

# KIC 003857860

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003857860-01	OBS	4681.01	4.117117	133.374260	39.5	3.594	11.0	11.0	1.74	6148	1.20	1516.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003857860-01	OBS	FP	0.00	0	0	1	0	CENT_RESOLVED_OFFSET—HALO_GHOST

**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.

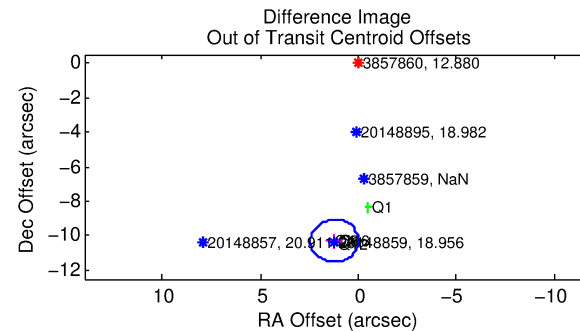
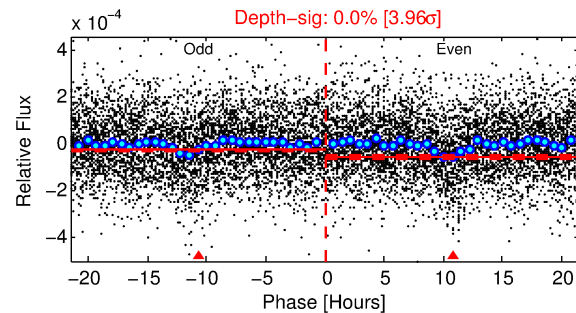
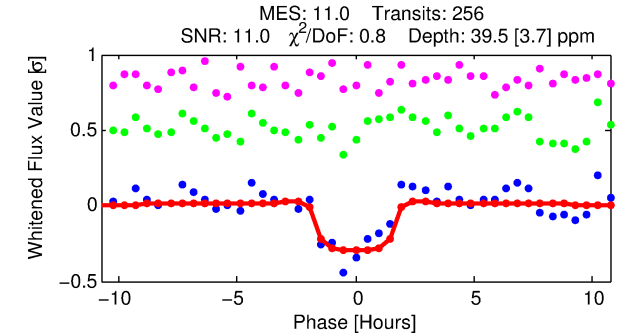
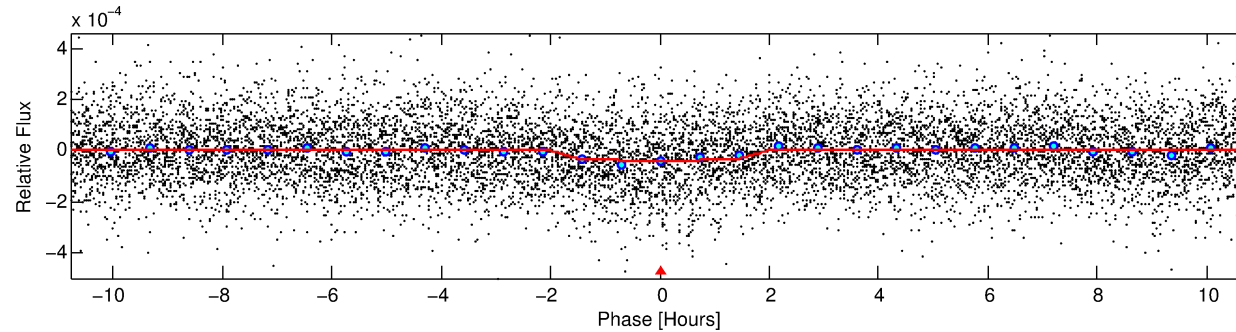
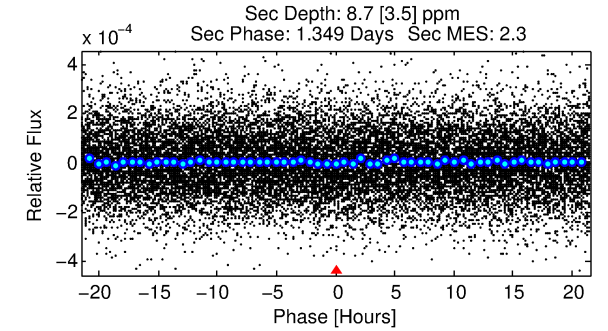
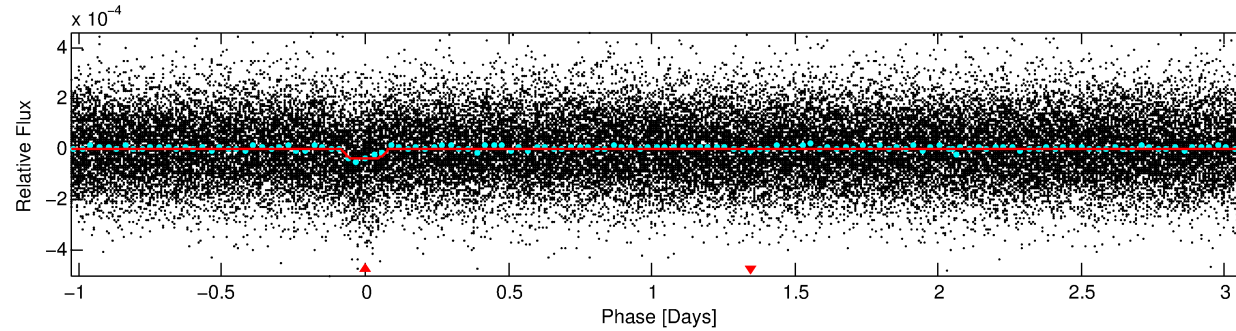
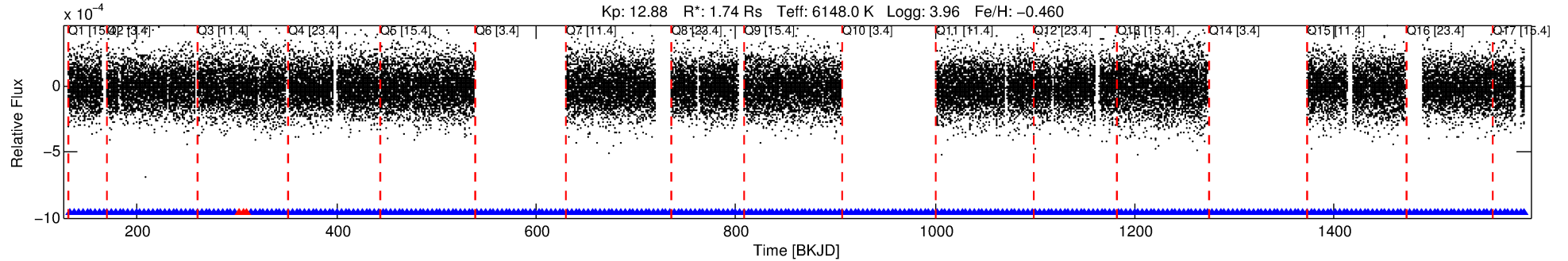
## Ephemeris Match Information For 003857860-01

No Significant Match Found

# DV One-Page Summary

KIC: 3857860 Candidate: 1 of 1 Period: 4.117 d  
KOI: K04681 Corr: No Ephemeris Match

Kp: 12.88 R\*: 1.74 Rs Teff: 6148.0 K Logg: 3.96 Fe/H: -0.460



## DV Fit Results:

Period = 4.11712 [0.00003] d  
Epoch = 133.3743 [0.0047] BKJD  
Rp/R\* = 0.0063 [0.0021]  
a/R\* = 5.72 [9.85]  
b = 0.77 [0.94]  
Seff = 1516.72 [570.39]  
Teq = 1591 [150] K  
Rp = 1.20 [0.50] Re  
a = 0.0506 [0.0119] AU  
Ag = 8.51 [7.42] [1.01σ]  
Teff = 4203 [830] K [3.10σ]

