

# KIC 008229458

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008229458-01	OBS	2238.01	1.646804	132.061053	293.3	1.427	25.2	30.7	0.51	3810	1.16	100.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008229458-01	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.

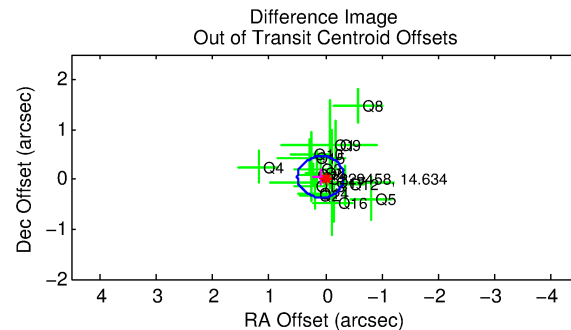
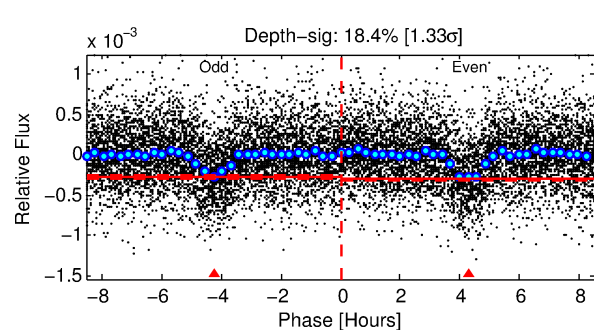
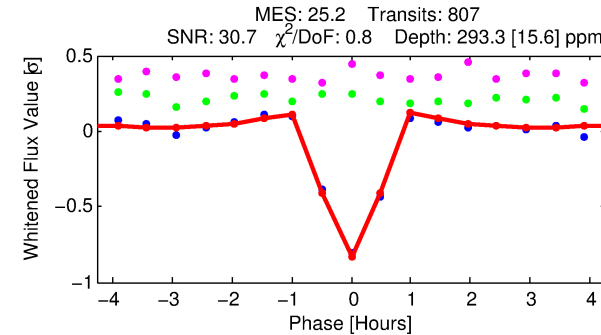
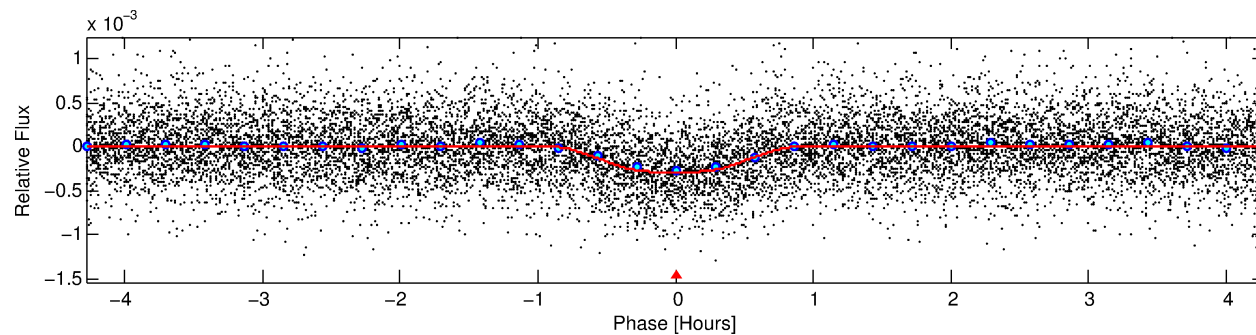
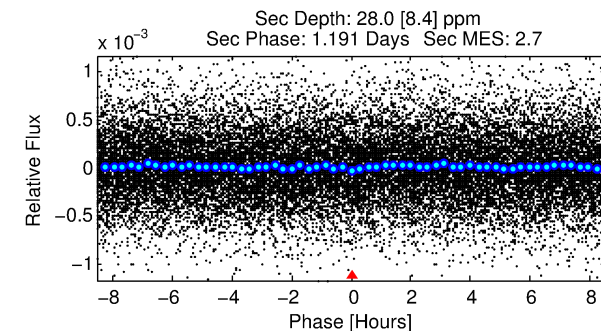
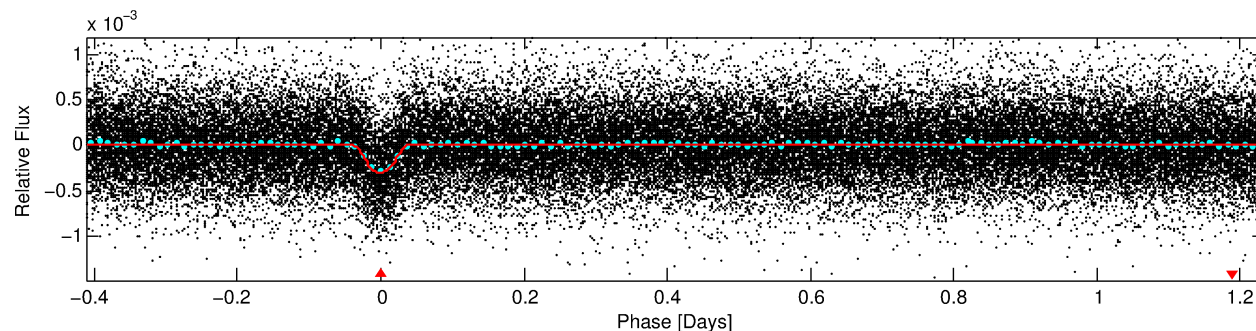
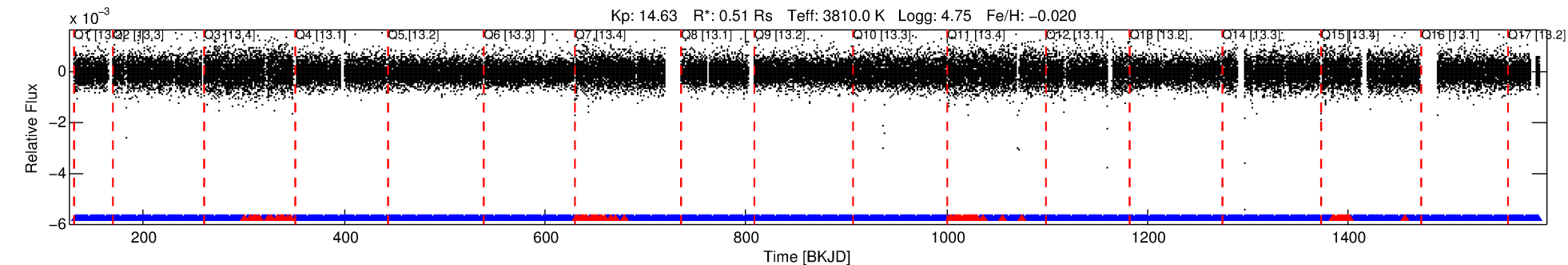
## Ephemeris Match Information For 008229458-01

No Significant Match Found

# DV One-Page Summary

KIC: 8229458 Candidate: 1 of 1 Period: 1.647 d

KOI: K02238.01 Corr: 0.938



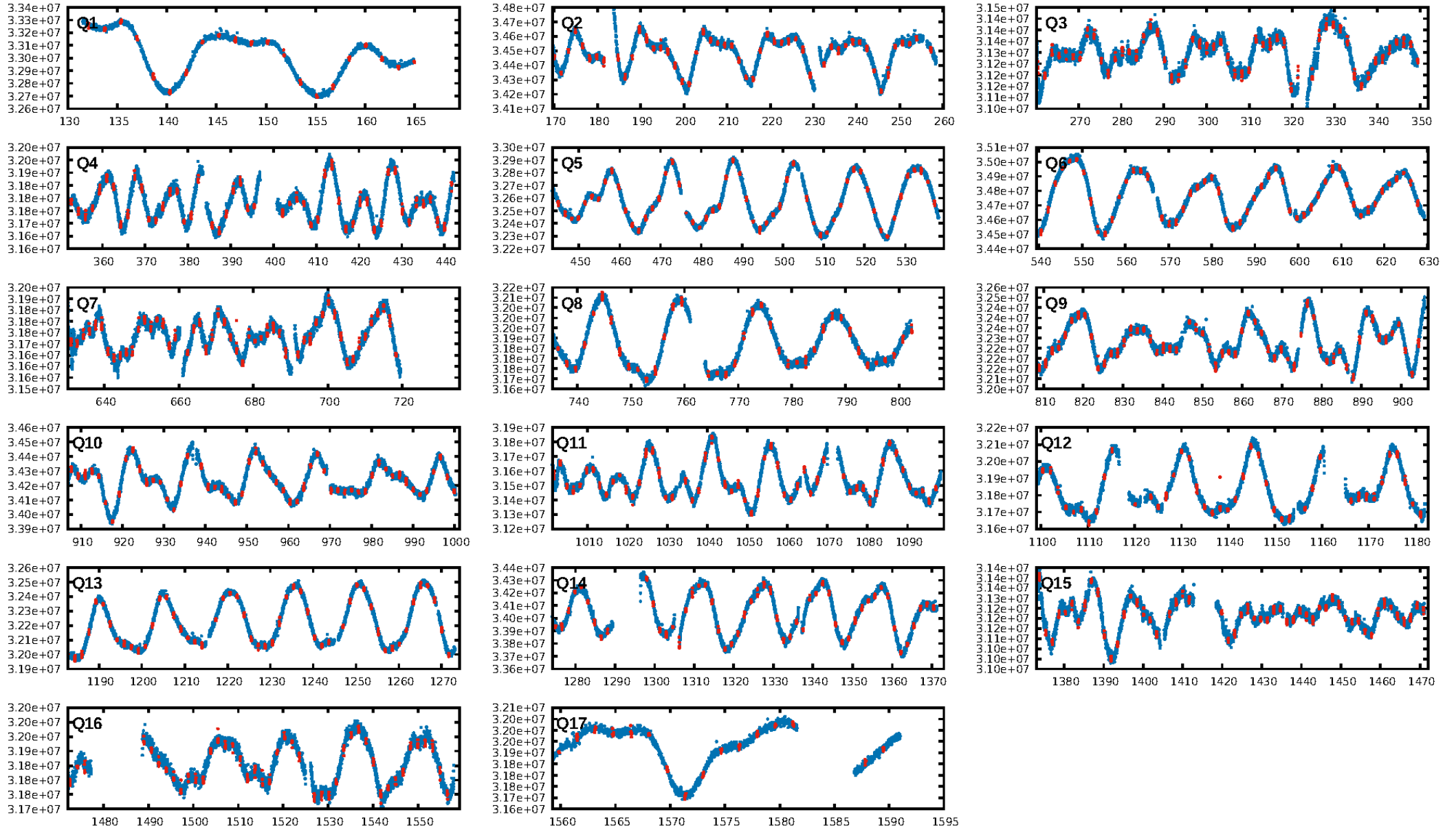
## DV Fit Results:

Period = 1.64680 [0.00000] d  
Epoch = 132.0611 [0.0006] BKJD  
Rp/R\* = 0.0206 [0.0018]  
a/R\* = 3.26 [0.98]  
b = 0.96 [0.03]  
Seff = 100.11 [11.68]  
Teq = 807 [24] K  
Rp = 1.15 [0.13] Re  
a = 0.0223 [0.0013] AU  
Ag = 5.74 [2.04] [2.32σ]  
Teffp = 1930 [173] K [6.44σ]

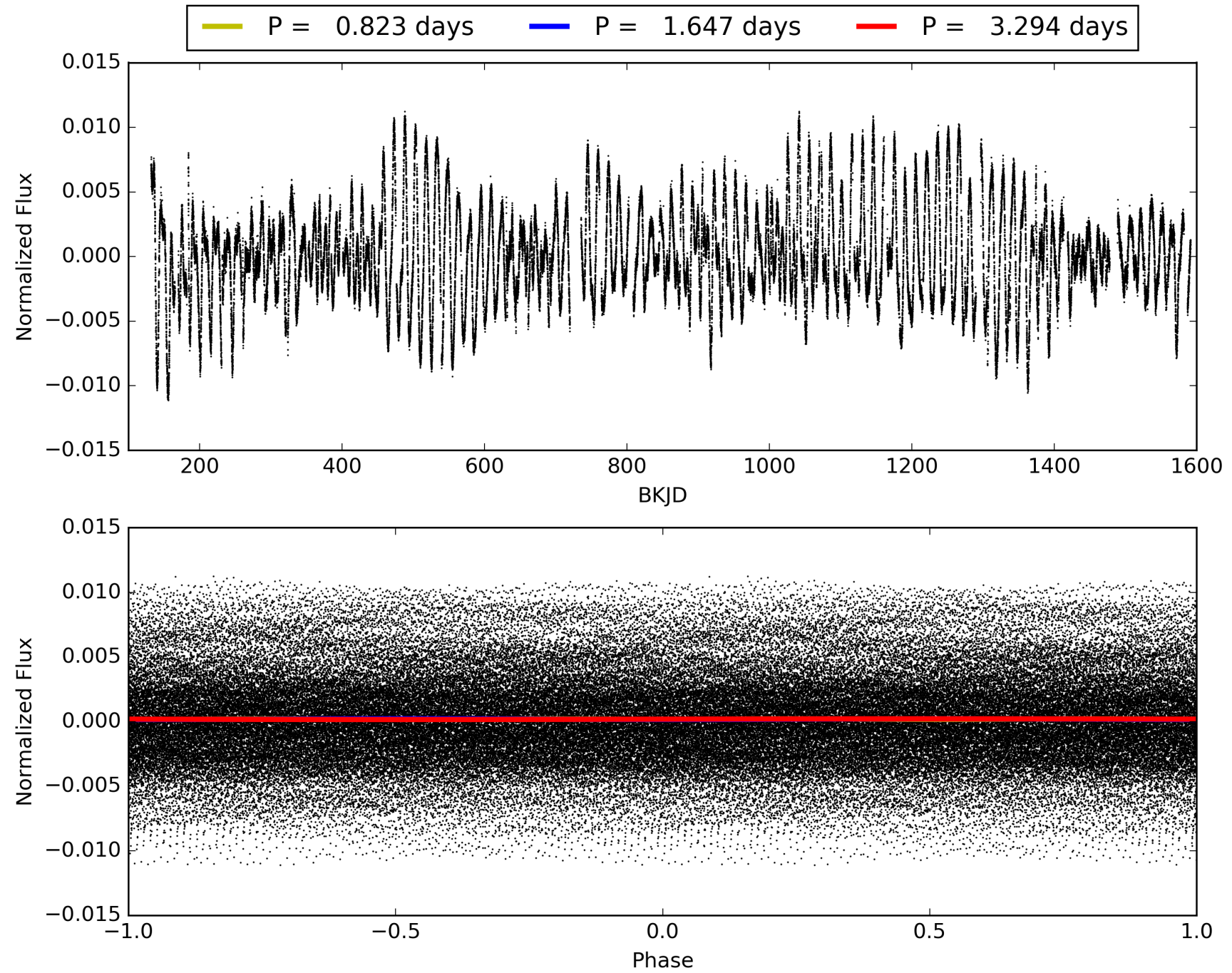
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.44e-129  
RollingBand-fgt: 0.92 [706/770]  
GhostDiagnostic-chr: 9.991  
Centroid-sig: 10.0%  
Centroid-so: 0.219 arcsec [0.57σ]  
OotOffset-rm: 0.093 arcsec [0.67σ]  
KicOffset-rm: 0.562 arcsec [4.07σ]  
OotOffset-st: 4/3/4/5 [16]  
KicOffset-st: 4/3/4/5 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008229458-01, PDC Light Curves

