

# KIC 007870282

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
007870282-01	OBS	4732.01	0.580719	131.739267	80.2	2.513	15.1	14.1	0.84	5471	0.91	3345.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007870282-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—CENT_RESOLVED_OFFSET—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 007870282-01

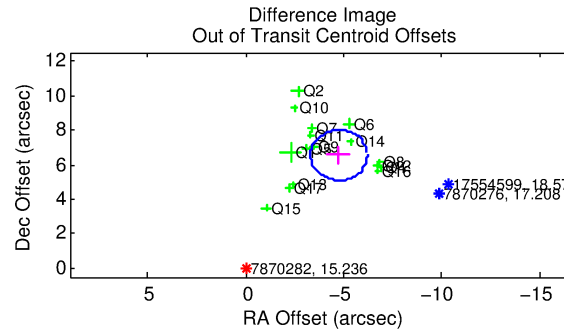
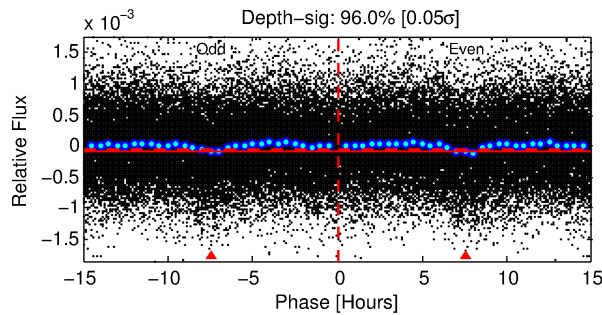
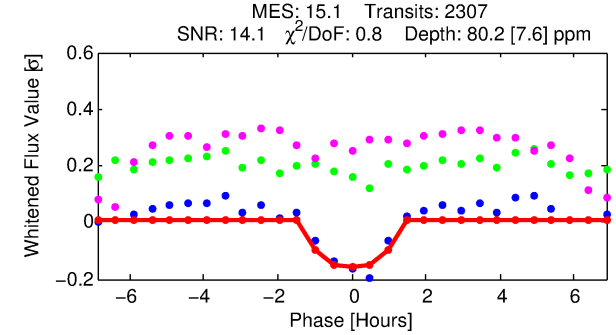
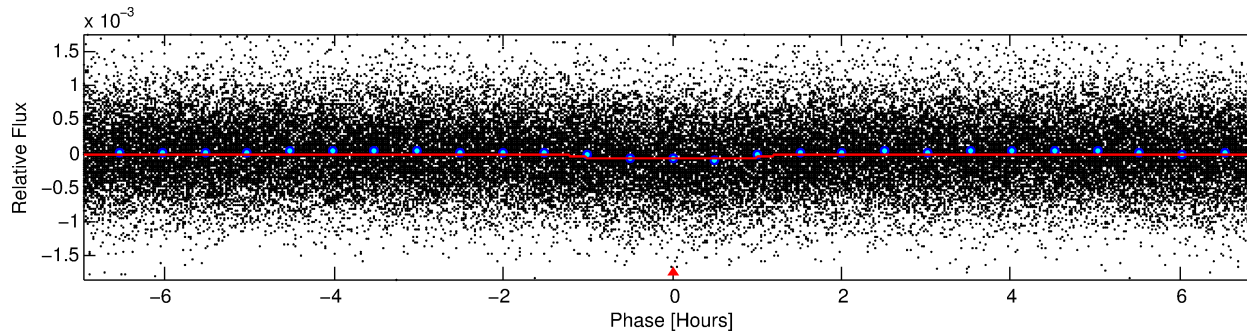
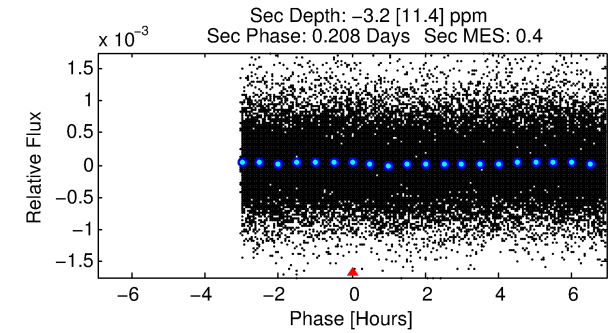
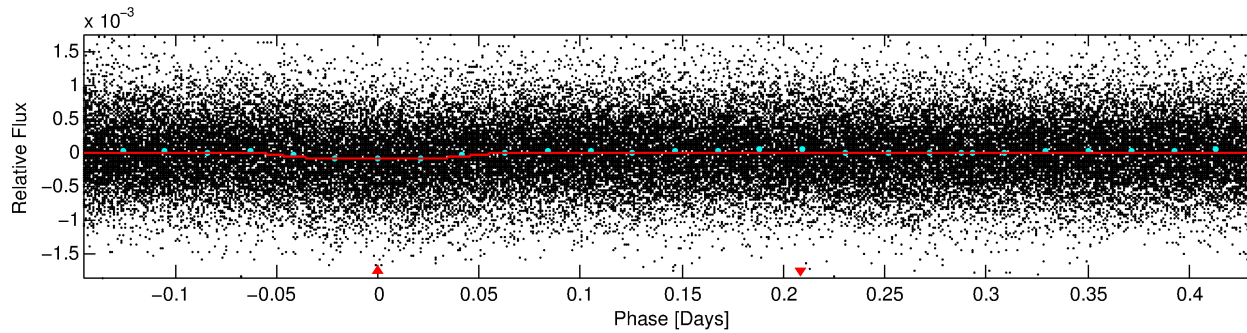
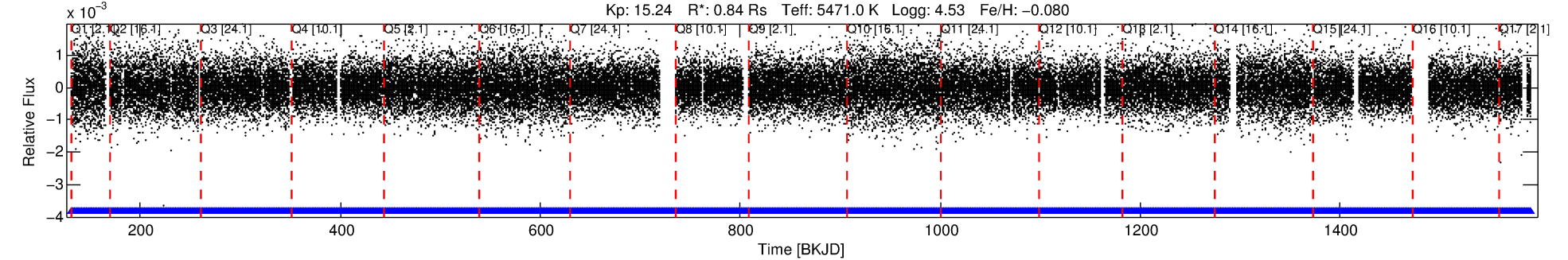
TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
007870282-01	7870282	007938870-pri	7938870	1:1	46.1	12	2	12.29	15.23	4436.20	Direct-PRF	0	1.40	1.03

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 7870282 Candidate: 1 of 1 Period: 0.581 d  
KOI: K04732.01 Corr: 0.914

Kp: 15.24 R\*: 0.84 Rs Teff: 5471.0 K Logg: 4.53 Fe/H: -0.080



## DV Fit Results:

Period = 0.58072 [0.00001] d  
Epoch = 131.7393 [0.0022] BKJD  
Rp/R\* = 0.0099 [0.0056]  
a/R\* = 1.24 [1.10]  
b = 0.90 [0.55]  
Seff = 3345.06 [972.59]  
Teff = 1939 [141] K  
Rp = 0.91 [0.56] Re  
a = 0.0130 [0.0024] AU  
Ag = N/A  
Teffp = N/A

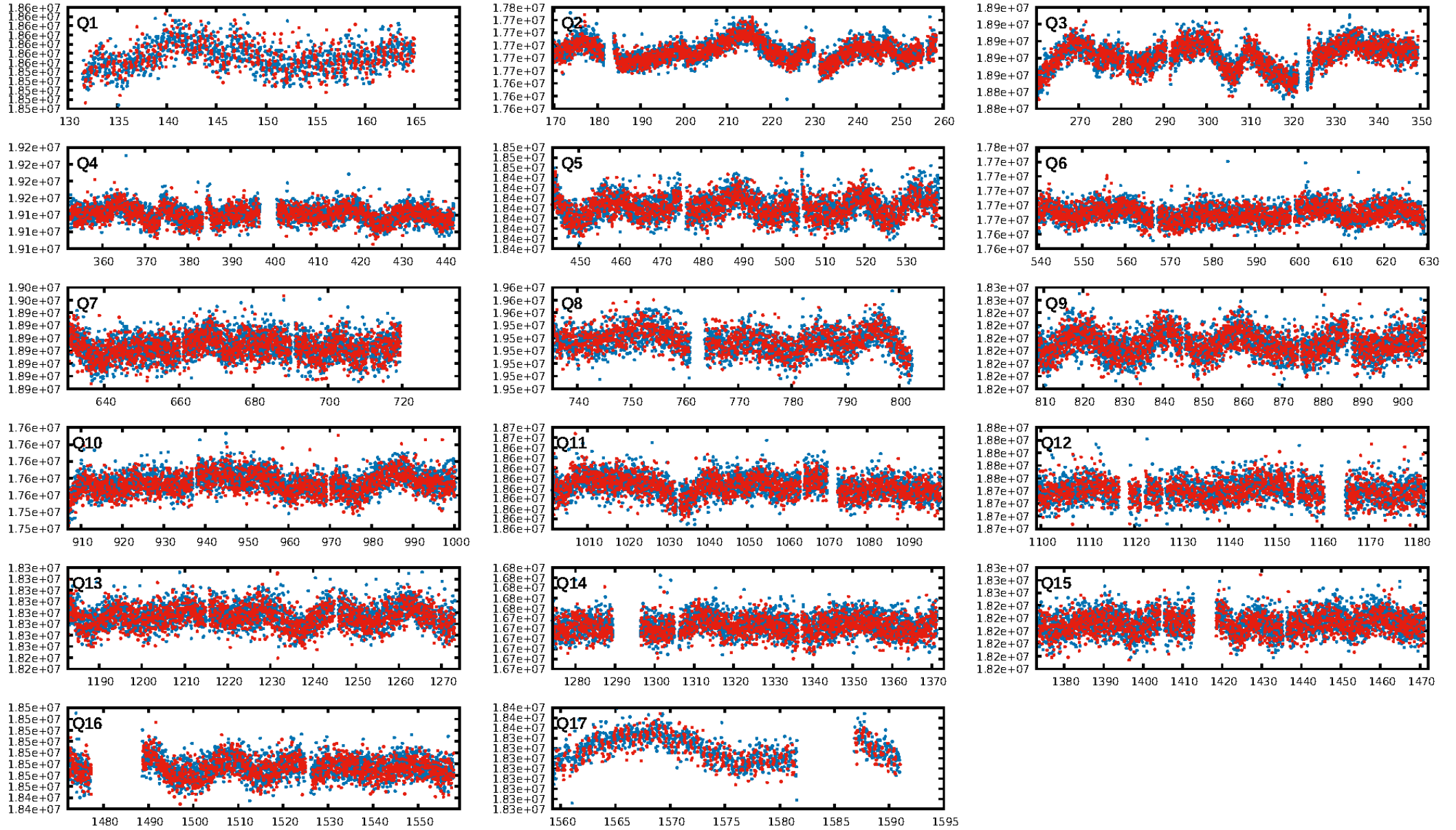
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.11e-44  
RollingBand-fgt: 1.00 [2204/2204]  
GhostDiagnostic-chr: -0.2531  
Centroid-sig: 0.0%  
Centroid-so: 5.270 arcsec [5.71σ]  
OotOffset-rm: 8.088 arcsec [16.68σ]  
KicOffset-rm: 8.207 arcsec [17.22σ]  
OotOffset-st: 4/3/4/5 [16]  
KicOffset-st: 4/3/4/5 [16]  
DiffImageQuality-fgm: 0.19 [3/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:19:40 Z

