

# KIC 004175630

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004175630-01	OBS	2998.01	28.227434	141.493908	1112.7	5.894	19.2	20.8	0.85	5858	2.96	24.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004175630-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

**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 004175630-01

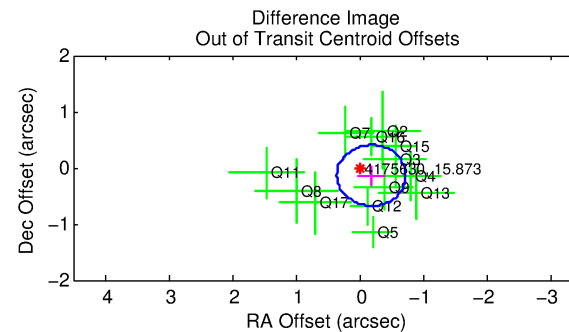
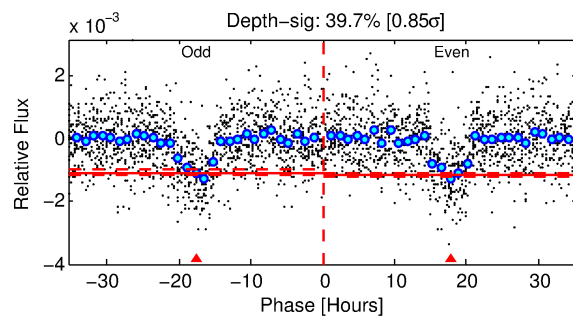
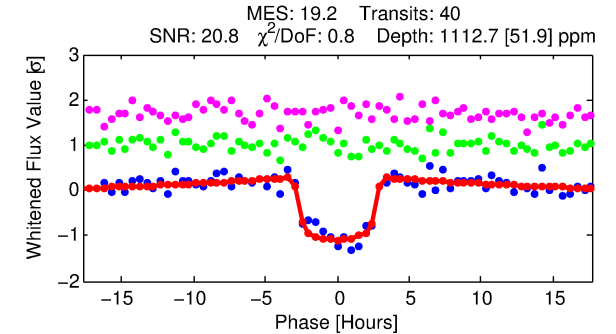
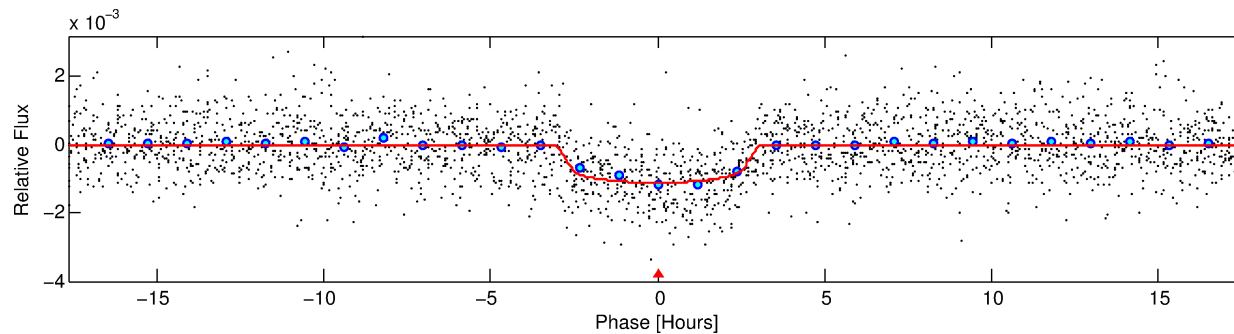
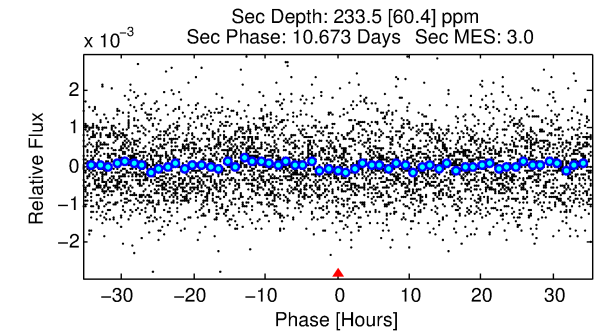
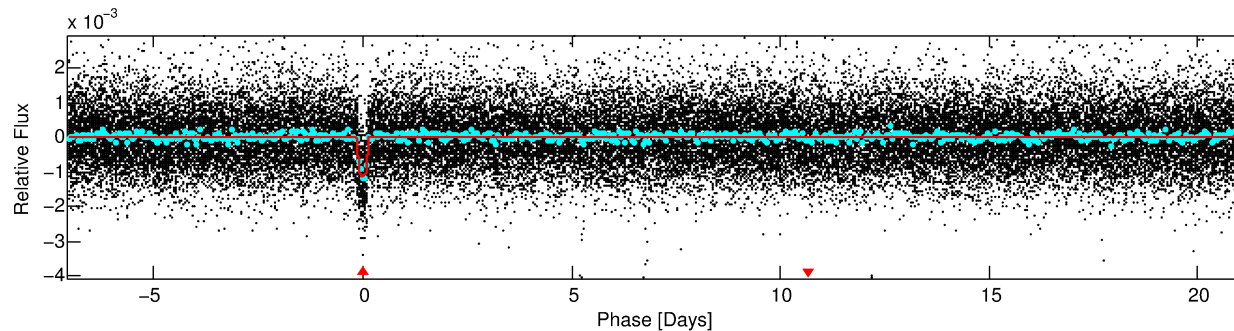
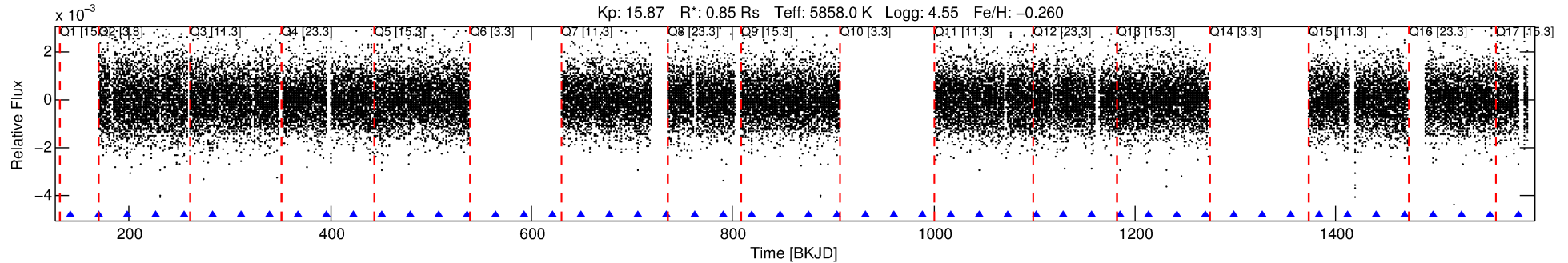
No Significant Match Found

# DV One-Page Summary

KIC: 4175630 Candidate: 1 of 1 Period: 28.227 d

KOI: K02998.01 Corr: 0.979

Kp: 15.87 R\*: 0.85 Rs Teff: 5858.0 K Logg: 4.55 Fe/H: -0.260



## DV Fit Results:

Period = 28.22743 [0.00015] d  
Epoch = 141.4939 [0.0048] BKJD  
Rp/R\* = 0.0319 [0.0105]  
a/R\* = 30.62 [46.35]  
b = 0.60 [1.61]  
Seff = 24.08 [8.59]  
Teq = 565 [50] K  
Rp = 2.96 [1.24] Re  
a = 0.1777 [0.0399] AU  
Ag = 464.46 [362.54] [1.28σ]  
Teff = 4054 [728] K [4.78σ]

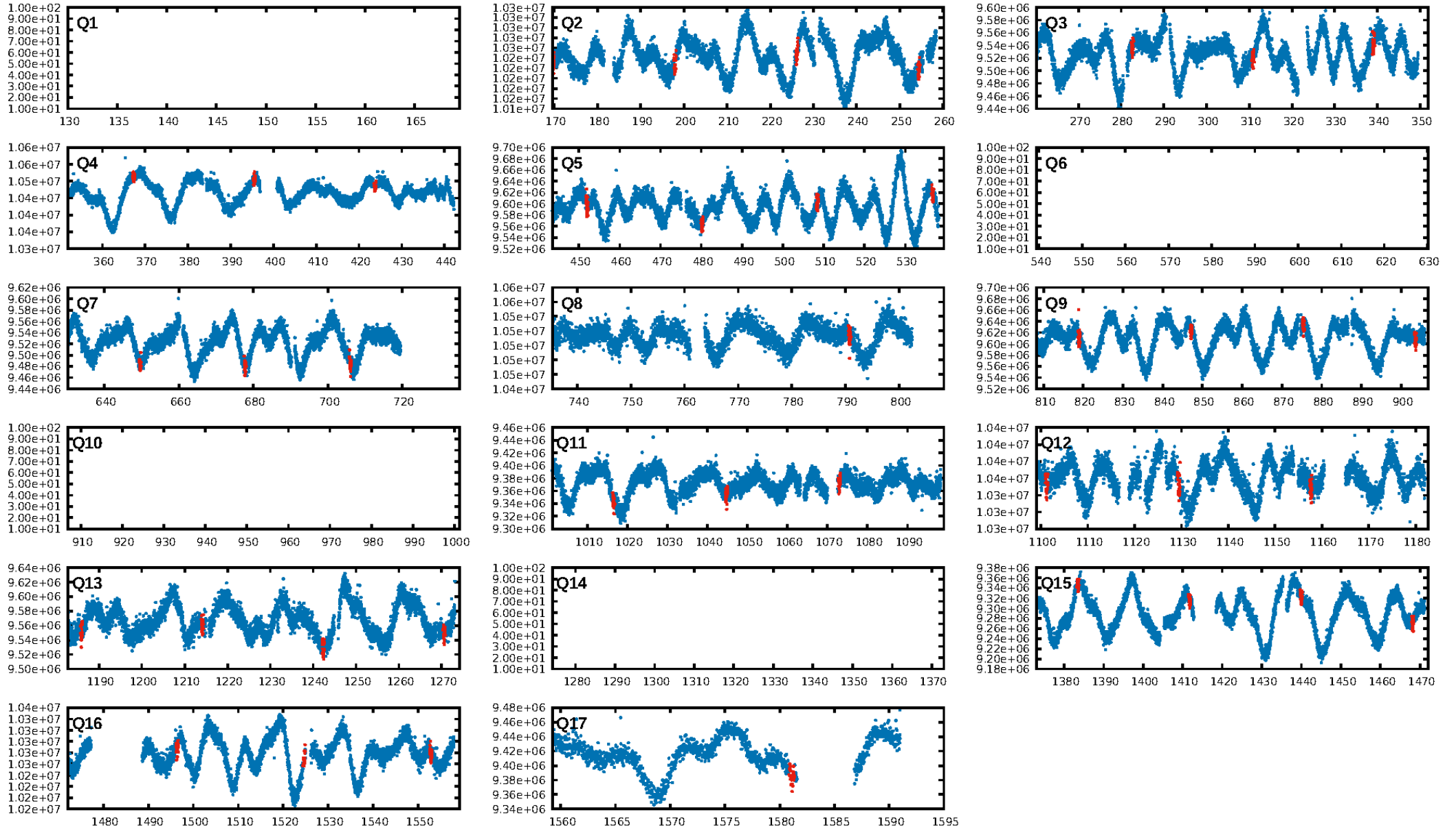
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 96.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.86e-78  
RollingBand-fgt: 1.00 [39/39]  
GhostDiagnostic-chr: 25.22  
Centroid-sig: 0.4%  
Centroid-so: 0.837 arcsec [1.54σ]  
OotOffset-rm: 0.234 arcsec [1.30σ]  
KicOffset-rm: 0.094 arcsec [0.54σ]  
OotOffset-st: 1/4/4/4 [13]  
KicOffset-st: 1/4/4/4 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [13/13]

