

# KIC 005091016

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005091016-01	OBS	2973.01	5.765658	134.961359	221.4	2.820	16.3	16.7	1.07	6218	1.88	373.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005091016-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_ALT—CENT_RESOLVED_OFFSET

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

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

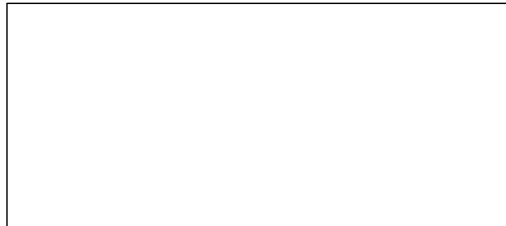
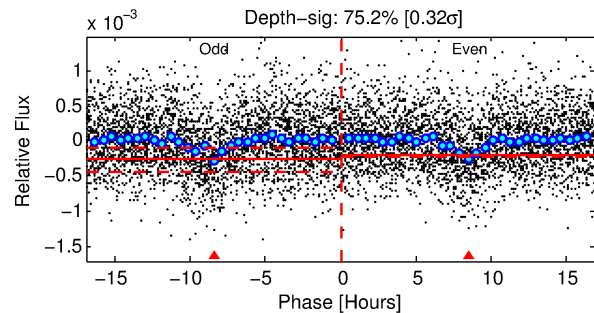
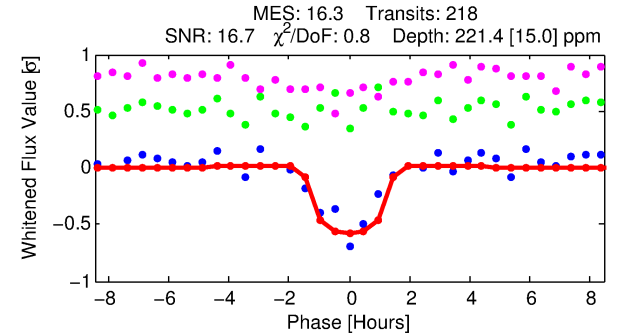
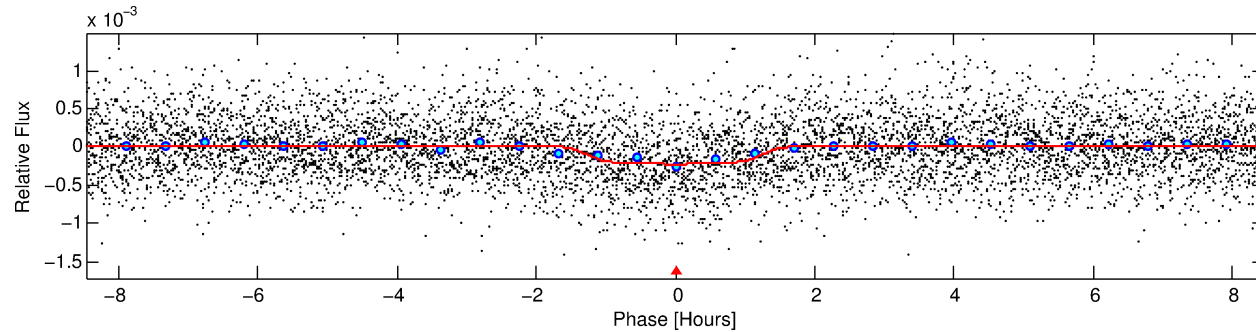
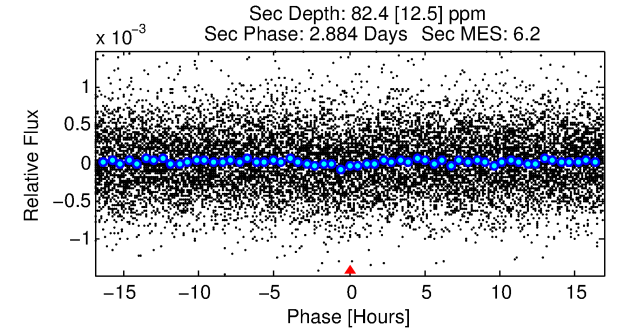
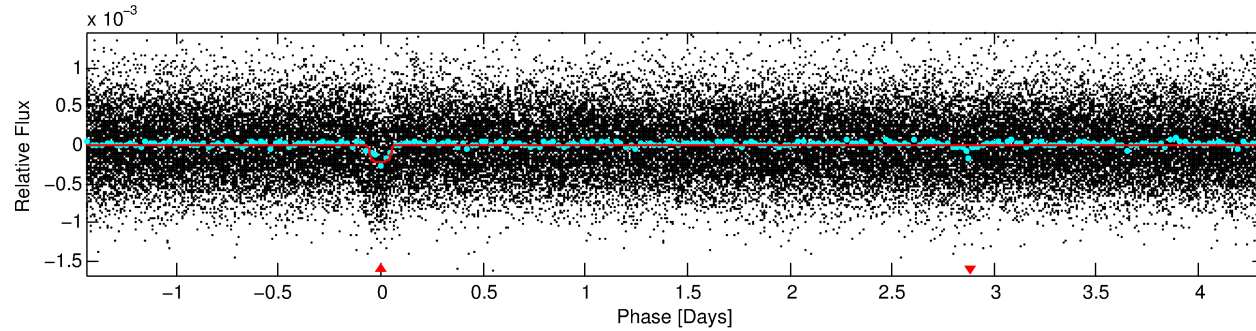
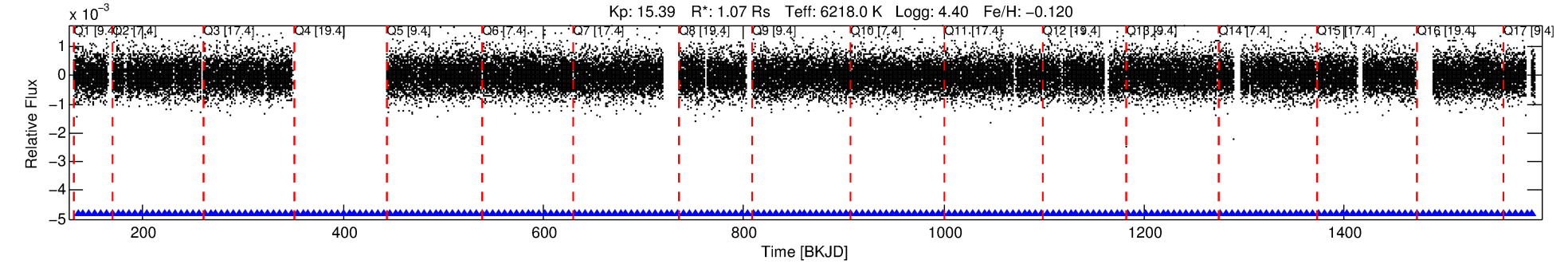
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005091016-01

No Significant Match Found

# DV One-Page Summary

KIC: 5091016 Candidate: 1 of 1 Period: 5.766 d  
KOI: K02973.01 Corr: 0.915



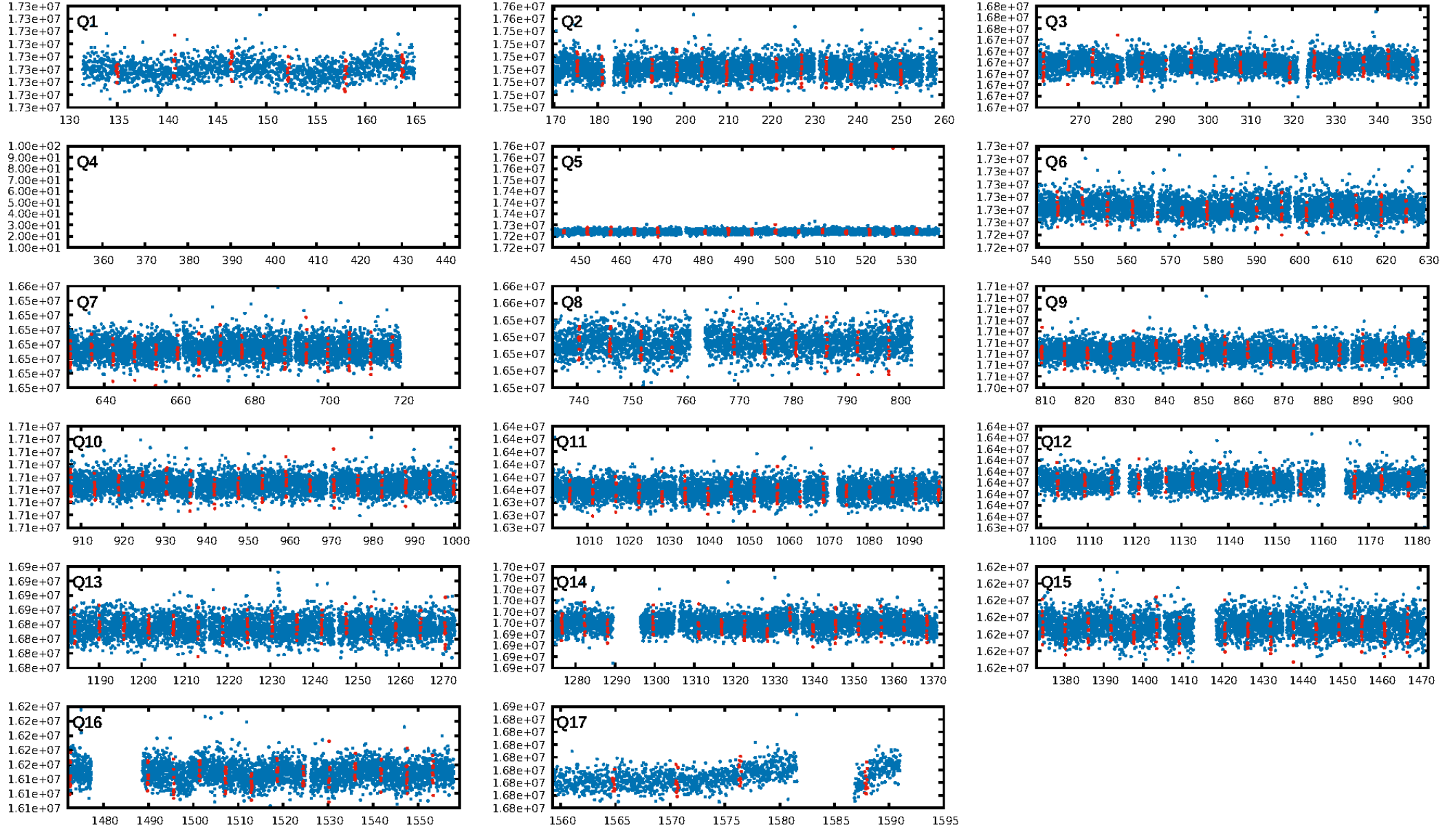
## DV Fit Results:

Period = 5.76566 [0.00003] d  
Epoch = 134.9614 [0.0034] BKJD  
Rp/R\* = 0.0161 [0.0047]  
a/R\* = 7.33 [11.41]  
b = 0.90 [0.33]  
Seff = 373.10 [162.86]  
Teff = 1121 [122] K  
Rp = 1.88 [0.85] Re  
a = 0.0642 [0.0181] AU  
Ag = 52.95 [38.70] [1.34σ]  
Teffp = 4674 [738] K [4.75σ]

