

# KIC 004043190

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004043190-01	OBS	1220.01	6.400866	136.881746	133.1	2.607	19.2	20.8	1.42	5426	1.97	358.28

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004043190-01	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.

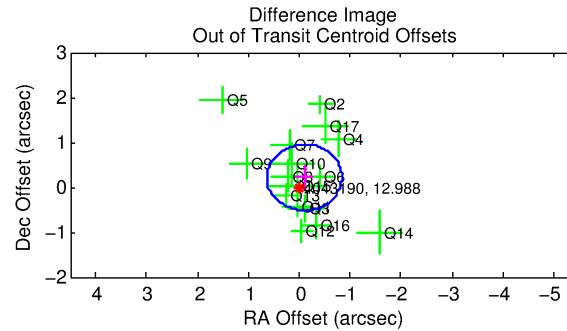
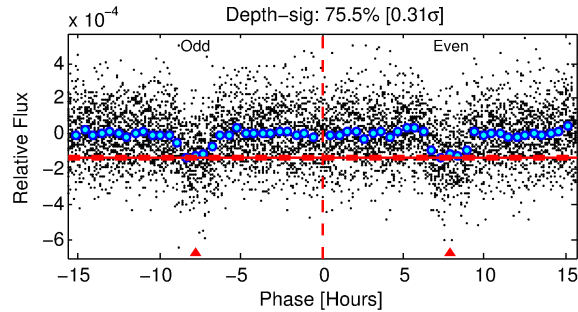
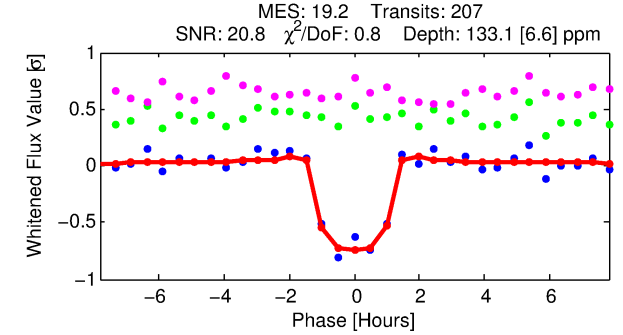
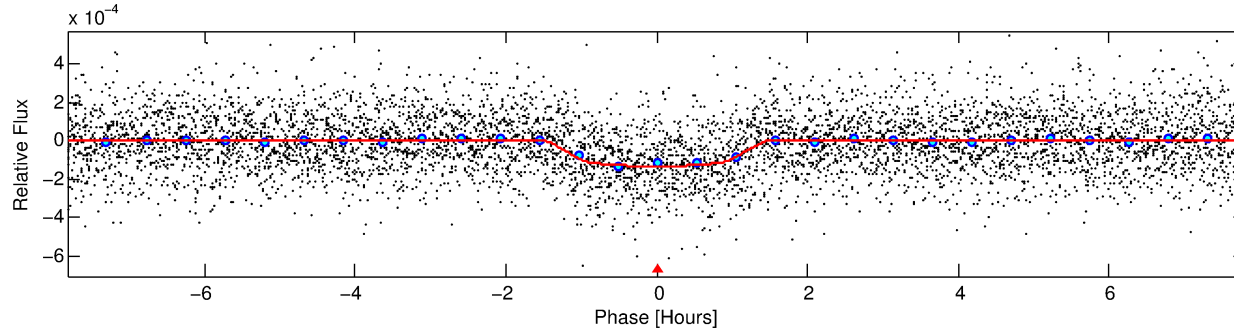
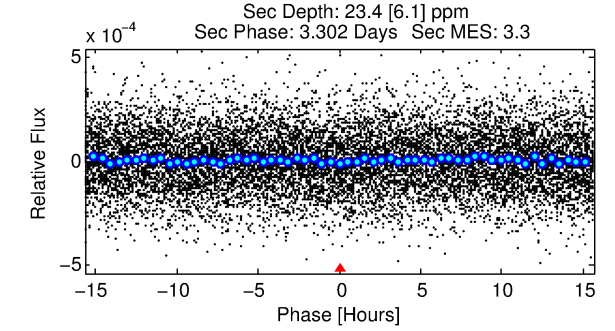
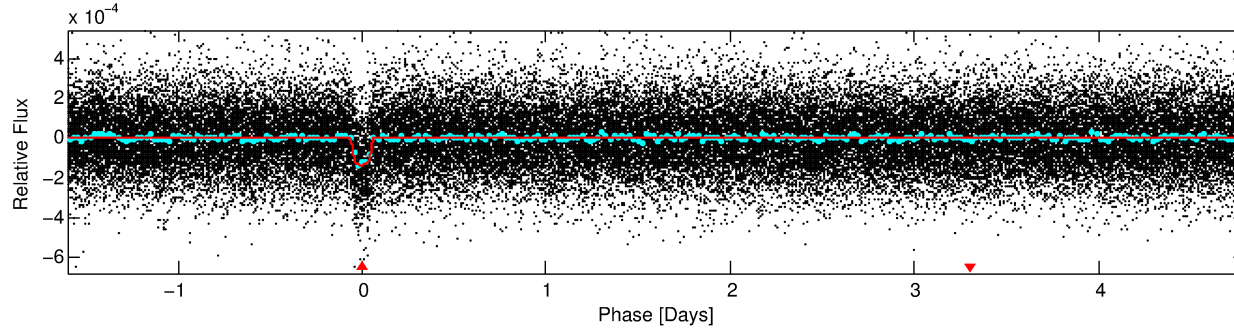
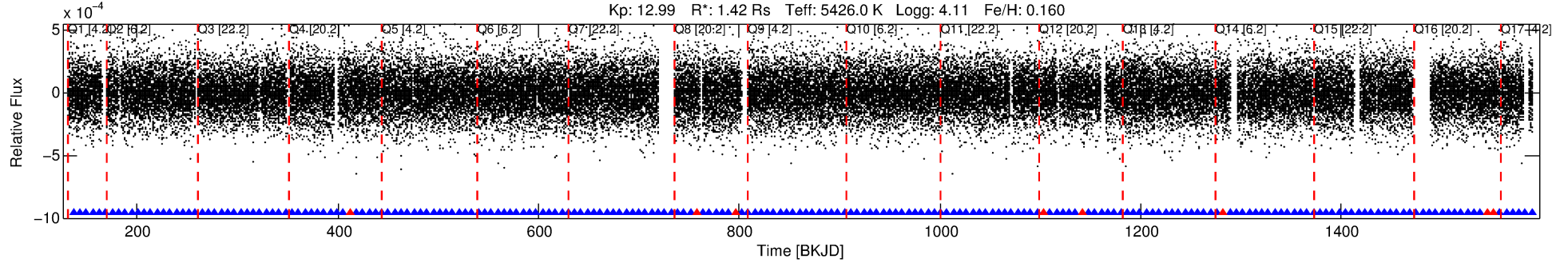
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004043190-01

No Significant Match Found

# DV One-Page Summary

KIC: 4043190 Candidate: 1 of 1 Period: 6.401 d  
KOI: K01220.01 Corr: 0.980



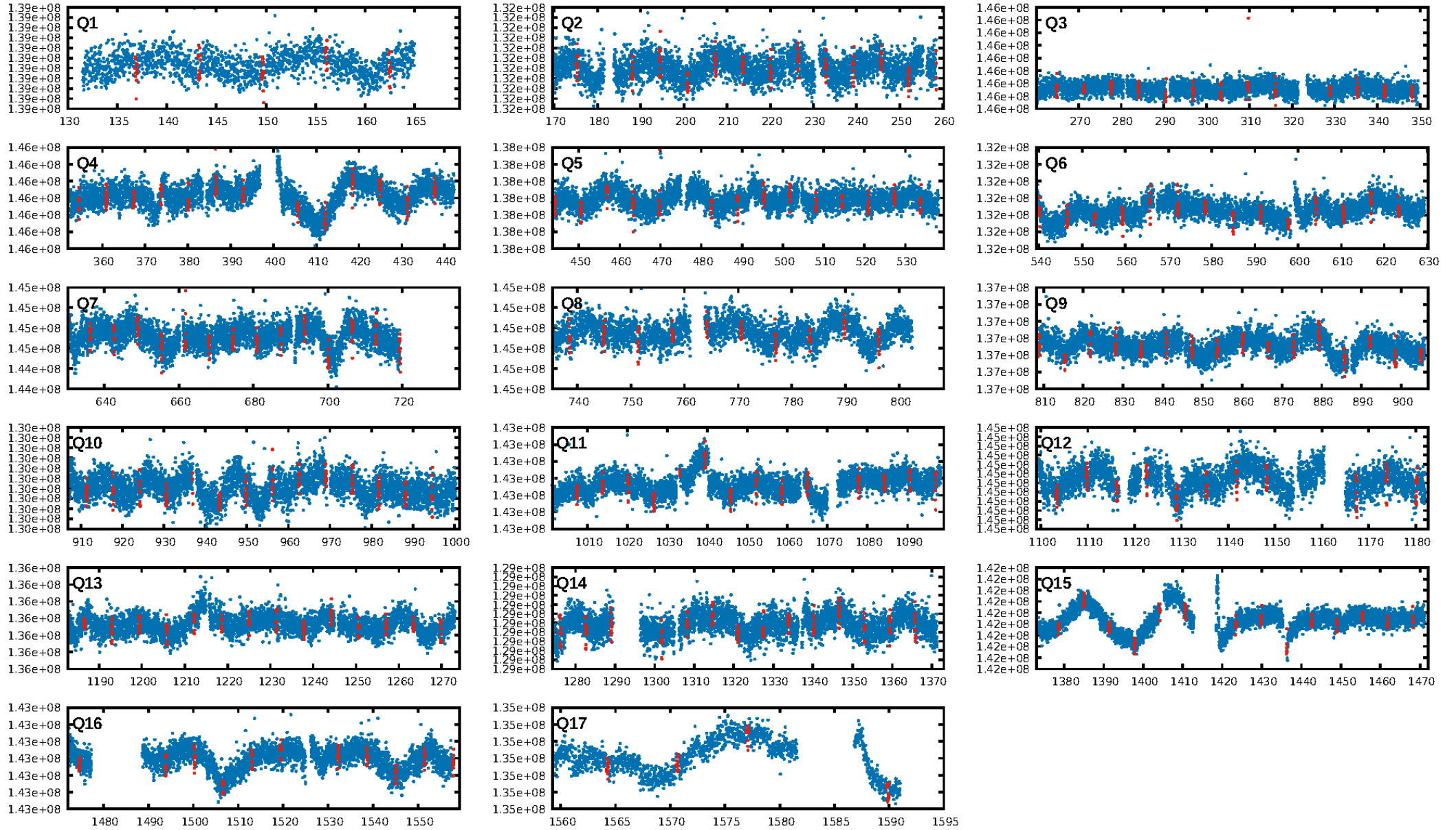
## DV Fit Results:

Period = 6.40087 [0.00002] d  
Epoch = 136.8817 [0.0021] BKJD  
Rp/R\* = 0.0127 [0.0040]  
a/R\* = 8.87 [11.97]  
b = 0.90 [0.30]  
Seff = 358.28 [143.05]  
Teq = 1109 [111] K  
Rp = 1.97 [0.80] Re  
a = 0.0662 [0.0163] AU  
Ag = 14.53 [11.40] [1.19σ]  
Teffp = 3349 [575] K [3.83σ]

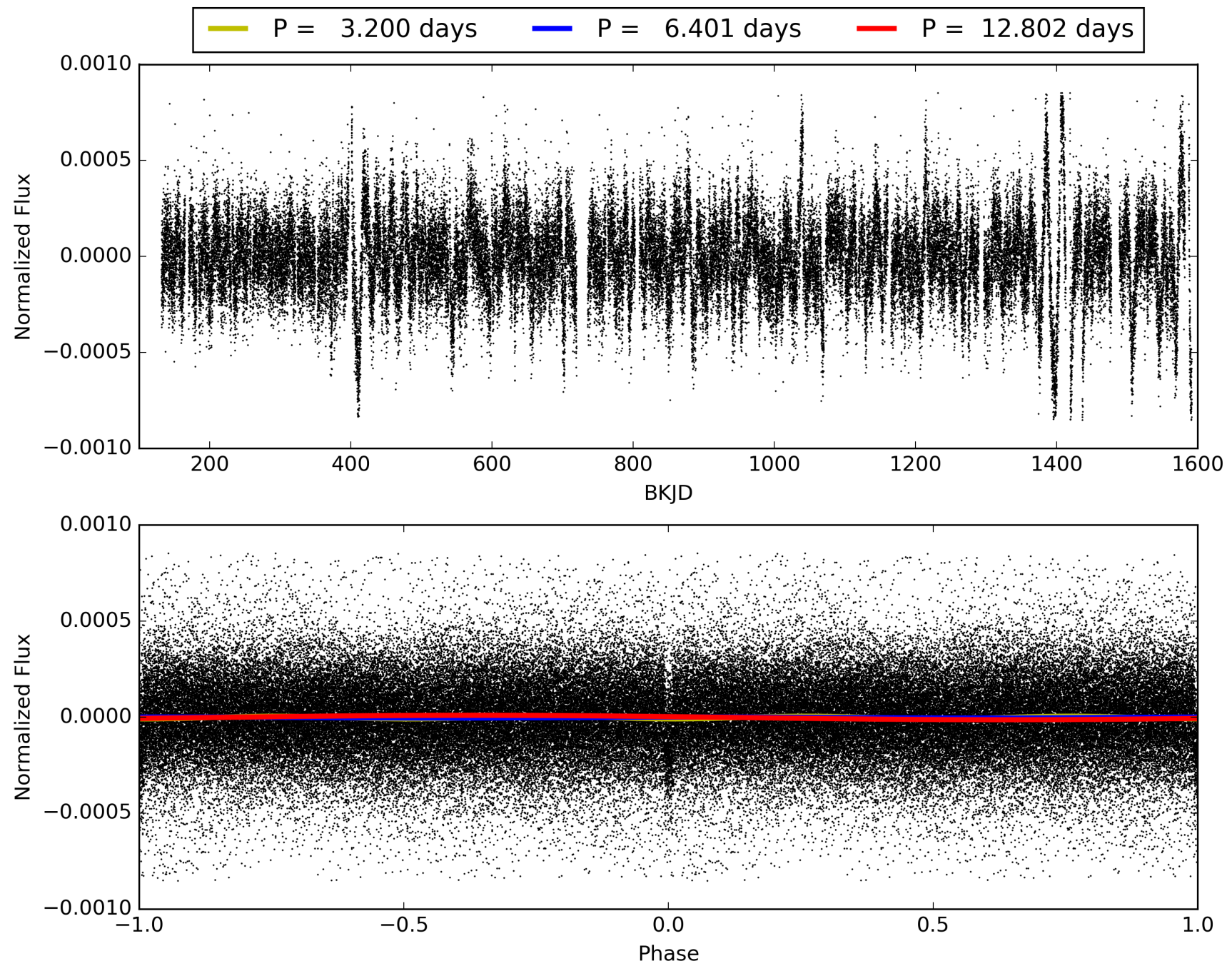
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.51e-78  
RollingBand-fgt: 0.96 [190/198]  
GhostDiagnostic-chr: 4.926  
Centroid-sig: 0.3%  
Centroid-so: 0.919 arcsec [1.98σ]  
OotOffset-rm: 0.237 arcsec [0.97σ]  
KicOffset-rm: 0.224 arcsec [0.86σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 004043190-01, PDC Light Curves

