

# KIC 005475431

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005475431-01	OBS	1546.01	0.917569	132.097413	425.3	1.714	28.0	33.1	0.89	5713	2.22	2211.74

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005475431-01	OBS	PC	0.73	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.

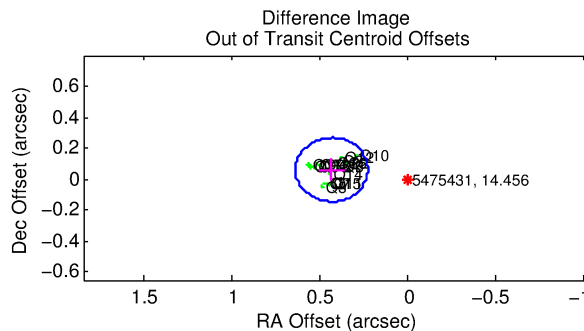
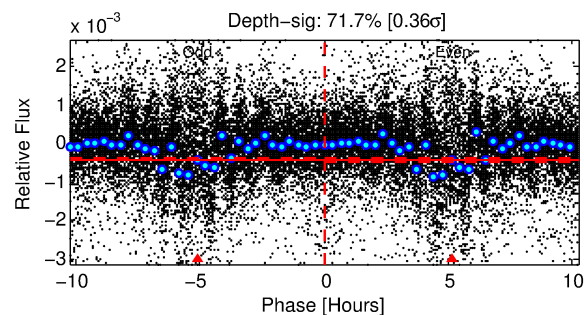
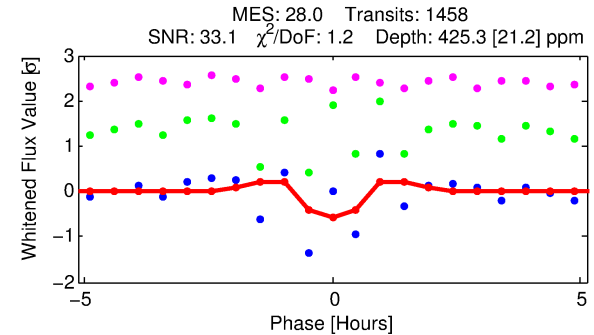
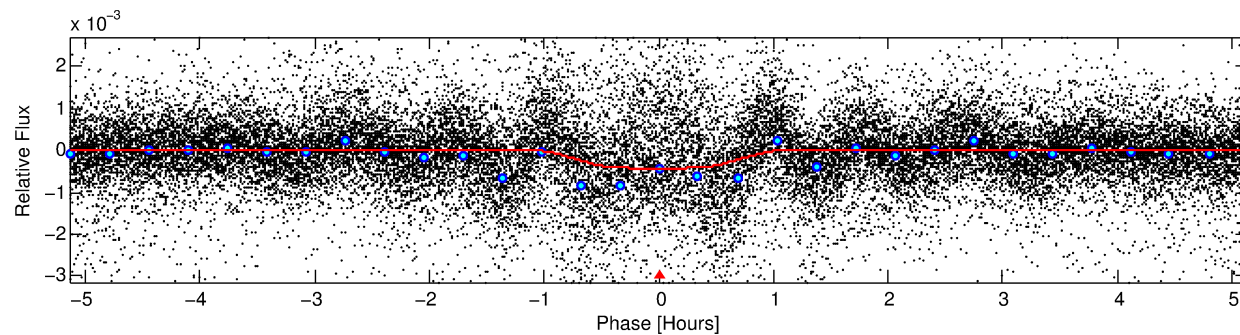
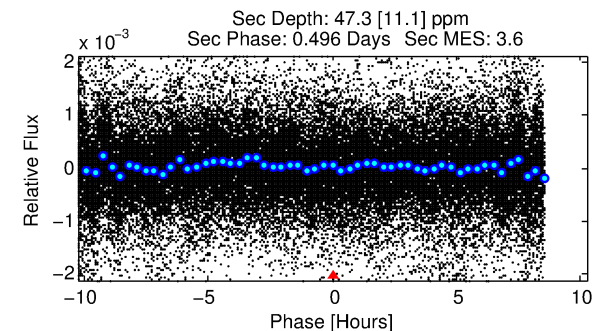
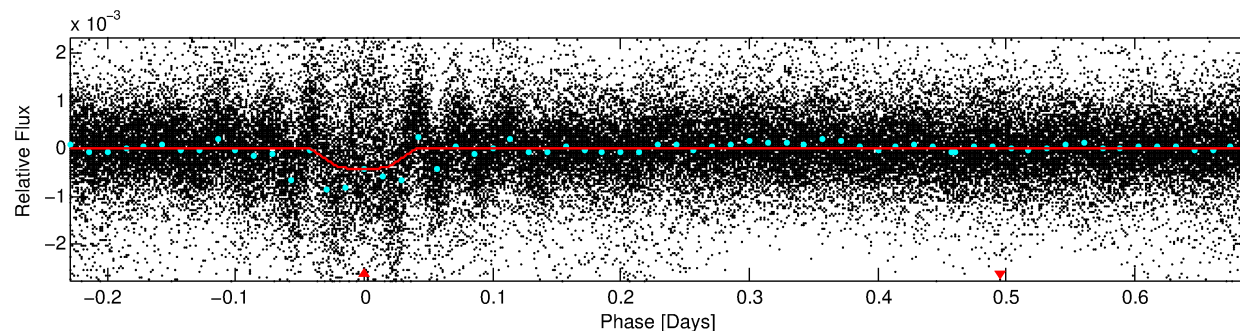
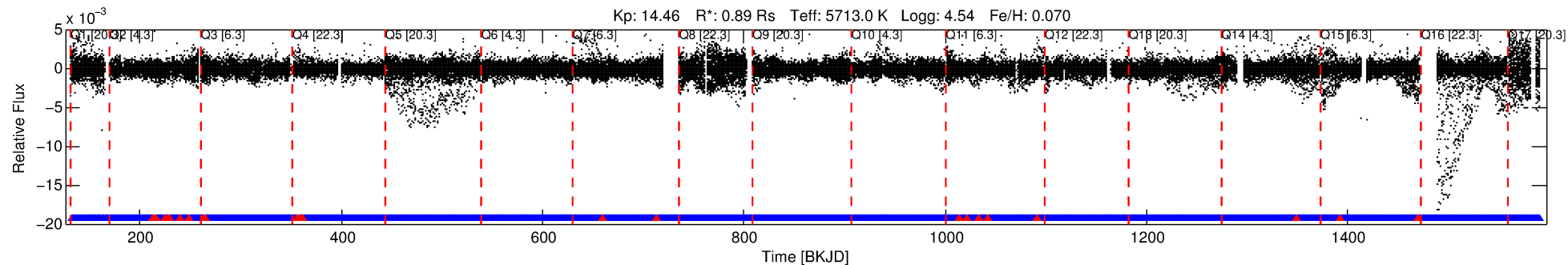
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005475431-01

No Significant Match Found

# DV One-Page Summary

KIC: 5475431 Candidate: 1 of 1 Period: 0.918 d  
KOI: K01546.01 Corr: 0.903



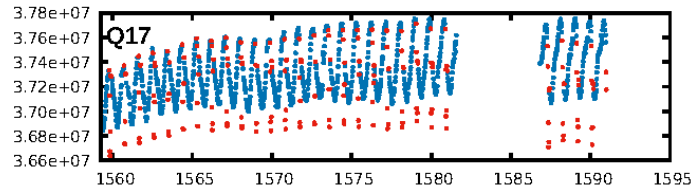
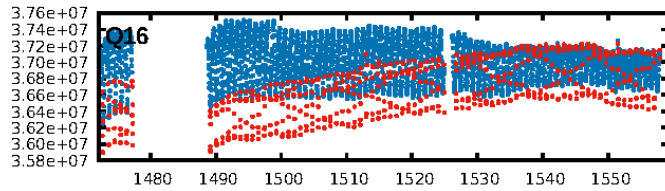
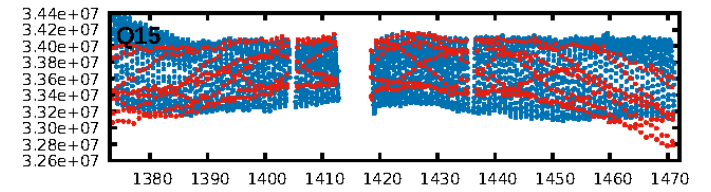
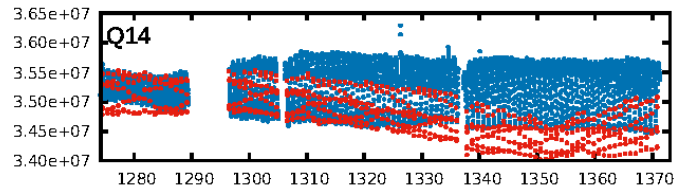
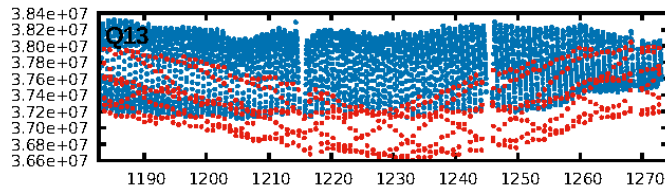
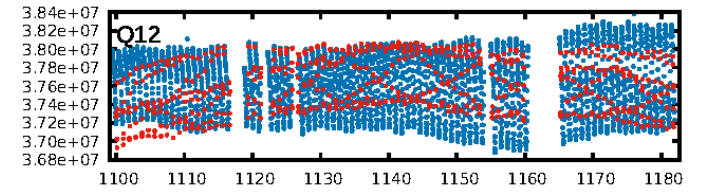
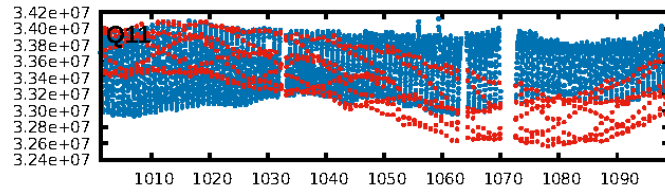
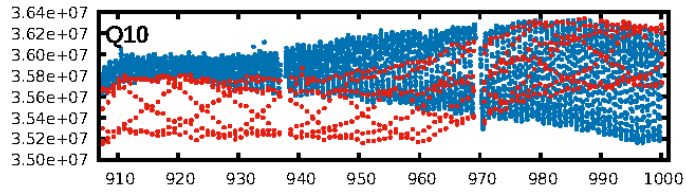
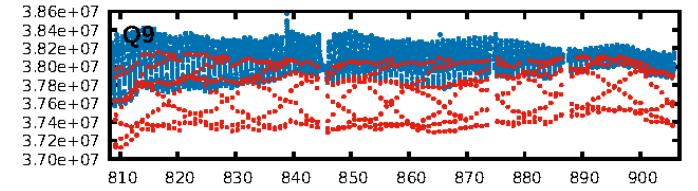
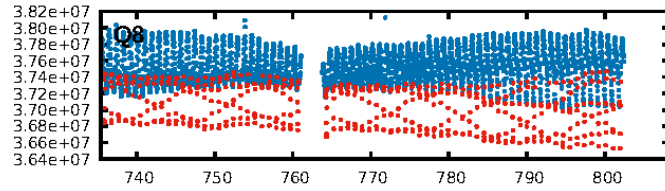
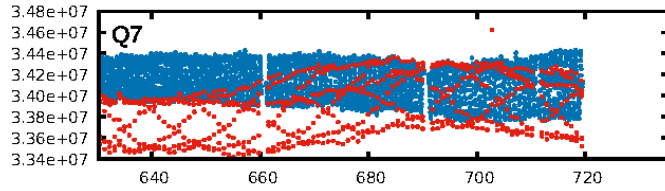
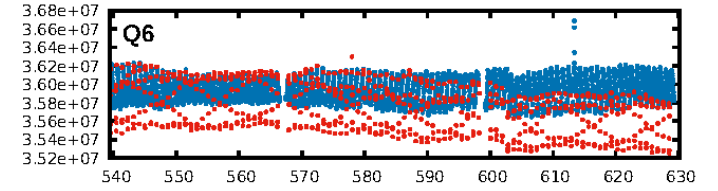
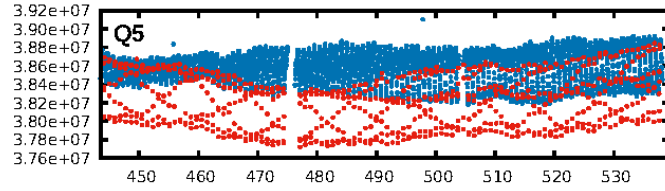
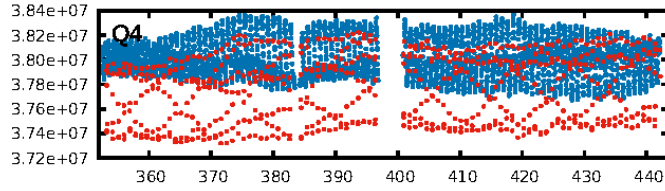
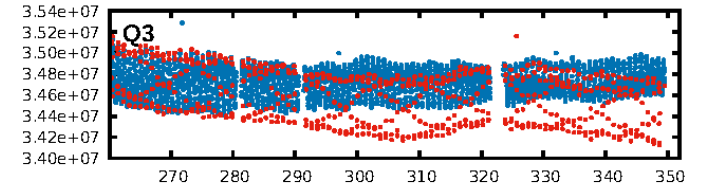
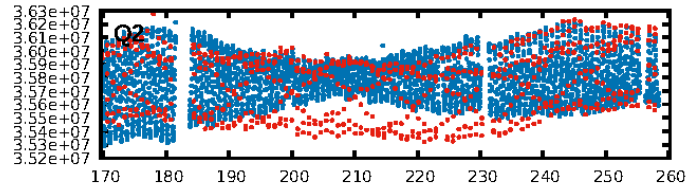
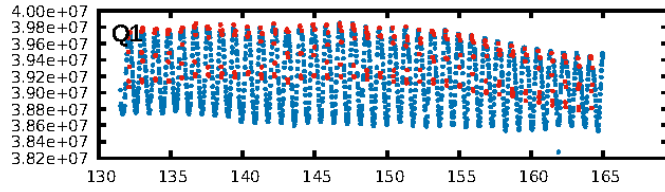
## DV Fit Results:

