

# KIC 009083503

## 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> )
009083503-01	OBS	7128.01	0.918379	131.633811	107.8	4.097	10.1	10.9	0.80	5222	0.80	1394.62

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009083503-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_FEW_DIFFS—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 009083503-01

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>
009083503-01	9083503	009083523-pri	9083523	1:1	74.9	-13	13	12.71	15.91	4145.40	Direct-PRF	0	4.37	3.51

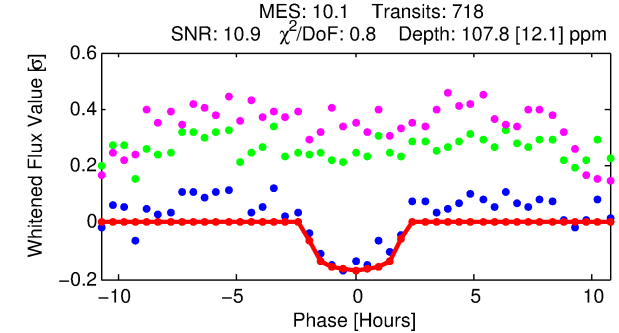
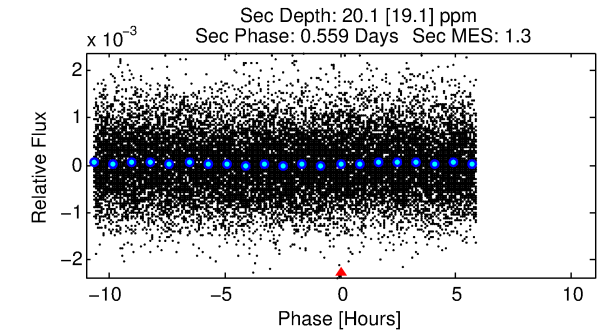
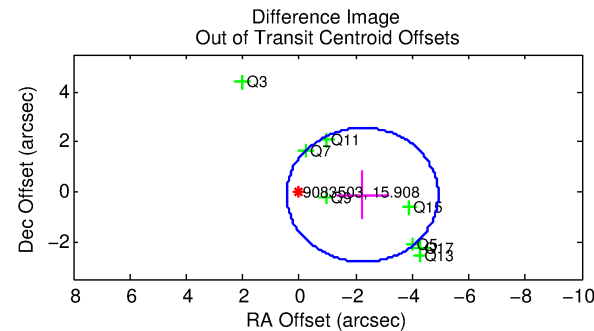
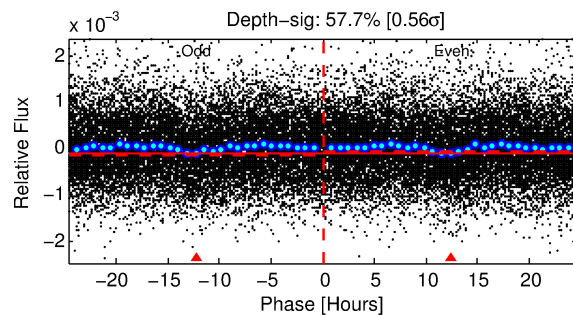
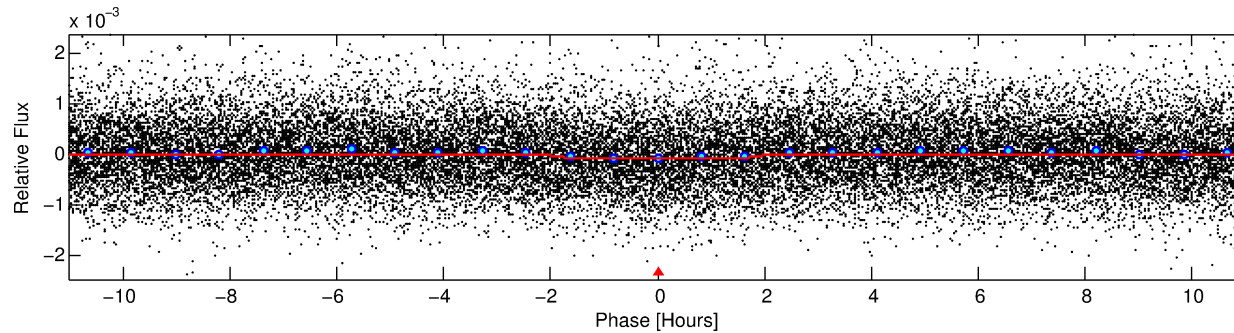
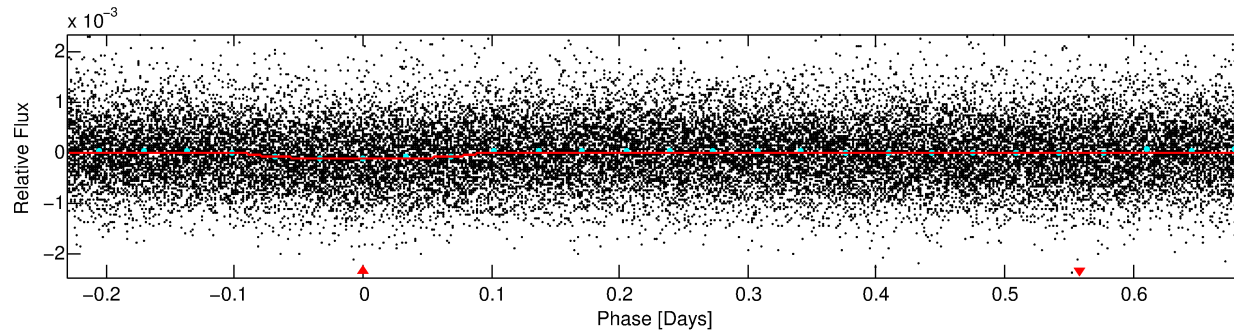
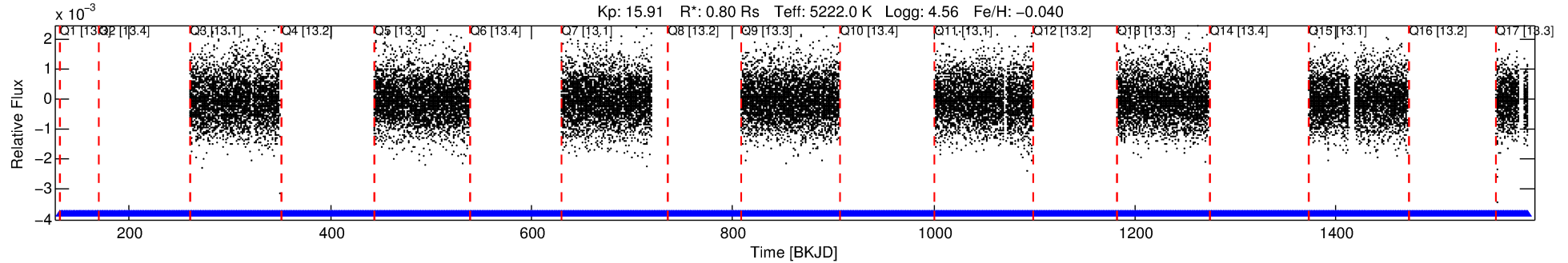
**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided 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: 9083503 Candidate: 1 of 1 Period: 0.918 d

KOI: K07128.01 Corr: 0.925

Kp: 15.91 R\*: 0.80 Rs Teff: 5222.0 K Logg: 4.56 Fe/H: -0.040



## DV Fit Results:

Period = 0.91838 [0.00001] d  
Epoch = 131.6338 [0.0049] BKJD  
Rp/R\* = 0.0093 [0.0169]  
a/R\* = 1.83 [8.57]  
b = 0.00 [1428.57]  
Seff = 1394.63 [311.36]  
Teq = 1558 [87] K  
Rp = 0.80 [1.47] Re  
a = 0.0174 [0.0022] AU  
Ag = 5.16 [19.44] [0.21σ]  
Teffp = 3631 [3420] K [0.61σ]

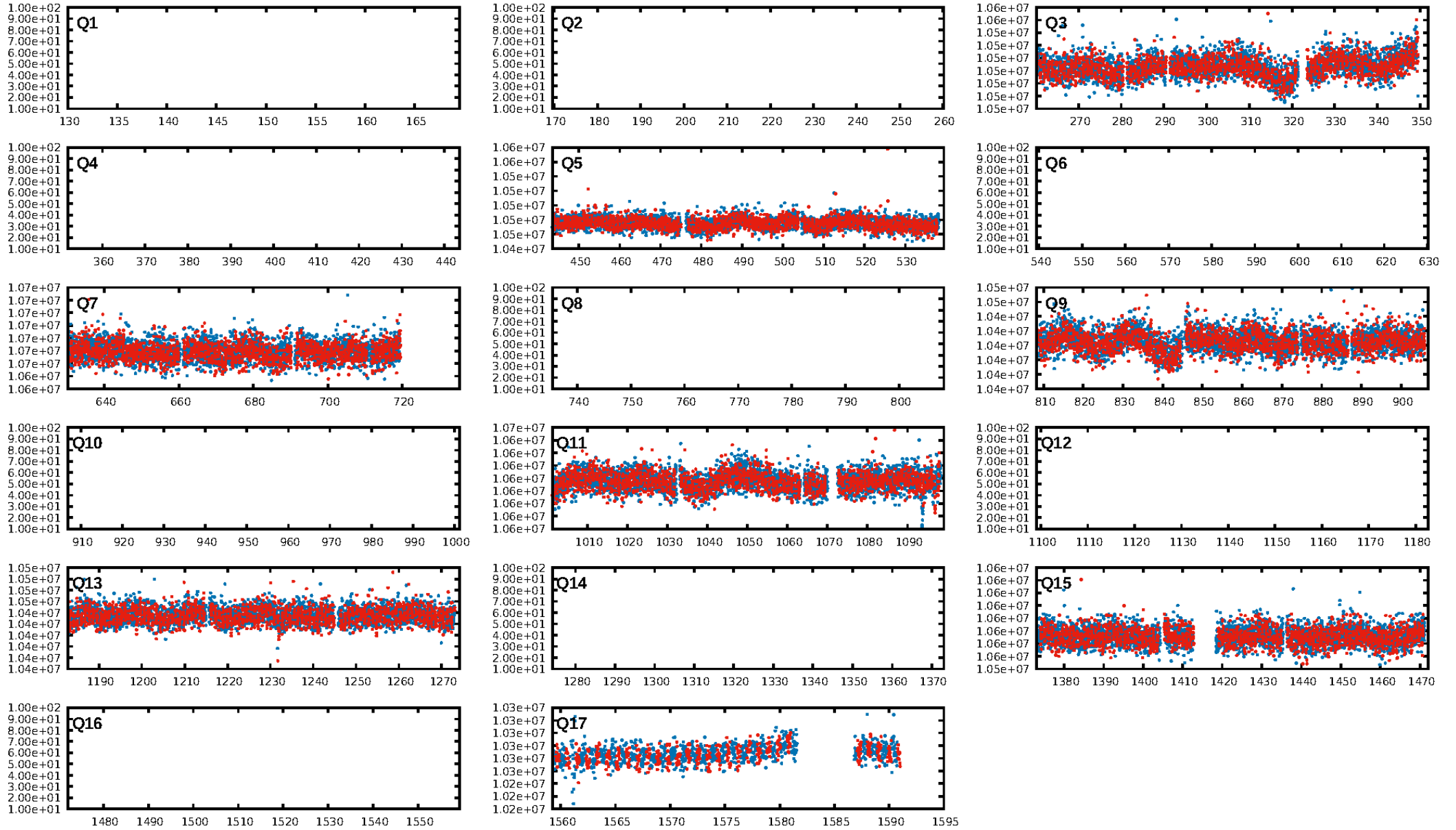
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.03e-22  
RollingBand-fgt: 1.00 [689/689]  
**GhostDiagnostic-chr: 0.3408**  
Centroid-sig: 0.0%  
Centroid-so: 3.543 arcsec [3.00σ]  
OotOffset-rm: 2.242 arcsec [2.51σ]  
KicOffset-rm: 2.164 arcsec [2.41σ]  
OotOffset-st: 0/4/0/4 [8]  
KicOffset-st: 0/4/0/4 [8]  
DiffImageQuality-fgm: 0.00 [0/8]  
DiffImageOverlap-fno: 1.00 [8/8]