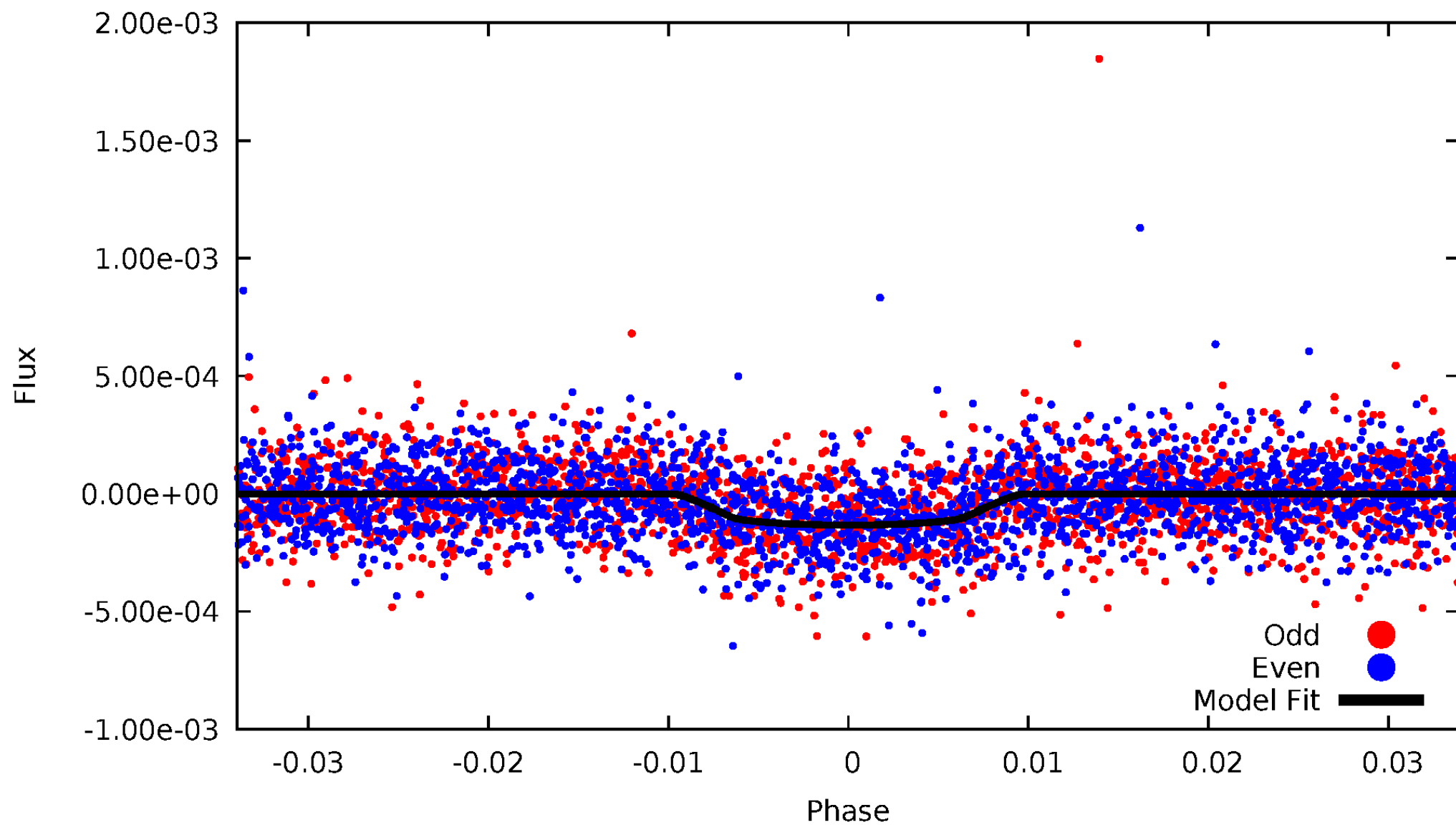


TCE 004043190-01



# DV Odd/Even

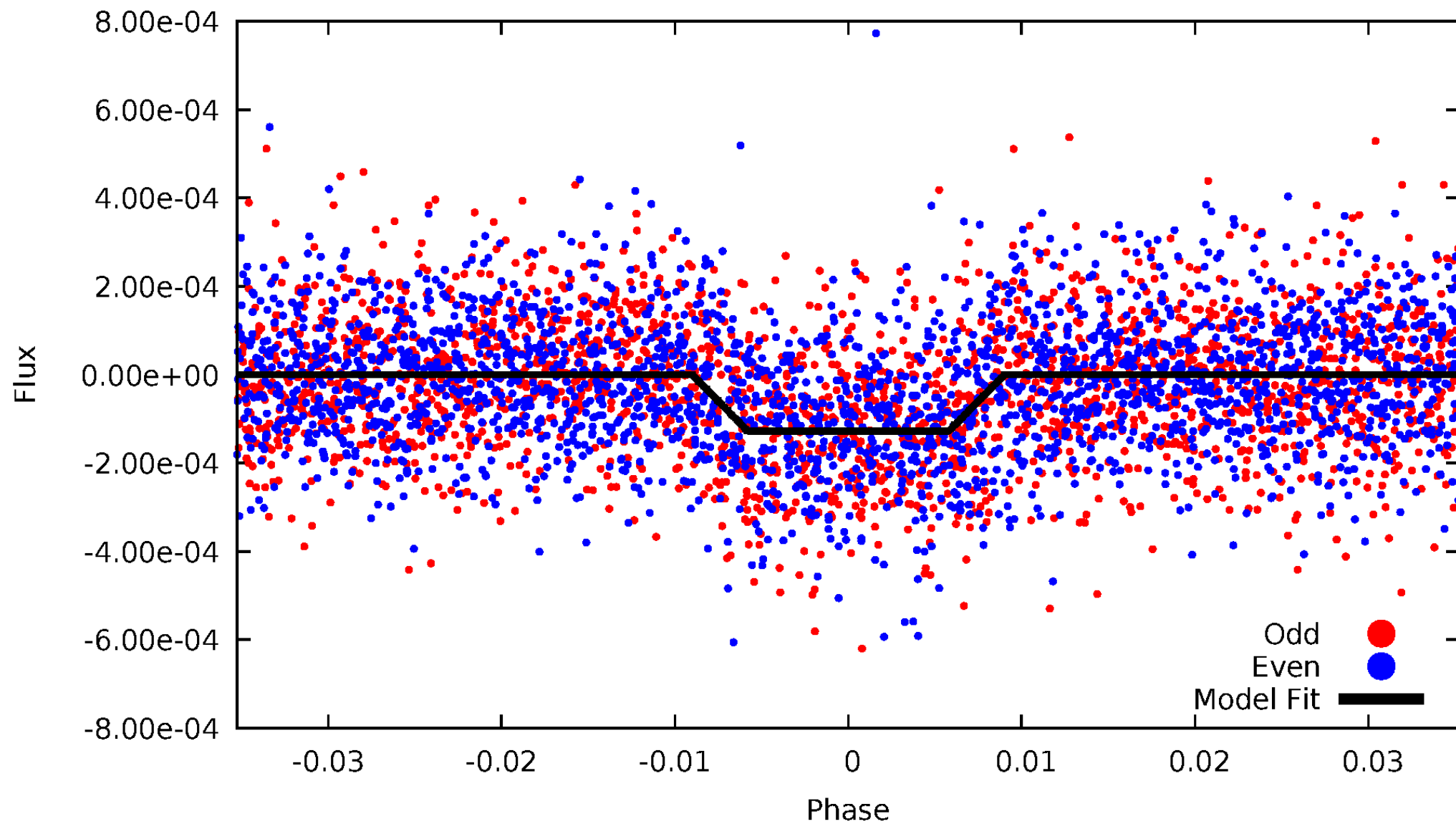
TCE 004043190-01





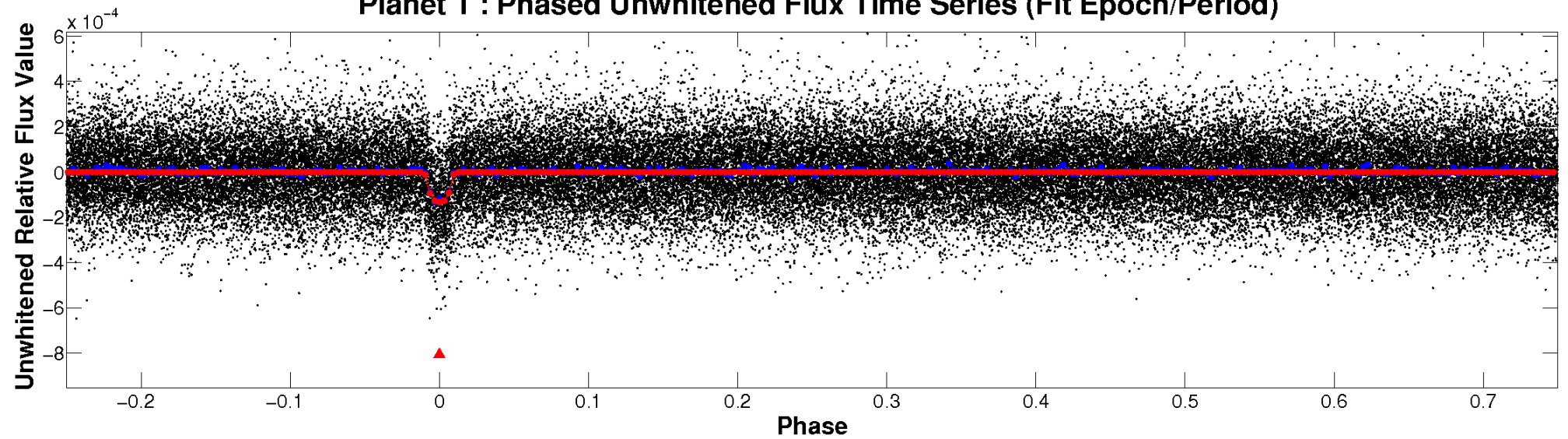
# ALT Odd/Even

TCE 004043190-01

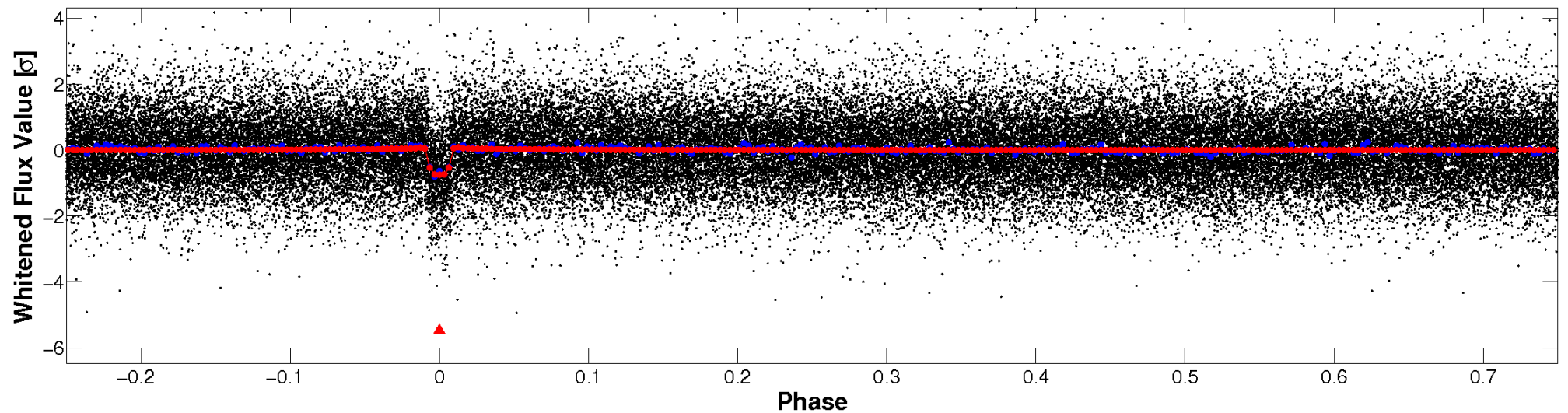


