

# KIC 007281856

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007281856-01	OBS	No	0.566799	131.817542	23.9	3.243	10.6	11.6	1.19	6555	0.68	12456.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007281856-01	OBS	FP	0.00	1	0	1	1	LPP_DV—MOD_NONUNIQ_ALT—HALO_GHOST—EPHEM_MATCH

**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.

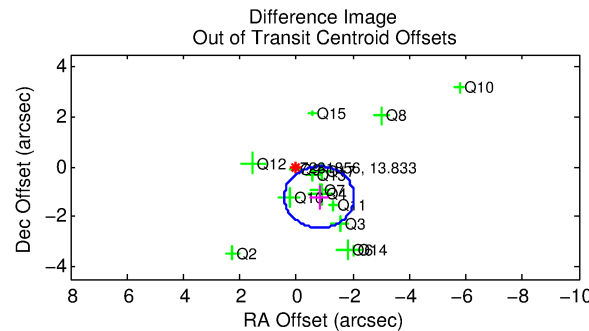
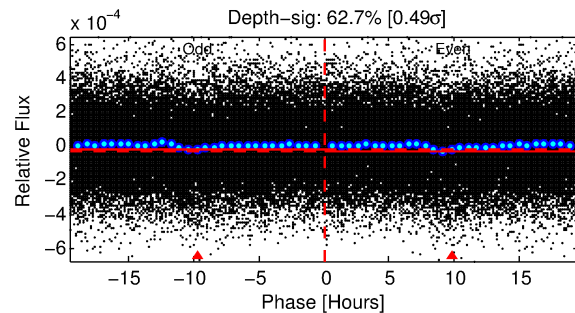
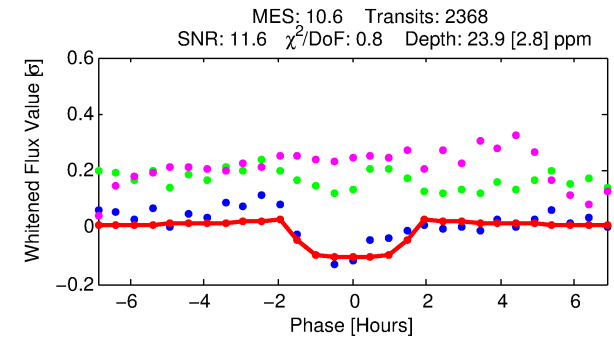
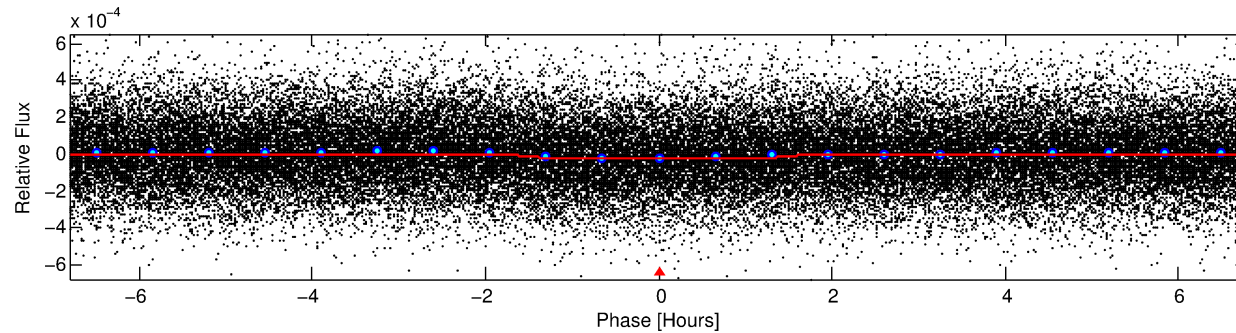
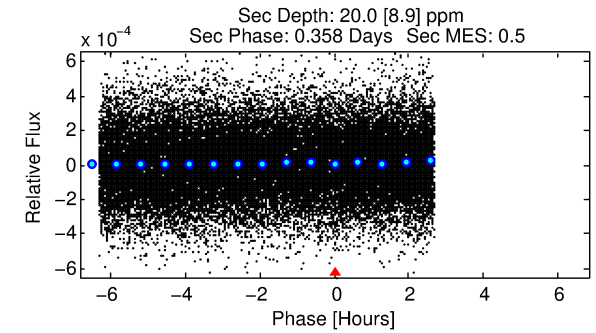
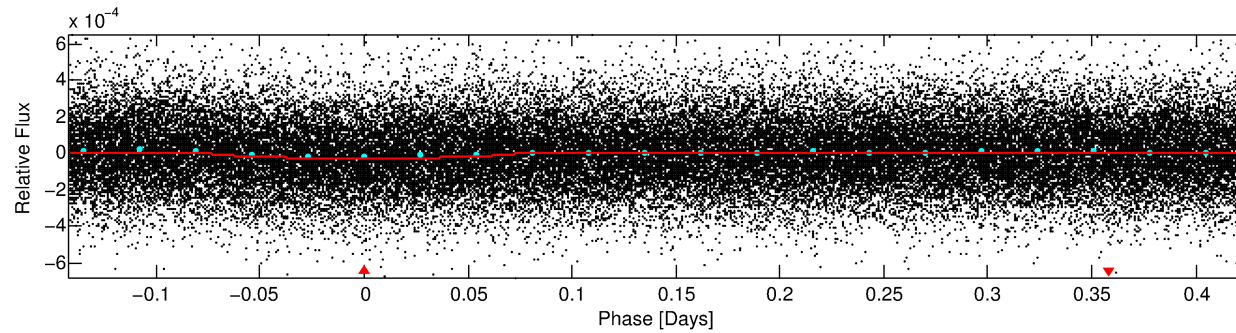
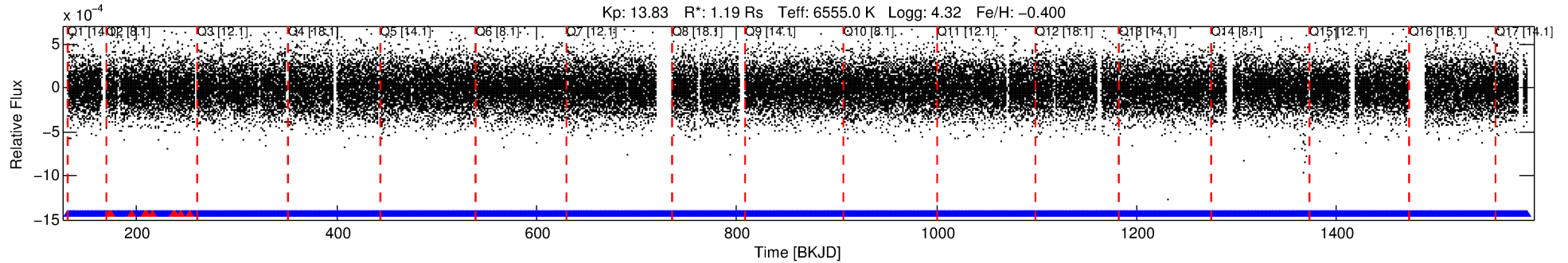
## Ephemeris Match Information For 007281856-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007281856-01	7281856	RR-Lyr-pri	7198959	1:1	1011.4	72	243	7.86	13.83	25971.00	Direct-PRF	0	0.29	19.80

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 7281856 Candidate: 1 of 1 Period: 0.567 d



## DV Fit Results:

Period = 0.56680 [0.00001] d  
Epoch = 131.8175 [0.0027] BKJD  
Rp/R\* = 0.0052 [0.0027]  
a/R\* = 1.11 [0.66]  
b = 0.90 [0.65]  
Seff = 12456.63 [4610.64]  
Teff = 2694 [249] K  
Rp = 0.68 [0.40] Re  
a = 0.0137 [0.0033] AU  
Ag = 4.51 [5.24] [0.67σ]  
Teffp = 6068 [1697] K [1.97σ]

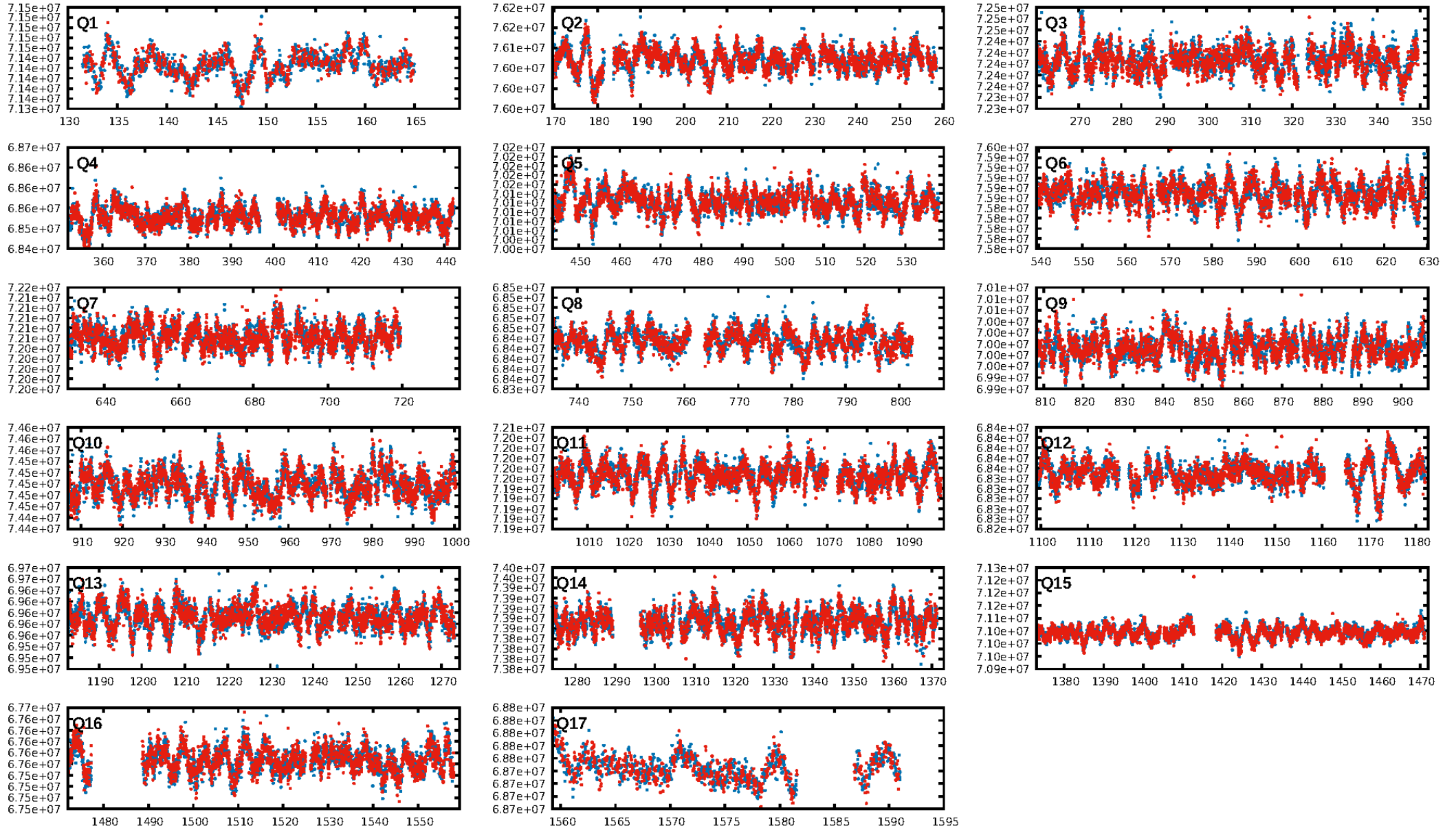
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.08e-20  
RollingBand-fgt: 0.99 [2249/2262]  
GhostDiagnostic-chr: 0.1258  
Centroid-sig: 0.0%  
Centroid-so: 3.759 arcsec [4.67σ]  
OotOffset-rm: 1.469 arcsec [3.57σ]  
KicOffset-rm: 1.398 arcsec [3.30σ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 0.27 [4/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 13:20:19 Z

