

# KIC 010529176

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010529176-01	OBS	No	374.696610	271.929839	490.4	11.452	7.5	7.2	0.77	5040	2.49	0.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010529176-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—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.

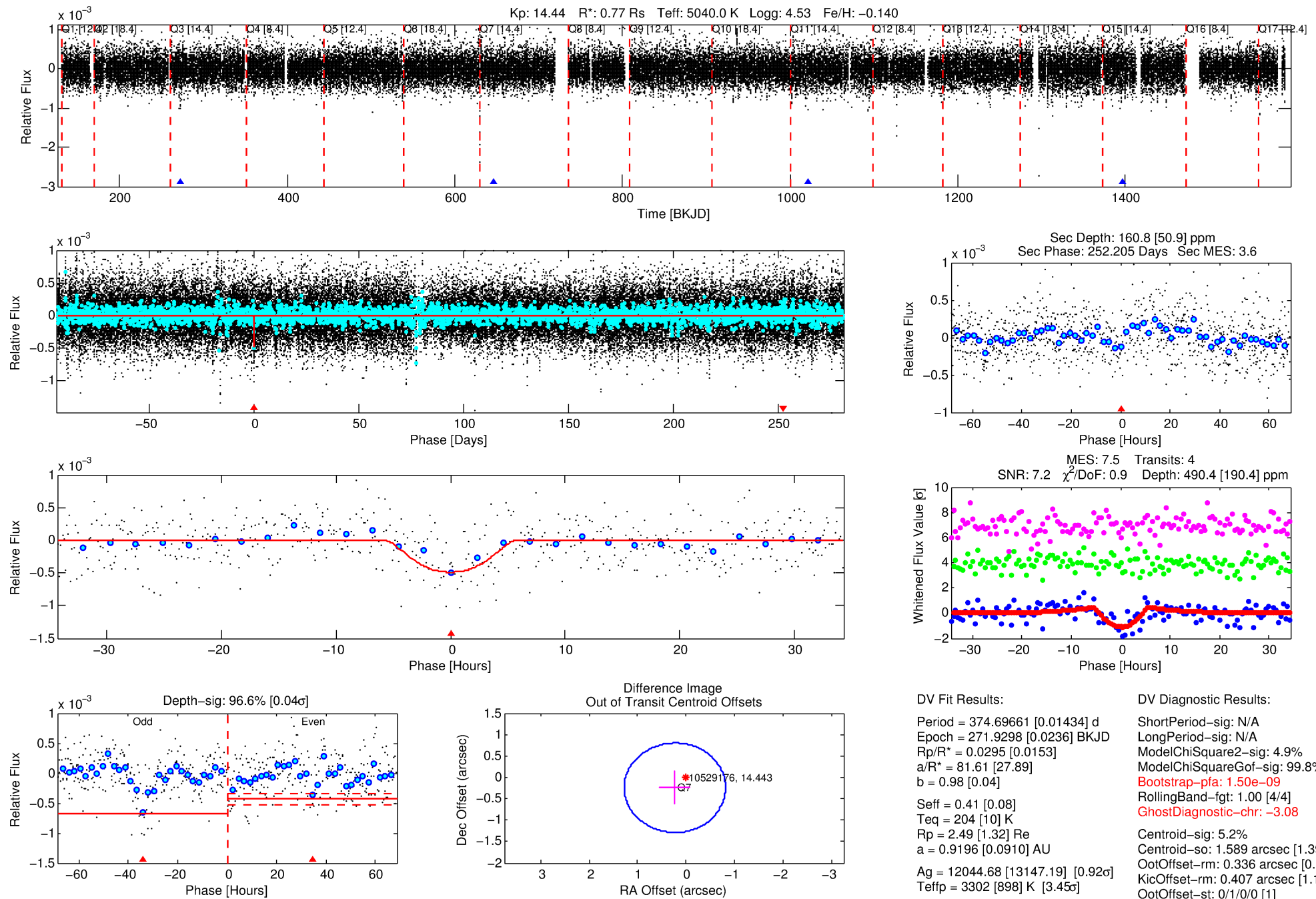
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010529176-01

No Significant Match Found

# DV One-Page Summary

KIC: 10529176 Candidate: 1 of 1 Period: 374.697 d



## DV Fit Results:

Period = 374.69661 [0.01434] d  
Epoch = 271.9298 [0.0236] BKJD  
Rp/R\* = 0.0295 [0.0153]  
a/R\* = 81.61 [27.89]  
b = 0.98 [0.04]  
Seff = 0.41 [0.08]  
Teq = 204 [10] K  
Rp = 2.49 [1.32] Re  
a = 0.9196 [0.0910] AU  
Ag = 12044.68 [13147.19] [0.92 $\sigma$ ]  
Teffp = 3302 [898] K [3.45 $\sigma$ ]

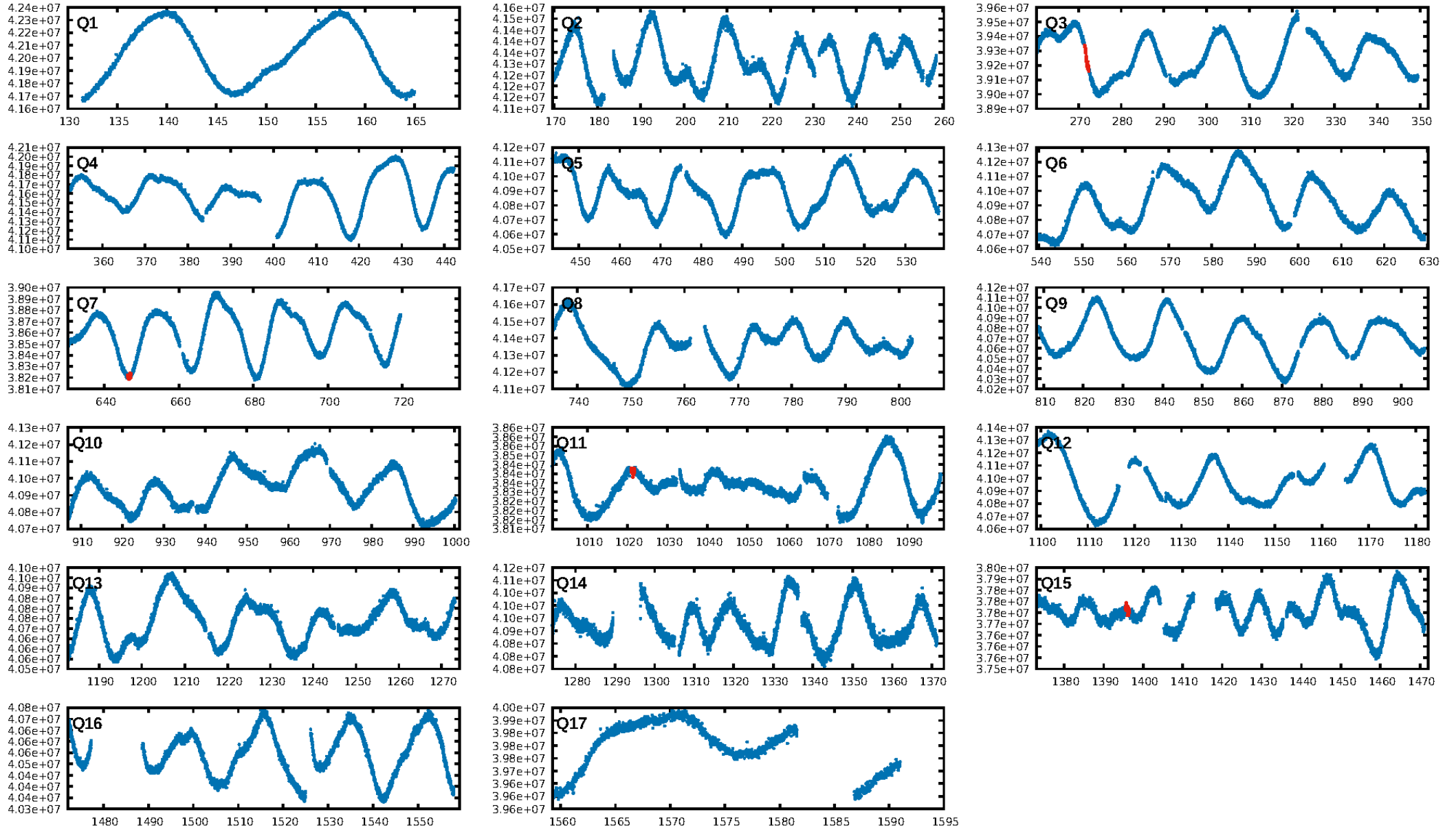
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 4.9%  
ModelChiSquareGof-sig: 99.8%  
**Bootstrap-pfa: 1.50e-09**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: -3.08**  
Centroid-sig: 5.2%  
Centroid-so: 1.589 arcsec [1.39 $\sigma$ ]  
OotOffset-rm: 0.336 arcsec [0.96 $\sigma$ ]  
KicOffset-rm: 0.407 arcsec [1.11 $\sigma$ ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [1/1]

