

# KIC 009388557

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009388557-01	OBS	8283.01	209.941918	268.564963	574.4	3.310	7.2	7.9	6.69	5125	18.12	42.51

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009388557-01	OBS	FP	0.15	1	0	0	0	MOD_NONUNIQ_ALT

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

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

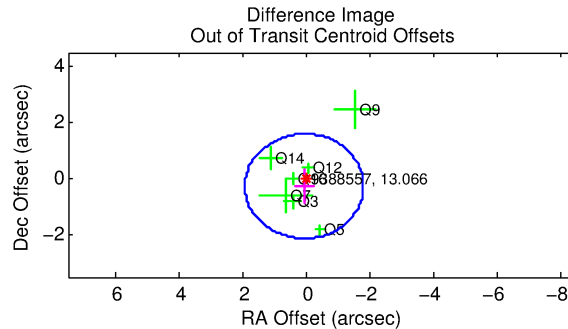
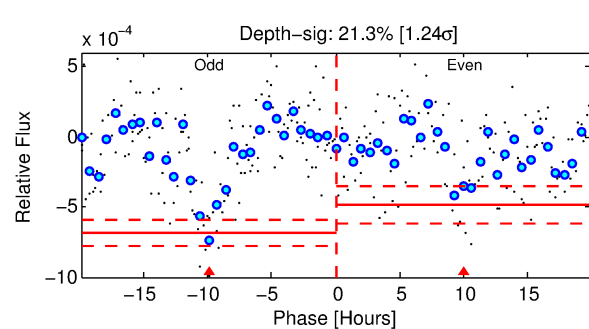
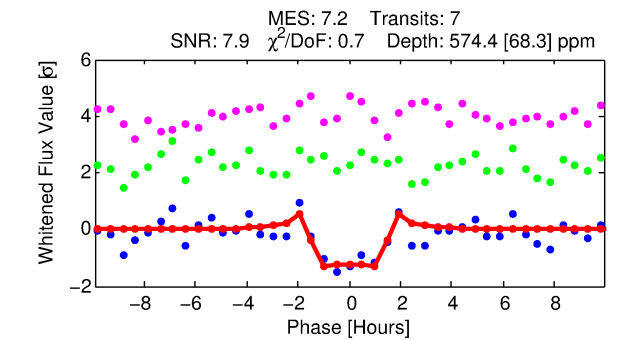
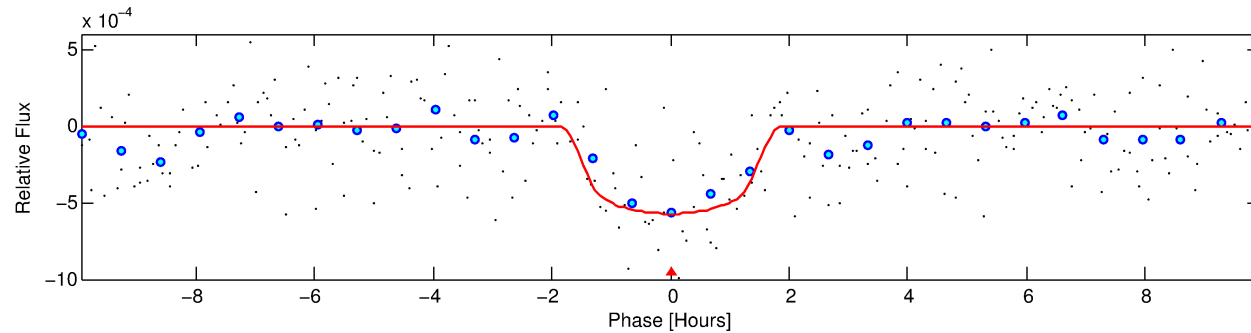
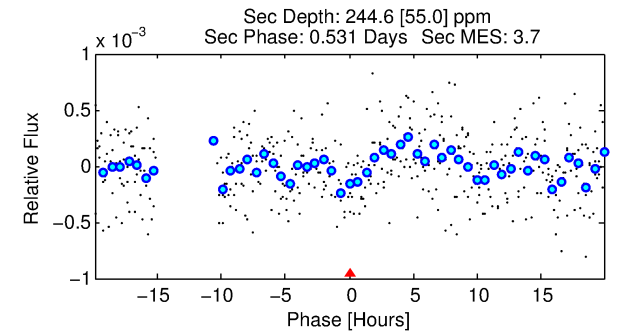
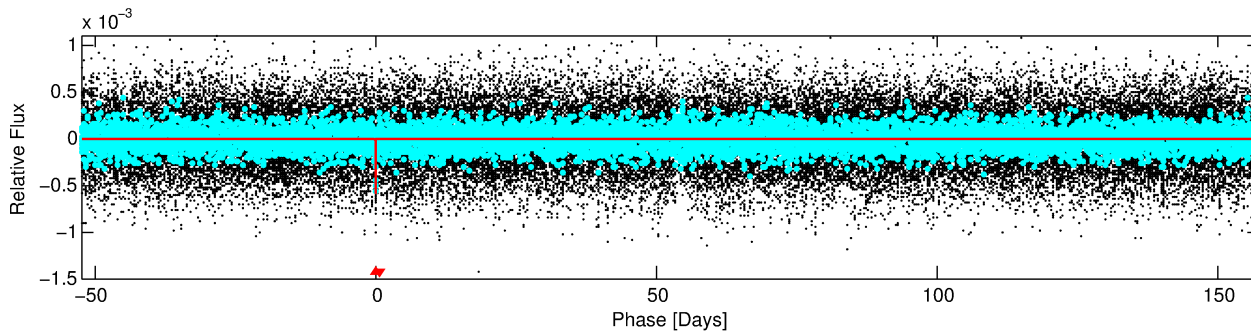
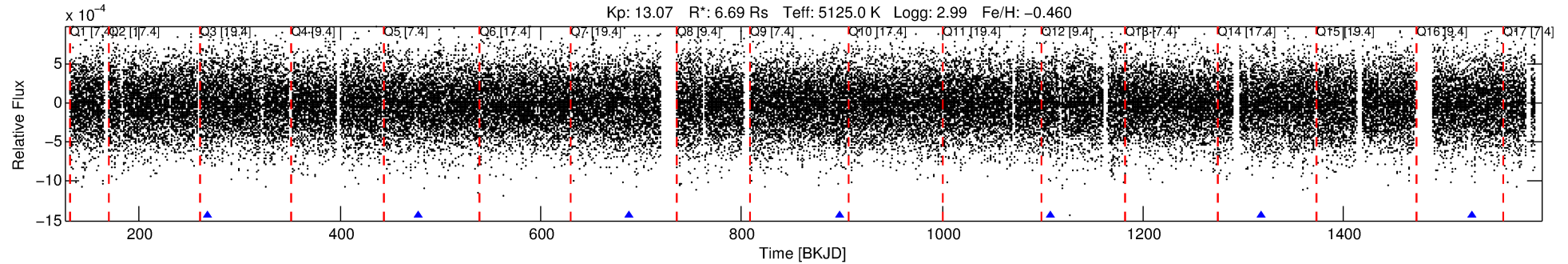
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009388557-01

No Significant Match Found

# DV One-Page Summary

KIC: 9388557 Candidate: 1 of 1 Period: 209.942 d



## DV Fit Results:

Period = 209.94192 [0.00142] d  
Epoch = 268.5650 [0.0048] BKJD  
Rp/R\* = 0.0248 [0.0148]  
a/R\* = 296.05 [715.01]  
b = 0.82 [0.96]  
Seff = 42.51 [18.73]  
Teff = 651 [72] K  
Rp = 18.12 [12.58] Re  
a = 0.8067 [0.2386] AU  
Ag = 266.83 [344.37] [0.77σ]  
Teffp = 4069 [1242] K [2.75σ]

