

# KIC 012120943

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012120943-01	OBS	1458.01	8.981285	139.279032	4754.9	4.968	149.7	154.0	1.02	5977	6.99	153.70

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012120943-01	OBS	PC	0.98	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.

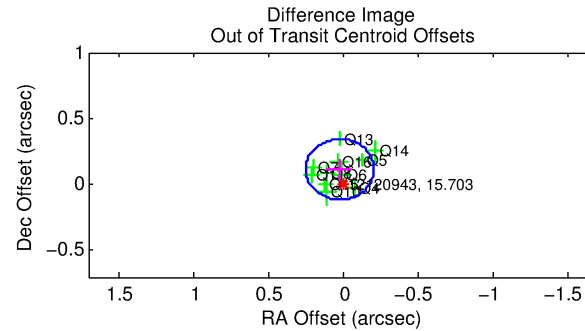
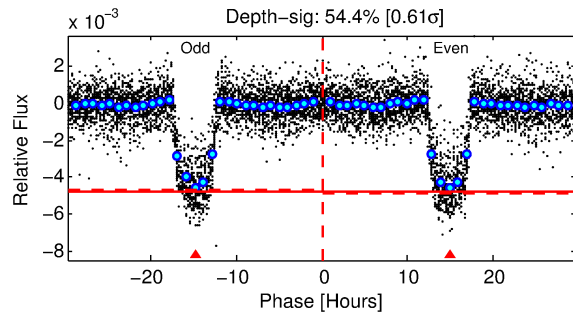
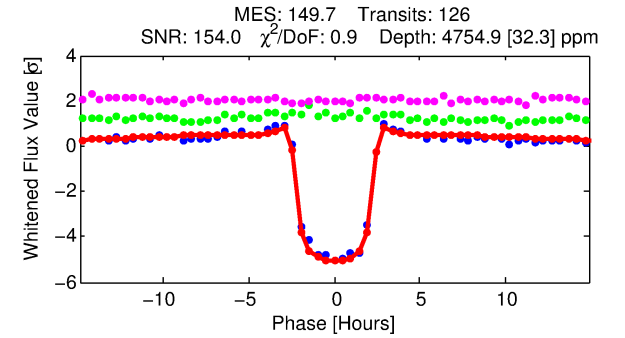
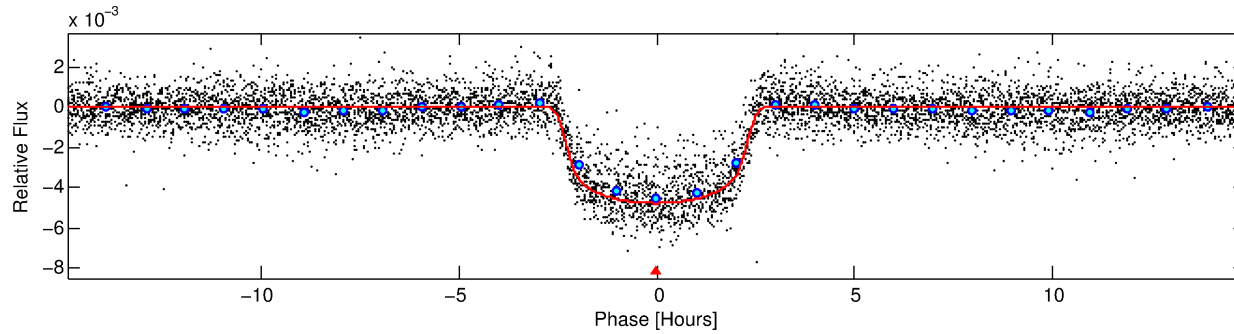
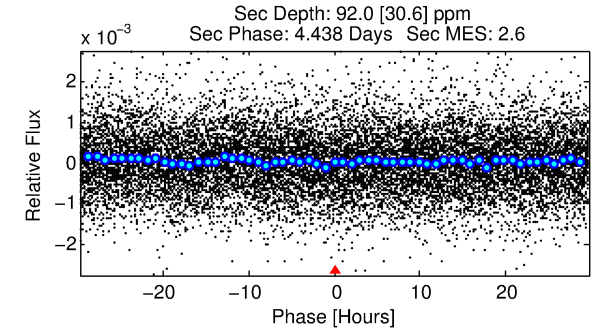
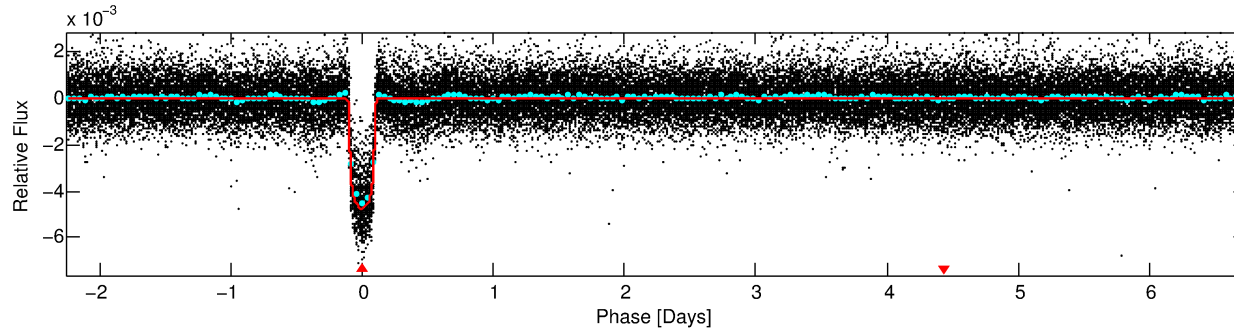
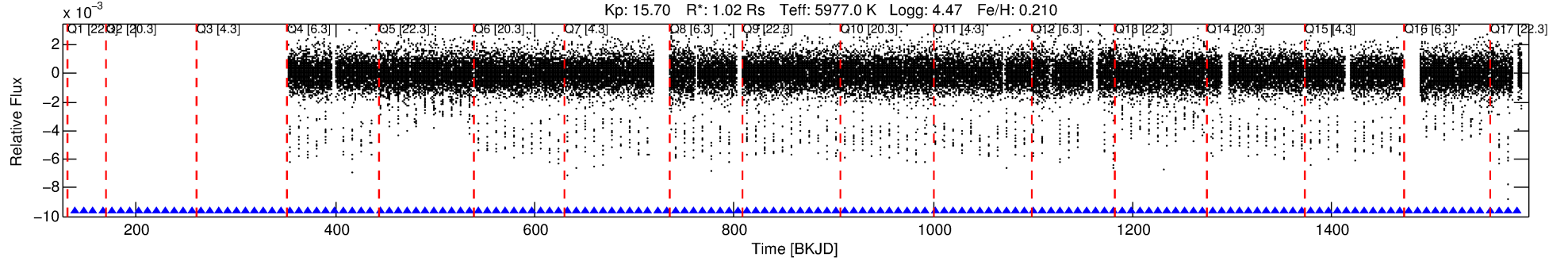
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012120943-01

No Significant Match Found

# DV One-Page Summary

KIC: 12120943 Candidate: 1 of 1 Period: 8.981 d  
KOI: K01458.01 Corr: 0.995



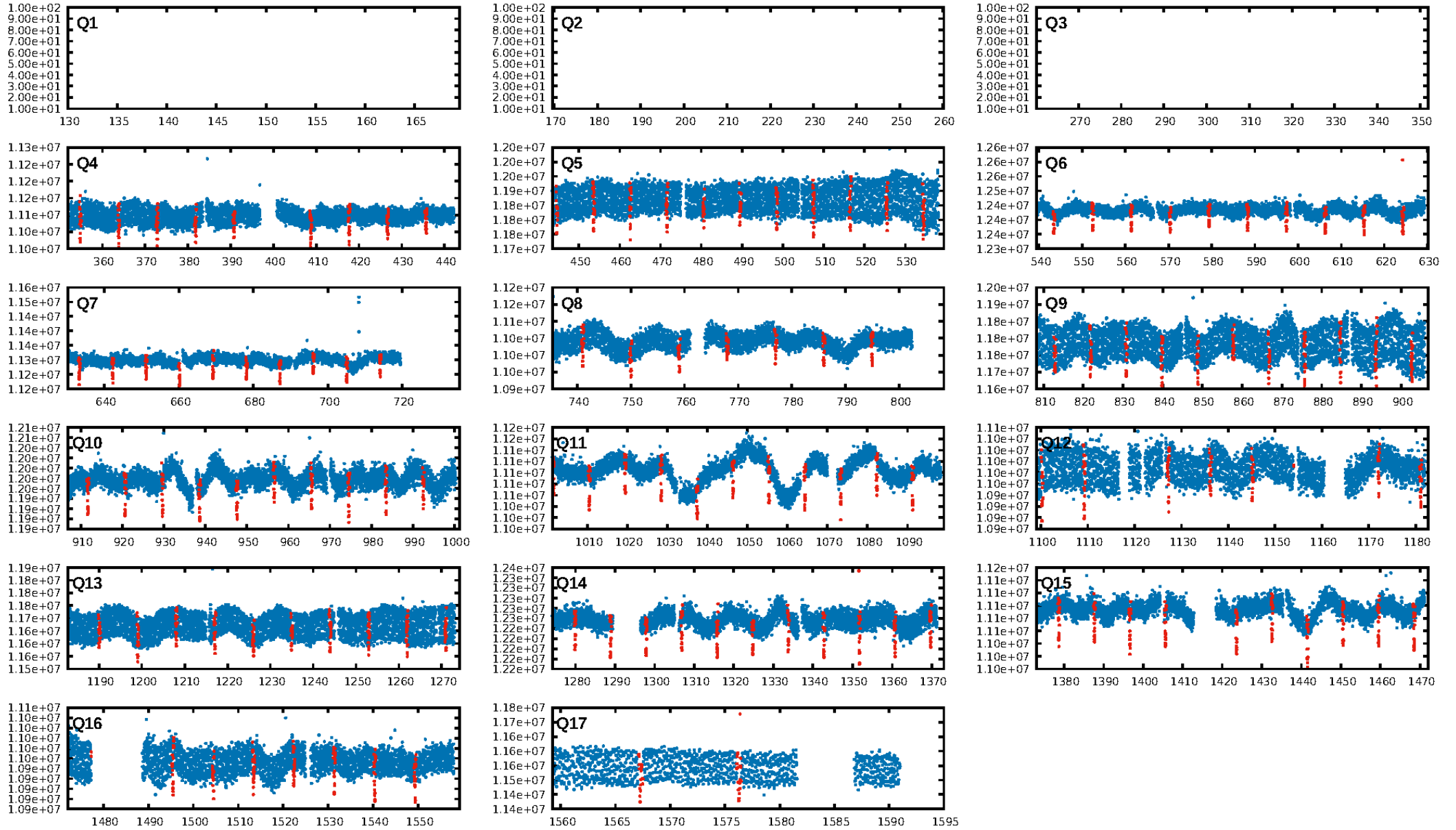
## DV Fit Results:

Period = 8.98128 [0.00001] d  
Epoch = 139.2790 [0.0007] BKJD  
Rp/R\* = 0.0627 [0.0026]  
a/R\* = 14.67 [2.70]  
b = 0.06 [3.09]  
Seff = 153.70 [58.17]  
Teq = 898 [85] K  
Rp = 6.99 [1.92] Re  
a = 0.0882 [0.0206] AU  
Ag = 8.04 [3.92] [1.80σ]  
Teffp = 2338 [219] K [6.12σ]

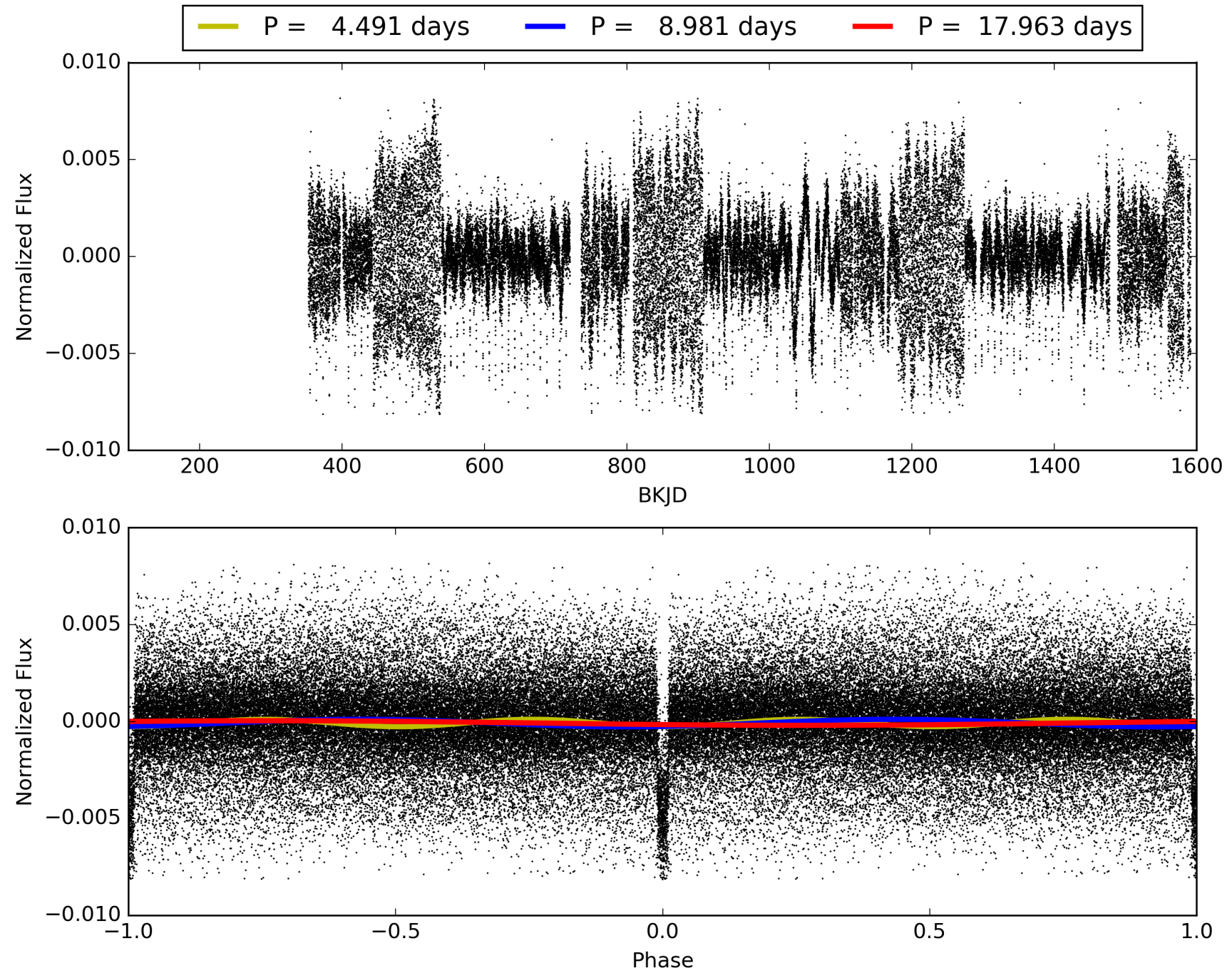
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [124/124]  
GhostDiagnostic-chr: 7.377  
Centroid-sig: 0.0%  
Centroid-so: 0.490 arcsec [3.04σ]  
OotOffset-rm: 0.116 arcsec [1.51σ]  
KicOffset-rm: 0.094 arcsec [1.18σ]  
OotOffset-st: 3/3/3/2 [11]  
KicOffset-st: 3/3/3/2 [11]  
DiffImageQuality-fgm: 1.00 [11/11]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 012120943-01, PDC Light Curves

