

# KIC 009551430

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009551430-01	OBS	4030.01	7.755344	134.507210	671.5	19.888	21.4	25.4	0.77	5607	3.86	107.94

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009551430-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_KIC_POS

**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 009551430-01

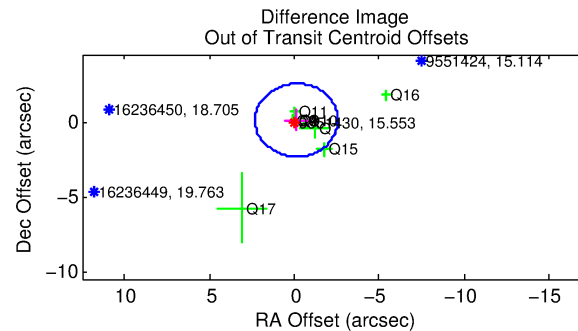
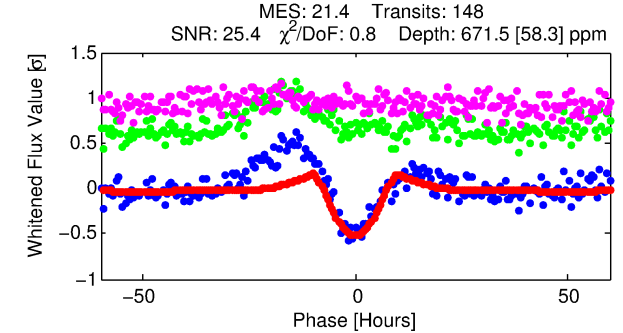
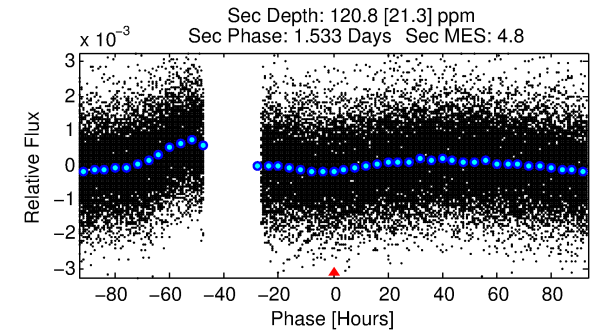
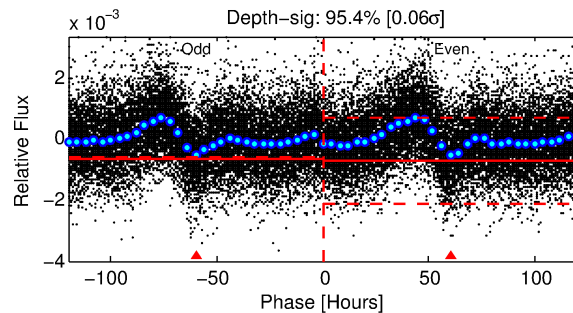
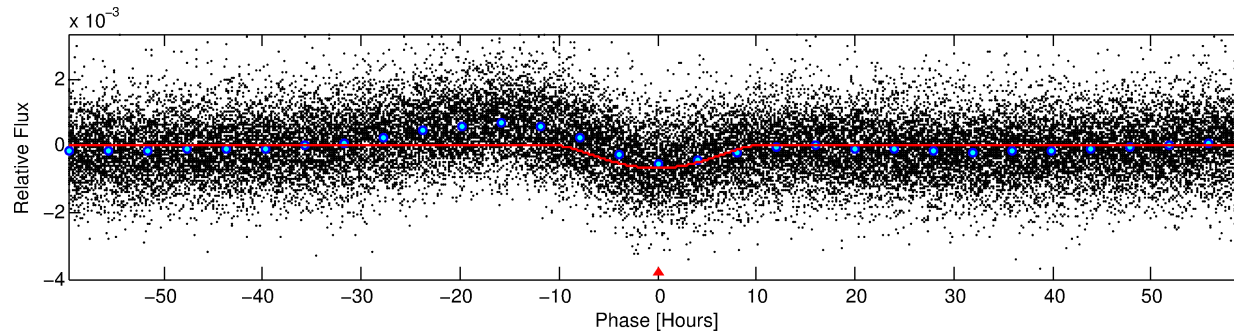
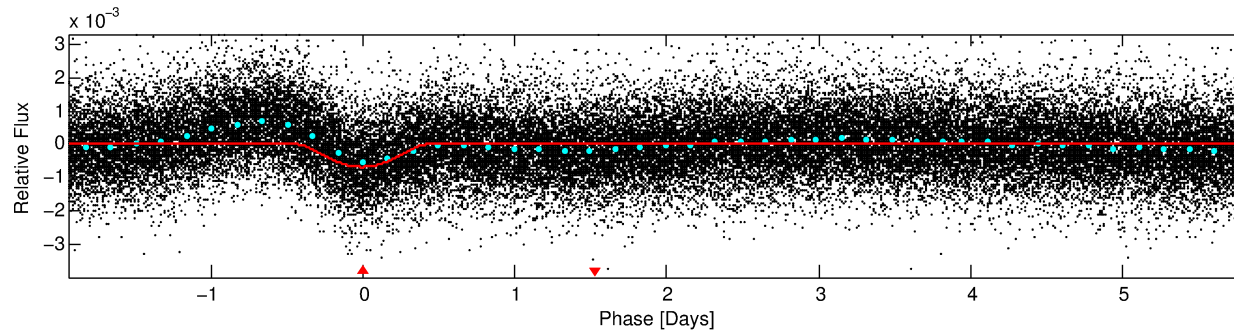
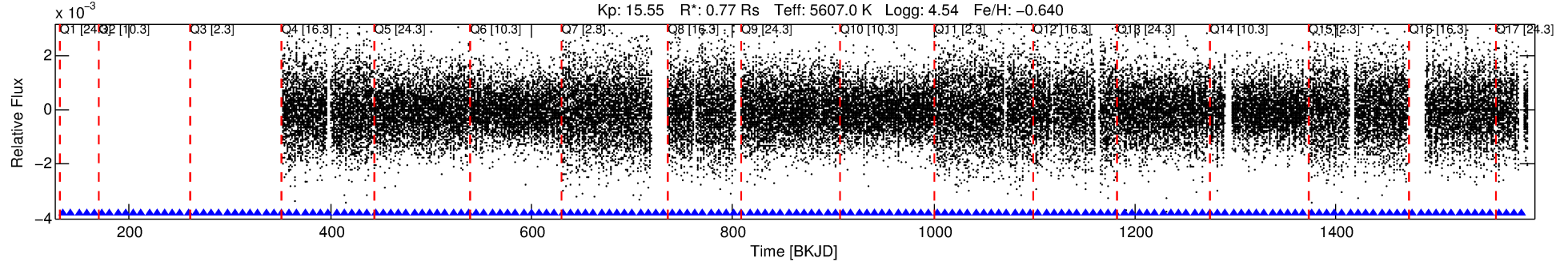
No Significant Match Found

# DV One-Page Summary

KIC: 9551430 Candidate: 1 of 1 Period: 7.755 d

KOI: K04030.01 Corr: 0.954

Kp: 15.55 R\*: 0.77 Rs Teff: 5607.0 K Logg: 4.54 Fe/H: -0.640



## DV Fit Results:

Period = 7.75534 [0.00016] d  
Epoch = 134.5072 [0.0180] BKJD  
Rp/R\* = 0.0462 [0.0446]  
a/R\* = 1.37 [0.11]  
b = 1.00 [0.07]  
Seff = 107.94 [27.72]  
Teq = 822 [53] K  
Rp = 3.86 [3.79] Re  
a = 0.0694 [0.0106] AU  
Ag = 21.43 [41.75] [0.49σ]  
Teffp = 2734 [1327] K [1.44σ]

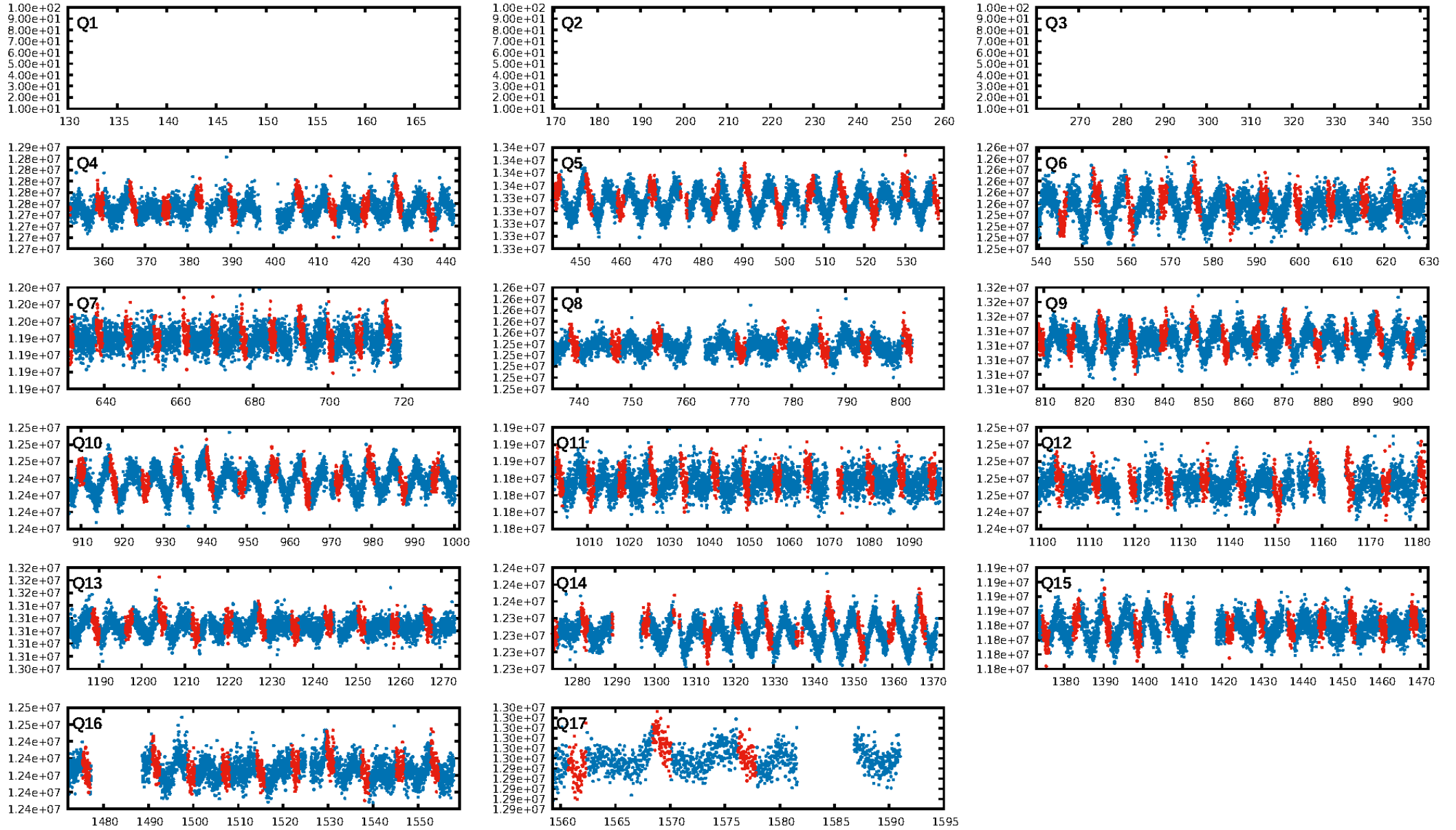
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.48e-87  
RollingBand-fgt: 1.00 [145/145]  
GhostDiagnostic-chr: 5.125  
Centroid-sig: 30.4%  
Centroid-so: 0.585 arcsec [2.33σ]  
OotOffset-rm: 0.170 arcsec [0.21σ]  
OotOffset-st: 1/3/3/2 [9]  
KicOffset-rm: 0.180 arcsec [0.40σ]  
KicOffset-st: 1/3/3/2 [9]  
DiffImageQuality-fgm: 0.56 [5/9]  
DiffImageOverlap-fno: 1.00 [14/14]

