

# KIC 003124598

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003124598-01	OBS	4187.01	7.071601	136.463446	124.7	3.666	14.3	15.3	1.26	6313	2.19	432.35

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003124598-01	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.

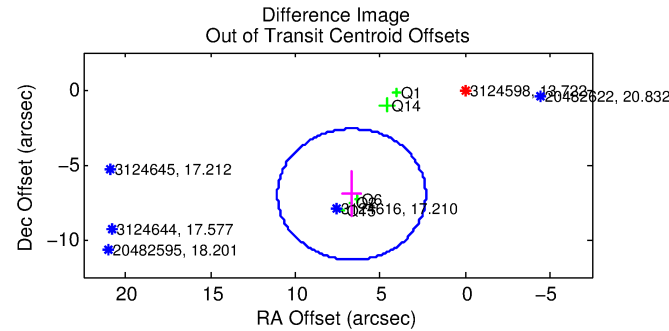
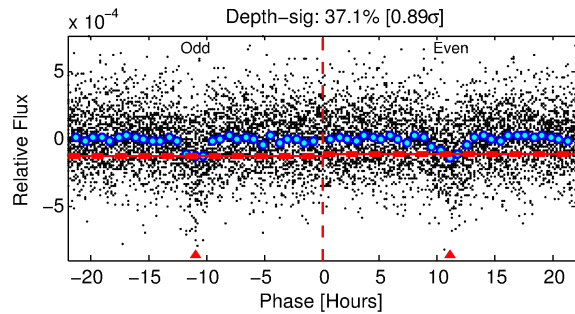
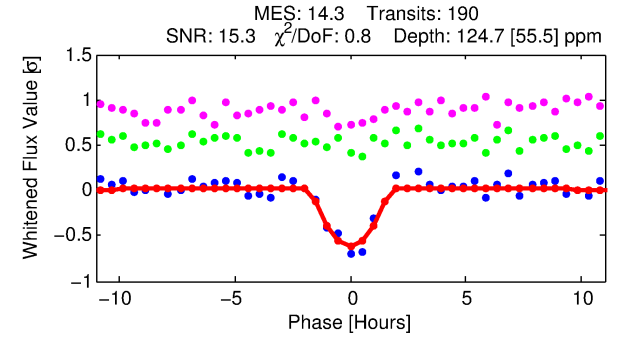
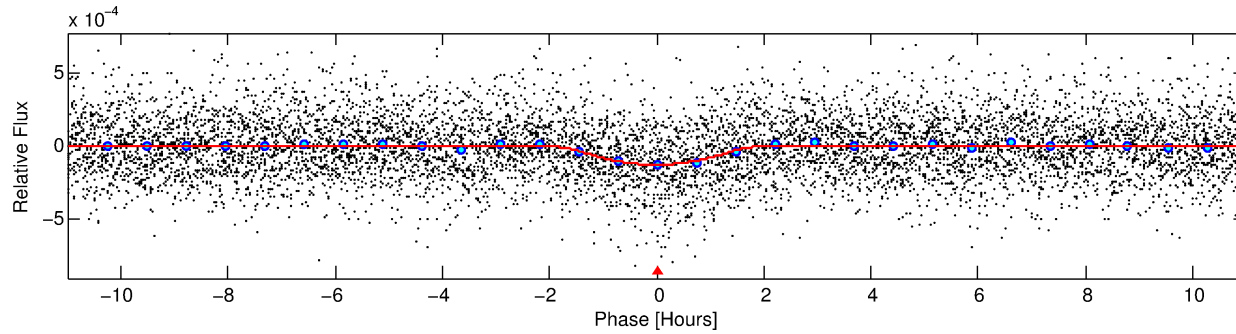
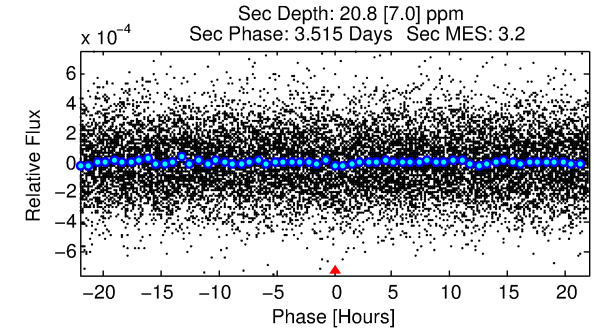
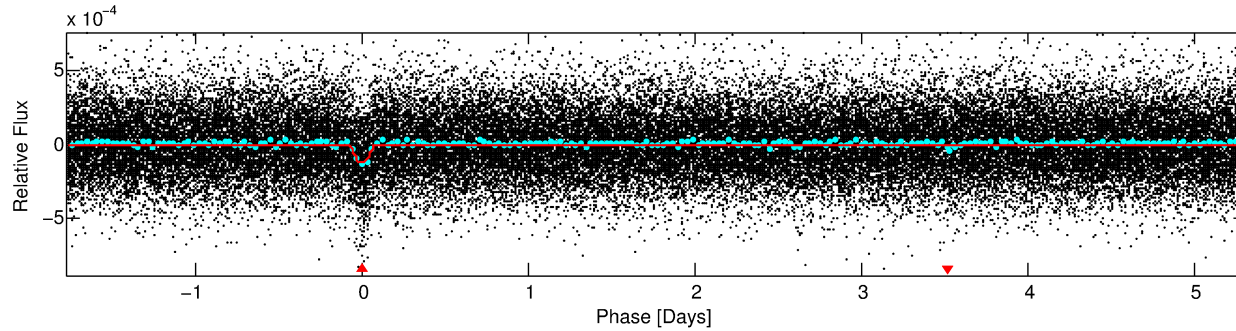
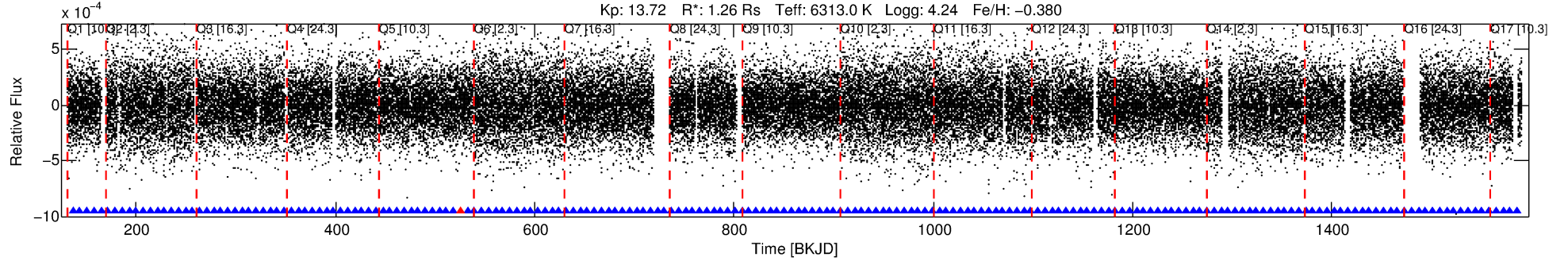
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003124598-01

No Significant Match Found

# DV One-Page Summary

KIC: 3124598 Candidate: 1 of 1 Period: 7.072 d  
KOI: K04187.01 Corr: 0.834



## DV Fit Results:

Period = 7.07160 [0.00005] d  
Epoch = 136.4634 [0.0057] BKJD  
Rp/R\* = 0.0159 [0.0124]  
a/R\* = 3.39 [1.15]  
b = 0.99 [0.03]  
Seff = 432.35 [161.21]  
Teq = 1163 [108] K  
Rp = 2.19 [1.81] Re  
a = 0.0722 [0.0171] AU  
Ag = 12.45 [20.34] [0.56σ]  
Teffp = 3377 [1353] K [1.63σ]

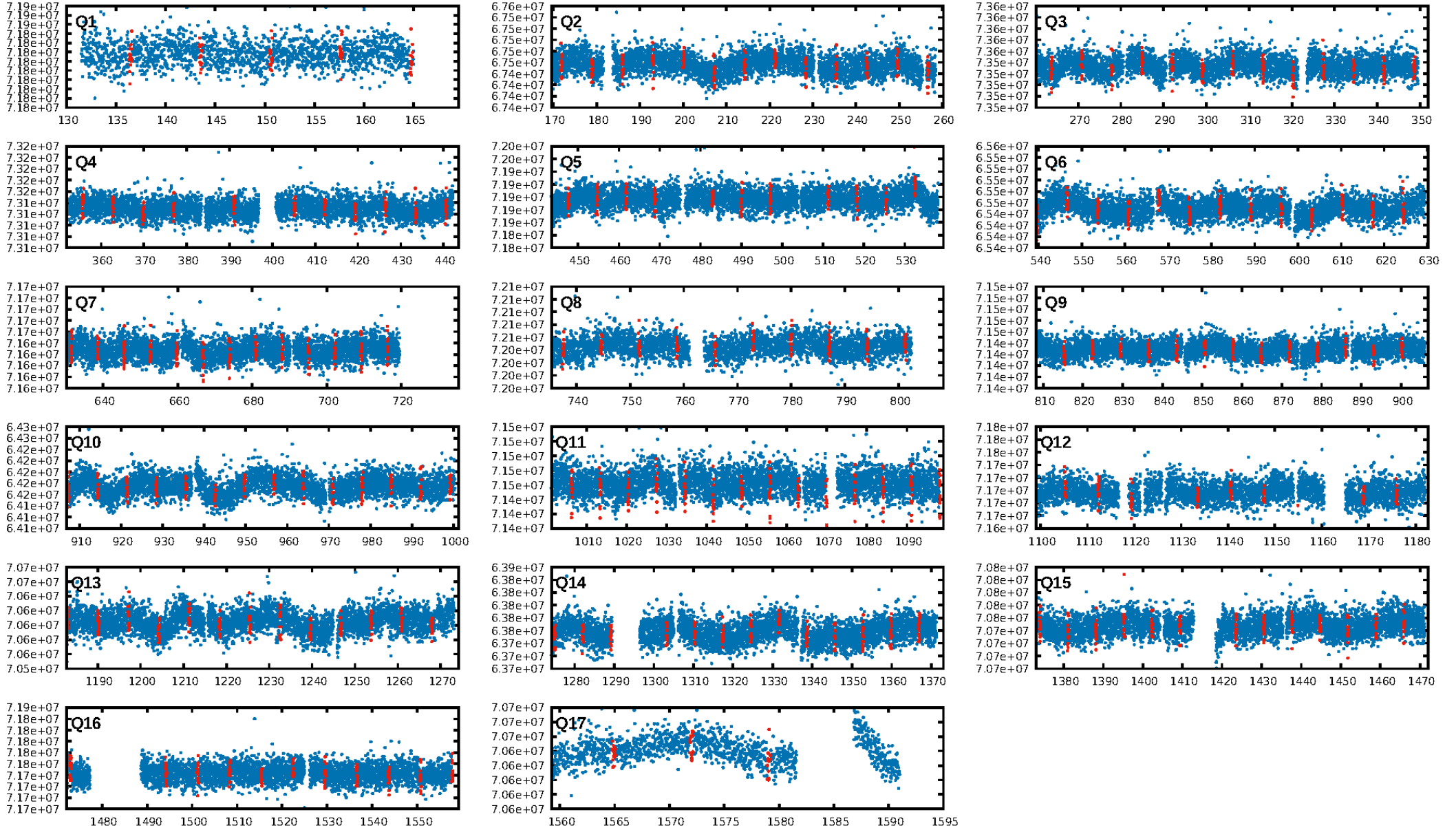
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 8.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.27e-45  
RollingBand-fgt: 0.99 [181/182]  
GhostDiagnostic-chr: -0.143  
Centroid-sig: 0.0%  
Centroid-so: 9.436 arcsec [10.91σ]  
OotOffset-rm: 9.660 arcsec [6.62σ]  
KicOffset-rm: 9.622 arcsec [5.60σ]  
OotOffset-st: 3/1/0/1 [5]  
KicOffset-st: 3/1/0/1 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 1.00 [17/17]

