

# KIC 010535991

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
010535991-01	OBS	8024.01	0.933749	132.441436	47.5	3.374	8.1	6.6	0.85	5978	0.69	2449.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010535991-01	OBS	FP	0.00	0	0	1	1	CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH

**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.

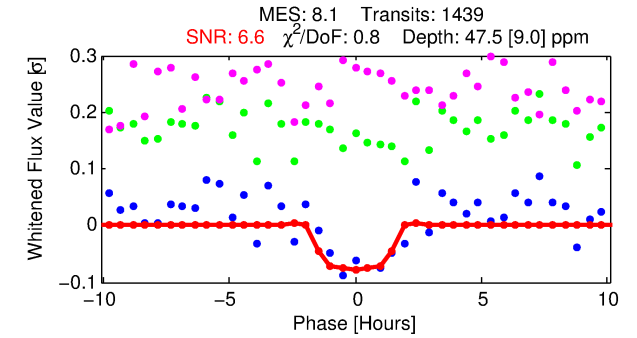
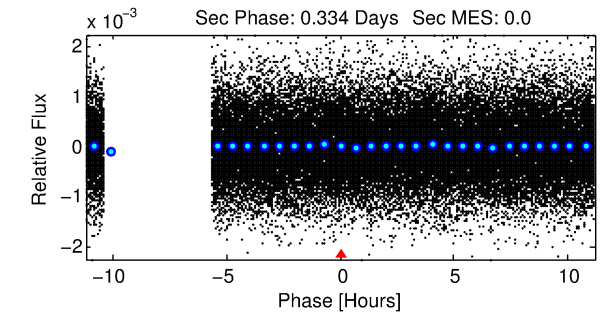
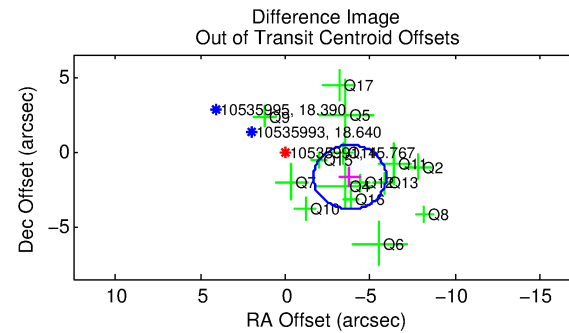
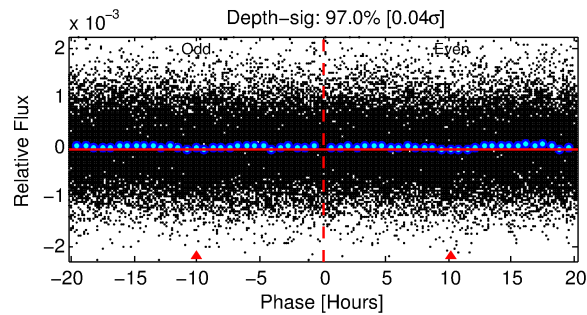
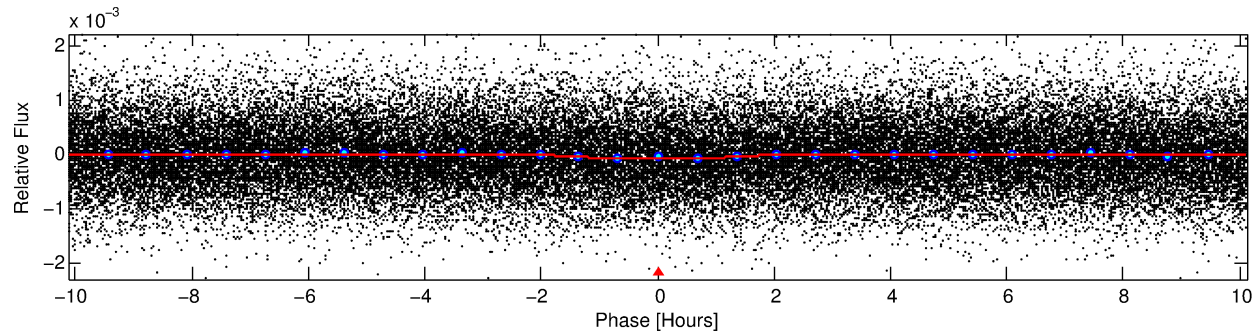
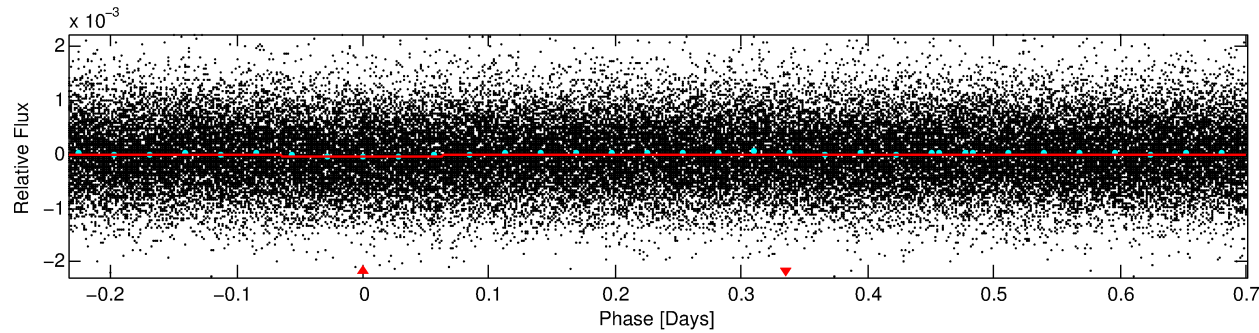
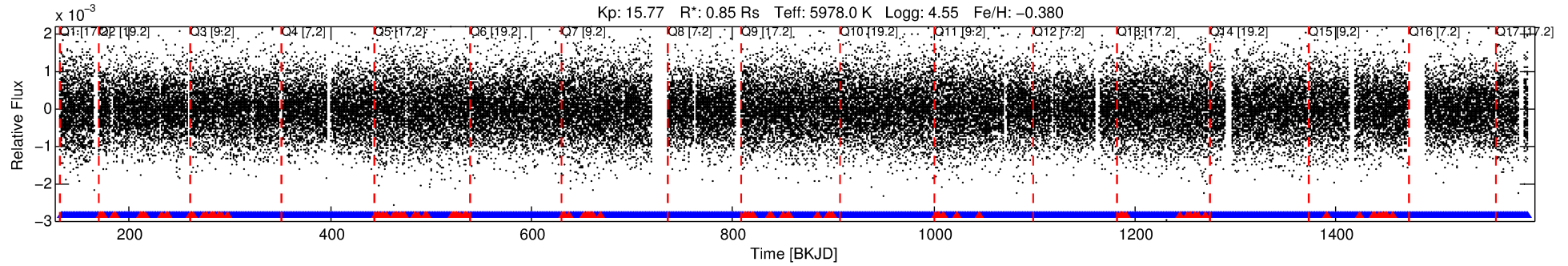
## Ephemeris Match Information For 010535991-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
010535991-01	10535991	V2083-Cyg-pri	10342012	1:2	1721.9	394	-181	6.90	15.76	4131.70	Direct-PRF	0	0.00	0.83

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10535991 Candidate: 1 of 1 Period: 0.934 d



## DV Fit Results:

Period = 0.93375 [0.00002] d  
Epoch = 132.4414 [0.0064] BKJD  
Rp/R\* = 0.0075 [0.0073]  
a/R\* = 1.33 [3.03]  
b = 0.91 [1.07]  
Seff = 2449.39 [901.65]  
Teq = 1794 [165] K  
Rp = 0.69 [0.70] Re  
a = 0.0183 [0.0043] AU  
Ag = N/A  
Teffp = N/A

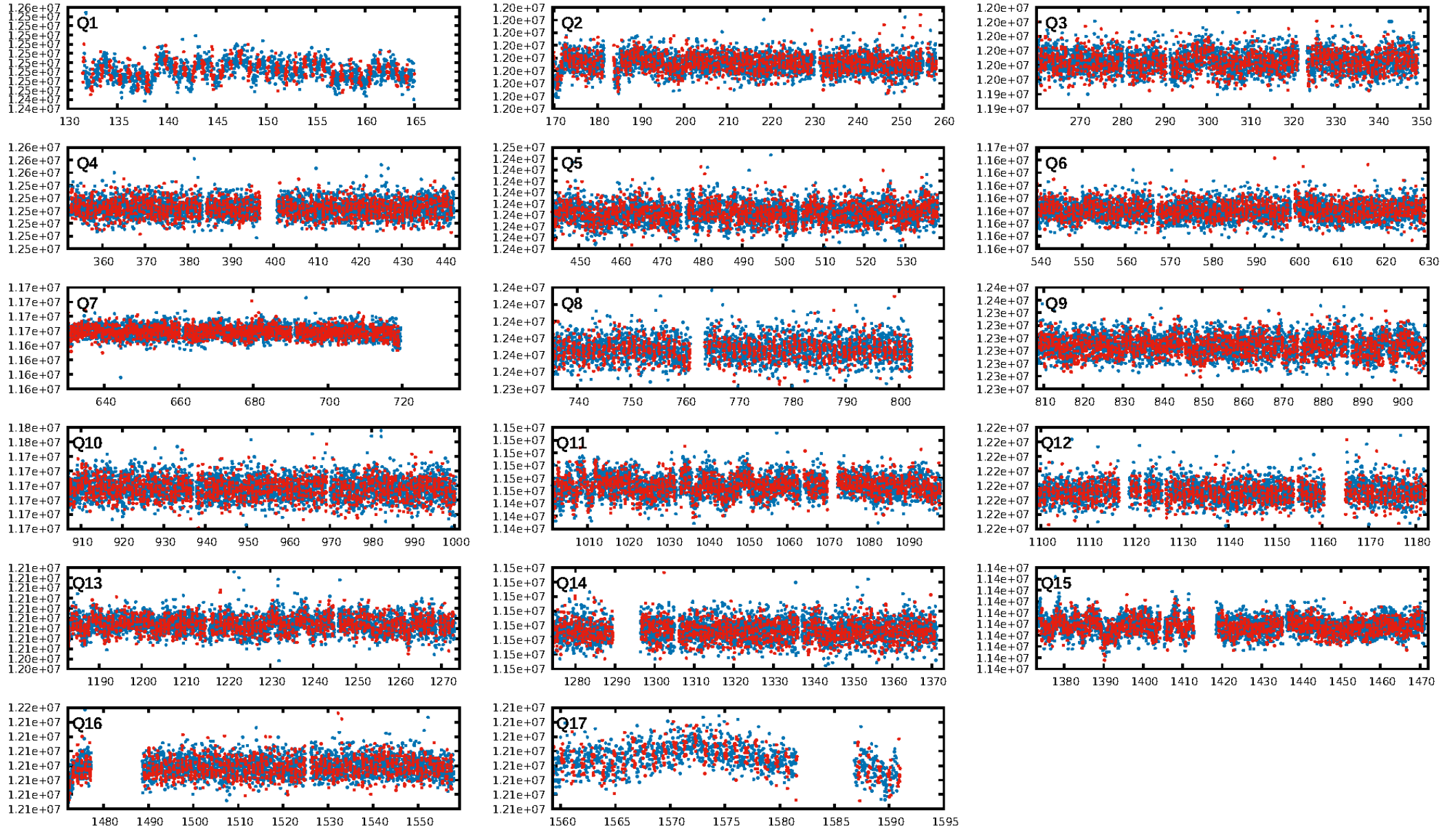
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.45e-16  
RollingBand-fgt: 0.93 [1271/1373]  
**GhostDiagnostic-chr: 0.1051**  
Centroid-sig: 7.0%  
Centroid-so: 3.301 arcsec [1.74 $\sigma$ ]  
**OotOffset-rm: 4.173 arcsec [5.84 $\sigma$ ]**  
**KicOffset-rm: 4.021 arcsec [5.70 $\sigma$ ]**  
OotOffset-st: 4/3/4/4 [15]  
KicOffset-st: 4/3/4/4 [15]  
DiffImageQuality-fgm: 0.07 [1/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 23:35:47 Z

