

# KIC 009541322

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009541322-01	OBS	2089.01	9.405234	134.555238	406.9	1.448	18.3	19.1	1.00	6347	2.39	183.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009541322-01	OBS	FP	0.00	0	0	1	0	CENT_RESOLVED_OFFSET—HALO_GHOST

**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.

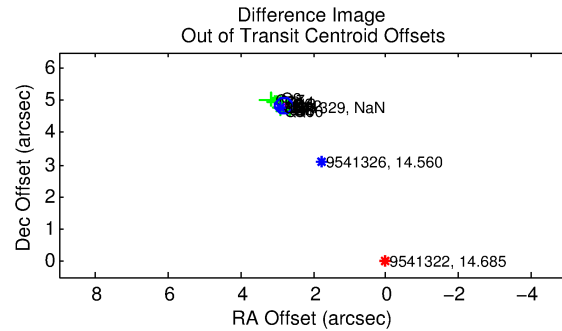
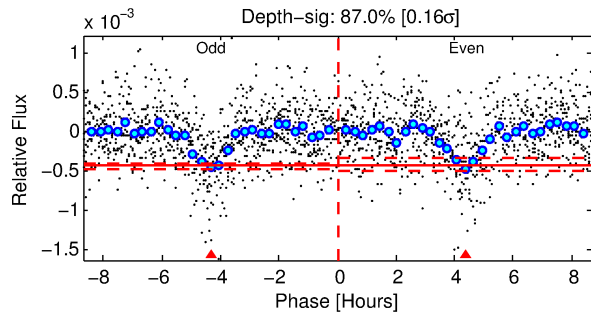
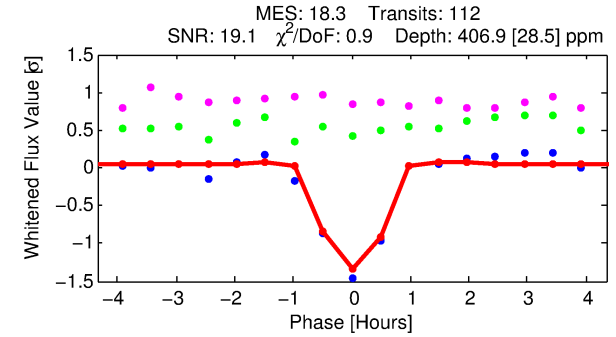
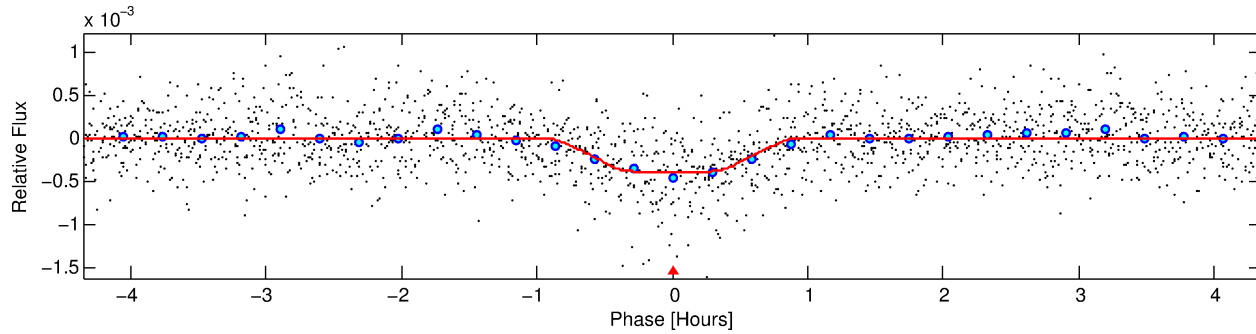
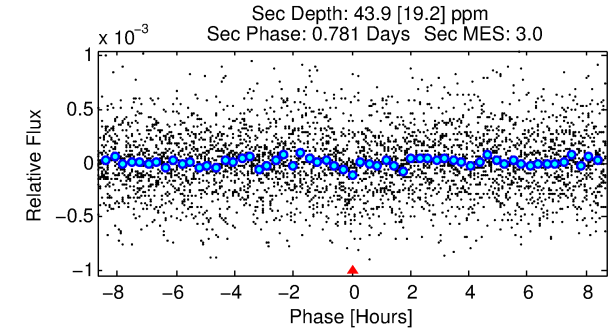
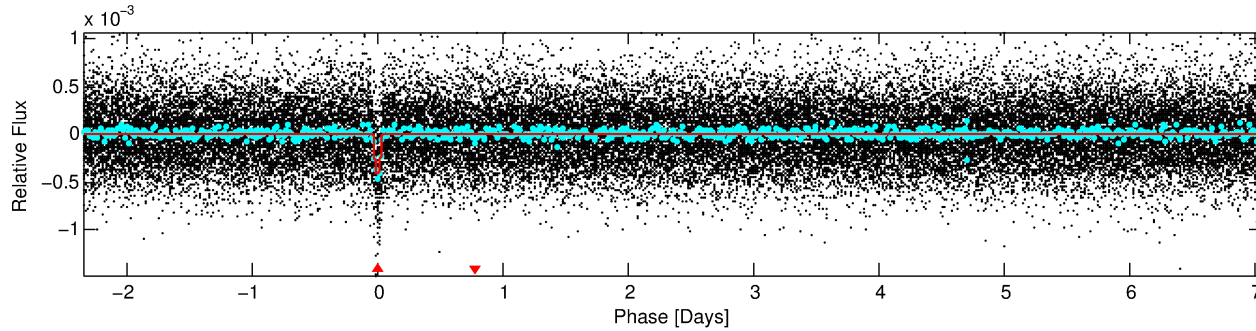
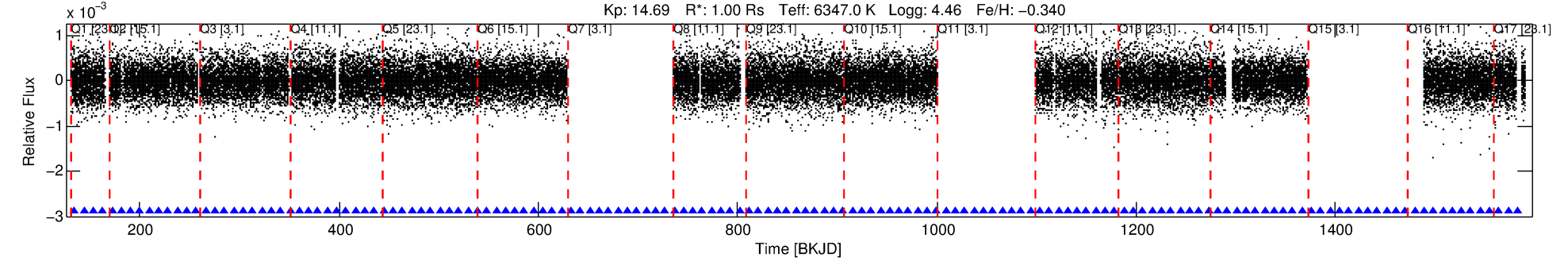
## Ephemeris Match Information For 009541322-01

No Significant Match Found

# DV One-Page Summary

KIC: 9541322 Candidate: 1 of 1 Period: 9.405 d  
KOI: K02089.01 Corr: 0.824

Kp: 14.69 R\*: 1.00 Rs Teff: 6347.0 K Logg: 4.46 Fe/H: -0.340



## DV Fit Results:

Period = 9.40523 [0.00002] d  
Epoch = 134.5552 [0.0018] BKJD  
Rp/R\* = 0.0220 [0.0056]  
a/R\* = 22.70 [31.05]  
b = 0.91 [0.25]  
Seff = 183.17 [76.09]  
Teq = 938 [97] K  
Rp = 2.39 [0.98] Re  
a = 0.0887 [0.0240] AU  
Ag = 33.35 [25.90] [1.25σ]  
Teffp = 3485 [594] K [4.23σ]

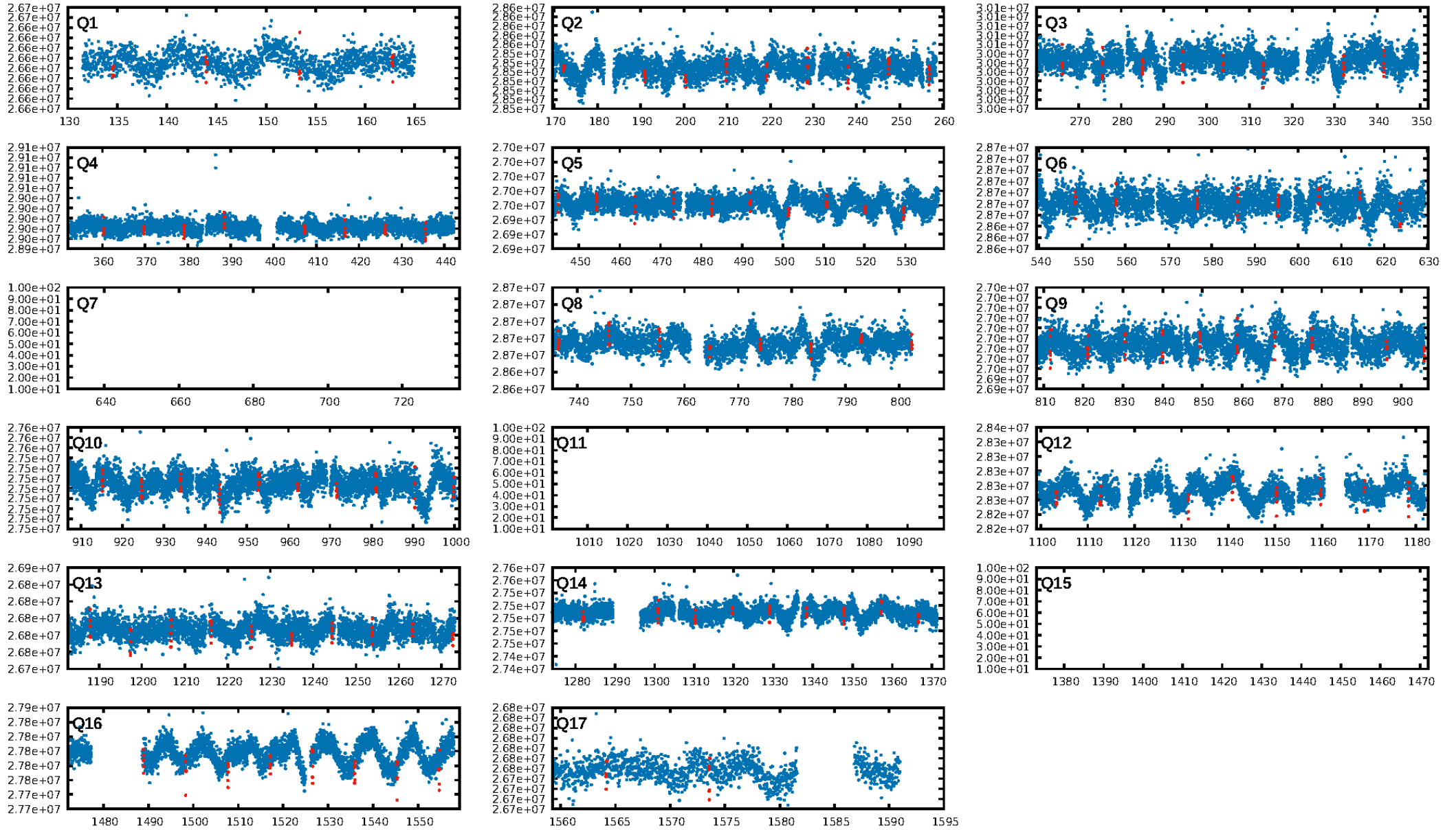
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.09e-72  
RollingBand-fgt: 1.00 [106/106]  
GhostDiagnostic-chr: -0.05609  
Centroid-sig: 0.0%  
Centroid-so: 16.777 arcsec [26.45σ]  
OotOffset-rm: 5.596 arcsec [70.22σ]  
KicOffset-rm: 5.822 arcsec [76.35σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