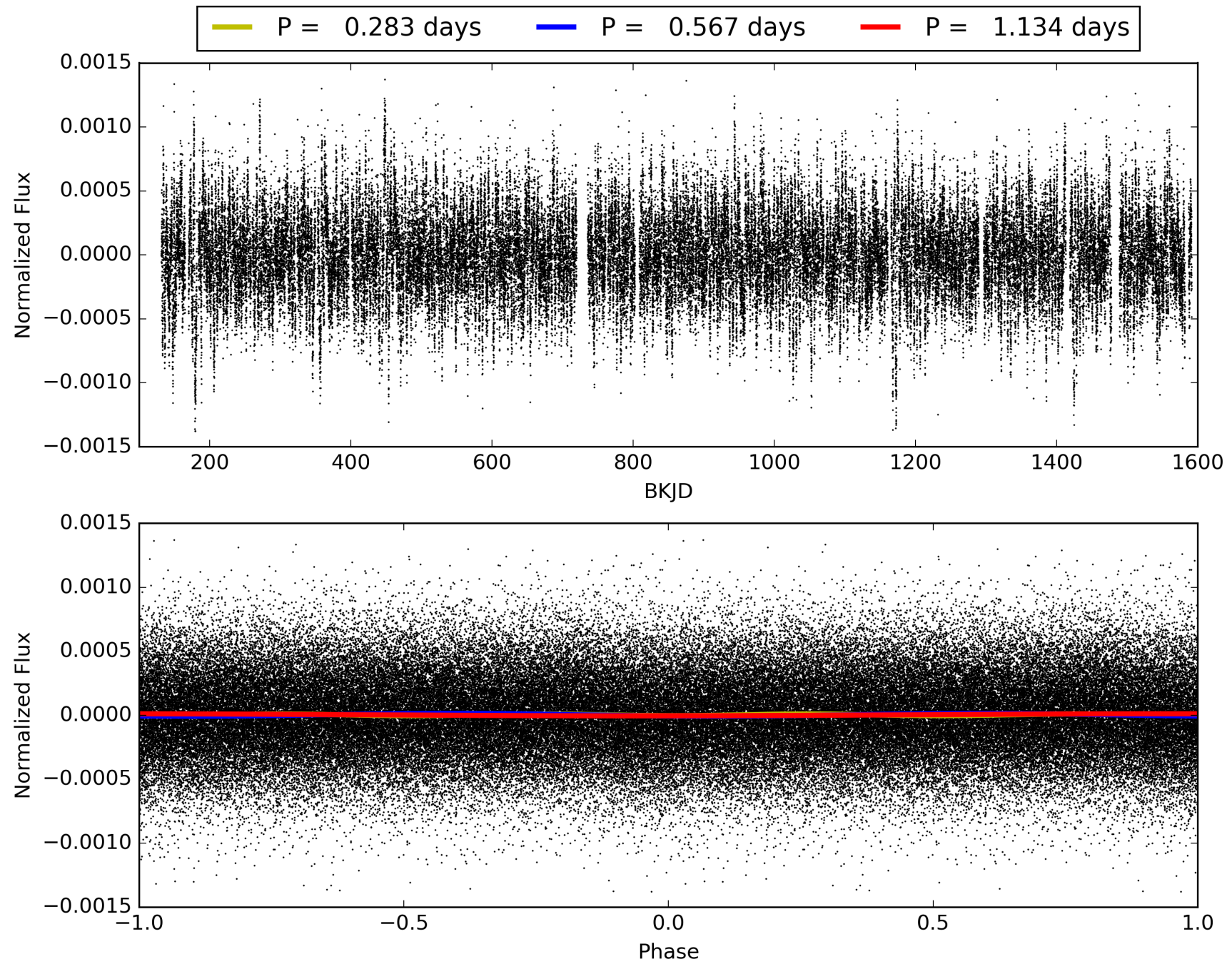
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007281856-01, PDC Light Curves



