

# KIC 007016909

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007016909-01	OBS	No	0.824735	131.901509	10.3	4.006	8.4	2.0	1.08	6214	0.35	4704.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007016909-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET

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

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

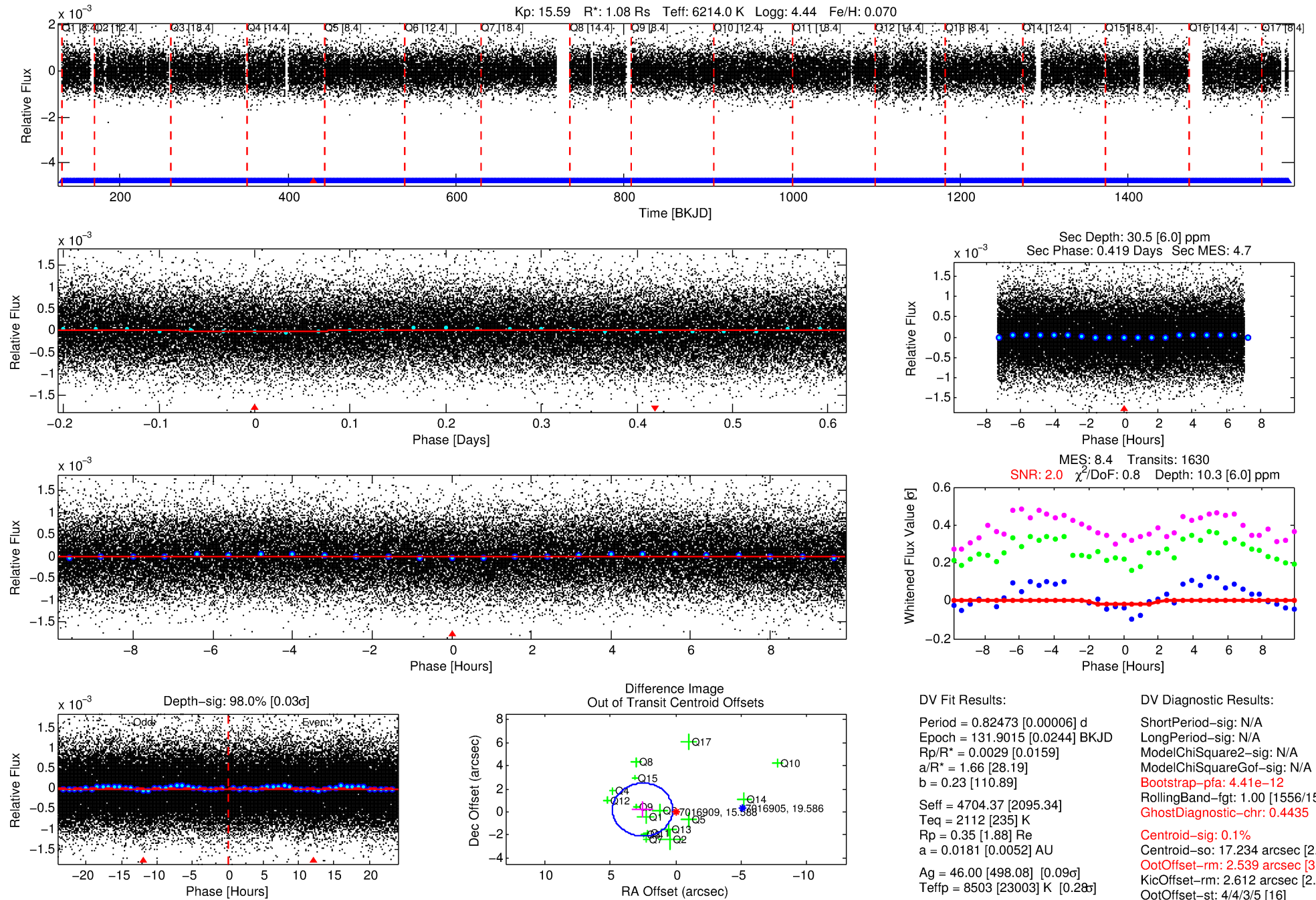
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007016909-01

No Significant Match Found

# DV One-Page Summary

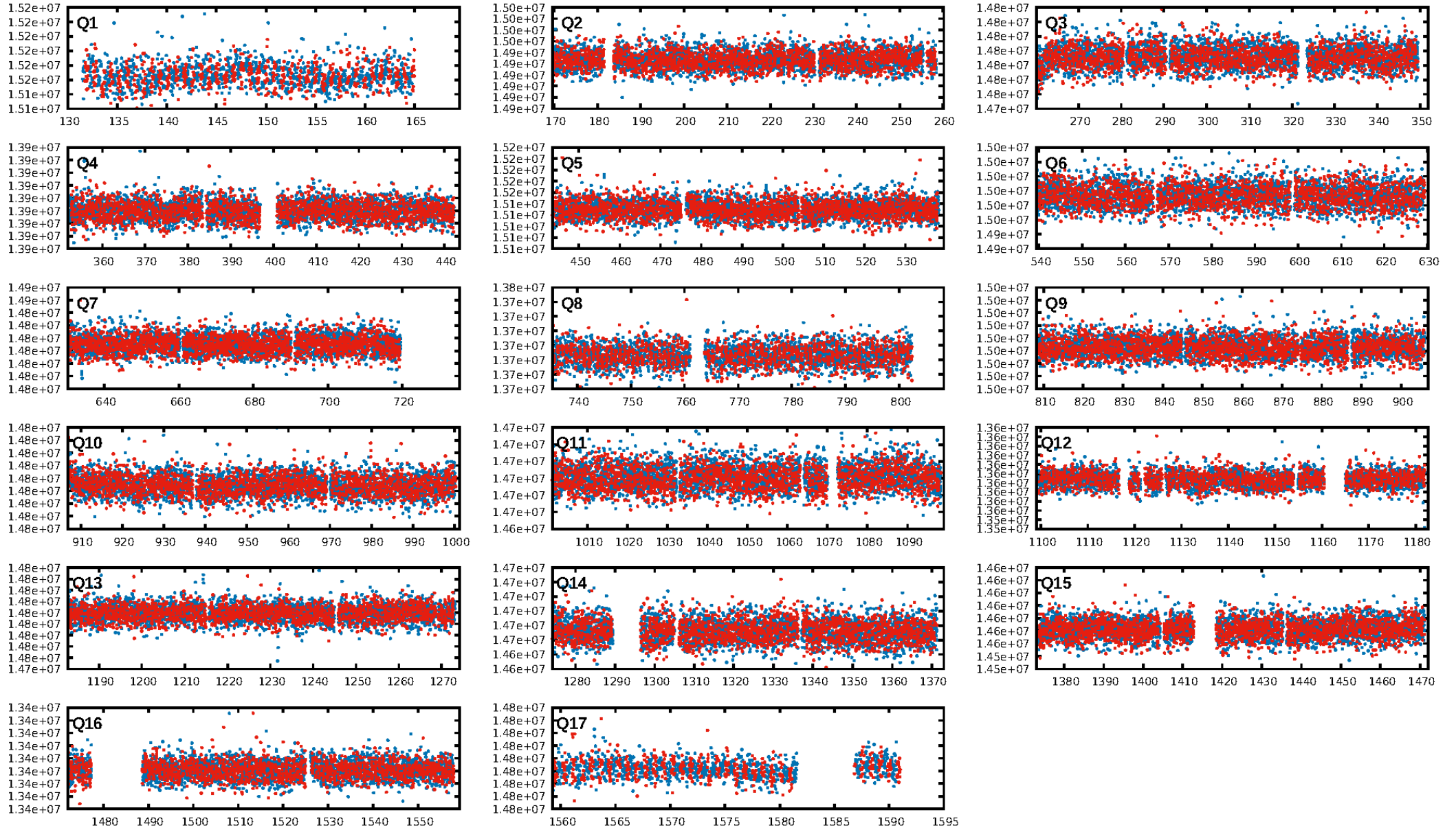
KIC: 7016909 Candidate: 1 of 1 Period: 0.825 d



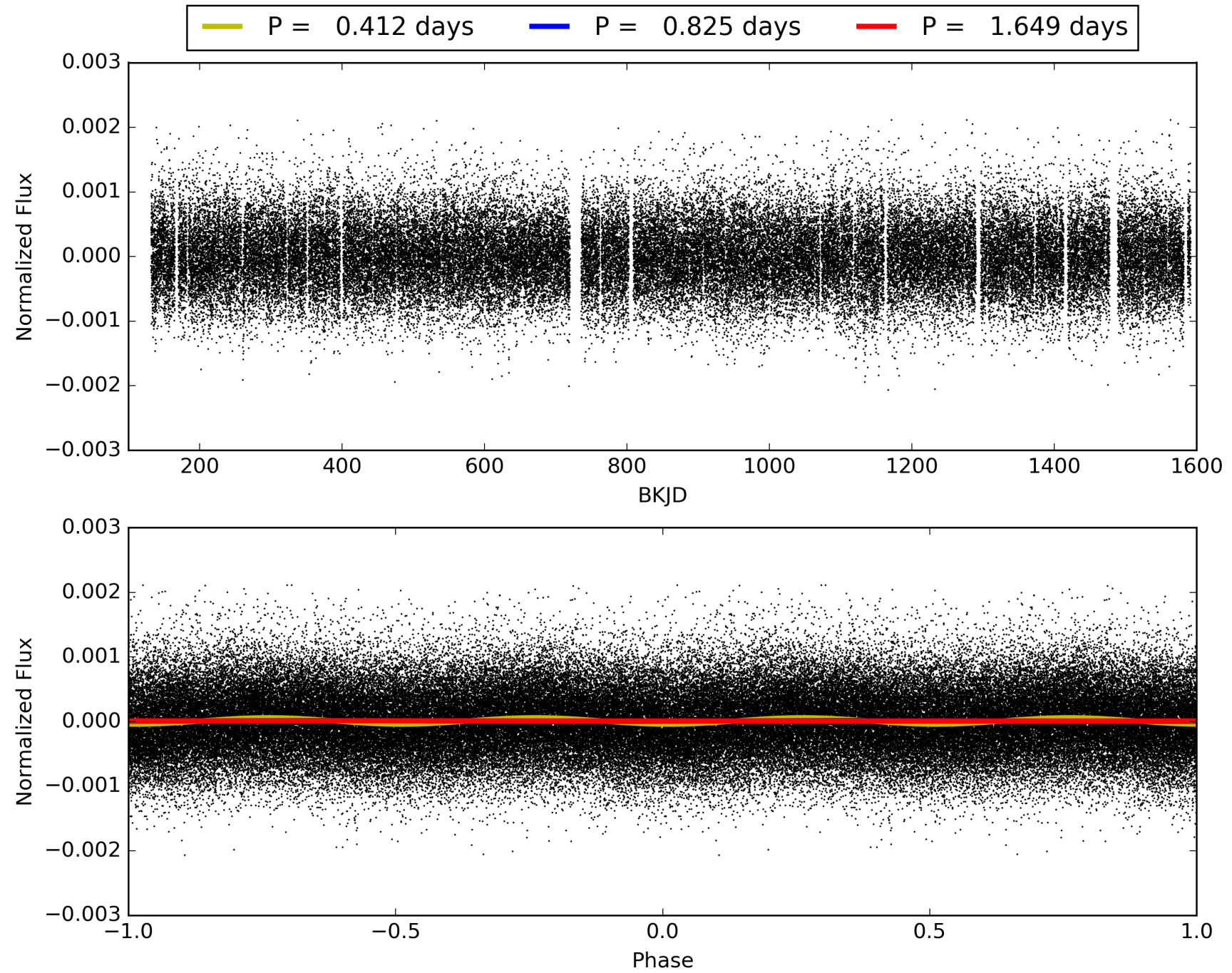
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 03:00:13 Z