# Non-Whitened Vs. Whitened Light Curve

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

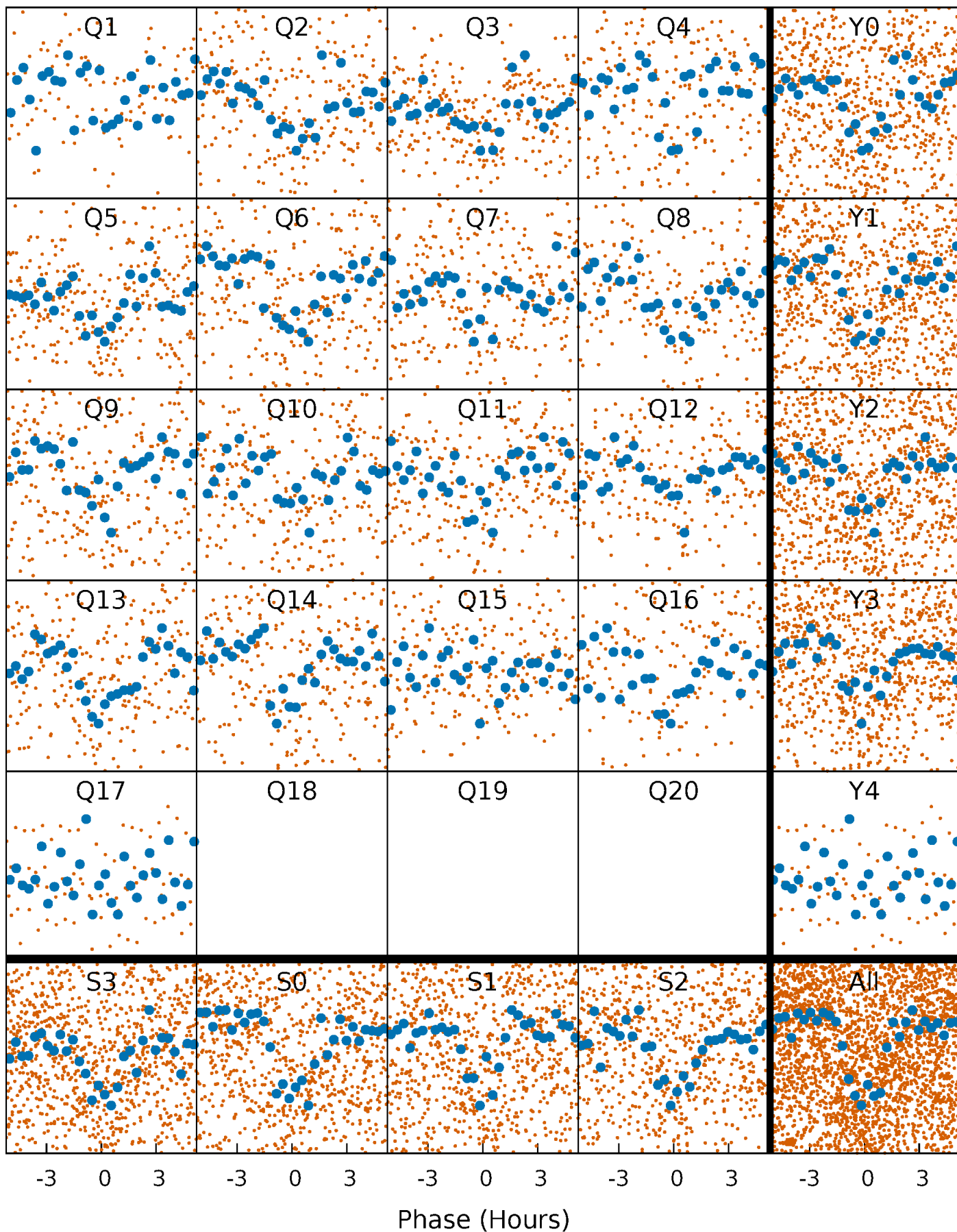


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

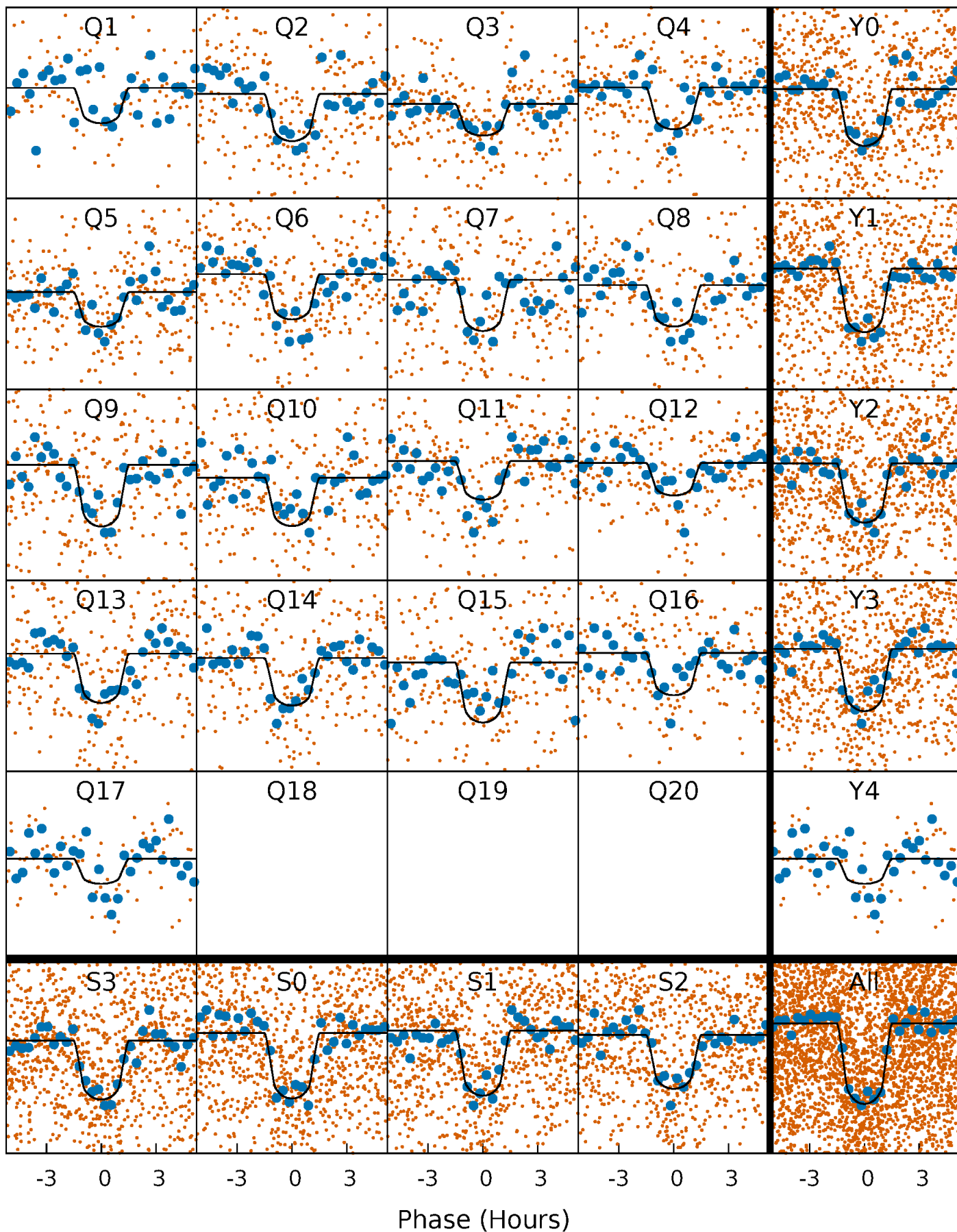
TCE 004043190-01   P= 6.400866 Days    $T_0=136.881746$  (BKJD)





