

# KIC 010599206

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010599206-01	OBS	0476.01	18.427924	141.585017	706.5	3.011	31.2	34.0	0.78	4768	2.38	18.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010599206-01	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.

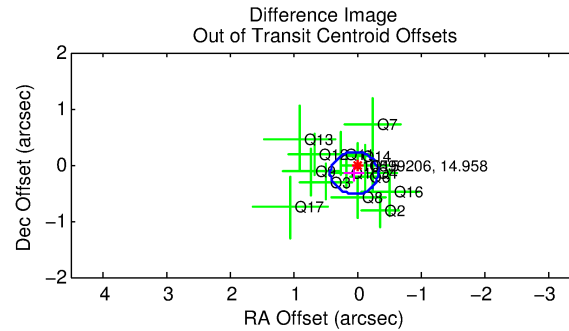
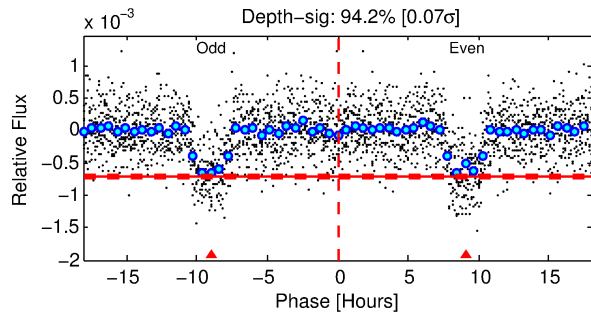
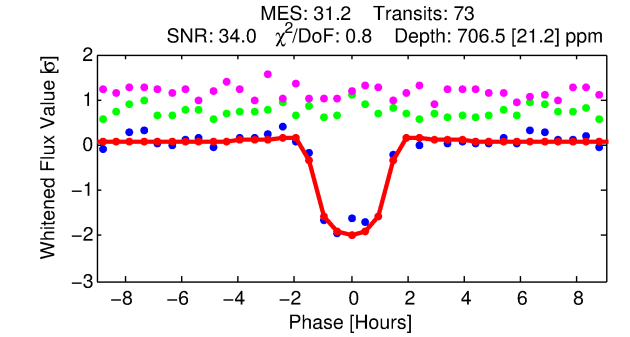
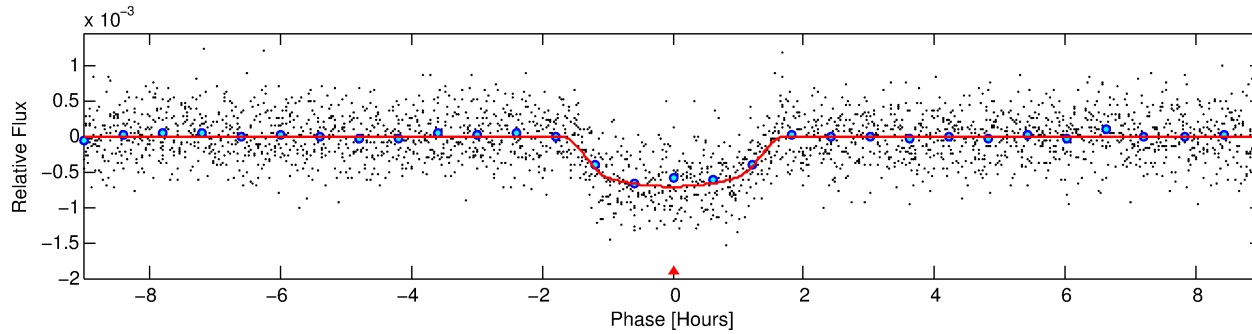
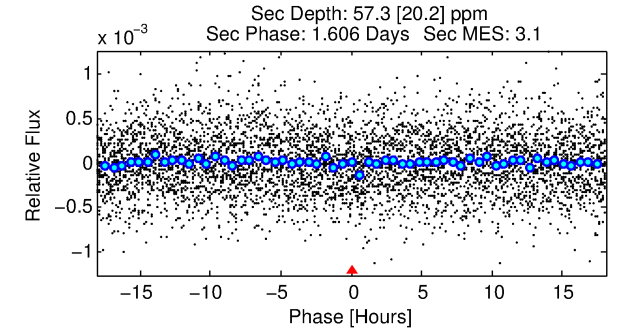
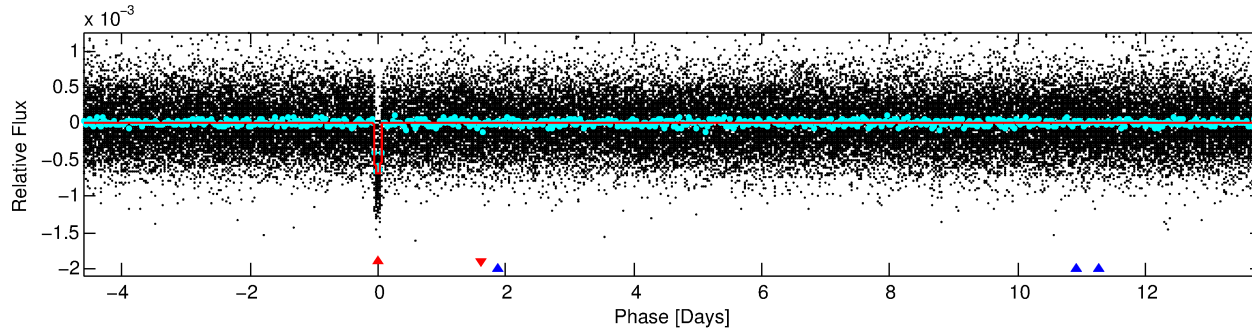
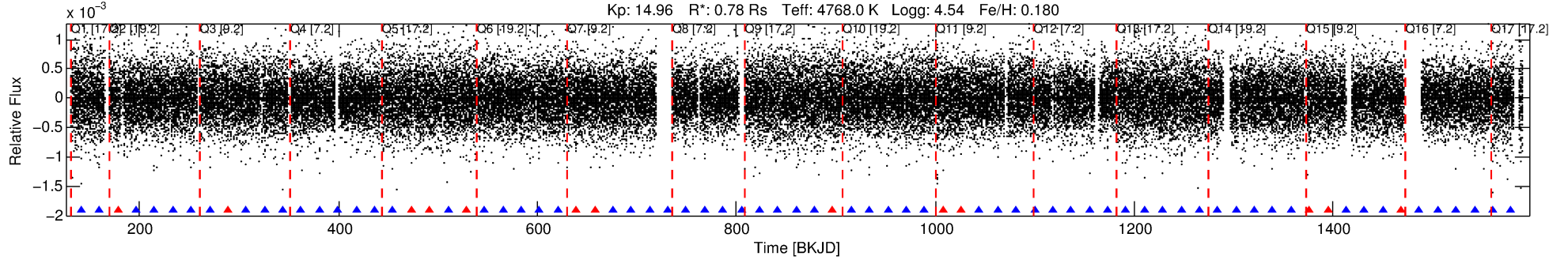
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010599206-01

No Significant Match Found

# DV One-Page Summary

KIC: 10599206 Candidate: 1 of 2 Period: 18.428 d  
KOI: K00476.01 Corr: 0.976



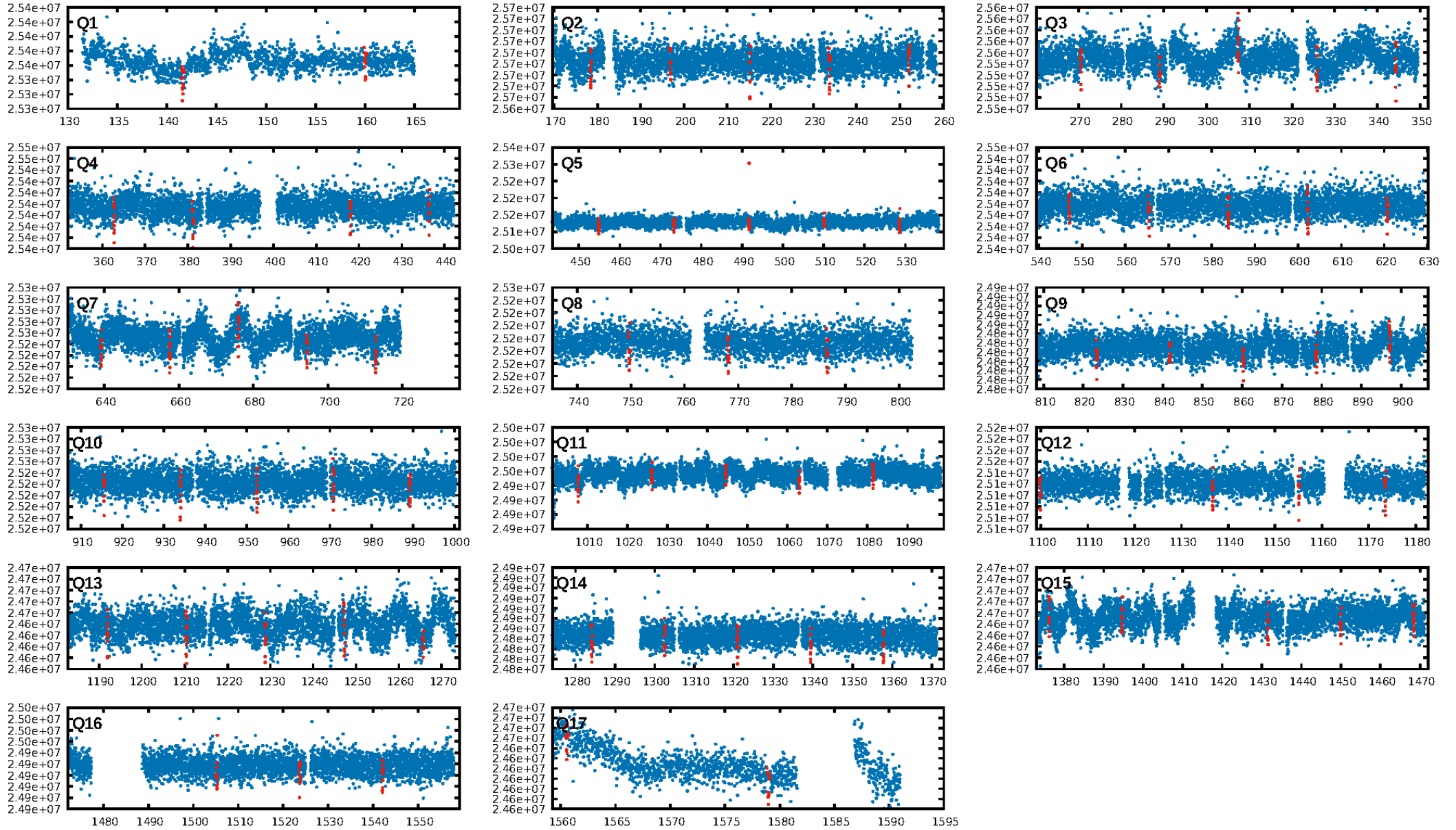
## DV Fit Results:

Period = 18.42792 [0.00005] d  
Epoch = 141.5850 [0.0021] BKJD  
Rp/R\* = 0.0280 [0.0070]  
a/R\* = 28.49 [24.46]  
b = 0.83 [0.34]  
Seff = 18.08 [2.06]  
Teq = 526 [15] K  
Rp = 2.38 [0.61] Re  
a = 0.1247 [0.0069] AU  
Ag = 86.67 [53.78] [1.59σ]  
Teffp = 2481 [383] K [5.09σ]