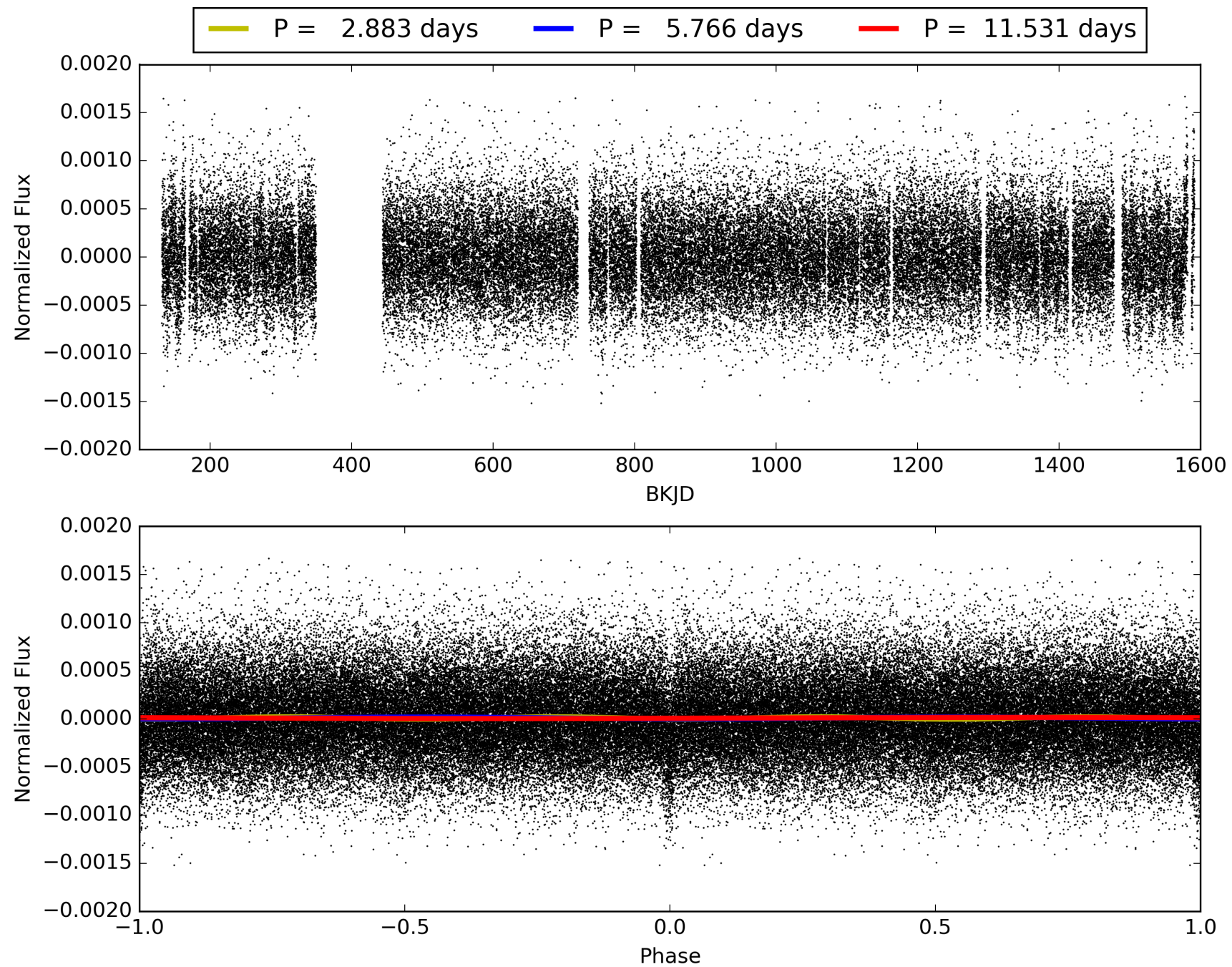
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.29e-58  
RollingBand-fgt: 1.00 [208/208]  
GhostDiagnostic-chr: -0.3999  
Centroid-sig: 0.0%  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [16/16]

