

# KIC 012315130

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012315130-01	OBS	No	458.885053	254.596056	210.1	23.919	8.1	8.8	1.75	7268	2.69	4.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012315130-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—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.

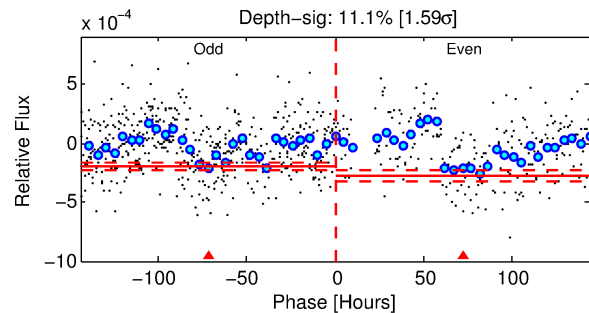
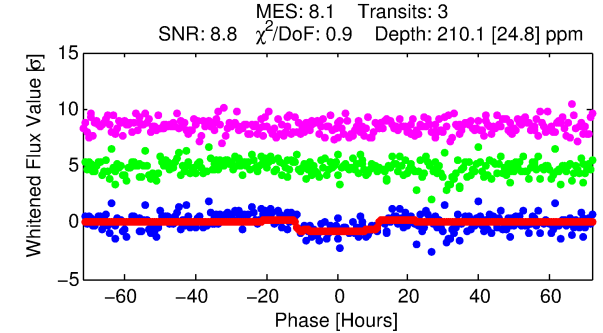
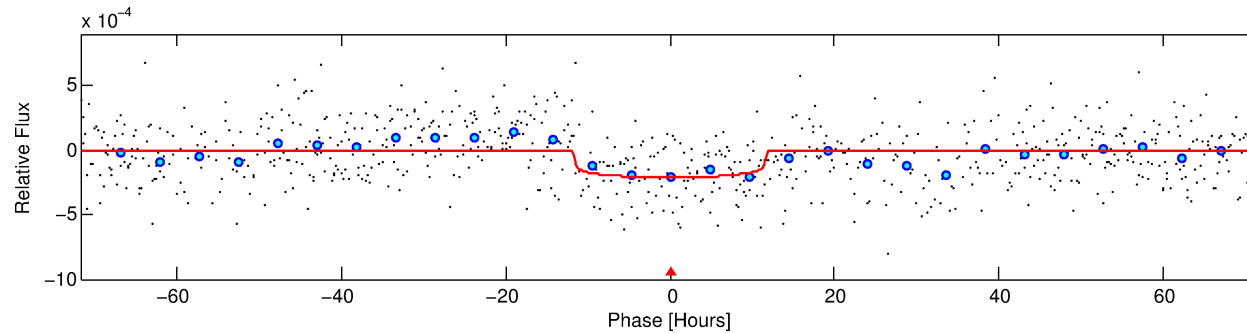
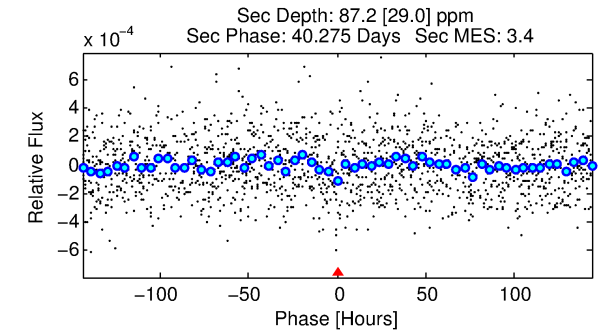
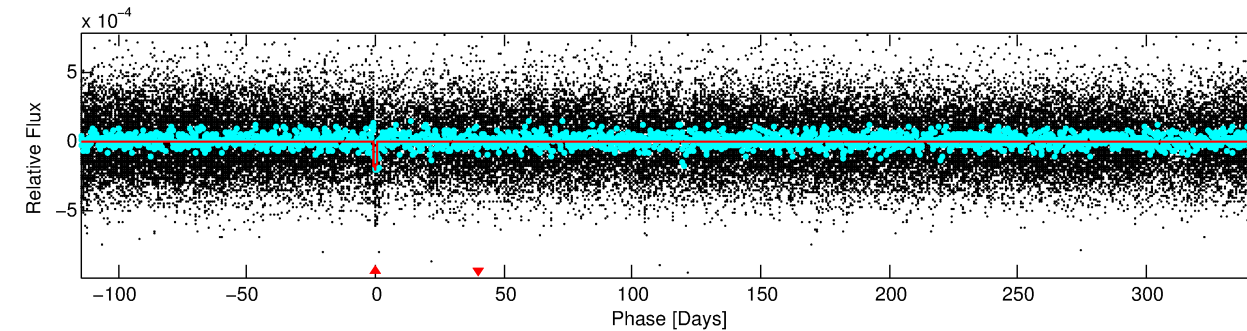
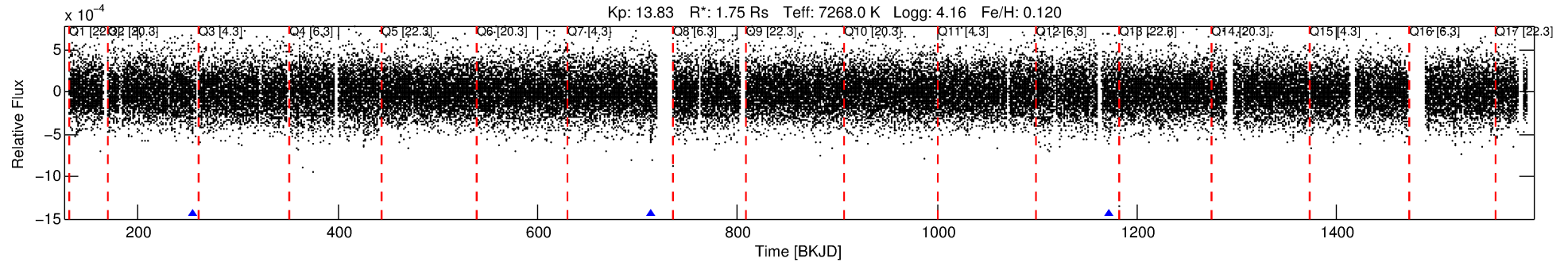
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012315130-01

No Significant Match Found

# DV One-Page Summary

KIC: 12315130 Candidate: 1 of 1 Period: 458.885 d



## DV Fit Results:

Period = 458.88505 [0.01884] d  
Epoch = 254.5961 [0.0246] BKJD  
Rp/R\* = 0.0141 [0.0033]  
a/R\* = 112.99 [154.01]  
b = 0.66 [1.17]  
Seff = 4.12 [1.71]  
Teq = 363 [38] K  
Rp = 2.69 [1.07] Re  
a = 1.3621 [0.3591] AU  
Ag = 12284.04 [8348.58] [1.47σ]  
Teffp = 5912 [888] K [6.24σ]

