

# KIC 012556885

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012556885-01	OBS	No	449.209906	333.425634	754.4	8.416	7.8	7.1	0.79	5534	2.35	0.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012556885-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—CENT_FEW_DIFFS

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

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

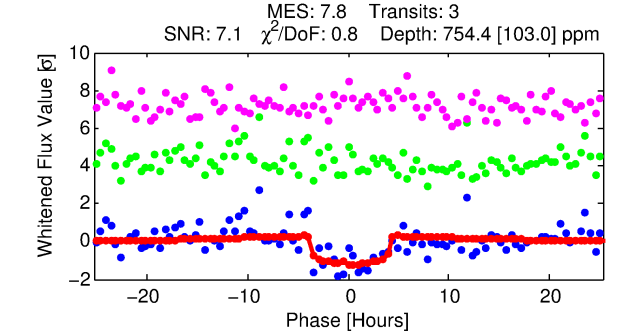
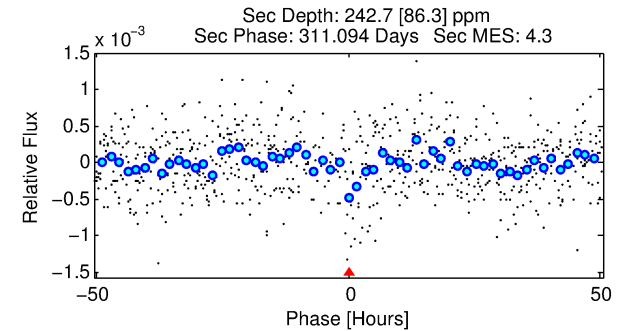
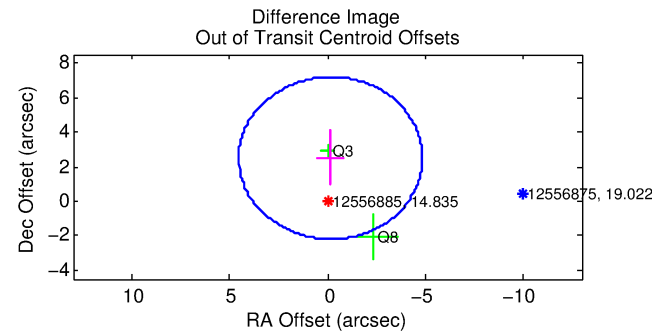
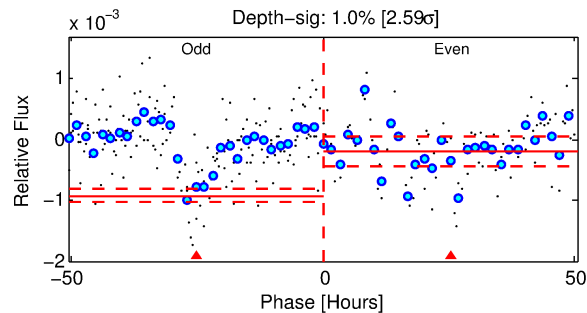
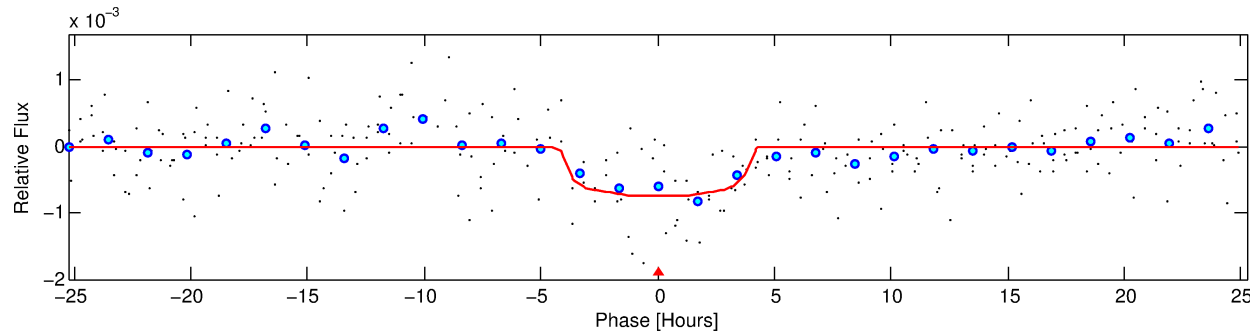
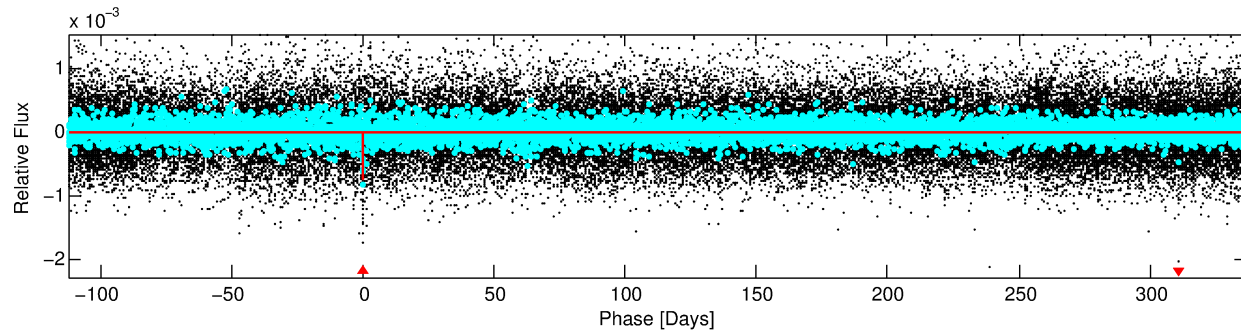
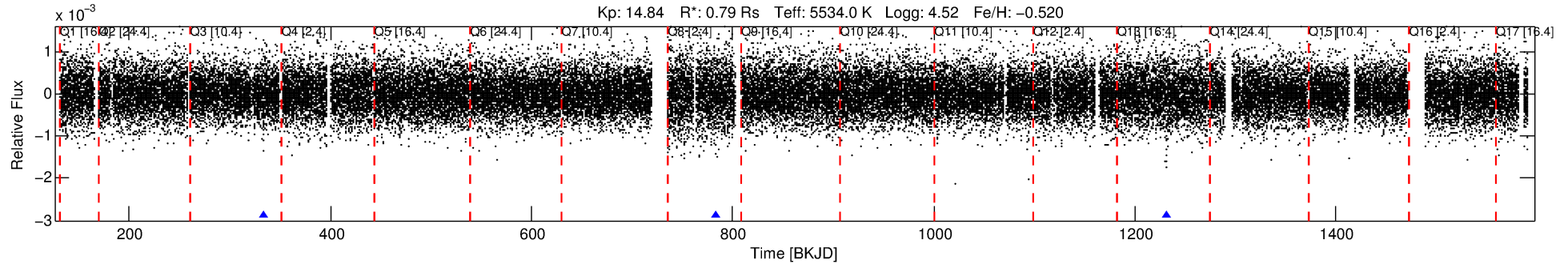
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012556885-01

No Significant Match Found

# DV One-Page Summary

KIC: 12556885 Candidate: 1 of 1 Period: 449.210 d



## DV Fit Results:

Period = 449.20991 [0.01342] d  
Epoch = 333.4256 [0.0135] BKJD  
Rp/R\* = 0.0275 [0.0080]  
a/R\* = 281.28 [348.67]  
b = 0.76 [0.69]  
Seff = 0.48 [0.11]  
Teq = 212 [12] K  
Rp = 2.35 [0.79] Re  
a = 1.0413 [0.1454] AU  
Ag = 26182.49 [18572.70] [1.41 $\sigma$ ]  
Teffp = 4169 [719] K [5.50 $\sigma$ ]