Period = 0.91757 [0.00000] d  
Epoch = 132.0974 [0.0006] BKJD  
Rp/R\* = 0.0227 [0.0032]  
a/R\* = 2.16 [1.05]  
b = 0.91 [0.13]  
Seff = 2211.74 [733.81]  
Teff = 1749 [145] K  
Rp = 2.22 [0.62] Re  
a = 0.0186 [0.0038] AU  
Ag = 1.82 [0.87] [0.95σ]  
Teffp = 3142 [305] K [4.13σ]

## DV Diagnostic Results:

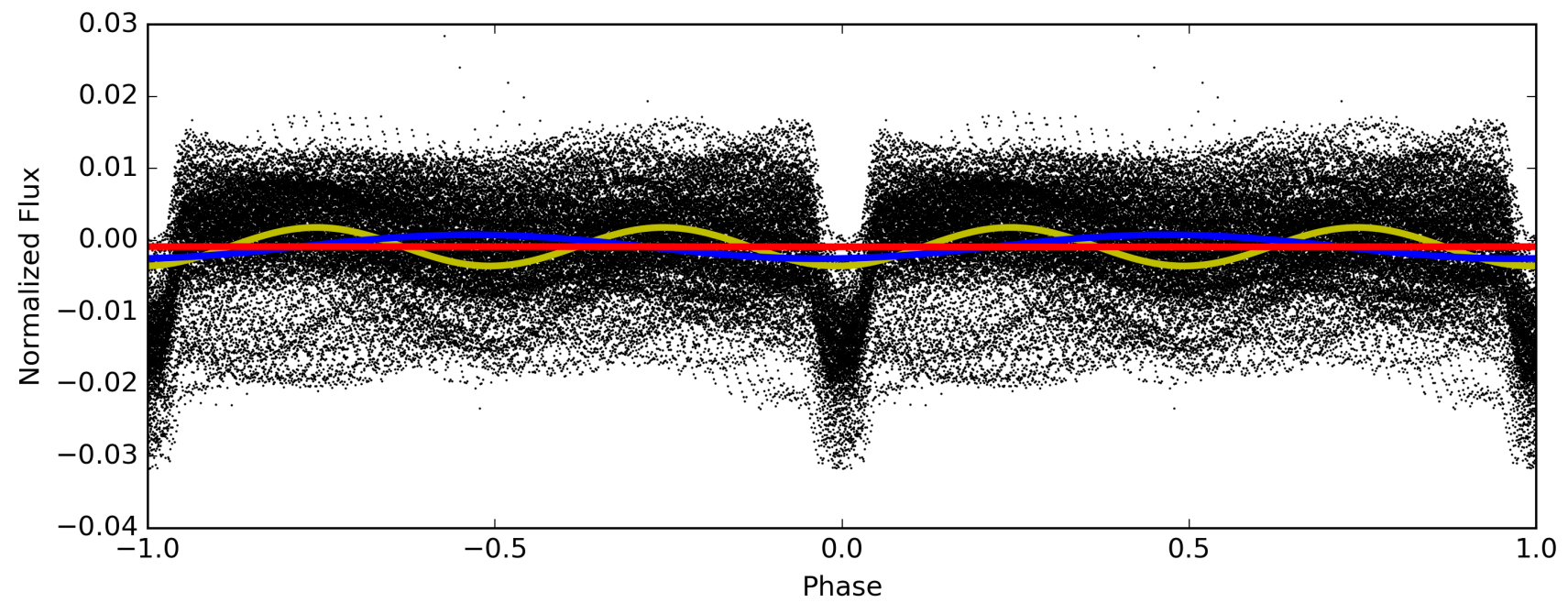
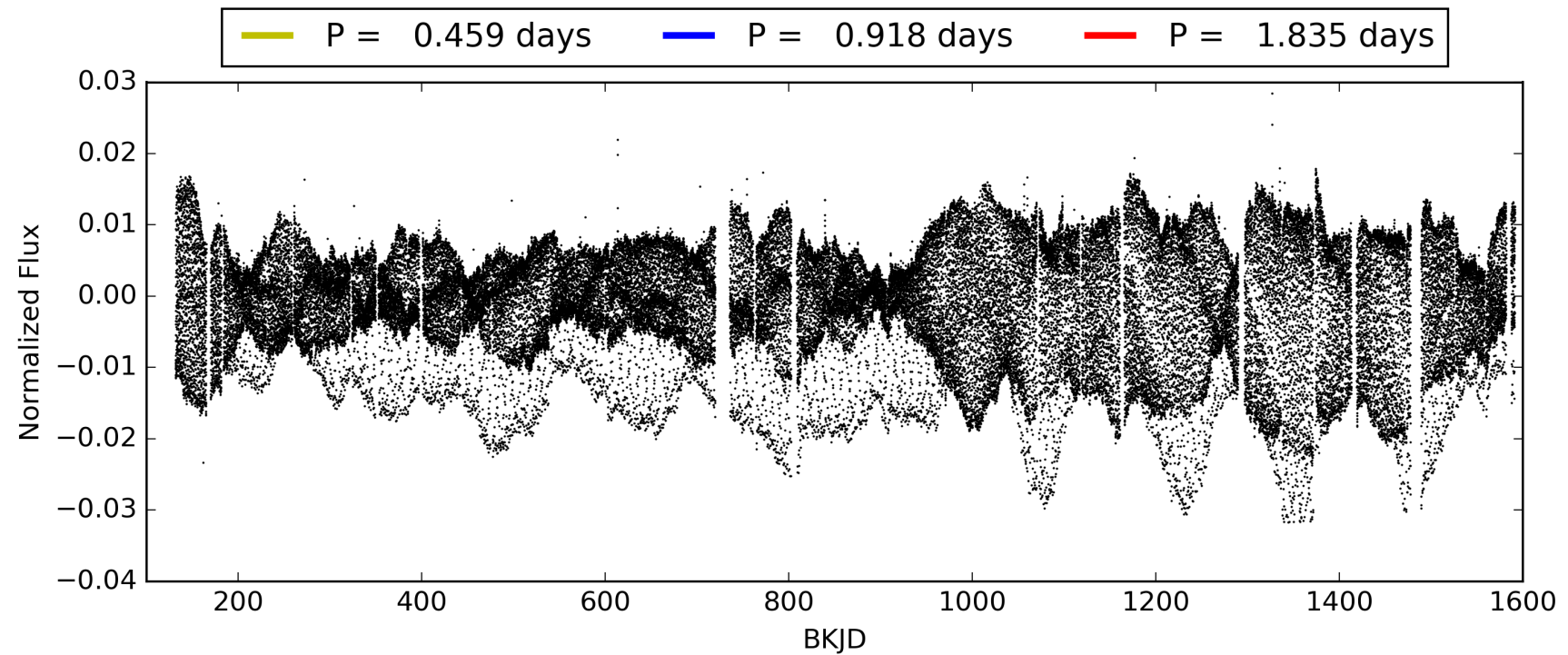
ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.65e-158  
RollingBand-fgt: 0.98 [1366/1393]  
**GhostDiagnostic-chr: 0.51**  
Centroid-sig: 0.0%  
Centroid-so: 1.984 arcsec [11.13σ]  
OotOffset-rm: 0.439 arcsec [6.38σ]  
KicOffset-rm: 0.351 arcsec [5.14σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005475431-01, PDC Light Curves



