

# KIC 002849140

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002849140-01	OBS	3416.01	11.823643	139.435243	199.3	8.517	11.3	12.2	0.80	5559	1.31	57.77

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002849140-01	OBS	PC	0.89	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.

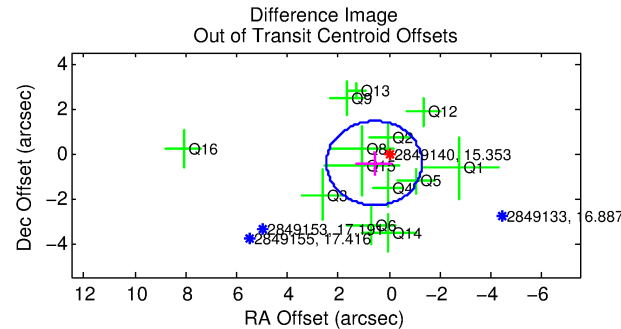
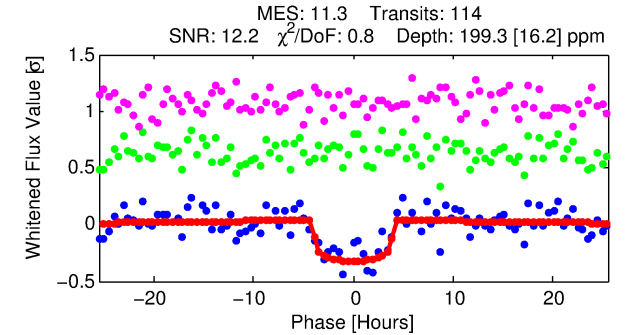
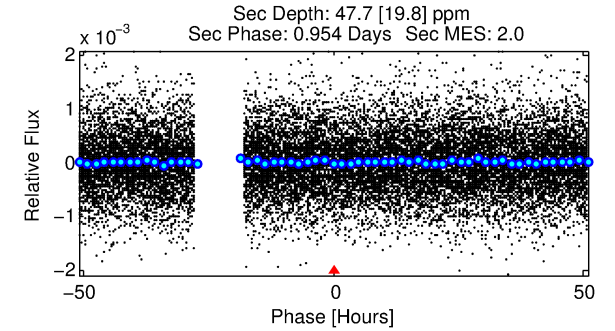
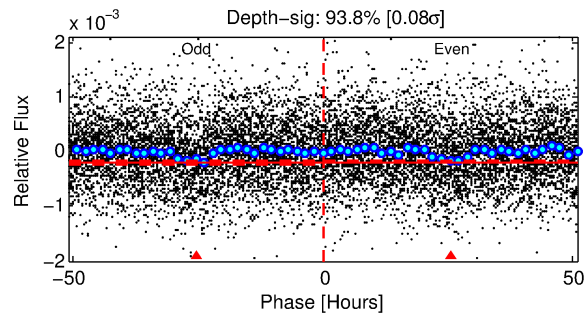
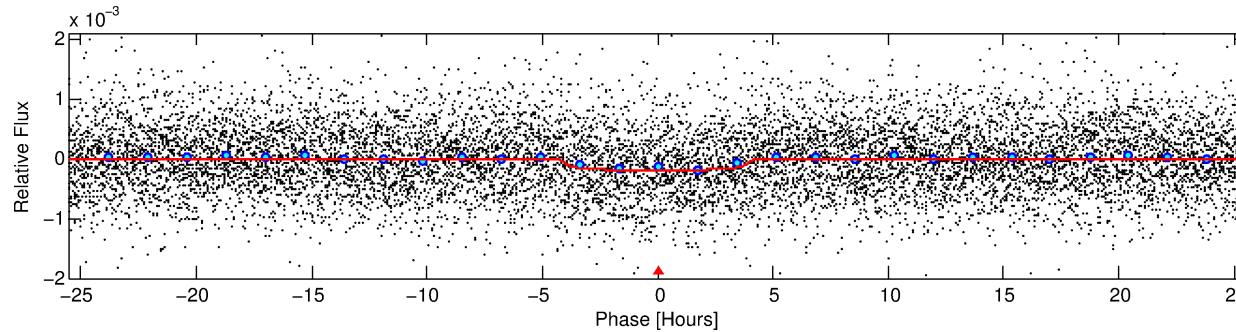
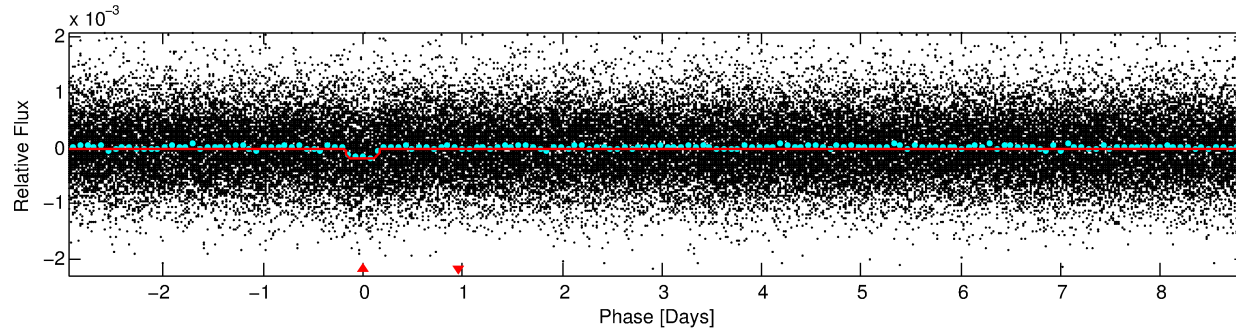
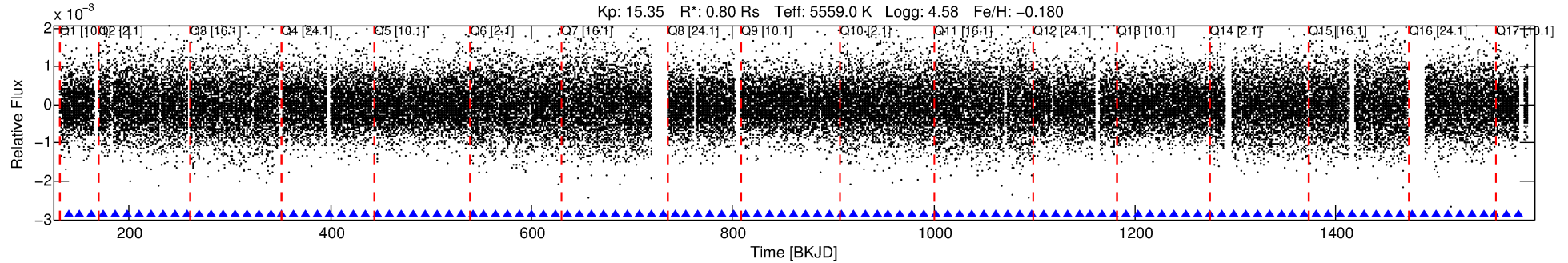
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002849140-01

No Significant Match Found

# DV One-Page Summary

KIC: 2849140 Candidate: 1 of 1 Period: 11.824 d  
KOI: K03416.01 Corr: 0.945



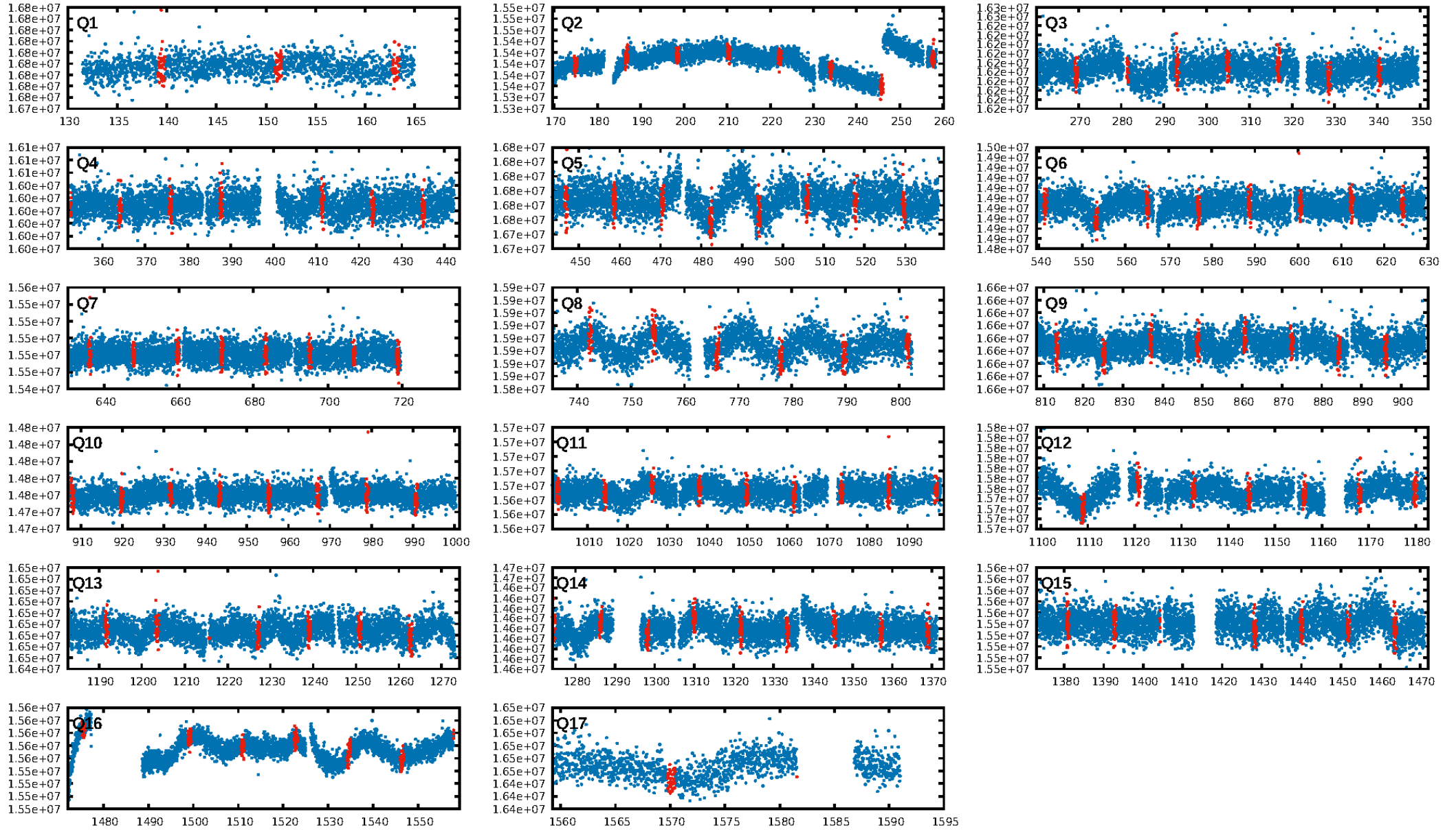
## DV Fit Results:

Period = 11.82364 [0.00018] d  
Epoch = 139.4352 [0.0119] BKJD  
Rp/R\* = 0.0149 [0.0040]  
a/R\* = 5.76 [6.63]  
b = 0.86 [0.36]  
Seff = 57.77 [15.44]  
Teq = 703 [47] K  
Rp = 1.31 [0.44] Re  
a = 0.0977 [0.0164] AU  
Ag = 146.29 [104.95] [1.38 $\sigma$ ]  
Teffp = 3780 [649] K [4.73 $\sigma$ ]

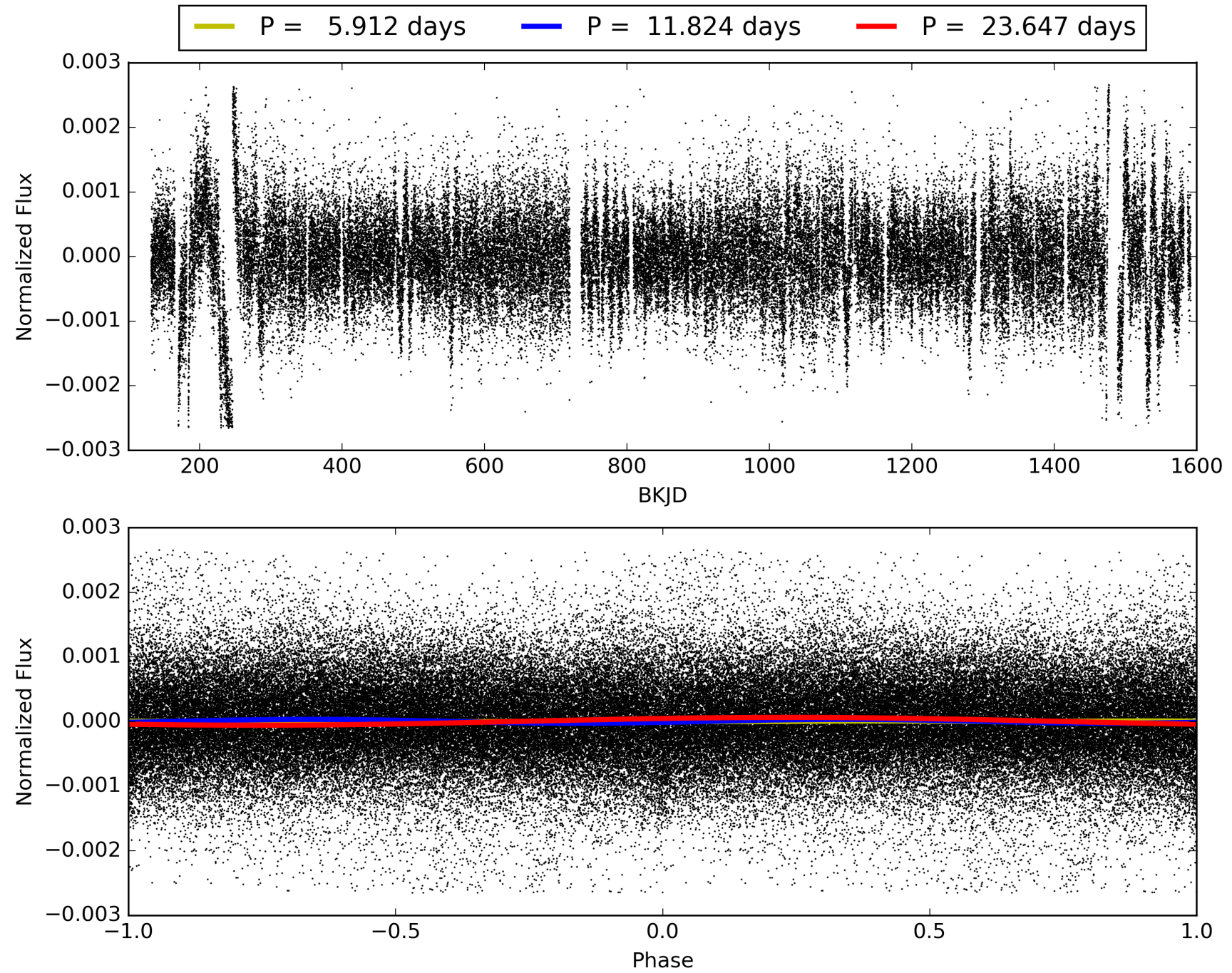
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.90e-28  
RollingBand-fgt: 1.00 [110/110]  
GhostDiagnostic-chr: 1.39  
Centroid-sig: 20.4%  
Centroid-so: 1.512 arcsec [1.88 $\sigma$ ]  
OotOffset-rm: 0.732 arcsec [1.17 $\sigma$ ]  
KicOffset-rm: 0.577 arcsec [0.99 $\sigma$ ]  
OotOffset-st: 3/2/4/4 [13]  
KicOffset-st: 3/2/4/4 [13]  
DiffImageQuality-fgm: 0.54 [7/13]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 002849140-01, PDC Light Curves