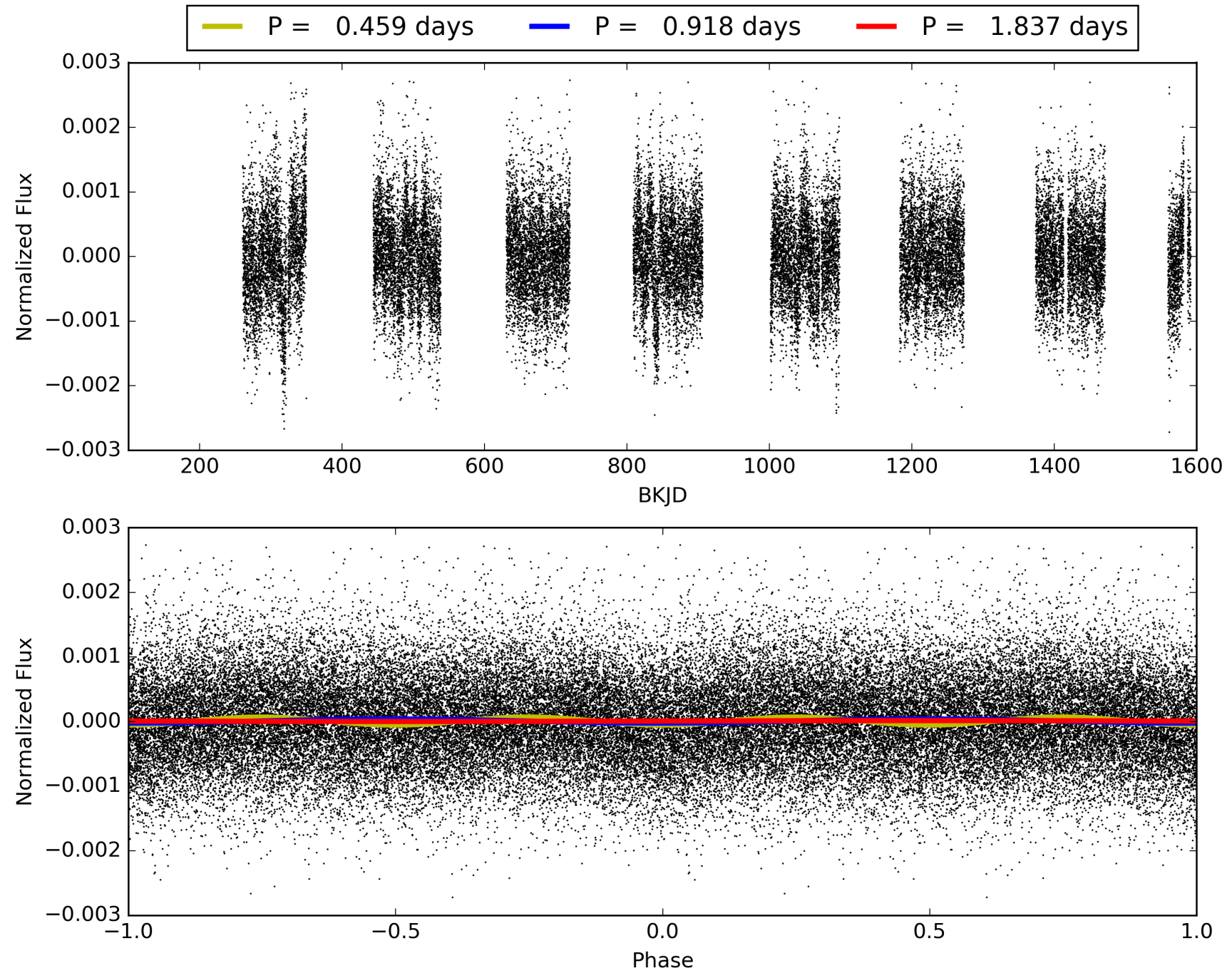
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:41:47 Z

