

# KIC 008373988

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008373988-02	OBS	No	423.576905	185.810749	497.1	17.587	15.5	14.4	1.00	6057	2.63	1.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008373988-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—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.

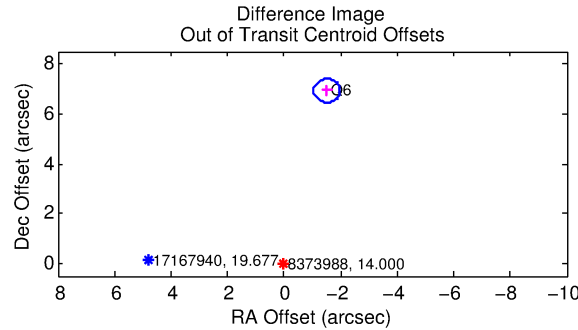
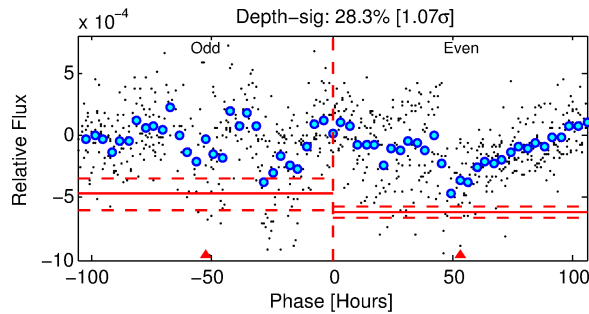
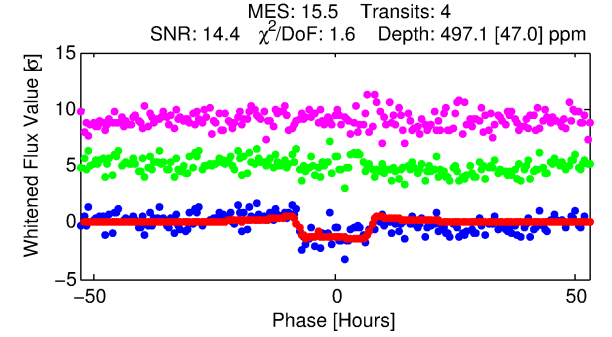
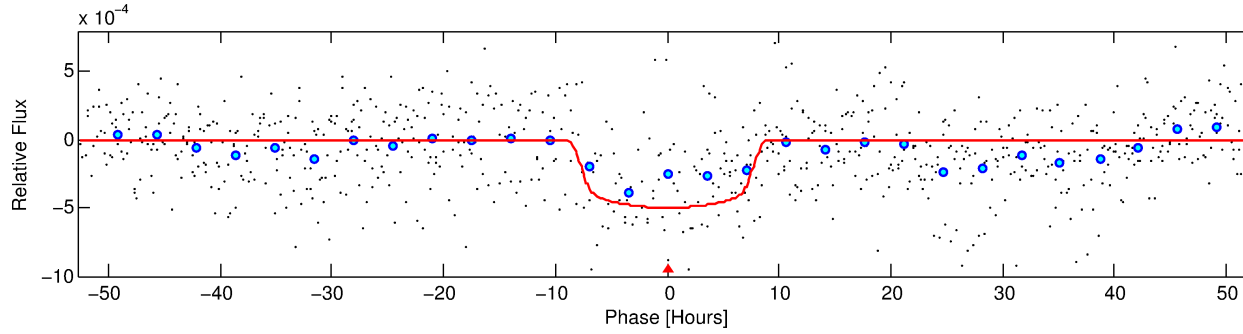
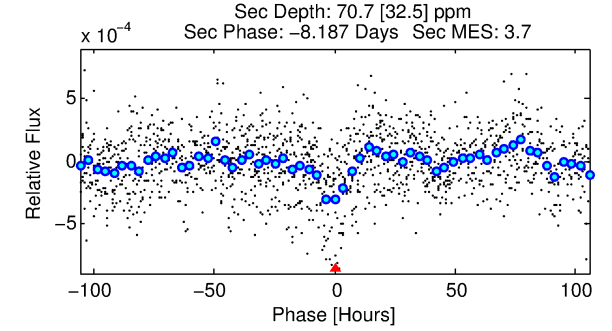
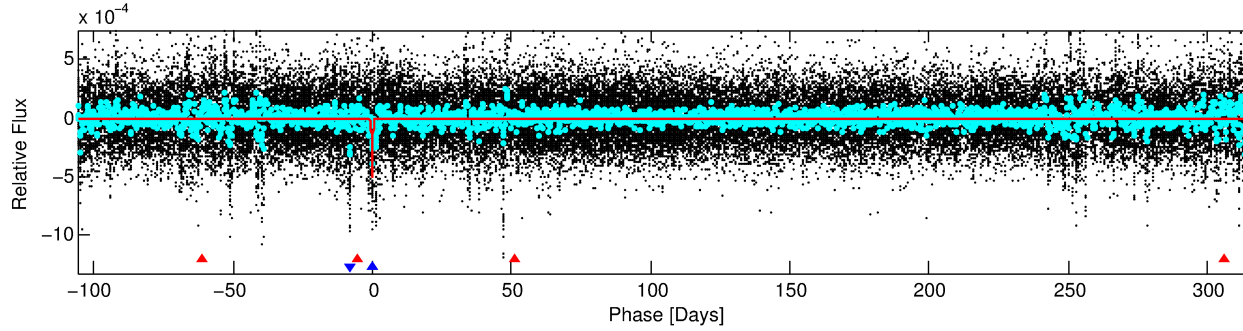
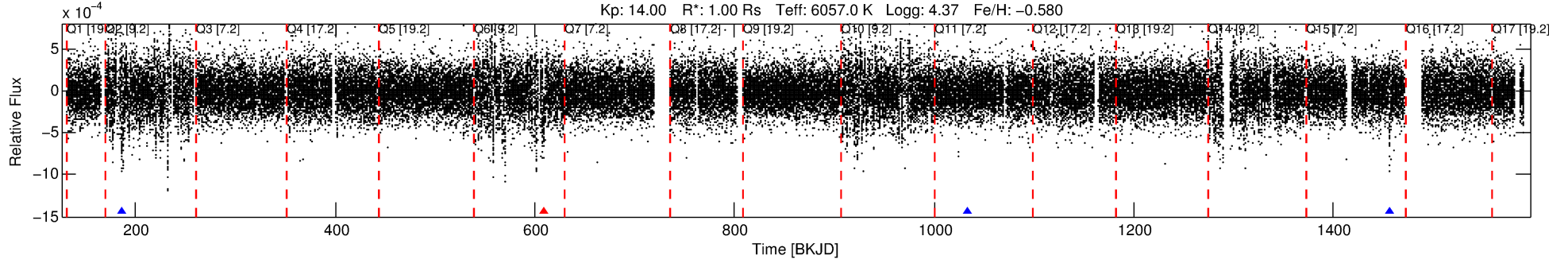
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008373988-02

No Significant Match Found

# DV One-Page Summary

KIC: 8373988 Candidate: 2 of 2 Period: 423.577 d



## DV Fit Results:

Period = 423.57690 [0.01033] d  
Epoch = 185.8107 [0.0220] BKJD  
Rp/R\* = 0.0240 [0.0019]  
a/R\* = 88.95 [27.47]  
b = 0.90 [0.06]  
Seff = 1.11 [0.40]  
Teq = 262 [23] K  
Rp = 2.63 [0.74] Re  
a = 1.0468 [0.2405] AU  
Ag = 6167.26 [3655.05] [1.69σ]  
Teffp = 3584 [449] K [7.39σ]

