

# KIC 010187159

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010187159-01	OBS	1870.01	7.964333	136.815833	732.1	1.645	38.4	43.8	0.91	5185	2.97	99.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187159-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

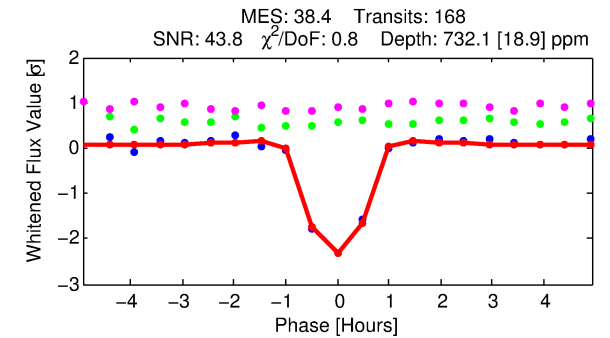
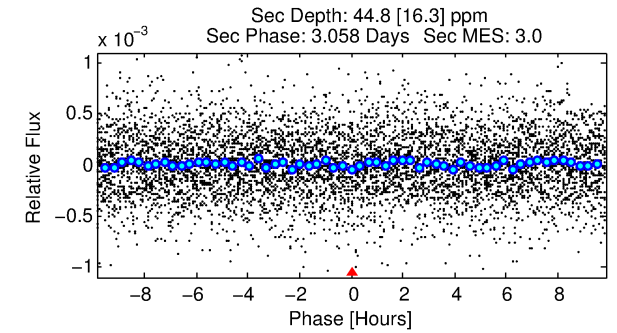
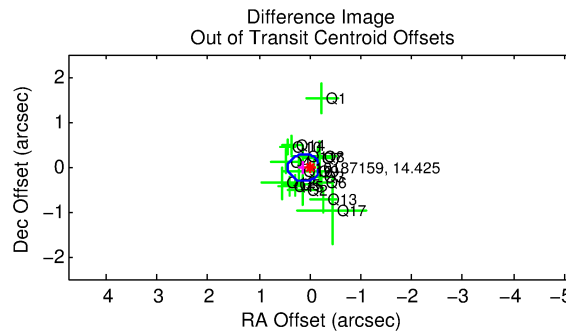
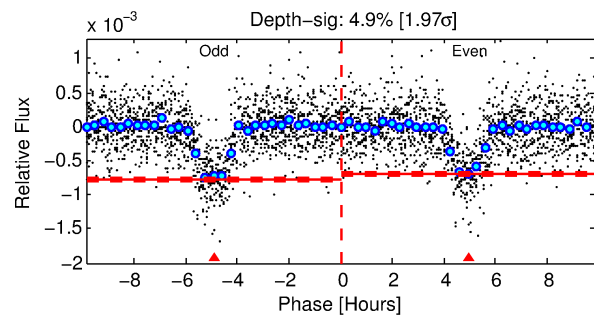
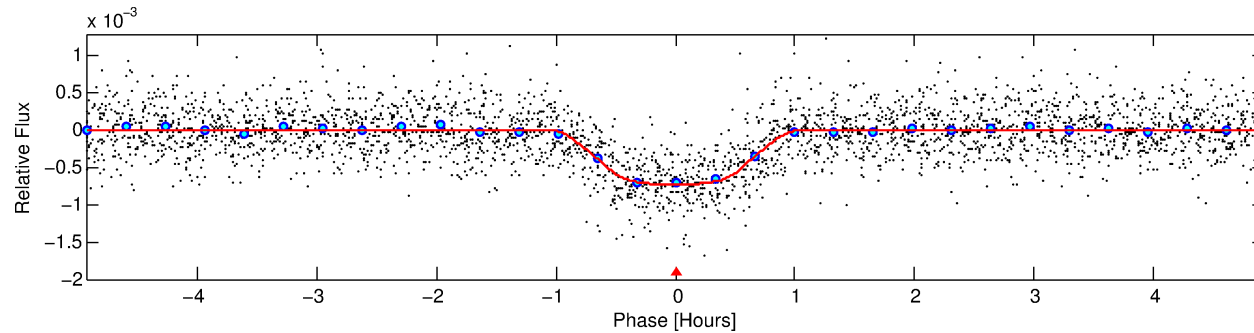
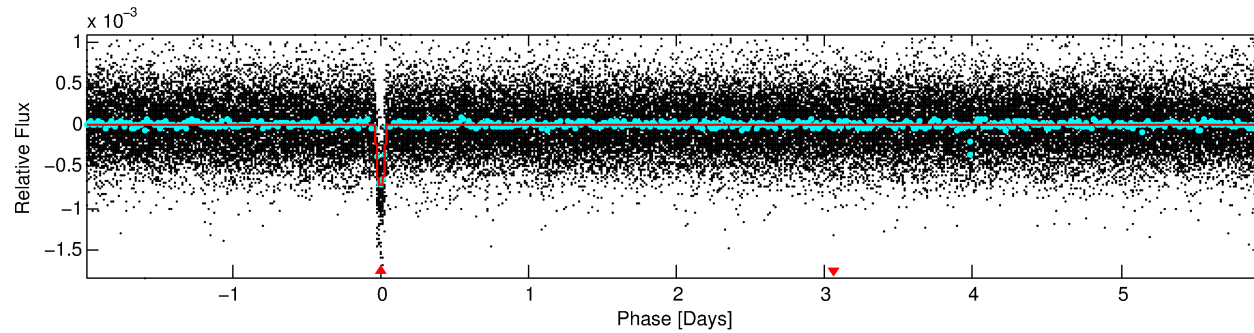
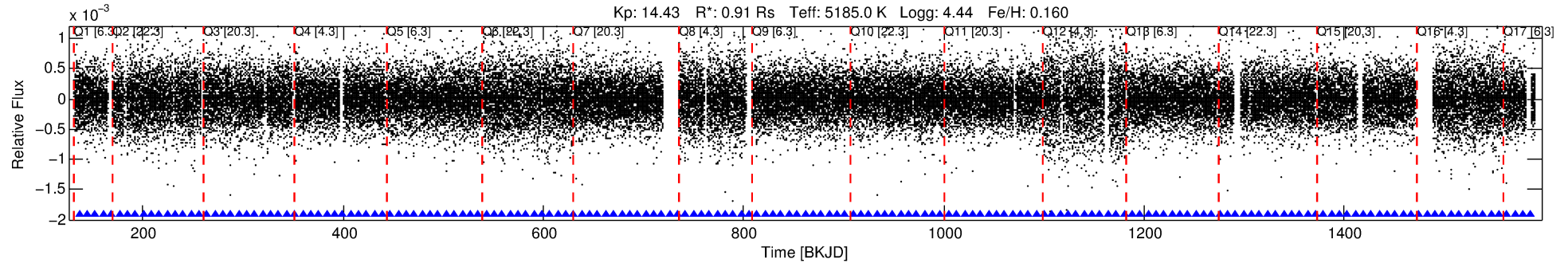
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010187159-01

No Significant Match Found

# DV One-Page Summary

KIC: 10187159 Candidate: 1 of 1 Period: 7.964 d  
KOI: K01870.01 Corr: 0.955



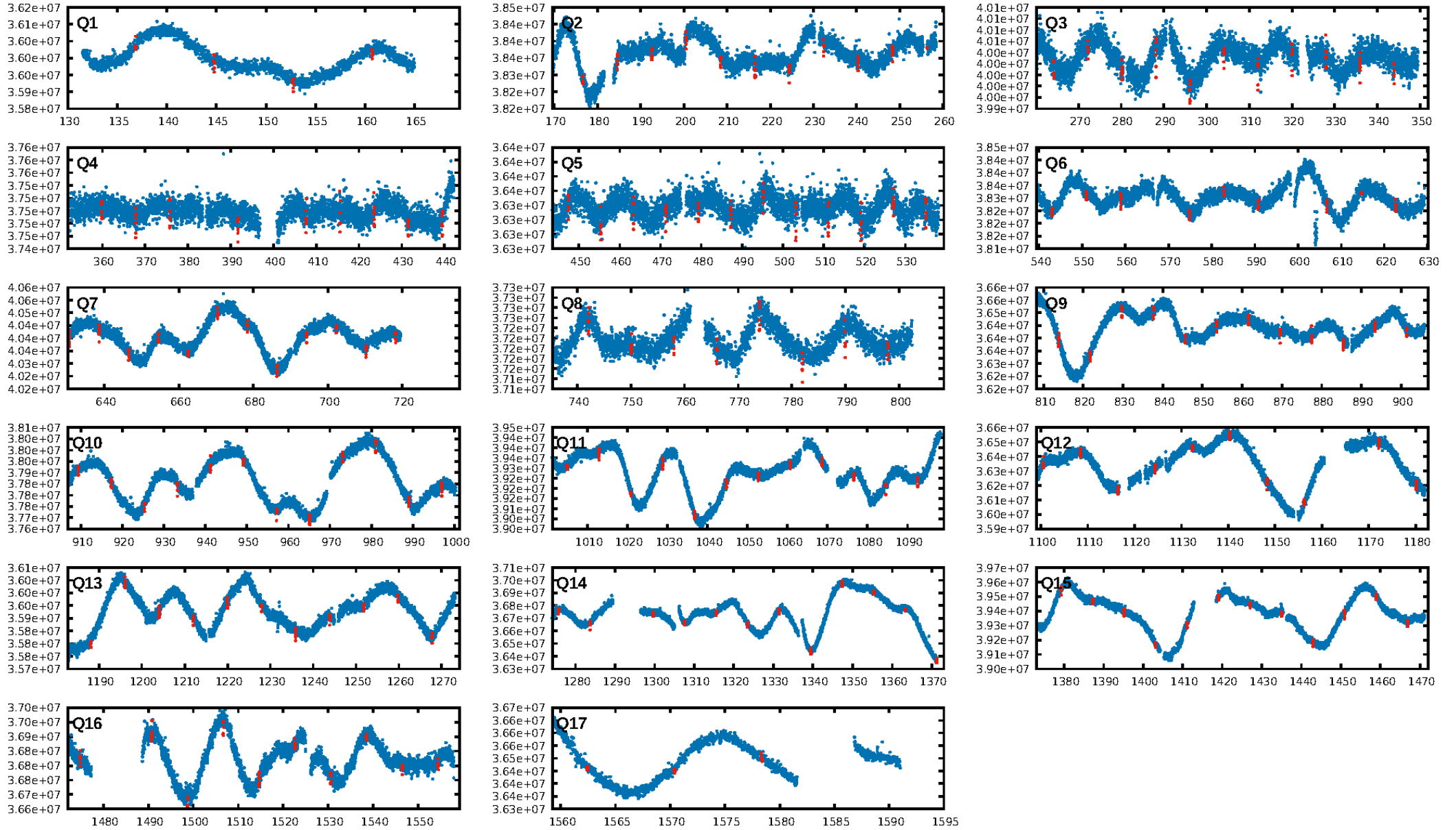
## DV Fit Results:

Period = 7.96433 [0.00001] d  
Epoch = 136.8158 [0.0008] BKJD  
Rp/R\* = 0.0299 [0.0041]  
a/R\* = 19.22 [10.30]  
b = 0.89 [0.13]  
Seff = 99.48 [35.94]  
Teff = 805 [73] K  
Rp = 2.97 [0.83] Re  
a = 0.0734 [0.0161] AU  
Ag = 15.10 [8.58] [1.64 $\sigma$ ]  
Teffp = 2454 [292] K [5.48 $\sigma$ ]