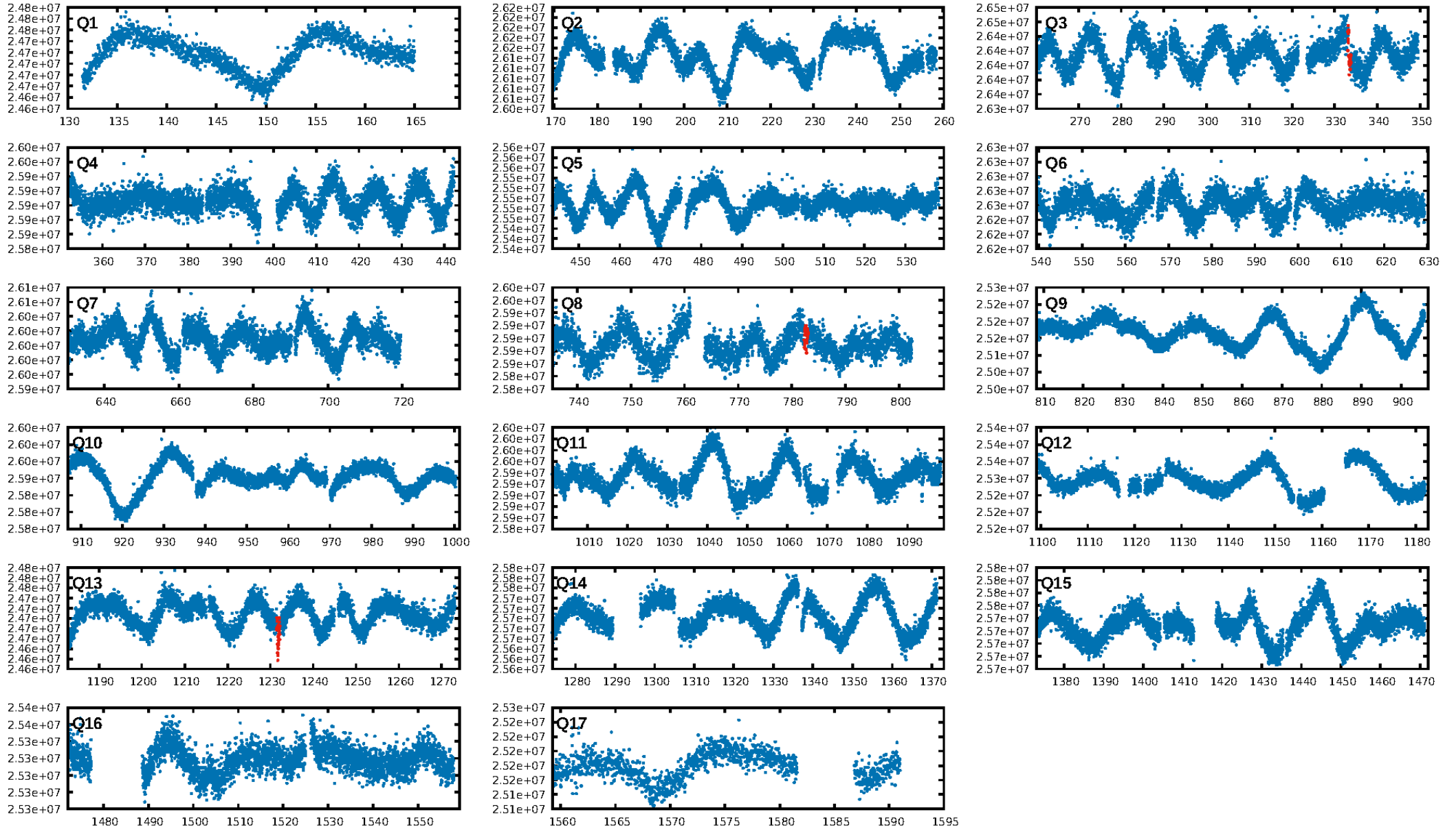
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 11.0%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 3.21e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.033  
Centroid-sig: 48.7%  
Centroid-so: 2.251 arcsec [1.77 $\sigma$ ]  
OotOffset-rm: 2.501 arcsec [1.60 $\sigma$ ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-rm: 2.448 arcsec [1.59 $\sigma$ ]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

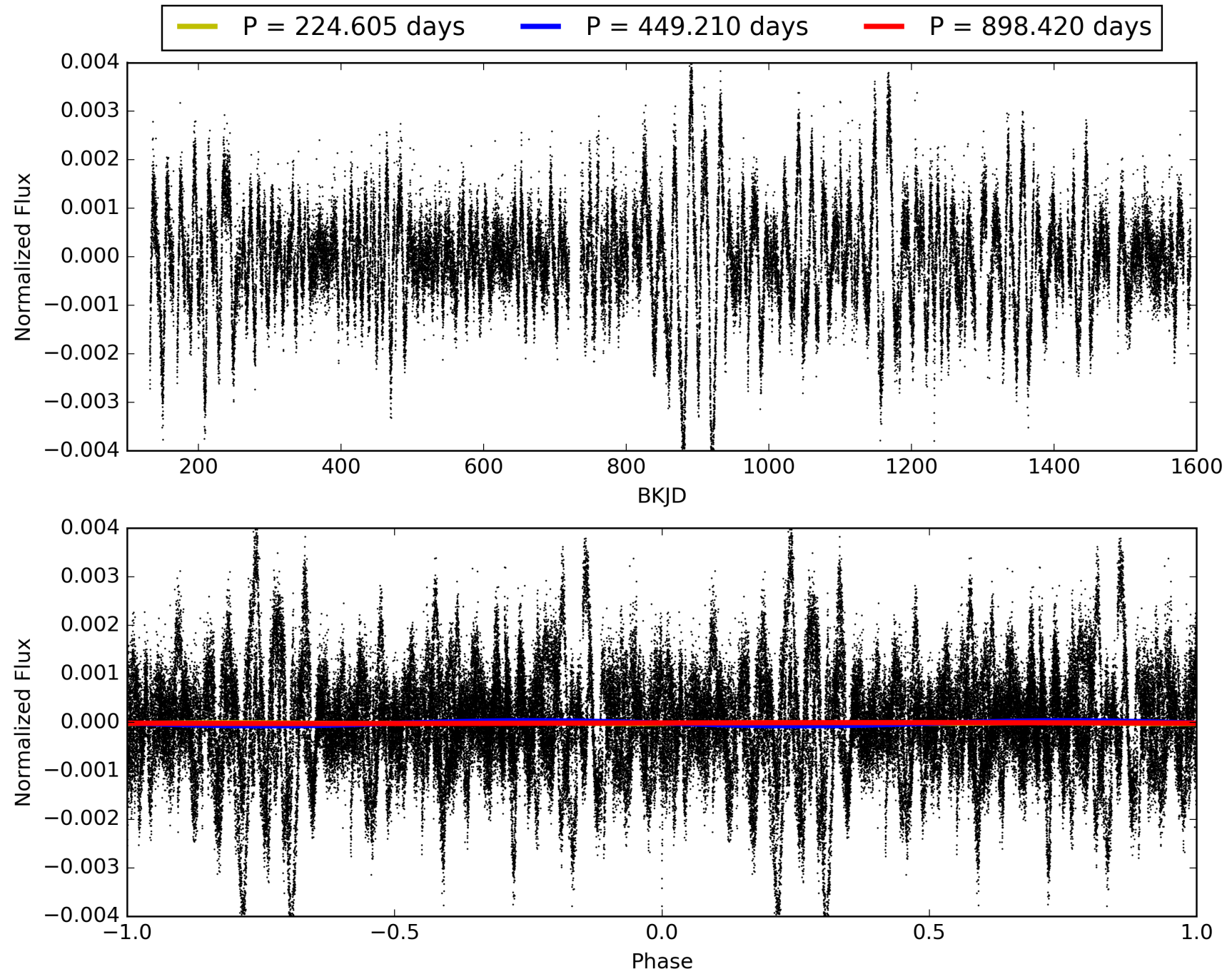
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 20:32:30 Z

