

# KIC 009406892

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009406892-01	OBS	4186.01	2.213137	132.725298	57.7	3.525	12.5	12.8	0.83	5921	0.74	844.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009406892-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

**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.

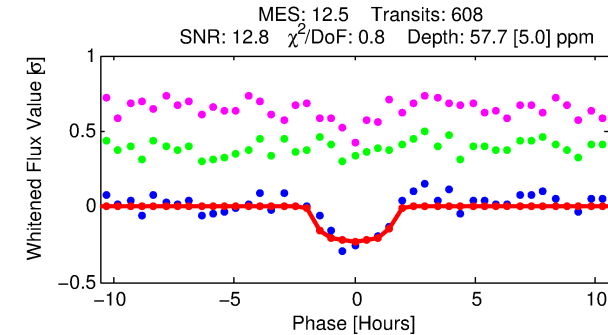
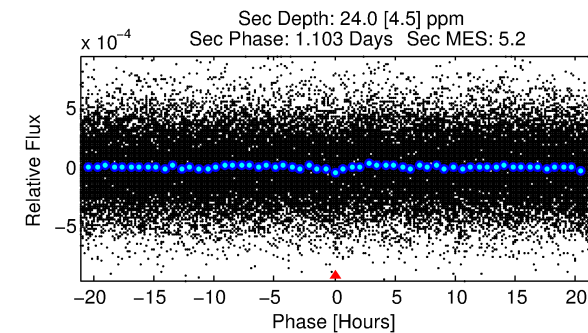
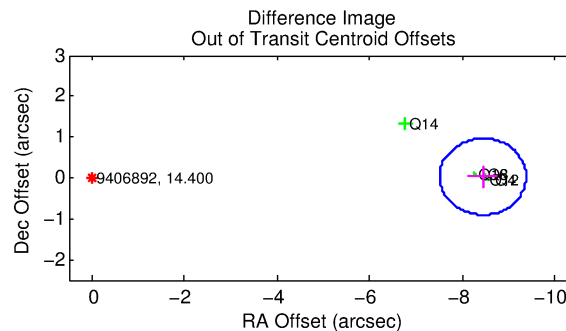
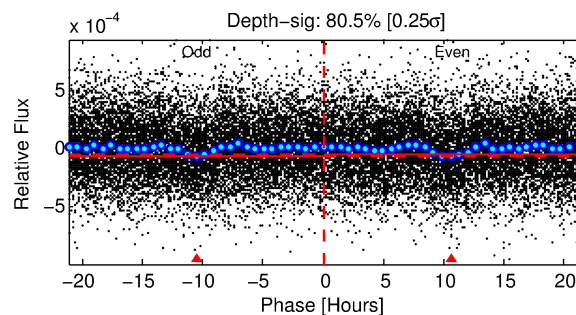
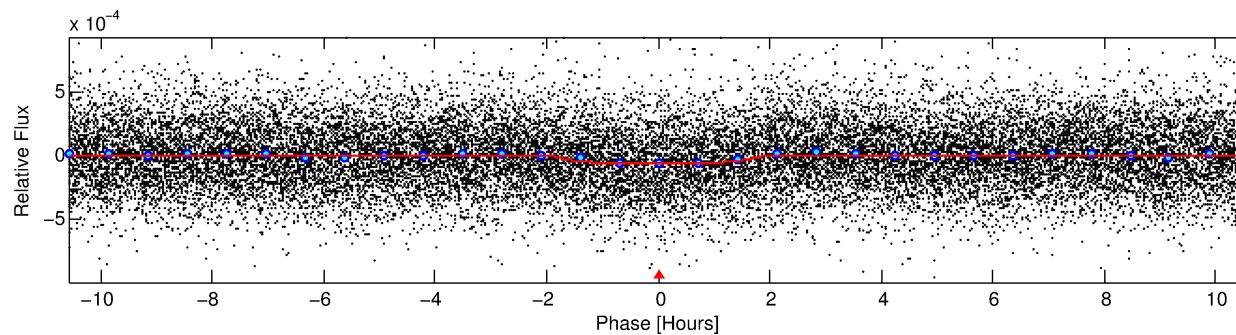
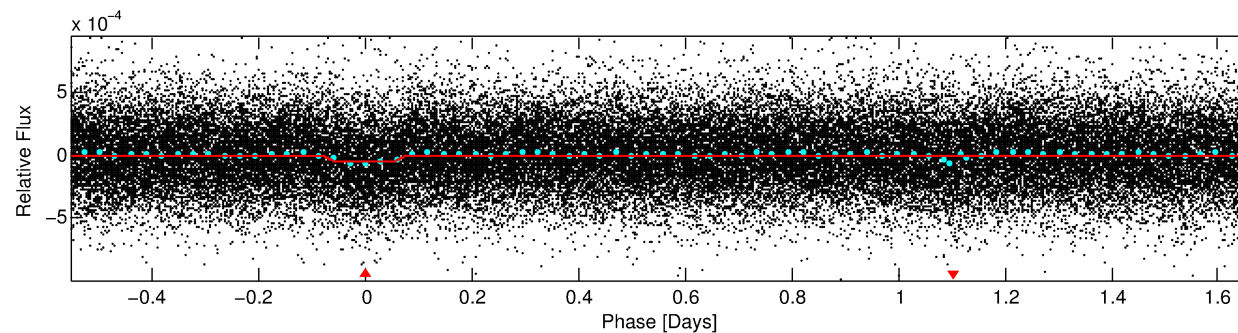
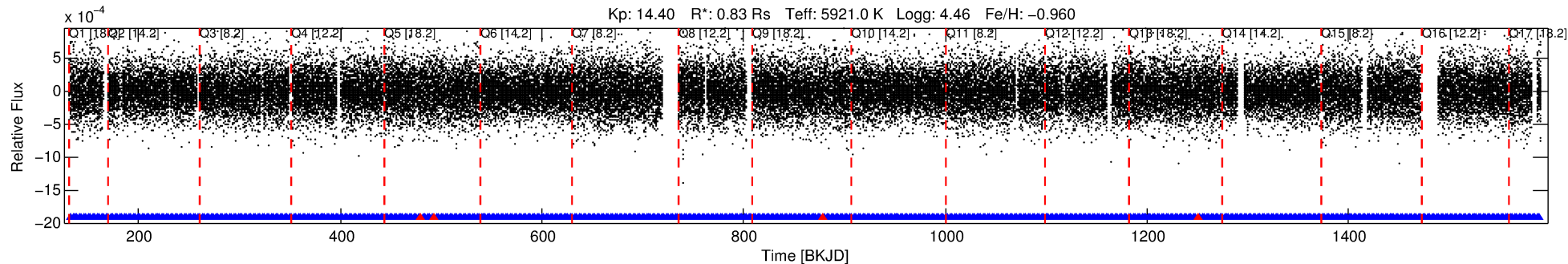
## Ephemeris Match Information For 009406892-01

No Significant Match Found

# DV One-Page Summary

KIC: 9406892 Candidate: 1 of 1 Period: 2.213 d  
KOI: K04186.01 Corr: 0.945

Kp: 14.40 R\*: 0.83 Rs Teff: 5921.0 K Logg: 4.46 Fe/H: -0.960



## DV Fit Results:

Period = 2.21314 [0.00002] d  
Epoch = 132.7253 [0.0038] BKJD  
Rp/R\* = 0.0081 [0.0035]  
a/R\* = 2.38 [4.74]  
b = 0.90 [0.52]  
Seff = 844.34 [243.68]  
Teq = 1375 [99] K  
Rp = 0.74 [0.35] Re  
a = 0.0300 [0.0052] AU  
Ag = 21.83 [20.13] [1.04σ]  
Teffp = 4594 [1024] K [3.13σ]

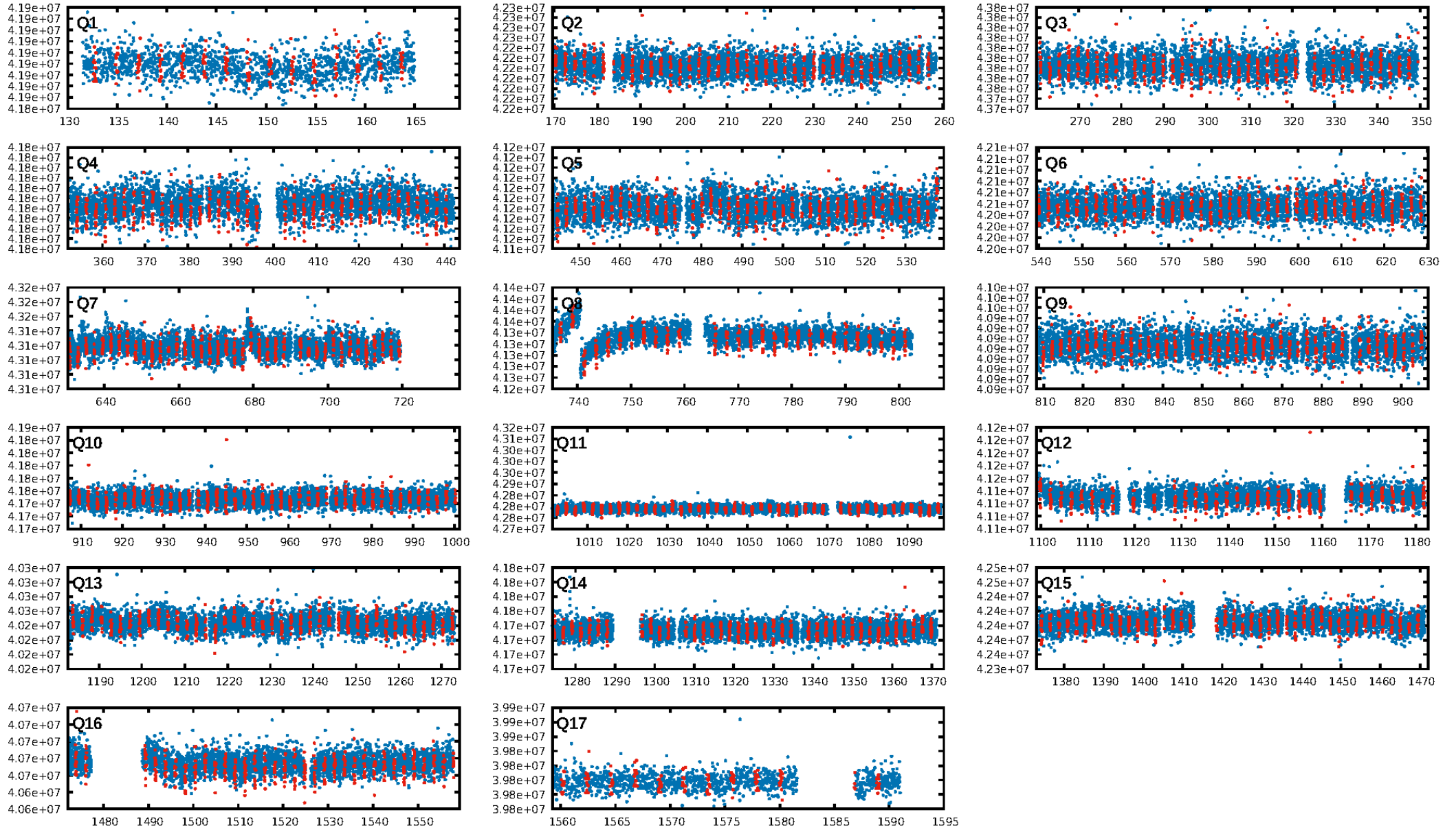
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.09e-34  
RollingBand-fgt: 0.99 [577/581]  
GhostDiagnostic-chr: -0.2473  
Centroid-sig: 0.0%  
Centroid-so: 18.977 arcsec [15.64σ]  
OotOffset-rm: 8.444 arcsec [27.09σ]  
KicOffset-rm: 8.676 arcsec [33.72σ]  
OotOffset-st: 1/0/4/0 [5]  
KicOffset-st: 1/0/4/0 [5]  
DiffImageQuality-fgm: 1.00 [5/5]  
DiffImageOverlap-fno: 1.00 [17/17]

