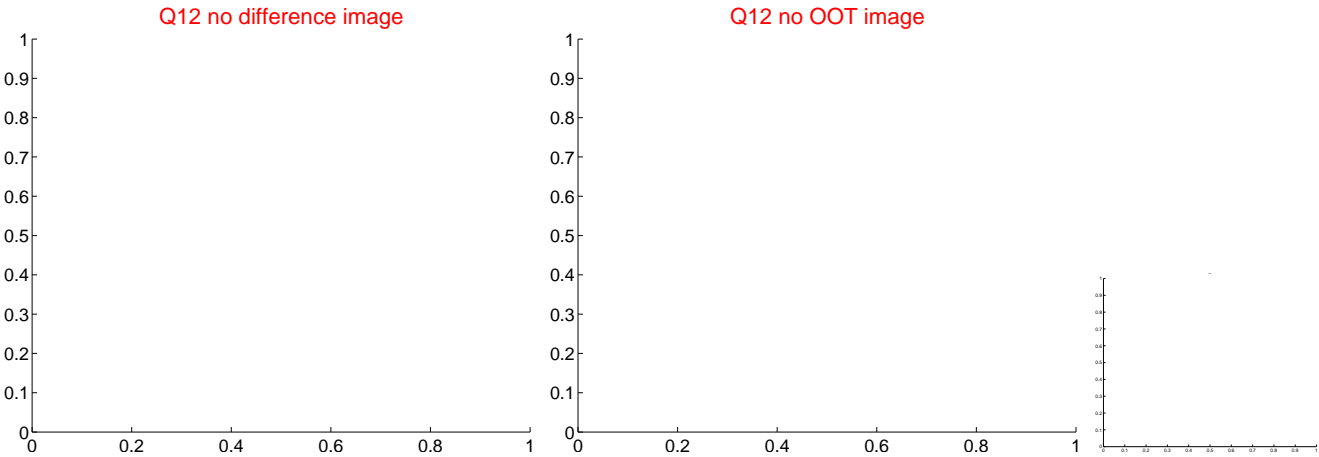
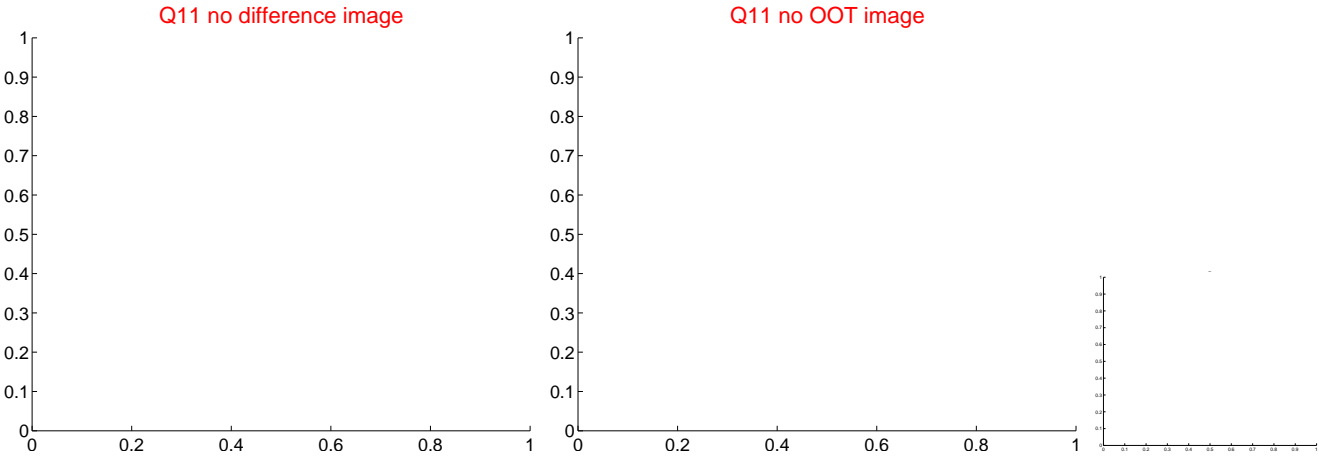
