

# KIC 009040422

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009040422-01	OBS	No	1.422750	132.830144	15.5	12.378	11.2	10.2	1.94	7318	0.81	11689.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009040422-01	OBS	FP	0.00	1	0	0	0	LPP_DV—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.

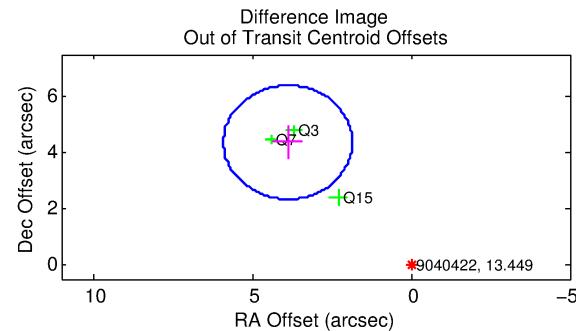
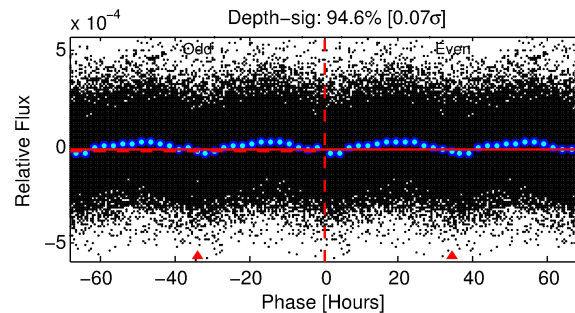
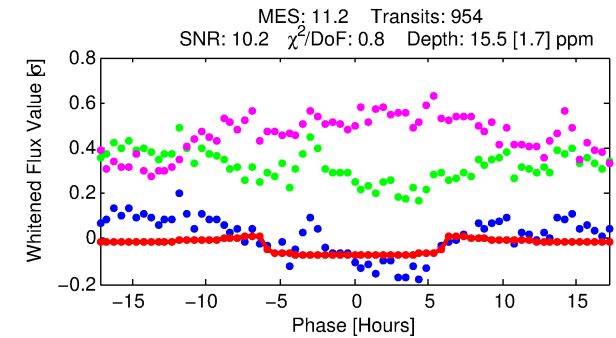
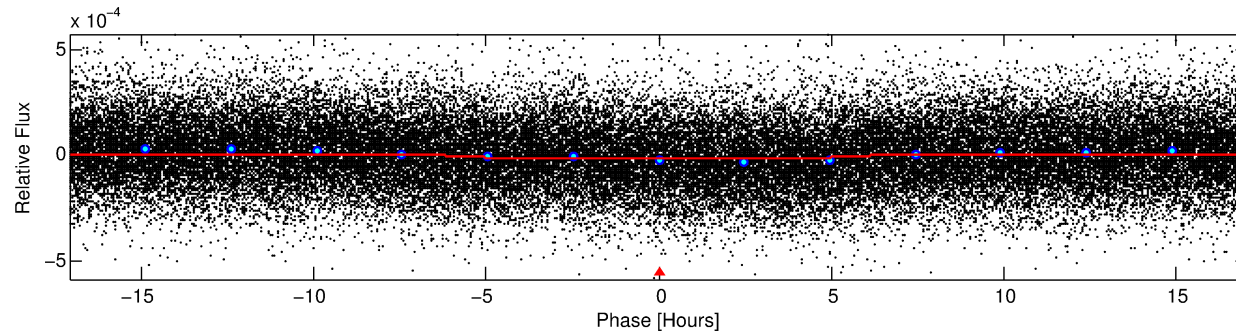
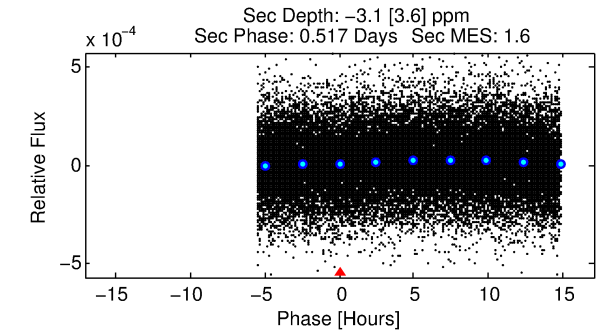
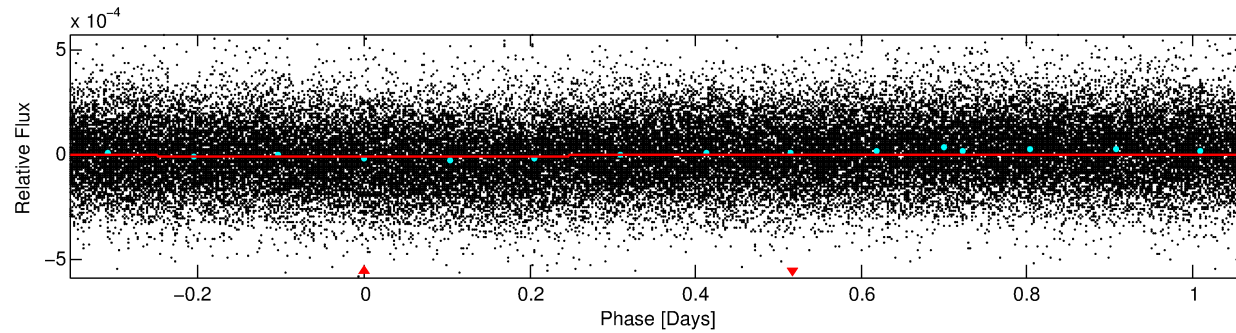
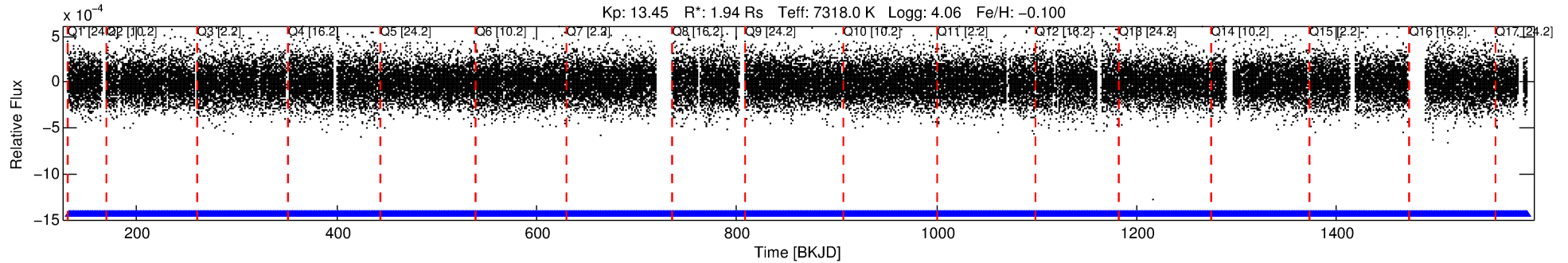
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009040422-01

No Significant Match Found

# DV One-Page Summary

KIC: 9040422 Candidate: 1 of 1 Period: 1.423 d



## DV Fit Results:

Period = 1.42275 [0.00003] d  
Epoch = 132.8301 [0.0080] BKJD  
Rp/R\* = 0.0038 [0.0033]  
a/R\* = 1.07 [0.72]  
b = 0.61 [5.65]  
Seff = 11689.40 [4337.10]  
Teq = 2651 [246] K  
Rp = 0.81 [0.75] Re  
a = 0.0288 [0.0068] AU  
Ag = N/A  
Teffp = N/A

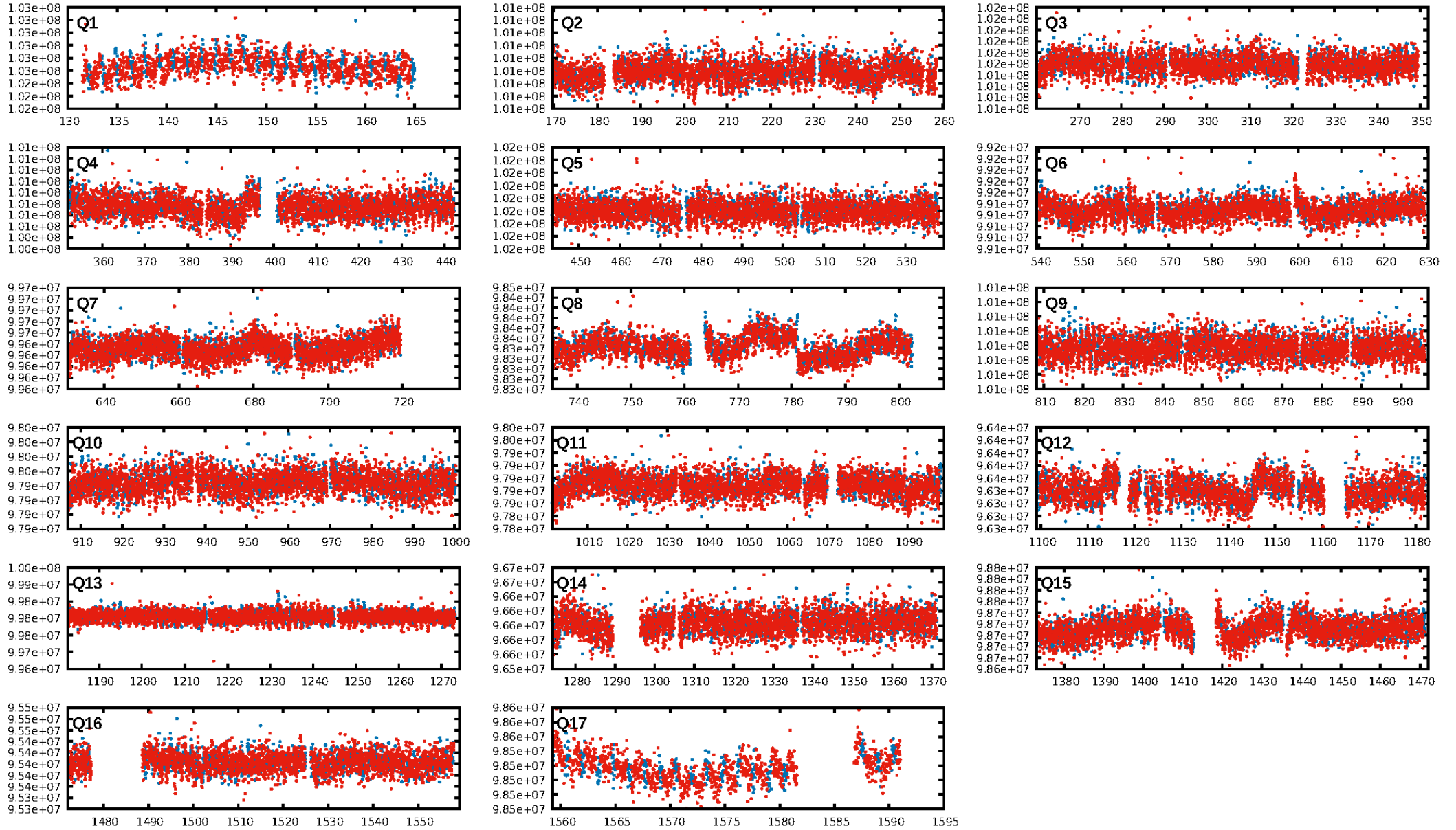
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [910/910]  
GhostDiagnostic-chr: 4.288  
Centroid-sig: 67.9%  
Centroid-so: 0.762 arcsec [0.75σ]  
OotOffset-rm: 5.838 arcsec [8.65σ]  
KicOffset-rm: 5.774 arcsec [7.59σ]  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [17/17]