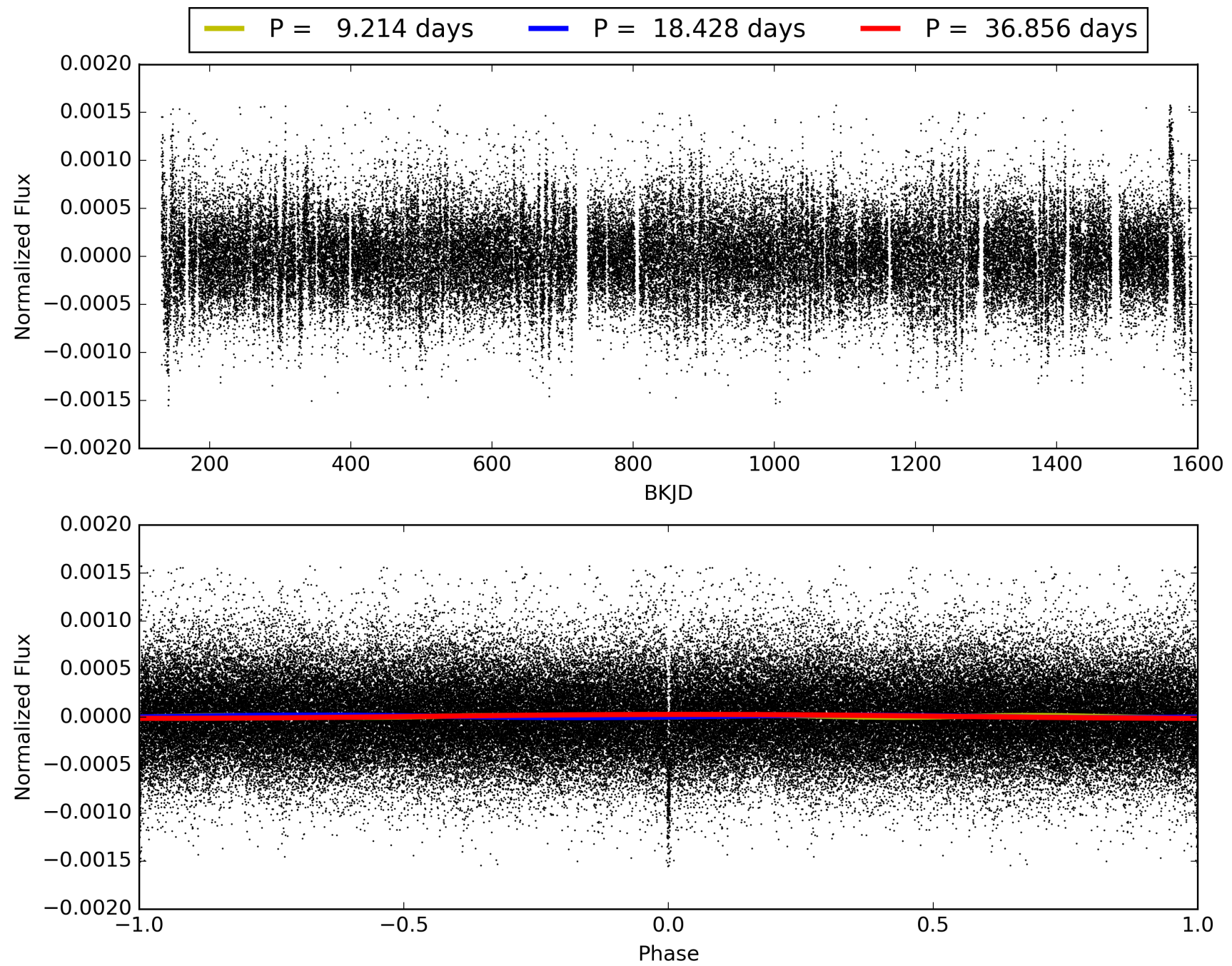
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [1013.96σ]  
ModelChiSquare2-sig: 99.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.37e-208  
RollingBand-fgt: 0.81 [56/69]  
GhostDiagnostic-chr: 6.644  
Centroid-sig: 12.2%  
Centroid-so: 0.681 arcsec [1.37σ]  
OotOffset-rm: 0.155 arcsec [1.24σ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-rm: 0.251 arcsec [2.04σ]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 010599206-01, PDC Light Curves