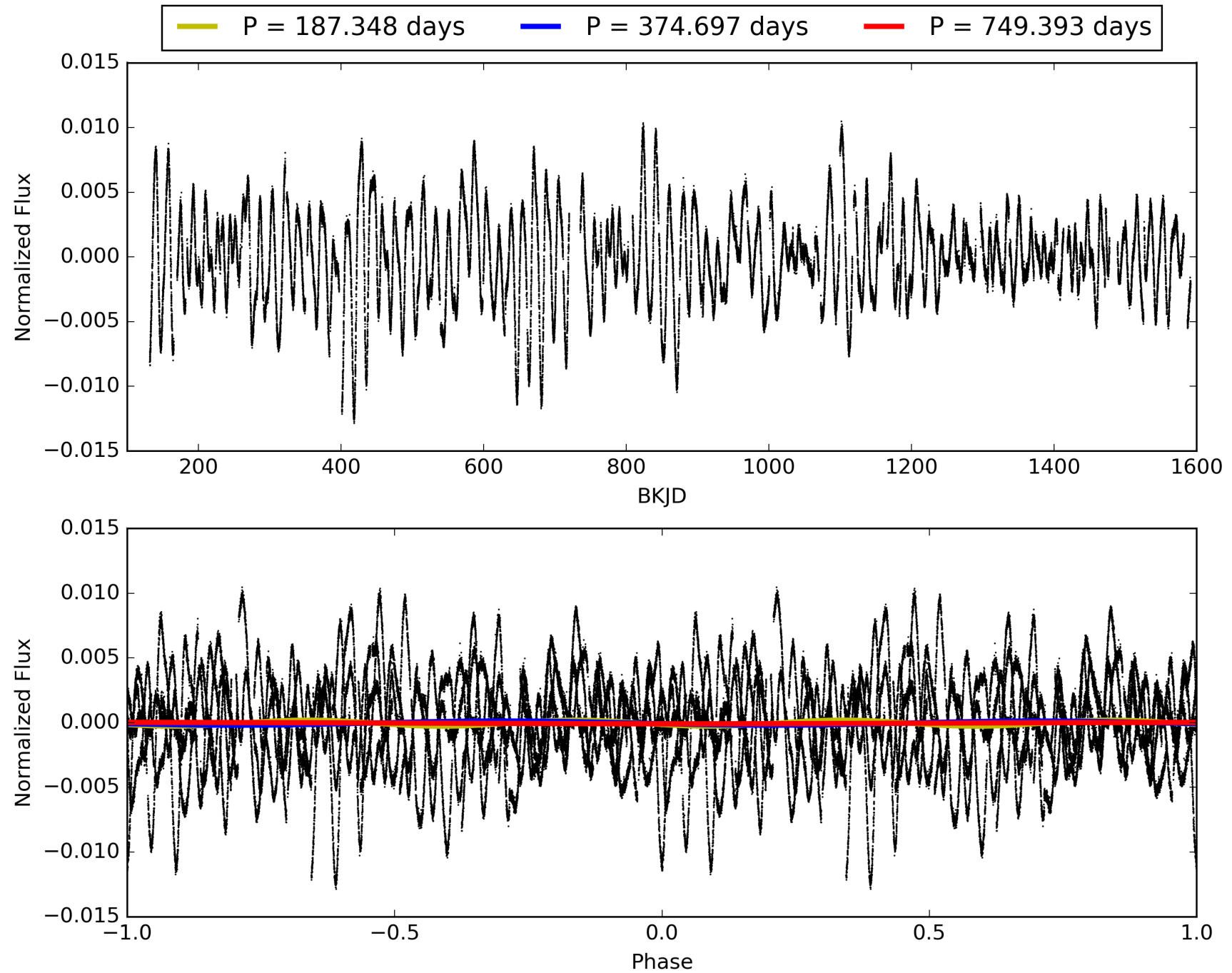
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:11:40 Z