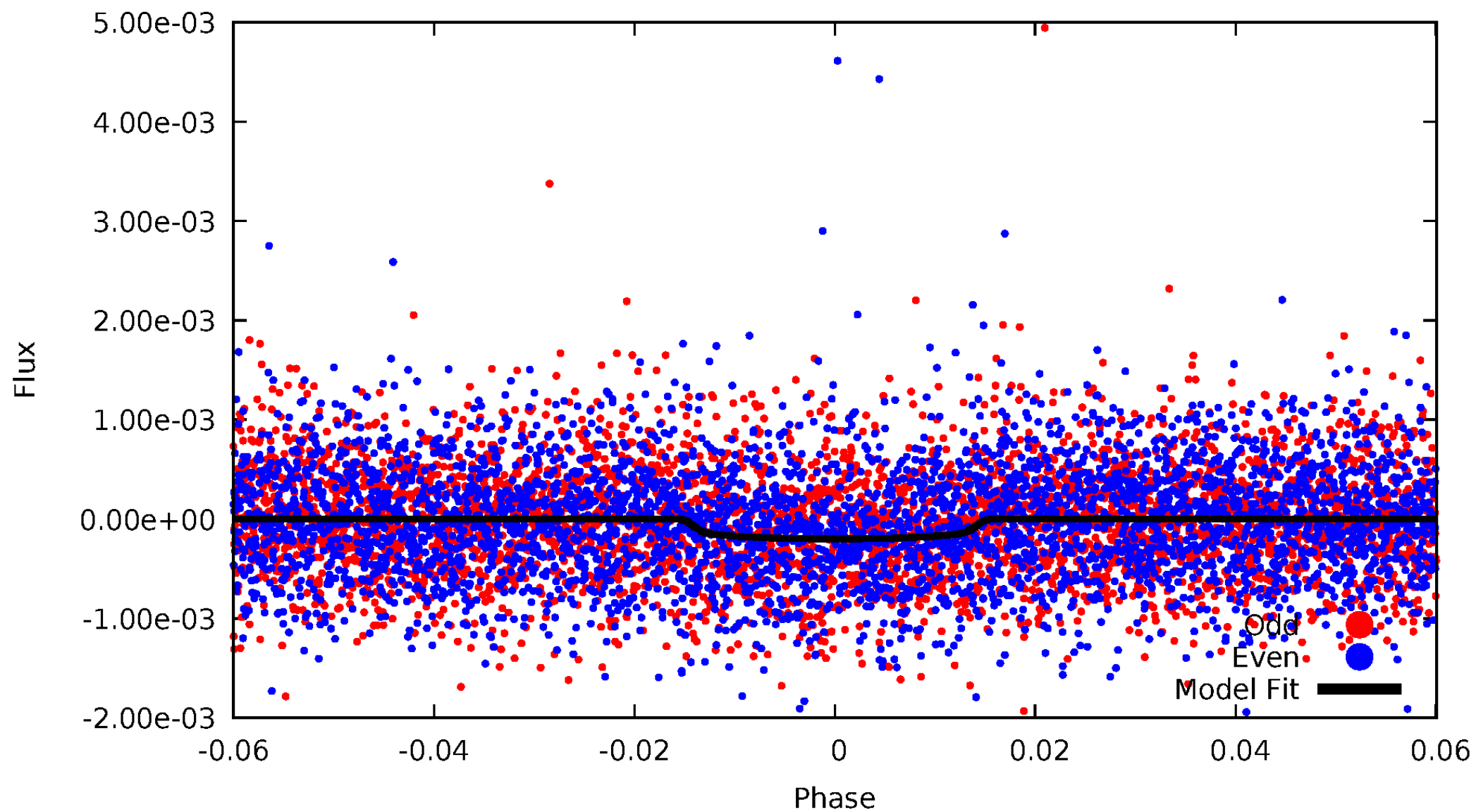


TCE 002849140-01



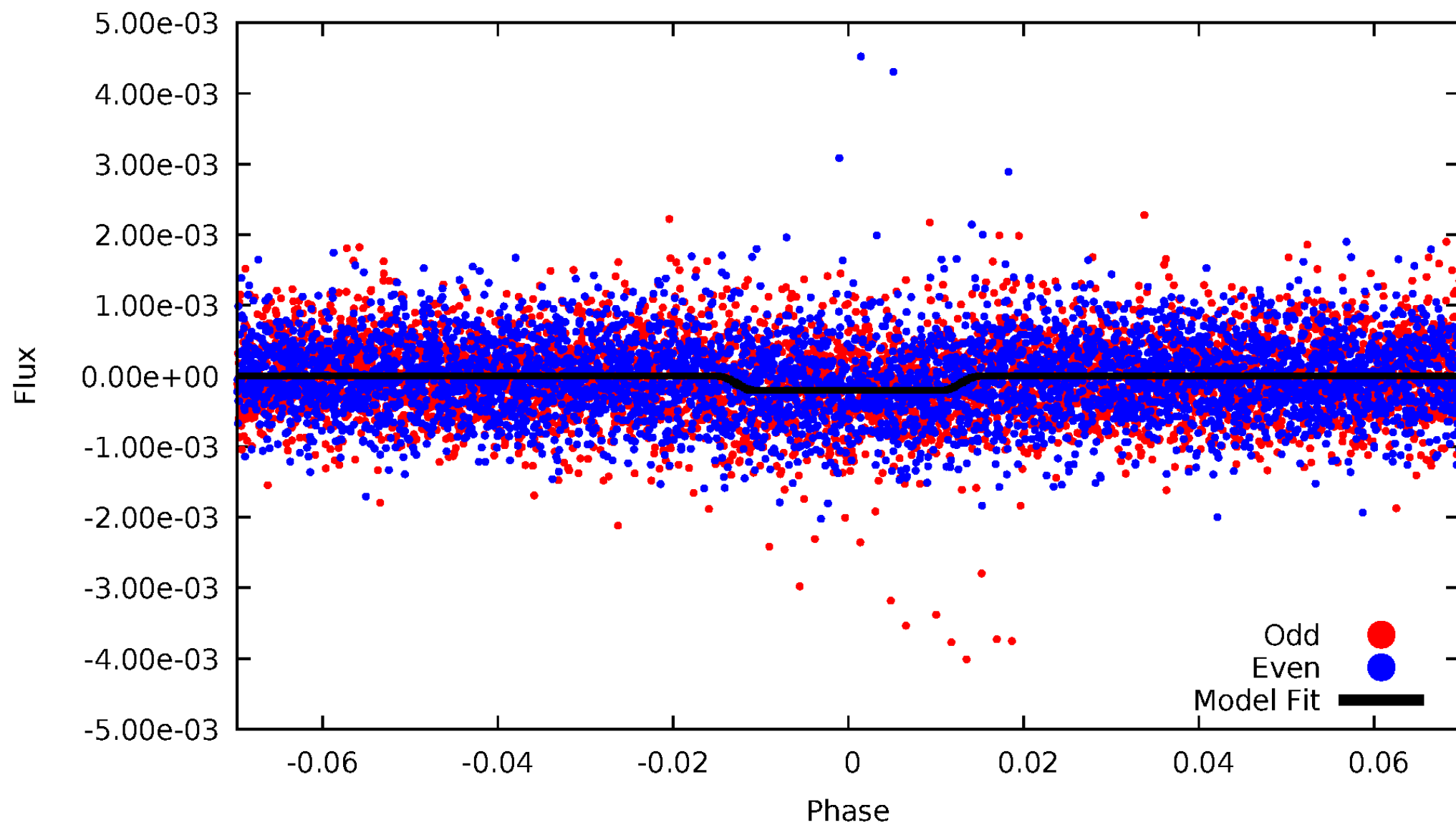
# DV Odd/Even

TCE 002849140-01



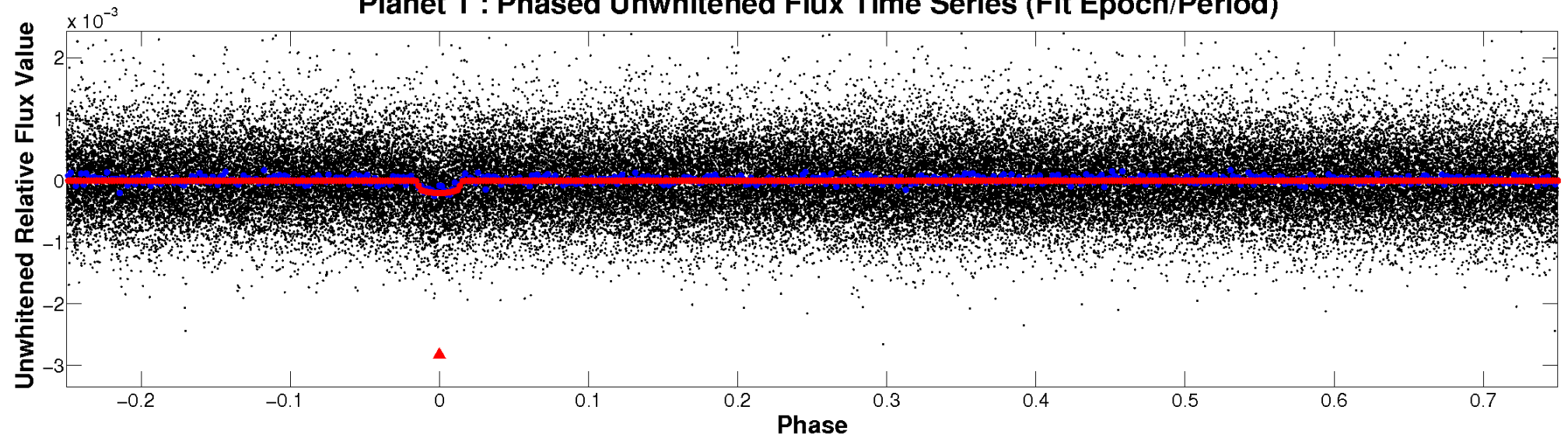
# ALT Odd/Even

TCE 002849140-01

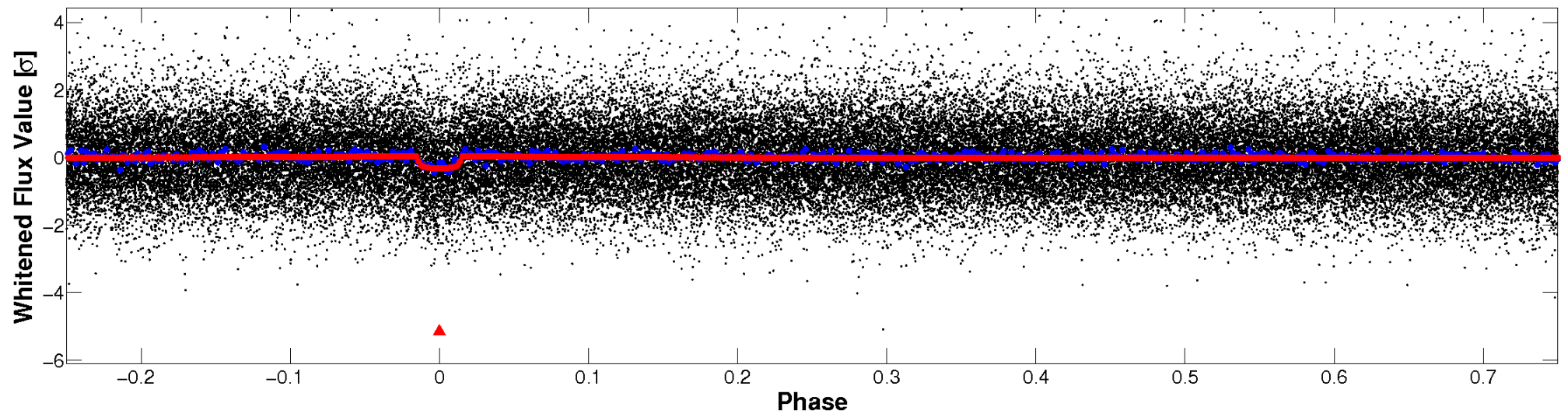


# Non-Whitened Vs. Whitened Light Curve

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

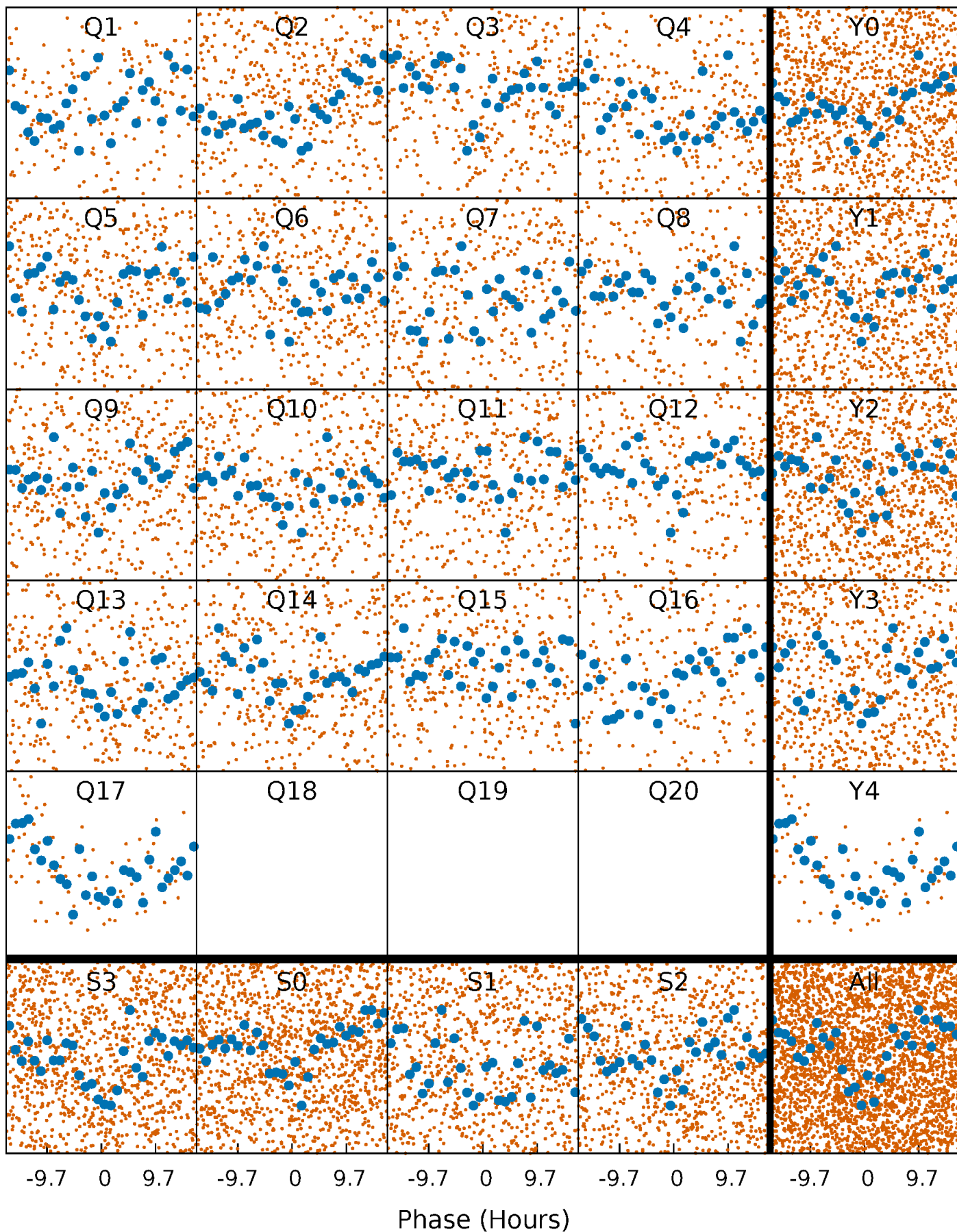


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