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

# TCE 007016909-01, PDC Light Curves



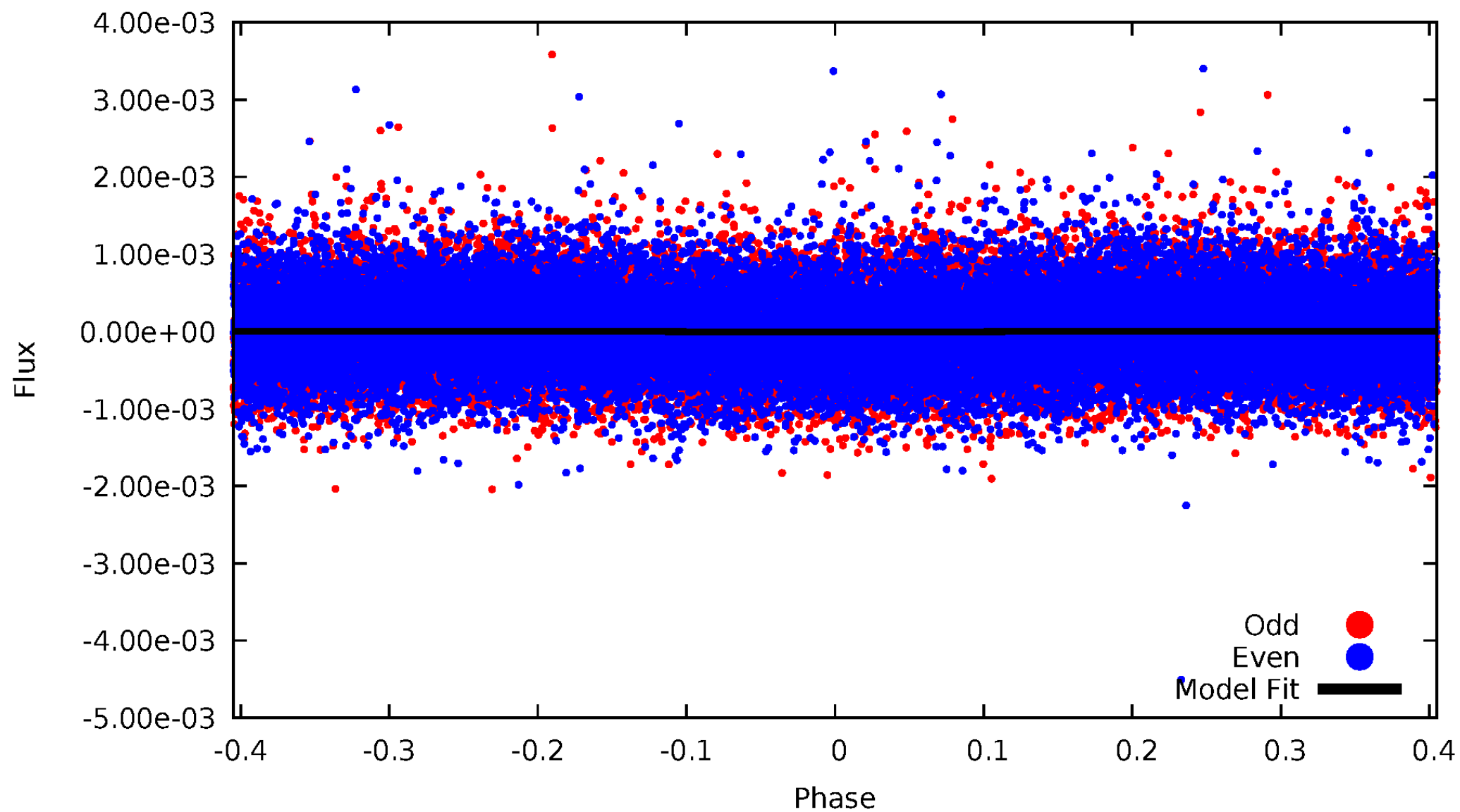
TCE 007016909-01





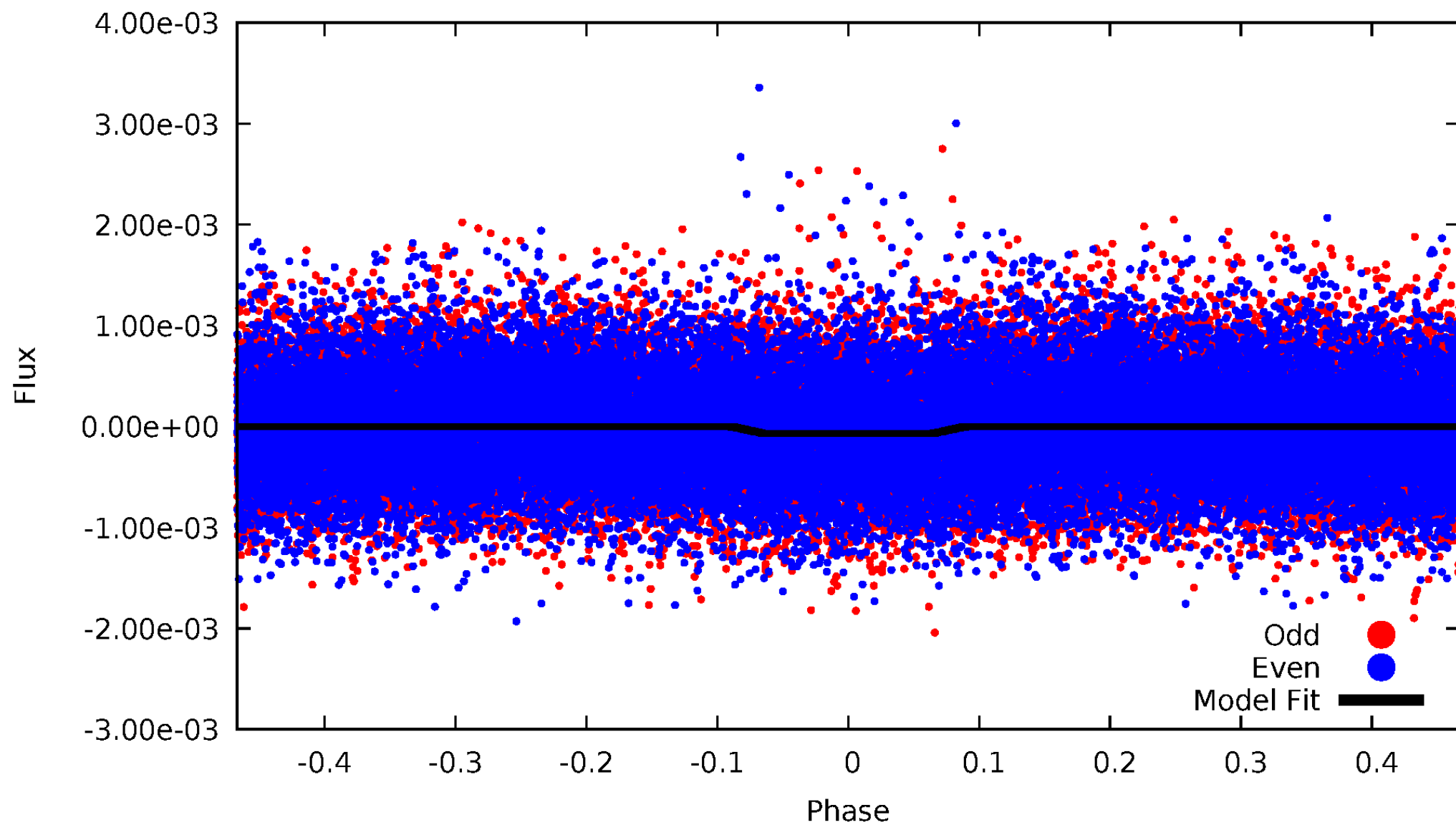
# DV Odd/Even

TCE 007016909-01



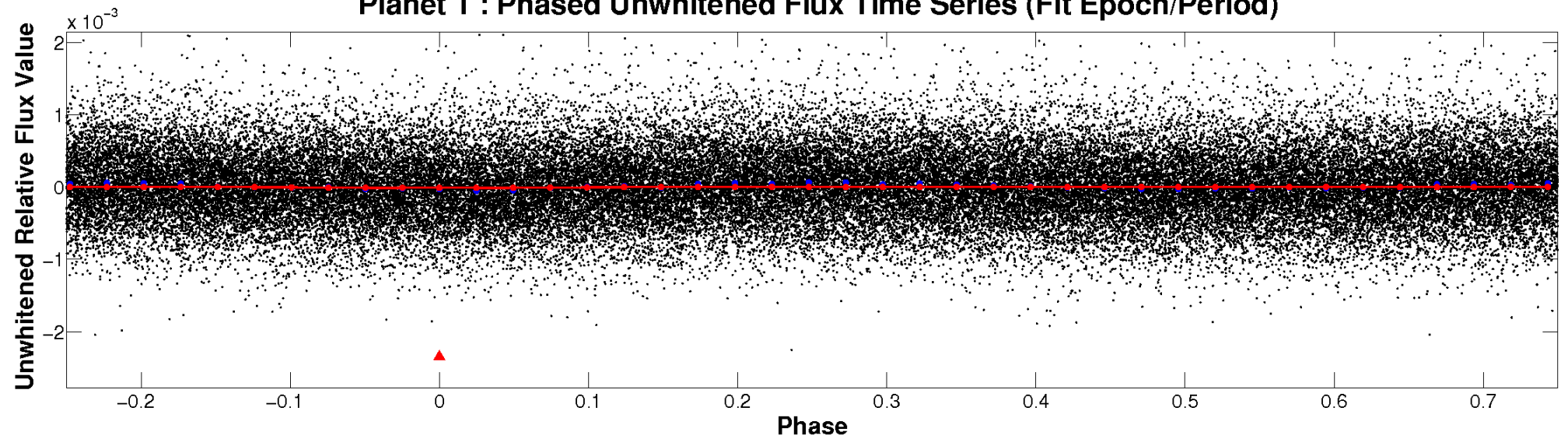
# ALT Odd/Even

TCE 007016909-01

