

# KIC 009813078

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009813078-01	OBS	No	0.812763	131.809180	106.9	6.352	10.8	5.7	3.15	6812	3.28	45128.89

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009813078-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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

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

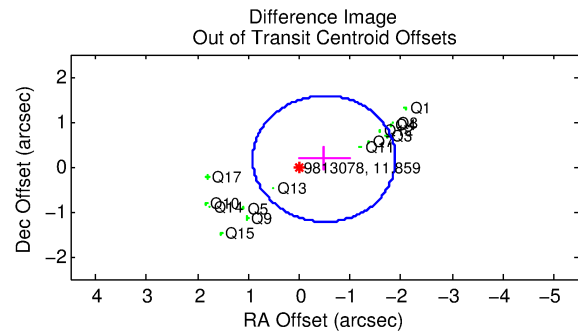
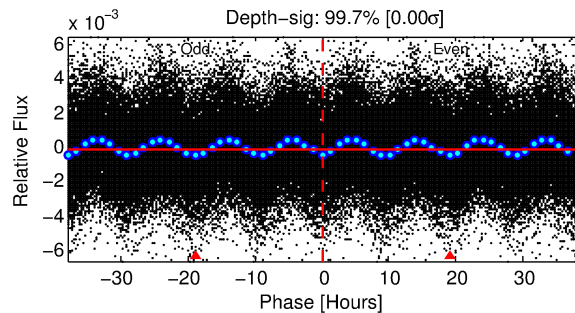
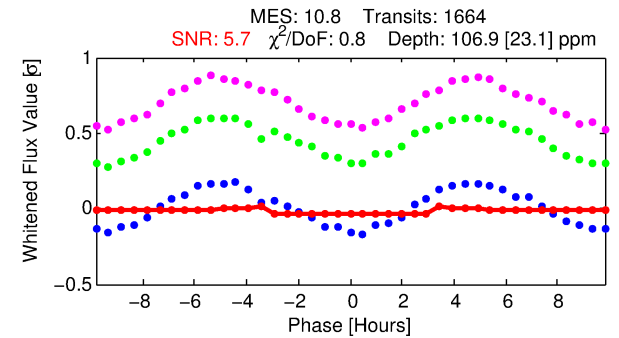
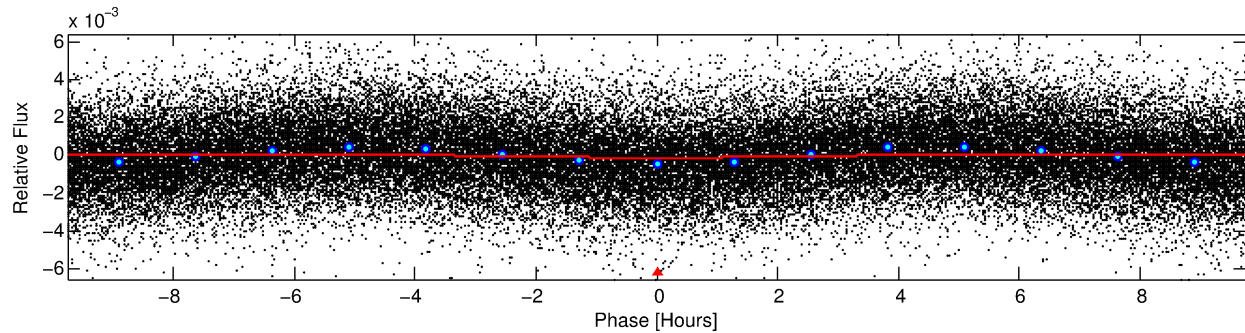
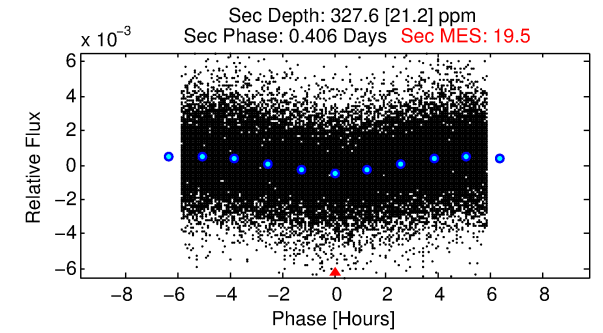
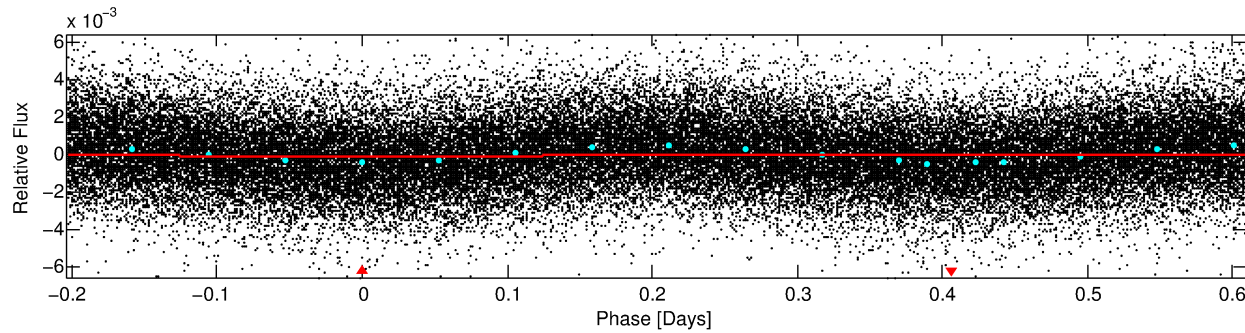
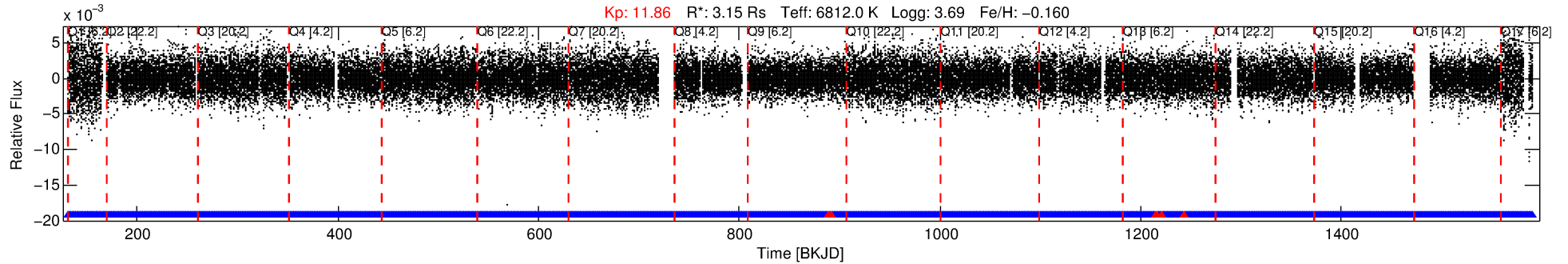
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009813078-01

No Significant Match Found

# DV One-Page Summary

KIC: 9813078 Candidate: 1 of 1 Period: 0.813 d



## DV Fit Results:

Period = 0.81276 [0.00002] d  
Epoch = 131.8092 [0.0058] BKJD  
Rp/R\* = 0.0096 [0.0108]  
a/R\* = 1.18 [2.09]  
b = 0.10 [61.83]  
Seff = 45128.89 [16290.87]  
Teq = 3717 [335] K  
Rp = 3.28 [3.80] Re  
a = 0.0206 [0.0047] AU  
Ag = 7.08 [16.19] [0.38σ]  
Teffp = 9372 [5302] K [1.06σ]

