

# KIC 005306720

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005306720-01	OBS	1991.01	27.364360	143.462848	2252.7	3.447	40.3	41.5	1.11	6167	8.42	44.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005306720-01	OBS	FP	0.00	0	1	1	0	DEEP_V_SHAPED—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 005306720-01

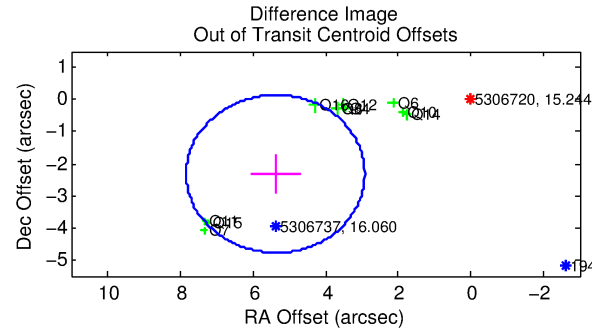
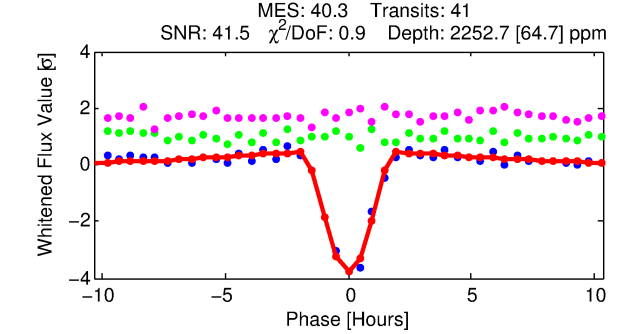
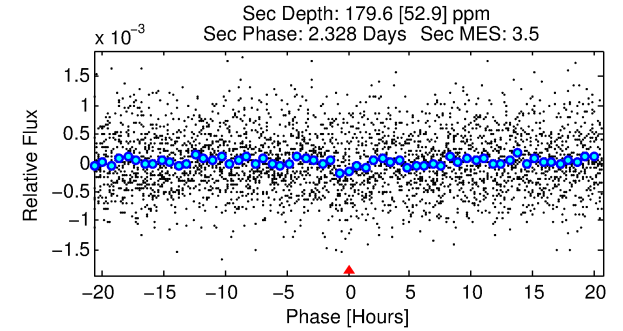
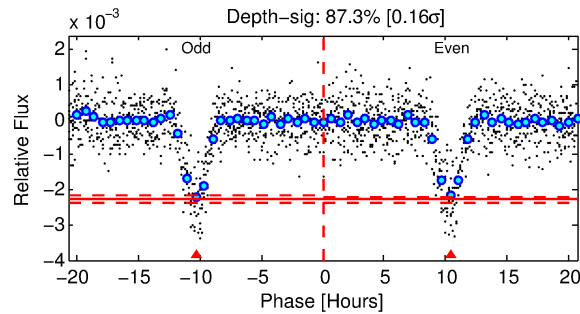
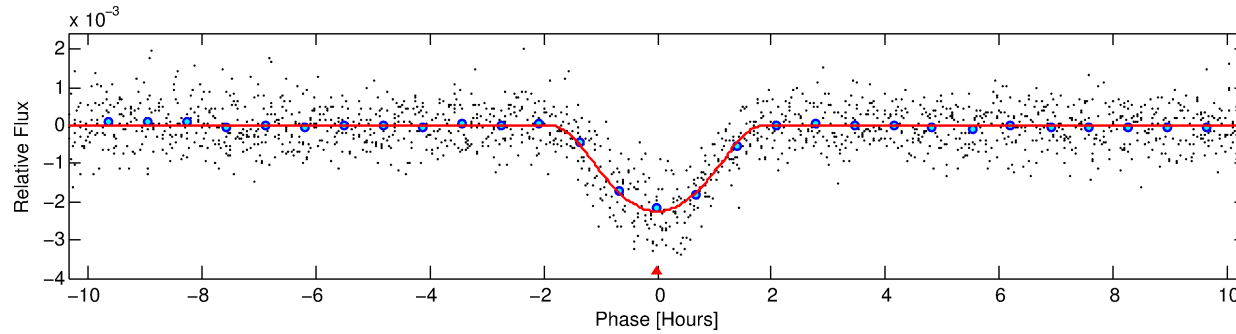
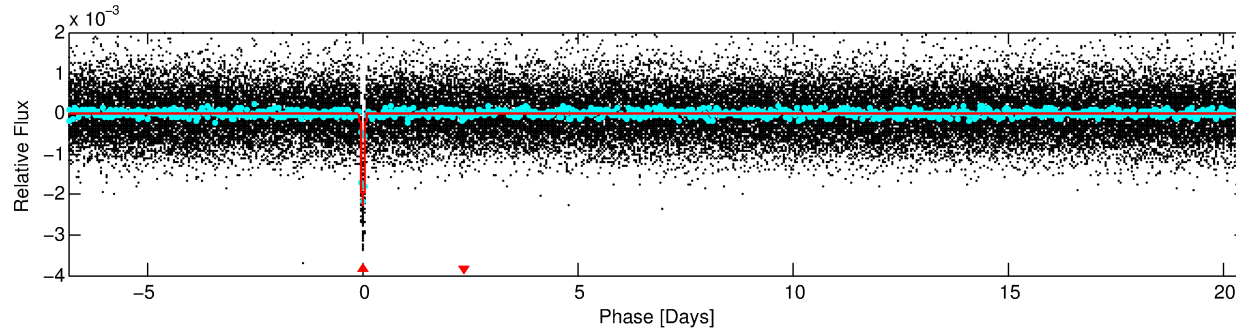
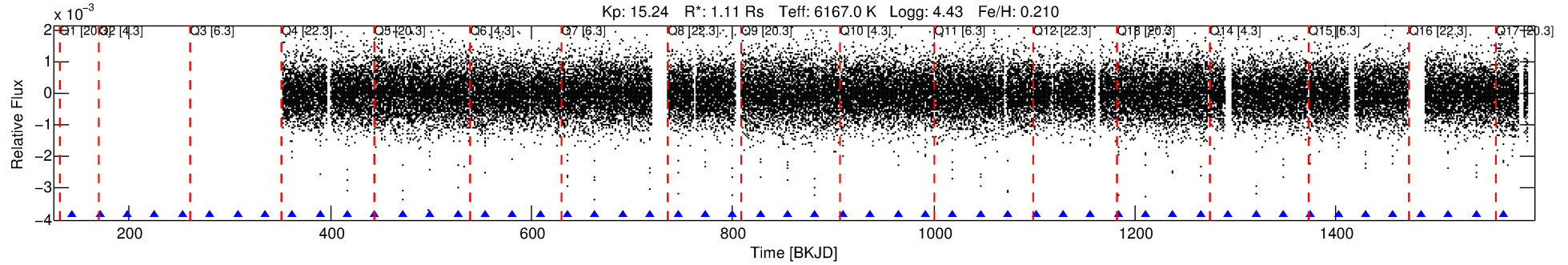
No Significant Match Found

# DV One-Page Summary

KIC: 5306720 Candidate: 1 of 1 Period: 27.364 d

KOI: K01991.01 Corr: 0.977

Kp: 15.24 R\*: 1.11 Rs Teff: 6167.0 K Logg: 4.43 Fe/H: 0.210



## DV Fit Results:

Period = 27.36436 [0.00007] d  
Epoch = 143.4628 [0.0024] BKJD  
Rp/R\* = 0.0697 [0.0389]  
a/R\* = 25.91 [4.27]  
b = 0.98 [0.07]  
Seff = 44.57 [18.64]  
Teq = 659 [69] K  
Rp = 8.42 [5.40] Re  
a = 0.1888 [0.0500] AU  
Ag = 49.61 [60.29] [0.81σ]  
Teffp = 2703 [788] K [2.59σ]