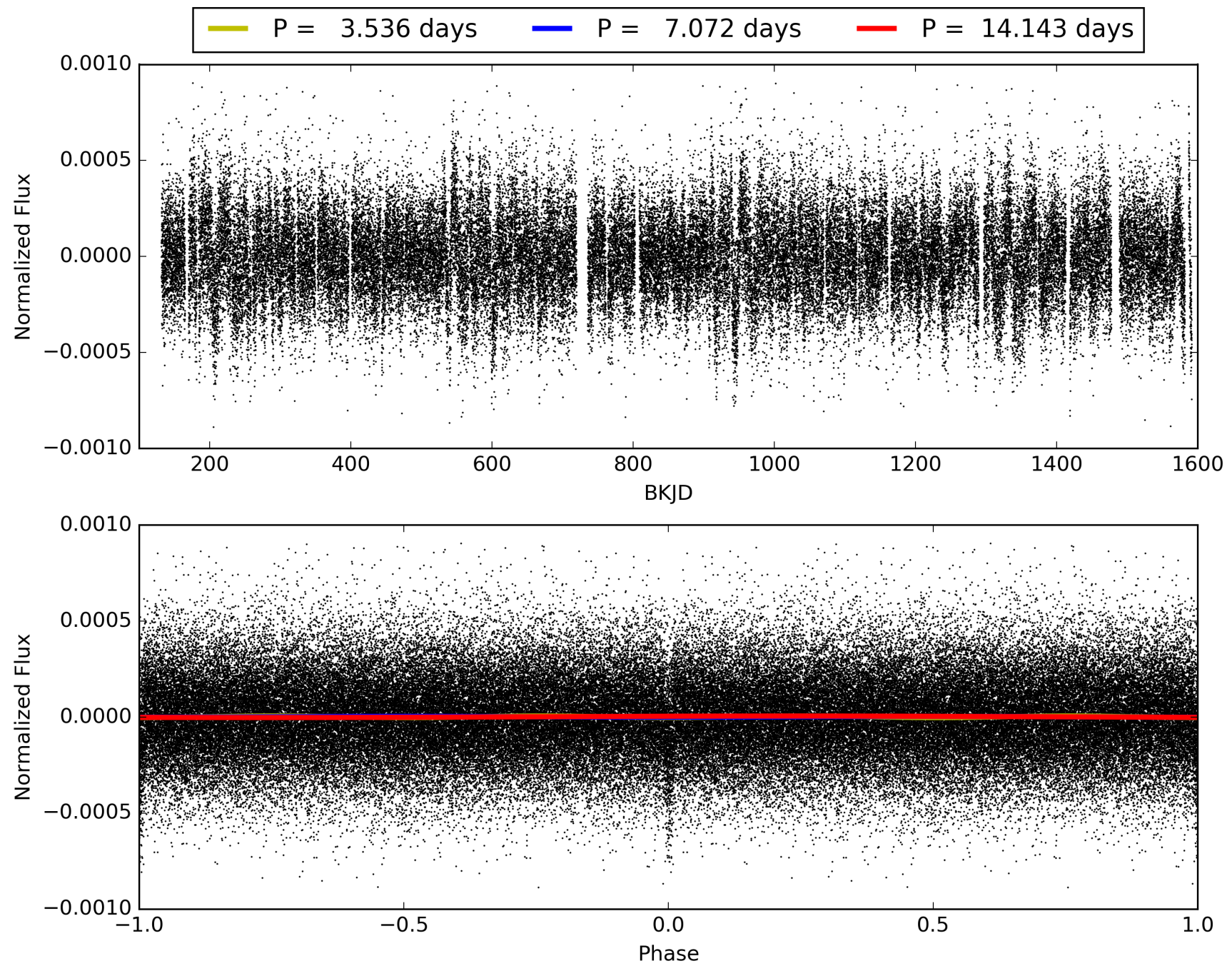
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:32:45 Z

