

# KIC 002970670

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002970670-01	OBS	6299.01	0.947548	131.882844	52.9	1.084	11.2	11.1	0.84	5508	0.74	1683.66

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002970670-01	OBS	PC	0.89	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.

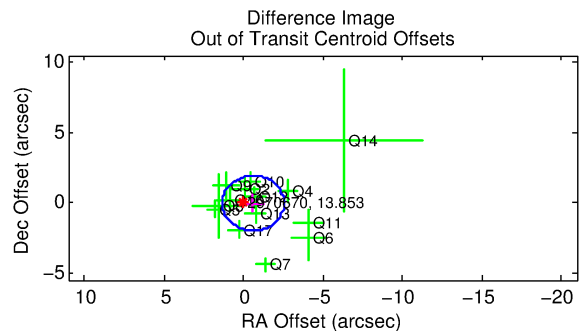
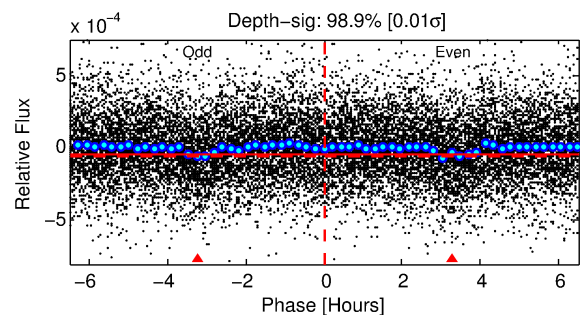
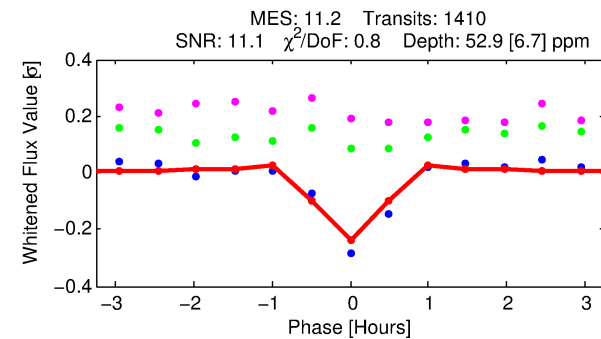
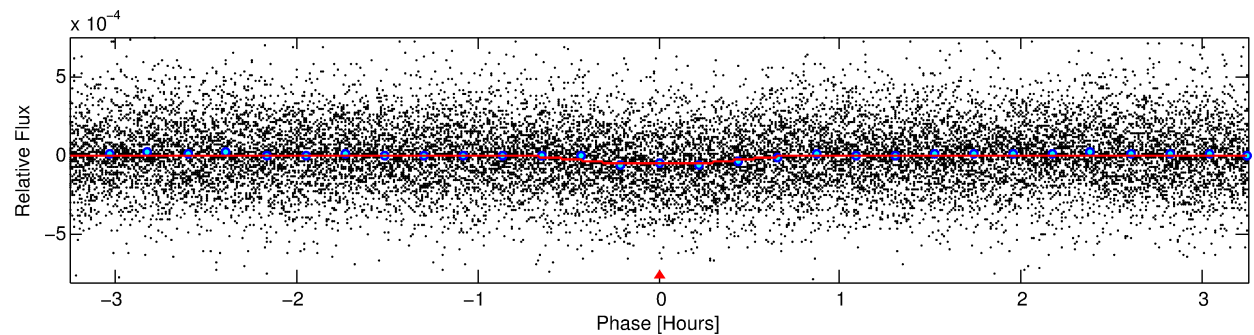
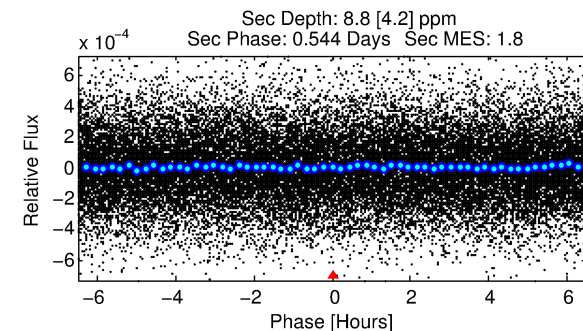
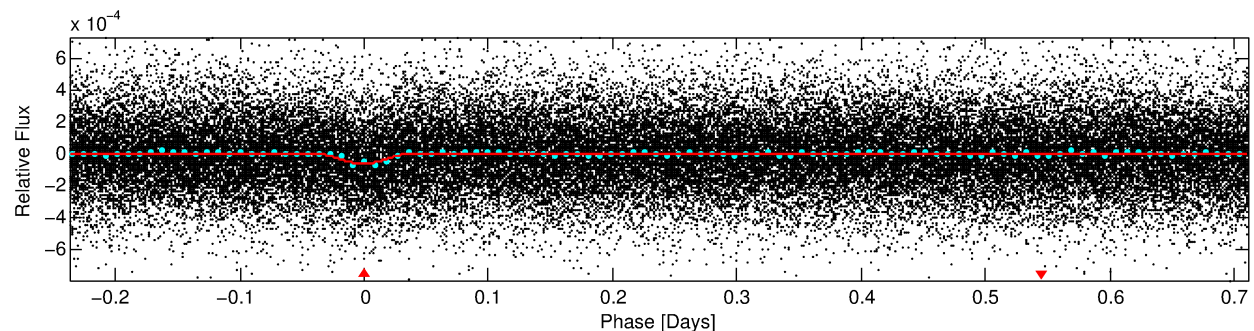
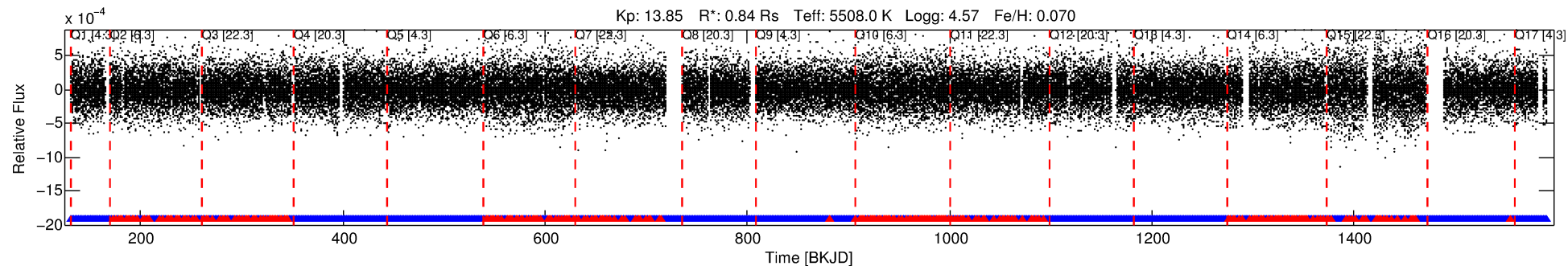
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002970670-01

No Significant Match Found

# DV One-Page Summary

KIC: 2970670 Candidate: 1 of 1 Period: 0.948 d  
KOI: K06299.01 Corr: 0.925



## DV Fit Results:

Period = 0.94755 [0.00001] d  
Epoch = 131.8828 [0.0015] BKJD  
Rp/R\* = 0.0080 [0.0029]  
a/R\* = 3.20 [4.48]  
b = 0.90 [0.34]  
Seff = 1683.66 [319.23]  
Teq = 1633 [77] K  
Rp = 0.74 [0.28] Re  
a = 0.0186 [0.0021] AU  
Ag = 3.09 [2.70] [0.77σ]  
Teffp = 3349 [718] K [2.38σ]

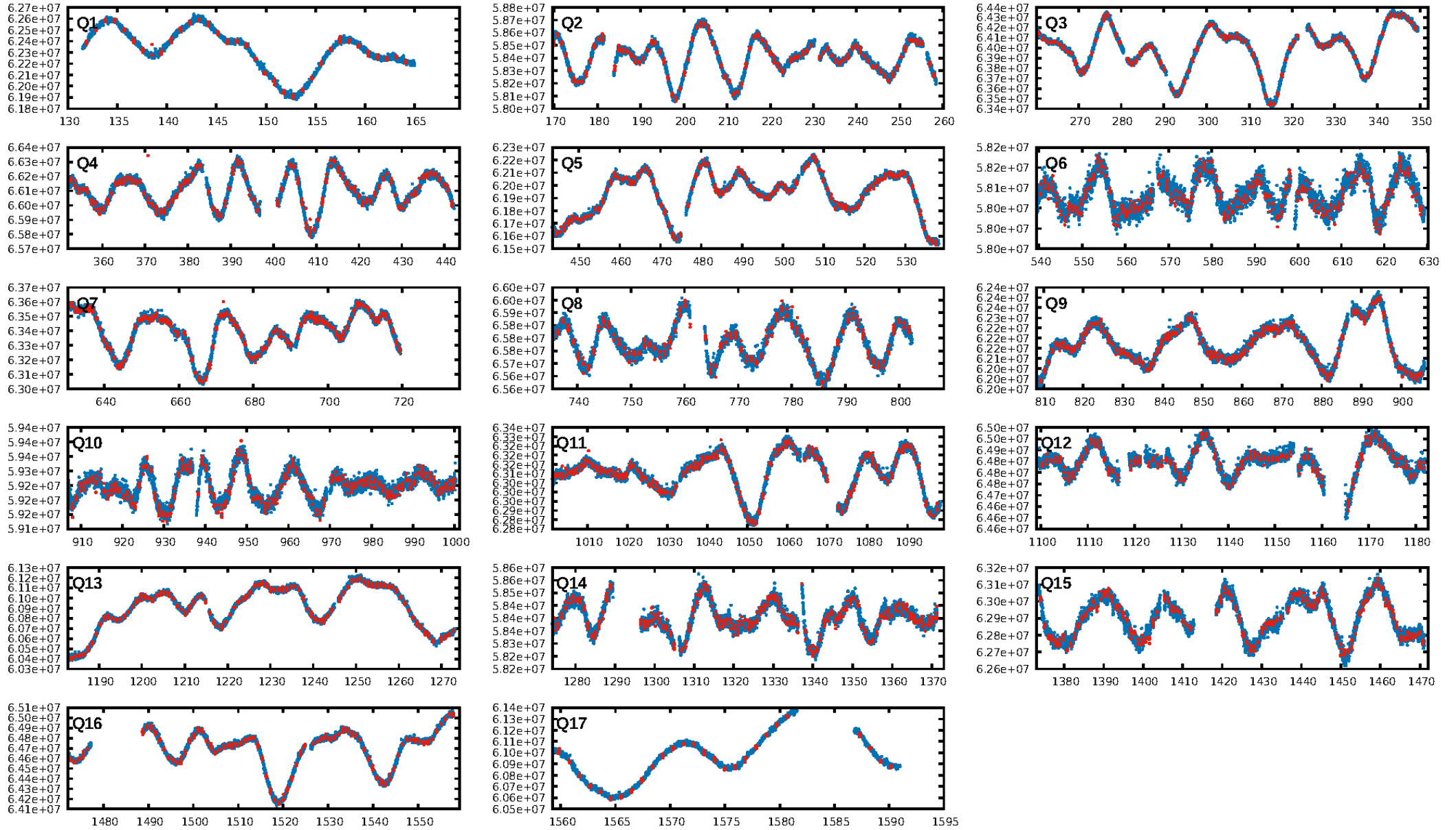
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.24e-27  
RollingBand-fgt: 0.78 [1045/1348]  
GhostDiagnostic-chr: -2.555  
Centroid-sig: 8.9%  
Centroid-so: 0.852 arcsec [0.88σ]  
OotOffset-rm: 0.622 arcsec [0.95σ]  
KicOffset-rm: 0.690 arcsec [1.09σ]  
OotOffset-st: 4/2/4/4 [14]  
KicOffset-st: 4/2/4/4 [14]  
DiffImageQuality-fgm: 0.64 [9/14]  
DiffImageOverlap-fno: 1.00 [17/17]

