

# KIC 008415109

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008415109-01	OBS	No	0.939530	132.045093	3.5	9.399	11.3	5.1	2.52	9709	0.49	79047.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008415109-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—CENT_SATURATED

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

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

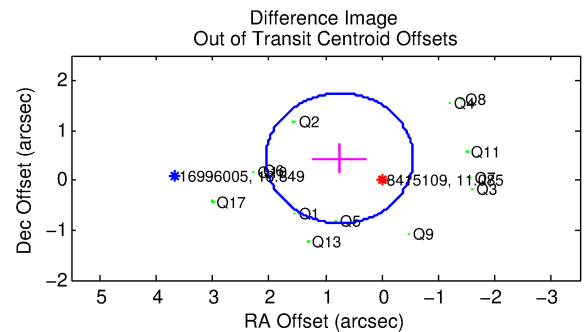
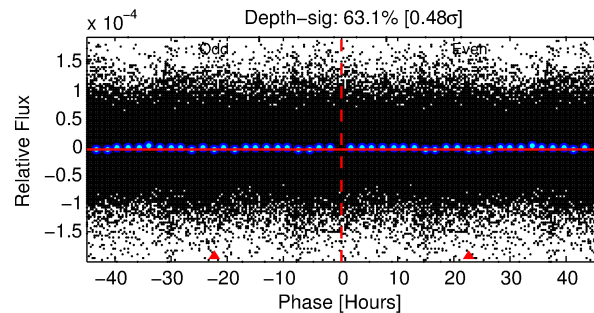
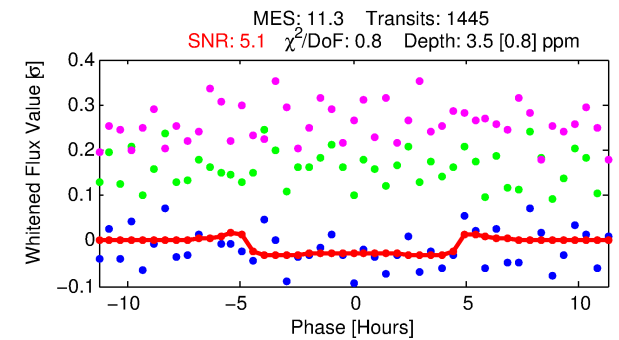
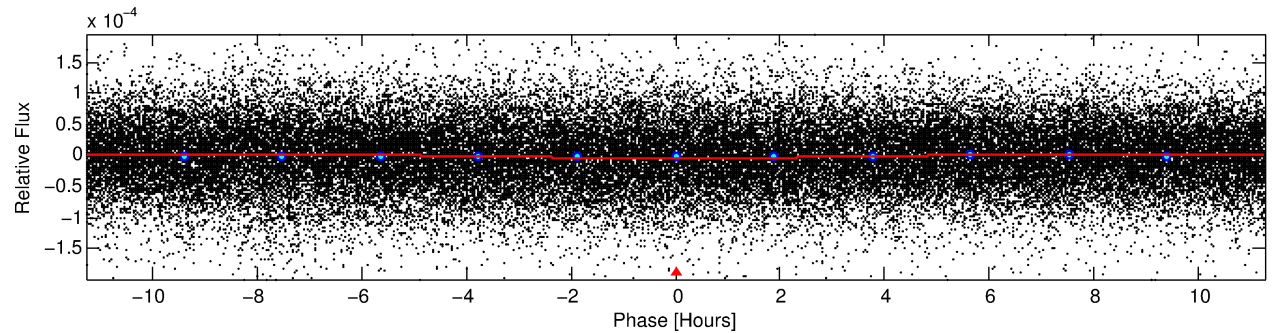
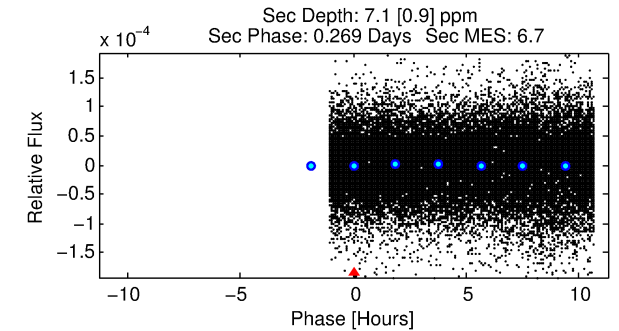
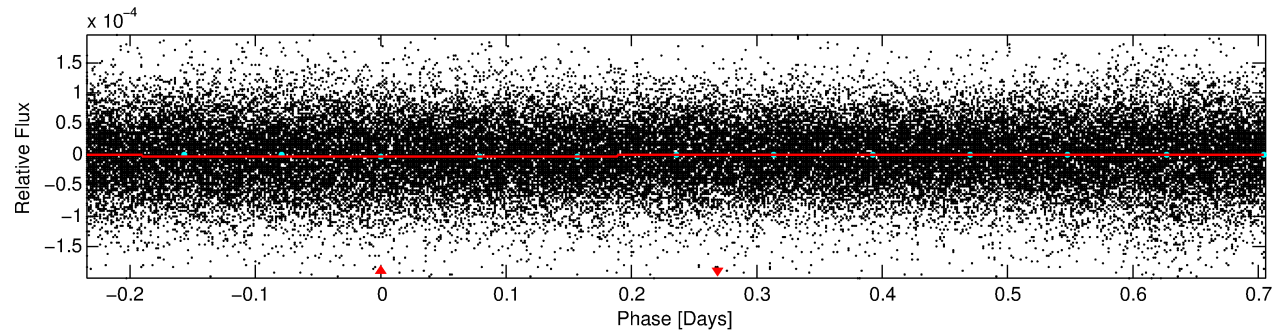
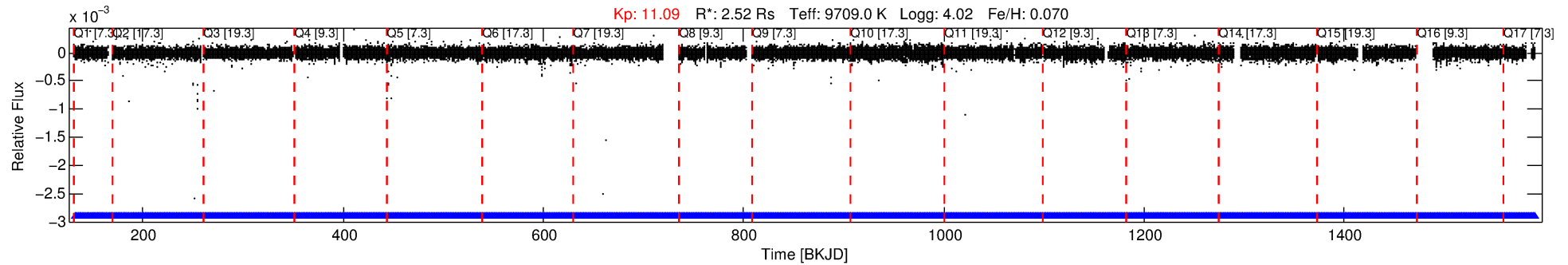
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008415109-01

No Significant Match Found

# DV One-Page Summary

KIC: 8415109 Candidate: 1 of 1 Period: 0.940 d



## DV Fit Results:

Period = 0.93953 [0.00003] d  
Epoch = 132.0451 [0.0075] BKJD  
Rp/R\* = 0.0018 [0.0013]  
a/R\* = 1.03 [0.32]  
b = 0.44 [10.14]  
Seff = 79047.11 [35284.03]  
Teff = 4276 [477] K  
Rp = 0.49 [0.40] Re  
a = 0.0253 [0.0072] AU  
Ag = 10.33 [16.10] [0.58 $\sigma$ ]  
Teffp = 11850 [4482] K [1.68 $\sigma$ ]

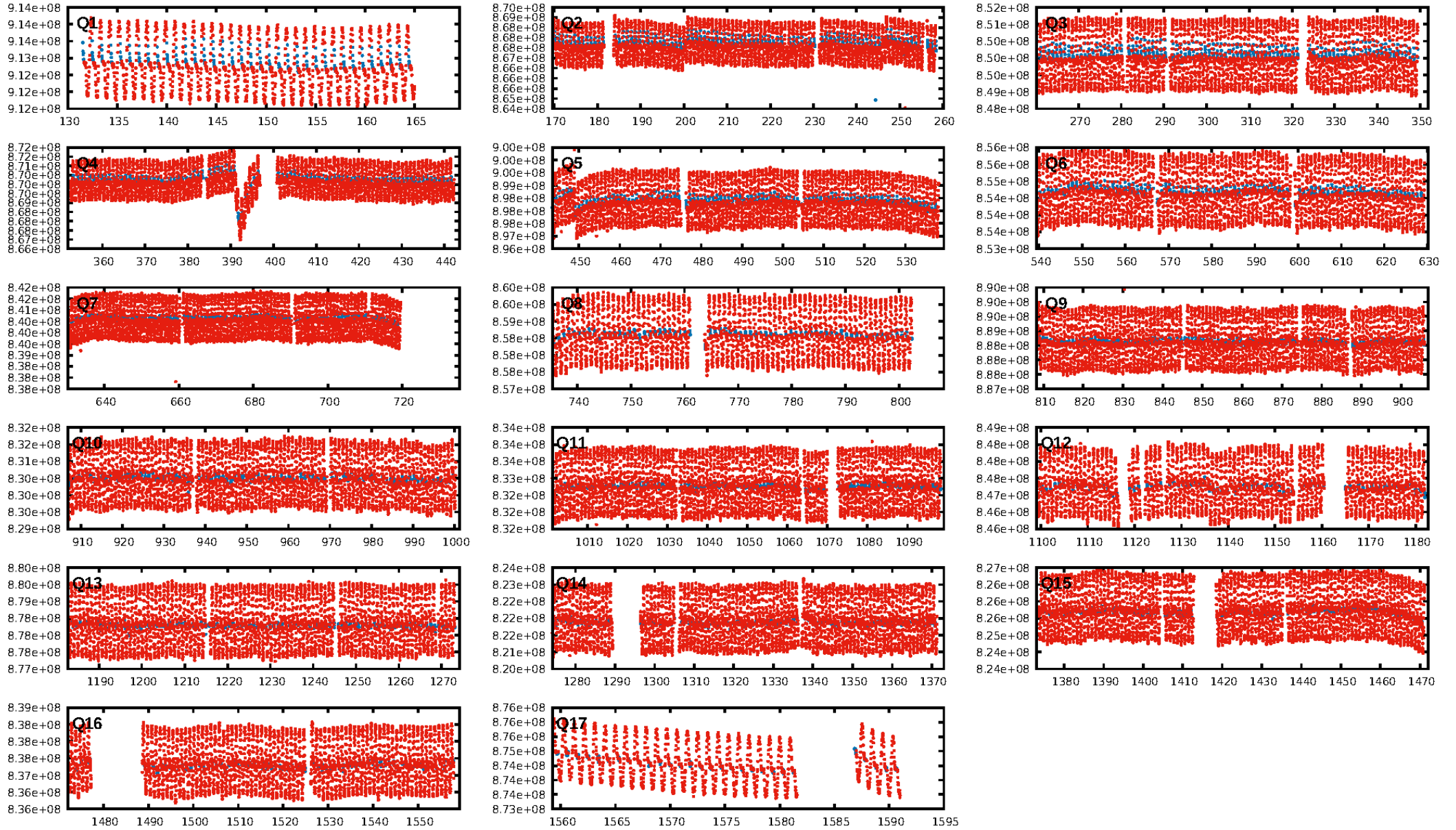
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1379/1379]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.868 arcsec [2.00 $\sigma$ ]  
KicOffset-rm: 0.920 arcsec [1.83 $\sigma$ ]  
OotOffset-st: 3/3/2/5 [13]  
KicOffset-st: 3/3/2/5 [13]  
DiffImageQuality-fgm: 0.92 [12/13]  
DiffImageOverlap-fno: 1.00 [17/17]