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

# TCE 003124598-01, PDC Light Curves



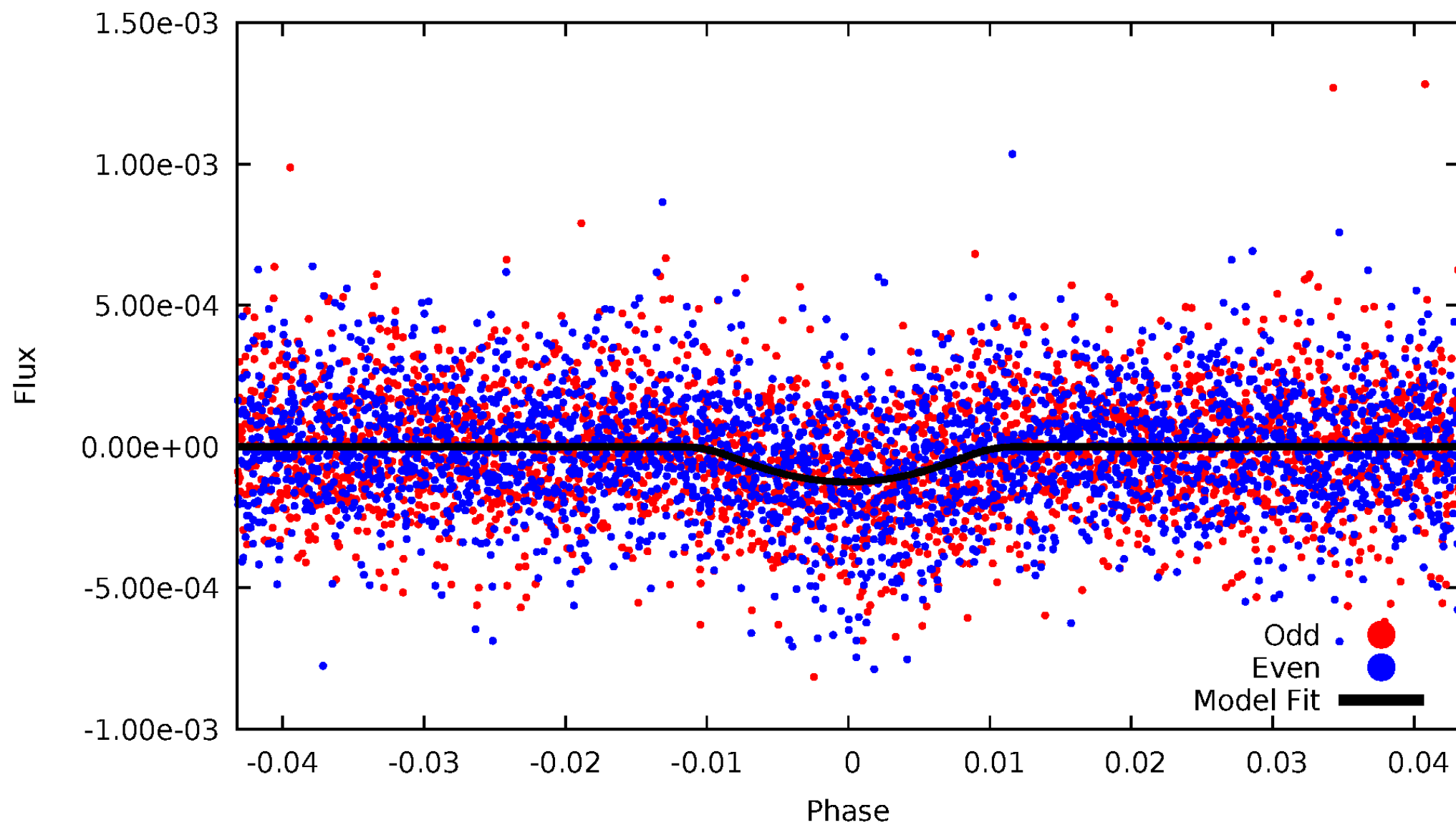
TCE 003124598-01





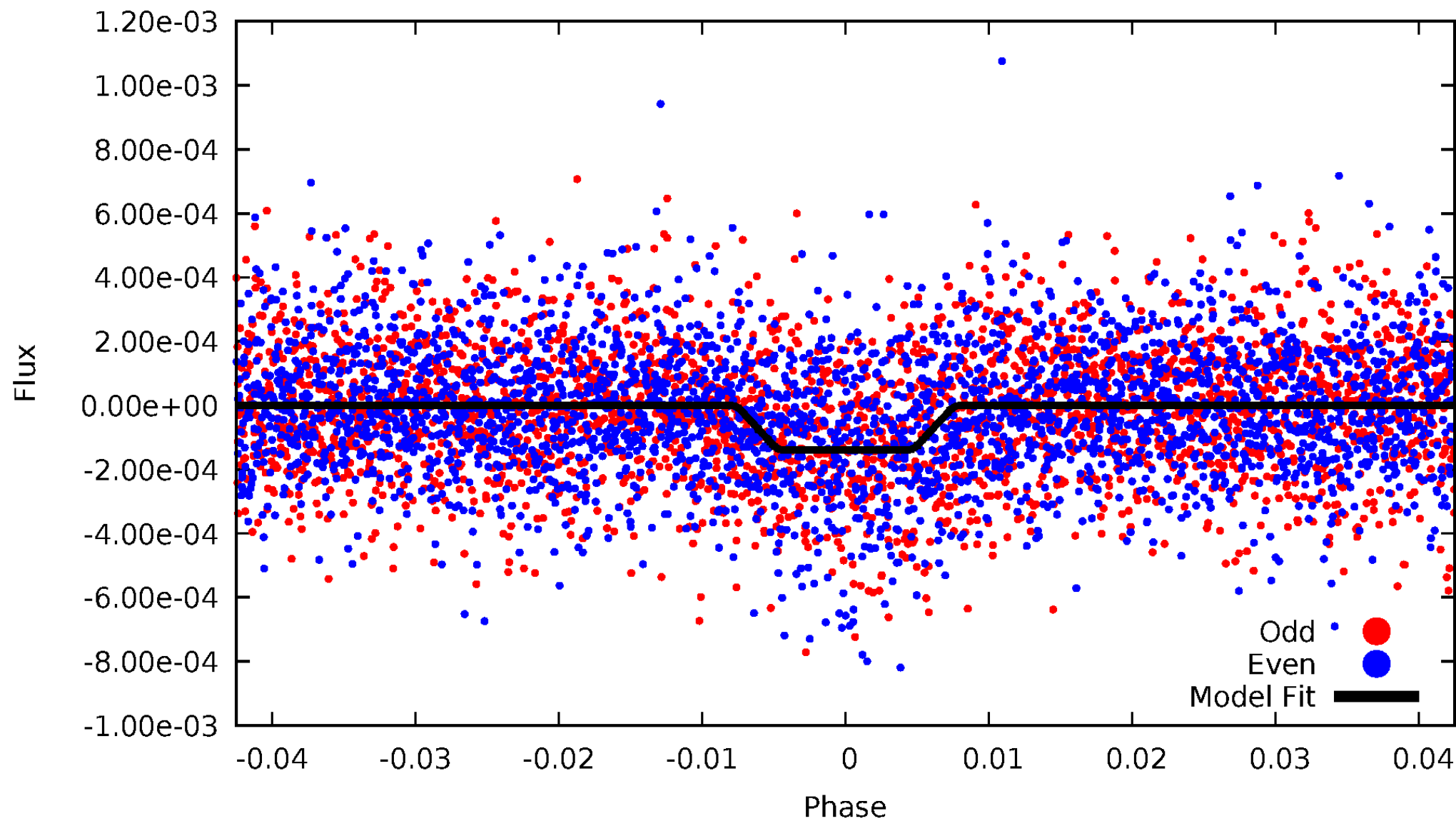
# DV Odd/Even

TCE 003124598-01

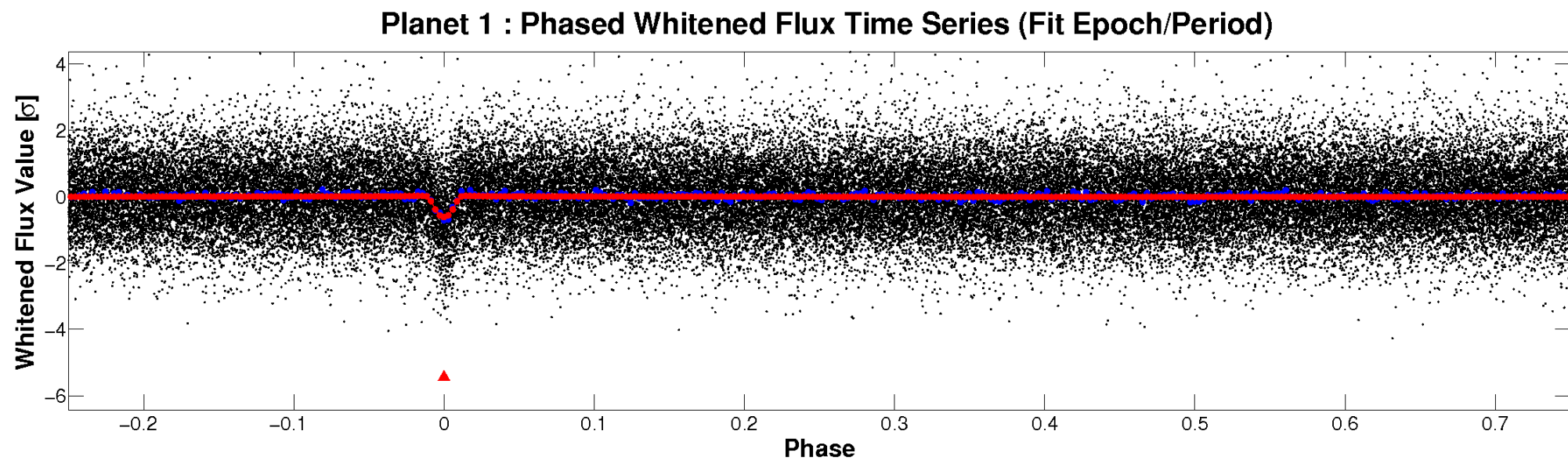
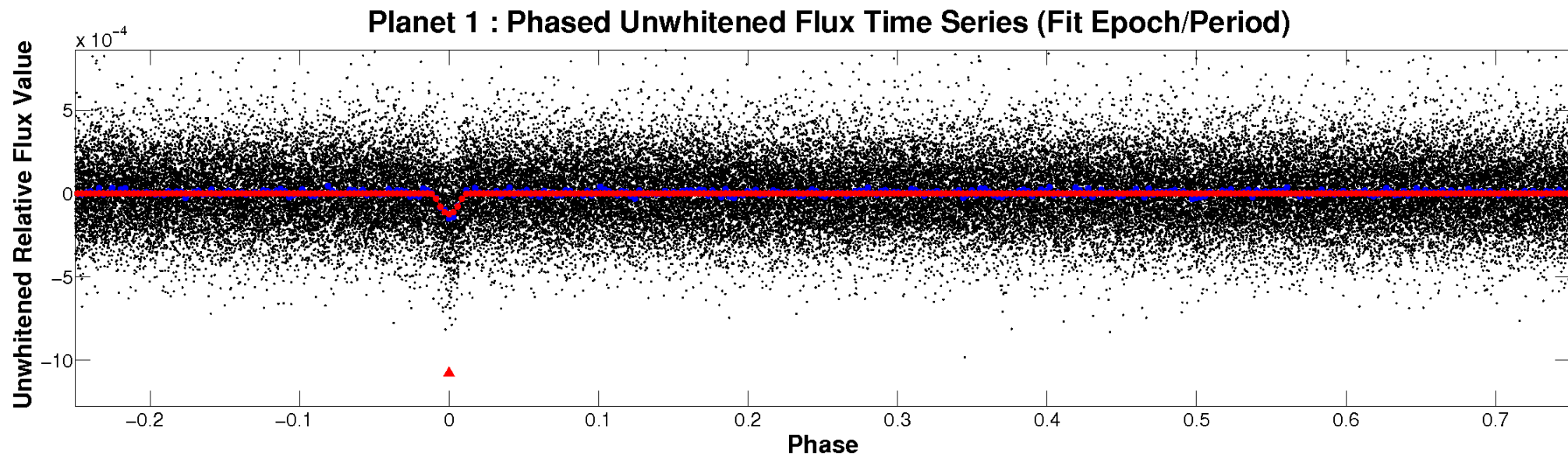