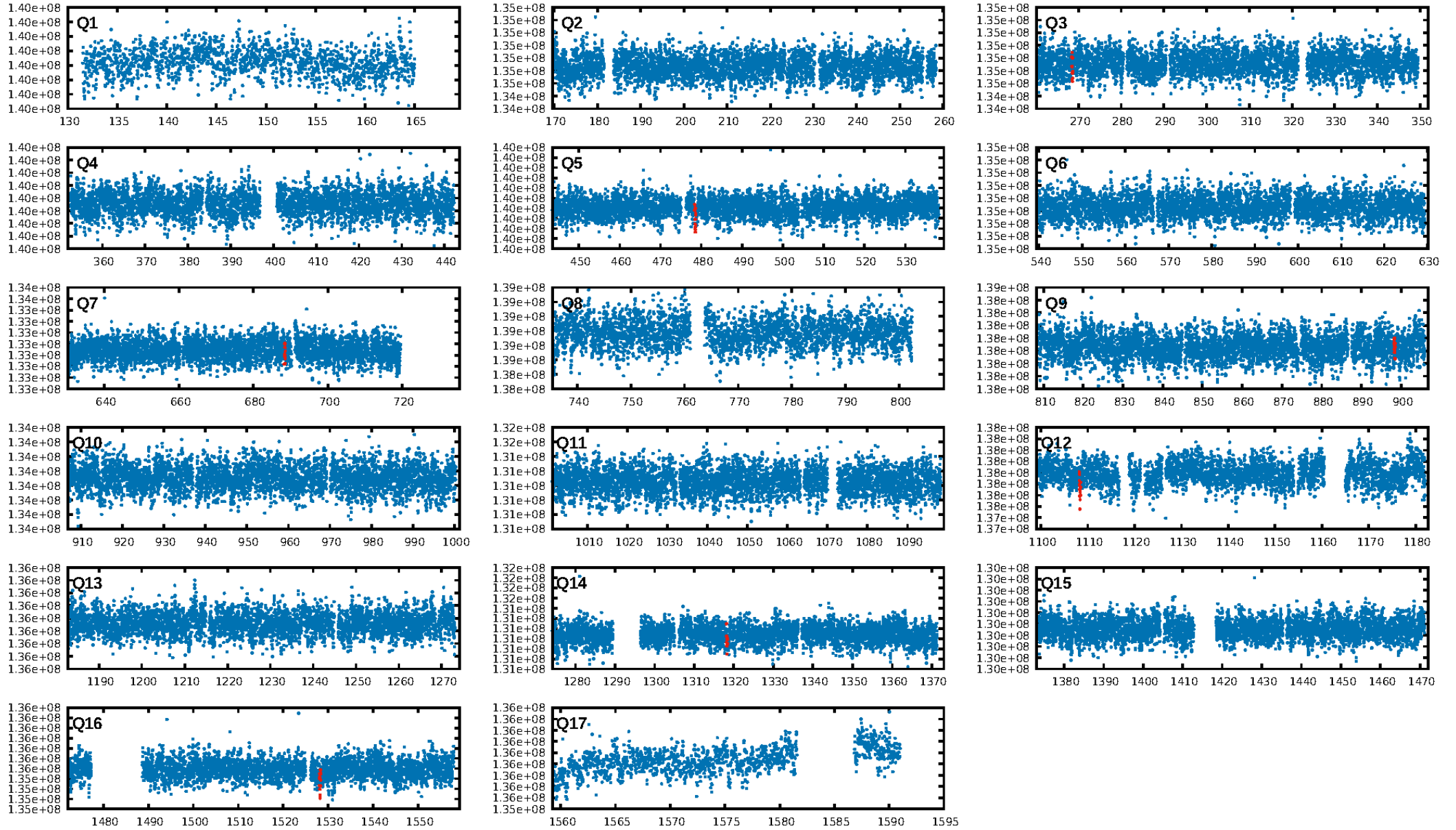
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 36.9%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 3.95e-11**  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 22.65  
**Centroid-sig: 0.0%**  
Centroid-so: 0.843 arcsec [1.92σ]  
OotOffset-rm: 0.278 arcsec [0.45σ]  
KicOffset-rm: 0.448 arcsec [0.90σ]  
OotOffset-st: 1/2/2/2 [7]  
KicOffset-st: 1/2/2/2 [7]  
DiffImageQuality-fgm: 0.86 [6/7]  
DiffImageOverlap-fno: 1.00 [7/7]

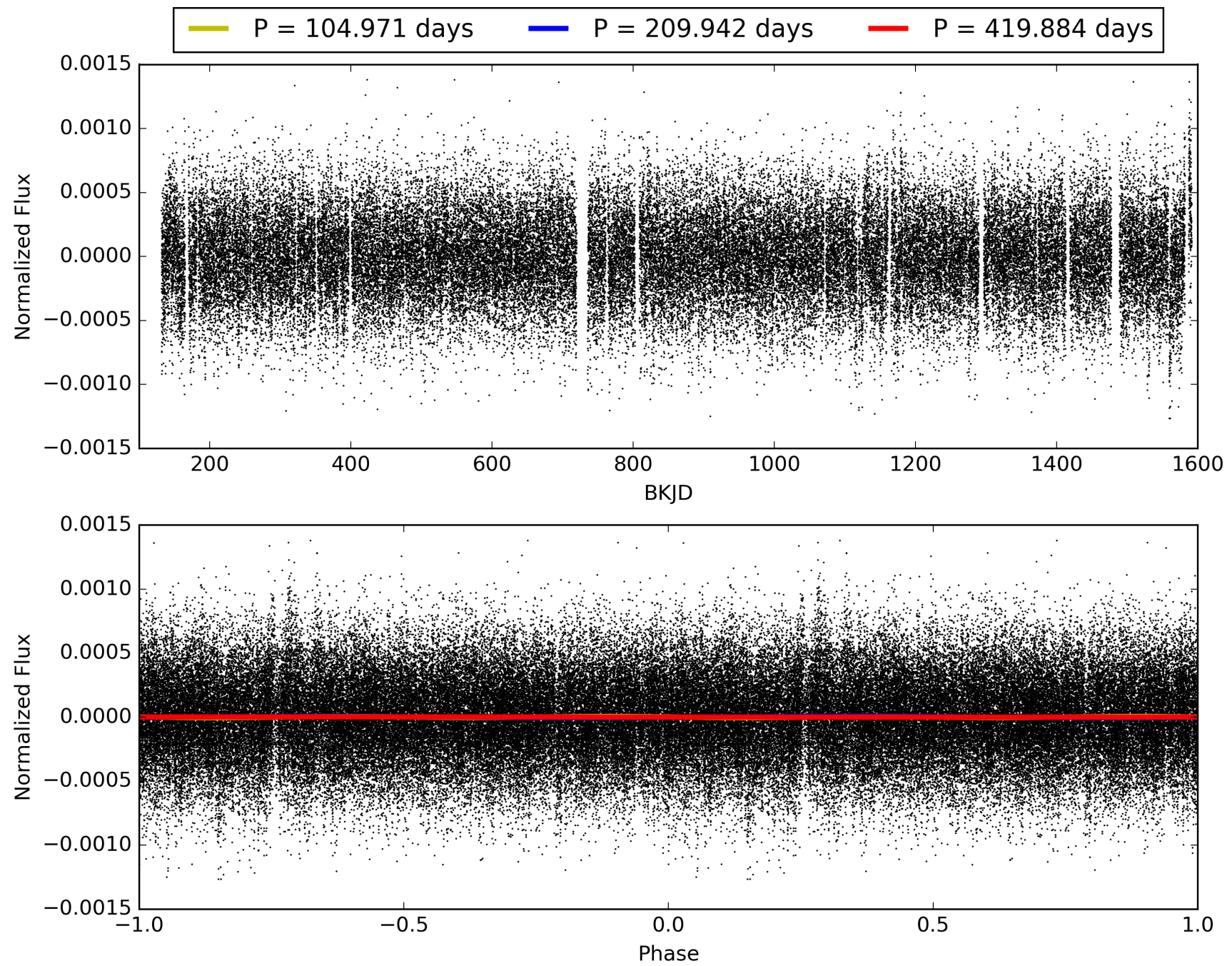
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:57:00 Z