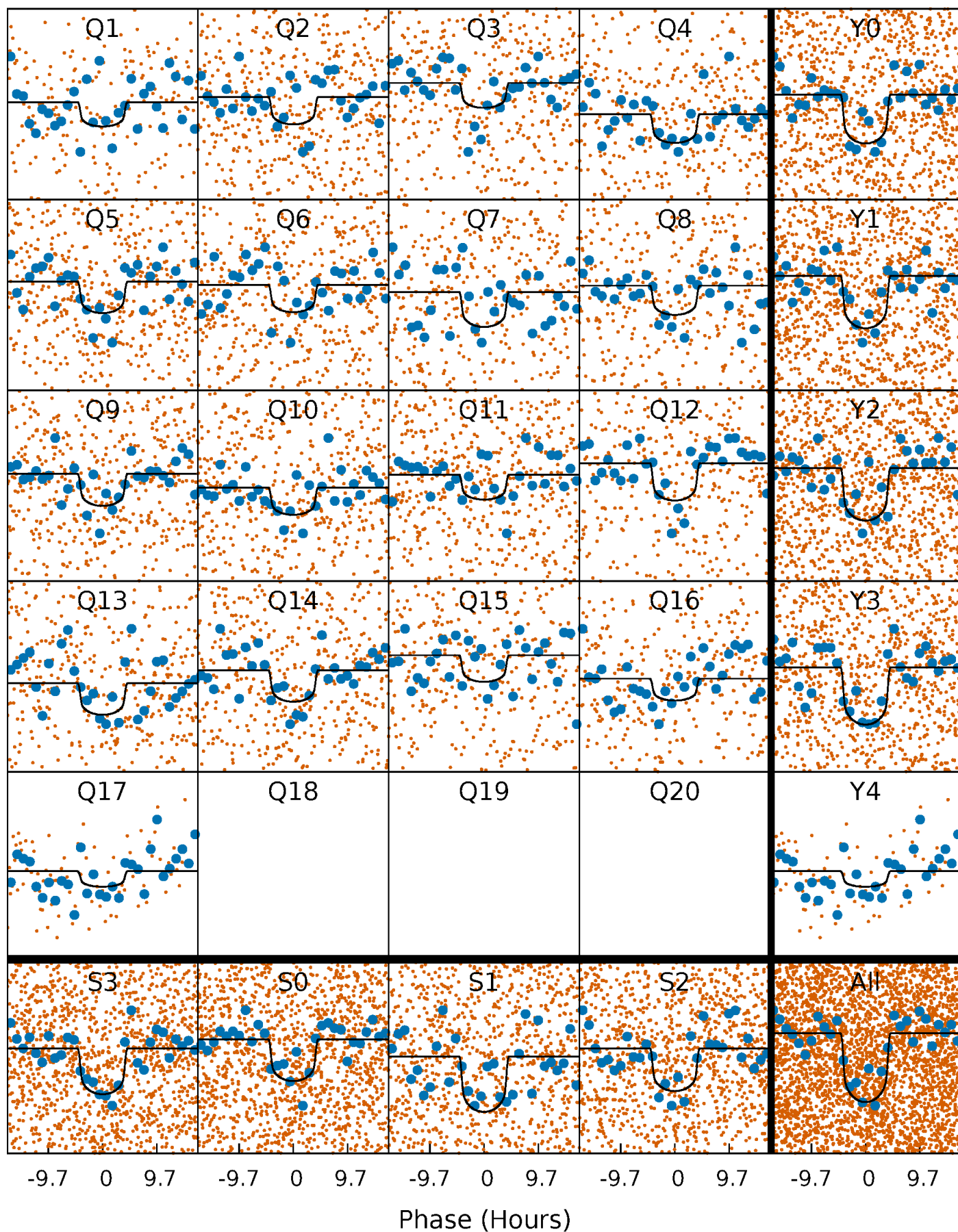
# PDC Quarter-Phased Transit Curves

TCE 002849140-01 P= 11.823643 Days  $T_0=139.435243$  (BKJD)



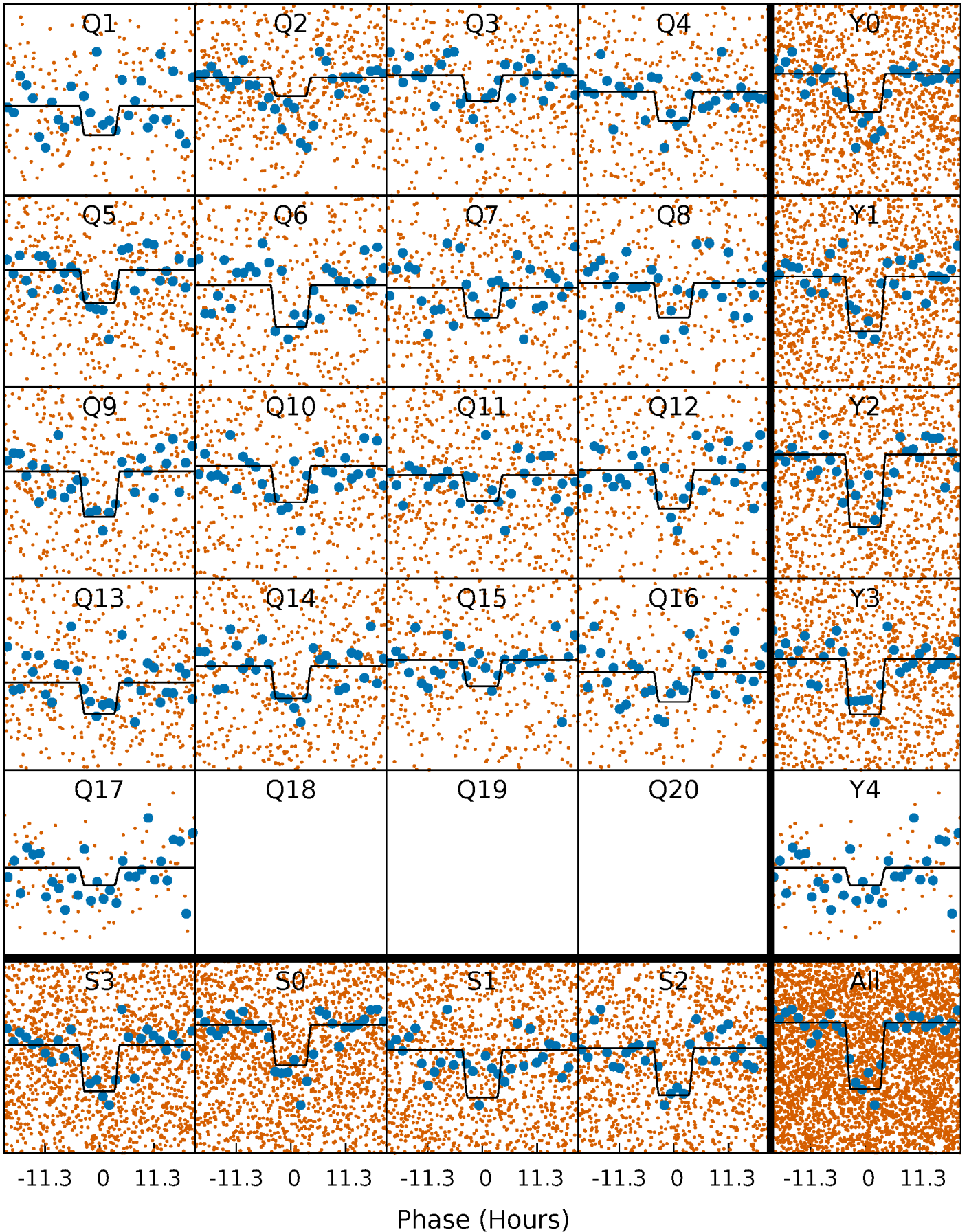
# DV Quarter-Phased Transit Curves

TCE 002849140-01 P= 11.823643 Days  $T_0=139.435243$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

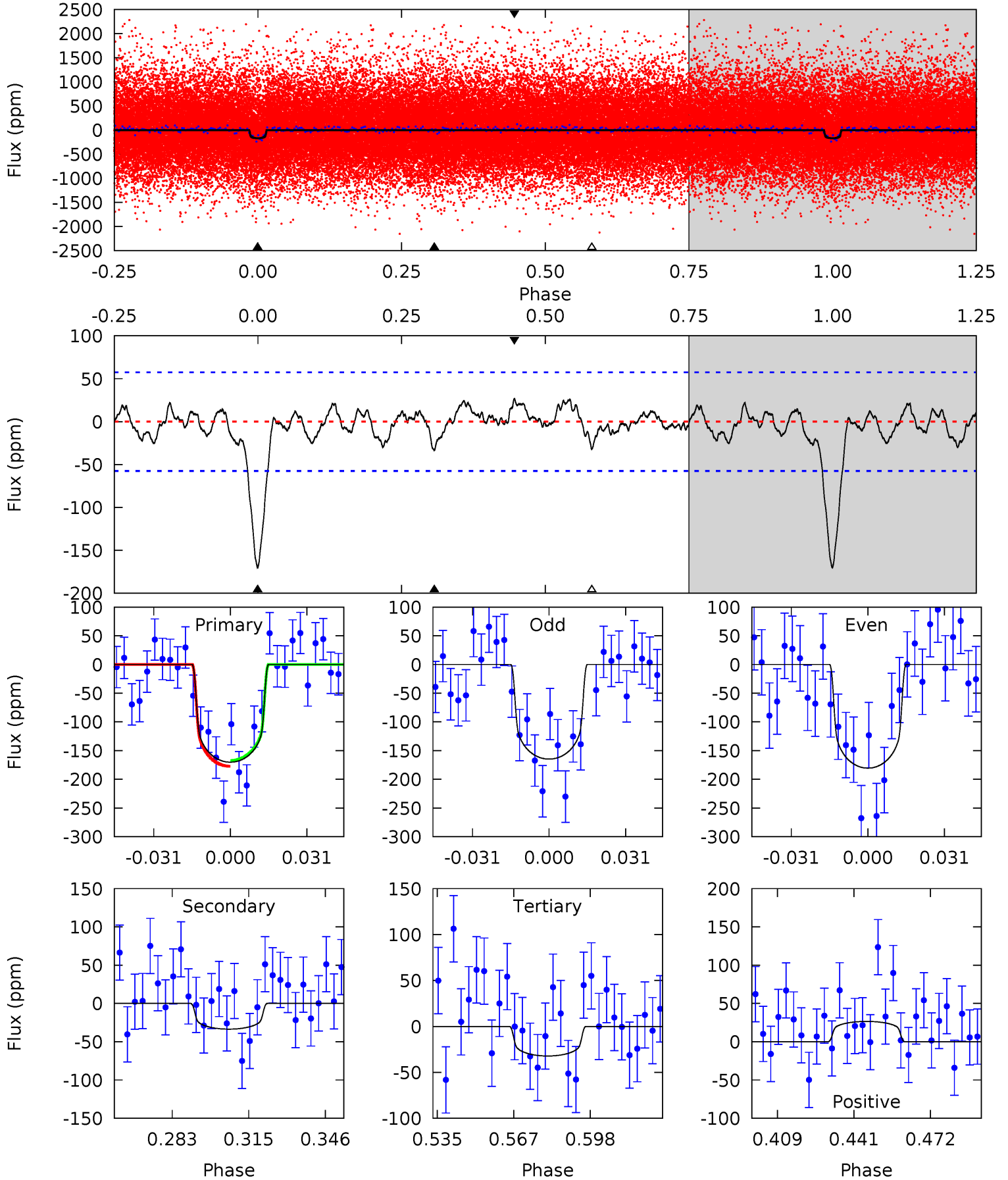
TCE 002849140-01 P= 11.823498 Days  $T_0=139.432905$  (BKJD)