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

# TCE 010529176-01, PDC Light Curves

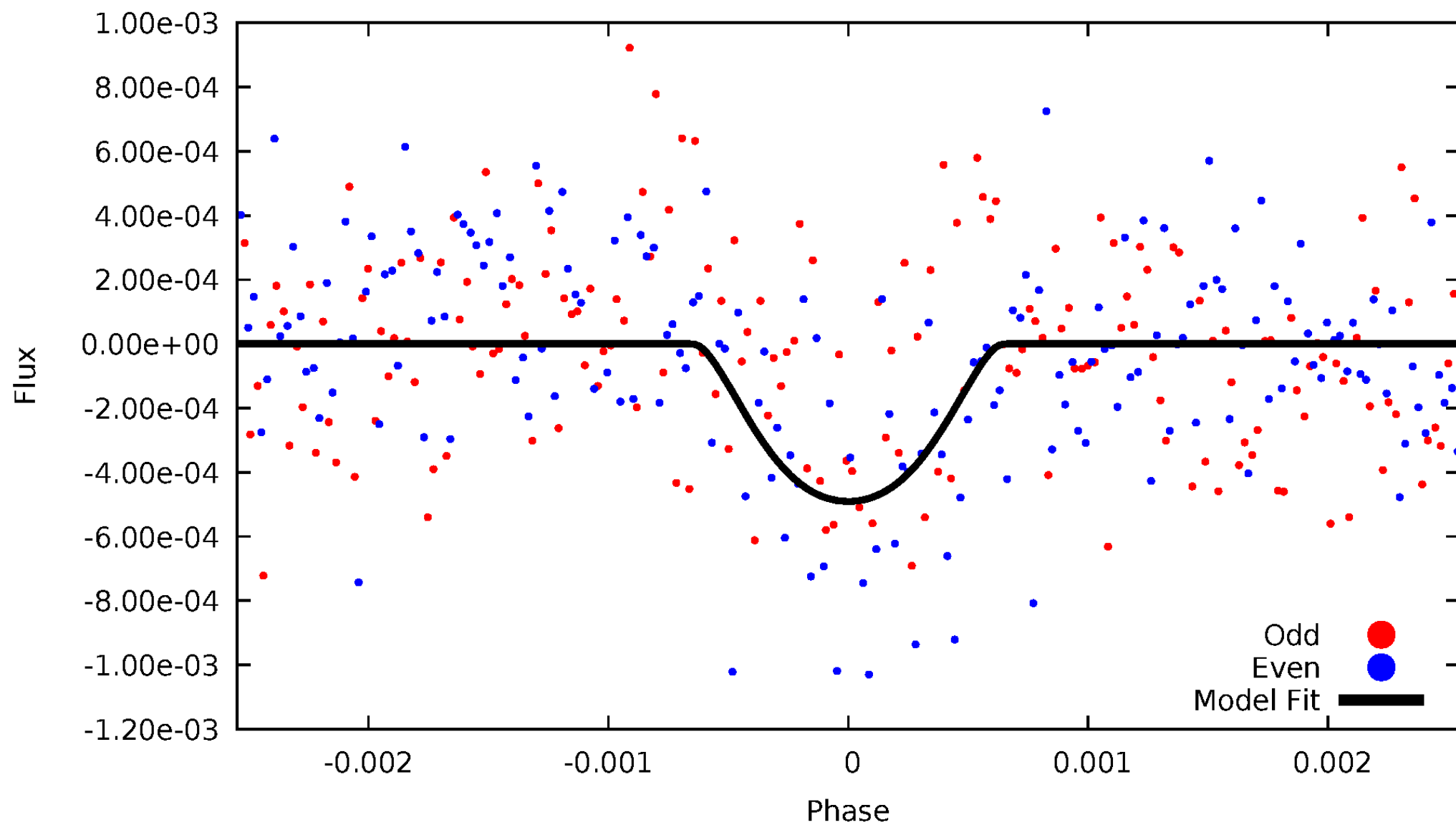


TCE 010529176-01



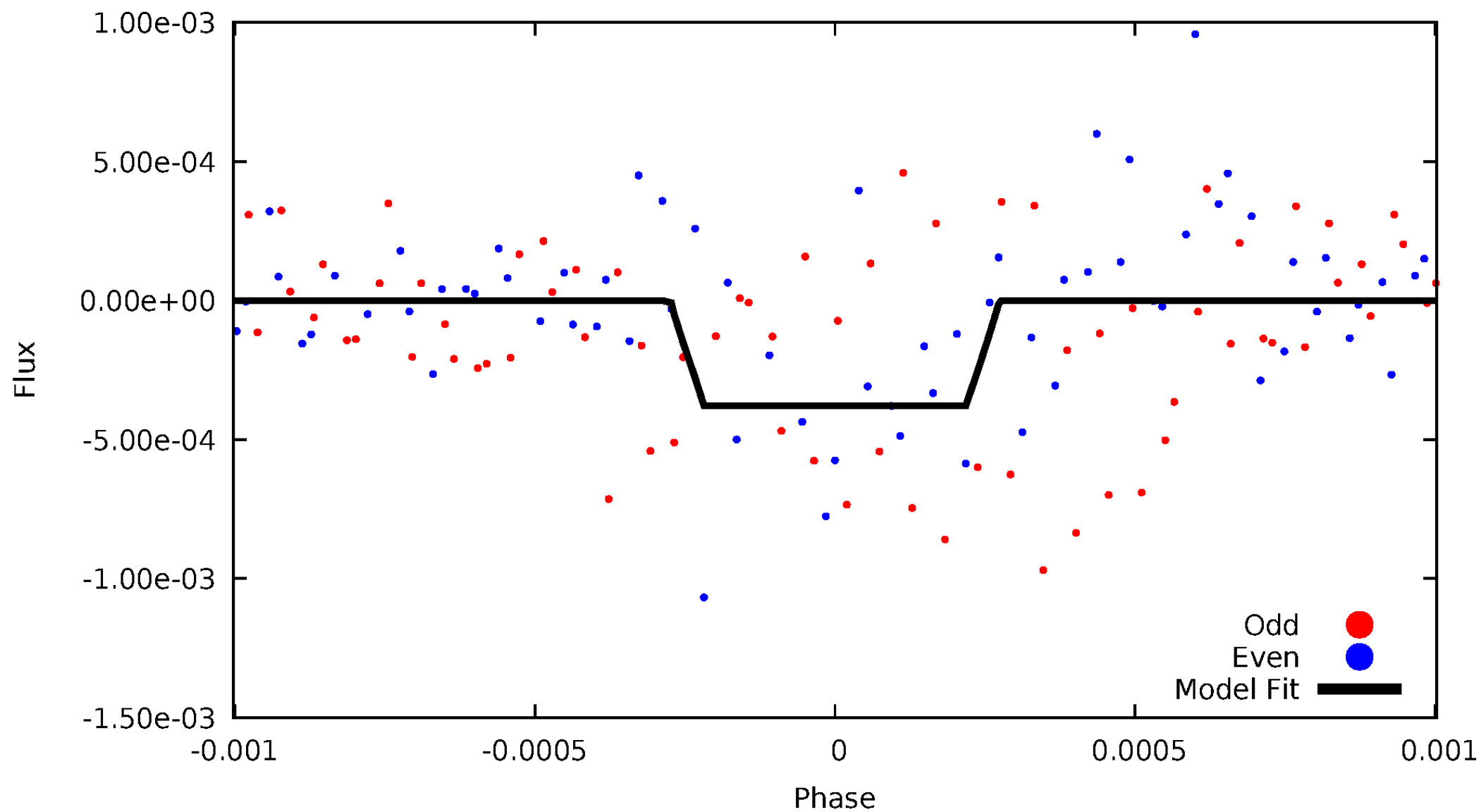
# DV Odd/Even

TCE 010529176-01



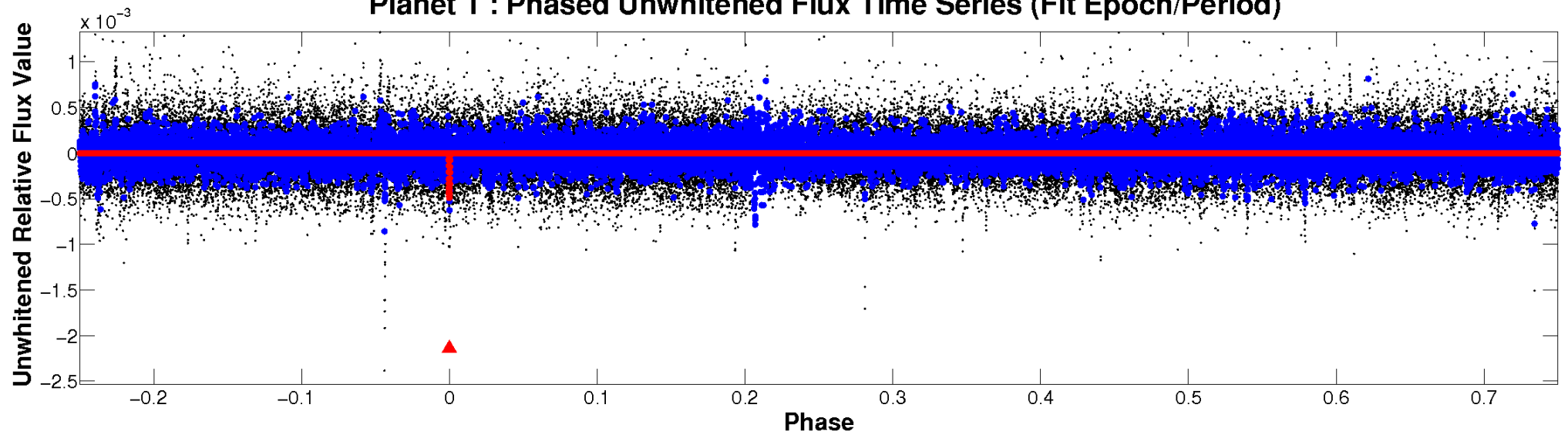