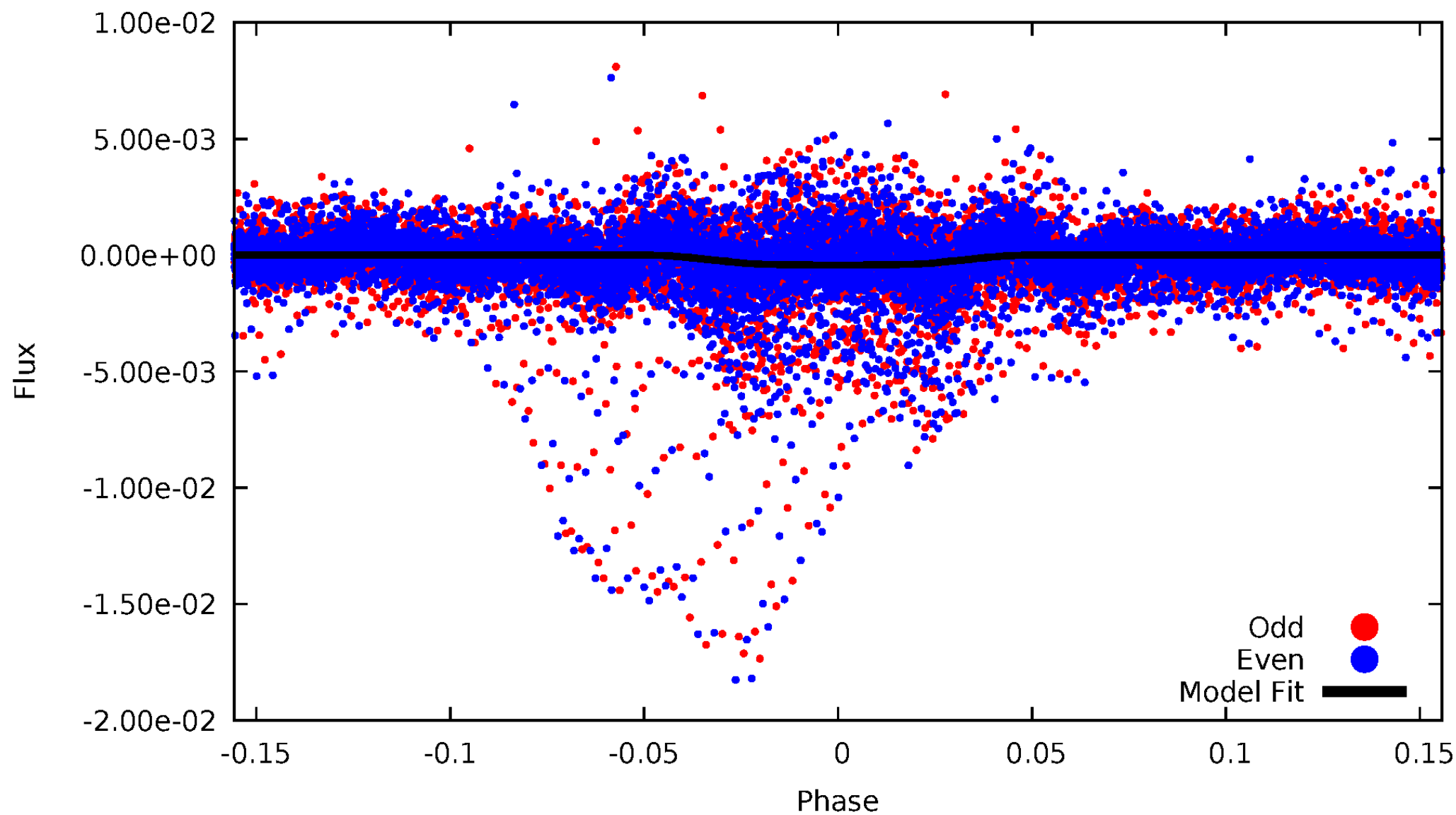


TCE 005475431-01



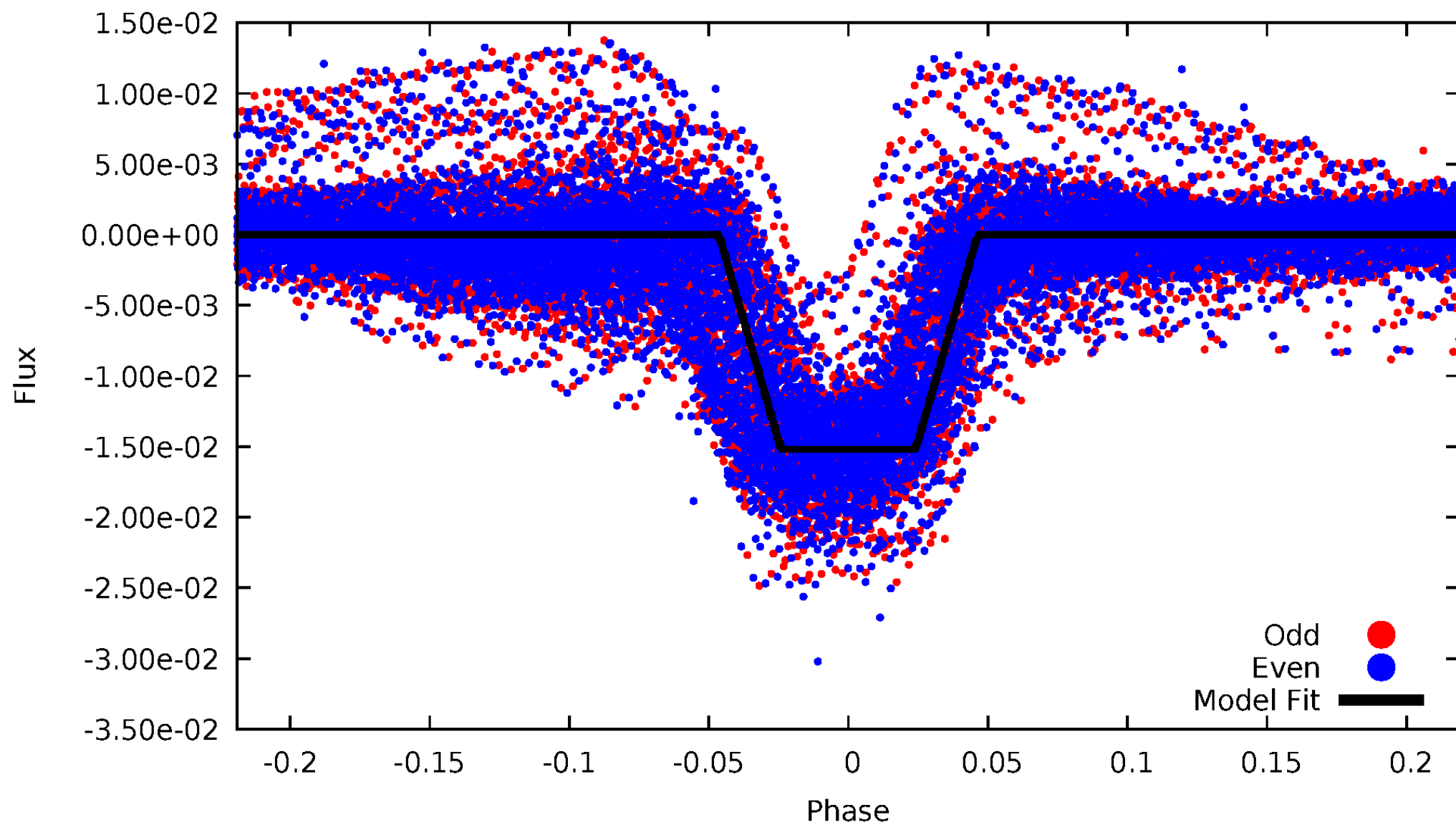
# DV Odd/Even

TCE 005475431-01



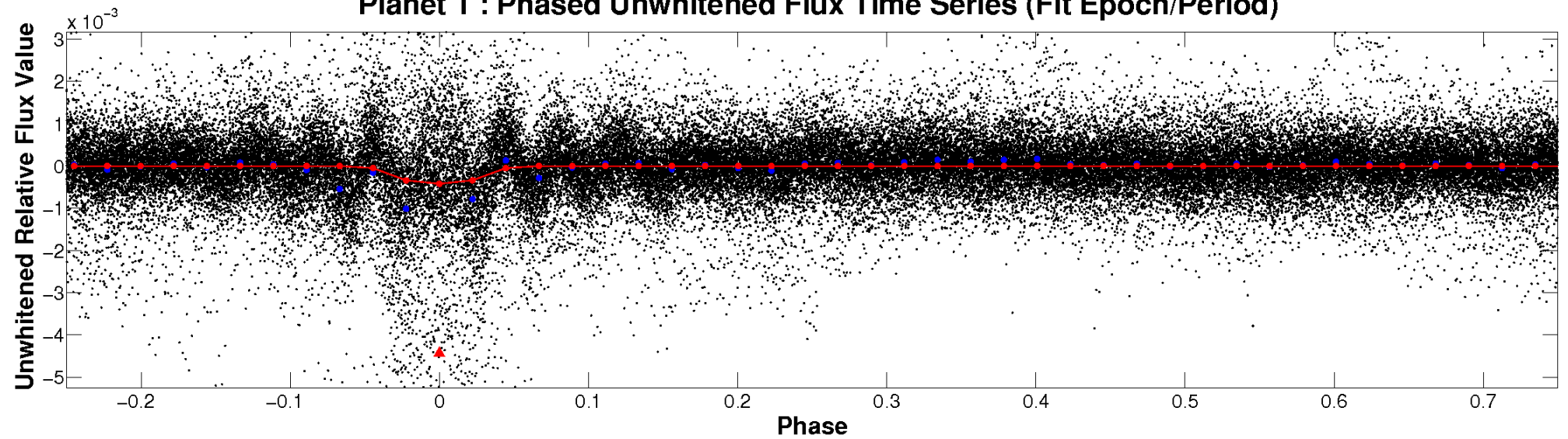
# ALT Odd/Even

TCE 005475431-01

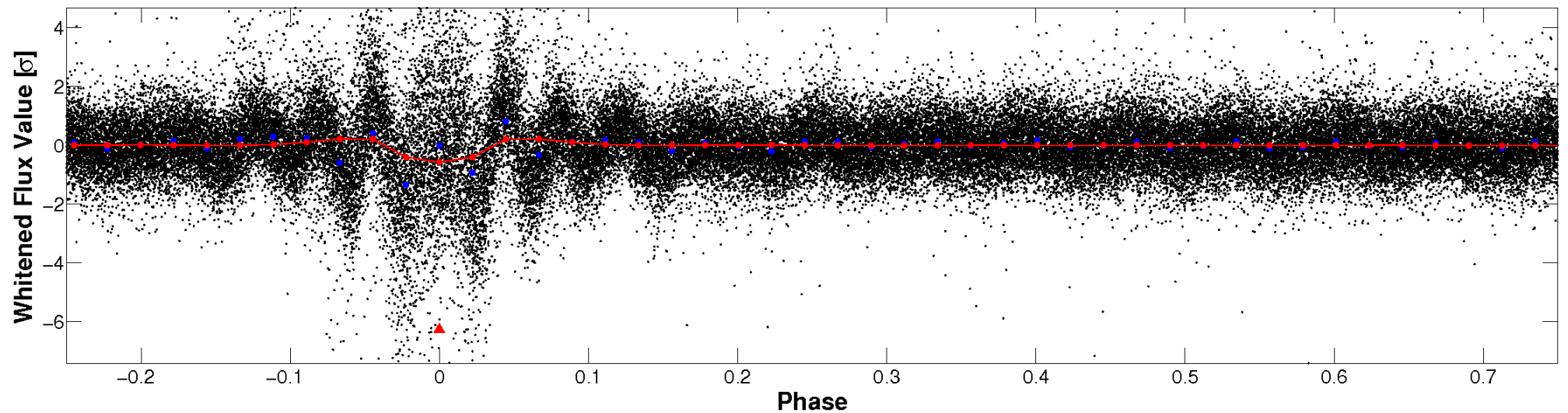


# Non-Whitened Vs. Whitened Light Curve

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