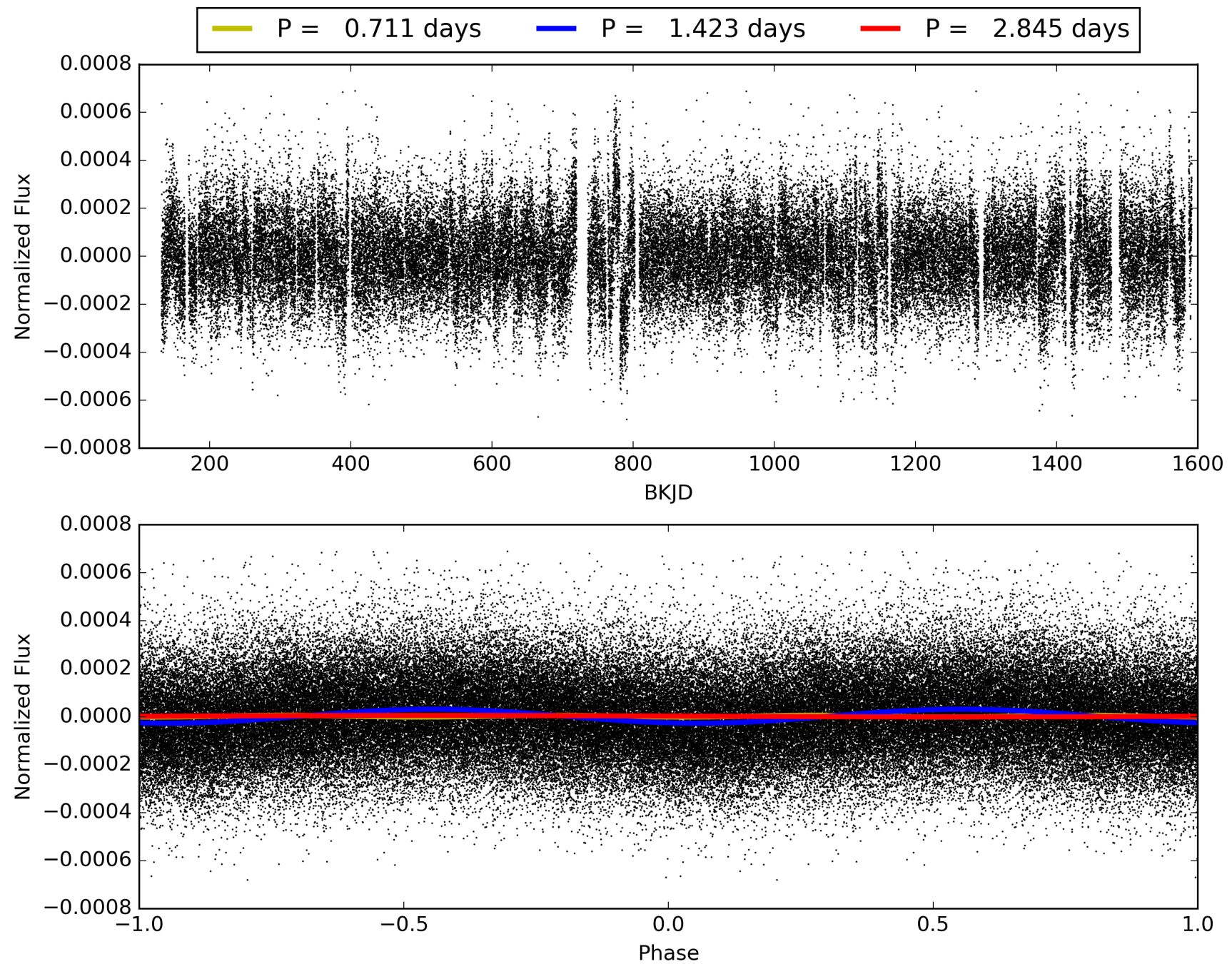
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:14:52 Z

