

# KIC 002309719

## 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> )
002309719-01	OBS	1020.01	54.356333	164.070277	10479.8	6.377	570.4	545.0	1.25	6161	22.88	24.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002309719-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED

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

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

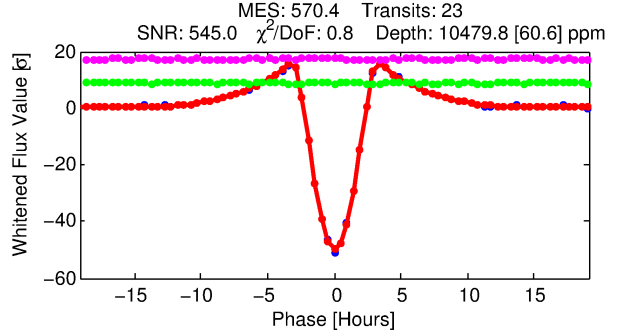
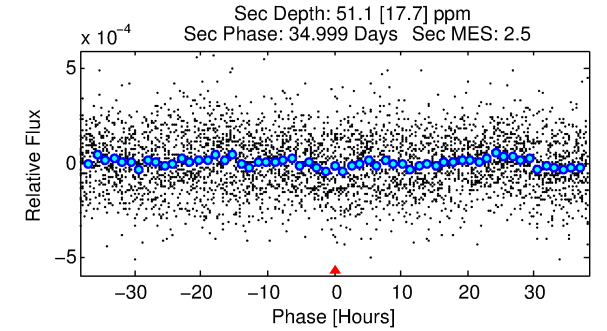
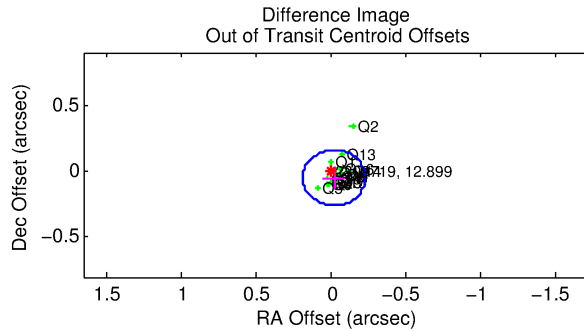
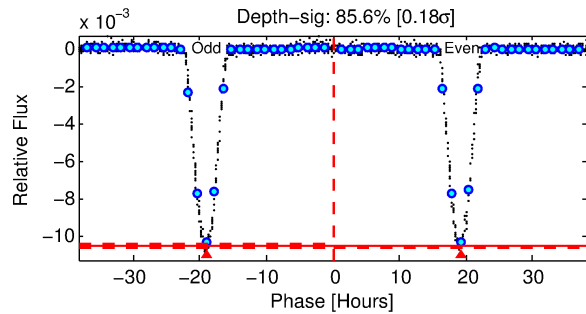
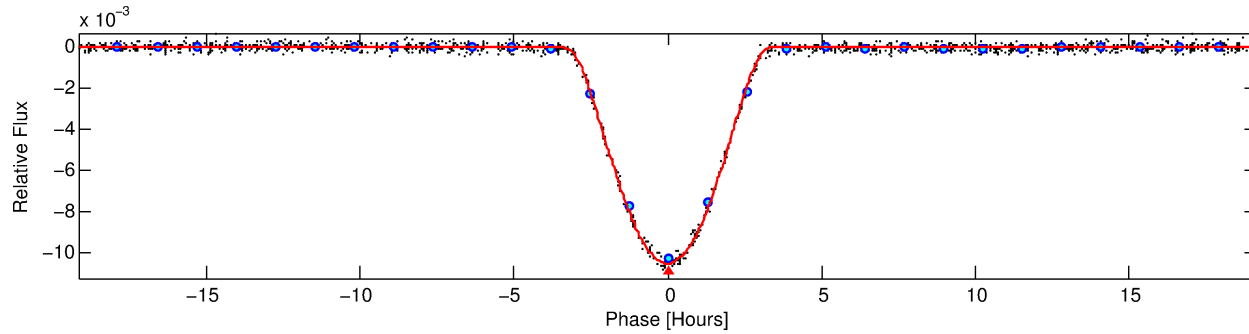
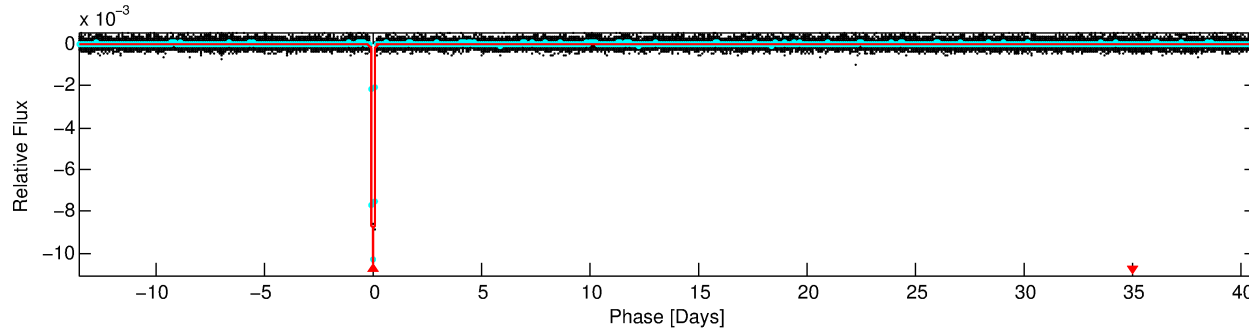
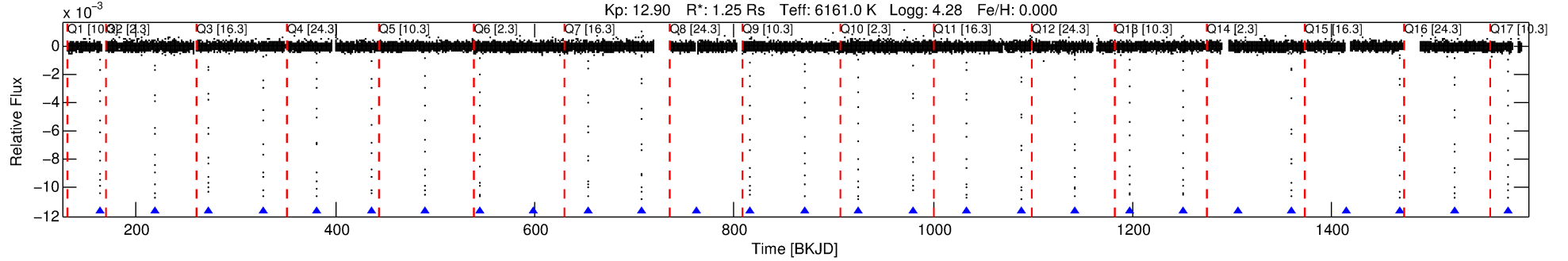
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002309719-01

No Significant Match Found

# DV One-Page Summary

KIC: 2309719 Candidate: 1 of 1 Period: 54.356 d  
KOI: K01020.01 Corr: 0.995



## DV Fit Results:

Period = 54.35633 [0.00001] d  
Epoch = 164.0703 [0.0002] BKJD  
Rp/R\* = 0.1670 [0.0111]  
a/R\* = 39.22 [0.38]  
b = 1.00 [0.02]  
Seff = 24.22 [5.68]  
Teff = 566 [33] K  
Rp = 22.88 [4.26] Re  
a = 0.2897 [0.0429] AU  
Ag = 4.51 [1.94] [1.81σ]  
Teffp = 1274 [122] K [5.62σ]