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

# TCE 009388557-01, PDC Light Curves

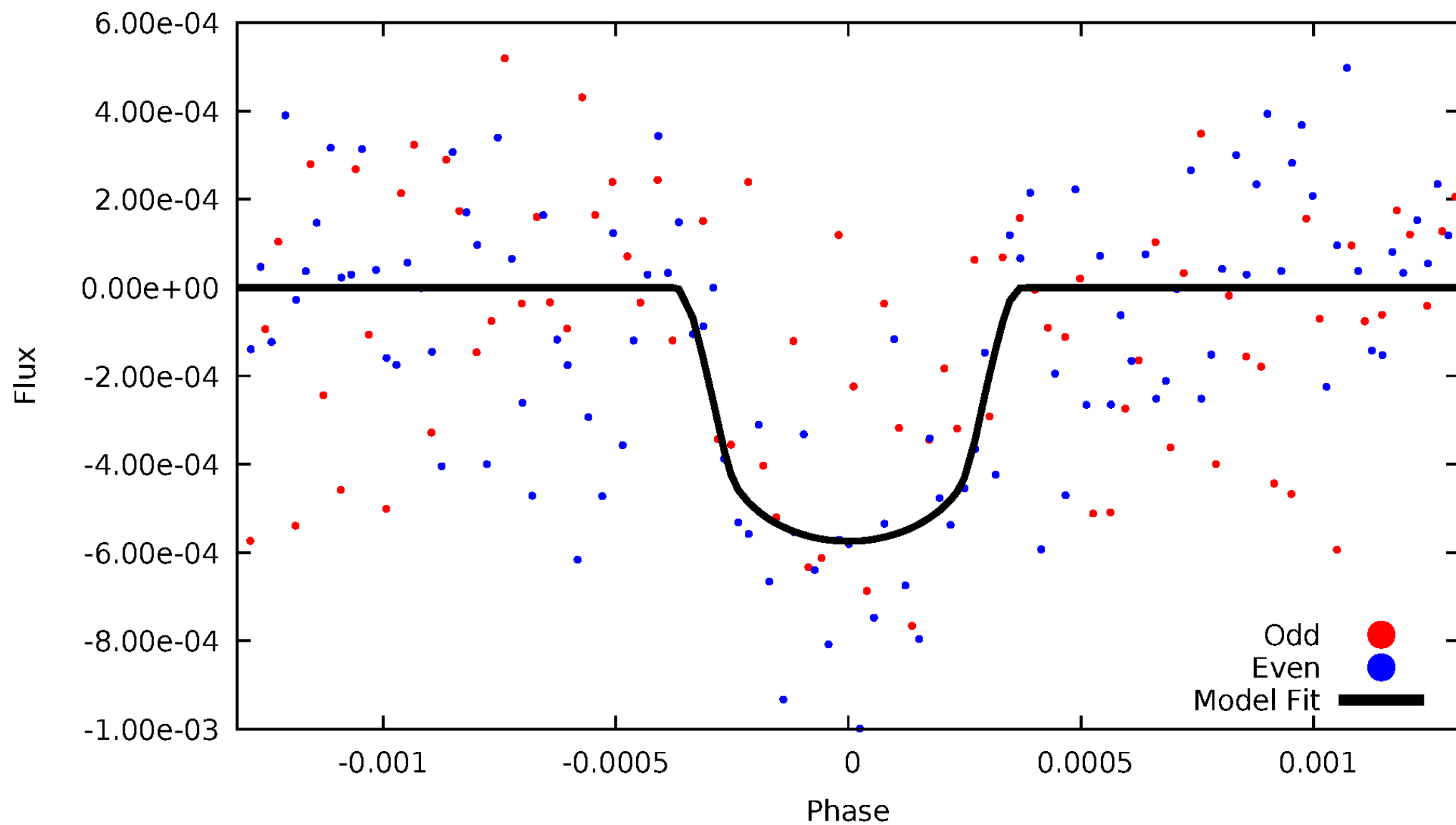


TCE 009388557-01



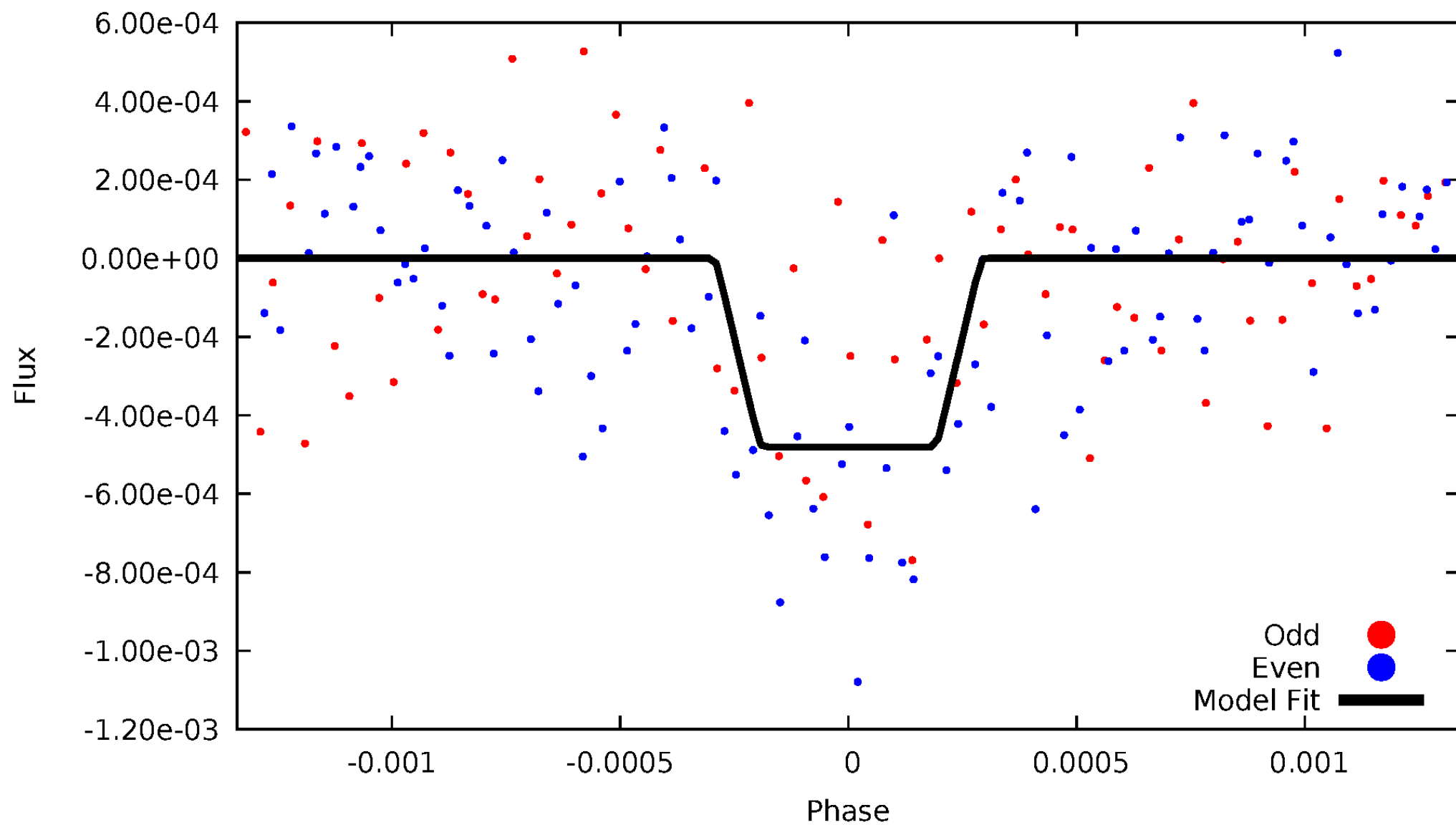
# DV Odd/Even

TCE 009388557-01



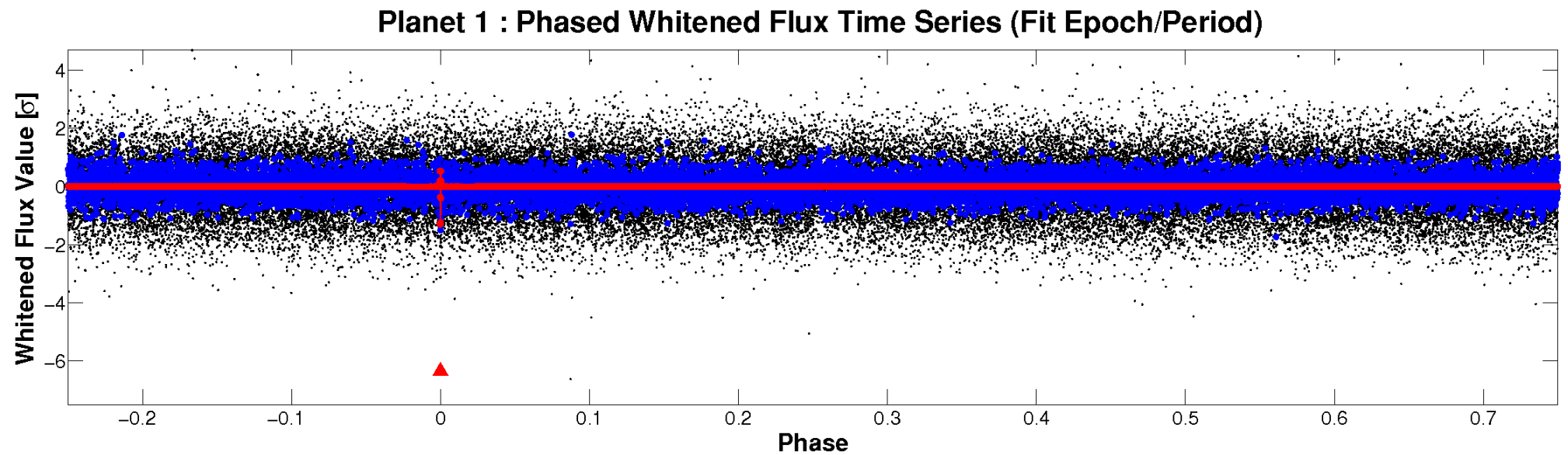
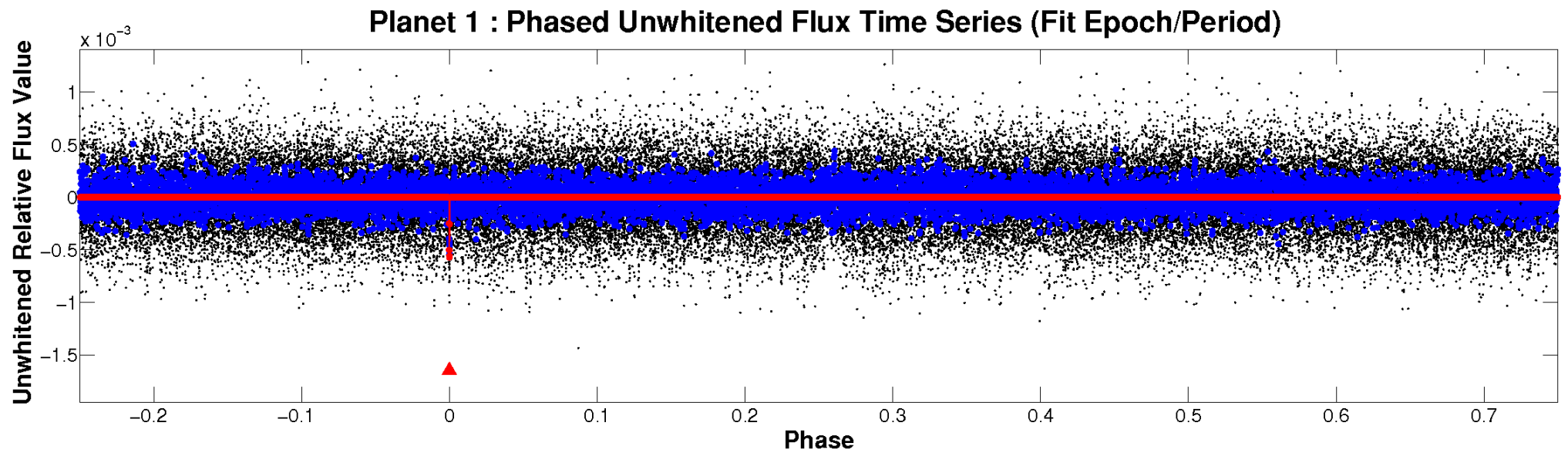
# ALT Odd/Even