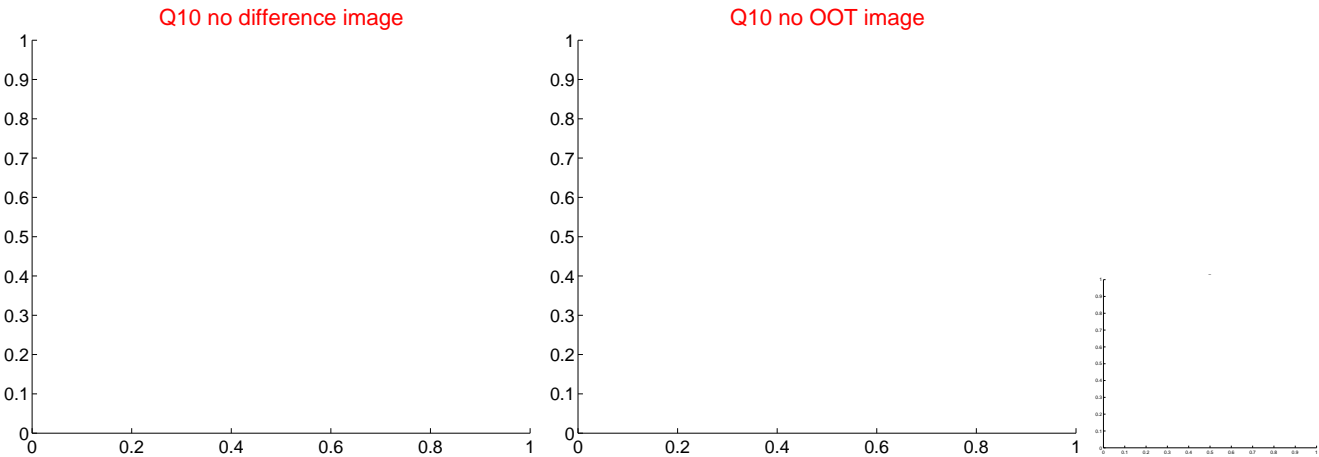
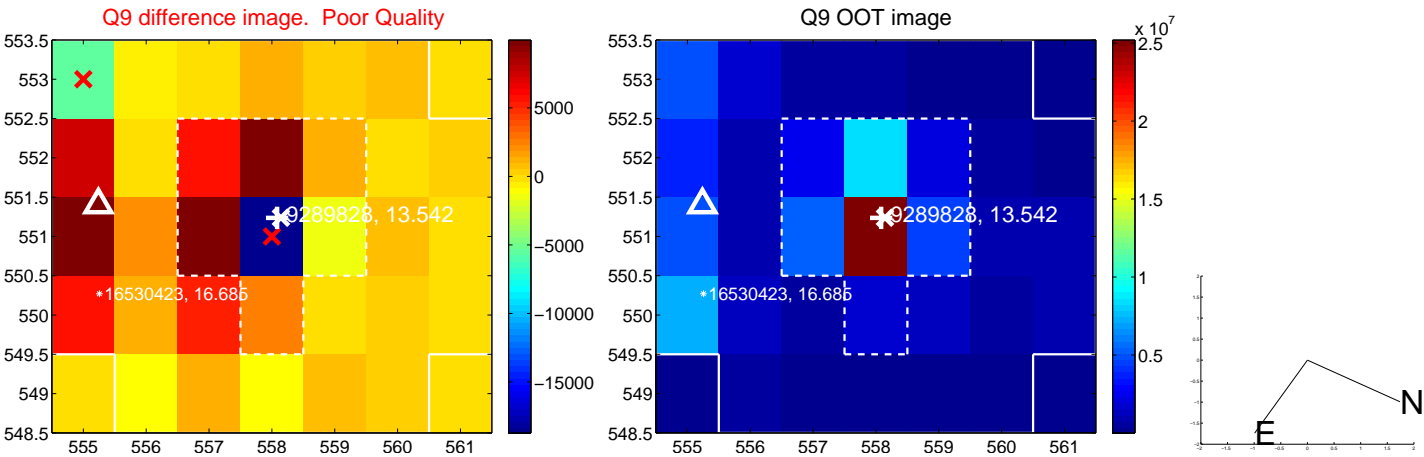
Q4 OOT image