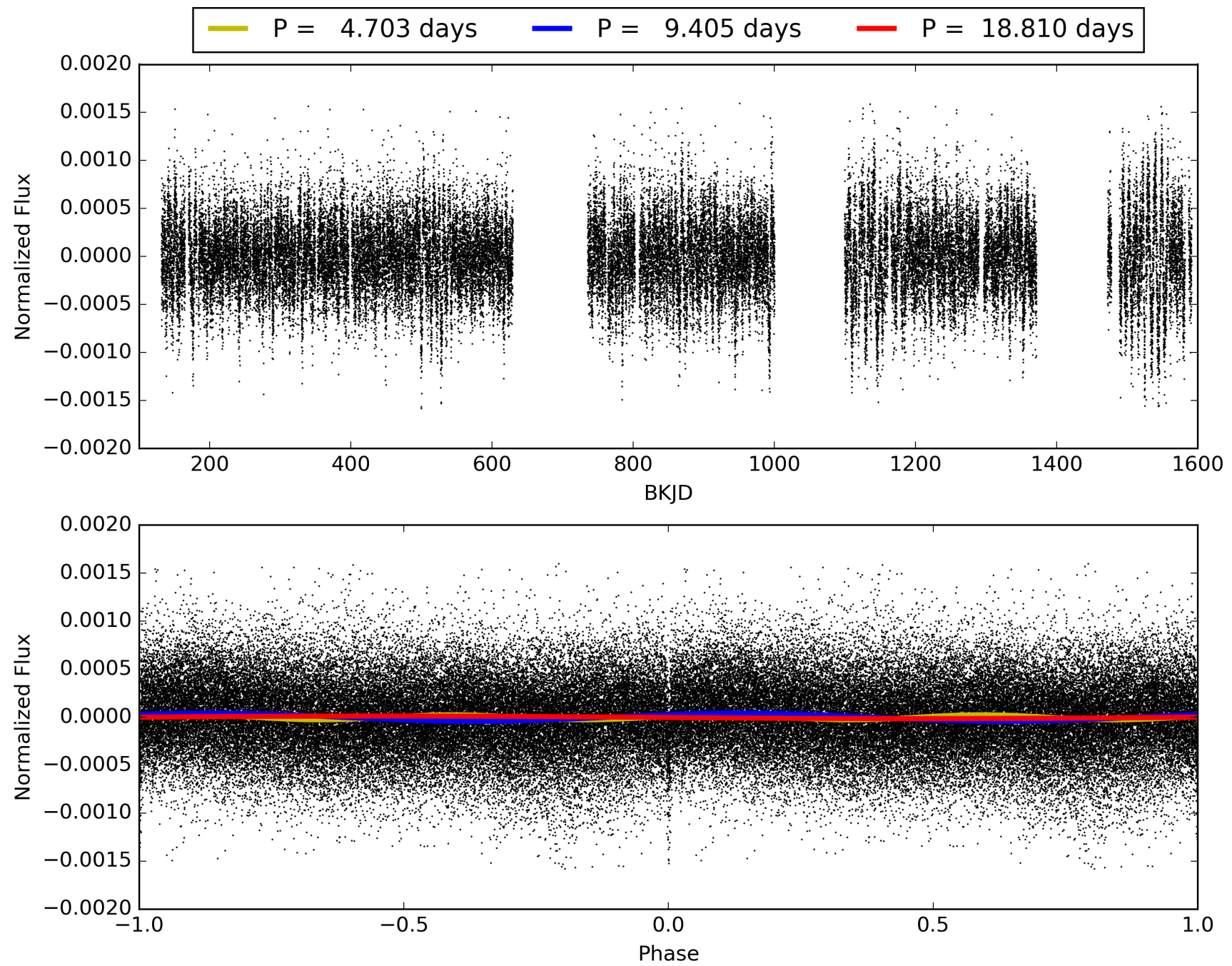
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:30:07 Z

