

# KIC 002439243

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002439243-01	OBS	2280.01	26.020421	154.524112	1166.4	4.958	22.8	23.3	1.24	5624	4.61	49.19

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002439243-01	OBS	PC	1.00	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 002439243-01

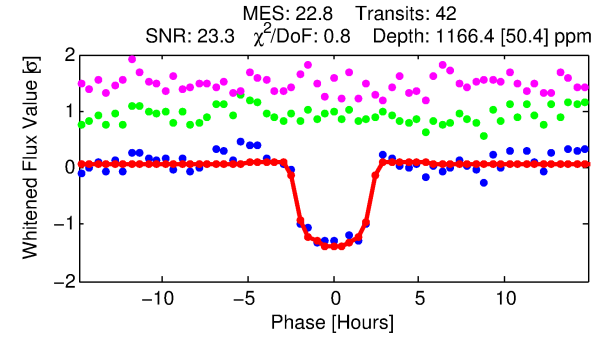
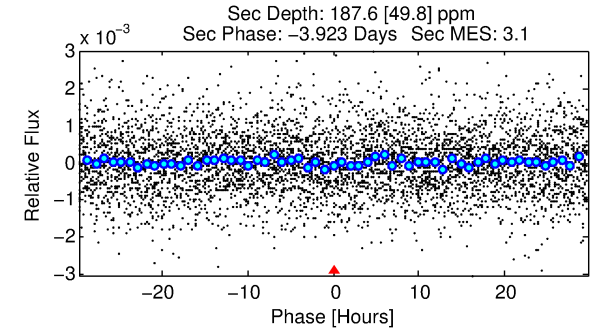
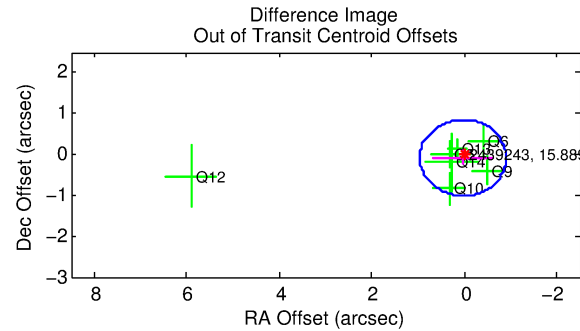
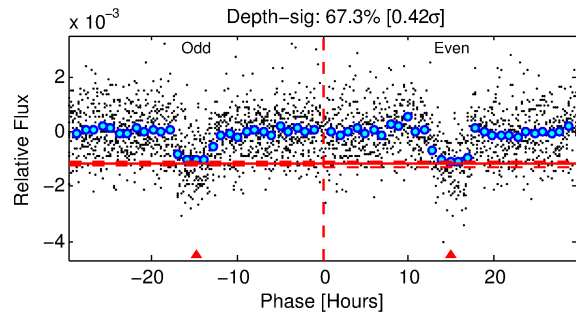
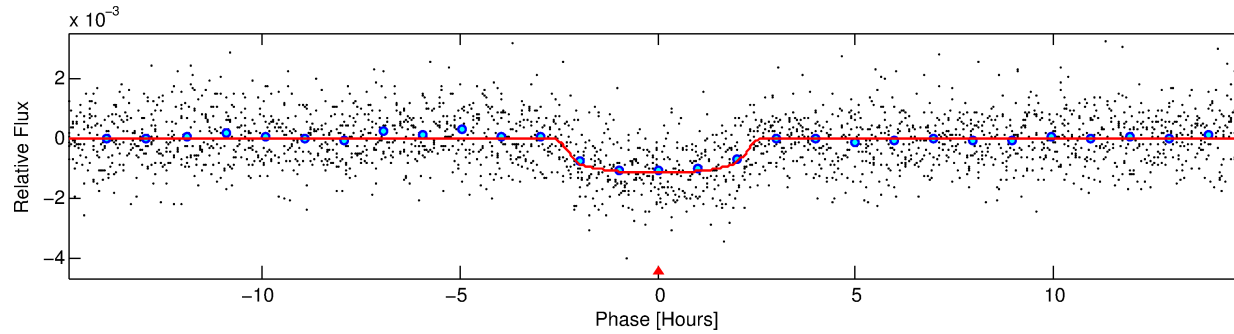
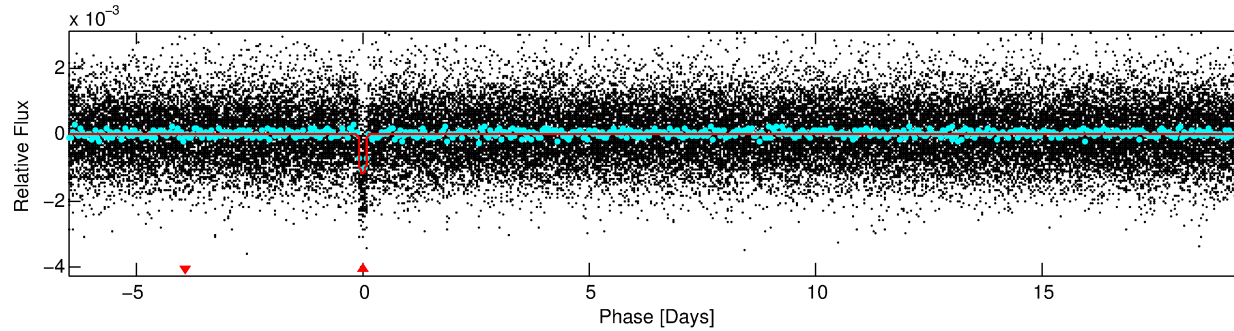
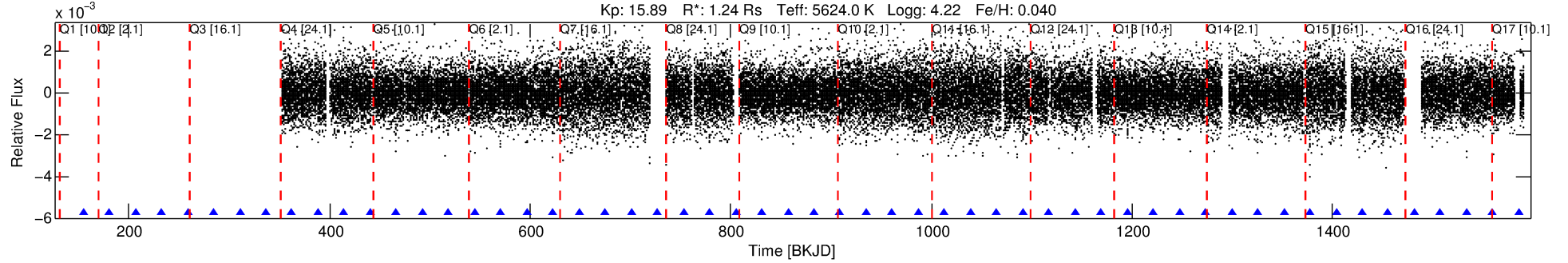
No Significant Match Found

# DV One-Page Summary

KIC: 2439243 Candidate: 1 of 1 Period: 26.020 d

KOI: K02280.01 Corr: 0.987

Kp: 15.89 R\*: 1.24 Rs Teff: 5624.0 K Logg: 4.22 Fe/H: 0.040



## DV Fit Results:

Period = 26.02042 [0.00016] d  
Epoch = 154.5241 [0.0054] BKJD  
Rp/R\* = 0.0340 [0.0080]  
a/R\* = 28.64 [27.93]  
b = 0.75 [0.59]  
Seff = 49.19 [15.82]  
Teq = 675 [54] K  
Rp = 4.61 [1.41] Re  
a = 0.1679 [0.0325] AU  
Ag = 136.70 [85.61] [1.58σ]  
Teffp = 3570 [486] K [5.92σ]

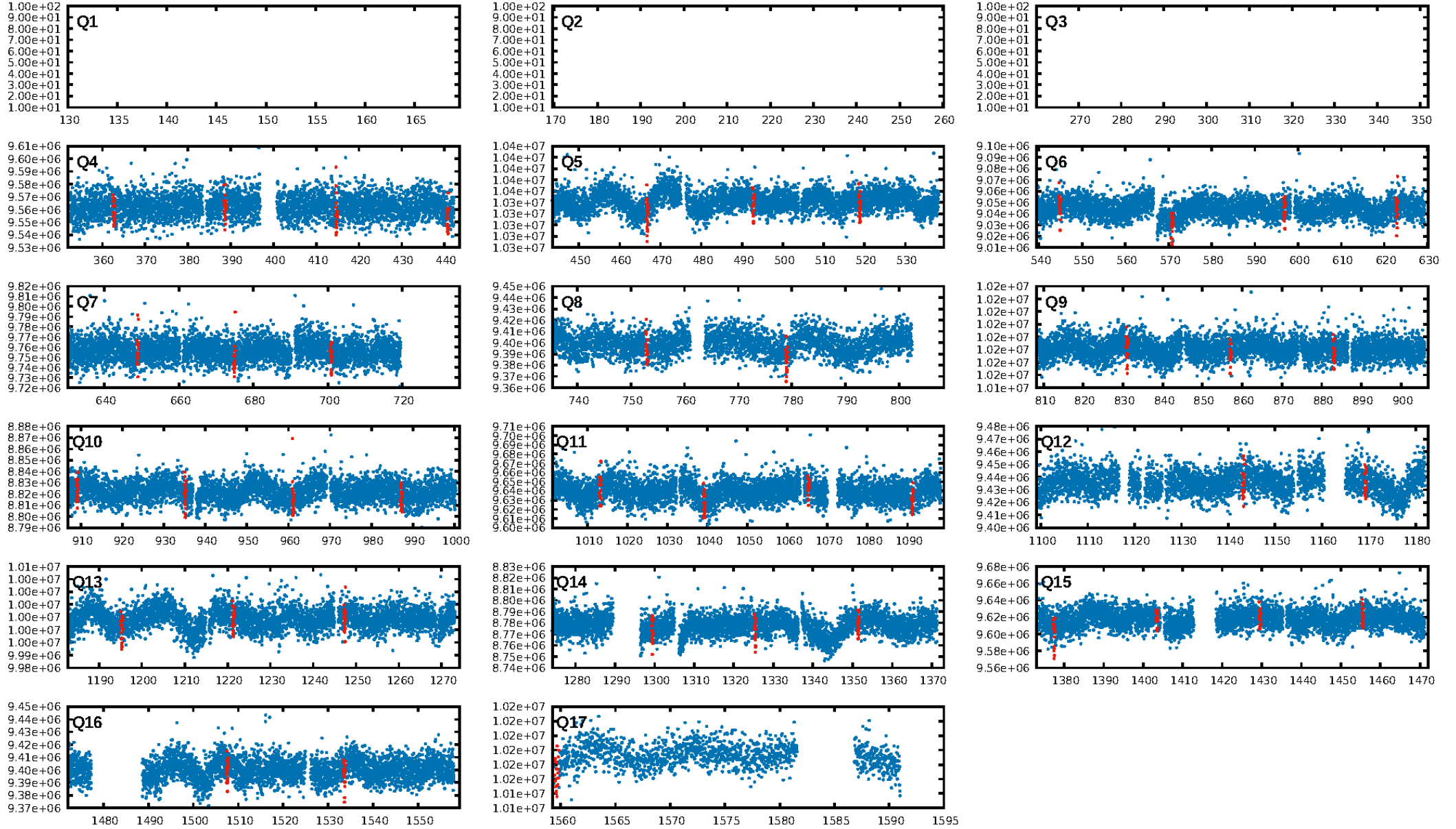
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 98.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.96e-113  
RollingBand-fgt: 1.00 [41/41]  
GhostDiagnostic-chr: 6.04  
Centroid-sig: 7.3%  
Centroid-so: 1.379 arcsec [2.43σ]  
OotOffset-rm: 0.088 arcsec [0.28σ]  
KicOffset-rm: 0.271 arcsec [1.31σ]  
OotOffset-st: 3/0/1/3 [7]  
KicOffset-st: 3/1/1/3 [8]  
DiffImageQuality-fgm: 0.88 [7/8]  
DiffImageOverlap-fno: 1.00 [13/13]

