

# KIC 010338650

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010338650-01	OBS	No	228.028478	251.442060	14.7	1.071	10.6	1.1	46.48	4161	22.57	541.88

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010338650-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

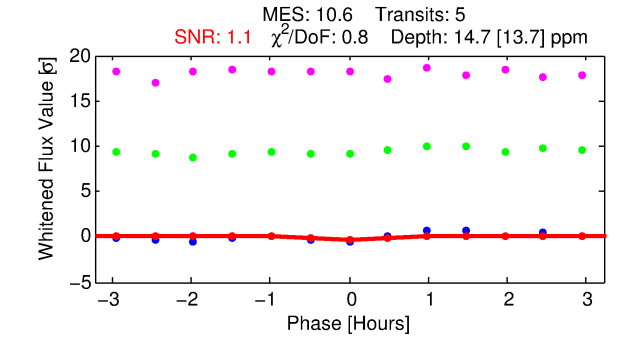
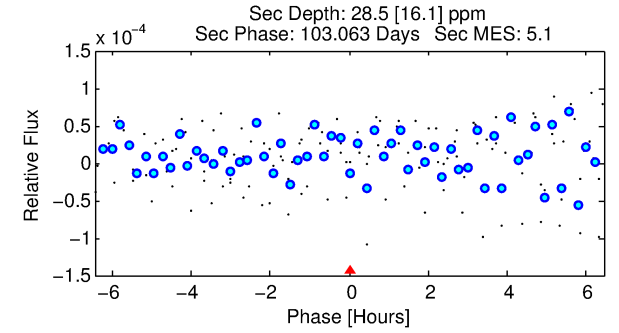
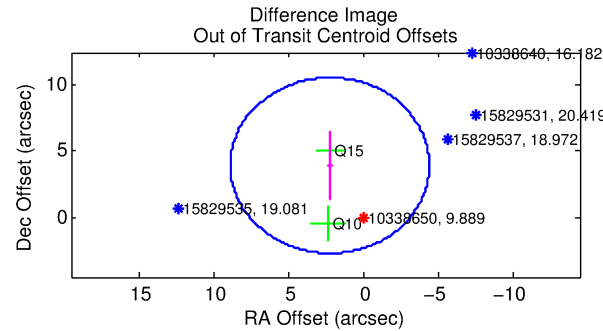
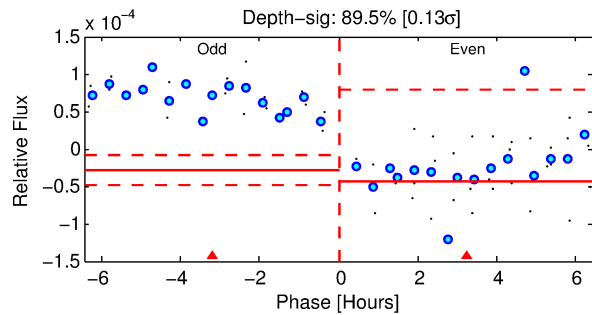
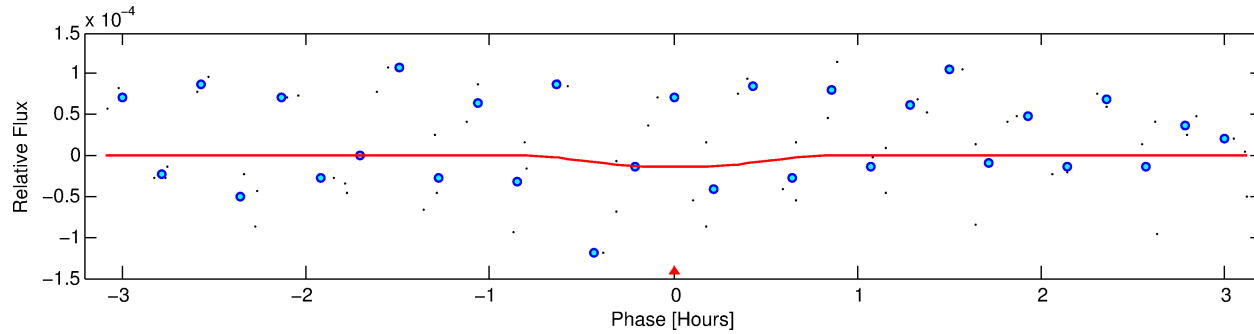
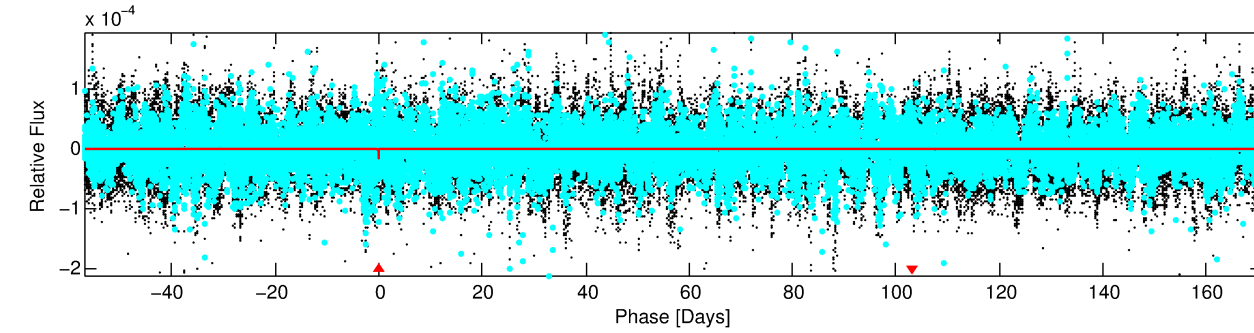
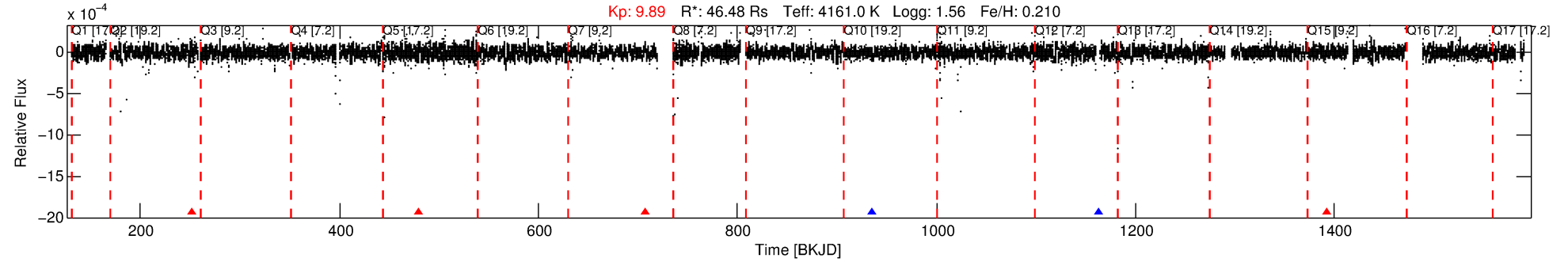
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010338650-01

No Significant Match Found

# DV One-Page Summary

KIC: 10338650 Candidate: 1 of 1 Period: 228.028 d



## DV Fit Results:

Period = 228.02848 [0.00737] d  
Epoch = 251.4421 [0.0187] BKJD  
Rp/R\* = 0.0044 [0.0151]  
a/R\* = 740.52 [7704.19]  
b = 0.90 [2.51]  
Seff = 541.88 [393.66]  
Teq = 1230 [223] K  
Rp = 22.57 [77.87] Re  
a = 1.0349 [0.4989] AU  
Ag = 32.98 [226.58] [0.14 $\sigma$ ]  
Teffp = 4558 [7788] K [0.43 $\sigma$ ]

