

# KIC 002309579

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002309579-01	OBS	No	1.043673	132.554099	26.8	3.807	9.3	6.7	2.60	7239	1.57	27616.62

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002309579-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

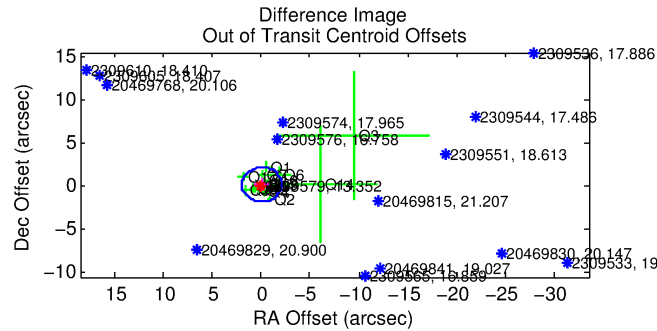
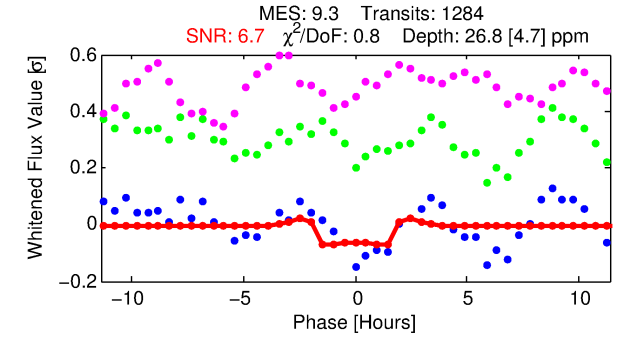
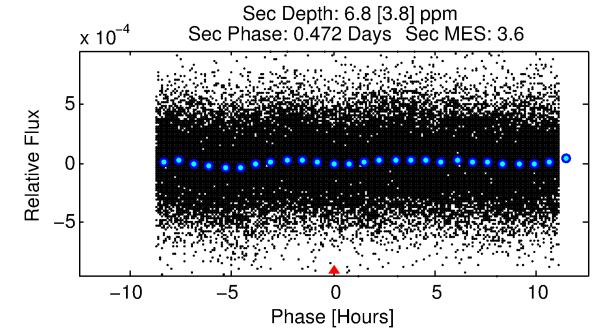
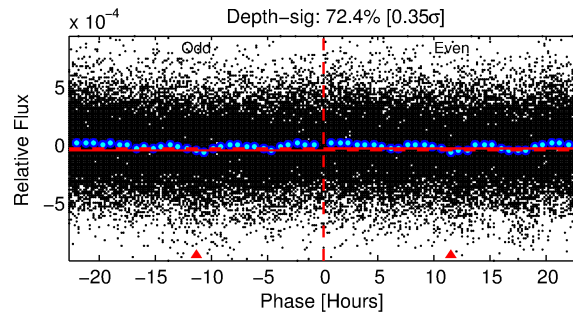
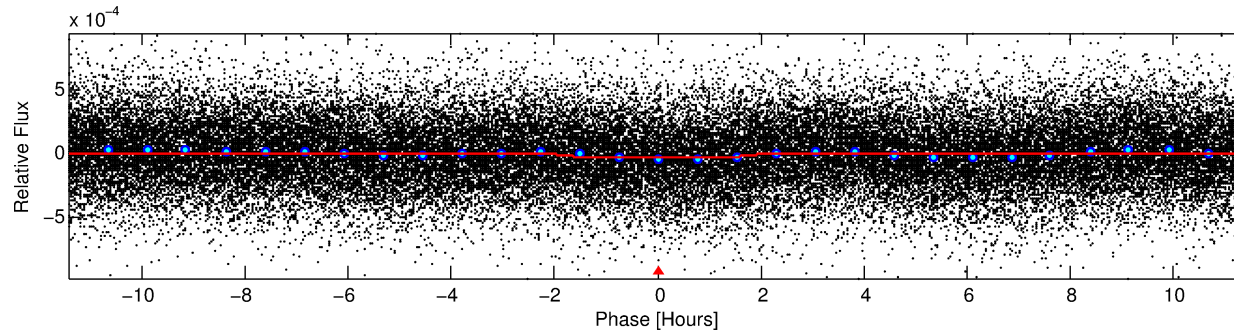
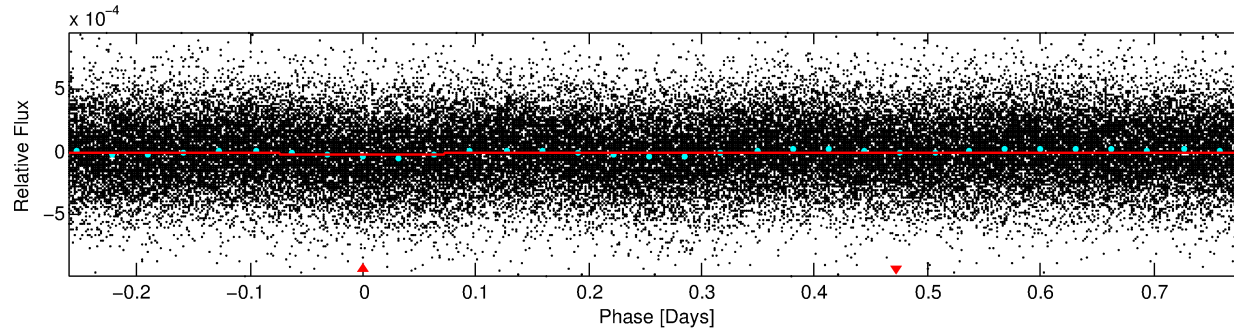
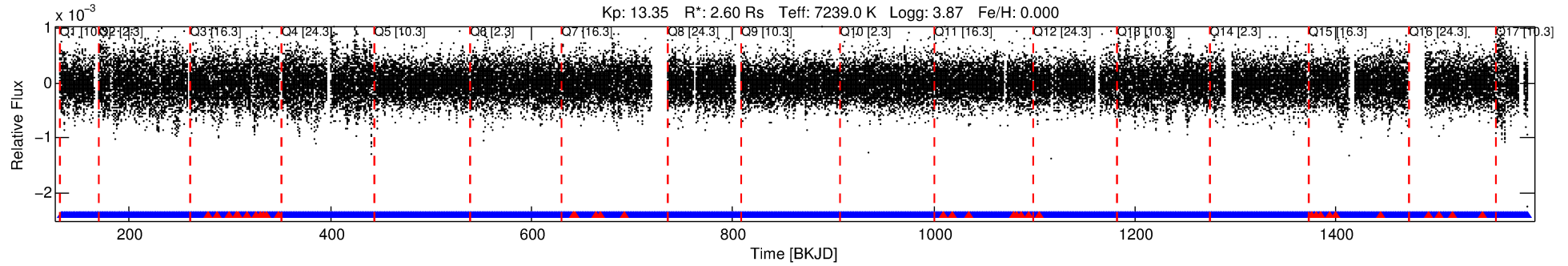
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002309579-01

No Significant Match Found

# DV One-Page Summary

KIC: 2309579 Candidate: 1 of 1 Period: 1.044 d



## DV Fit Results:

Period = 1.04367 [0.00002] d  
Epoch = 132.5541 [0.0040] BKJD  
Rp/R\* = 0.0055 [0.0019]  
a/R\* = 1.31 [1.19]  
b = 0.91 [0.43]  
Seff = 27616.62 [16354.64]  
Teq = 3287 [487] K  
Rp = 1.57 [0.84] Re  
a = 0.0245 [0.0089] AU  
Ag = 0.92 [0.96] [-0.08 $\sigma$ ]  
Teffp = 4976 [1133] K [1.37 $\sigma$ ]

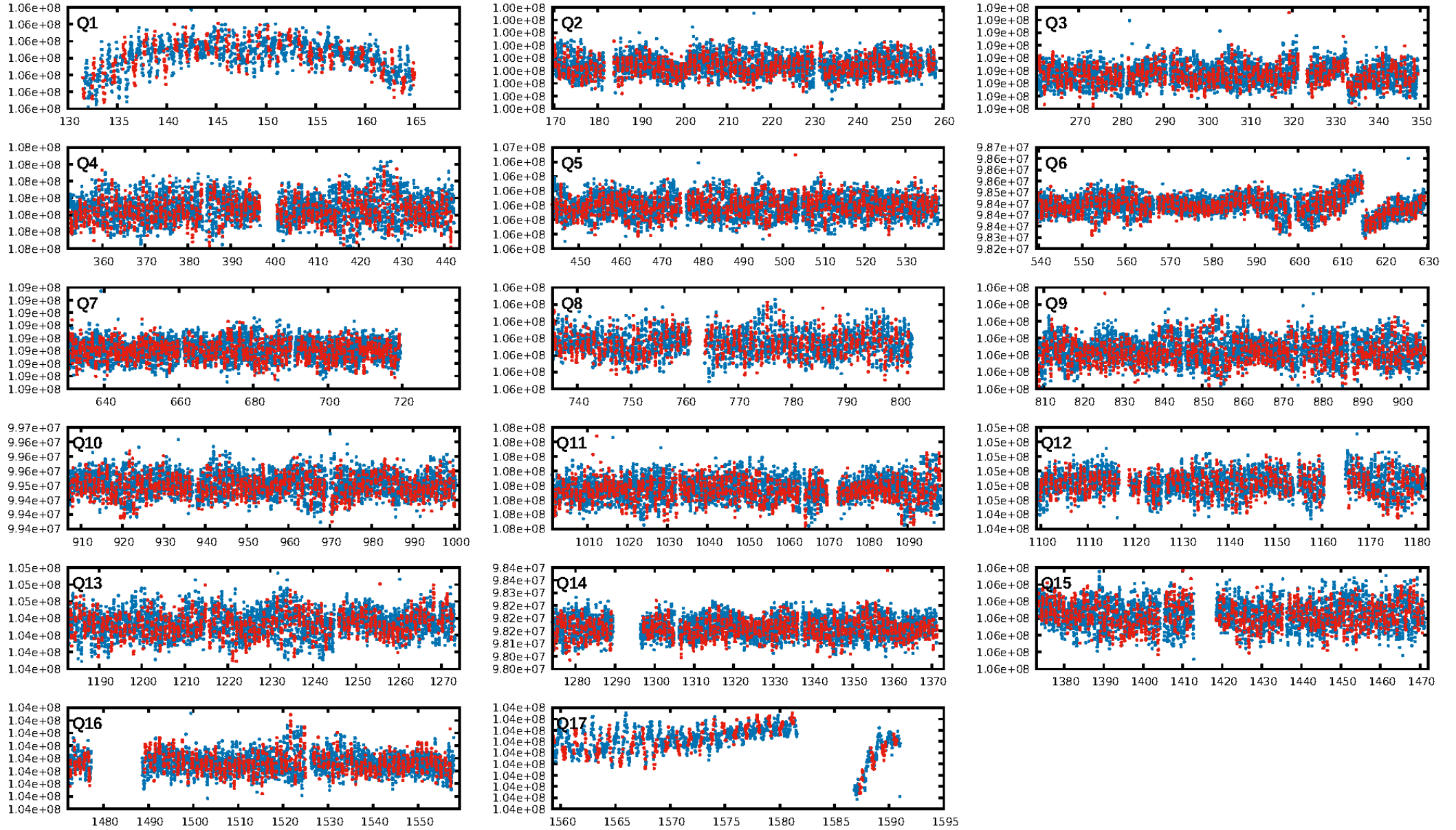
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.51e-19  
RollingBand-fgt: 0.97 [1190/1225]  
GhostDiagnostic-chr: 2.041  
Centroid-sig: 8.3%  
Centroid-so: 1.597 arcsec [1.53 $\sigma$ ]  
OotOffset-rm: 0.200 arcsec [0.30 $\sigma$ ]  
KicOffset-rm: 0.228 arcsec [0.33 $\sigma$ ]  
OotOffset-st: 4/4/3/4 [15]  
KicOffset-st: 4/4/3/4 [15]  
DiffImageQuality-fgm: 0.80 [12/15]  
DiffImageOverlap-fno: 1.00 [17/17]