# TCE 005091016-01, PDC Light Curves

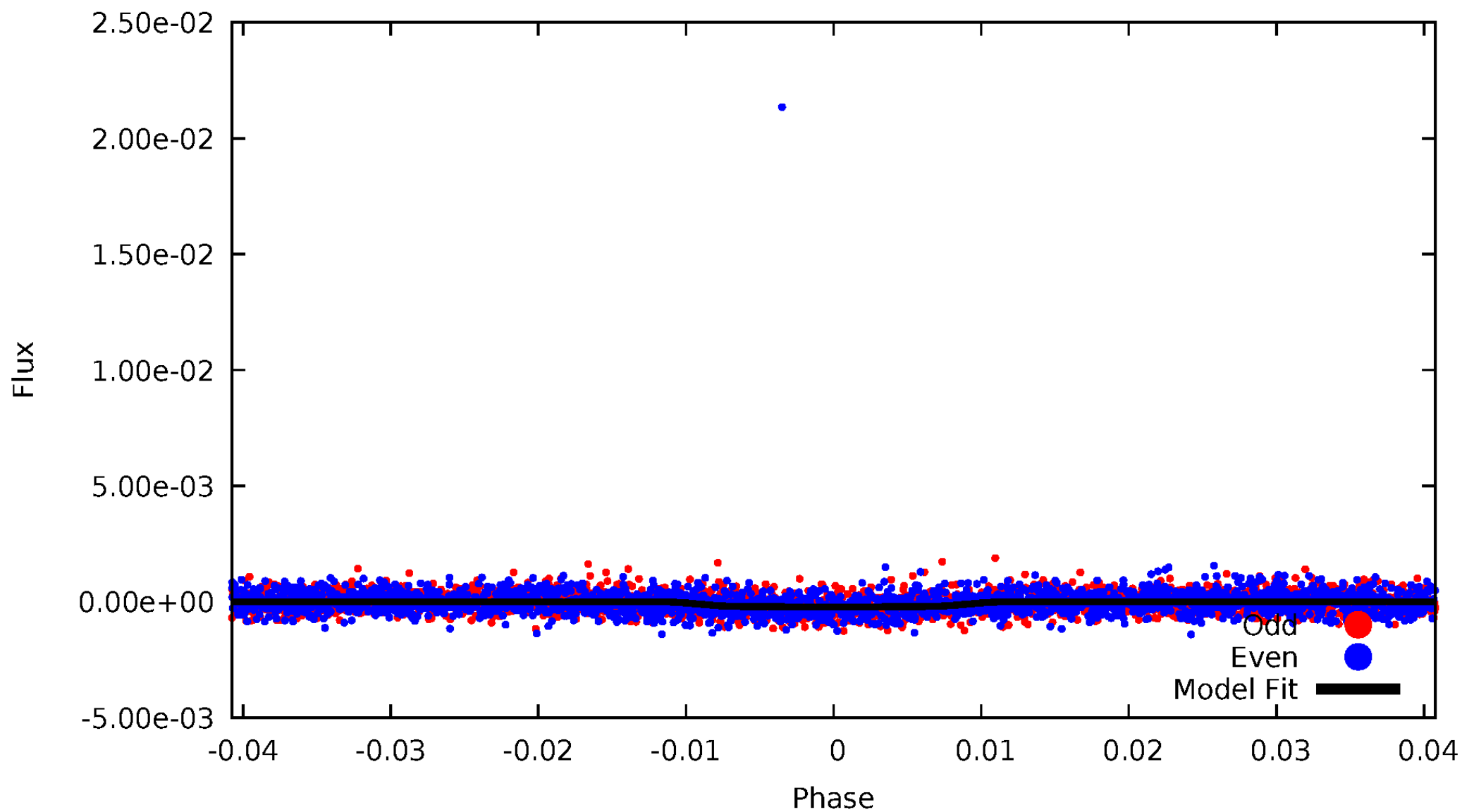


TCE 005091016-01



# DV Odd/Even

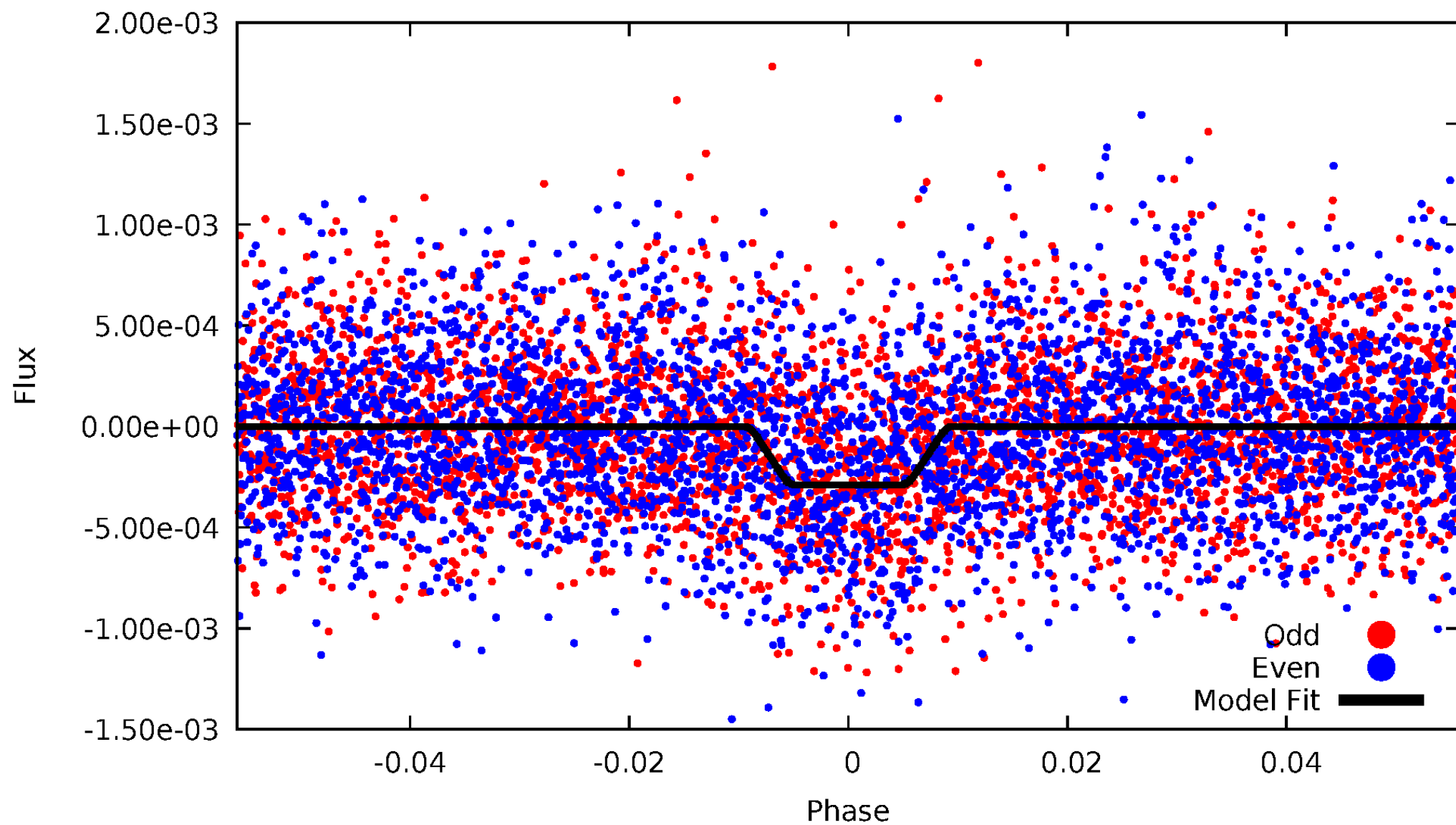
TCE 005091016-01





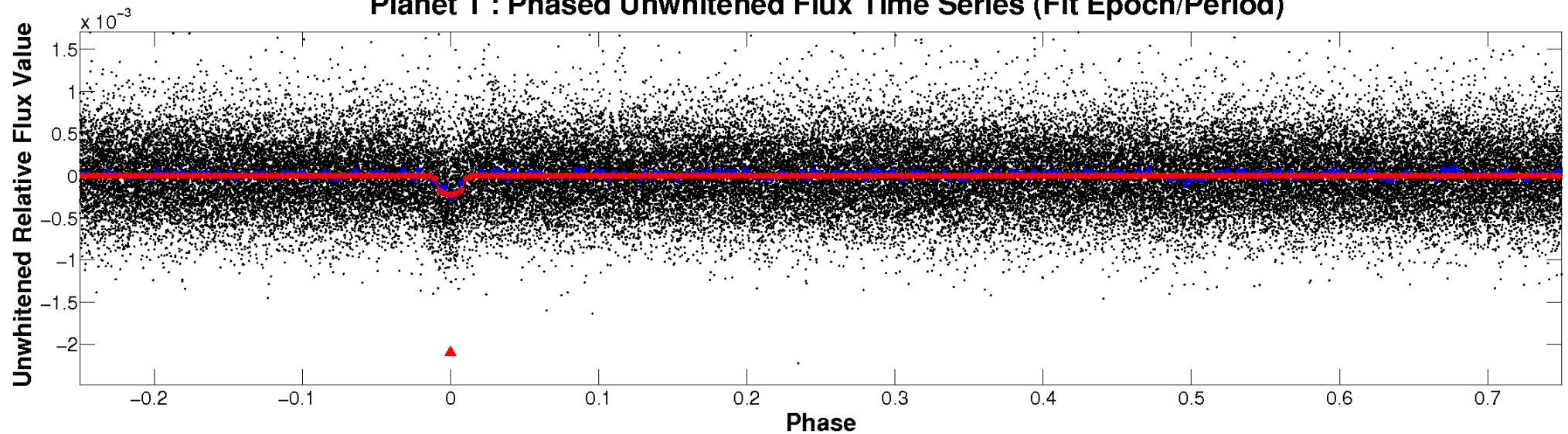
# ALT Odd/Even

TCE 005091016-01

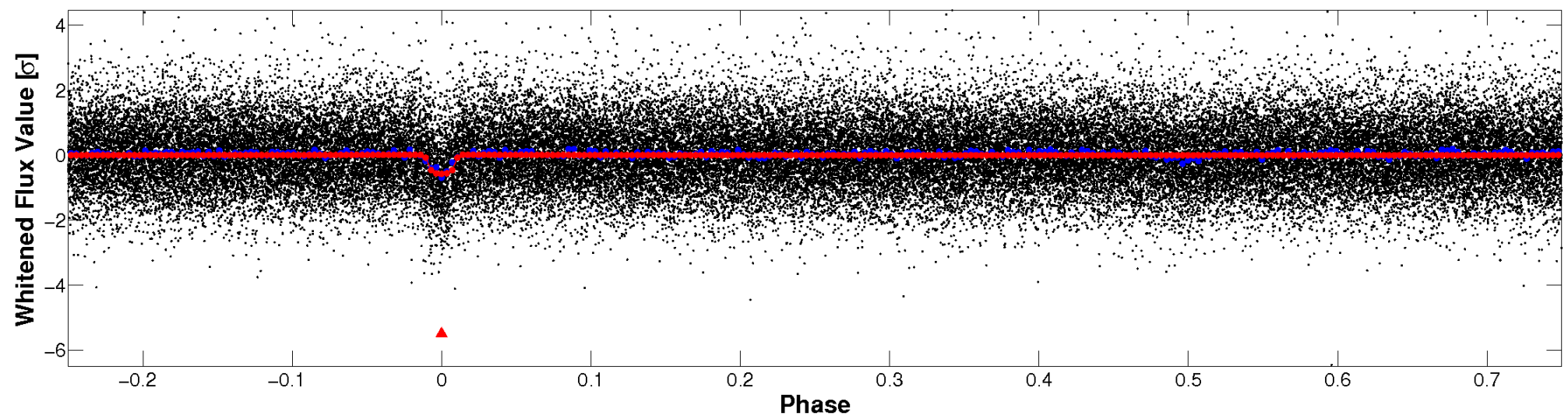


# Non-Whitened Vs. Whitened Light Curve

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

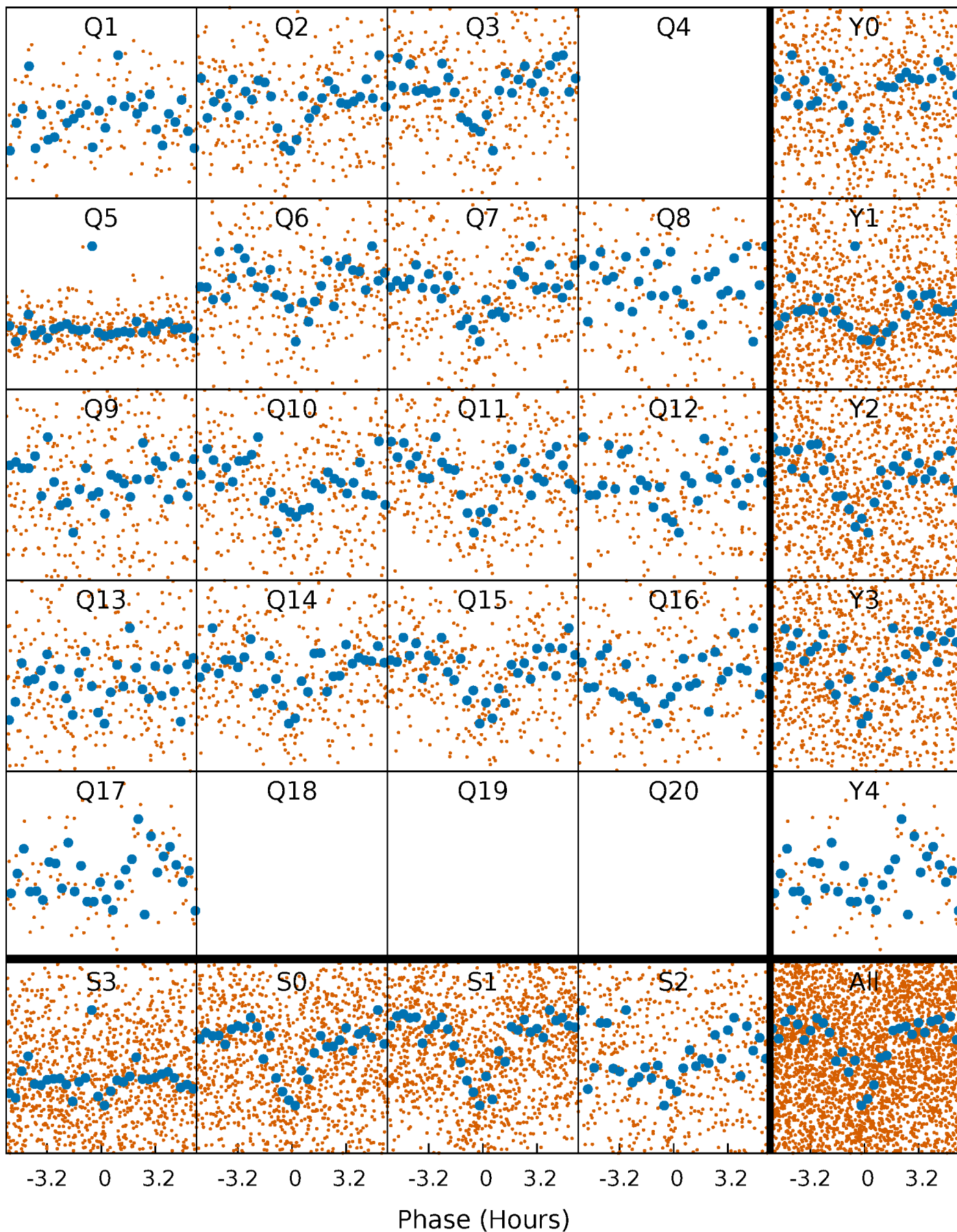


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

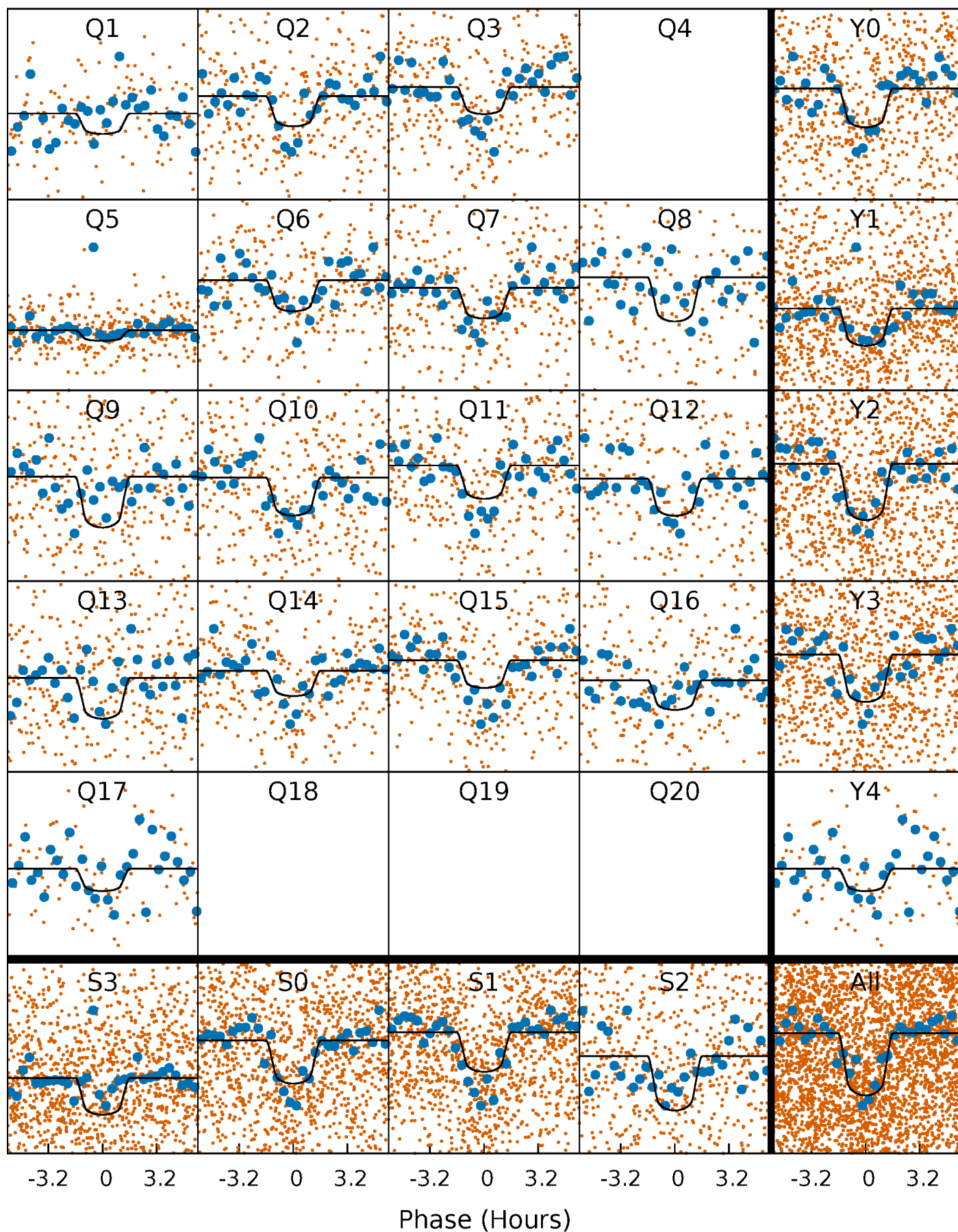
TCE 005091016-01 P= 5.765658 Days  $T_0=134.961359$  (BKJD)