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

# TCE 009541322-01, PDC Light Curves

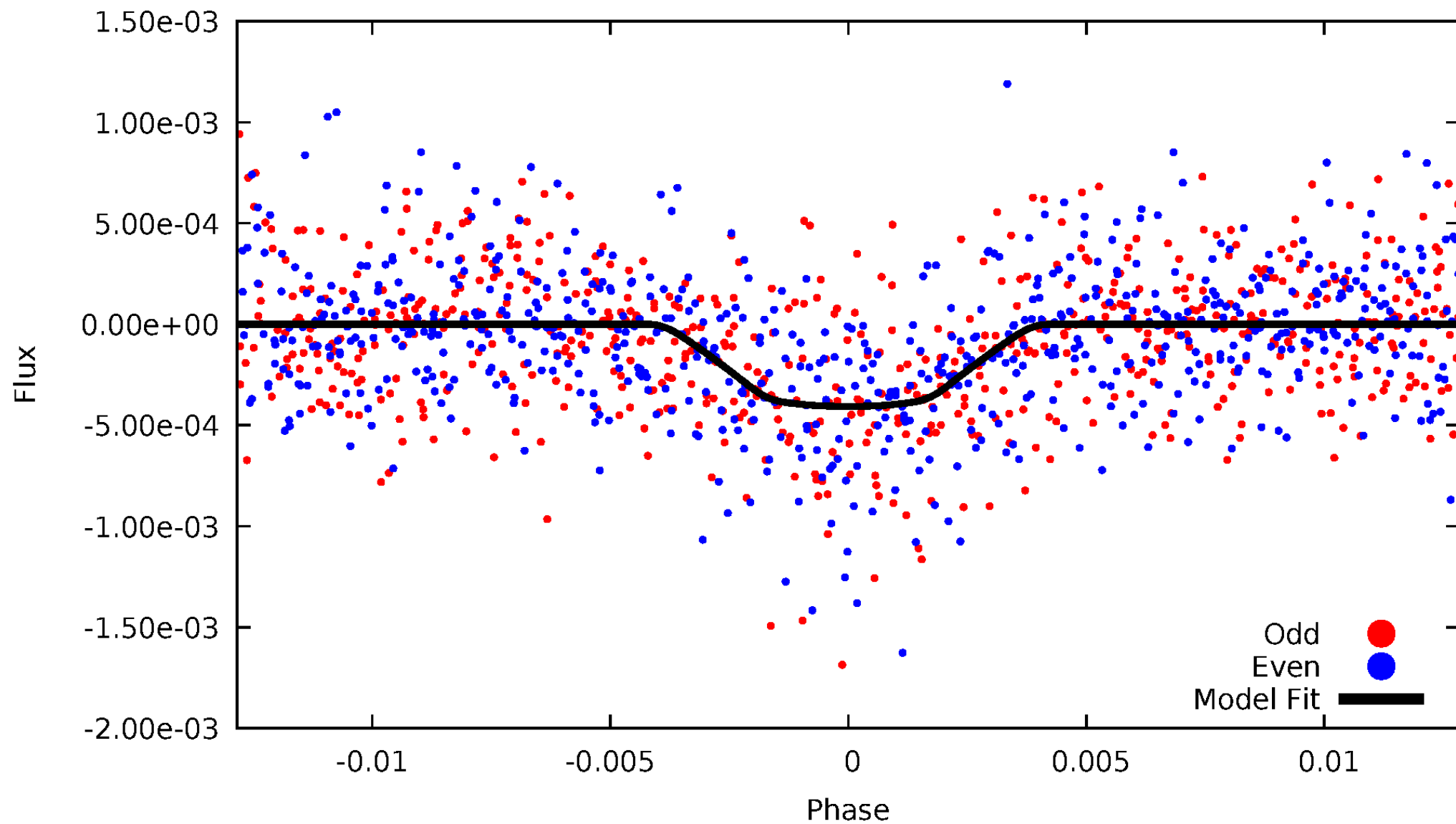


TCE 009541322-01



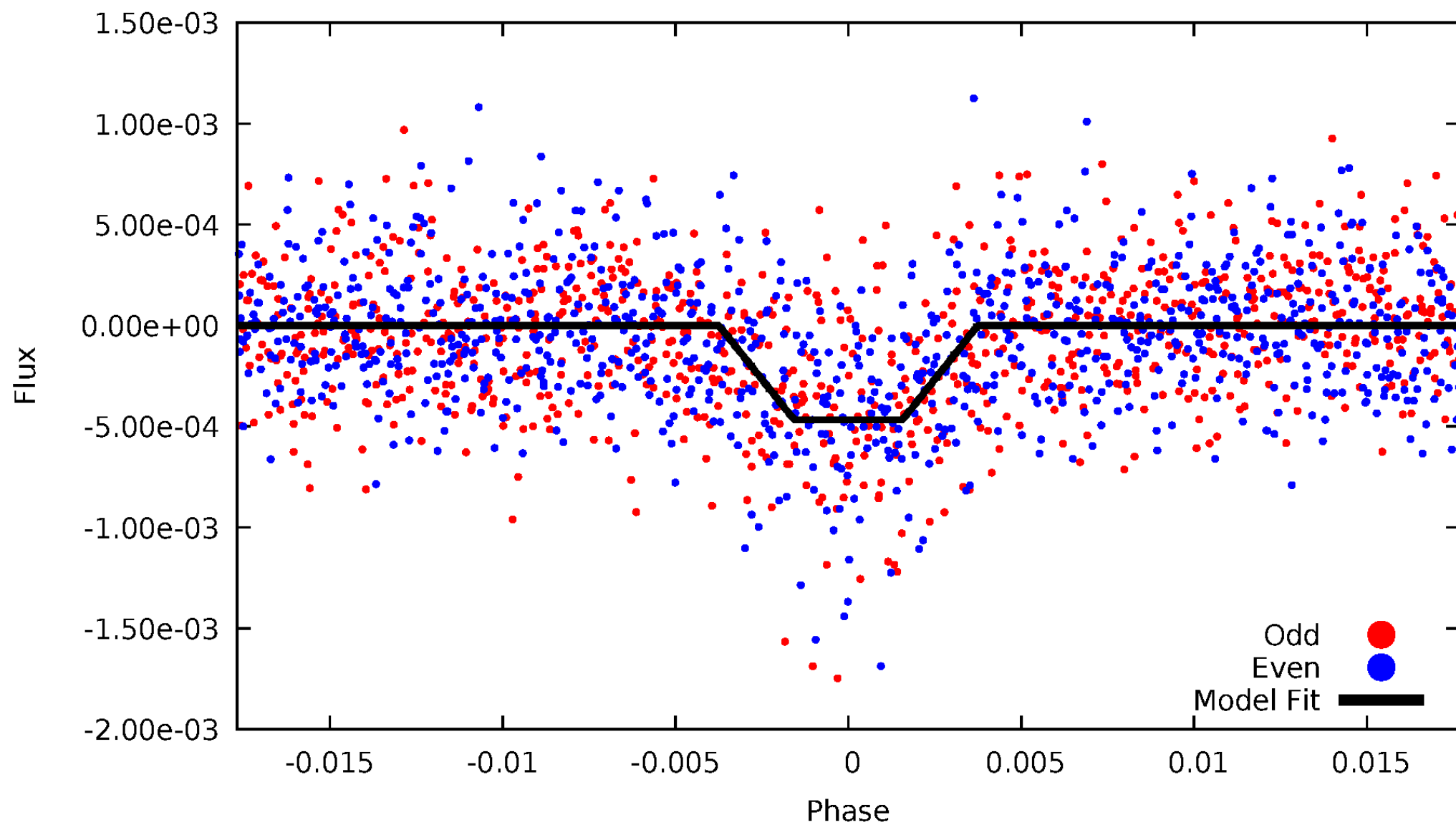
# DV Odd/Even

TCE 009541322-01



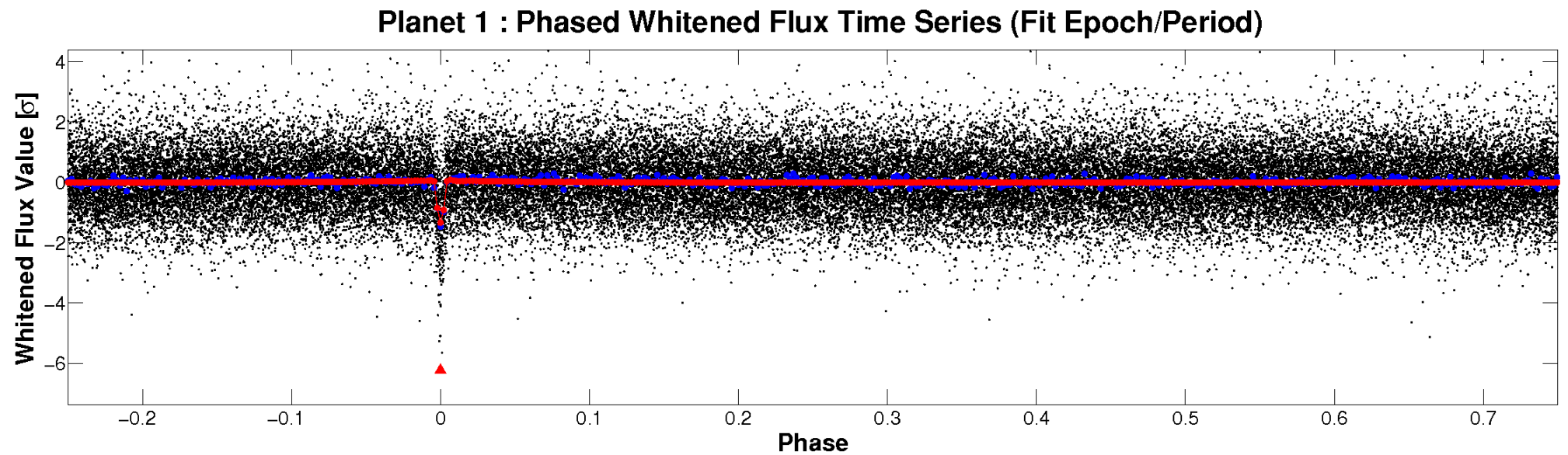
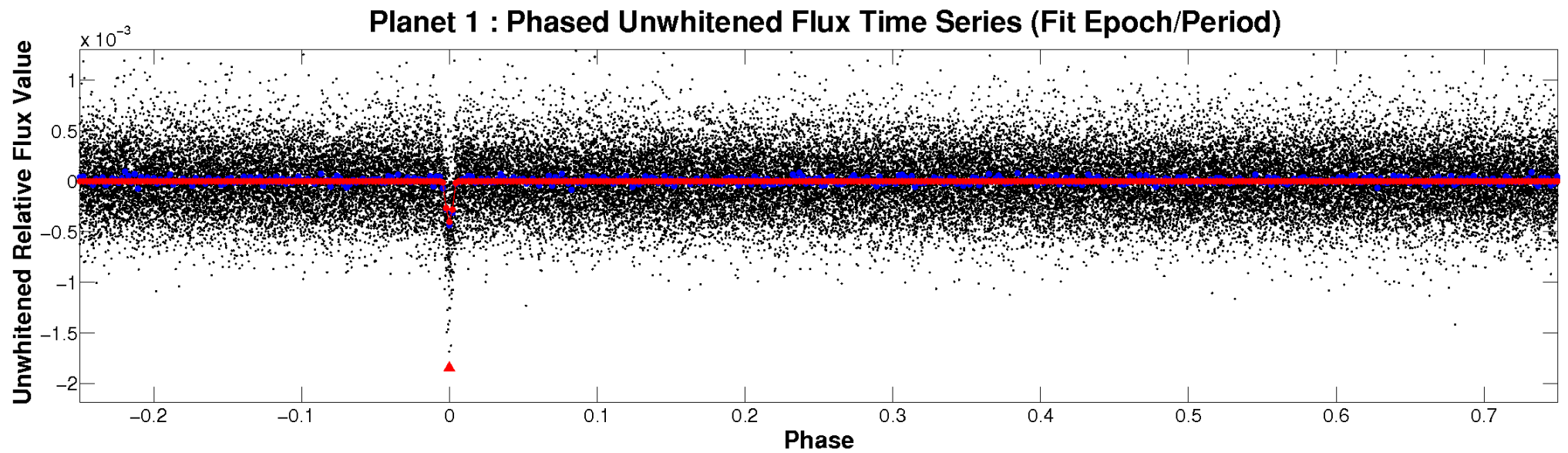
# ALT Odd/Even