# ALT Odd/Even

TCE 010529176-01

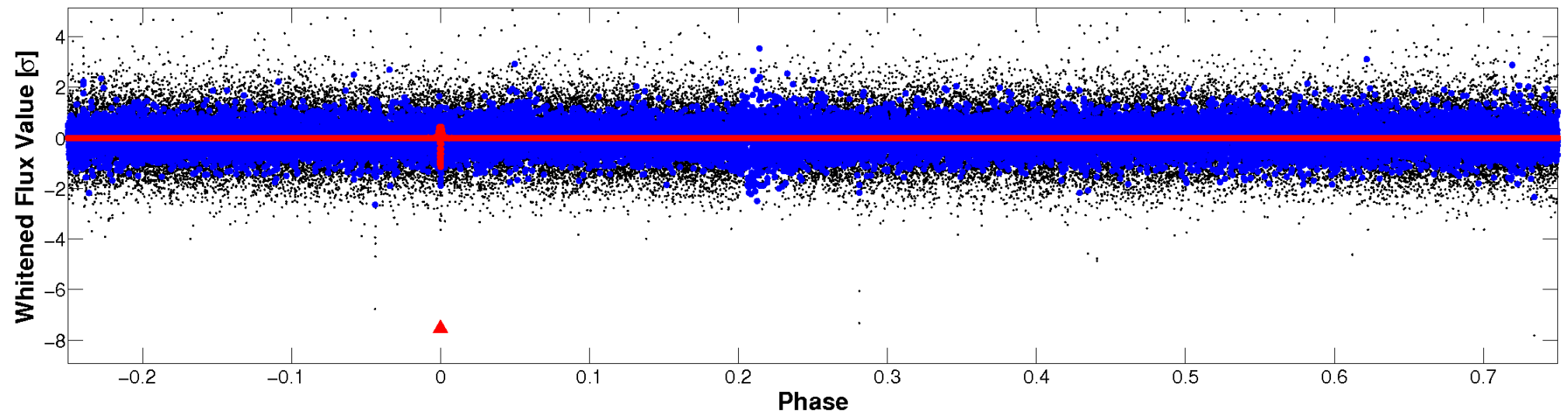


# Non-Whitened Vs. Whitened Light Curve

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

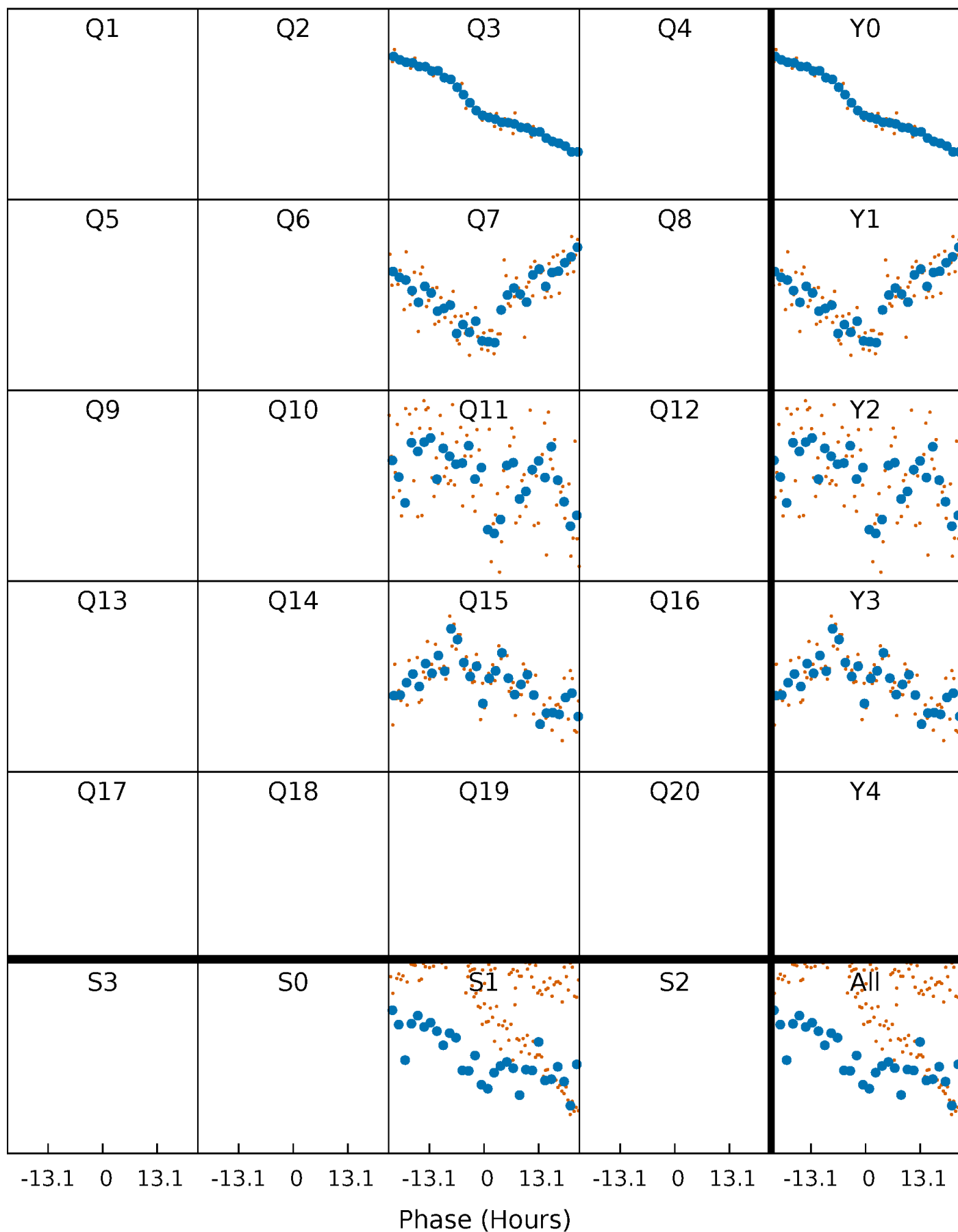


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