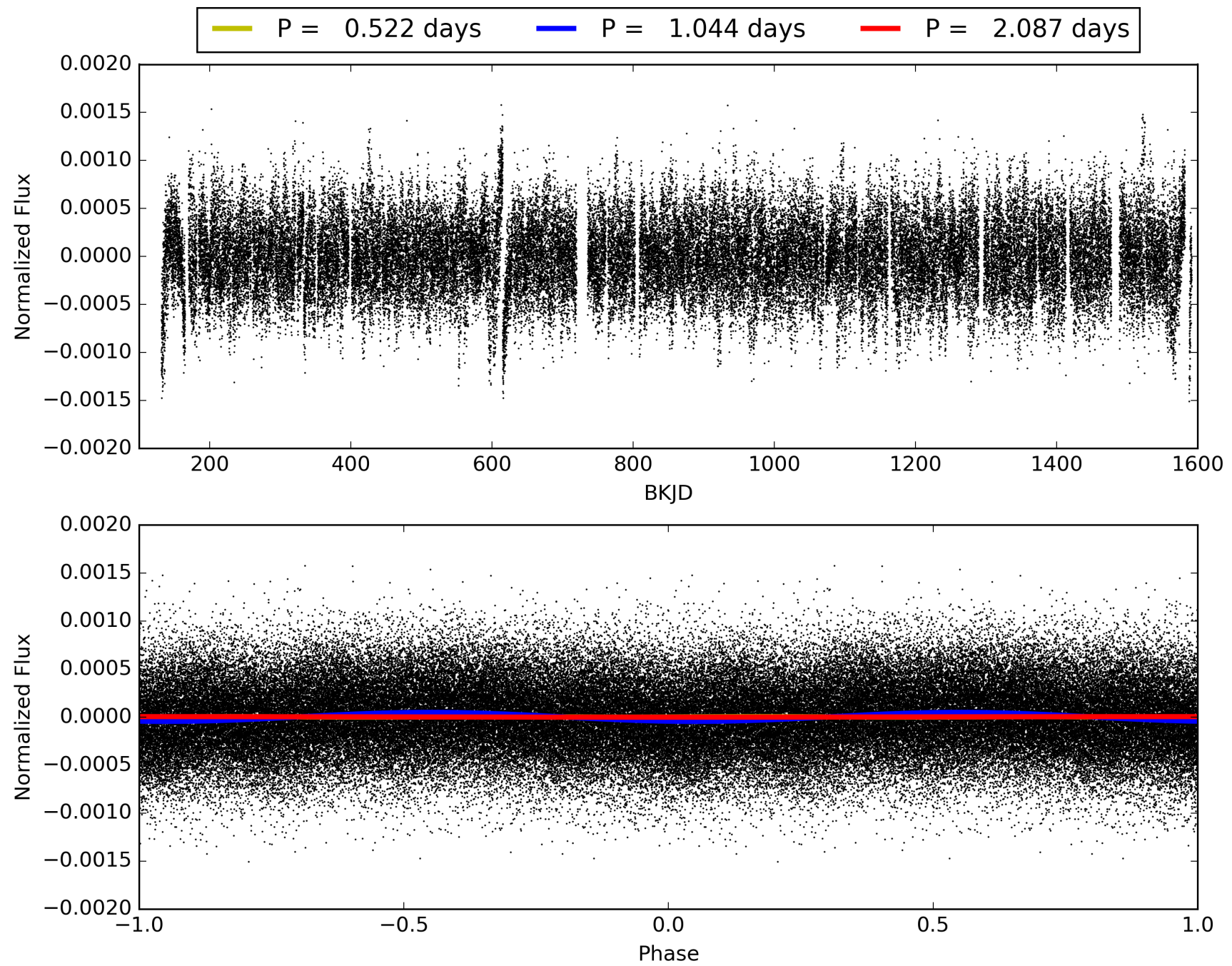
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:43:48 Z