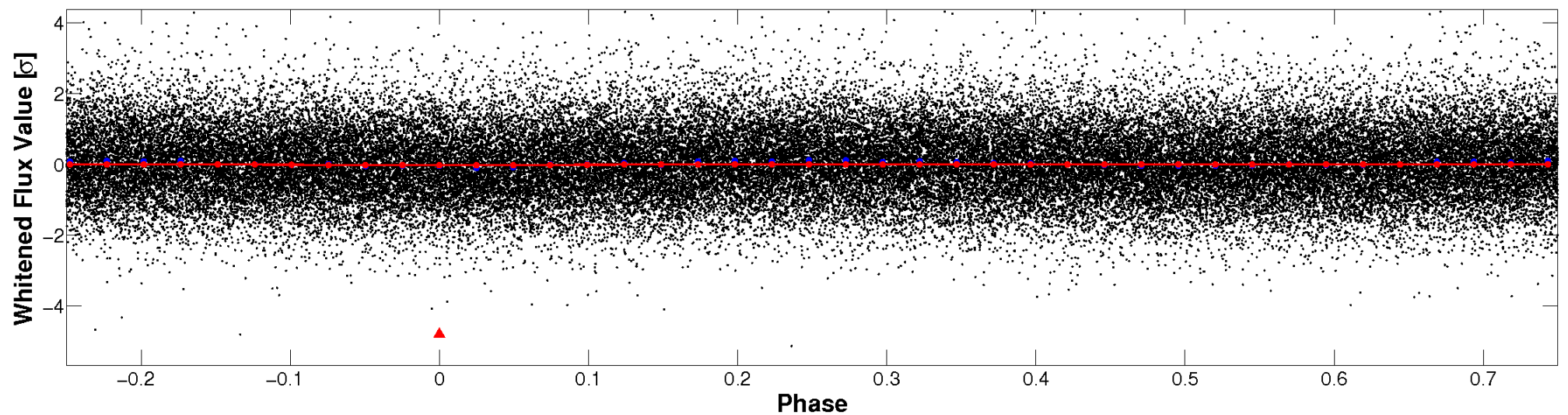


# Non-Whitened Vs. Whitened Light Curve

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

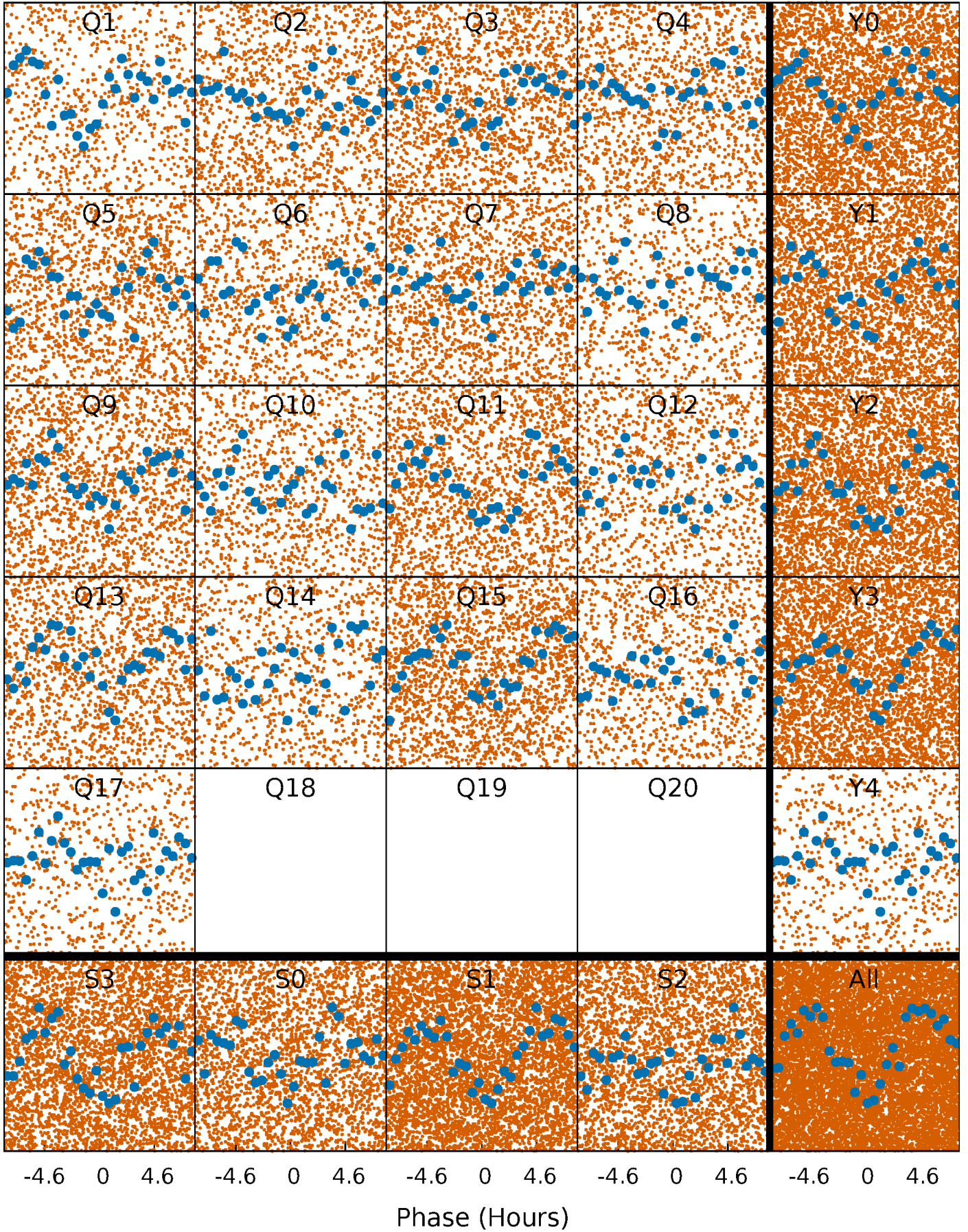


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

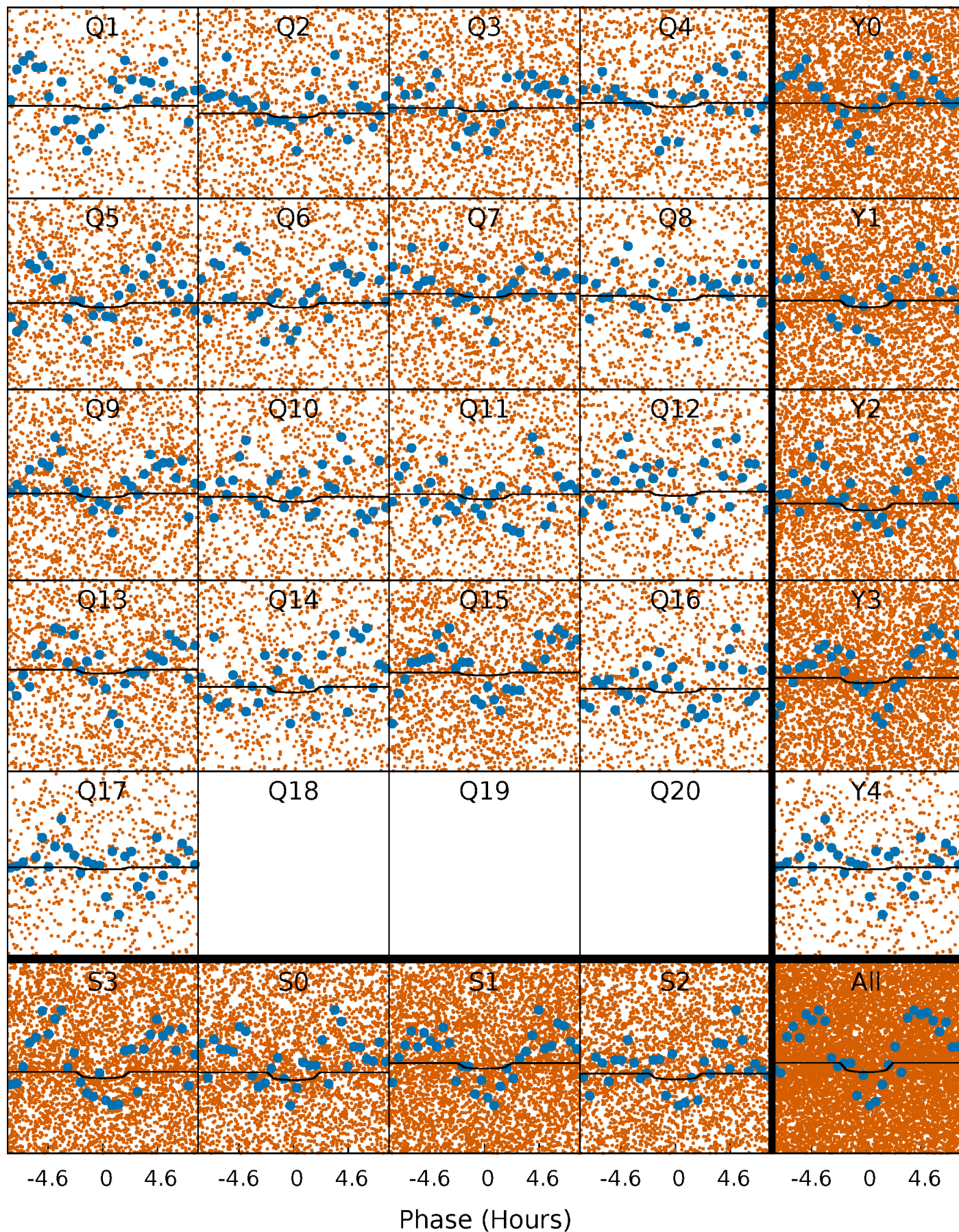
TCE 007016909-01   P= 0.824735 Days    $T_0=131.901509$  (BKJD)





