

# KIC 009602538

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009602538-01	OBS	7203.01	3.556548	133.550683	46.0	6.497	8.1	8.4	0.82	5475	0.67	317.85

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009602538-01	OBS	FP	0.00	0	0	0	1	EPHEM_MATCH

**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.

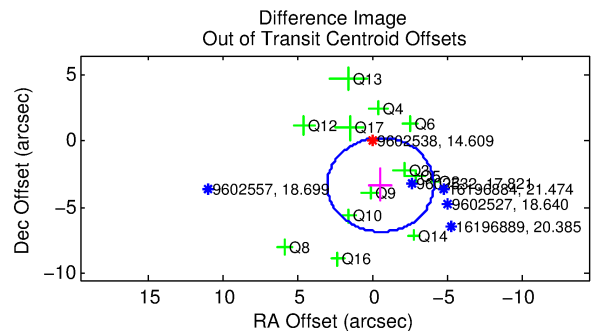
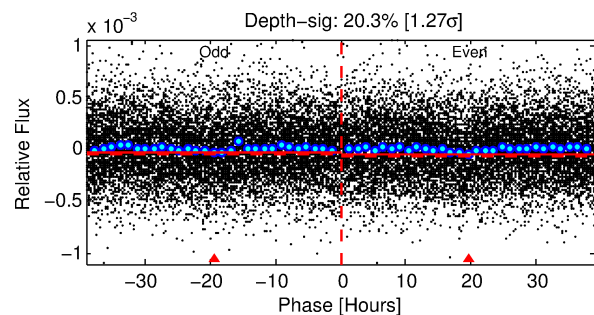
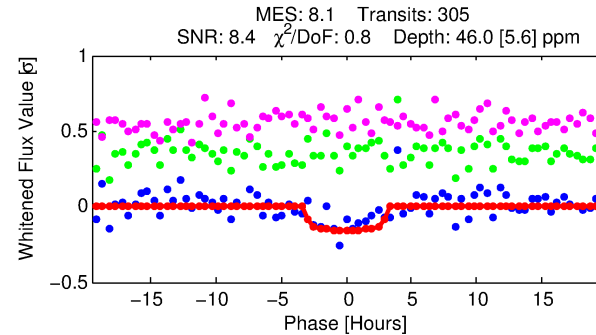
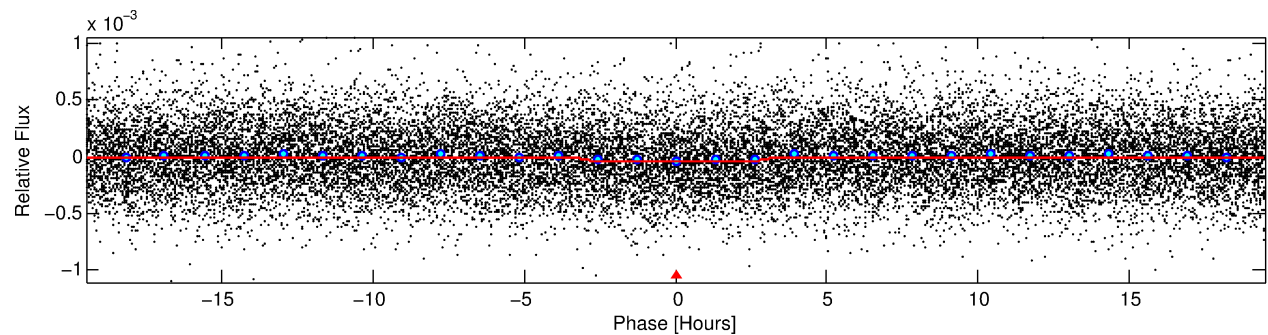
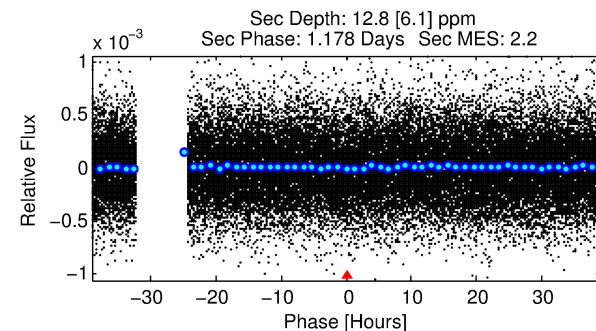
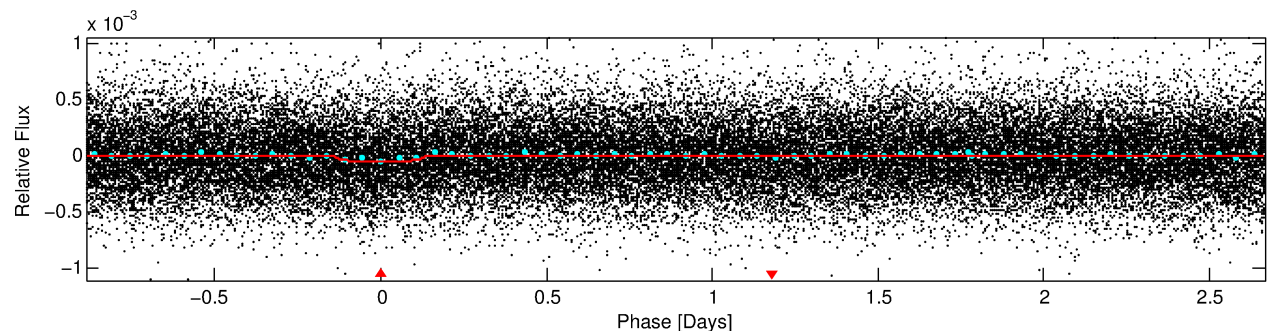
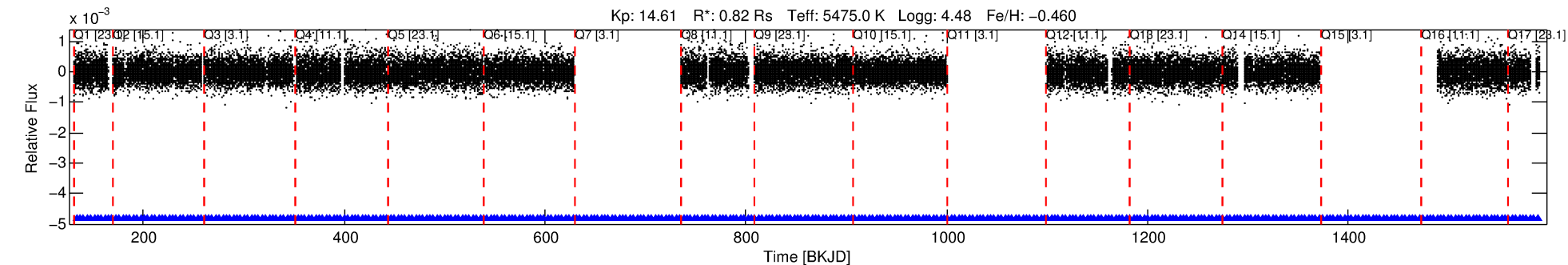
## Ephemeris Match Information For 009602538-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
009602538-01	9602538	V995-Cyg-pri	9602595	1:1	197.3	14	48	11.88	14.61	16759.00	Direct-PRF	0	0.41	1.30

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 9602538 Candidate: 1 of 1 Period: 3.557 d  
KOI: K07203.01 Corr: 0.844



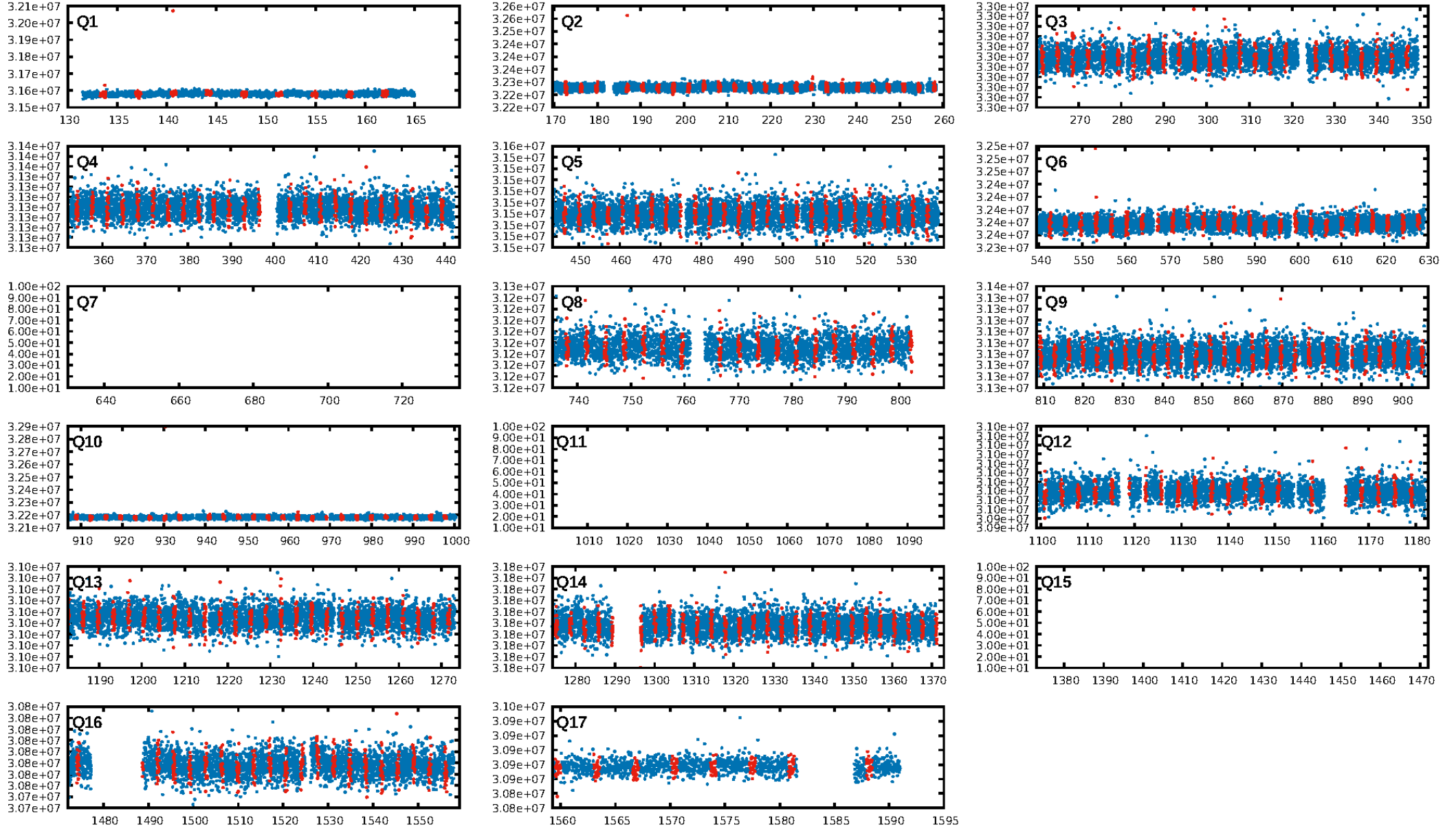
## DV Fit Results:

Period = 3.55655 [0.00005] d  
Epoch = 133.5507 [0.0098] BKJD  
Rp/R\* = 0.0075 [0.0035]  
a/R\* = 2.00 [3.35]  
b = 0.92 [0.40]  
Seff = 317.85 [92.05]  
Teff = 1077 [78] K  
Rp = 0.67 [0.33] Re  
a = 0.0412 [0.0069] AU  
Ag = 26.57 [28.43] [0.90σ]  
Teffp = 3779 [989] K [2.72σ]

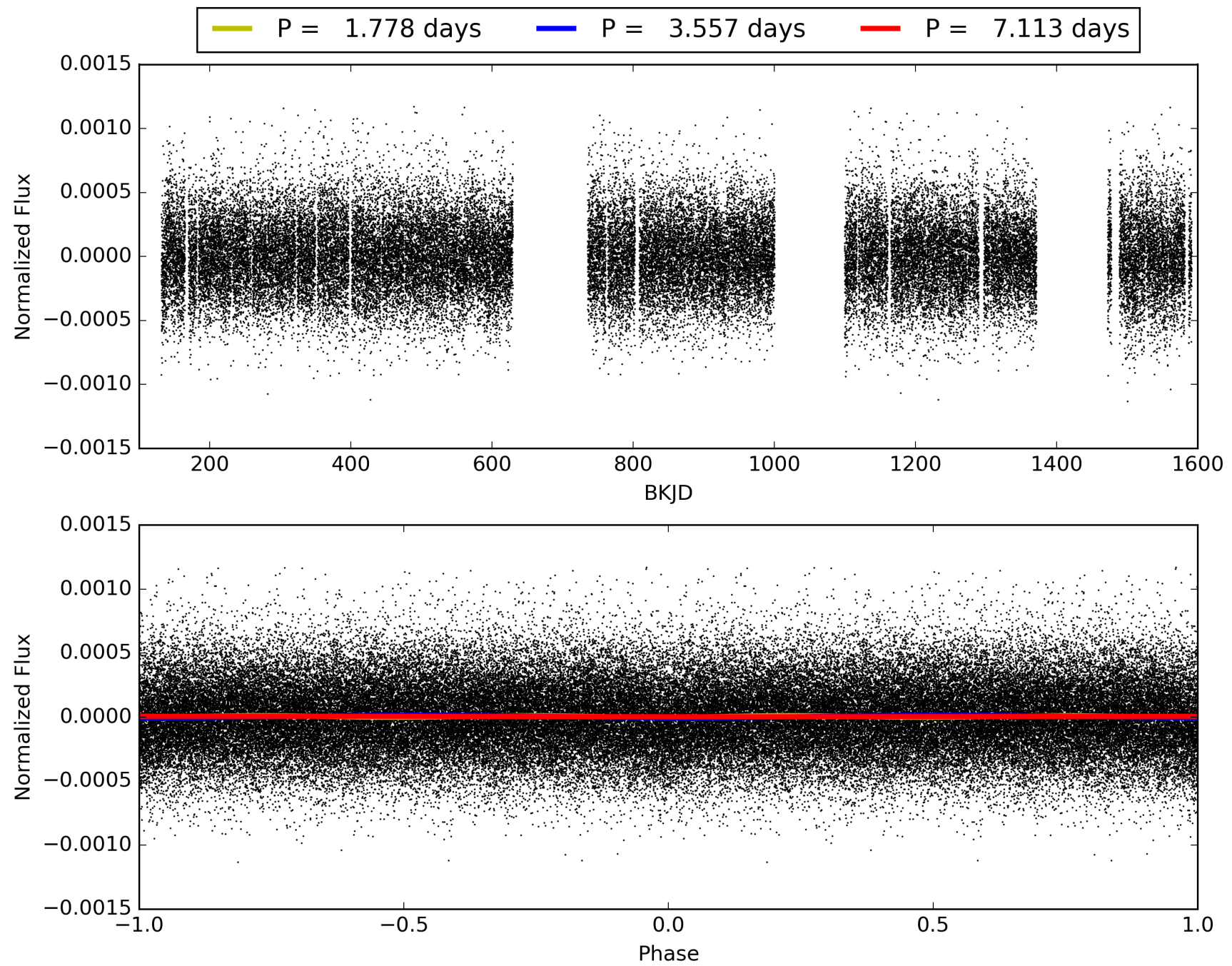
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 6.23e-16  
RollingBand-fgt: 1.00 [288/288]  
**GhostDiagnostic-chr: 0.3176**  
Centroid-sig: 0.1%  
Centroid-so: 3.897 arcsec [2.22σ]  
OotOffset-rm: 3.345 arcsec [2.82σ]  
KicOffset-rm: 3.270 arcsec [2.84σ]  
OotOffset-st: 4/1/4/4 [13]  
KicOffset-st: 4/1/4/4 [13]  
DiffImageQuality-fgm: 0.00 [0/13]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 009602538-01, PDC Light Curves