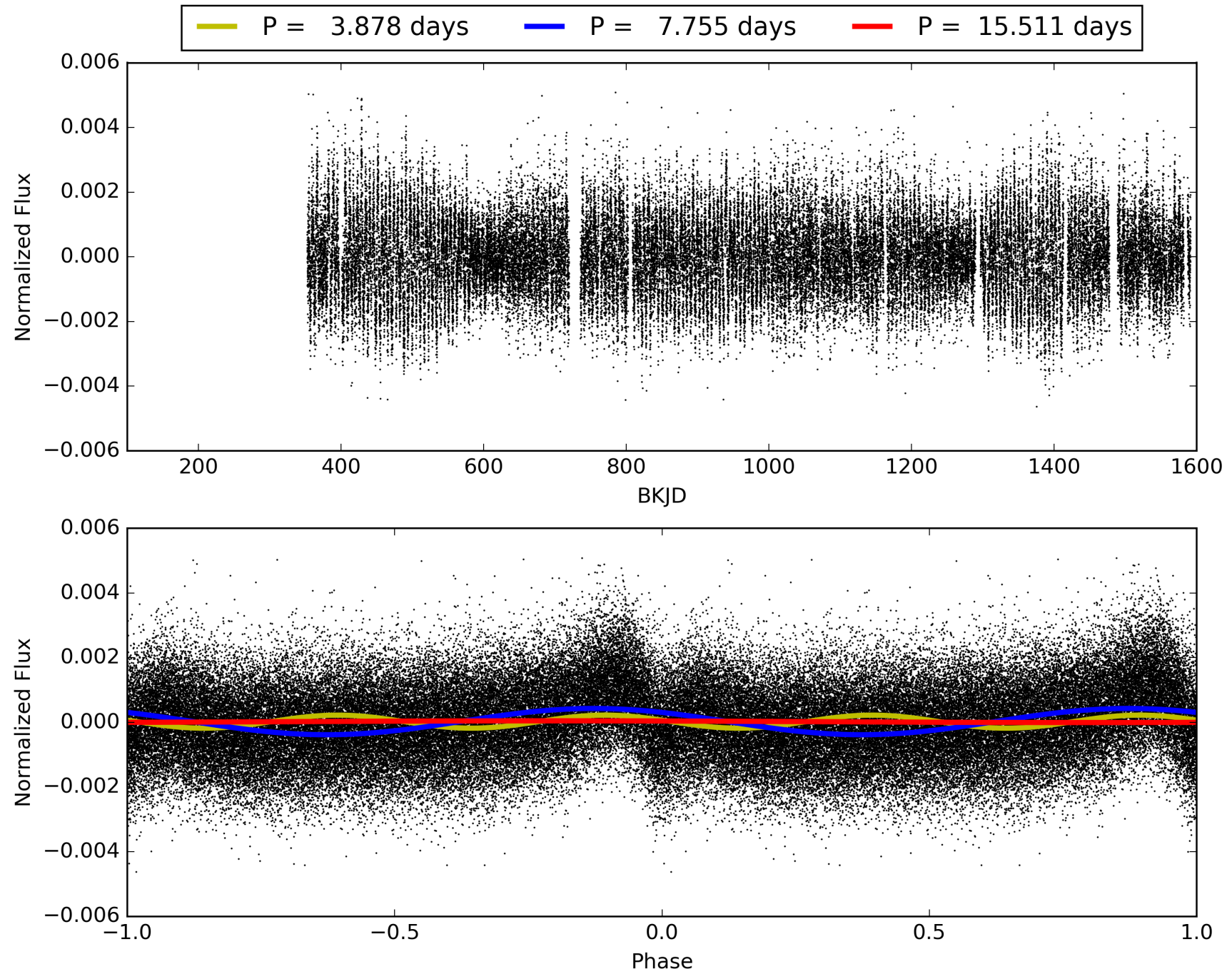
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:38:10 Z

