

# KIC 009651668

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009651668-01	OBS	0183.01	2.684329	133.354748	18119.4	2.726	2803.8	2685.9	0.96	5561	12.86	606.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009651668-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT

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

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

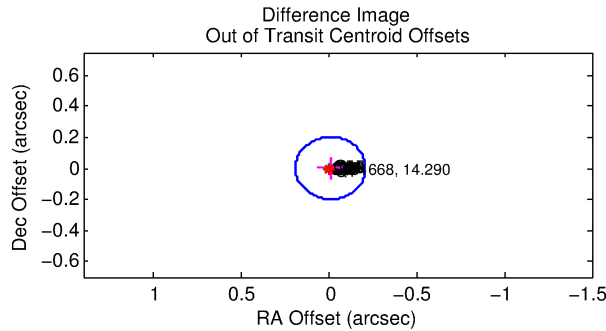
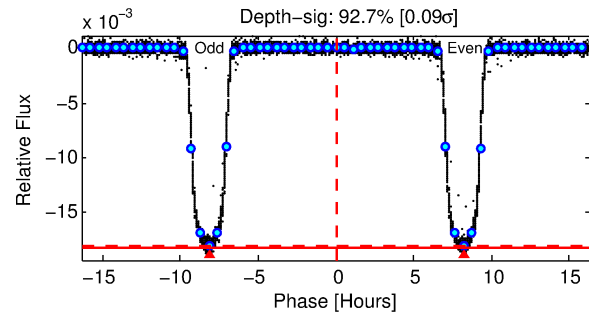
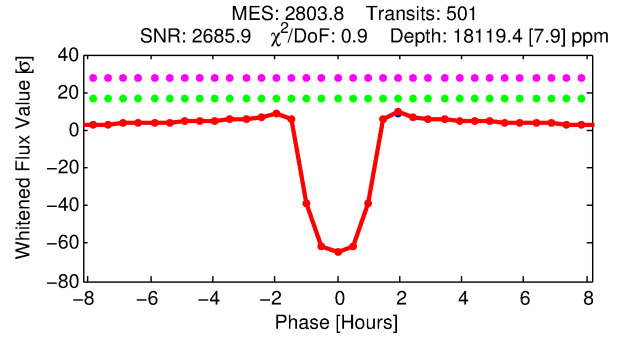
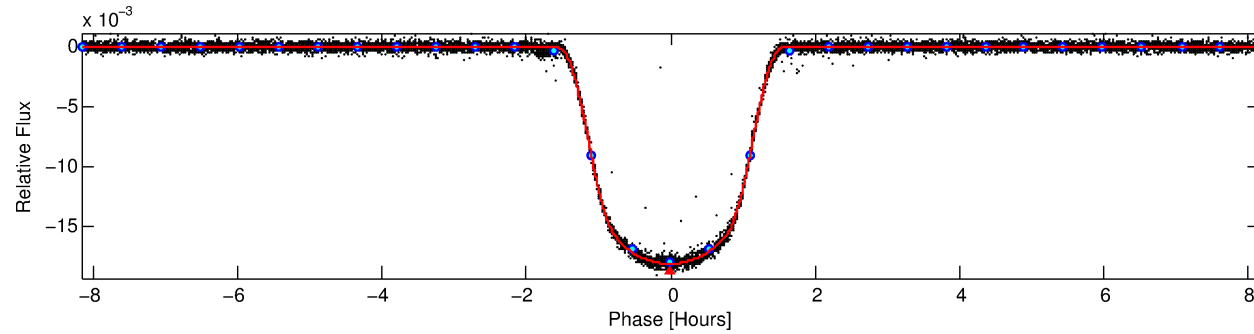
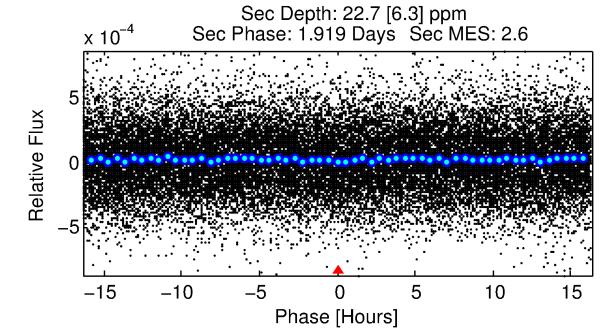
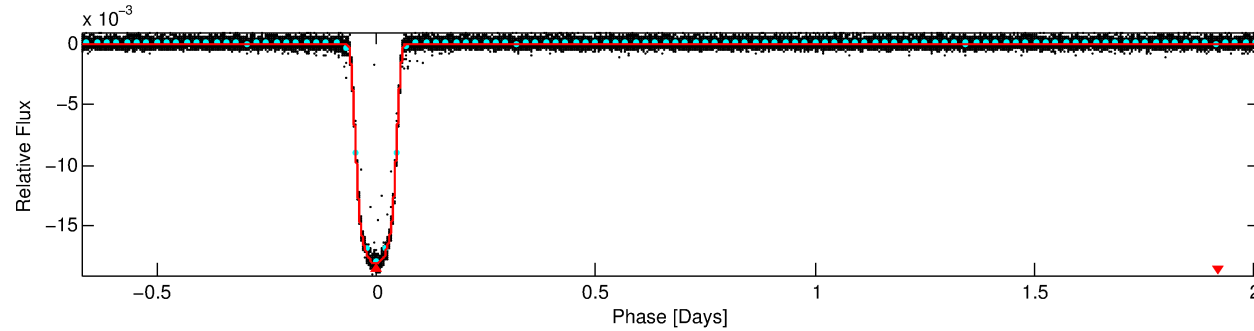
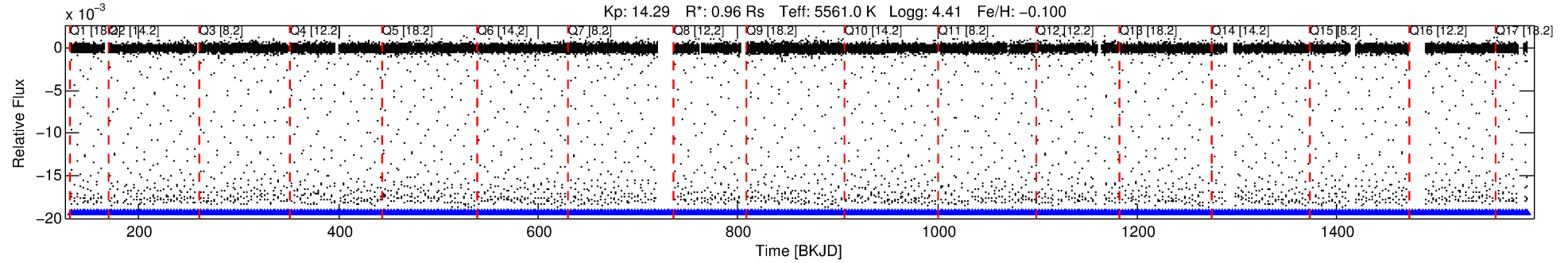
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009651668-01

No Significant Match Found

# DV One-Page Summary

KIC: 9651668 Candidate: 1 of 1 Period: 2.684 d  
KOI: K00183.01 Name: Kepler-423b Corr: 0.992



## DV Fit Results:

Period = 2.68433 [0.00000] d  
Epoch = 133.3547 [0.0000] BKJD  
Rp/R\* = 0.1233 [0.0002]  
a/R\* = 8.14 [0.04]  
b = 0.31 [0.02]  
Seff = 606.31 [118.73]  
Teq = 1265 [62] K  
Rp = 12.86 [1.61] Re  
a = 0.0359 [0.0043] AU  
Ag = 0.10 [0.03] [-27.49 $\sigma$ ]  
Teffp = 1093 [78] K [-1.74 $\sigma$ ]