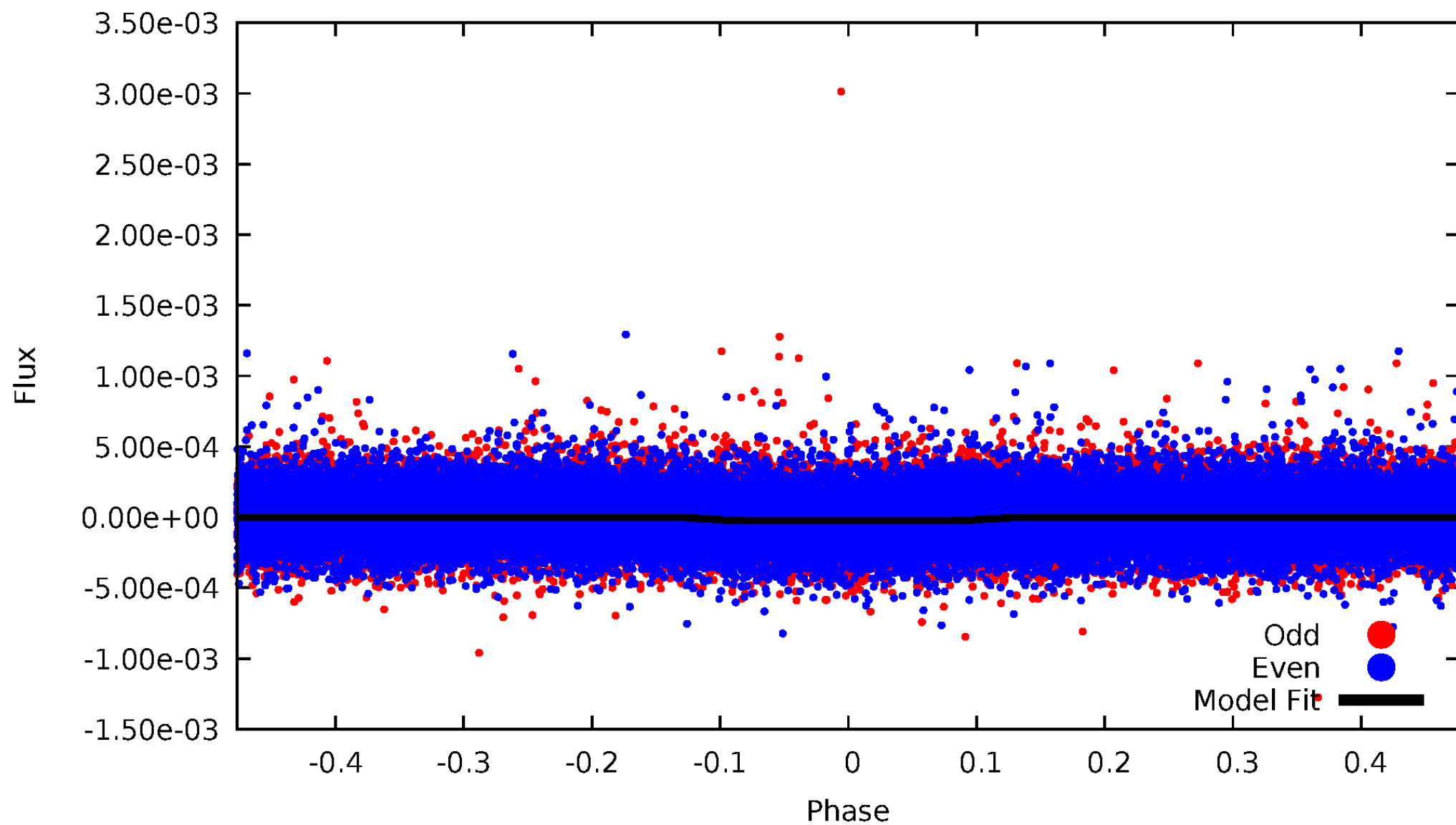


TCE 007281856-01



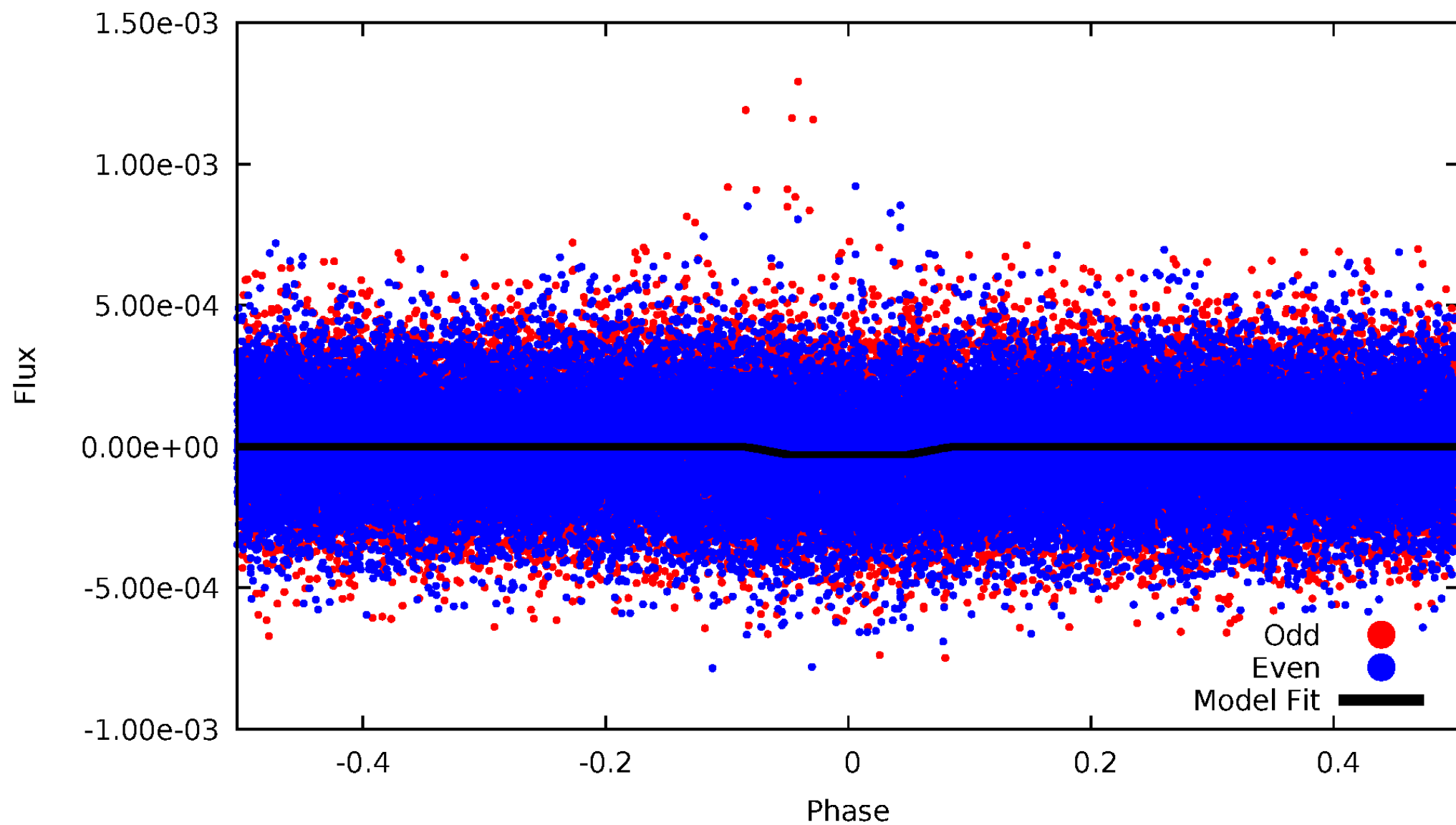
# DV Odd/Even

TCE 007281856-01



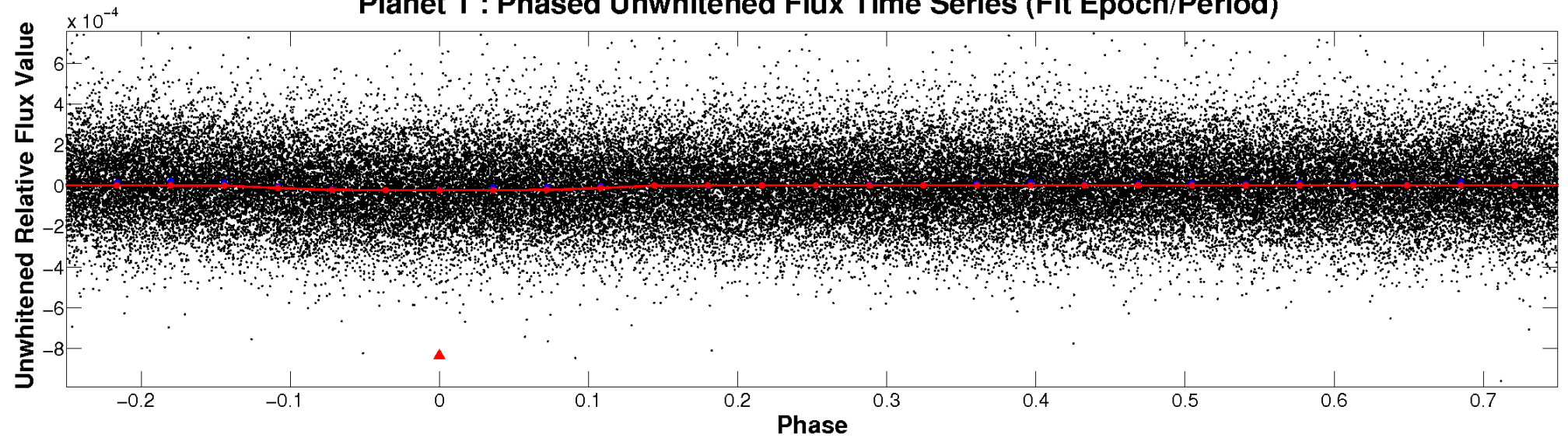
# ALT Odd/Even

TCE 007281856-01

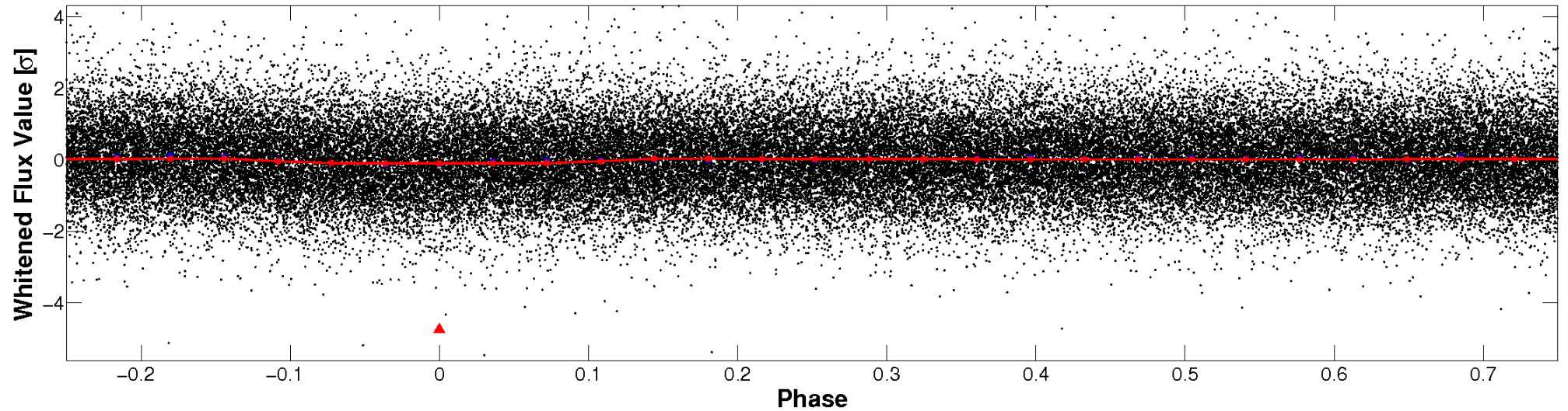


# Non-Whitened Vs. Whitened Light Curve

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



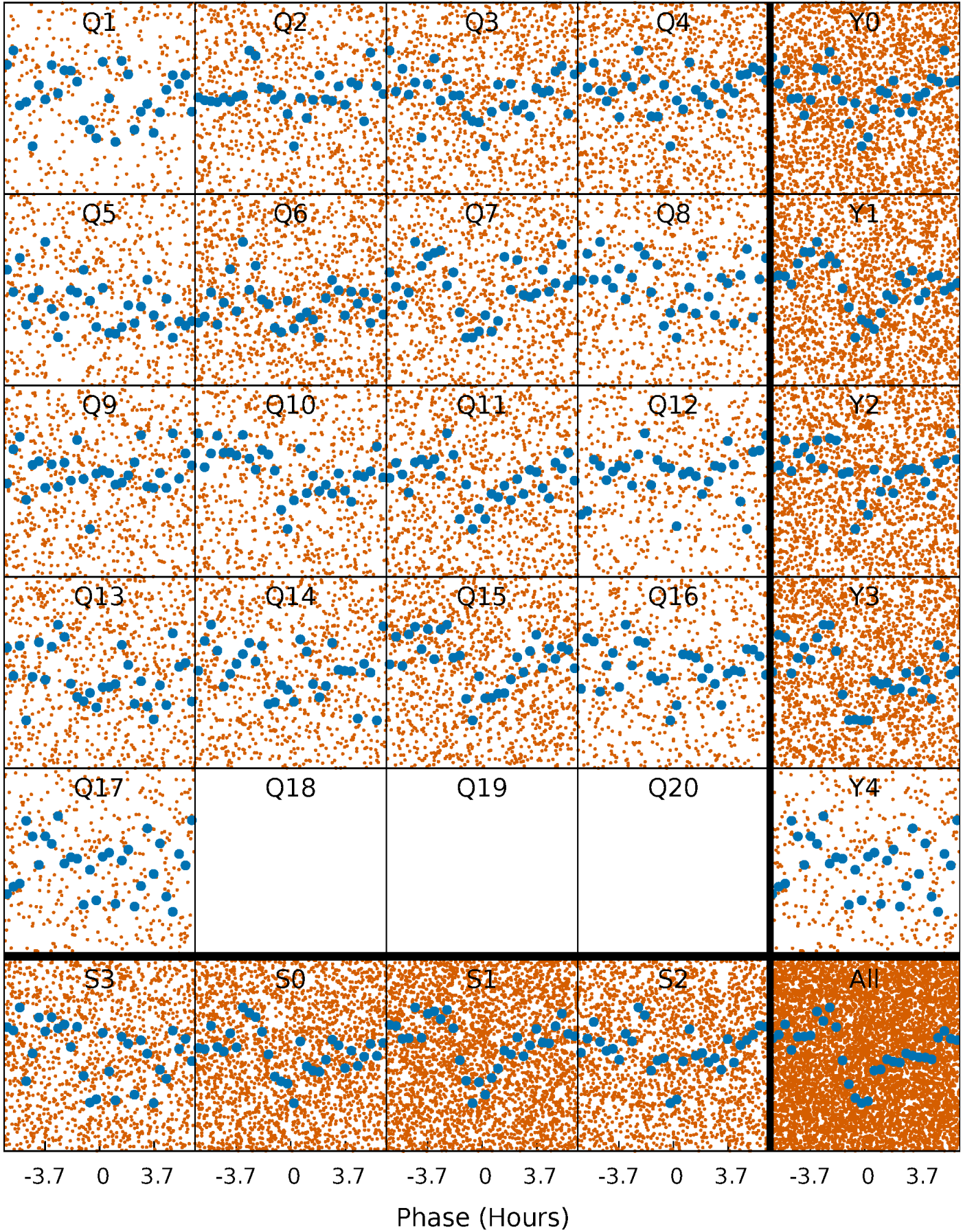
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