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

# TCE 012556885-01, PDC Light Curves

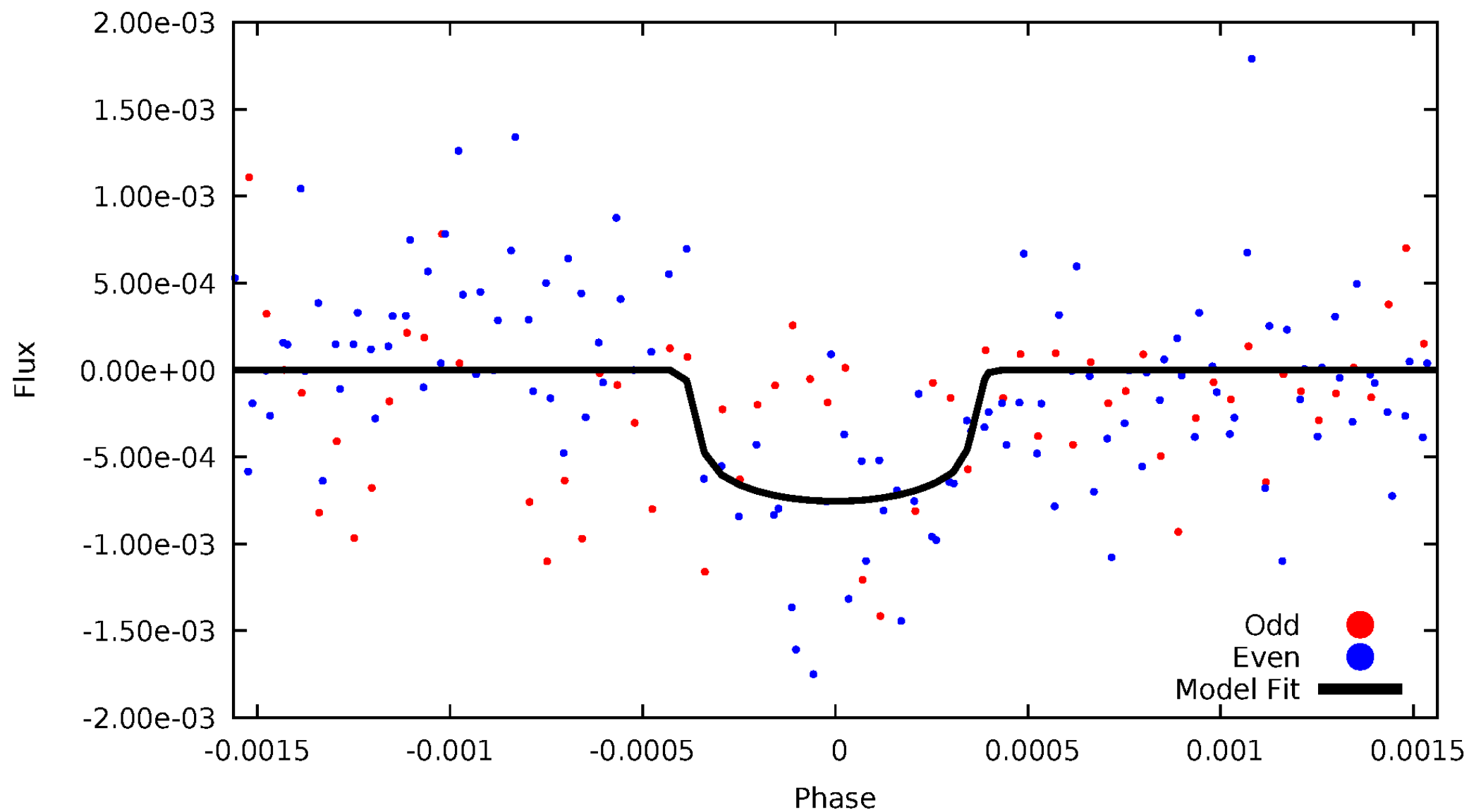


TCE 012556885-01



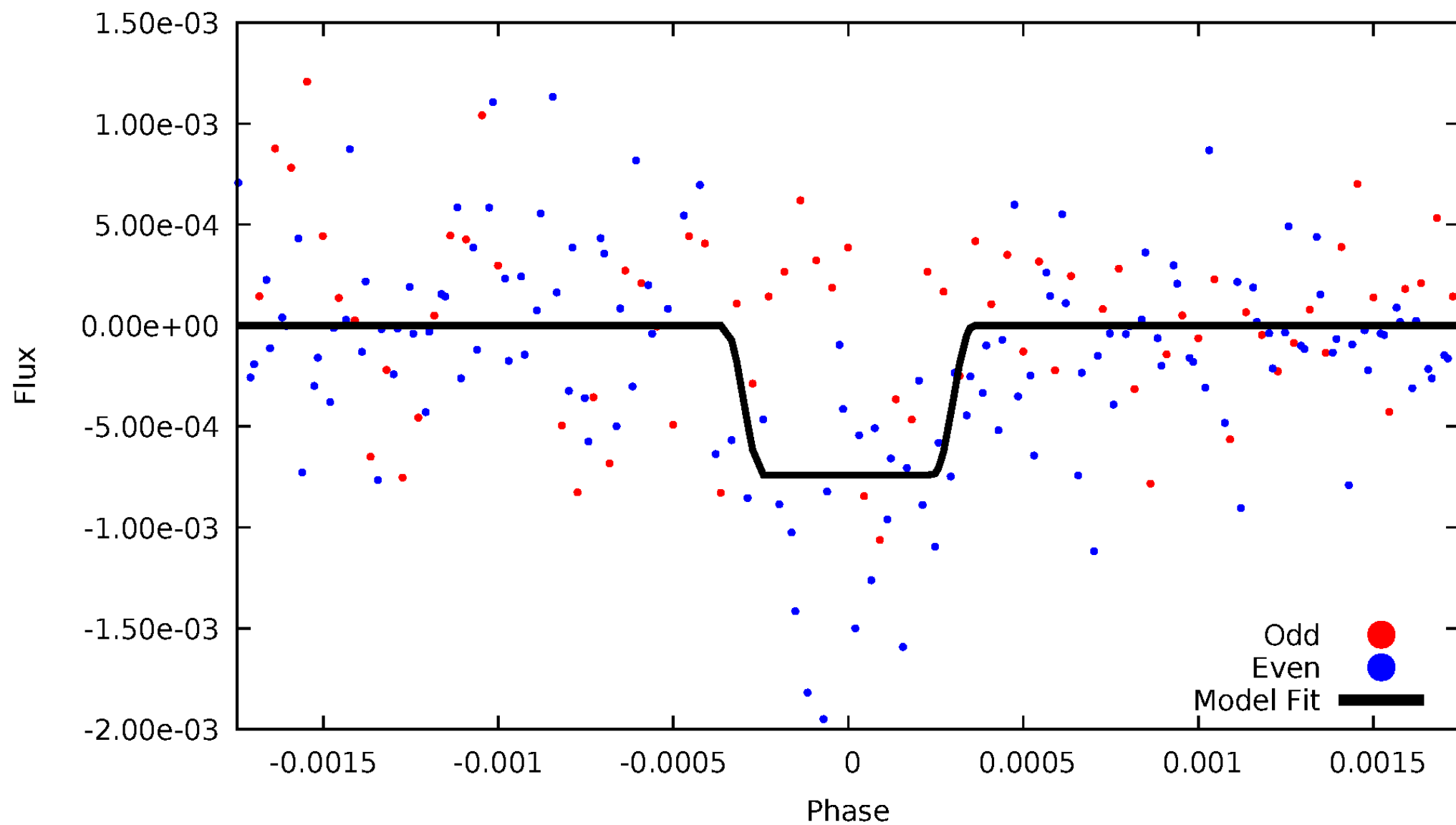
# DV Odd/Even

TCE 012556885-01



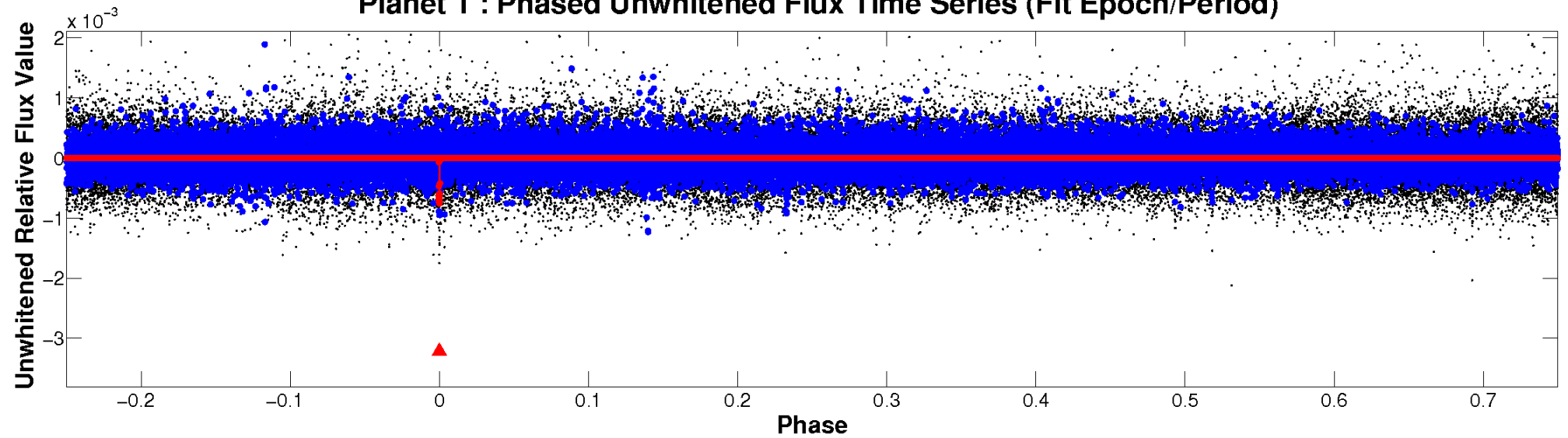