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

# TCE 002309579-01, PDC Light Curves



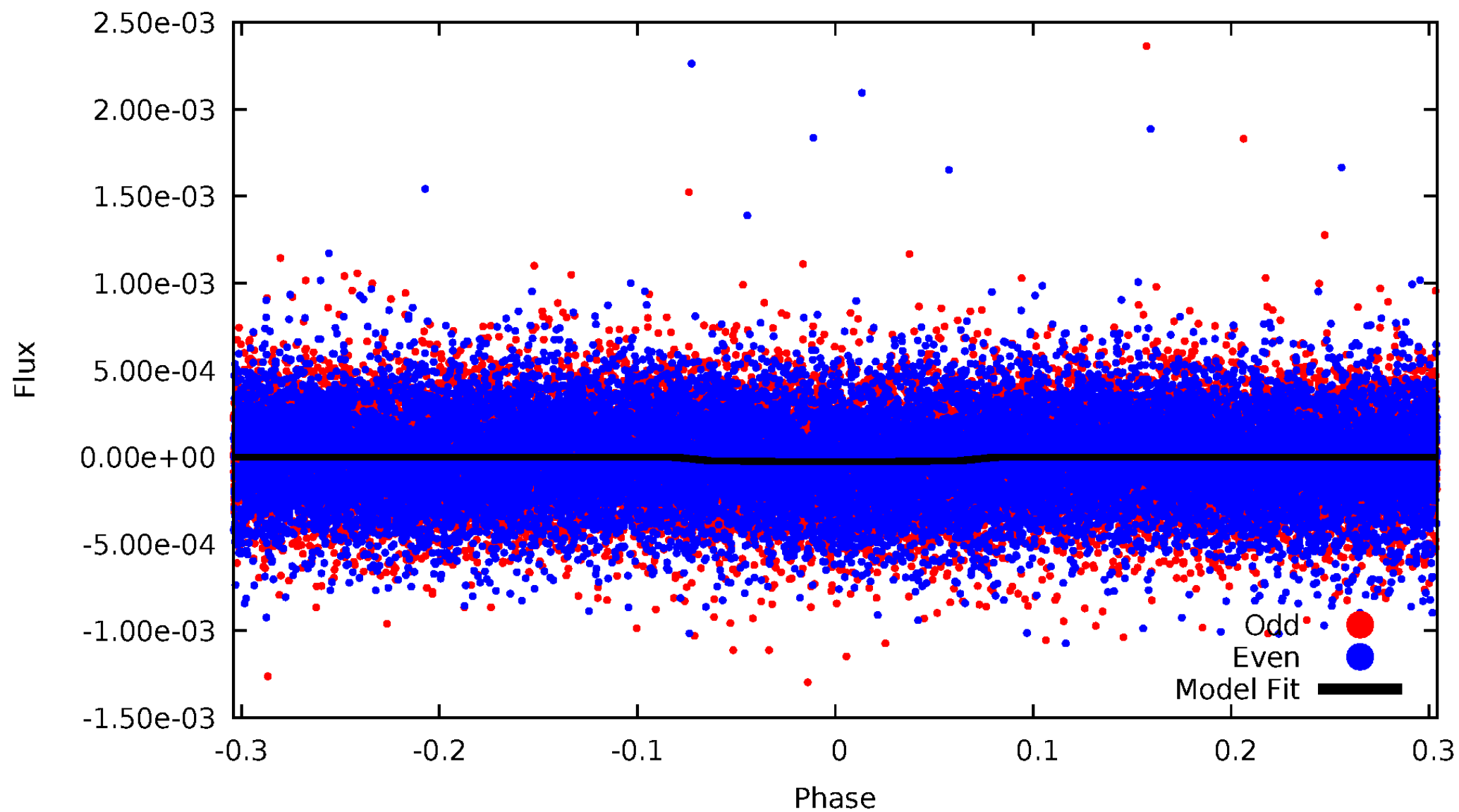
TCE 002309579-01





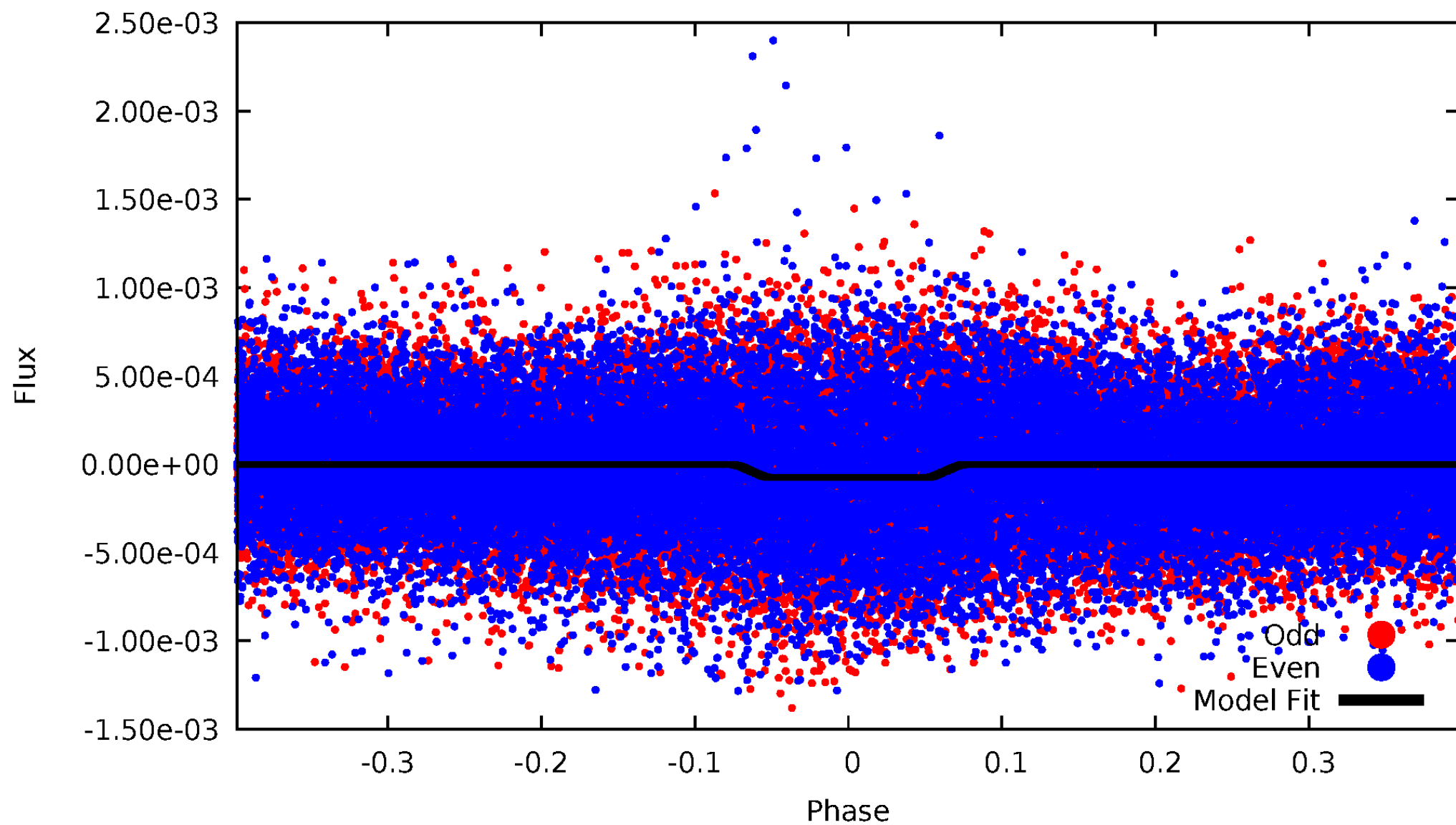
# DV Odd/Even

TCE 002309579-01



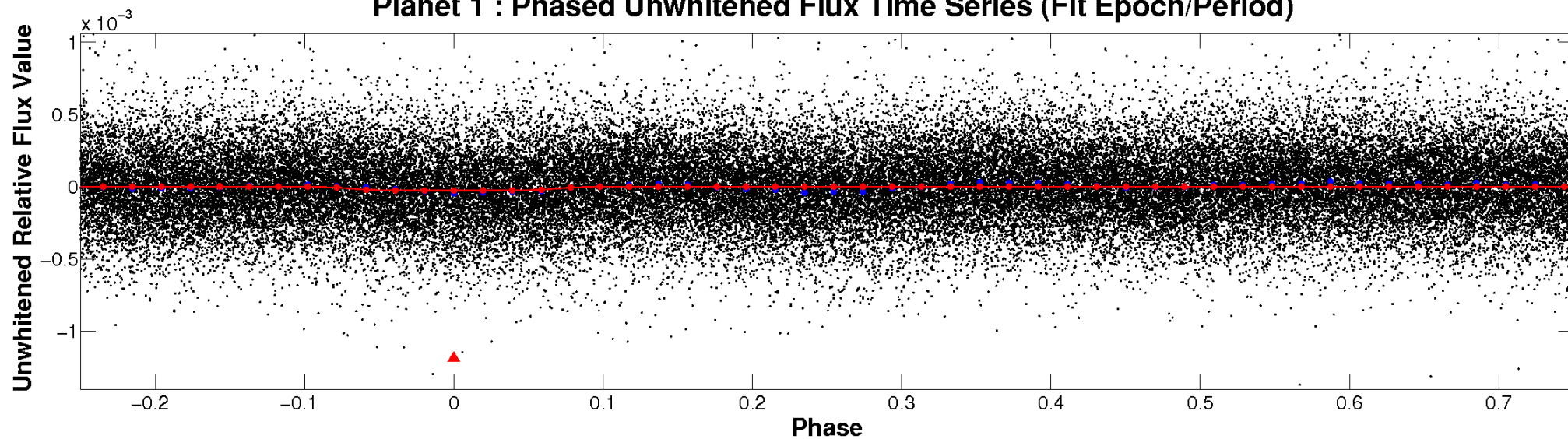
# ALT Odd/Even

TCE 002309579-01

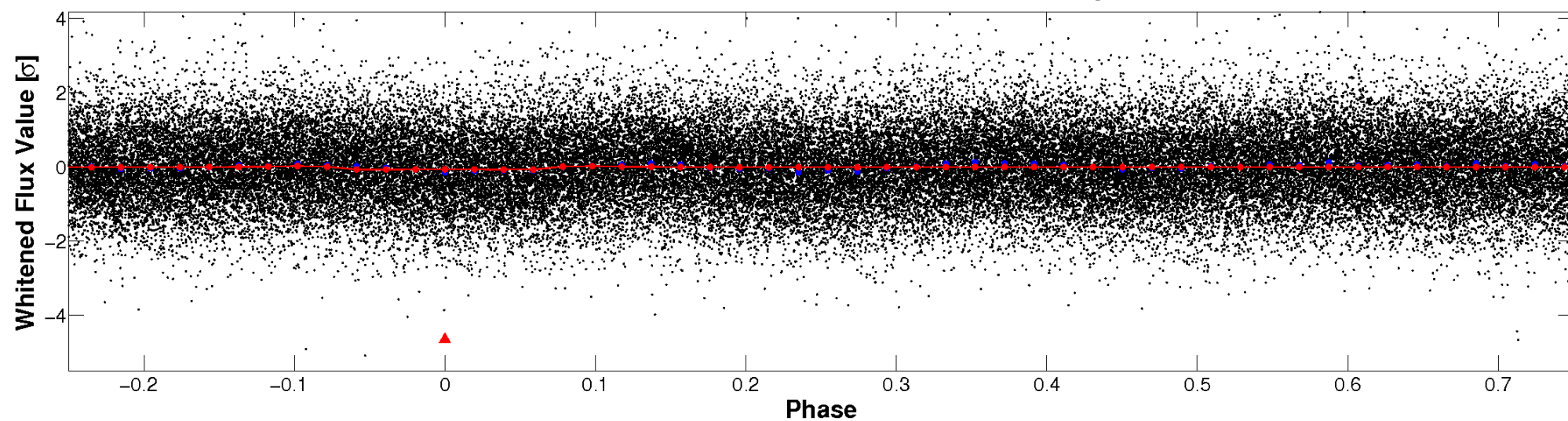


# Non-Whitened Vs. Whitened Light Curve

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

