

# KIC 004043008

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004043008-01	OBS	No	516.777777	159.580958	1105.7	5.699	7.7	5.5	10.22	4799	63.01	20.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004043008-01	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS

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

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

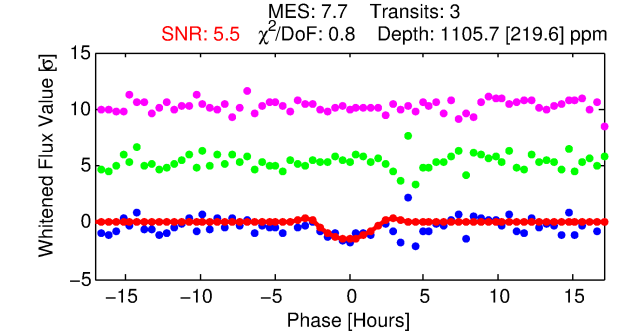
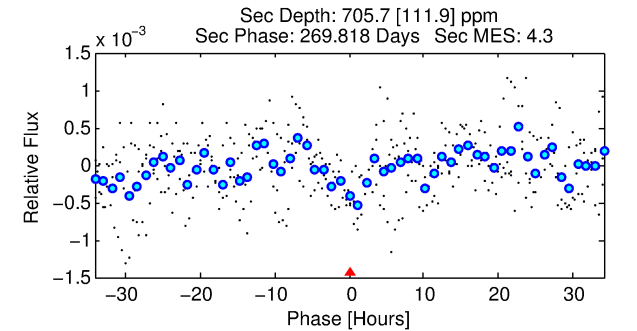
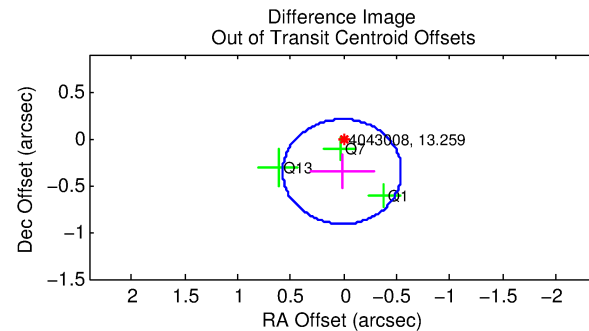
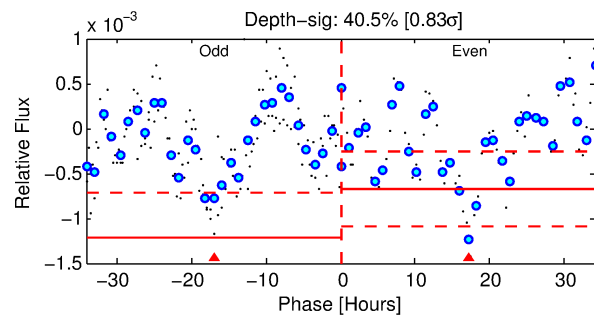
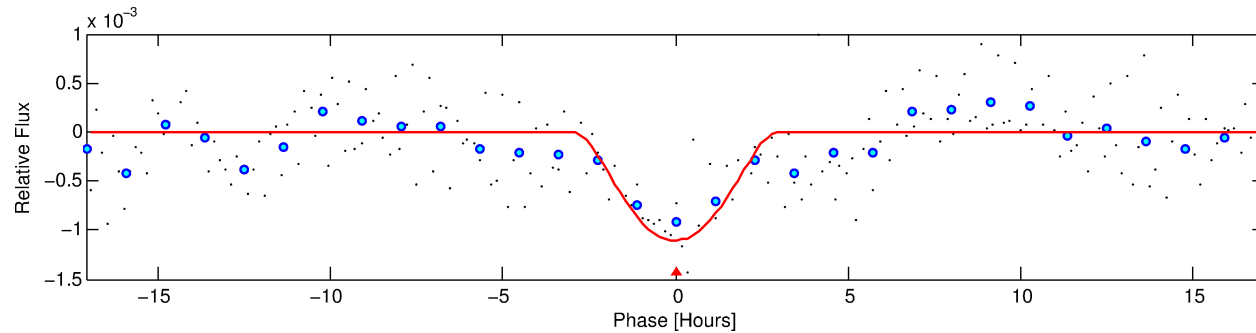
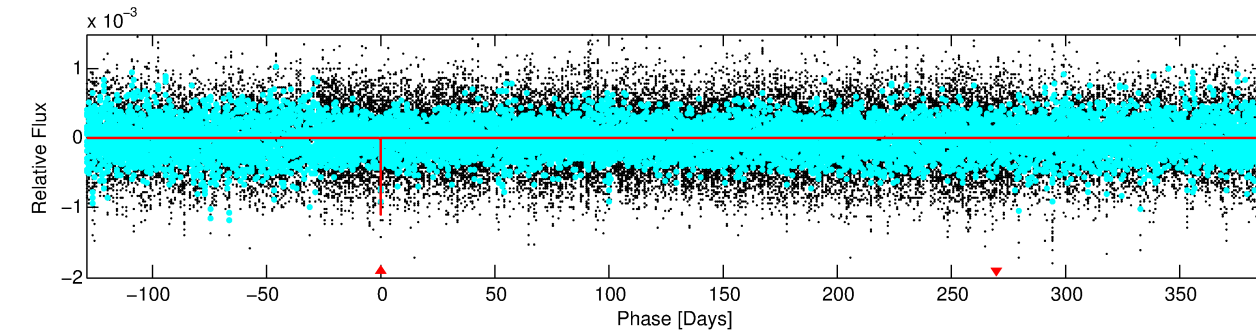
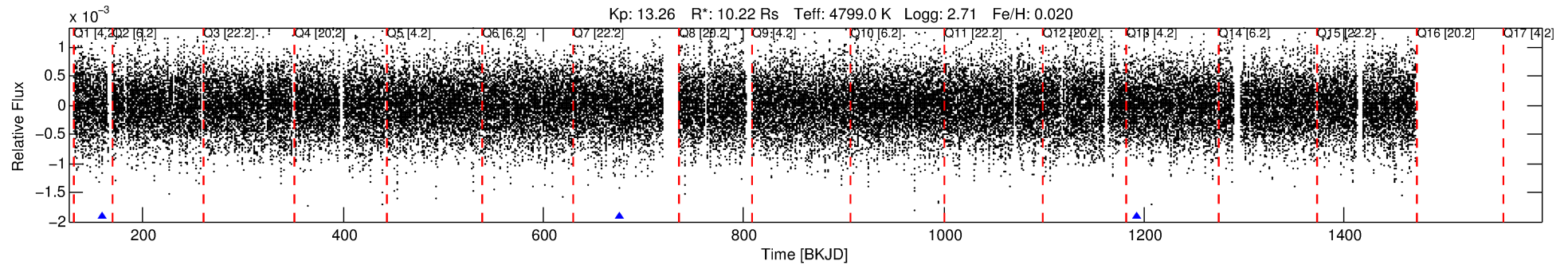
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004043008-01

No Significant Match Found

# DV One-Page Summary

KIC: 4043008 Candidate: 1 of 1 Period: 516.778 d



## DV Fit Results:

Period = 516.77778 [0.01161] d  
Epoch = 159.5810 [0.0153] BKJD  
Rp/R\* = 0.0565 [0.1244]  
a/R\* = 253.70 [140.82]  
b = 0.99 [0.19]  
Seff = 20.04 [3.22]  
Teq = 540 [22] K  
Rp = 63.01 [139.31] Re  
a = 1.5733 [0.2126] AU  
Ag = 242.08 [1067.38] [0.23 $\sigma$ ]  
Teffp = 3290 [3626] K [0.76 $\sigma$ ]

