

# KIC 009822284

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009822284-01	OBS	4807.01	0.969811	132.292395	15.0	1.113	7.4	10.9	1.00	5780	0.40	2718.67

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009822284-01	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.

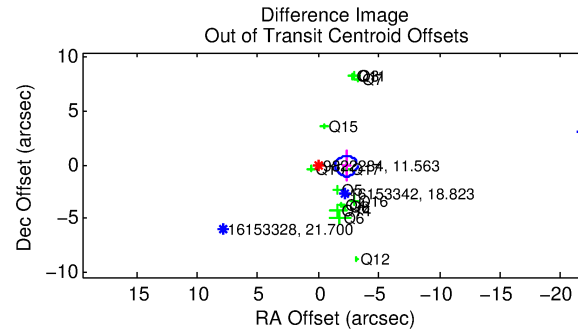
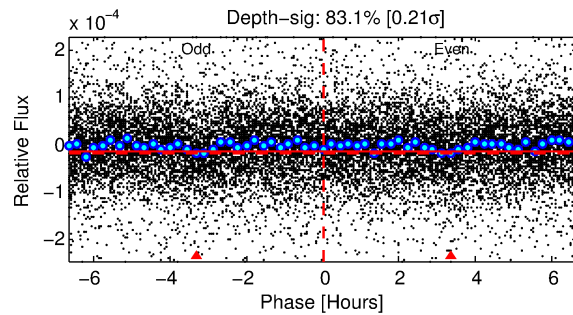
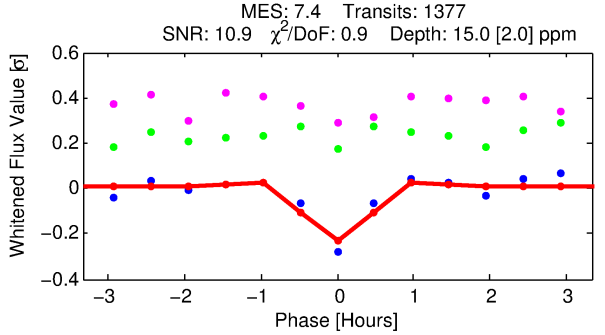
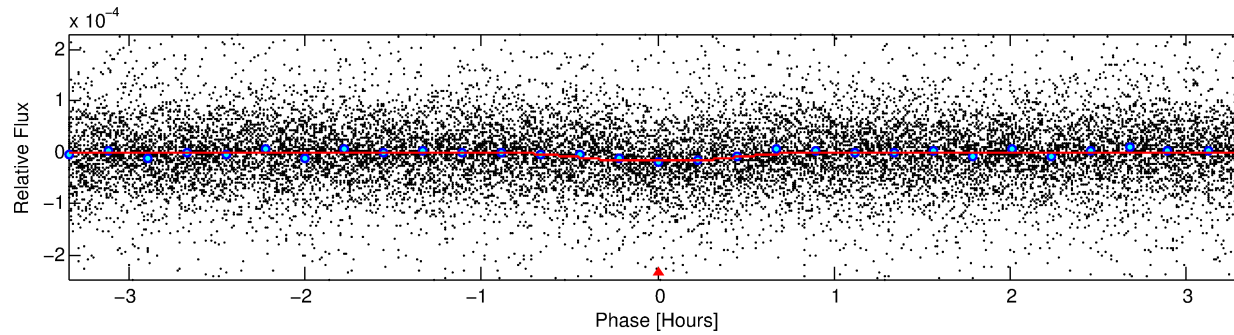
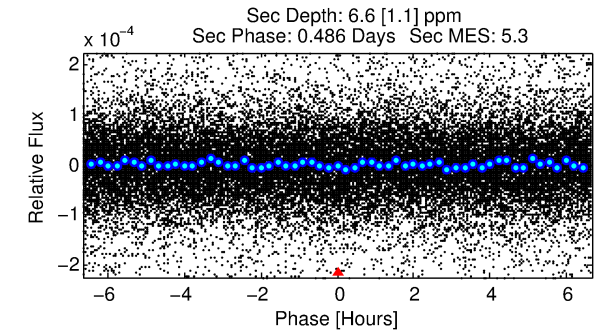
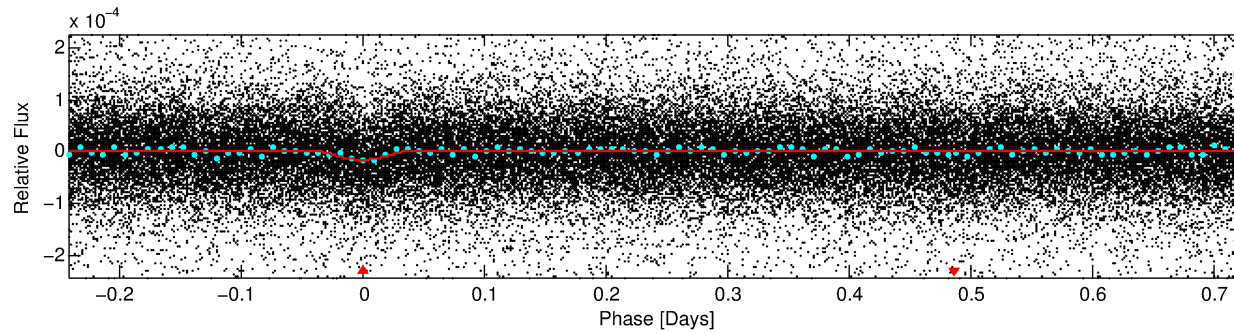
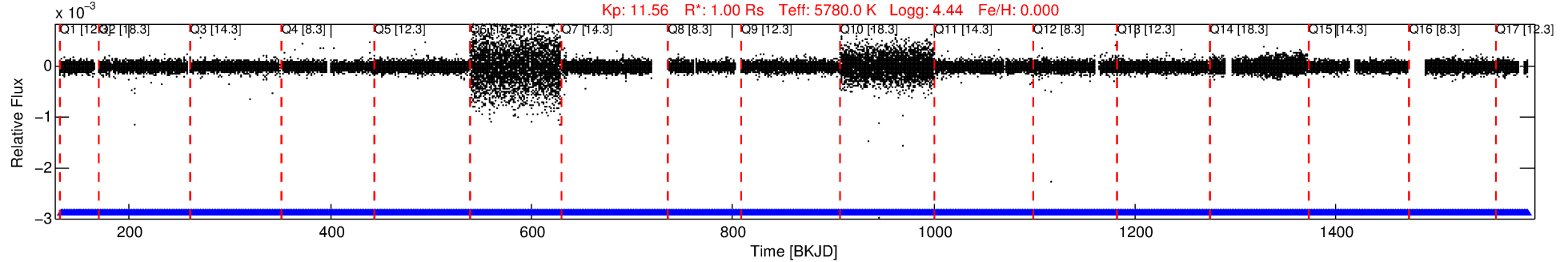
## Ephemeris Match Information For 009822284-01

No Significant Match Found

# DV One-Page Summary

KIC: 9822284 Candidate: 1 of 1 Period: 0.970 d  
KOI: K04807.01 Corr: 0.804

Kp: 11.56 R\*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



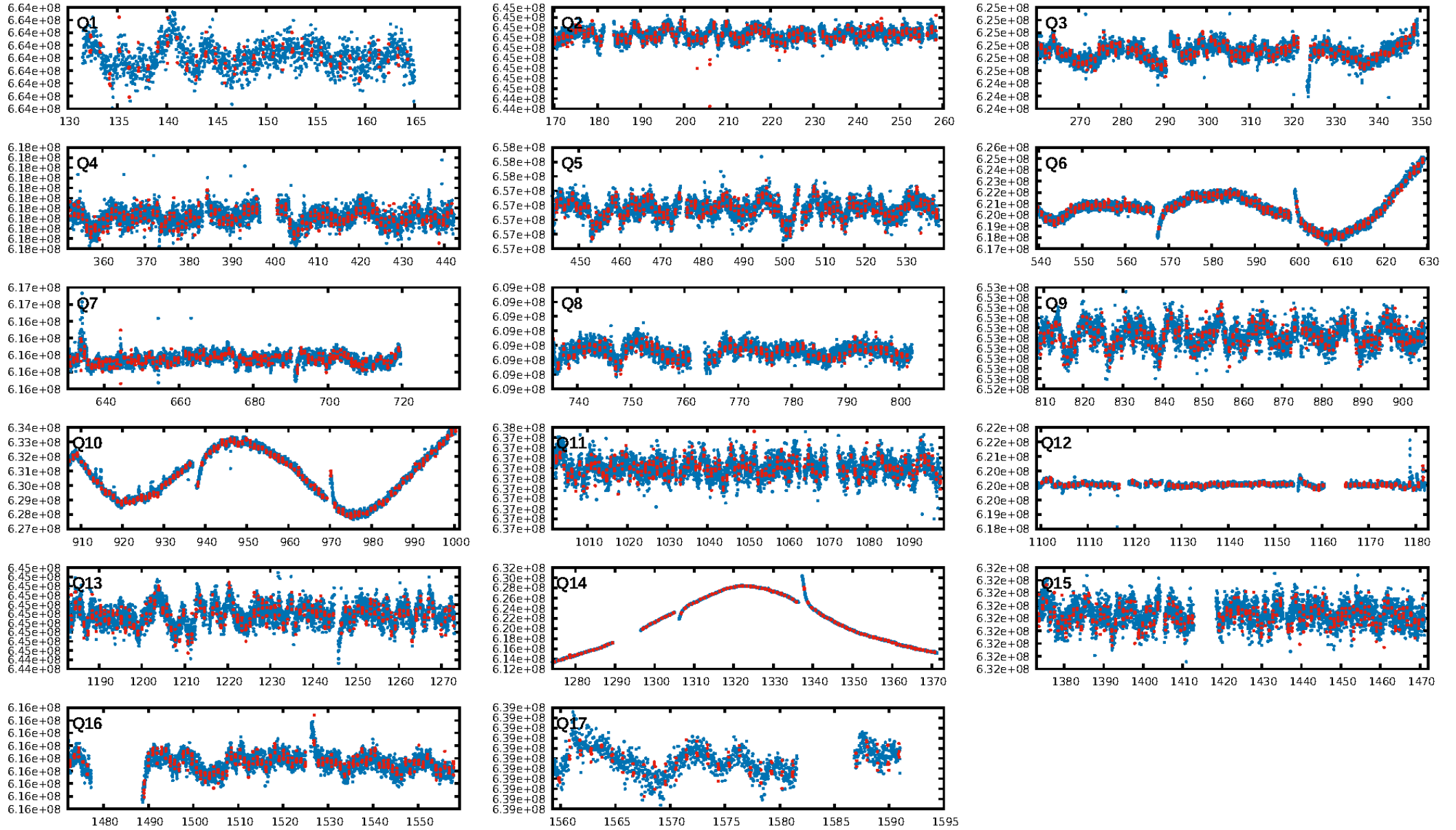
## DV Fit Results:

Period = 0.96981 [0.00001] d  
Epoch = 132.2924 [0.0018] BKJD  
Rp/R\* = 0.0037 [0.0009]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
b = 0.54 [1.33]  
Seff = 2718.67 [0.04]  
Teq = 1841 [0] K  
Rp = 0.40 [0.09] Re  
a = 0.0192 [0.0000] AU  
Ag = 8.31 [4.13] [1.77σ]  
Teffp = 4833 [600] K [4.99σ]