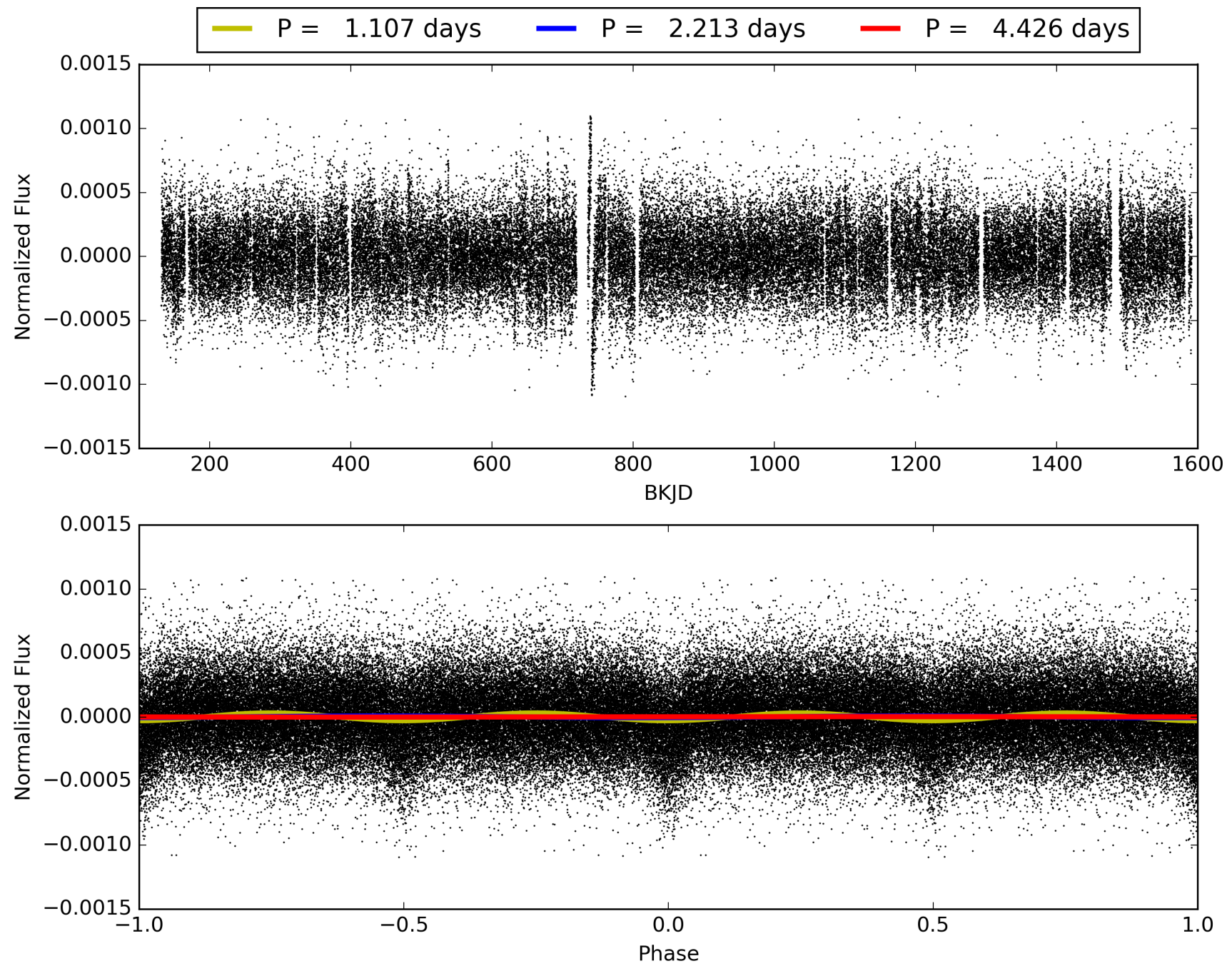
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:10:54 Z