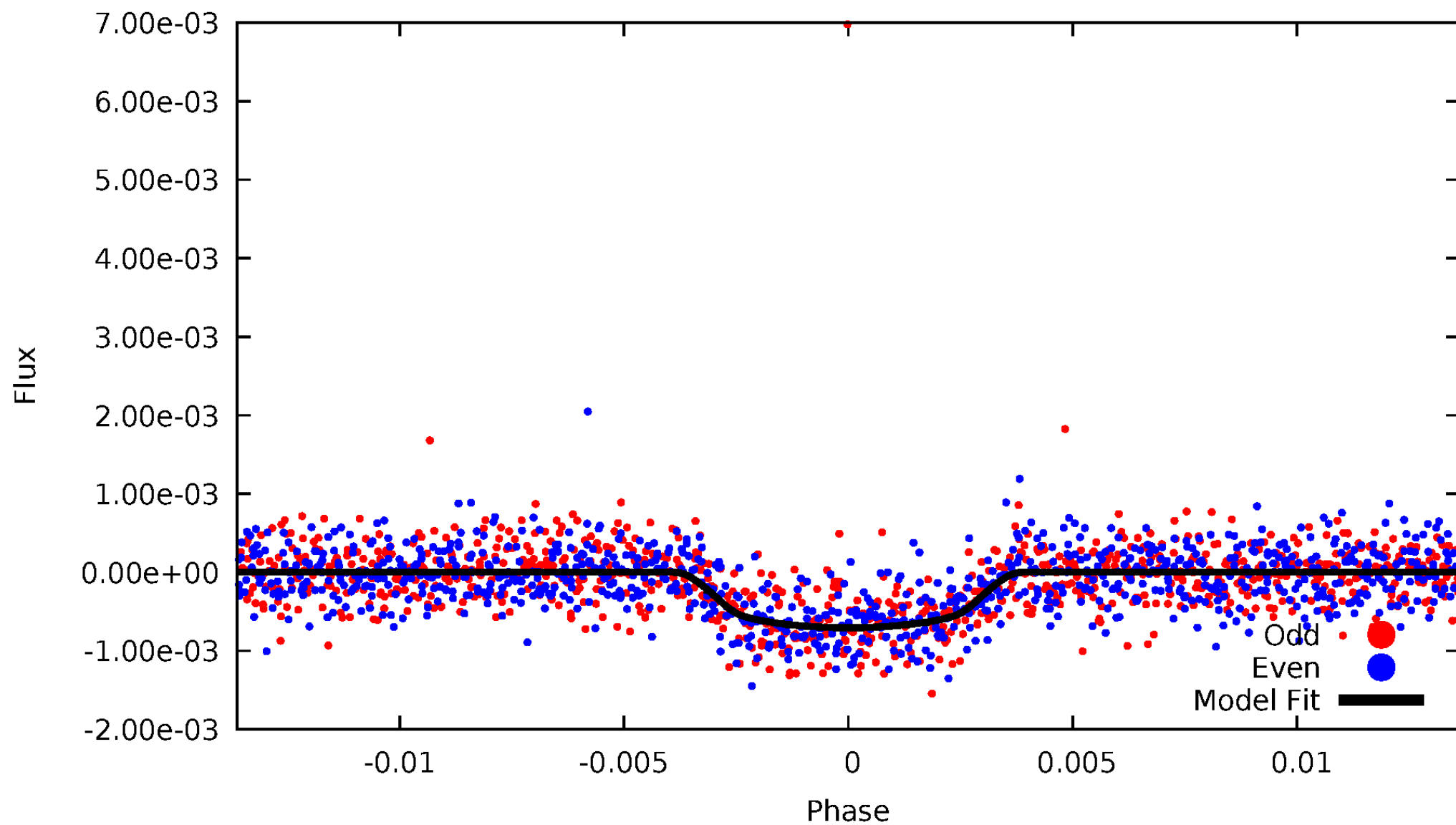


TCE 010599206-01



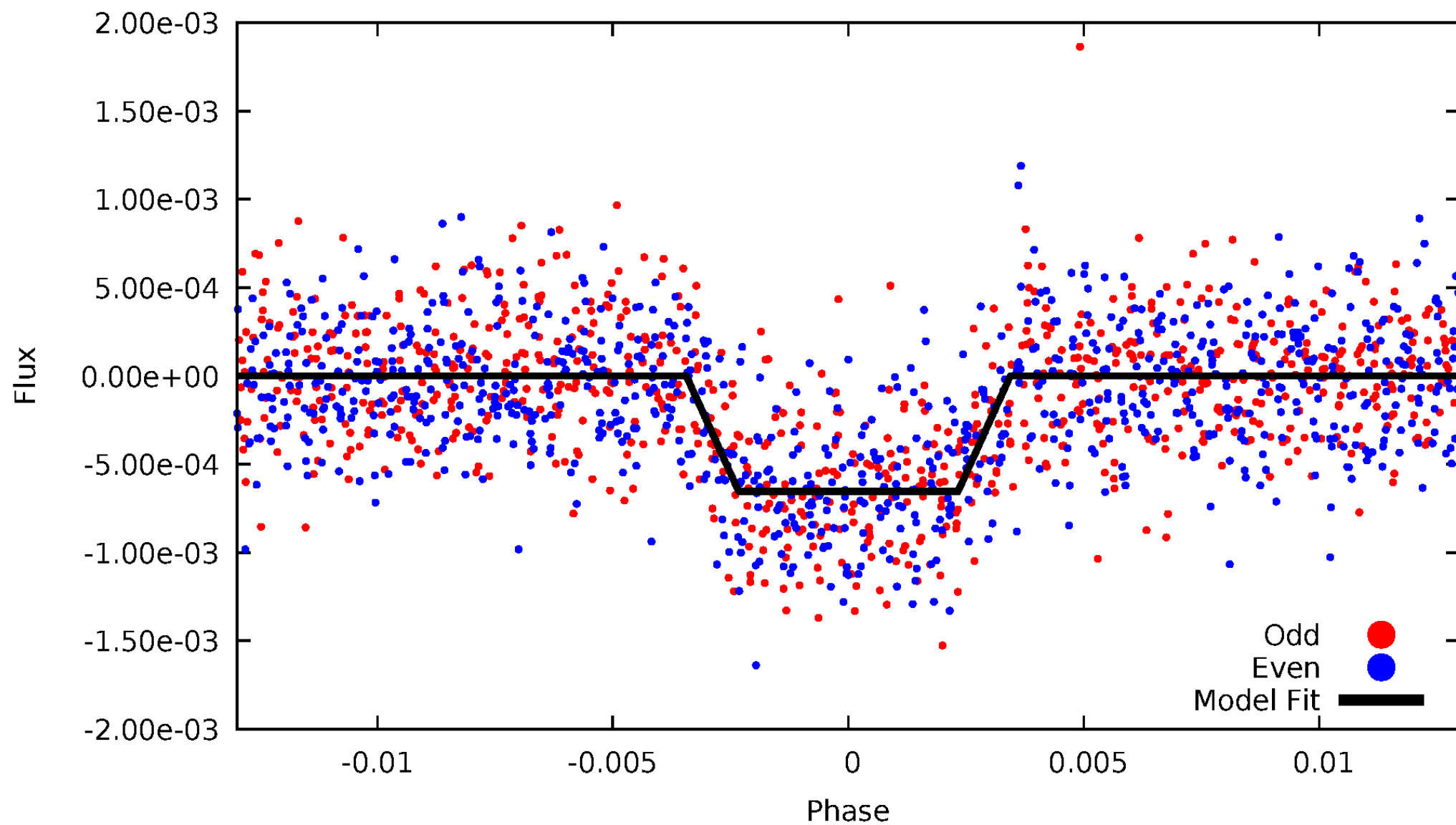
# DV Odd/Even

TCE 010599206-01



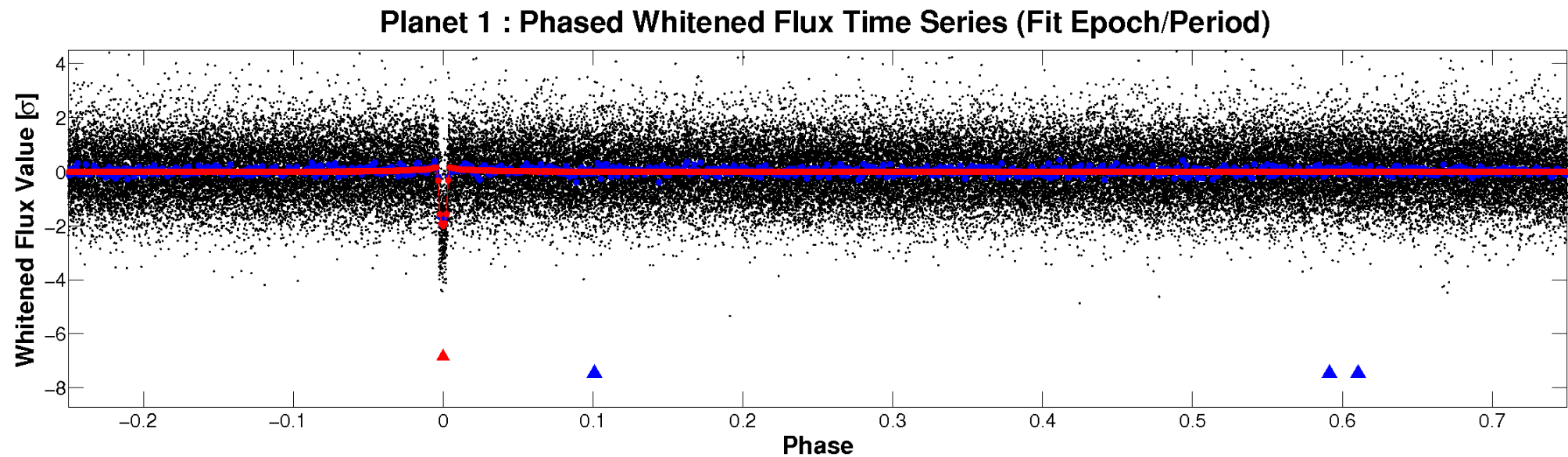
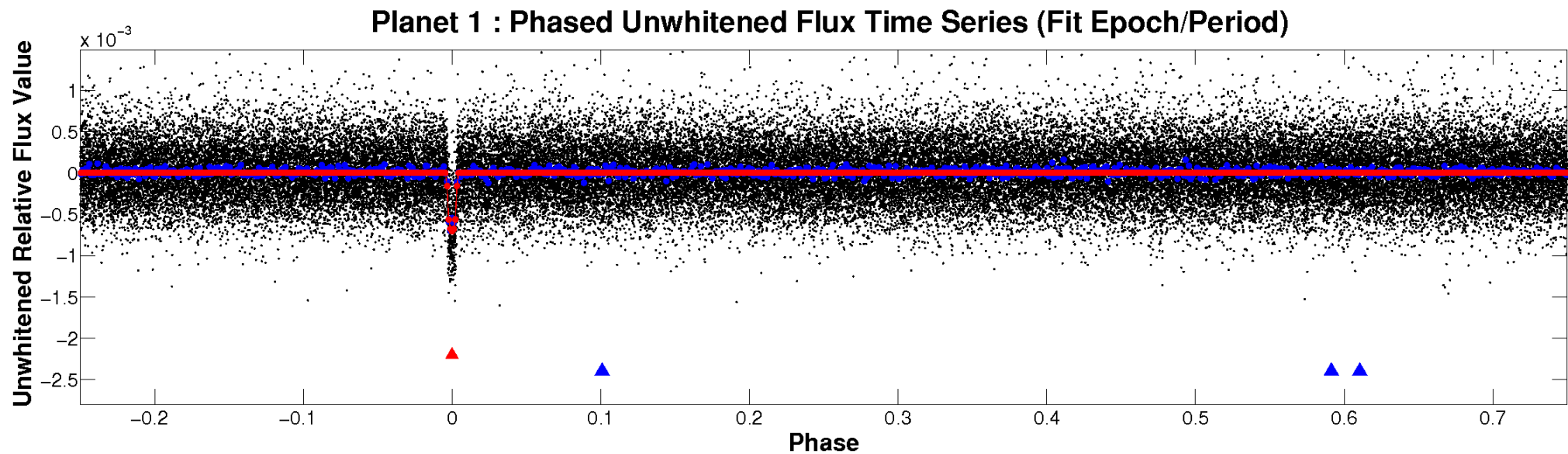
# ALT Odd/Even

TCE 010599206-01



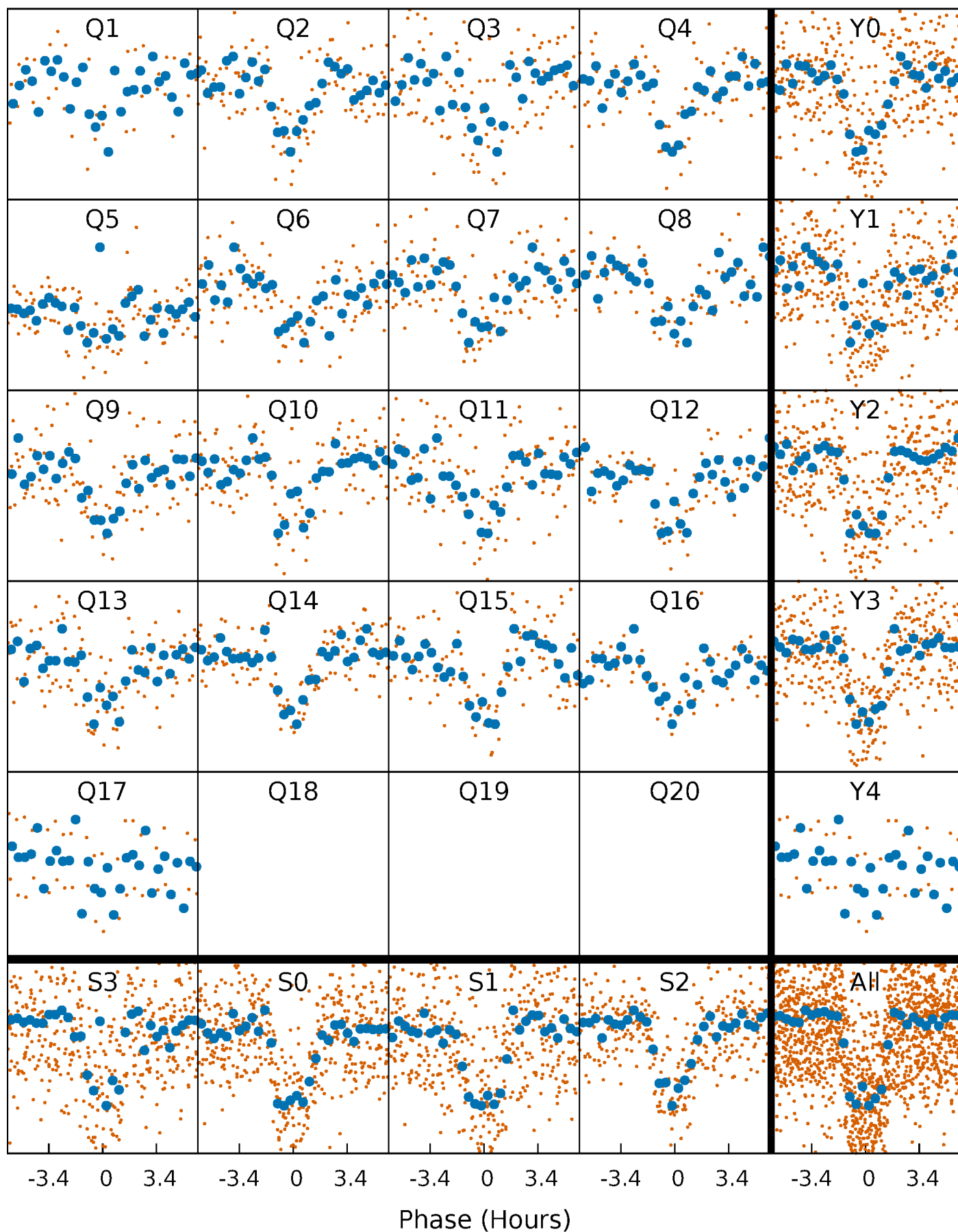


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

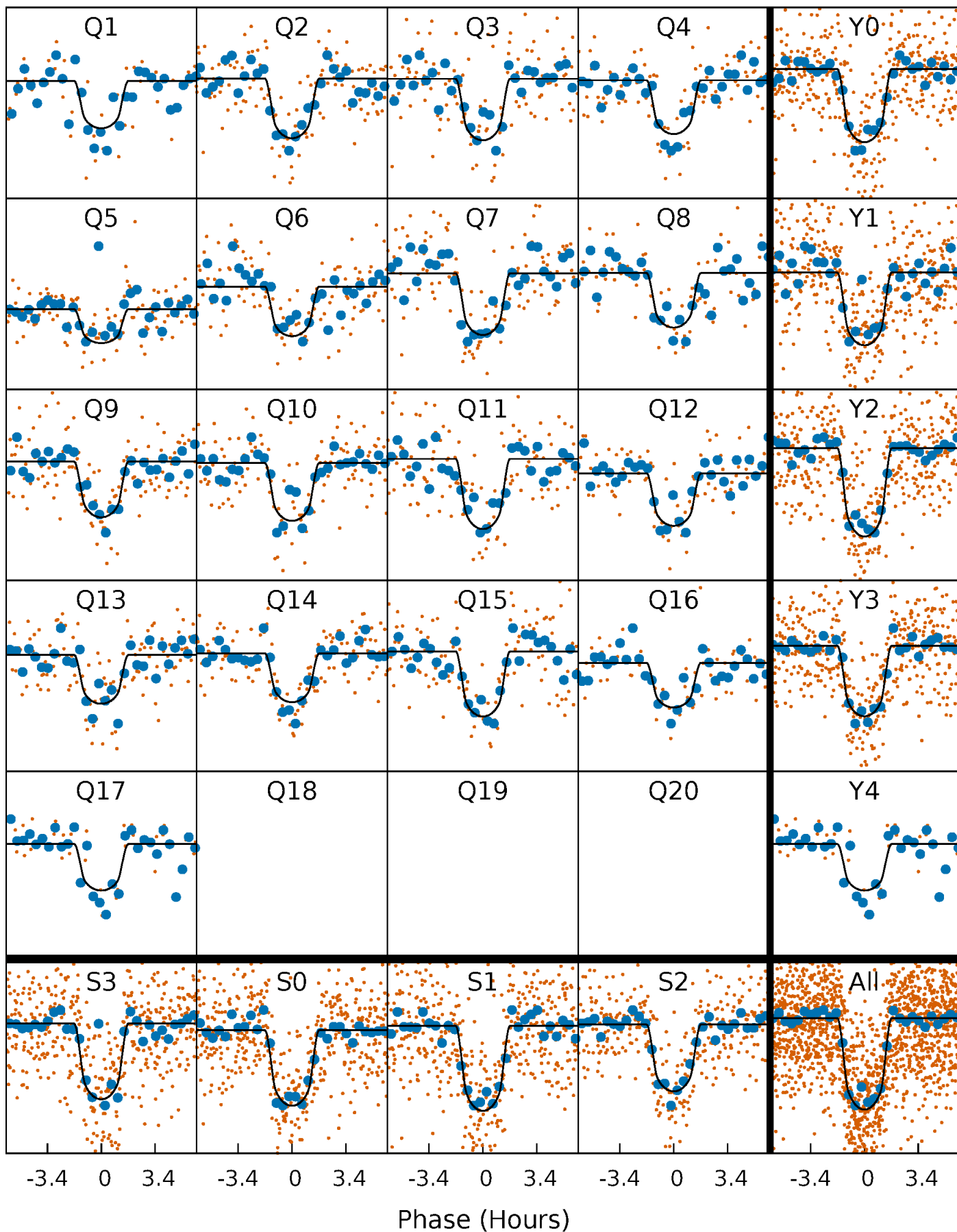
TCE 010599206-01   P= 18.427924 Days    $T_0=141.585017$  (BKJD)