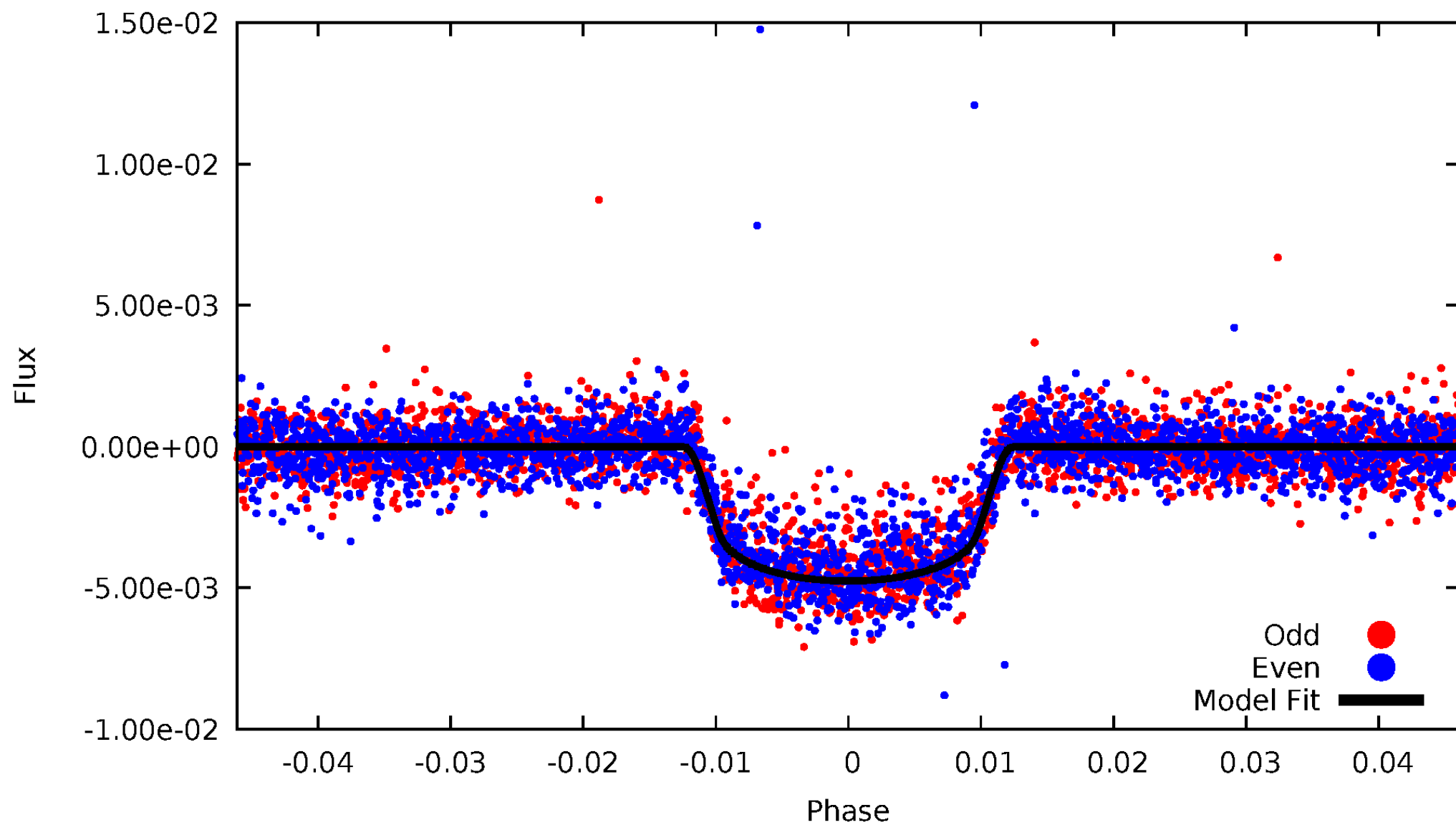


TCE 012120943-01



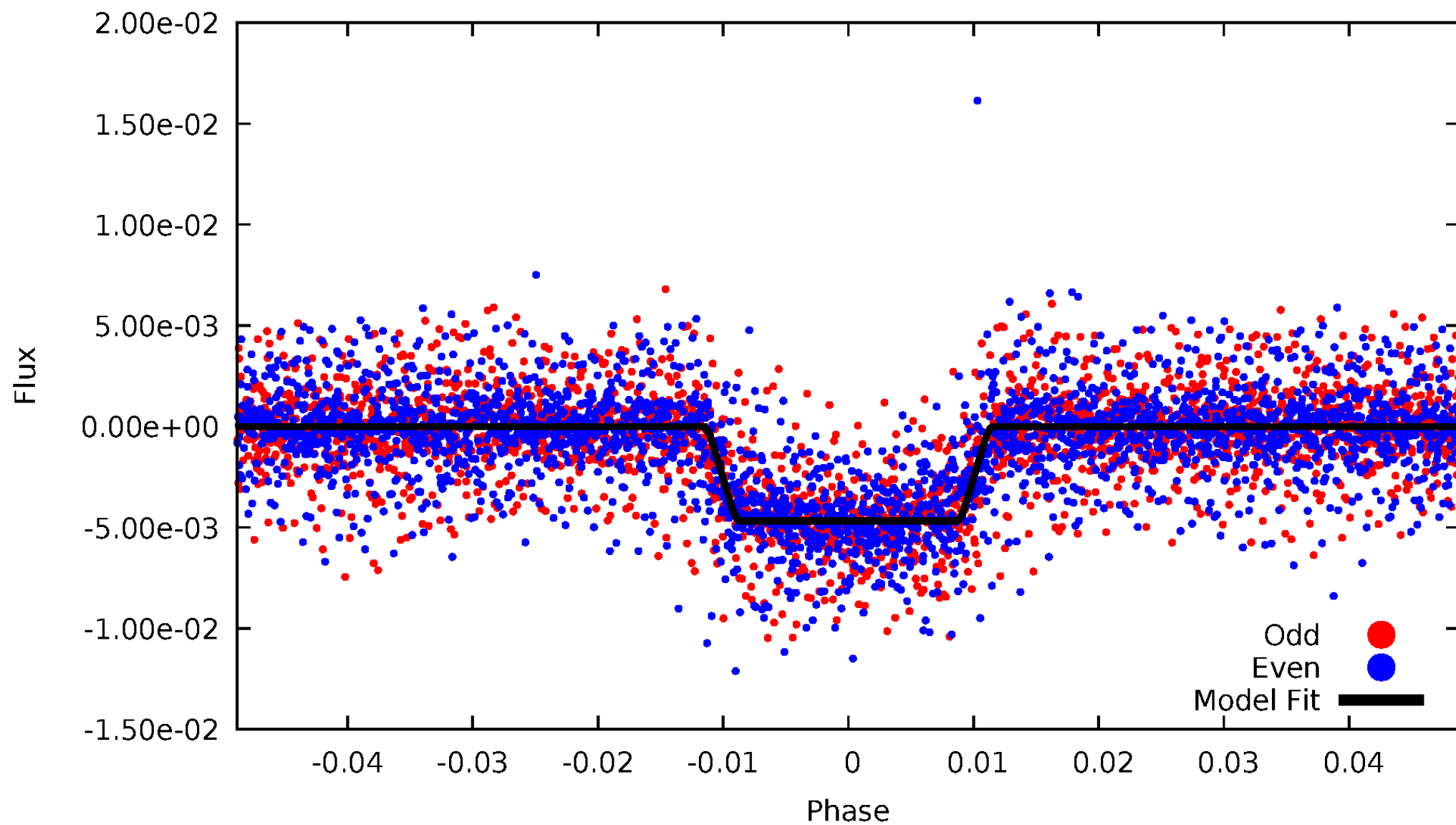
# DV Odd/Even

TCE 012120943-01



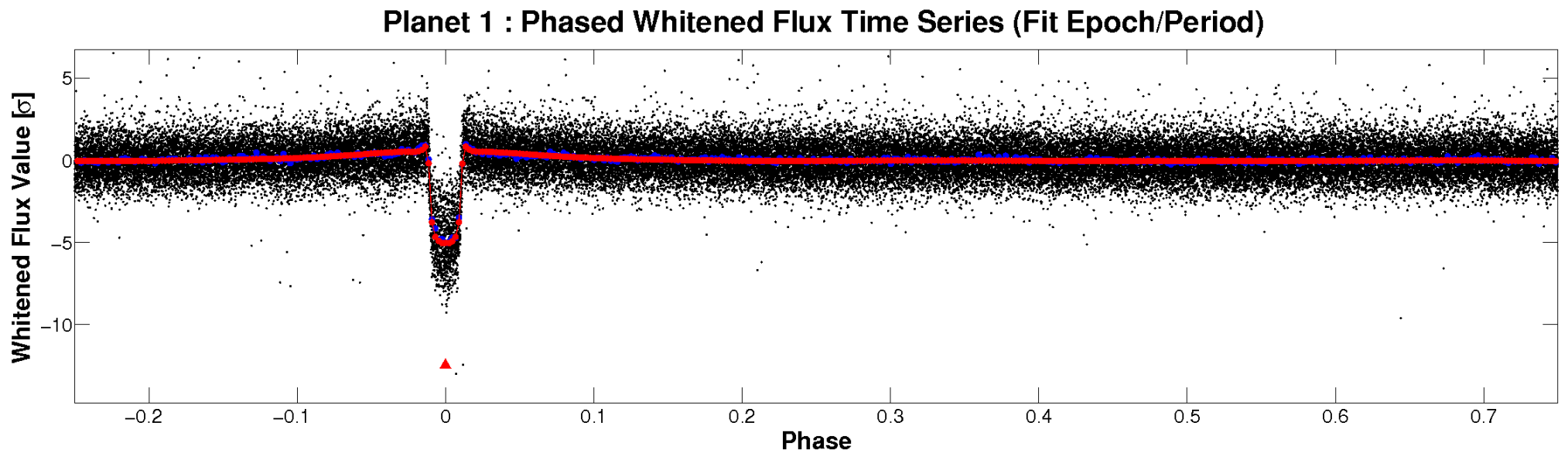
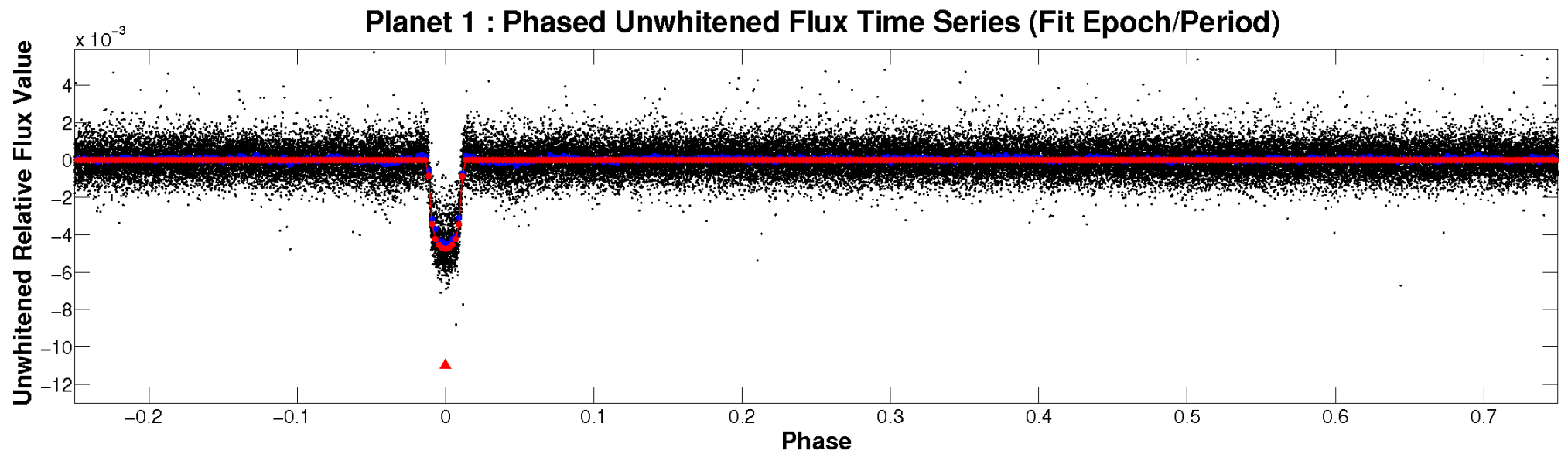
# ALT Odd/Even