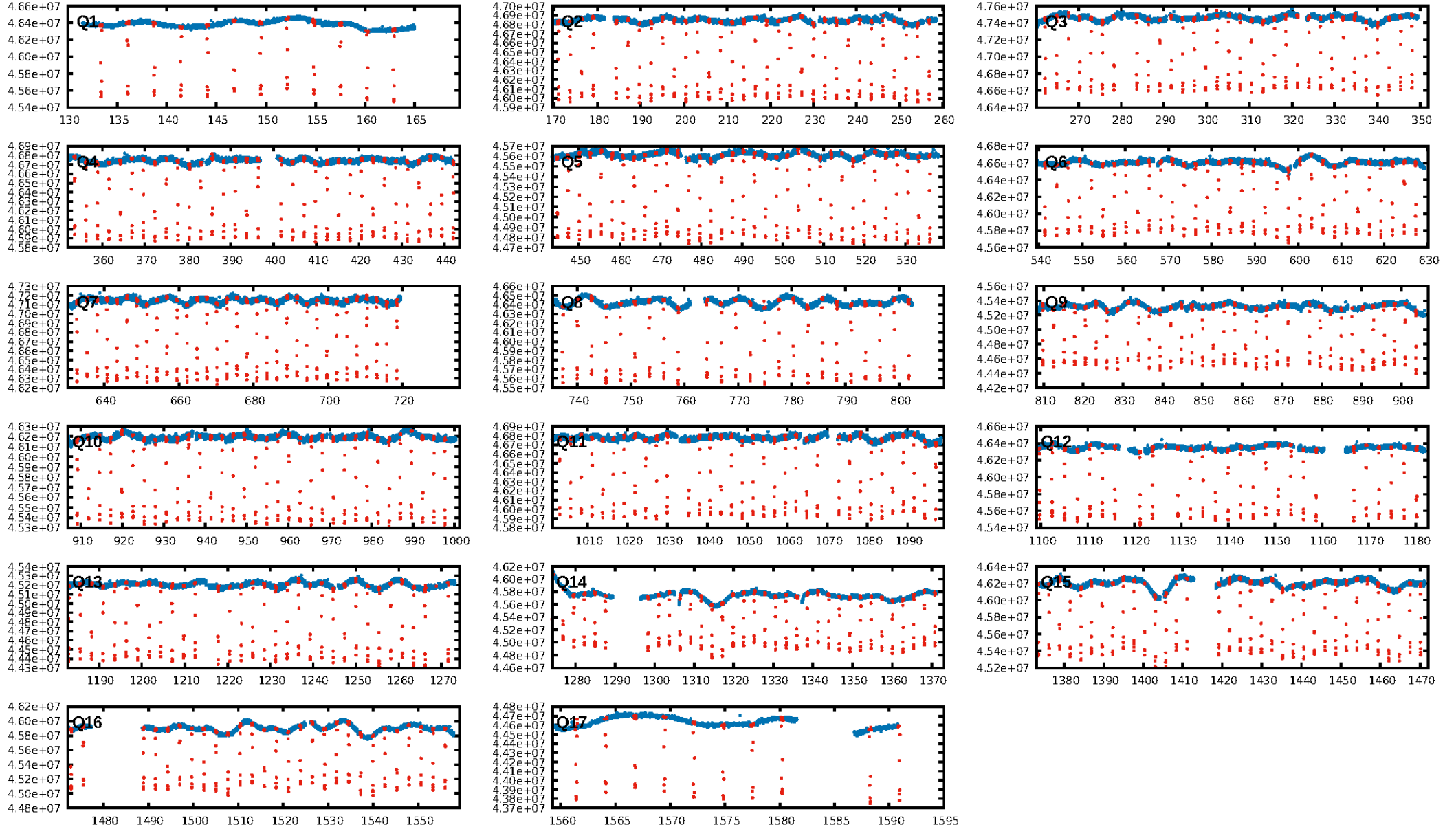
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [479/479]  
GhostDiagnostic-chr: 7.109  
Centroid-sig: 0.0%  
Centroid-so: 0.057 arcsec [13.54 $\sigma$ ]  
OotOffset-rm: 0.008 arcsec [0.12 $\sigma$ ]  
KicOffset-rm: 0.032 arcsec [0.48 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

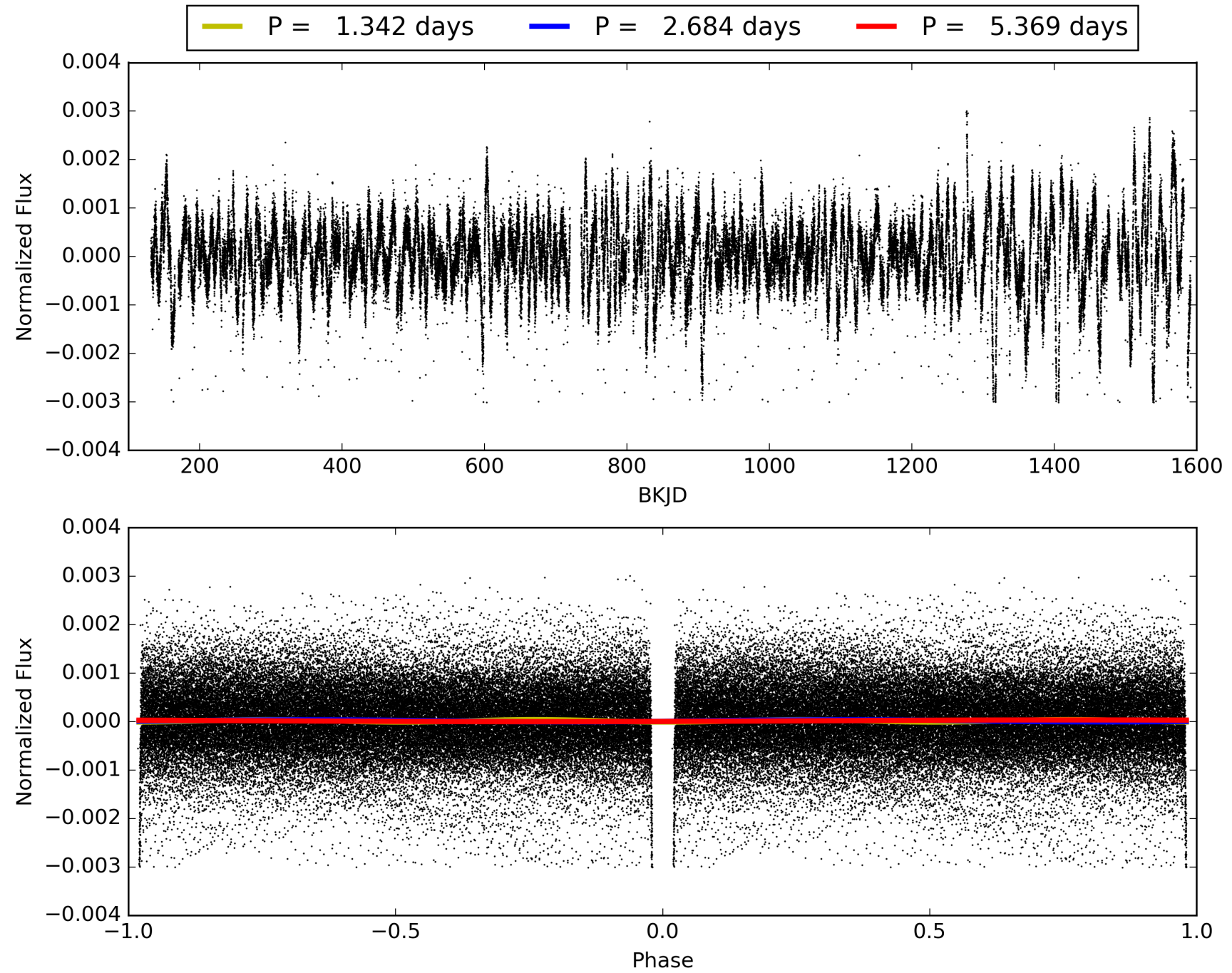
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:42:48 Z