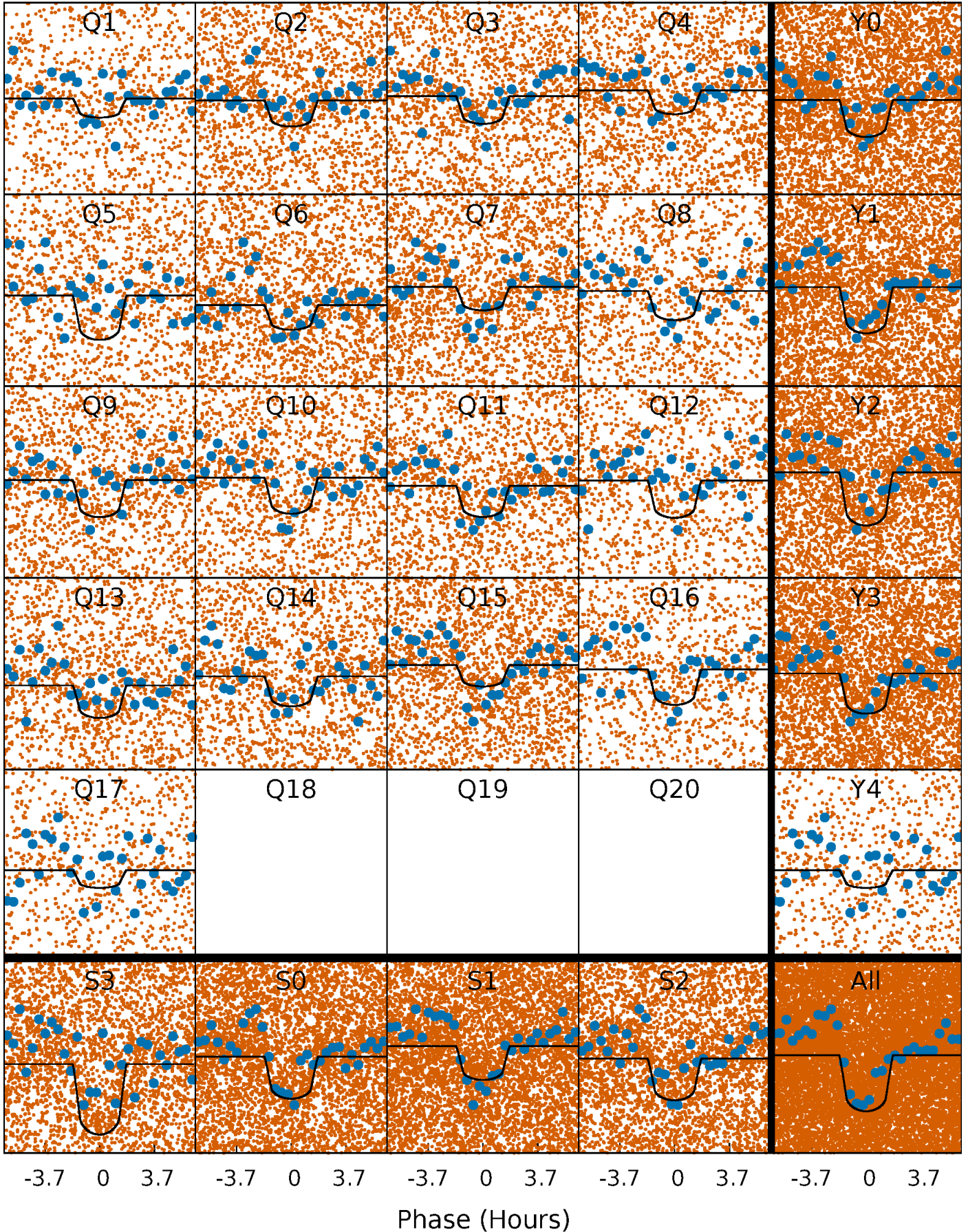
TCE 007281856-01 P= 0.566799 Days  $T_0=131.817542$  (BKJD)





# DV Quarter-Phased Transit Curves

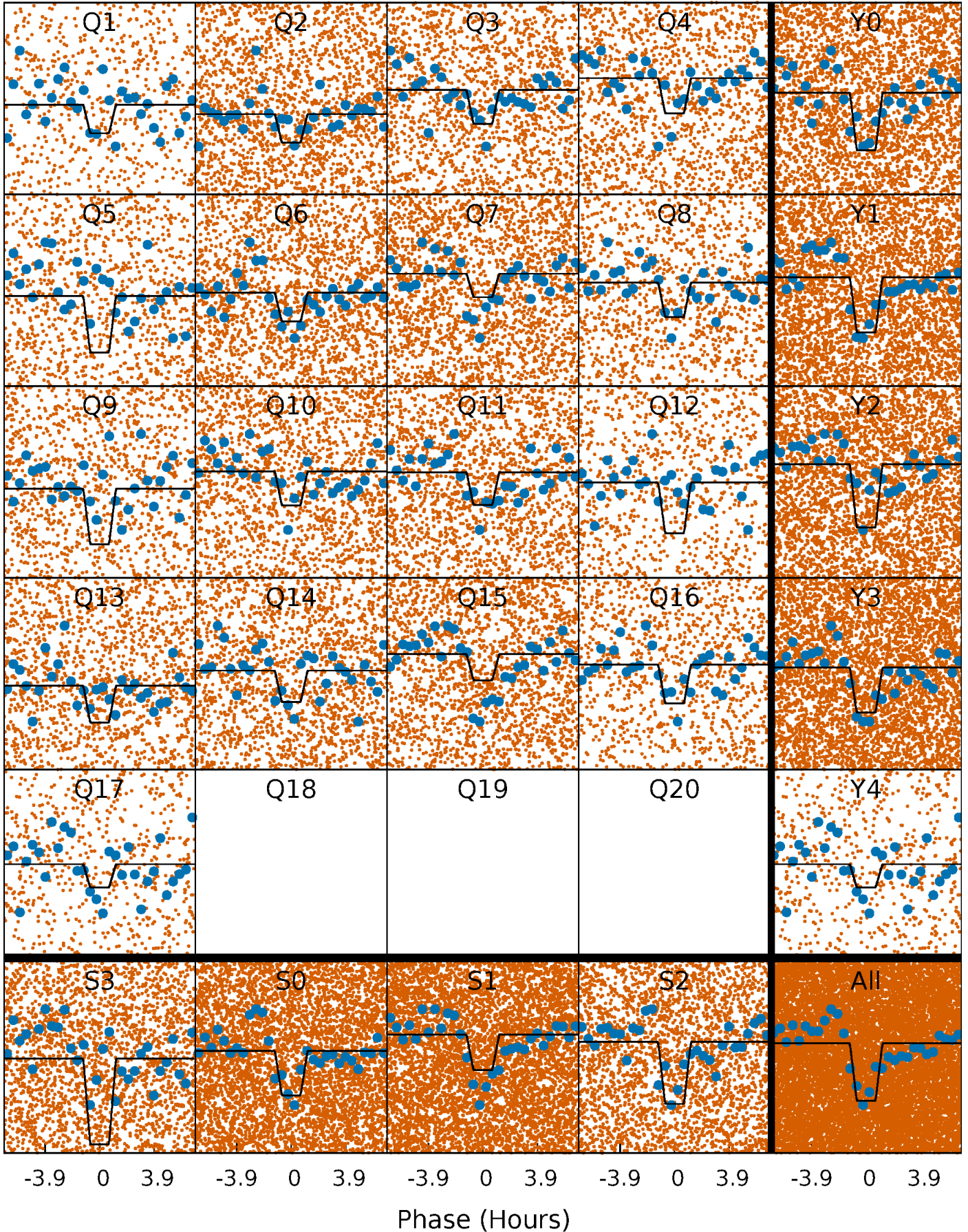
TCE 007281856-01 P= 0.566799 Days  $T_0=131.817542$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