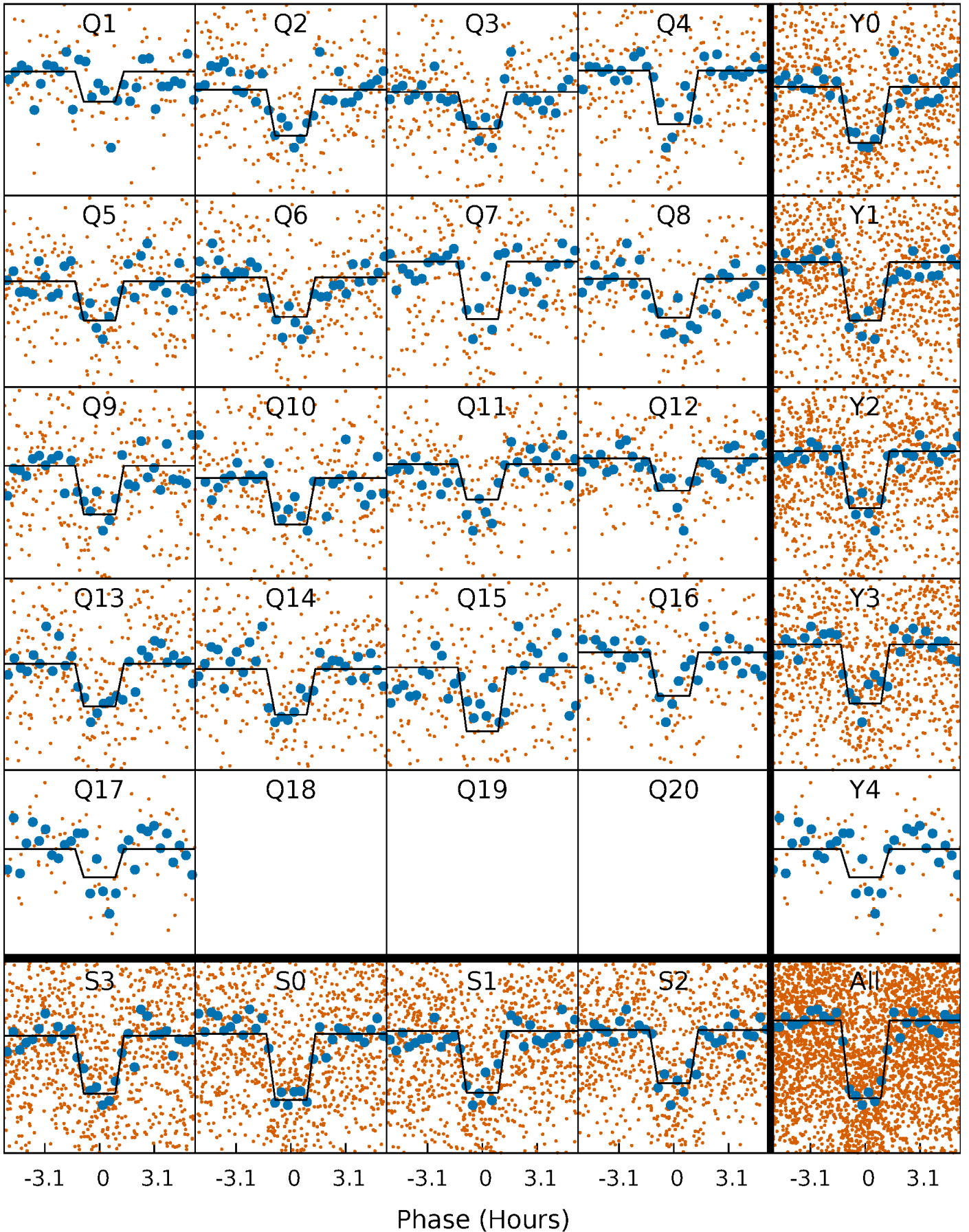
# DV Quarter-Phased Transit Curves

TCE 004043190-01 P= 6.400866 Days  $T_0=136.881746$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

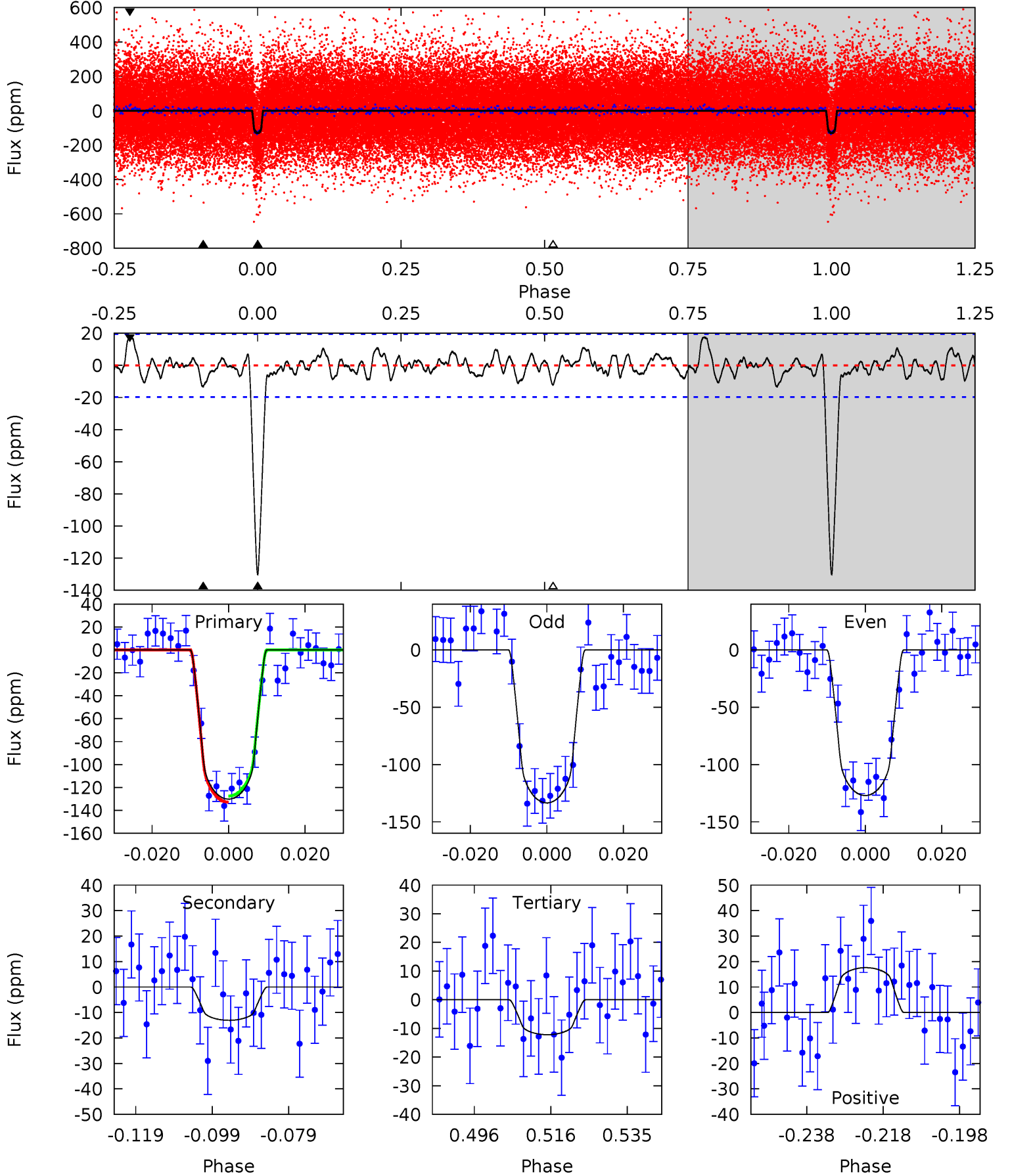
TCE 004043190-01 P= 6.400856 Days  $T_0=136.883544$  (BKJD)



# DV Model-Shift Uniqueness Test

004043190-01, P = 6.400866 Days, E = 130.480880 Days

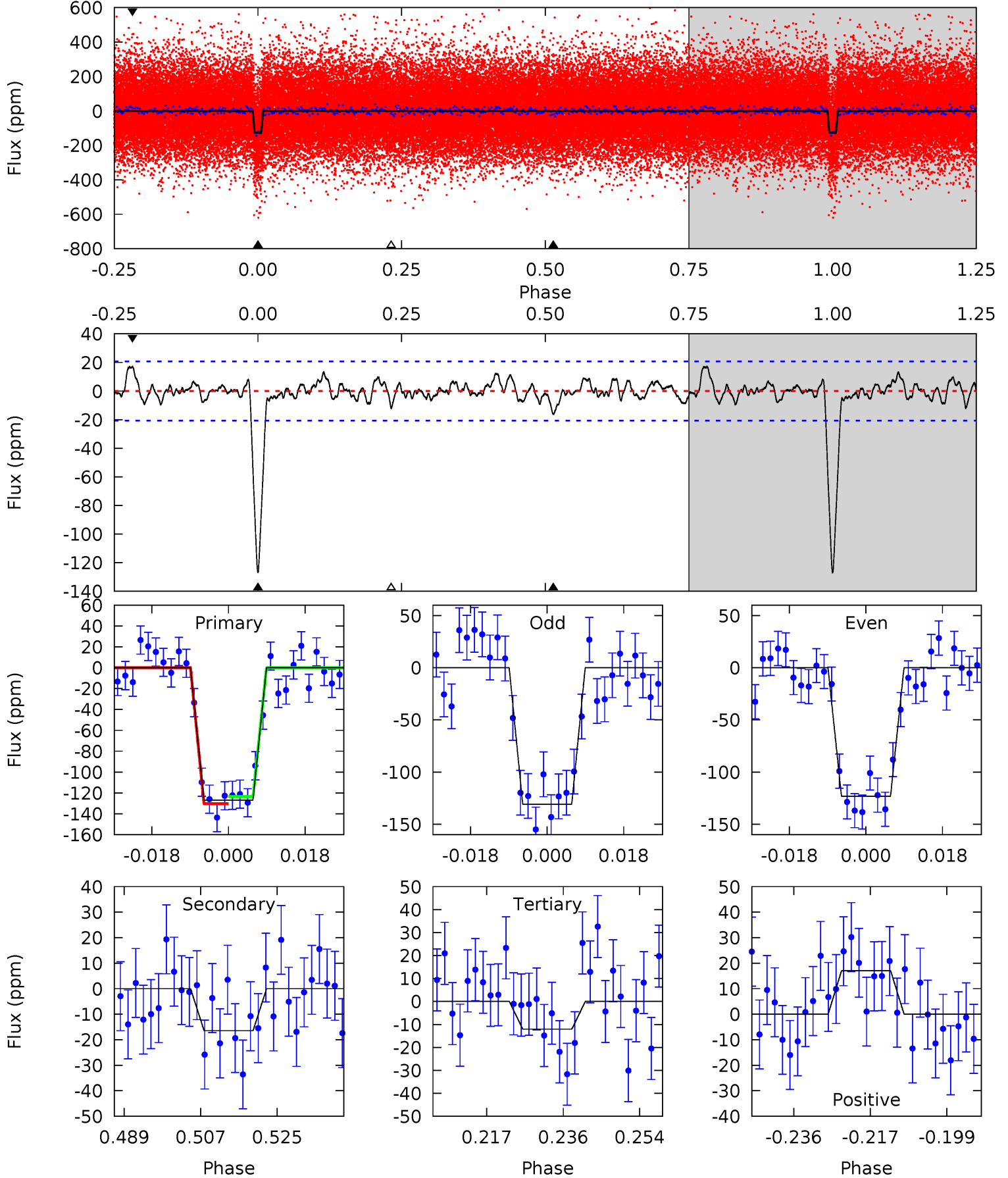
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.4	3.25	3.03	4.38	4.89	2.33	1.25	29.4	28.0	0.22	-1.13	0.80	1.00	0.12	0.66