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

# TCE 009040422-01, PDC Light Curves



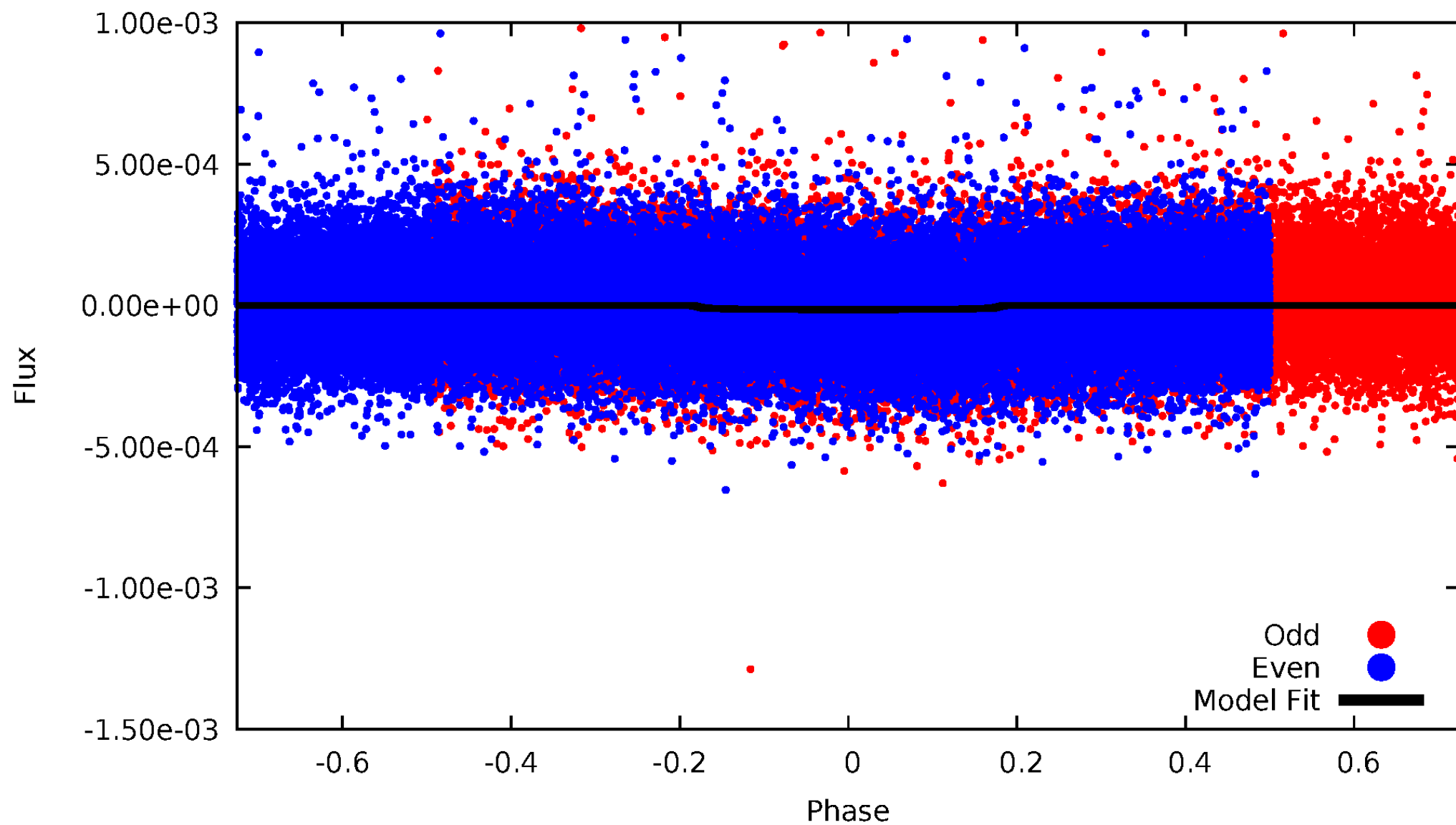
TCE 009040422-01





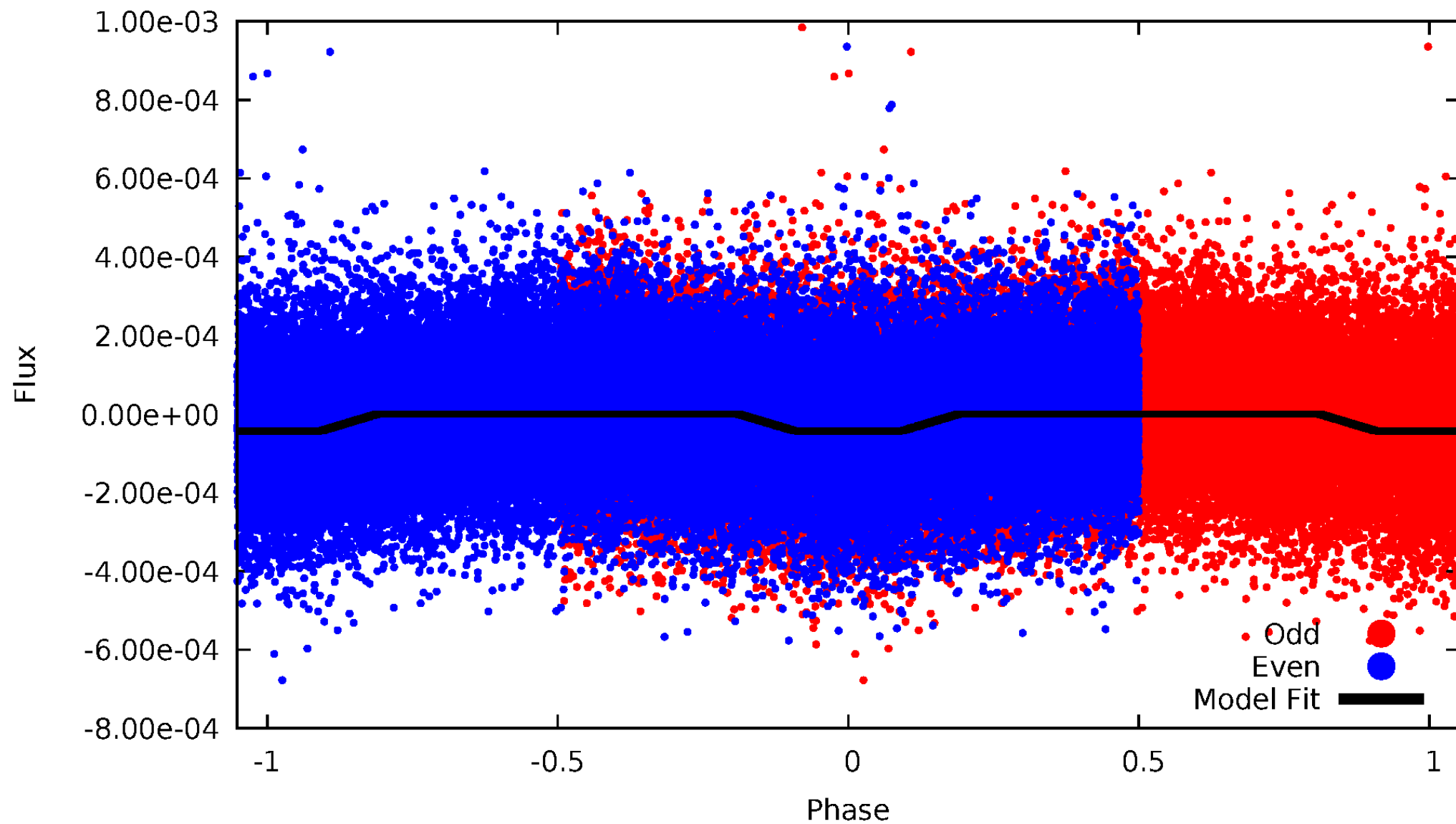
# DV Odd/Even

TCE 009040422-01

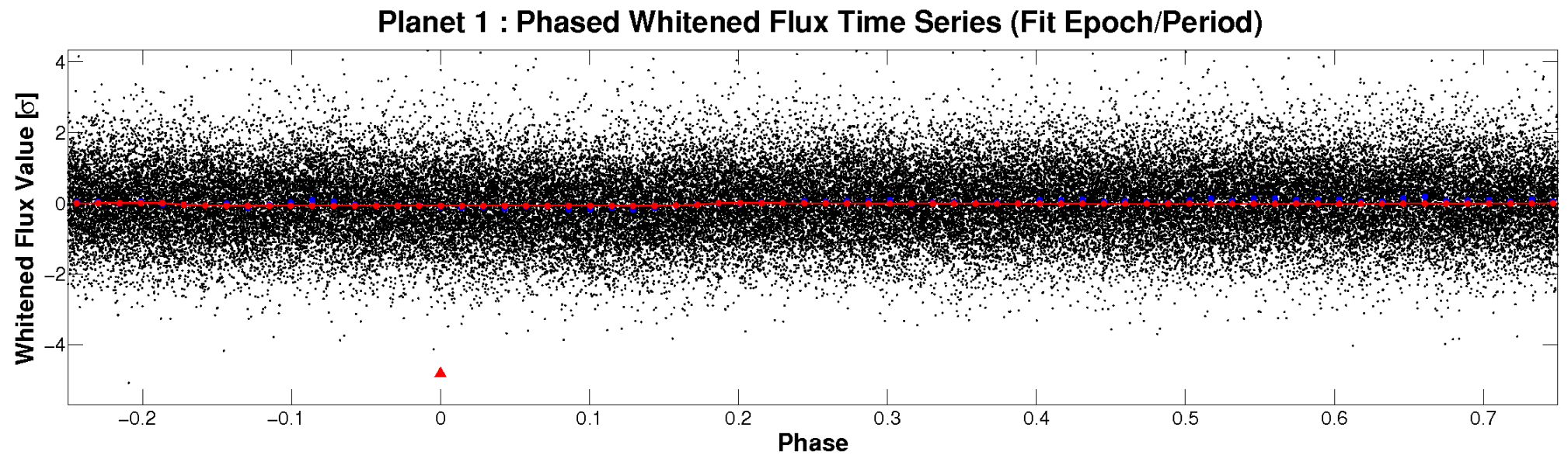
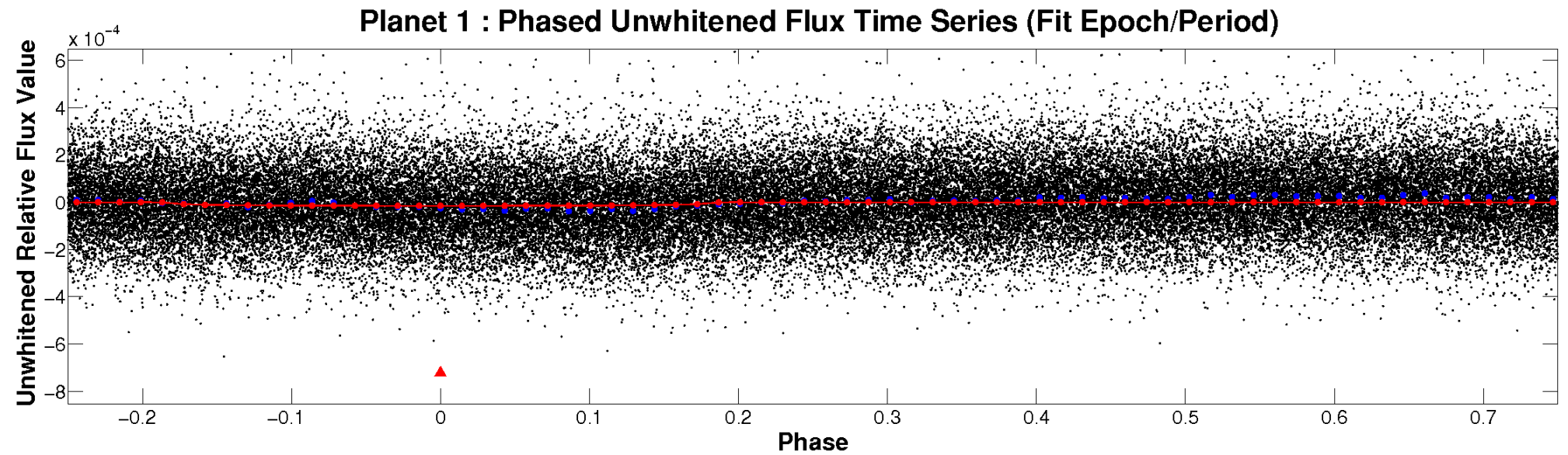


# ALT Odd/Even

TCE 009040422-01

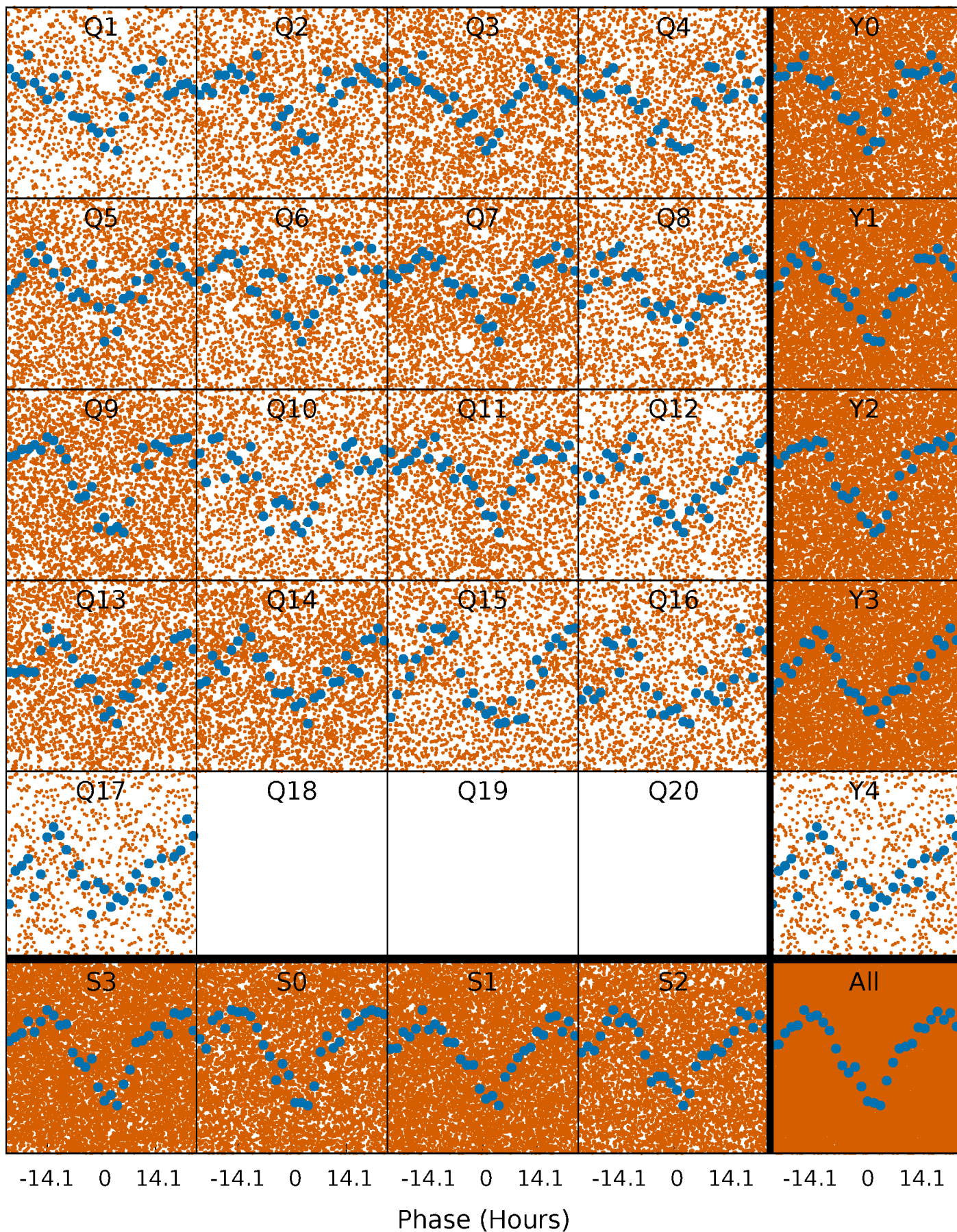


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

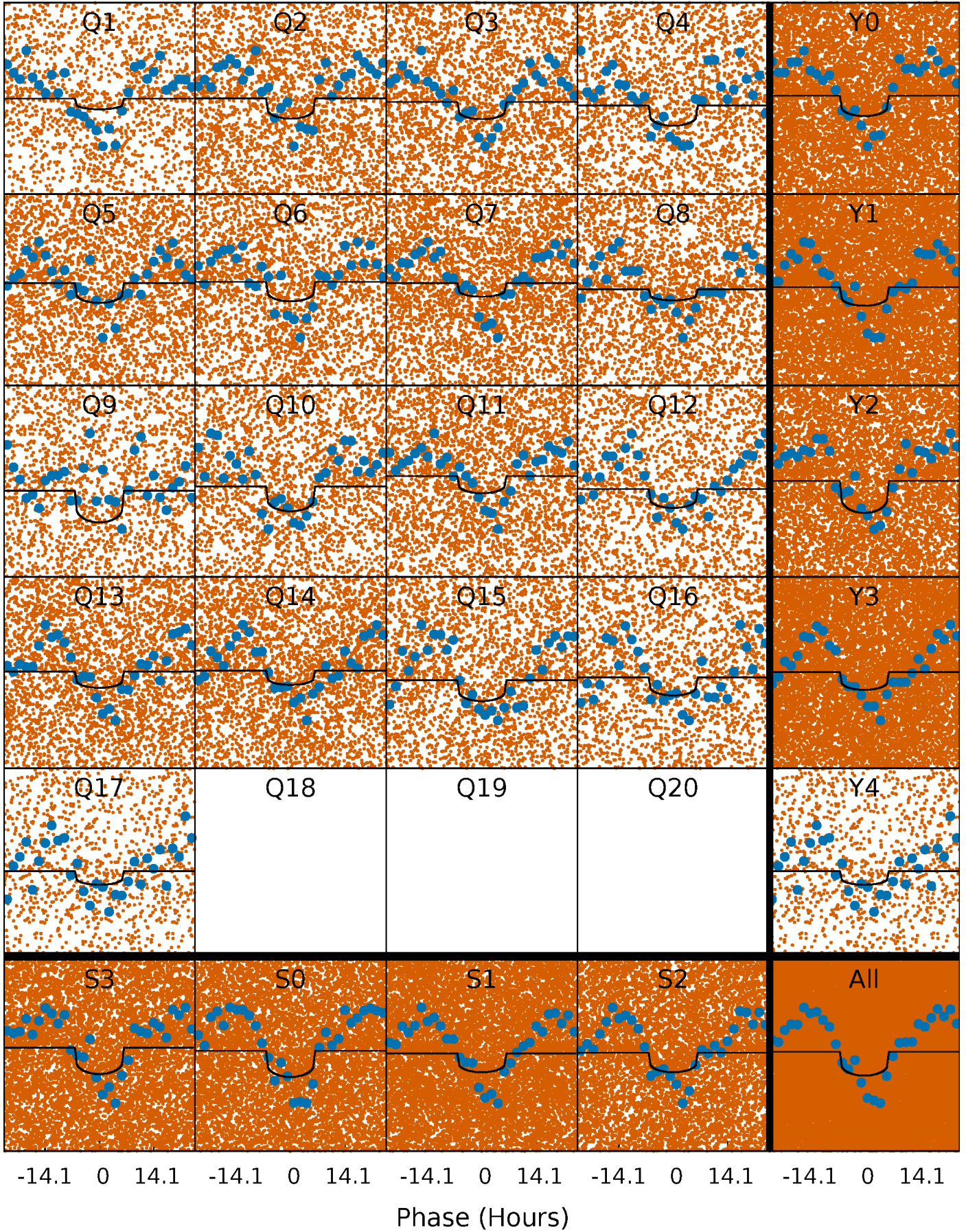
TCE 009040422-01 P= 1.422750 Days  $T_0=132.830144$  (BKJD)