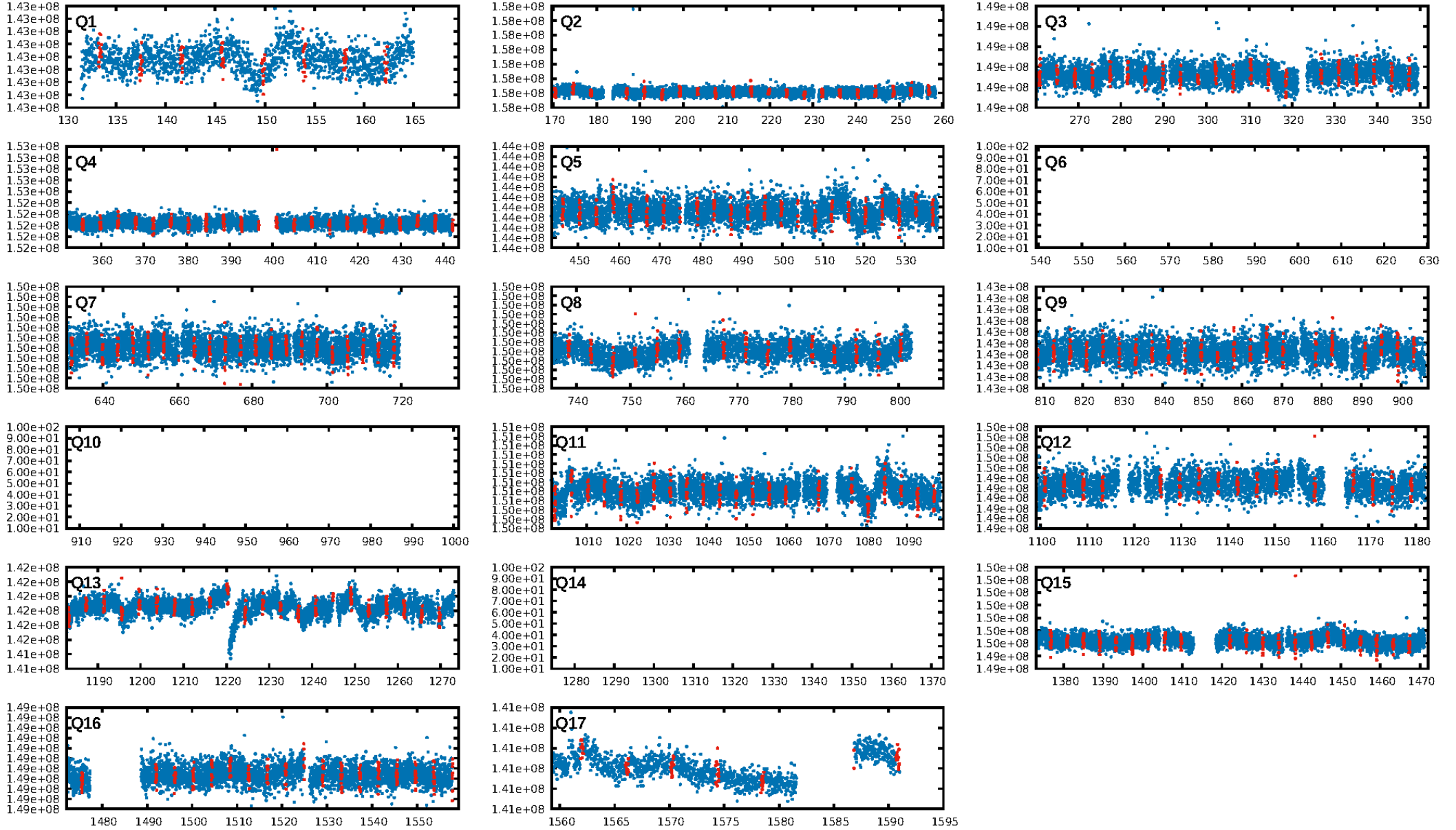
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 3.84e-27  
RollingBand-fgt: 0.99 [239/242]  
GhostDiagnostic-chr: -0.004237  
Centroid-sig: 0.0%  
Centroid-so: 17.035 arcsec [13.43σ]  
OotOffset-rm: 10.365 arcsec [25.25σ]  
KicOffset-rm: 10.362 arcsec [32.06σ]  
OotOffset-st: 0/0/4/1 [5]  
KicOffset-st: 0/0/4/1 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 1.00 [14/14]

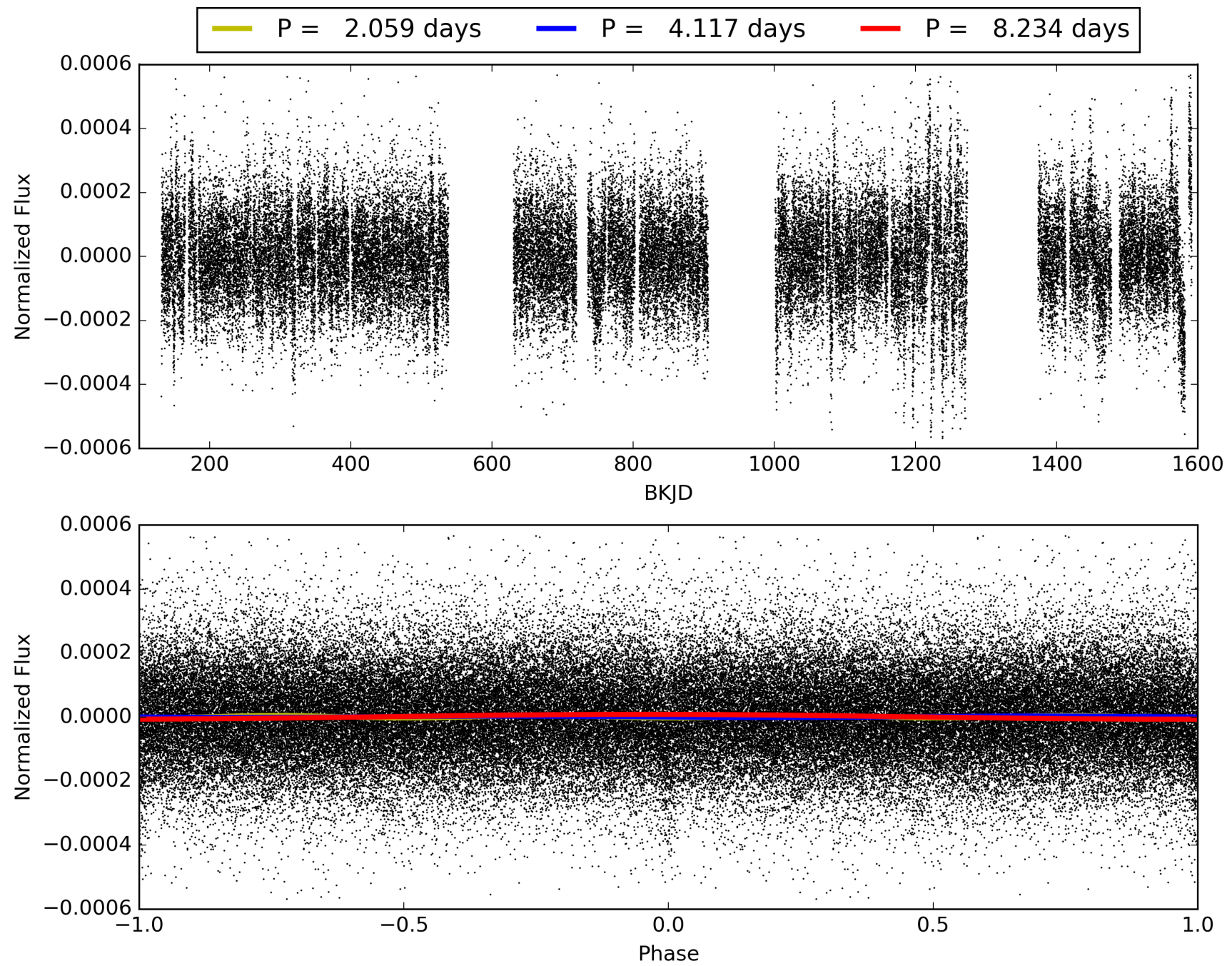
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:22:14 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003857860-01, PDC Light Curves

