

# KIC 009452897

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009452897-01	OBS	3391.01	36.766737	157.142117	593.9	5.291	9.7	11.1	0.54	4342	2.08	3.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009452897-01	OBS	PC	0.99	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 009452897-01

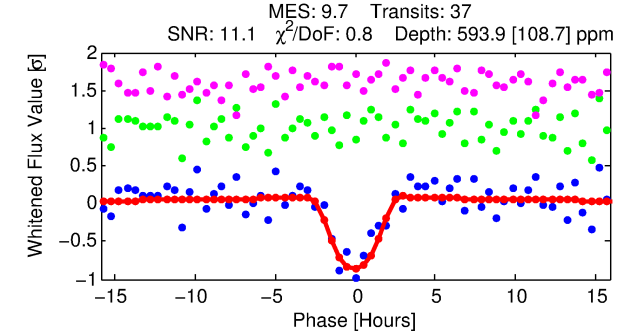
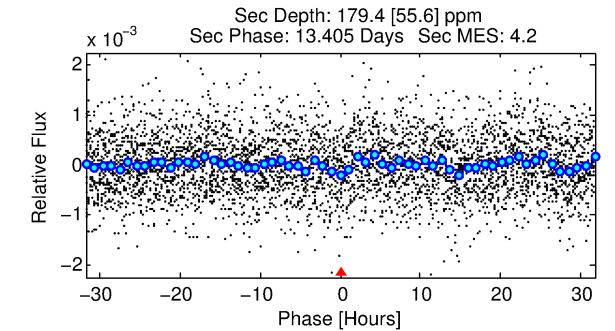
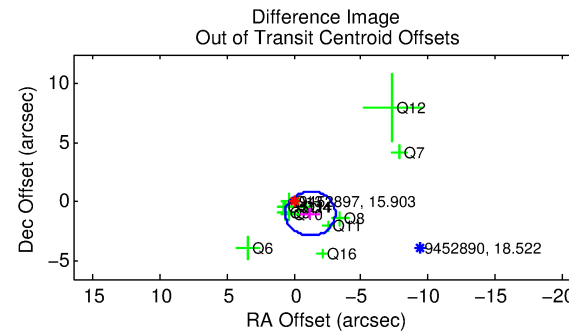
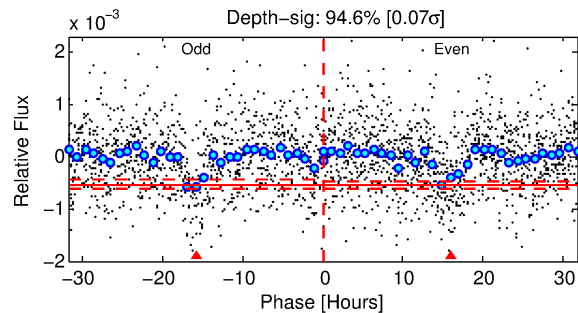
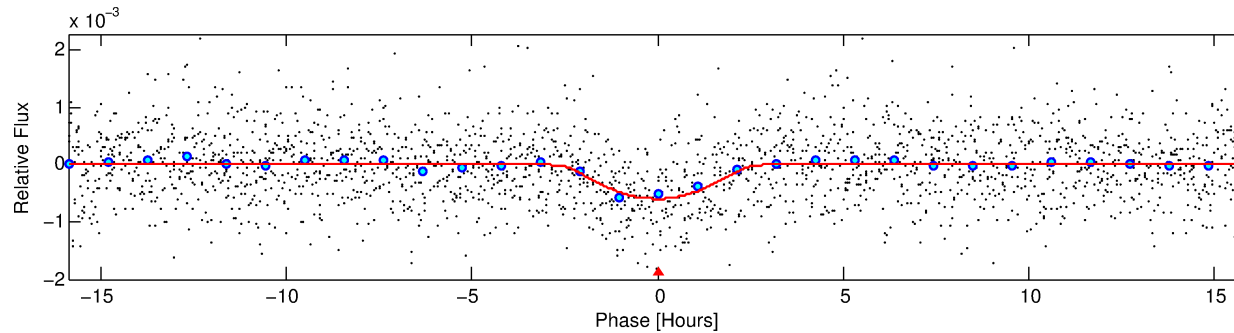
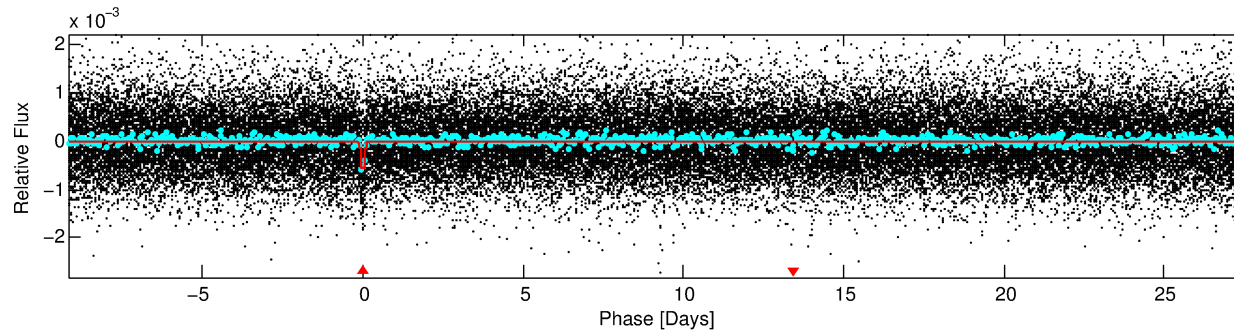
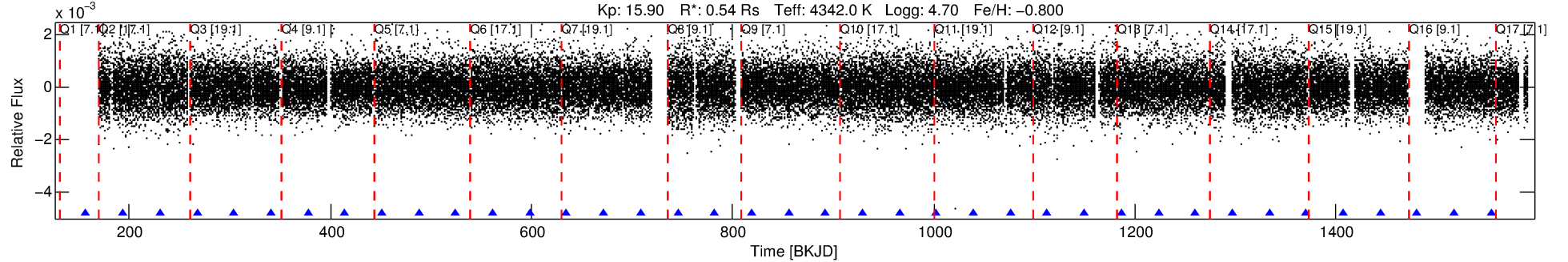
No Significant Match Found

# DV One-Page Summary

KIC: 9452897 Candidate: 1 of 1 Period: 36.767 d

KOI: K03391 Corr: No Ephemeris Match

Kp: 15.90 R\*: 0.54 Rs Teff: 4342.0 K Logg: 4.70 Fe/H: -0.800



## DV Fit Results:

Period = 36.76674 [0.00050] d  
Epoch = 157.1421 [0.0113] BKJD  
Rp/R\* = 0.0354 [0.0381]  
a/R\* = 17.27 [7.57]  
b = 0.98 [0.07]  
Seff = 3.02 [0.53]  
Teq = 336 [15] K  
Rp = 2.08 [2.25] Re  
a = 0.1754 [0.0144] AU  
Ag = 699.48 [1525.21] [0.46σ]  
Teffp = 2673 [1458] K [1.60σ]

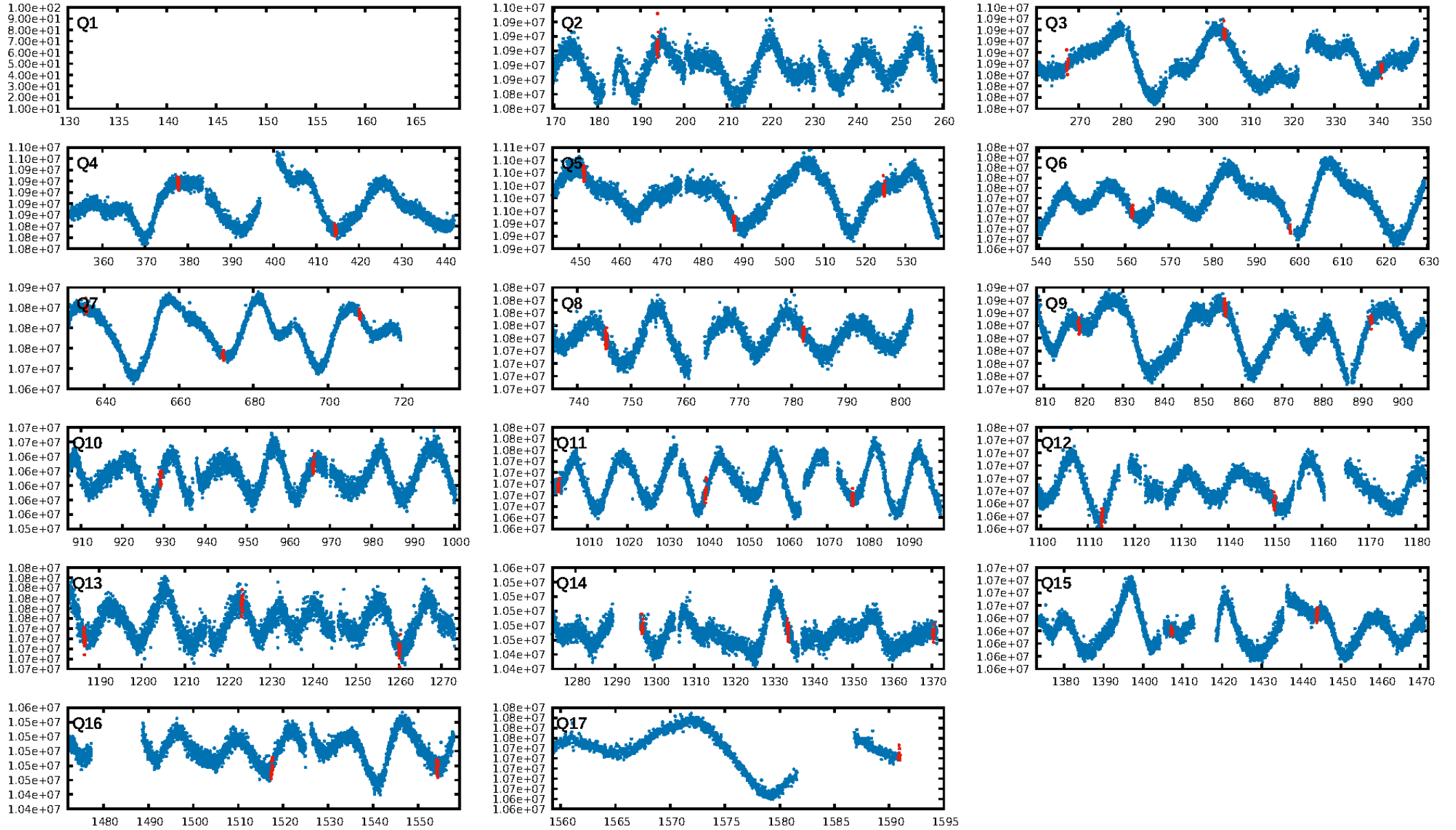
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 95.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.11e-21  
RollingBand-fgt: 1.00 [36/36]  
GhostDiagnostic-chr: -5.289  
Centroid-sig: 3.3%  
Centroid-so: 2.011 arcsec [1.62σ]  
OotOffset-rm: 1.553 arcsec [2.49σ]  
KicOffset-rm: 1.341 arcsec [2.08σ]  
OotOffset-st: 3/2/4/3 [12]  
KicOffset-st: 3/2/4/3 [12]  
DiffImageQuality-fgm: 0.58 [7/12]  
DiffImageOverlap-fno: 1.00 [15/15]