TCE 012120943-01



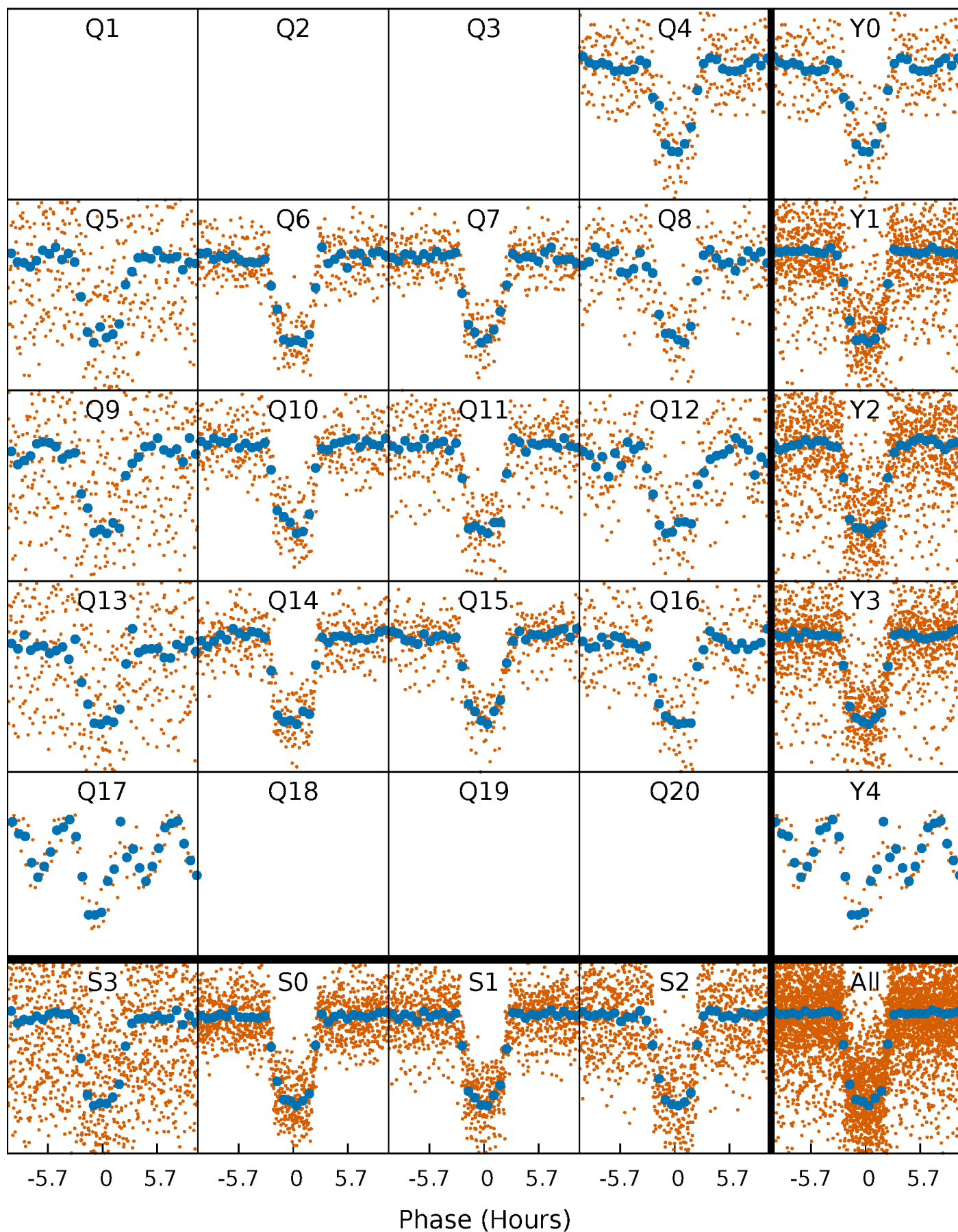


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

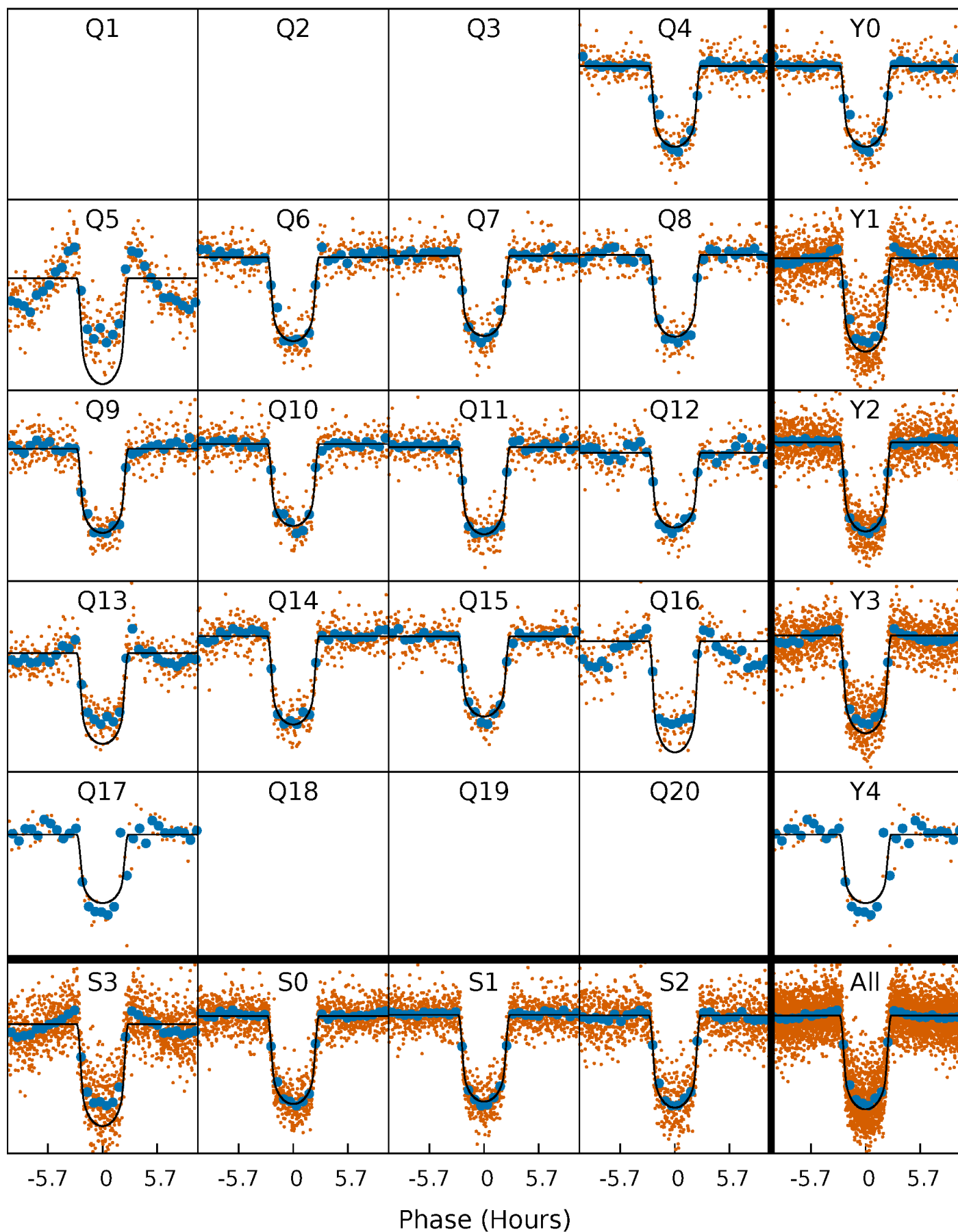
TCE 012120943-01 P= 8.981285 Days  $T_0=139.279032$  (BKJD)





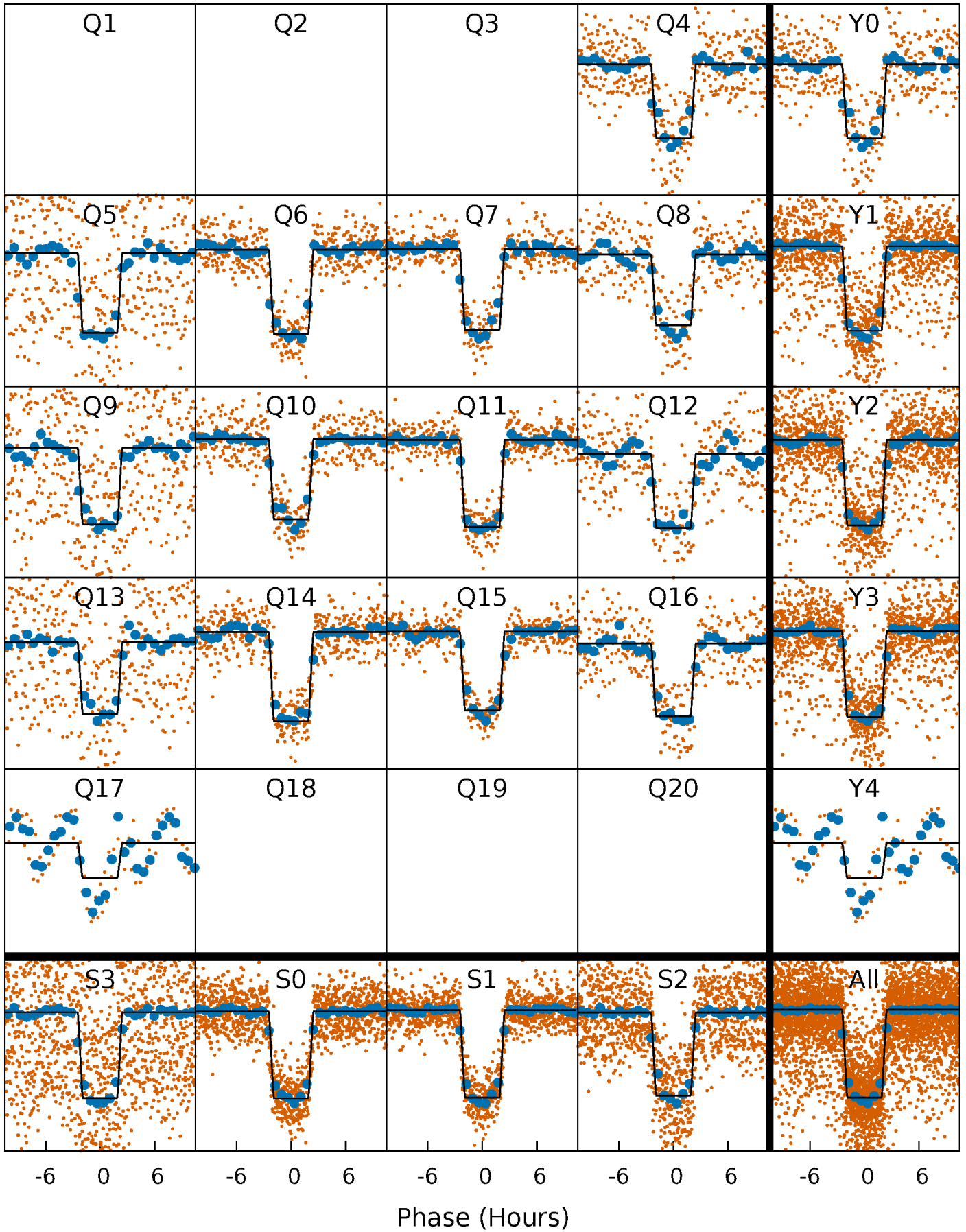
# DV Quarter-Phased Transit Curves

TCE 012120943-01 P= 8.981285 Days  $T_0=139.279032$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