TCE 009541322-01



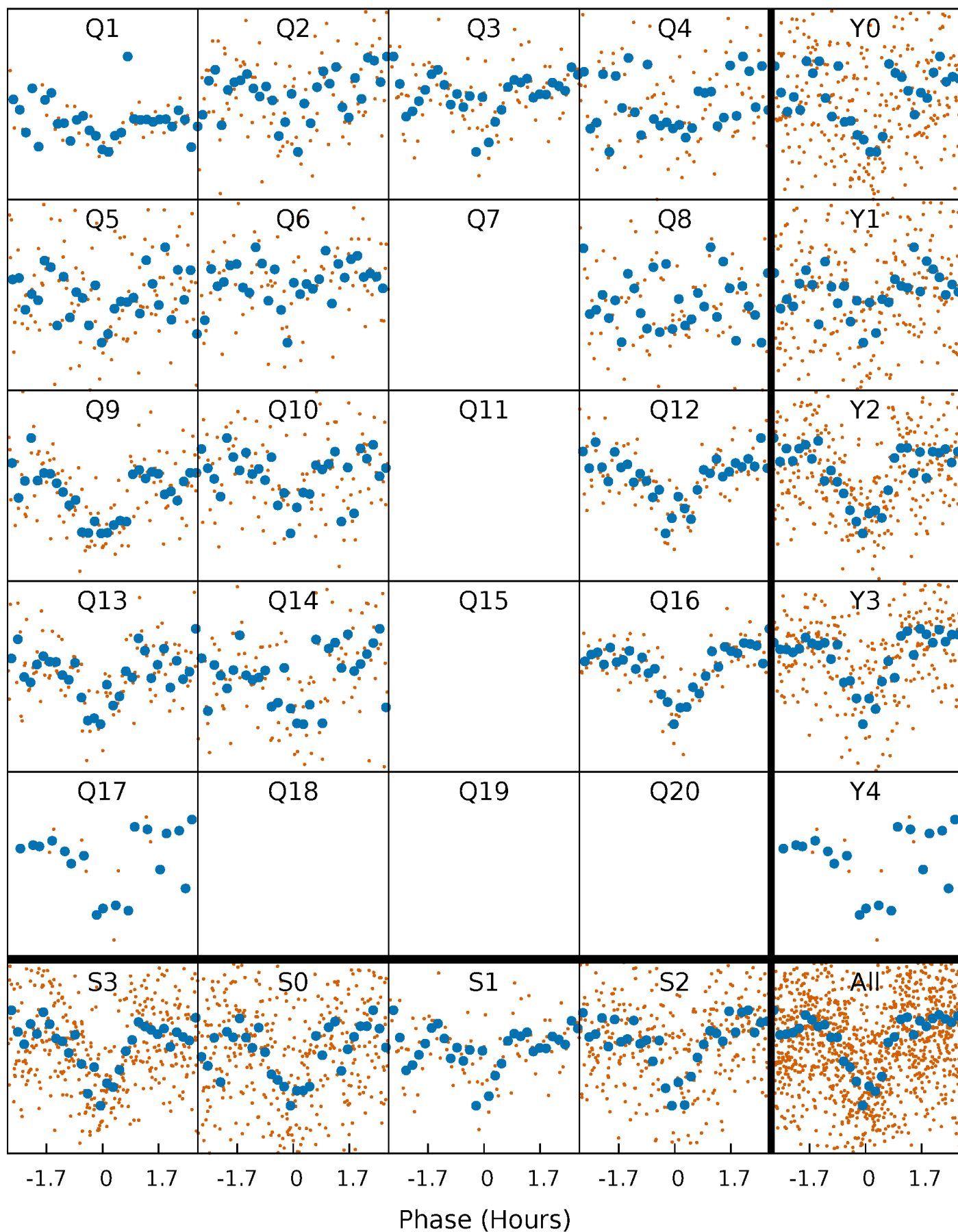


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

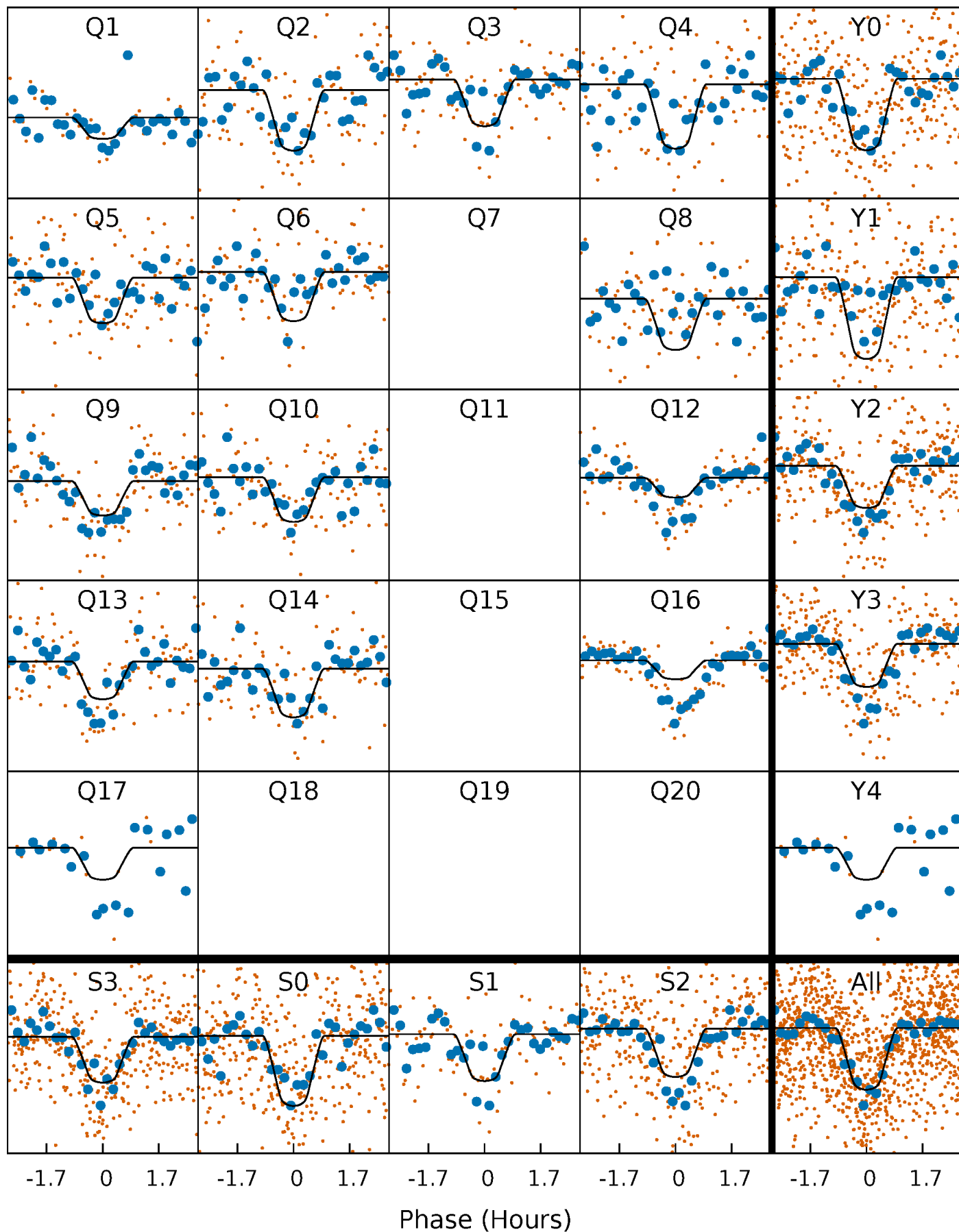
TCE 009541322-01   P= 9.405234 Days    $T_0=134.555238$  (BKJD)





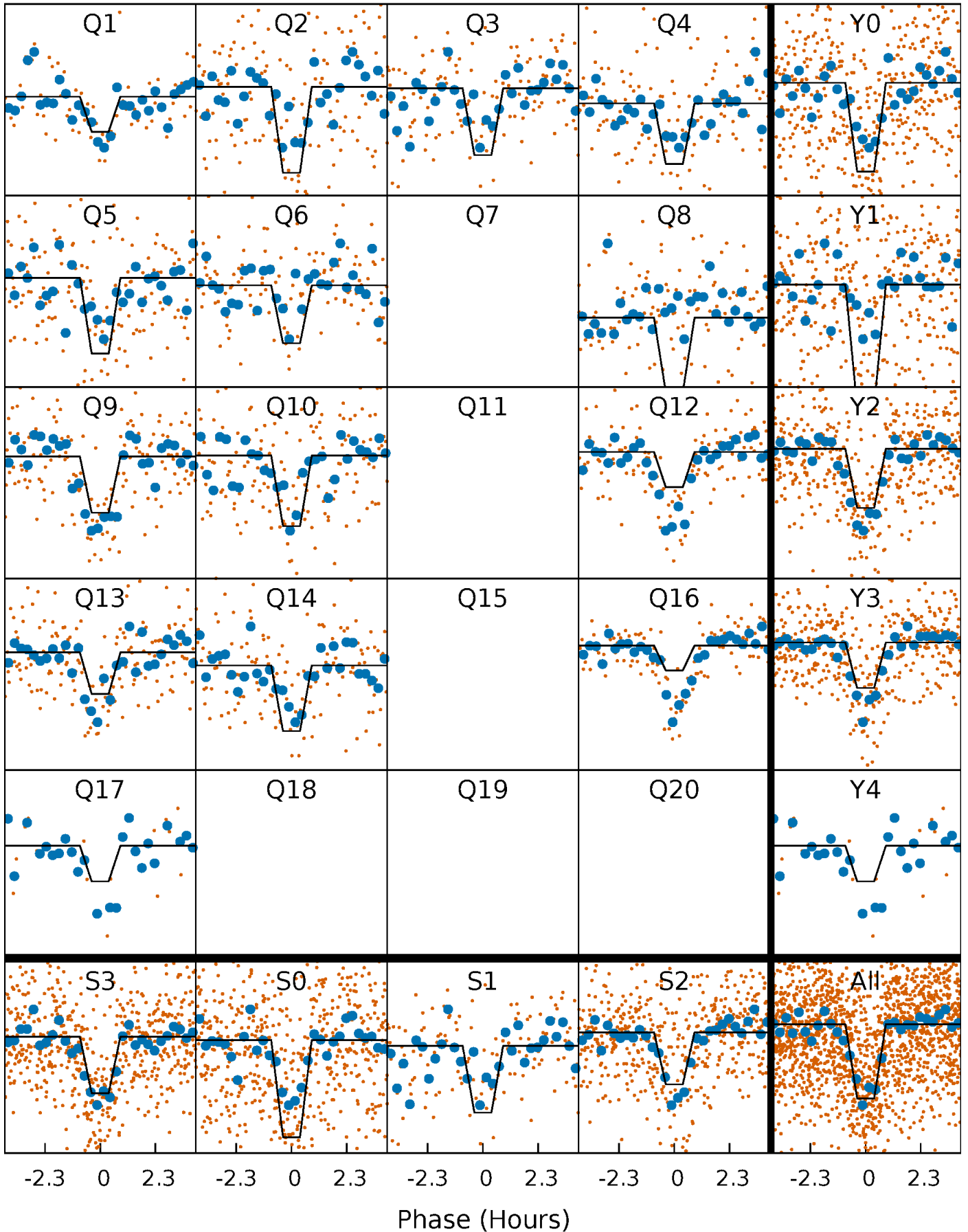
# DV Quarter-Phased Transit Curves

TCE 009541322-01   P= 9.405234 Days    $T_0=134.555238$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

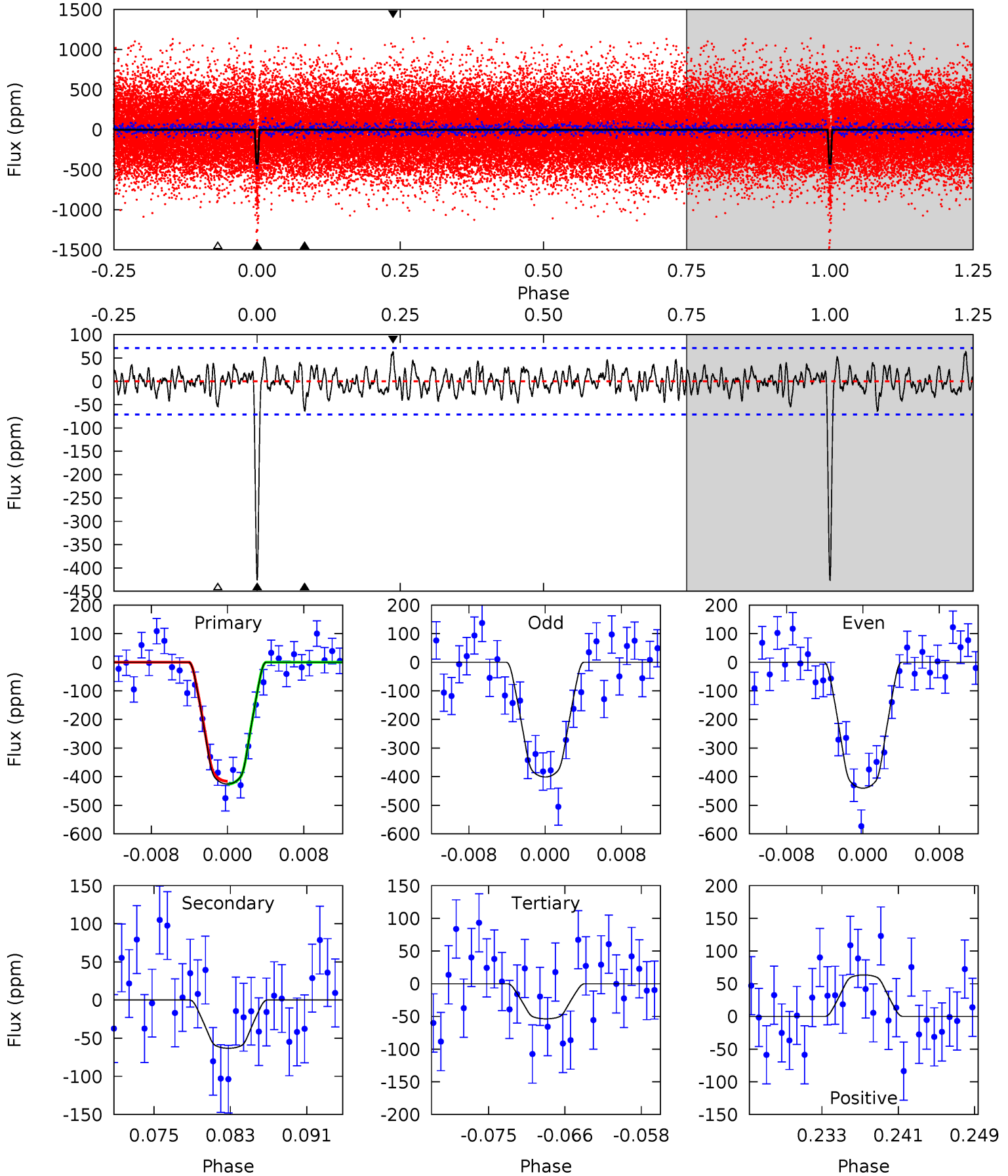
TCE 009541322-01 P= 9.405265 Days  $T_0=134.552397$  (BKJD)