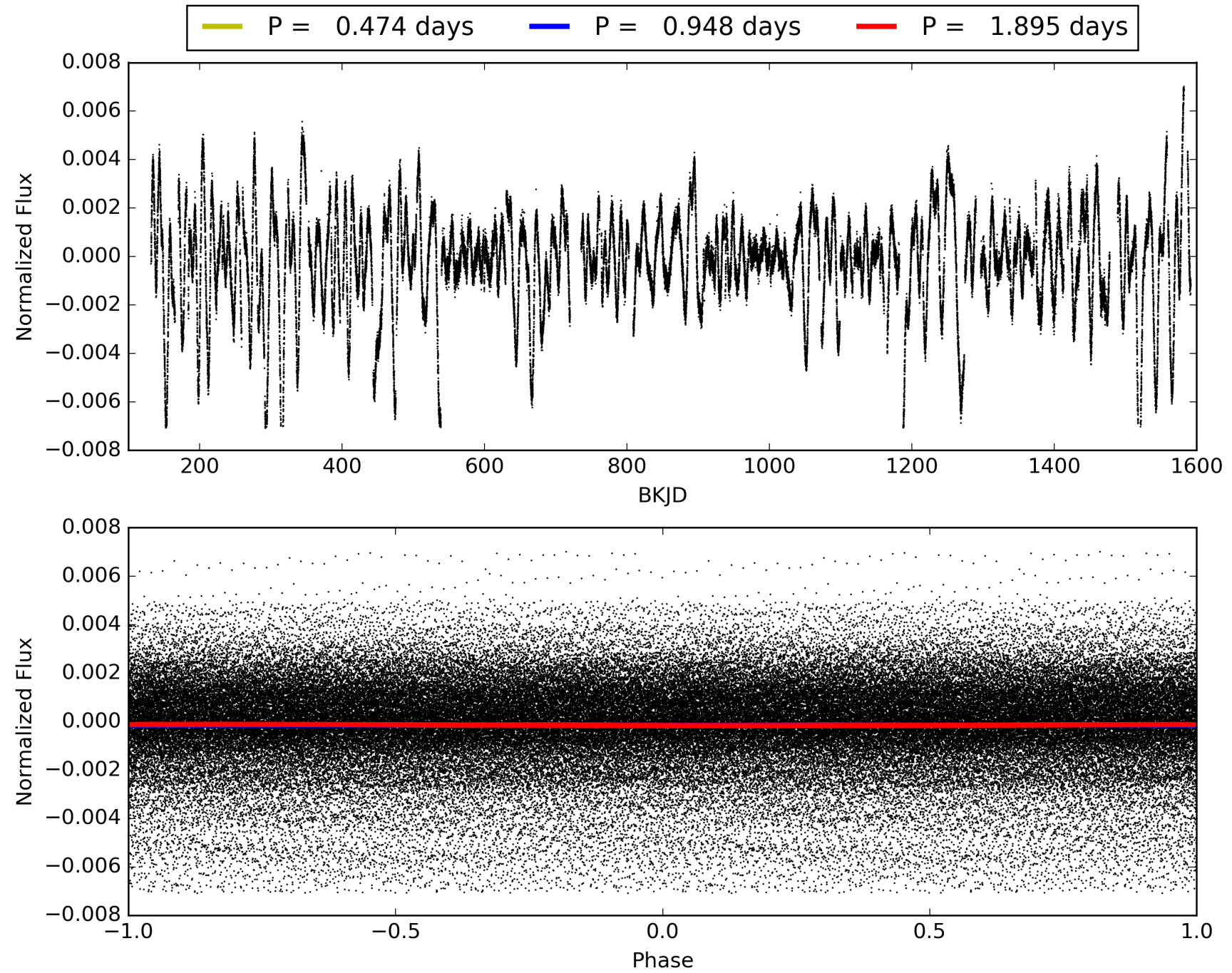
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:35:41 Z