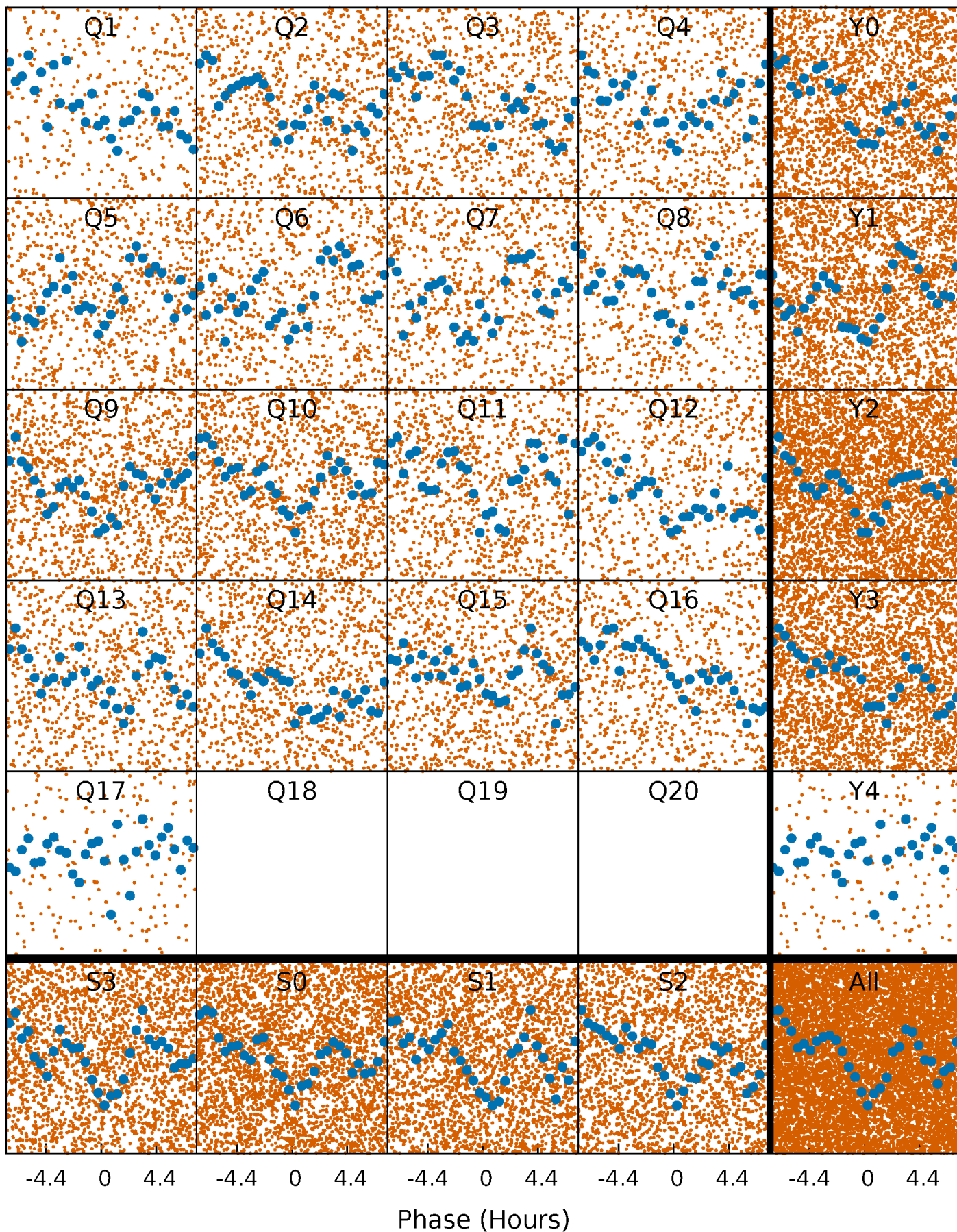


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

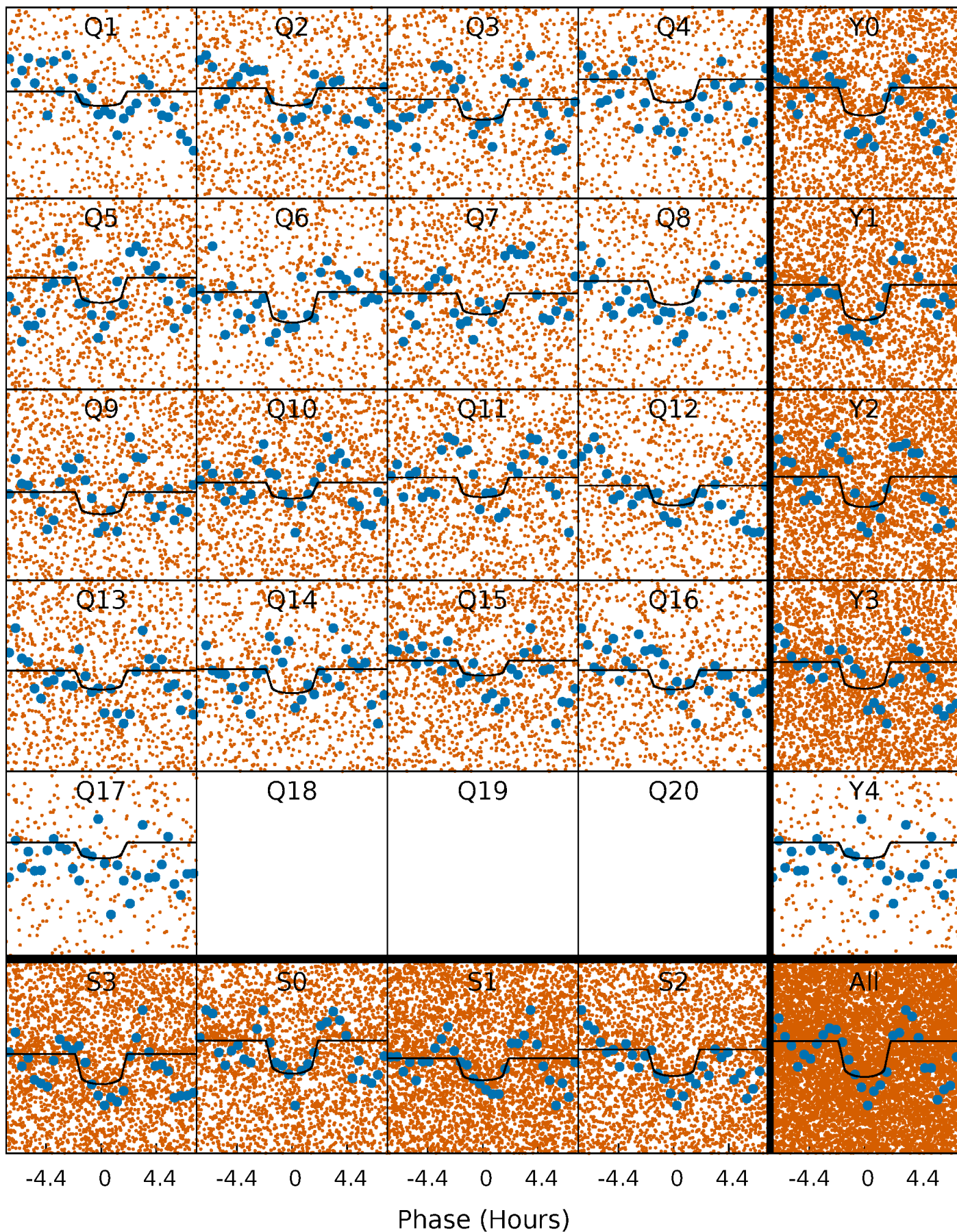
TCE 002309579-01 P= 1.043673 Days  $T_0=132.554099$  (BKJD)





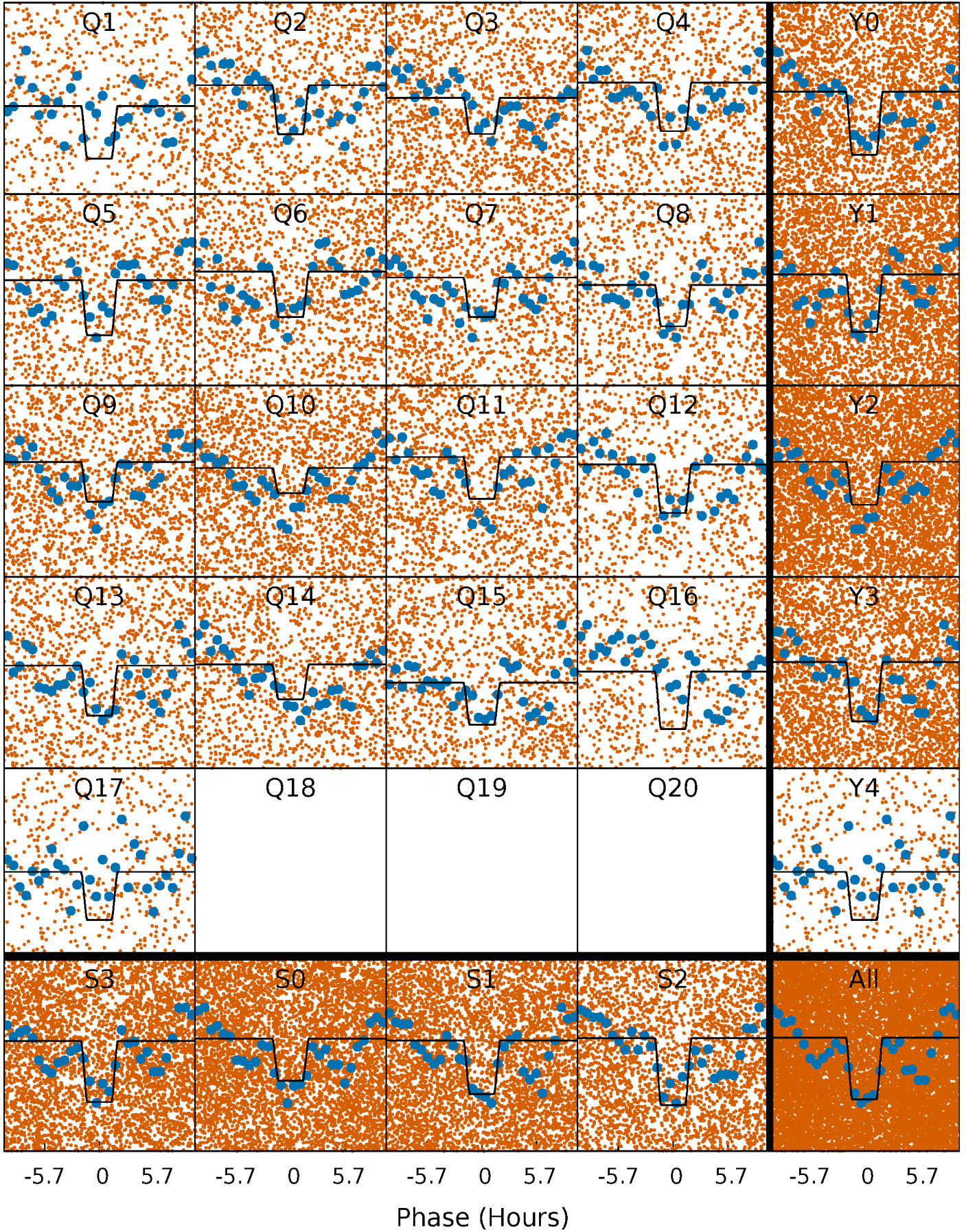
# DV Quarter-Phased Transit Curves

TCE 002309579-01 P= 1.043673 Days  $T_0=132.554099$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 002309579-01 P= 1.043724 Days  $T_0=132.534294$  (BKJD)