# DV Model-Shift Uniqueness Test

002849140-01,  $P = 11.823643$  Days,  $E = 127.611600$  Days

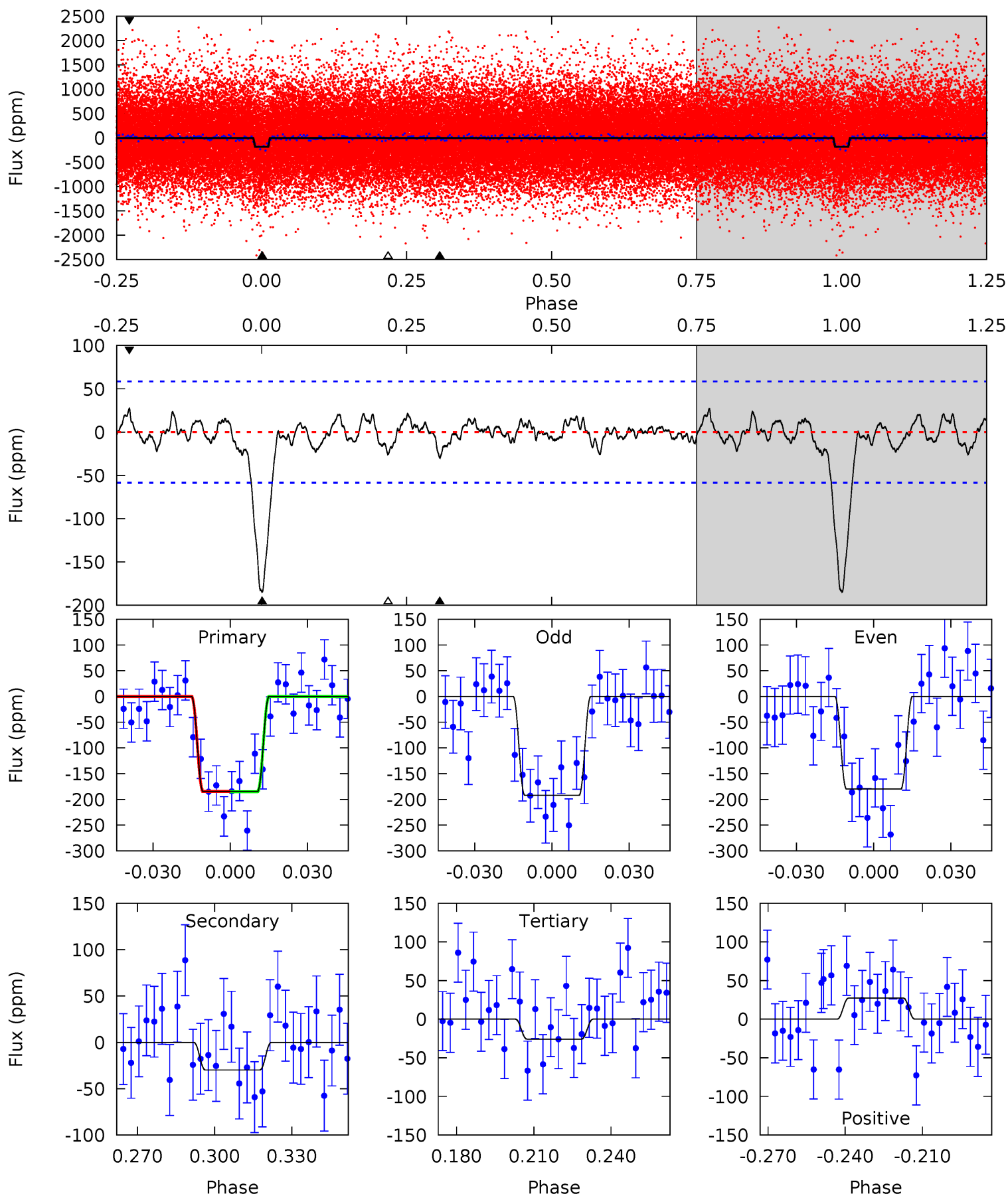
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	2.80	2.69	2.21	4.80	2.15	1.02	11.5	12.0	0.11	0.59	0.66	0.90	0.13	0.42



# Alt Model-Shift Uniqueness Test

002849140-01, P = 11.823498 Days, E = 127.609407 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
15.2	2.45	2.13	2.25	4.81	2.17	0.84	13.1	13.0	0.33	0.20	0.49	1.12	0.13	0.02



### Stellar Parameters For KIC 002849140

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5559^{+149}_{-166}$	$4.578^{+0.032}_{-0.128}$	$-0.180^{+0.300}_{-0.300}$	$0.803^{+0.164}_{-0.070}$	$0.899^{+0.083}_{-0.102}$	$2.446^{+0.424}_{-0.929}$
	+3%/-3%	+1%/-3%	+167%/-167%	+20%/-9%	+9%/-11%	+17%/-38%
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 002849140-01 / KOI 3416.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-34 \pm 12$	$1.35^{+0.39}_{-0.34}$	$997^{+50}_{-37}$	$3792^{+495}_{-378}$	$90^{+92}_{-44}$
Alt.	$-30 \pm 12$	$1.33^{+0.39}_{-0.41}$	$999^{+50}_{-39}$	$3762^{+564}_{-420}$	$87^{+99}_{-46}$

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

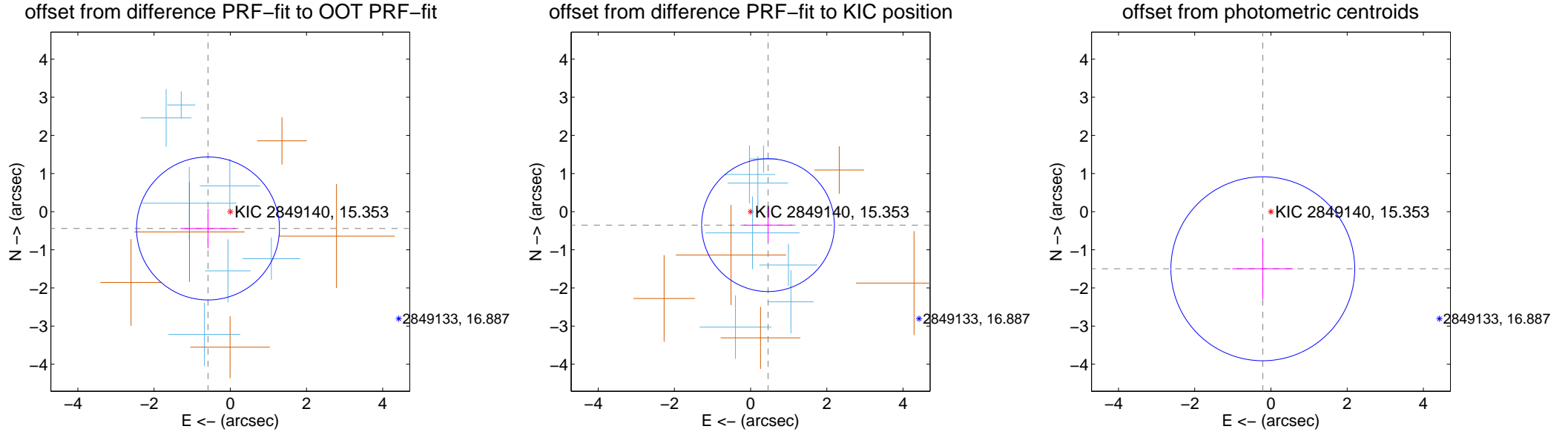
## DV Centroid Data

Supplemental centroid analysis for 002849140-01. Kepler magnitude: 15.35. Transit SNR 12.24

There are 7 quarters with good PRF difference image offsets

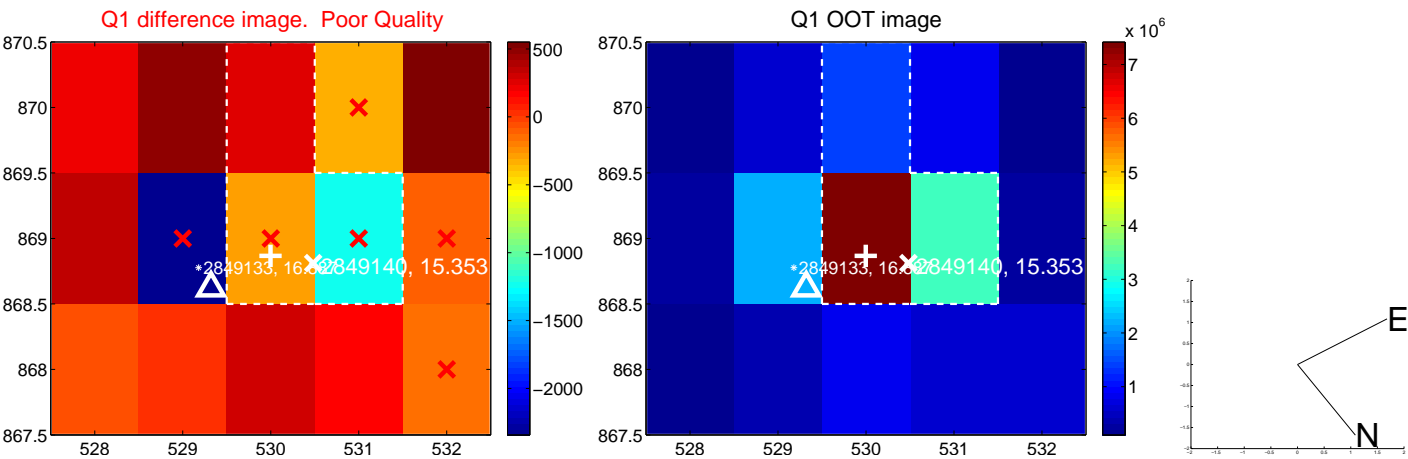
The direct PRF centroid is offset from the target star catalog position by about 1.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.732 \pm 0.625$	1.17	$0.585 \pm 0.726$	$-0.440 \pm 0.522$
PRF-fit source offset from KIC position	$0.577 \pm 0.581$	0.99	$-0.457 \pm 0.638$	$-0.353 \pm 0.442$
photometric centroid source offset	$1.51 \pm 0.80$	1.88	$0.21 \pm 0.80$	$-1.50 \pm 0.80$

