

# KIC 010228991

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010228991-01	OBS	No	0.699759	132.077644	11.4	1.864	11.6	4.6	2.88	7861	1.15	72996.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010228991-01	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

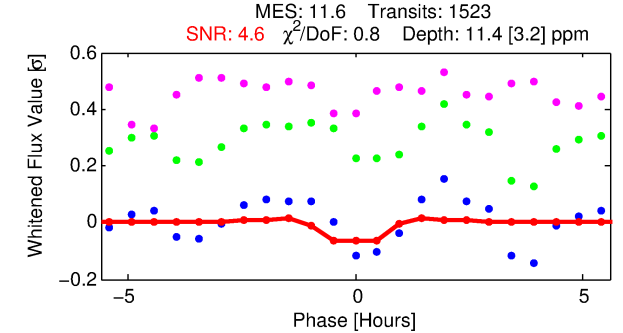
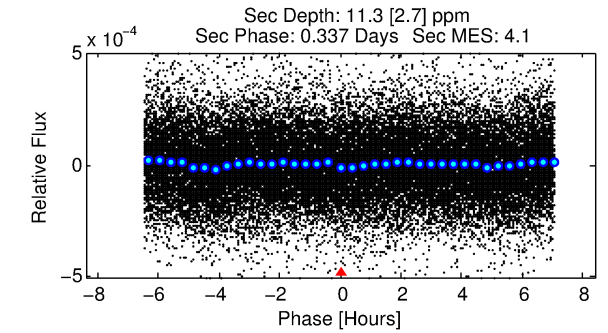
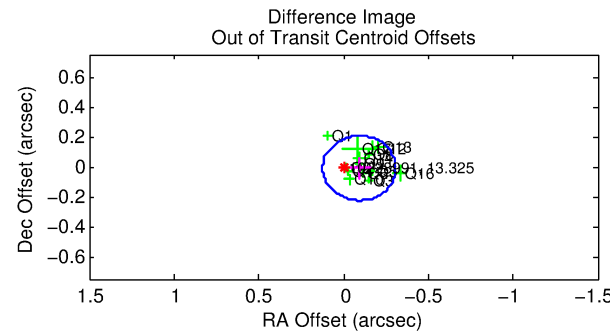
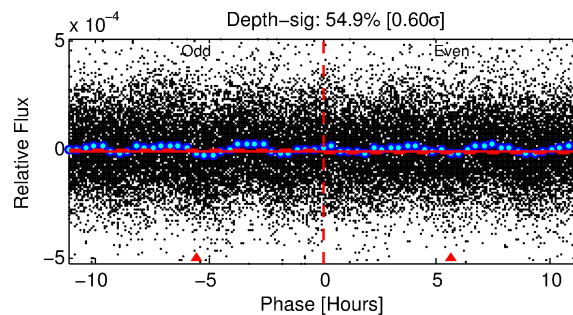
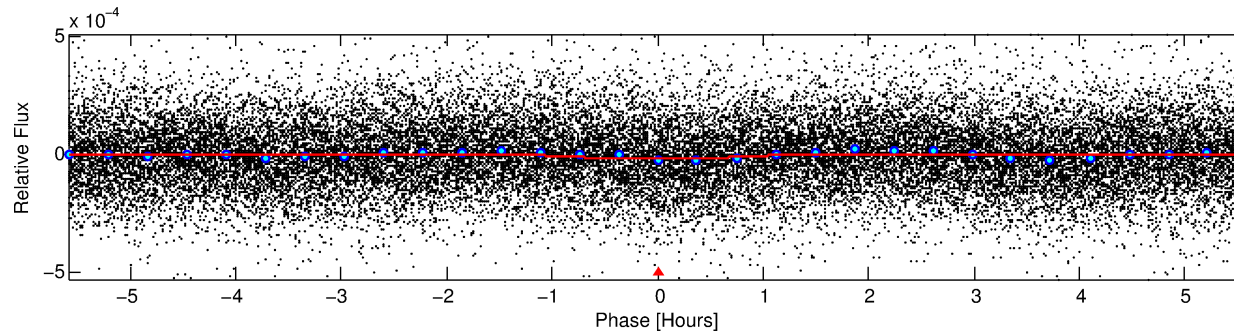
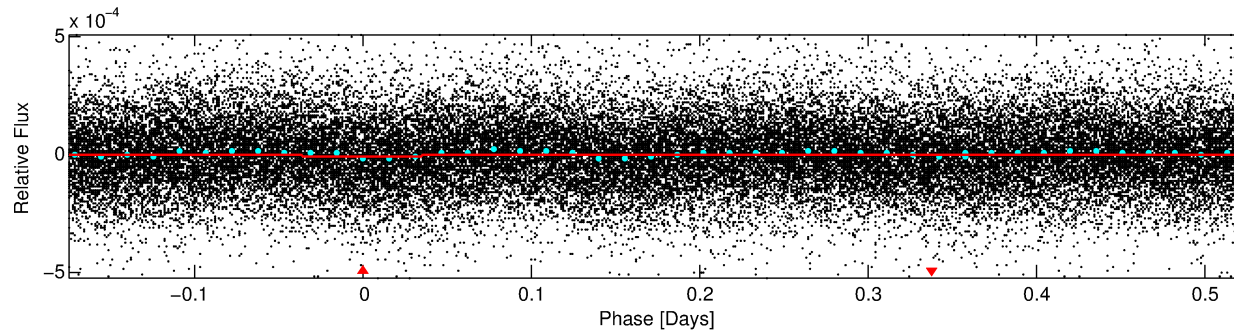
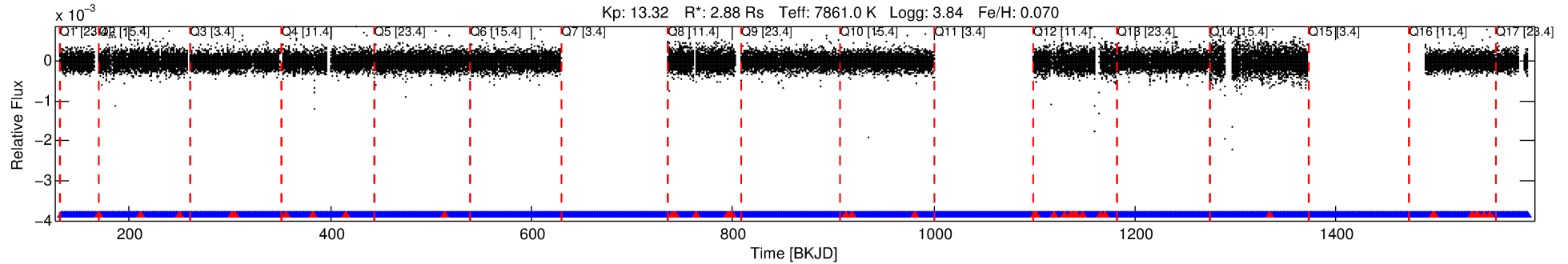
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010228991-01

No Significant Match Found

# DV One-Page Summary

KIC: 10228991 Candidate: 1 of 1 Period: 0.700 d



## DV Fit Results:

Period = 0.69976 [0.00002] d  
Epoch = 132.0776 [0.0047] BKJD  
Rp/R\* = 0.0037 [0.0012]  
a/R\* = 1.51 [1.56]  
b = 0.92 [0.33]  
Seff = 72996.12 [41452.12]  
Teq = 4191 [595] K  
Rp = 1.15 [0.58] Re  
a = 0.0197 [0.0069] AU  
Ag = 1.84 [1.60] [0.52 $\sigma$ ]  
Teffp = 7543 [1332] K [2.30 $\sigma$ ]

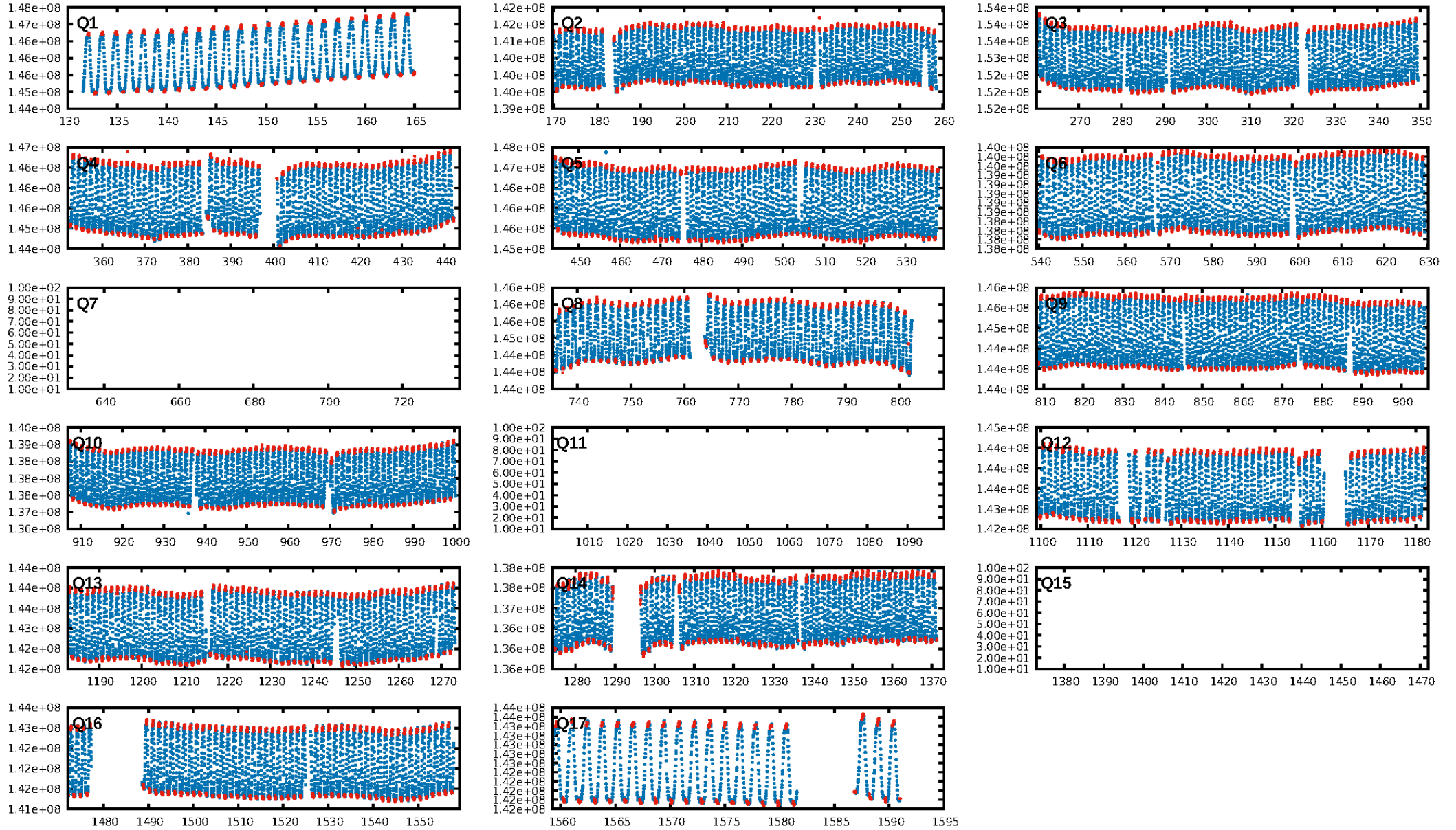
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.02e-28  
RollingBand-fgt: 0.97 [1396/1437]  
**GhostDiagnostic-chr: 0.2383**  
Centroid-sig: 67.3%  
Centroid-so: 1.255 arcsec [0.50 $\sigma$ ]  
OotOffset-rm: 0.093 arcsec [1.29 $\sigma$ ]  
KicOffset-rm: 0.142 arcsec [1.95 $\sigma$ ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.00 [0/14]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:51:17 Z