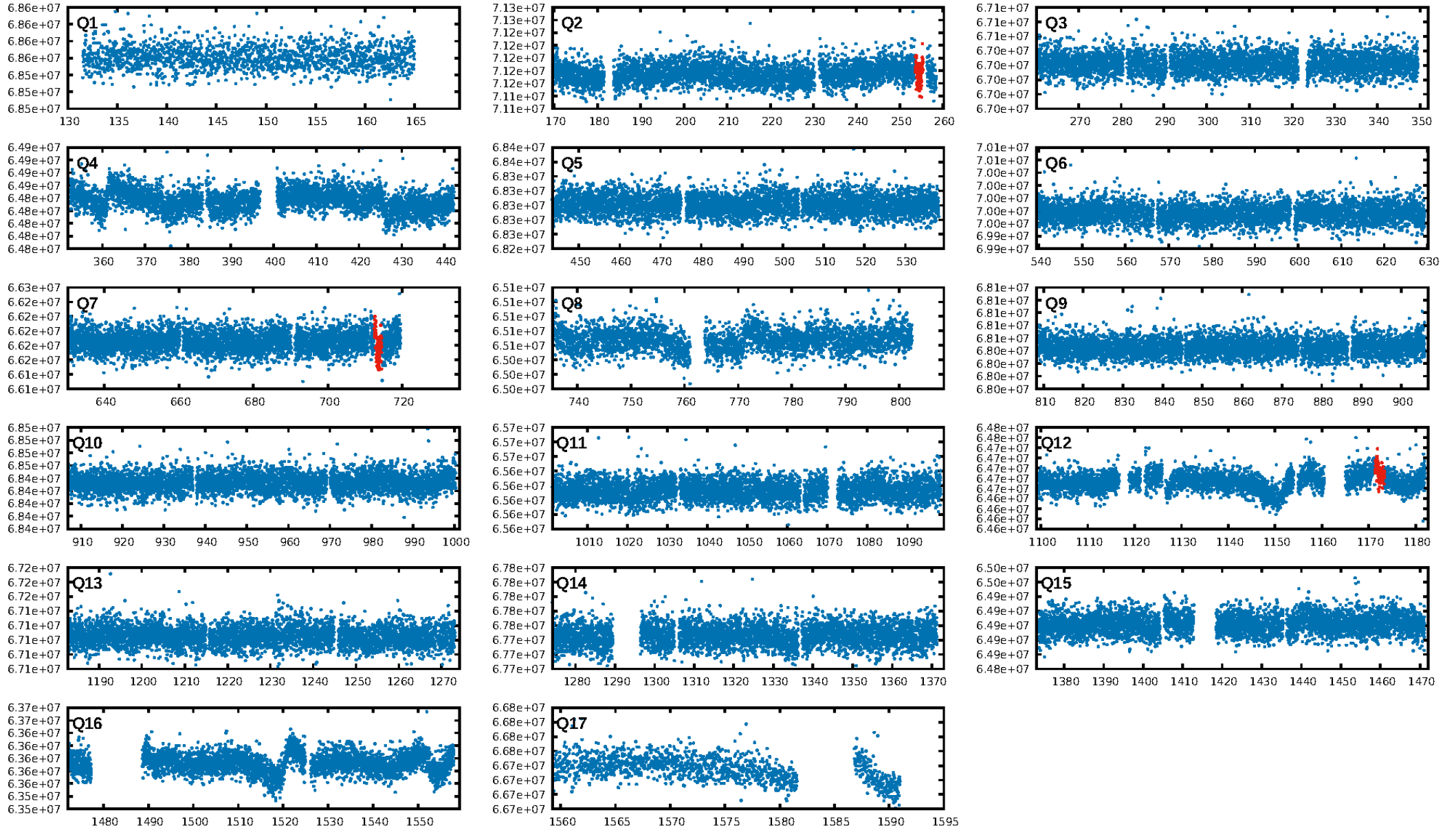
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 19.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.76e-15  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.7497**  
Centroid-sig: 50.0%  
Centroid-so: 2.054 arcsec [0.97σ]  
OotOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-rm: N/A  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

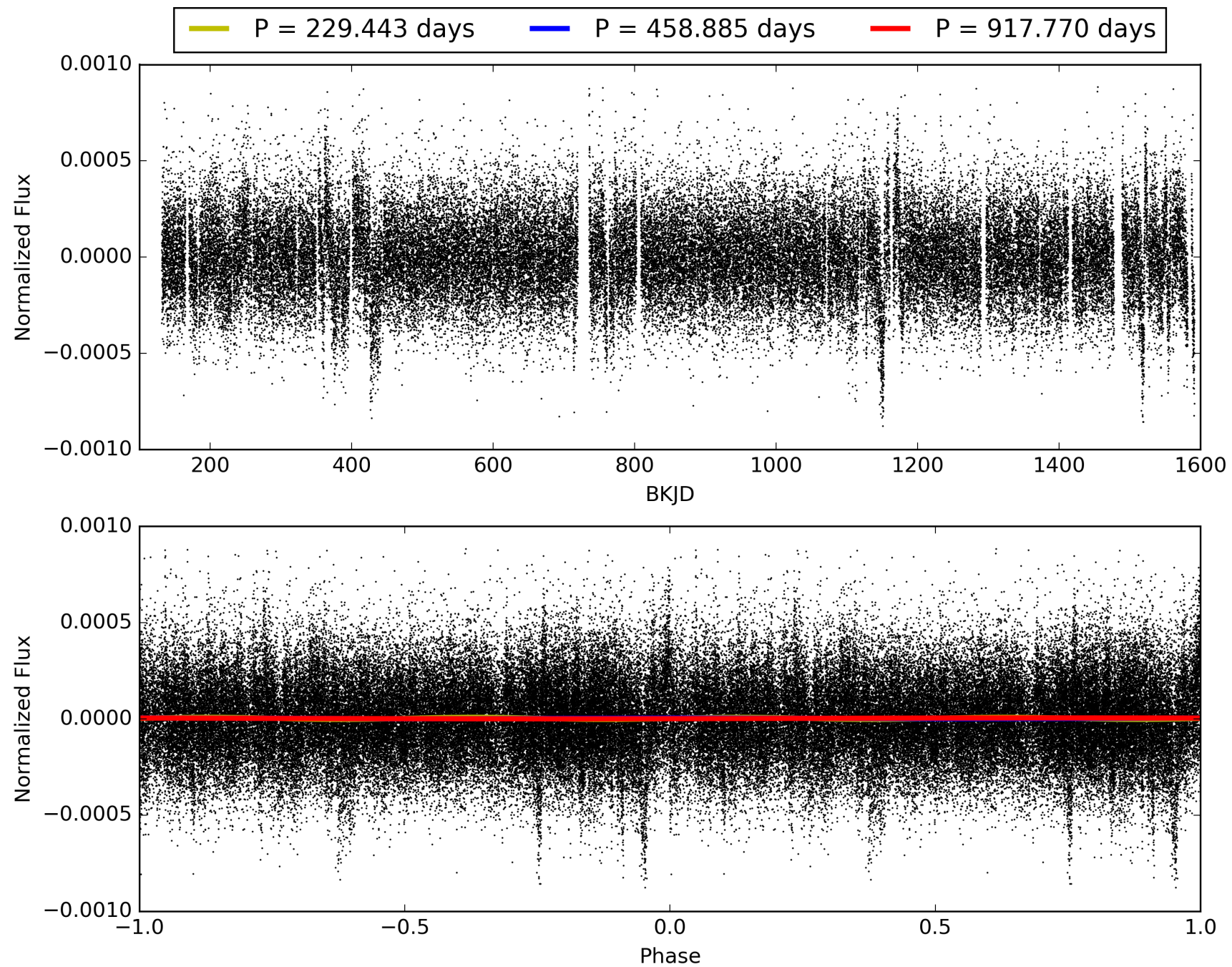
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:08:16 Z