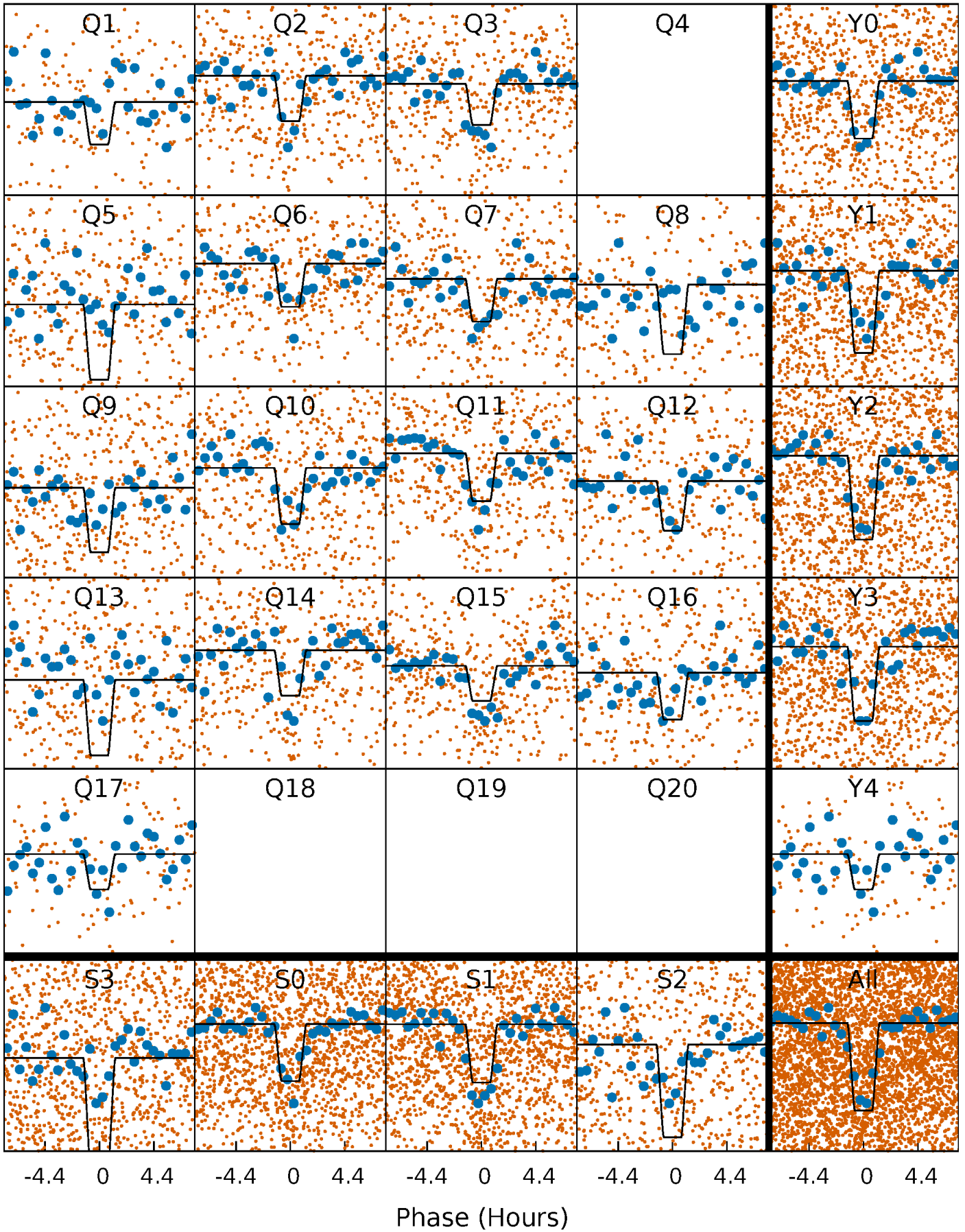
# DV Quarter-Phased Transit Curves

TCE 005091016-01 P= 5.765658 Days  $T_0=134.961359$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

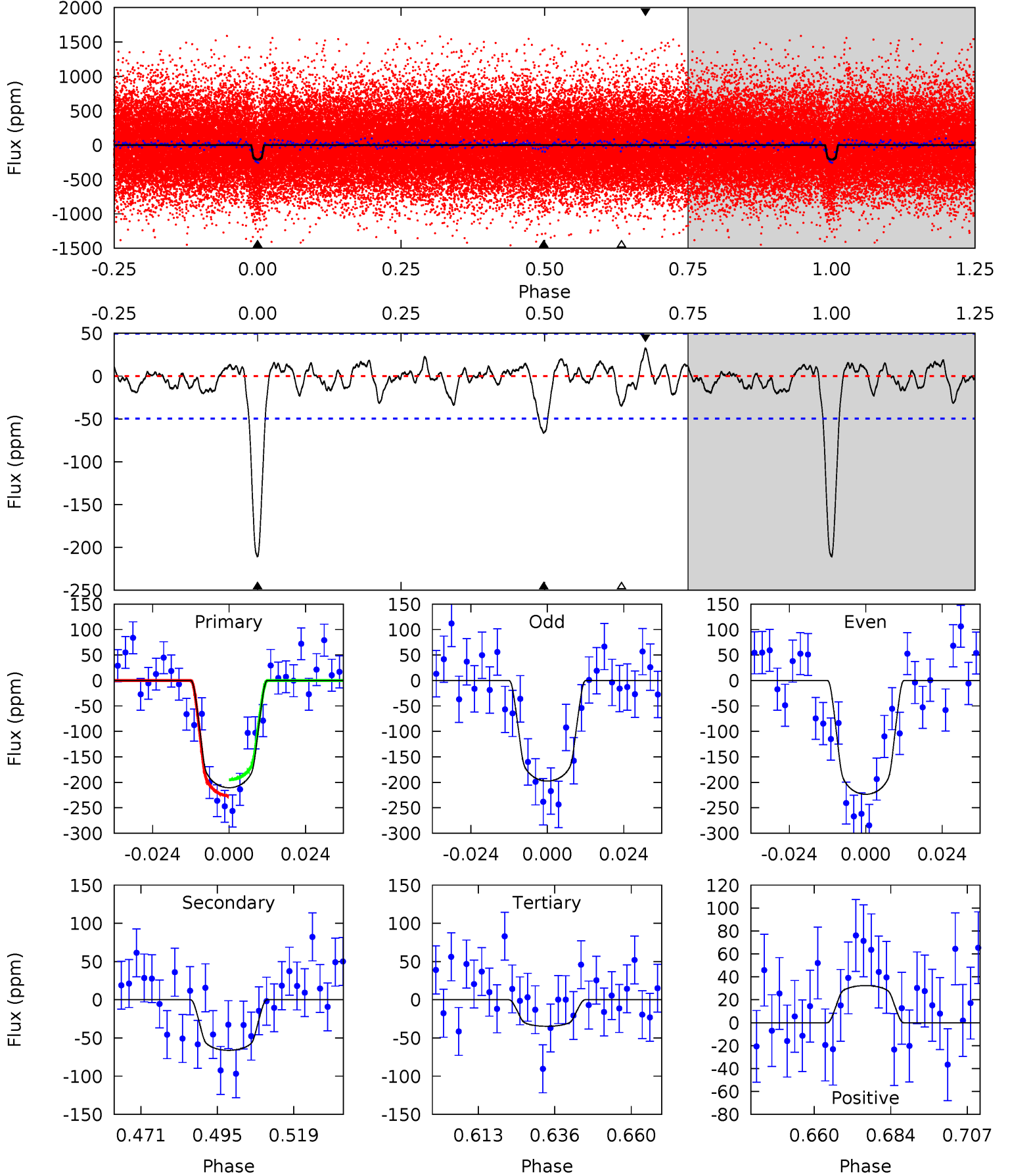
TCE 005091016-01 P= 5.765654 Days  $T_0=134.956340$  (BKJD)