TCE 009388557-01



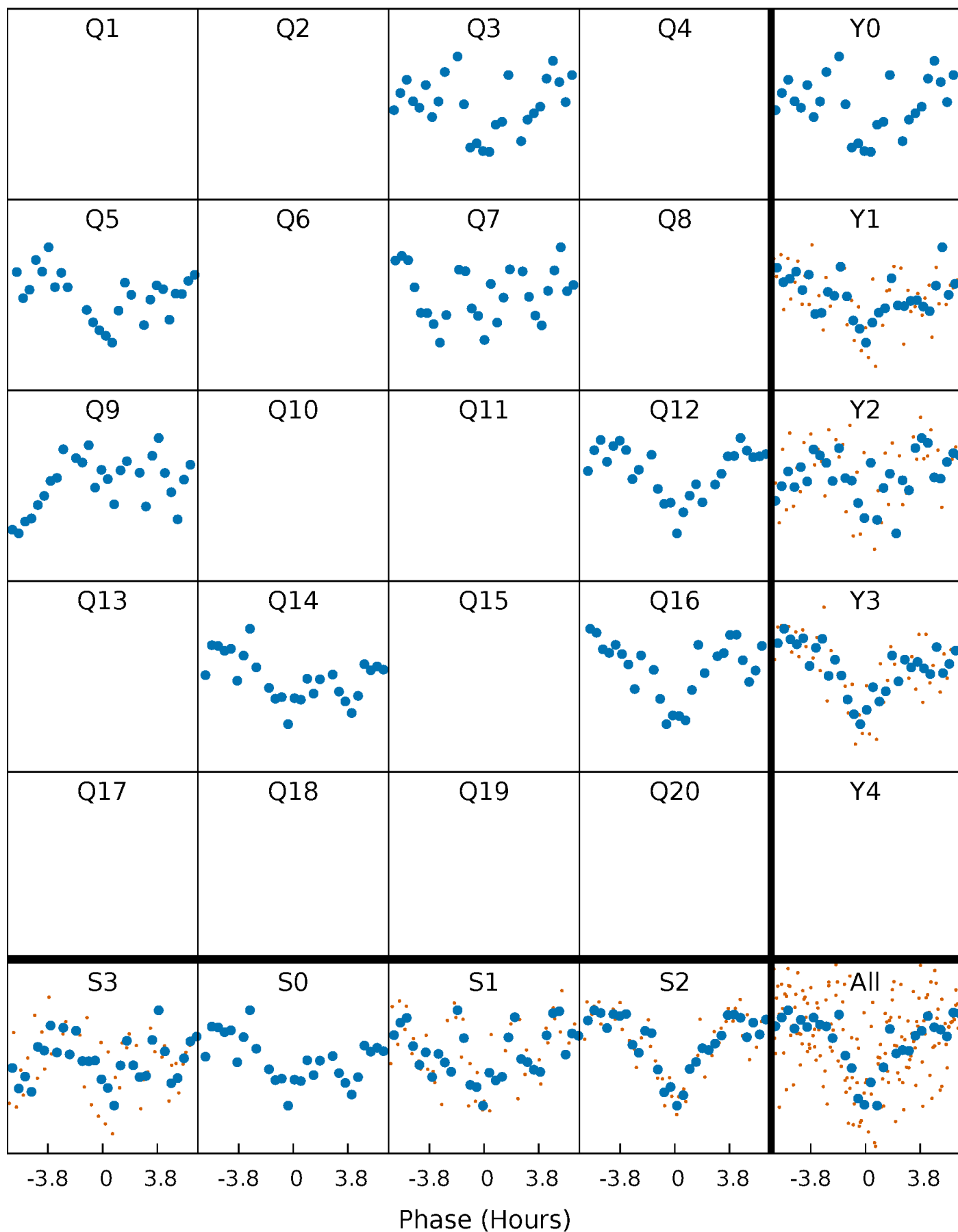


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

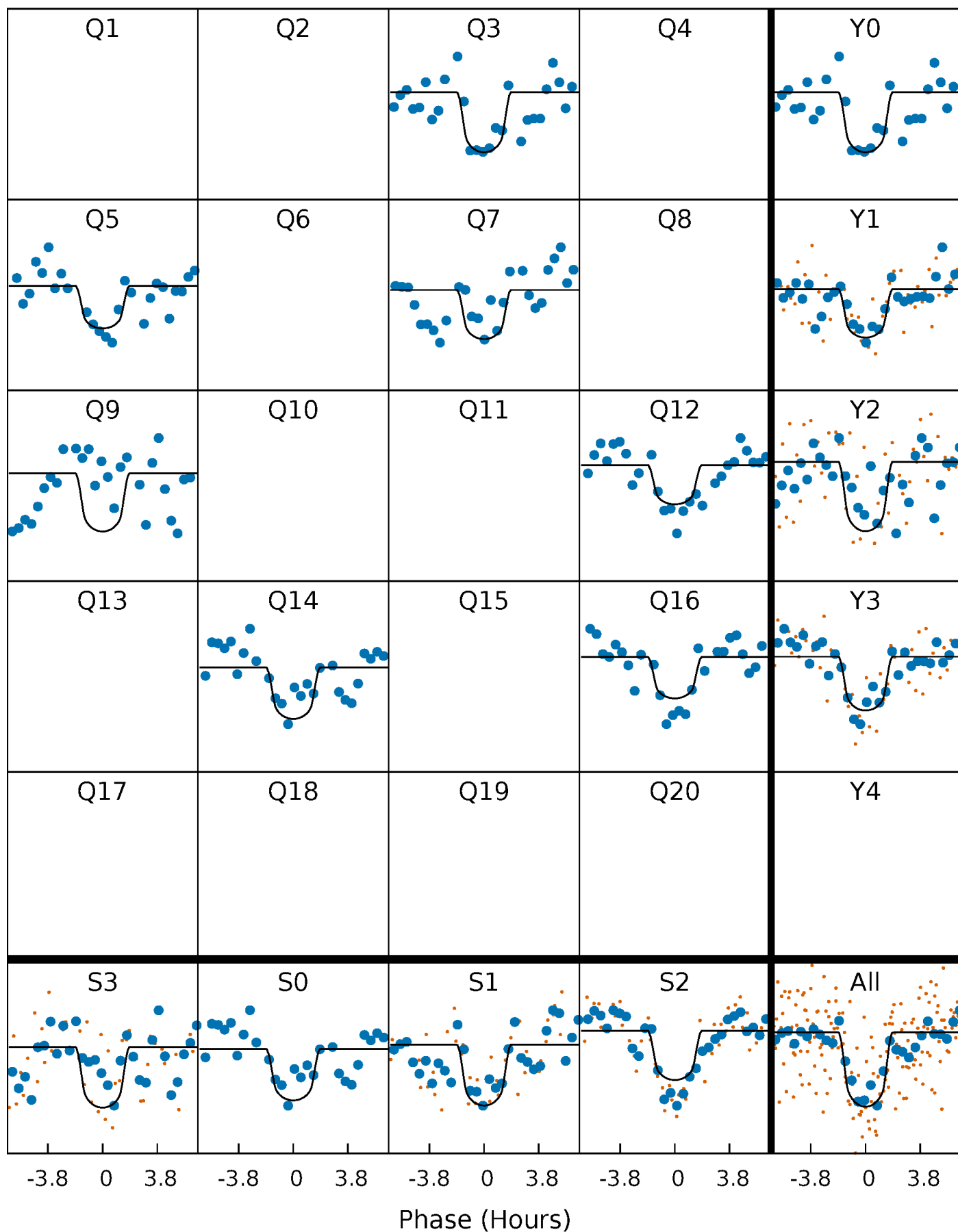
TCE 009388557-01 P=209.941918 Days  $T_0=268.564963$  (BKJD)