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

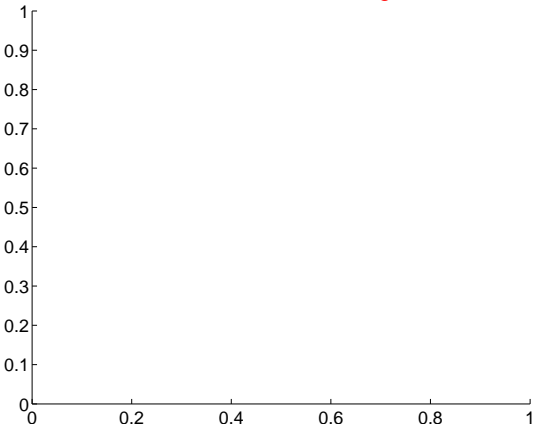


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

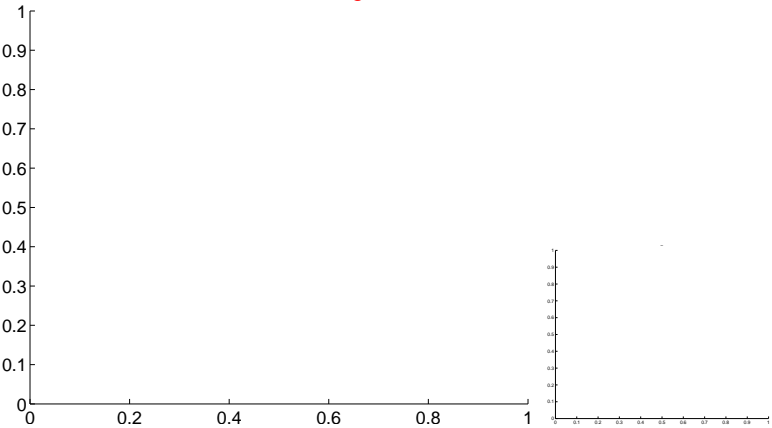


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

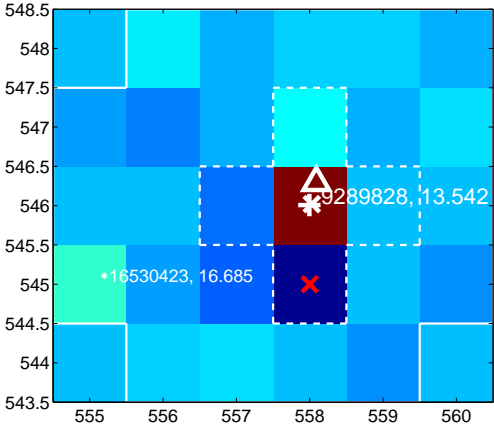
Q13 no difference image



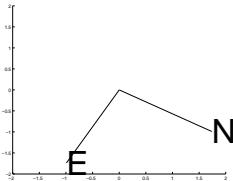
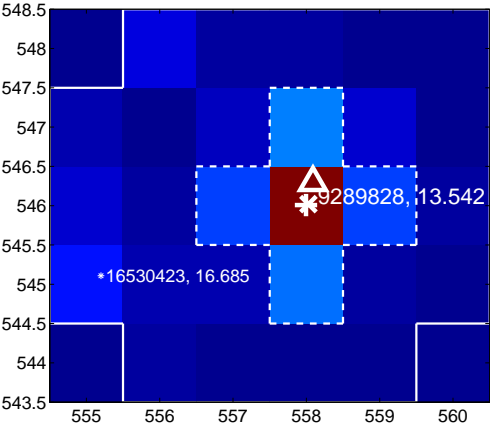
Q13 no OOT image



