

# KIC 008120820

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008120820-01	OBS	6971.01	129.222742	255.185929	475.5	7.638	8.1	9.3	0.81	4934	2.15	1.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008120820-01	OBS	PC	0.36	0	0	0	0	CENT_KIC_POS

**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.

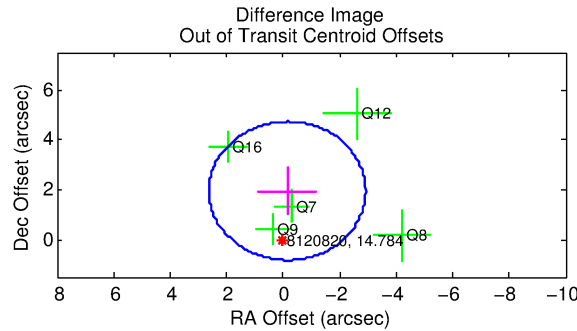
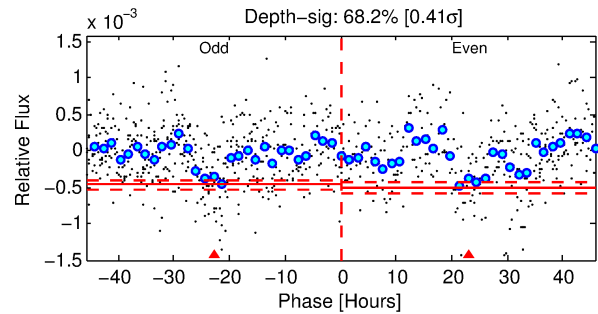
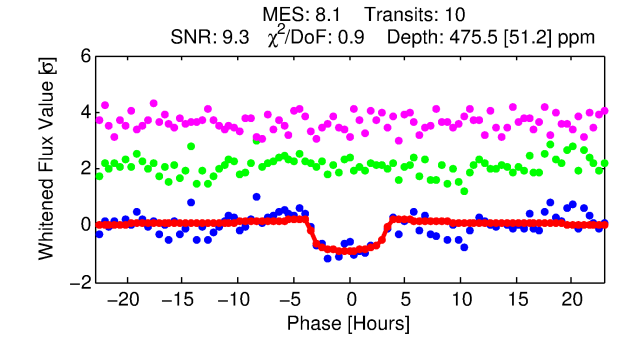
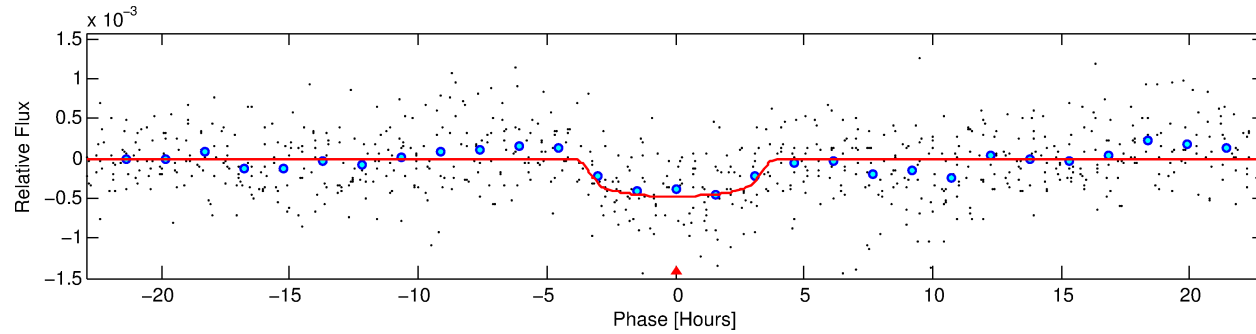
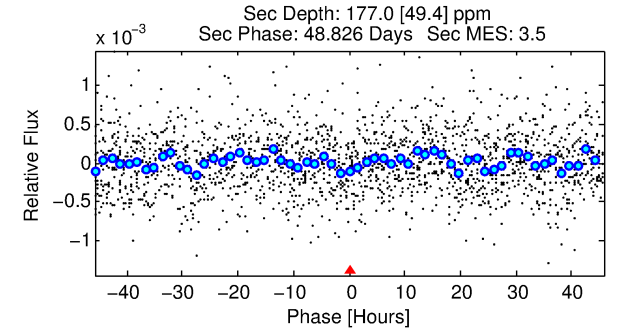
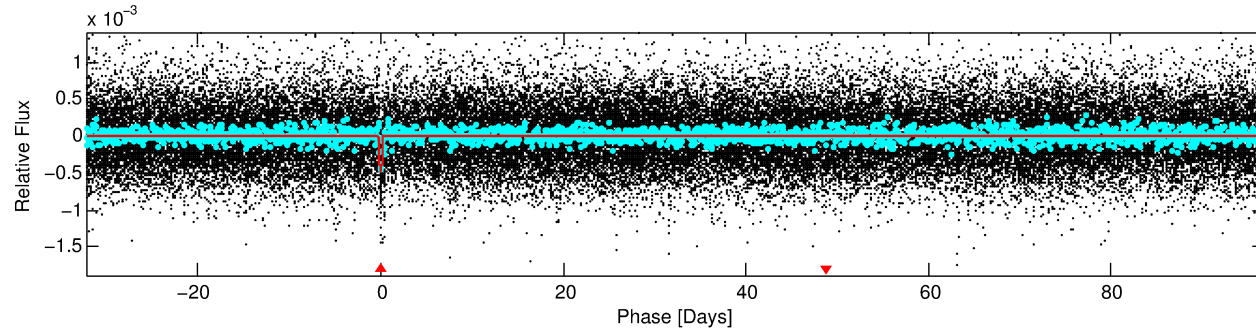
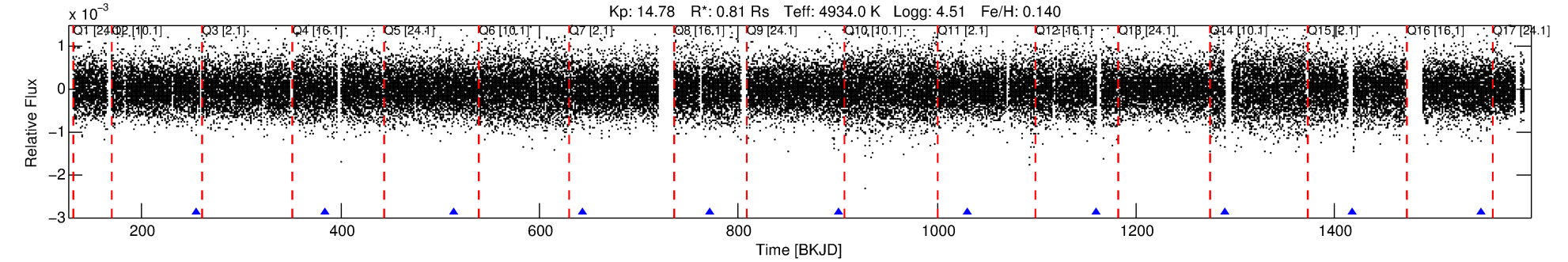
## Ephemeris Match Information For 008120820-01