# DV Model-Shift Uniqueness Test

005091016-01, P = 5.765658 Days, E = 129.195701 Days

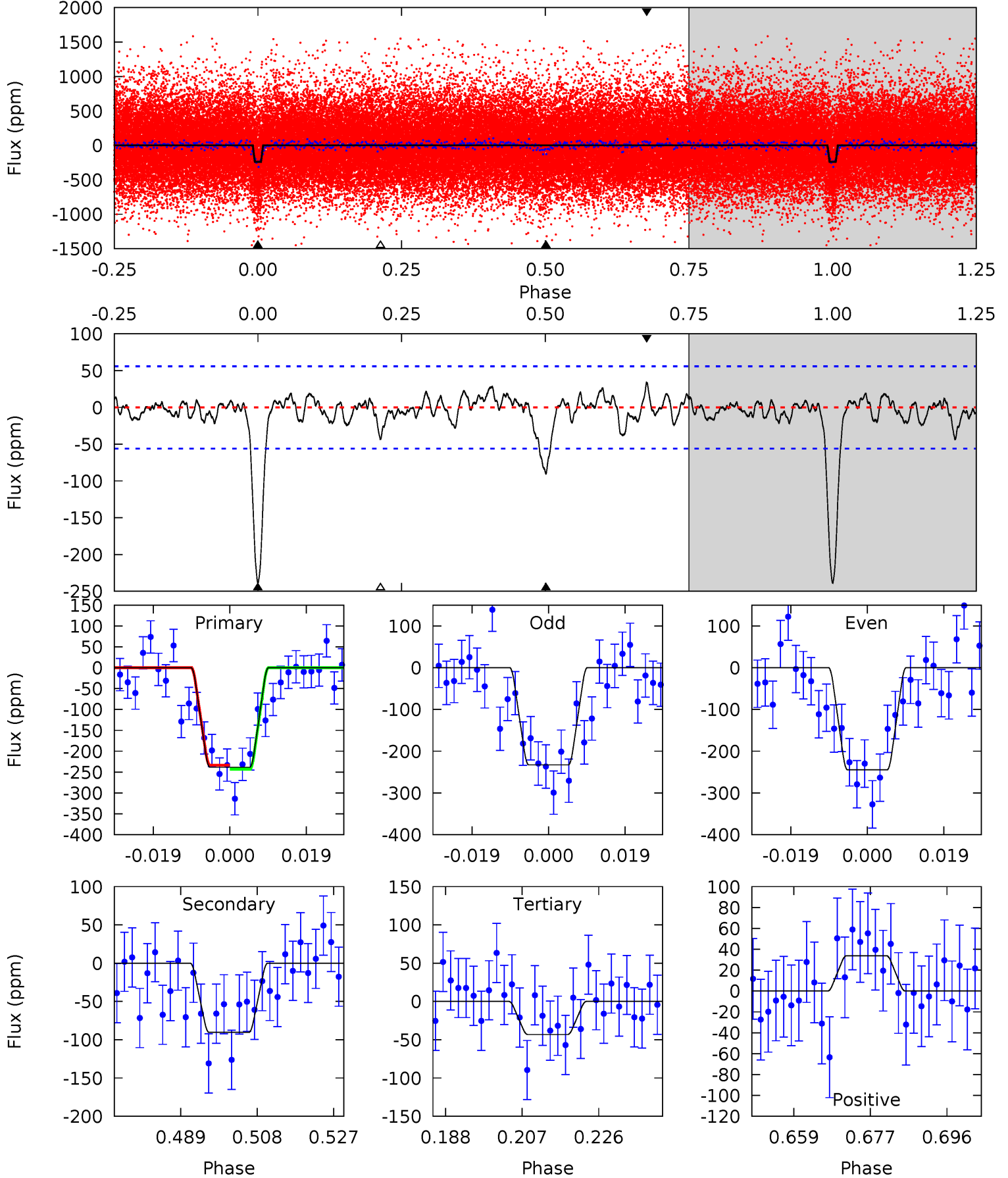
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.6	6.48	3.40	3.17	4.86	2.26	1.13	17.2	17.5	3.08	3.31	1.28	0.92	0.13	1.54



# Alt Model-Shift Uniqueness Test

005091016-01, P = 5.765654 Days, E = 129.190686 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
20.9	7.91	3.79	2.96	4.90	2.35	1.10	17.1	17.9	4.13	4.95	0.51	1.01	0.12	0.42



### Stellar Parameters For KIC 005091016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6218^{+194}_{-259}$	$4.404^{+0.072}_{-0.217}$	$-0.120^{+0.250}_{-0.300}$	$1.072^{+0.366}_{-0.147}$	$1.057^{+0.168}_{-0.137}$	$1.207^{+0.472}_{-0.653}$
	+3%/-4%	+2%/-5%	+208%/-250%	+34%/-14%	+16%/-13%	+39%/-54%
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 005091016-01 / KOI 2973.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-66 \pm 10$	$1.91^{+0.71}_{-0.58}$	$1594^{+118}_{-88}$	$4577^{+782}_{-452}$	$39^{+44}_{-18}$
Alt.	$-90 \pm 11$	$2.17^{+0.65}_{-0.63}$	$1593^{+131}_{-90}$	$4702^{+711}_{-438}$	$44^{+44}_{-18}$

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



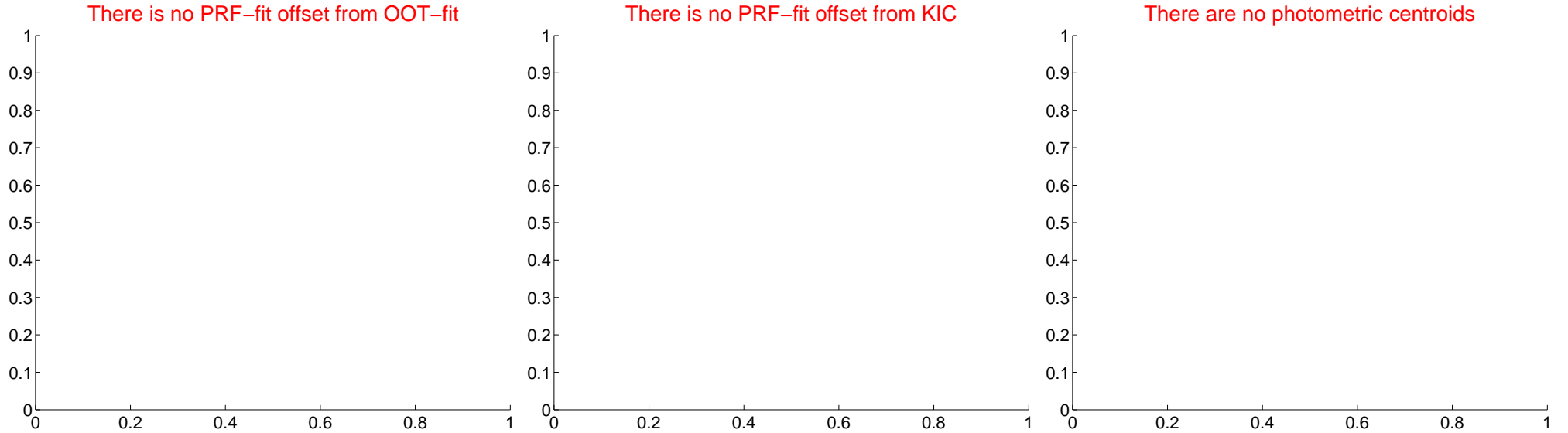
## DV Centroid Data

Supplemental centroid analysis for 005091016-01. Kepler magnitude: 15.39. Transit SNR 16.67

There are 0 quarters with good PRF difference image offsets

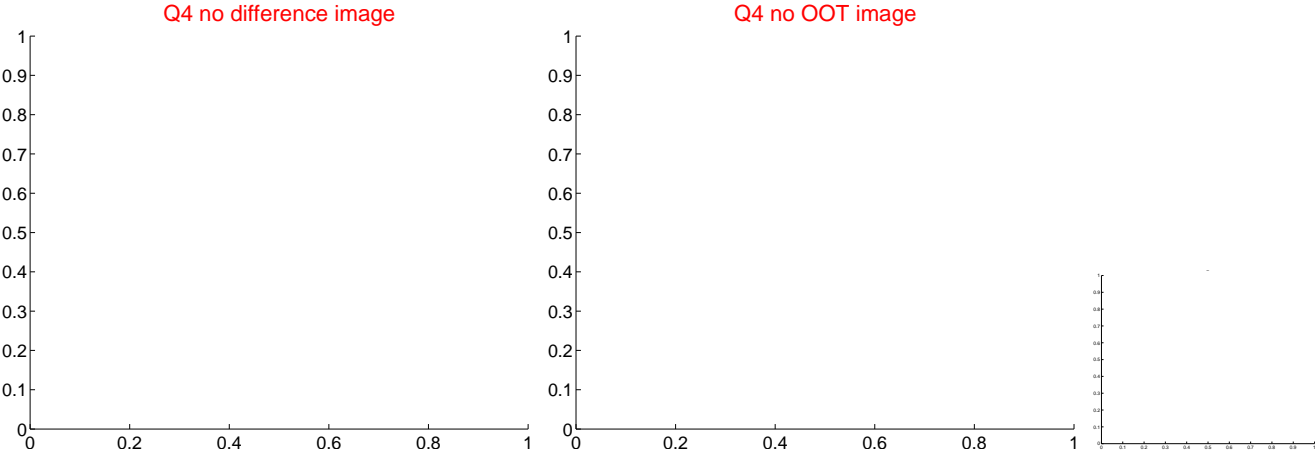
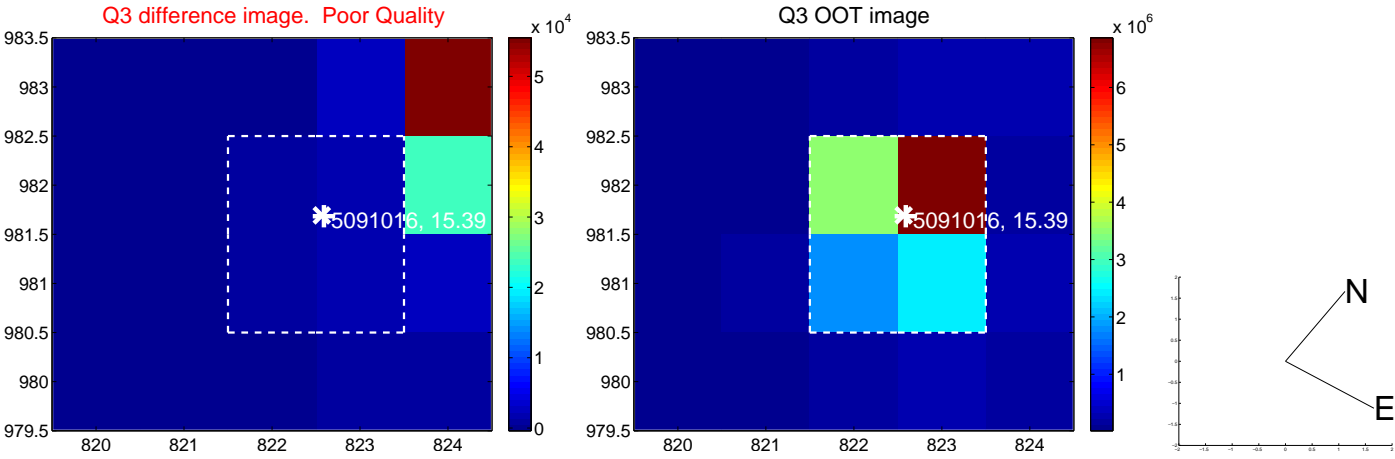
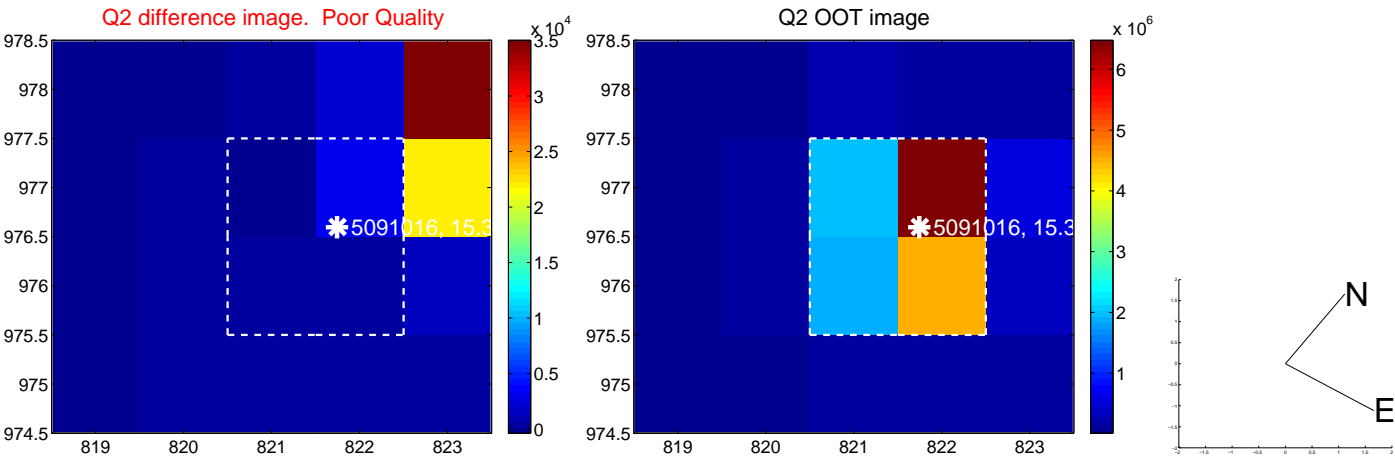
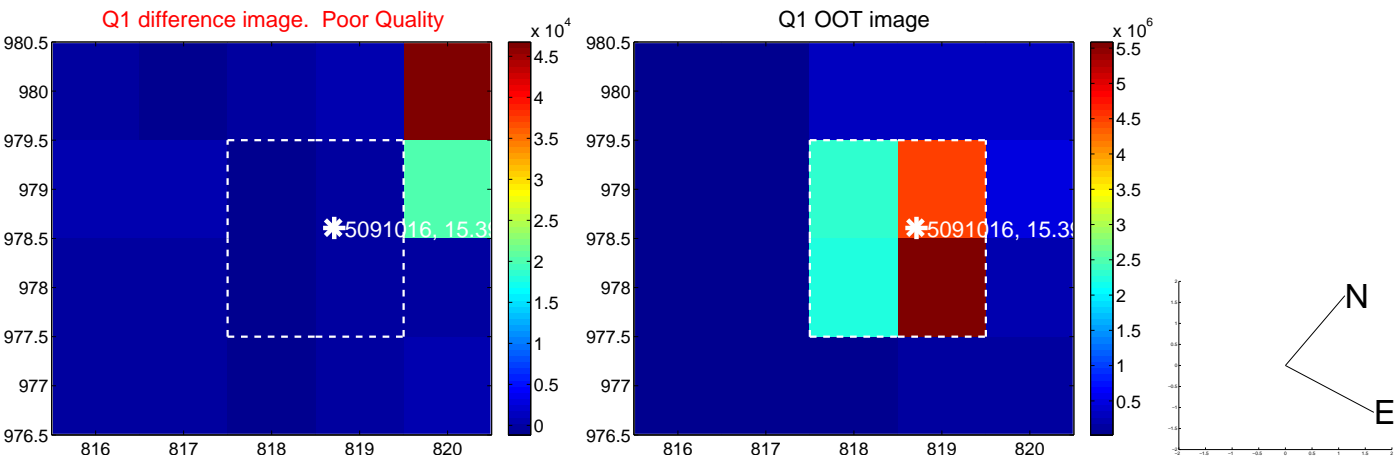
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—