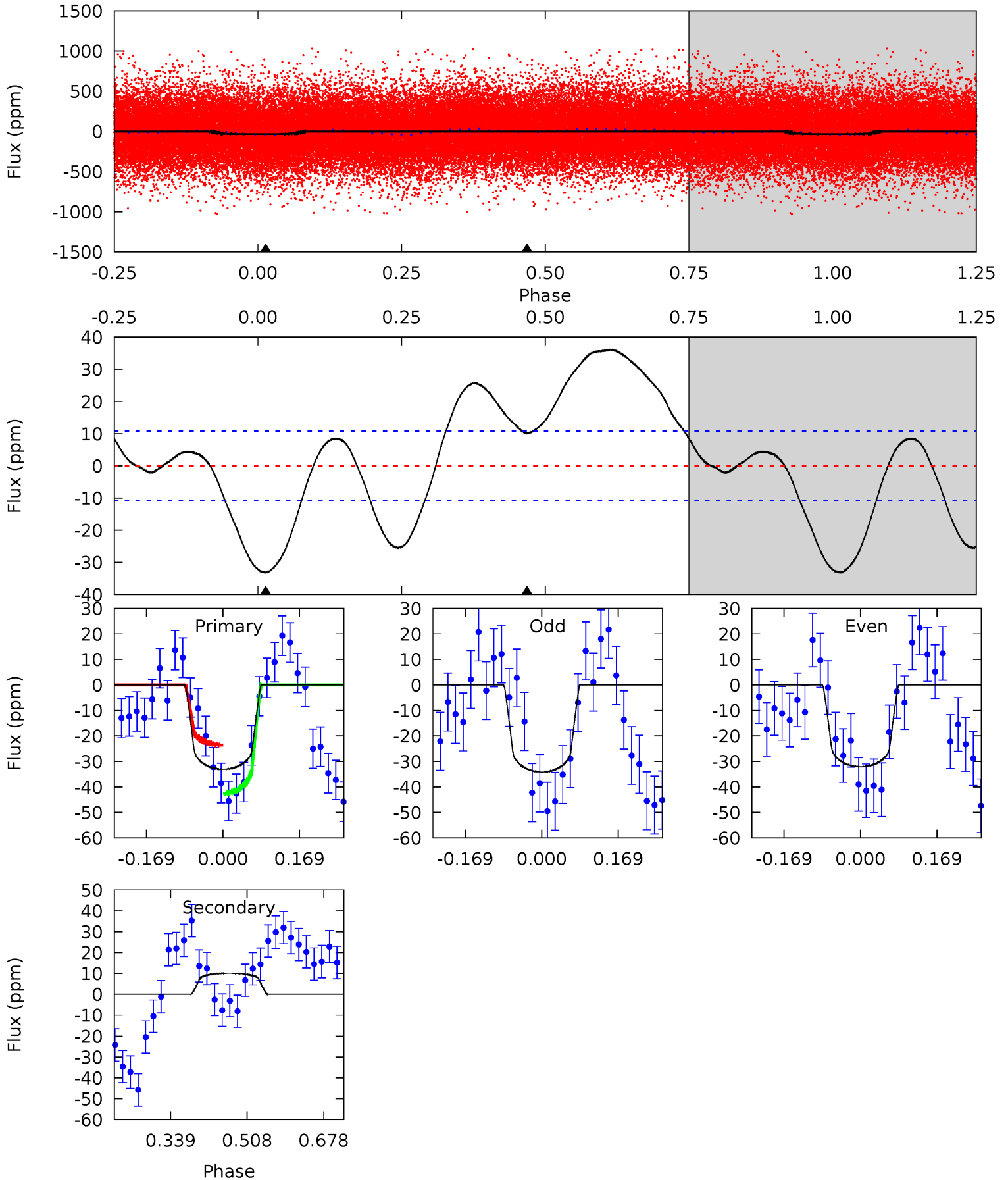




# DV Model-Shift Uniqueness Test

002309579-01, P = 1.043673 Days, E = 131.510426 Days

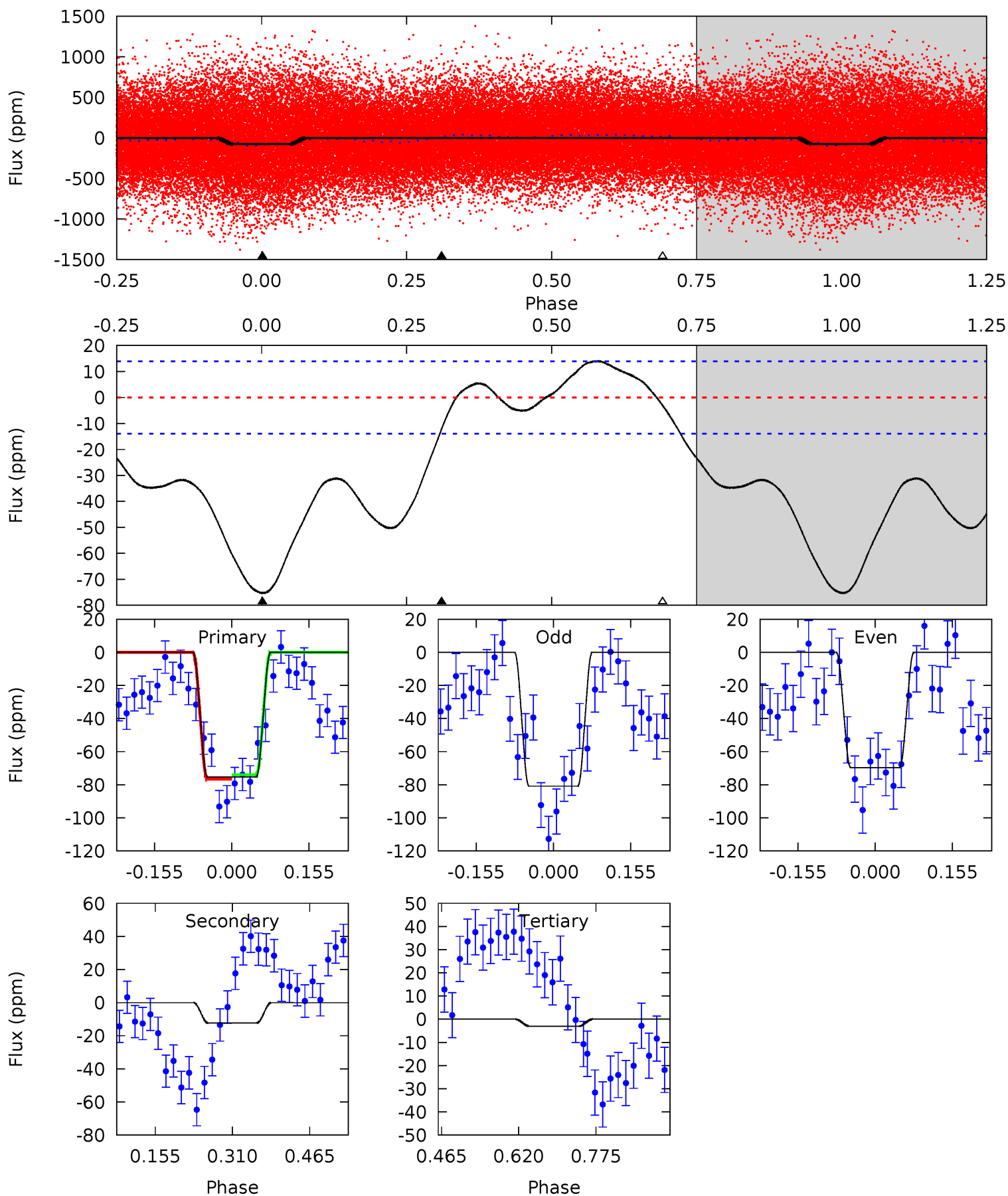
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	-4.18	0	0	4.45	1.37	7.58	13.7	13.7	-4.18	-4.18	0.43	1.11	0.52	3.92



# Alt Model-Shift Uniqueness Test

002309579-01, P = 1.043724 Days, E = 131.490570 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
24.1	3.93	0.98	0	4.47	1.42	5.57	23.2	24.1	2.95	3.93	1.80	0.85	0.16	0.42





### Stellar Parameters For KIC 002309579

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7239^{+230}_{-374}$	$3.865^{+0.315}_{-0.135}$	$0.000^{+0.200}_{-0.350}$	$2.597^{+0.531}_{-1.061}$	$1.801^{+0.186}_{-0.433}$	$0.145^{+0.372}_{-0.049}$
	+3%/-5%	+8%/-3%	+inf%/-inf%	+20%/-41%	+10%/-24%	+257%/-34%
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 002309579-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$10 \pm 2$	$1.49^{+0.62}_{-0.58}$	$4525^{+326}_{-427}$	$-5664^{+639}_{-1192}$	$-1.425^{+0.710}_{-2.357}$
Alt.	$-12 \pm 3$	$2.35^{+0.69}_{-0.71}$	$4513^{+354}_{-423}$	$4188^{+754}_{-800}$	$0.712^{+0.712}_{-0.310}$