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

# TCE 012315130-01, PDC Light Curves

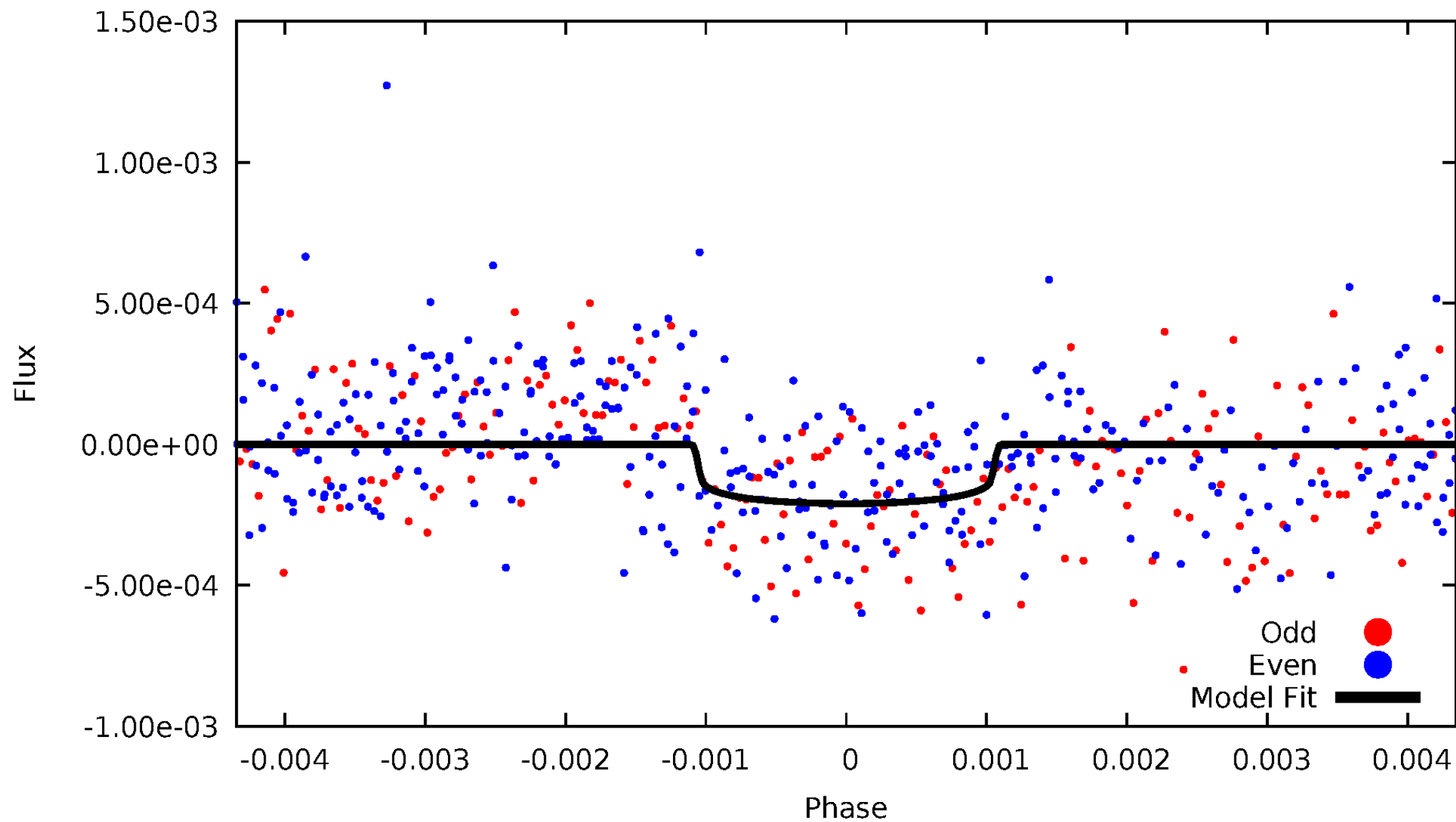


# TCE 012315130-01



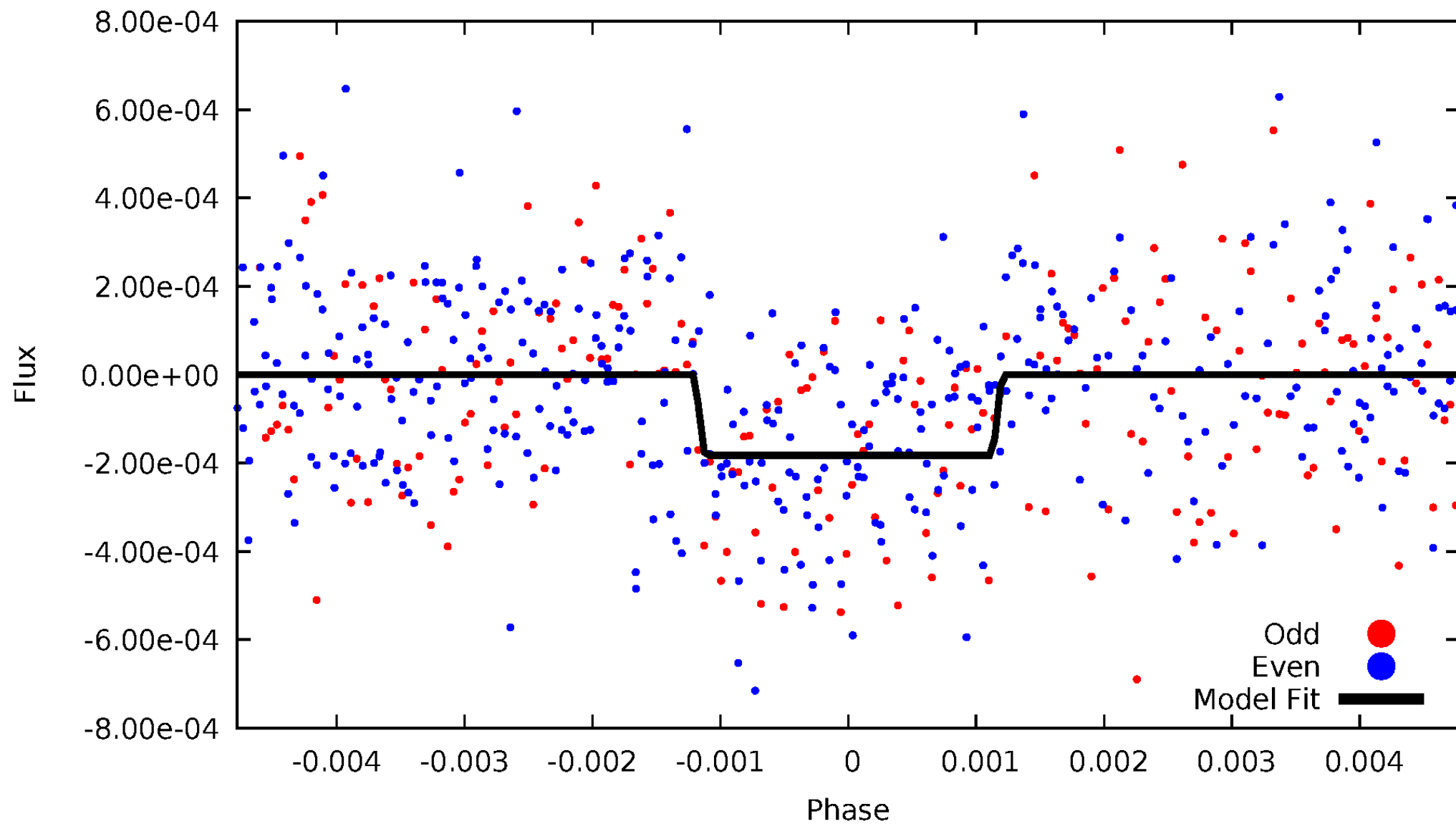
# DV Odd/Even

TCE 012315130-01