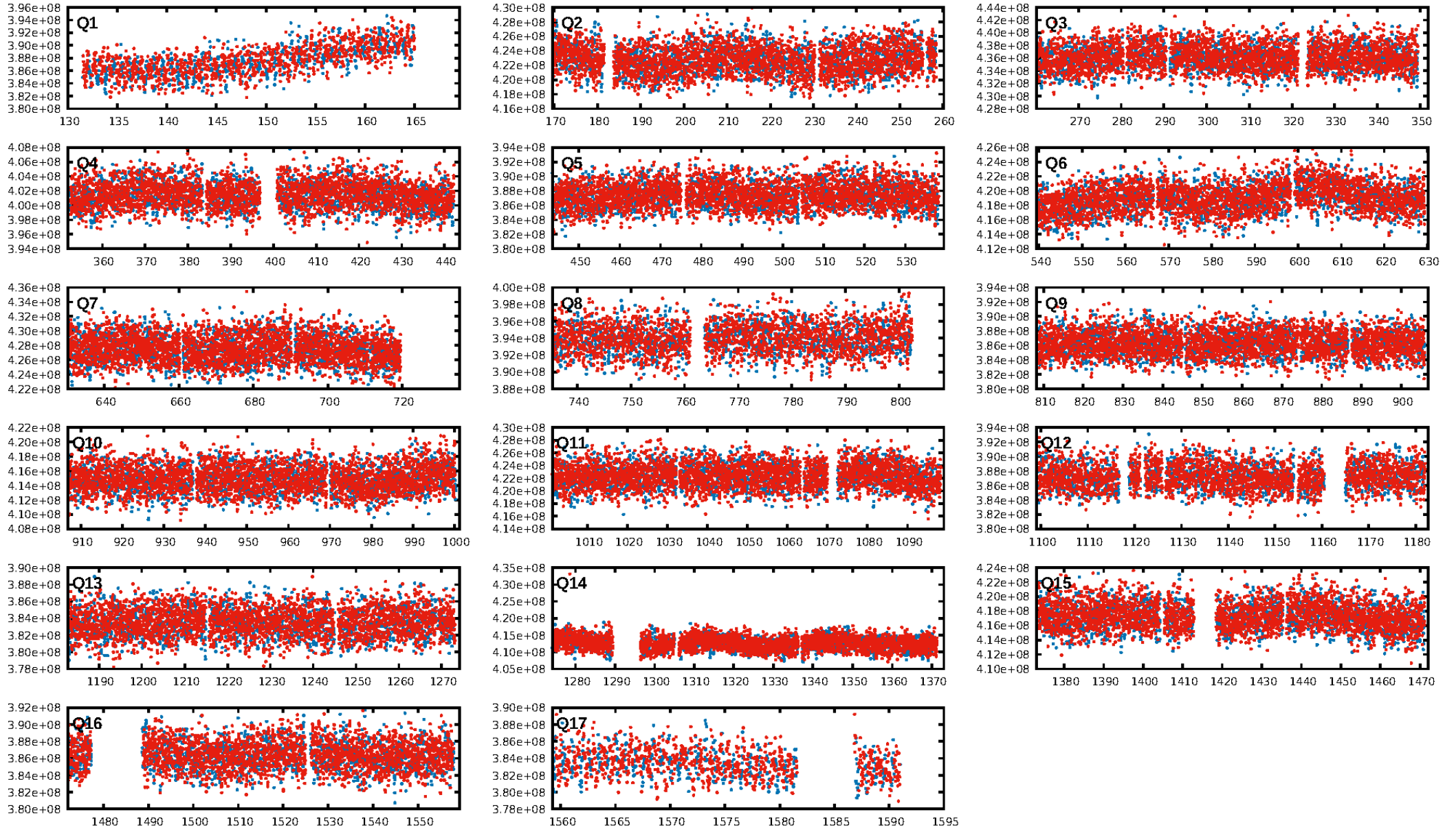
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1584/1591]  
GhostDiagnostic-chr: 0.9863  
Centroid-sig: 0.0%  
Centroid-so: 0.147 arcsec [1.92σ]  
OotOffset-rm: 0.521 arcsec [1.11σ]  
OotOffset-st: 2/4/3/5 [14]  
KicOffset-rm: 0.468 arcsec [0.97σ]  
KicOffset-st: 2/4/3/5 [14]  
DiffImageQuality-fgm: 0.79 [11/14]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:02:01 Z

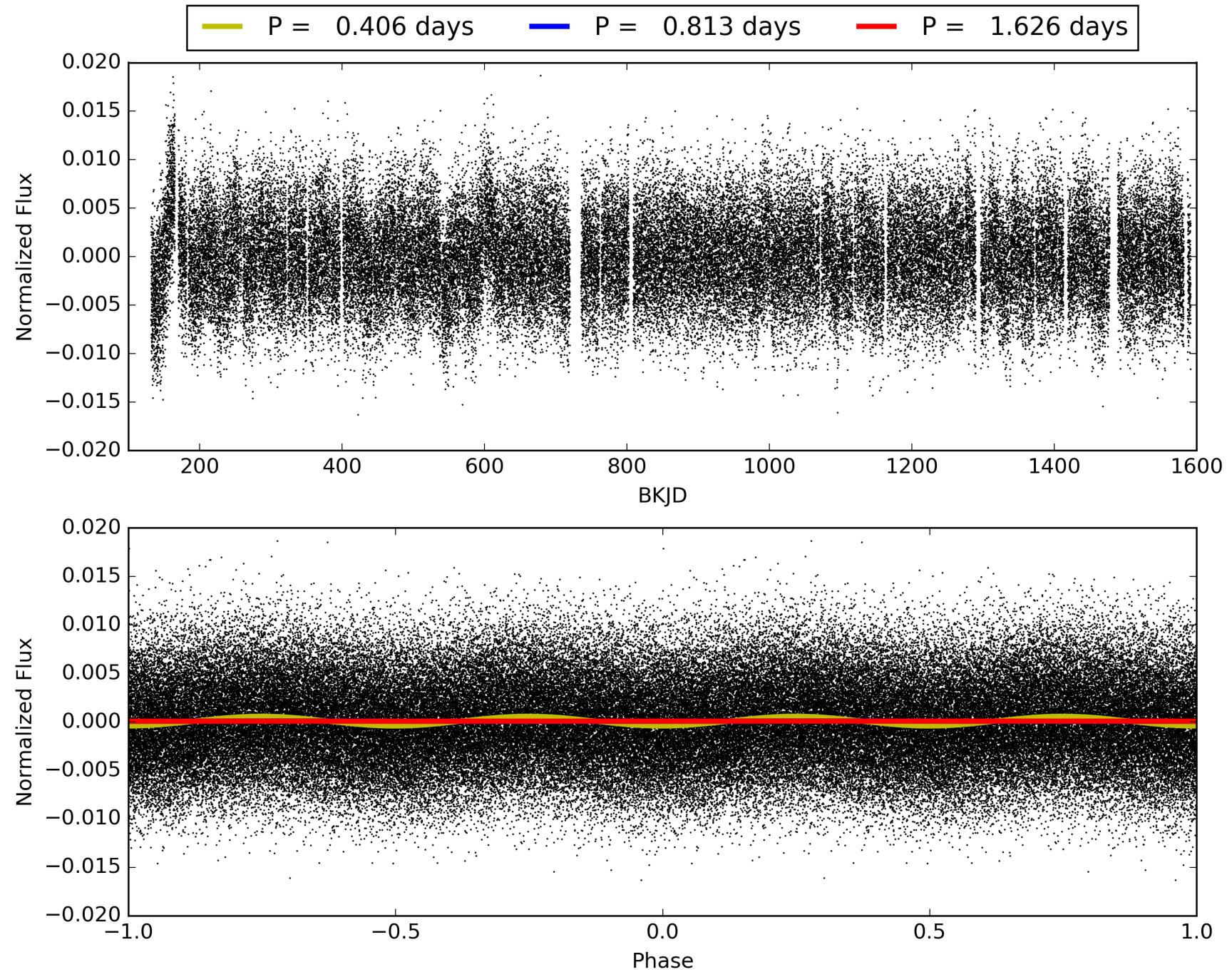
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009813078-01, PDC Light Curves