# ALT Odd/Even

TCE 003124598-01

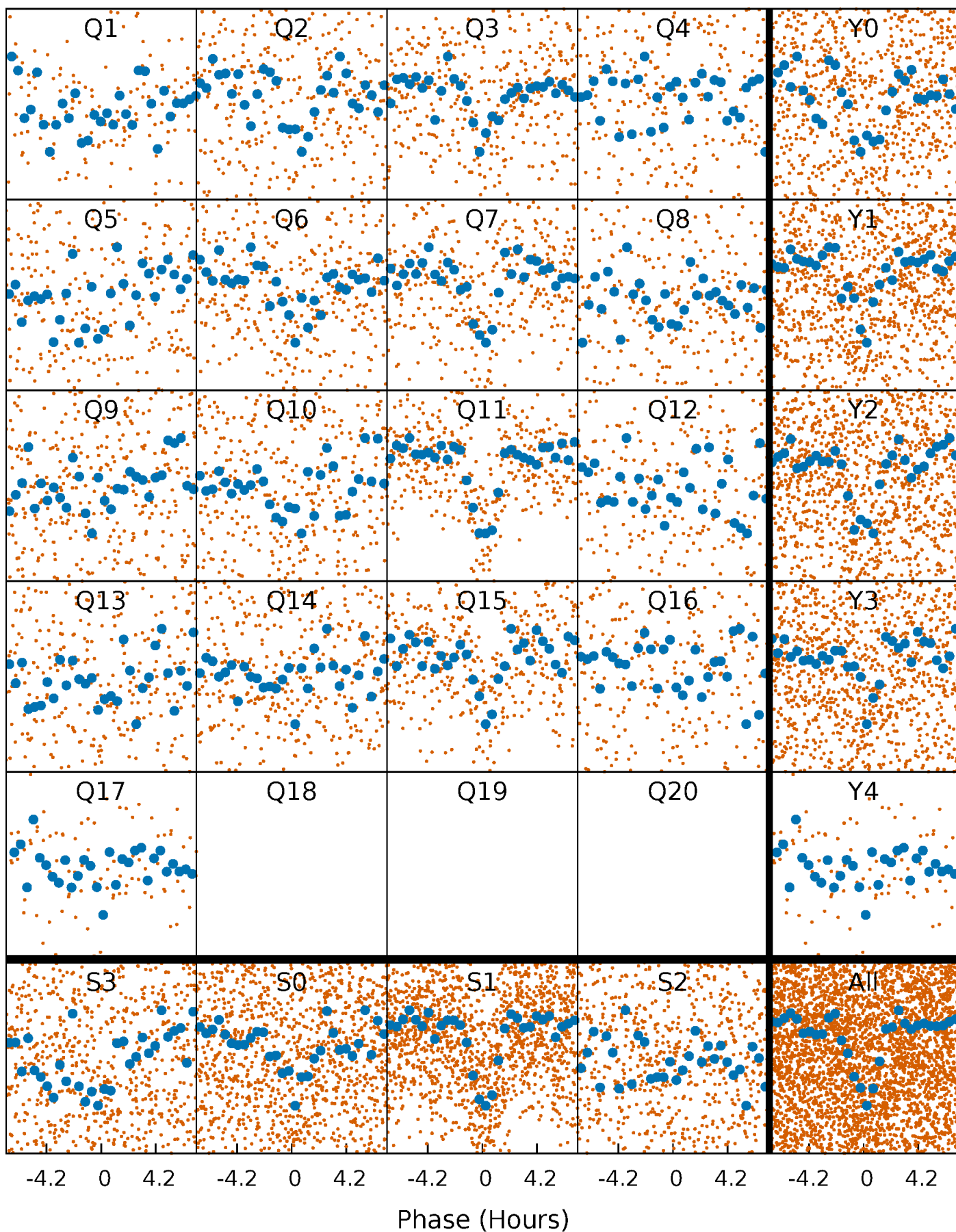


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

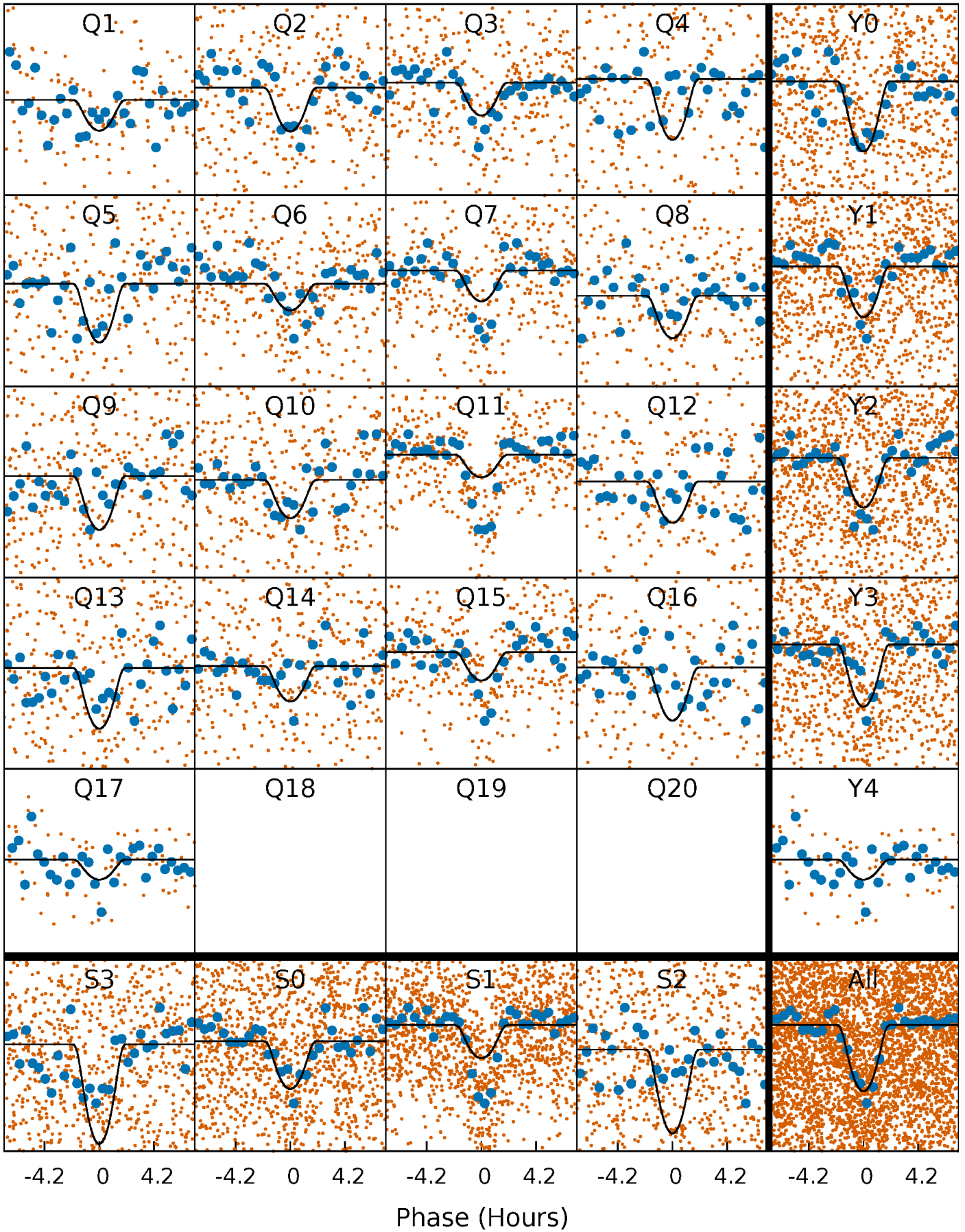
TCE 003124598-01 P= 7.071601 Days  $T_0=136.463446$  (BKJD)





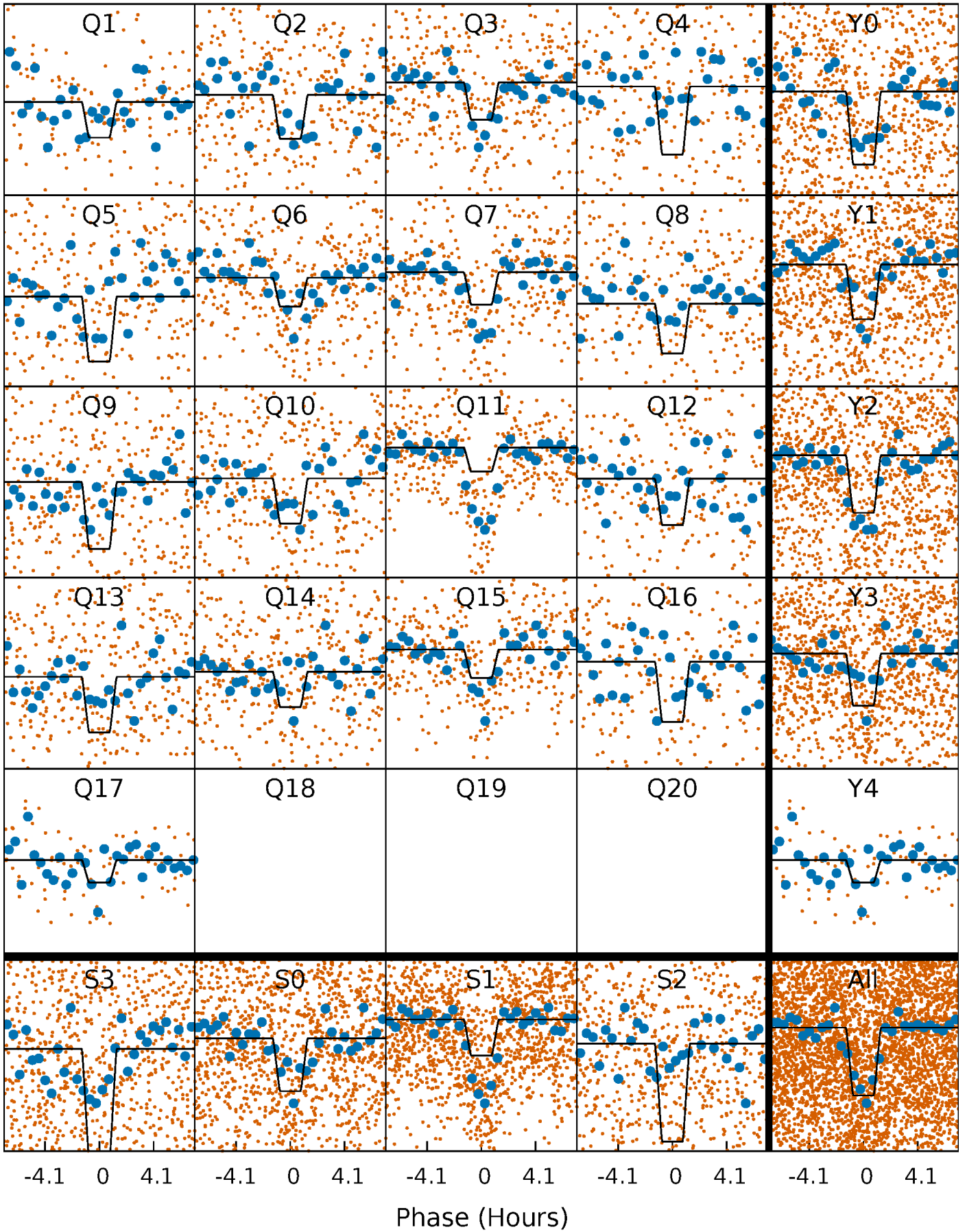
# DV Quarter-Phased Transit Curves

TCE 003124598-01   P= 7.071601 Days    $T_0=136.463446$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