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

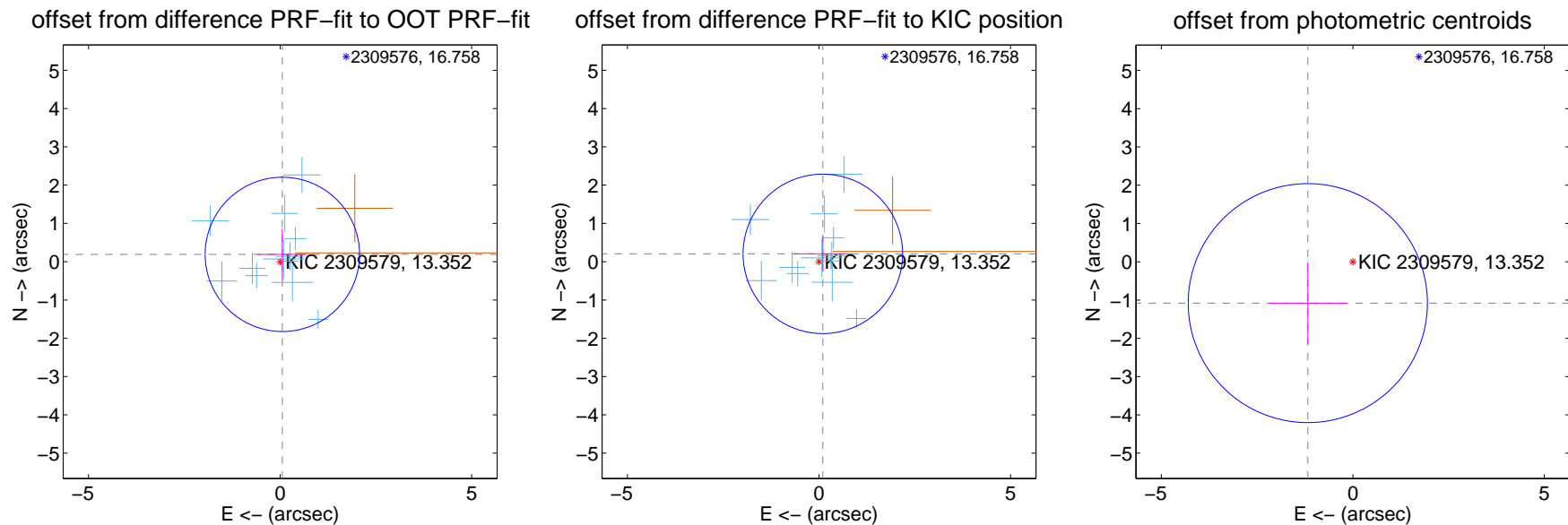
## DV Centroid Data

Supplemental centroid analysis for 002309579-01. Kepler magnitude: 13.35. Transit SNR 6.65

There are 12 quarters with good PRF difference image offsets

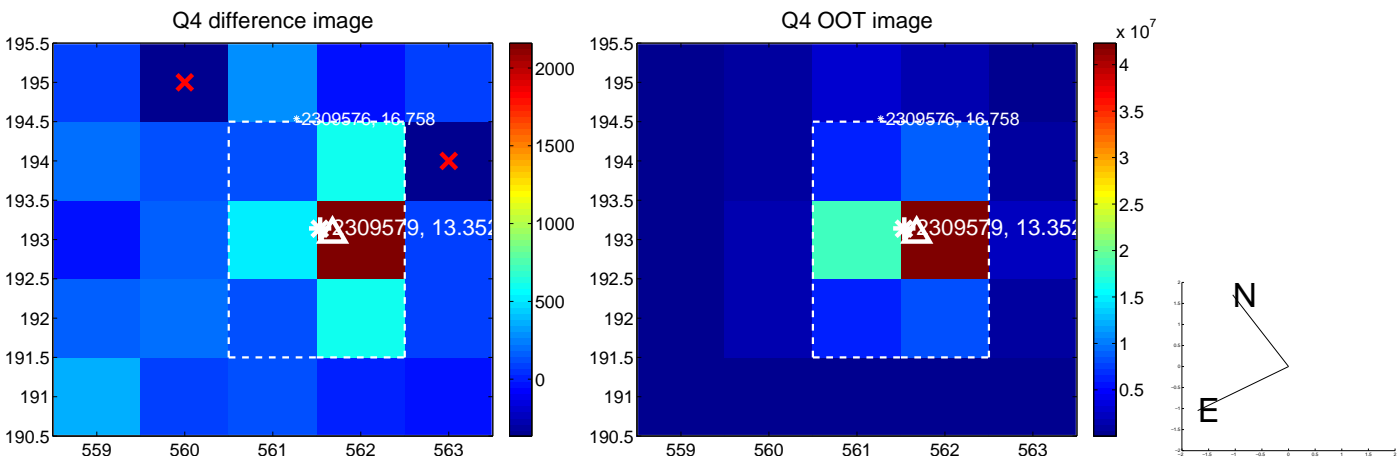
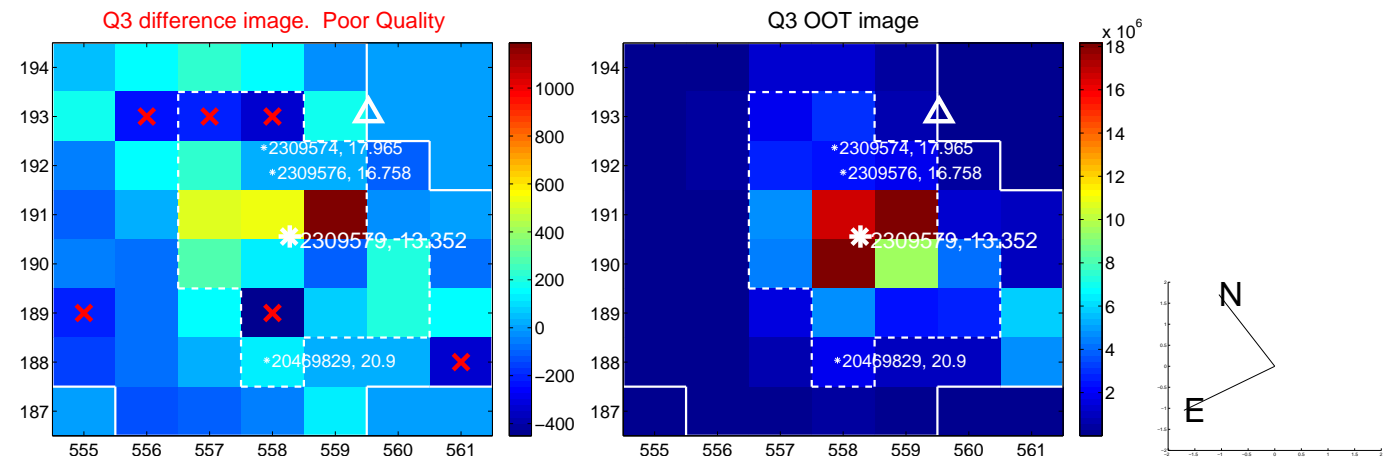
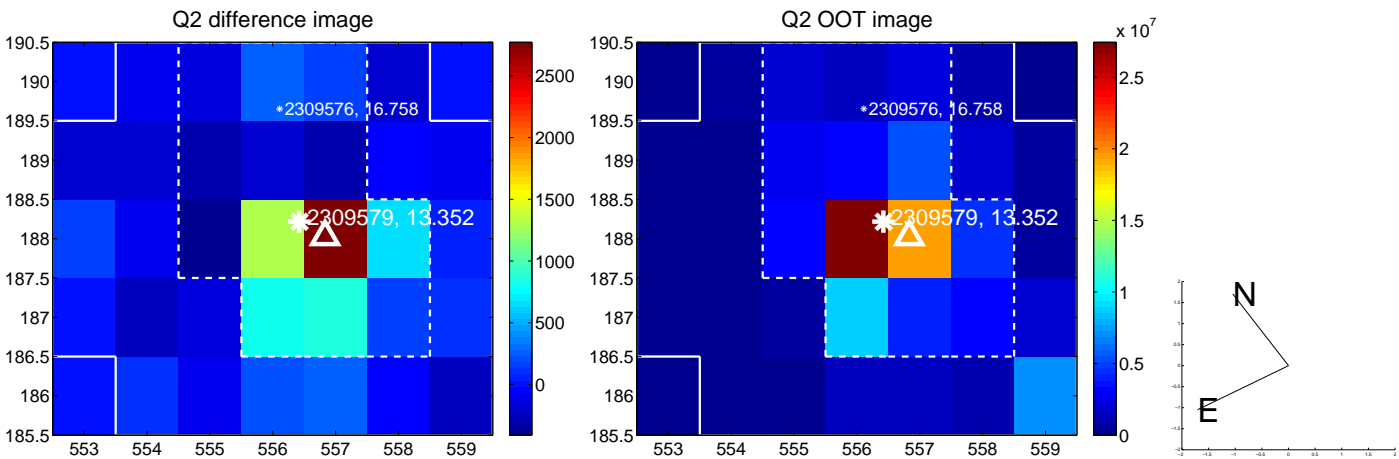
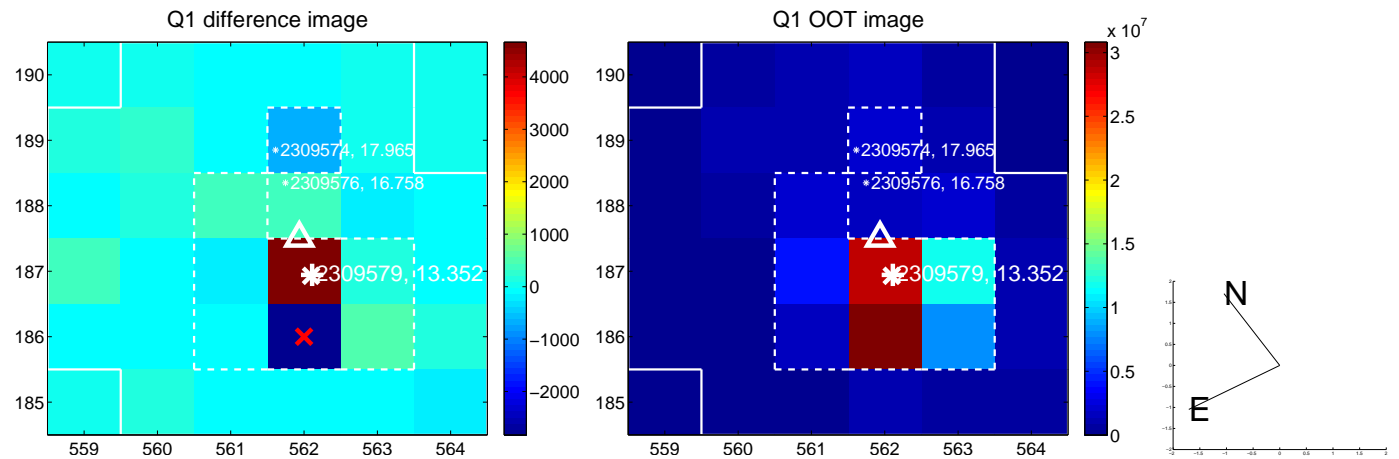
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.200 \pm 0.672$	0.30	$-0.059 \pm 0.651$	$0.191 \pm 0.673$
PRF-fit source offset from KIC position	$0.228 \pm 0.694$	0.33	$-0.101 \pm 0.757$	$0.205 \pm 0.461$
photometric centroid source offset	$1.60 \pm 1.04$	1.53	$1.18 \pm 1.01$	$-1.08 \pm 1.08$