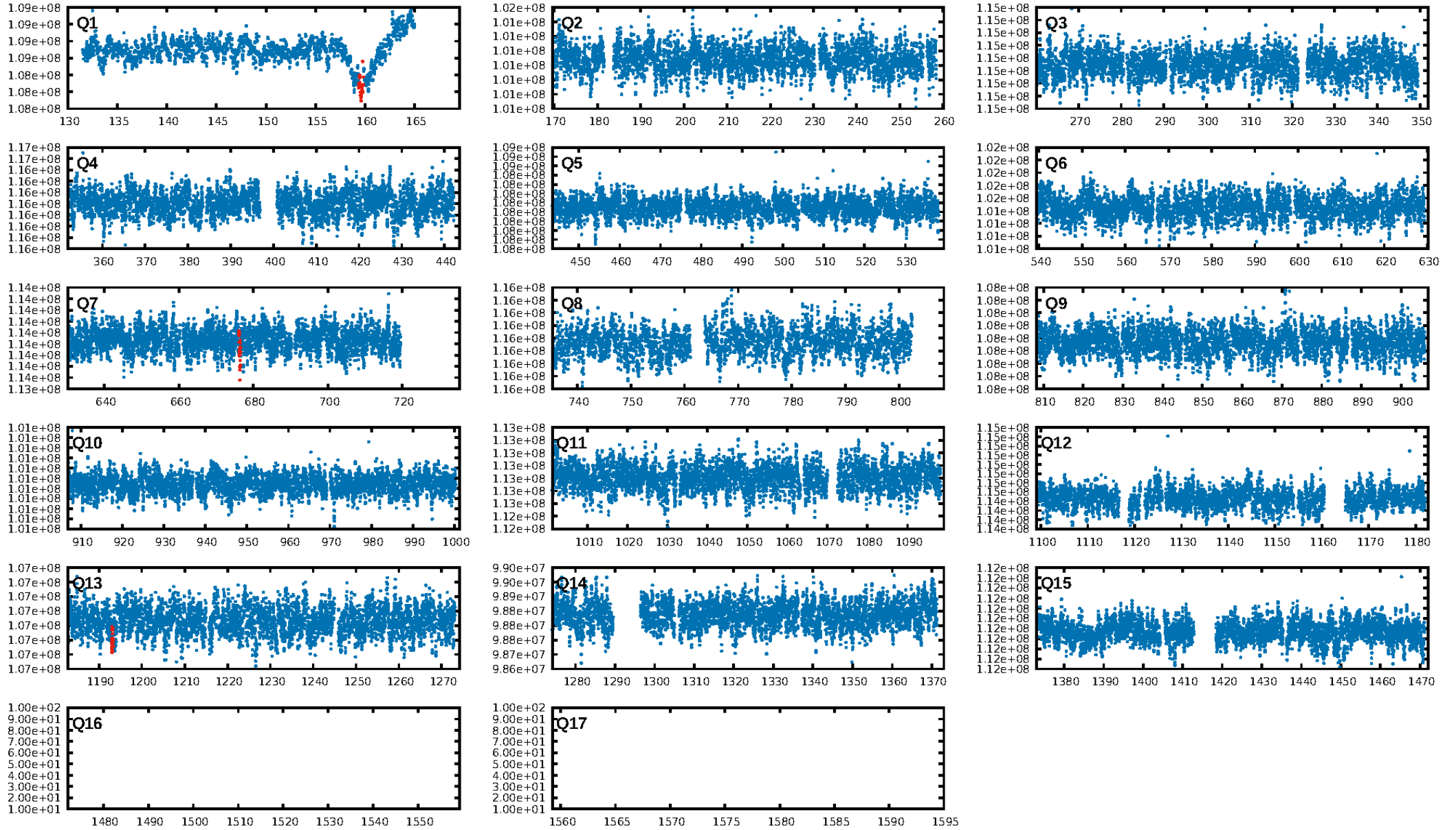
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 59.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.45e-09  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 1.957  
Centroid-sig: 37.8%  
Centroid-so: 0.395 arcsec [0.89 $\sigma$ ]  
OotOffset-rm: 0.354 arcsec [1.90 $\sigma$ ]  
KicOffset-rm: 0.396 arcsec [2.31 $\sigma$ ]  
OotOffset-st: 0/1/0/2 [3]  
KicOffset-st: 0/1/0/2 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

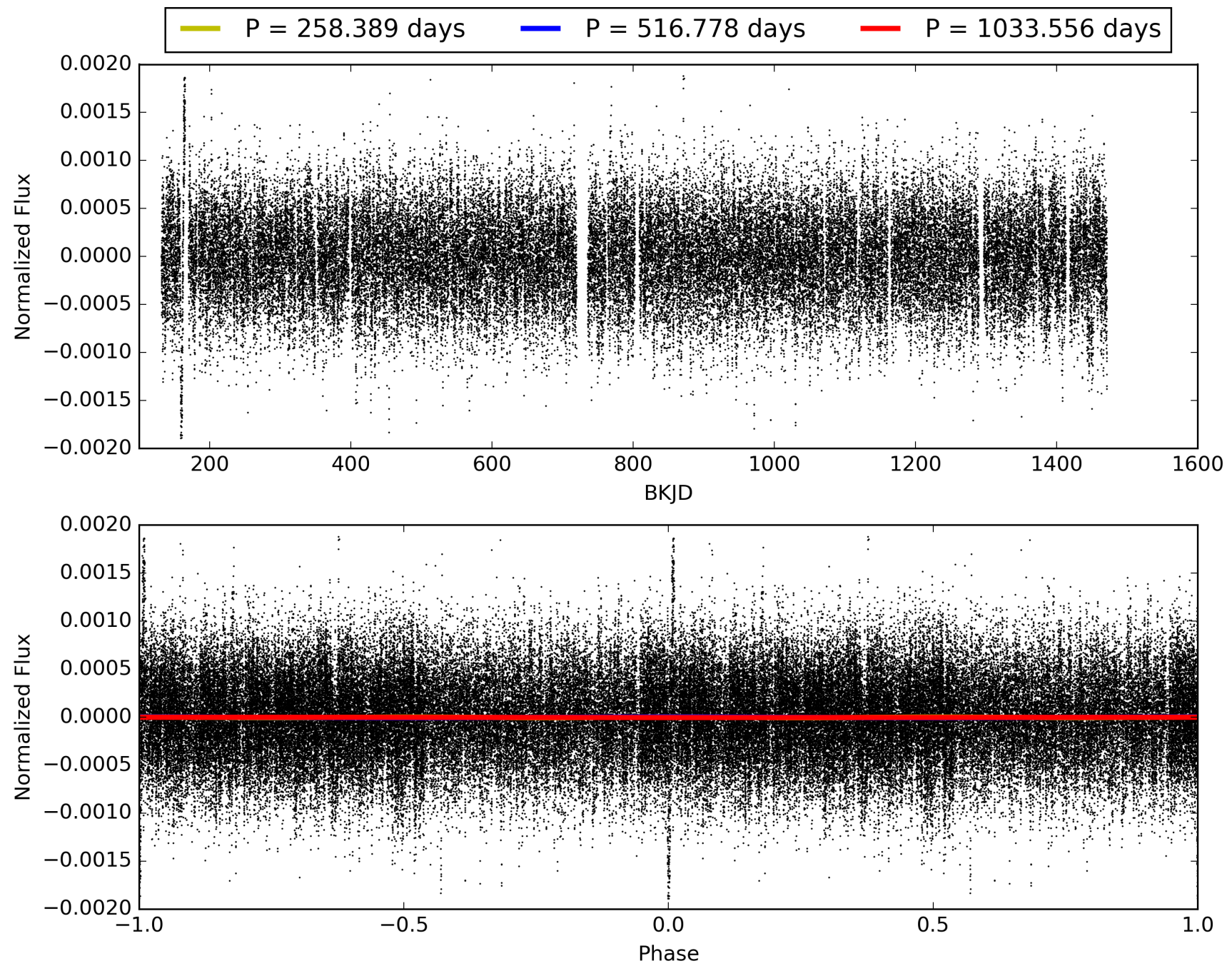
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:05:08 Z