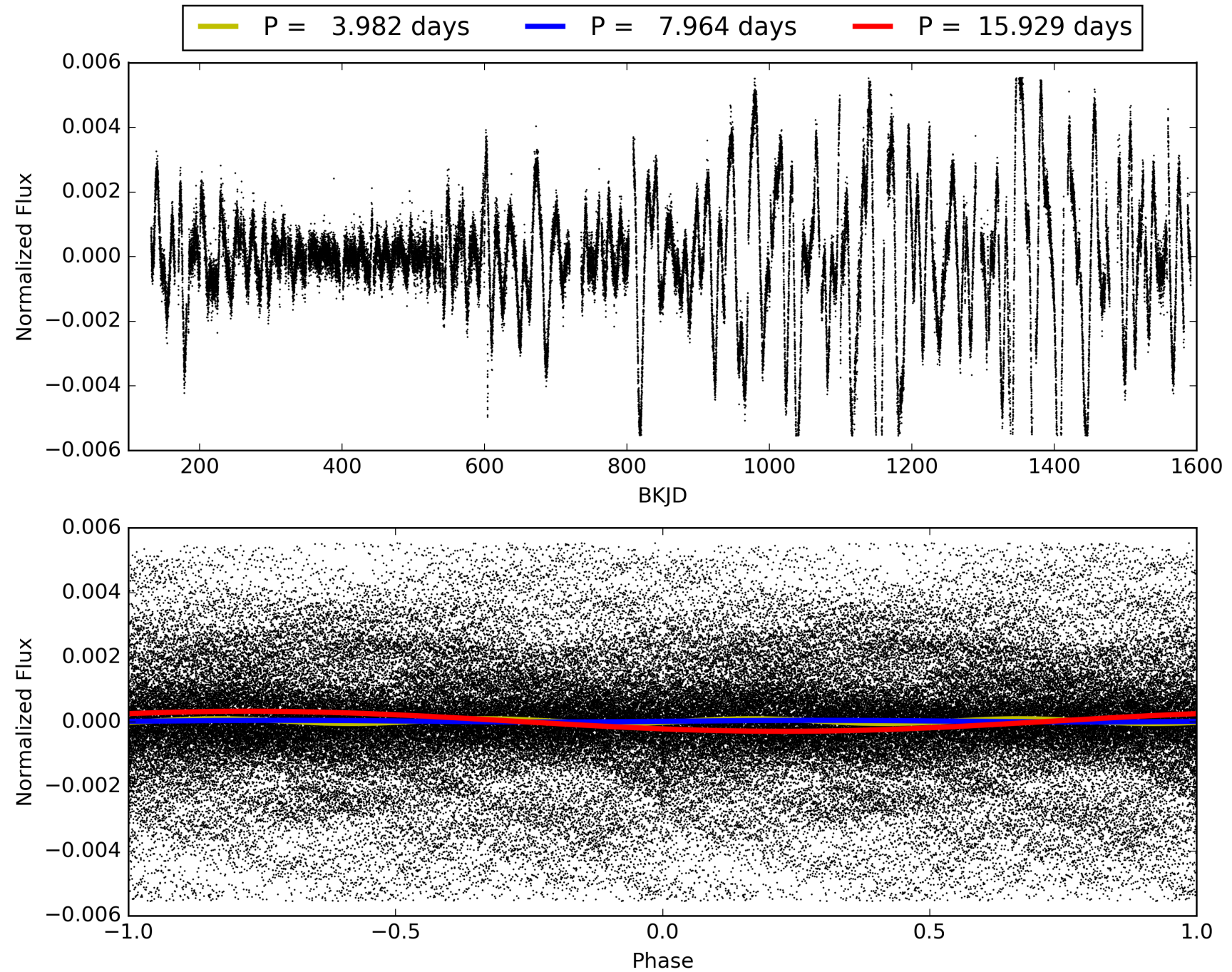
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 94.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.39e-299  
RollingBand-fgt: 1.00 [161/161]  
GhostDiagnostic-chr: 4.123  
Centroid-sig: 5.0%  
Centroid-so: 0.872 arcsec [2.80 $\sigma$ ]  
OotOffset-rm: 0.128 arcsec [1.26 $\sigma$ ]  
KicOffset-rm: 0.410 arcsec [2.95 $\sigma$ ]  
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 010187159-01, PDC Light Curves