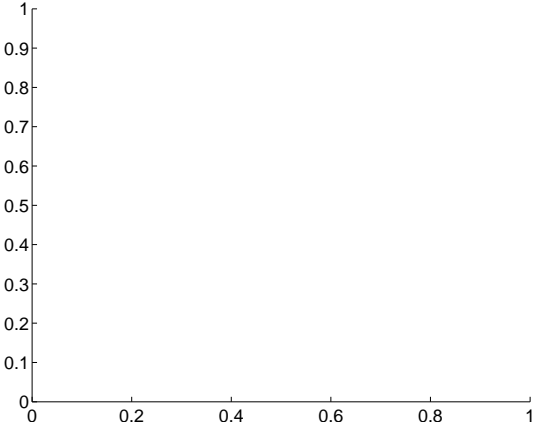
Q14 difference image



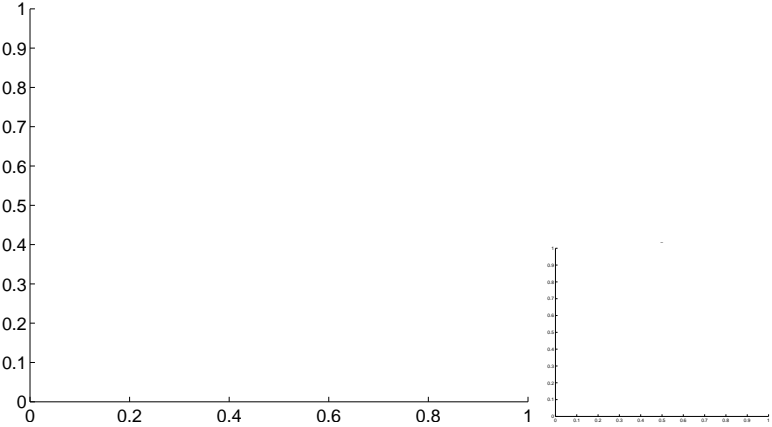
Q14 OOT image



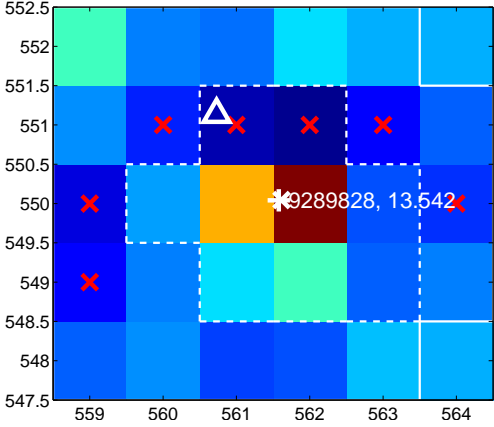
Q15 no difference image



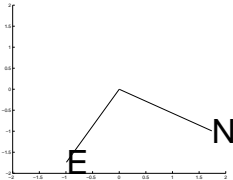
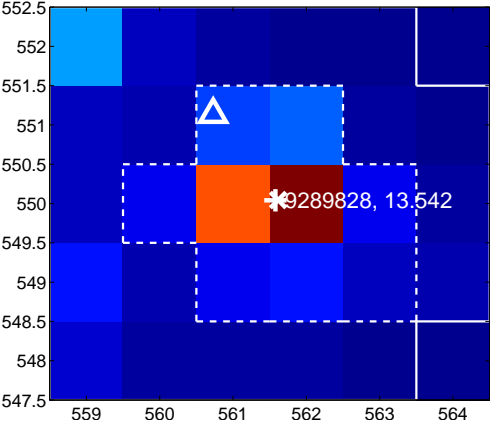
Q15 no OOT image