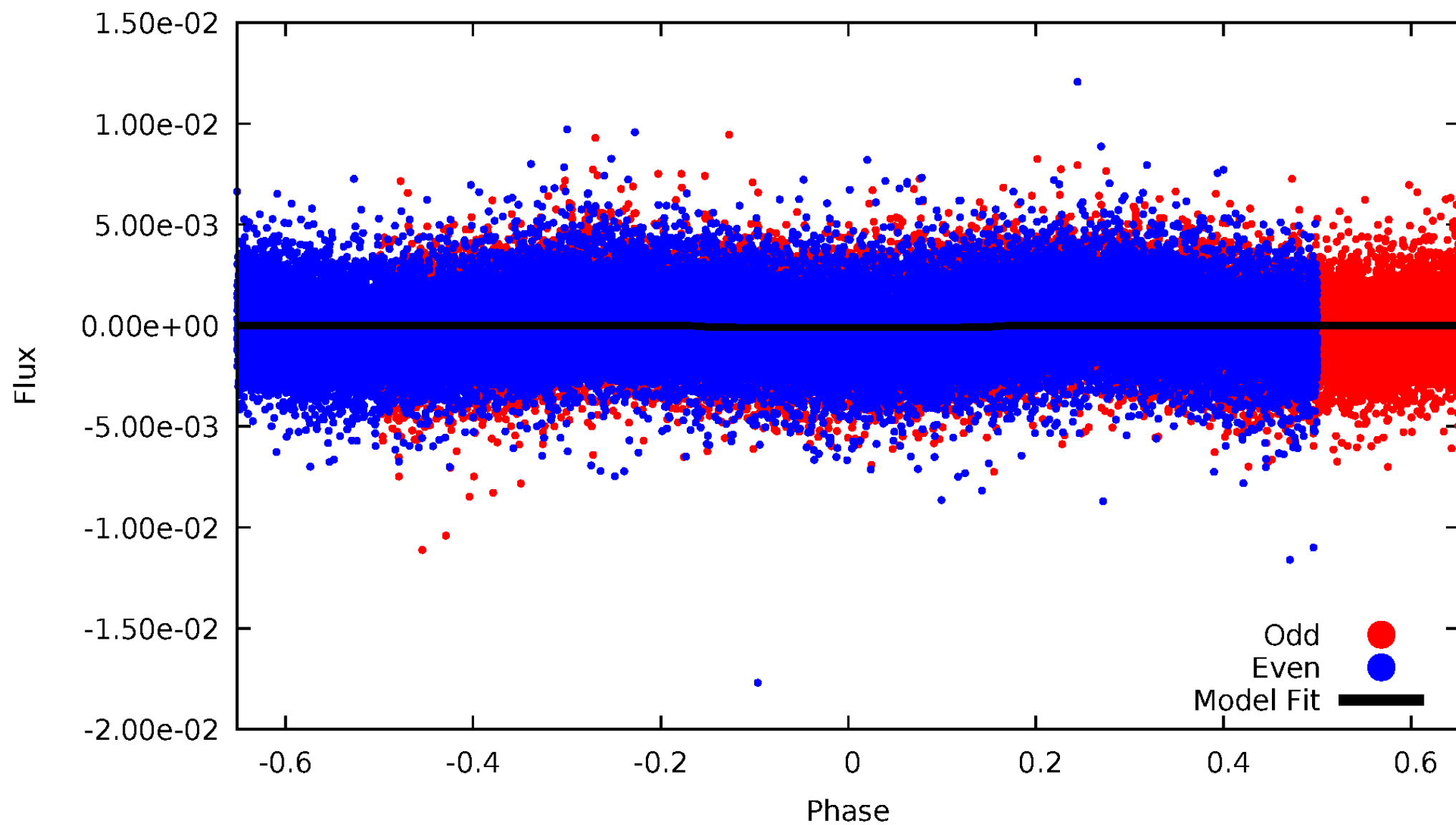


# TCE 009813078-01



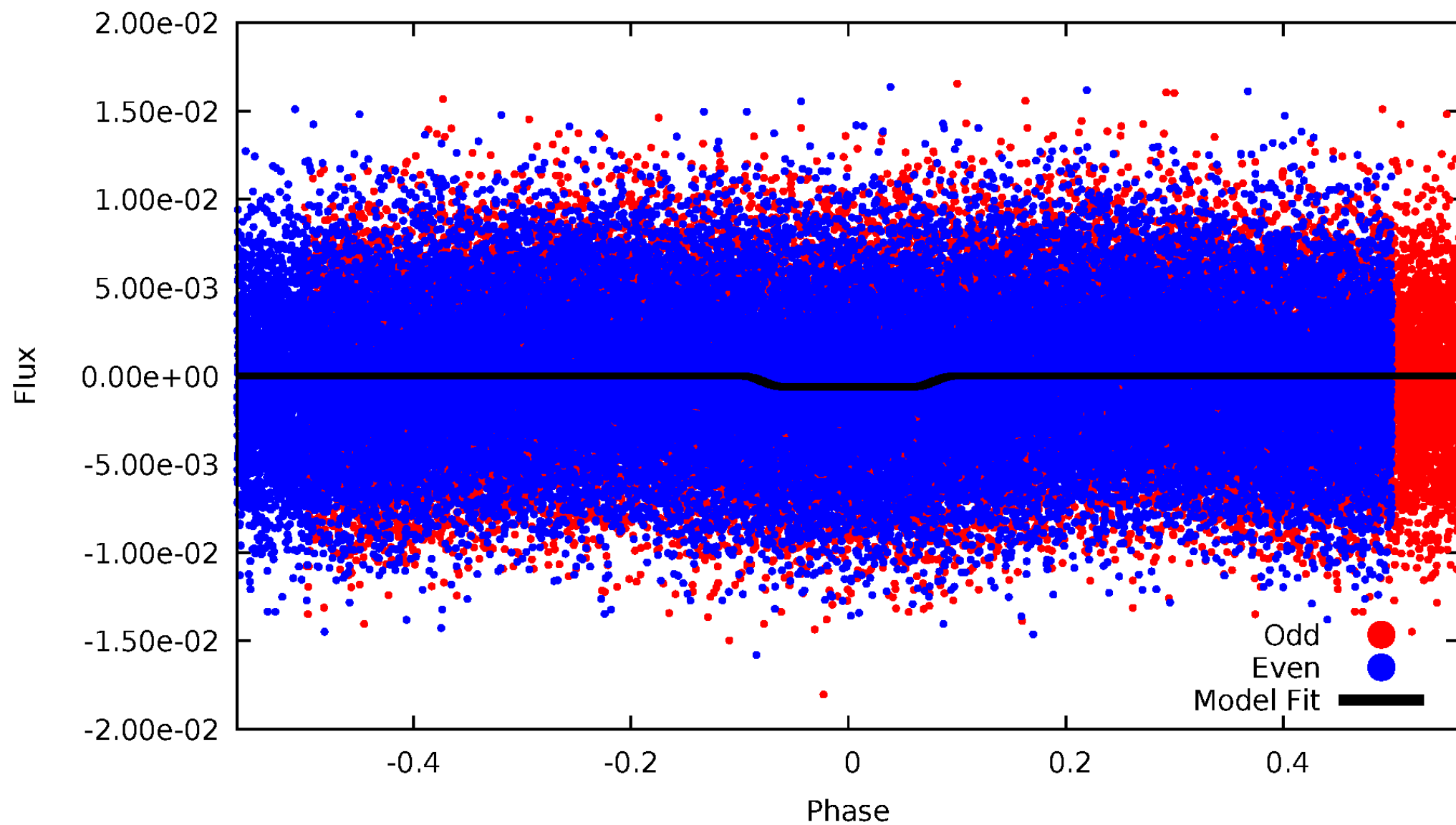
# DV Odd/Even

TCE 009813078-01



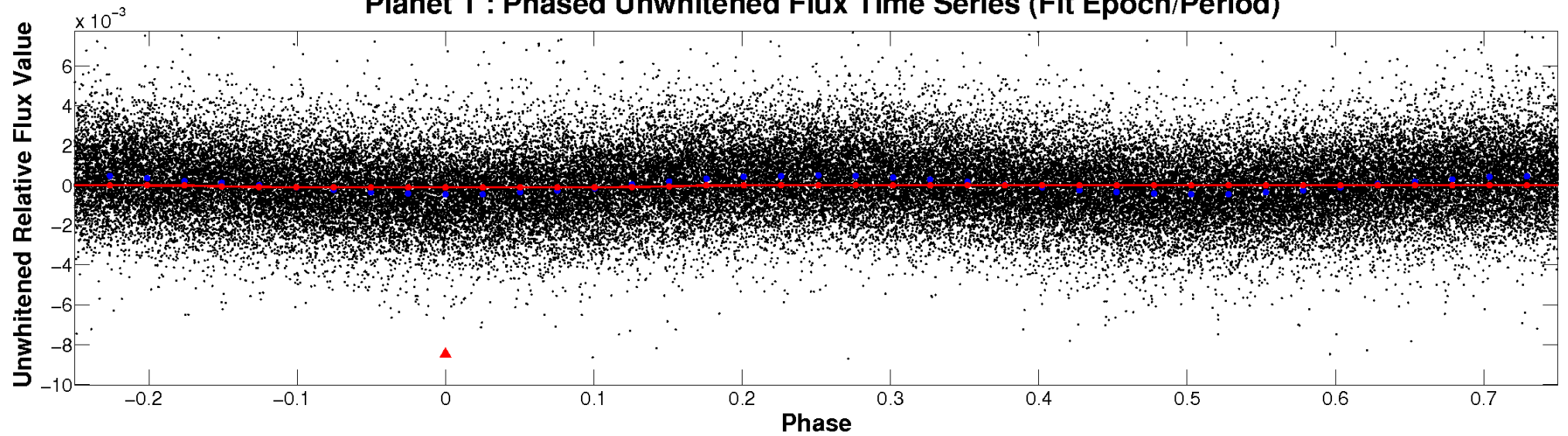
# ALT Odd/Even

TCE 009813078-01

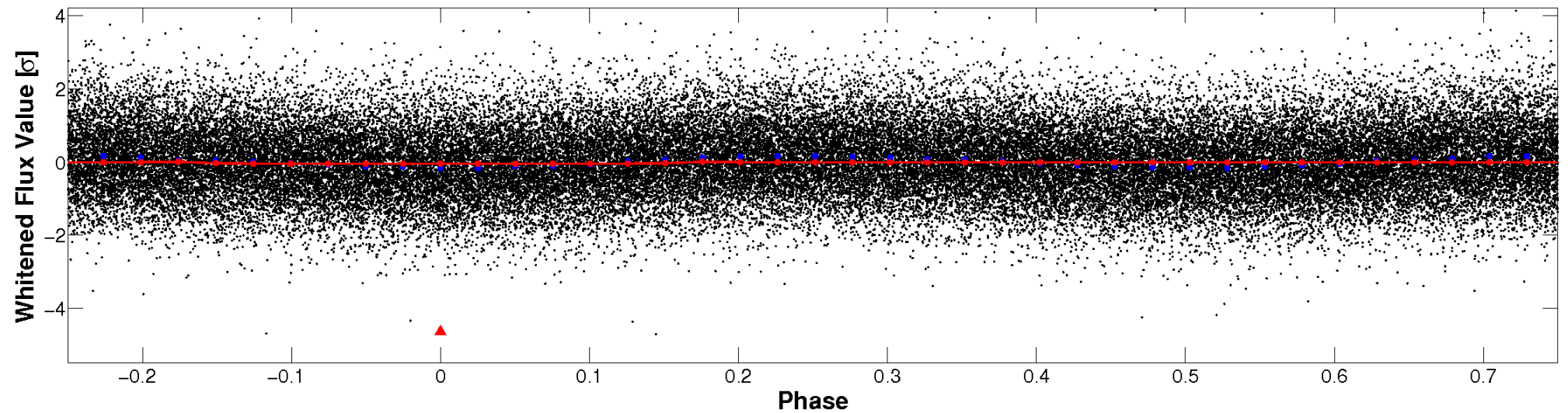


# Non-Whitened Vs. Whitened Light Curve

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



