

# KIC 009018021

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009018021-01	OBS	5600.01	17.169612	134.582381	97.1	14.373	8.7	9.3	1.91	5053	2.17	135.82

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009018021-01	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.

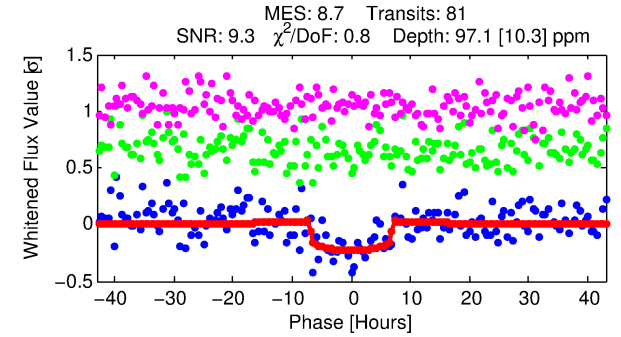
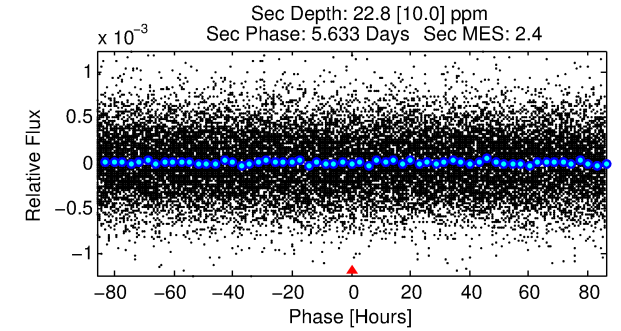
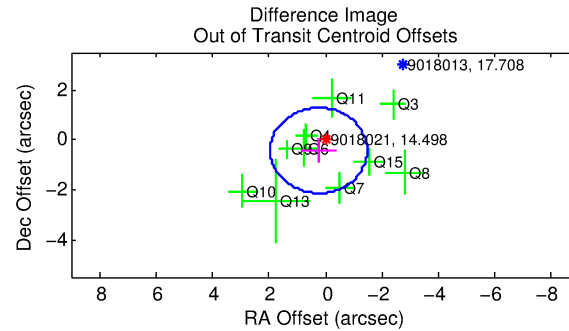
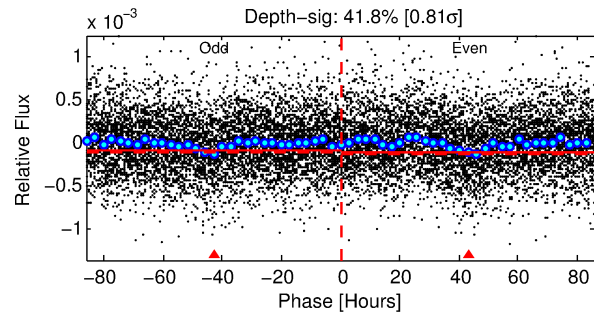
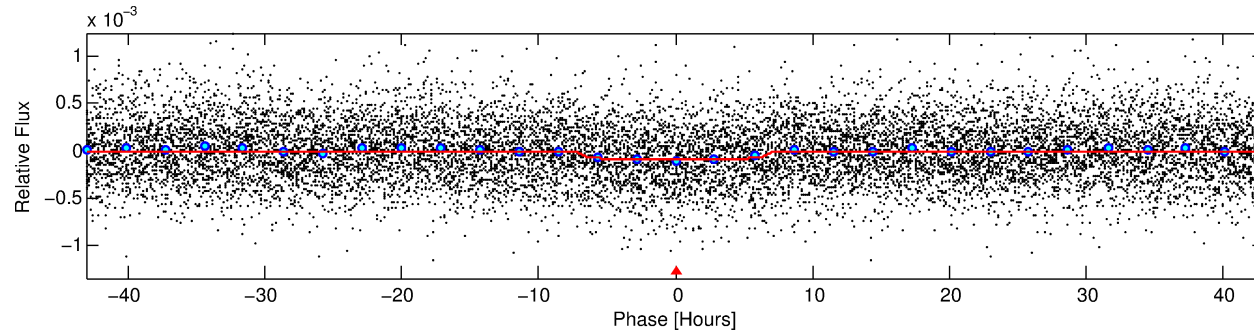
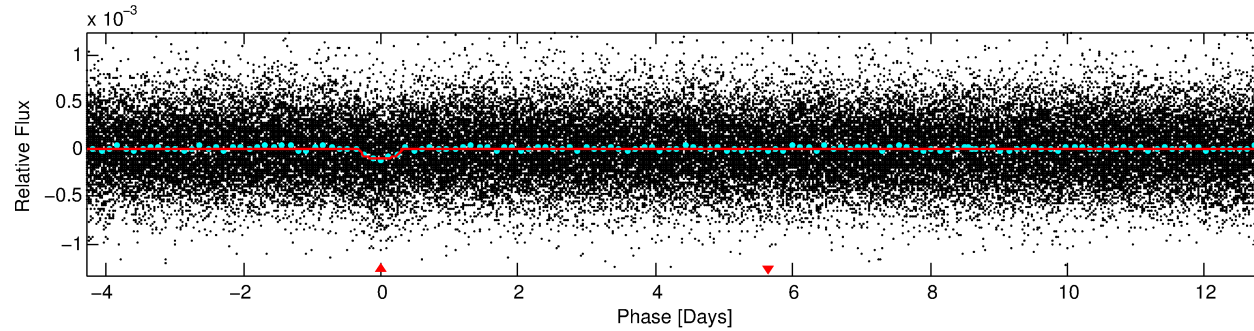
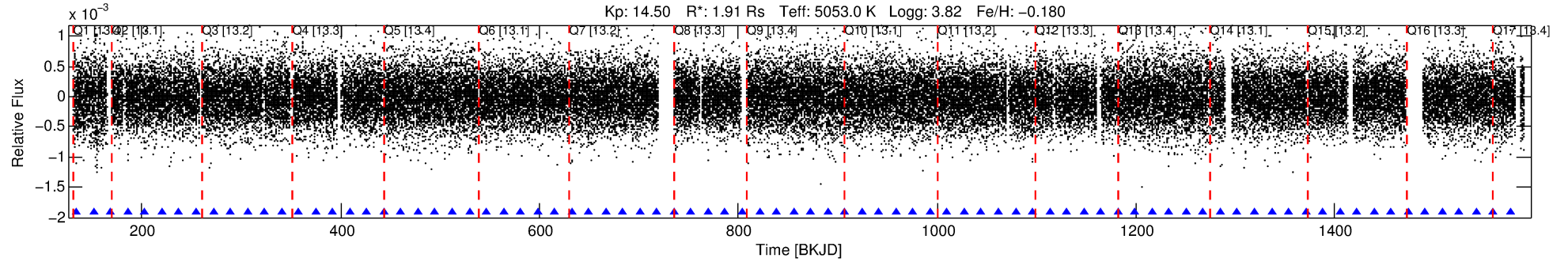
## Ephemeris Match Information For 009018021-01

No Significant Match Found

# DV One-Page Summary

KIC: 9018021 Candidate: 1 of 1 Period: 17.170 d

KOI: K05600 Corr: No Ephemeris Match



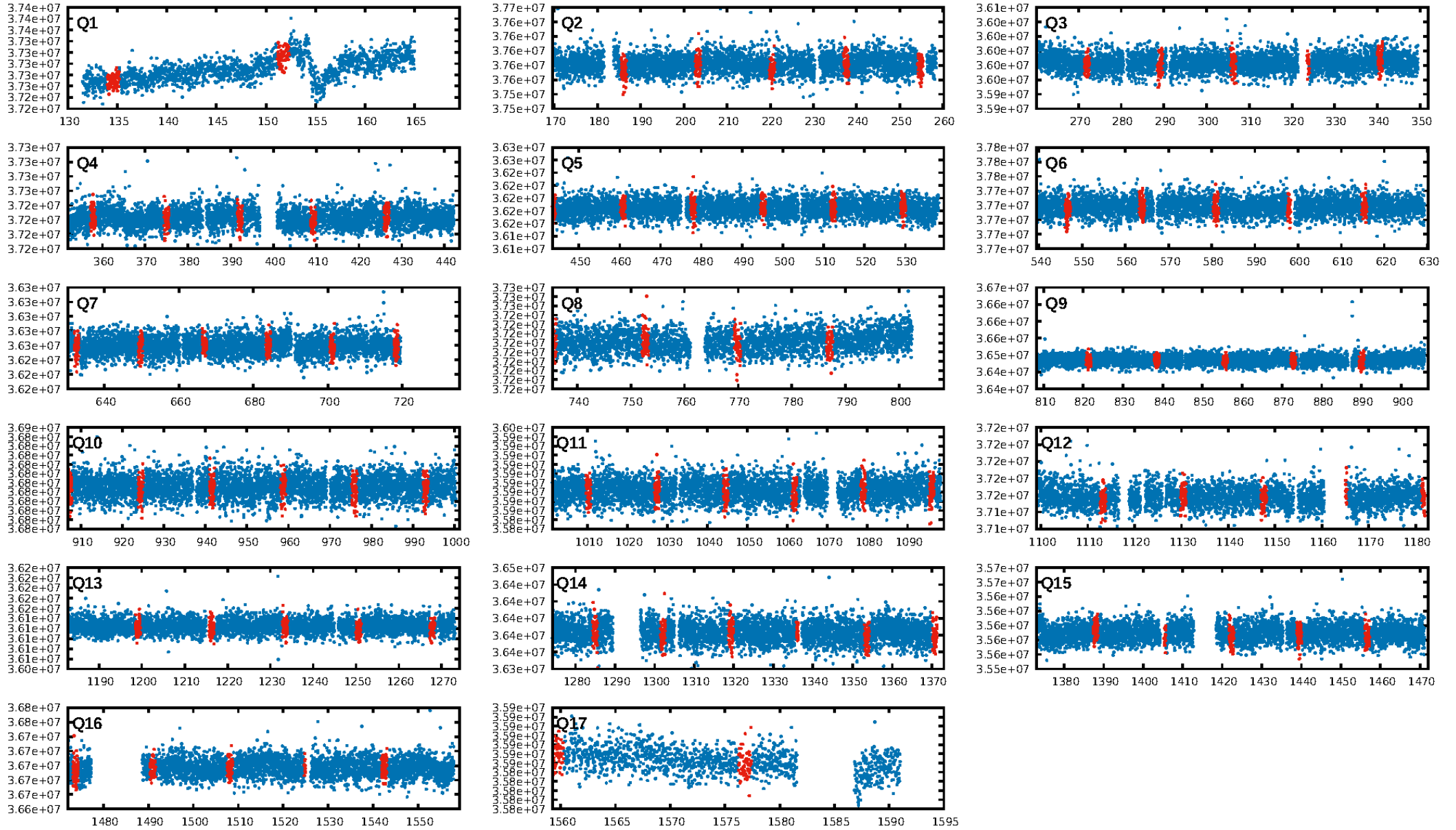
## DV Fit Results:

Period = 17.16961 [0.00044] d  
Epoch = 134.5824 [0.0211] BKJD  
Rp/R\* = 0.0104 [0.0029]  
a/R\* = 5.06 [5.21]  
b = 0.85 [0.35]  
Seff = 135.82 [172.06]  
Teff = 871 [276] K  
Rp = 2.17 [1.46] Re  
a = 0.1251 [0.0905] AU  
Ag = 41.60 [60.04] [0.68 $\sigma$ ]  
Teffp = 3418 [608] K [3.81 $\sigma$ ]