# Alt Model-Shift Uniqueness Test

004043190-01, P = 6.400856 Days, E = 130.482688 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	3.90	2.87	4.06	4.91	2.36	1.16	27.3	26.1	1.03	-0.16	0.91	1.00	0.12	0.81



### Stellar Parameters For KIC 004043190

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5426^{+119}_{-76}$	$4.107^{+0.227}_{-0.105}$	$0.160^{+0.150}_{-0.150}$	$1.421^{+0.247}_{-0.371}$	$0.943^{+0.073}_{-0.043}$	$0.463^{+0.577}_{-0.164}$
	+2%/-1%	+6%/-3%	+94%/-94%	+17%/-26%	+8%/-5%	+125%/-35%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 004043190-01 / KOI 1220.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-13 \pm 4$	$1.90^{+0.63}_{-0.60}$	$1543^{+79}_{-109}$	$3380^{+498}_{-318}$	$8.447^{+10.756}_{-4.132}$
Alt.	$-16 \pm 4$	$1.69^{+0.69}_{-0.63}$	$1541^{+82}_{-112}$	$3645^{+644}_{-365}$	$14^{+23}_{-7}$

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



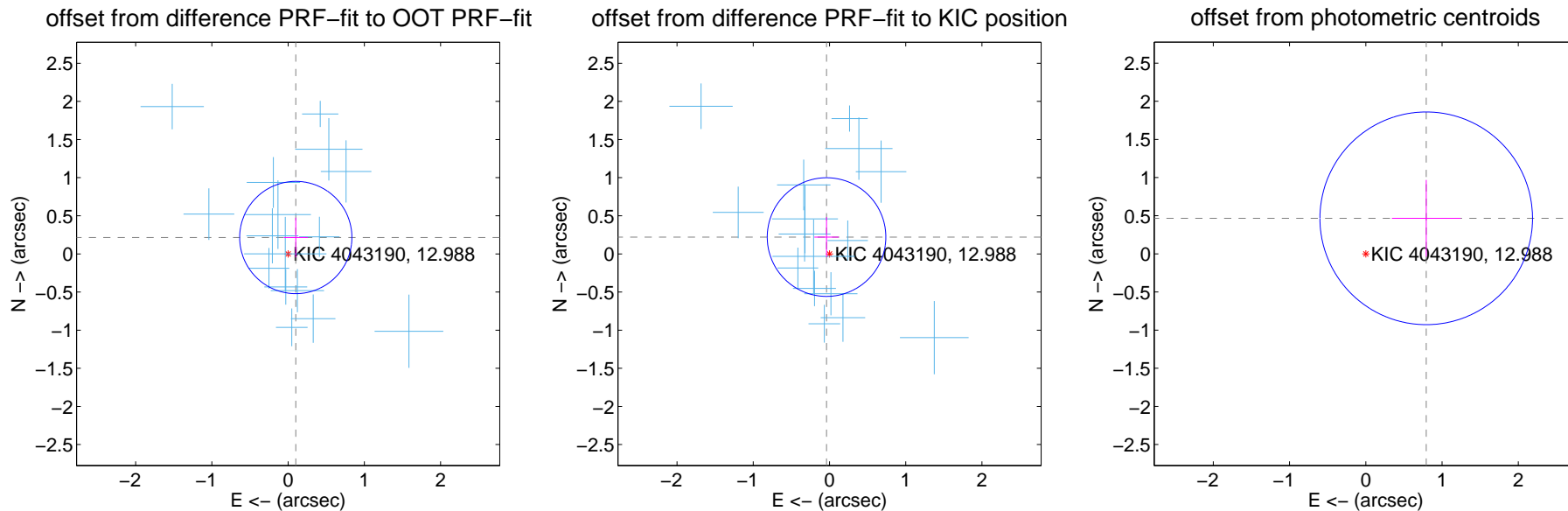
## DV Centroid Data

Supplemental centroid analysis for 004043190-01. Kepler magnitude: 12.99. Transit SNR 20.80

There are 16 quarters with good PRF difference image offsets

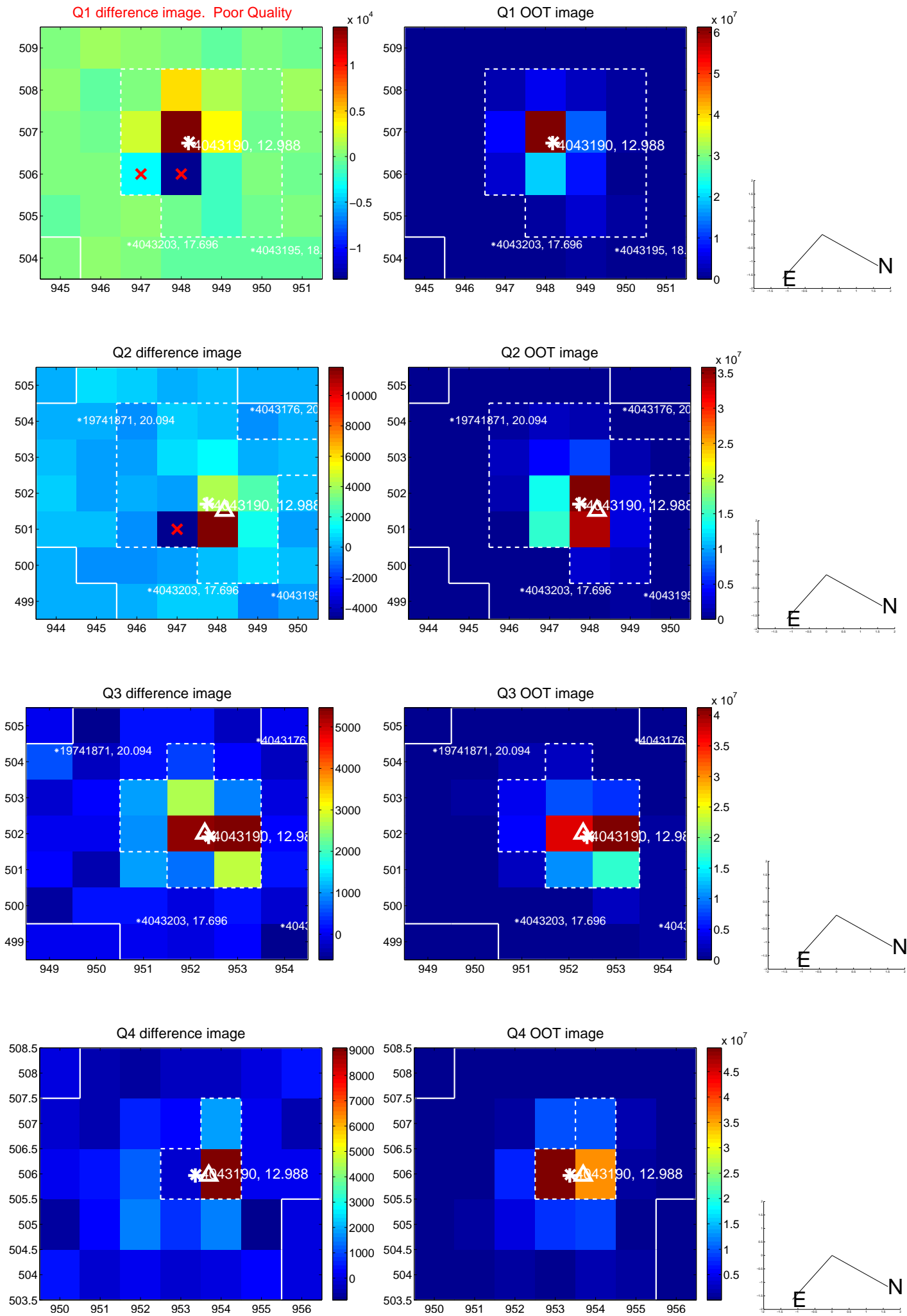
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.237 \pm 0.245$	0.97	$-0.101 \pm 0.160$	$0.215 \pm 0.260$
PRF-fit source offset from KIC position	$0.224 \pm 0.259$	0.86	$0.039 \pm 0.160$	$0.221 \pm 0.262$
photometric centroid source offset	$0.92 \pm 0.46$	1.98	$-0.79 \pm 0.45$	$0.47 \pm 0.50$