# DV Quarter-Phased Transit Curves

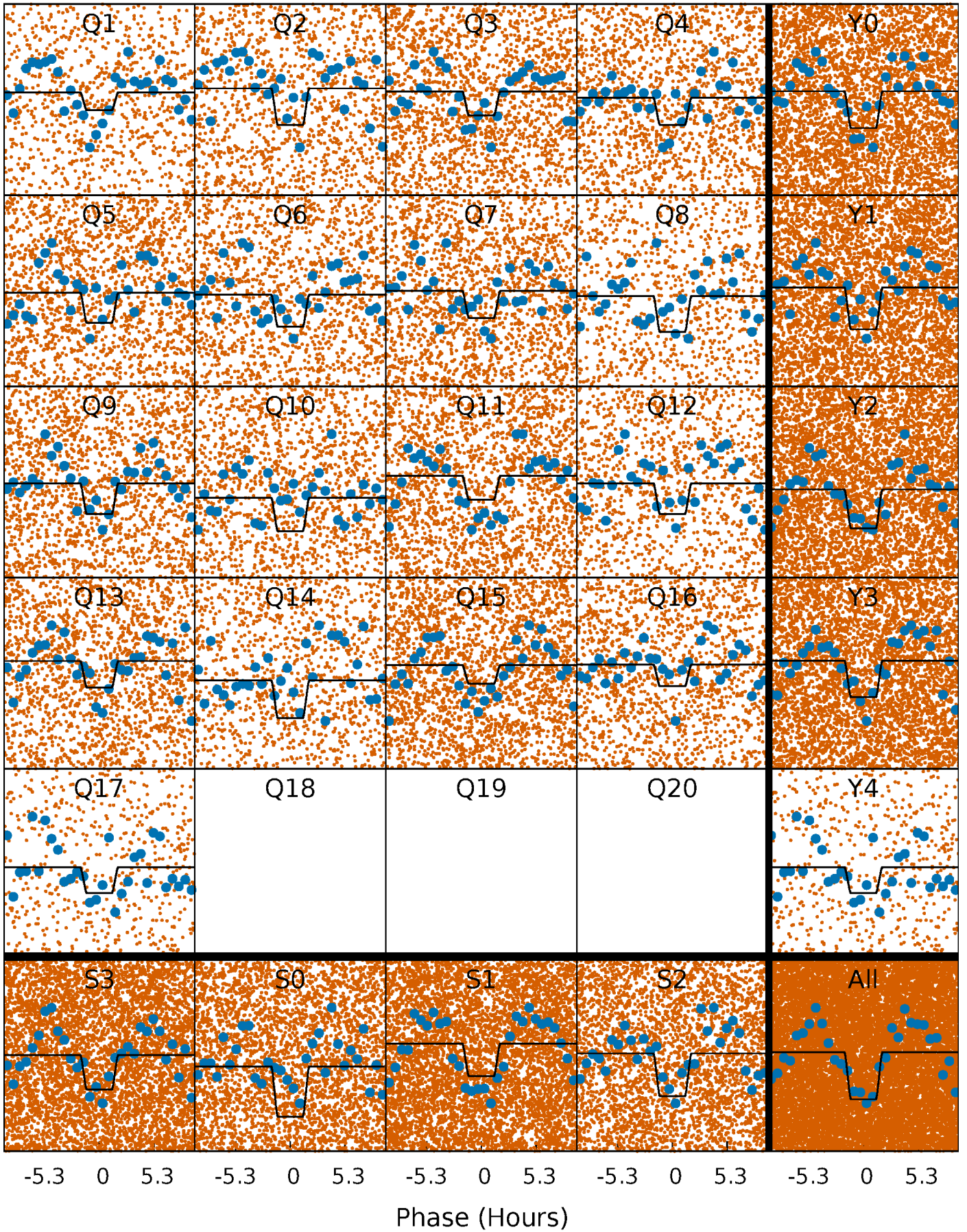
TCE 007016909-01 P= 0.824735 Days  $T_0=131.901509$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

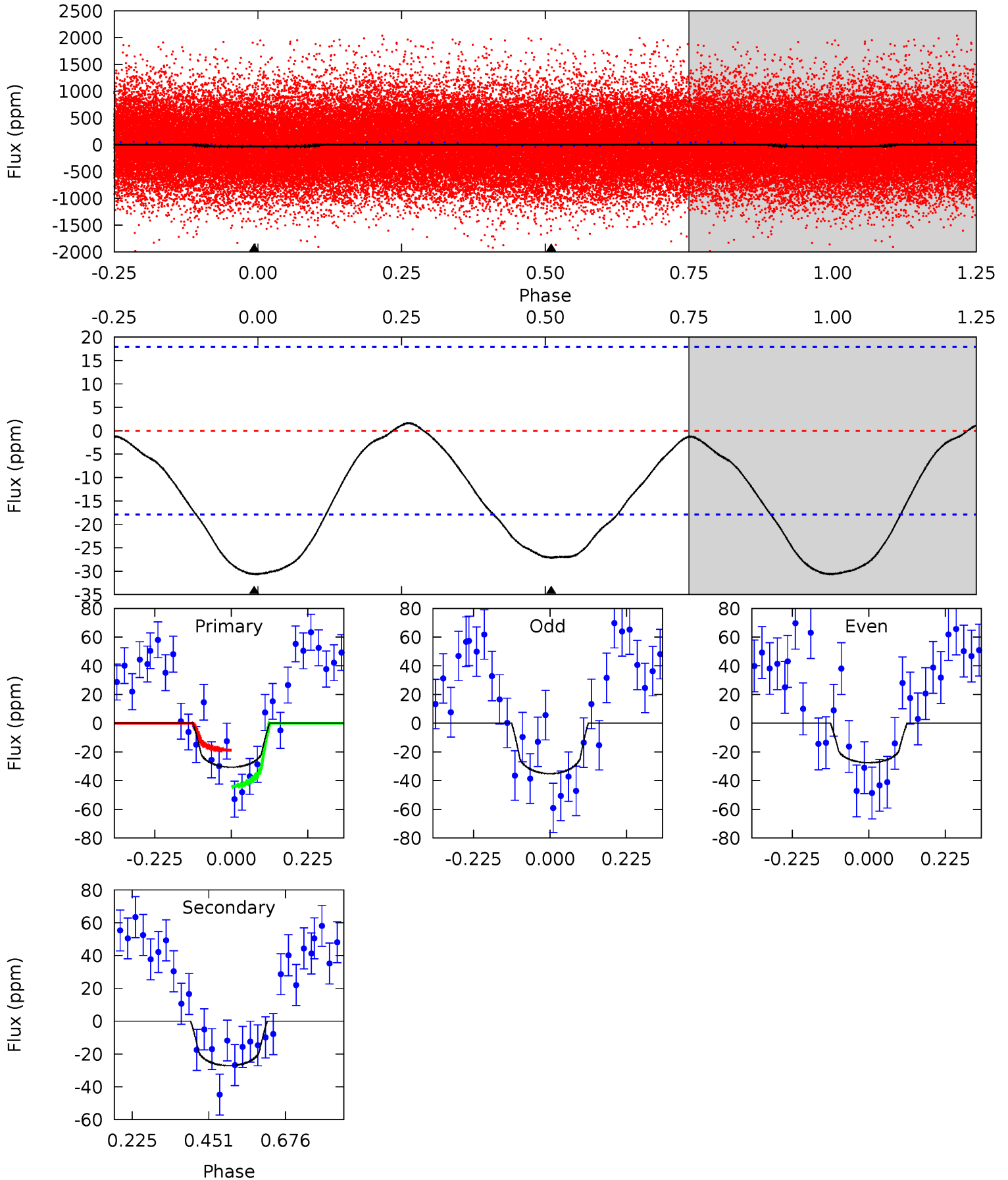
TCE 007016909-01 P= 0.824789 Days  $T_0=131.866034$  (BKJD)