# ALT Odd/Even

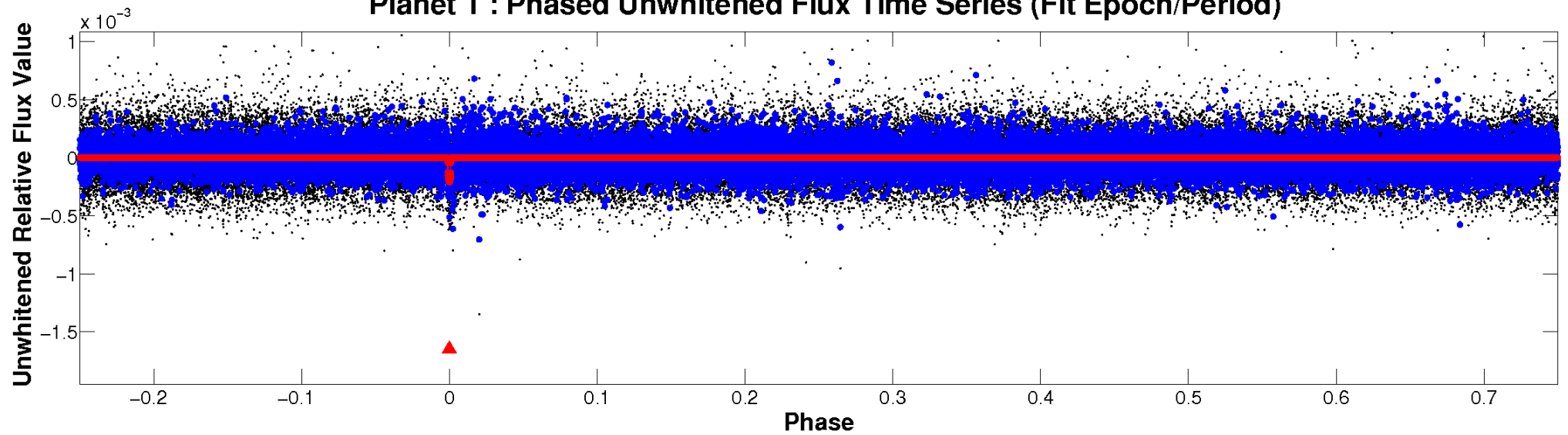
TCE 012315130-01



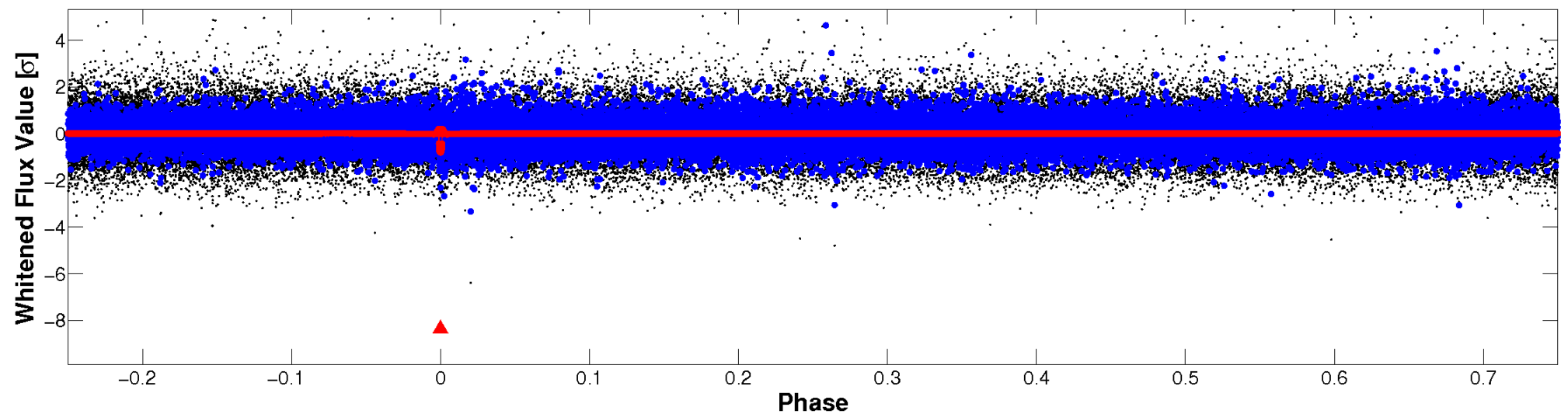


# Non-Whitened Vs. Whitened Light Curve

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