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

# TCE 009083503-01, PDC Light Curves

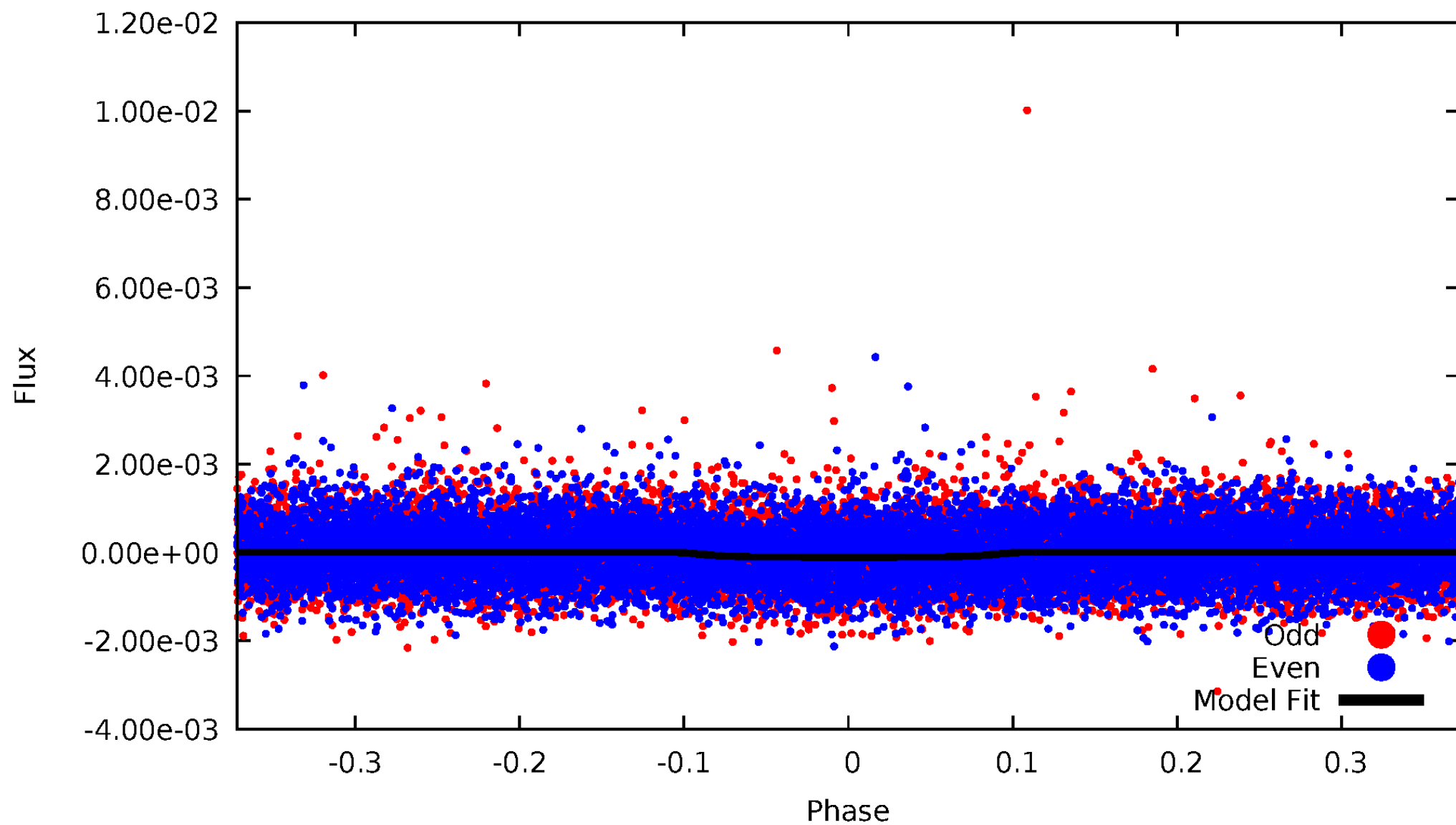


TCE 009083503-01



# DV Odd/Even

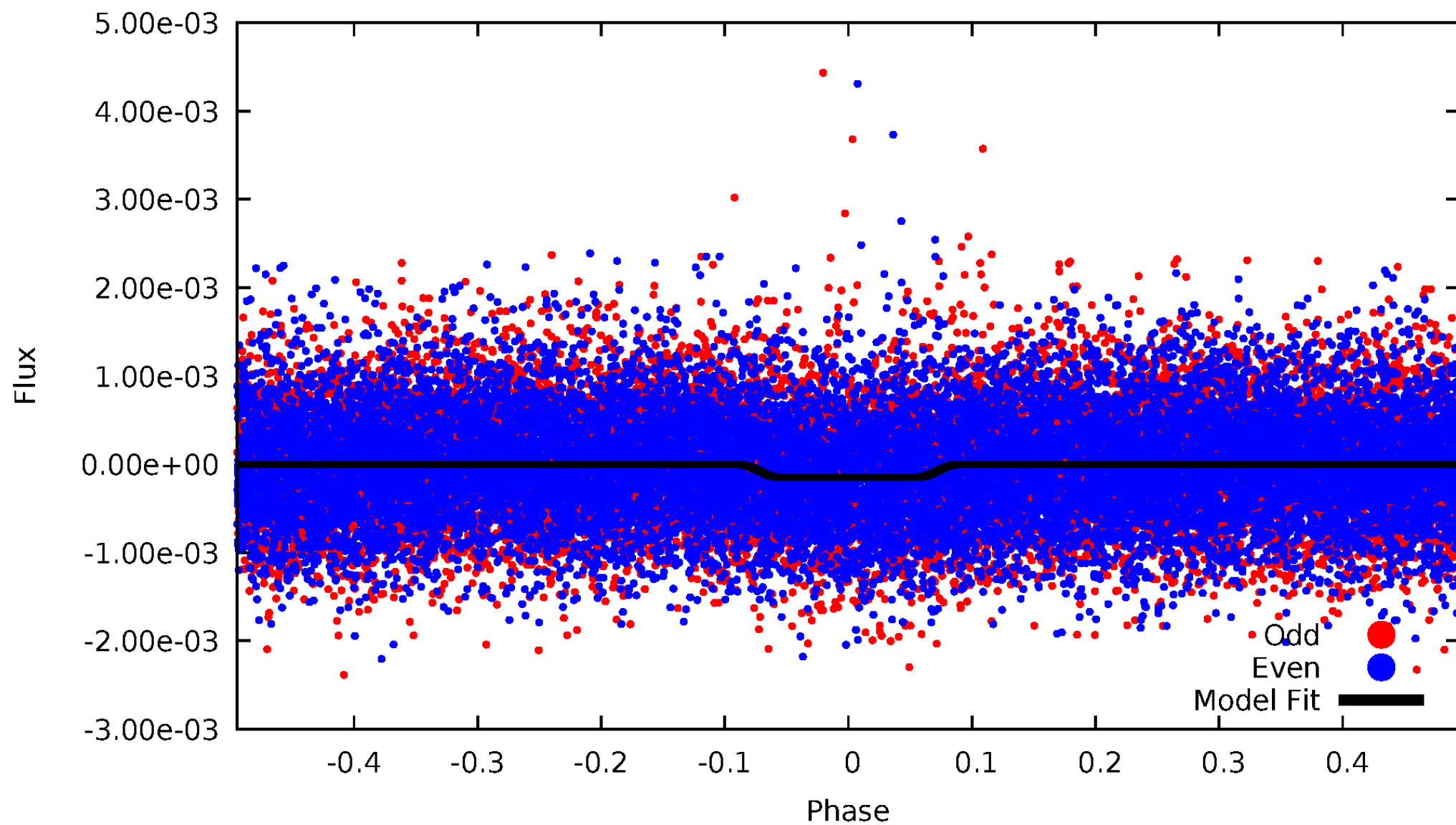
TCE 009083503-01





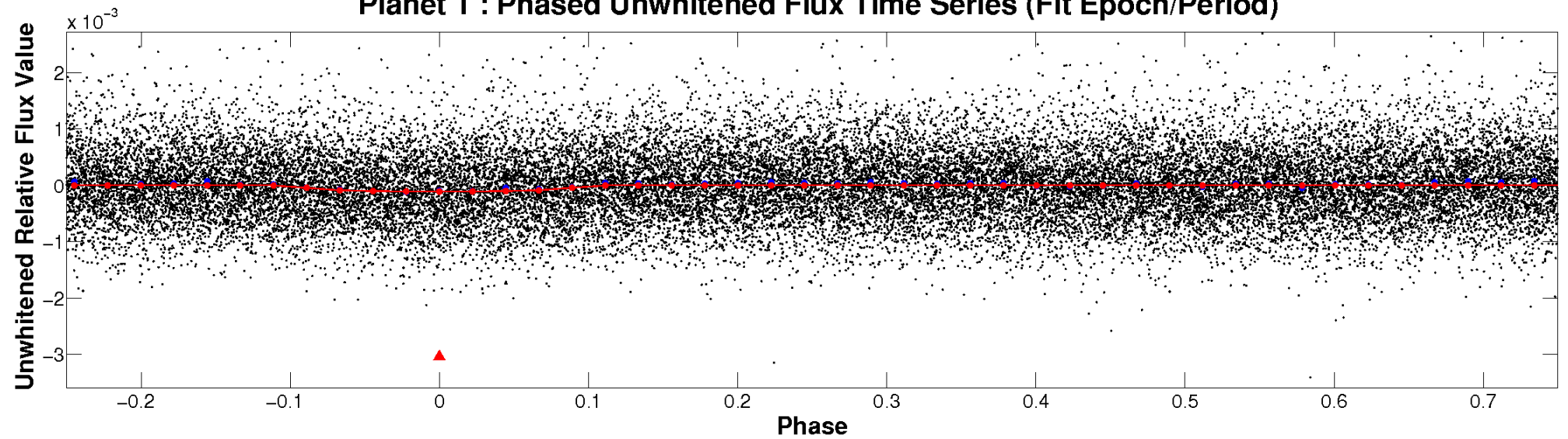
# ALT Odd/Even

TCE 009083503-01

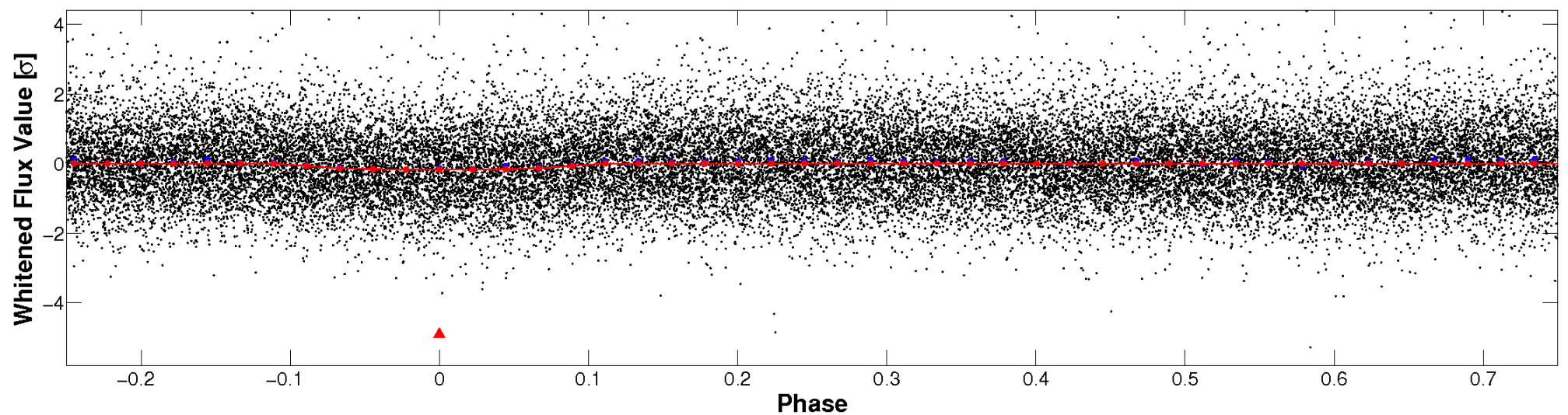


# Non-Whitened Vs. Whitened Light Curve

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

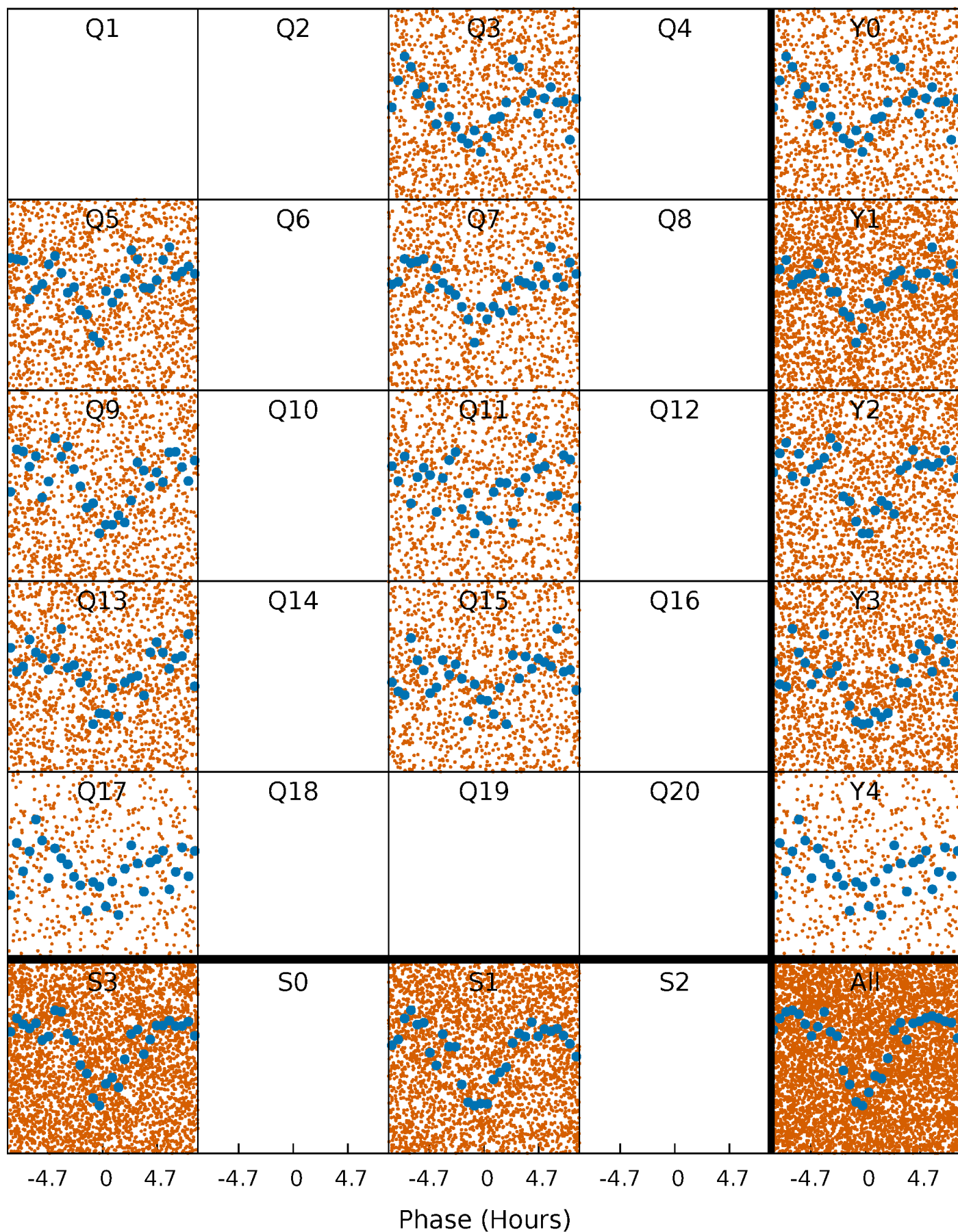