# ALT Odd/Even

TCE 012556885-01

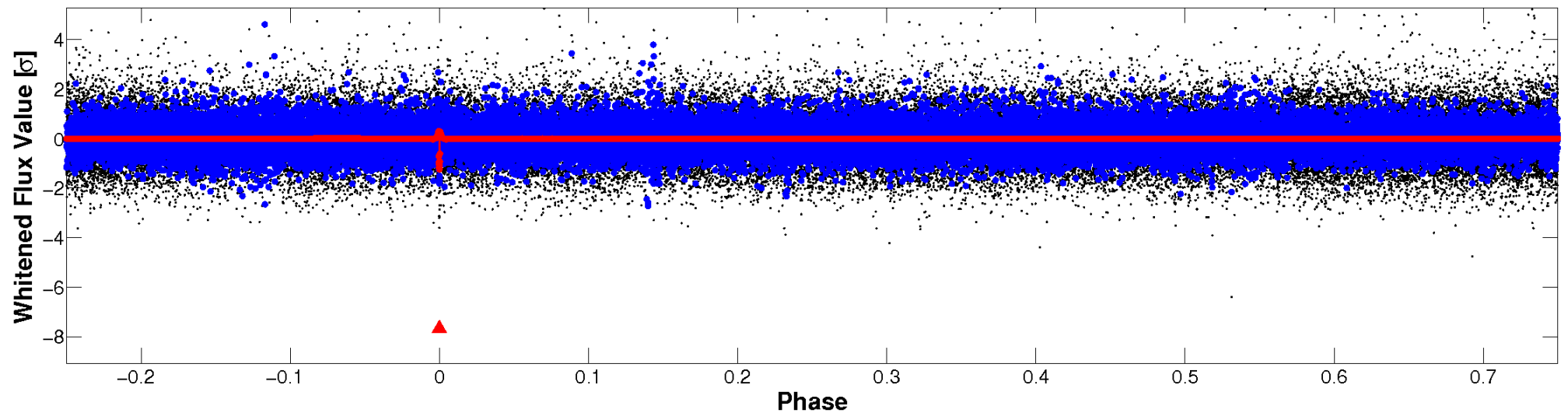


# Non-Whitened Vs. Whitened Light Curve

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



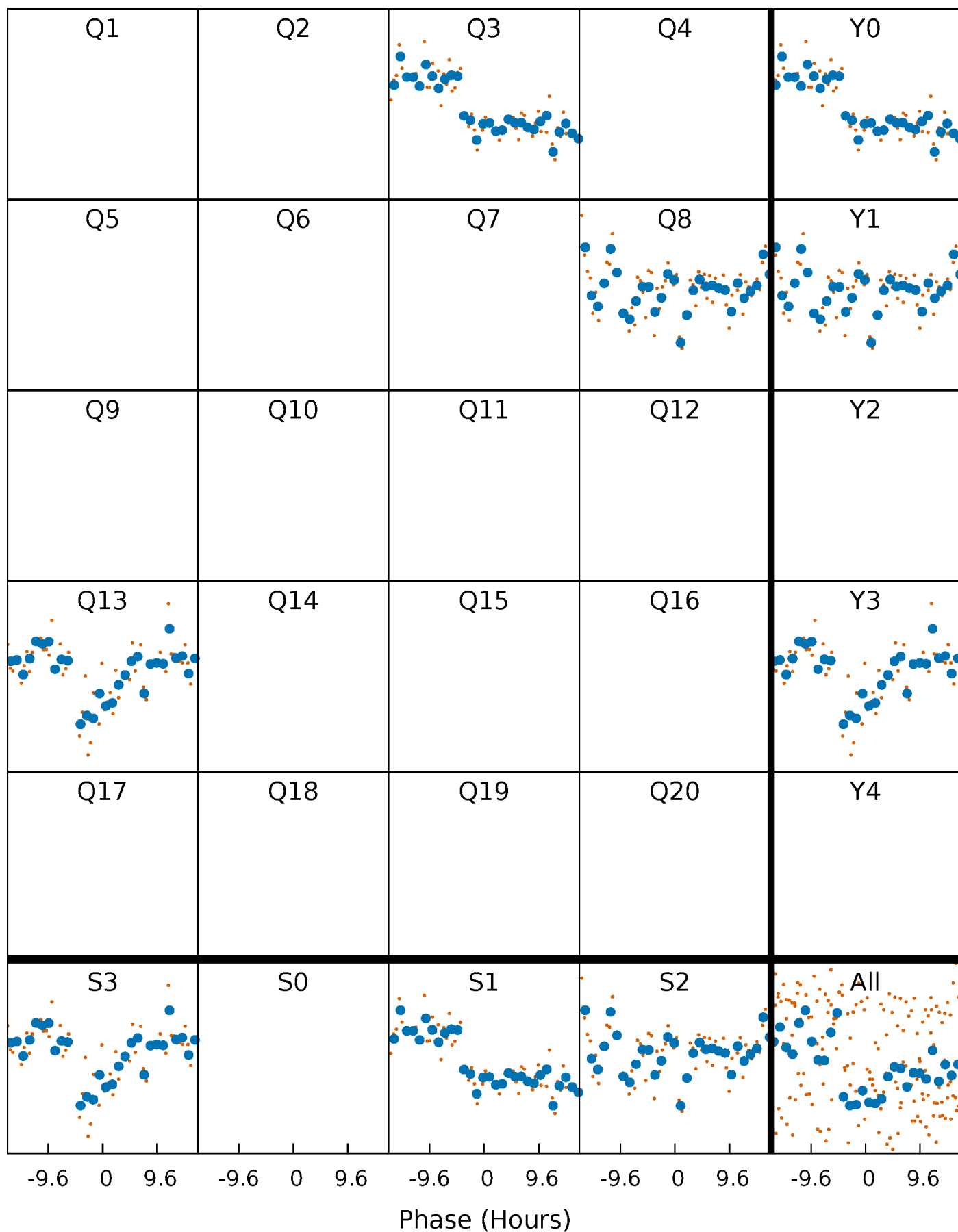
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