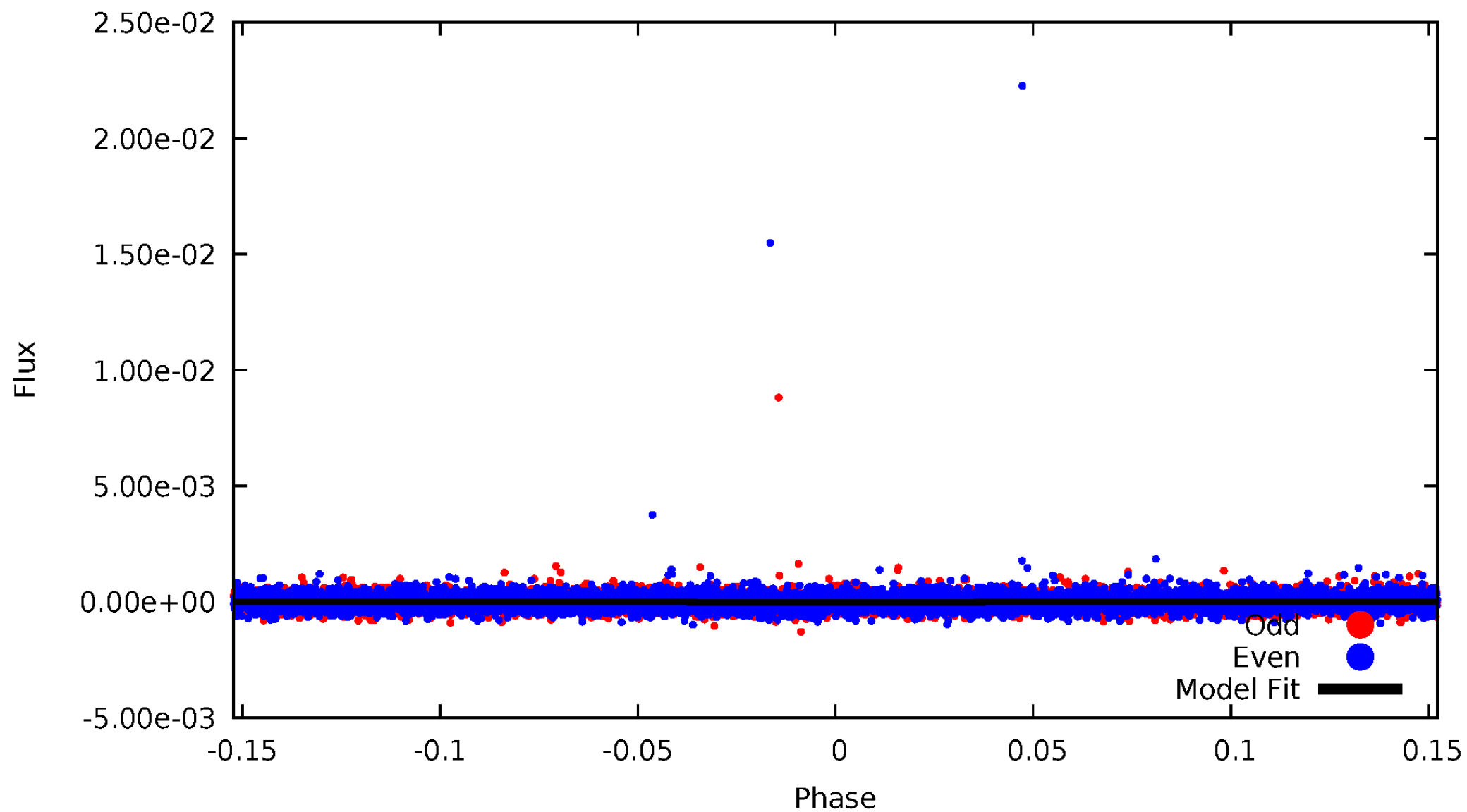


TCE 009602538-01



# DV Odd/Even

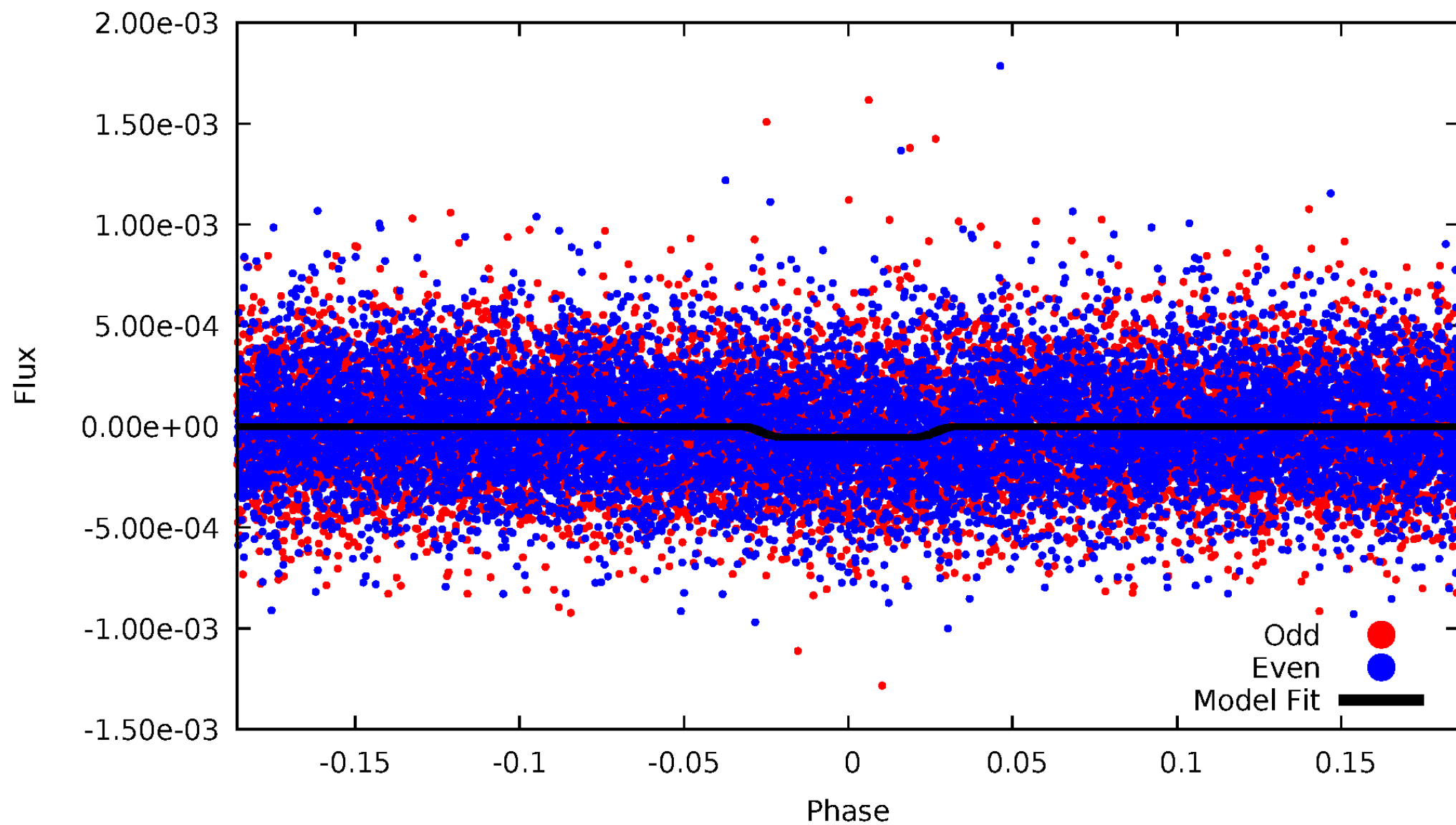
TCE 009602538-01





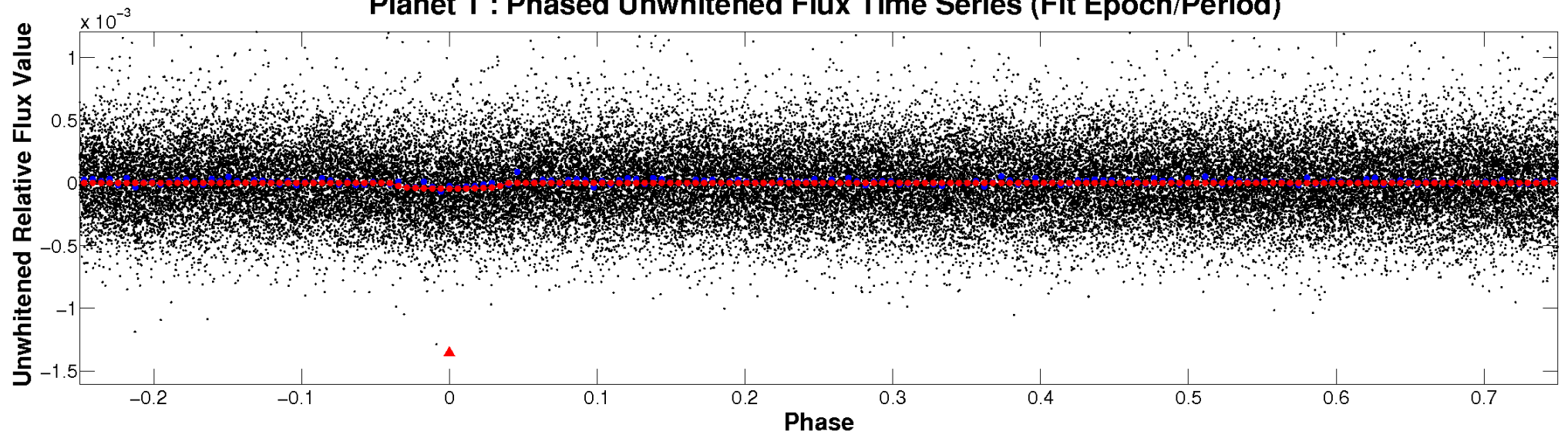
# ALT Odd/Even

TCE 009602538-01

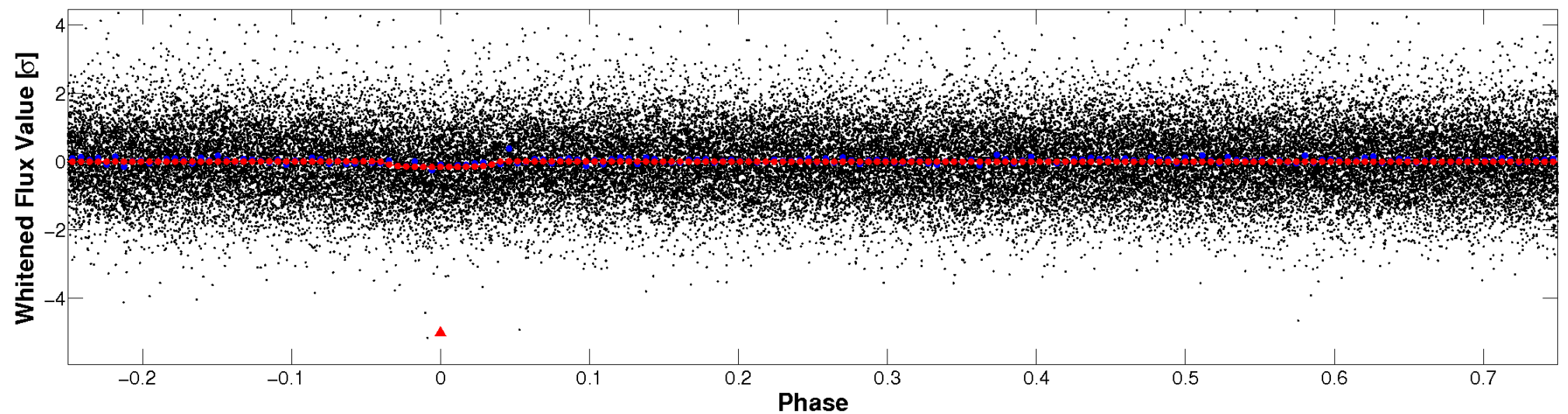


# Non-Whitened Vs. Whitened Light Curve

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

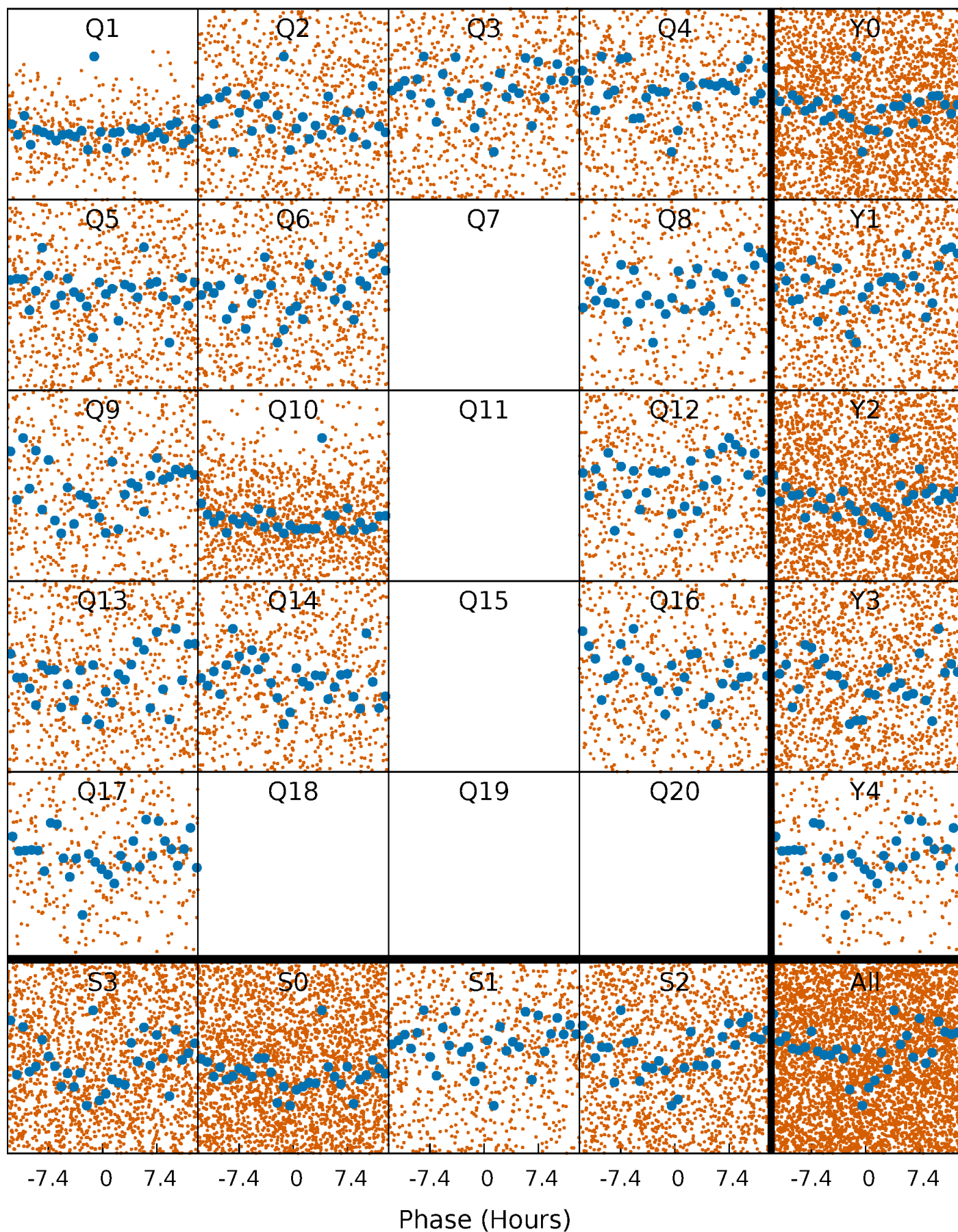


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

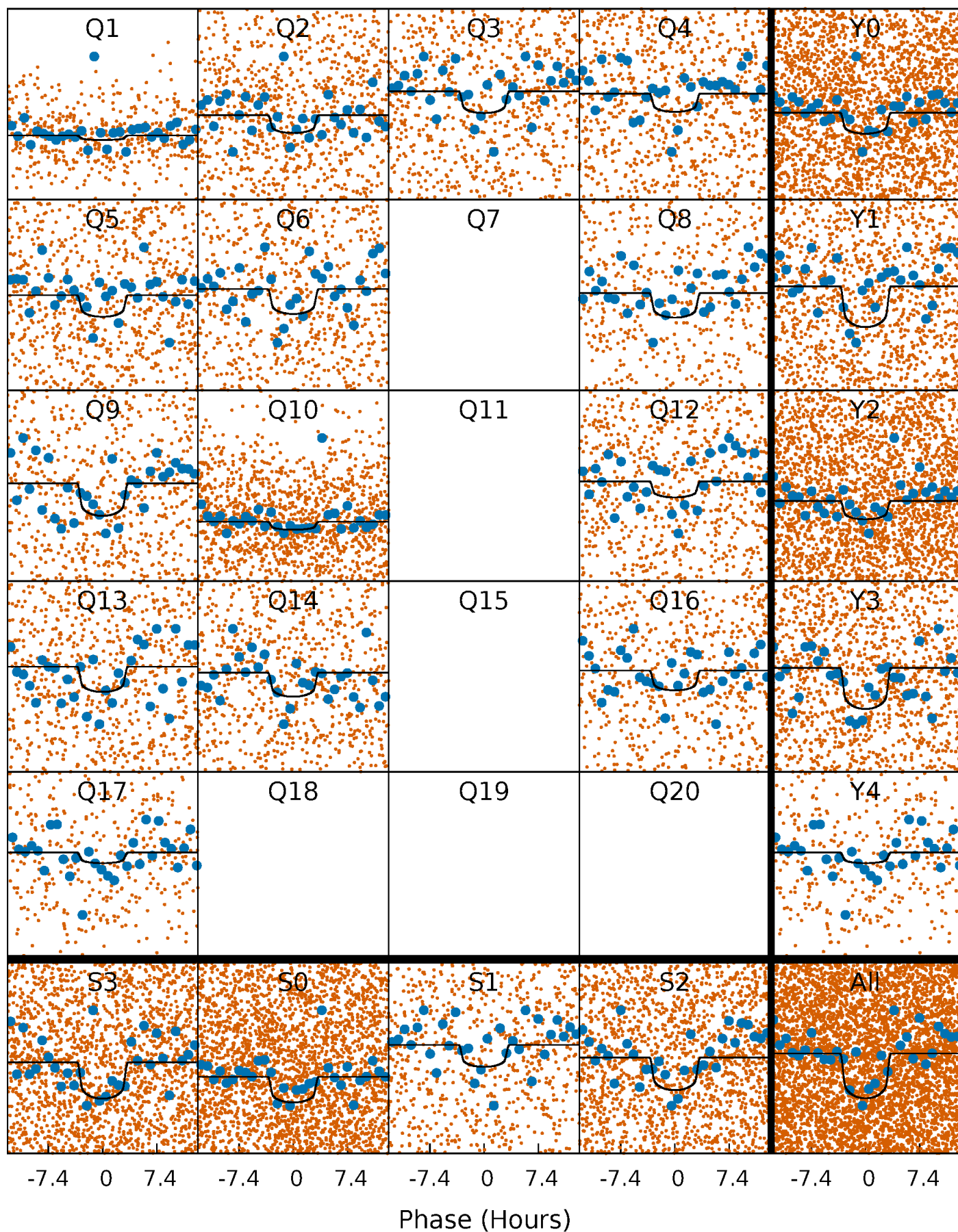
TCE 009602538-01 P= 3.556548 Days  $T_0=133.550683$  (BKJD)