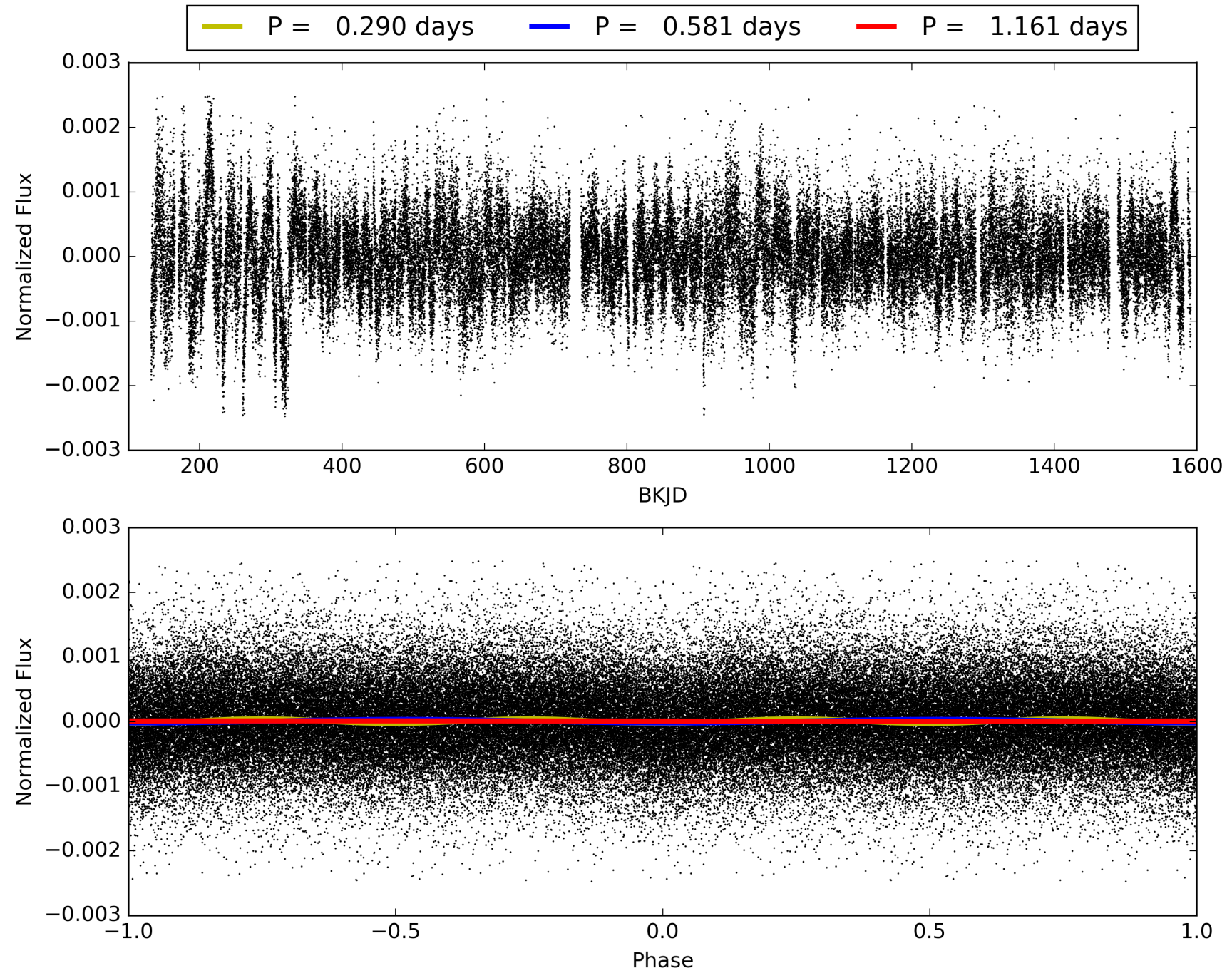
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007870282-01, PDC Light Curves