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

# TCE 002970670-01, PDC Light Curves

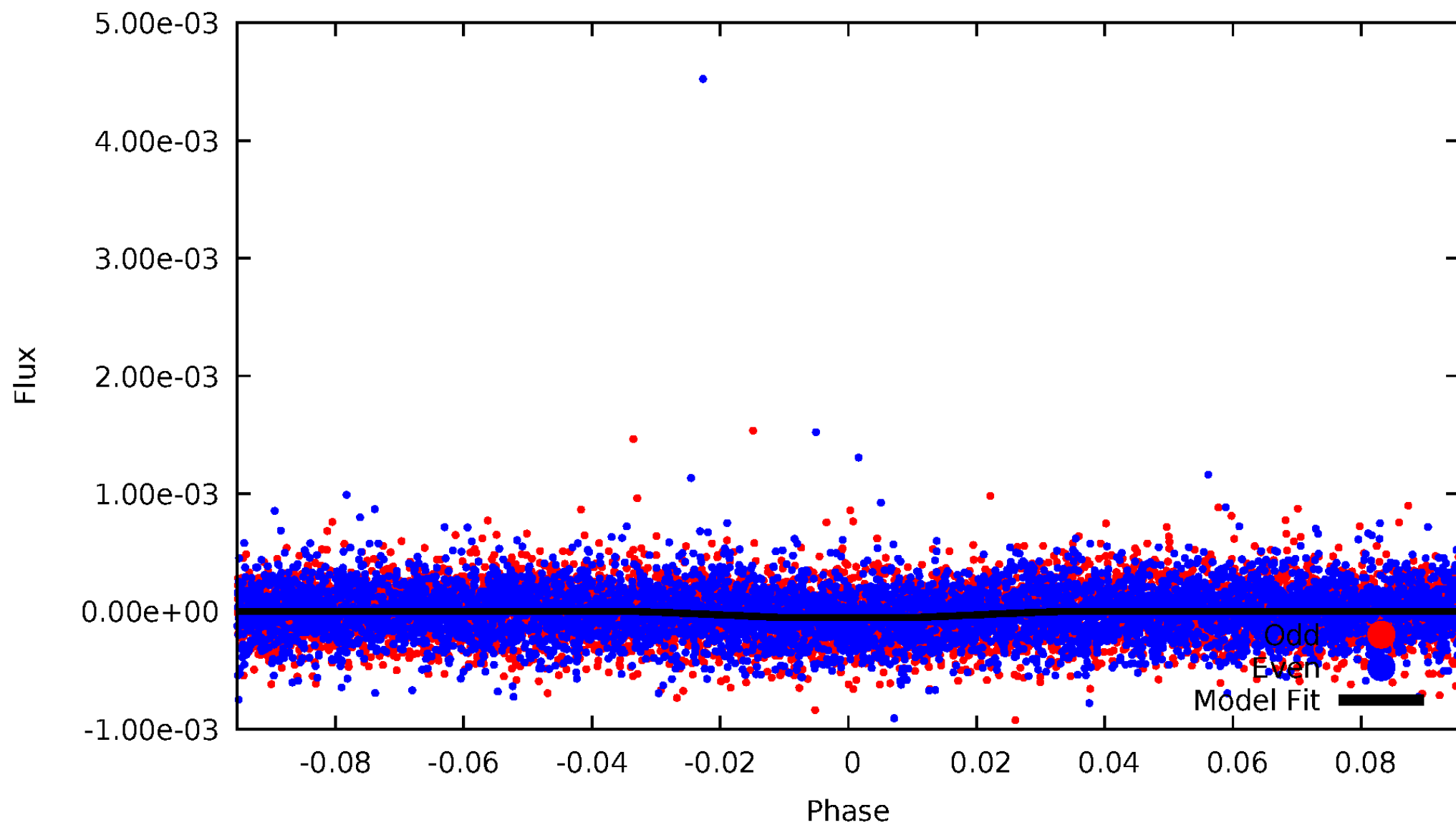


TCE 002970670-01



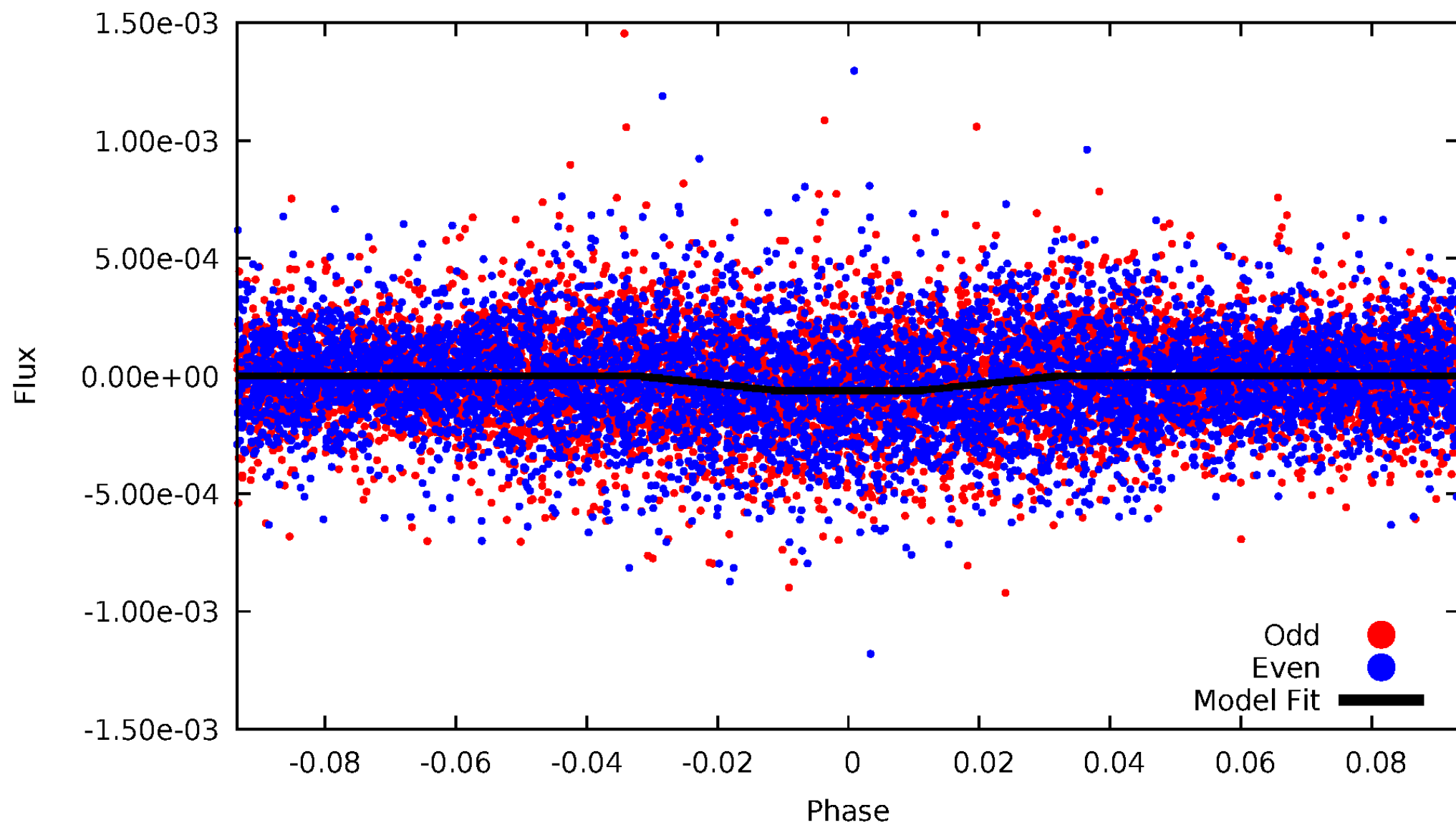
# DV Odd/Even

TCE 002970670-01

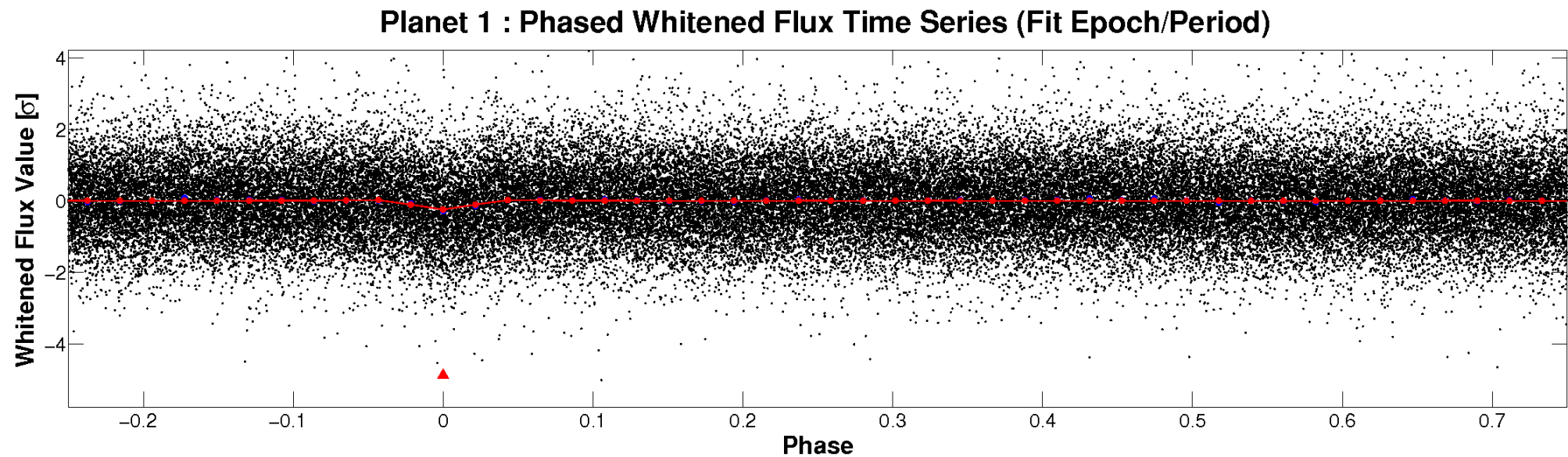
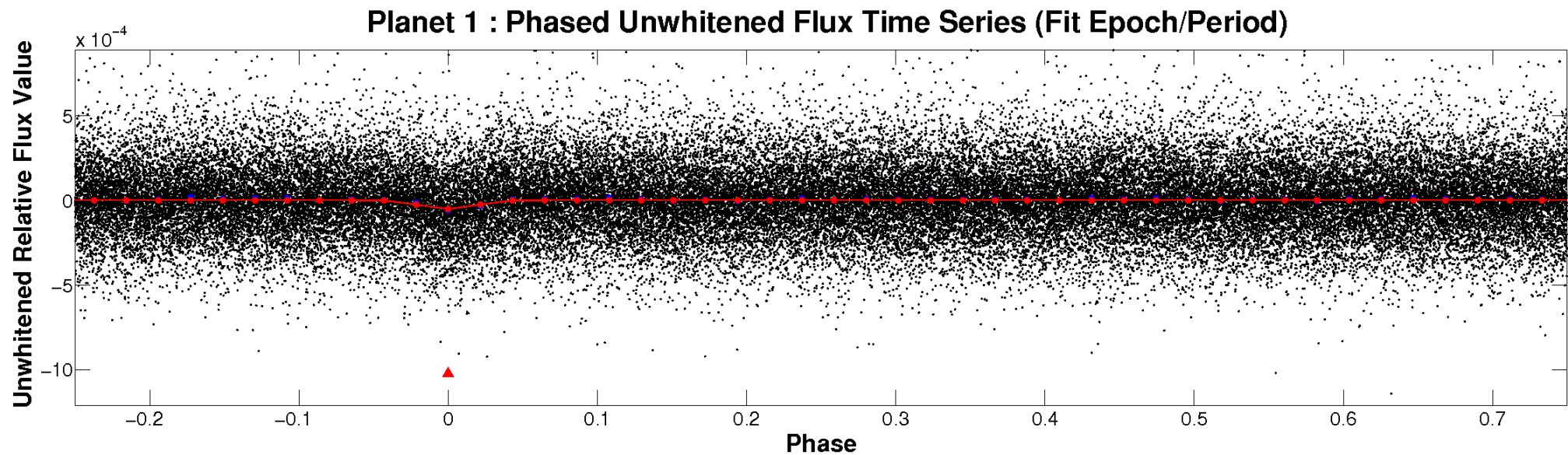


# ALT Odd/Even

TCE 002970670-01

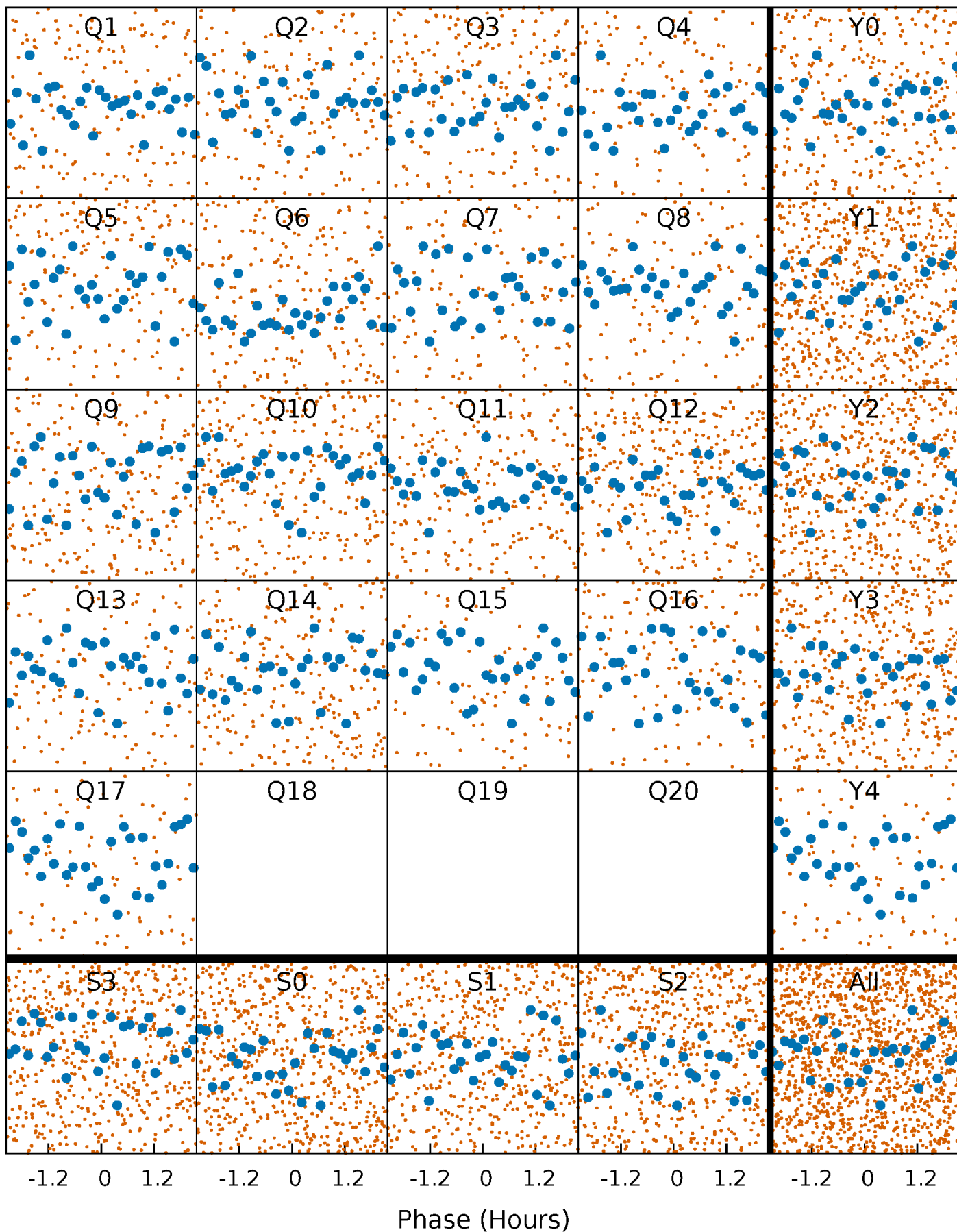


# Non-Whitened Vs. Whitened Light Curve



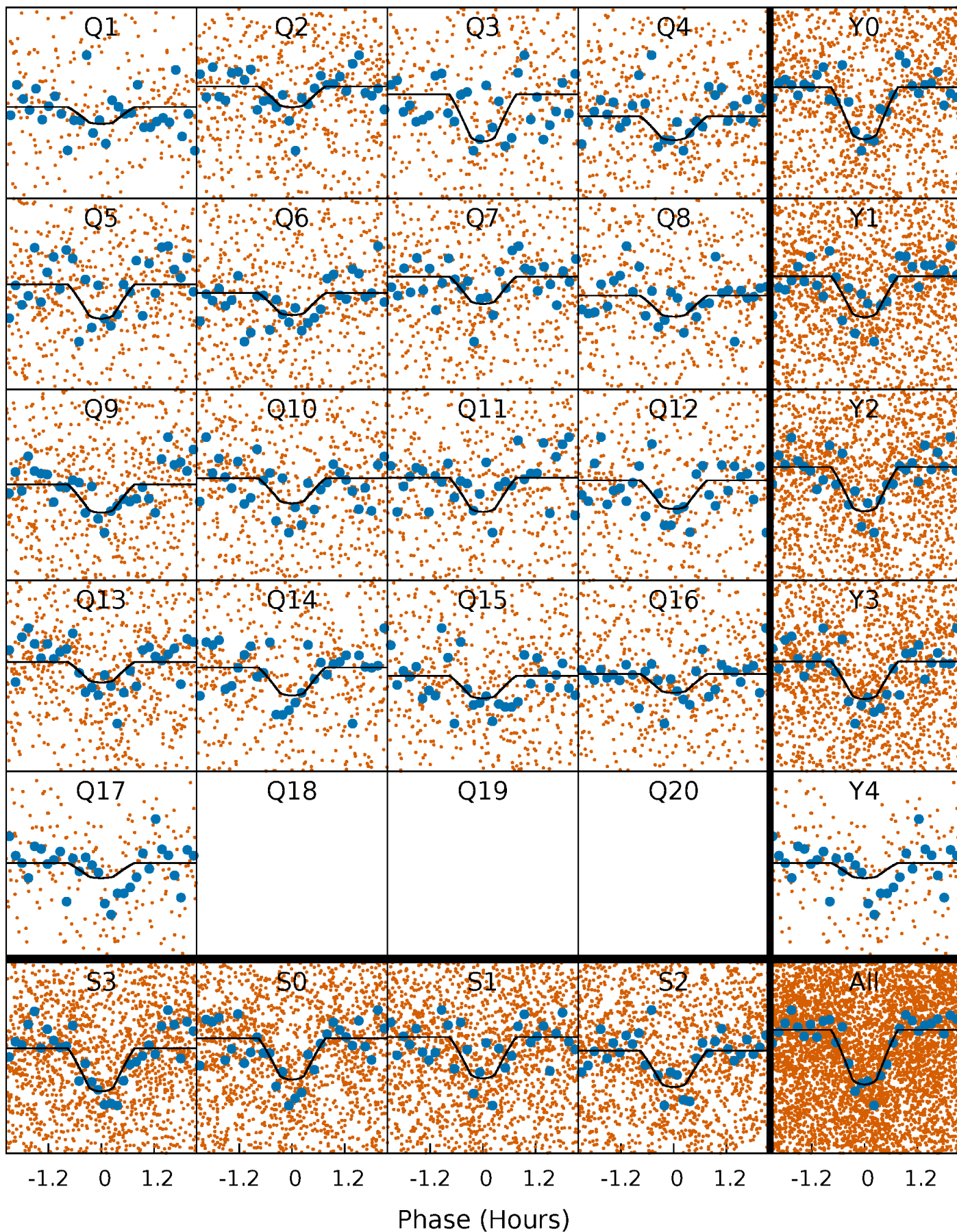
# PDC Quarter-Phased Transit Curves

TCE 002970670-01   P= 0.947548 Days    $T_0=131.882844$  (BKJD)