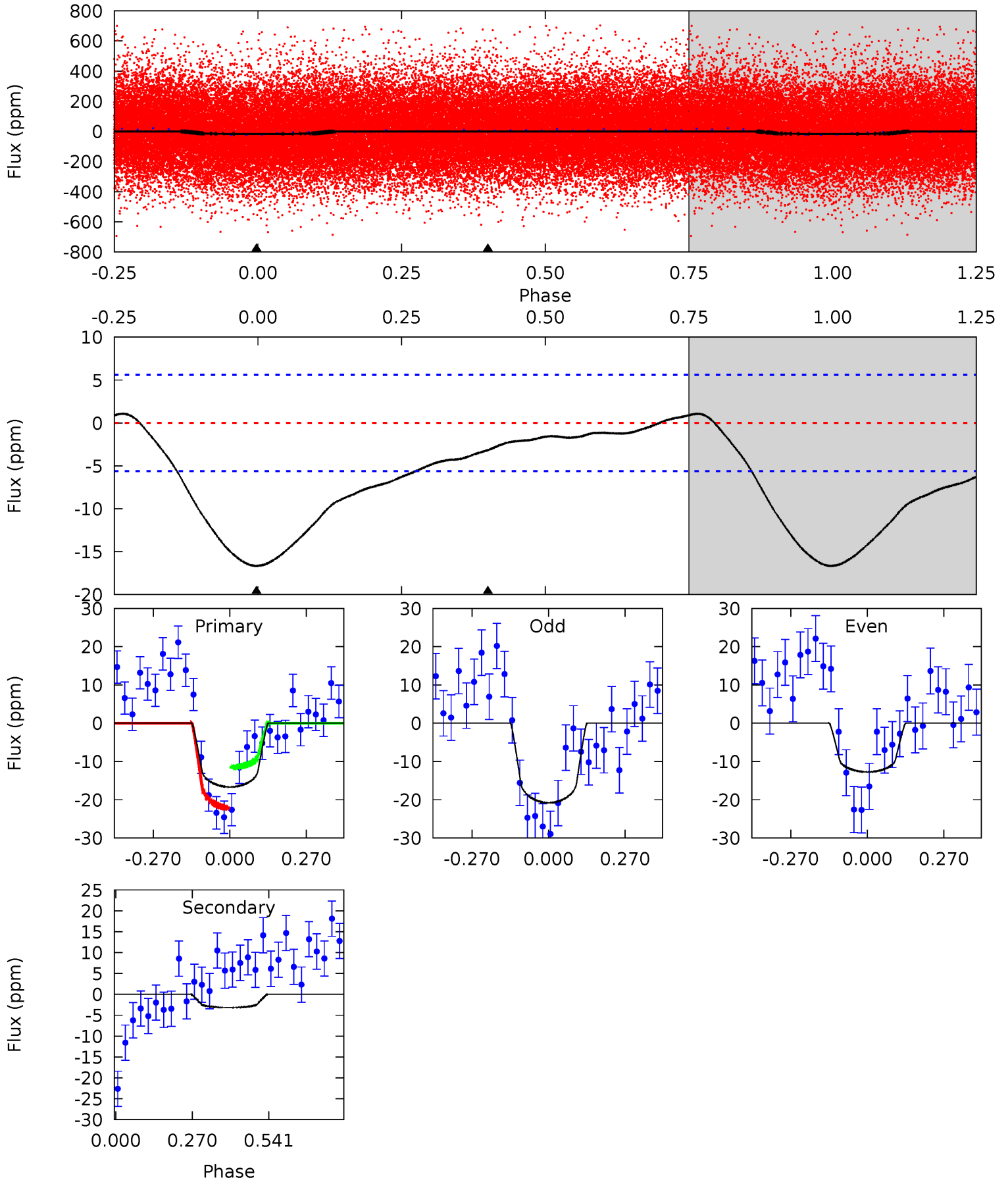
TCE 007281856-01 P= 0.566795 Days  $T_0=131.814937$  (BKJD)



# DV Model-Shift Uniqueness Test

007281856-01, P = 0.566799 Days, E = 131.250743 Days

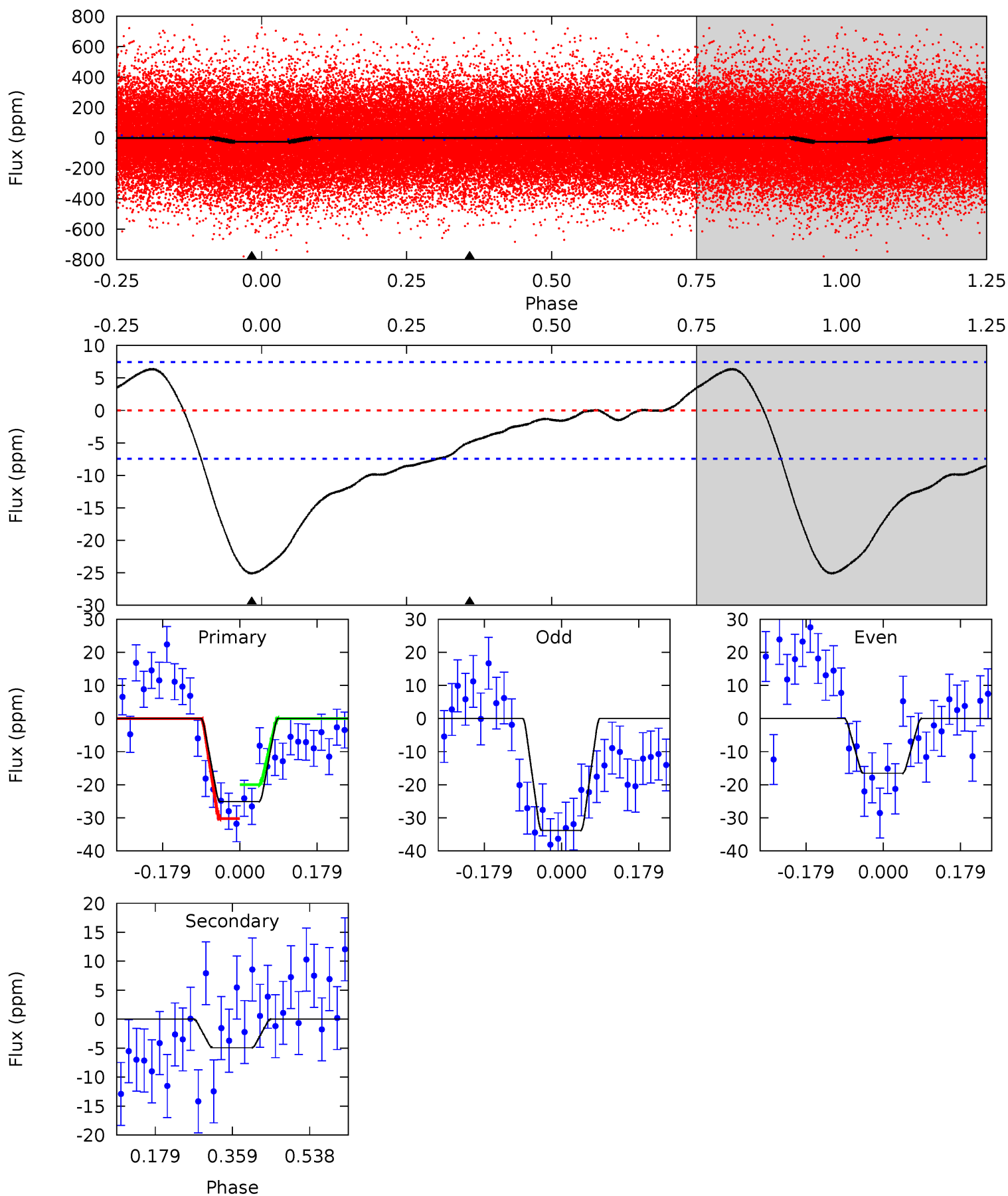
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	2.46	0	0	4.35	1.10	0.48	12.9	12.9	2.46	2.46	3.07	1.07	0.06	4.06



# Alt Model-Shift Uniqueness Test

007281856-01, P = 0.566795 Days, E = 131.248142 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
15.0	2.94	0	0	4.44	1.34	2.11	15.0	15.0	2.94	2.94	5.15	1.10	0.20	3.02





### Stellar Parameters For KIC 007281856

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6555^{+157}_{-216}$	$4.316^{+0.116}_{-0.188}$	$-0.400^{+0.250}_{-0.300}$	$1.189^{+0.340}_{-0.183}$	$1.066^{+0.160}_{-0.117}$	$0.894^{+0.501}_{-0.437}$
	+2%/-3%	+3%/-4%	+62%/-75%	+29%/-15%	+15%/-11%	+56%/-49%
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 007281856-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-3 \pm 1$	$0.70^{+0.39}_{-0.33}$	$3779^{+262}_{-214}$	$3604^{+1373}_{-6493}$	$0.635^{+1.664}_{-0.401}$
Alt.	$-5 \pm 2$	$0.69^{+0.37}_{-0.35}$	$3772^{+286}_{-199}$	$4140^{+1683}_{-1057}$	$1.036^{+2.994}_{-0.633}$

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

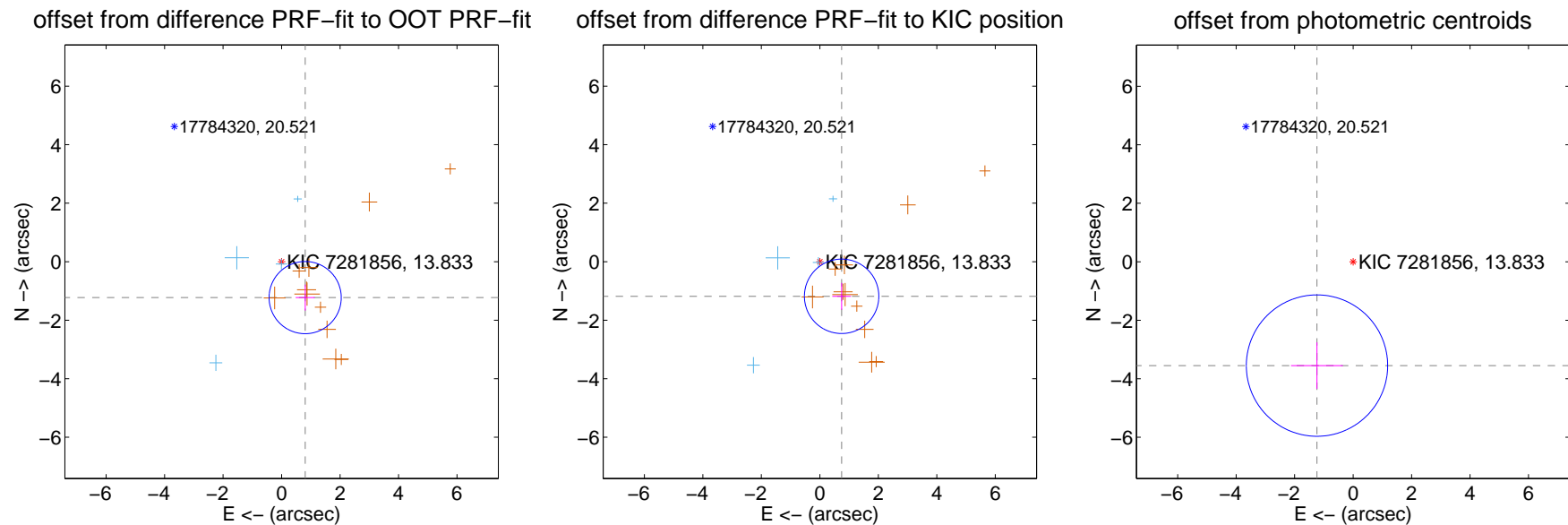
## DV Centroid Data

Supplemental centroid analysis for 007281856-01. Kepler magnitude: 13.83. Transit SNR 11.56