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

# TCE 009651668-01, PDC Light Curves

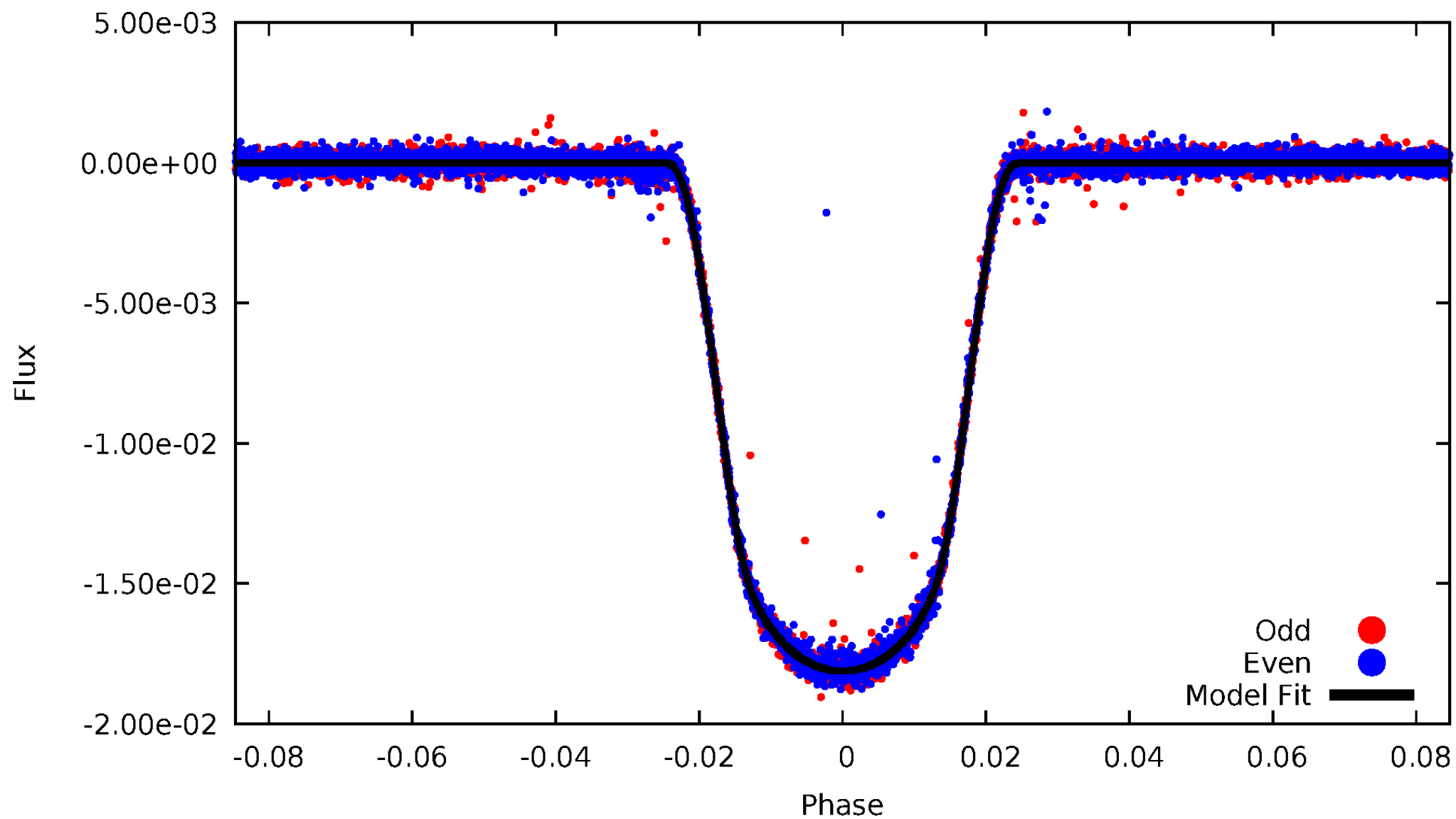


TCE 009651668-01



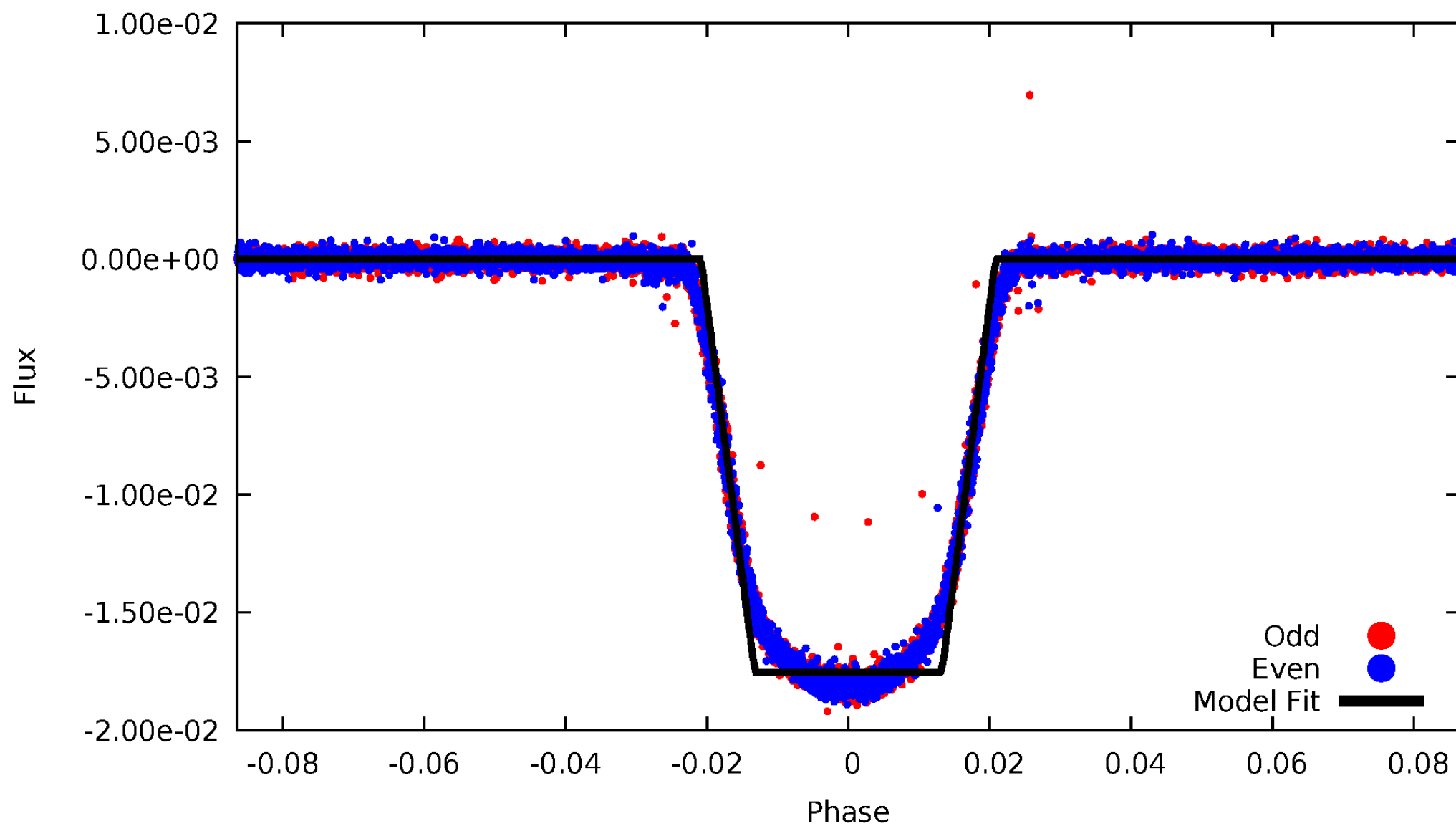
# DV Odd/Even

TCE 009651668-01



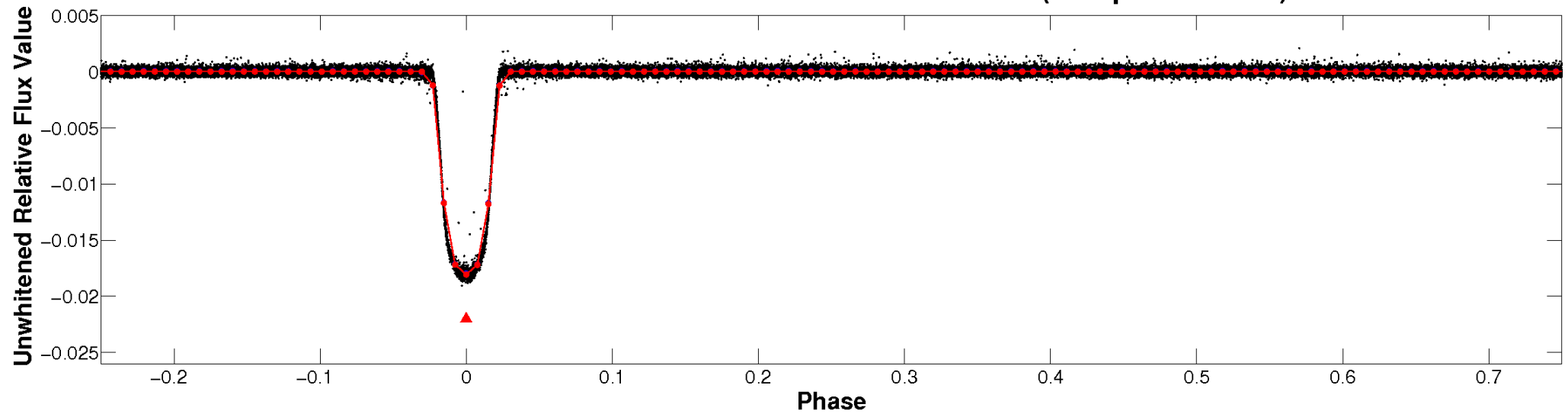
# ALT Odd/Even

TCE 009651668-01