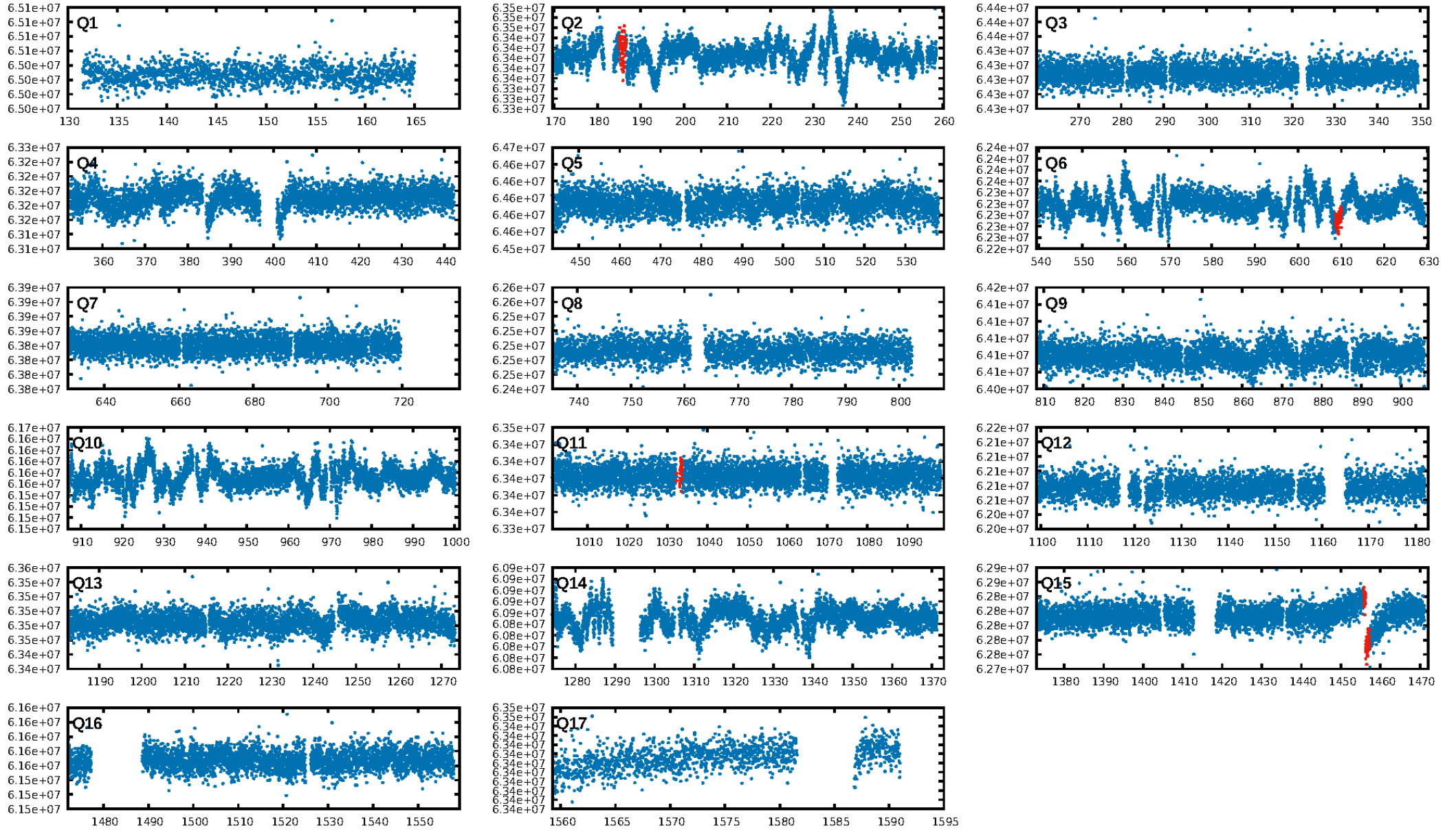
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [55.67σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 26.9%  
Bootstrap-pfa: 4.37e-21  
RollingBand-fgt: 0.75 [3/4]  
GhostDiagnostic-chr: 6.033  
Centroid-sig: 0.0%  
Centroid-so: 3.388 arcsec [3.33σ]  
OotOffset-rm: 7.088 arcsec [45.69σ]  
KicOffset-rm: 7.070 arcsec [45.52σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

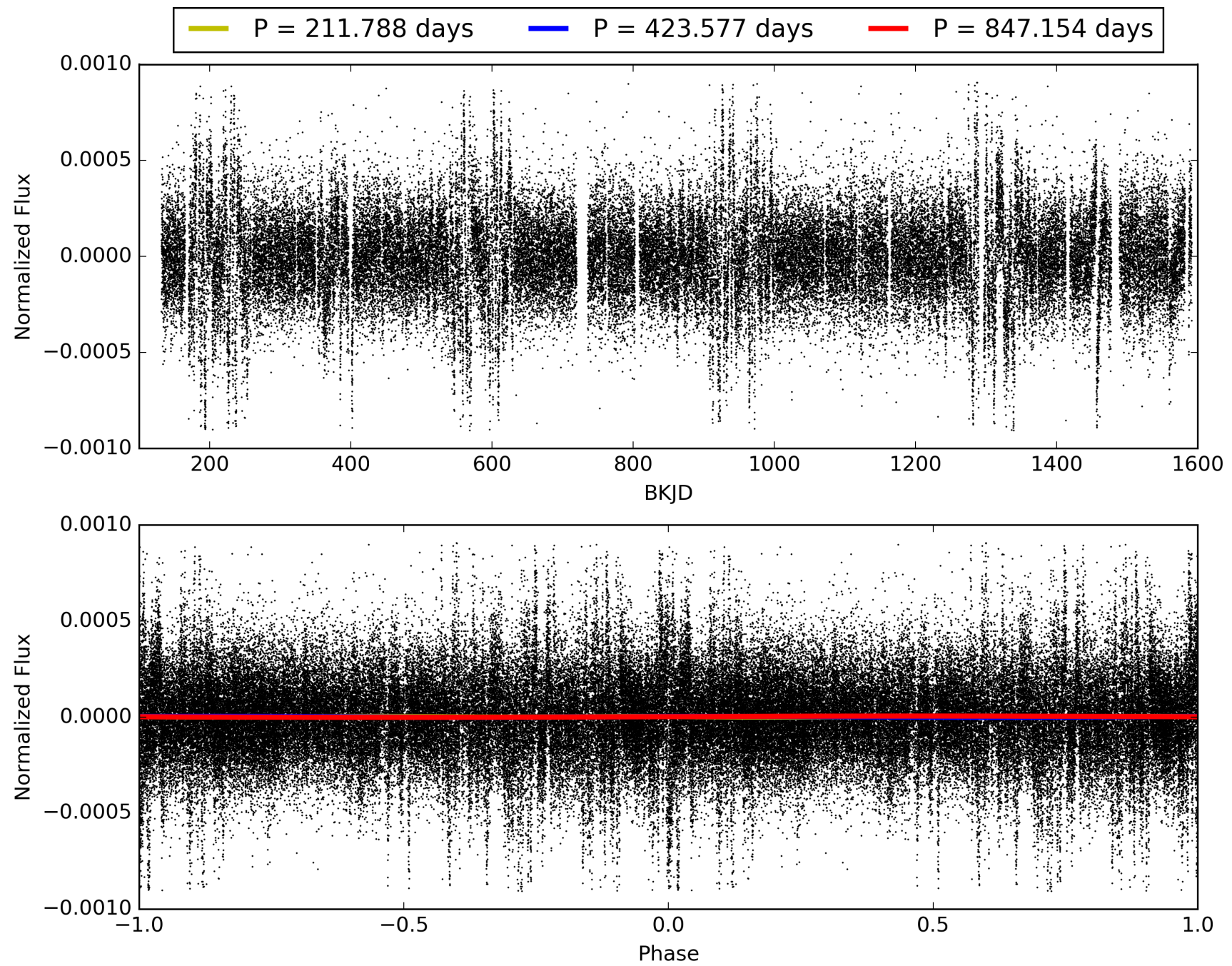
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:40:41 Z