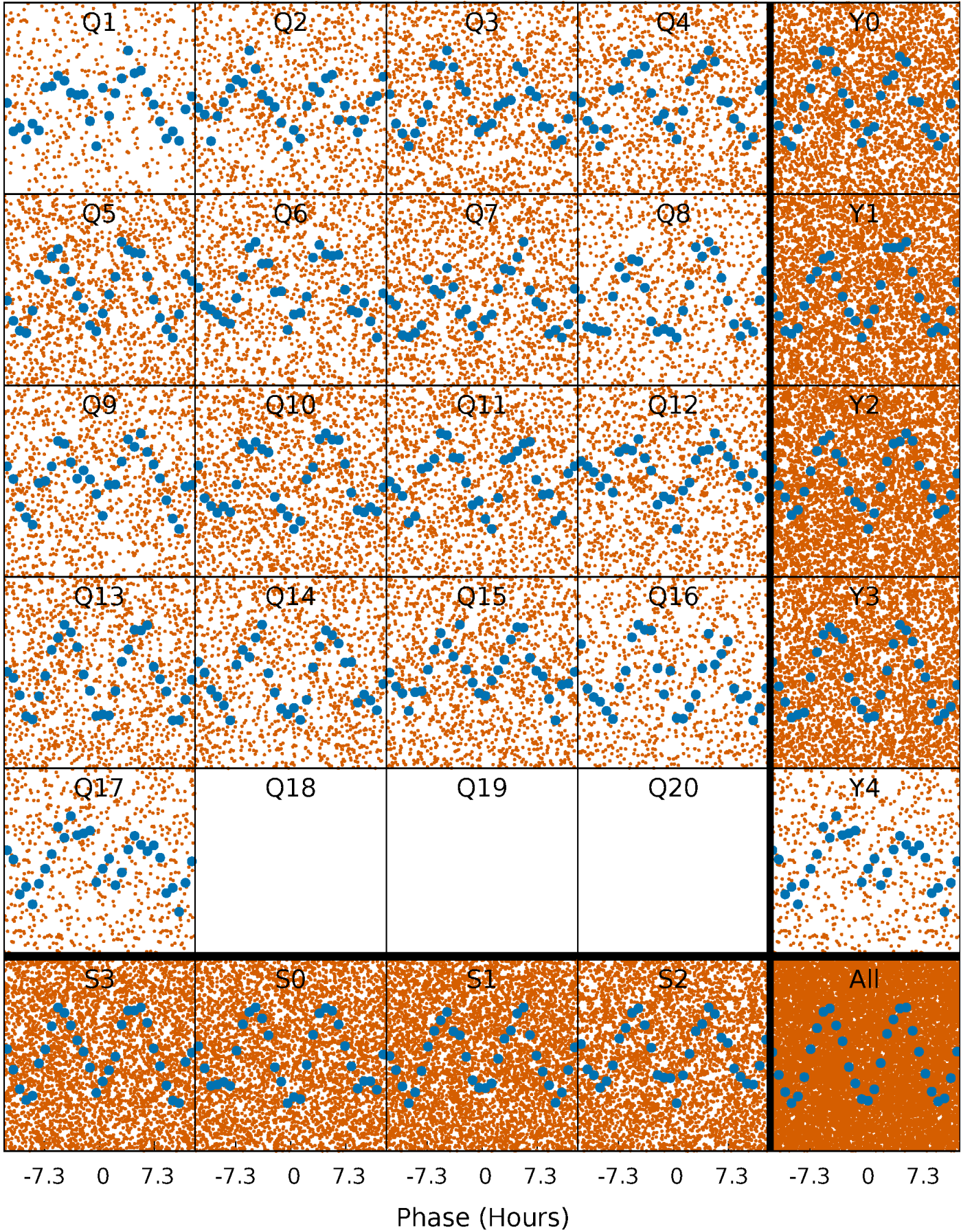
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

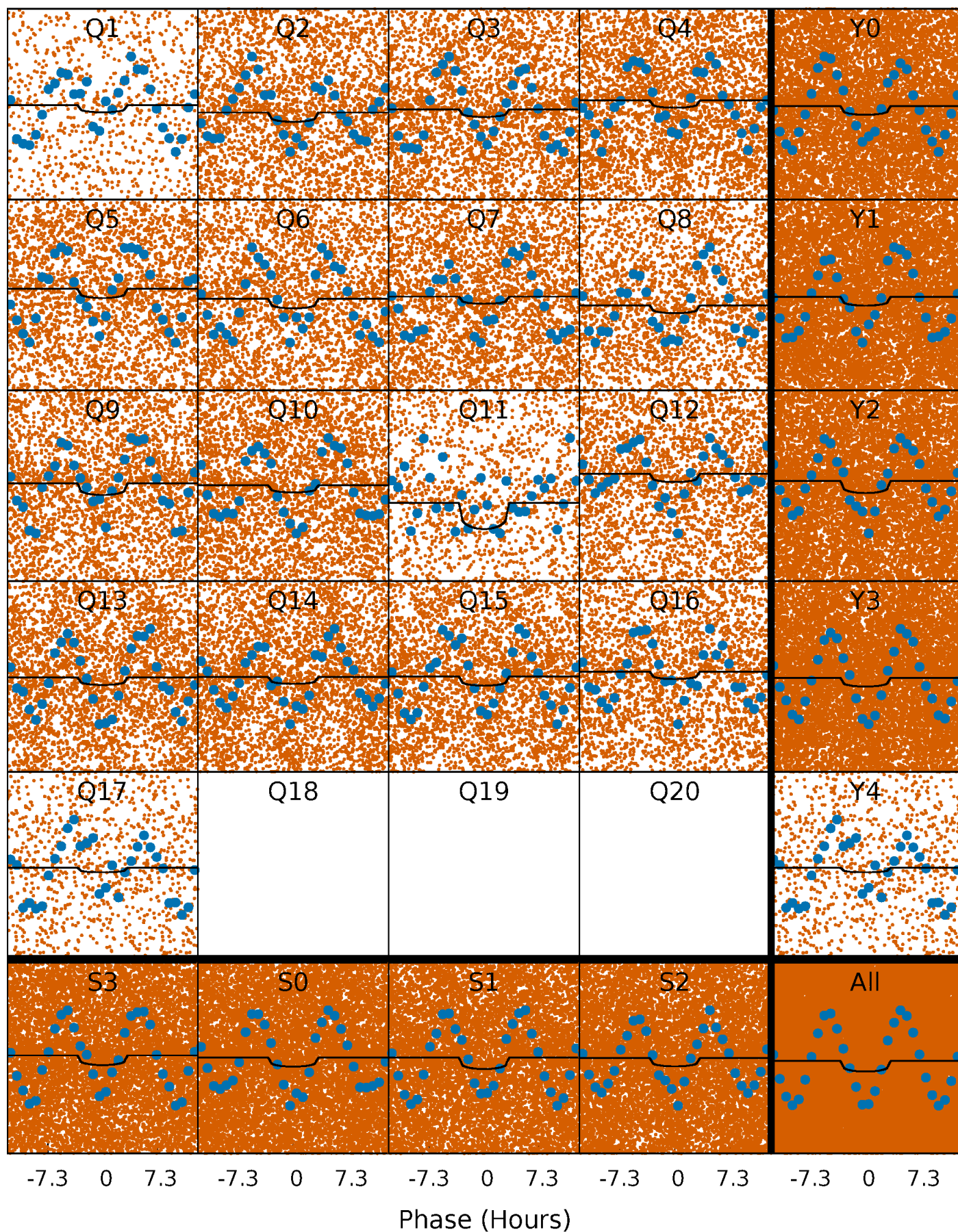
TCE 009813078-01   P= 0.812763 Days    $T_0=131.809180$  (BKJD)





# DV Quarter-Phased Transit Curves

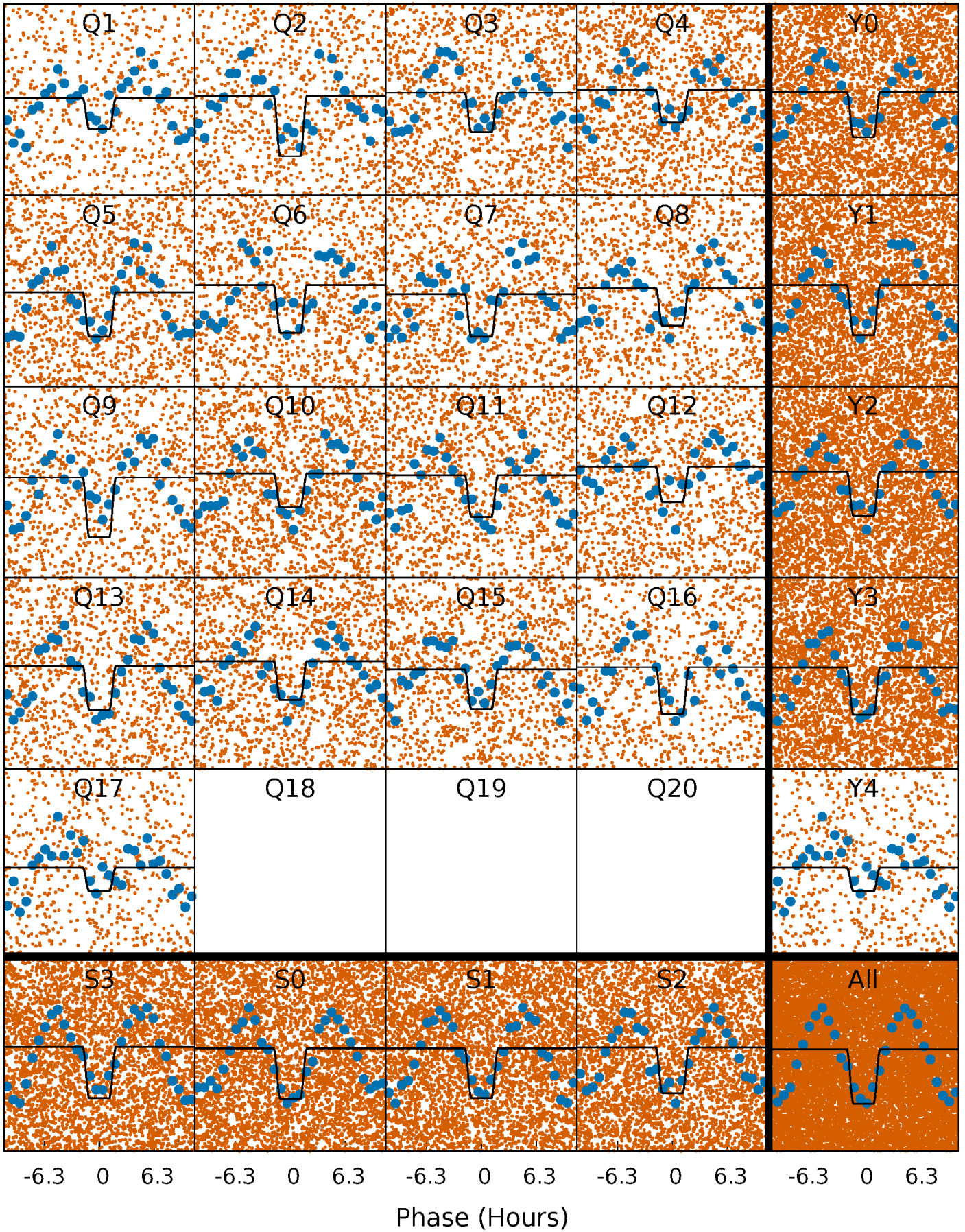
TCE 009813078-01 P= 0.812763 Days  $T_0=131.809180$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