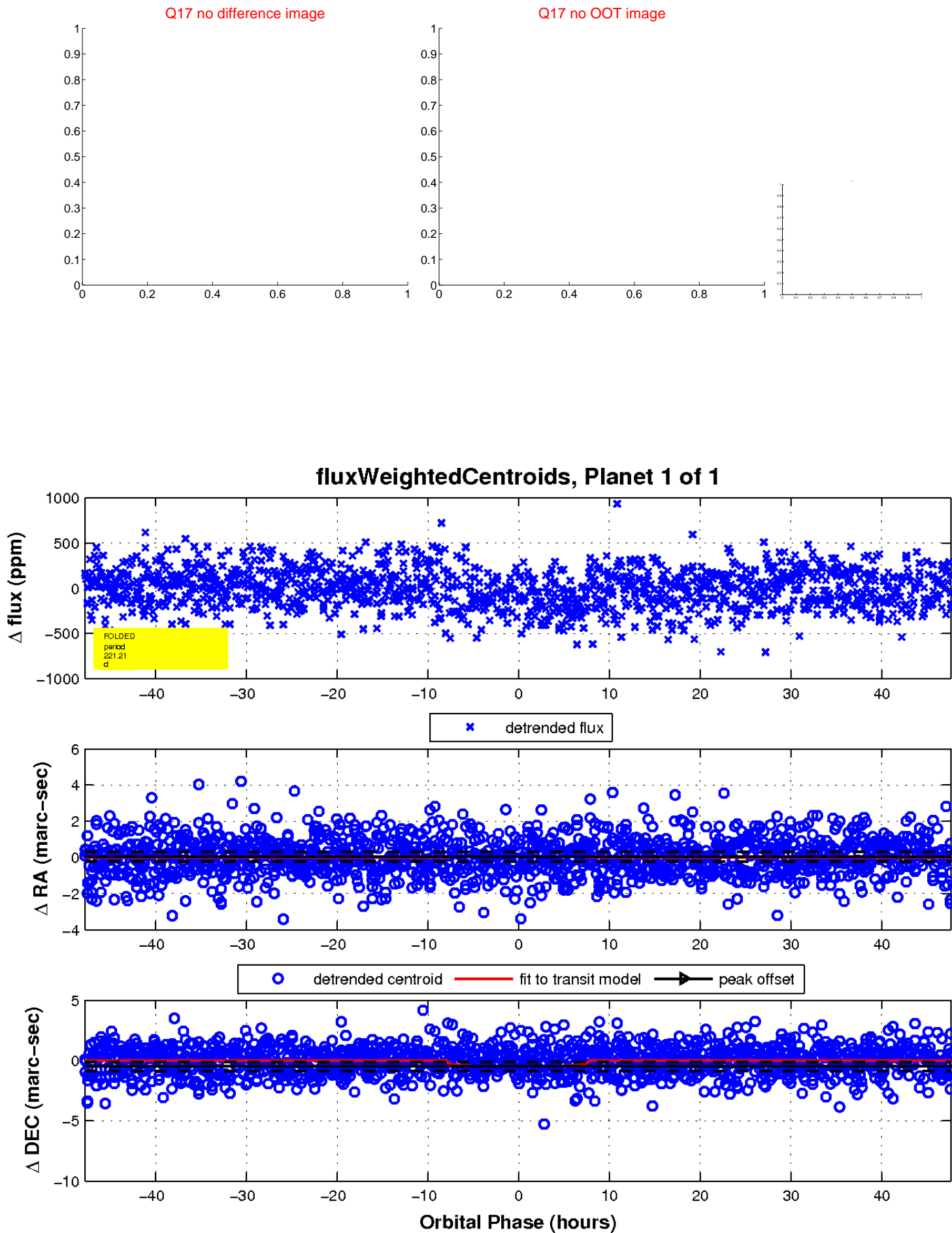
Q16 difference image. Poor Quality



Q16 OOT image



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



UKIRT Image