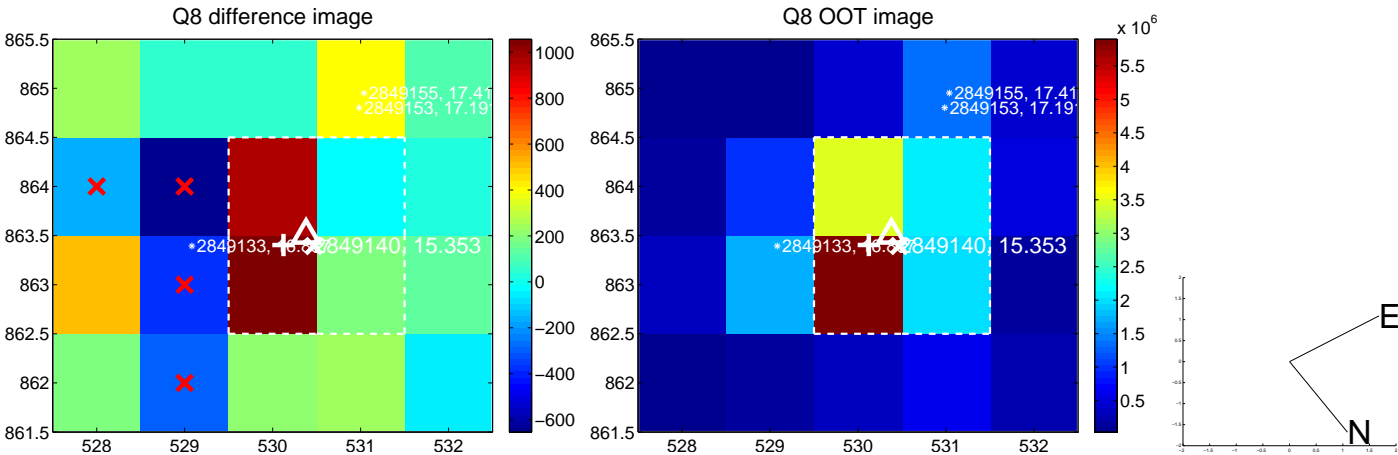
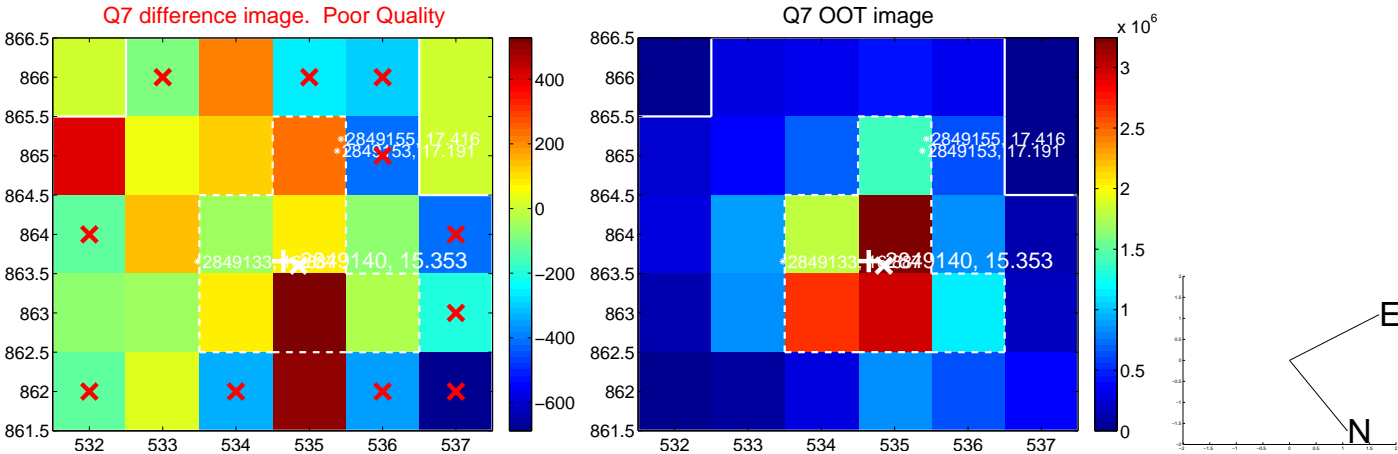
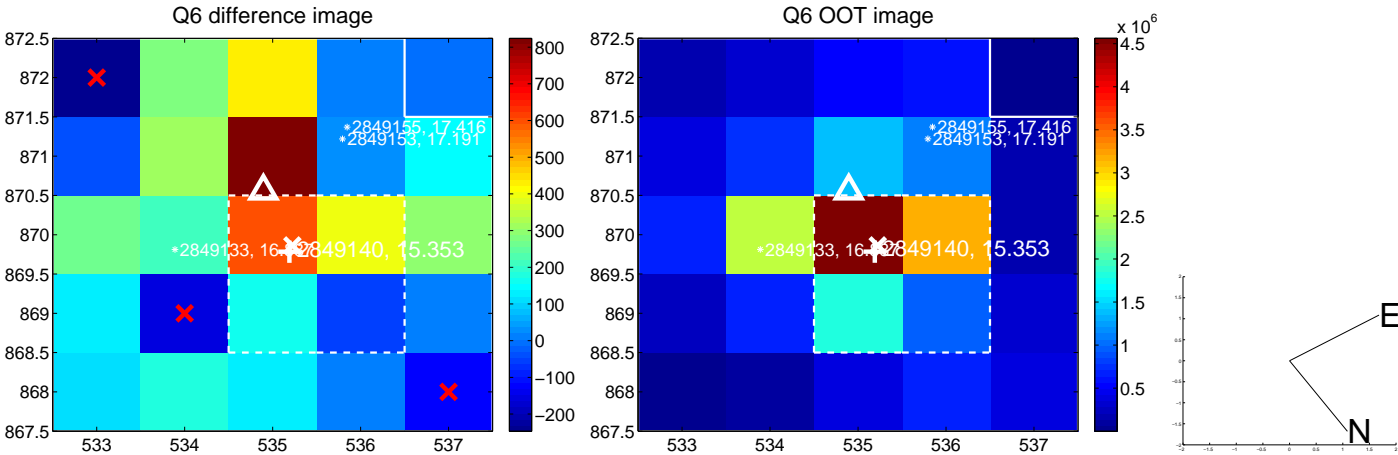
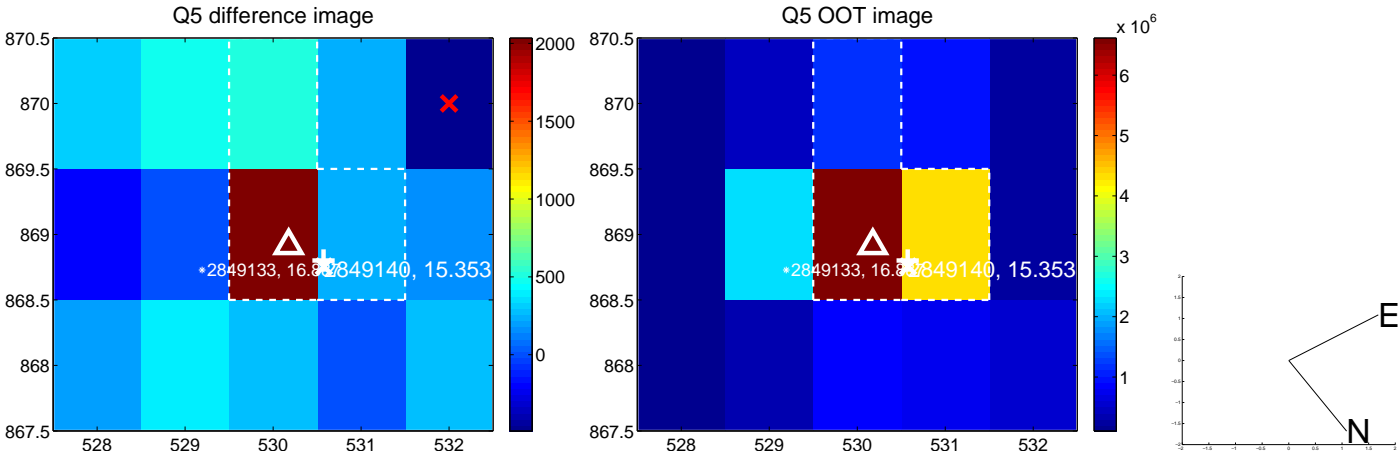