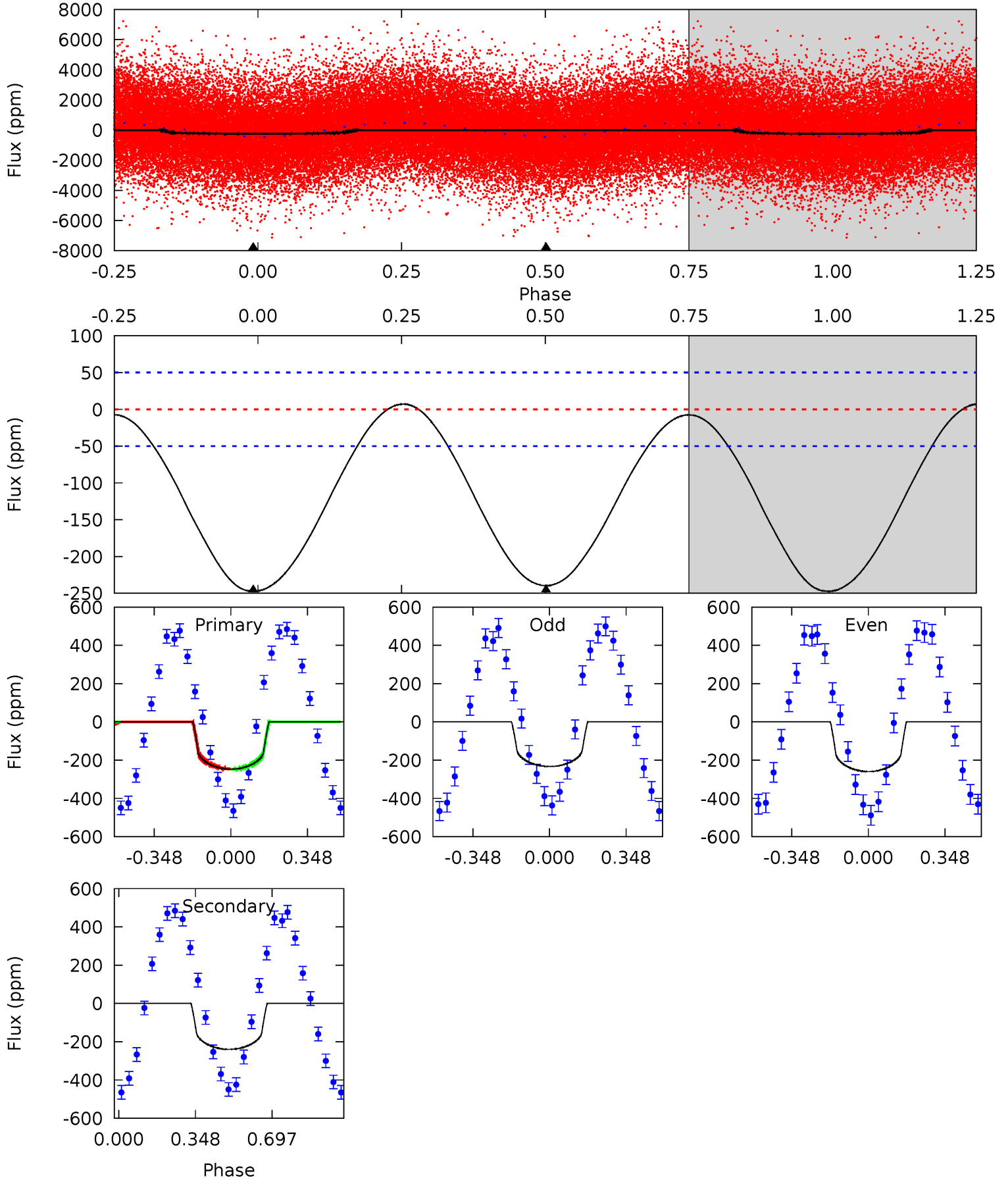
TCE 009813078-01   P= 0.812787 Days    $T_0=131.786398$  (BKJD)



# DV Model-Shift Uniqueness Test

009813078-01, P = 0.812763 Days, E = 130.996417 Days

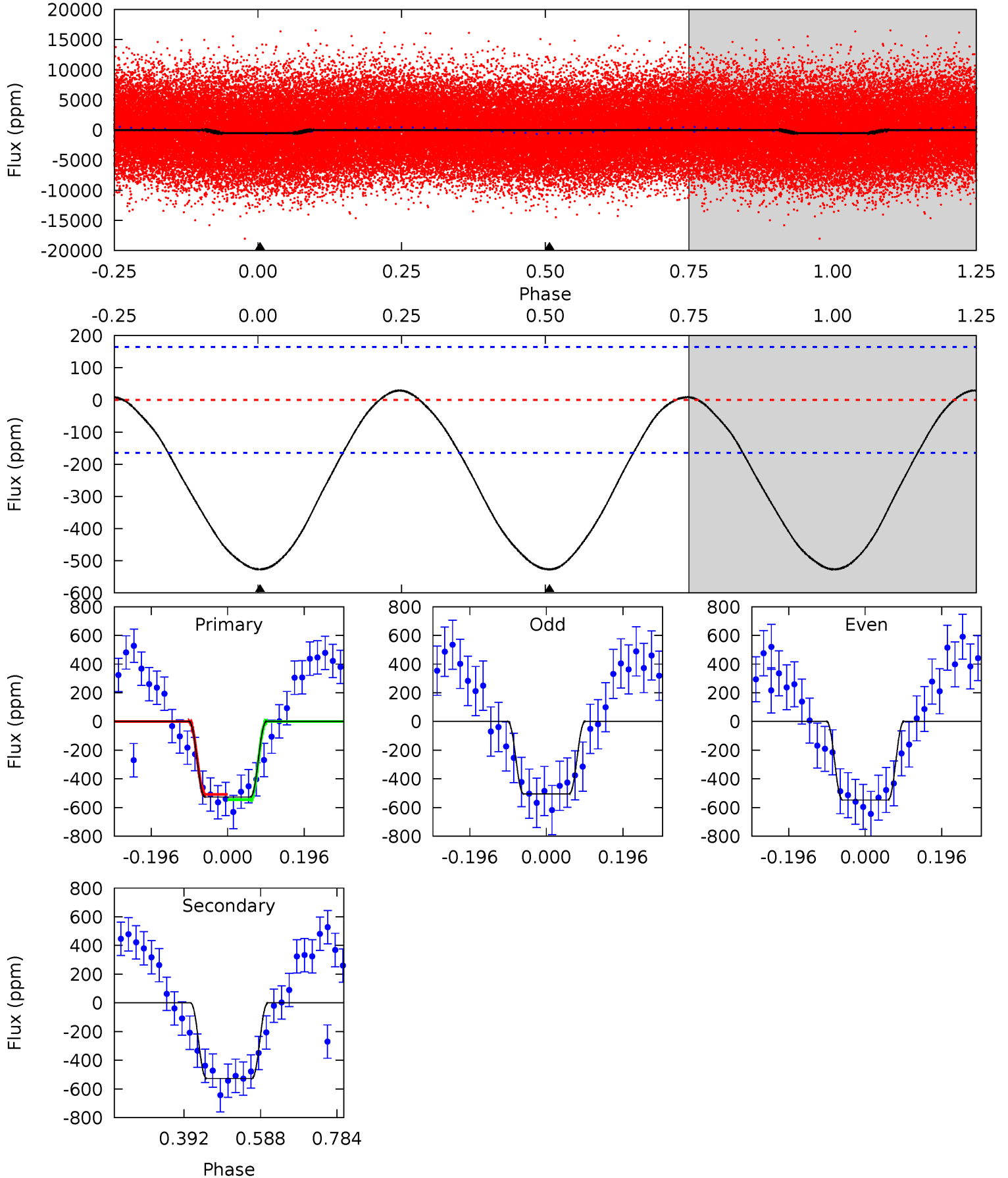
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.2	20.6	0	0	4.30	0.94	0.58	21.2	21.2	20.6	20.6	1.15	1.01	0.03	0.08



# Alt Model-Shift Uniqueness Test

009813078-01, P = 0.812787 Days, E = 130.973611 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
14.1	14.1	0	0	4.42	1.29	0.64	14.1	14.1	14.1	14.1	0.57	1.18	0.05	0.48





### Stellar Parameters For KIC 009813078

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6812^{+122}_{-149}$	$3.687^{+0.200}_{-0.050}$	$-0.160^{+0.150}_{-0.150}$	$3.145^{+0.284}_{-0.795}$	$1.752^{+0.125}_{-0.249}$	$0.079^{+0.091}_{-0.014}$
	+2%/-2%	+5%/-1%	+94%/-94%	+9%/-25%	+7%/-14%	+115%/-17%
Source	SPE4	SPE4	SPE4	DSEP		

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

### Secondary Eclipse Parameters for KIC 009813078-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-240 \pm 12$	$4.04^{+3.03}_{-2.58}$	$5106^{+189}_{-304}$	$7403^{+10189}_{-2046}$	$3.415^{+21.964}_{-2.268}$
Alt.	$-527 \pm 37$	$7.98^{+3.71}_{-3.39}$	$5107^{+196}_{-310}$	$6246^{+2623}_{-1234}$	$1.937^{+3.886}_{-1.035}$