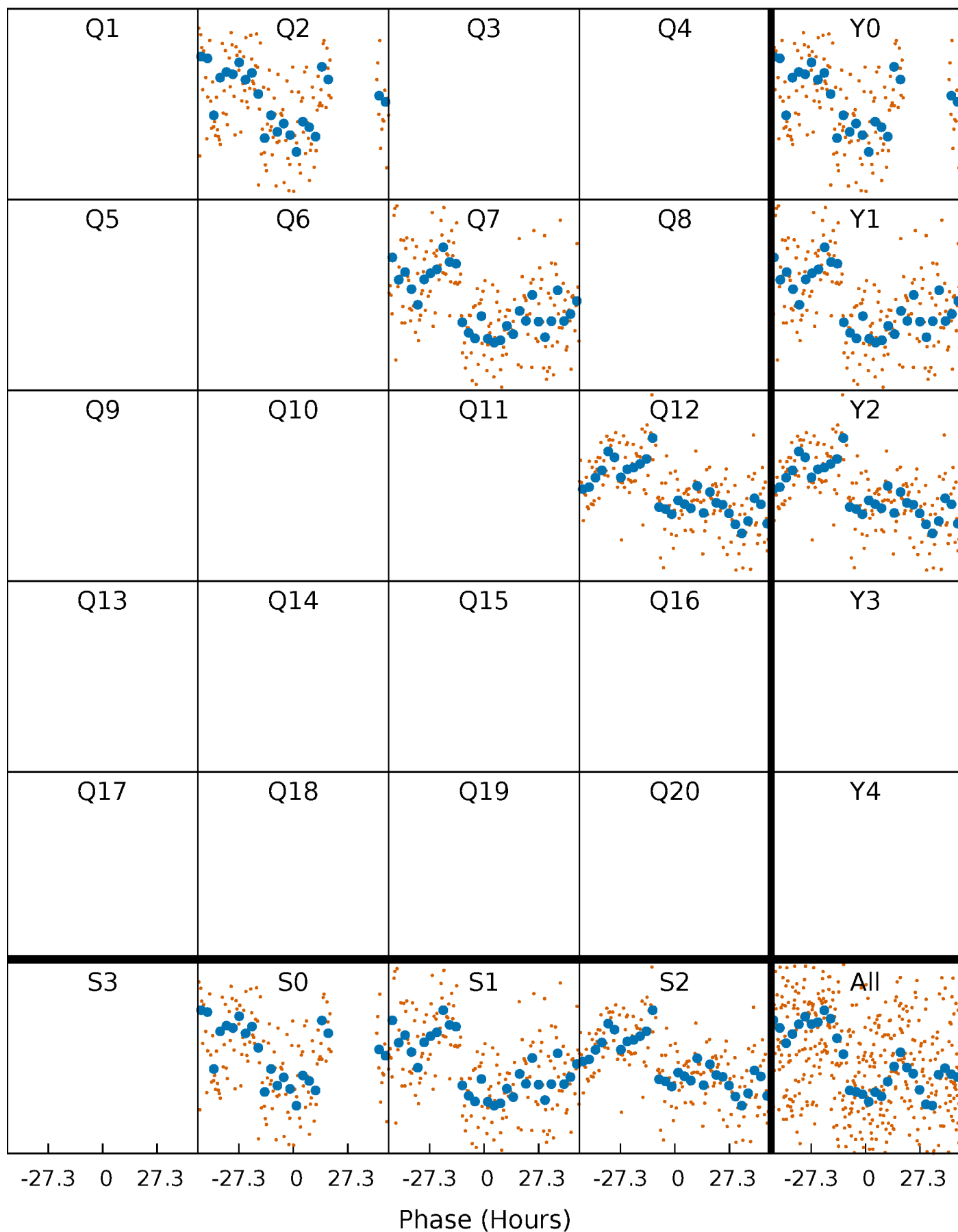


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

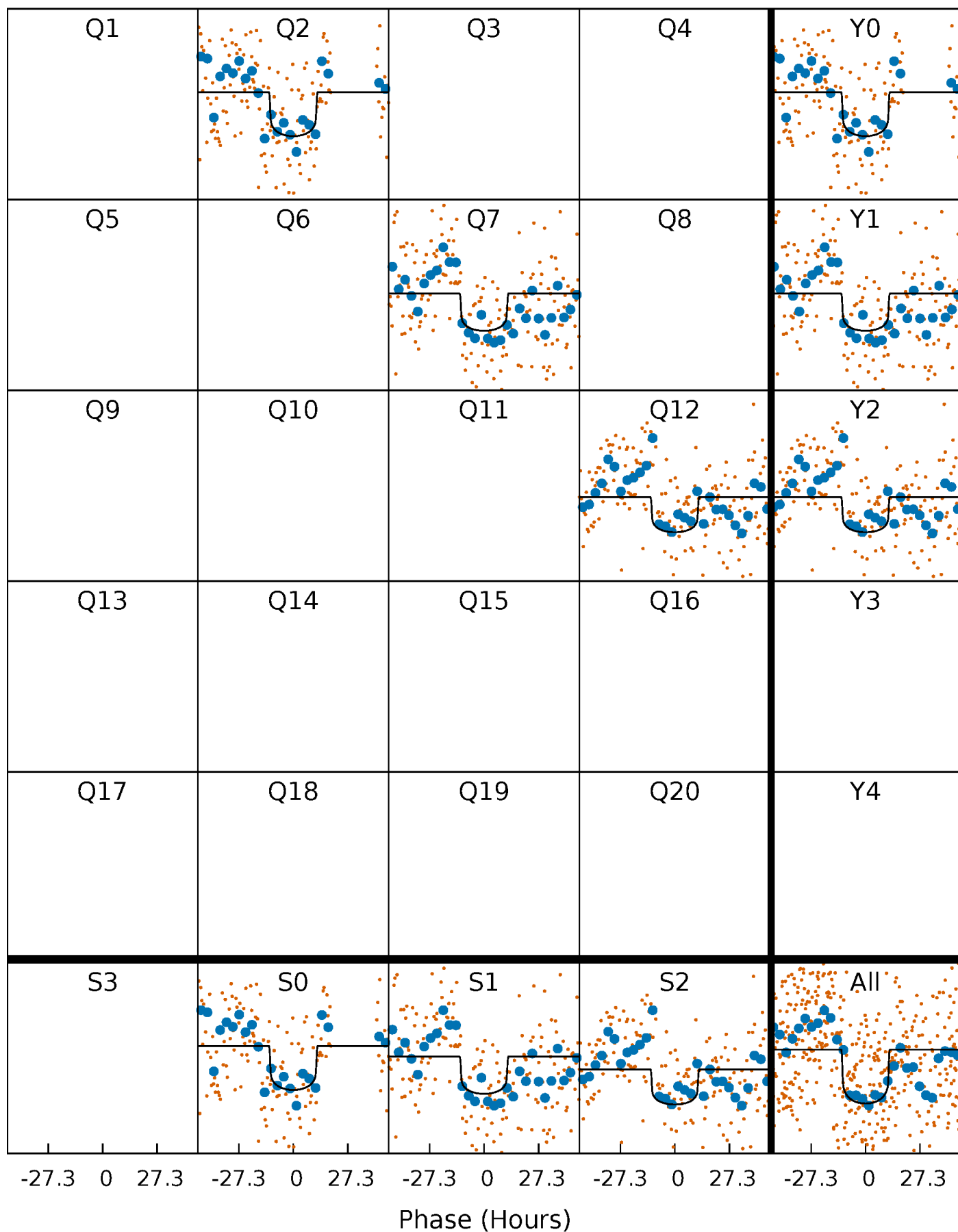
TCE 012315130-01 P=458.885053 Days  $T_0=254.596056$  (BKJD)