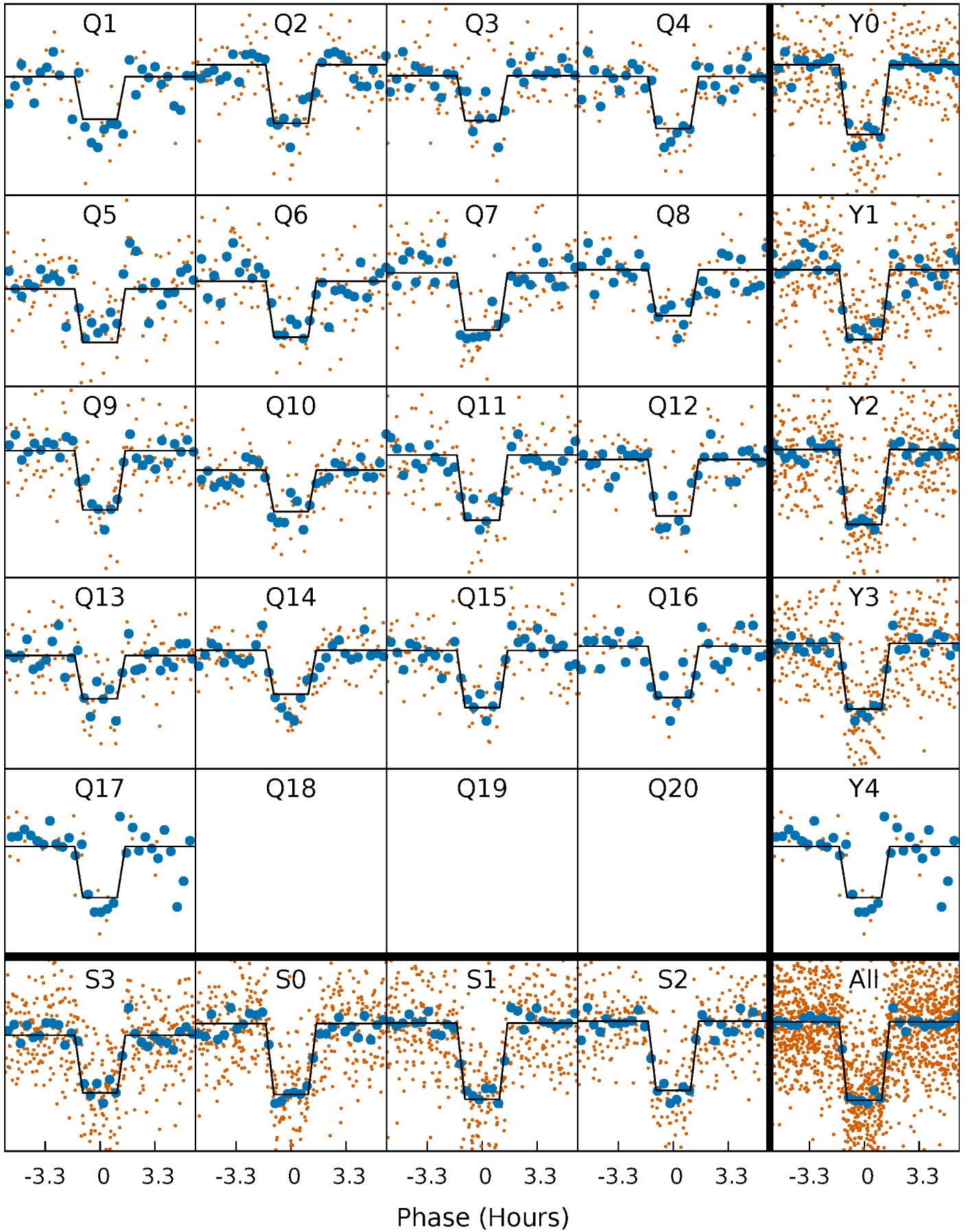
# DV Quarter-Phased Transit Curves

TCE 010599206-01 P= 18.427924 Days  $T_0=141.585017$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

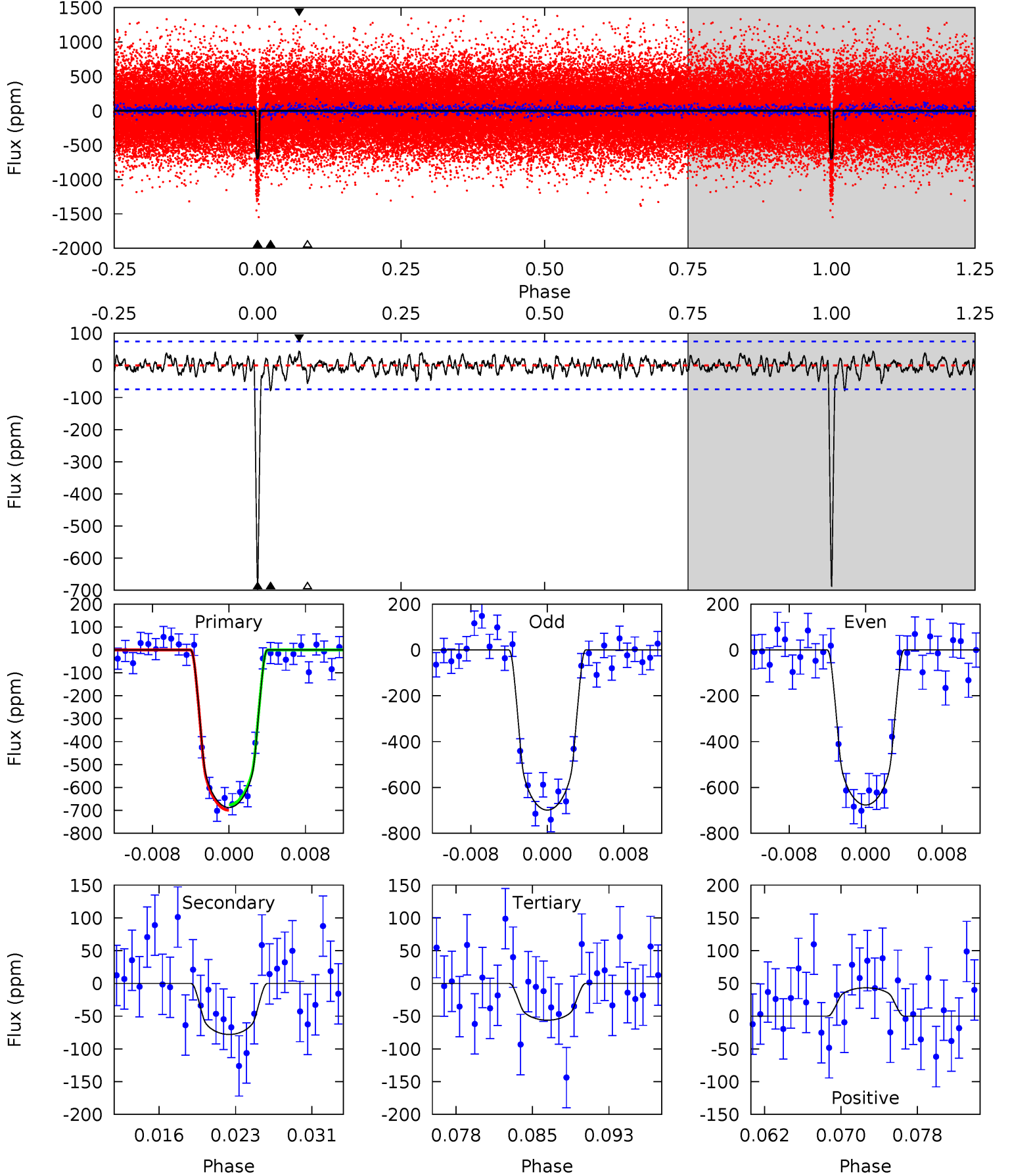
TCE 010599206-01 P= 18.428010 Days  $T_0=141.581508$  (BKJD)



# DV Model-Shift Uniqueness Test

010599206-01,  $P = 18.427924$  Days,  $E = 123.157093$  Days

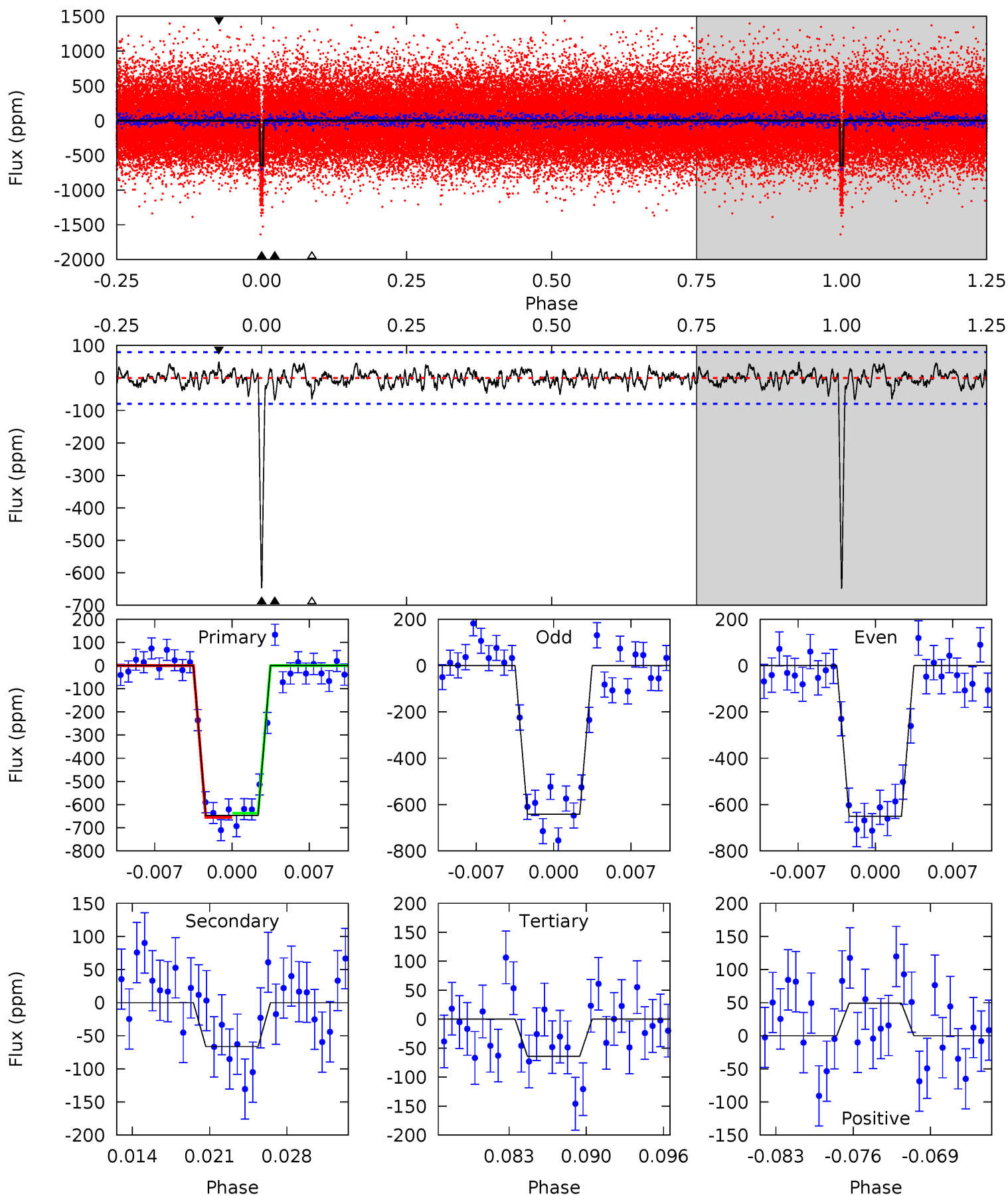
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.9	5.31	3.83	2.95	5.07	2.66	1.14	43.0	43.9	1.49	2.36	0.76	0.94	0.06	0.78