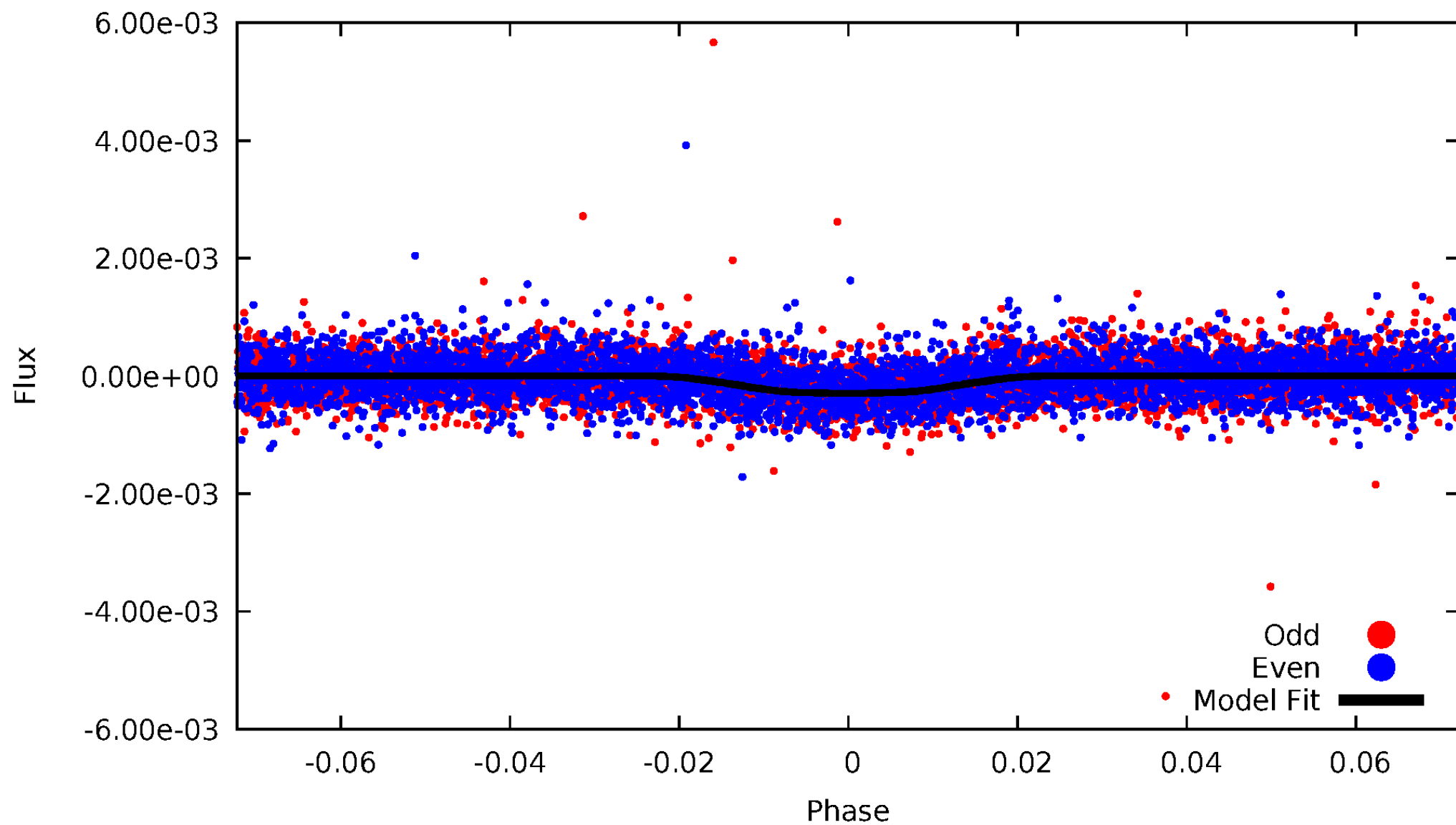


TCE 008229458-01



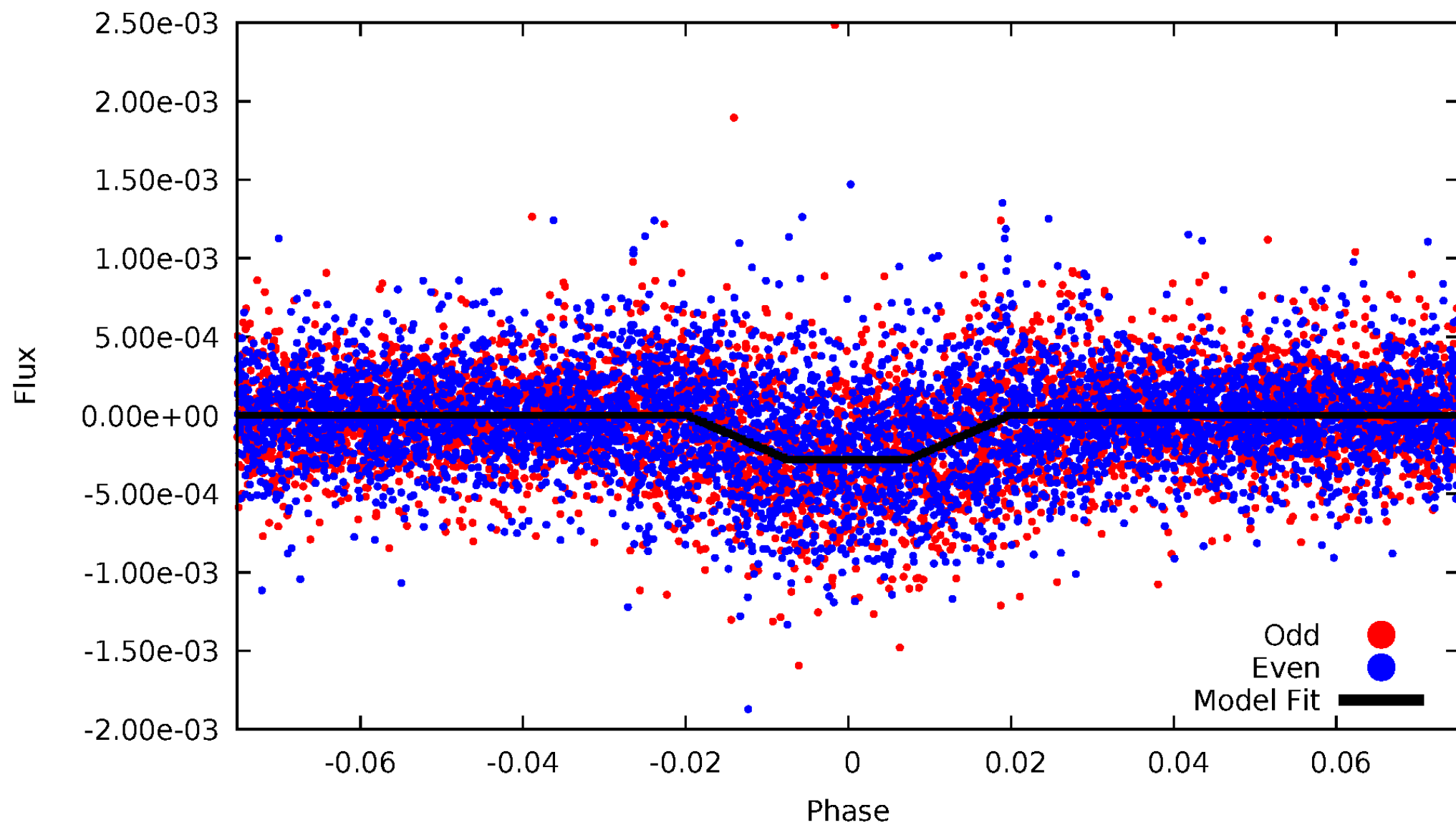
# DV Odd/Even

TCE 008229458-01



# ALT Odd/Even

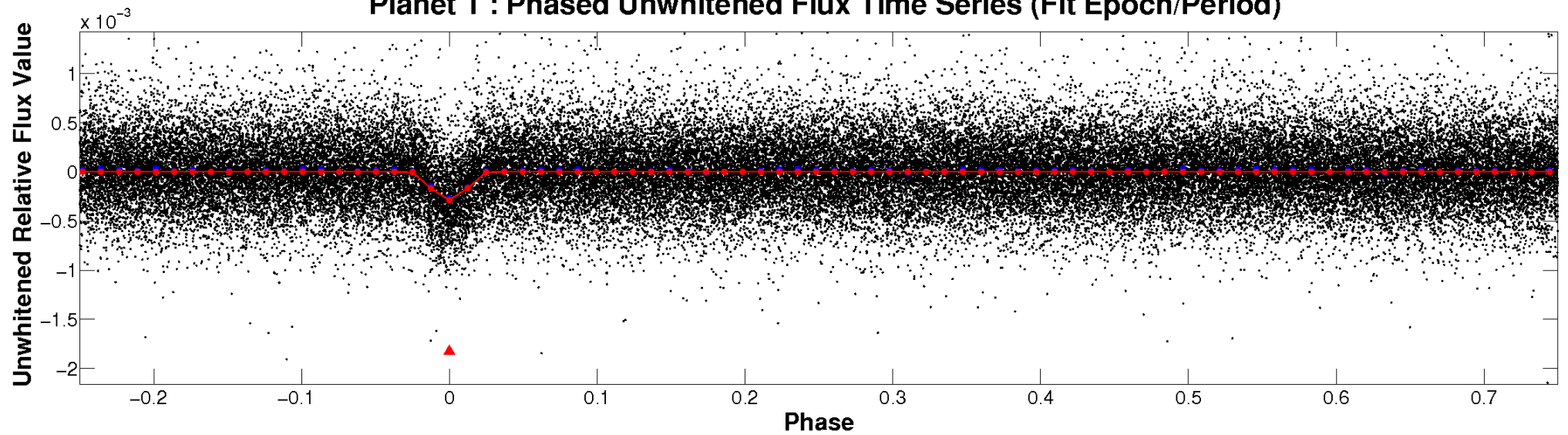
TCE 008229458-01



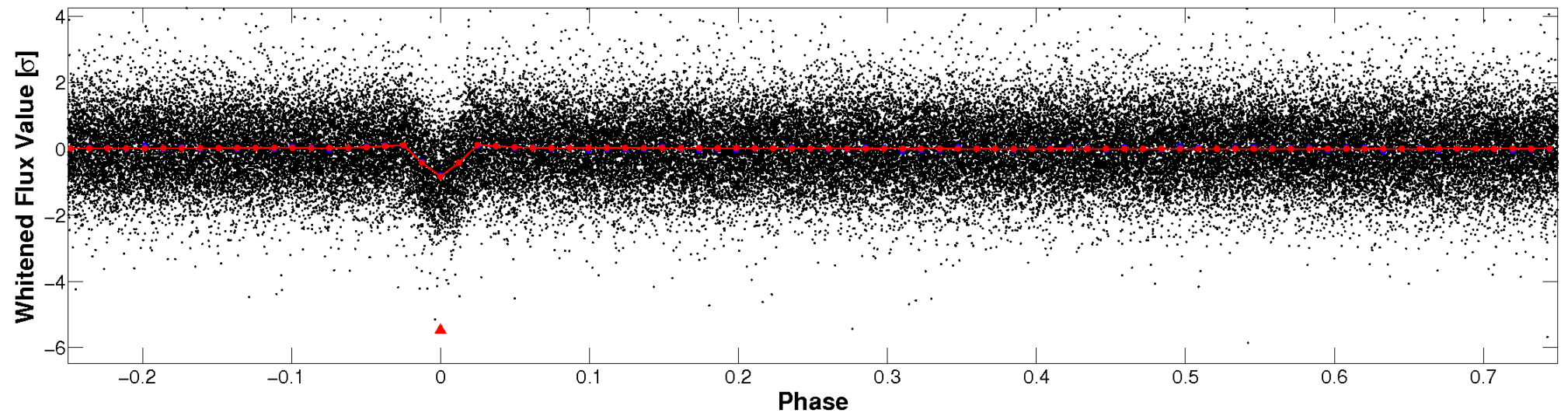


# Non-Whitened Vs. Whitened Light Curve

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

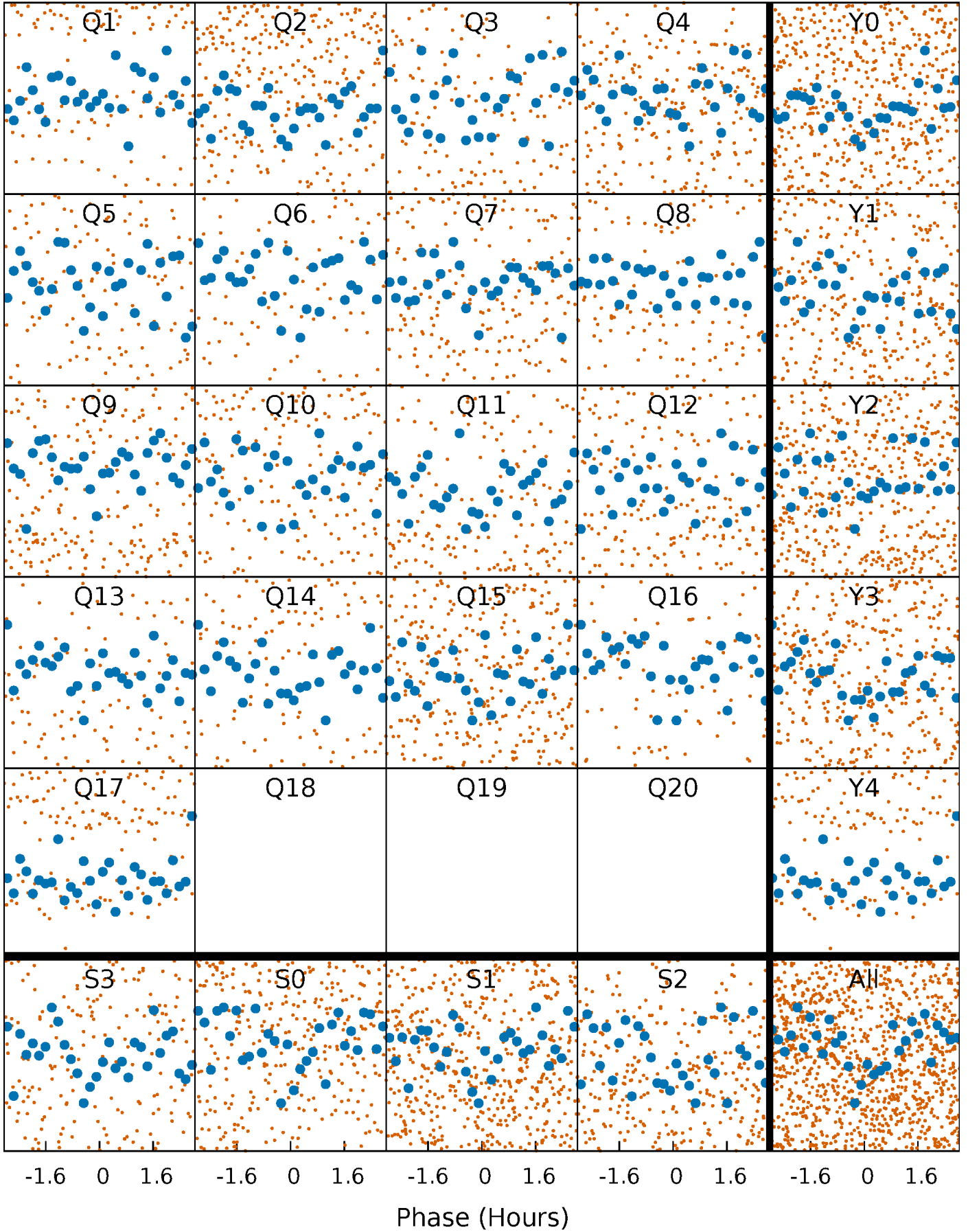