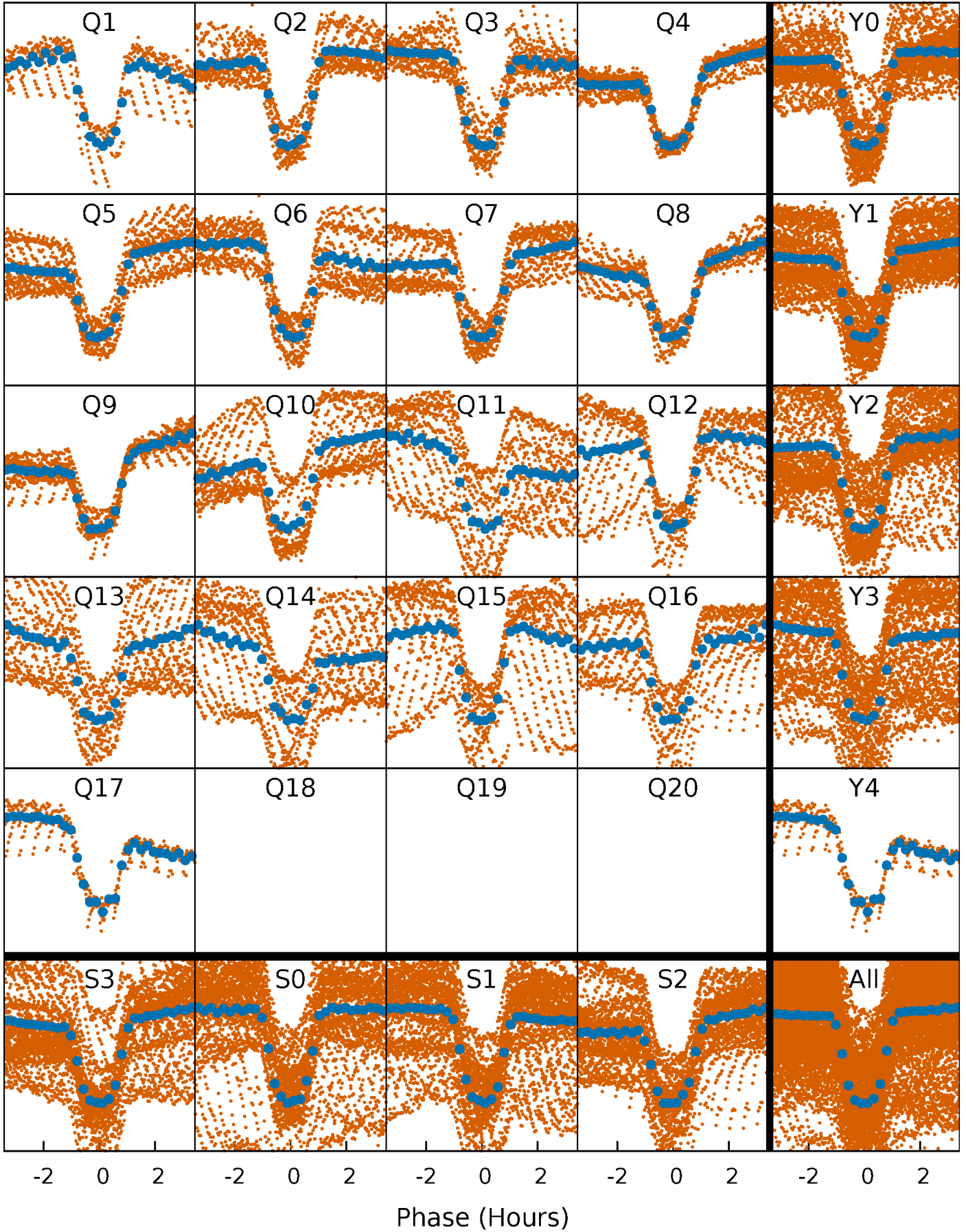
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

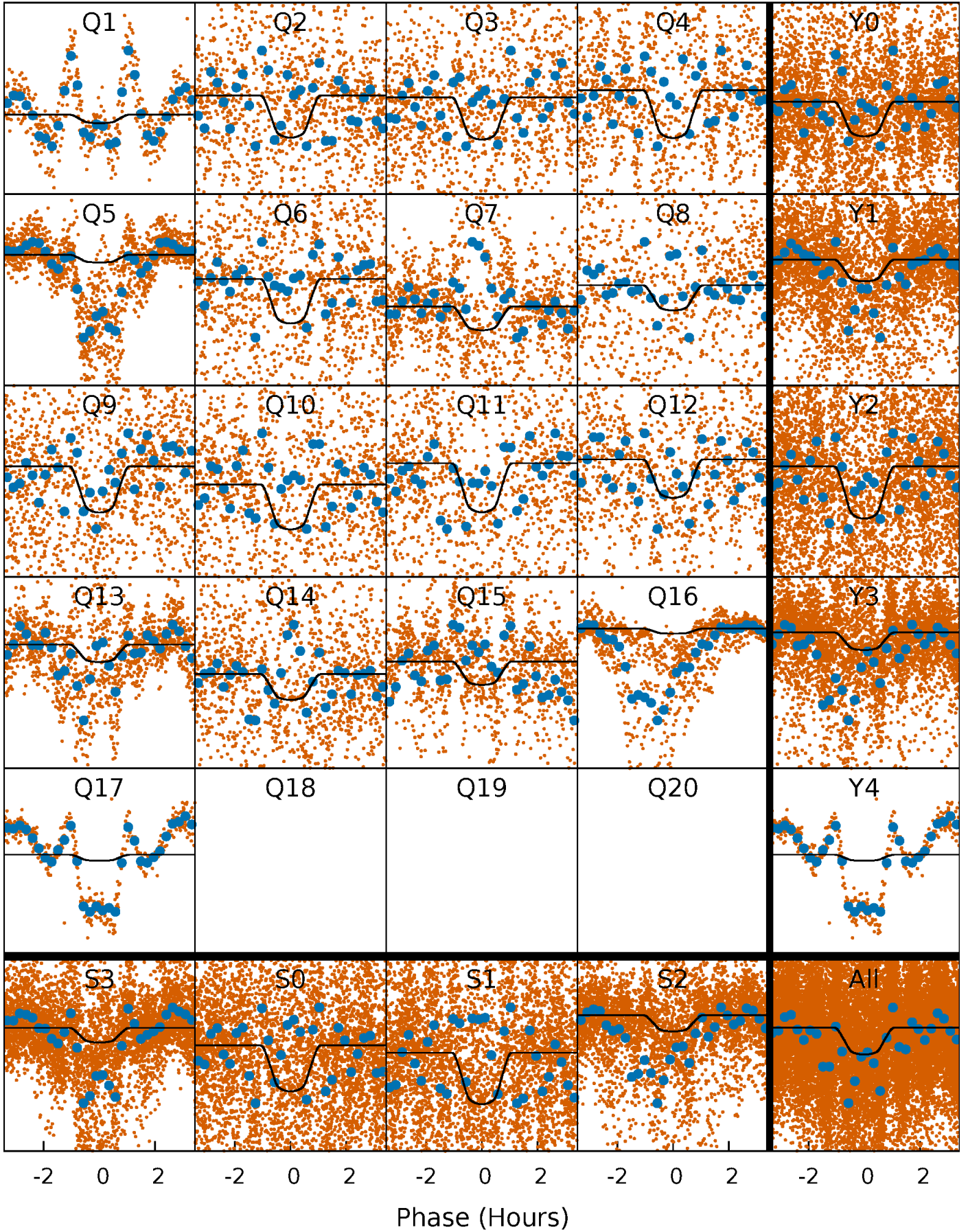
TCE 005475431-01 P= 0.917569 Days  $T_0=132.097413$  (BKJD)





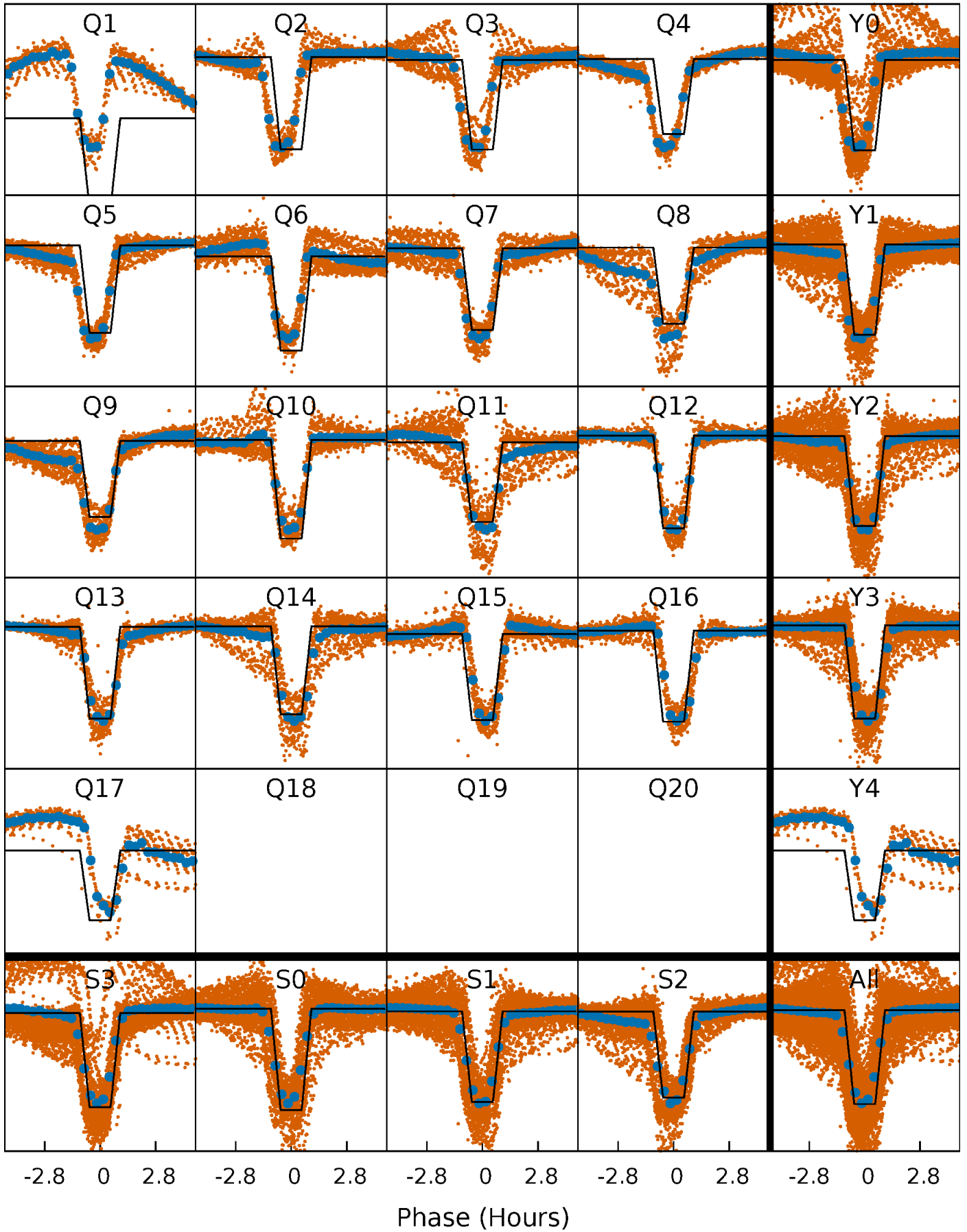
# DV Quarter-Phased Transit Curves

TCE 005475431-01   P= 0.917569 Days    $T_0=132.097413$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