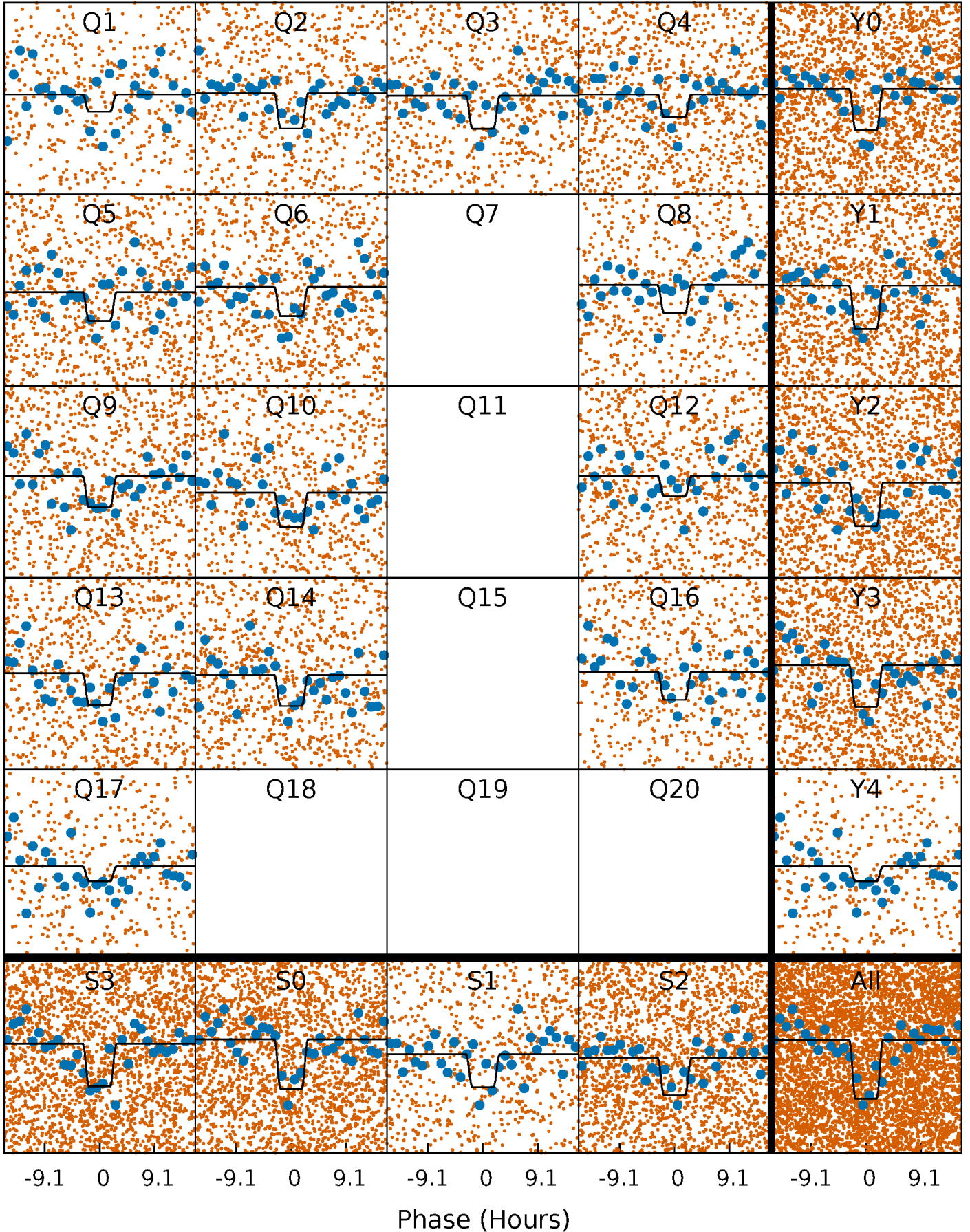
# DV Quarter-Phased Transit Curves

TCE 009602538-01 P= 3.556548 Days  $T_0=133.550683$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

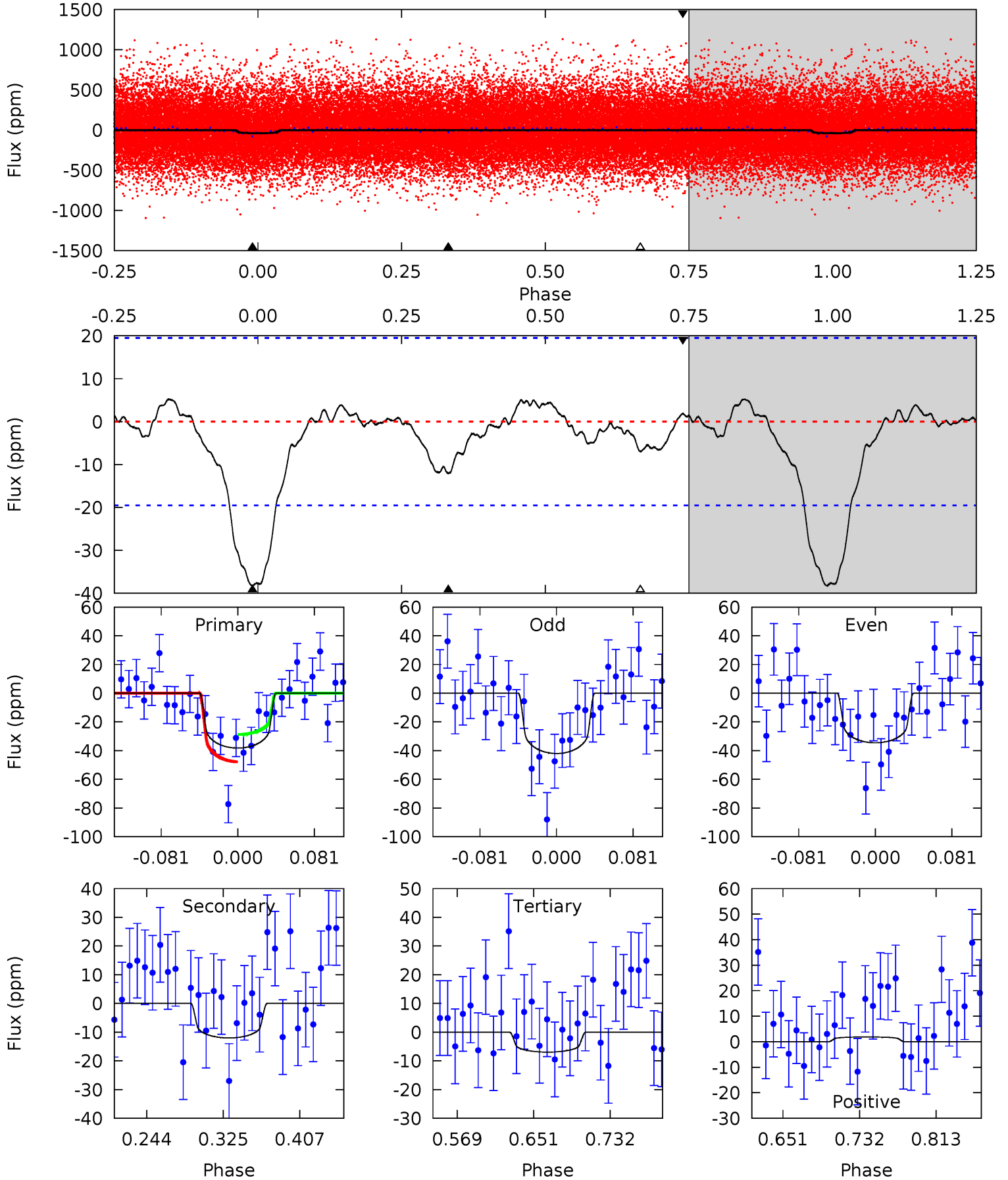
TCE 009602538-01 P= 3.556372 Days  $T_0=133.554149$  (BKJD)



# DV Model-Shift Uniqueness Test

009602538-01, P = 3.556548 Days, E = 129.994135 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
9.03	2.84	1.64	0.44	4.61	1.74	0.71	7.39	8.59	1.20	2.39	0.88	0.86	0.12	2.24