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

# TCE 009551430-01, PDC Light Curves



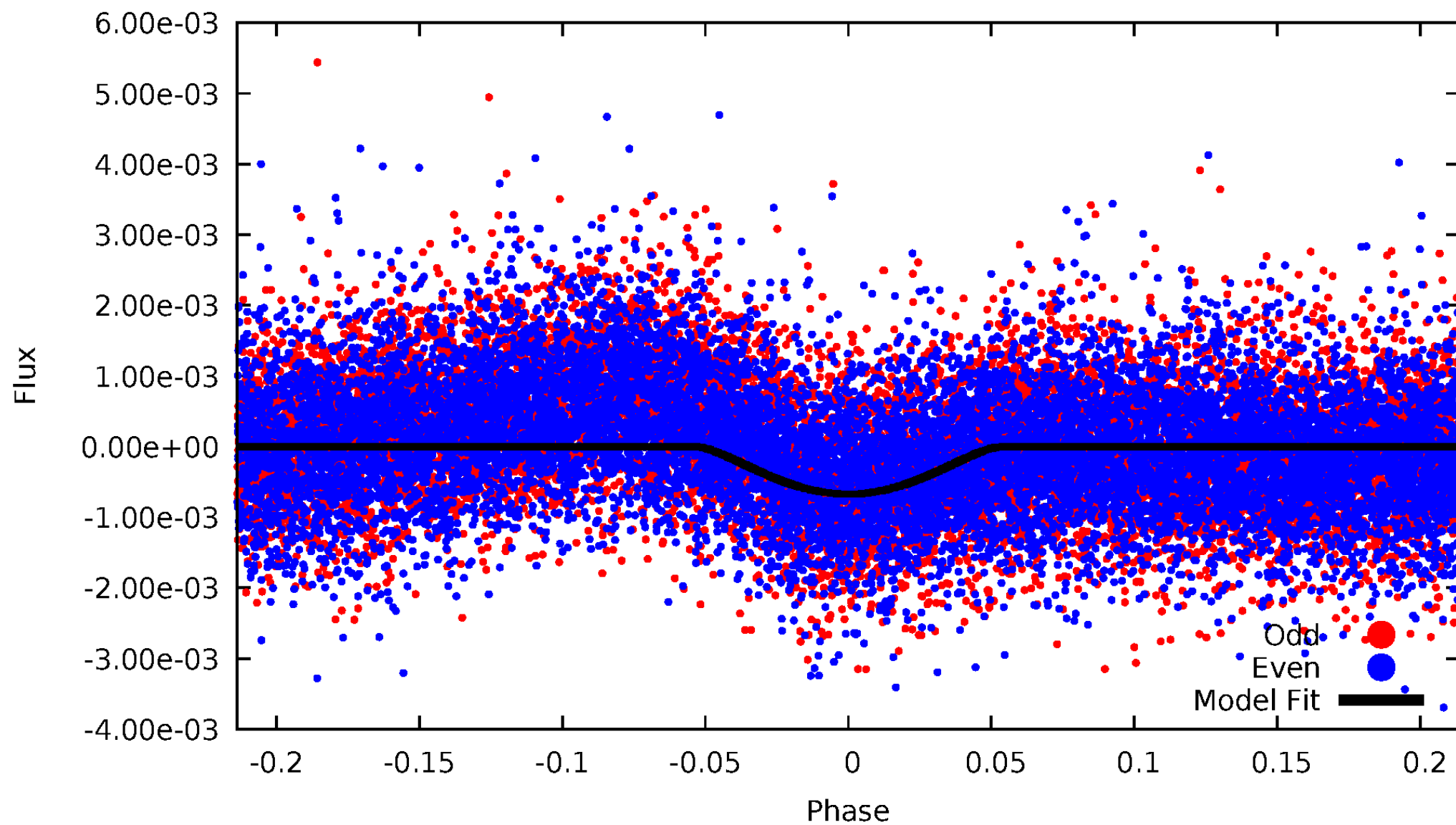
TCE 009551430-01





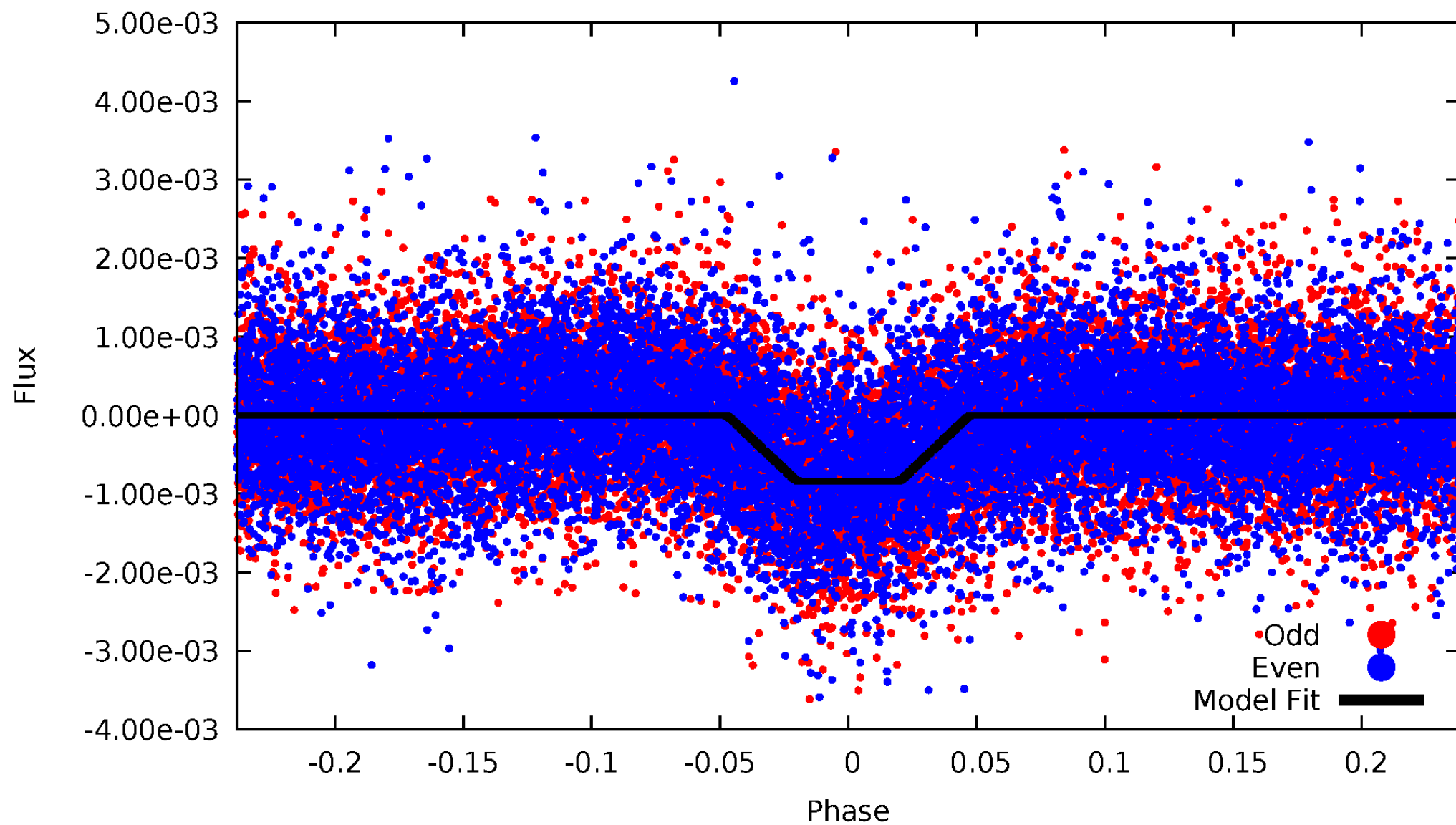
# DV Odd/Even

TCE 009551430-01



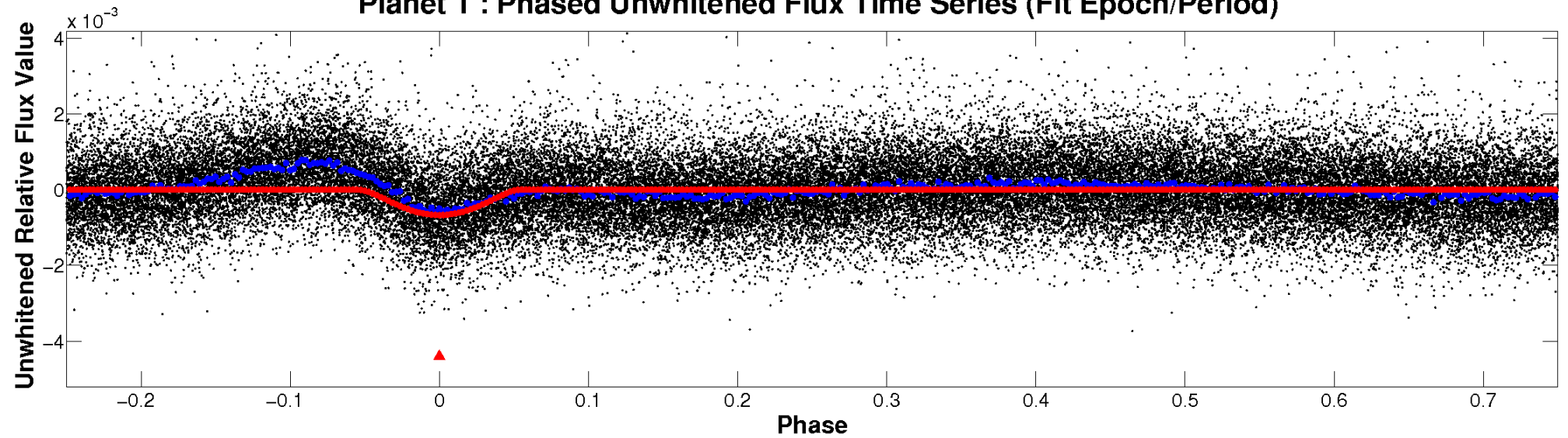
# ALT Odd/Even

TCE 009551430-01

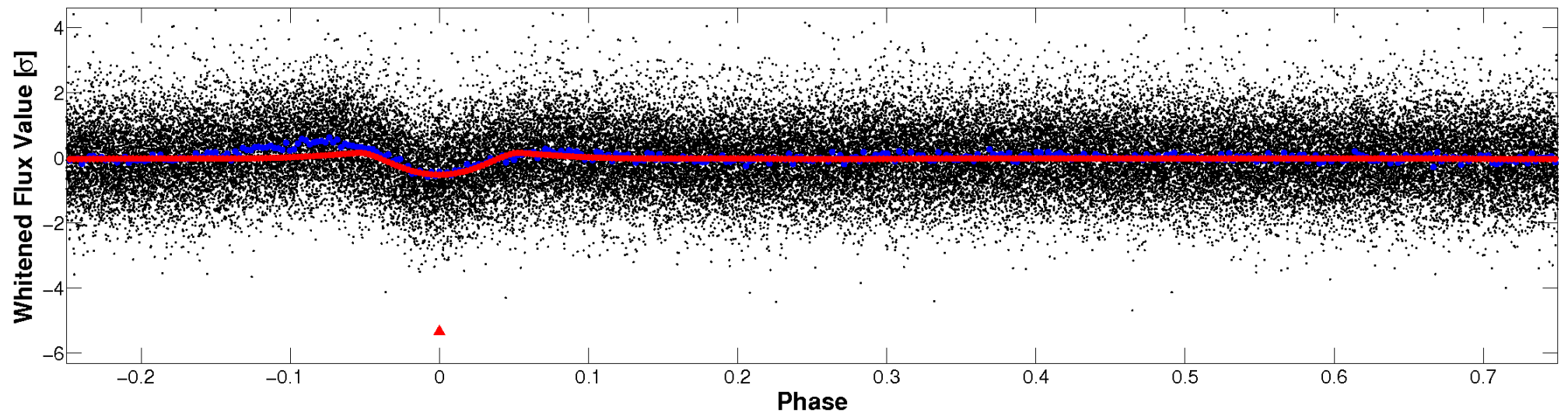


# Non-Whitened Vs. Whitened Light Curve

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

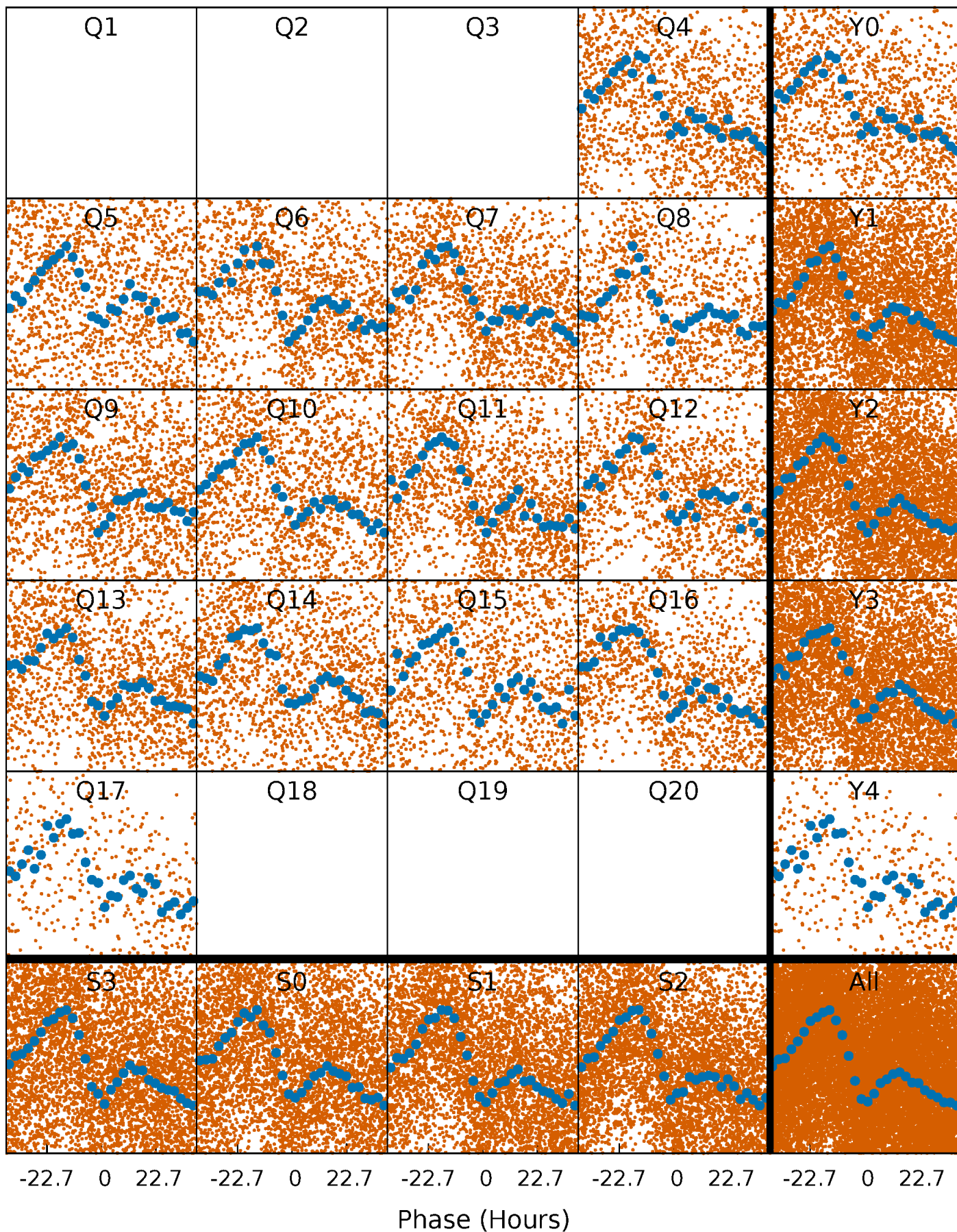


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

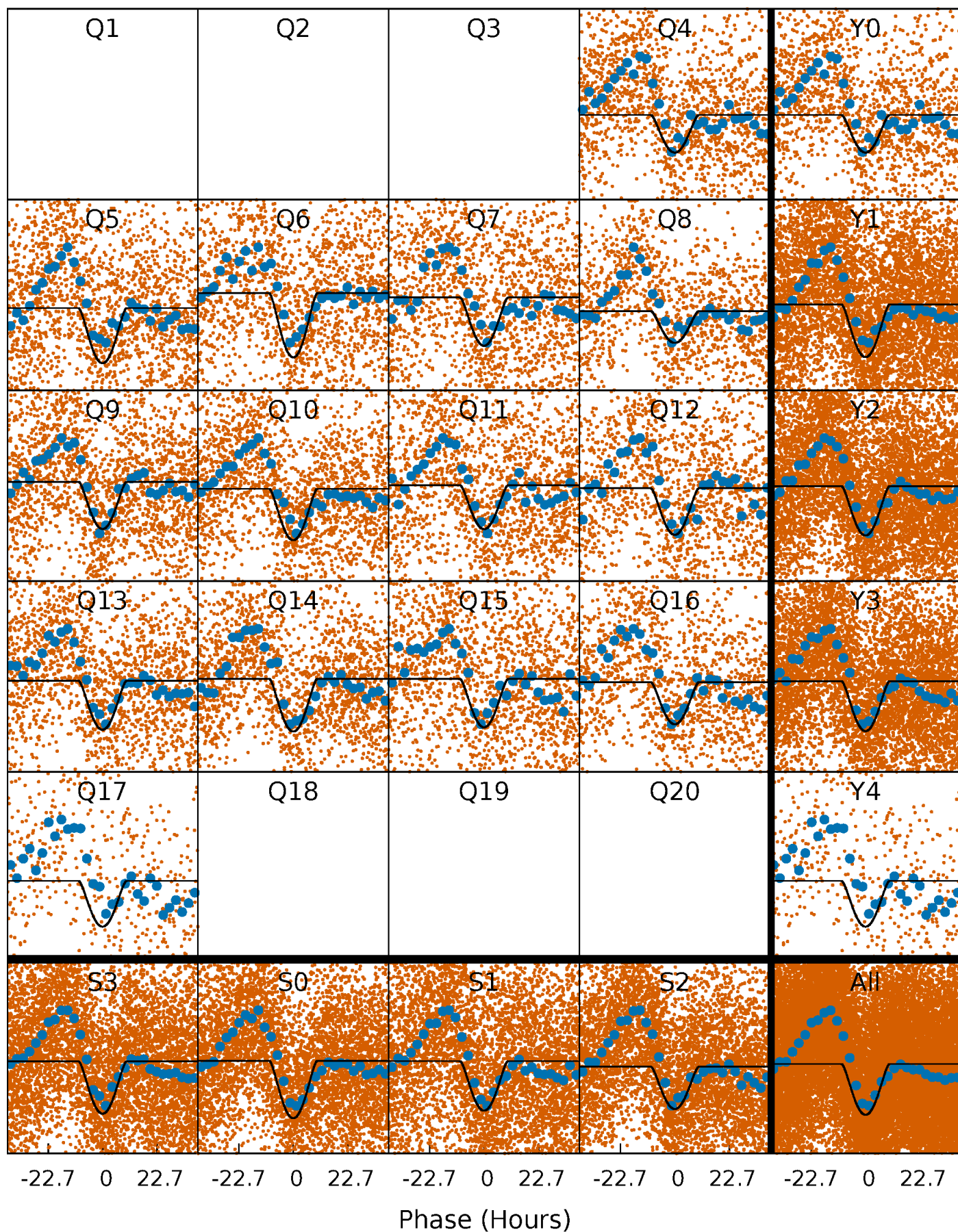
TCE 009551430-01 P= 7.755344 Days  $T_0=134.507210$  (BKJD)