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

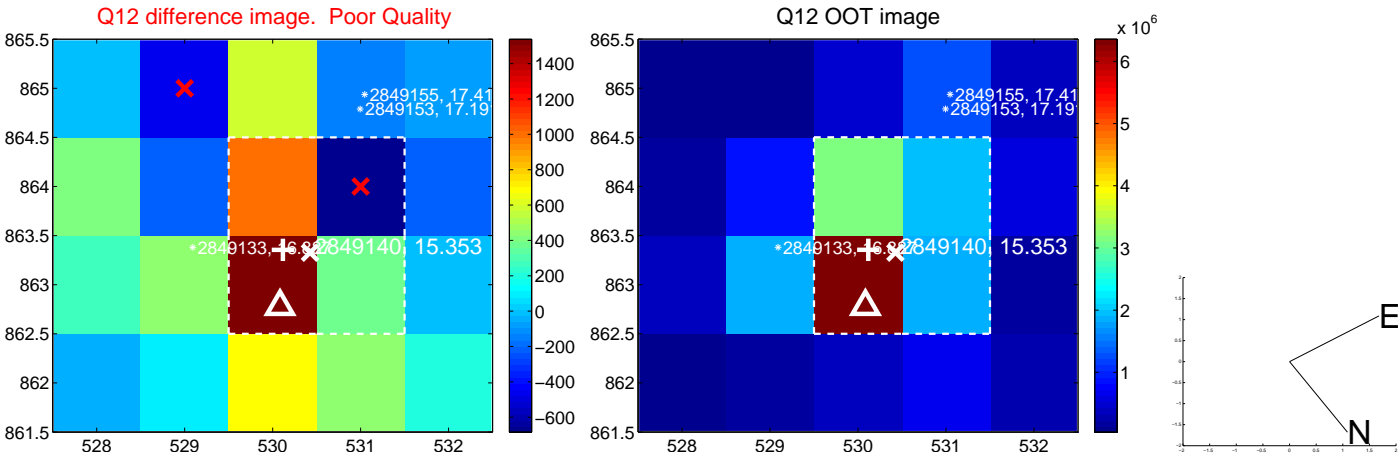
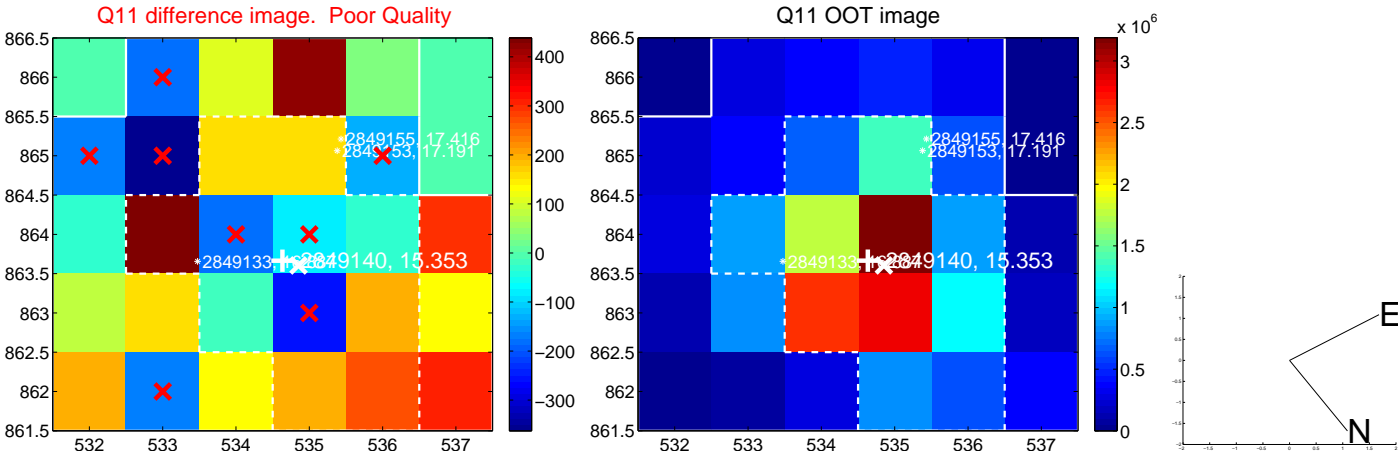
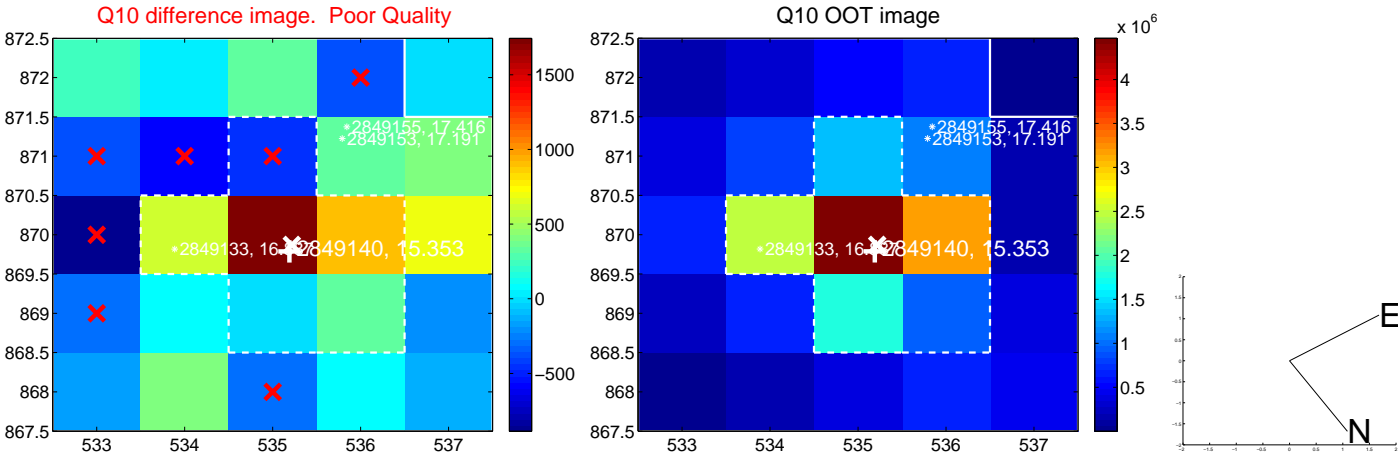
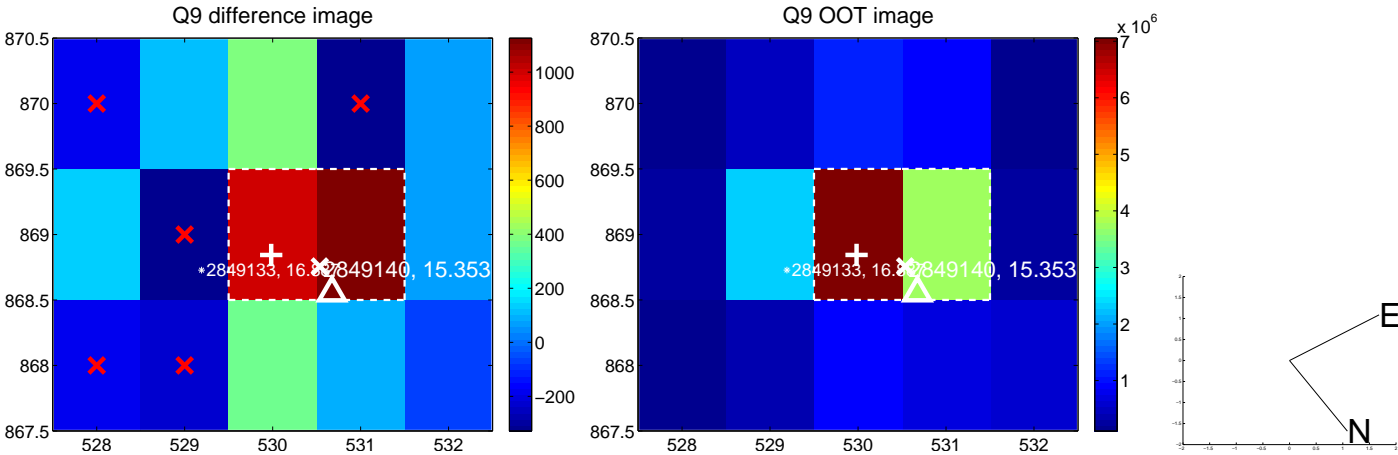
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