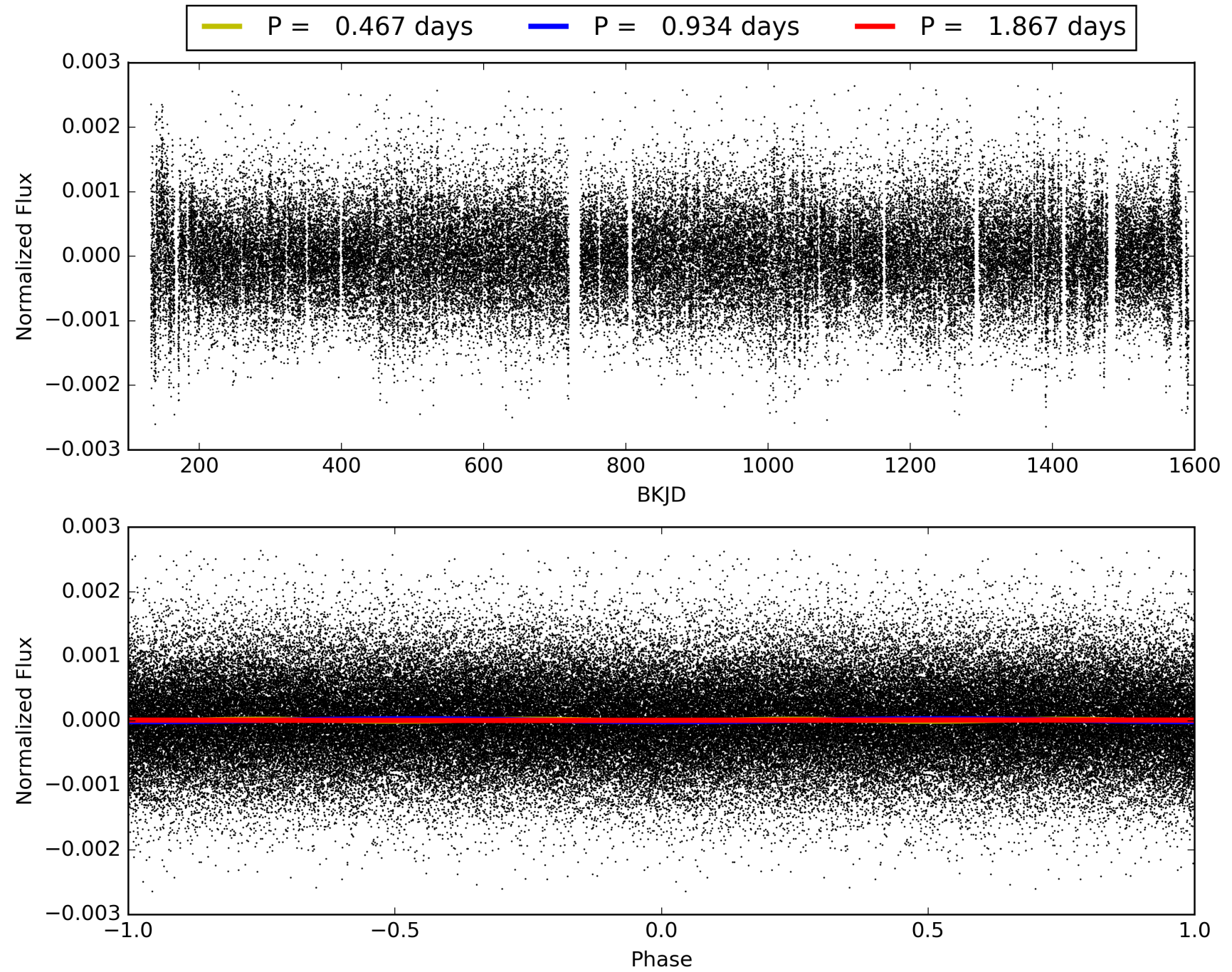
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010535991-01, PDC Light Curves



