

# KIC 006516185

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006516185-01	OBS	2445.01	47.366203	175.032463	776.4	7.813	13.9	14.7	0.90	5708	4.25	12.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006516185-01	OBS	PC	0.99	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.

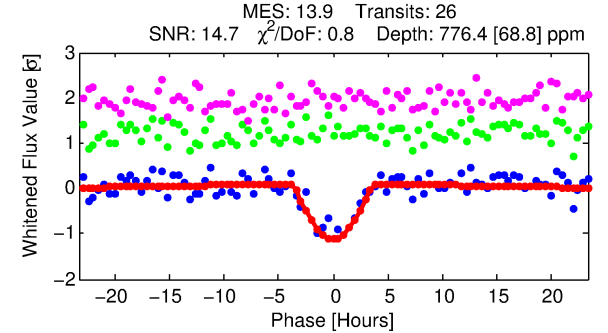
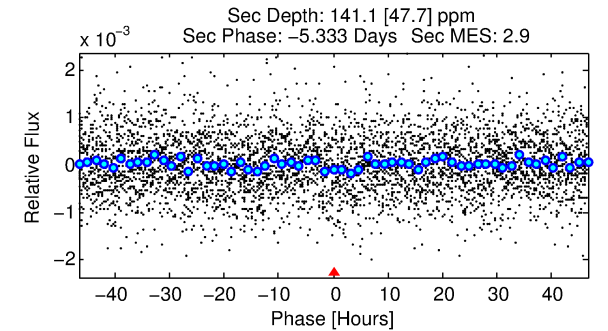
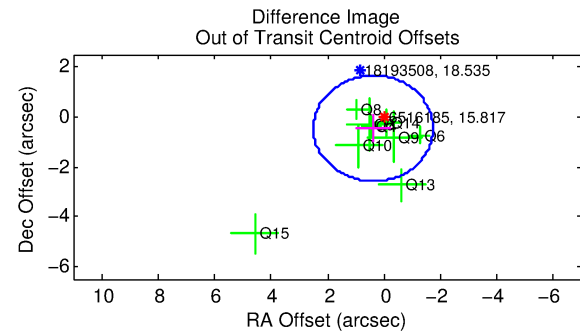
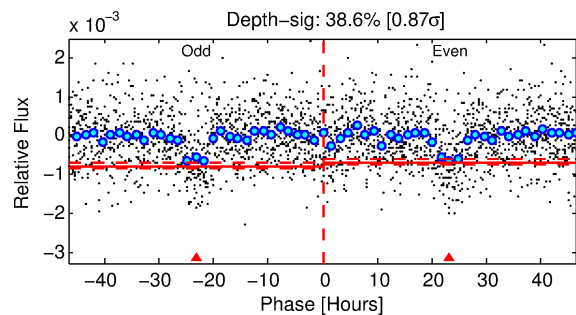
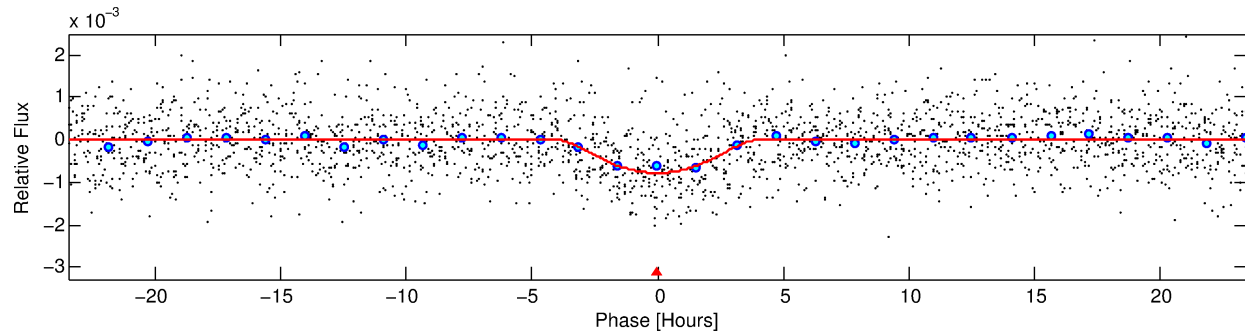
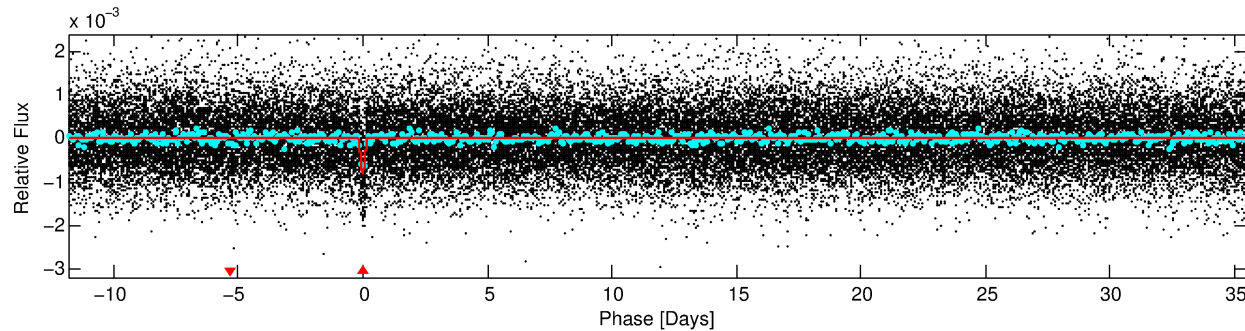
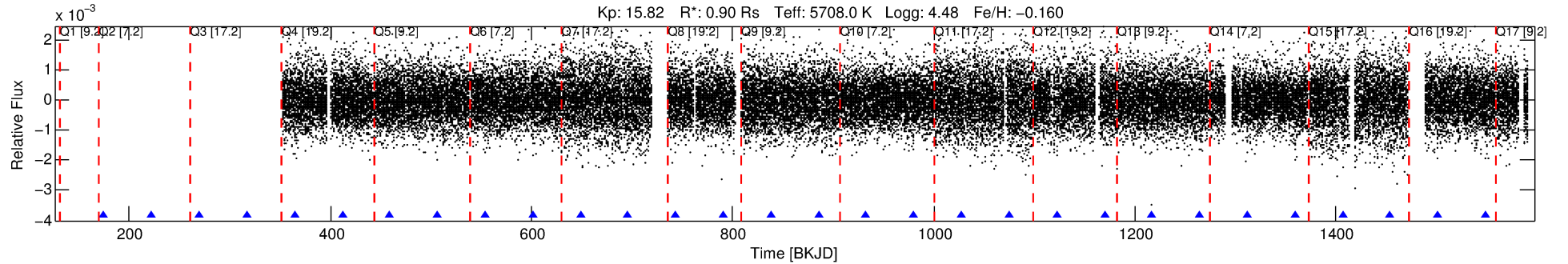
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006516185-01

No Significant Match Found

# DV One-Page Summary

KIC: 6516185 Candidate: 1 of 1 Period: 47.366 d  
KOI: K02445.01 Corr: 0.797



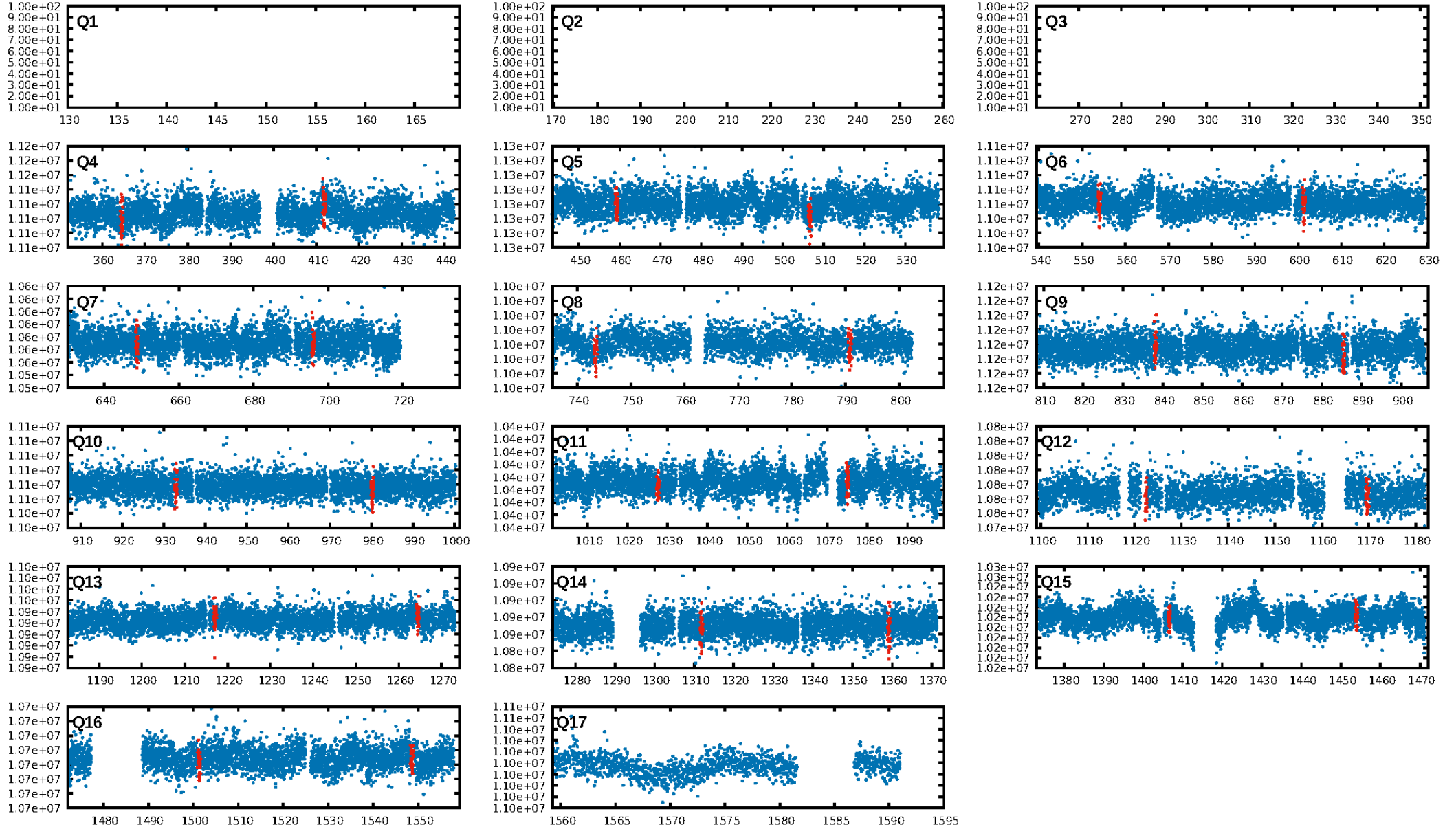
## DV Fit Results:

Period = 47.36620 [0.00080] d  
Epoch = 175.0325 [0.0144] BKJD  
Rp/R\* = 0.0431 [0.0607]  
a/R\* = 15.43 [6.80]  
b = 0.99 [0.10]  
Seff = 12.64 [4.54]  
Teq = 481 [43] K  
Rp = 4.25 [6.09] Re  
a = 0.2474 [0.0572] AU  
Ag = 263.56 [752.37] [0.35 $\sigma$ ]  
Teffp = 2995 [2125] K [1.18 $\sigma$ ]

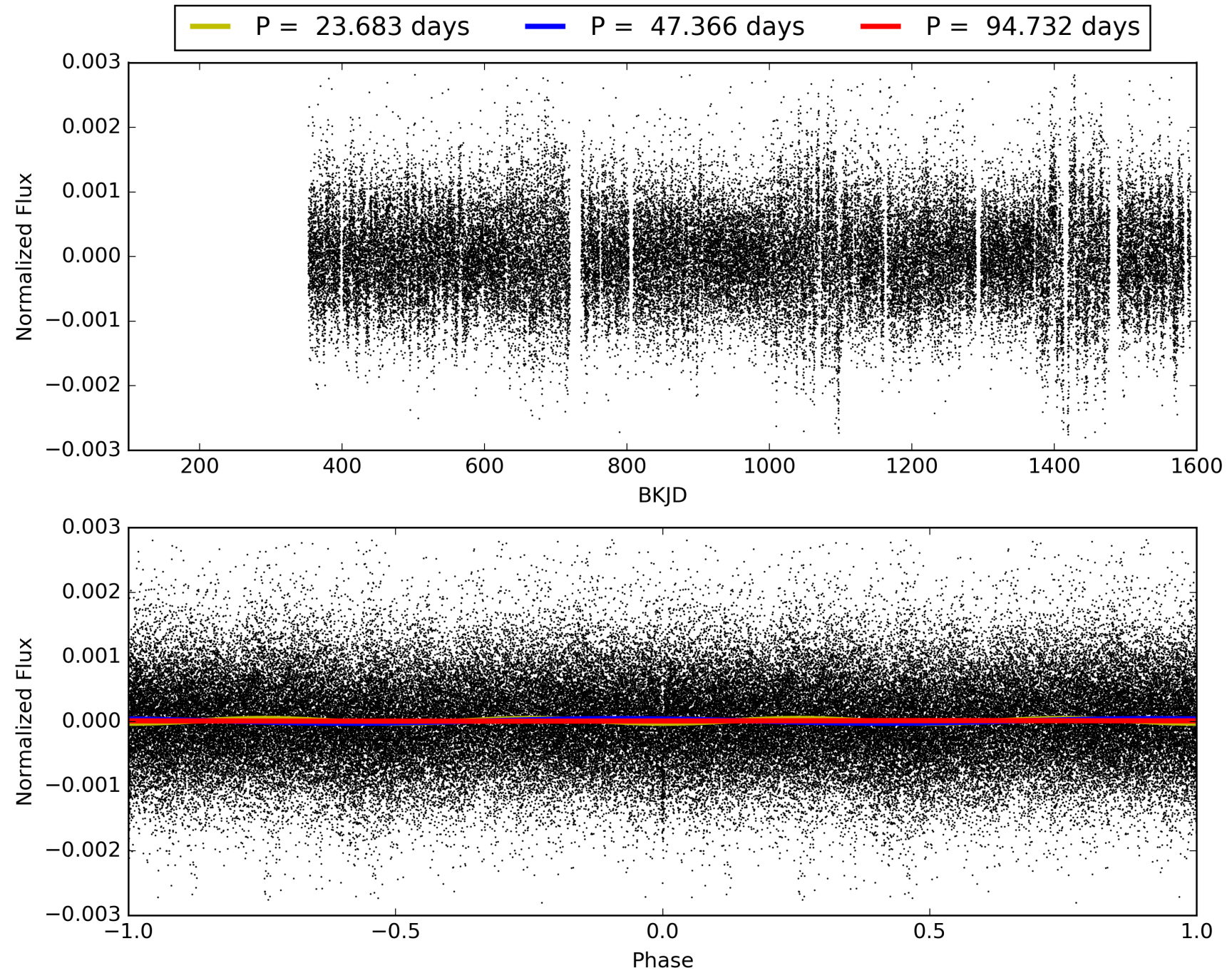
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 89.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.07e-42  
RollingBand-fgt: 1.00 [26/26]  
GhostDiagnostic-chr: 11.12  
Centroid-sig: 67.9%  
Centroid-so: 0.621 arcsec [0.64 $\sigma$ ]  
OotOffset-rm: 0.606 arcsec [0.86 $\sigma$ ]  
KicOffset-rm: 0.442 arcsec [0.71 $\sigma$ ]  
OotOffset-st: 3/1/2/3 [9]  
KicOffset-st: 3/1/2/3 [9]  
DiffImageQuality-fgm: 0.78 [7/9]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 006516185-01, PDC Light Curves