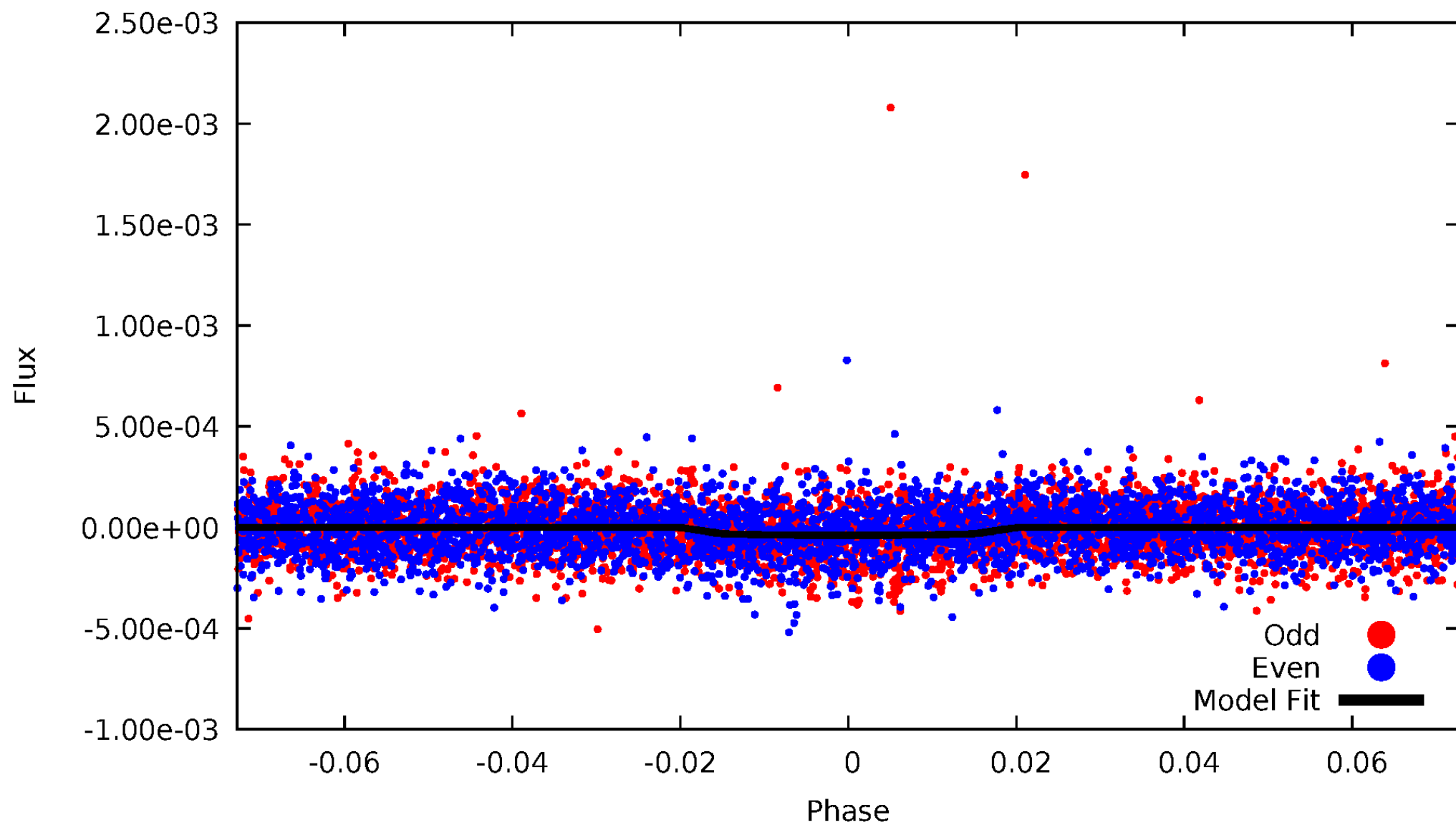


TCE 003857860-01



# DV Odd/Even

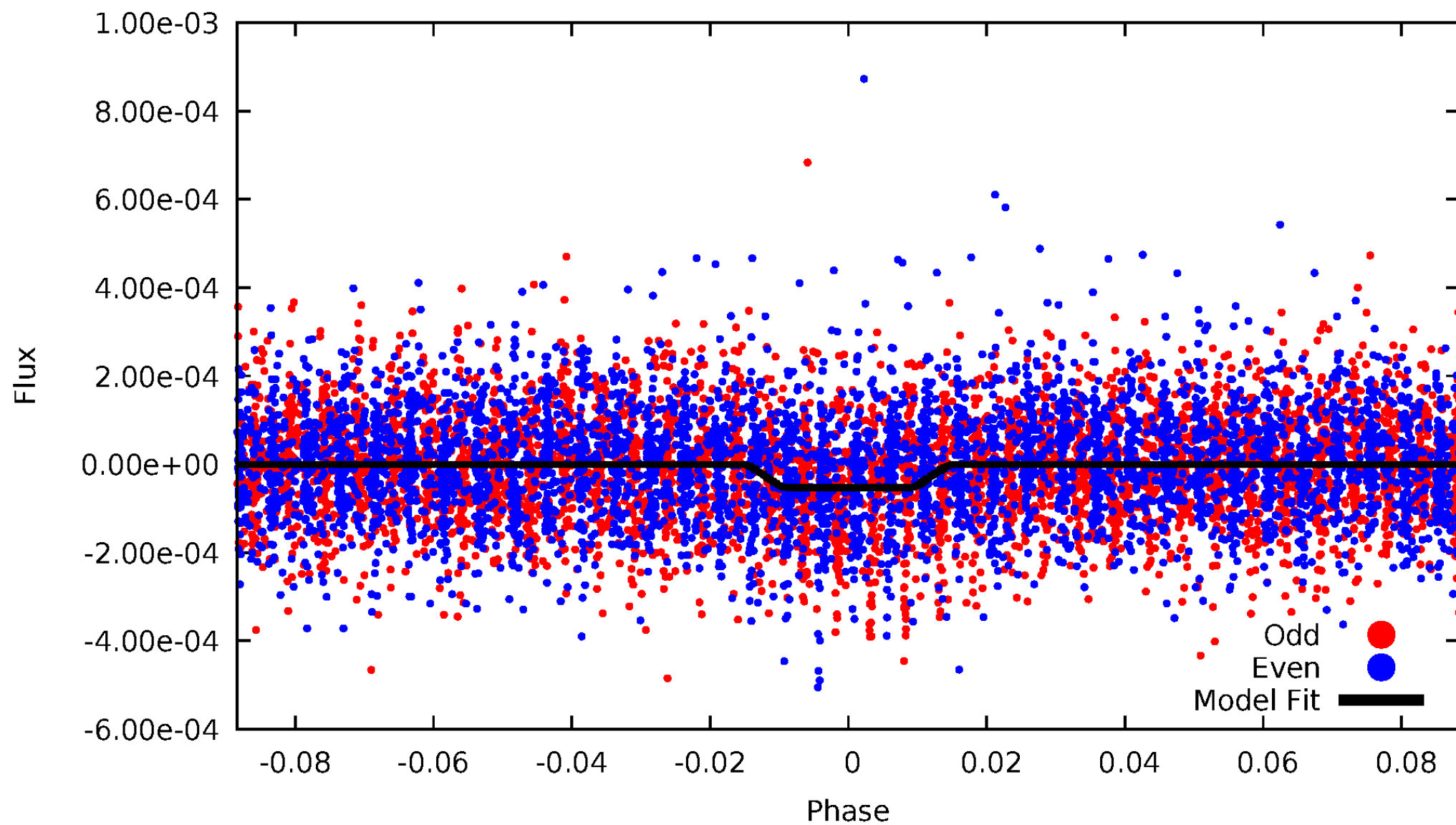
TCE 003857860-01





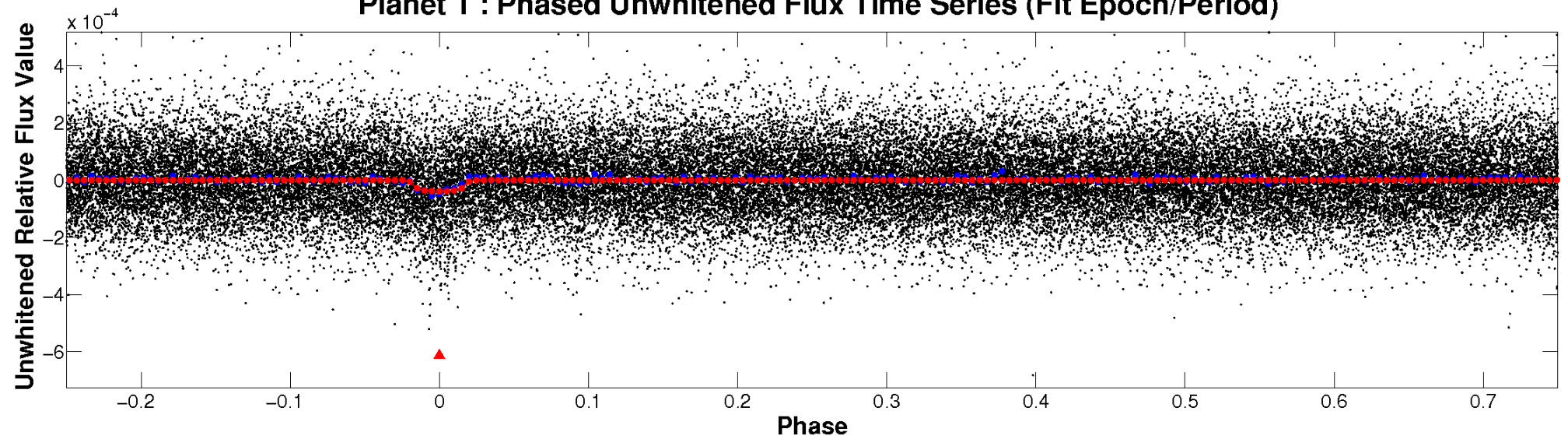
# ALT Odd/Even

TCE 003857860-01

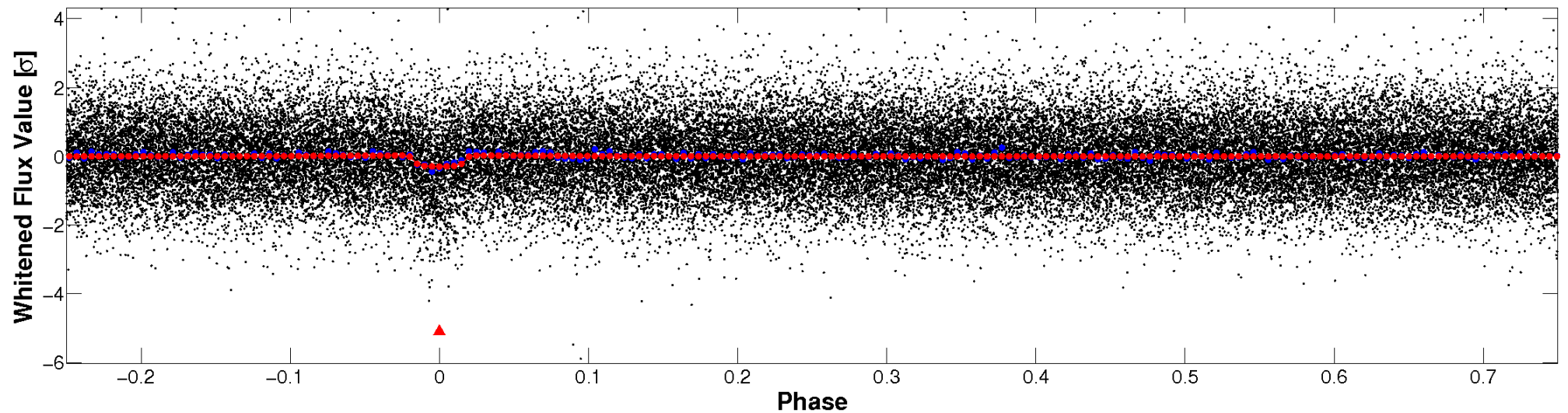