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

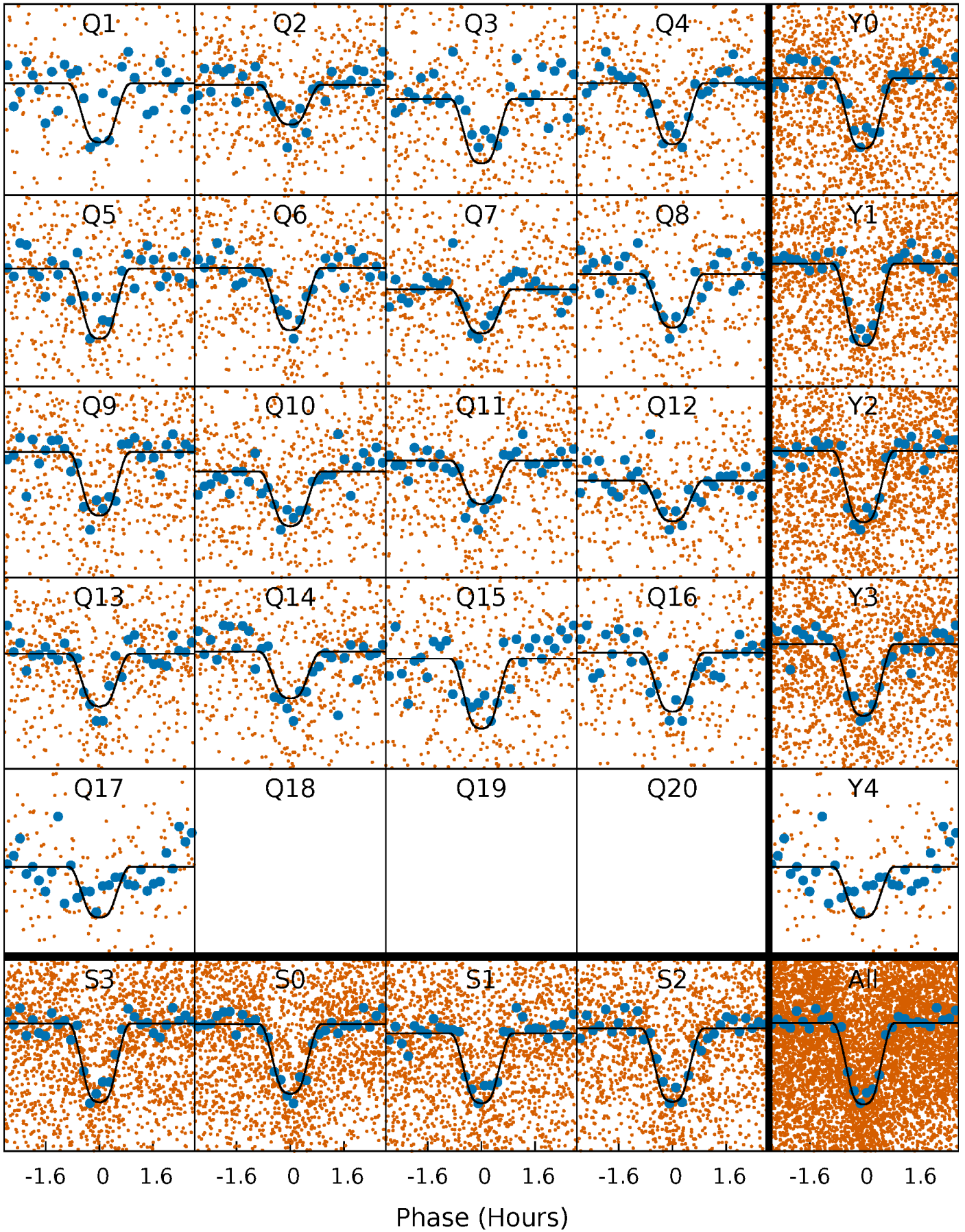
TCE 008229458-01   P= 1.646804 Days    $T_0=132.061053$  (BKJD)





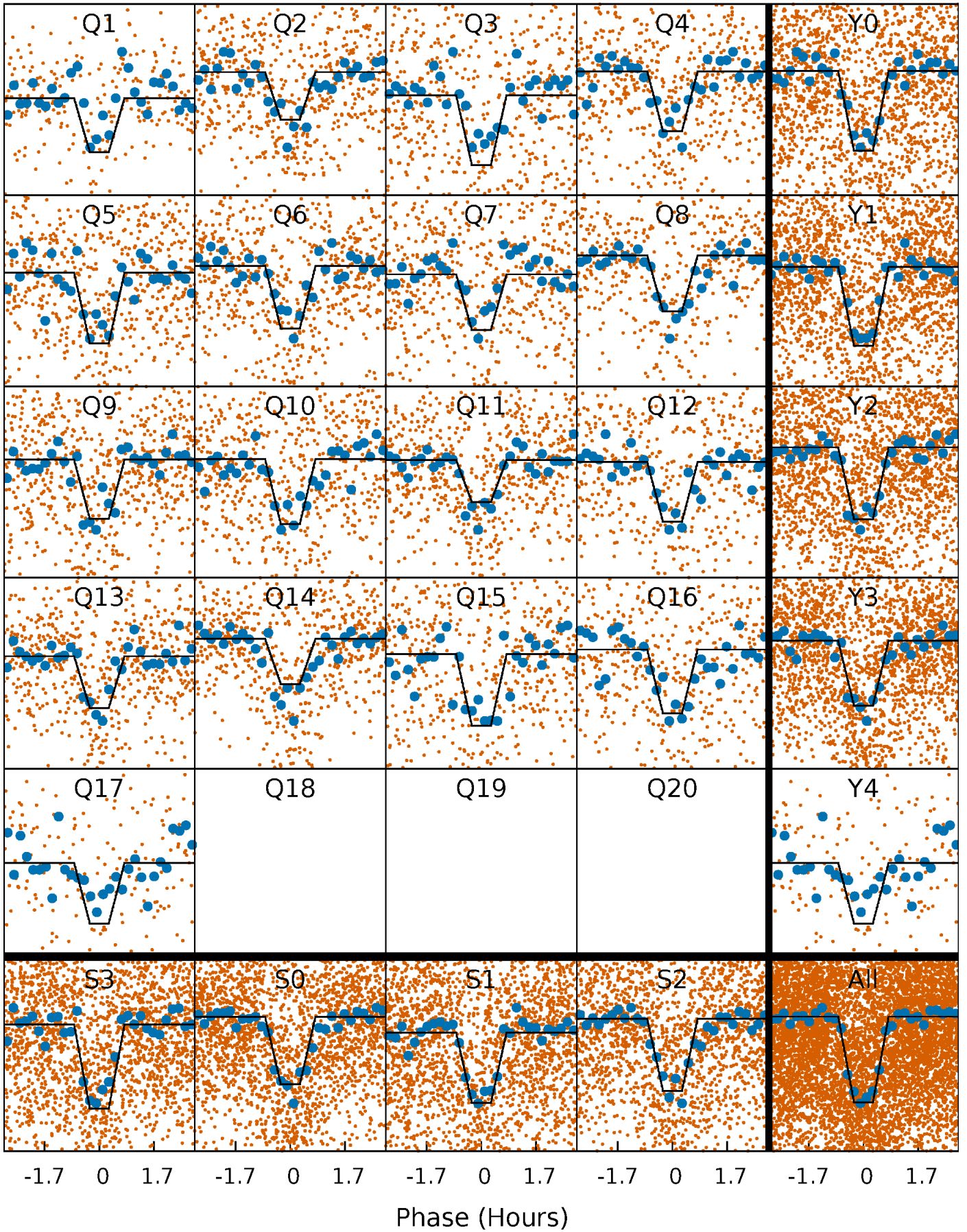
# DV Quarter-Phased Transit Curves

TCE 008229458-01 P= 1.646804 Days  $T_0=132.061053$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

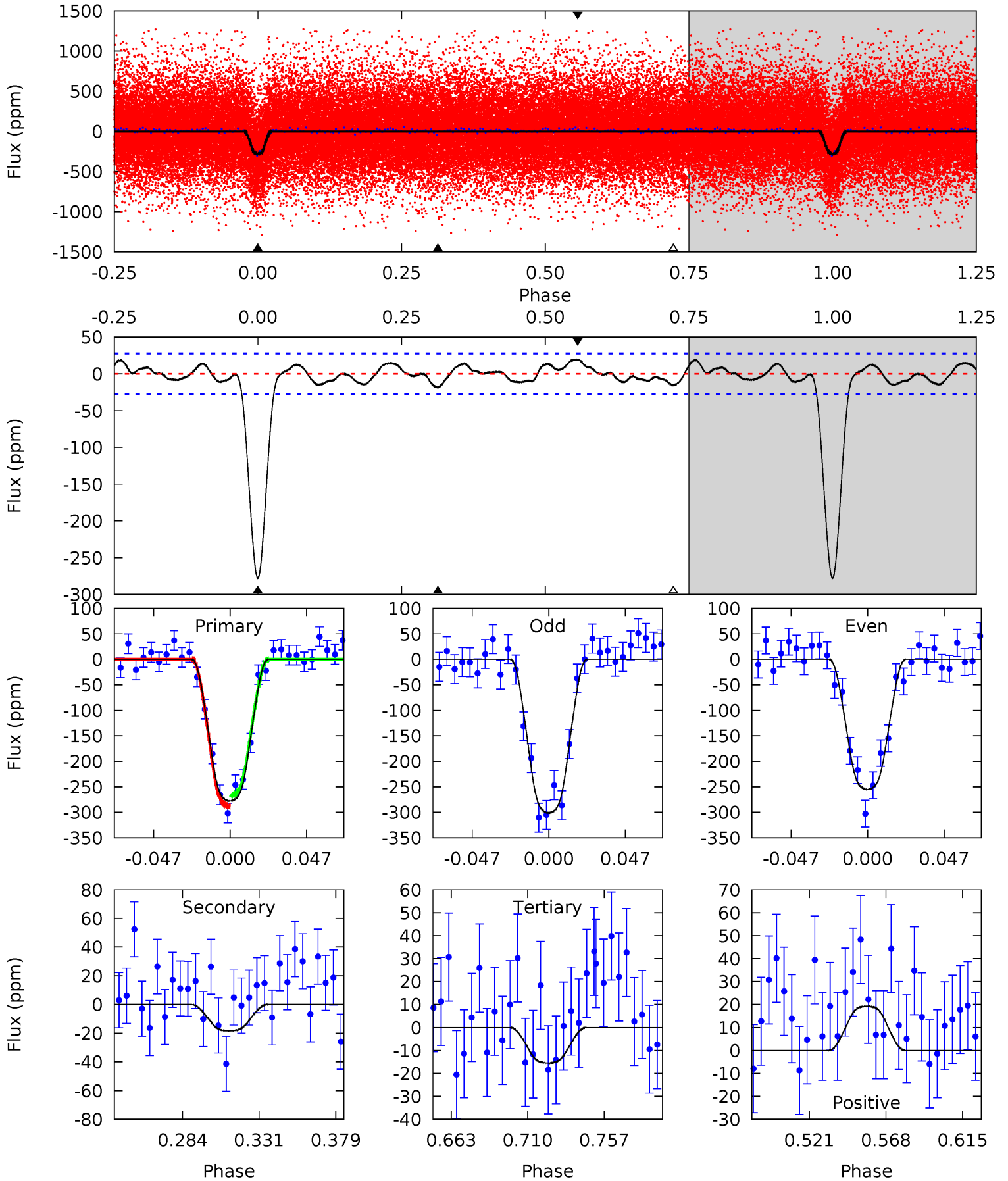
TCE 008229458-01 P= 1.646801 Days  $T_0=132.061948$  (BKJD)