# DV Model-Shift Uniqueness Test

009541322-01, P = 9.405234 Days, E = 125.150004 Days

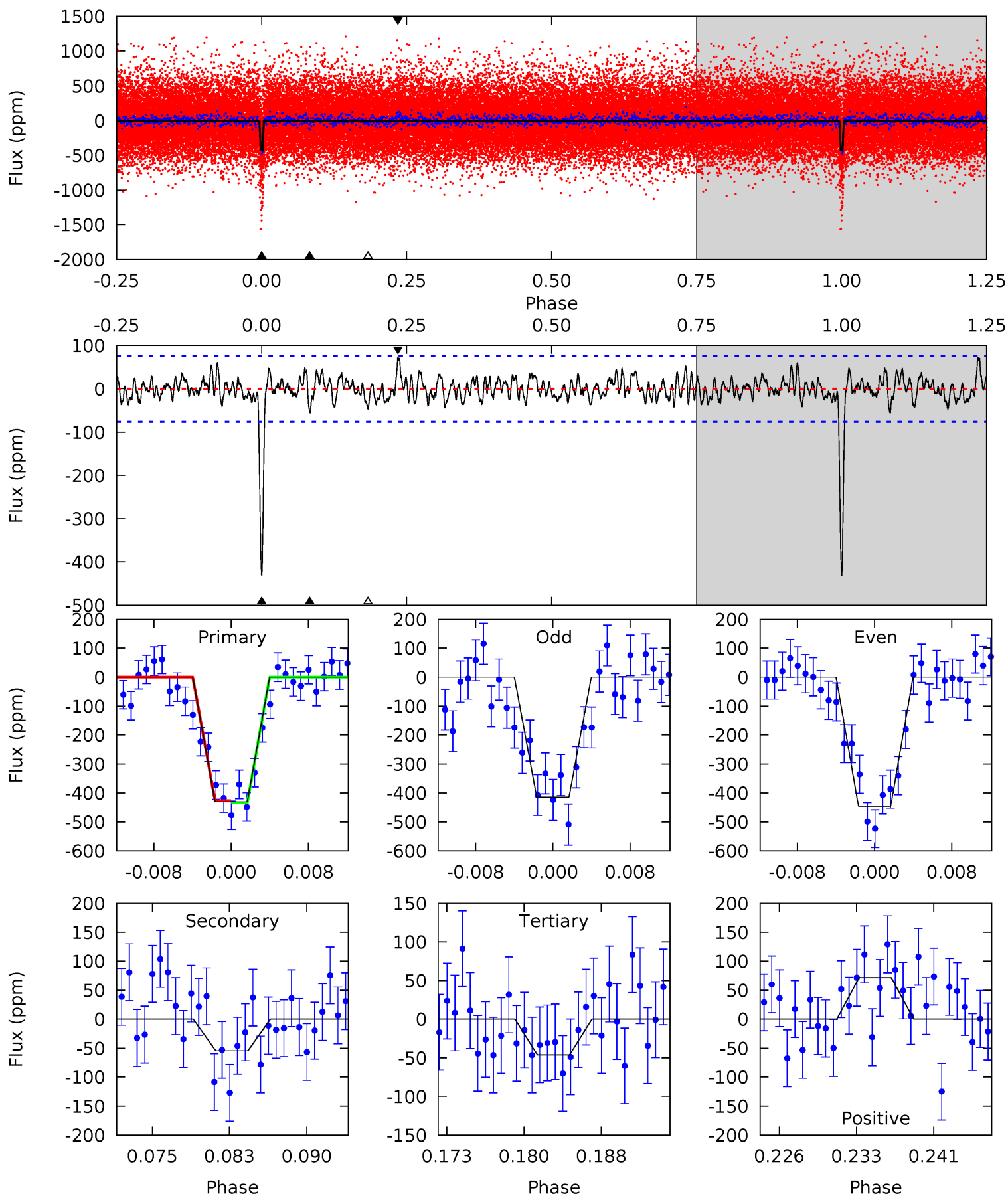
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.2	4.48	3.81	4.50	5.06	2.64	1.35	26.4	25.7	0.67	-0.01	1.38	1.10	0.13	0.36



# Alt Model-Shift Uniqueness Test

009541322-01, P = 9.405265 Days, E = 125.147132 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
28.7	3.63	3.07	4.77	5.08	2.67	1.36	25.6	23.9	0.56	-1.15	1.04	1.09	0.14	0.24



### Stellar Parameters For KIC 009541322

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6347^{+170}_{-207}$	$4.464^{+0.054}_{-0.216}$	$-0.340^{+0.250}_{-0.300}$	$0.996^{+0.319}_{-0.106}$	$1.053^{+0.143}_{-0.143}$	$1.501^{+0.416}_{-0.776}$
	+3%/-3%	+1%/-5%	+74%/-88%	+32%/-11%	+14%/-14%	+28%/-52%
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 009541322-01 / KOI 2089.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-63 \pm 14$	$2.49^{+0.78}_{-0.70}$	$1341^{+91}_{-66}$	$4091^{+578}_{-363}$	$42^{+42}_{-18}$
Alt.	$-54 \pm 15$	$2.40^{+0.77}_{-0.70}$	$1335^{+99}_{-67}$	$4030^{+571}_{-398}$	$39^{+42}_{-19}$

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

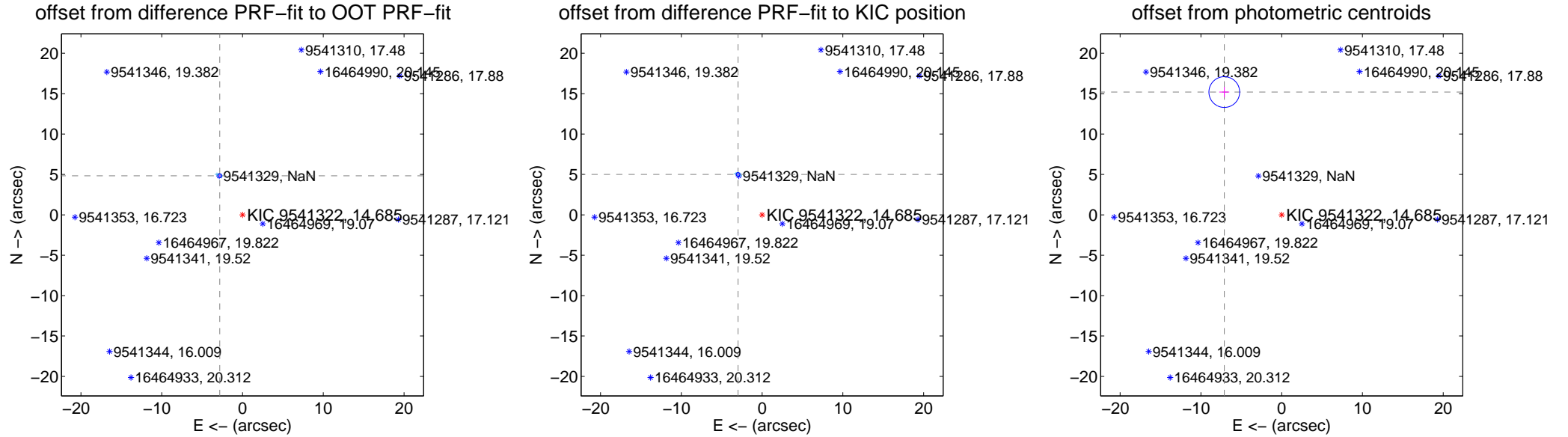
## DV Centroid Data

Supplemental centroid analysis for 009541322-01. Kepler magnitude: 14.69. Transit SNR 19.13

There are 14 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

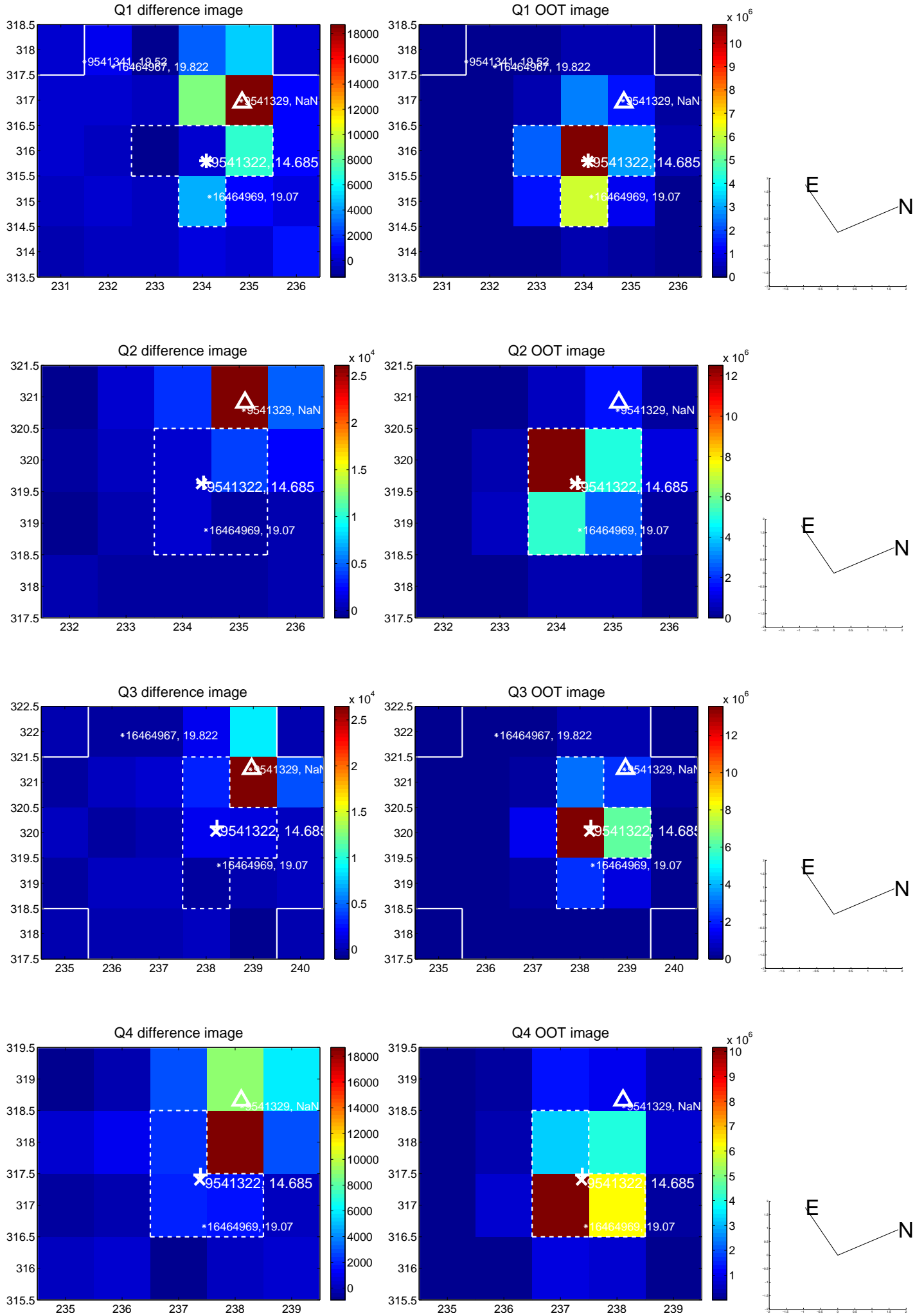
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.596 \pm 0.080$	70.22	$2.813 \pm 0.079$	$4.837 \pm 0.074$
PRF-fit source offset from KIC position	$5.822 \pm 0.076$	76.35	$2.976 \pm 0.079$	$5.004 \pm 0.075$
photometric centroid source offset	$16.78 \pm 0.63$	26.45	$7.11 \pm 0.62$	$15.20 \pm 0.64$