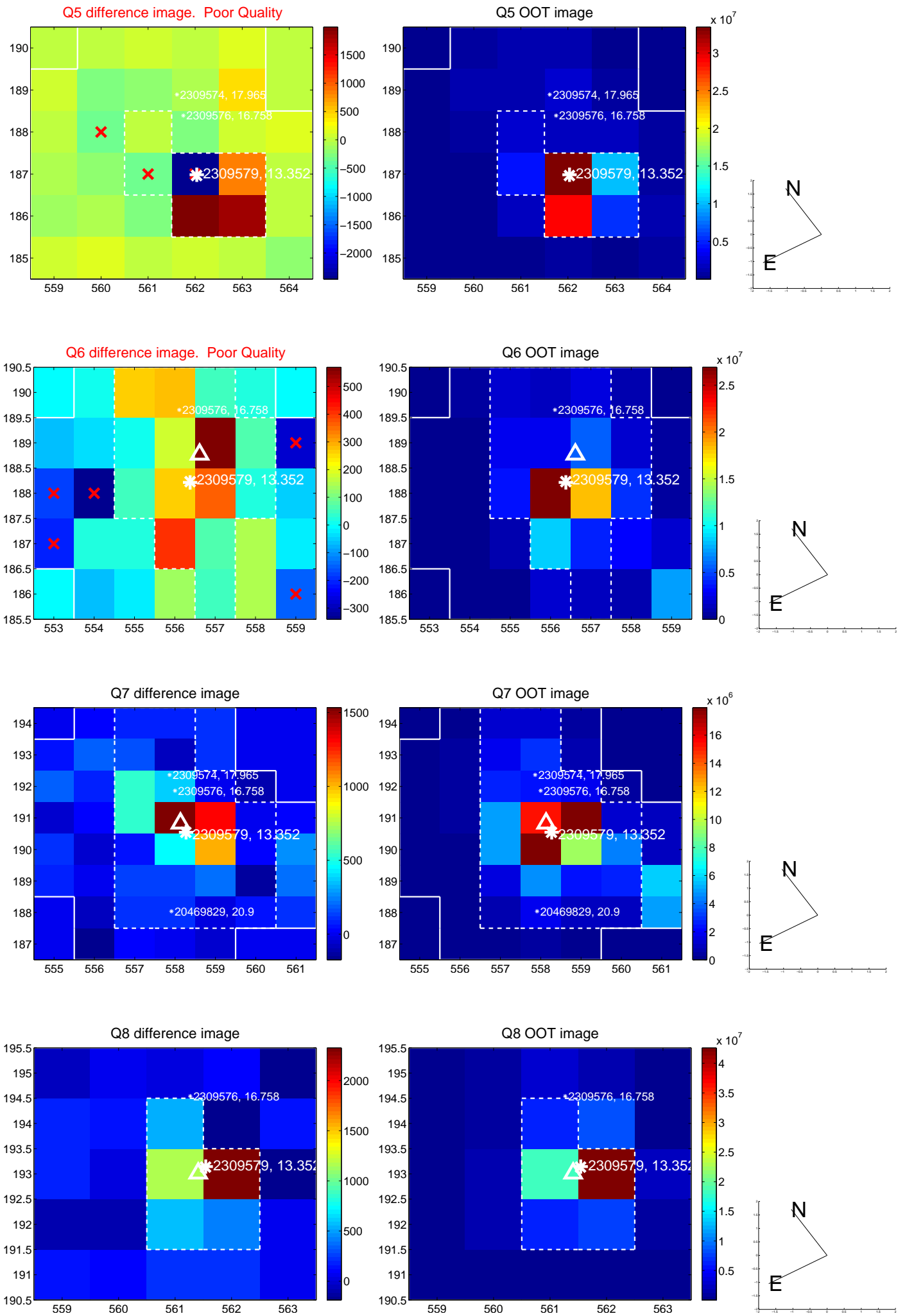


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

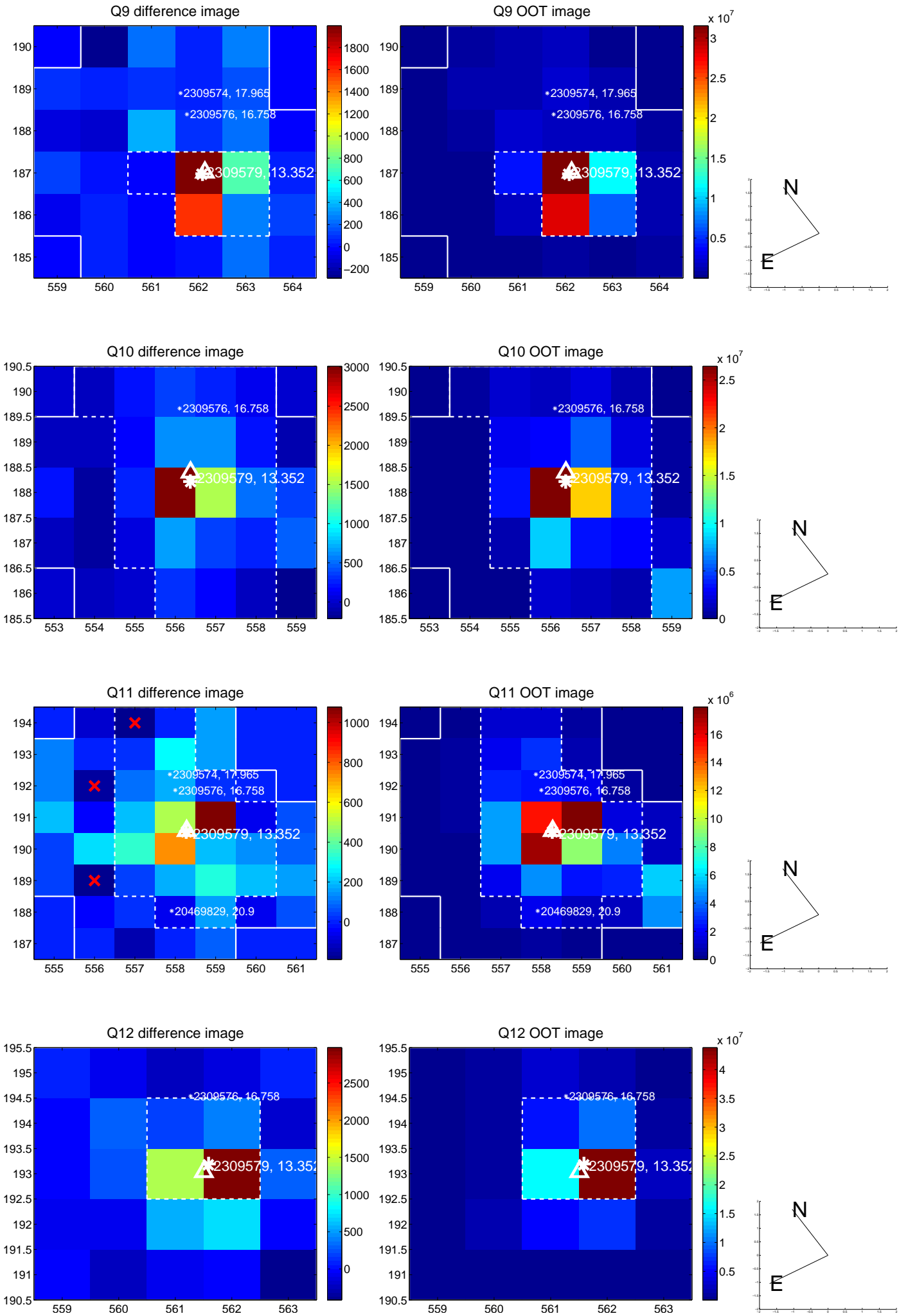


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

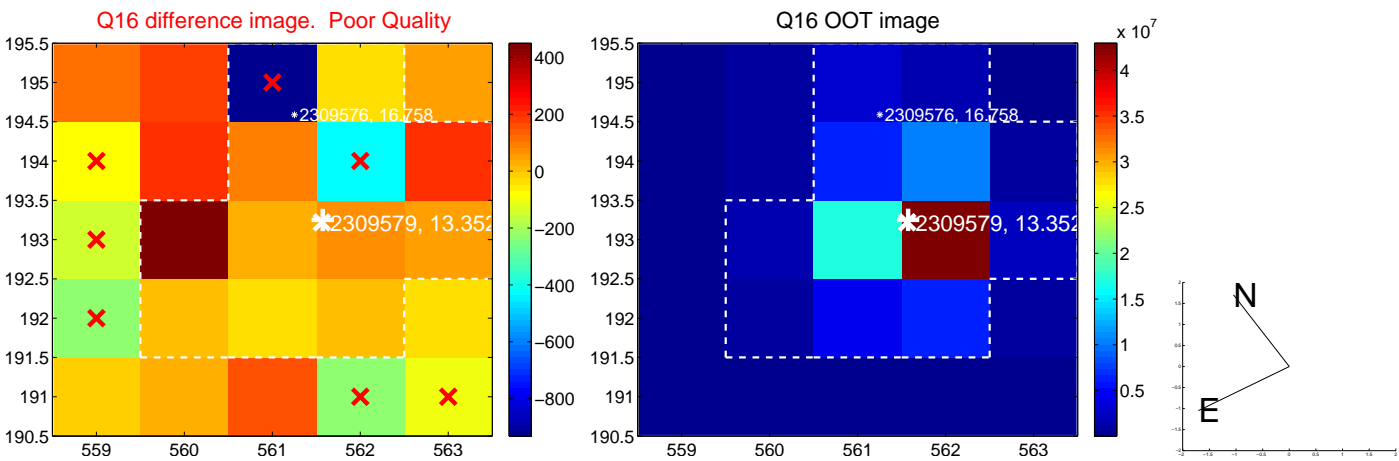