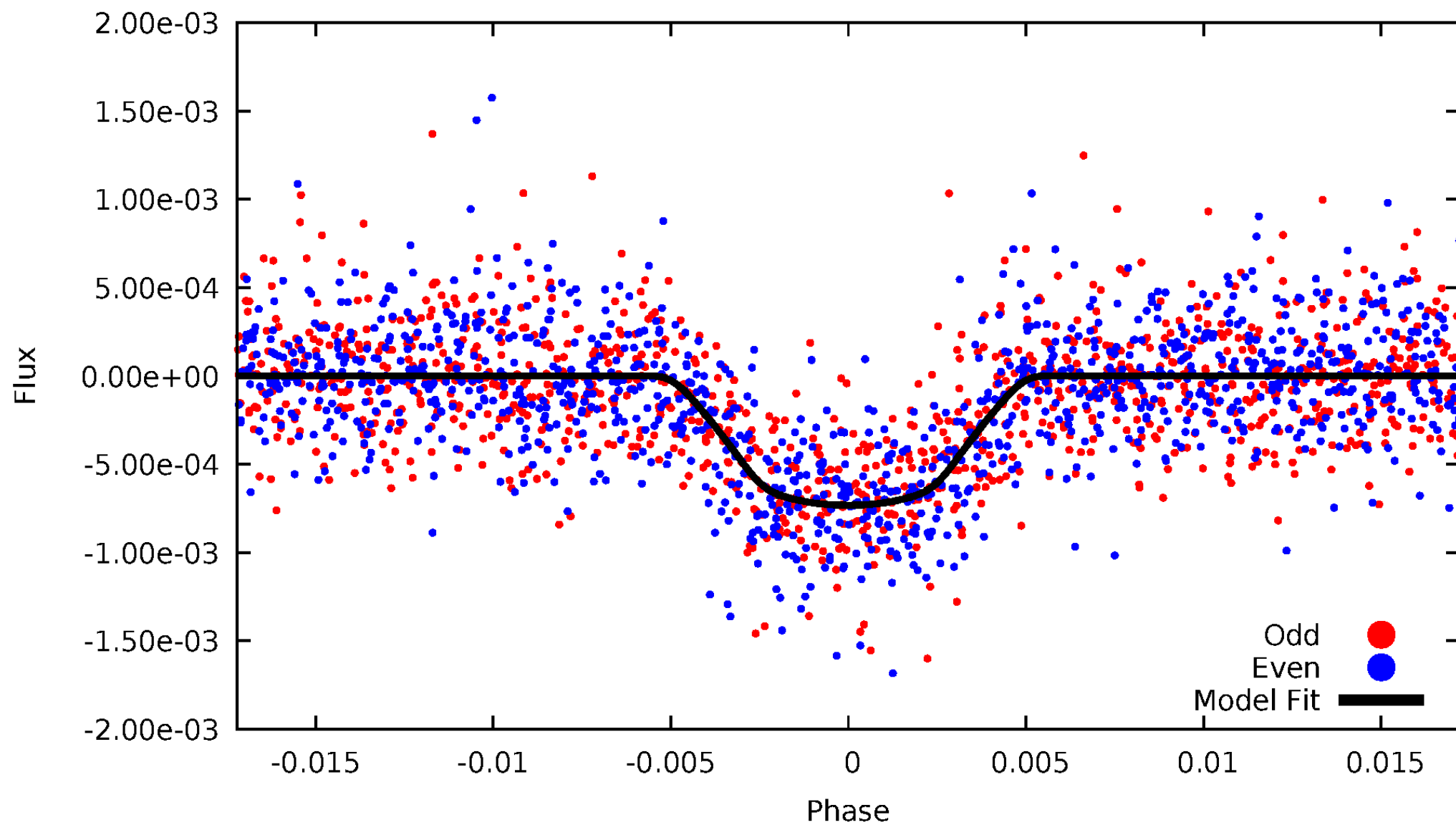


# TCE 010187159-01



# DV Odd/Even

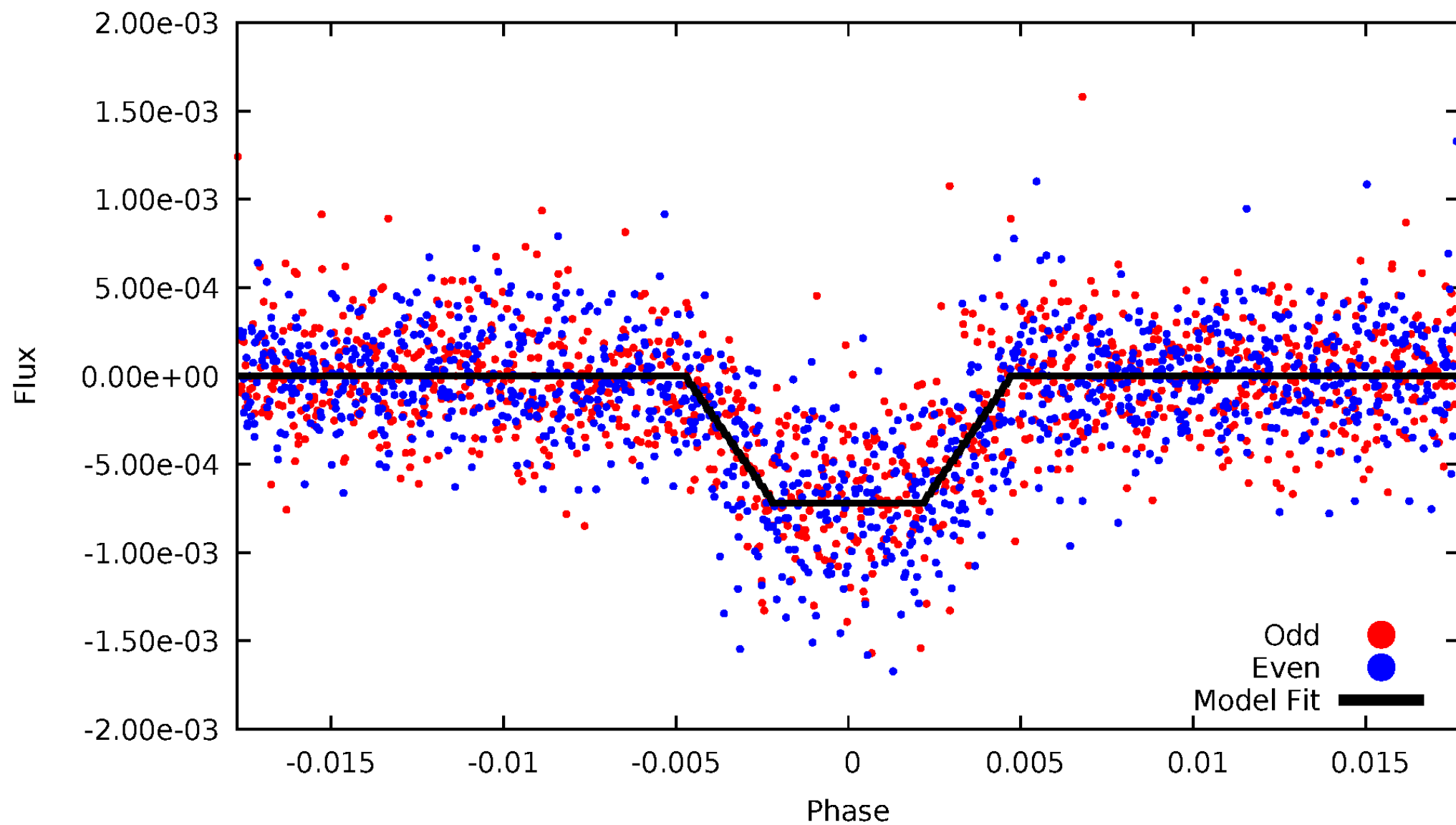
TCE 010187159-01



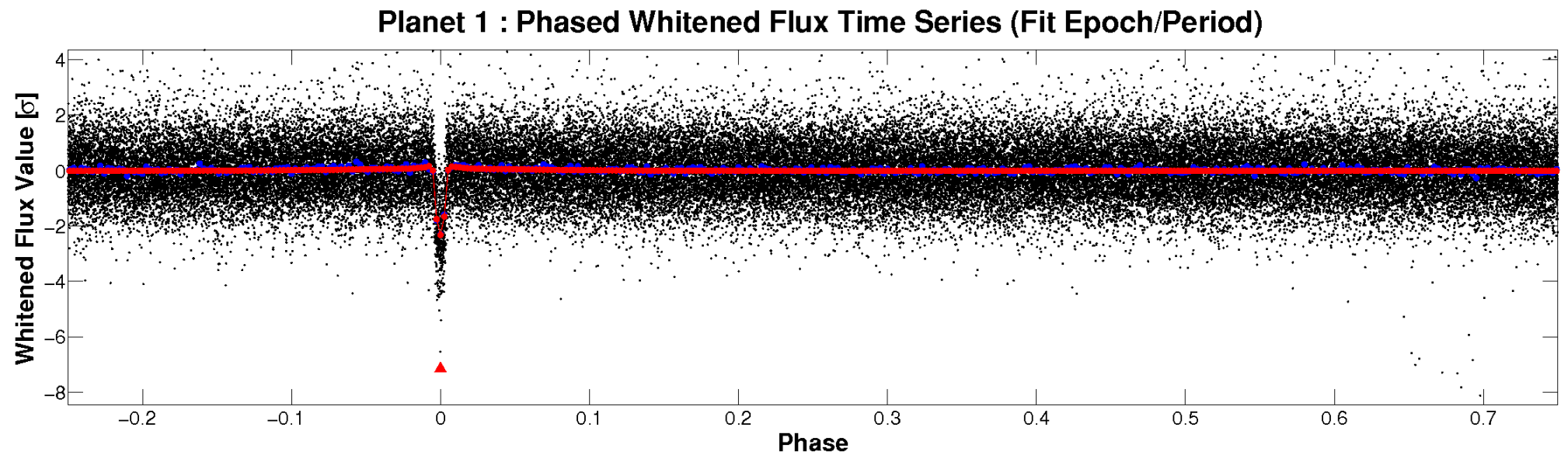
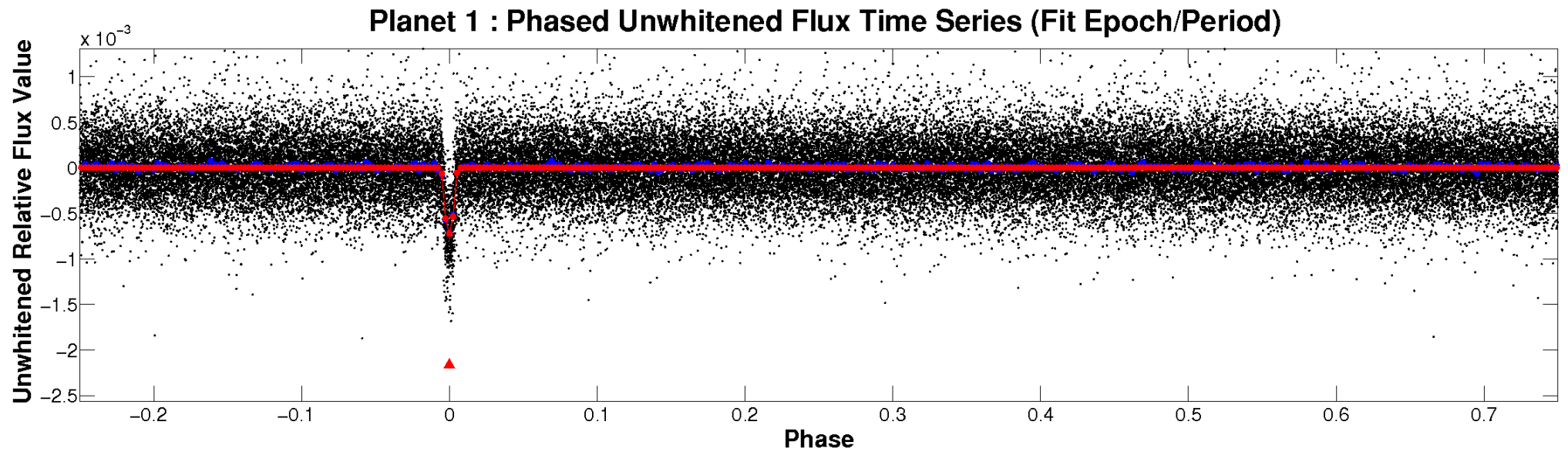


# ALT Odd/Even

TCE 010187159-01

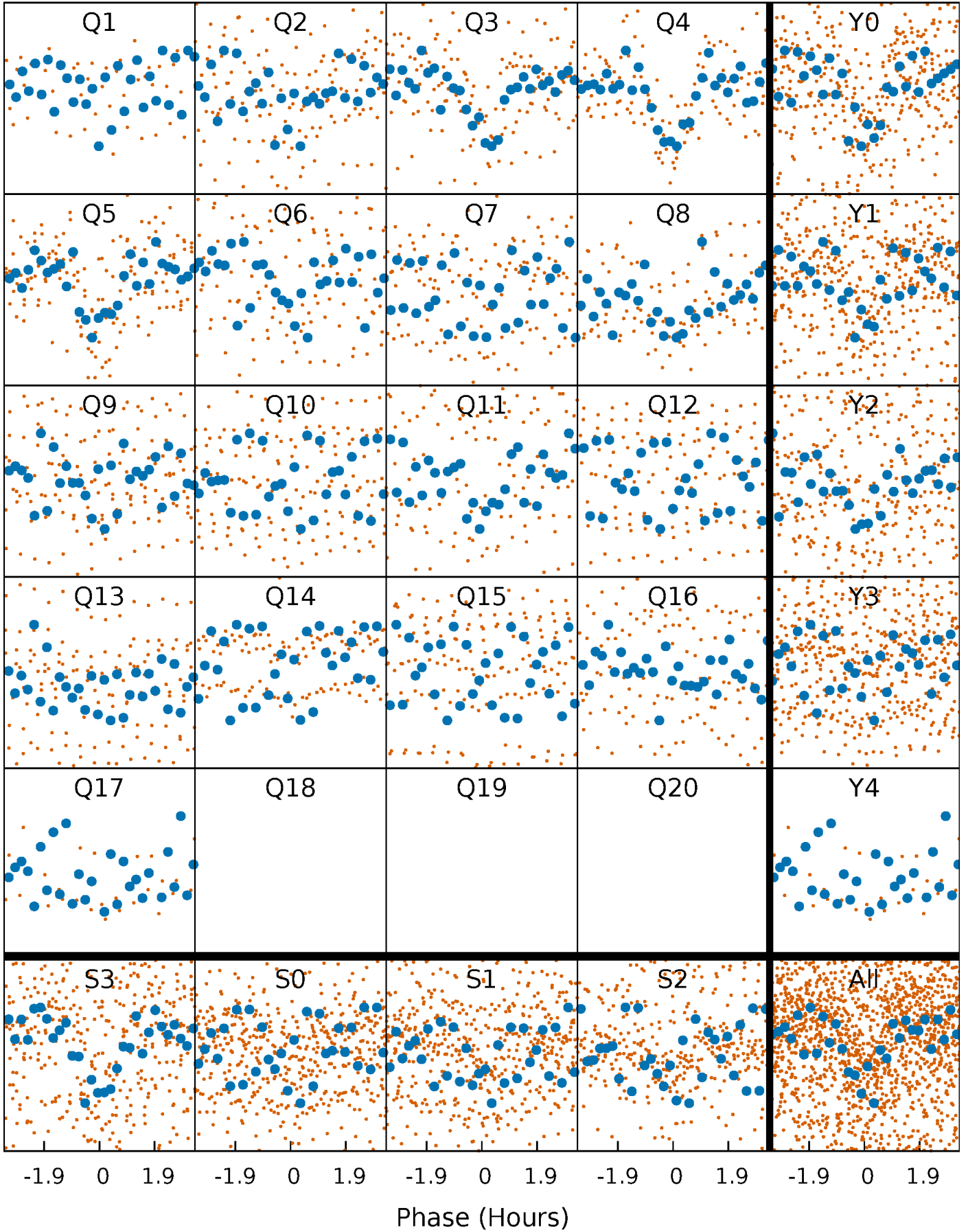


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

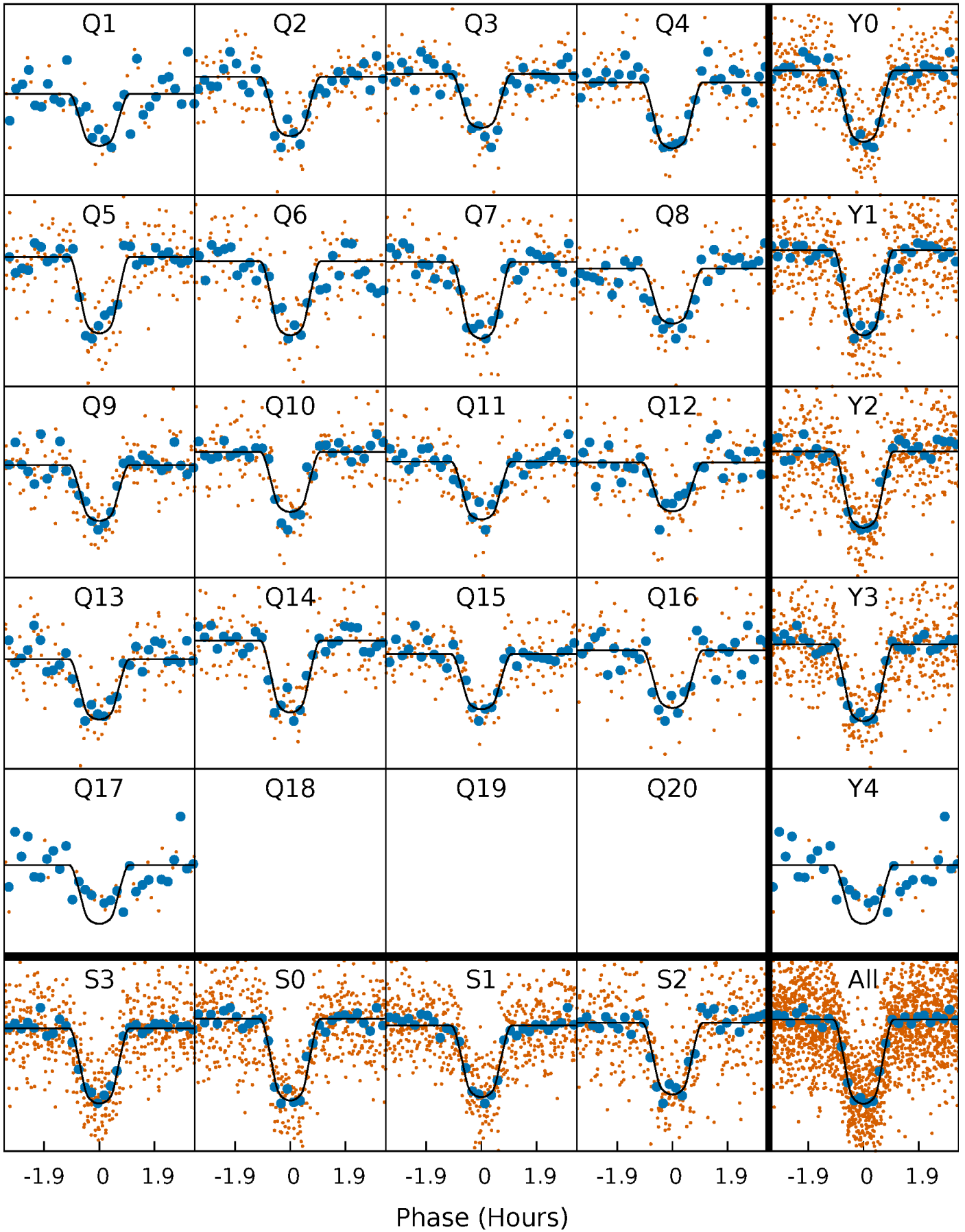
TCE 010187159-01   P= 7.964333 Days    $T_0=136.815833$  (BKJD)