# Non-Whitened Vs. Whitened Light Curve

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

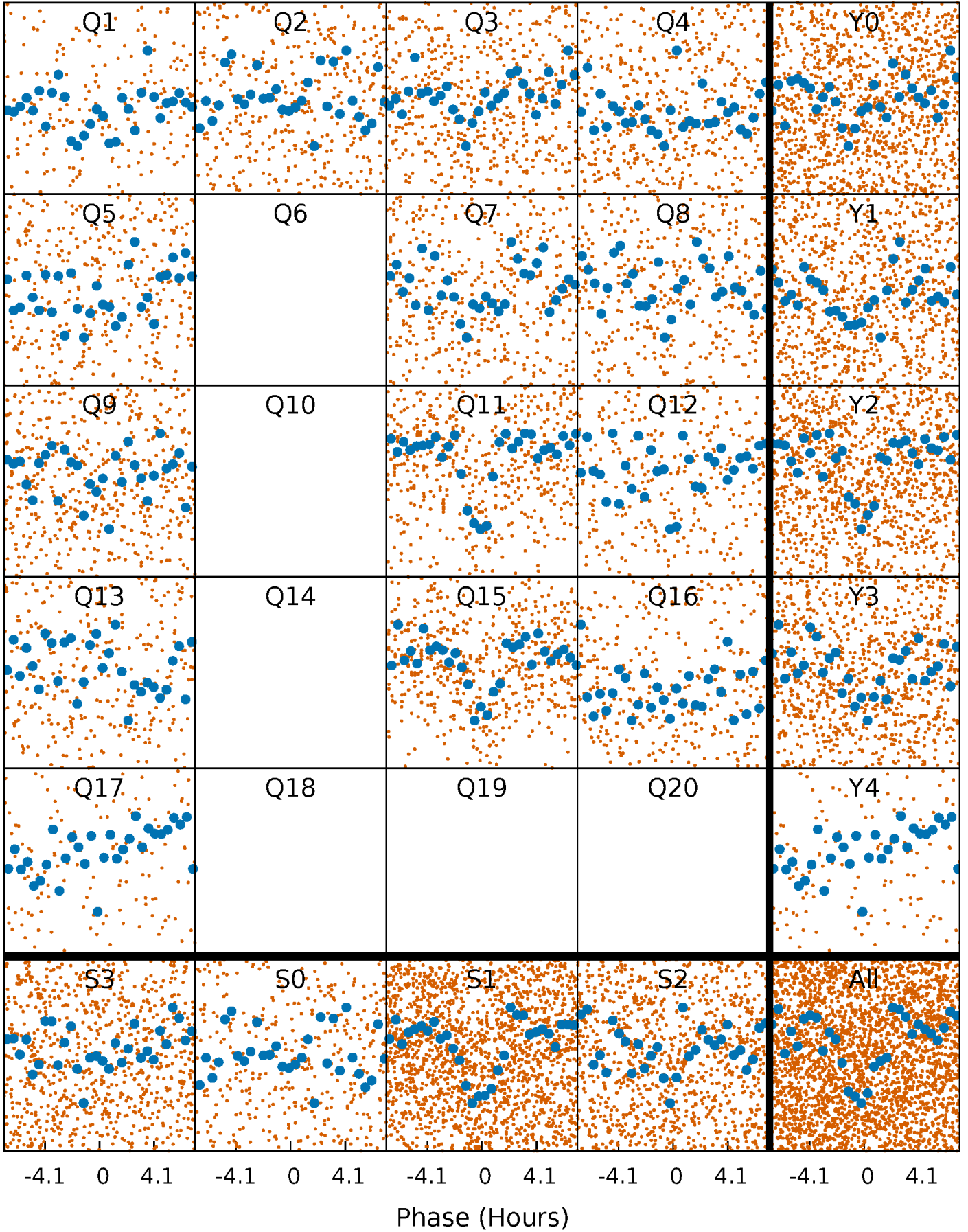


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

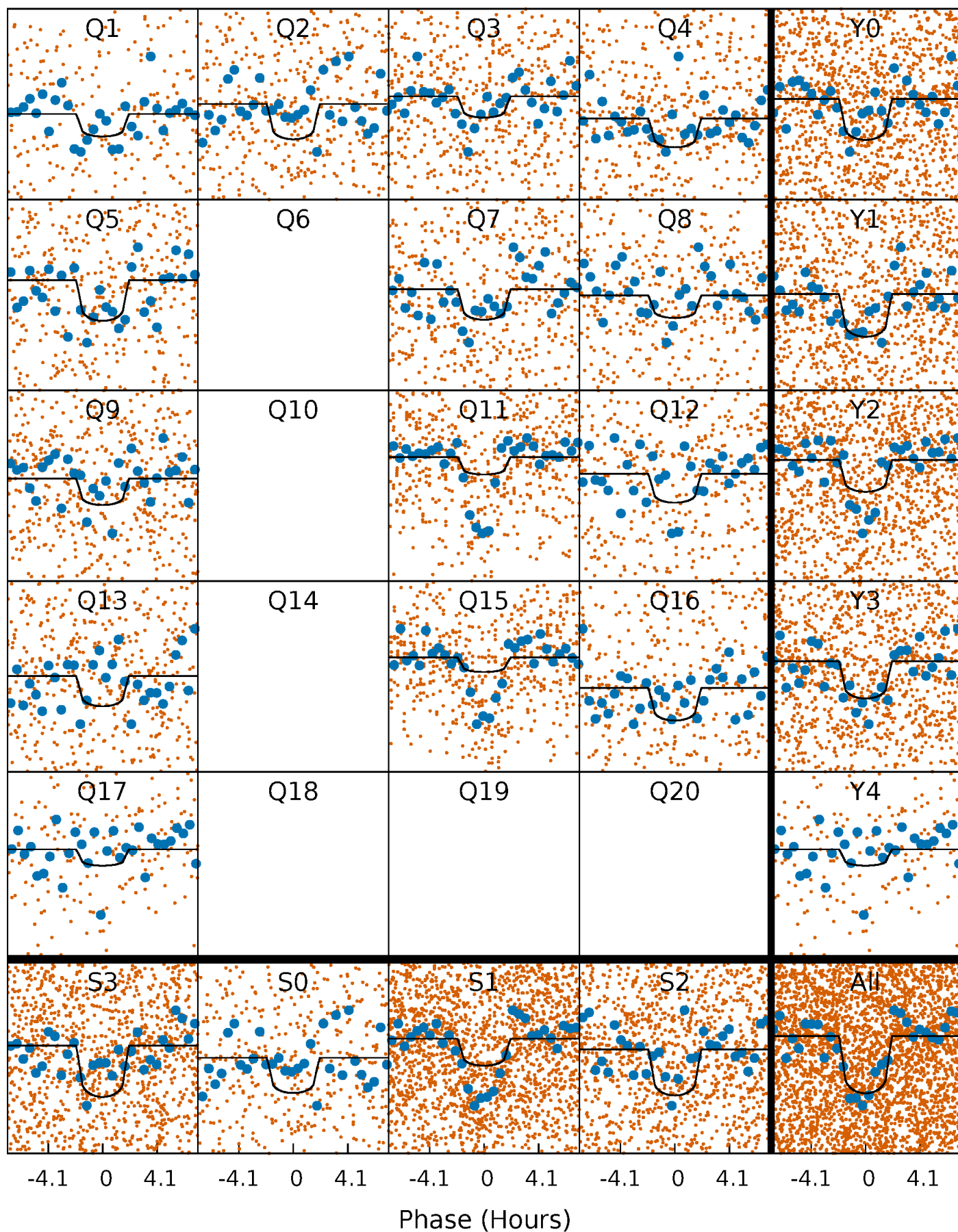
TCE 003857860-01   P= 4.117117 Days    $T_0=133.374260$  (BKJD)