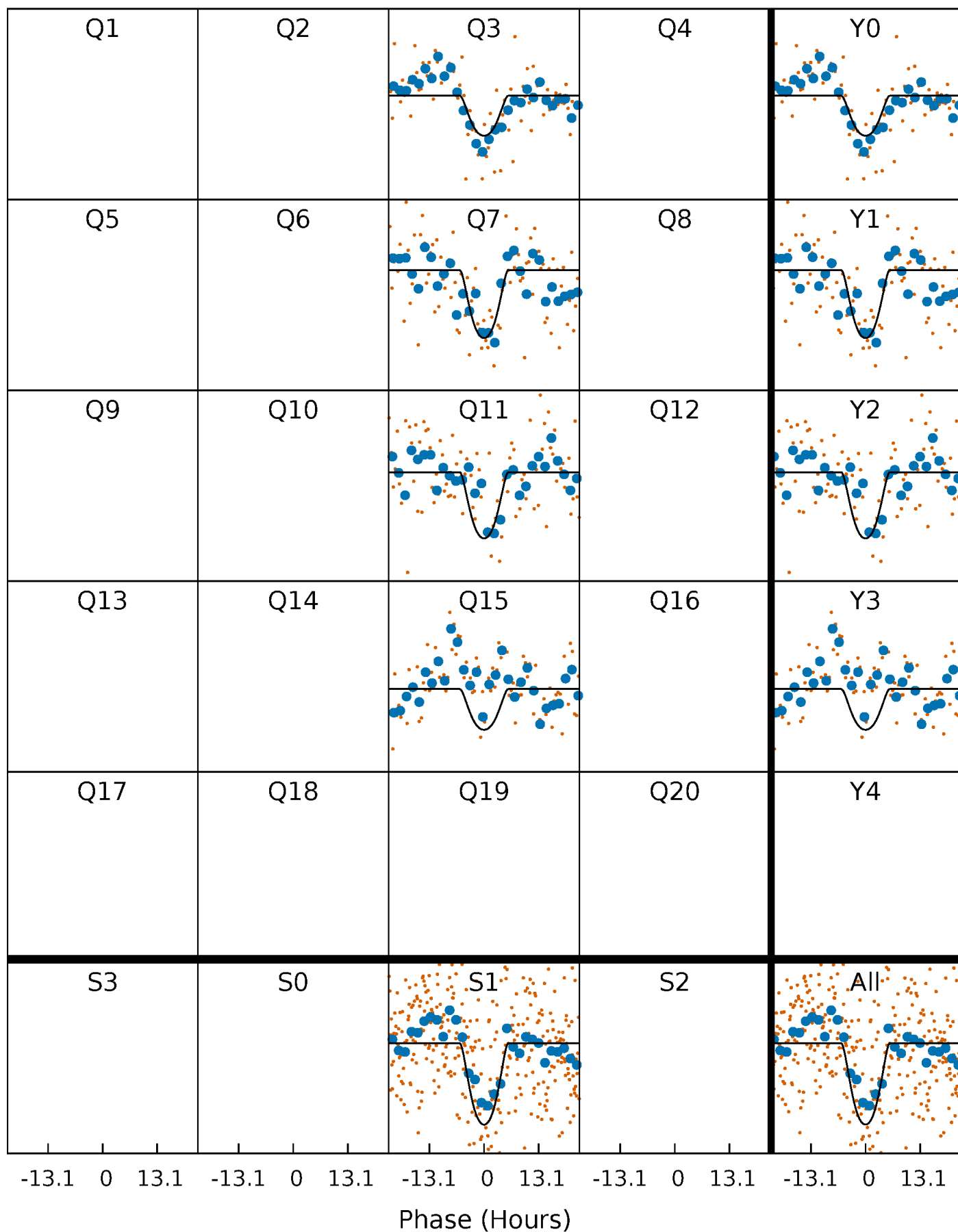
TCE 010529176-01 P=374.696610 Days  $T_0=271.929839$  (BKJD)





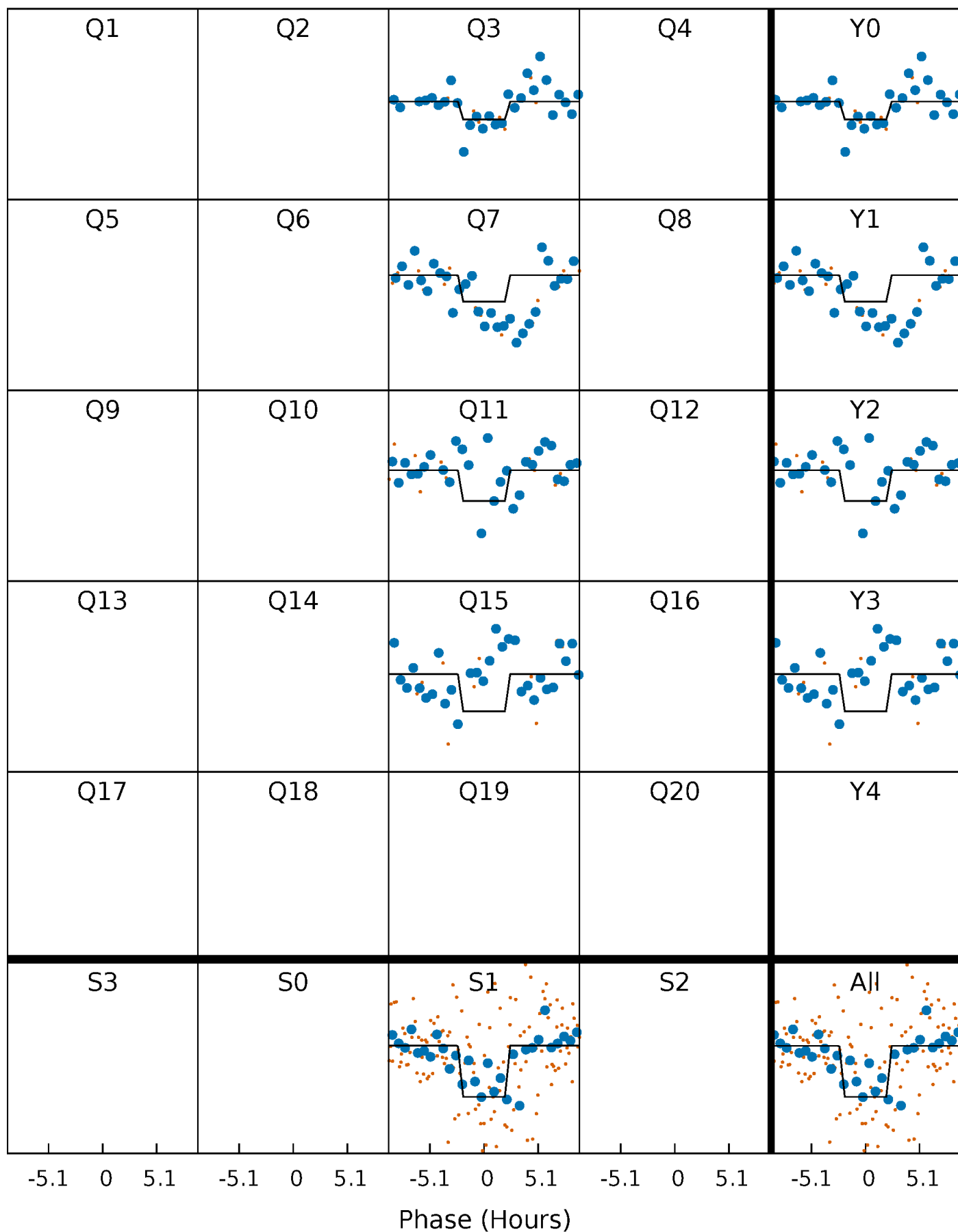
# DV Quarter-Phased Transit Curves

TCE 010529176-01 P=374.696610 Days  $T_0=271.929839$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