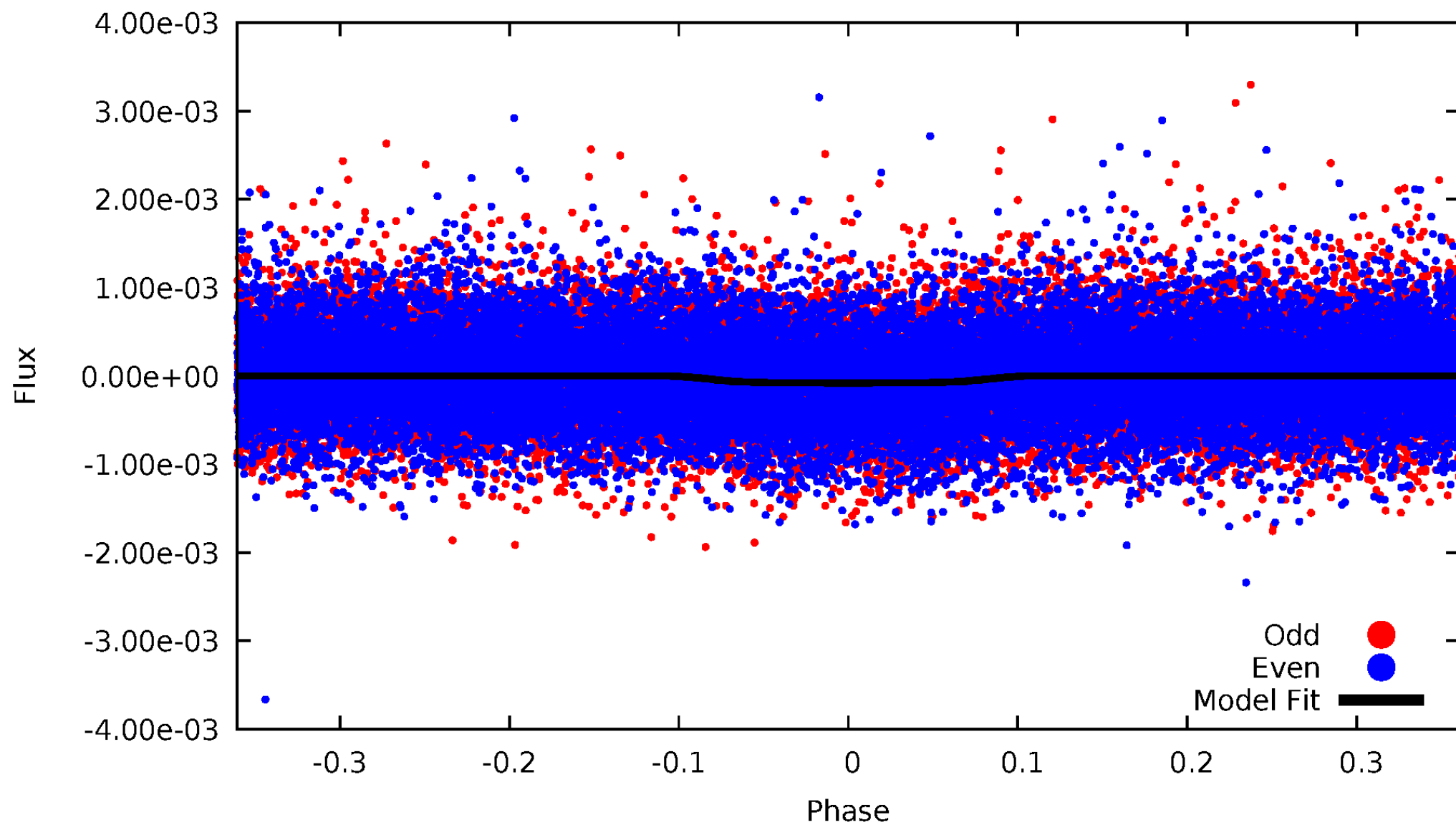


TCE 007870282-01



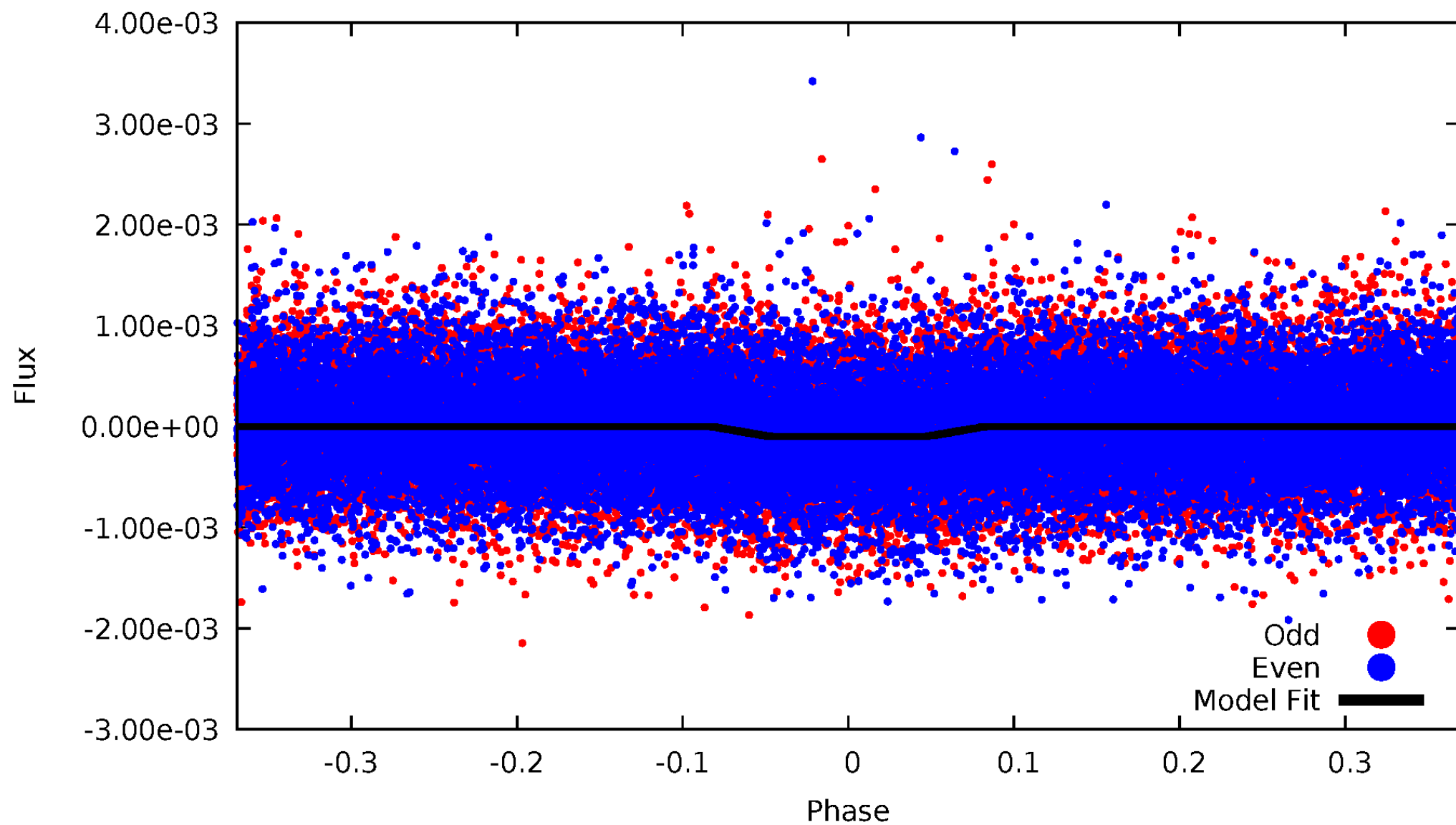
DV Odd/Even

TCE 007870282-01



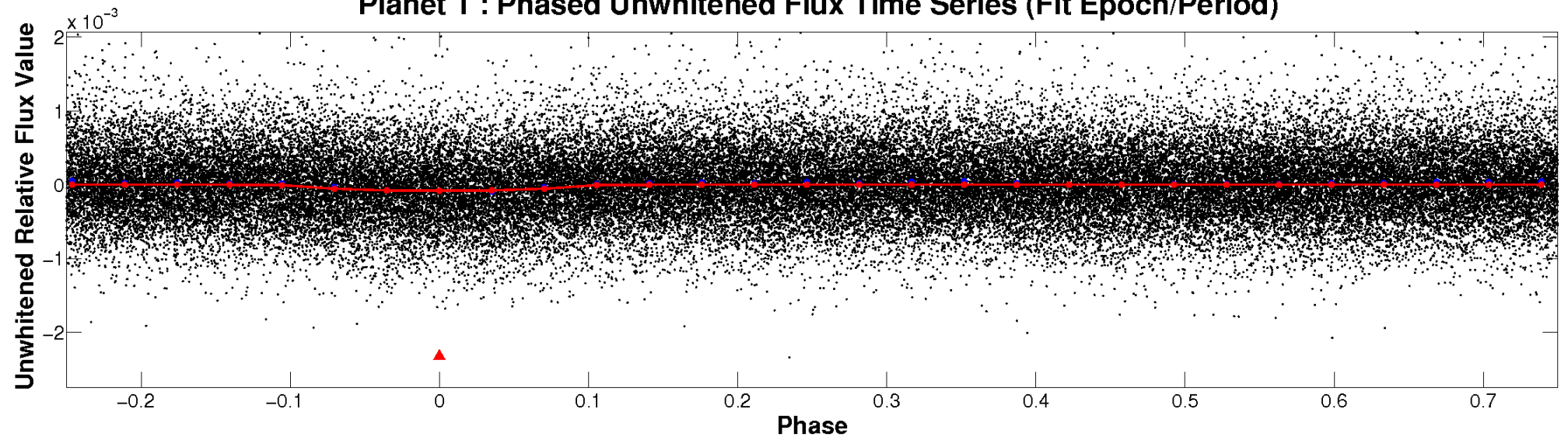
# ALT Odd/Even

TCE 007870282-01

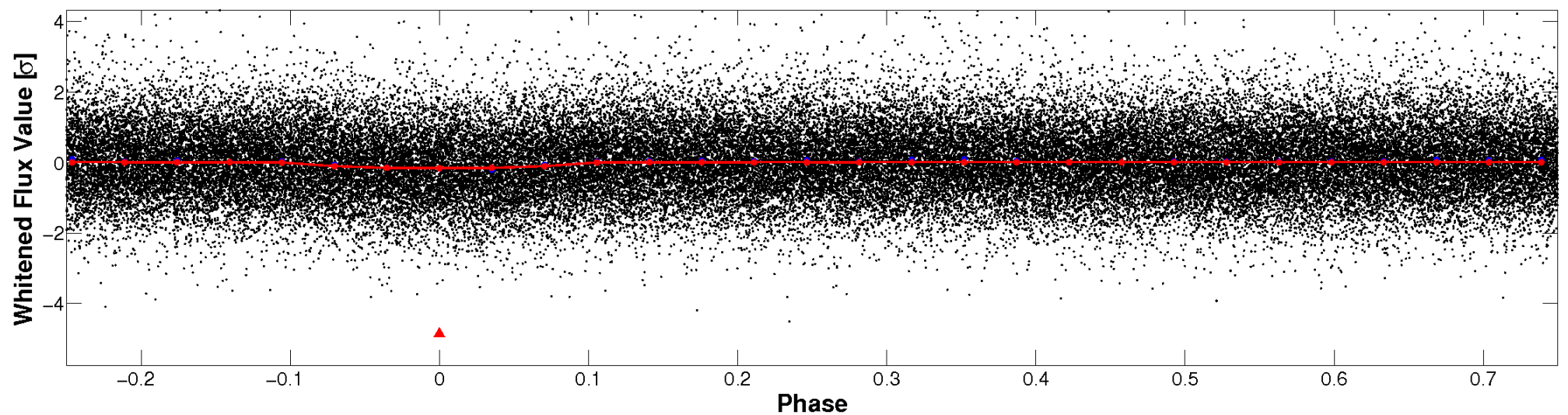


# Non-Whitened Vs. Whitened Light Curve

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



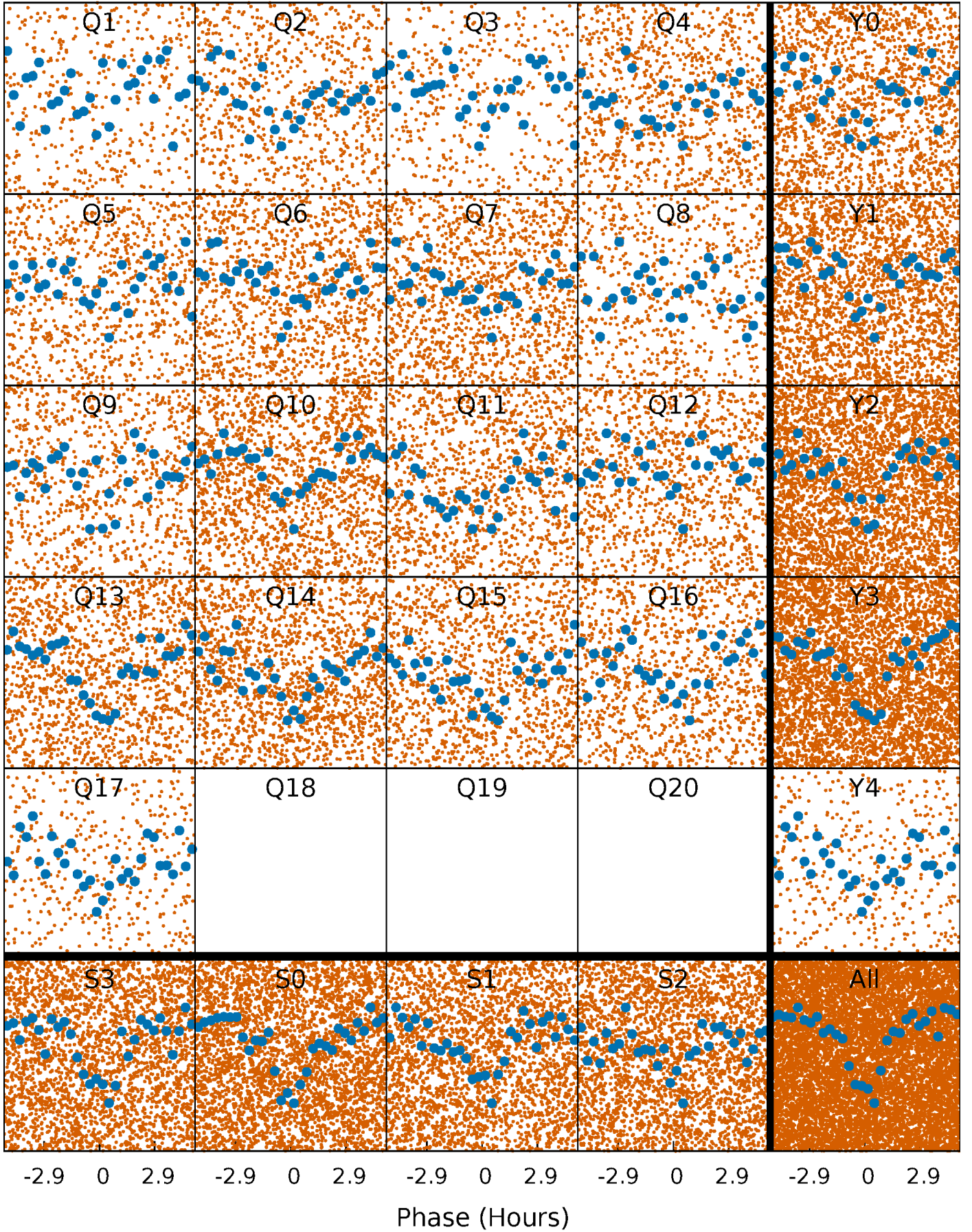
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

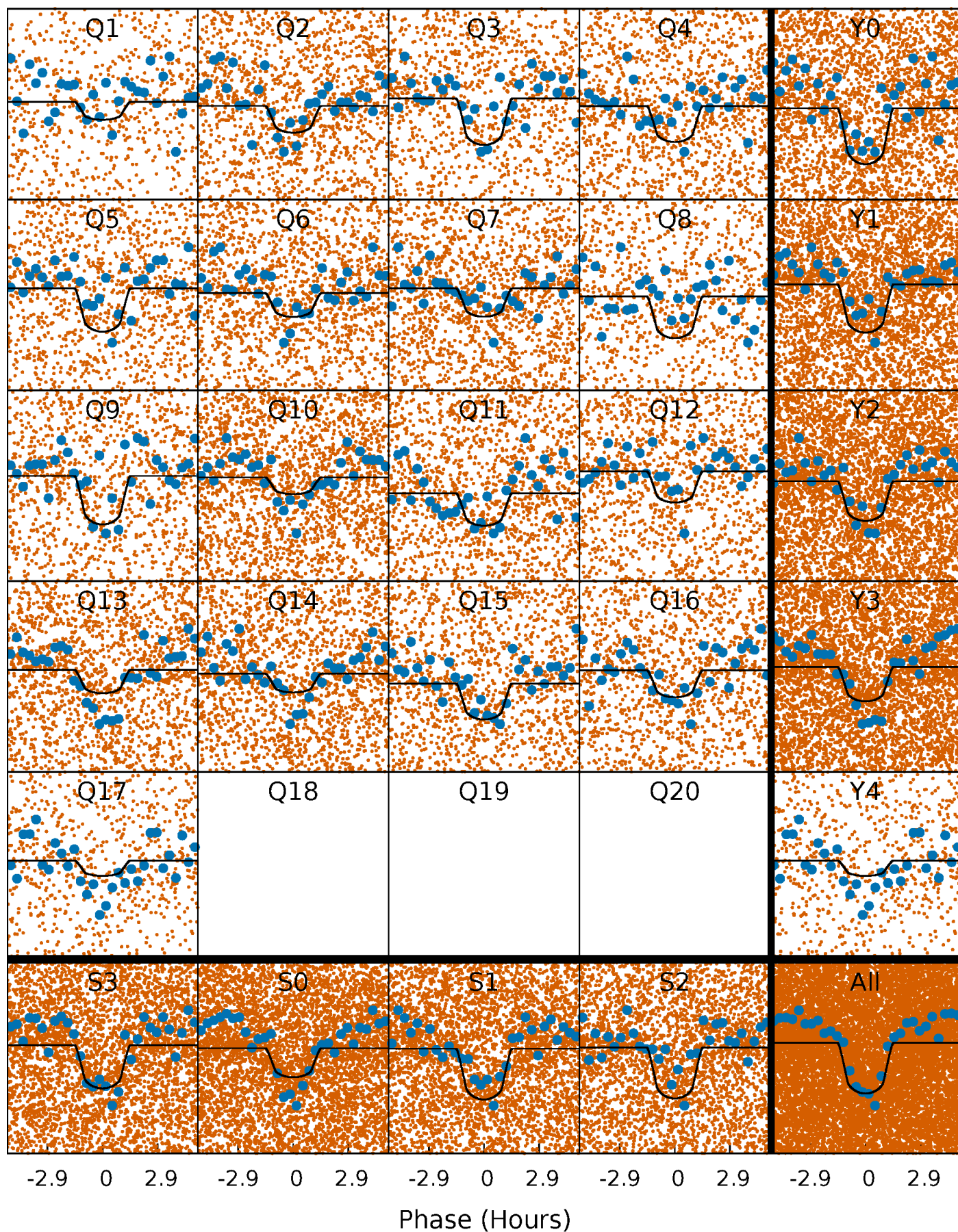
TCE 007870282-01   P= 0.580719 Days    $T_0=131.739267$  (BKJD)