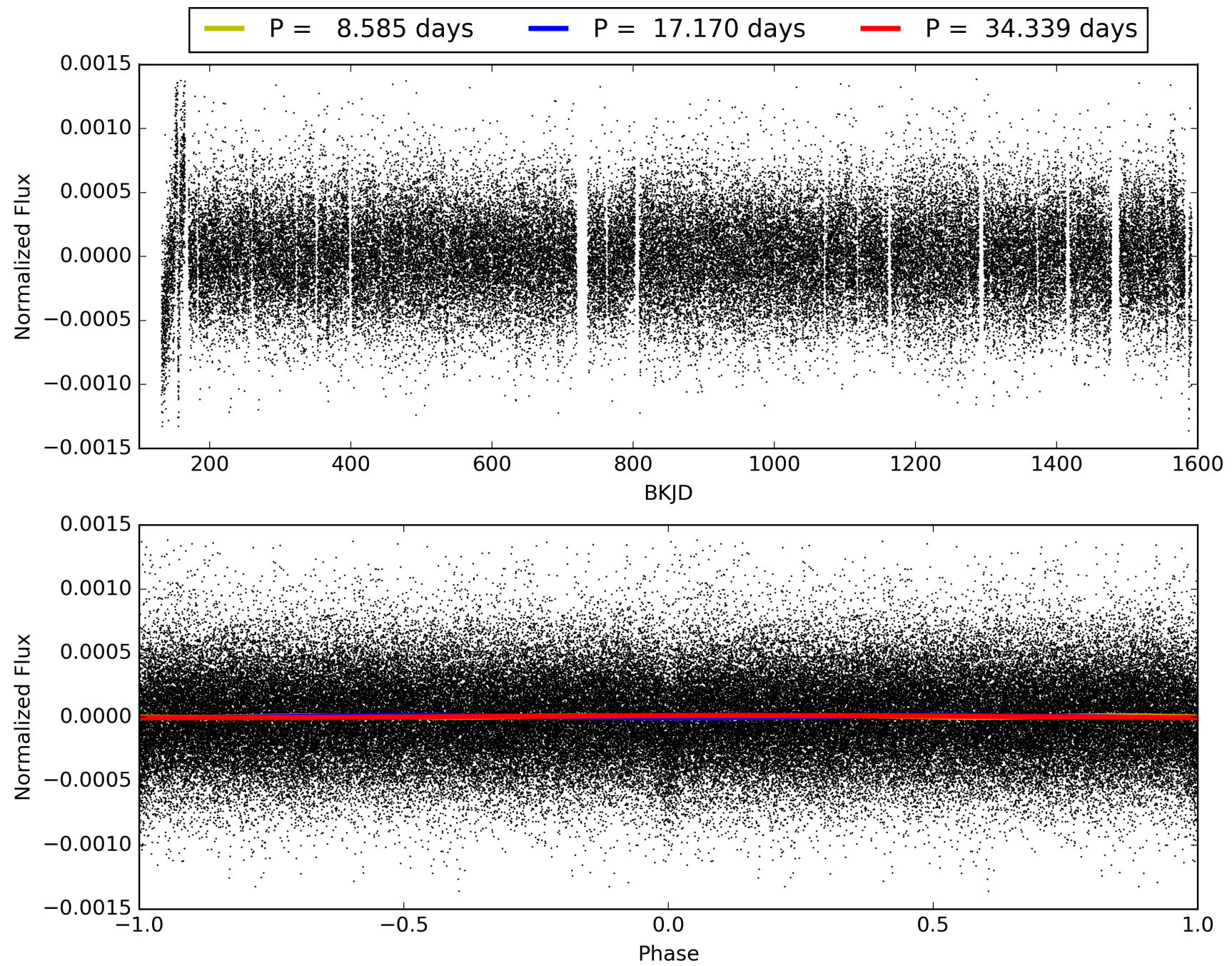
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 77.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.73e-17  
RollingBand-fgt: 1.00 [77/77]  
GhostDiagnostic-chr: -8.288  
Centroid-sig: 0.0%  
Centroid-so: 2.380 arcsec [2.26 $\sigma$ ]  
OotOffset-rm: 0.499 arcsec [0.87 $\sigma$ ]  
KicOffset-rm: 0.419 arcsec [0.82 $\sigma$ ]  
OotOffset-st: 2/4/2/2 [10]  
KicOffset-st: 2/4/2/2 [10]  
DiffImageQuality-fgm: 0.60 [6/10]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009018021-01, PDC Light Curves