There are 4 quarters with good PRF difference image offsets

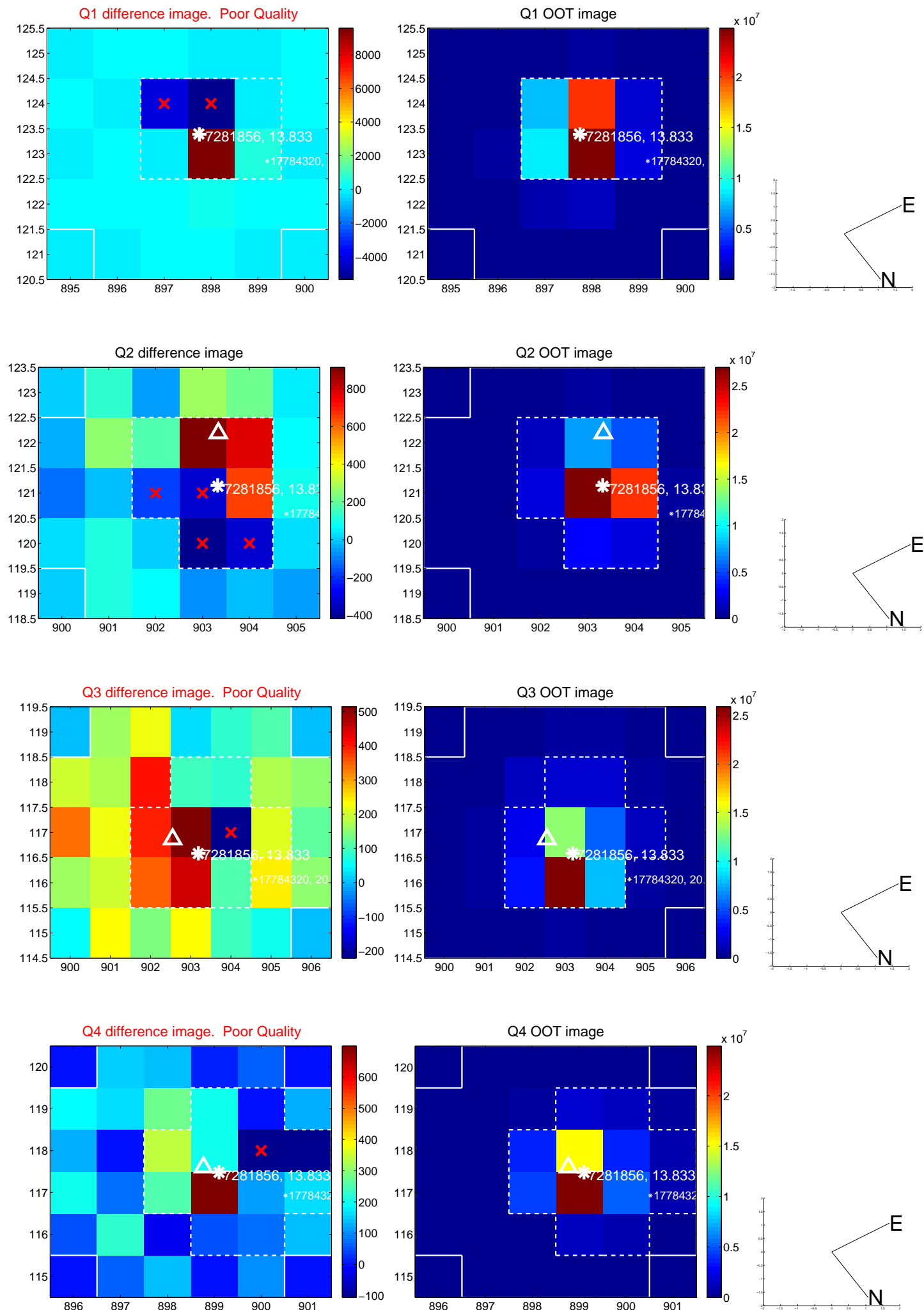
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.469 \pm 0.411$	3.57	$-0.807 \pm 0.325$	$-1.227 \pm 0.443$
PRF-fit source offset from KIC position	$1.398 \pm 0.424$	3.30	$-0.745 \pm 0.320$	$-1.183 \pm 0.459$
photometric centroid source offset	$3.76 \pm 0.81$	4.67	$1.24 \pm 0.89$	$-3.55 \pm 0.80$

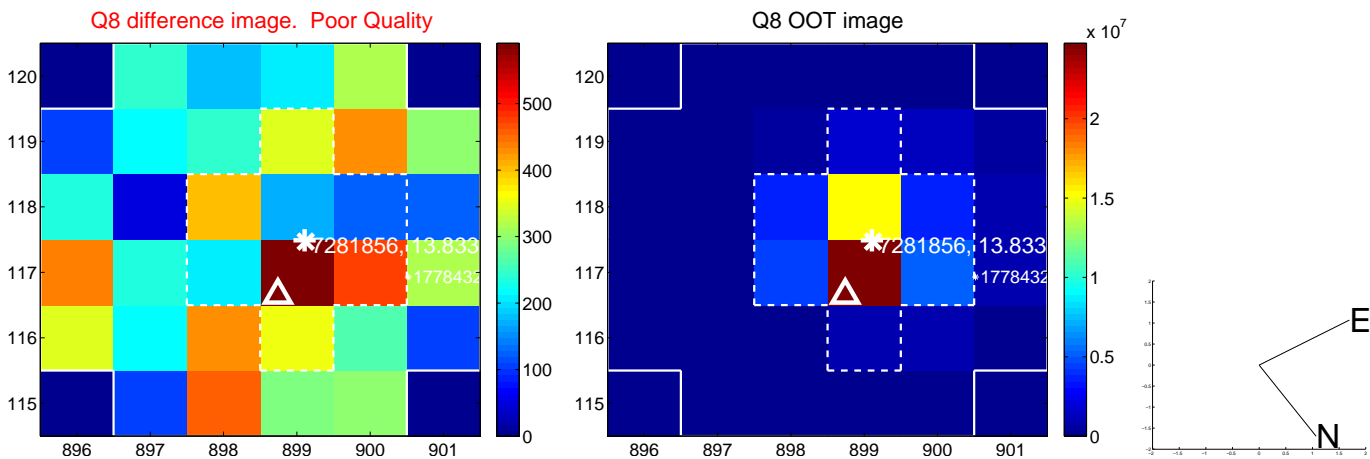
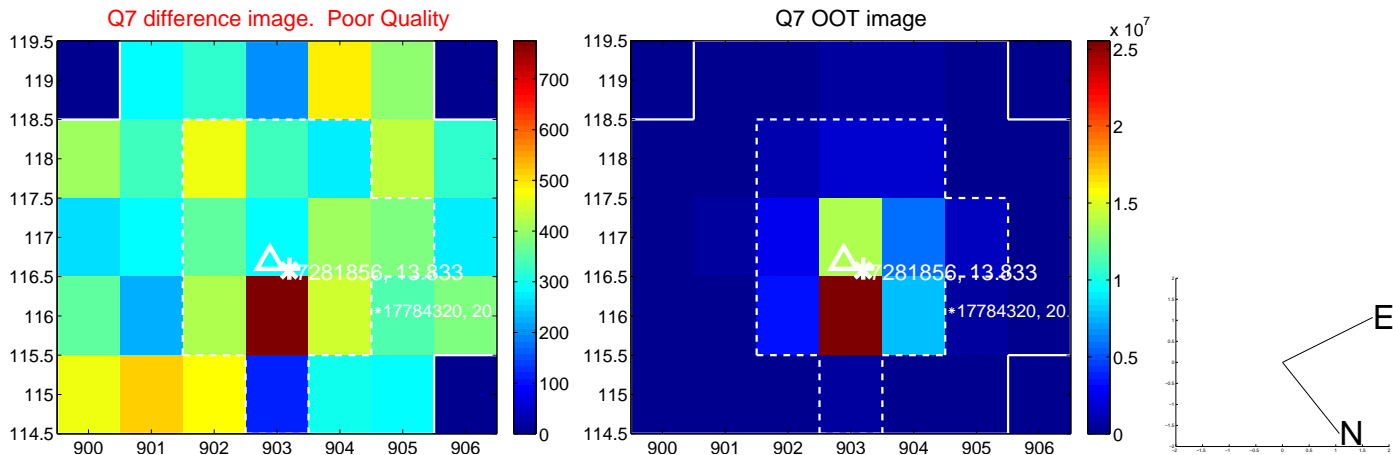
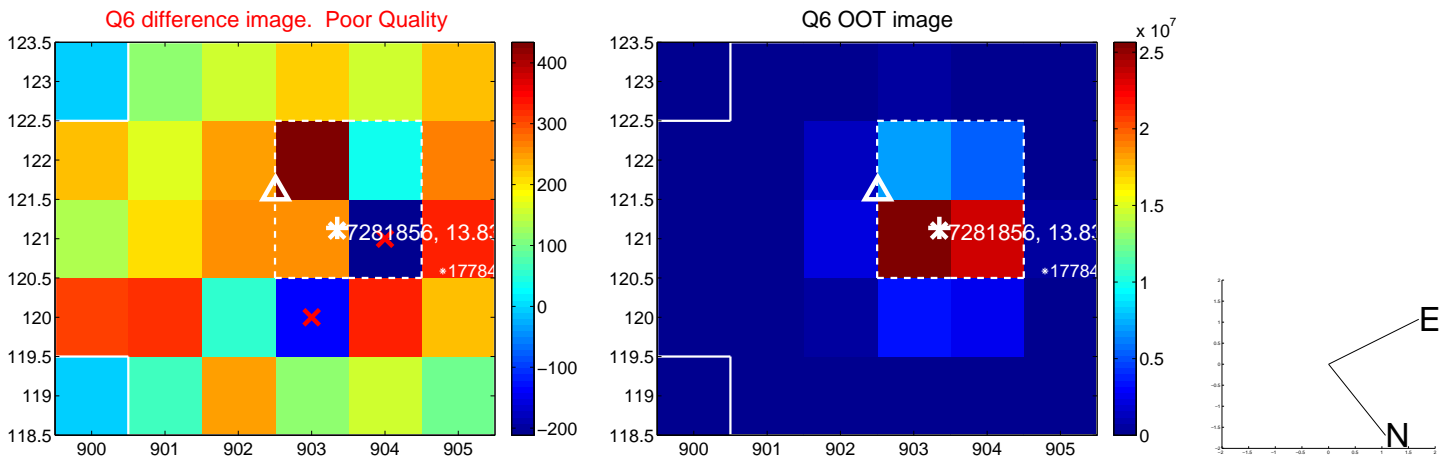
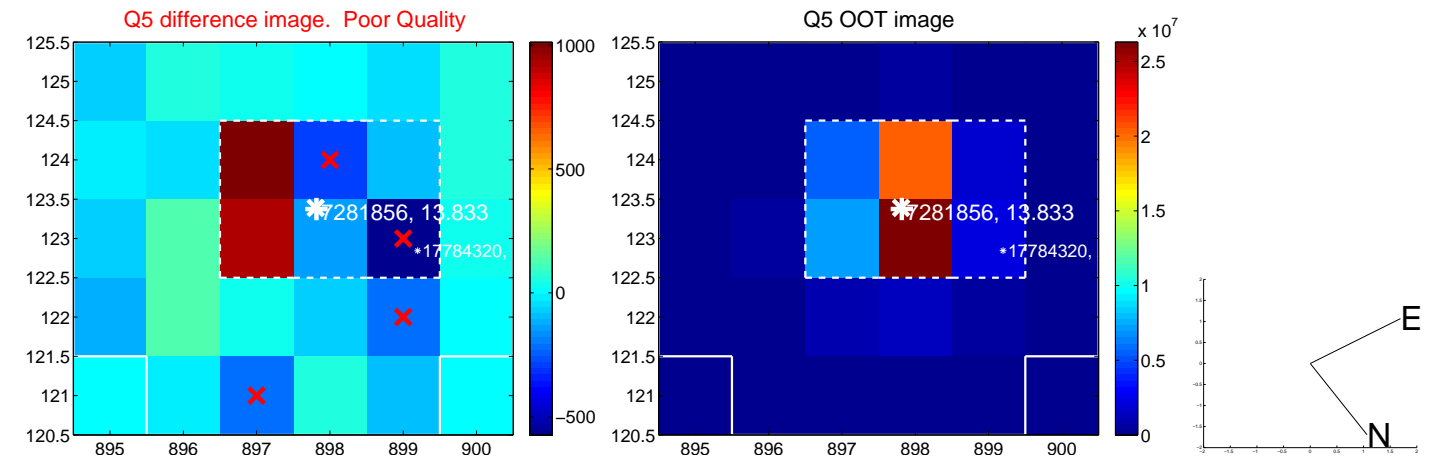