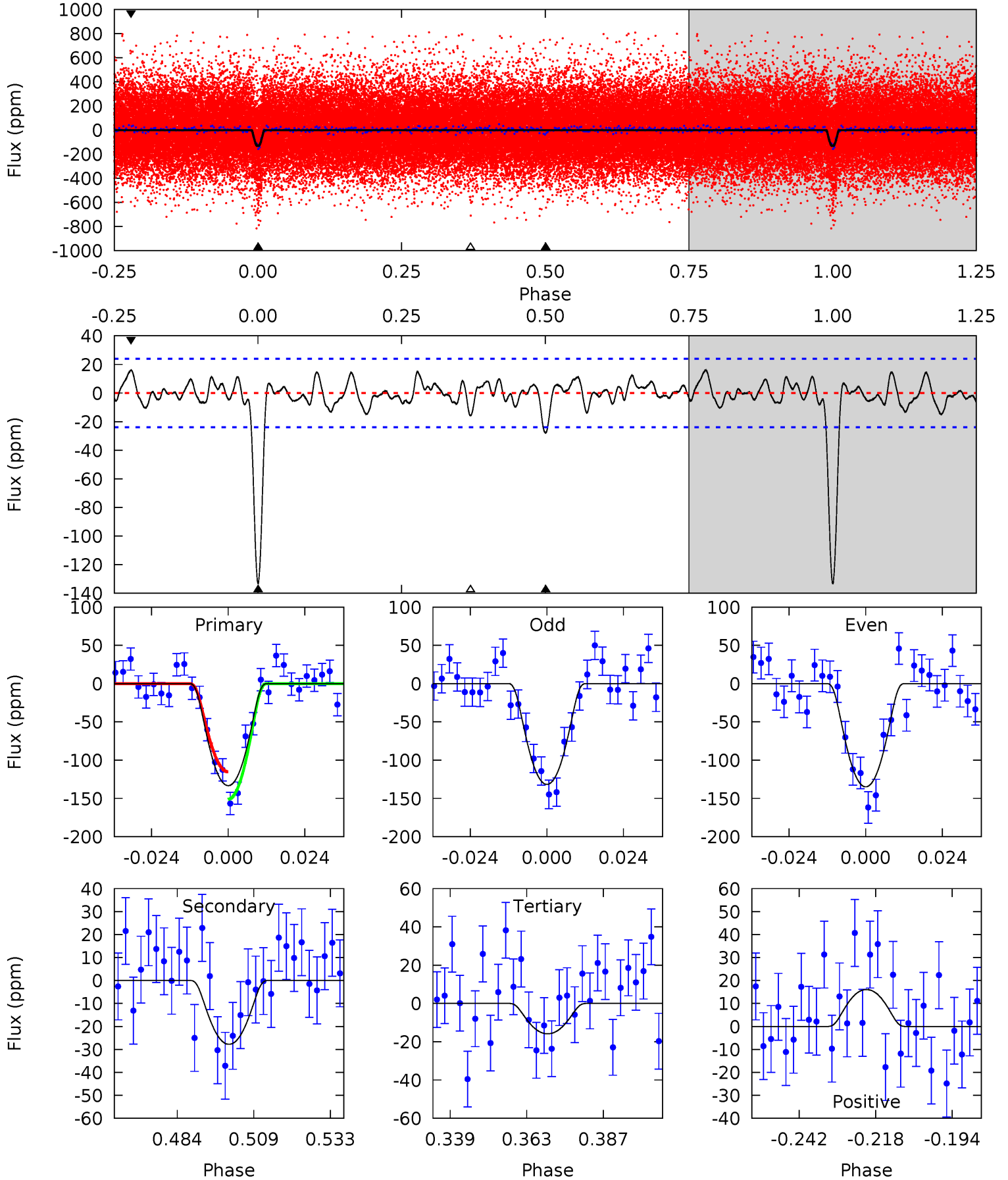
TCE 003124598-01 P= 7.071654 Days  $T_0=136.458683$  (BKJD)



# DV Model-Shift Uniqueness Test

003124598-01, P = 7.071601 Days, E = 129.391845 Days

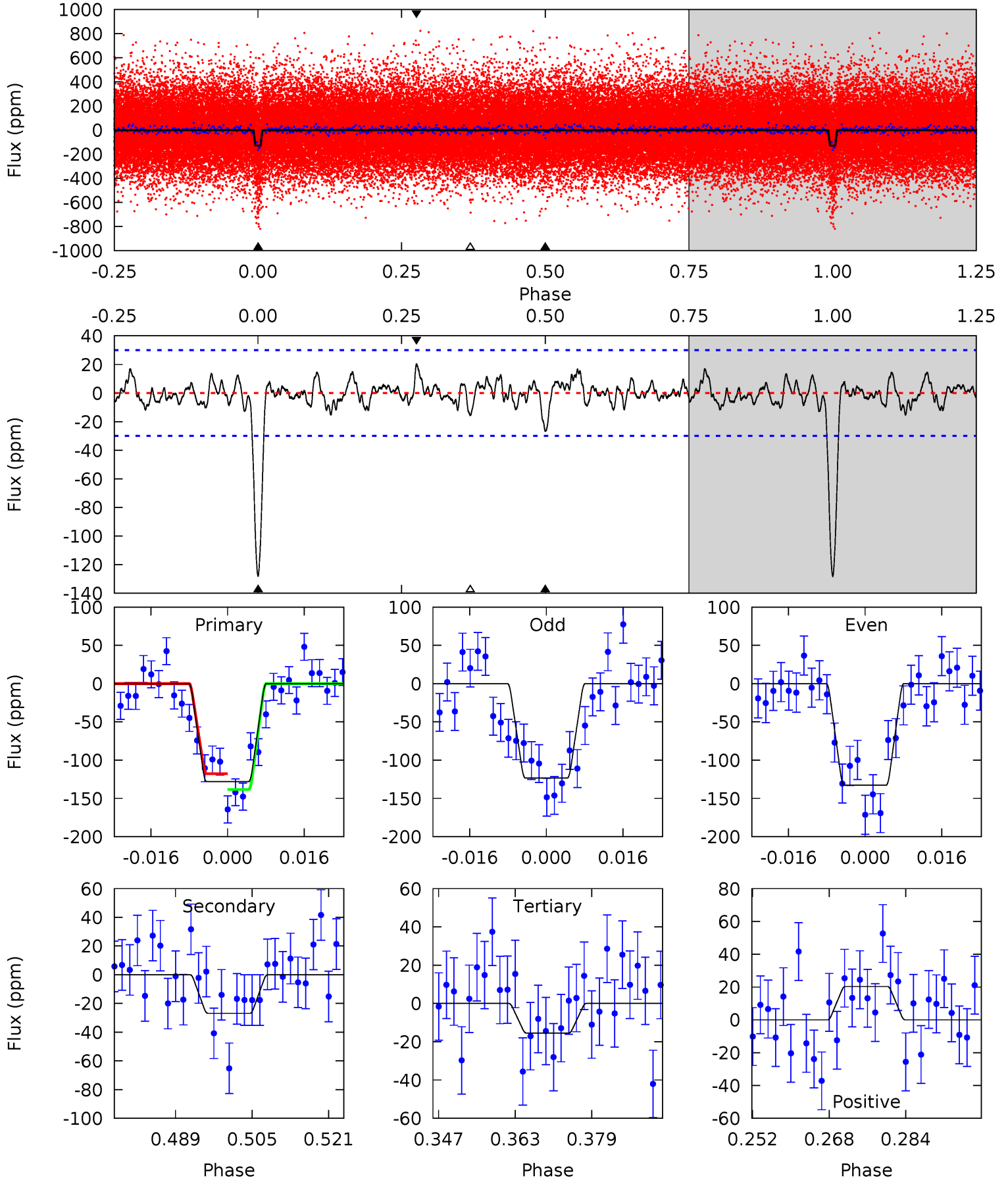
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.1	5.64	3.22	3.26	4.85	2.25	1.25	23.8	23.8	2.42	2.38	0.33	1.28	0.11	3.63



# Alt Model-Shift Uniqueness Test

003124598-01, P = 7.071654 Days, E = 129.387029 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
21.1	4.42	2.56	3.35	4.94	2.41	1.03	18.5	17.7	1.86	1.07	0.78	1.26	0.14	1.69





### Stellar Parameters For KIC 003124598

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6313^{+176}_{-220}$	$4.240^{+0.190}_{-0.171}$	$-0.380^{+0.300}_{-0.300}$	$1.259^{+0.351}_{-0.287}$	$1.005^{+0.157}_{-0.129}$	$0.709^{+0.722}_{-0.362}$
	+3%/-3%	+4%/-4%	+79%/-79%	+28%/-23%	+16%/-13%	+102%/-51%
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 003124598-01 / KOI 4187.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-28 \pm 5$	$2.29^{+1.60}_{-1.30}$	$1615^{+120}_{-115}$	$3850^{+1648}_{-634}$	$15^{+71}_{-10}$
Alt.	$-27 \pm 6$	$1.93^{+1.53}_{-1.20}$	$1621^{+114}_{-113}$	$4077^{+2167}_{-749}$	$21^{+125}_{-14}$

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

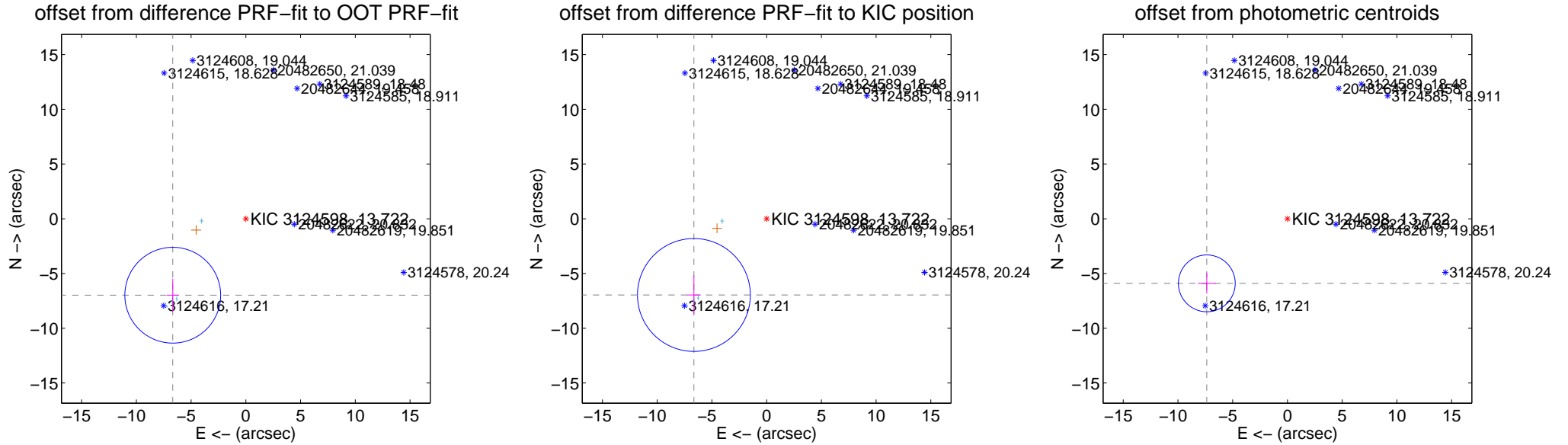
## DV Centroid Data

Supplemental centroid analysis for 003124598-01. Kepler magnitude: 13.72. Transit SNR 15.29