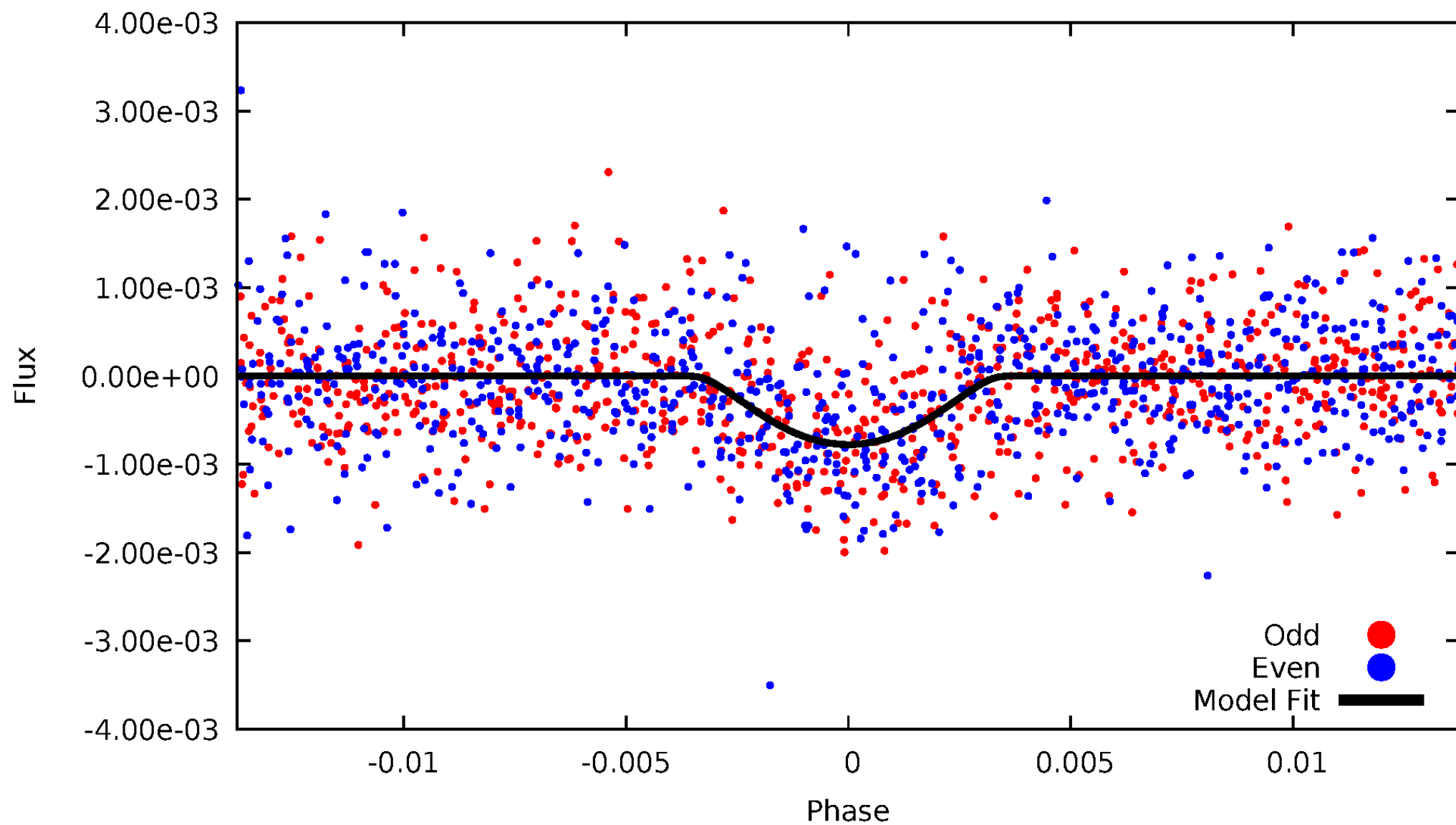


TCE 006516185-01



# DV Odd/Even

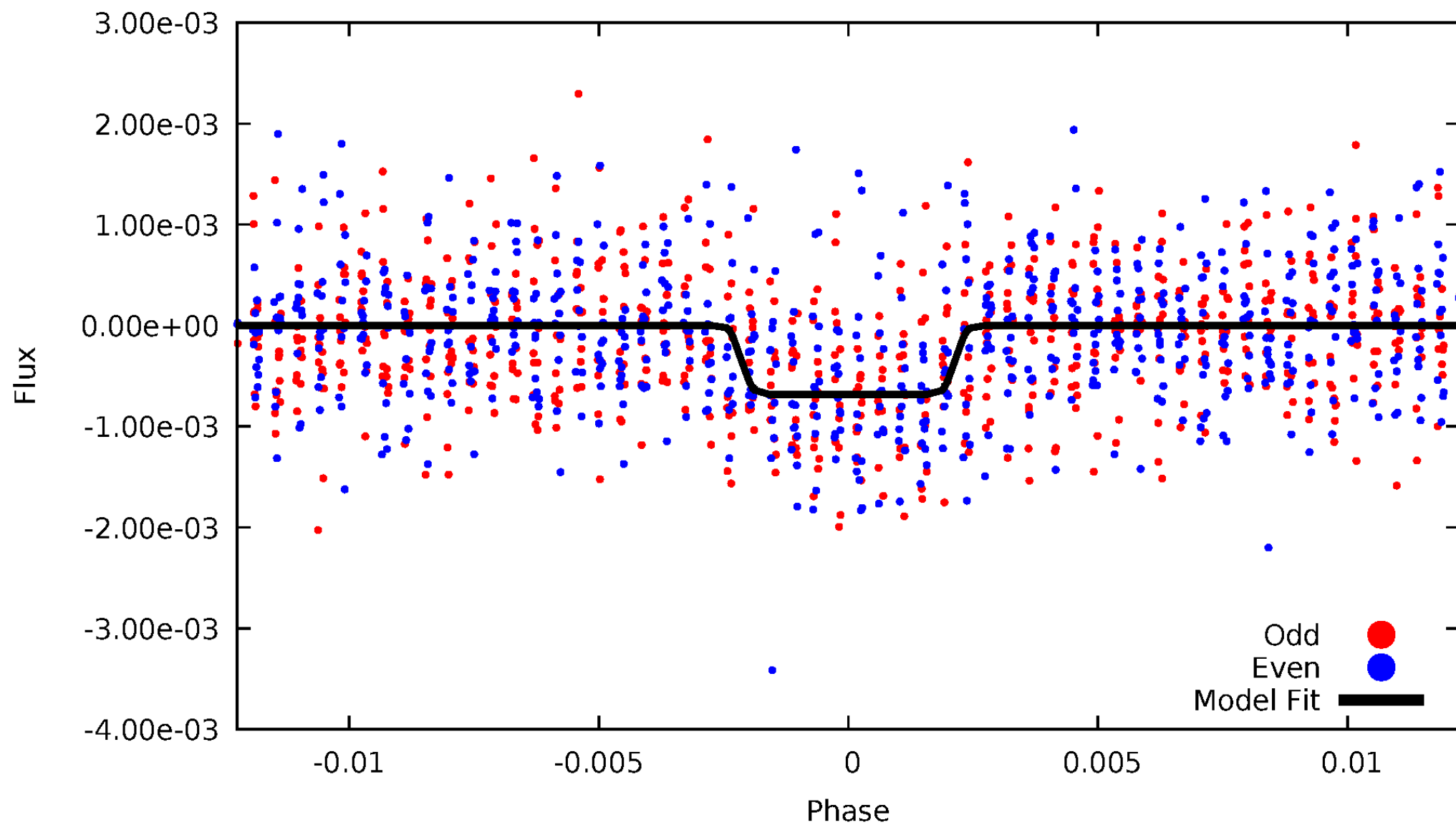
TCE 006516185-01



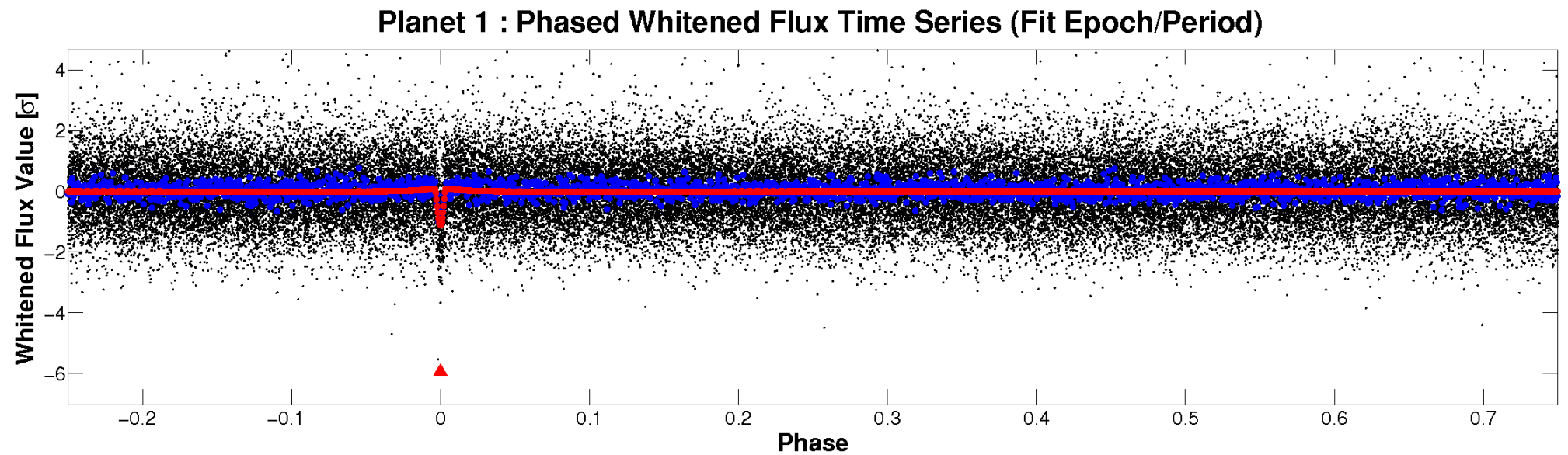
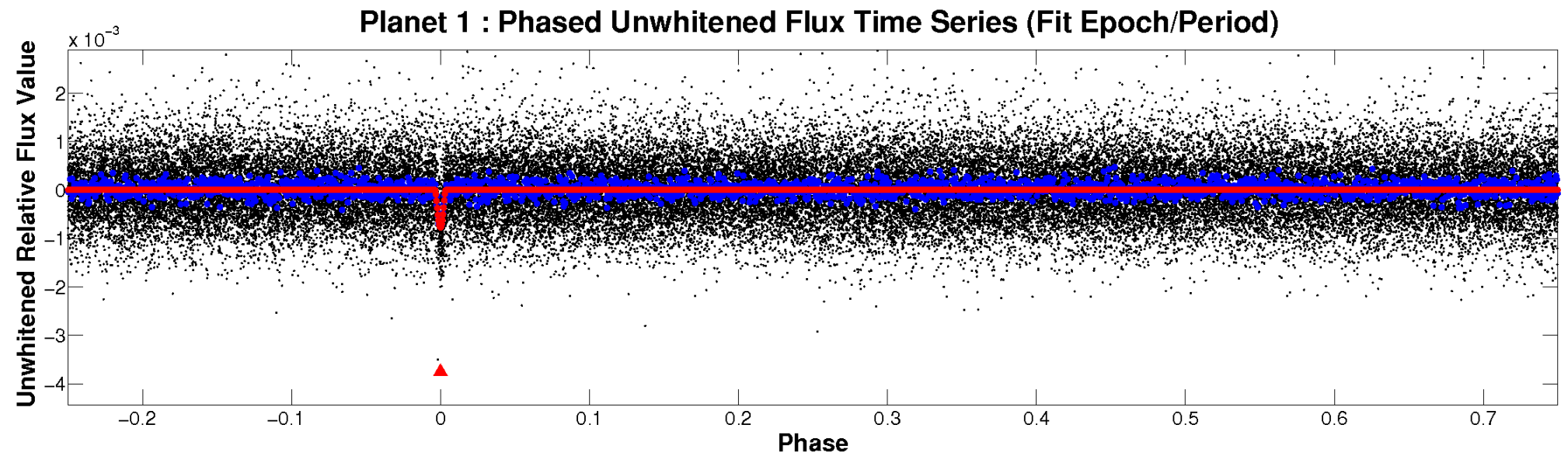