# DV Quarter-Phased Transit Curves

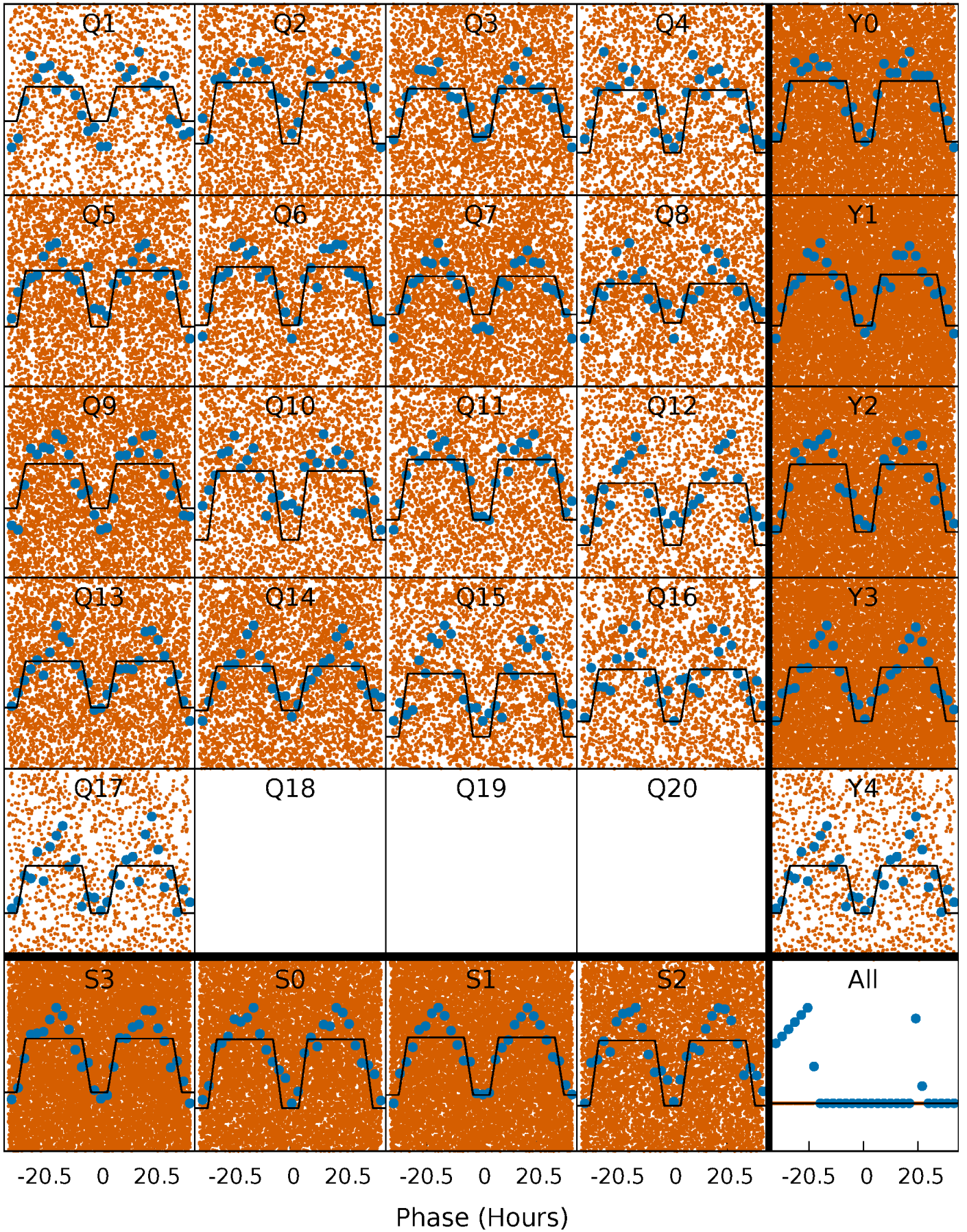
TCE 009040422-01 P= 1.422750 Days  $T_0=132.830144$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

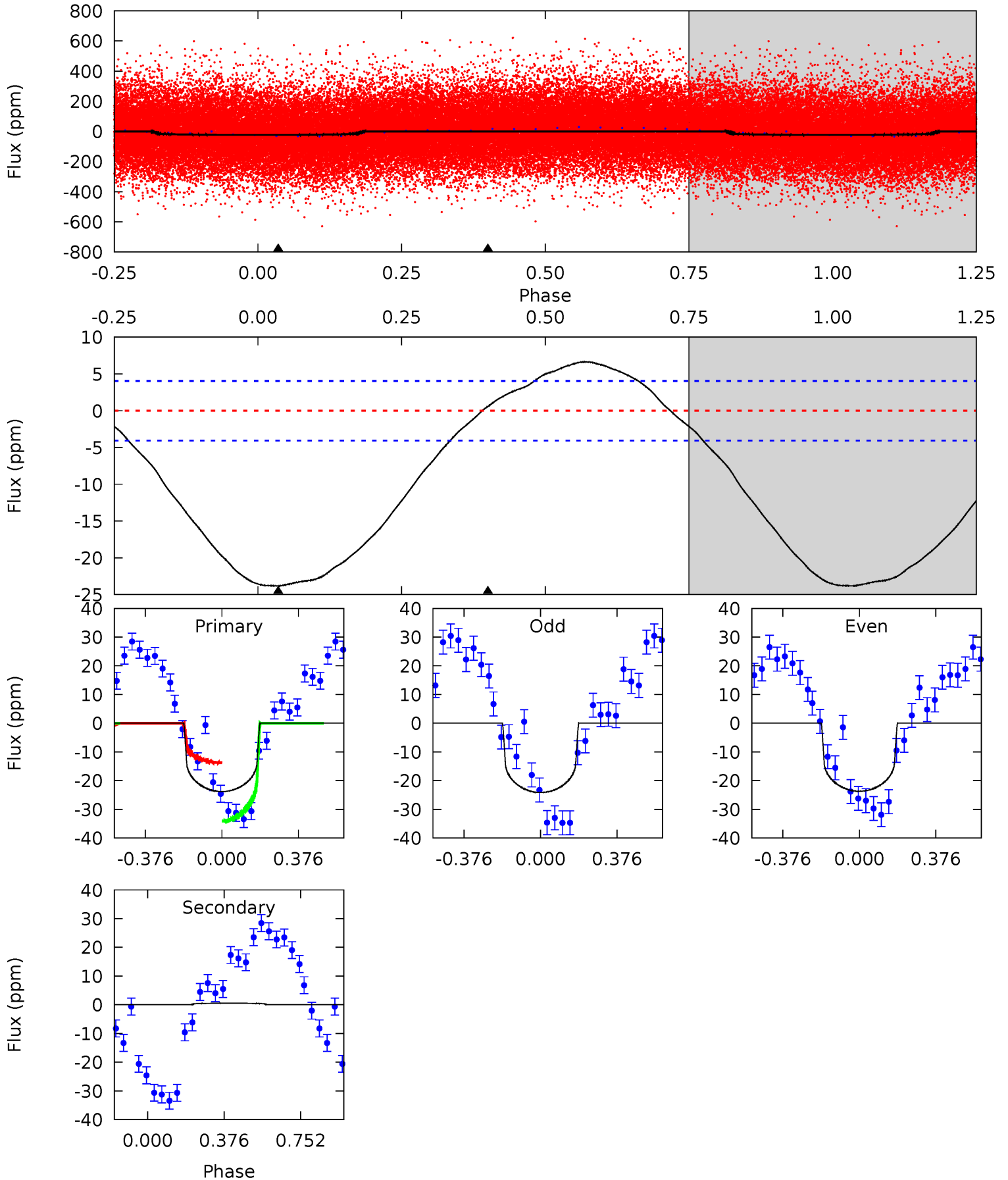
TCE 009040422-01 P= 1.422835 Days  $T_0=132.870359$  (BKJD)



# DV Model-Shift Uniqueness Test

009040422-01, P = 1.422750 Days, E = 131.407394 Days

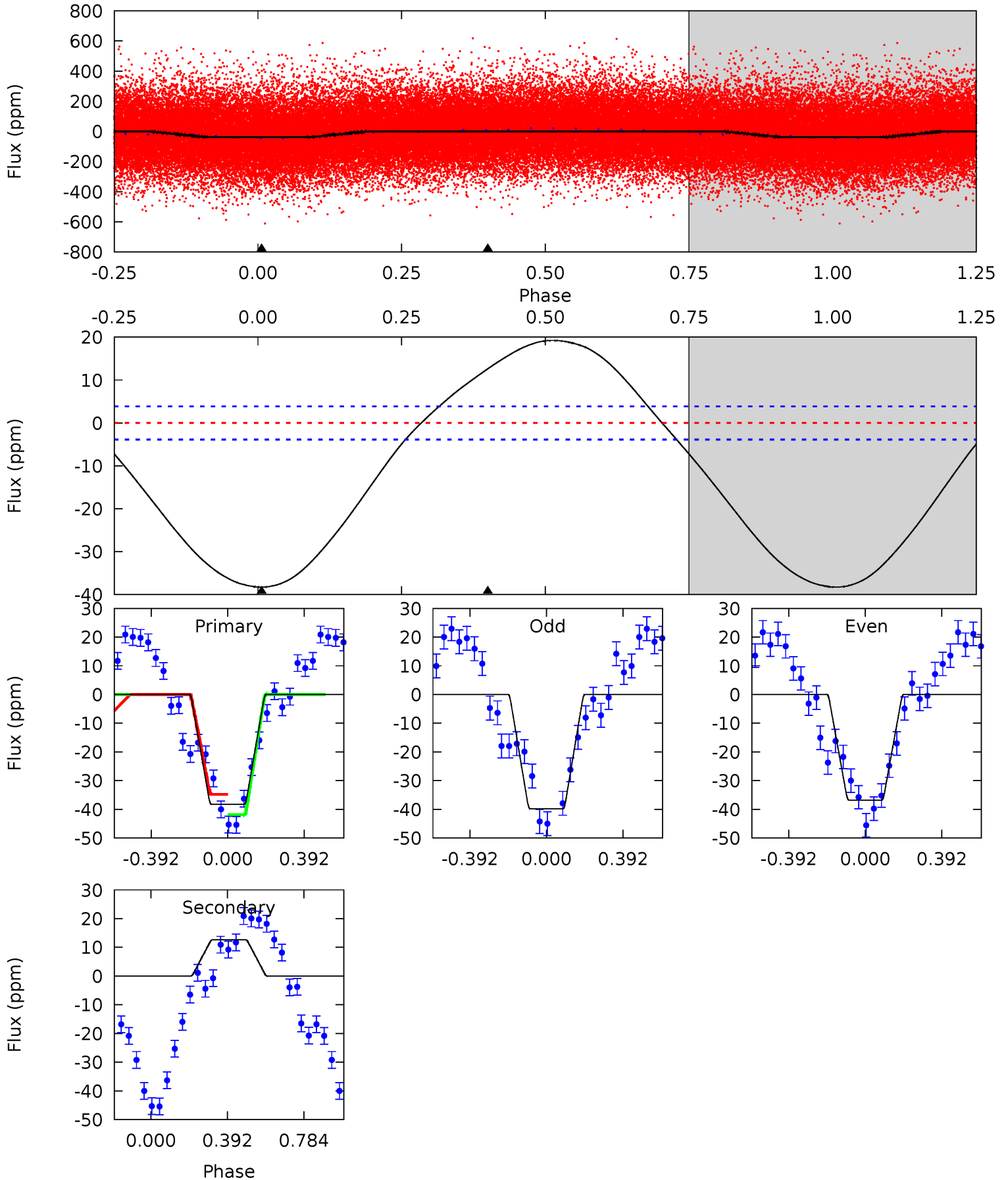
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.1	-0.60	0	0	4.28	0.89	2.22	25.1	25.1	-0.60	-0.60	0.23	1.04	0.22	10.9