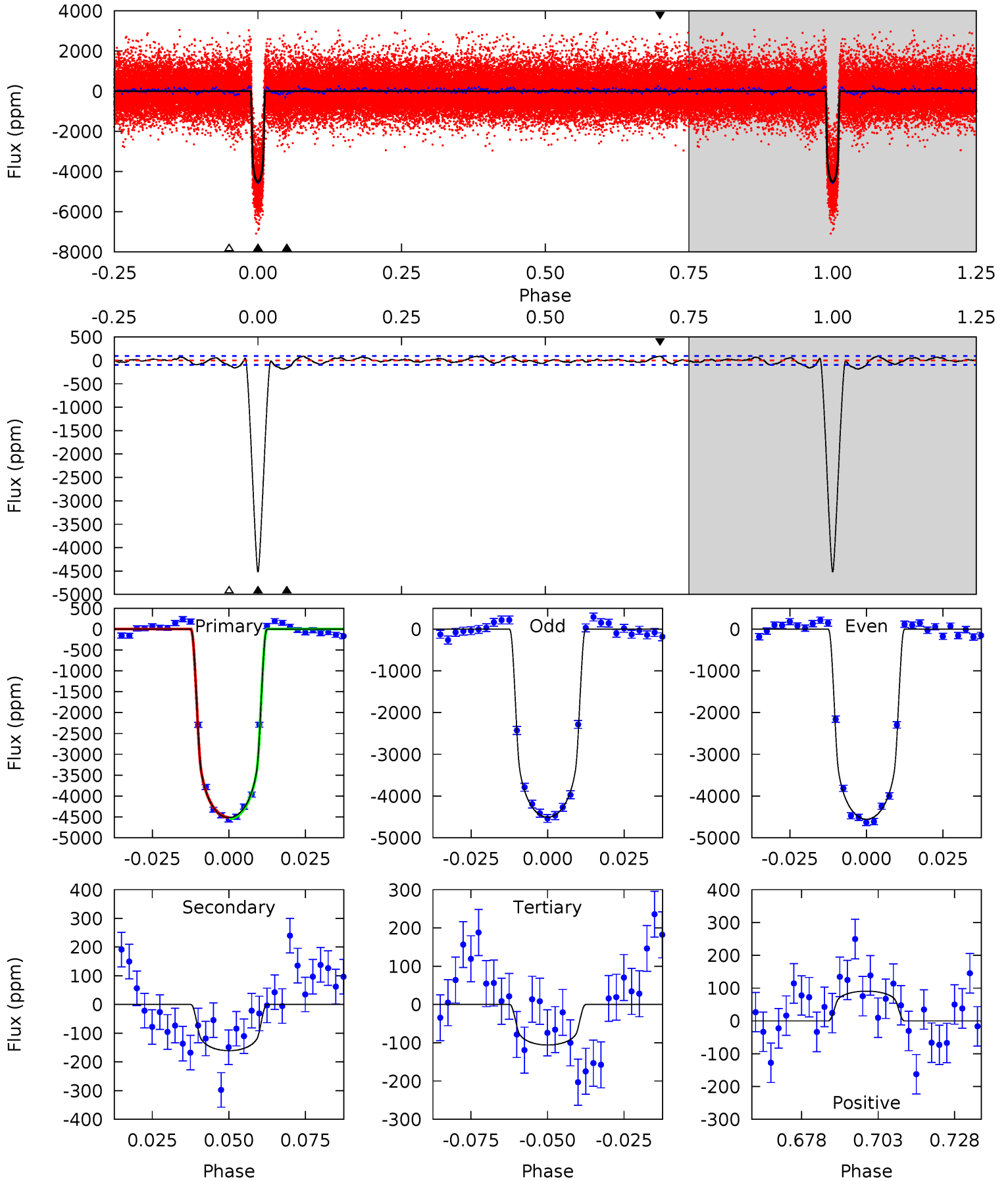
TCE 012120943-01 P= 8.981164 Days  $T_0=139.291278$  (BKJD)



# DV Model-Shift Uniqueness Test

012120943-01, P = 8.981285 Days, E = 139.279032 Days

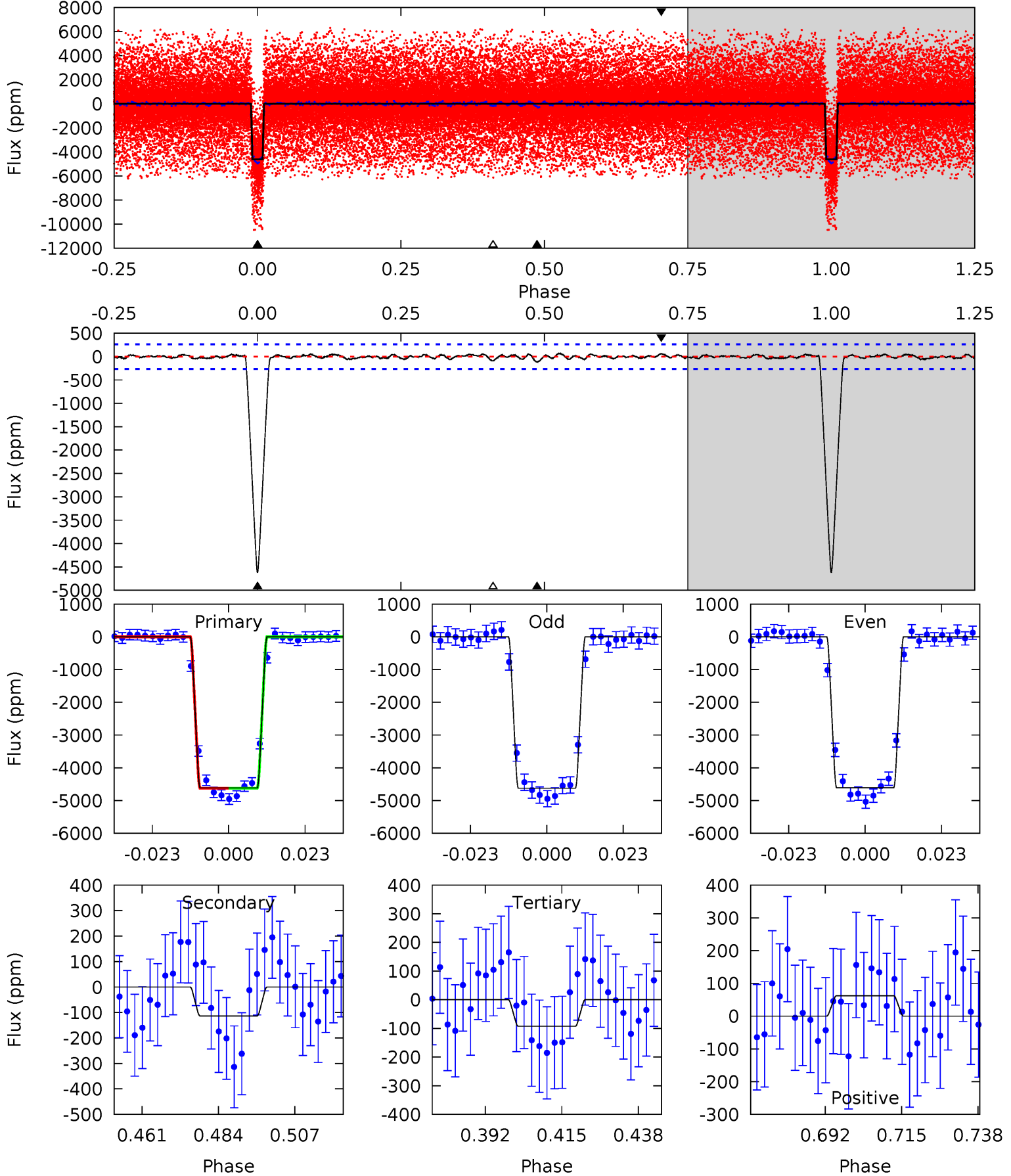
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
227.9	8.12	5.34	4.57	4.85	2.24	2.16	222.6	223.3	2.78	3.54	1.22	0.94	0.02	0.73



# Alt Model-Shift Uniqueness Test

012120943-01, P = 8.981164 Days, E = 139.291278 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
84.6	2.08	1.70	1.14	4.86	2.27	0.52	82.9	83.4	0.38	0.93	0.14	0.99	0.02	0.02



### Stellar Parameters For KIC 012120943

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5977^{+187}_{-229}$	$4.473^{+0.048}_{-0.192}$	$0.210^{+0.150}_{-0.300}$	$1.022^{+0.278}_{-0.111}$	$1.133^{+0.118}_{-0.145}$	$1.493^{+0.361}_{-0.710}$
	+3%/-4%	+1%/-4%	+71%/-143%	+27%/-11%	+10%/-13%	+24%/-48%
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 012120943-01 / KOI 1458.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-161 \pm 20$	$7.19^{+1.07}_{-0.66}$	$1279^{+85}_{-67}$	$3237^{+107}_{-100}$	$13^{+3}_{-3}$
Alt.	$-113 \pm 55$	$7.92^{+1.15}_{-0.72}$	$1282^{+89}_{-66}$	$2995^{+208}_{-249}$	$7.414^{+4.288}_{-3.623}$

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

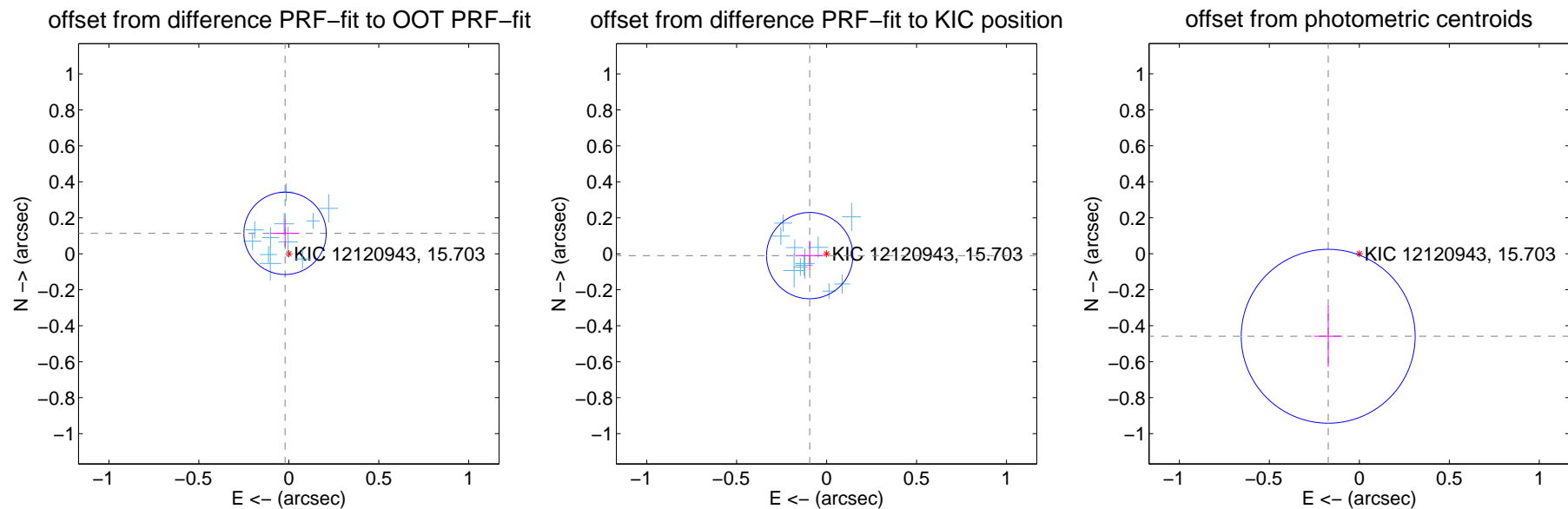
## DV Centroid Data

Supplemental centroid analysis for 012120943-01. Kepler magnitude: 15.70. Transit SNR 153.99