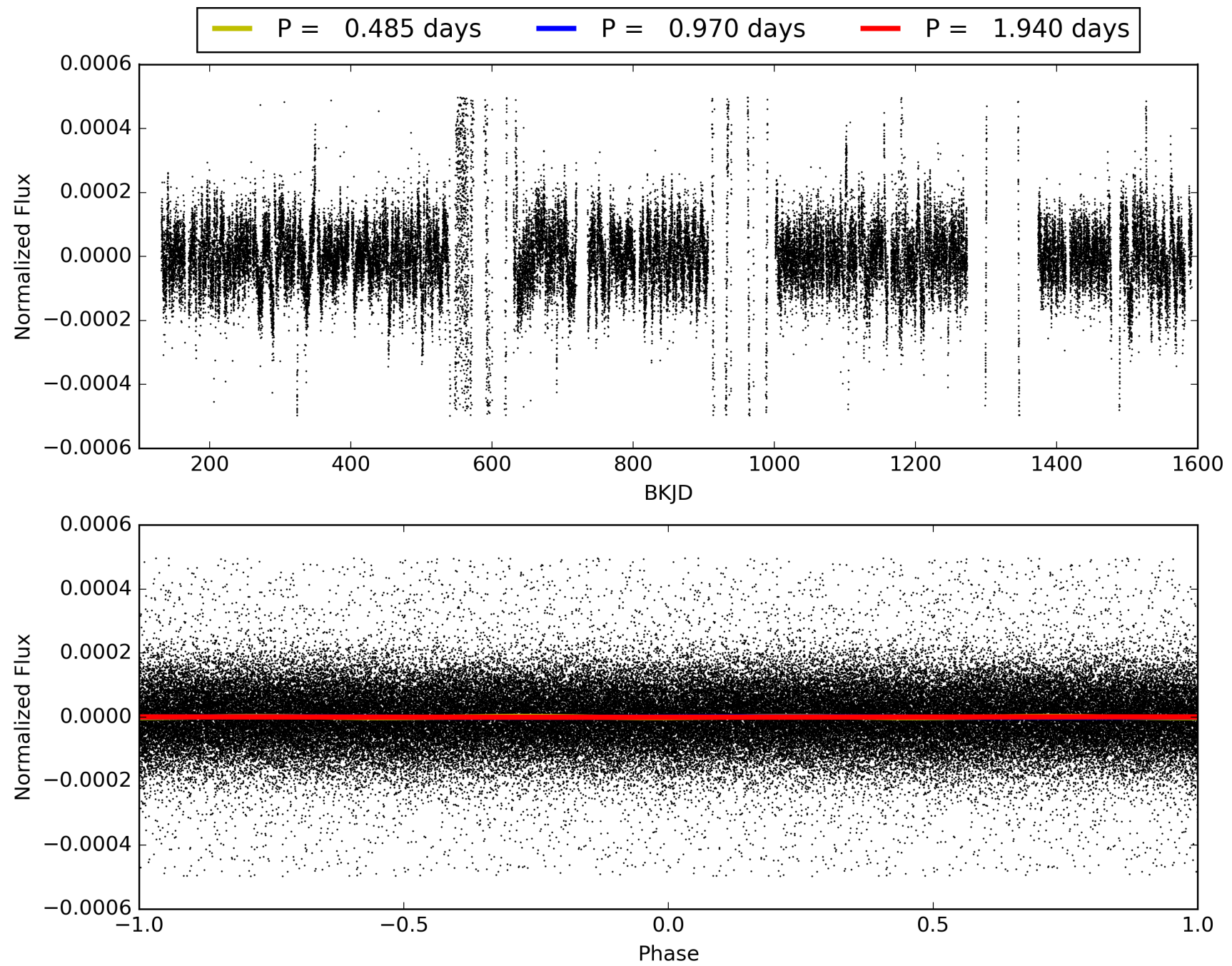
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.40e-11  
RollingBand-fgt: 1.00 [1315/1315]  
GhostDiagnostic-chr: 0.8513  
Centroid-sig: 0.0%  
Centroid-so: 7.031 arcsec [2.65σ]  
OotOffset-rm: 2.294 arcsec [7.35σ]  
KicOffset-rm: 3.691 arcsec [6.92σ]  
OotOffset-st: 3/4/4/2 [13]  
KicOffset-st: 3/4/4/2 [13]  
DiffImageQuality-fgm: 0.54 [7/13]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009822284-01, PDC Light Curves