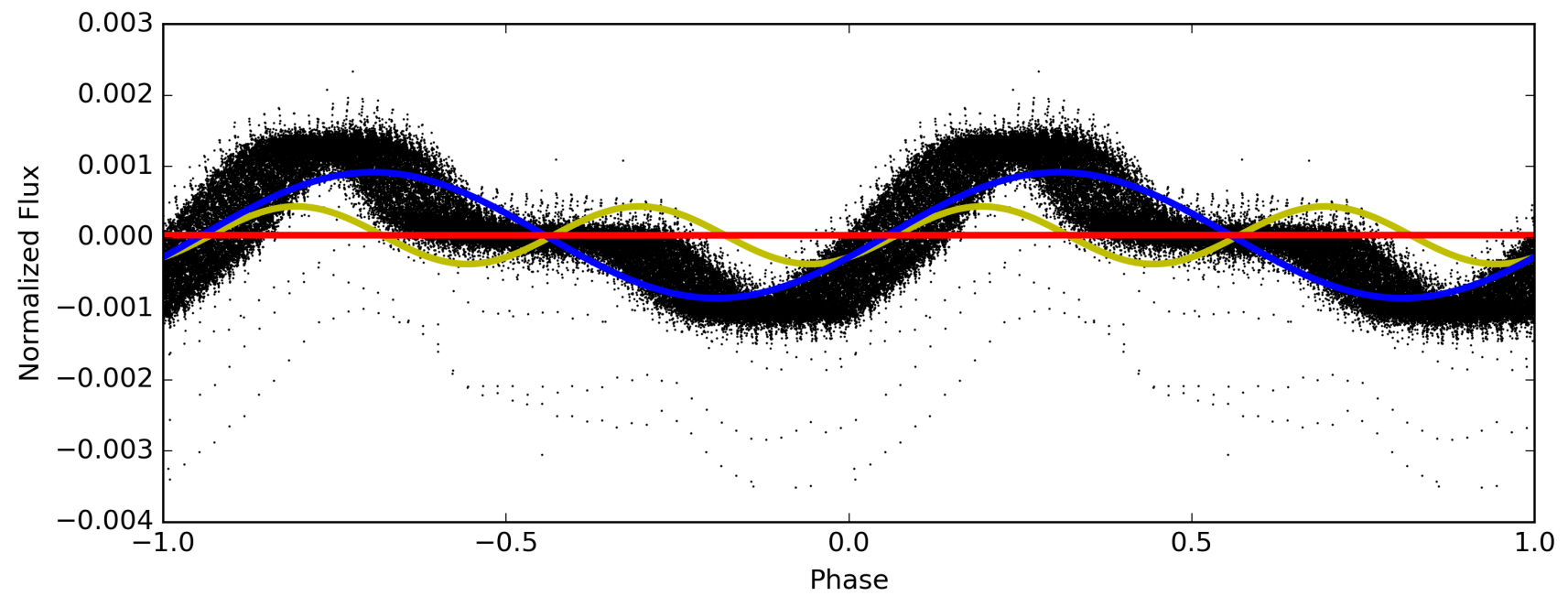
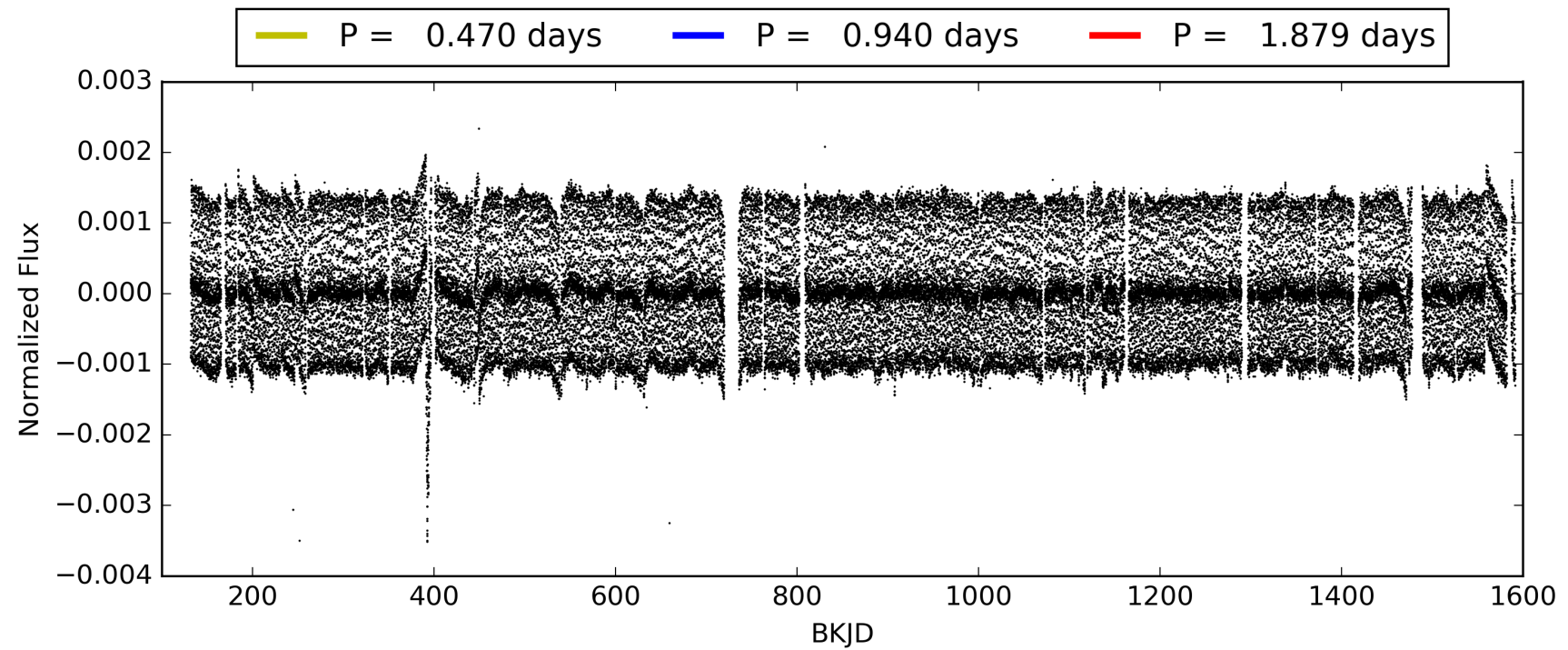
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:19:59 Z

