

# KIC 009366617

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009366617-01	OBS	4215.01	26.548842	137.240554	142.6	8.125	13.2	13.9	2.15	5456	2.91	115.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009366617-01	OBS	PC	0.87	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.

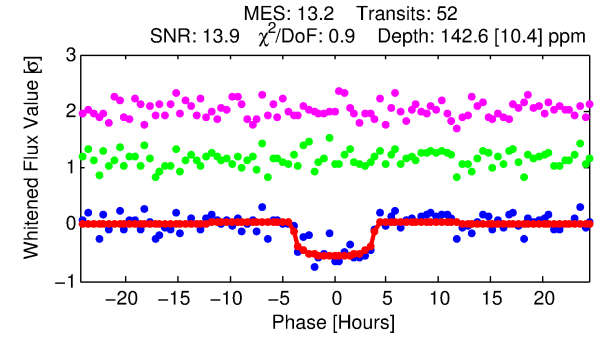
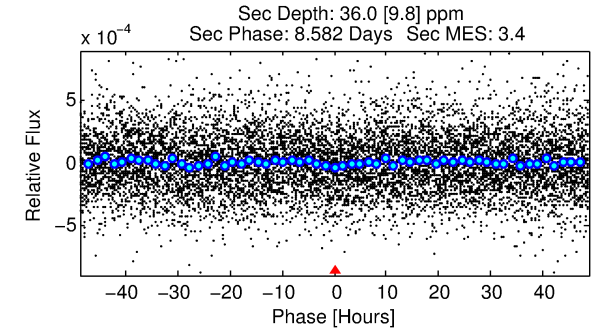
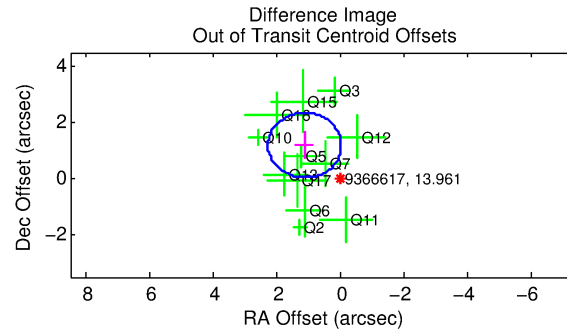
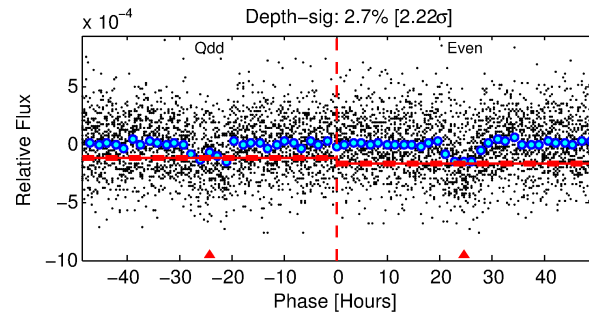
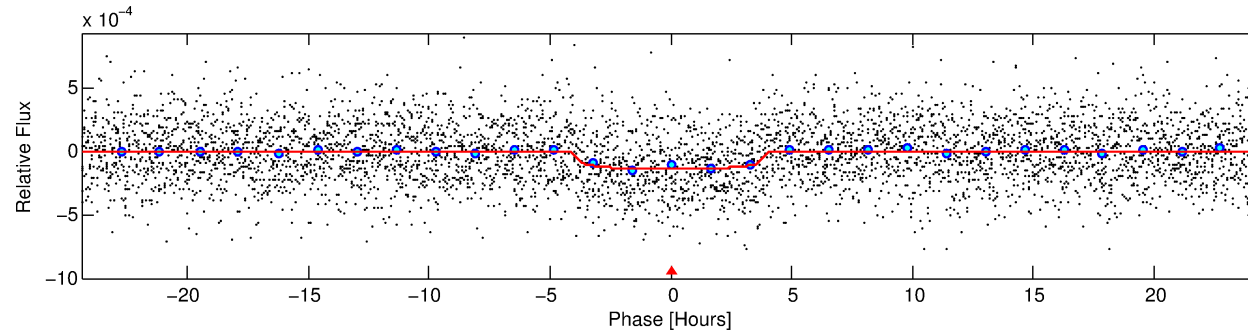
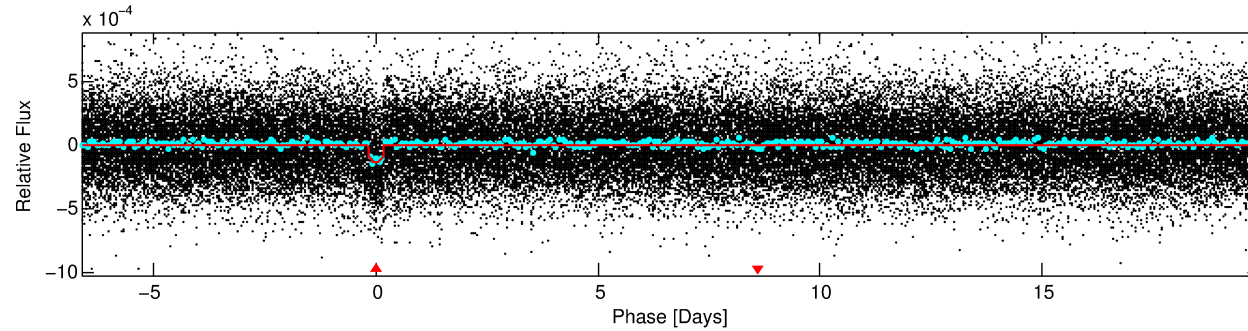
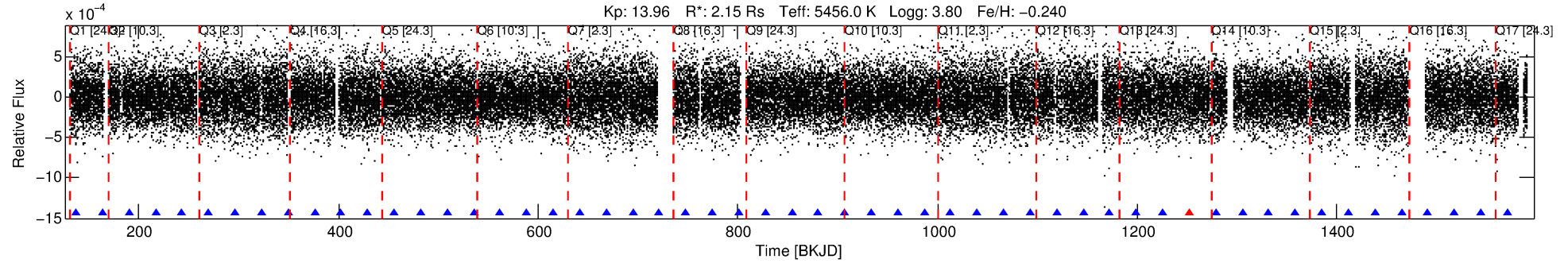
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009366617-01

No Significant Match Found

# DV One-Page Summary

KIC: 9366617 Candidate: 1 of 1 Period: 26.549 d  
KOI: K04215.01 Corr: 0.991



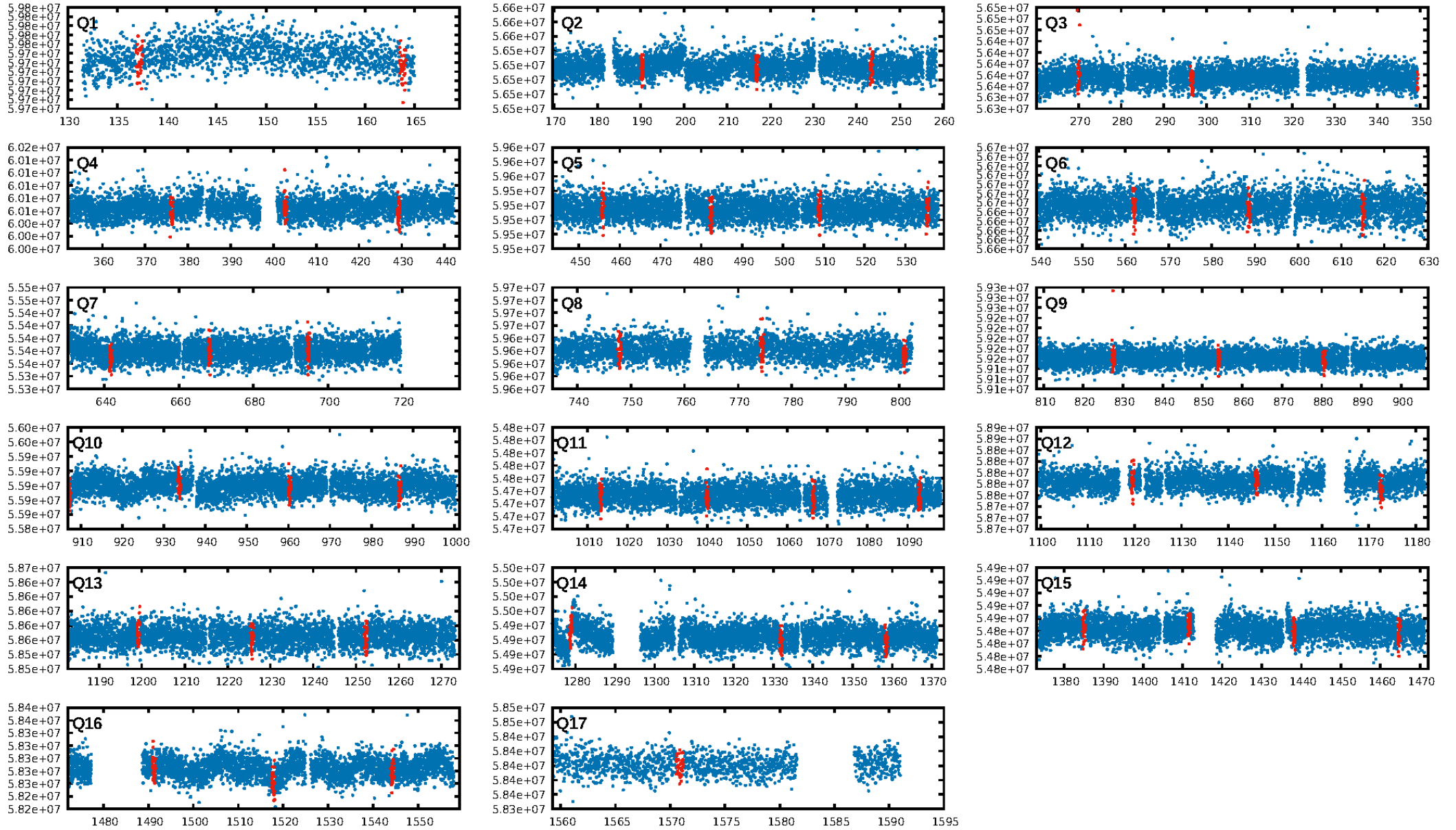
## DV Fit Results:

Period = 26.54884 [0.00034] d  
Epoch = 137.2406 [0.0106] BKJD  
Rp/R\* = 0.0124 [0.0044]  
a/R\* = 14.46 [22.65]  
b = 0.83 [0.59]  
Seff = 115.83 [132.93]  
Teq = 837 [240] K  
Rp = 2.91 [2.11] Re  
a = 0.1783 [0.1204] AU  
Ag = 74.44 [102.26] [0.72σ]  
Teffp = 3799 [741] K [3.80σ]