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

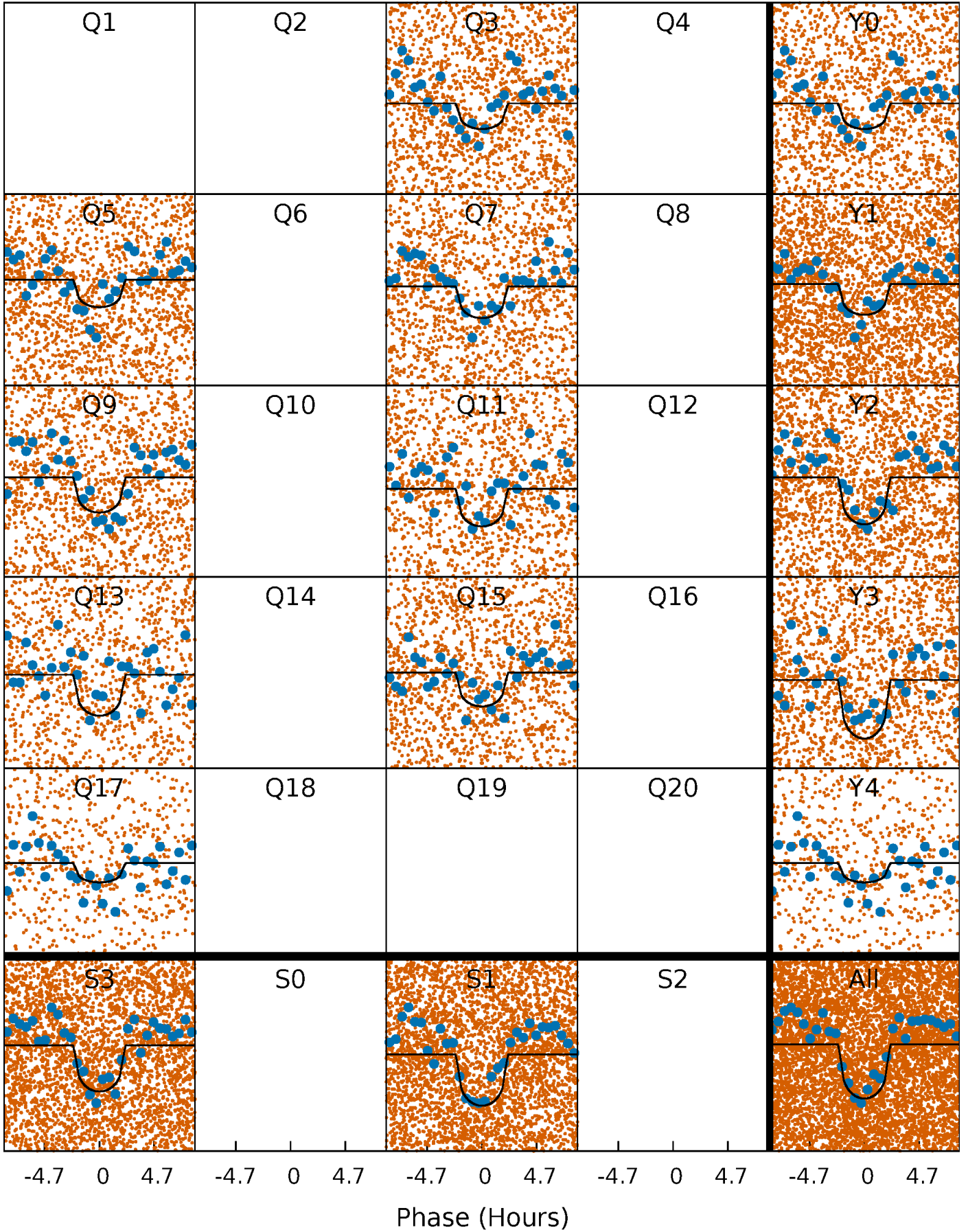
TCE 009083503-01   P= 0.918379 Days    $T_0=131.633811$  (BKJD)





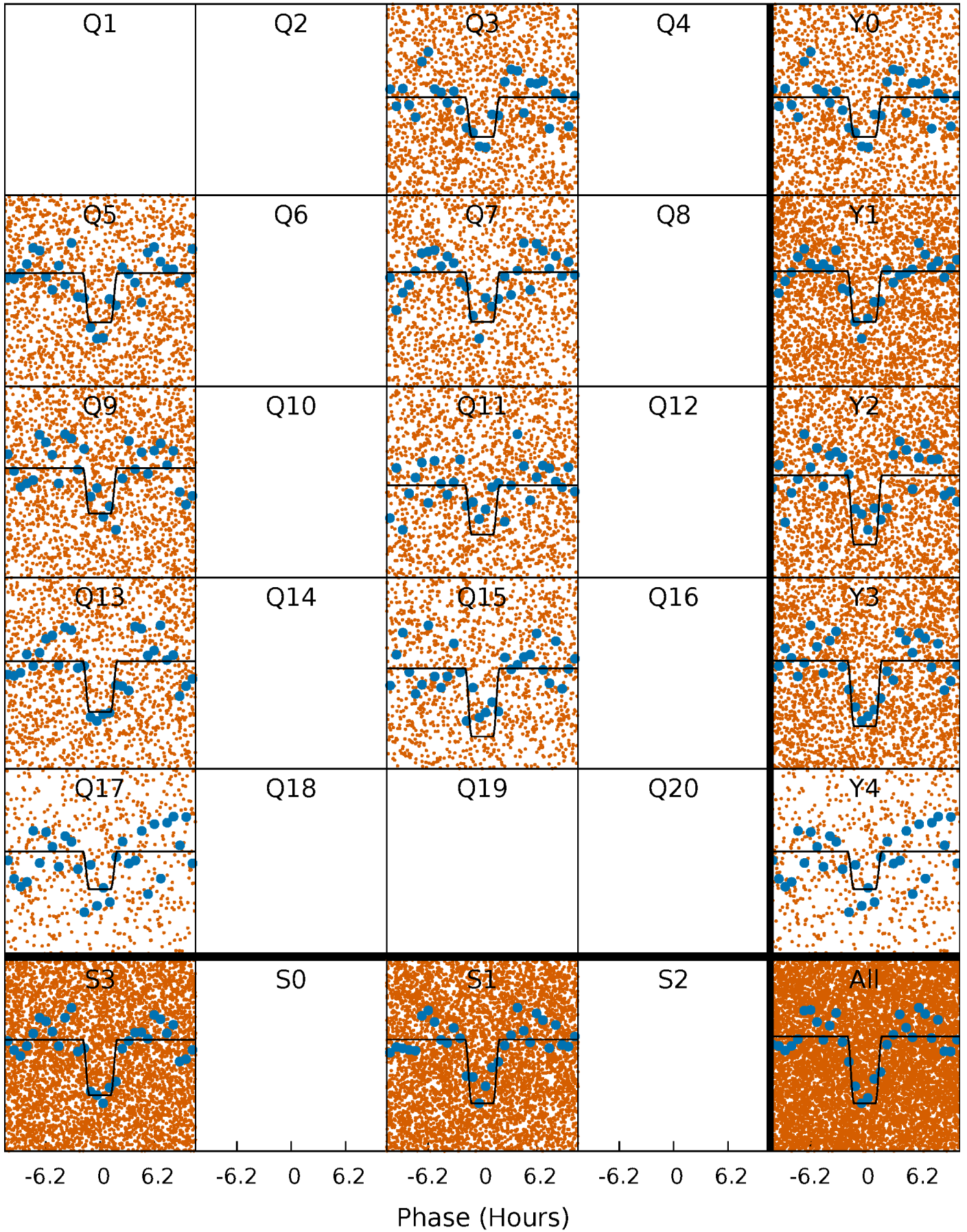
# DV Quarter-Phased Transit Curves

TCE 009083503-01   P= 0.918379 Days    $T_0=131.633811$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

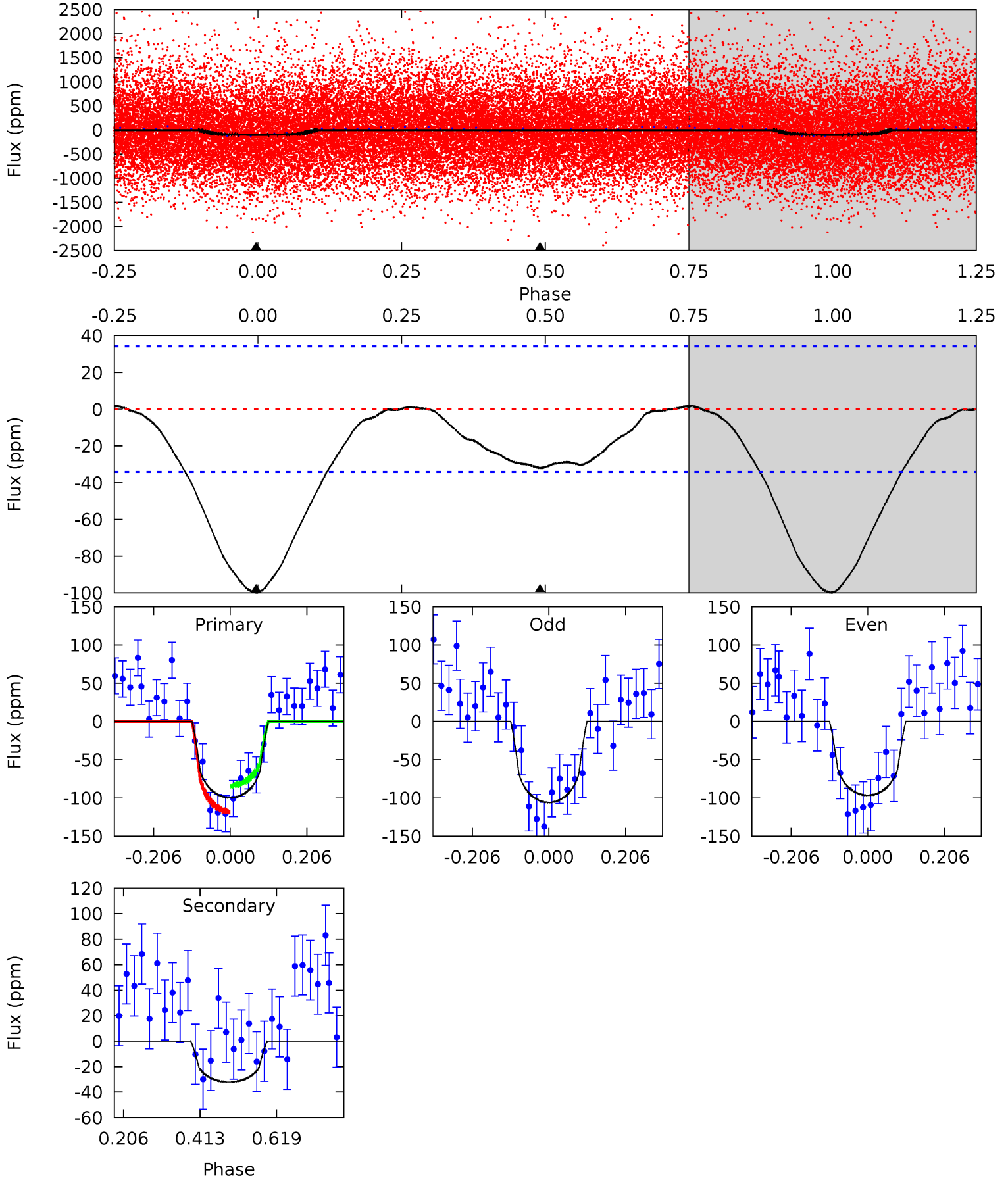
TCE 009083503-01 P= 0.918404 Days  $T_0=131.607677$  (BKJD)