# DV Model-Shift Uniqueness Test

007016909-01, P = 0.824735 Days, E = 131.076774 Days

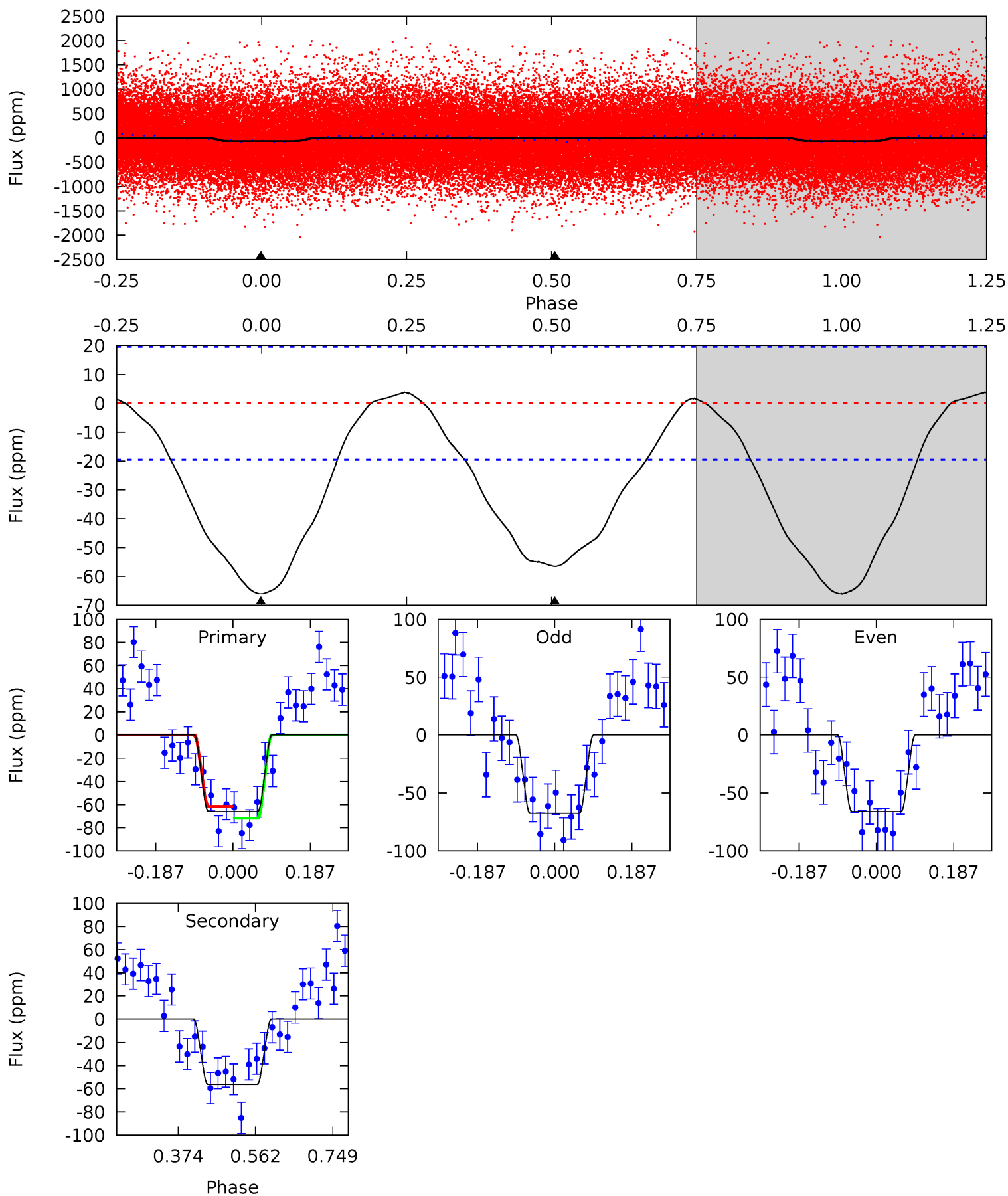
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.52	6.65	0	0	4.39	1.21	0.31	7.52	7.52	6.65	6.65	0.94	1.14	0.05	3.09



# Alt Model-Shift Uniqueness Test

007016909-01, P = 0.824789 Days, E = 131.041245 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
15.0	12.8	0	0	4.43	1.32	0.88	15.0	15.0	12.8	12.8	0.19	1.09	0.05	1.17





### Stellar Parameters For KIC 007016909

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6214^{+173}_{-239}$	$4.442^{+0.054}_{-0.229}$	$0.070^{+0.250}_{-0.300}$	$1.076^{+0.365}_{-0.122}$	$1.169^{+0.158}_{-0.173}$	$1.321^{+0.388}_{-0.708}$
	+3%/-4%	+1%/-5%	+357%/-429%	+34%/-11%	+14%/-15%	+29%/-54%
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 007016909-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-27 \pm 4$	$1.44^{+1.43}_{-1.03}$	$3016^{+245}_{-160}$	$4226^{+3589}_{-1178}$	$2.289^{+25.530}_{-1.723}$
Alt.	$-57 \pm 4$	$1.70^{+1.69}_{-1.13}$	$3013^{+226}_{-152}$	$4589^{+3536}_{-1150}$	$3.363^{+27.987}_{-2.489}$

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

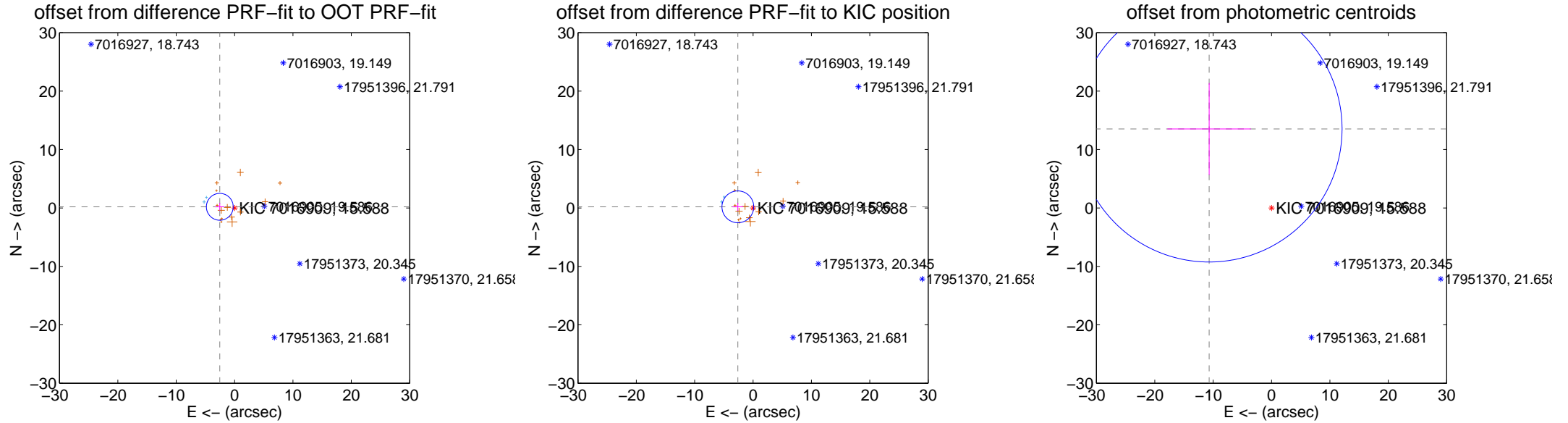
## DV Centroid Data

Supplemental centroid analysis for 007016909-01. Kepler magnitude: 15.59. Transit SNR 2.03