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

# TCE 009406892-01, PDC Light Curves

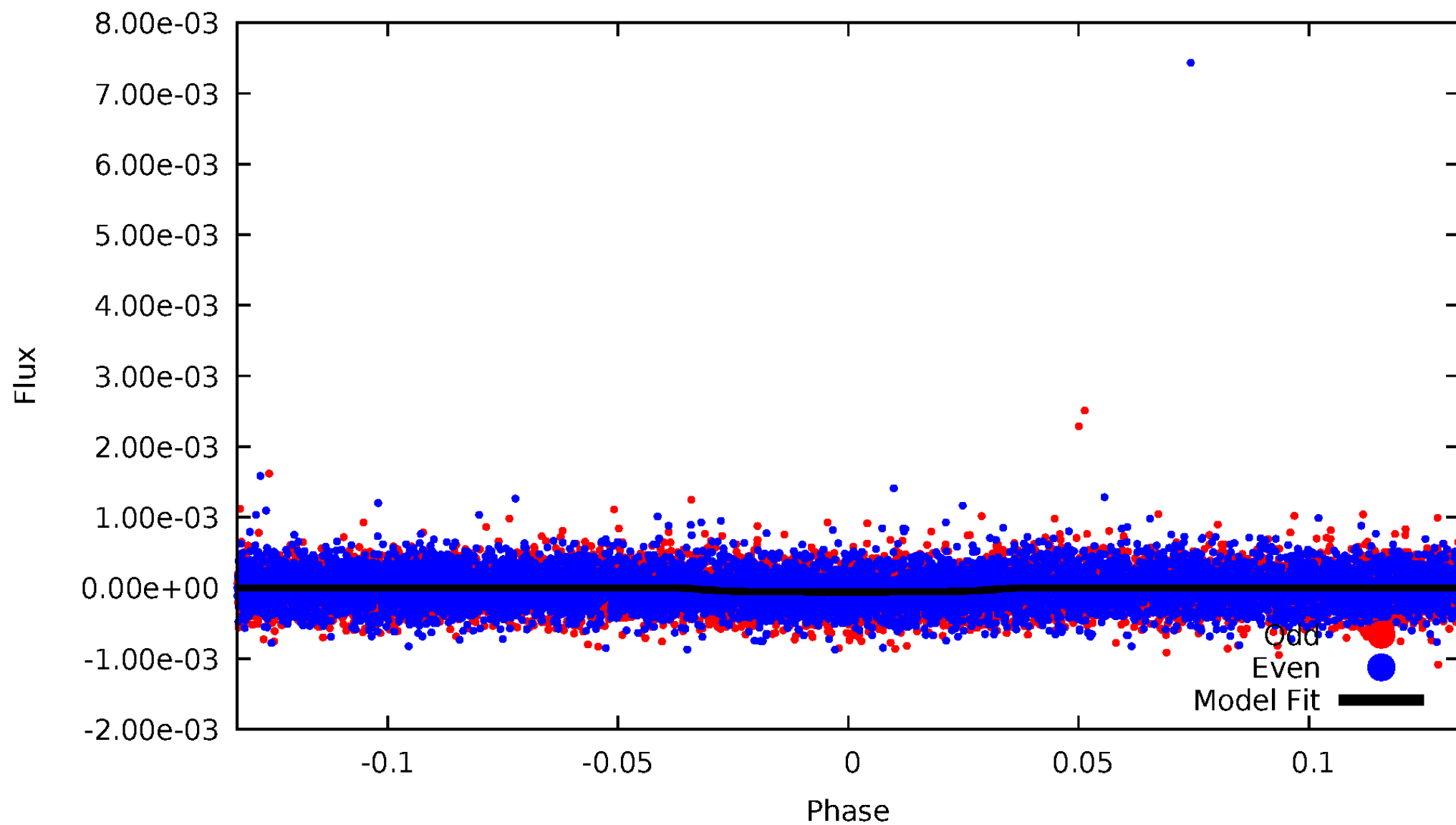


TCE 009406892-01



# DV Odd/Even

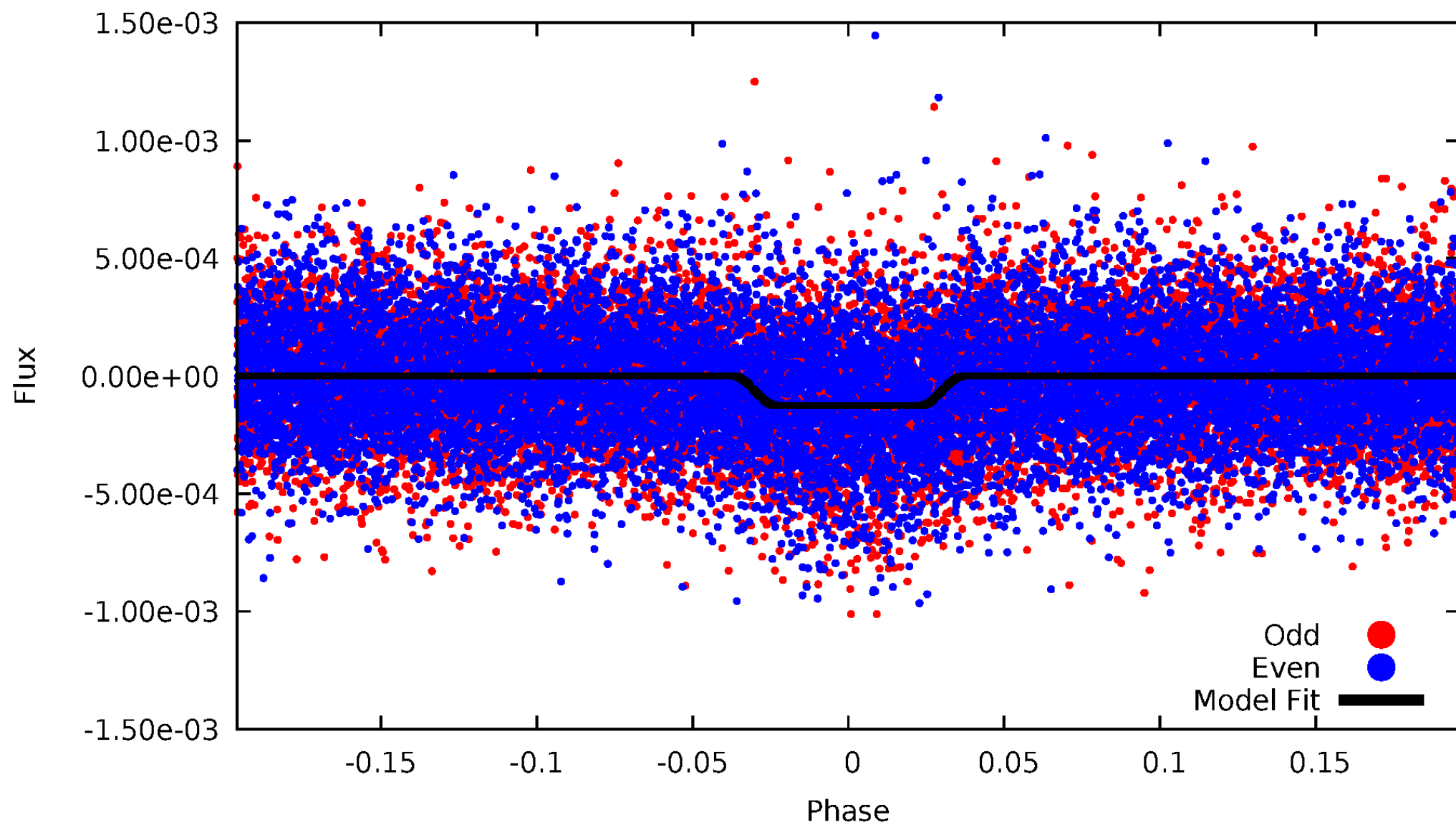
TCE 009406892-01



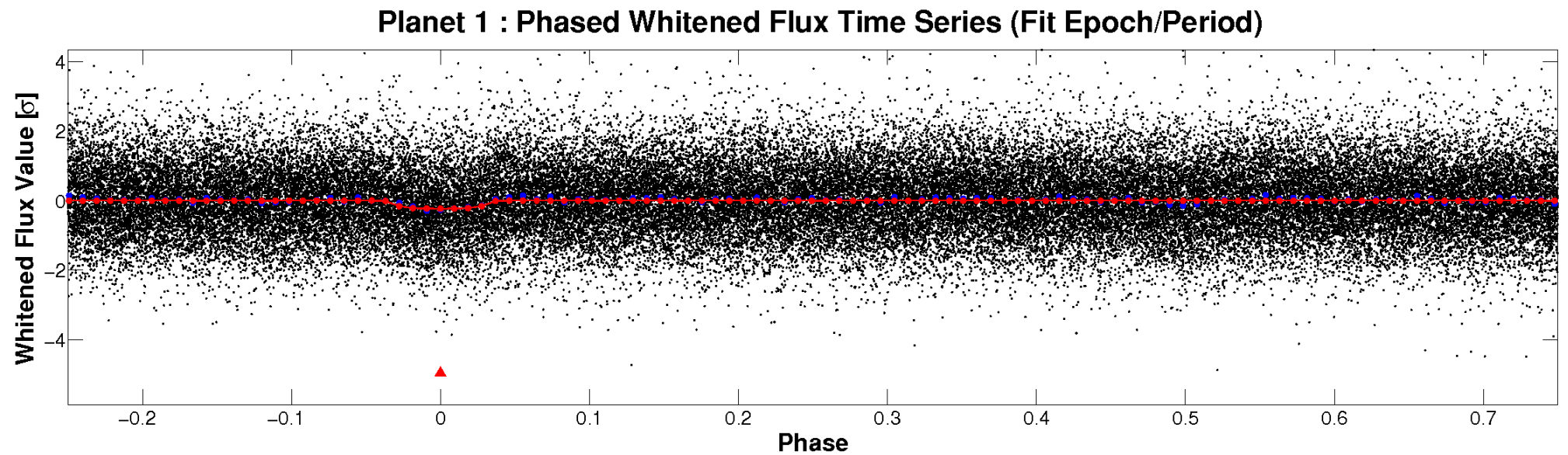
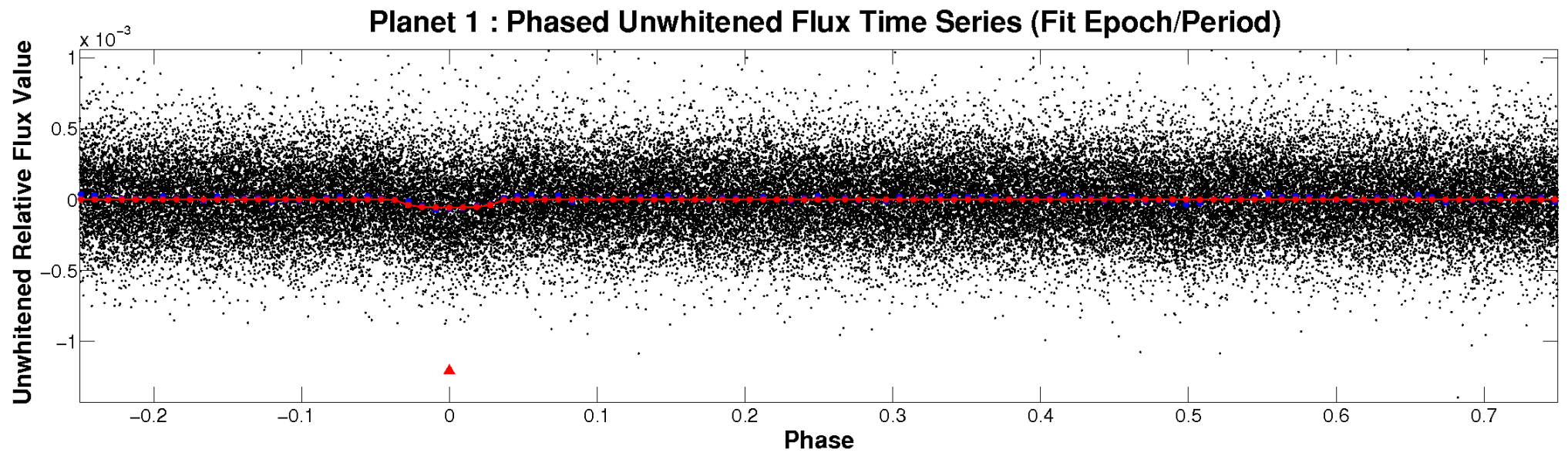


# ALT Odd/Even

TCE 009406892-01

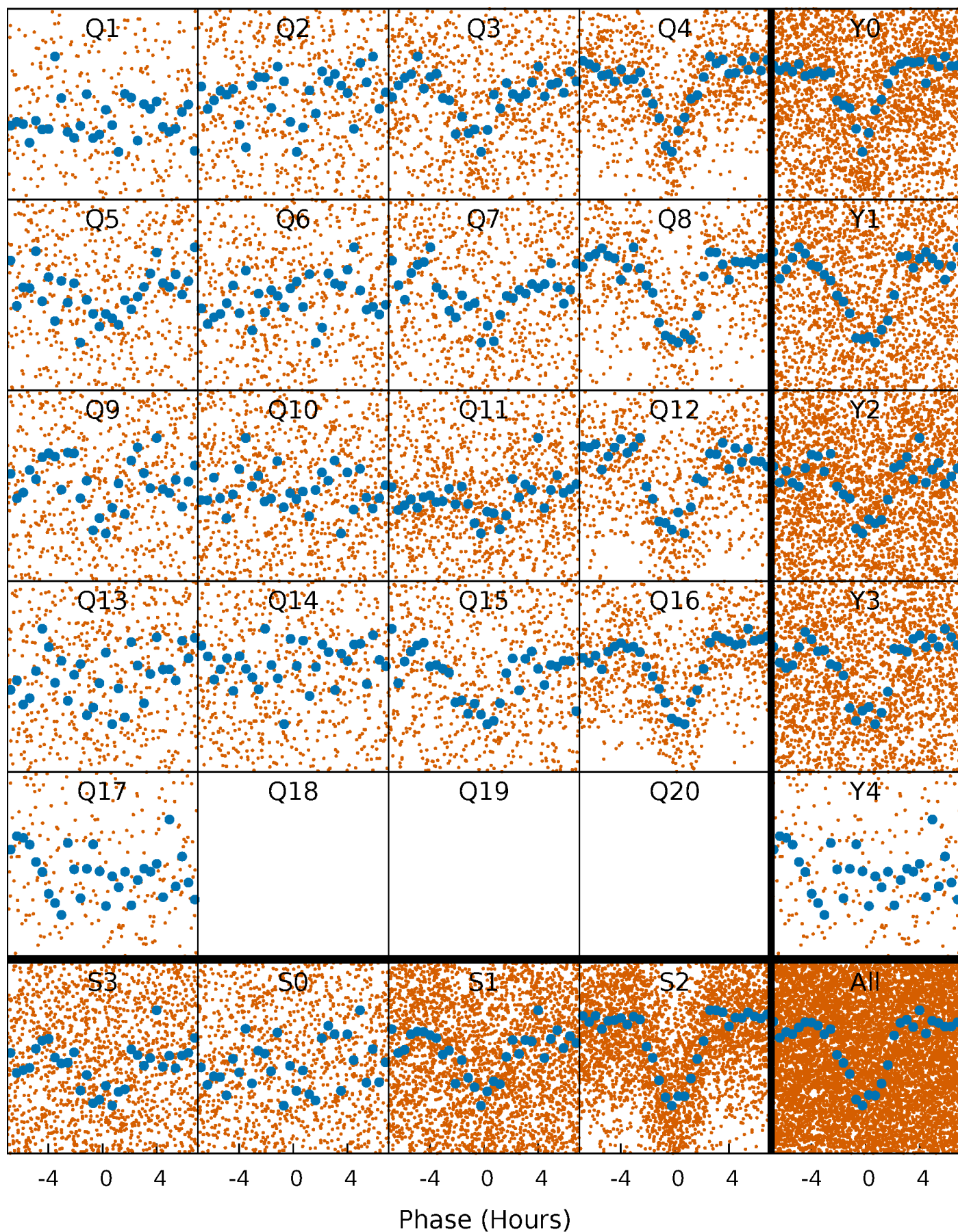


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

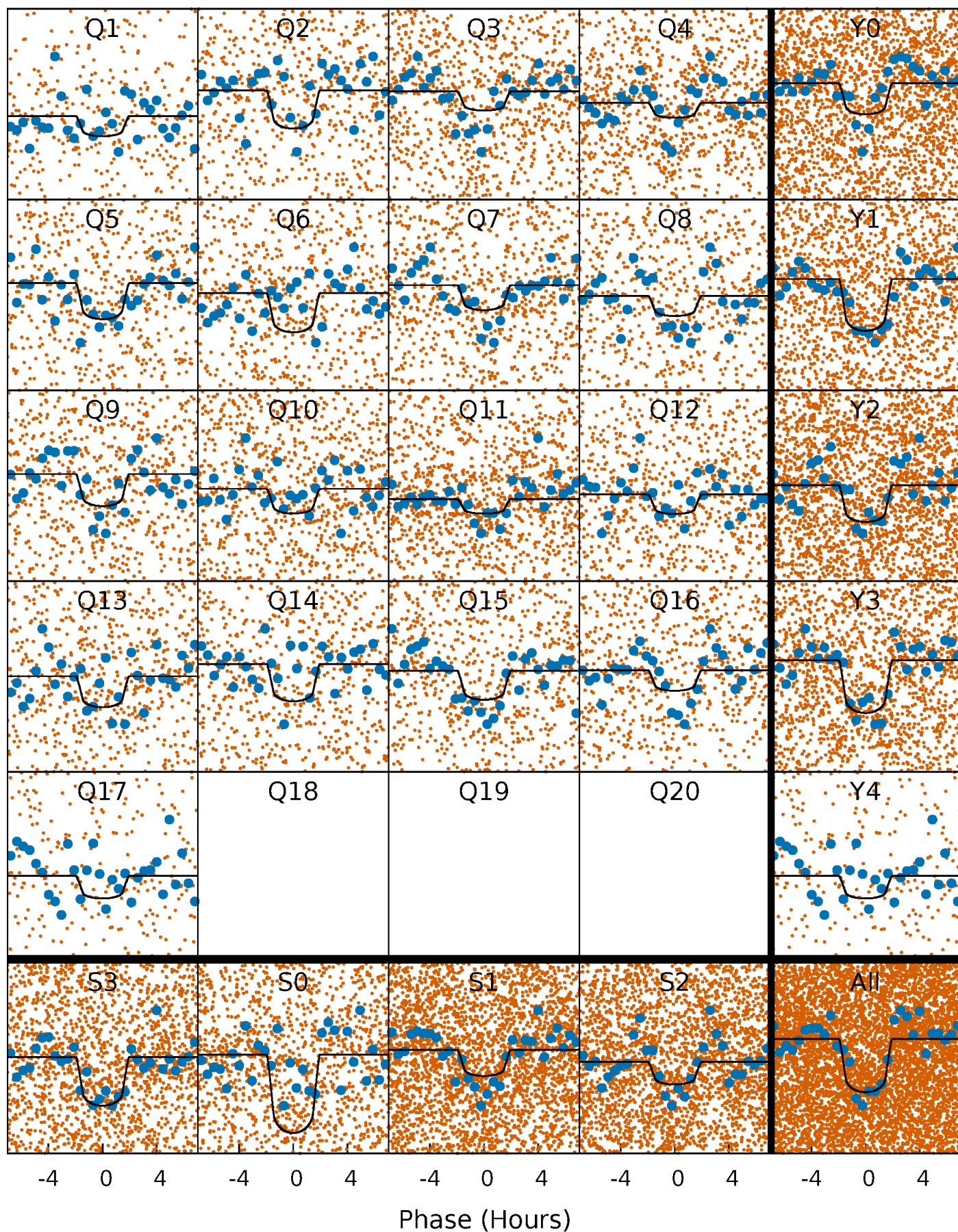
TCE 009406892-01 P= 2.213137 Days  $T_0=132.725298$  (BKJD)