# DV Model-Shift Uniqueness Test

008229458-01, P = 1.646804 Days, E = 130.414249 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
47.3	3.14	2.64	3.28	4.72	1.98	1.53	44.7	44.1	0.50	-0.15	3.92	0.97	0.06	1.77

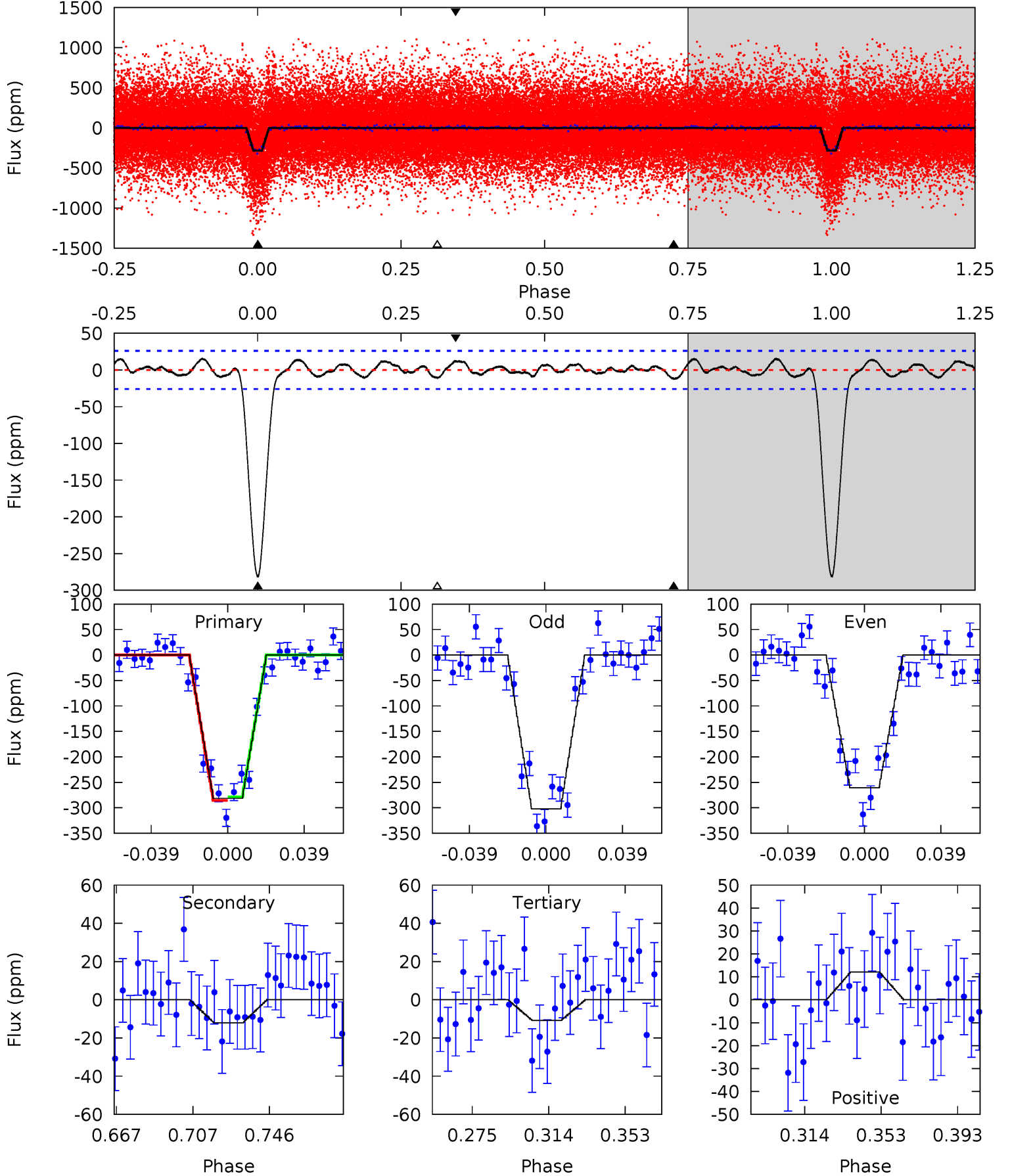




# Alt Model-Shift Uniqueness Test

008229458-01, P = 1.646801 Days, E = 130.415147 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
51.5	2.20	1.98	2.21	4.76	2.06	1.07	49.5	49.3	0.23	-0.01	3.78	1.01	0.05	0.64



### Stellar Parameters For KIC 008229458

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3810^{+76}_{-84}$	$4.753^{+0.035}_{-0.038}$	$-0.020^{+0.150}_{-0.150}$	$0.513^{+0.038}_{-0.038}$	$0.543^{+0.031}_{-0.046}$	$5.666^{+0.992}_{-0.844}$
	+2%/-2%	+1%/-1%	+750%/-750%	+7%/-7%	+6%/-8%	+18%/-15%
Source	SPE70	SPE60	SPE70	DSEP		

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

### Secondary Eclipse Parameters for KIC 008229458-01 / KOI 2238.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-18 \pm 6$	$1.16^{+0.11}_{-0.11}$	$1128^{+29}_{-33}$	$2400^{+115}_{-111}$	$3.652^{+1.495}_{-1.174}$
Alt.	$-12 \pm 5$	$0.94^{+0.11}_{-0.10}$	$1126^{+29}_{-30}$	$2405^{+149}_{-190}$	$3.614^{+2.134}_{-1.704}$

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



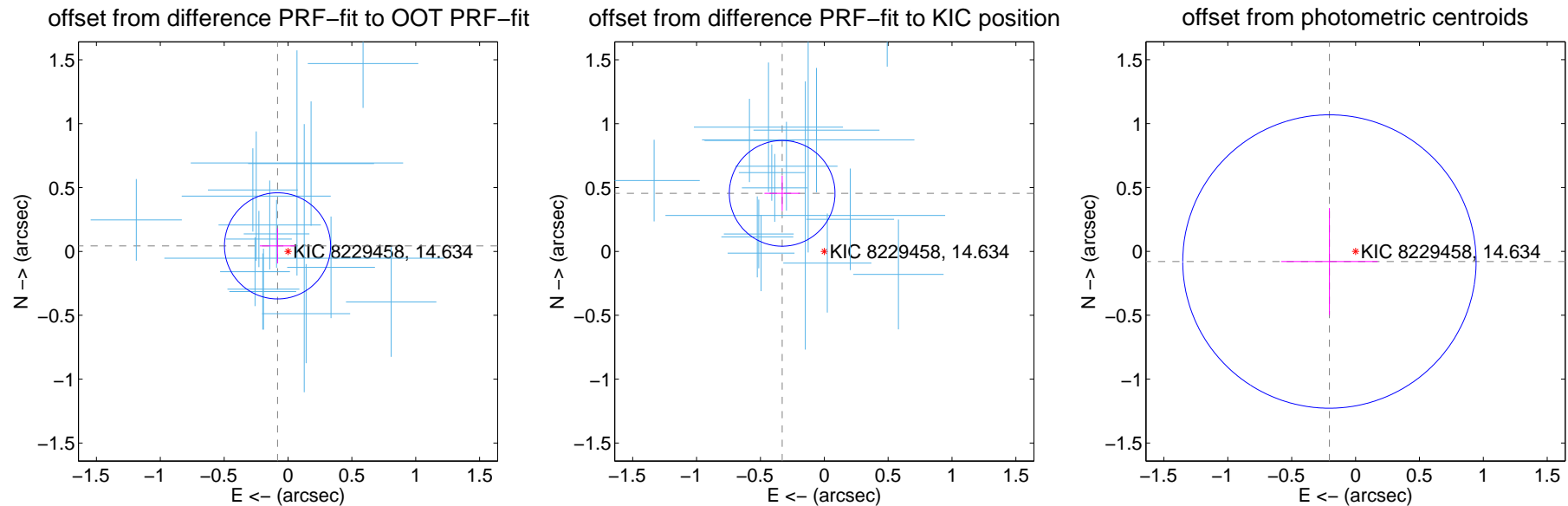
## DV Centroid Data

Supplemental centroid analysis for 008229458-01. Kepler magnitude: 14.63. Transit SNR 30.72

There are 16 quarters with good PRF difference image offsets

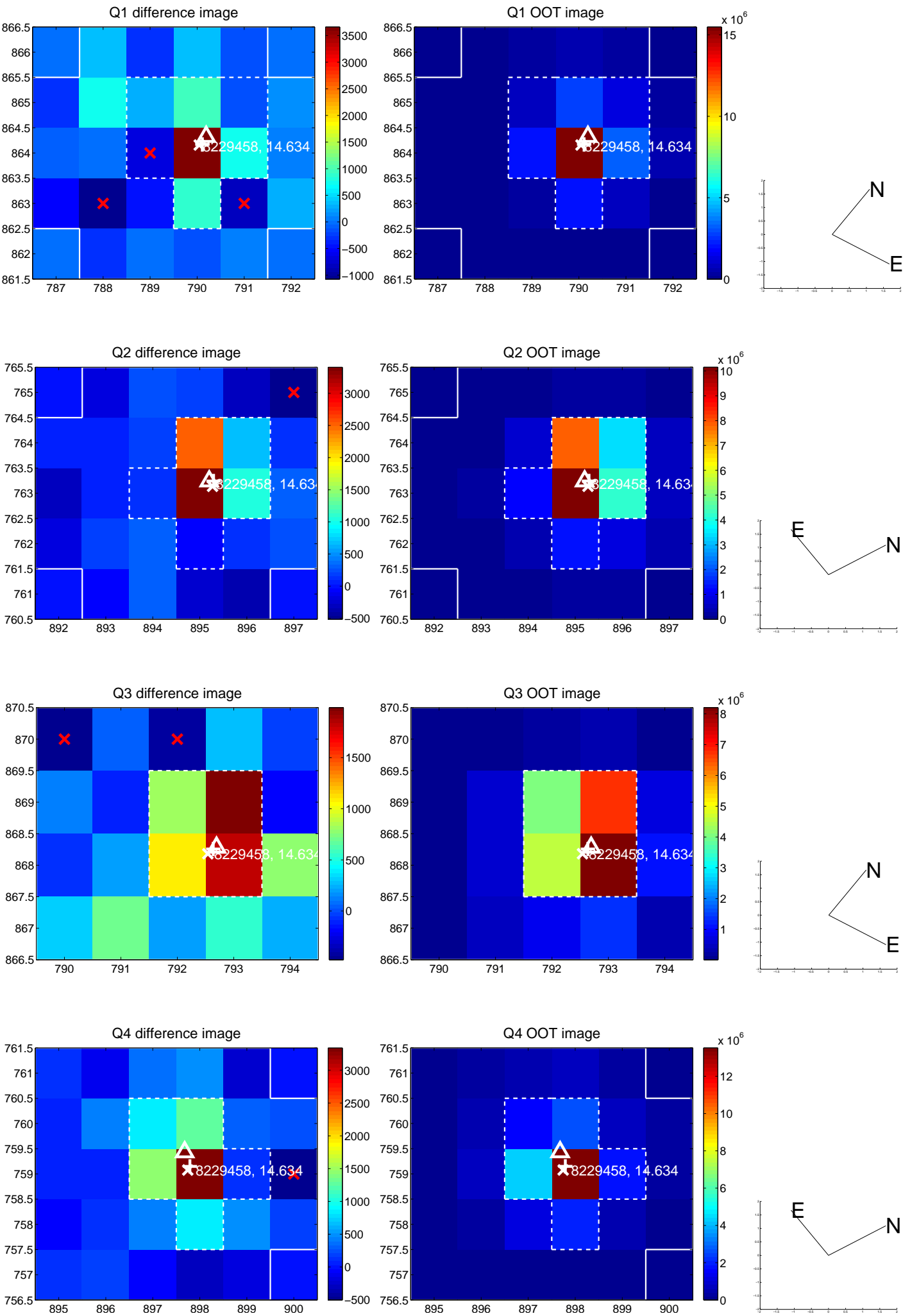
The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.093 \pm 0.138$	0.67	$0.082 \pm 0.139$	$0.043 \pm 0.137$
PRF-fit source offset from KIC position	<b>0.562 <math>\pm</math> 0.138</b>	<b>4.07</b>	$0.330 \pm 0.139$	$0.455 \pm 0.137$
photometric centroid source offset	$0.22 \pm 0.38$	0.57	$0.20 \pm 0.38$	$-0.08 \pm 0.42$