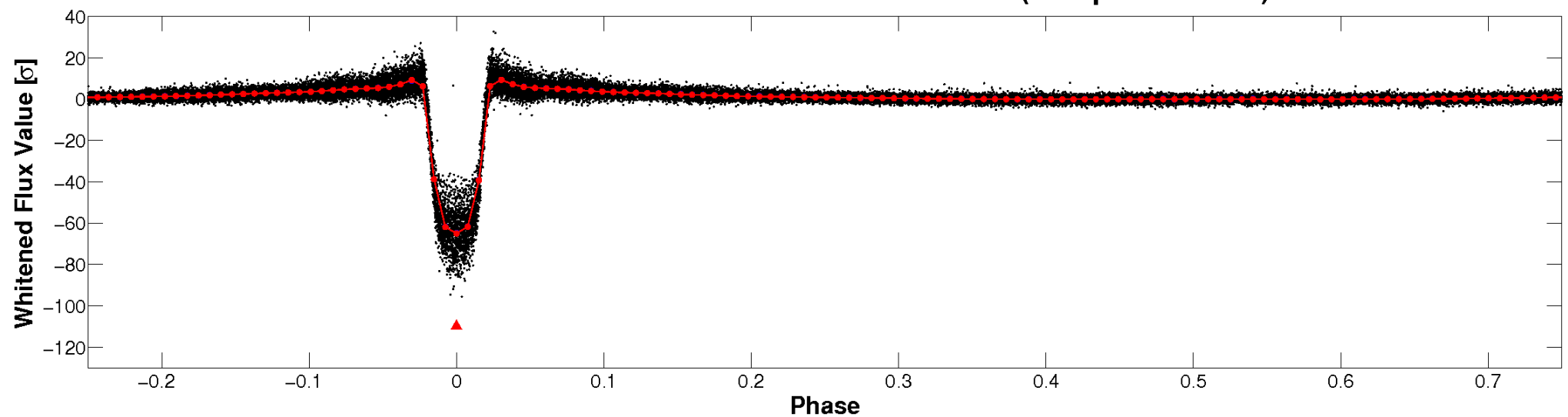


# Non-Whitened Vs. Whitened Light Curve

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

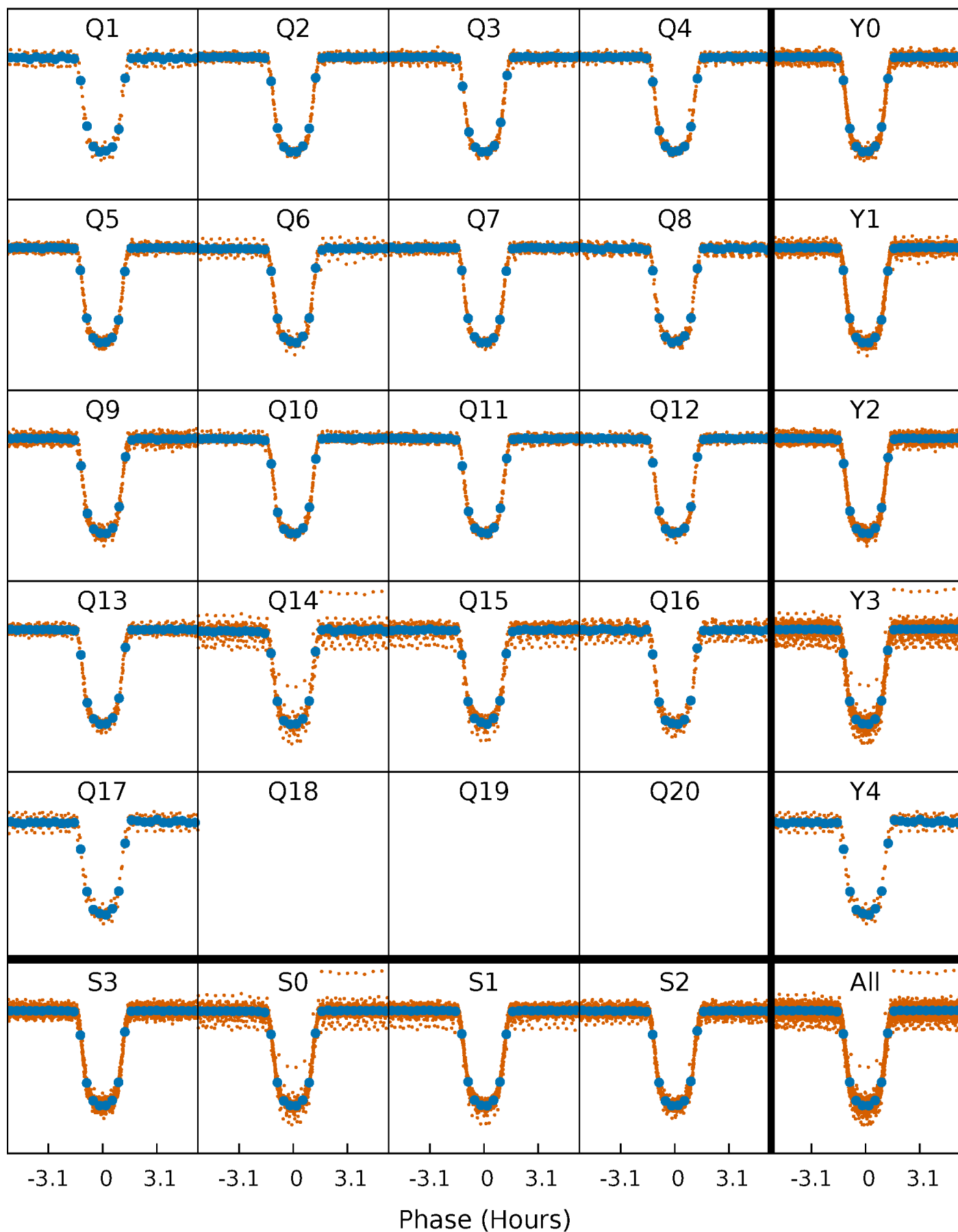


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

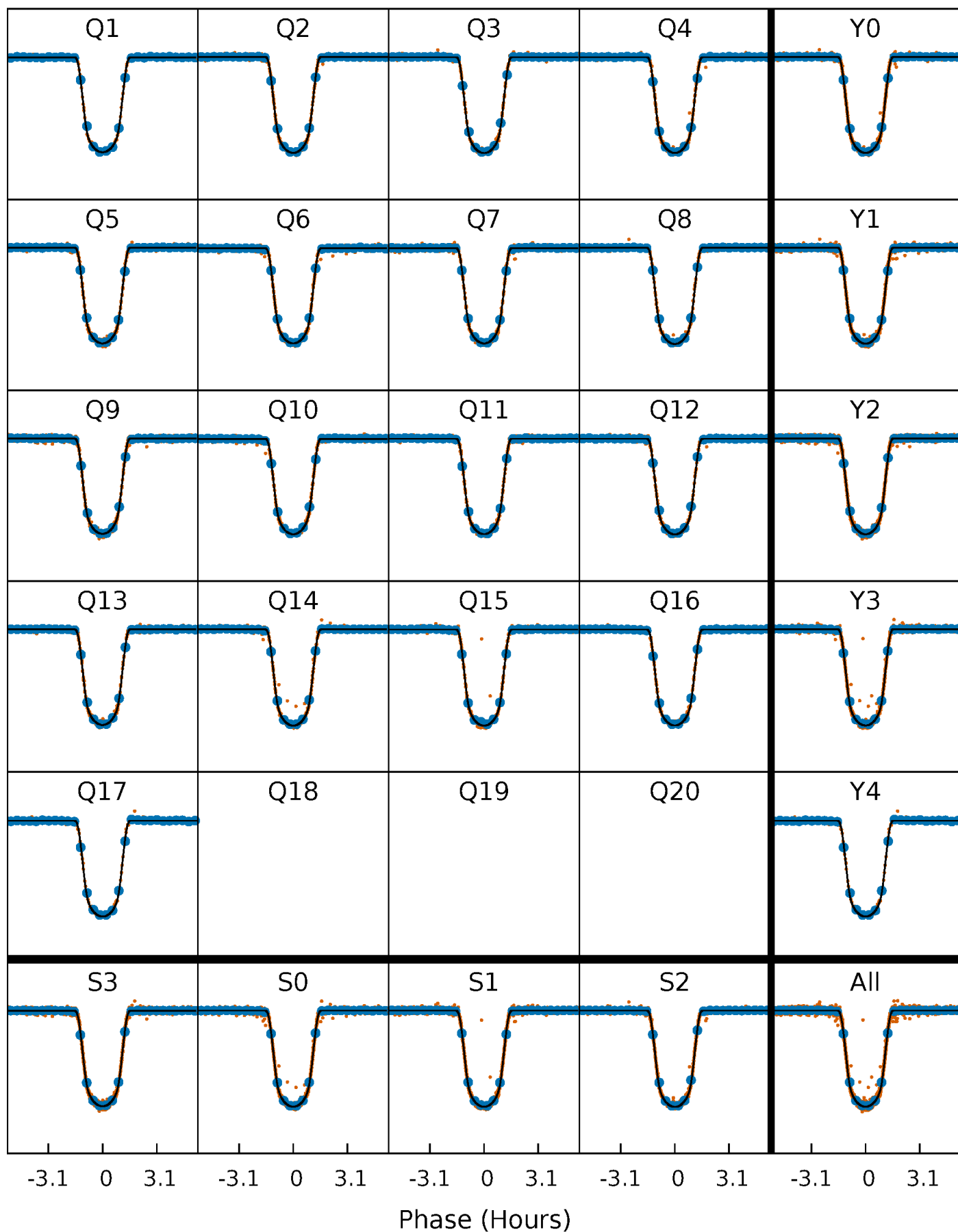
TCE 009651668-01 P= 2.684329 Days  $T_0=133.354748$  (BKJD)





