

# KIC 004742452

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004742452-01	OBS	7704.01	5.439786	135.158683	81.7	3.254	7.2	8.1	1.08	6108	1.13	362.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004742452-01	OBS	PC	0.94	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.

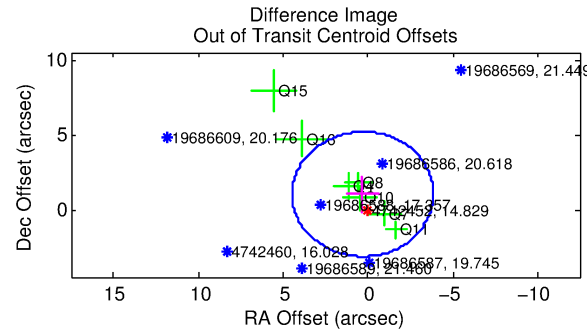
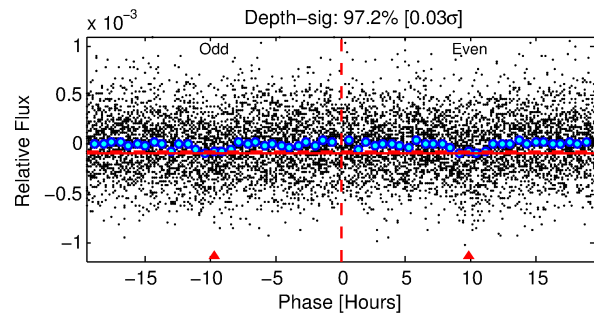
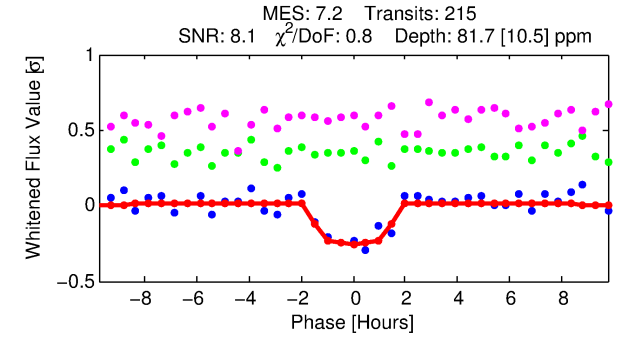
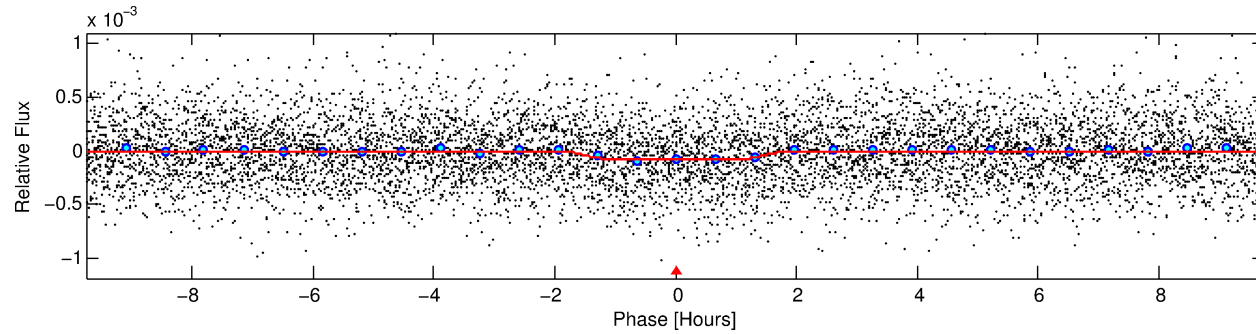
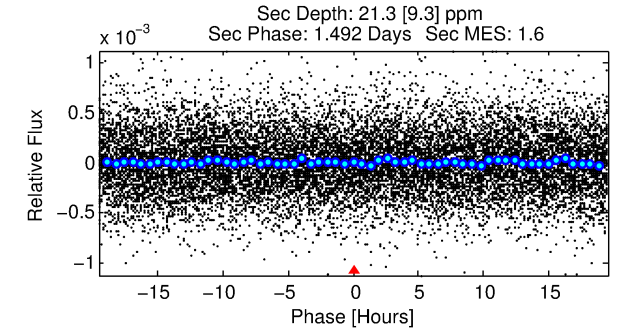
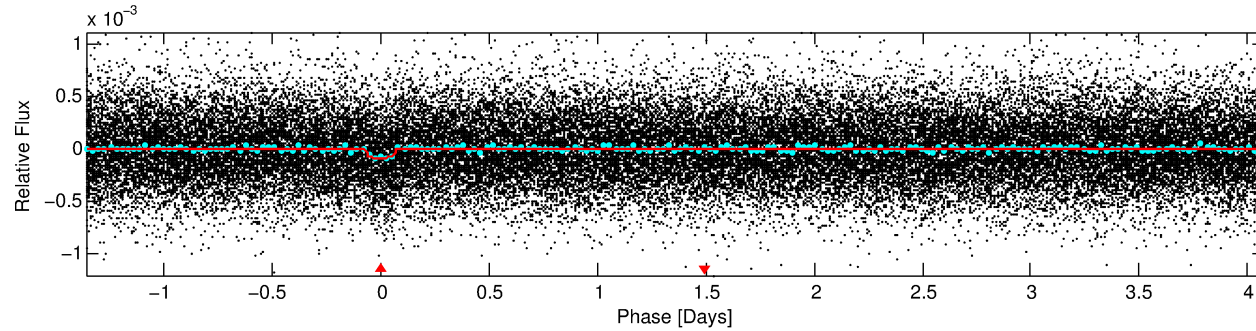
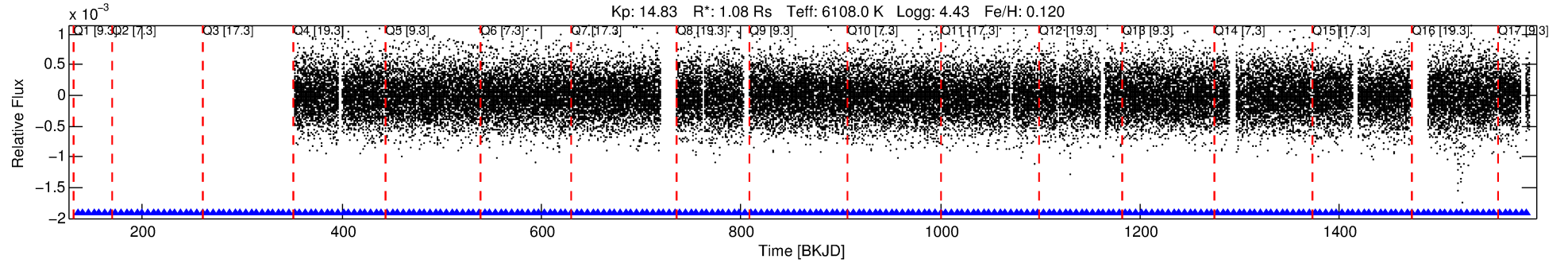
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004742452-01

No Significant Match Found

# DV One-Page Summary

KIC: 4742452 Candidate: 1 of 1 Period: 5.440 d



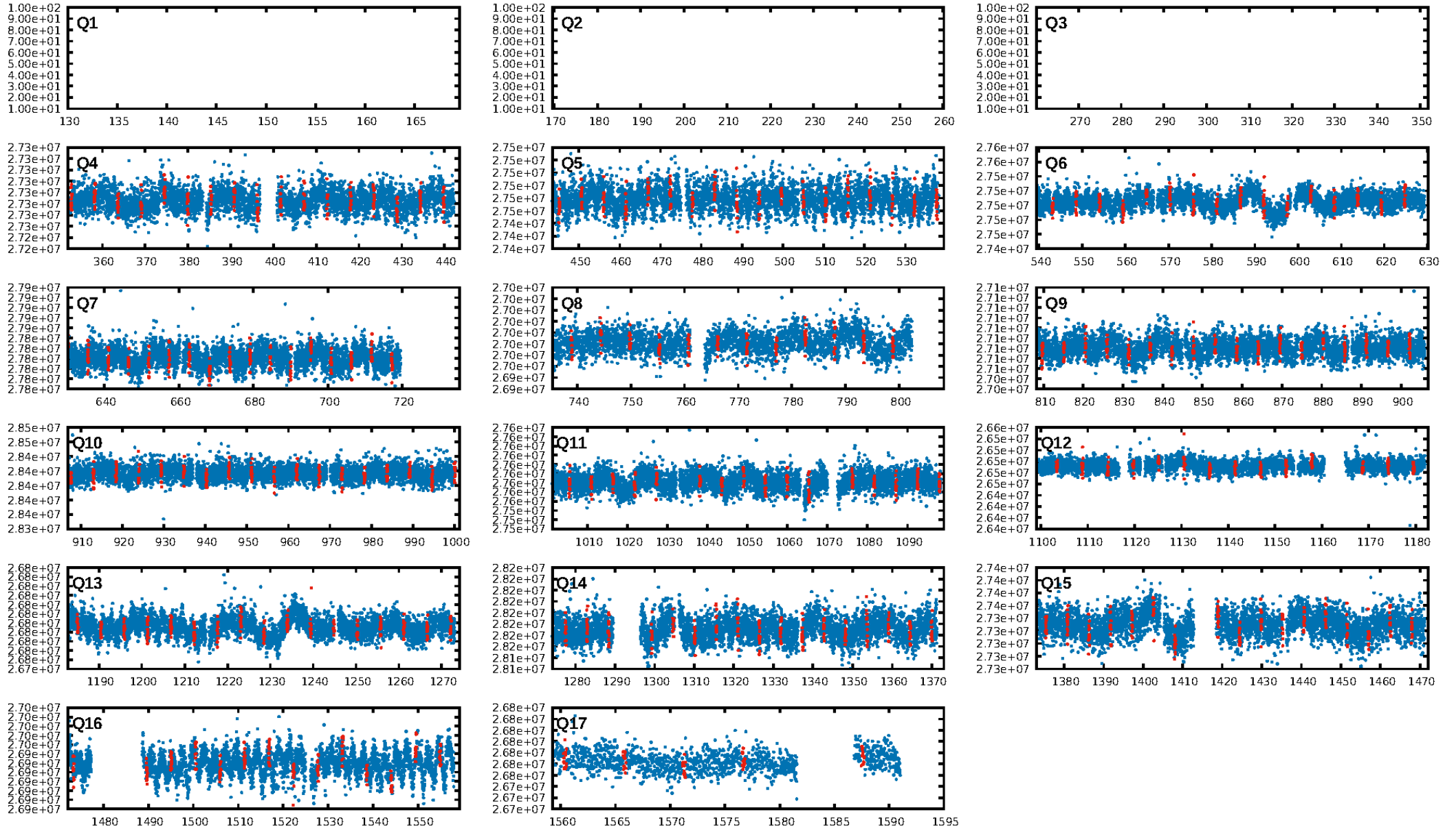
## DV Fit Results:

Period = 5.43979 [0.00005] d  
Epoch = 135.1587 [0.0074] BKJD  
Rp/R\* = 0.0096 [0.0068]  
a/R\* = 6.47 [22.47]  
b = 0.88 [0.96]  
Seff = 362.52 [155.53]  
Teff = 1113 [119] K  
Rp = 1.13 [0.88] Re  
a = 0.0633 [0.0173] AU  
Ag = 36.82 [56.20] [0.64σ]  
Teffp = 4238 [1571] K [1.98σ]

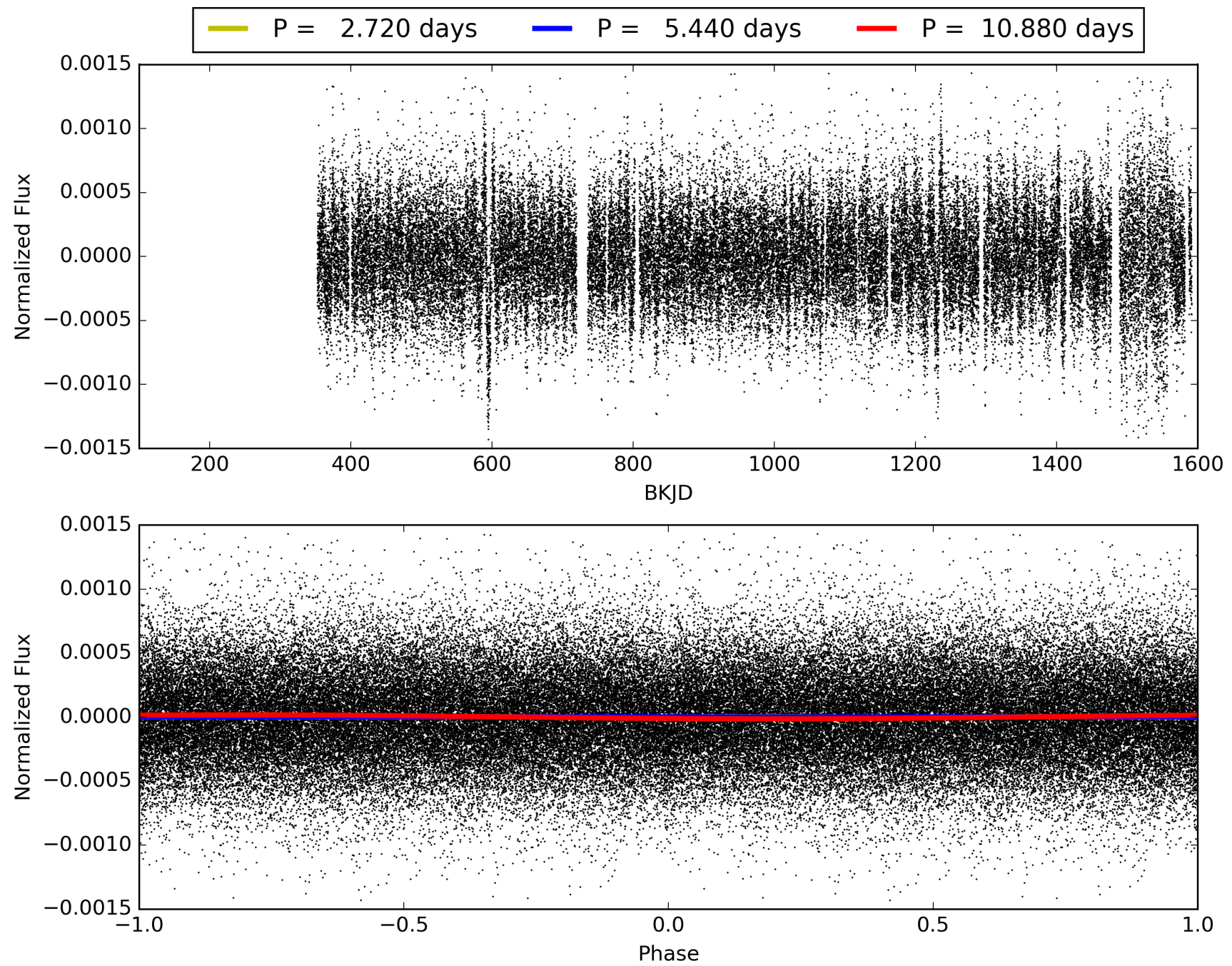
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.30e-13  
RollingBand-fgt: 1.00 [210/210]  
GhostDiagnostic-chr: -3.822  
Centroid-sig: 32.6%  
Centroid-so: 0.995 arcsec [0.68σ]  
OotOffset-rm: 1.070 arcsec [0.77σ]  
KicOffset-rm: 0.640 arcsec [0.54σ]  
OotOffset-st: 1/3/3/0 [7]  
KicOffset-st: 1/3/3/0 [7]  
DiffImageQuality-fgm: 0.71 [5/7]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 004742452-01, PDC Light Curves