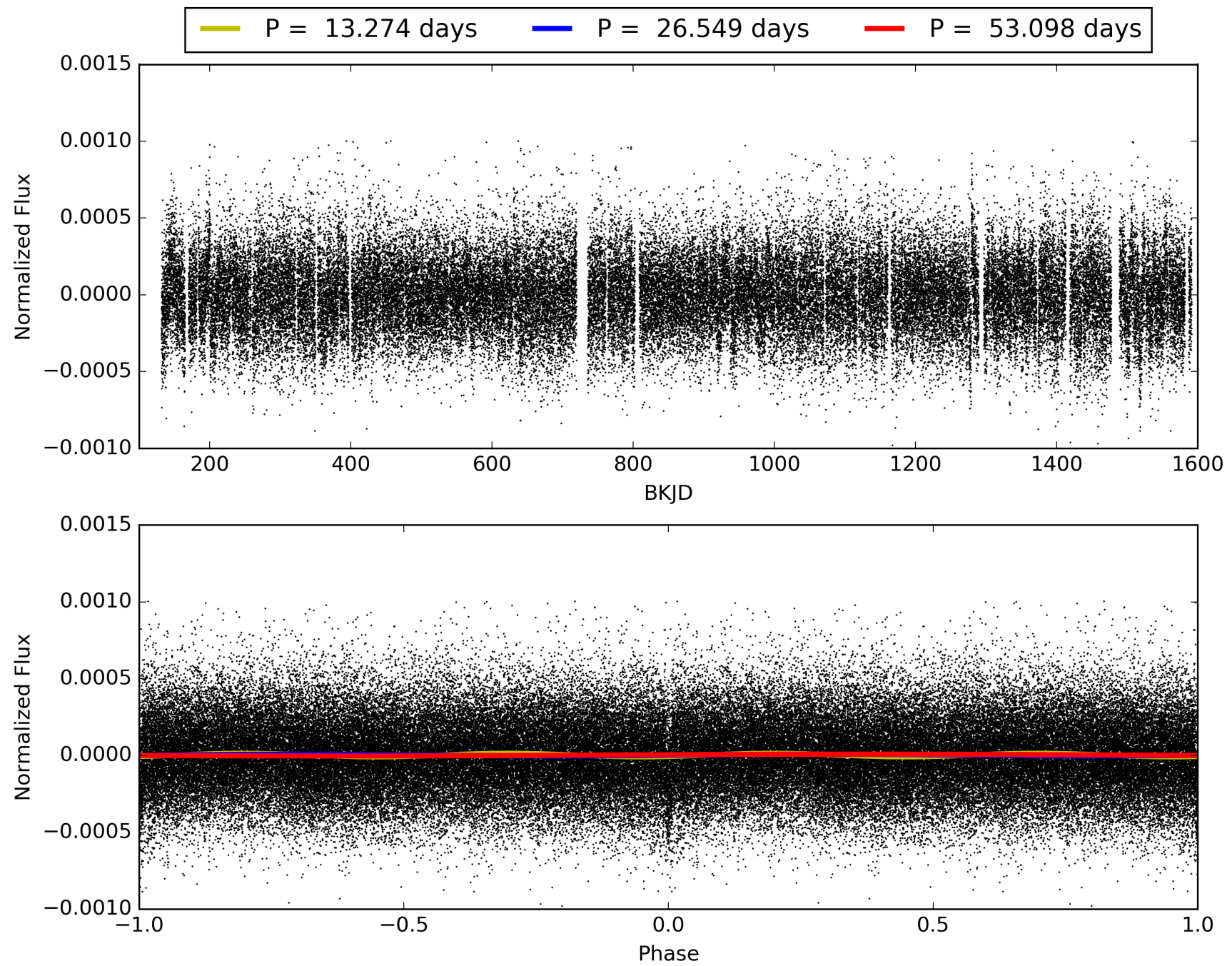
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 98.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.70e-40  
RollingBand-fgt: 0.98 [48/49]  
GhostDiagnostic-chr: 2.166  
Centroid-sig: 15.9%  
Centroid-so: 1.265 arcsec [1.22σ]  
OotOffset-rm: 1.641 arcsec [4.26σ]  
KicOffset-rm: 1.765 arcsec [3.98σ]  
OotOffset-st: 3/4/2/3 [12]  
KicOffset-st: 3/4/2/3 [12]  
DiffImageQuality-fgm: 0.67 [8/12]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009366617-01, PDC Light Curves