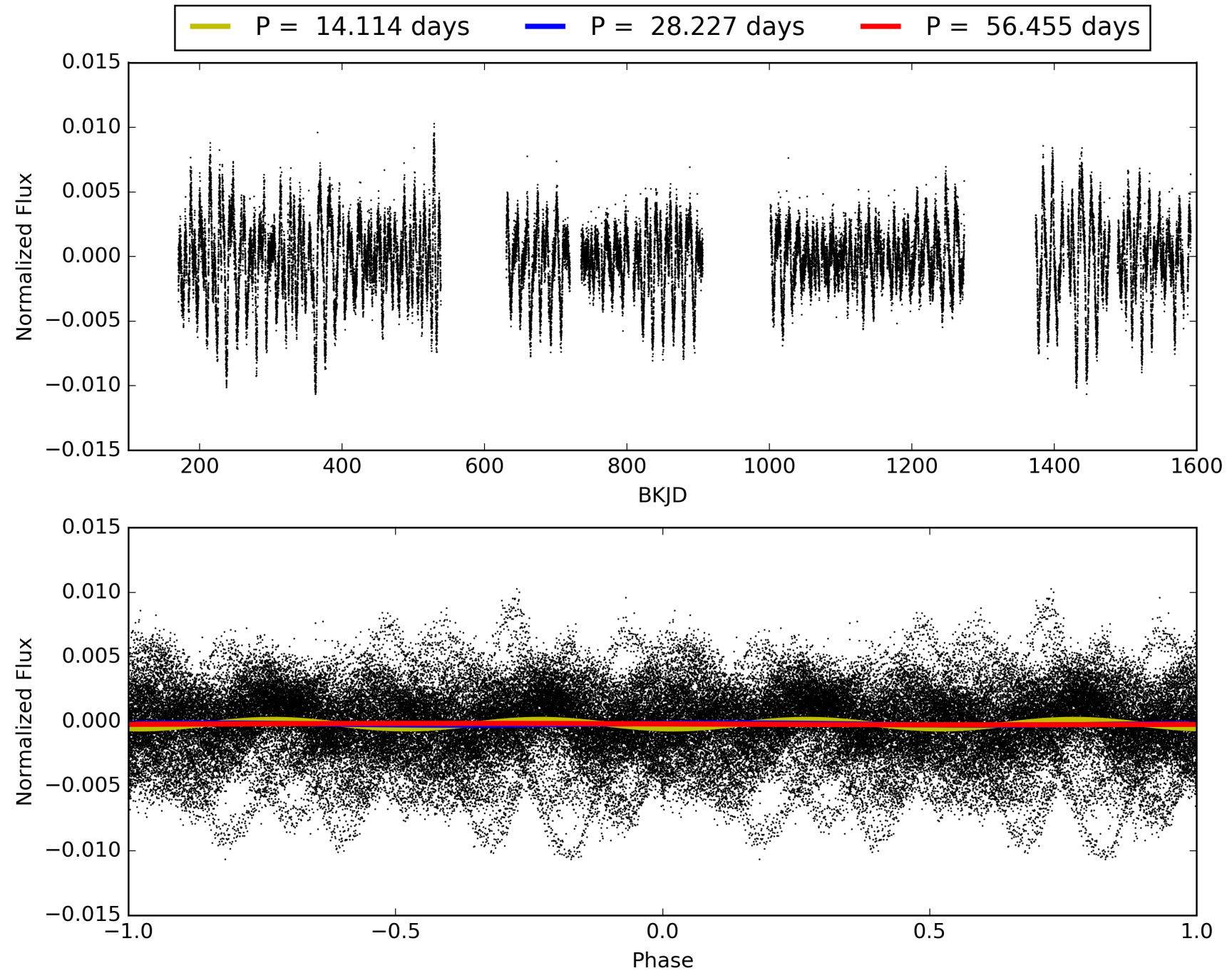
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 19:24:10 Z