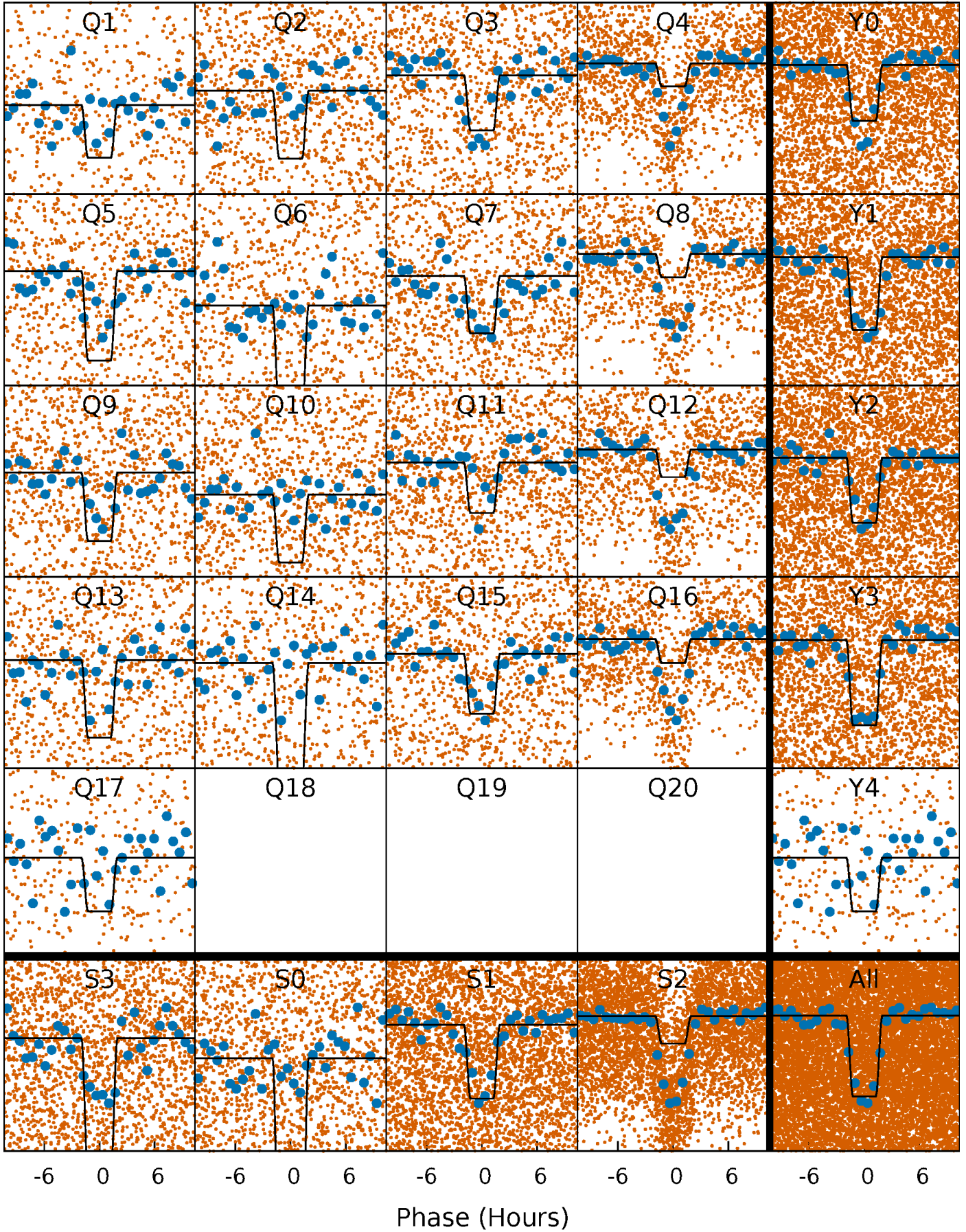
# DV Quarter-Phased Transit Curves

TCE 009406892-01 P= 2.213137 Days  $T_0=132.725298$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

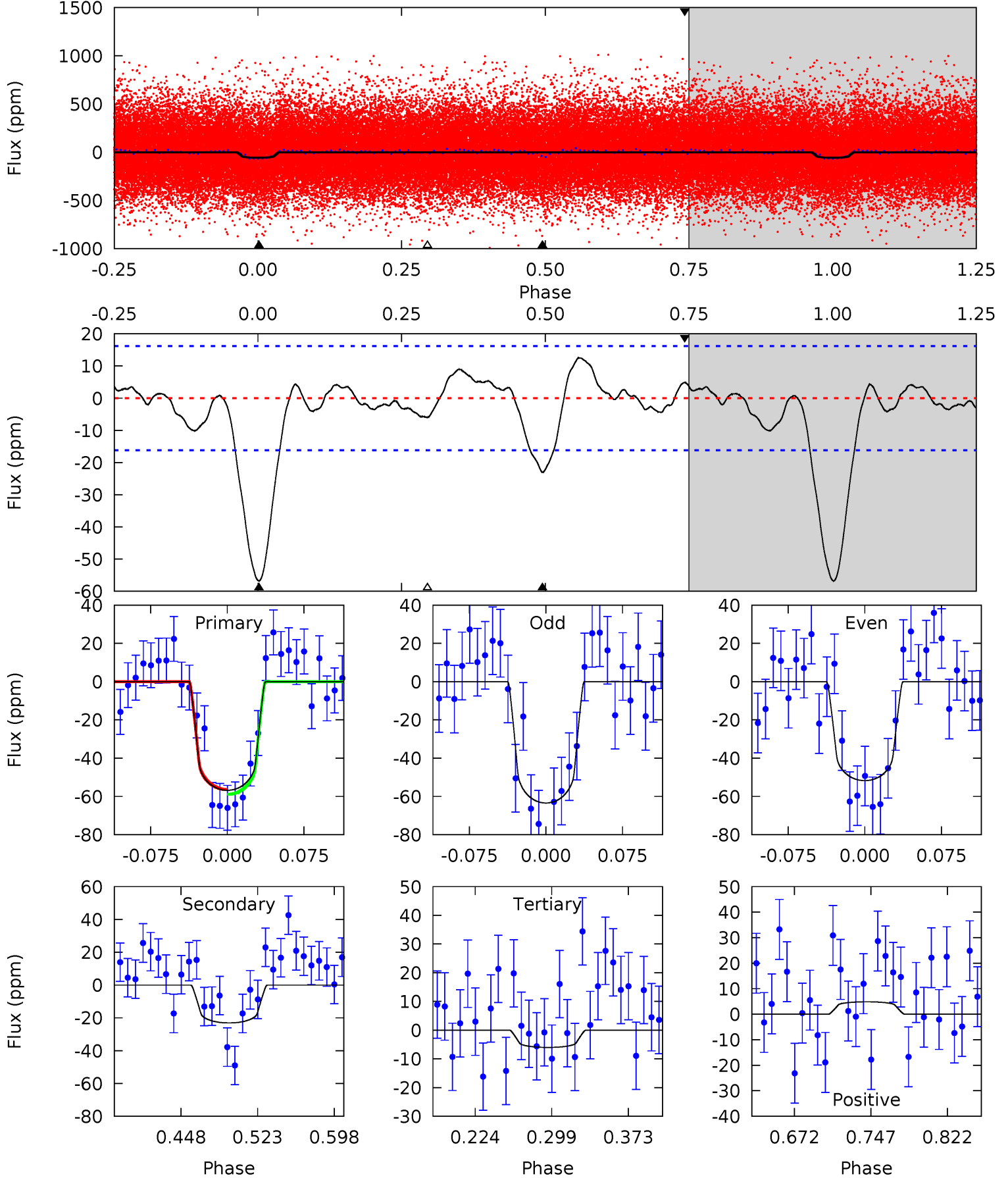
TCE 009406892-01 P= 2.213159 Days  $T_0=132.715641$  (BKJD)



# DV Model-Shift Uniqueness Test

009406892-01, P = 2.213137 Days, E = 130.512161 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
16.2	6.60	1.72	1.39	4.63	1.78	1.24	14.5	14.8	4.88	5.21	1.67	1.06	0.18	0.36