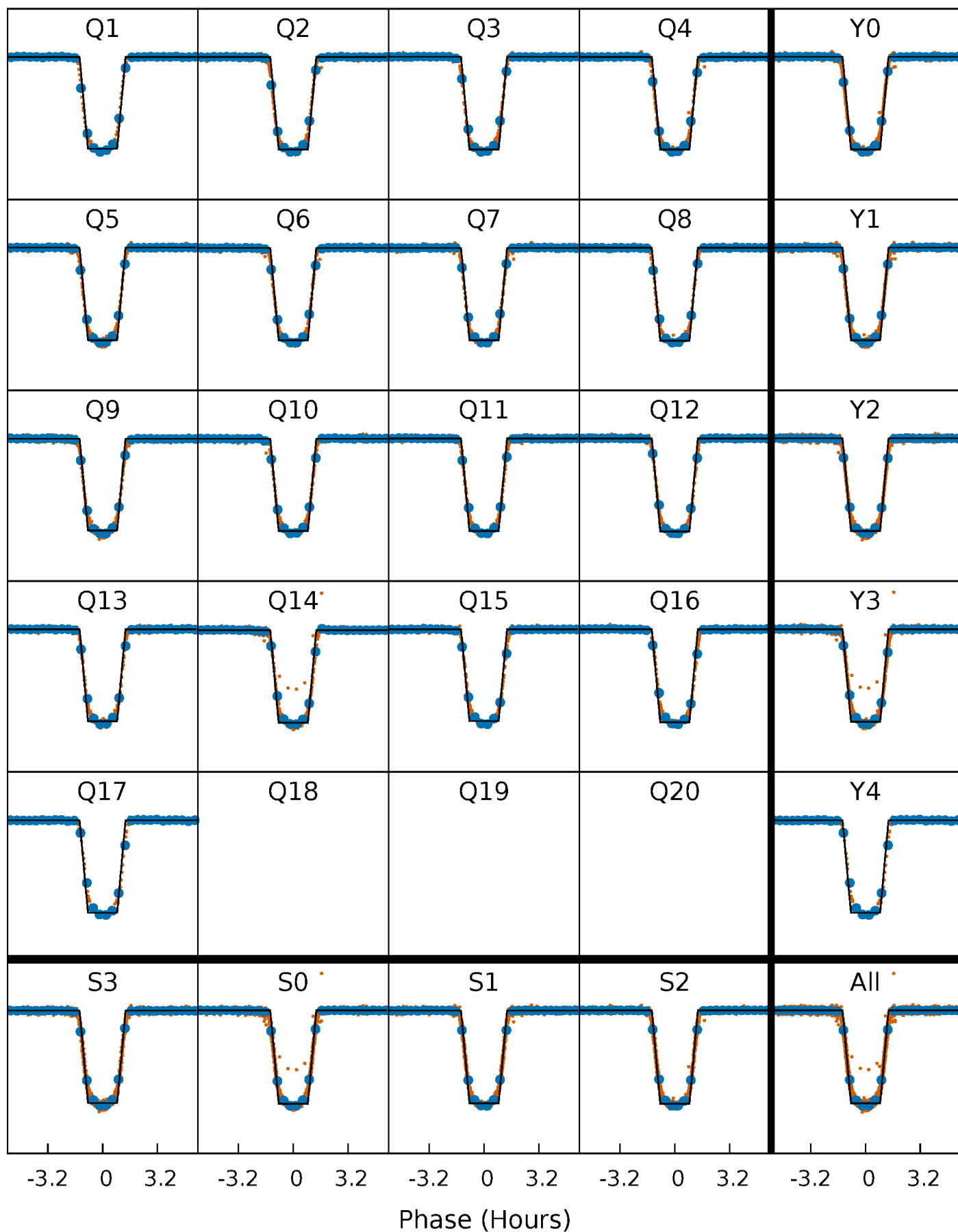
# DV Quarter-Phased Transit Curves

TCE 009651668-01 P= 2.684329 Days  $T_0=133.354748$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

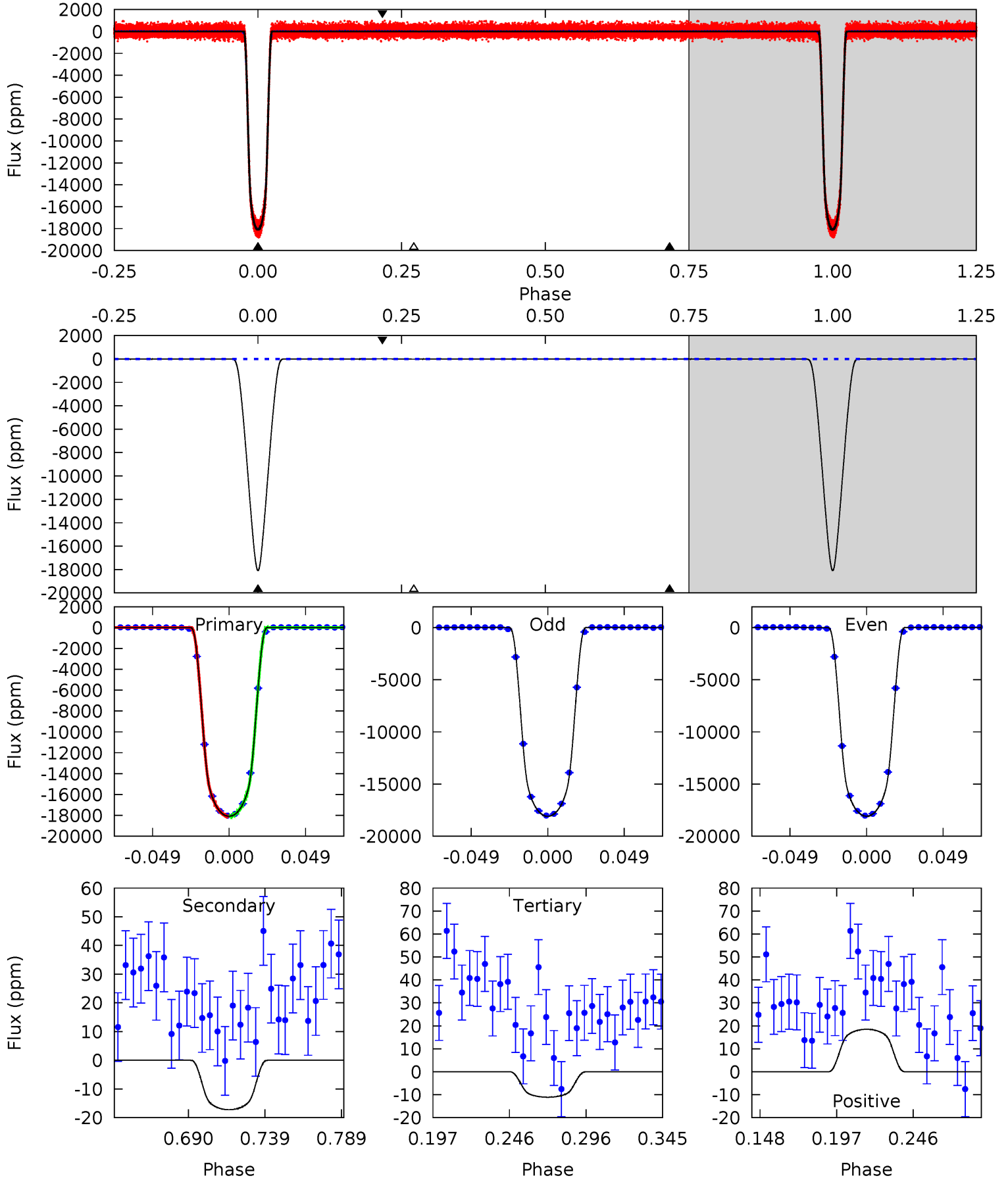
TCE 009651668-01 P= 2.684321 Days  $T_0=133.356834$  (BKJD)



# DV Model-Shift Uniqueness Test

009651668-01, P = 2.684329 Days, E = 130.670419 Days

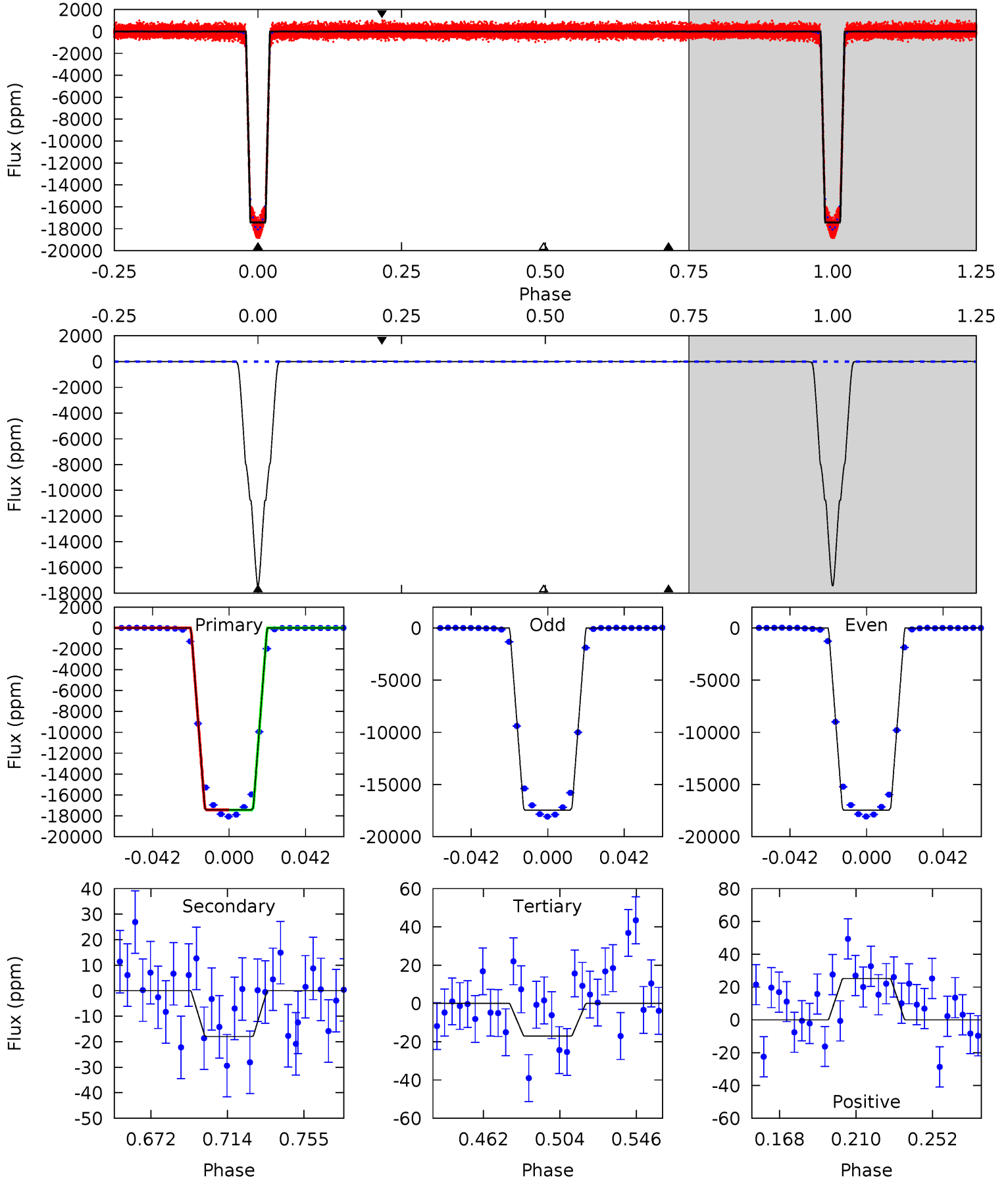
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4408	4.20	2.70	4.51	4.71	1.97	1.48	4406	4404	1.49	-0.31	1.49	1.00	0.00	0.66