# DV Quarter-Phased Transit Curves

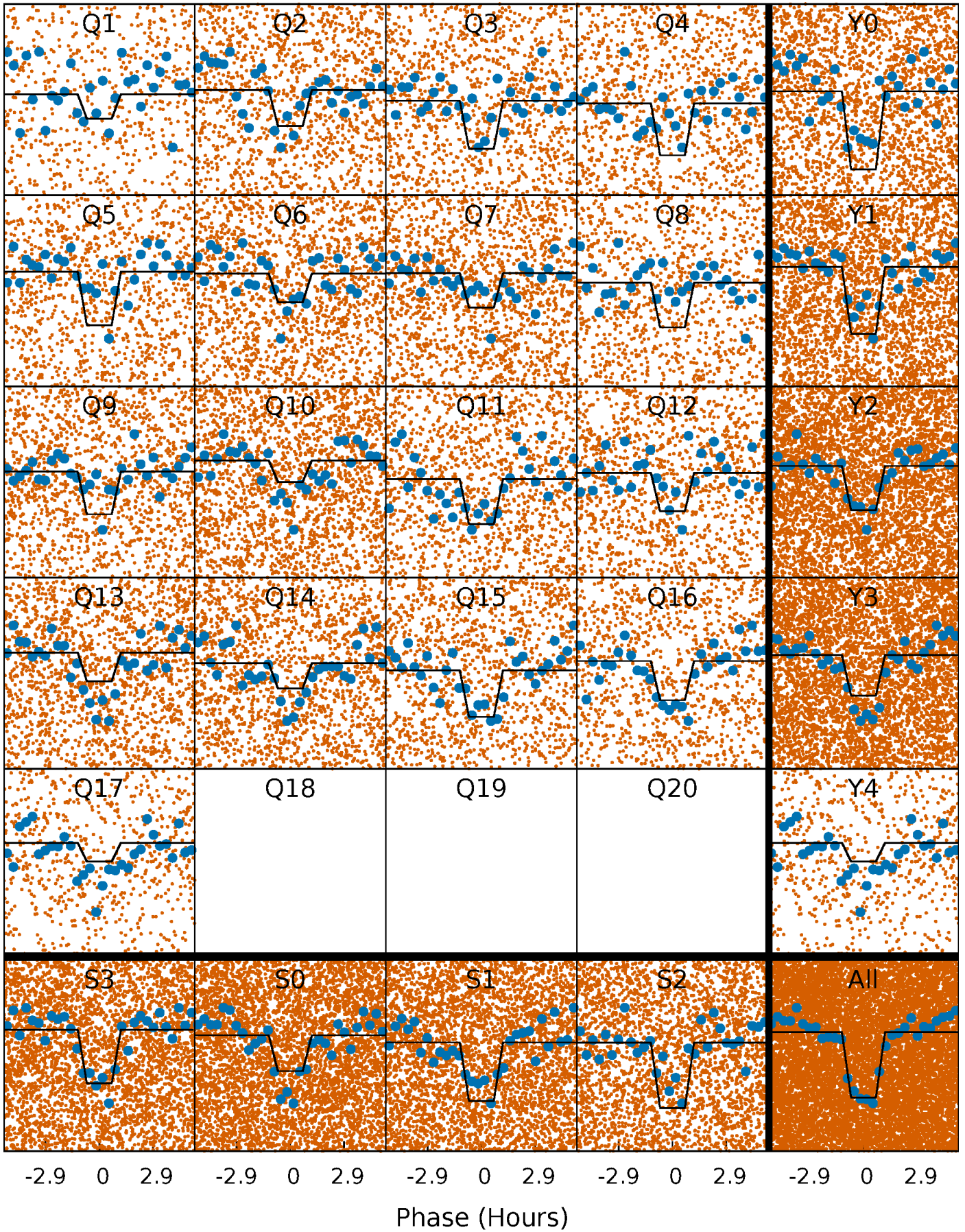
TCE 007870282-01 P= 0.580719 Days  $T_0=131.739267$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

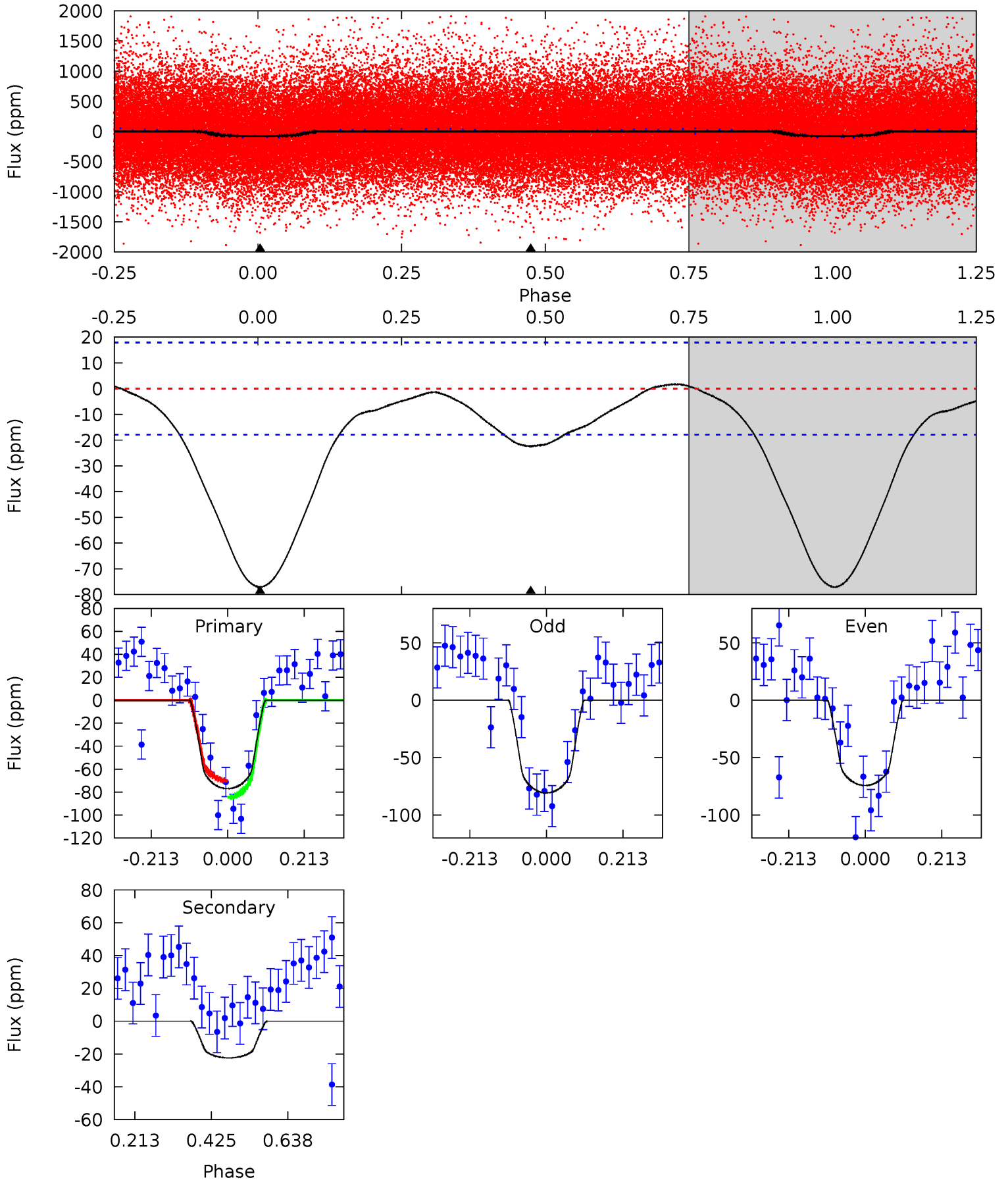
TCE 007870282-01 P= 0.580721 Days  $T_0=131.739249$  (BKJD)