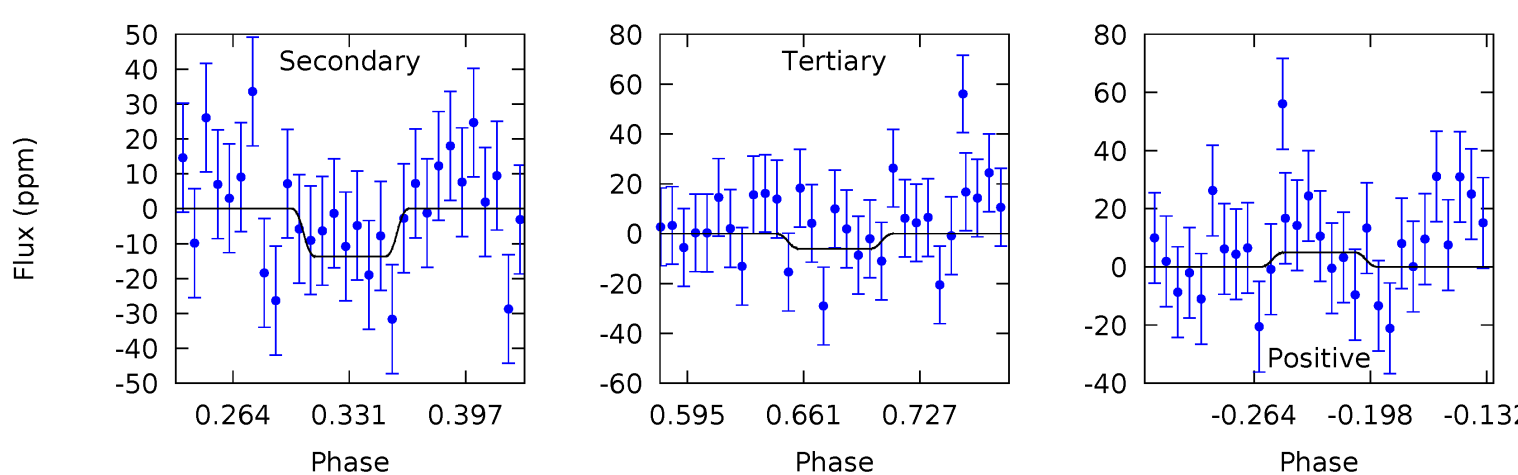
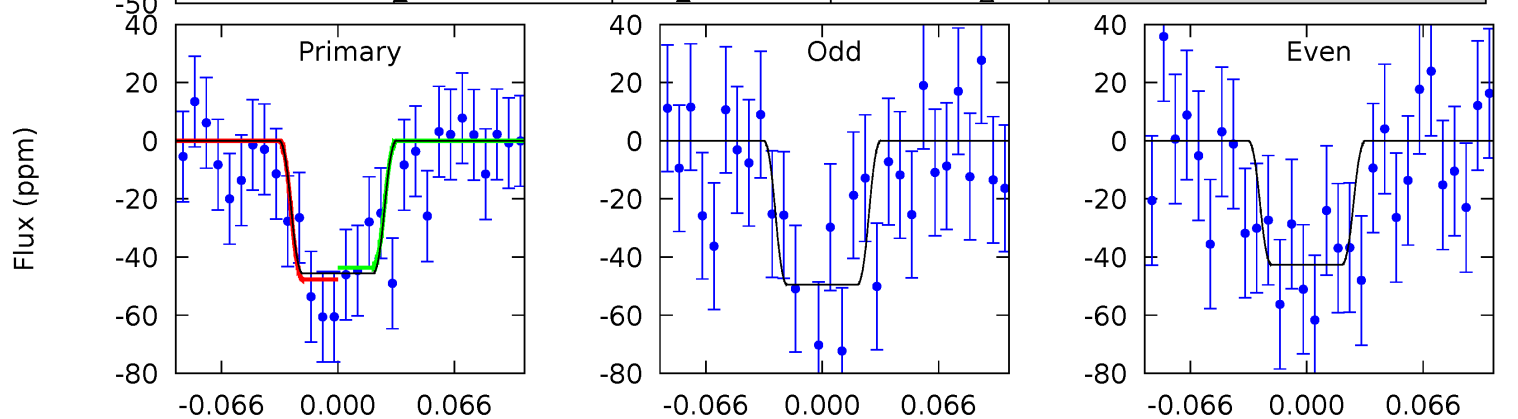
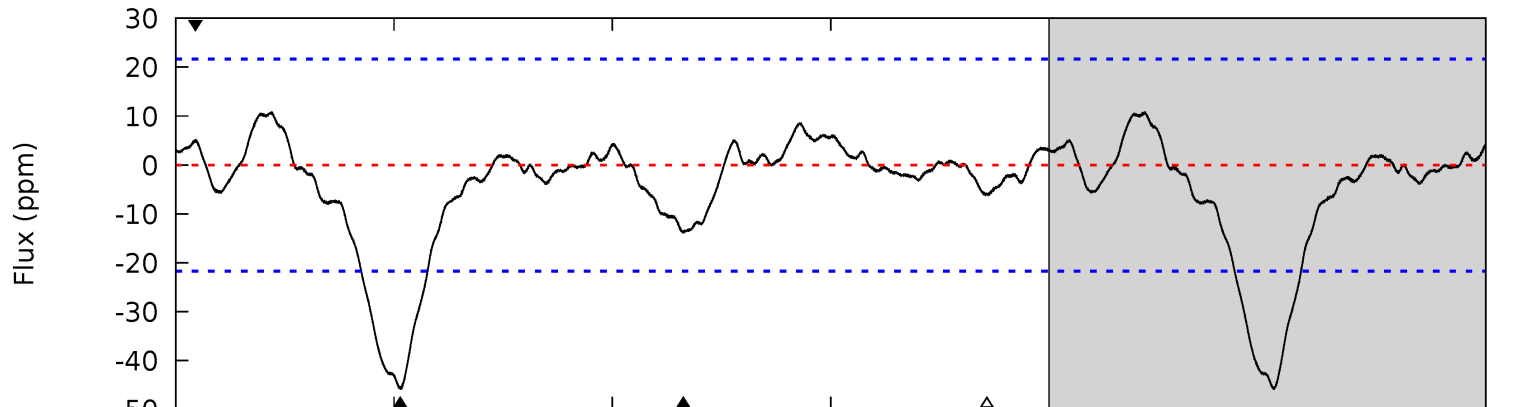
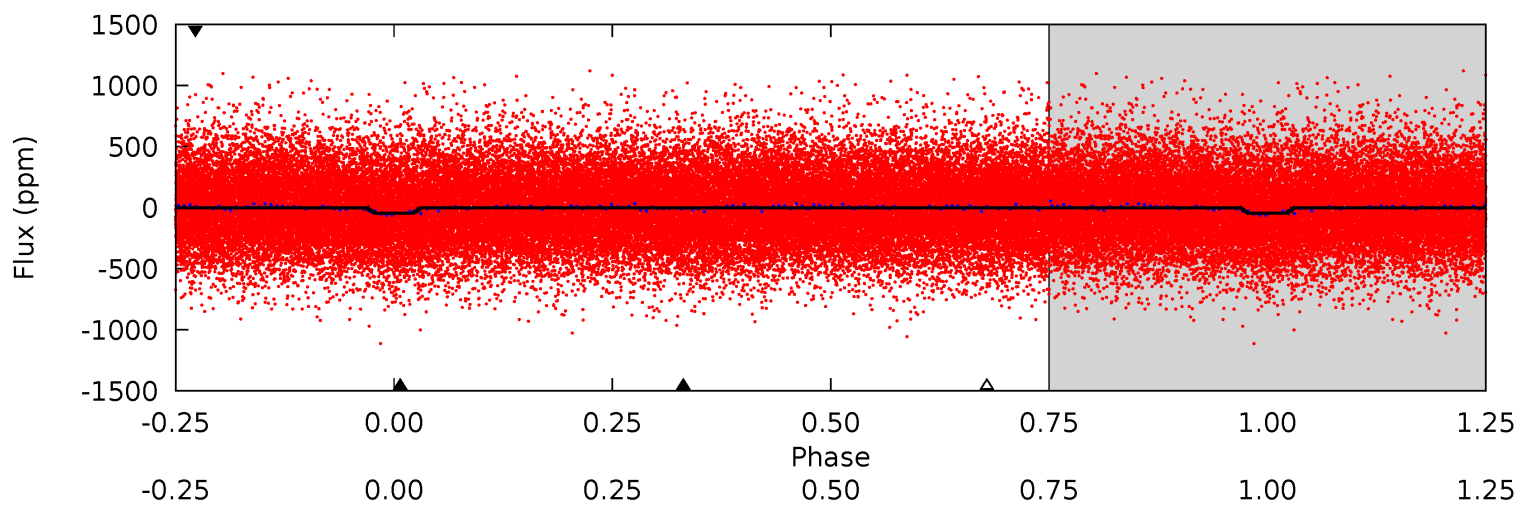




# Alt Model-Shift Uniqueness Test

009602538-01, P = 3.556372 Days, E = 129.997777 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
9.79	2.94	1.31	1.07	4.65	1.84	0.83	8.48	8.72	1.63	1.87	0.73	0.91	0.19	0.44





### Stellar Parameters For KIC 009602538

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5475^{+179}_{-162}$	$4.479^{+0.121}_{-0.148}$	$-0.460^{+0.350}_{-0.300}$	$0.818^{+0.151}_{-0.110}$	$0.734^{+0.117}_{-0.042}$	$1.892^{+0.996}_{-0.762}$
	+3%/-3%	+3%/-3%	+76%/-65%	+18%/-13%	+16%/-6%	+53%/-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 009602538-01 / KOI 7203.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-12 \pm 4$	$0.66^{+0.32}_{-0.30}$	$1509^{+92}_{-80}$	$4027^{+1107}_{-591}$	$25^{+64}_{-15}$
Alt.	$-14 \pm 5$	$0.66^{+0.33}_{-0.29}$	$1509^{+84}_{-78}$	$4151^{+1175}_{-612}$	$30^{+69}_{-18}$

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

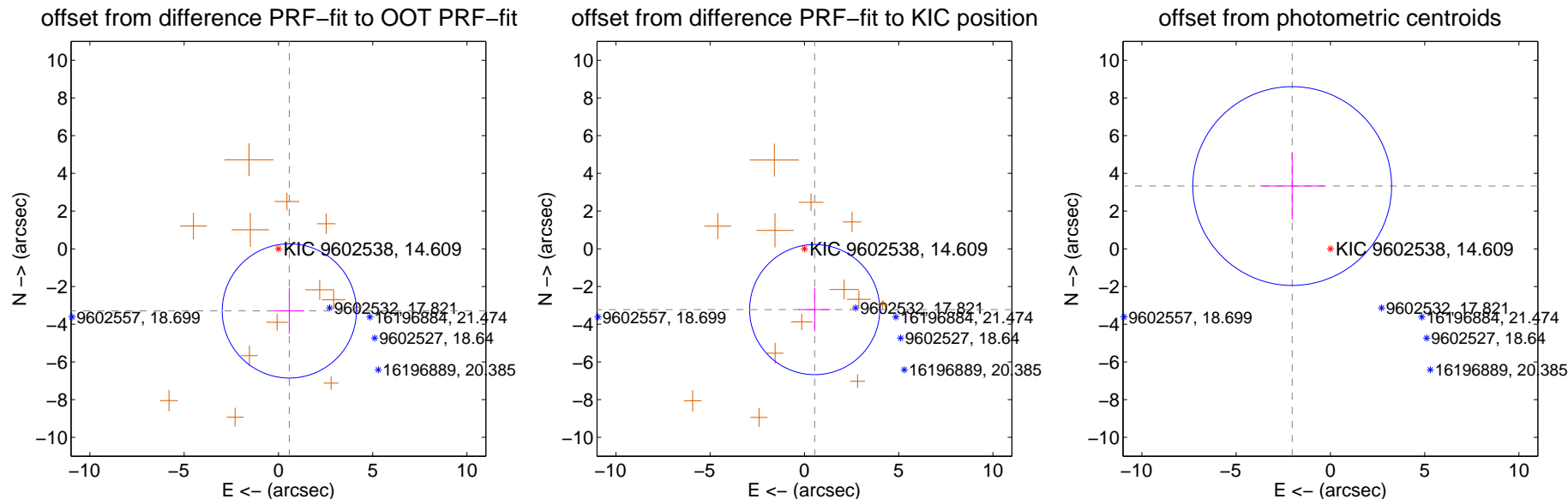
## DV Centroid Data

Supplemental centroid analysis for 009602538-01. Kepler magnitude: 14.61. Transit SNR 8.40