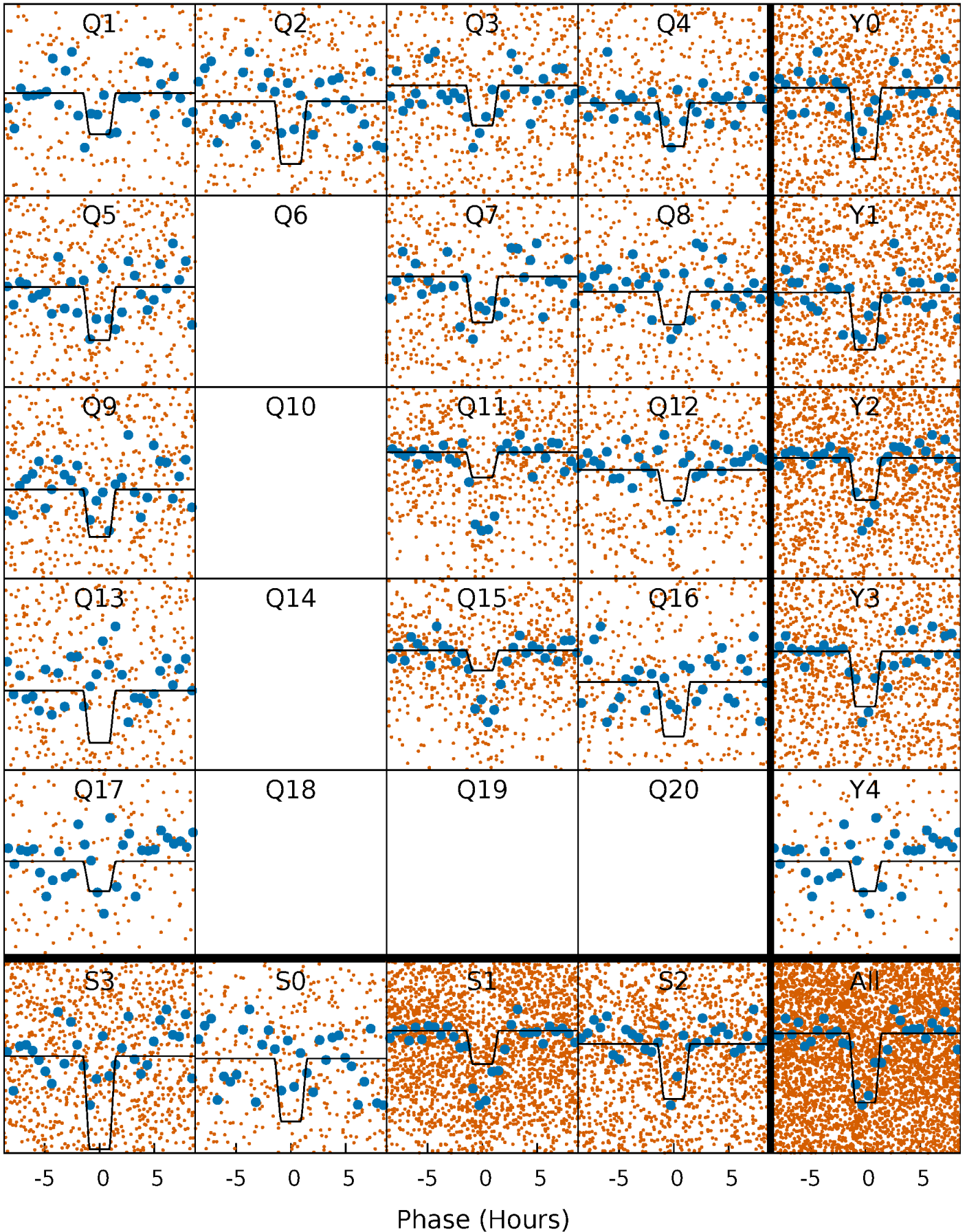
# DV Quarter-Phased Transit Curves

TCE 003857860-01   P= 4.117117 Days    $T_0=133.374260$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

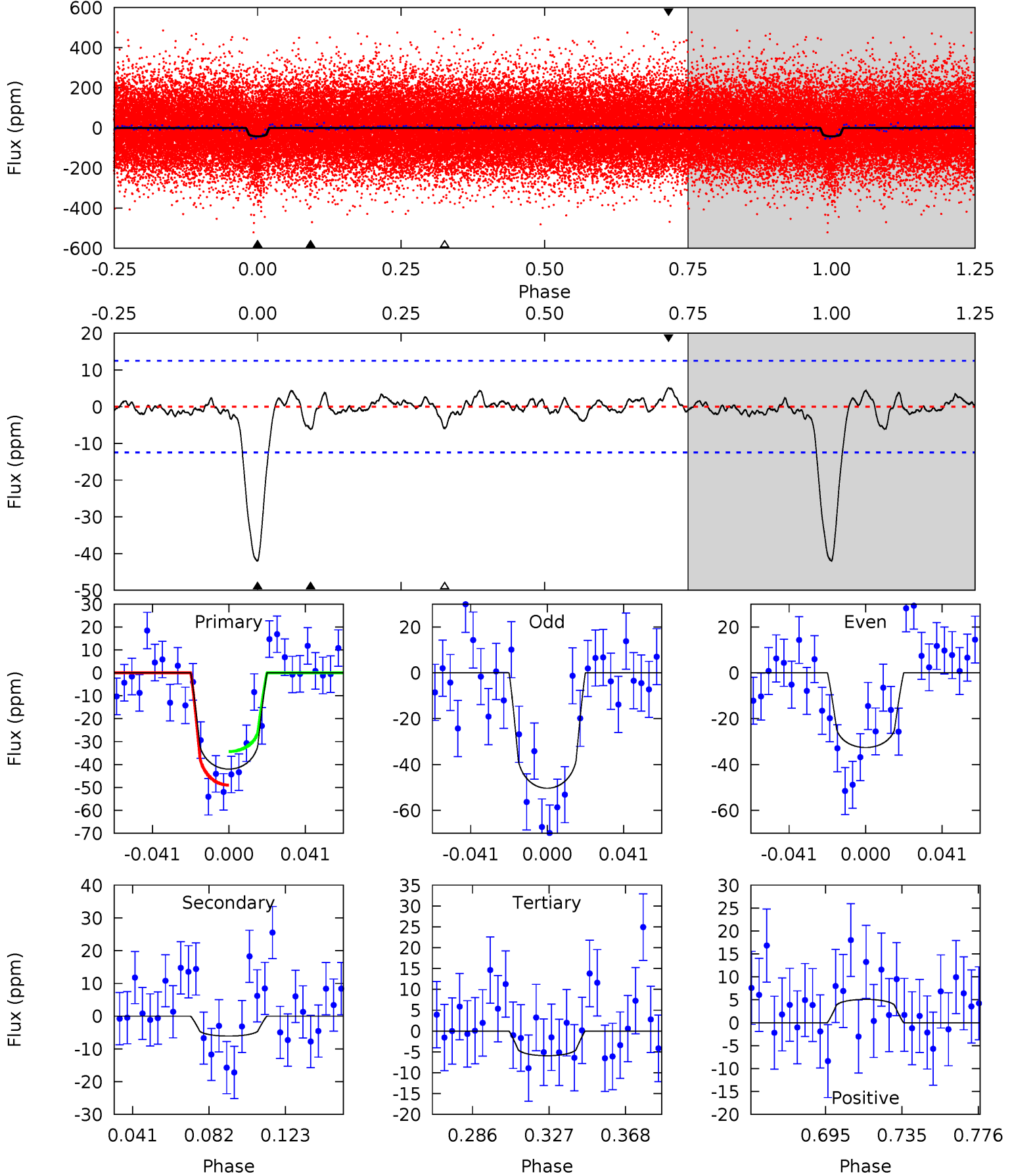
TCE 003857860-01 P= 4.117156 Days  $T_0=133.353993$  (BKJD)



# DV Model-Shift Uniqueness Test

003857860-01, P = 4.117117 Days, E = 129.257143 Days

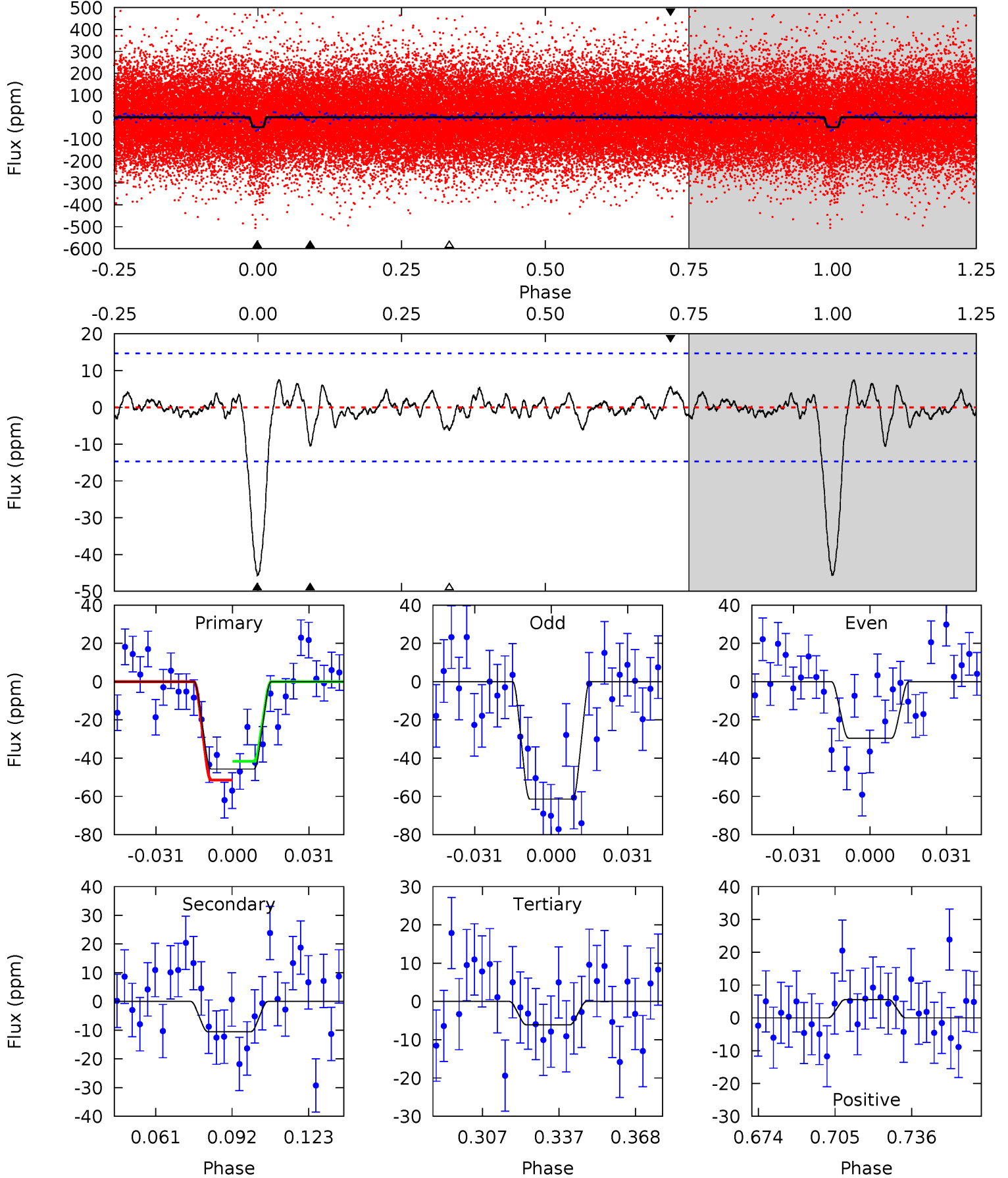
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	2.32	2.26	1.94	4.75	2.04	0.65	13.7	14.0	0.06	0.38	3.38	1.03	0.11	2.79