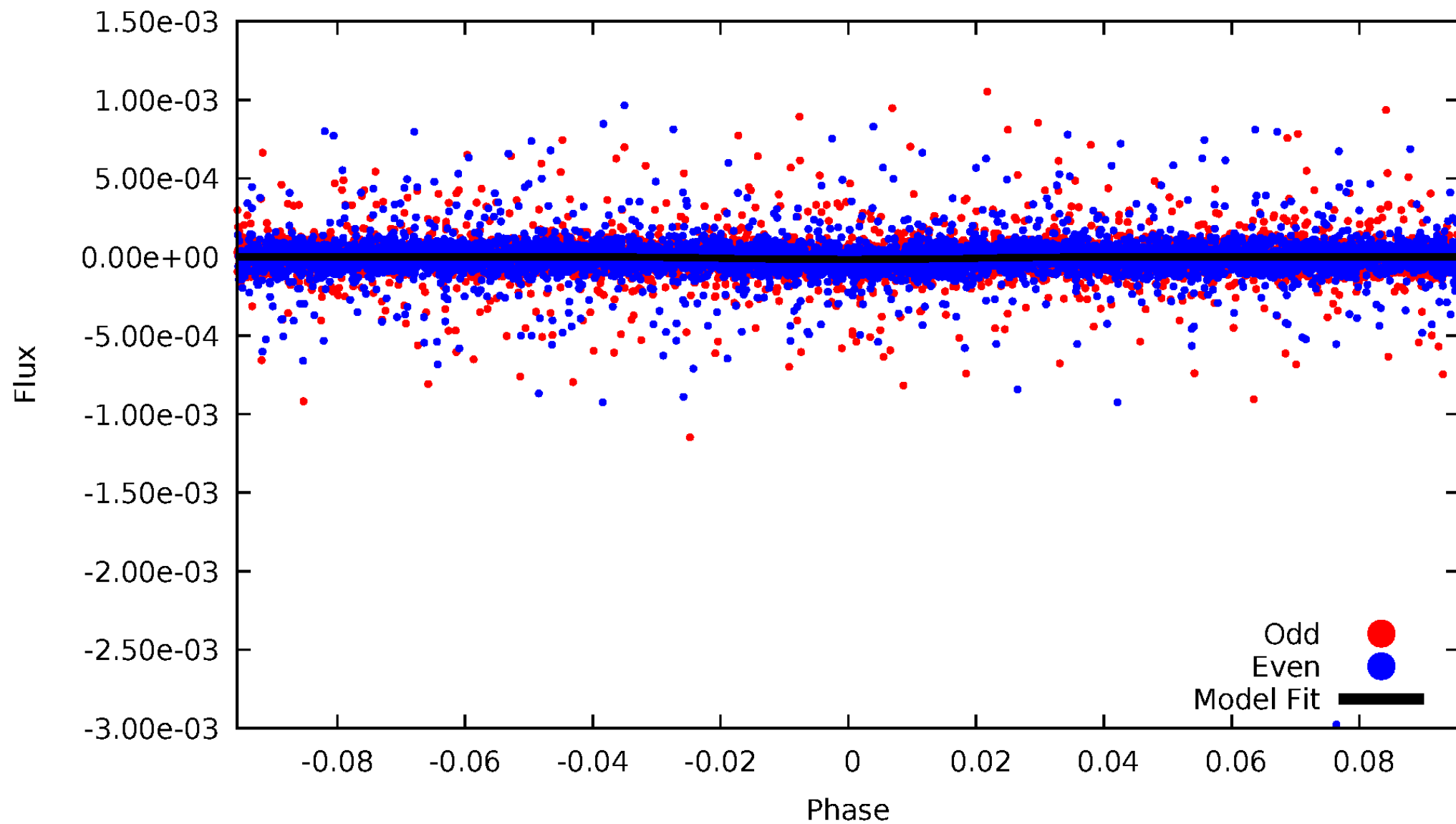


TCE 009822284-01



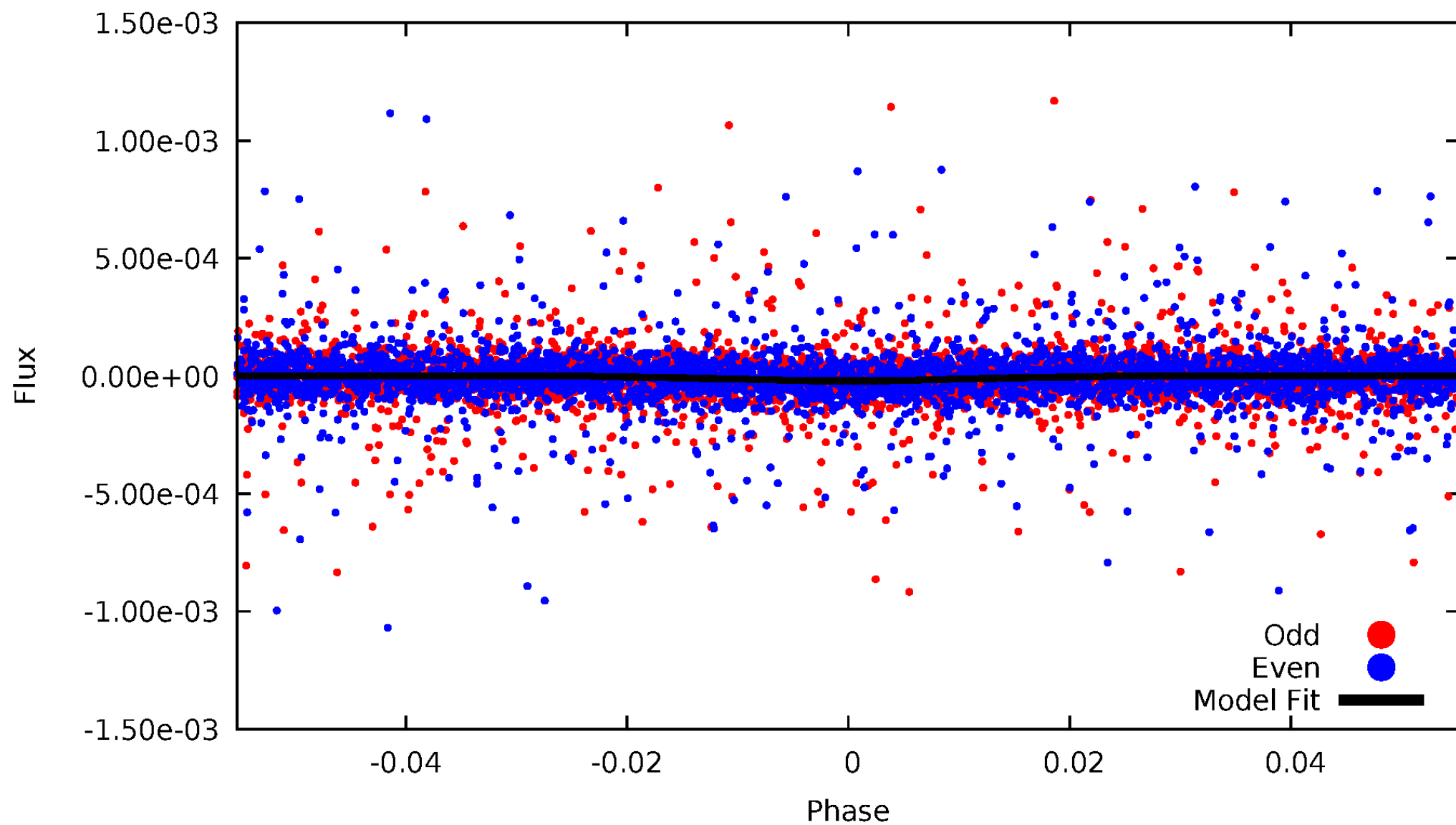
DV Odd/Even

TCE 009822284-01



# ALT Odd/Even

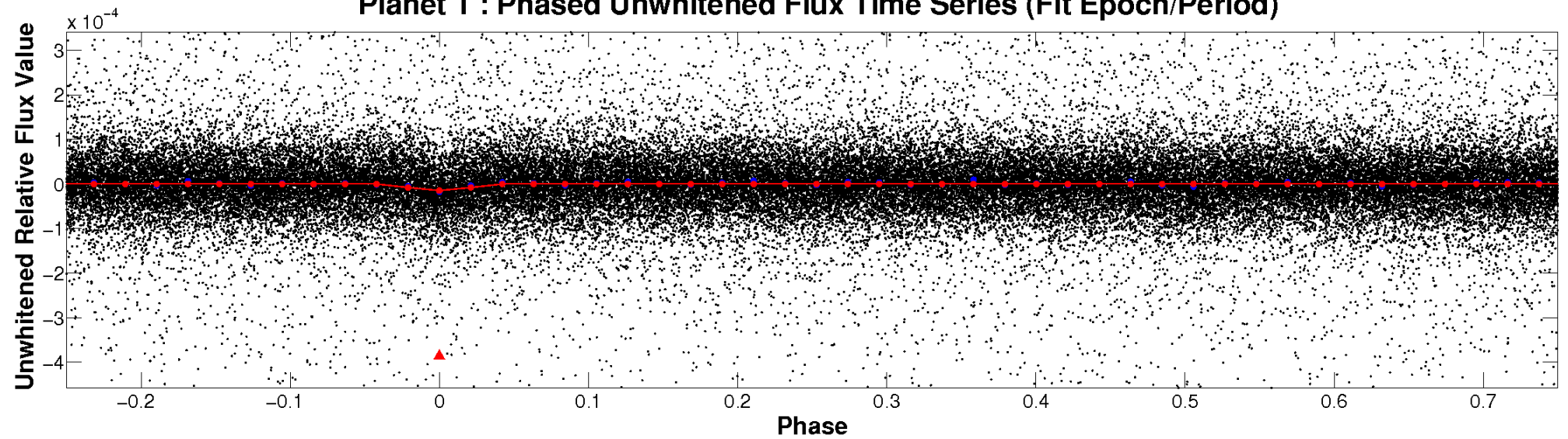
TCE 009822284-01



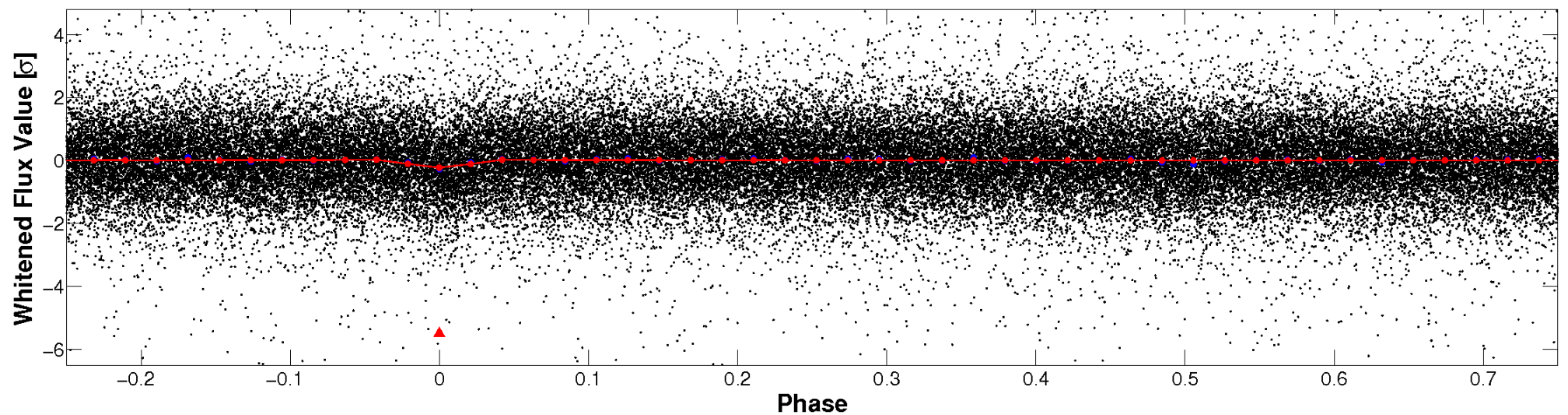


# Non-Whitened Vs. Whitened Light Curve

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

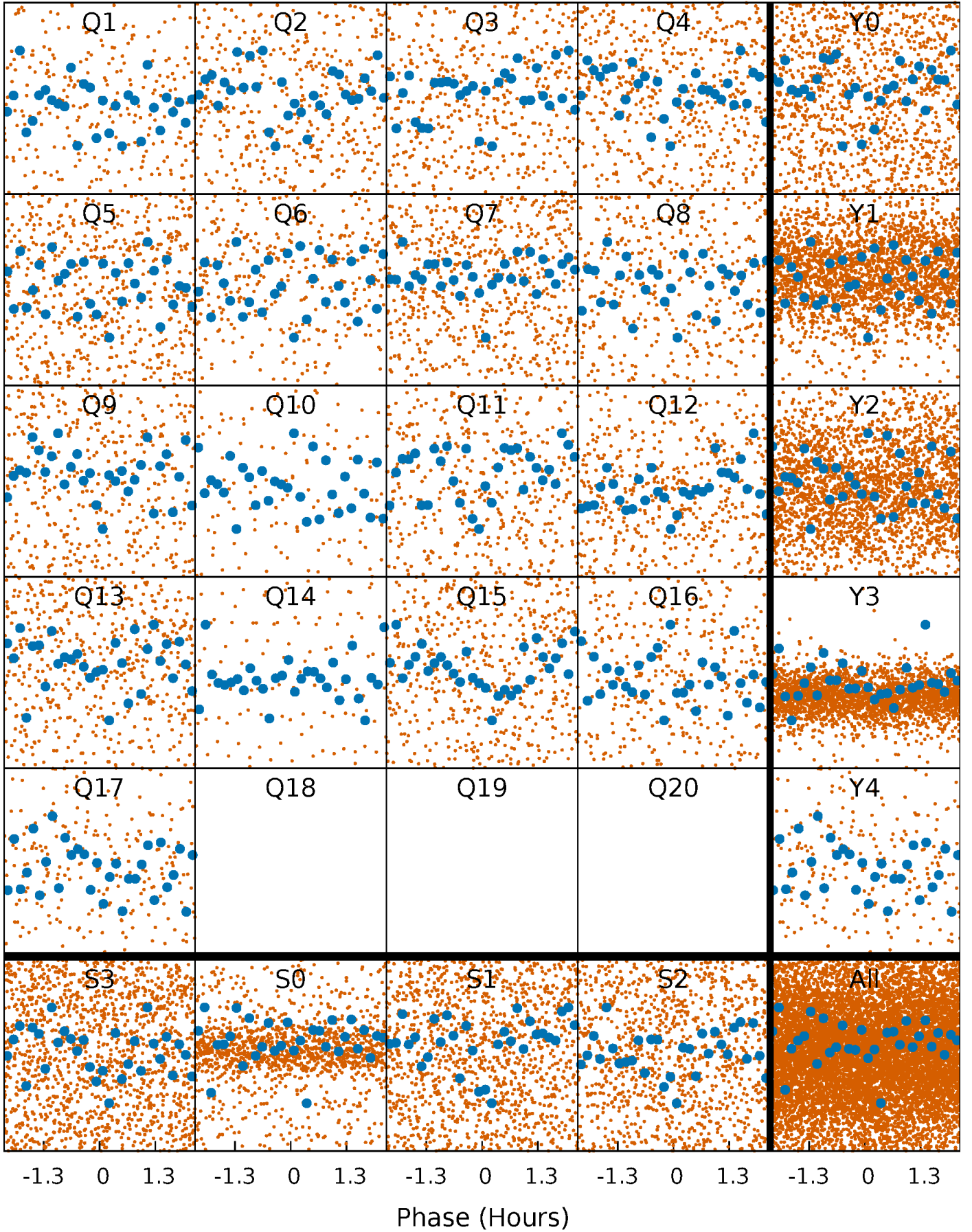


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

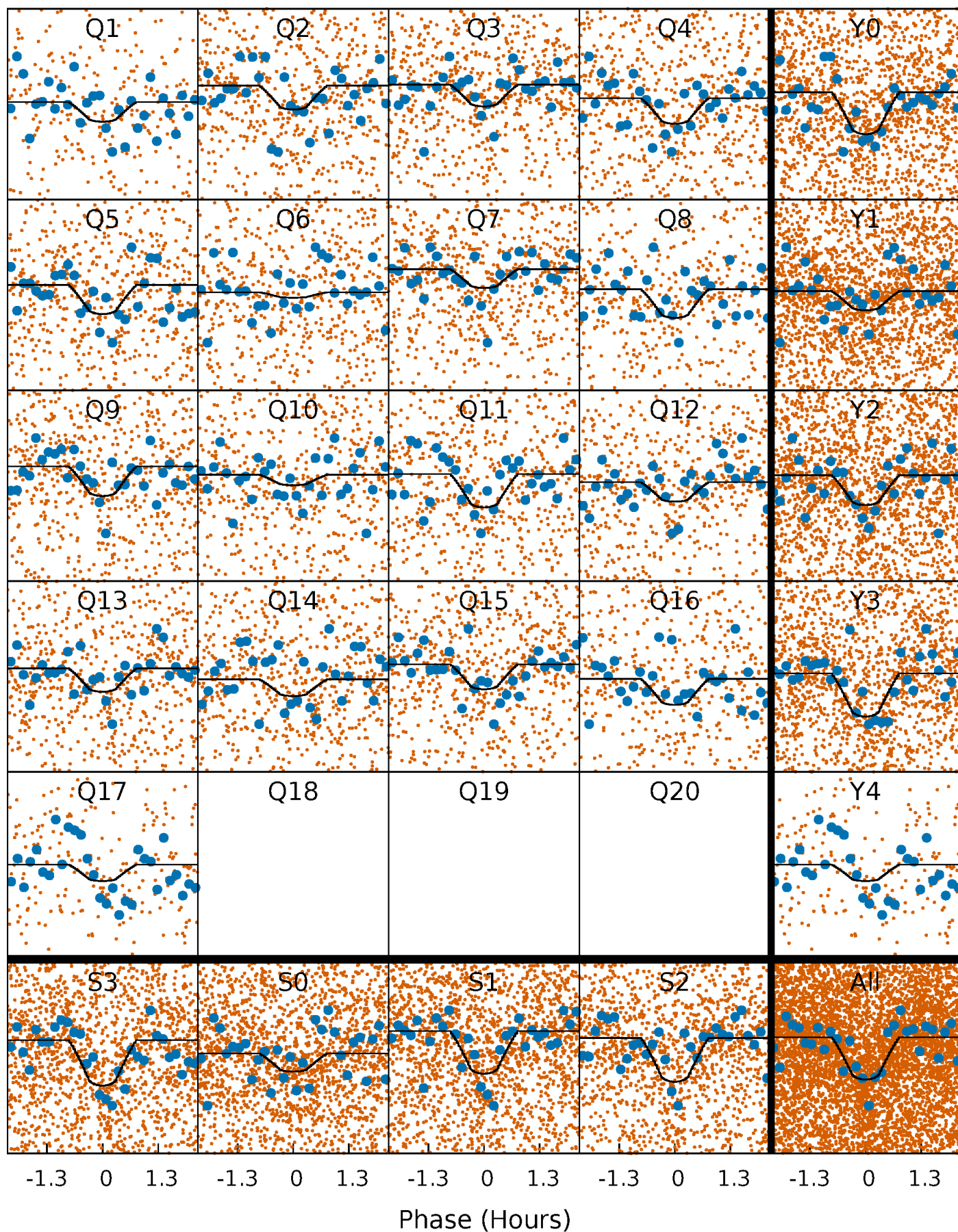
TCE 009822284-01   P= 0.969811 Days    $T_0=132.292395$  (BKJD)