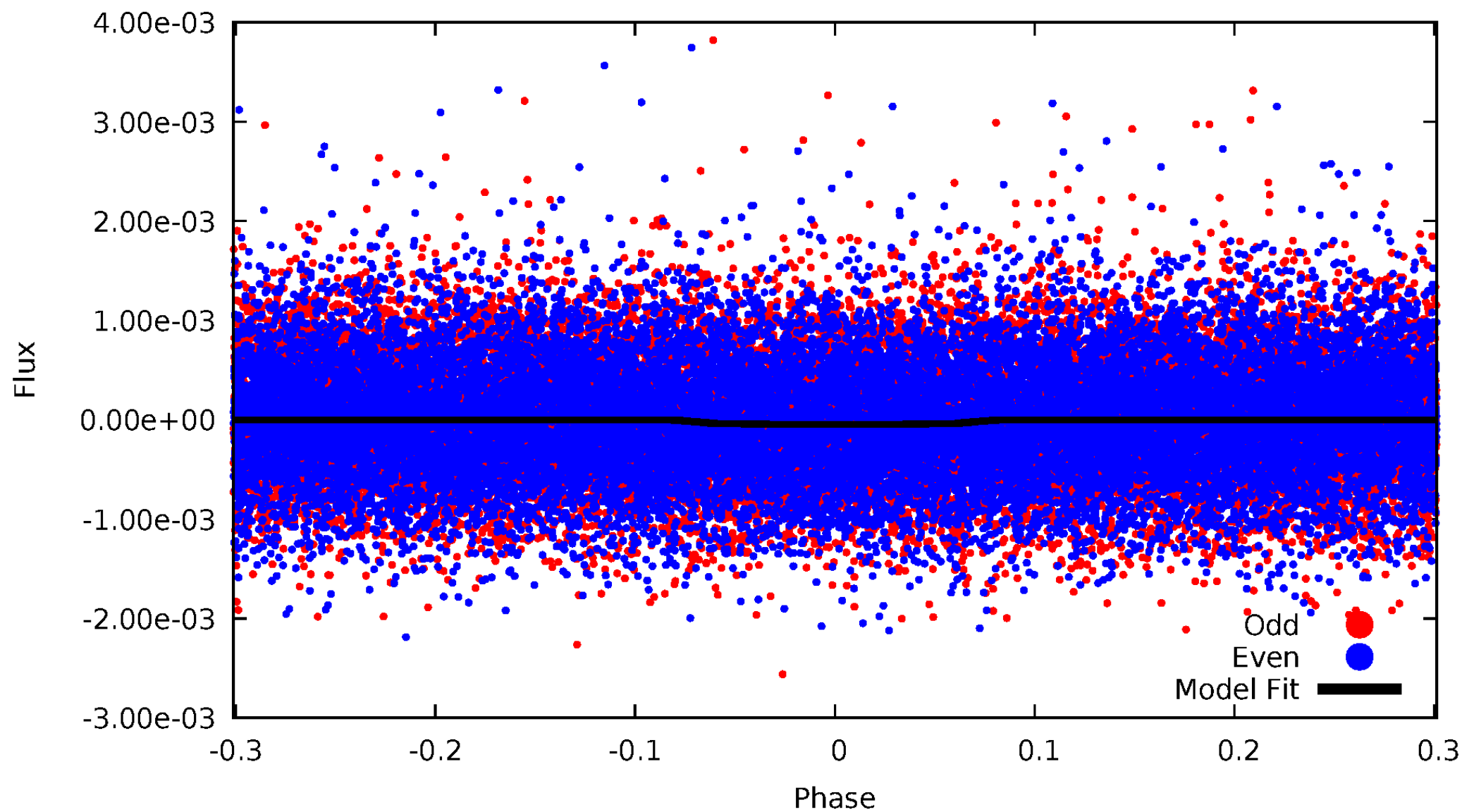


# TCE 010535991-01



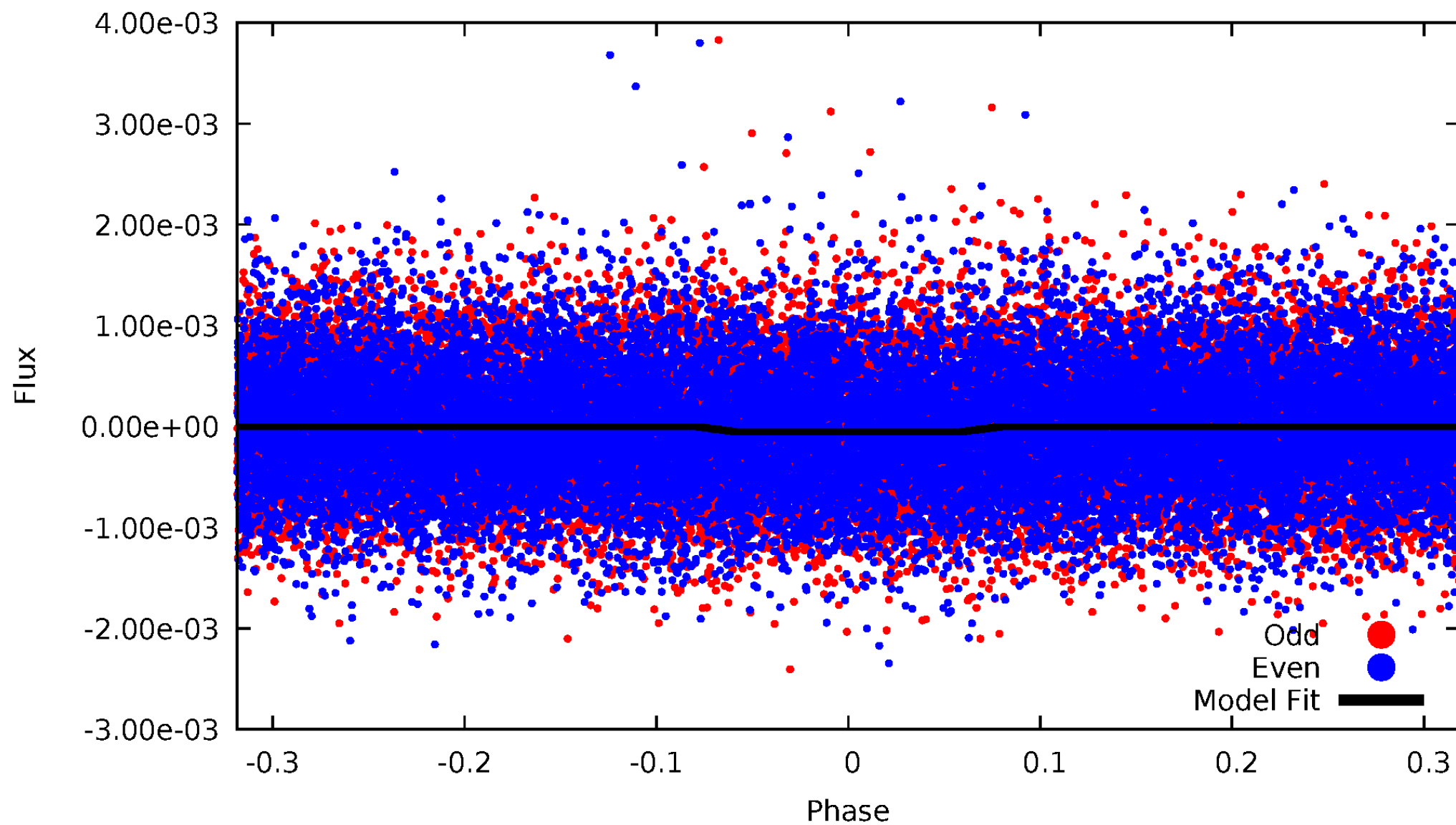
# DV Odd/Even

TCE 010535991-01



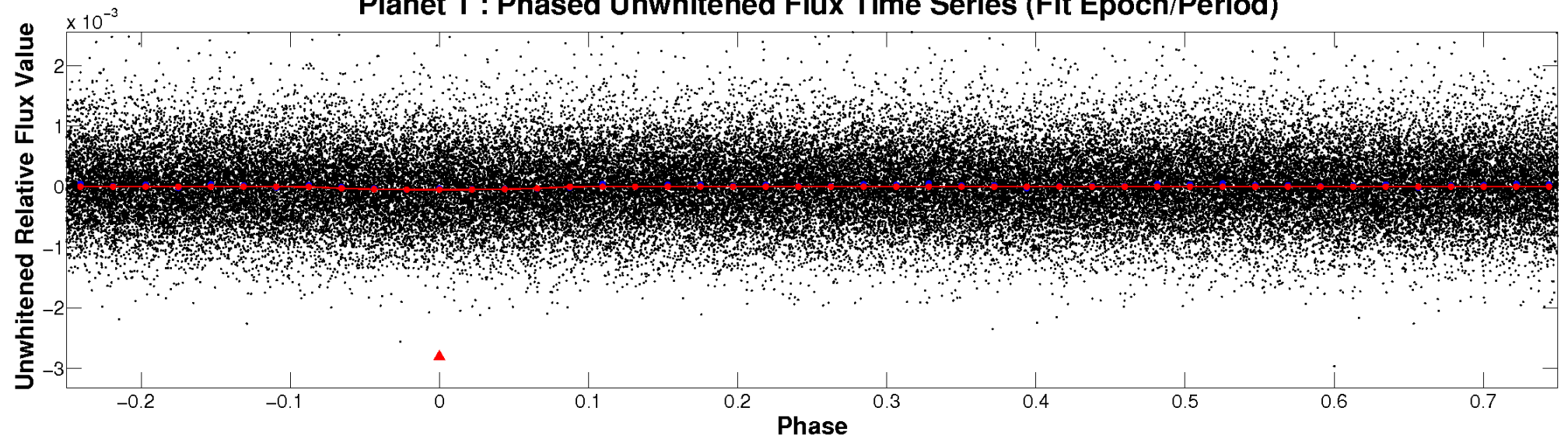
# ALT Odd/Even

TCE 010535991-01

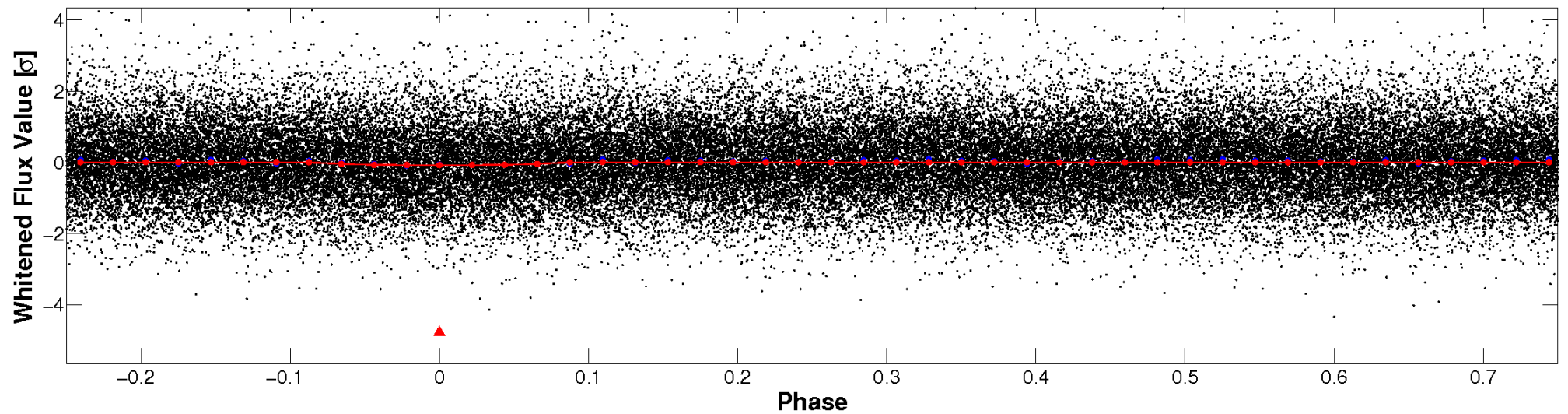


# Non-Whitened Vs. Whitened Light Curve

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



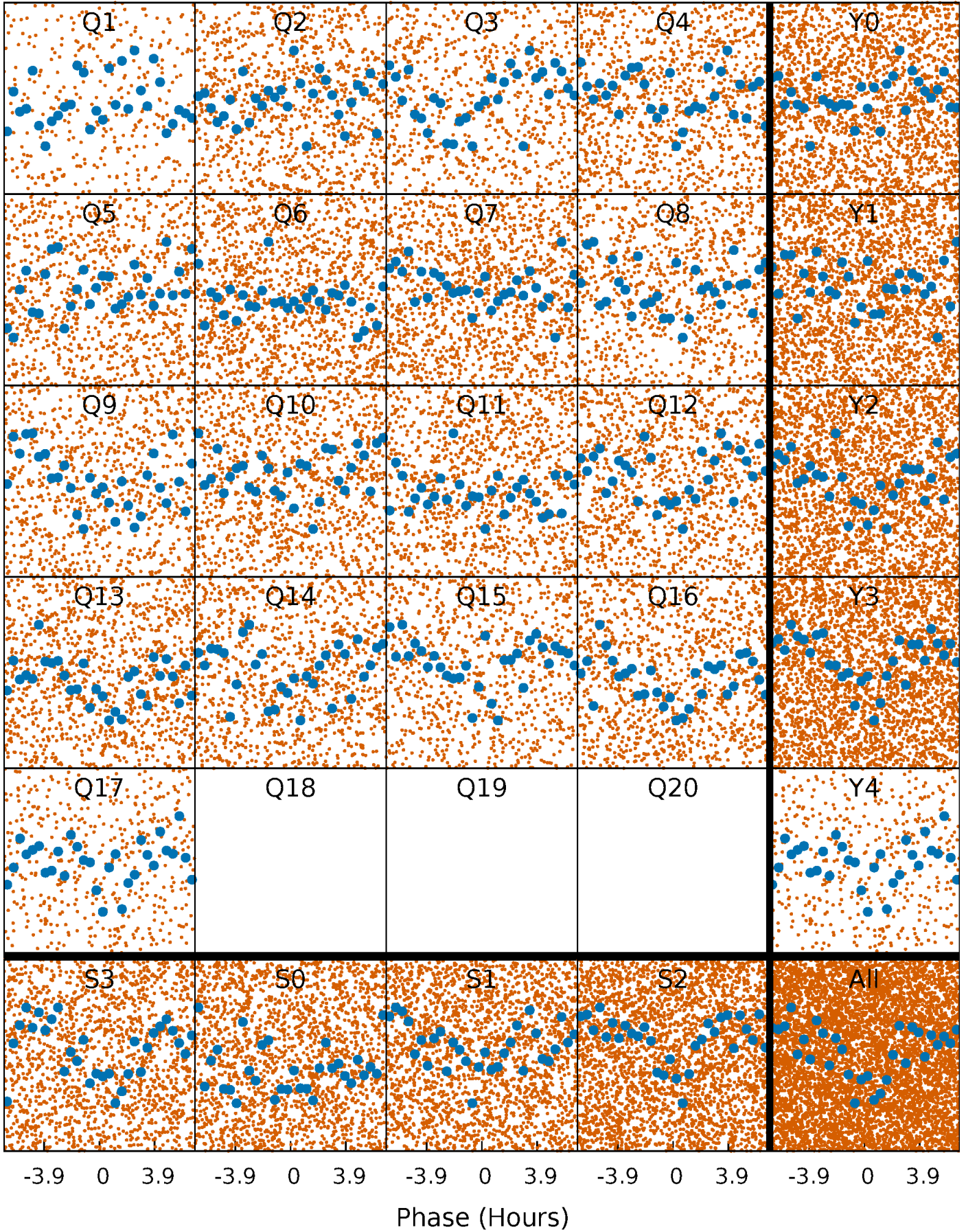
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

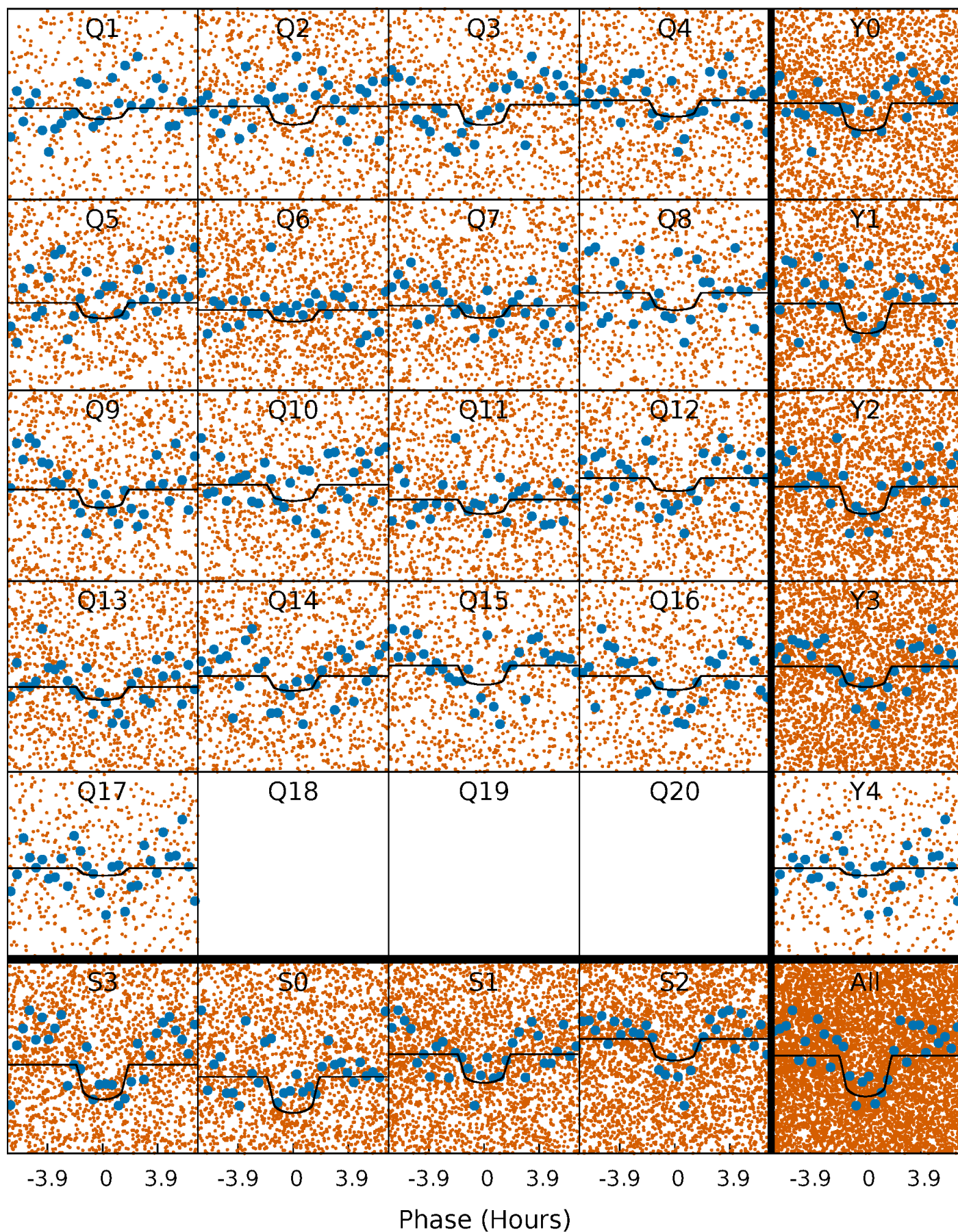
TCE 010535991-01 P= 0.933749 Days  $T_0=132.441436$  (BKJD)