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

# TCE 008373988-02, PDC Light Curves

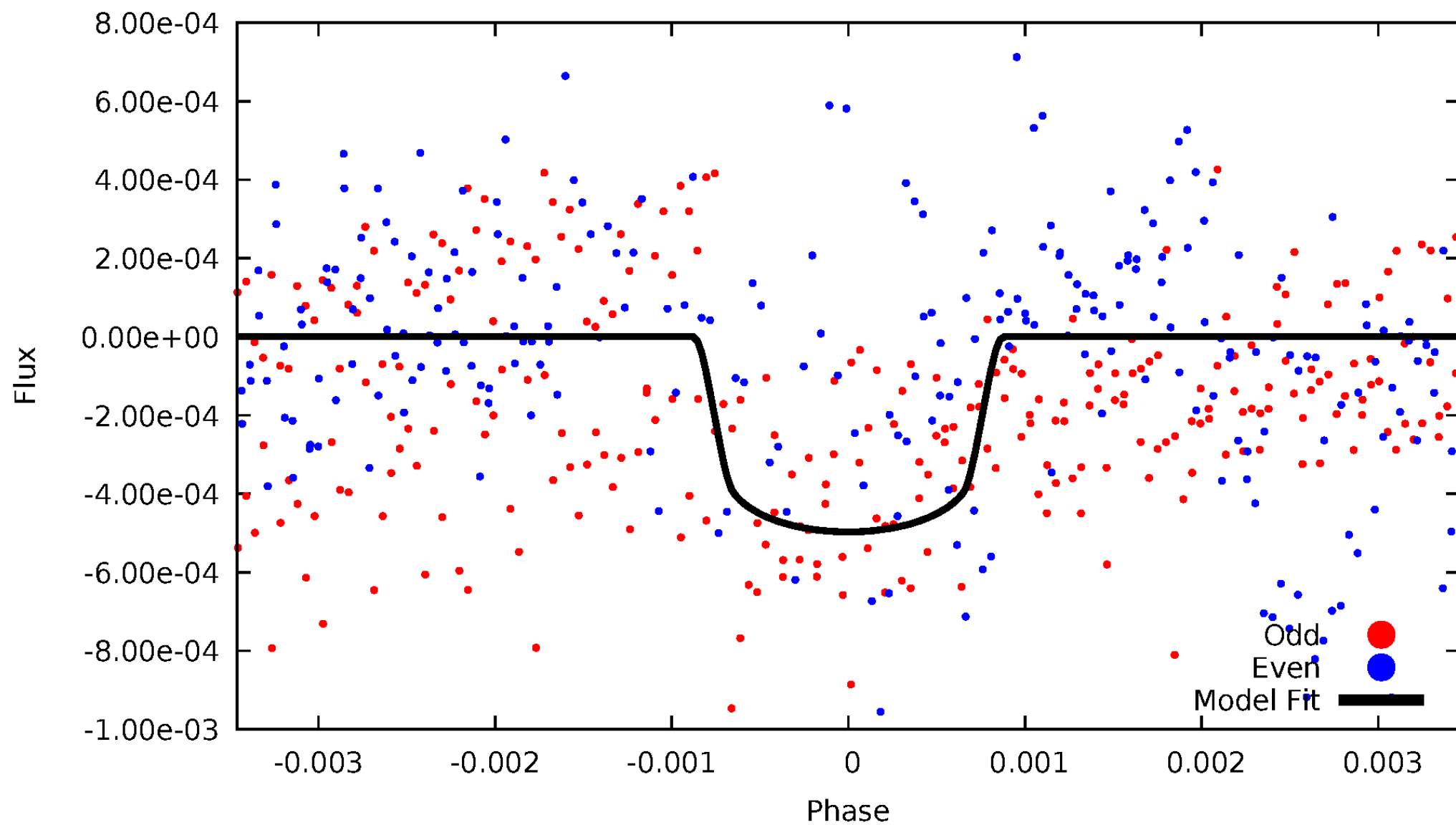


TCE 008373988-02



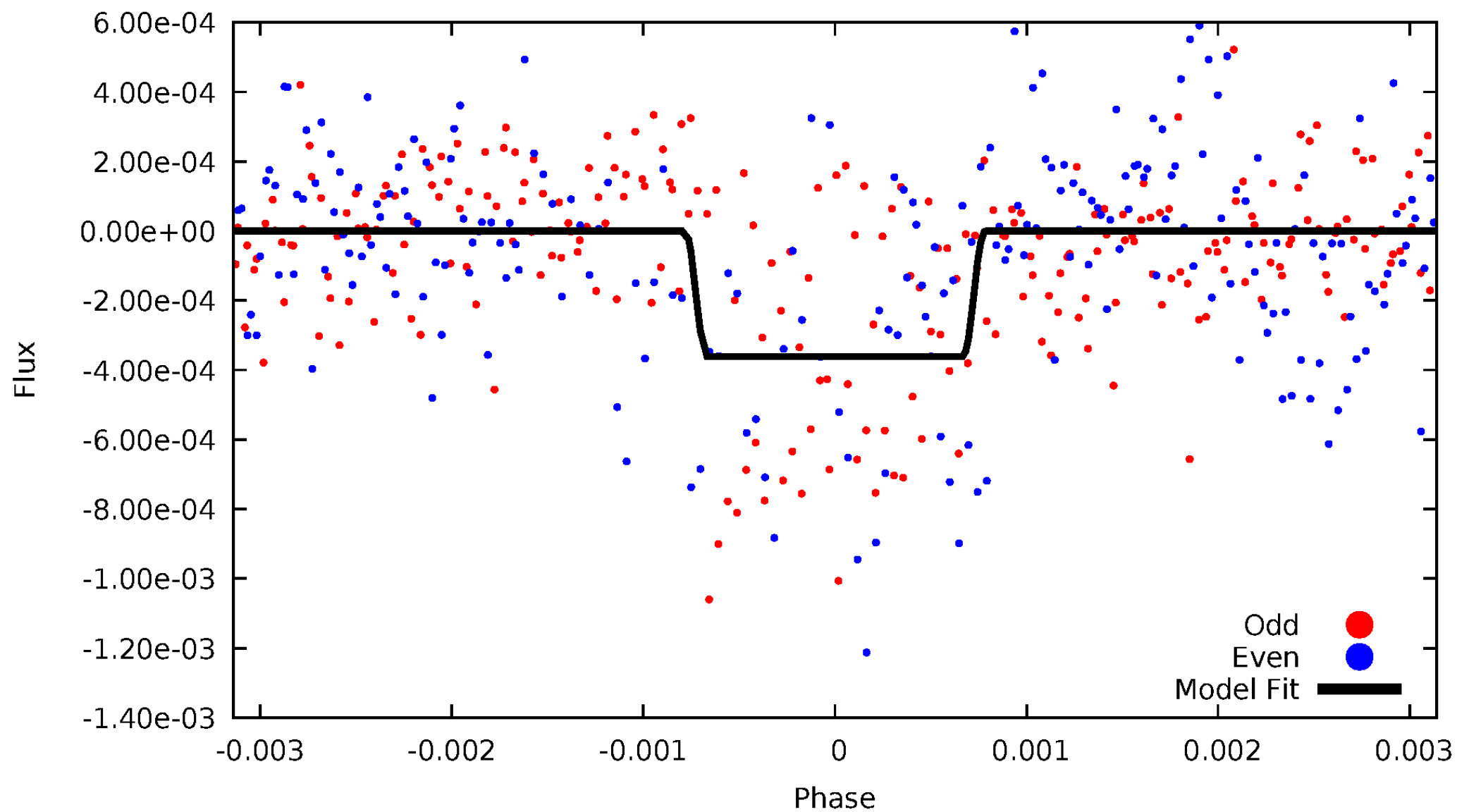
# DV Odd/Even

TCE 008373988-02



# ALT Odd/Even

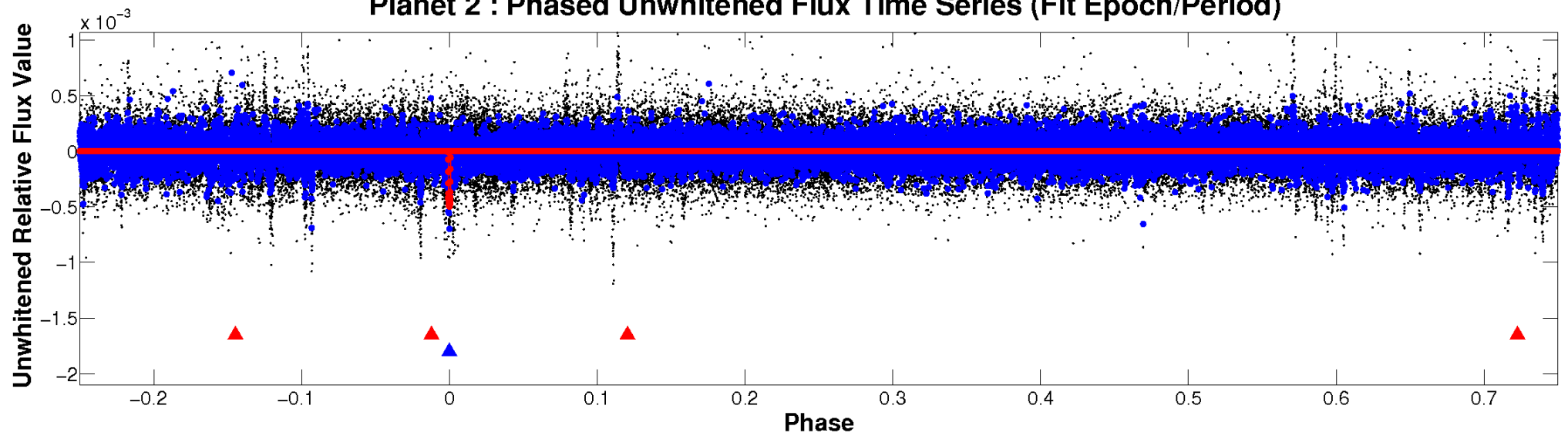
TCE 008373988-02



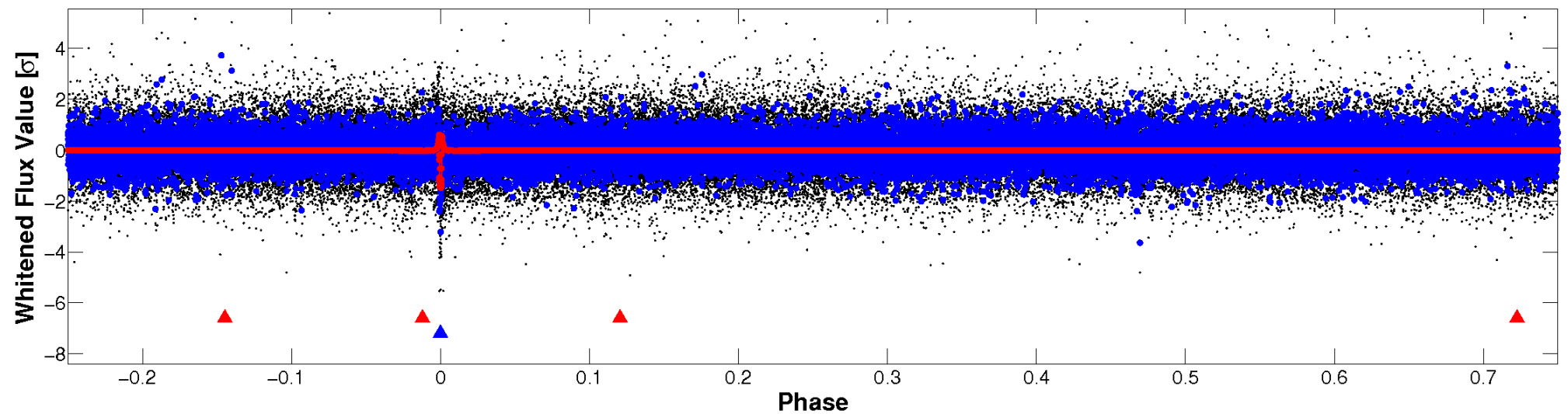