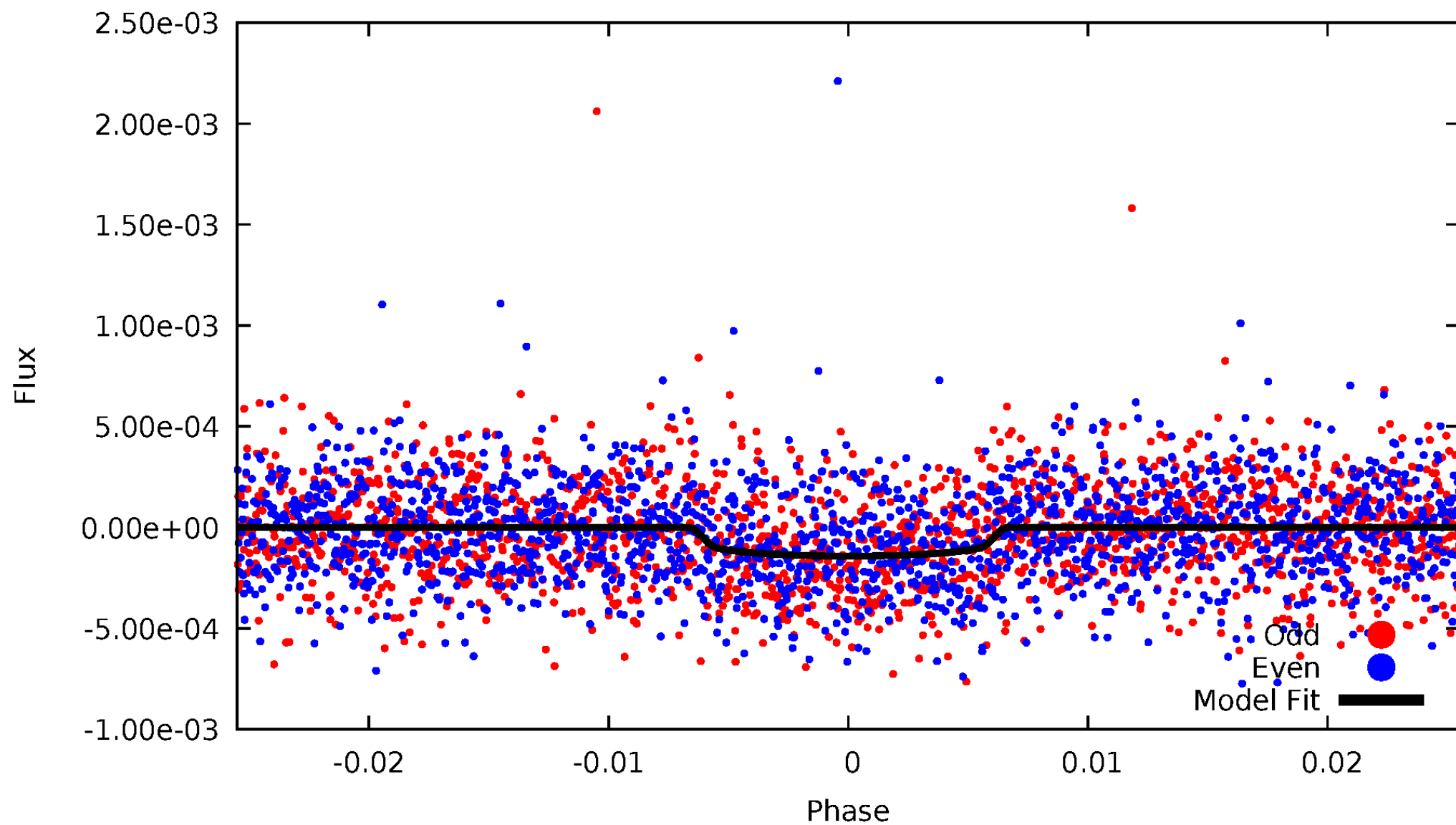


TCE 009366617-01



# DV Odd/Even

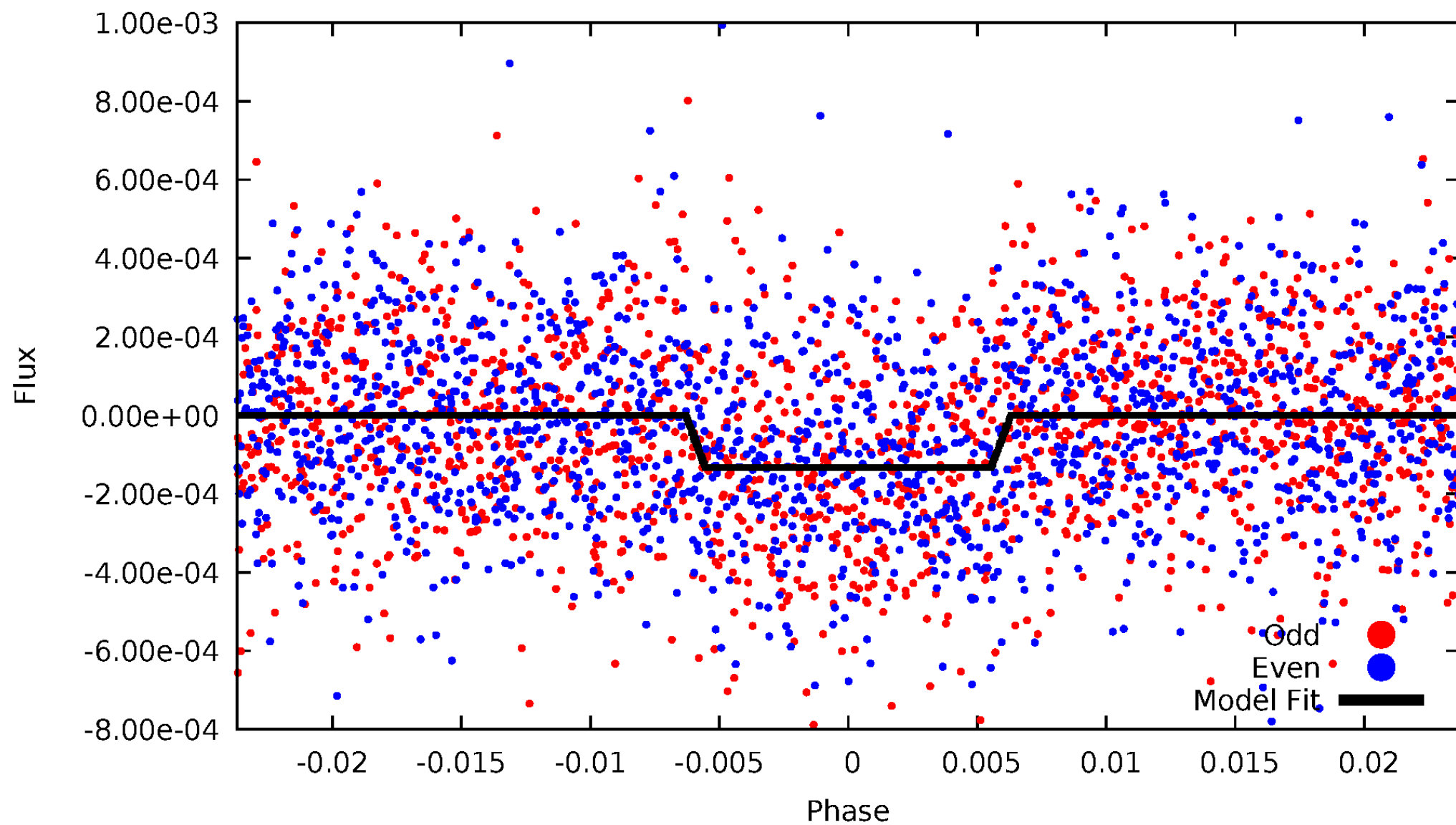
TCE 009366617-01





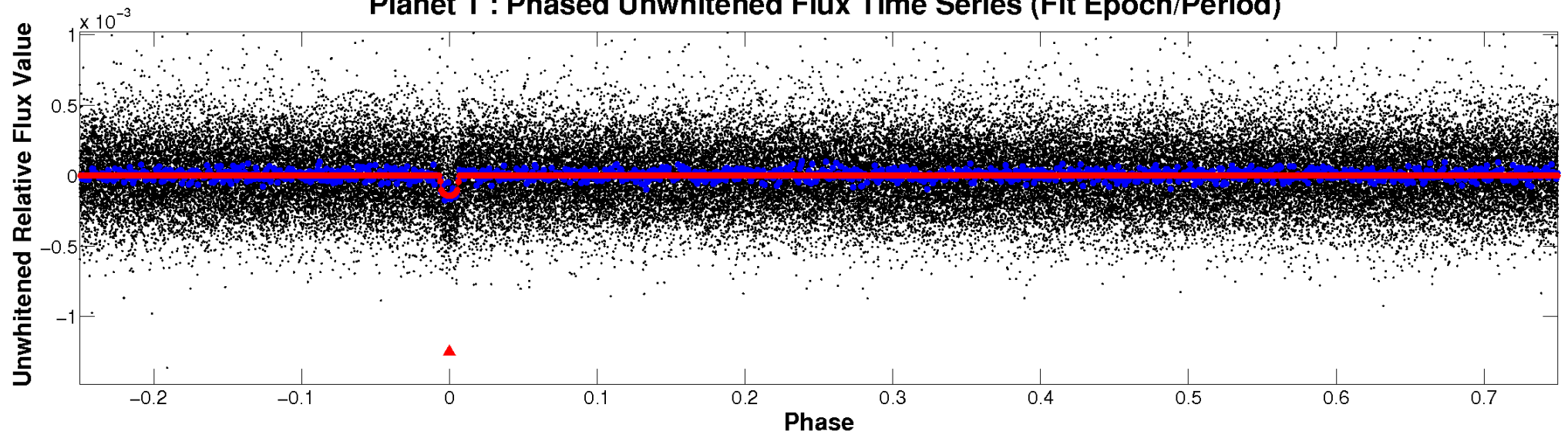
# ALT Odd/Even

TCE 009366617-01

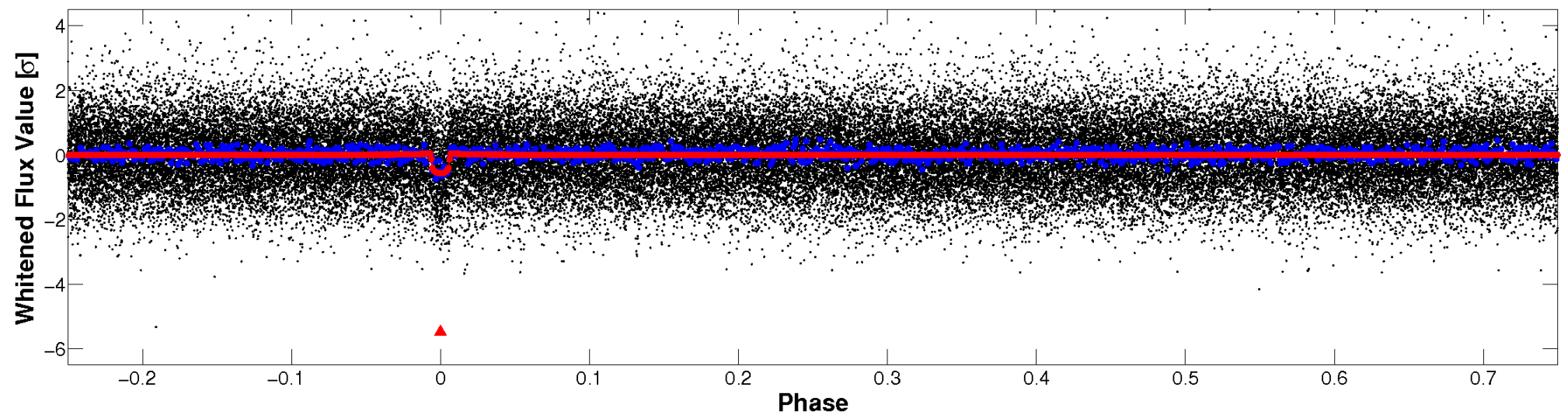


# Non-Whitened Vs. Whitened Light Curve

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

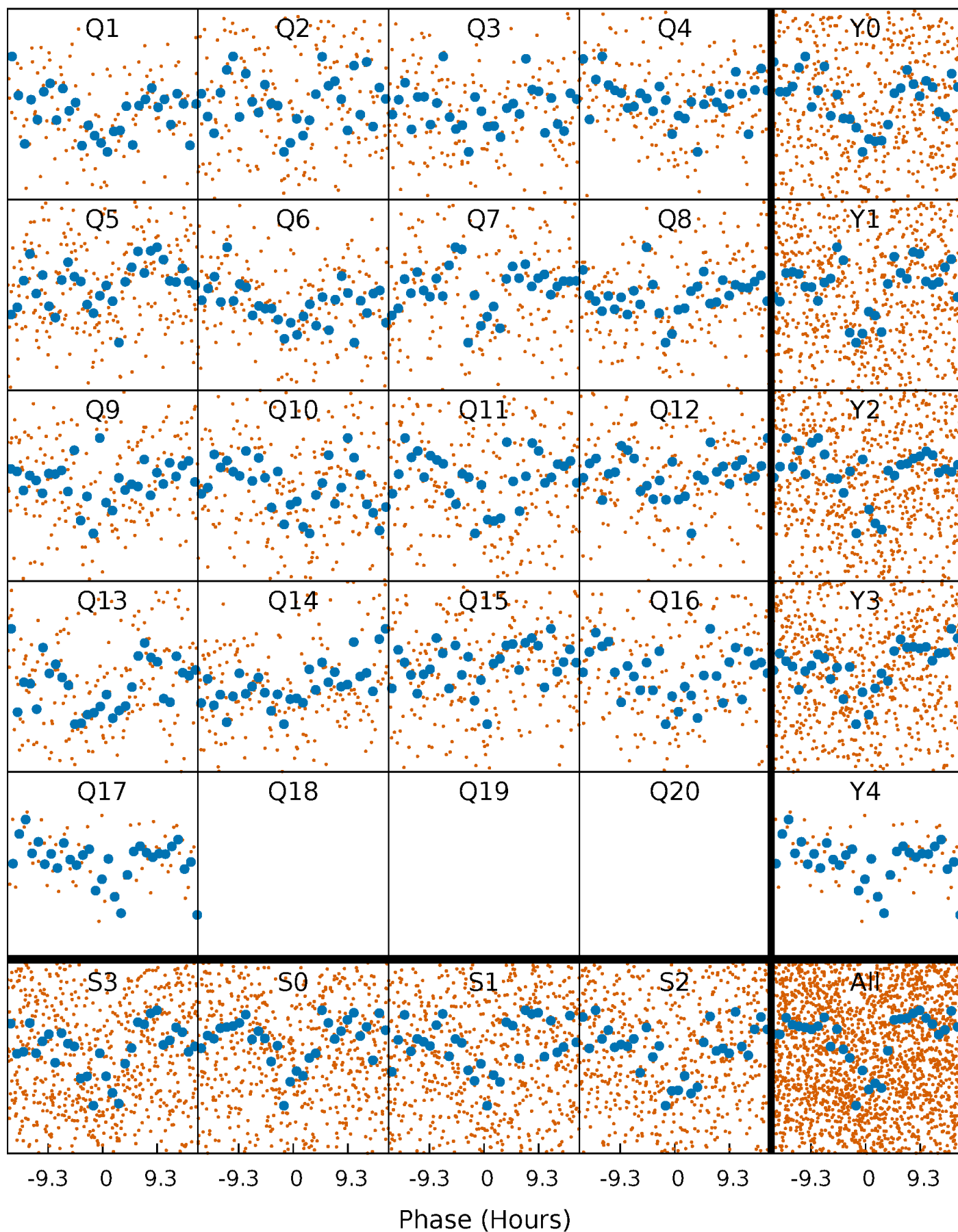


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

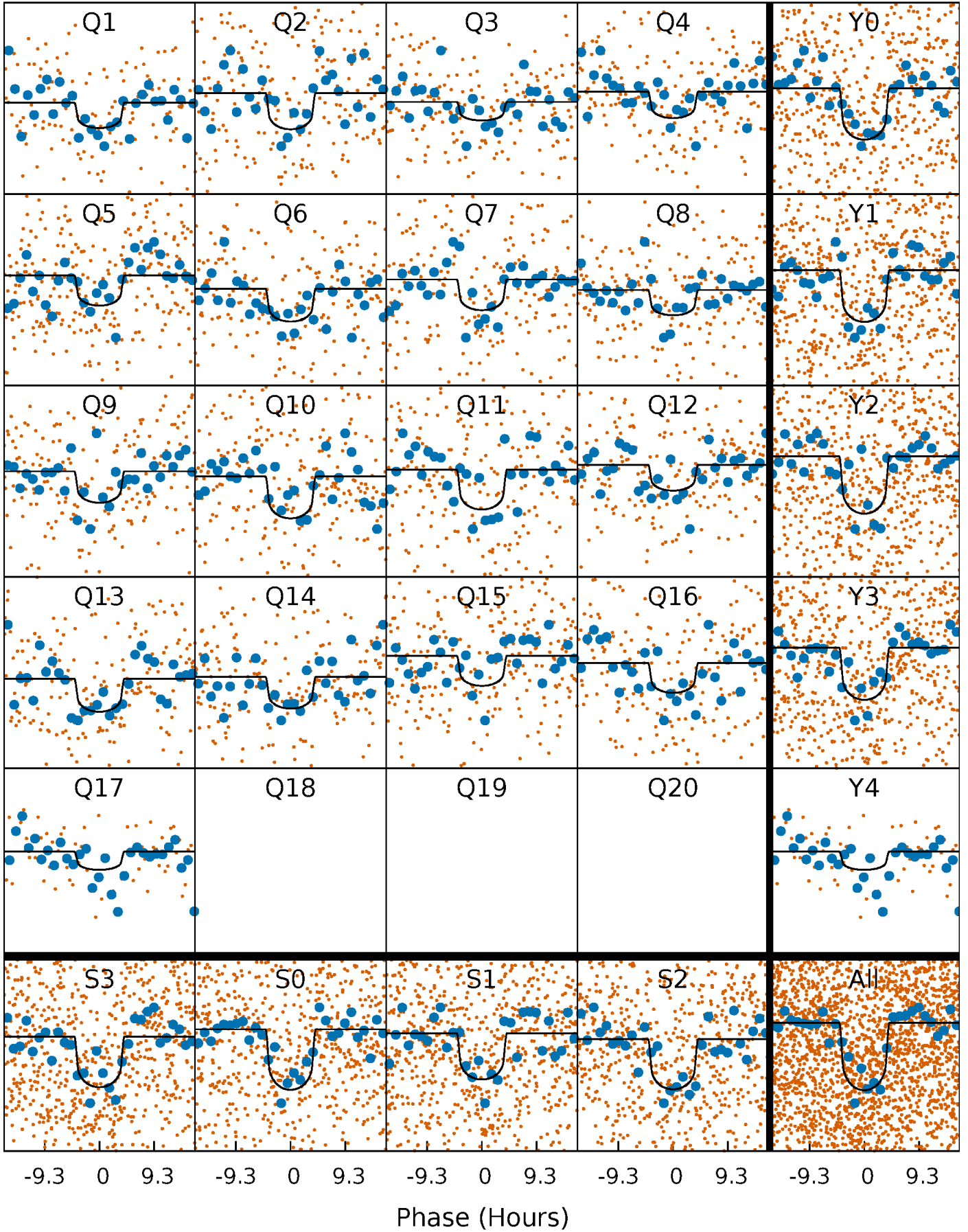
TCE 009366617-01 P= 26.548842 Days  $T_0=137.240554$  (BKJD)