# Alt Model-Shift Uniqueness Test

009040422-01, P = 1.422835 Days, E = 131.447524 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
42.3	-14.0	0	0	4.27	0.86	5.02	42.3	42.3	-14.0	-14.0	1.67	1.09	0.33	3.75





### Stellar Parameters For KIC 009040422

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7318^{+228}_{-304}$	$4.058^{+0.175}_{-0.175}$	$-0.100^{+0.200}_{-0.350}$	$1.942^{+0.567}_{-0.464}$	$1.569^{+0.211}_{-0.281}$	$0.302^{+0.326}_{-0.134}$
	+3%/-4%	+4%/-4%	+200%/-350%	+29%/-24%	+13%/-18%	+108%/-44%
Source	KIC0	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 009040422-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$1 \pm 1$	$0.90^{+0.73}_{-0.53}$	$3701^{+289}_{-255}$	$-3842^{+825}_{-1264}$	$-0.202^{+0.375}_{-1.759}$
Alt.	$13 \pm 1$	$1.40^{+0.86}_{-0.65}$	$3698^{+308}_{-268}$	$-5443^{+755}_{-1978}$	$-2.871^{+1.681}_{-7.266}$

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

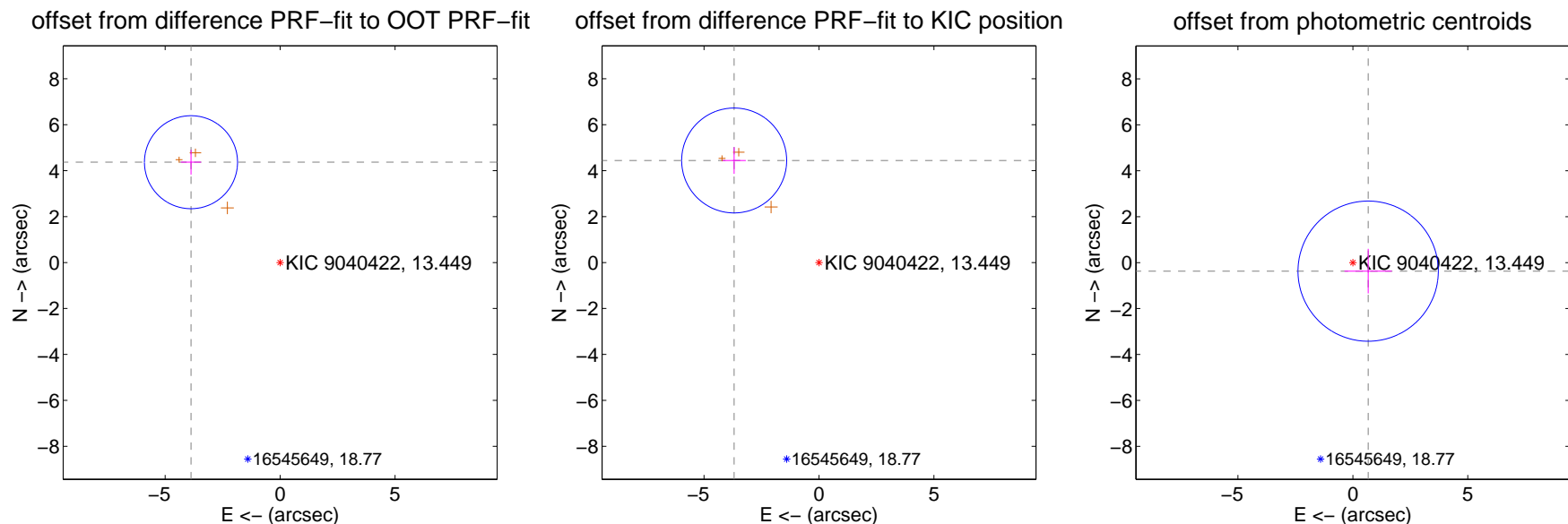
## DV Centroid Data

Supplemental centroid analysis for 009040422-01. Kepler magnitude: 13.45. Transit SNR 10.21

There are 0 quarters with good PRF difference image offsets

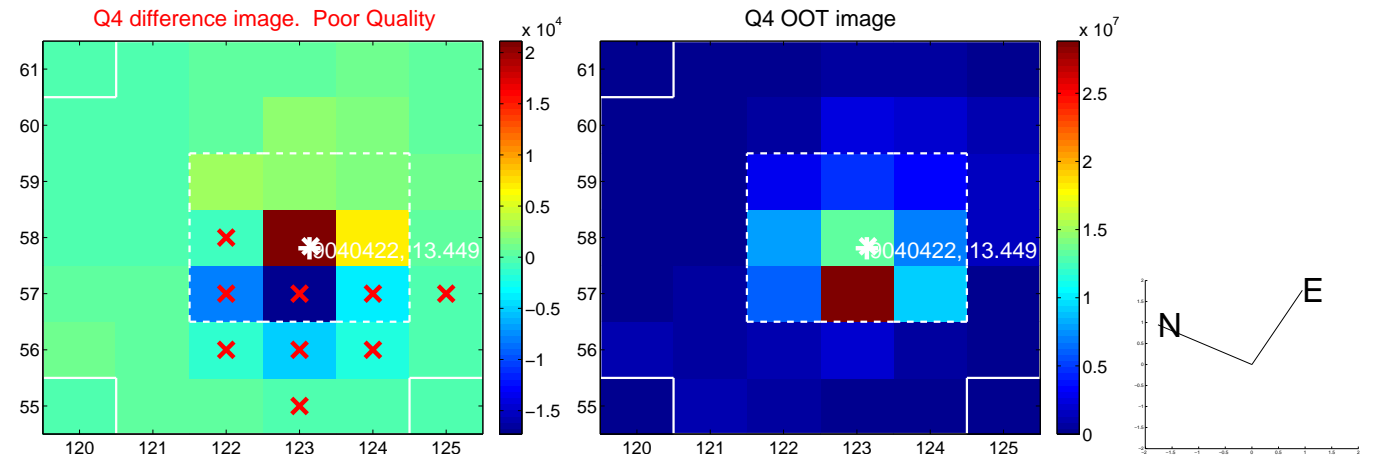
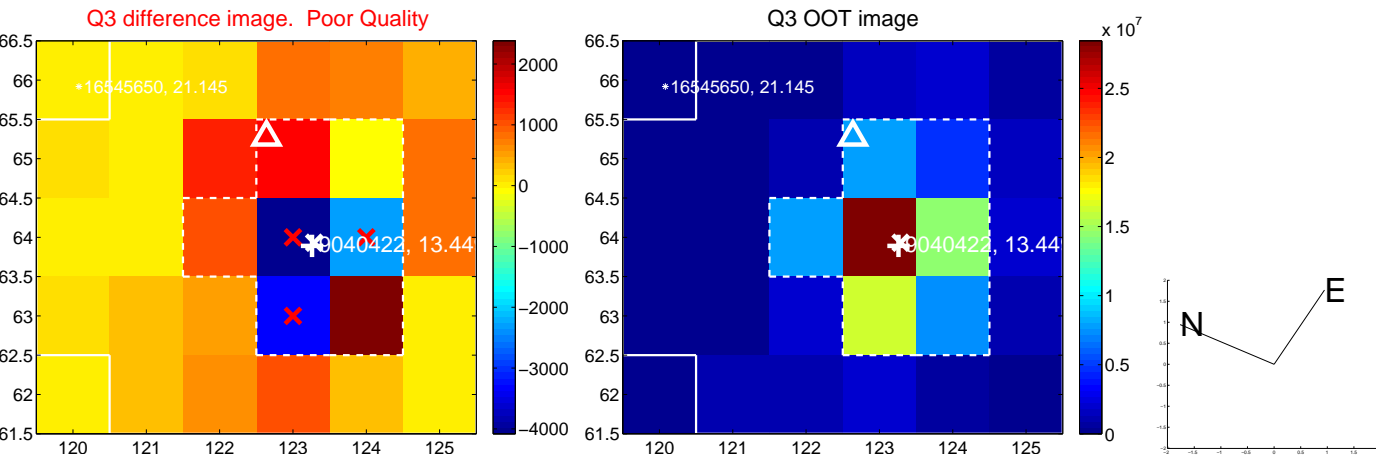
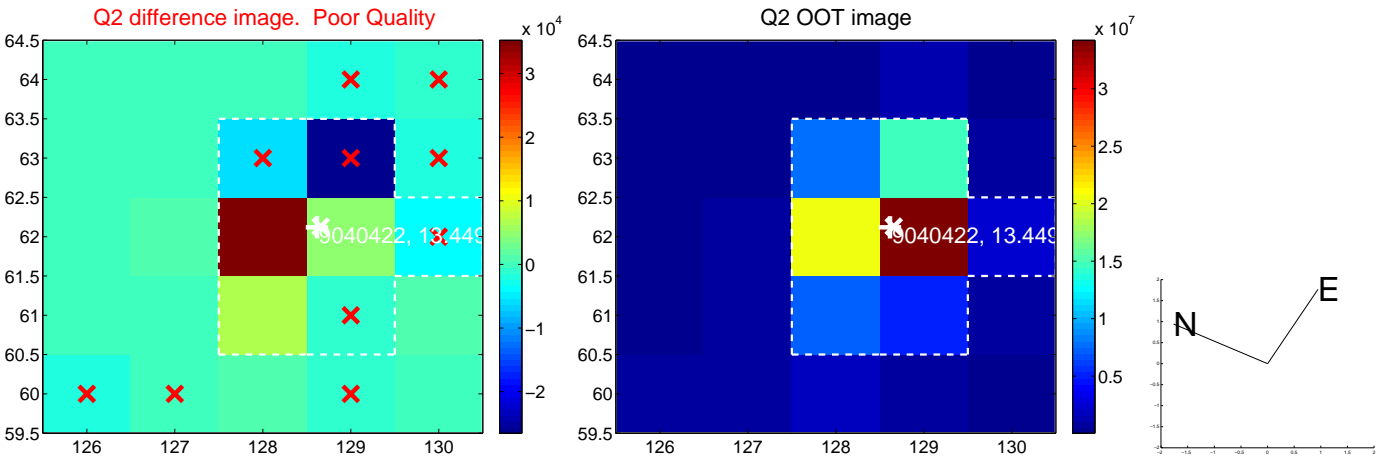
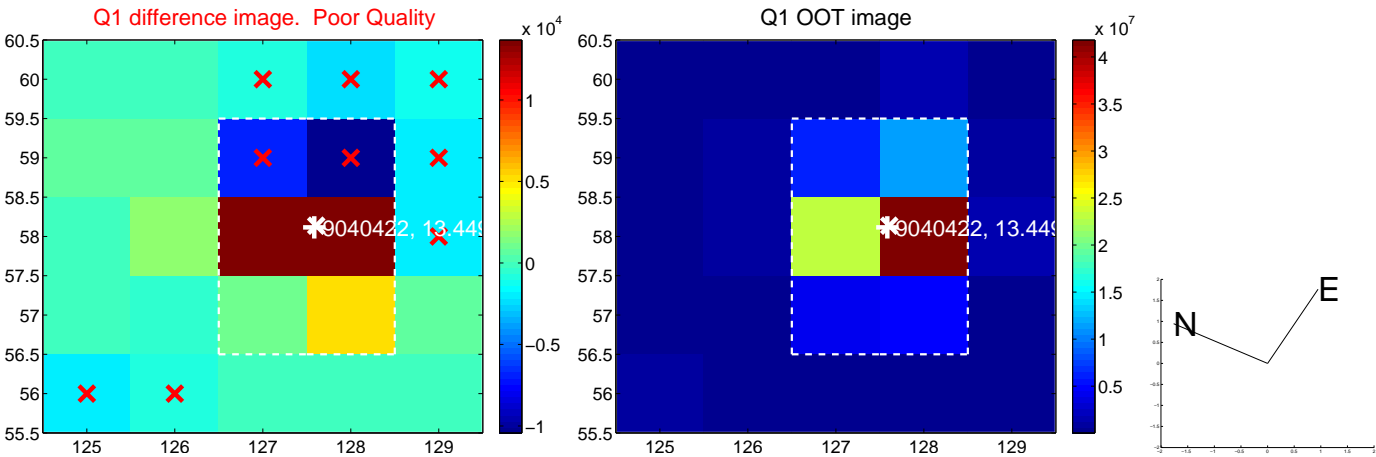
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.838 \pm 0.675$	8.65	$3.875 \pm 0.441$	$4.367 \pm 0.538$
PRF-fit source offset from KIC position	$5.774 \pm 0.761$	7.59	$3.689 \pm 0.507$	$4.442 \pm 0.581$
photometric centroid source offset	$0.76 \pm 1.02$	0.75	$-0.67 \pm 1.03$	$-0.37 \pm 0.97$