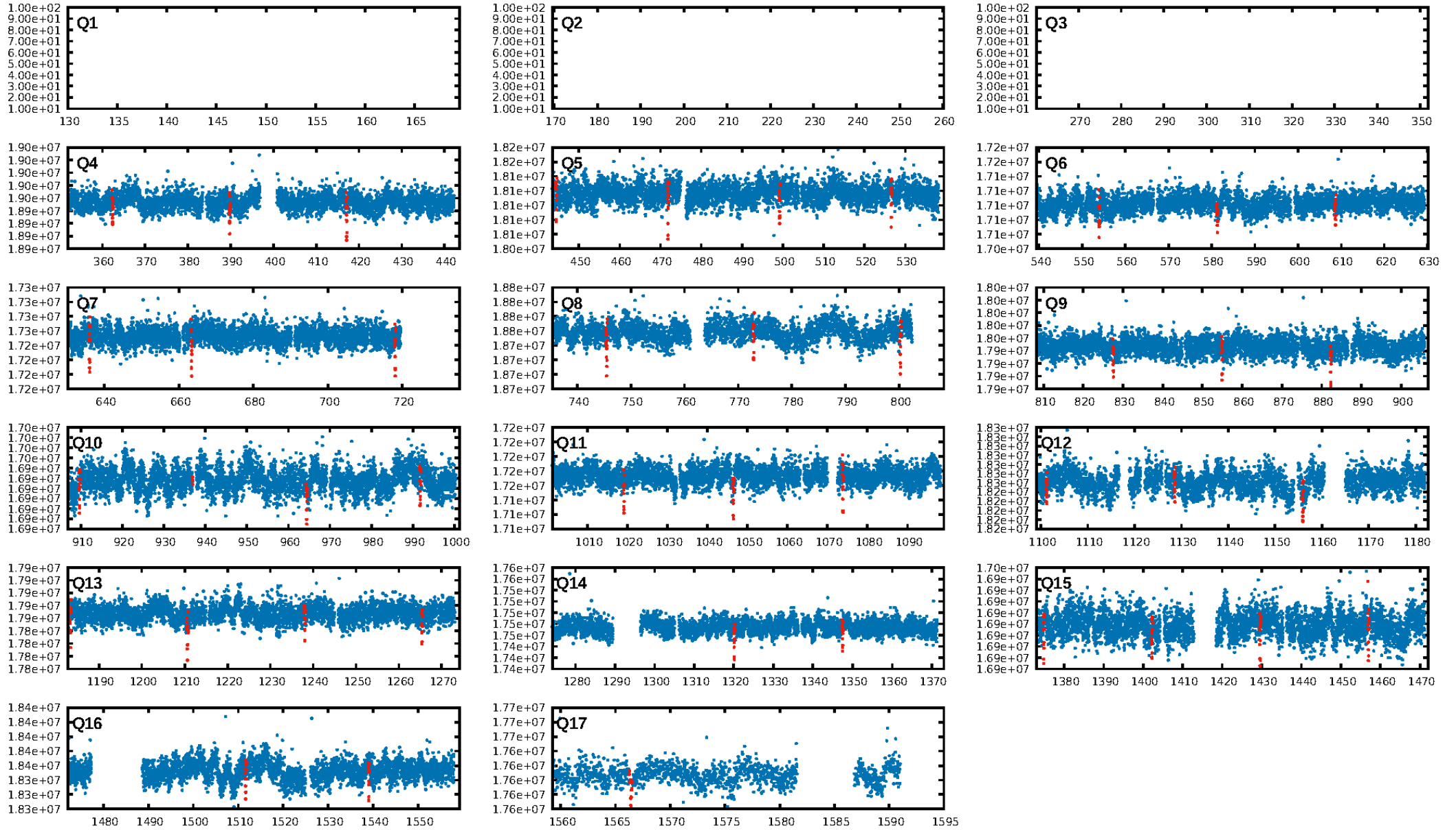
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [40/40]  
GhostDiagnostic-chr: -0.08166  
Centroid-sig: 0.0%  
Centroid-so: 4.444 arcsec [21.72σ]  
OotOffset-rm: 5.855 arcsec [7.15σ]  
KicOffset-rm: 6.573 arcsec [8.44σ]  
OotOffset-st: 3/3/4/0 [10]  
KicOffset-st: 3/3/4/0 [10]  
DiffImageQuality-fgm: 0.80 [8/10]  
DiffImageOverlap-fno: 1.00 [14/14]

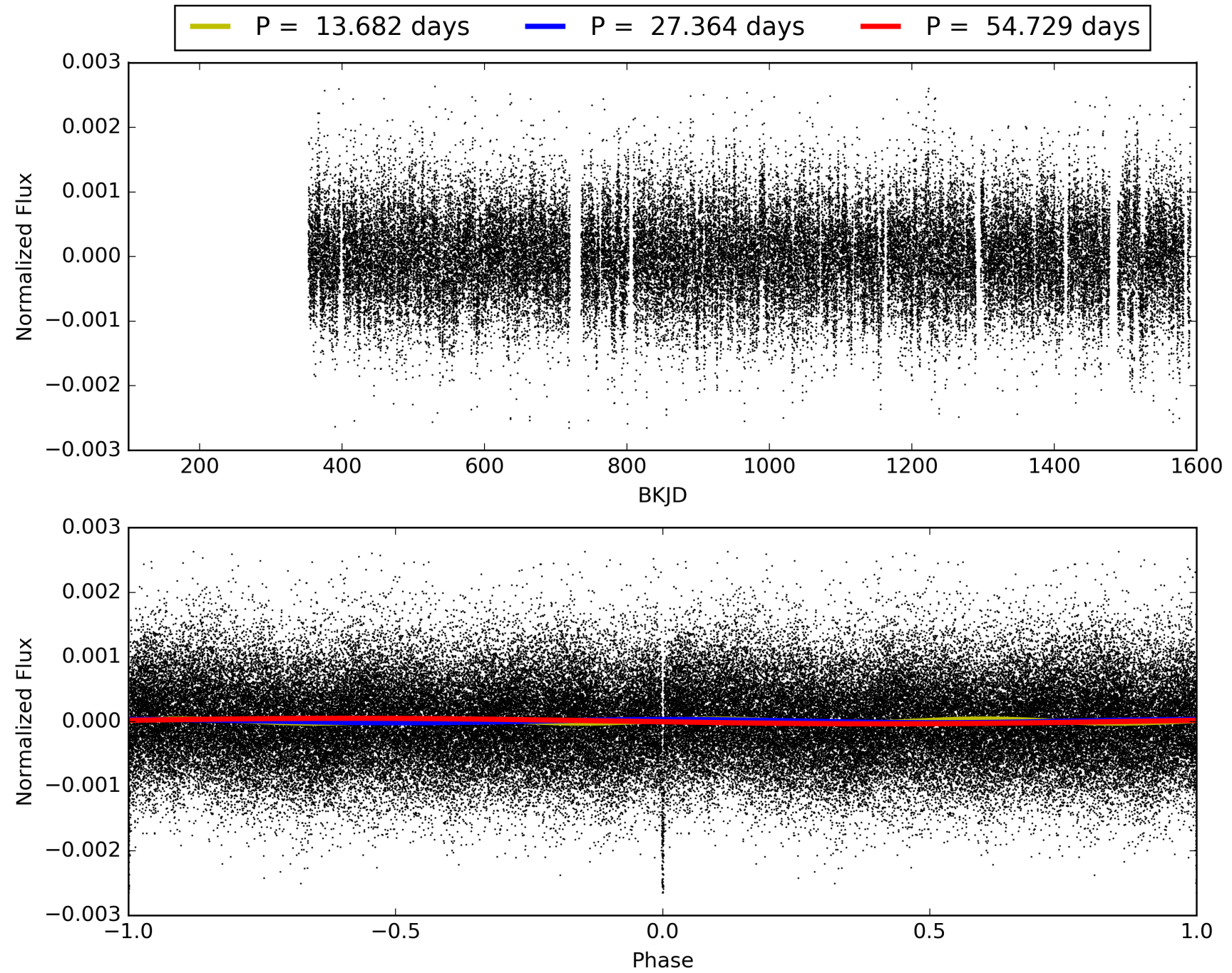
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 06:05:36 Z