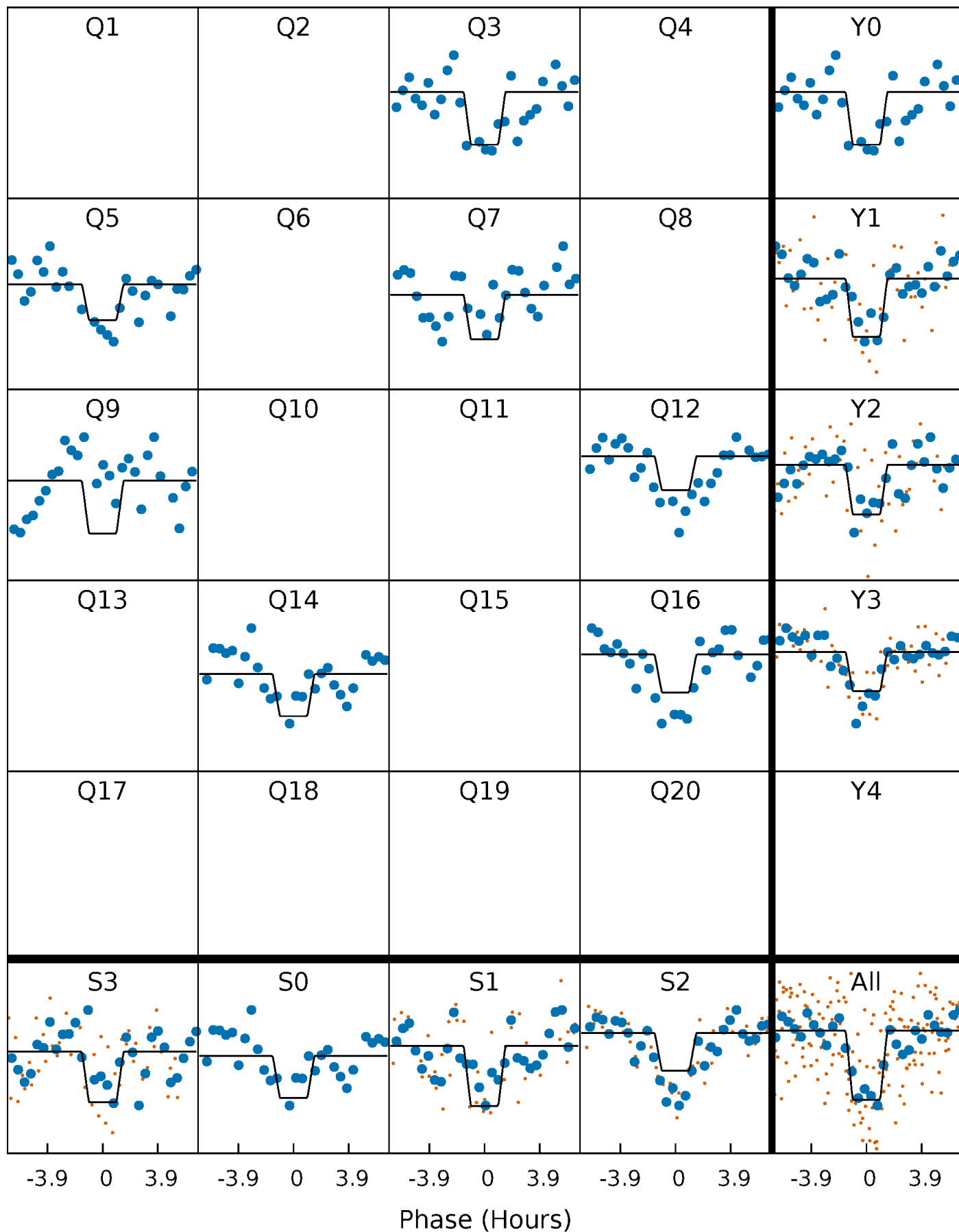
# DV Quarter-Phased Transit Curves

TCE 009388557-01 P=209.941918 Days  $T_0=268.564963$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

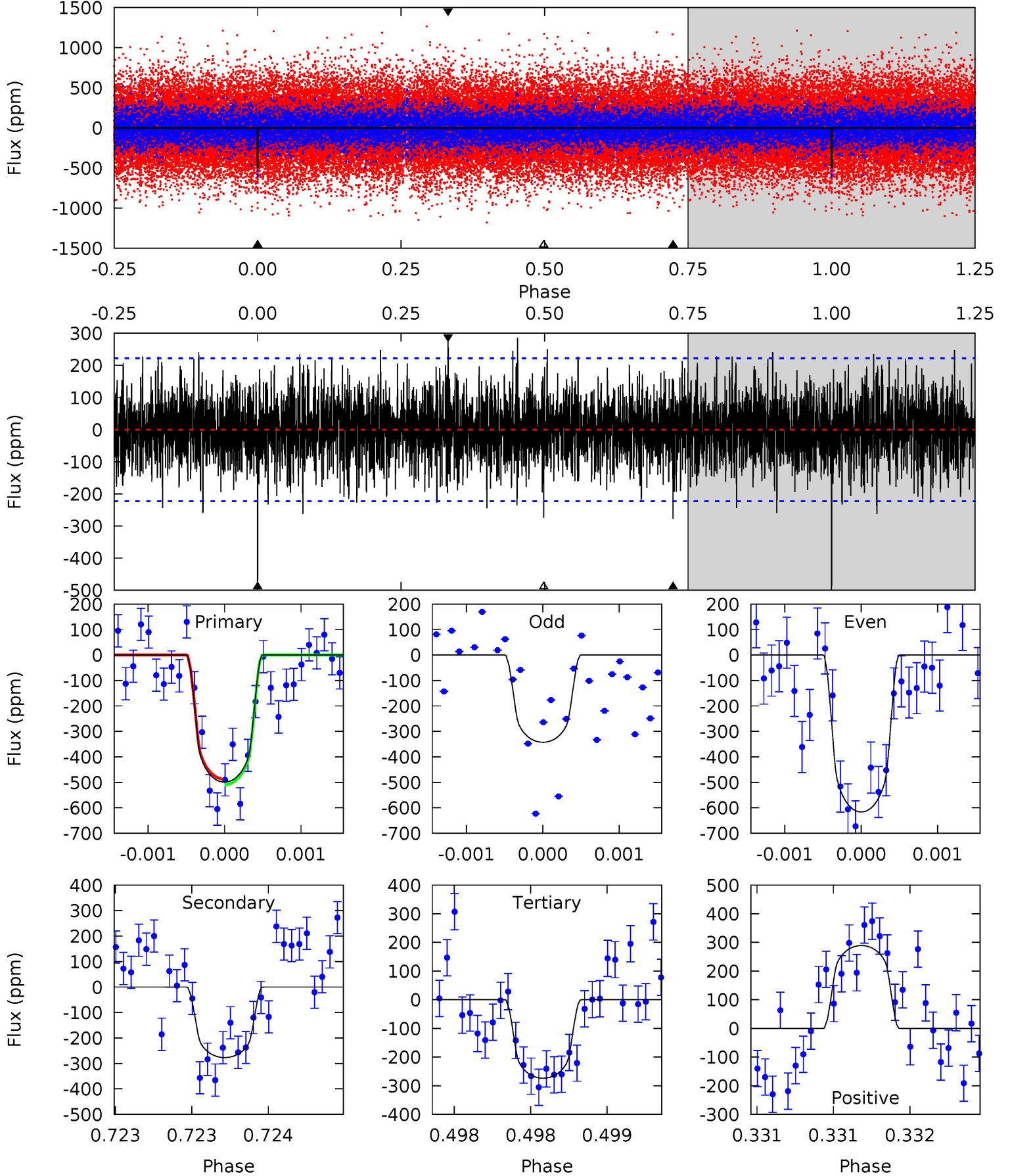
TCE 009388557-01 P=209.942436 Days  $T_0=268.563829$  (BKJD)



# DV Model-Shift Uniqueness Test

009388557-01, P = 209.941918 Days, E = 58.623045 Days

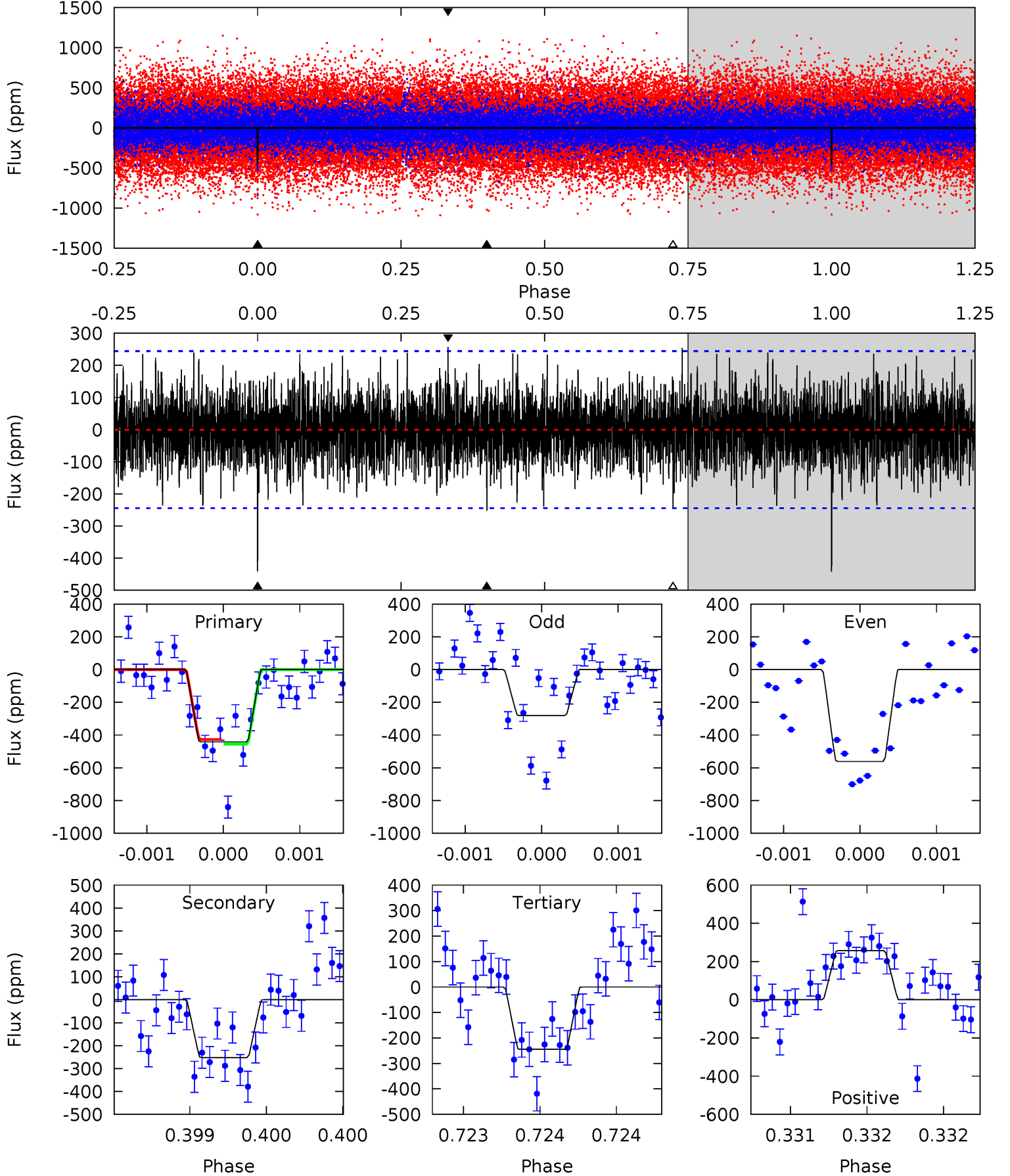
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	6.86	6.78	7.16	5.50	3.37	1.95	5.58	5.20	0.08	-0.30	3.36	0.91	0.37	0.28