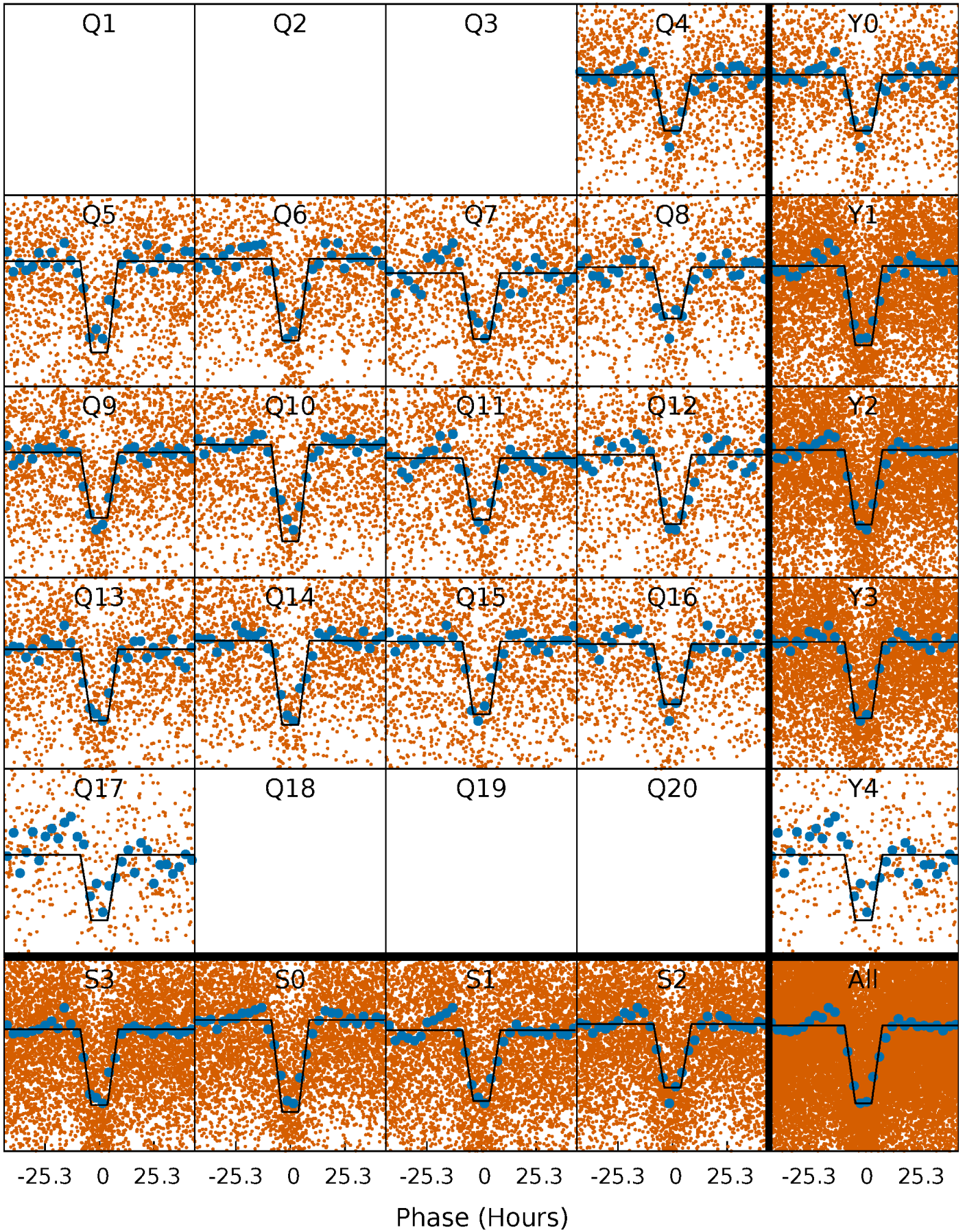
# DV Quarter-Phased Transit Curves

TCE 009551430-01 P= 7.755344 Days  $T_0=134.507210$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009551430-01   P= 7.755469 Days    $T_0=134.497803$  (BKJD)

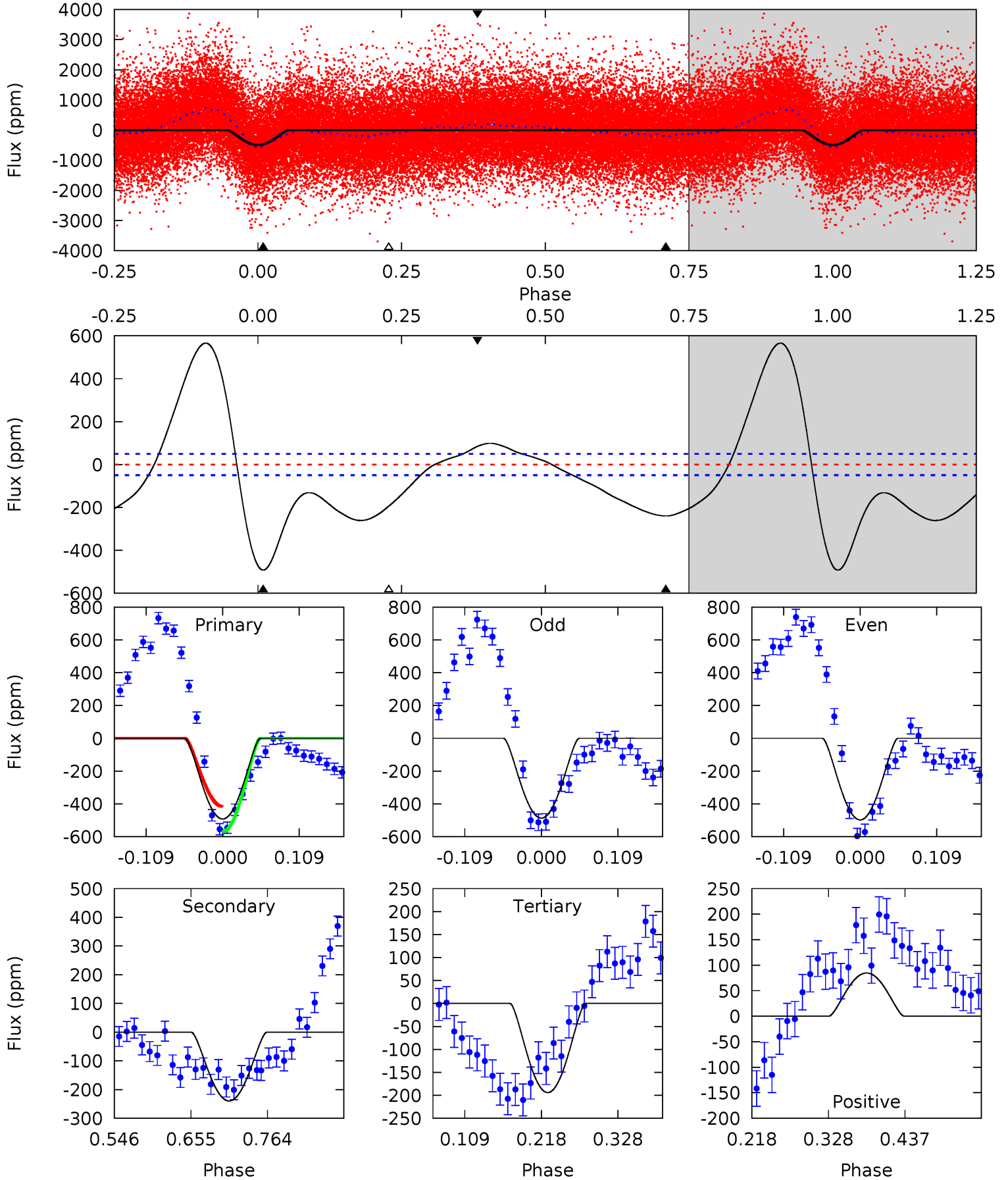




# DV Model-Shift Uniqueness Test

009551430-01, P = 7.755344 Days, E = 134.507210 Days

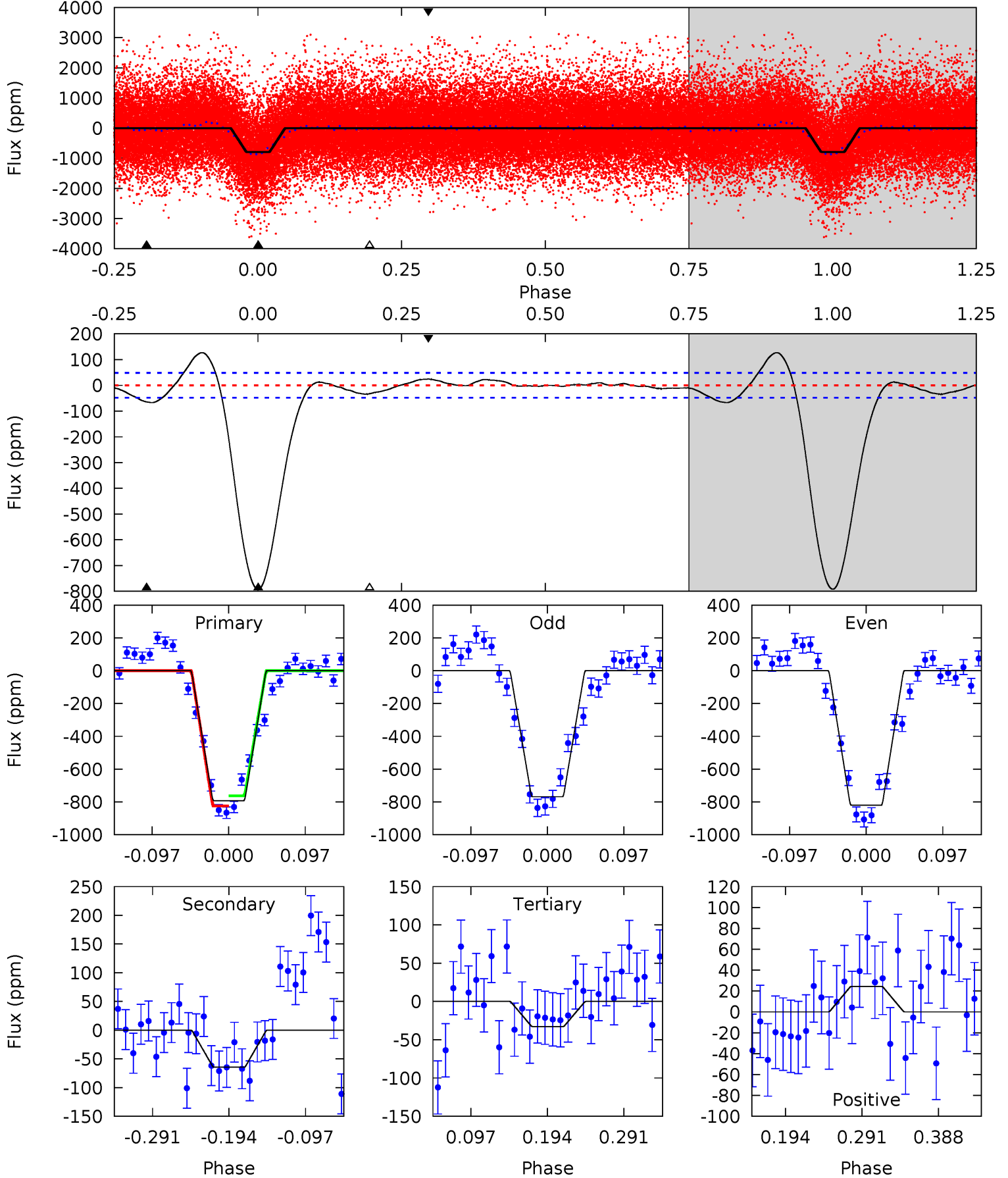
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.9	21.8	17.7	7.72	4.55	1.60	15.8	27.2	37.1	4.16	14.1	0.50	1.00	0.53	6.99