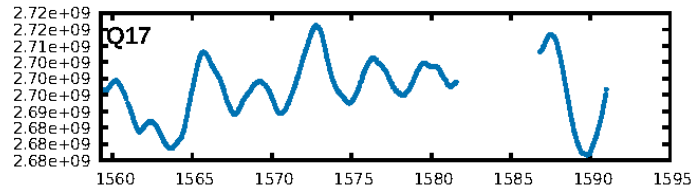
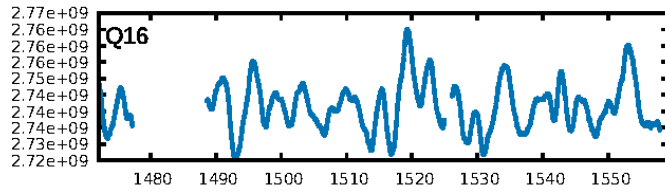
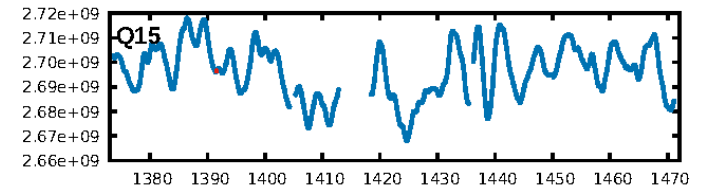
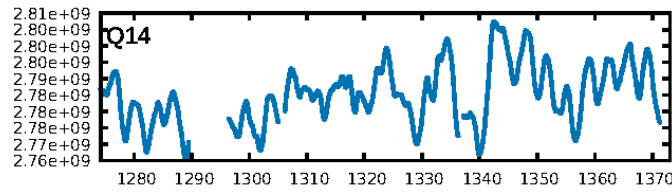
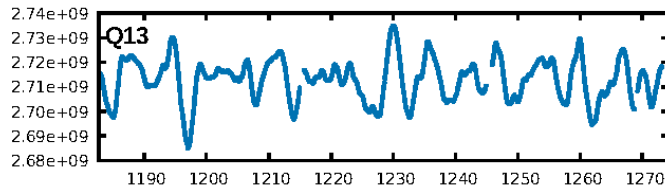
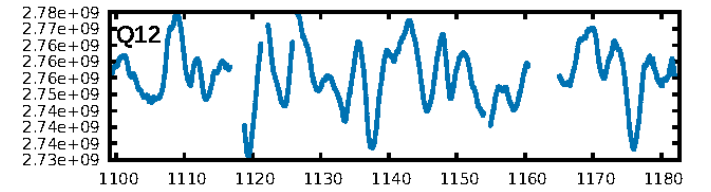
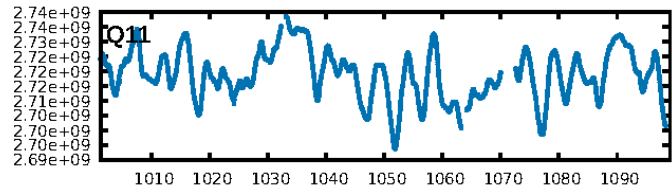
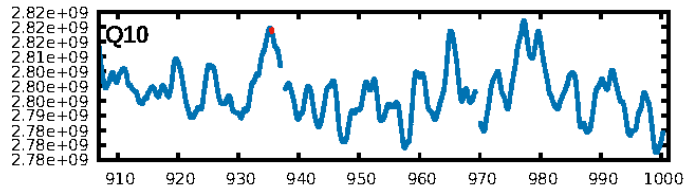
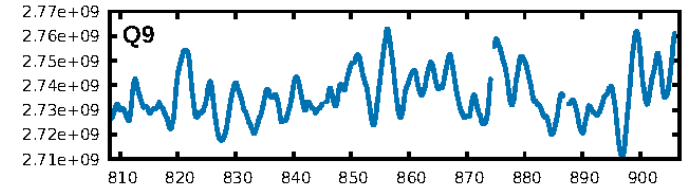
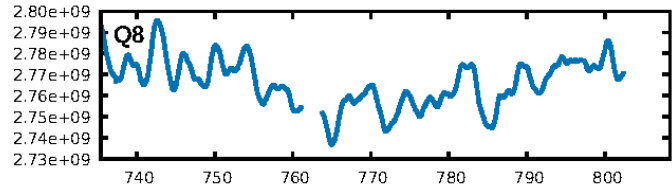
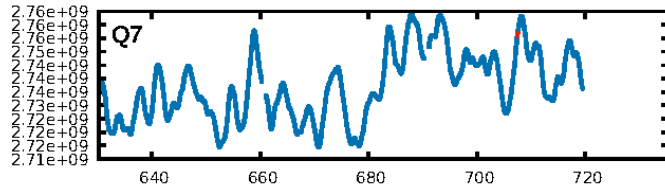
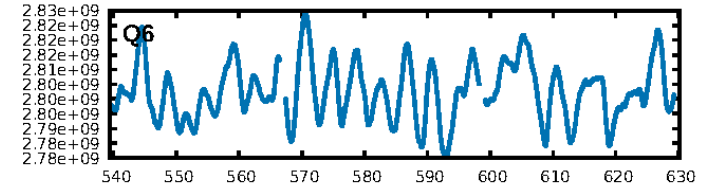
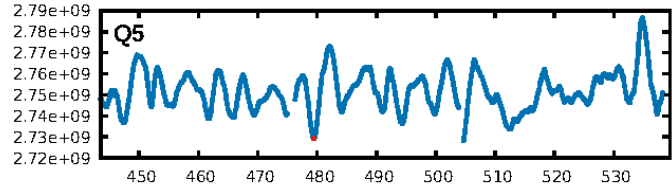
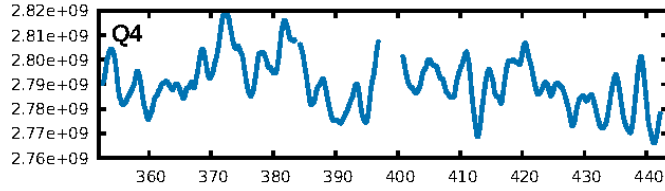
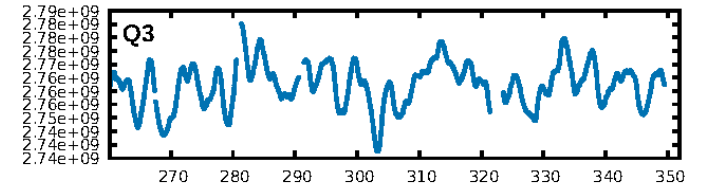
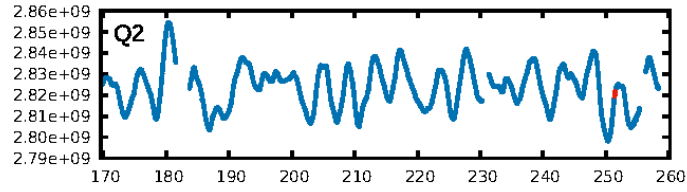
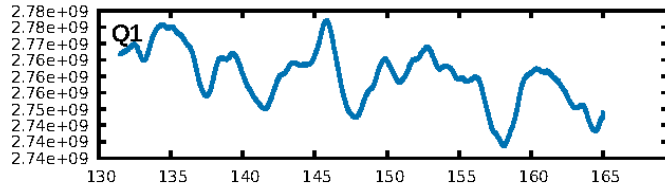
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 87.8%  
ModelChiSquareGof-sig: 96.5%  
Bootstrap-pfa: 3.43e-09  
RollingBand-fgt: 0.20 [1/5]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 15.7%  
Centroid-so: 27.260 arcsec [1.06 $\sigma$ ]  
OotOffset-rm: 4.519 arcsec [2.04 $\sigma$ ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-rm: 3.655 arcsec [3.87 $\sigma$ ]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [5/5]

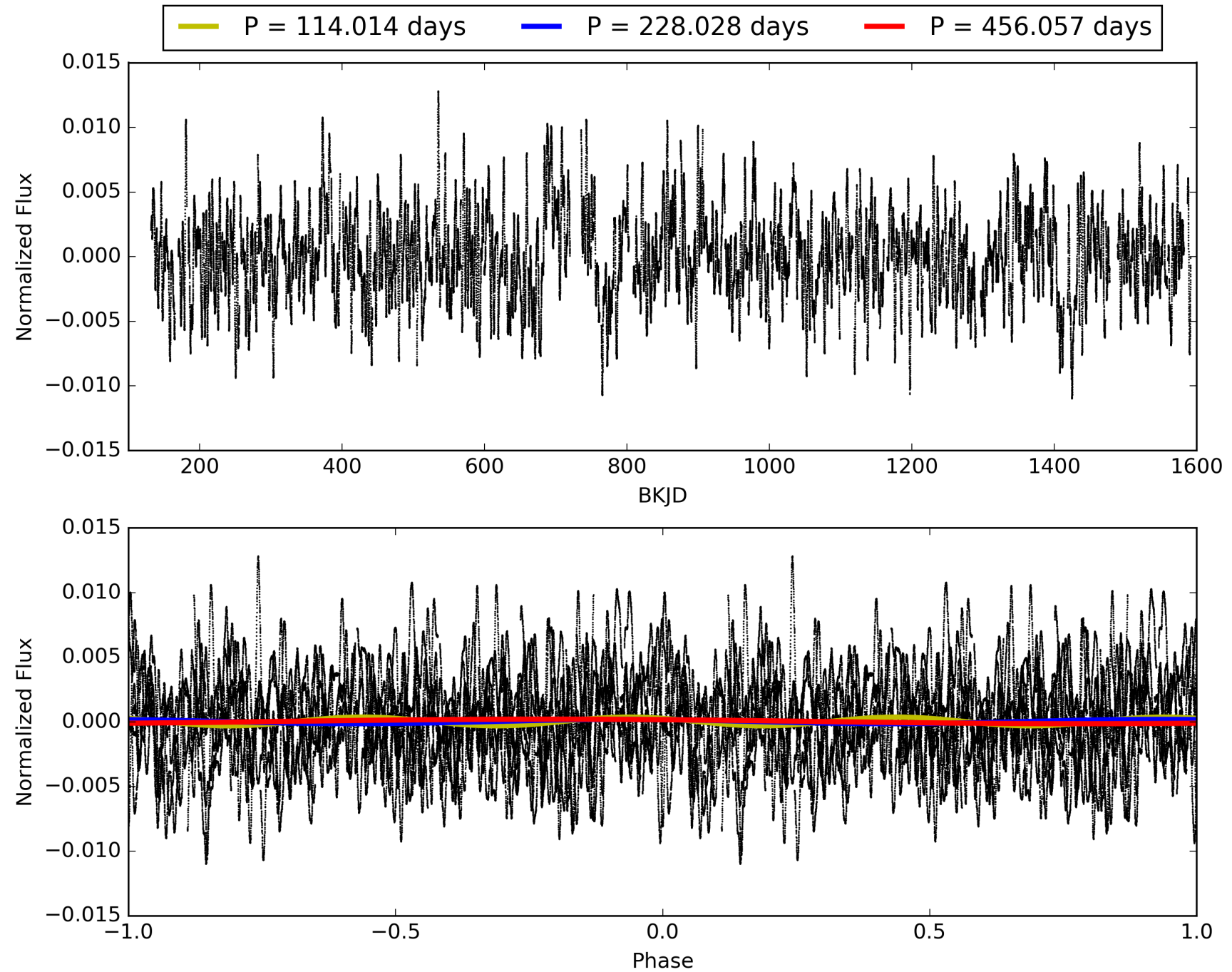
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 10:14:27 Z