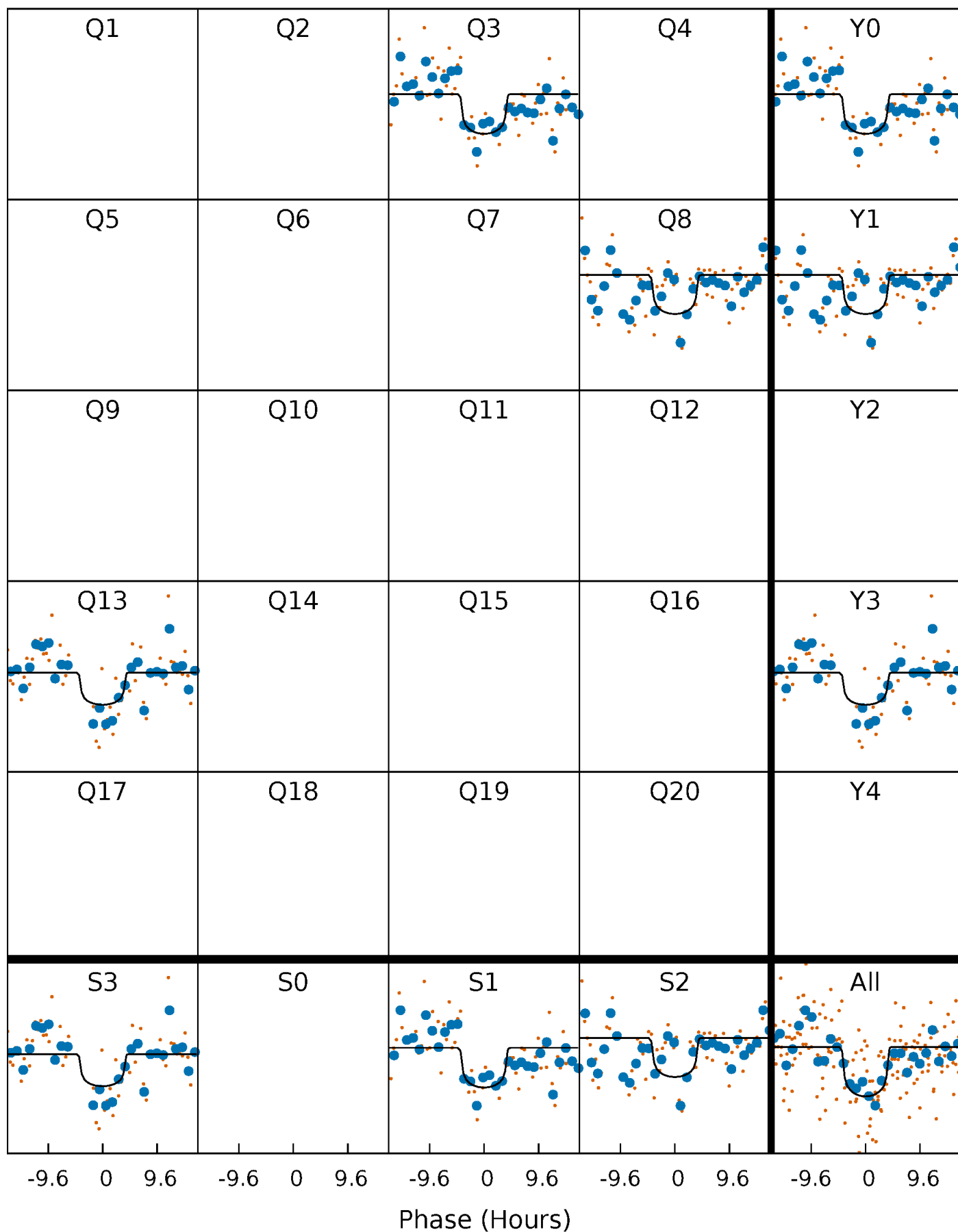
TCE 012556885-01 P=449.209906 Days  $T_0=333.425634$  (BKJD)





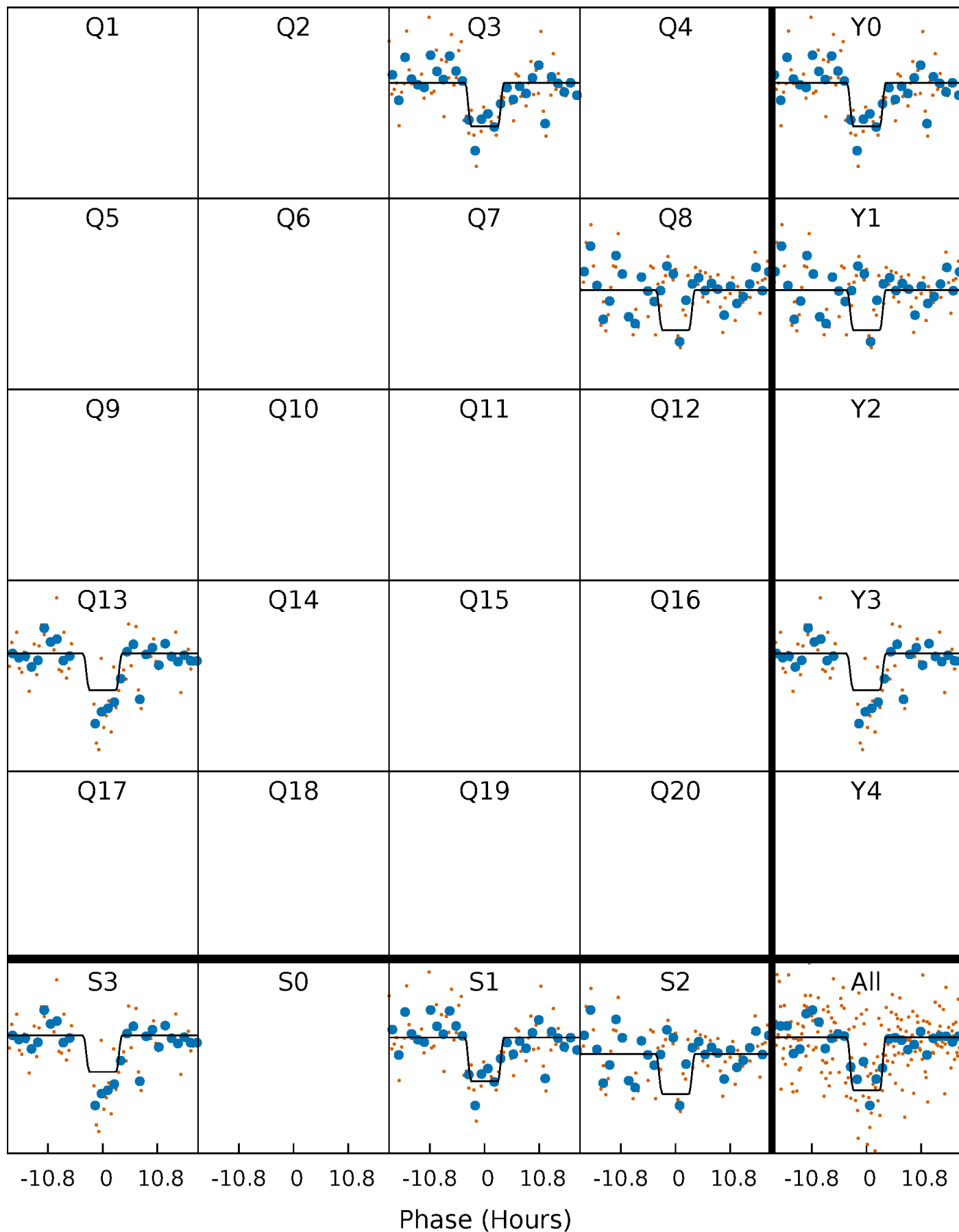
# DV Quarter-Phased Transit Curves

TCE 012556885-01 P=449.209906 Days  $T_0=333.425634$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