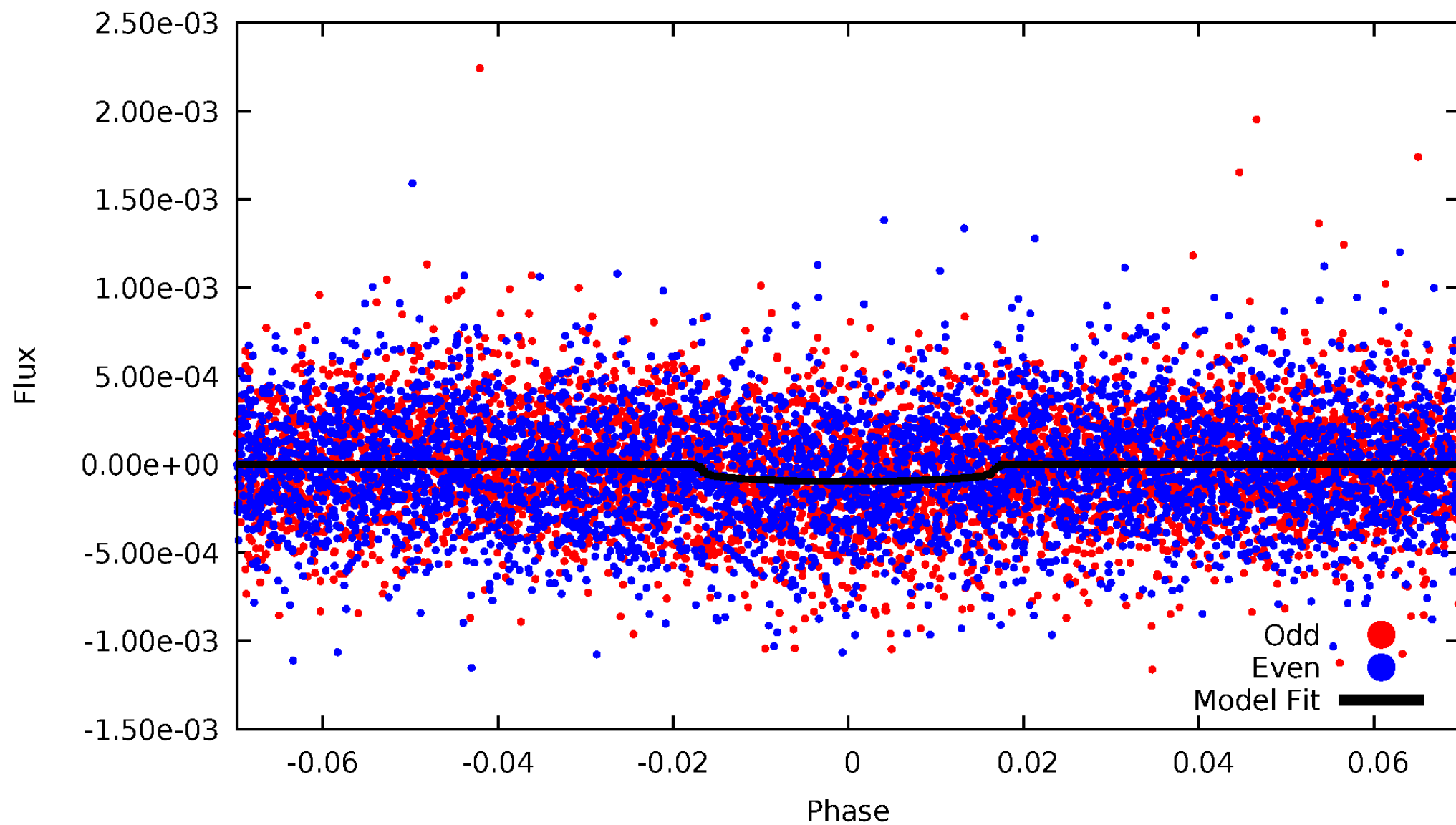
TCE 009018021-01





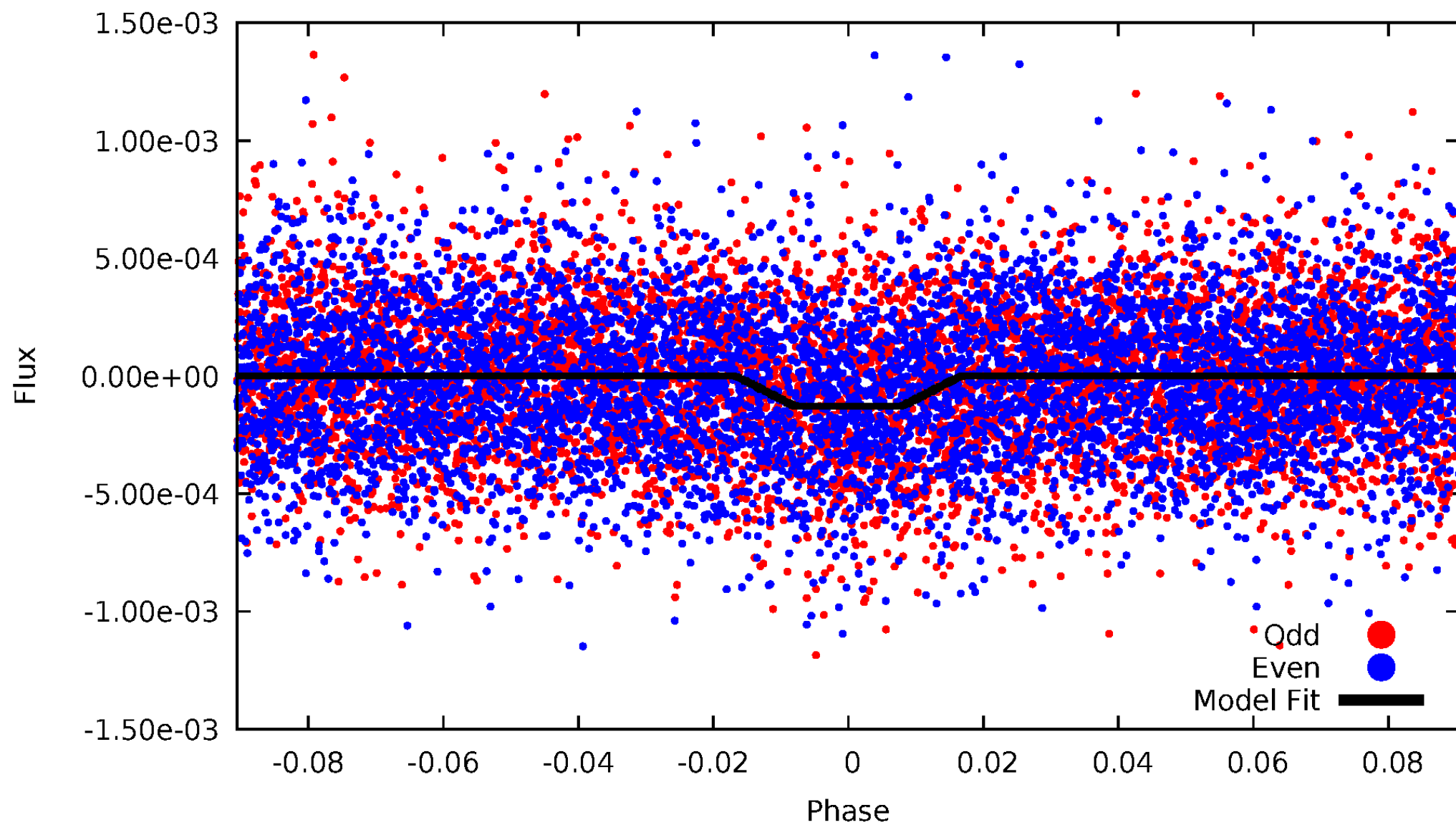
# DV Odd/Even

TCE 009018021-01

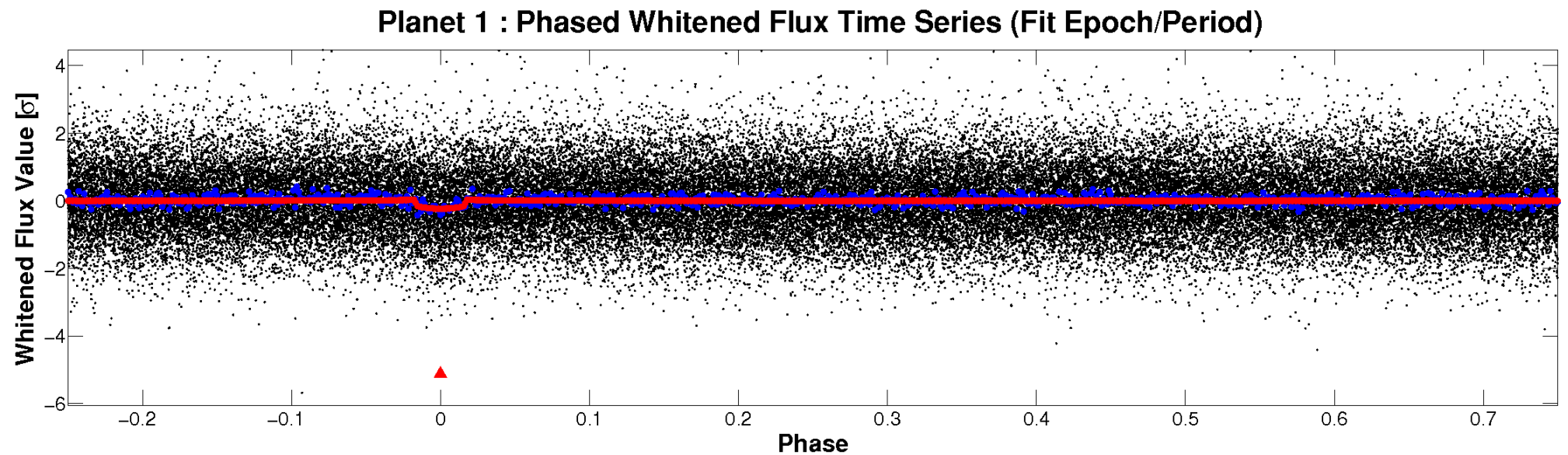
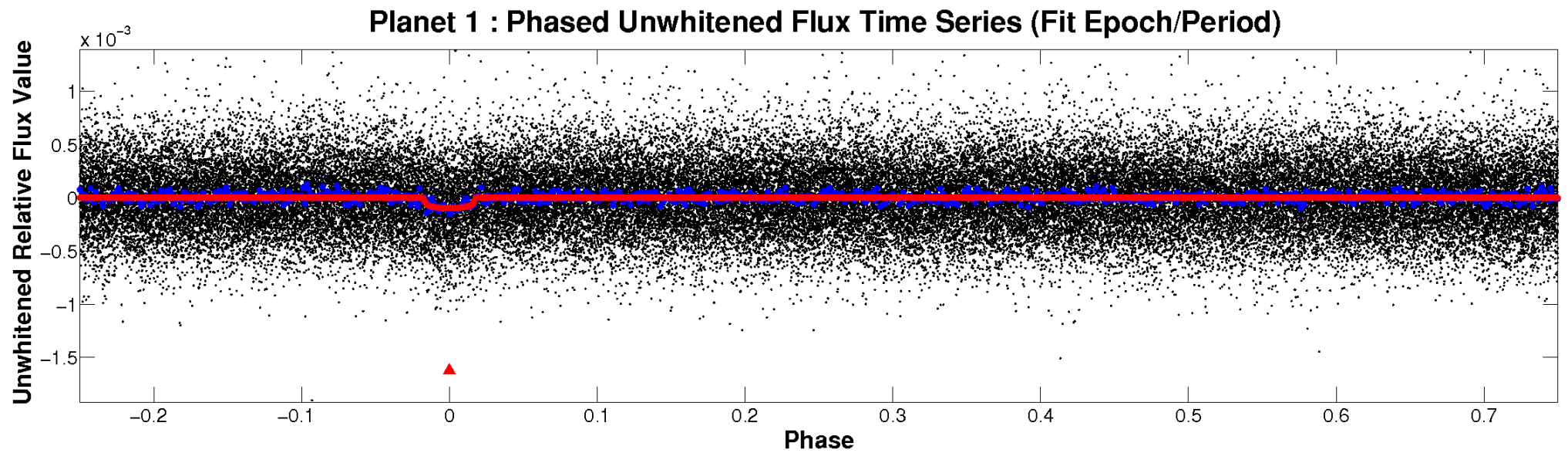


# ALT Odd/Even

TCE 009018021-01

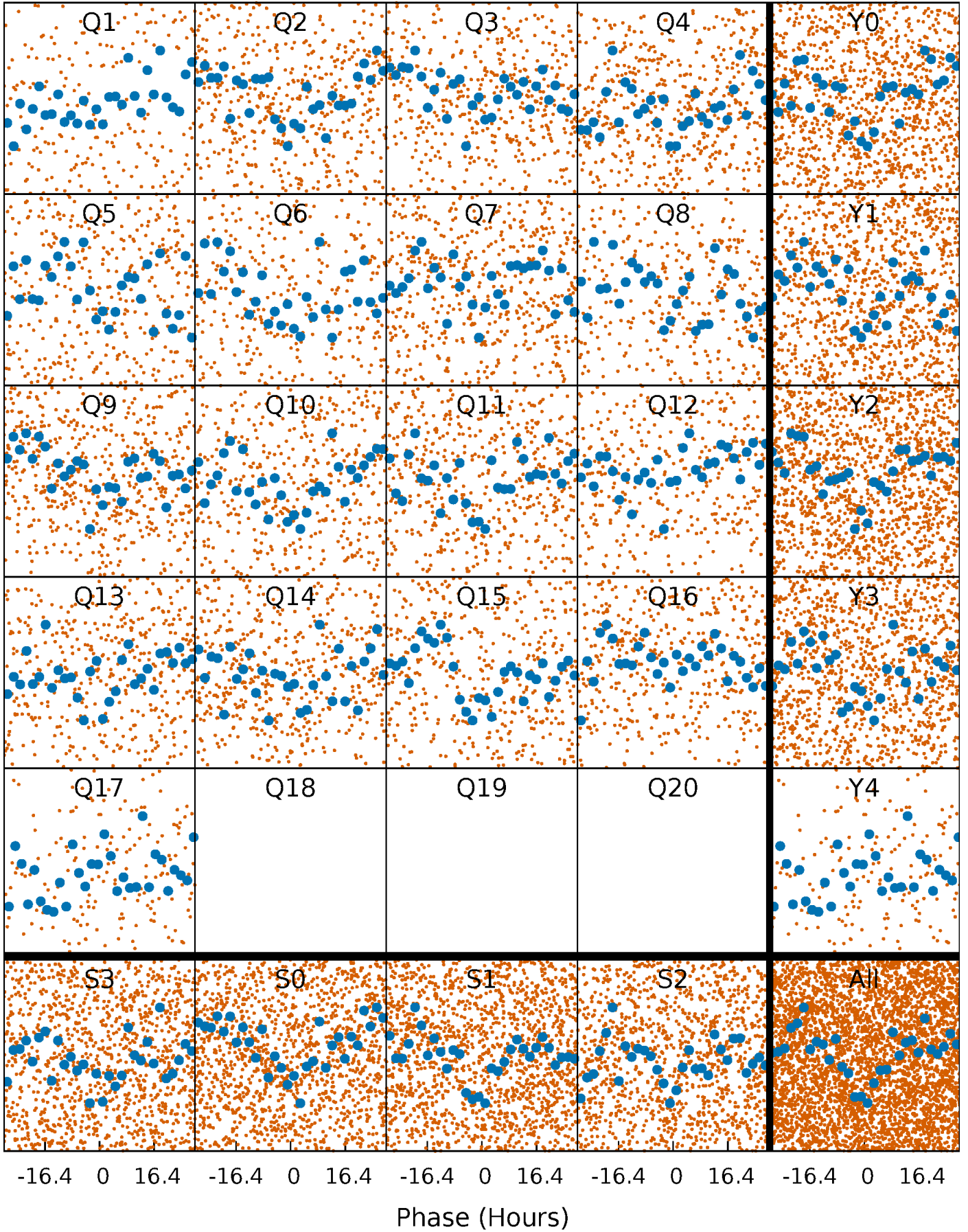


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

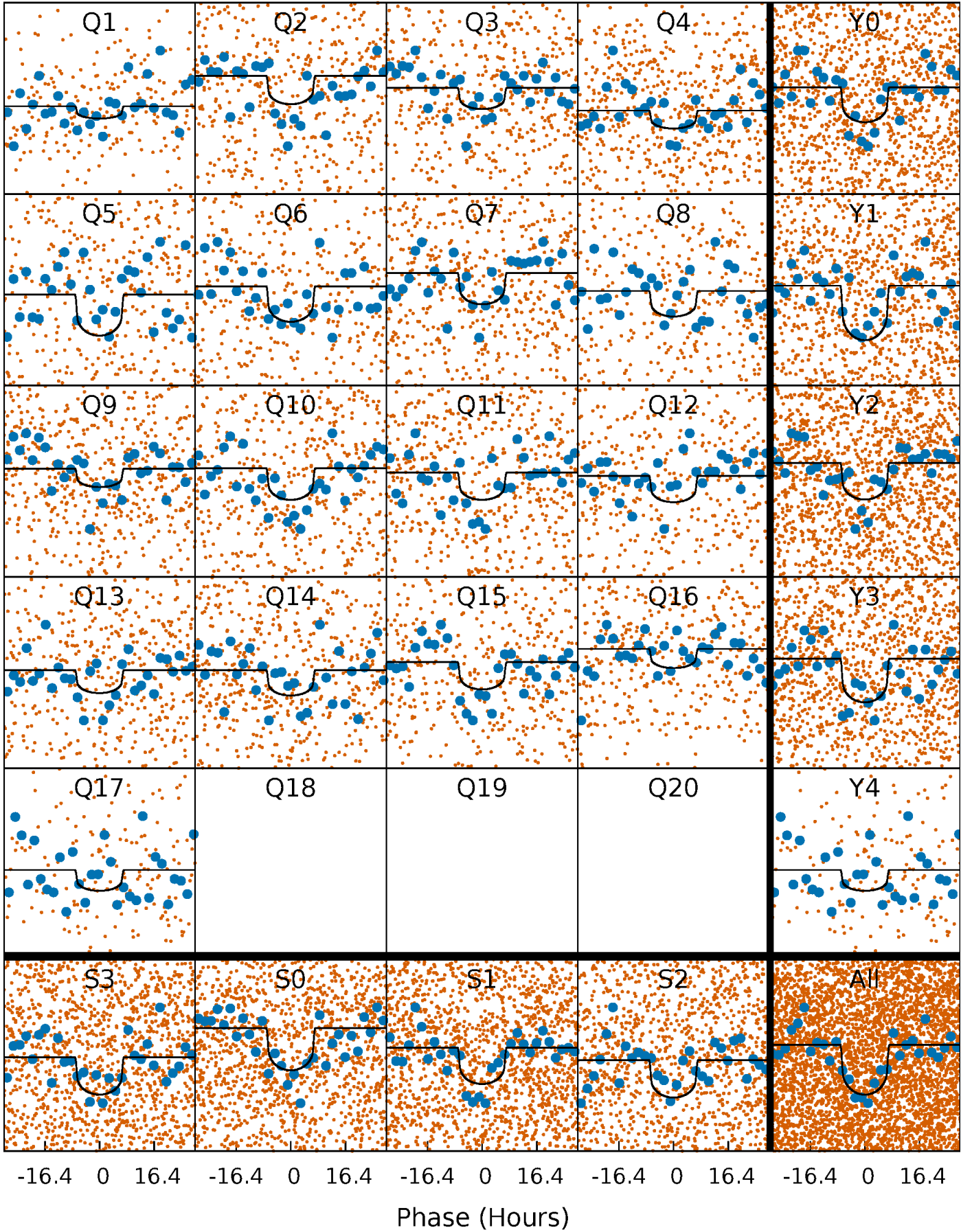
TCE 009018021-01 P= 17.169612 Days  $T_0=134.582381$  (BKJD)