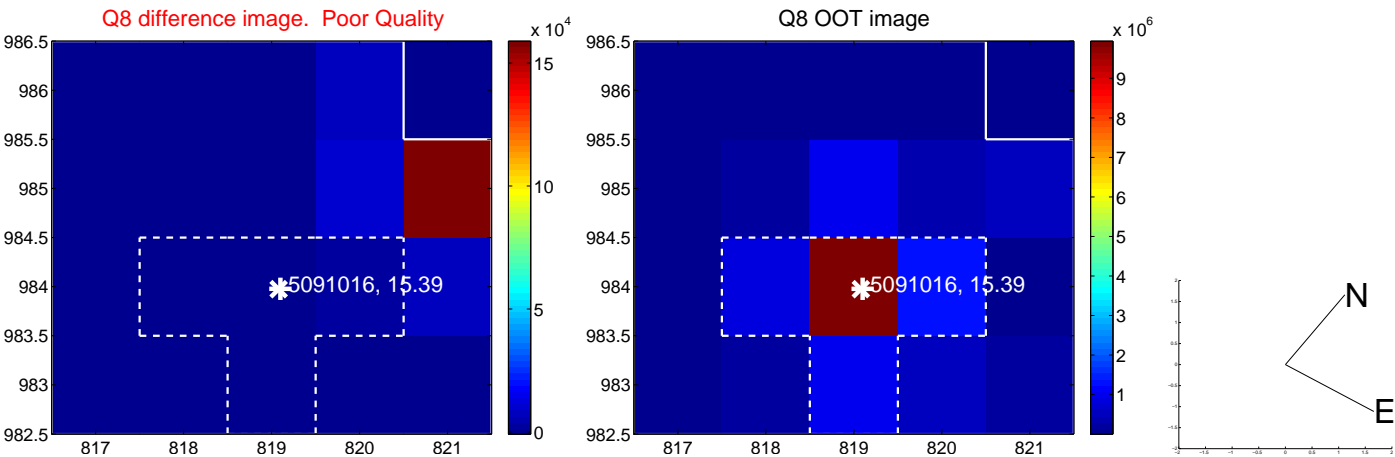
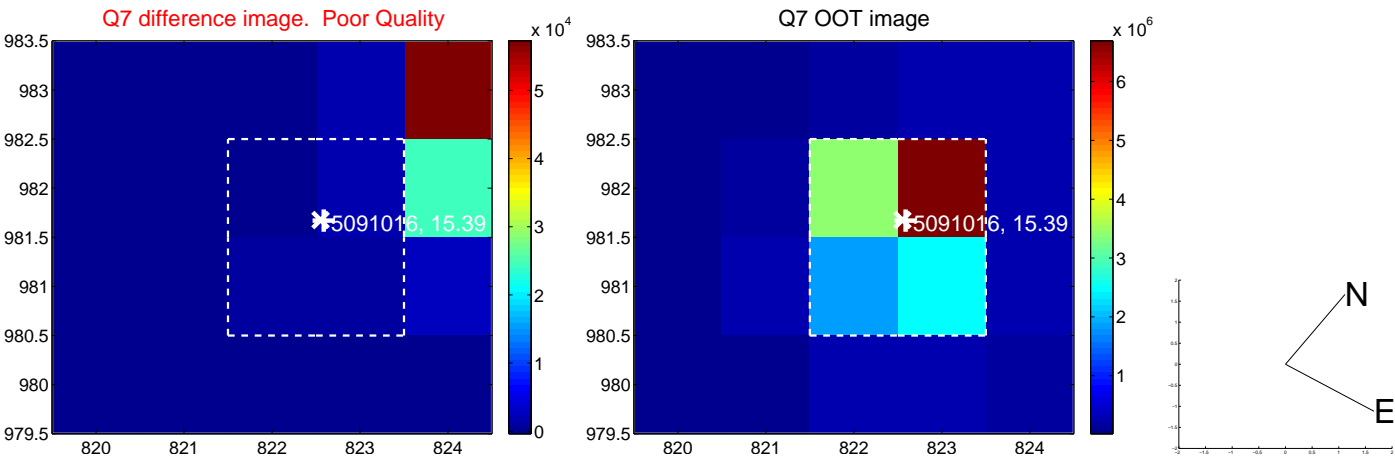
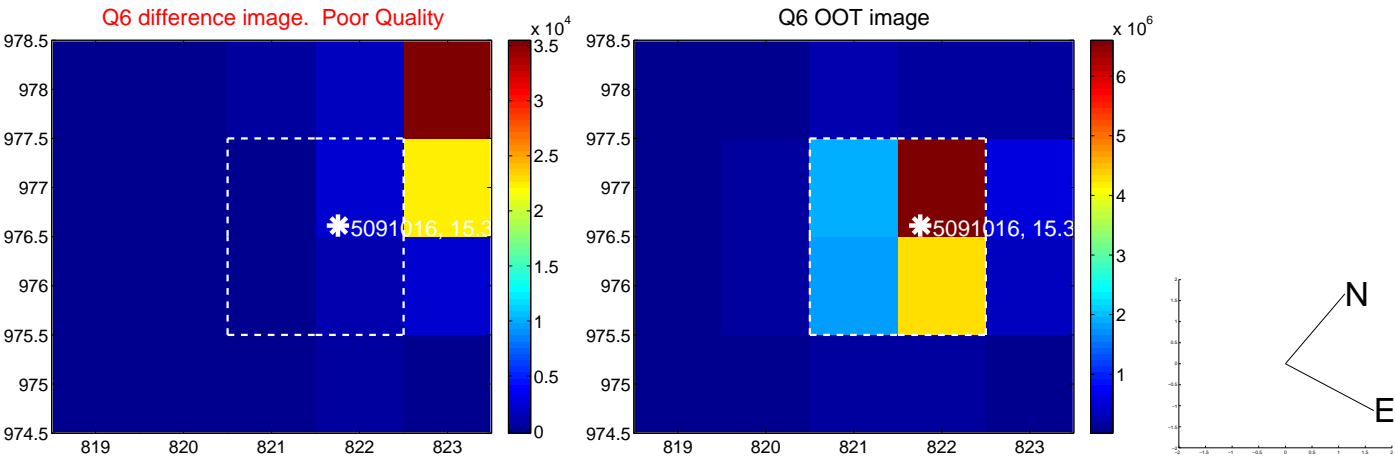
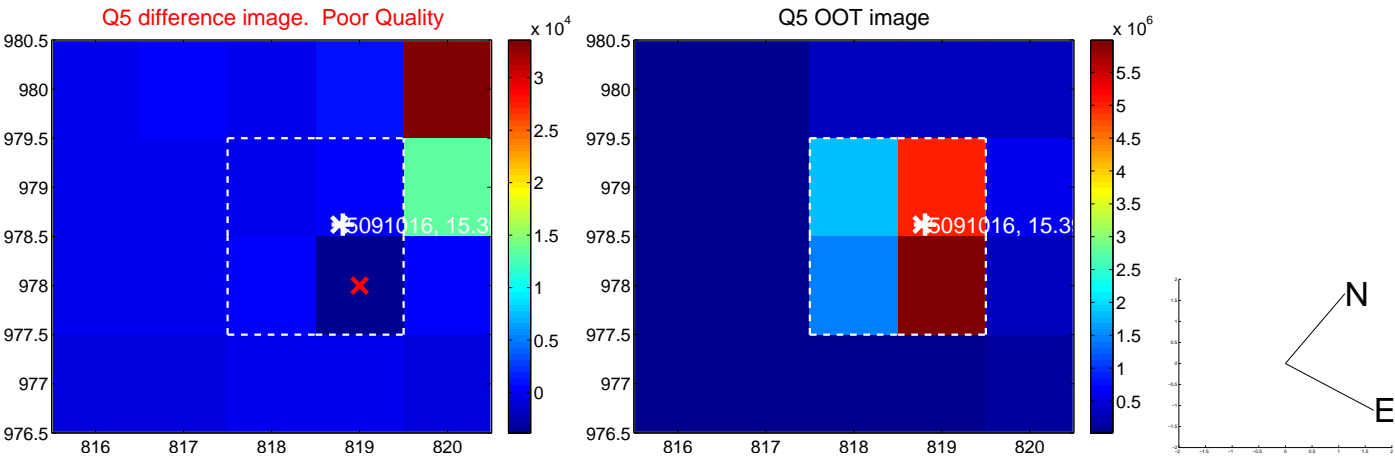