# DV Model-Shift Uniqueness Test

007870282-01, P = 0.580719 Days, E = 131.158548 Days

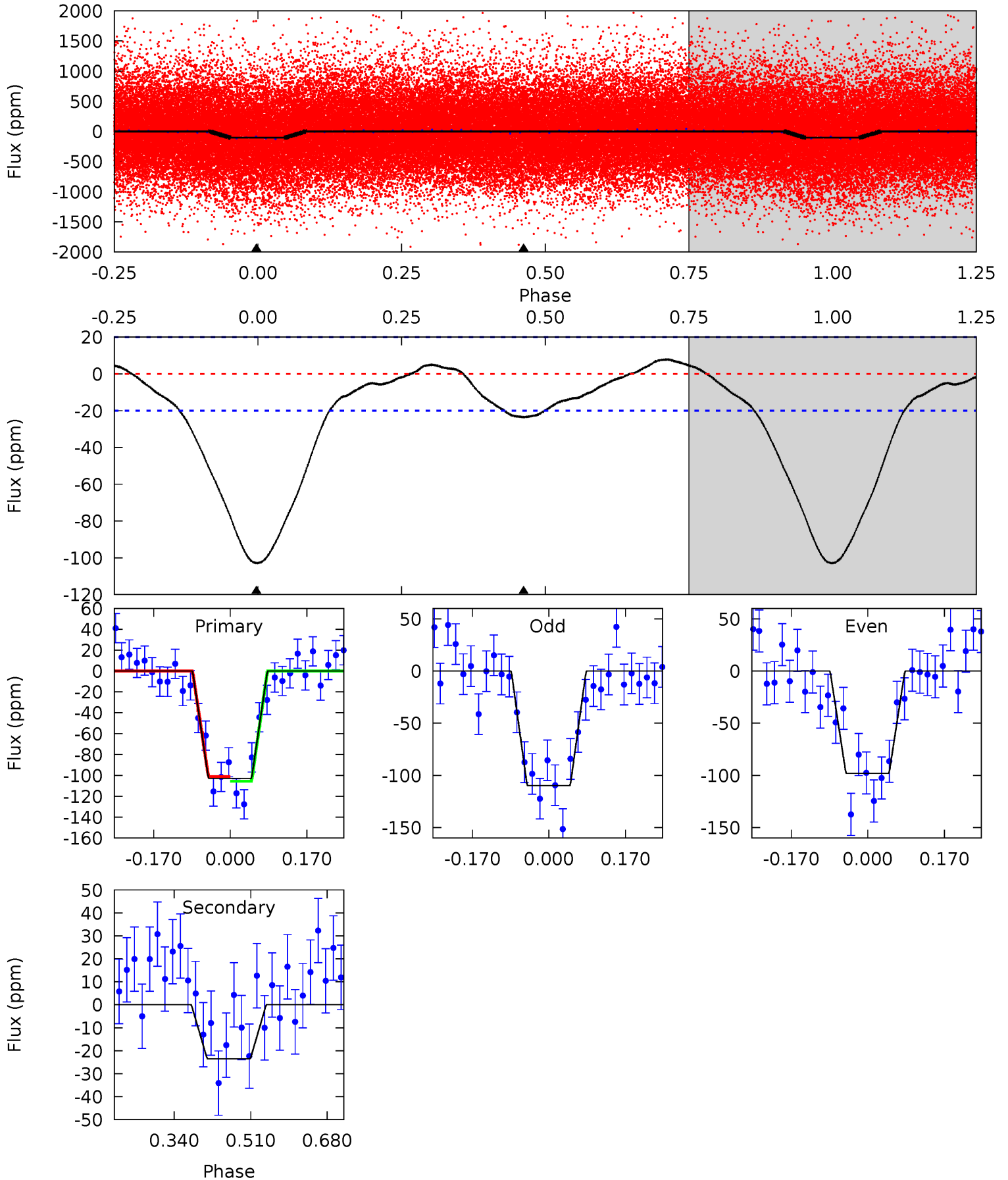
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	5.52	0	0	4.40	1.25	0.75	19.0	19.0	5.52	5.52	0.81	0.95	0.02	1.78



# Alt Model-Shift Uniqueness Test

007870282-01, P = 0.580721 Days, E = 131.158528 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
22.9	5.24	0	0	4.45	1.37	1.13	22.9	22.9	5.24	5.24	1.30	0.95	0.07	0.49





### Stellar Parameters For KIC 007870282

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5471^{+164}_{-147}$	$4.530^{+0.057}_{-0.143}$	$-0.080^{+0.300}_{-0.300}$	$0.841^{+0.187}_{-0.080}$	$0.874^{+0.091}_{-0.091}$	$2.072^{+0.522}_{-0.850}$
	+3%/-3%	+1%/-3%	+375%/-375%	+22%/-10%	+10%/-10%	+25%/-41%
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 007870282-01 / KOI 4732.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-22 \pm 4$	$0.91^{+0.58}_{-0.46}$	$2743^{+143}_{-118}$	$3999^{+1392}_{-728}$	$2.421^{+7.746}_{-1.505}$
Alt.	$-24 \pm 4$	$0.97^{+0.59}_{-0.50}$	$2749^{+141}_{-124}$	$3928^{+1402}_{-671}$	$2.236^{+7.226}_{-1.333}$

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

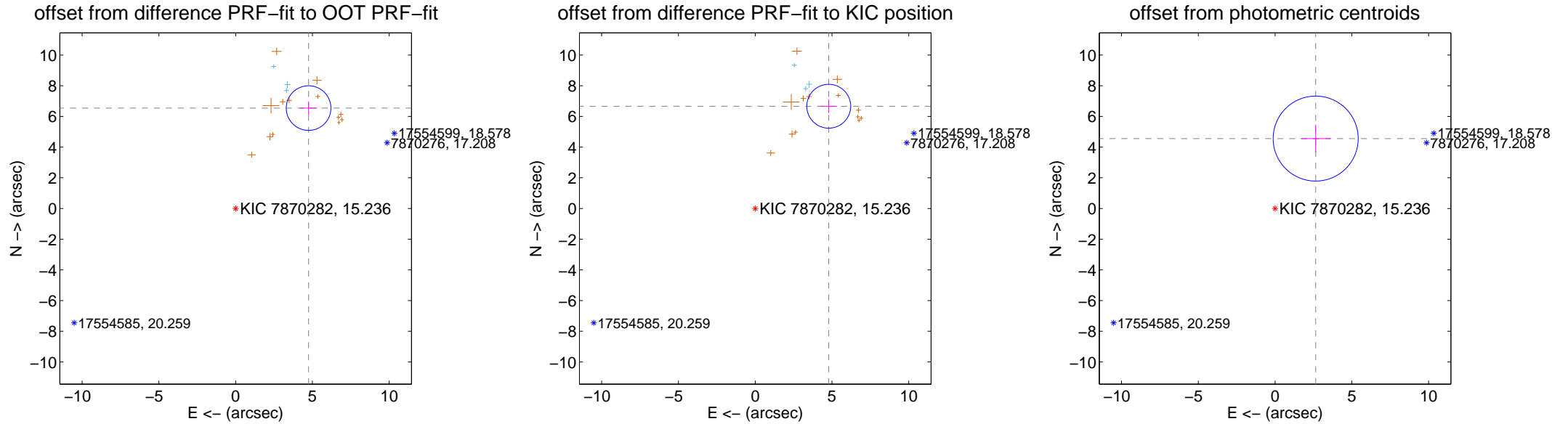
## DV Centroid Data

Supplemental centroid analysis for 007870282-01. Kepler magnitude: 15.24. Transit SNR 14.05

There are 3 quarters with good PRF difference image offsets

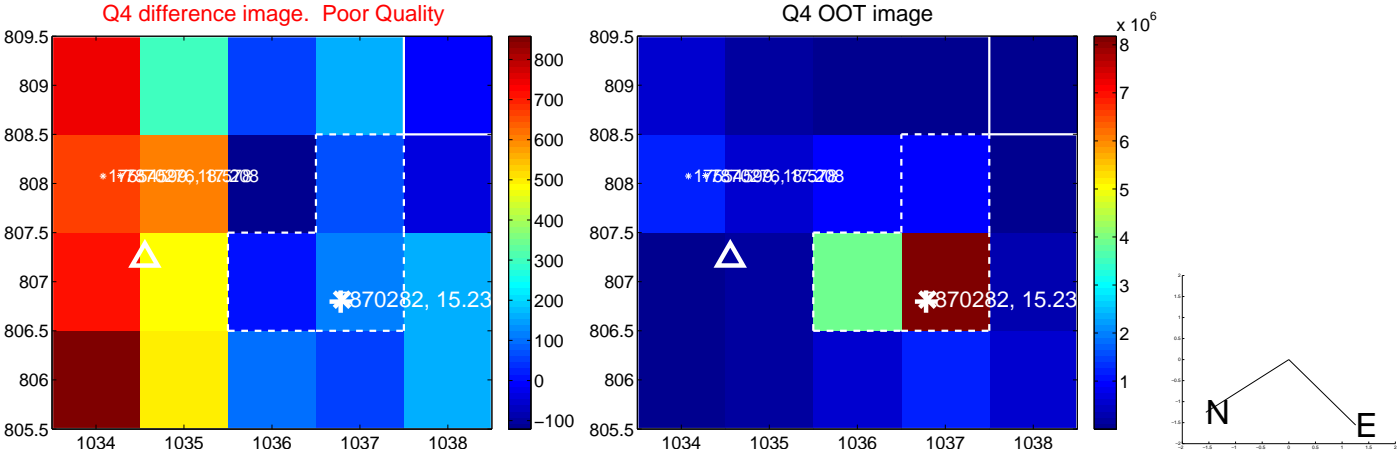
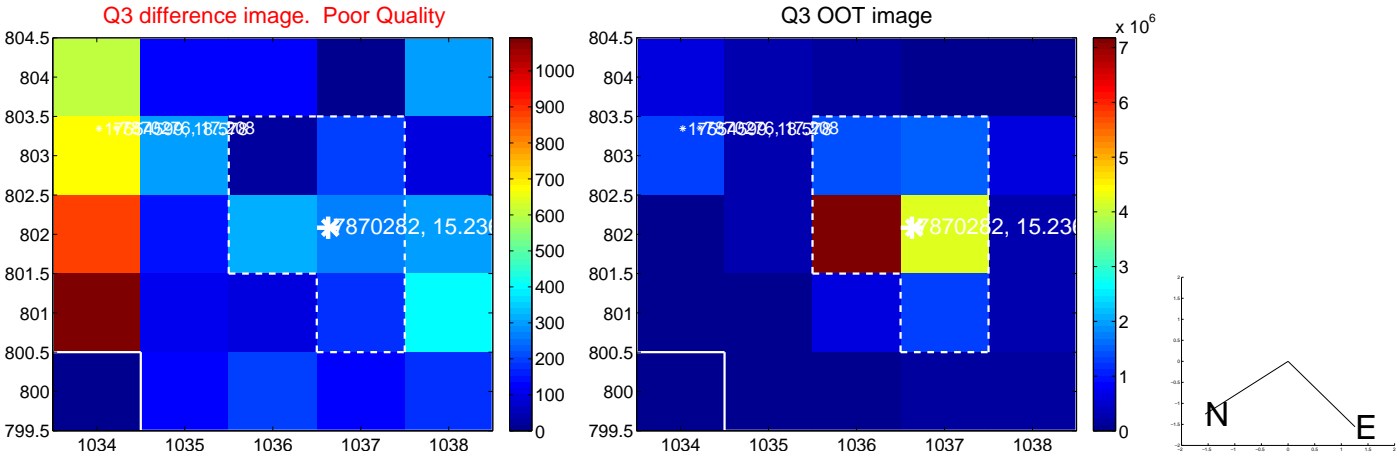
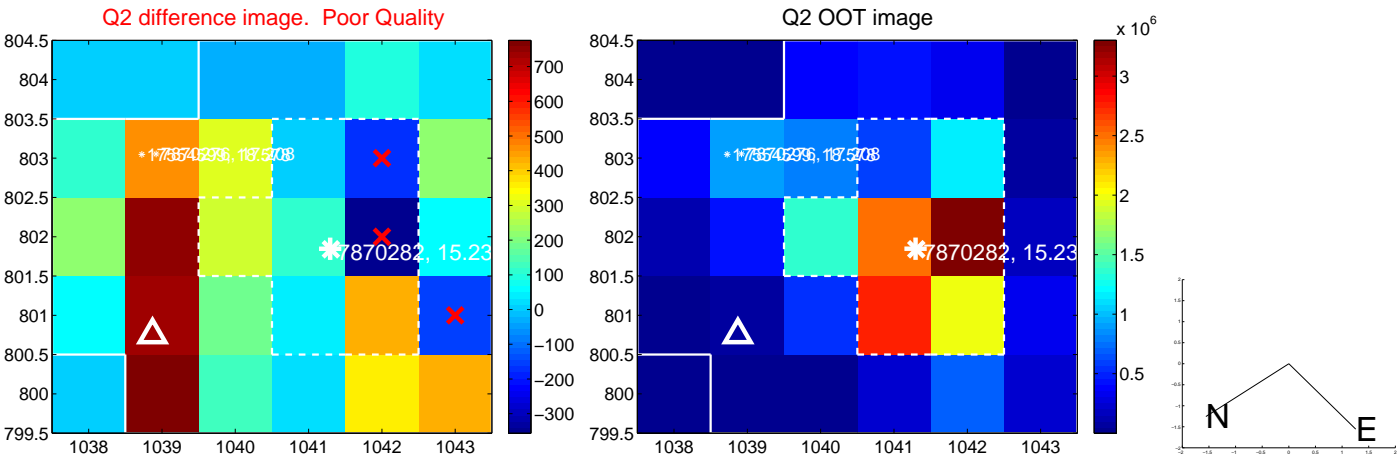
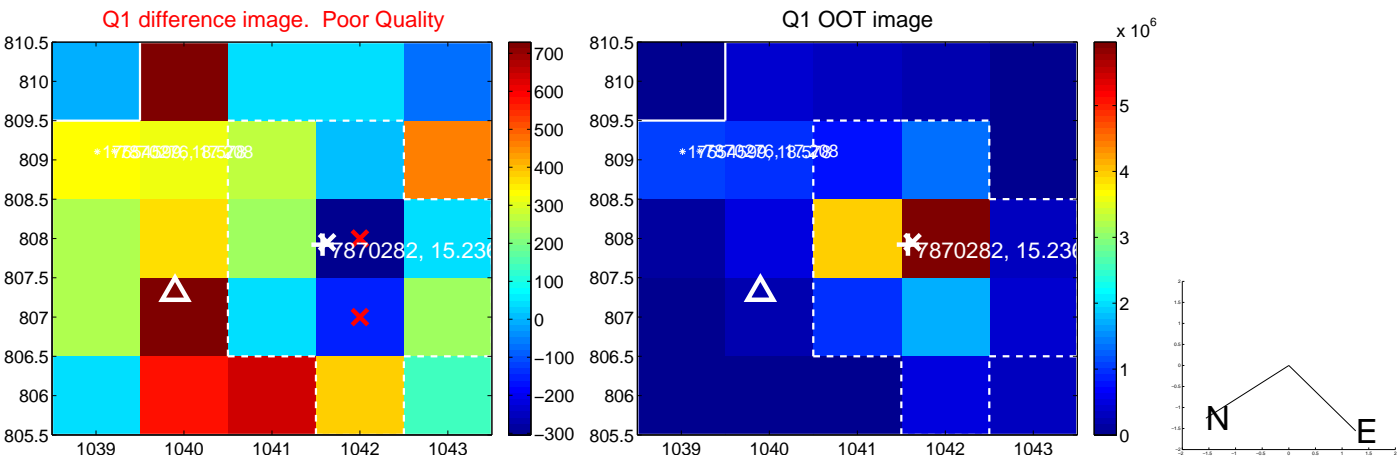
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$8.088 \pm 0.485$	16.68	$-4.751 \pm 0.560$	$6.545 \pm 0.440$
PRF-fit source offset from KIC position	$8.207 \pm 0.477$	17.22	$-4.788 \pm 0.545$	$6.665 \pm 0.437$
photometric centroid source offset	$5.27 \pm 0.92$	5.71	$-2.65 \pm 0.97$	$4.56 \pm 0.91$