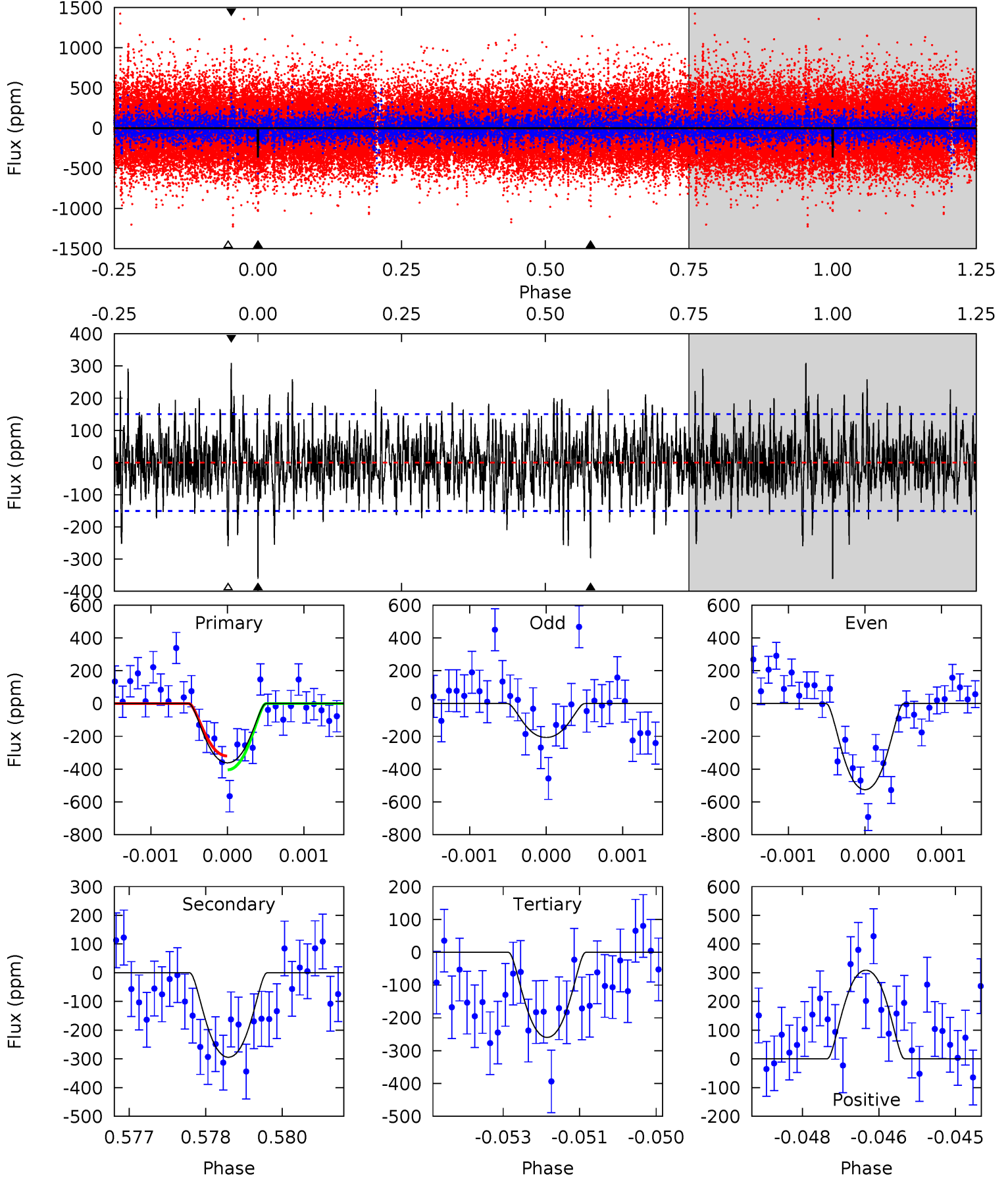
TCE 010529176-01 P=374.765113 Days  $T_0=271.830555$  (BKJD)



# DV Model-Shift Uniqueness Test

010529176-01, P = 374.696610 Days, E = 271.929839 Days

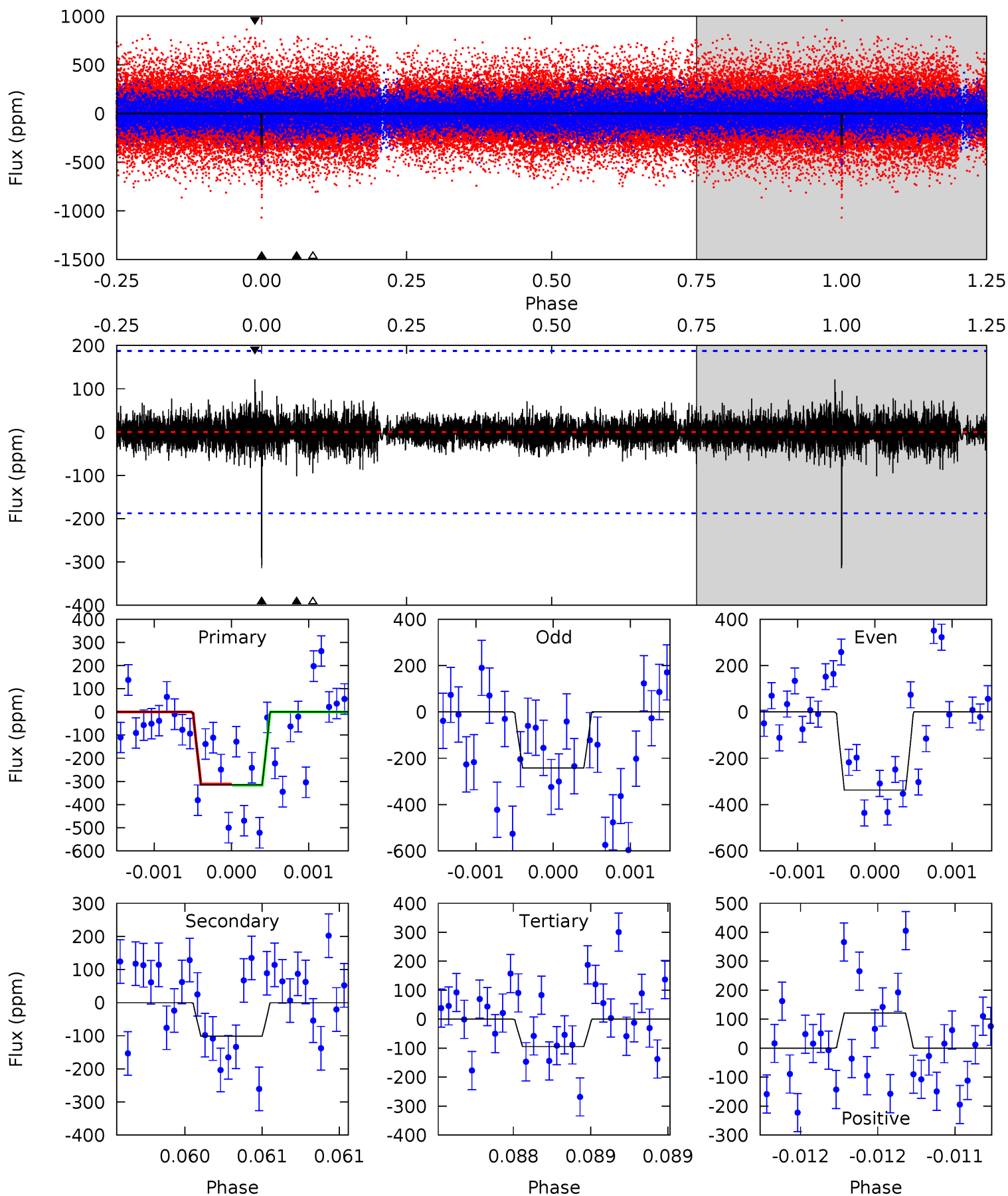
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	10.6	9.33	11.1	5.41	3.22	2.64	3.67	1.90	1.25	-0.52	5.72	0.87	0.46	1.52