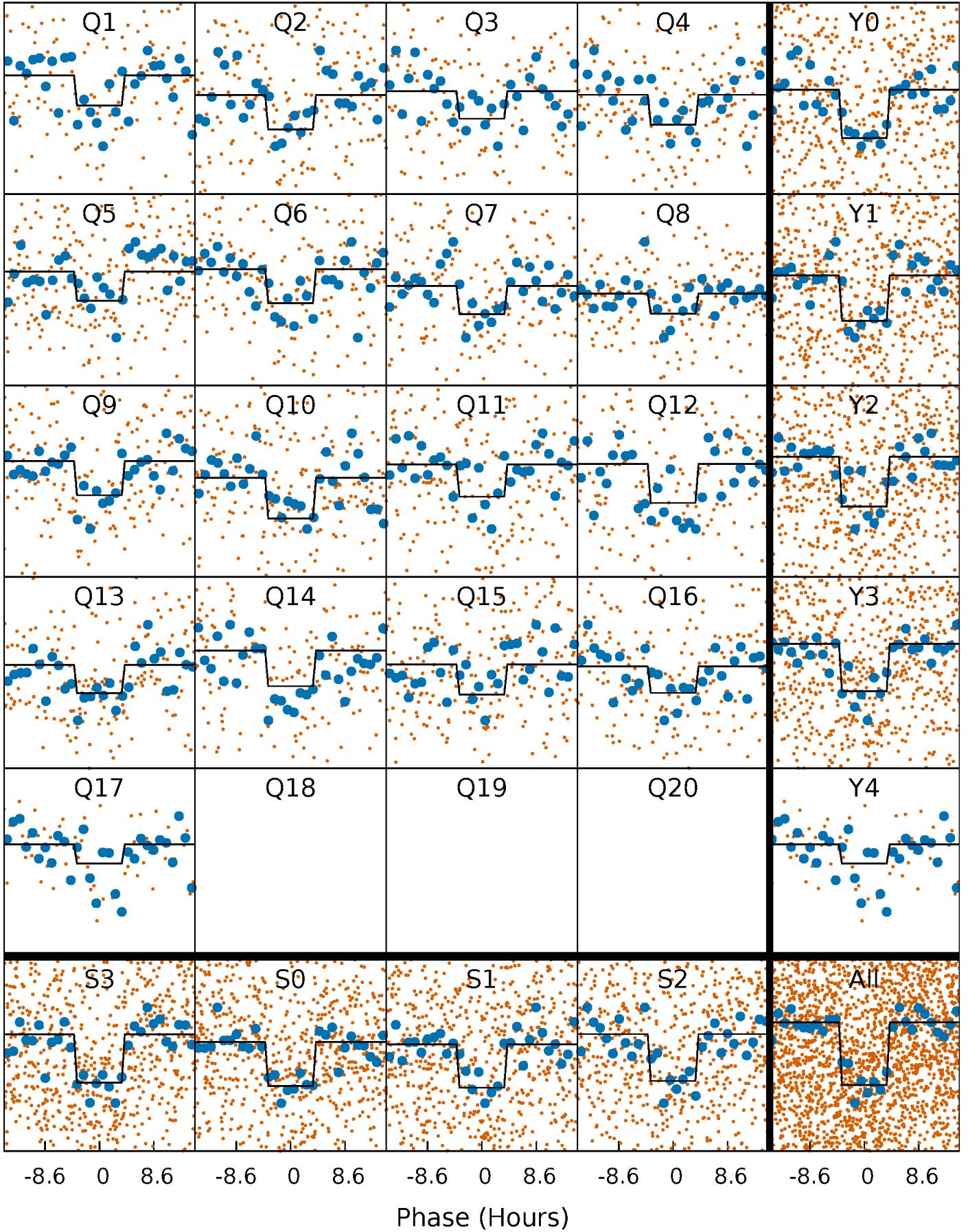
# DV Quarter-Phased Transit Curves

TCE 009366617-01 P= 26.548842 Days  $T_0=137.240554$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

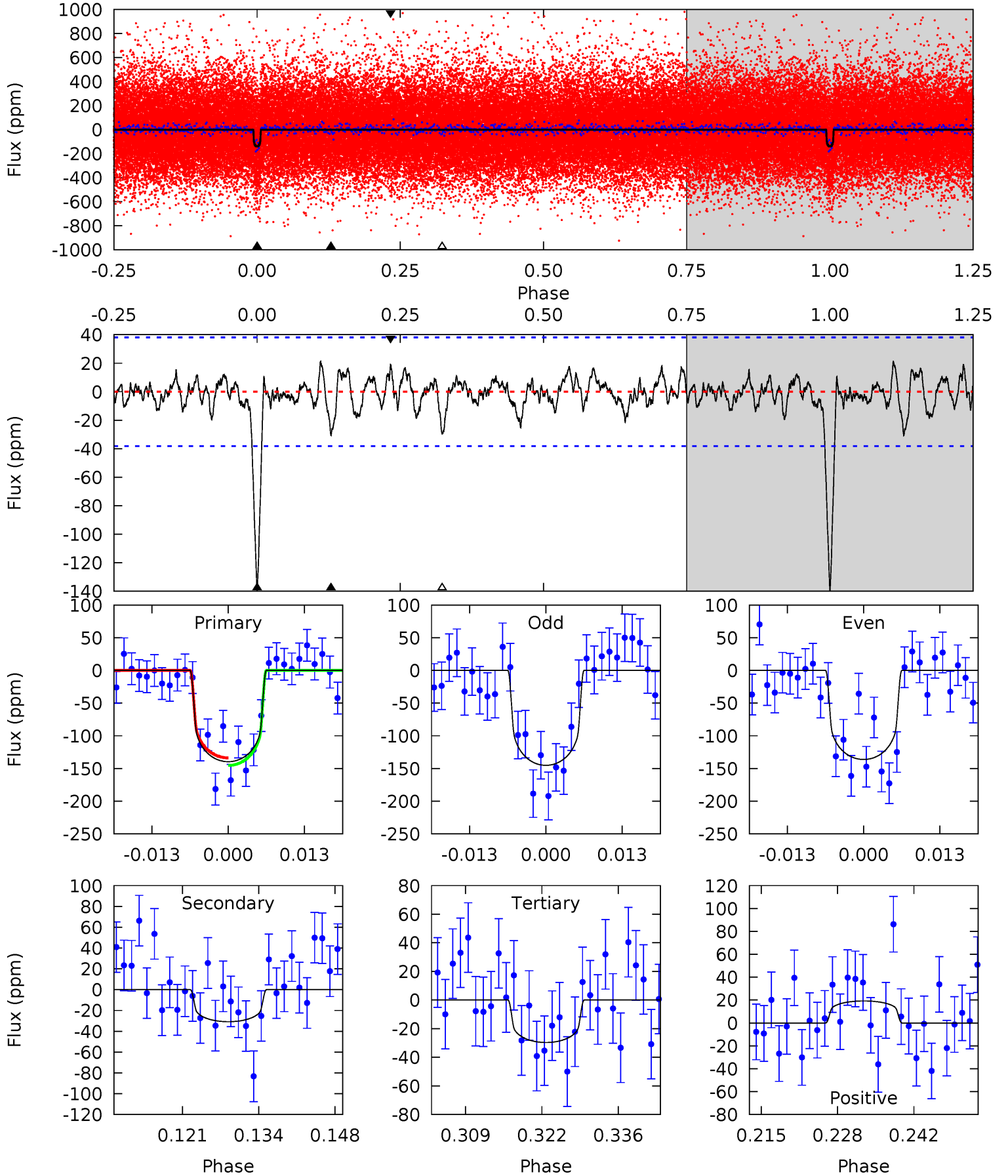
TCE 009366617-01 P= 26.548565 Days  $T_0=137.245688$  (BKJD)



# DV Model-Shift Uniqueness Test

009366617-01, P = 26.548842 Days, E = 110.691712 Days

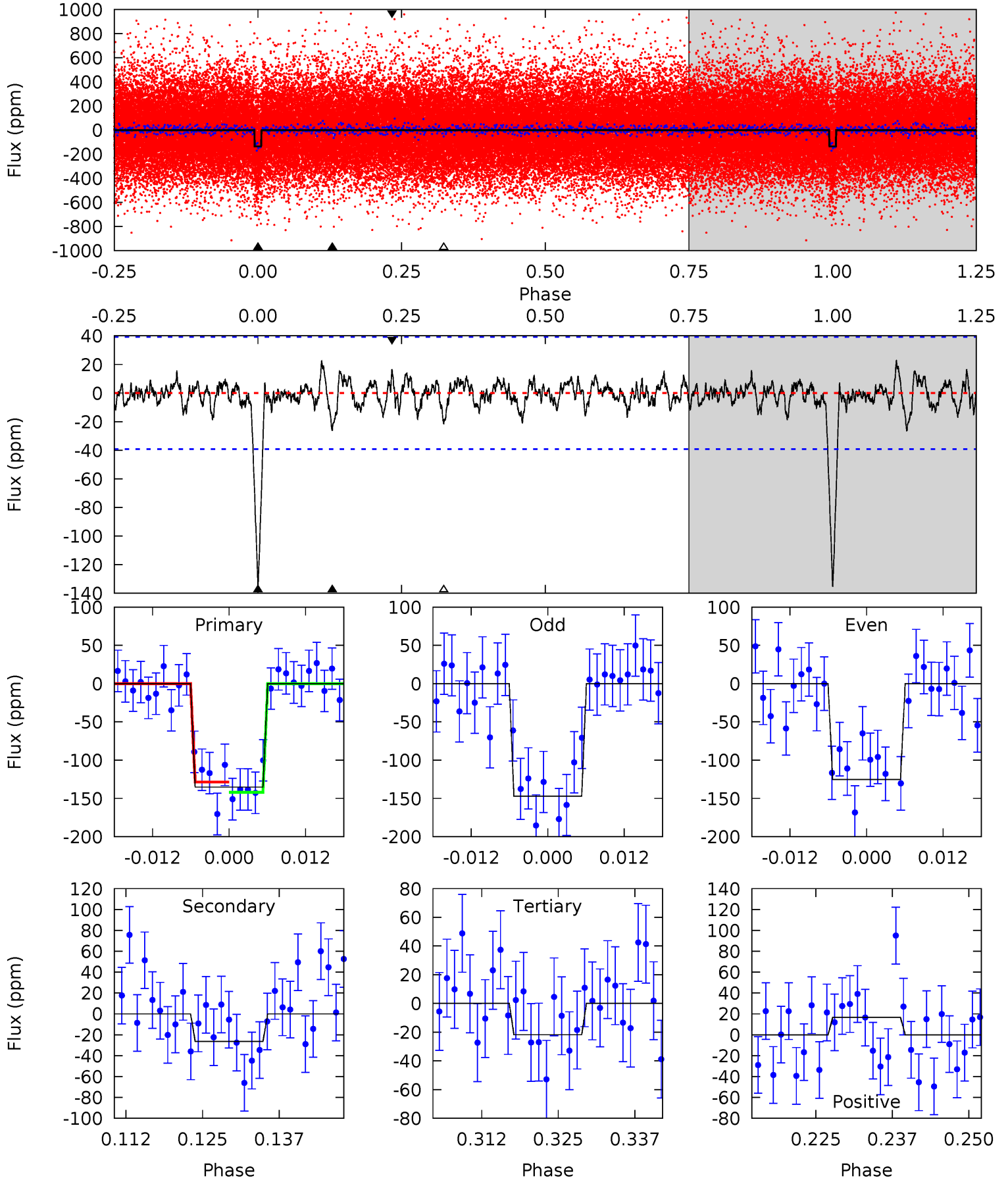
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	4.01	3.86	2.50	4.97	2.47	1.07	14.3	15.7	0.15	1.51	0.59	0.89	0.13	0.76