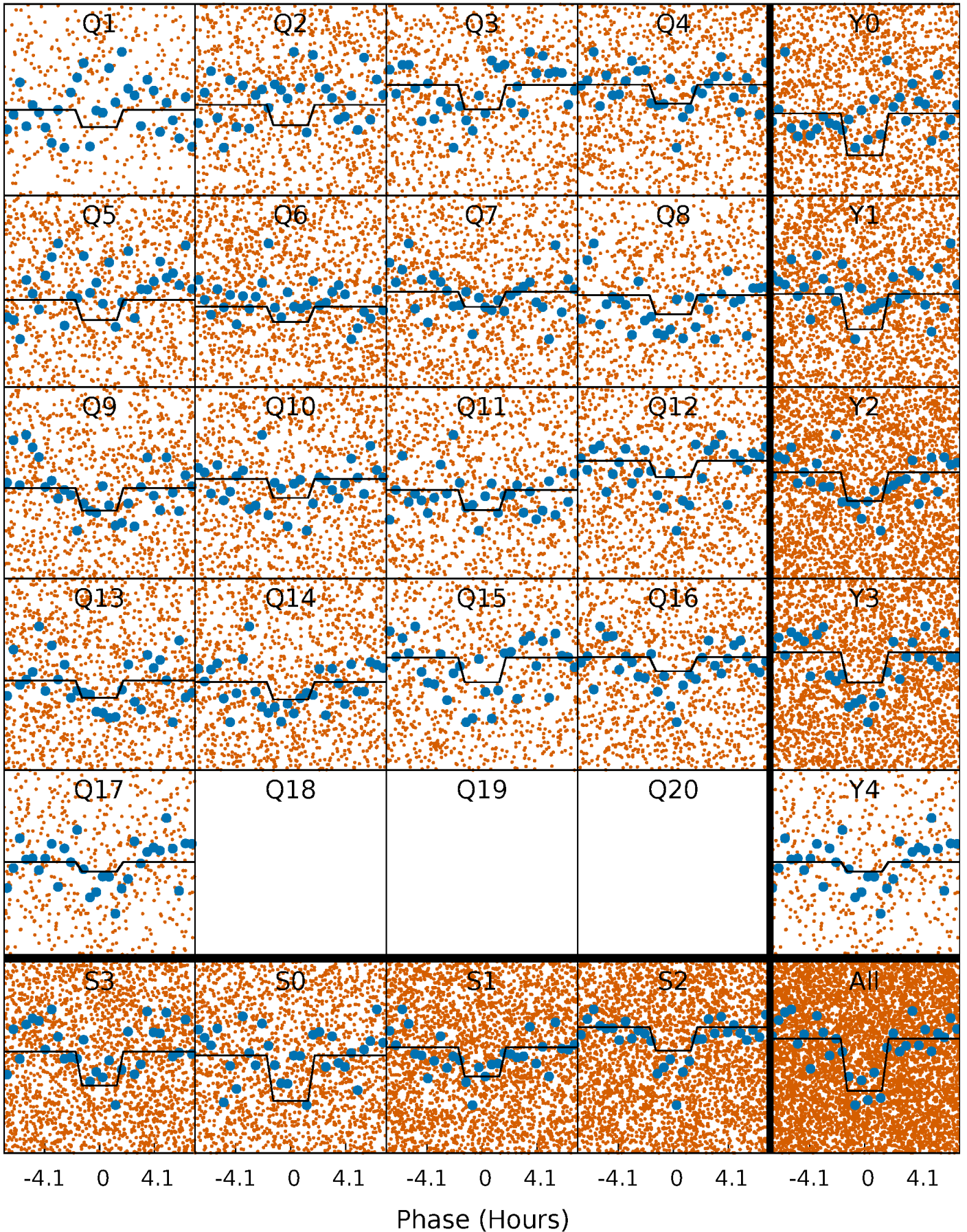
# DV Quarter-Phased Transit Curves

TCE 010535991-01 P= 0.933749 Days  $T_0=132.441436$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010535991-01 P= 0.933759 Days  $T_0=132.441692$  (BKJD)

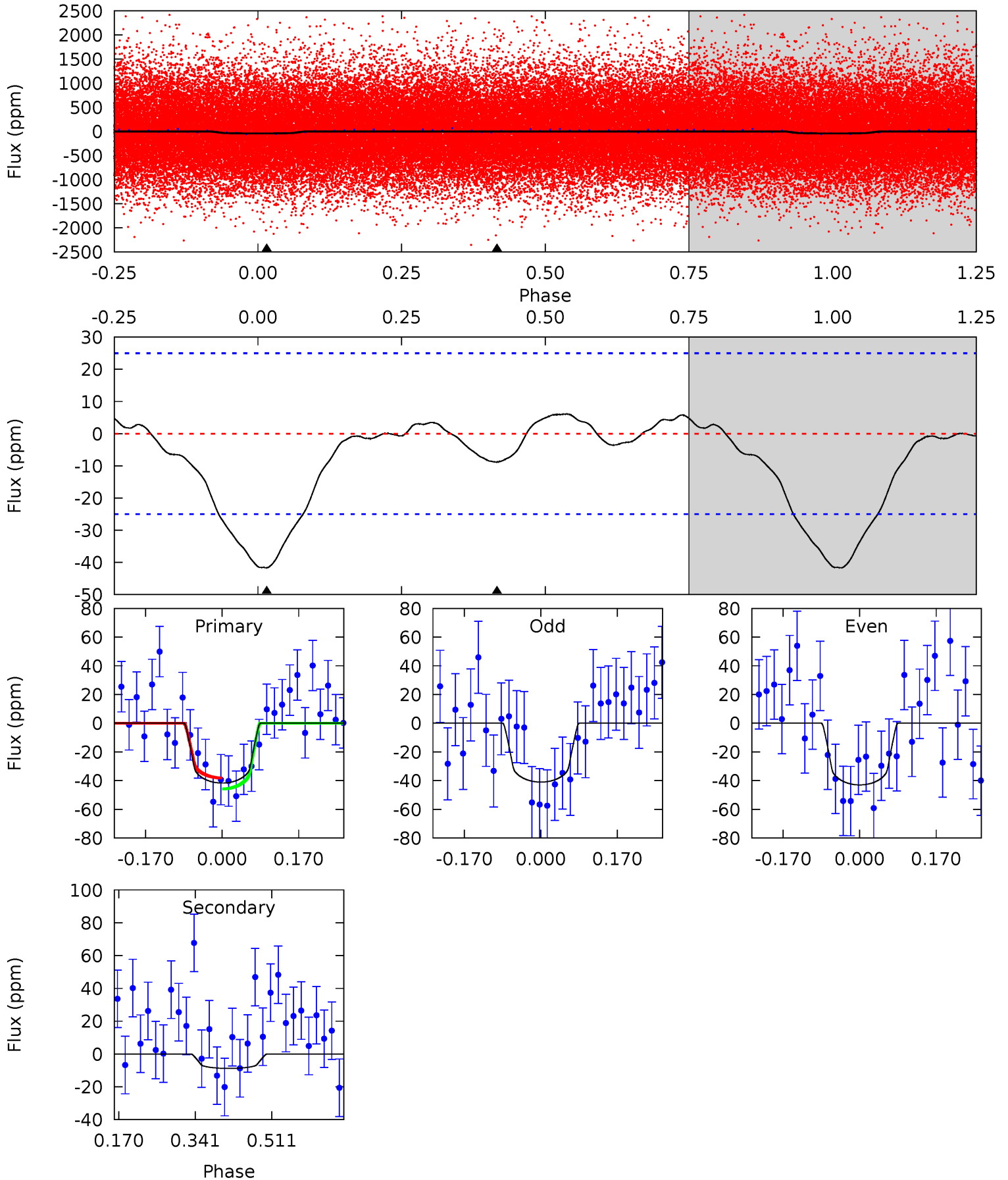




# DV Model-Shift Uniqueness Test

010535991-01, P = 0.933749 Days, E = 131.507687 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
7.43	1.57	0	0	4.45	1.37	0.52	7.43	7.43	1.57	1.57	0.18	0.75	0.13	0.68