# ALT Odd/Even

TCE 006516185-01

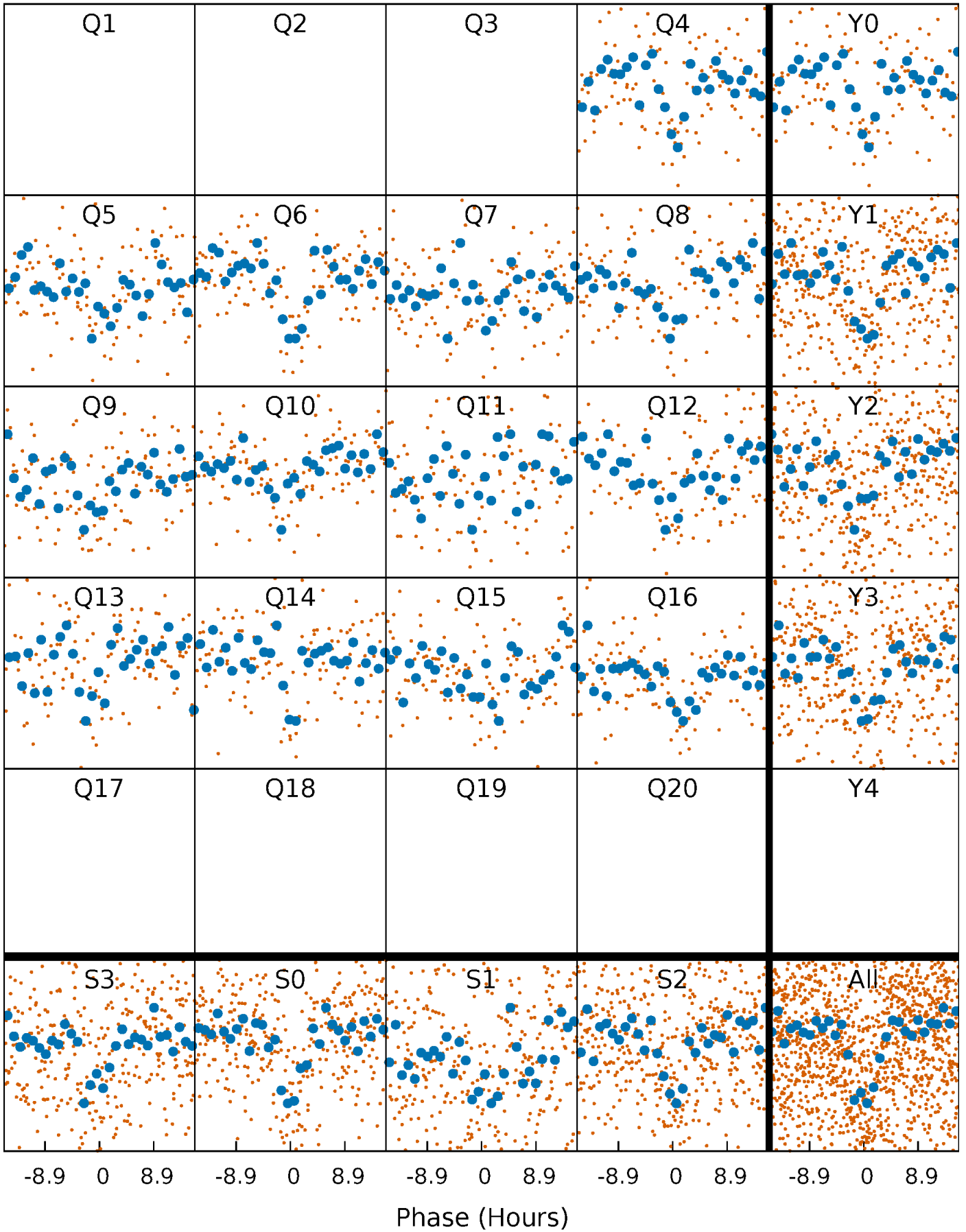


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

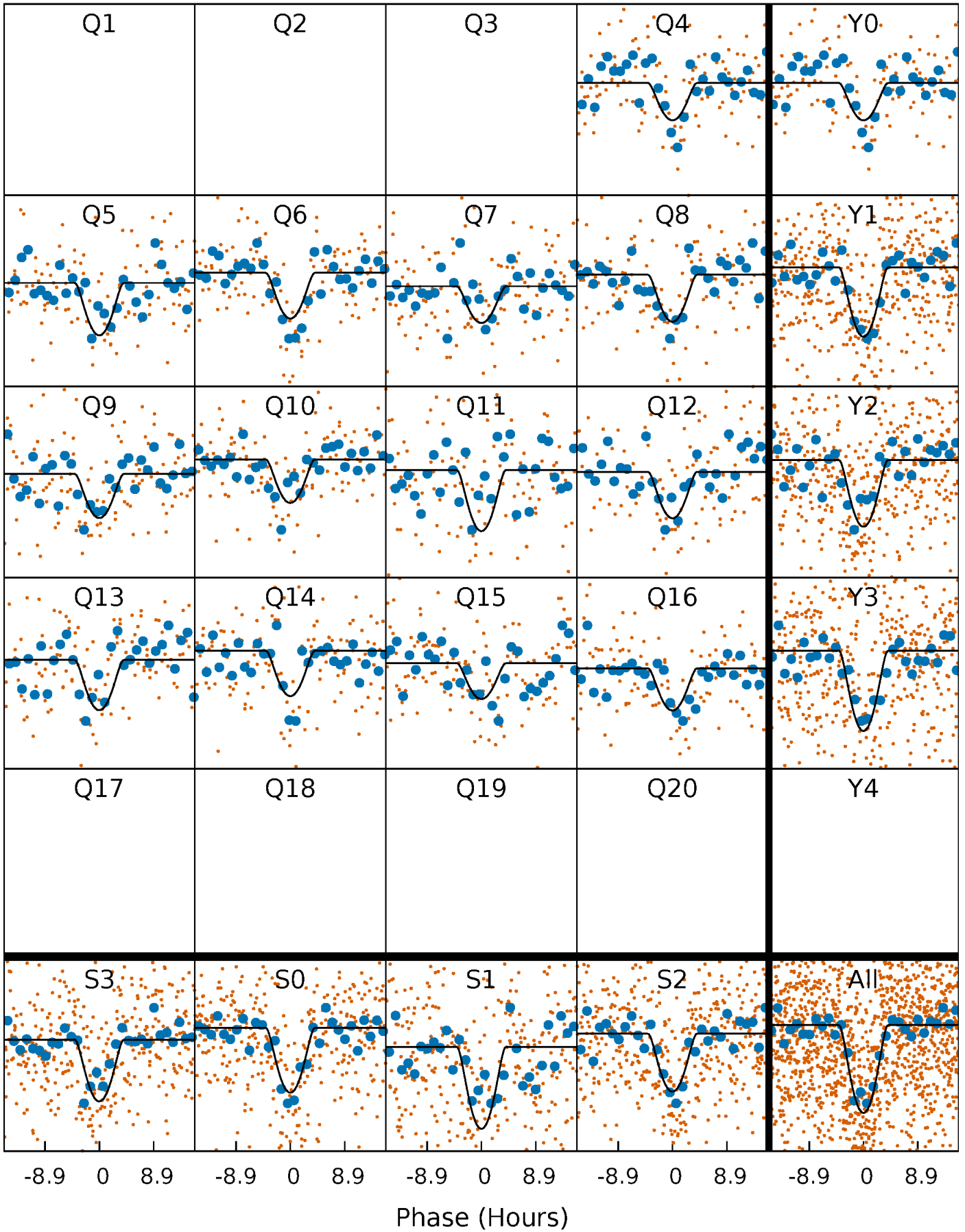
TCE 006516185-01 P= 47.366203 Days  $T_0=175.032463$  (BKJD)





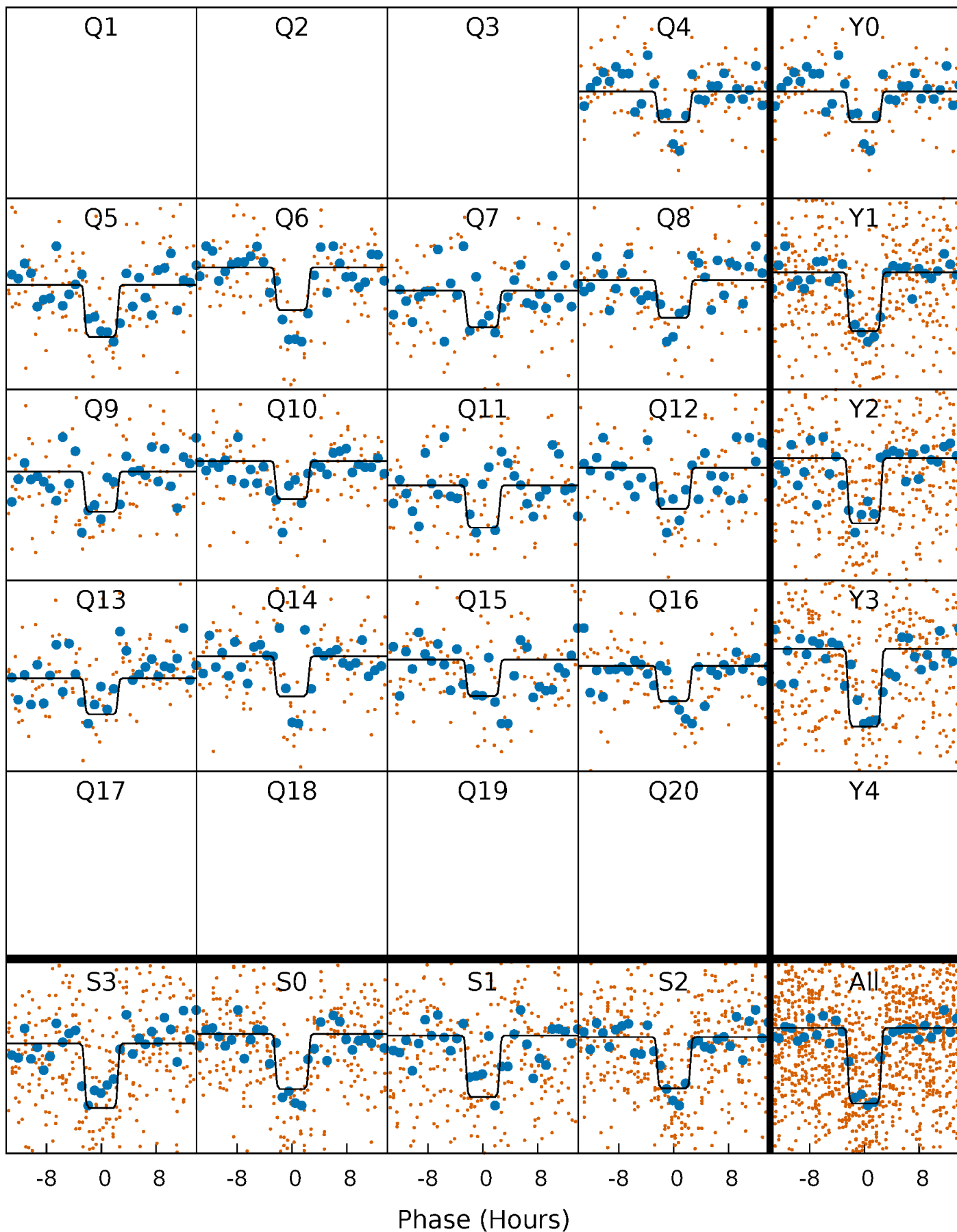
# DV Quarter-Phased Transit Curves

TCE 006516185-01 P= 47.366203 Days  $T_0=175.032463$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

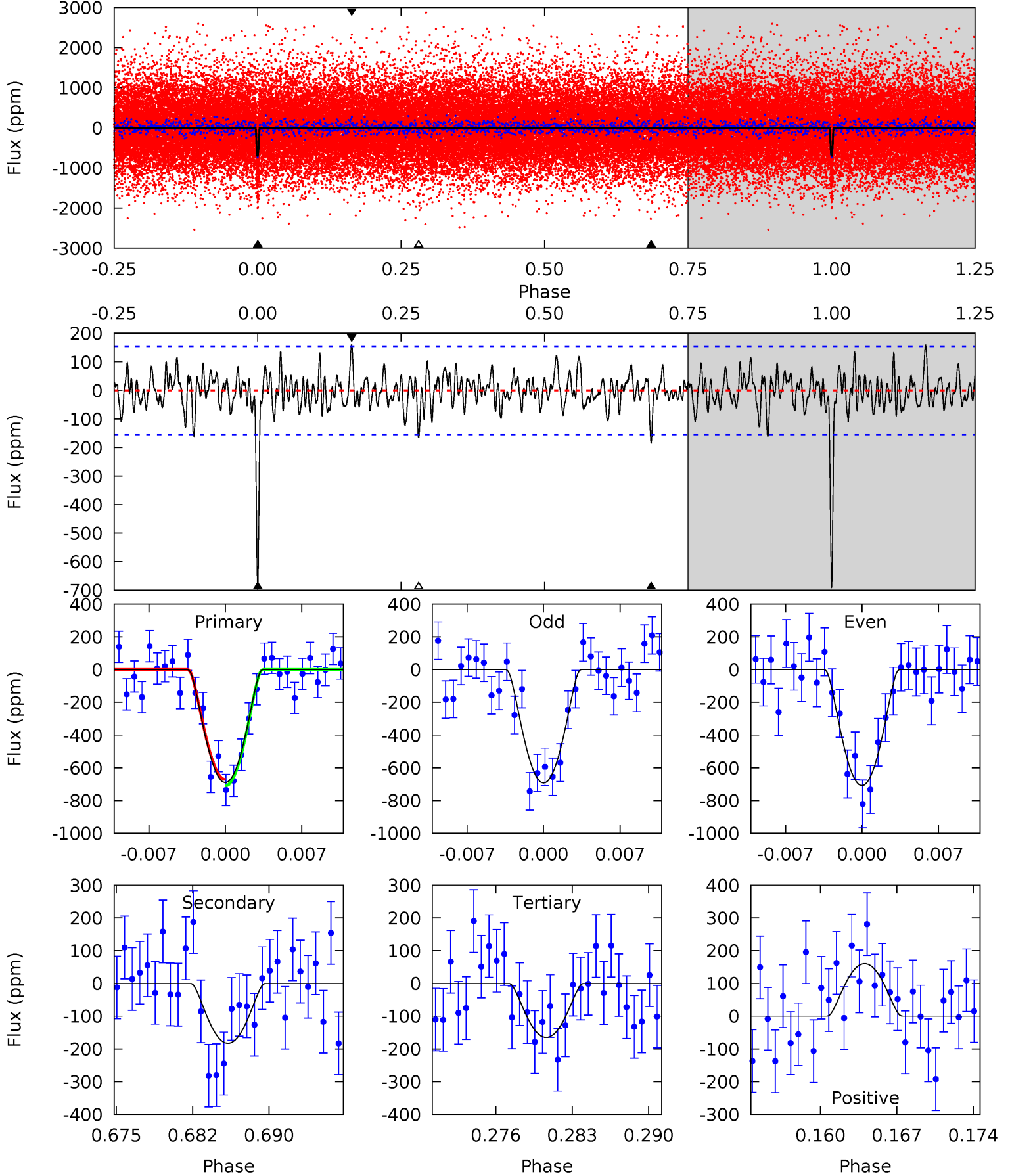
TCE 006516185-01 P= 47.365128 Days  $T_0=175.044765$  (BKJD)