# Alt Model-Shift Uniqueness Test

009551430-01, P = 7.755469 Days, E = 134.497803 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
74.9	6.09	3.11	2.30	4.57	1.66	1.30	71.8	72.6	2.98	3.79	2.46	1.00	0.14	2.96





### Stellar Parameters For KIC 009551430

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5607^{+192}_{-192}$	$4.539^{+0.084}_{-0.116}$	$-0.640^{+0.300}_{-0.300}$	$0.766^{+0.143}_{-0.088}$	$0.740^{+0.095}_{-0.051}$	$2.318^{+0.875}_{-0.805}$
	+3%/-3%	+2%/-3%	+47%/-47%	+19%/-11%	+13%/-7%	+38%/-35%
Source	KIC0	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 009551430-01 / KOI 4030.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-240 \pm 11$	$4.62^{+3.34}_{-2.92}$	$1153^{+61}_{-57}$	$3479^{+1491}_{-524}$	$31^{+193}_{-21}$
Alt.	$-64 \pm 11$	$3.65^{+3.65}_{-2.36}$	$1154^{+64}_{-56}$	$3052^{+1272}_{-551}$	$12^{+95}_{-9}$

$T_{\text{max}}$  = 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

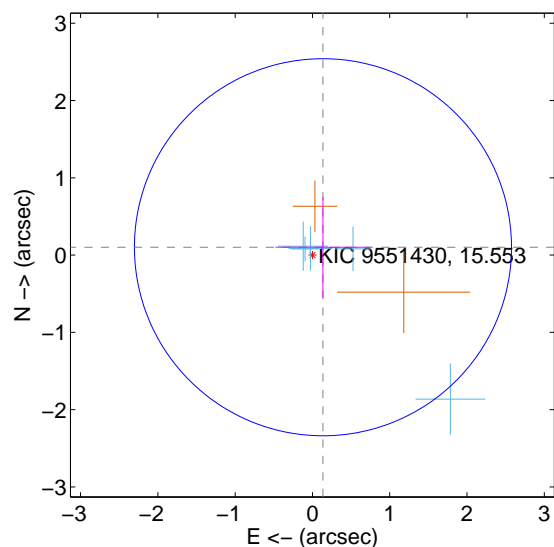
Supplemental centroid analysis for 009551430-01. Kepler magnitude: 15.55. Transit SNR 25.42

There are 5 quarters with good PRF difference image offsets

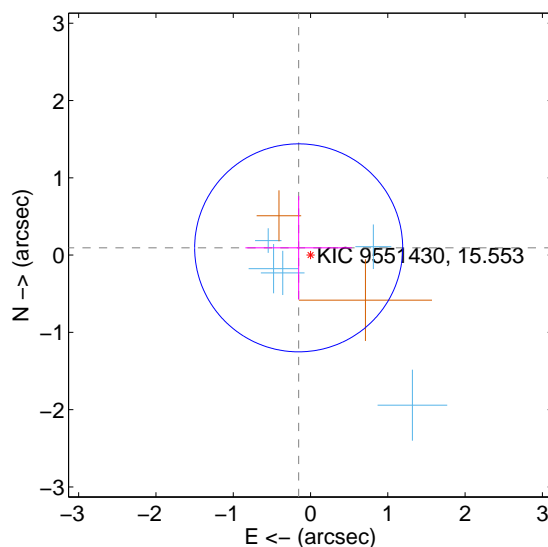
The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.170 \pm 0.813$	0.21	$-0.136 \pm 0.615$	$0.102 \pm 0.652$
PRF-fit source offset from KIC position	$0.180 \pm 0.449$	0.40	$0.153 \pm 0.689$	$0.094 \pm 0.669$
photometric centroid source offset	$0.59 \pm 0.25$	2.33	$0.37 \pm 0.29$	$0.45 \pm 0.22$

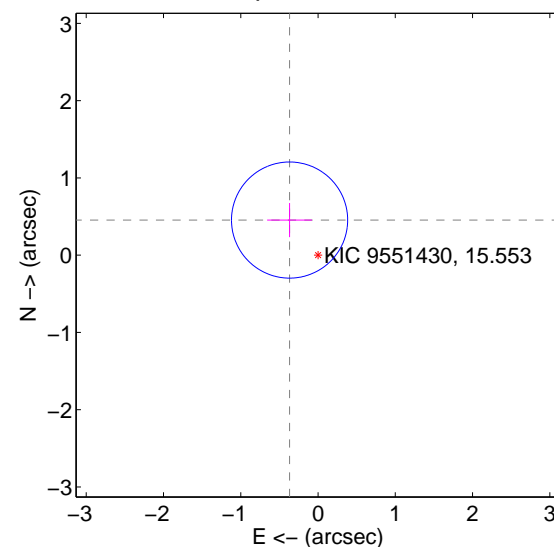
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

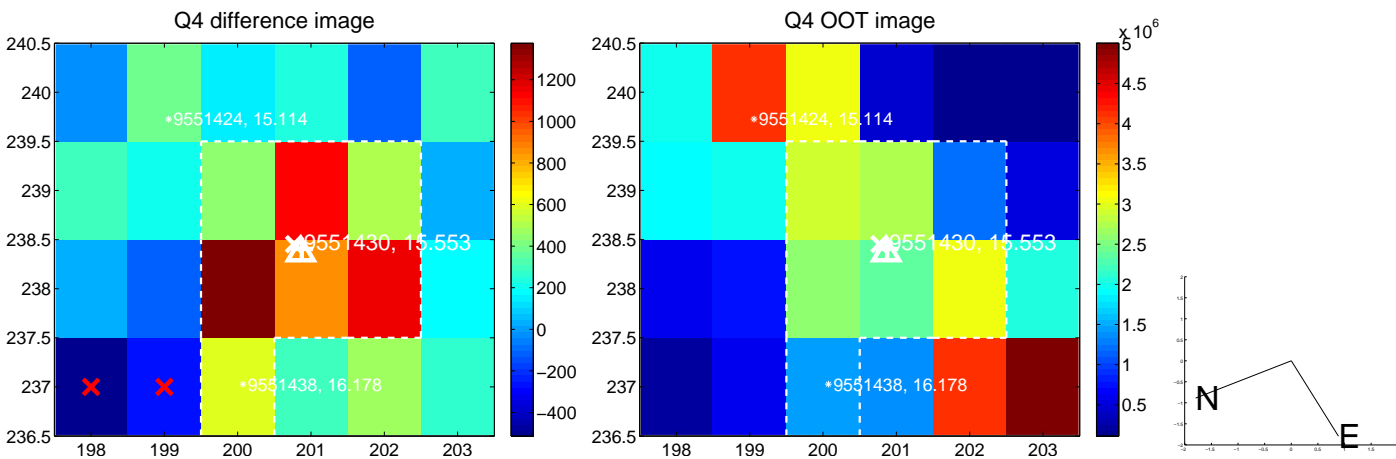
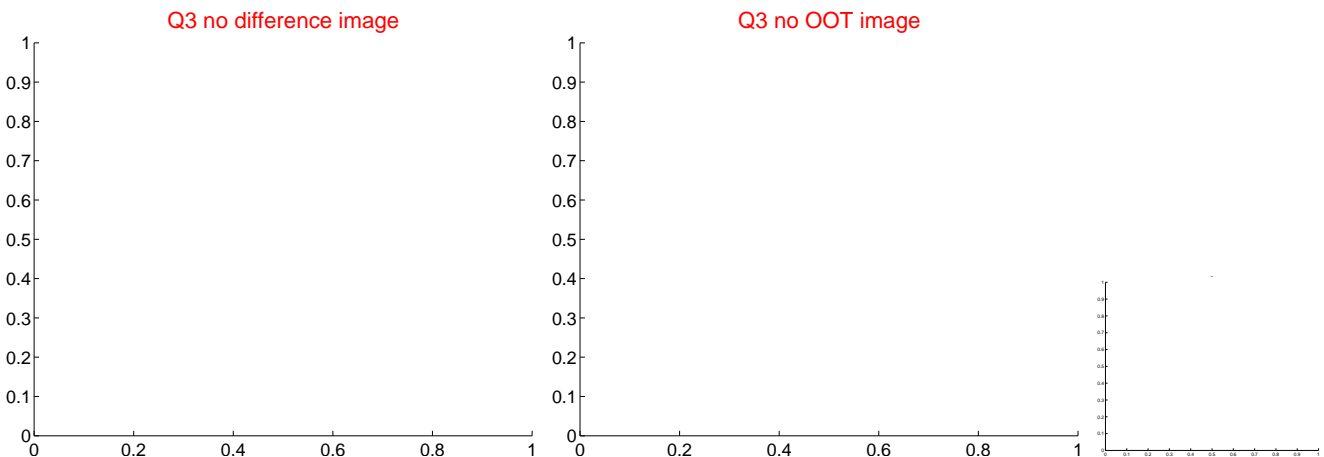
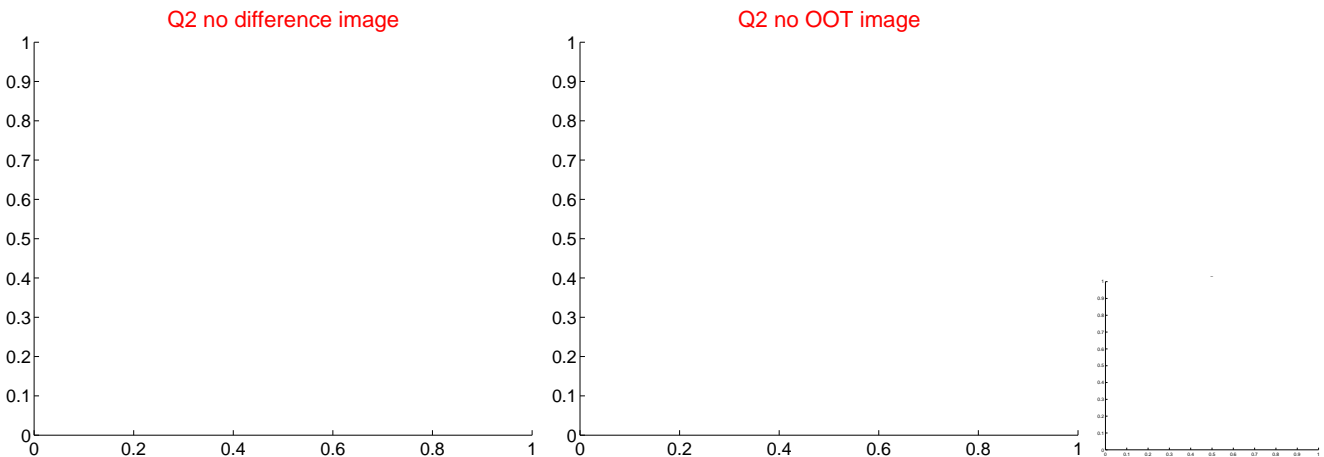
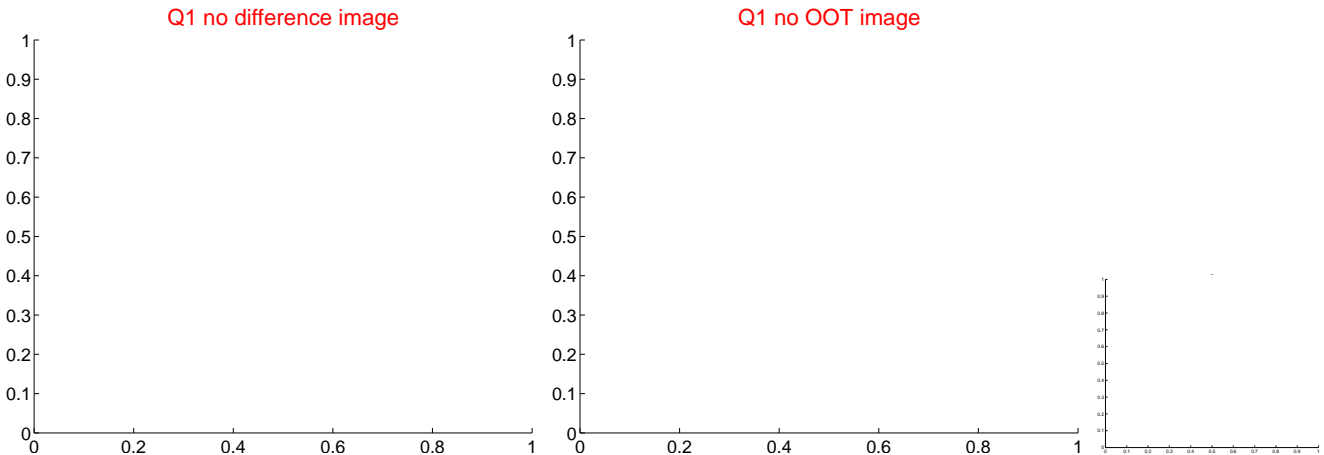