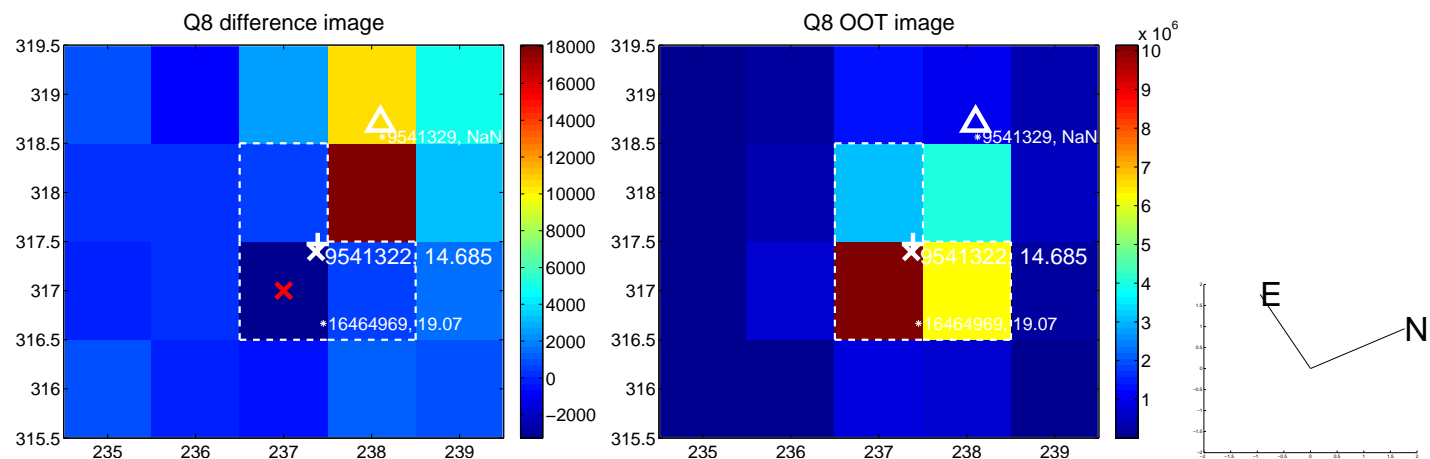
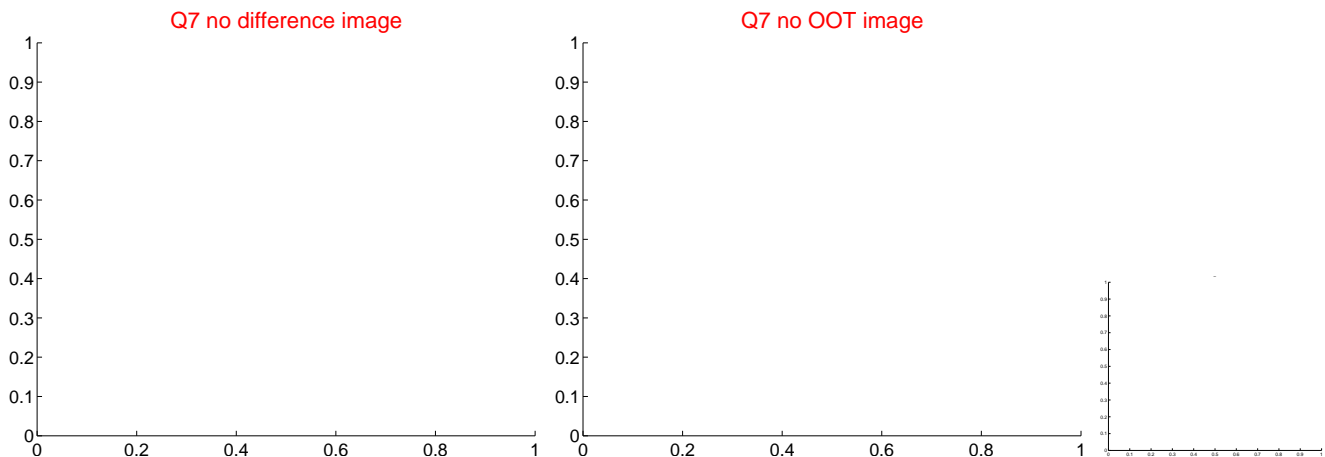
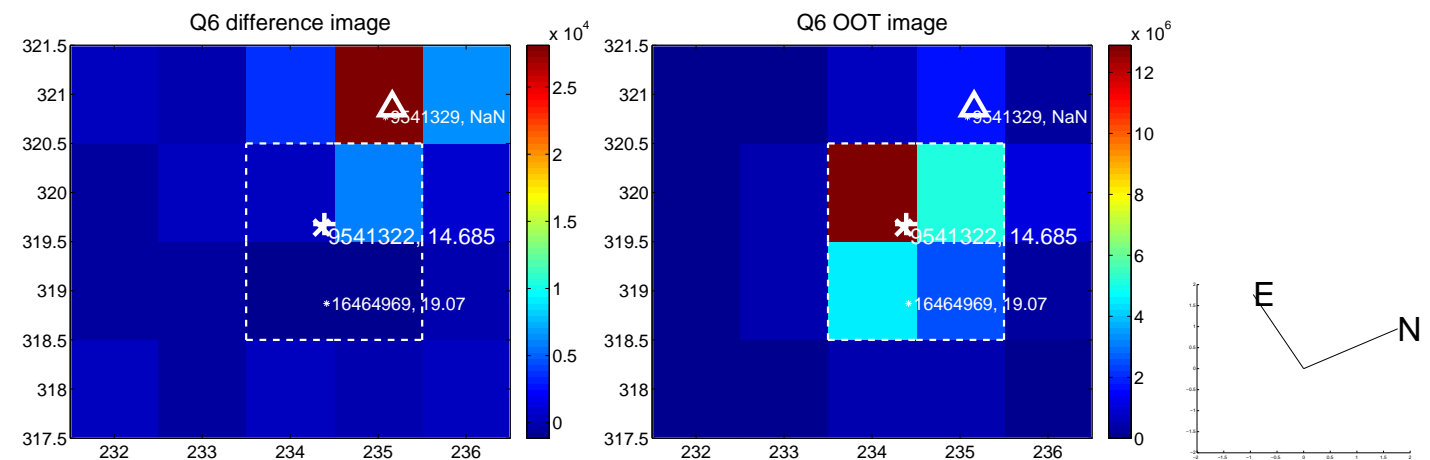
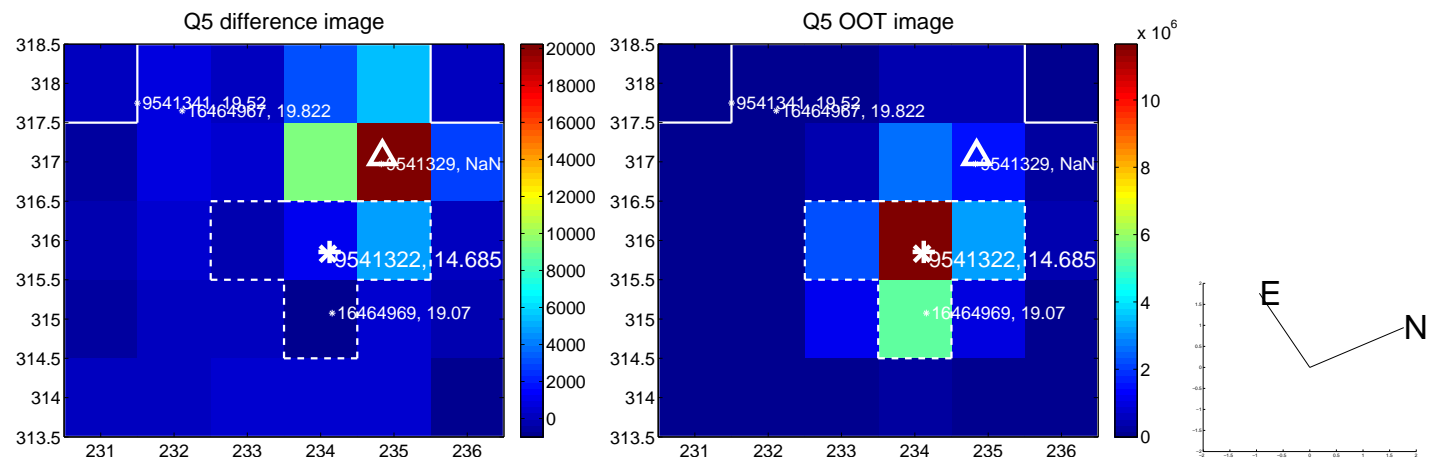
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