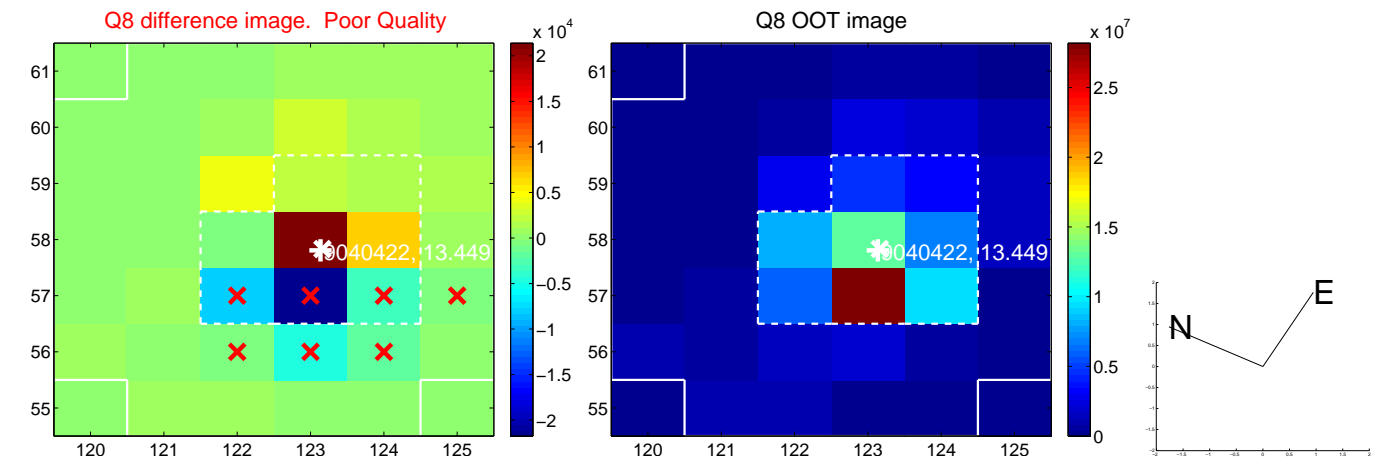
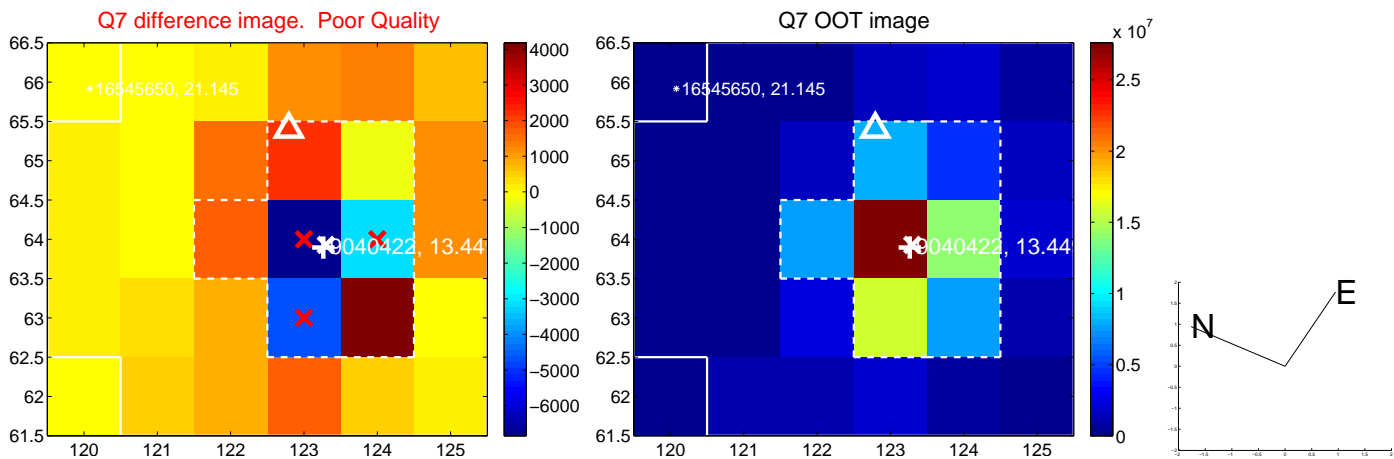
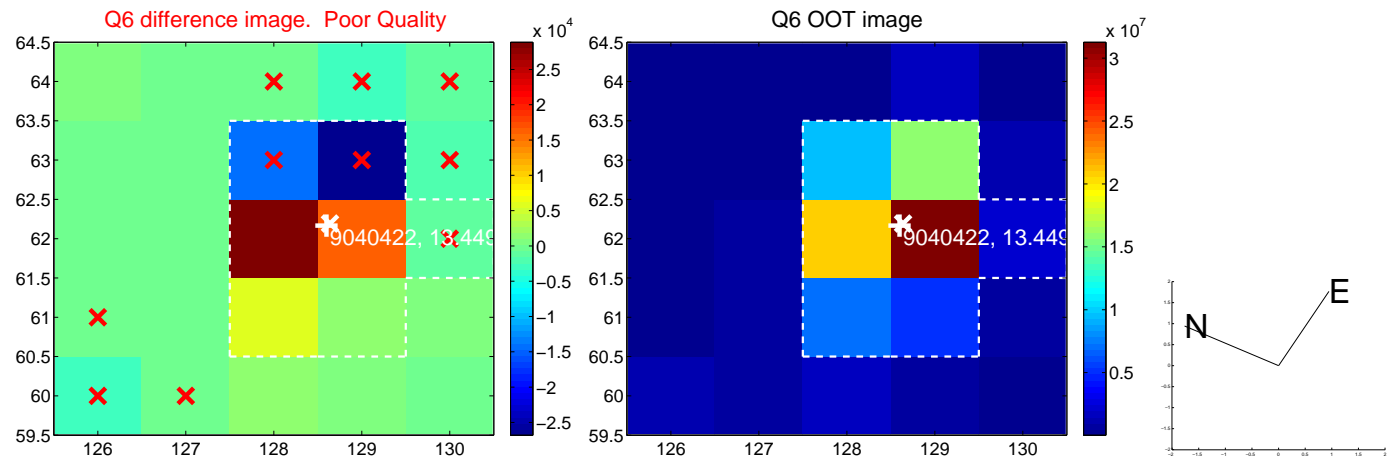
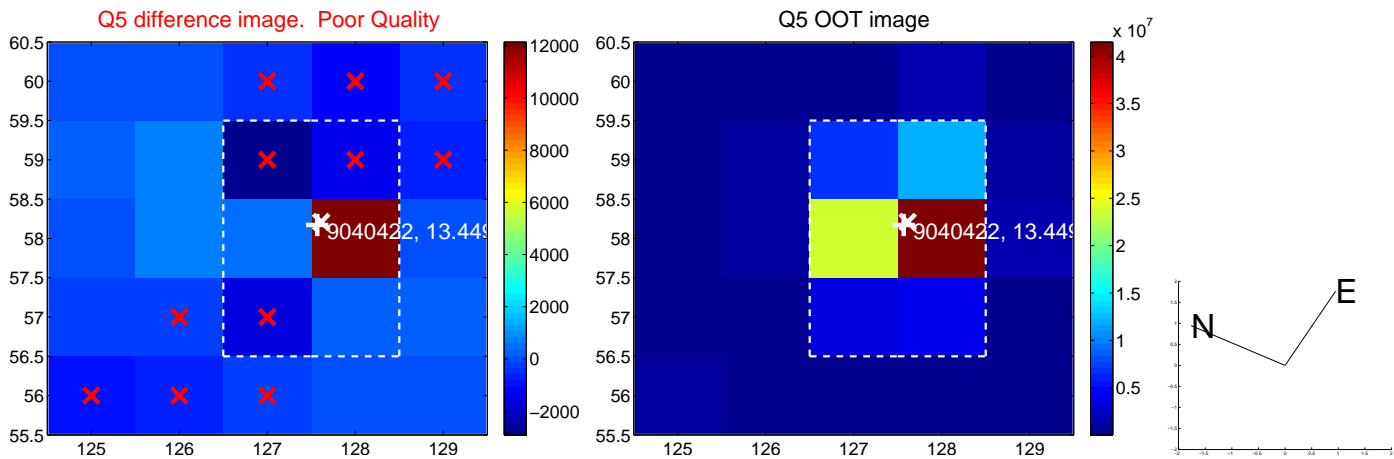