No Significant Match Found

# DV One-Page Summary

KIC: 8120820 Candidate: 1 of 1 Period: 129.223 d

KOI: K06971.01 Corr: 0.932



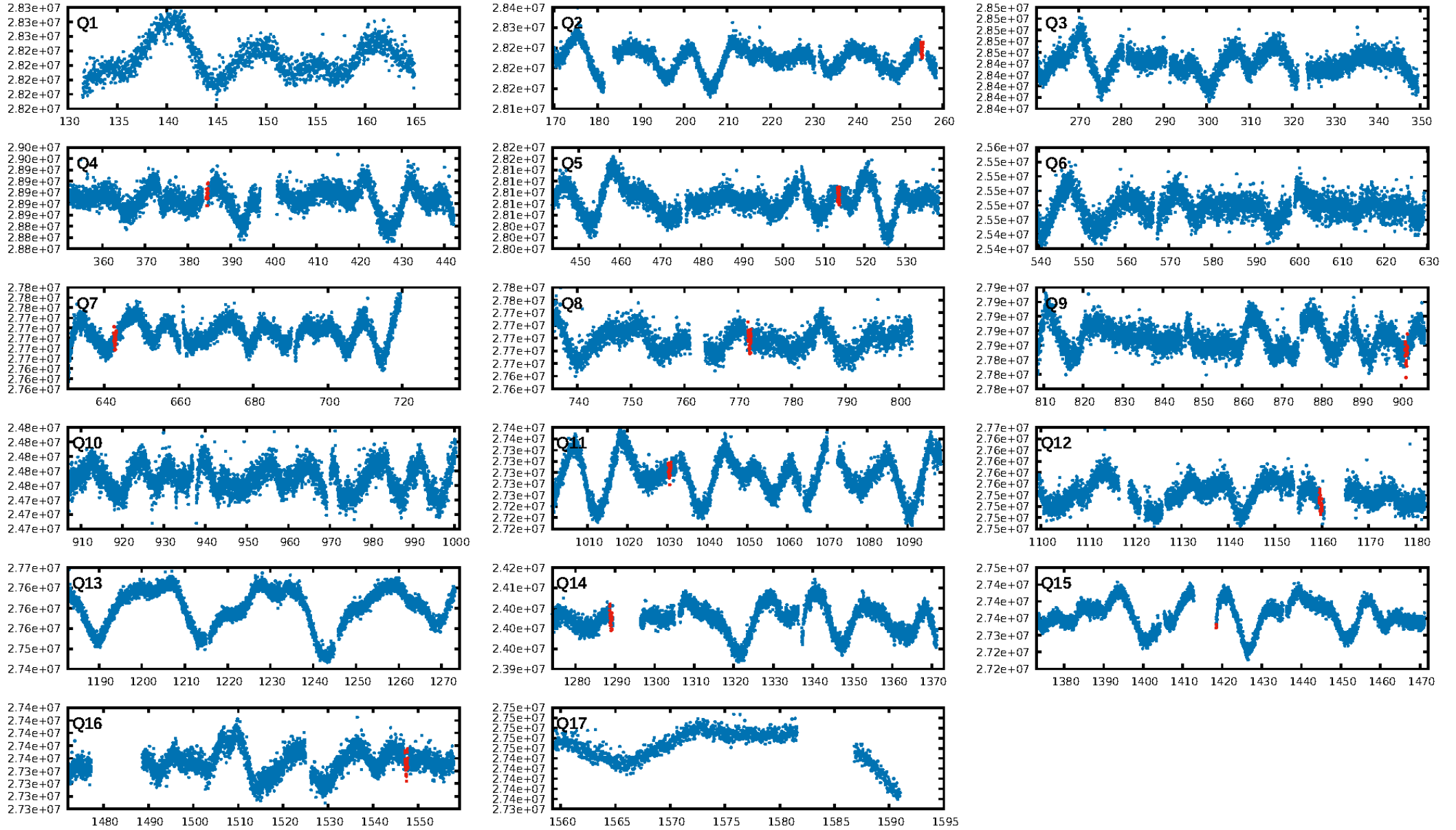
## DV Fit Results:

Period = 129.22274 [0.00232] d  
Epoch = 255.1859 [0.0131] BKJD  
Rp/R\* = 0.0244 [0.0036]  
a/R\* = 63.39 [32.95]  
b = 0.90 [0.11]  
Seff = 1.64 [0.21]  
Teff = 288 [9] K  
Rp = 2.15 [0.35] Re  
a = 0.4608 [0.0313] AU  
Ag = 4457.02 [1874.14] [2.38 $\sigma$ ]  
Teffp = 3643 [374] K [8.97 $\sigma$ ]

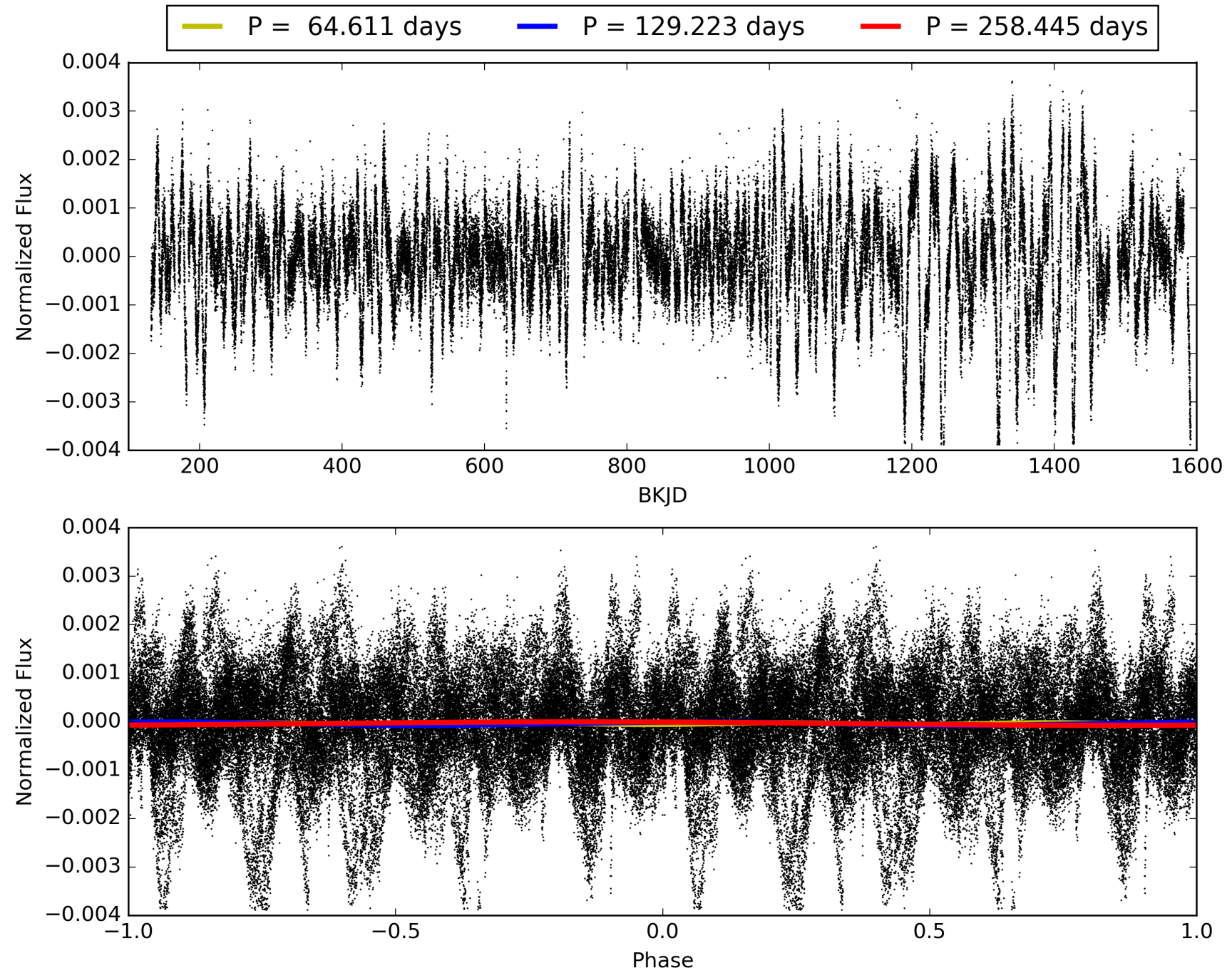
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 89.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.70e-14  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: -0.3583  
Centroid-sig: 1.4%  
Centroid-so: 1.592 arcsec [1.67 $\sigma$ ]  
OotOffset-rm: 1.953 arcsec [2.11 $\sigma$ ]  
KicOffset-rm: 2.185 arcsec [1.93 $\sigma$ ]  
OotOffset-st: 0/1/3/1 [5]  
KicOffset-st: 0/1/3/1 [5]  
DiffImageQuality-fgm: 0.40 [2/5]  
DiffImageOverlap-fno: 1.00 [6/6]