# Alt Model-Shift Uniqueness Test

003857860-01, P = 4.117156 Days, E = 129.236837 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
15.0	3.44	2.01	1.83	4.81	2.16	0.74	13.0	13.1	1.44	1.61	5.22	1.18	0.14	1.61





### Stellar Parameters For KIC 003857860

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6148^{+82}_{-82}$	$3.964^{+0.217}_{-0.108}$	$-0.460^{+0.150}_{-0.150}$	$1.741^{+0.289}_{-0.434}$	$1.016^{+0.087}_{-0.106}$	$0.271^{+0.309}_{-0.092}$
	+1%/-1%	+5%/-3%	+33%/-33%	+17%/-25%	+9%/-10%	+114%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 003857860-01 / KOI 4681.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-6 \pm 3$	$1.12^{+0.44}_{-0.38}$	$2203^{+112}_{-141}$	$4071^{+869}_{-552}$	$6.226^{+11.249}_{-3.560}$
Alt.	$-11 \pm 3$	$1.33^{+0.43}_{-0.41}$	$2200^{+111}_{-138}$	$4295^{+654}_{-449}$	$8.231^{+9.126}_{-3.794}$

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

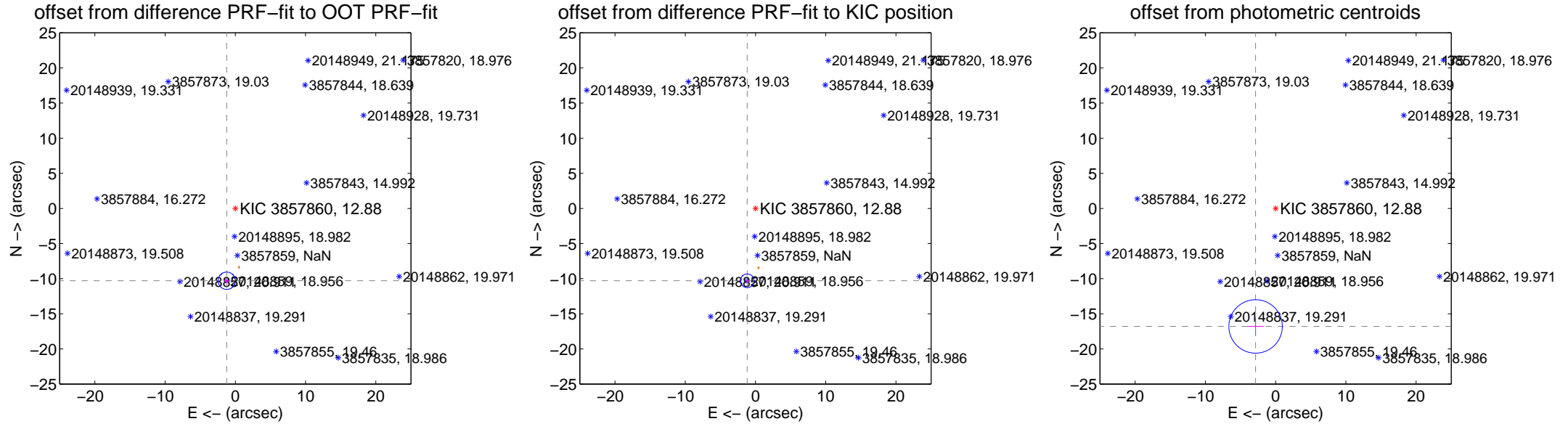
## DV Centroid Data

Supplemental centroid analysis for 003857860-01. Kepler magnitude: 12.88. Transit SNR 11.03

There are 4 quarters with good PRF difference image offsets

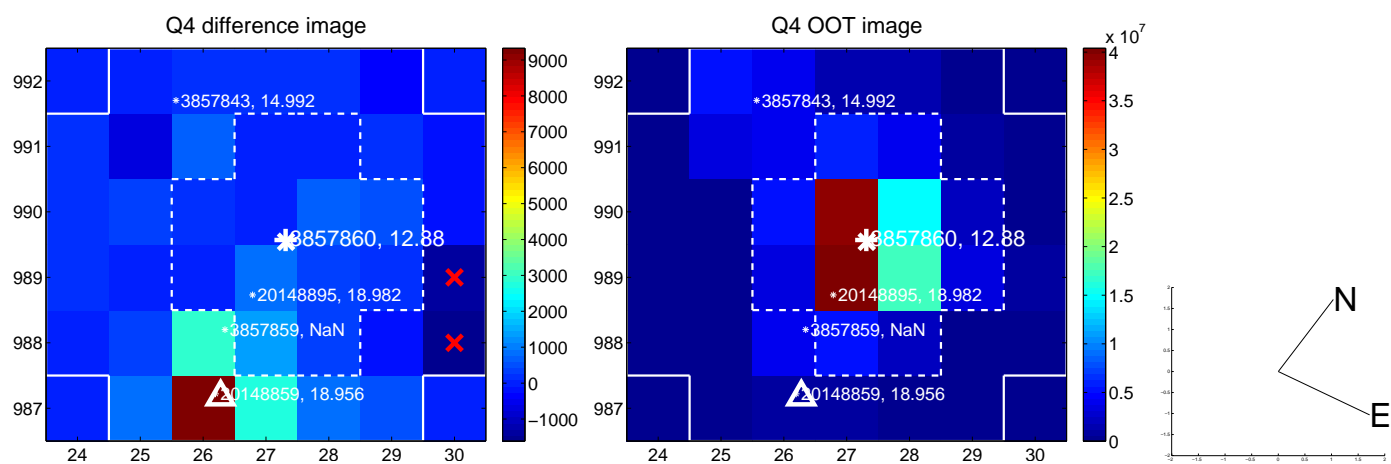
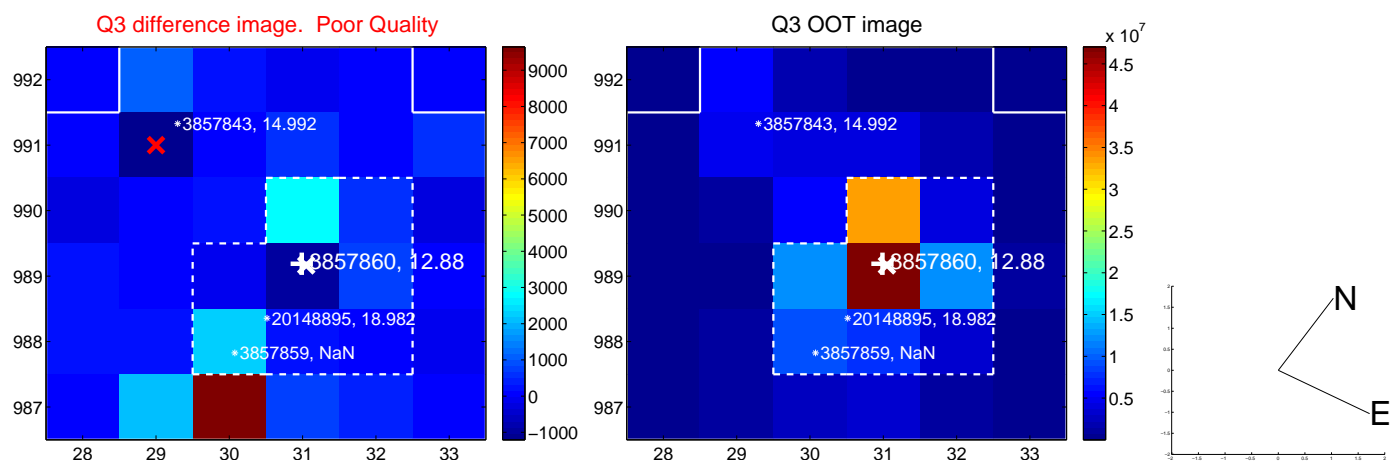
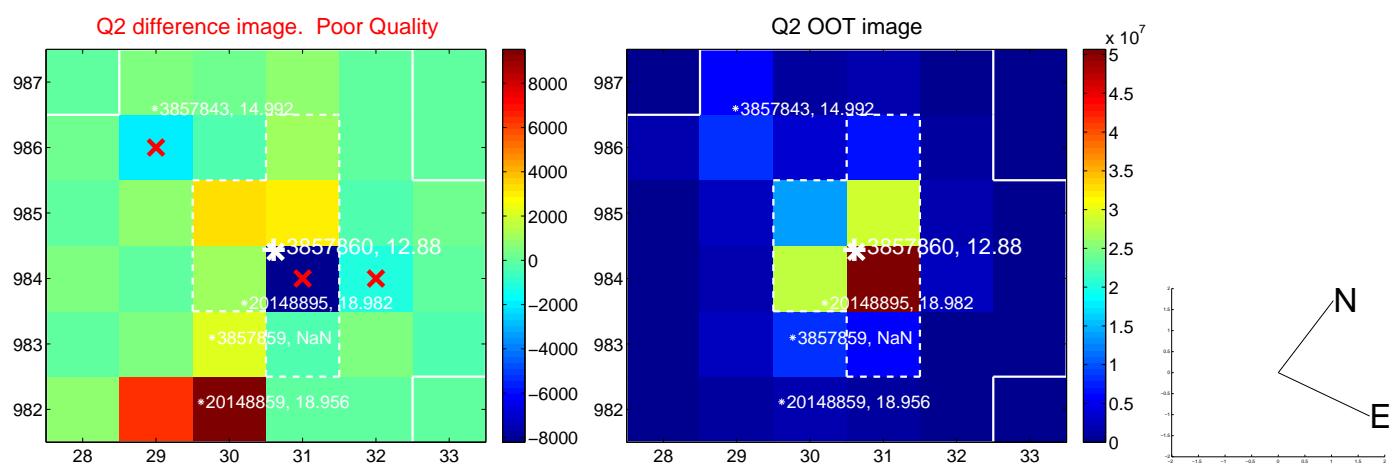
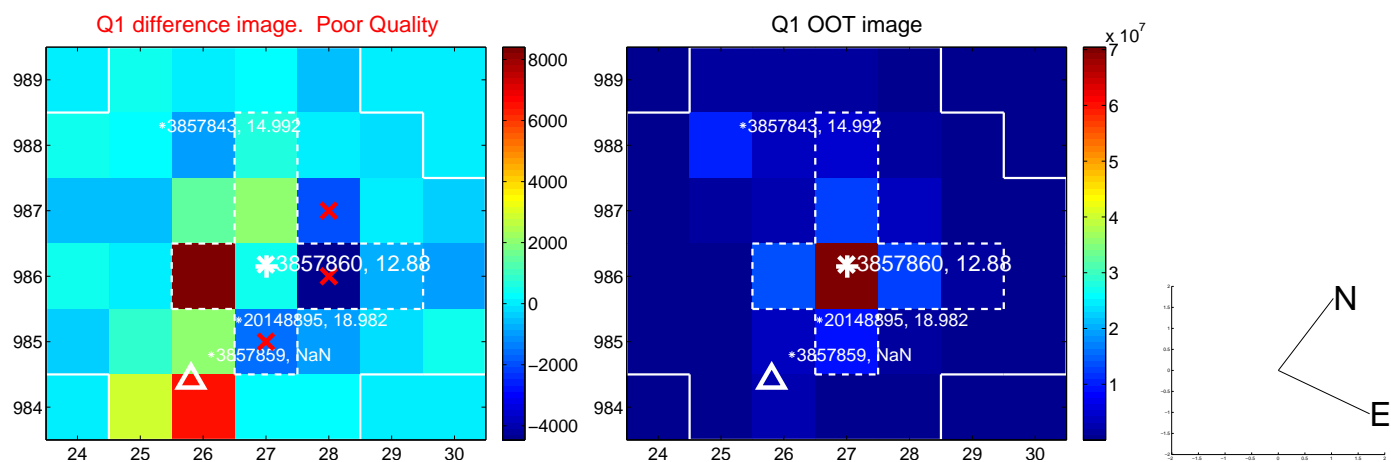
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$10.365 \pm 0.411$	25.25	$1.226 \pm 0.361$	$-10.292 \pm 0.372$
PRF-fit source offset from KIC position	$10.362 \pm 0.323$	32.06	$1.175 \pm 0.264$	$-10.295 \pm 0.297$
photometric centroid source offset	$17.04 \pm 1.27$	13.43	$2.85 \pm 1.21$	$-16.79 \pm 1.27$