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

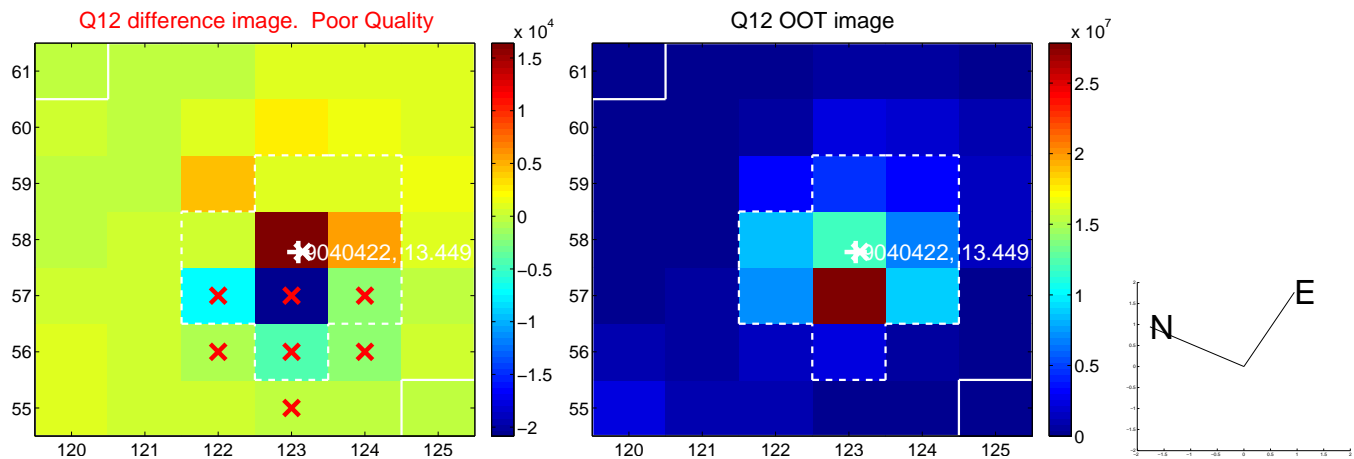
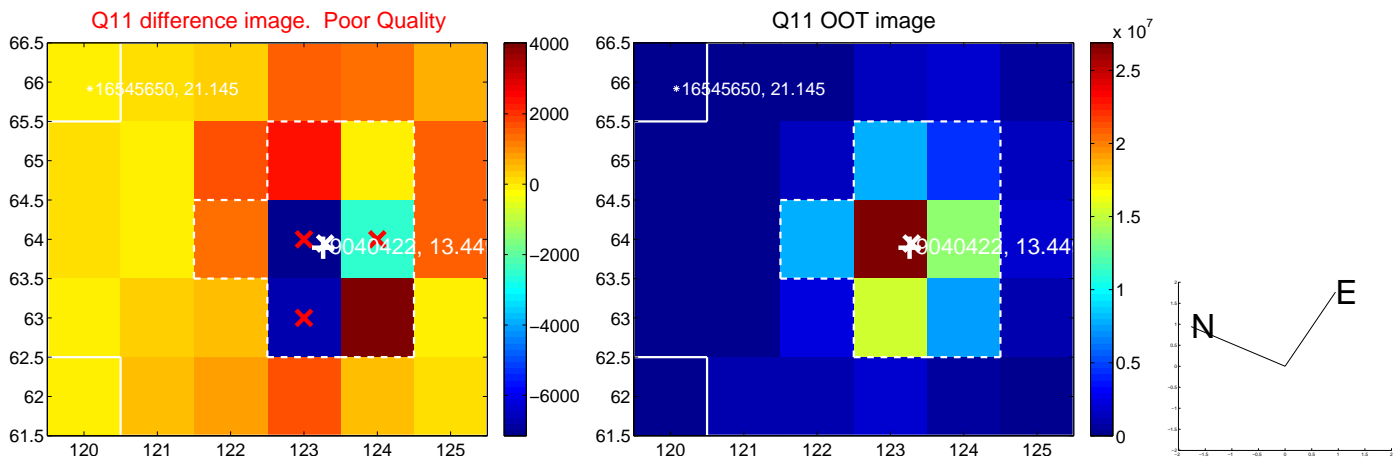
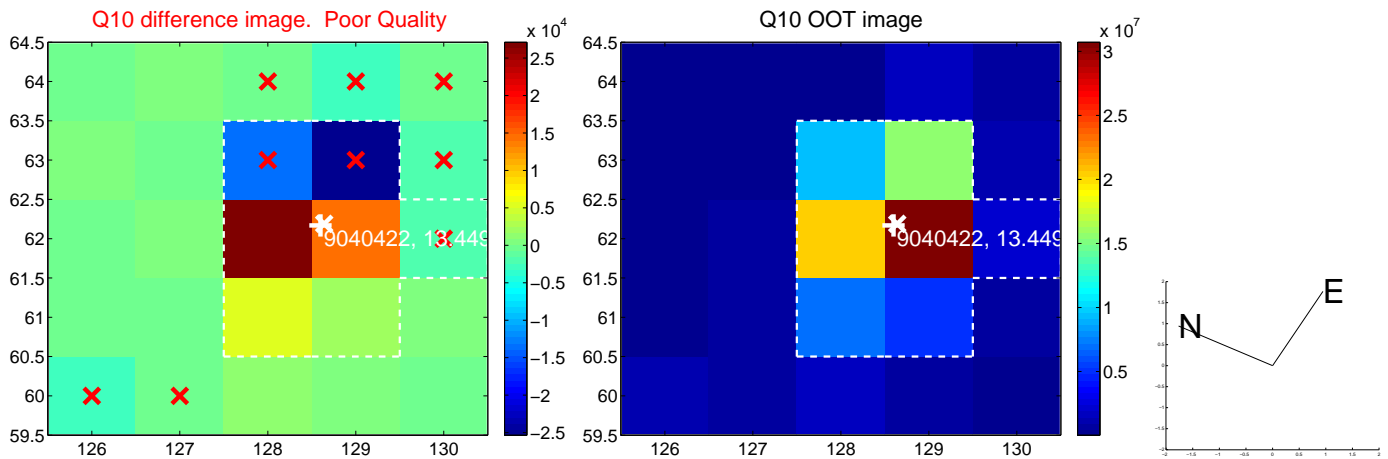
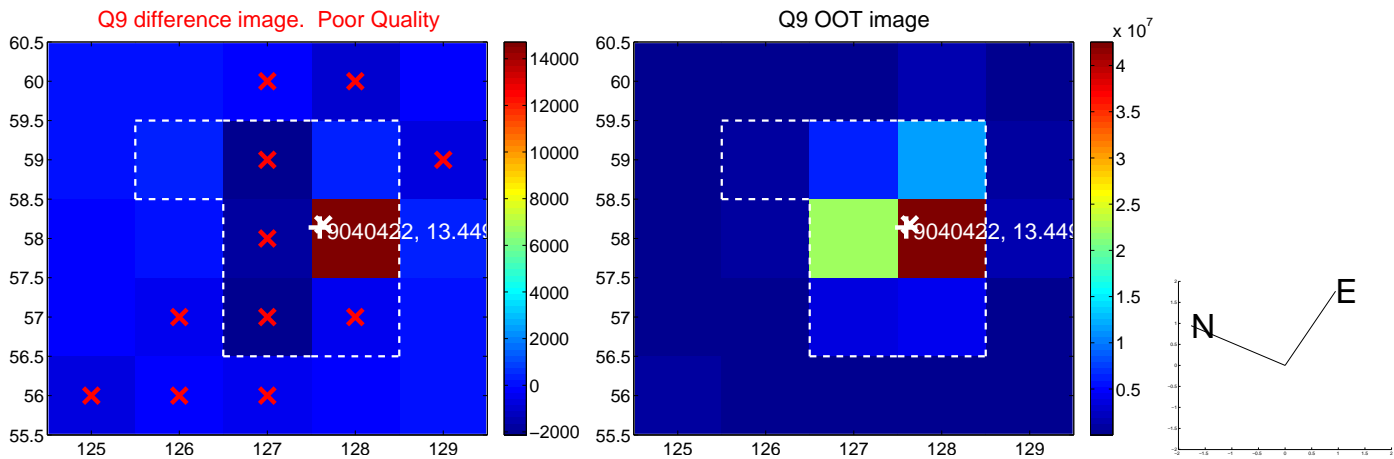