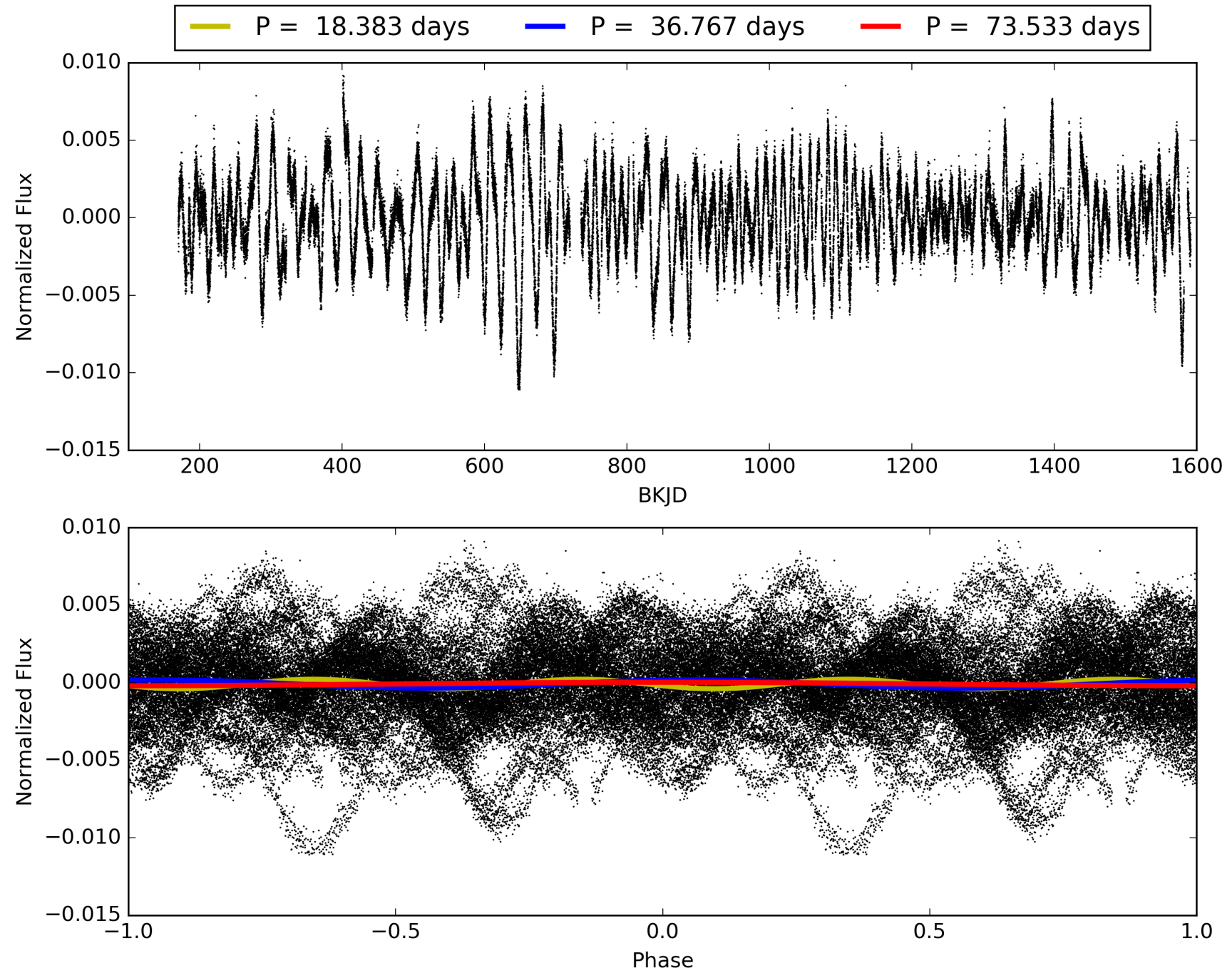
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:01:19 Z