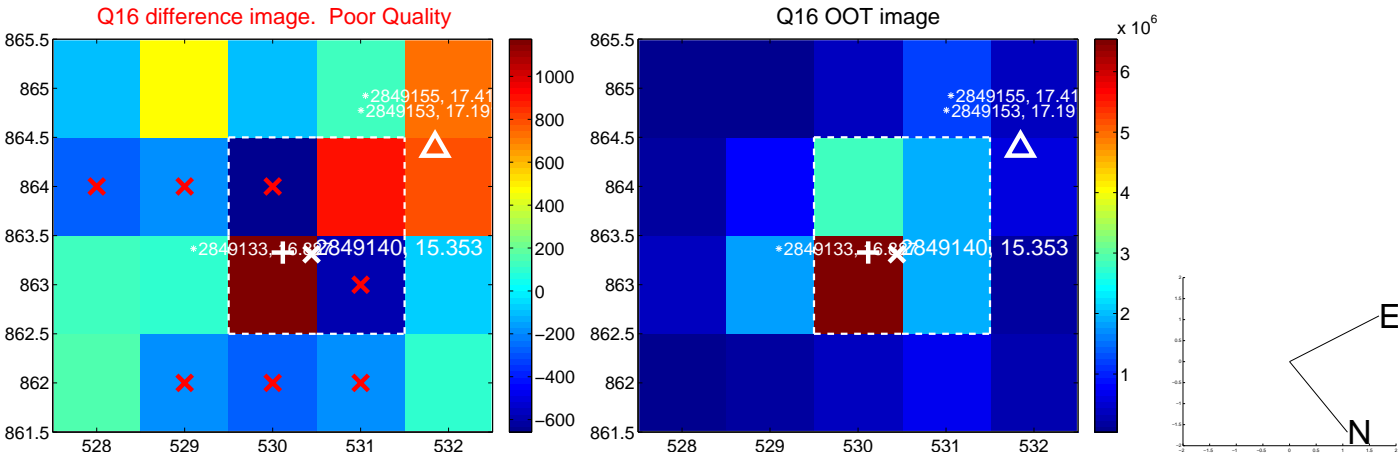
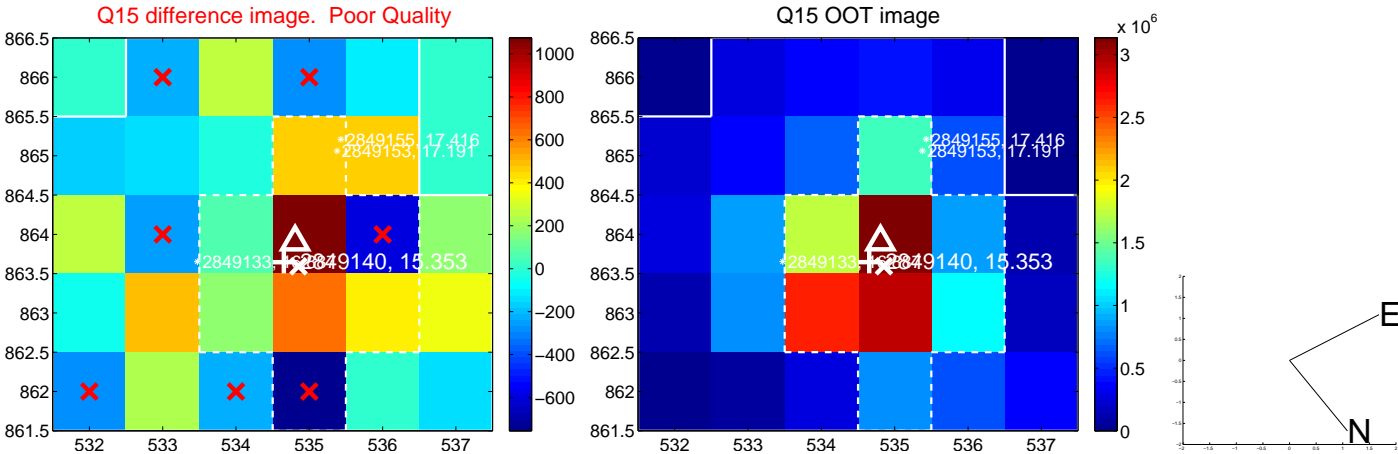
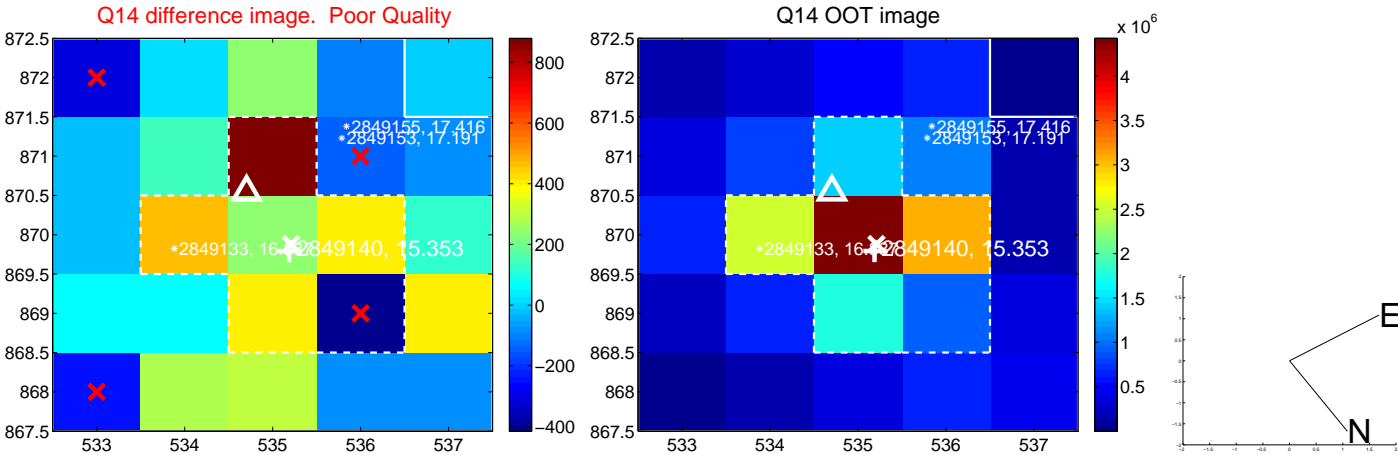
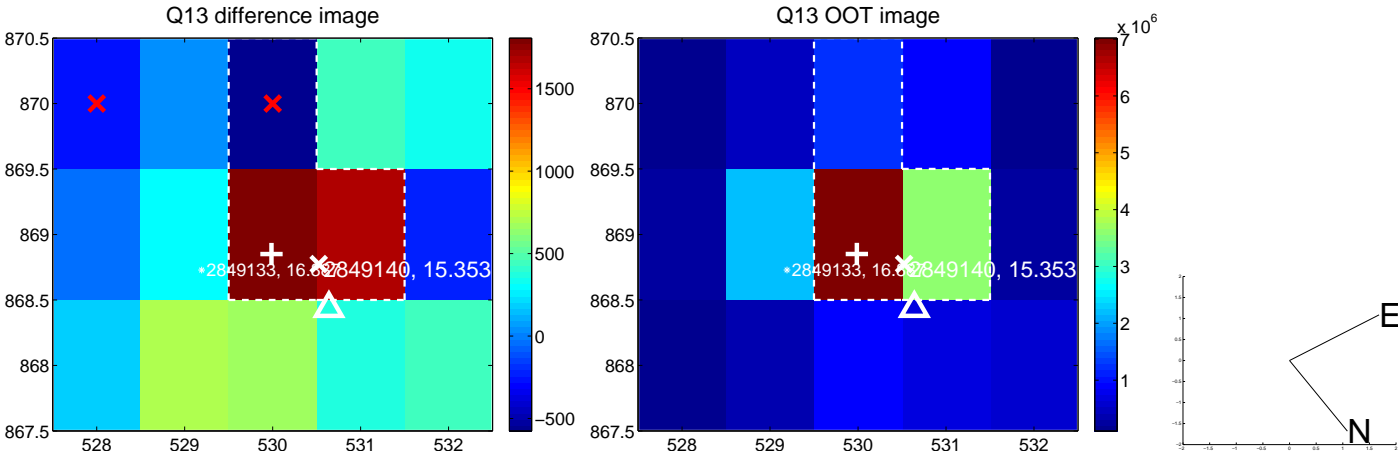
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



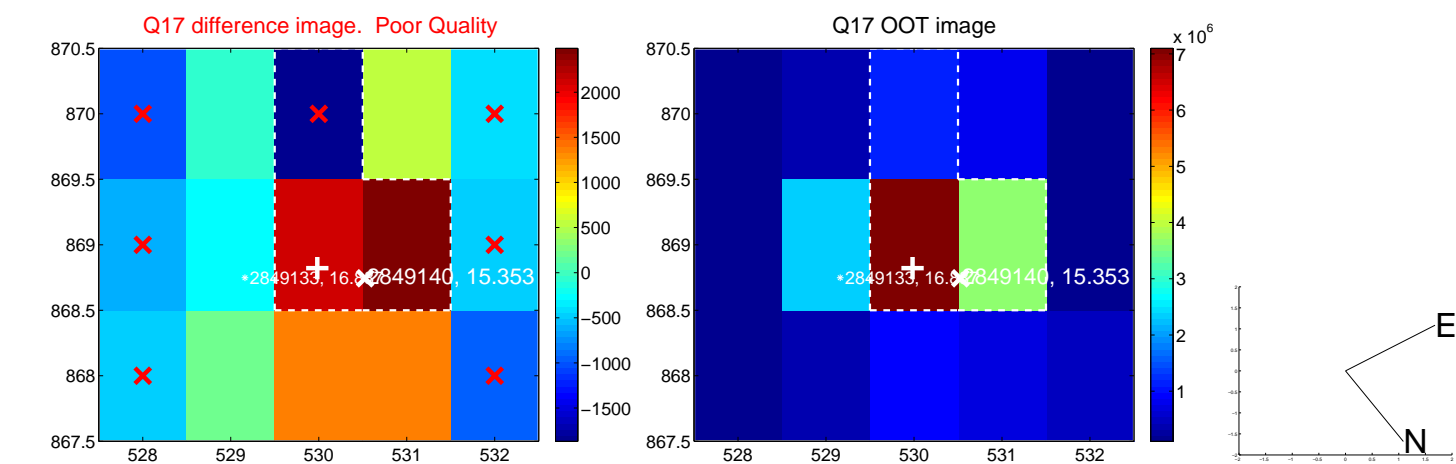
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



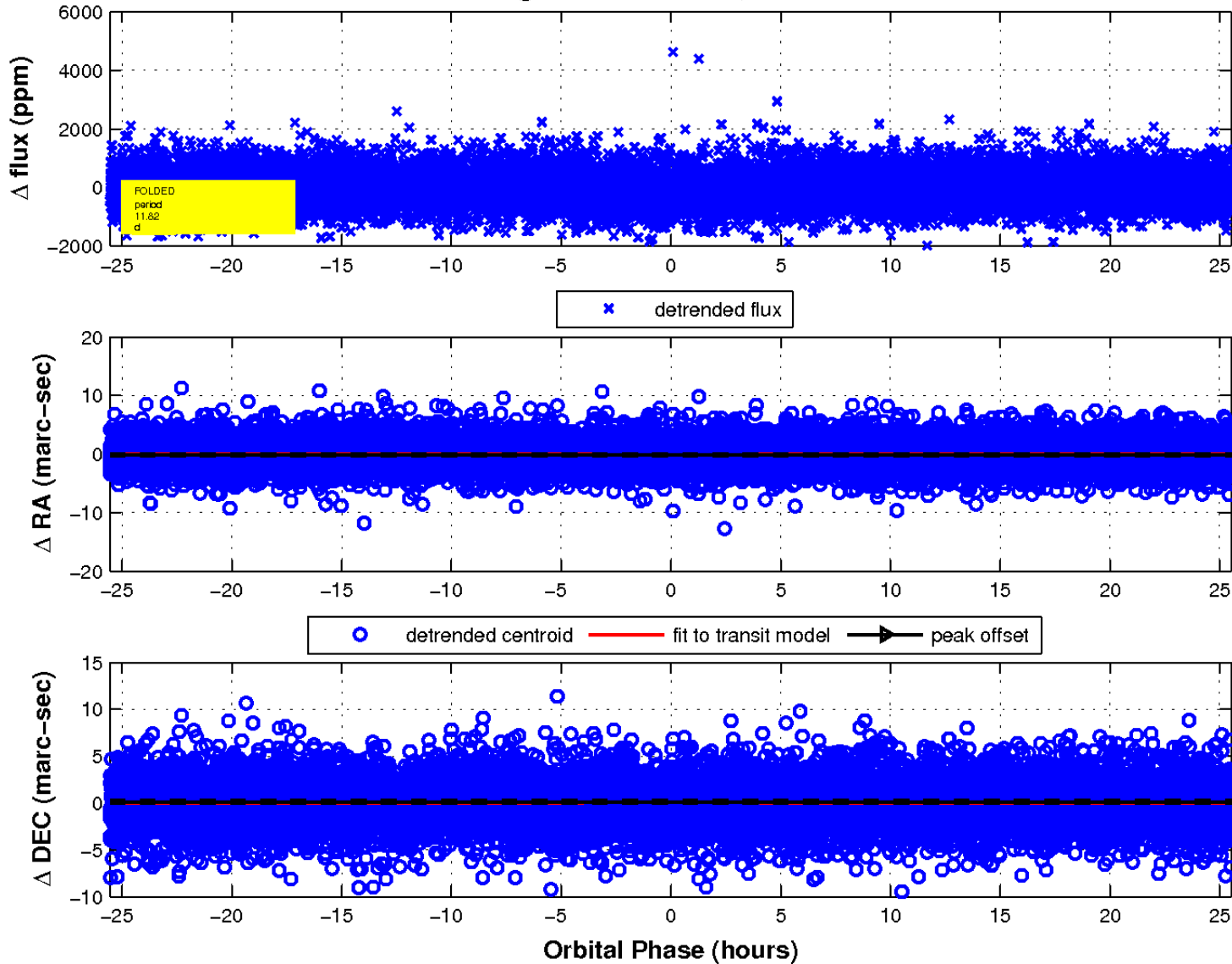
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