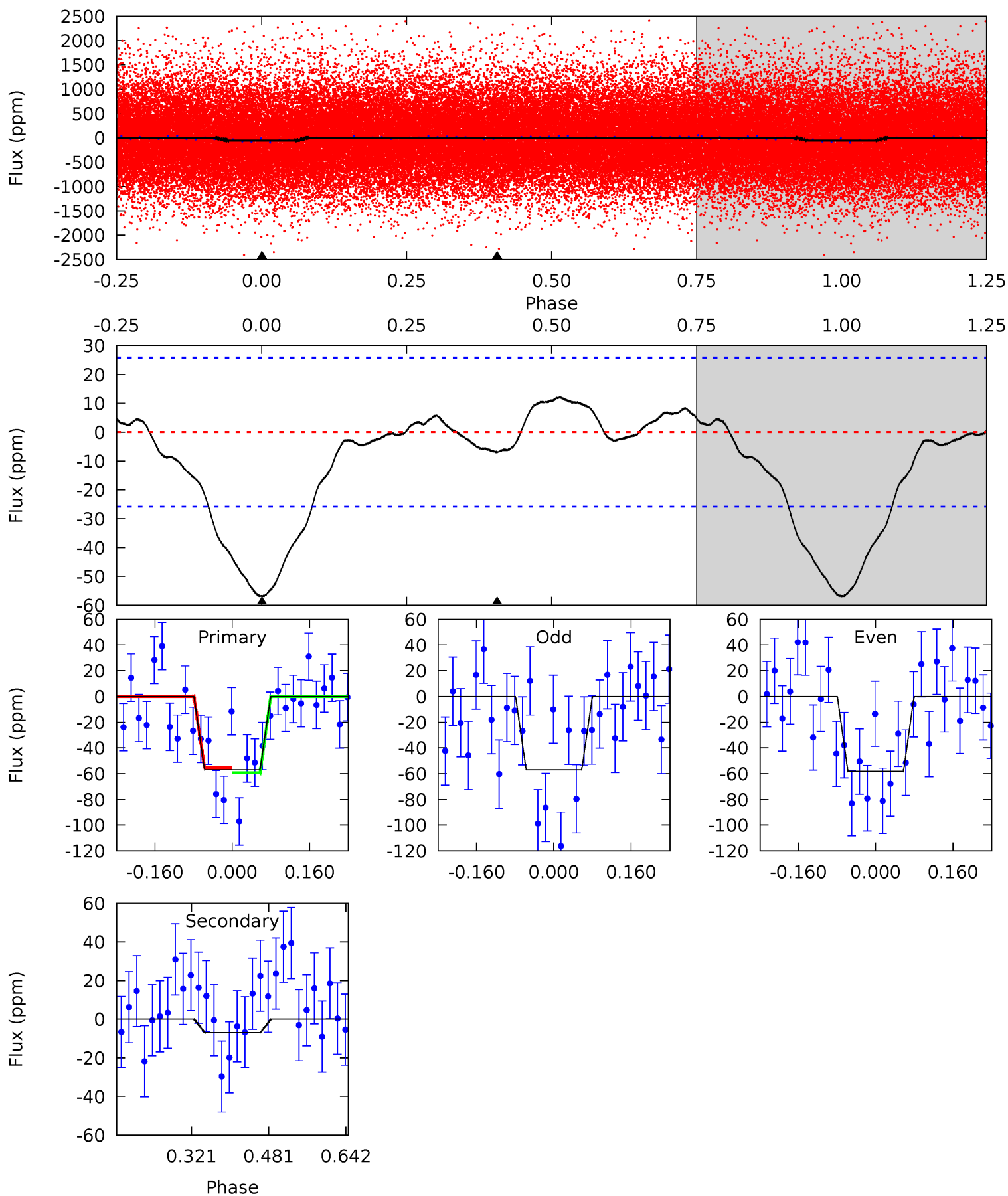




# Alt Model-Shift Uniqueness Test

010535991-01, P = 0.933759 Days, E = 131.507933 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
9.83	1.20	0	0	4.46	1.40	0.73	9.83	9.83	1.20	1.20	0.10	0.82	0.17	0.34



### Stellar Parameters For KIC 010535991

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5978^{+161}_{-179}$	$4.554^{+0.036}_{-0.192}$	$-0.380^{+0.300}_{-0.300}$	$0.846^{+0.235}_{-0.078}$	$0.932^{+0.109}_{-0.109}$	$2.172^{+0.423}_{-1.114}$
	+3%/-3%	+1%/-4%	+79%/-79%	+28%/-9%	+12%/-12%	+19%/-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 010535991-01 / KOI 8024.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-9 \pm 6$	$0.86^{+0.66}_{-0.54}$	$2554^{+181}_{-98}$	$3681^{+1794}_{-1335}$	$1.953^{+12.526}_{-1.590}$
Alt.	$-7 \pm 6$	$0.90^{+0.61}_{-0.57}$	$2570^{+167}_{-113}$	$3422^{+1645}_{-5953}$	$1.341^{+8.820}_{-1.162}$

$T_{max}$  = 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

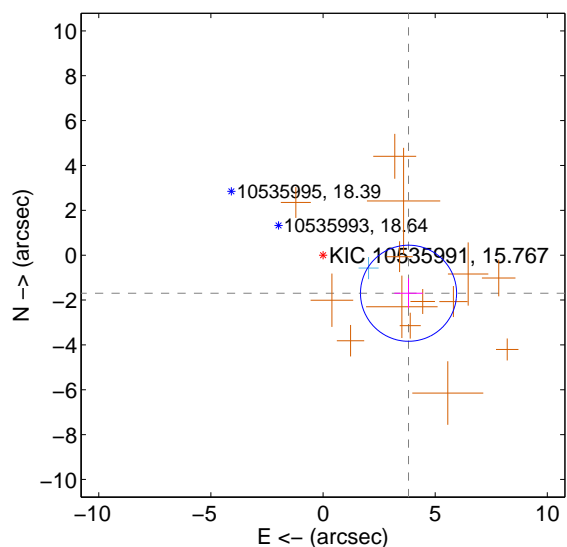
Supplemental centroid analysis for 010535991-01. Kepler magnitude: 15.77. Transit SNR 6.59

There are 1 quarters with good PRF difference image offsets

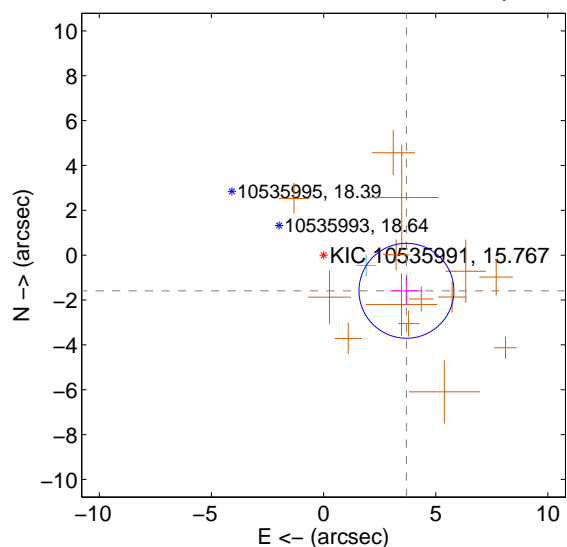
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.173 \pm 0.714$	5.84	$-3.812 \pm 0.635$	$-1.697 \pm 0.664$
PRF-fit source offset from KIC position	$4.021 \pm 0.705$	5.70	$-3.694 \pm 0.718$	$-1.588 \pm 0.629$
photometric centroid source offset	$3.30 \pm 1.90$	1.74	$-3.15 \pm 1.89$	$1.00 \pm 1.97$

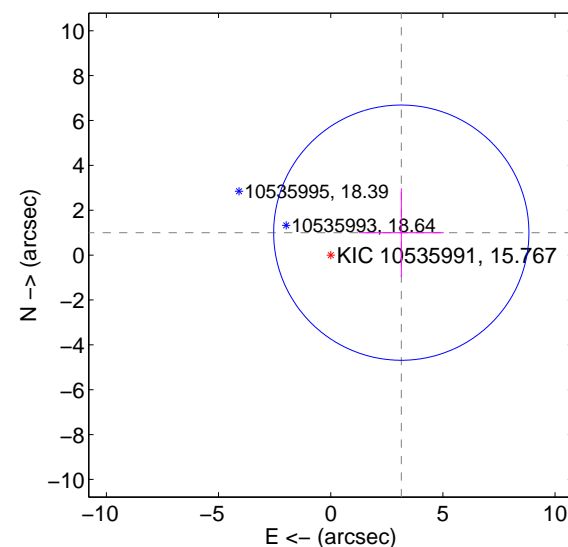
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



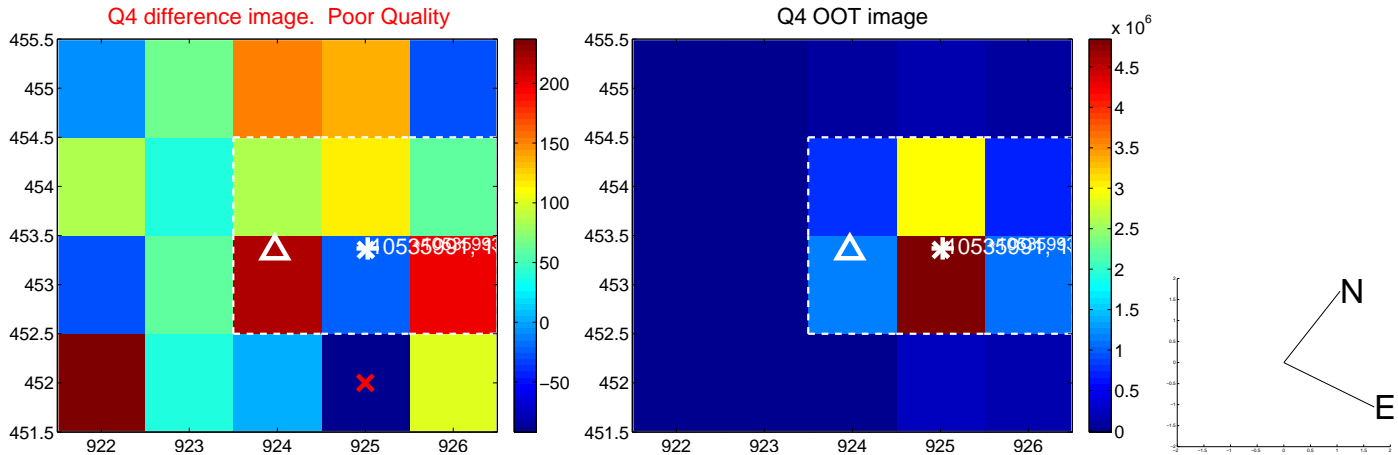
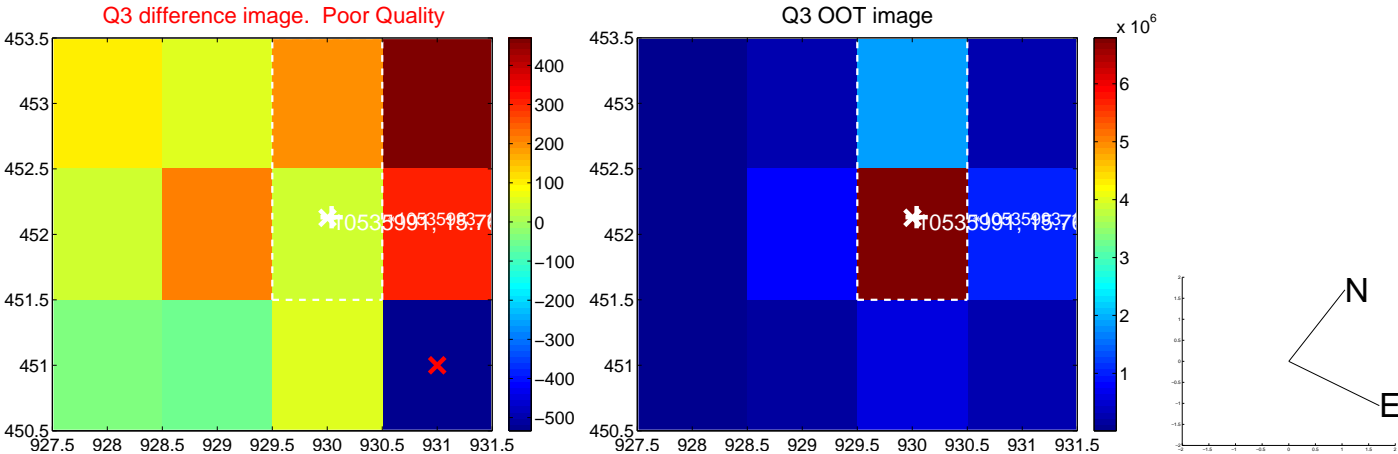
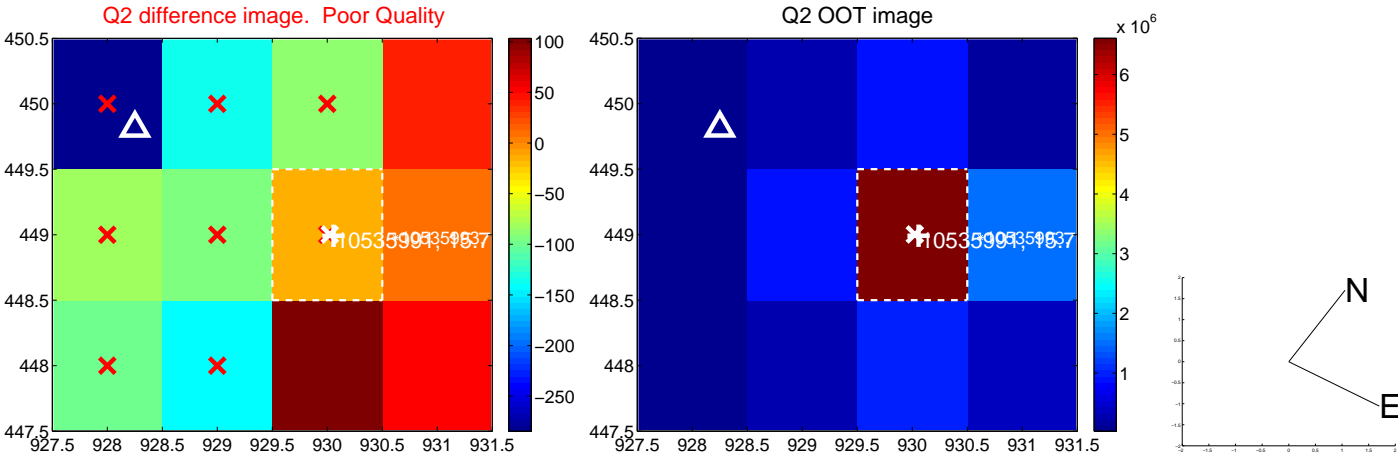
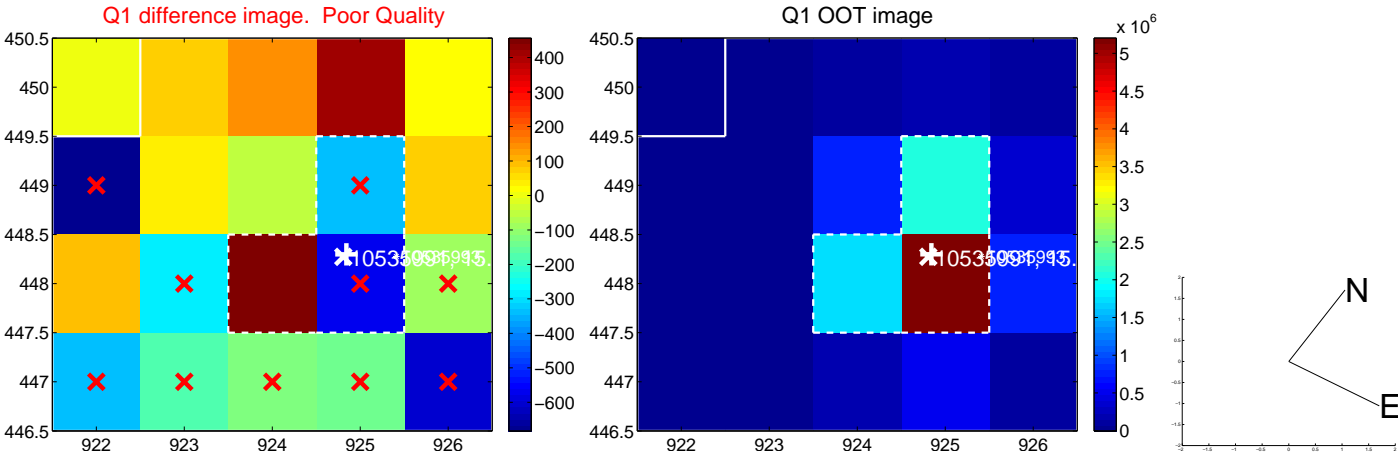
offset from photometric centroids