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

# TCE 004175630-01, PDC Light Curves

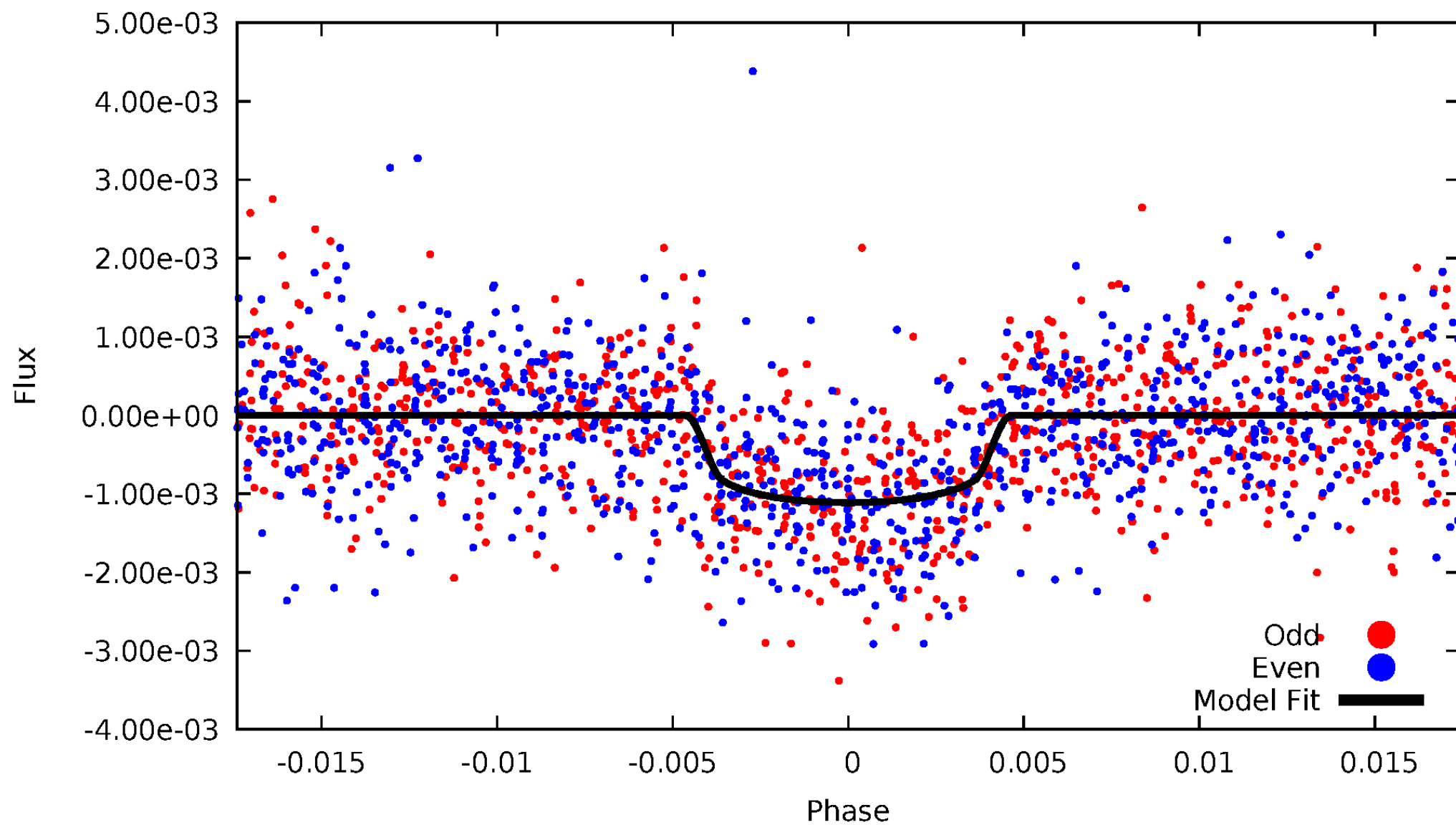


TCE 004175630-01



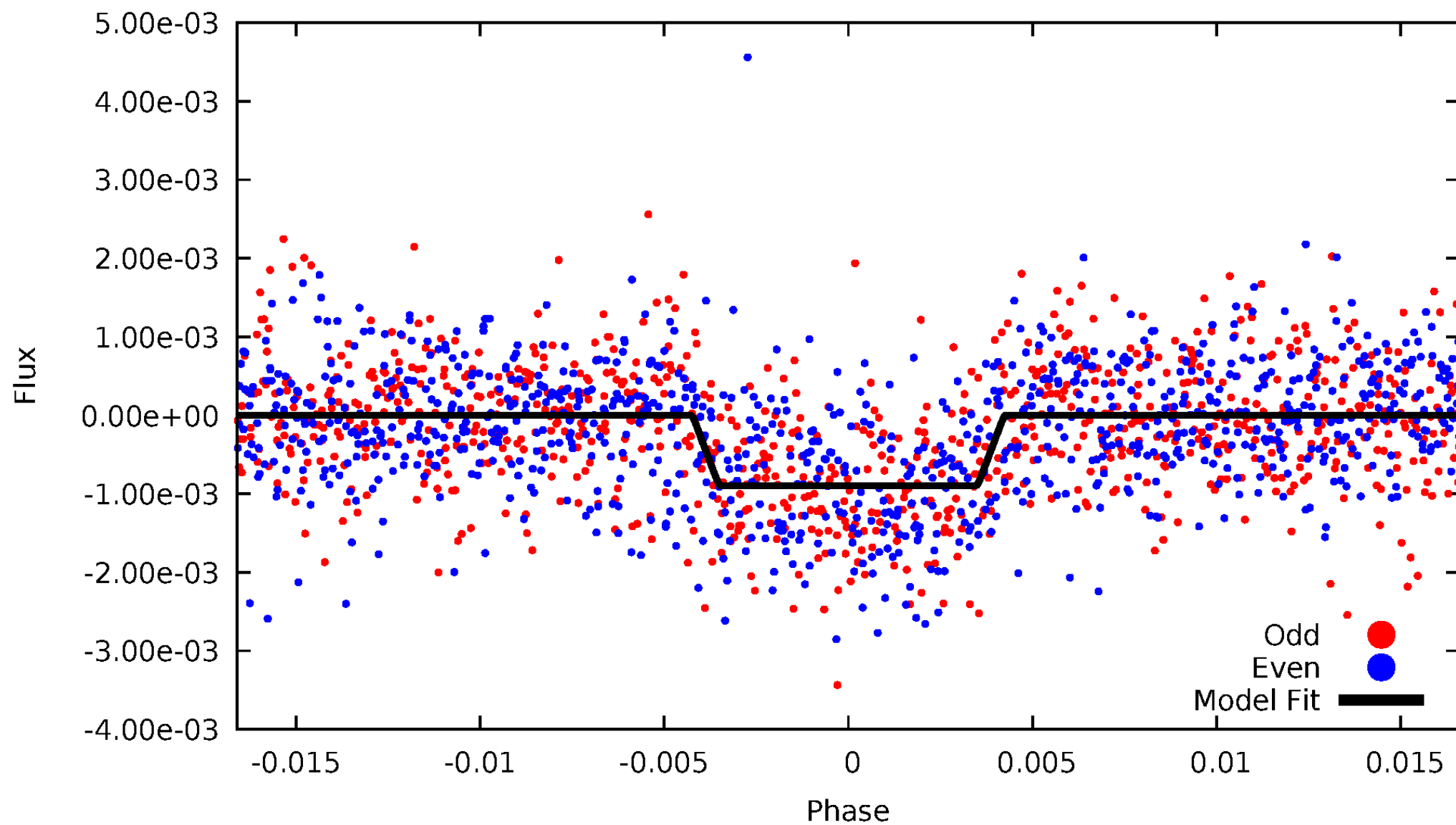
# DV Odd/Even

TCE 004175630-01



# ALT Odd/Even

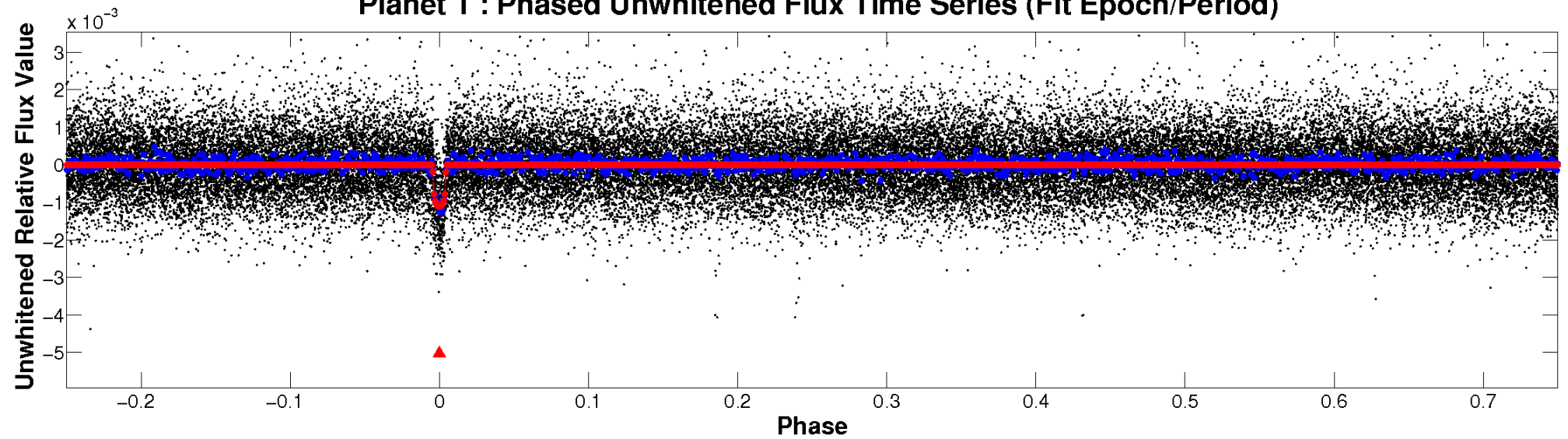
TCE 004175630-01



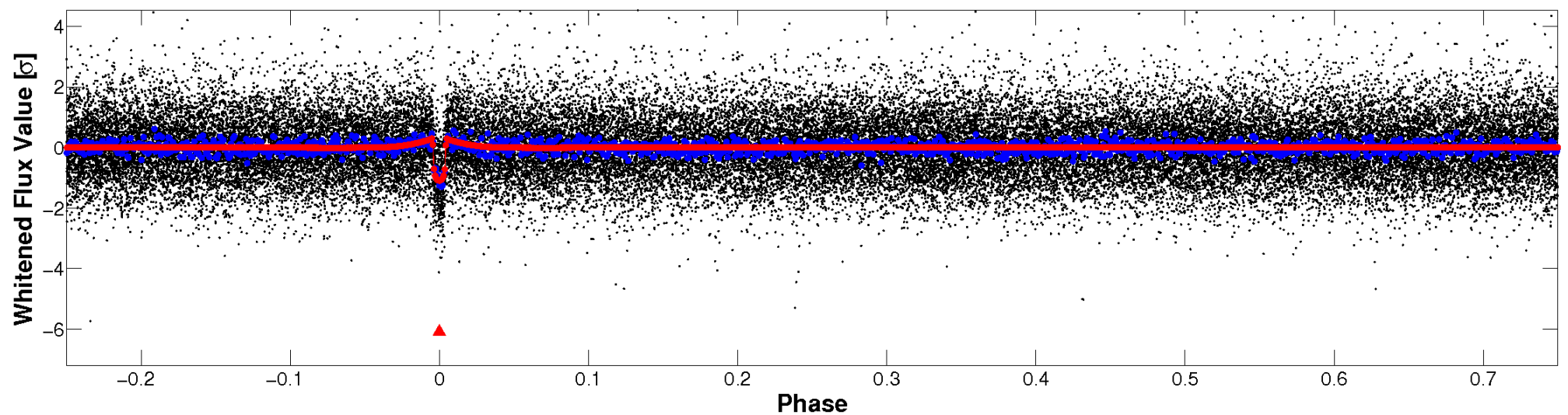


# Non-Whitened Vs. Whitened Light Curve

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