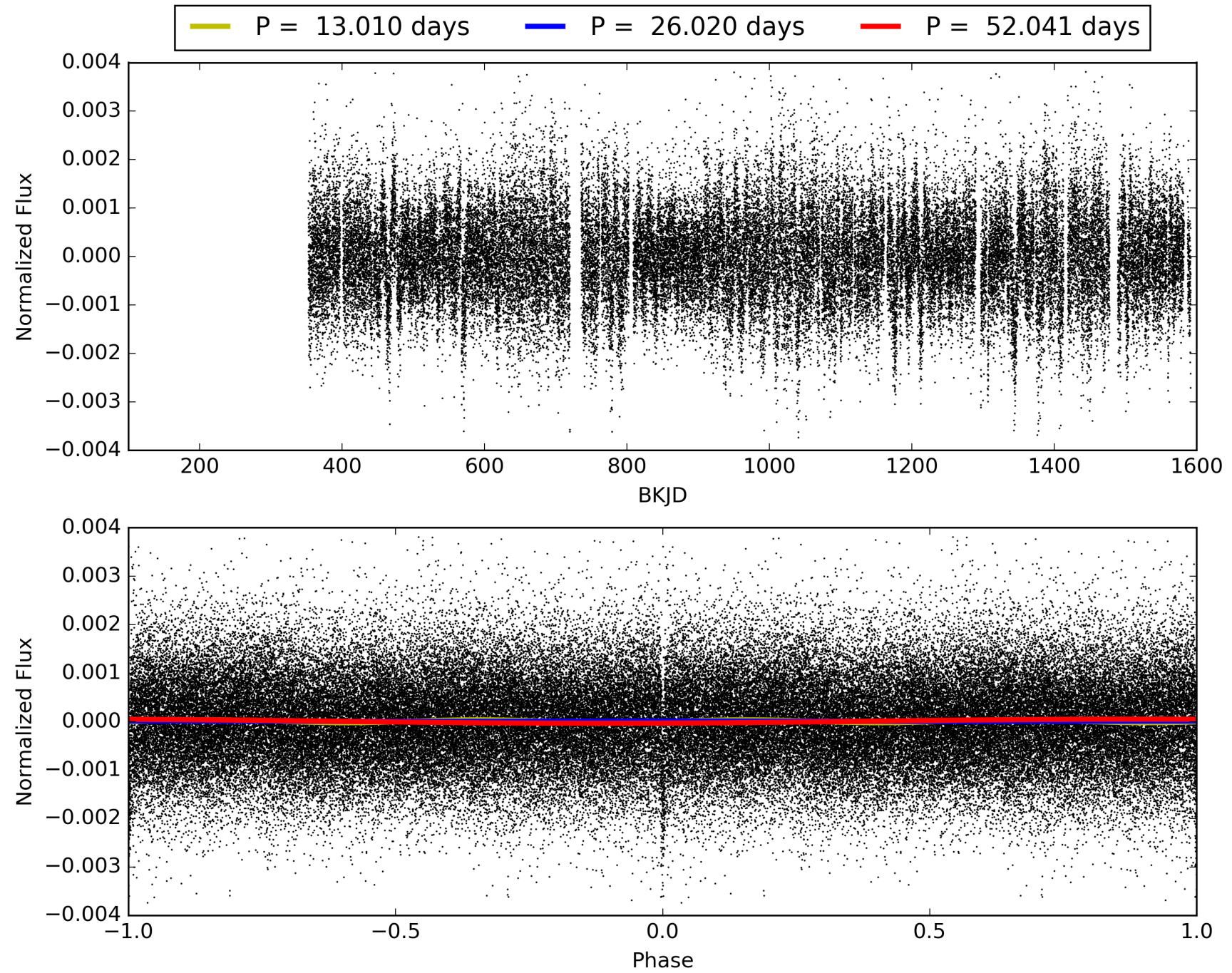
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:12:56 Z