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

# TCE 009452897-01, PDC Light Curves

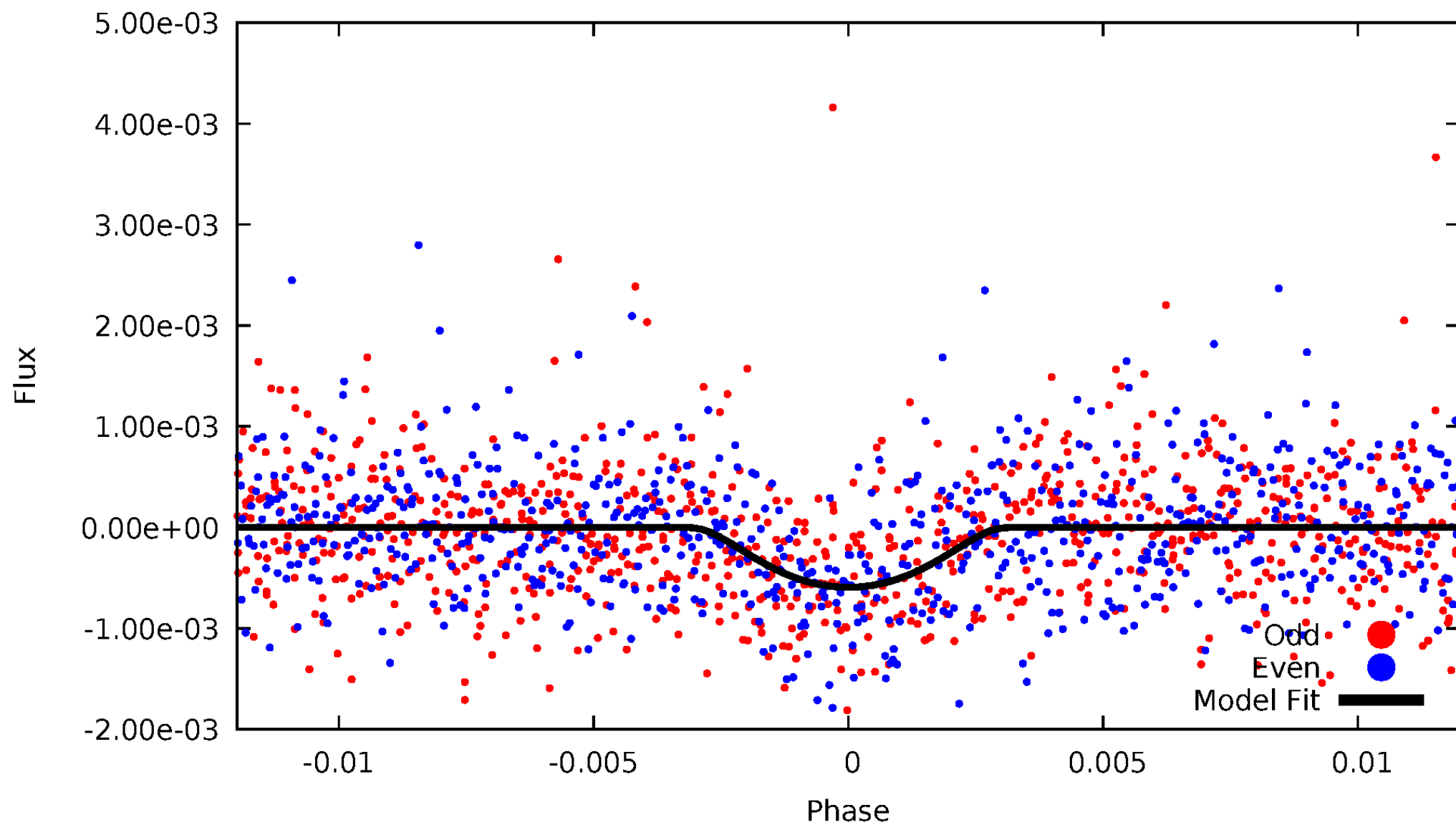


TCE 009452897-01



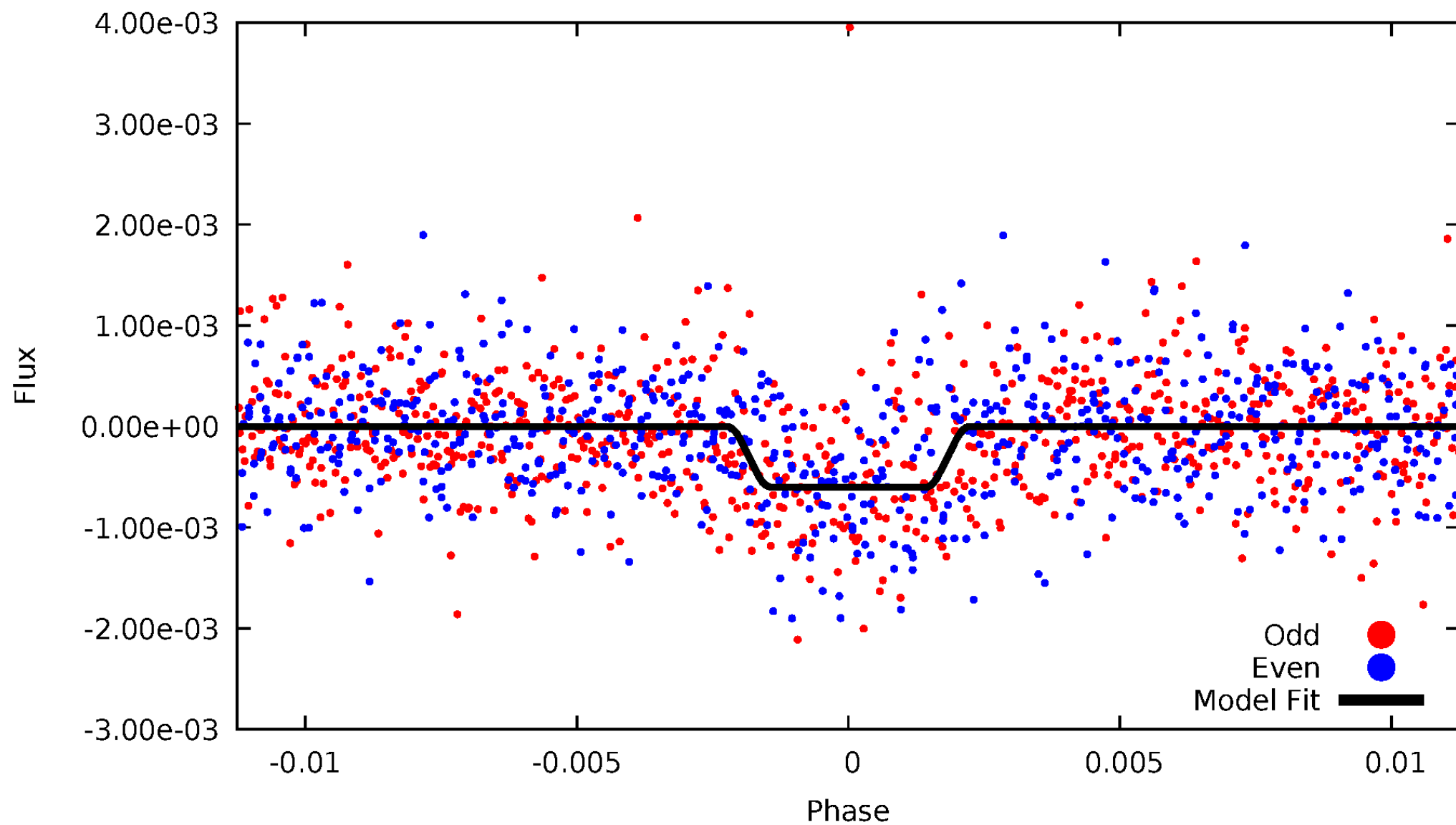
# DV Odd/Even

TCE 009452897-01



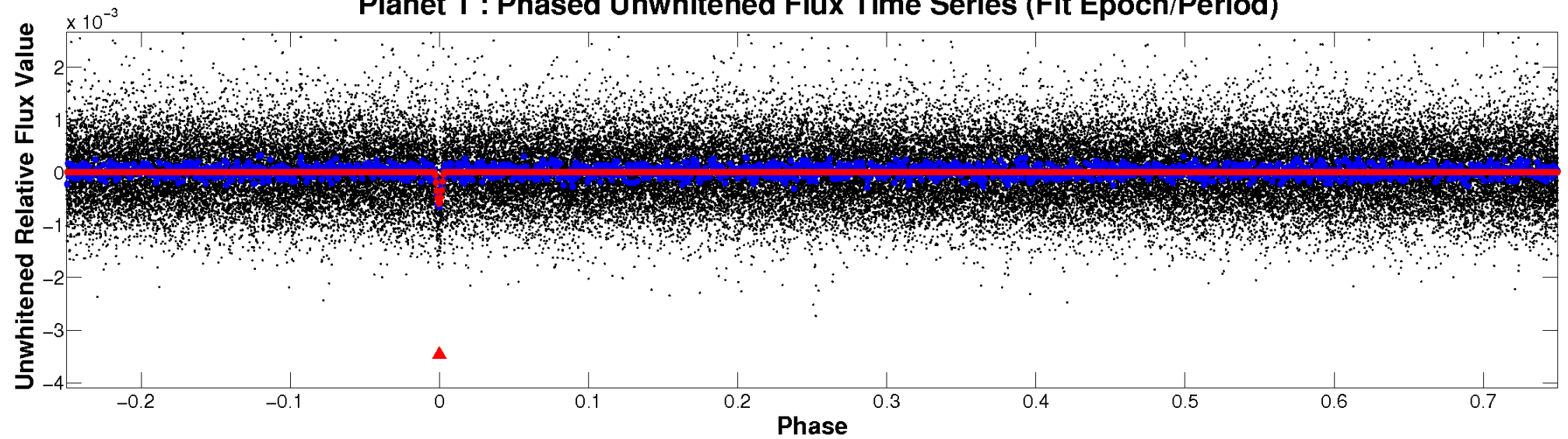
# ALT Odd/Even

TCE 009452897-01

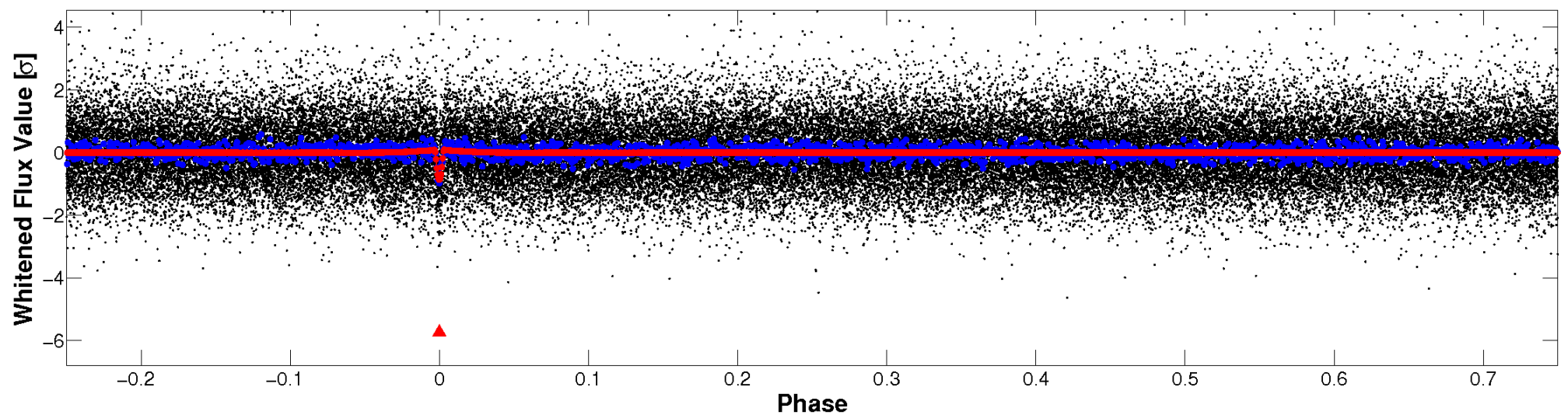


# Non-Whitened Vs. Whitened Light Curve

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

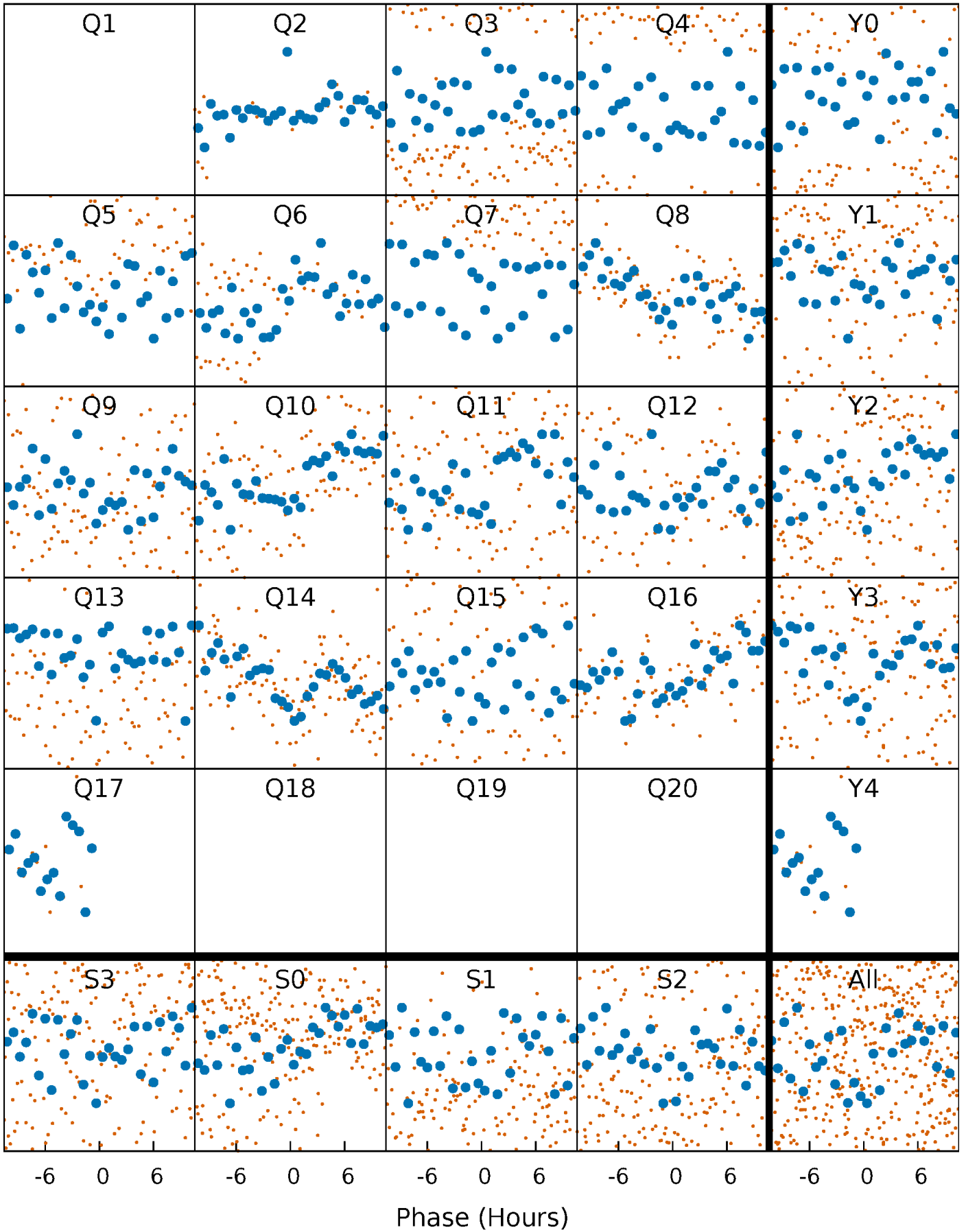