# DV Model-Shift Uniqueness Test

009083503-01, P = 0.918379 Days, E = 131.633811 Days

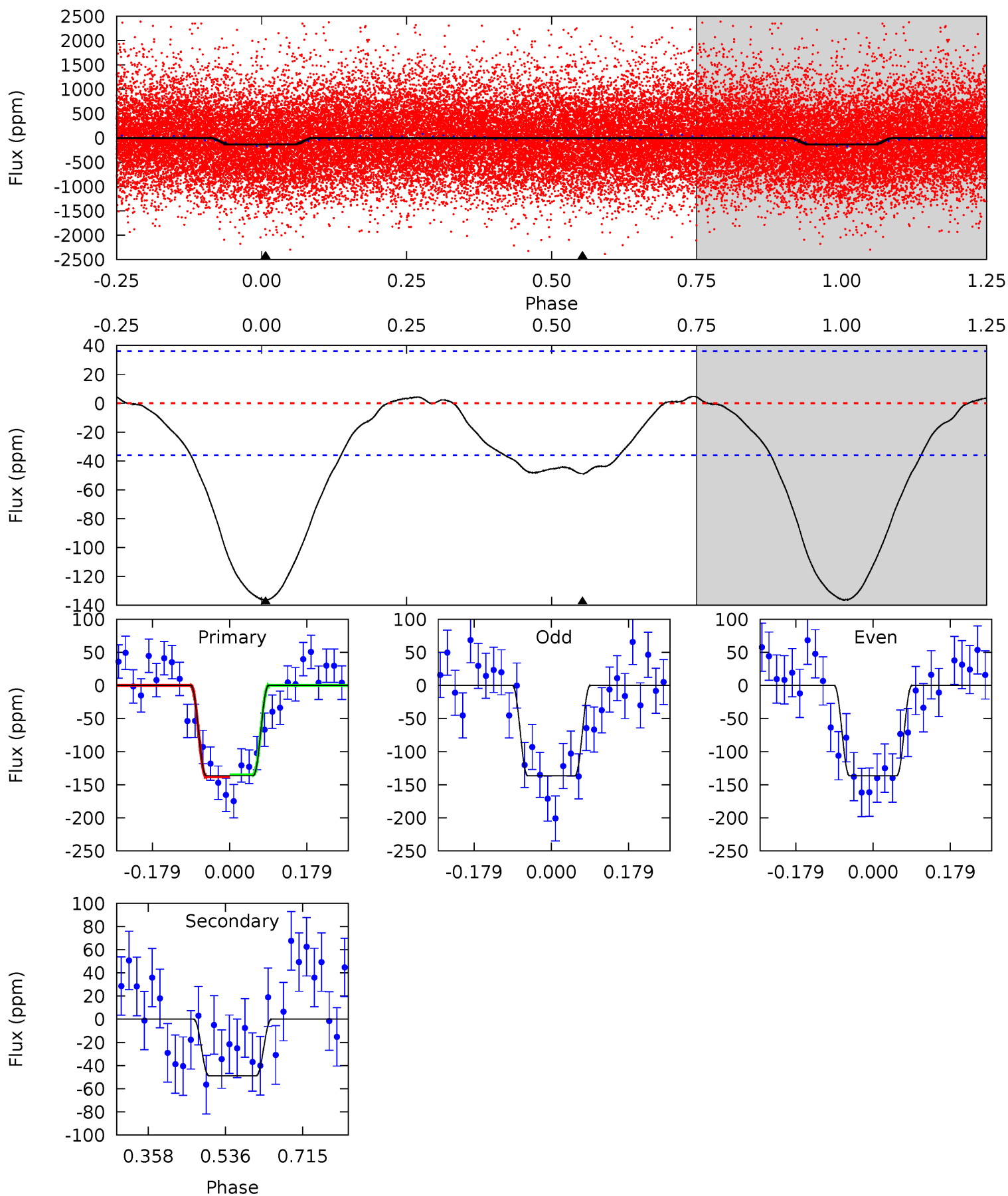
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	4.15	0	0	4.41	1.26	0.15	12.9	12.9	4.15	4.15	0.61	0.84	0.02	2.21



# Alt Model-Shift Uniqueness Test

009083503-01, P = 0.918404 Days, E = 131.607677 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
16.8	6.02	0	0	4.44	1.34	0.76	16.8	16.8	6.02	6.02	0.01	0.96	0.03	0.20





### Stellar Parameters For KIC 009083503

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5222^{+184}_{-184}$	$4.556^{+0.049}_{-0.091}$	$-0.040^{+0.300}_{-0.300}$	$0.795^{+0.122}_{-0.071}$	$0.828^{+0.086}_{-0.078}$	$2.325^{+0.497}_{-0.657}$
	+4%/-4%	+1%/-2%	+750%/-750%	+15%/-9%	+10%/-9%	+21%/-28%
Source	KIC0	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 009083503-01 / KOI 7128.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-32 \pm 8$	$1.27^{+1.26}_{-0.85}$	$2194^{+109}_{-97}$	$3539^{+2072}_{-761}$	$2.967^{+25.285}_{-2.178}$
Alt.	$-49 \pm 8$	$1.58^{+1.25}_{-1.02}$	$2193^{+101}_{-93}$	$3638^{+1833}_{-721}$	$3.247^{+22.652}_{-2.233}$

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



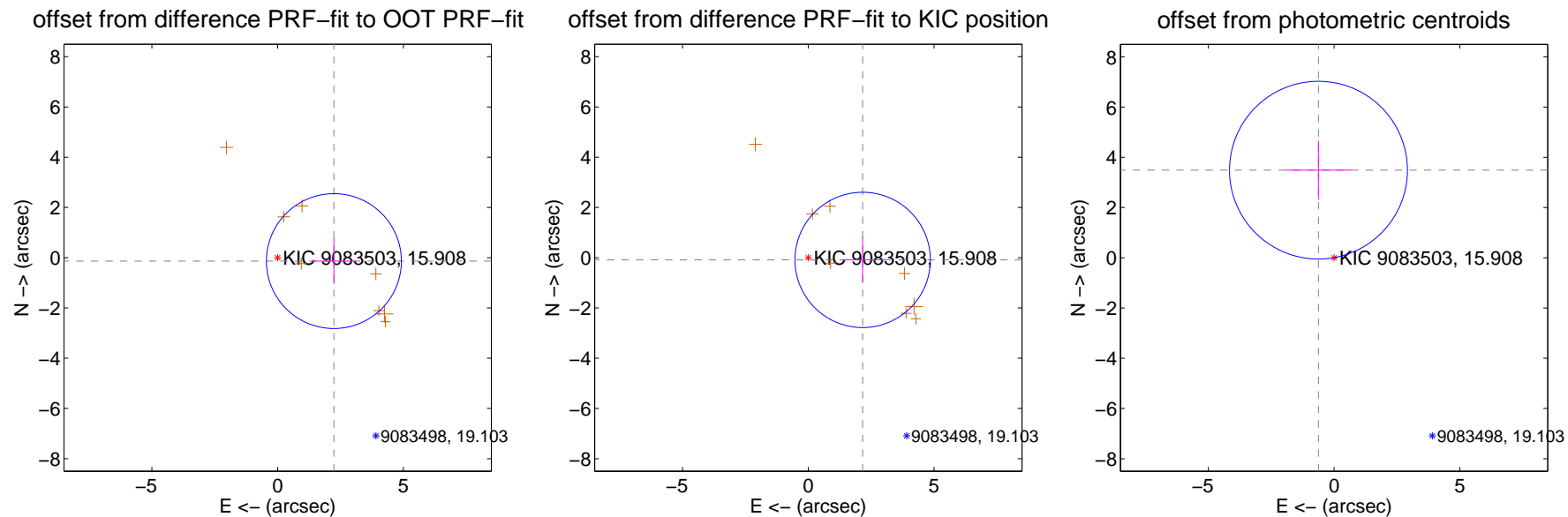
## DV Centroid Data

Supplemental centroid analysis for 009083503-01. Kepler magnitude: 15.91. Transit SNR 10.87

There are 0 quarters with good PRF difference image offsets

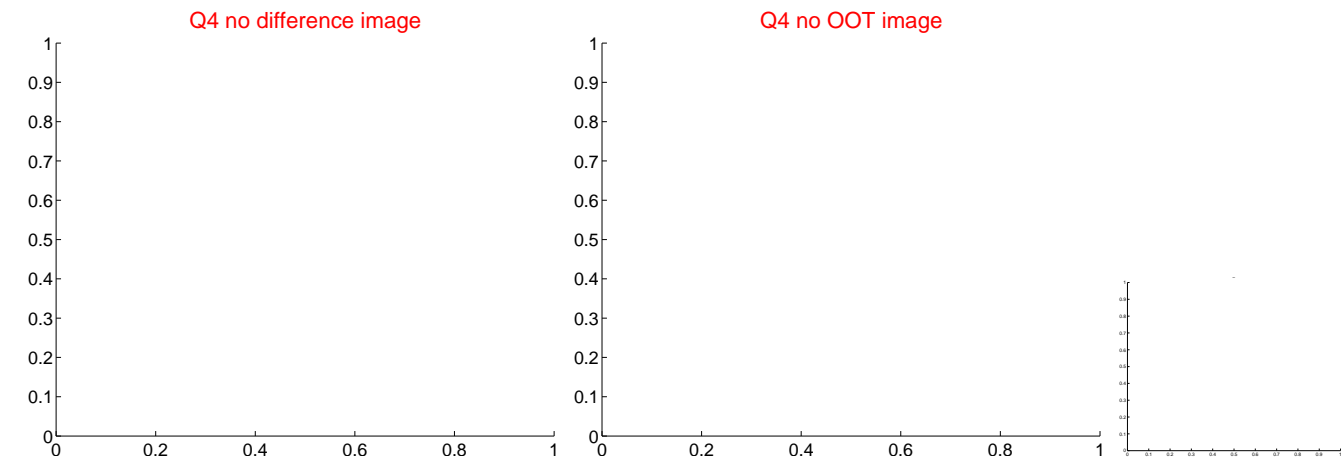
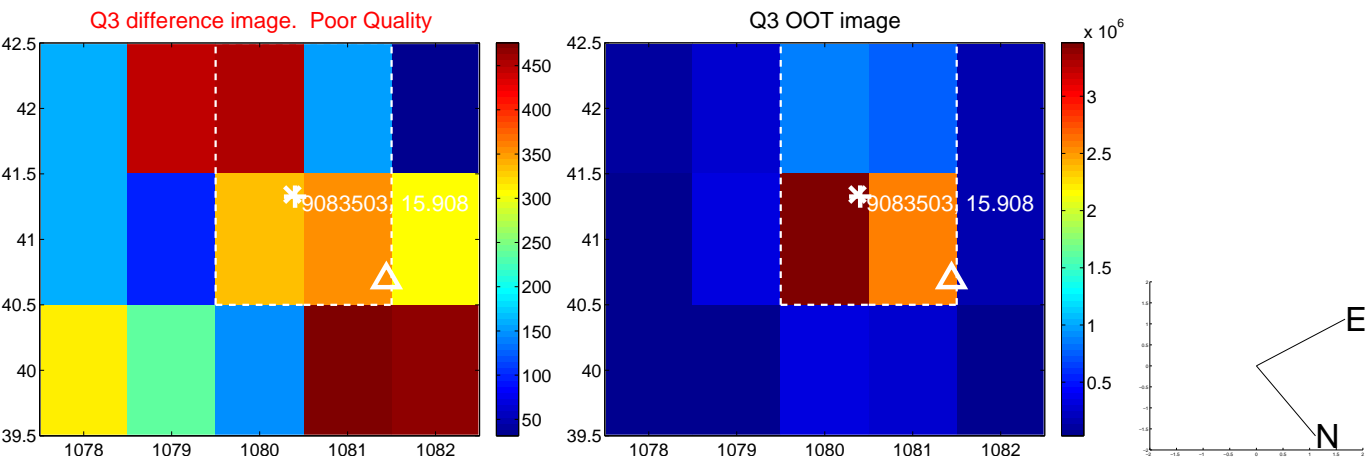
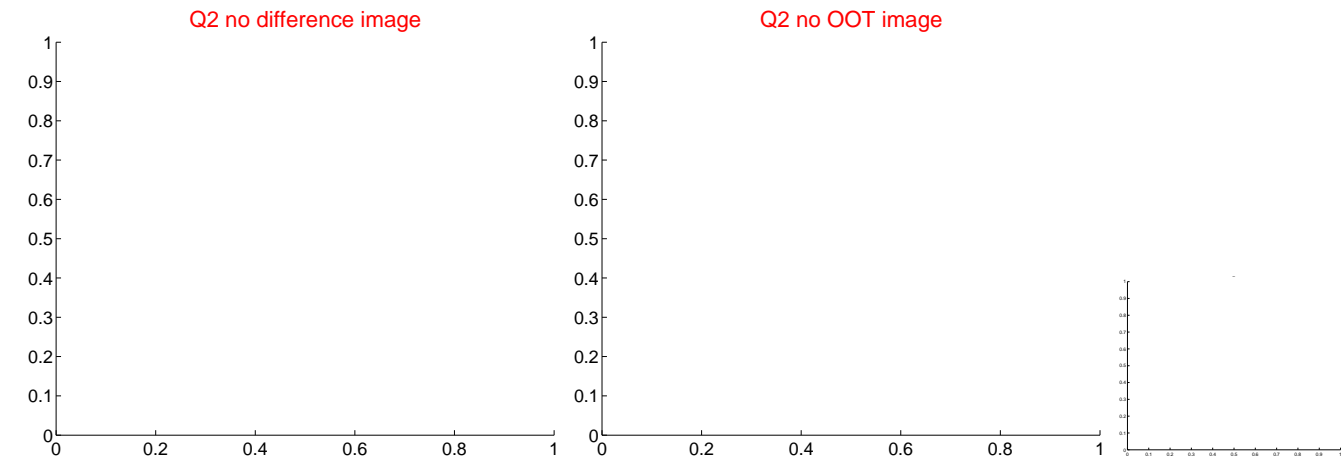
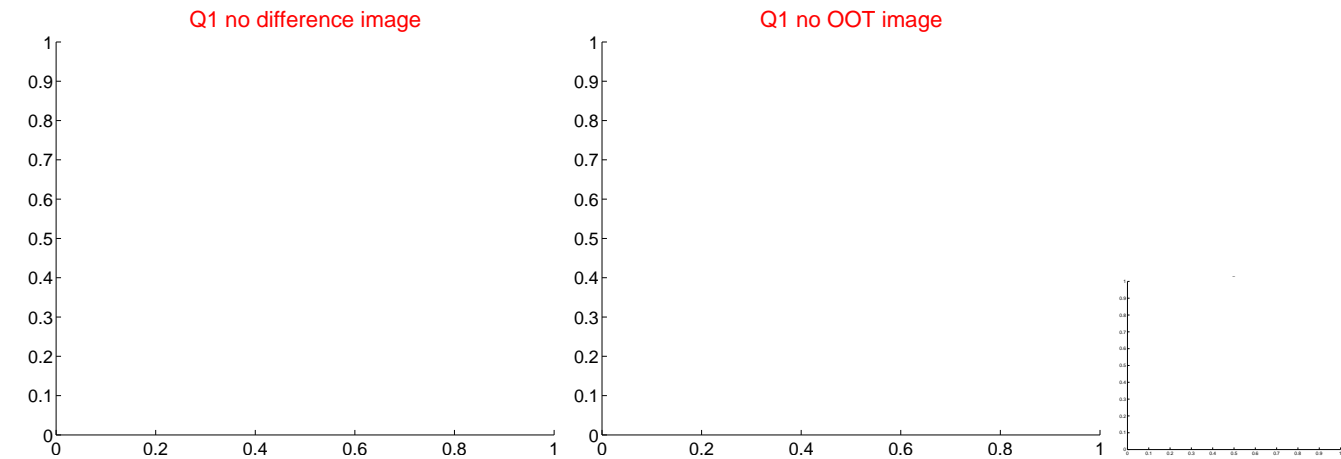
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.242 \pm 0.895$	2.51	$-2.238 \pm 0.895$	$-0.135 \pm 0.911$
PRF-fit source offset from KIC position	$2.164 \pm 0.898$	2.41	$-2.162 \pm 0.898$	$-0.088 \pm 0.917$
photometric centroid source offset	$3.54 \pm 1.18$	3.00	$0.62 \pm 1.32$	$3.49 \pm 1.17$