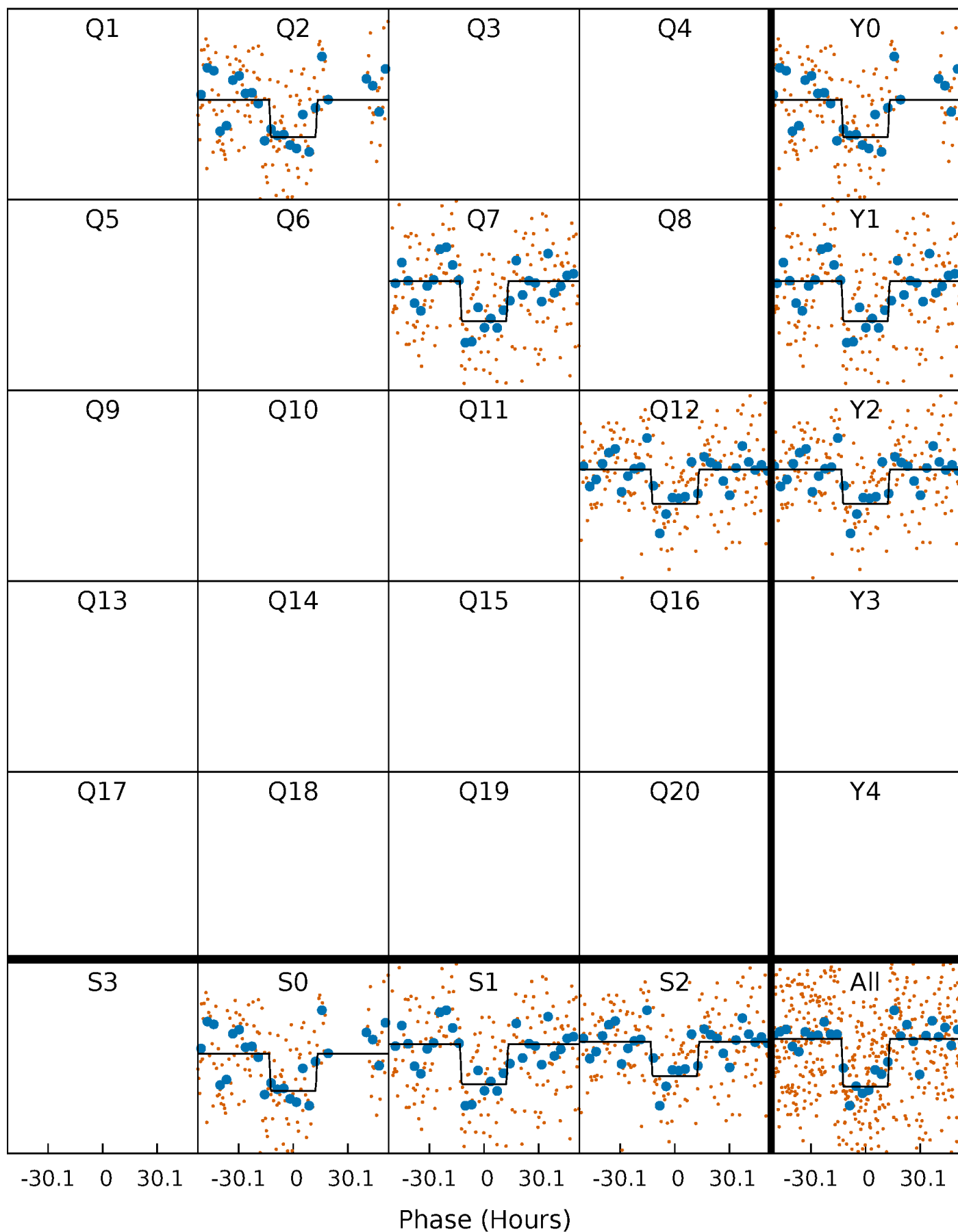
# DV Quarter-Phased Transit Curves

TCE 012315130-01 P=458.885053 Days  $T_0=254.596056$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

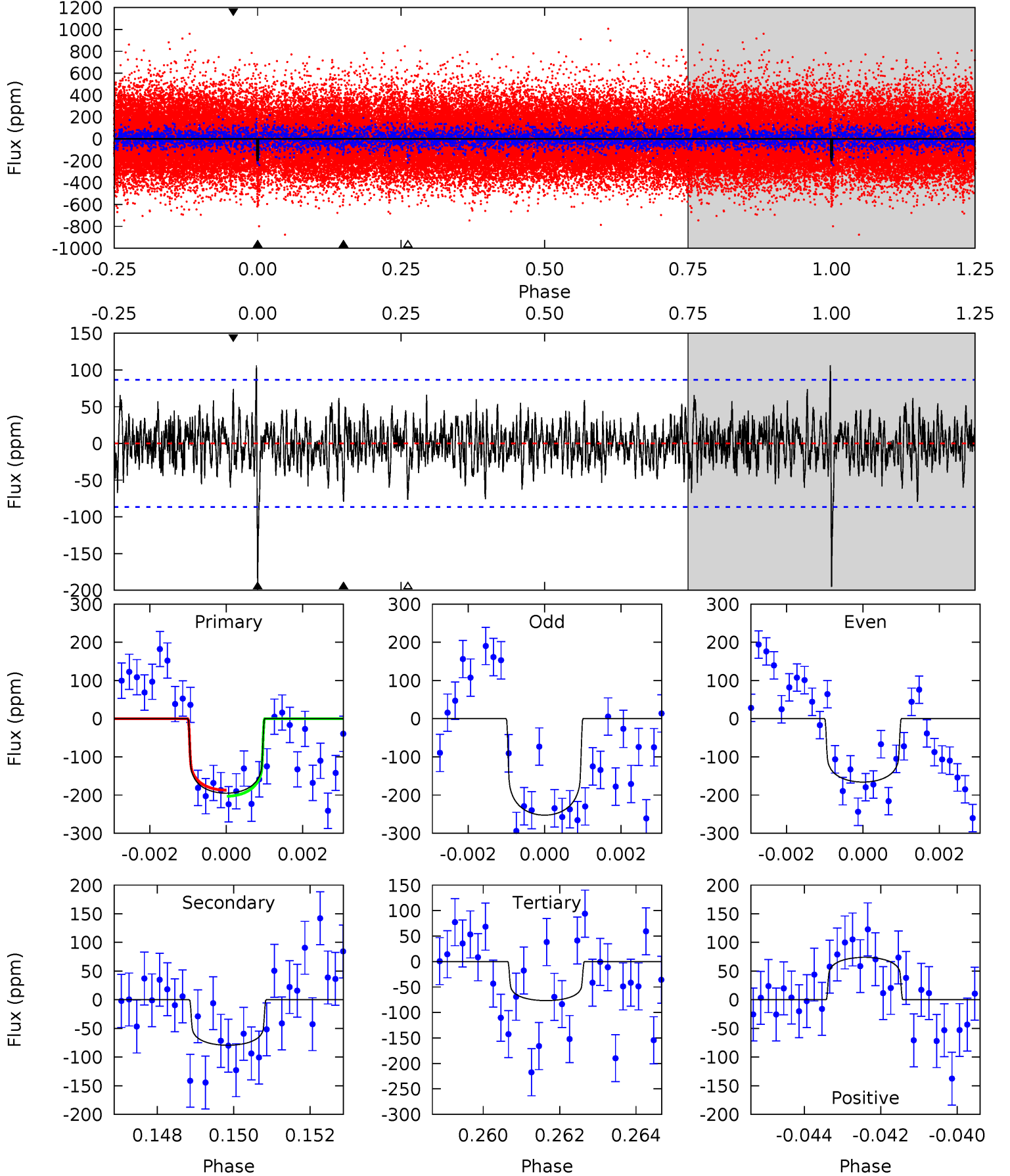
TCE 012315130-01 P=458.917324 Days  $T_0=254.630969$  (BKJD)