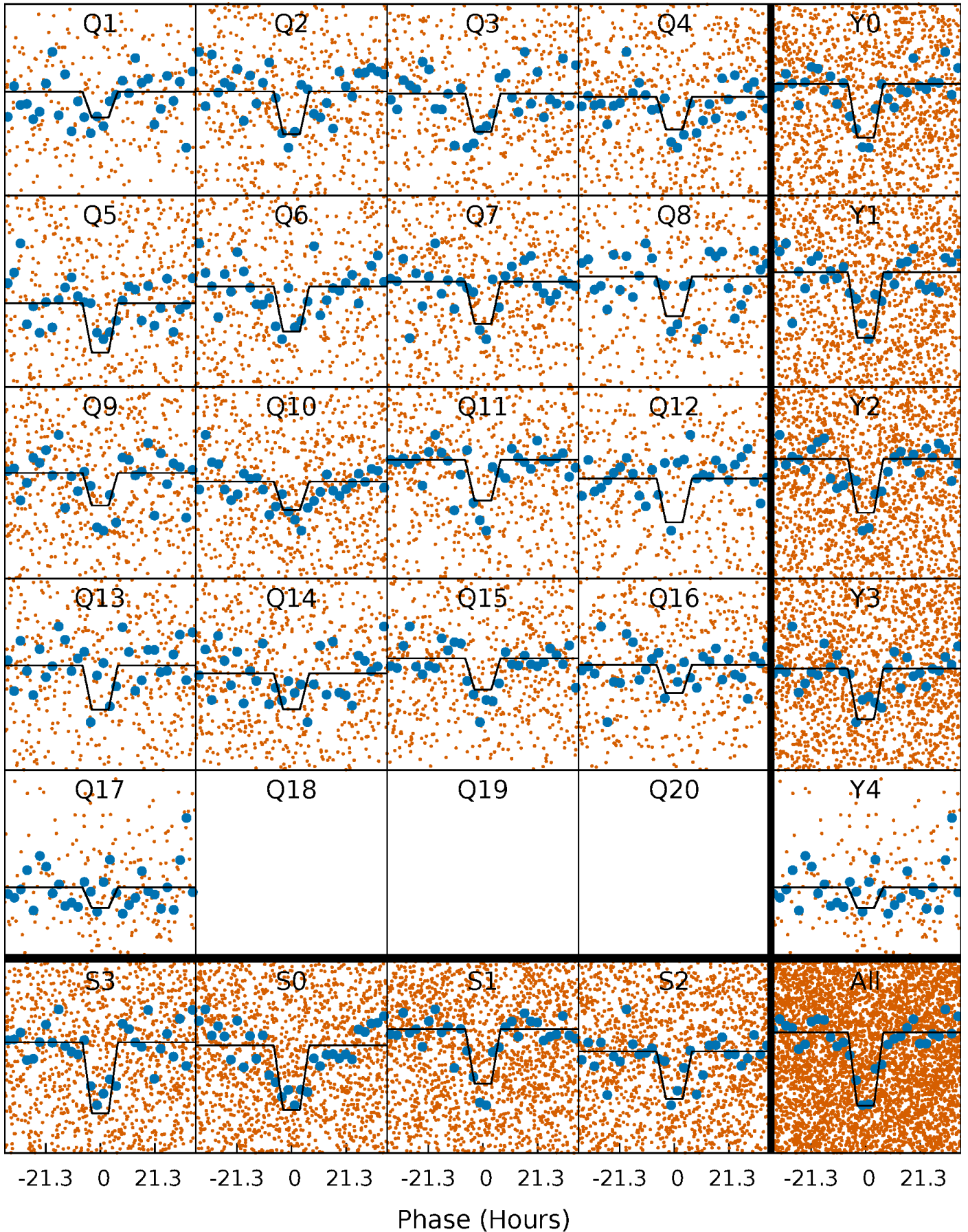
# DV Quarter-Phased Transit Curves

TCE 009018021-01 P= 17.169612 Days  $T_0=134.582381$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

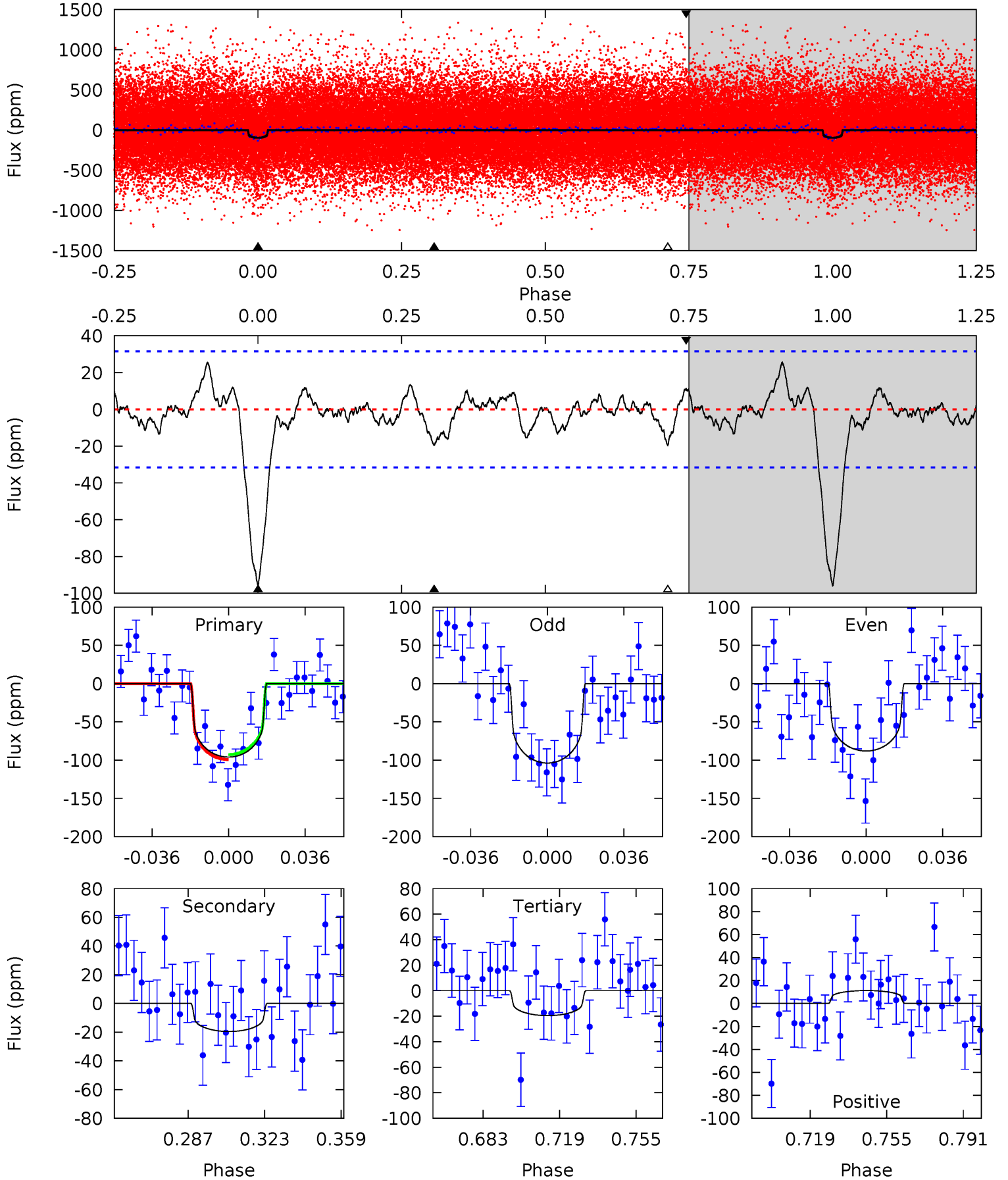
TCE 009018021-01 P= 17.168094 Days  $T_0=134.615804$  (BKJD)



# DV Model-Shift Uniqueness Test

009018021-01,  $P = 17.169612$  Days,  $E = 117.412769$  Days

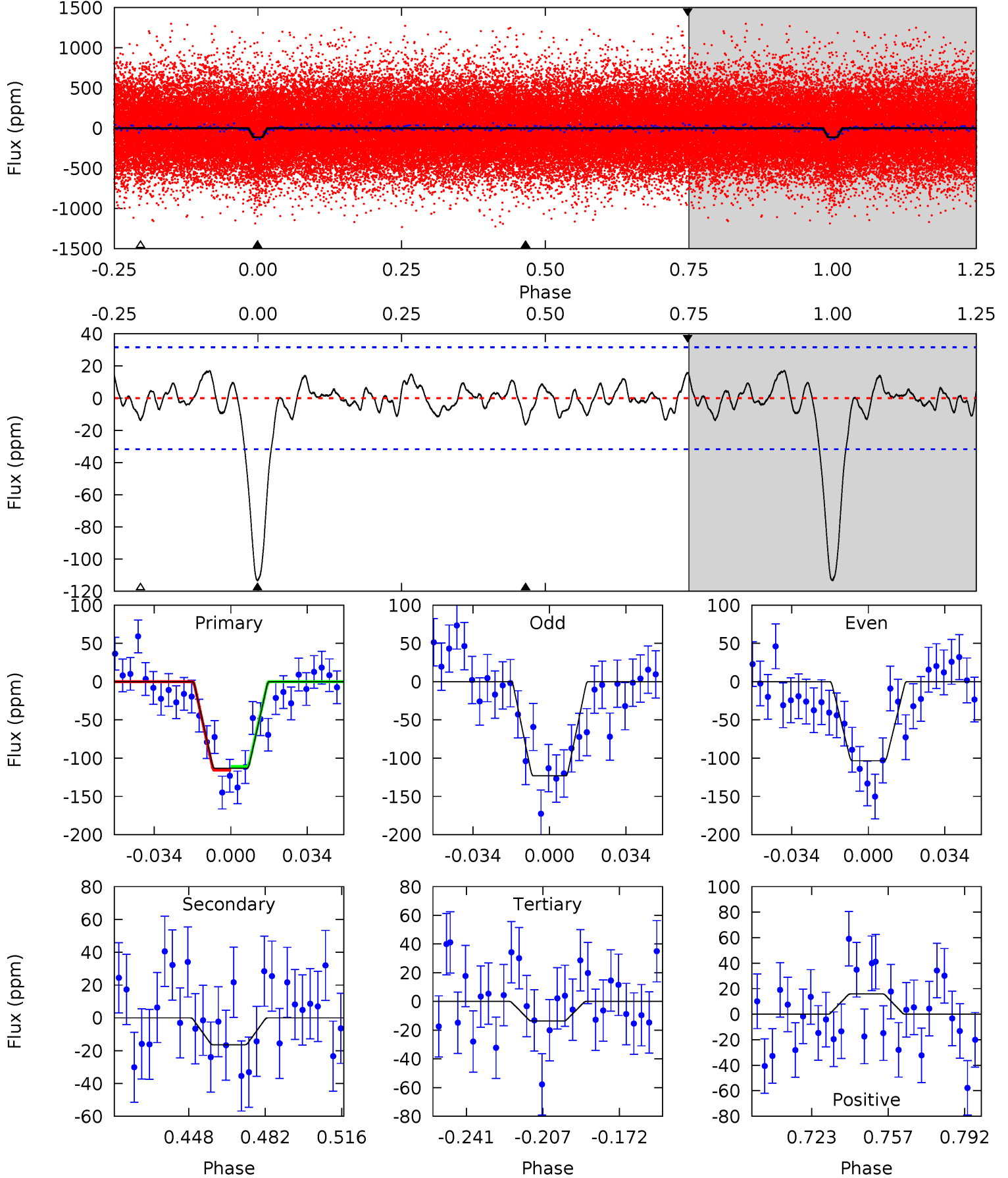
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	2.96	2.96	1.70	4.78	2.10	1.05	11.6	12.8	0.00	1.26	1.19	0.91	0.21	0.49