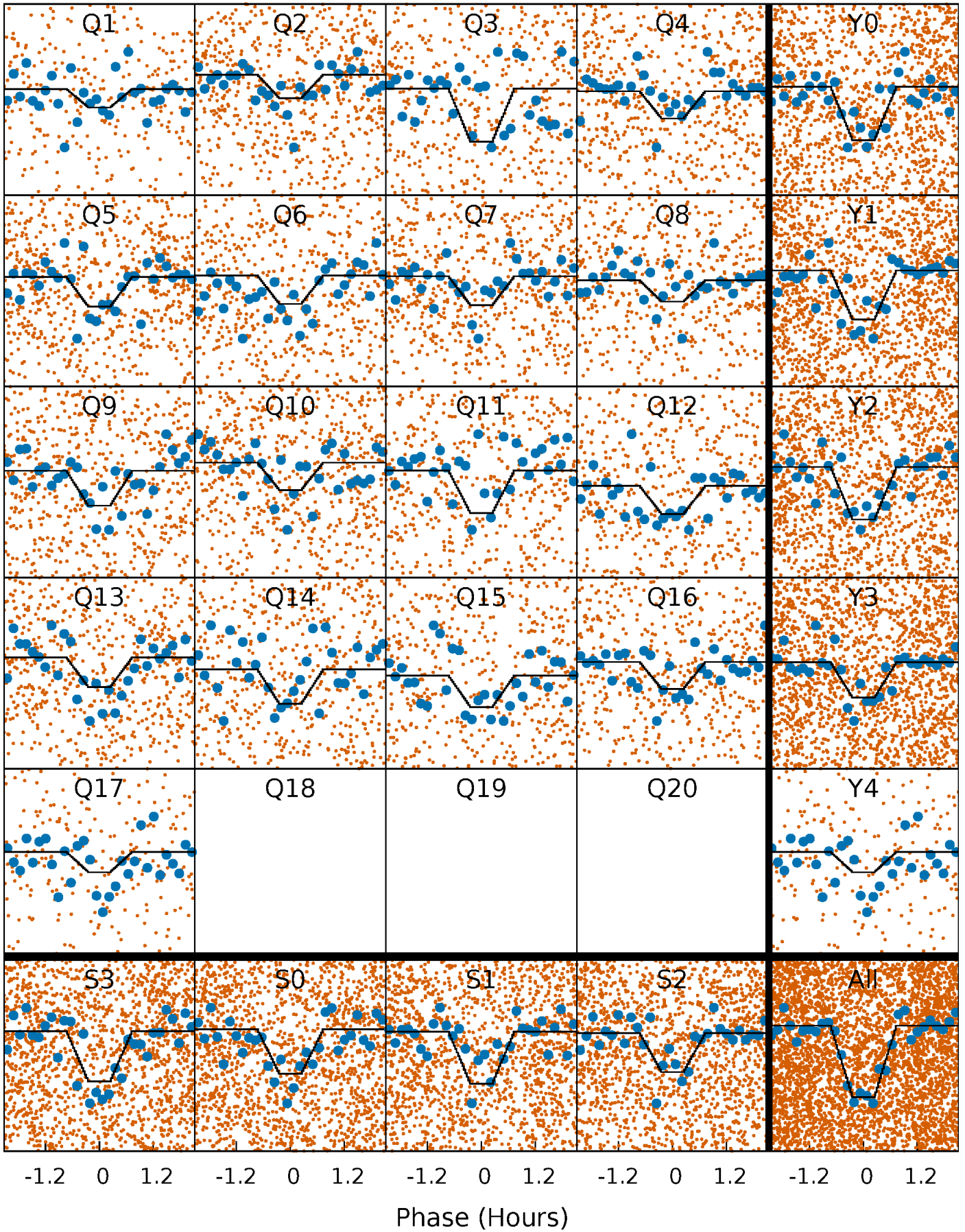
# DV Quarter-Phased Transit Curves

TCE 002970670-01 P= 0.947548 Days  $T_0=131.882844$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

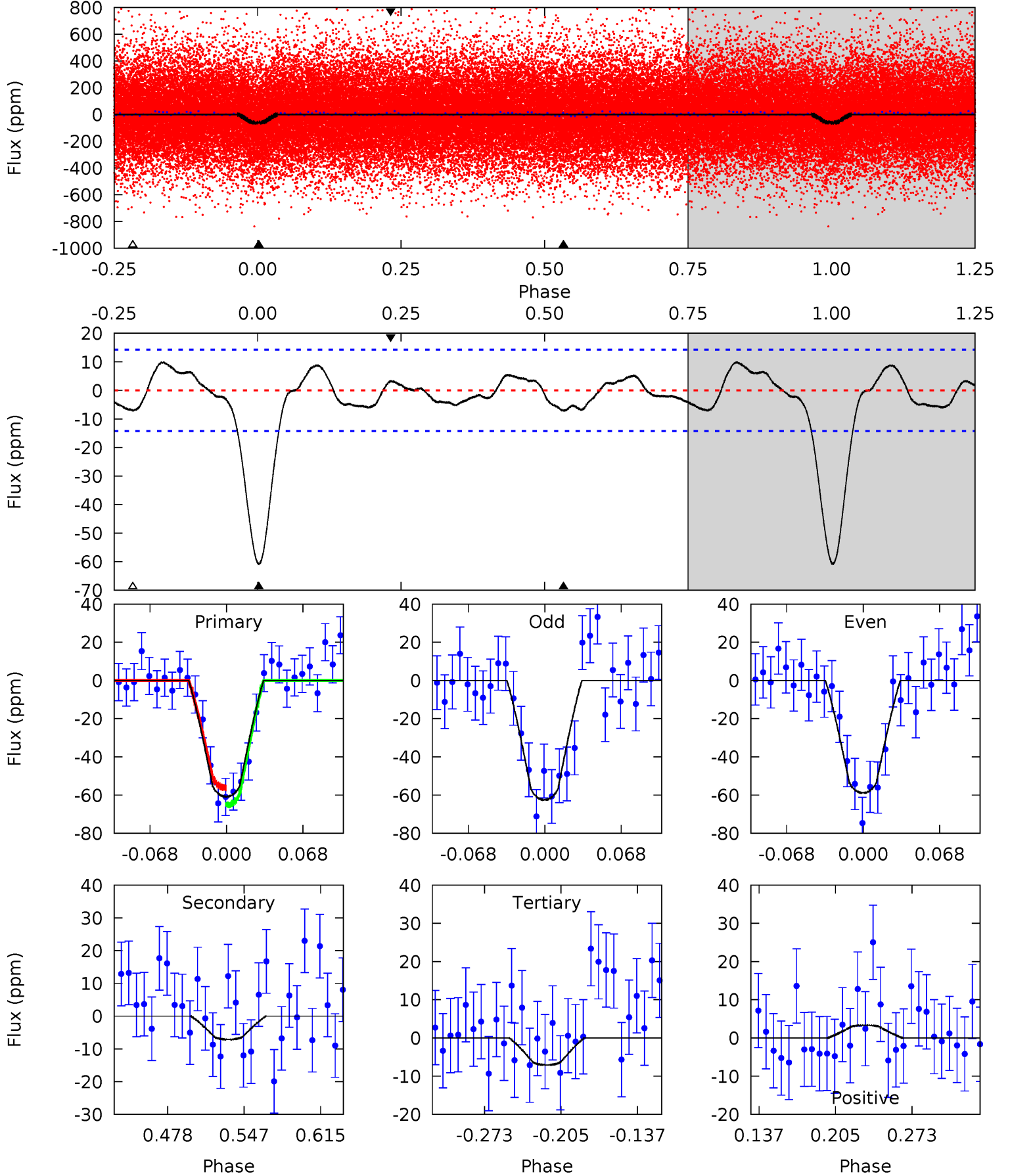
TCE 002970670-01 P= 0.947550 Days  $T_0=131.882722$  (BKJD)



# DV Model-Shift Uniqueness Test

002970670-01,  $P = 0.947548$  Days,  $E = 130.935296$  Days

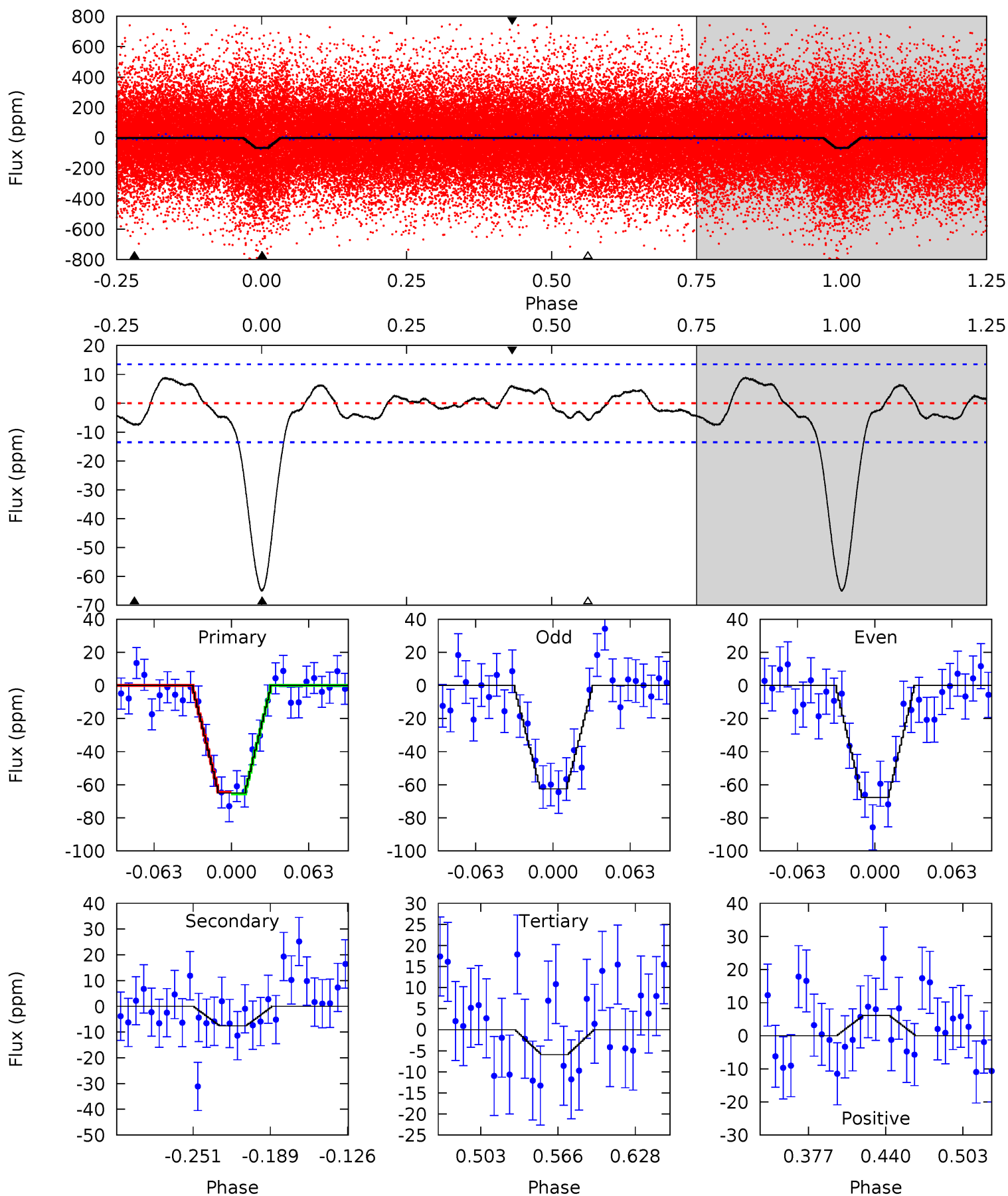
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	2.32	2.30	1.08	4.64	1.82	1.44	17.5	18.7	0.02	1.24	0.59	0.90	0.14	1.47