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

# TCE 010338650-01, PDC Light Curves

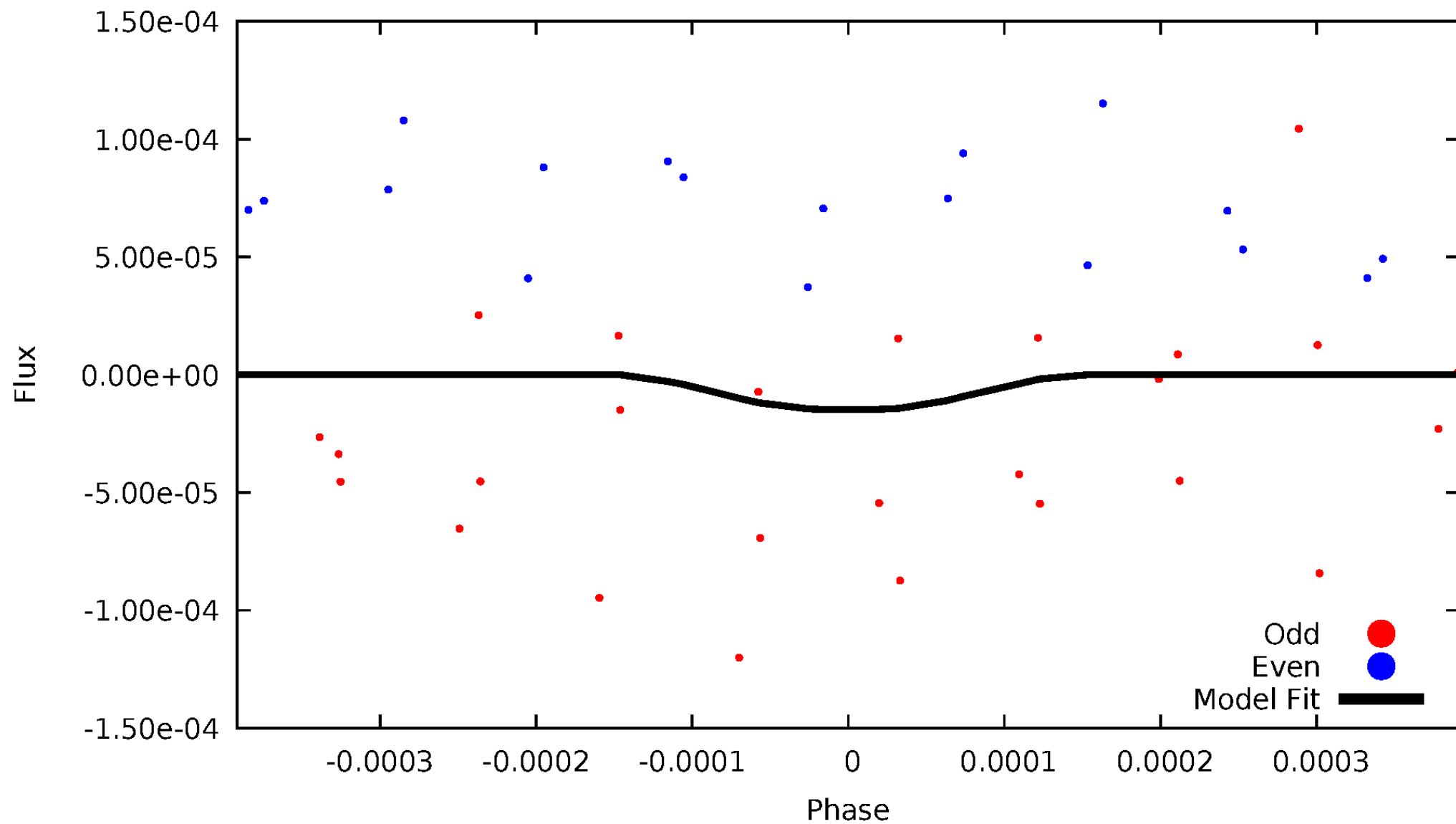


TCE 010338650-01



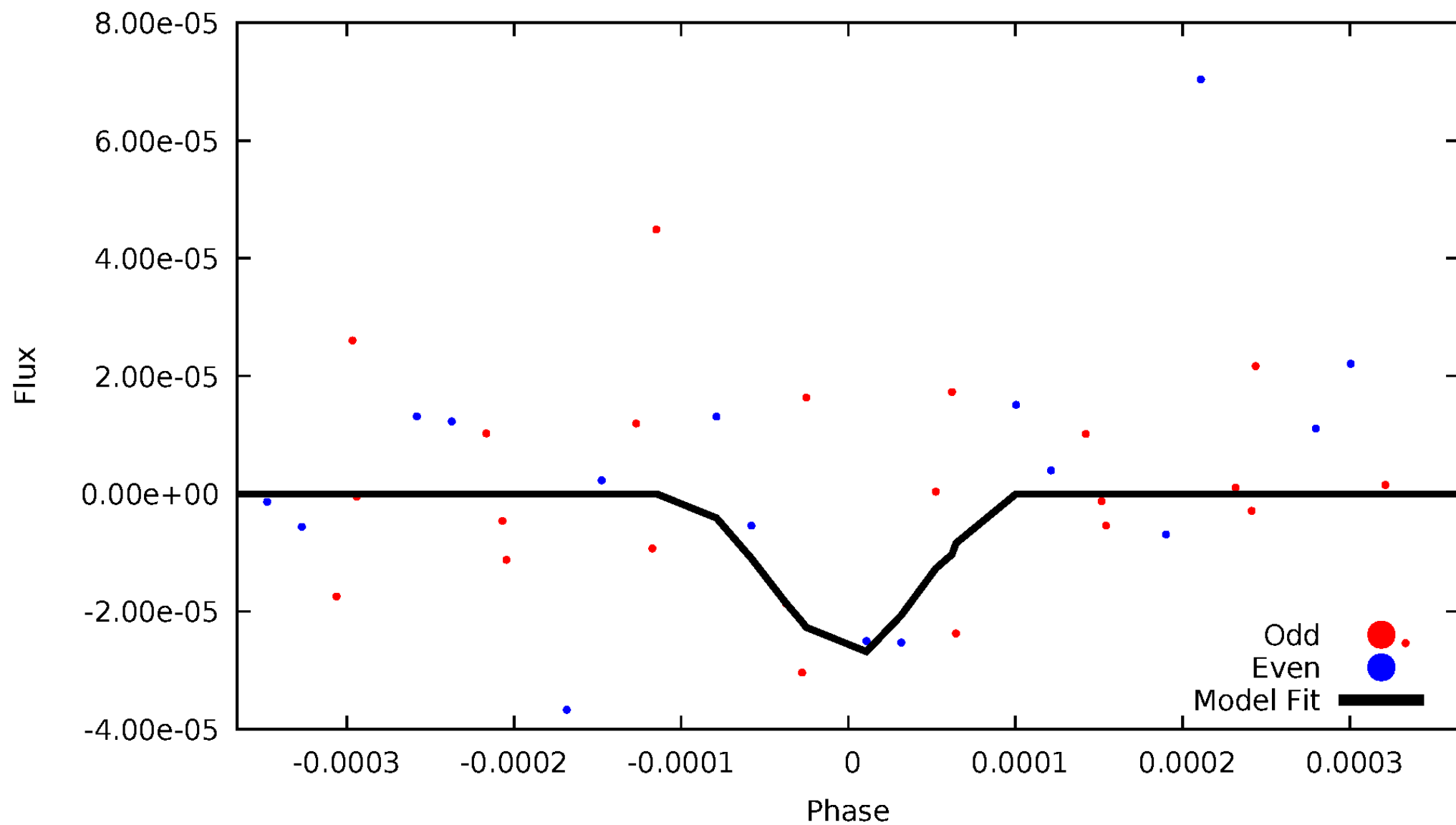
# DV Odd/Even

TCE 010338650-01



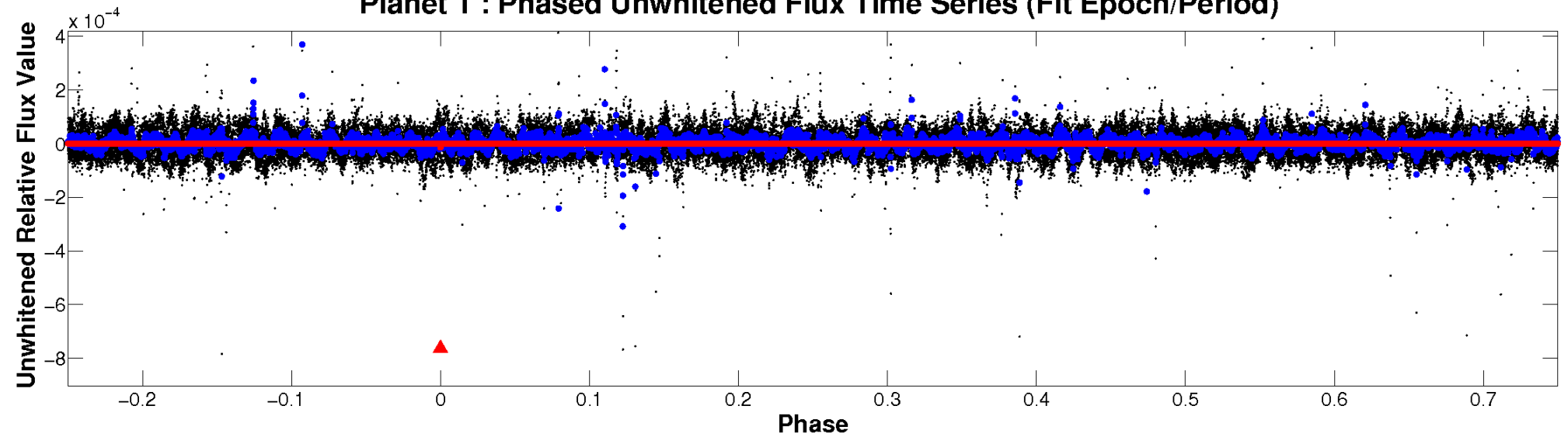
# ALT Odd/Even

TCE 010338650-01