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

# TCE 008415109-01, PDC Light Curves

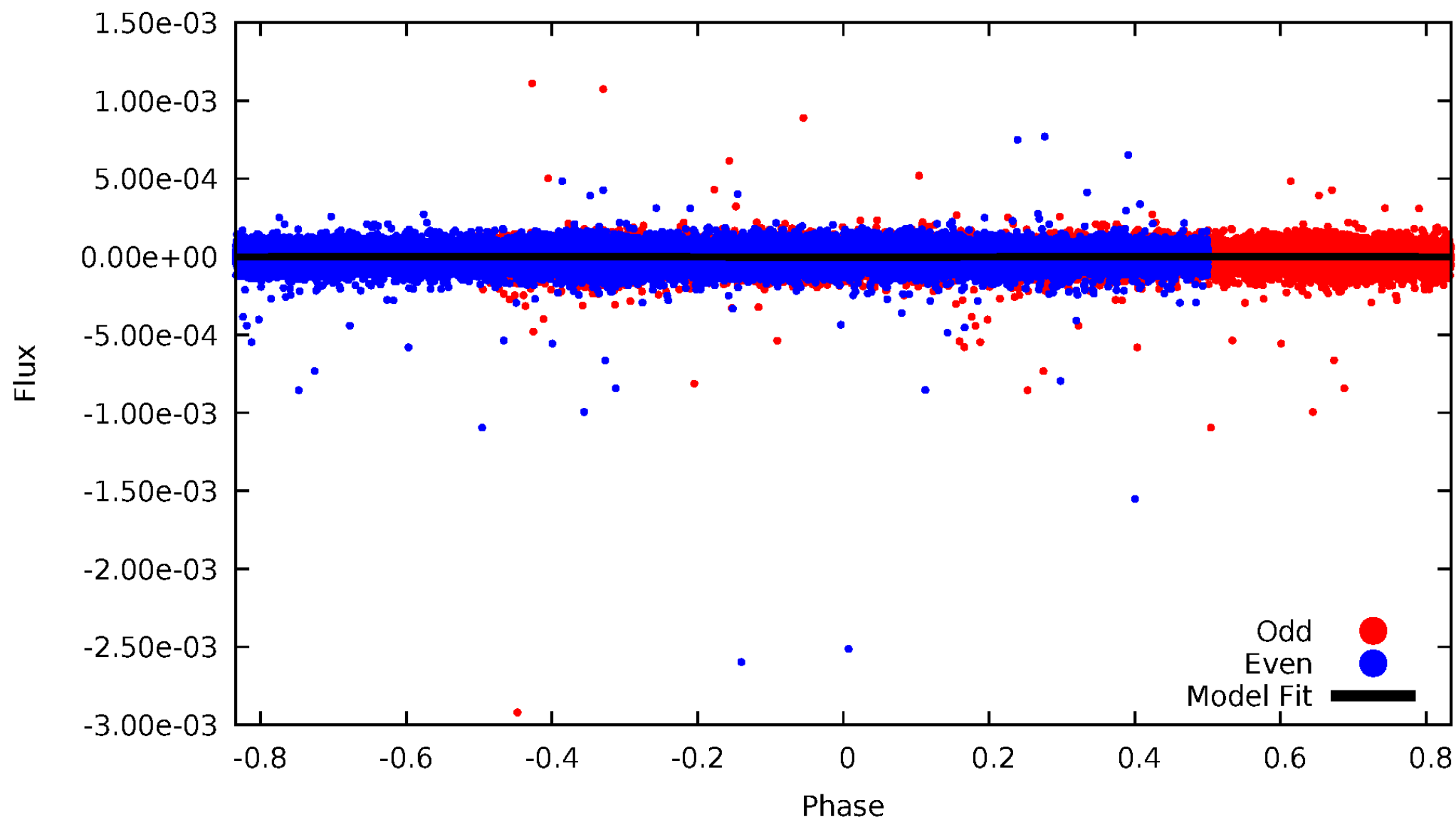


TCE 008415109-01



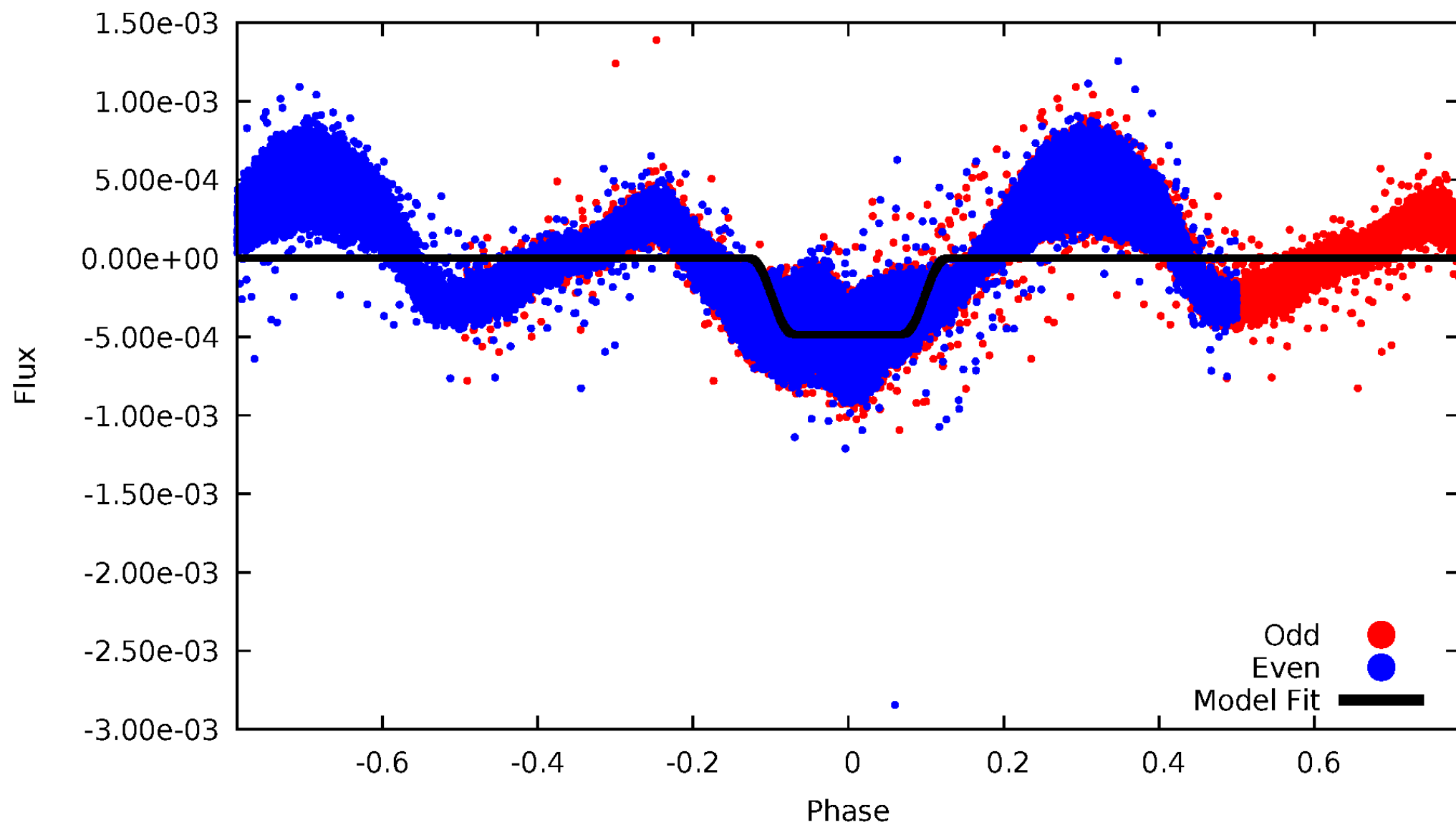
# DV Odd/Even

TCE 008415109-01



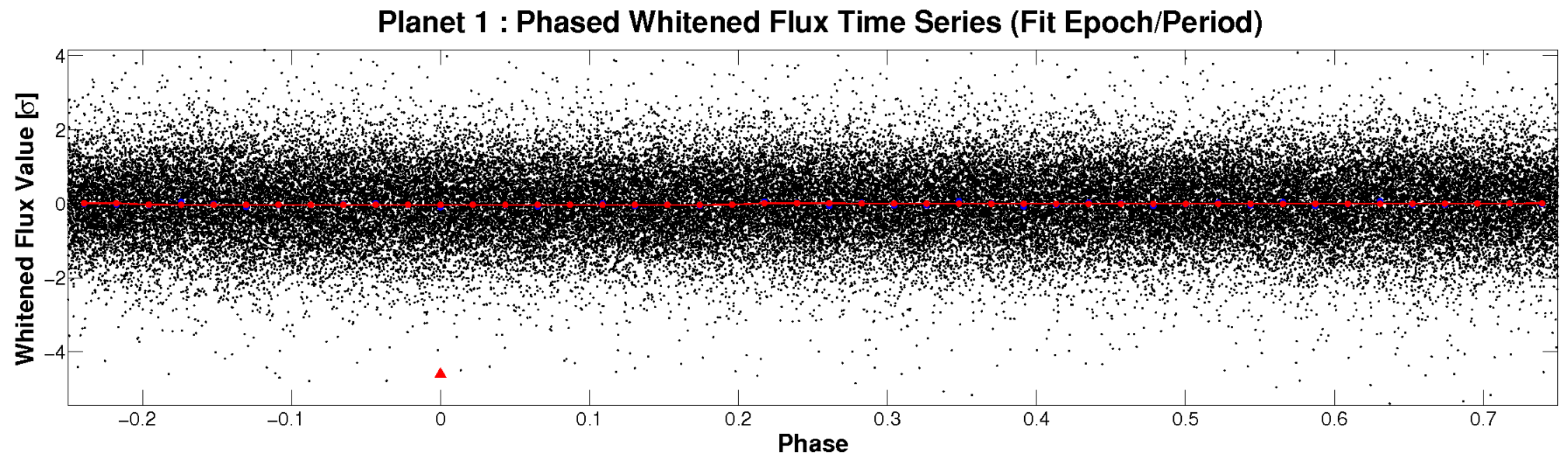
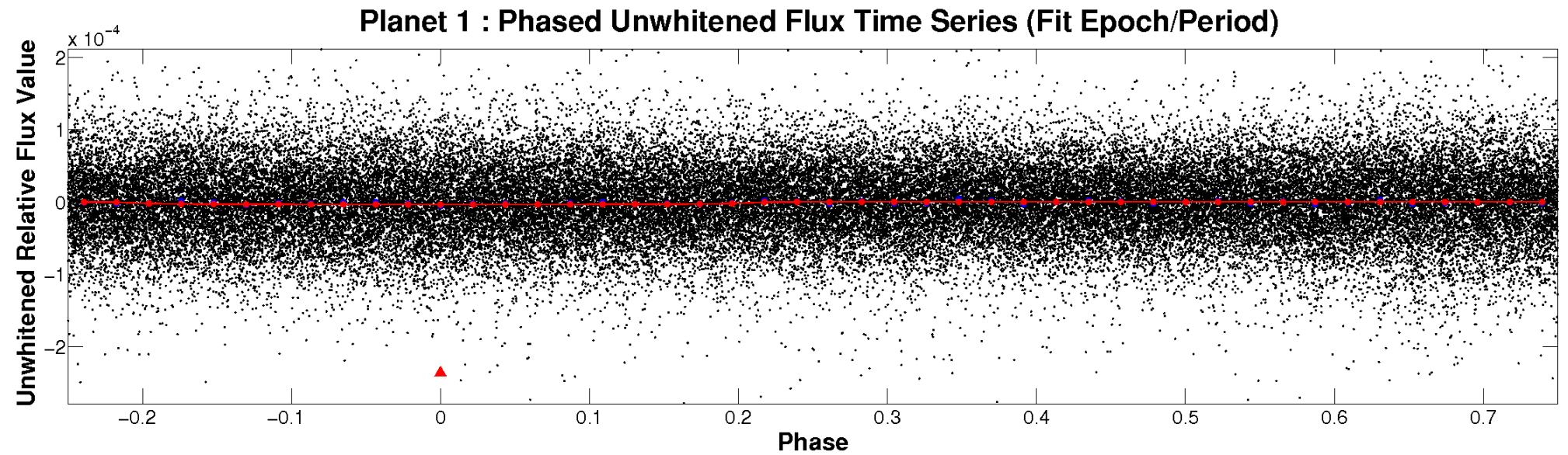
# ALT Odd/Even