There are 4 quarters with good PRF difference image offsets

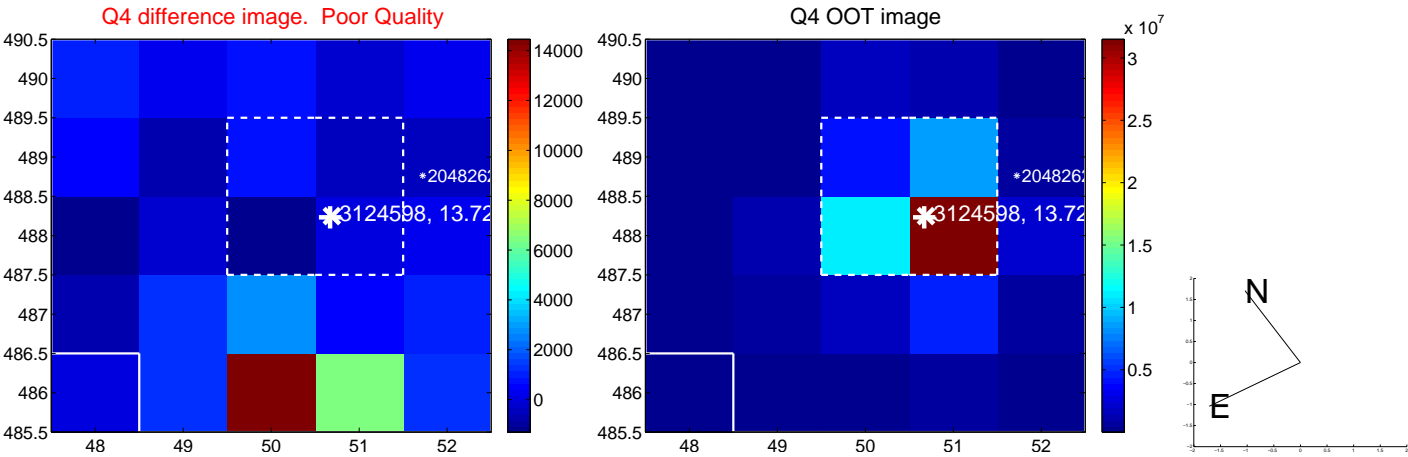
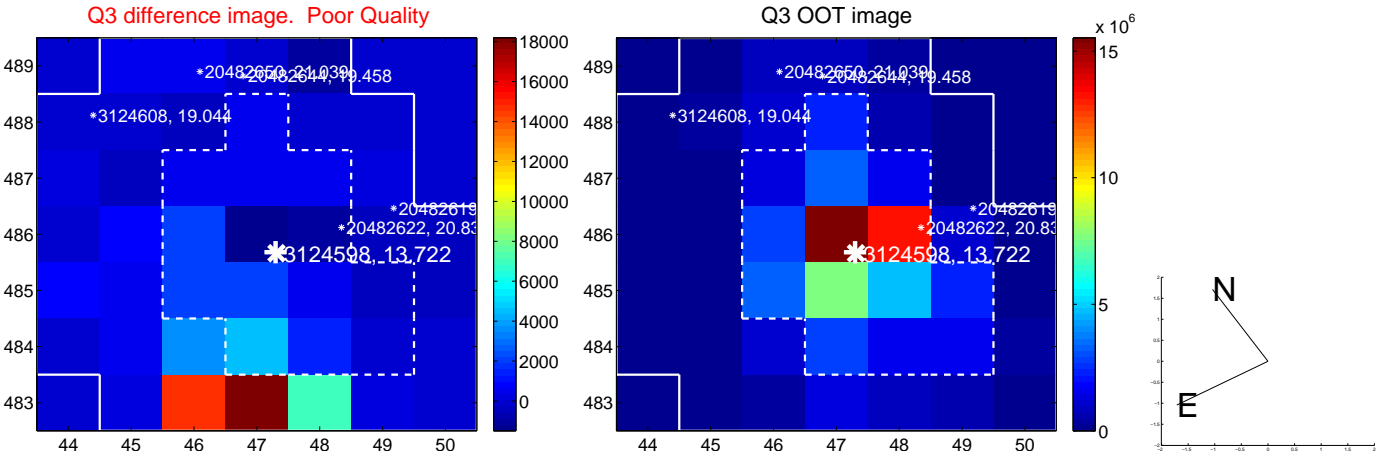
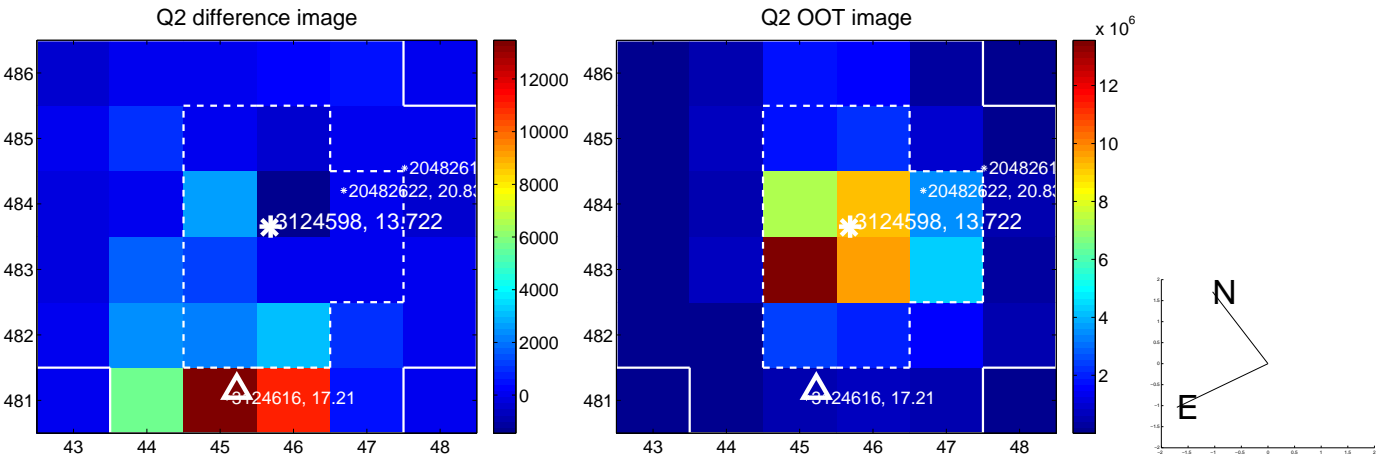
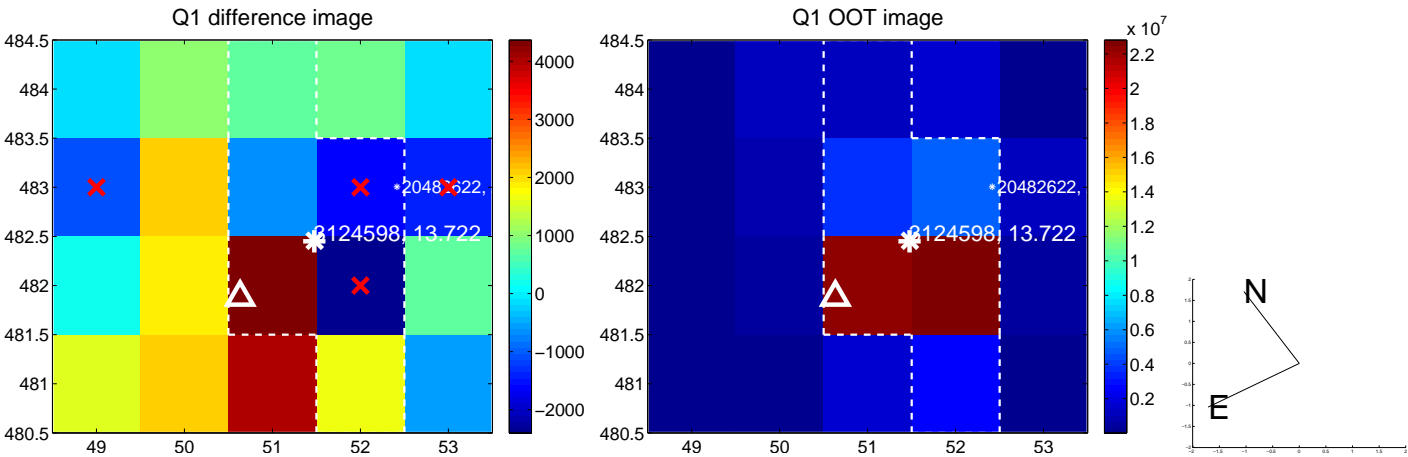
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	9.660 $\pm$ 1.458	6.62	6.676 $\pm$ 0.546	-6.982 $\pm$ 1.507
PRF-fit source offset from KIC position	9.622 $\pm$ 1.718	5.60	6.643 $\pm$ 0.631	-6.960 $\pm$ 1.783
photometric centroid source offset	9.44 $\pm$ 0.86	10.91	7.37 $\pm$ 0.82	-5.90 $\pm$ 0.93