# Alt Model-Shift Uniqueness Test

009651668-01, P = 2.684321 Days, E = 130.672513 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
3375	3.48	3.30	4.88	4.74	2.03	1.42	3371	3370	0.18	-1.40	0.36	1.00	0.00	1.34



### Stellar Parameters For KIC 009651668

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5561^{+74}_{-74}$	$4.411^{+0.110}_{-0.090}$	$-0.100^{+0.150}_{-0.150}$	$0.956^{+0.120}_{-0.109}$	$0.859^{+0.065}_{-0.042}$	$1.387^{+0.633}_{-0.366}$
	+1%/-1%	+2%/-2%	+150%/-150%	+13%/-11%	+8%/-5%	+46%/-26%
Source	SPE82	SPE82	SPE82	DSEP		

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

### Secondary Eclipse Parameters for KIC 009651668-01 / KOI 0183.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-17 \pm 4$	$12.82^{+0.94}_{-0.92}$	$1763^{+66}_{-65}$	$-2273^{+58}_{-52}$	$0.073^{+0.023}_{-0.018}$
Alt.	$-18 \pm 5$	$13.82^{+0.99}_{-0.95}$	$1765^{+65}_{-62}$	$-2281^{+54}_{-53}$	$0.067^{+0.021}_{-0.021}$

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

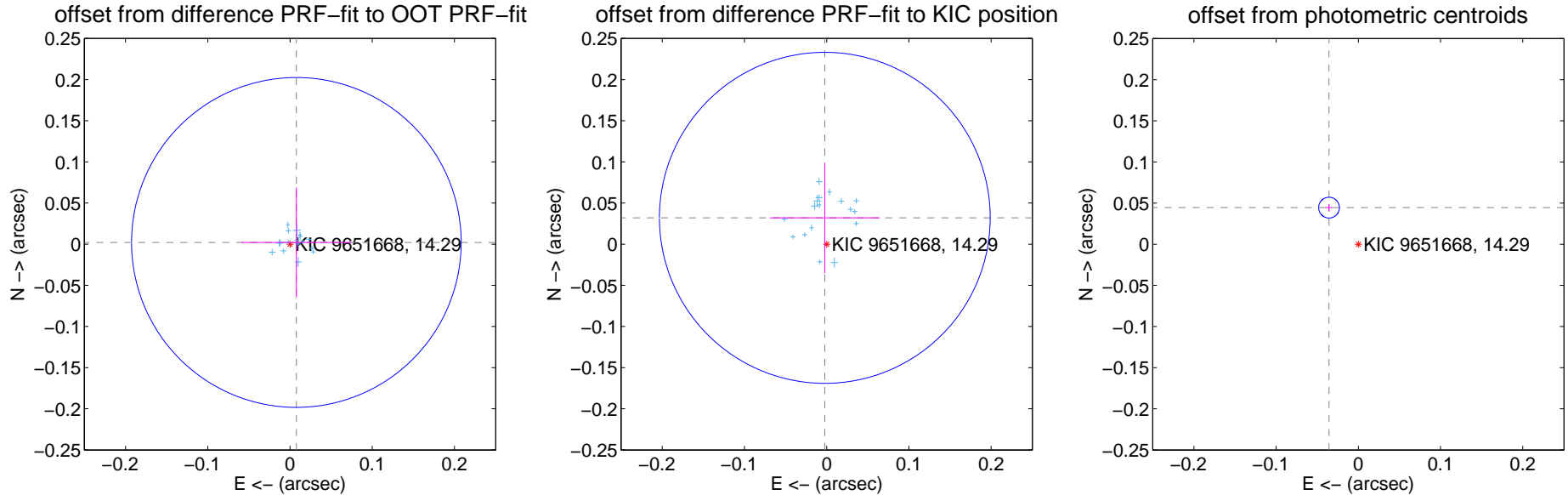
## DV Centroid Data

Supplemental centroid analysis for 009651668-01. Kepler magnitude: 14.29. Transit SNR 2685.86

There are 17 quarters with good PRF difference image offsets

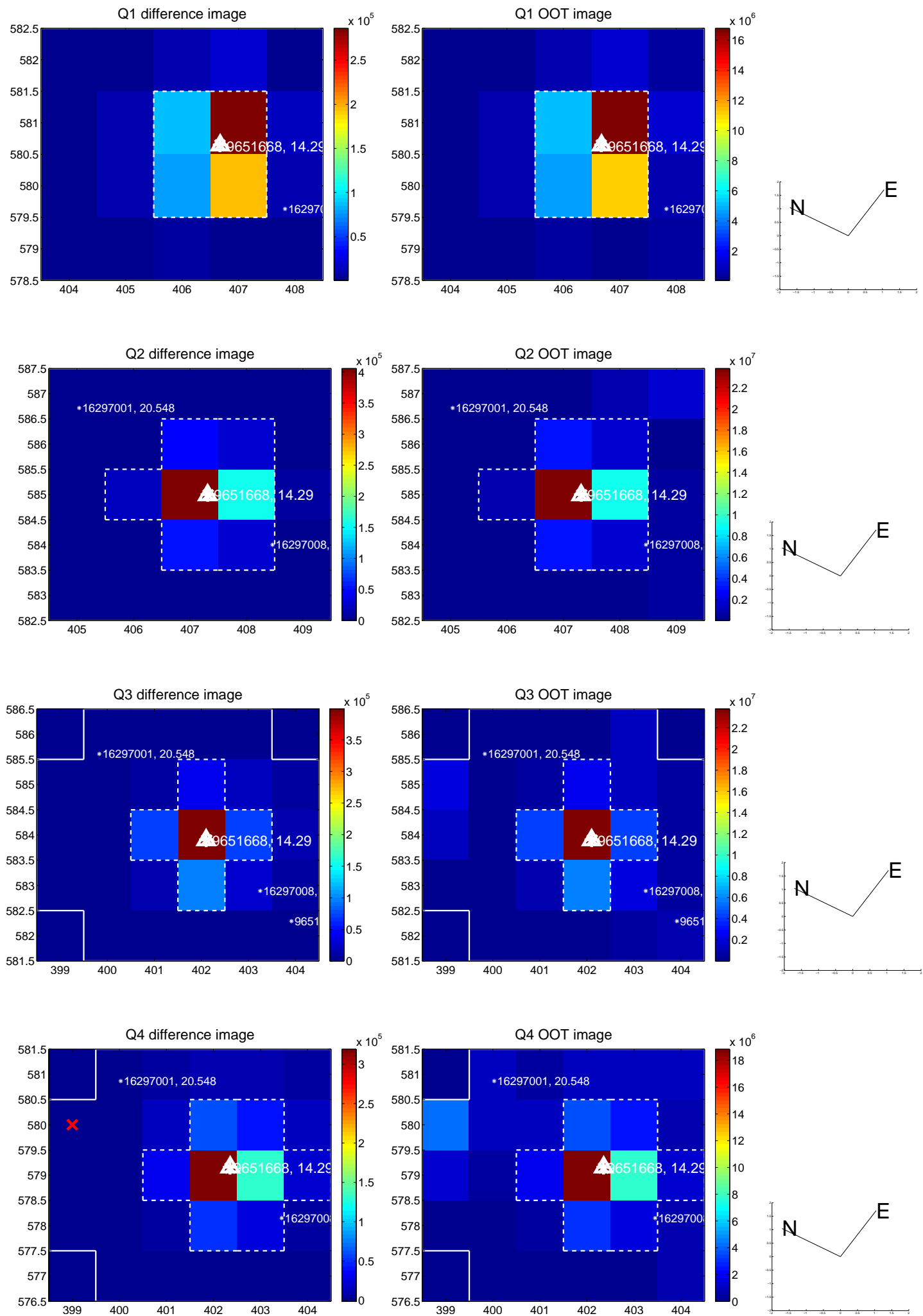
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.008 \pm 0.067$	0.12	$-0.008 \pm 0.067$	$0.002 \pm 0.067$
PRF-fit source offset from KIC position	$0.032 \pm 0.067$	0.48	$0.002 \pm 0.067$	$0.032 \pm 0.067$
photometric centroid source offset	$0.06 \pm 0.00$	13.54	$0.04 \pm 0.00$	$0.04 \pm 0.00$