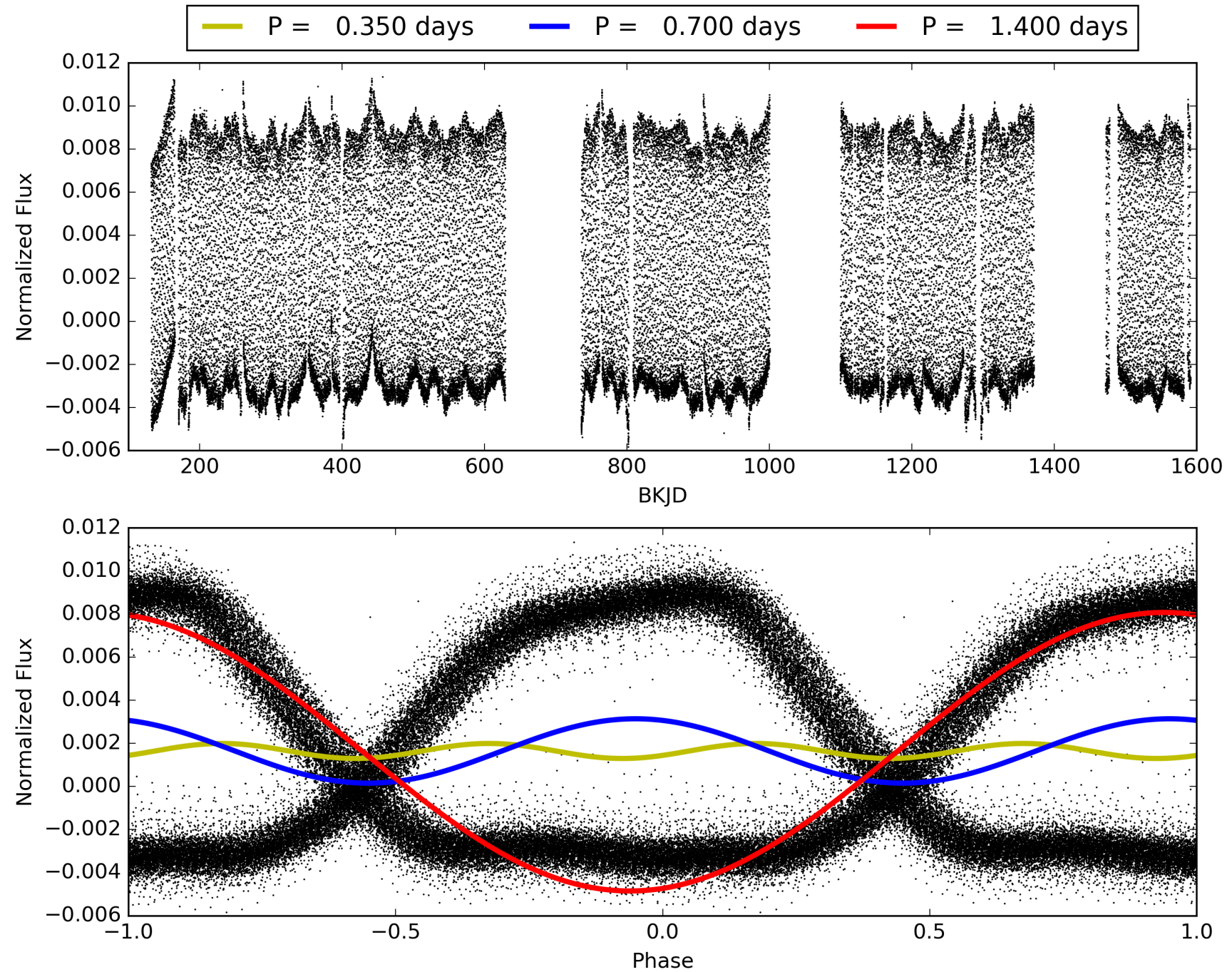
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010228991-01, PDC Light Curves