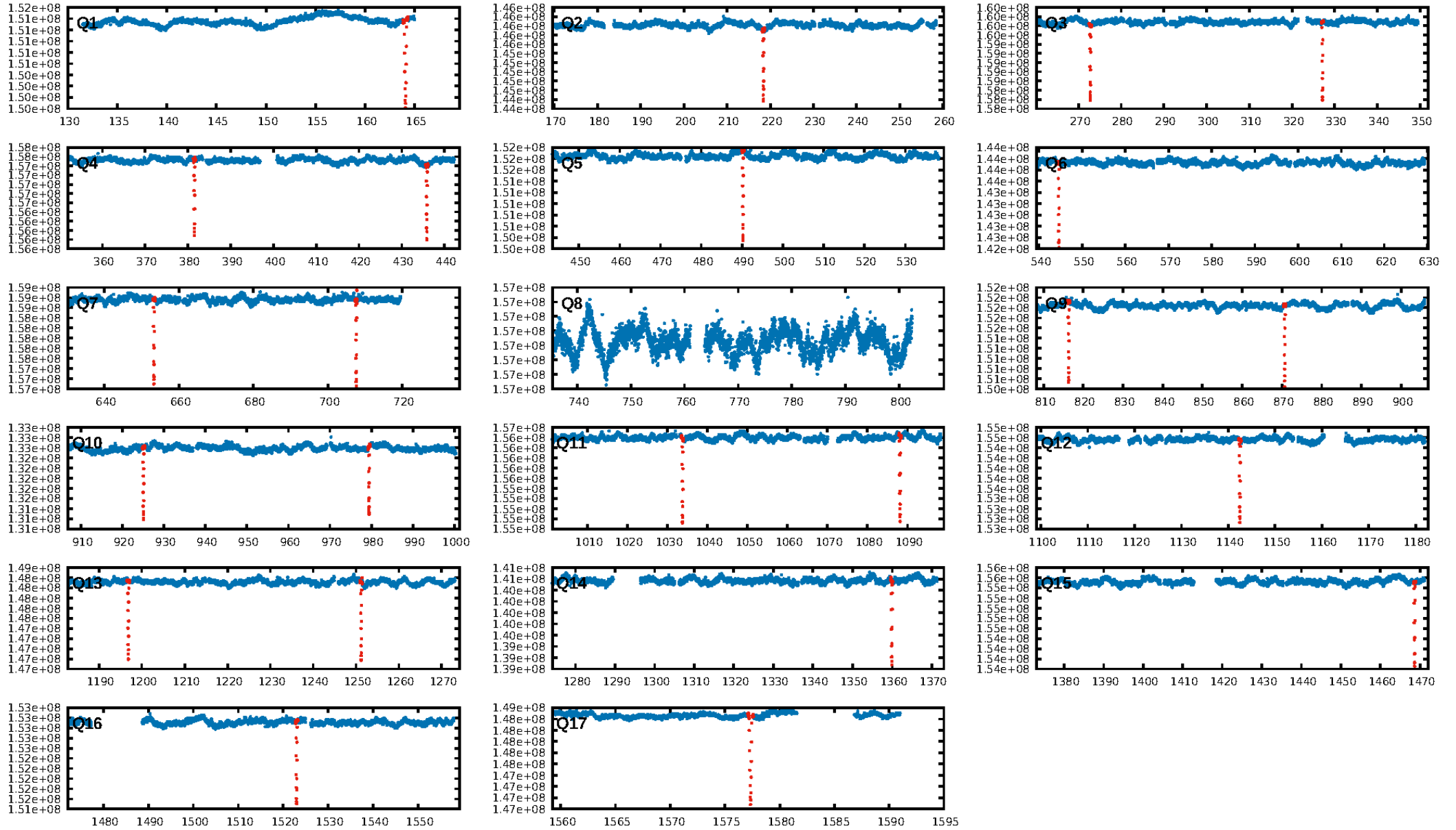
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [21/21]  
GhostDiagnostic-chr: 3.803  
Centroid-sig: 0.0%  
Centroid-so: 0.262 arcsec [14.48σ]  
OotOffset-rm: 0.056 arcsec [0.79σ]  
KicOffset-rm: 0.032 arcsec [0.42σ]  
OotOffset-st: 4/4/3/5 [16]  
KicOffset-st: 4/4/3/5 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [16/16]

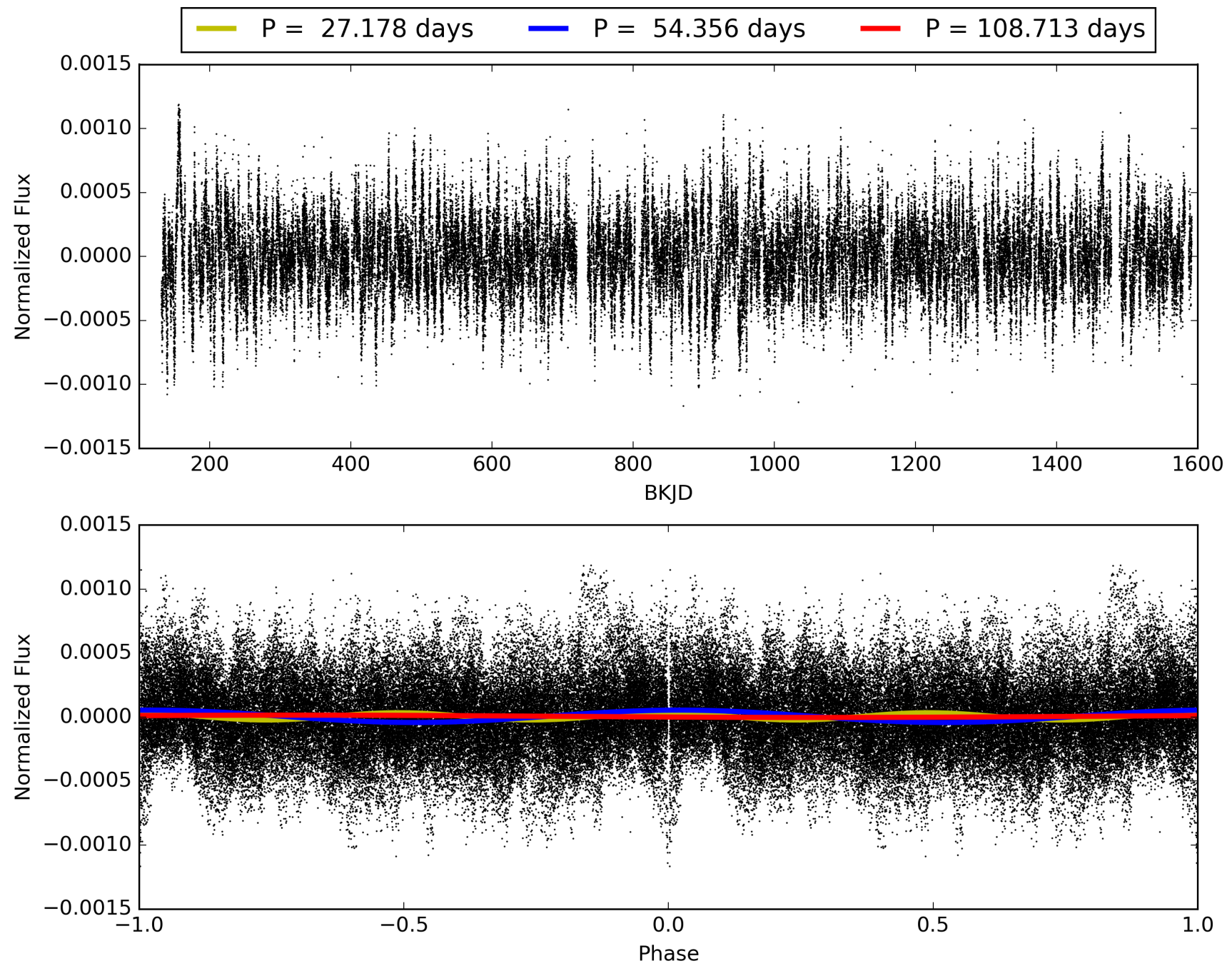
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:30:21 Z