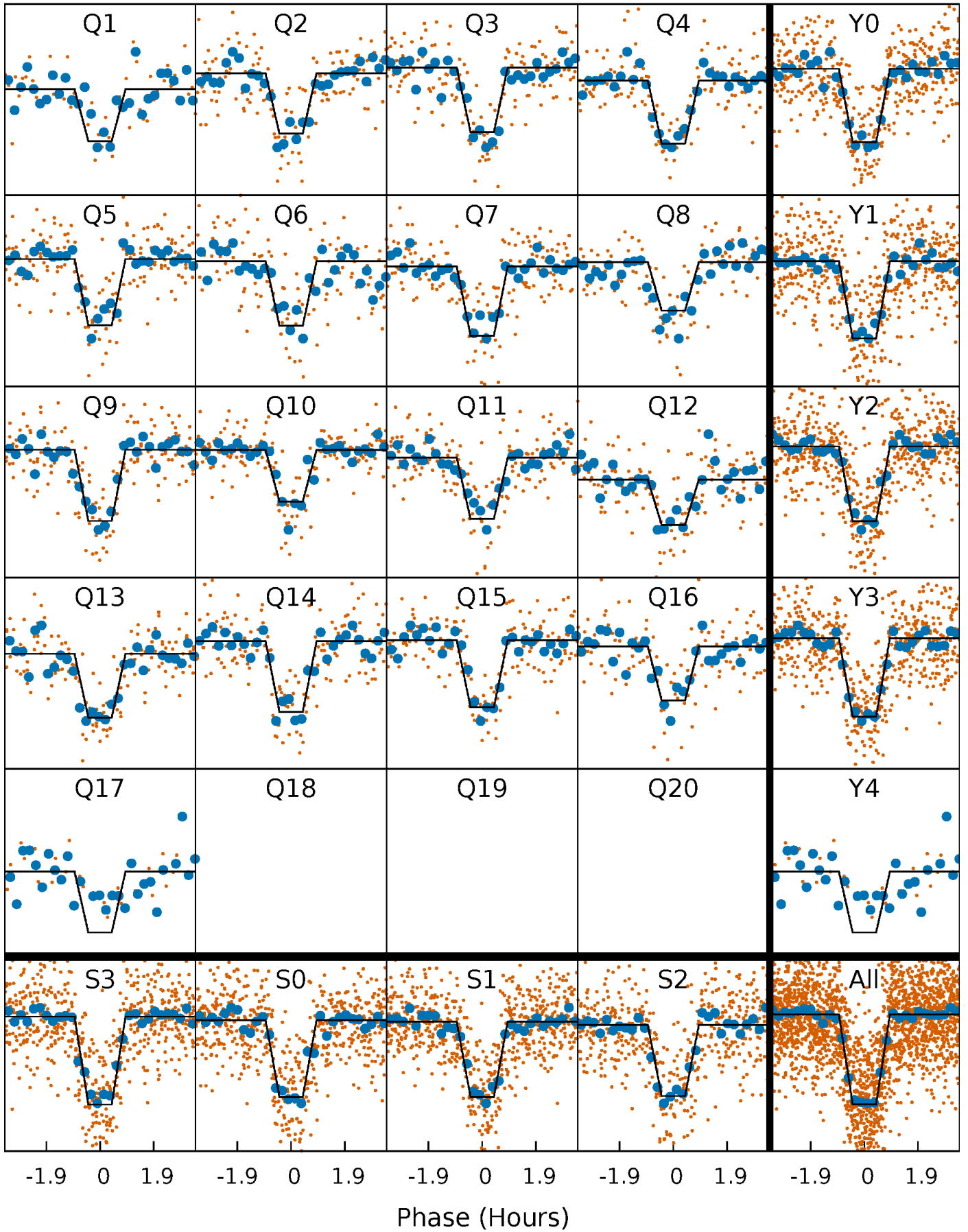
# DV Quarter-Phased Transit Curves

TCE 010187159-01 P= 7.964333 Days  $T_0=136.815833$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

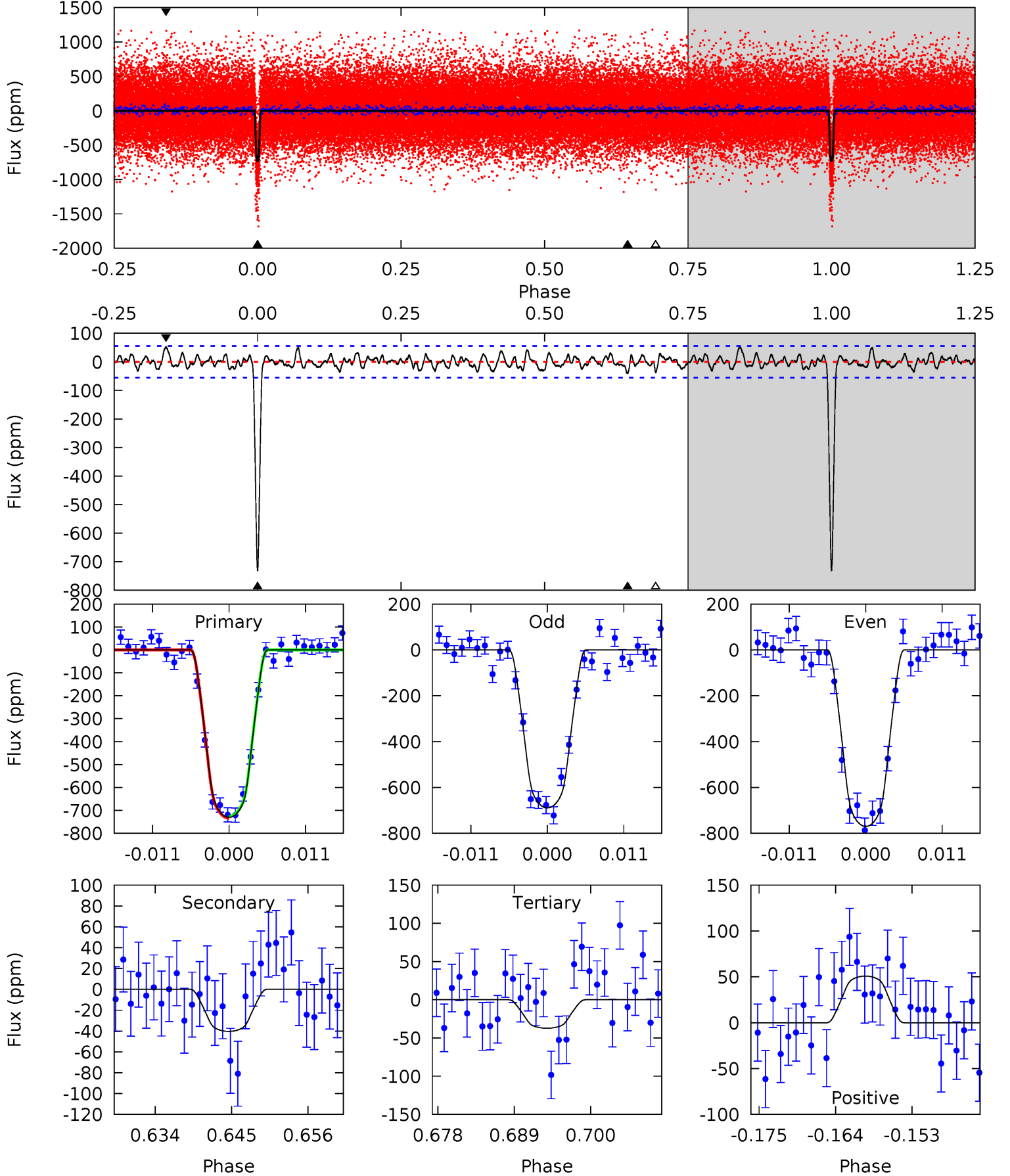
TCE 010187159-01 P= 7.964311 Days  $T_0=136.817283$  (BKJD)



# DV Model-Shift Uniqueness Test

010187159-01, P = 7.964333 Days, E = 128.851500 Days

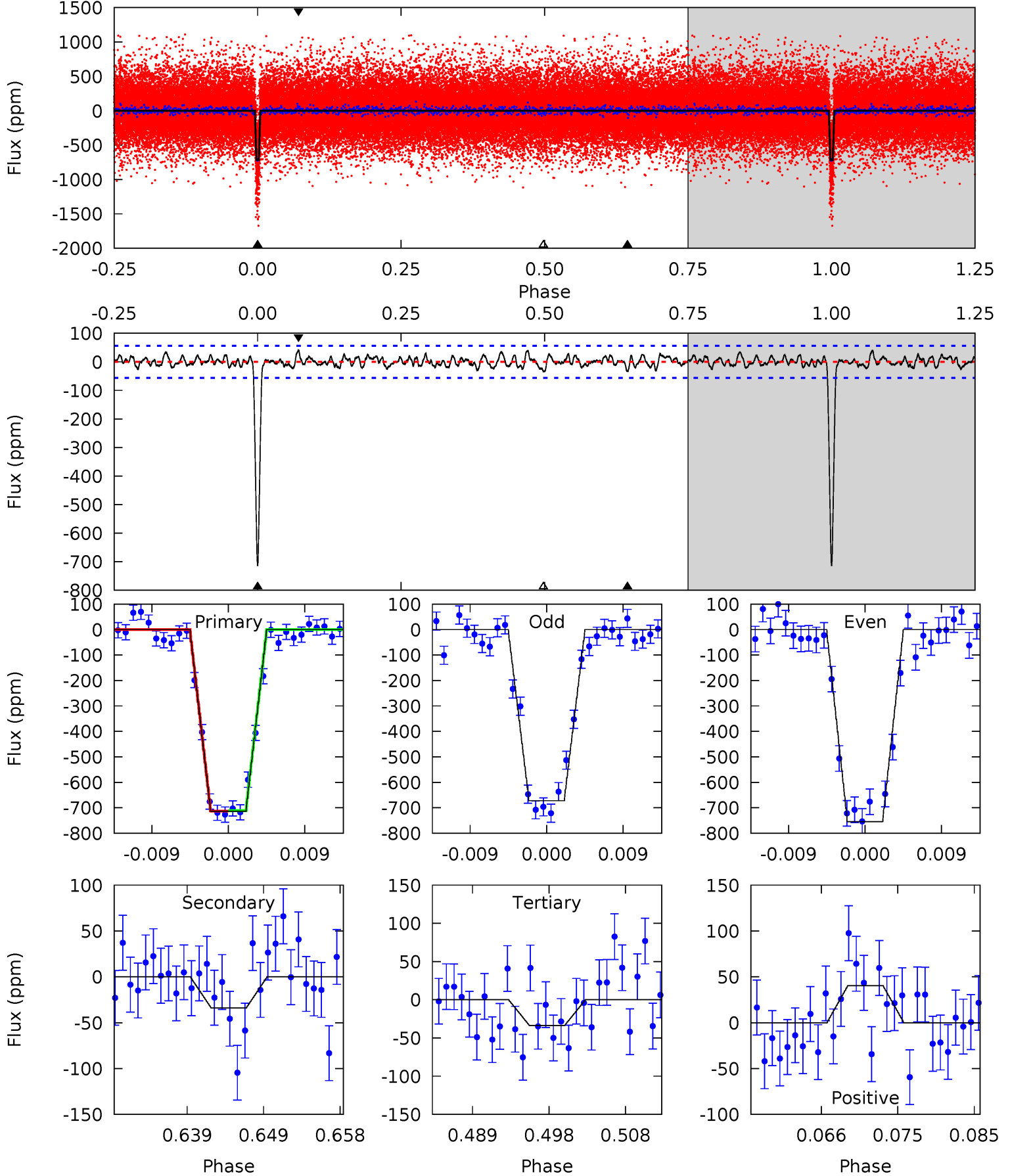
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
65.7	3.63	3.35	4.57	5.01	2.54	1.44	62.4	61.2	0.28	-0.94	3.65	1.01	0.07	0.35