# Alt Model-Shift Uniqueness Test

010599206-01,  $P = 18.428010$  Days,  $E = 123.153498$  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
41.4	4.24	4.10	3.14	5.10	2.70	1.13	37.2	38.2	0.13	1.10	0.31	1.00	0.07	0.59



### Stellar Parameters For KIC 010599206

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4768^{+85}_{-76}$	$4.536^{+0.052}_{-0.017}$	$0.180^{+0.150}_{-0.150}$	$0.779^{+0.026}_{-0.045}$	$0.759^{+0.042}_{-0.027}$	$2.266^{+0.472}_{-0.165}$
	+2%/-2%	+1%/-0%	+83%/-83%	+3%/-6%	+6%/-4%	+21%/-7%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 010599206-01 / KOI 0476.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-78 \pm 15$	$2.35^{+0.60}_{-0.64}$	$731^{+15}_{-17}$	$3207^{+313}_{-221}$	$121^{+104}_{-47}$
Alt.	$-66 \pm 16$	$2.15^{+0.60}_{-0.58}$	$731^{+14}_{-16}$	$3189^{+370}_{-245}$	$118^{+115}_{-50}$

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



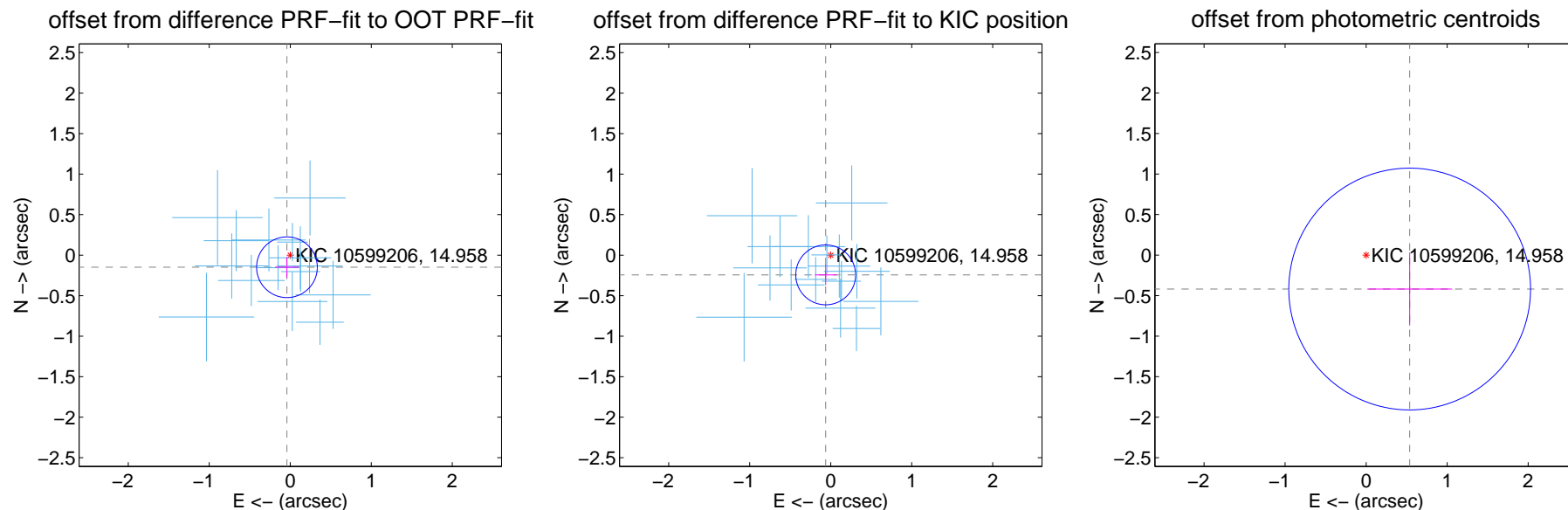
## DV Centroid Data

Supplemental centroid analysis for 010599206-01. Kepler magnitude: 14.96. Transit SNR 34.01

There are 15 quarters with good PRF difference image offsets

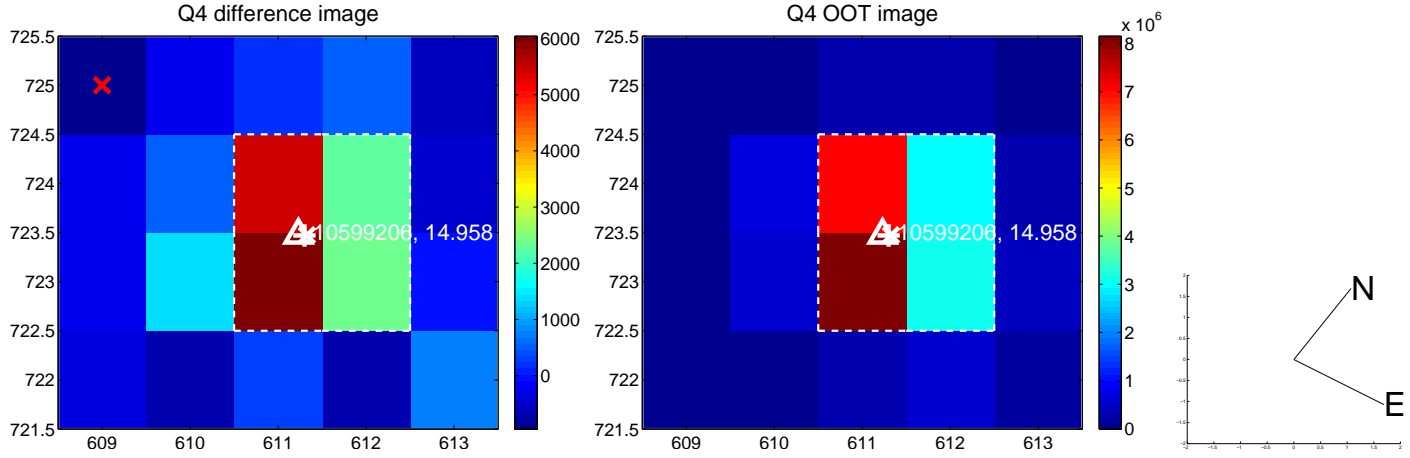
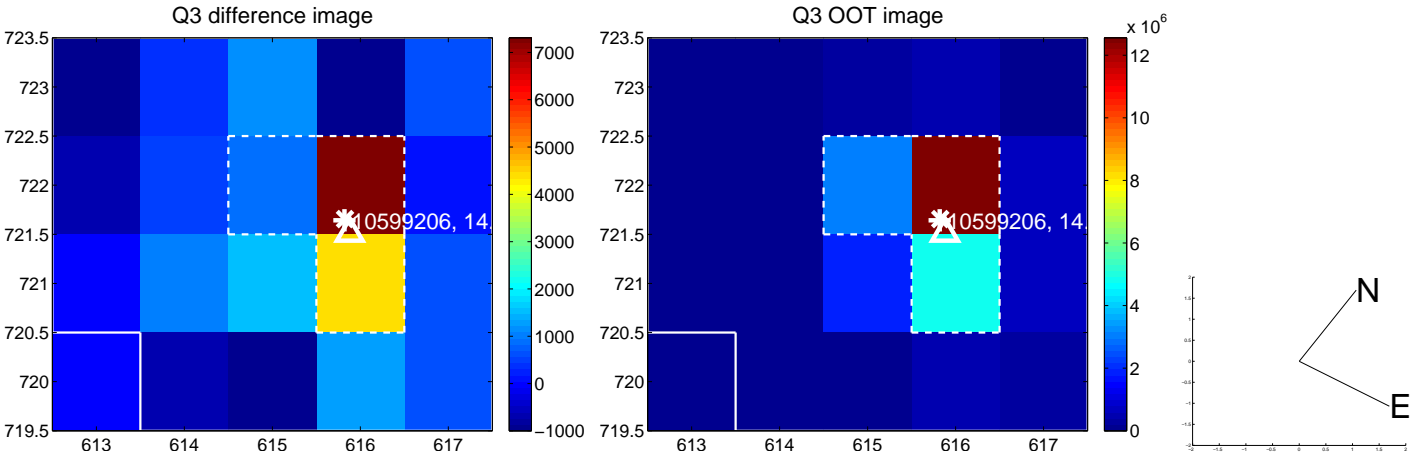
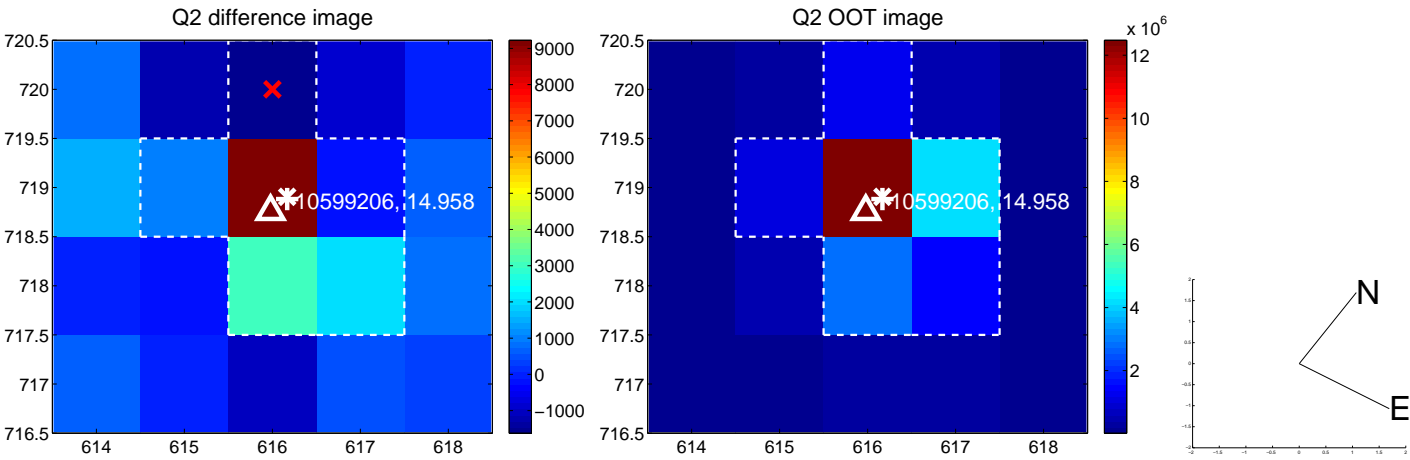
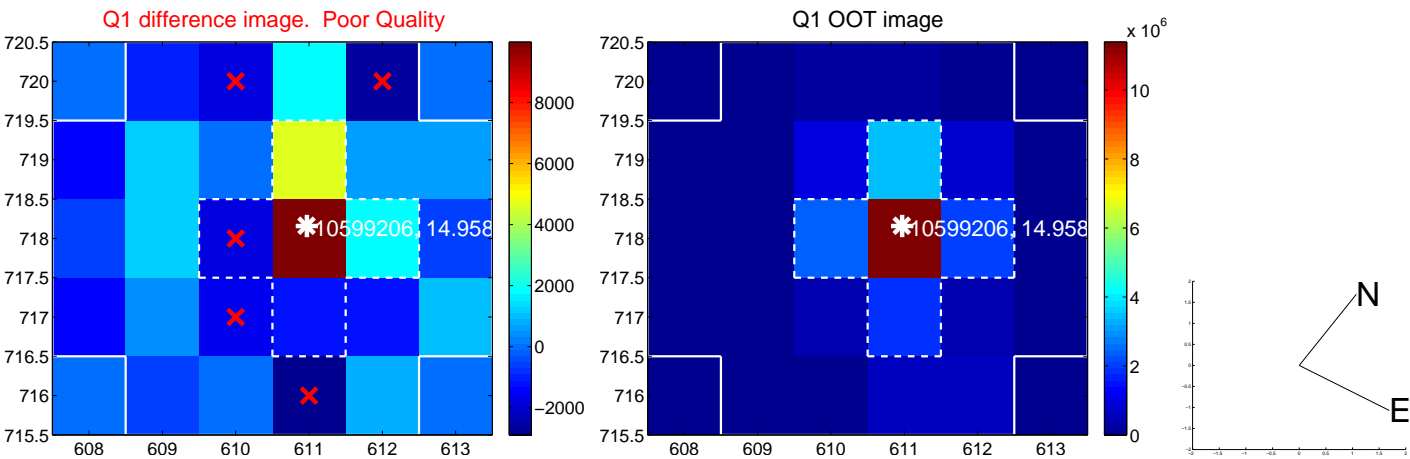
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.155 \pm 0.125$	1.24	$0.041 \pm 0.147$	$-0.149 \pm 0.127$
PRF-fit source offset from KIC position	$0.251 \pm 0.123$	2.04	$0.062 \pm 0.134$	$-0.243 \pm 0.128$
photometric centroid source offset	$0.68 \pm 0.50$	1.37	$-0.54 \pm 0.52$	$-0.42 \pm 0.45$