TCE 008415109-01



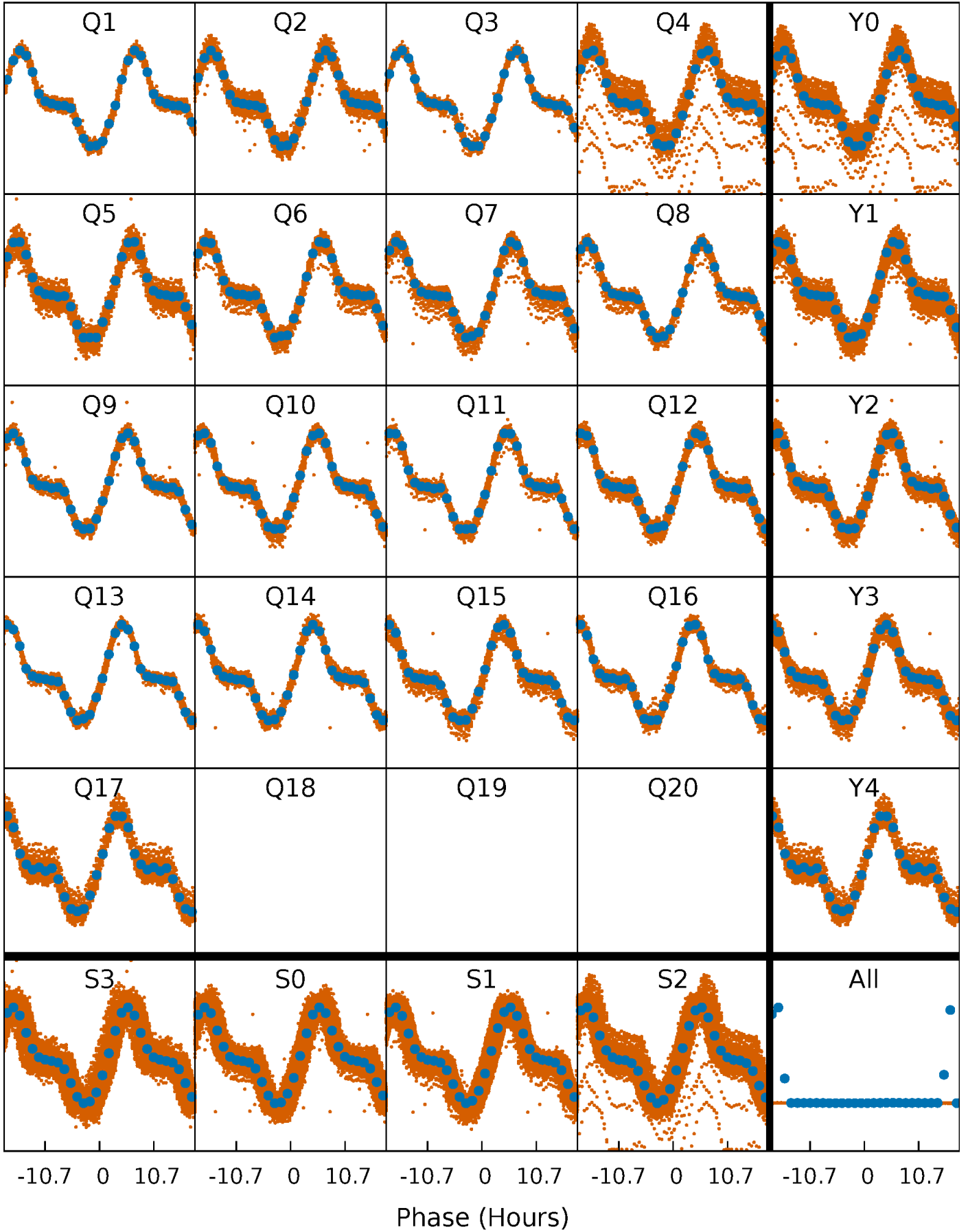


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

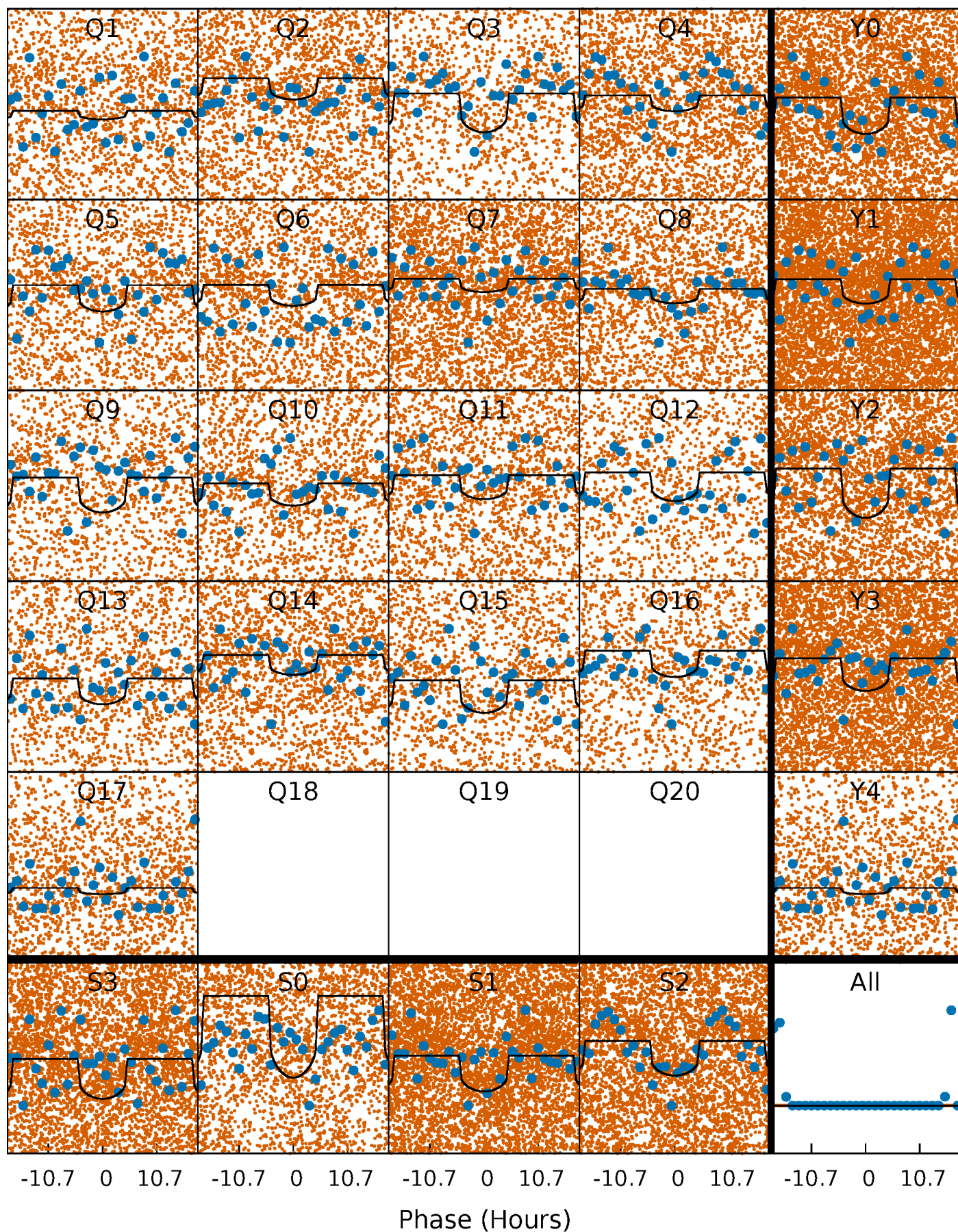
TCE 008415109-01   P= 0.939530 Days    $T_0=132.045093$  (BKJD)