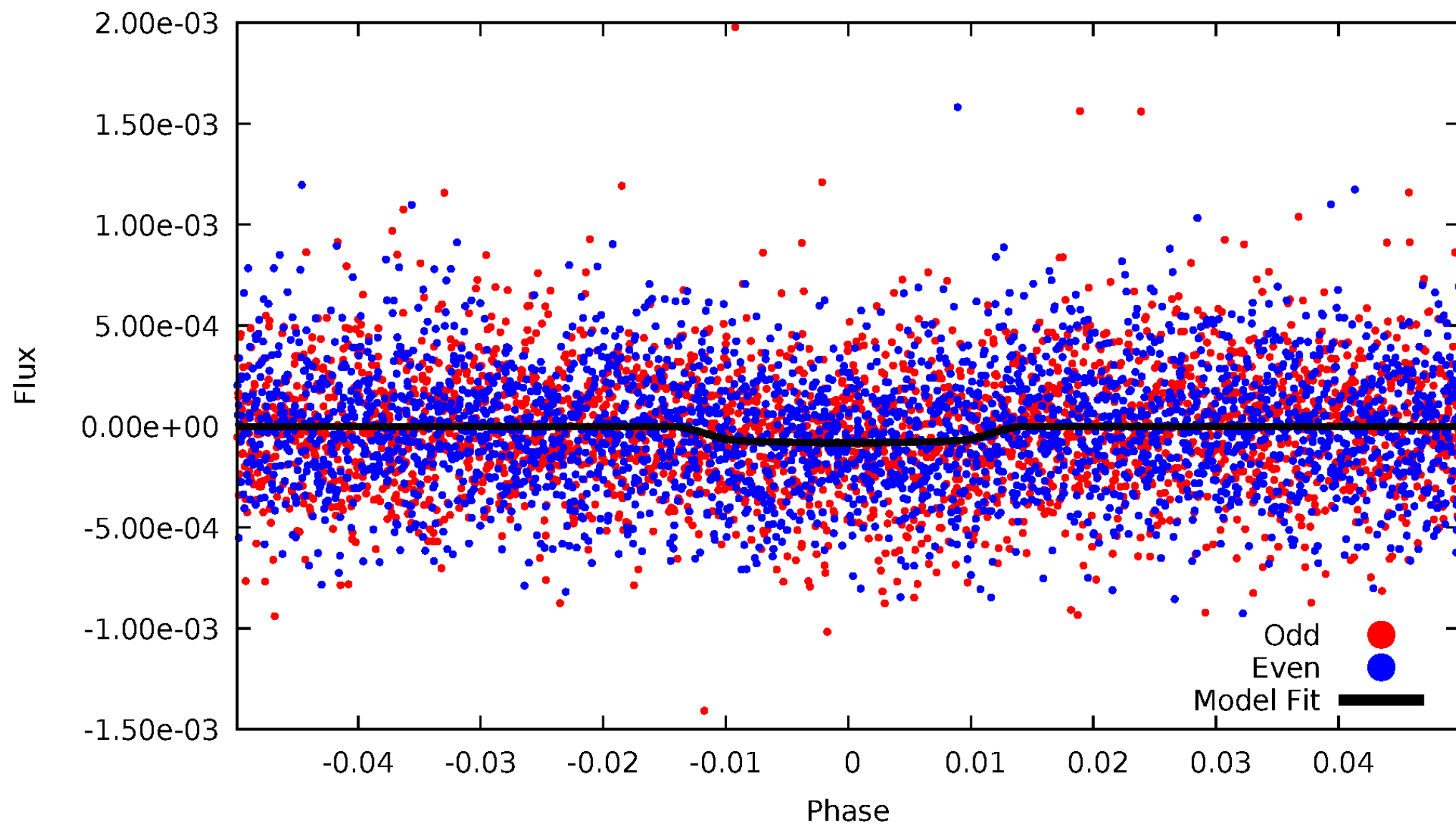
TCE 004742452-01





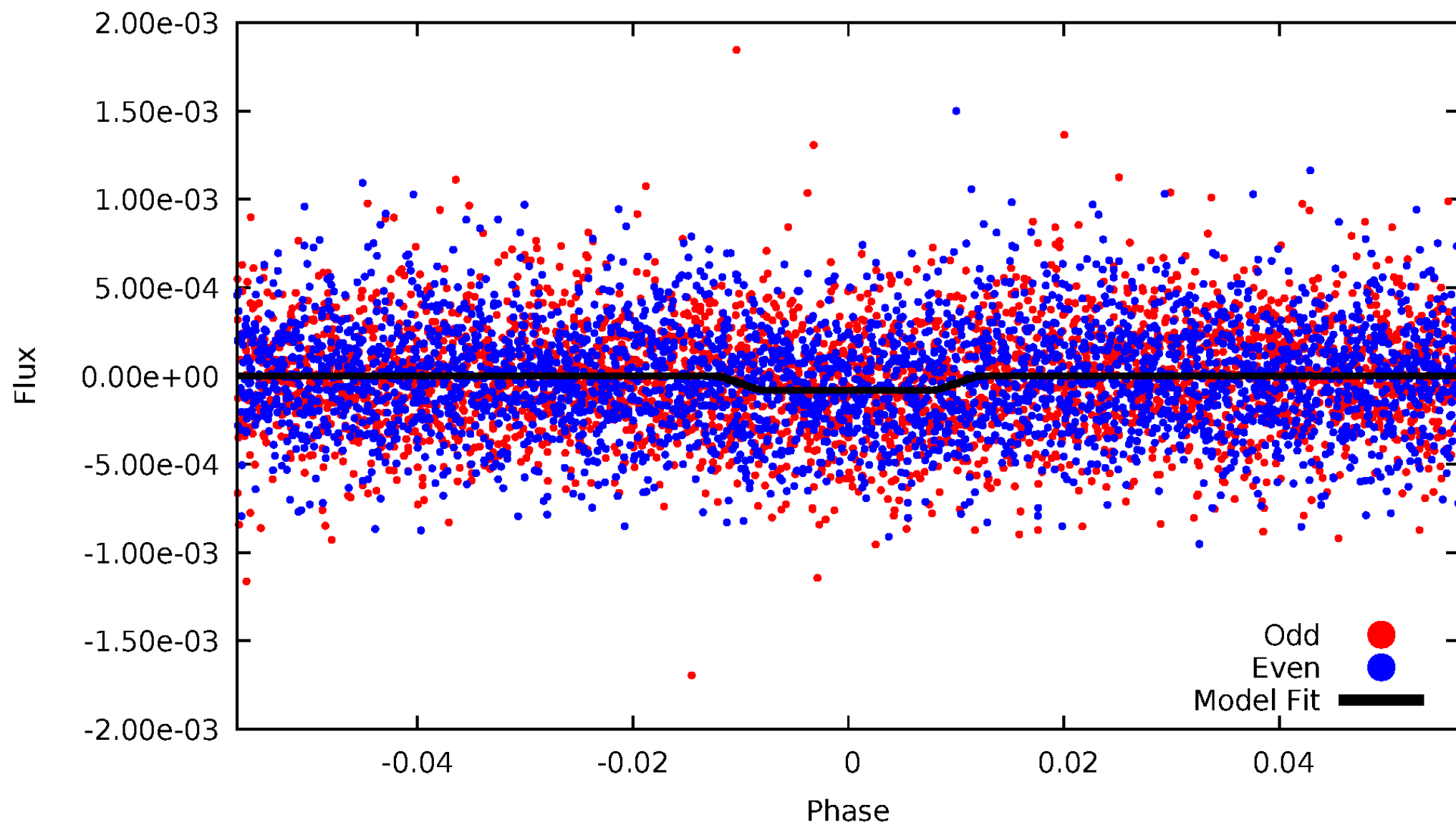
# DV Odd/Even

TCE 004742452-01

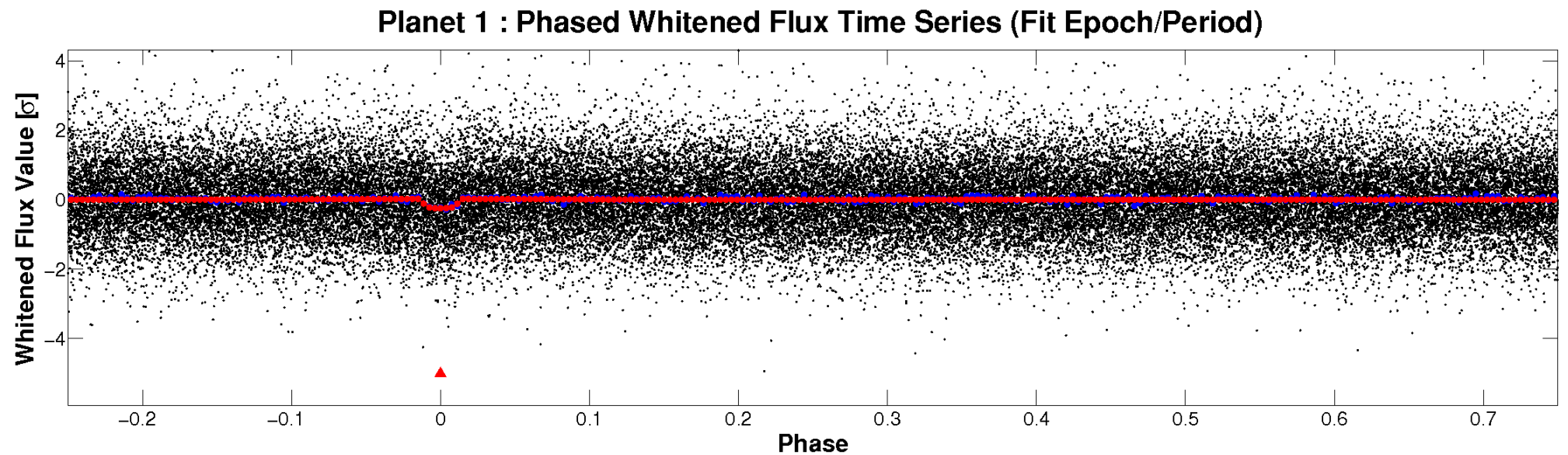
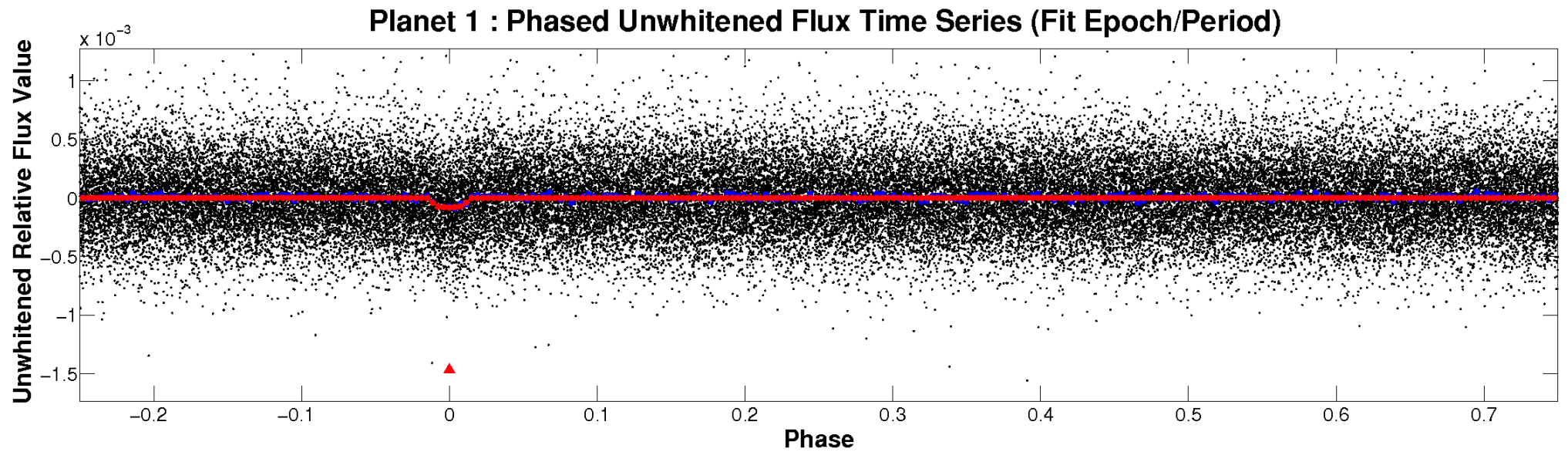