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

# TCE 004043008-01, PDC Light Curves

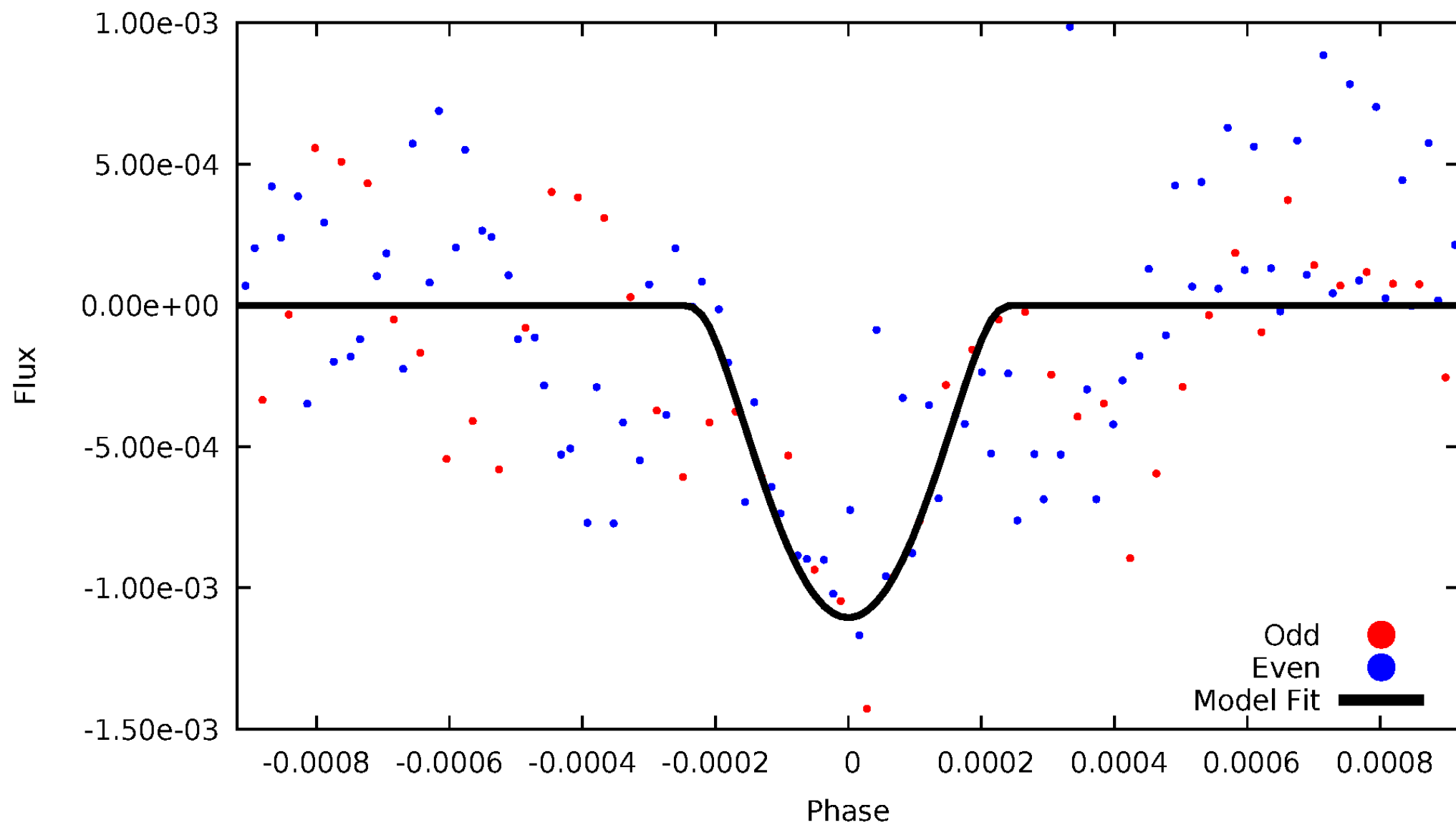


TCE 004043008-01



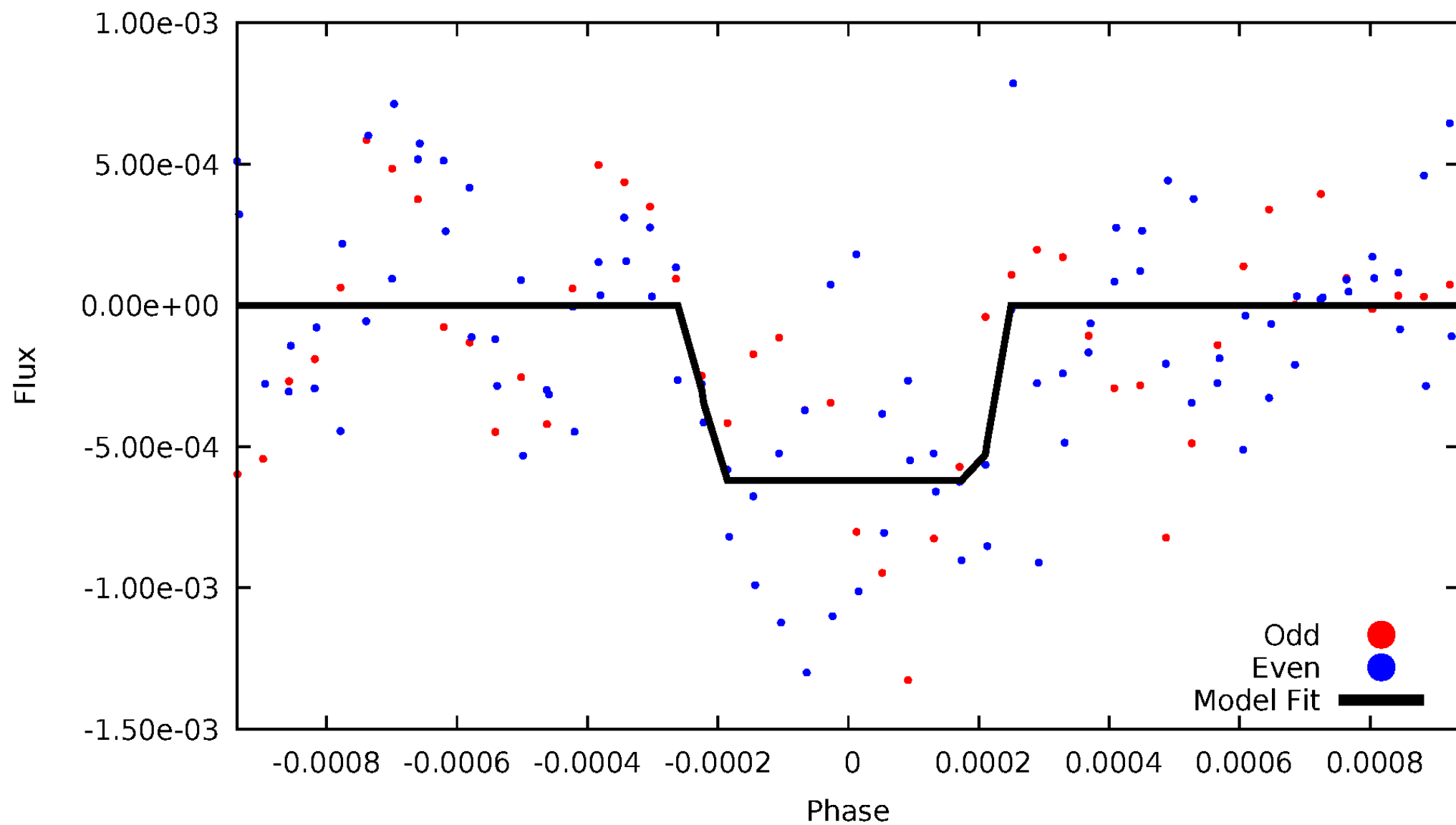
# DV Odd/Even

TCE 004043008-01



# ALT Odd/Even

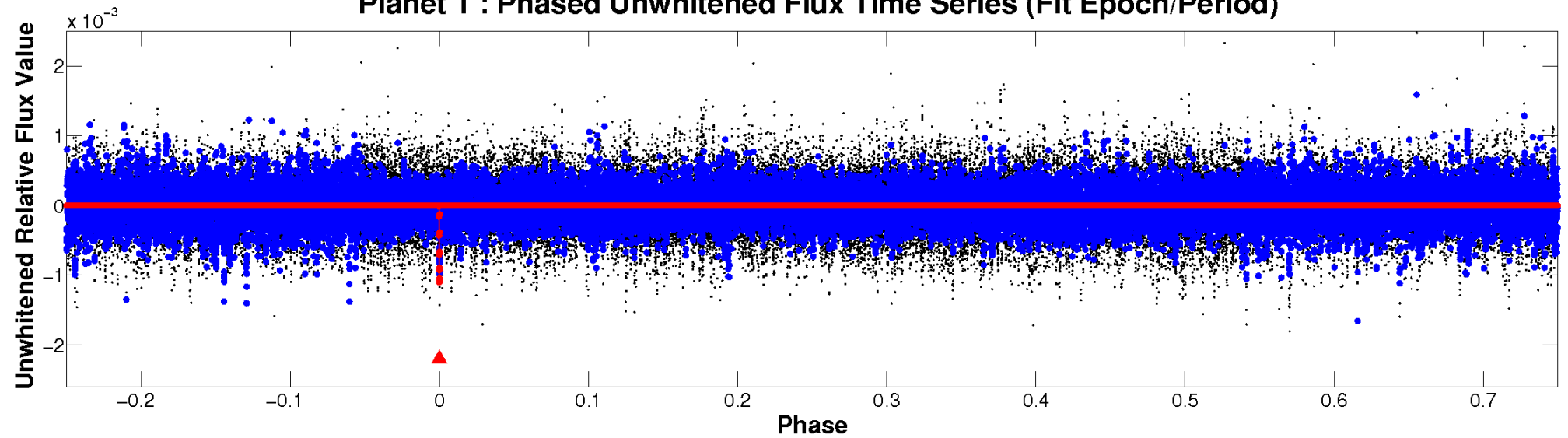
TCE 004043008-01