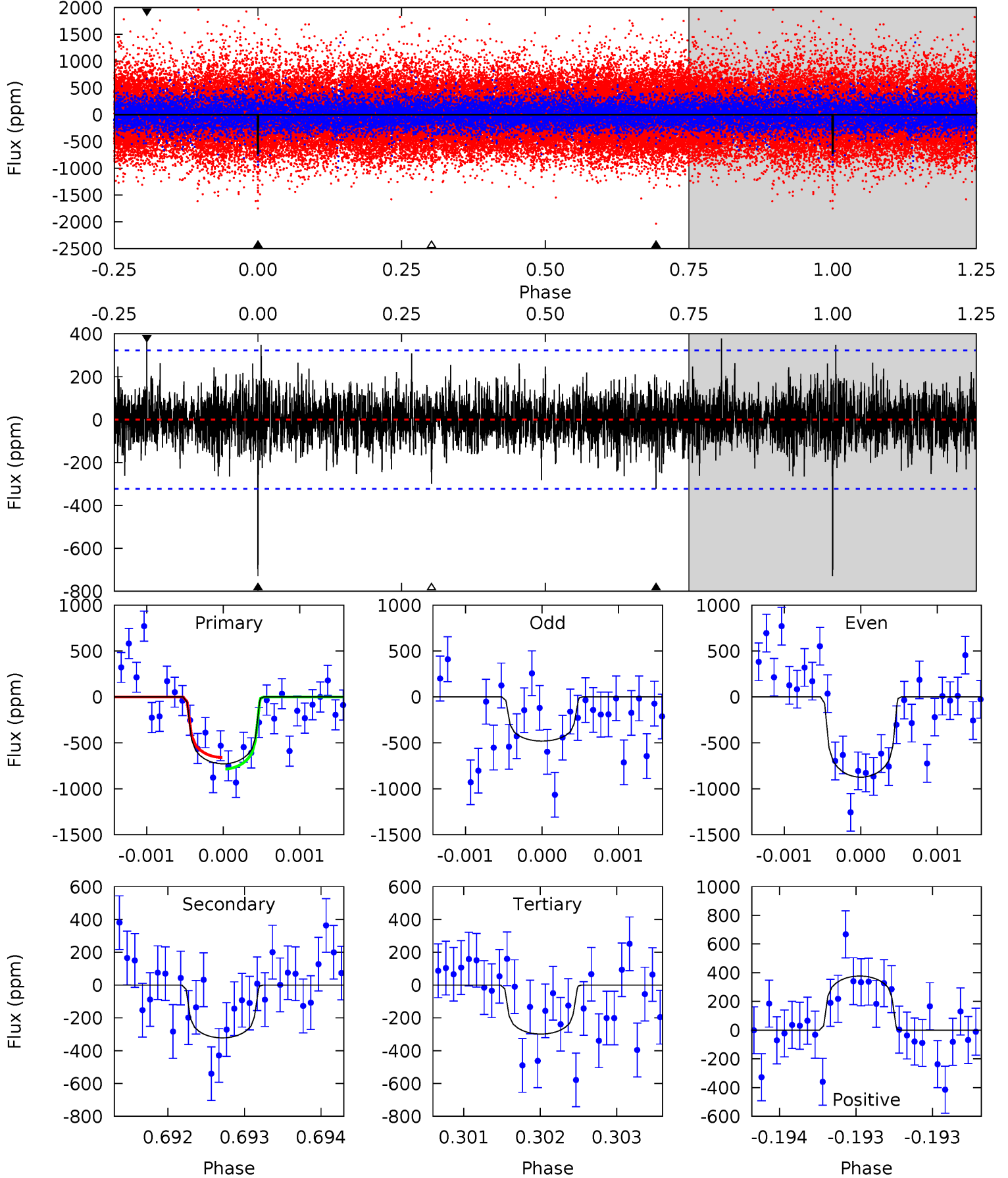
TCE 012556885-01 P=449.204572 Days  $T_0=333.442712$  (BKJD)



# DV Model-Shift Uniqueness Test

012556885-01, P = 449.209906 Days, E = 333.425634 Days

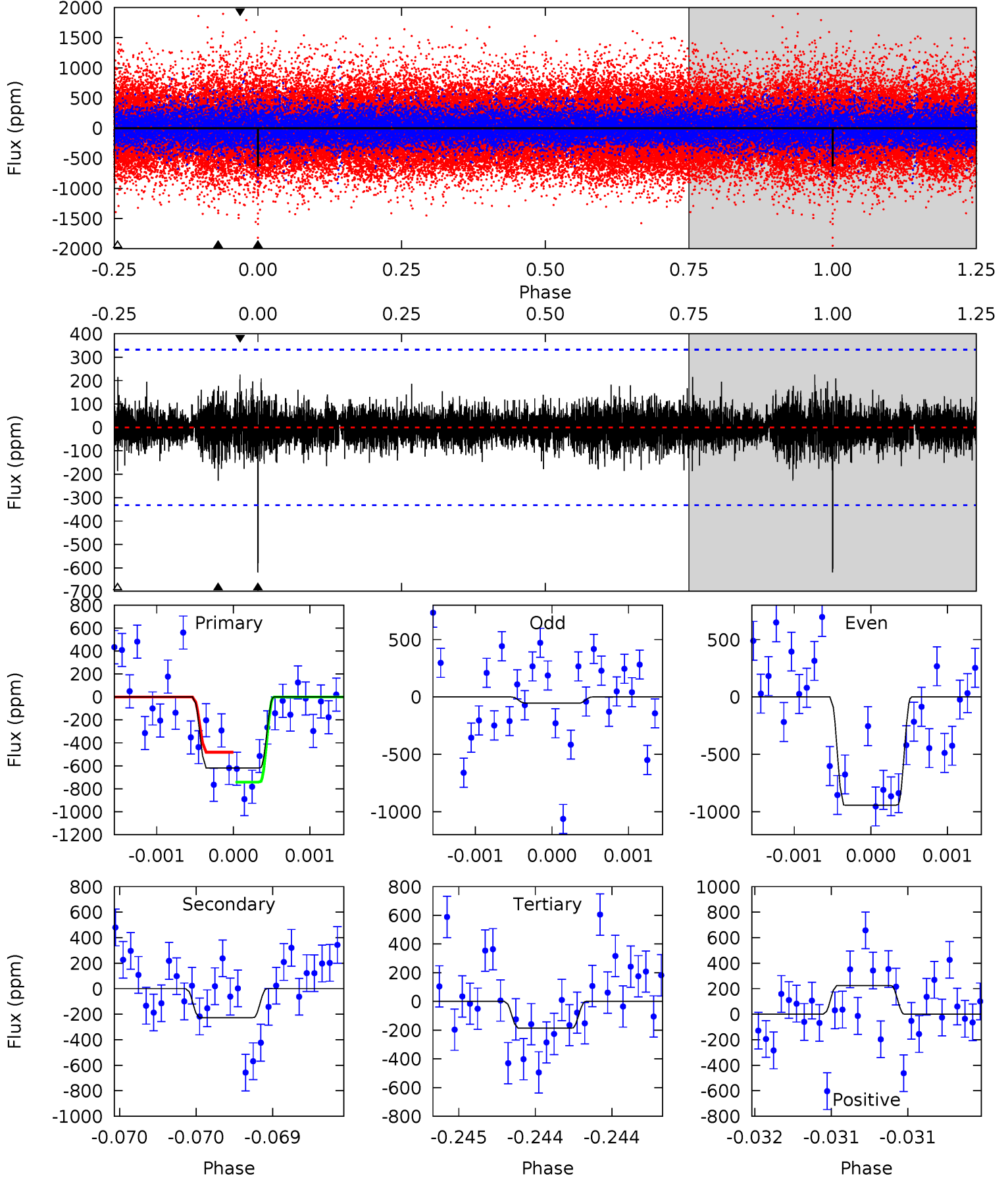
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	5.48	5.08	6.41	5.49	3.35	1.30	7.31	5.97	0.40	-0.94	3.20	0.99	0.34	1.05