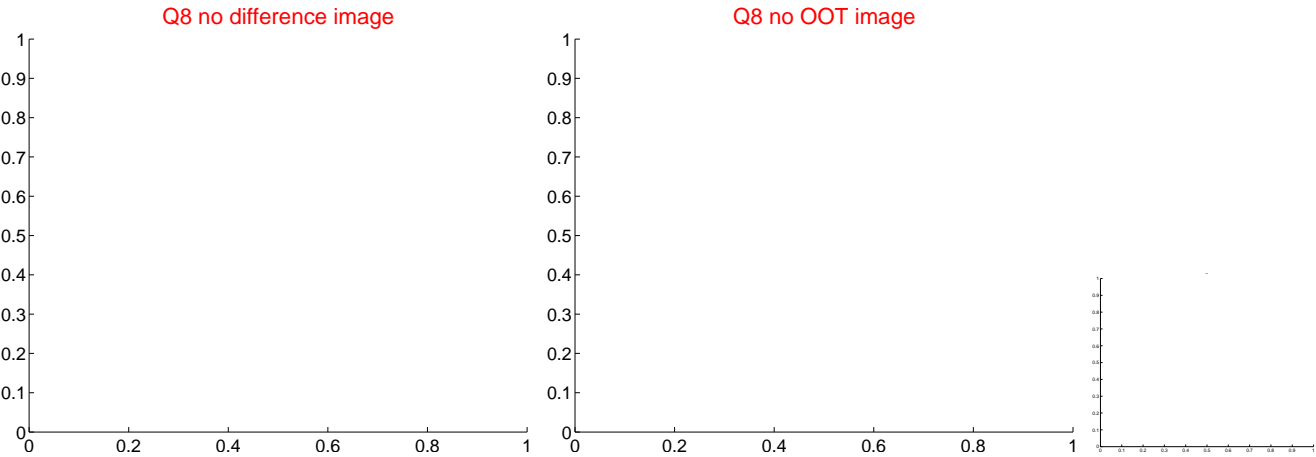
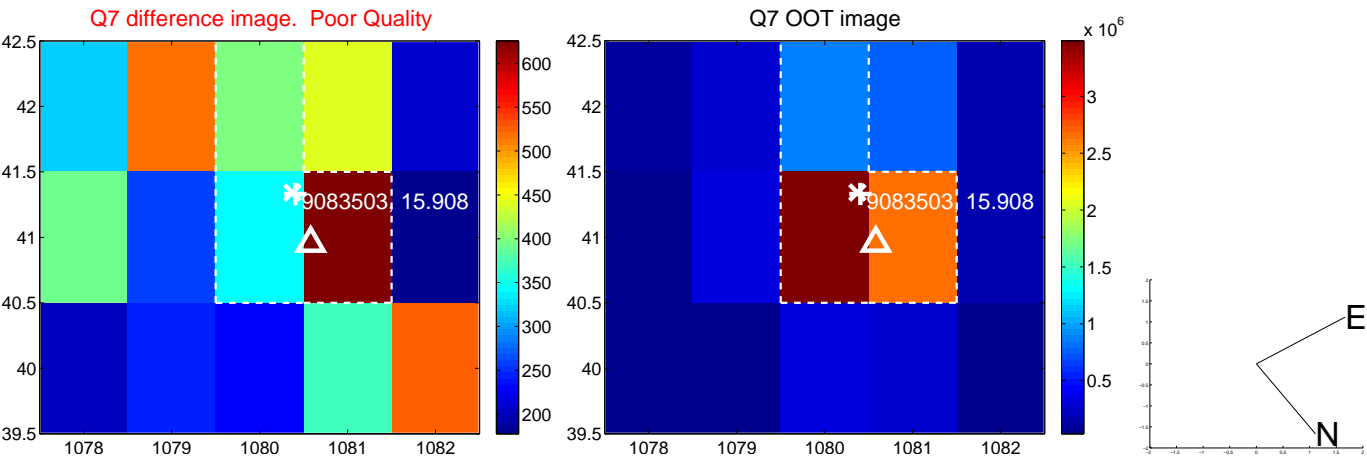
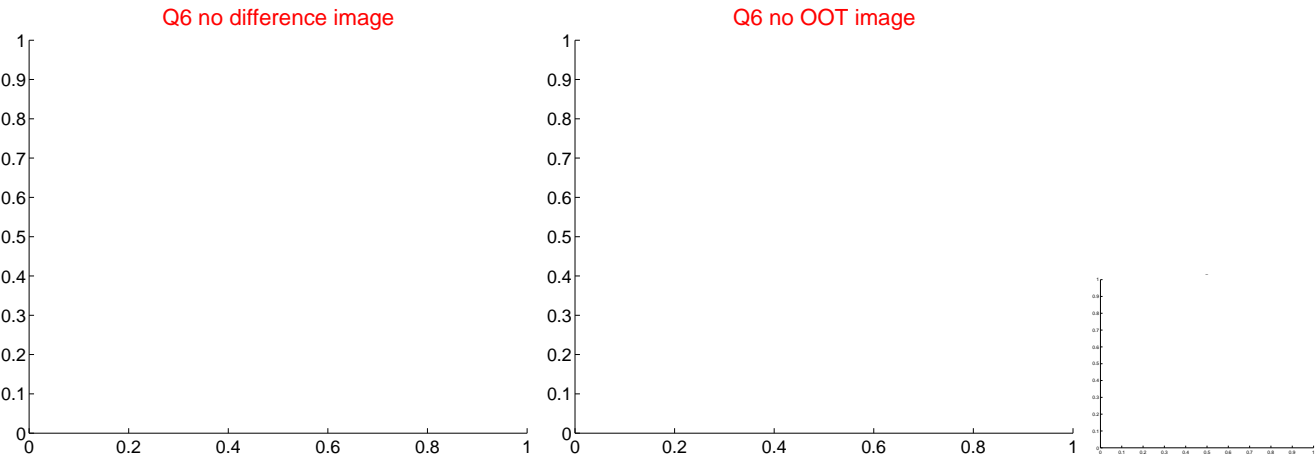
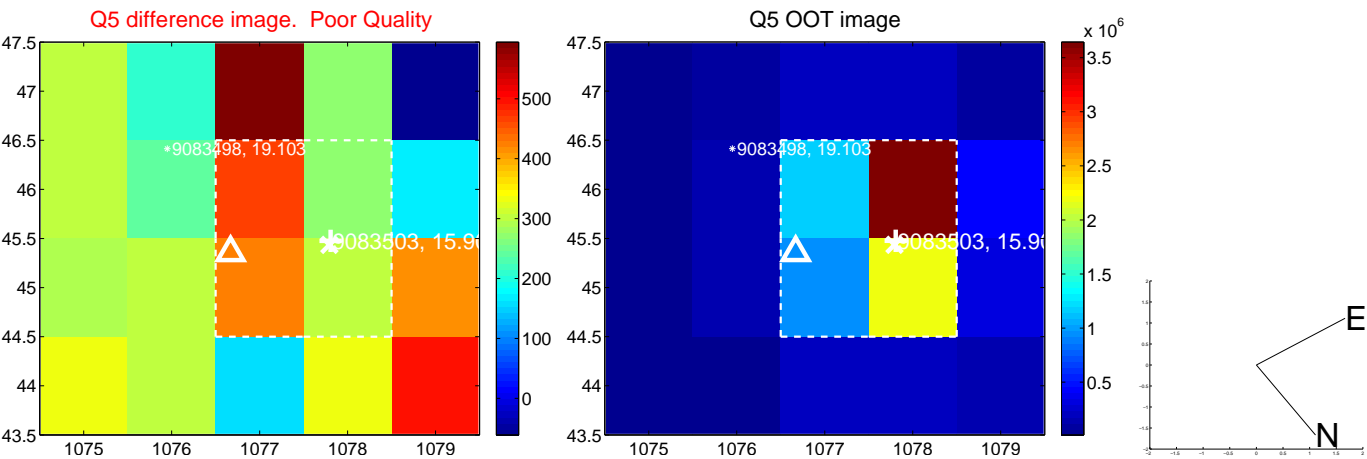