# ALT Odd/Even

TCE 004742452-01

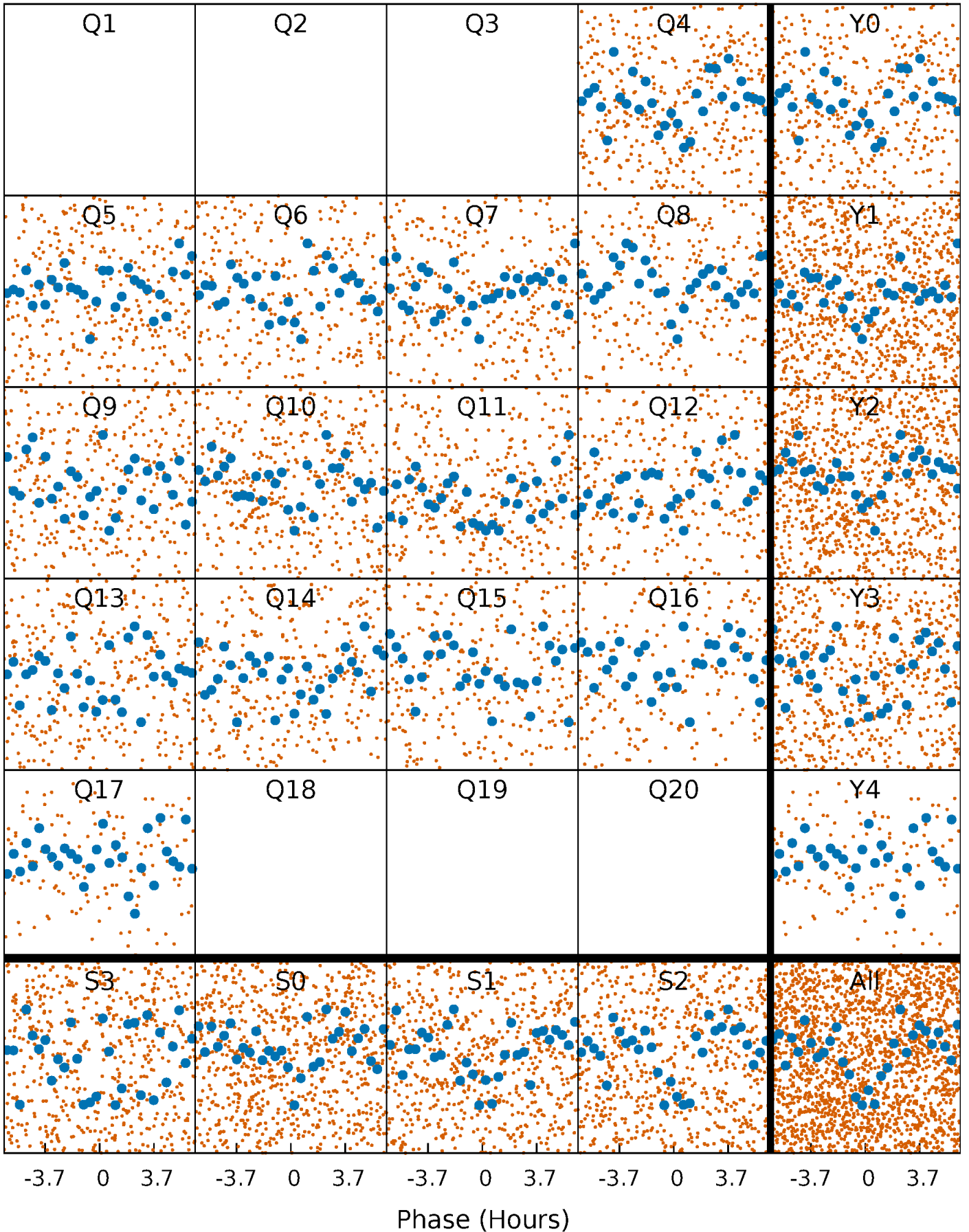


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

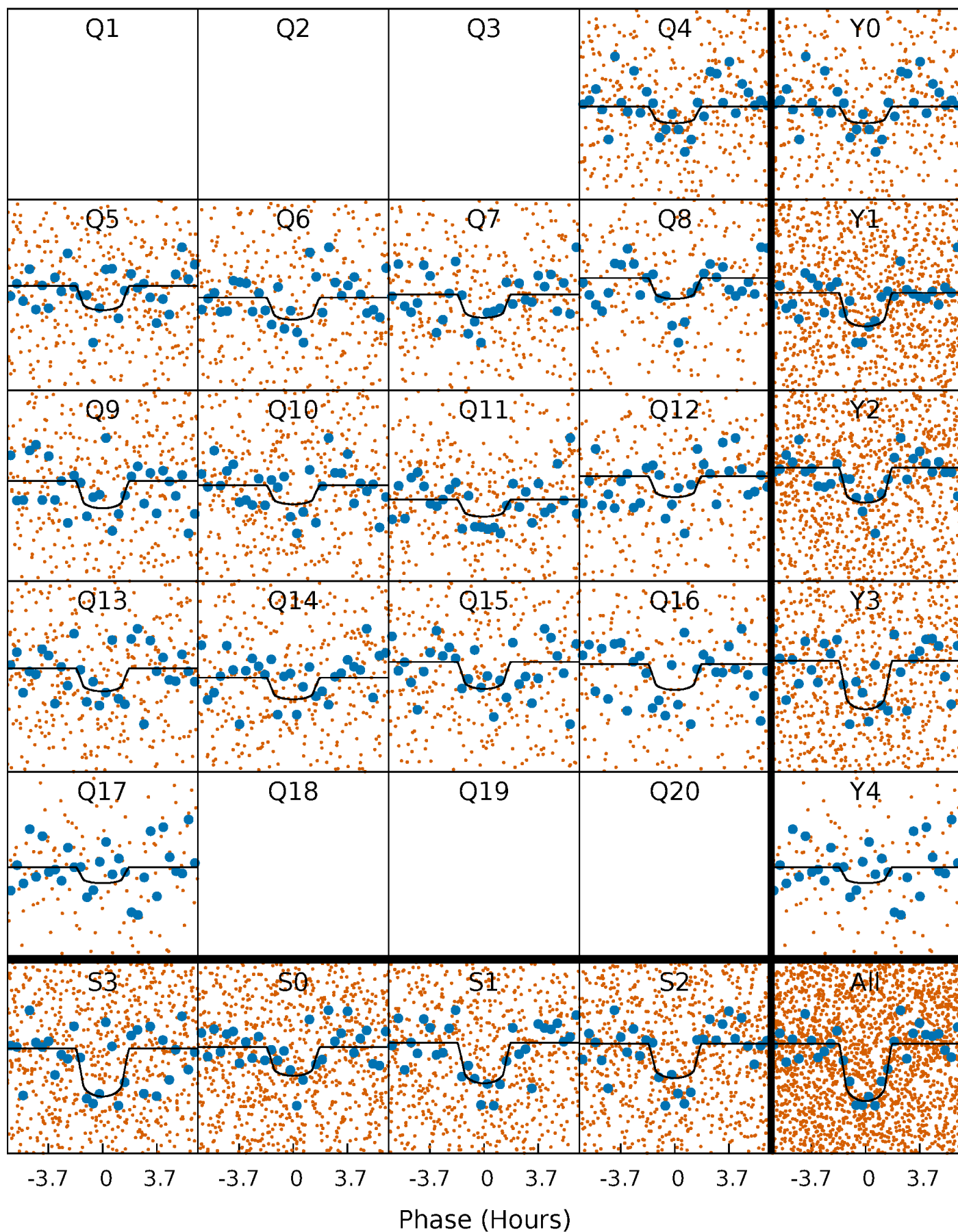
TCE 004742452-01 P= 5.439786 Days  $T_0=135.158683$  (BKJD)





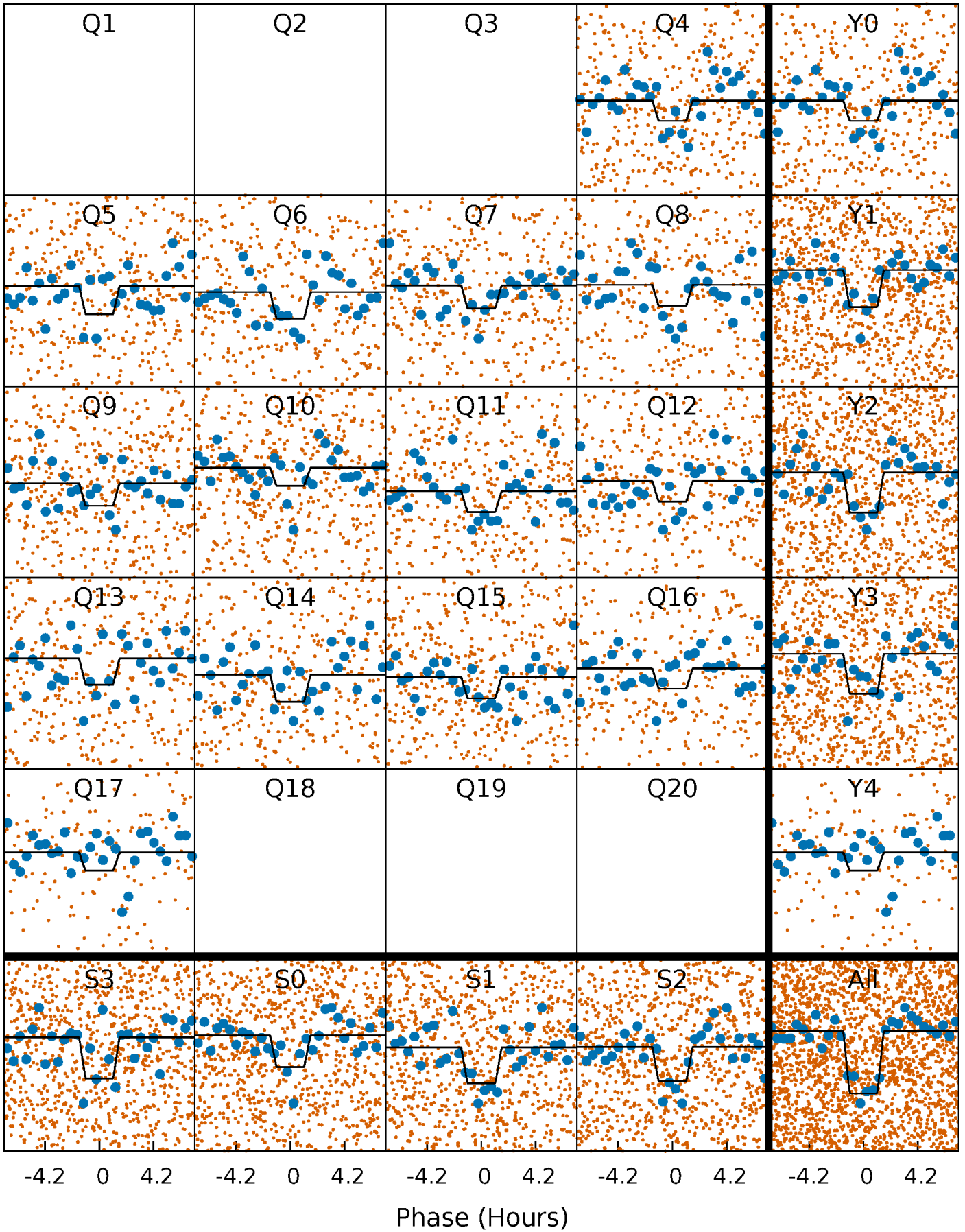
# DV Quarter-Phased Transit Curves

TCE 004742452-01 P= 5.439786 Days  $T_0=135.158683$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

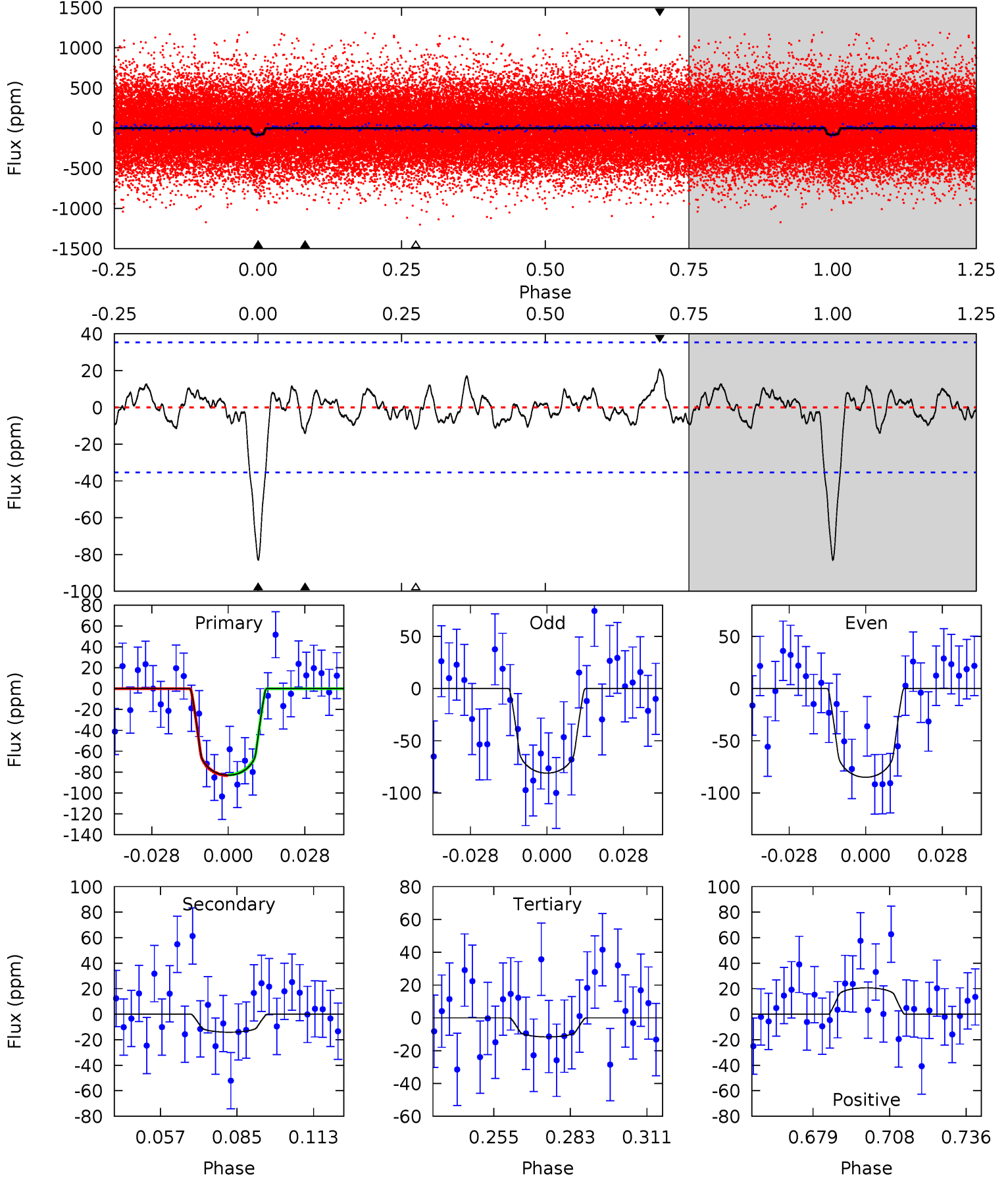
TCE 004742452-01 P= 5.439909 Days  $T_0=135.142445$  (BKJD)