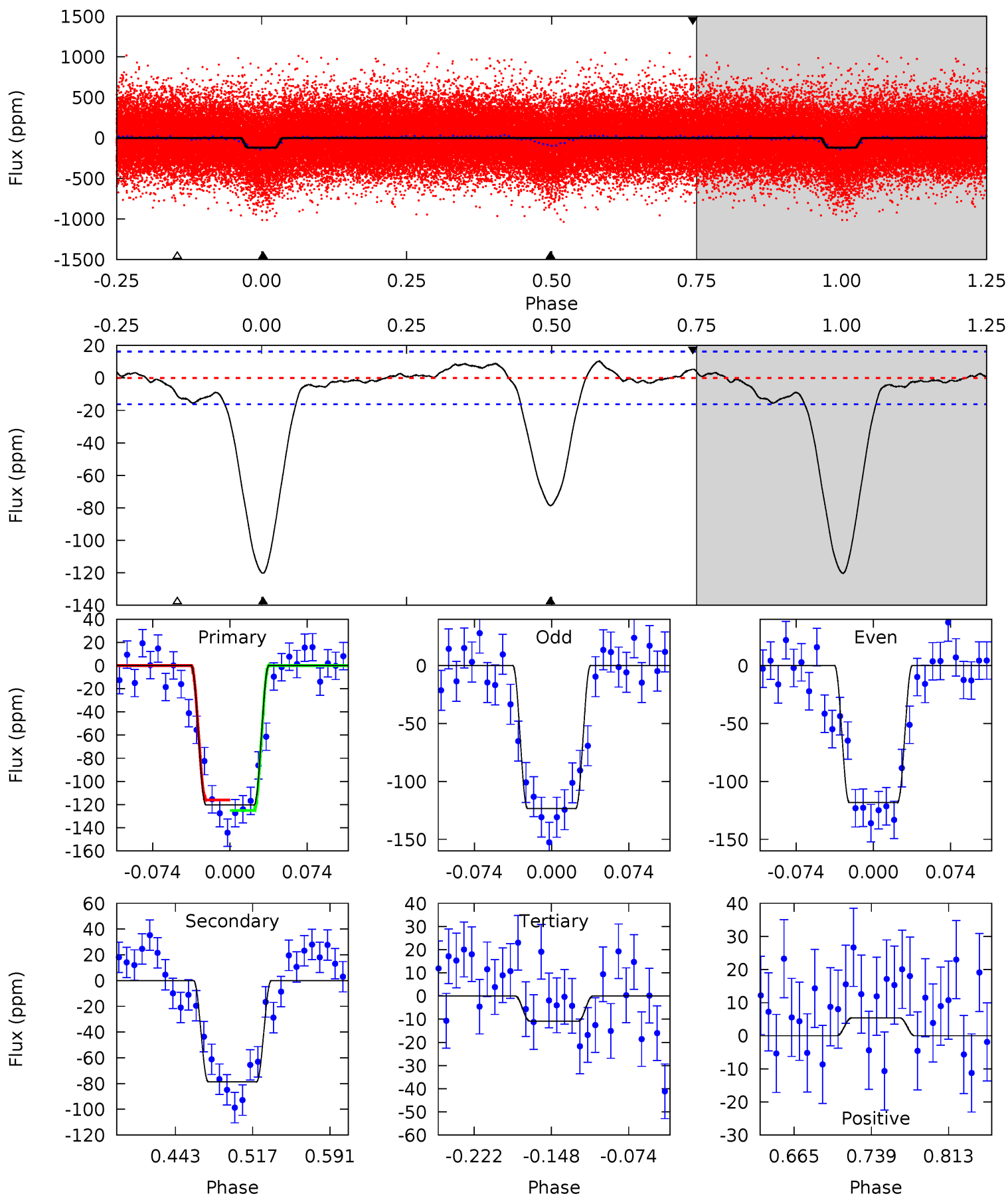




# Alt Model-Shift Uniqueness Test

009406892-01, P = 2.213159 Days, E = 130.502482 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
34.3	22.4	3.10	1.53	4.63	1.79	1.63	31.2	32.7	19.3	20.9	0.73	1.31	0.08	1.29





### Stellar Parameters For KIC 009406892

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5921^{+178}_{-160}$	$4.465^{+0.135}_{-0.149}$	$-0.960^{+0.300}_{-0.250}$	$0.830^{+0.160}_{-0.107}$	$0.733^{+0.085}_{-0.037}$	$1.808^{+1.065}_{-0.715}$
	+3%/-3%	+3%/-3%	+31%/-26%	+19%/-13%	+12%/-5%	+59%/-40%
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 009406892-01 / KOI 4186.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-23 \pm 3$	$0.74^{+0.38}_{-0.31}$	$1926^{+116}_{-105}$	$4688^{+1320}_{-654}$	$21^{+43}_{-12}$
Alt.	$-79 \pm 4$	$1.03^{+0.35}_{-0.34}$	$1924^{+126}_{-97}$	$5279^{+1105}_{-571}$	$37^{+45}_{-16}$

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

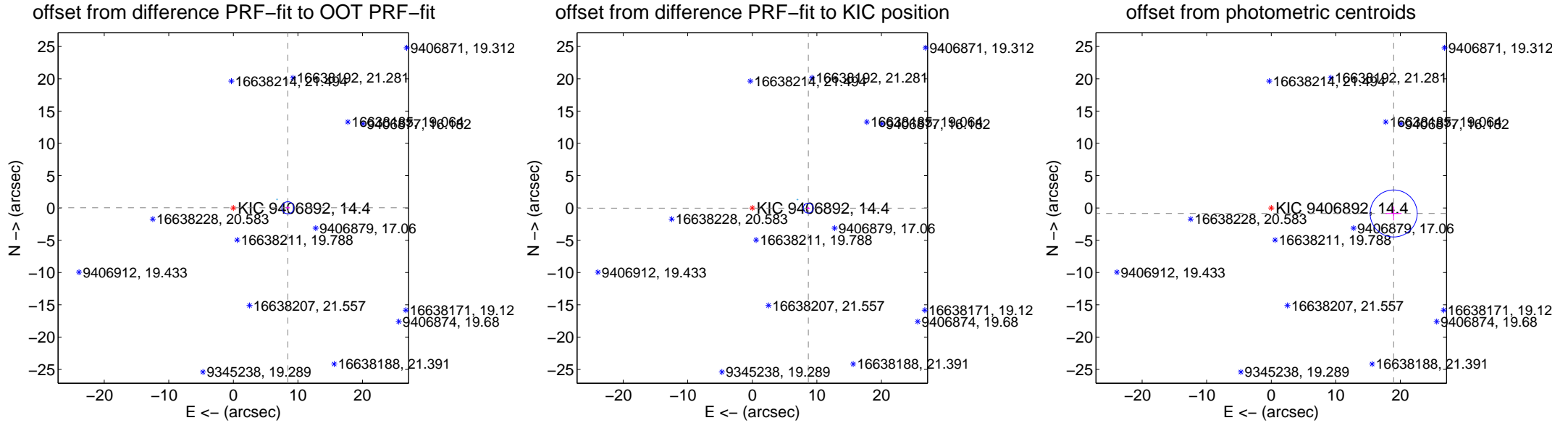
## DV Centroid Data

Supplemental centroid analysis for 009406892-01. Kepler magnitude: 14.40. Transit SNR 12.84

There are 5 quarters with good PRF difference image offsets

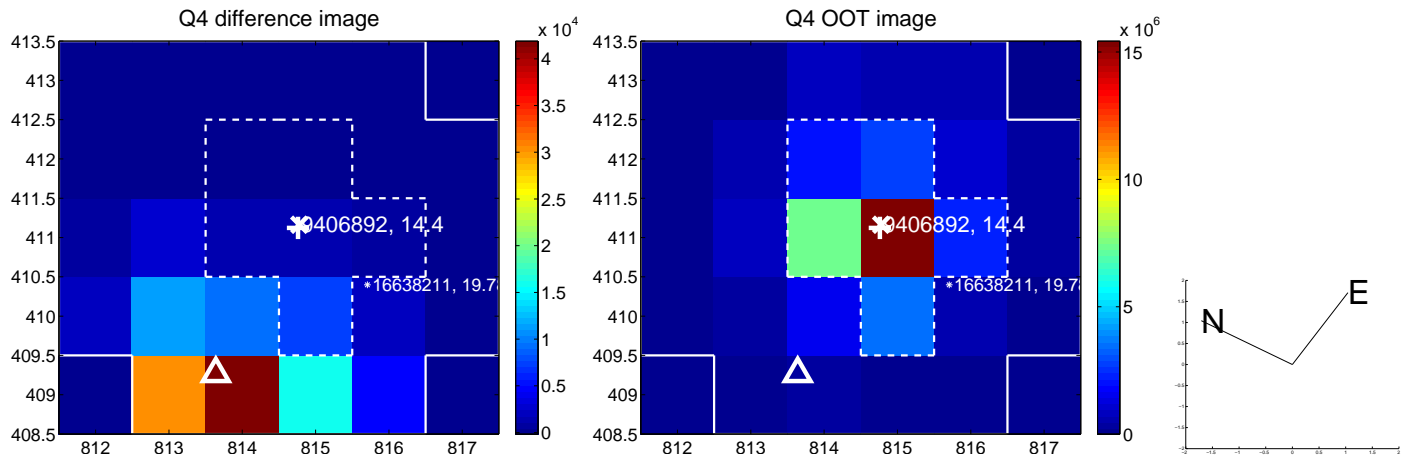
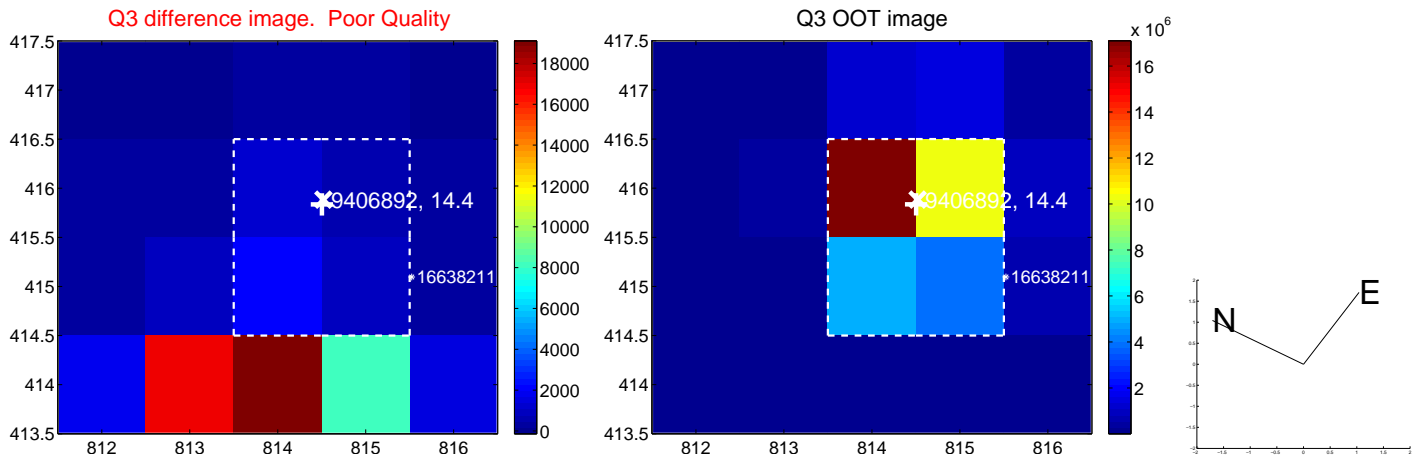
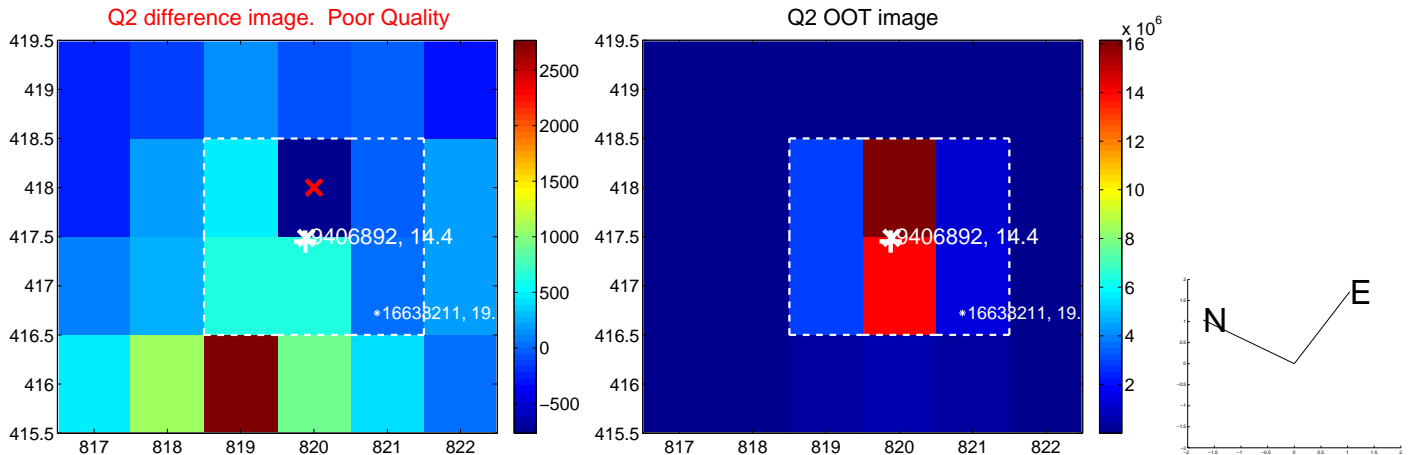
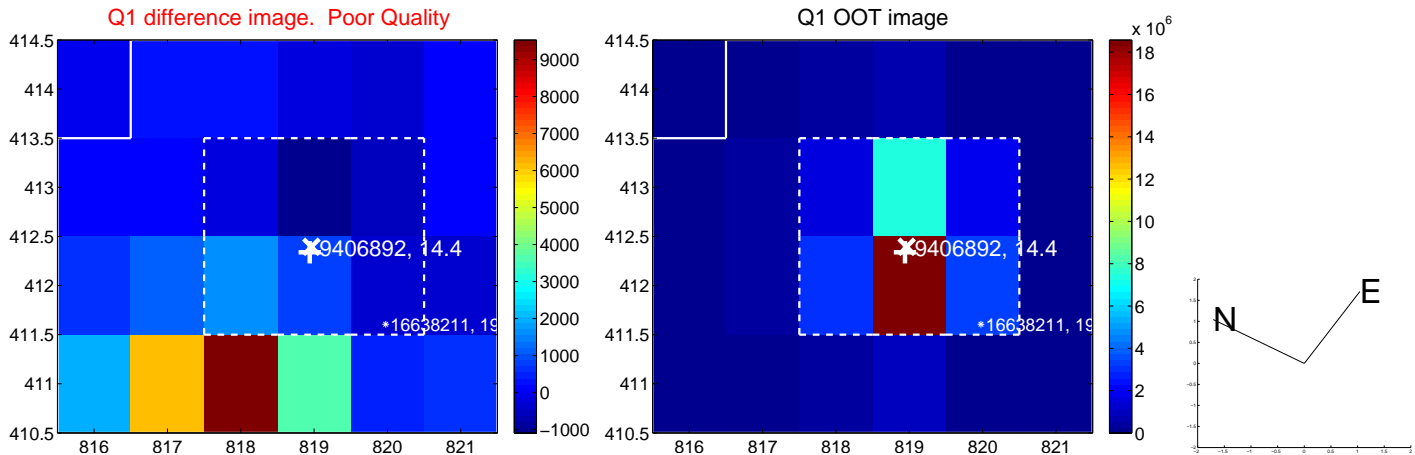
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$8.444 \pm 0.312$	27.09	$-8.444 \pm 0.312$	$0.027 \pm 0.246$
PRF-fit source offset from KIC position	$8.676 \pm 0.257$	33.72	$-8.676 \pm 0.257$	$-0.027 \pm 0.201$
photometric centroid source offset	$18.98 \pm 1.21$	15.64	$-18.96 \pm 1.21$	$-0.86 \pm 1.07$