# DV Model-Shift Uniqueness Test

012315130-01, P = 458.885053 Days, E = 254.596056 Days

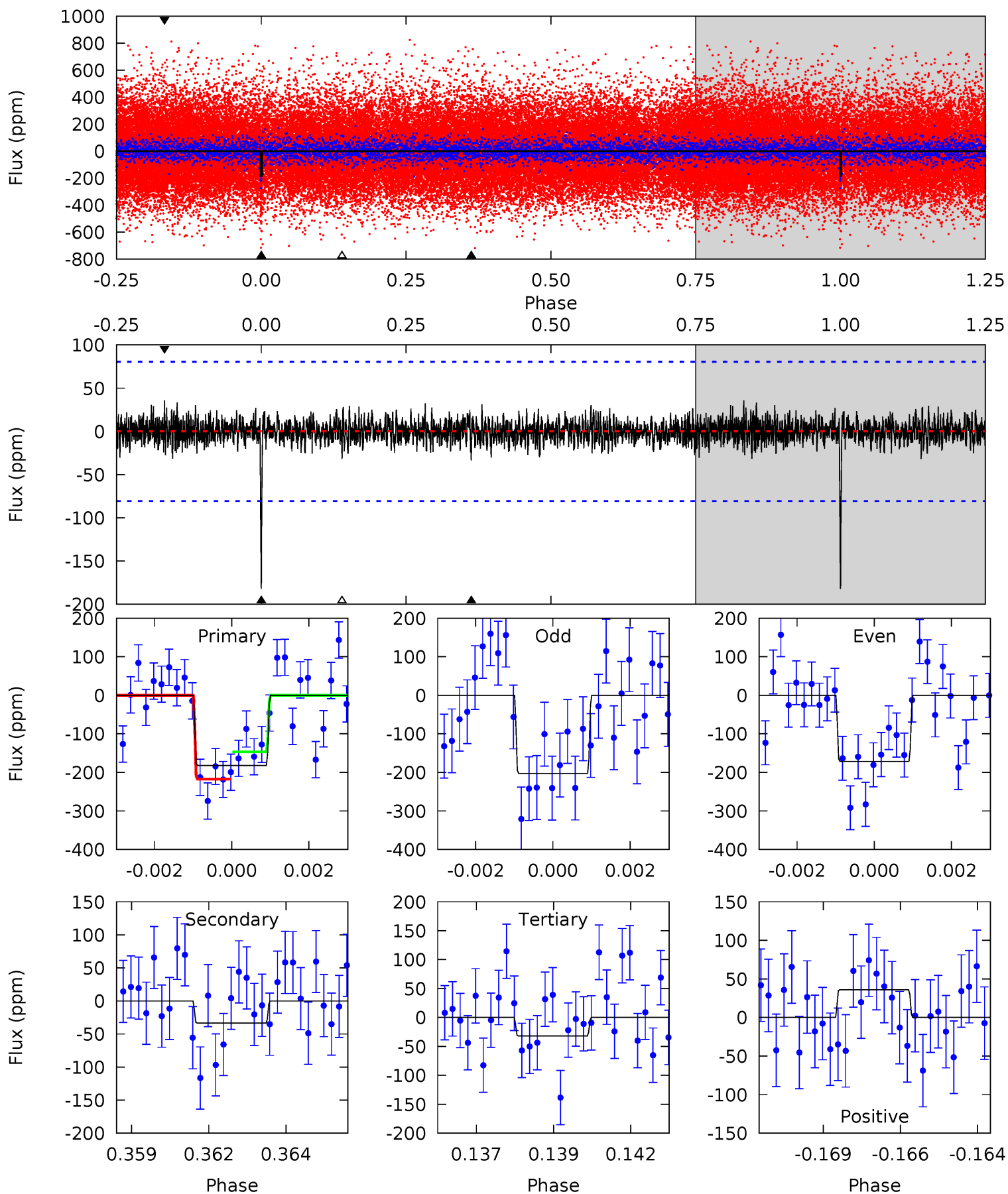
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	4.87	4.70	4.54	5.31	3.06	1.39	7.27	7.43	0.17	0.33	2.52	0.93	0.35	0.49



# Alt Model-Shift Uniqueness Test

012315130-01, P = 458.917324 Days, E = 254.630969 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
12.0	2.20	2.10	2.36	5.29	3.03	0.62	9.86	9.60	0.10	-0.16	0.97	1.02	0.16	2.33



### Stellar Parameters For KIC 012315130

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7268^{+200}_{-343}$	$4.157^{+0.105}_{-0.195}$	$0.120^{+0.200}_{-0.350}$	$1.748^{+0.569}_{-0.306}$	$1.599^{+0.204}_{-0.249}$	$0.422^{+0.205}_{-0.218}$
	+3%/-5%	+3%/-5%	+167%/-292%	+33%/-18%	+13%/-16%	+49%/-52%
Source	KIC0	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 012315130-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-79 \pm 16$	$2.78^{+0.77}_{-0.69}$	$511^{+41}_{-29}$	$5674^{+852}_{-591}$	$10264^{+7834}_{-4245}$
Alt.	$-33 \pm 15$	$2.63^{+0.75}_{-0.65}$	$510^{+36}_{-33}$	$4757^{+766}_{-621}$	$4642^{+4483}_{-2553}$

$T_{\text{max}}$  = 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

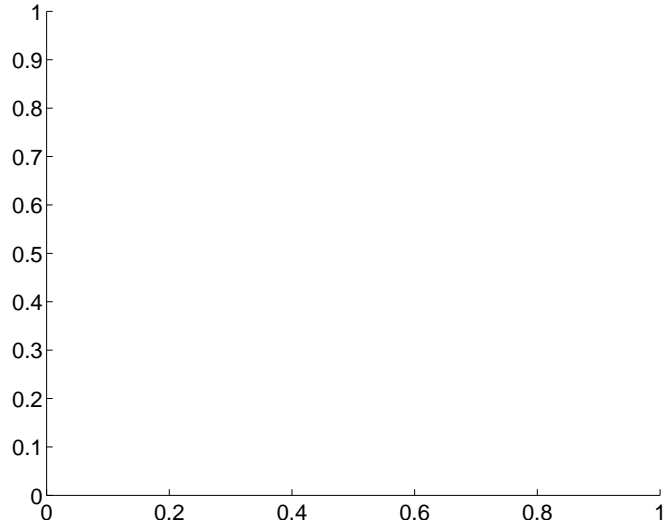
Supplemental centroid analysis for 012315130-01. Kepler magnitude: 13.83. Transit SNR 8.85