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

# TCE 005306720-01, PDC Light Curves

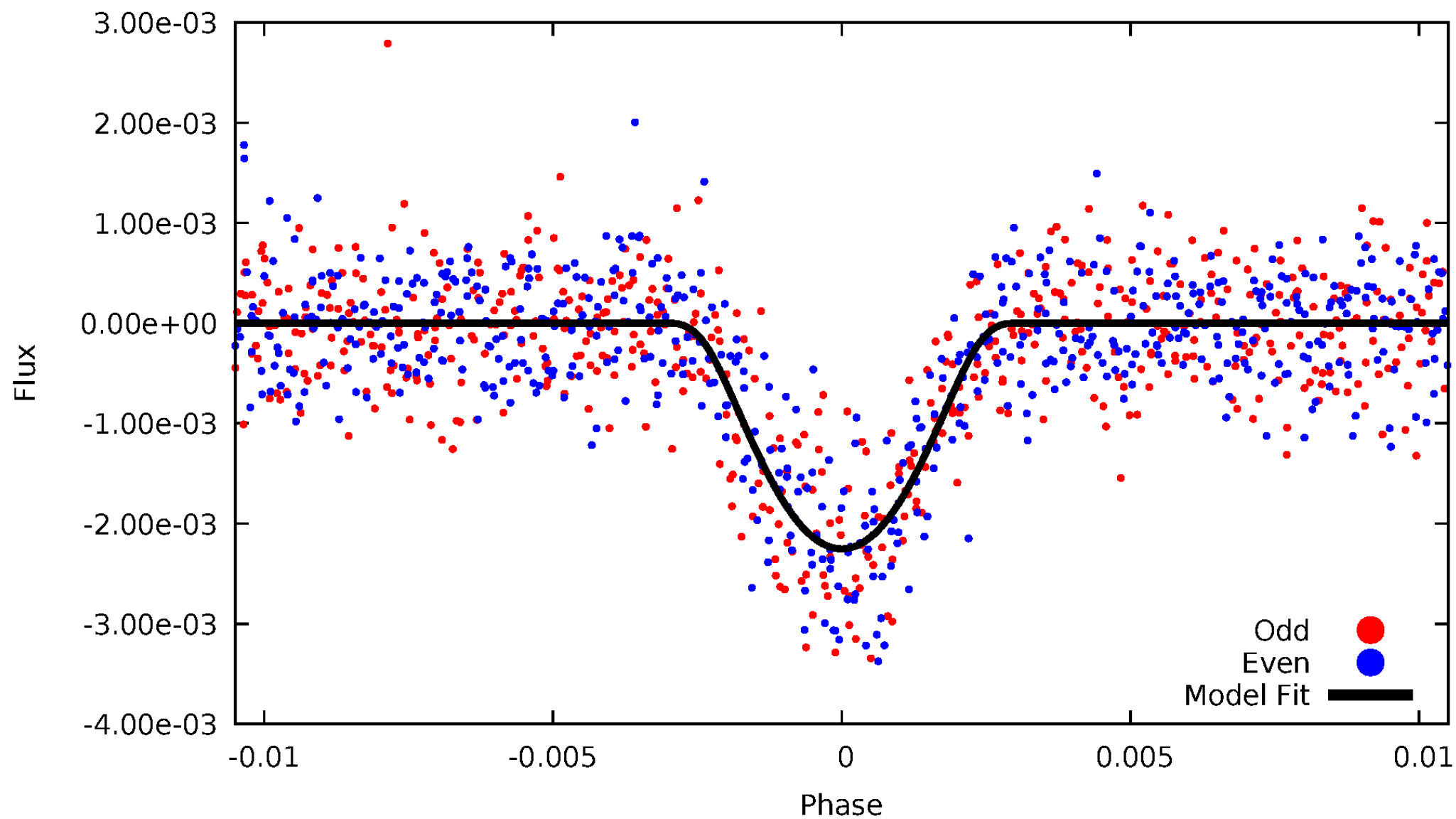


TCE 005306720-01



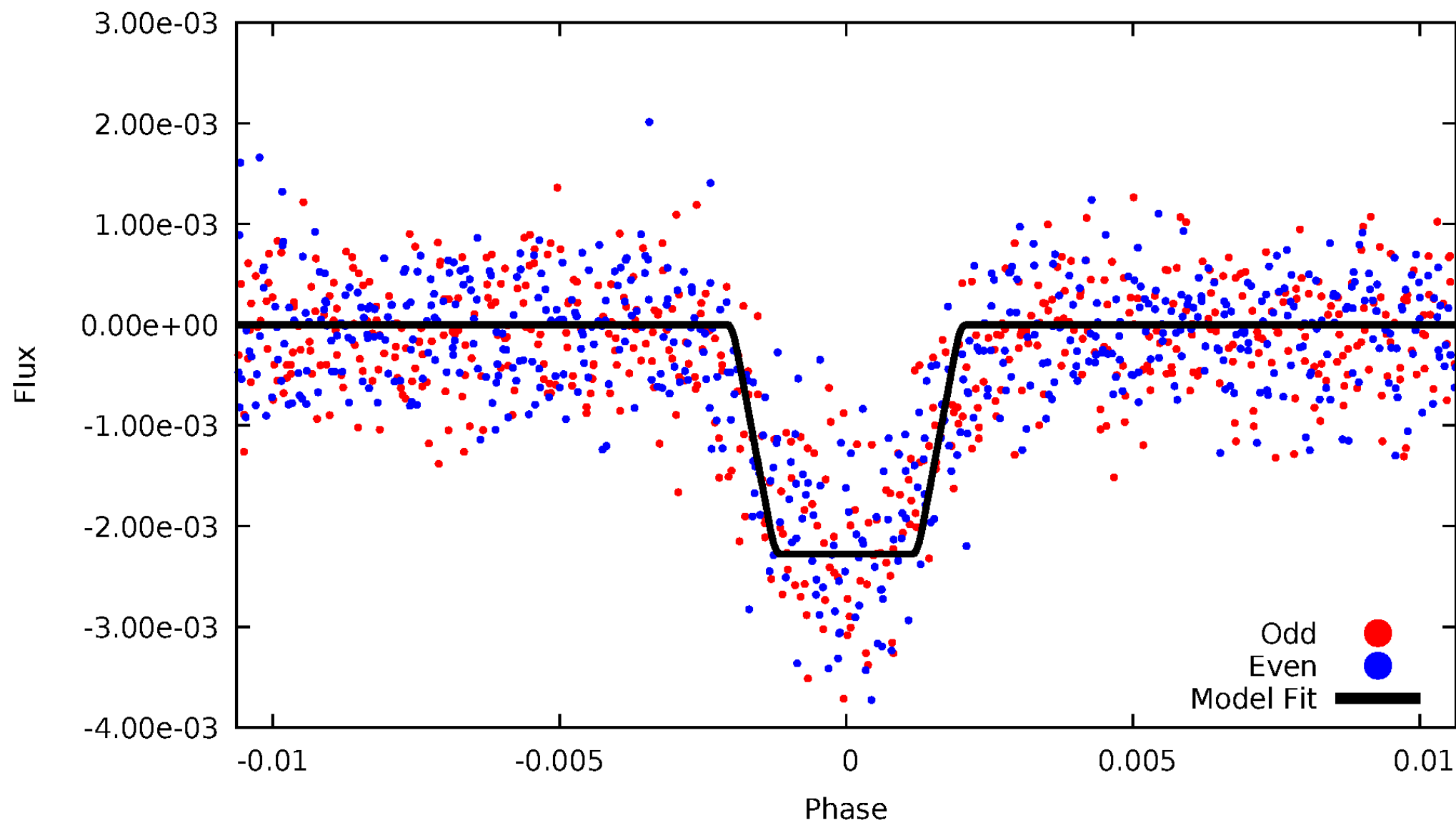
# DV Odd/Even

TCE 005306720-01



# ALT Odd/Even

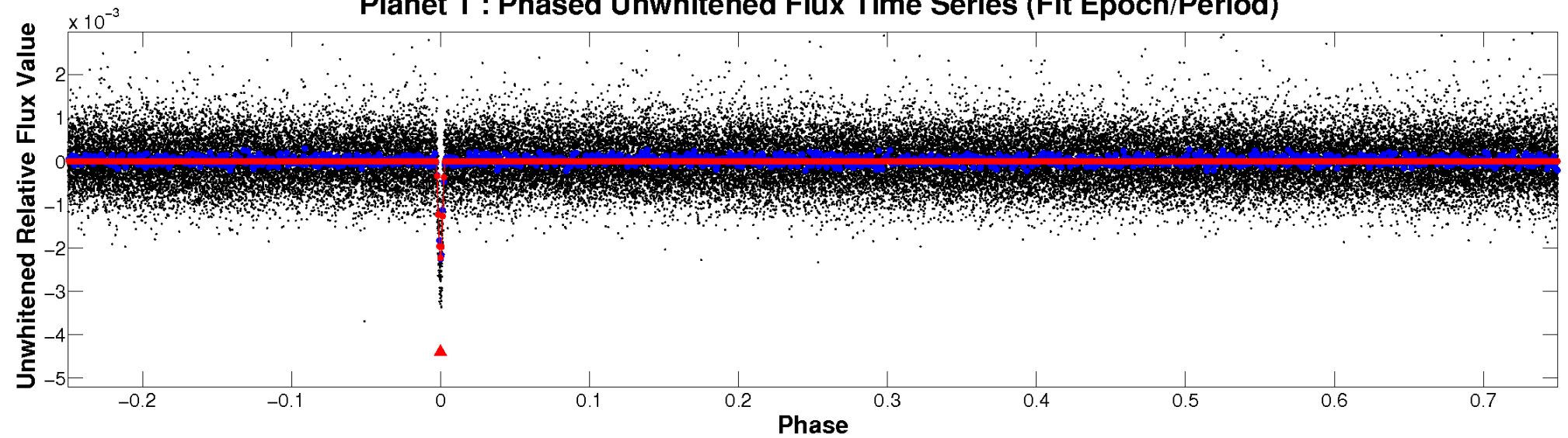
TCE 005306720-01