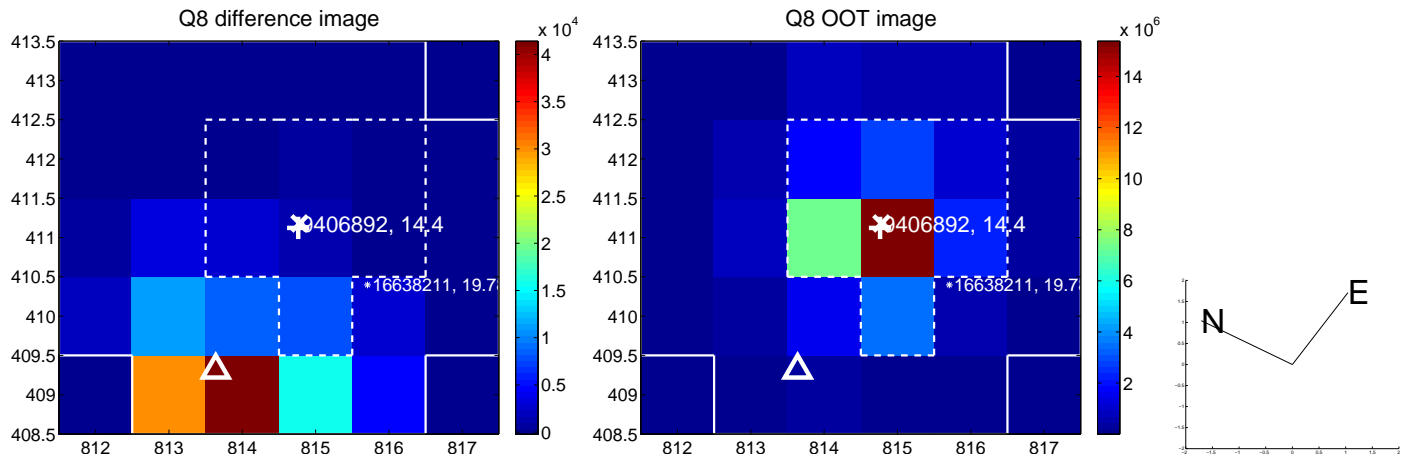
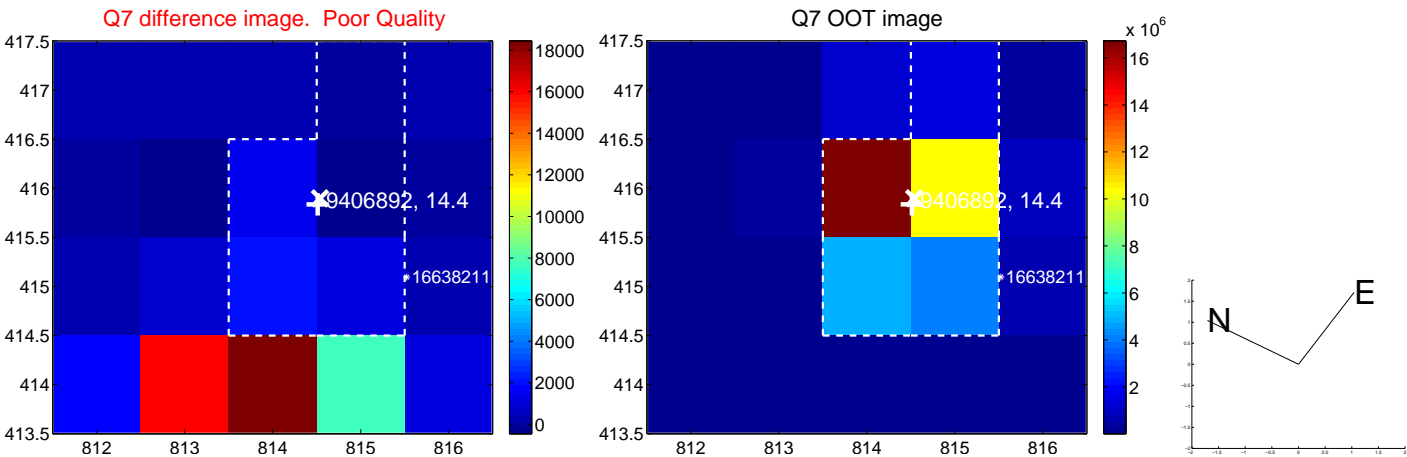
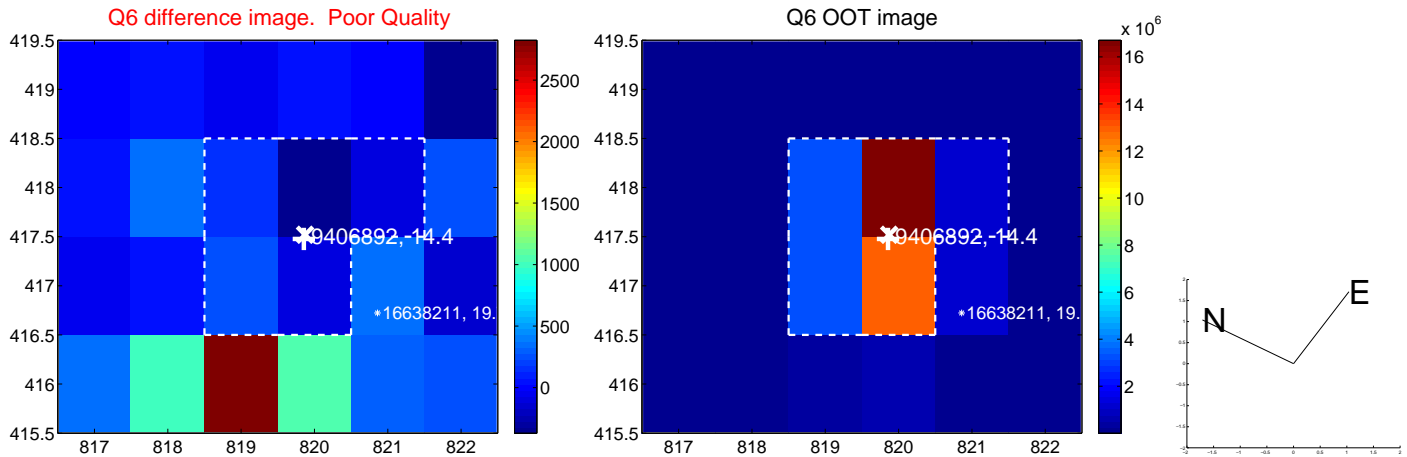
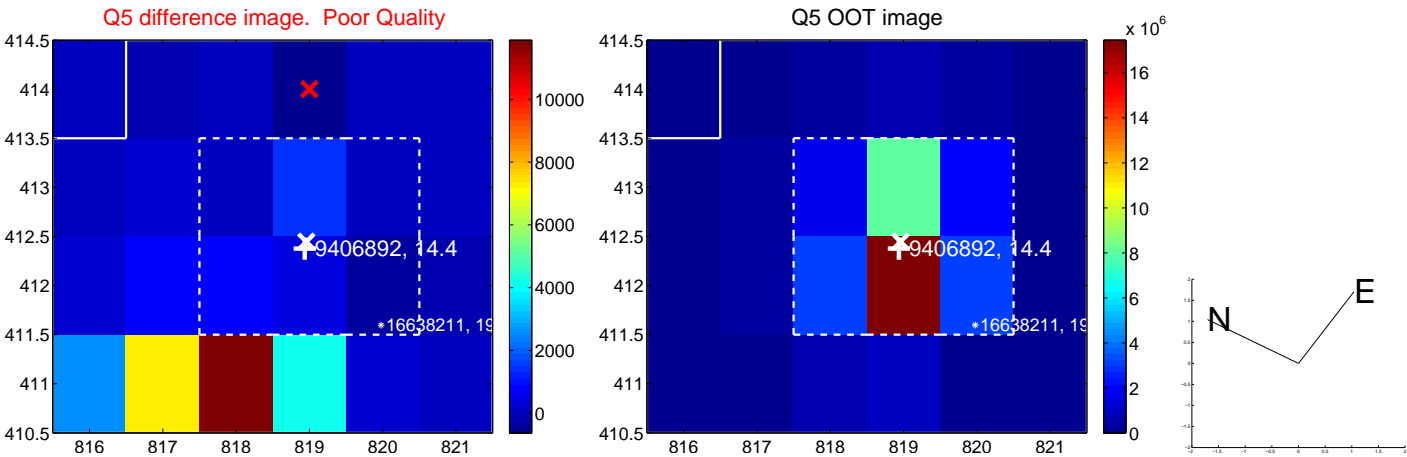