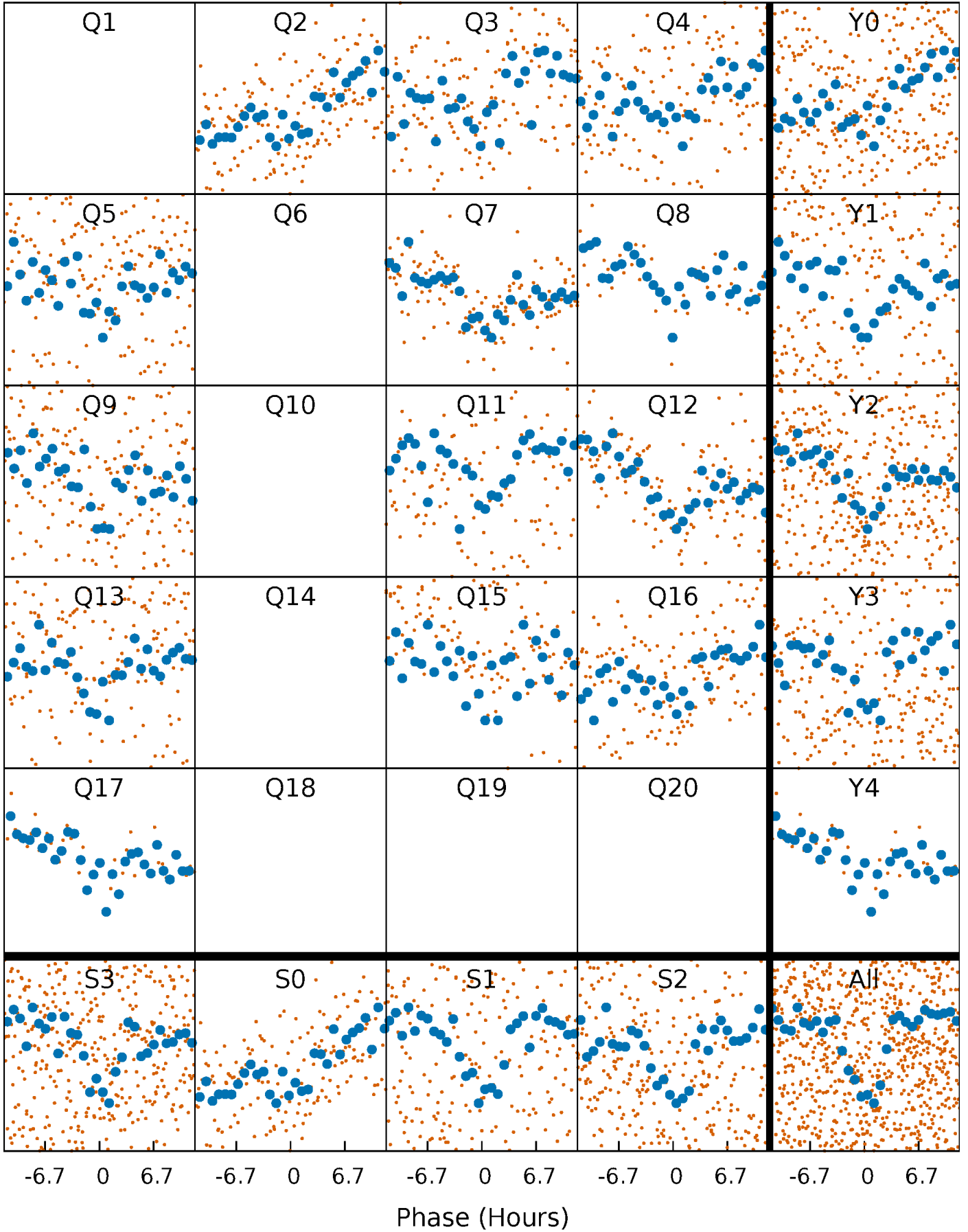


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

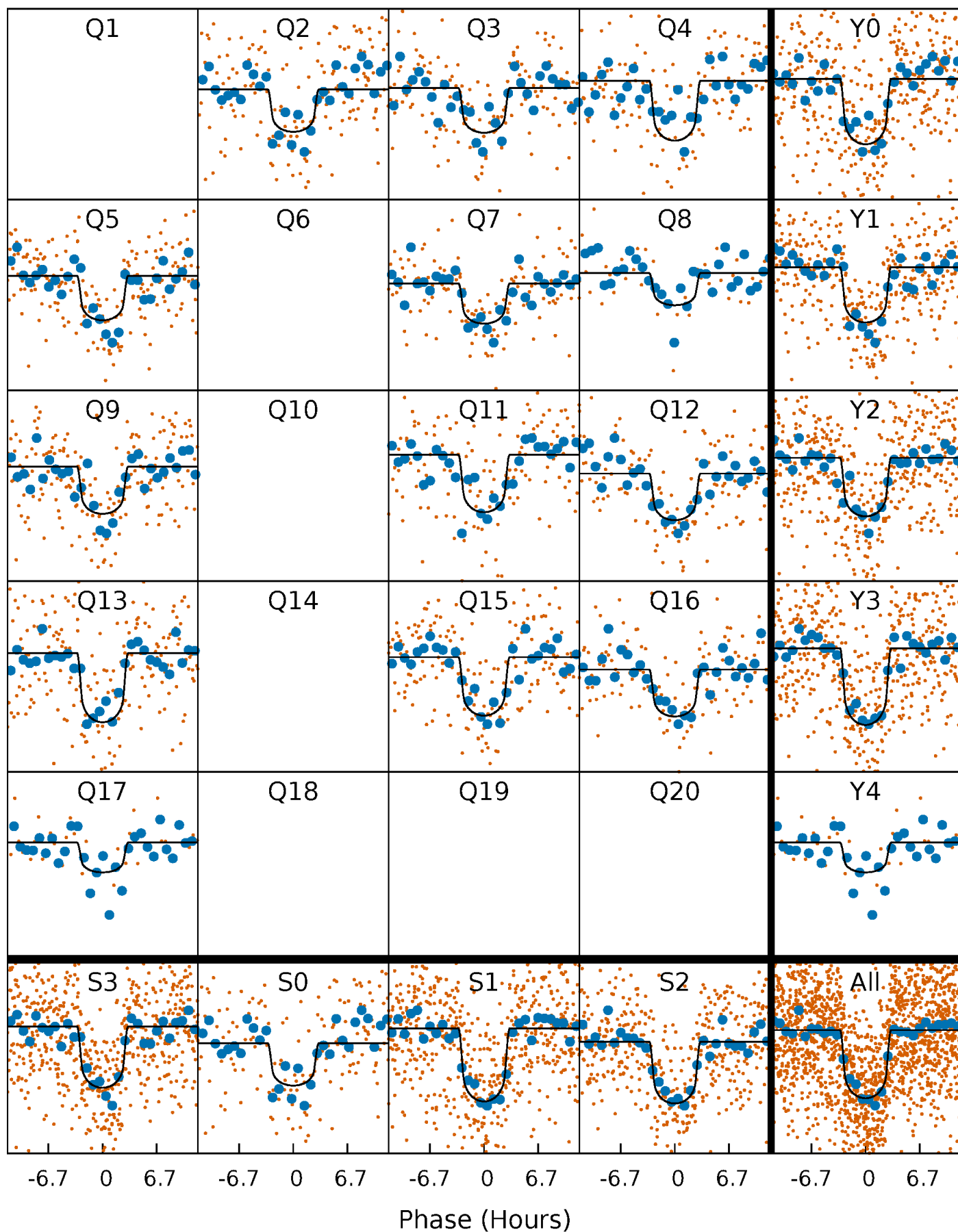
TCE 004175630-01 P= 28.227434 Days  $T_0=141.493909$  (BKJD)





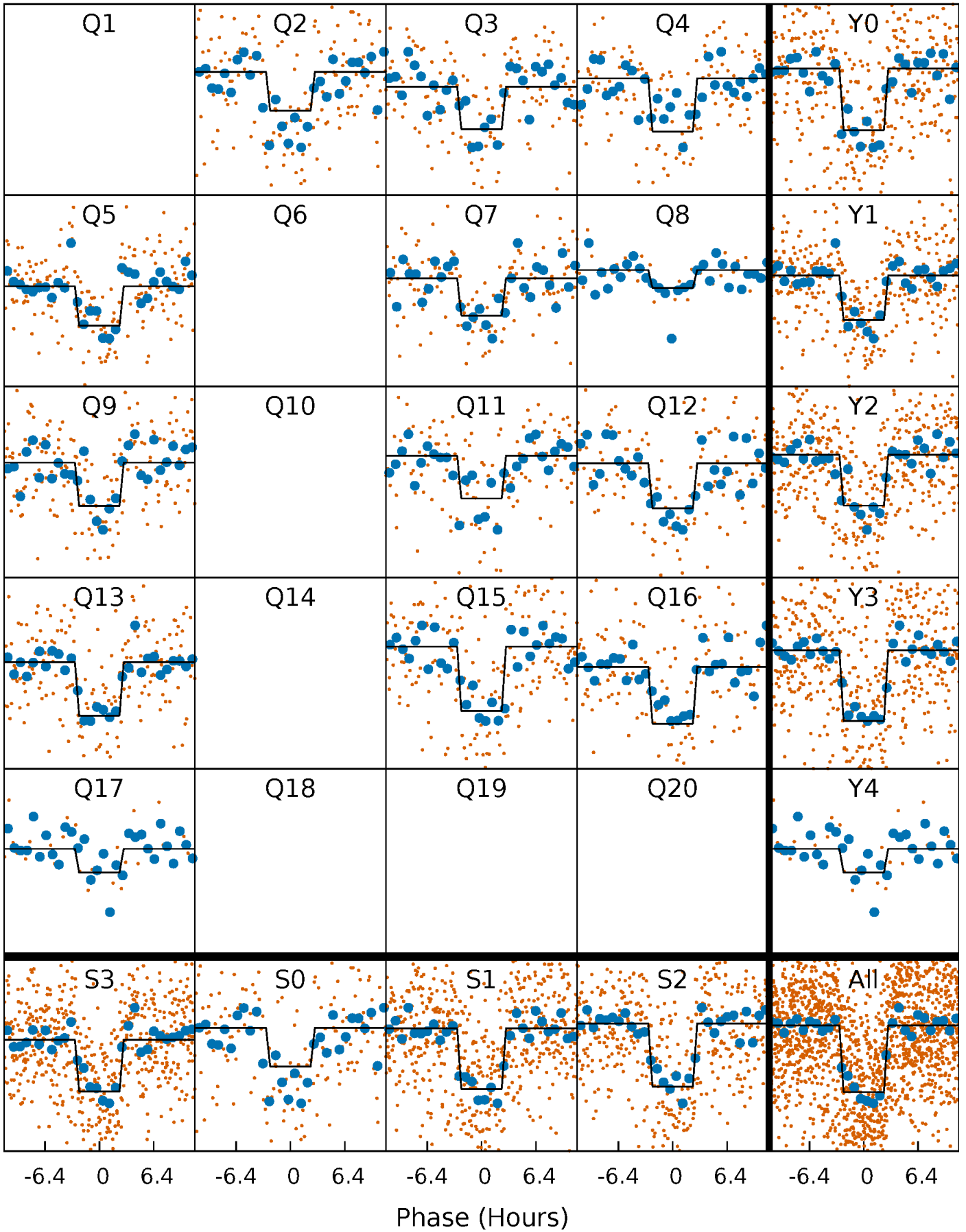
# DV Quarter-Phased Transit Curves

TCE 004175630-01 P= 28.227434 Days  $T_0=141.493909$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