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

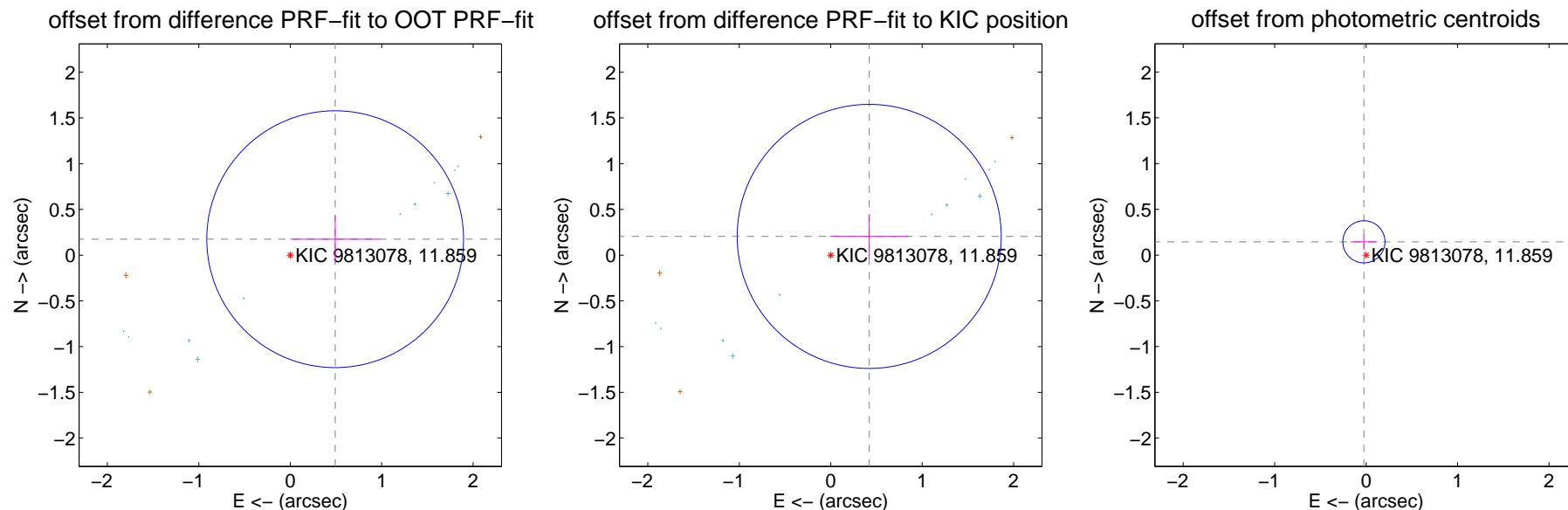
## DV Centroid Data

Supplemental centroid analysis for 009813078-01. **Kepler magnitude: 11.86.** Transit SNR 5.68

There are 11 quarters with good PRF difference image offsets

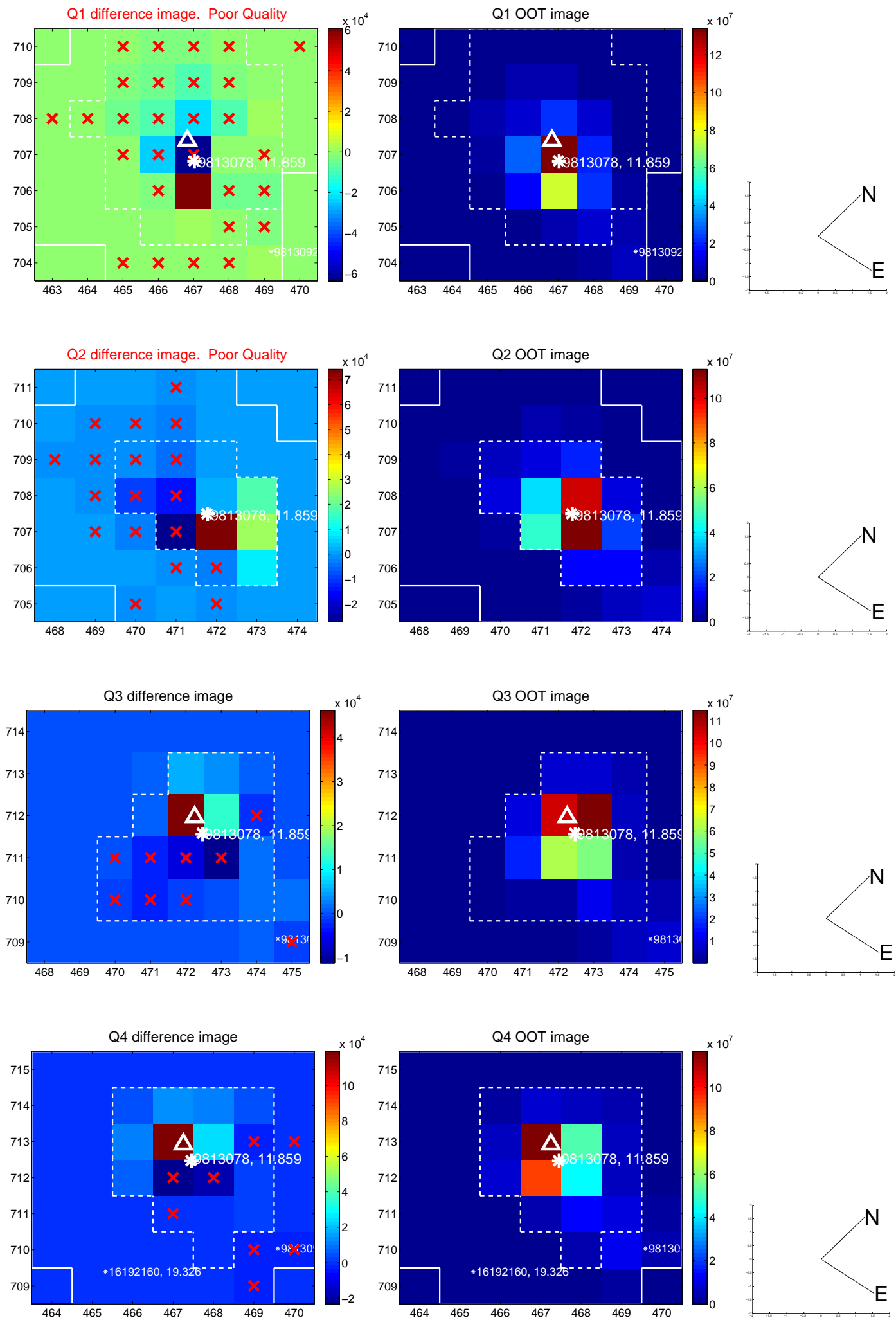
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.521 \pm 0.468$	1.11	$-0.491 \pm 0.488$	$0.174 \pm 0.255$
PRF-fit source offset from KIC position	$0.468 \pm 0.481$	0.97	$-0.421 \pm 0.428$	$0.205 \pm 0.243$
photometric centroid source offset	$0.15 \pm 0.08$	1.92	$0.02 \pm 0.14$	$0.15 \pm 0.07$