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

# TCE 002439243-01, PDC Light Curves

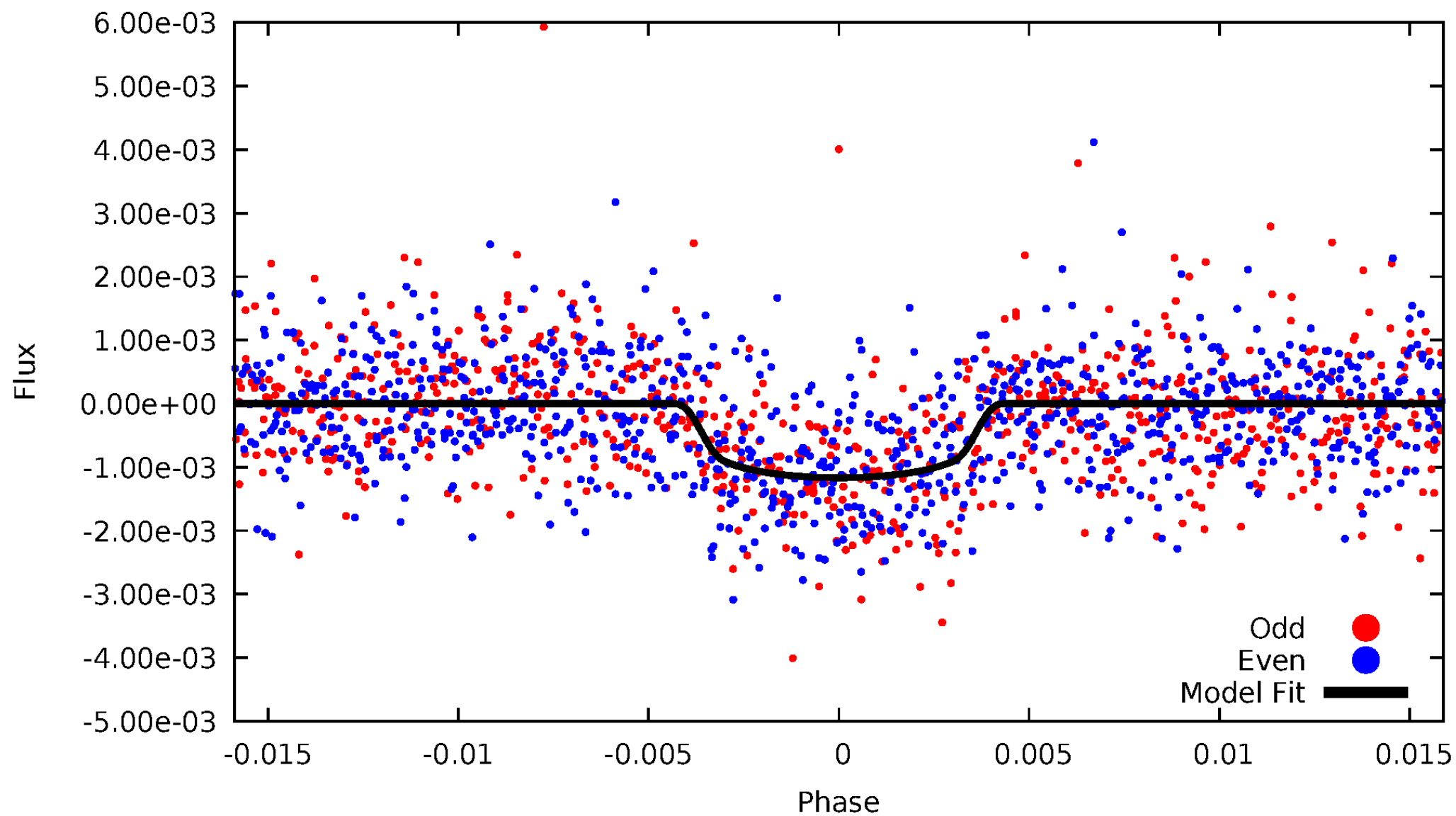


TCE 002439243-01



# DV Odd/Even

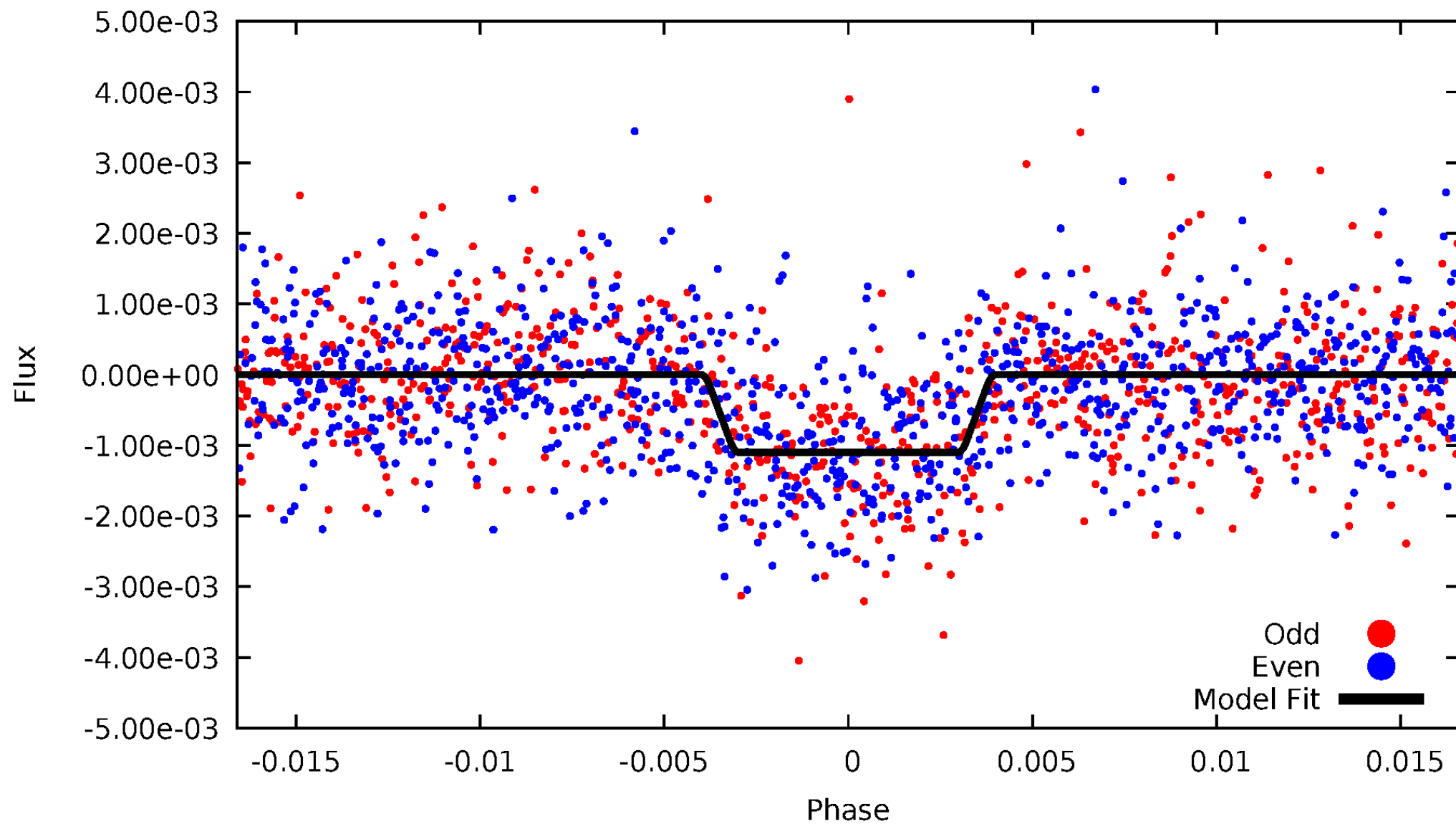
TCE 002439243-01





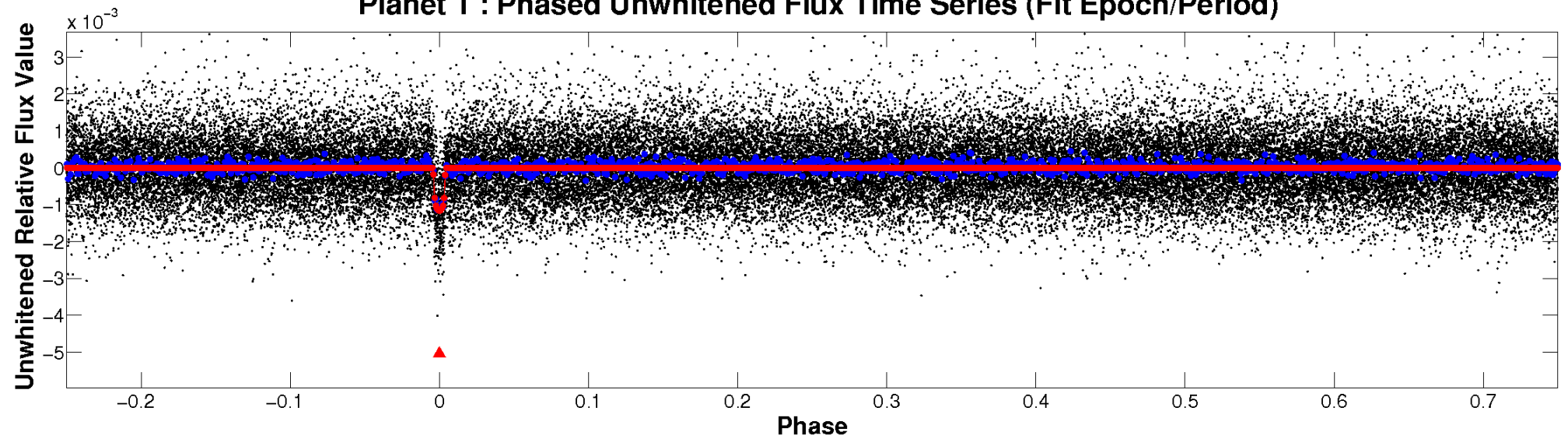
# ALT Odd/Even

TCE 002439243-01

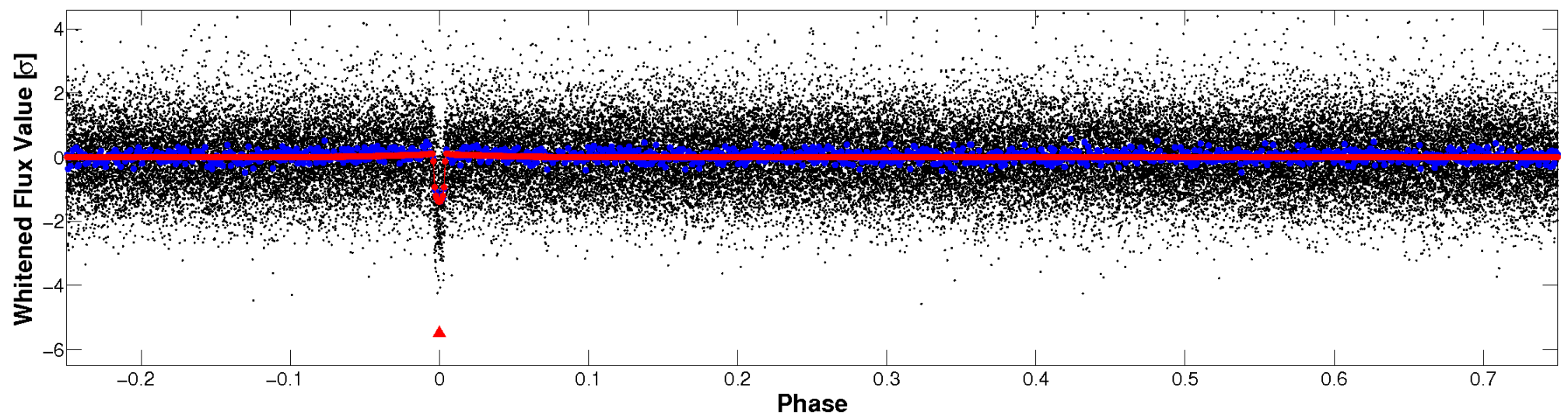


# Non-Whitened Vs. Whitened Light Curve

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

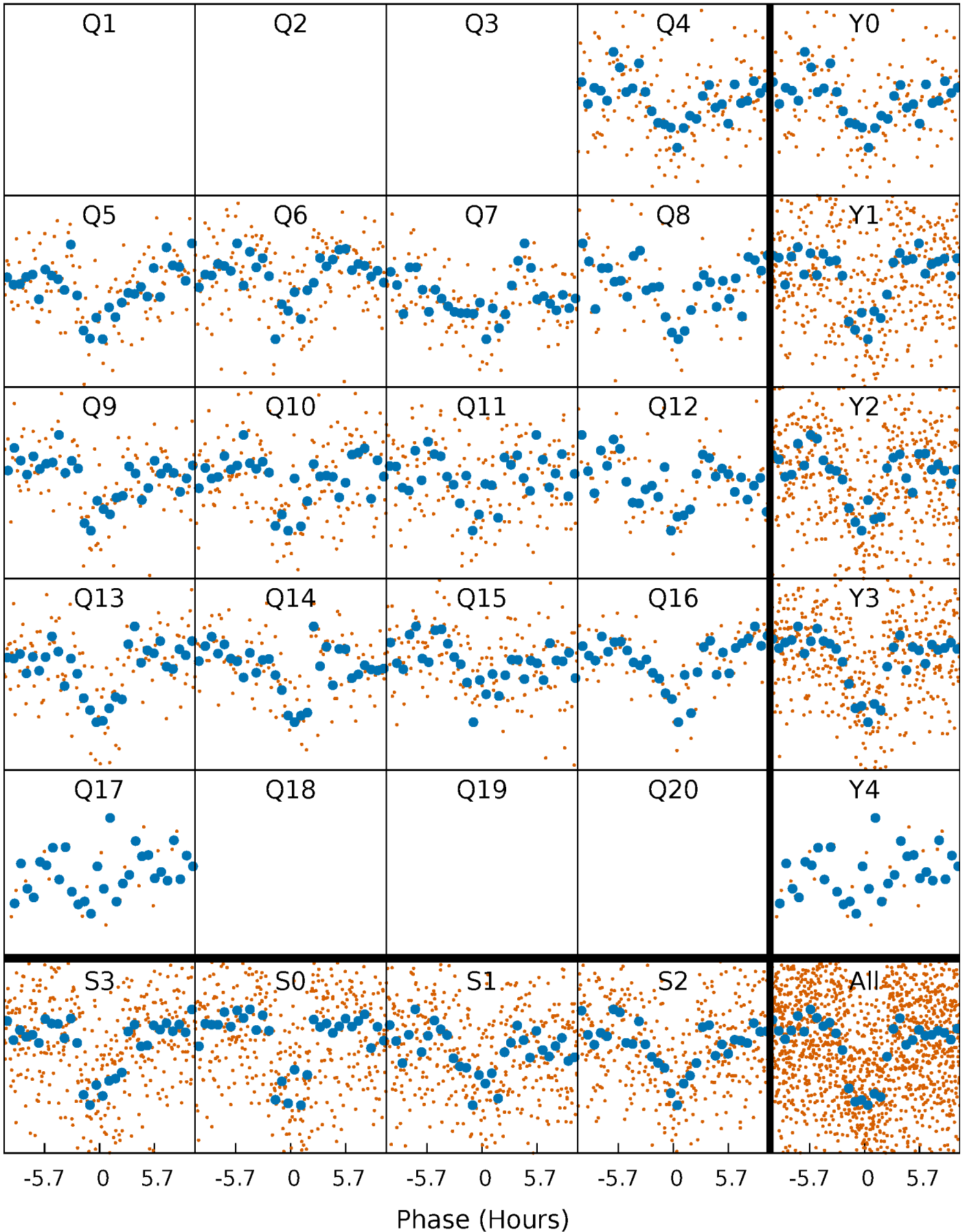