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



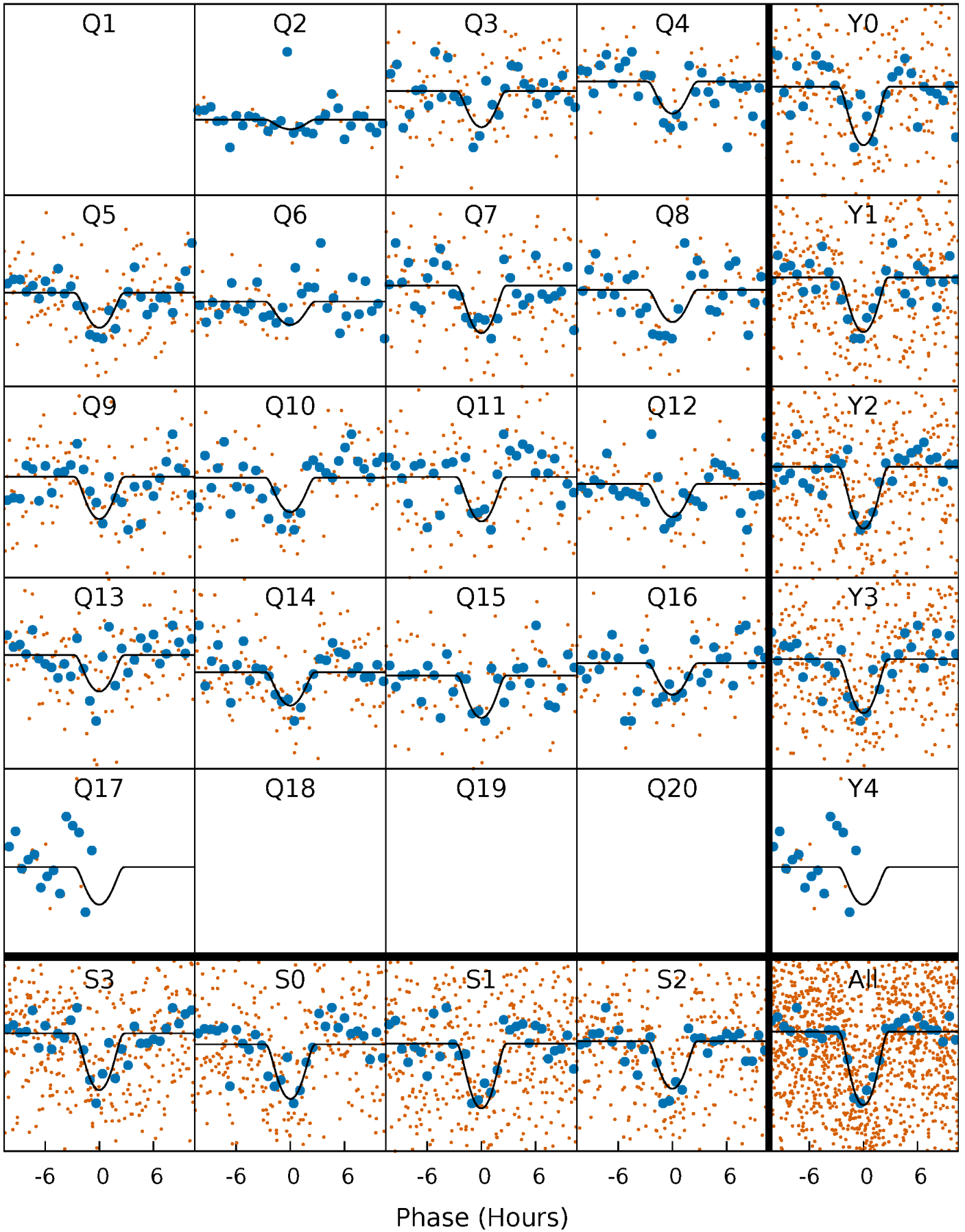
# PDC Quarter-Phased Transit Curves

TCE 009452897-01   P= 36.766737 Days    $T_0=157.142117$  (BKJD)



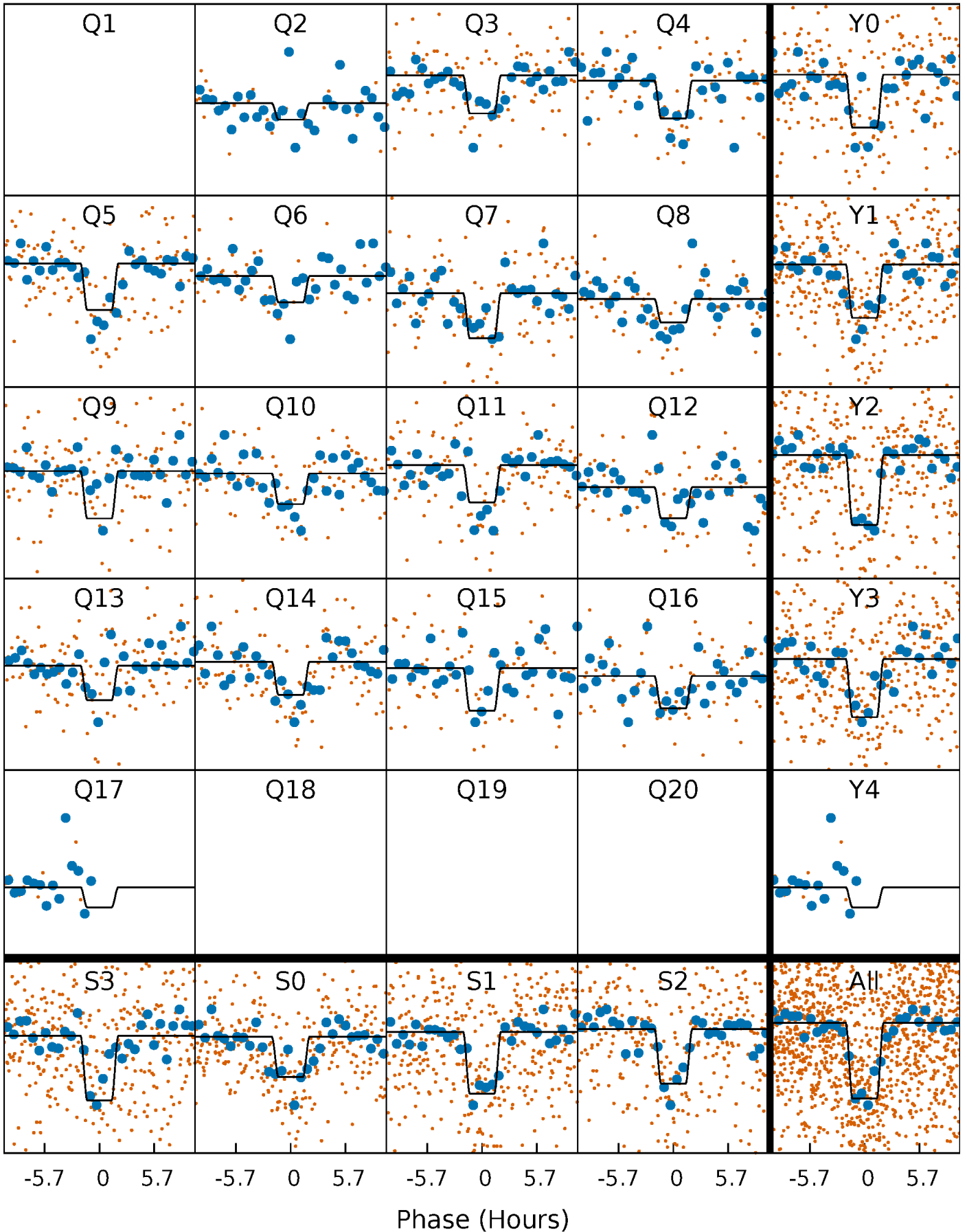
# DV Quarter-Phased Transit Curves

TCE 009452897-01 P= 36.766737 Days  $T_0=157.142117$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

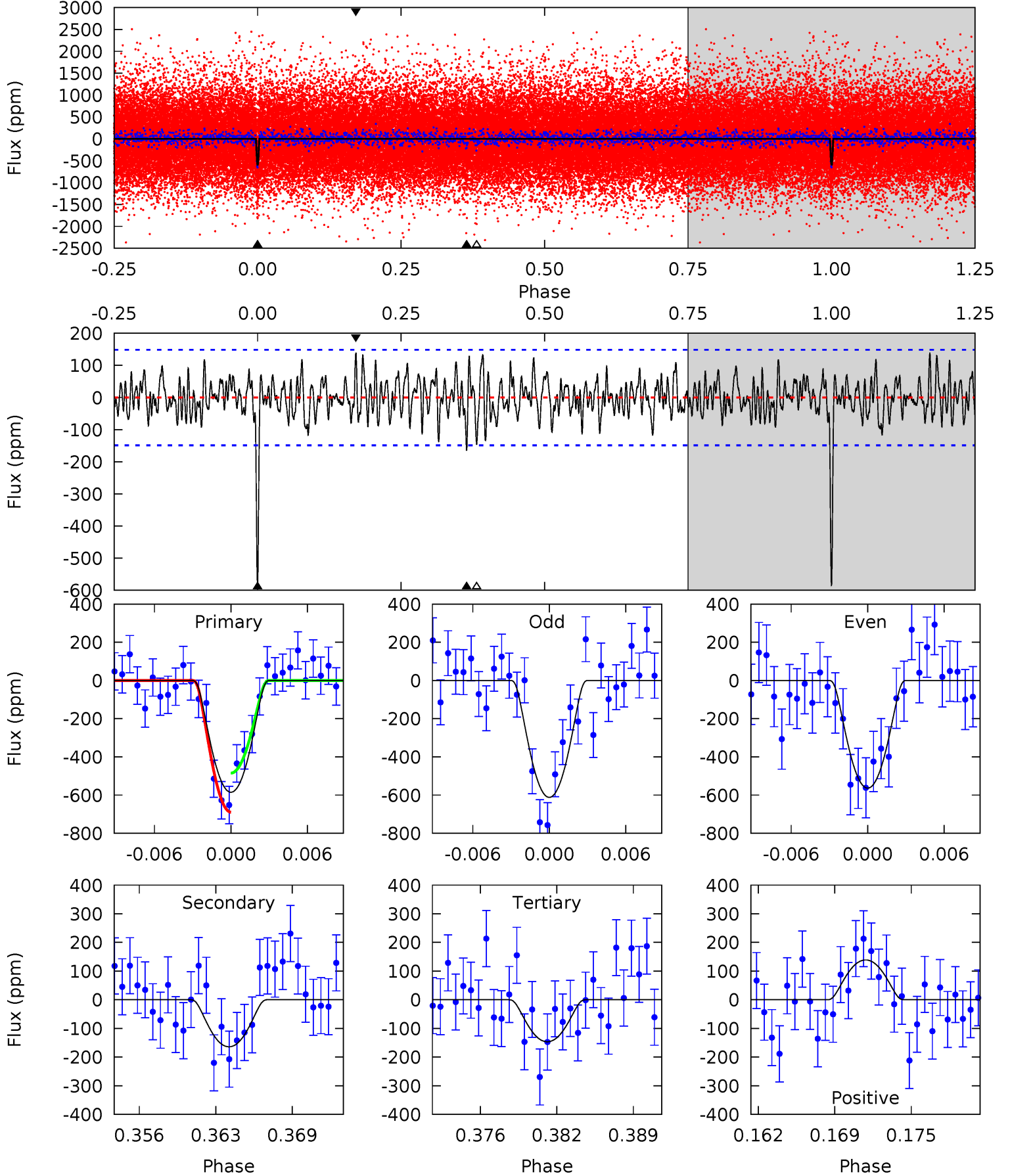
TCE 009452897-01 P= 36.766986 Days  $T_0=157.129761$  (BKJD)