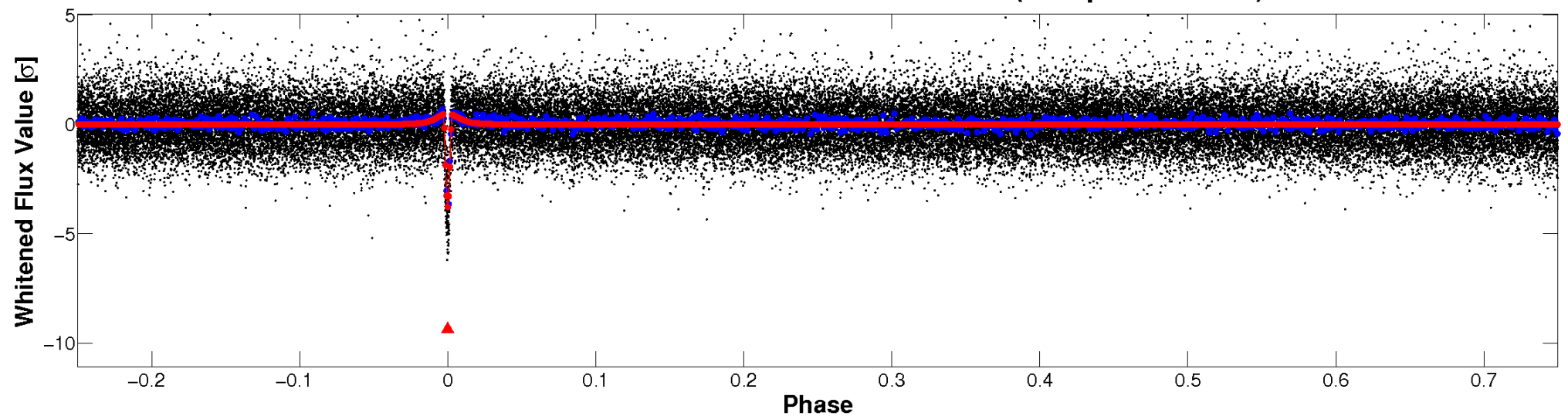


# Non-Whitened Vs. Whitened Light Curve

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

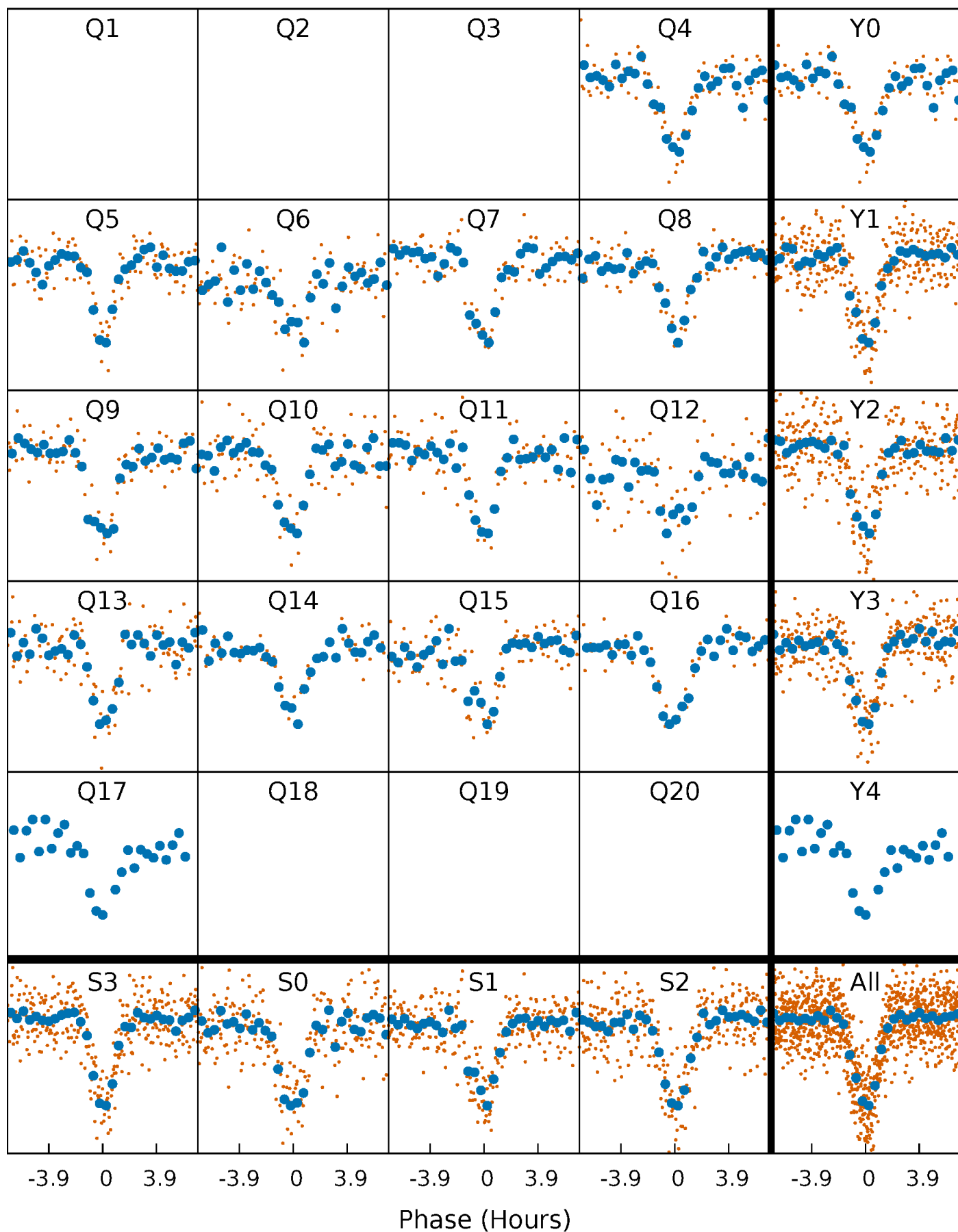


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

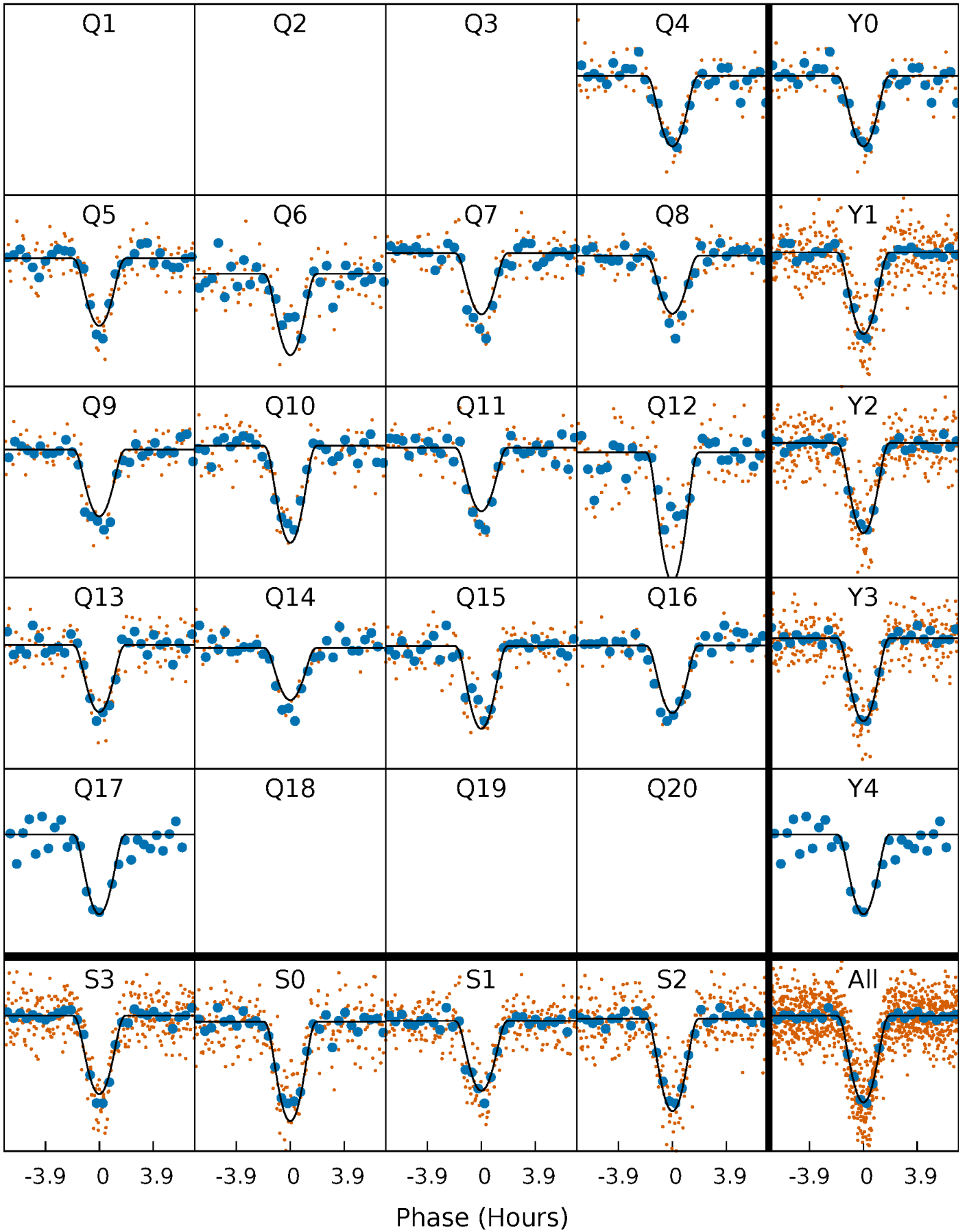
TCE 005306720-01 P= 27.364360 Days  $T_0=143.462848$  (BKJD)