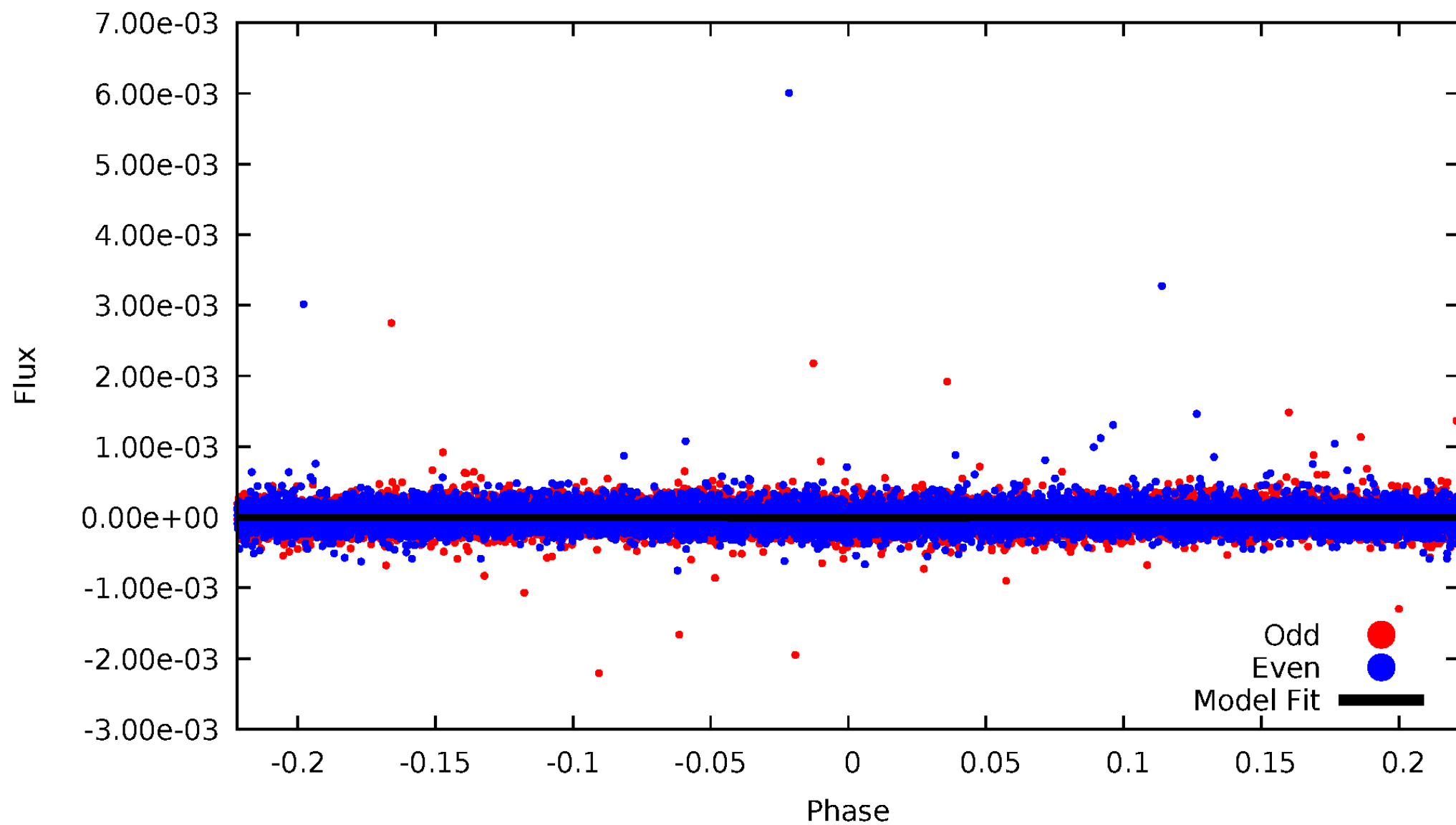


# TCE 010228991-01



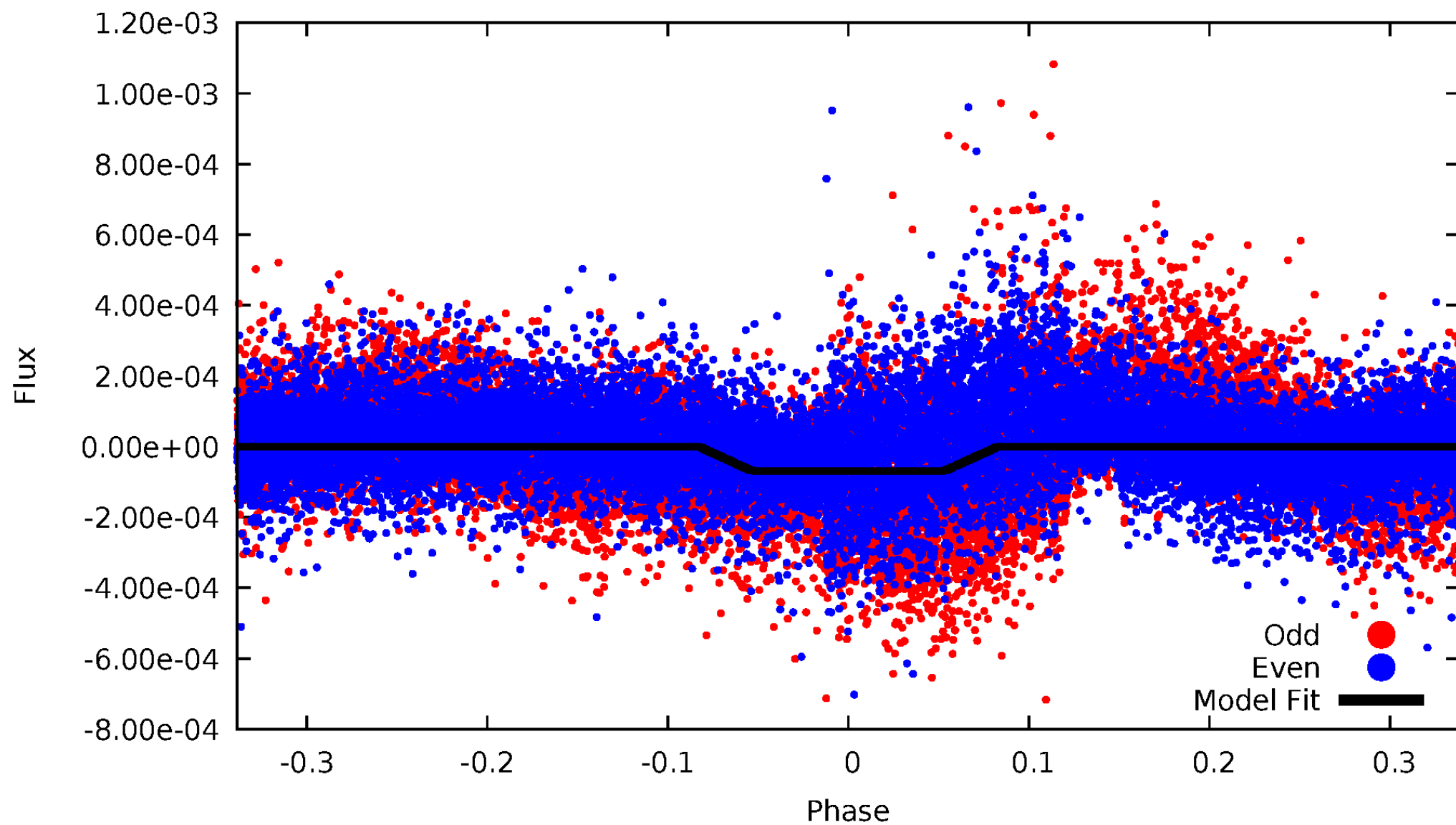
# DV Odd/Even

TCE 010228991-01



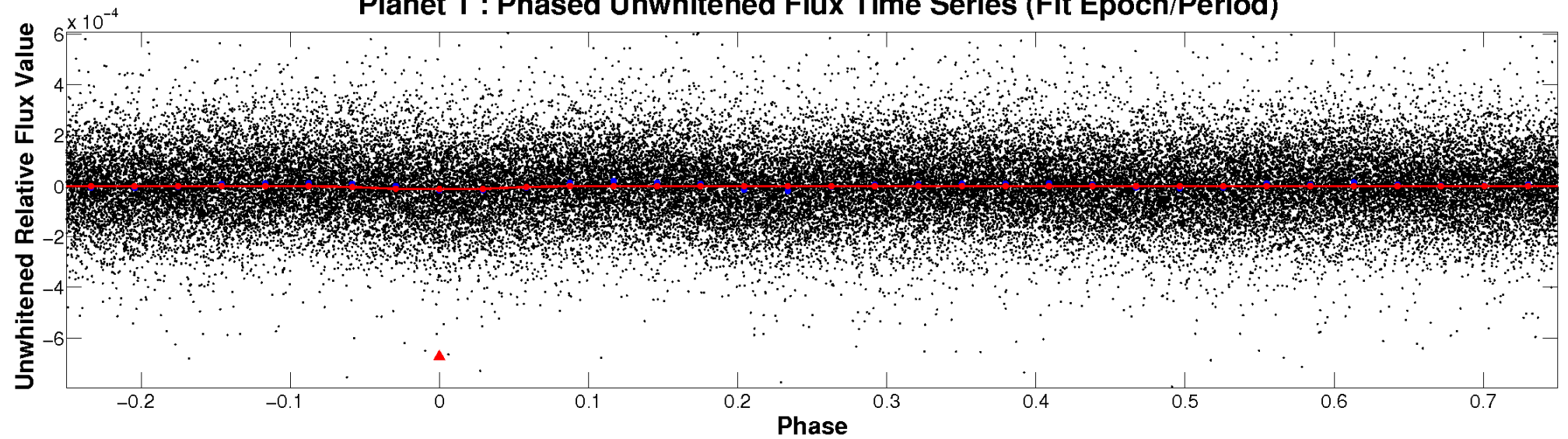
# ALT Odd/Even

TCE 010228991-01

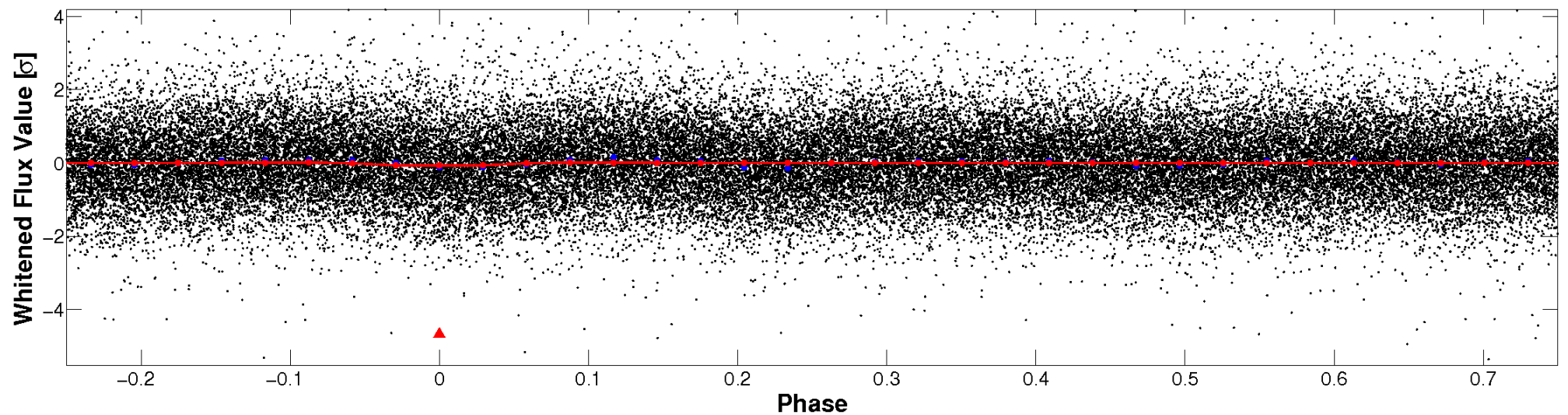


# Non-Whitened Vs. Whitened Light Curve

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

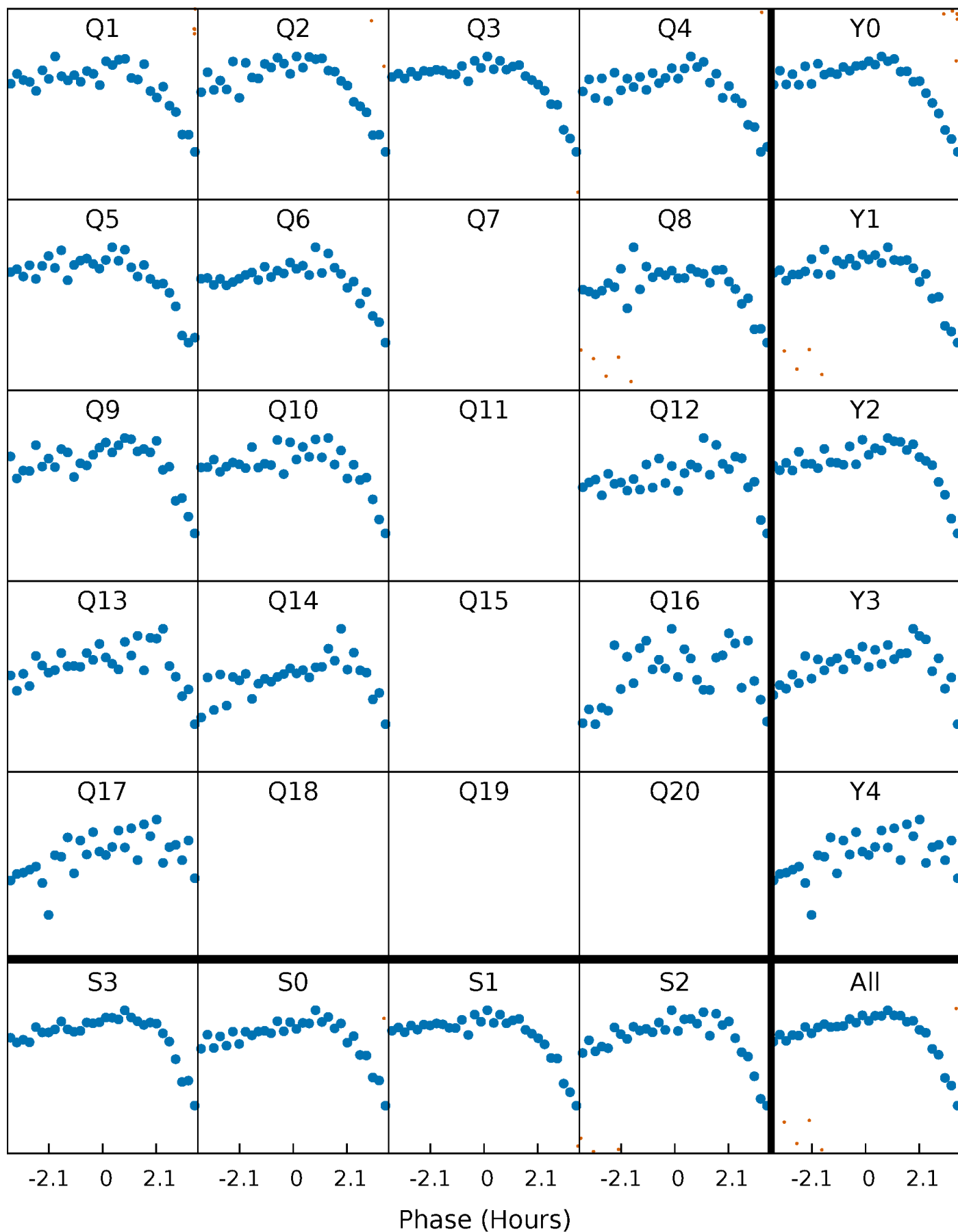