# Alt Model-Shift Uniqueness Test

009388557-01, P = 209.942436 Days, E = 58.621393 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
10.0	5.71	5.55	5.84	5.54	3.43	1.63	4.47	4.18	0.16	-0.12	3.17	0.94	0.37	0.33



### Stellar Parameters For KIC 009388557

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5125^{+88}_{-127}$	$2.988^{+0.234}_{-0.156}$	$-0.460^{+0.200}_{-0.300}$	$6.690^{+1.270}_{-2.358}$	$1.587^{+0.194}_{-0.544}$	$0.007^{+0.012}_{-0.003}$
	+2%/-2%	+8%/-5%	+43%/-65%	+19%/-35%	+12%/-34%	+157%/-40%
Source	PHO1	FLK73	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 009388557-01 / KOI 8283.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-277 \pm 40$	$17.62^{+11.87}_{-9.33}$	$901^{+62}_{-67}$	$4339^{+1528}_{-689}$	$299^{+1124}_{-186}$
Alt.	$-252 \pm 44$	$16.03^{+10.69}_{-9.08}$	$906^{+58}_{-71}$	$4407^{+1903}_{-701}$	$333^{+1461}_{-210}$

$T_{\text{max}}$  = 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

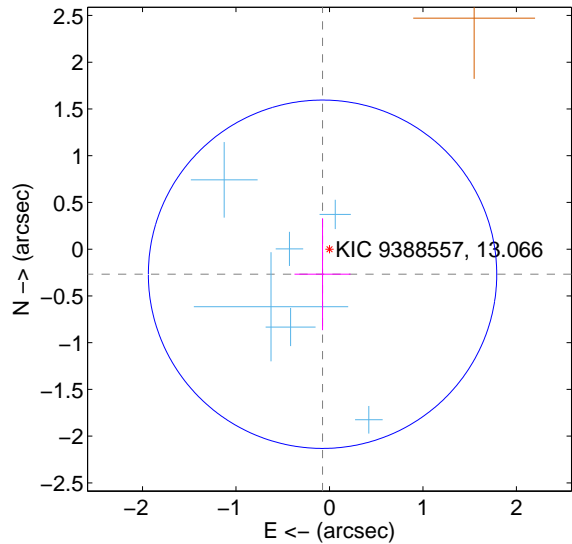
Supplemental centroid analysis for 009388557-01. Kepler magnitude: 13.07. Transit SNR 7.89

There are 6 quarters with good PRF difference image offsets

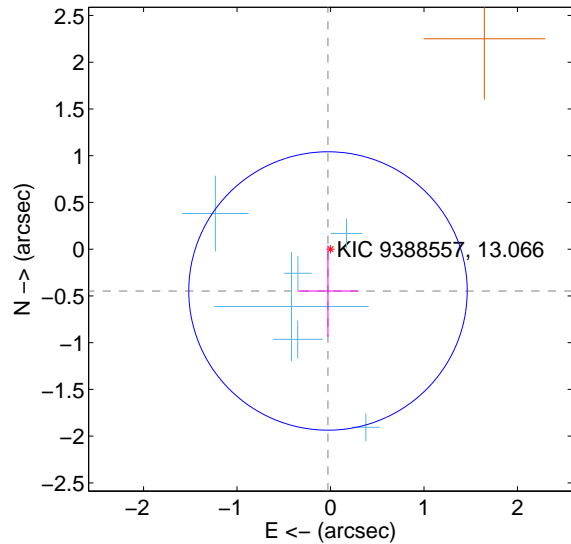
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.278 \pm 0.621$	0.45	$0.074 \pm 0.300$	$-0.268 \pm 0.598$
PRF-fit source offset from KIC position	$0.448 \pm 0.496$	0.90	$0.027 \pm 0.327$	$-0.447 \pm 0.489$
photometric centroid source offset	$0.84 \pm 0.44$	1.92	$0.11 \pm 0.48$	$-0.84 \pm 0.44$

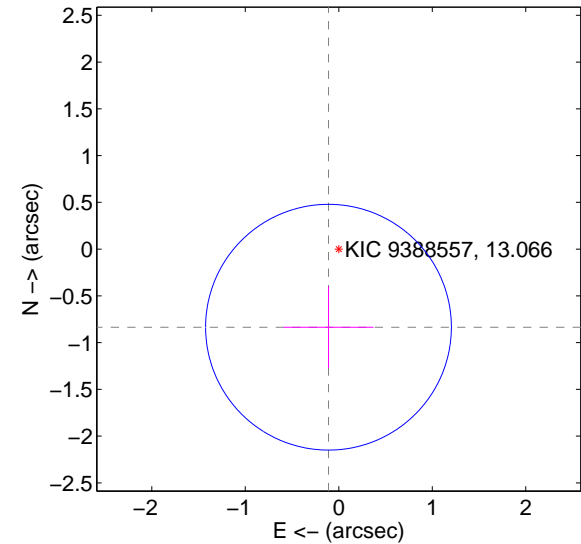
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