# TCE 008120820-01, PDC Light Curves

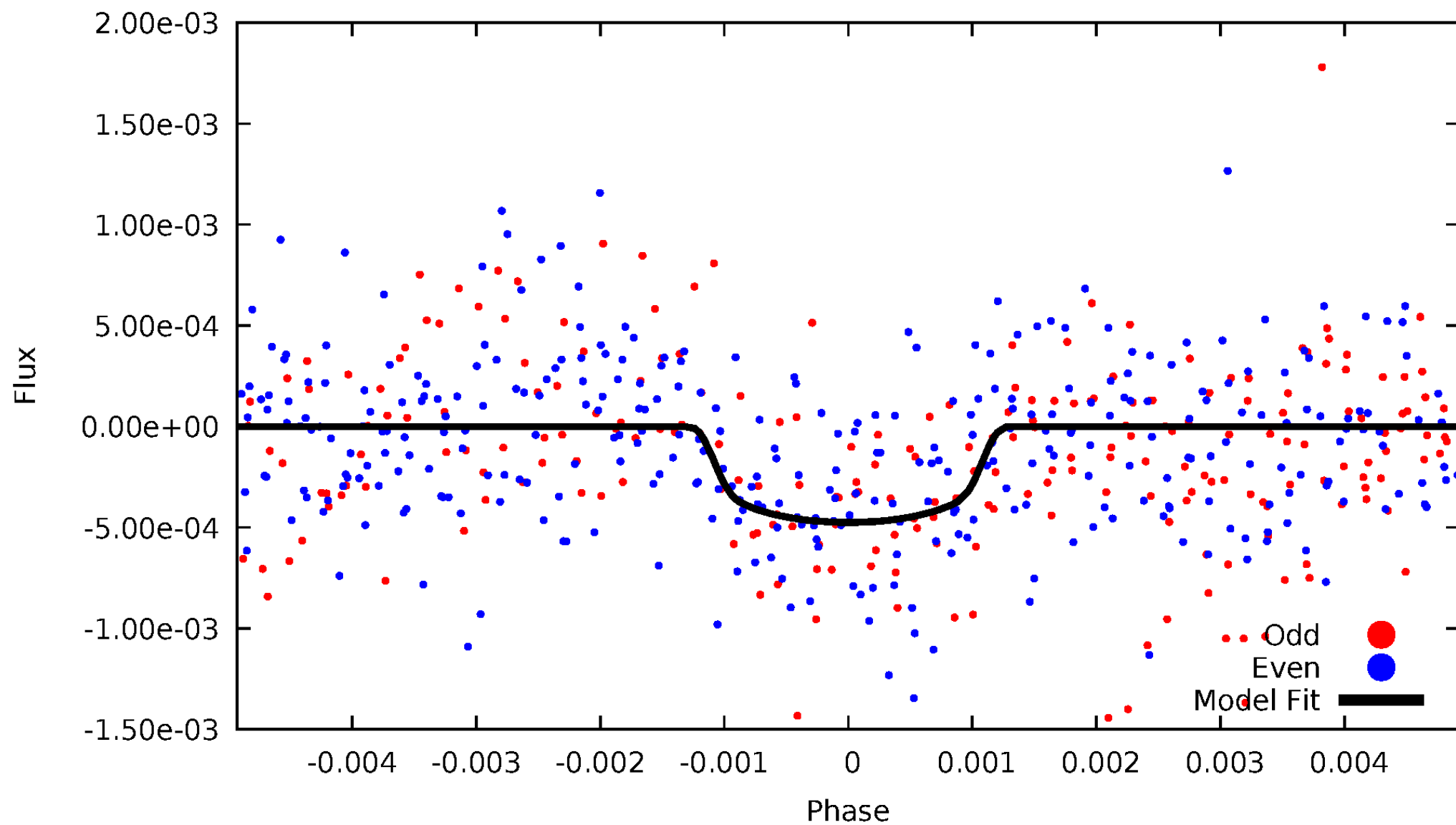


TCE 008120820-01



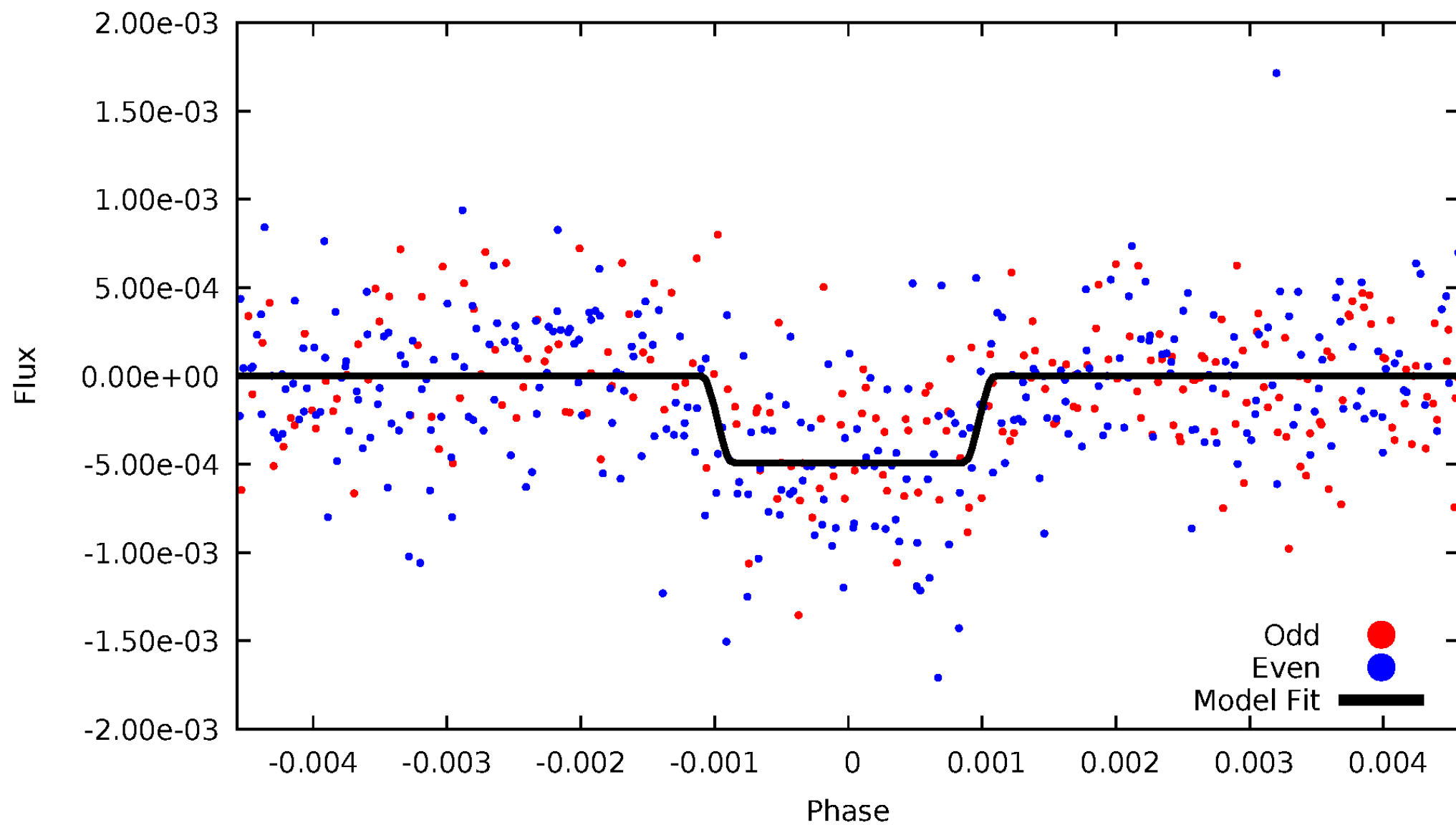
# DV Odd/Even

TCE 008120820-01



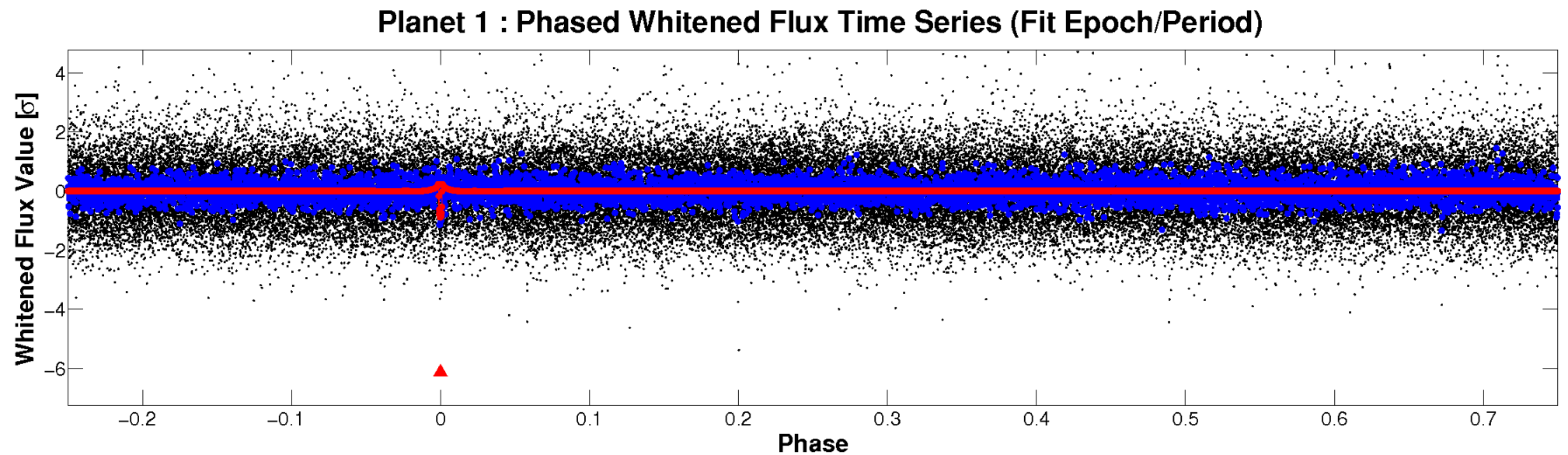