# DV Model-Shift Uniqueness Test

004742452-01, P = 5.439786 Days, E = 135.158683 Days

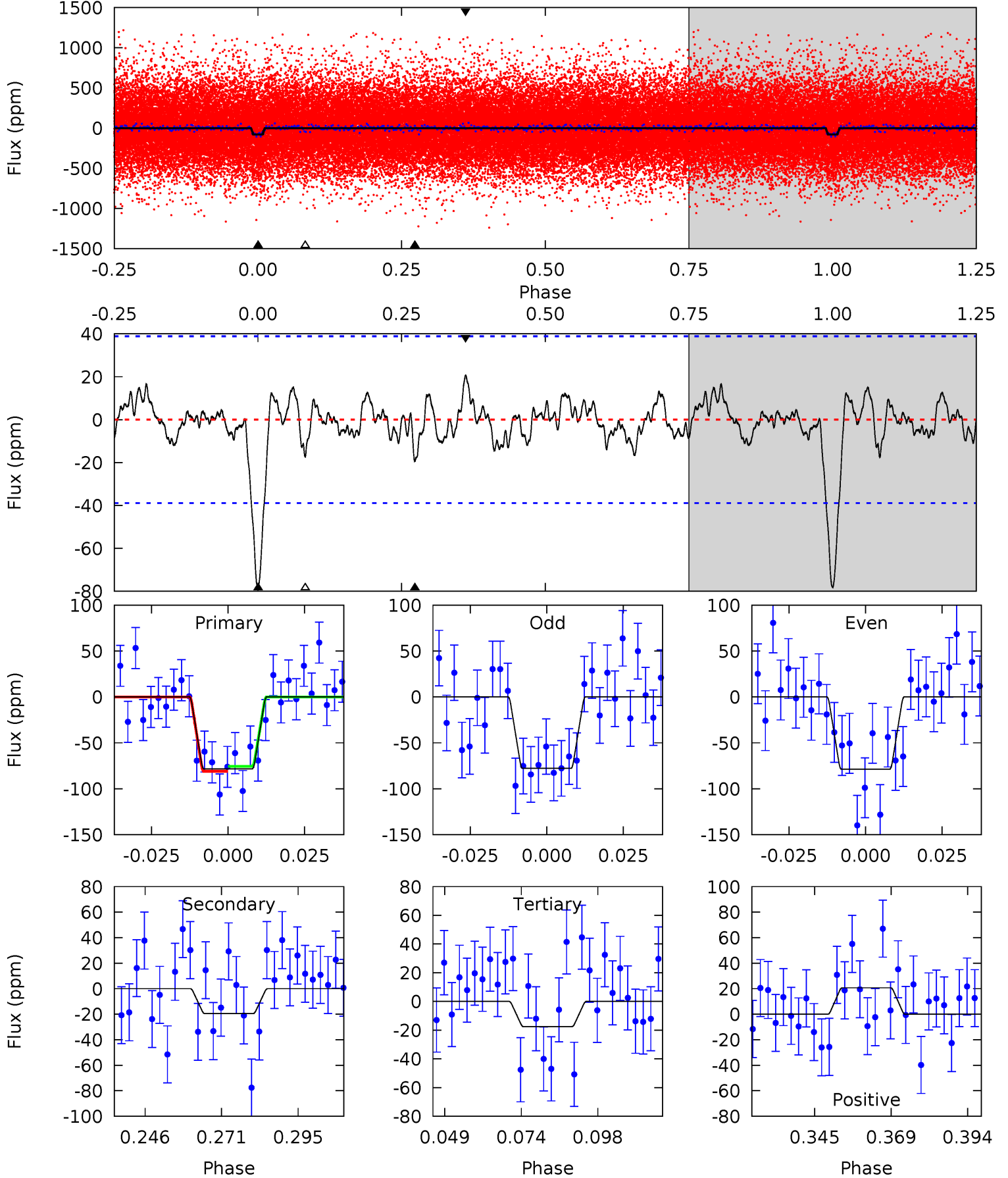
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	1.92	1.58	2.82	4.82	2.19	0.84	9.73	8.49	0.34	-0.90	0.27	0.91	0.20	0.04



# Alt Model-Shift Uniqueness Test

004742452-01, P = 5.439909 Days, E = 135.142445 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
9.76	2.43	2.19	2.58	4.85	2.25	0.88	7.57	7.17	0.25	-0.15	0.05	0.96	0.21	0.34





### Stellar Parameters For KIC 004742452

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6108^{+190}_{-253}$	$4.430^{+0.054}_{-0.216}$	$0.120^{+0.200}_{-0.300}$	$1.080^{+0.350}_{-0.125}$	$1.147^{+0.147}_{-0.164}$	$1.284^{+0.378}_{-0.690}$
	+3%/-4%	+1%/-5%	+167%/-250%	+32%/-12%	+13%/-14%	+29%/-54%
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 004742452-01 / KOI 7704.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-14 \pm 7$	$1.28^{+0.89}_{-0.74}$	$1585^{+117}_{-84}$	$3923^{+1754}_{-754}$	$16^{+90}_{-12}$
Alt.	$-19 \pm 8$	$1.20^{+0.80}_{-0.70}$	$1586^{+117}_{-88}$	$4347^{+1884}_{-795}$	$30^{+136}_{-20}$

$T_{\text{max}}$  = 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

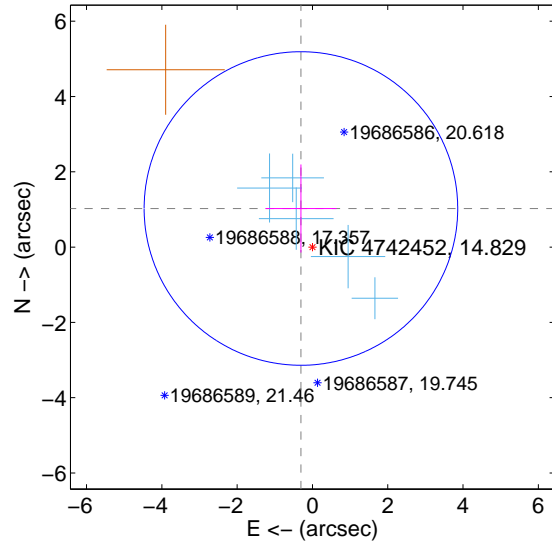
Supplemental centroid analysis for 004742452-01. Kepler magnitude: 14.83. Transit SNR 8.13

There are 5 quarters with good PRF difference image offsets

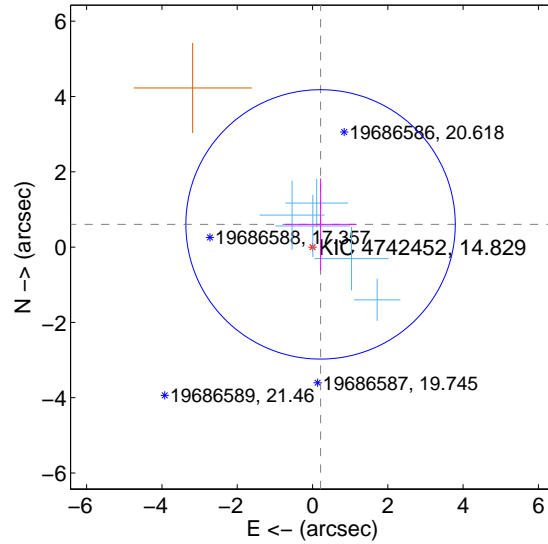
The direct PRF centroid is offset from the target star catalog position by about 0.86 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.070 \pm 1.388$	0.77	$0.306 \pm 0.943$	$1.025 \pm 1.171$
PRF-fit source offset from KIC position	$0.640 \pm 1.193$	0.54	$-0.213 \pm 0.943$	$0.603 \pm 1.220$
photometric centroid source offset	$1.00 \pm 1.45$	0.68	$-0.94 \pm 1.49$	$0.32 \pm 1.05$

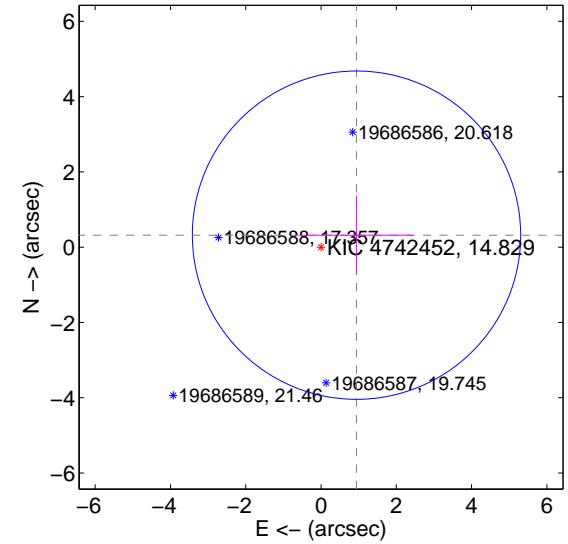
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