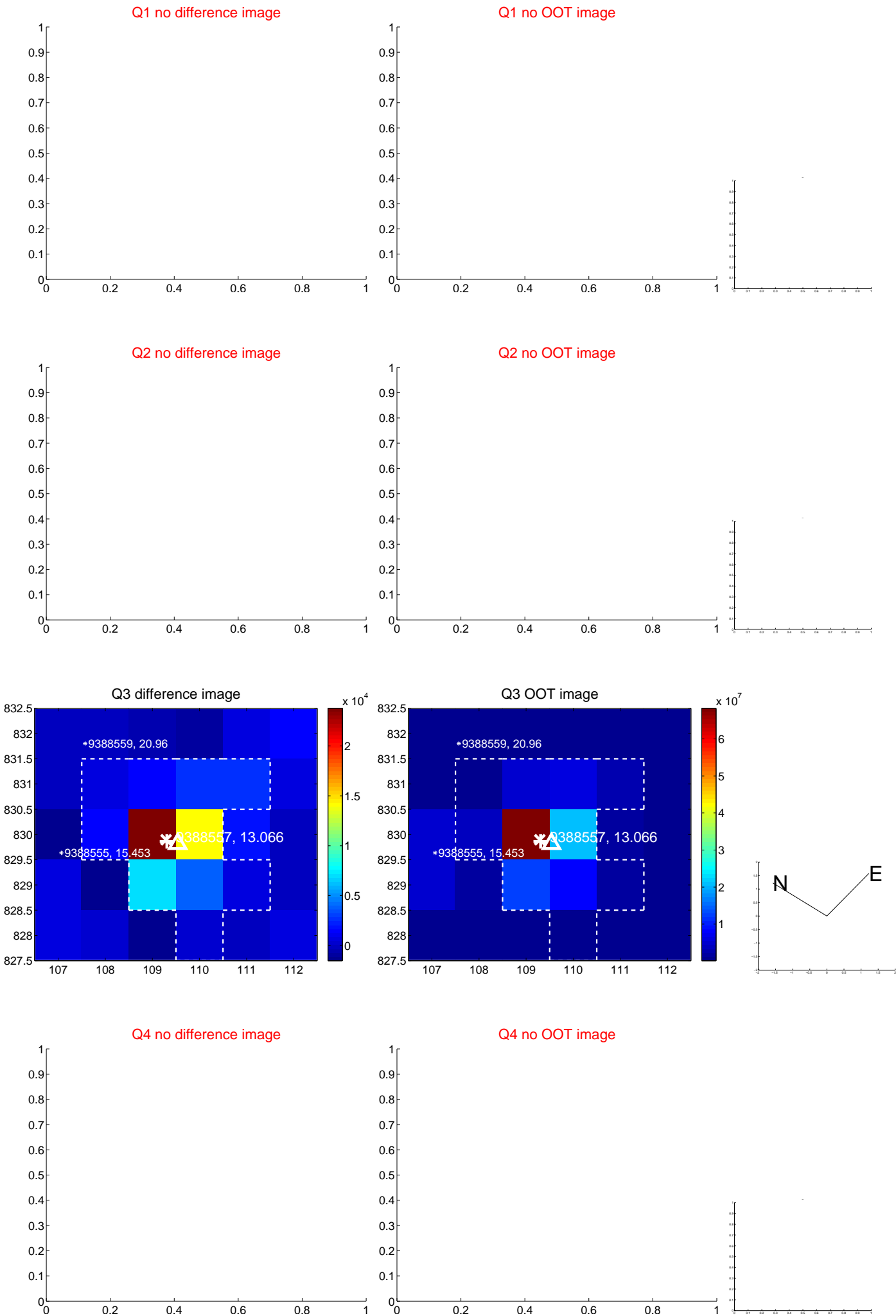
offset from photometric centroids



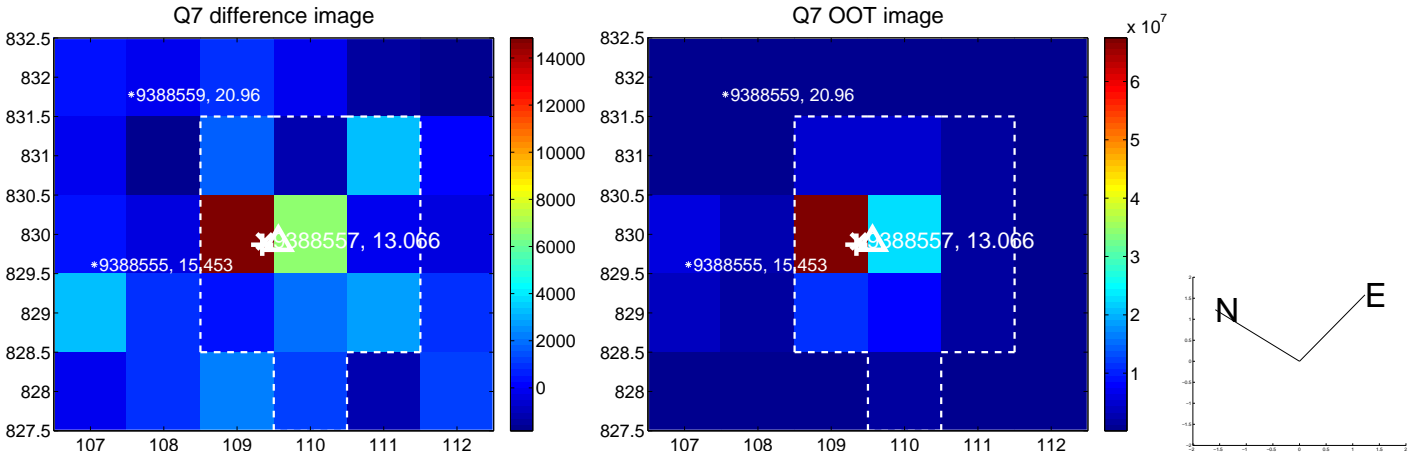
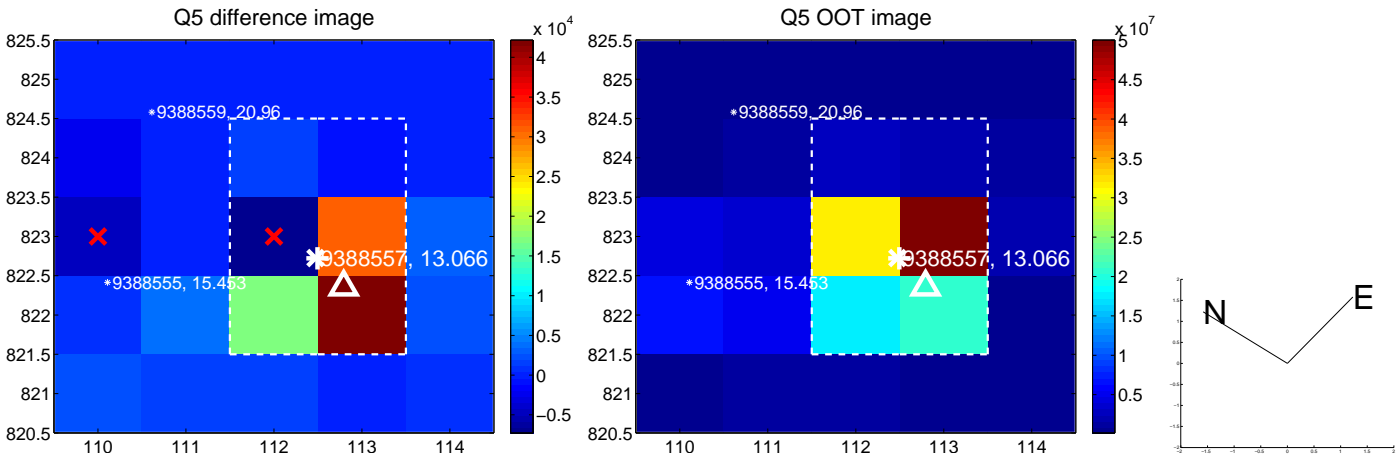
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



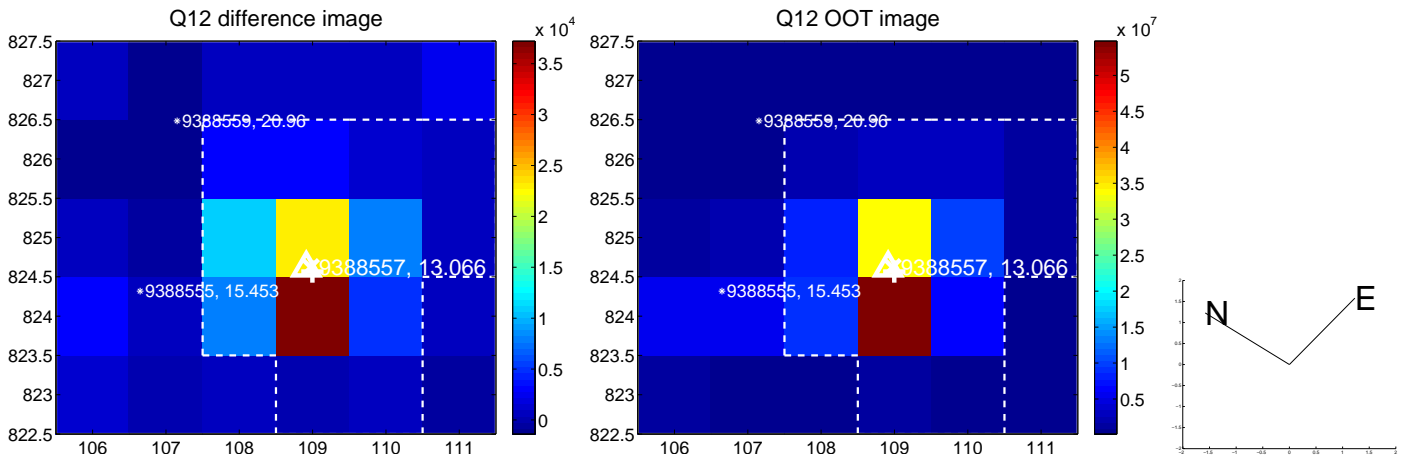
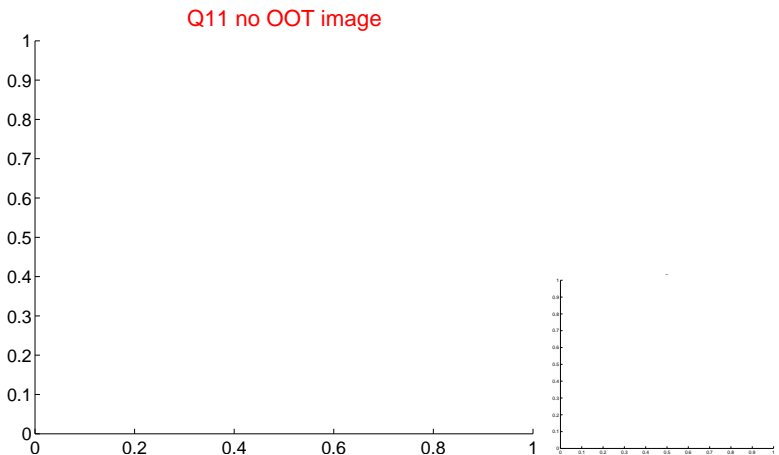
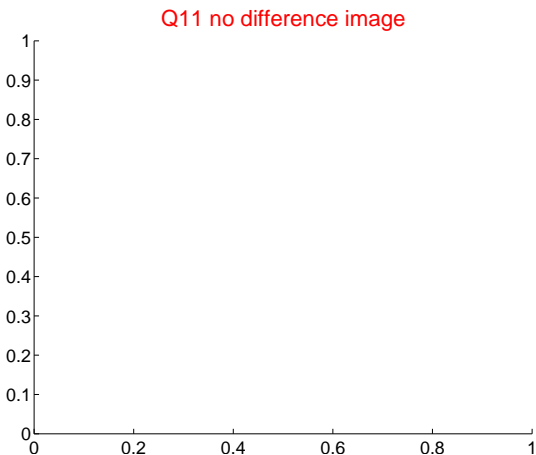
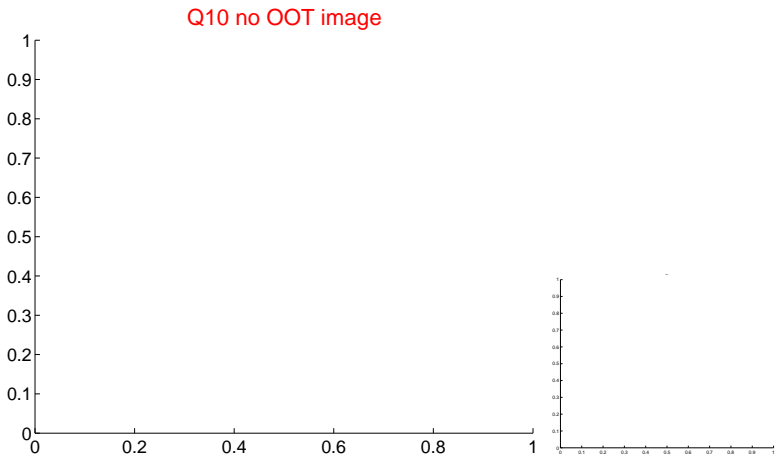
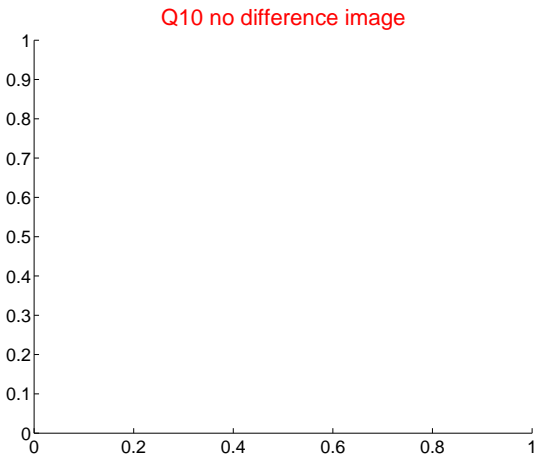
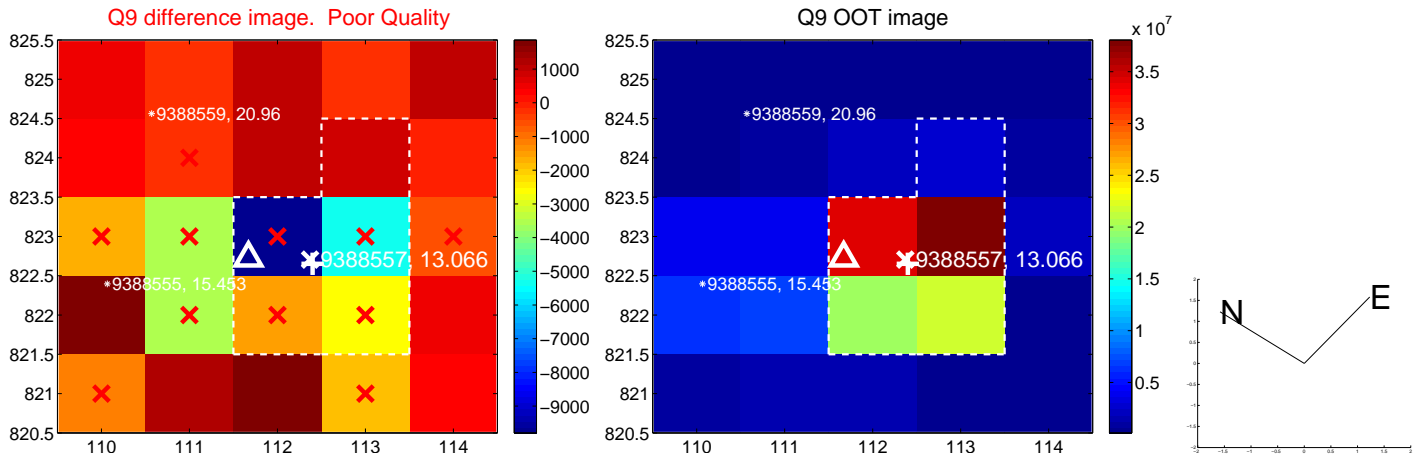
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