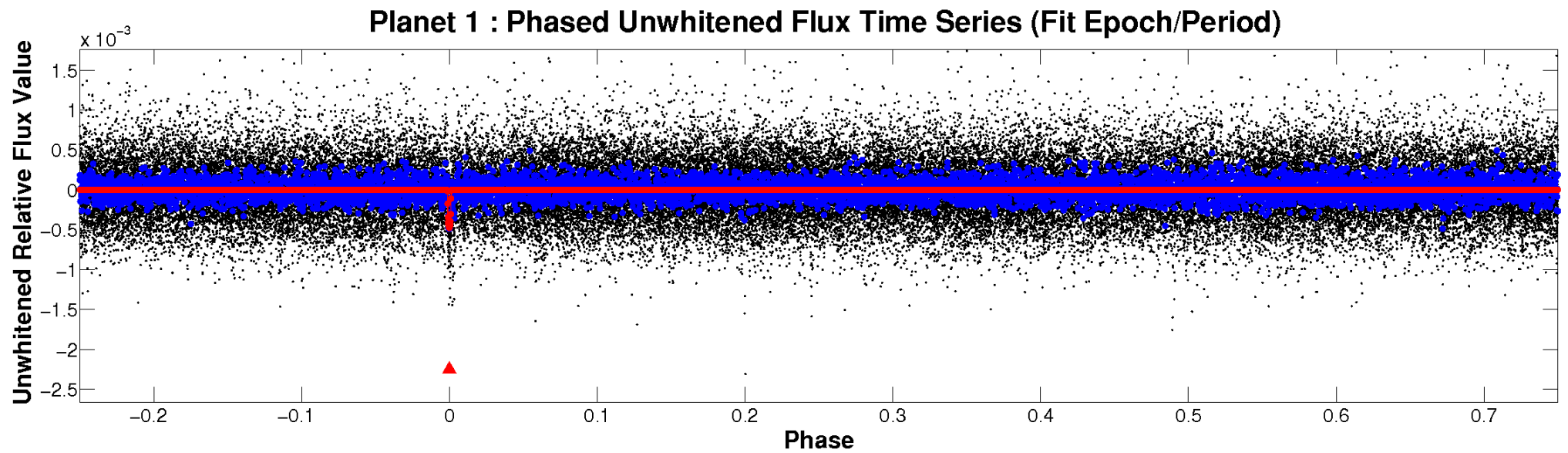
# ALT Odd/Even

TCE 008120820-01





# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

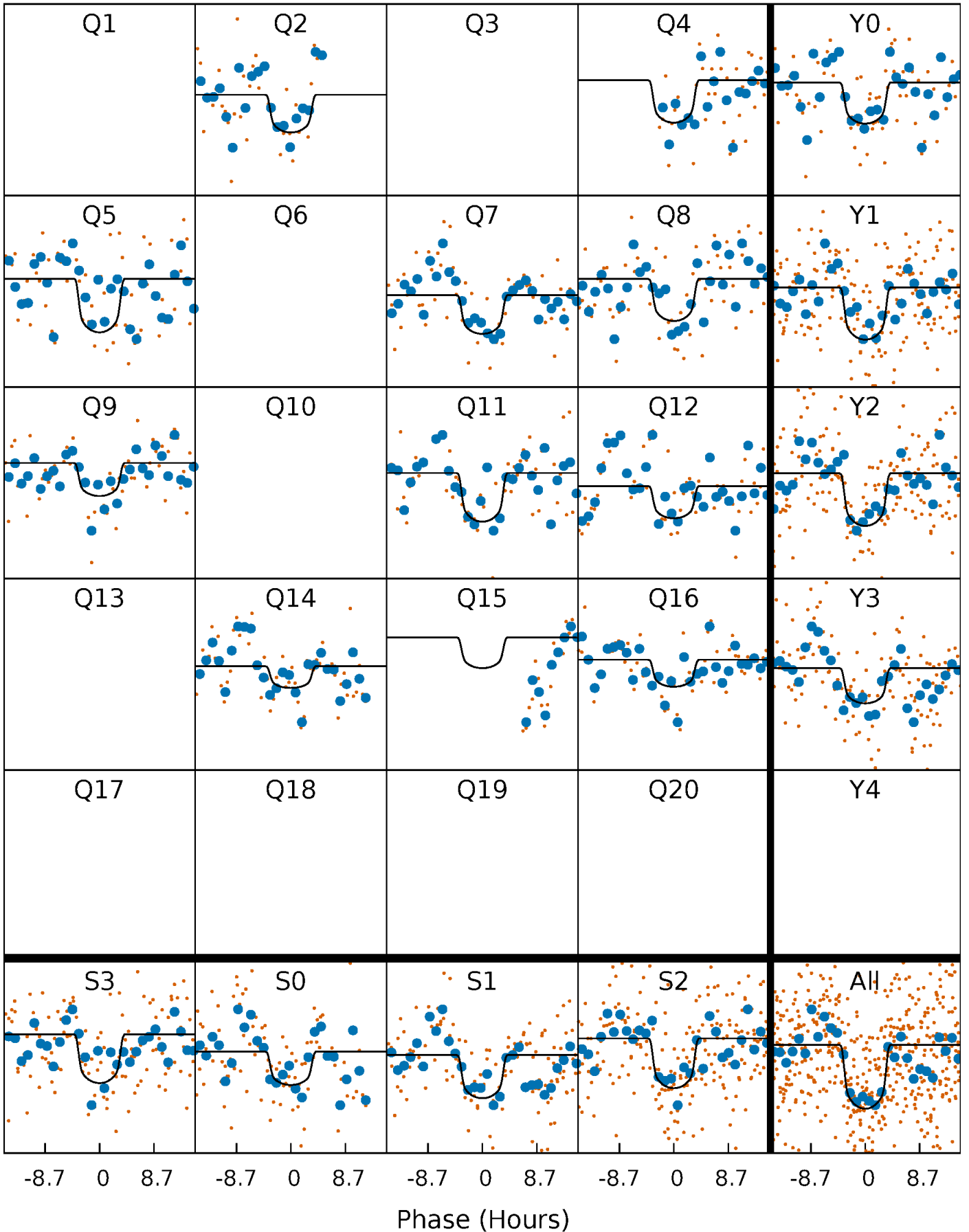
TCE 008120820-01 P=129.222742 Days  $T_0=255.185929$  (BKJD)