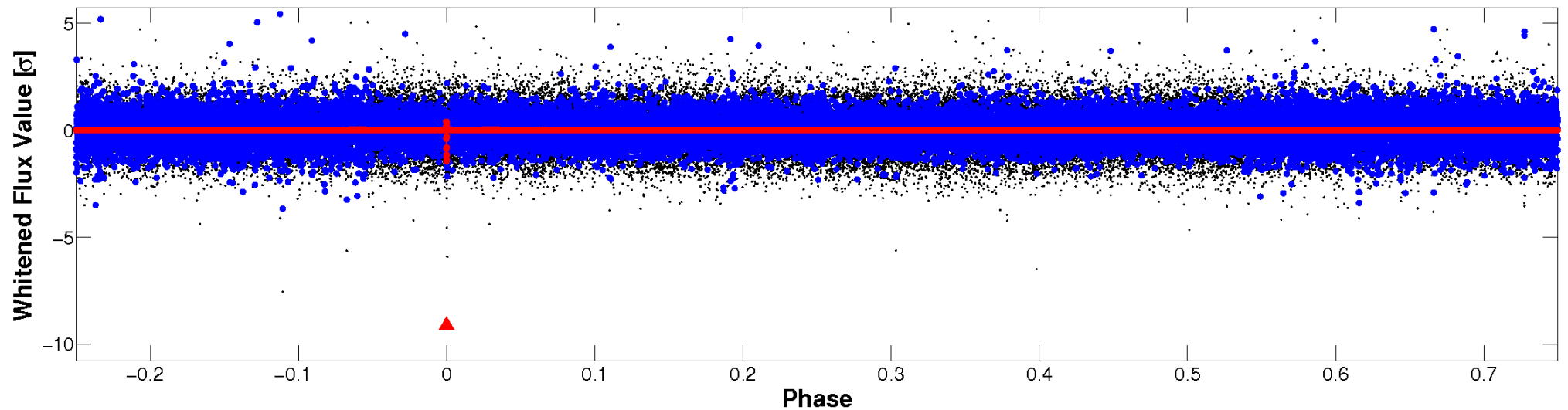


# Non-Whitened Vs. Whitened Light Curve

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

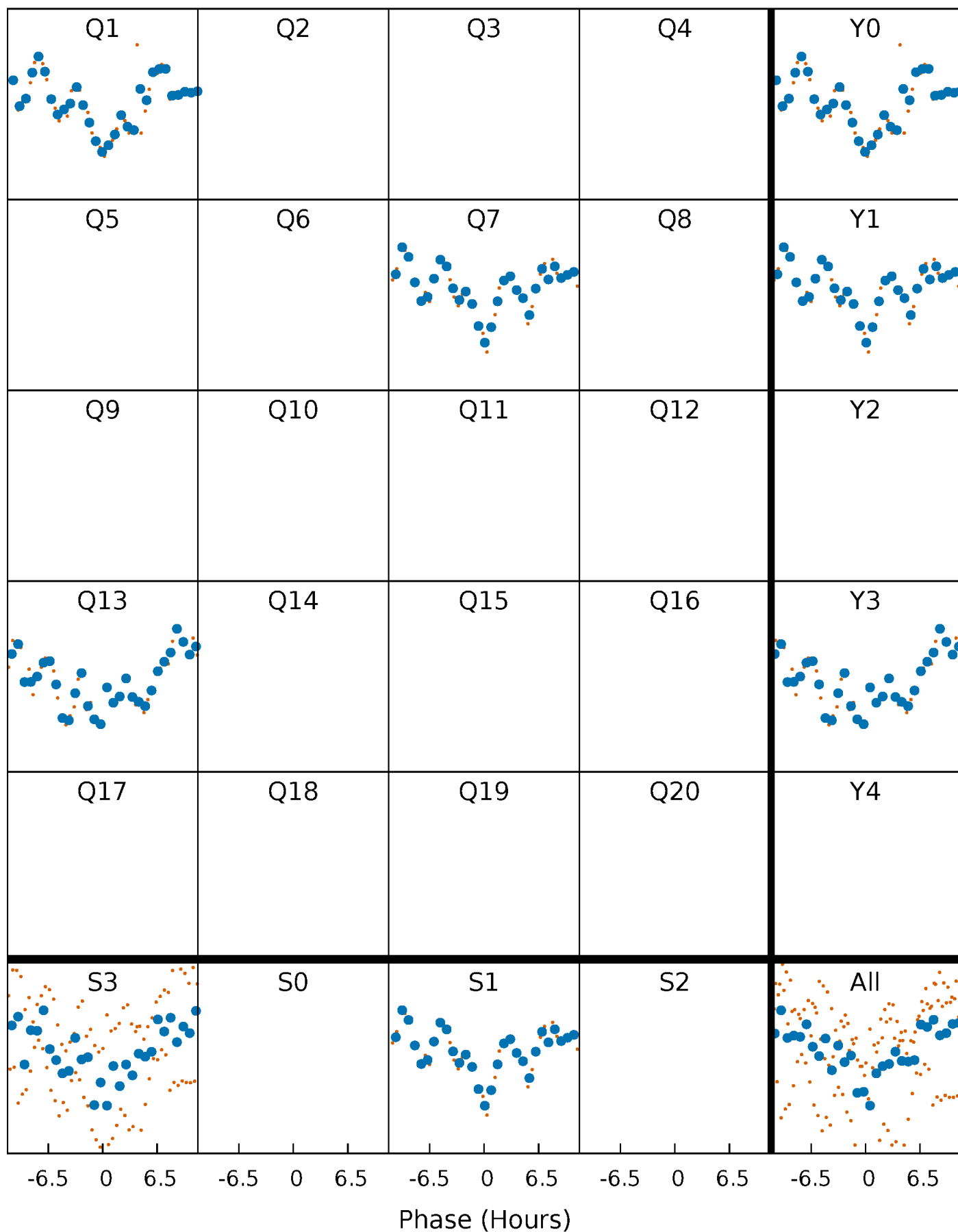


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

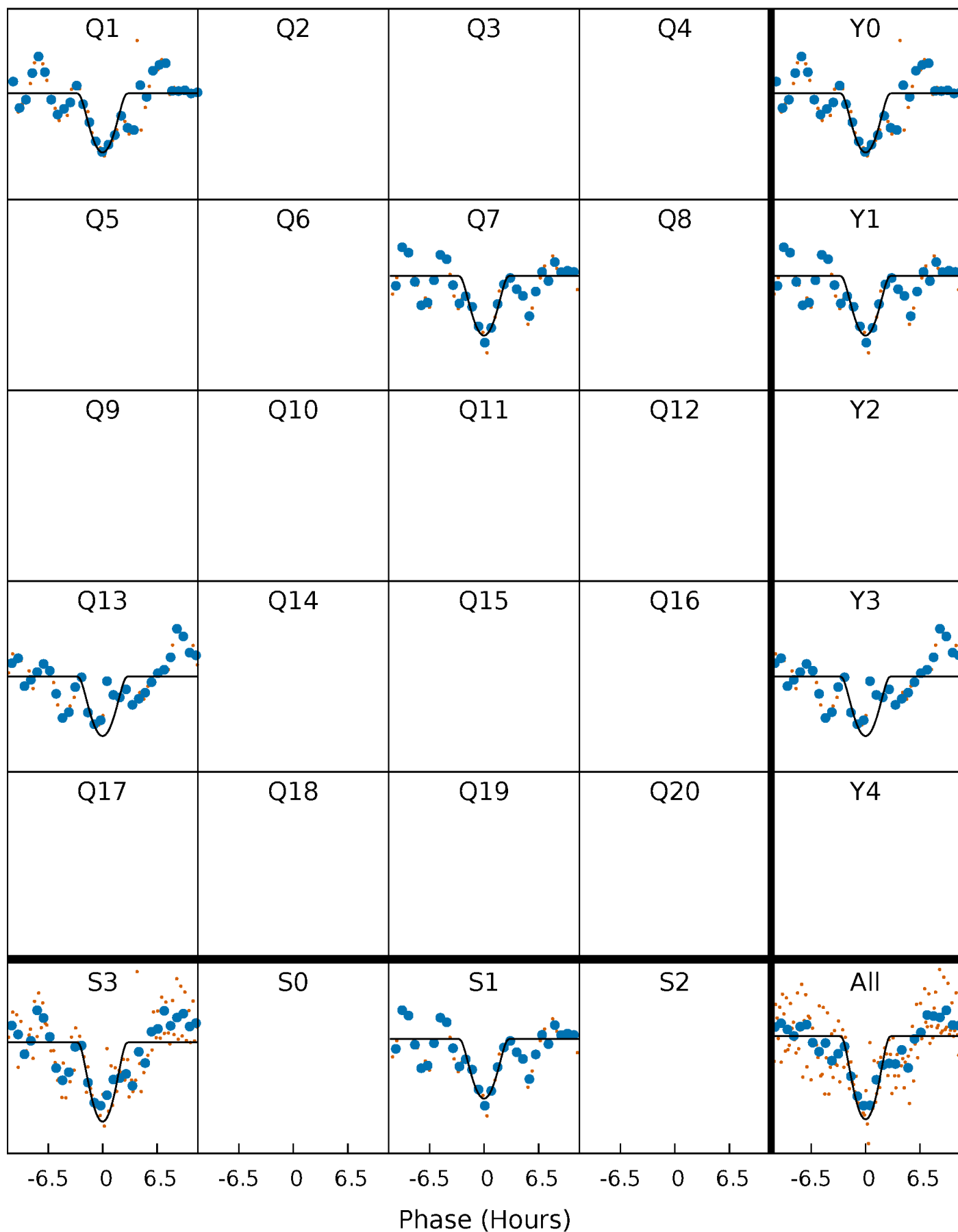
TCE 004043008-01 P=516.777777 Days  $T_0=159.580958$  (BKJD)