# Alt Model-Shift Uniqueness Test

002970670-01, P = 0.947550 Days, E = 130.935172 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
22.5	2.63	2.04	2.11	4.66	1.86	1.23	20.4	20.4	0.58	0.51	0.89	1.00	0.12	0.16



### Stellar Parameters For KIC 002970670

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5508^{+74}_{-82}$	$4.569^{+0.011}_{-0.105}$	$0.070^{+0.150}_{-0.150}$	$0.840^{+0.101}_{-0.027}$	$0.955^{+0.037}_{-0.061}$	$2.266^{+0.145}_{-0.638}$
	+1%/-1%	+0%/-2%	+214%/-214%	+12%/-3%	+4%/-6%	+6%/-28%
Source	SPE90	SPE90	SPE90	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 002970670-01 / KOI 6299.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-7 \pm 3$	$0.78^{+0.28}_{-0.26}$	$2314^{+72}_{-49}$	$3501^{+610}_{-499}$	$2.198^{+3.178}_{-1.228}$
Alt.	$-8 \pm 3$	$0.72^{+0.29}_{-0.26}$	$2315^{+74}_{-49}$	$3575^{+702}_{-531}$	$2.553^{+4.102}_{-1.489}$

$T_{max}$  = 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

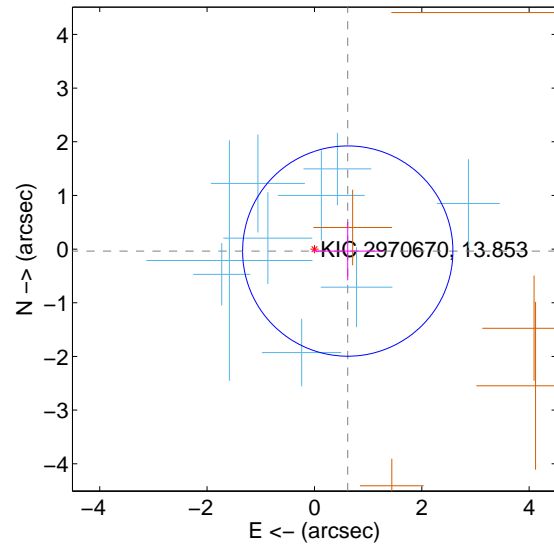
Supplemental centroid analysis for 002970670-01. Kepler magnitude: 13.85. Transit SNR 11.07

There are 9 quarters with good PRF difference image offsets

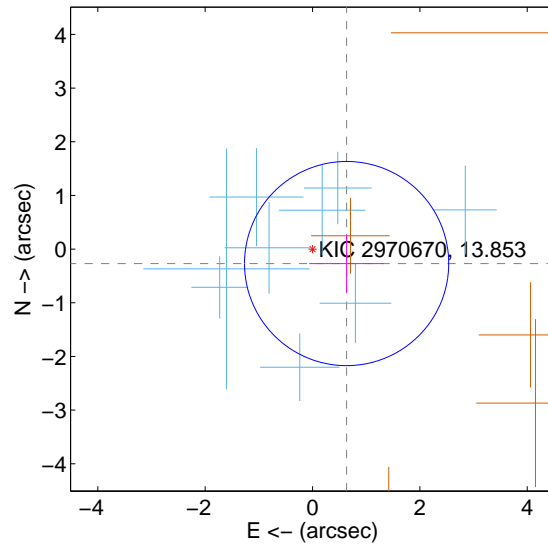
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.622 \pm 0.653$	0.95	$-0.621 \pm 0.656$	$-0.037 \pm 0.545$
PRF-fit source offset from KIC position	$0.690 \pm 0.634$	1.09	$-0.635 \pm 0.696$	$-0.269 \pm 0.545$
photometric centroid source offset	$0.85 \pm 0.97$	0.88	$0.79 \pm 0.94$	$0.32 \pm 1.12$

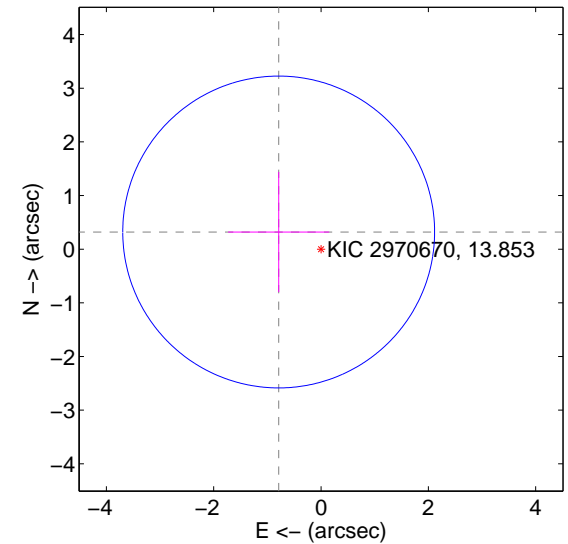
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

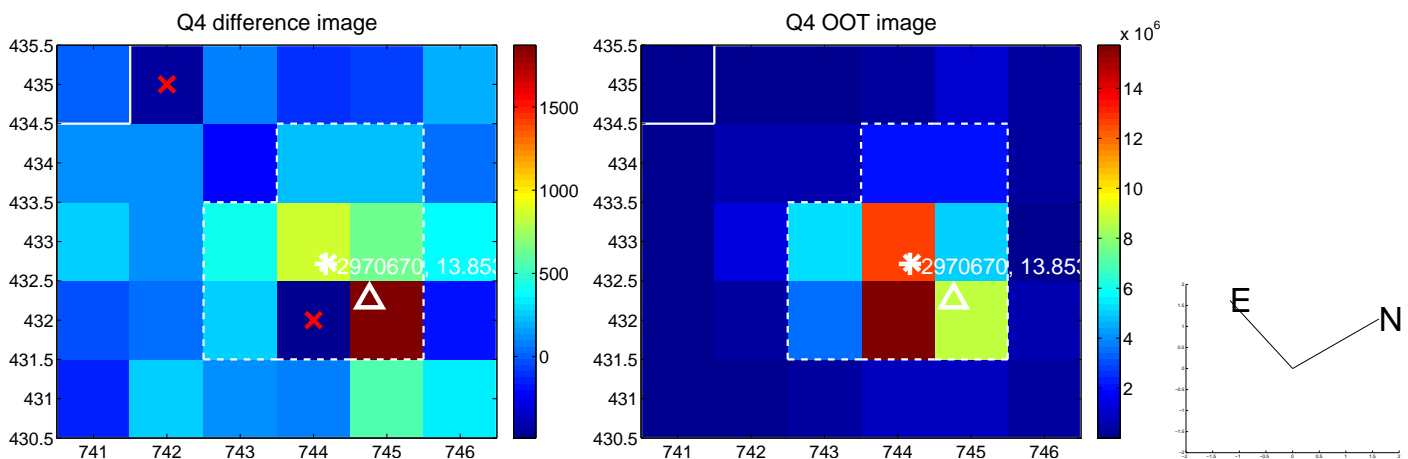
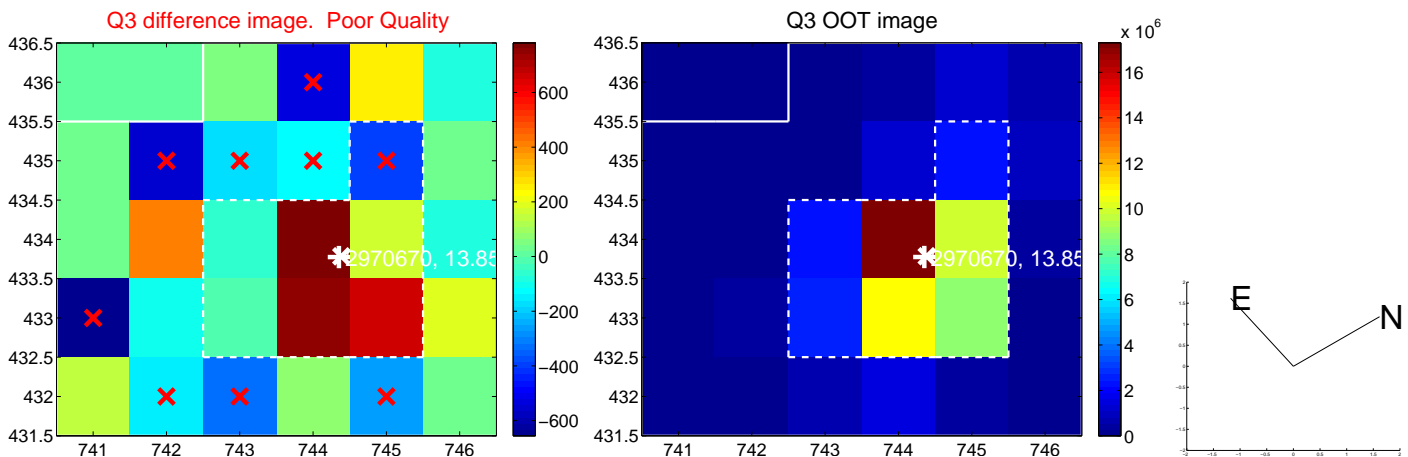
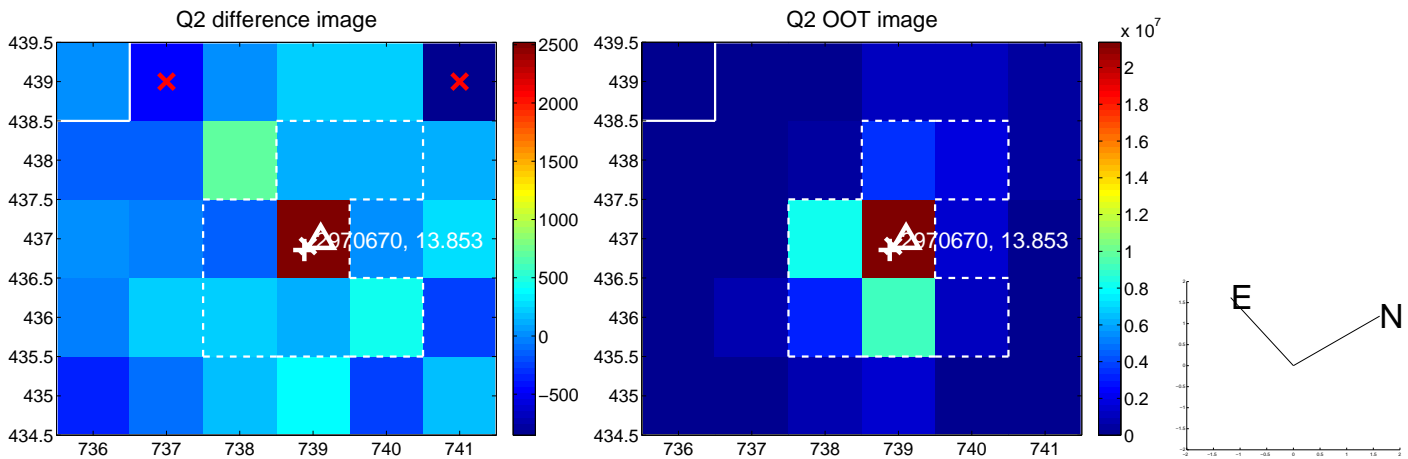
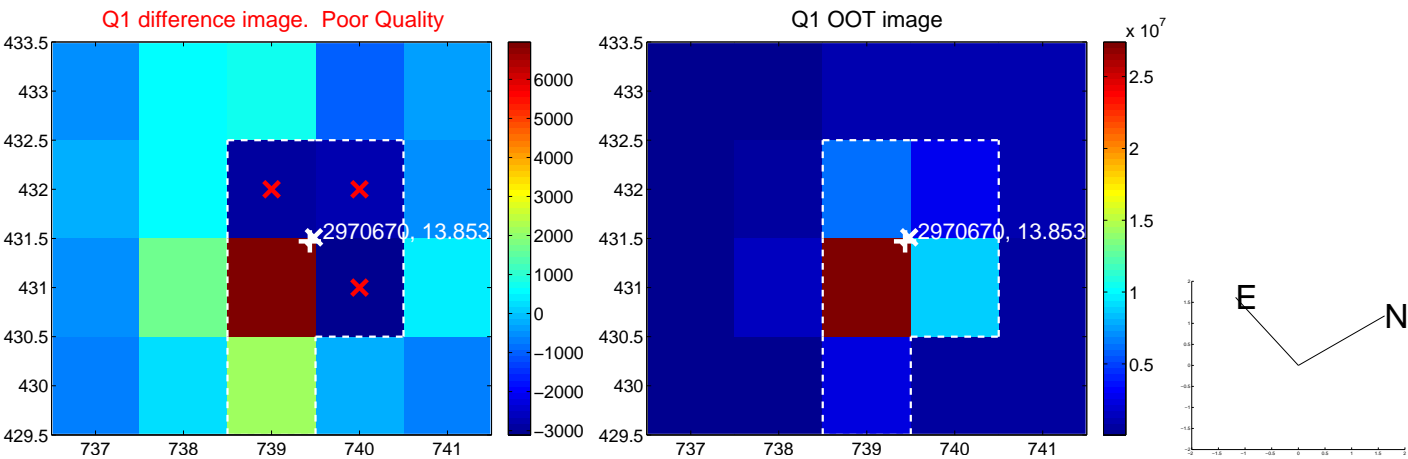