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

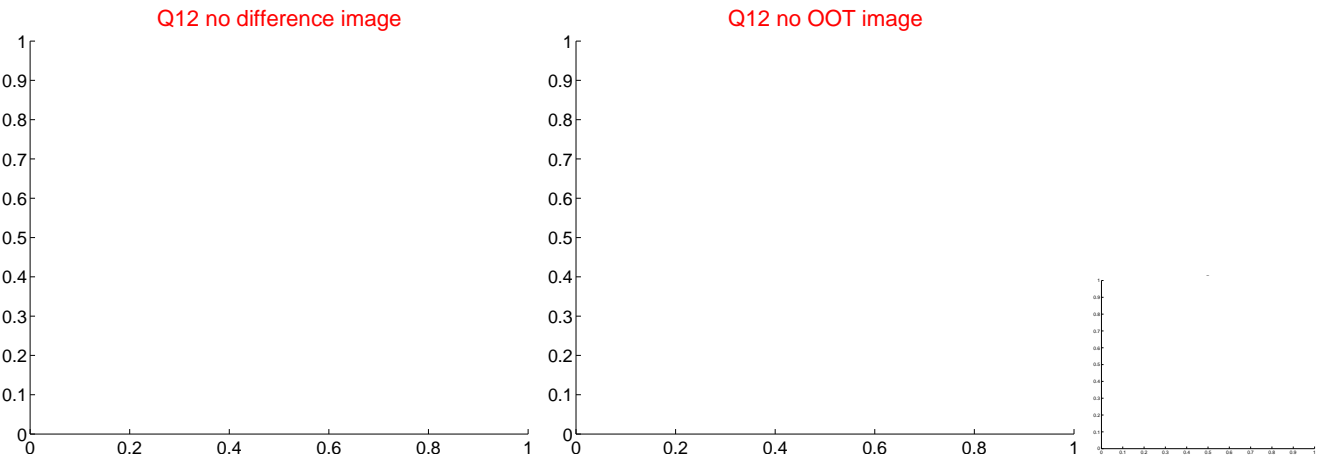
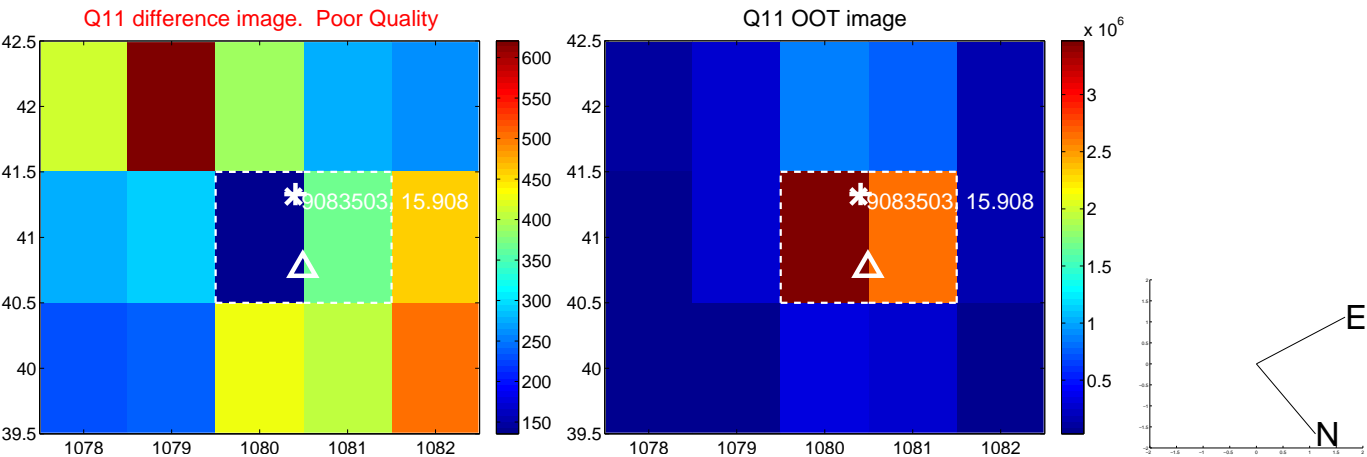
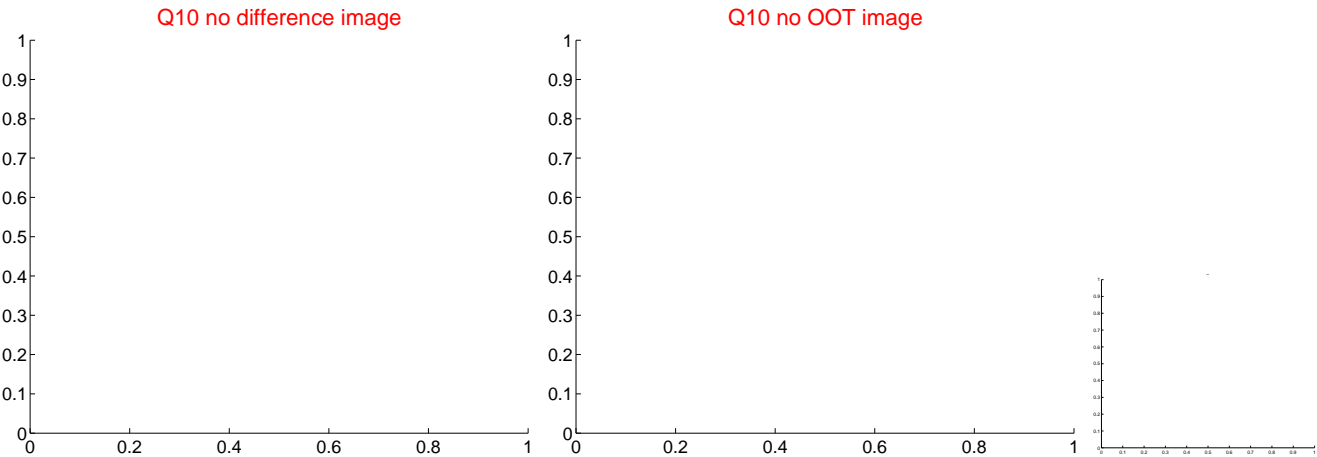
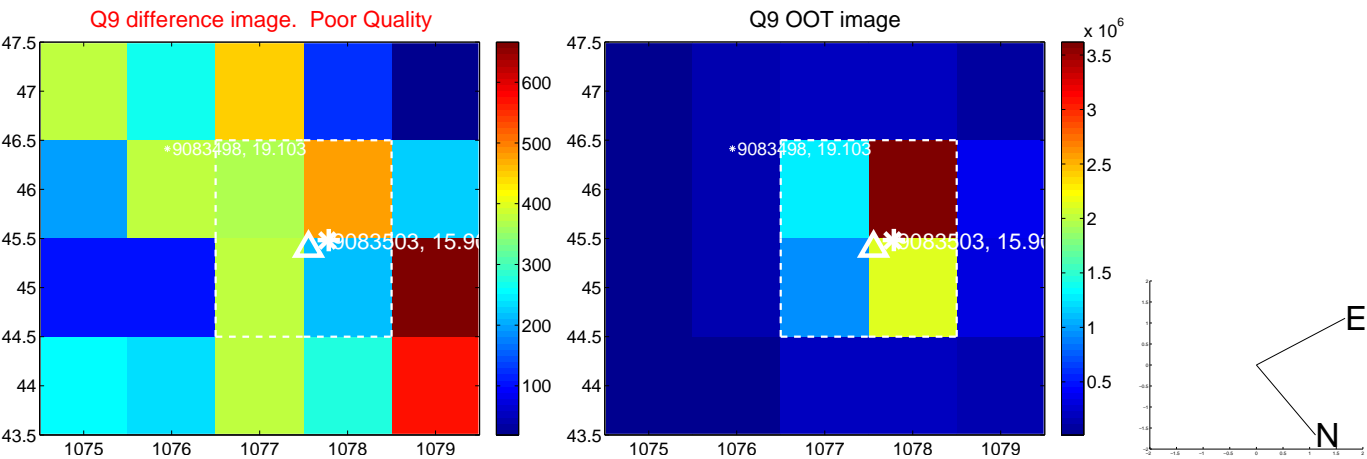
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