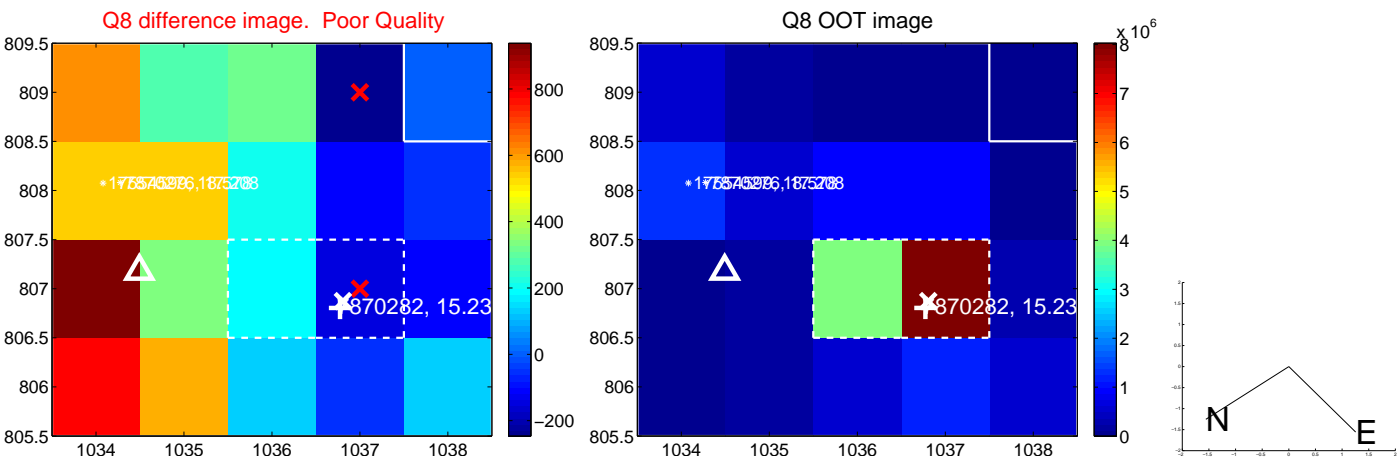
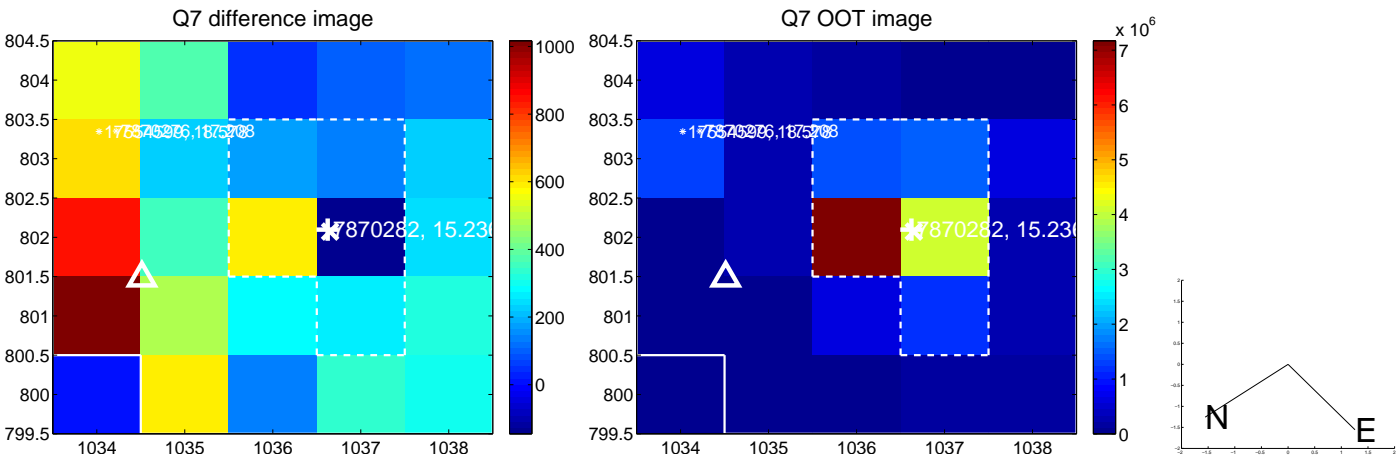
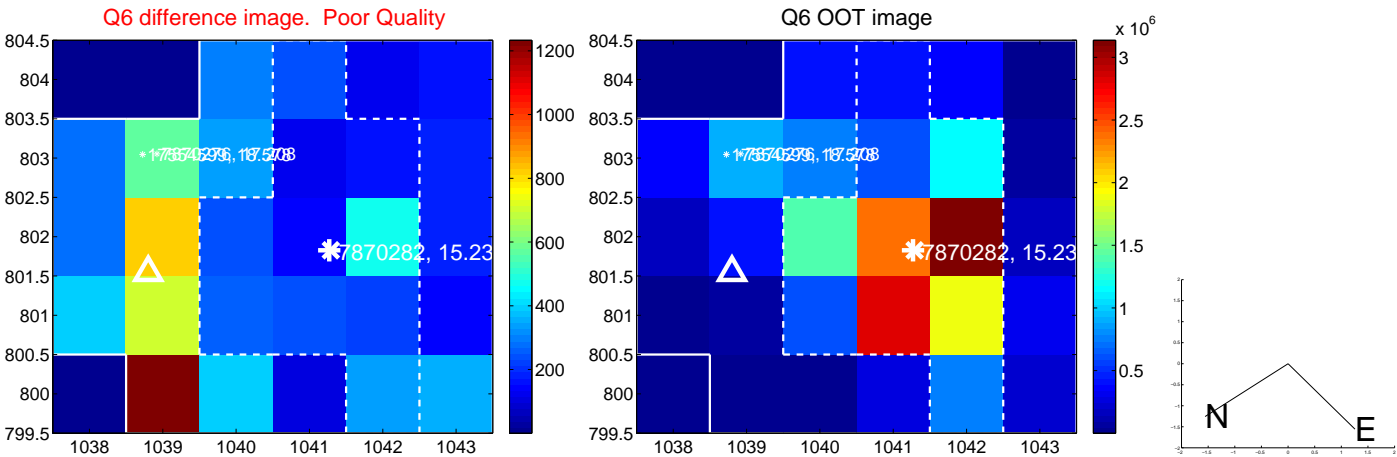
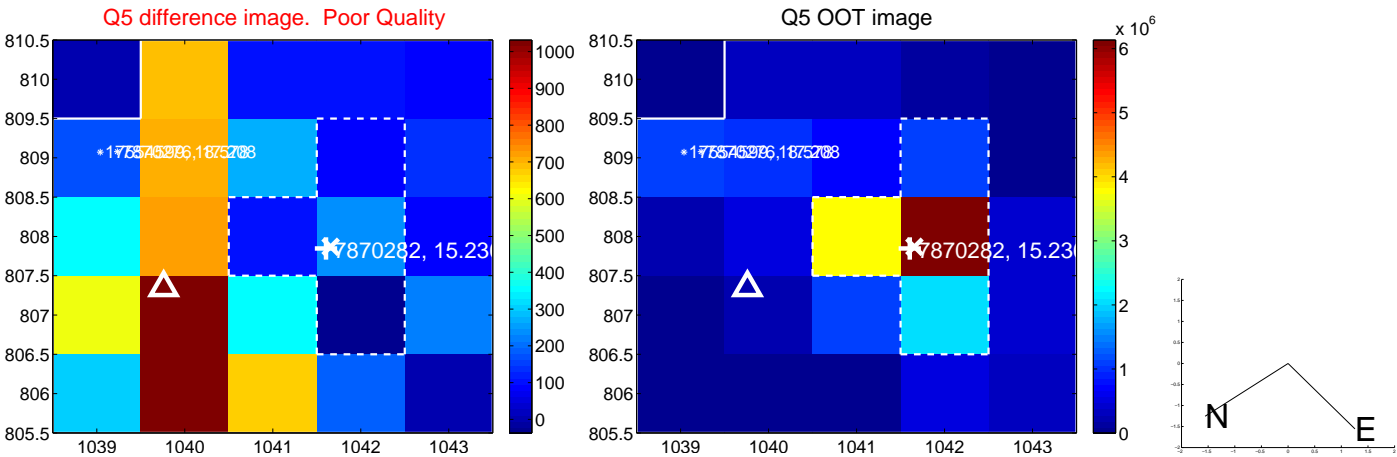