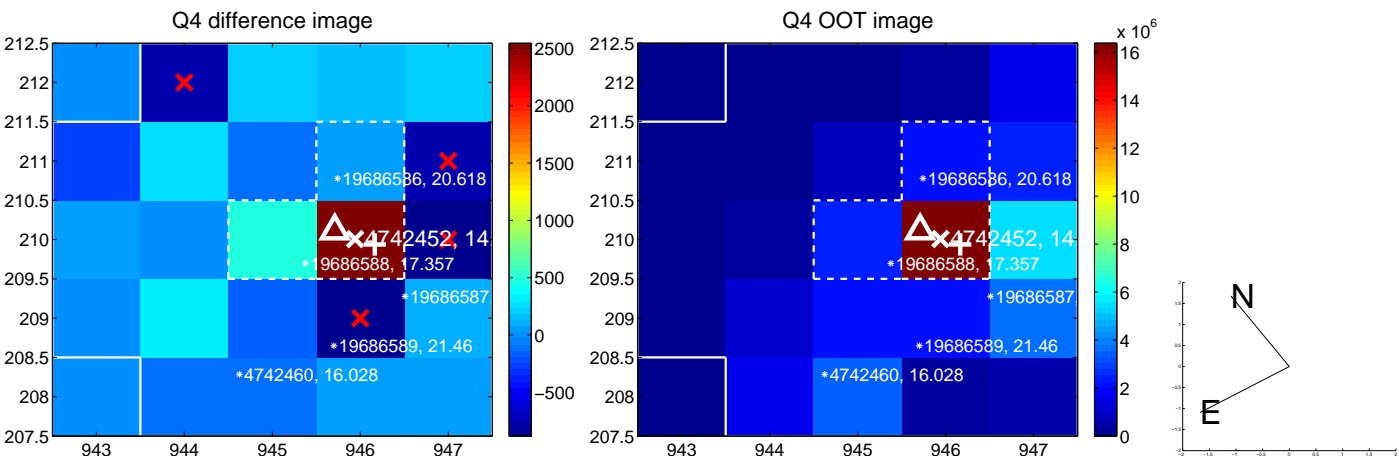


offset from photometric centroids

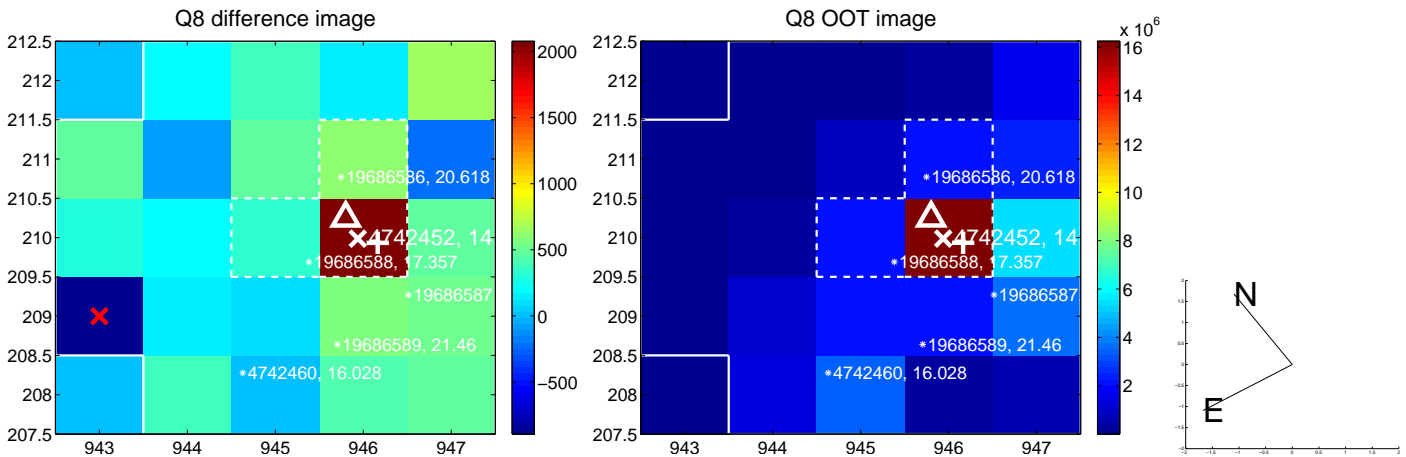
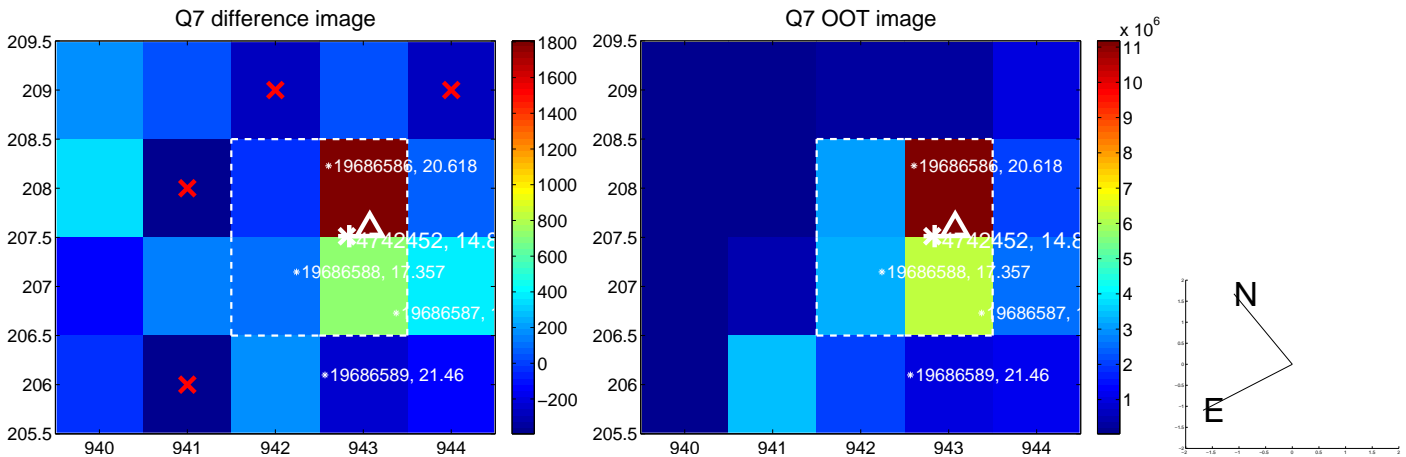
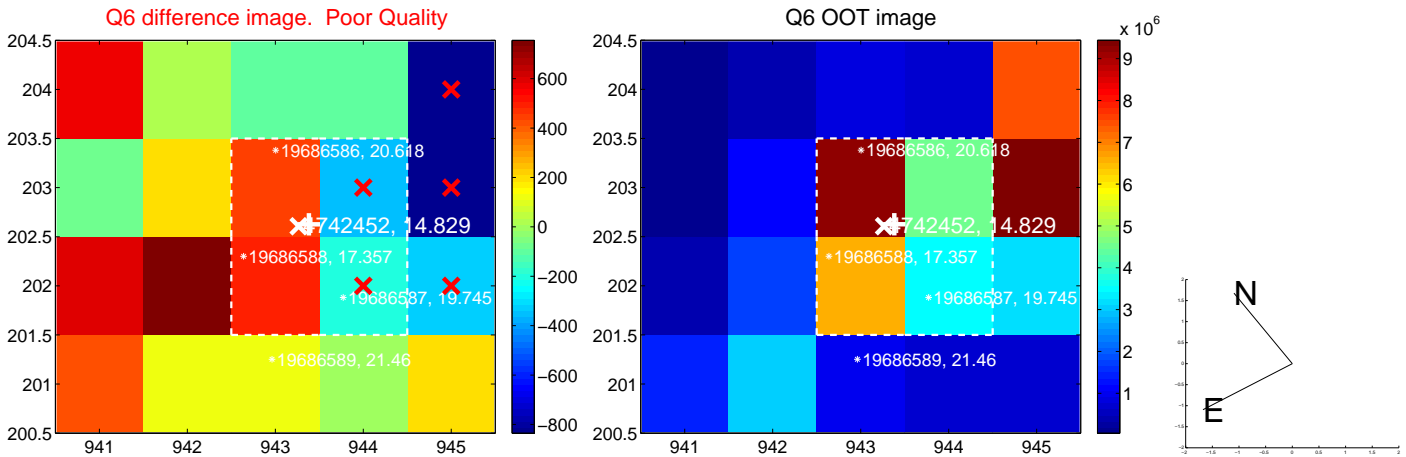
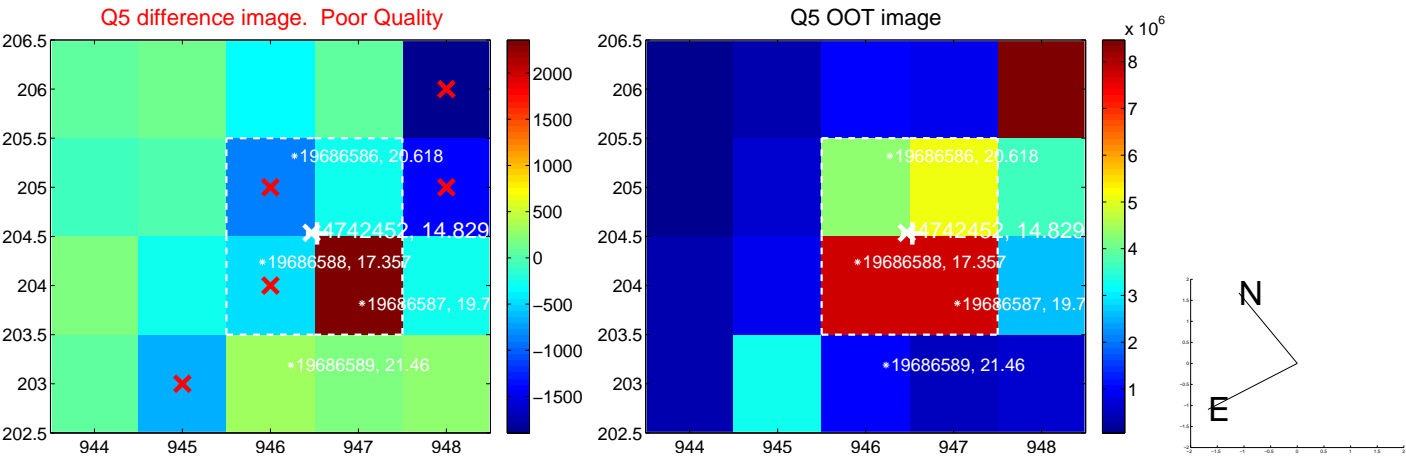