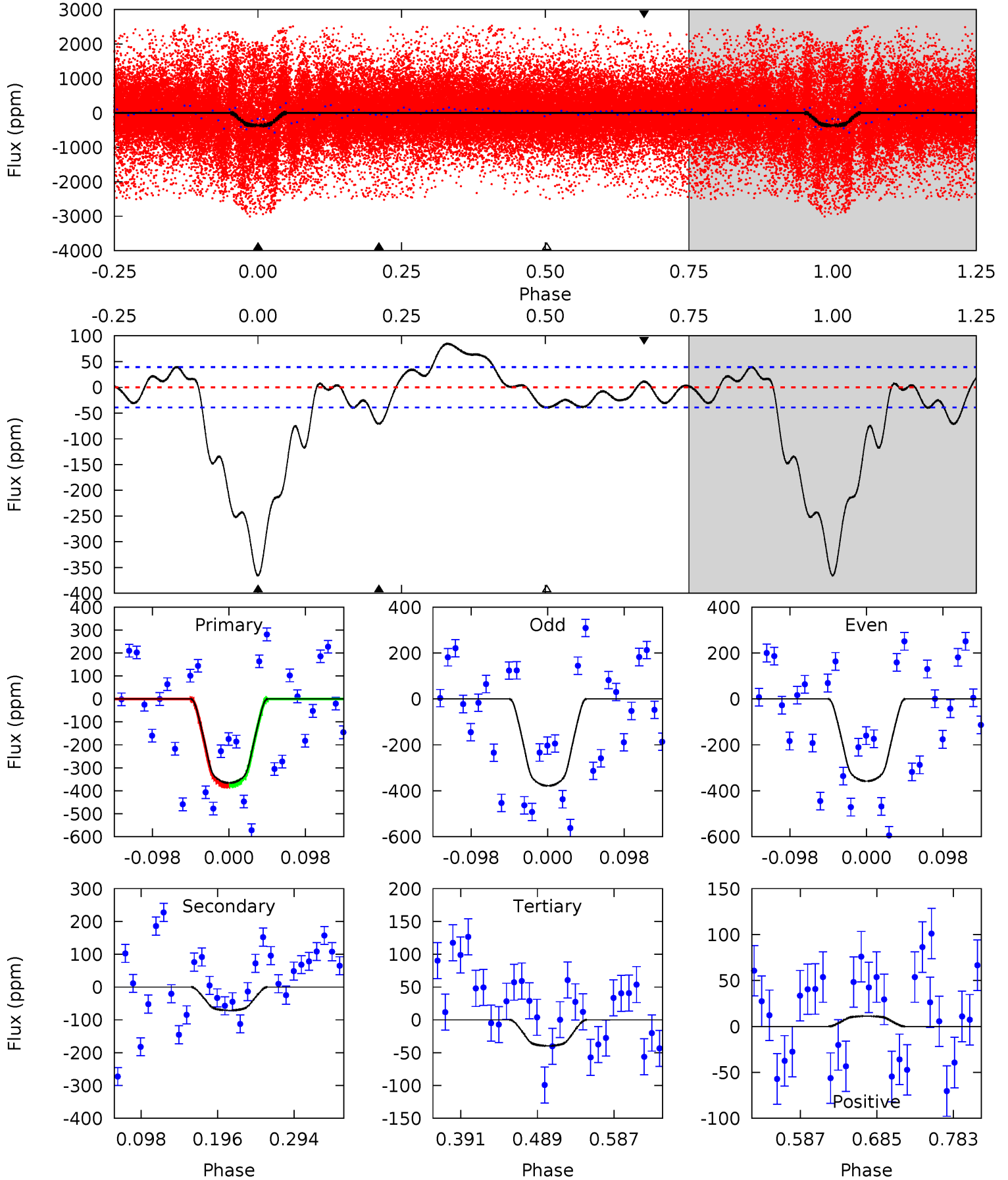
TCE 005475431-01     $P = 0.917547$  Days     $T_0 = 132.119246$  (BKJD)



# DV Model-Shift Uniqueness Test

005475431-01, P = 0.917569 Days, E = 131.179844 Days

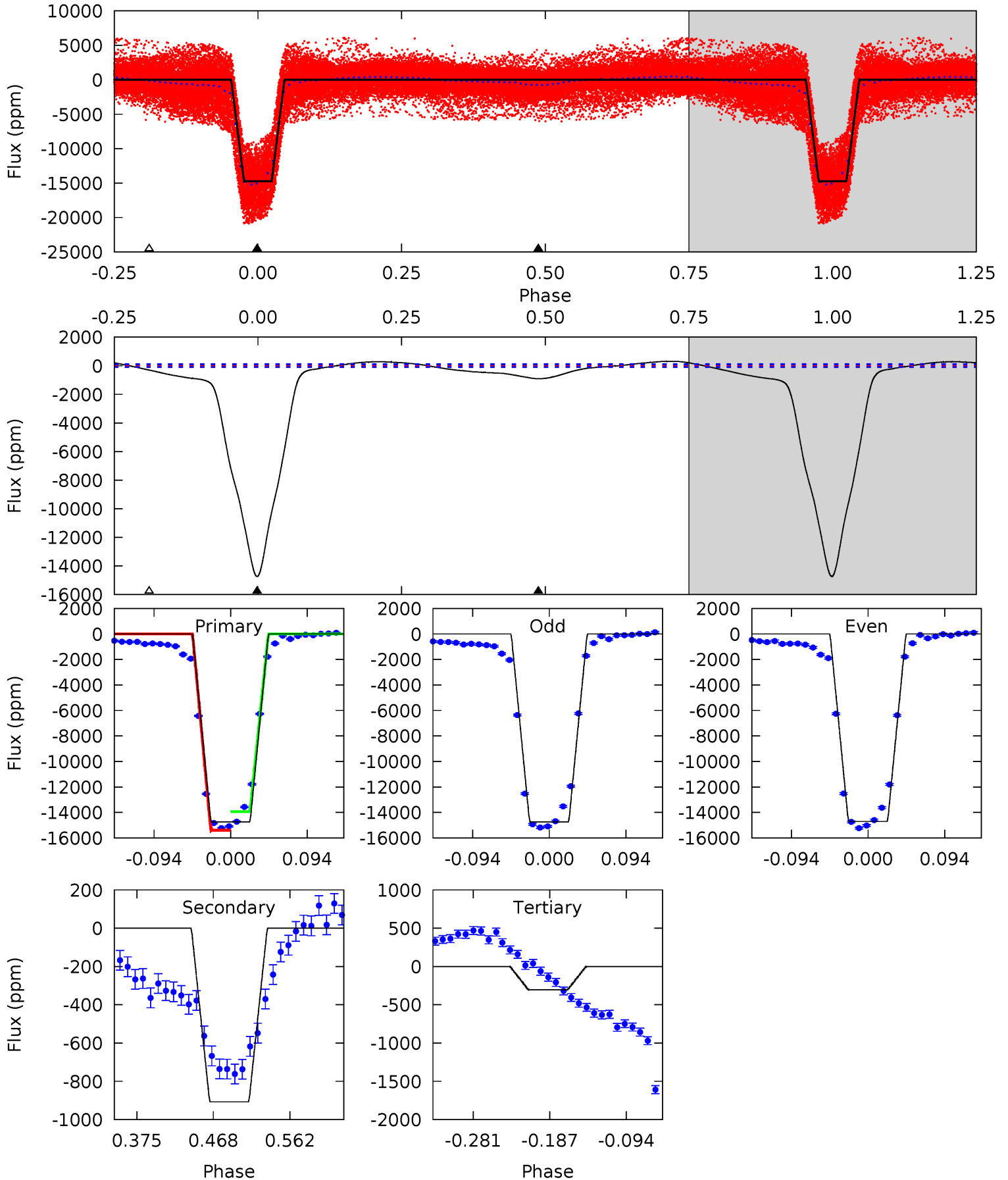
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.6	8.30	4.62	1.30	4.57	1.66	3.97	38.0	41.3	3.68	7.00	1.19	1.68	0.19	0.13



# Alt Model-Shift Uniqueness Test

005475431-01, P = 0.917547 Days, E = 131.201699 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
688.2	42.4	14.2	0	4.58	1.68	15.3	674.0	688.2	28.2	42.4	0.55	1.00	0.02	34.0





### Stellar Parameters For KIC 005475431

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.541^{+0.031}_{-0.168}$	$0.070^{+0.250}_{-0.300}$	$0.893^{+0.217}_{-0.072}$	$1.010^{+0.089}_{-0.122}$	$2.000^{+0.331}_{-0.918}$
	+3%/-3%	+1%/-4%	+357%/-429%	+24%/-8%	+9%/-12%	+17%/-46%
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 005475431-01 / KOI 1546.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-71 \pm 9$	$2.28^{+0.41}_{-0.35}$	$2491^{+140}_{-109}$	$3754^{+263}_{-217}$	$2.511^{+1.107}_{-0.730}$
Alt.	$-907 \pm 21$	$12.31^{+1.64}_{-0.86}$	$2494^{+143}_{-111}$	$3187^{+70}_{-78}$	$1.104^{+0.153}_{-0.214}$

$T_{\text{max}}$  = 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

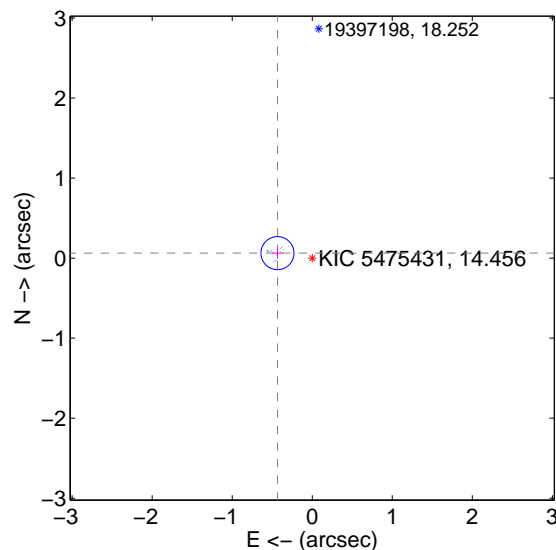
Supplemental centroid analysis for 005475431-01. Kepler magnitude: 14.46. Transit SNR 33.13

There are 17 quarters with good PRF difference image offsets

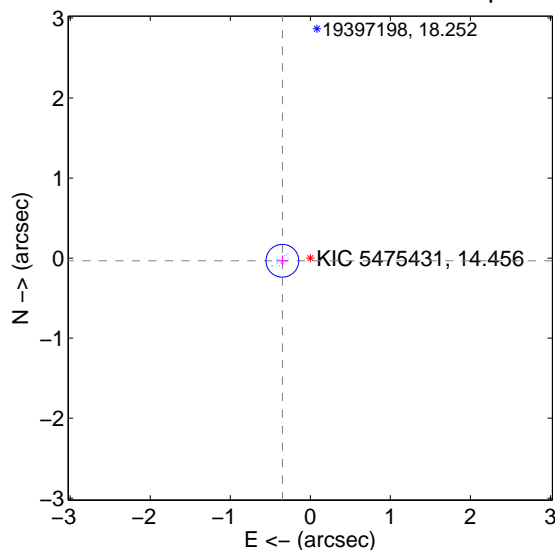
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.439 \pm 0.069$	6.38	$0.434 \pm 0.069$	$0.062 \pm 0.068$
PRF-fit source offset from KIC position	$0.351 \pm 0.068$	5.14	$0.349 \pm 0.068$	$-0.033 \pm 0.067$
photometric centroid source offset	$1.98 \pm 0.18$	11.13	$1.46 \pm 0.18$	$1.34 \pm 0.17$

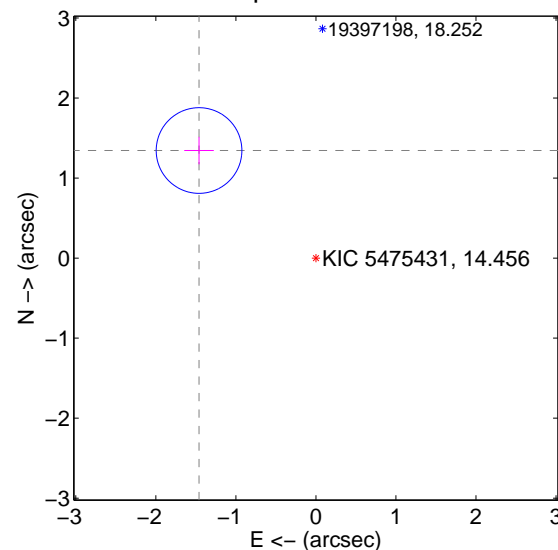
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