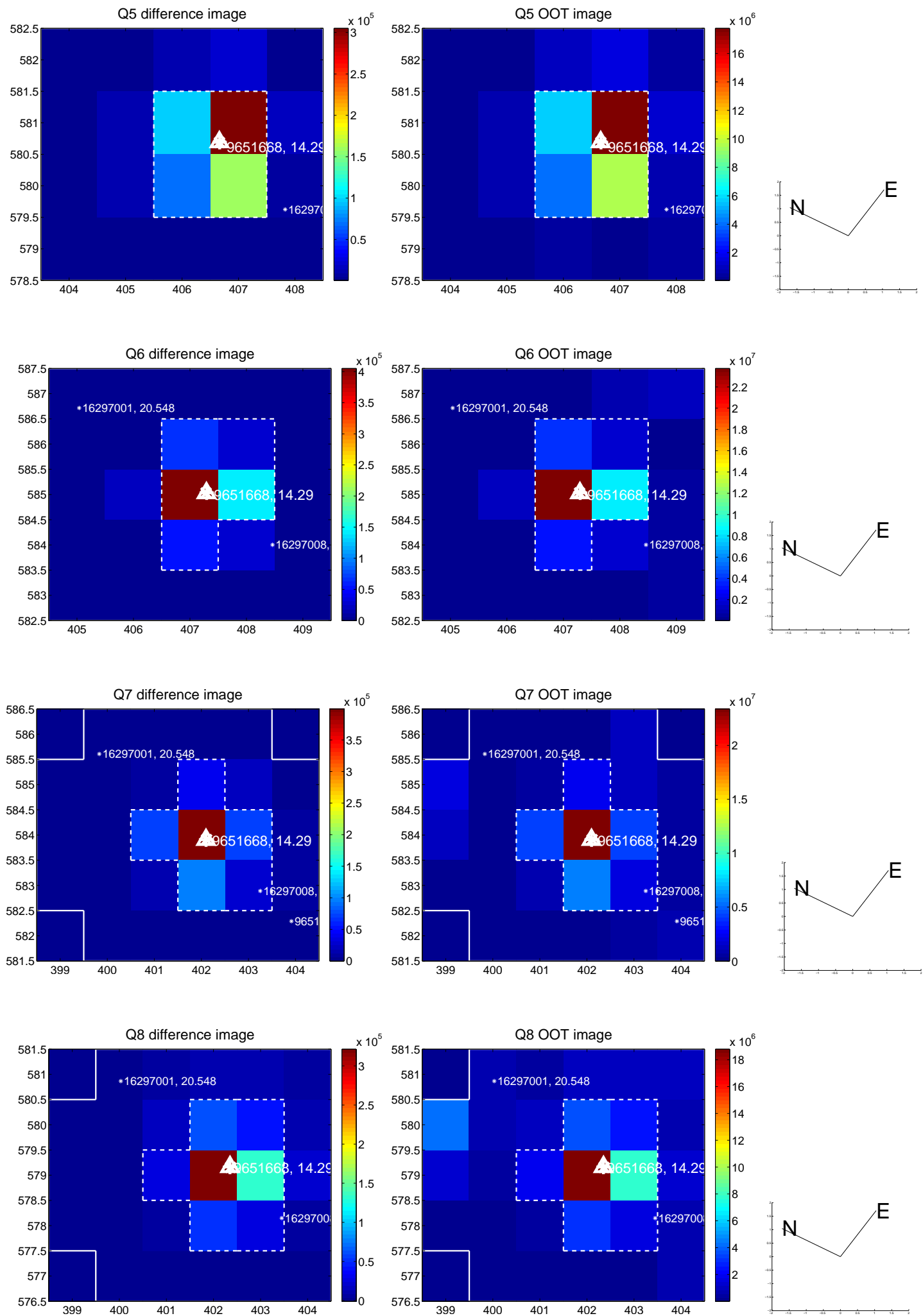


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

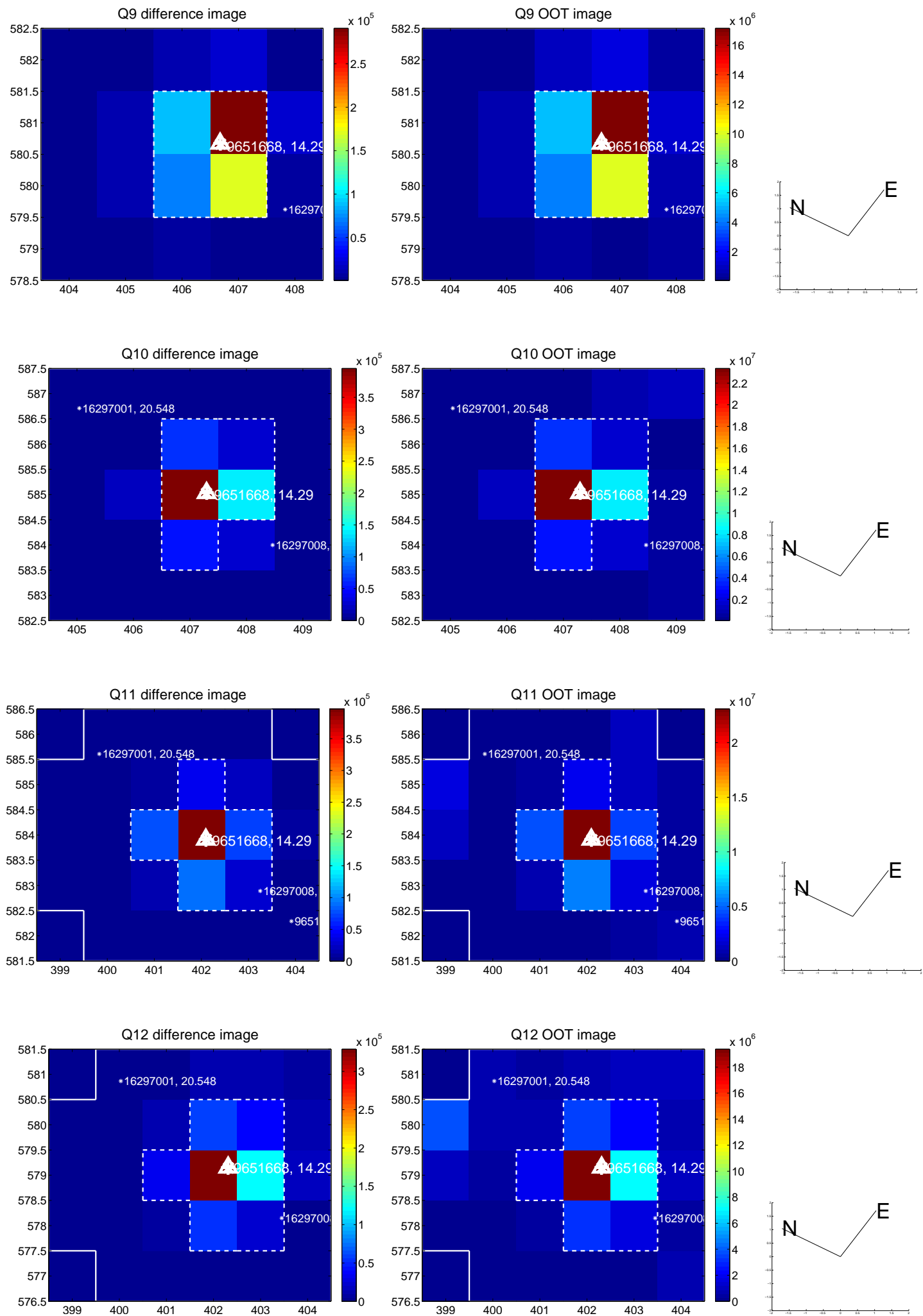


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