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

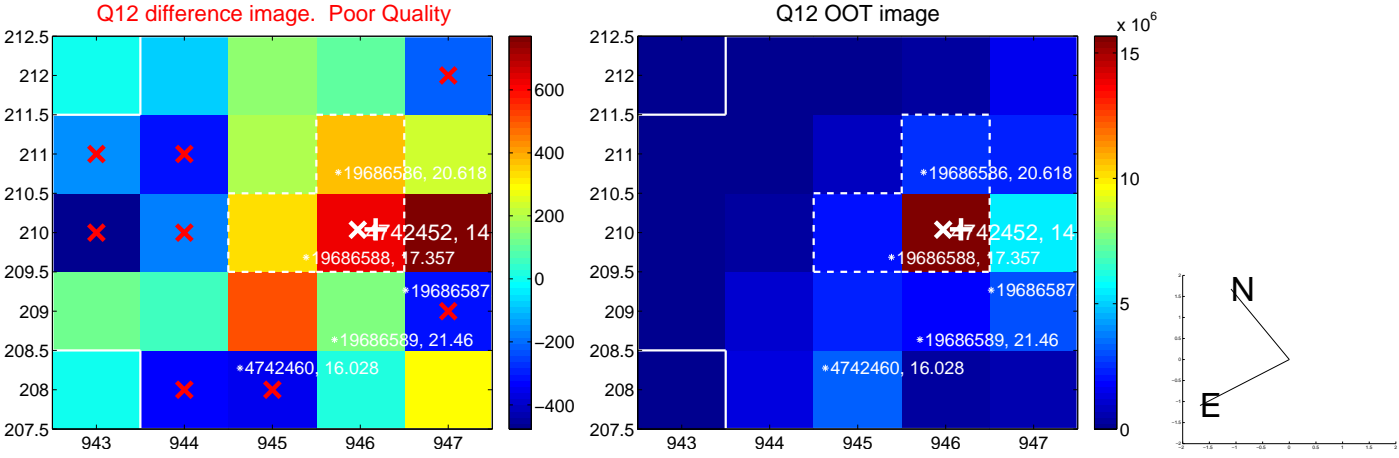
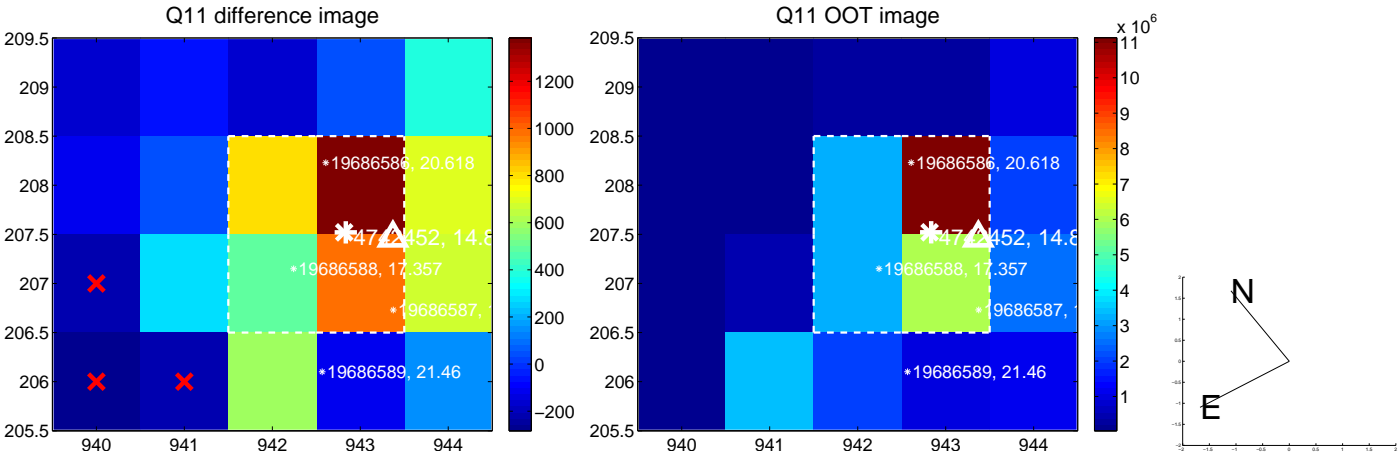
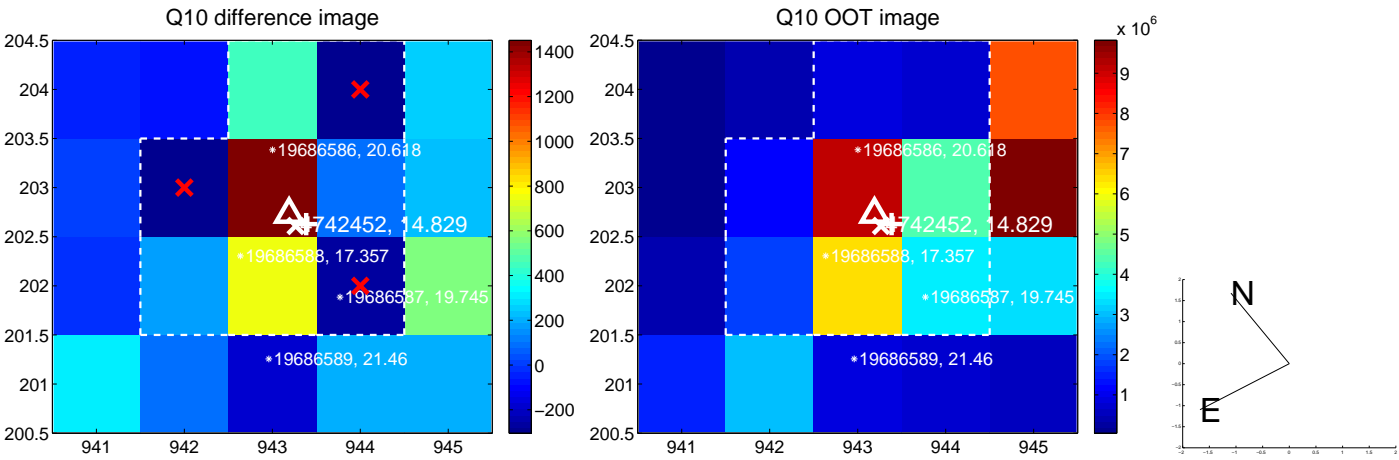
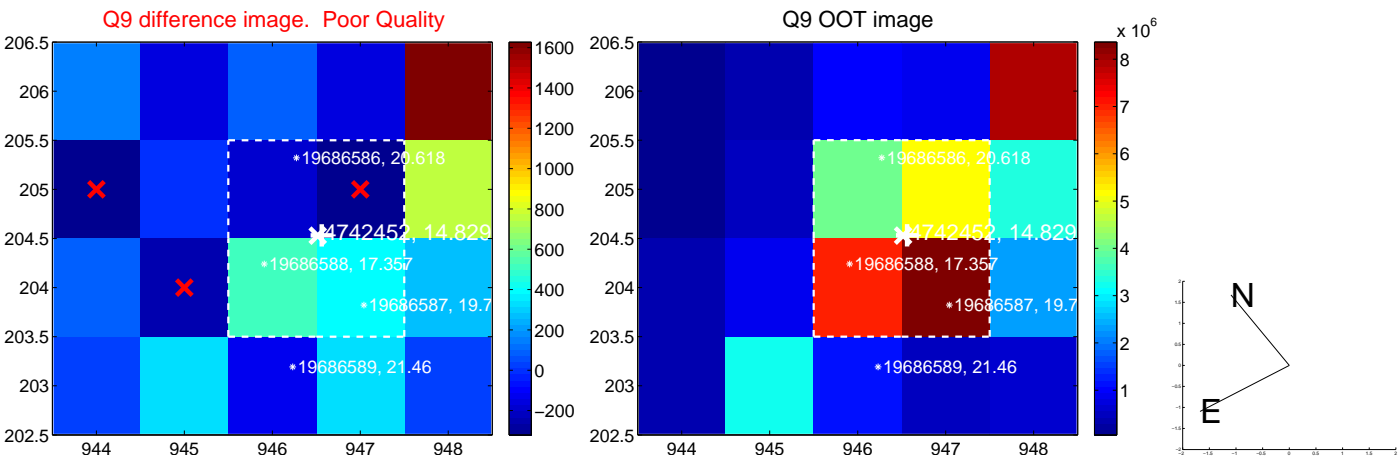