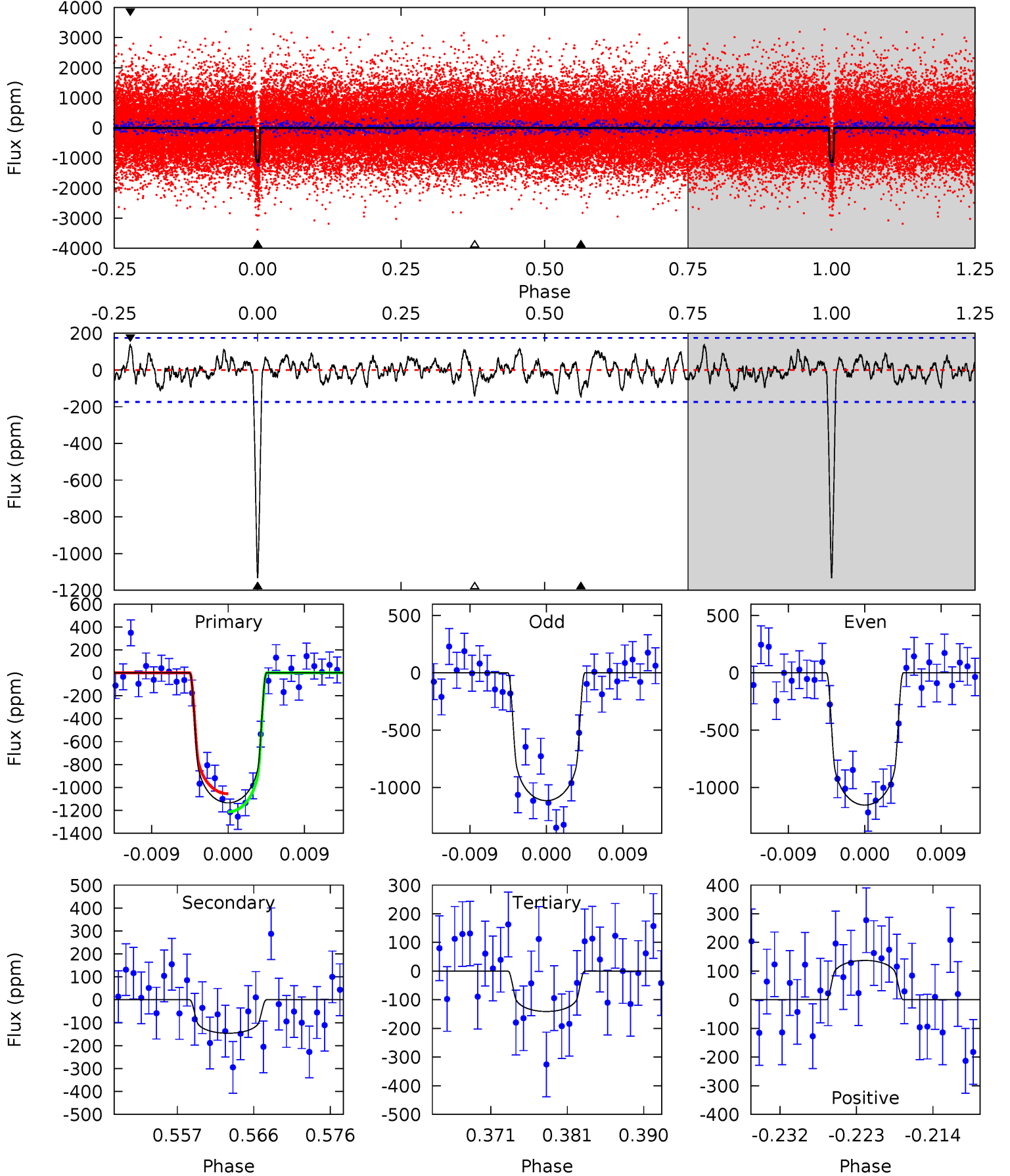
TCE 004175630-01 P= 28.227083 Days  $T_0=141.502796$  (BKJD)



# DV Model-Shift Uniqueness Test

004175630-01, P = 28.227434 Days, E = 141.493909 Days

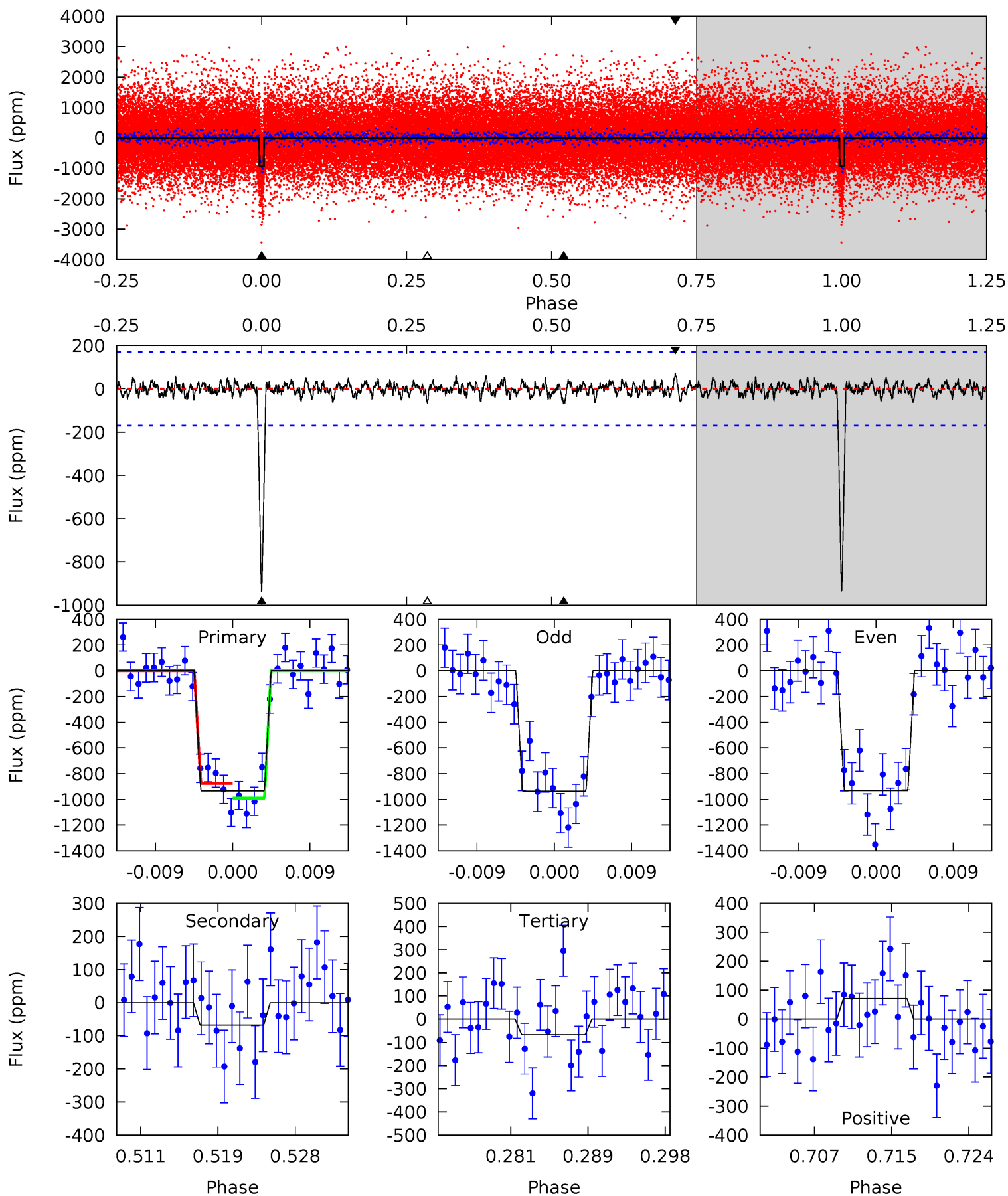
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.8	4.22	4.07	3.96	5.04	2.60	1.33	28.7	28.8	0.15	0.26	0.56	1.03	0.11	2.29



# Alt Model-Shift Uniqueness Test

004175630-01, P = 28.227083 Days, E = 141.502796 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
27.8	2.01	1.98	2.12	5.06	2.63	0.65	25.8	25.7	0.03	-0.11	0.03	1.00	0.07	1.69



### Stellar Parameters For KIC 004175630

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5858^{+157}_{-192}$	$4.553^{+0.035}_{-0.184}$	$-0.260^{+0.300}_{-0.300}$	$0.849^{+0.222}_{-0.079}$	$0.940^{+0.099}_{-0.121}$	$2.167^{+0.403}_{-1.023}$
	+3%/-3%	+1%/-4%	+115%/-115%	+26%/-9%	+11%/-13%	+19%/-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 004175630-01 / KOI 2998.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-146 \pm 35$	$3.07^{+1.12}_{-0.97}$	$807^{+47}_{-37}$	$3946^{+614}_{-436}$	$253^{+345}_{-123}$
Alt.	$-68 \pm 34$	$2.94^{+1.08}_{-1.14}$	$809^{+49}_{-37}$	$3489^{+686}_{-428}$	$125^{+231}_{-74}$

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

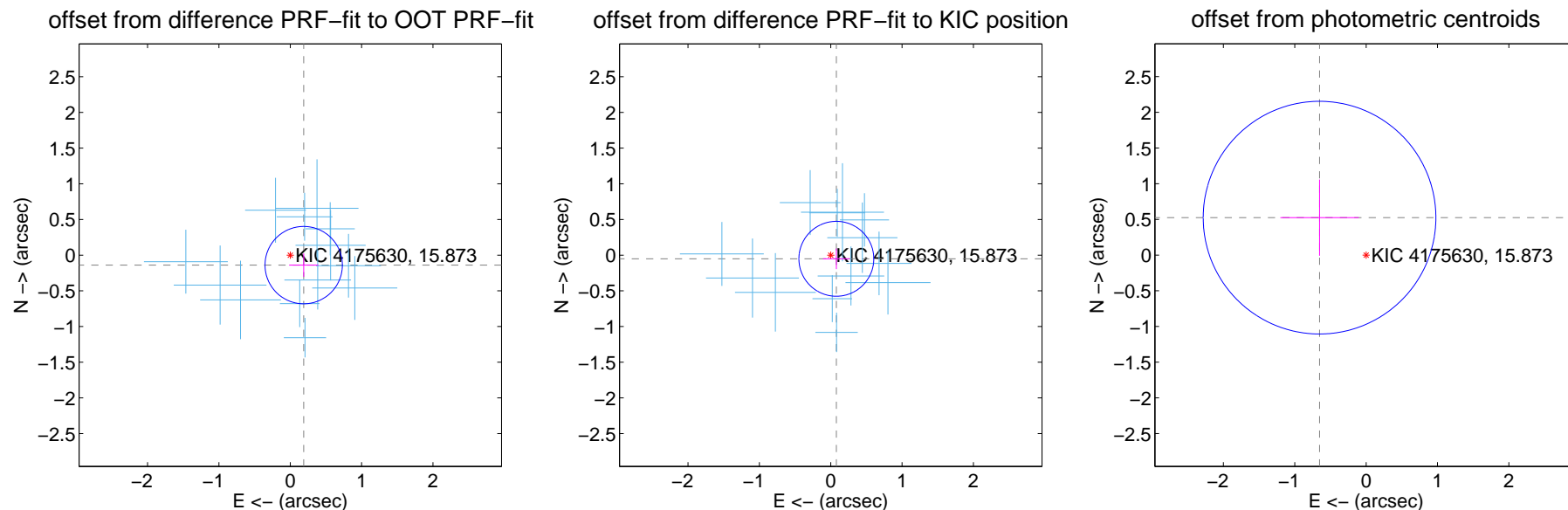
## DV Centroid Data

Supplemental centroid analysis for 004175630-01. Kepler magnitude: 15.87. Transit SNR 20.78