# Alt Model-Shift Uniqueness Test

009018021-01,  $P = 17.168094$  Days,  $E = 117.447710$  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
17.1	2.47	2.06	2.39	4.78	2.12	0.98	15.0	14.7	0.41	0.08	1.49	1.03	0.13	0.36





### Stellar Parameters For KIC 009018021

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5053^{+136}_{-151}$	$3.824^{+0.777}_{-0.333}$	$-0.180^{+0.300}_{-0.300}$	$1.907^{+1.172}_{-1.172}$	$0.885^{+0.209}_{-0.171}$	$0.180^{+2.697}_{-0.120}$
	+3%/-3%	+20%/-9%	+167%/-167%	+61%/-61%	+24%/-19%	+1501%/-67%
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 009018021-01 / KOI 5600.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-20 \pm 7$	$2.05^{+1.05}_{-0.87}$	$1188^{+189}_{-202}$	$3624^{+492}_{-350}$	$39^{+82}_{-23}$
Alt.	$-16 \pm 7$	$2.20^{+1.09}_{-0.92}$	$1198^{+194}_{-229}$	$3442^{+426}_{-330}$	$27^{+63}_{-16}$

$T_{\text{max}}$  = 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

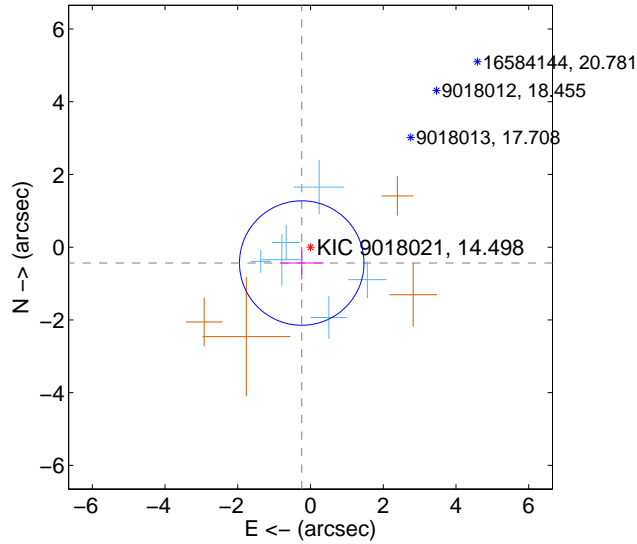
Supplemental centroid analysis for 009018021-01. Kepler magnitude: 14.50. Transit SNR 9.34

There are 6 quarters with good PRF difference image offsets

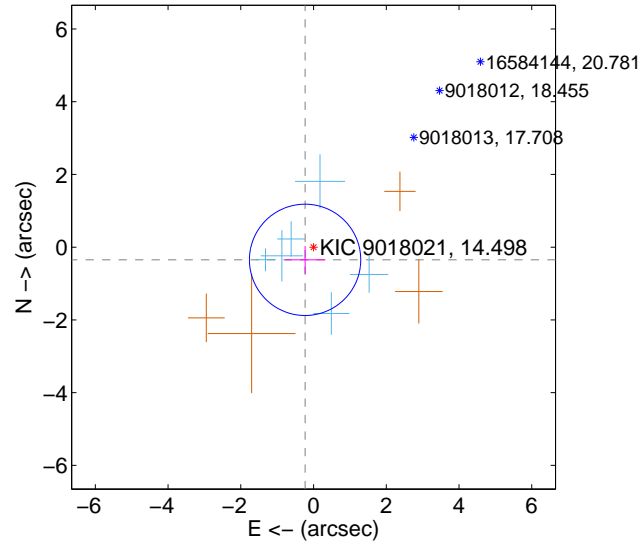
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.499 \pm 0.570$	0.87	$0.241 \pm 0.603$	$-0.436 \pm 0.449$
PRF-fit source offset from KIC position	$0.419 \pm 0.510$	0.82	$0.233 \pm 0.558$	$-0.349 \pm 0.379$
photometric centroid source offset	$2.38 \pm 1.05$	2.26	$-0.56 \pm 1.08$	$-2.31 \pm 1.05$

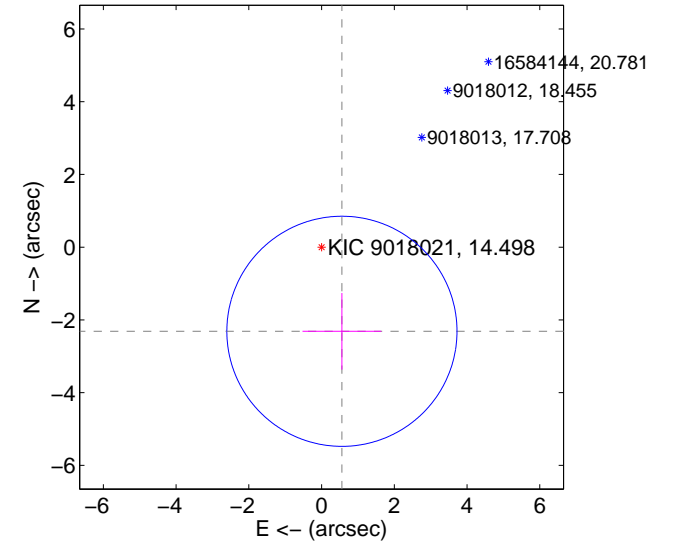
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

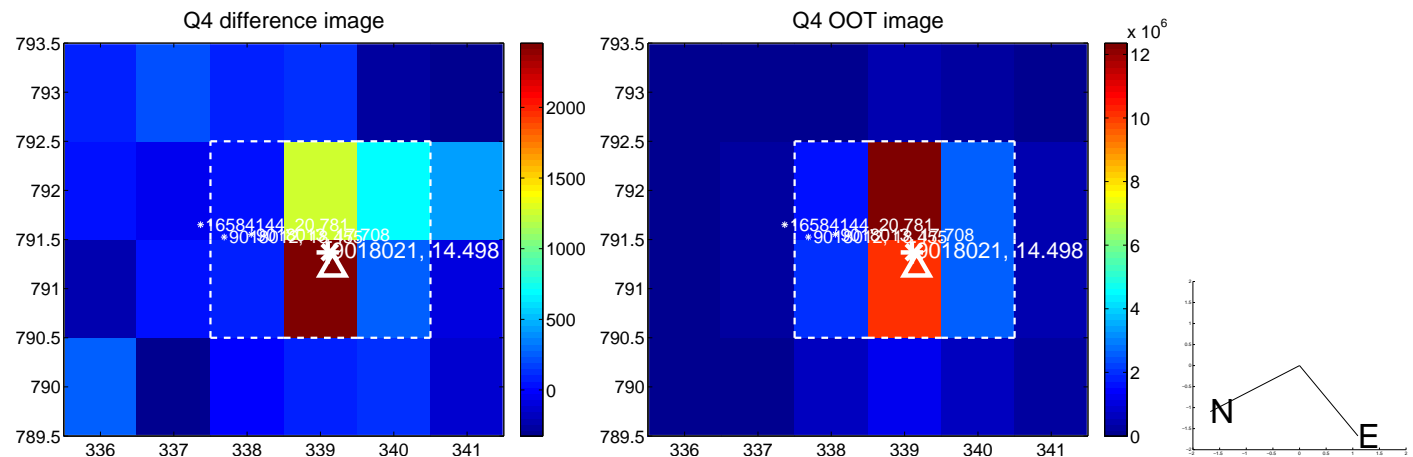
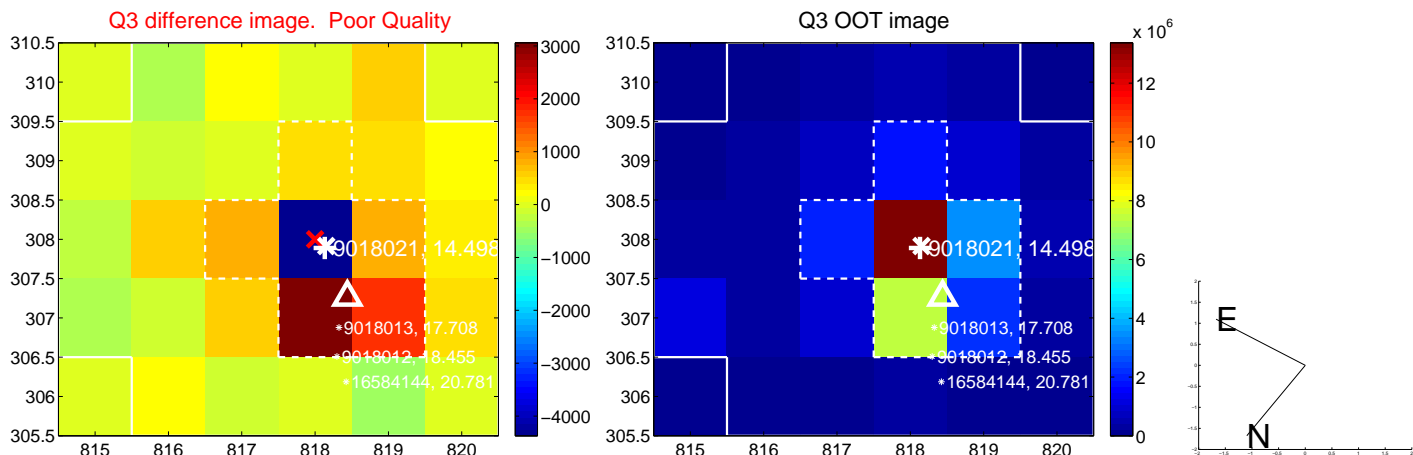
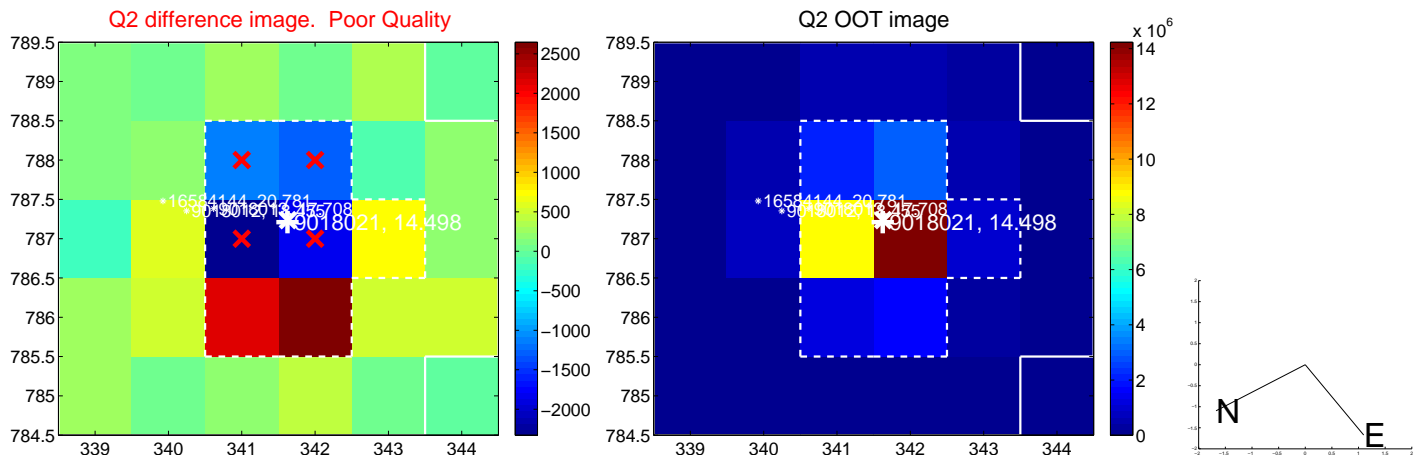
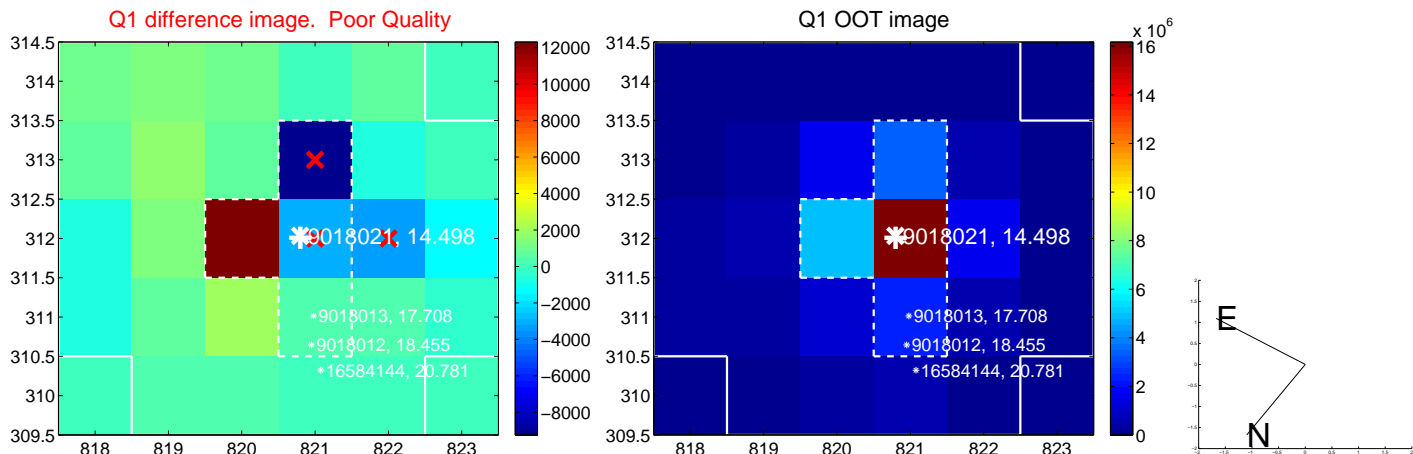