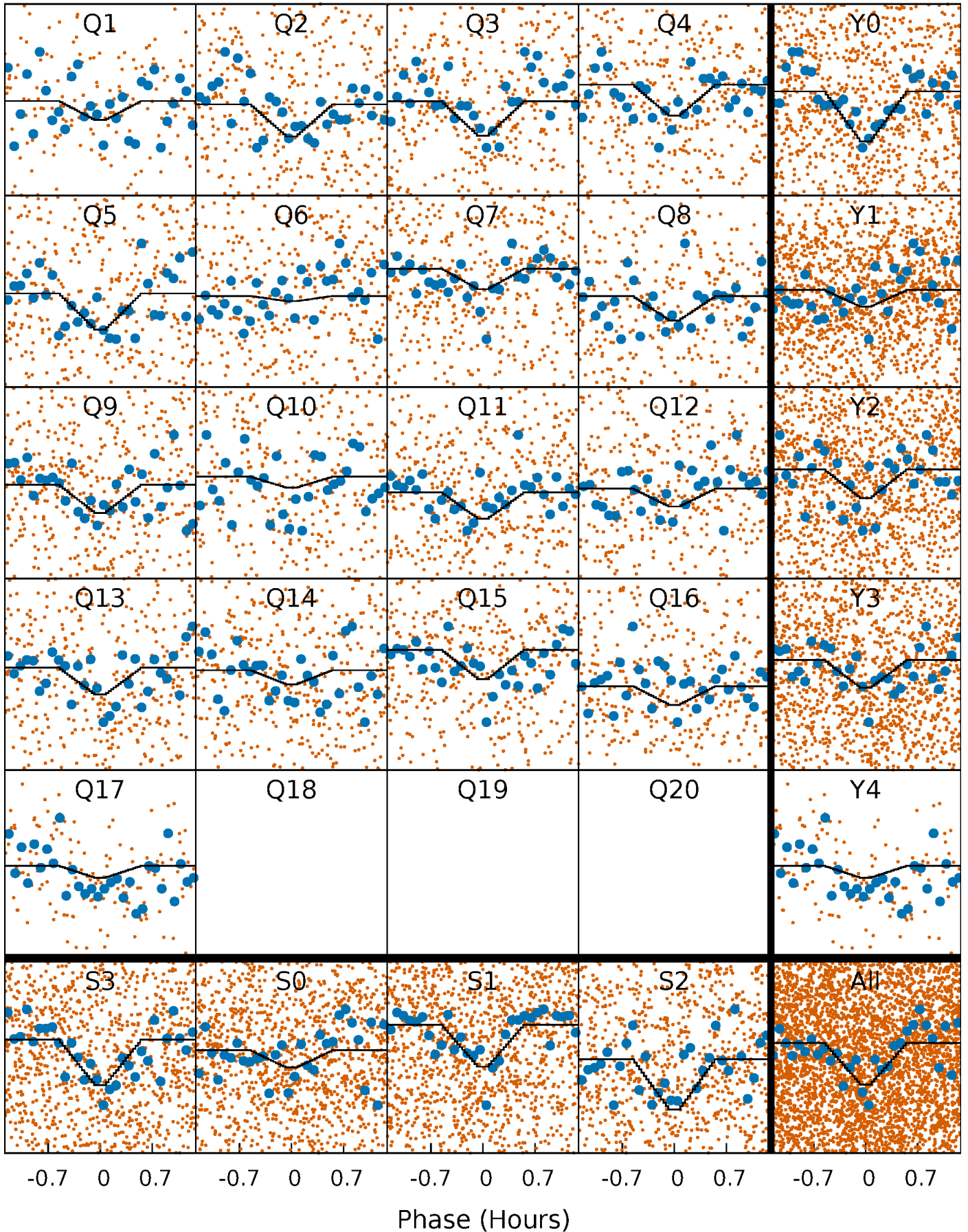
# DV Quarter-Phased Transit Curves

TCE 009822284-01 P= 0.969811 Days  $T_0=132.292395$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

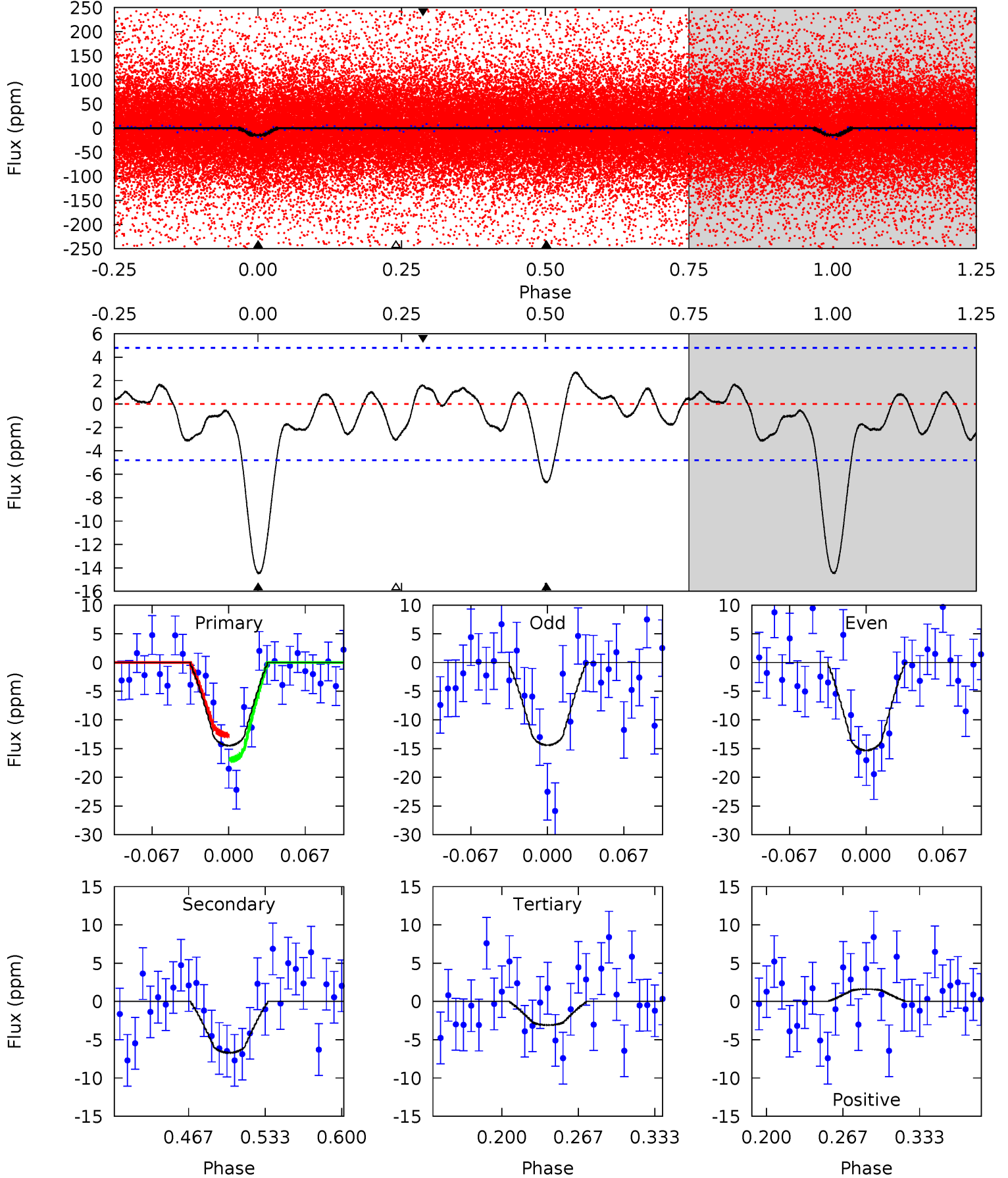
TCE 009822284-01   P= 0.969813 Days    $T_0=132.294450$  (BKJD)



# DV Model-Shift Uniqueness Test

009822284-01, P = 0.969811 Days, E = 131.322584 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
14.0	6.49	2.99	1.56	4.65	1.83	1.28	11.0	12.5	3.51	4.93	0.45	1.13	0.16	2.13

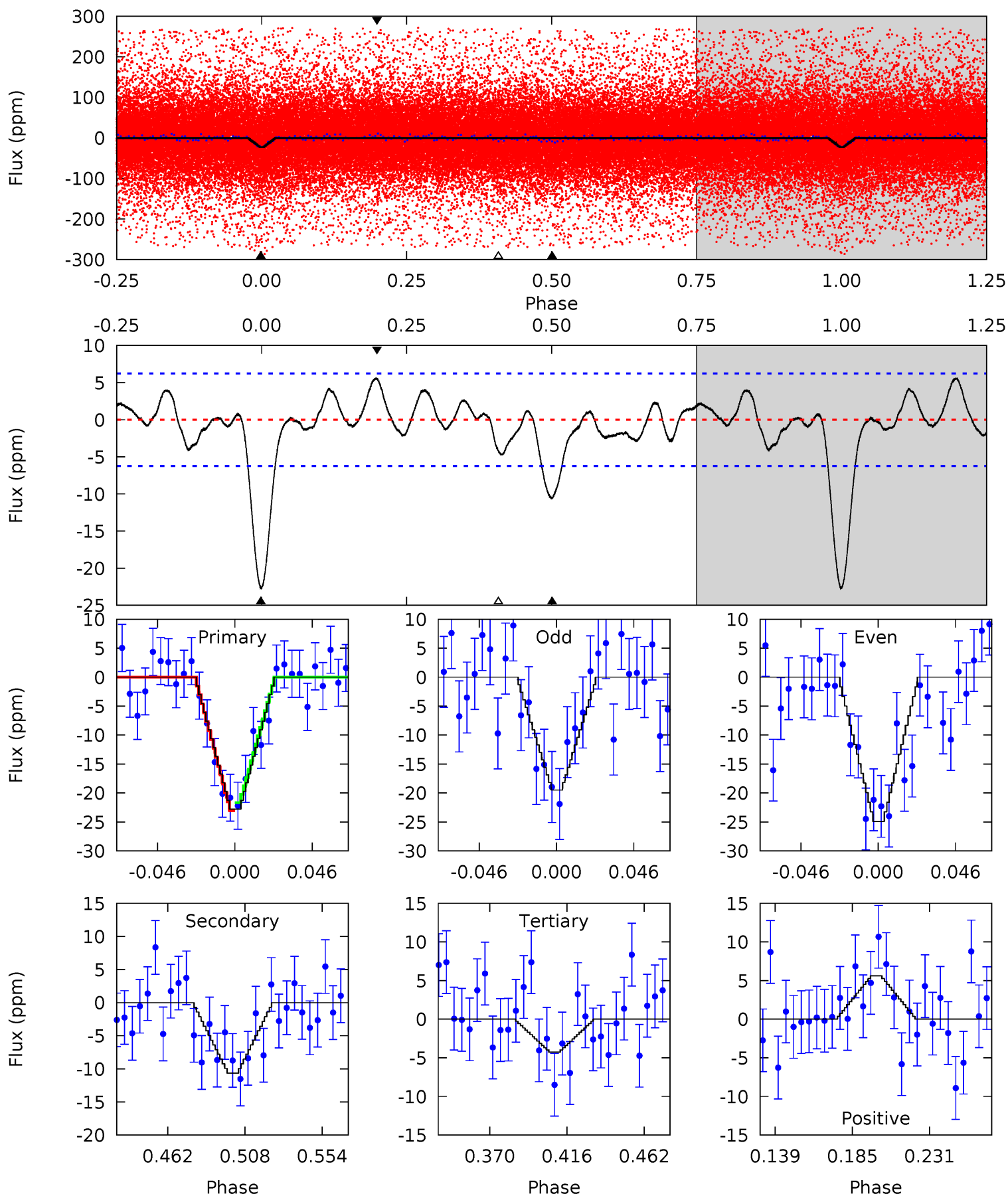




# Alt Model-Shift Uniqueness Test

009822284-01, P = 0.969813 Days, E = 131.324637 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
17.3	8.07	3.23	4.26	4.72	1.99	1.58	14.0	13.0	4.84	3.81	2.07	0.90	0.20	0.52