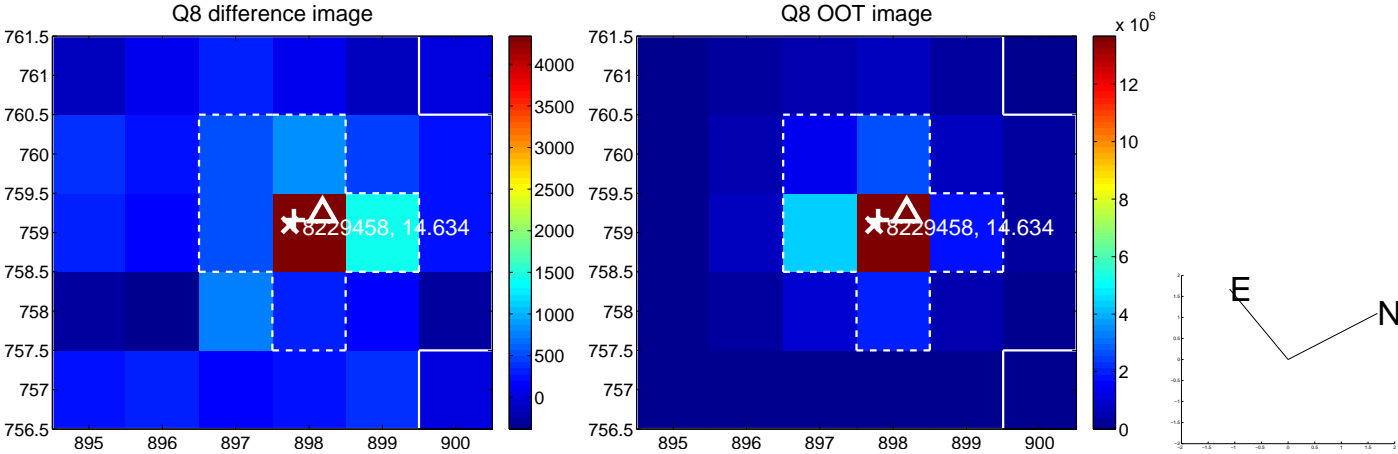
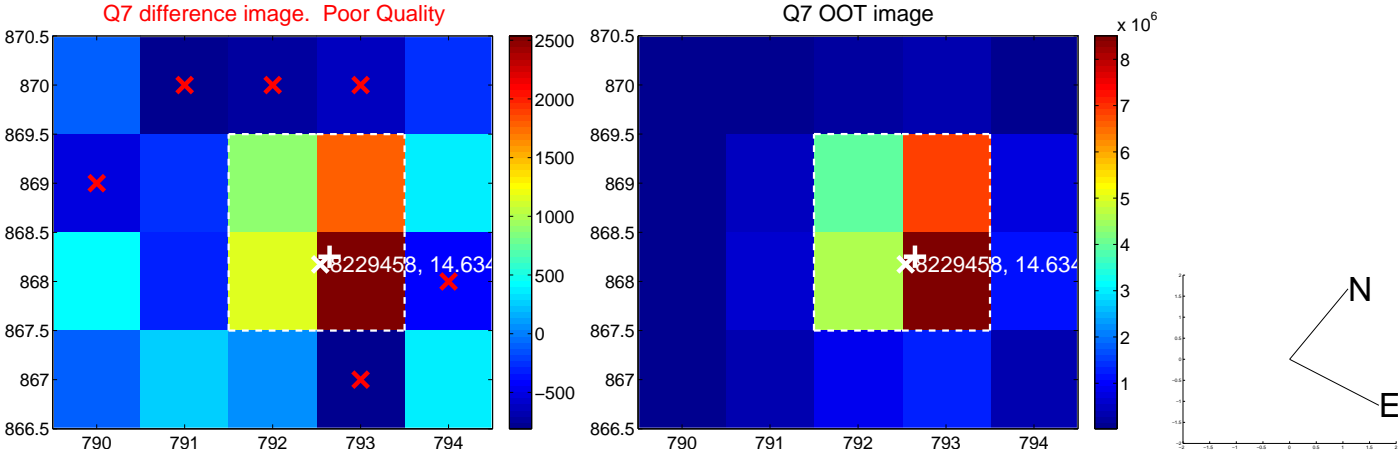
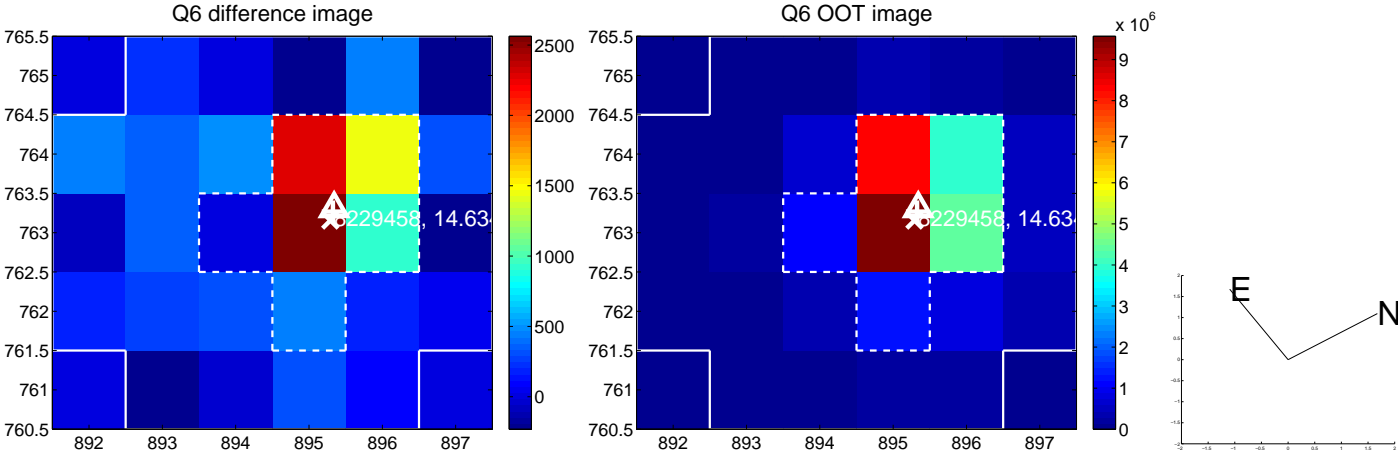
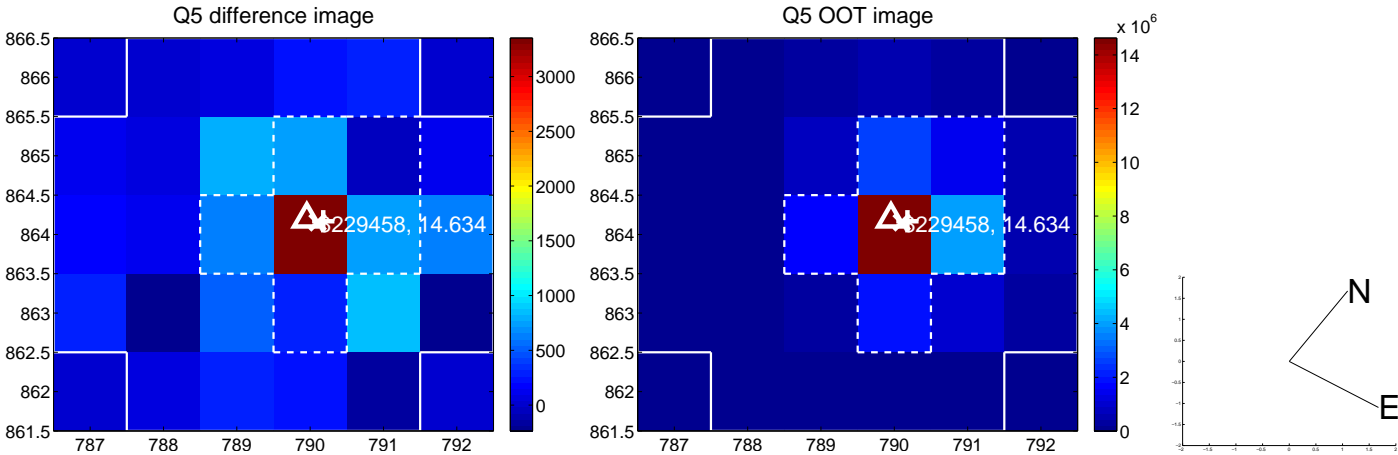