# DV Model-Shift Uniqueness Test

006516185-01,  $P = 47.366203$  Days,  $E = 175.032463$  Days

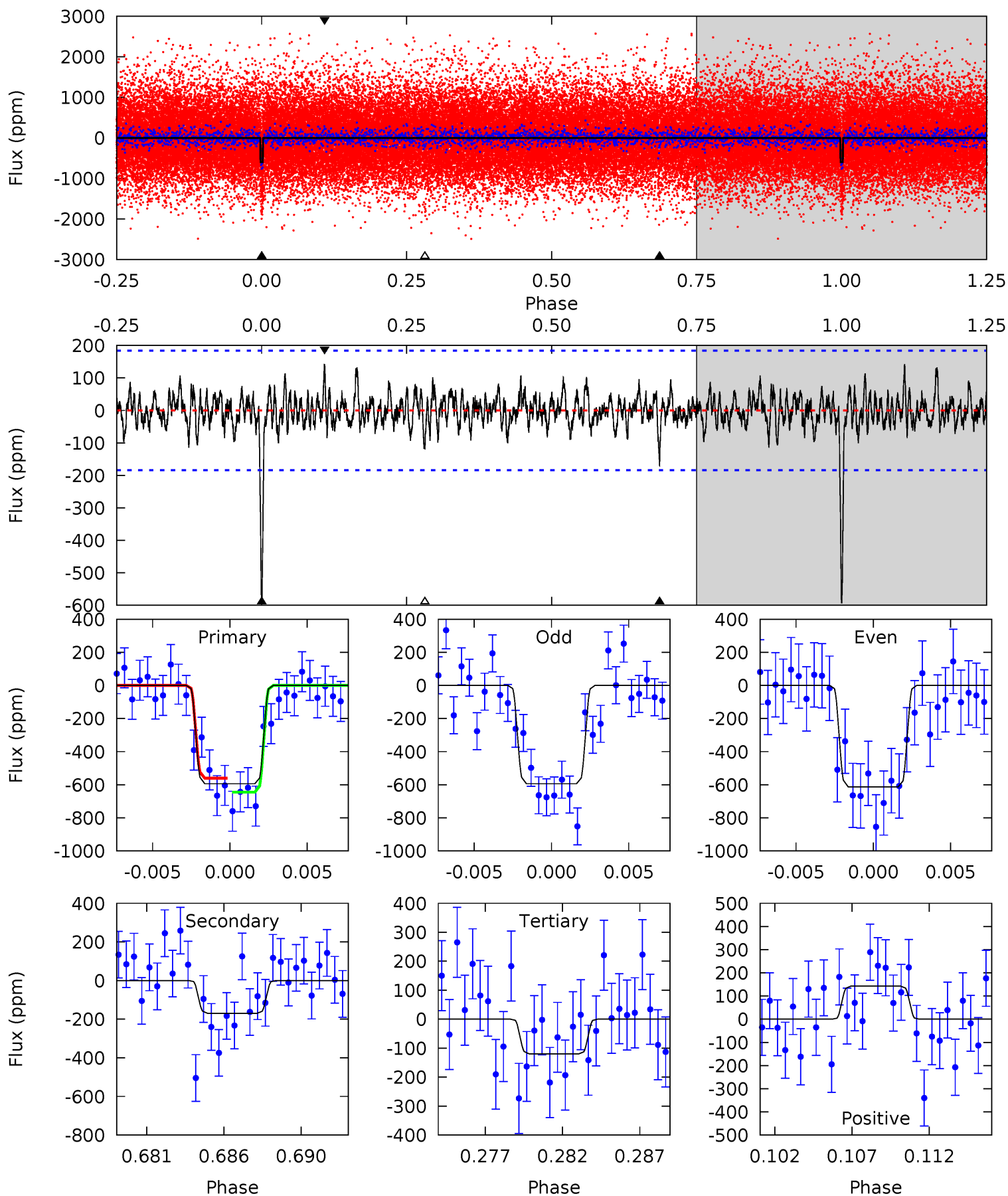
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	6.03	5.44	5.27	5.09	2.68	1.57	17.3	17.4	0.59	0.75	0.26	0.96	0.19	0.64



# Alt Model-Shift Uniqueness Test

006516185-01,  $P = 47.365128$  Days,  $E = 175.044765$  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
16.7	4.75	3.36	4.00	5.16	2.82	1.09	13.3	12.7	1.39	0.74	0.27	1.01	0.19	1.19



### Stellar Parameters For KIC 006516185

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5708^{+169}_{-186}$	$4.482^{+0.078}_{-0.182}$	$-0.160^{+0.300}_{-0.300}$	$0.902^{+0.249}_{-0.107}$	$0.902^{+0.112}_{-0.092}$	$1.729^{+0.575}_{-0.849}$
	+3%/-3%	+2%/-4%	+188%/-188%	+28%/-12%	+12%/-10%	+33%/-49%
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 006516185-01 / KOI 2445.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-183 \pm 30$	$6.40^{+5.30}_{-4.40}$	$679^{+41}_{-33}$	$3238^{+1527}_{-505}$	$152^{+1282}_{-106}$
Alt.	$-169 \pm 36$	$5.42^{+5.34}_{-3.61}$	$680^{+48}_{-32}$	$3362^{+1513}_{-597}$	$194^{+1443}_{-144}$

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



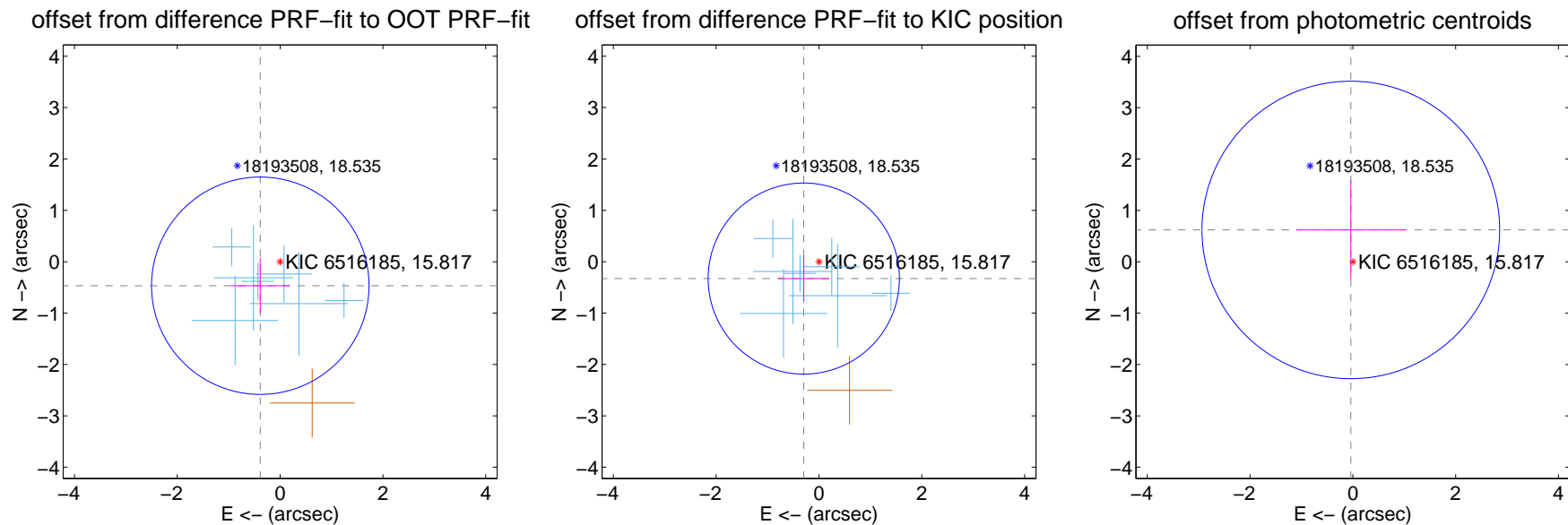
## DV Centroid Data

Supplemental centroid analysis for 006516185-01. Kepler magnitude: 15.82. Transit SNR 14.66