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

# TCE 002309719-01, PDC Light Curves

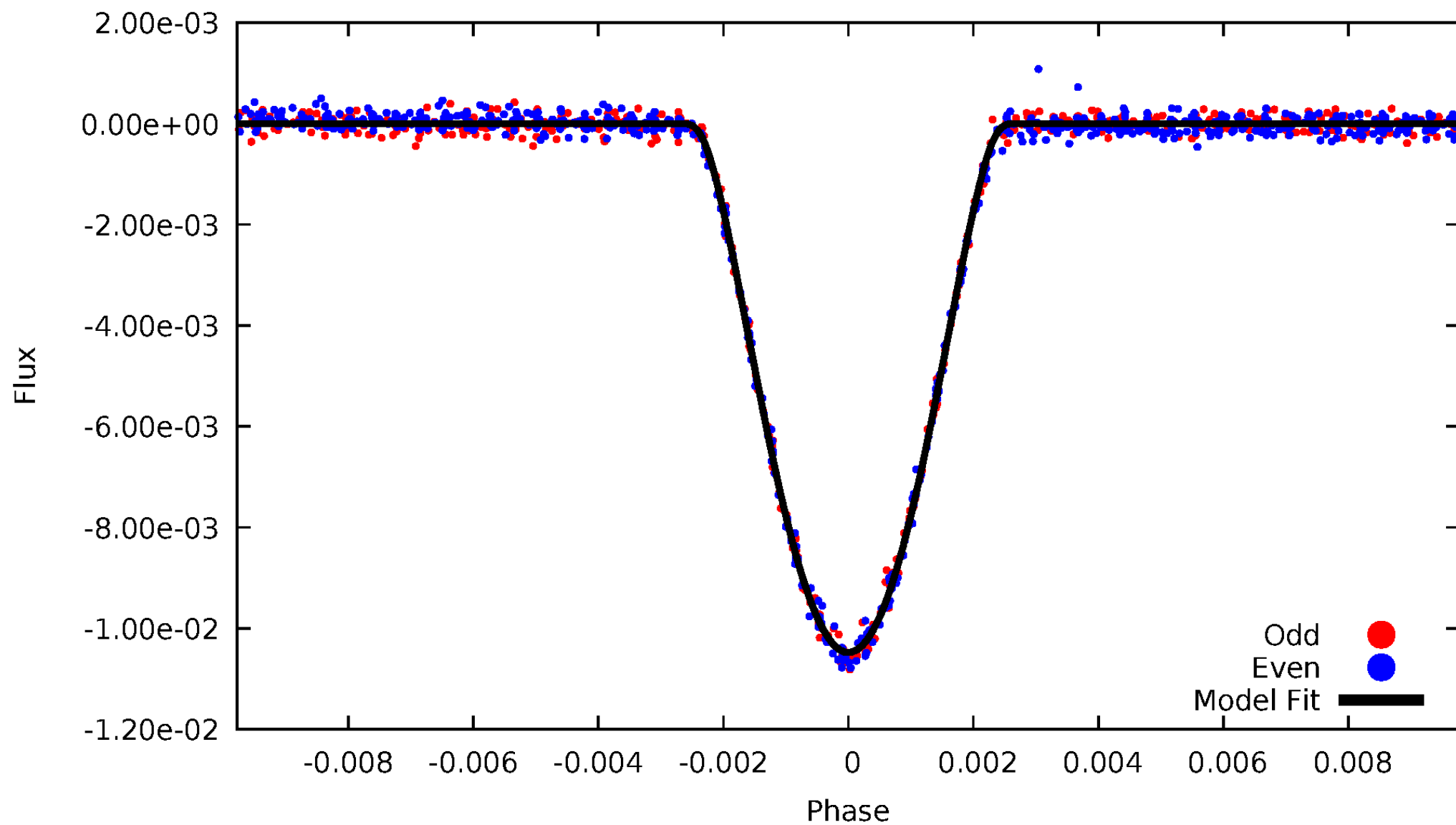


# TCE 002309719-01



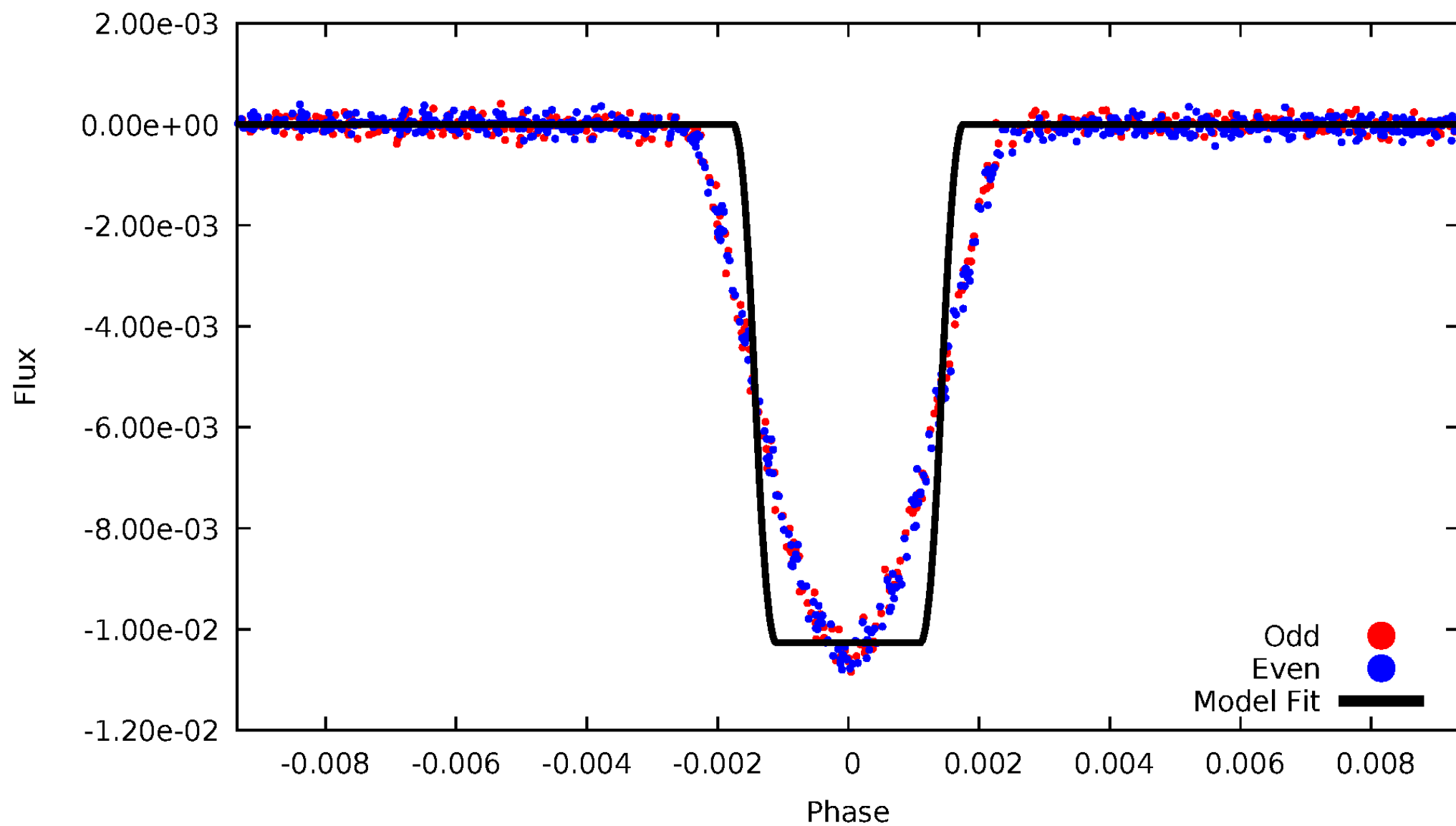
# DV Odd/Even

TCE 002309719-01

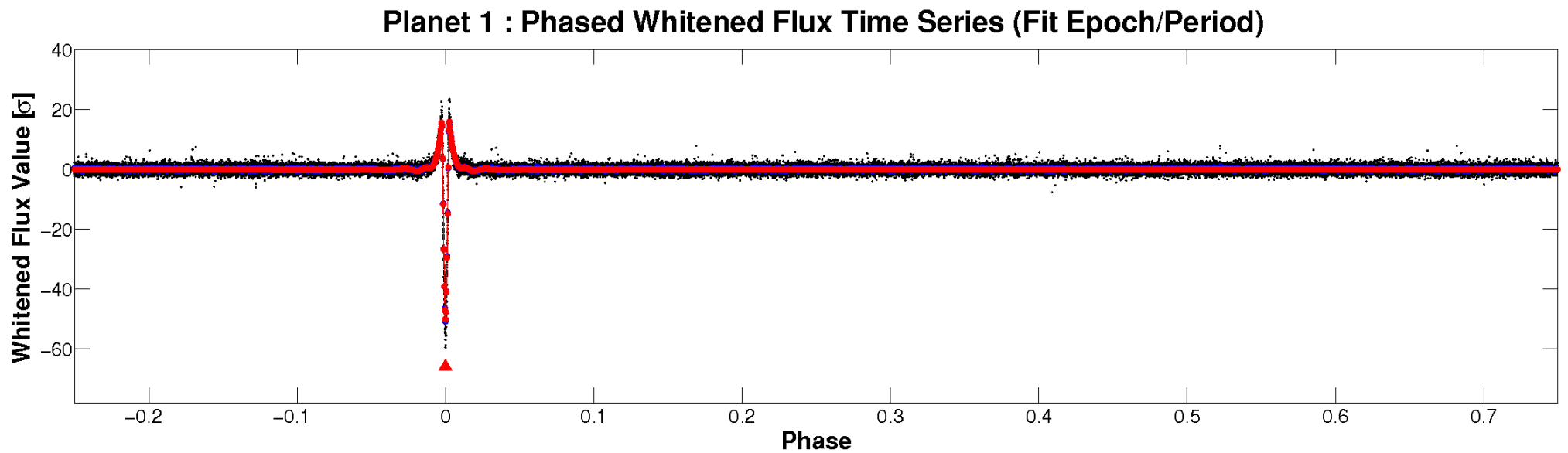
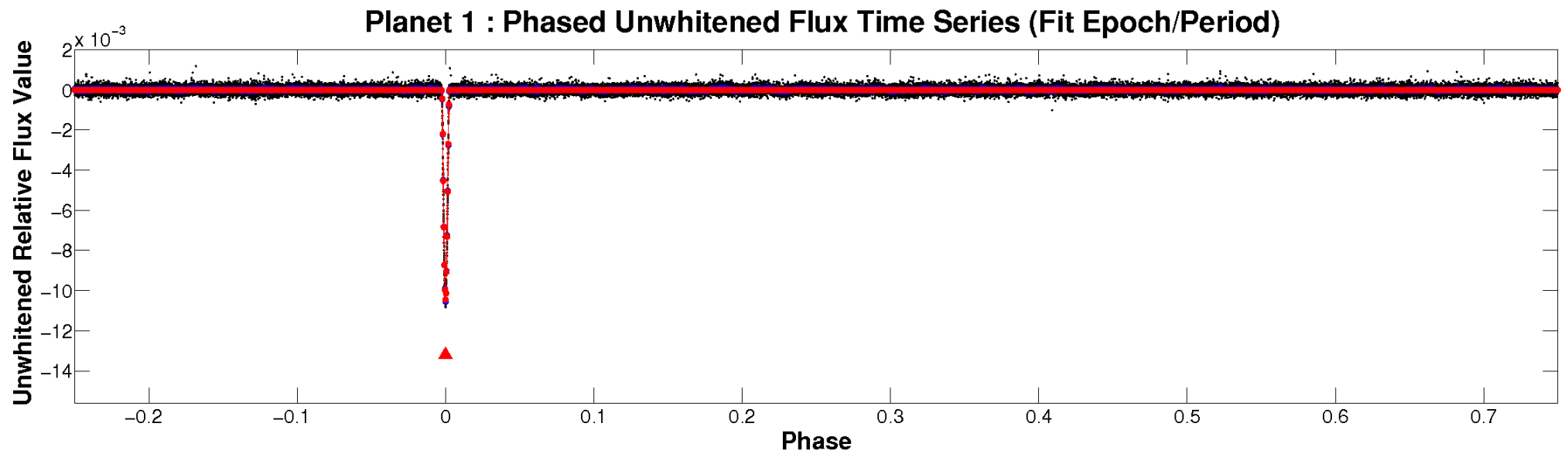