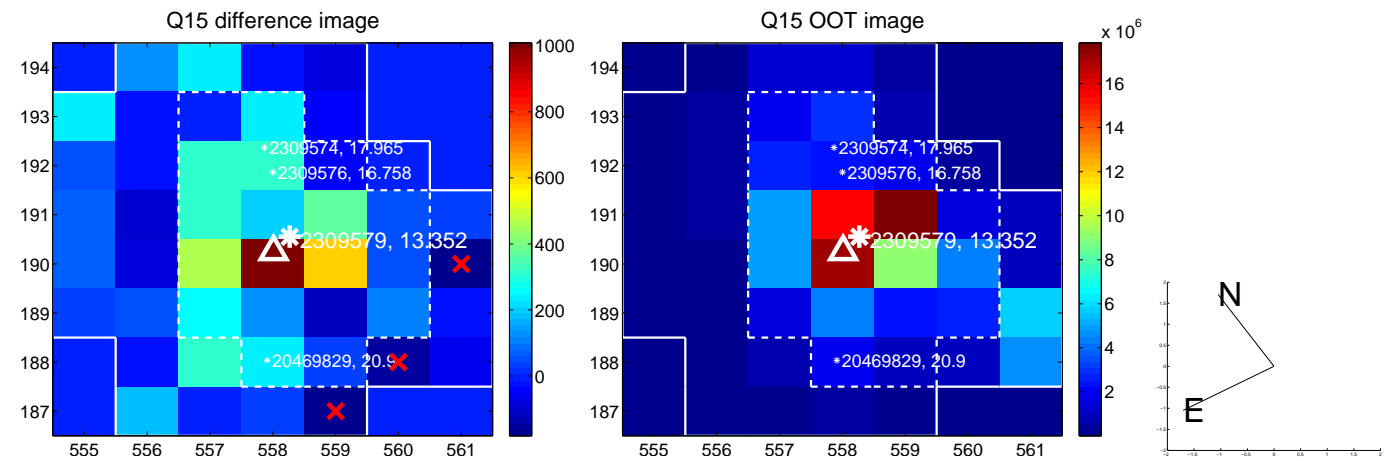
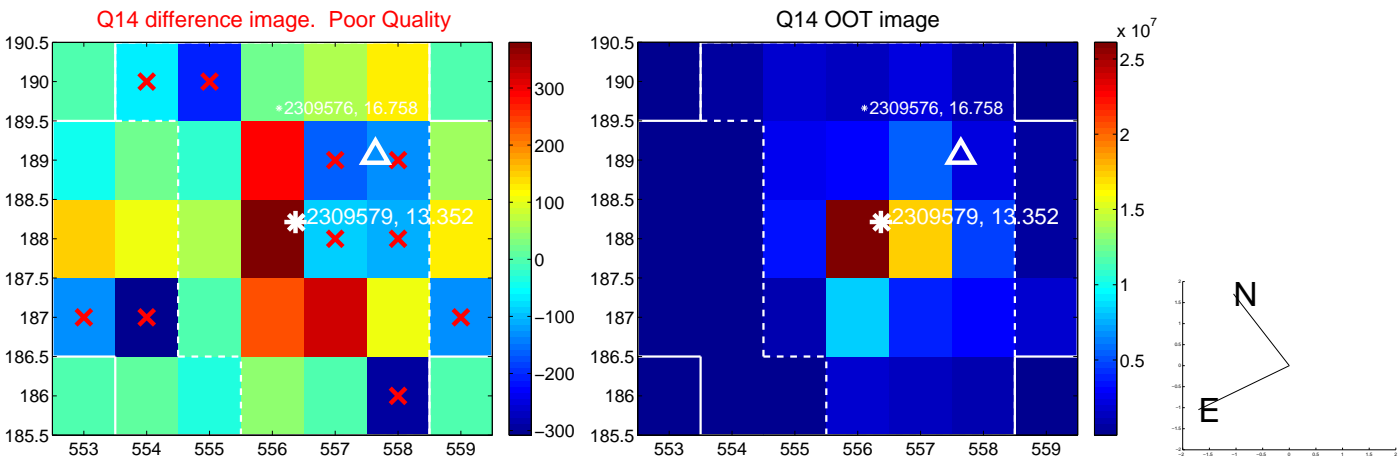
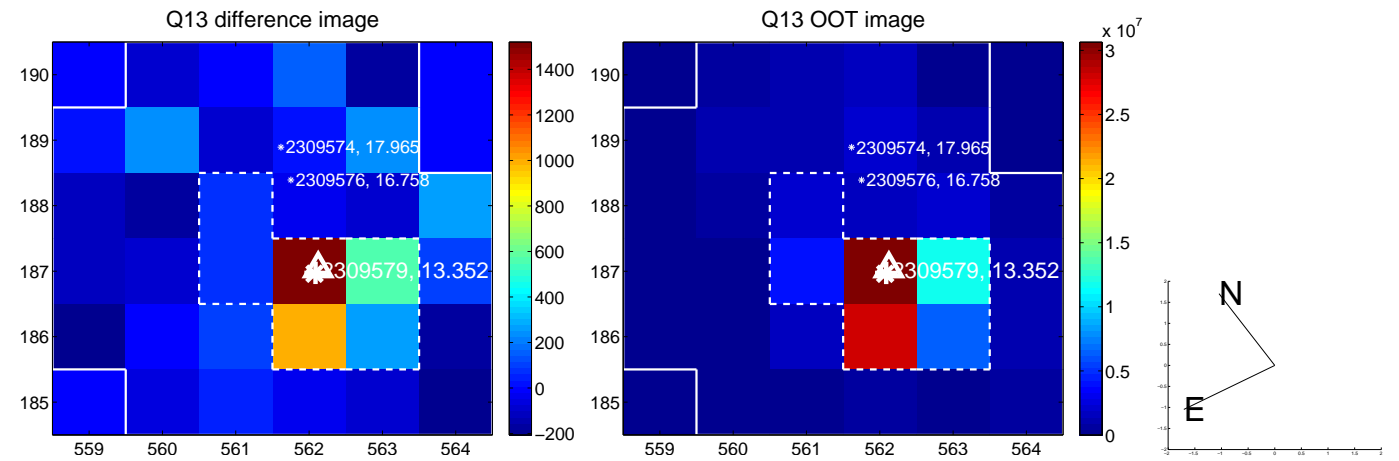




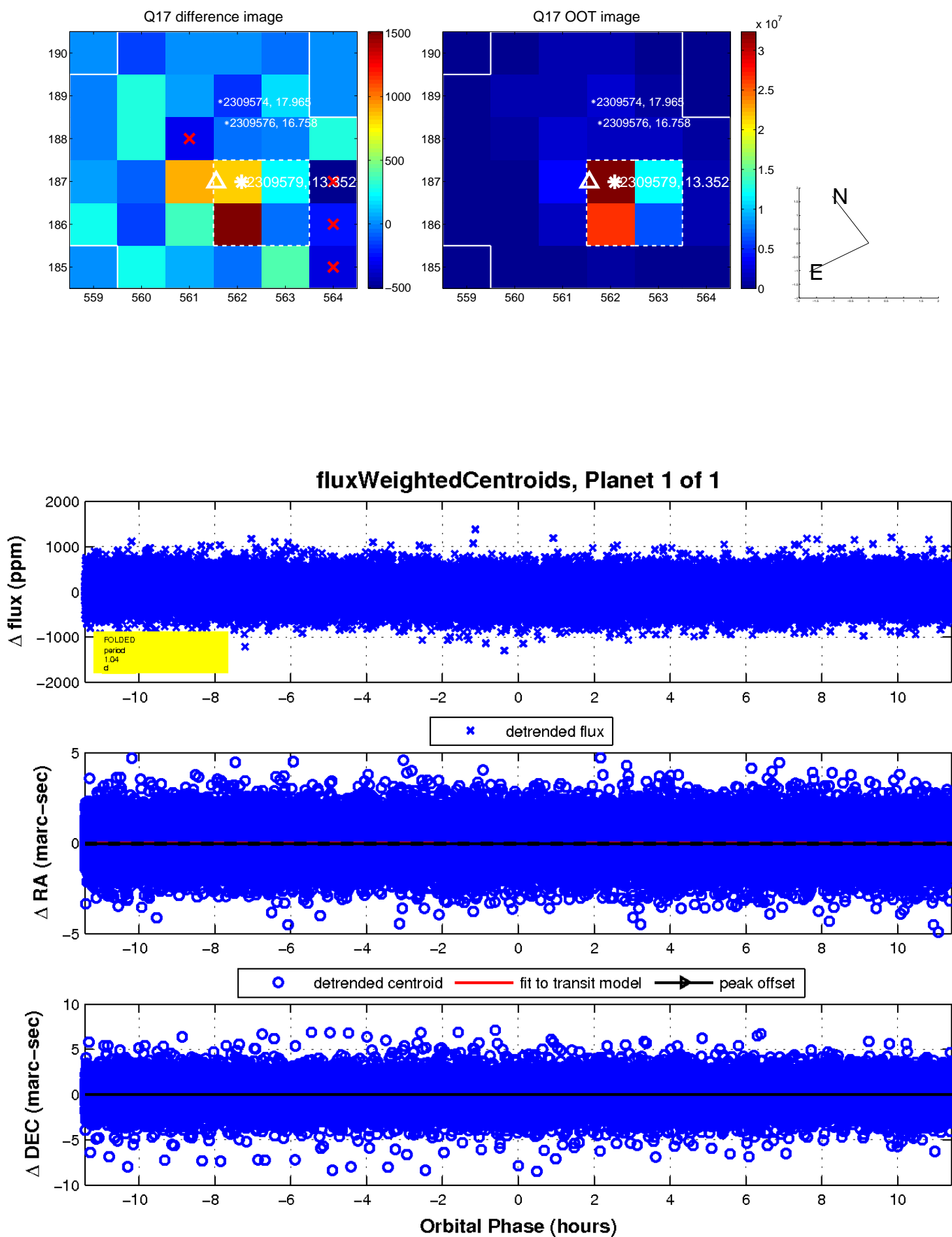
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