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

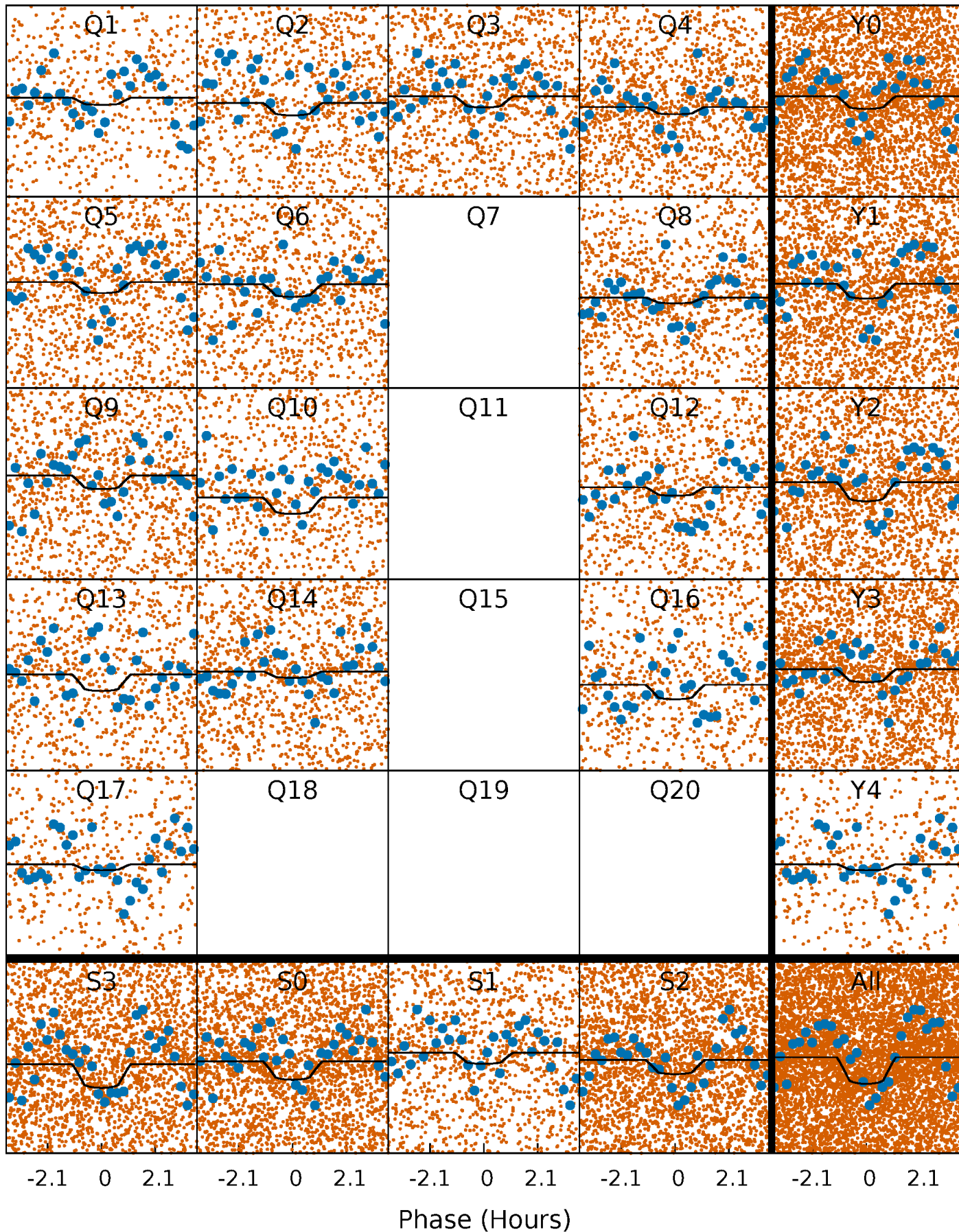
TCE 010228991-01   P= 0.699759 Days    $T_0=132.077644$  (BKJD)





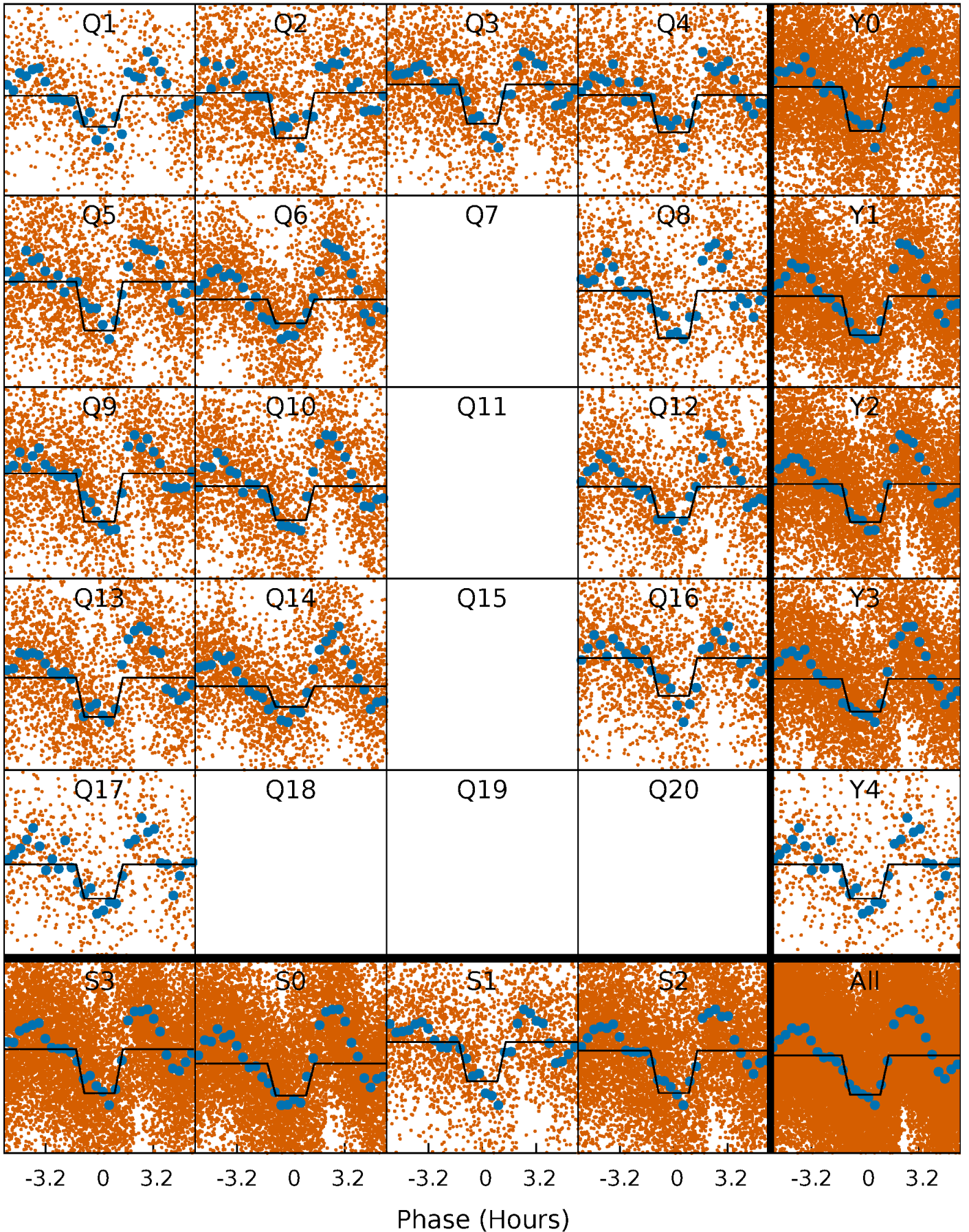
# DV Quarter-Phased Transit Curves

TCE 010228991-01 P= 0.699759 Days  $T_0=132.077644$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010228991-01 P= 0.699791 Days  $T_0=132.025175$  (BKJD)