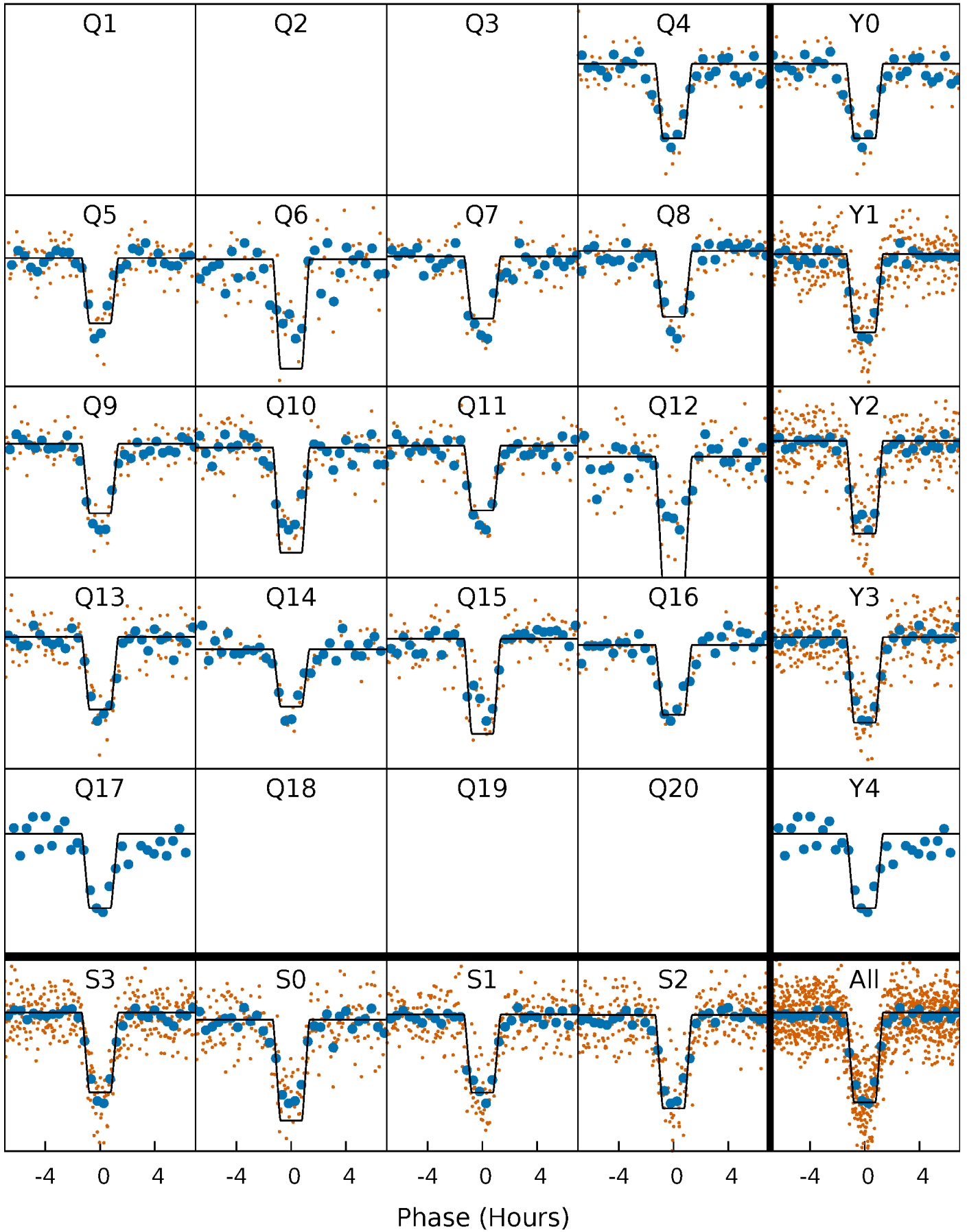
# DV Quarter-Phased Transit Curves

TCE 005306720-01 P= 27.364360 Days  $T_0=143.462848$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

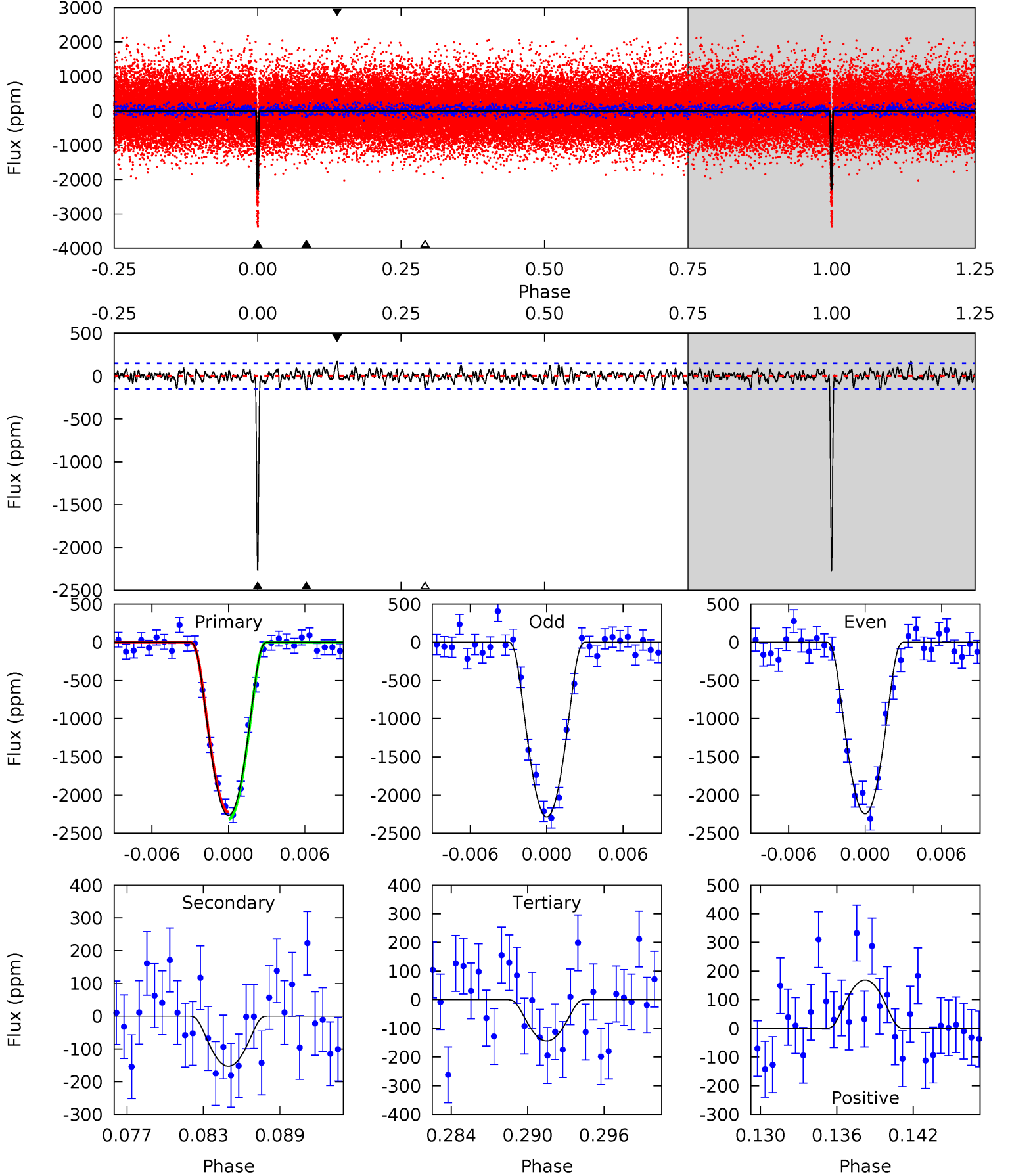
TCE 005306720-01 P= 27.364103 Days  $T_0=143.471228$  (BKJD)



# DV Model-Shift Uniqueness Test

005306720-01, P = 27.364360 Days, E = 143.462848 Days

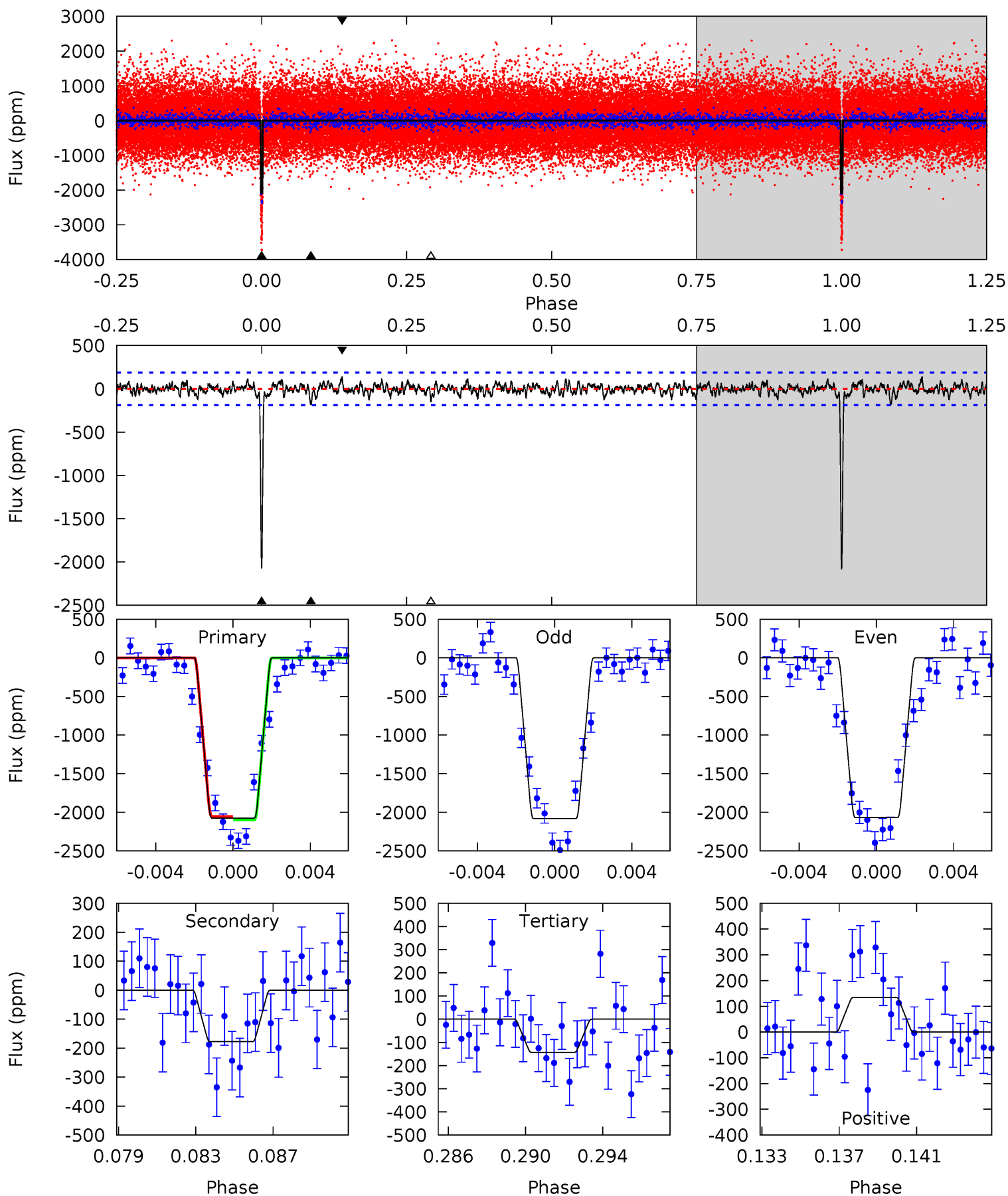
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
77.0	5.19	4.89	5.74	5.13	2.75	1.56	72.1	71.2	0.31	-0.55	0.73	0.95	0.07	1.62