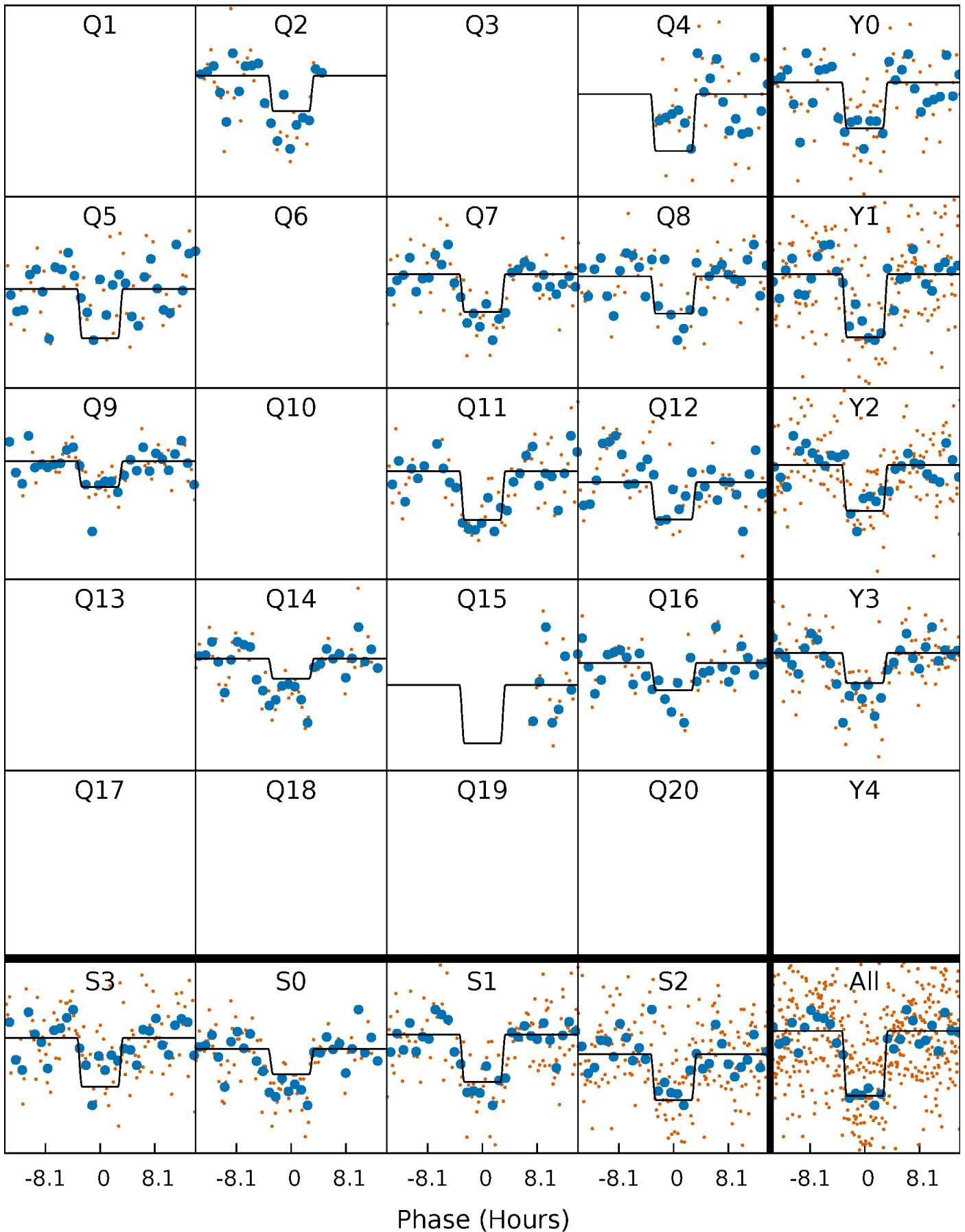
# DV Quarter-Phased Transit Curves

TCE 008120820-01 P=129.222742 Days  $T_0=255.185929$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

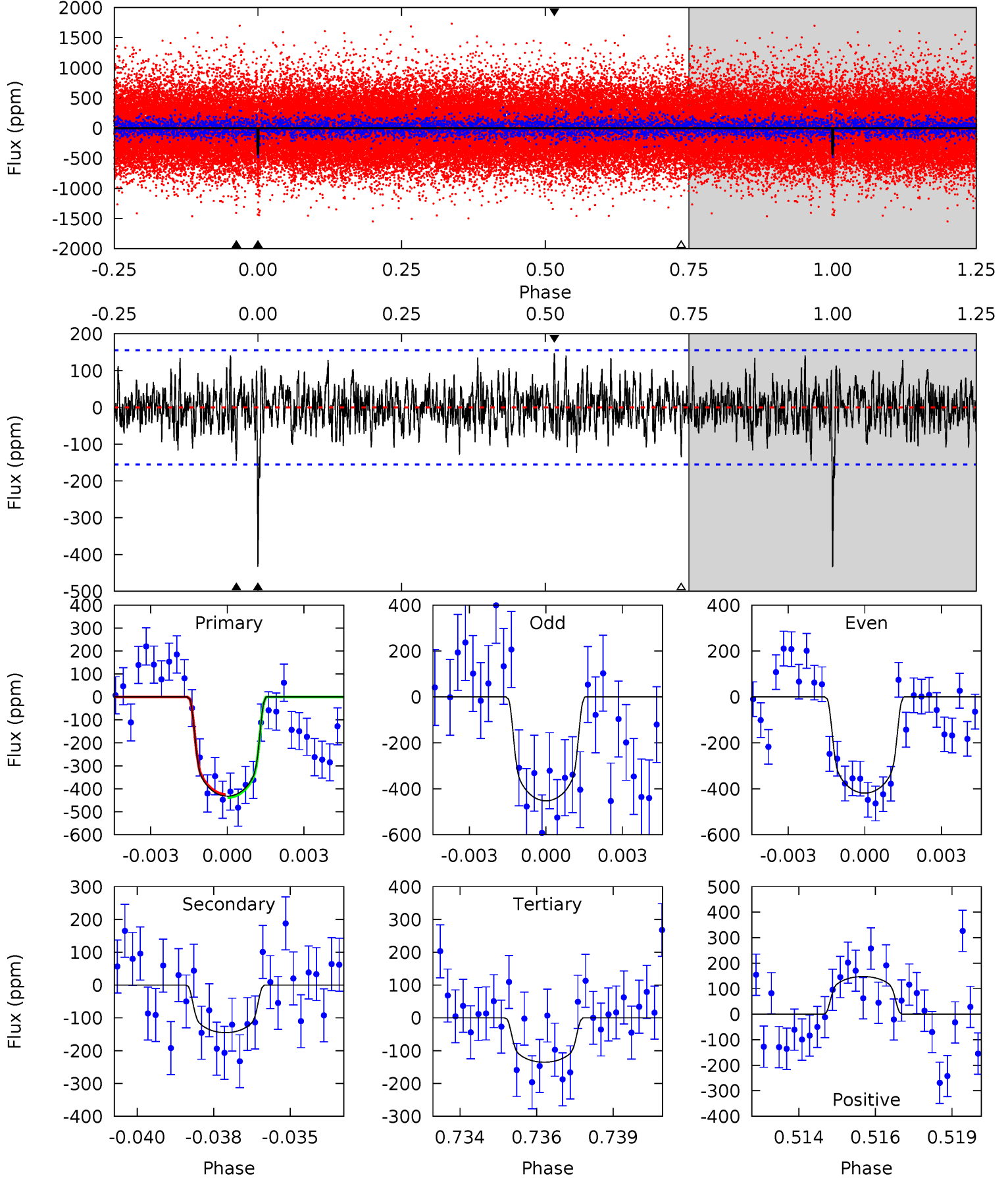
TCE 008120820-01 P=129.218234 Days  $T_0=255.203664$  (BKJD)