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

TCE 008373988-02     $P=423.576905$  Days     $T_0=185.810749$  (BKJD)





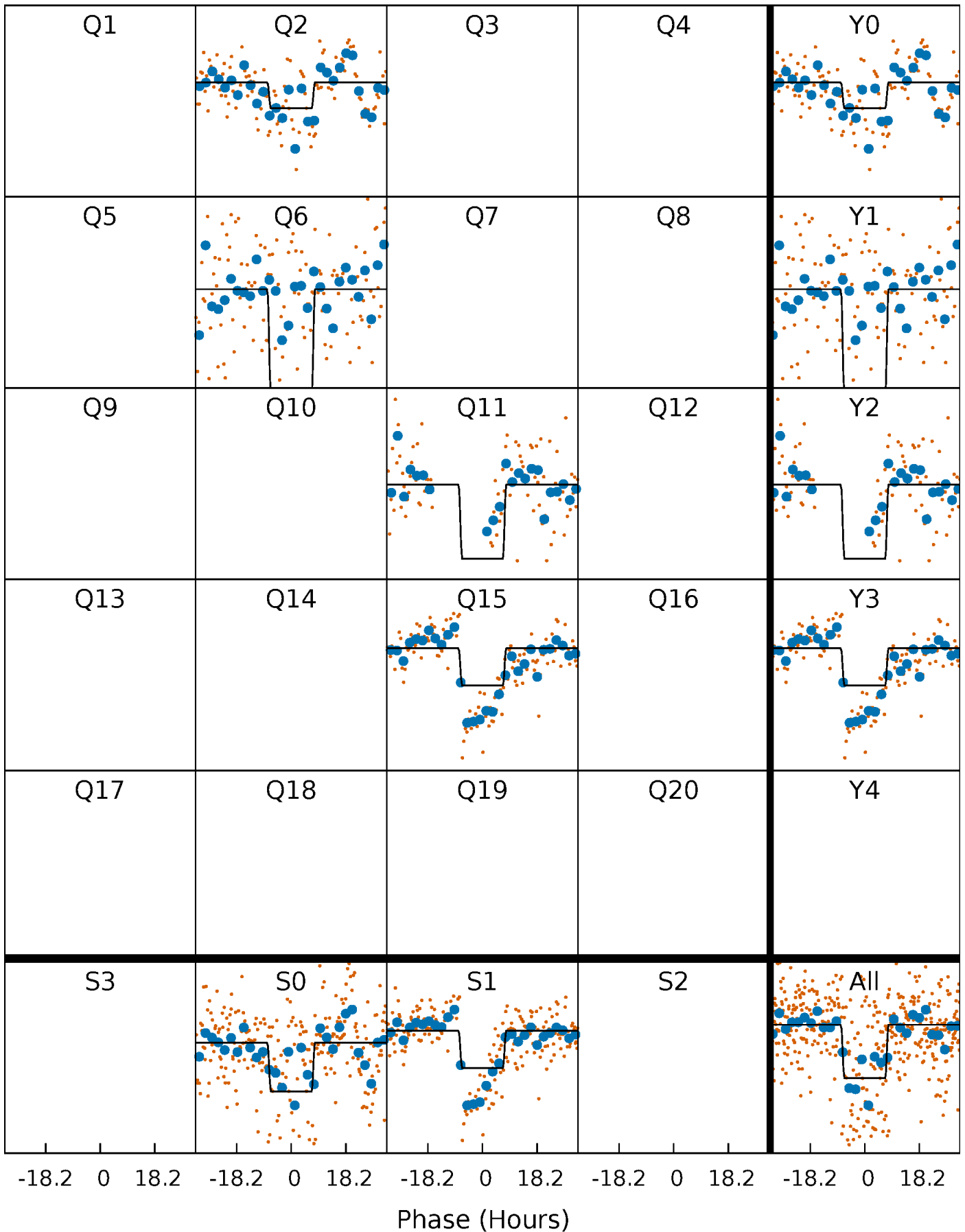
# DV Quarter-Phased Transit Curves

TCE 008373988-02 P=423.576905 Days  $T_0=185.810749$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