# DV Model-Shift Uniqueness Test

009452897-01,  $P = 36.766737$  Days,  $E = 157.142117$  Days

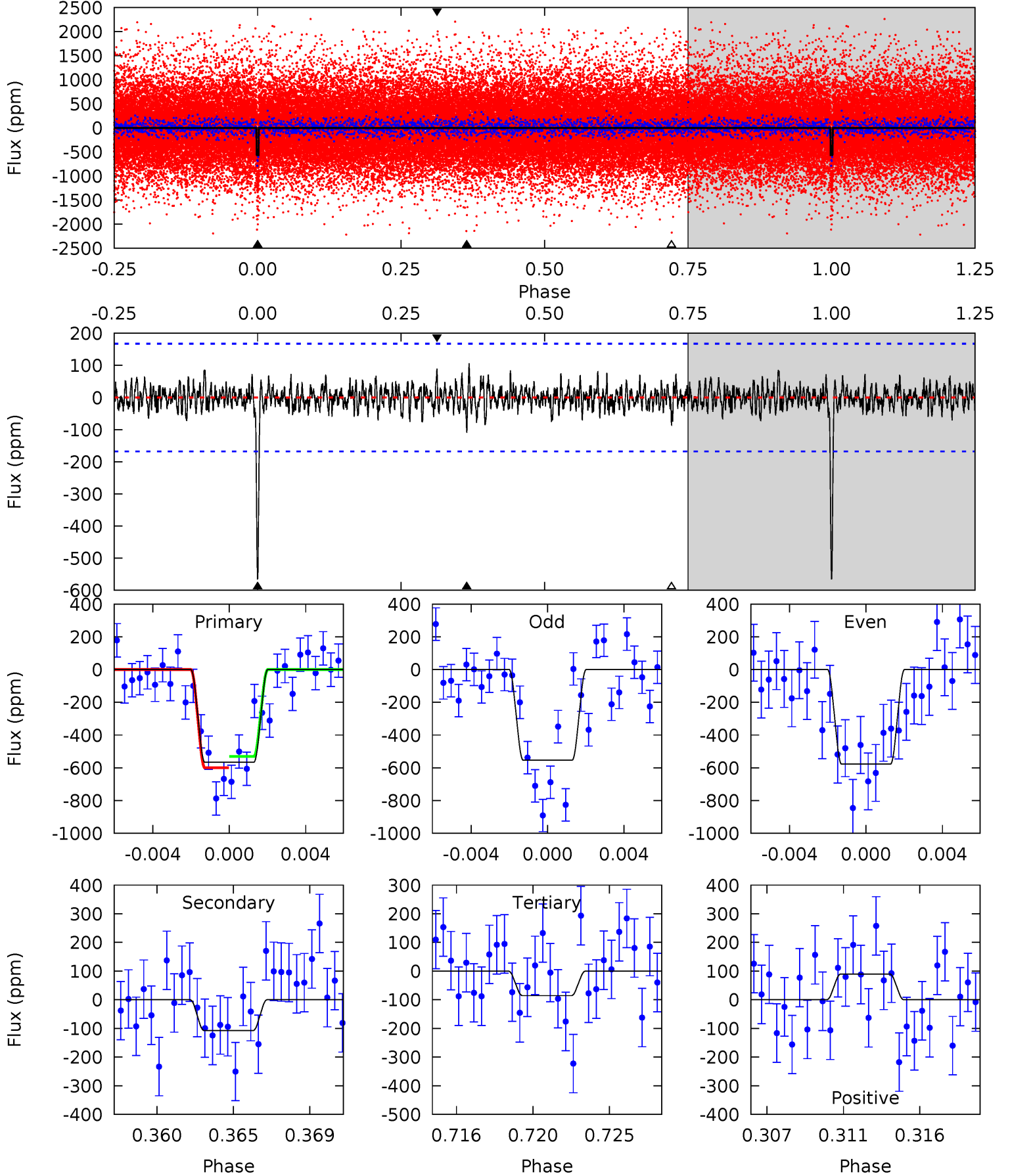
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	5.64	5.04	4.77	5.11	2.72	1.64	15.1	15.3	0.60	0.87	0.83	0.96	0.19	3.52



# Alt Model-Shift Uniqueness Test

009452897-01,  $P = 36.766986$  Days,  $E = 157.129761$  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
17.5	3.32	2.65	2.78	5.18	2.84	0.86	14.8	14.7	0.67	0.54	0.37	1.00	0.16	1.07



### Stellar Parameters For KIC 009452897

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4342^{+117}_{-143}$	$4.699^{+0.063}_{-0.031}$	$-0.800^{+0.300}_{-0.350}$	$0.540^{+0.044}_{-0.054}$	$0.531^{+0.048}_{-0.037}$	$4.759^{+1.372}_{-0.606}$
	+3%/-3%	+1%/-1%	+37%/-44%	+8%/-10%	+9%/-7%	+29%/-13%
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 009452897-01 / KOI 3391.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-164 \pm 29$	$2.53^{+2.00}_{-1.73}$	$467^{+15}_{-18}$	$2938^{+1245}_{-436}$	$432^{+3777}_{-303}$
Alt.	$-107 \pm 32$	$2.25^{+1.87}_{-1.44}$	$467^{+15}_{-18}$	$2839^{+1067}_{-414}$	$347^{+2287}_{-249}$

$T_{max}$  = 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

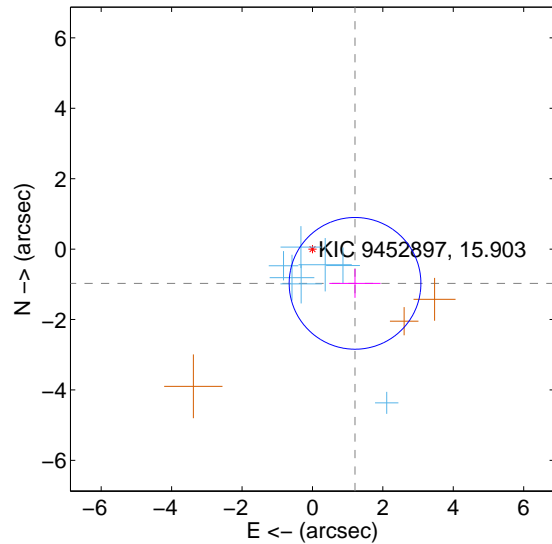
Supplemental centroid analysis for 009452897-01. Kepler magnitude: 15.90. Transit SNR 11.06

There are 7 quarters with good PRF difference image offsets

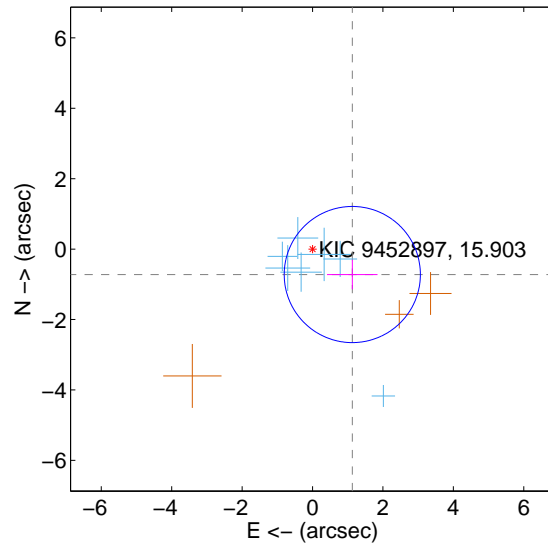
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.553 \pm 0.624$	2.49	$-1.210 \pm 0.729$	$-0.973 \pm 0.411$
PRF-fit source offset from KIC position	$1.341 \pm 0.645$	2.08	$-1.130 \pm 0.717$	$-0.722 \pm 0.419$
photometric centroid source offset	$2.01 \pm 1.24$	1.62	$-0.04 \pm 1.18$	$2.01 \pm 1.24$

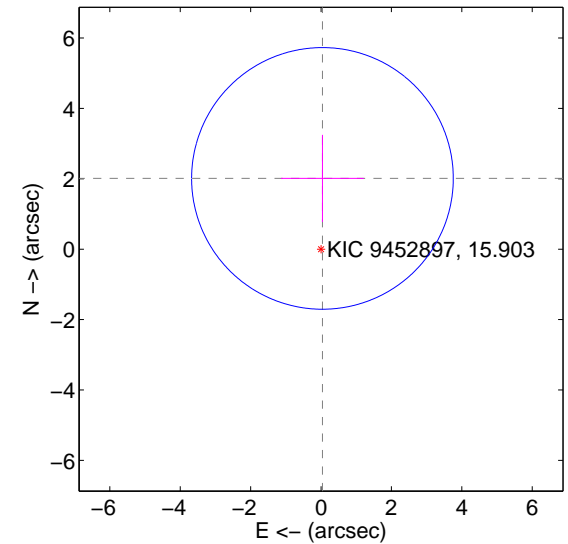
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