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

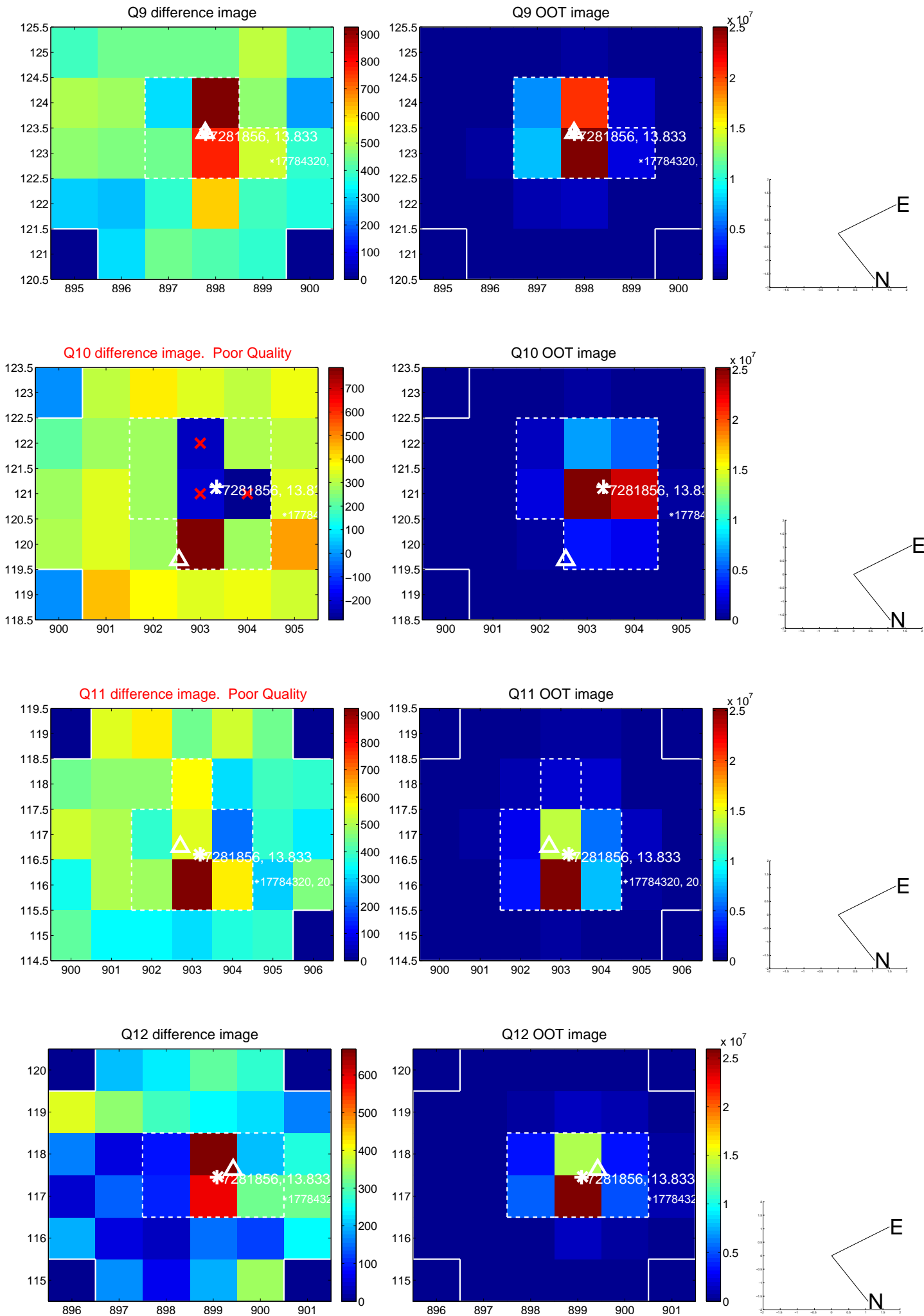


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

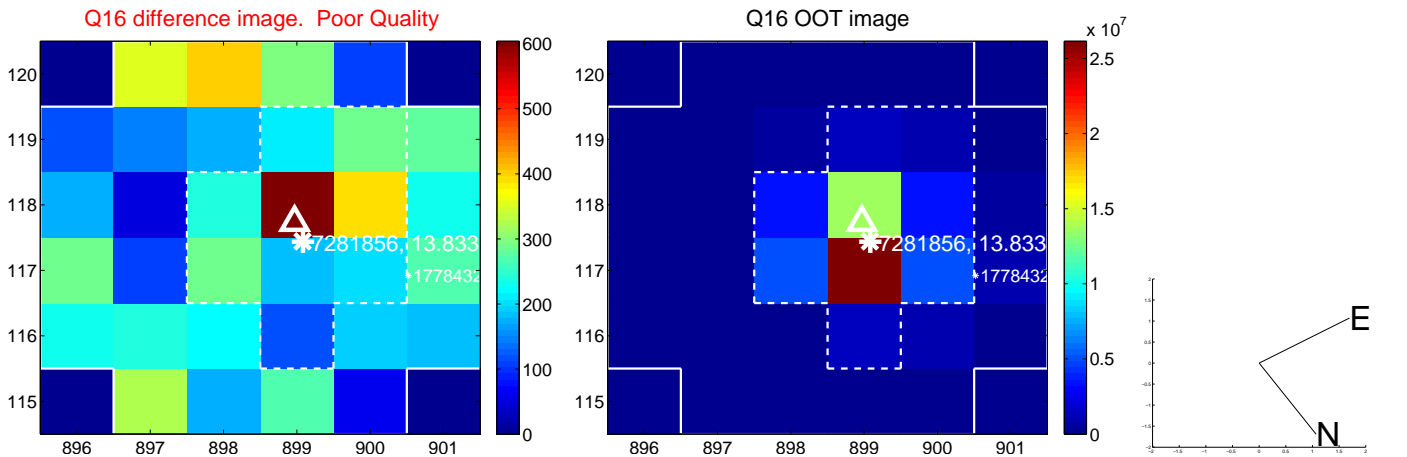
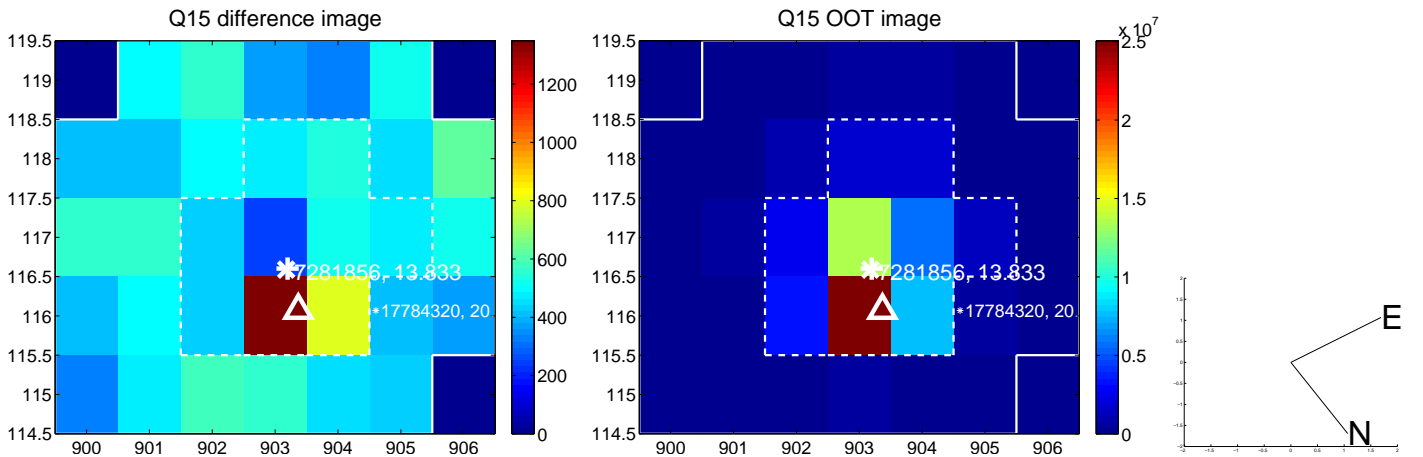
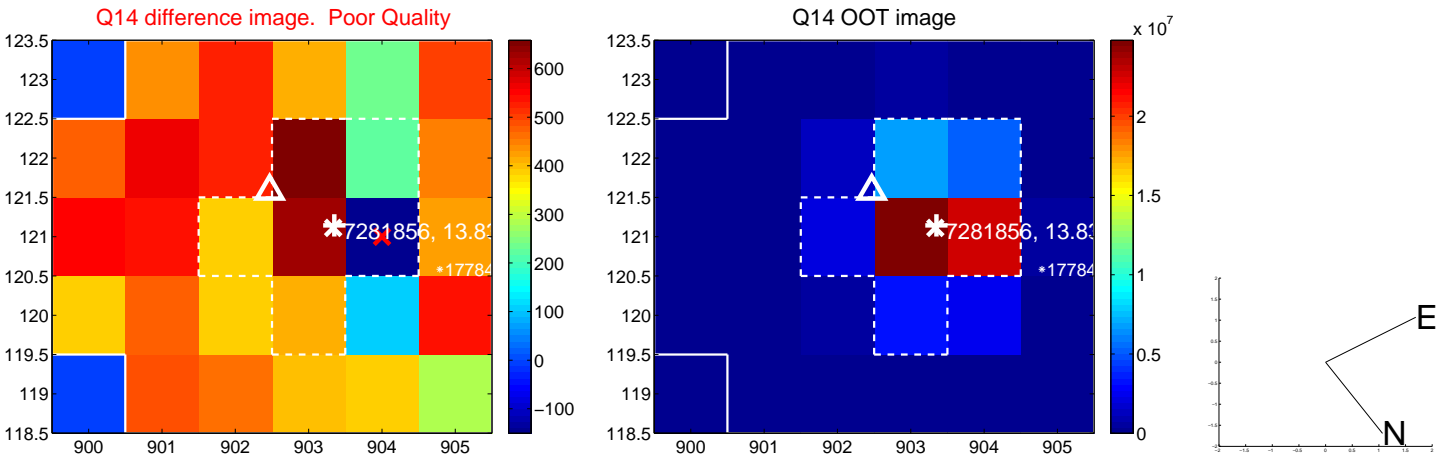