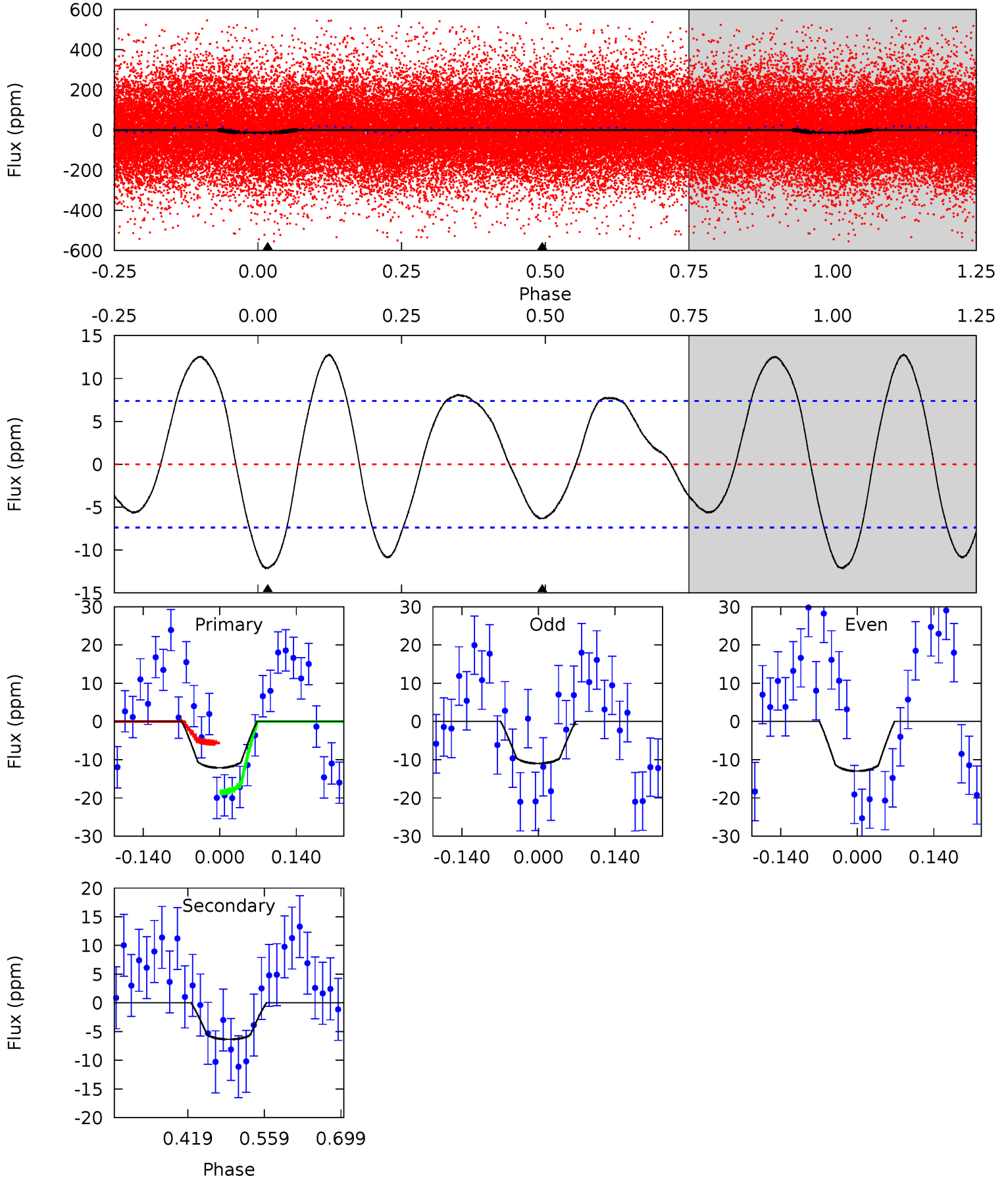




# DV Model-Shift Uniqueness Test

010228991-01, P = 0.699759 Days, E = 131.377885 Days

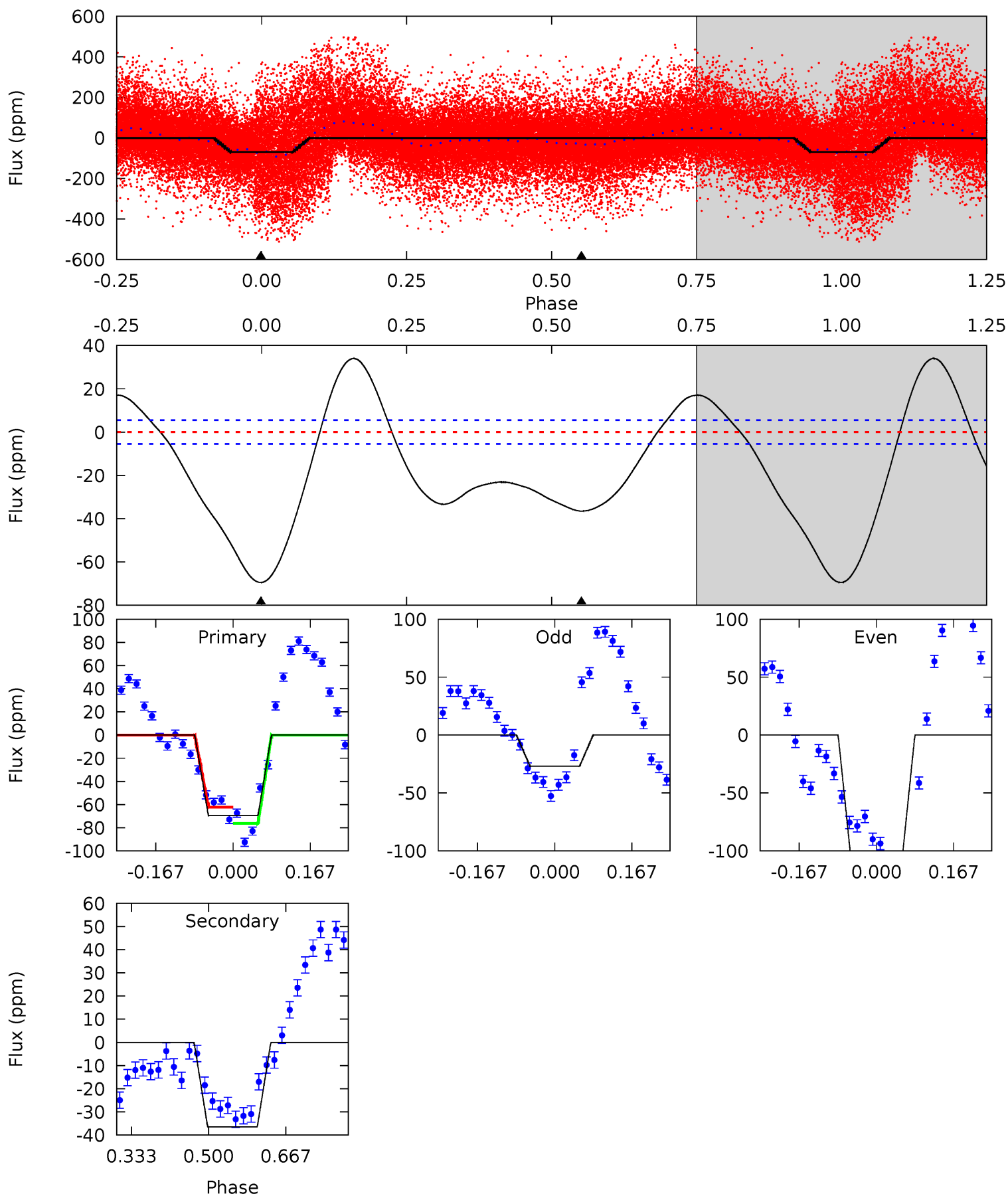
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.38	3.87	0	0	4.49	1.48	3.48	7.38	7.38	3.87	3.87	0.62	0.93	0.51	3.91



# Alt Model-Shift Uniqueness Test

010228991-01, P = 0.699791 Days, E = 131.325384 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
56.7	29.8	0	0	4.46	1.38	17.3	56.7	56.7	29.8	29.8	37.0	1.04	0.33	5.75



### Stellar Parameters For KIC 010228991

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7861^{+218}_{-354}$	$3.838^{+0.308}_{-0.123}$	$0.070^{+0.250}_{-0.400}$	$2.875^{+0.476}_{-1.112}$	$2.075^{+0.284}_{-0.527}$	$0.123^{+0.289}_{-0.041}$
	+3%/-5%	+8%/-3%	+357%/-571%	+17%/-39%	+14%/-25%	+235%/-34%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010228991-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-6 \pm 2$	$1.07^{+0.43}_{-0.39}$	$5759^{+390}_{-601}$	$5876^{+1799}_{-1197}$	$1.147^{+1.731}_{-0.576}$
Alt.	$-37 \pm 1$	$2.50^{+0.54}_{-0.61}$	$5761^{+410}_{-560}$	$6136^{+717}_{-589}$	$1.264^{+0.864}_{-0.404}$

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



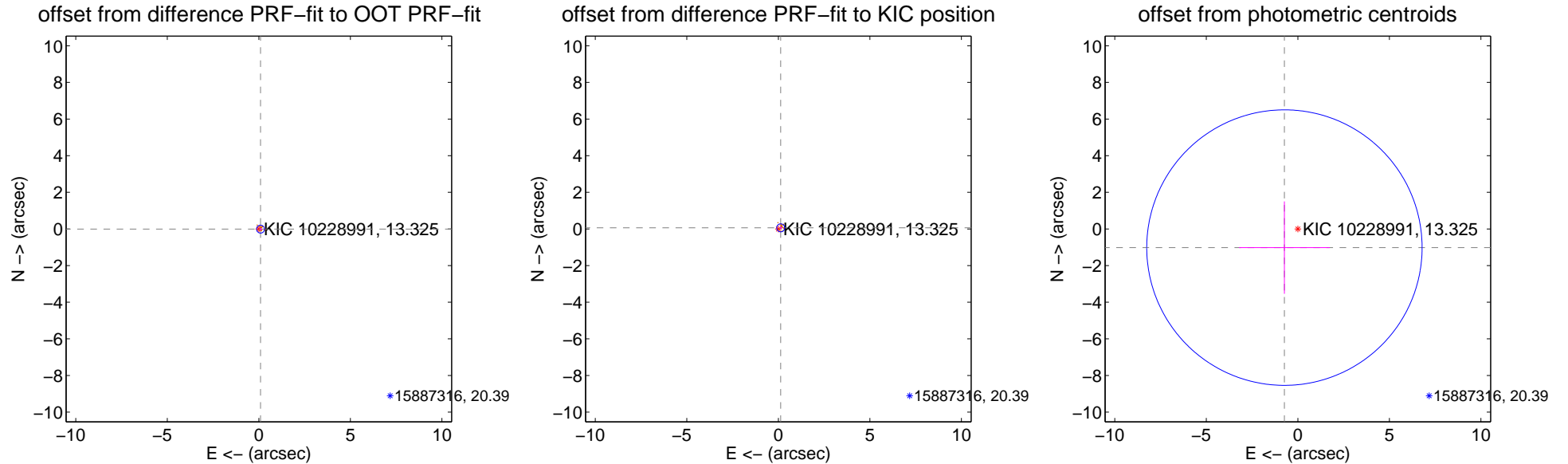
## DV Centroid Data

Supplemental centroid analysis for 010228991-01. Kepler magnitude: 13.32. Transit SNR 4.57