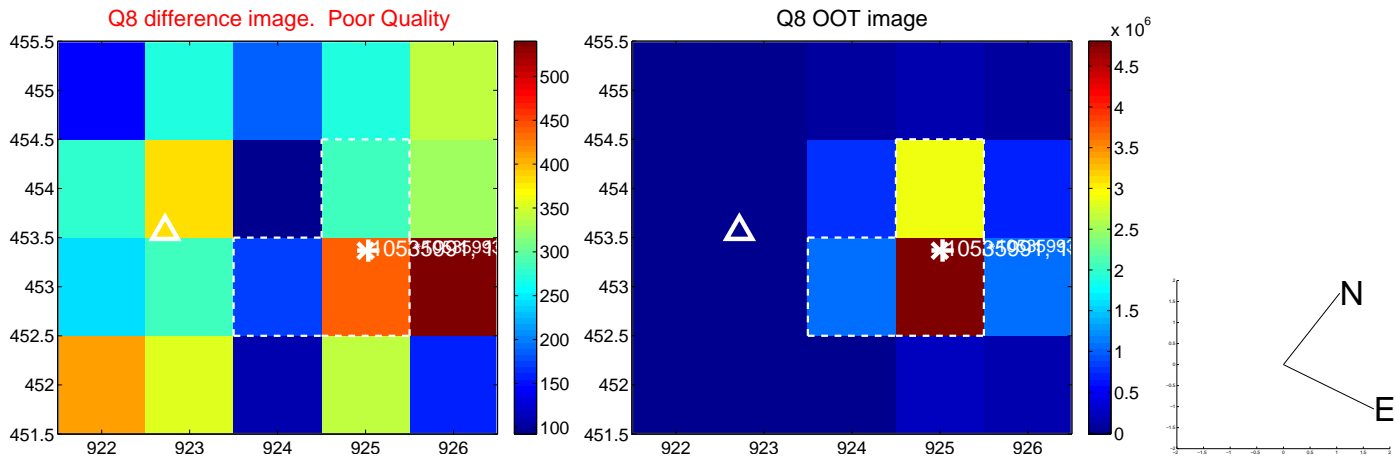
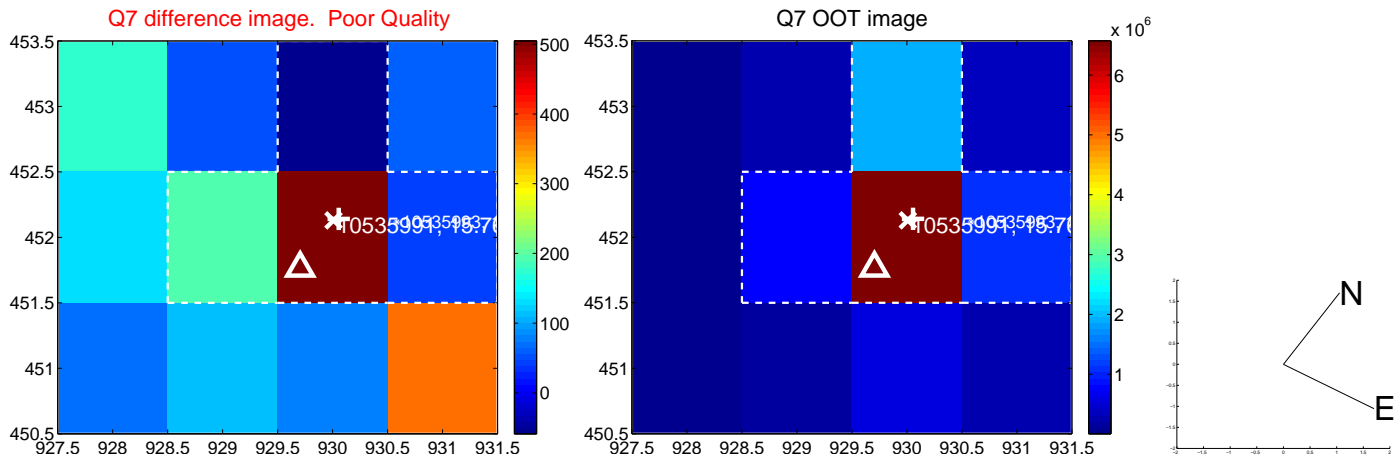
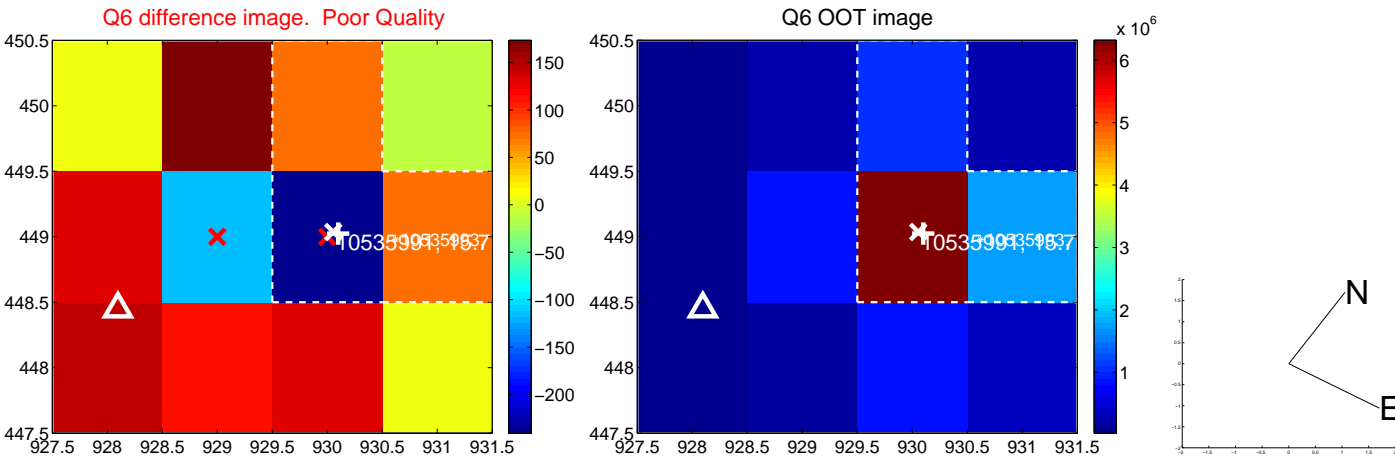
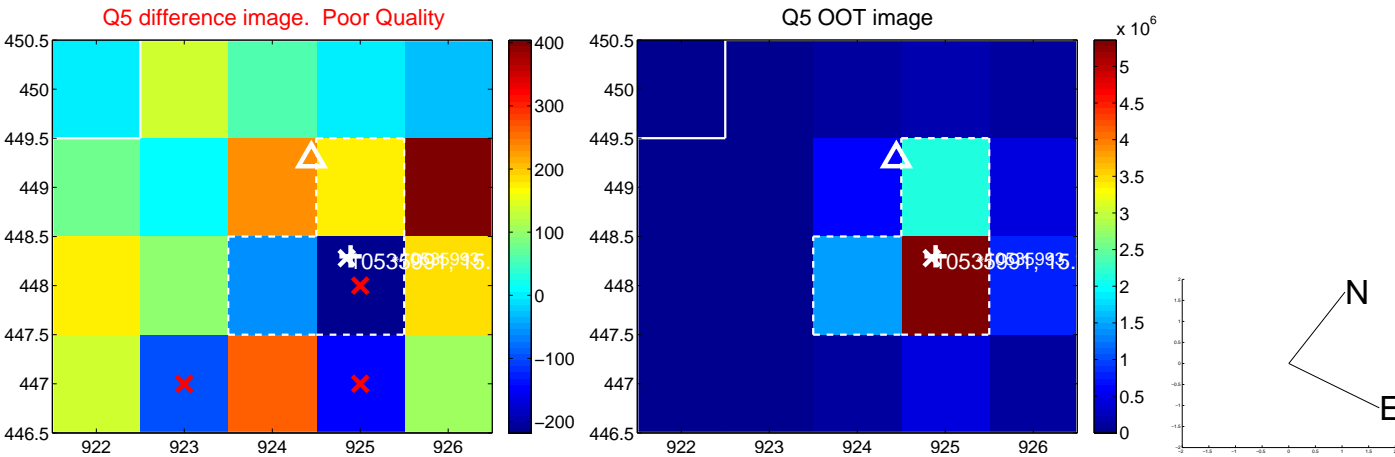
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