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

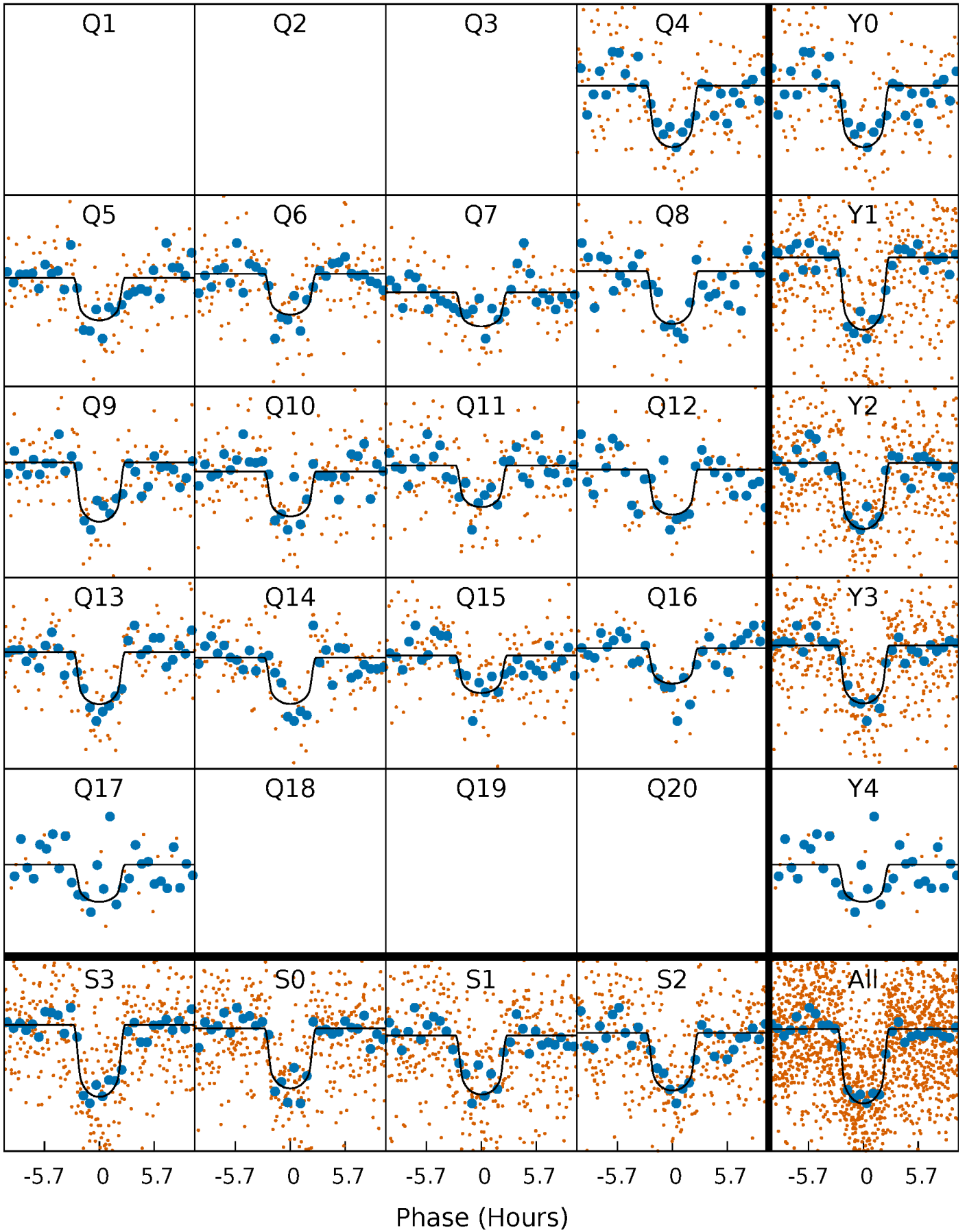
TCE 002439243-01 P= 26.020421 Days  $T_0=154.524112$  (BKJD)





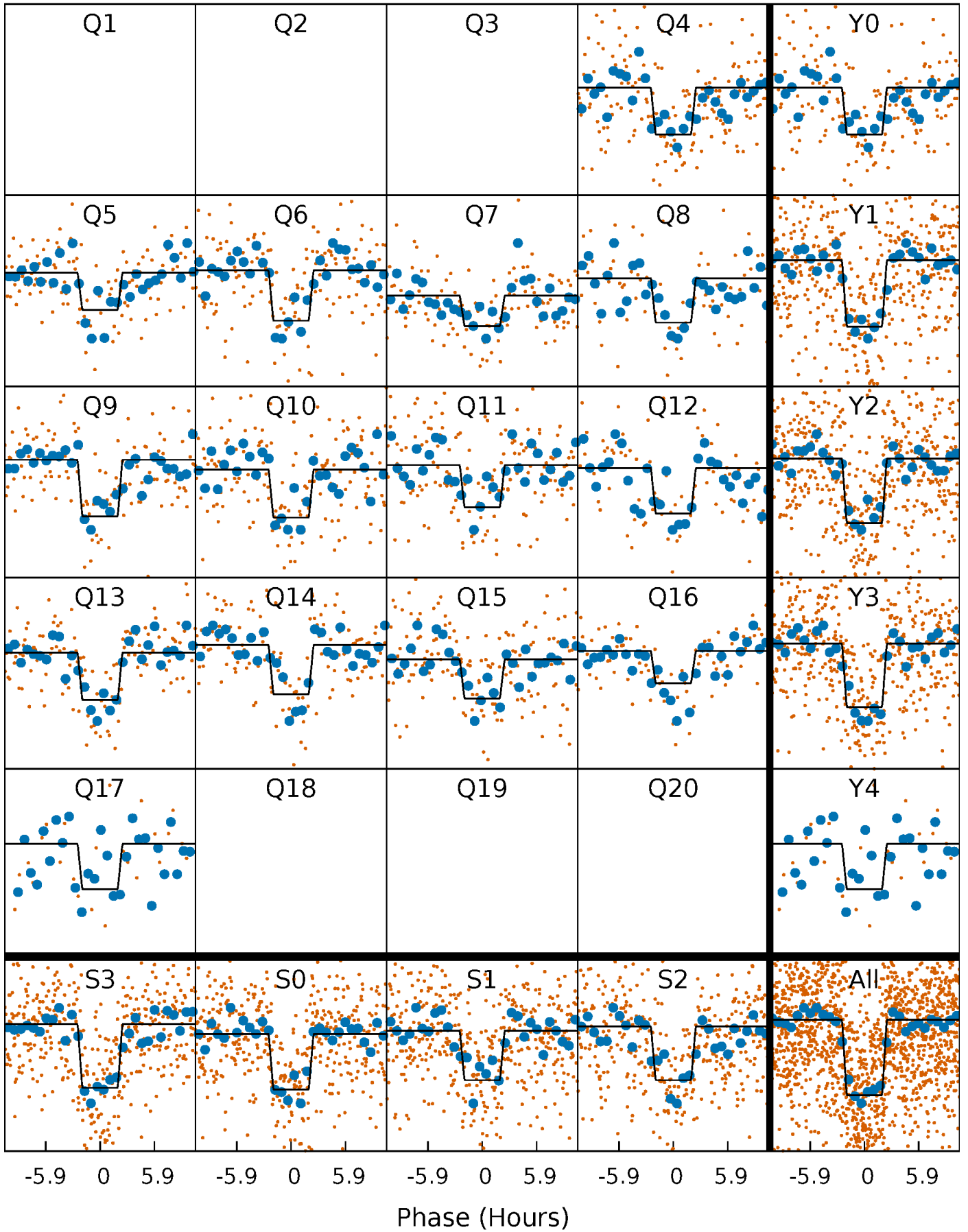
# DV Quarter-Phased Transit Curves

TCE 002439243-01 P= 26.020421 Days  $T_0=154.524112$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

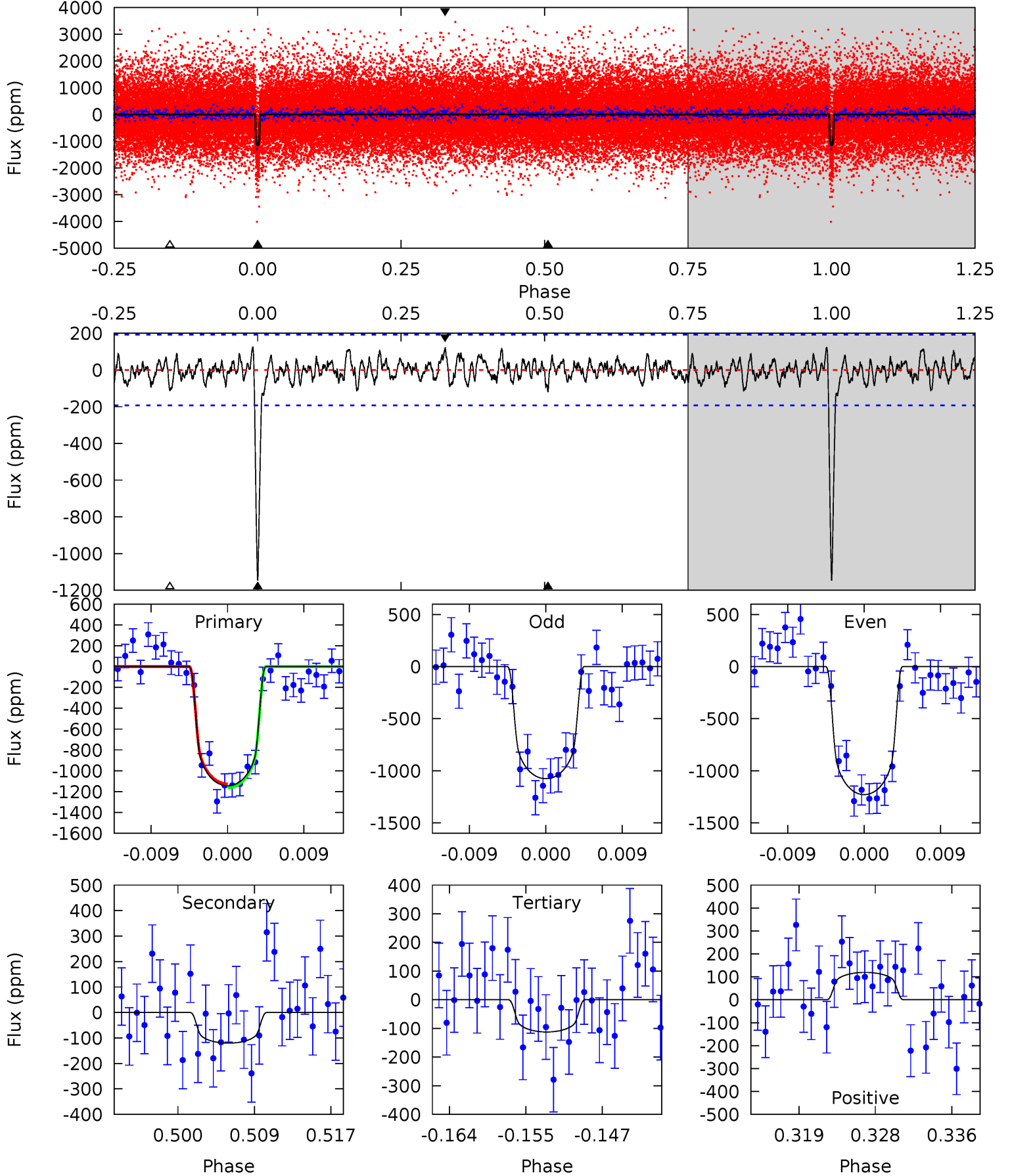
TCE 002439243-01 P= 26.020560 Days  $T_0=154.521010$  (BKJD)