# Alt Model-Shift Uniqueness Test

005306720-01,  $P = 27.364103$  Days,  $E = 143.471228$  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
57.5	4.92	3.98	3.74	5.19	2.87	1.23	53.5	53.7	0.94	1.18	0.21	0.98	0.06	0.60



### Stellar Parameters For KIC 005306720

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6167^{+194}_{-259}$	$4.428^{+0.052}_{-0.208}$	$0.210^{+0.200}_{-0.350}$	$1.107^{+0.351}_{-0.117}$	$1.200^{+0.139}_{-0.170}$	$1.246^{+0.356}_{-0.665}$
	+3%/-4%	+1%/-5%	+95%/-167%	+32%/-11%	+12%/-14%	+29%/-53%
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 005306720-01 / KOI 1991.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-153 \pm 29$	$9.32^{+5.00}_{-4.67}$	$944^{+66}_{-56}$	$3118^{+809}_{-352}$	$33^{+98}_{-19}$
Alt.	$-178 \pm 36$	$6.90^{+4.38}_{-4.24}$	$940^{+69}_{-49}$	$3540^{+1400}_{-545}$	$76^{+405}_{-50}$

$T_{max}$  = 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

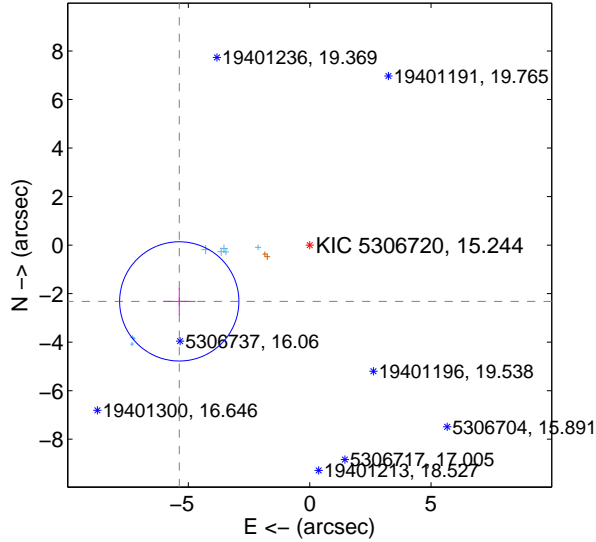
Supplemental centroid analysis for 005306720-01. Kepler magnitude: 15.24. Transit SNR 41.46

There are 8 quarters with good PRF difference image offsets

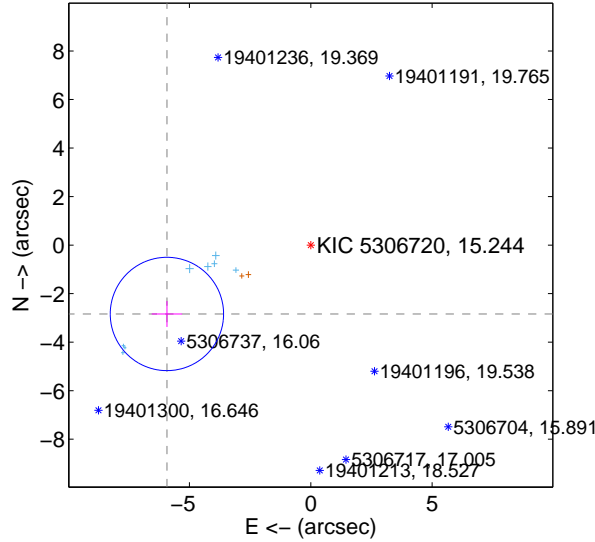
The direct PRF centroid is offset from the target star catalog position by about 1.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.855 \pm 0.819$	7.15	$5.376 \pm 0.671$	$-2.320 \pm 0.556$
PRF-fit source offset from KIC position	$6.573 \pm 0.779$	8.44	$5.929 \pm 0.625$	$-2.838 \pm 0.533$
photometric centroid source offset	$4.44 \pm 0.20$	21.72	$3.74 \pm 0.21$	$-2.40 \pm 0.20$

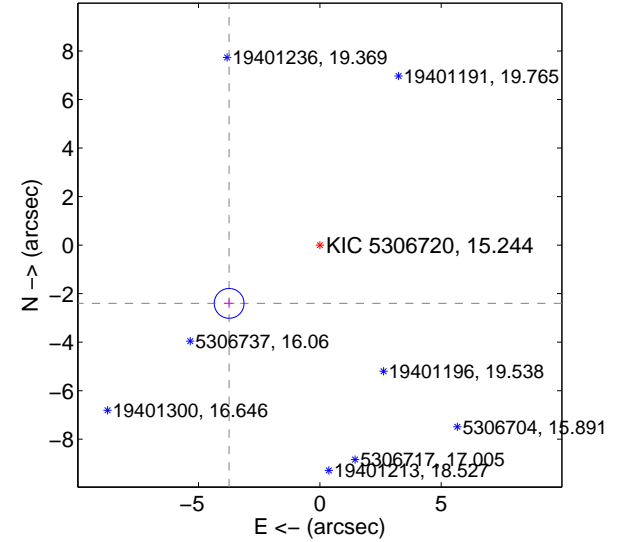
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