# Alt Model-Shift Uniqueness Test

009366617-01, P = 26.548565 Days, E = 110.697123 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
17.2	3.35	2.77	2.12	4.98	2.50	0.85	14.4	15.1	0.58	1.23	1.37	0.96	0.14	0.86



### Stellar Parameters For KIC 009366617

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5456^{+191}_{-172}$	$3.802^{+0.690}_{-0.230}$	$-0.240^{+0.350}_{-0.250}$	$2.154^{+0.833}_{-1.354}$	$1.074^{+0.189}_{-0.231}$	$0.151^{+1.898}_{-0.080}$
	+4%/-3%	+18%/-6%	+146%/-104%	+39%/-63%	+18%/-22%	+1254%/-53%
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 009366617-01 / KOI 4215.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-31 \pm 8$	$2.62^{+1.41}_{-1.11}$	$1149^{+135}_{-183}$	$3986^{+766}_{-432}$	$79^{+159}_{-48}$
Alt.	$-26 \pm 8$	$2.49^{+1.43}_{-1.12}$	$1156^{+131}_{-171}$	$3952^{+861}_{-498}$	$70^{+191}_{-42}$

$T_{max}$  = 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

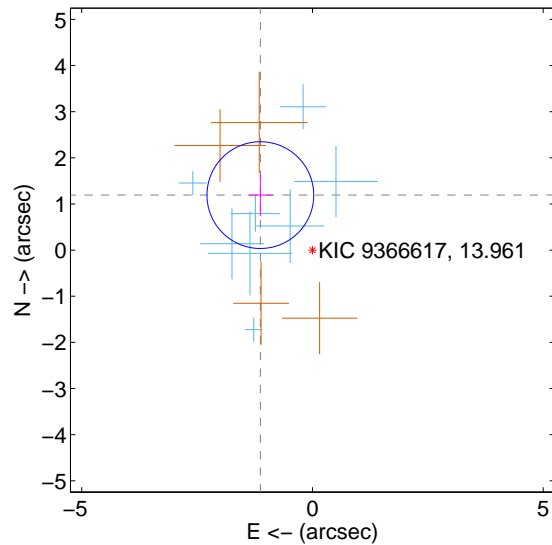
Supplemental centroid analysis for 009366617-01. Kepler magnitude: 13.96. Transit SNR 13.88

There are 8 quarters with good PRF difference image offsets

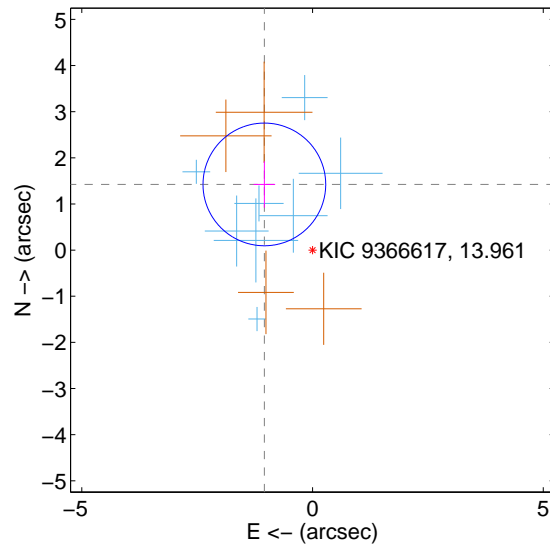
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>1.641 <math>\pm</math> 0.385</b>	<b>4.26</b>	1.128 $\pm$ 0.263	1.191 $\pm$ 0.455
PRF-fit source offset from KIC position	<b>1.765 <math>\pm</math> 0.443</b>	<b>3.98</b>	1.043 $\pm$ 0.234	1.423 $\pm$ 0.502
photometric centroid source offset	1.27 $\pm$ 1.03	1.22	1.09 $\pm$ 1.07	-0.65 $\pm$ 0.94

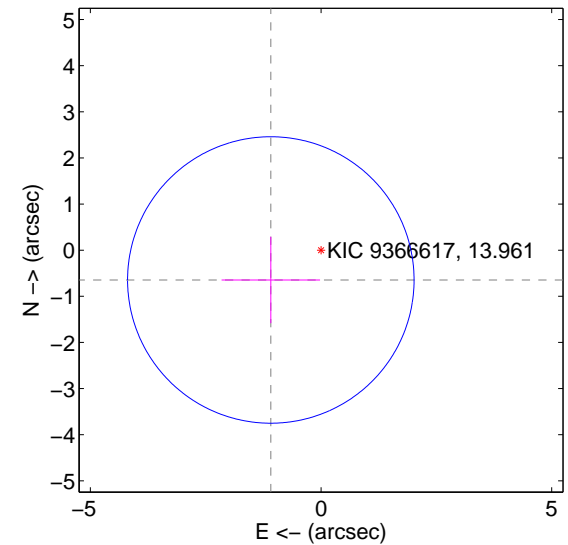
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

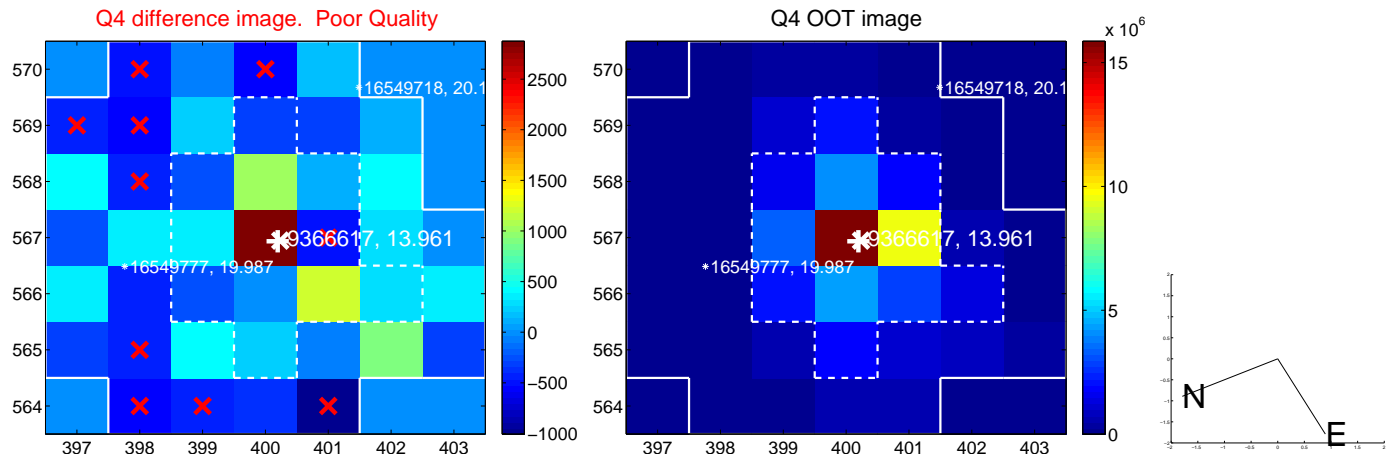
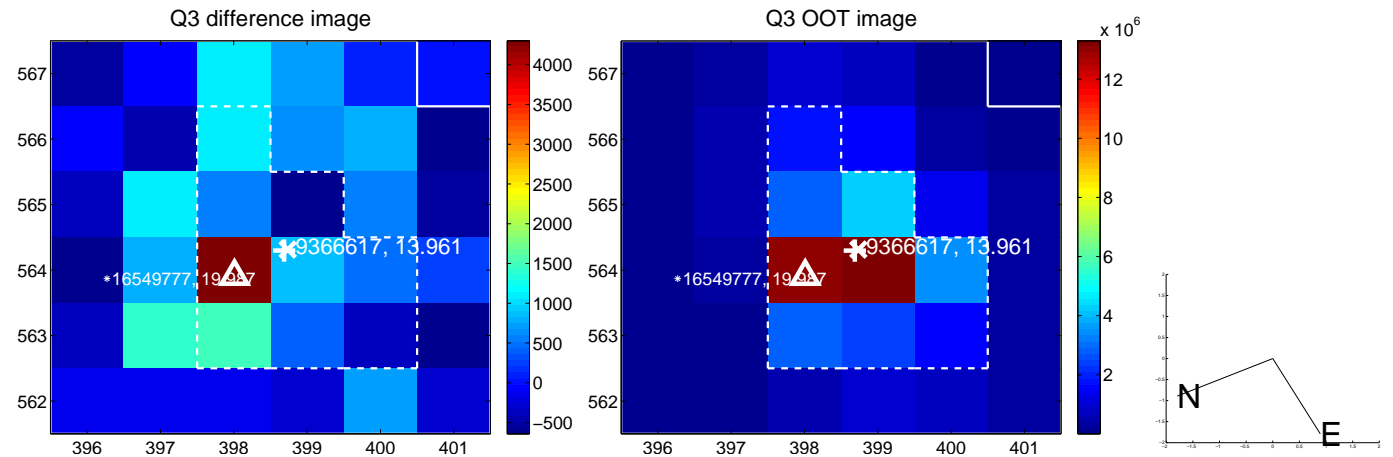
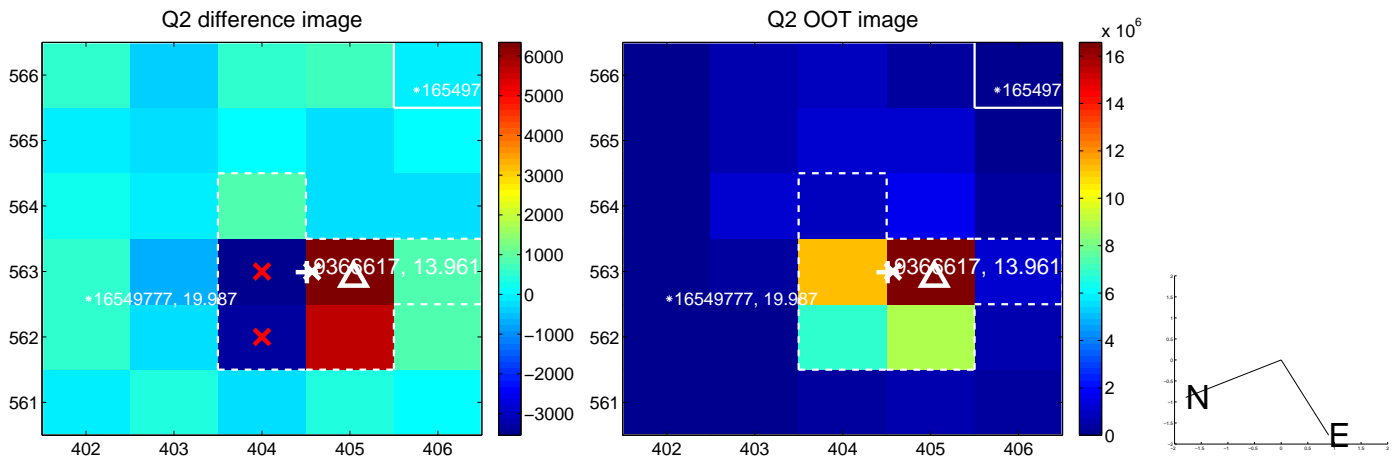
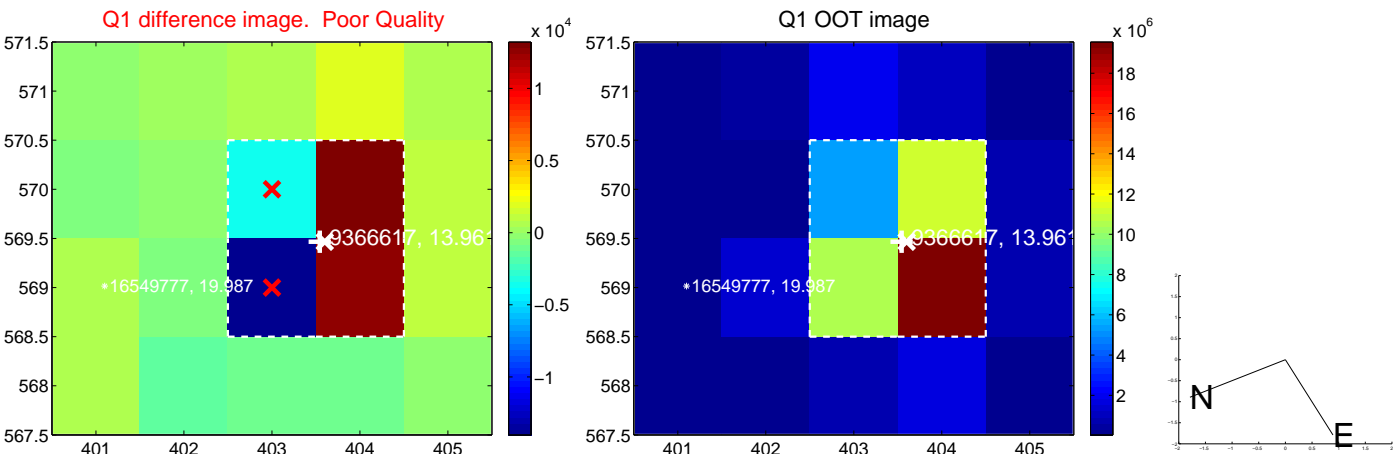