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

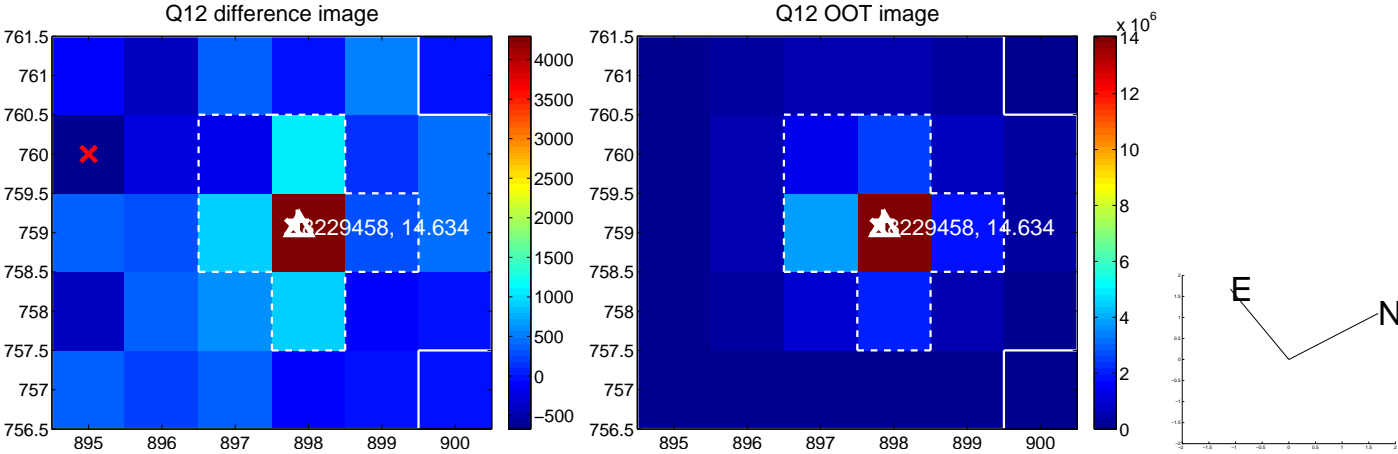
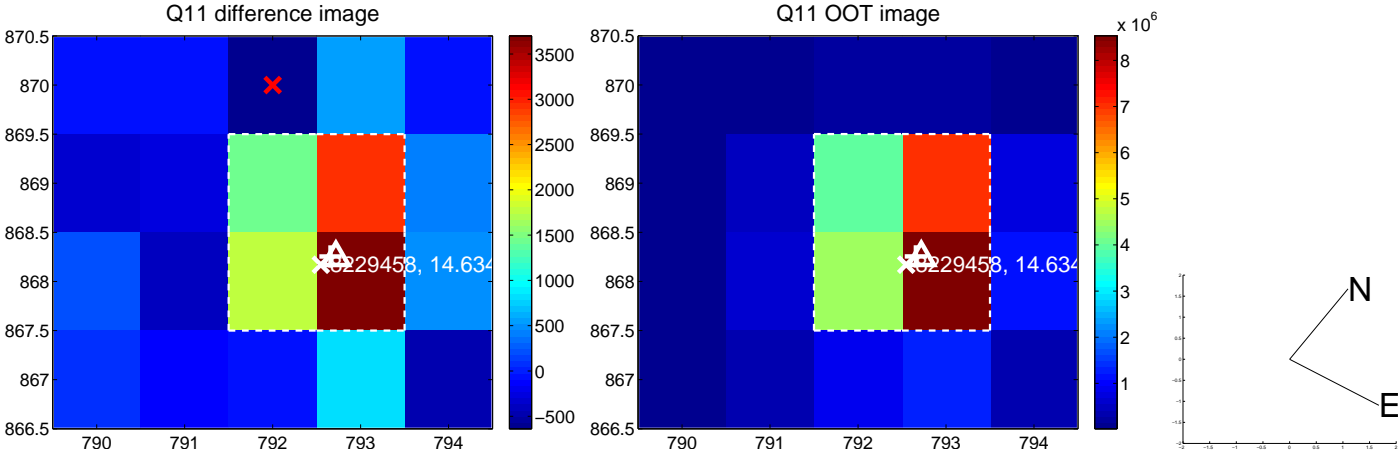
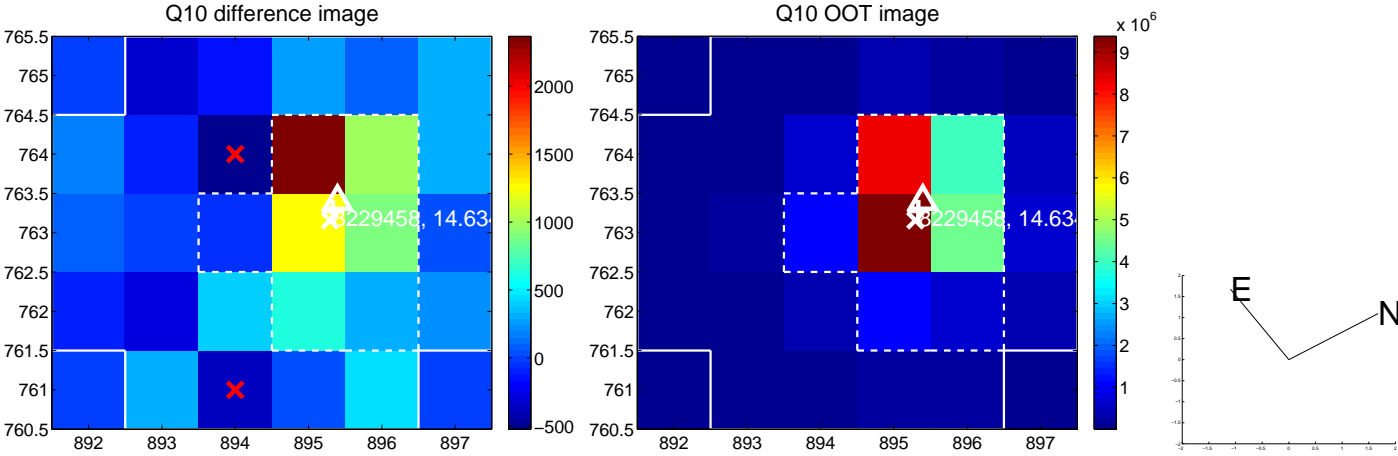
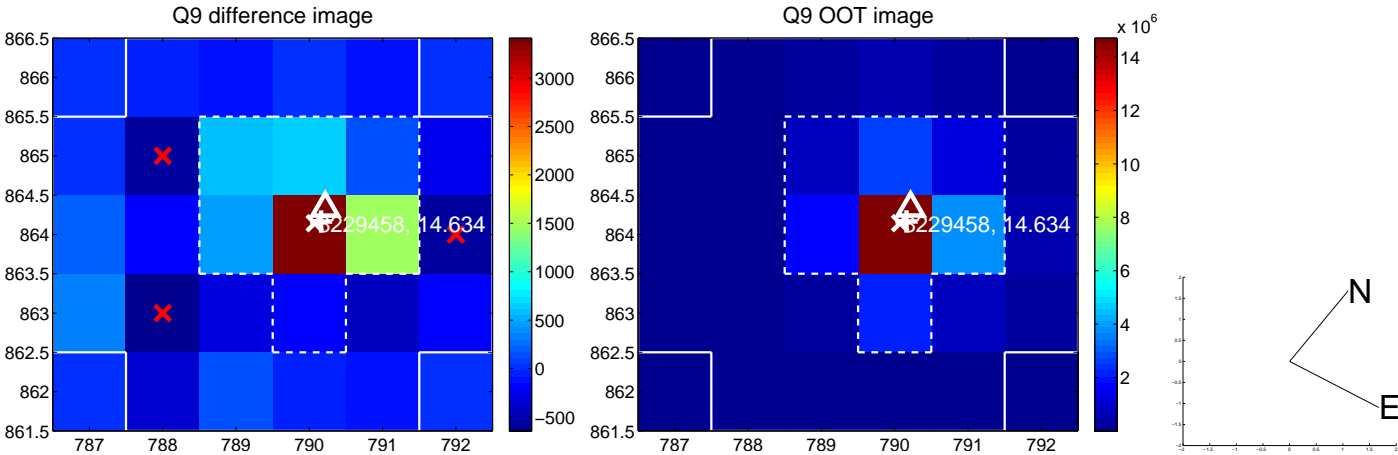
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