offset from photometric centroids

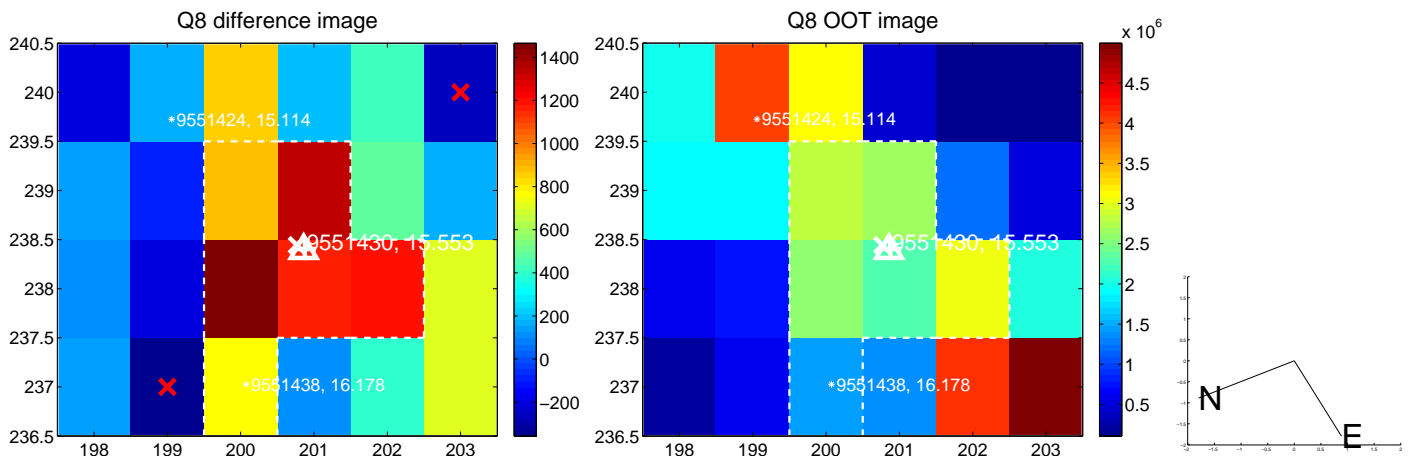
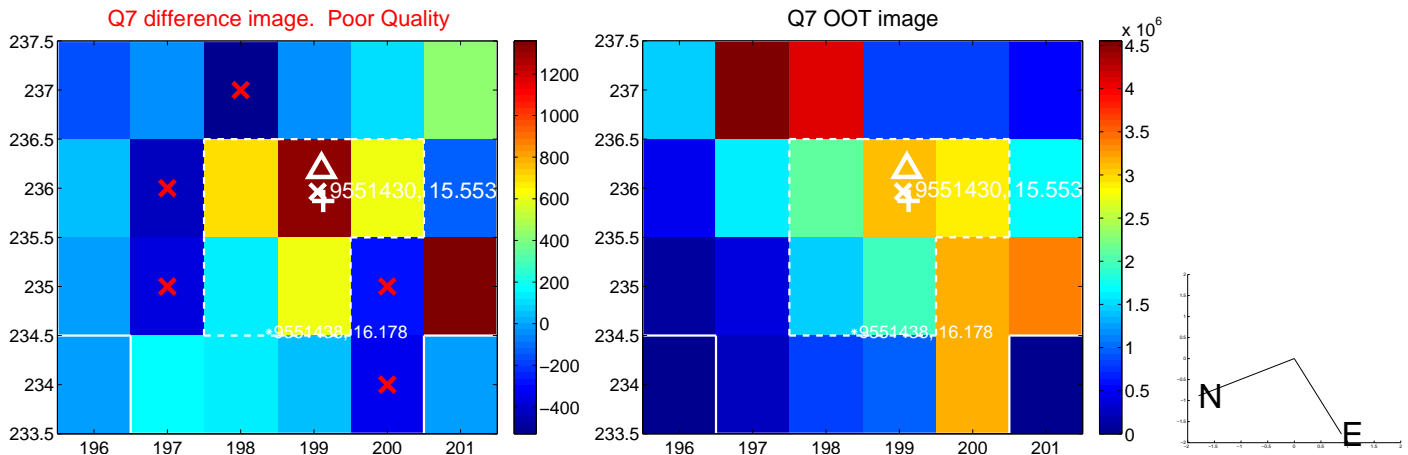
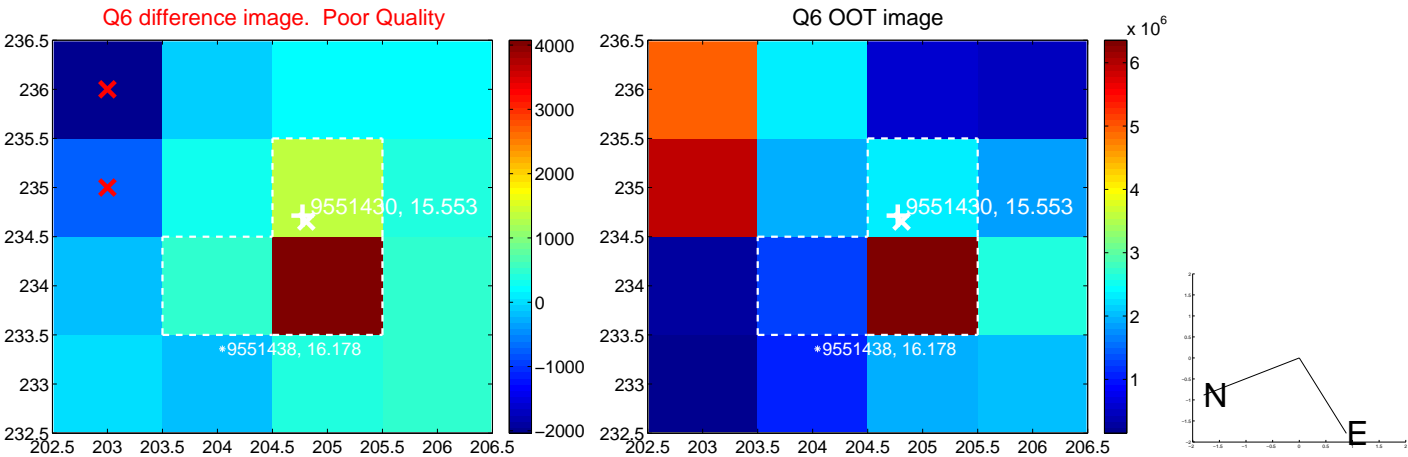
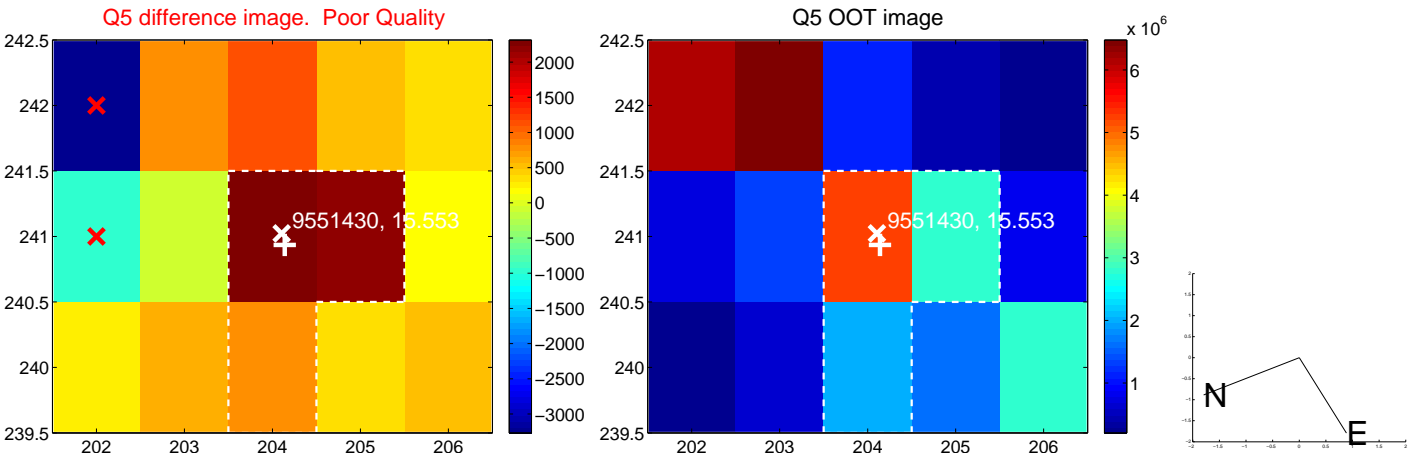