There are 11 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

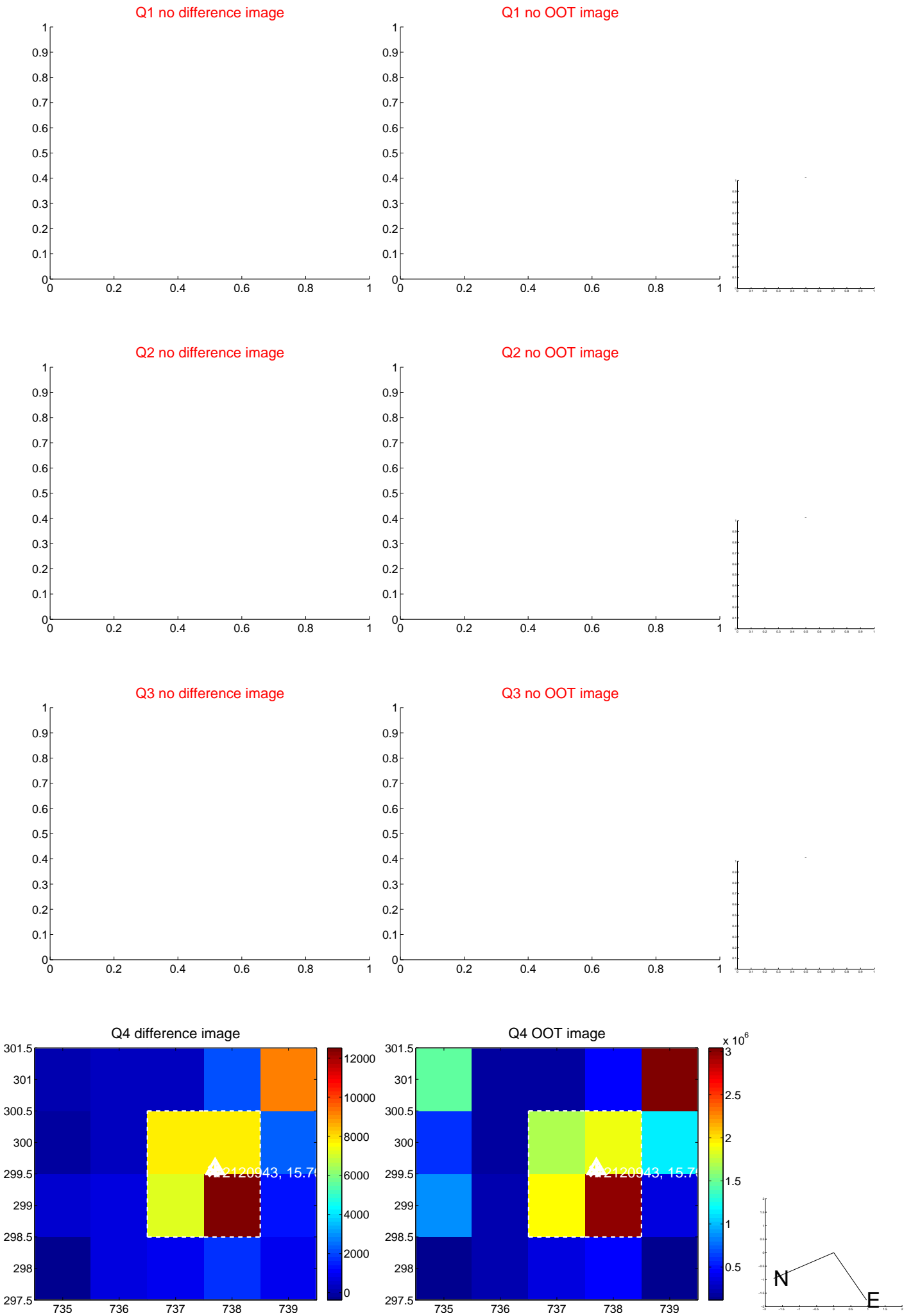
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.116 \pm 0.076$	1.51	$0.021 \pm 0.080$	$0.114 \pm 0.076$
PRF-fit source offset from KIC position	$0.094 \pm 0.080$	1.18	$0.094 \pm 0.080$	$-0.010 \pm 0.083$
photometric centroid source offset	$0.49 \pm 0.16$	3.04	$0.17 \pm 0.08$	$-0.46 \pm 0.17$



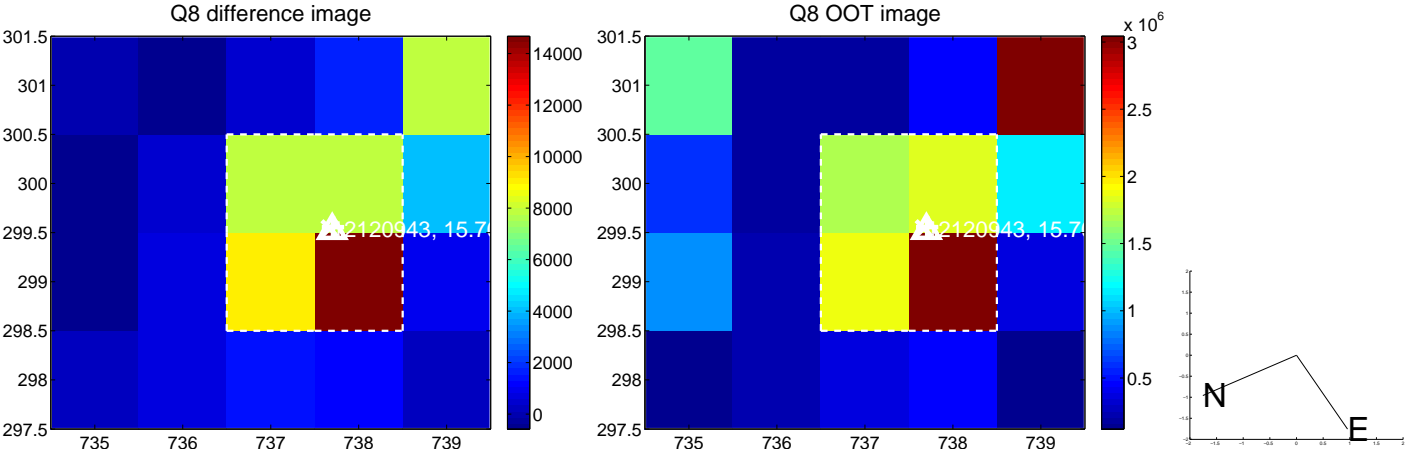
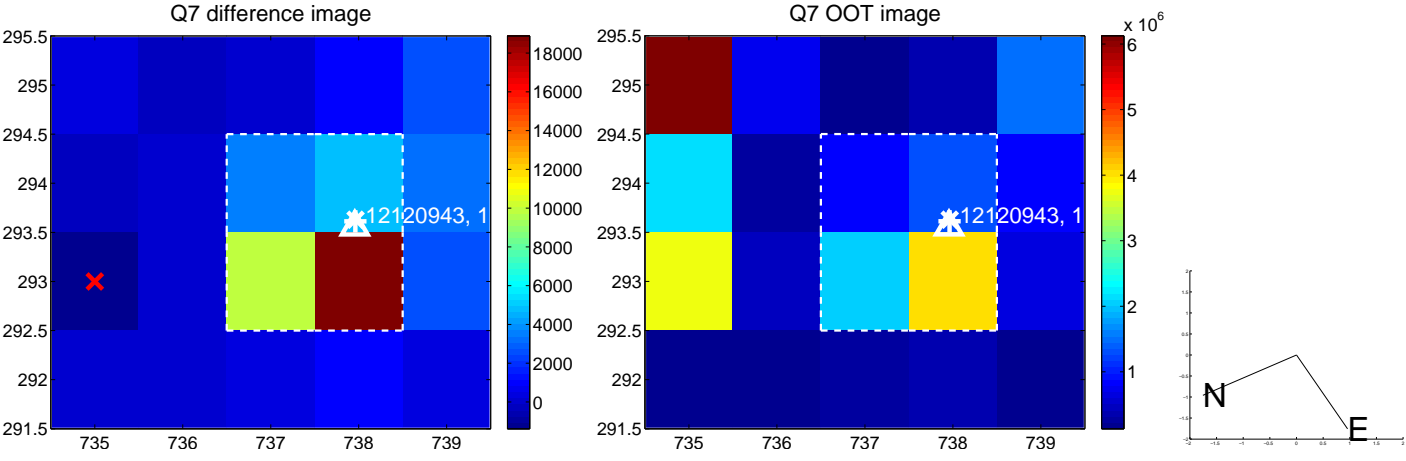
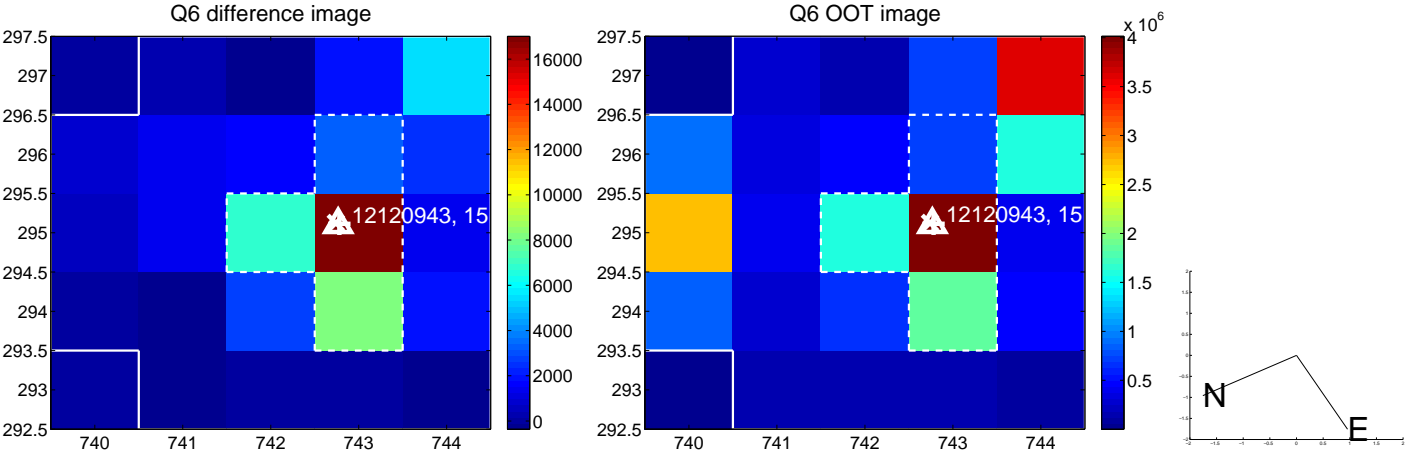
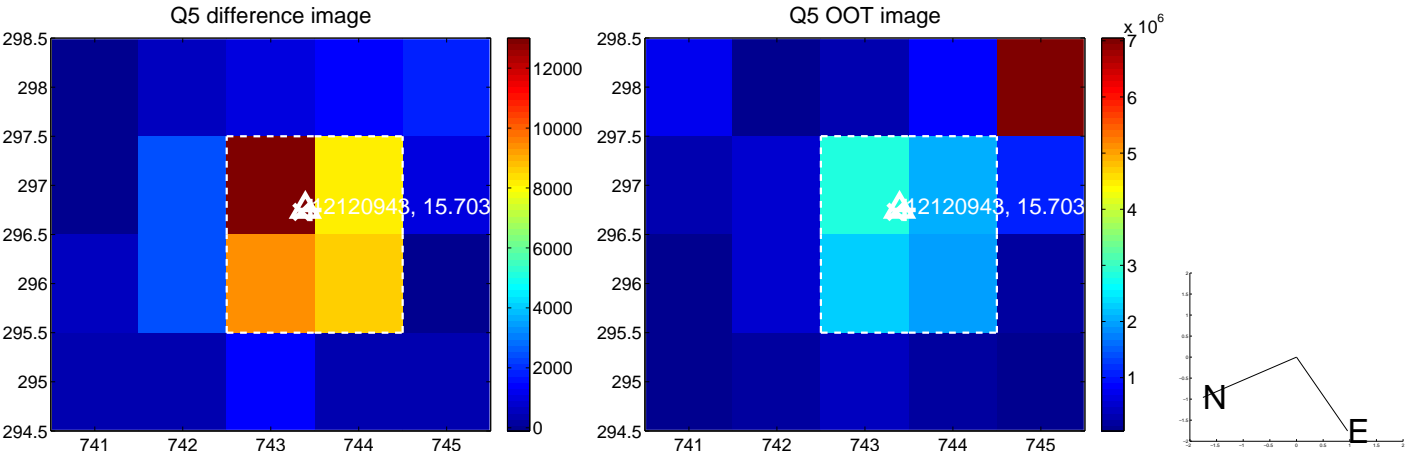
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