# ALT Odd/Even

TCE 002309719-01

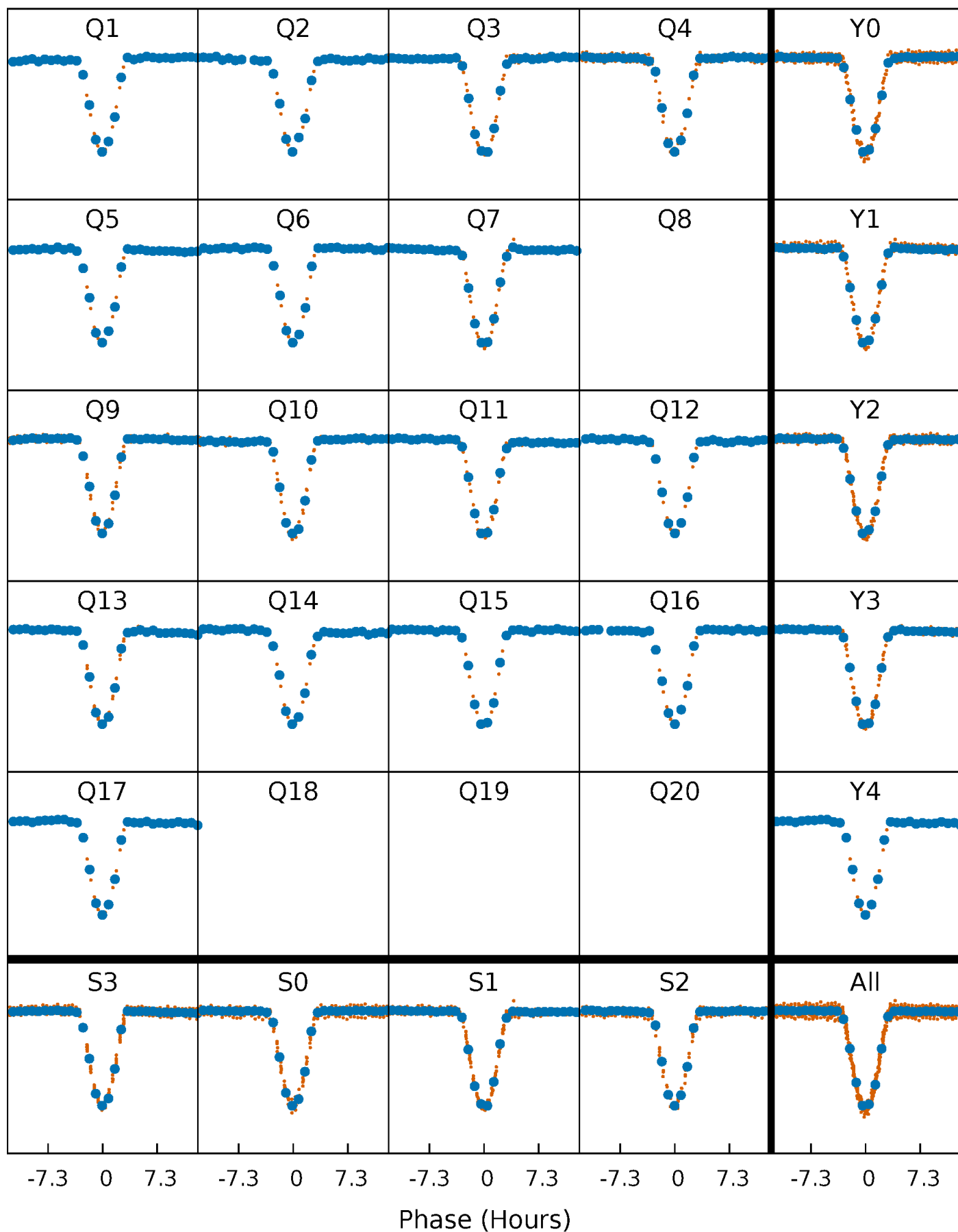


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

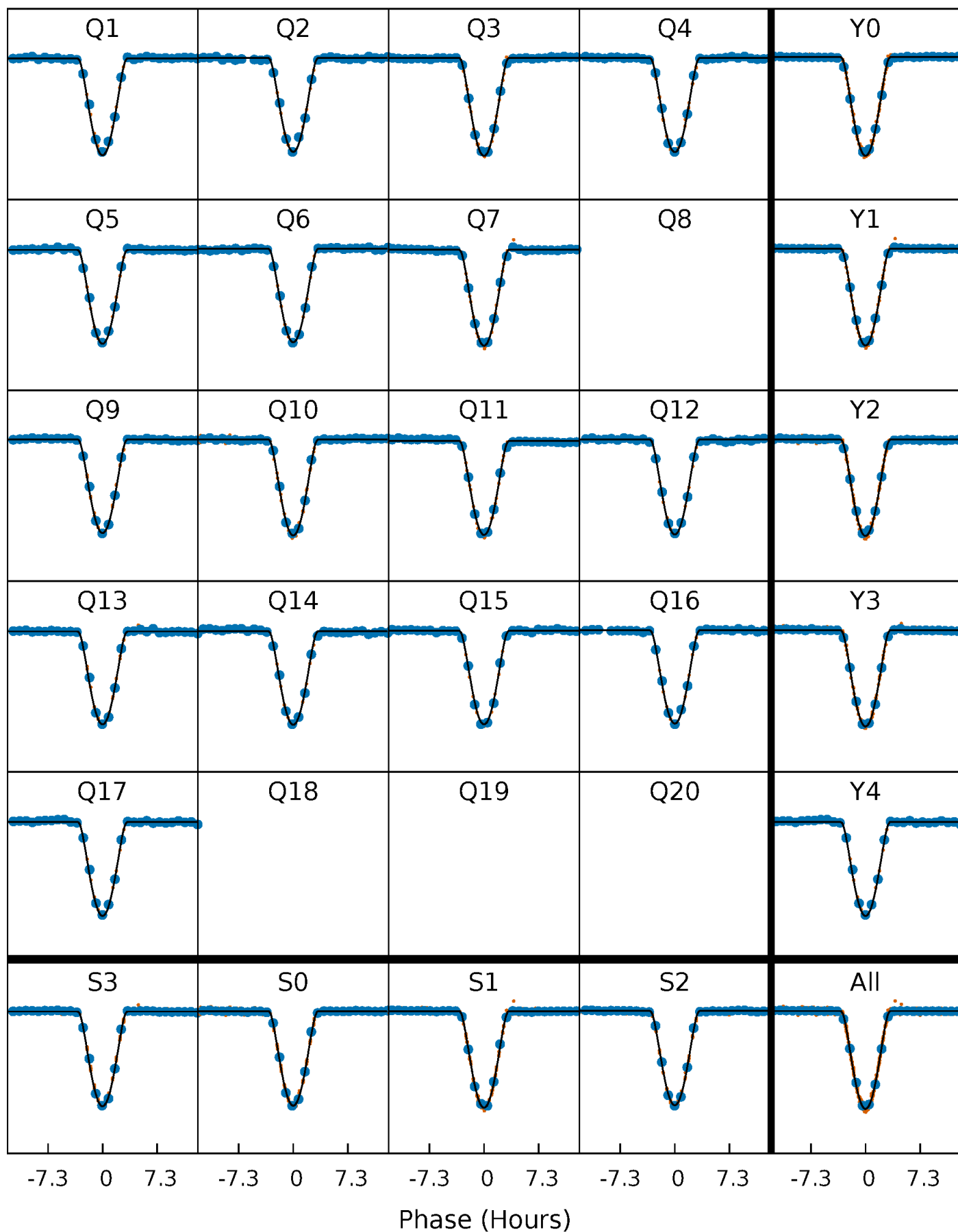
TCE 002309719-01 P= 54.356333 Days  $T_0=164.070277$  (BKJD)