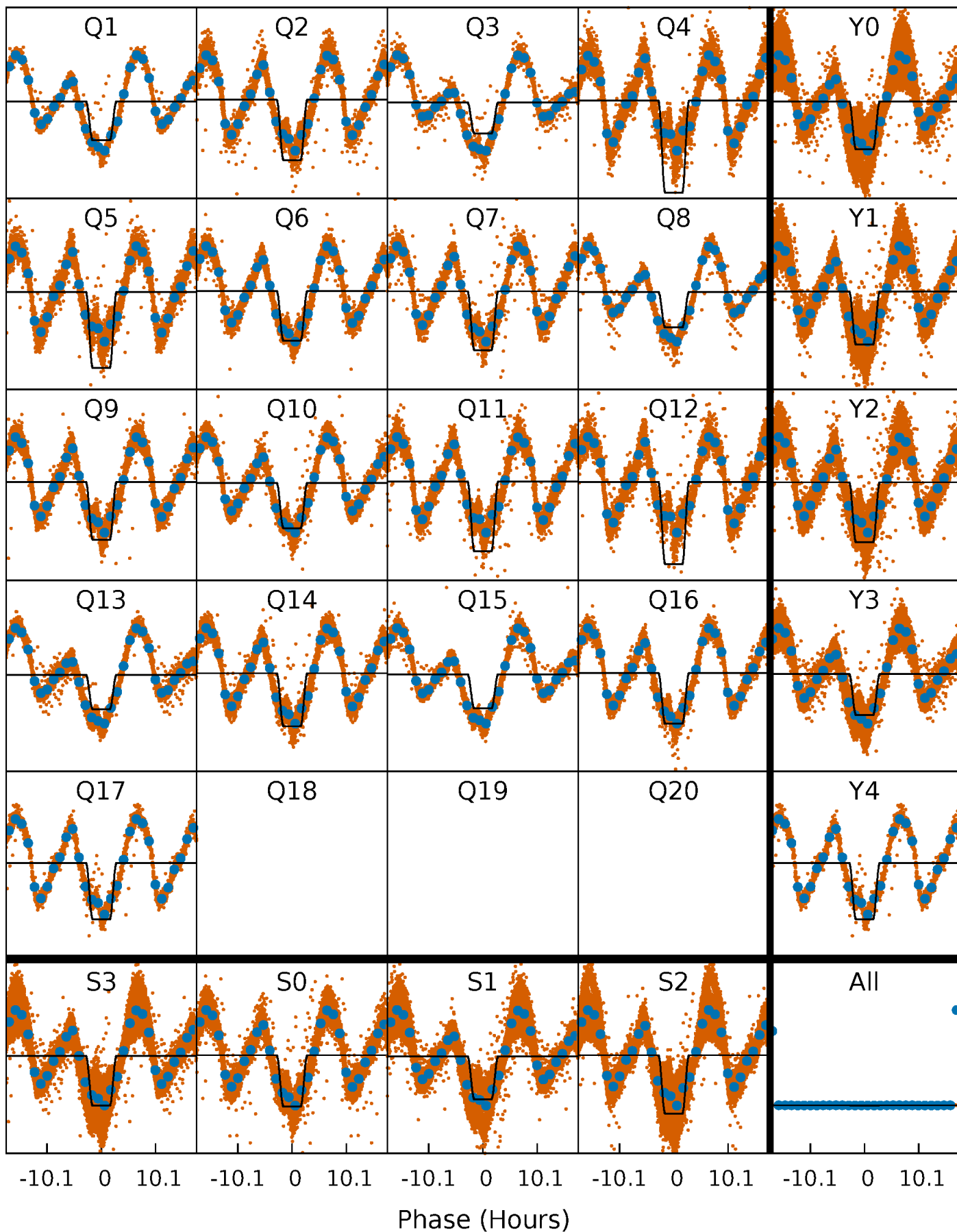
# DV Quarter-Phased Transit Curves

TCE 008415109-01 P= 0.939530 Days  $T_0=132.045093$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

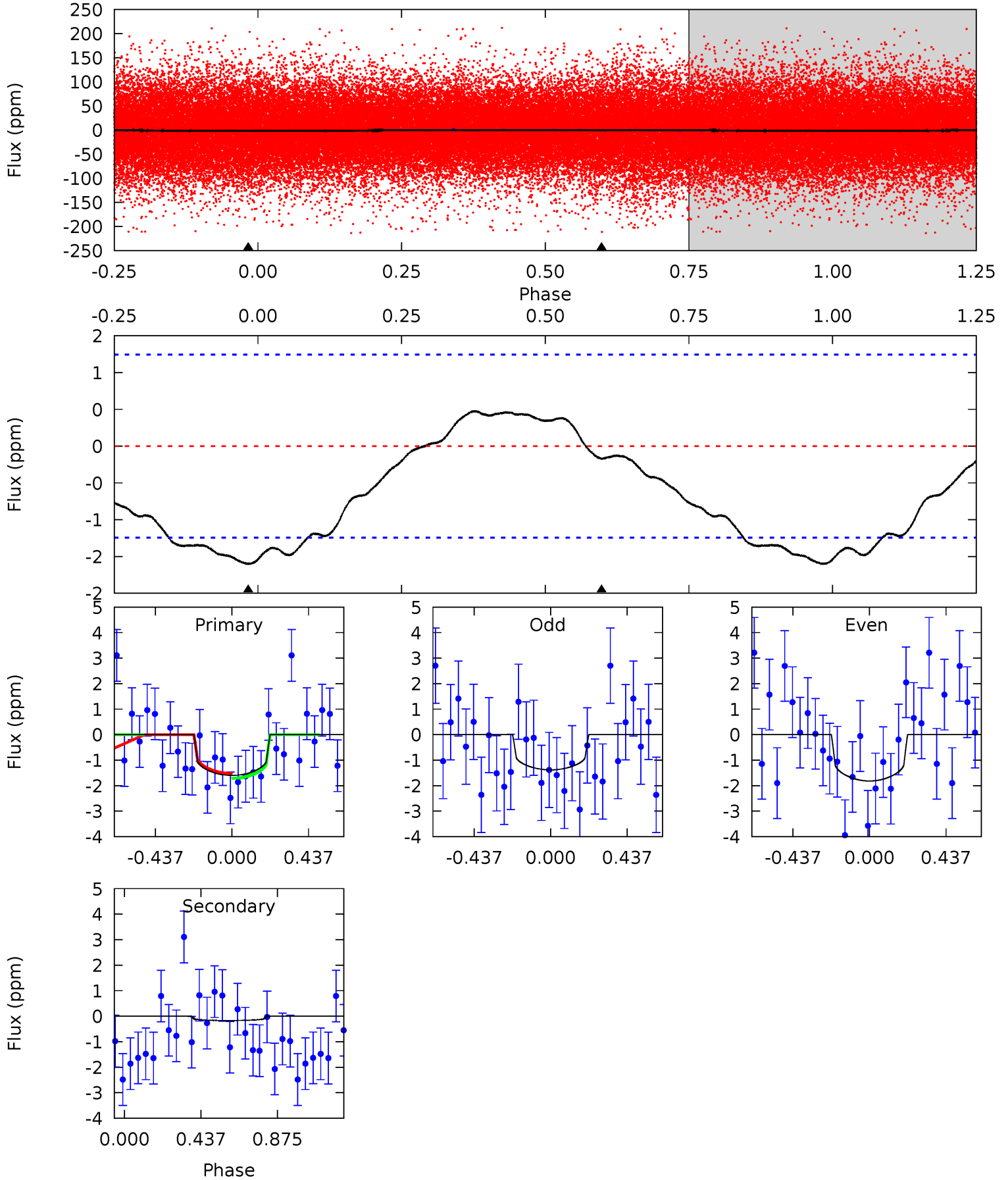
TCE 008415109-01 P= 0.939440 Days  $T_0=132.045778$  (BKJD)



# DV Model-Shift Uniqueness Test

008415109-01, P = 0.939530 Days, E = 131.105563 Days

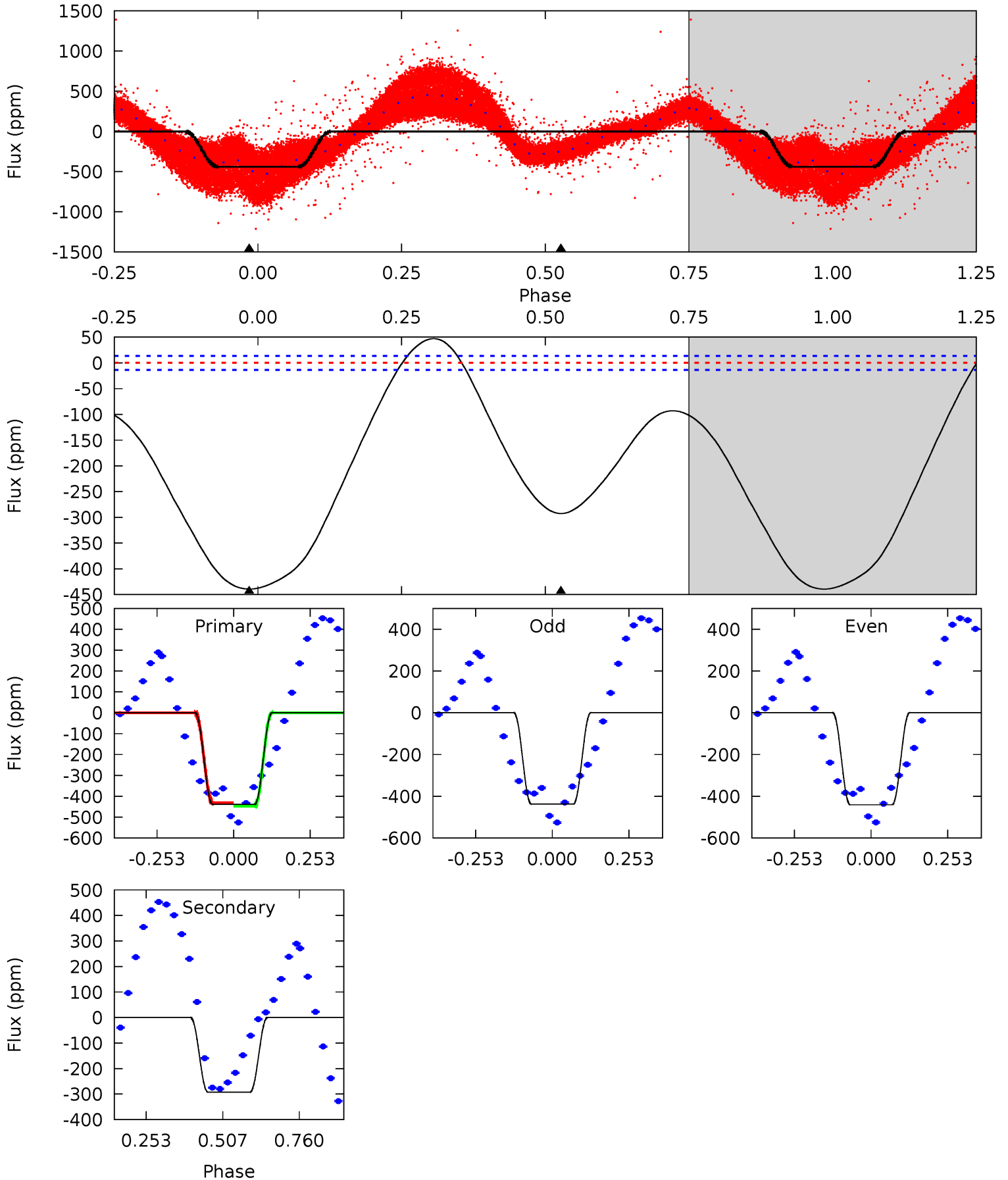
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.45	0.59	0	0	4.24	0.78	0.45	5.45	5.45	0.59	0.59	0.71	0.76	0.23	0.30