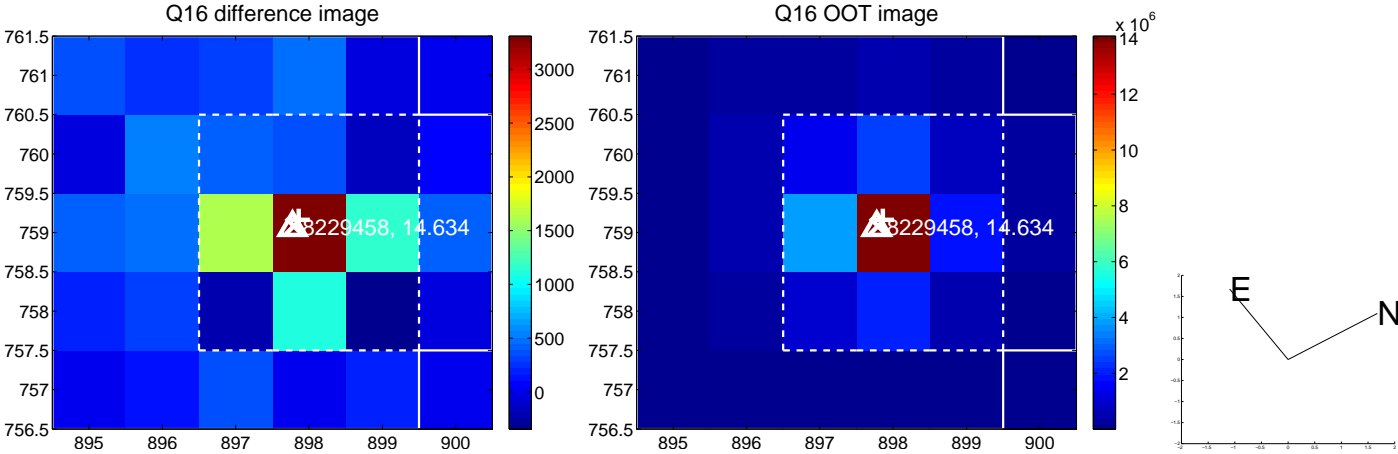
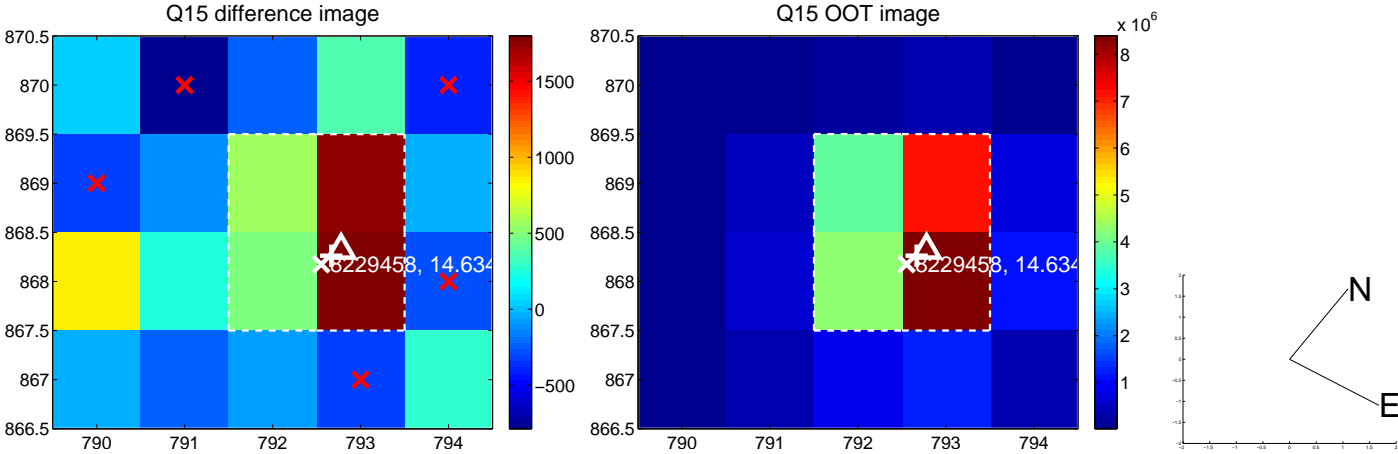
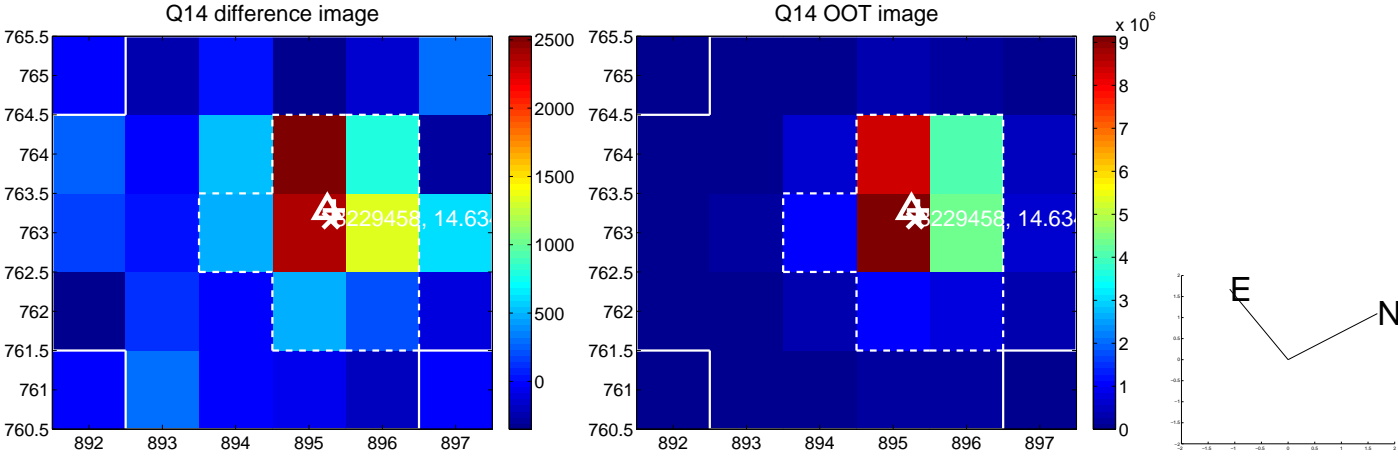
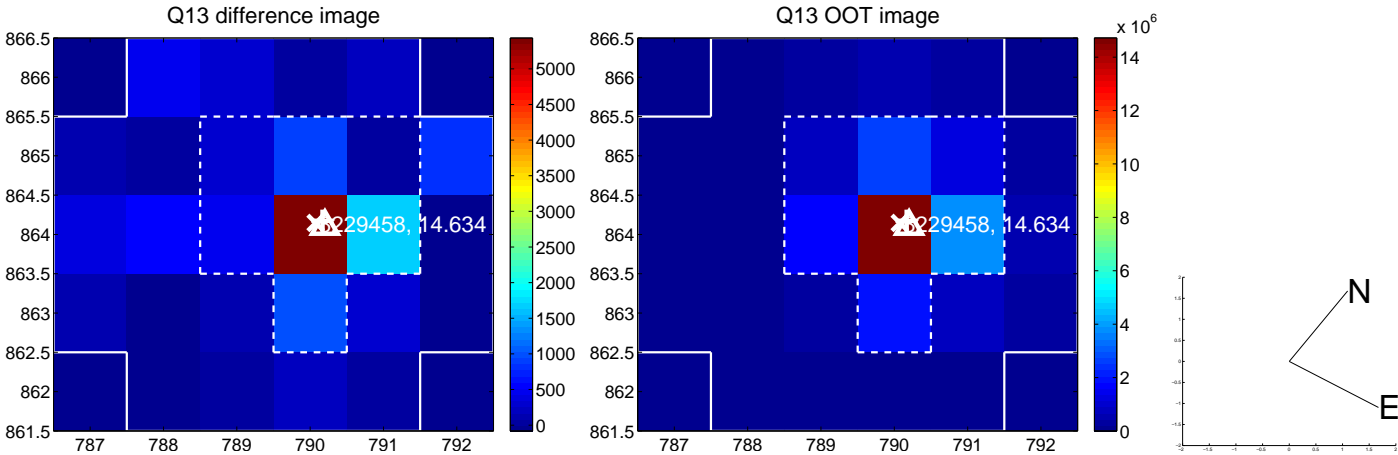
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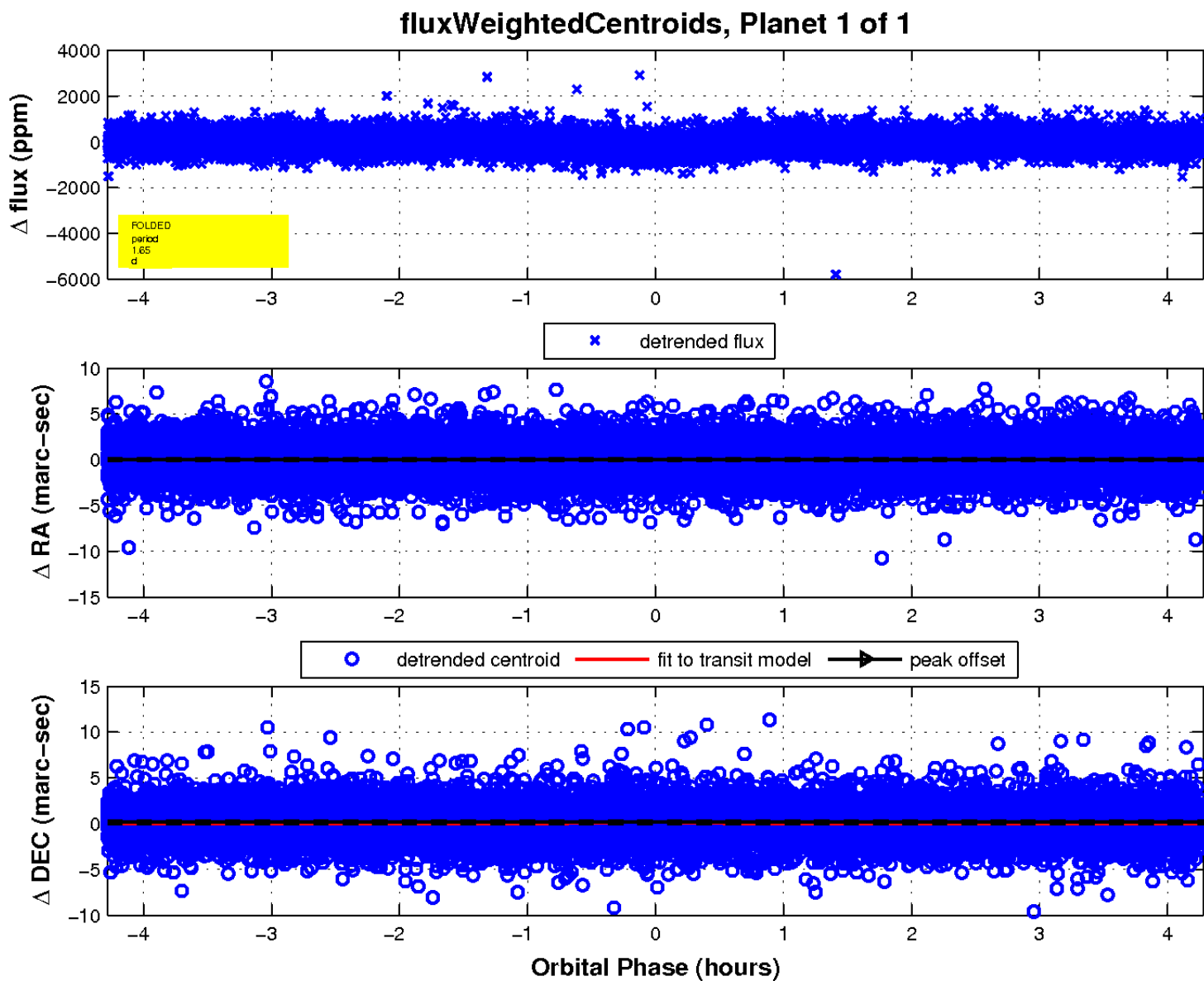
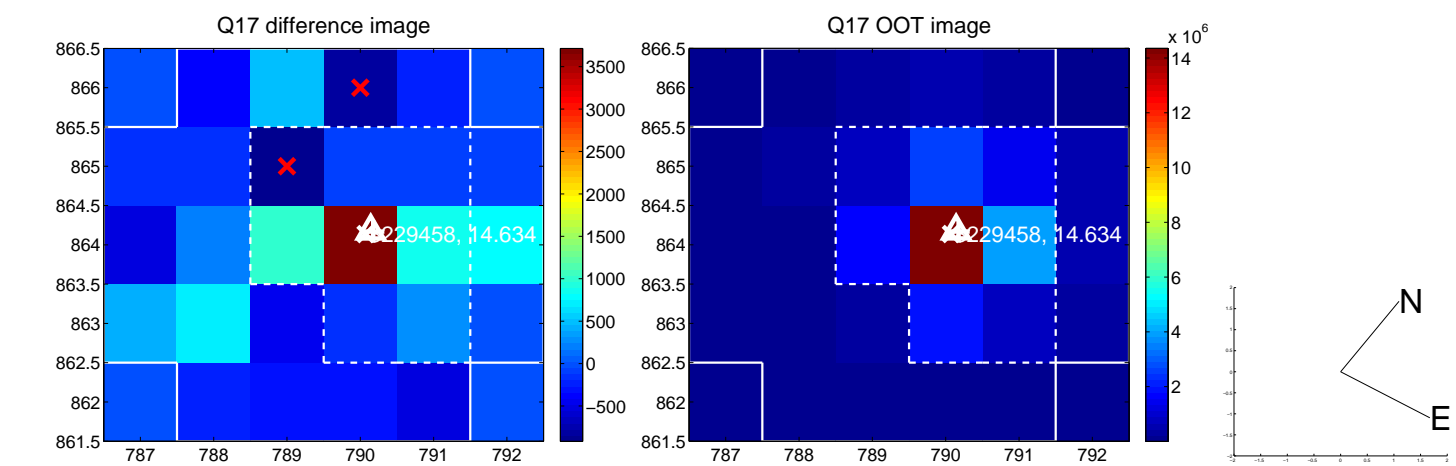


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



# UKIRT Image

Declination