offset from photometric centroids

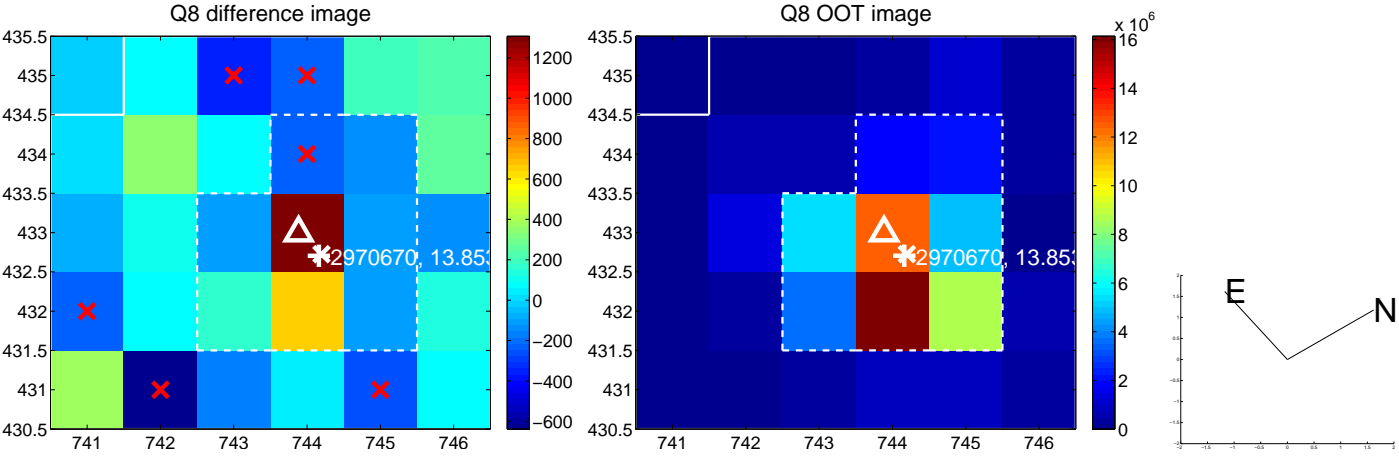
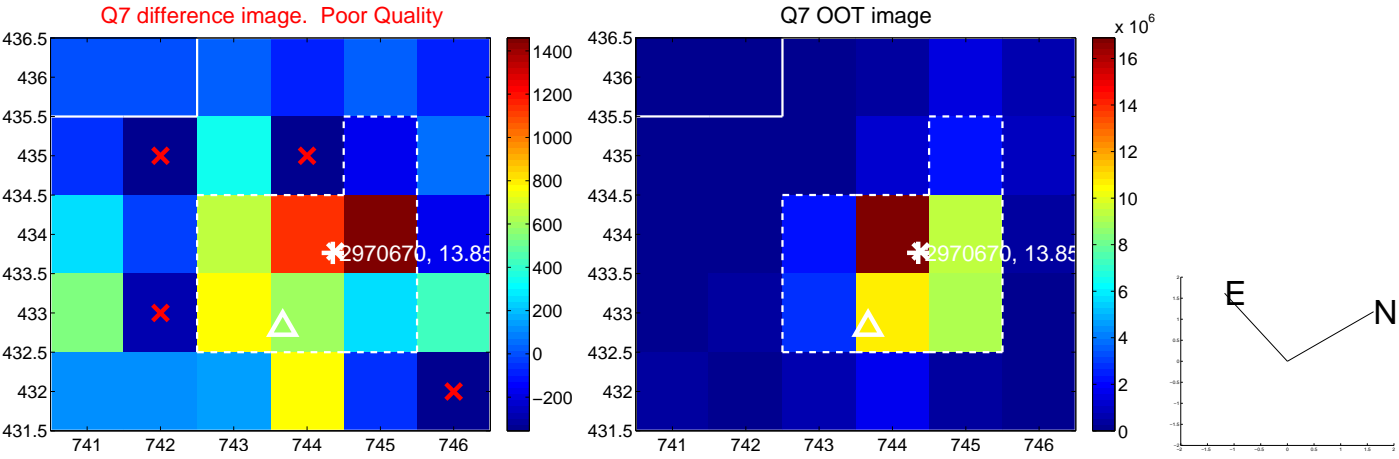
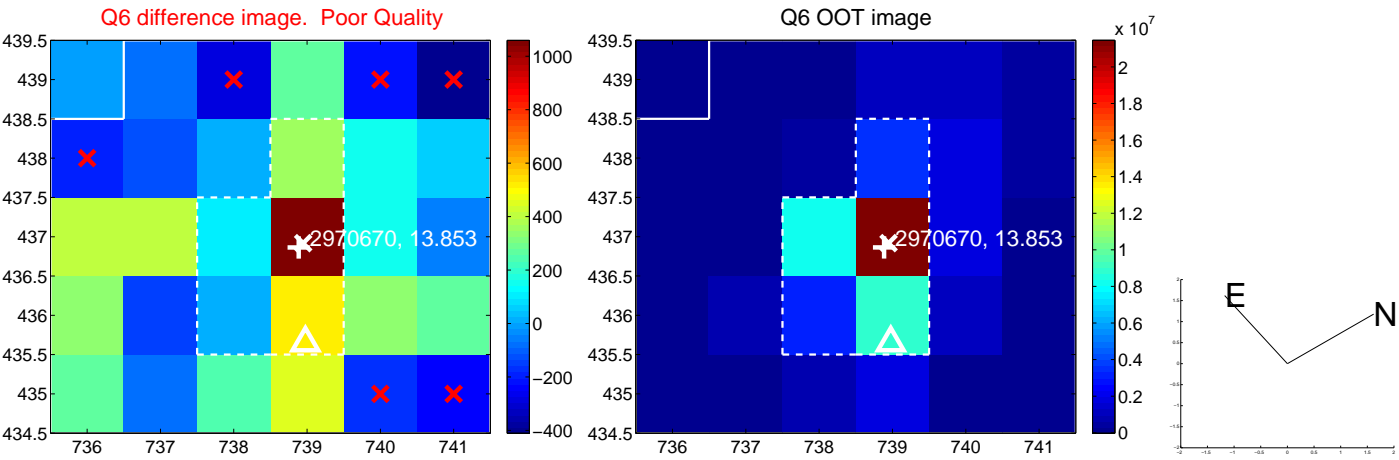
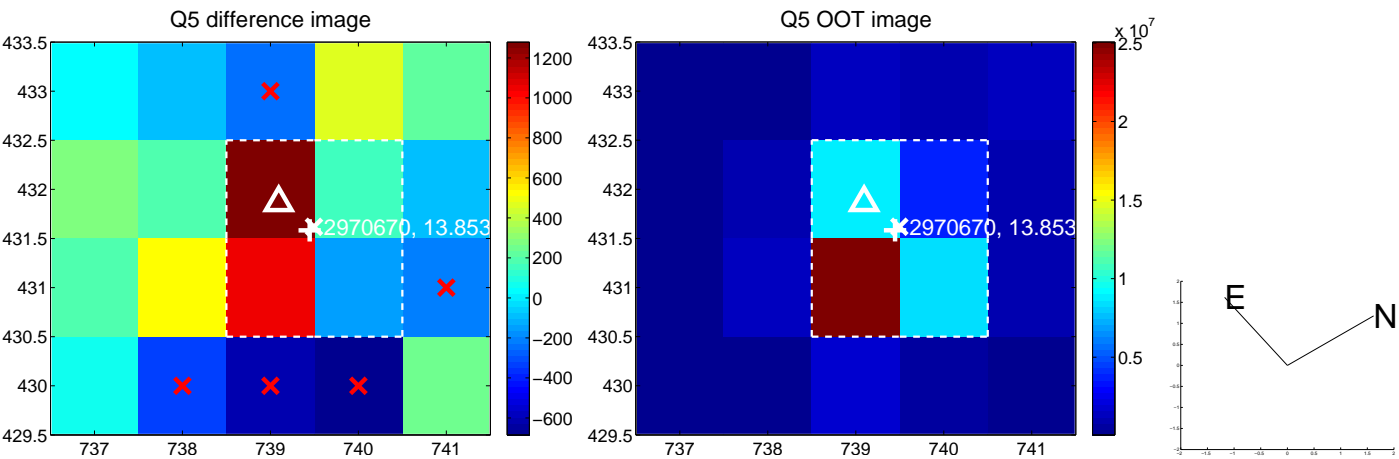