There are 7 quarters with good PRF difference image offsets

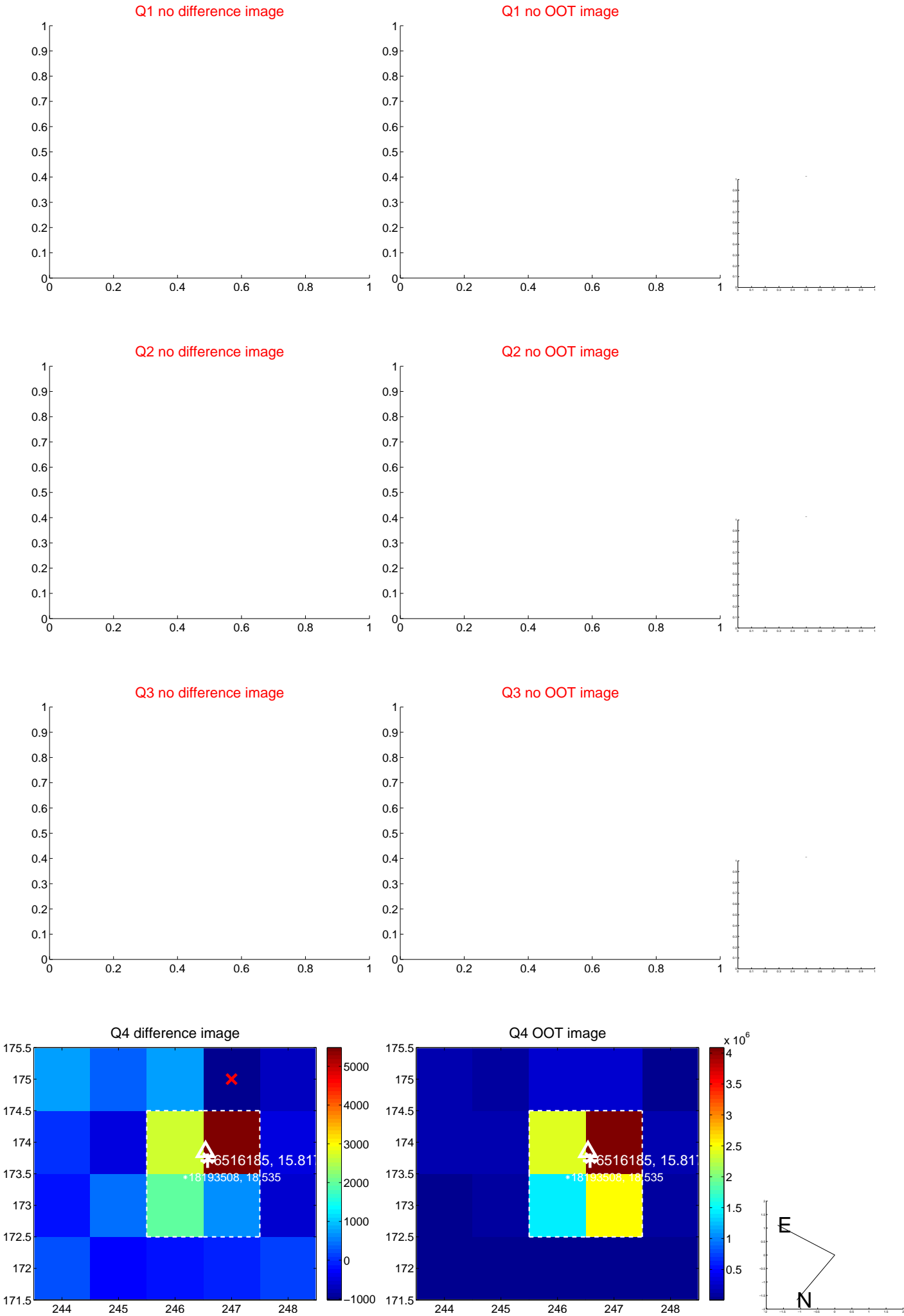
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.606 \pm 0.705$	0.86	$0.386 \pm 0.572$	$-0.468 \pm 0.535$
PRF-fit source offset from KIC position	$0.442 \pm 0.620$	0.71	$0.296 \pm 0.499$	$-0.328 \pm 0.460$
photometric centroid source offset	$0.62 \pm 0.97$	0.64	$0.04 \pm 1.06$	$0.62 \pm 0.96$

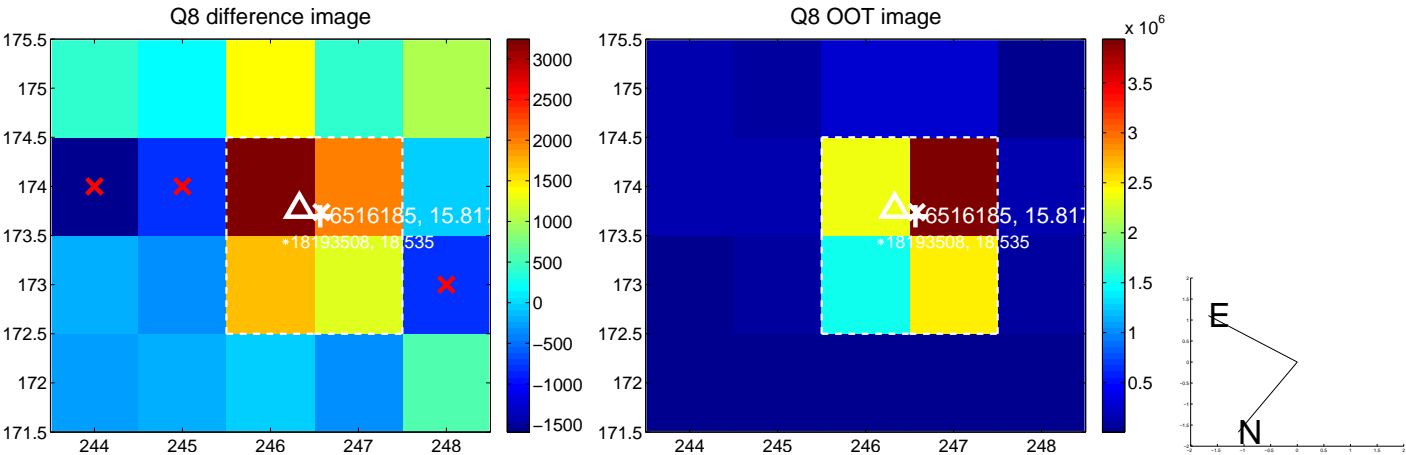
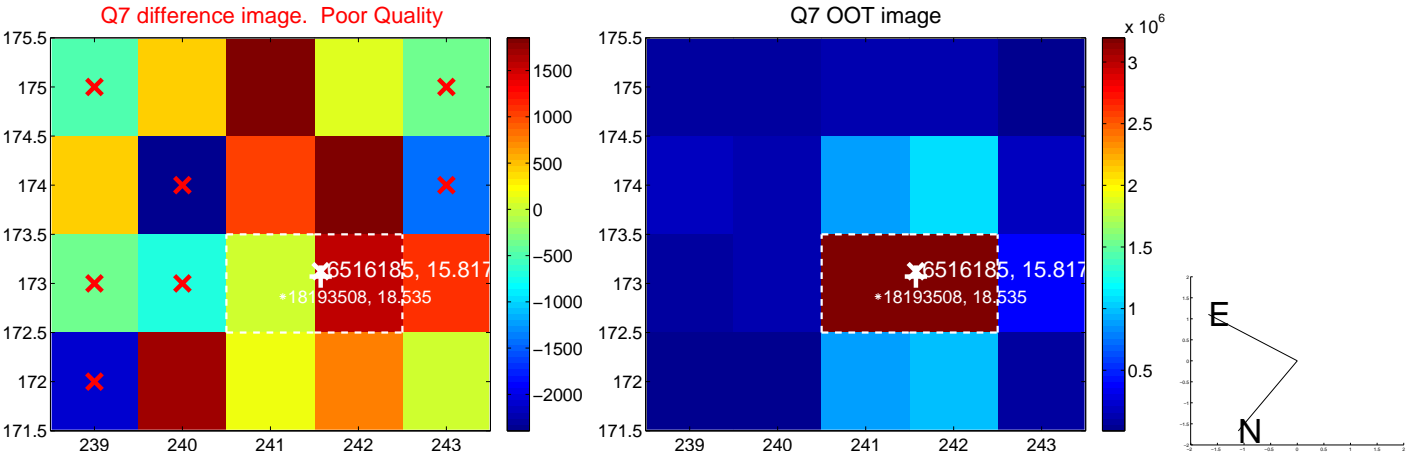
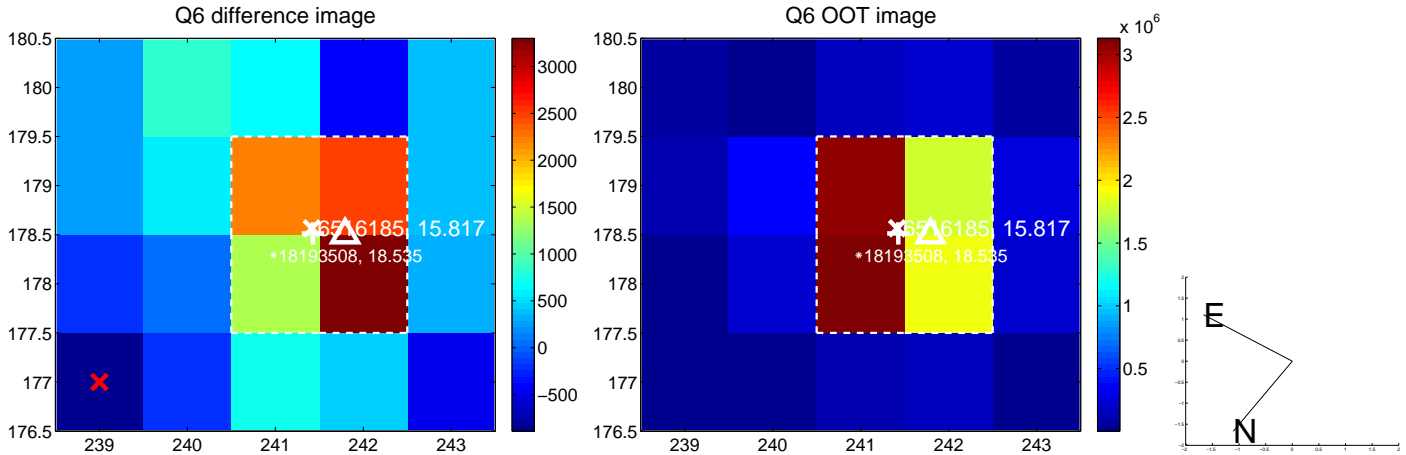
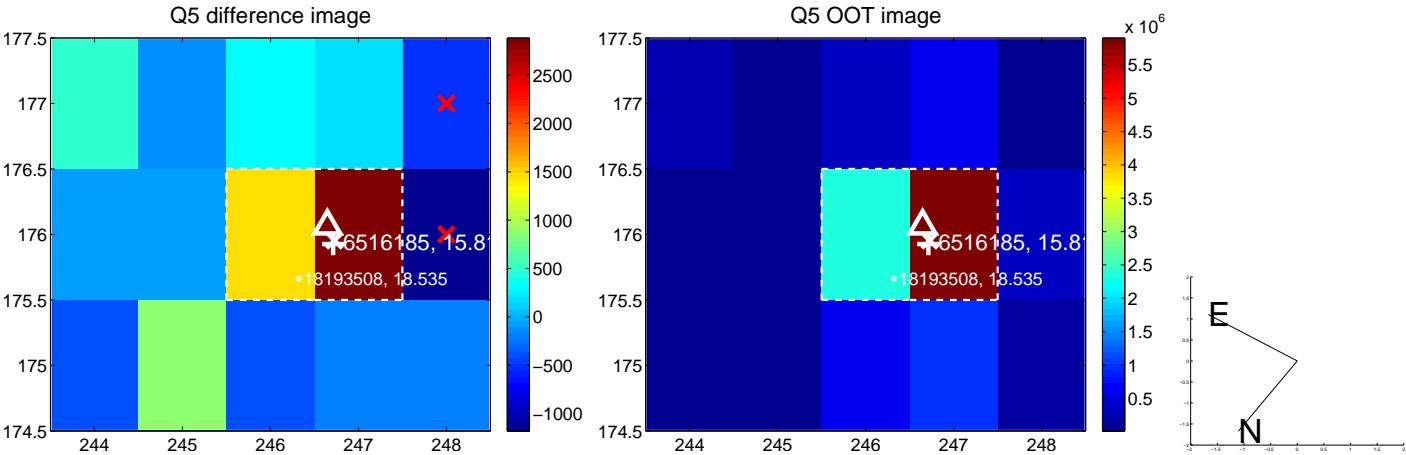