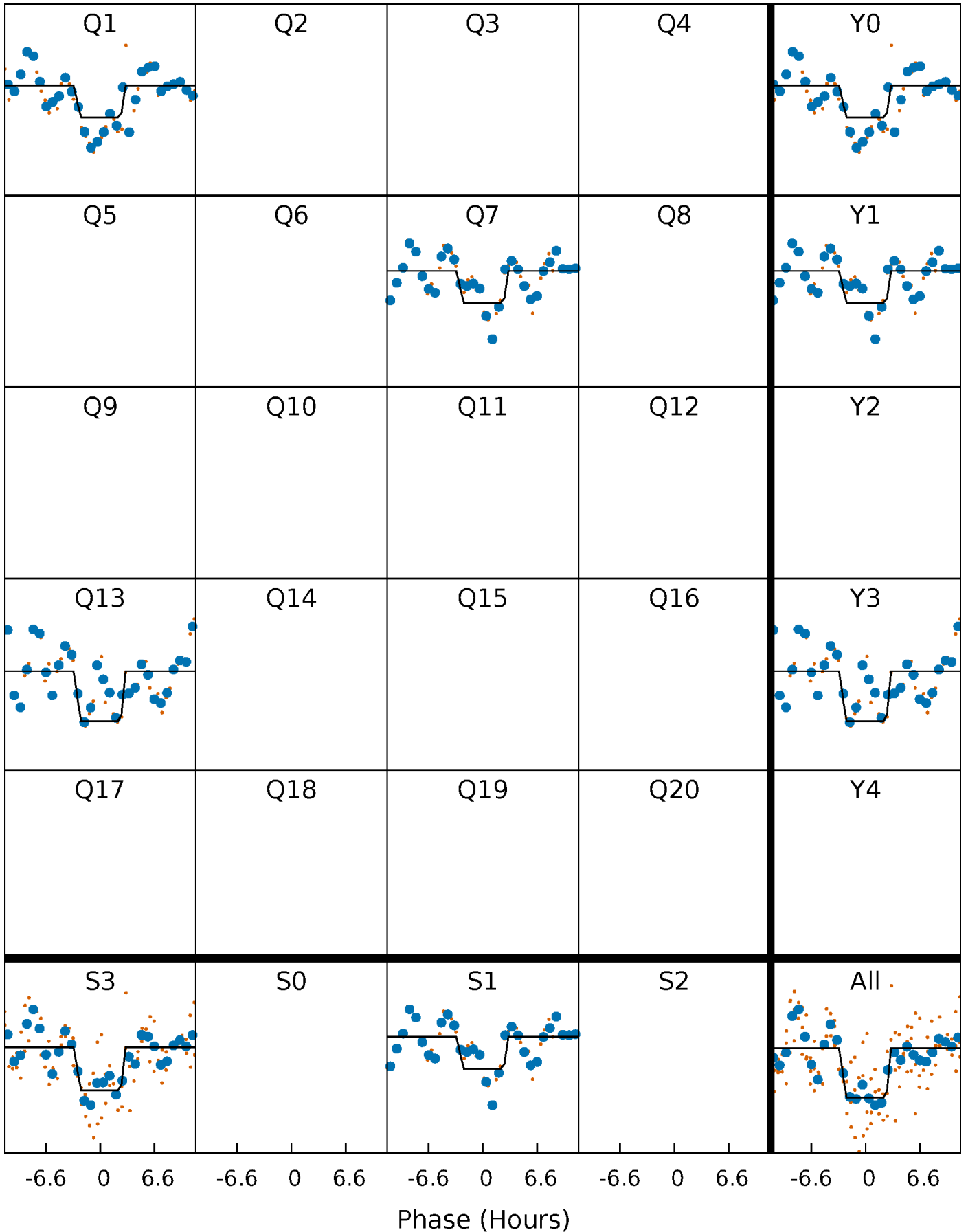
# DV Quarter-Phased Transit Curves

TCE 004043008-01 P=516.777777 Days  $T_0=159.580958$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

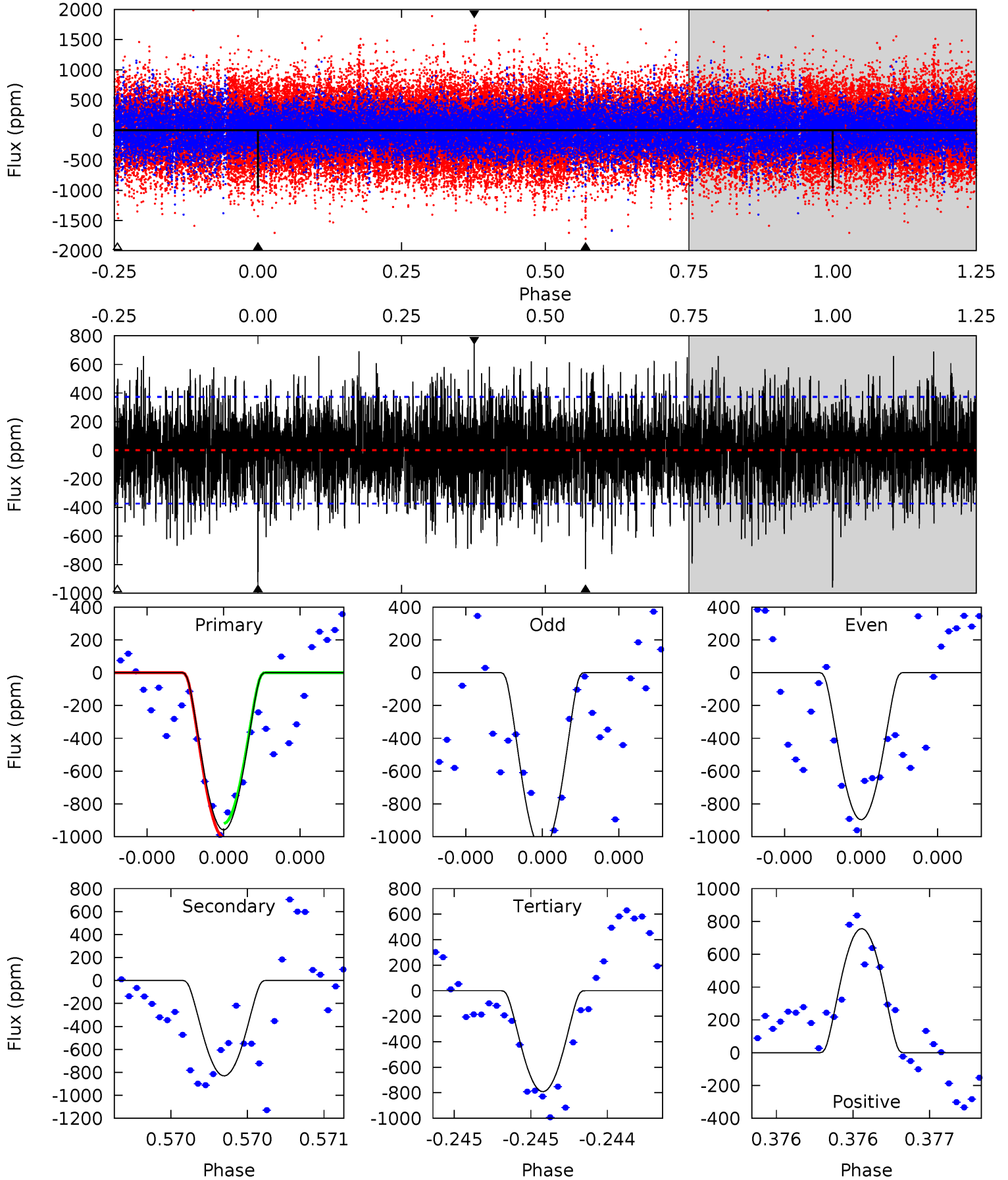
TCE 004043008-01 P=516.703432 Days  $T_0=159.622621$  (BKJD)



# DV Model-Shift Uniqueness Test

004043008-01, P = 516.777777 Days, E = 159.580958 Days

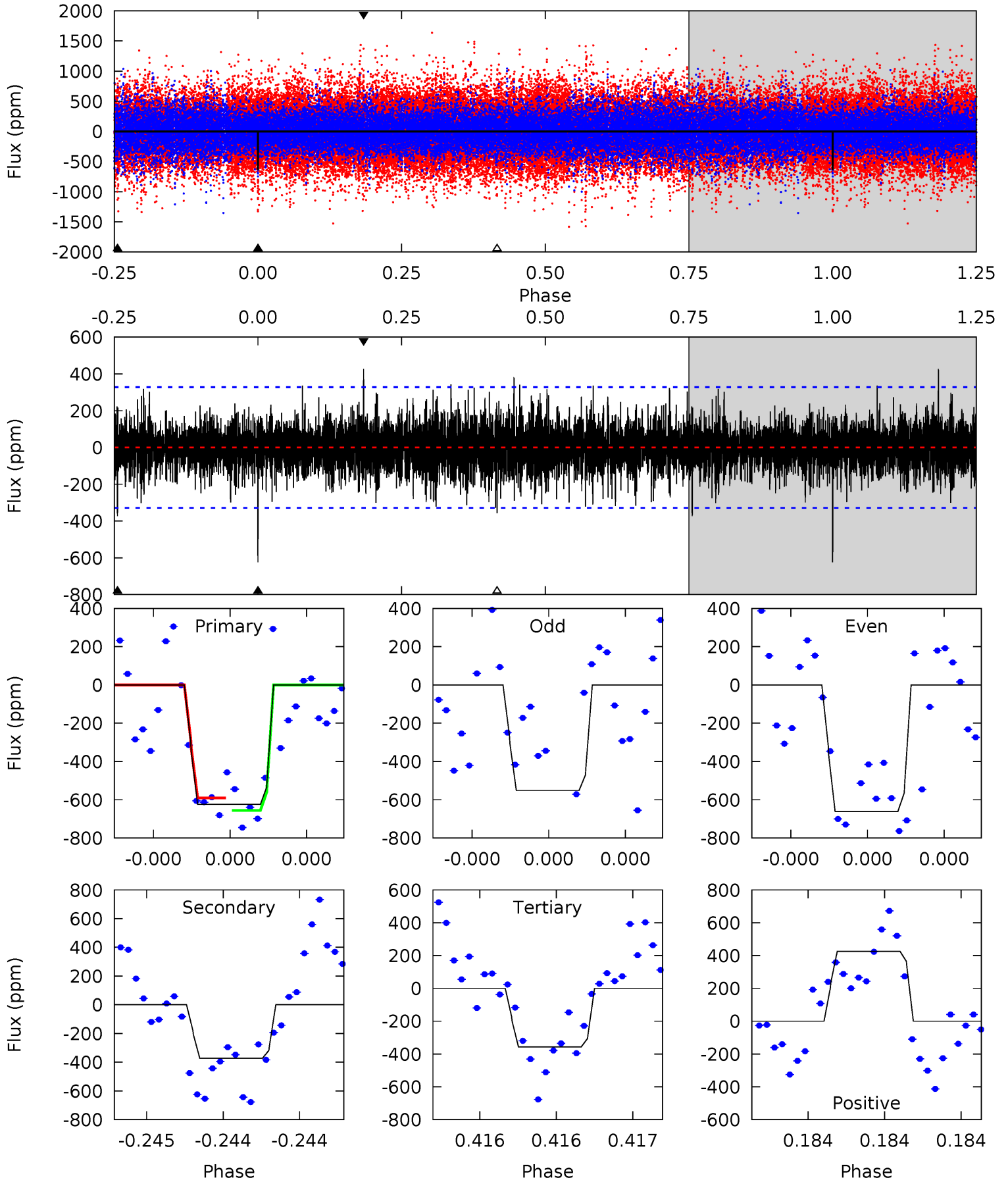
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	12.5	11.9	11.3	5.59	3.50	3.12	2.51	3.04	0.59	1.12	1.30	0.89	0.44	0.58