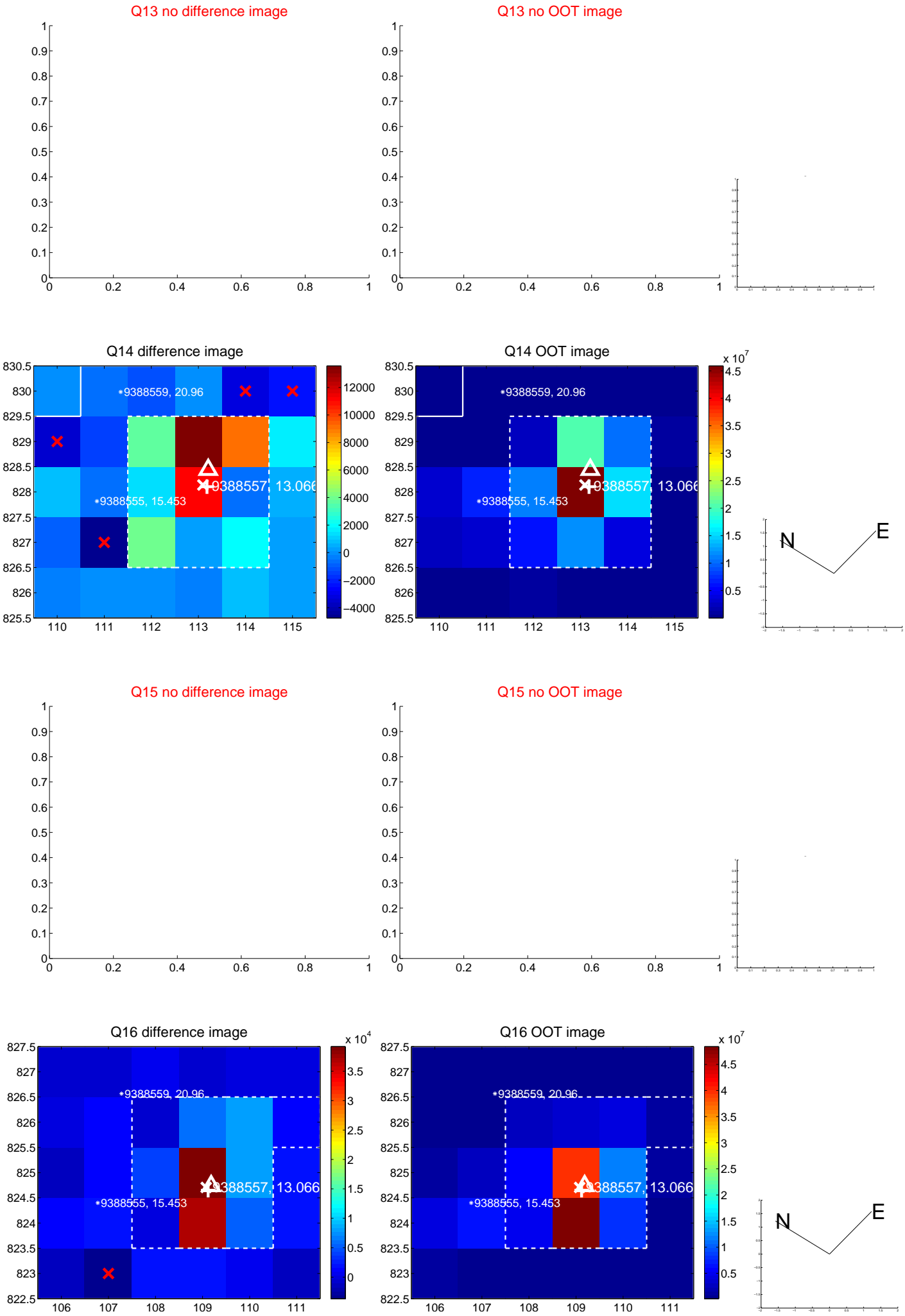
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



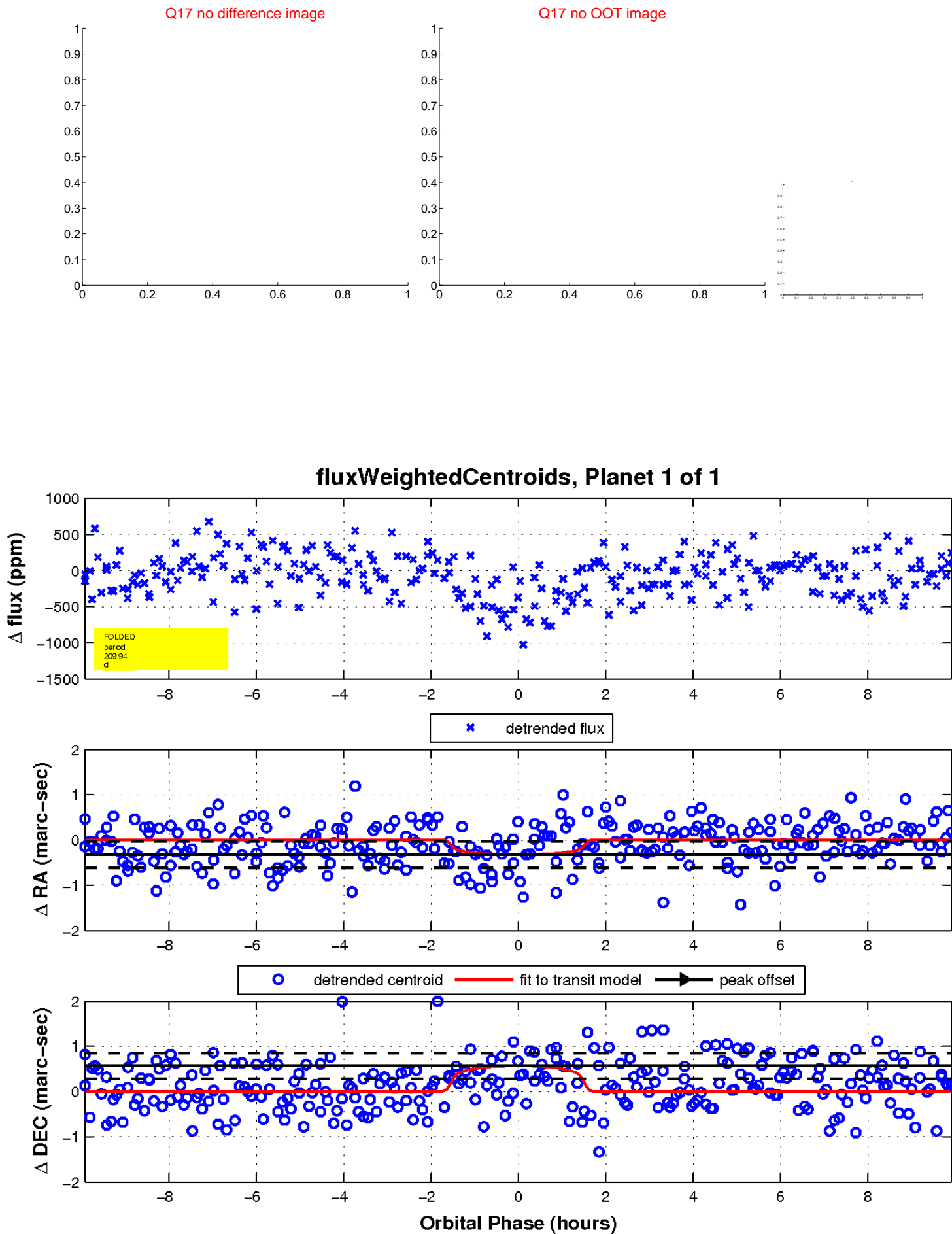
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