There are 2 quarters with good PRF difference image offsets

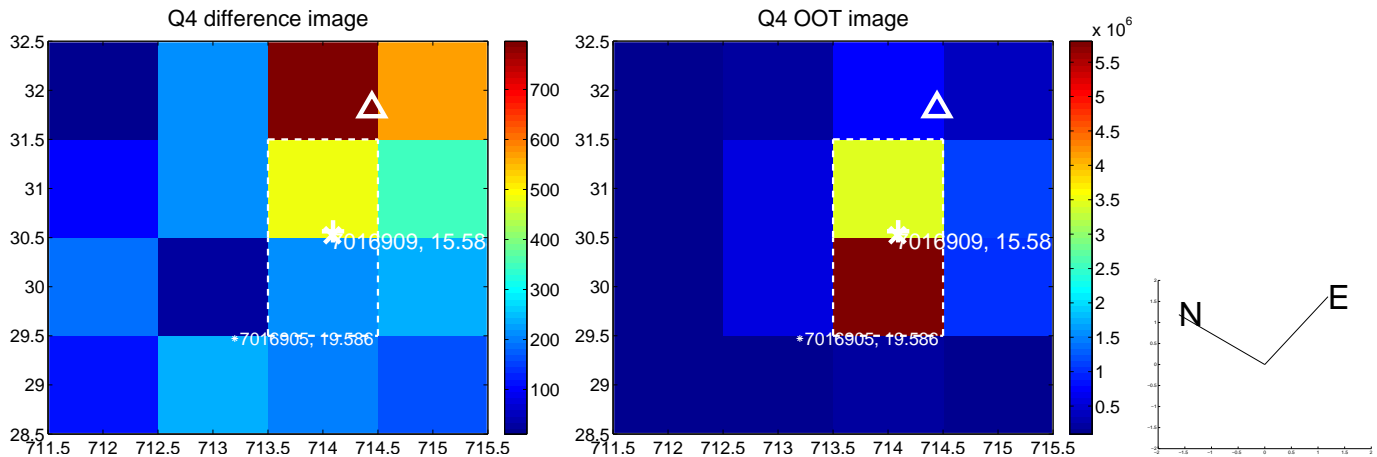
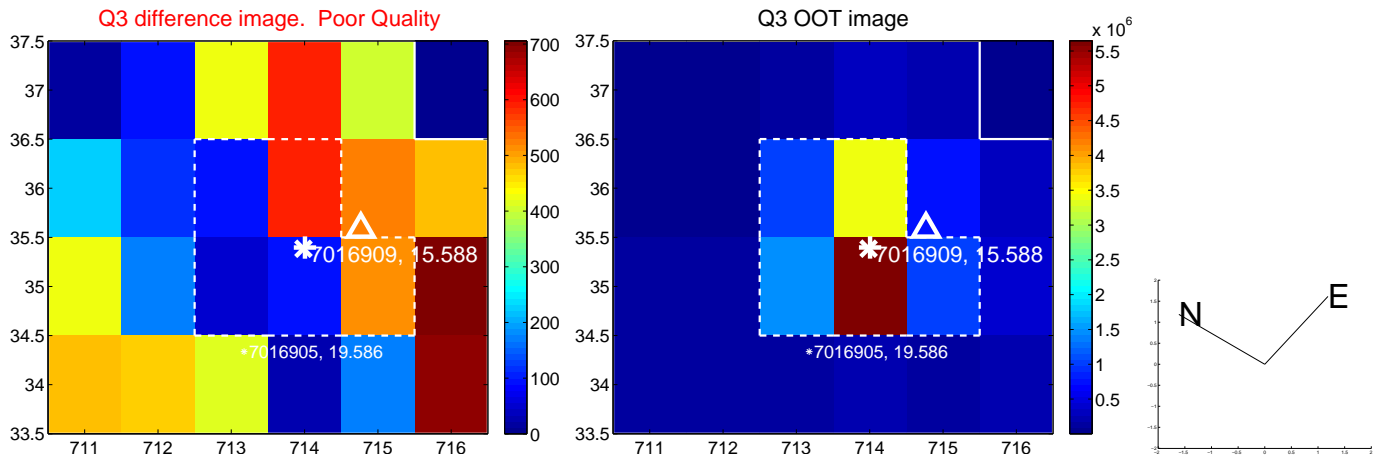
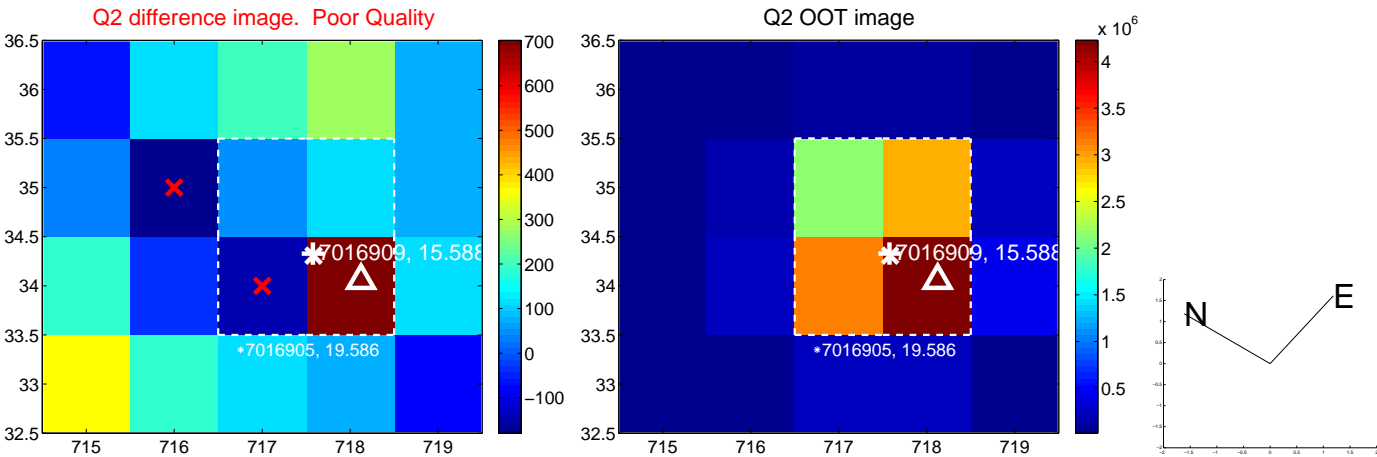
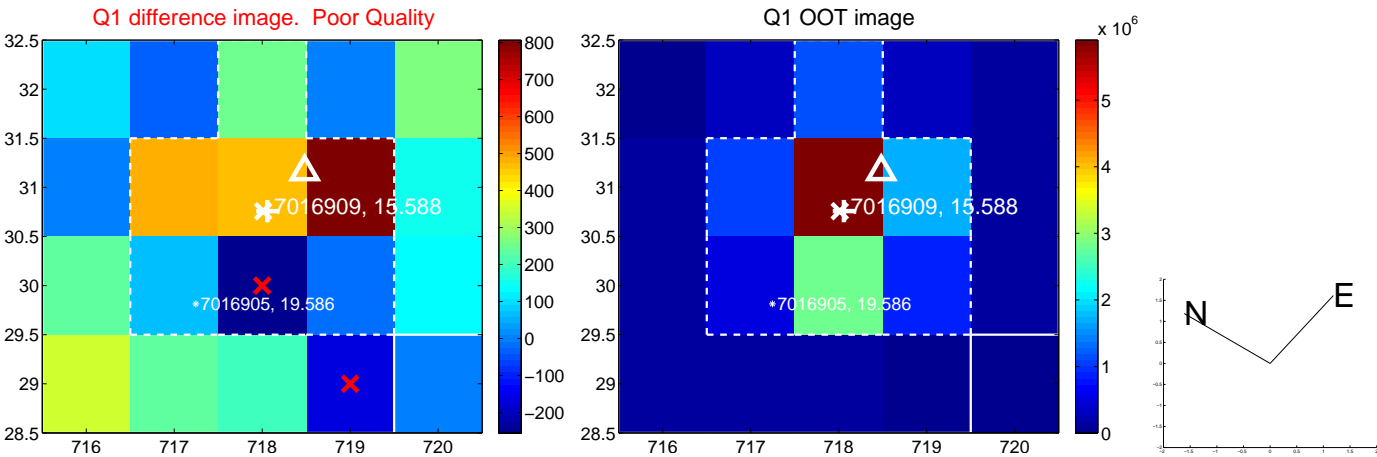
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>2.539 <math>\pm</math> 0.766</b>	<b>3.31</b>	2.531 $\pm$ 0.780	0.194 $\pm$ 0.650
PRF-fit source offset from KIC position	2.612 $\pm$ 0.907	2.88	2.605 $\pm$ 0.921	0.193 $\pm$ 0.664
photometric centroid source offset	17.23 $\pm$ 7.59	2.27	10.69 $\pm$ 7.16	13.52 $\pm$ 7.85

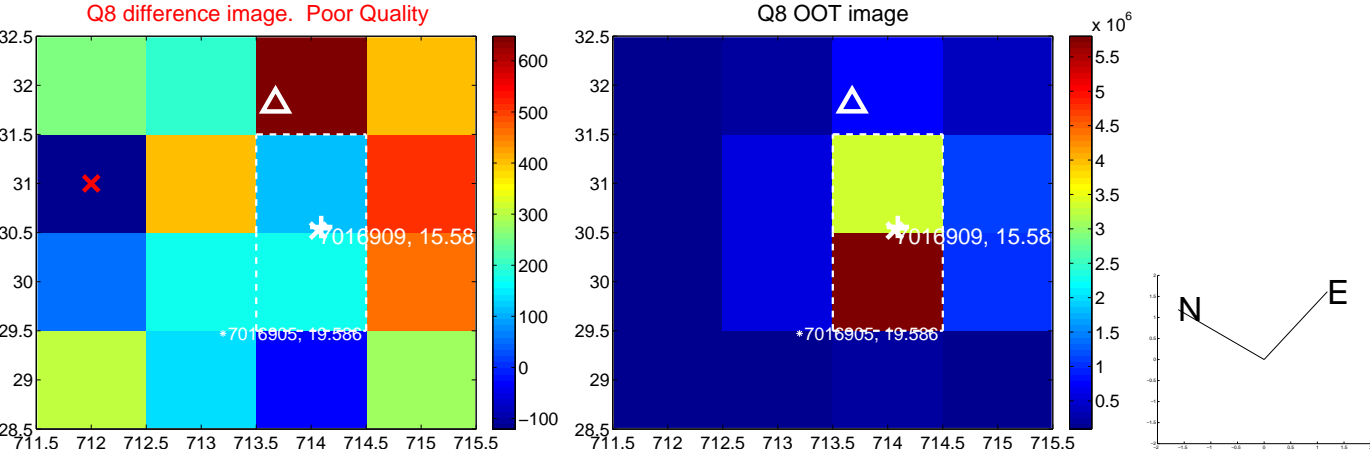
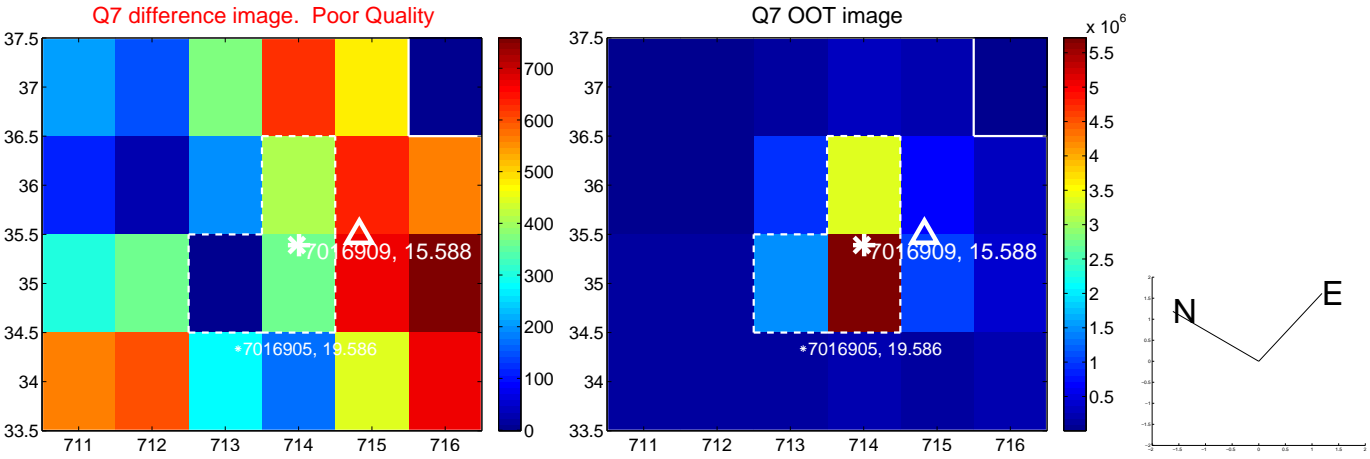
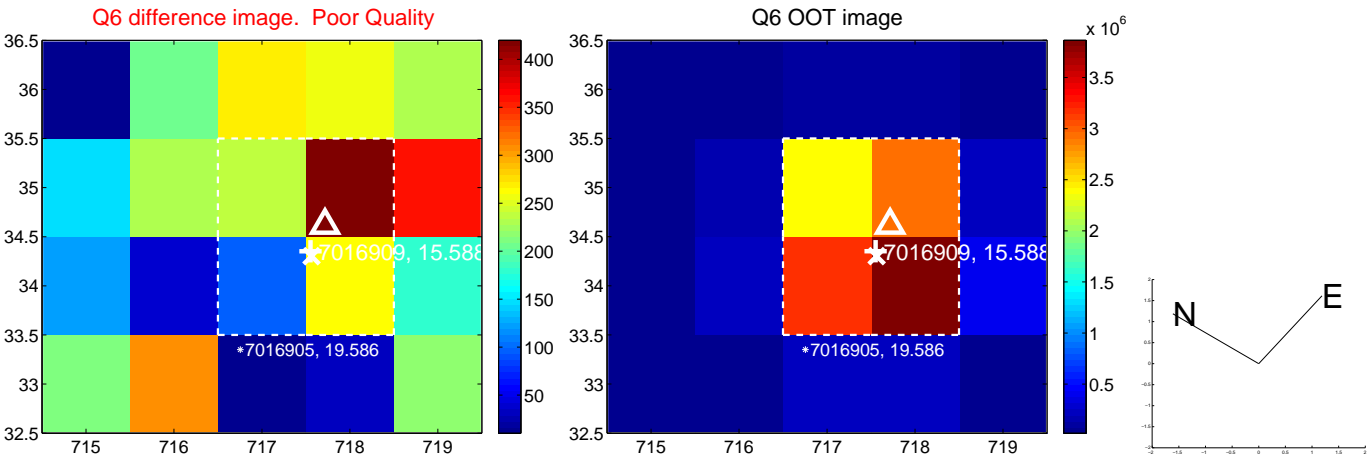
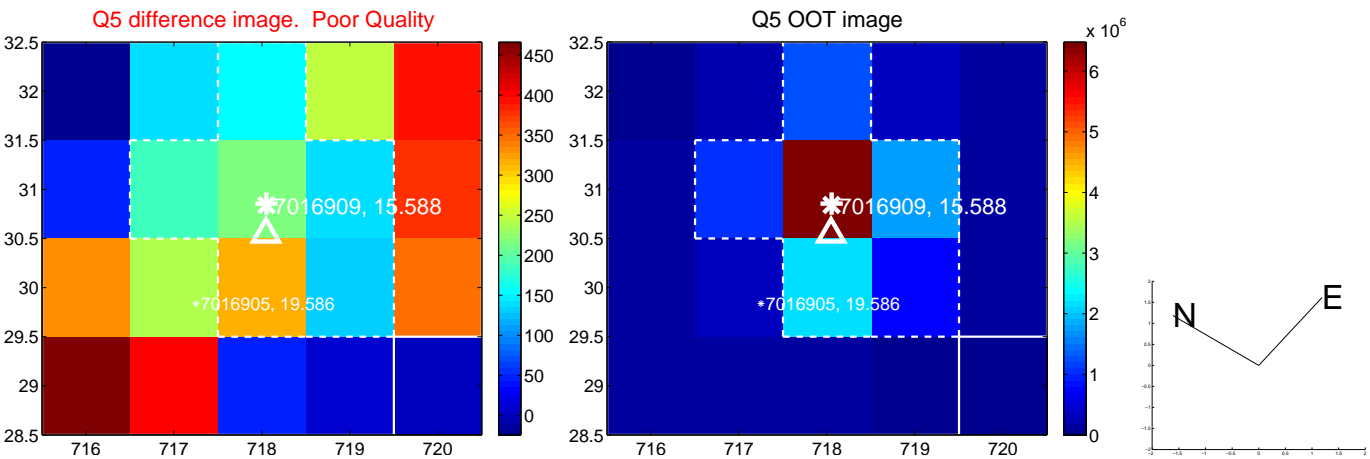