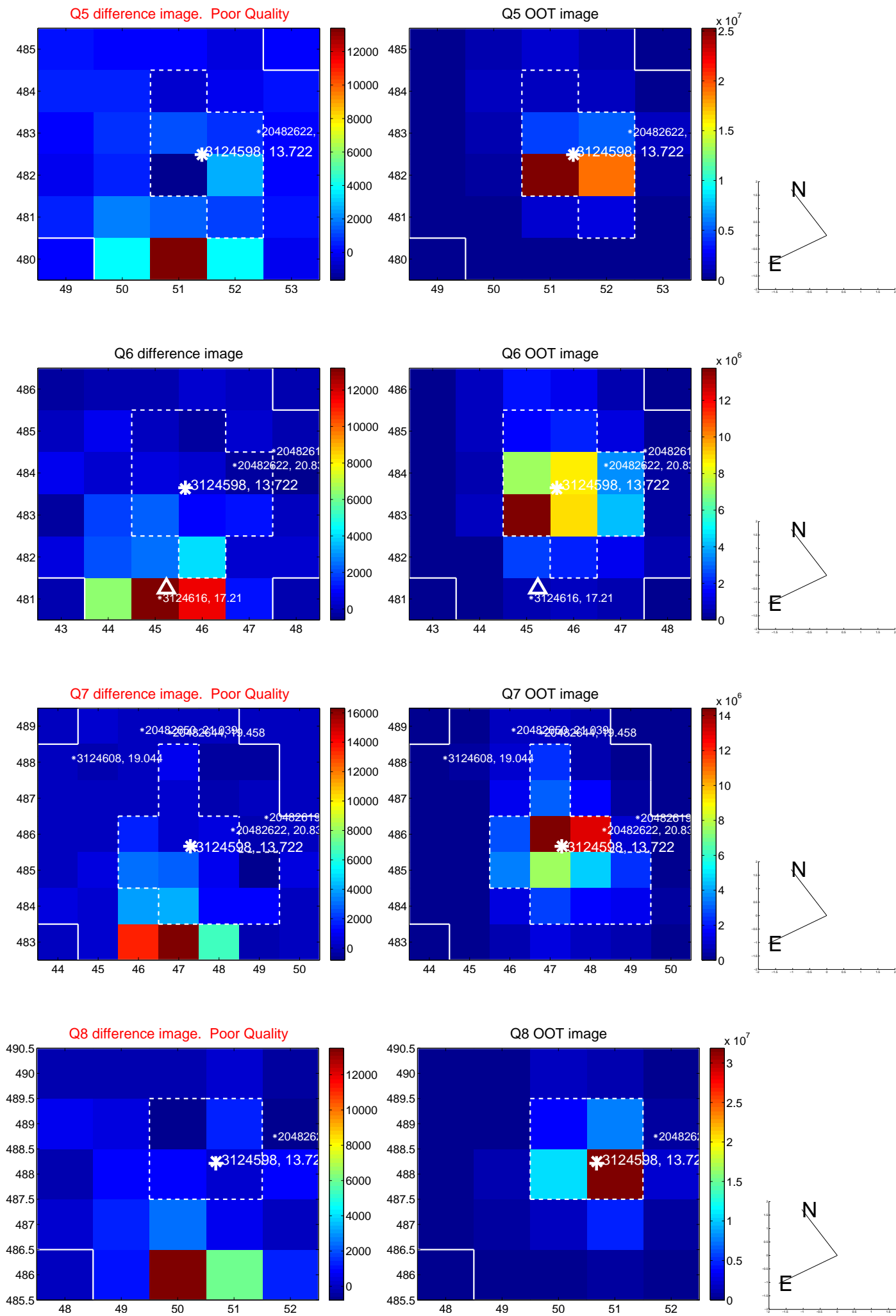


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

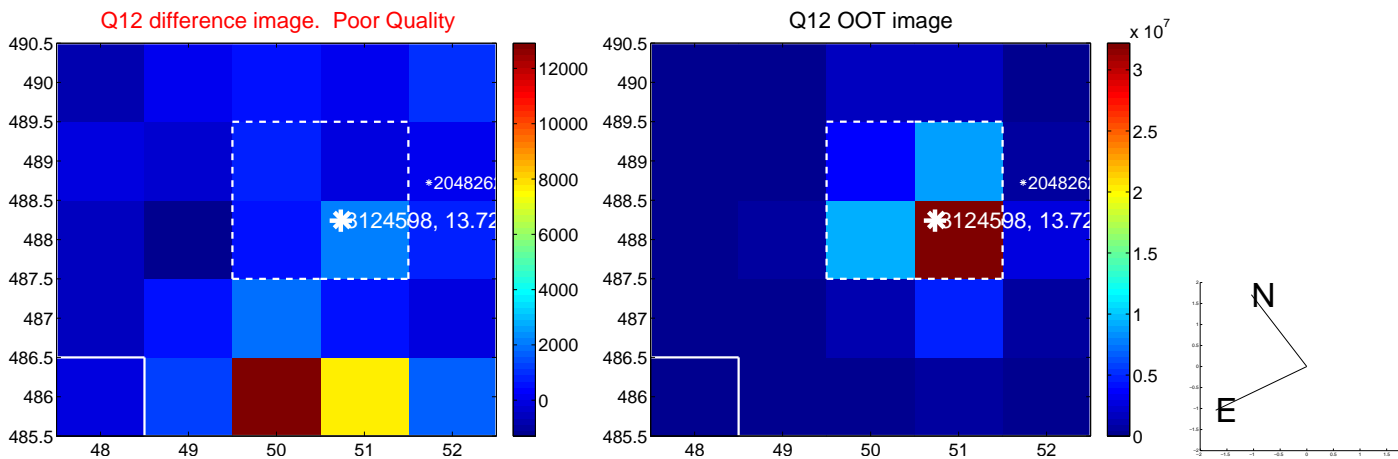
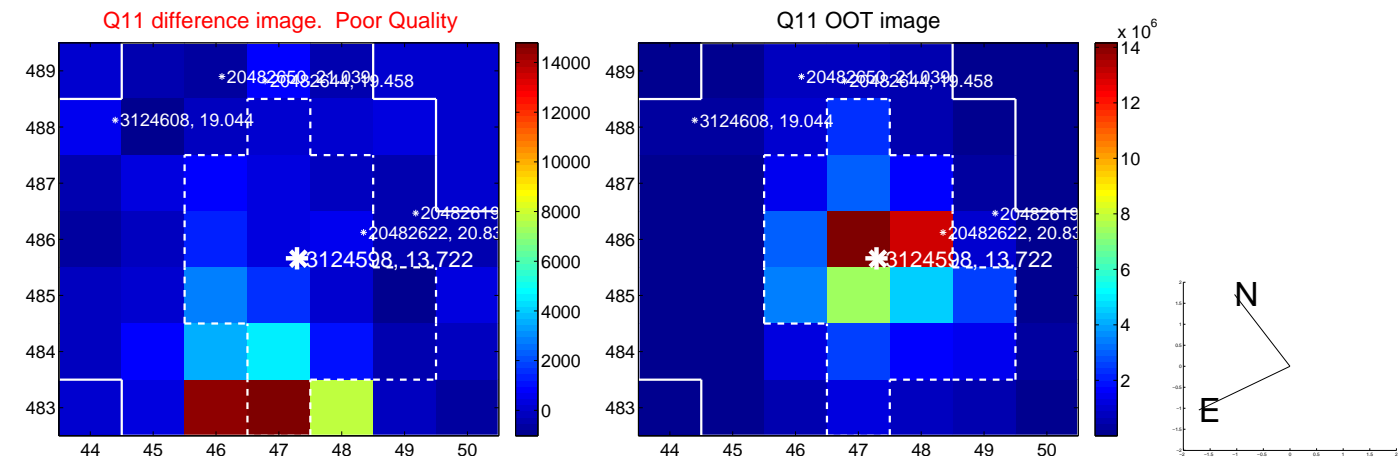
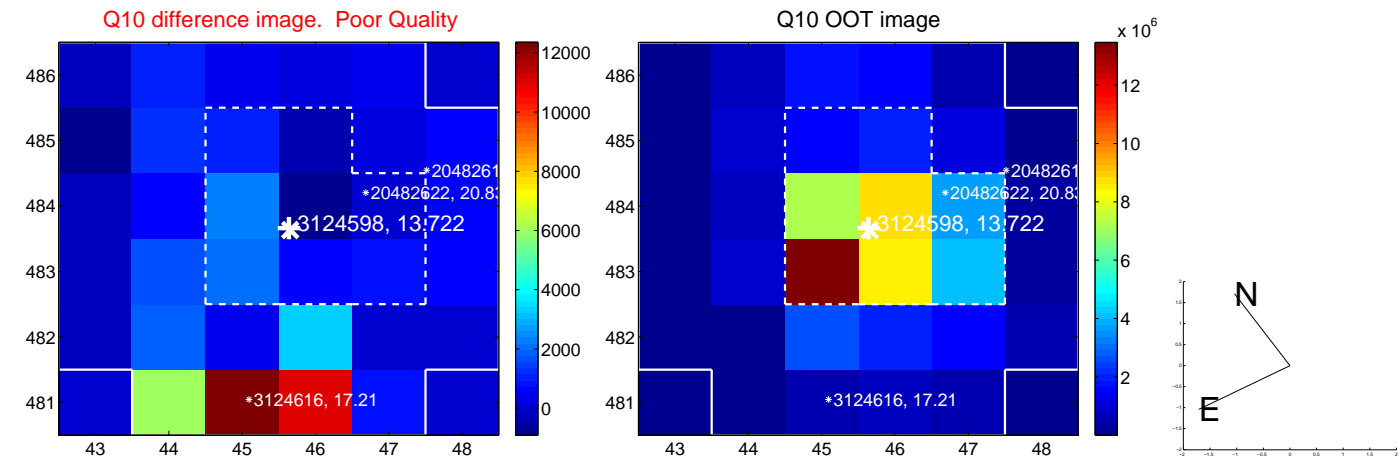
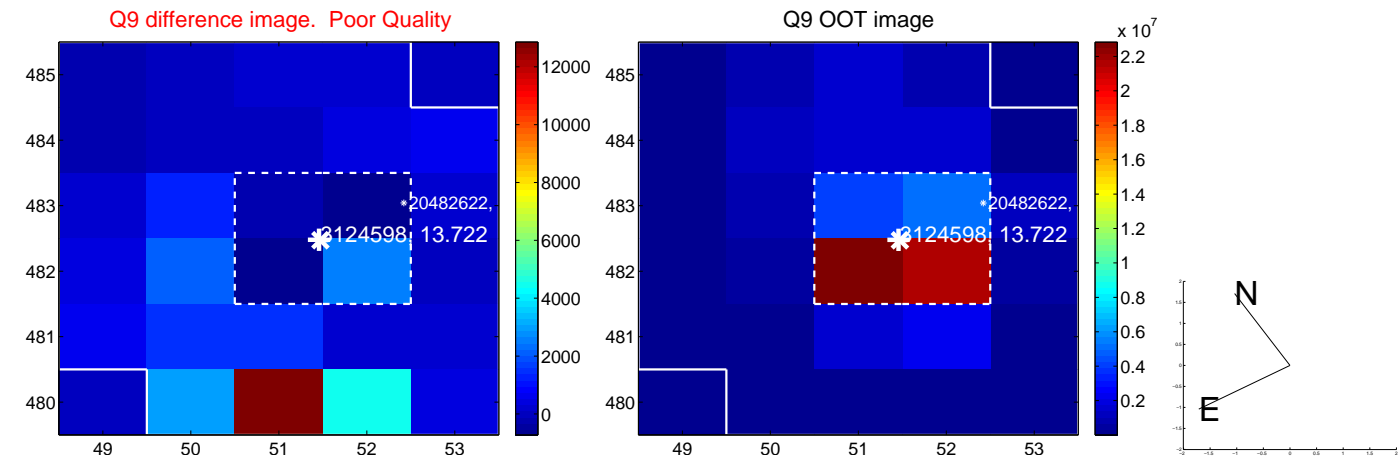