offset from photometric centroids

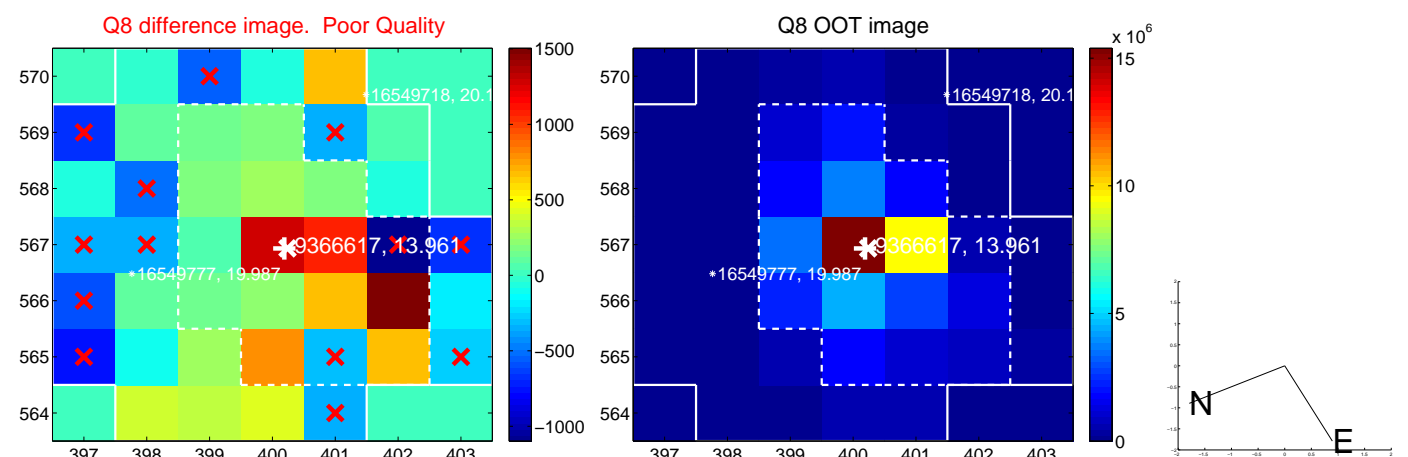
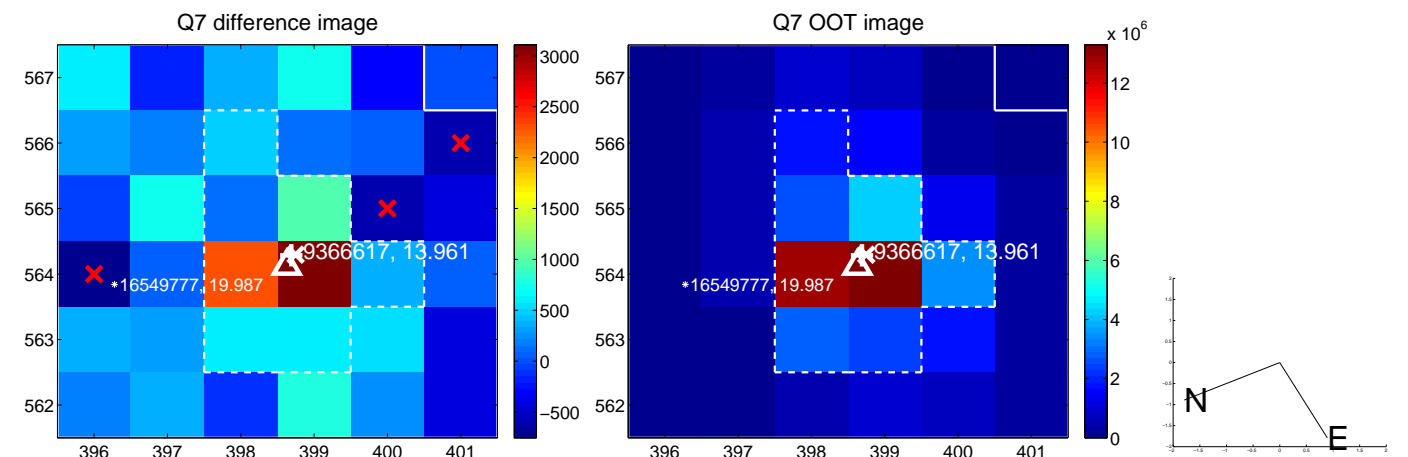
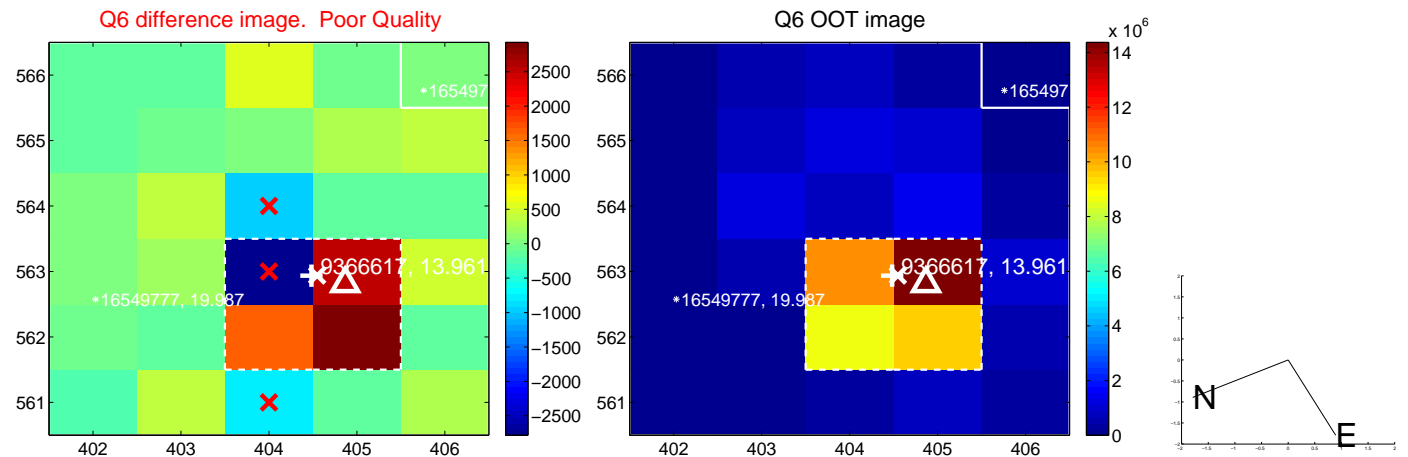
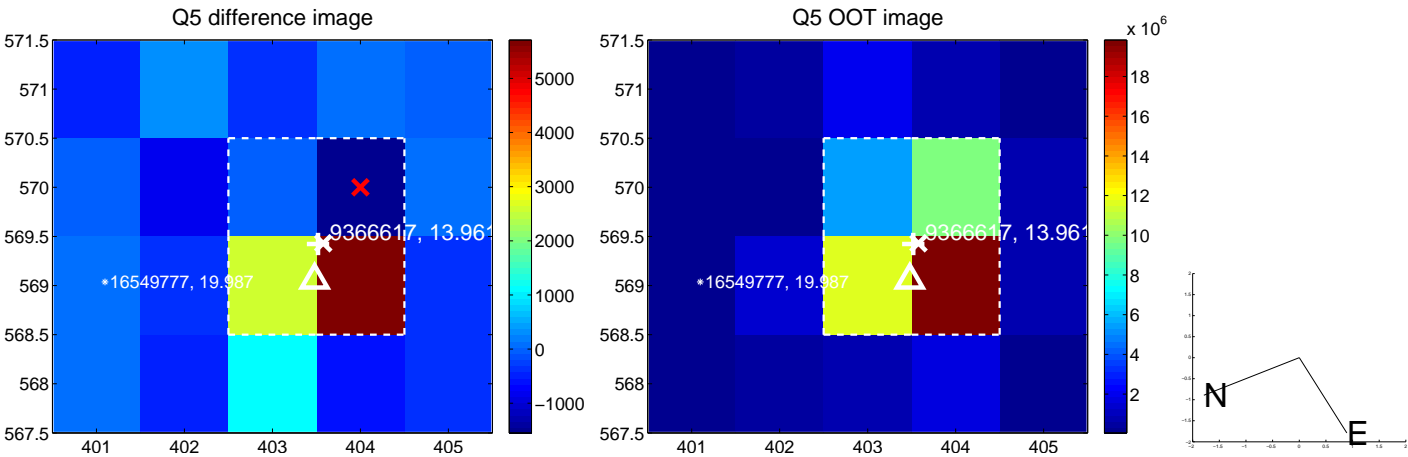