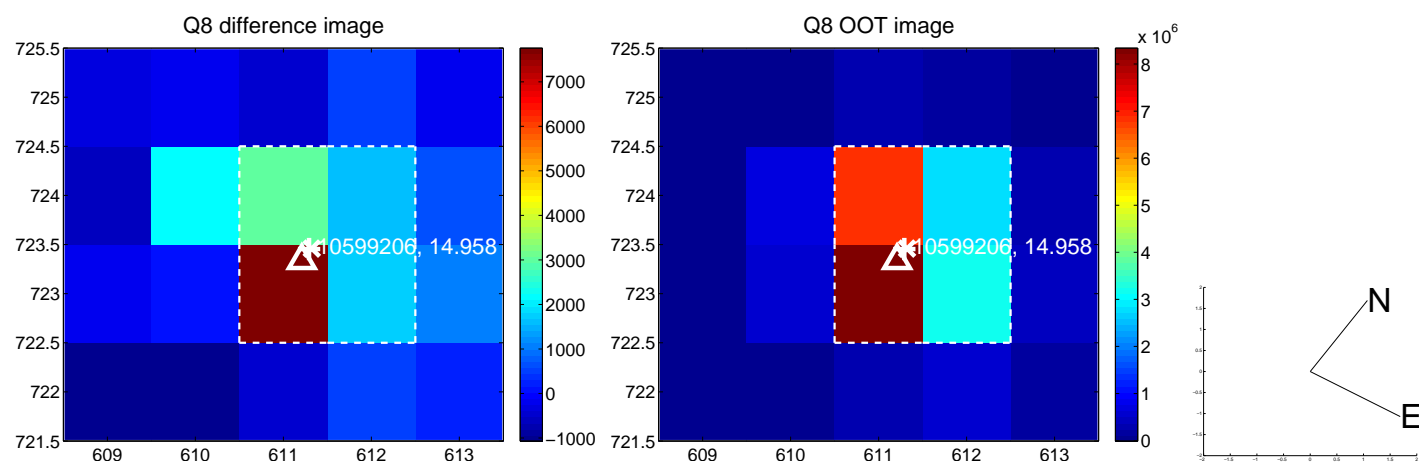
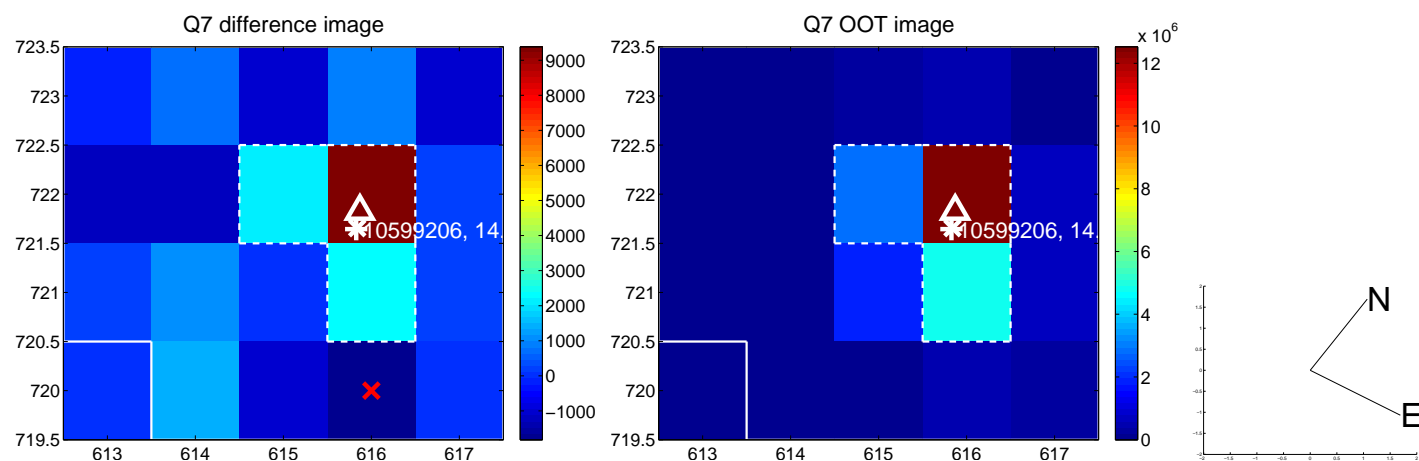
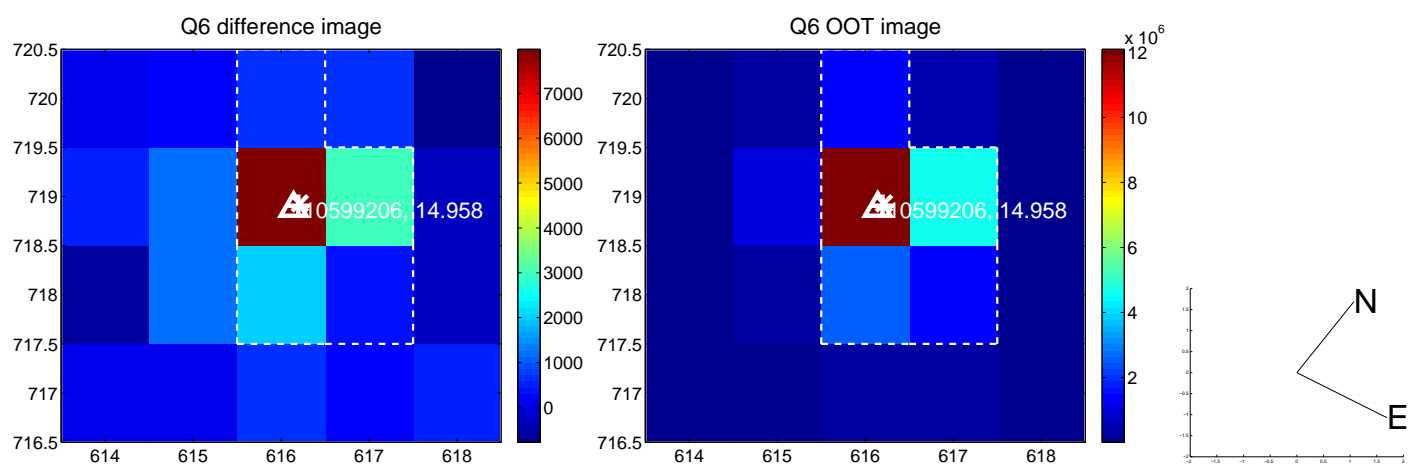
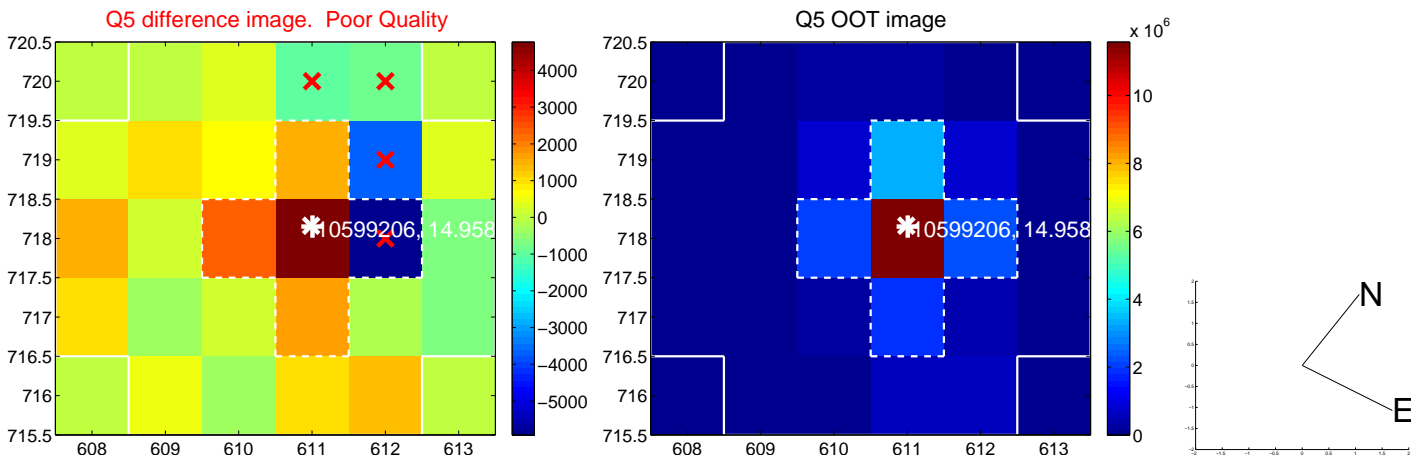