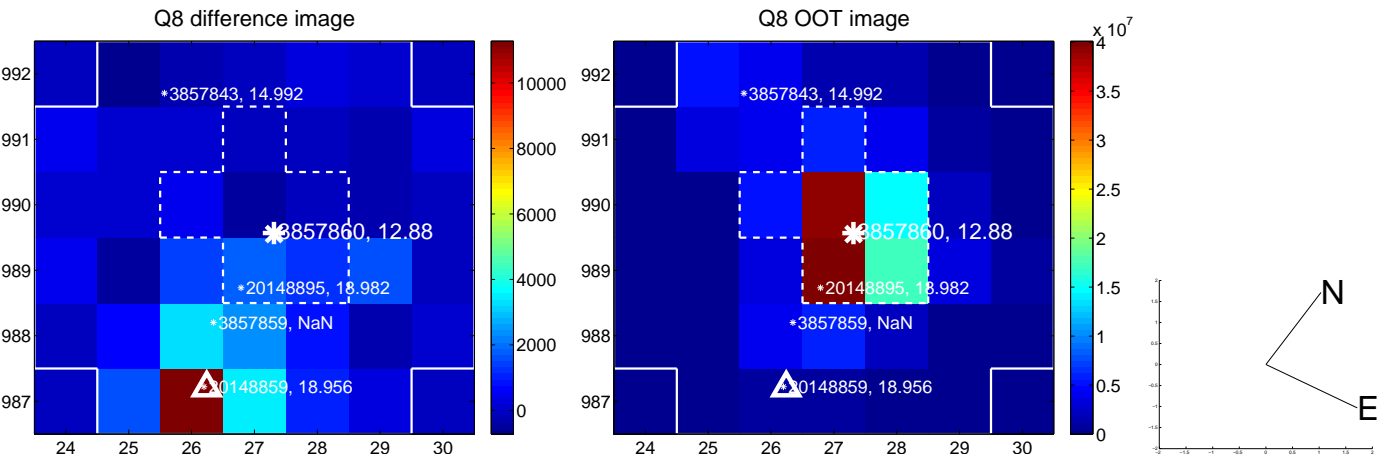
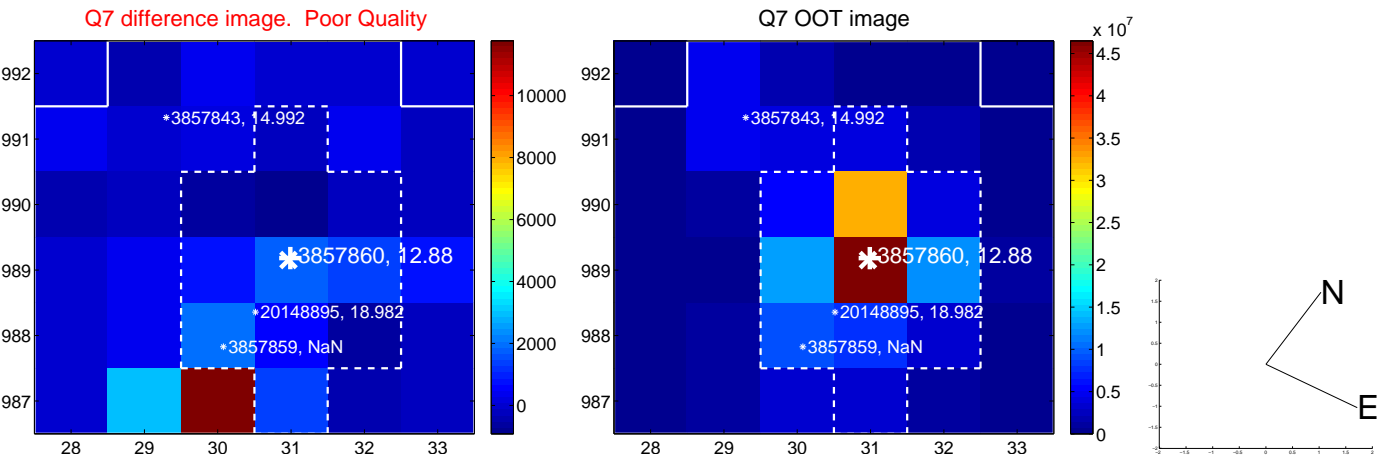
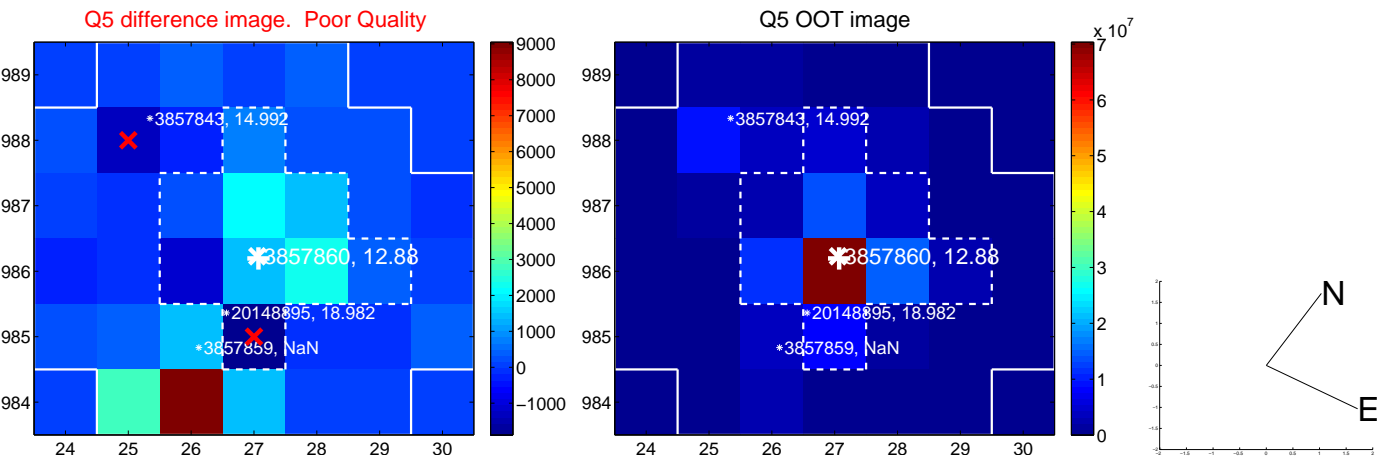