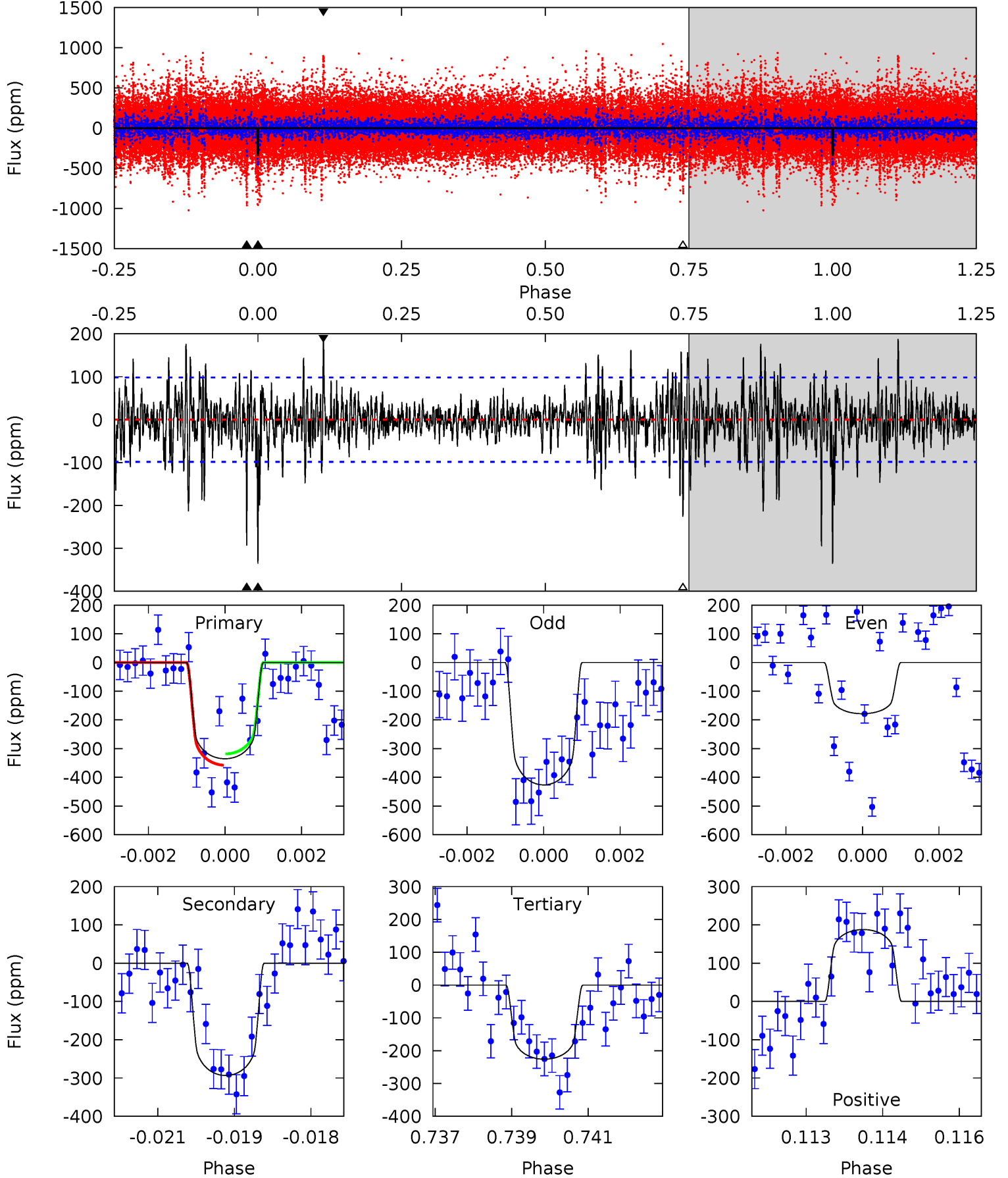
TCE 008373988-02 P=423.574076 Days  $T_0=185.817532$  (BKJD)



# DV Model-Shift Uniqueness Test

008373988-02, P = 423.576905 Days, E = 185.810749 Days

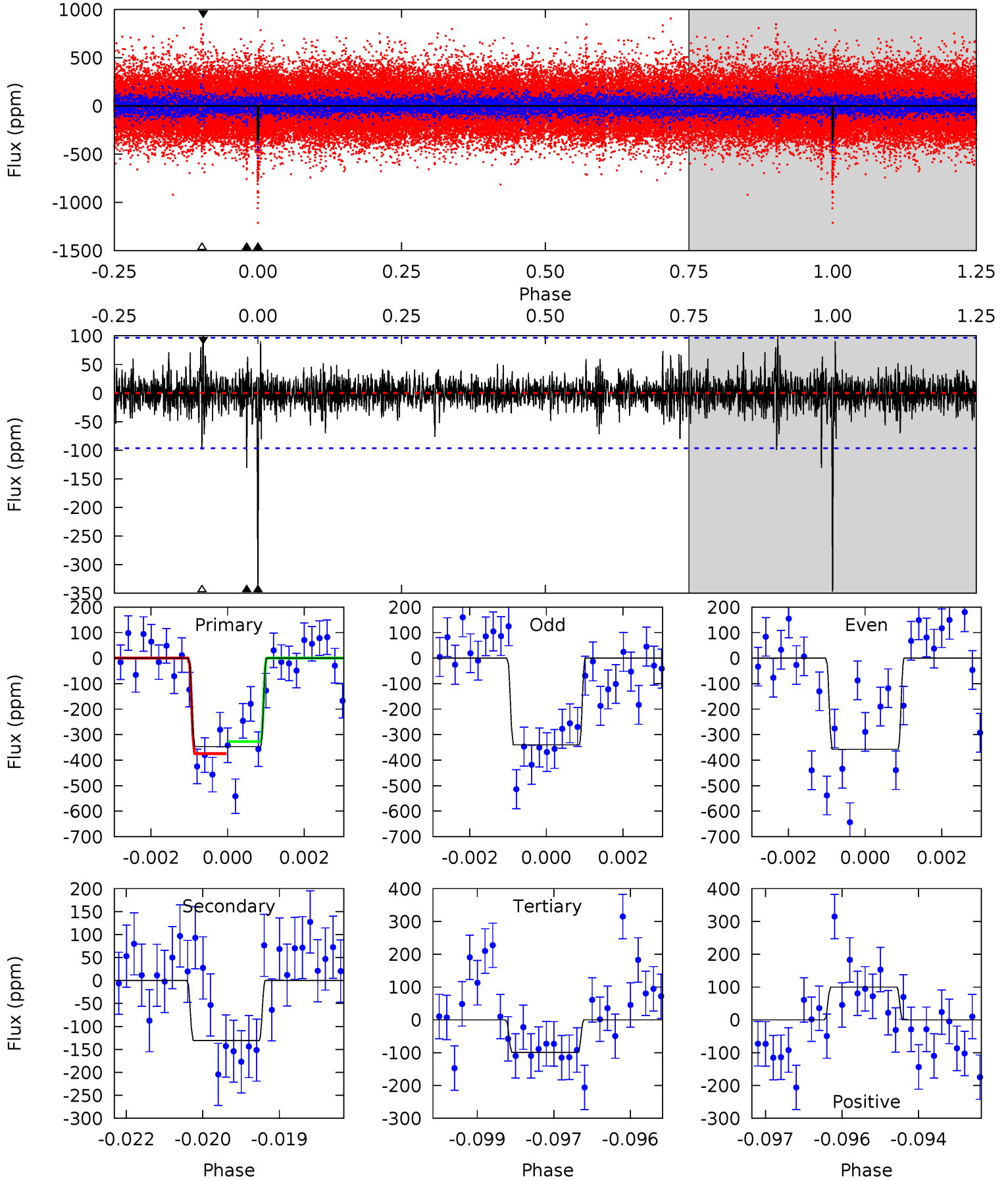
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.3	16.0	12.3	10.2	5.35	3.13	2.54	5.96	8.04	3.67	5.75	6.69	1.17	0.36	0



# Alt Model-Shift Uniqueness Test

008373988-02,  $P = 423.574076$  Days,  $E = 185.817532$  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
19.3	7.27	5.53	5.56	5.37	3.17	1.03	13.8	13.8	1.74	1.71	0.47	1.10	0.22	1.29



### Stellar Parameters For KIC 008373988

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6057^{+163}_{-181}$	$4.366^{+0.153}_{-0.187}$	$-0.580^{+0.300}_{-0.300}$	$1.003^{+0.270}_{-0.180}$	$0.853^{+0.108}_{-0.072}$	$1.190^{+0.947}_{-0.557}$
	+3%/-3%	+4%/-4%	+52%/-52%	+27%/-18%	+13%/-8%	+80%/-47%
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 008373988-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-293 \pm 18$	$2.66^{+0.49}_{-0.35}$	$367^{+29}_{-22}$	$5185^{+227}_{-229}$	$25111^{+8521}_{-6846}$
Alt.	$-131 \pm 18$	$2.09^{+0.40}_{-0.30}$	$366^{+29}_{-23}$	$4806^{+281}_{-230}$	$17821^{+7485}_{-5301}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

## DV Centroid Data

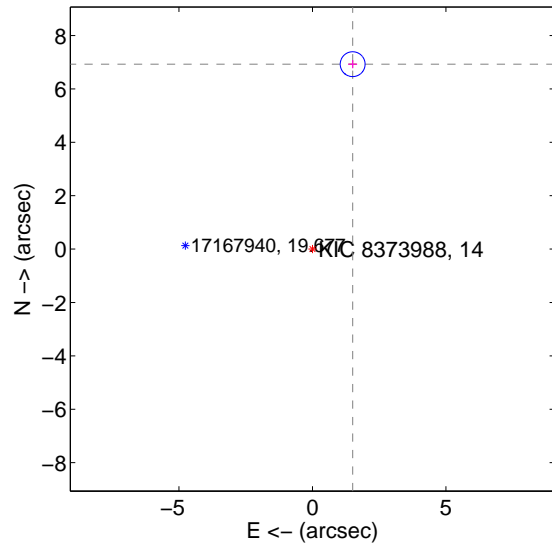
Supplemental centroid analysis for 008373988-02. Kepler magnitude: 14.00. Transit SNR 14.45