There are 13 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

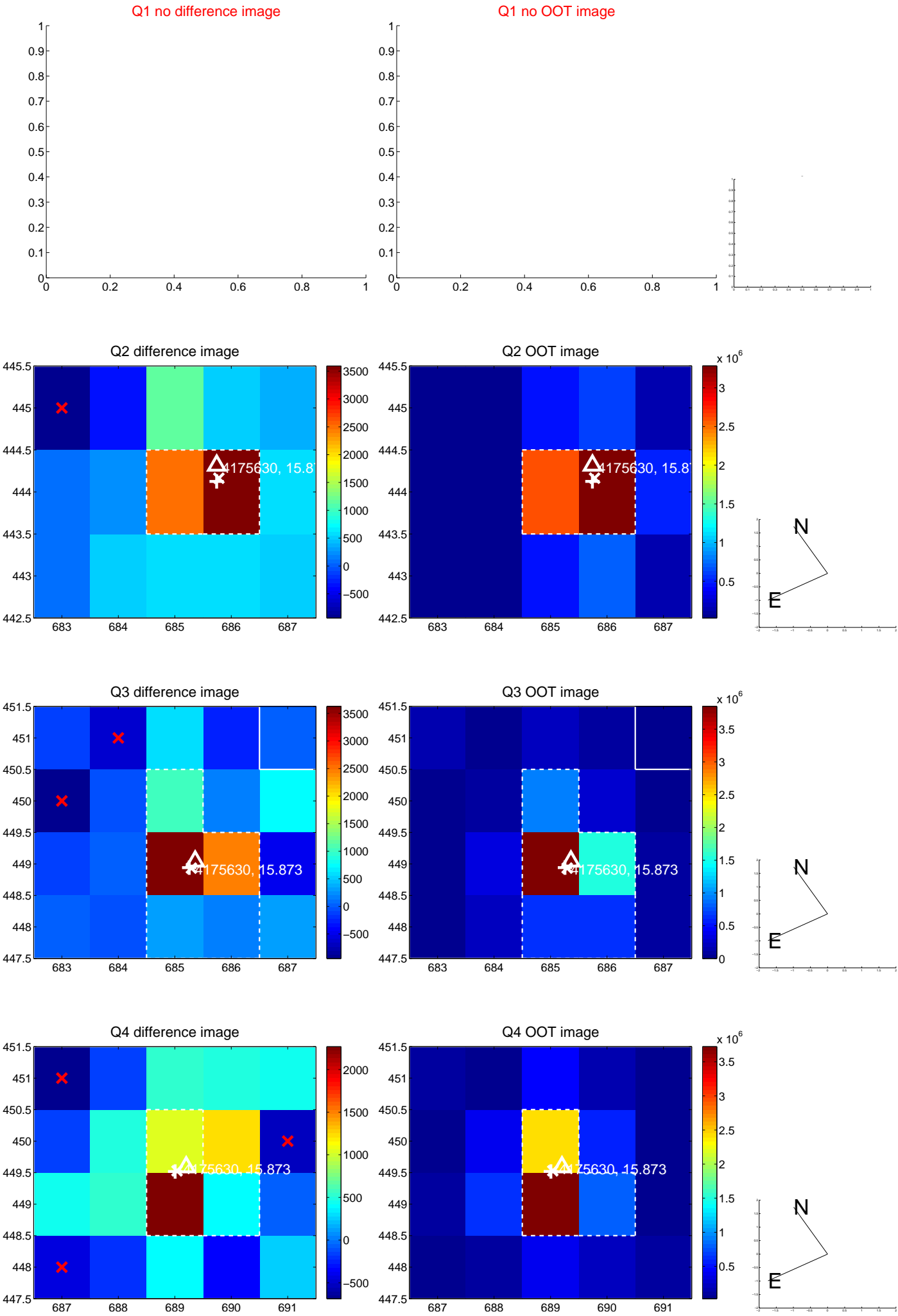
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.234 \pm 0.181$	1.30	$-0.188 \pm 0.204$	$-0.140 \pm 0.164$
PRF-fit source offset from KIC position	$0.094 \pm 0.175$	0.54	$-0.079 \pm 0.187$	$-0.051 \pm 0.144$
photometric centroid source offset	$0.84 \pm 0.54$	1.54	$0.65 \pm 0.55$	$0.52 \pm 0.53$



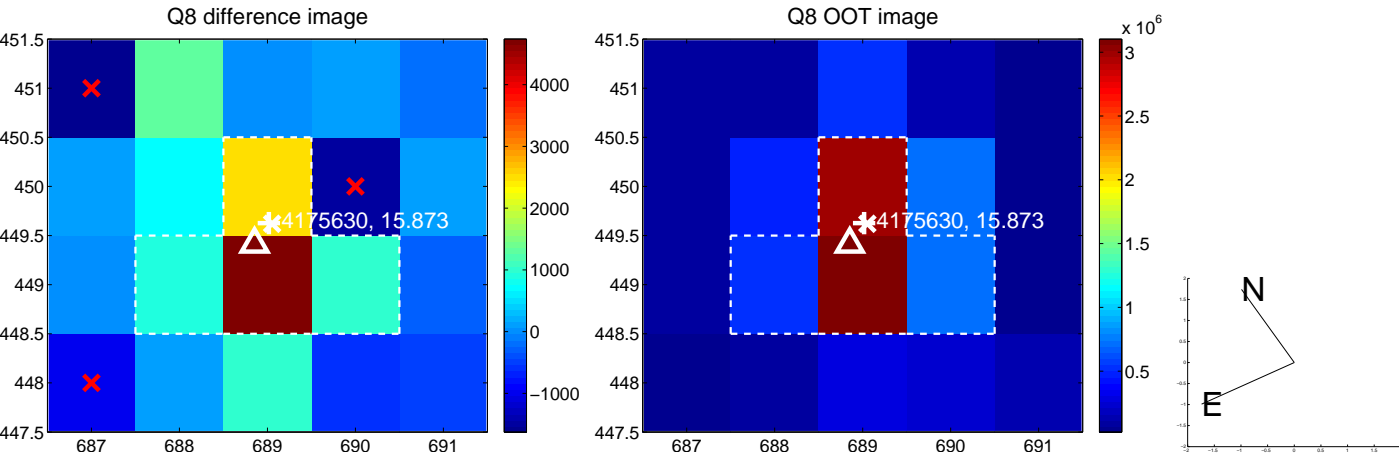
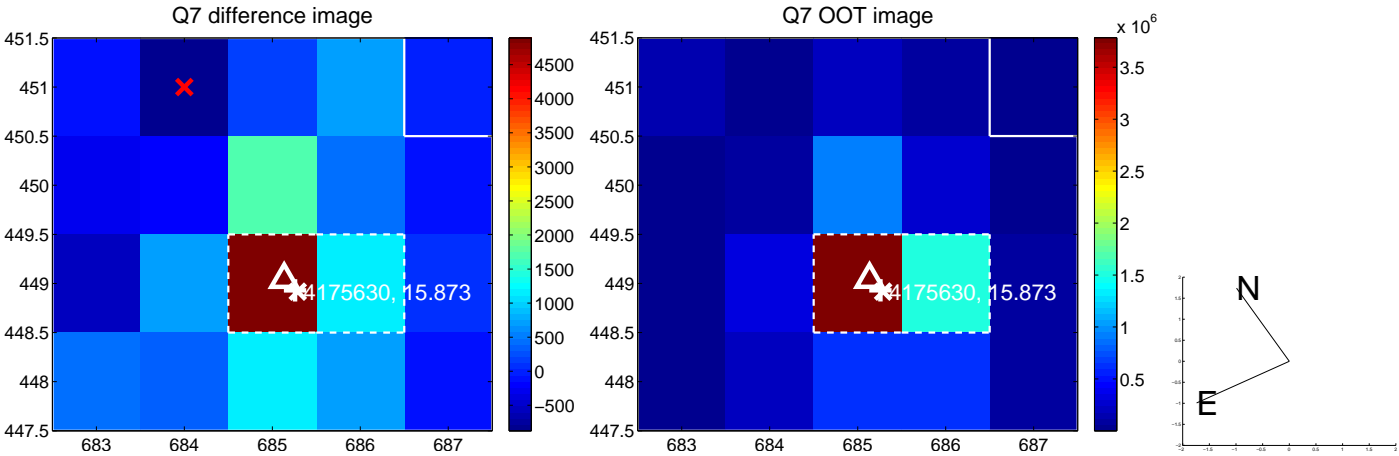
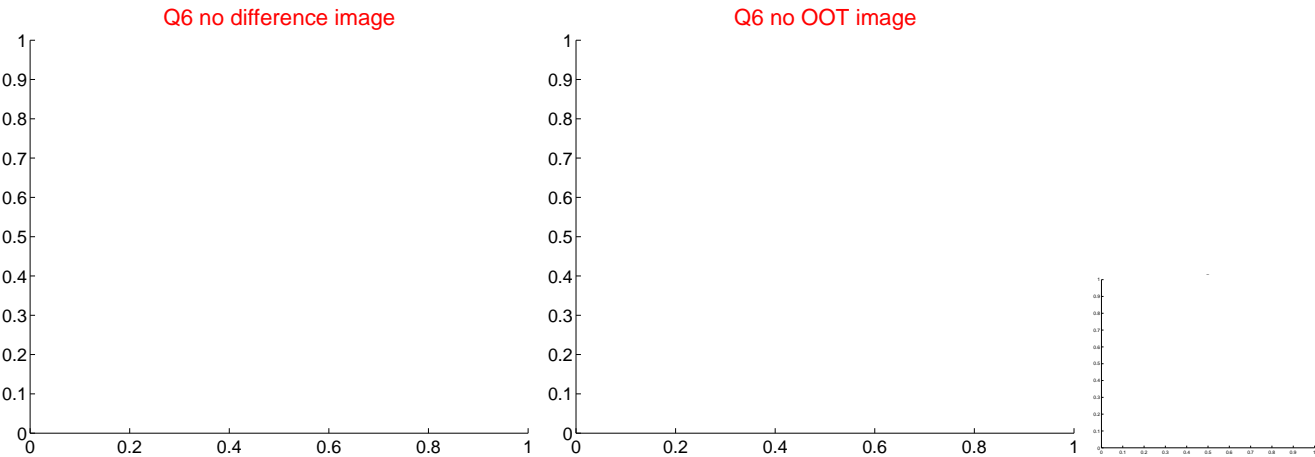
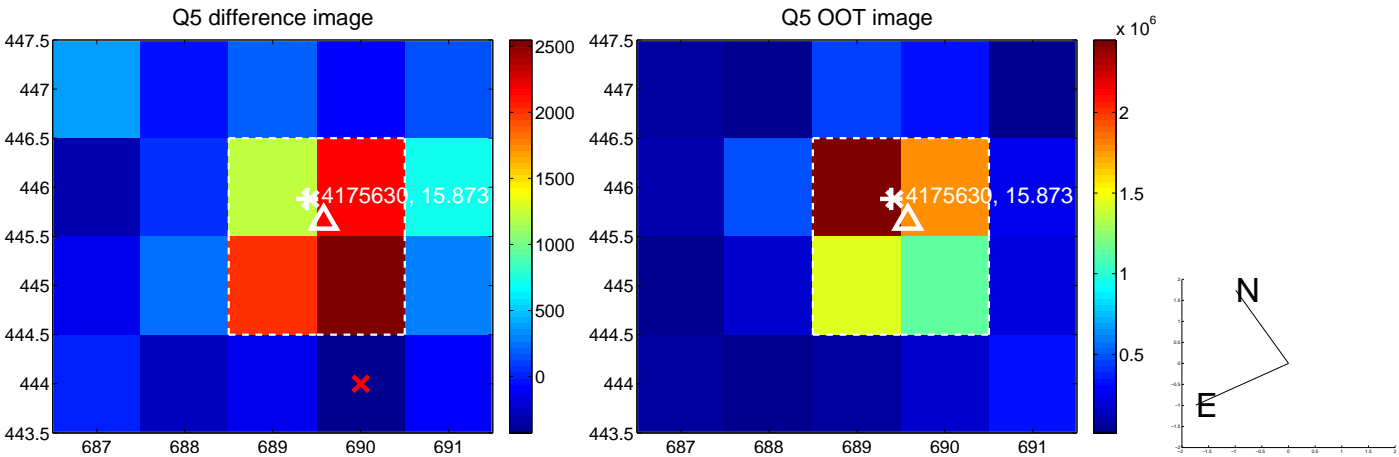
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