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

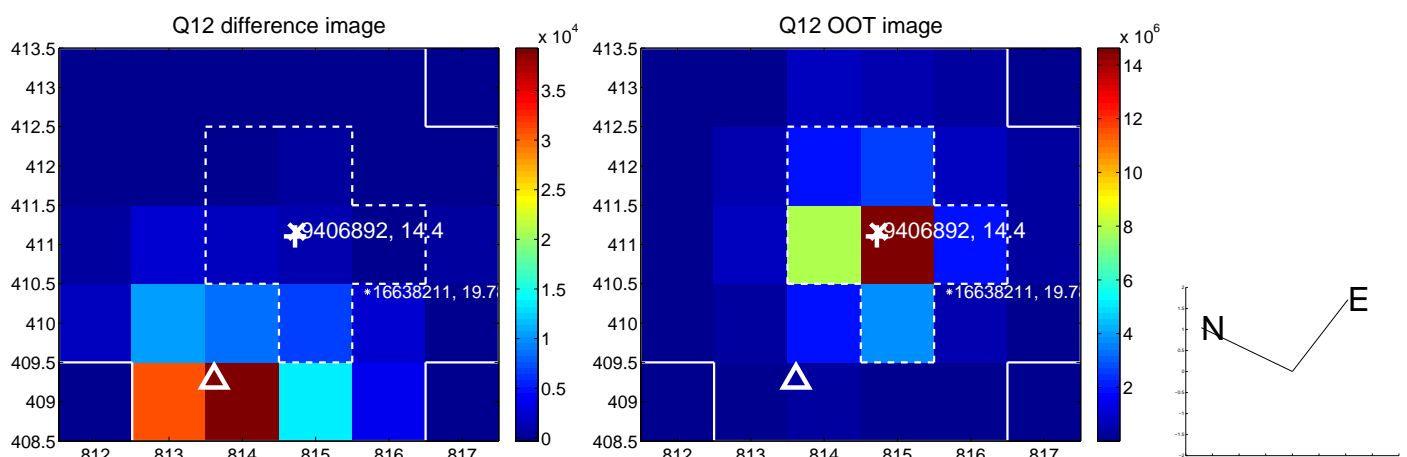
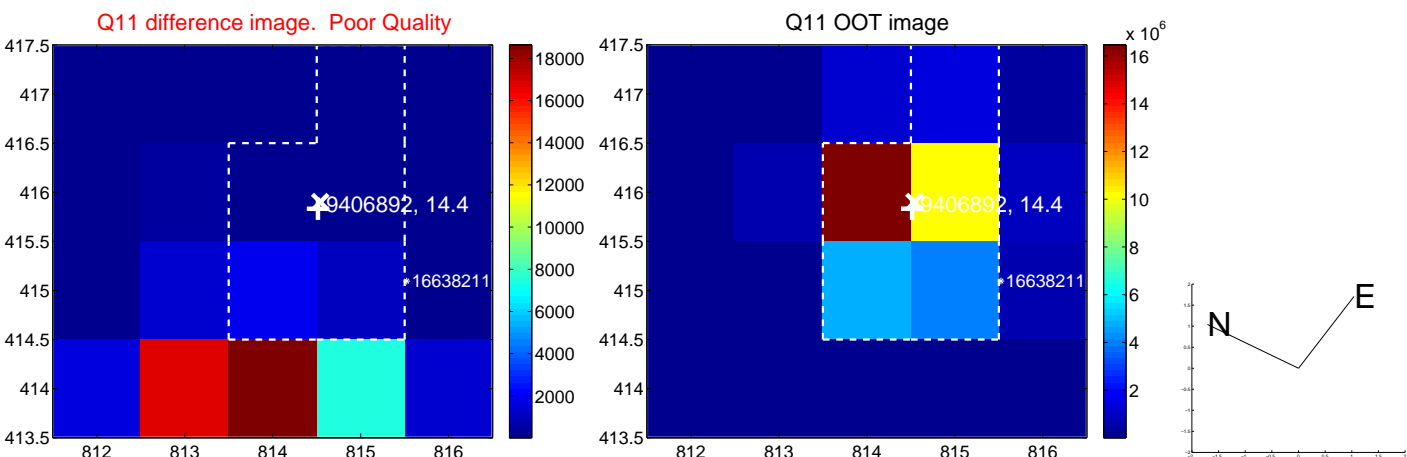
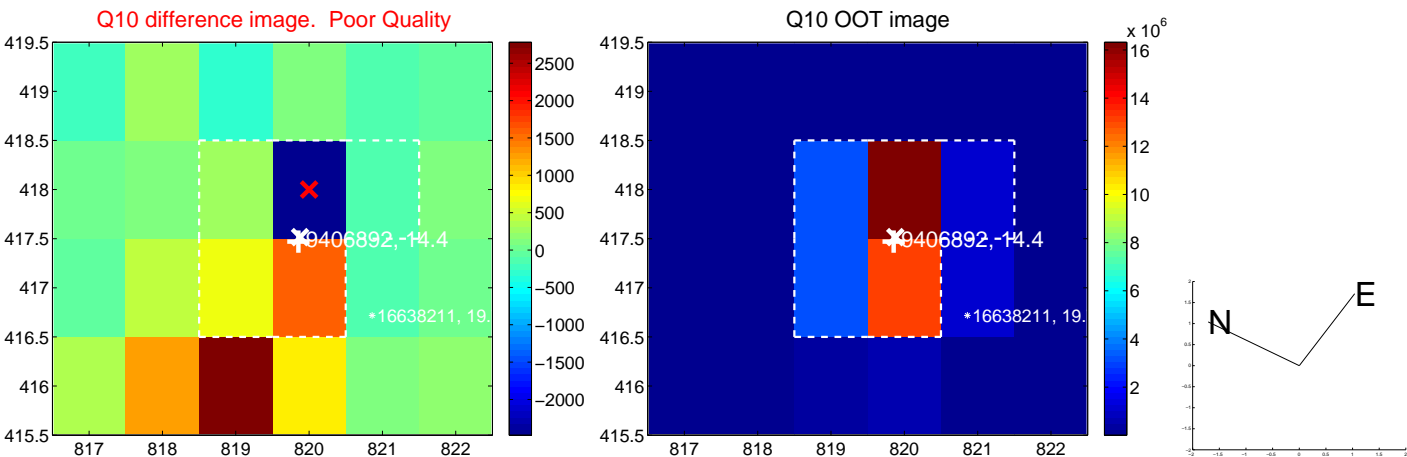
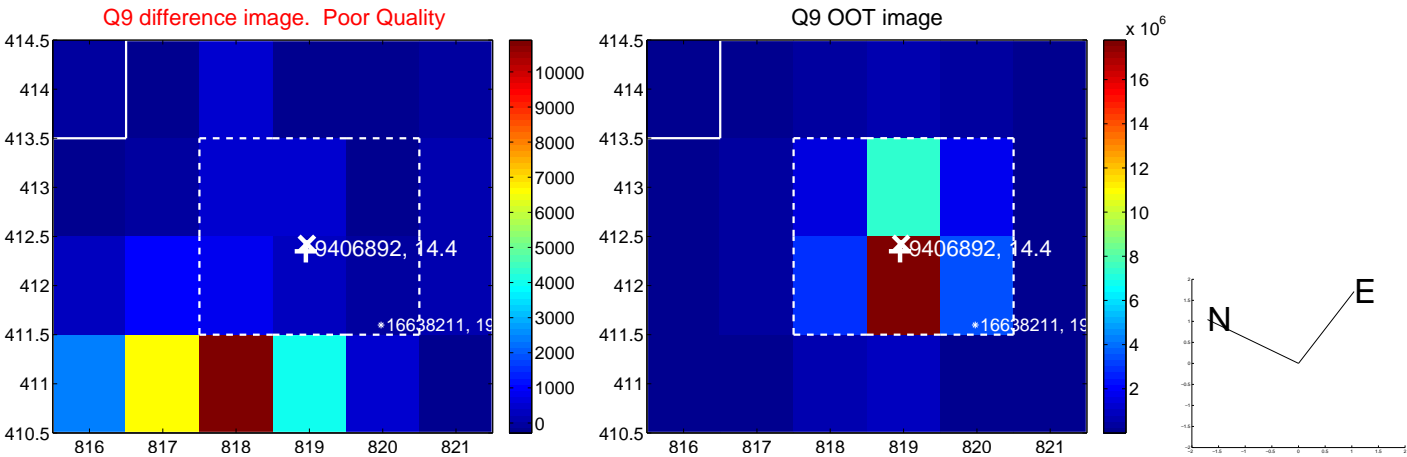