### Stellar Parameters For KIC 009822284

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5780^{+1}_{-1}$	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 009822284-01 / KOI 4807.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-7 \pm 1$	$0.40^{+0.10}_{-0.10}$	$2581^{+119}_{-120}$	$4906^{+698}_{-470}$	$8.480^{+6.941}_{-3.215}$
Alt.	$-11 \pm 1$	$0.49^{+0.10}_{-0.09}$	$2566^{+128}_{-118}$	$4964^{+477}_{-394}$	$8.853^{+4.770}_{-2.688}$

$T_{\text{max}}$  = 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

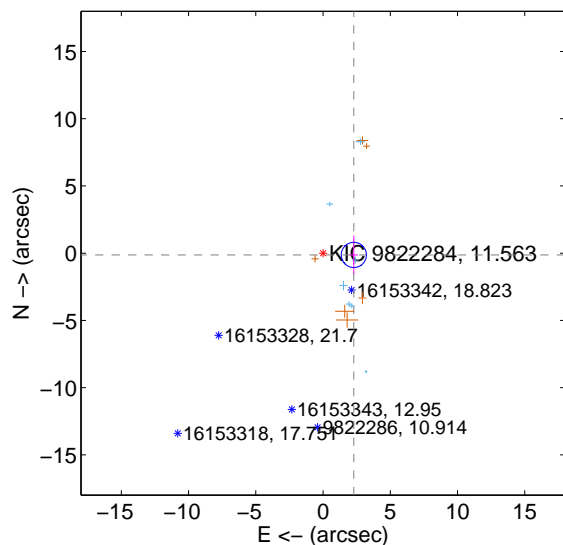
Supplemental centroid analysis for 009822284-01. **Kepler magnitude: 11.56.** Transit SNR 10.94

There are 7 quarters with good PRF difference image offsets

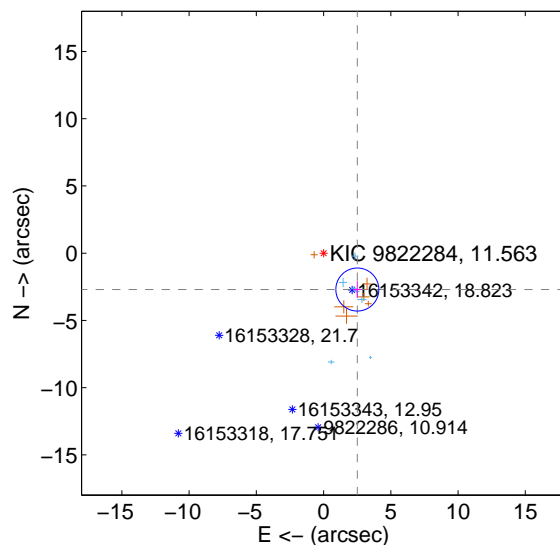
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>2.294 \pm 0.312</math></b>	<b>7.35</b>	$-2.290 \pm 0.302$	$-0.131 \pm 1.435$
PRF-fit source offset from KIC position	<b><math>3.691 \pm 0.533</math></b>	<b>6.92</b>	$-2.511 \pm 0.297$	$-2.704 \pm 0.625$
photometric centroid source offset	$7.03 \pm 2.66$	2.65	$-2.20 \pm 1.06$	$-6.68 \pm 2.77$

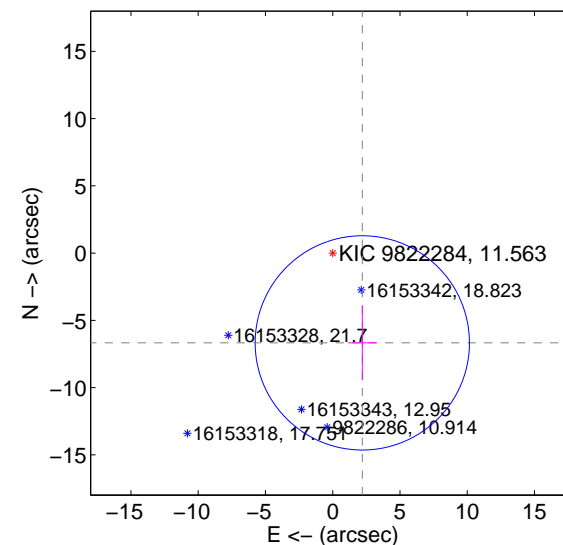
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

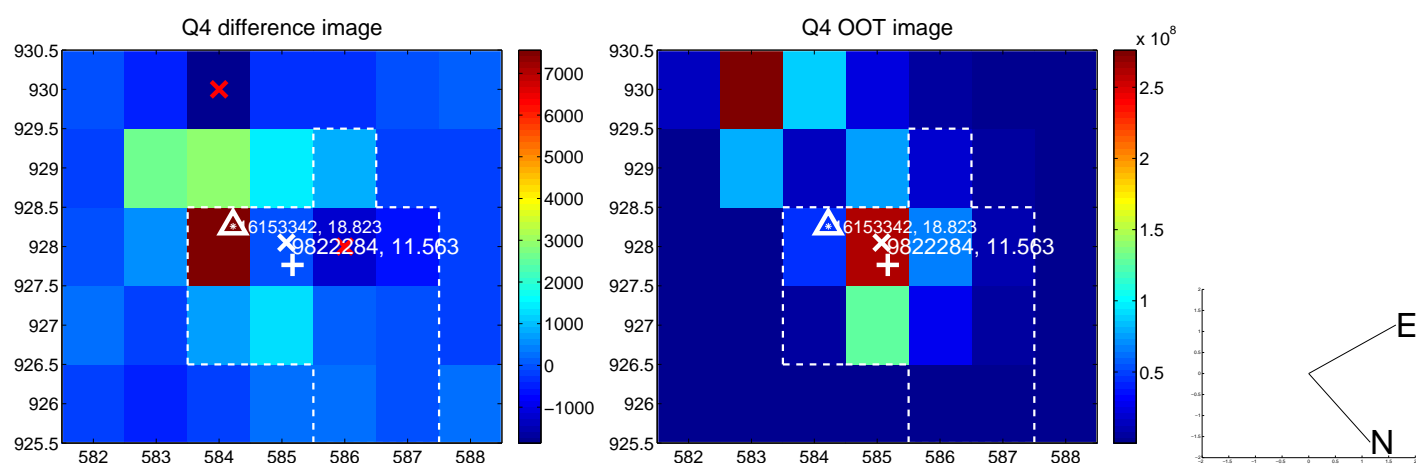
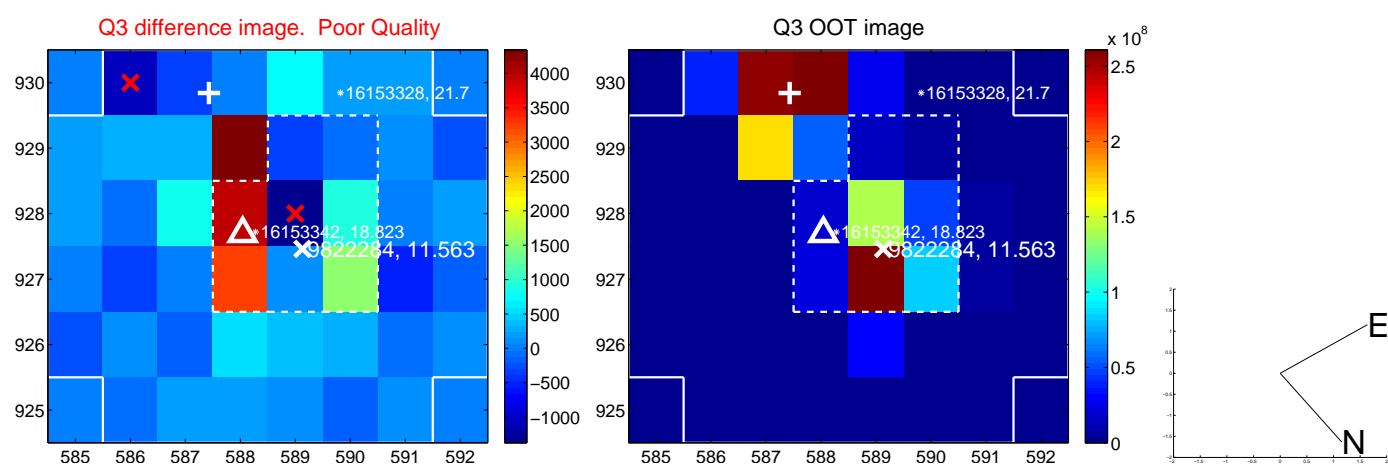
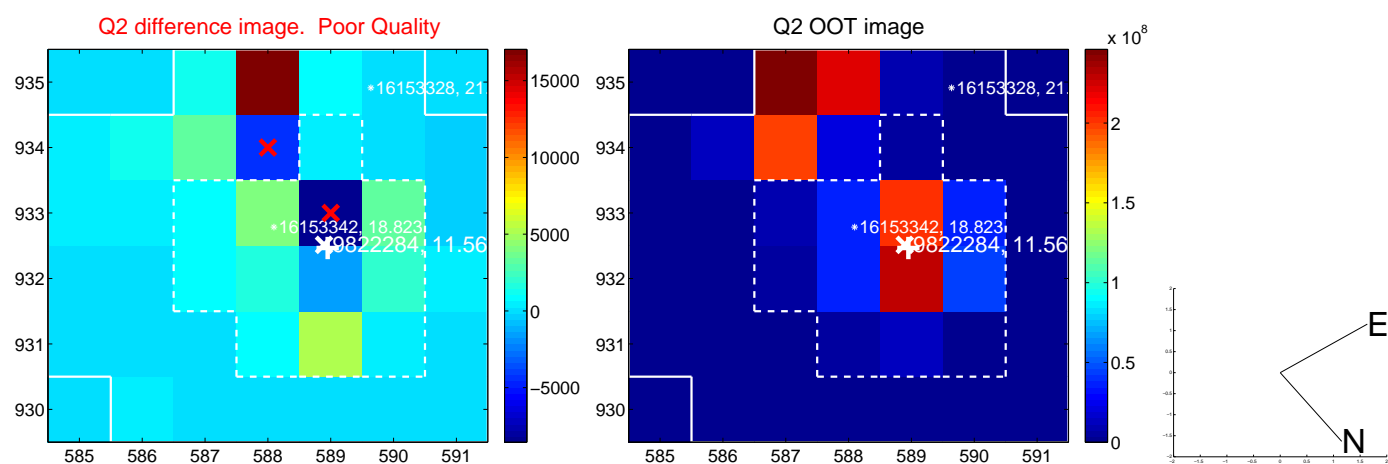
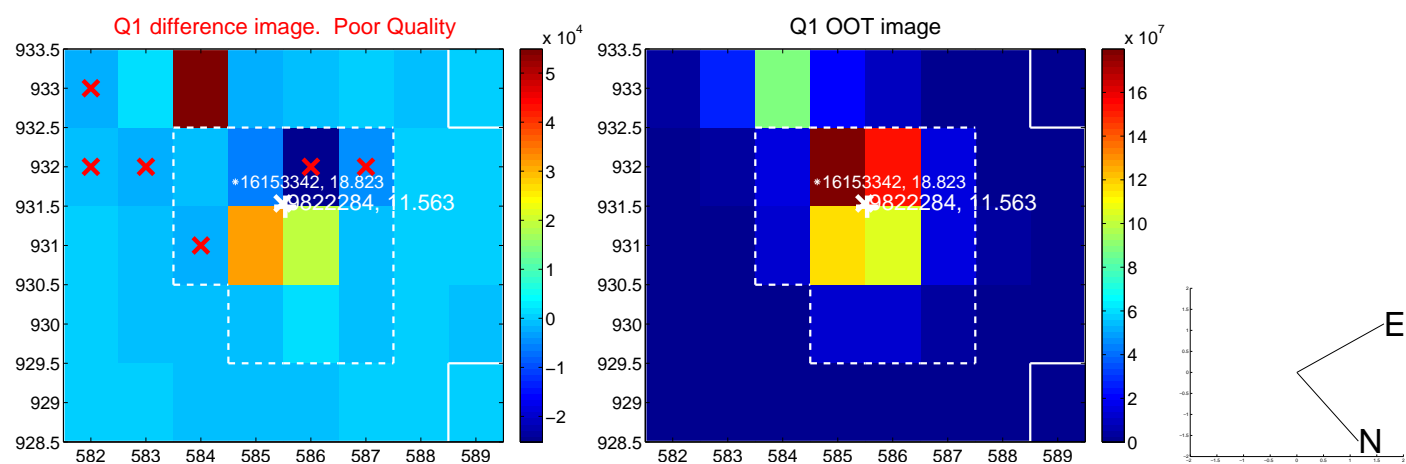