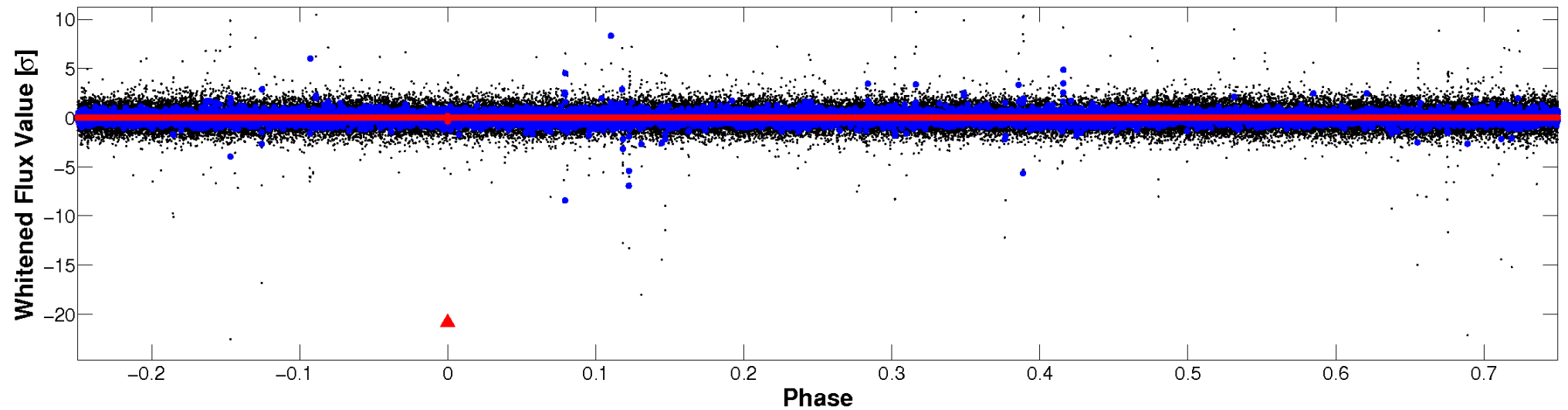


# Non-Whitened Vs. Whitened Light Curve

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

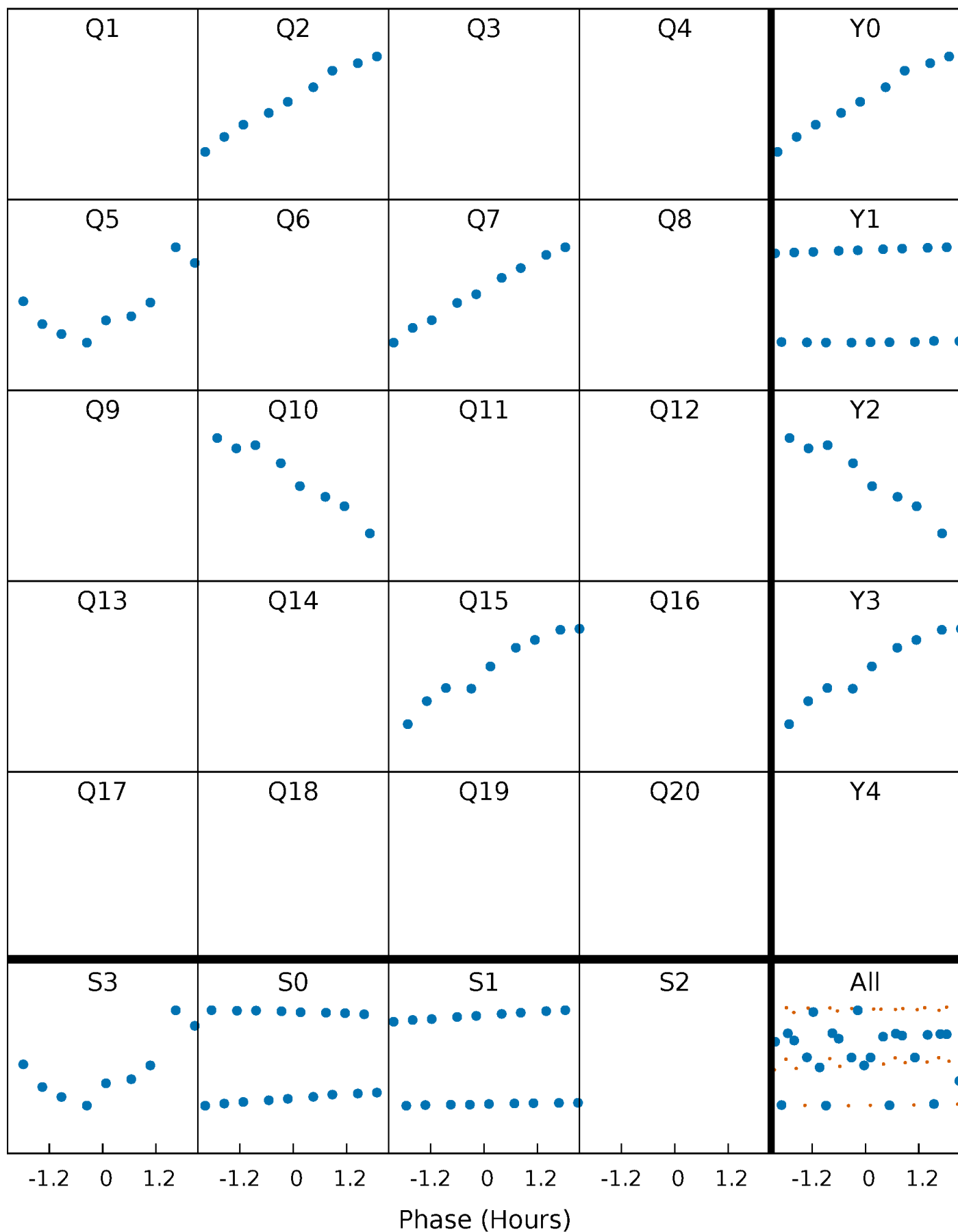


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

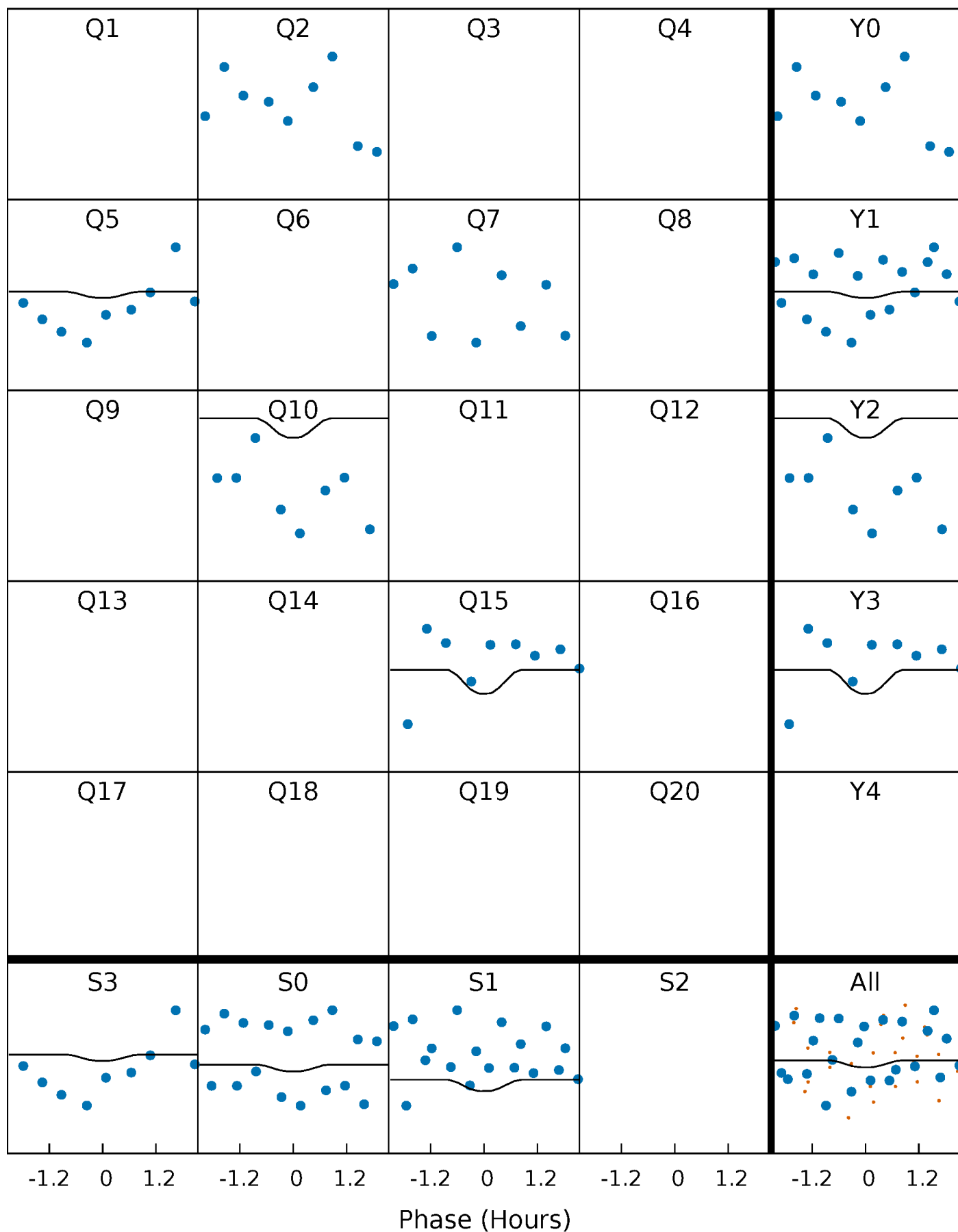
TCE 010338650-01 P=228.028478 Days  $T_0=251.442060$  (BKJD)