# DV Model-Shift Uniqueness Test

002439243-01,  $P = 26.020421$  Days,  $E = 154.524112$  Days

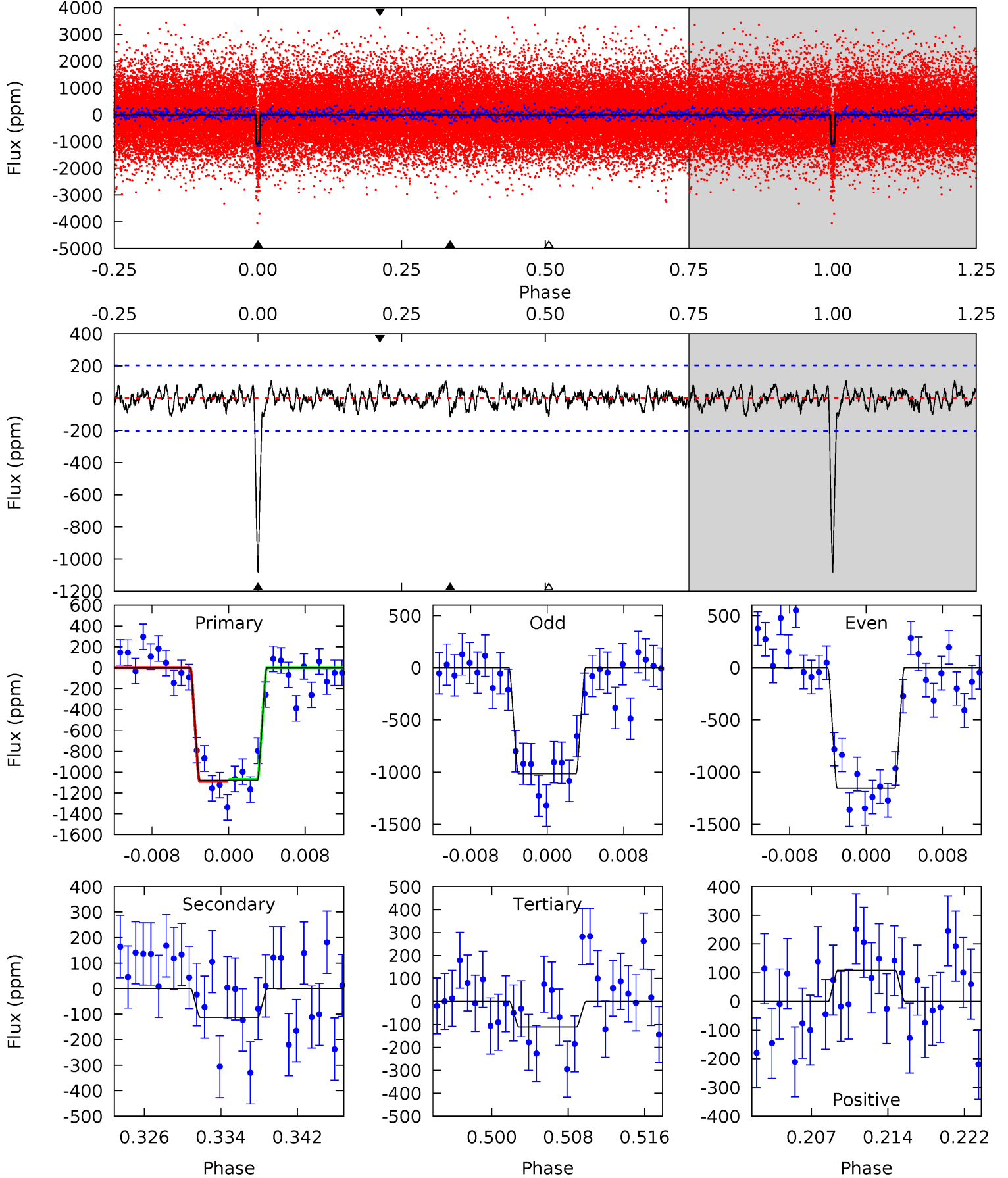
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.1	3.16	2.95	3.13	5.05	2.63	1.13	27.1	26.9	0.20	0.02	2.00	1.02	0.10	0.50



# Alt Model-Shift Uniqueness Test

002439243-01, P = 26.020560 Days, E = 154.521010 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
26.8	2.79	2.76	2.69	5.07	2.65	0.99	24.0	24.1	0.03	0.10	1.71	1.02	0.09	0.27



### Stellar Parameters For KIC 002439243

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5624^{+84}_{-75}$	$4.218^{+0.188}_{-0.101}$	$0.040^{+0.150}_{-0.150}$	$1.244^{+0.196}_{-0.240}$	$0.931^{+0.078}_{-0.045}$	$0.682^{+0.581}_{-0.205}$
	+1%/-1%	+4%/-2%	+375%/-375%	+16%/-19%	+8%/-5%	+85%/-30%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 002439243-01 / KOI 2280.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-120 \pm 38$	$4.37^{+1.21}_{-1.02}$	$936^{+44}_{-59}$	$3639^{+370}_{-303}$	$94^{+81}_{-41}$
Alt.	$-112 \pm 40$	$4.43^{+1.19}_{-1.17}$	$939^{+43}_{-52}$	$3625^{+390}_{-348}$	$91^{+88}_{-43}$

$T_{\text{max}}$  = 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

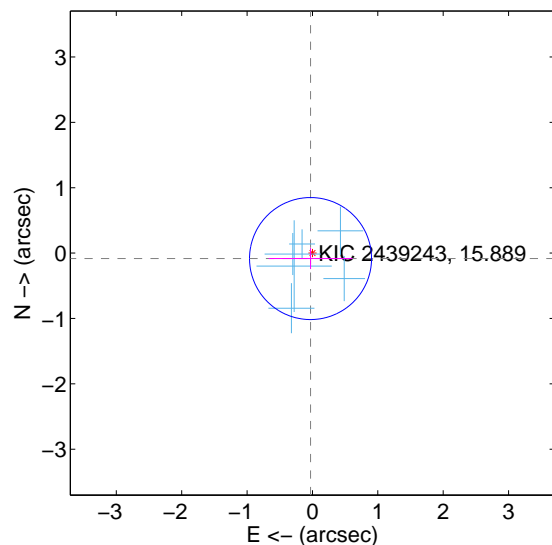
Supplemental centroid analysis for 002439243-01. Kepler magnitude: 15.89. Transit SNR 23.35

There are 7 quarters with good PRF difference image offsets

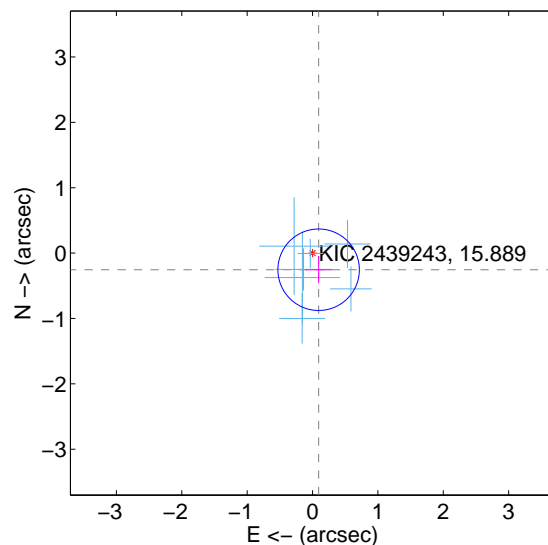
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.088 \pm 0.311$	0.28	$0.029 \pm 0.639$	$-0.083 \pm 0.162$
PRF-fit source offset from KIC position	$0.271 \pm 0.208$	1.31	$-0.094 \pm 0.205$	$-0.254 \pm 0.208$
photometric centroid source offset	$1.38 \pm 0.57$	2.43	$-1.20 \pm 0.61$	$-0.67 \pm 0.43$

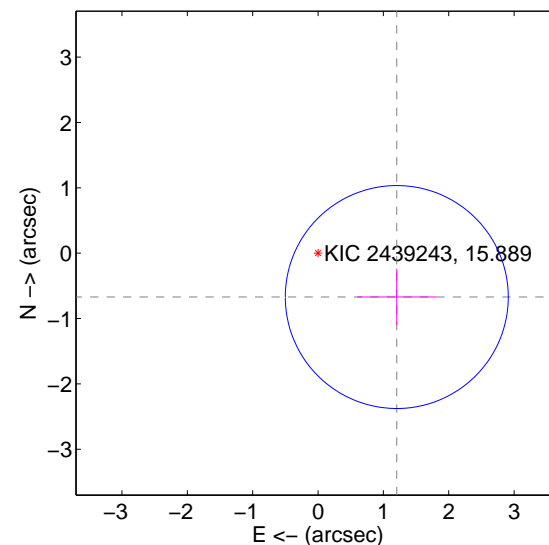
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