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

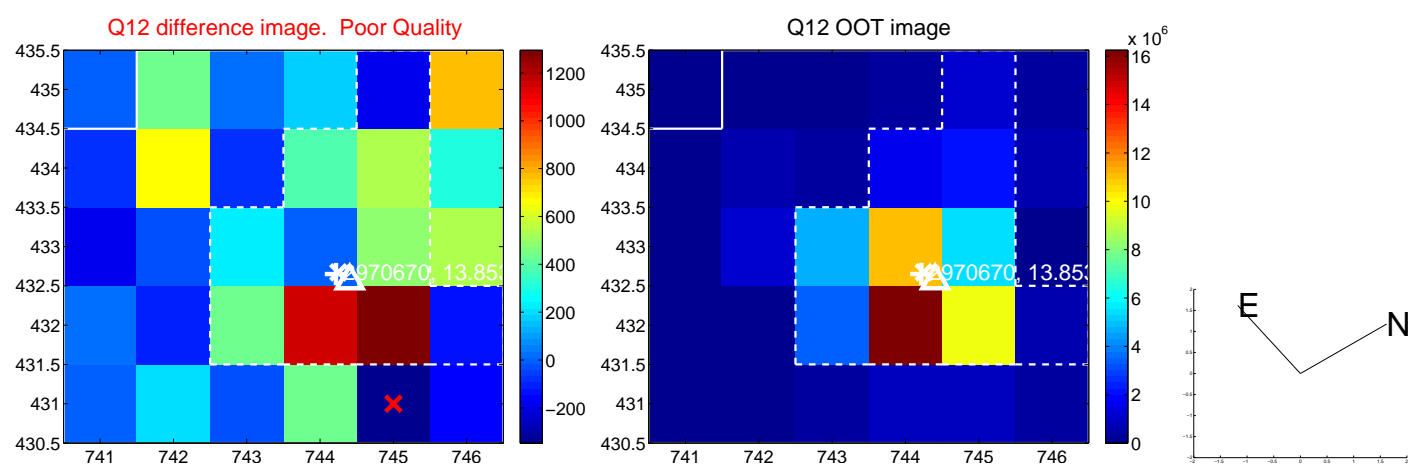
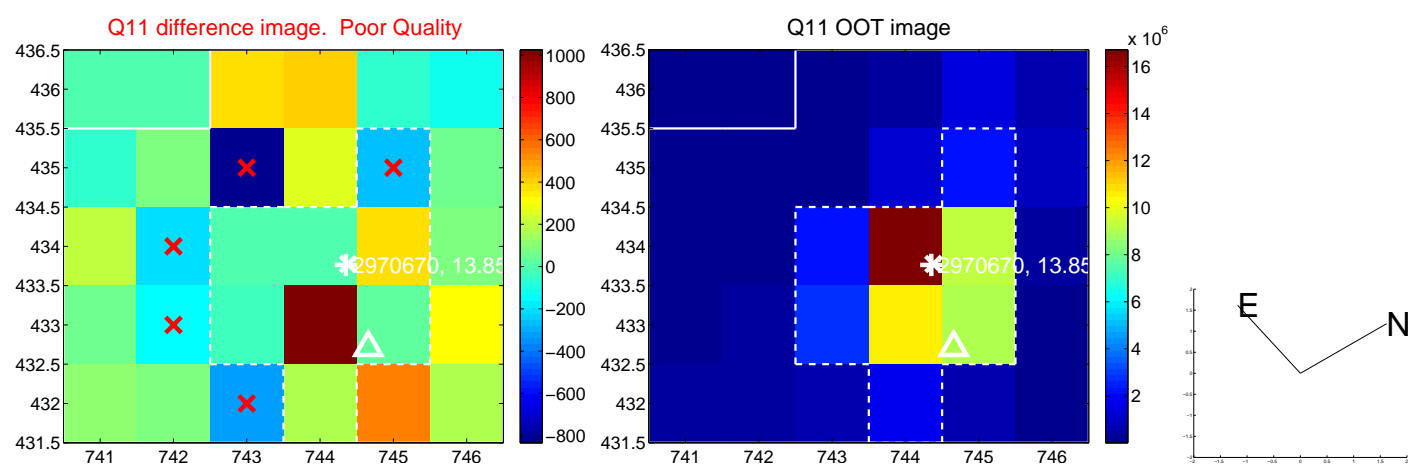
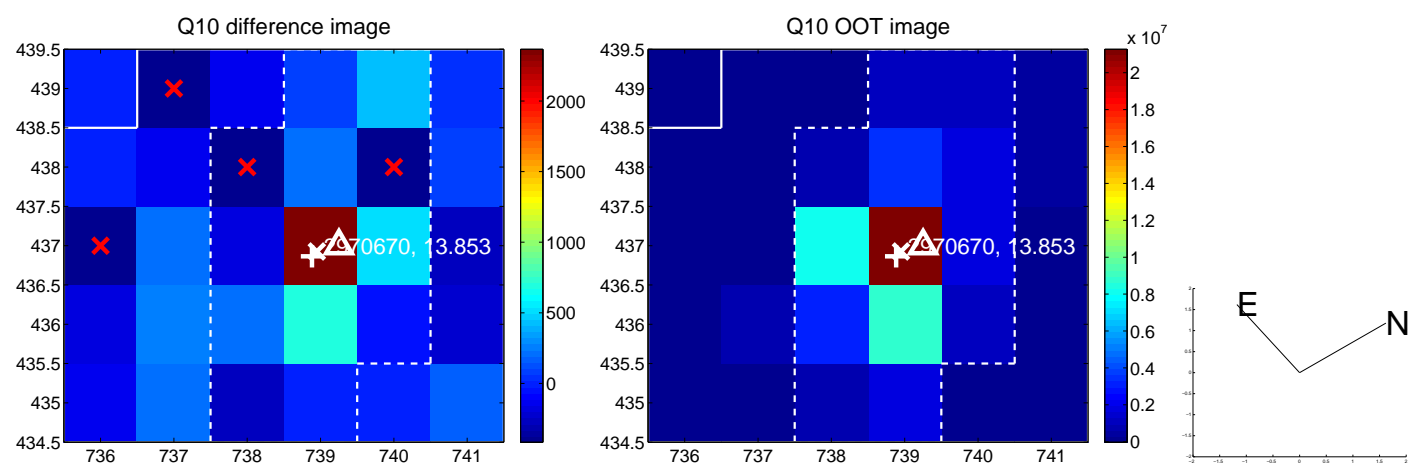
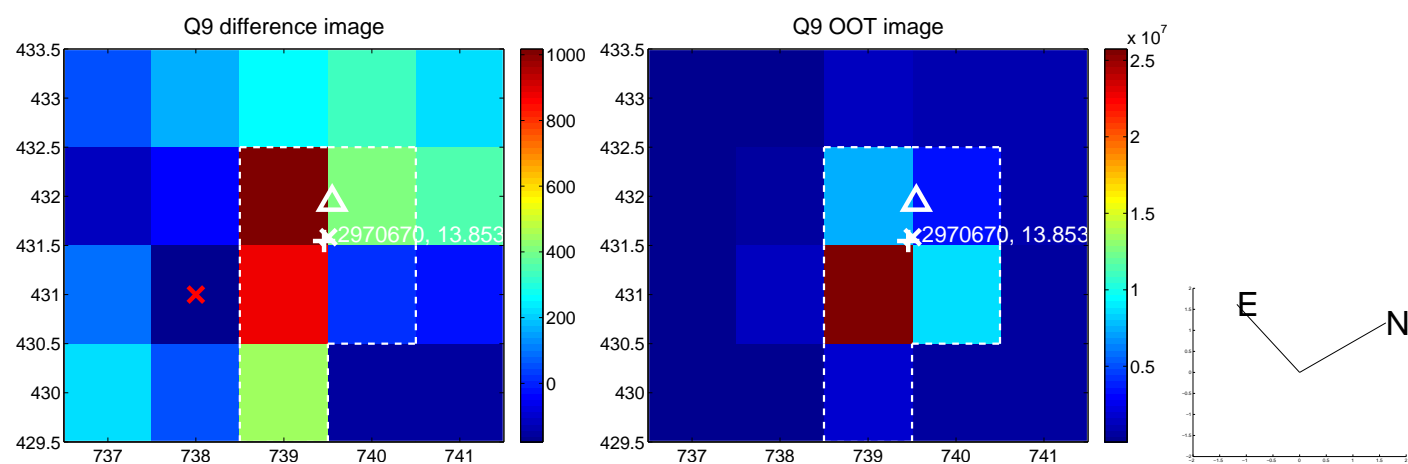
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