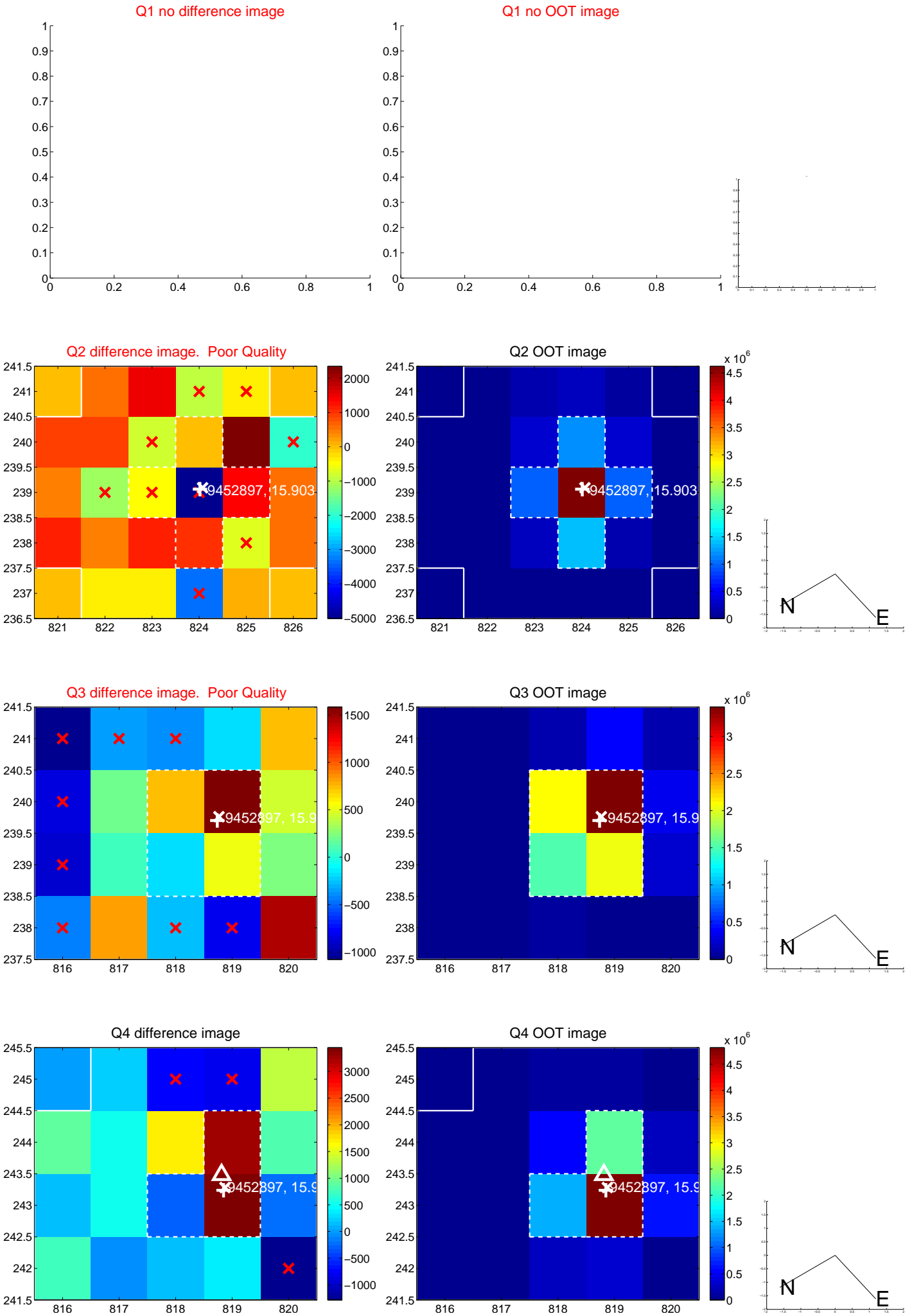


offset from photometric centroids

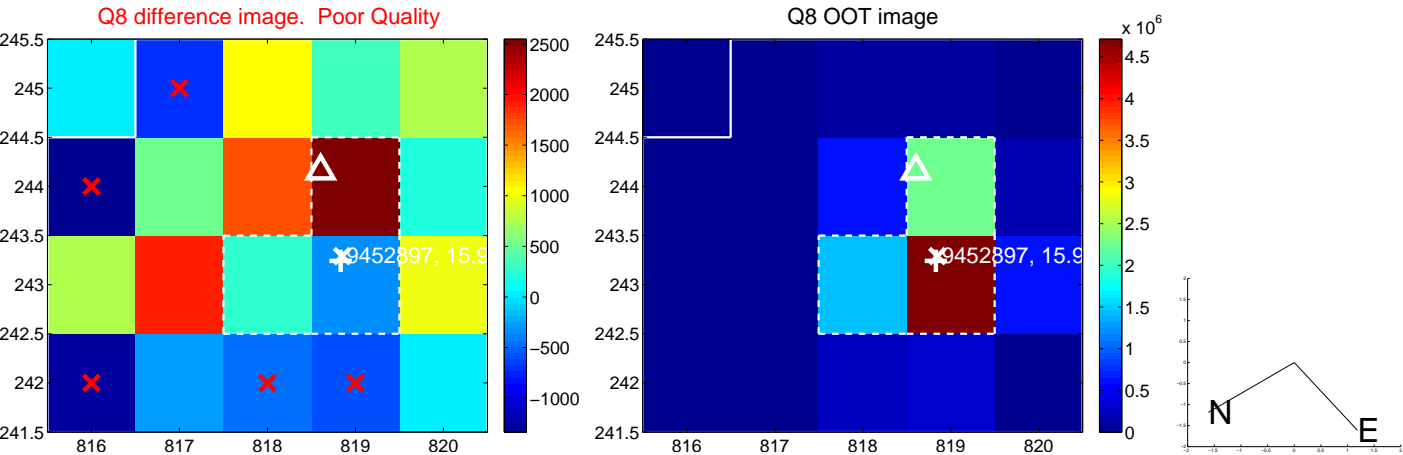
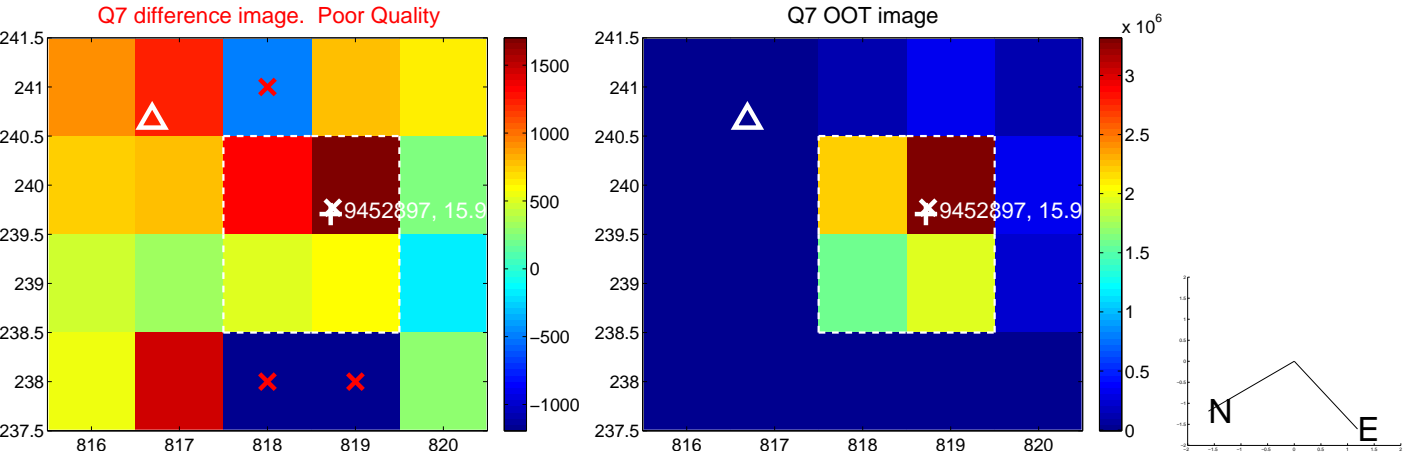
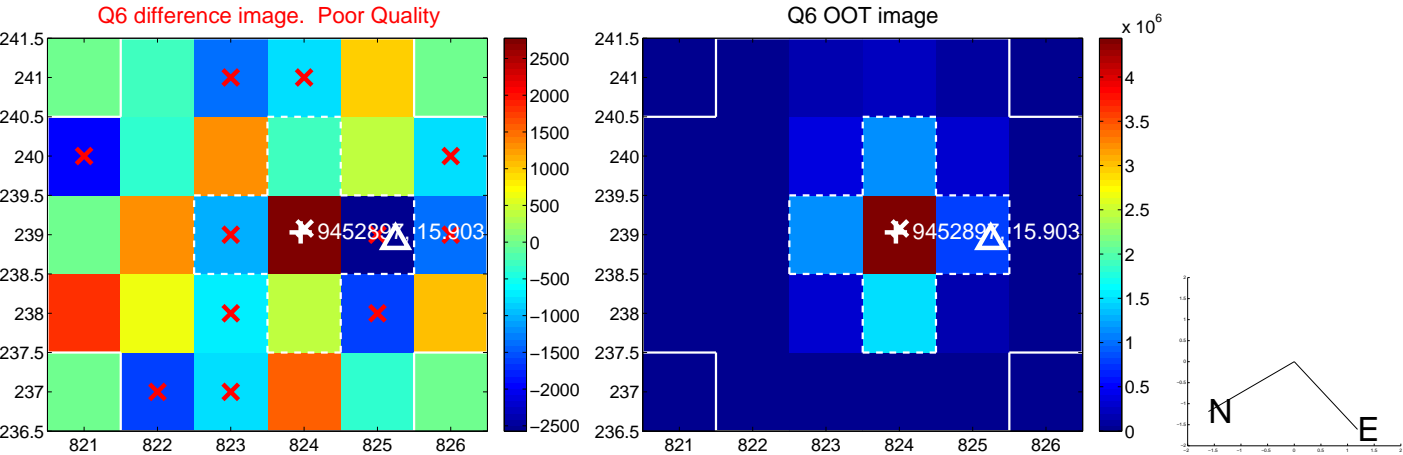
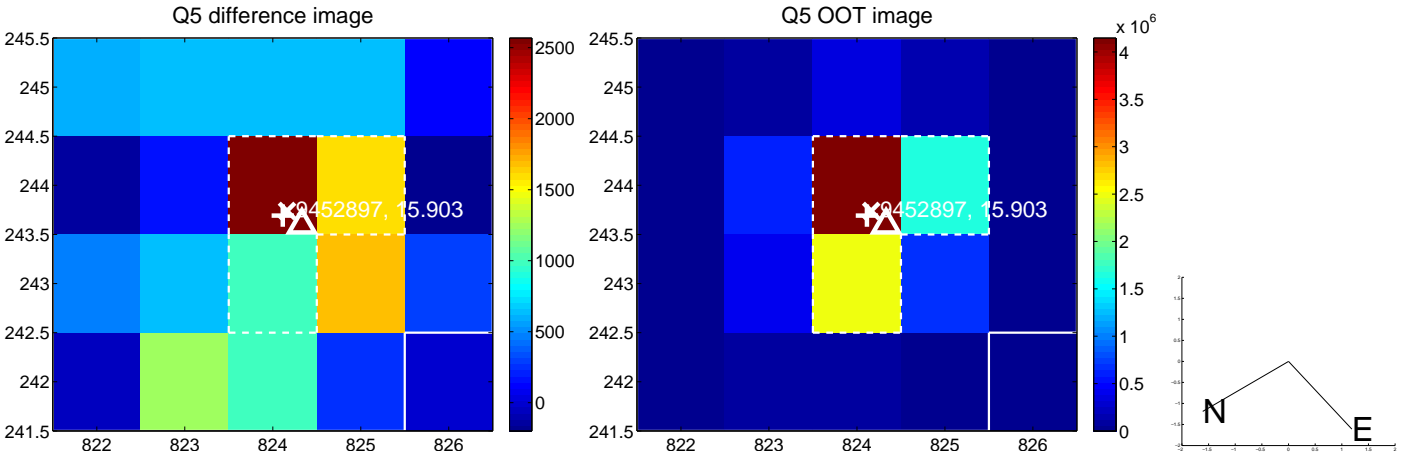