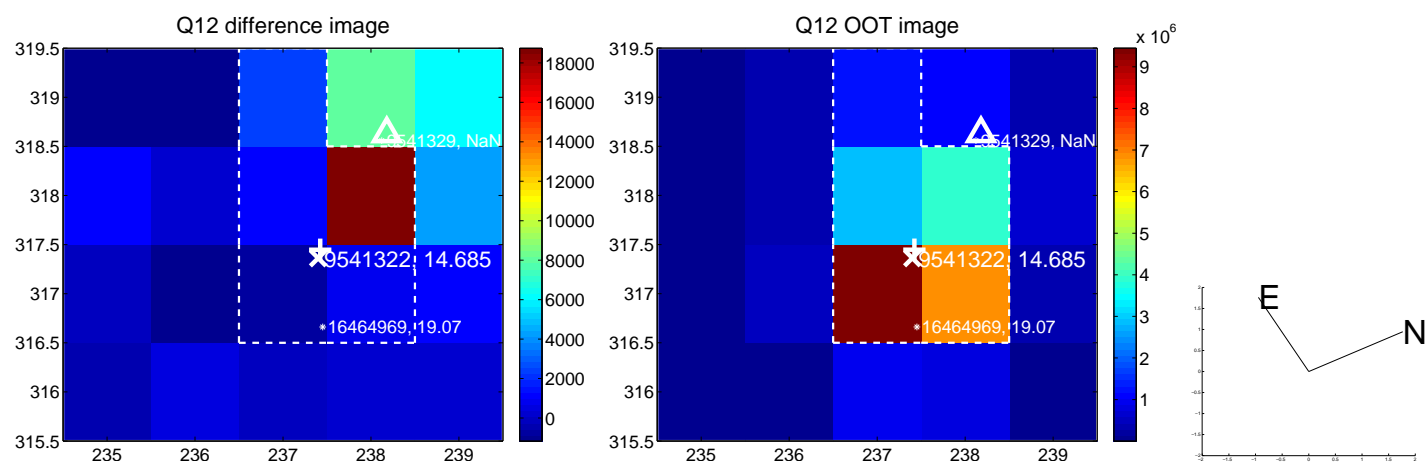
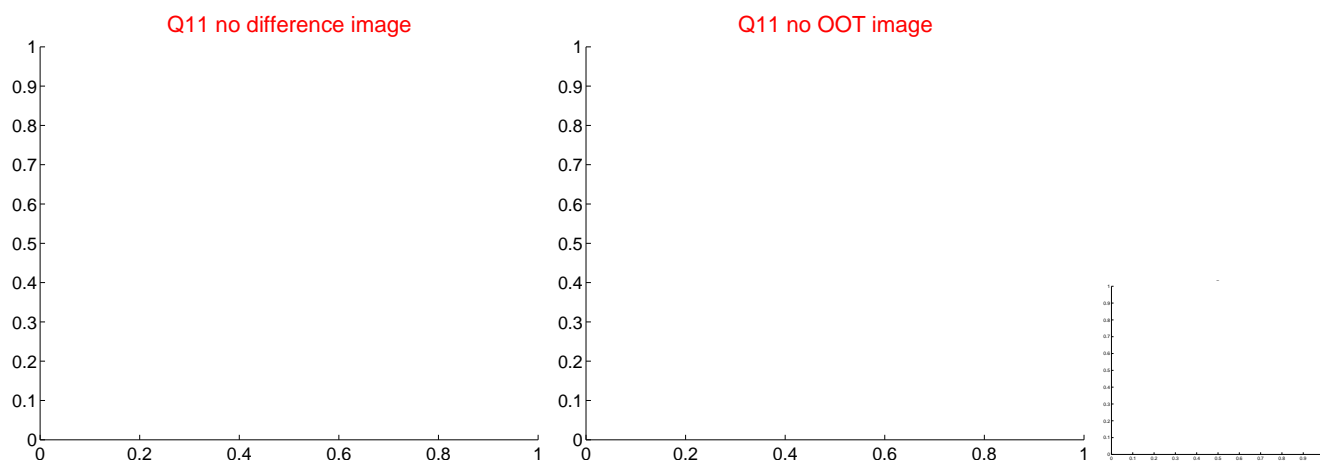
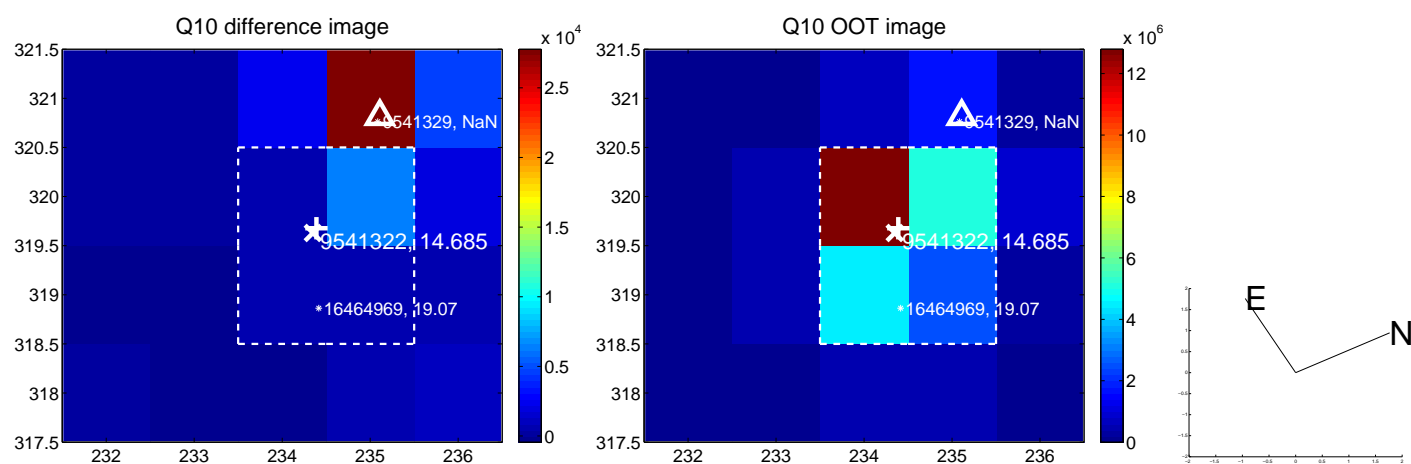
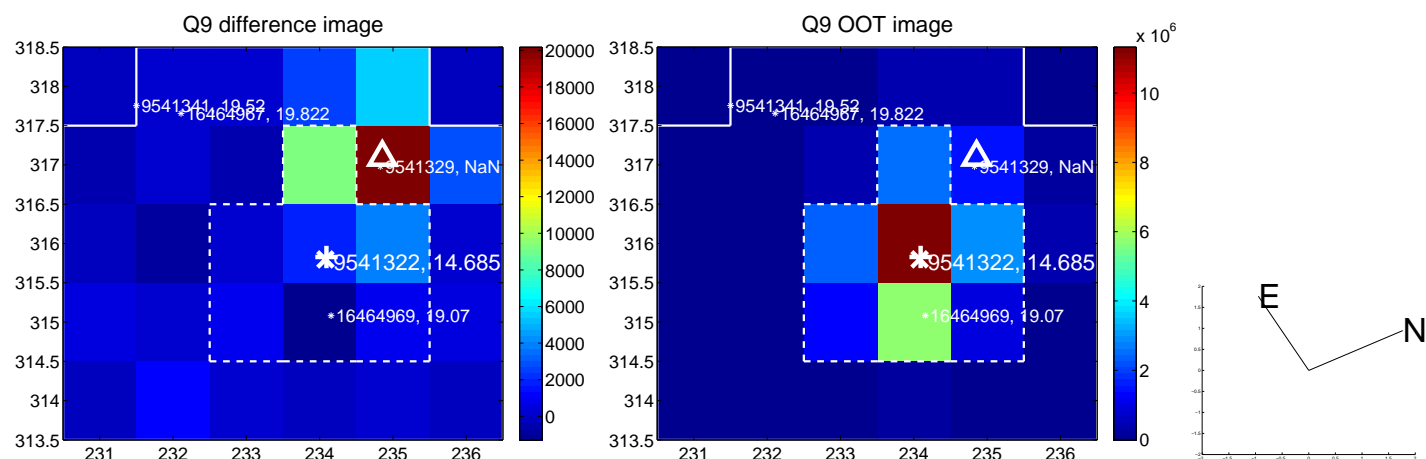
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