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

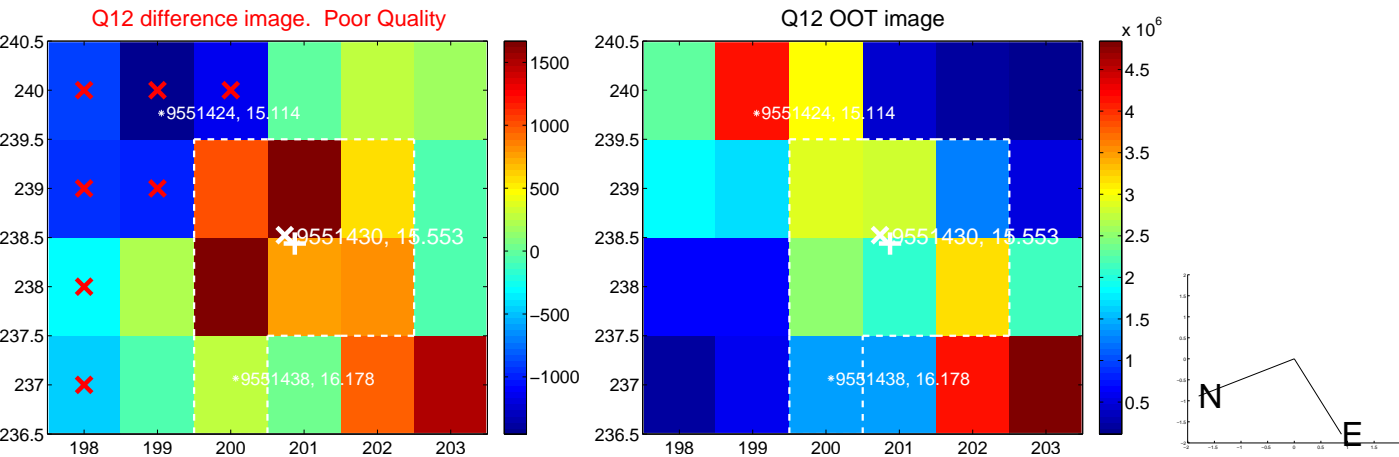
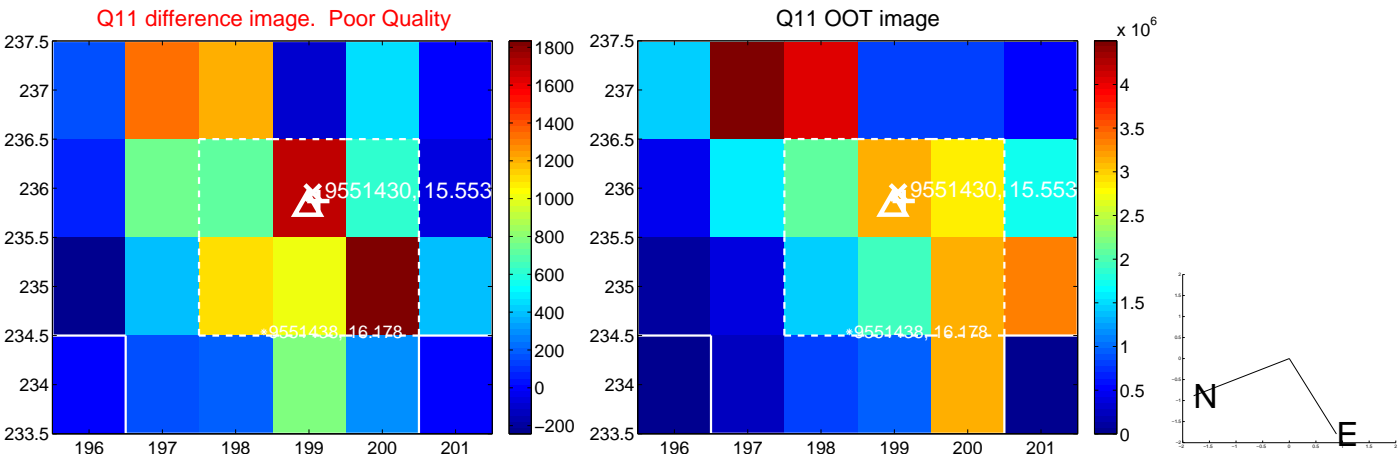
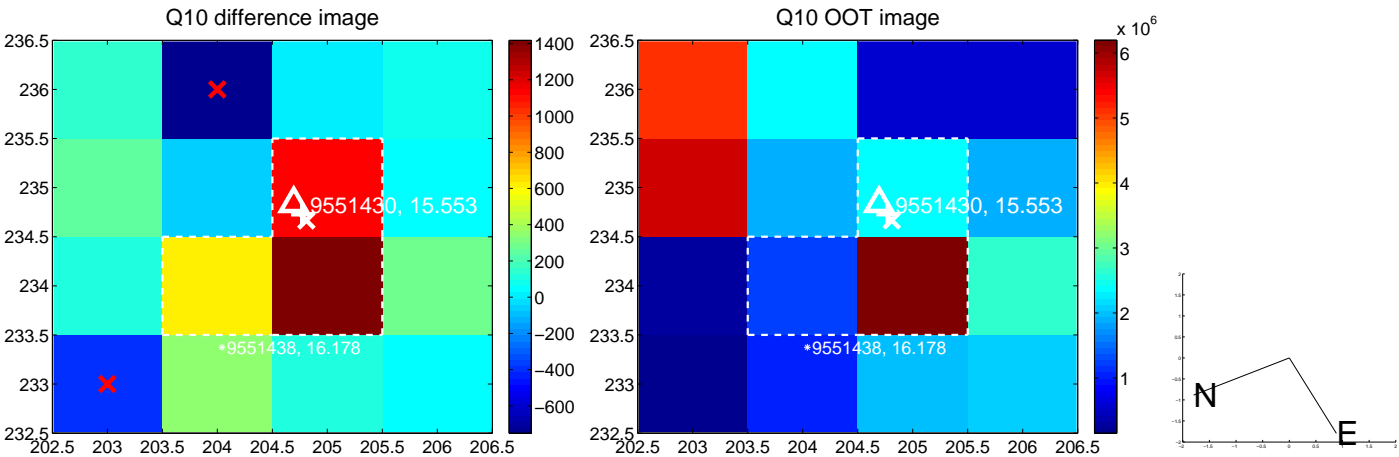
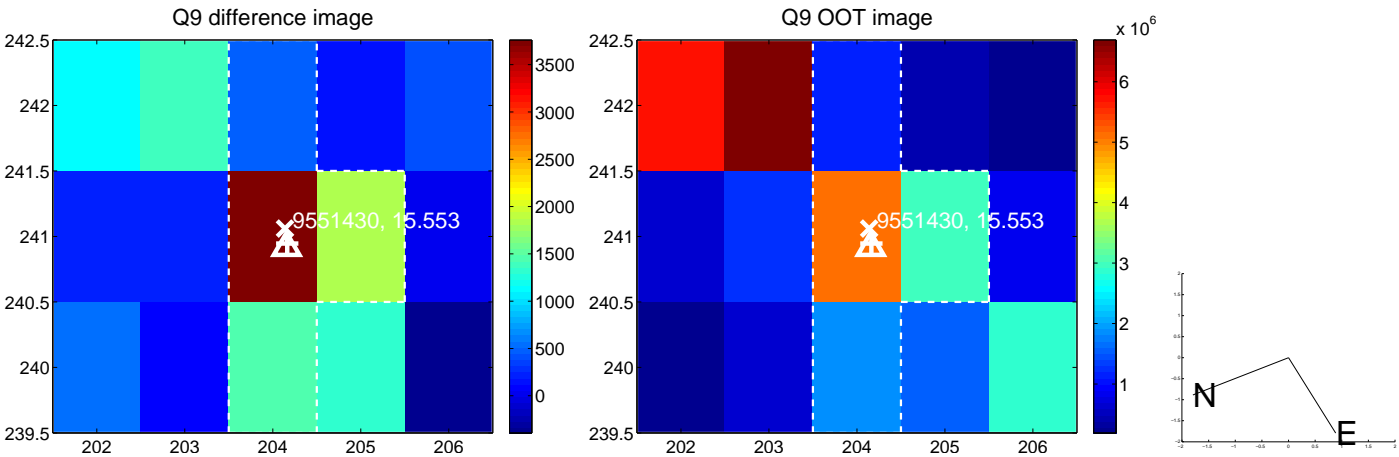