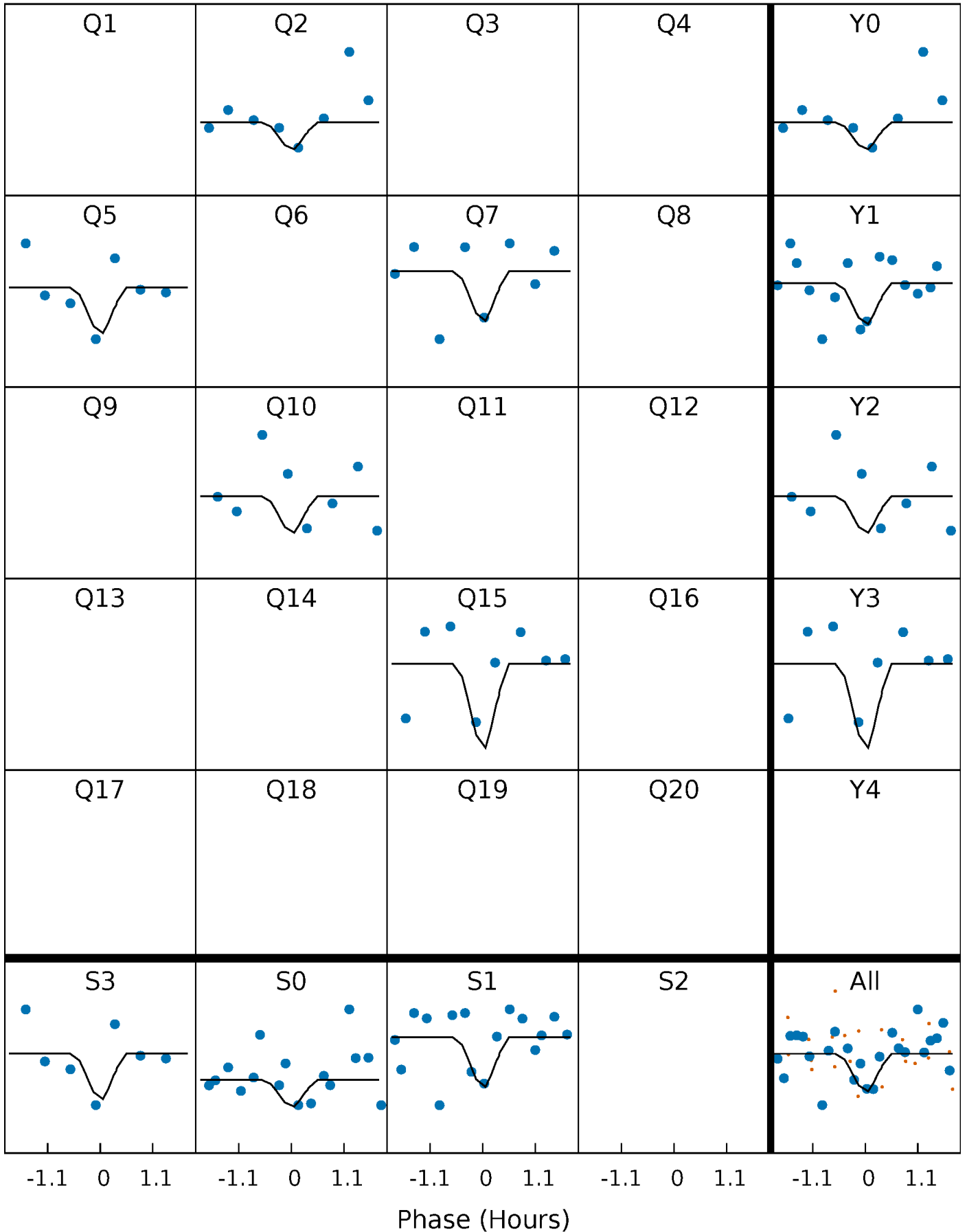
# DV Quarter-Phased Transit Curves

TCE 010338650-01     $P=228.028478$  Days     $T_0=251.442060$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

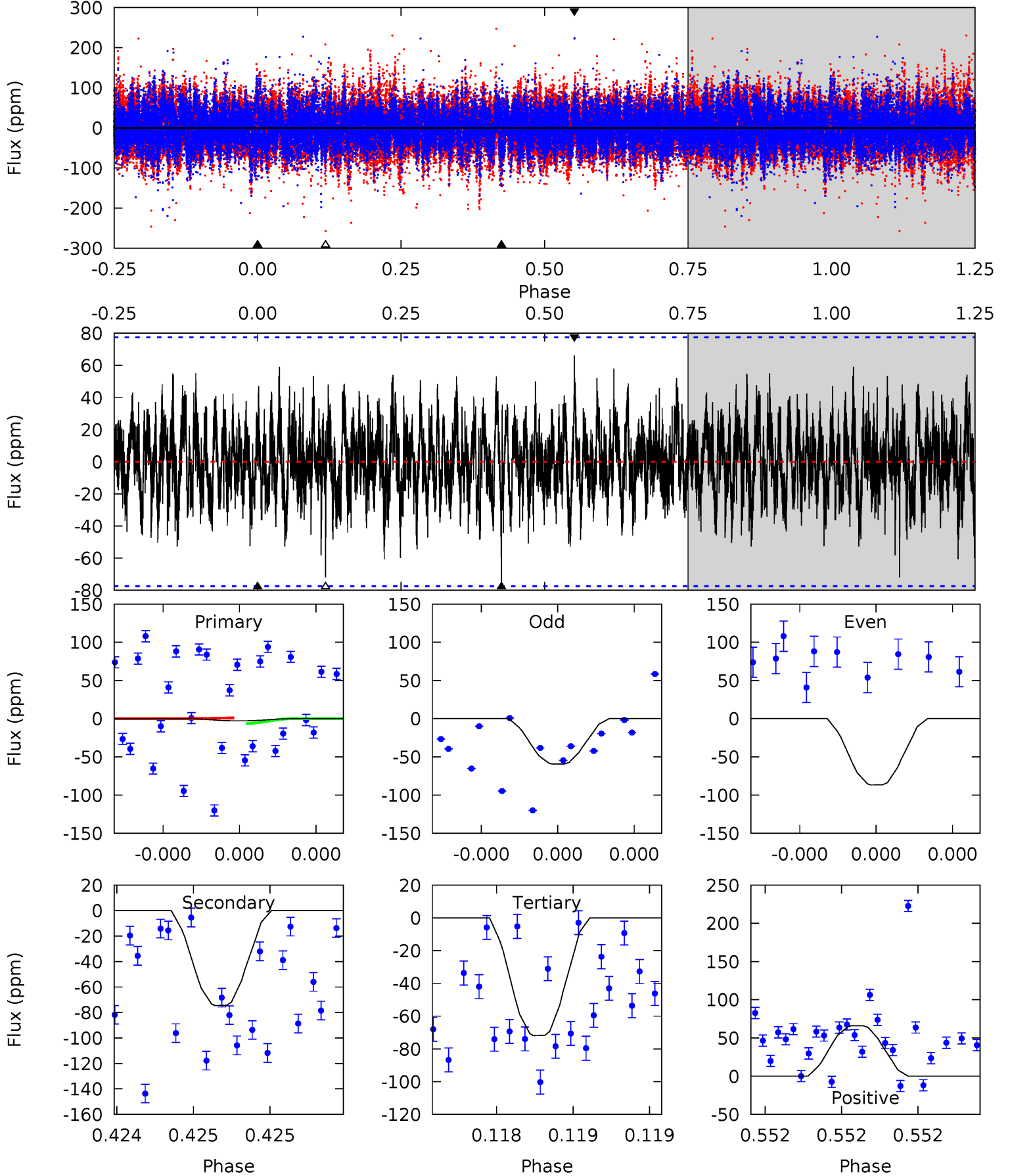
TCE 010338650-01 P=228.029721 Days  $T_0=251.431193$  (BKJD)