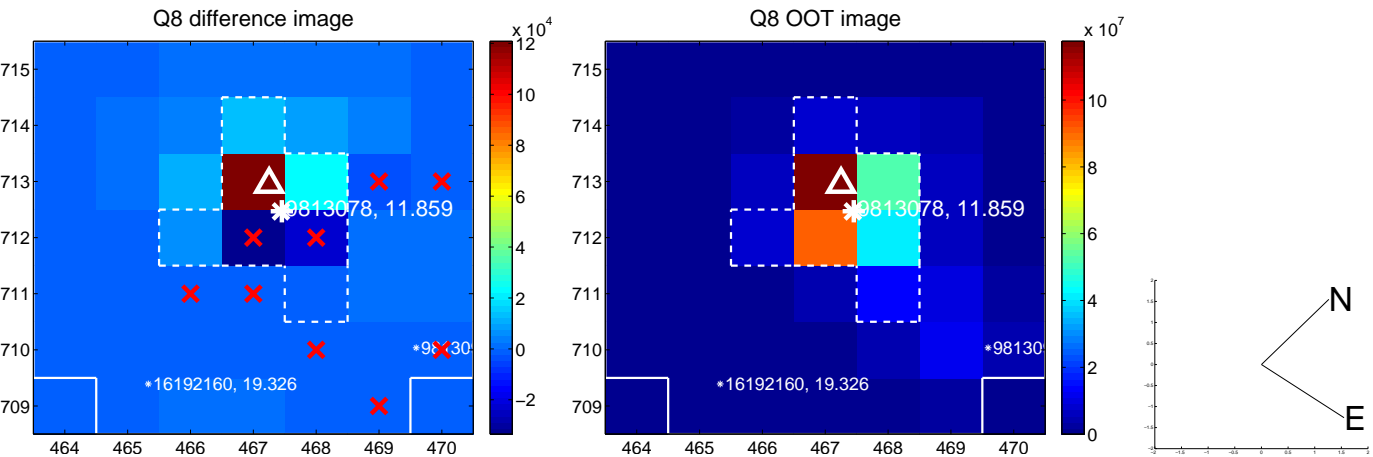
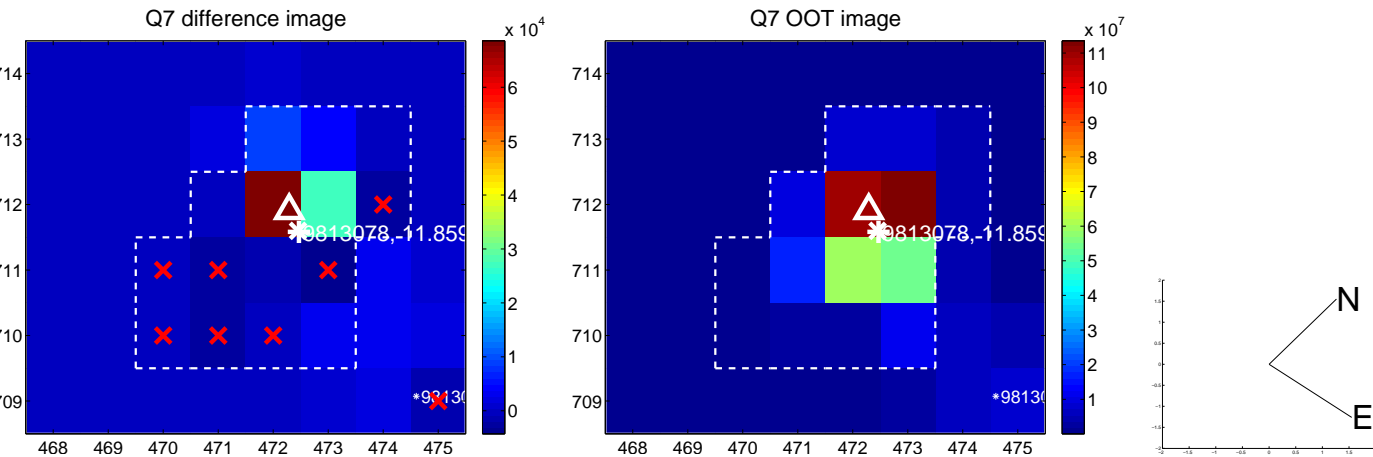
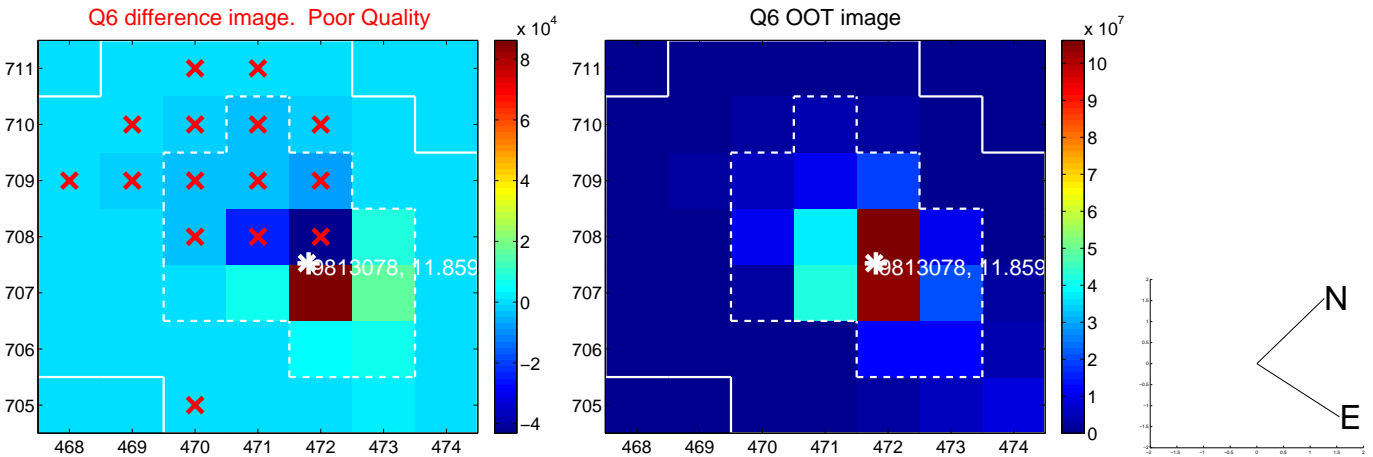
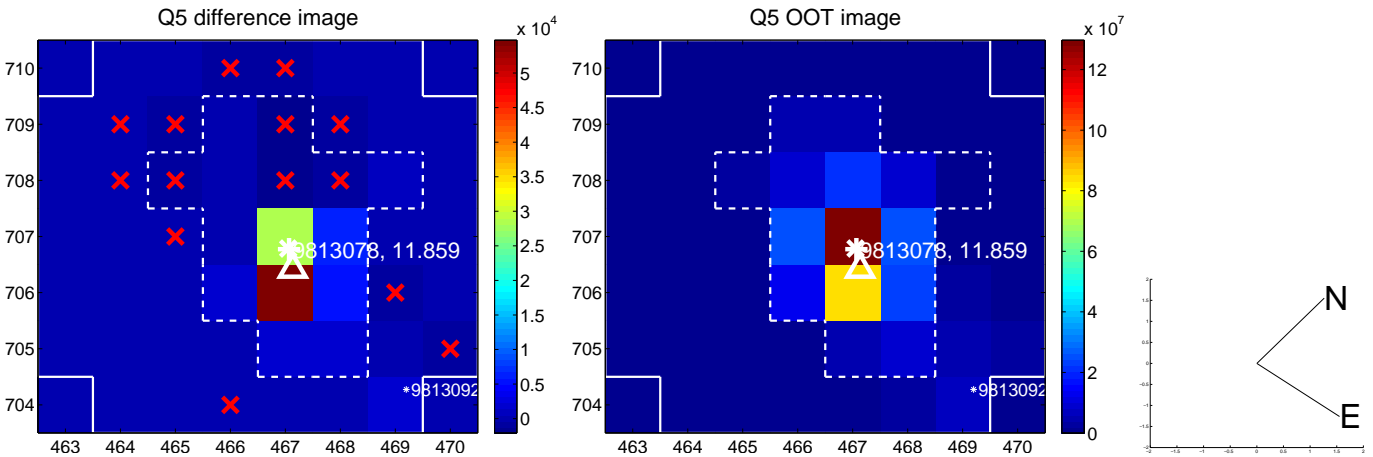