offset from photometric centroids

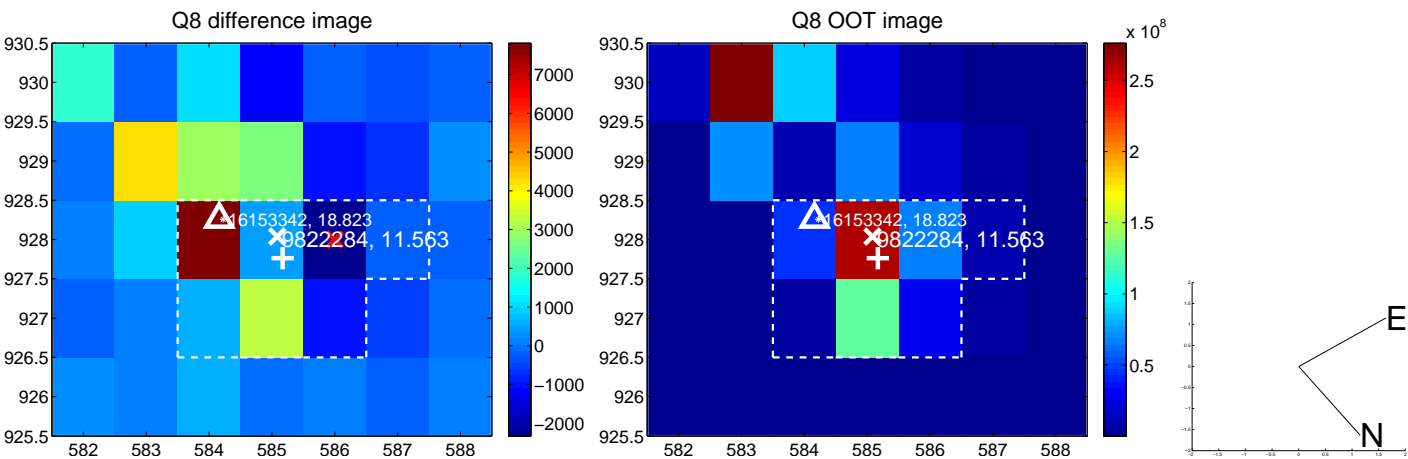
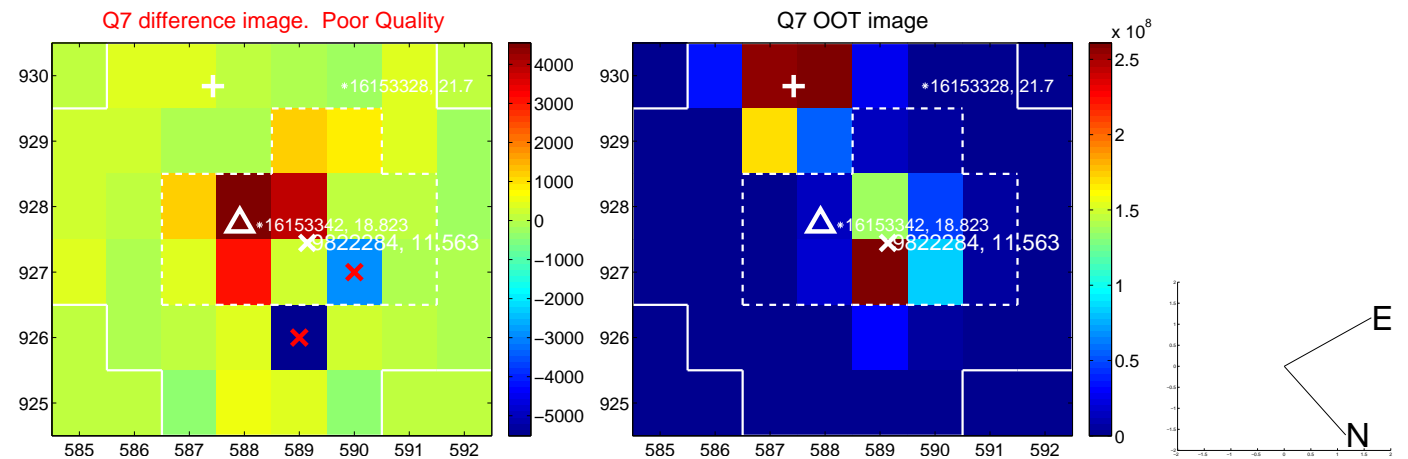
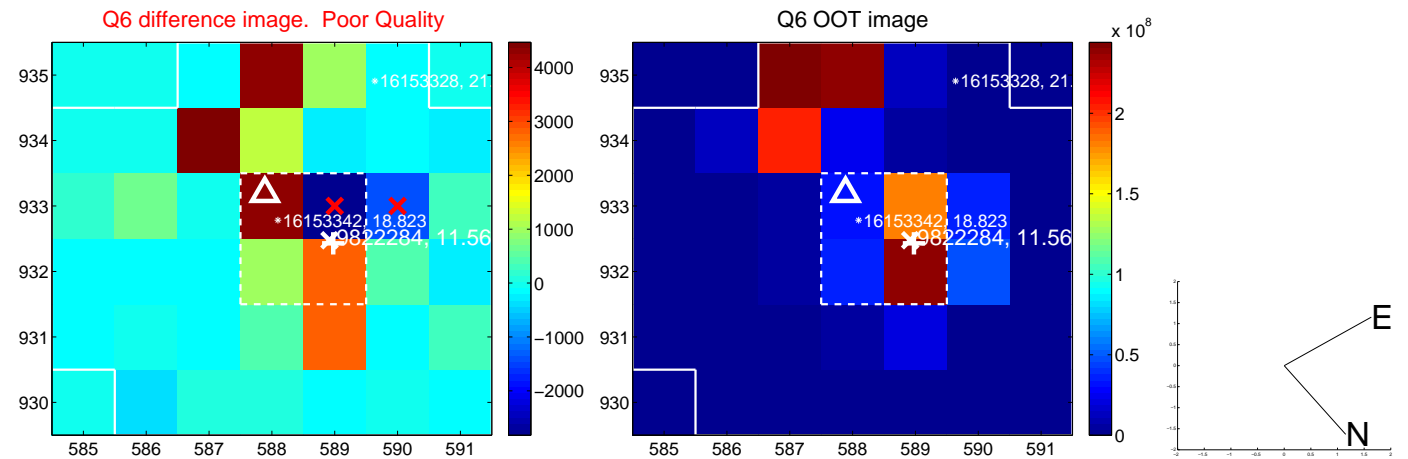
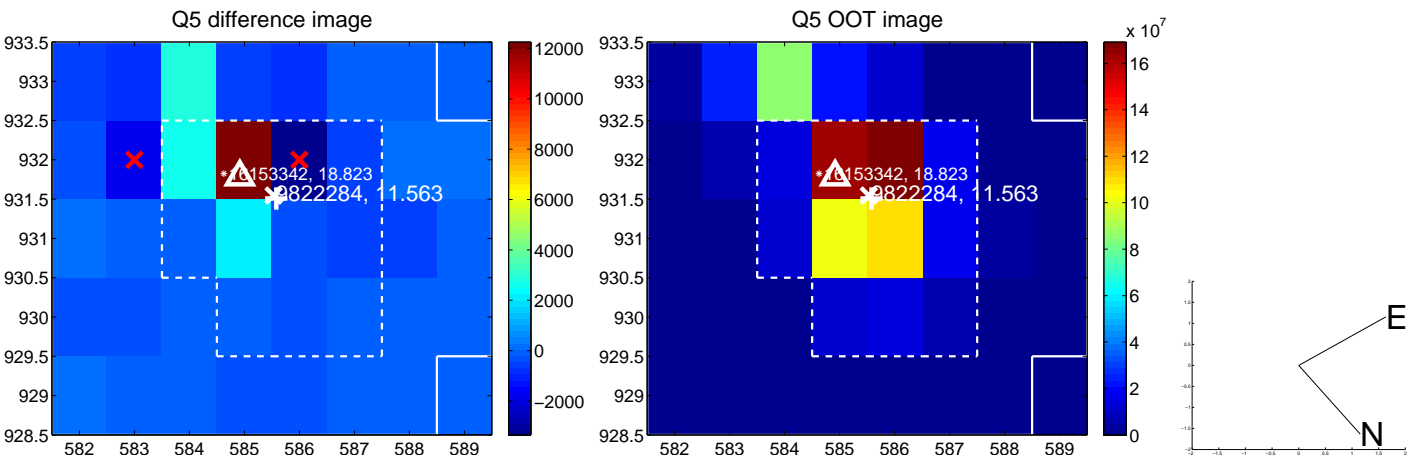