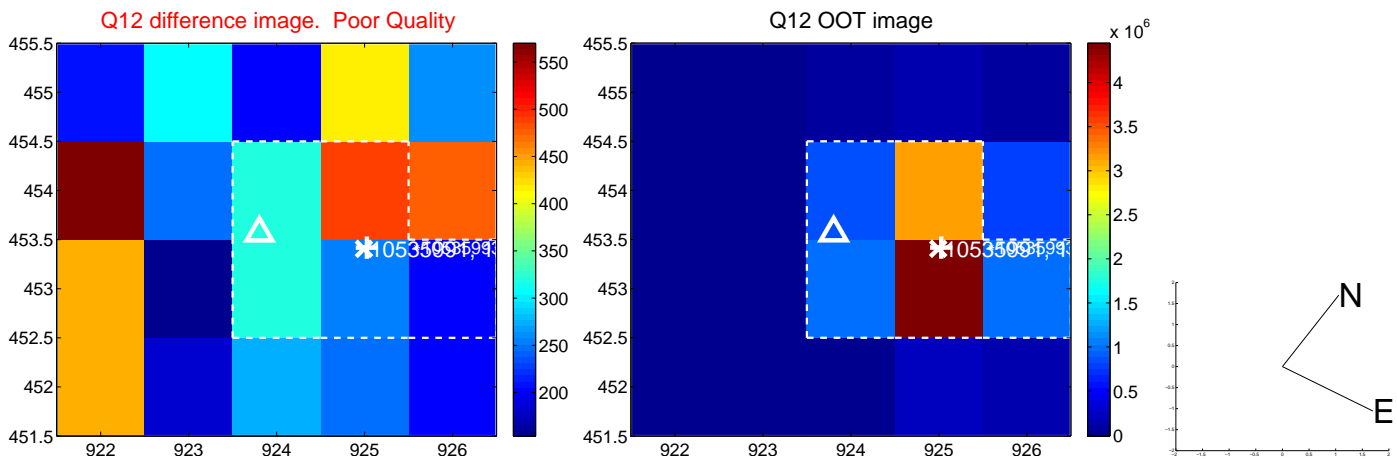
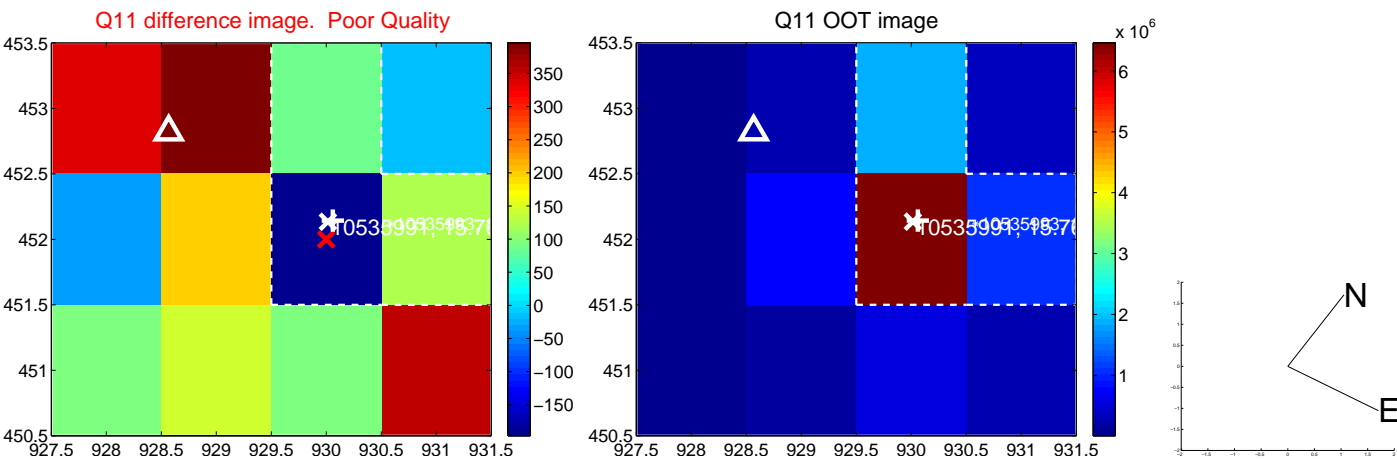
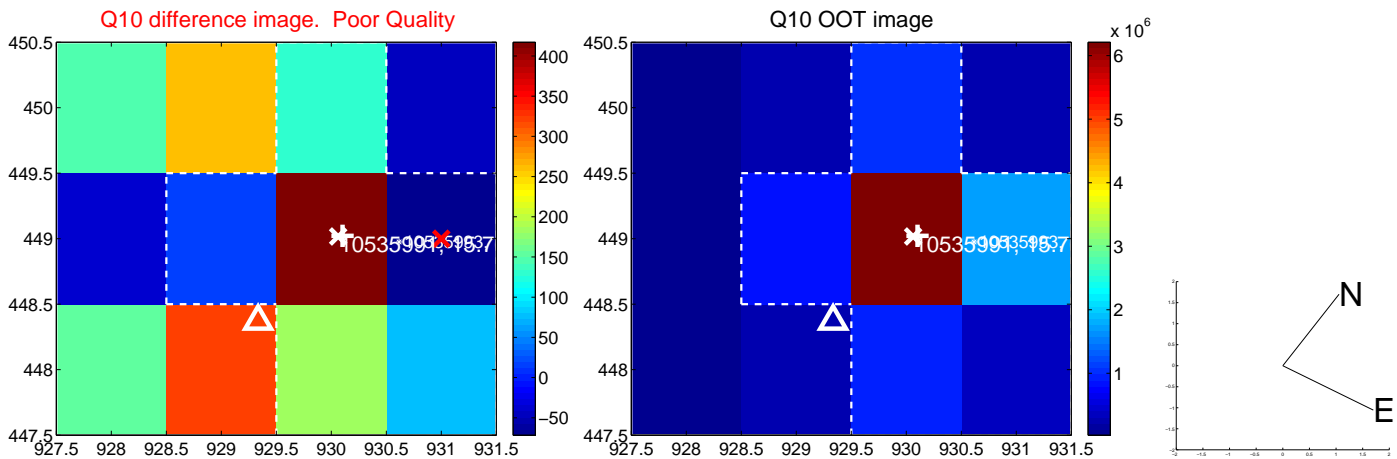
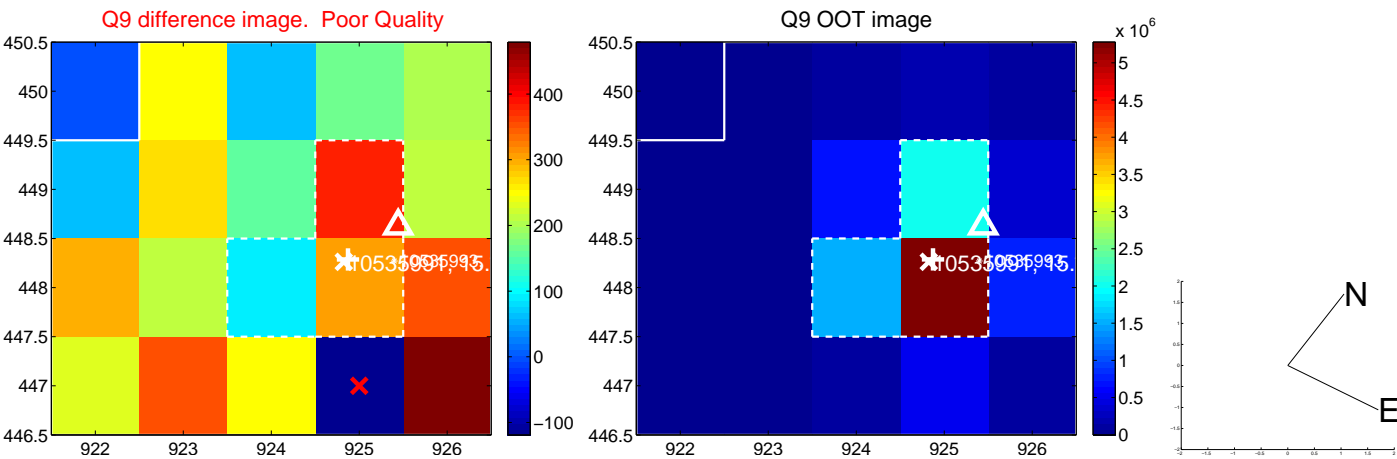
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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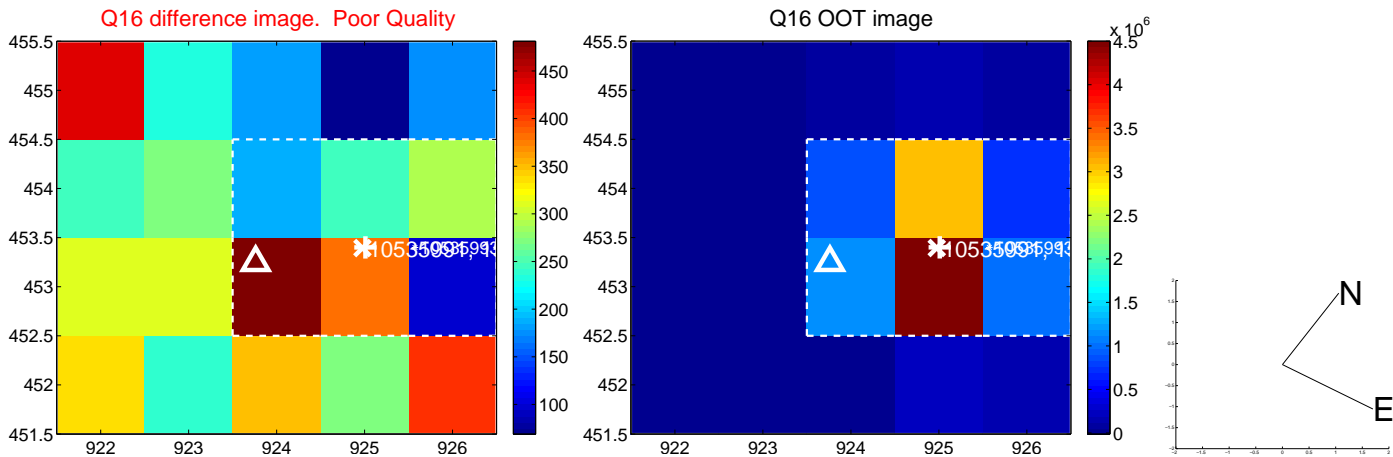
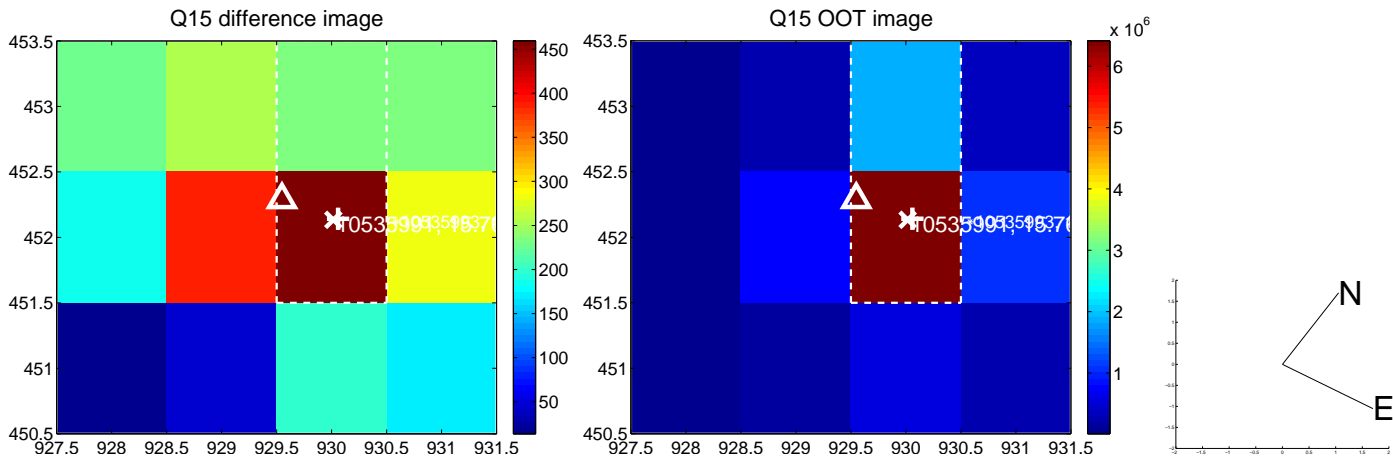
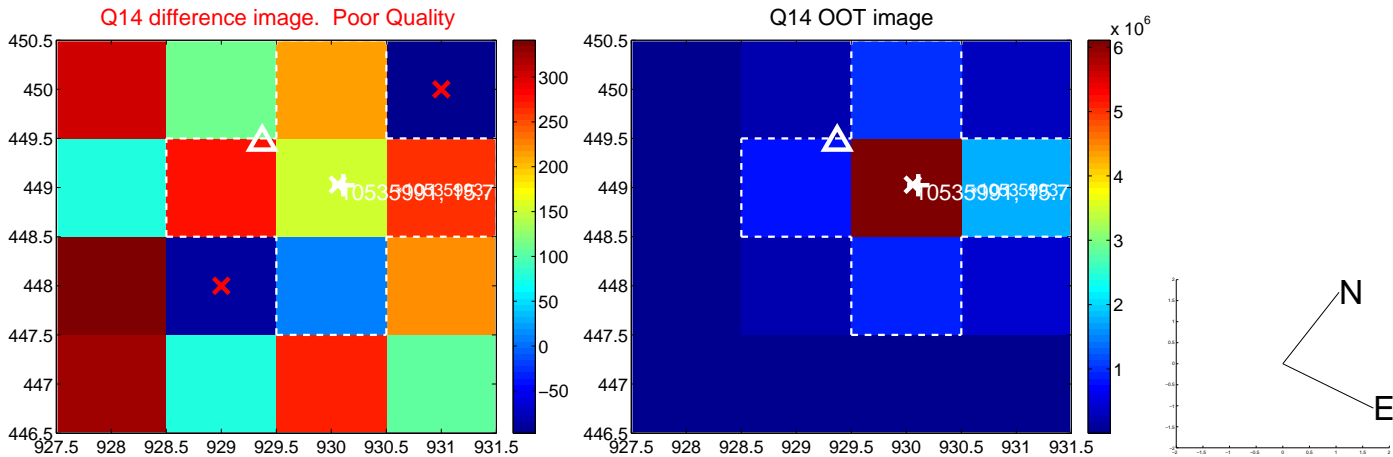
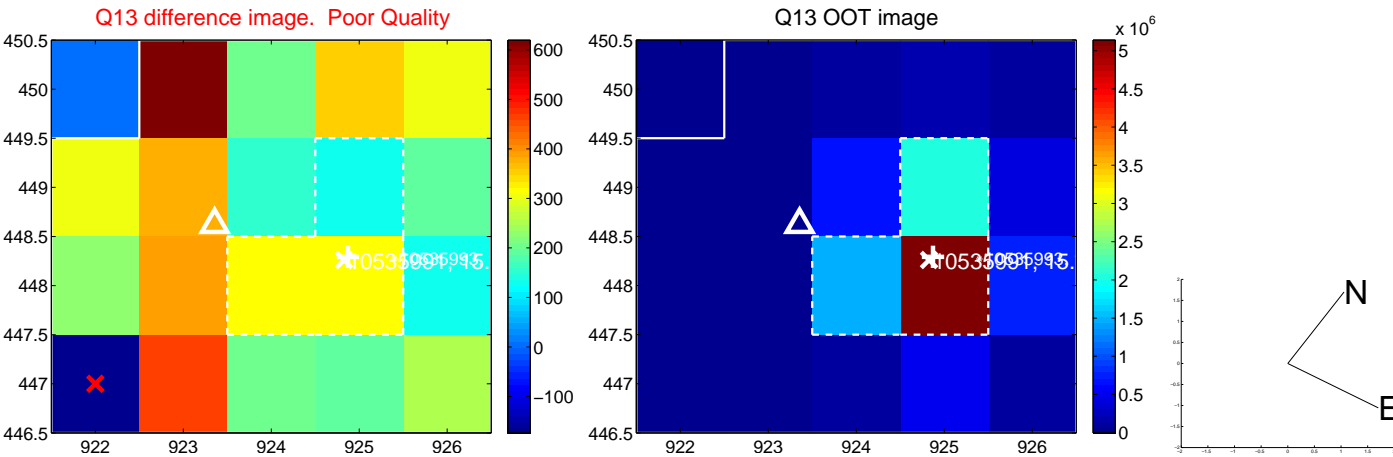