# DV Model-Shift Uniqueness Test

010338650-01,  $P = 228.028478$  Days,  $E = 23.413582$  Days

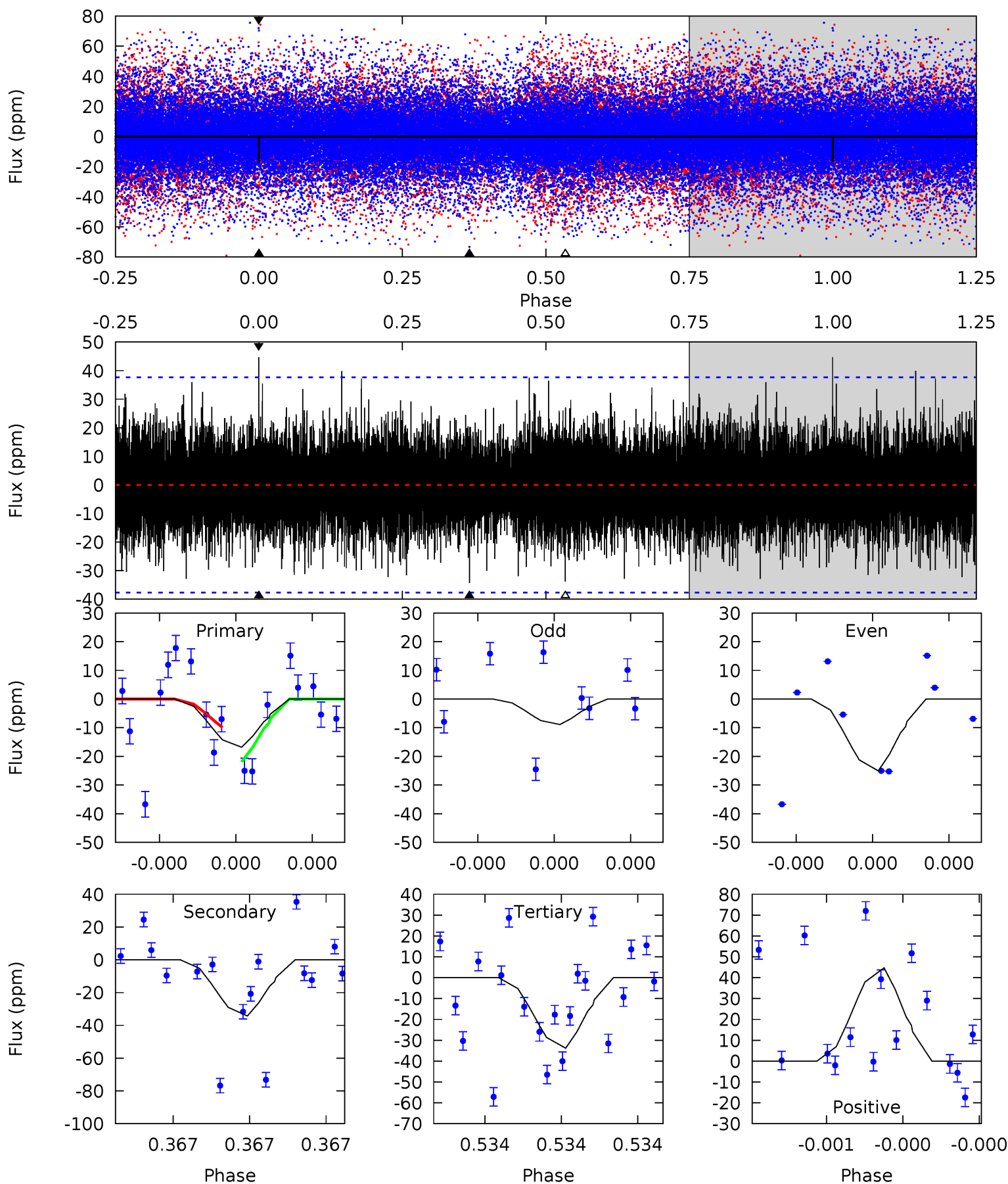
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.21	5.50	5.30	4.88	5.71	3.69	1.32	-5.09	-4.67	0.20	0.62	0.95	-0.19	0.47	0.20



# Alt Model-Shift Uniqueness Test

010338650-01, P = 228.029721 Days, E = 23.401472 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
2.58	5.26	5.19	6.87	5.79	3.80	1.32	-2.61	-4.28	0.07	-1.60	1.20	0.75	0.57	0.92



### Stellar Parameters For KIC 010338650

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4161^{+123}_{-111}$	$1.557^{+0.399}_{-0.171}$	$0.210^{+0.150}_{-0.300}$	$46.484^{+6.491}_{-25.963}$	$2.843^{+0.535}_{-1.605}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+26%/-11%	+71%/-143%	+14%/-56%	+19%/-56%	+452%/-41%
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 010338650-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-75 \pm 14$	$56.54^{+64.26}_{-40.02}$	$1711^{+114}_{-180}$	$3708^{+2245}_{-775}$	$13^{+138}_{-10}$
Alt.	$-34 \pm 7$	$57.94^{+57.80}_{-39.71}$	$1715^{+109}_{-188}$	$3231^{+1555}_{-639}$	$5.955^{+50.179}_{-4.624}$

$T_{\text{max}}$  = 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

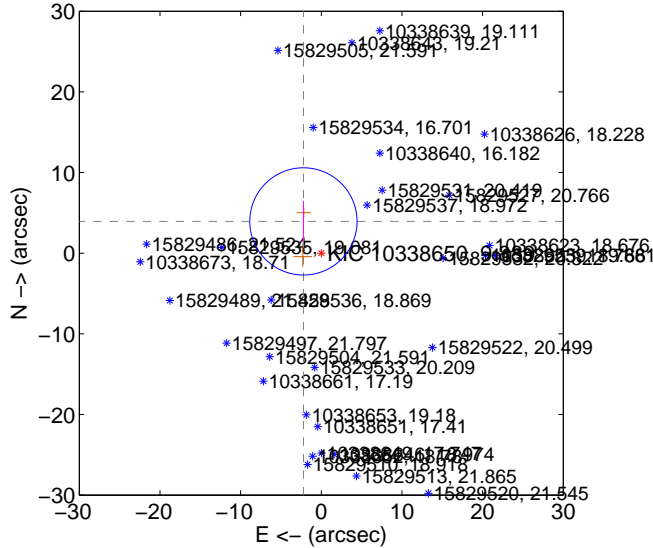
Supplemental centroid analysis for 010338650-01. **Kepler magnitude: 9.89.** Transit SNR 1.14

There are 0 quarters with good PRF difference image offsets

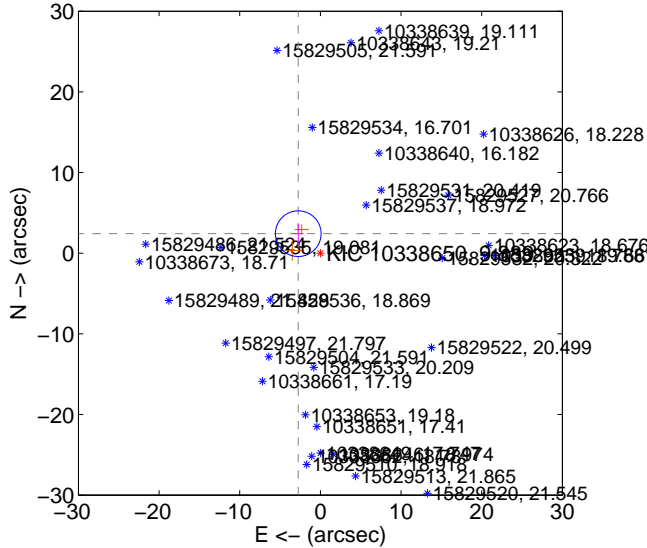
The OOT PRF centroid is offset from the target star catalog position by about 2.09 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.519 \pm 2.216$	2.04	$2.214 \pm 0.099$	$3.939 \pm 2.542$
PRF-fit source offset from KIC position	<b><math>3.655 \pm 0.944</math></b>	<b>3.87</b>	$2.742 \pm 0.668$	$2.417 \pm 1.209$
photometric centroid source offset	$27.26 \pm 25.68$	1.06	$10.66 \pm 17.64$	$-25.09 \pm 26.87$

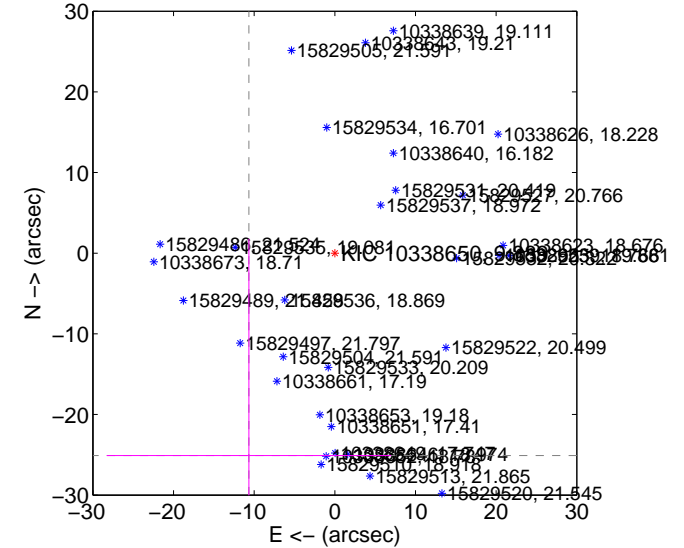
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