# Alt Model-Shift Uniqueness Test

012556885-01, P = 449.204572 Days, E = 333.442712 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
10.3	3.78	3.09	3.74	5.52	3.40	0.83	7.20	6.55	0.69	0.03	7.12	0.88	0.27	2.15



### Stellar Parameters For KIC 012556885

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5534^{+163}_{-147}$	$4.521^{+0.090}_{-0.110}$	$-0.520^{+0.300}_{-0.300}$	$0.785^{+0.131}_{-0.095}$	$0.745^{+0.103}_{-0.044}$	$2.170^{+0.819}_{-0.702}$
	+3%/-3%	+2%/-2%	+58%/-58%	+17%/-12%	+14%/-6%	+38%/-32%
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 012556885-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-322 \pm 59$	$2.37^{+0.69}_{-0.71}$	$297^{+14}_{-14}$	$4630^{+702}_{-468}$	$35008^{+35401}_{-14792}$
Alt.	$-227 \pm 60$	$2.33^{+0.73}_{-0.66}$	$296^{+15}_{-12}$	$4315^{+642}_{-417}$	$24444^{+25185}_{-11258}$

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

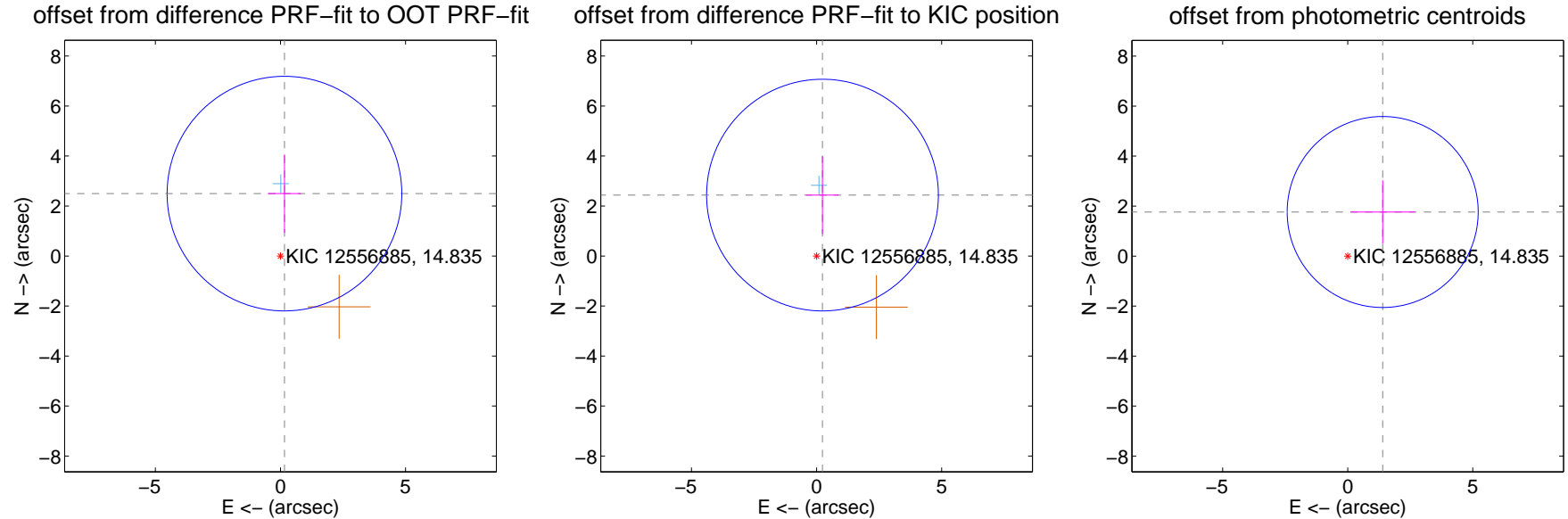
## DV Centroid Data

Supplemental centroid analysis for 012556885-01. Kepler magnitude: 14.84. Transit SNR 7.11

There are 1 quarters with good PRF difference image offsets

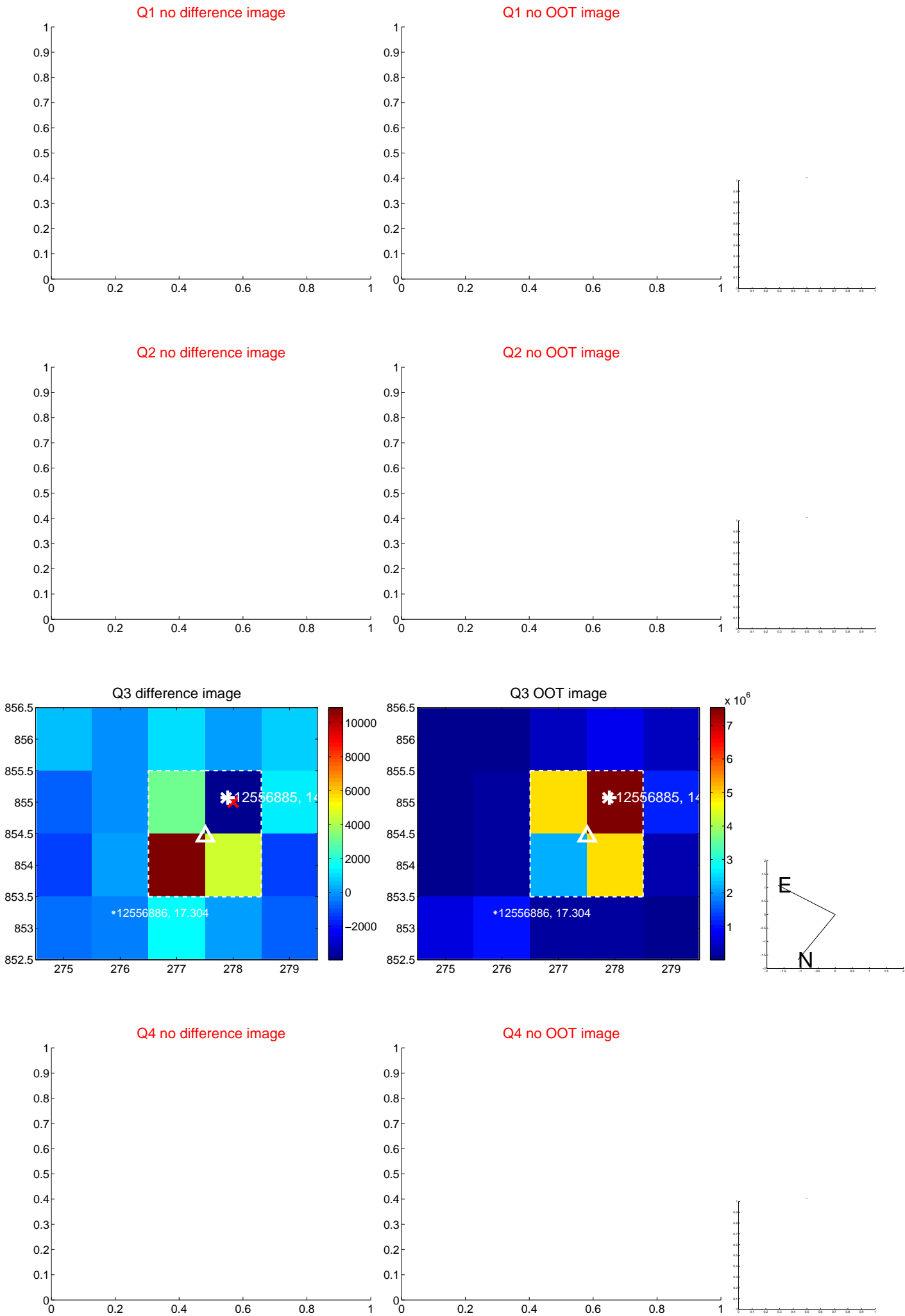
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.501 \pm 1.564$	1.60	$-0.160 \pm 0.660$	$2.496 \pm 1.567$
PRF-fit source offset from KIC position	$2.448 \pm 1.545$	1.59	$-0.237 \pm 0.650$	$2.437 \pm 1.550$
photometric centroid source offset	$2.25 \pm 1.27$	1.77	$-1.40 \pm 1.29$	$1.76 \pm 1.27$