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

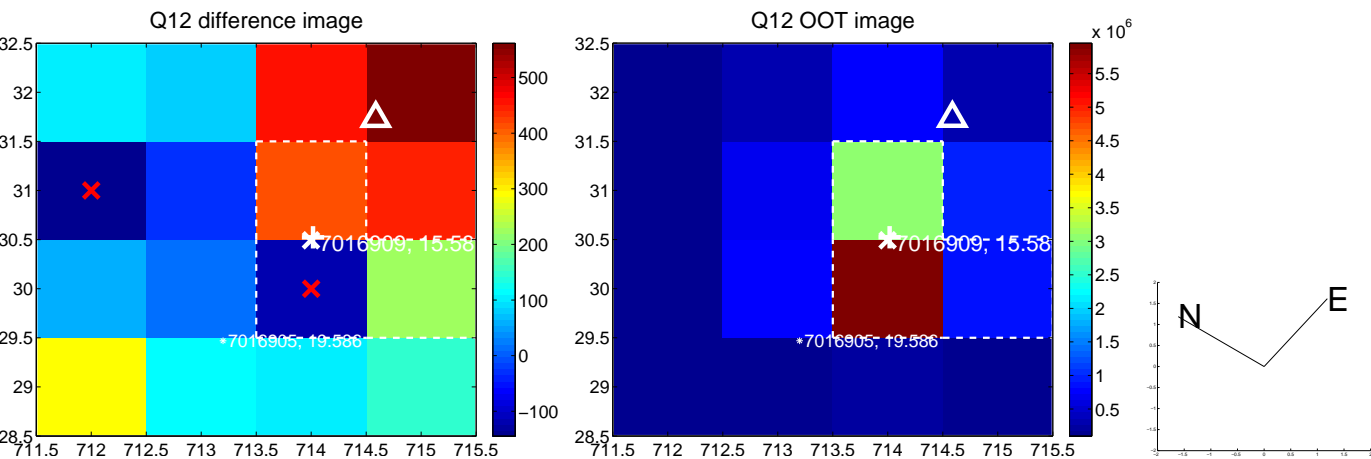
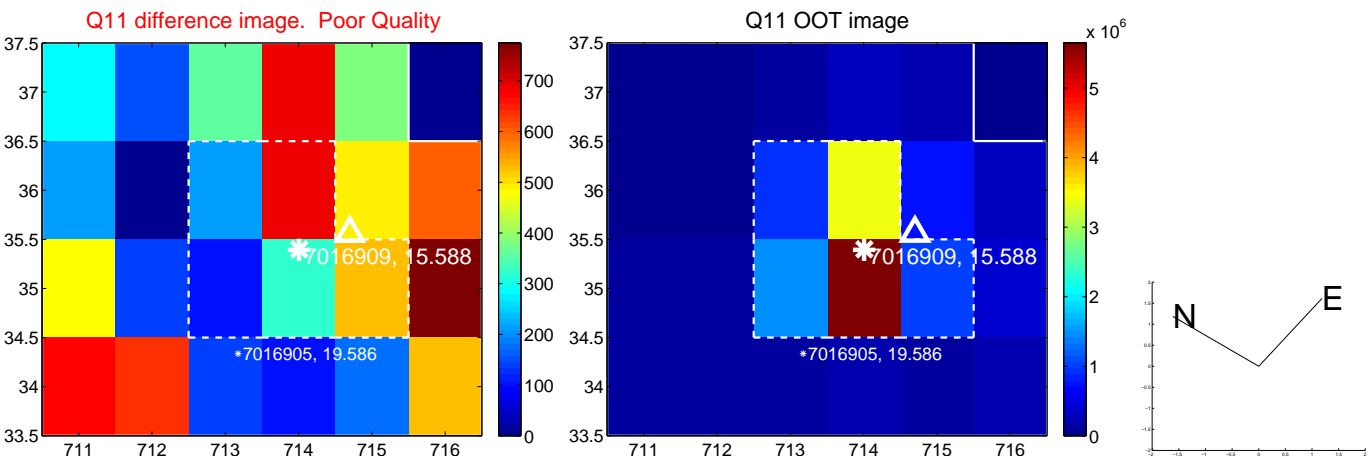
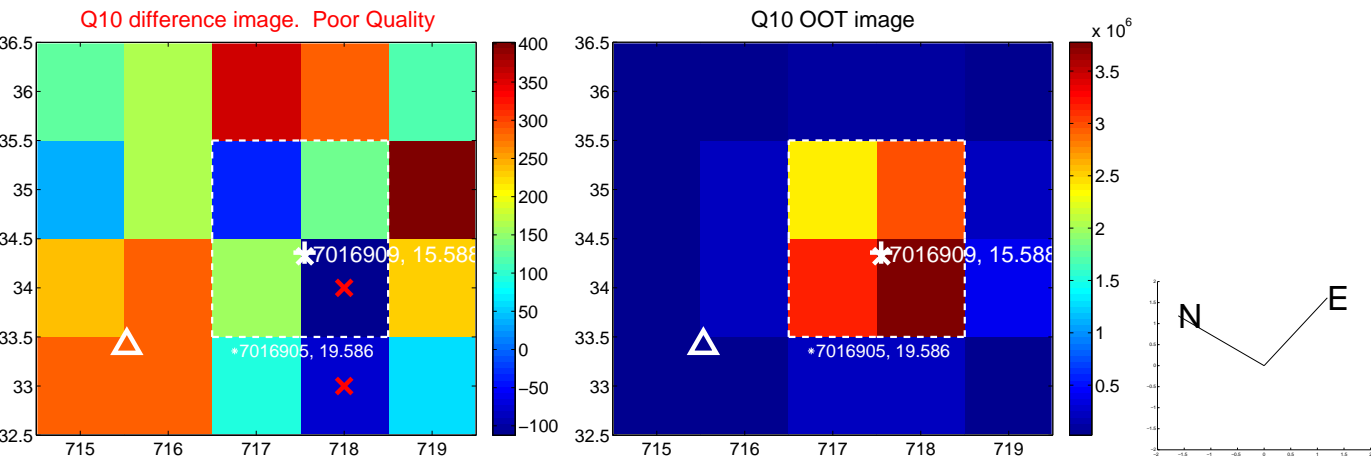
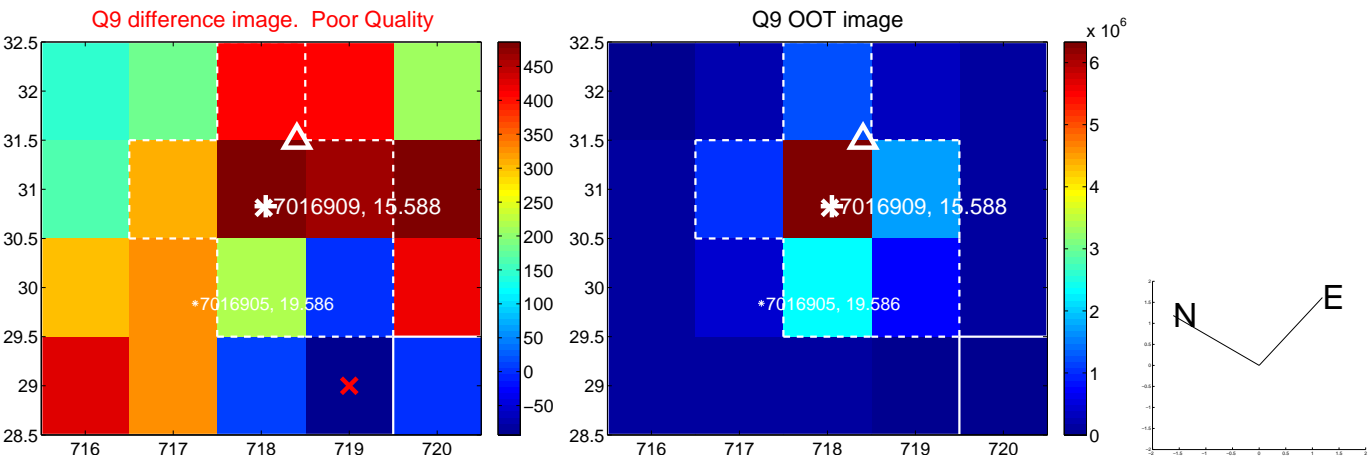