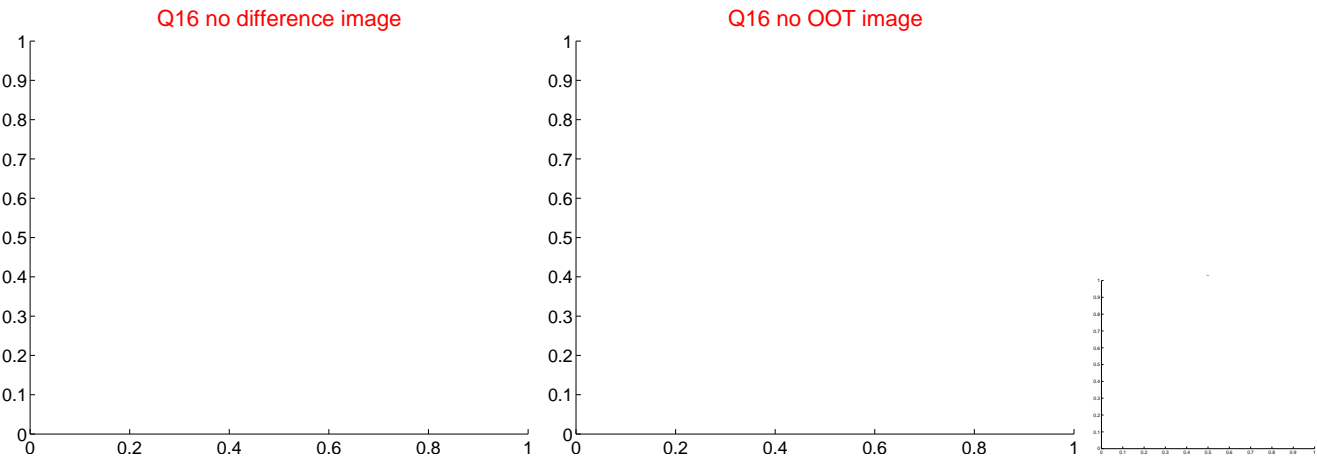
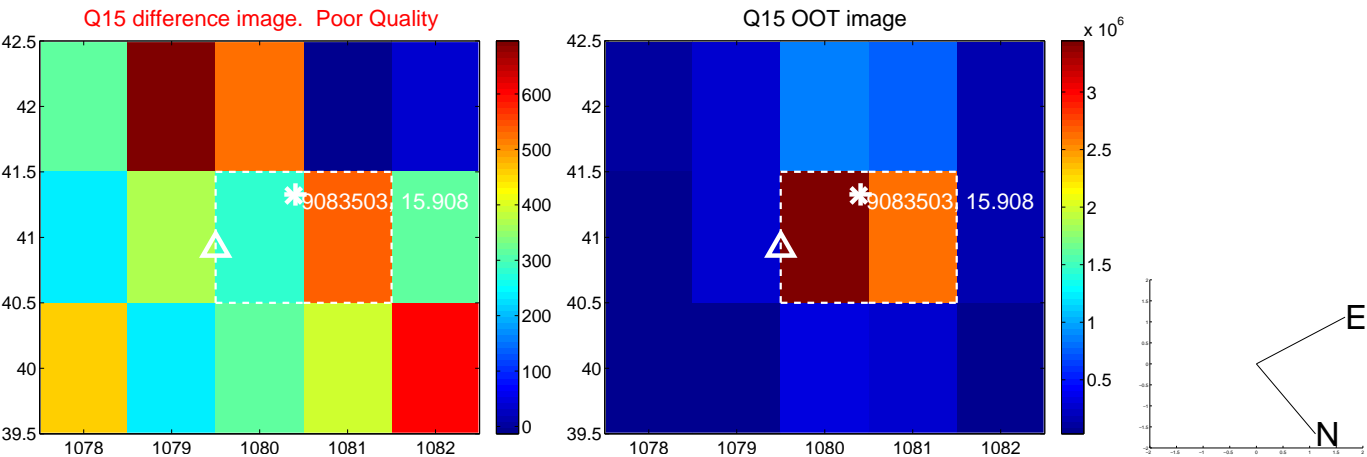
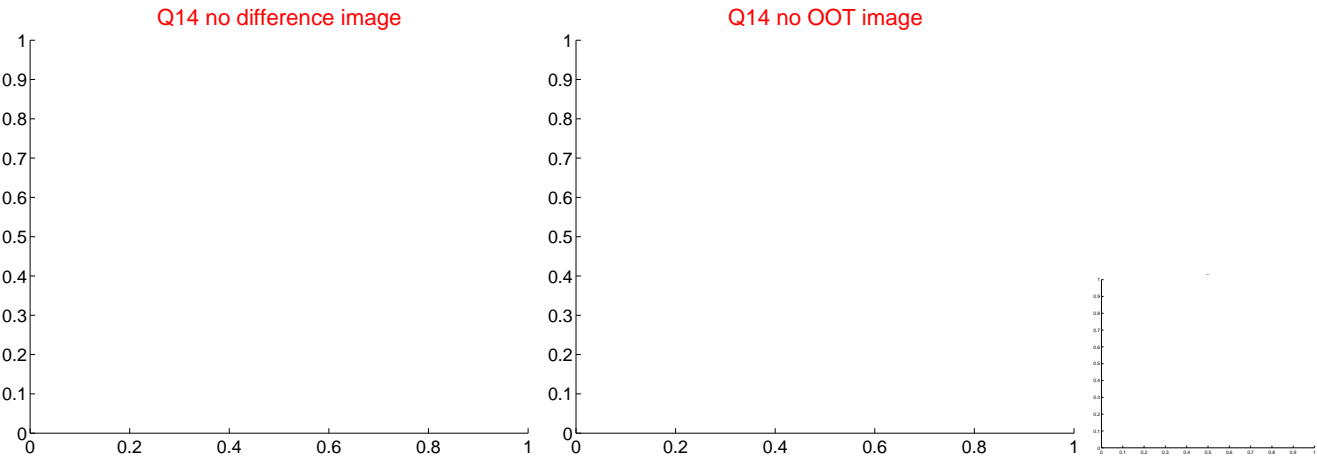
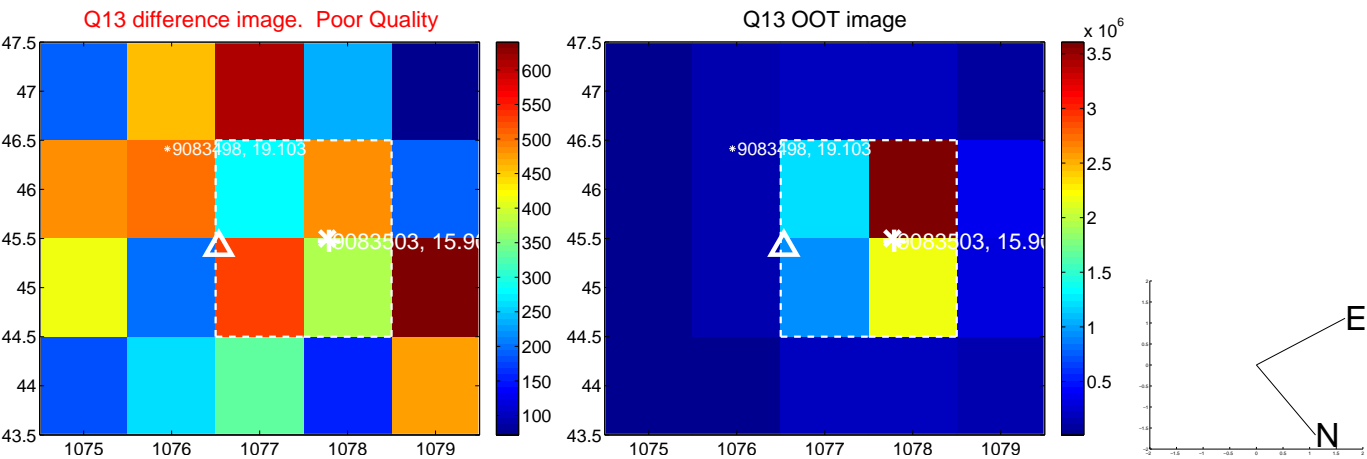
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

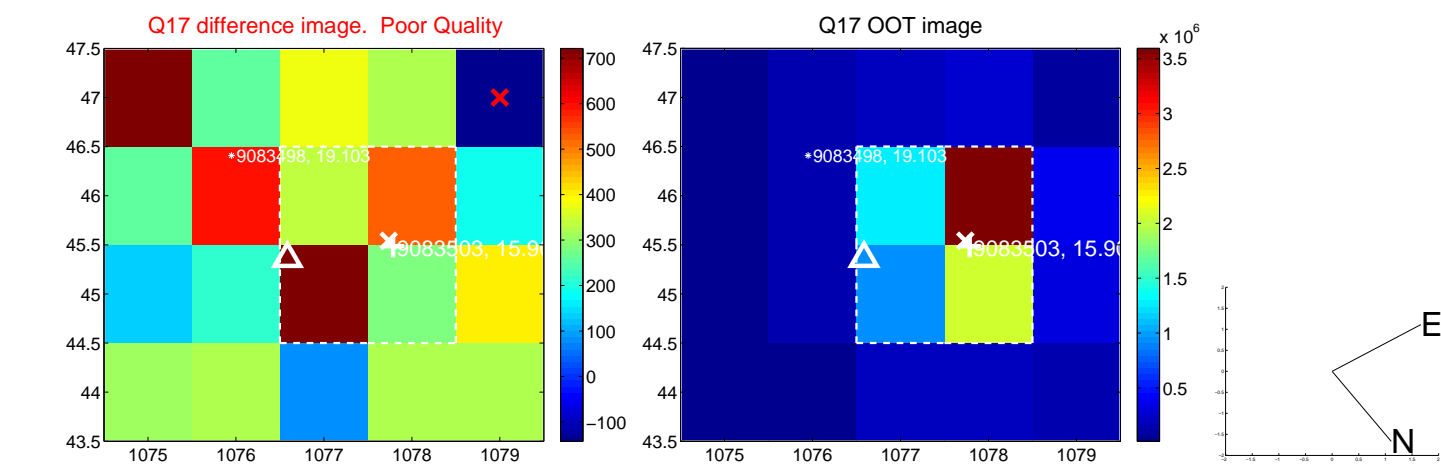


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

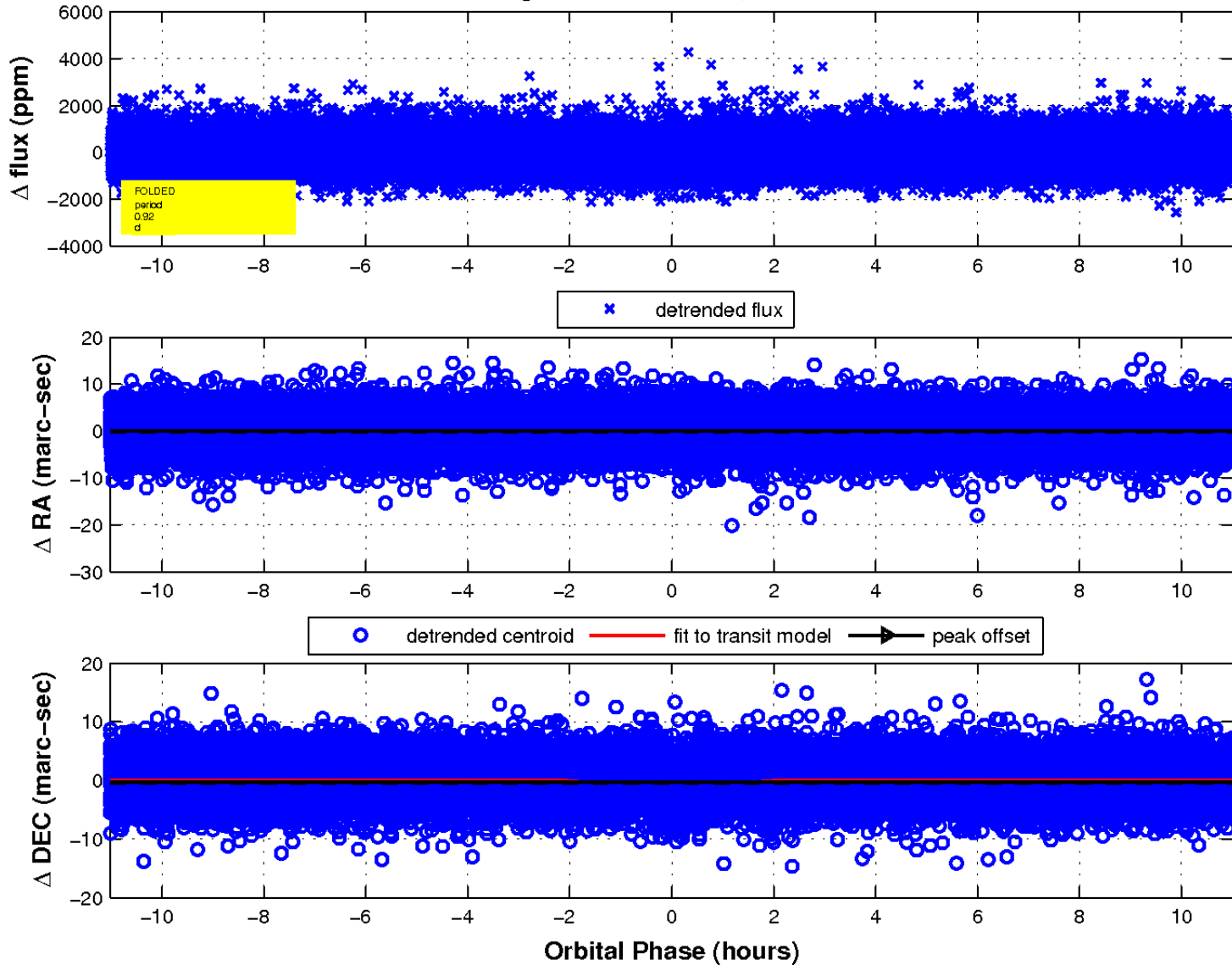




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