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

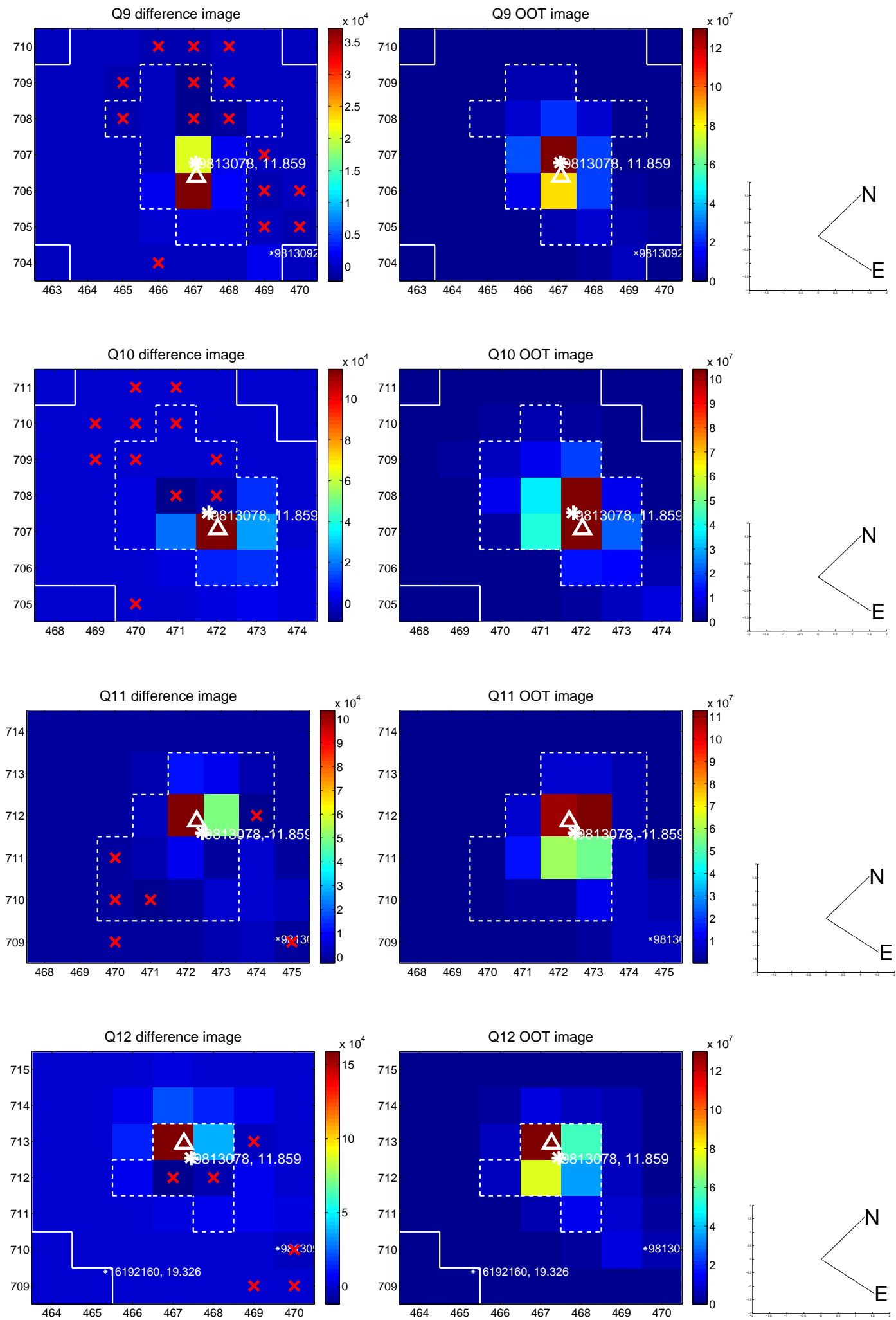


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

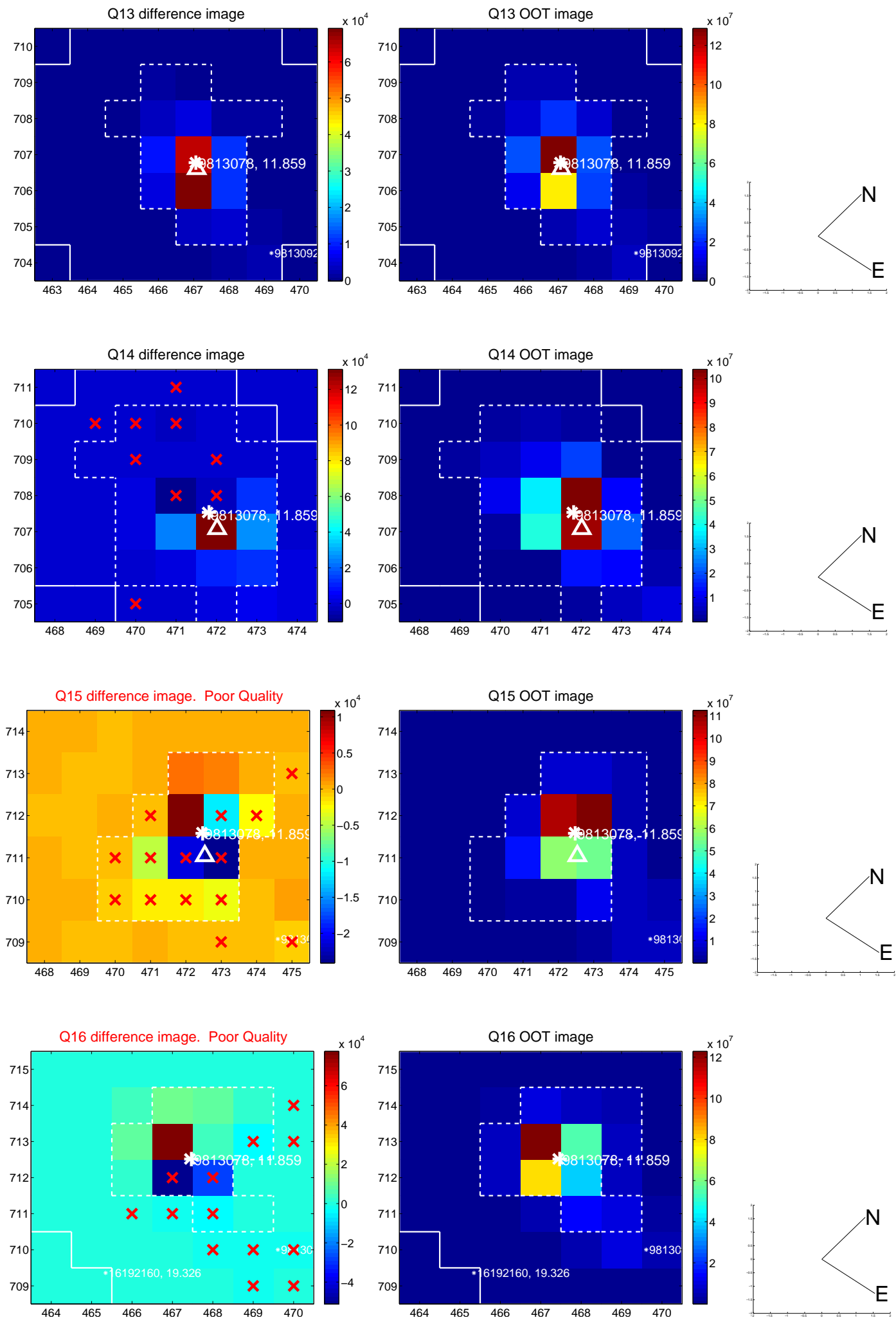




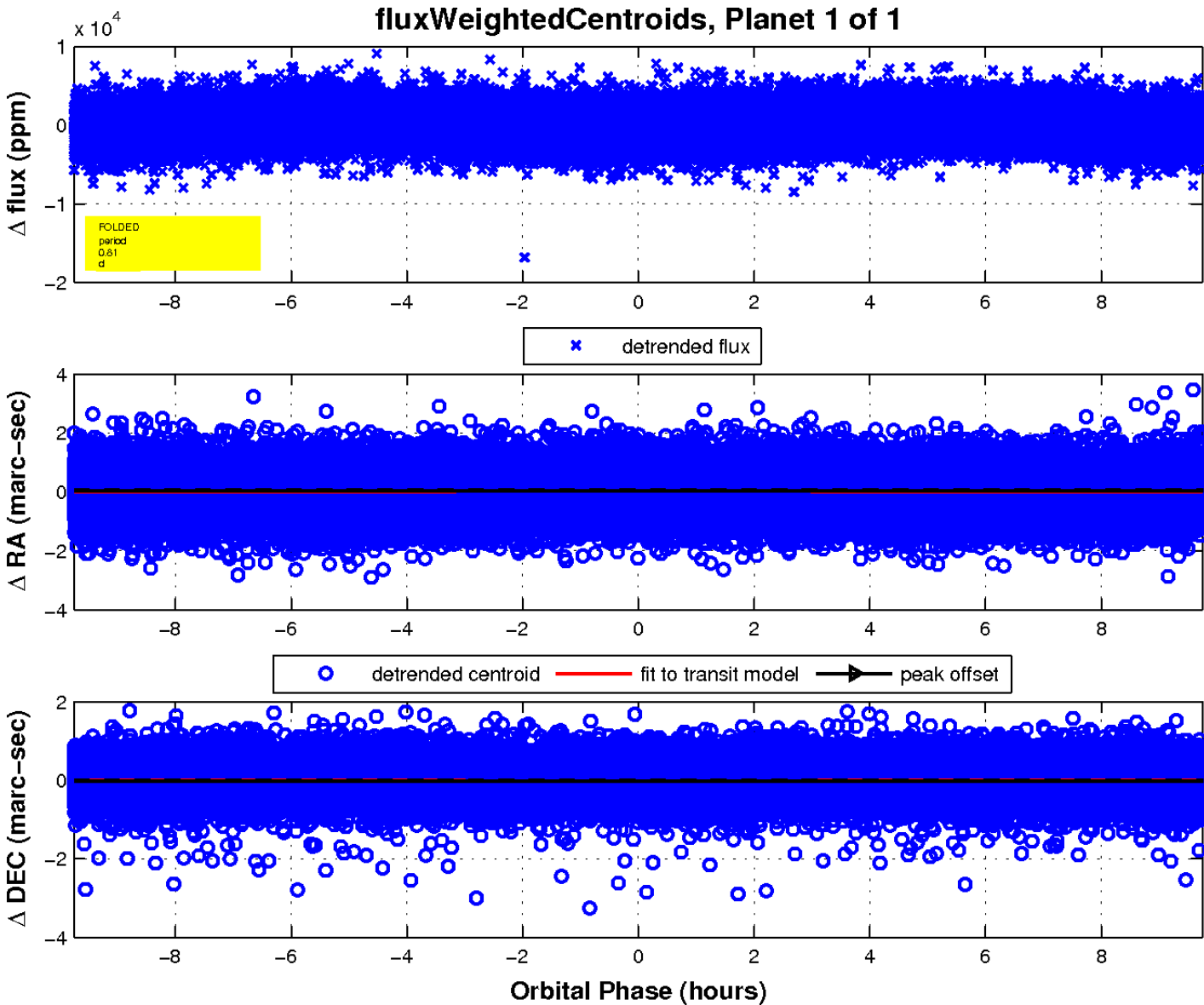
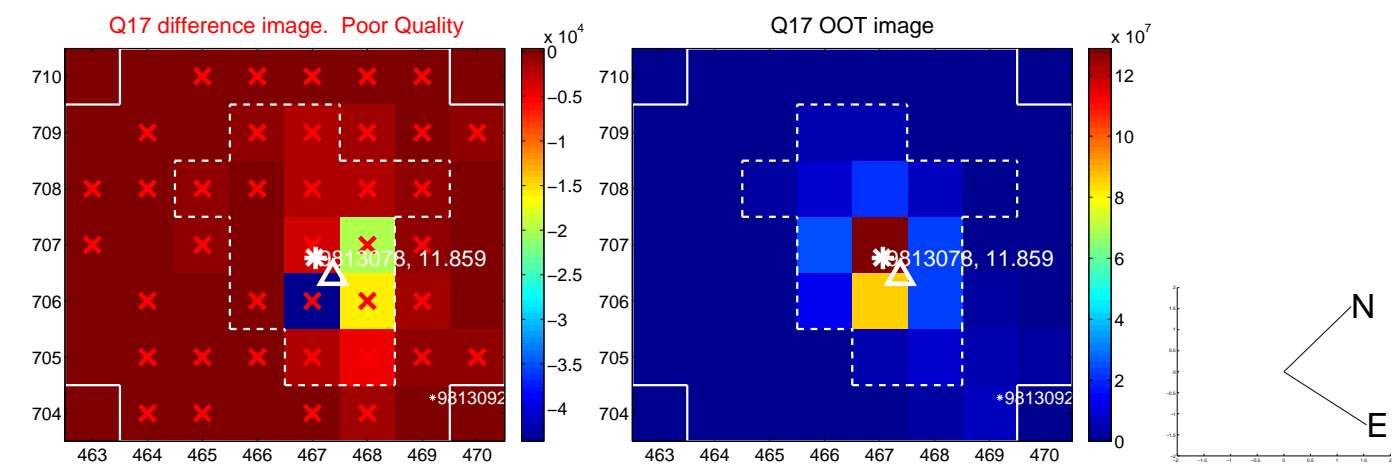
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