# Alt Model-Shift Uniqueness Test

010529176-01, P = 374.765113 Days, E = 271.830555 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
9.32	3.01	2.80	3.60	5.56	3.46	0.57	6.51	5.72	0.21	-0.59	1.40	0.84	0.28	0.07



### Stellar Parameters For KIC 010529176

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5040^{+151}_{-136}$	$4.530^{+0.084}_{-0.056}$	$-0.140^{+0.300}_{-0.300}$	$0.773^{+0.071}_{-0.087}$	$0.737^{+0.095}_{-0.055}$	$2.253^{+0.730}_{-0.417}$
	+3%/-3%	+2%/-1%	+214%/-214%	+9%/-11%	+13%/-7%	+32%/-18%
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 010529176-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-294 \pm 28$	$2.57^{+1.28}_{-1.27}$	$284^{+11}_{-11}$	$4016^{+1369}_{-491}$	$21130^{+67765}_{-12028}$
Alt.	$-102 \pm 34$	$1.76^{+1.31}_{-1.07}$	$284^{+12}_{-11}$	$3791^{+1809}_{-674}$	$15189^{+93268}_{-10799}$

$T_{\text{max}}$  = 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

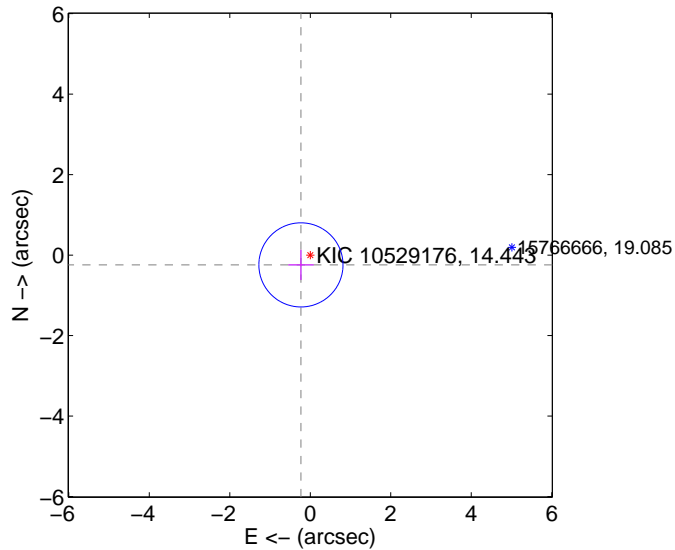
Supplemental centroid analysis for 010529176-01. Kepler magnitude: 14.44. Transit SNR 7.24

There are 1 quarters with good PRF difference image offsets

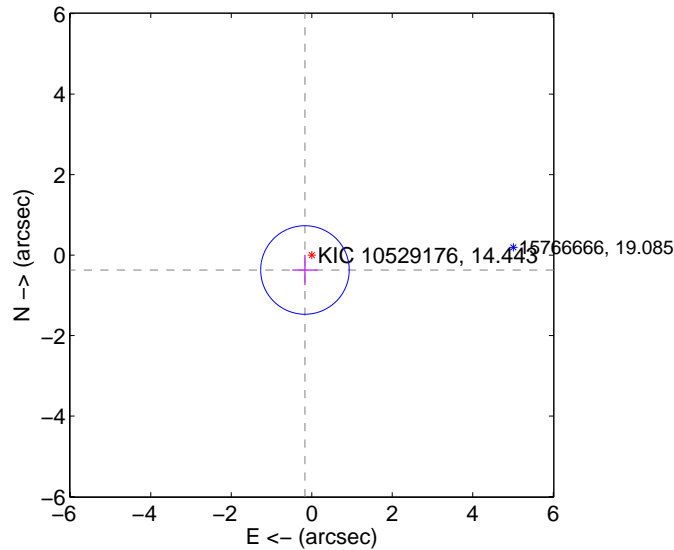
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.336 \pm 0.348$	0.96	$0.232 \pm 0.315$	$-0.243 \pm 0.376$
PRF-fit source offset from KIC position	$0.407 \pm 0.367$	1.11	$0.169 \pm 0.315$	$-0.370 \pm 0.376$
photometric centroid source offset	$1.59 \pm 1.14$	1.39	$0.87 \pm 1.13$	$1.33 \pm 1.14$

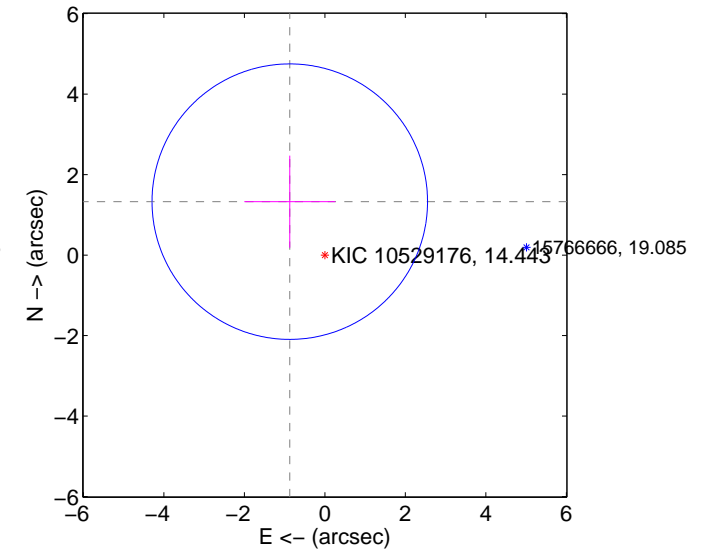
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