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

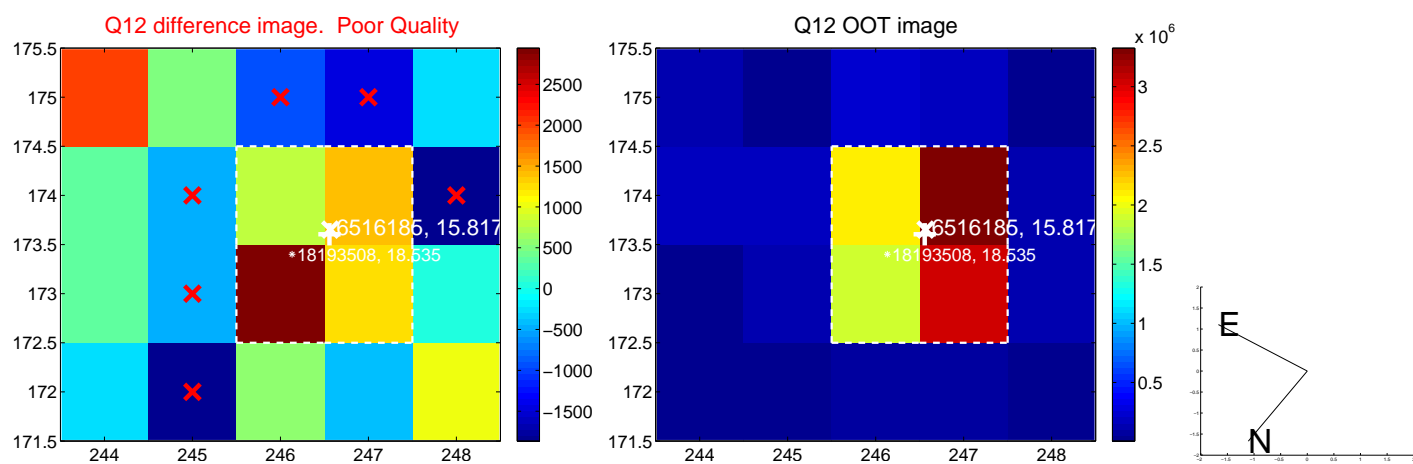
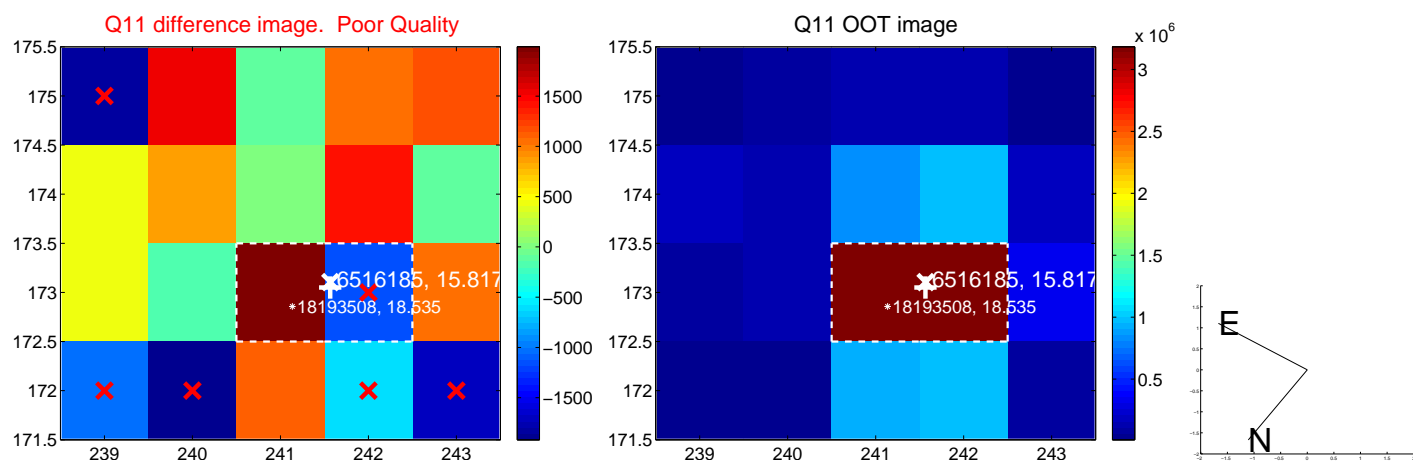
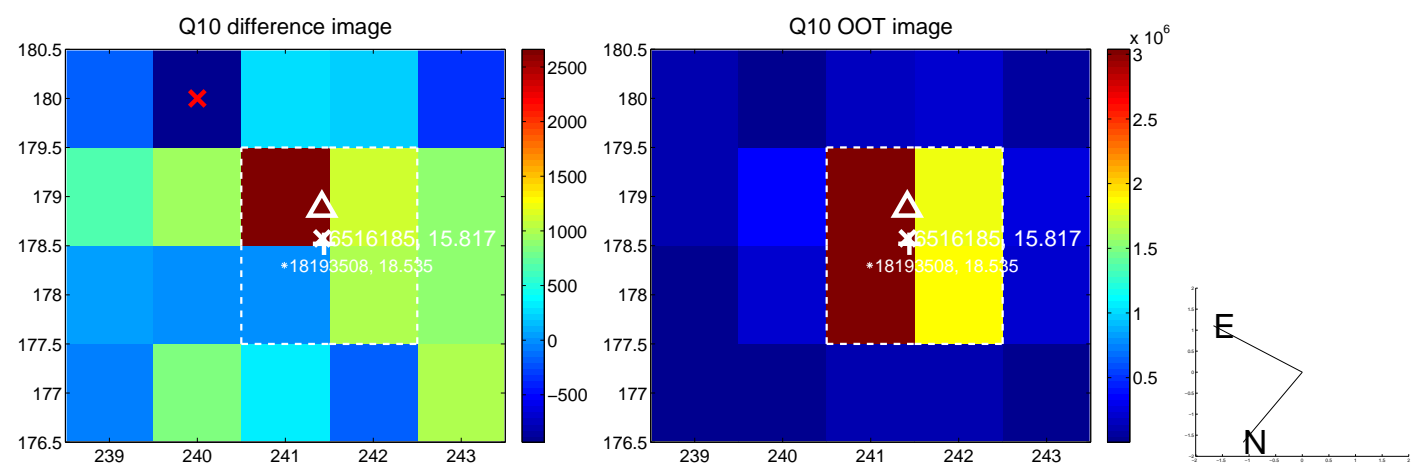
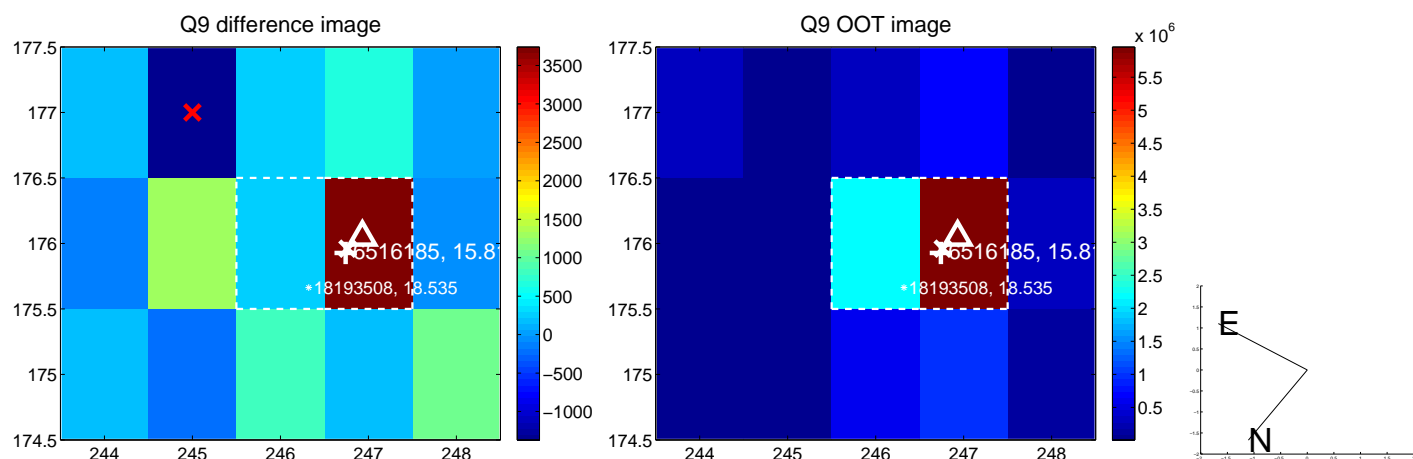
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