offset from photometric centroids

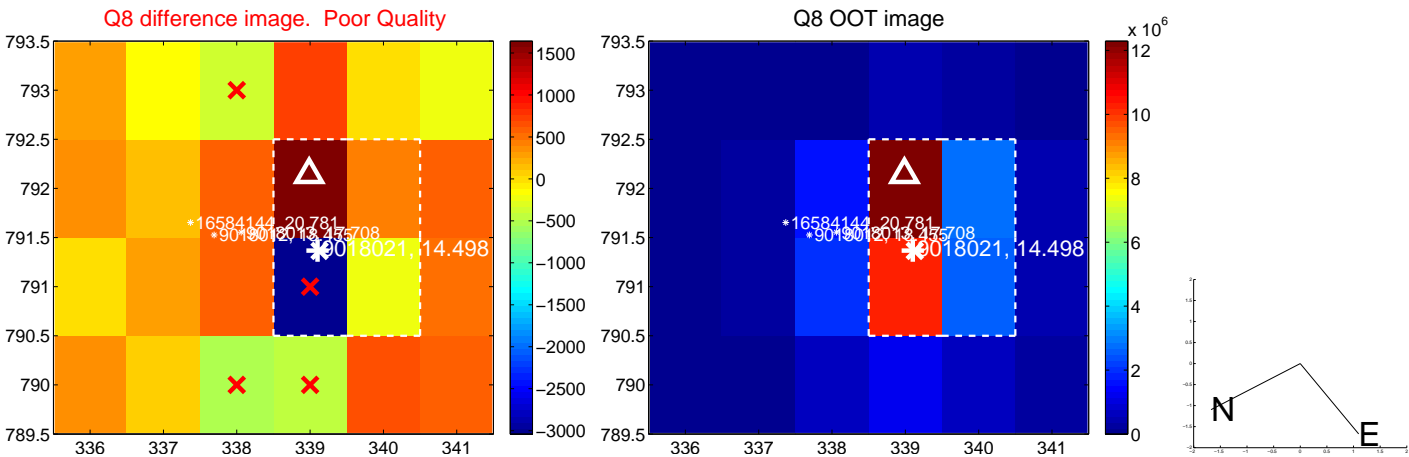
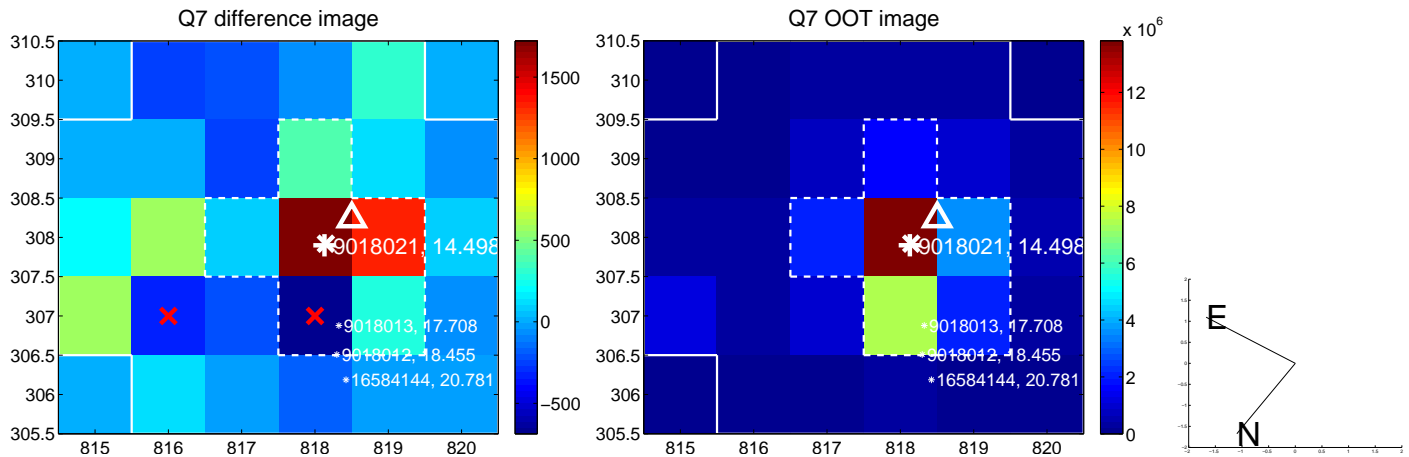
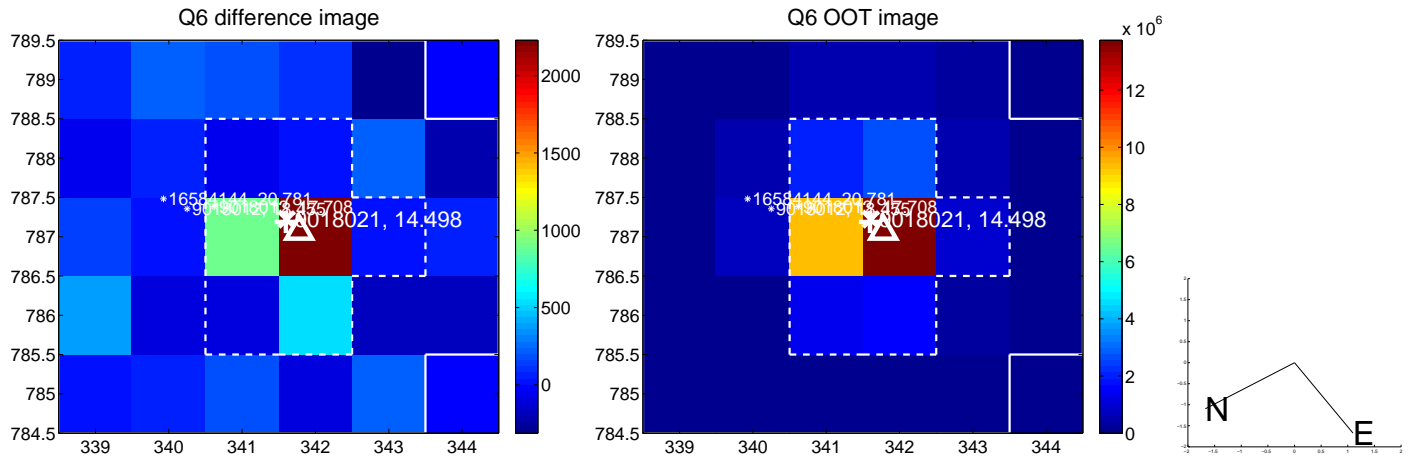
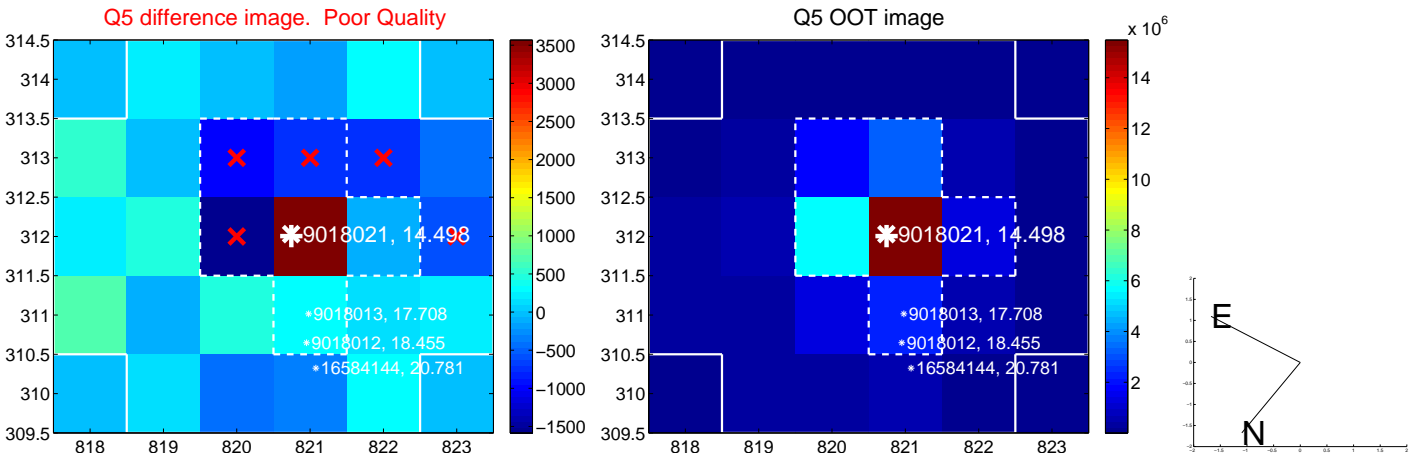