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

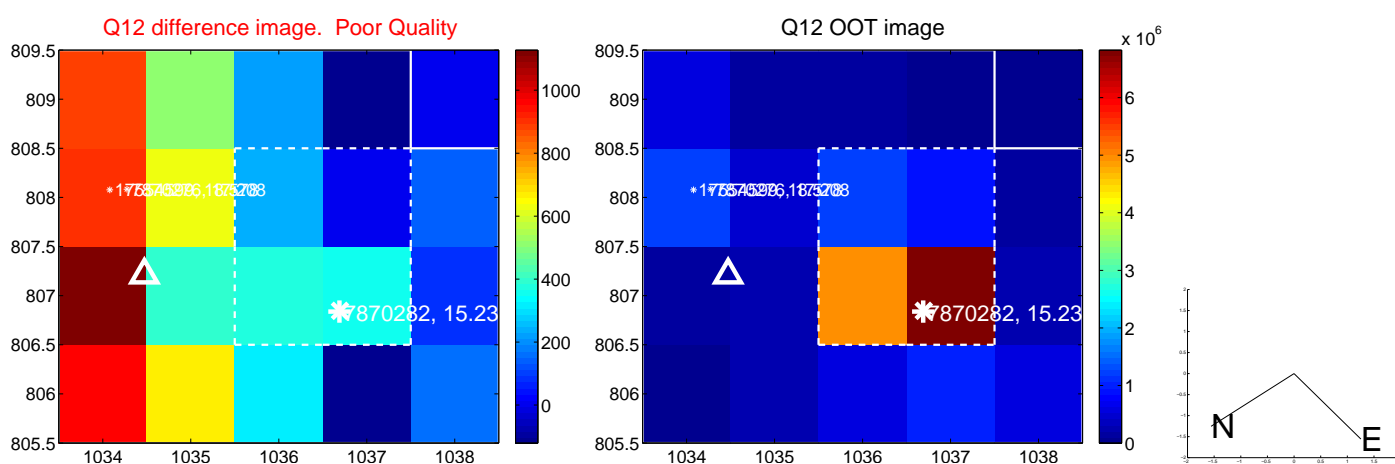
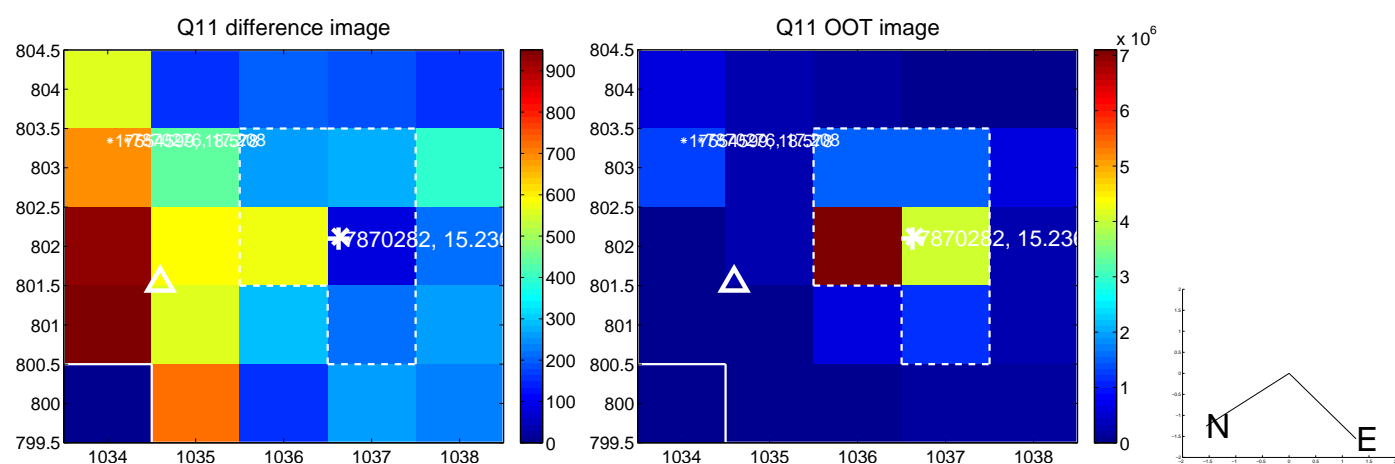
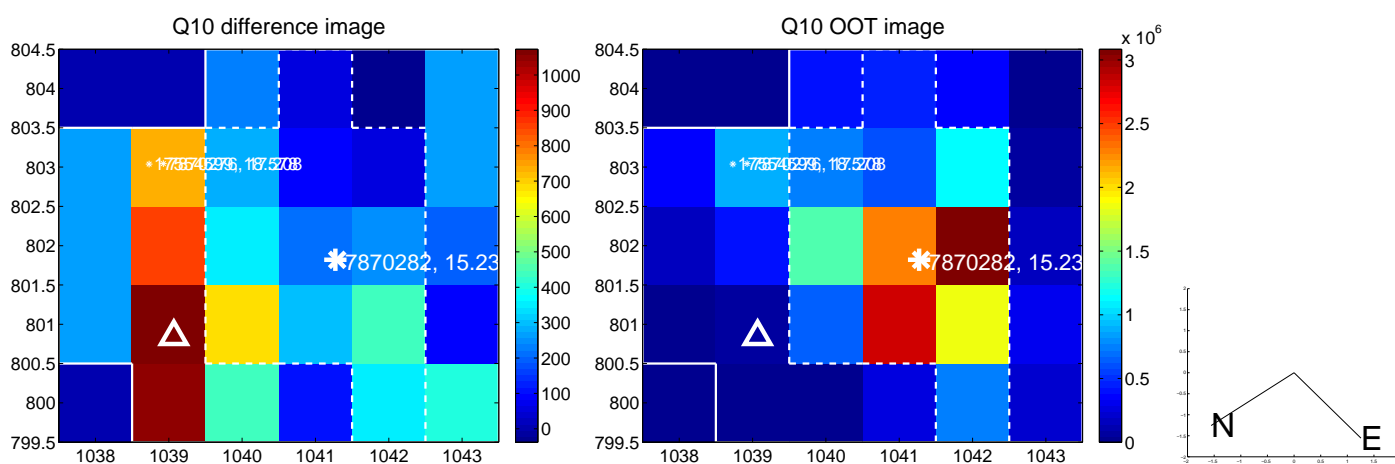
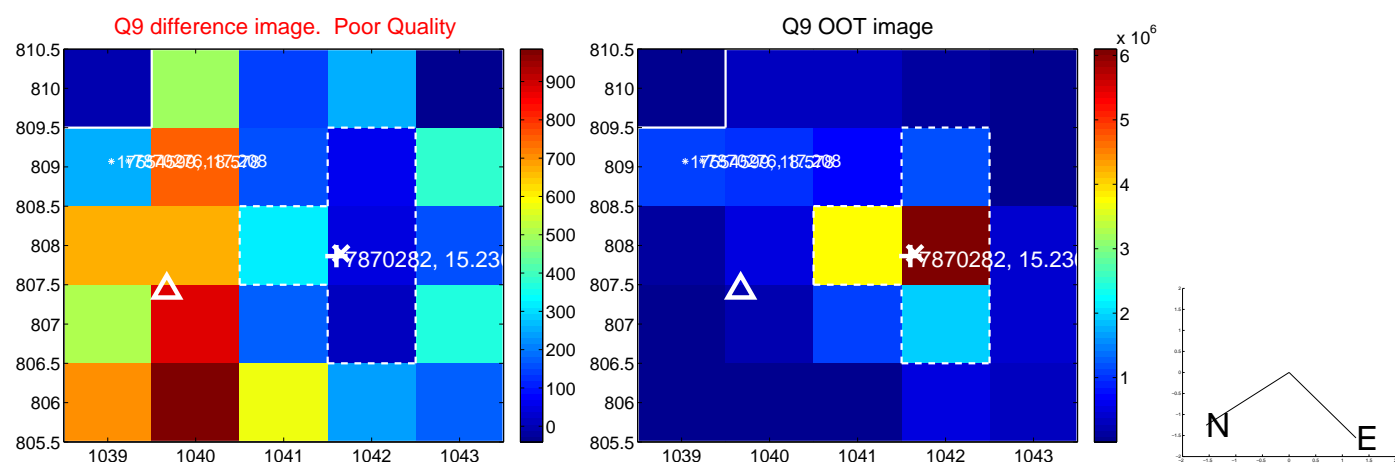