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

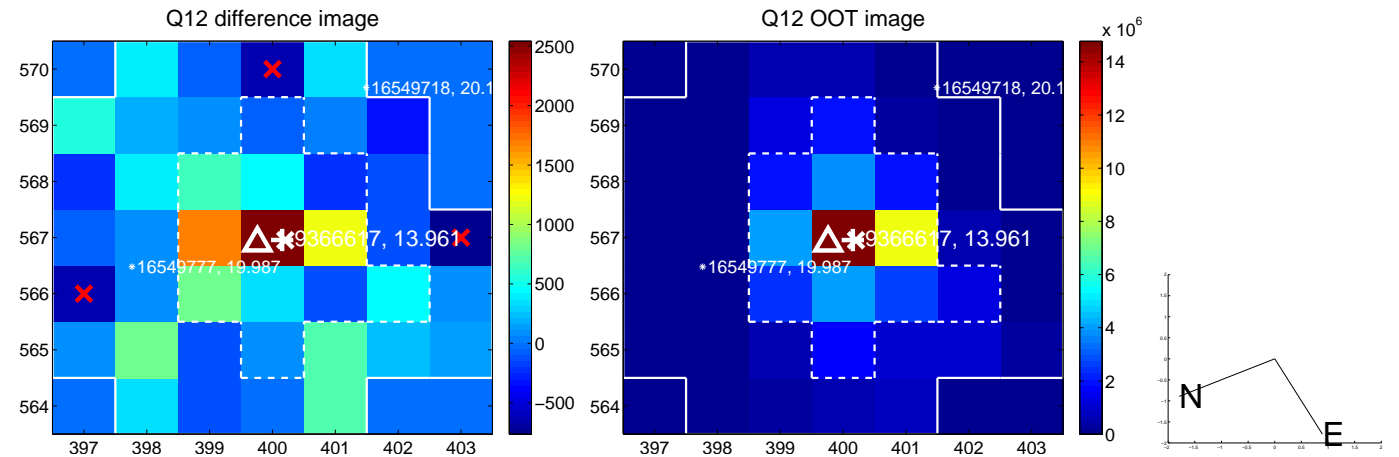
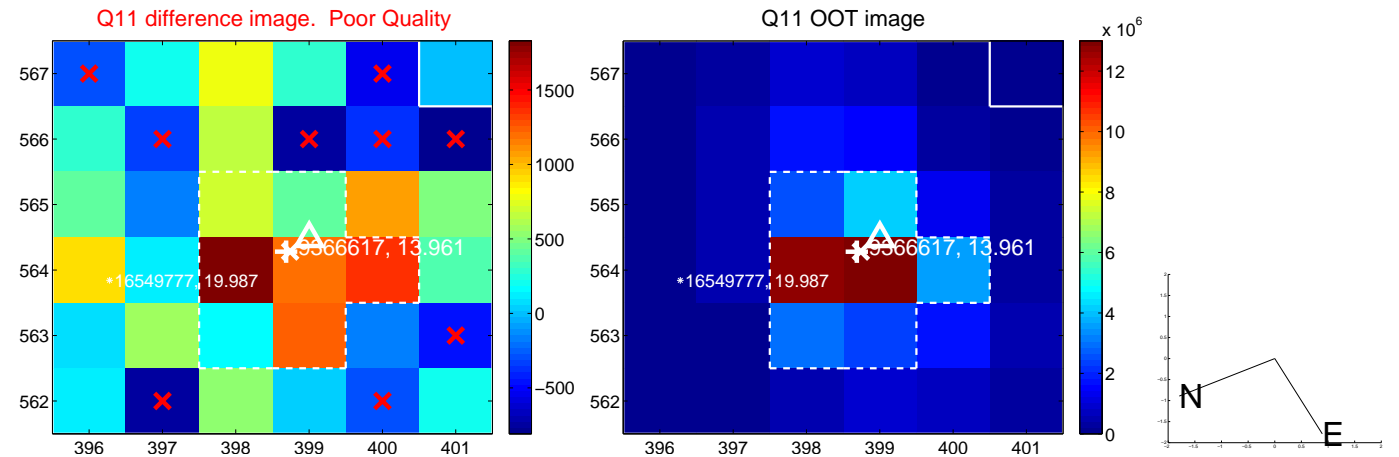
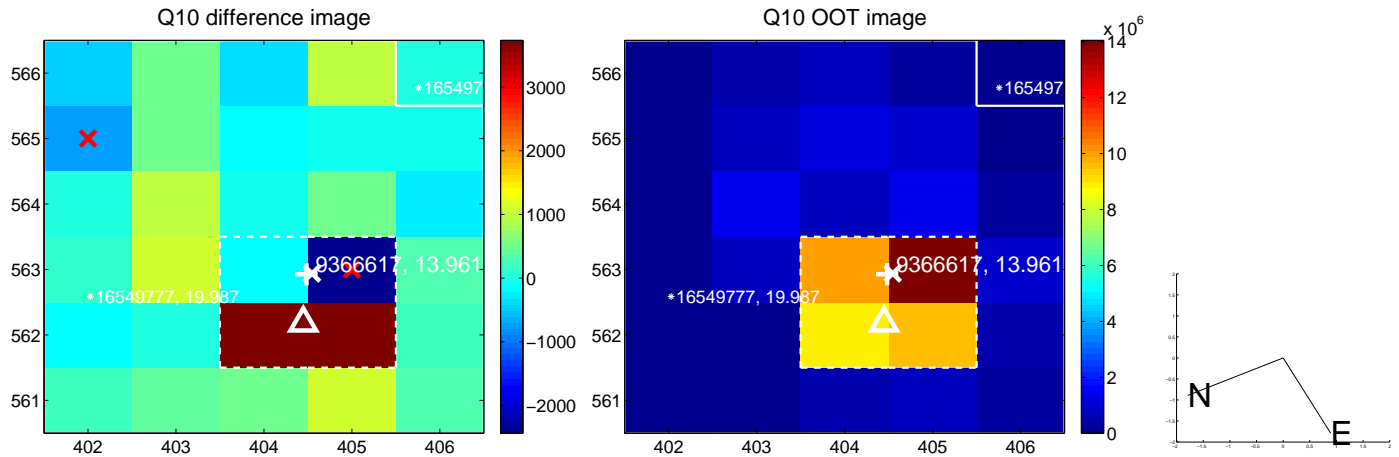
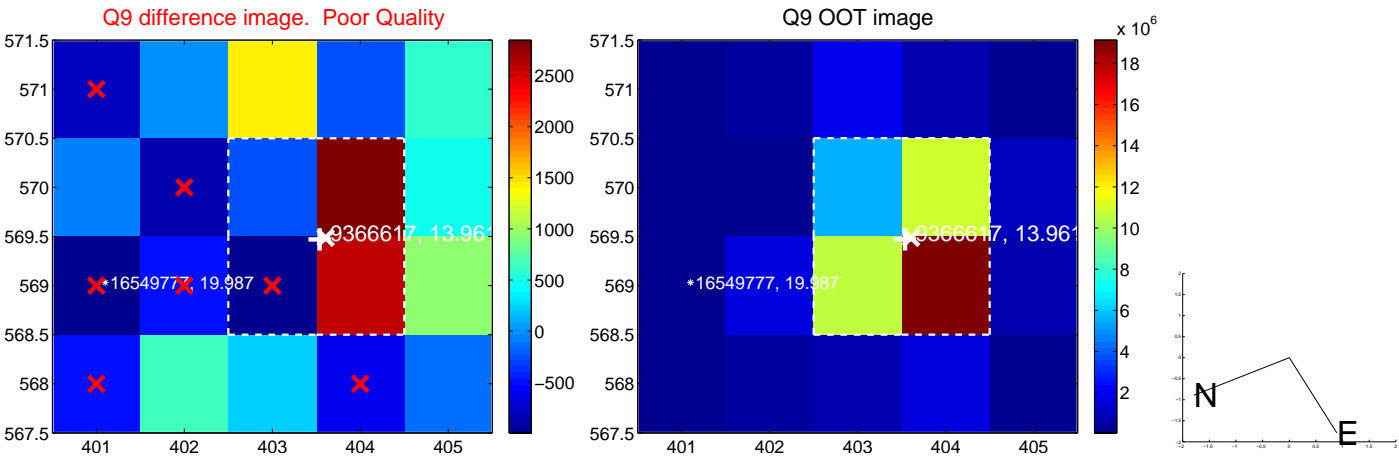
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