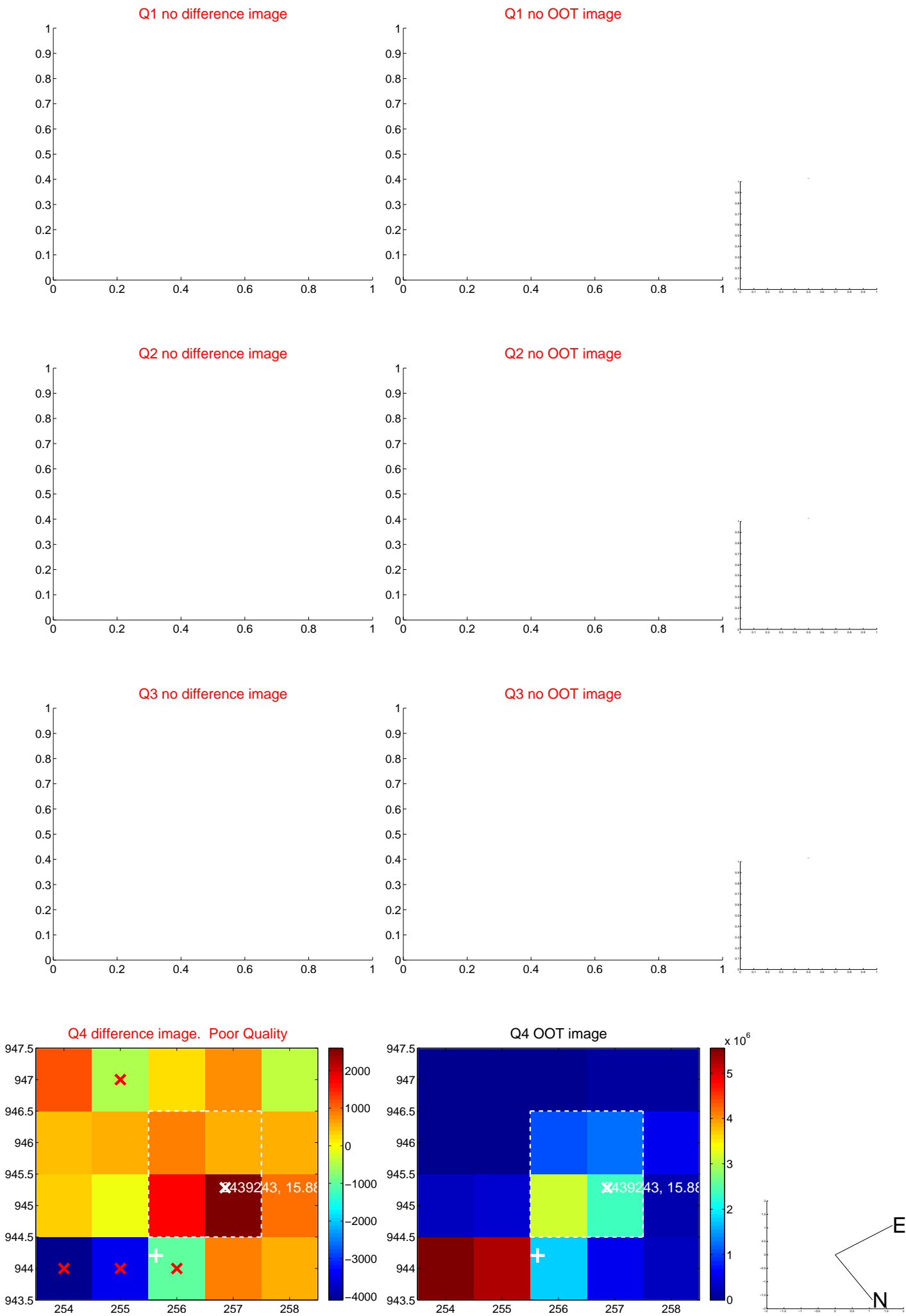


offset from photometric centroids

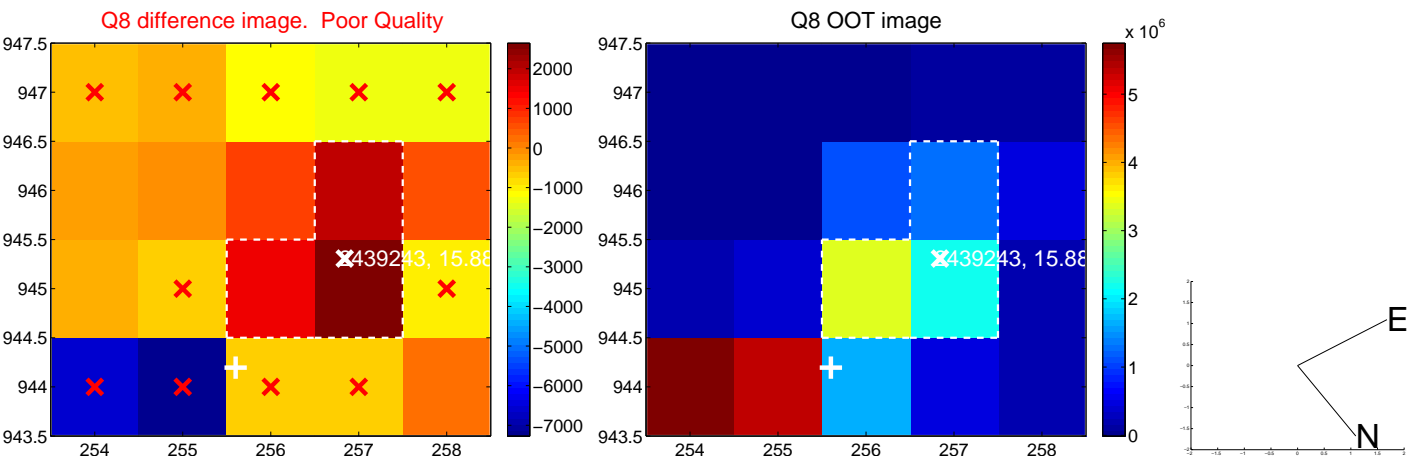
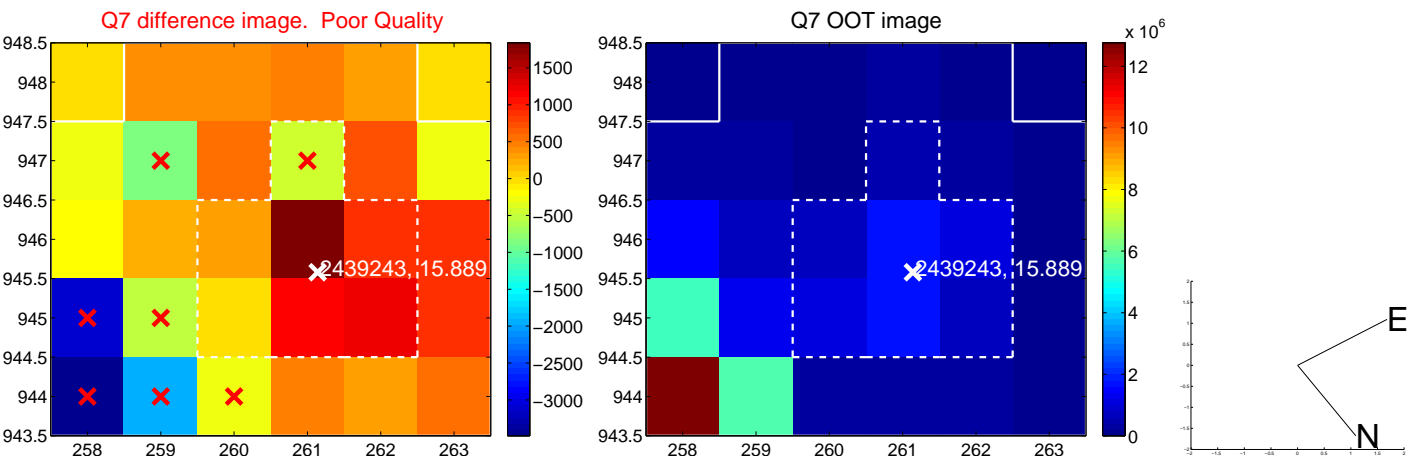
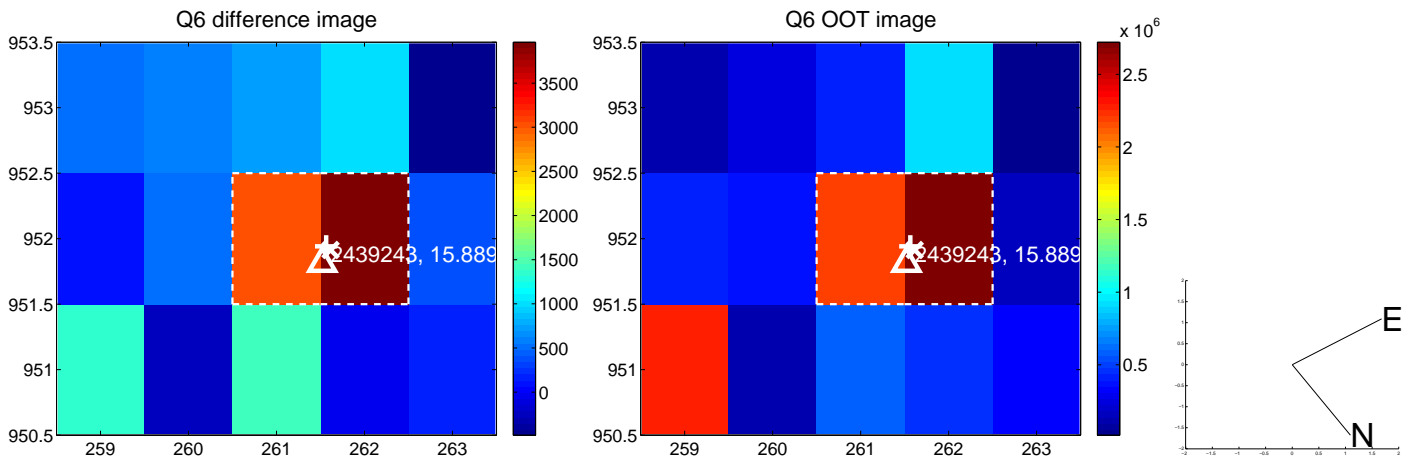
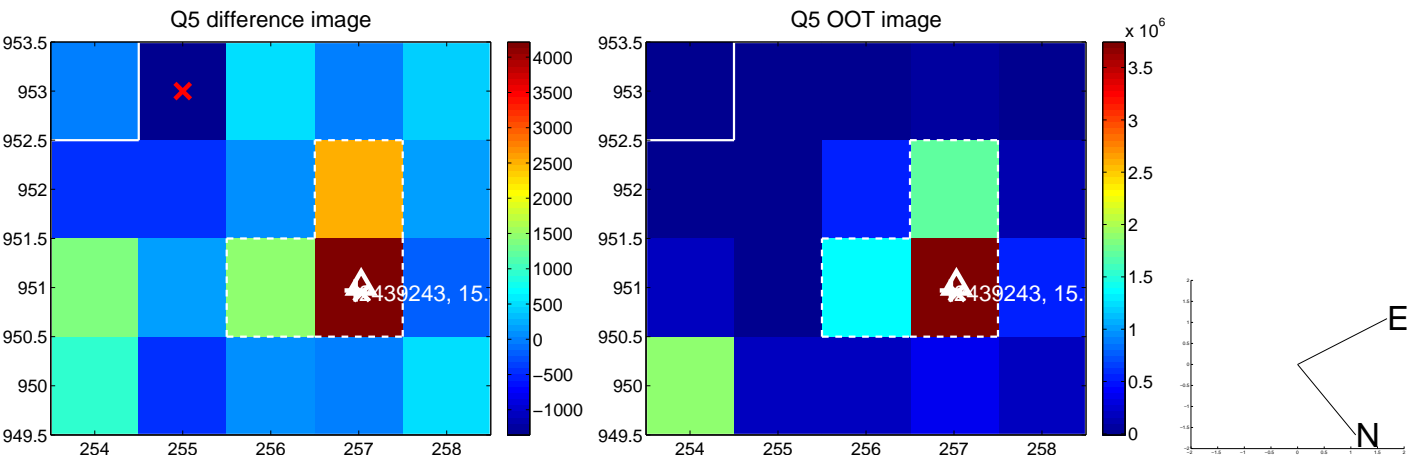