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

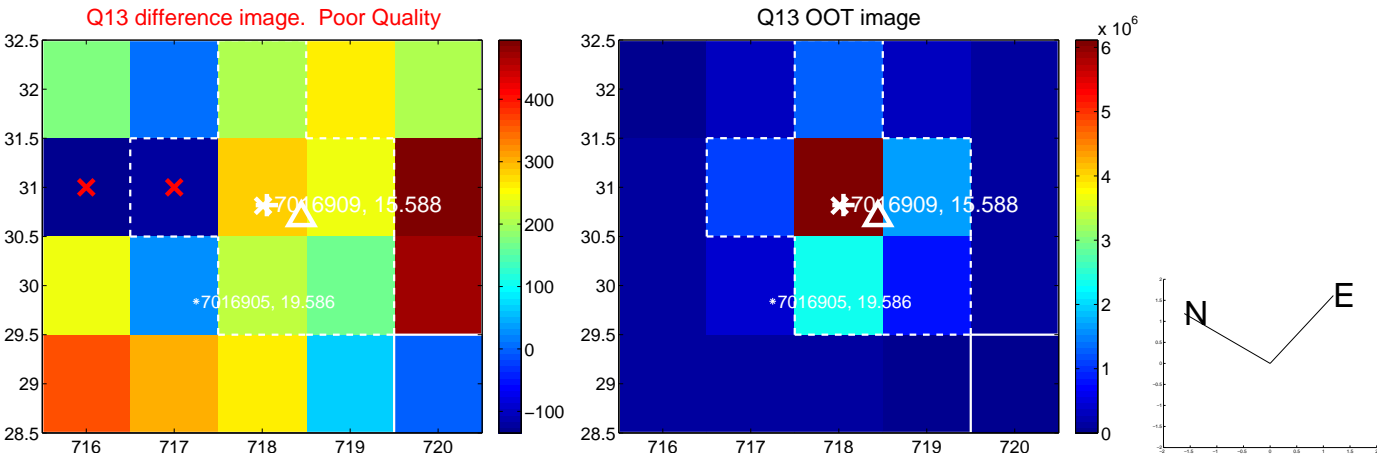




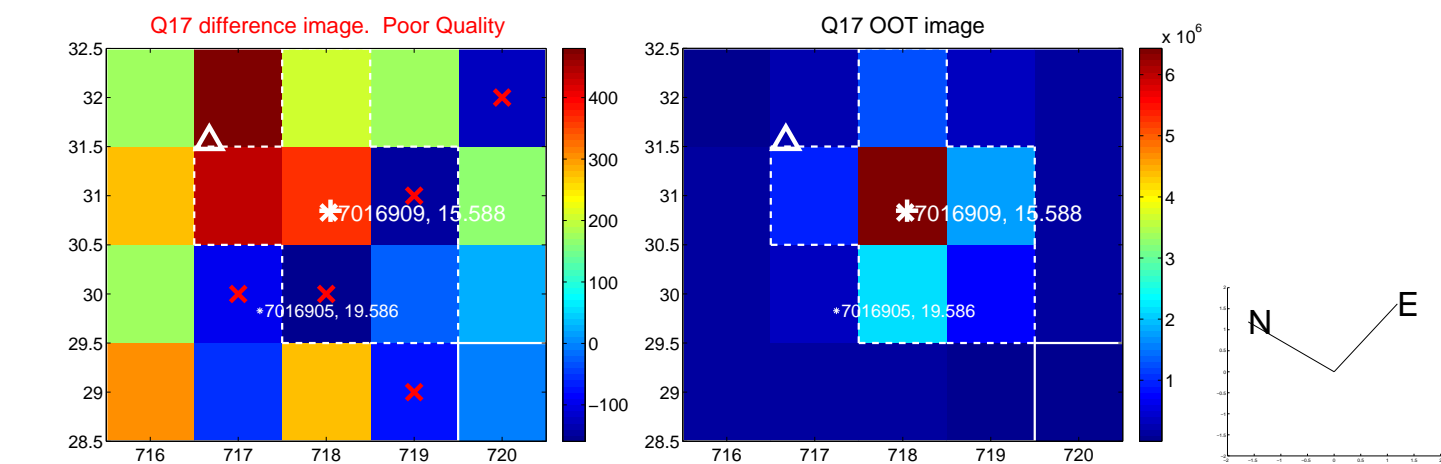
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



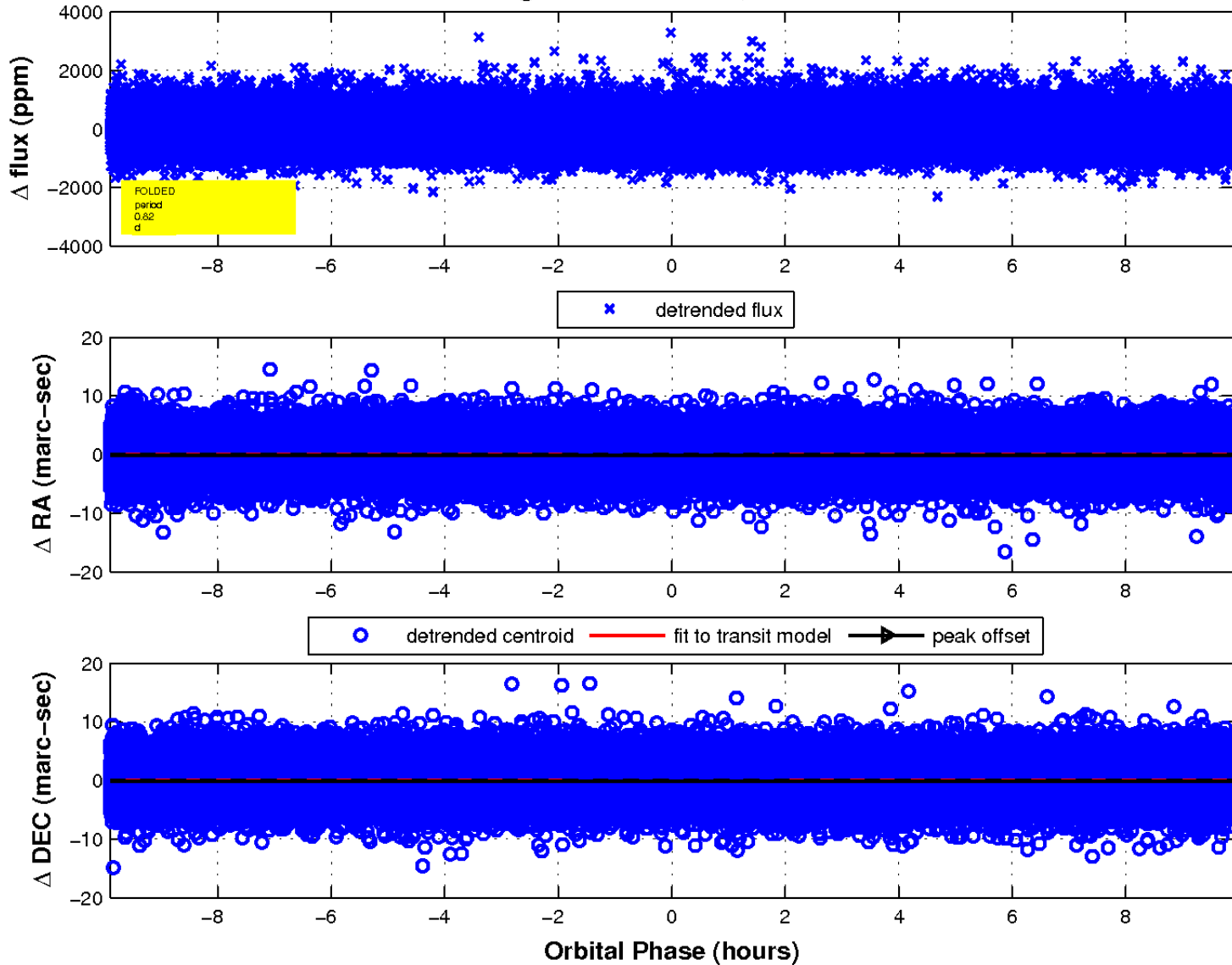
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