There are 0 quarters with good PRF difference image offsets

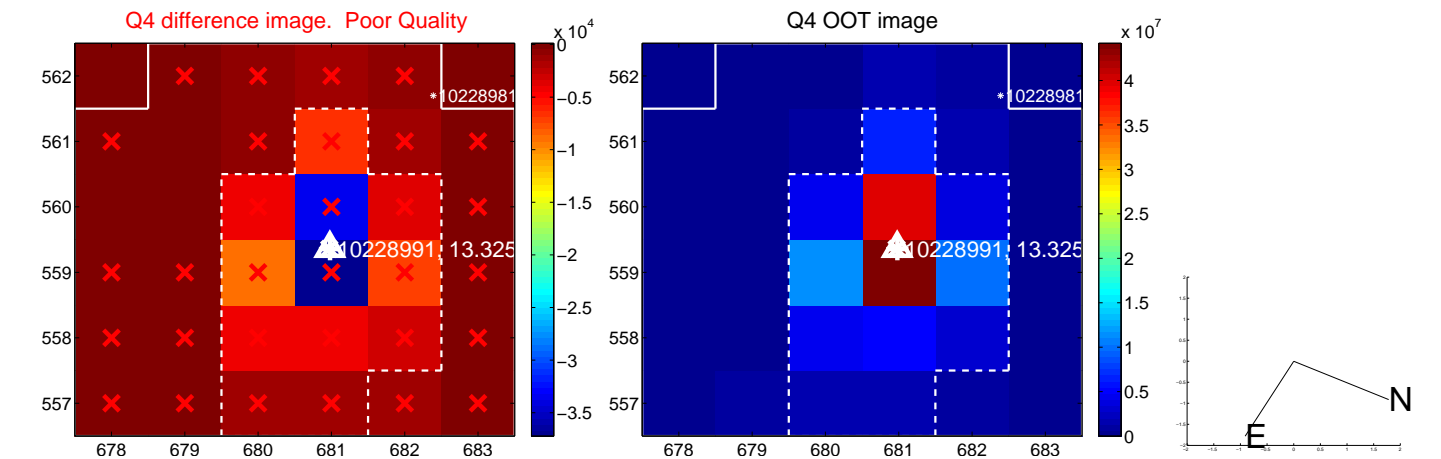
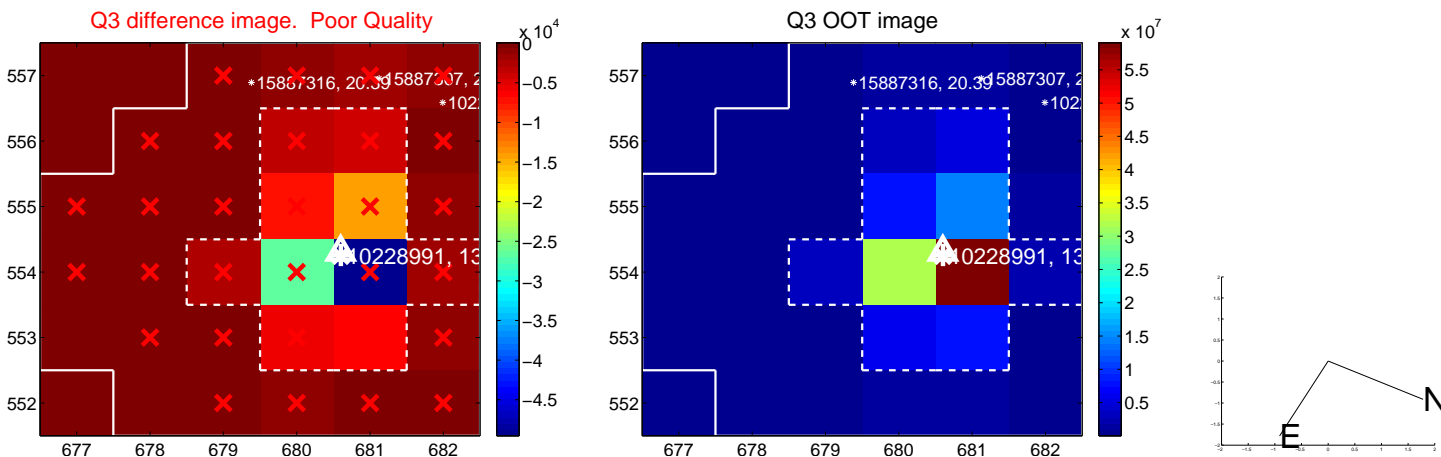
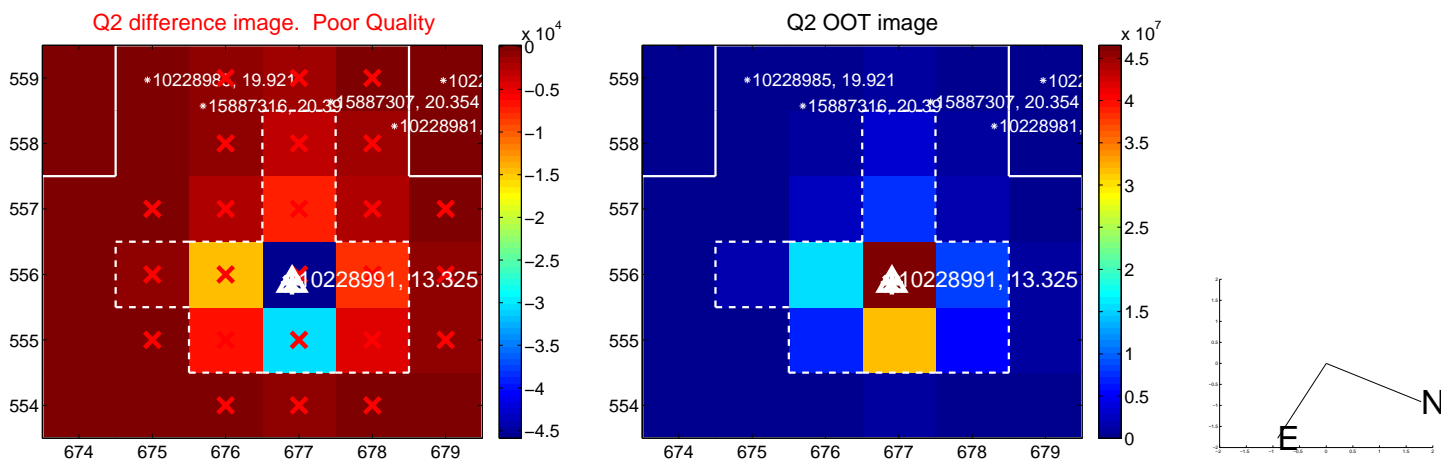
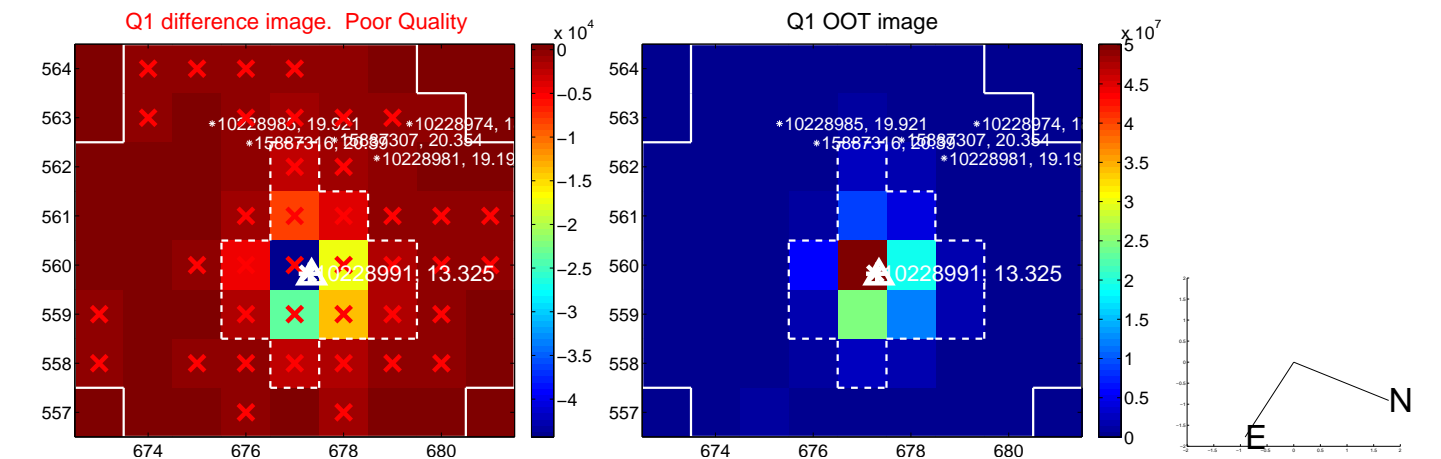
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.093 \pm 0.072$	1.29	$-0.092 \pm 0.072$	$-0.010 \pm 0.071$
PRF-fit source offset from KIC position	$0.142 \pm 0.073$	1.95	$-0.128 \pm 0.073$	$0.061 \pm 0.073$
photometric centroid source offset	$1.26 \pm 2.51$	0.50	$0.73 \pm 2.48$	$-1.02 \pm 2.52$