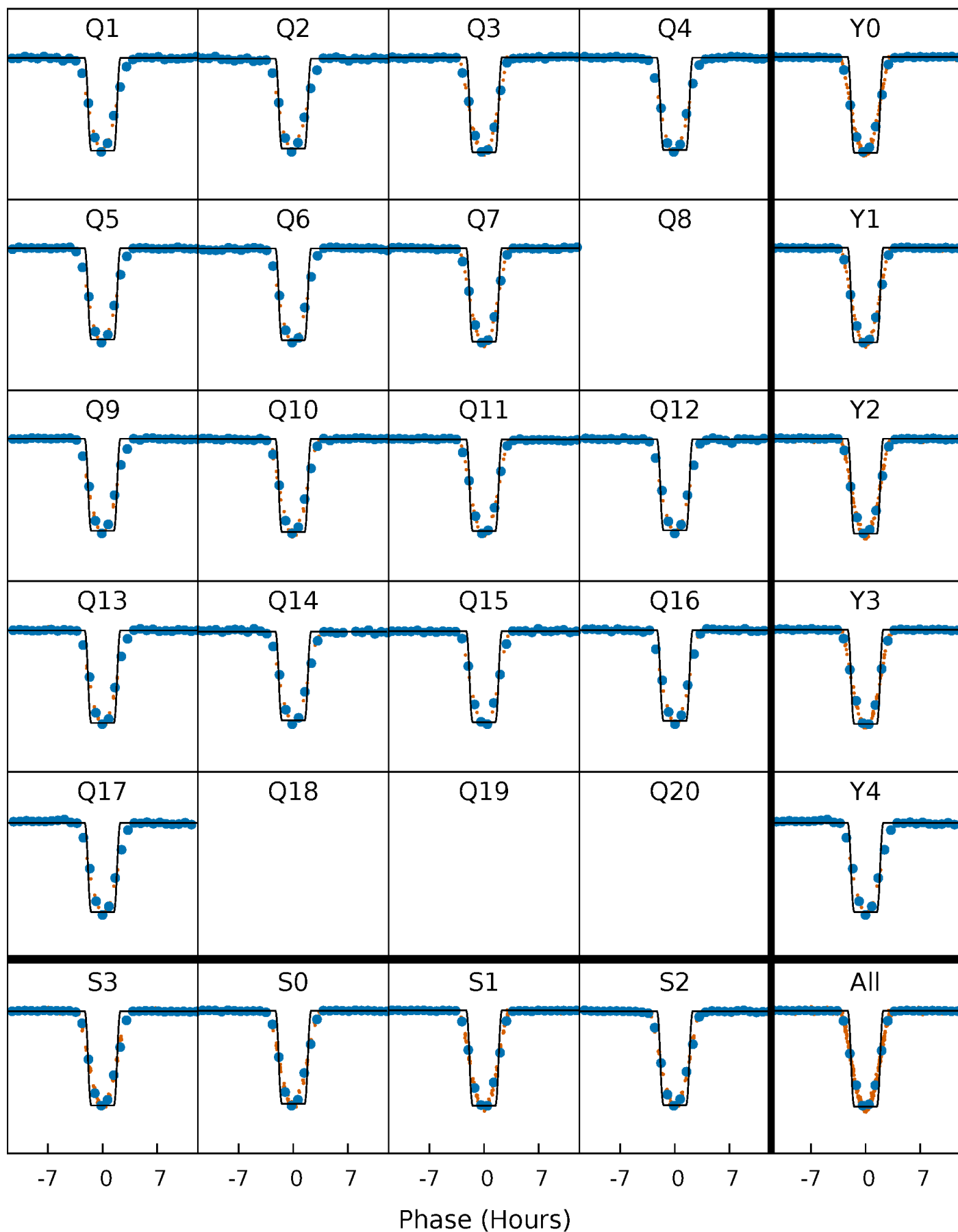
# DV Quarter-Phased Transit Curves

TCE 002309719-01 P= 54.356333 Days  $T_0=164.070277$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

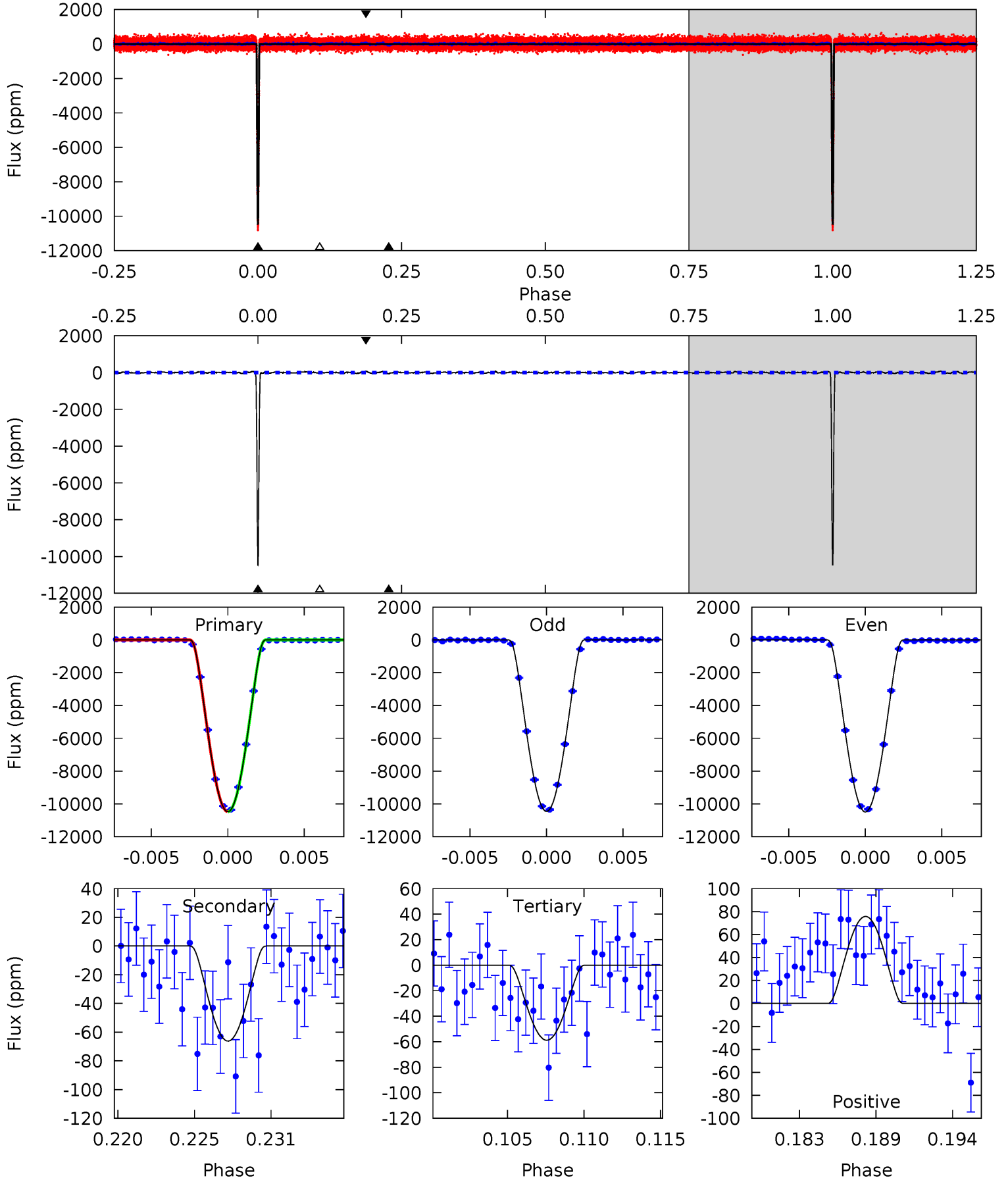
TCE 002309719-01 P= 54.356095 Days  $T_0=164.073236$  (BKJD)



# DV Model-Shift Uniqueness Test

002309719-01, P = 54.356333 Days, E = 109.713944 Days

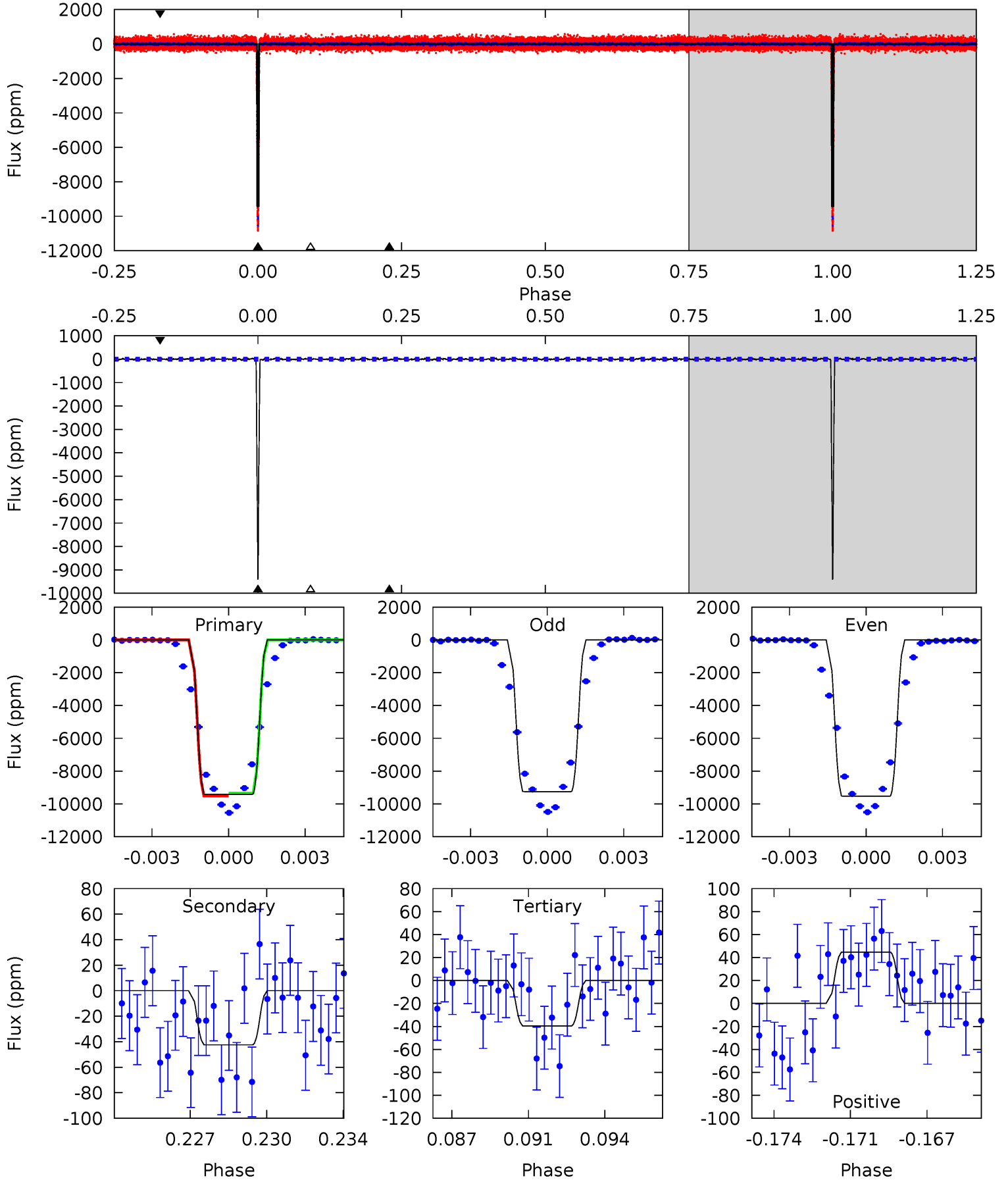
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1272	8.04	7.14	9.20	5.15	2.79	2.45	1265	1263	0.90	-1.16	1.88	1.00	0.01	0.42