There are 0 quarters with good PRF difference image offsets

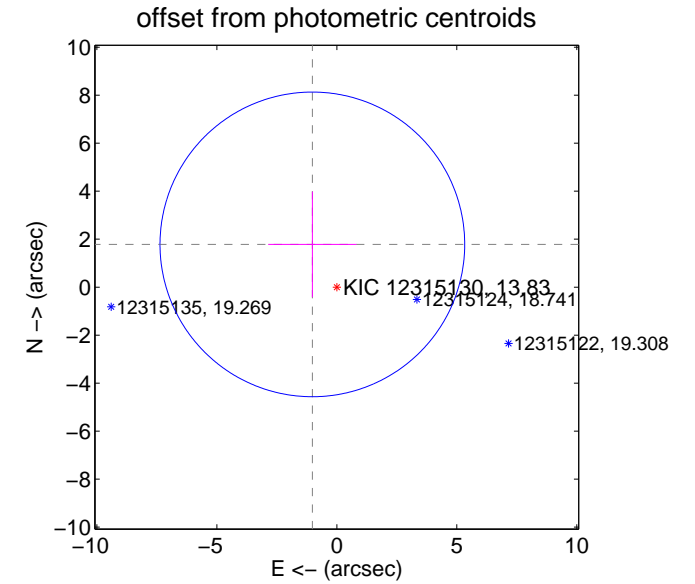
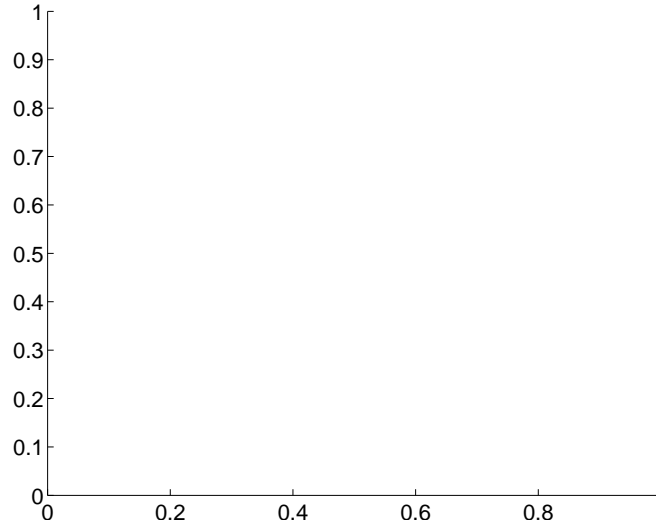
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$2.05 \pm 2.12$	0.97	$1.02 \pm 1.84$	$1.78 \pm 2.20$

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



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.



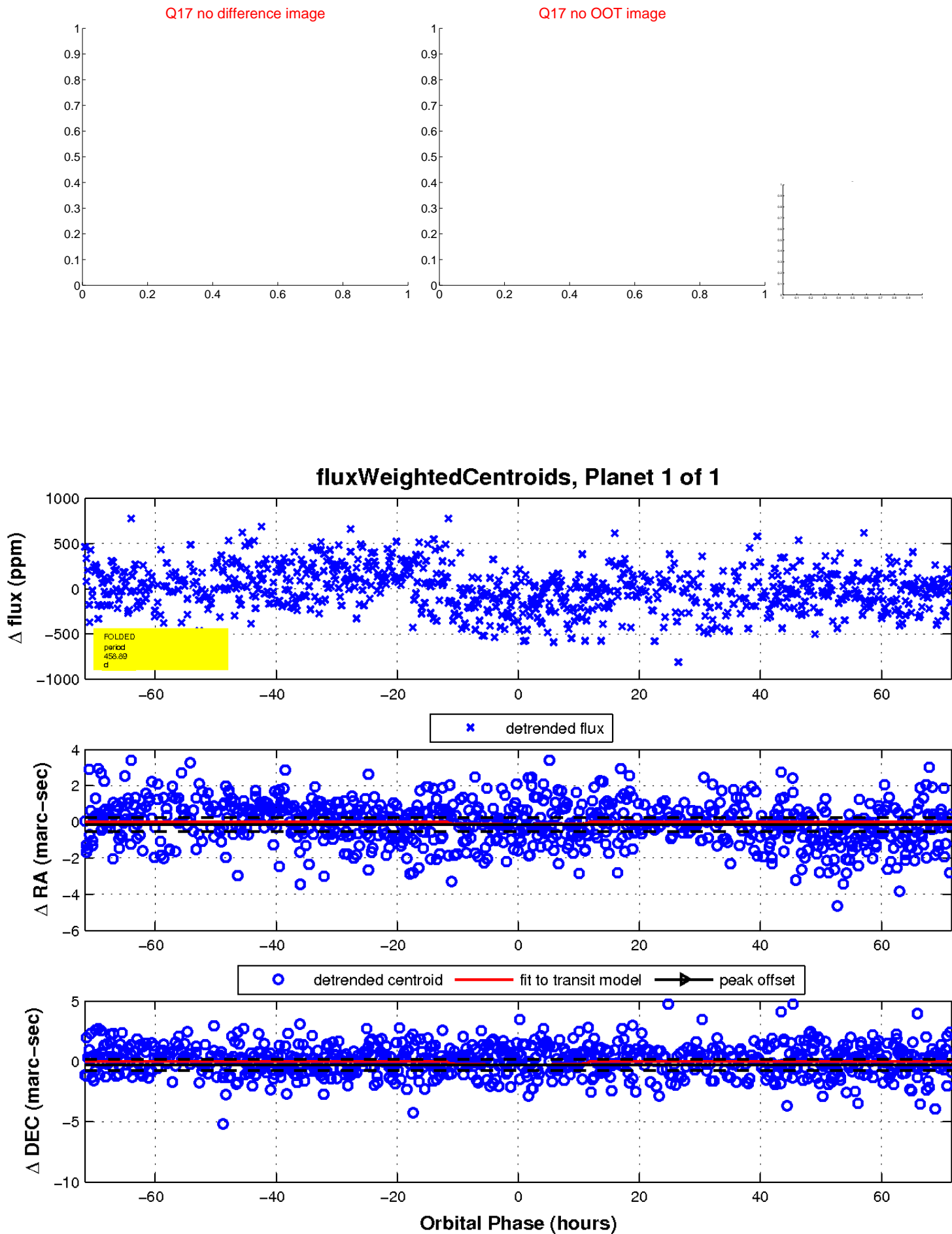
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