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

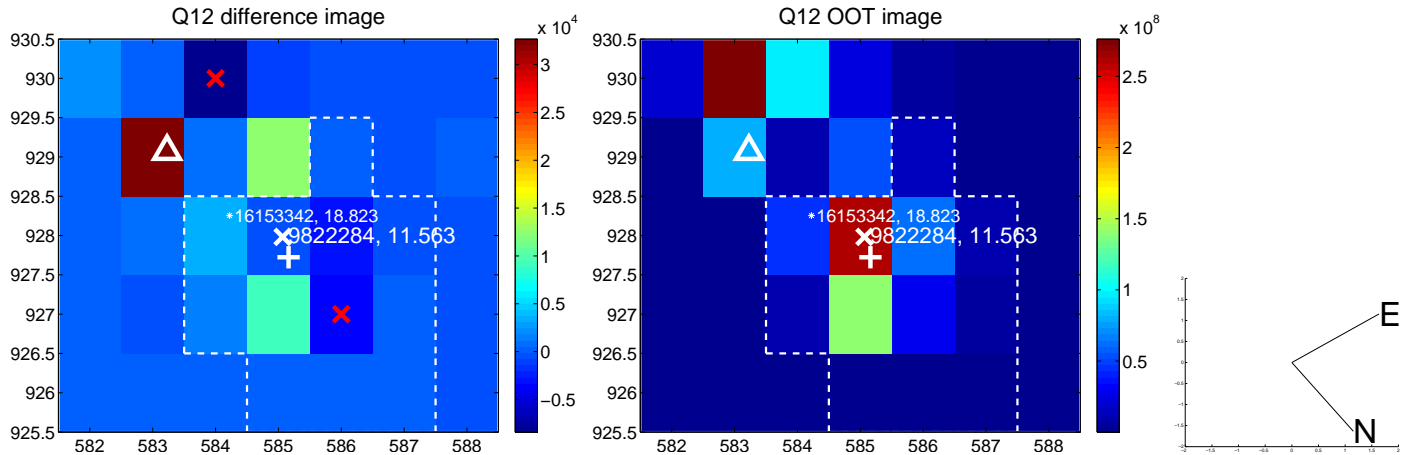
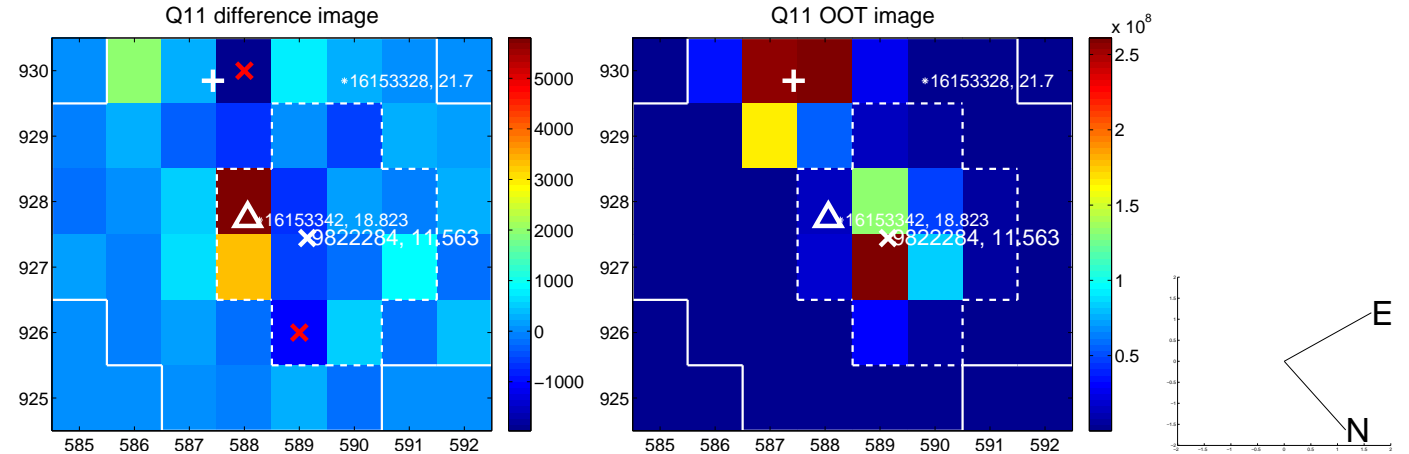
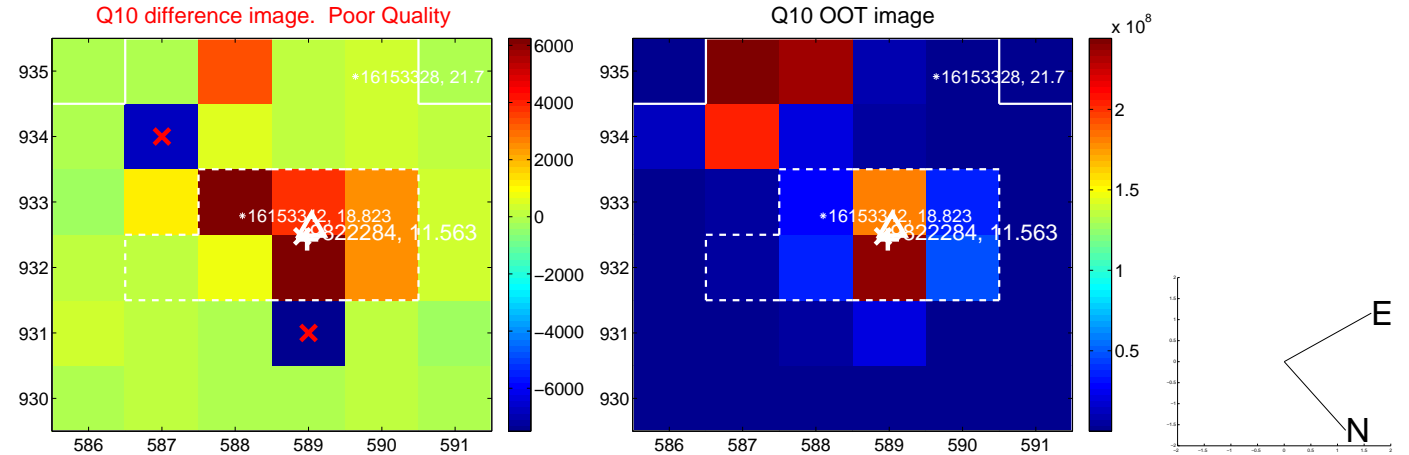
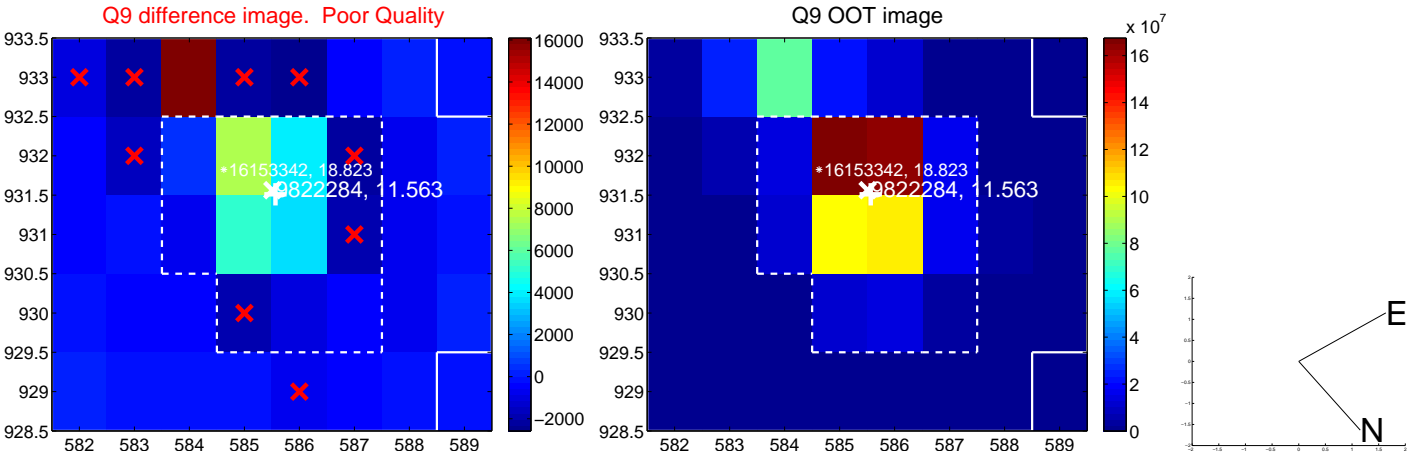
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