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

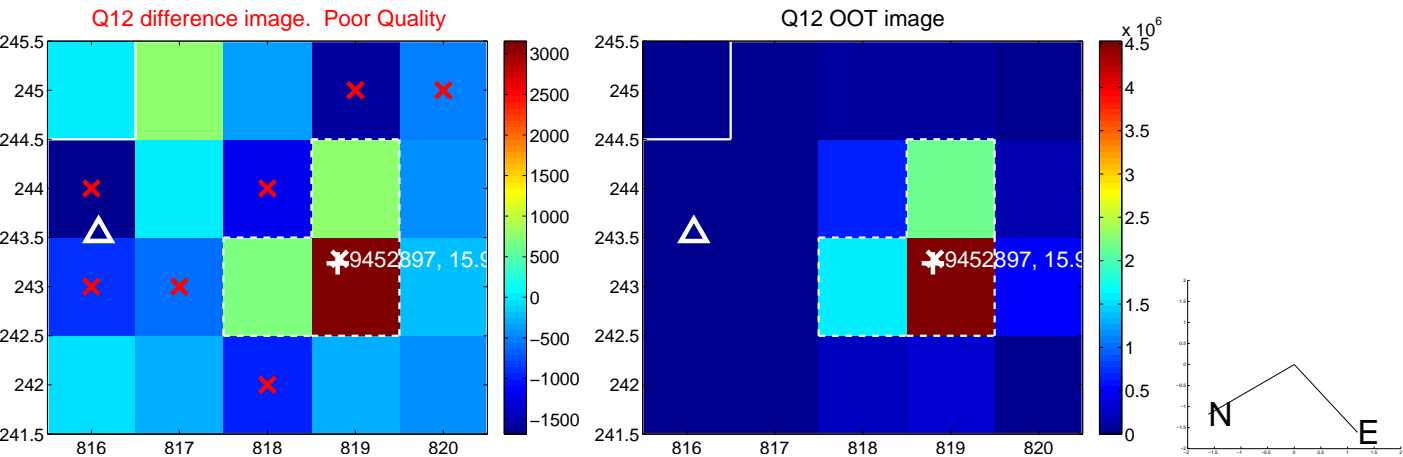
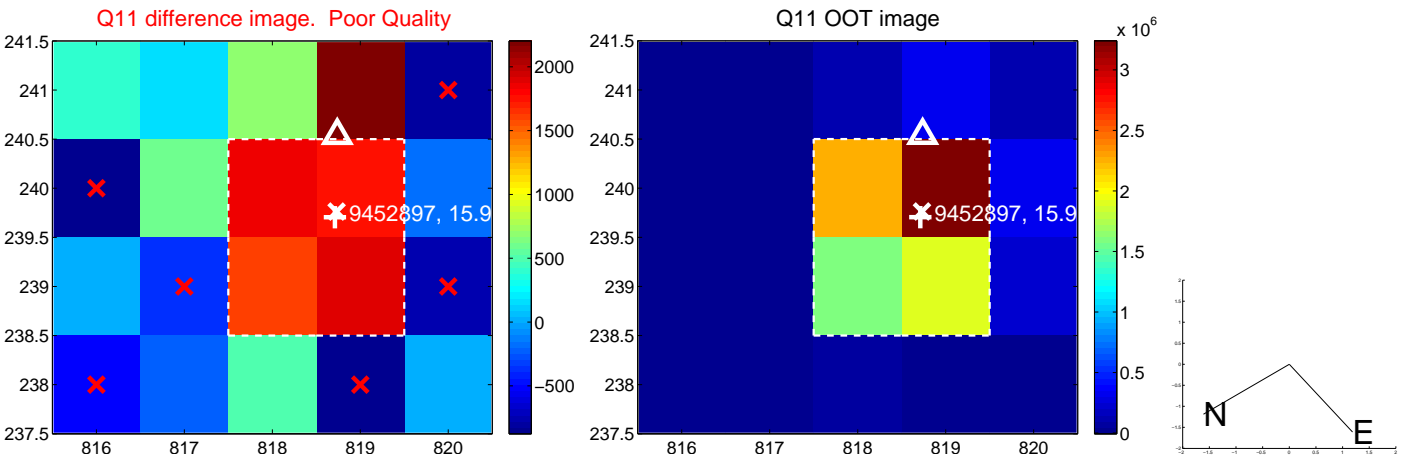
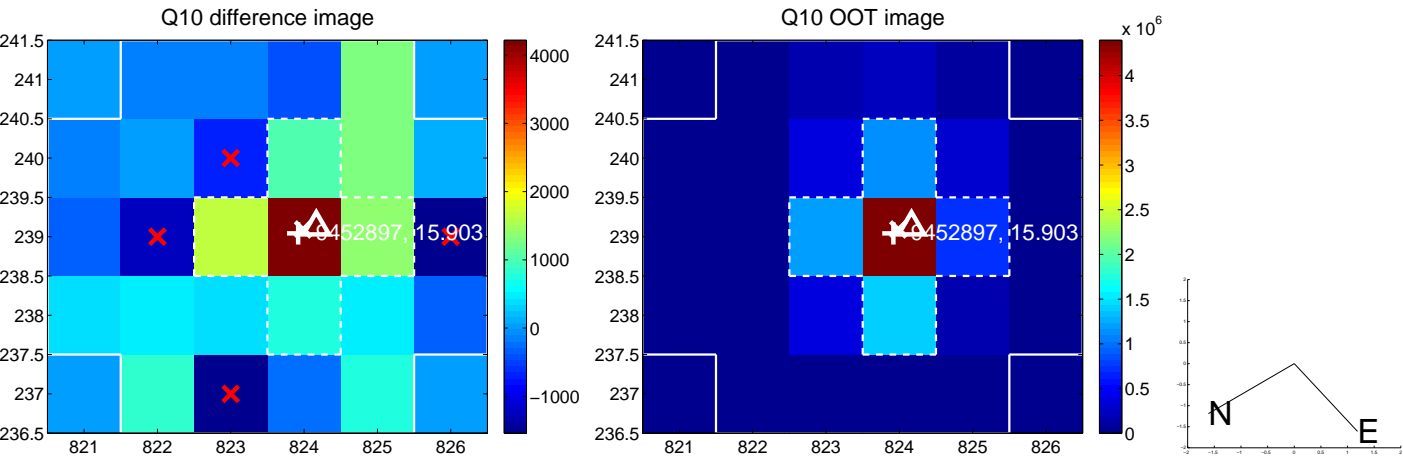
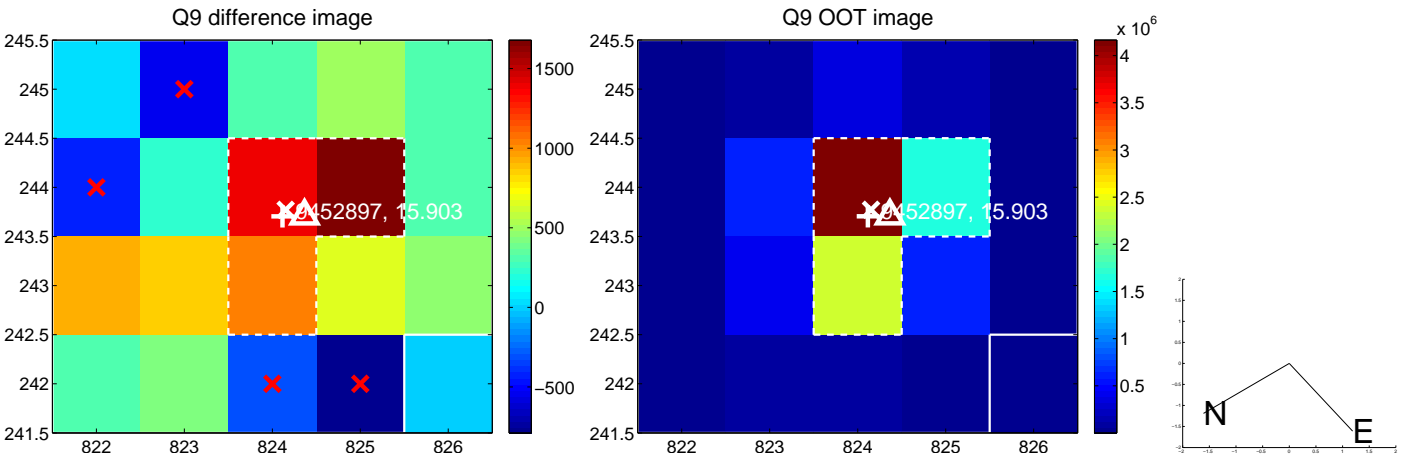
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