# Alt Model-Shift Uniqueness Test

004043008-01, P = 516.703432 Days, E = 159.622621 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
10.7	6.35	6.09	7.27	5.60	3.52	1.65	4.56	3.38	0.26	-0.92	0.89	1.13	0.41	0.56



### Stellar Parameters For KIC 004043008

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4799^{+42}_{-92}$	$2.708^{+0.030}_{-0.030}$	$0.020^{+0.100}_{-0.200}$	$10.218^{+0.875}_{-2.041}$	$1.944^{+0.659}_{-0.725}$	$0.003^{+0.001}_{-0.000}$
	+1%/-2%	+1%/-1%	+500%/-1000%	+9%/-20%	+34%/-37%	+29%/-11%
Source	SPE74	AST9	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 004043008-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-831 \pm 67$	$115.28^{+120.78}_{-82.03}$	$752^{+17}_{-21}$	$3068^{+1680}_{-516}$	$83^{+979}_{-62}$
Alt.	$-372 \pm 59$	$106.68^{+102.65}_{-73.31}$	$752^{+17}_{-20}$	$2827^{+1215}_{-448}$	$44^{+388}_{-32}$

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

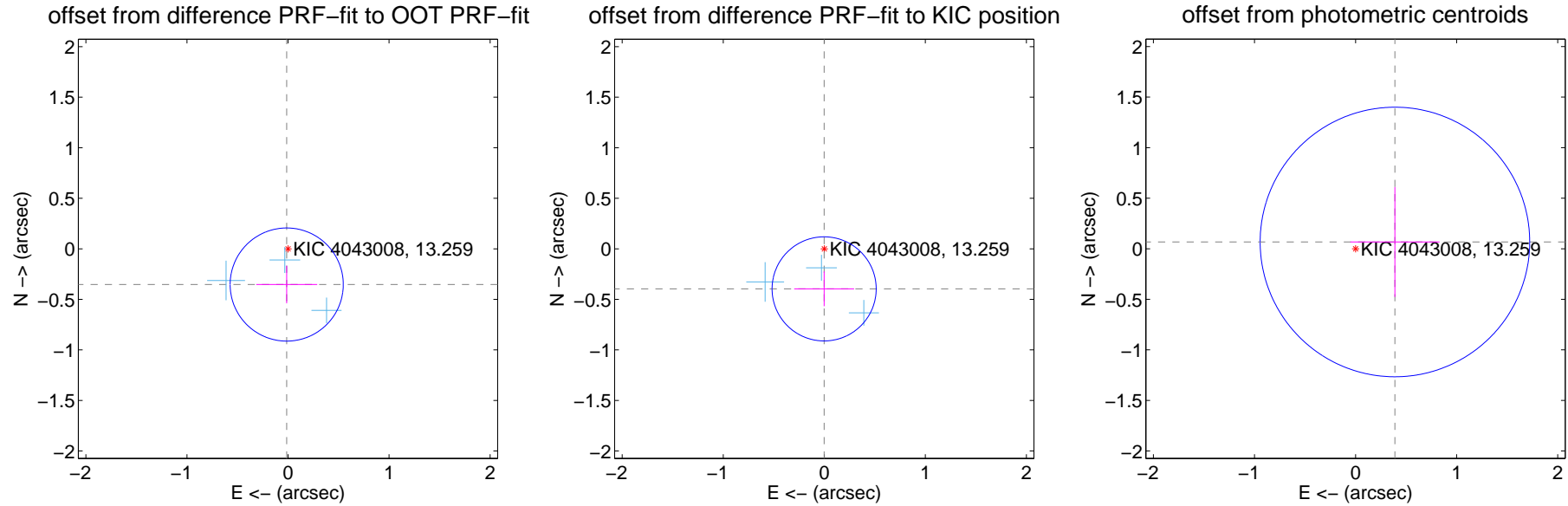
## DV Centroid Data

Supplemental centroid analysis for 004043008-01. Kepler magnitude: 13.26. Transit SNR 5.54

There are 3 quarters with good PRF difference image offsets

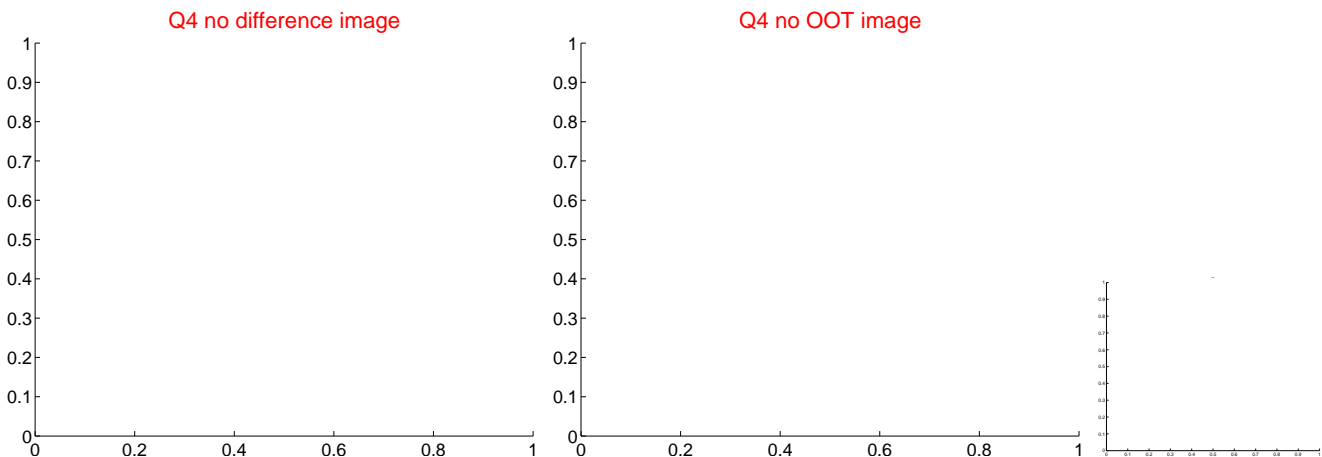
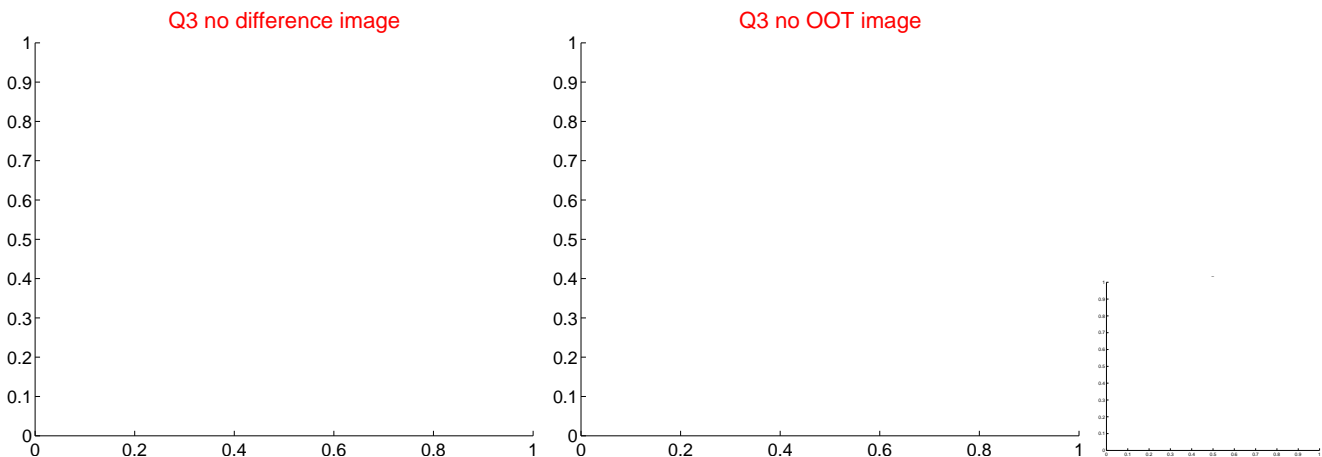
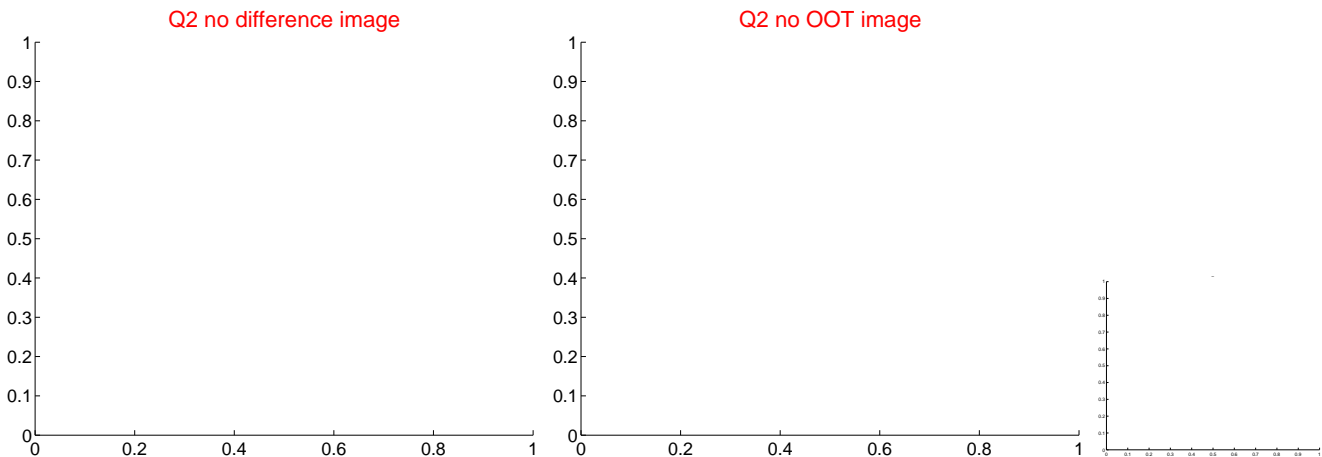
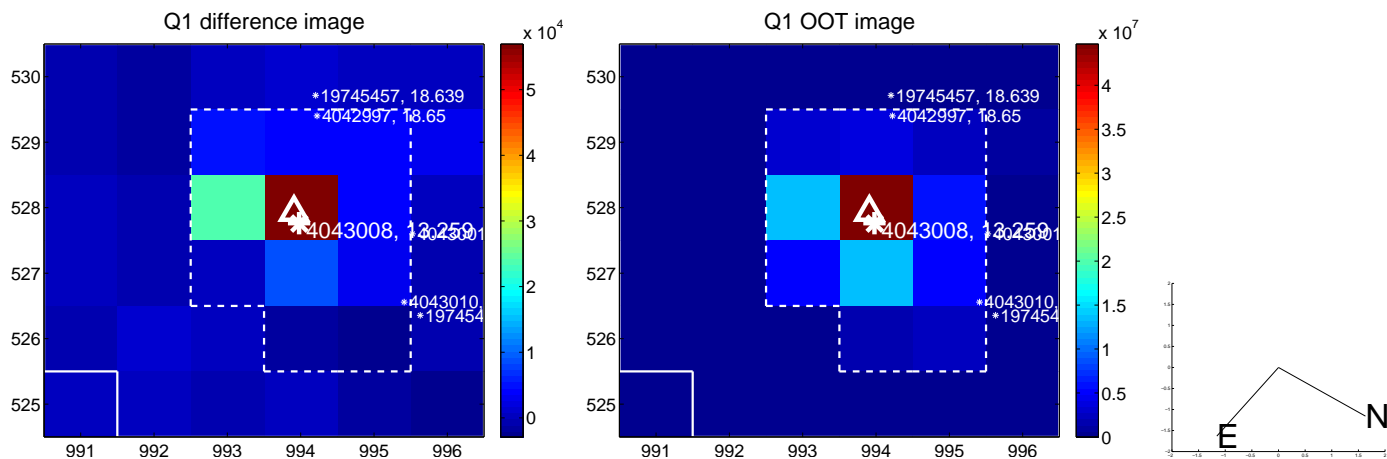
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.354 \pm 0.187$	1.90	$0.013 \pm 0.302$	$-0.353 \pm 0.186$
PRF-fit source offset from KIC position	$0.396 \pm 0.172$	2.31	$0.002 \pm 0.296$	$-0.396 \pm 0.172$
photometric centroid source offset	$0.40 \pm 0.44$	0.89	$-0.39 \pm 0.44$	$0.07 \pm 0.54$