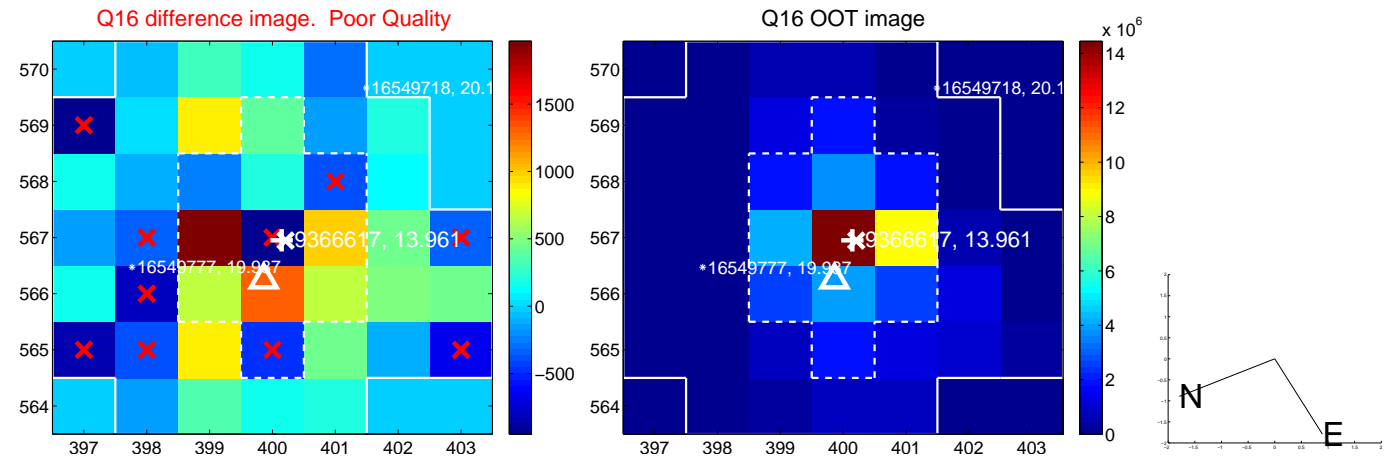
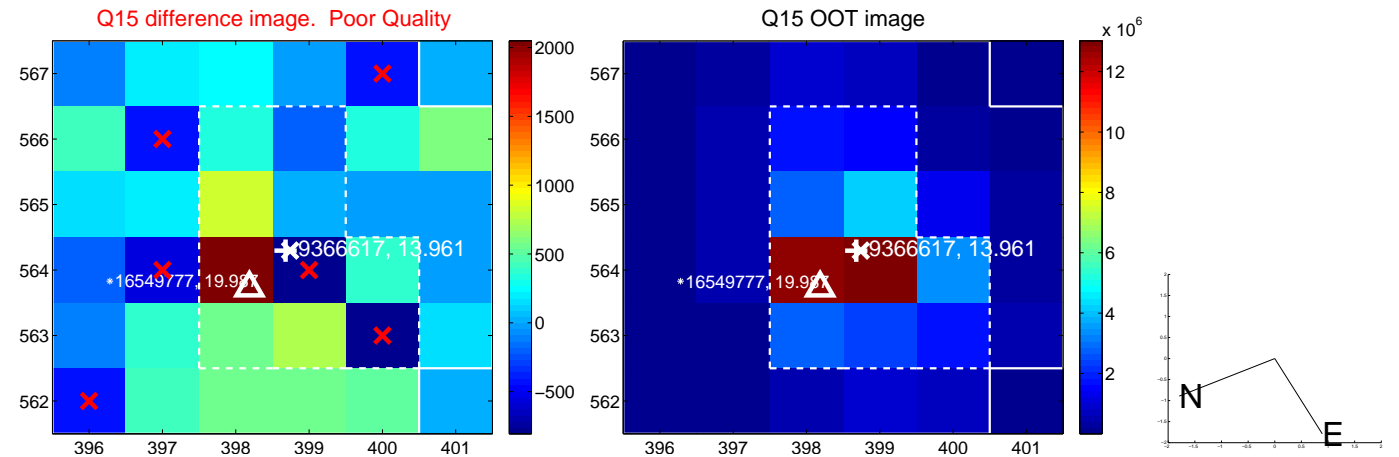
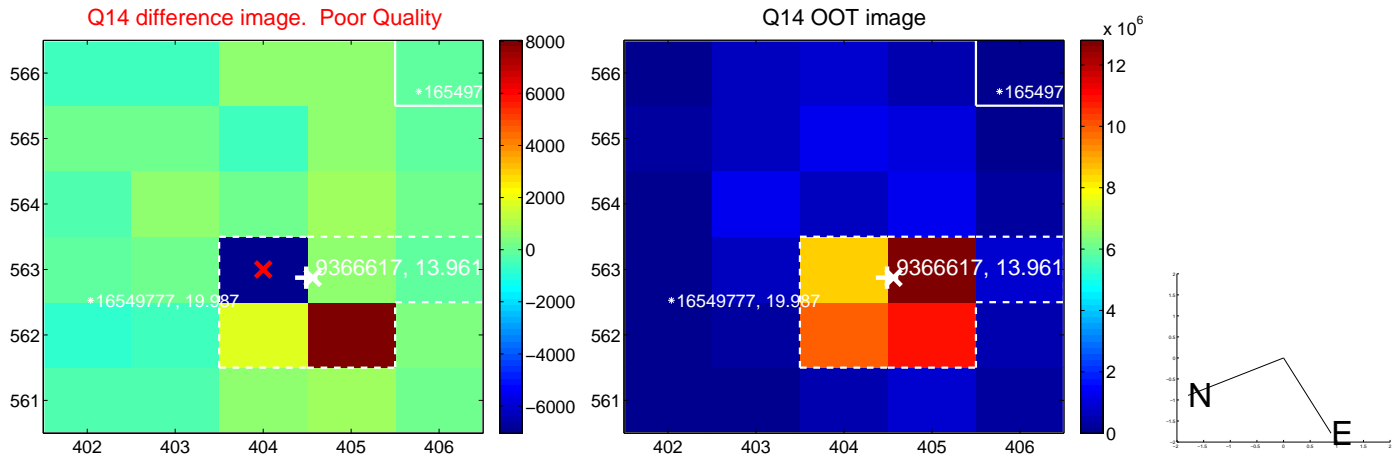
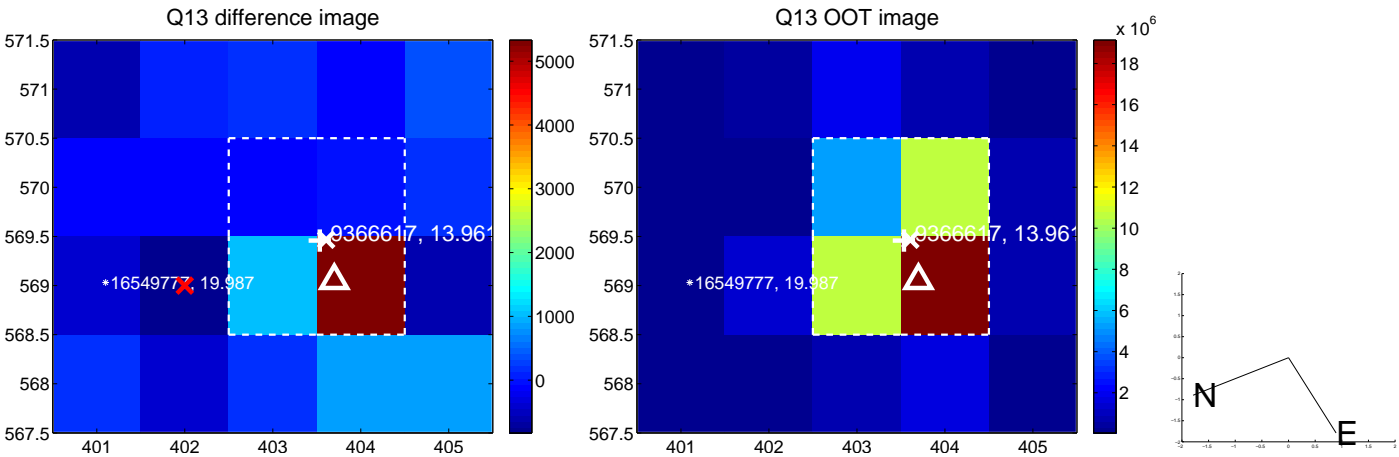
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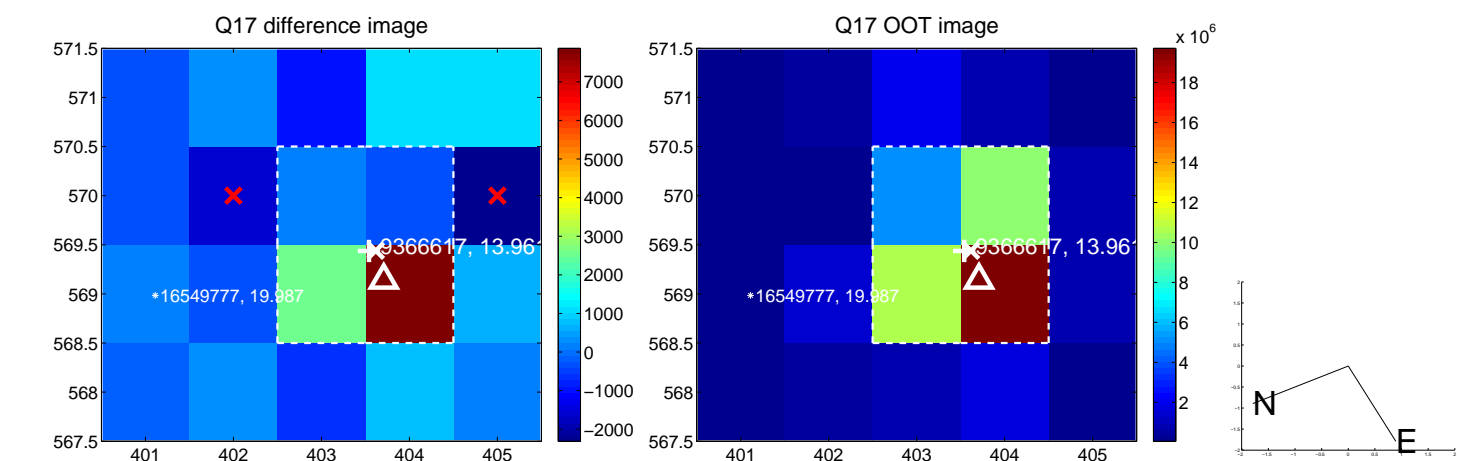


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

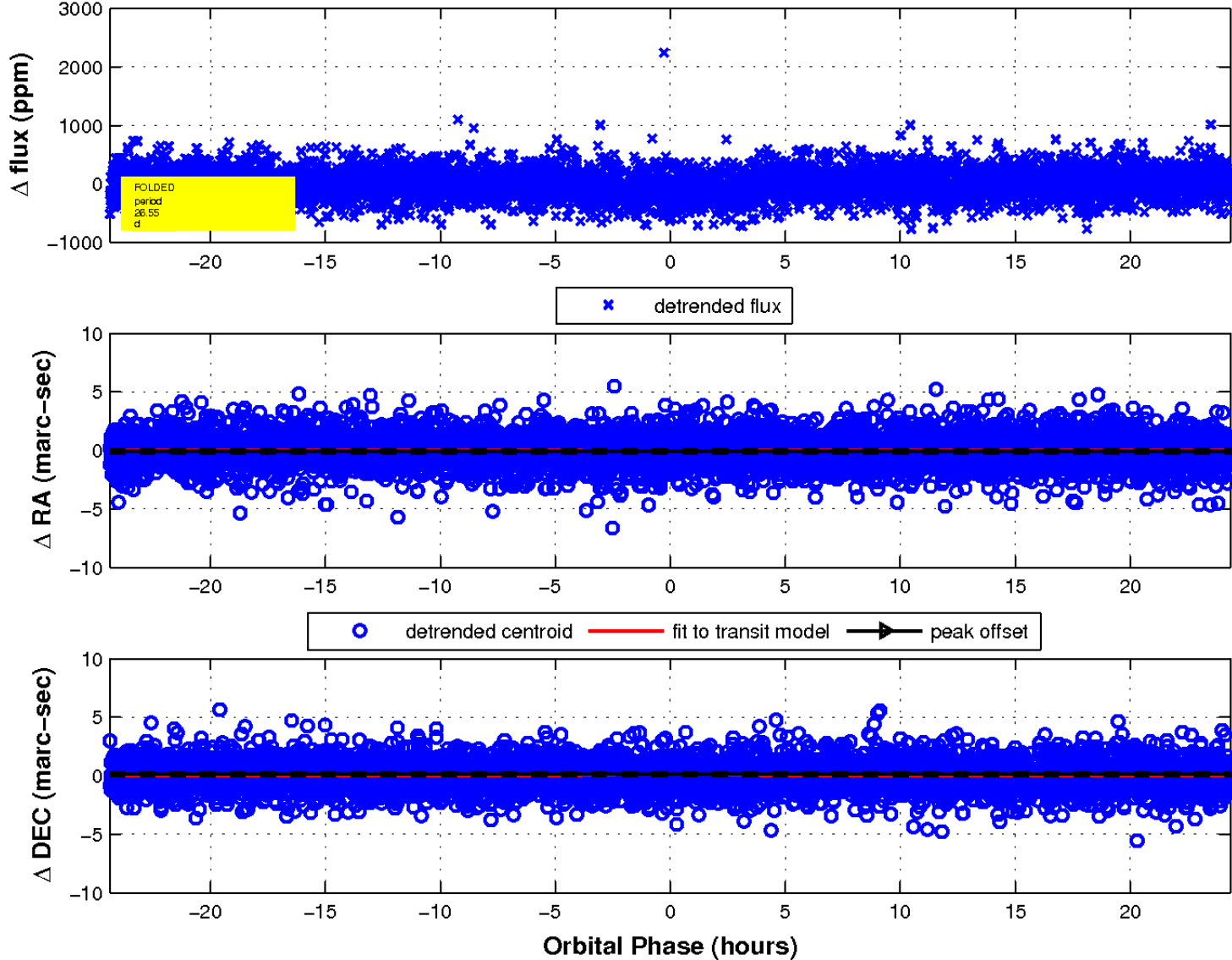




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



### fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