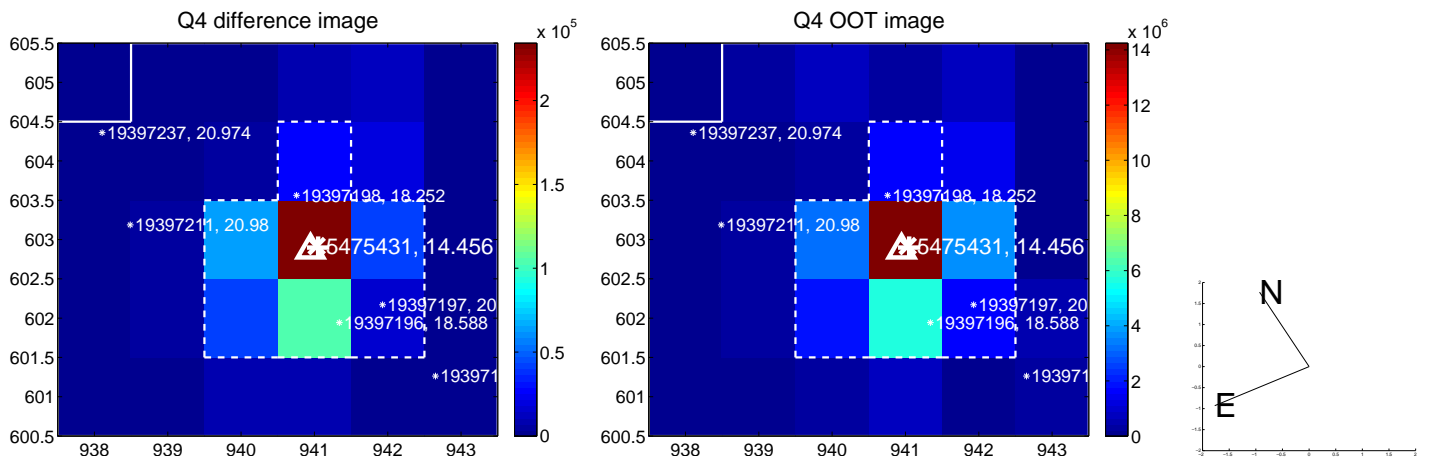
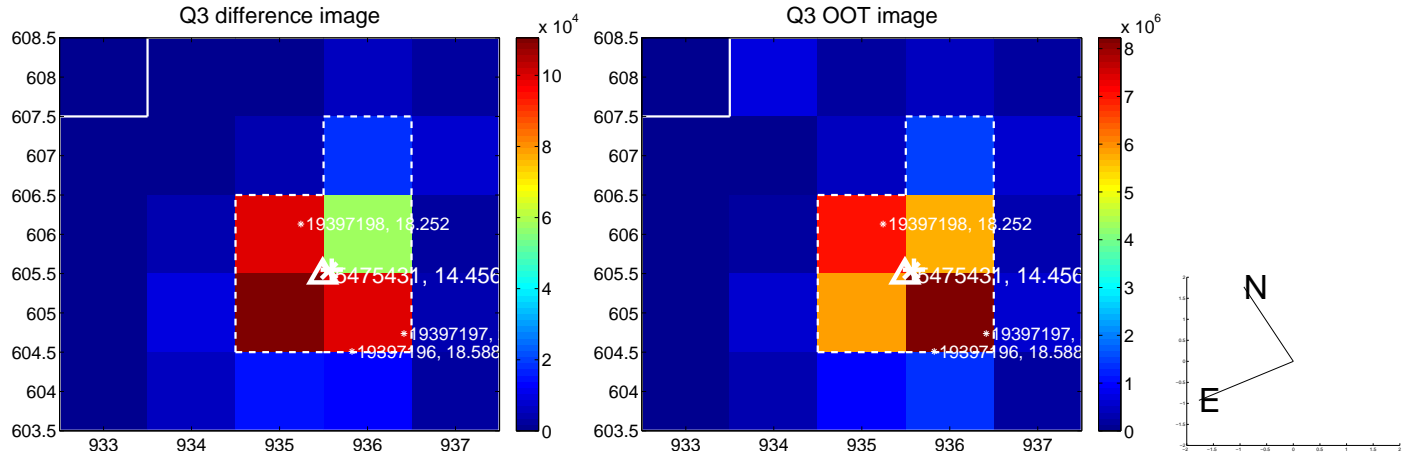
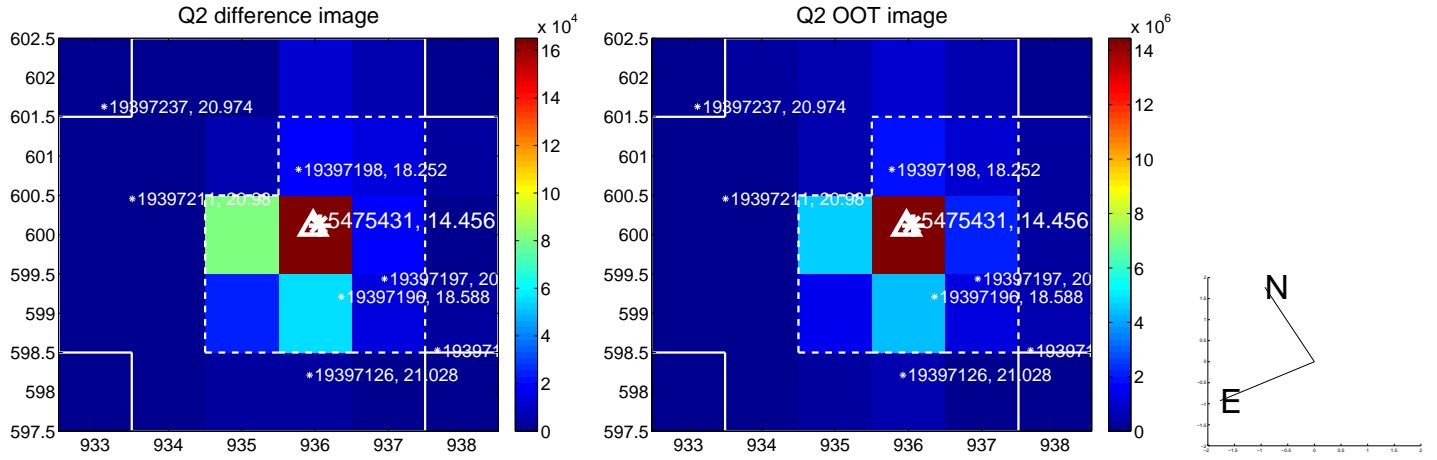
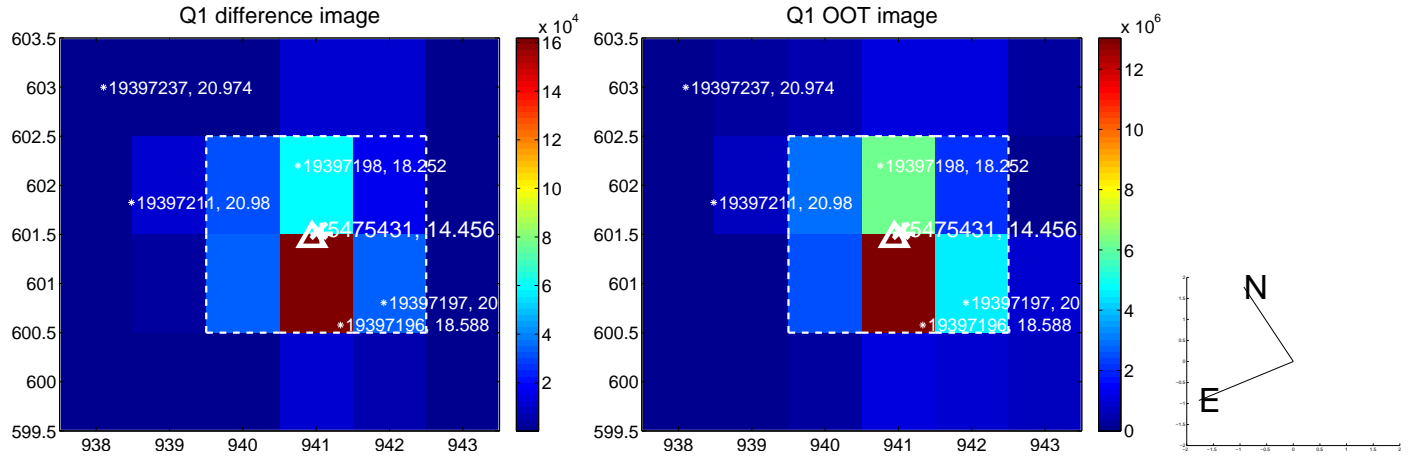