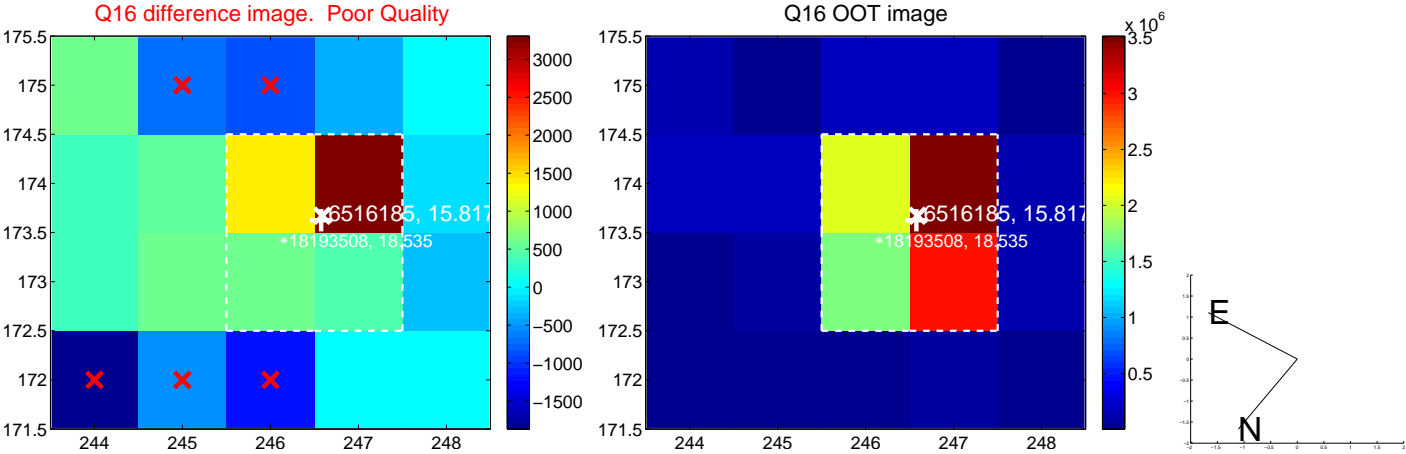
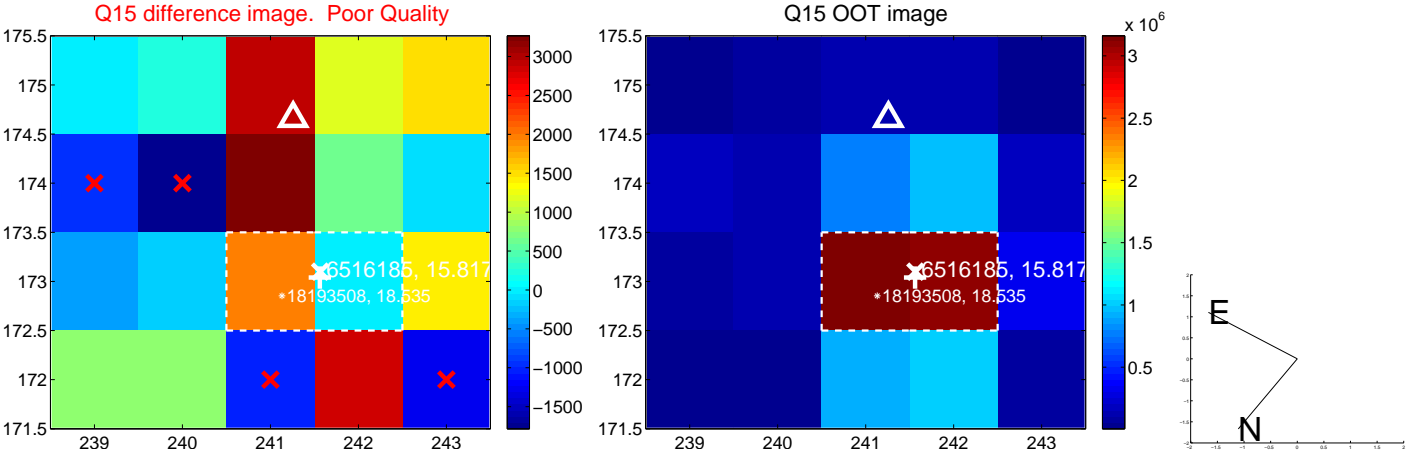
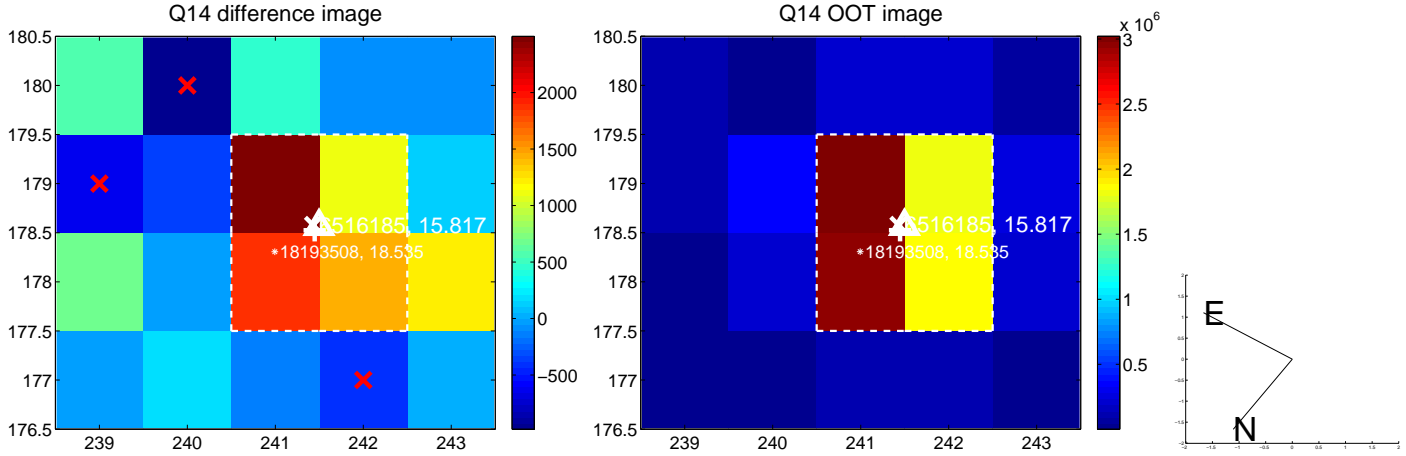
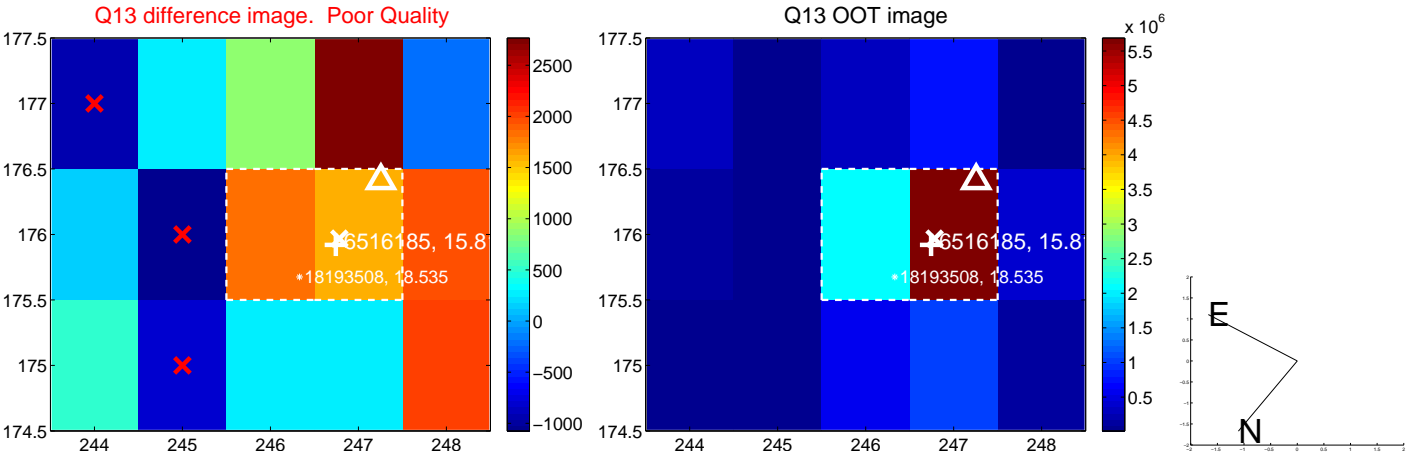
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

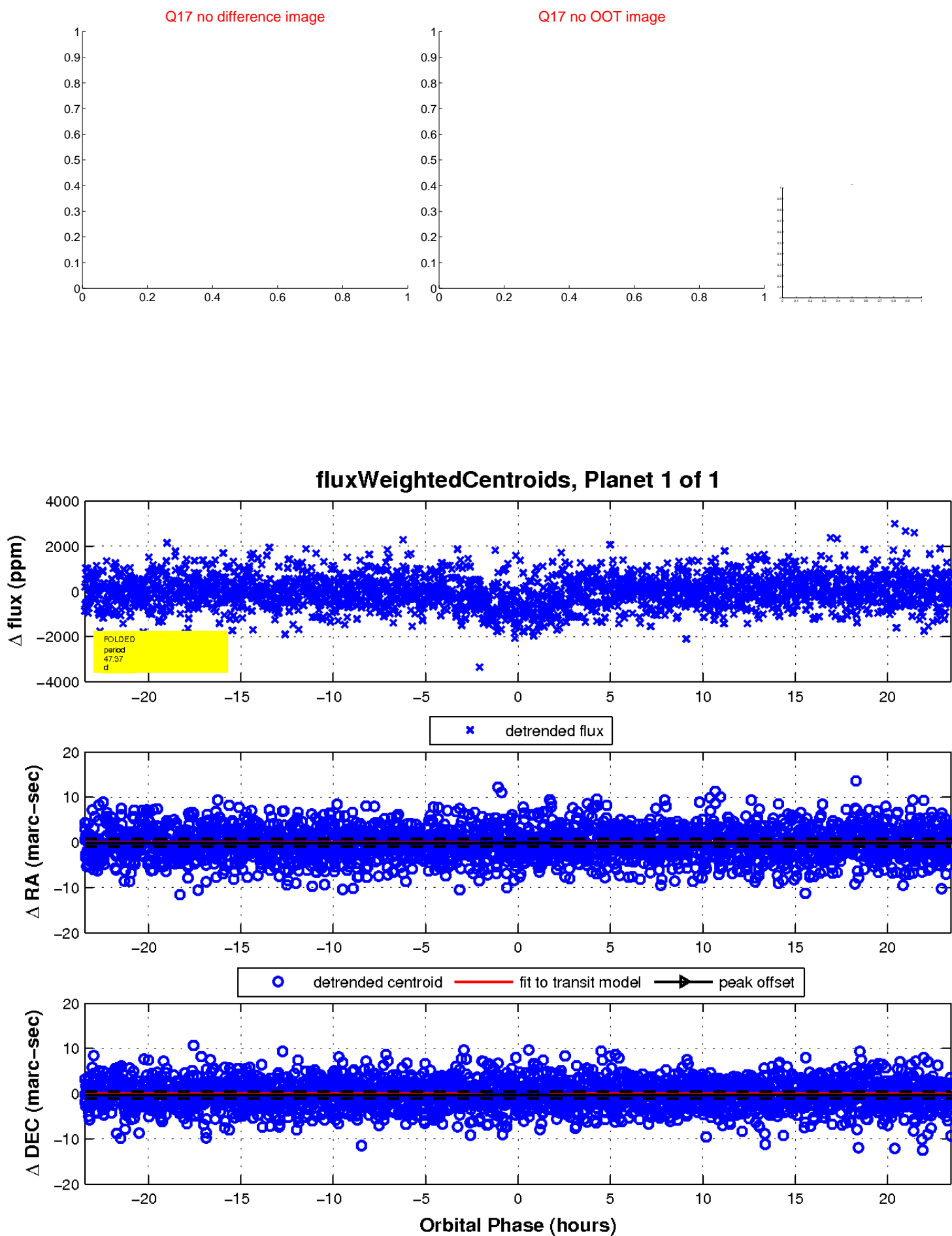


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