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

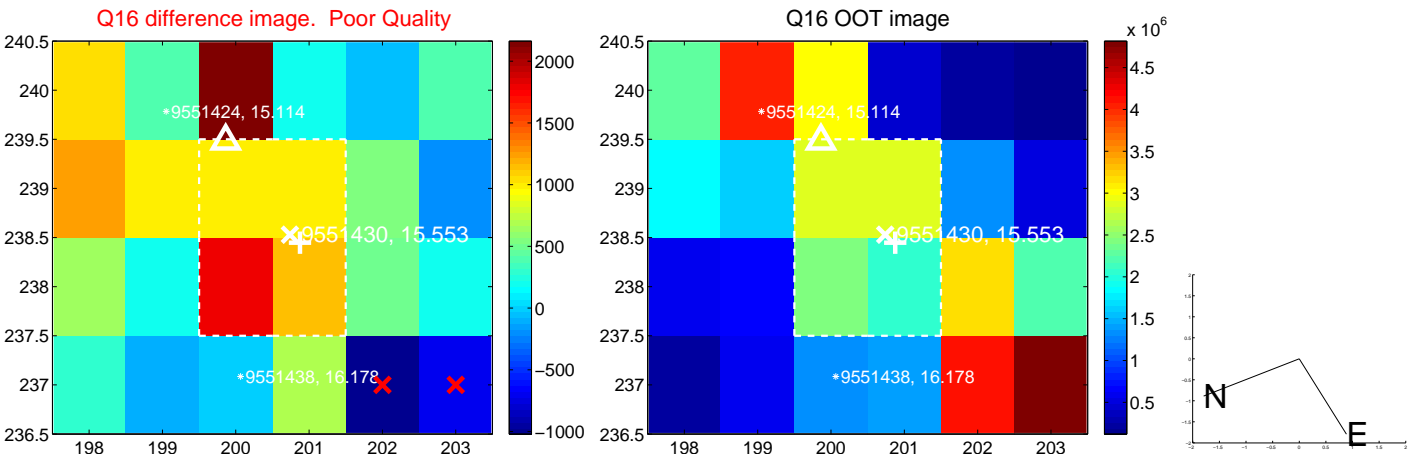
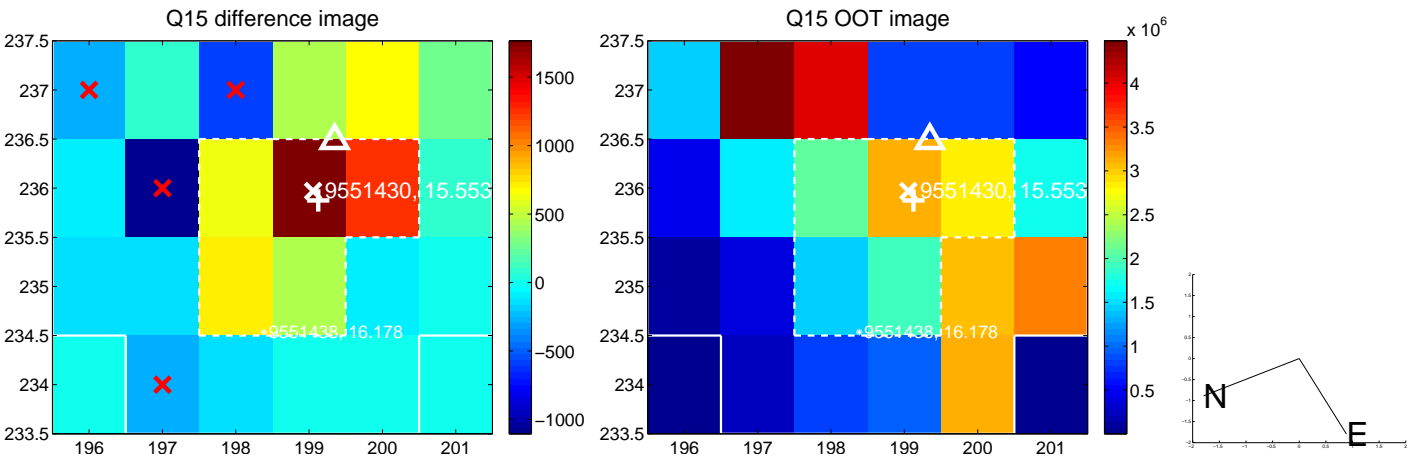
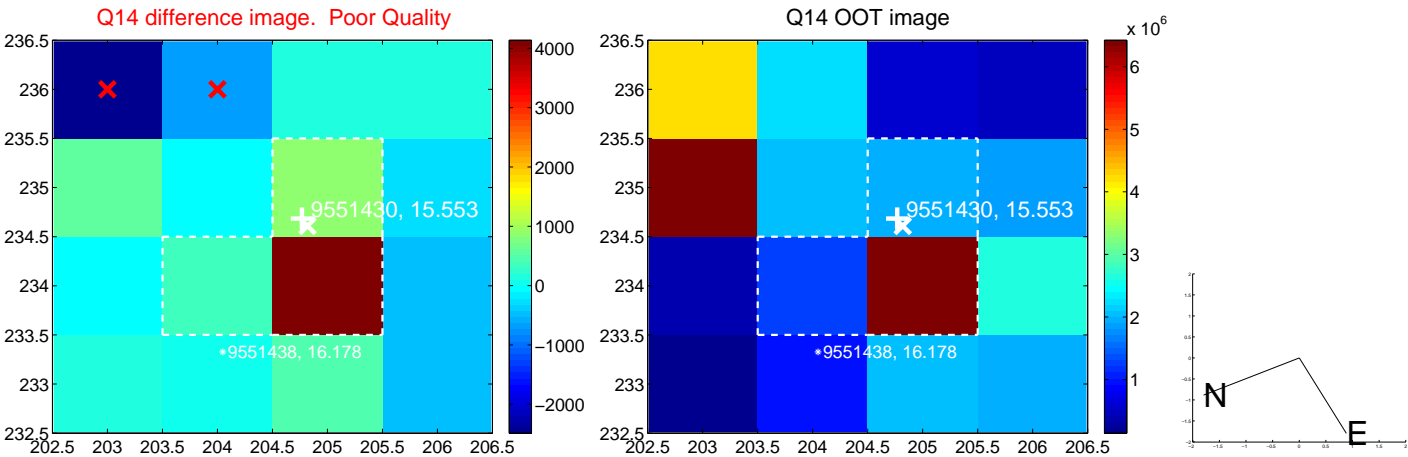
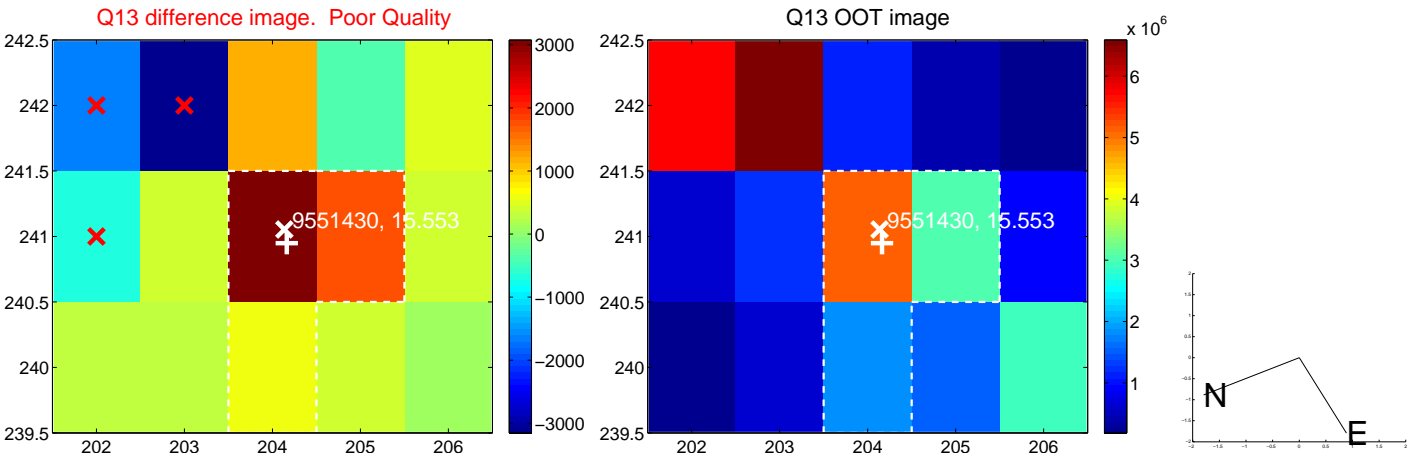




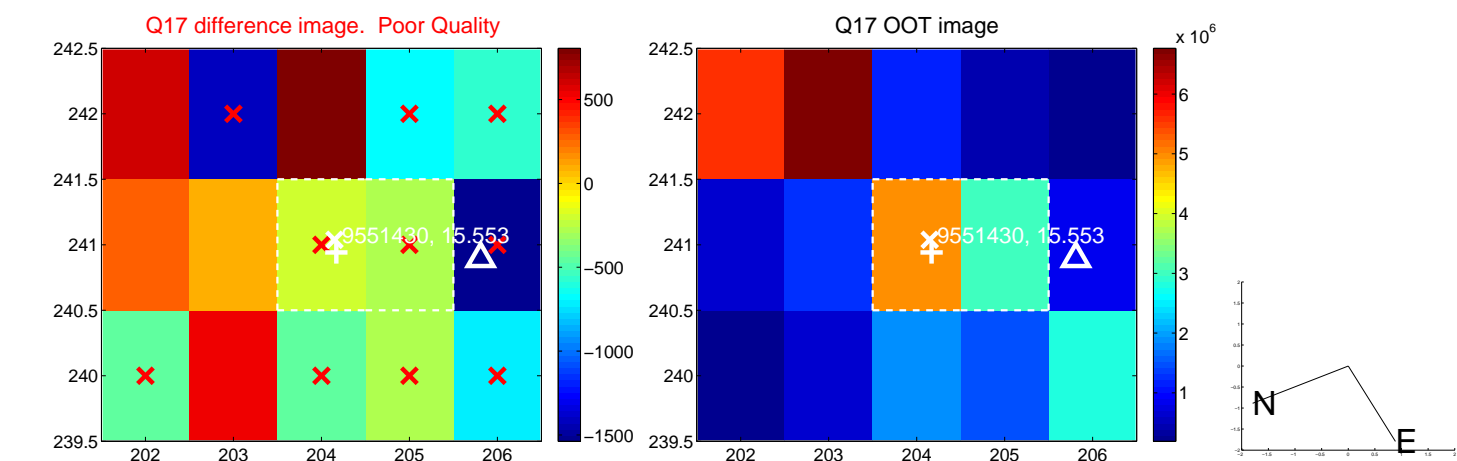
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



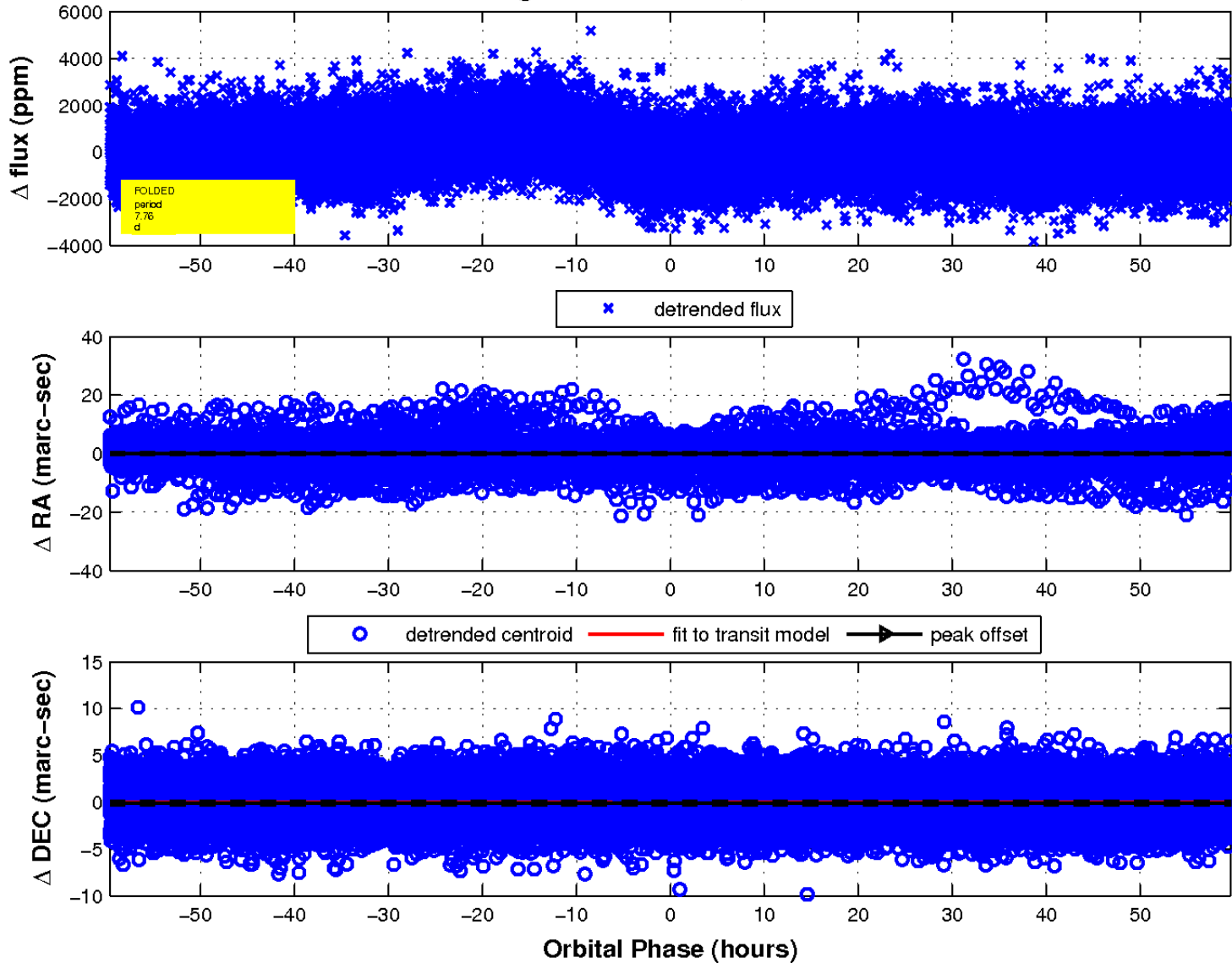
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