# Alt Model-Shift Uniqueness Test

002309719-01, P = 54.356095 Days, E = 109.717141 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
881.1	3.97	3.71	4.19	5.22	2.92	1.23	877.4	876.9	0.26	-0.22	12.8	0.99	0.00	8.42



### Stellar Parameters For KIC 002309719

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6161^{+123}_{-135}$	$4.281^{+0.120}_{-0.120}$	$0.000^{+0.150}_{-0.150}$	$1.255^{+0.218}_{-0.158}$	$1.095^{+0.103}_{-0.075}$	$0.780^{+0.400}_{-0.285}$
	+2%/-2%	+3%/-3%	+inf%/-inf%	+17%/-13%	+9%/-7%	+51%/-37%
Source	SPE57	SPE57	SPE57	DSEP		

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

### Secondary Eclipse Parameters for KIC 002309719-01 / KOI 1020.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-66 \pm 8$	$22.76^{+2.87}_{-2.23}$	$790^{+38}_{-35}$	$2274^{+55}_{-58}$	$5.865^{+1.474}_{-1.339}$
Alt.	$-42 \pm 11$	$13.88^{+2.14}_{-1.88}$	$791^{+37}_{-37}$	$2432^{+107}_{-108}$	$10^{+5}_{-3}$

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

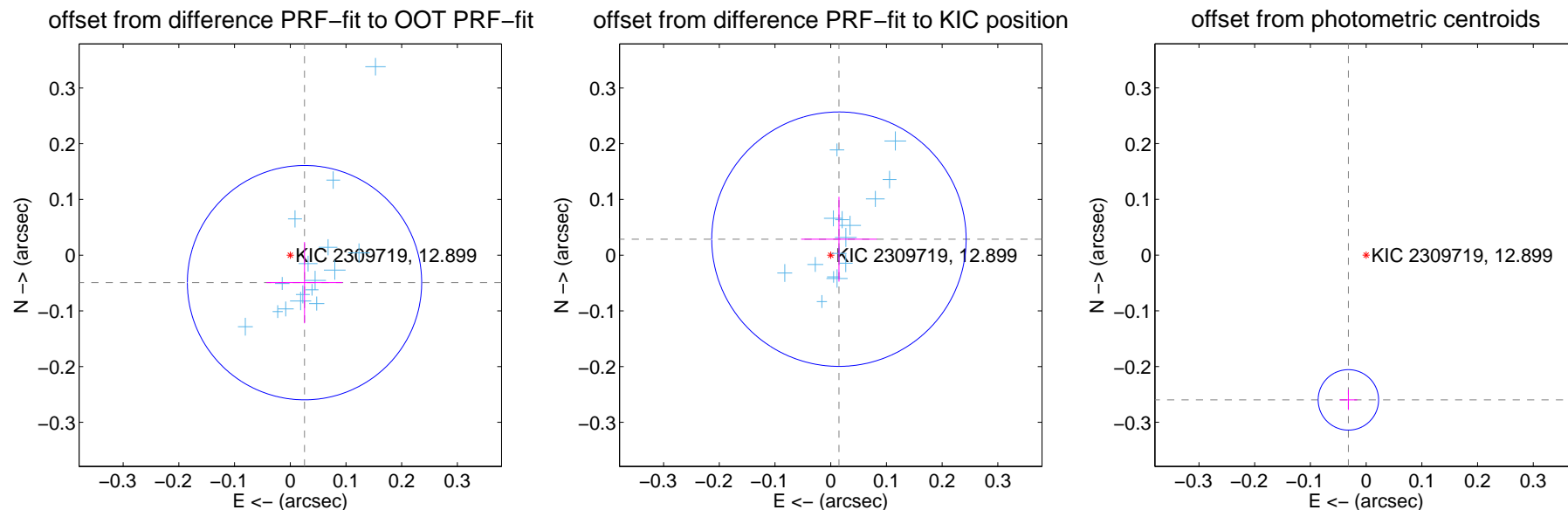
## DV Centroid Data

Supplemental centroid analysis for 002309719-01. Kepler magnitude: 12.90. Transit SNR 545.05

There are 16 quarters with good PRF difference image offsets

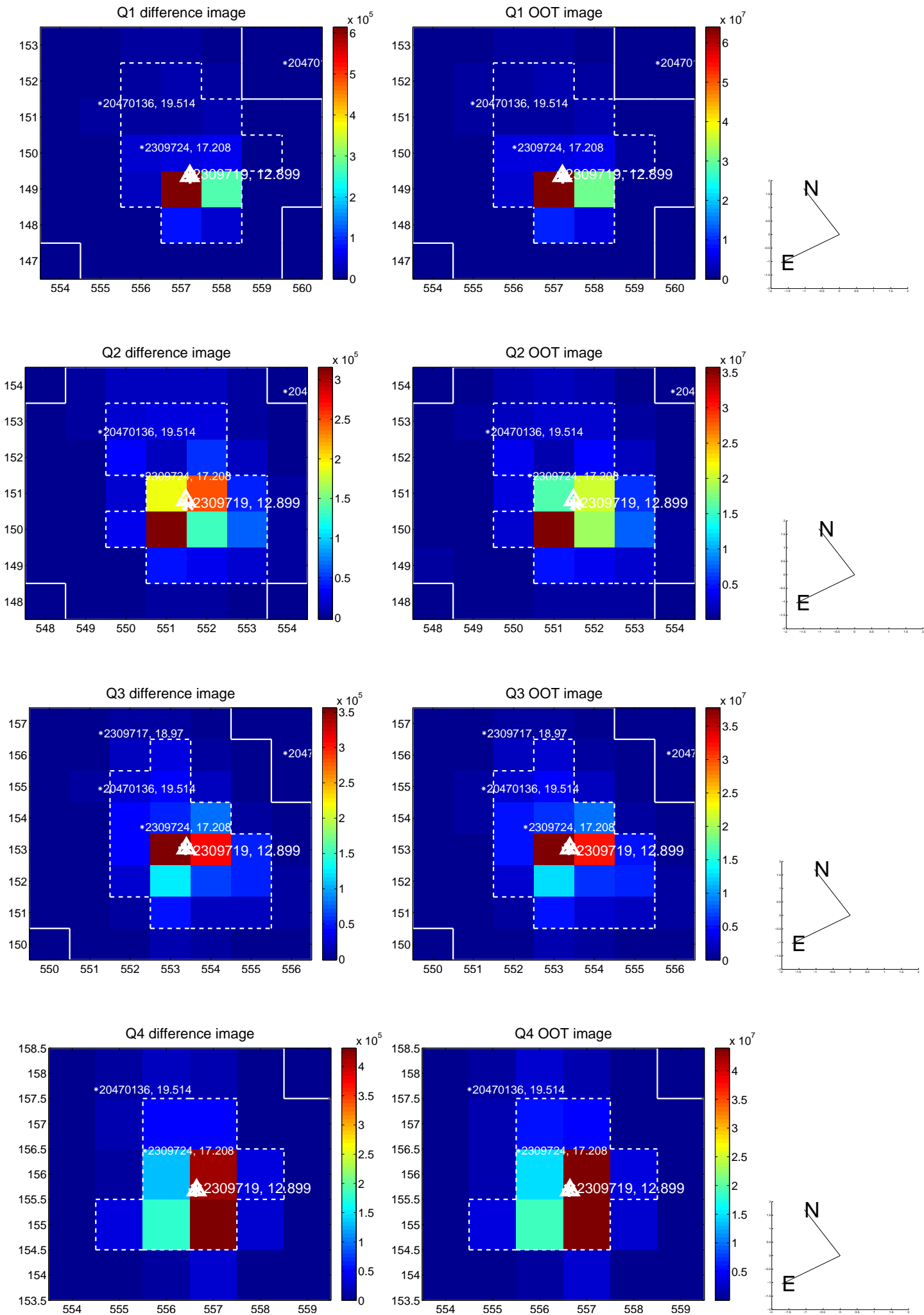
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.056 \pm 0.070$	0.79	$-0.026 \pm 0.068$	$-0.049 \pm 0.073$
PRF-fit source offset from KIC position	$0.032 \pm 0.076$	0.42	$-0.015 \pm 0.068$	$0.029 \pm 0.076$
photometric centroid source offset	$0.26 \pm 0.02$	14.48	$0.03 \pm 0.02$	$-0.26 \pm 0.02$