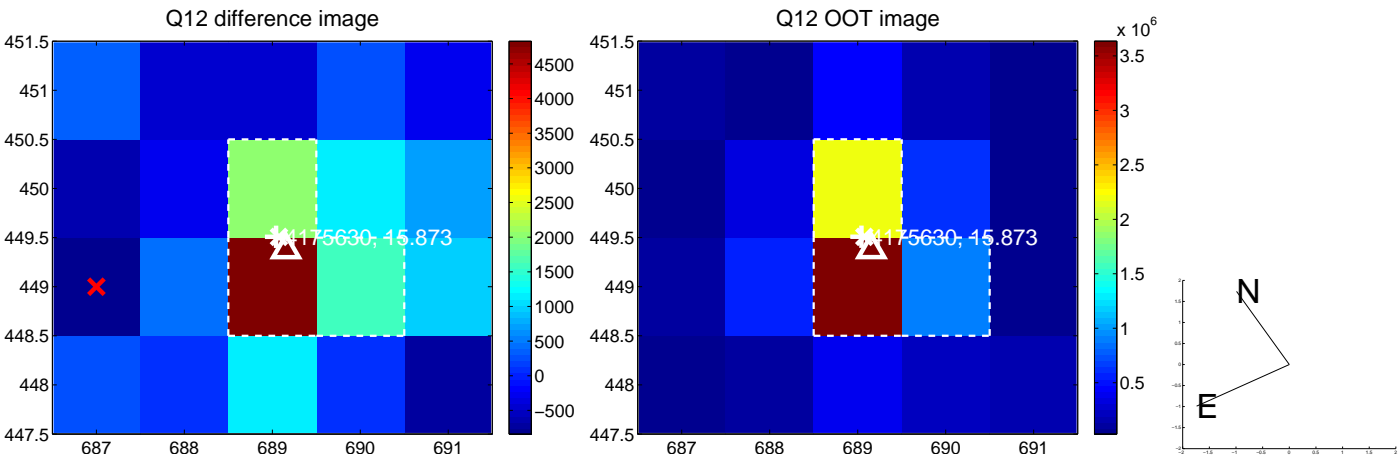
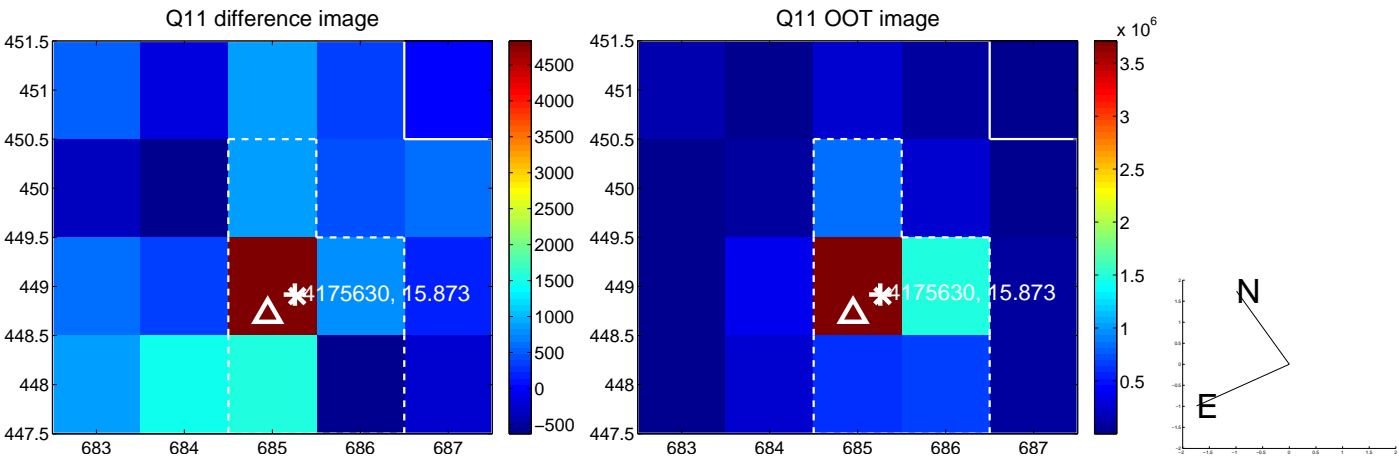
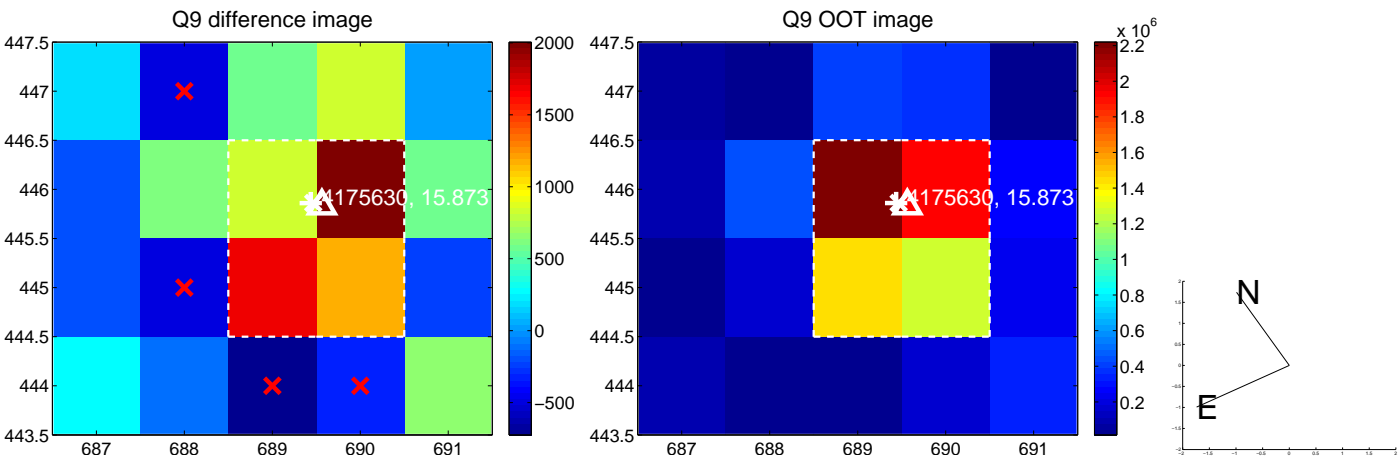
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