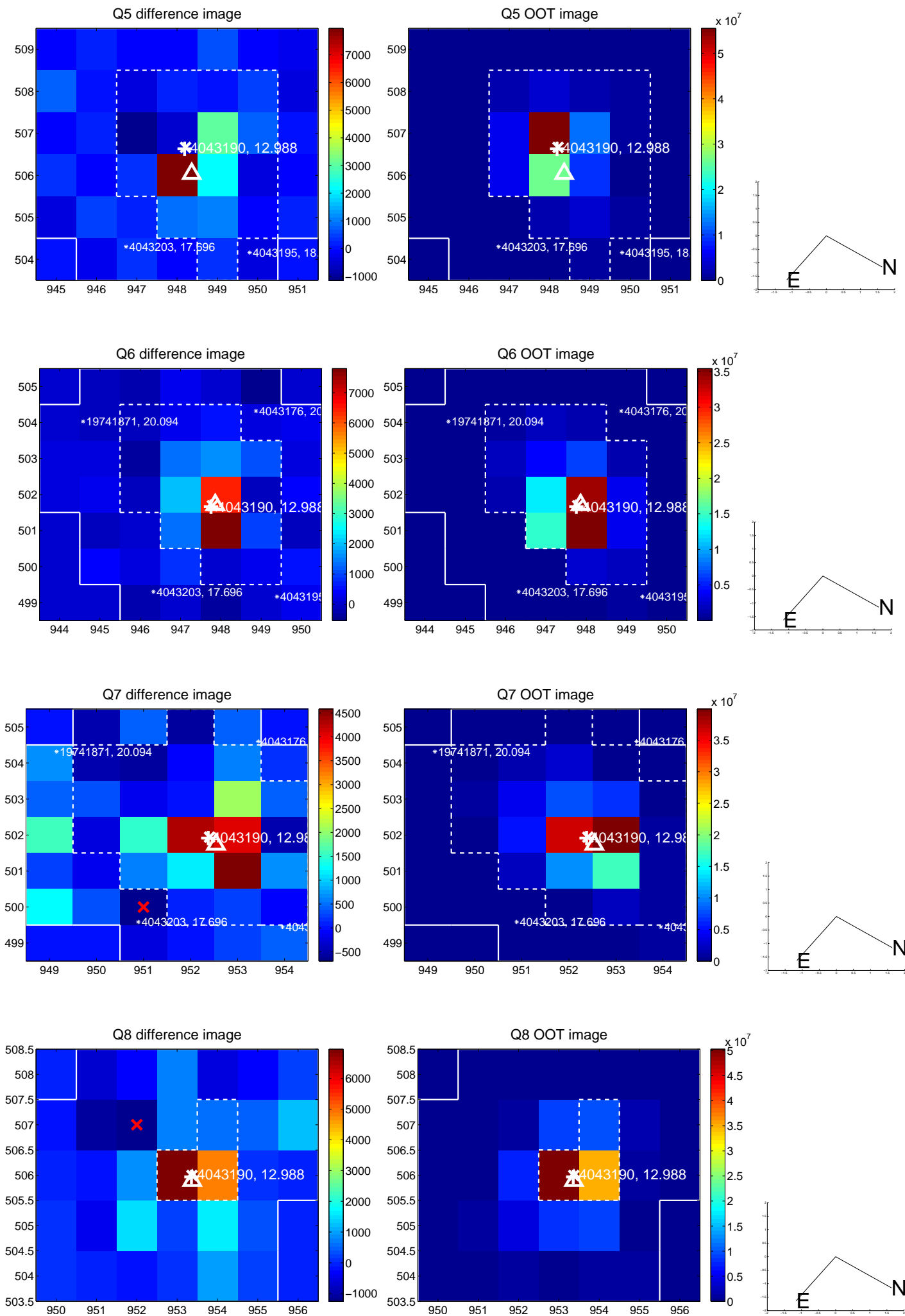


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

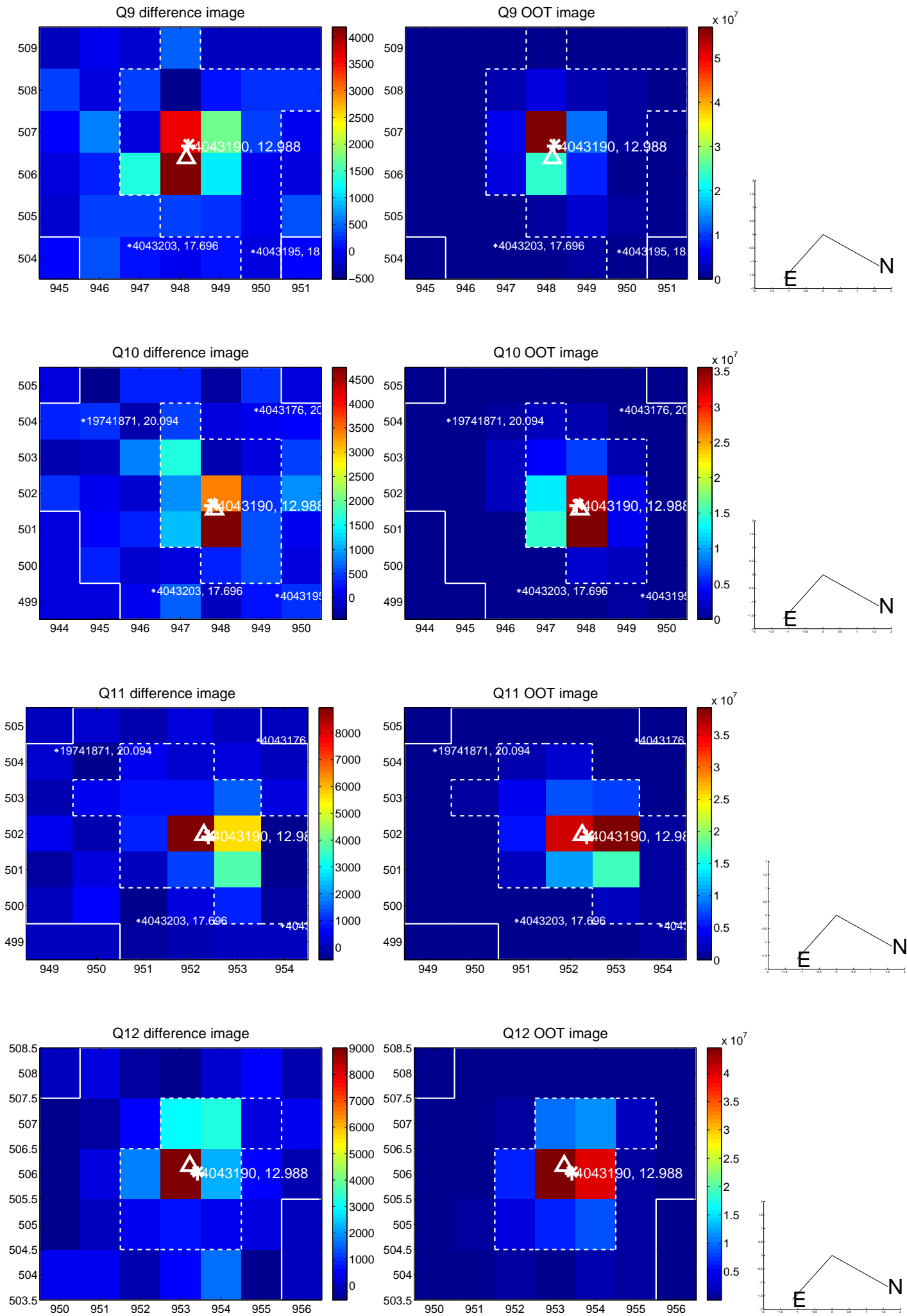
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