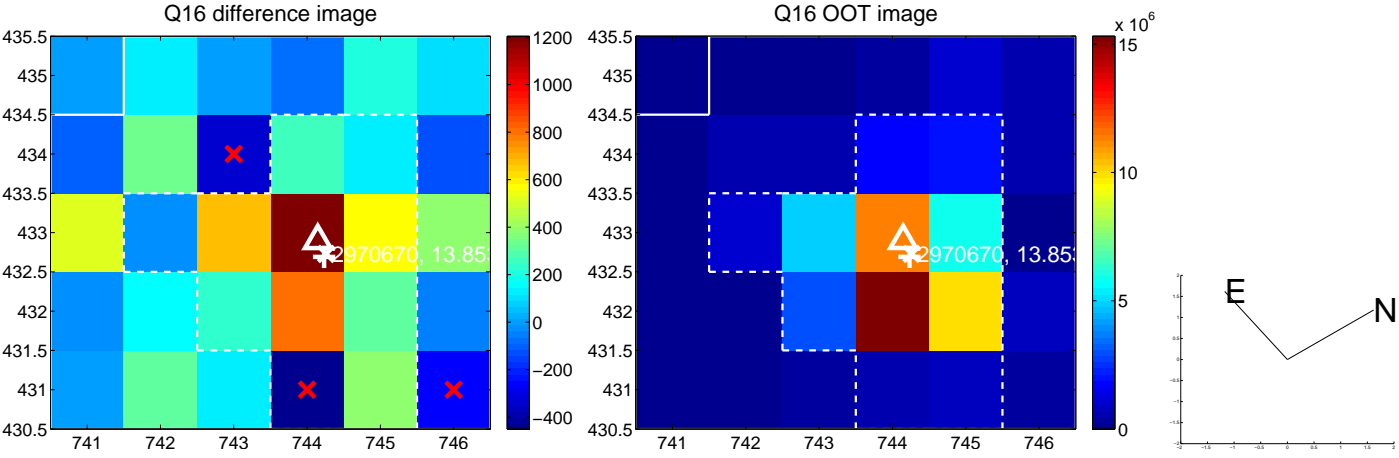
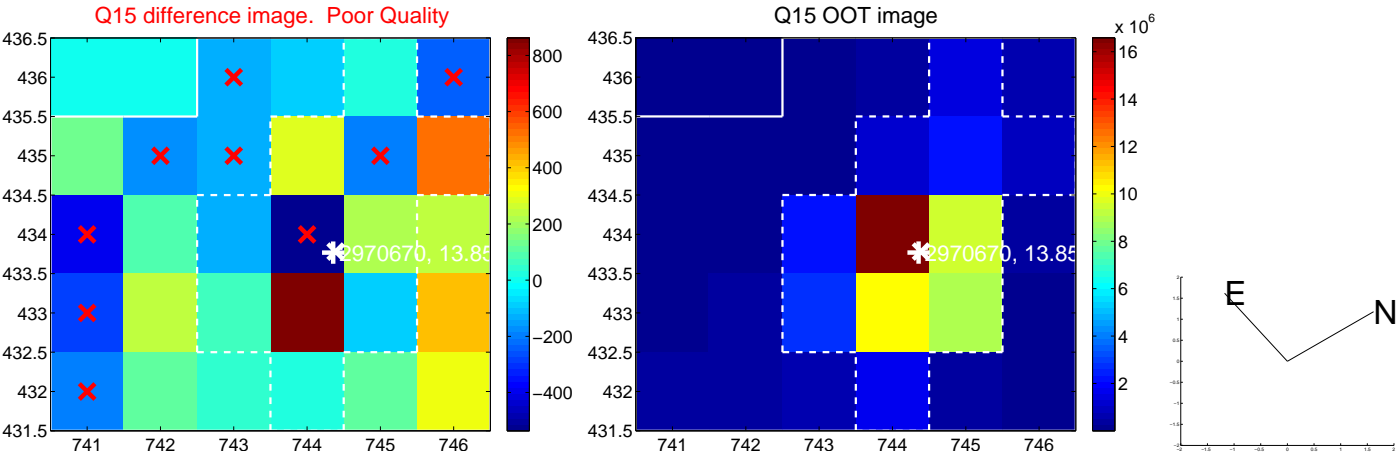
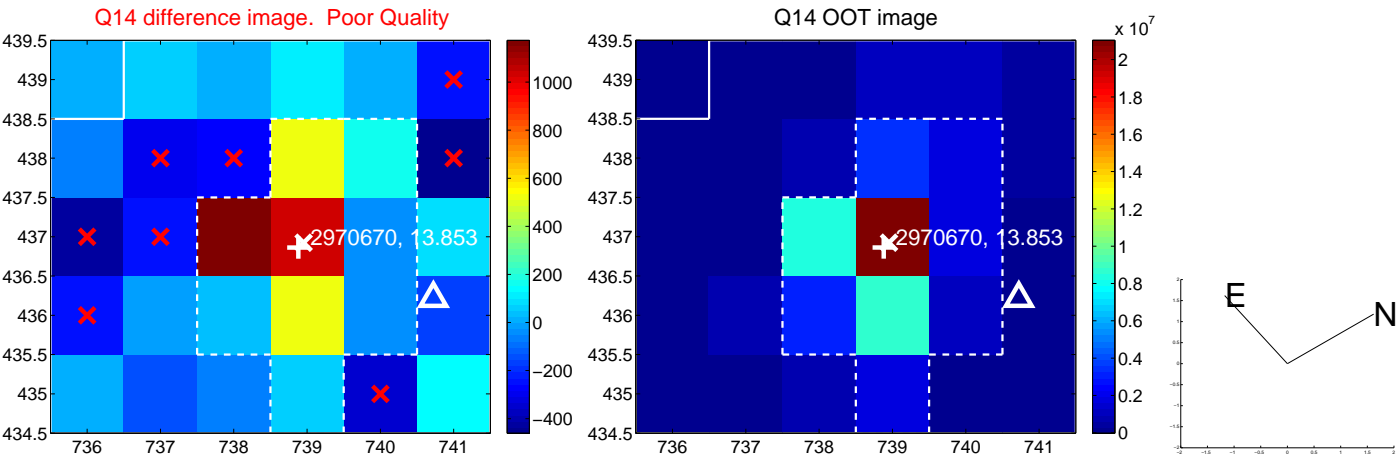
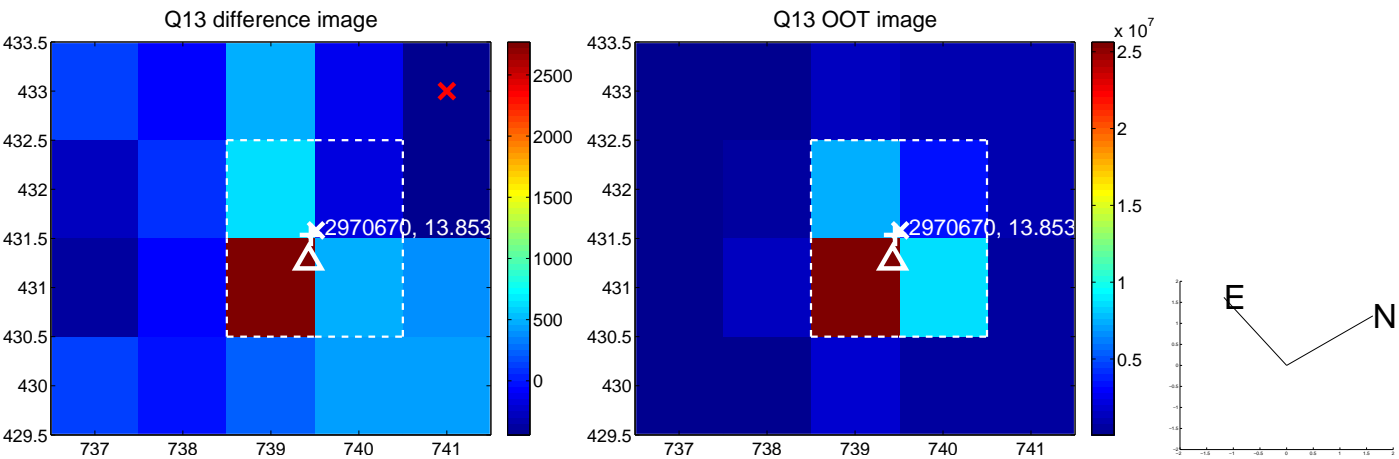
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



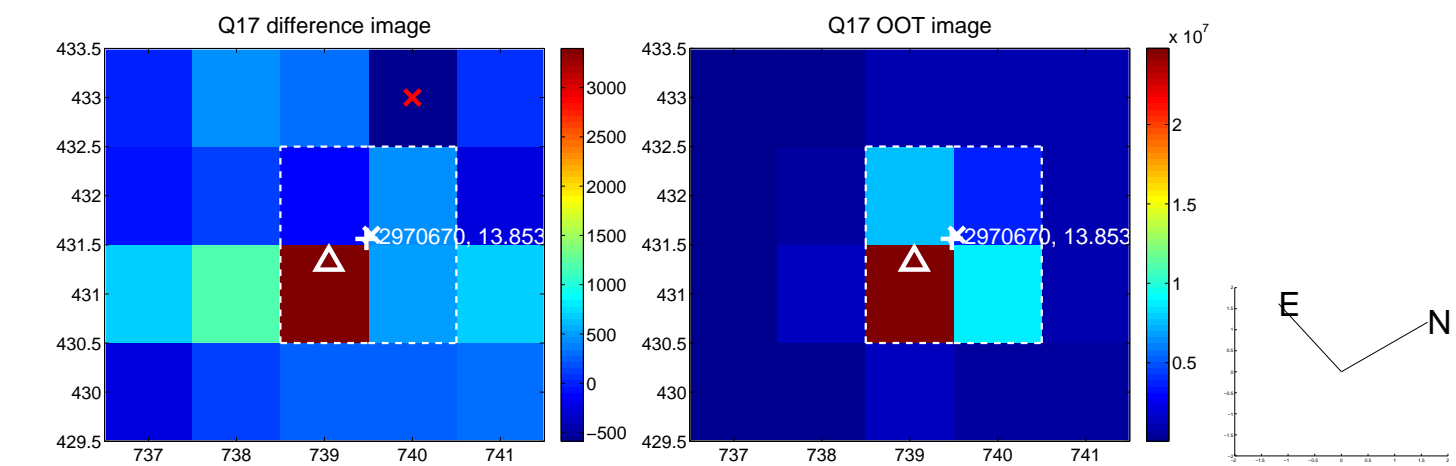
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



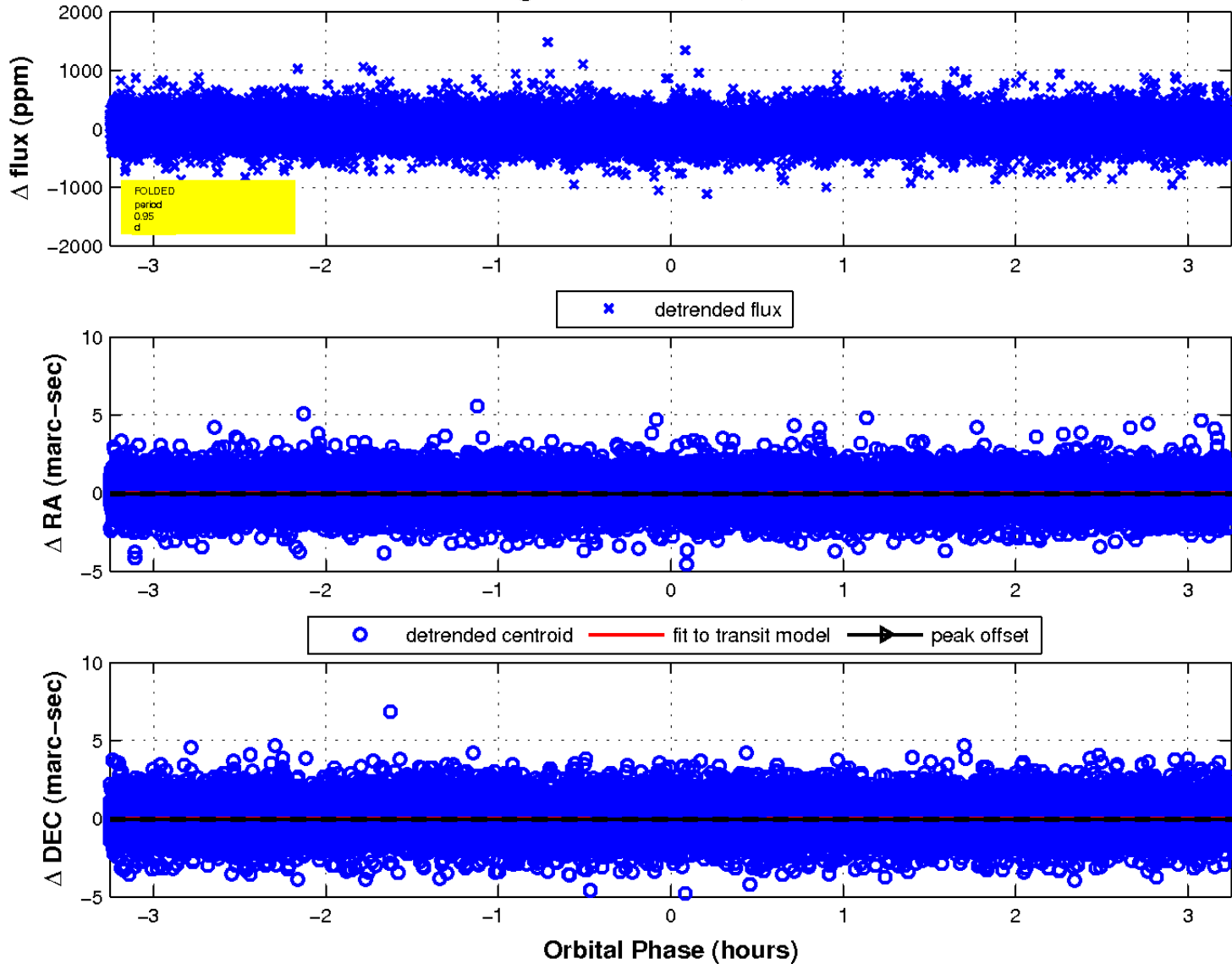
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