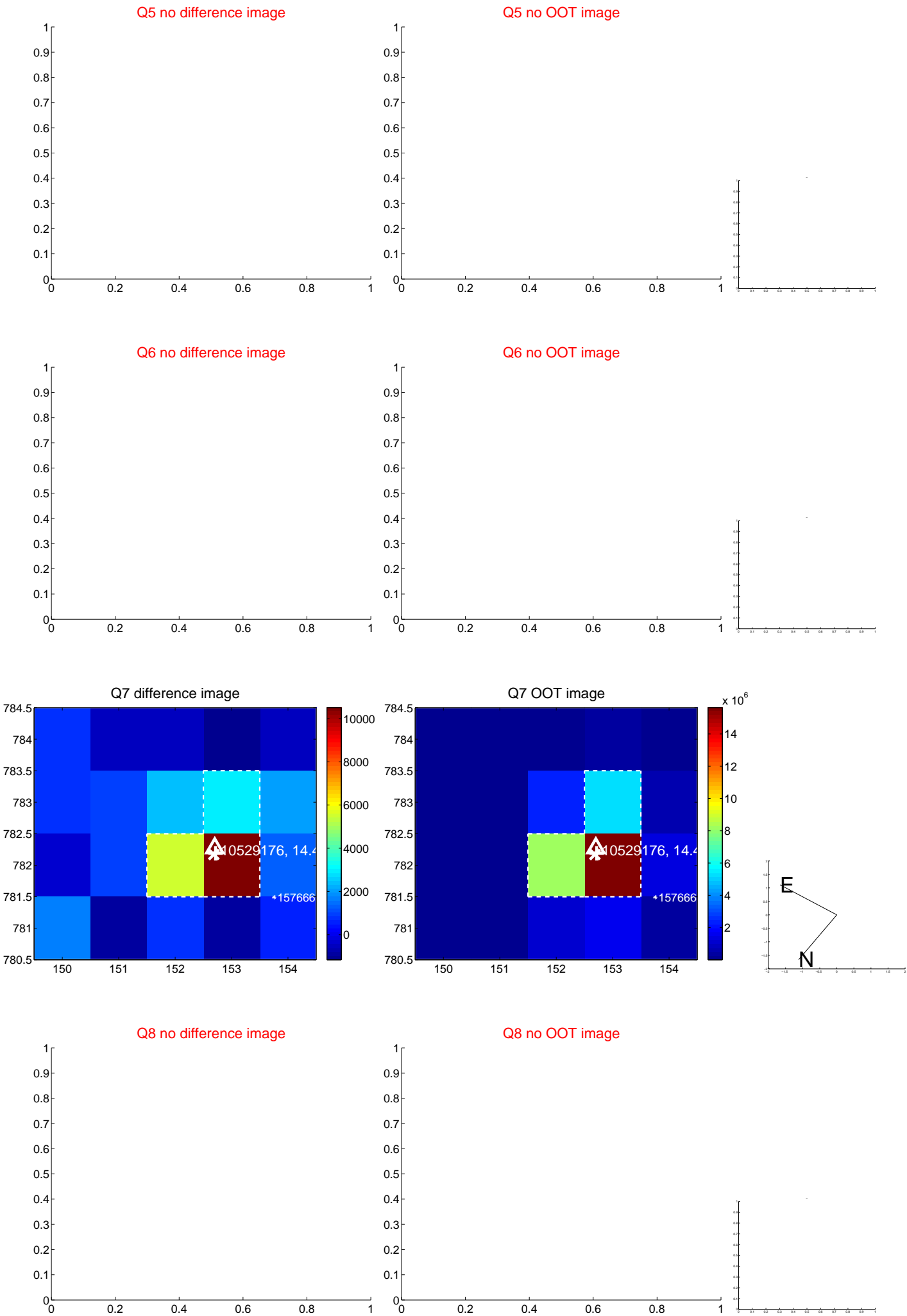


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





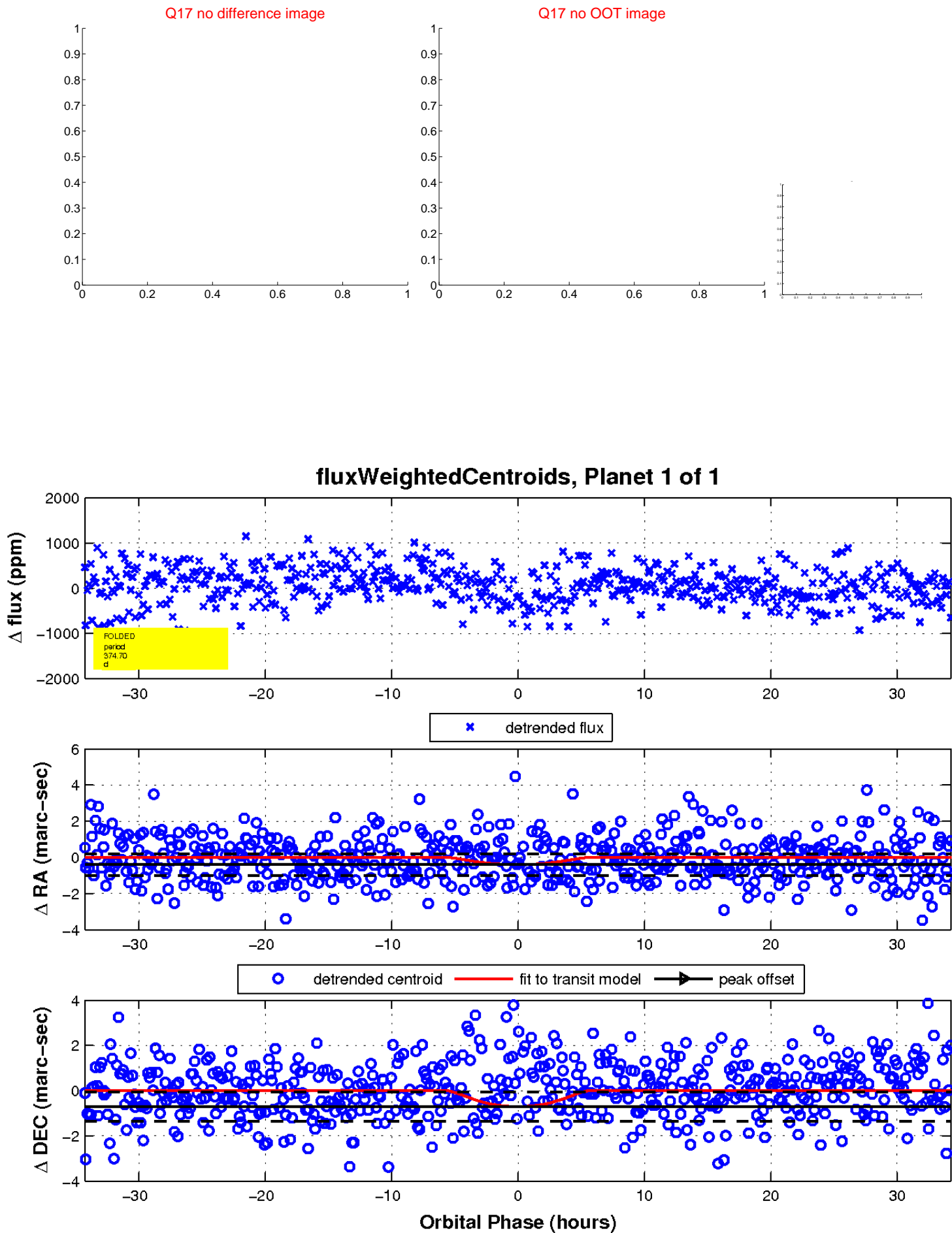
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