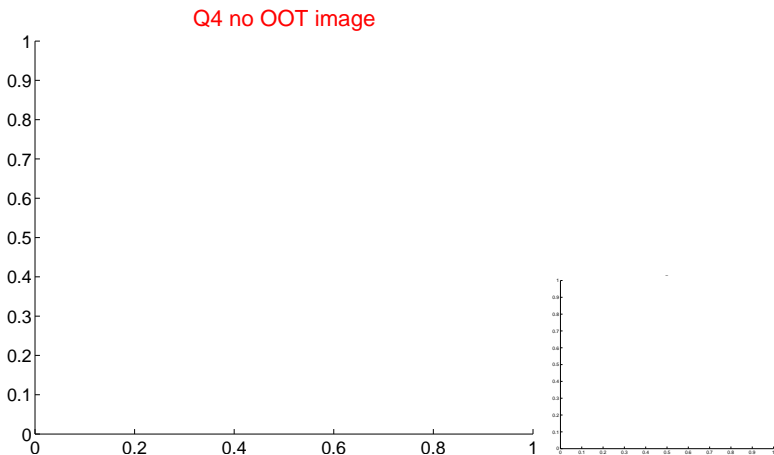
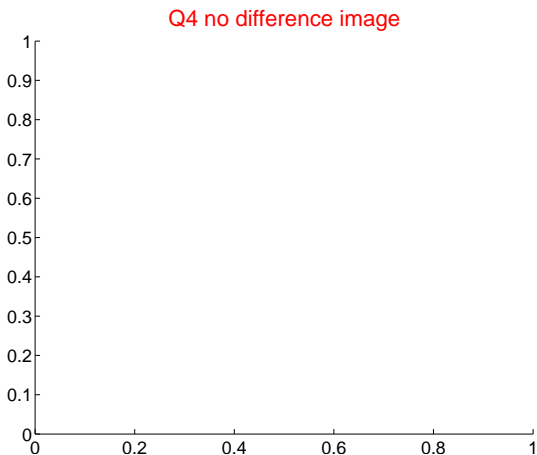
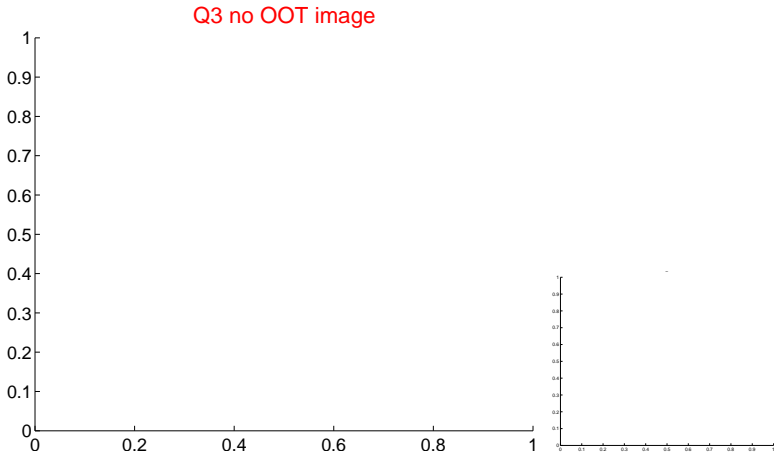
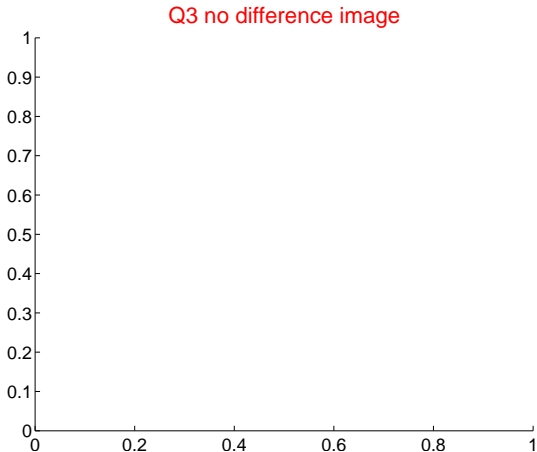
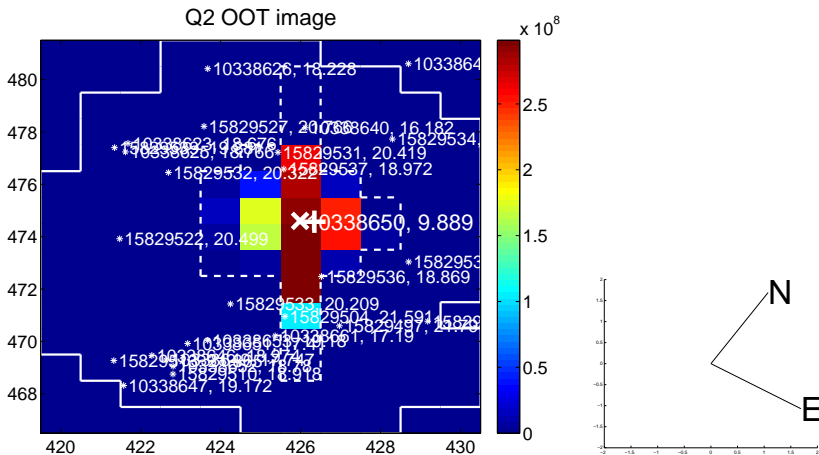
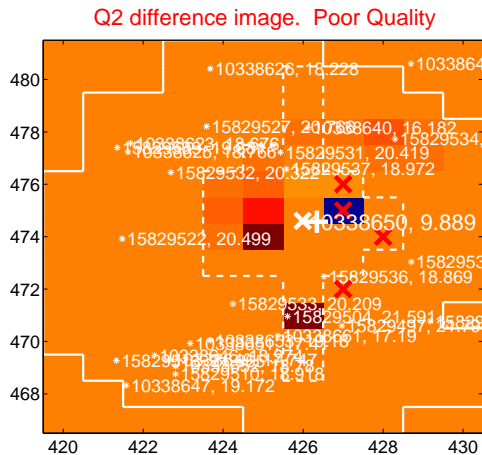
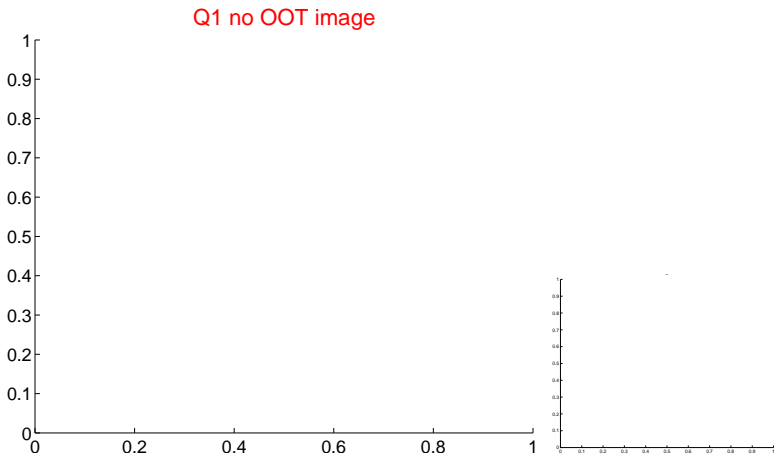
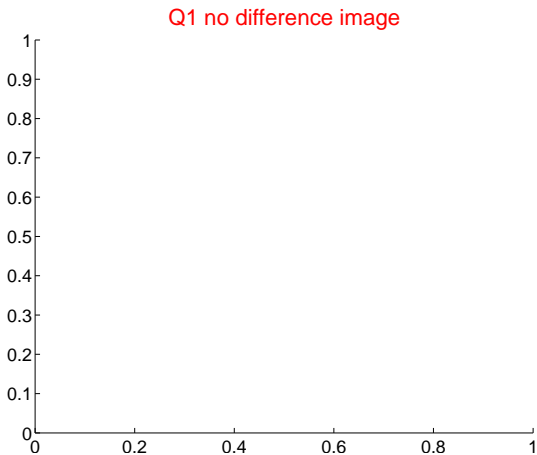