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

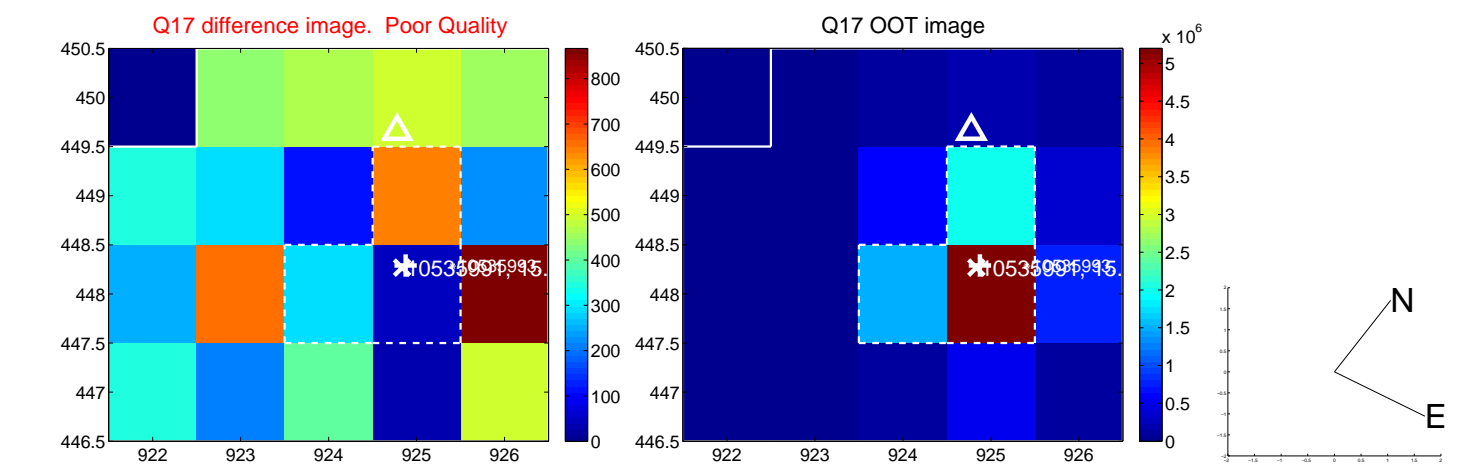




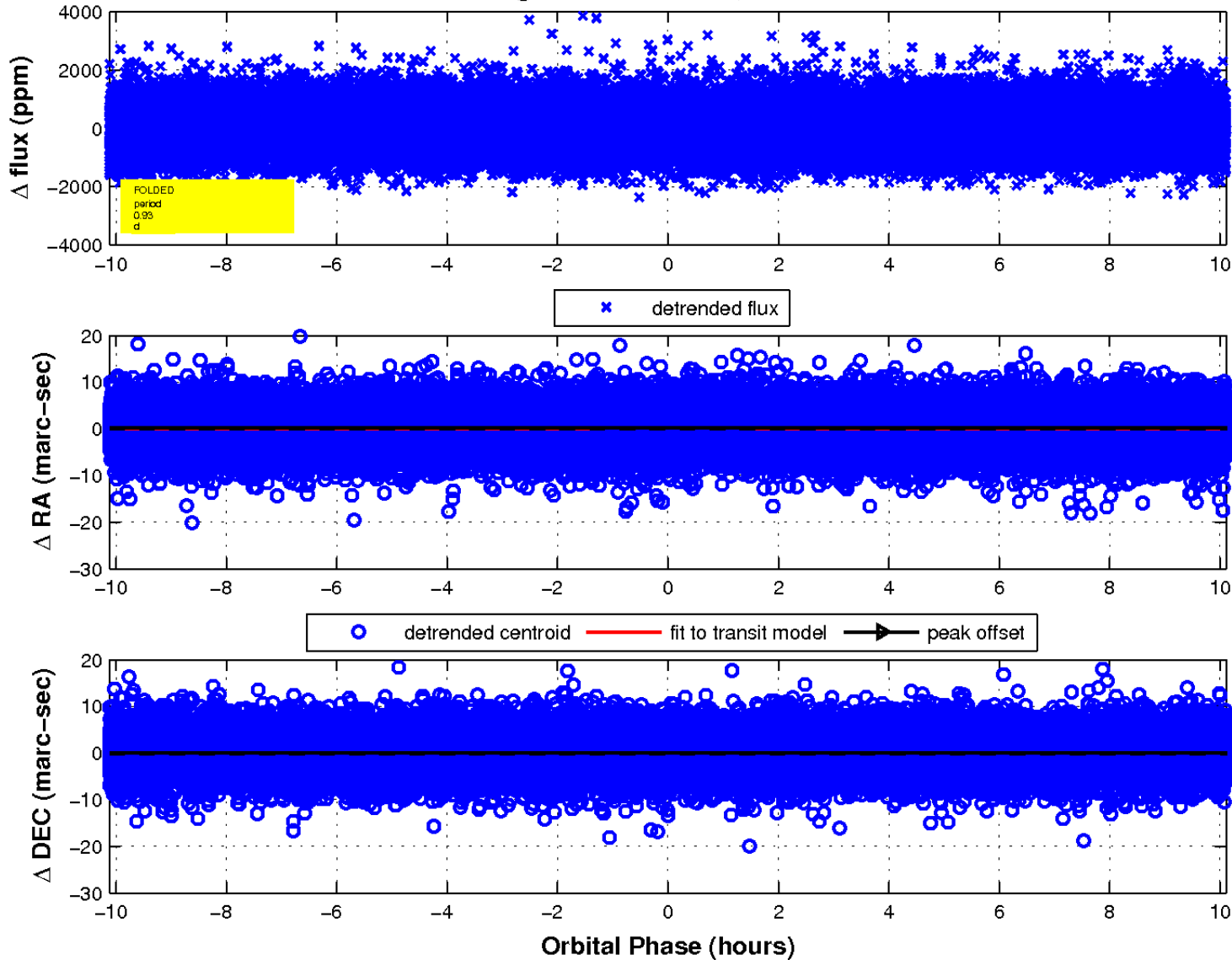
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