# DV Model-Shift Uniqueness Test

008120820-01, P = 129.222742 Days, E = 125.963187 Days

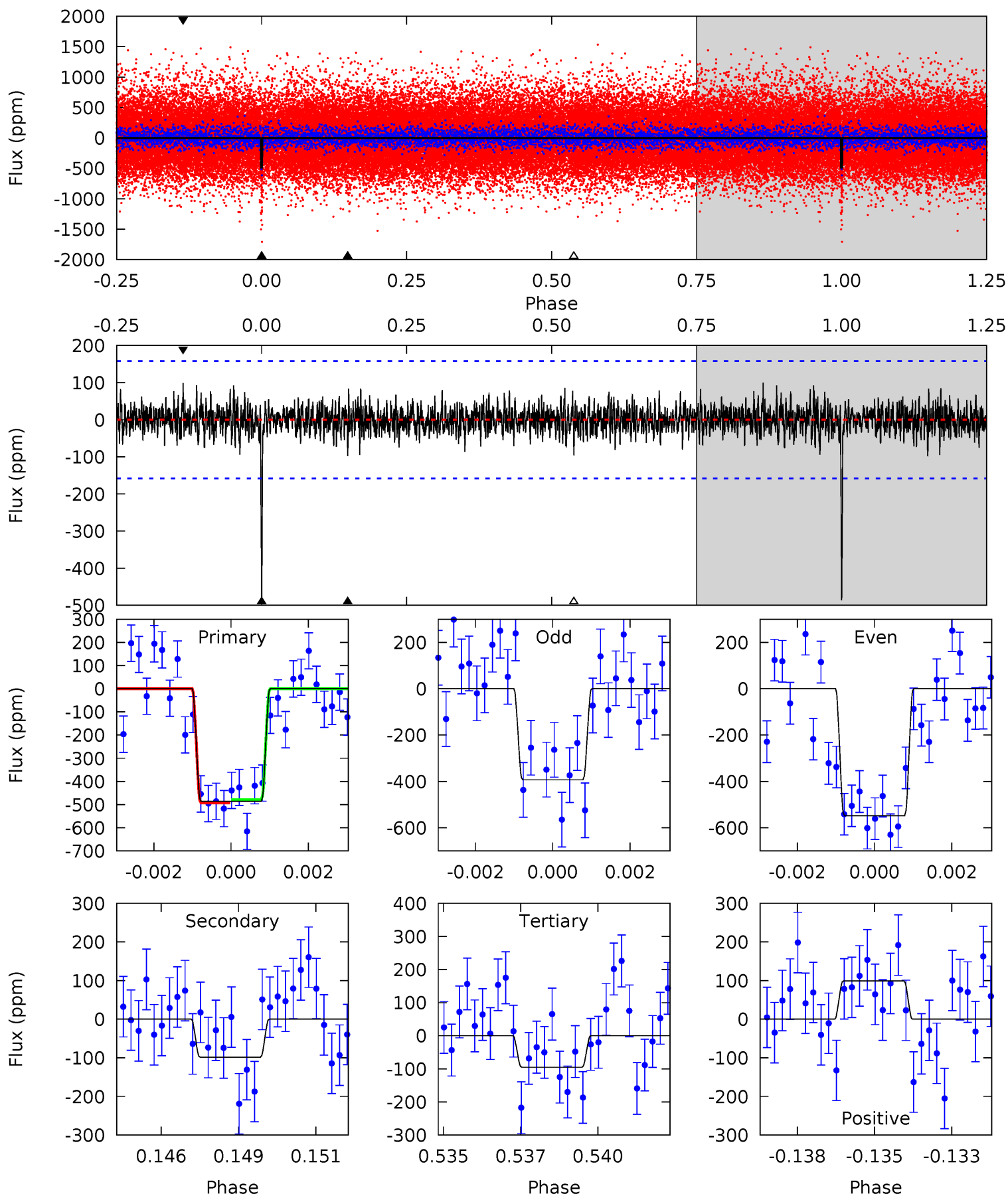
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.7	4.93	4.60	5.02	5.28	3.02	1.50	10.1	9.67	0.34	-0.08	0.55	1.02	0.25	0.21



# Alt Model-Shift Uniqueness Test

008120820-01, P = 129.218234 Days, E = 125.985430 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
16.3	3.30	3.19	3.33	5.31	3.06	0.91	13.1	13.0	0.11	-0.02	2.54	0.96	0.17	0.23



### Stellar Parameters For KIC 008120820

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4934^{+81}_{-81}$	$4.515^{+0.067}_{-0.022}$	$0.140^{+0.150}_{-0.150}$	$0.809^{+0.031}_{-0.054}$	$0.781^{+0.055}_{-0.025}$	$2.076^{+0.487}_{-0.193}$
	+2%/-2%	+1%/-0%	+107%/-107%	+4%/-7%	+7%/-3%	+23%/-9%
Source	SPE90	SPE90	SPE90	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008120820-01 / KOI 6971.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-145 \pm 29$	$2.14^{+0.32}_{-0.31}$	$400^{+9}_{-9}$	$3782^{+244}_{-216}$	$3754^{+1527}_{-1159}$
Alt.	$-98 \pm 30$	$1.94^{+0.33}_{-0.32}$	$400^{+8}_{-9}$	$3659^{+294}_{-267}$	$3053^{+1822}_{-1141}$

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

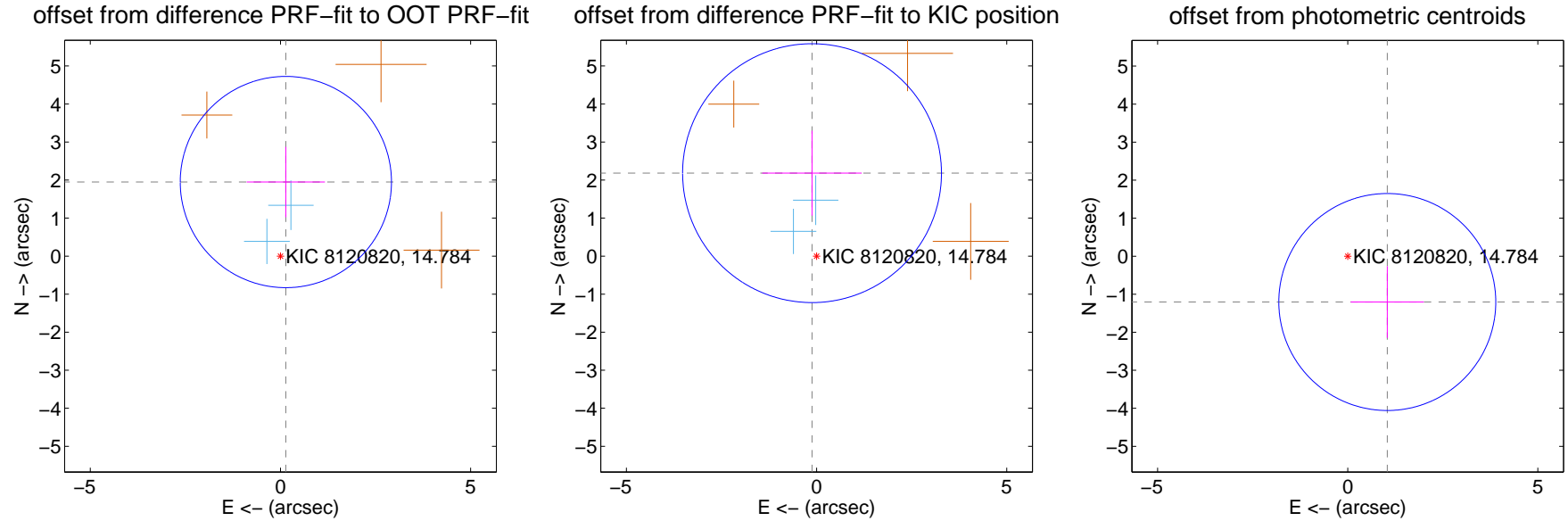
## DV Centroid Data

Supplemental centroid analysis for 008120820-01. Kepler magnitude: 14.78. Transit SNR 9.32

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.953 \pm 0.926$	2.11	$-0.142 \pm 1.029$	$1.948 \pm 0.925$
PRF-fit source offset from KIC position	$2.185 \pm 1.134$	1.93	$0.120 \pm 1.307$	$2.182 \pm 1.116$
photometric centroid source offset	$1.59 \pm 0.95$	1.67	$-1.04 \pm 0.96$	$-1.20 \pm 0.94$