There are 0 quarters with good PRF difference image offsets

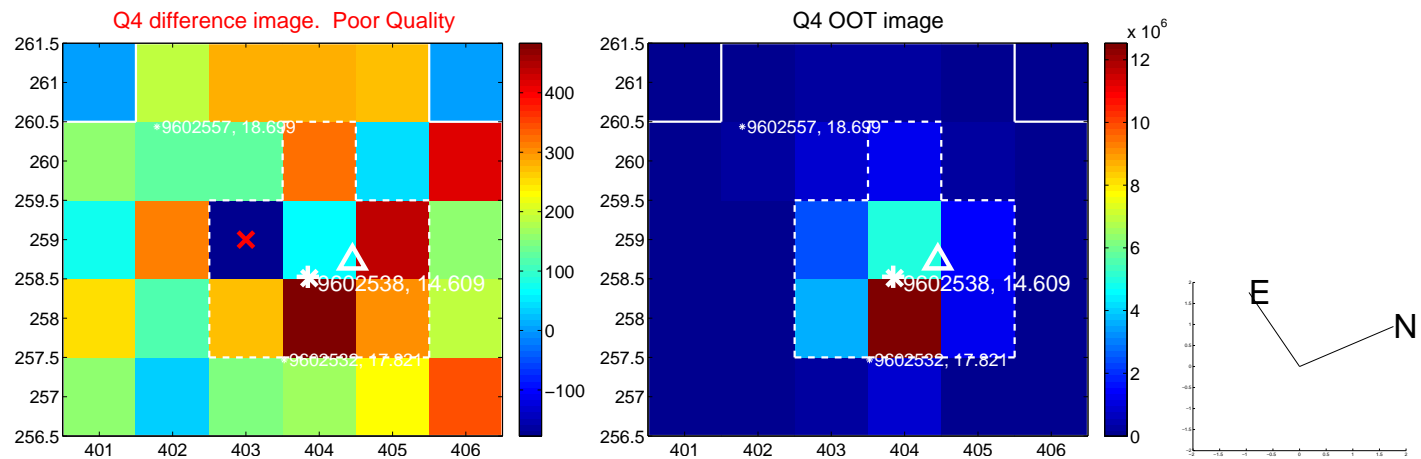
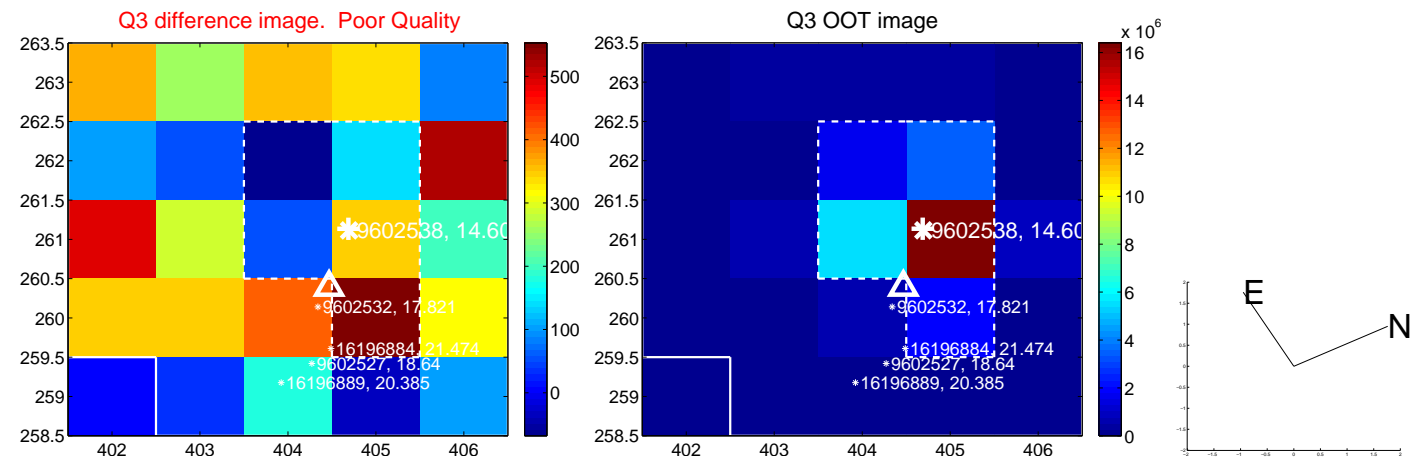
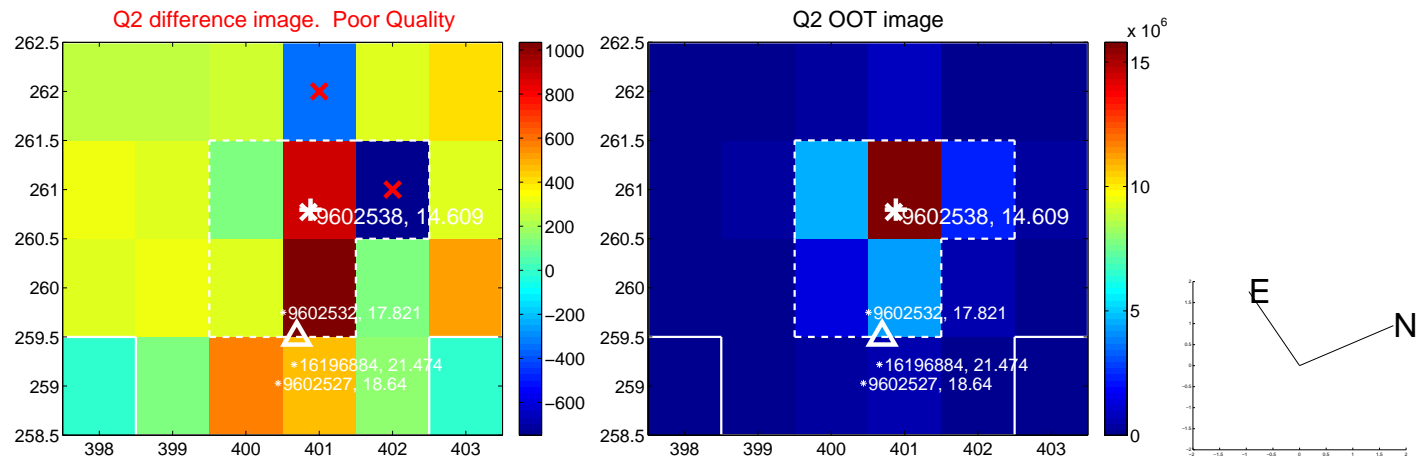
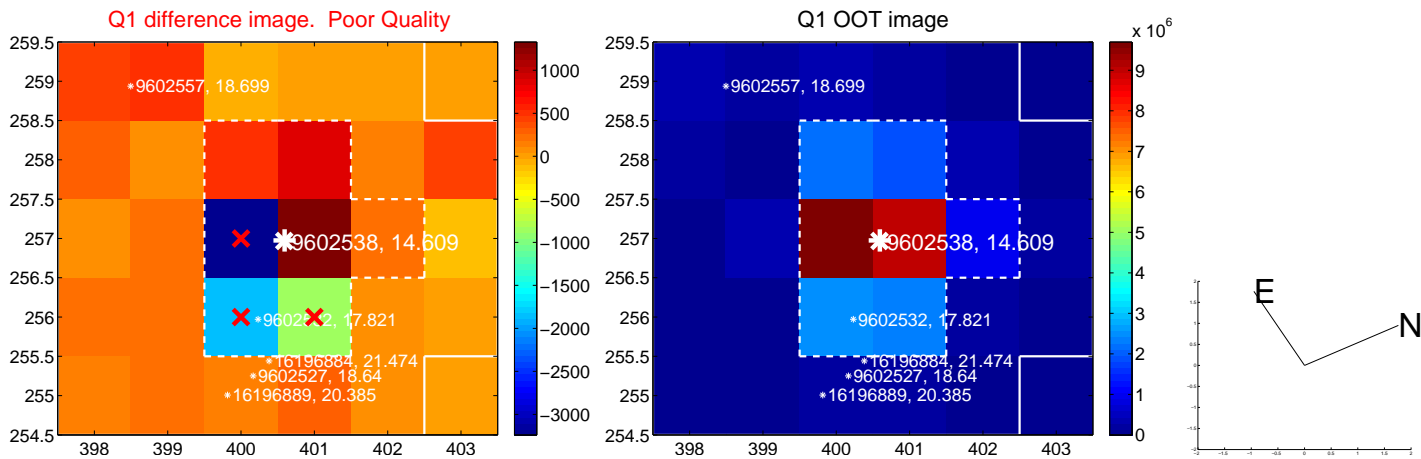
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.345 \pm 1.186$	2.82	$-0.577 \pm 0.798$	$-3.295 \pm 1.208$
PRF-fit source offset from KIC position	$3.270 \pm 1.150$	2.84	$-0.544 \pm 0.834$	$-3.224 \pm 1.161$
photometric centroid source offset	$3.90 \pm 1.76$	2.22	$2.03 \pm 1.70$	$3.33 \pm 1.78$