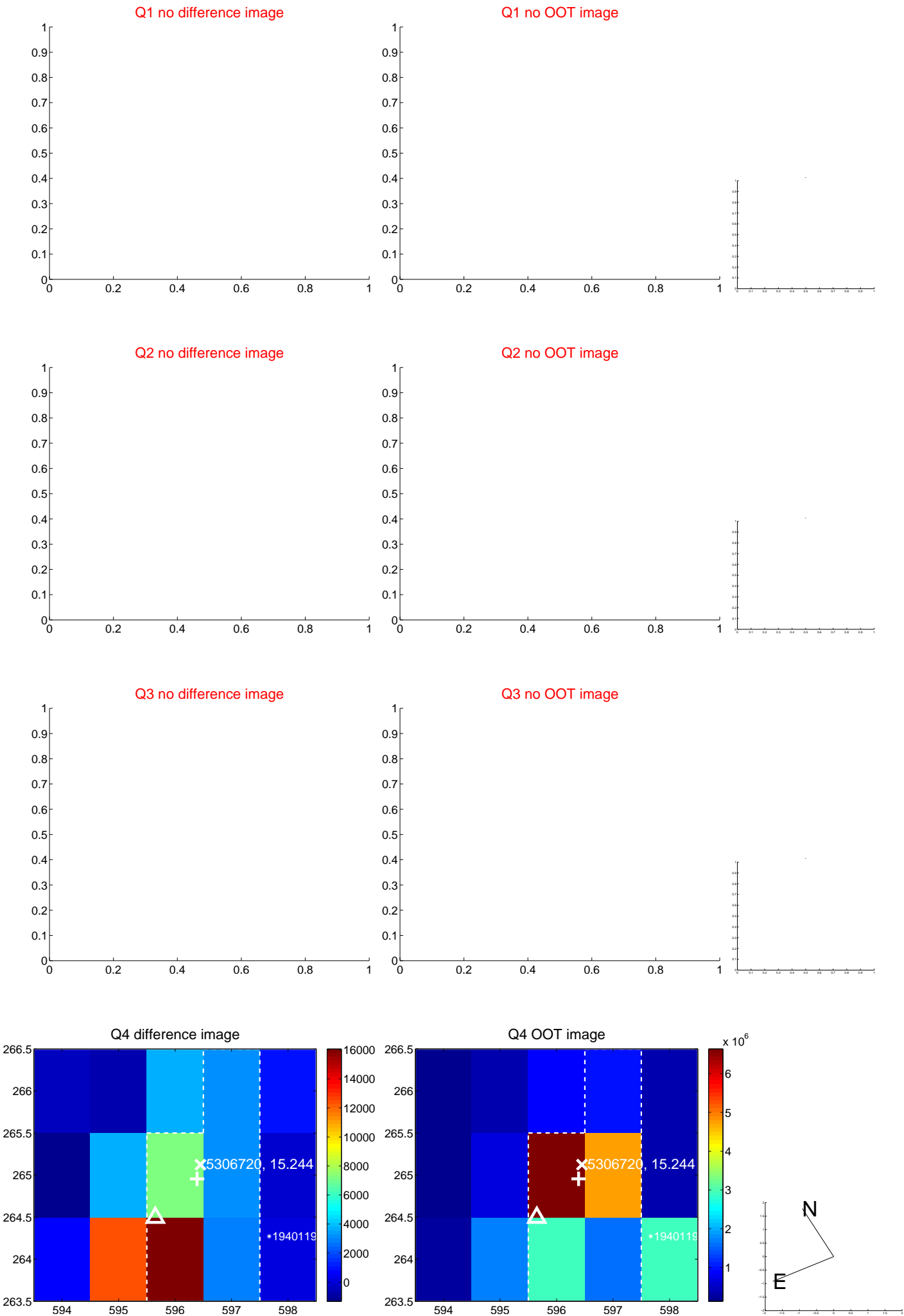
offset from photometric centroids



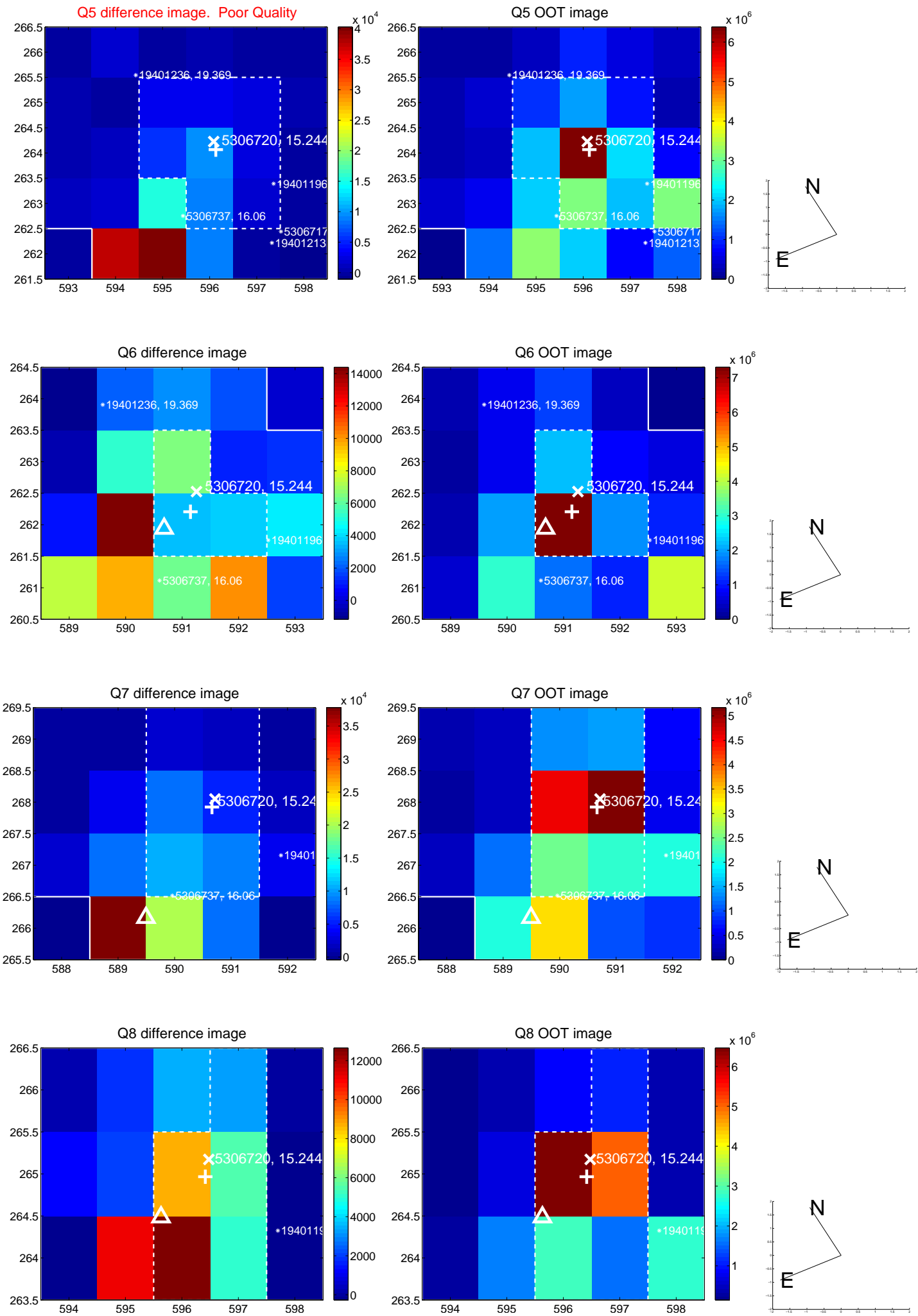
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



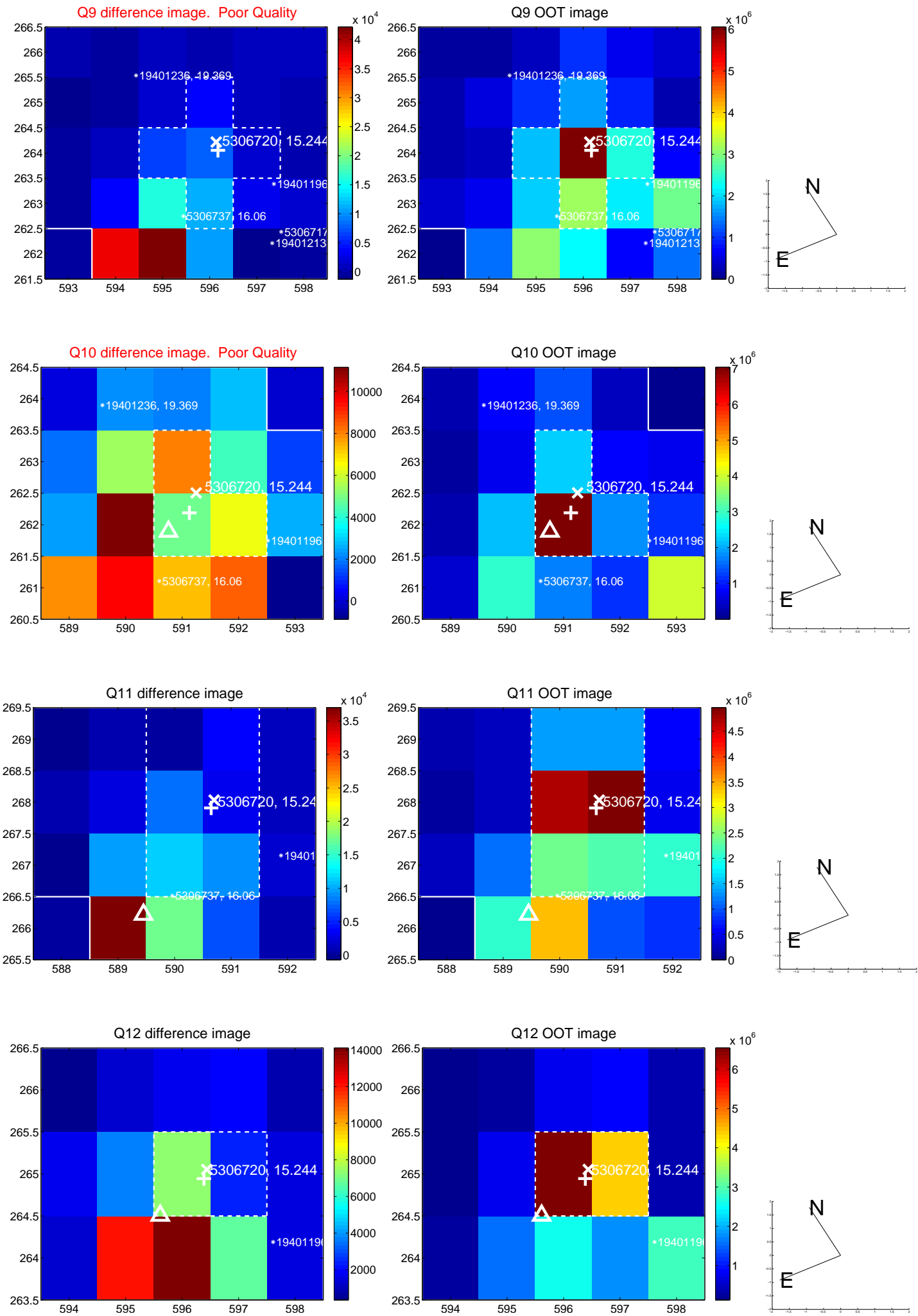
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