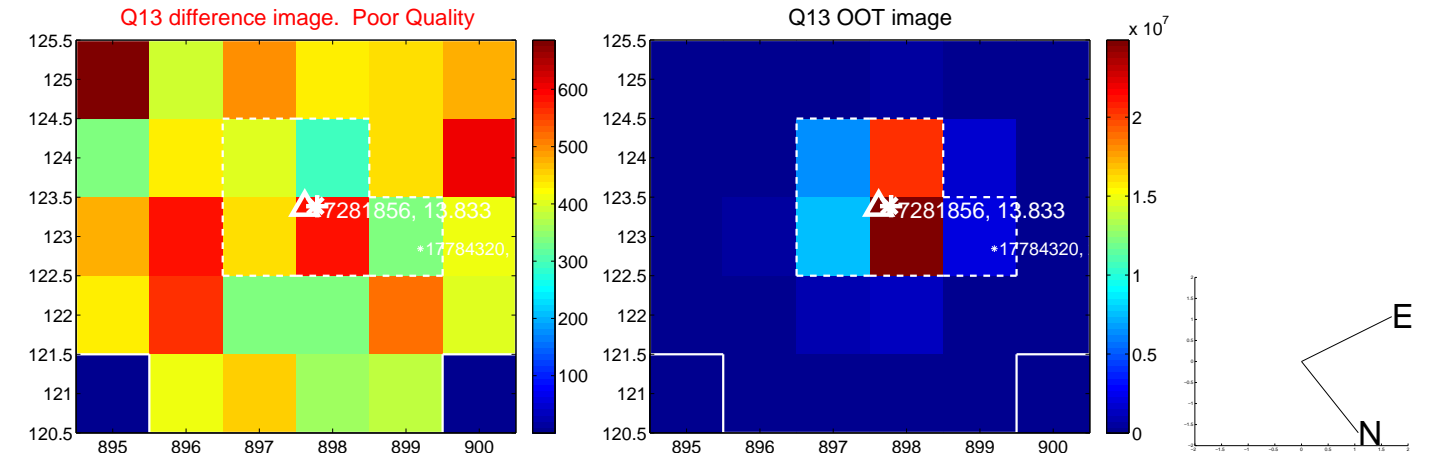




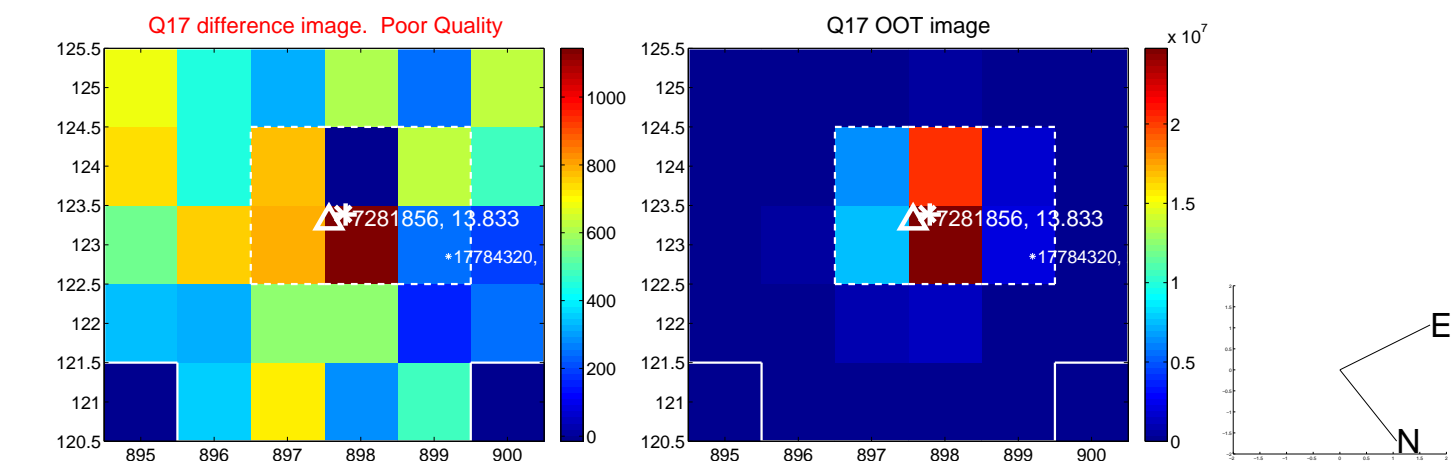
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



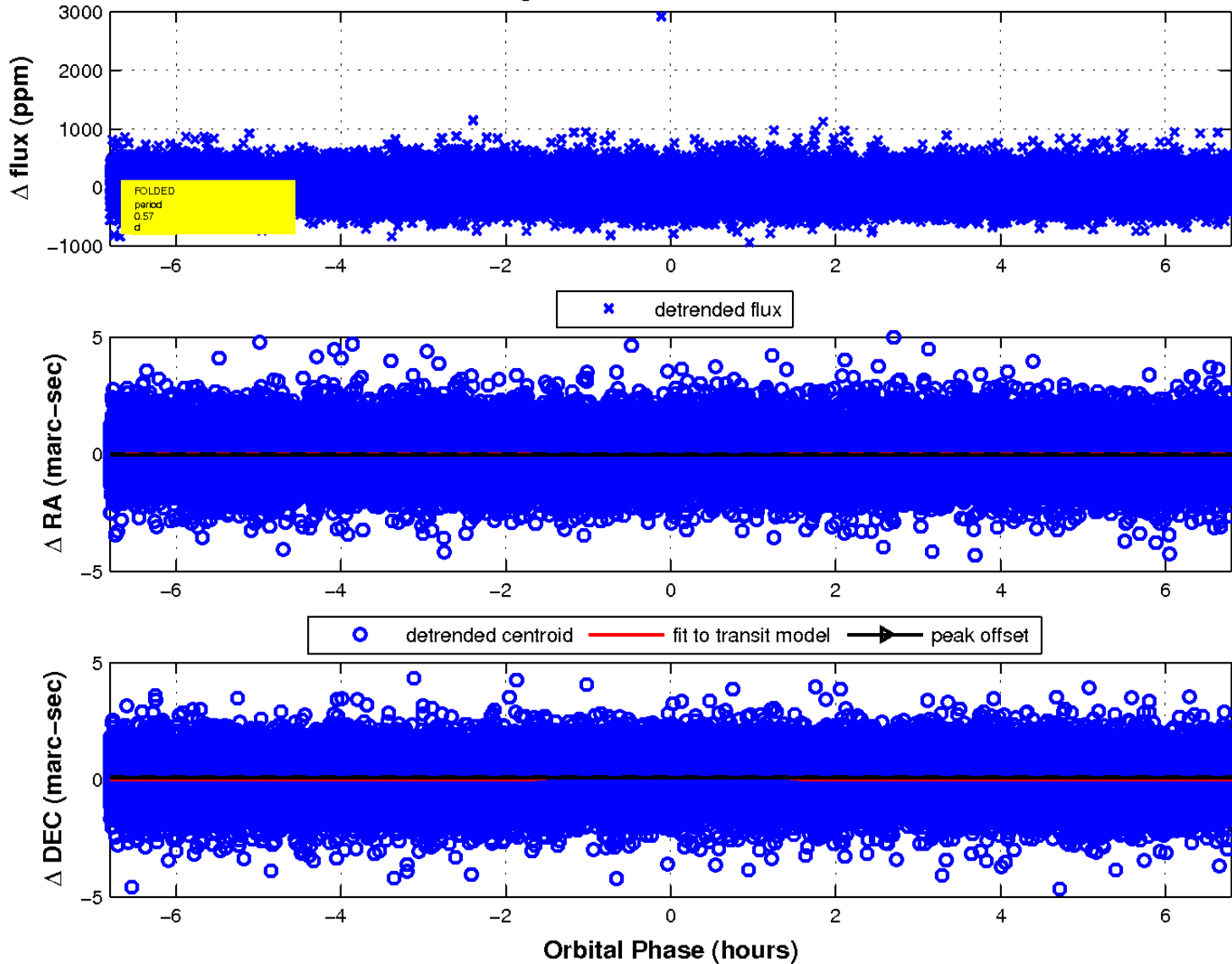
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