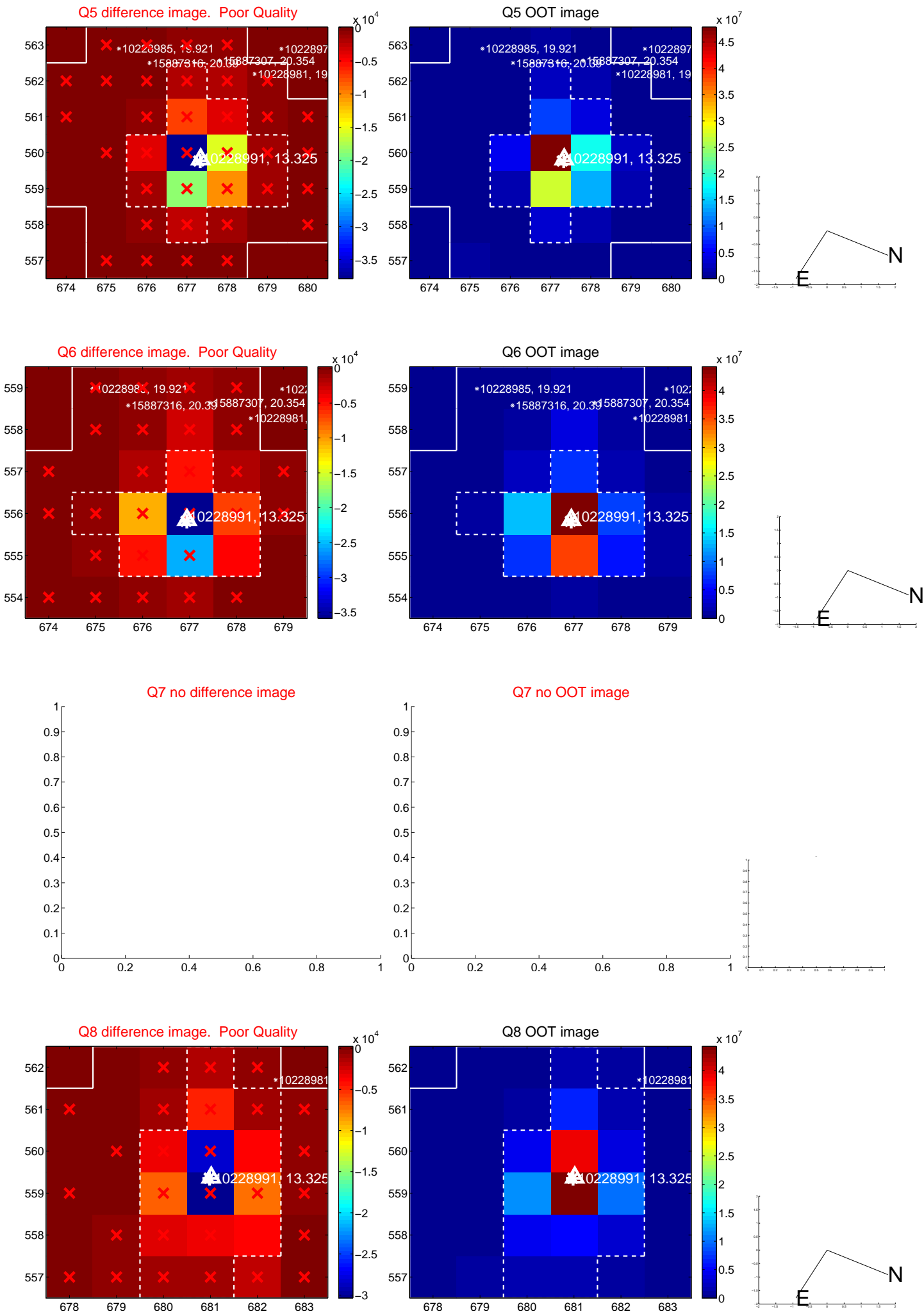


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

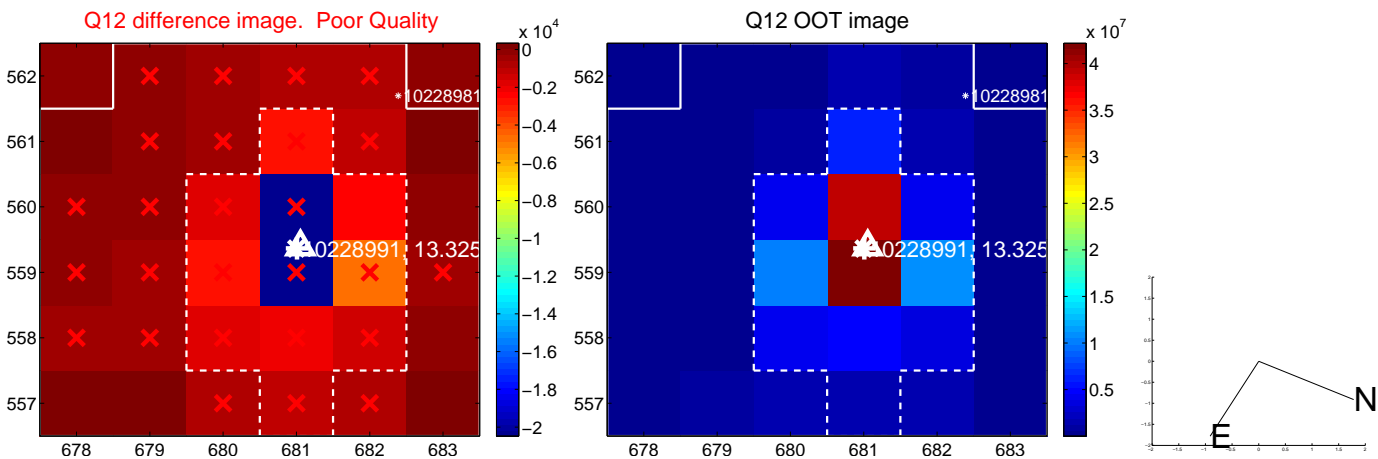
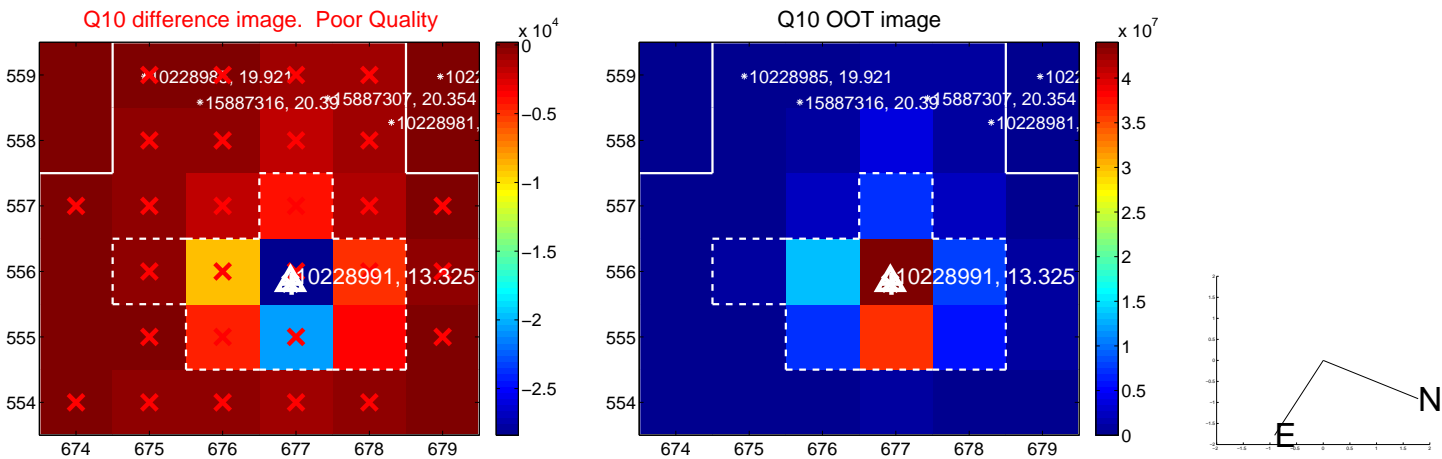
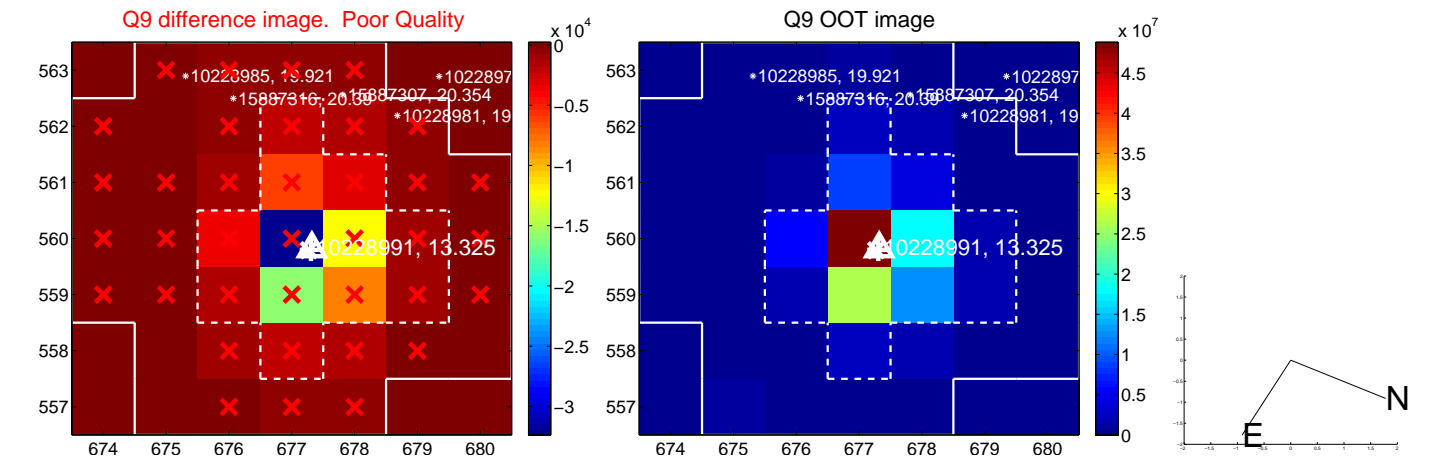
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