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

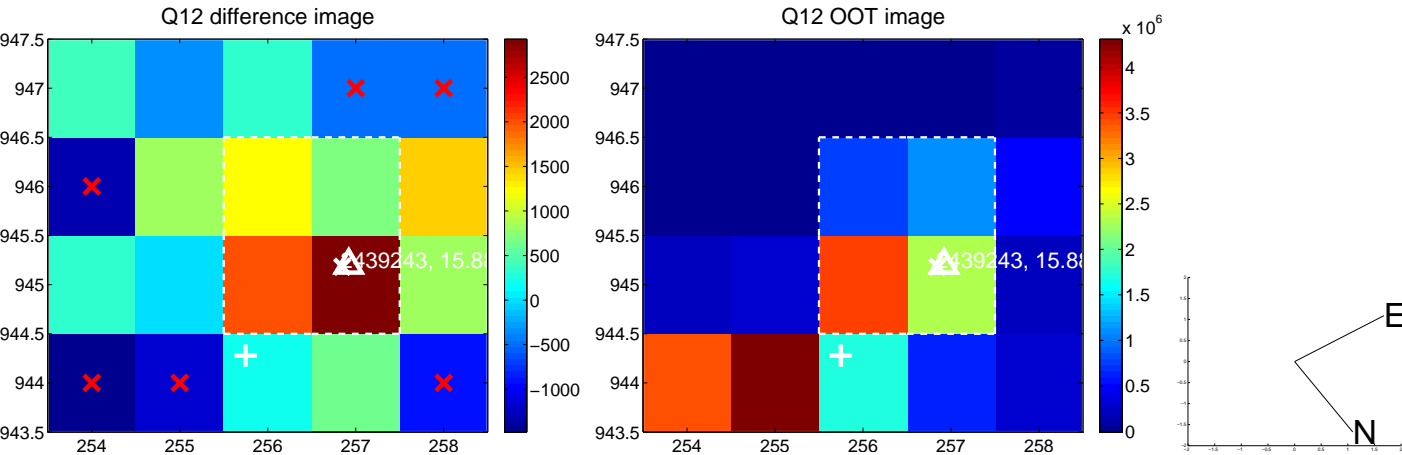
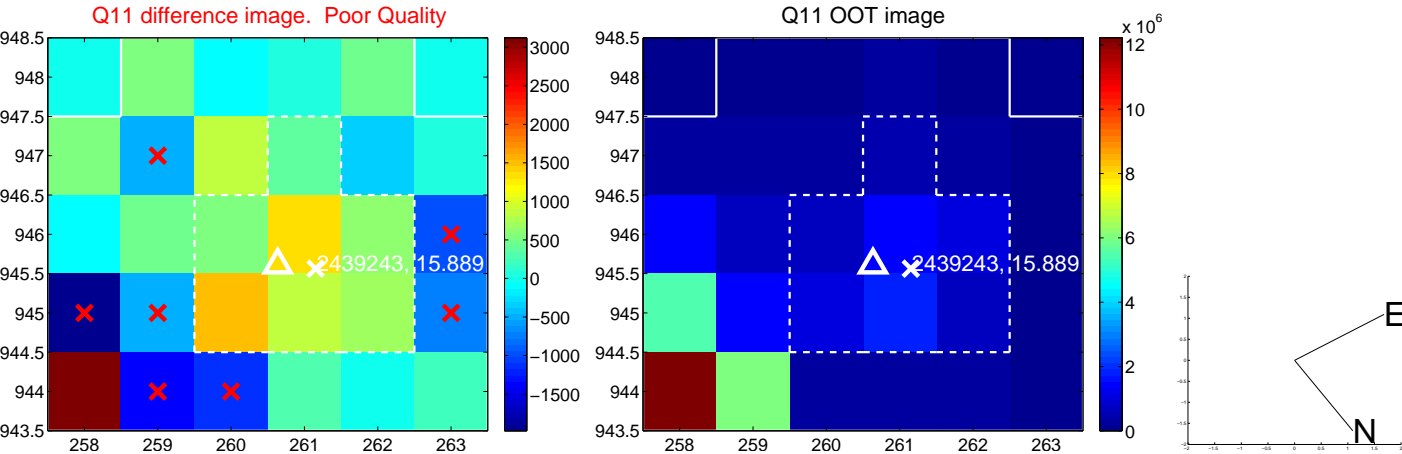
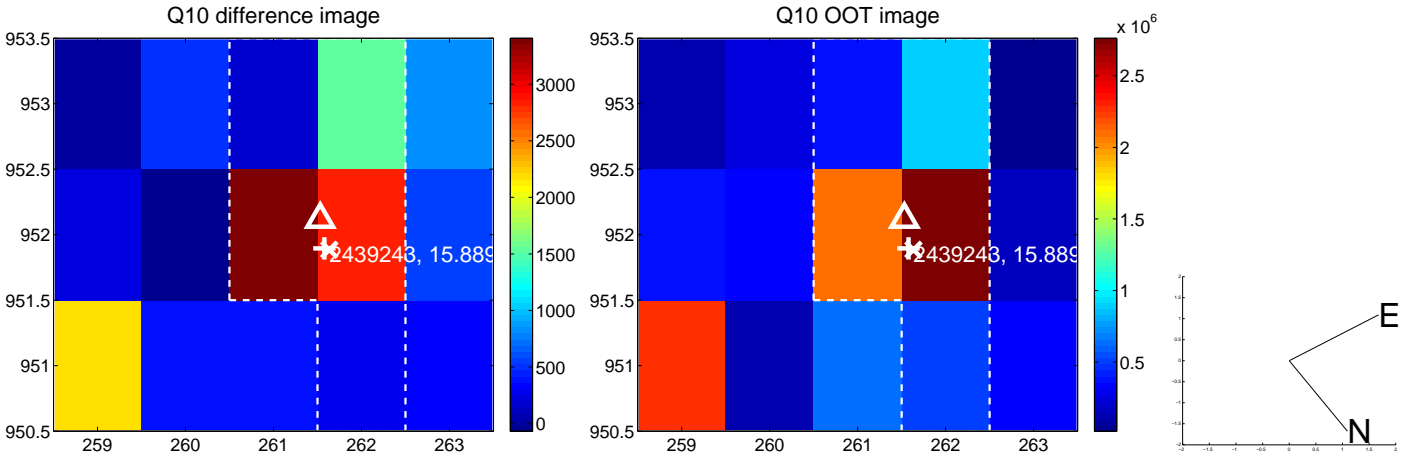
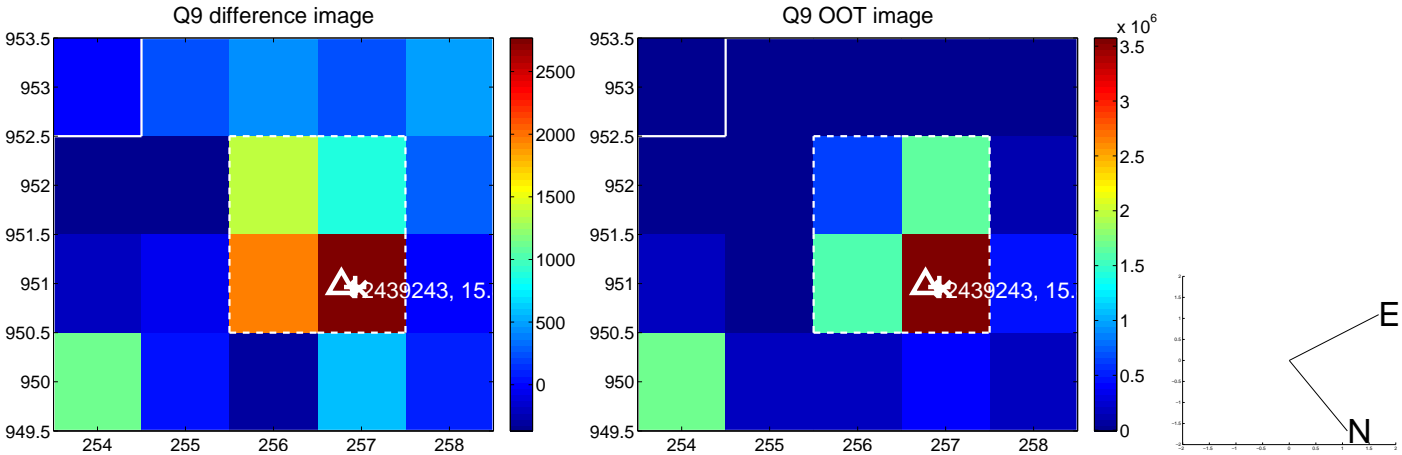
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