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

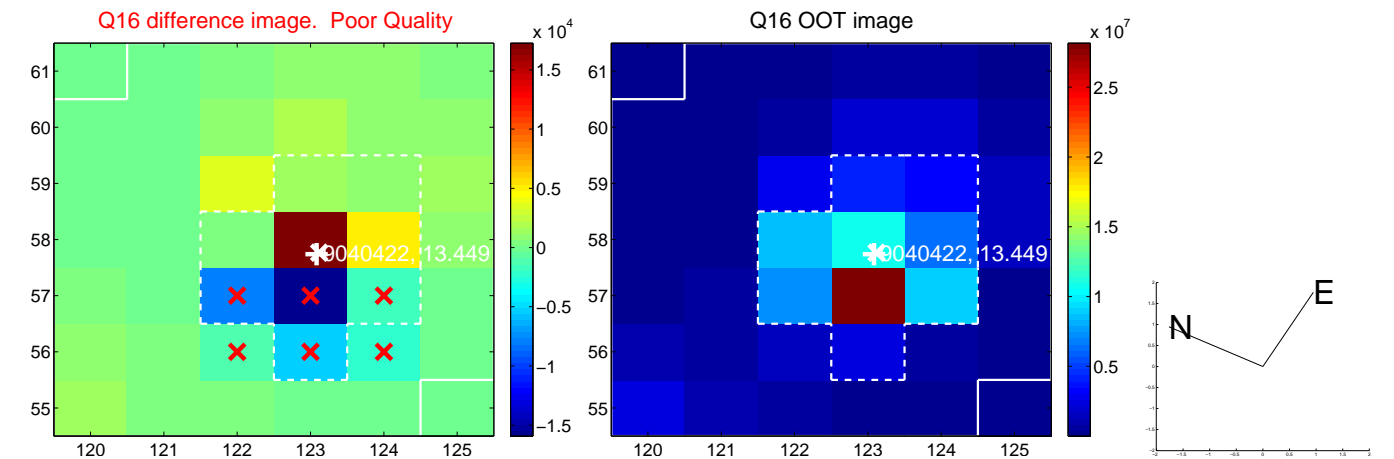
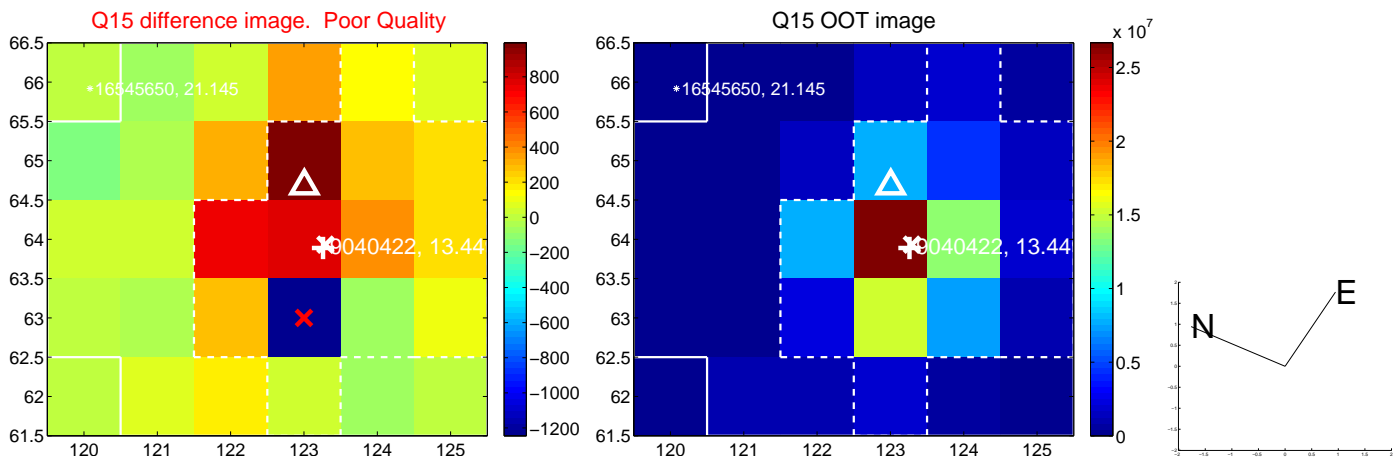
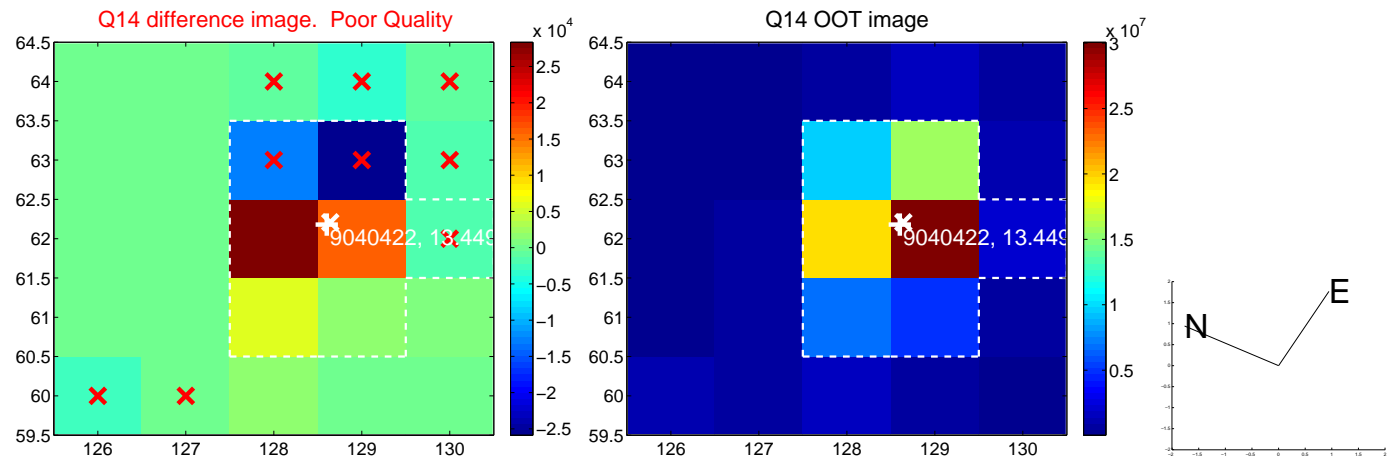
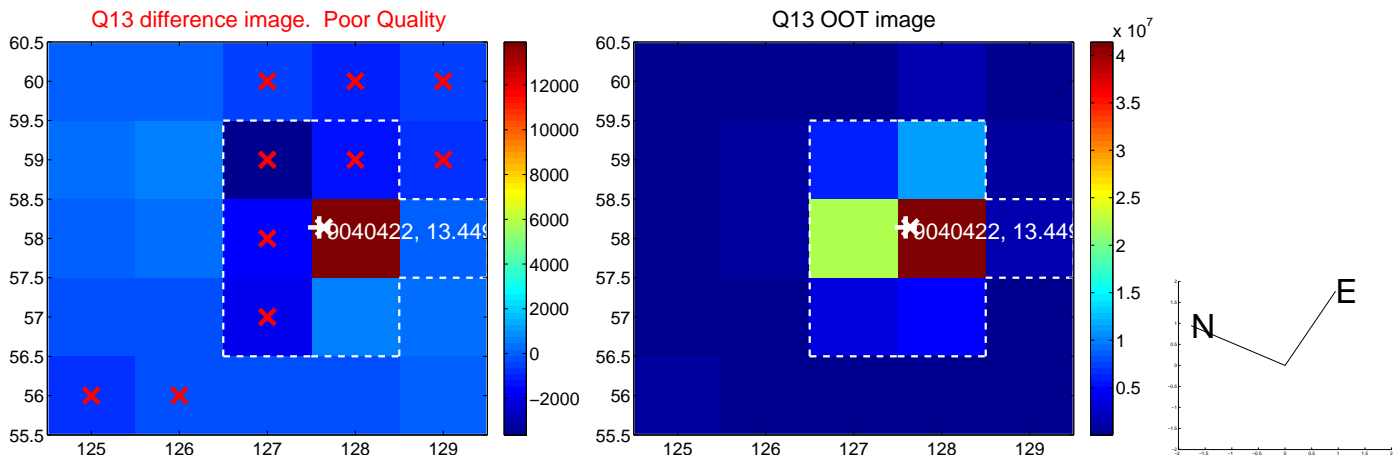




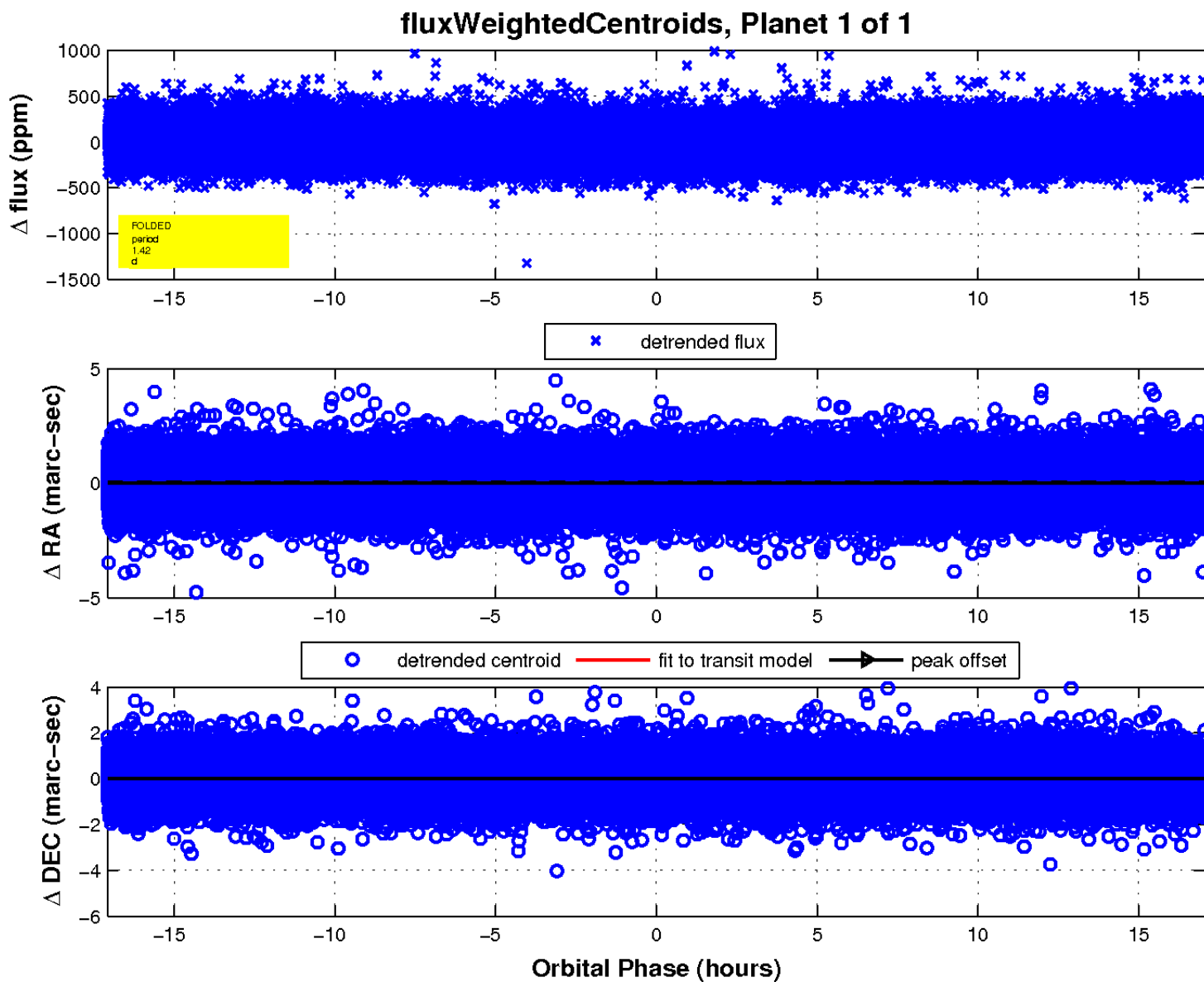
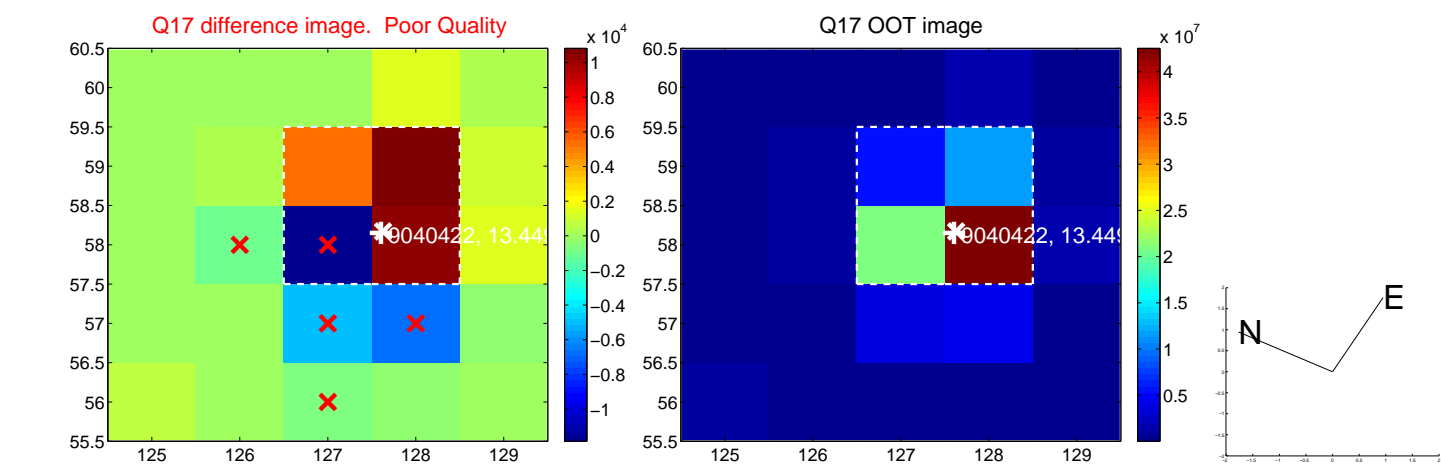
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