There are 0 quarters with good PRF difference image offsets

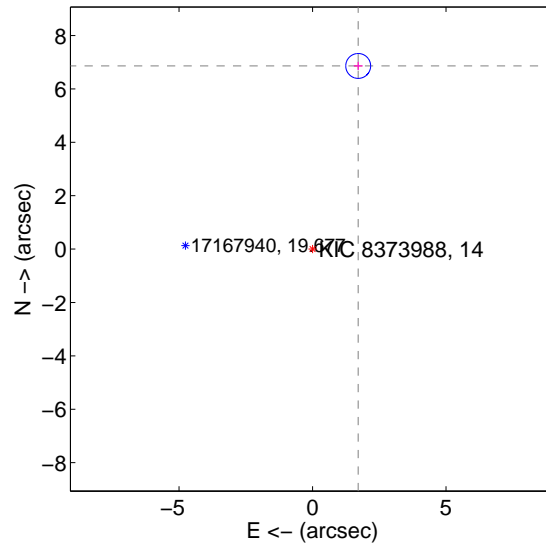
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.088 \pm 0.155$	45.69	$-1.506 \pm 0.168$	$6.926 \pm 0.155$
PRF-fit source offset from KIC position	$7.070 \pm 0.155$	45.52	$-1.711 \pm 0.168$	$6.860 \pm 0.155$
photometric centroid source offset	$3.39 \pm 1.02$	3.33	$3.36 \pm 1.02$	$-0.42 \pm 1.23$

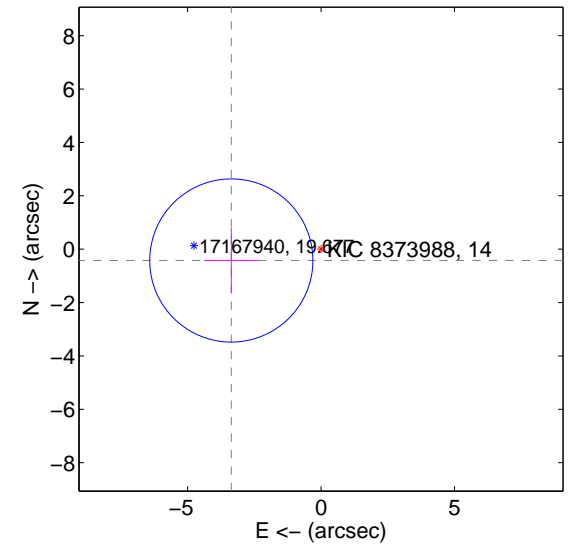
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



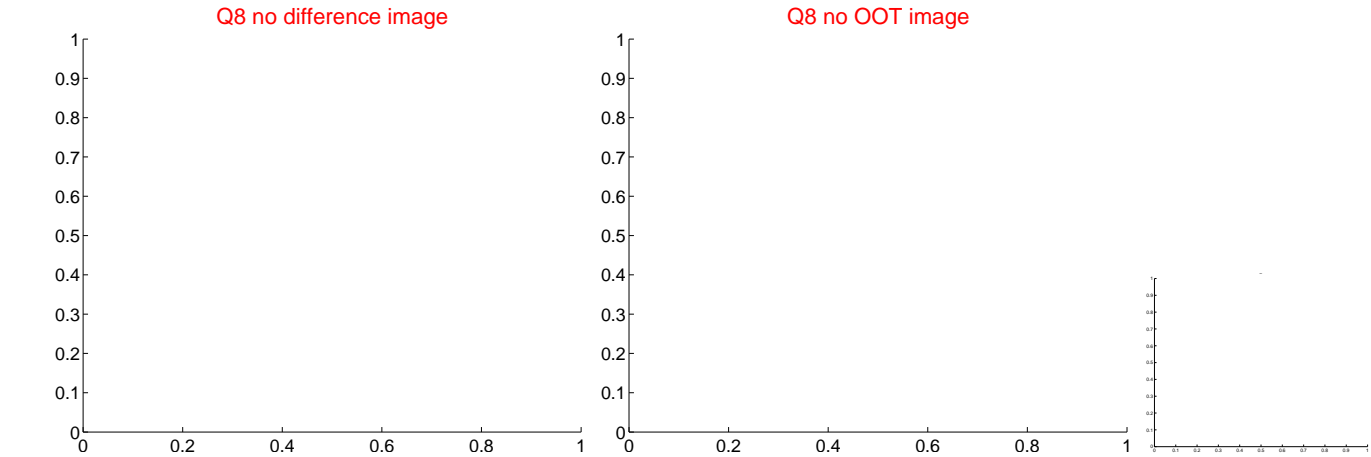
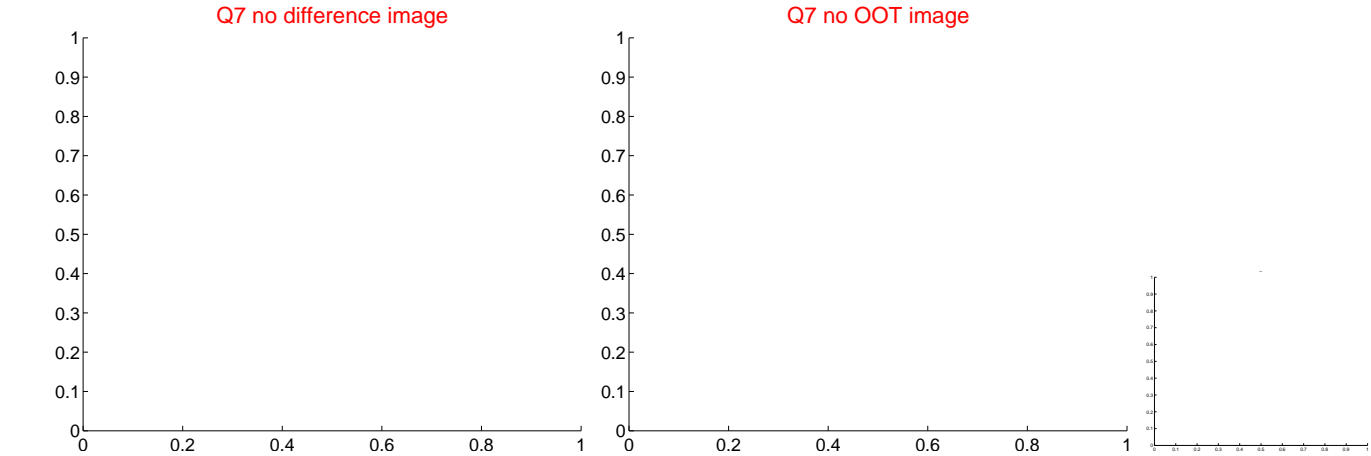
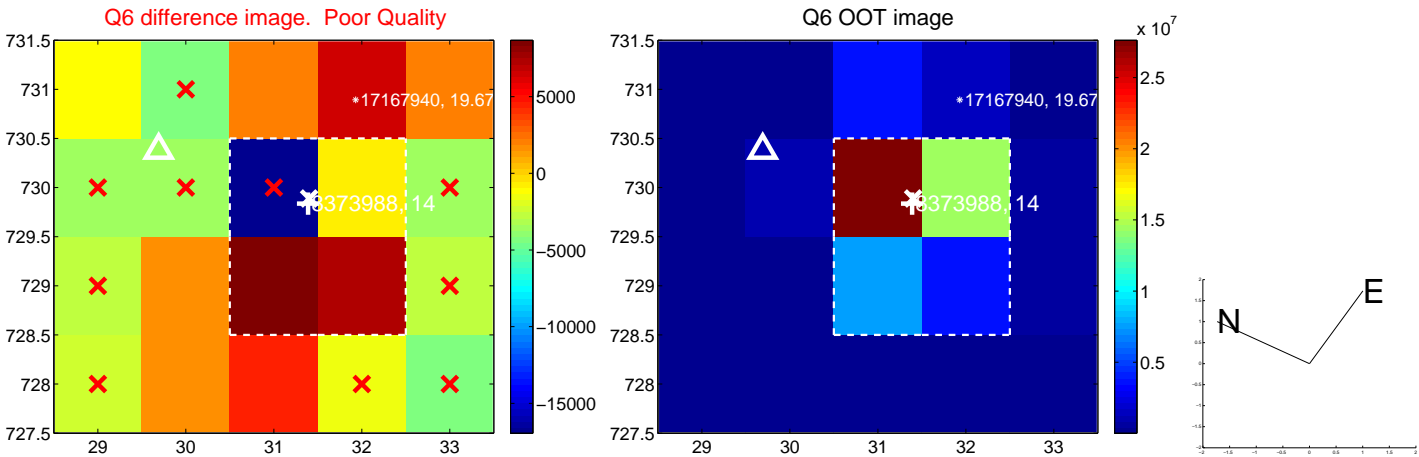
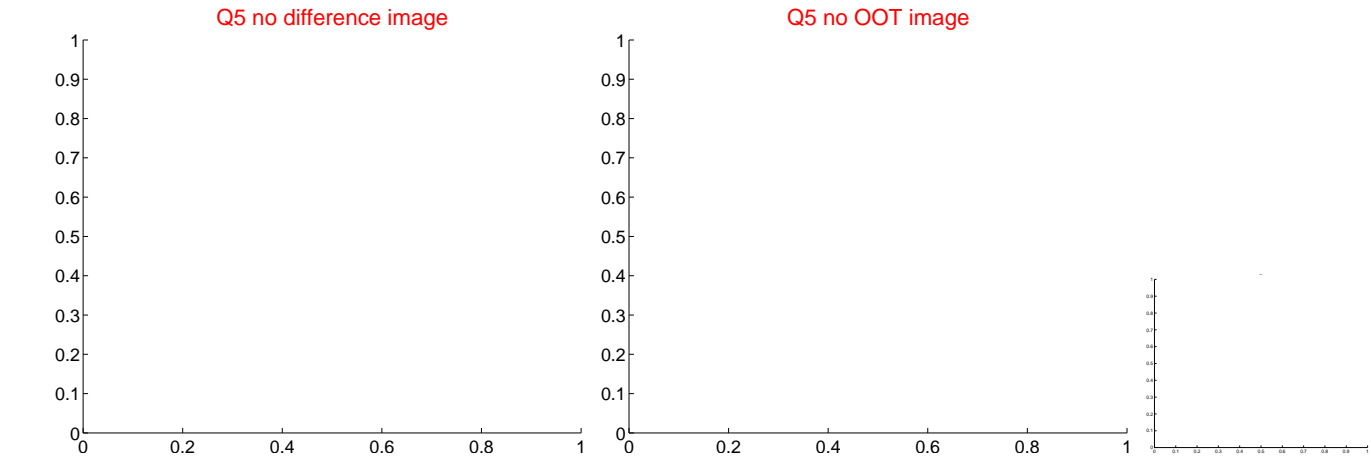
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