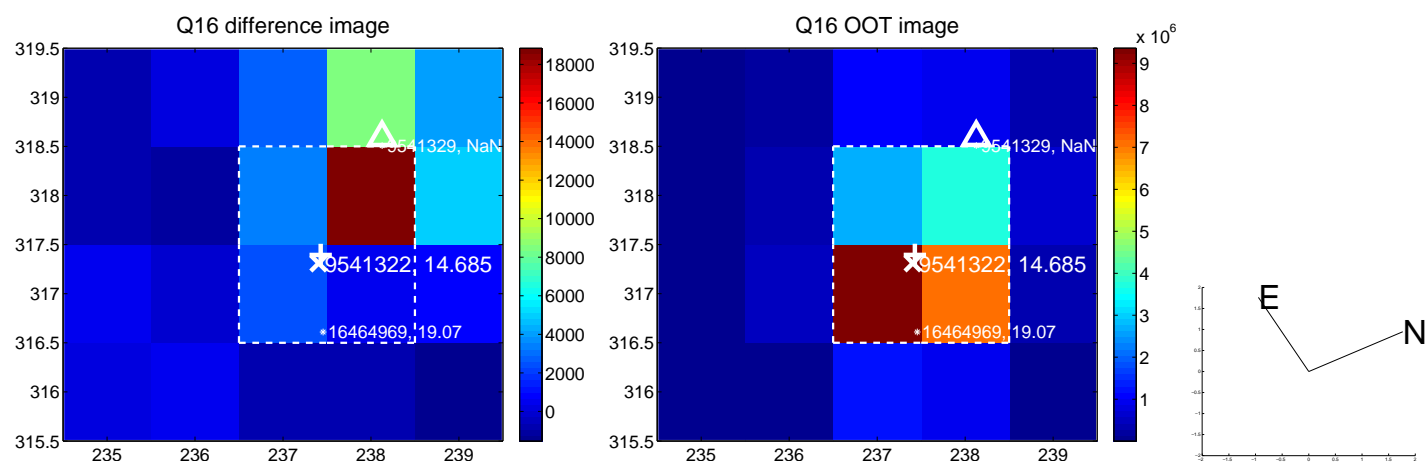
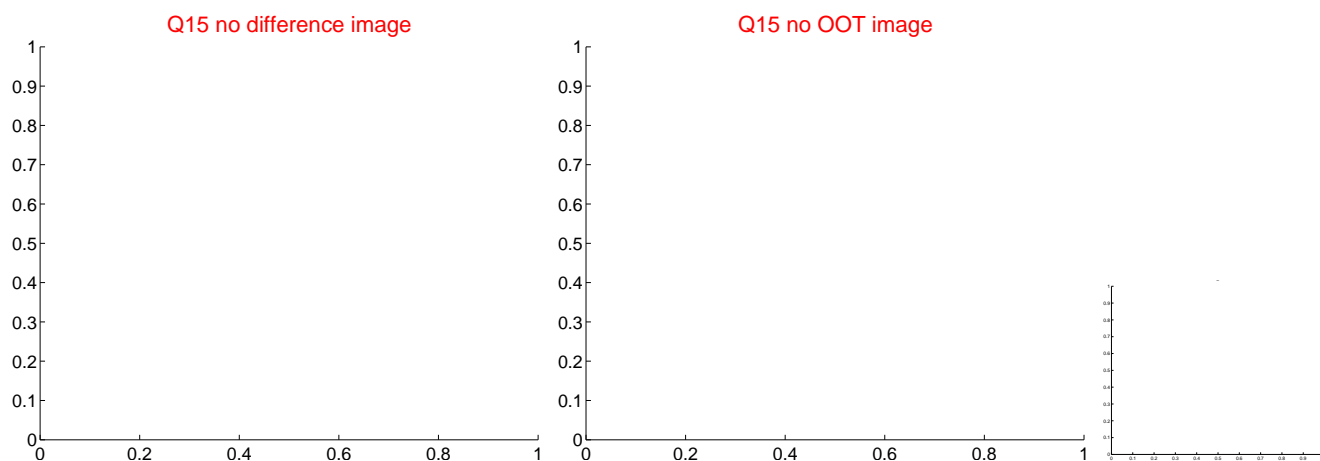
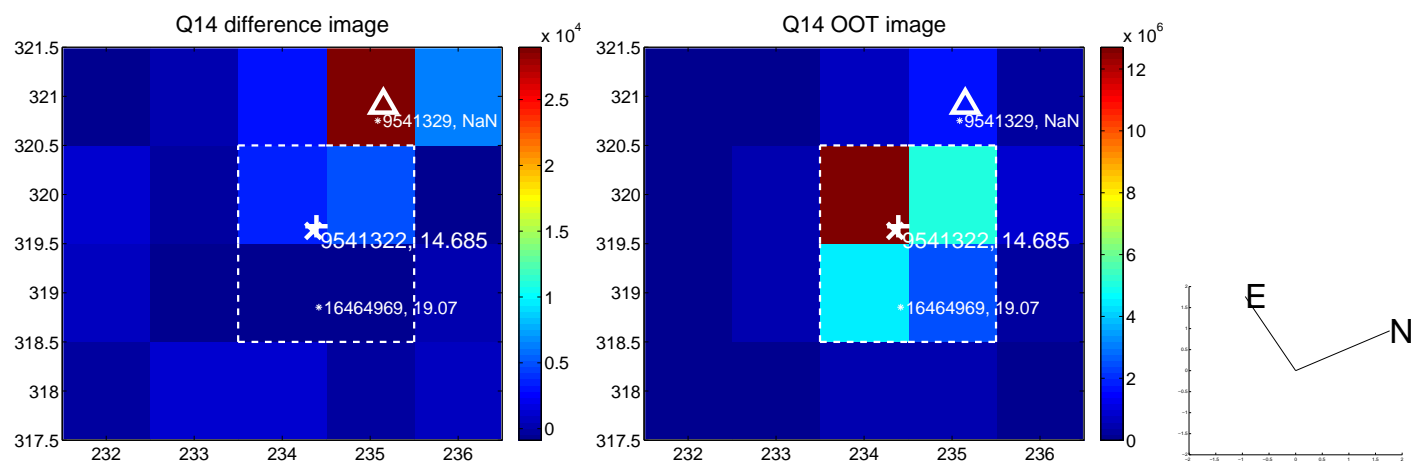
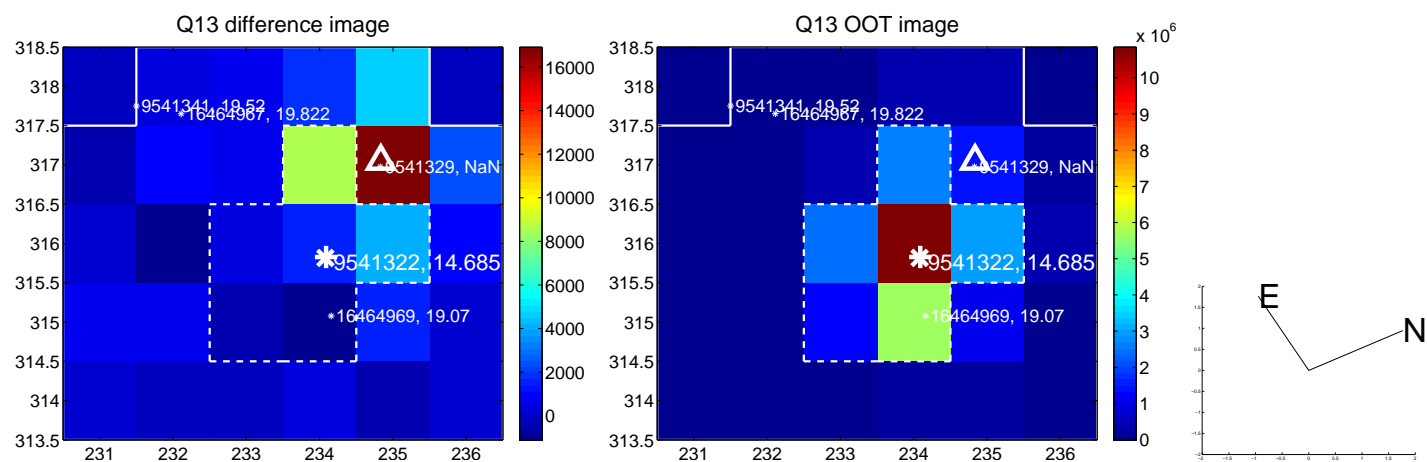
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



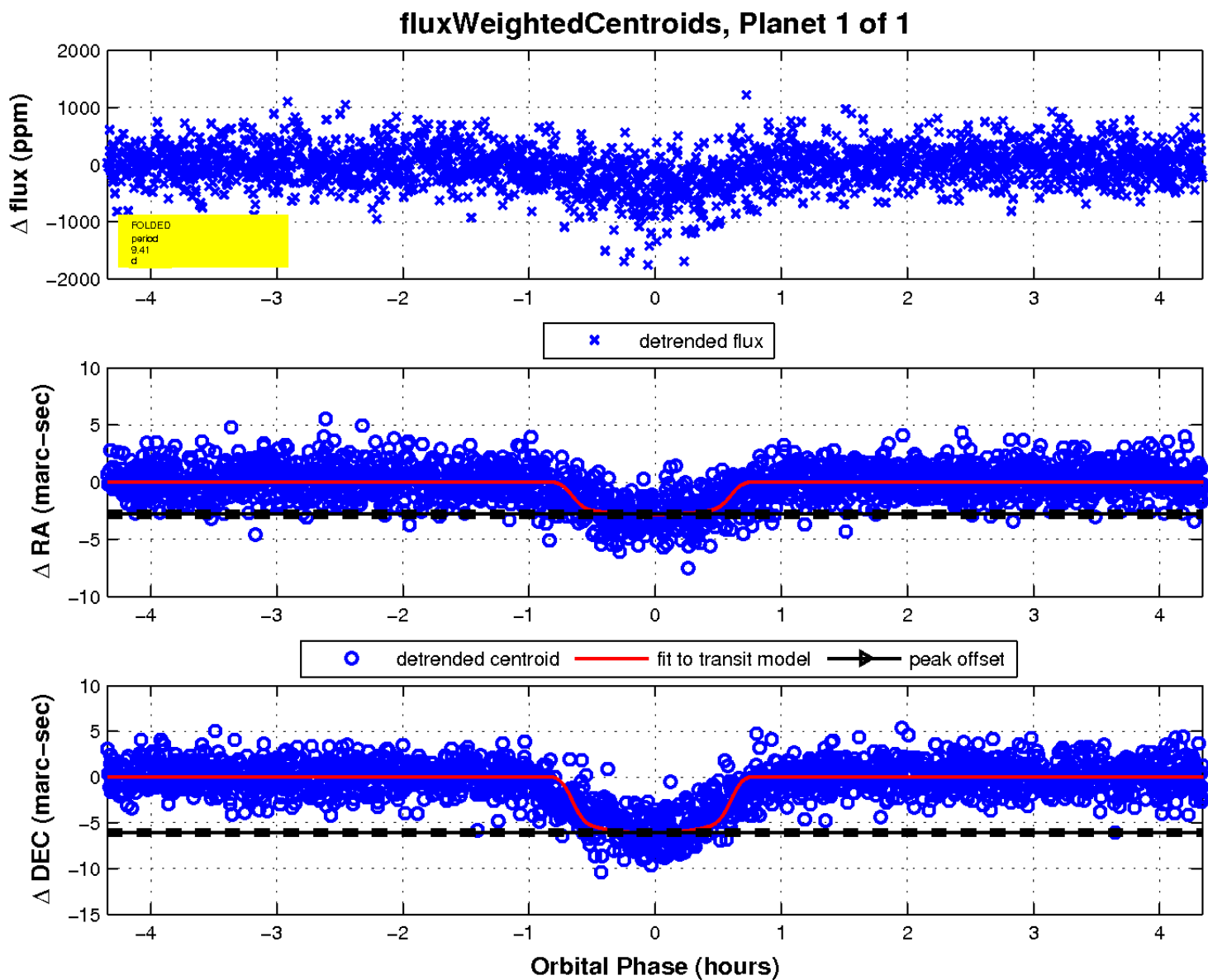
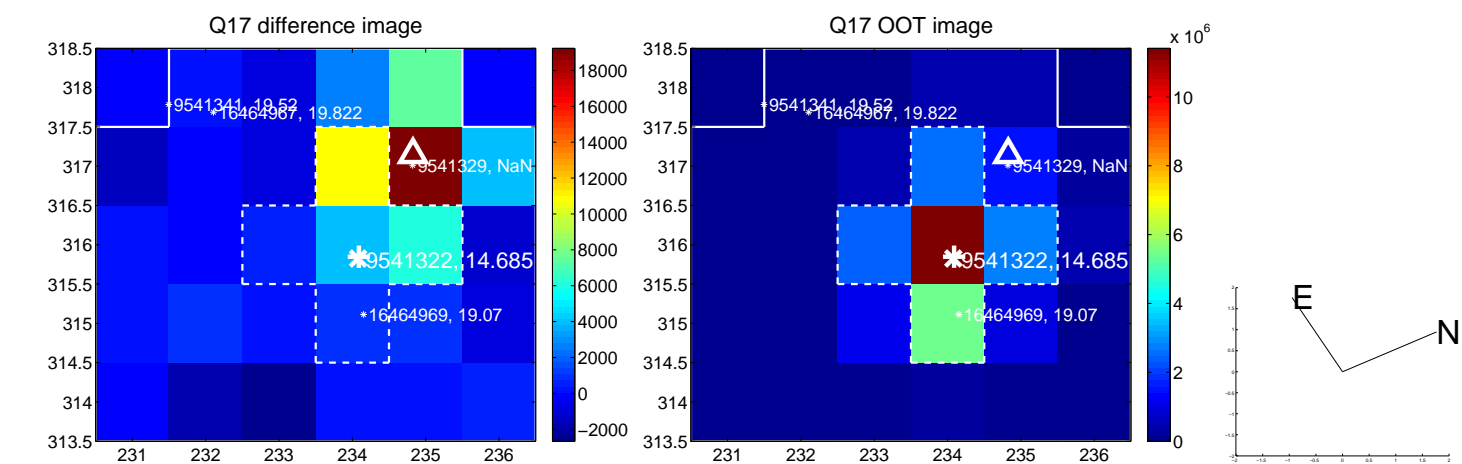
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