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

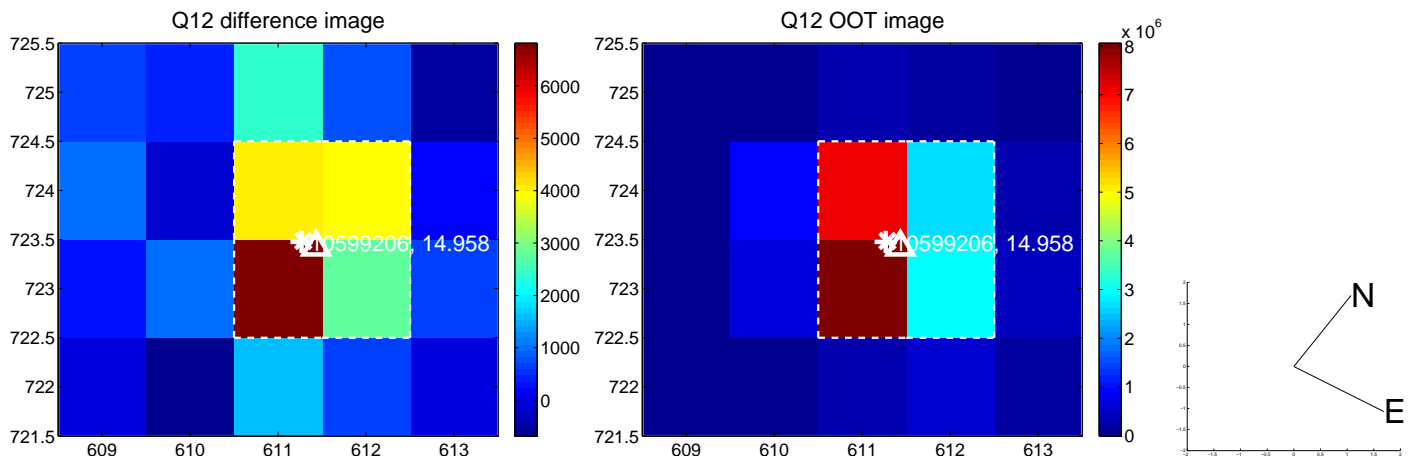
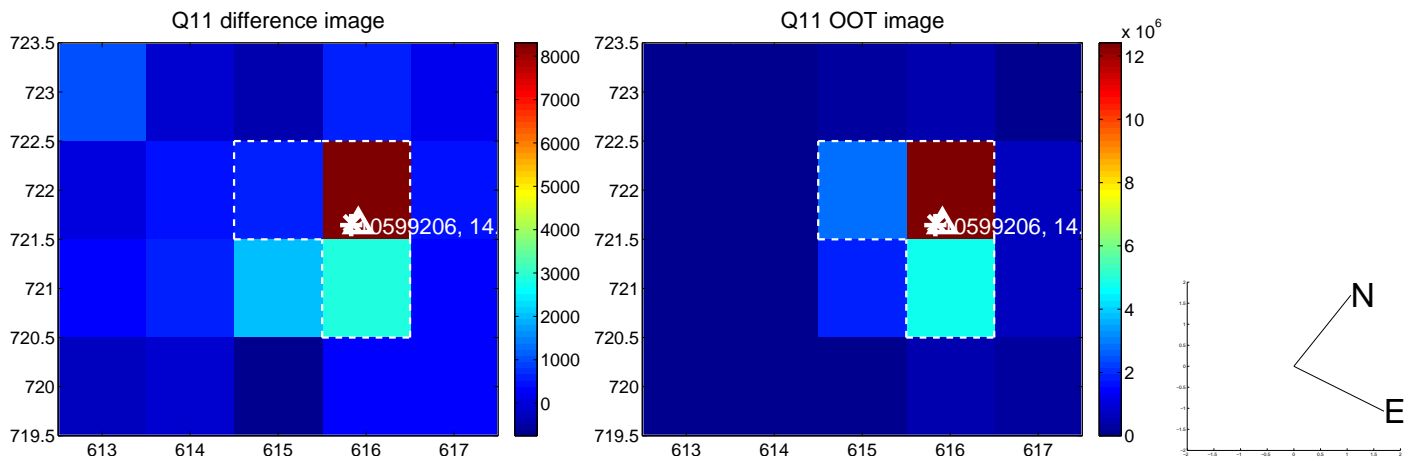
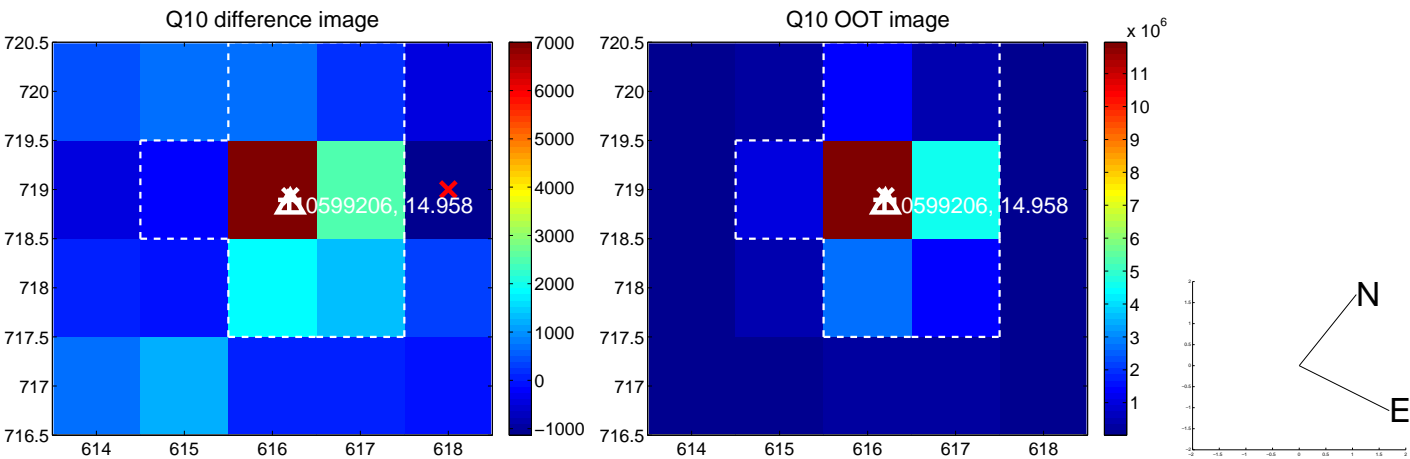
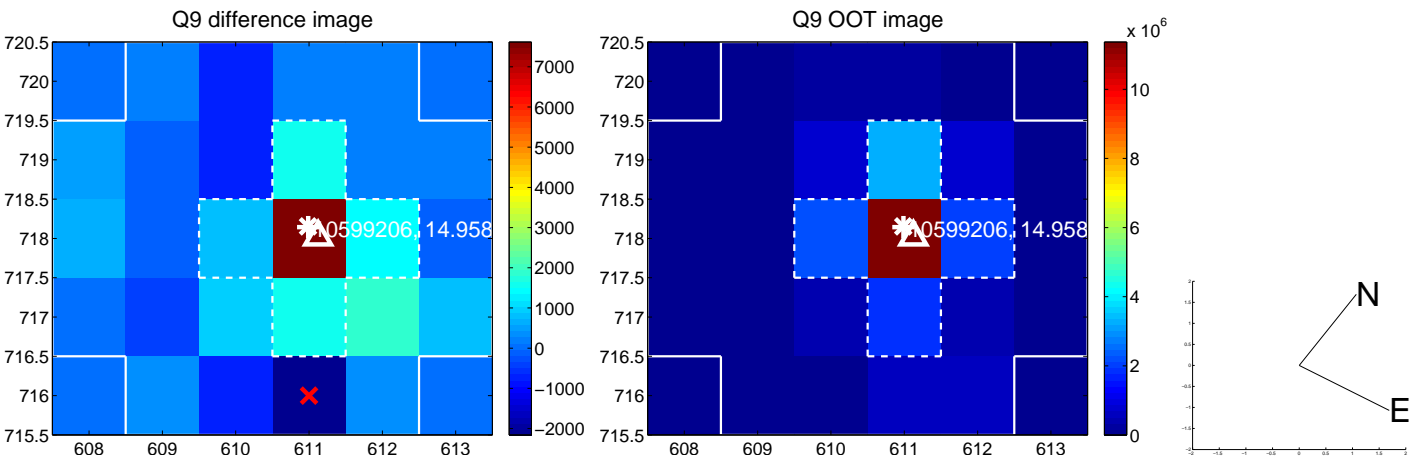
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