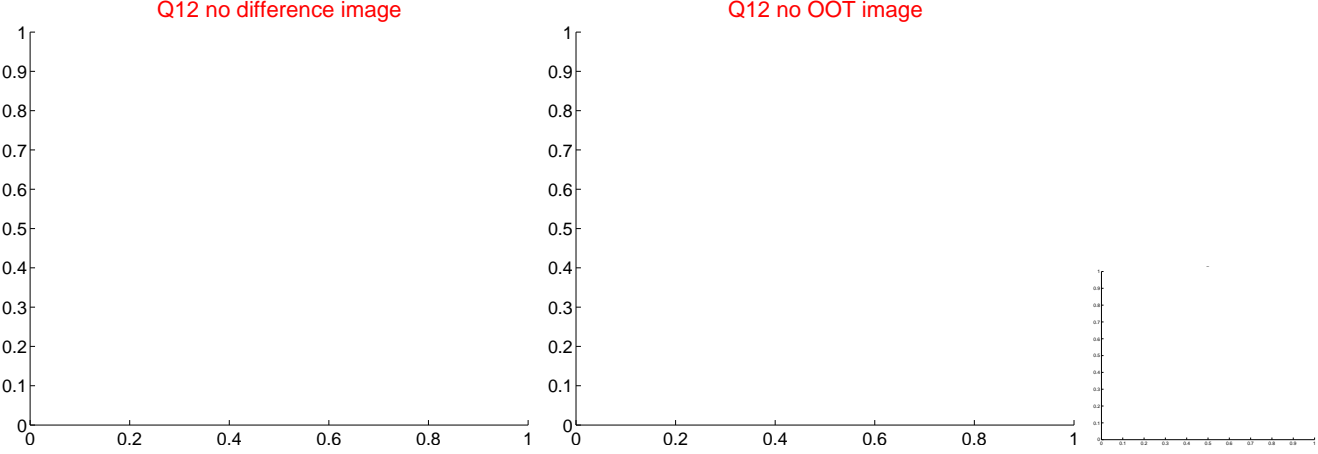
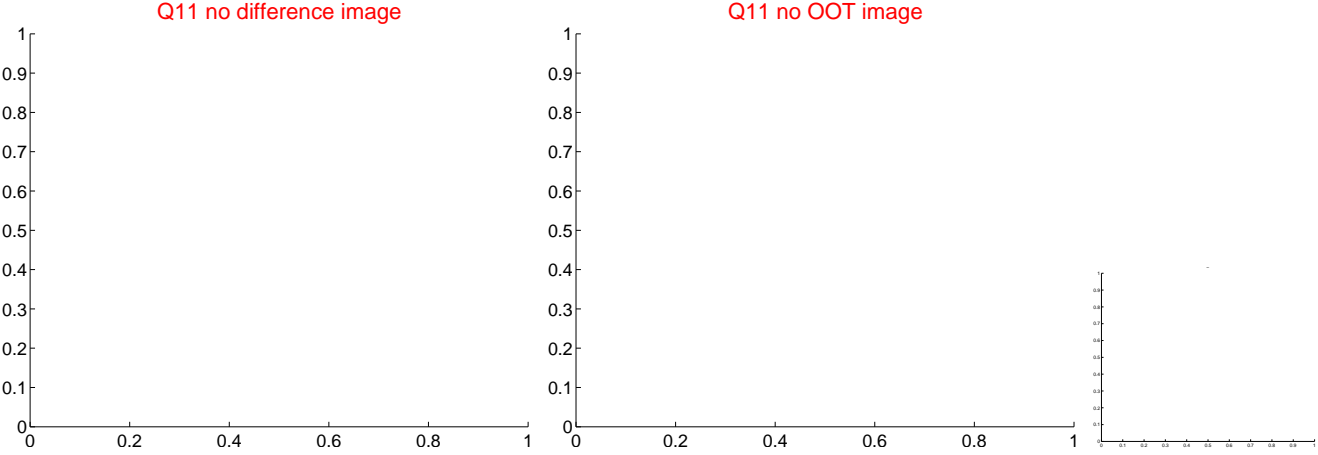
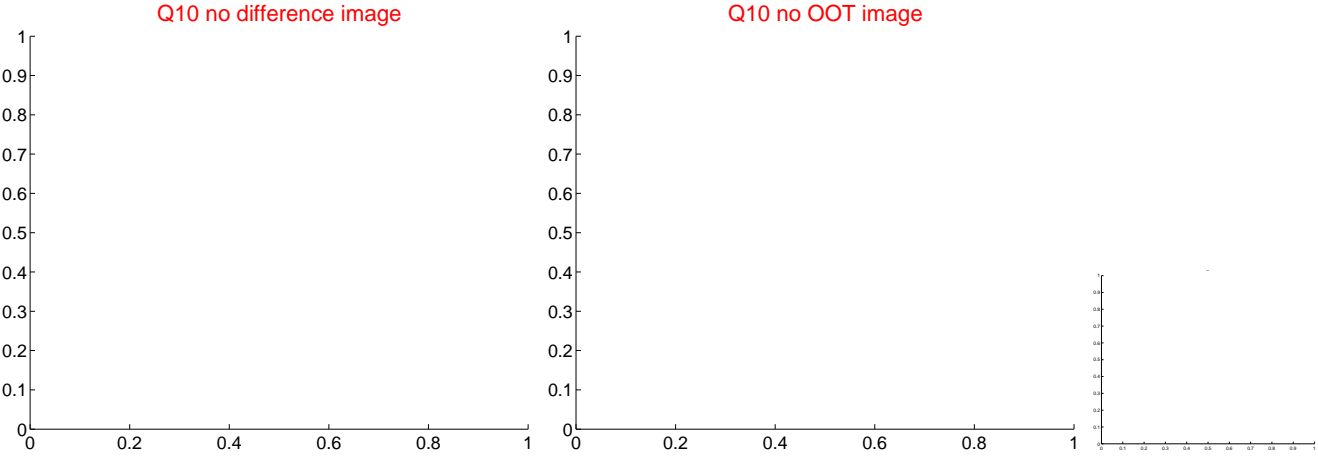
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