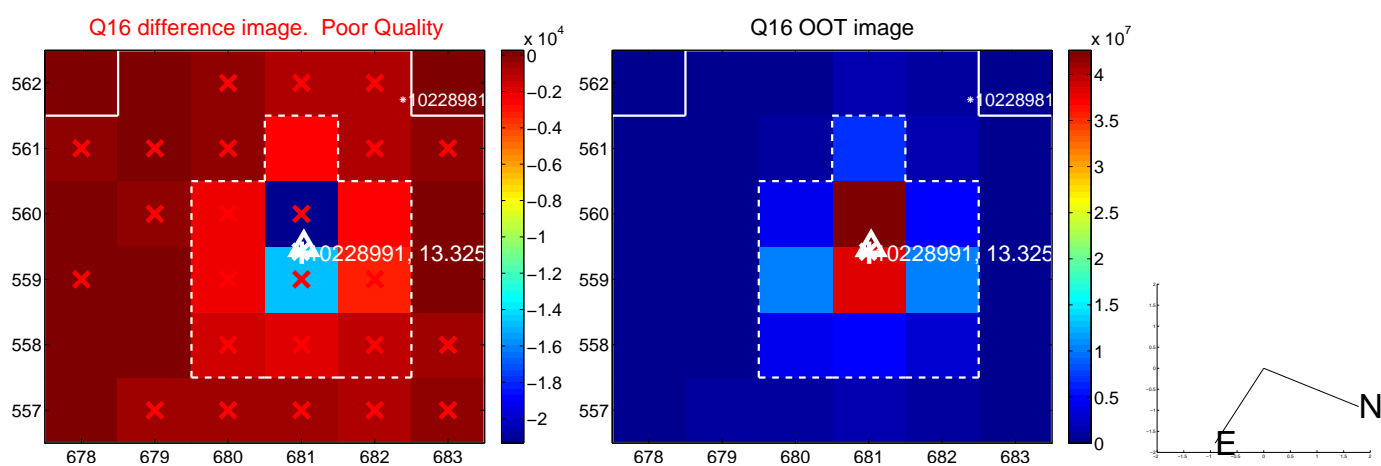
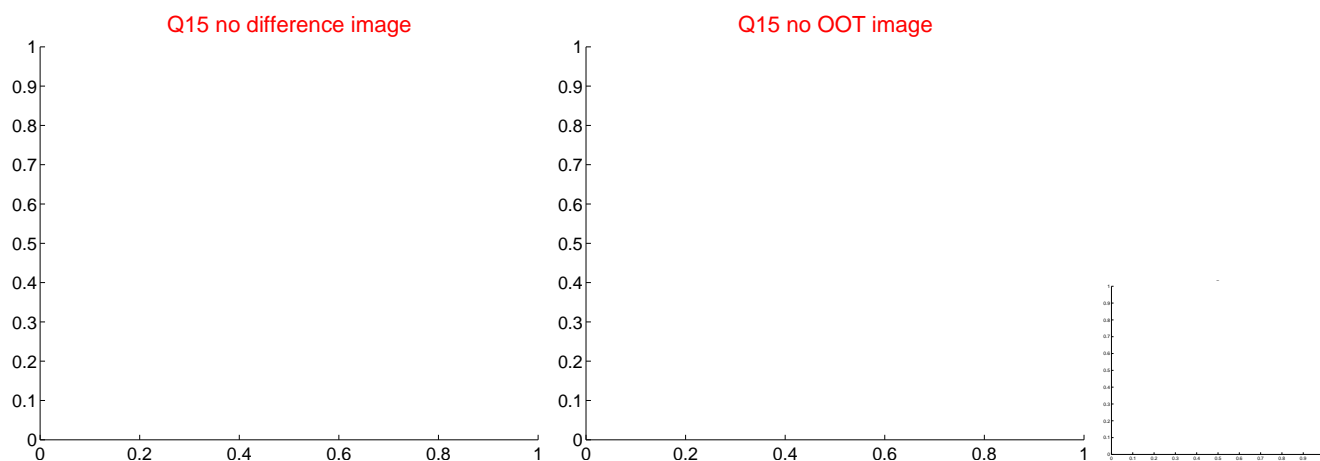
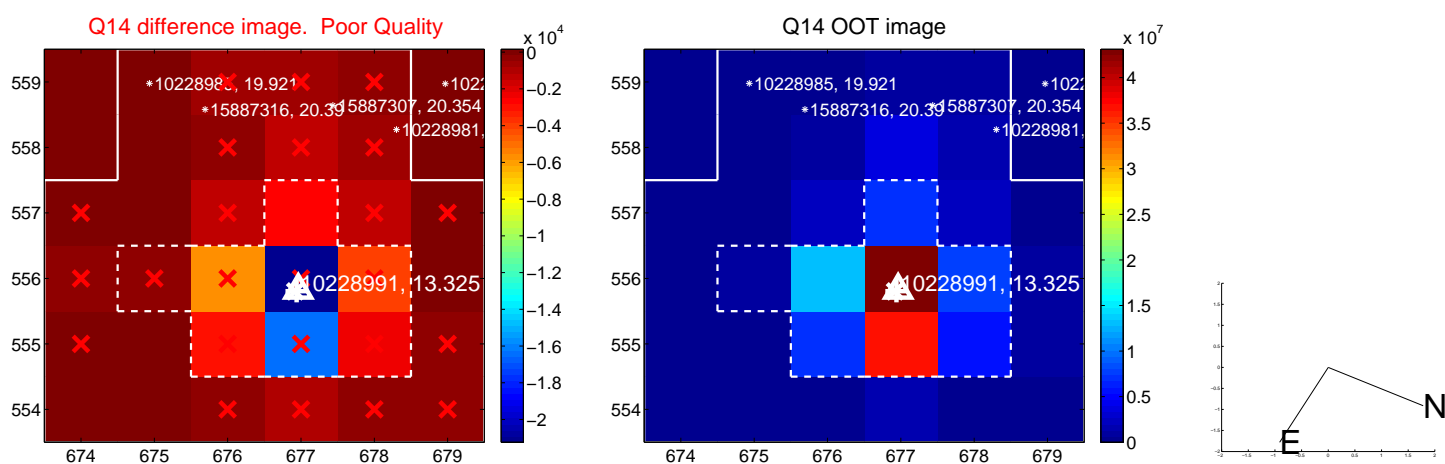
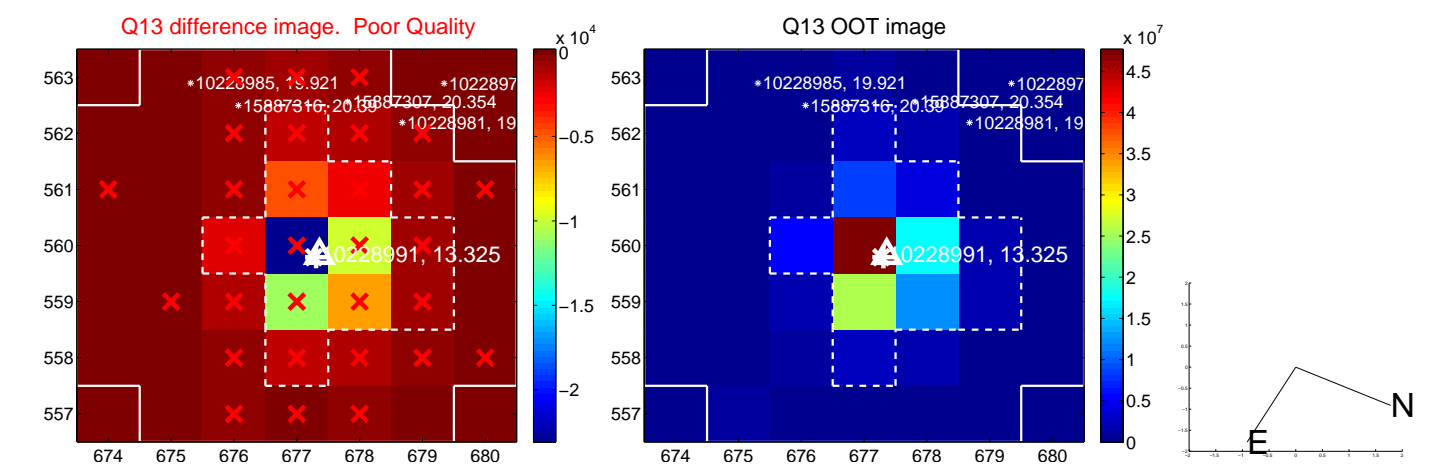
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

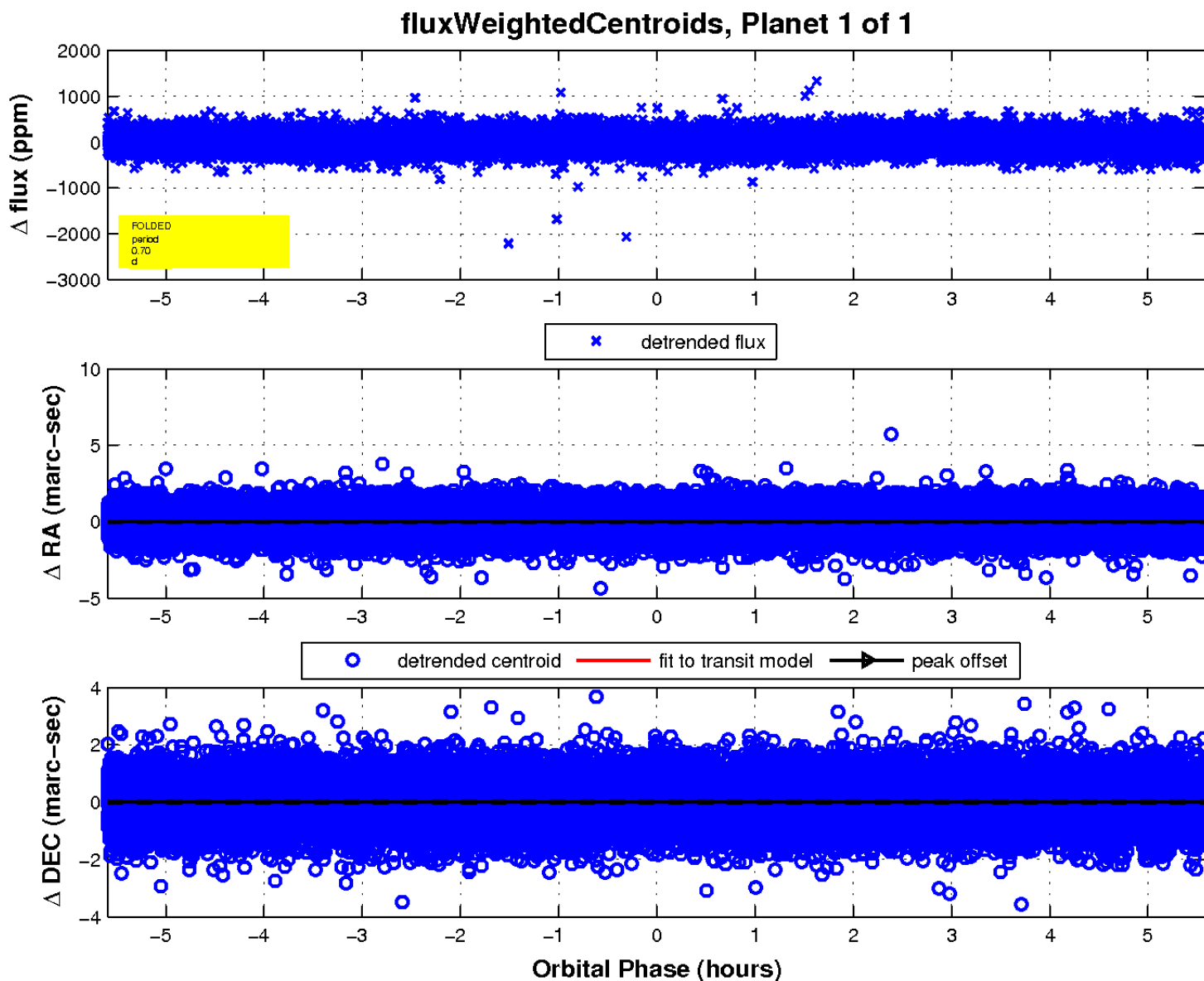
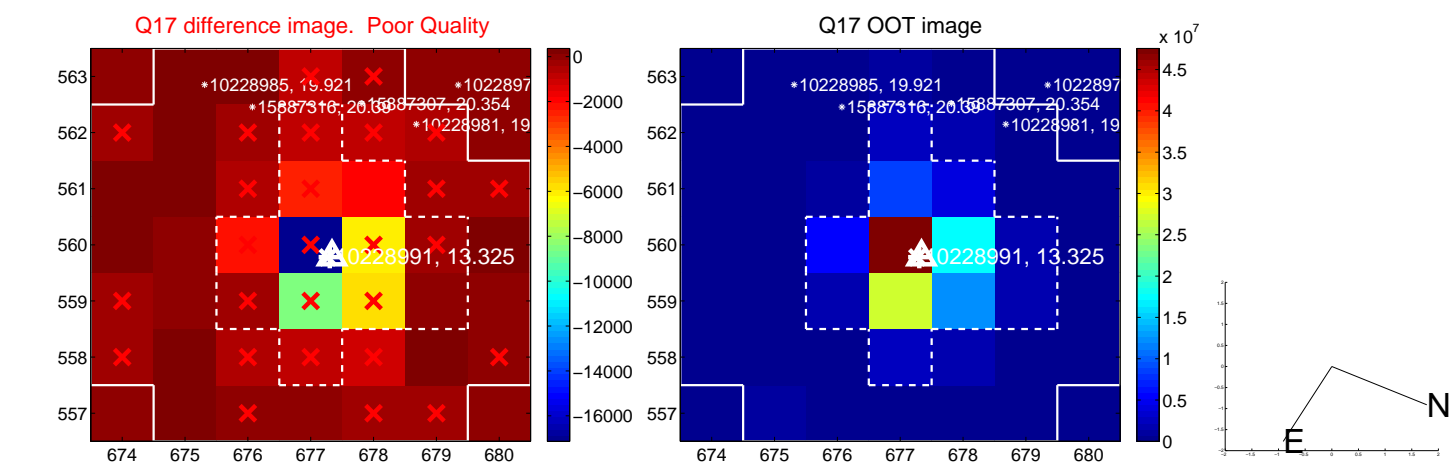


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