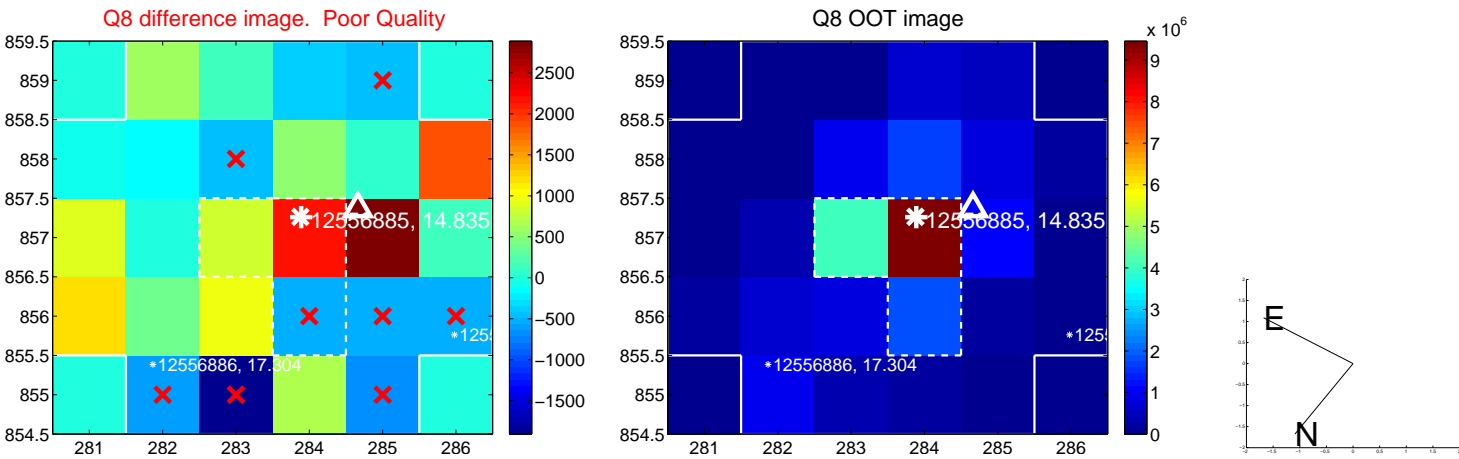
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



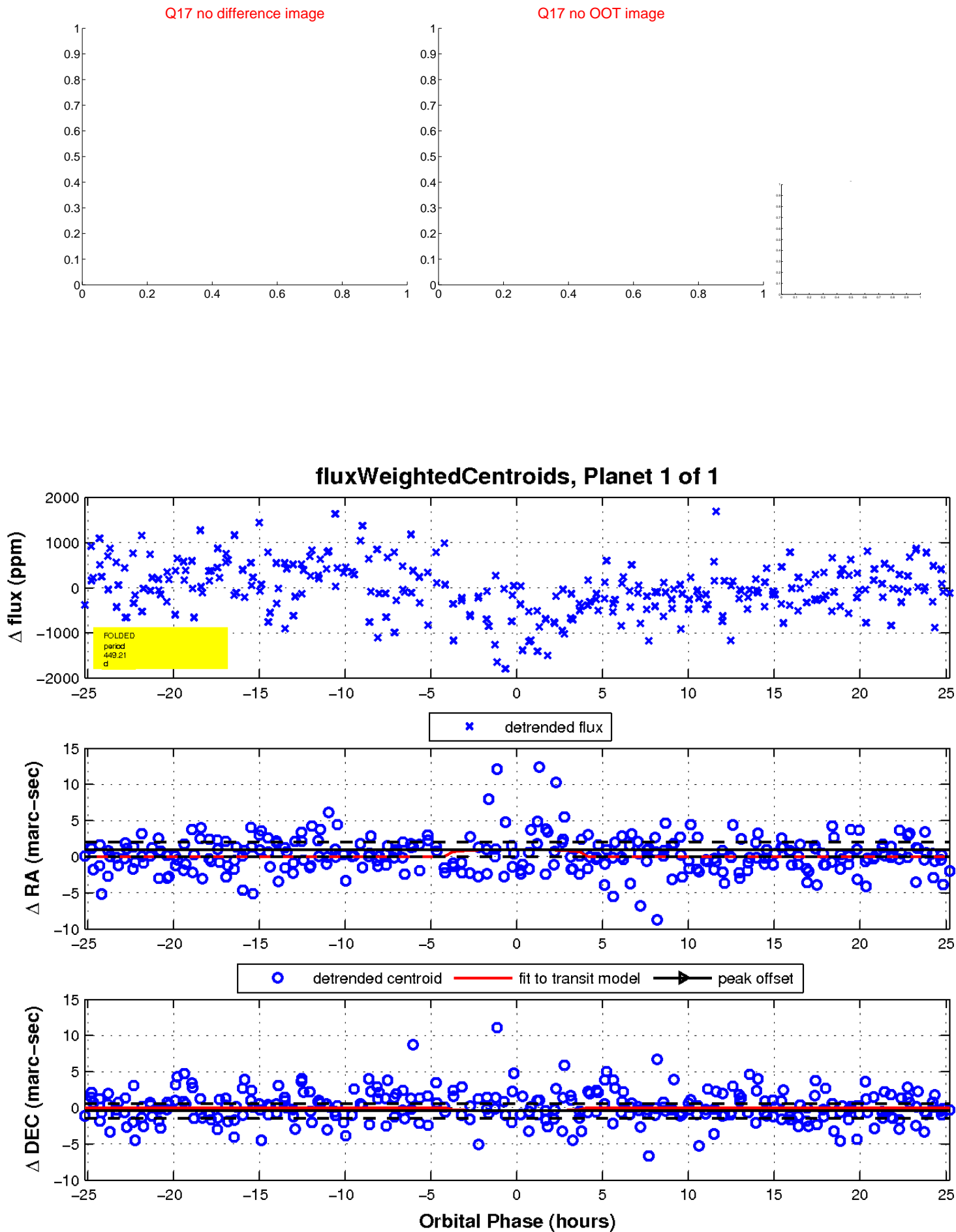
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