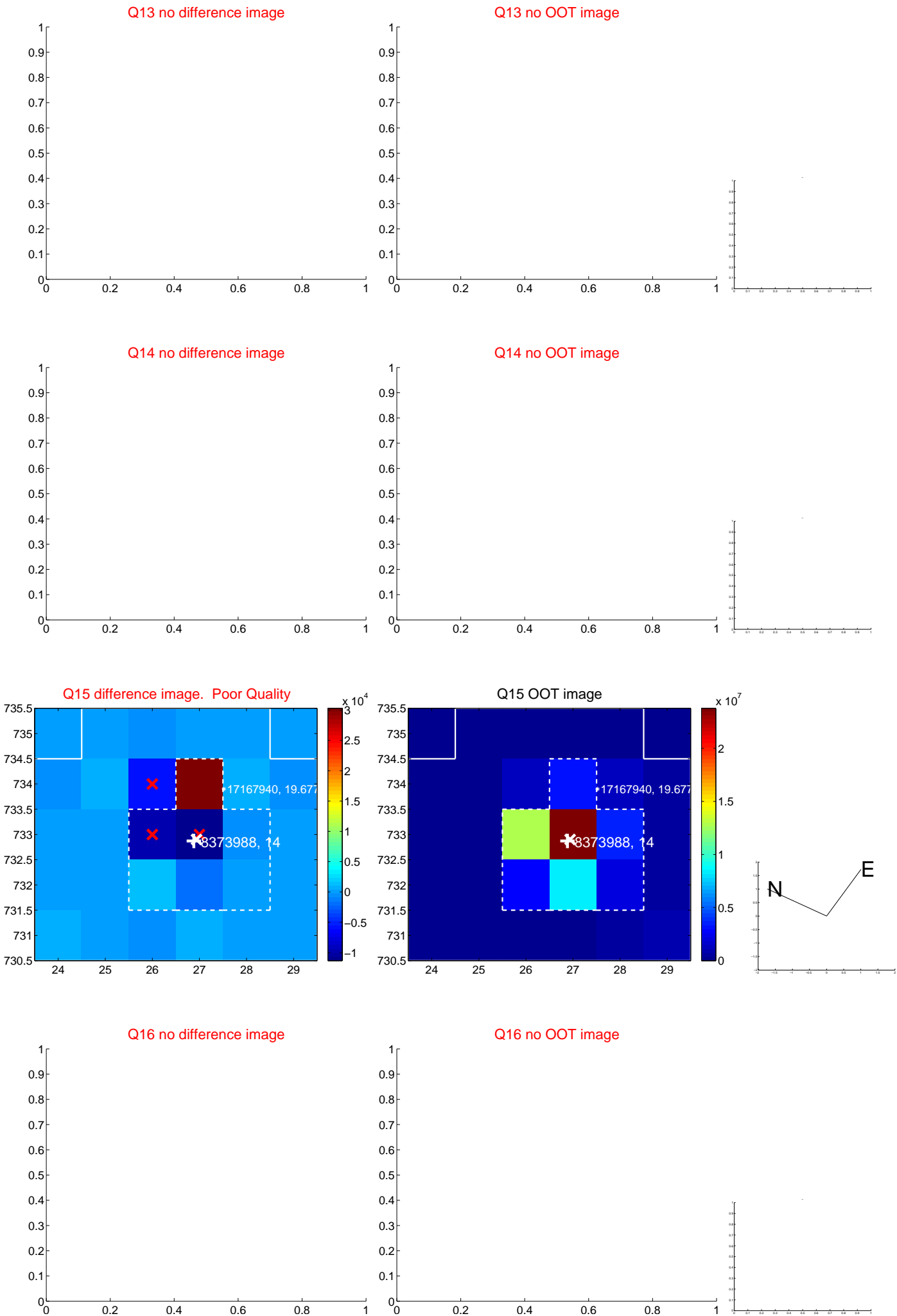
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



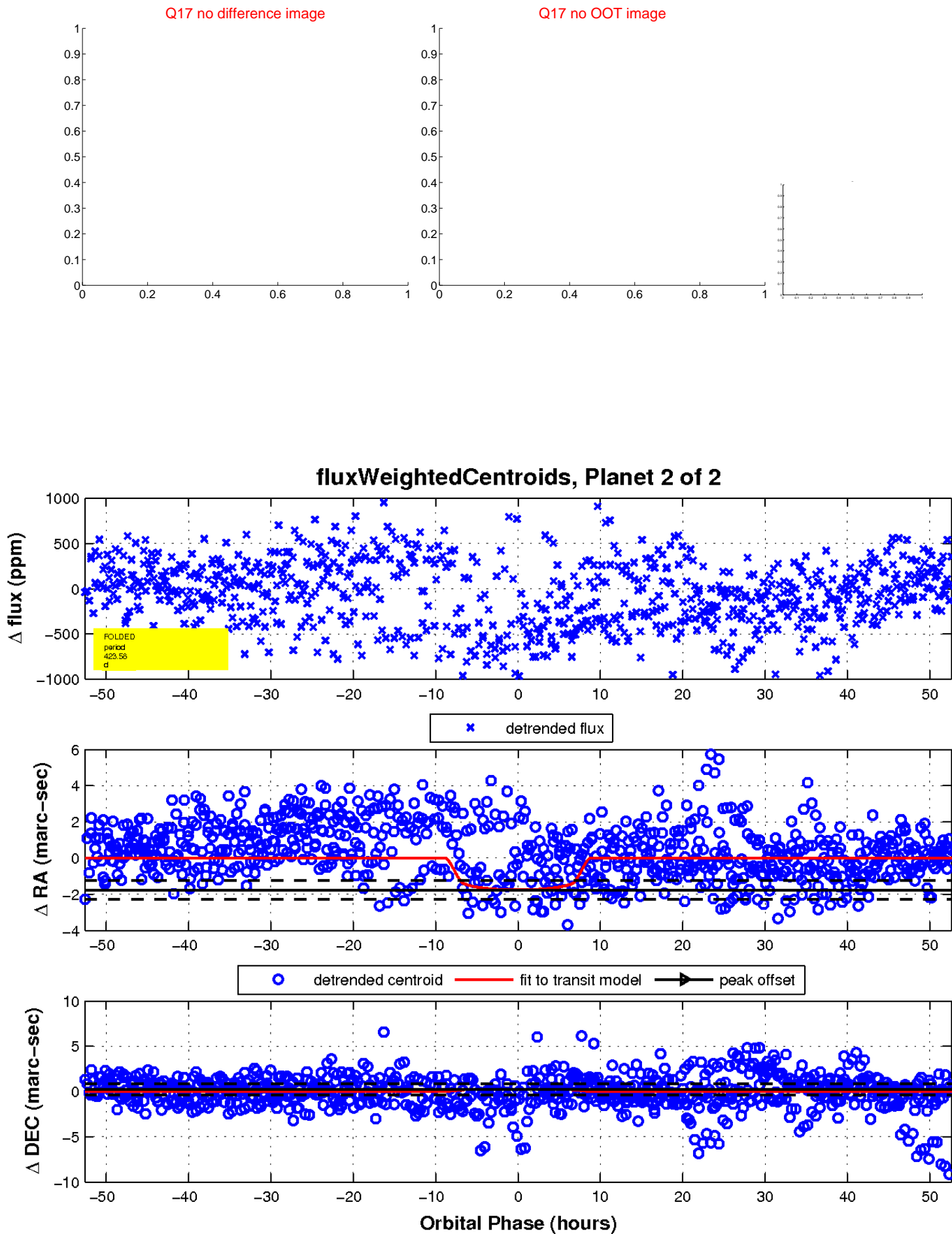
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