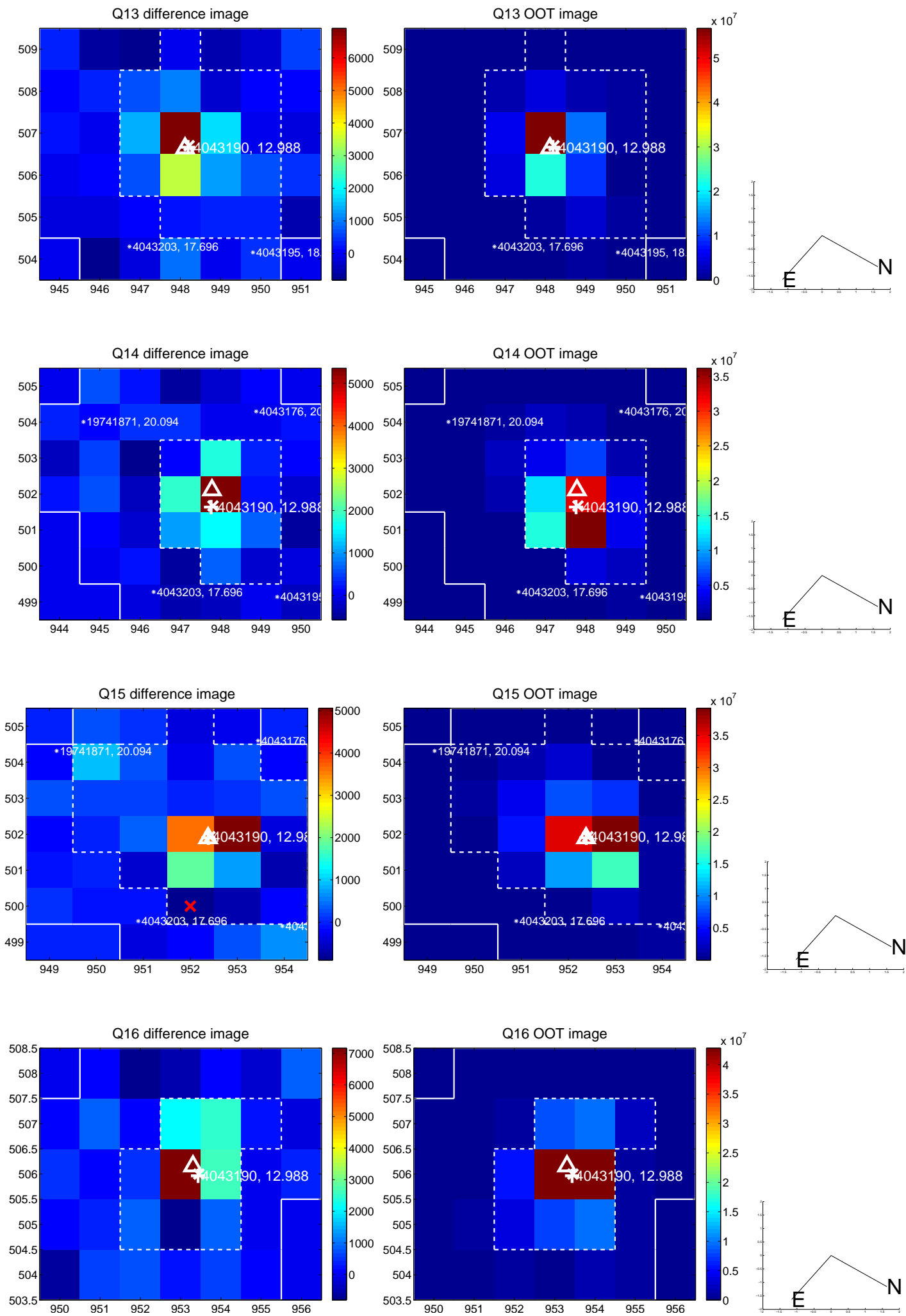
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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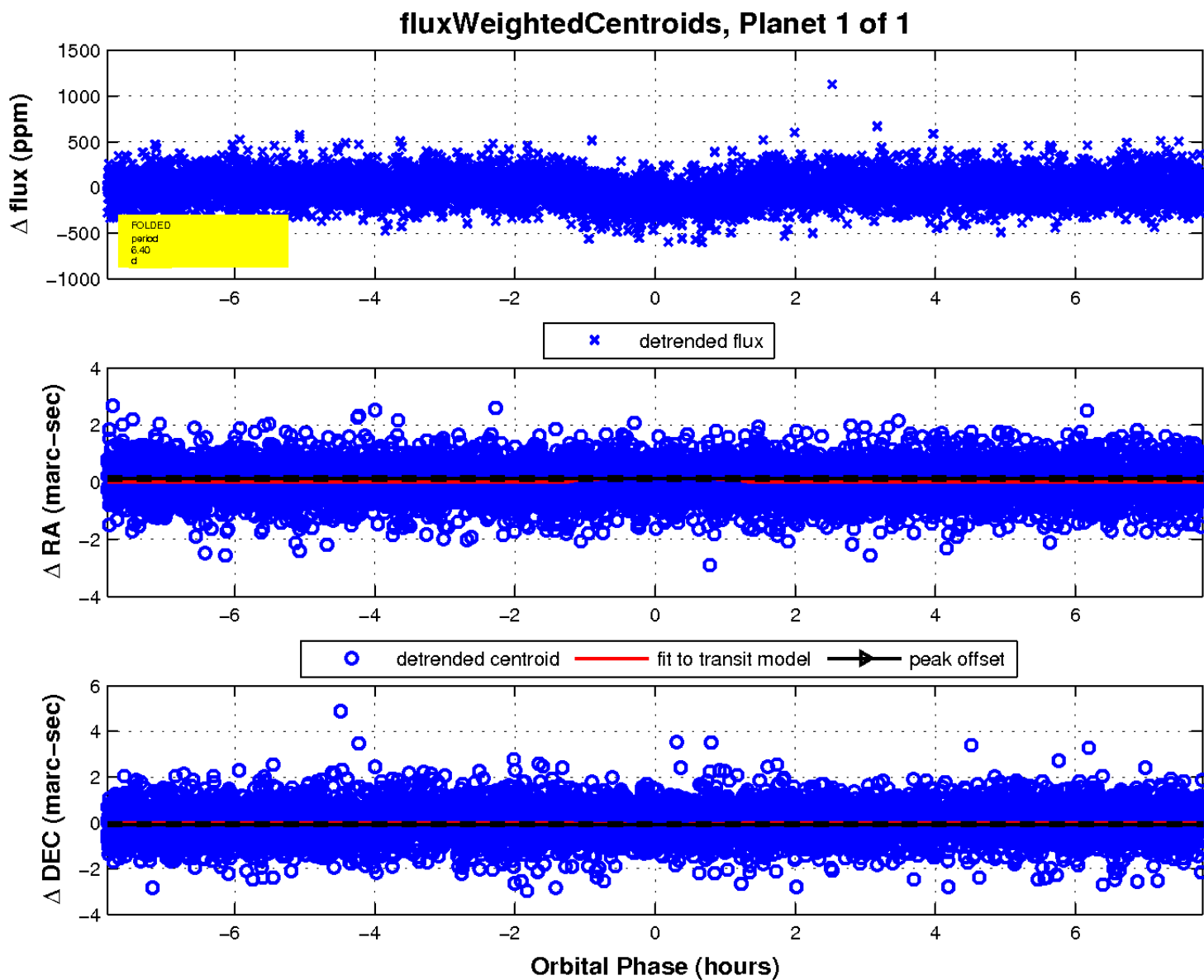
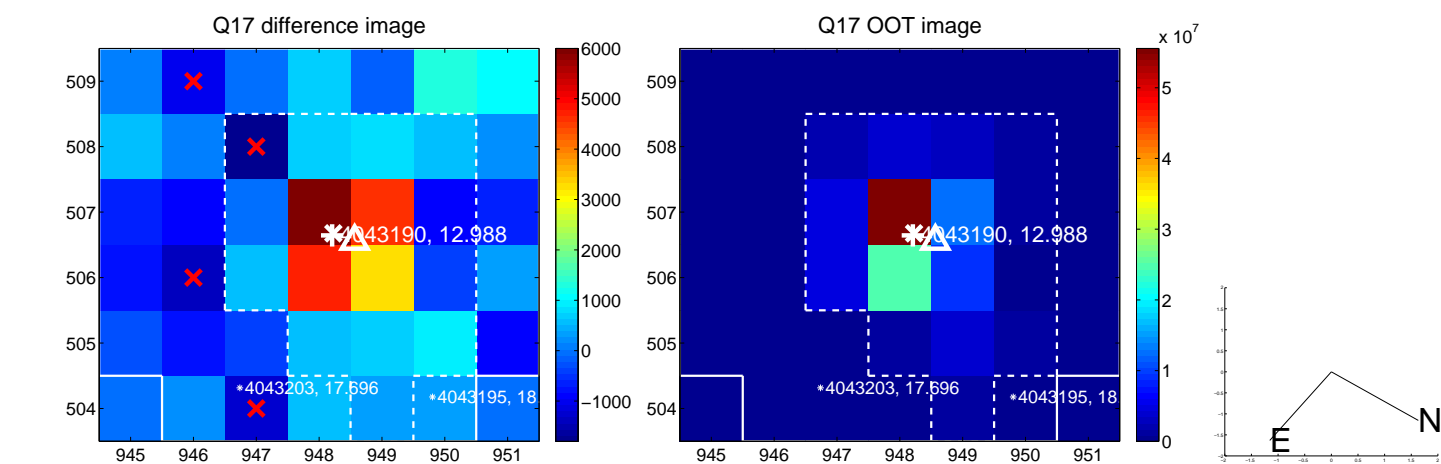


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