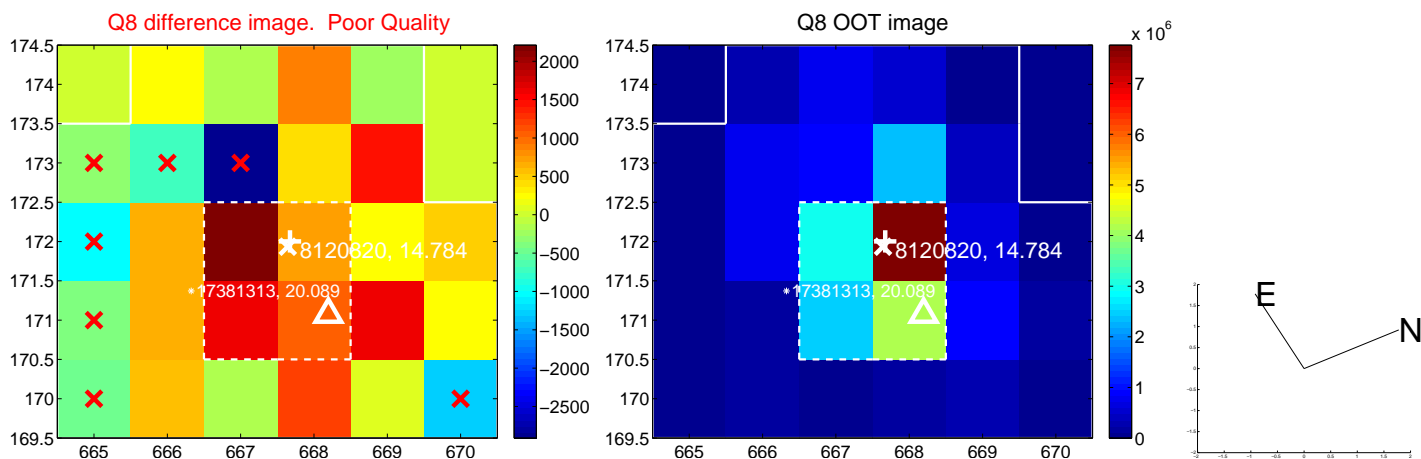
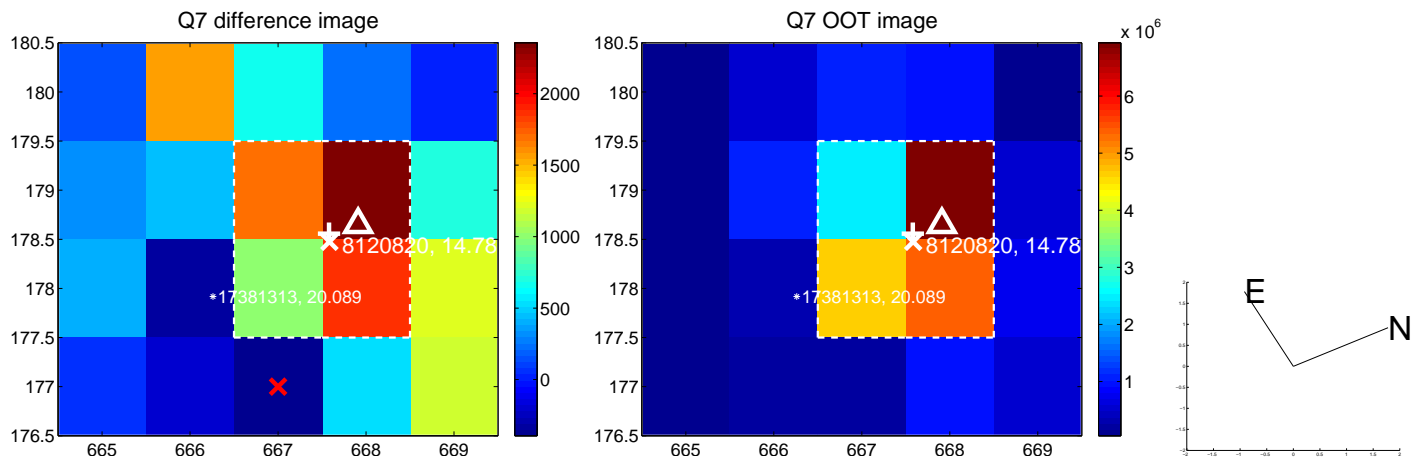
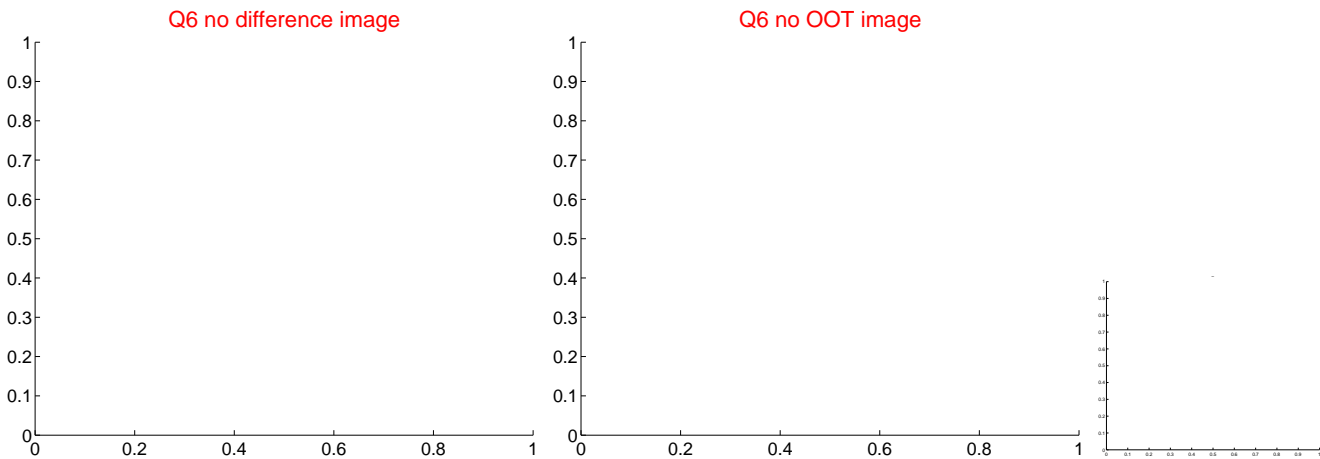
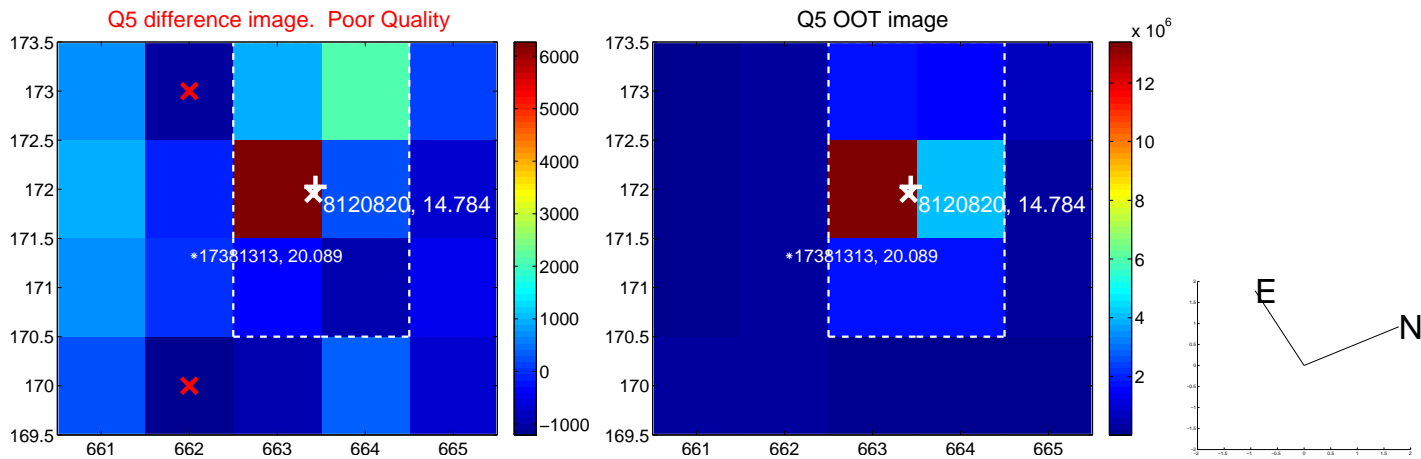
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