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

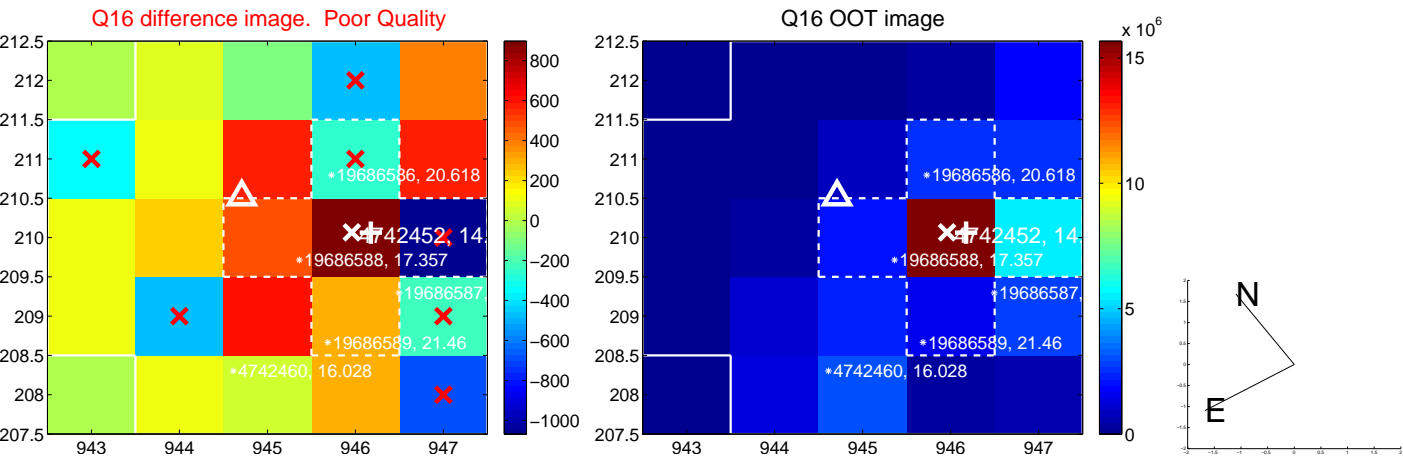
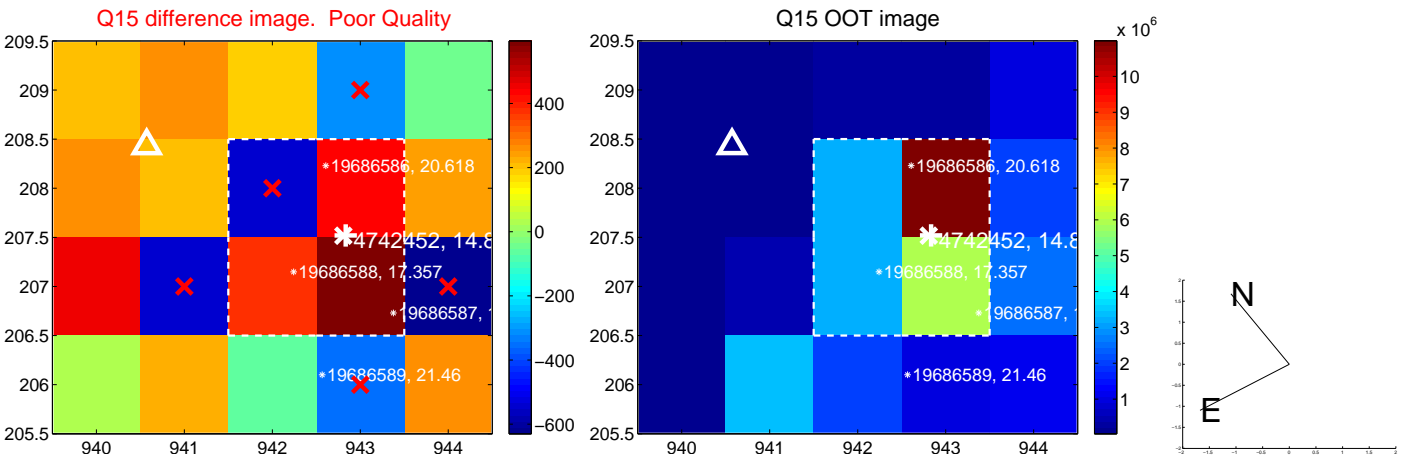
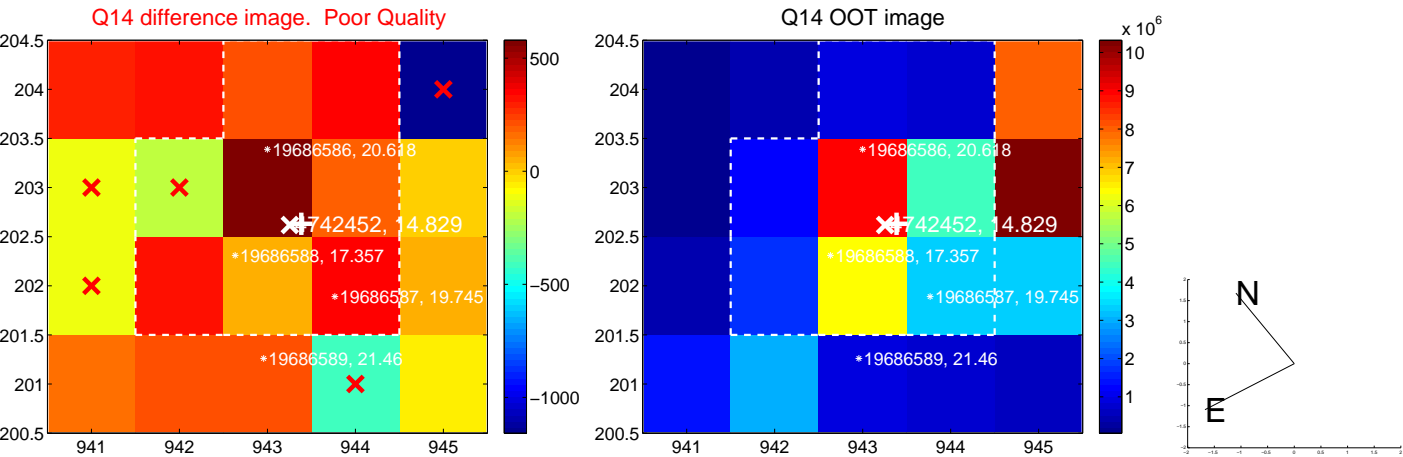
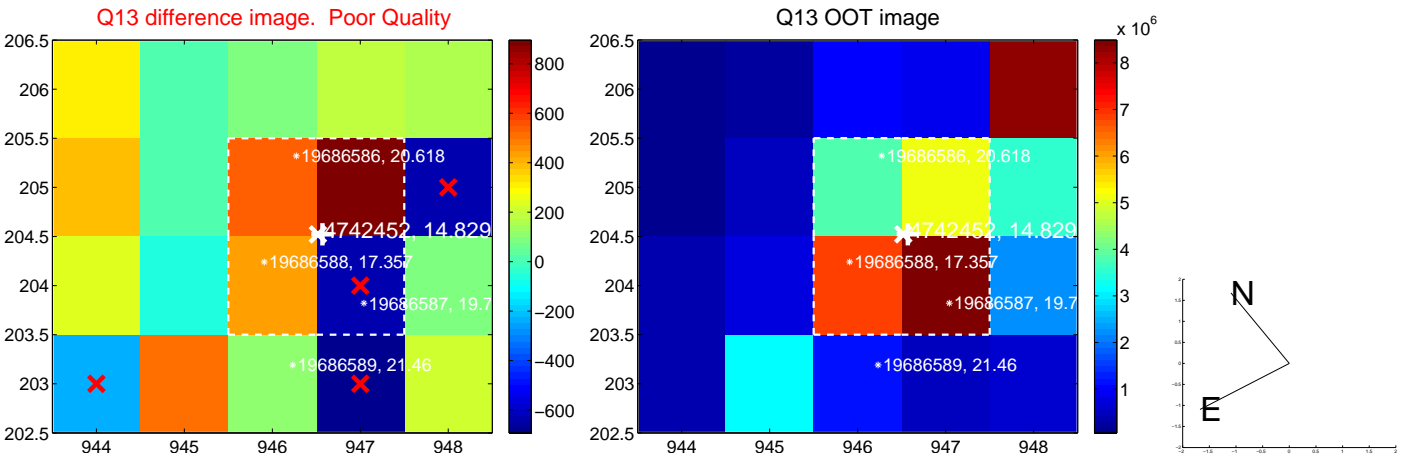




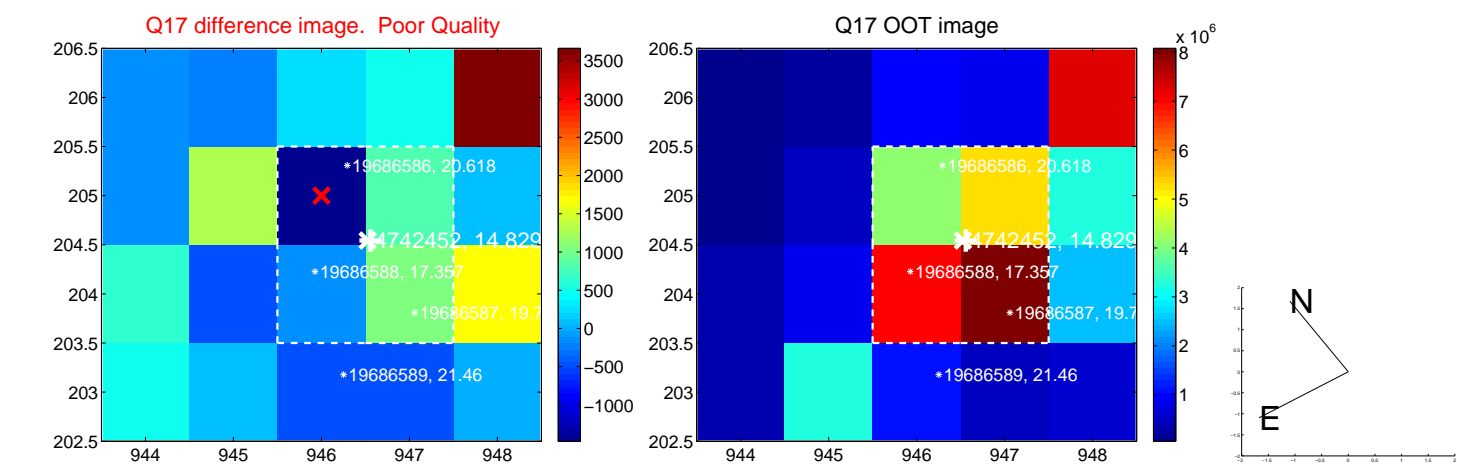
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



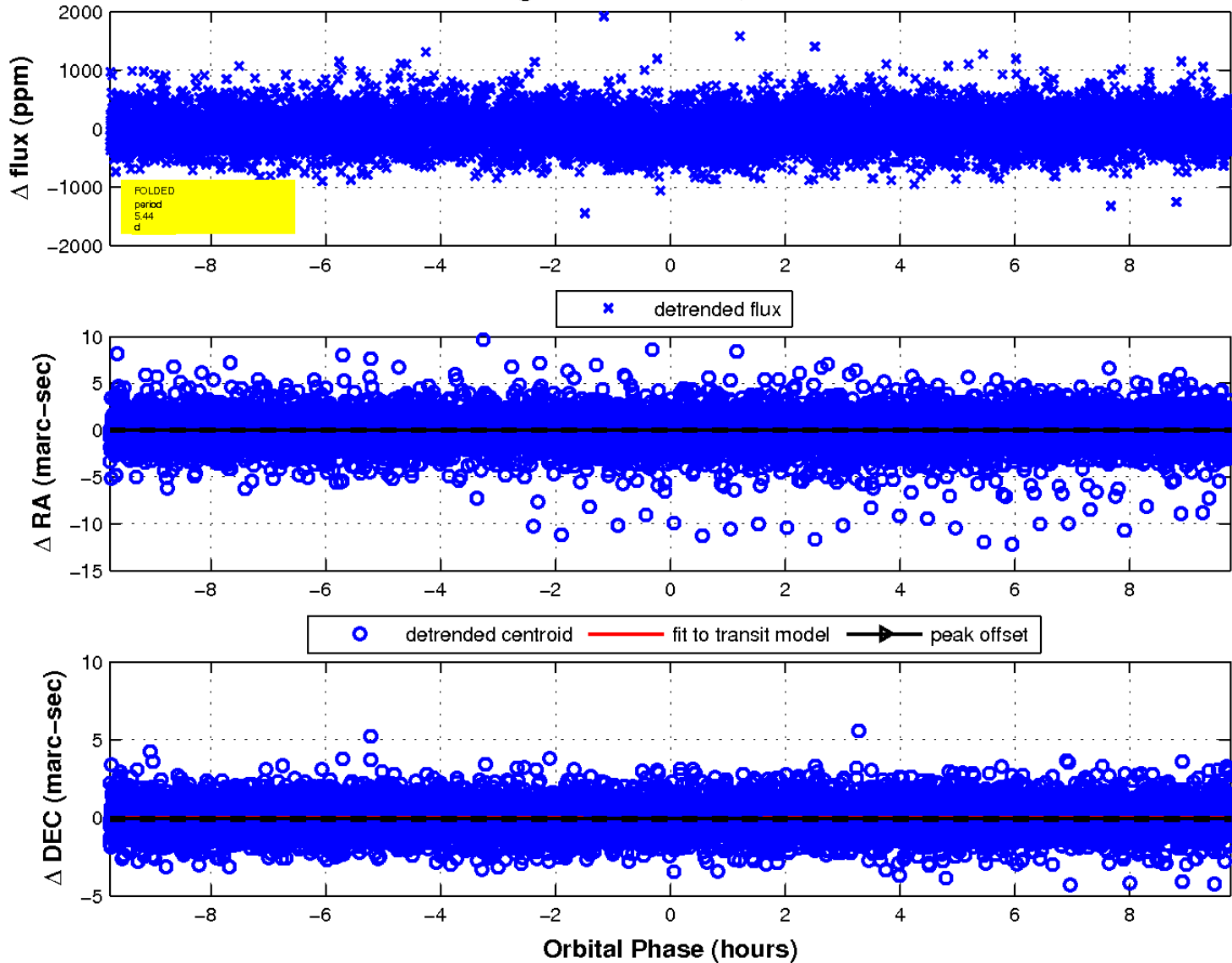
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



### fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