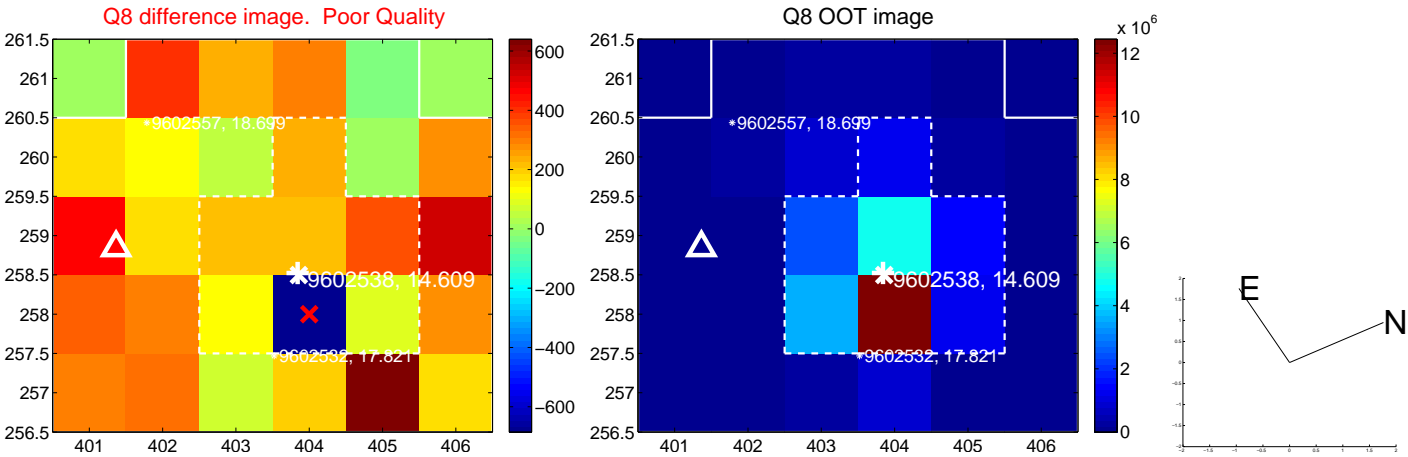
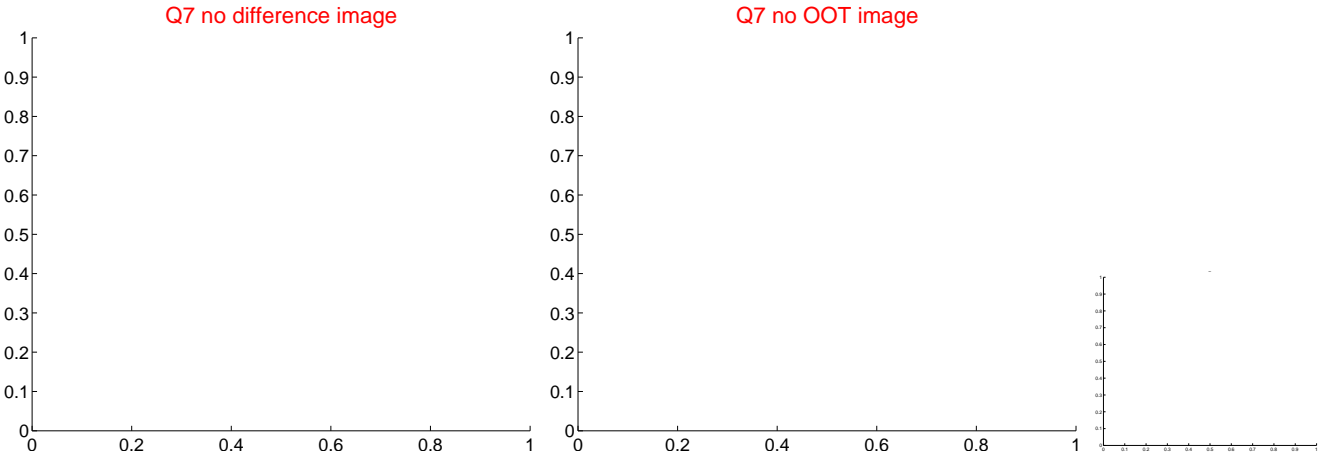
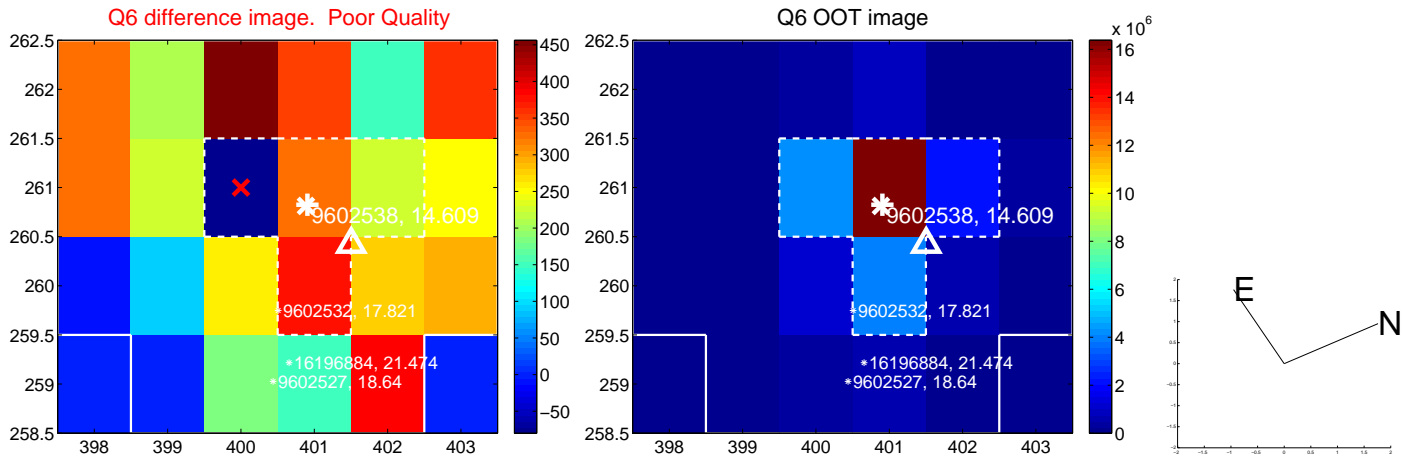
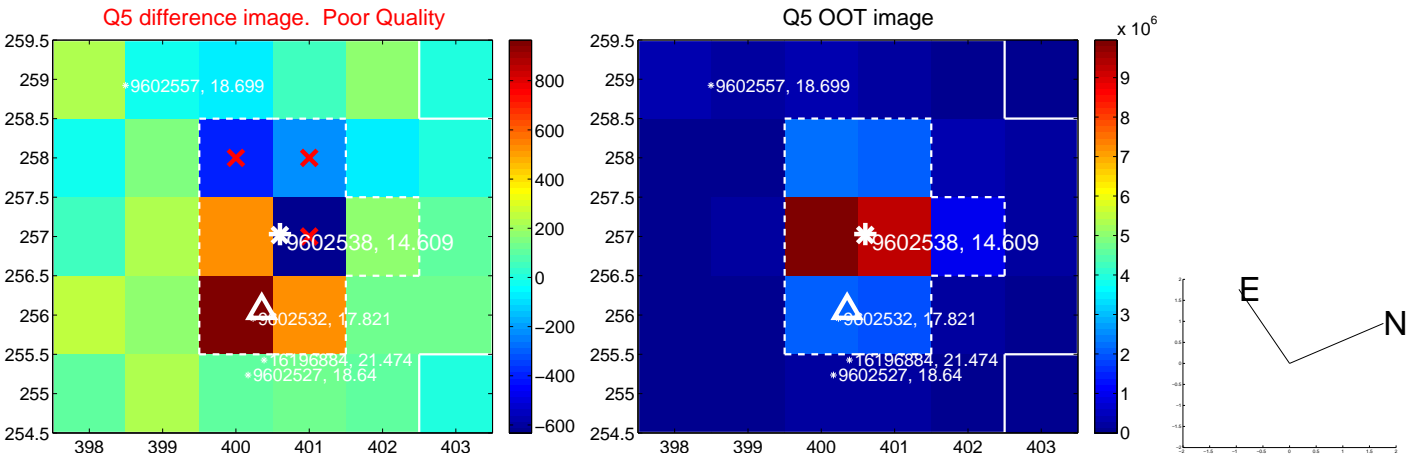