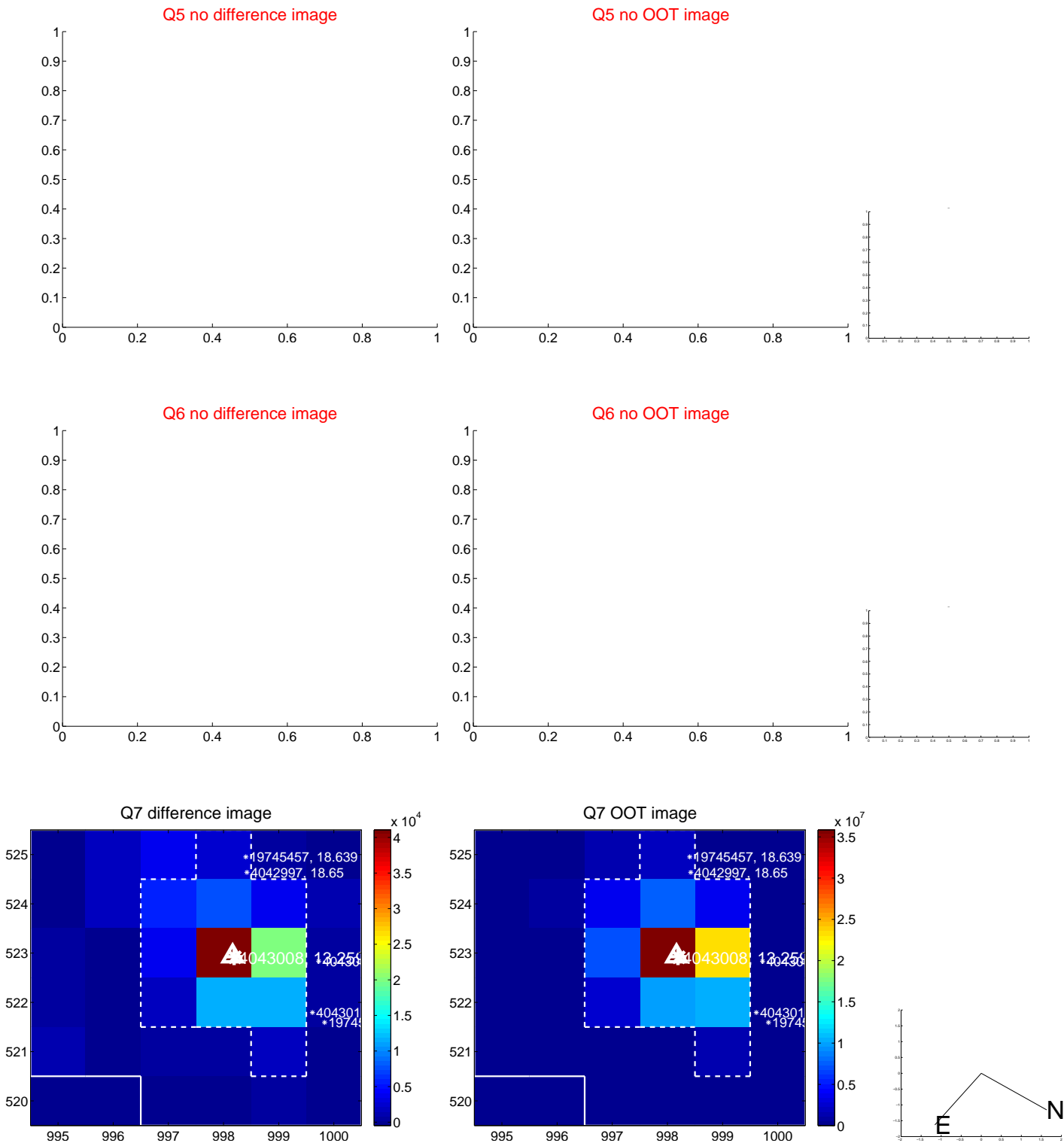
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