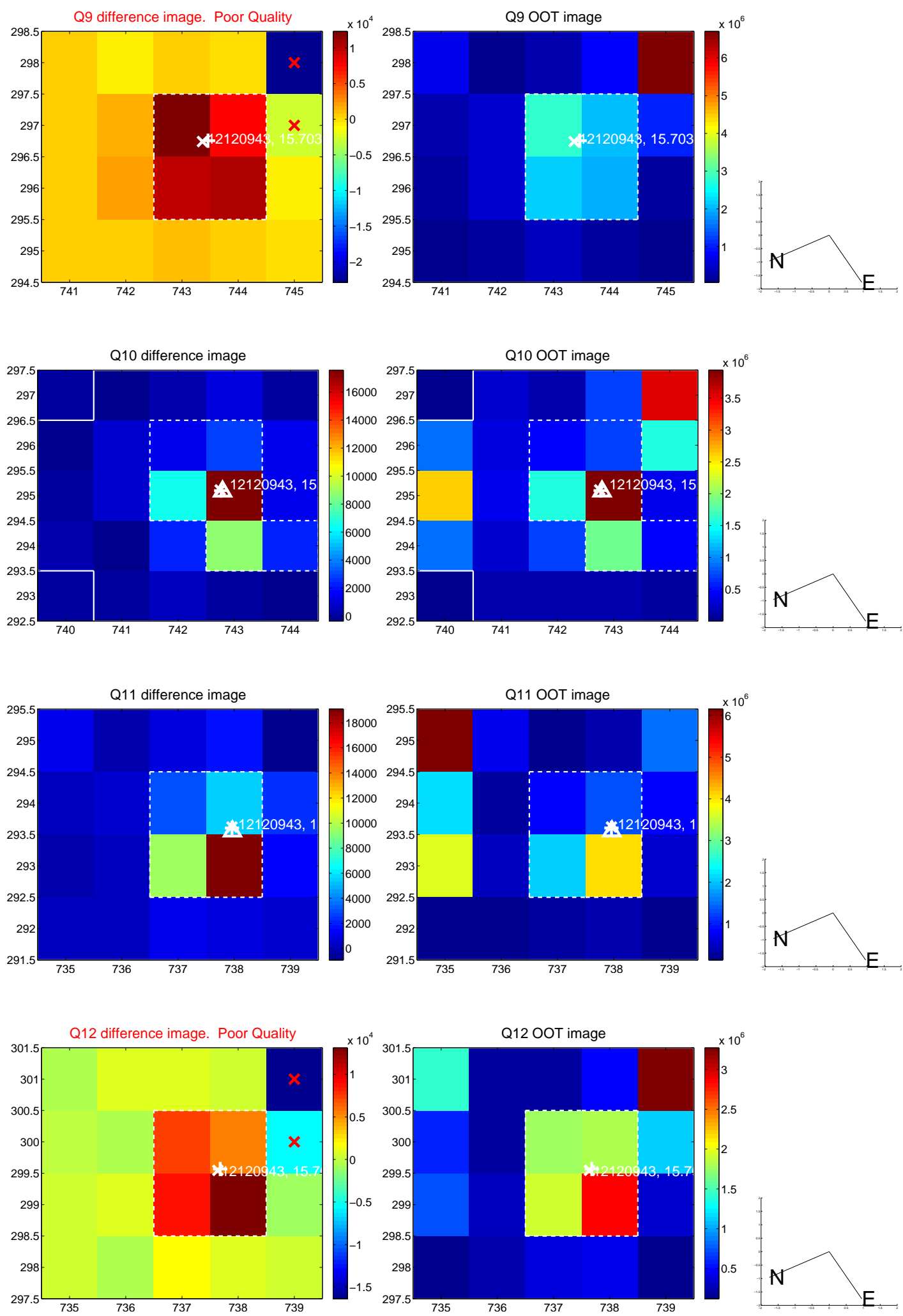
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