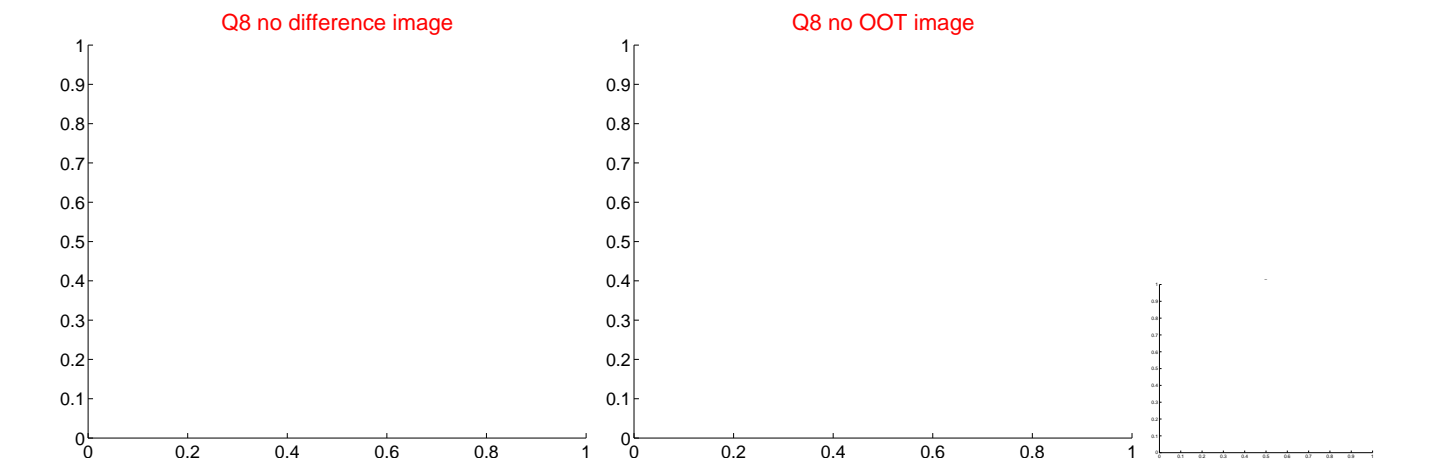
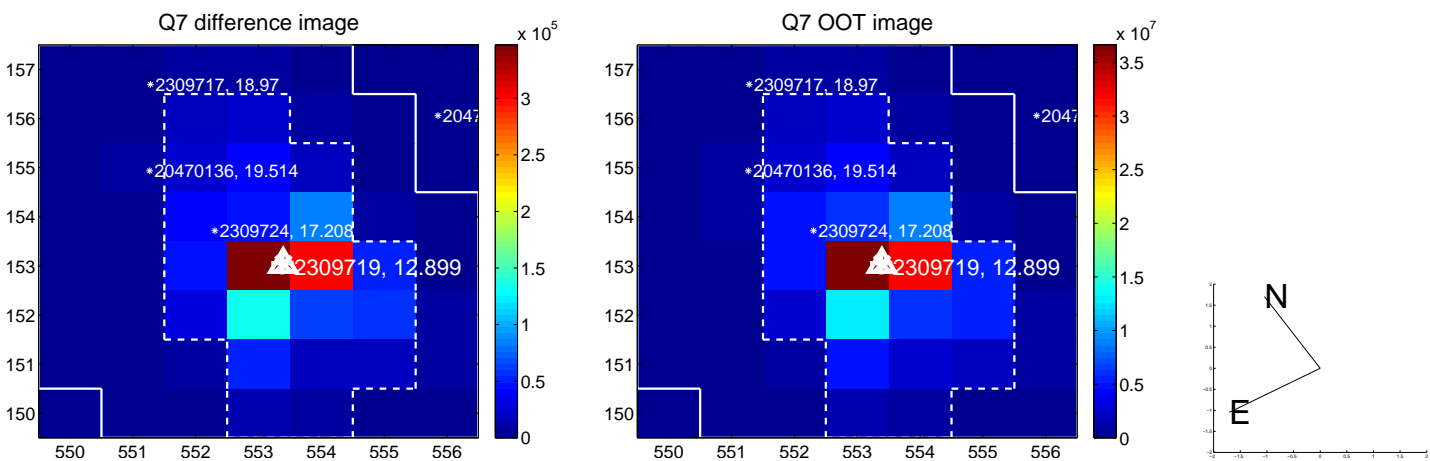
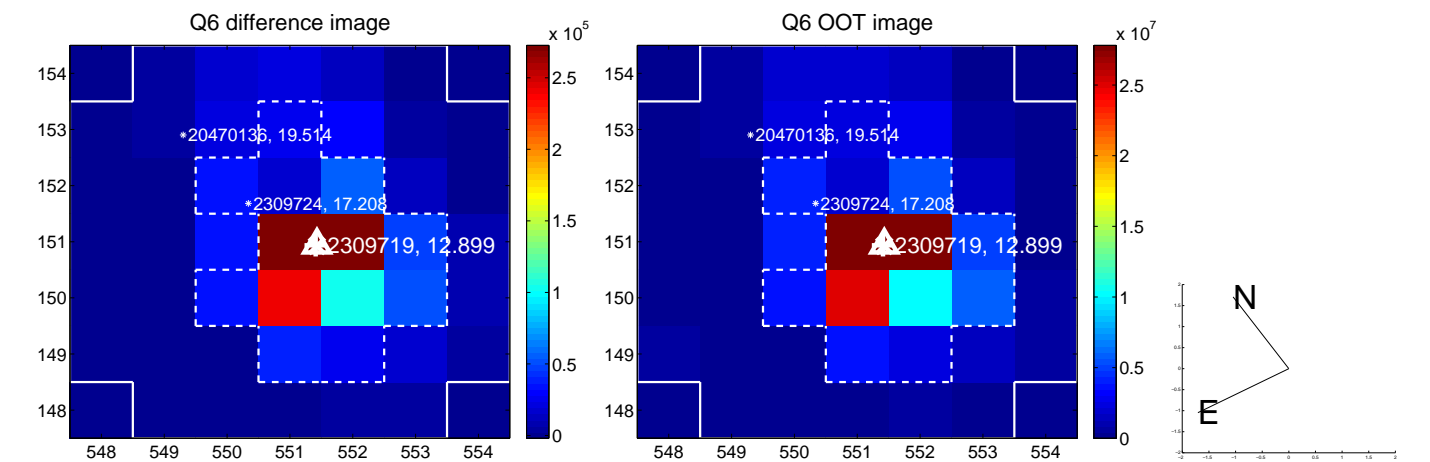
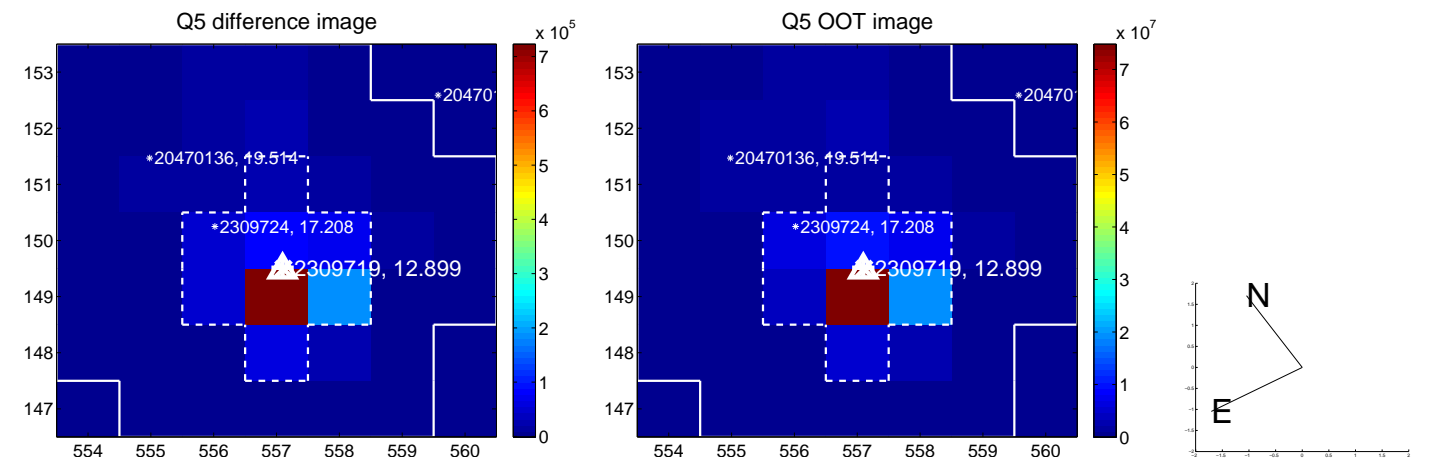