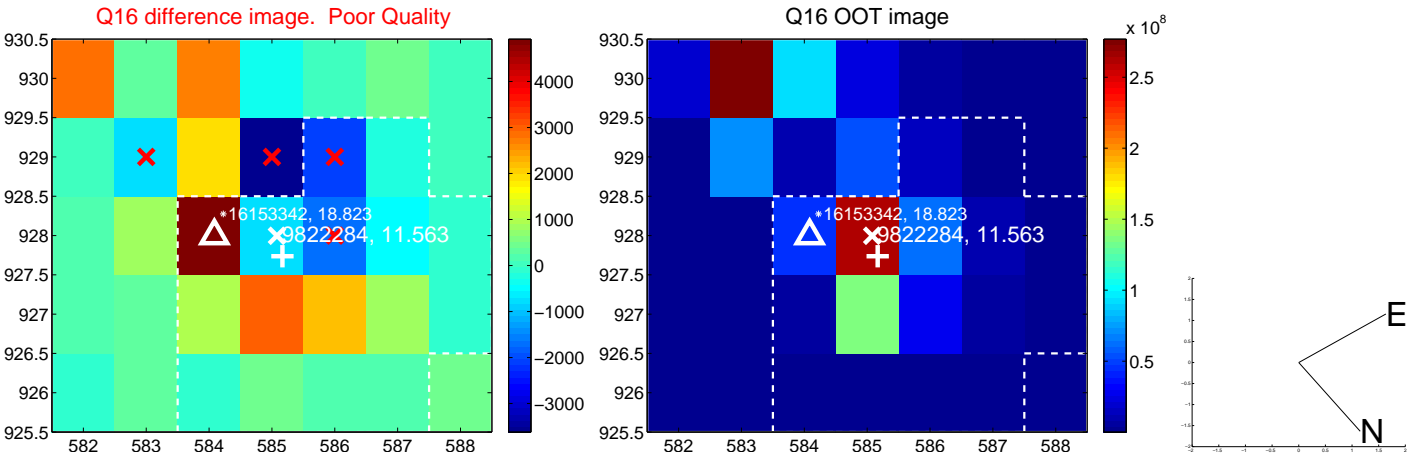
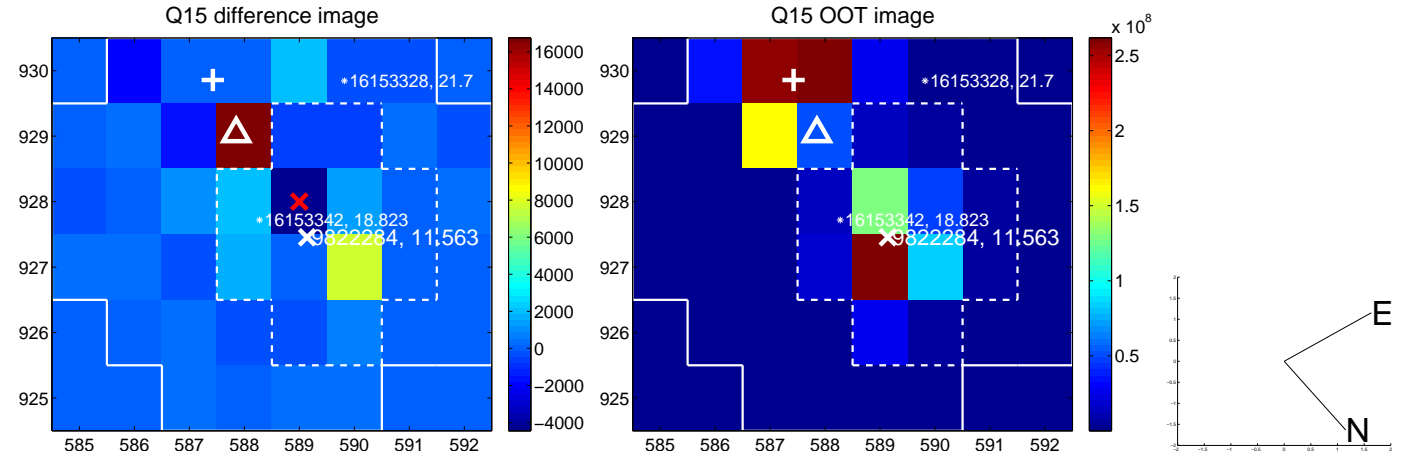
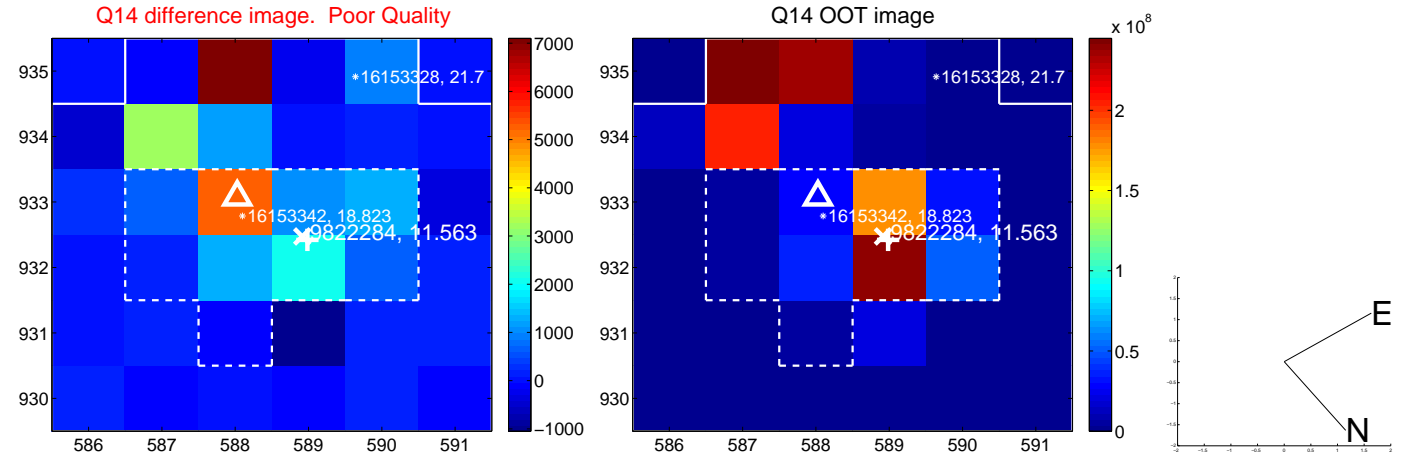
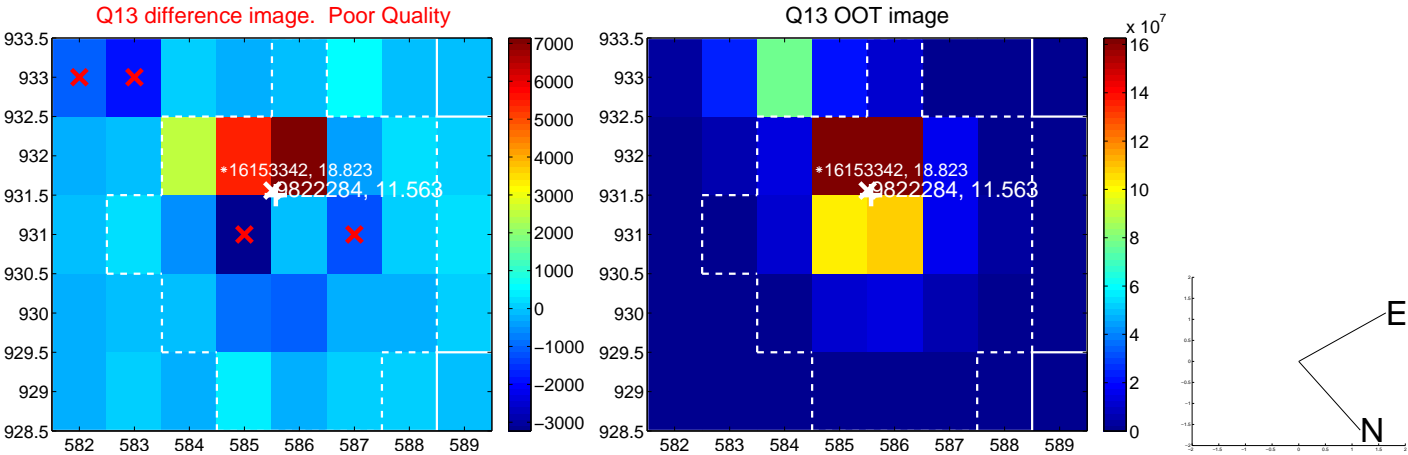
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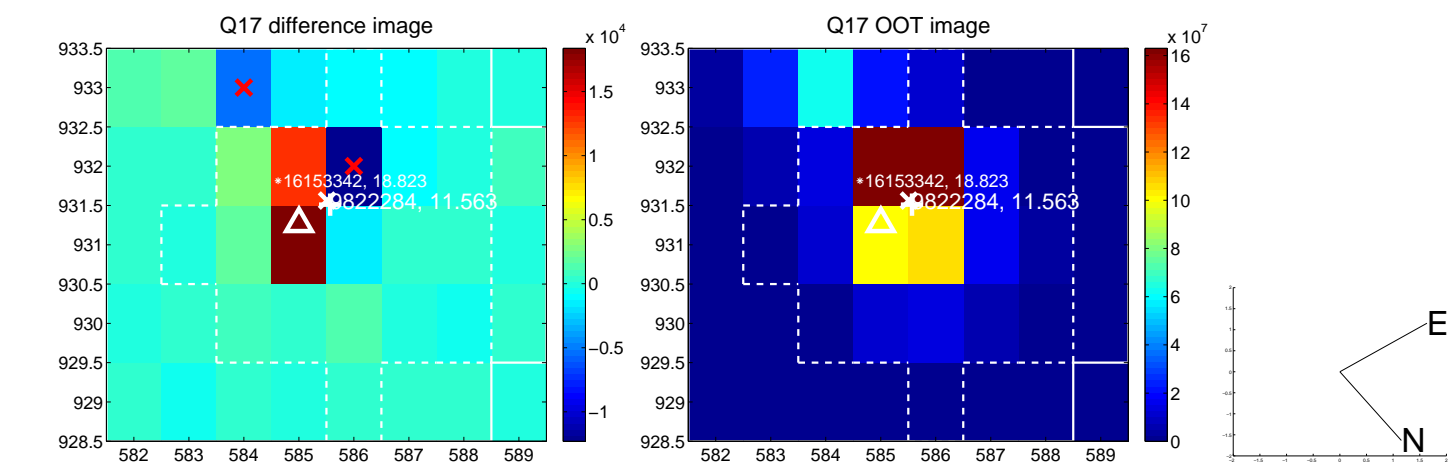


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

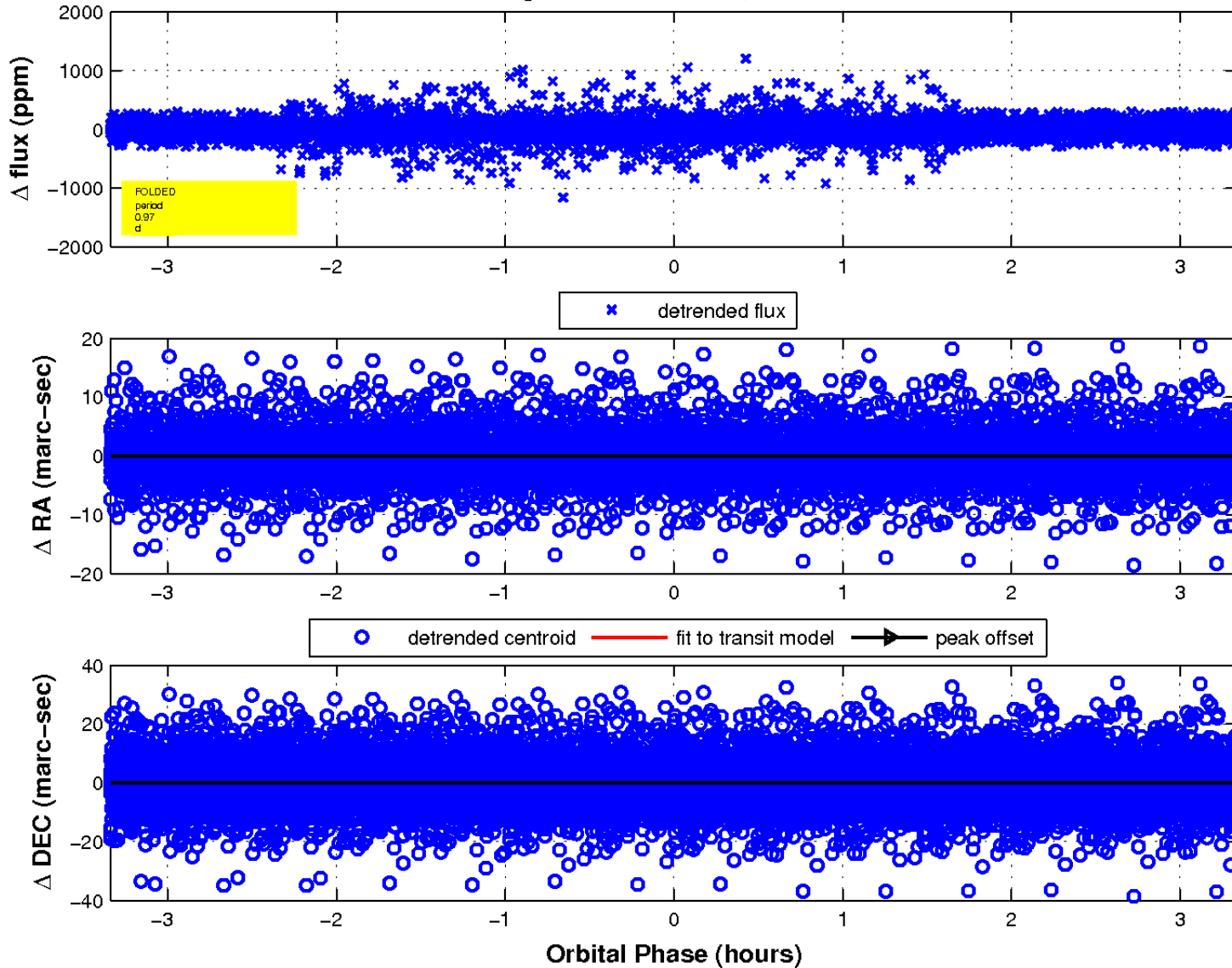




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