offset from photometric centroids

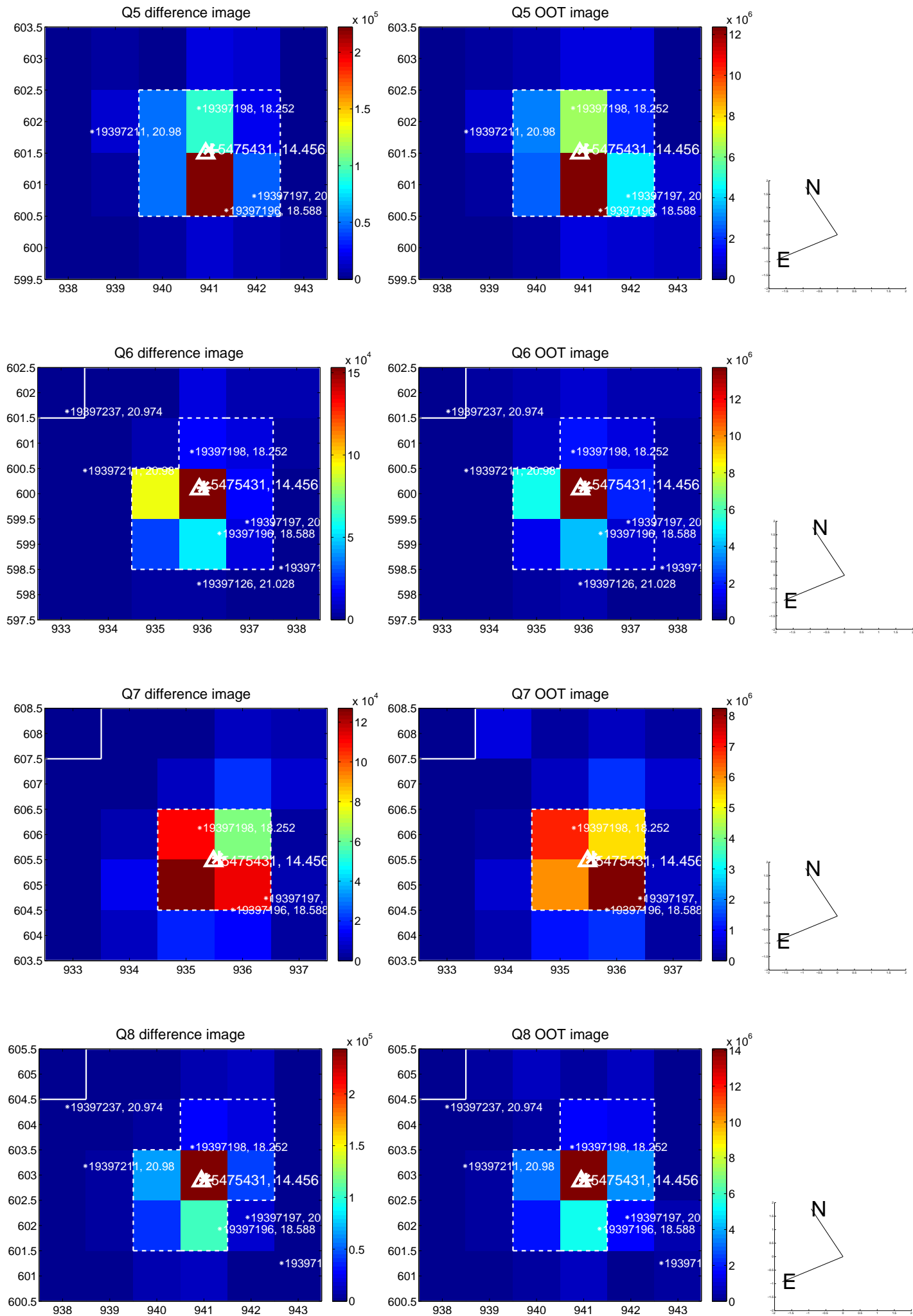


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

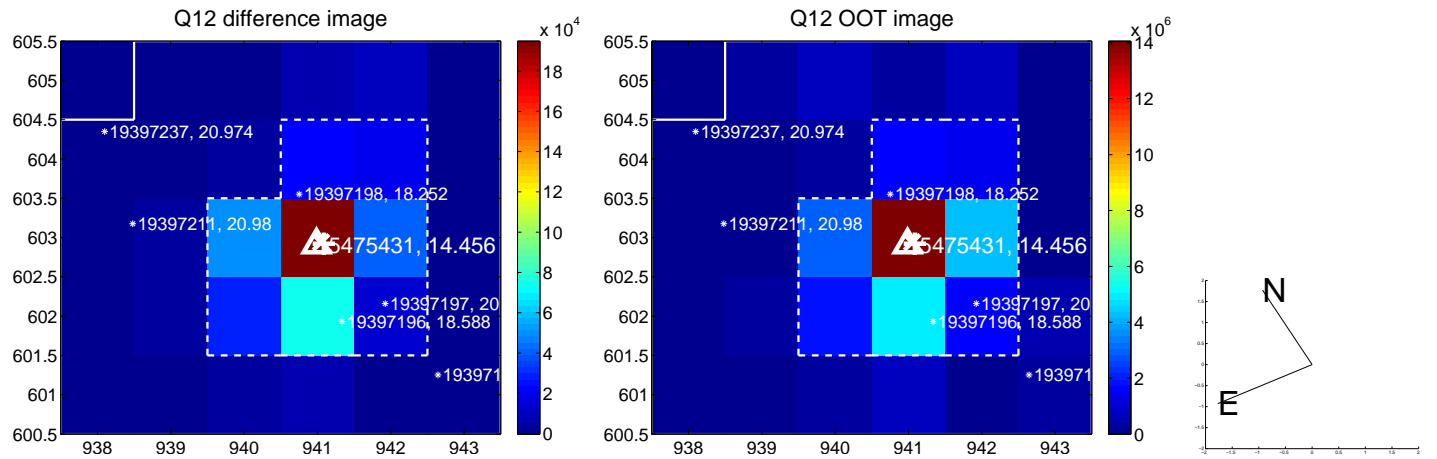
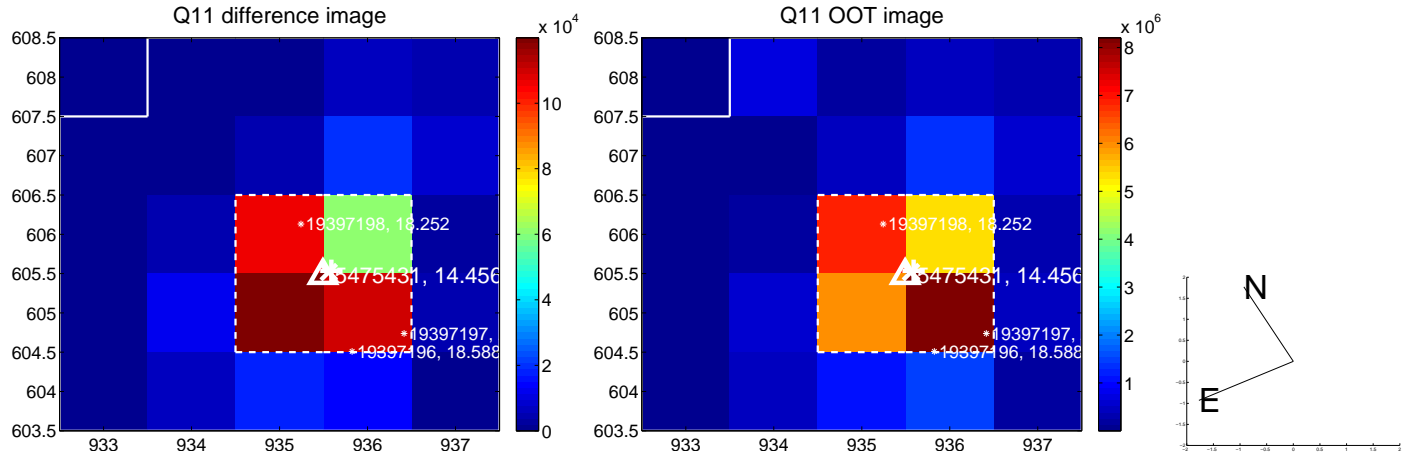
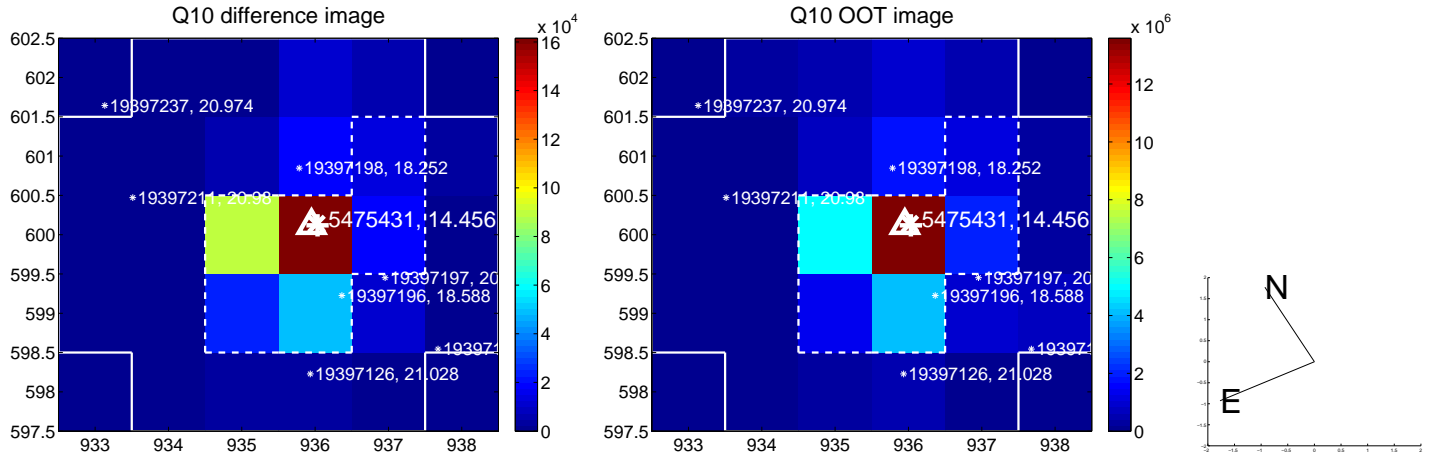
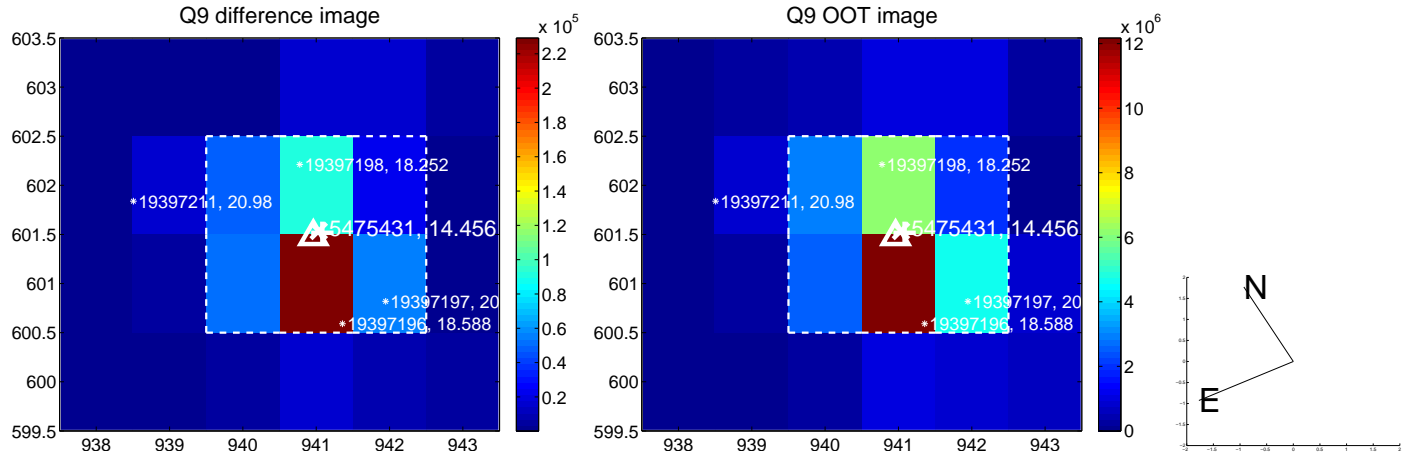