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

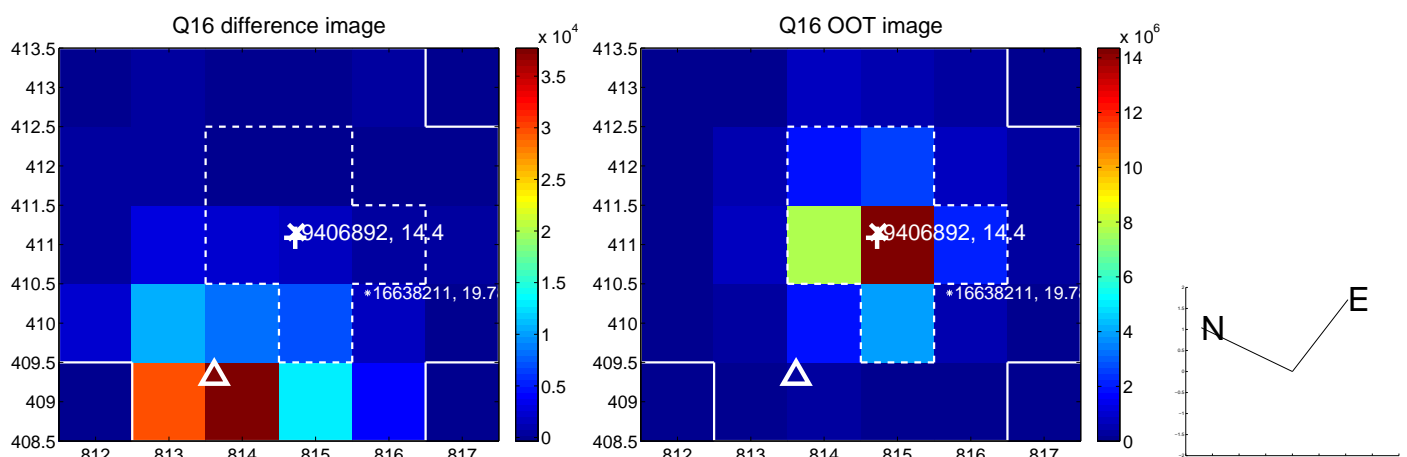
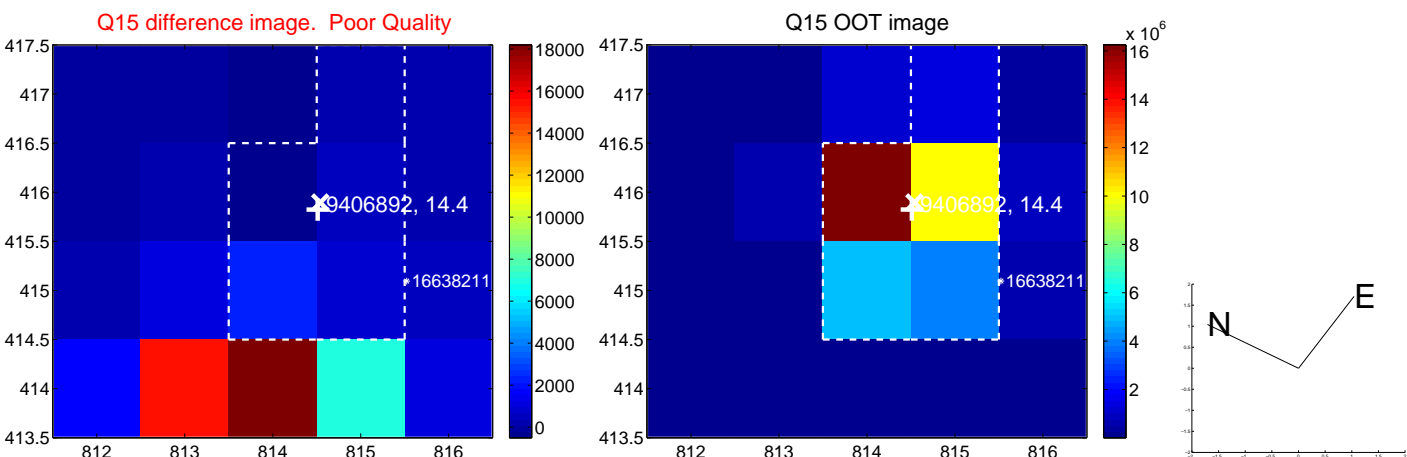
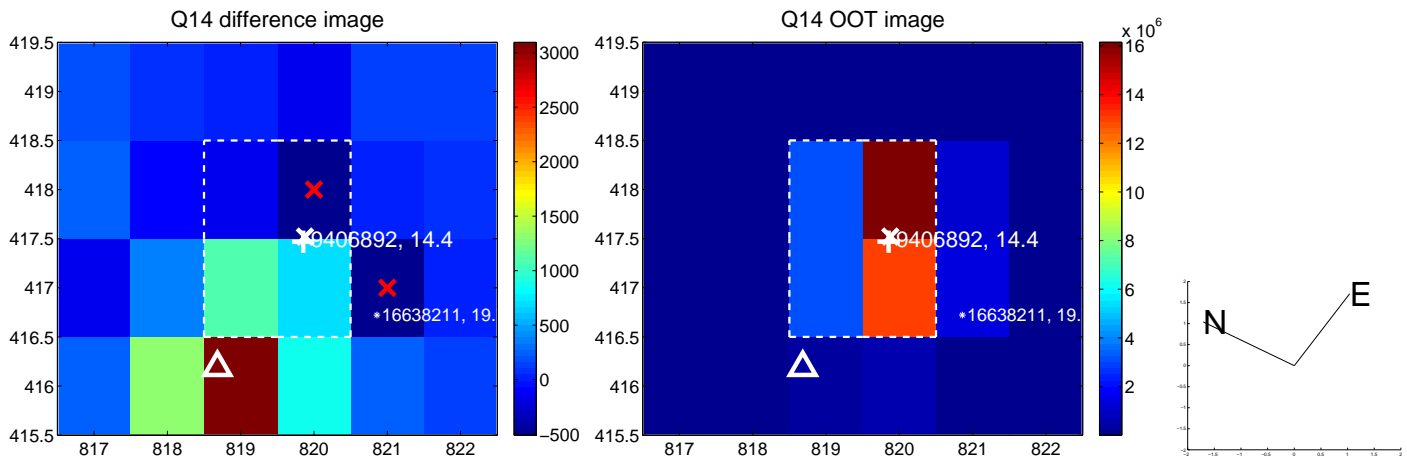
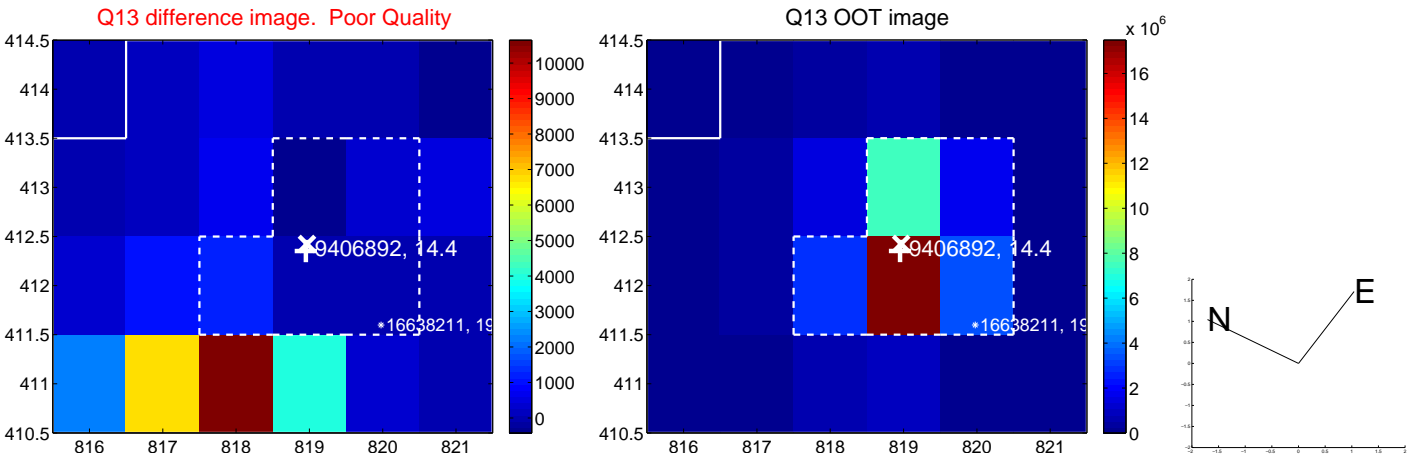




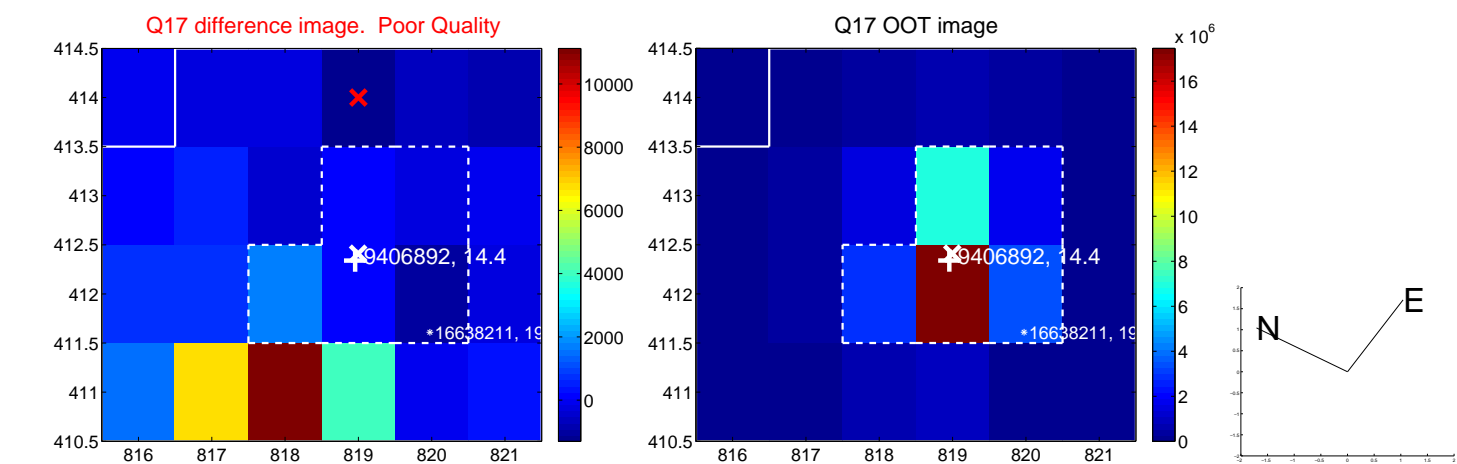
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



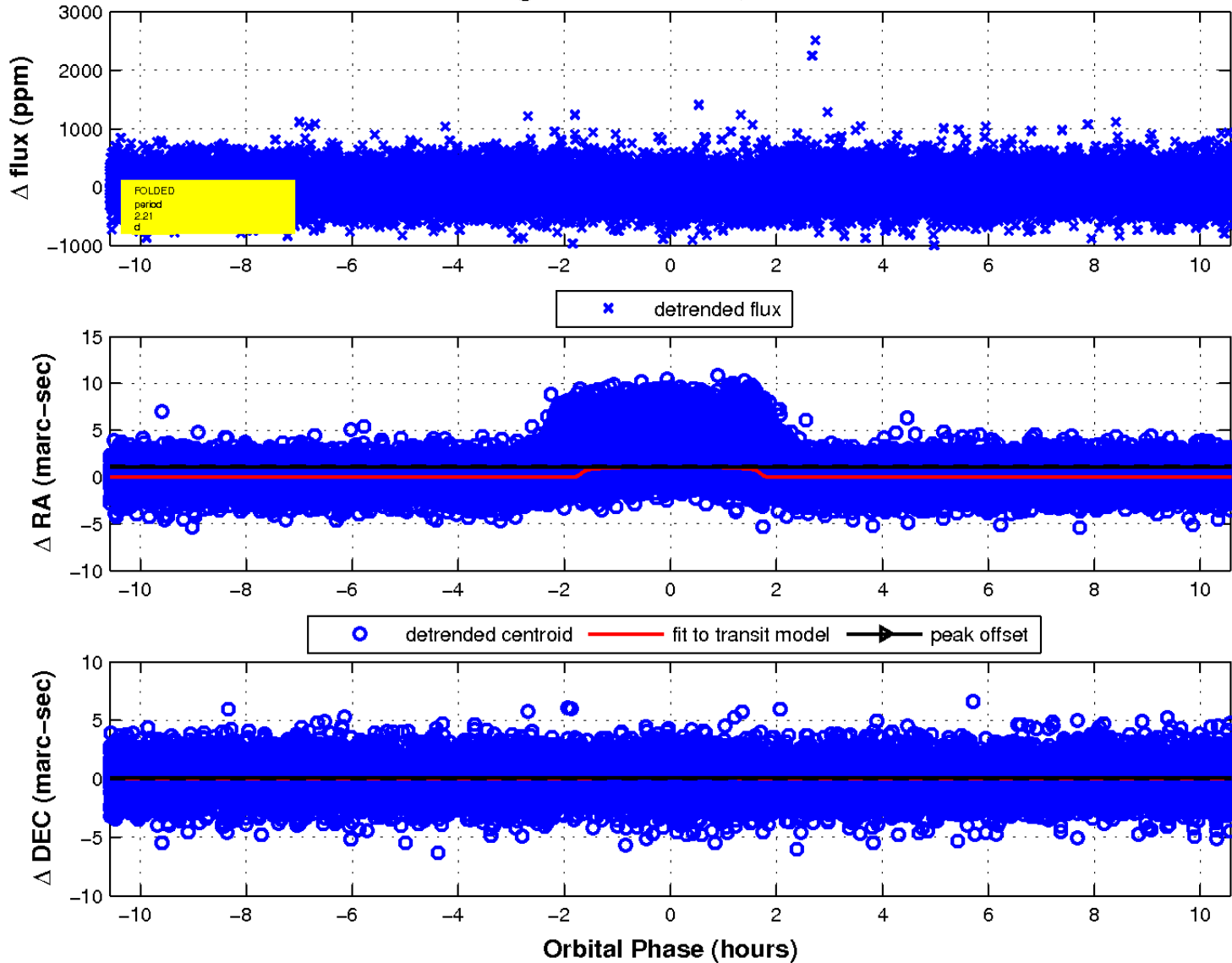
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