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

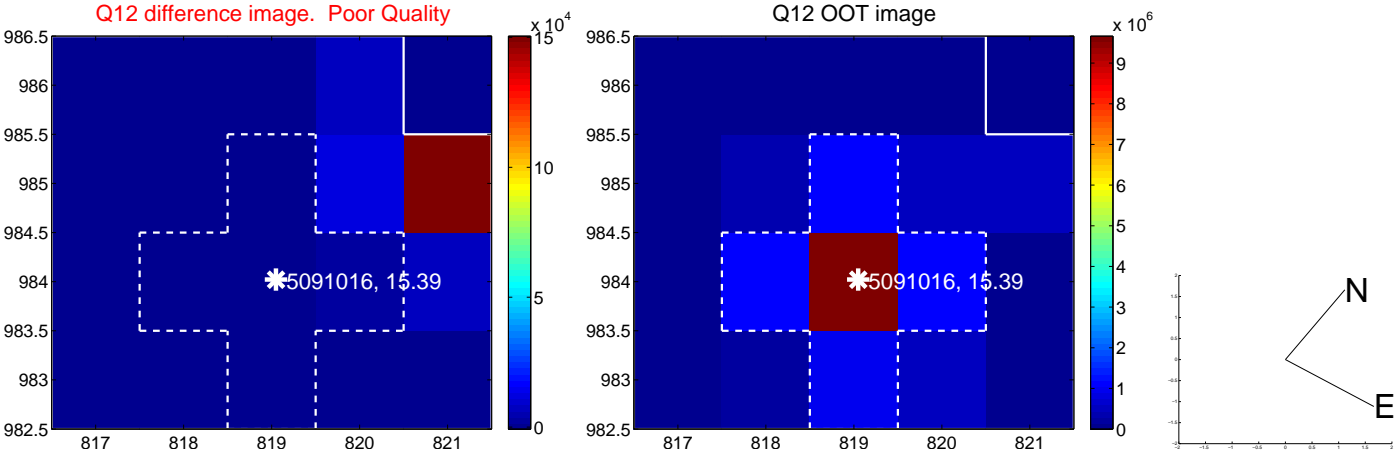
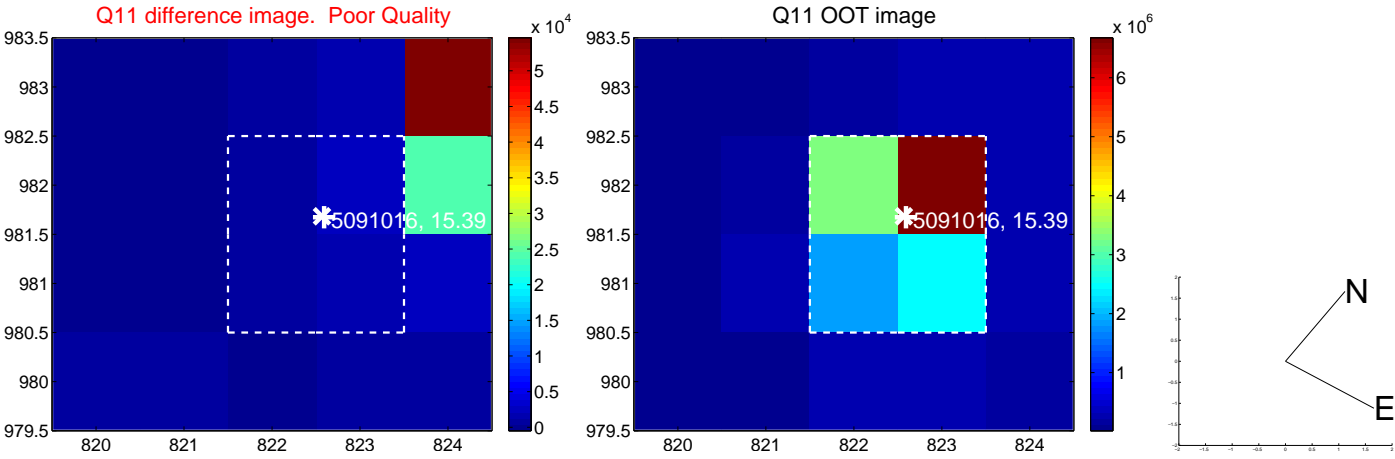
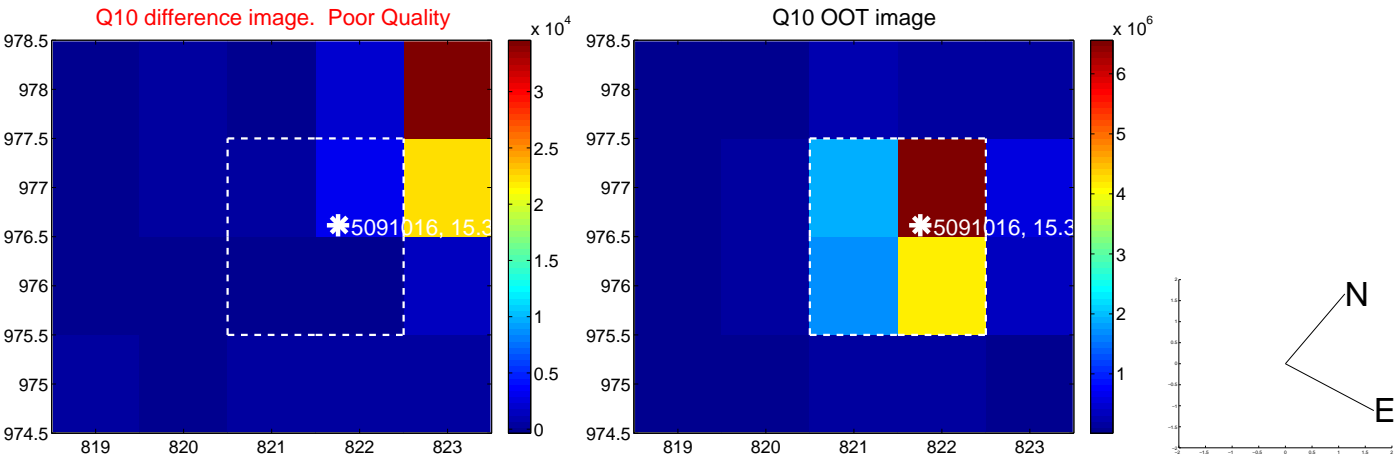
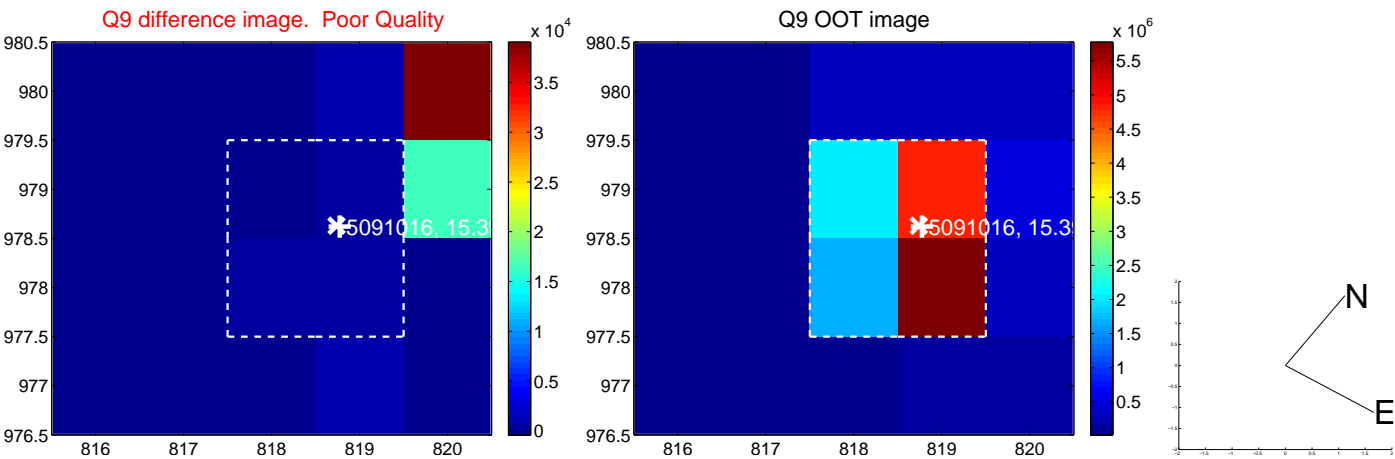
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