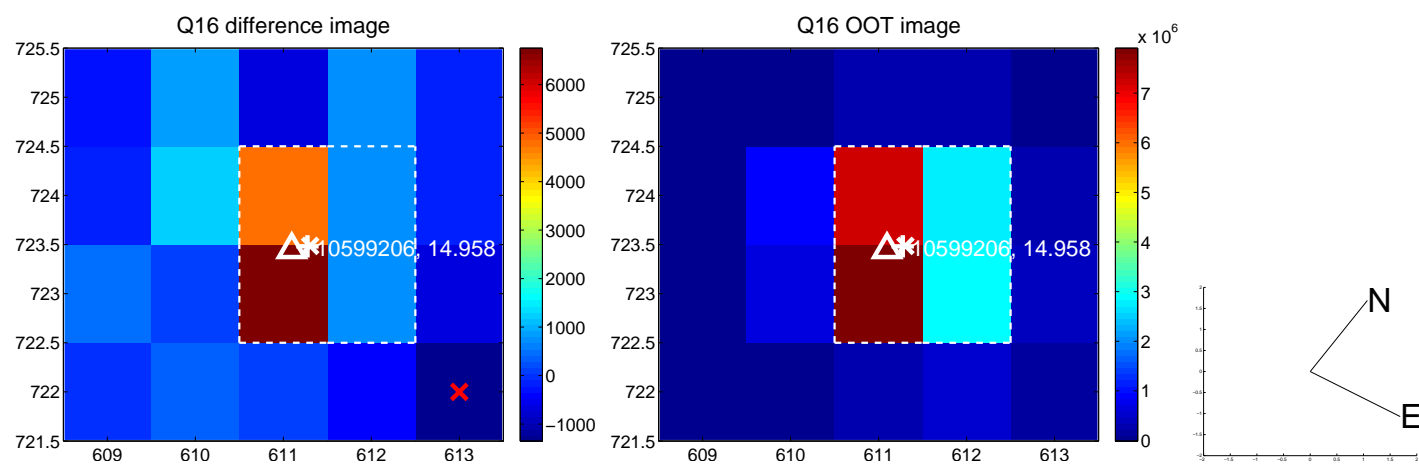
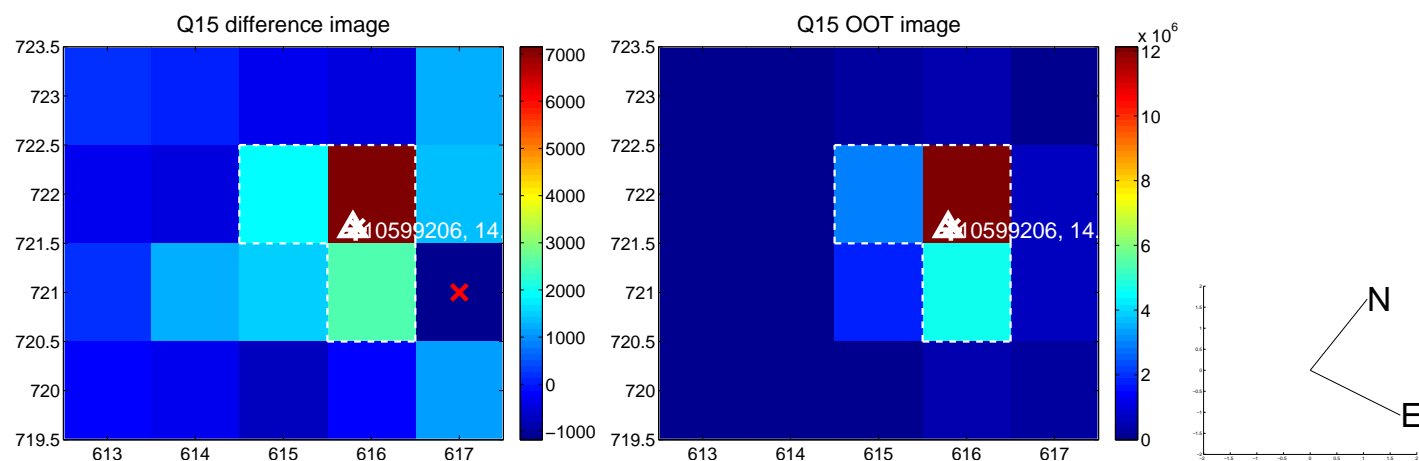
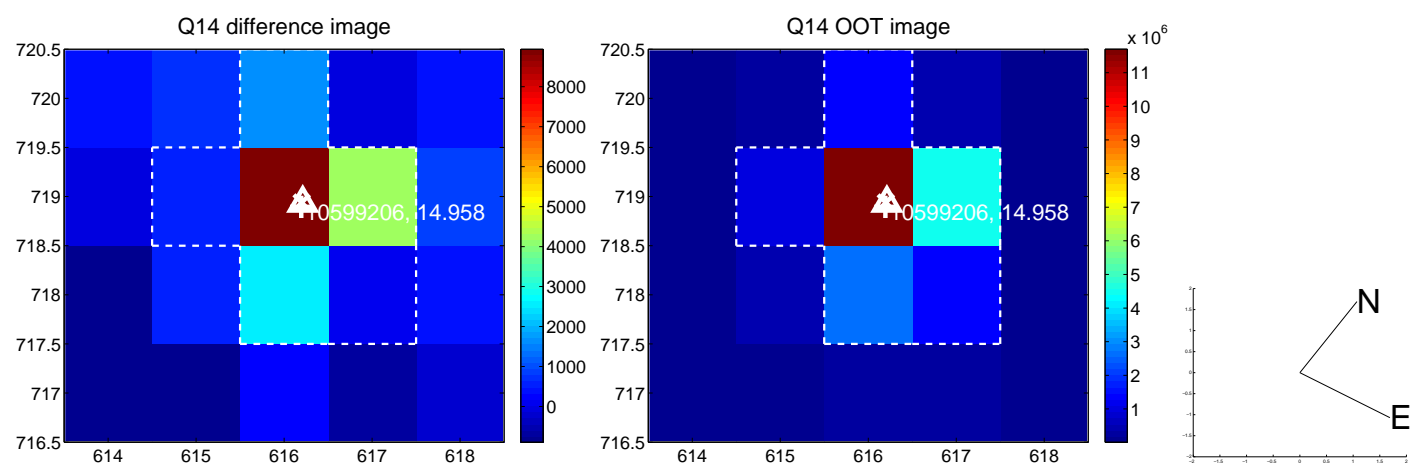
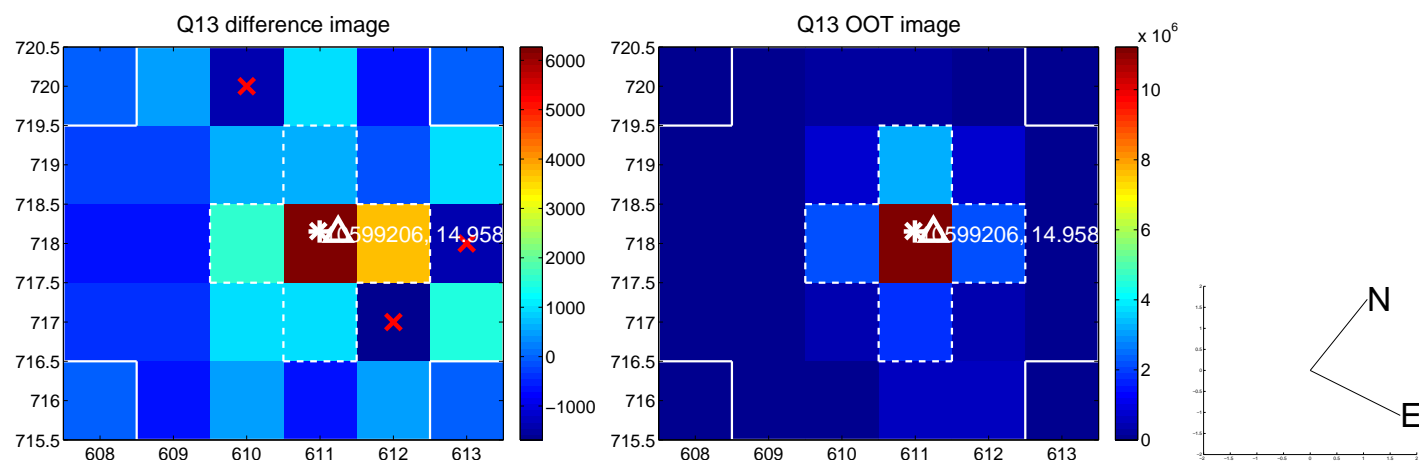
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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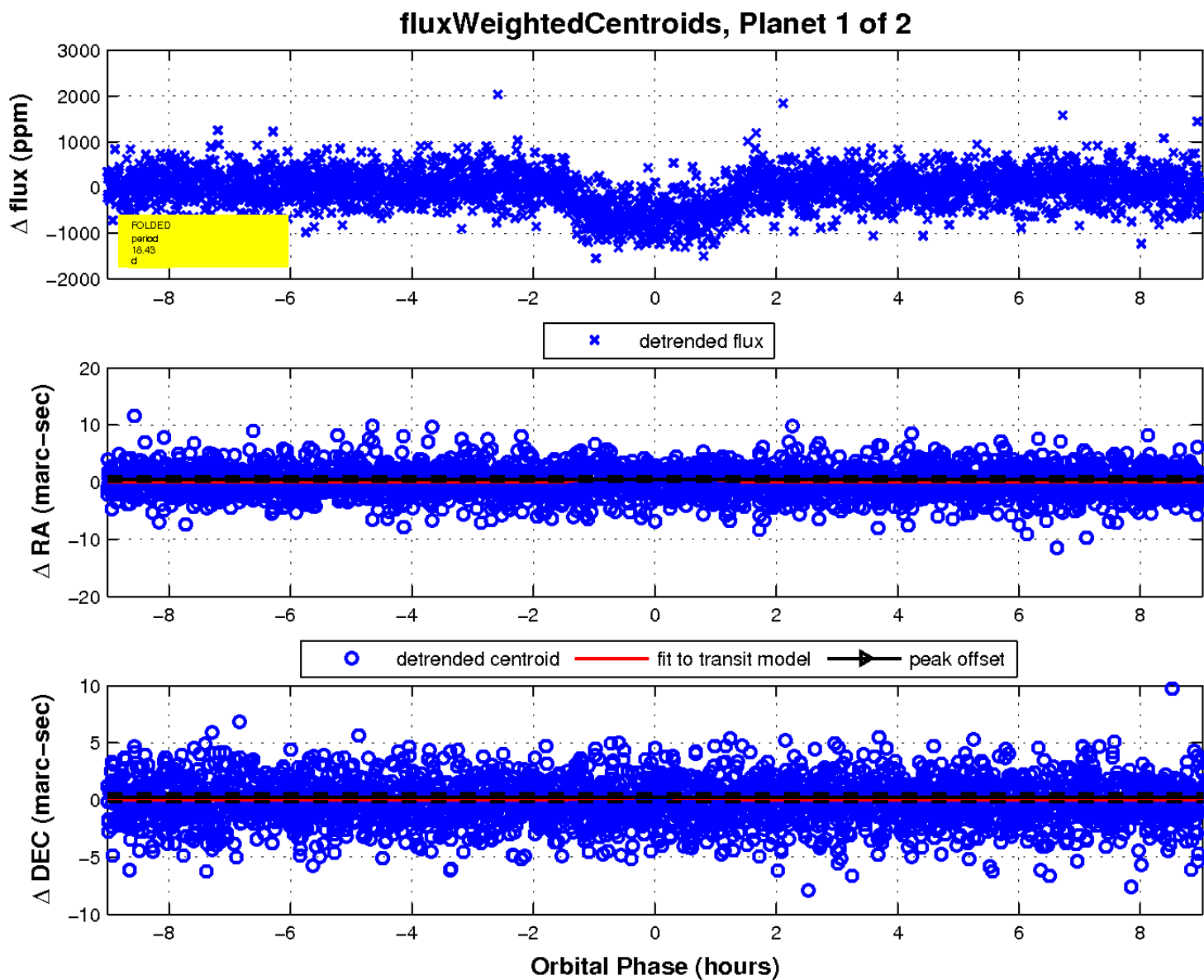
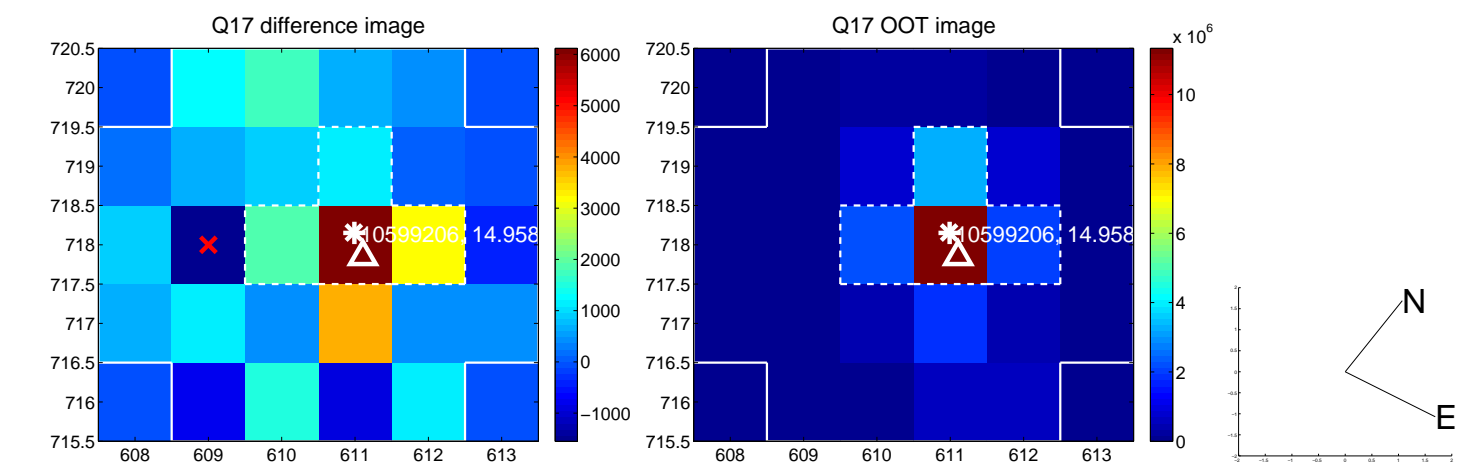


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