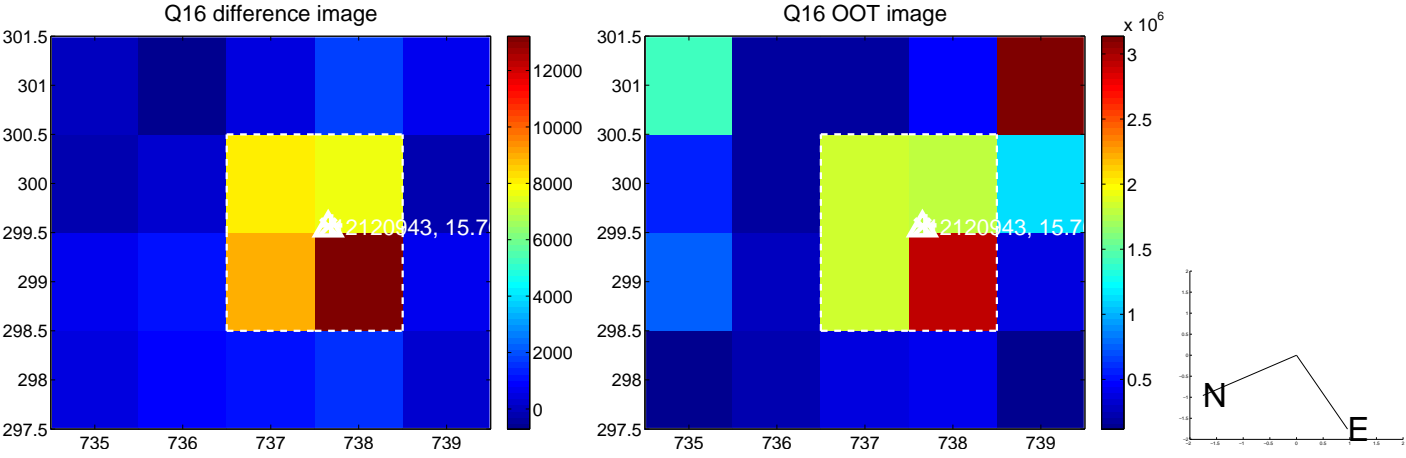
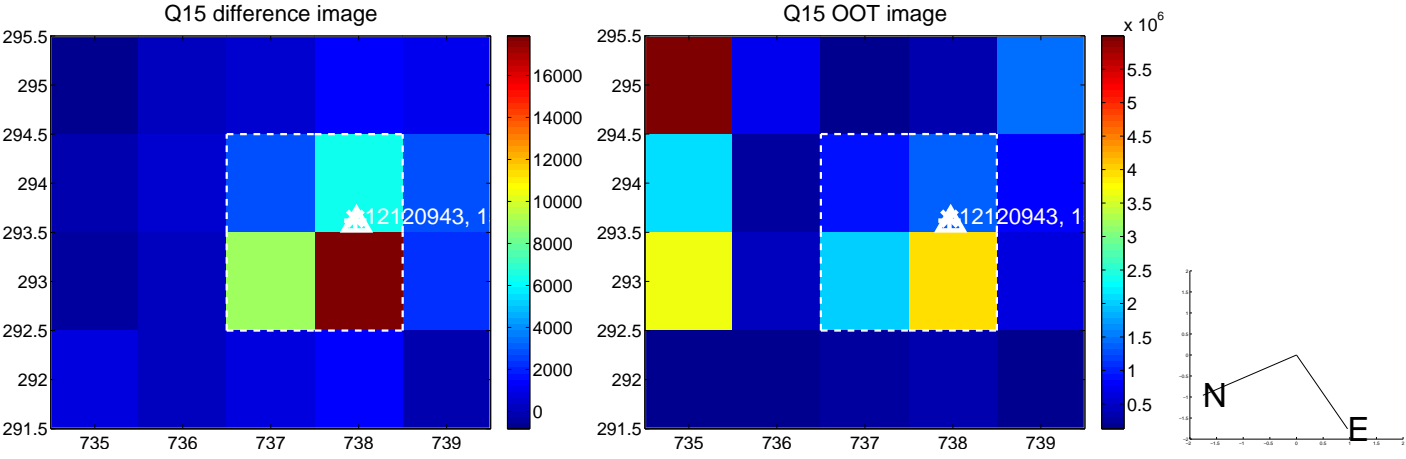
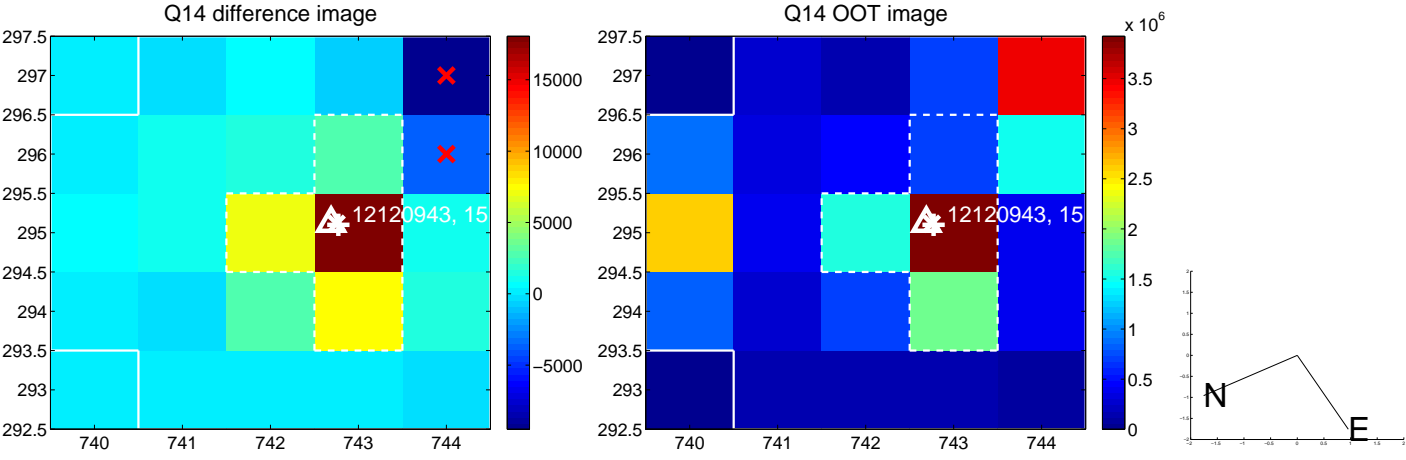
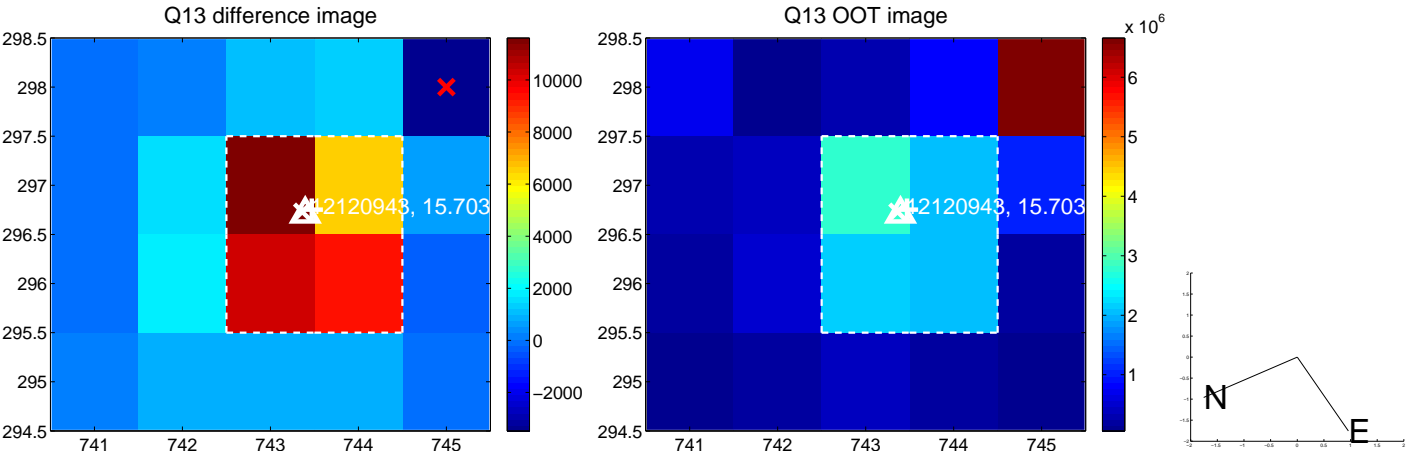
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



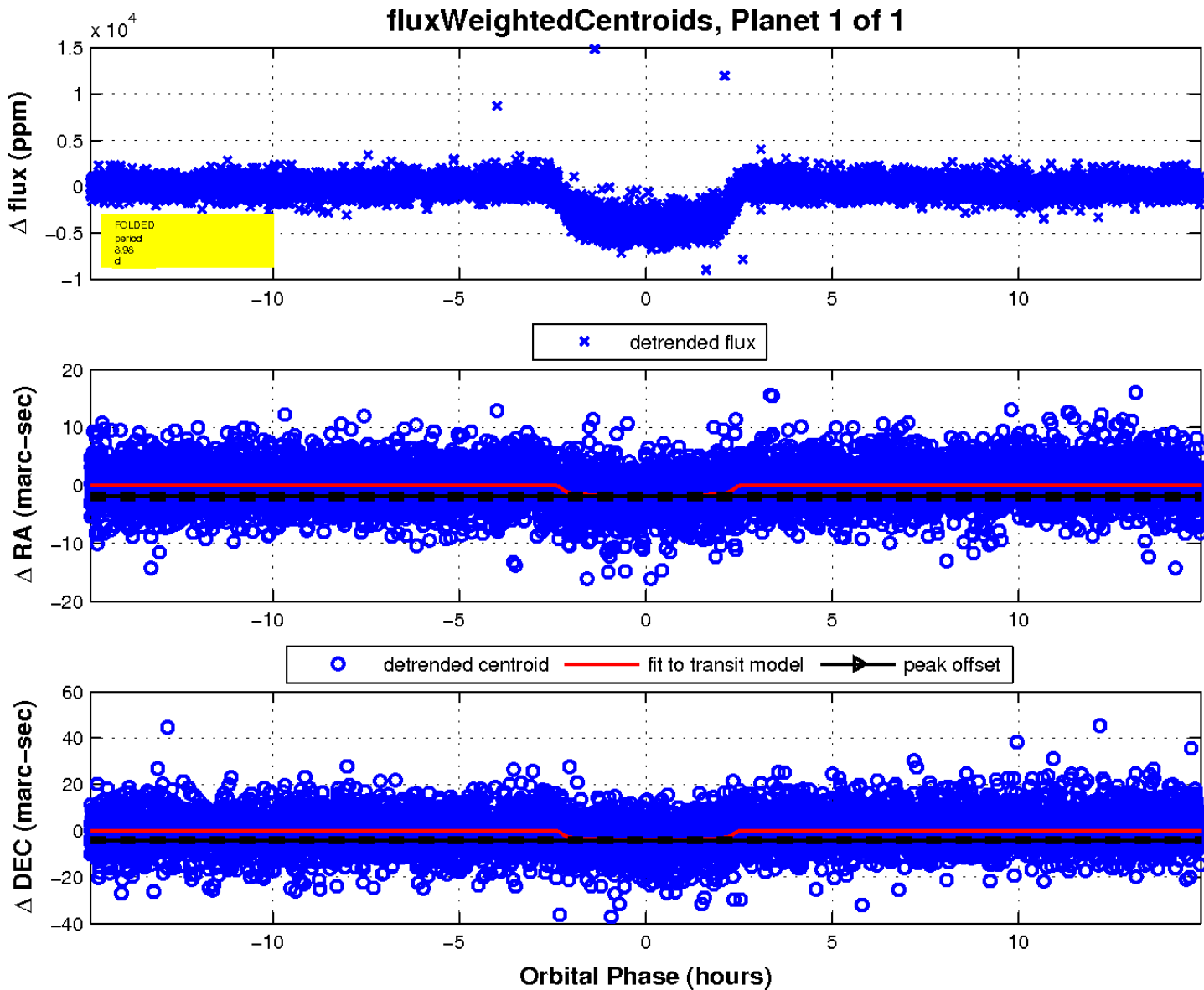
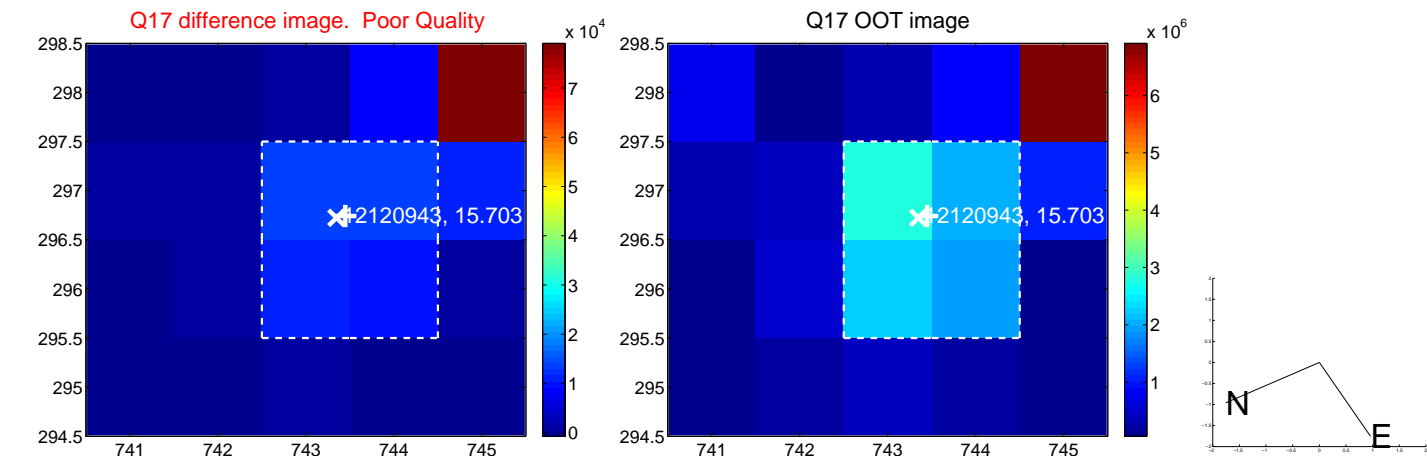
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