# Alt Model-Shift Uniqueness Test

010187159-01, P = 7.964311 Days, E = 128.852972 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
64.1	3.04	3.03	3.63	5.04	2.60	1.21	61.1	60.5	0.01	-0.59	3.70	1.01	0.05	0.08



### Stellar Parameters For KIC 010187159

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5185^{+170}_{-139}$	$4.440^{+0.105}_{-0.192}$	$0.160^{+0.250}_{-0.300}$	$0.910^{+0.222}_{-0.120}$	$0.831^{+0.087}_{-0.058}$	$1.553^{+0.764}_{-0.776}$
	+3%/-3%	+2%/-4%	+156%/-188%	+24%/-13%	+10%/-7%	+49%/-50%
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 010187159-01 / KOI 1870.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-40 \pm 11$	$3.01^{+0.56}_{-0.47}$	$1140^{+66}_{-61}$	$3018^{+193}_{-194}$	$13^{+8}_{-5}$
Alt.	$-34 \pm 11$	$2.74^{+0.58}_{-0.49}$	$1142^{+79}_{-62}$	$3029^{+214}_{-218}$	$13^{+8}_{-6}$

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



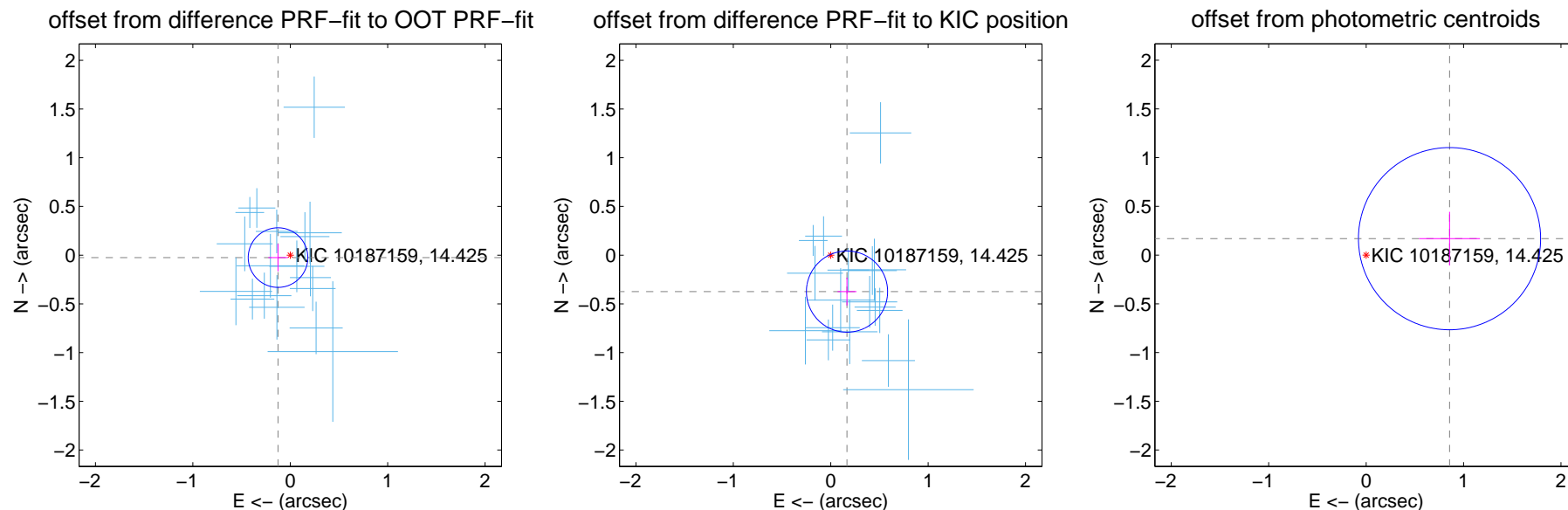
## DV Centroid Data

Supplemental centroid analysis for 010187159-01. Kepler magnitude: 14.43. Transit SNR 43.84

There are 17 quarters with good PRF difference image offsets

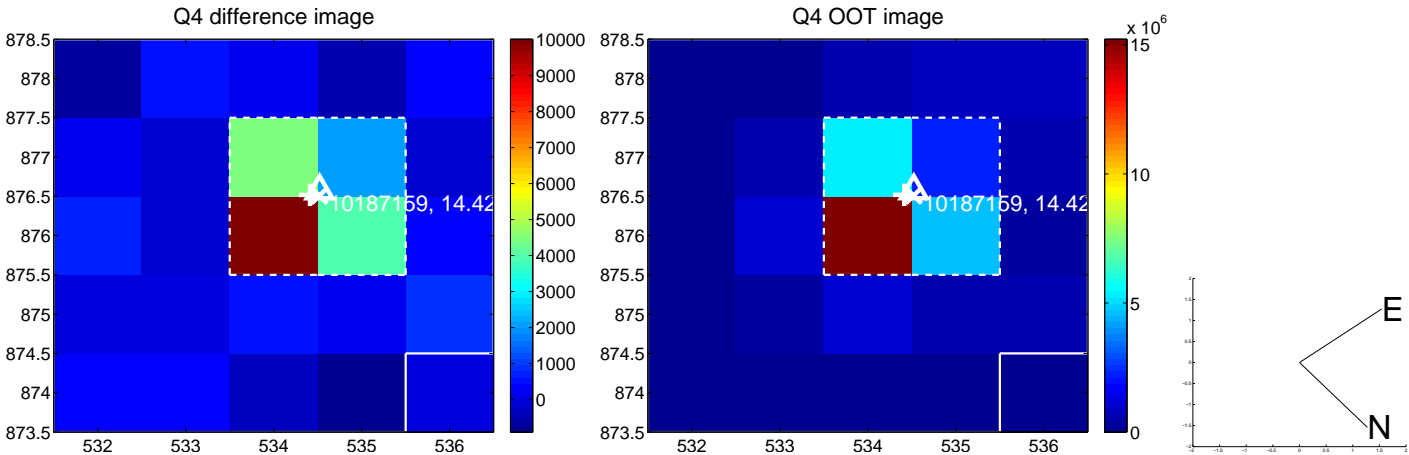
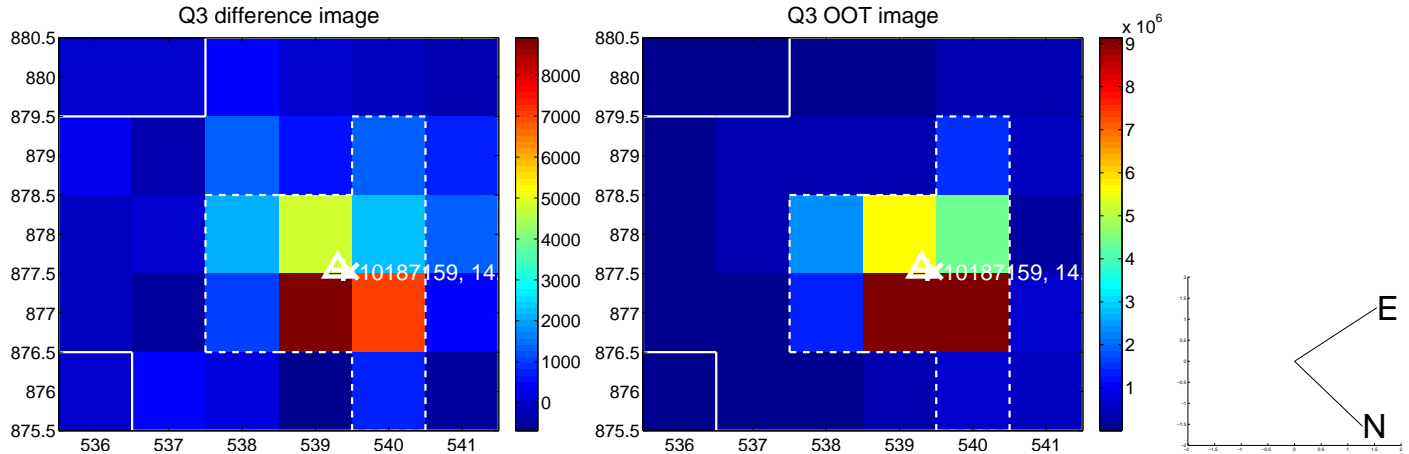
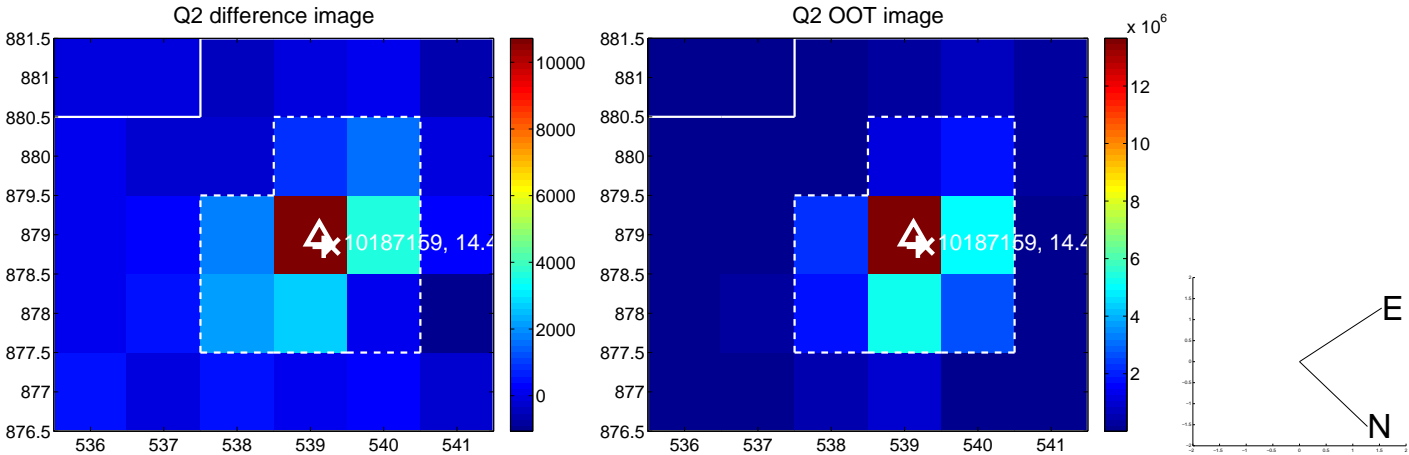
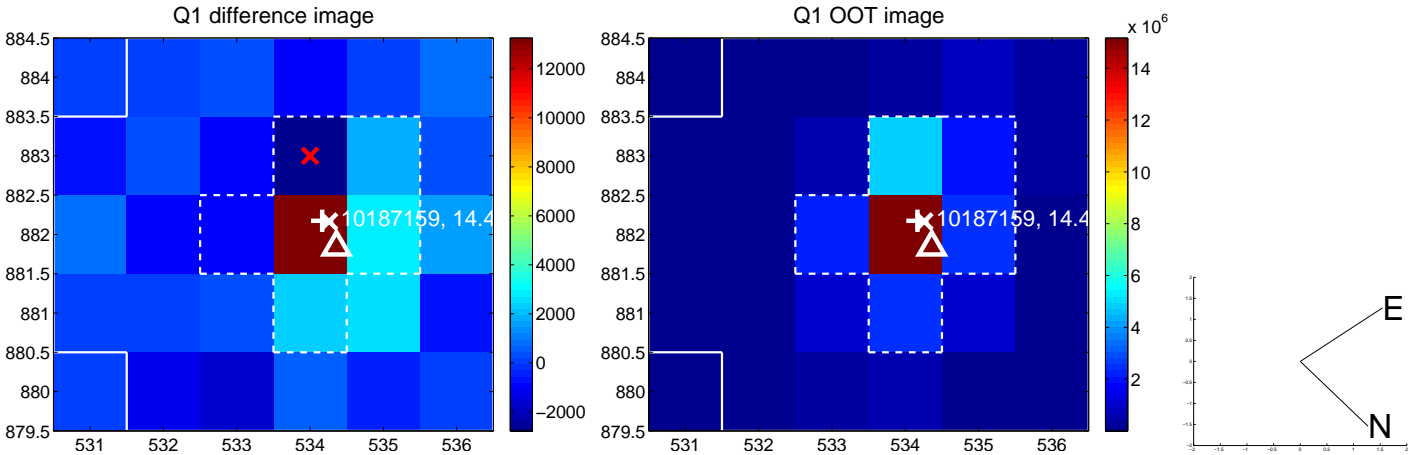
The direct PRF centroid is offset from the target star catalog position by about 0.53 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.128 \pm 0.102$	1.26	$0.126 \pm 0.100$	$-0.025 \pm 0.141$
PRF-fit source offset from KIC position	$0.410 \pm 0.139$	2.95	$-0.167 \pm 0.097$	$-0.374 \pm 0.143$
photometric centroid source offset	$0.87 \pm 0.31$	2.80	$-0.86 \pm 0.31$	$0.17 \pm 0.28$