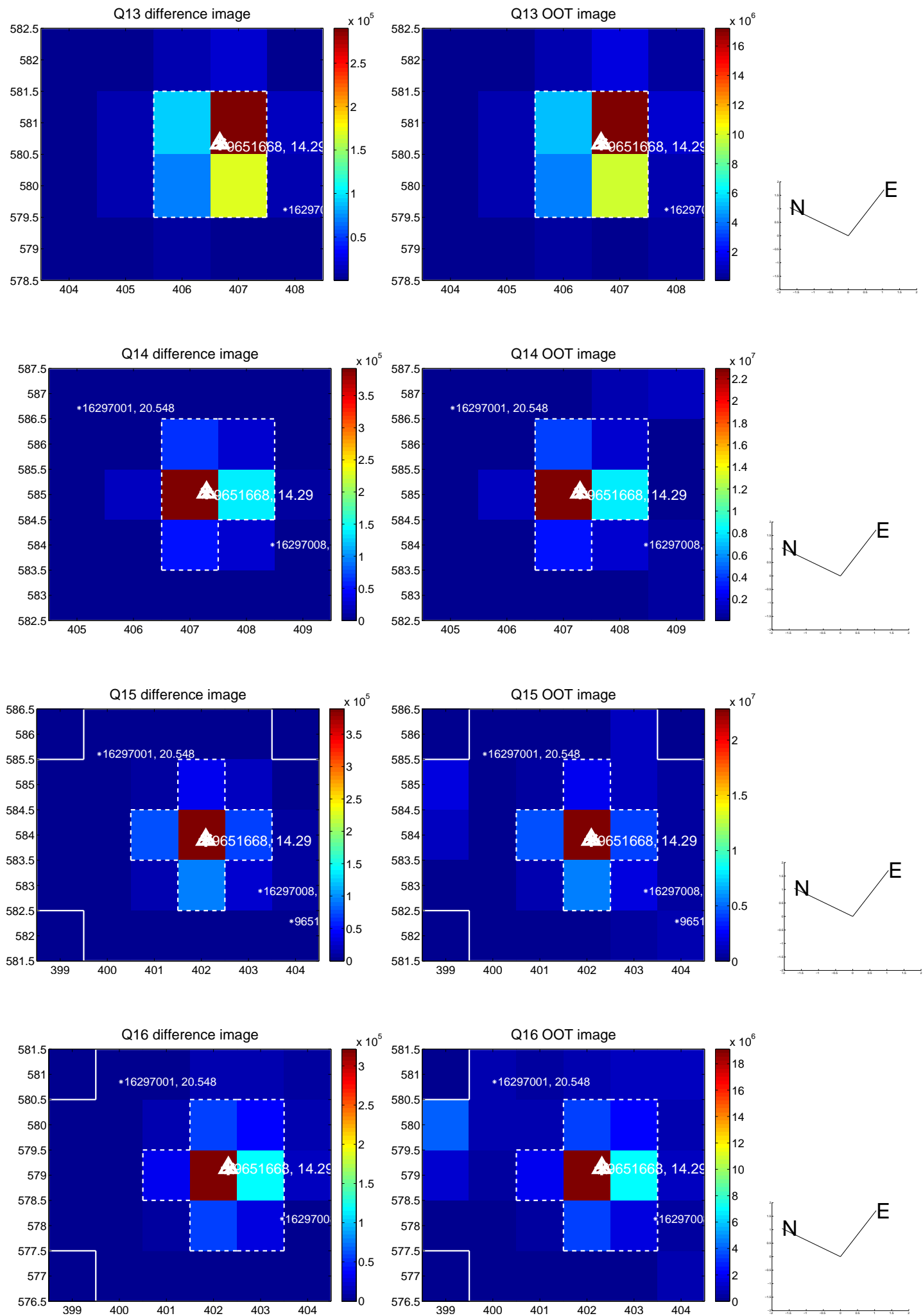




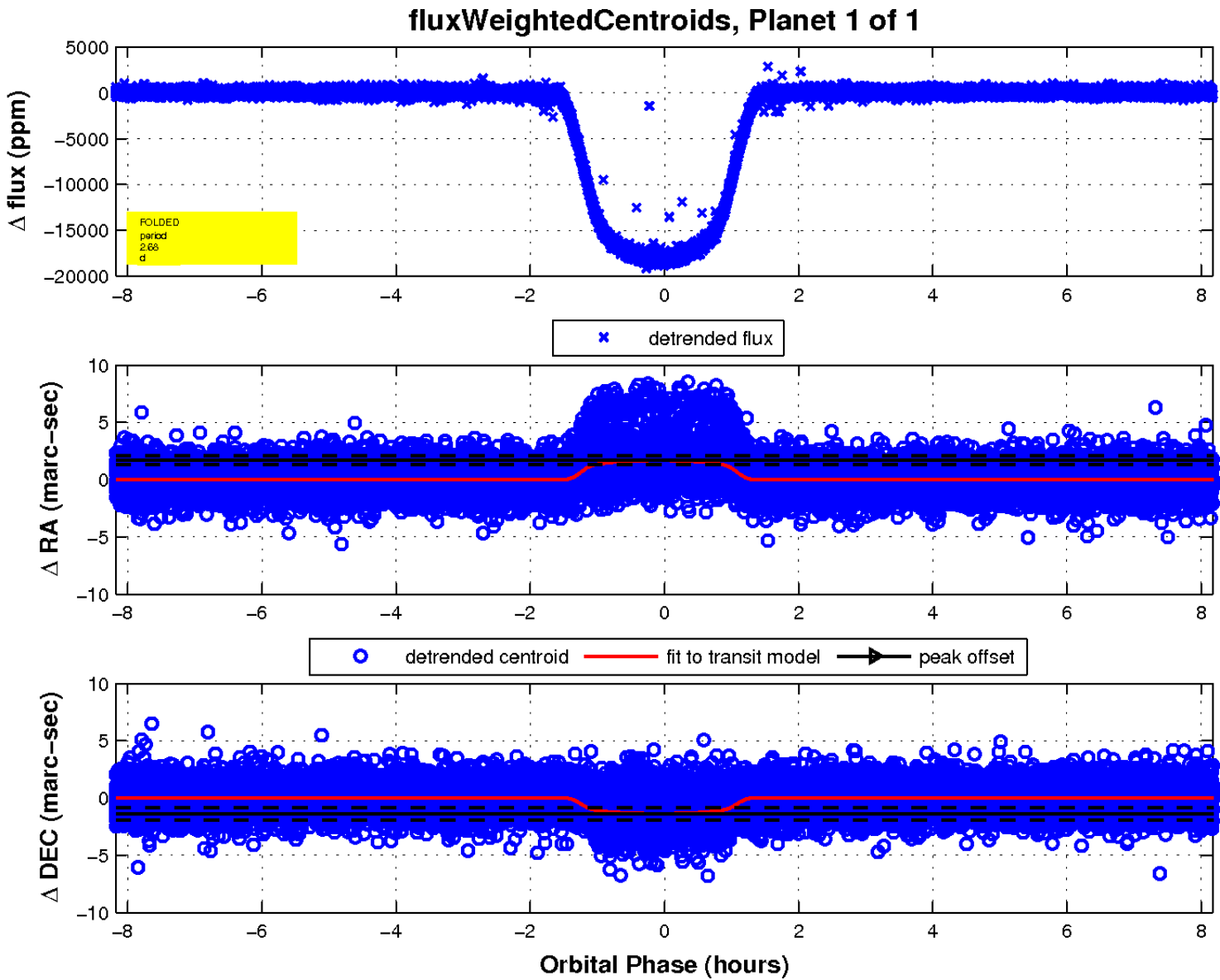
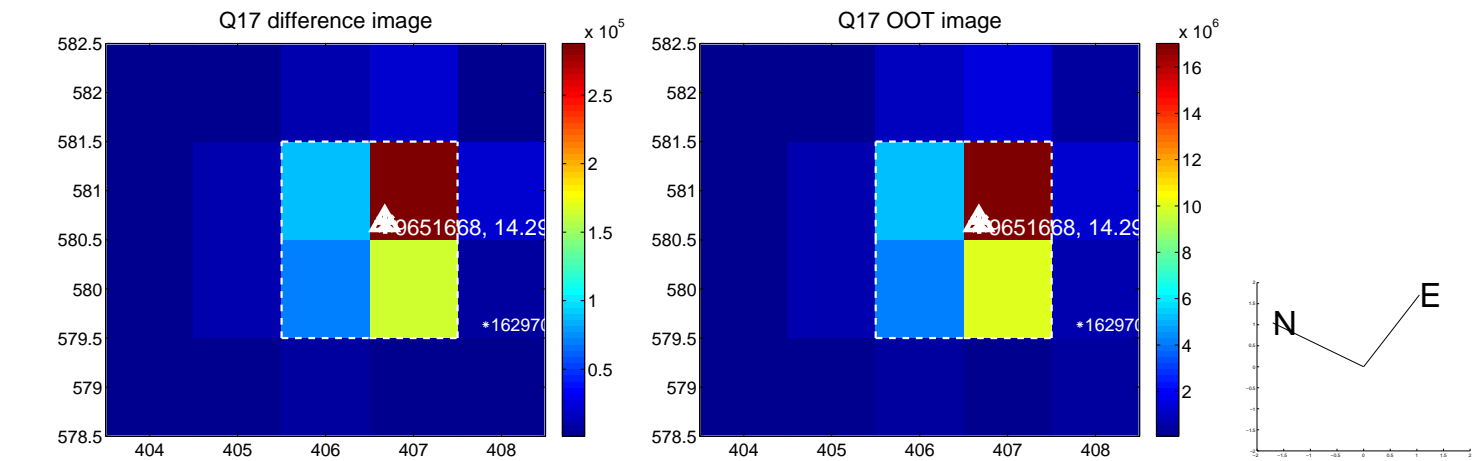
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