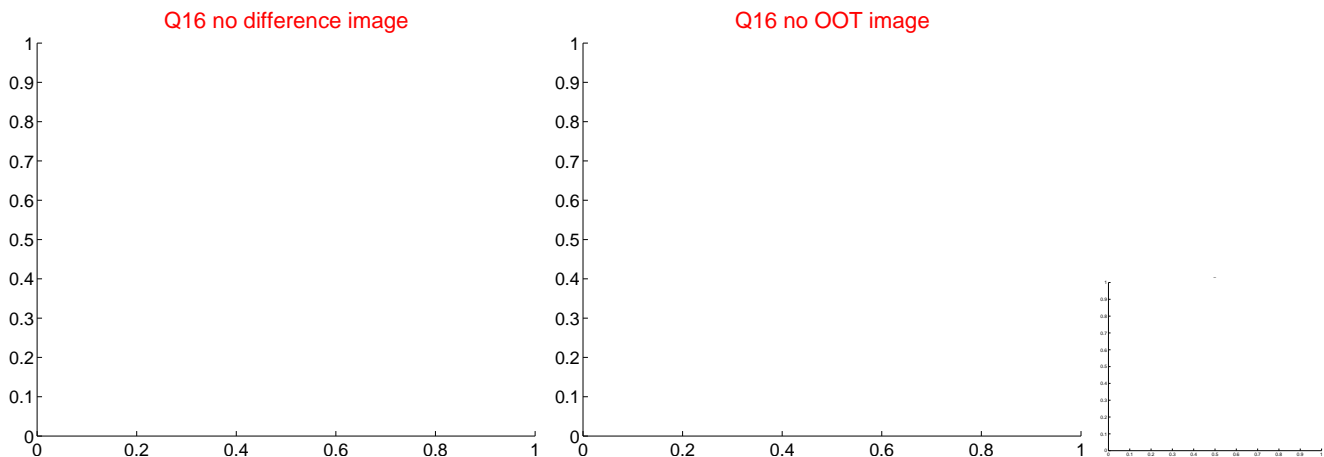
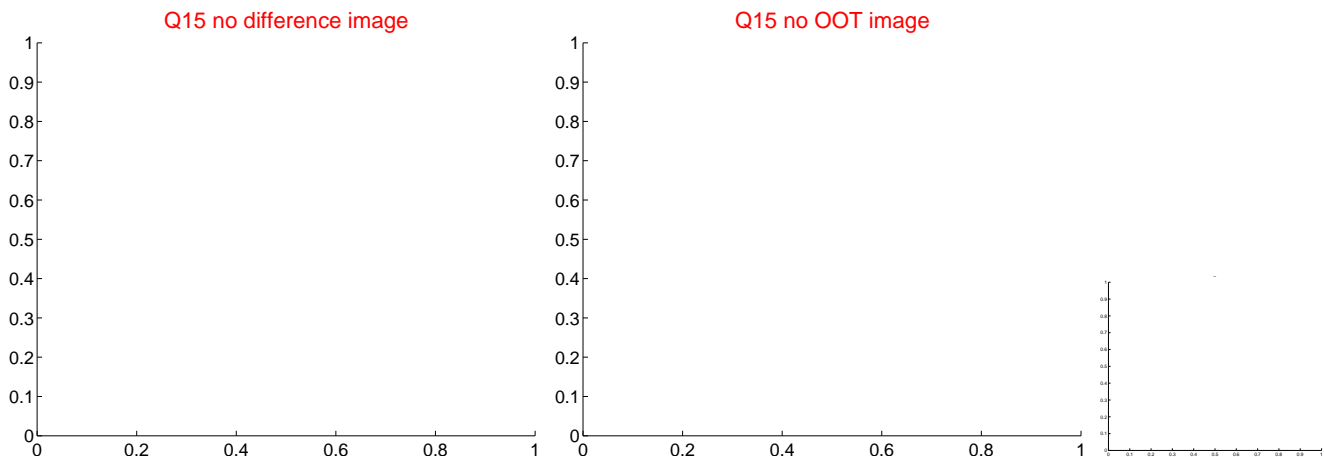
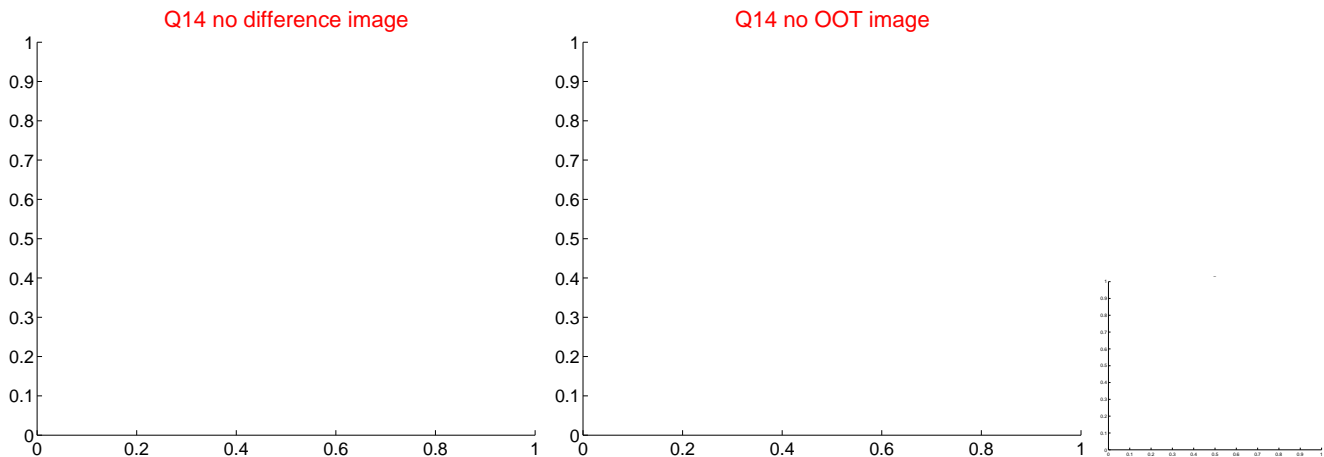
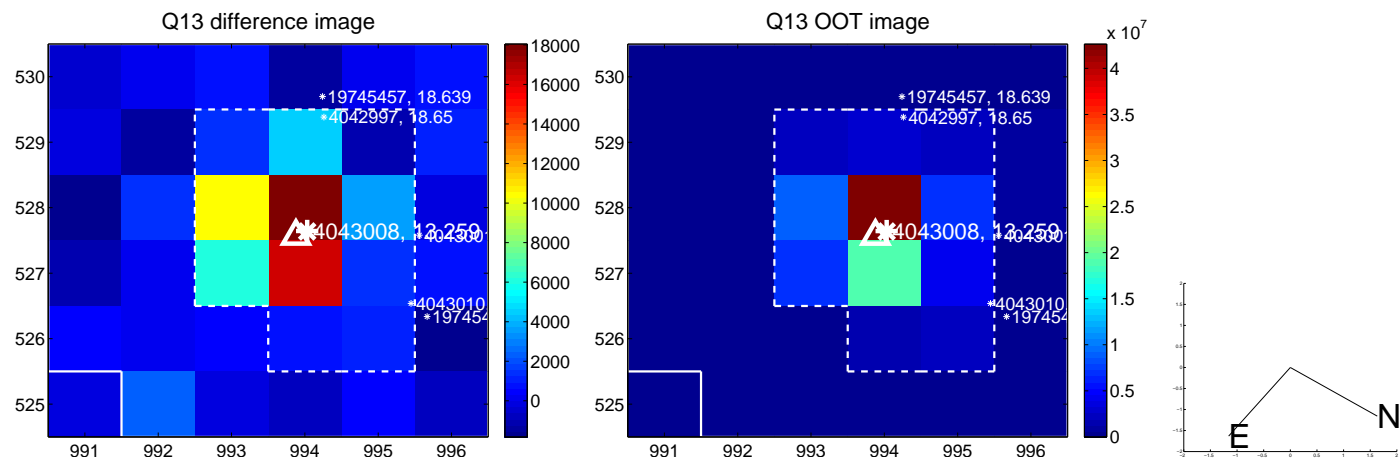
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



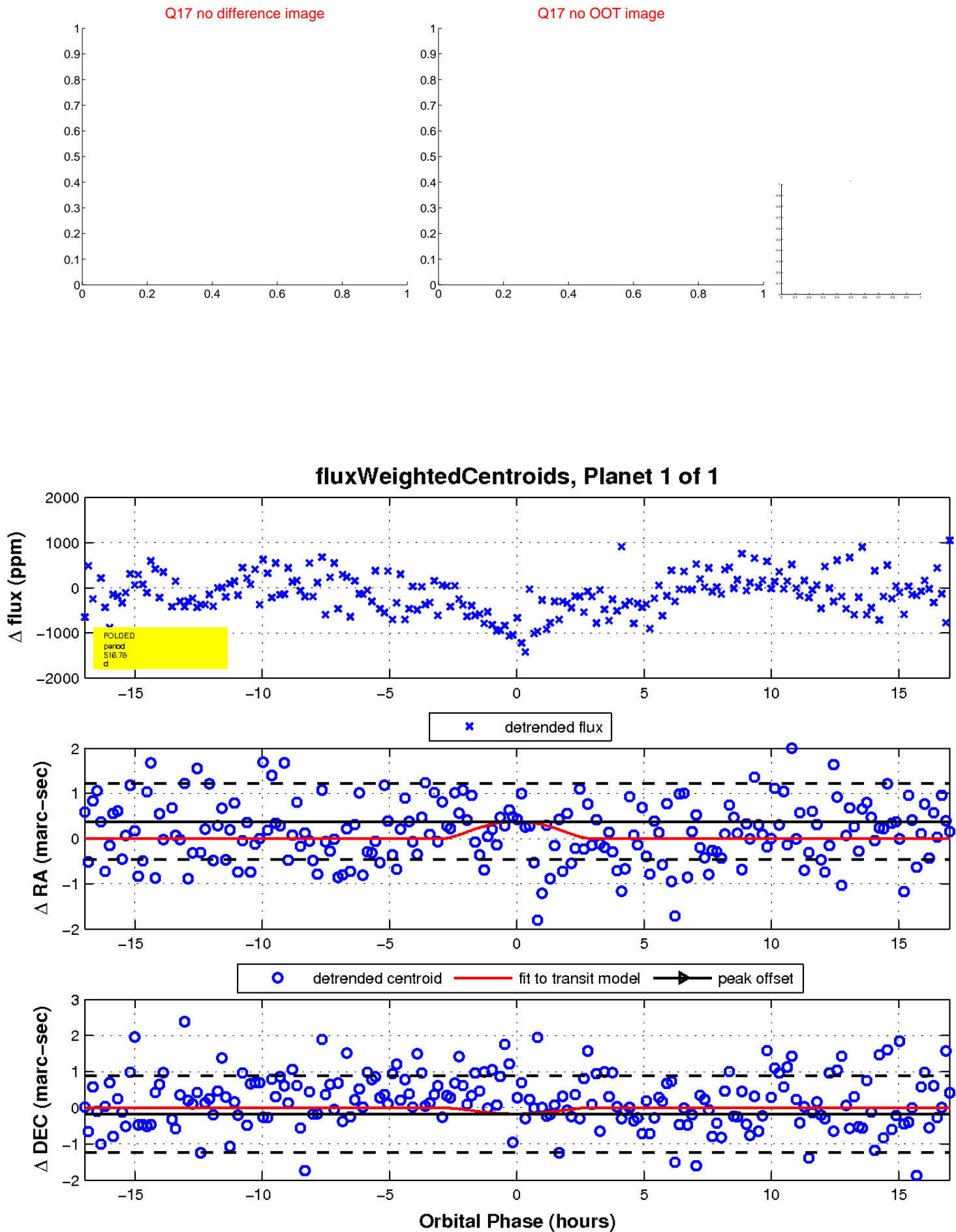
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

Declination