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

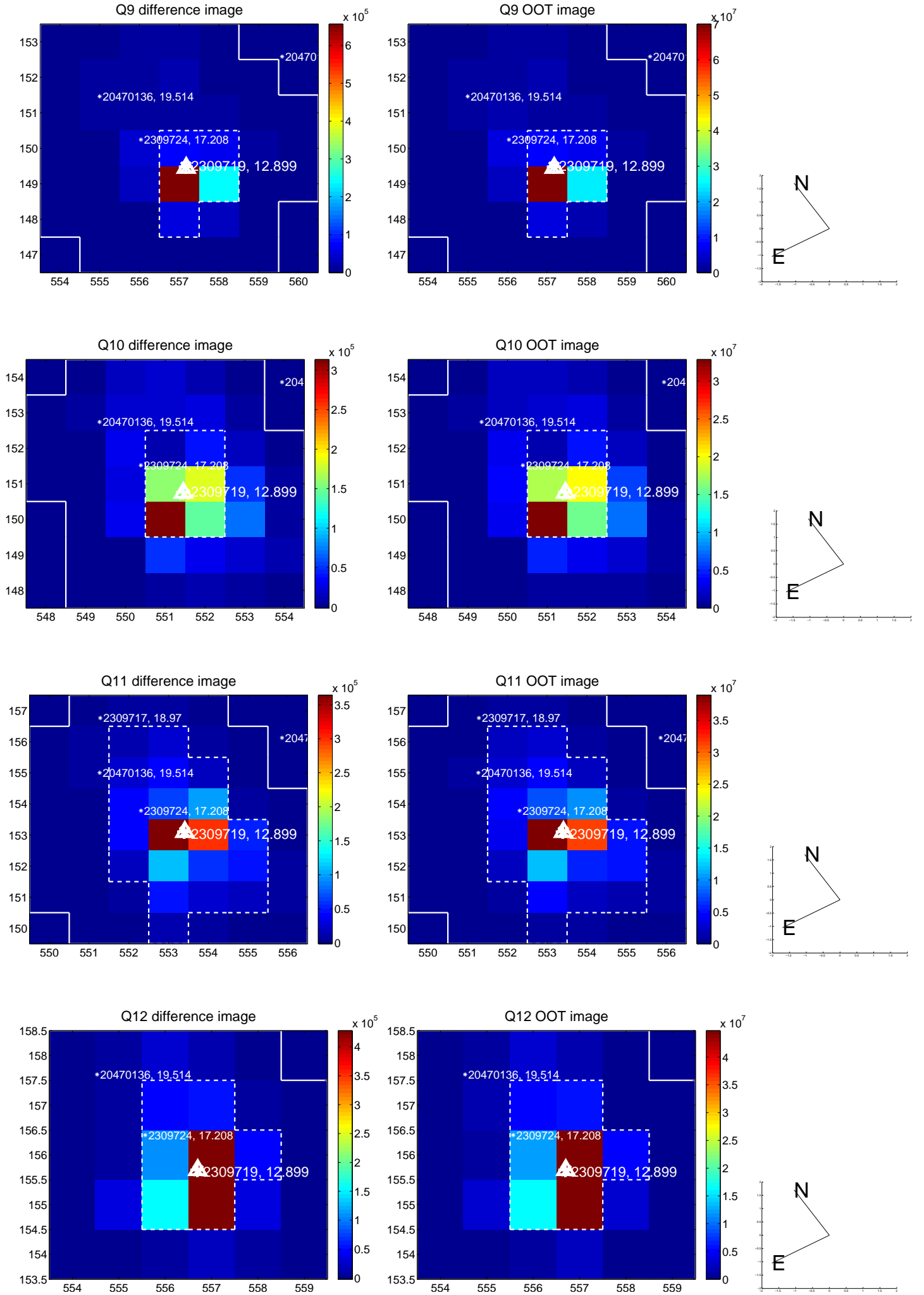


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

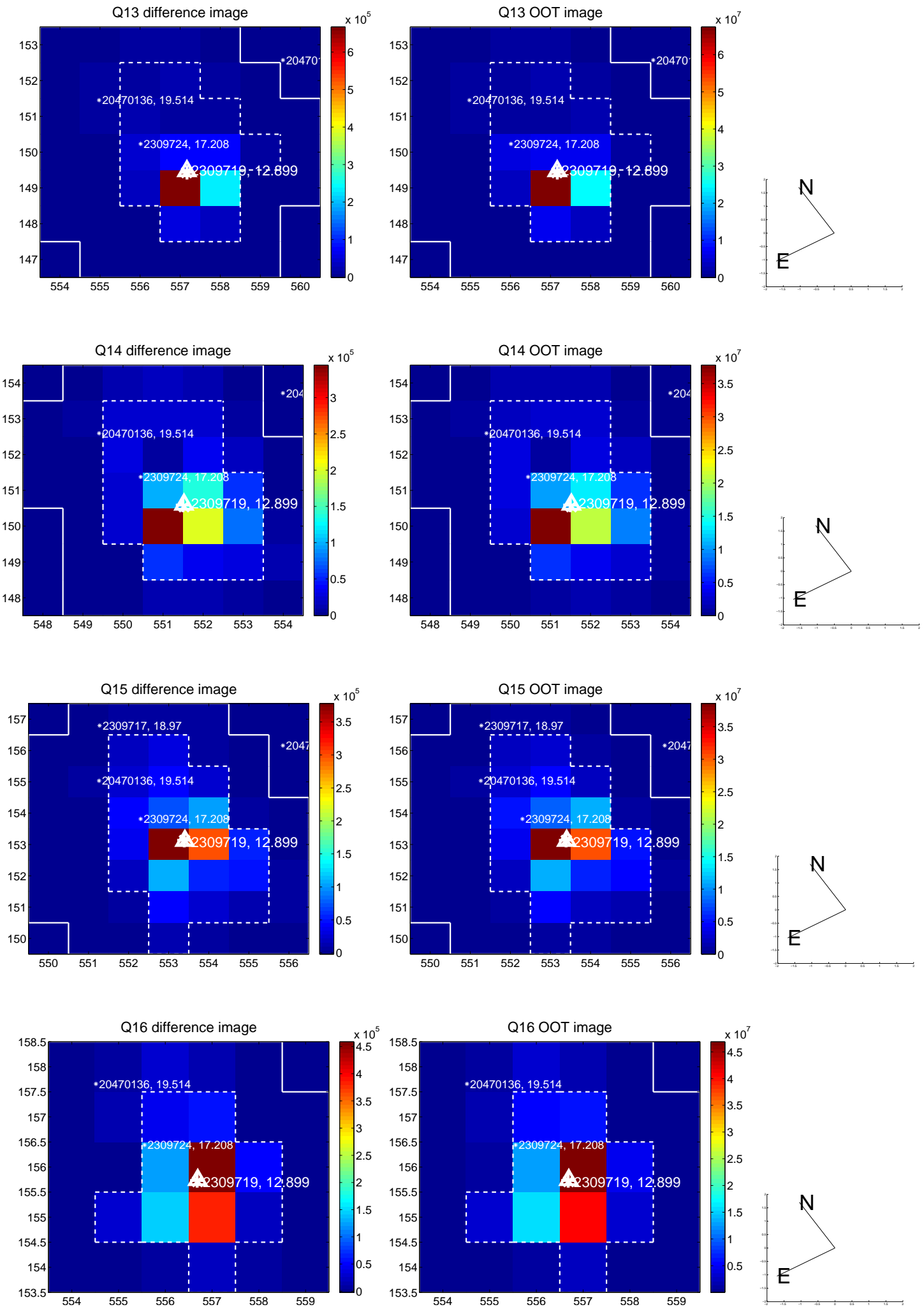




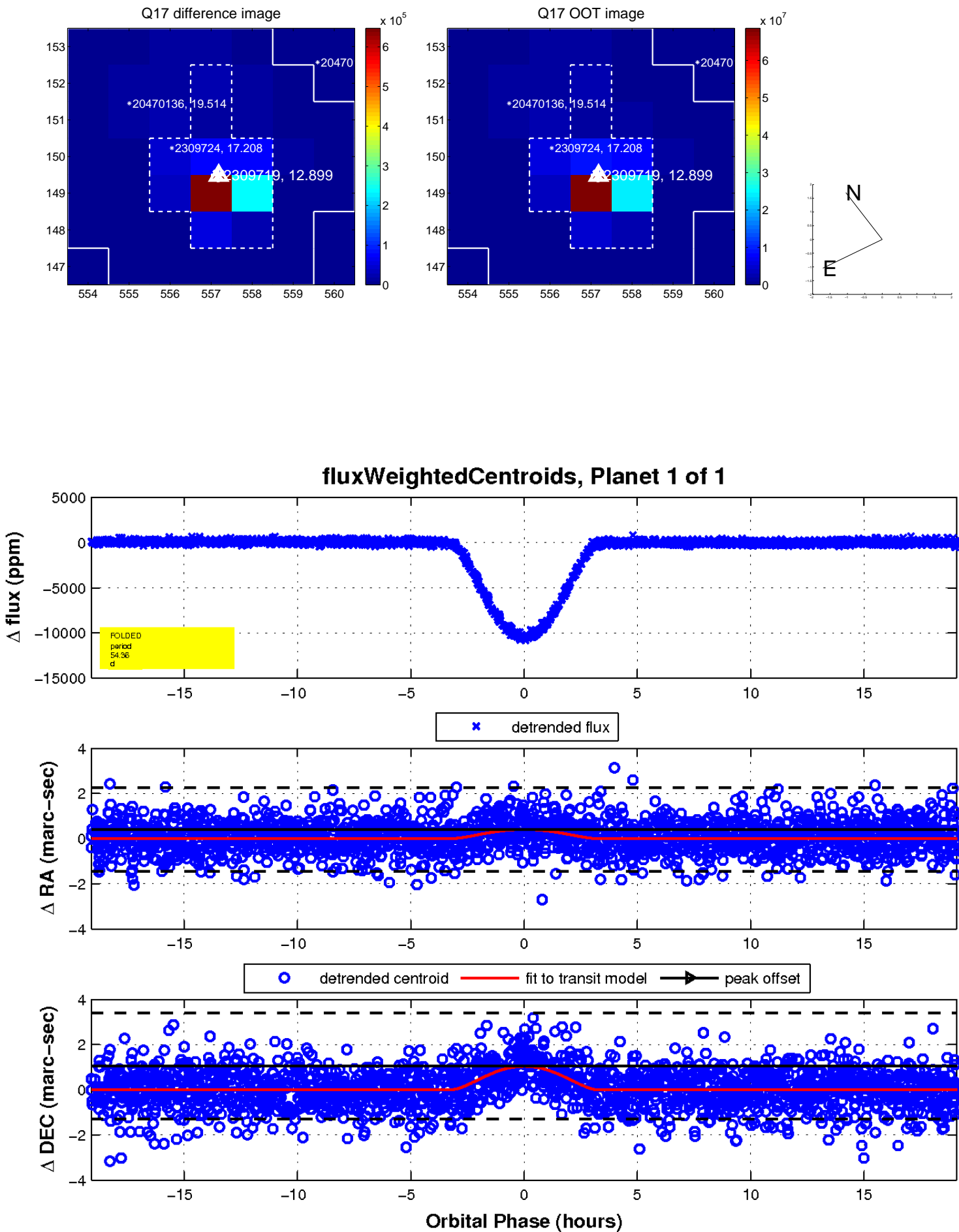
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