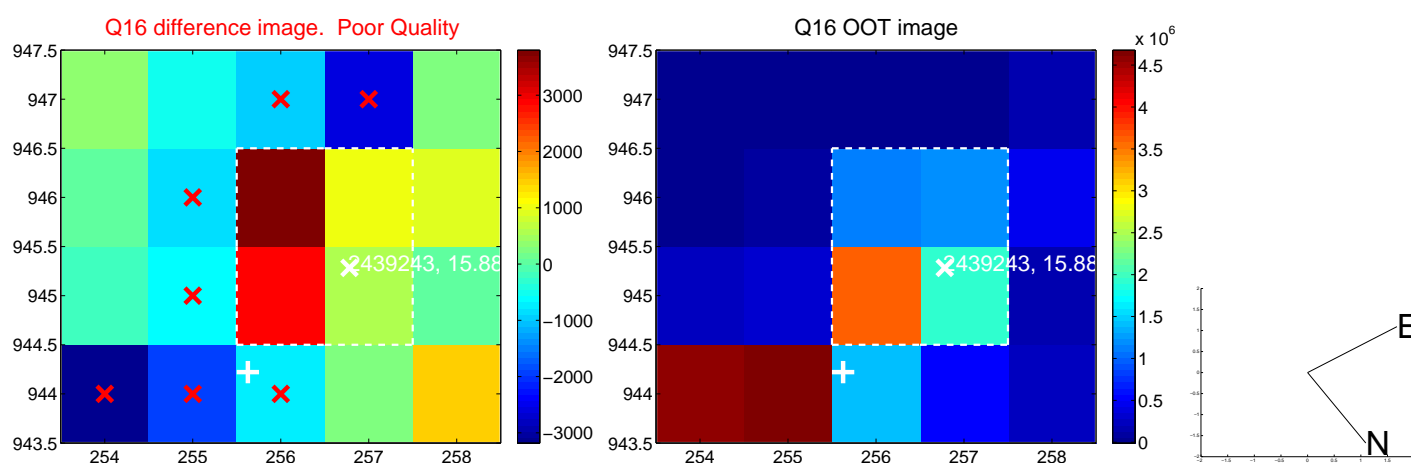
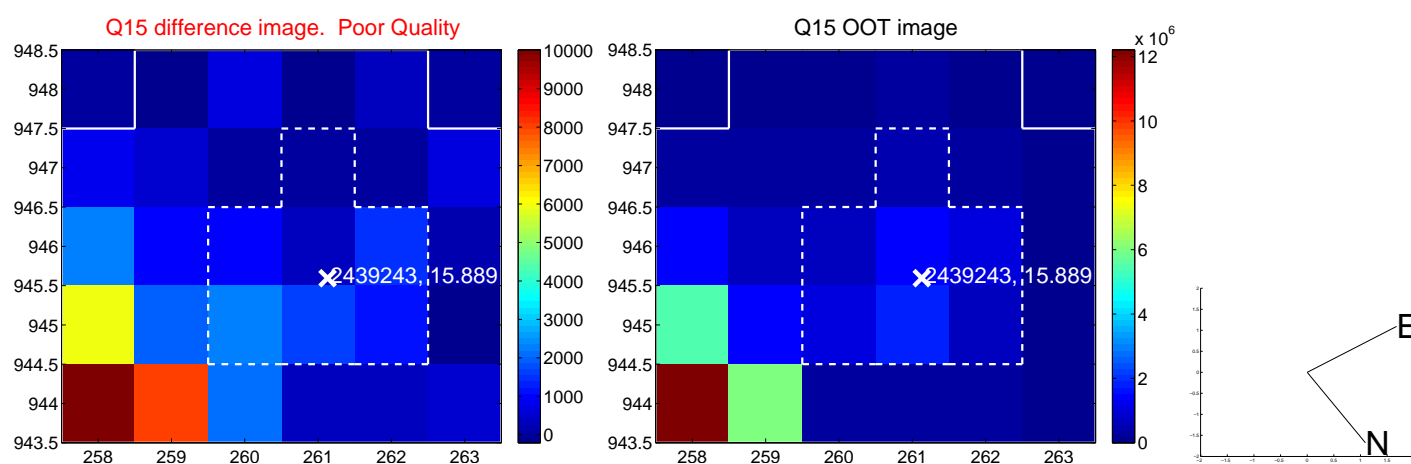
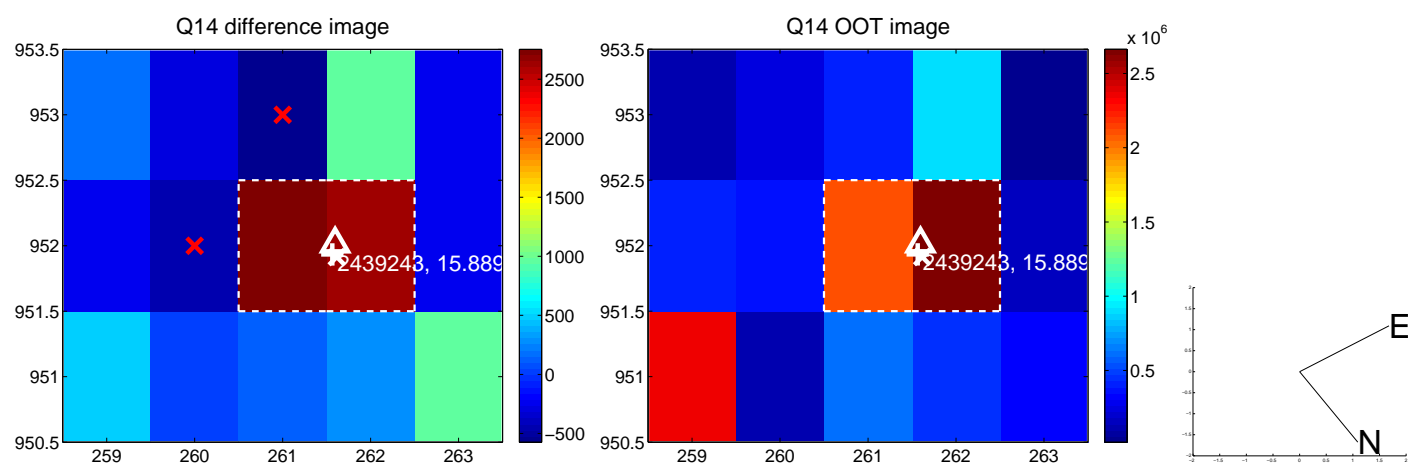
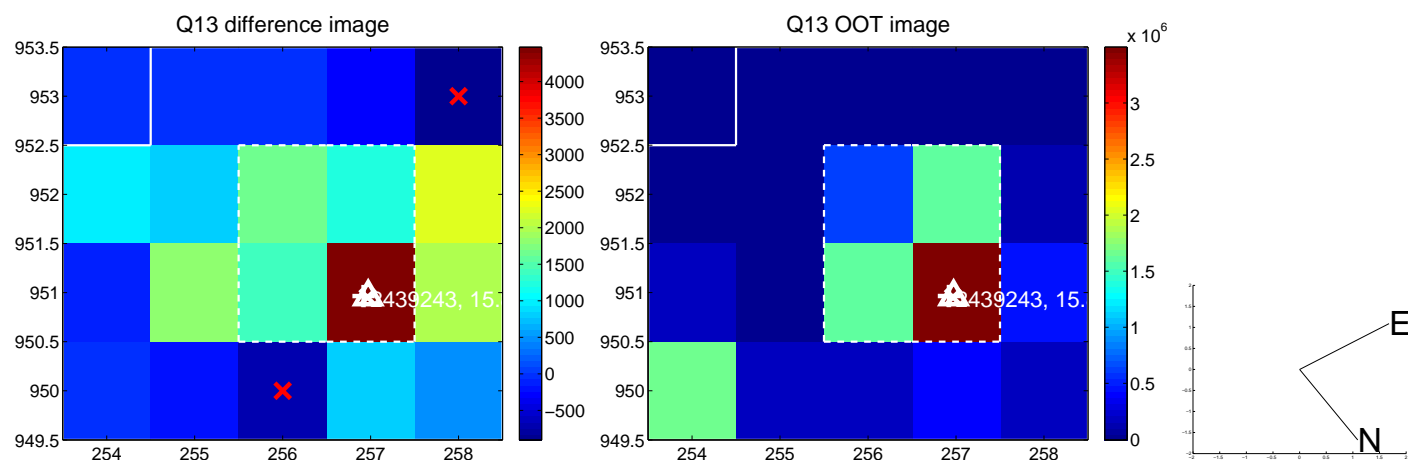
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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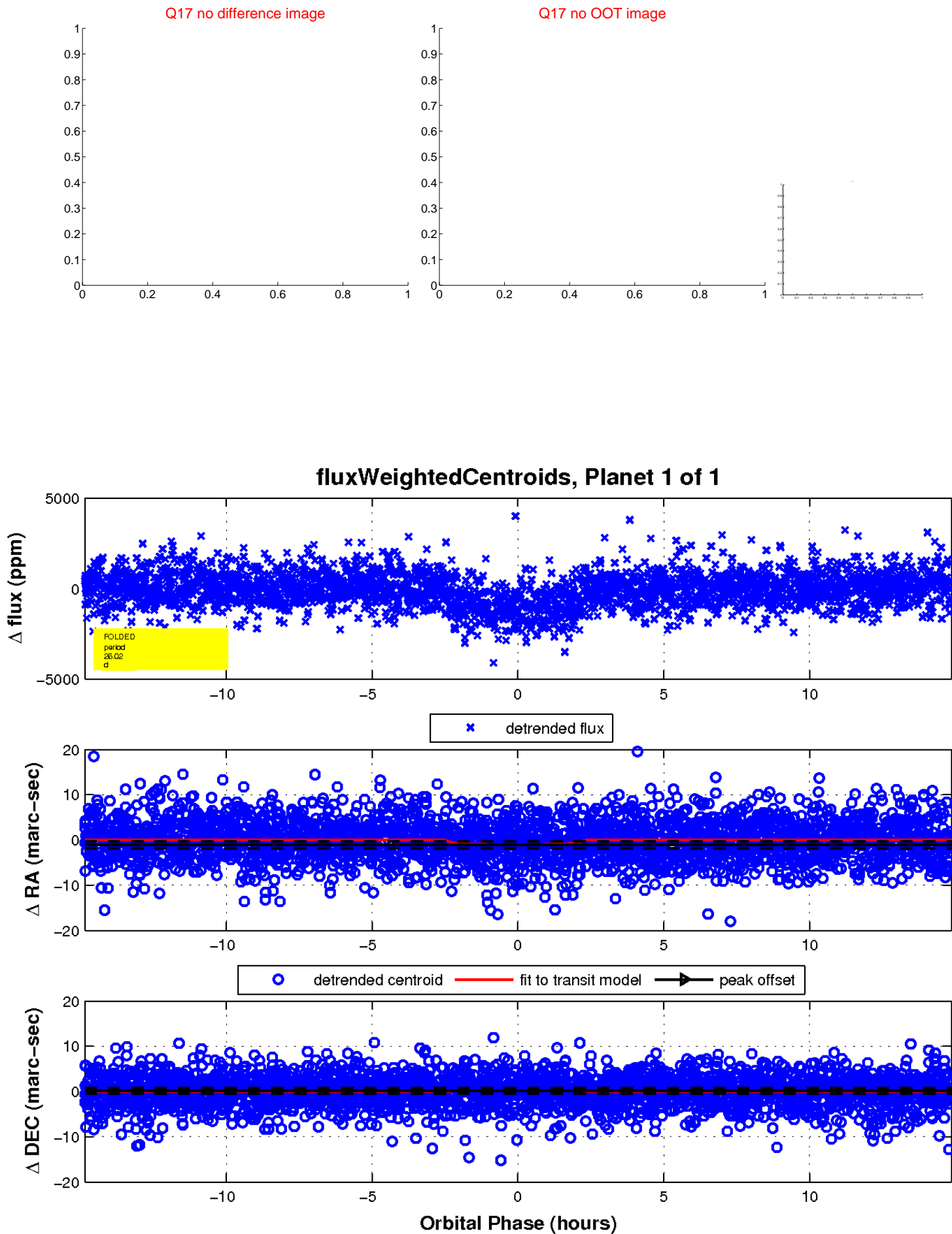


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