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

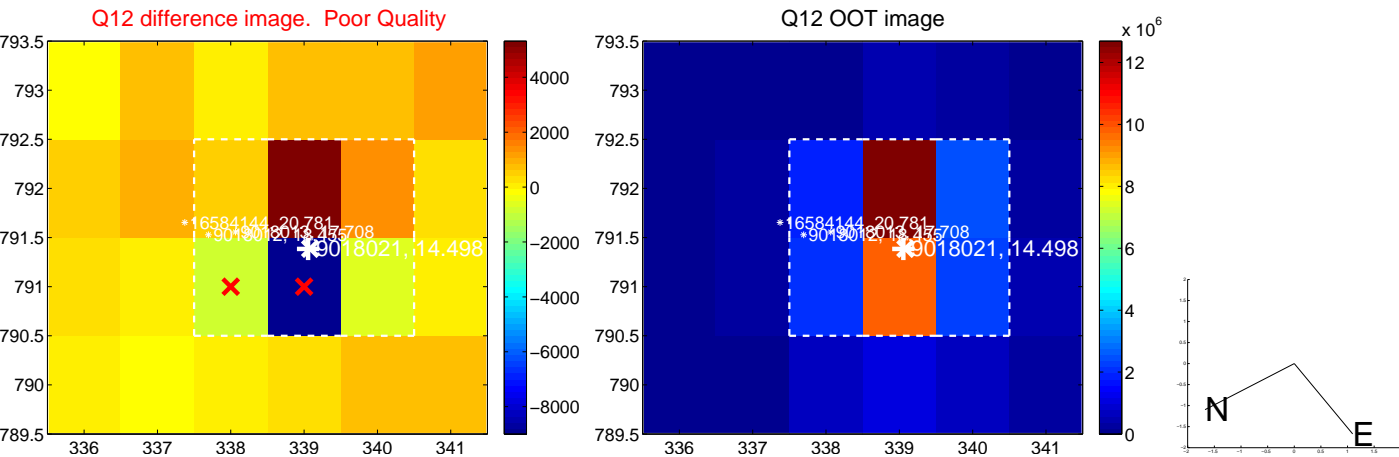
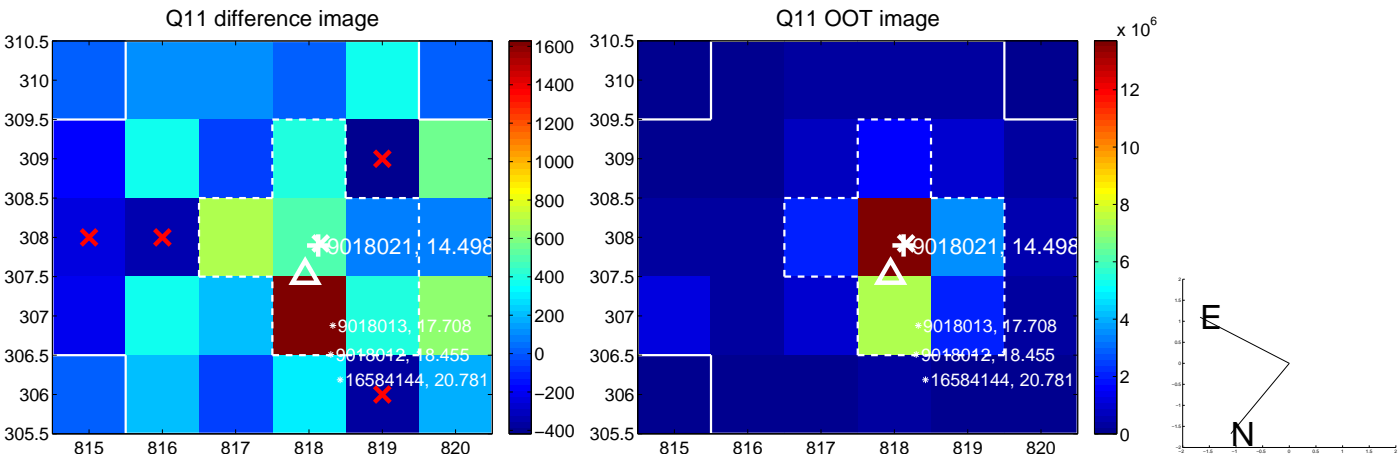
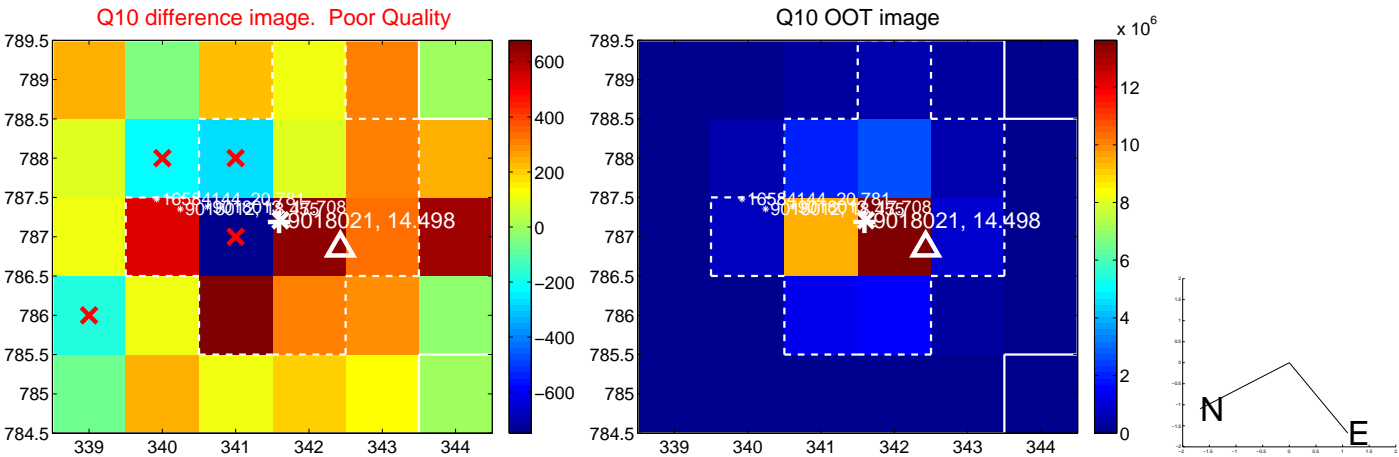
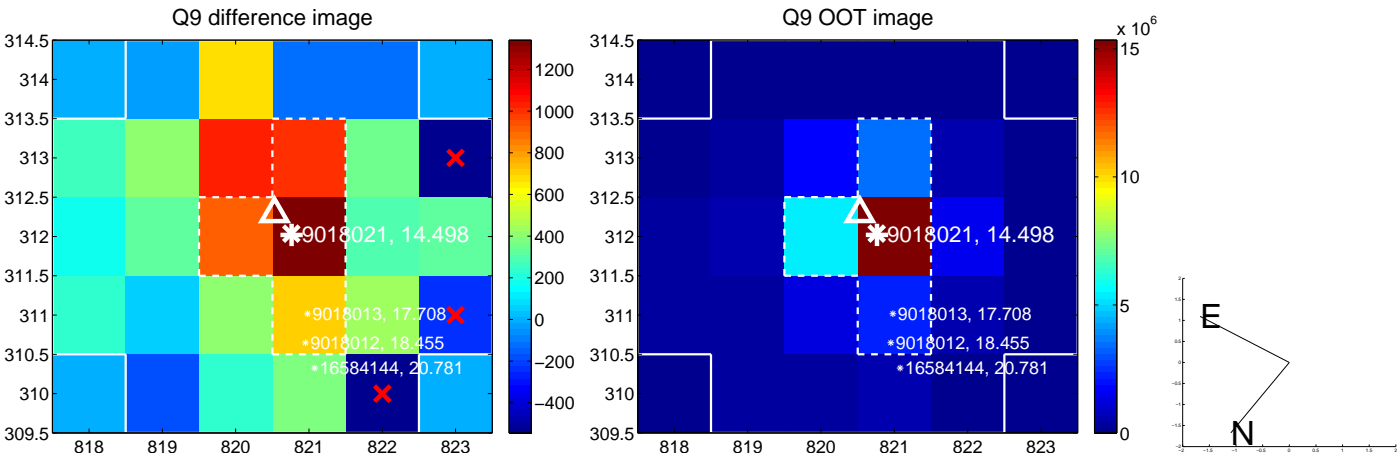