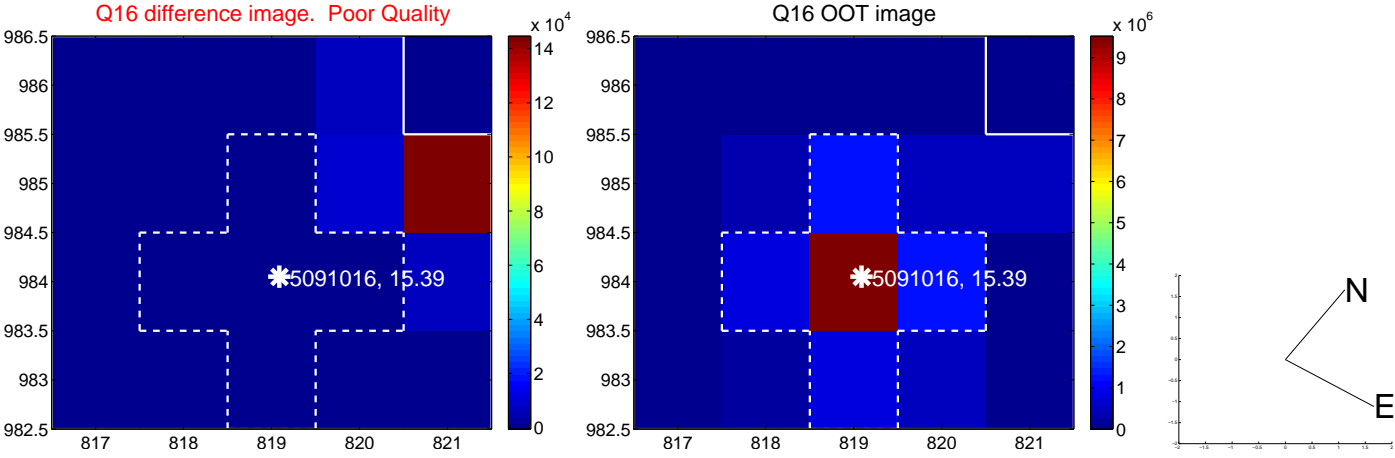
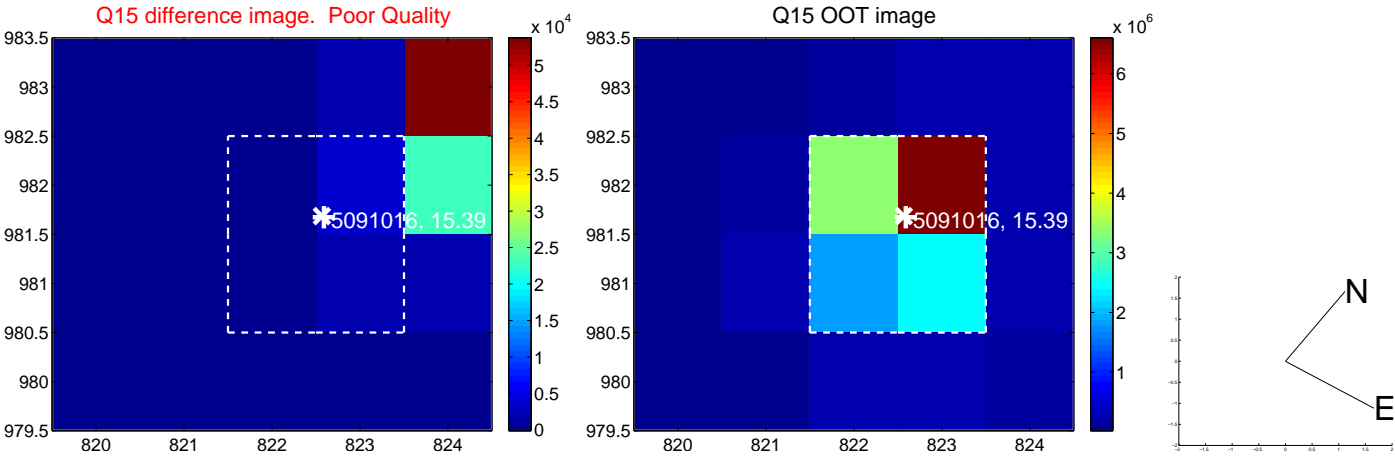
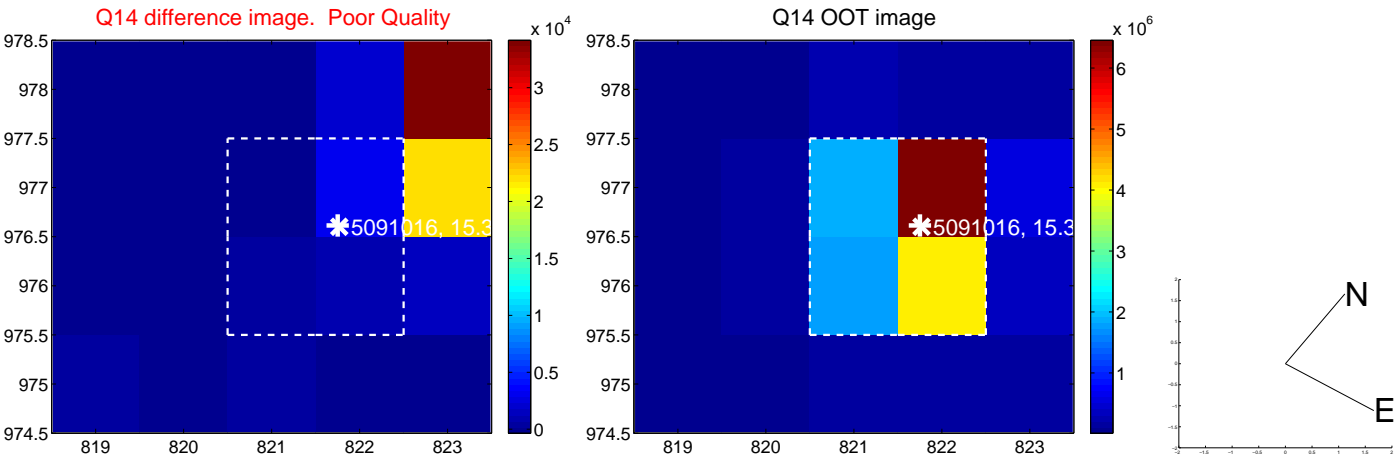
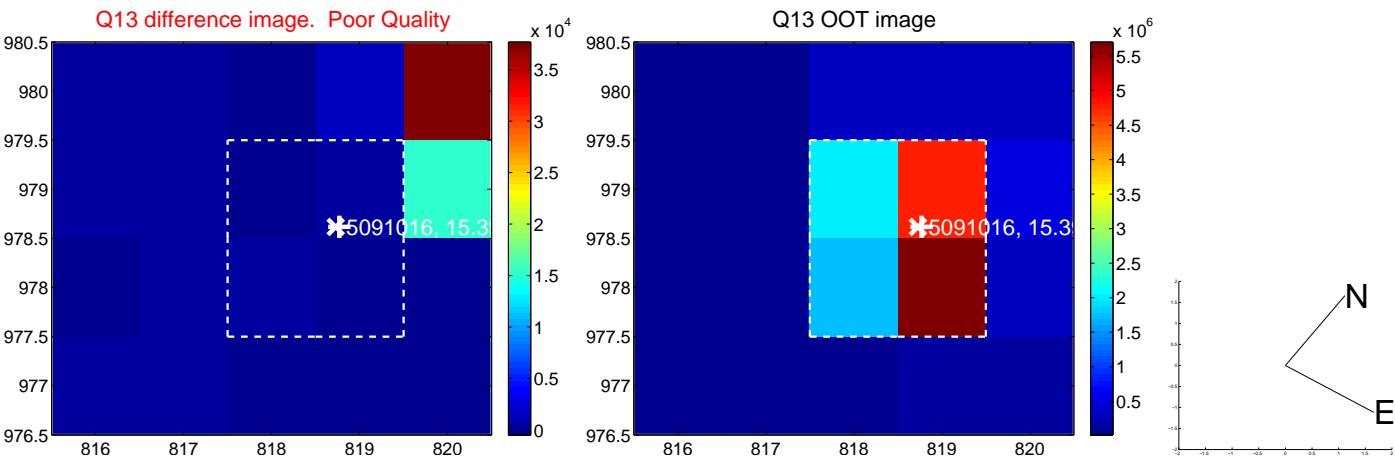
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

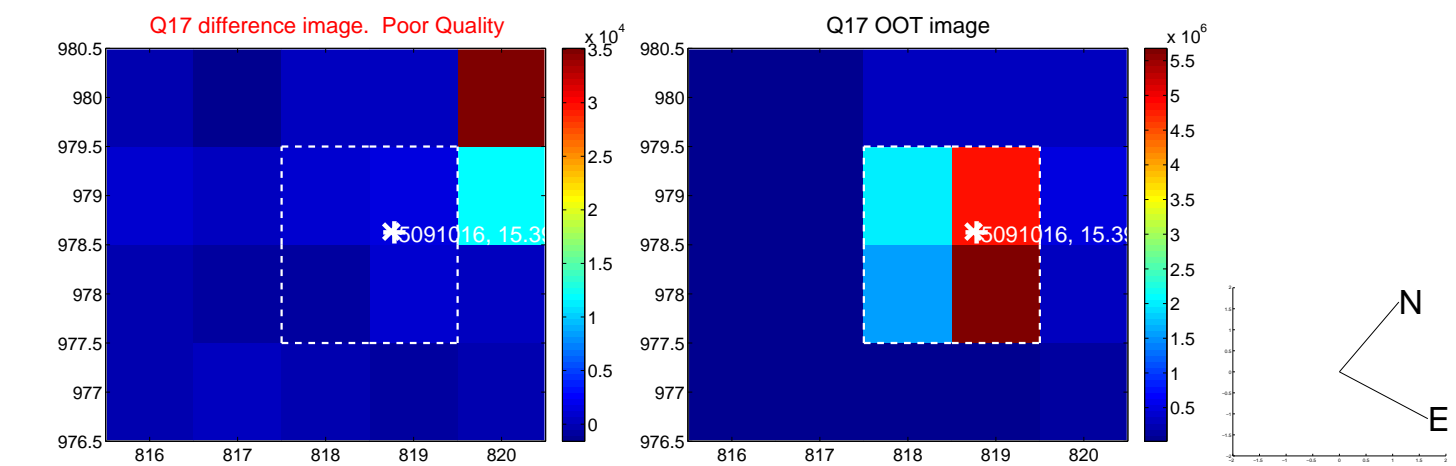


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

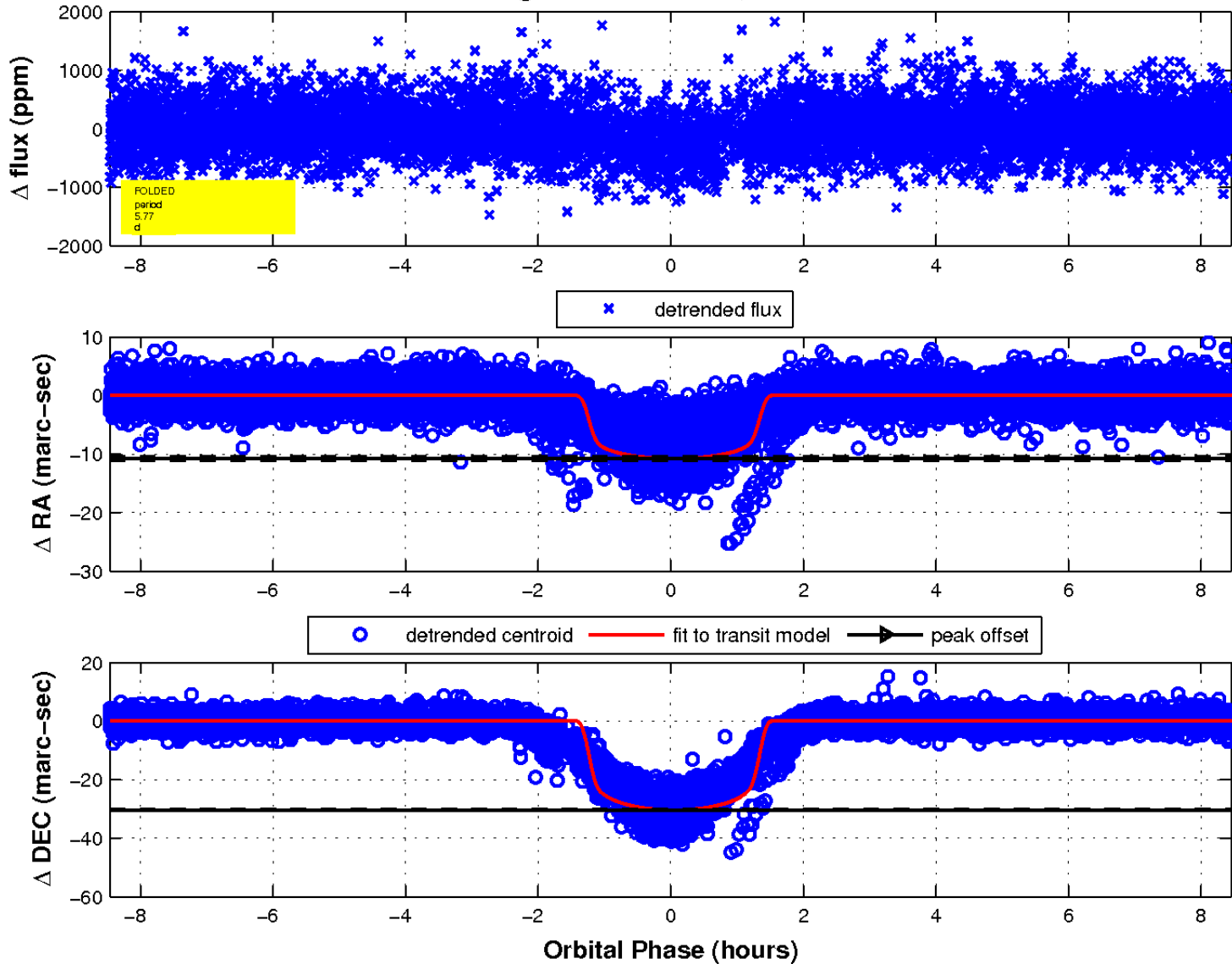




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