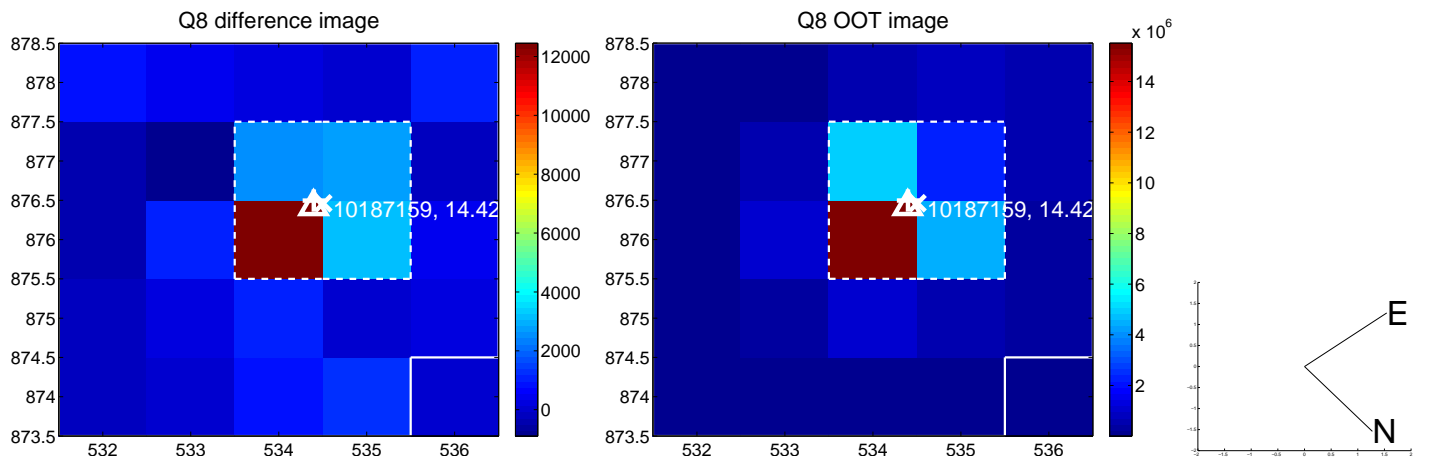
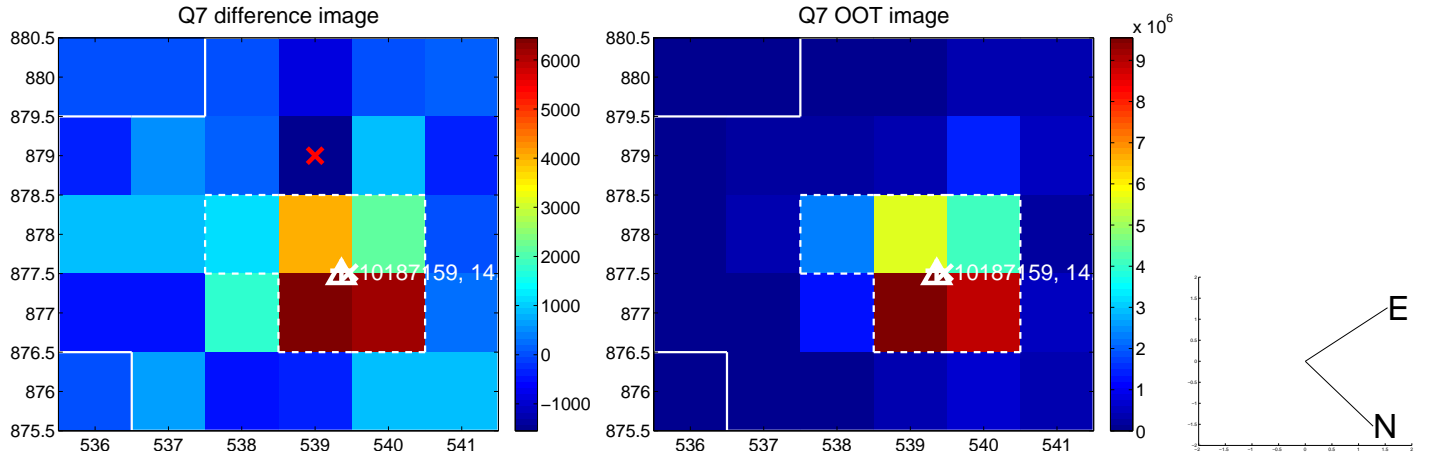
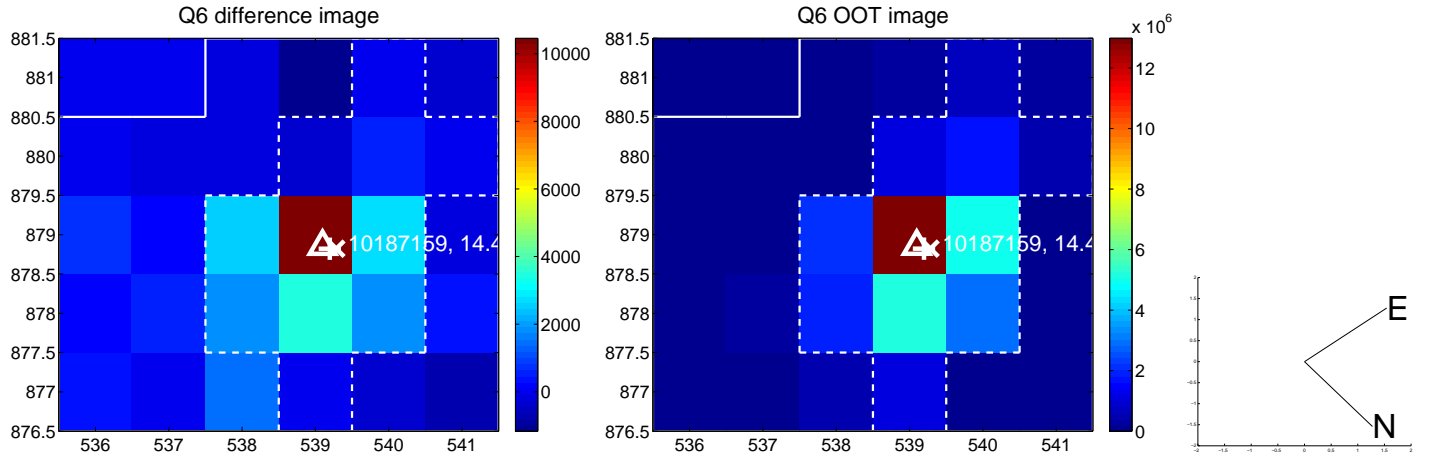
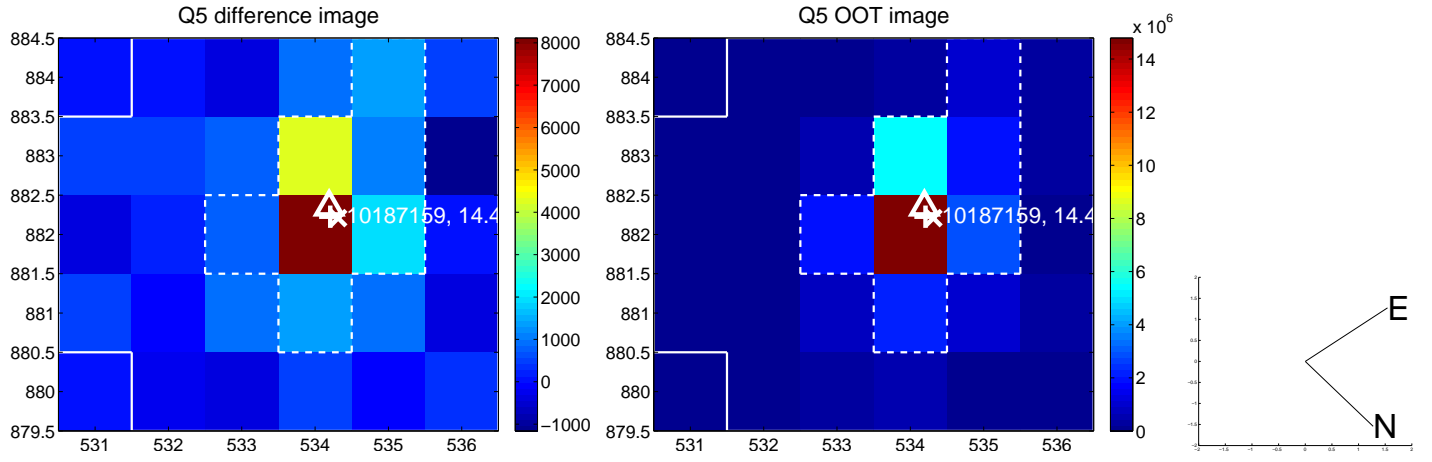