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

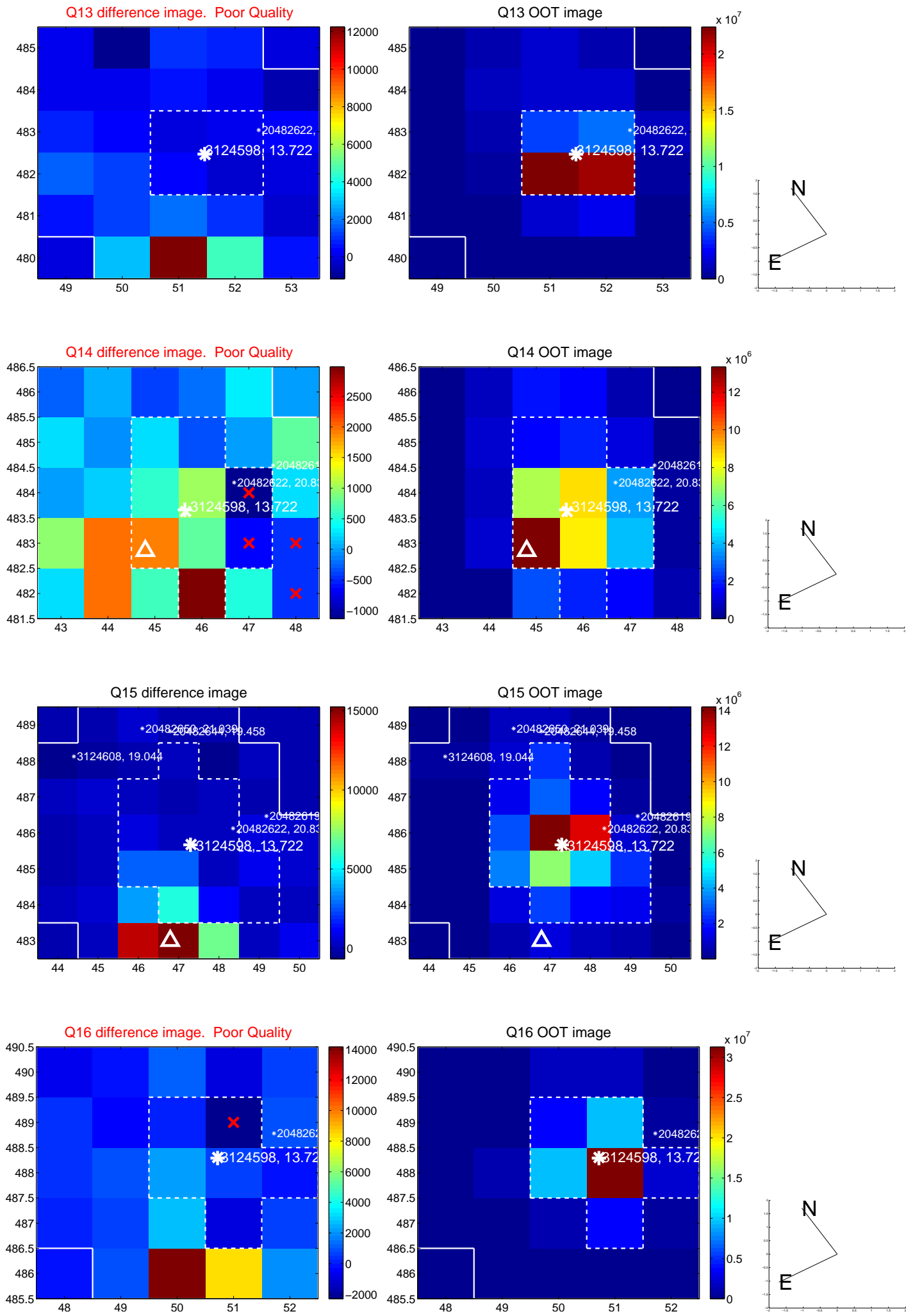




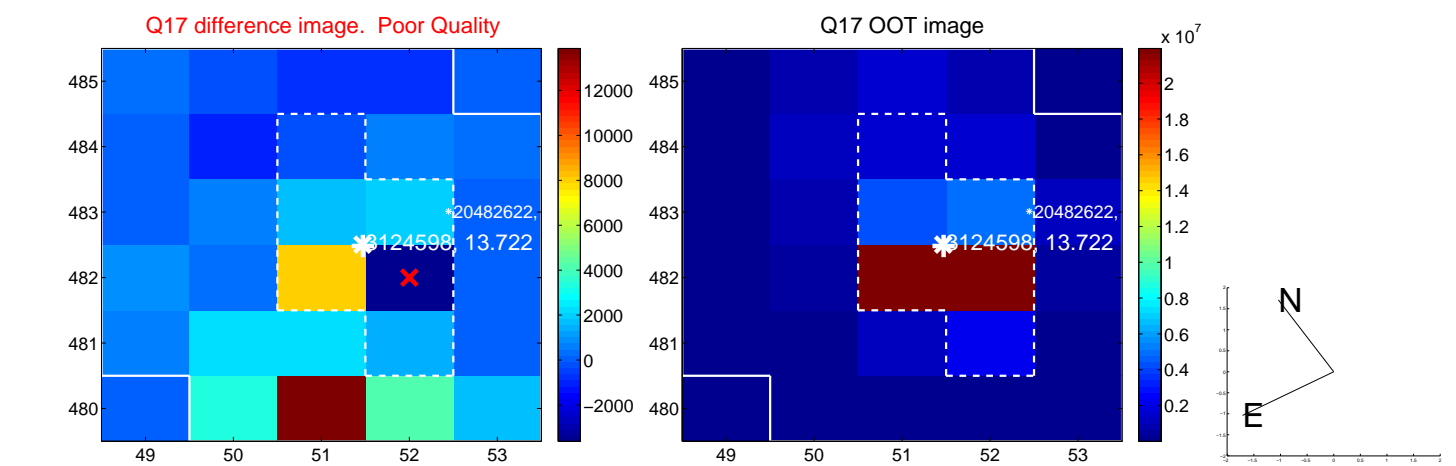
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



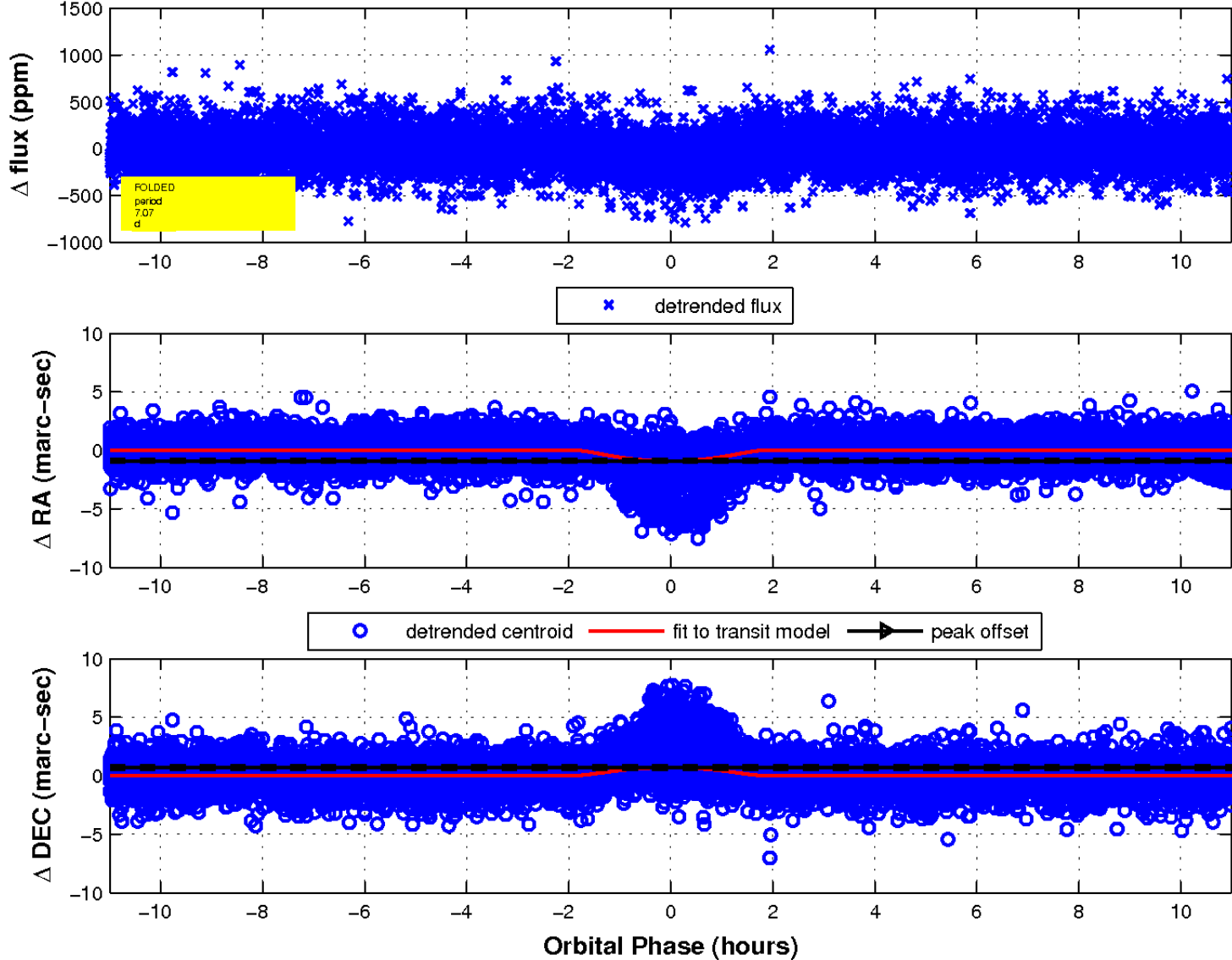
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