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

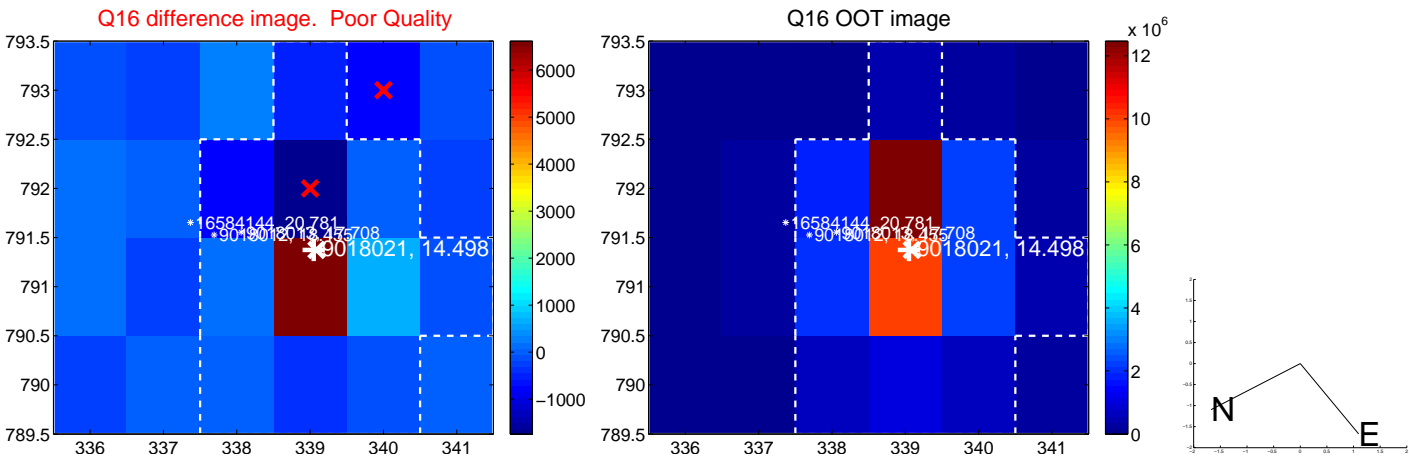
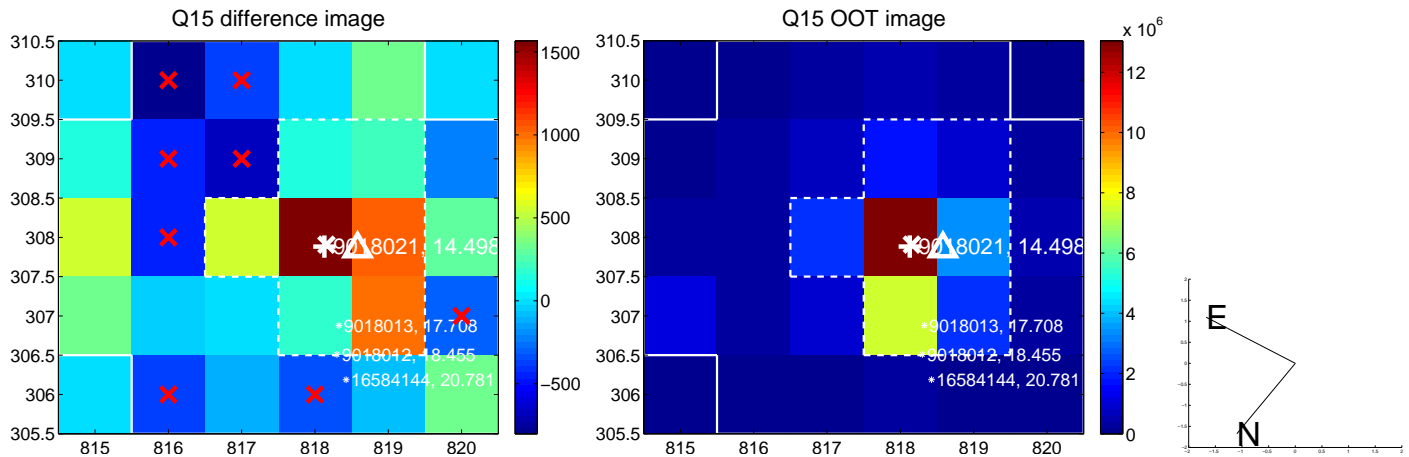
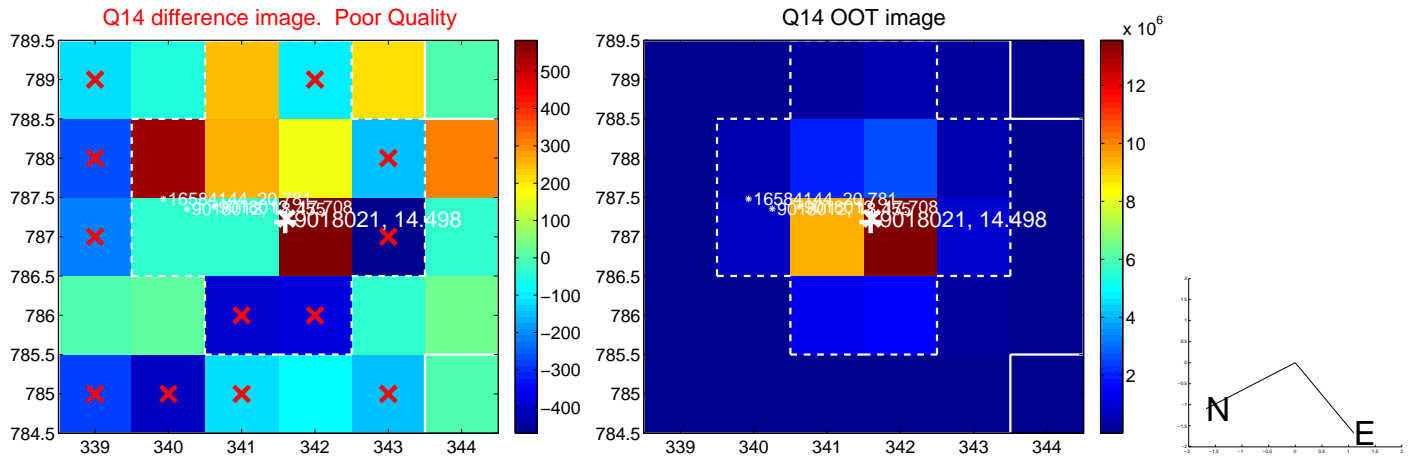
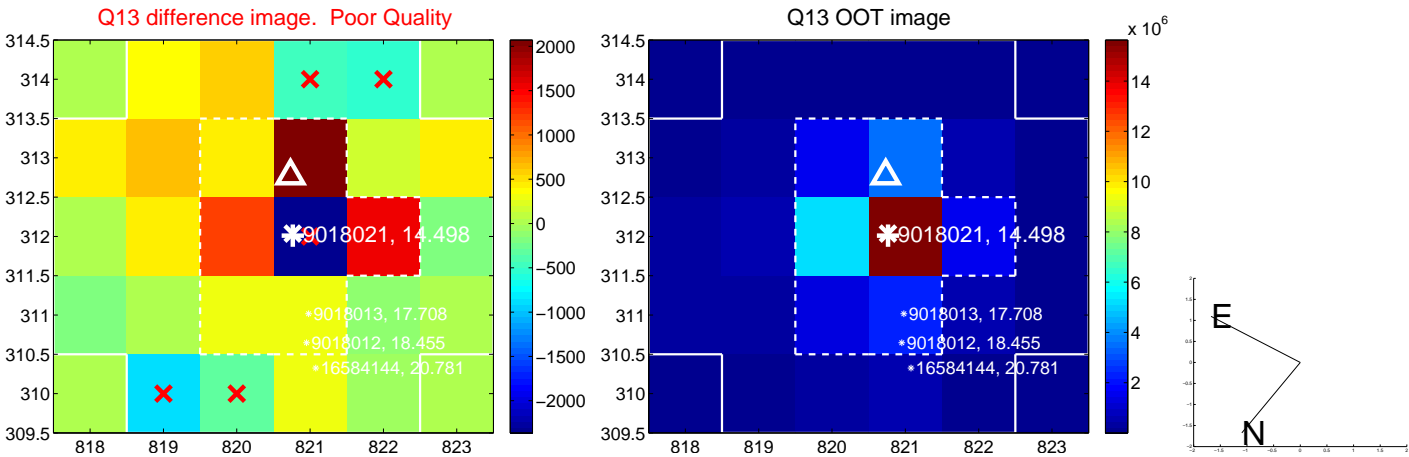




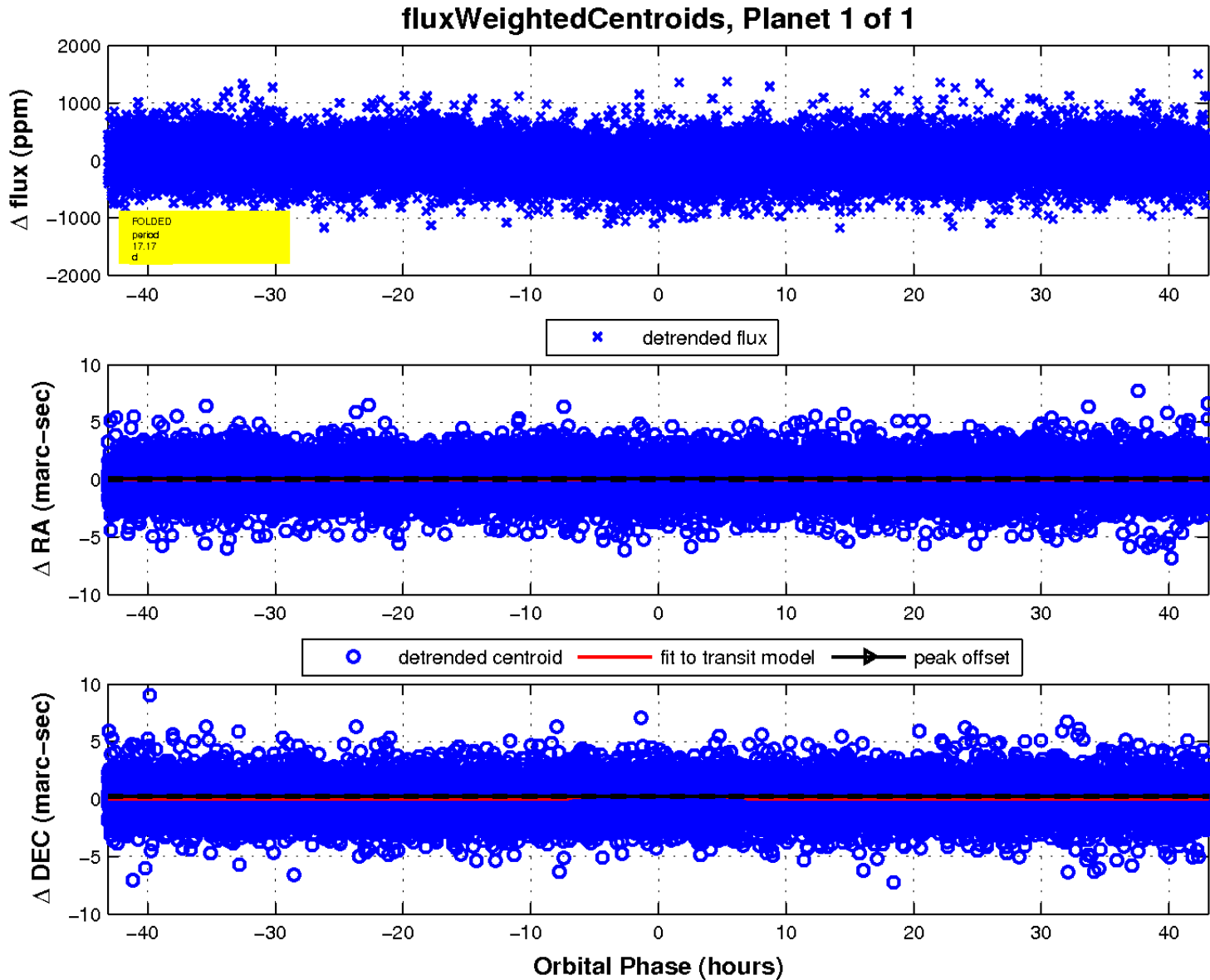
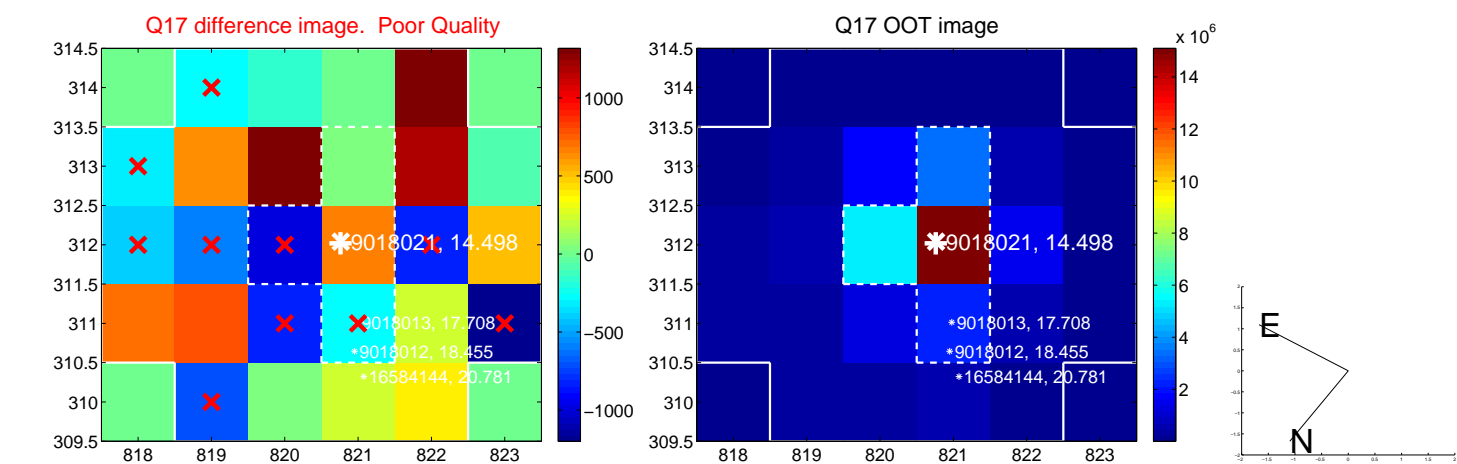
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