# Alt Model-Shift Uniqueness Test

008415109-01, P = 0.939440 Days, E = 131.106338 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
141.9	94.5	0	0	4.37	1.14	15.7	141.9	141.9	94.5	94.5	0.49	1.09	0.10	3.34



### Stellar Parameters For KIC 008415109

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$9709^{+306}_{-409}$	$4.024^{+0.225}_{-0.184}$	$0.070^{+0.150}_{-0.600}$	$2.525^{+0.860}_{-0.860}$	$2.459^{+0.339}_{-0.735}$	$0.215^{+0.327}_{-0.115}$
	+3%/-4%	+6%/-5%	+214%/-857%	+34%/-34%	+14%/-30%	+152%/-54%
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 008415109-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-0 \pm 0$	$0.50^{+0.37}_{-0.30}$	$5944^{+531}_{-487}$	$-3988^{+10187}_{-1269}$	$0.163^{+1.263}_{-0.331}$
Alt.	$-293 \pm 3$	$5.98^{+1.15}_{-1.15}$	$5962^{+501}_{-541}$	$7862^{+481}_{-426}$	$2.832^{+1.077}_{-0.805}$

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



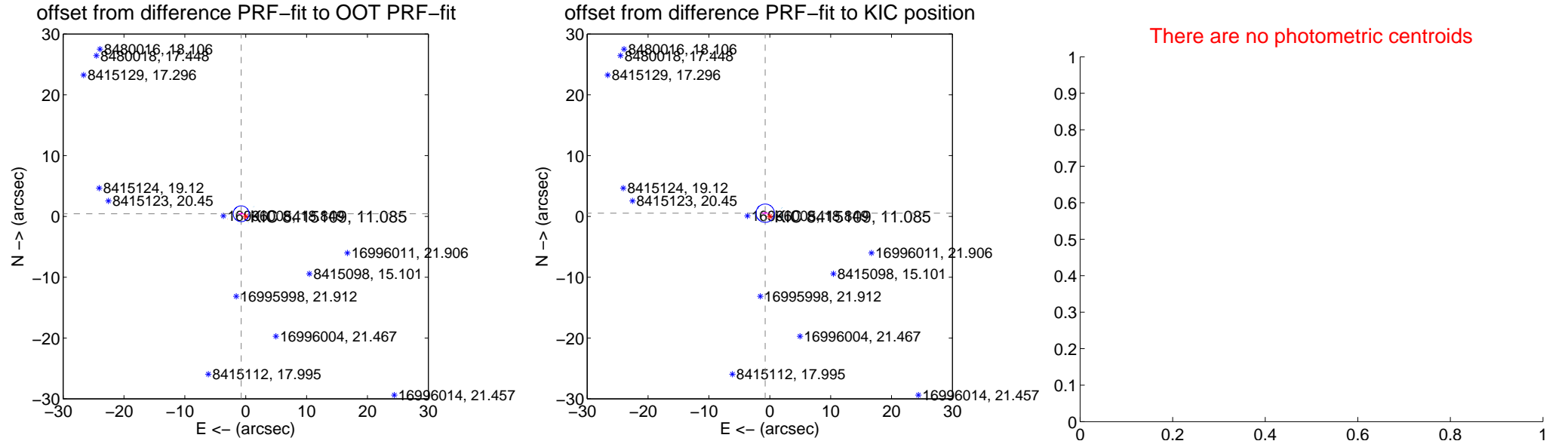
## DV Centroid Data

Supplemental centroid analysis for 008415109-01. **Kepler magnitude: 11.09.** Transit SNR 5.14

There are 12 quarters with good PRF difference image offsets

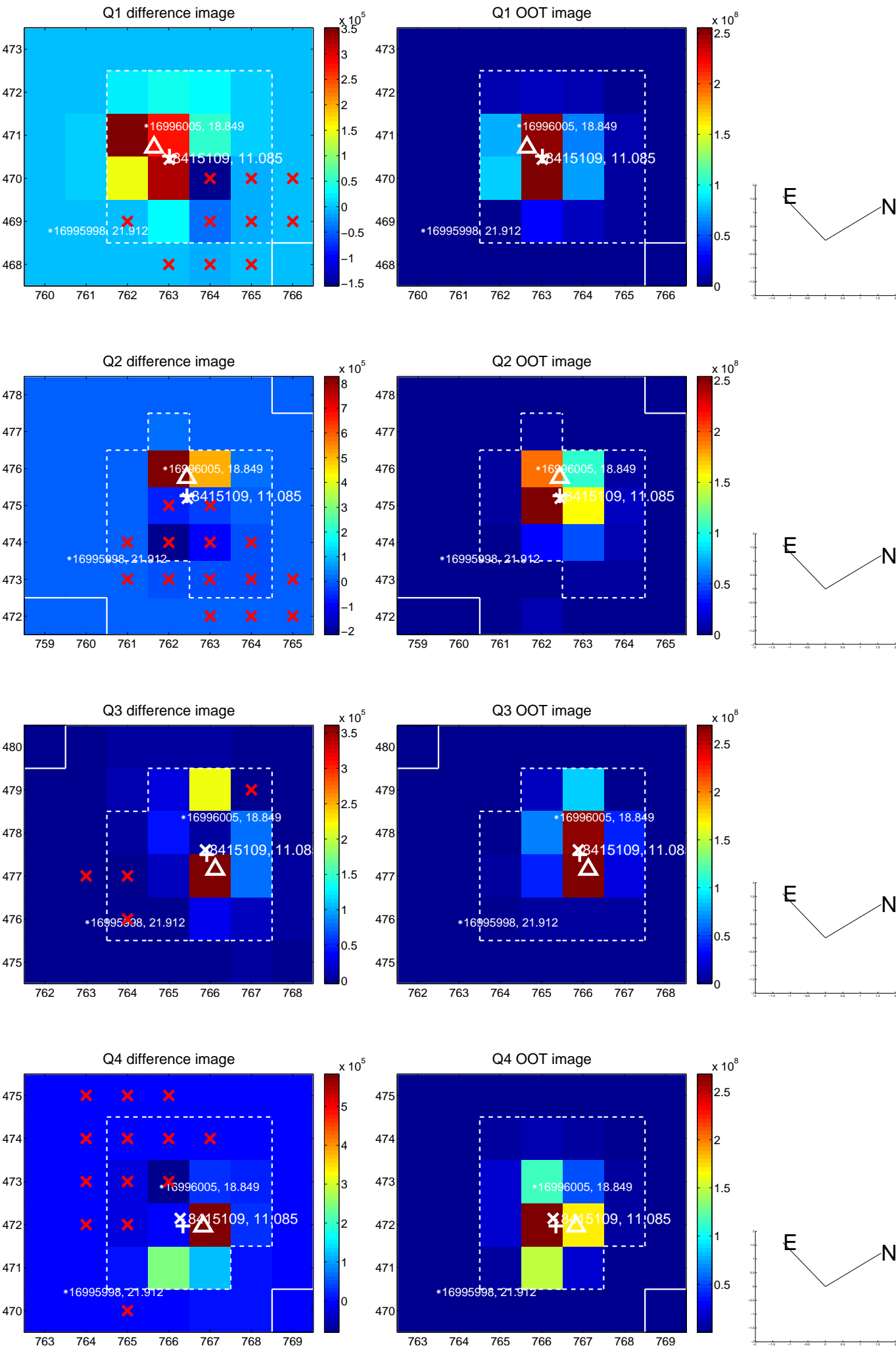
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.868 \pm 0.434$	2.00	$0.750 \pm 0.477$	$0.436 \pm 0.269$
PRF-fit source offset from KIC position	$0.920 \pm 0.503$	1.83	$0.753 \pm 0.590$	$0.528 \pm 0.243$
photometric centroid source offset	—	—	—	—