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

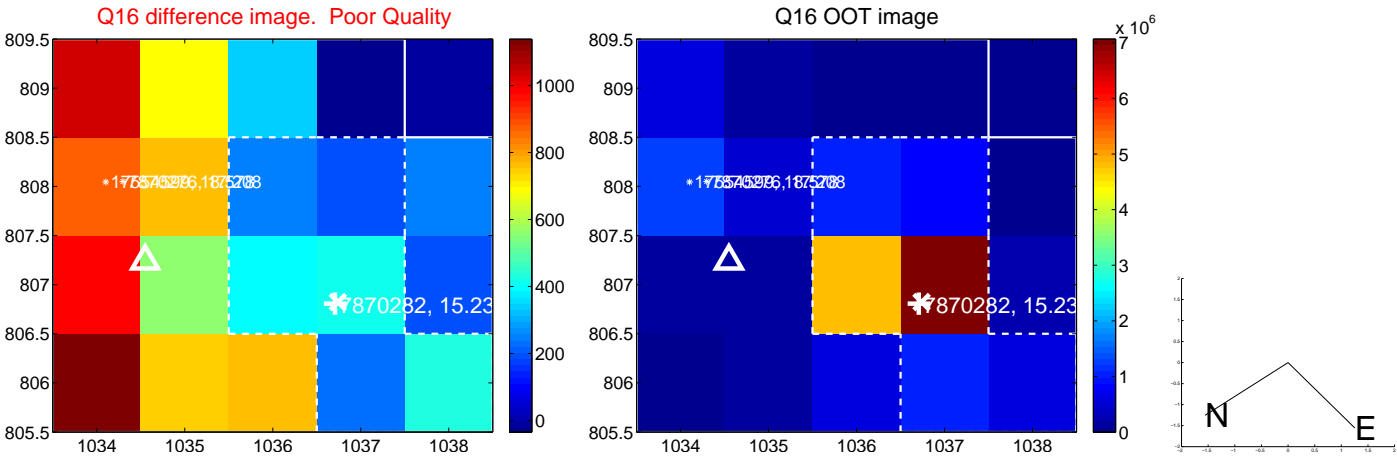
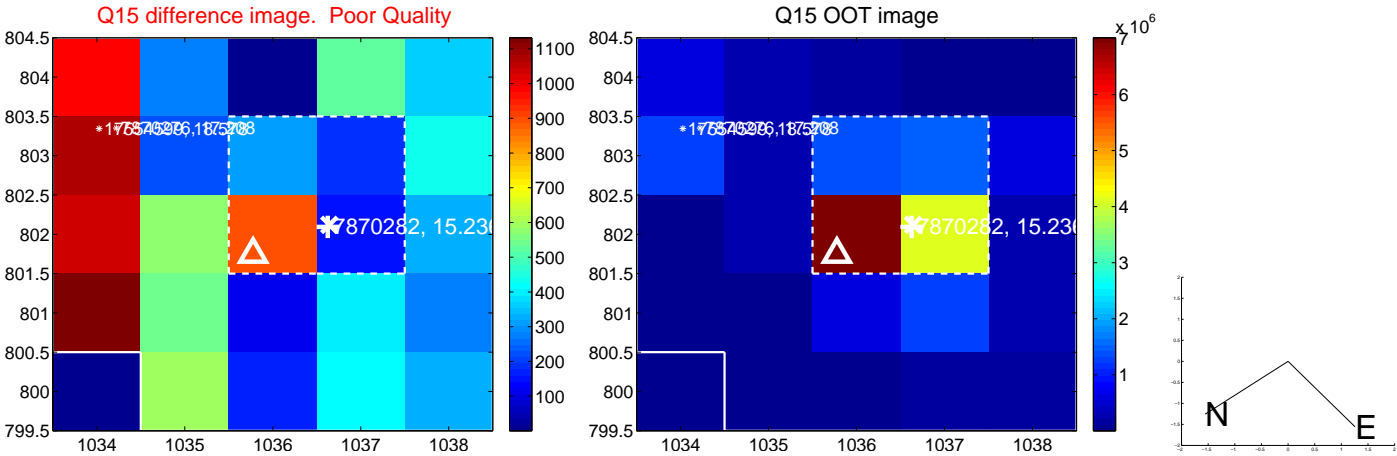
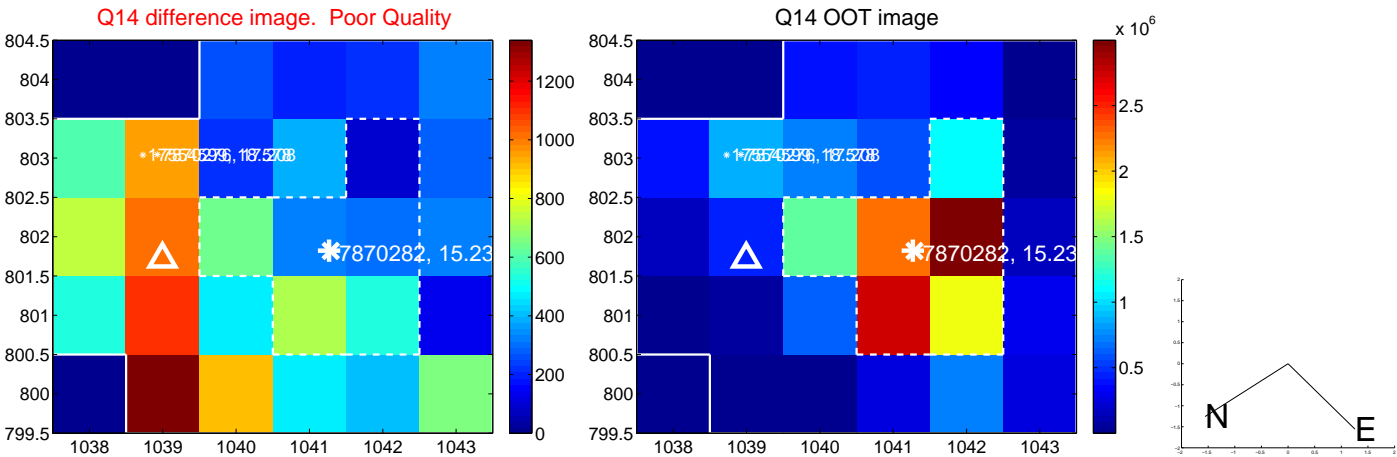
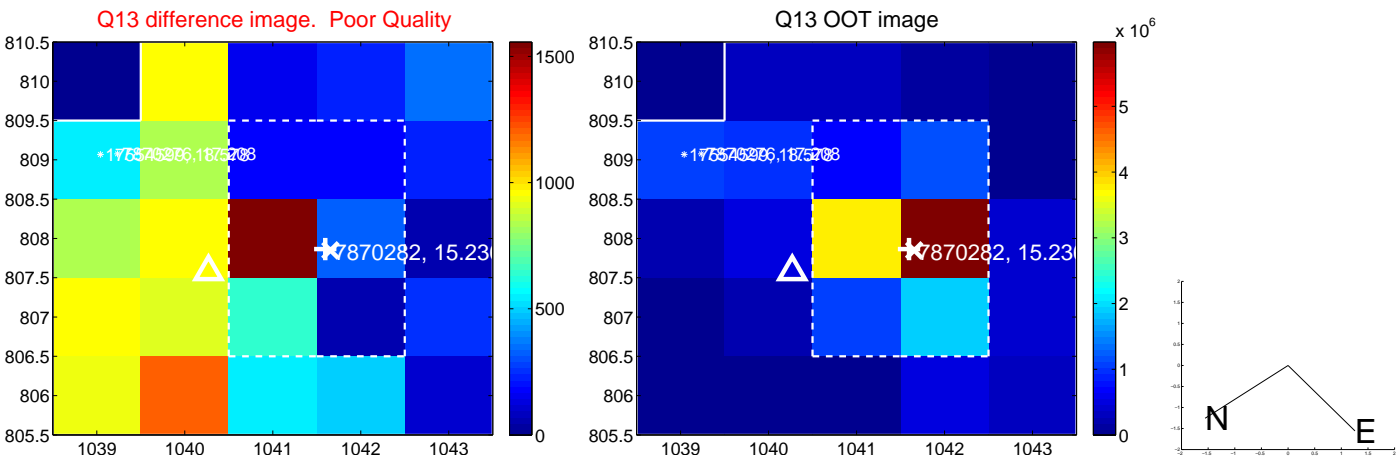




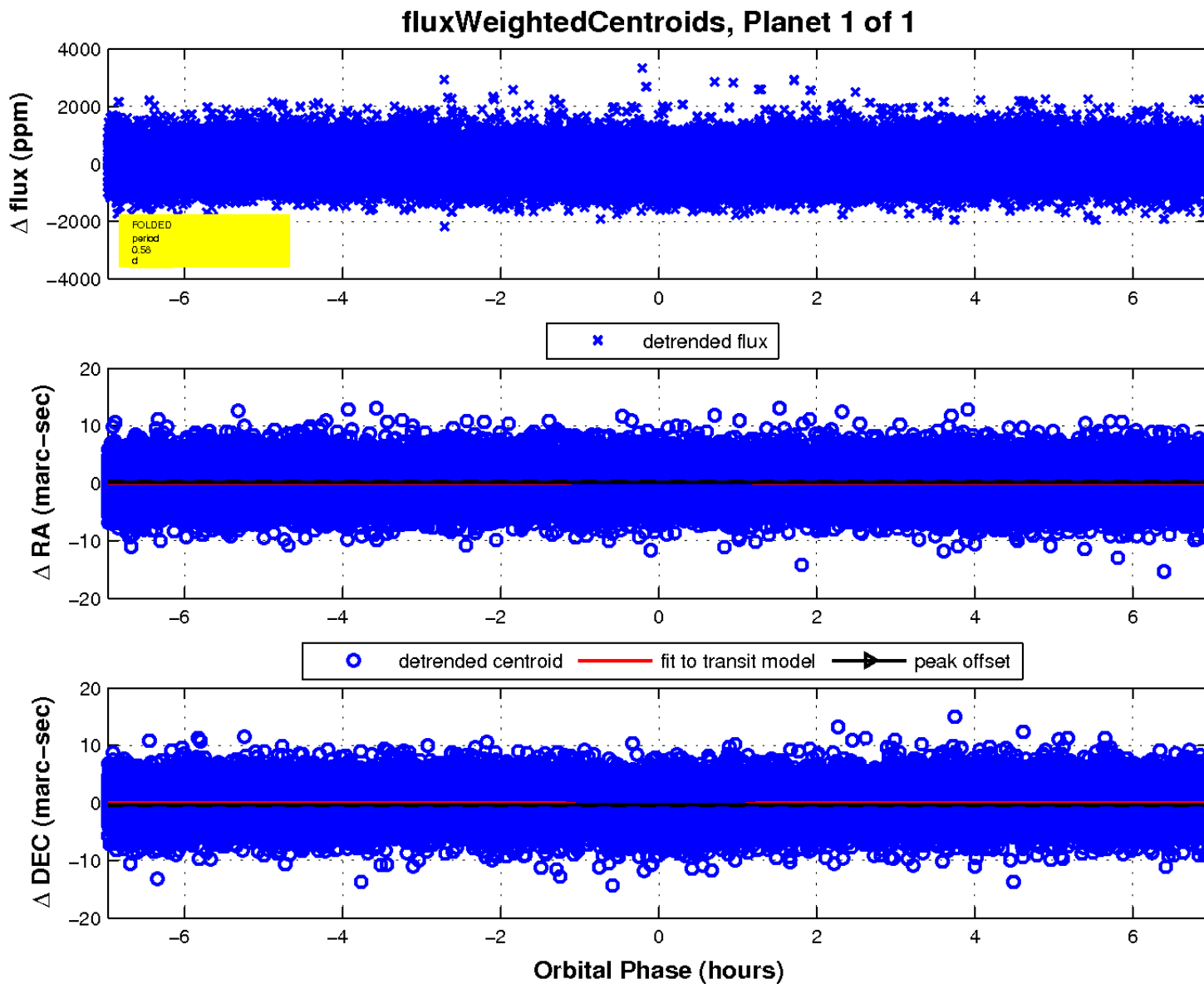
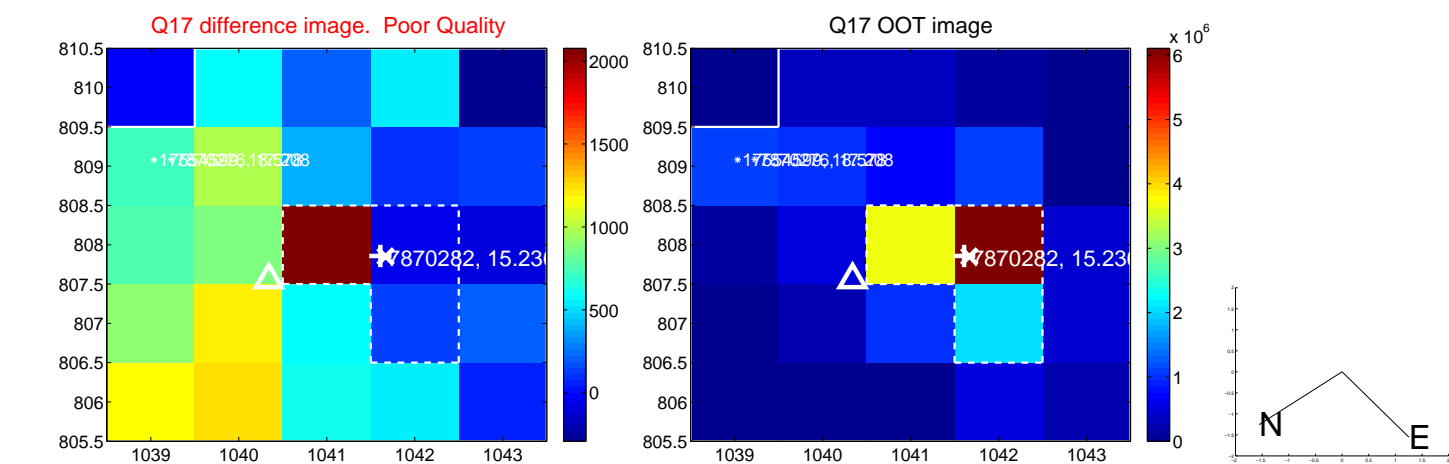
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