offset from photometric centroids

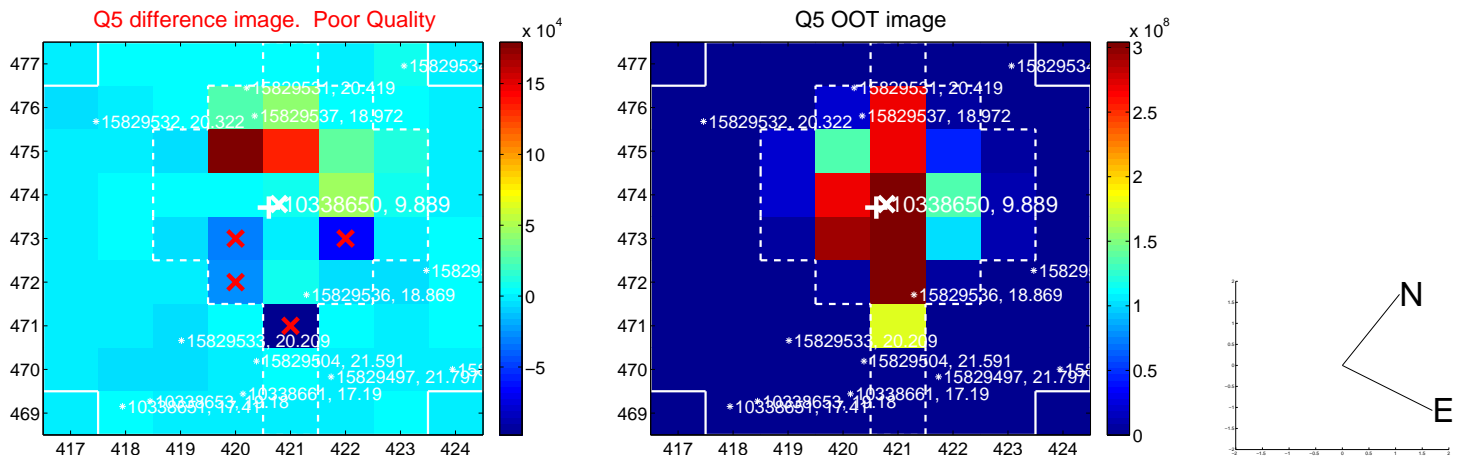


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

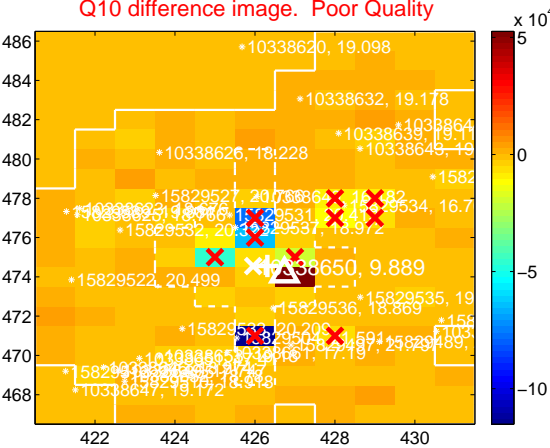
Q9 no difference image



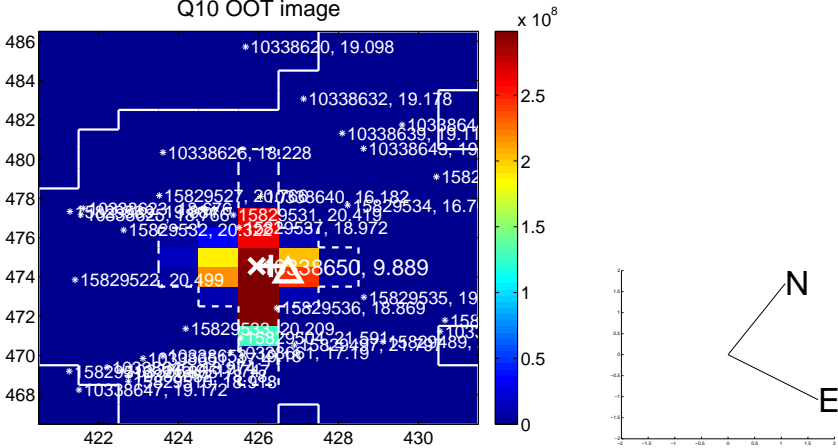
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

Q13 no difference image



Q13 no OOT image



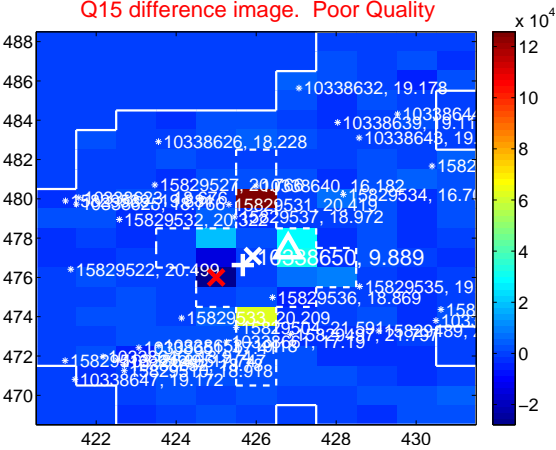
Q14 no difference image



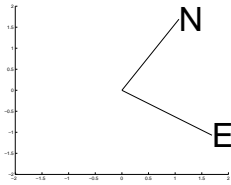
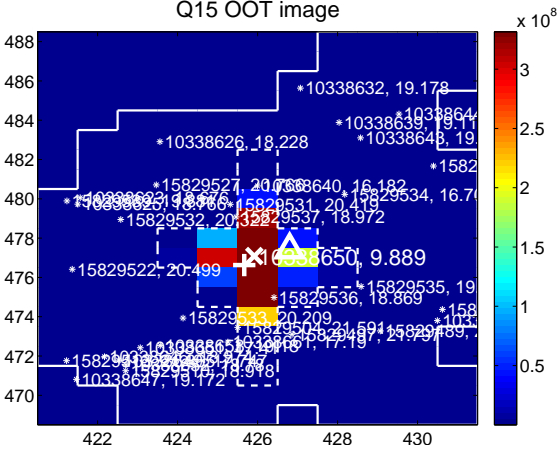
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



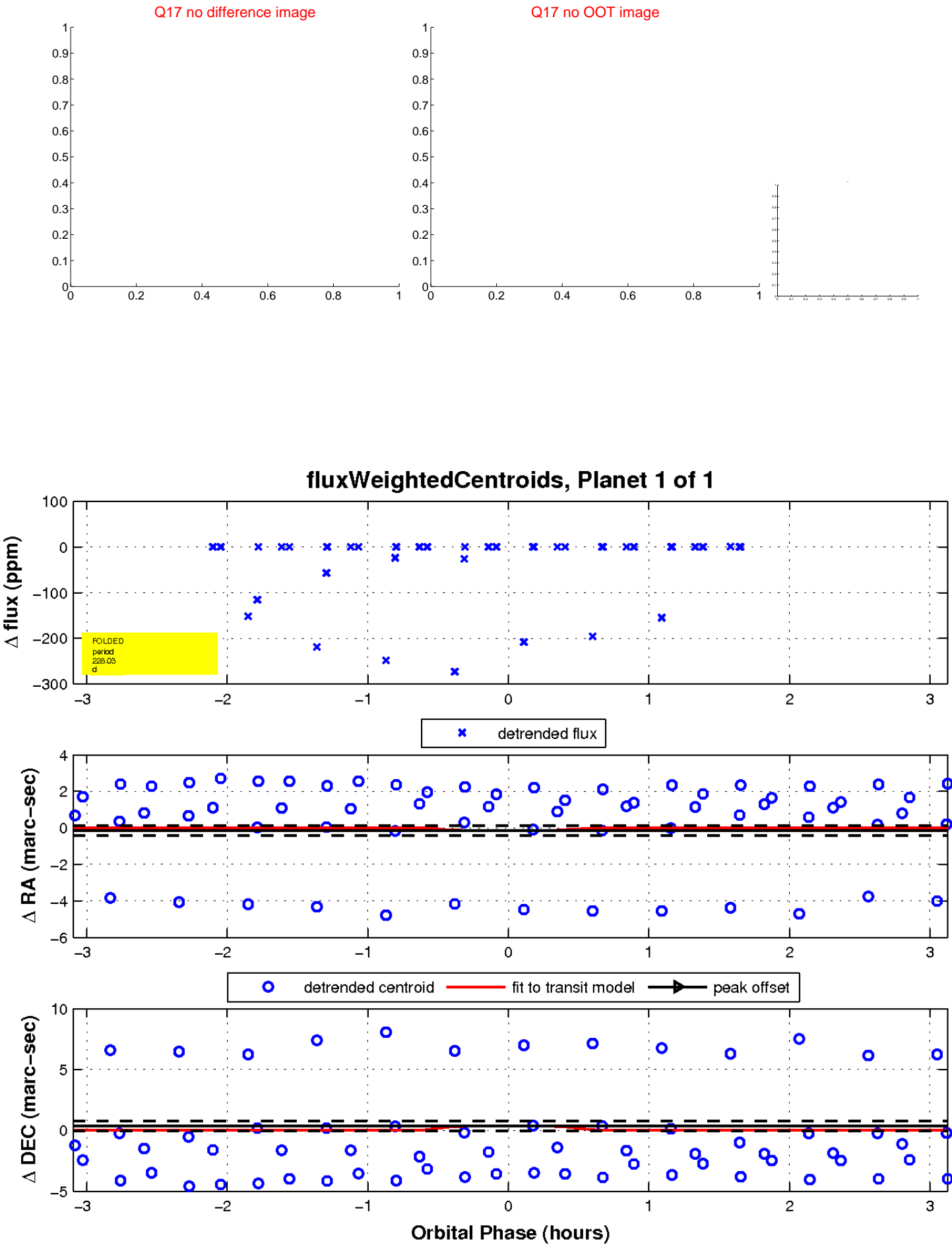
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