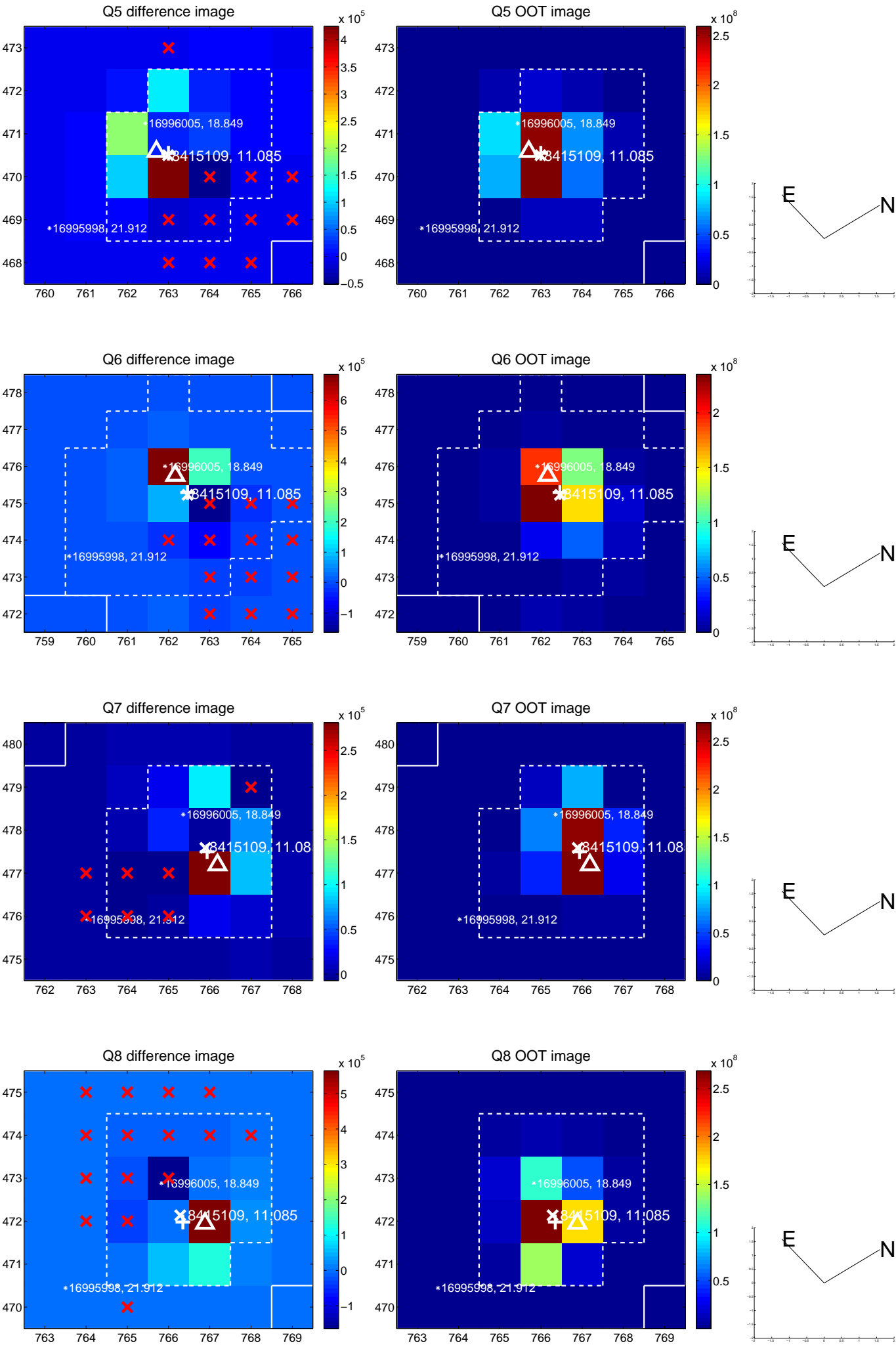


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

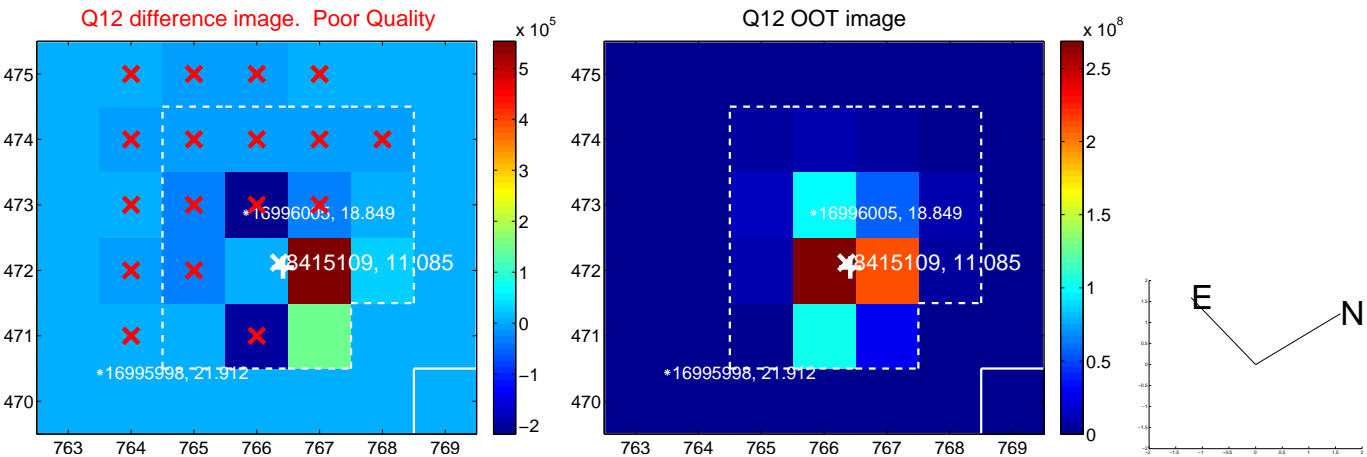
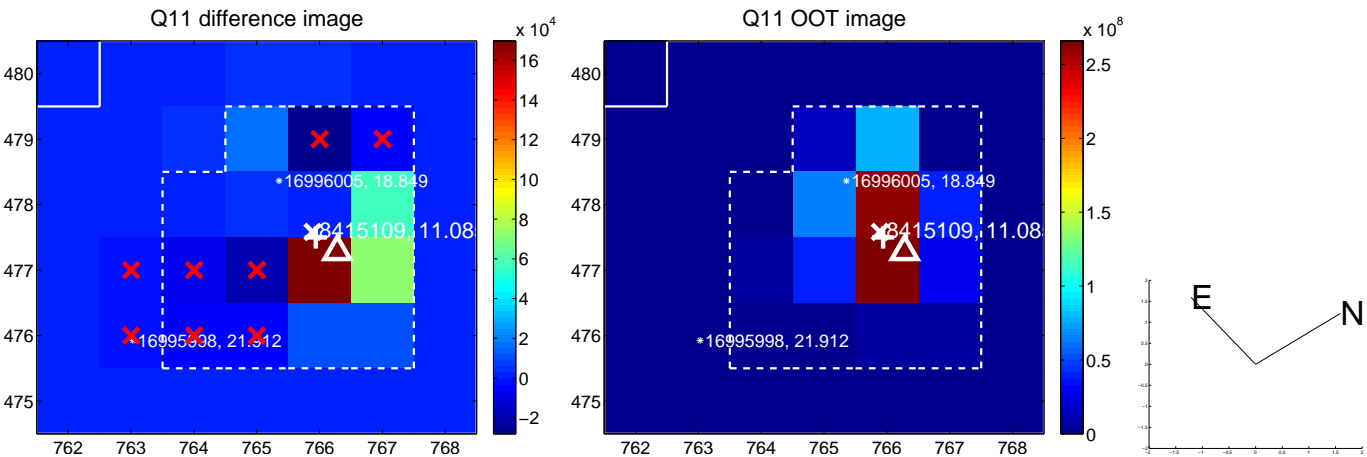
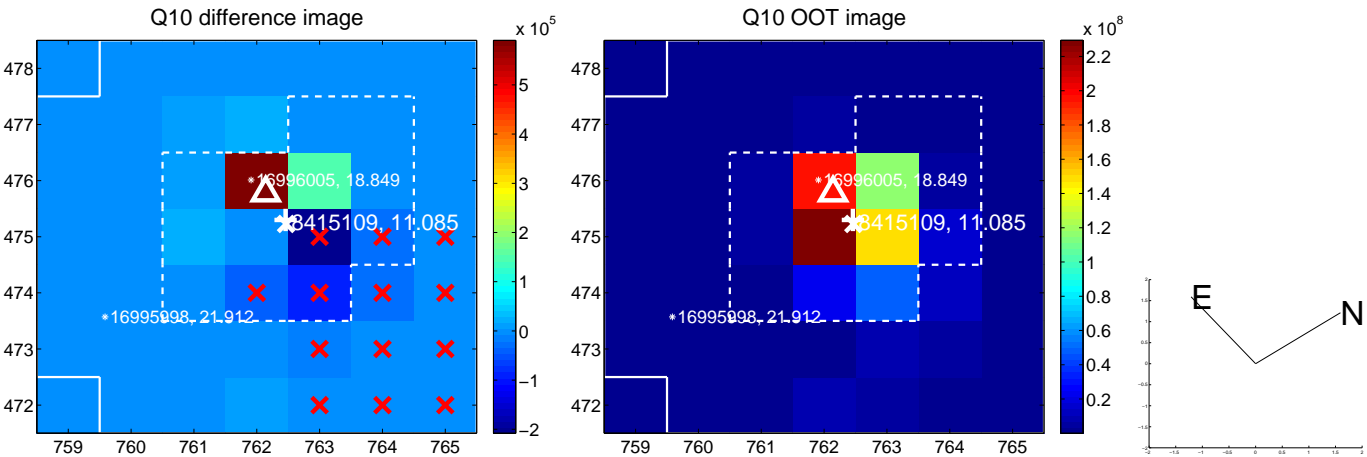
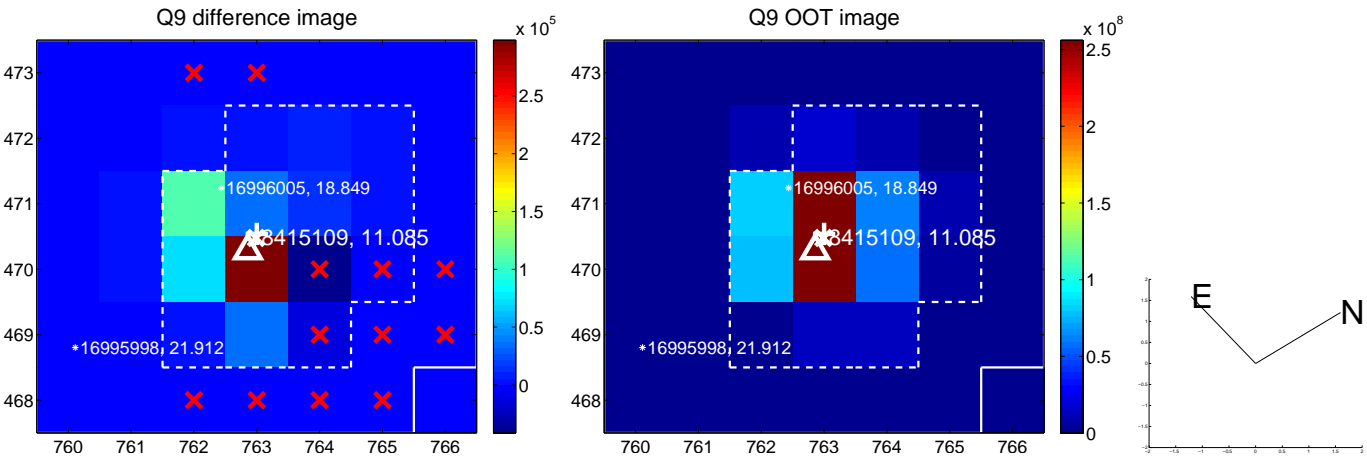
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