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

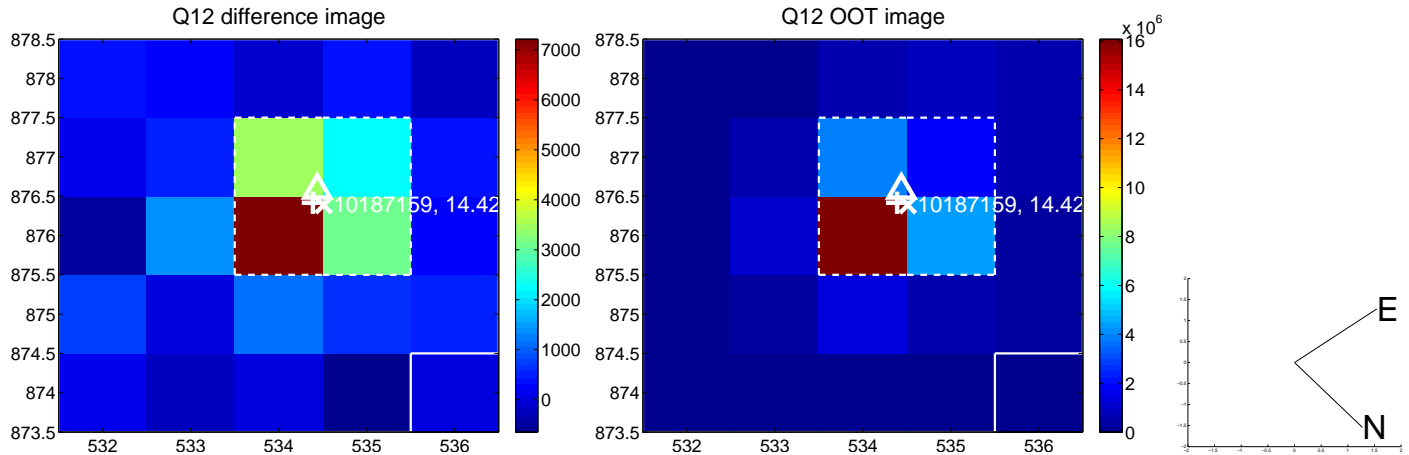
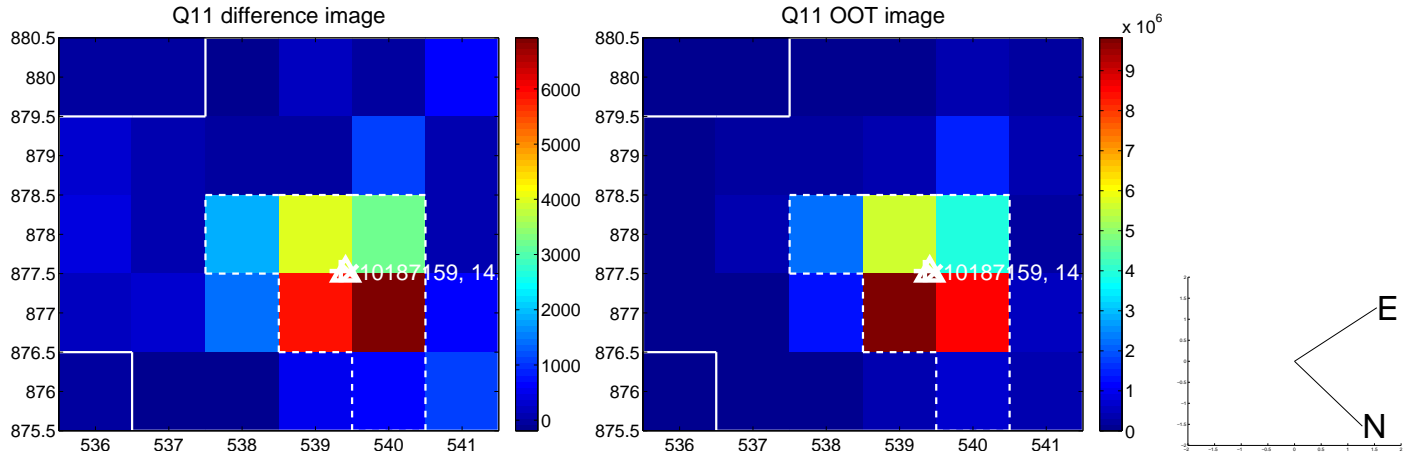
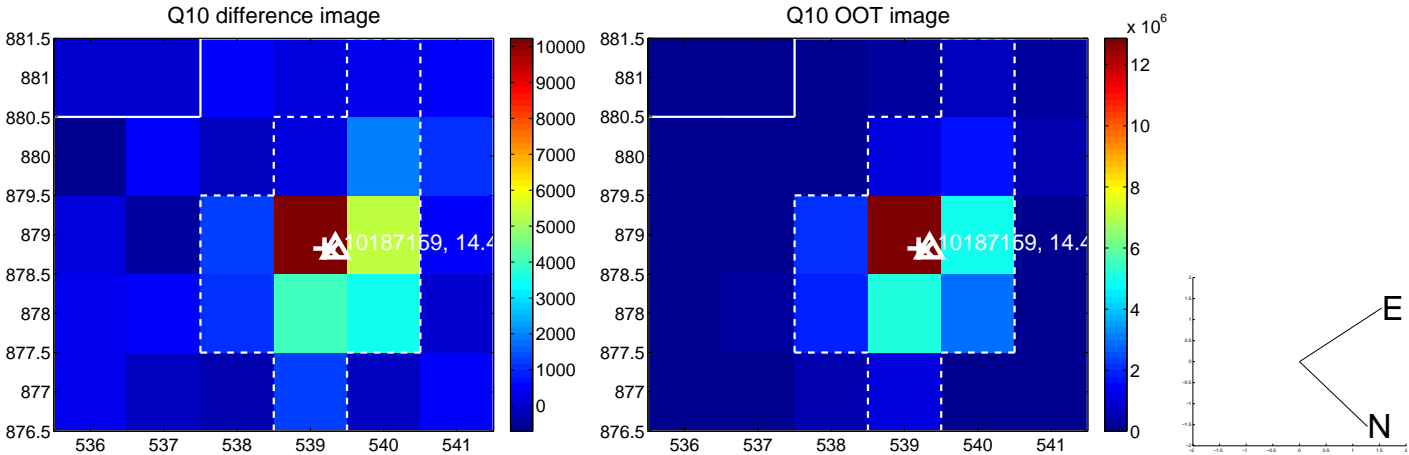
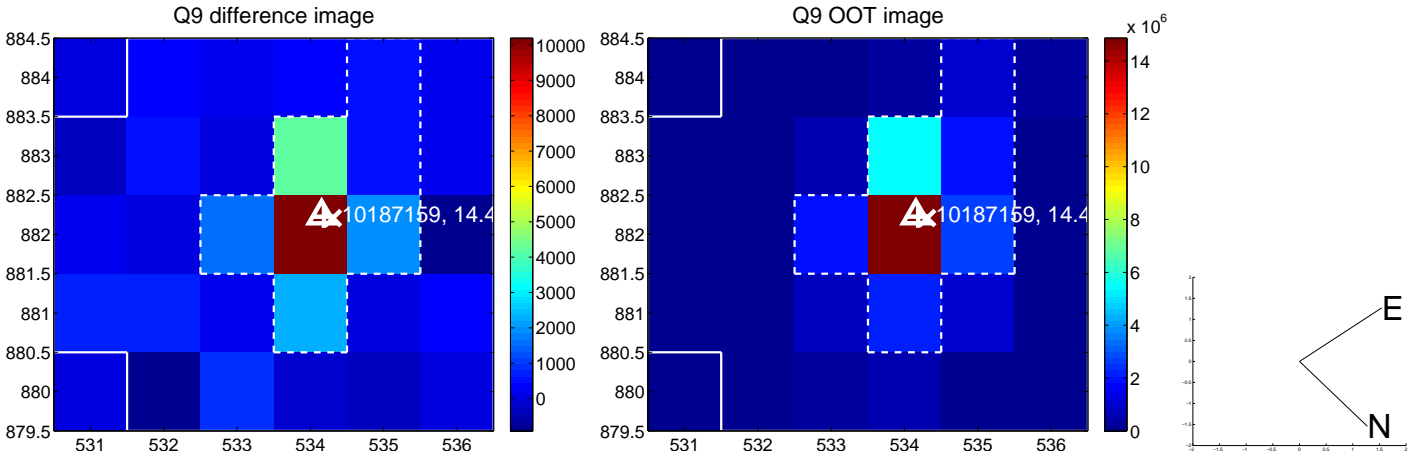
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