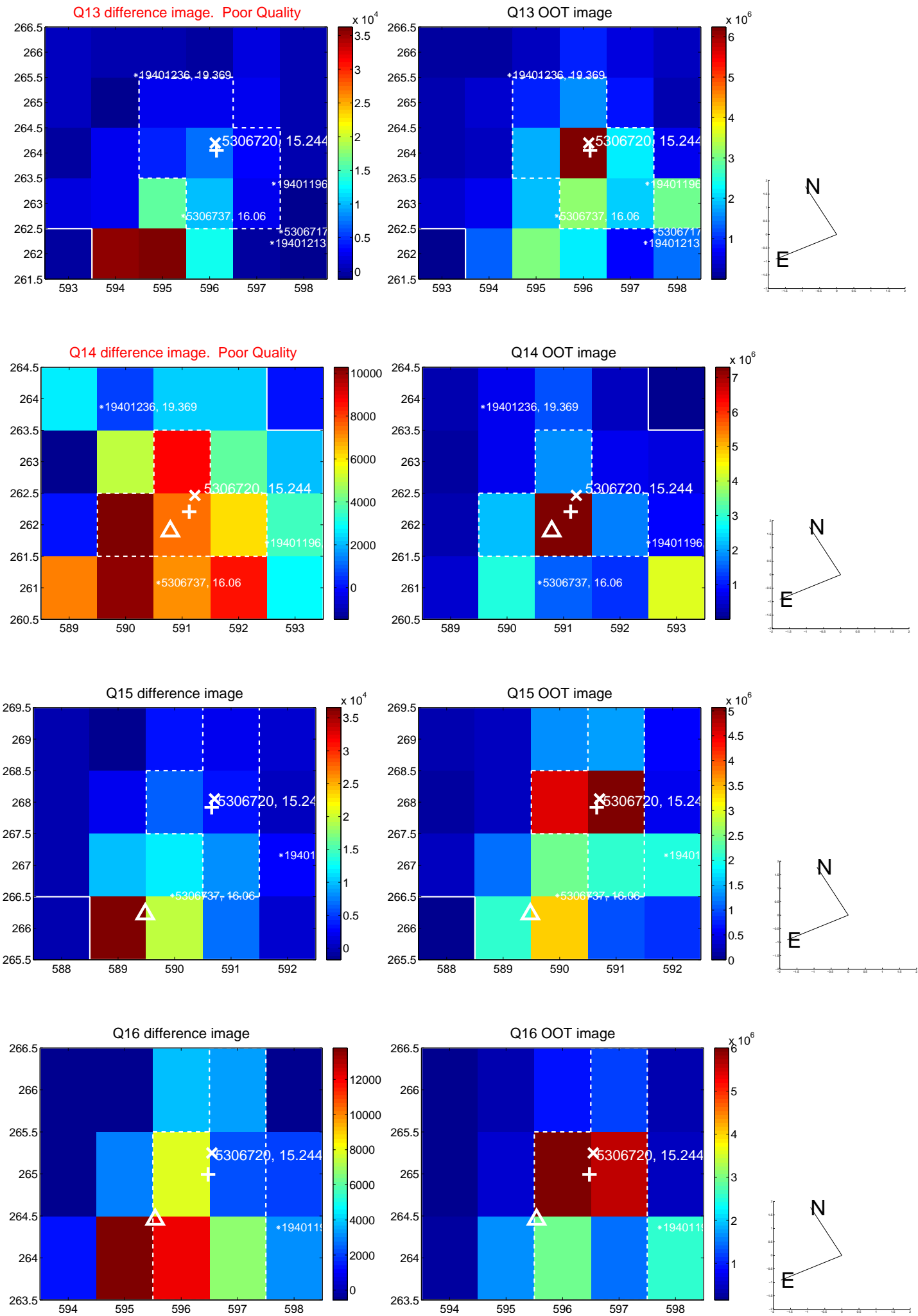
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



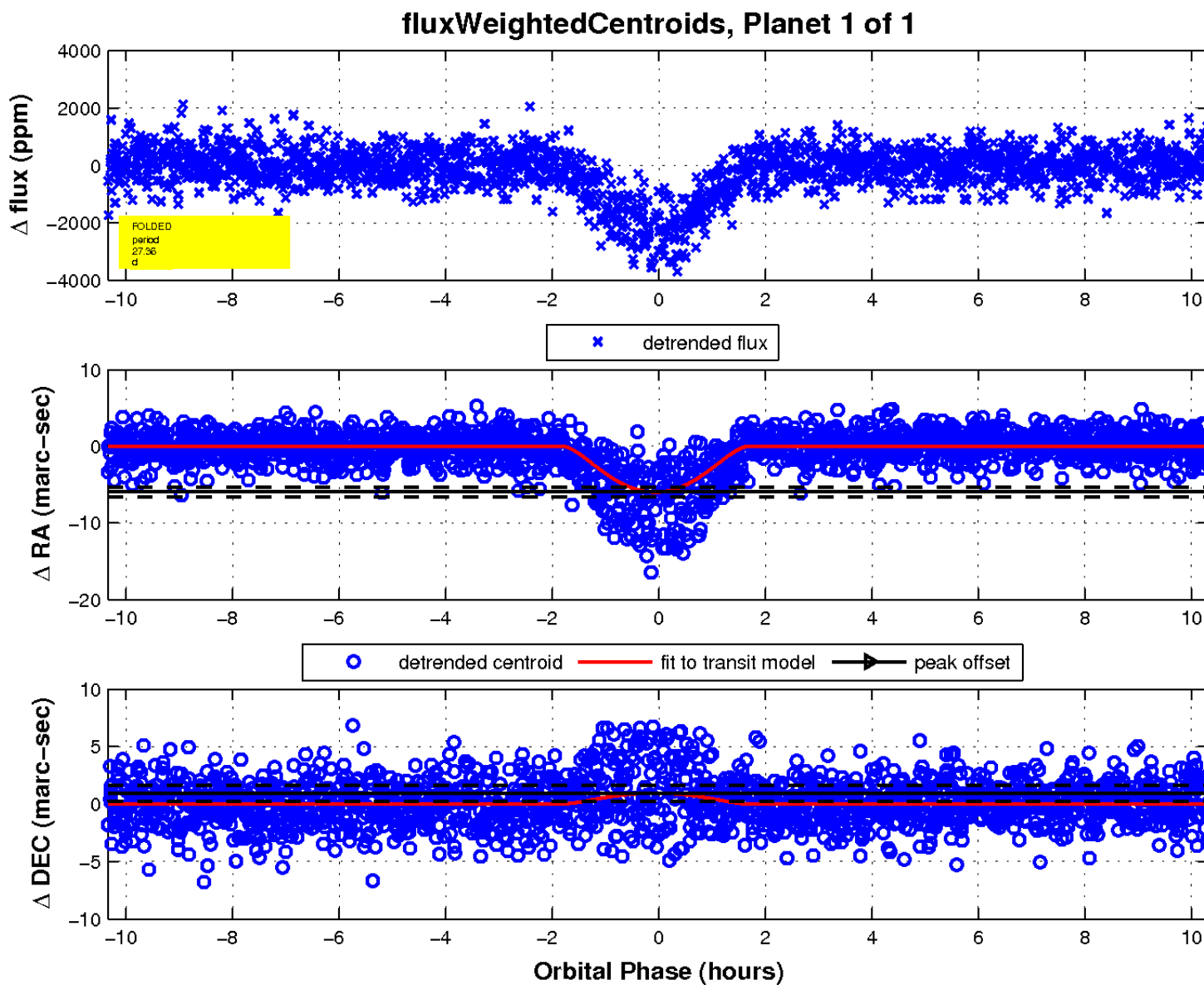
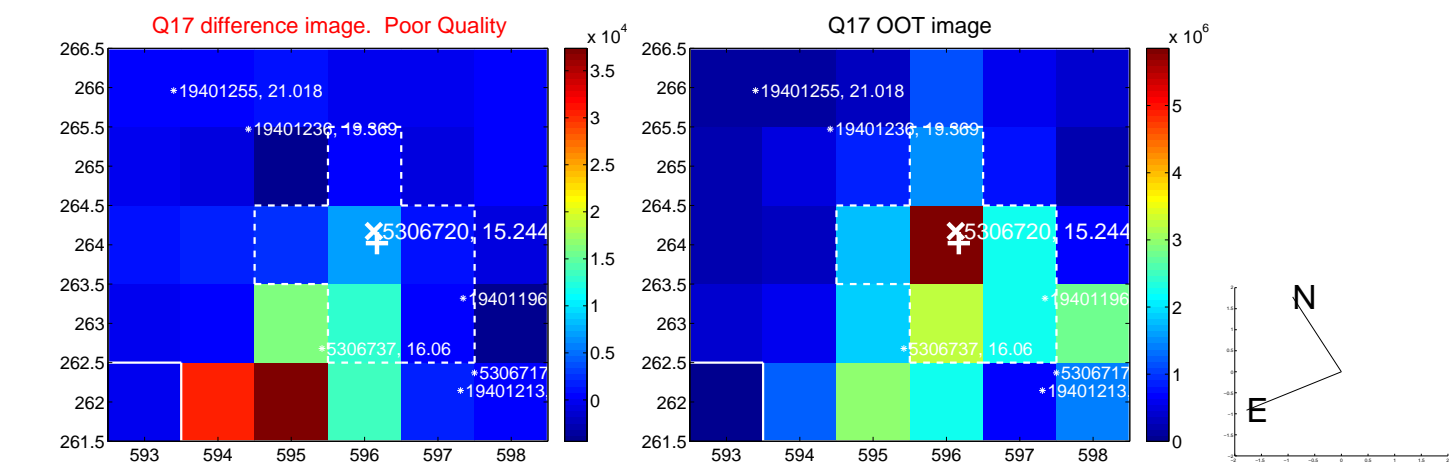
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