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

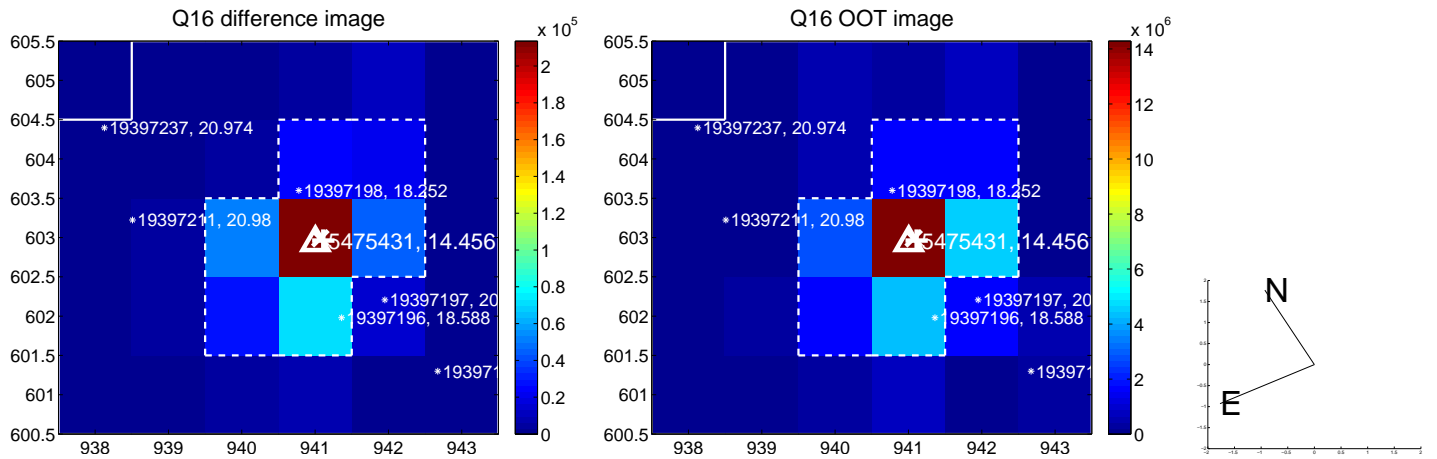
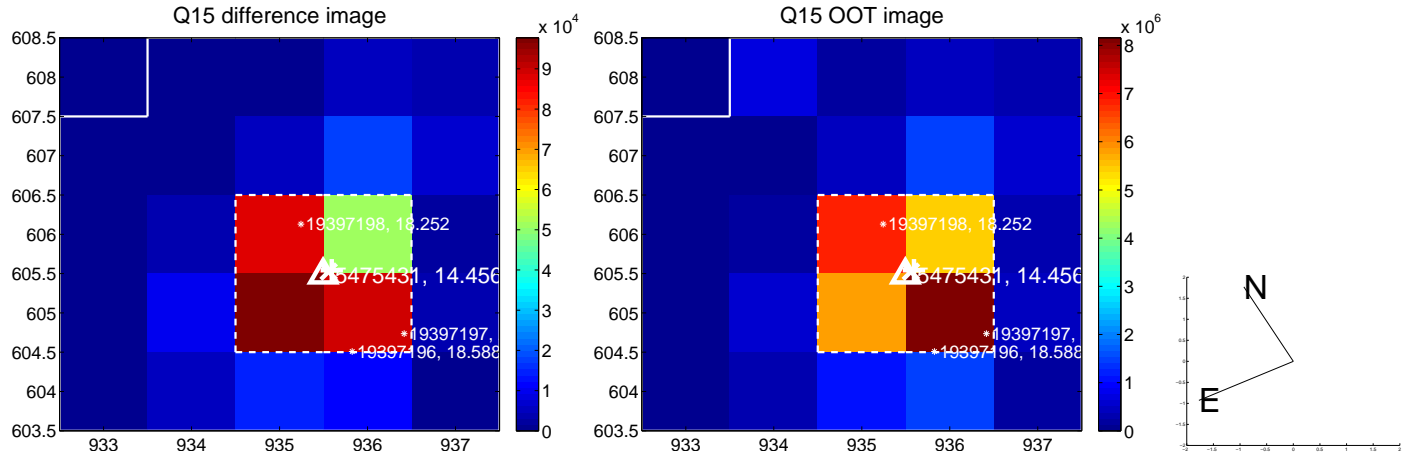
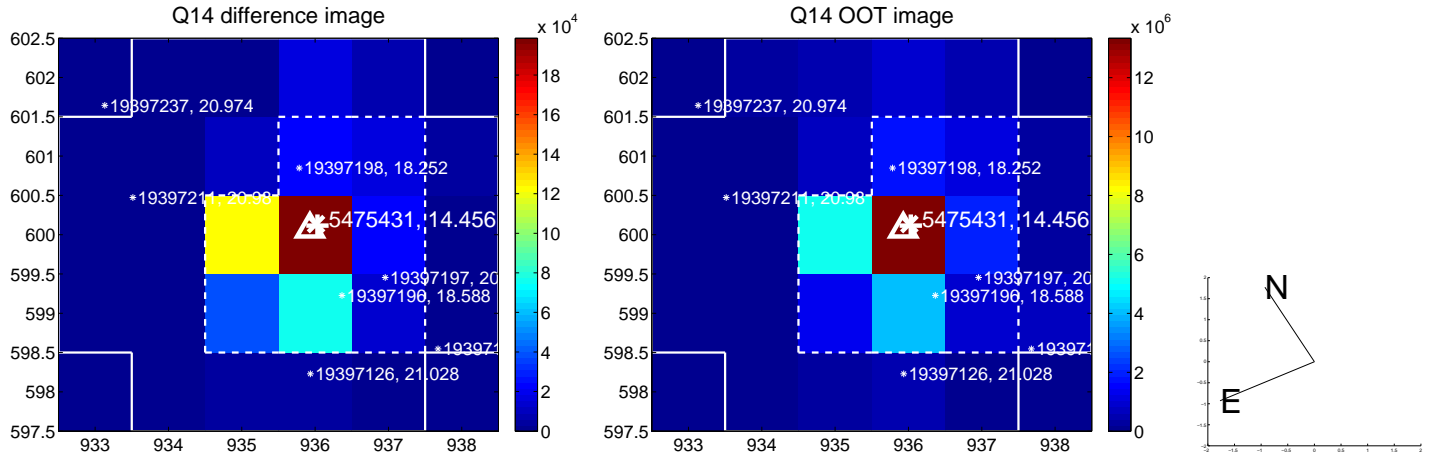
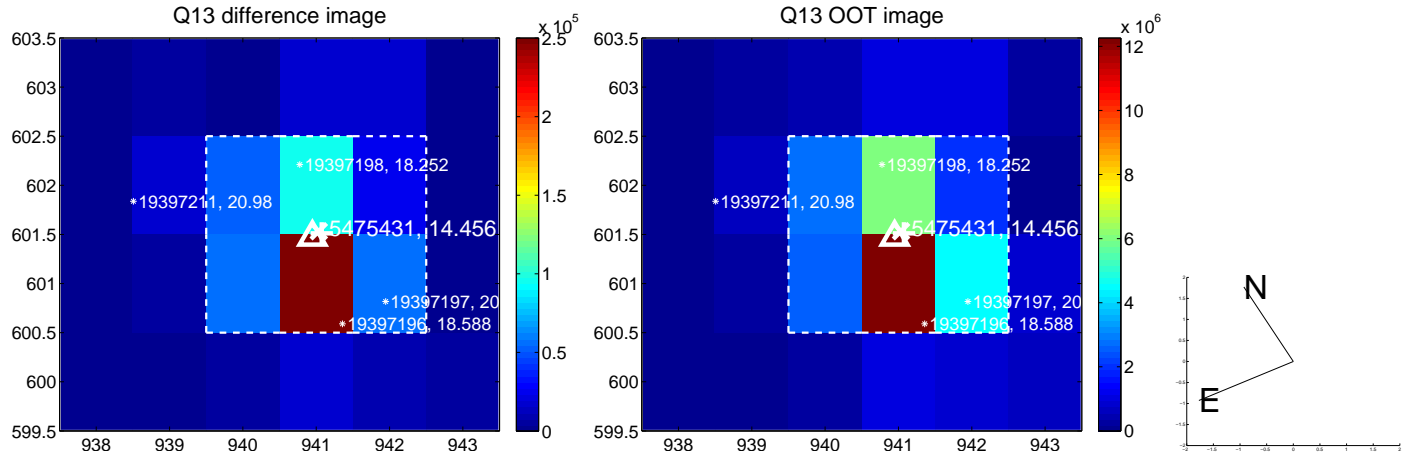




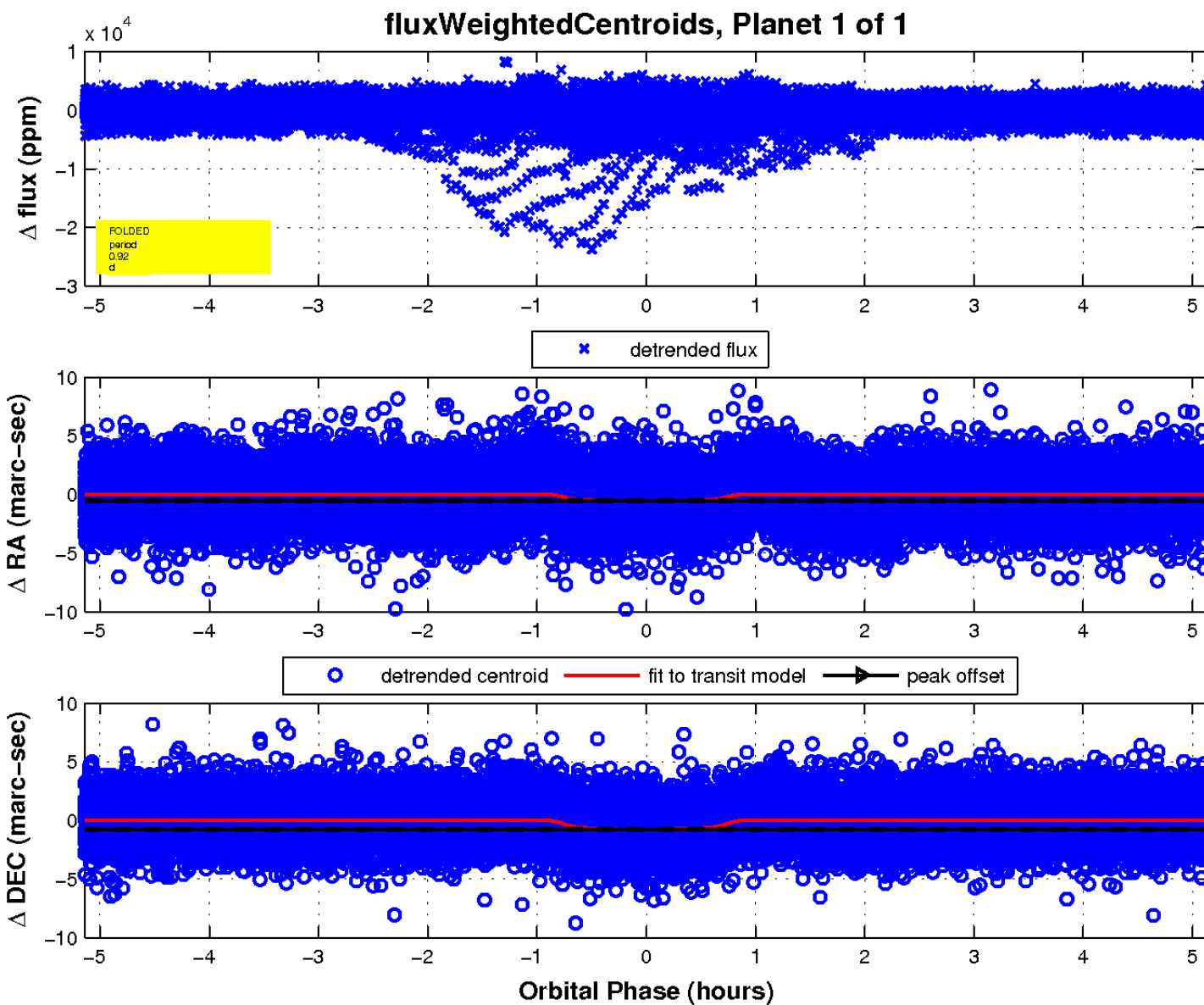
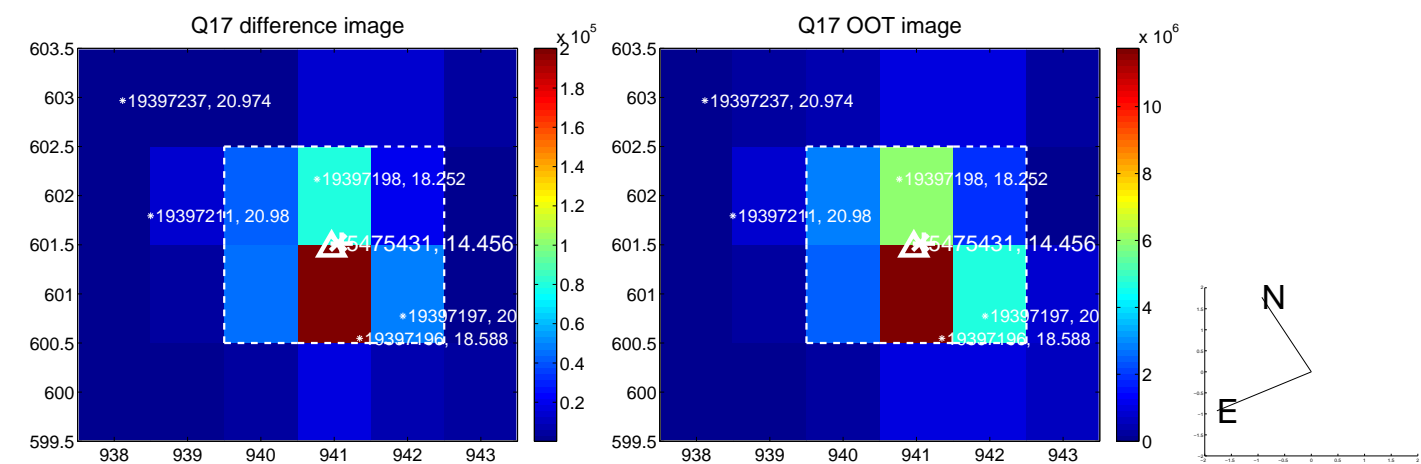
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