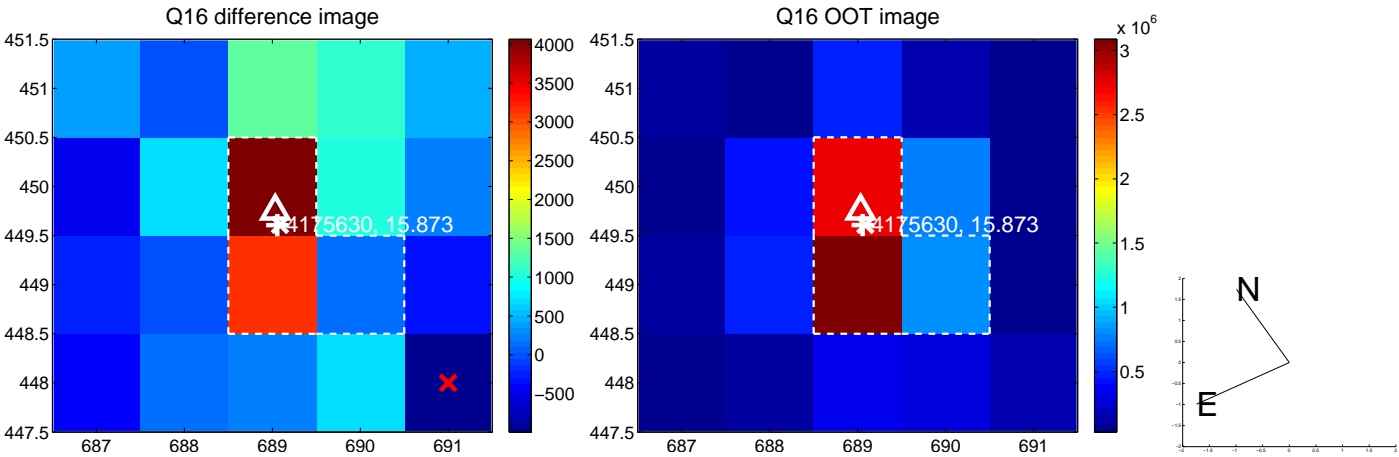
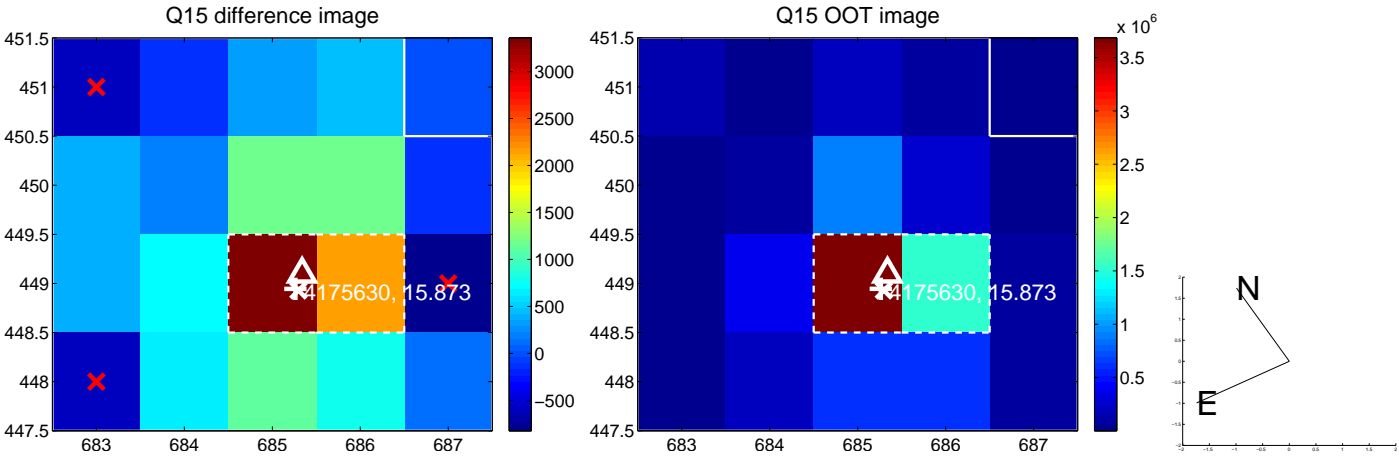
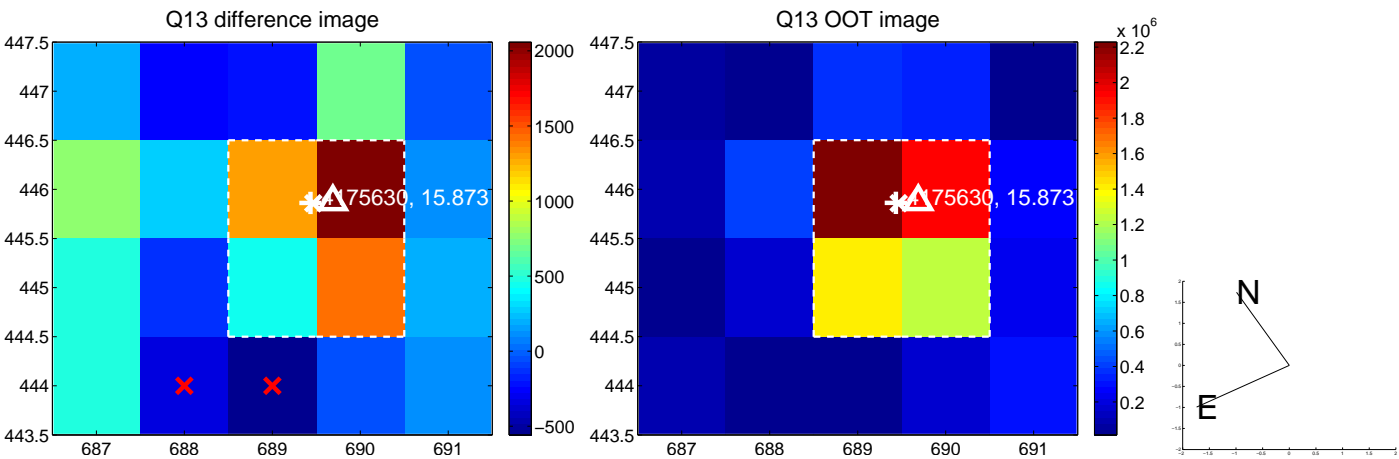
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



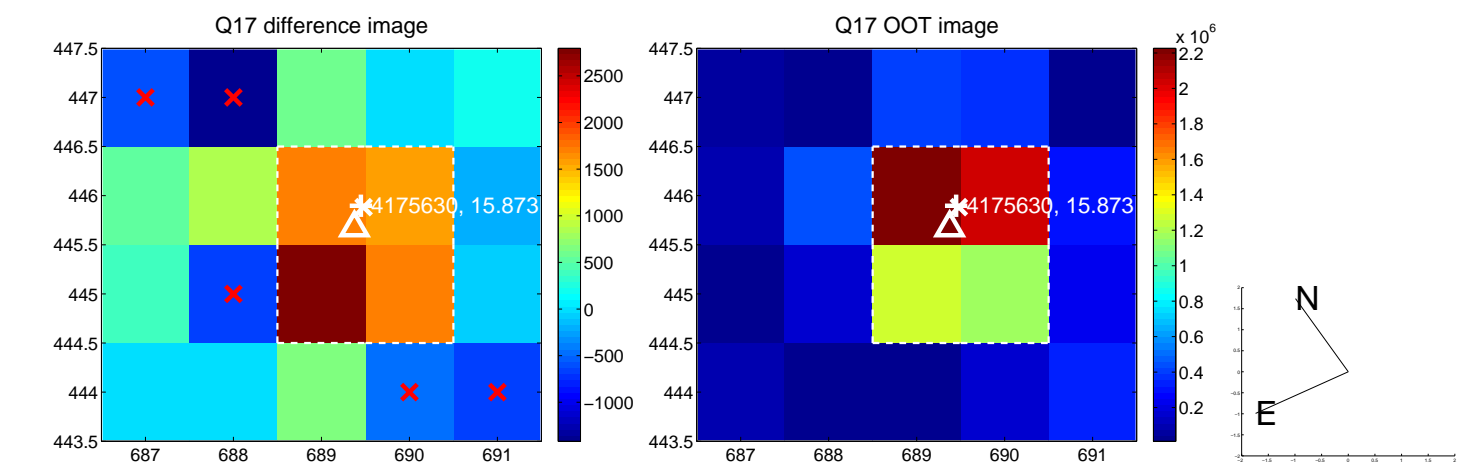
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



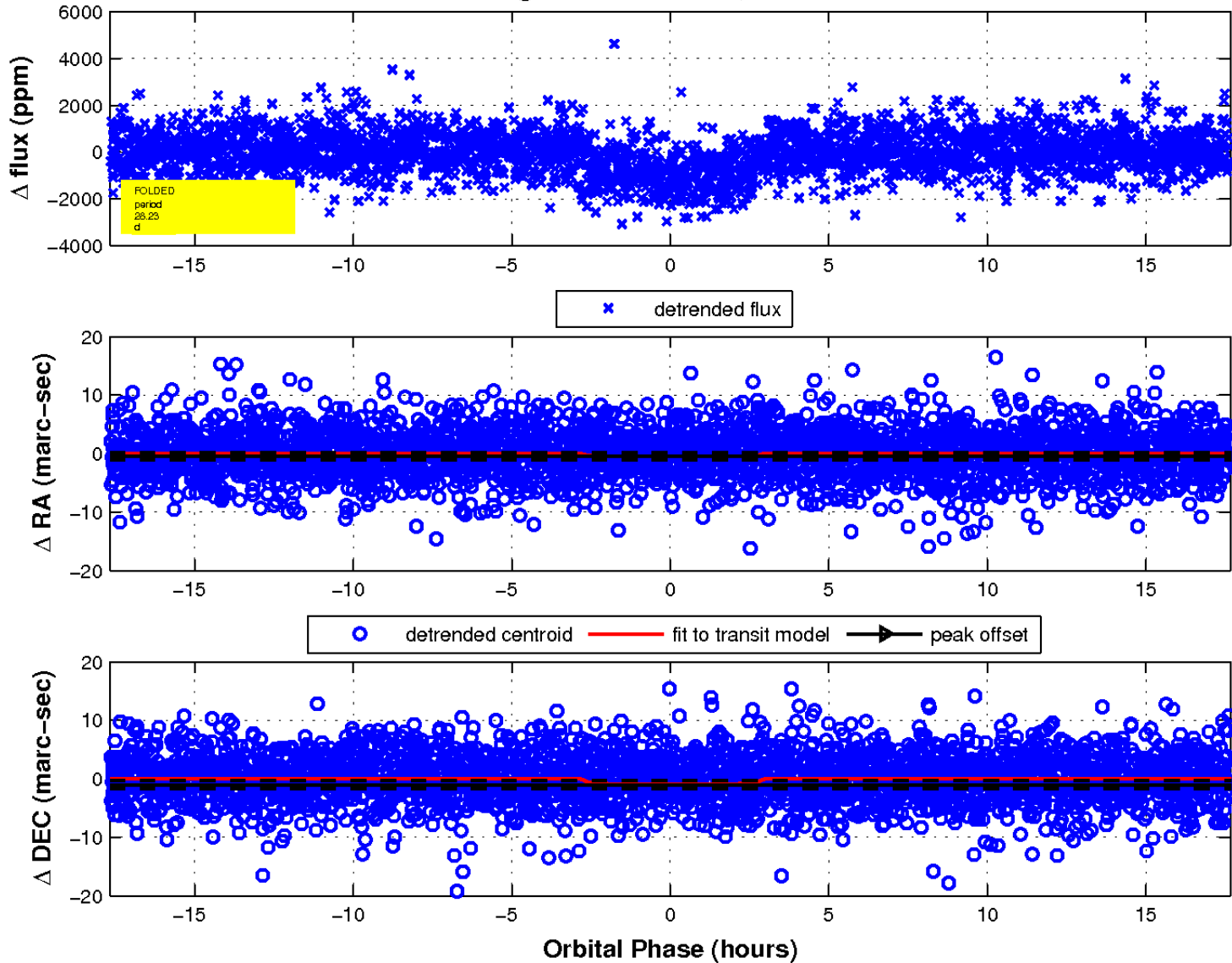
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