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

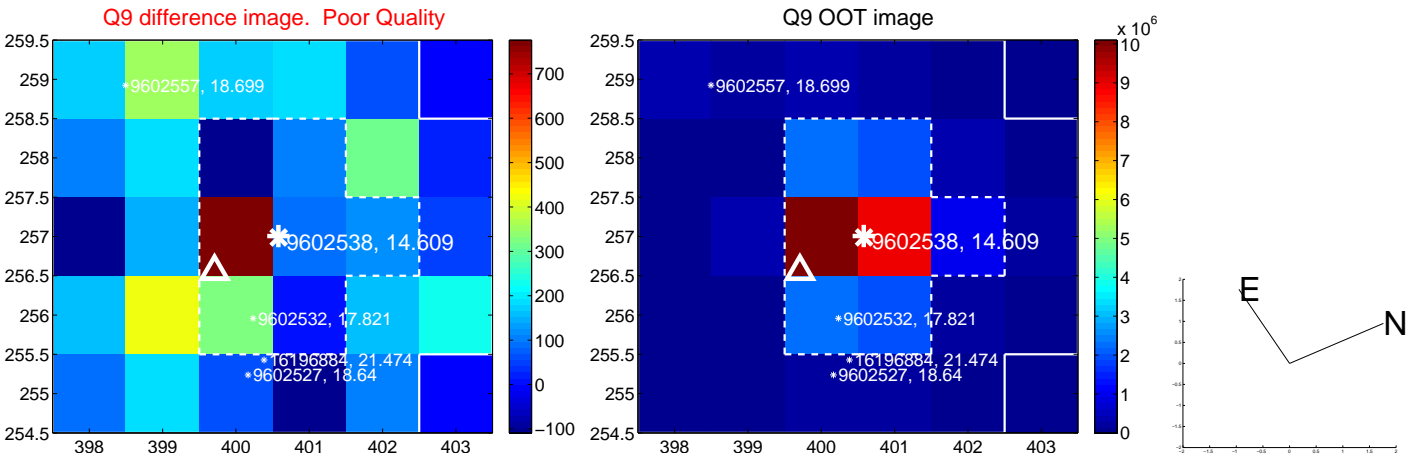


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

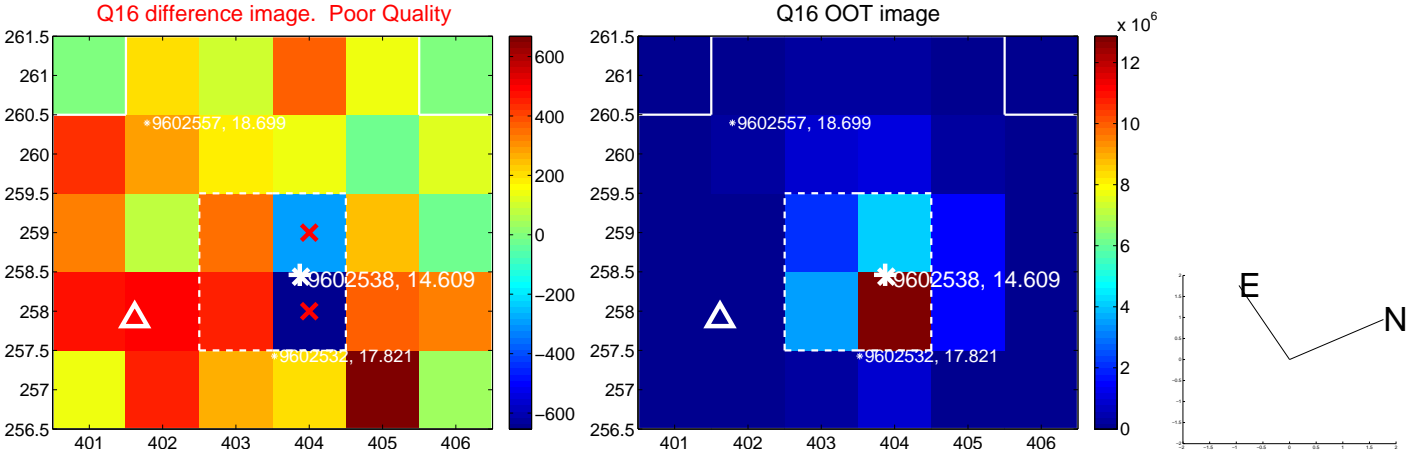
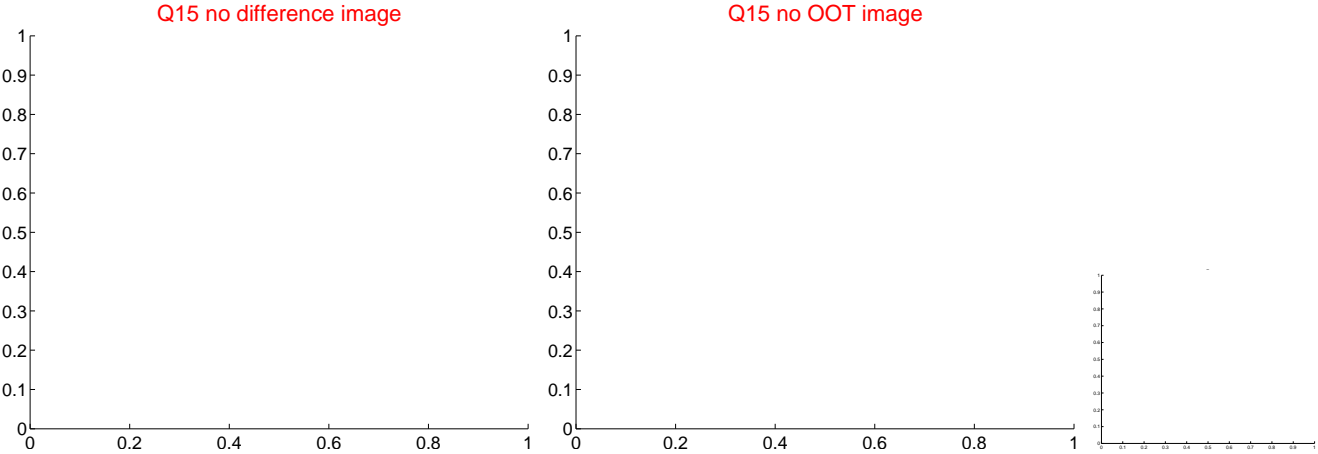
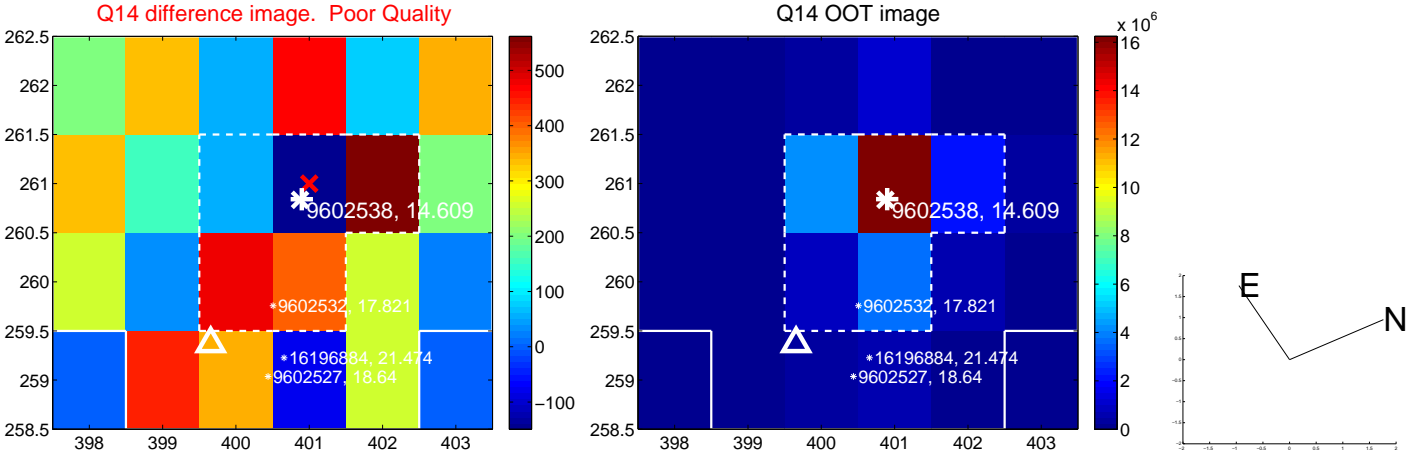
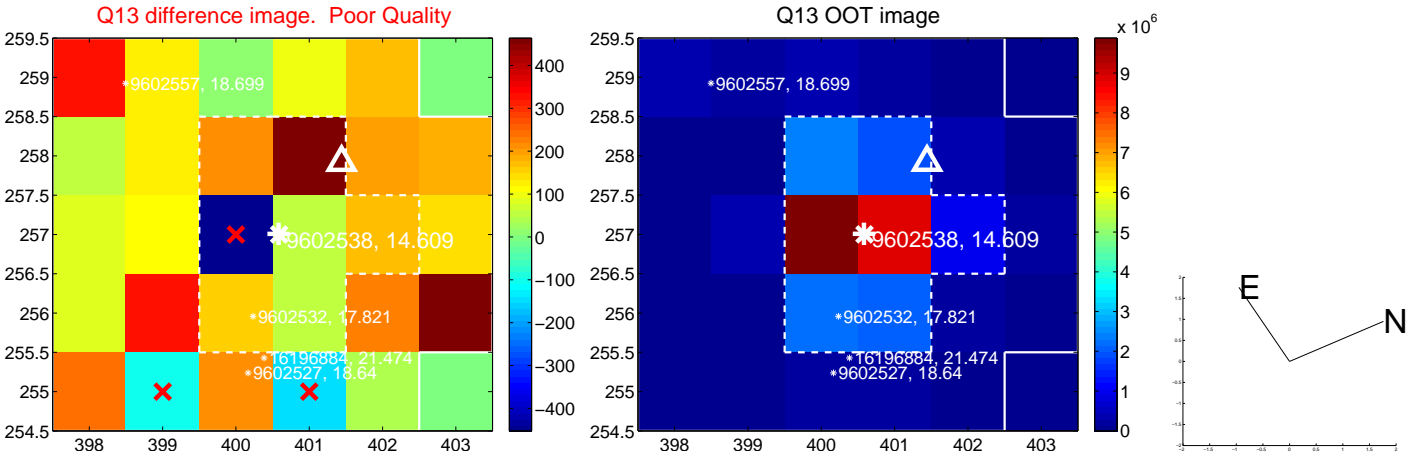




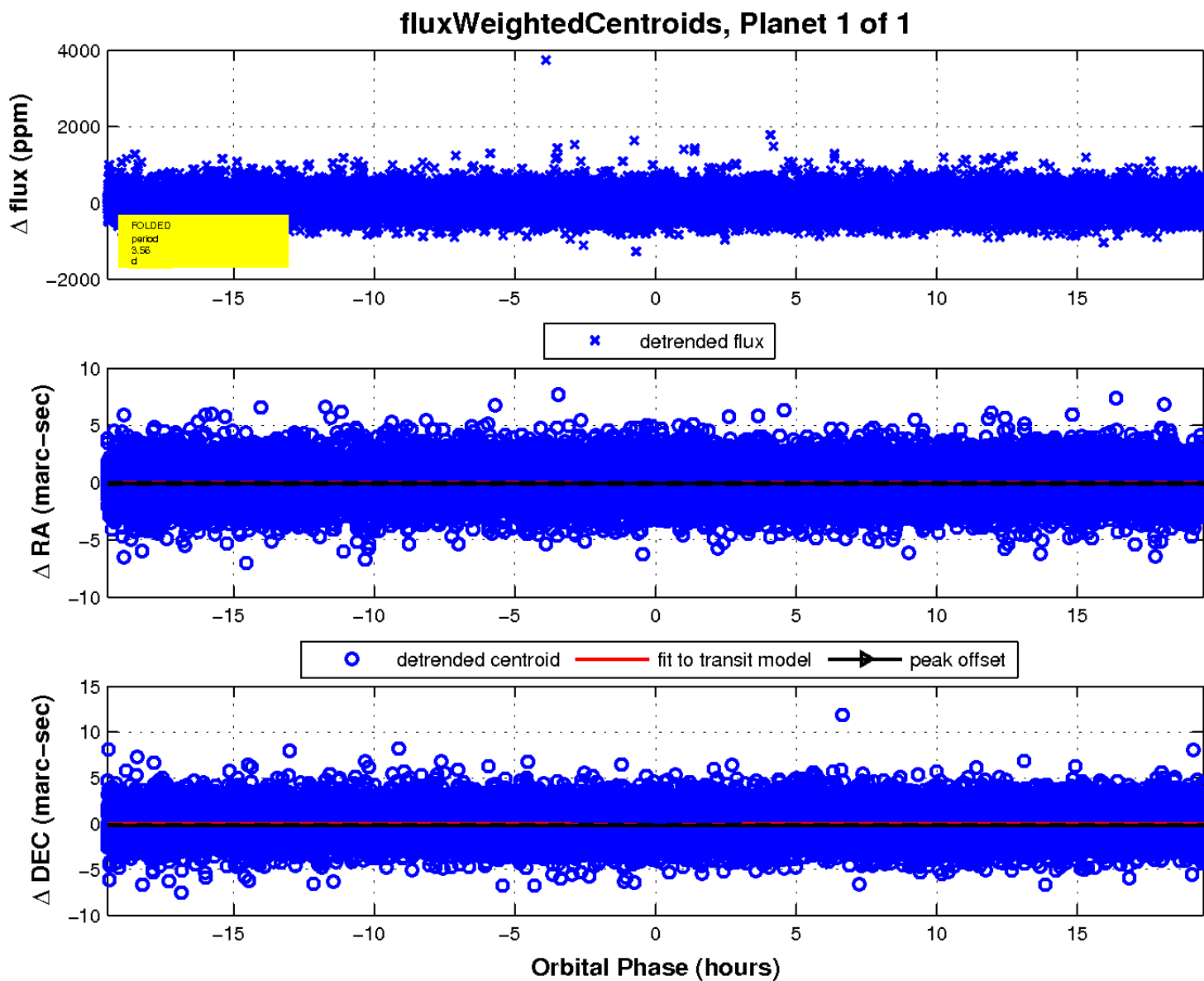
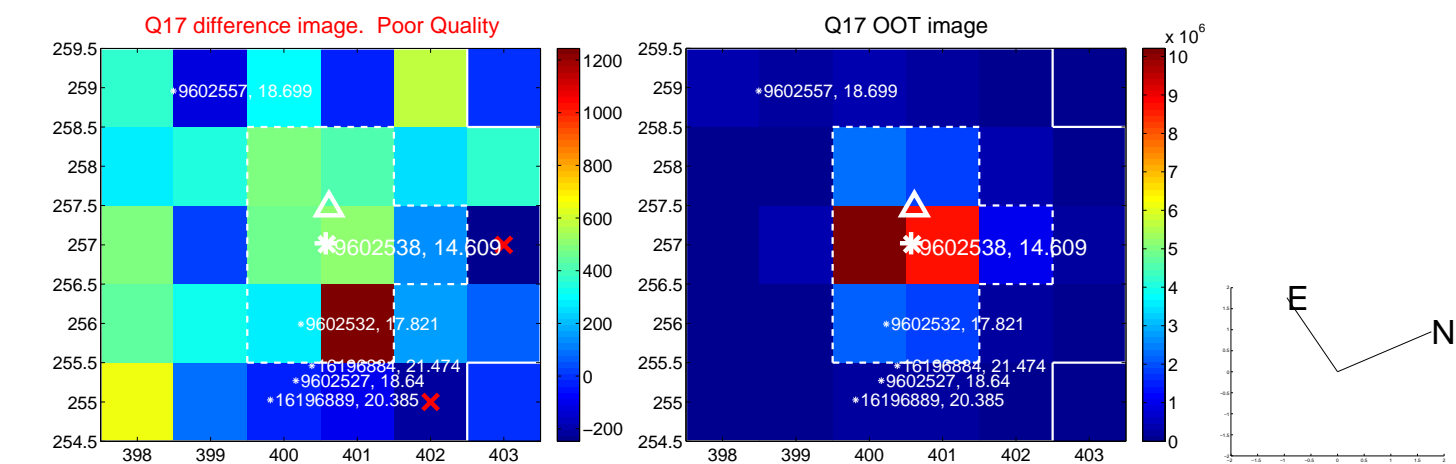
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