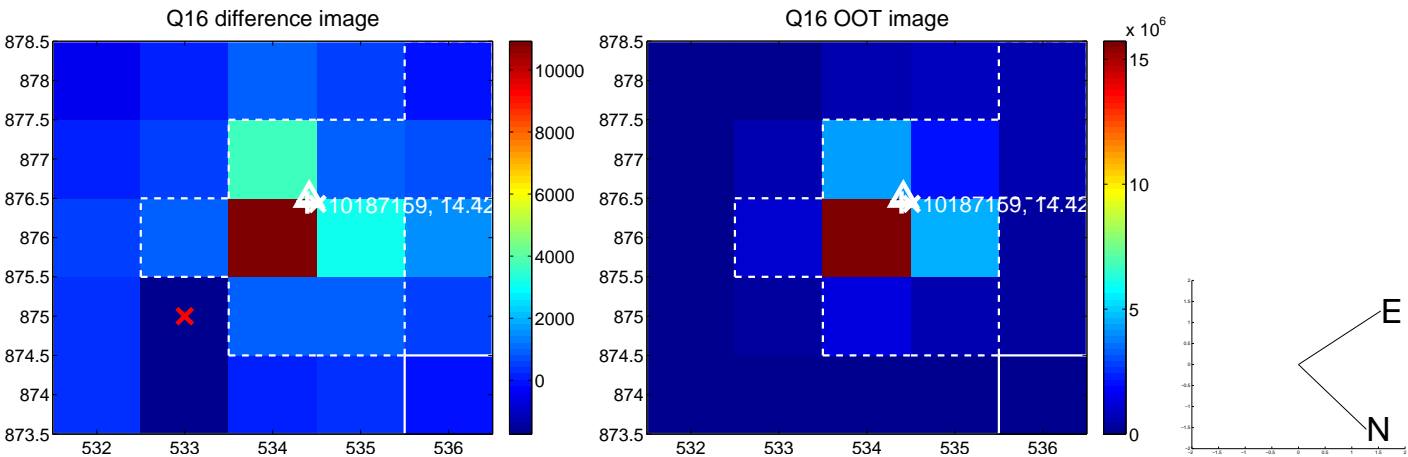
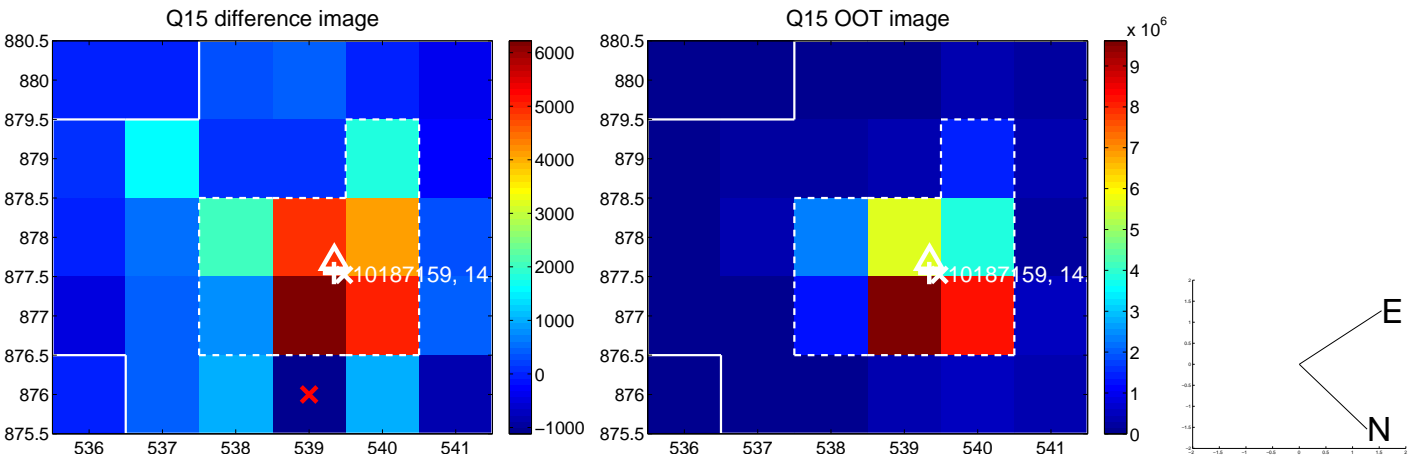
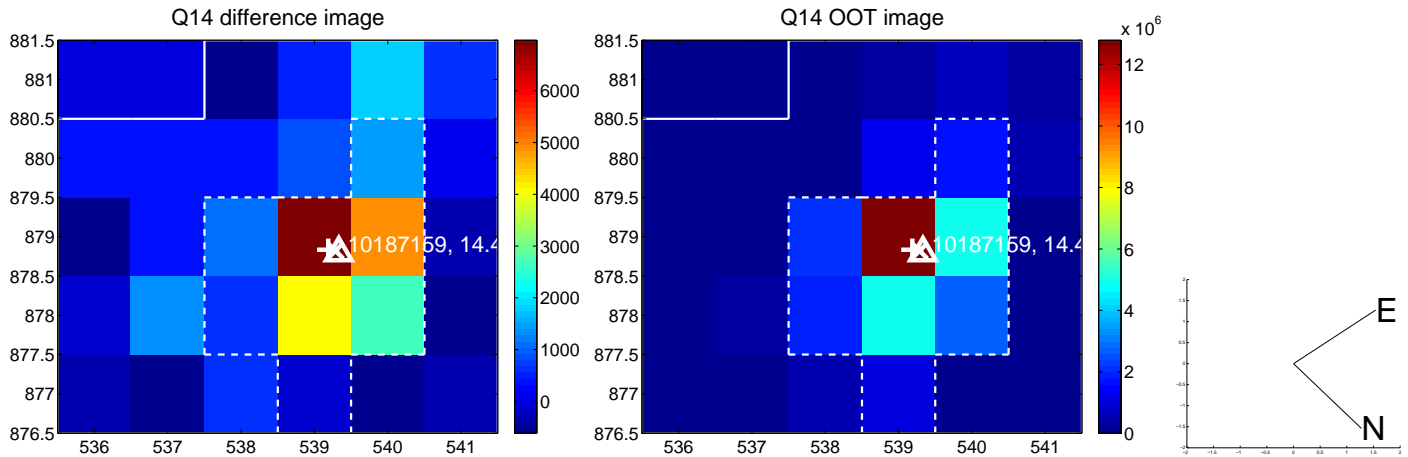
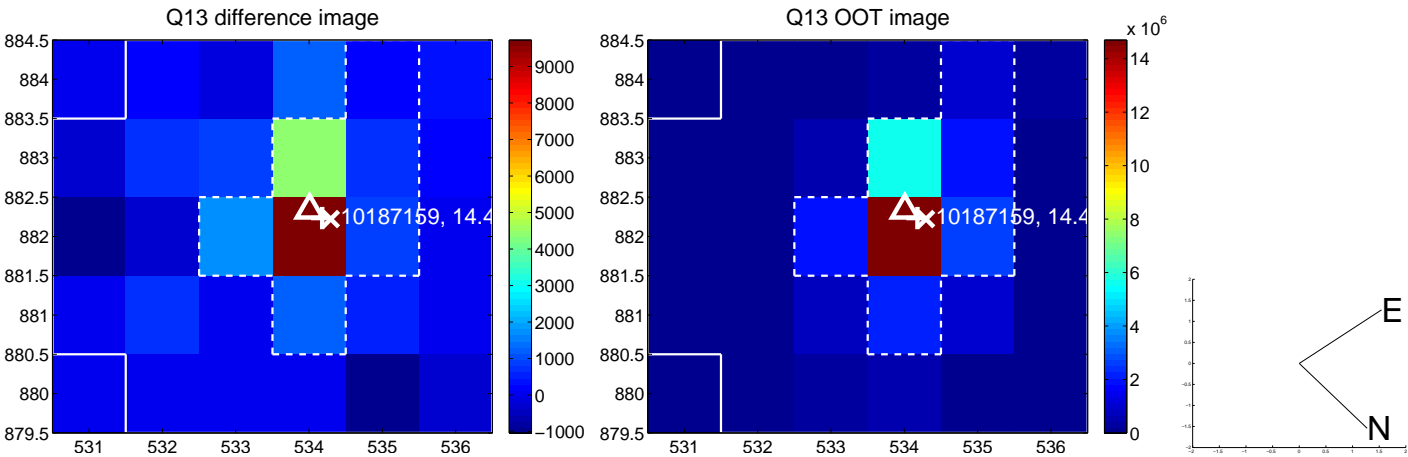
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

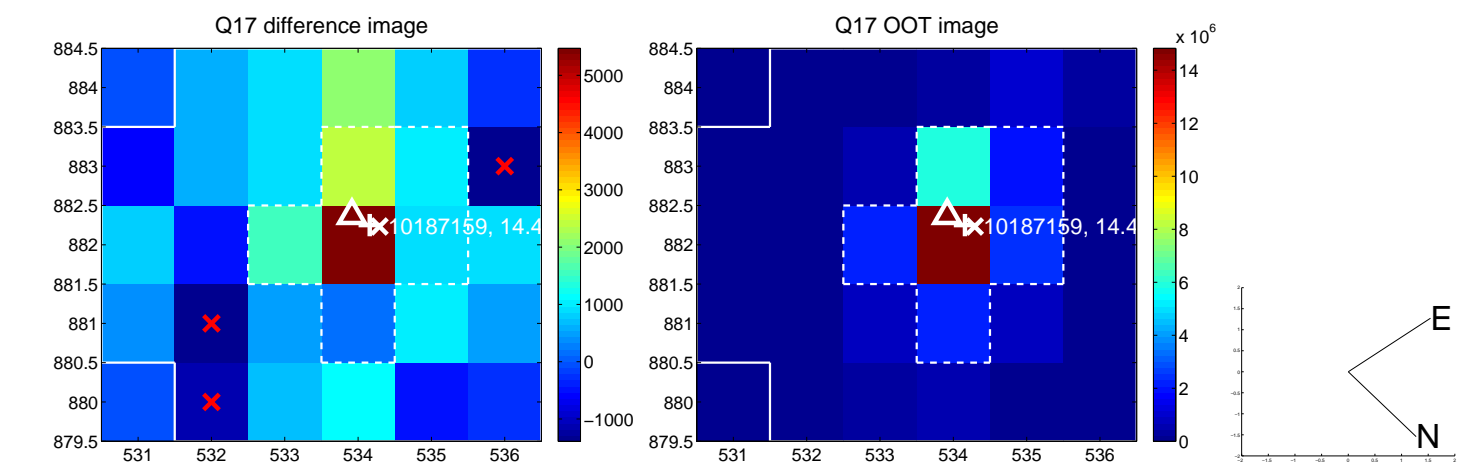


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

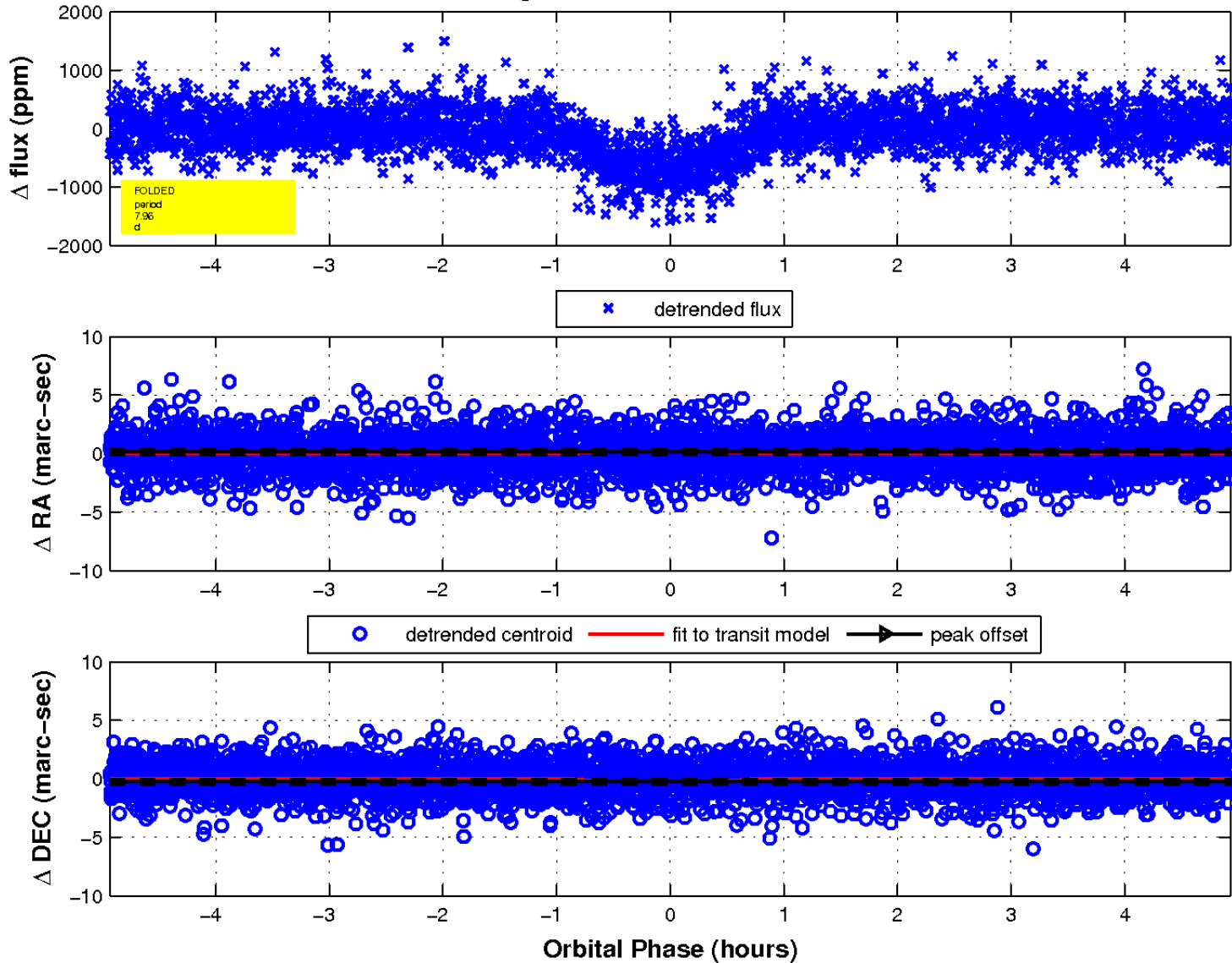




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



### fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