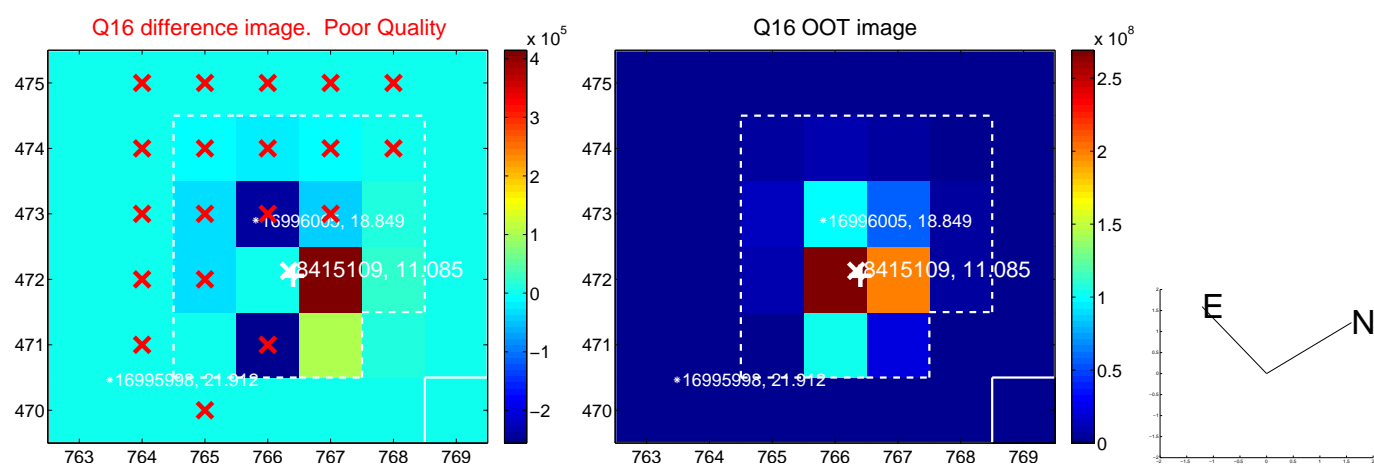
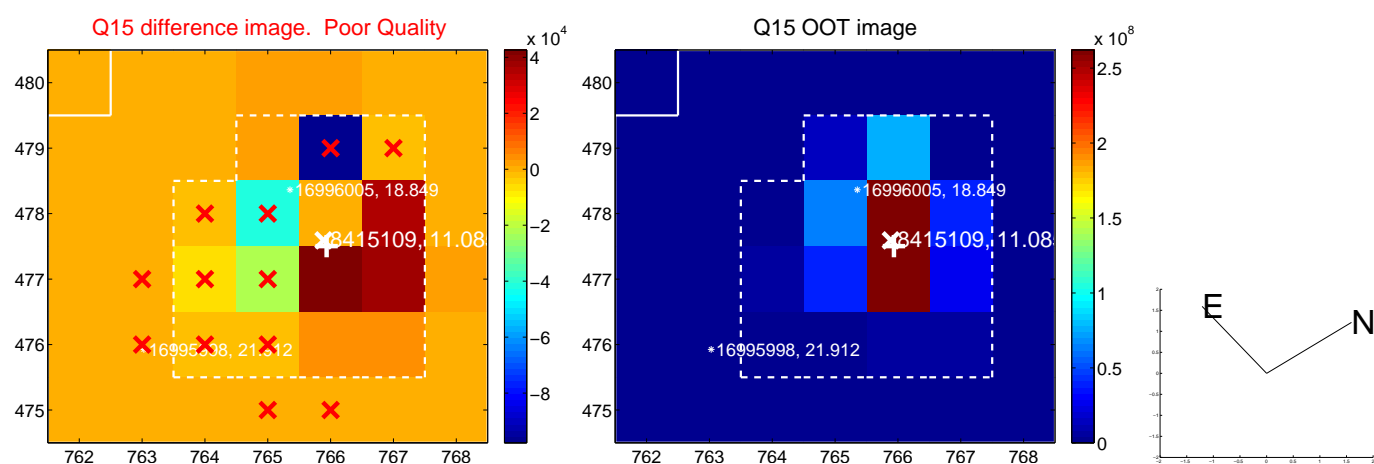
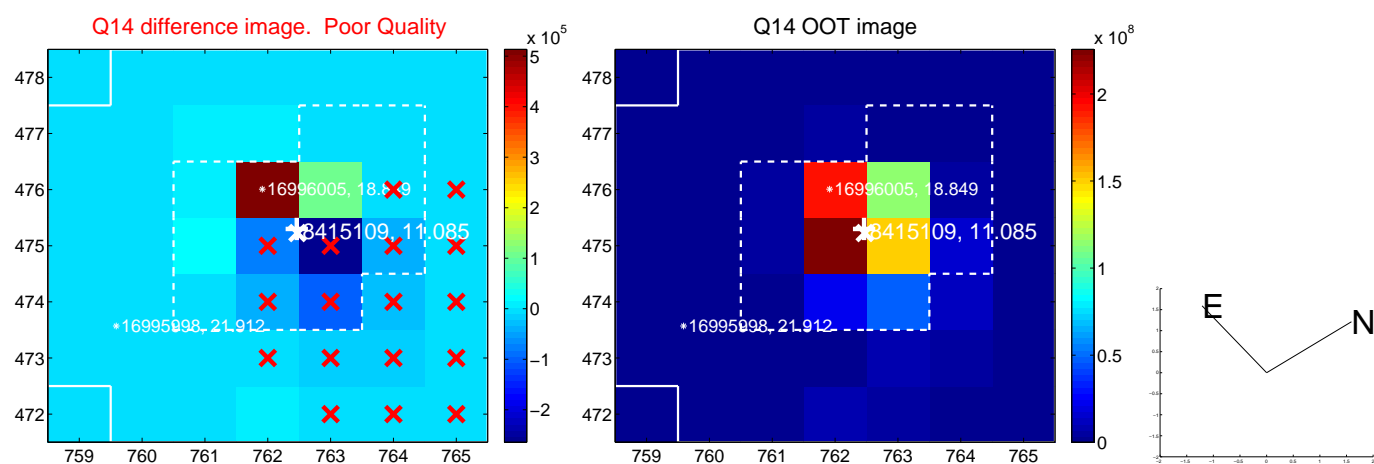
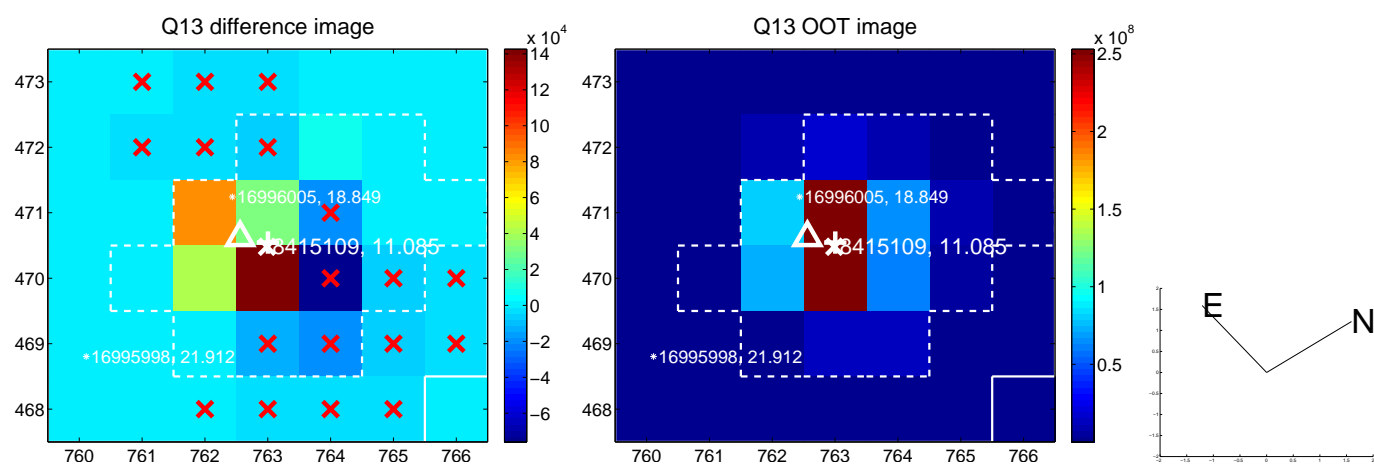
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

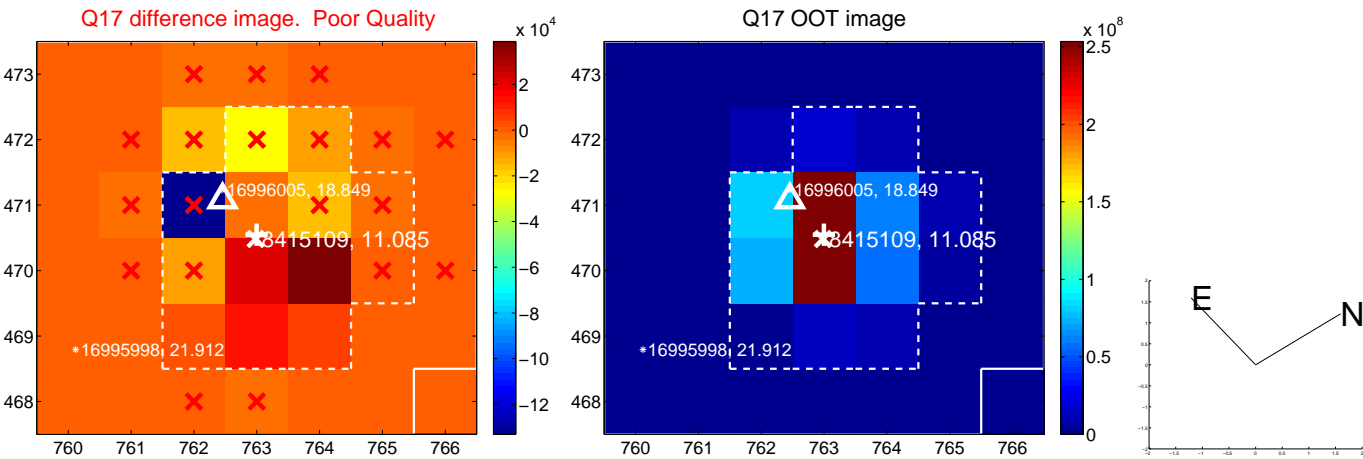


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



folded centroid time series figure for this object.

UKIRT Image

Declination