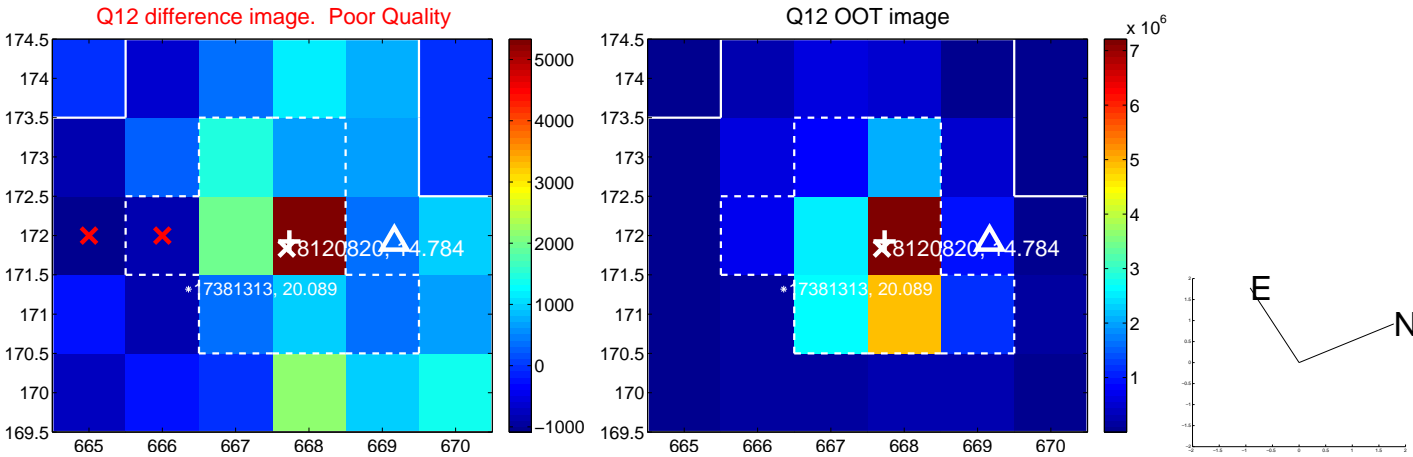
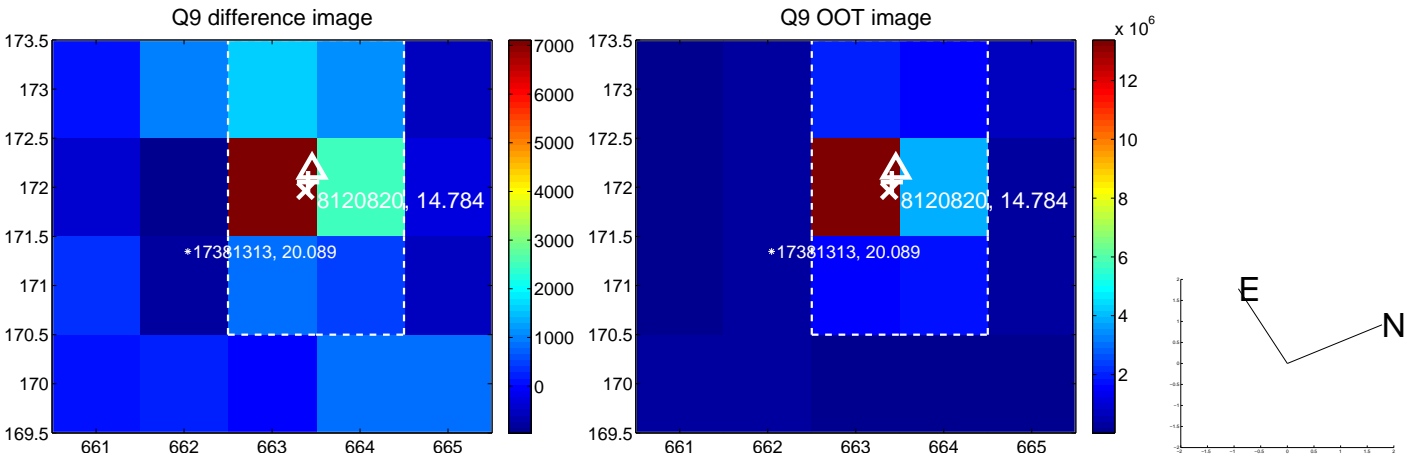
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



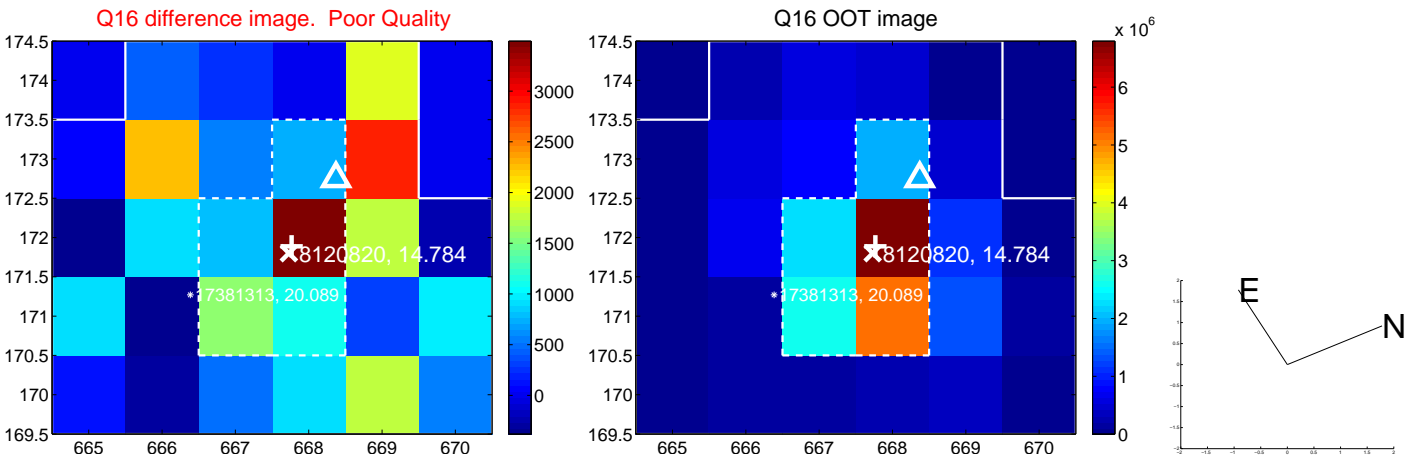
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



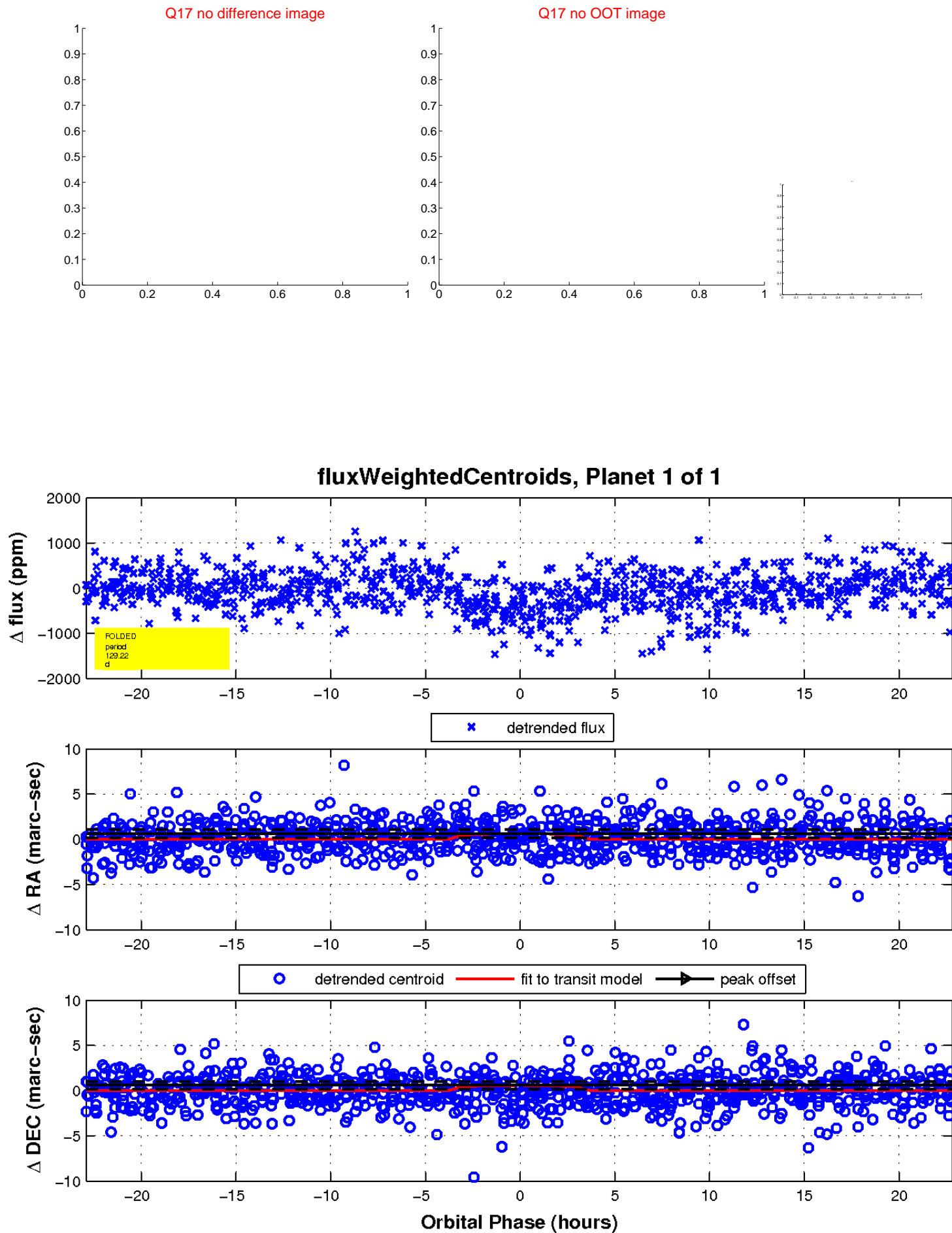
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