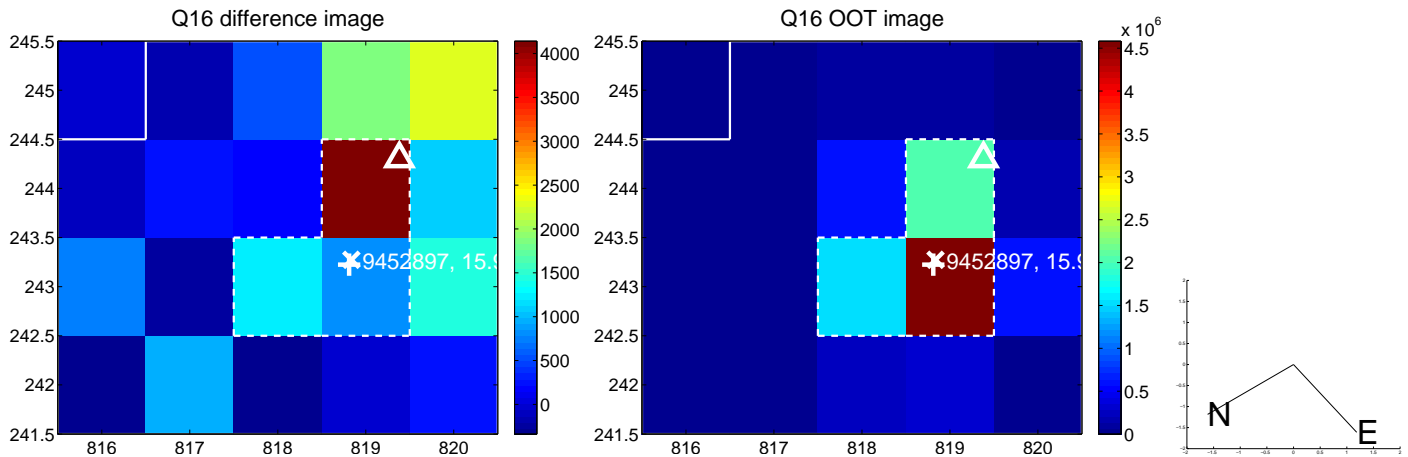
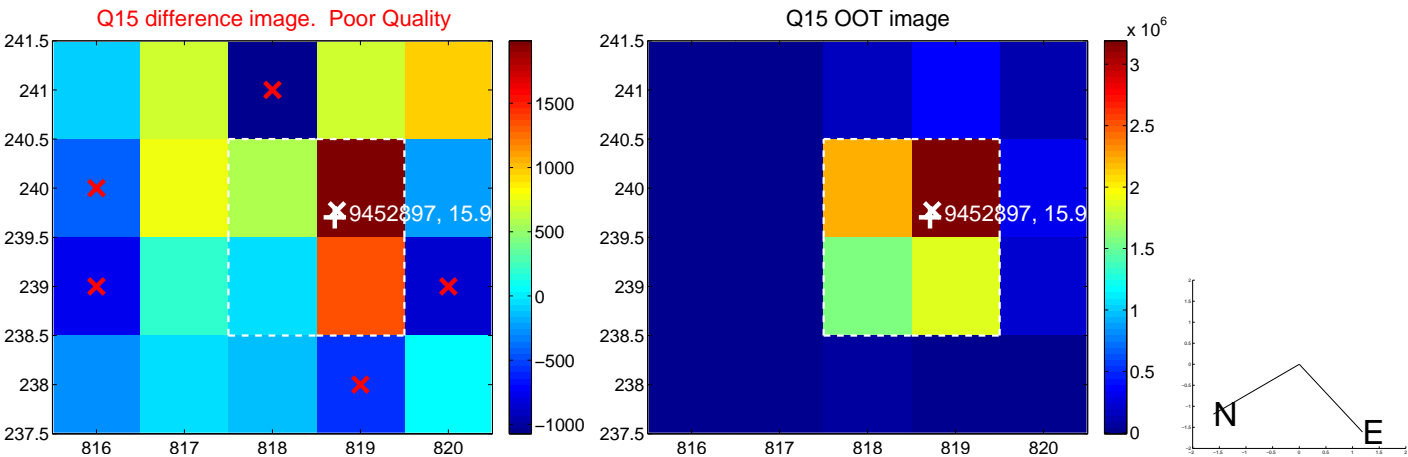
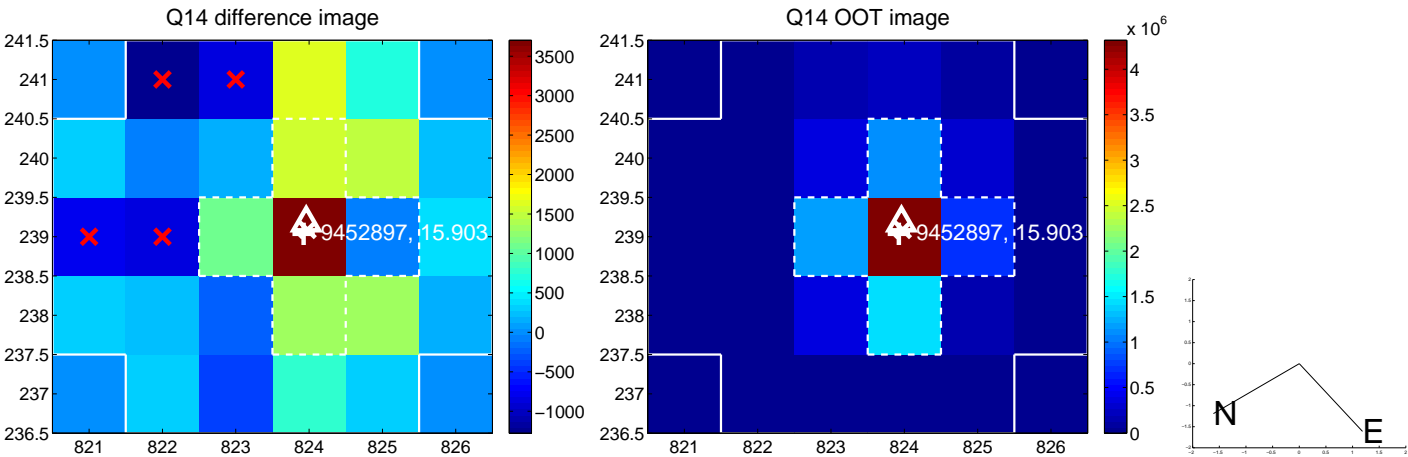
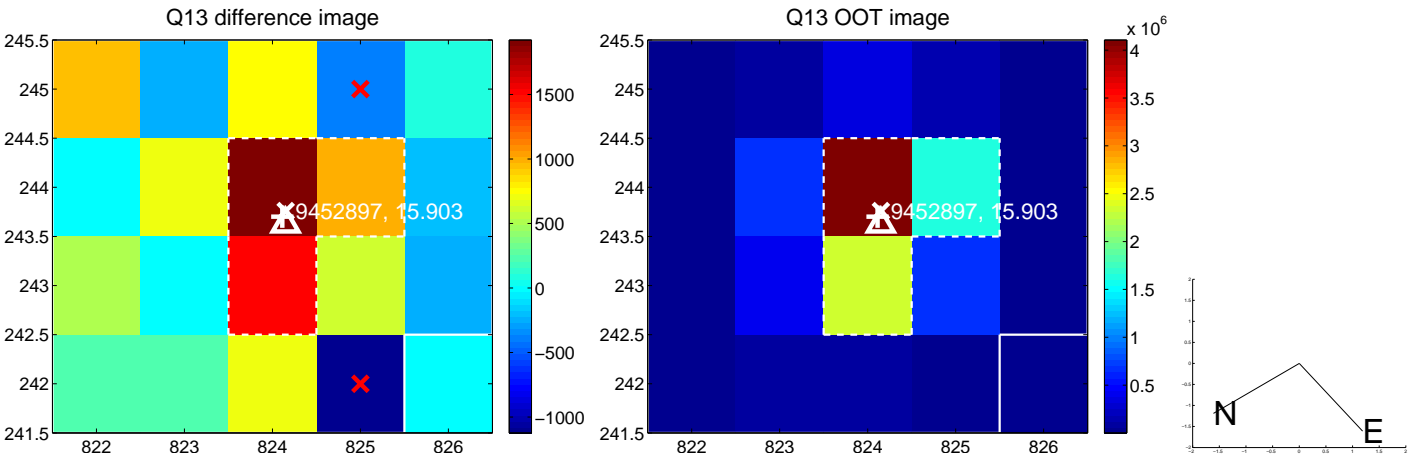
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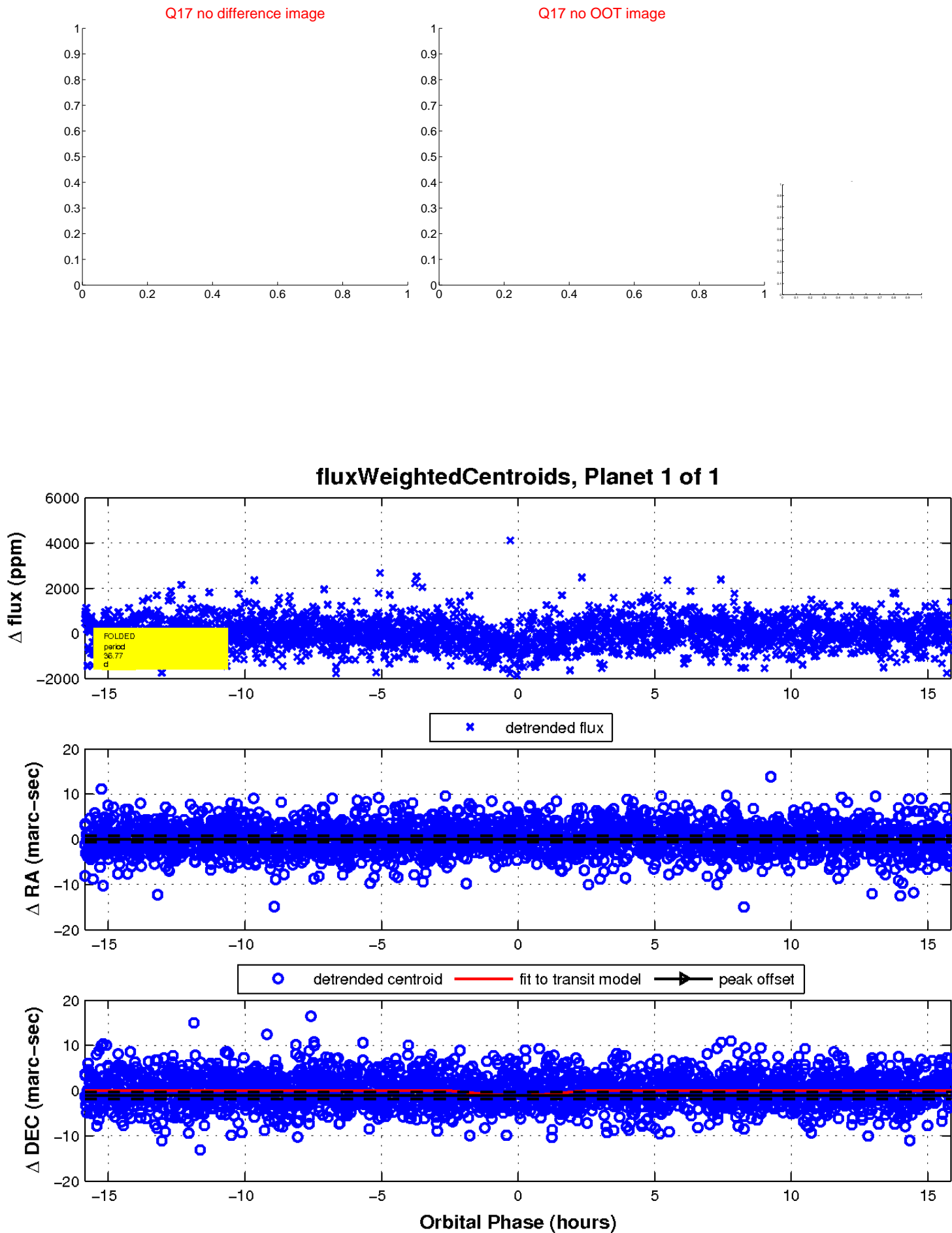
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination