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

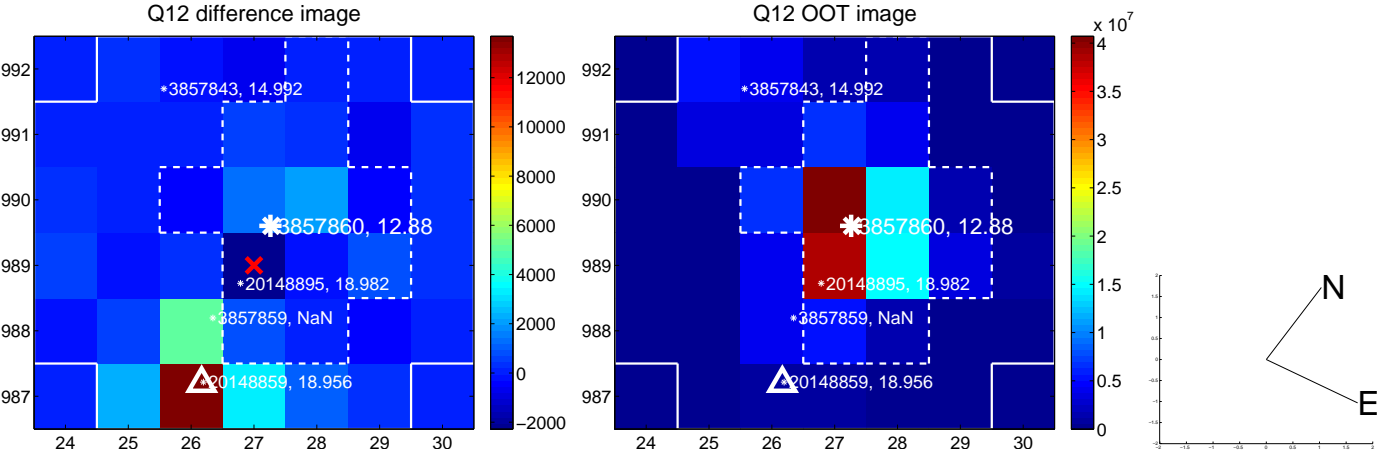
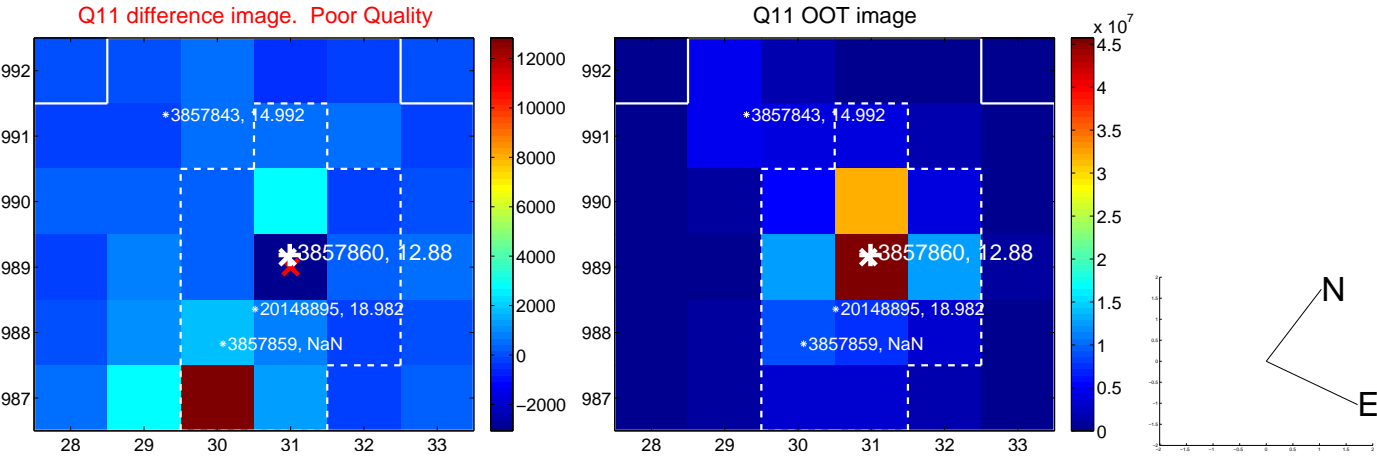
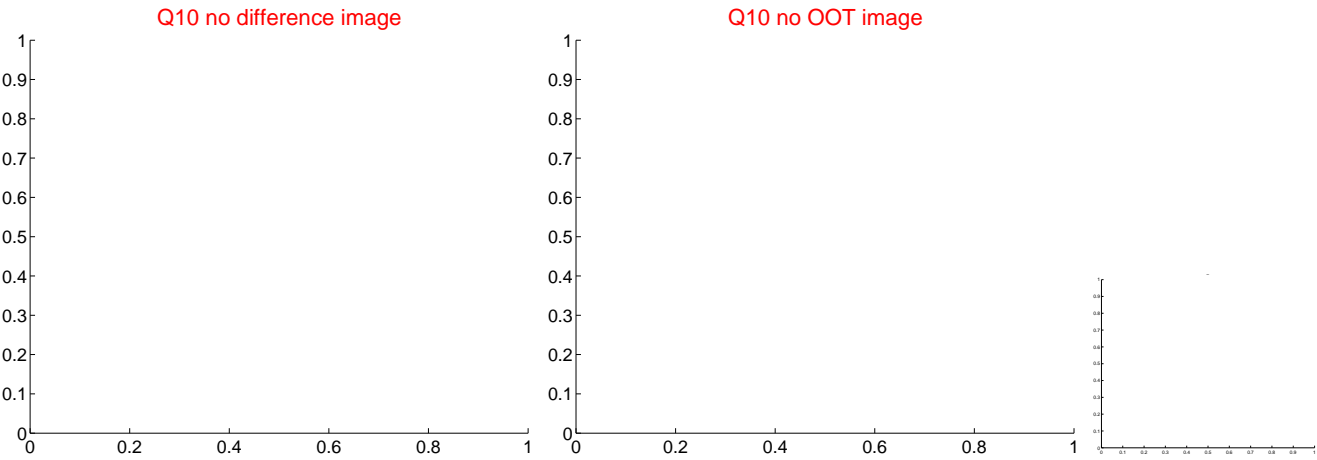
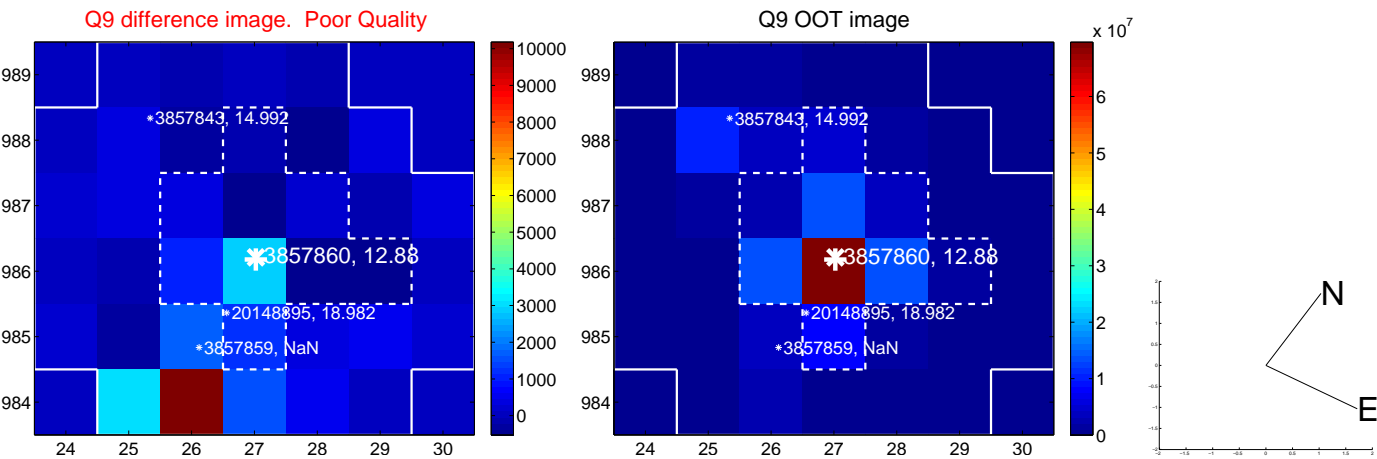


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

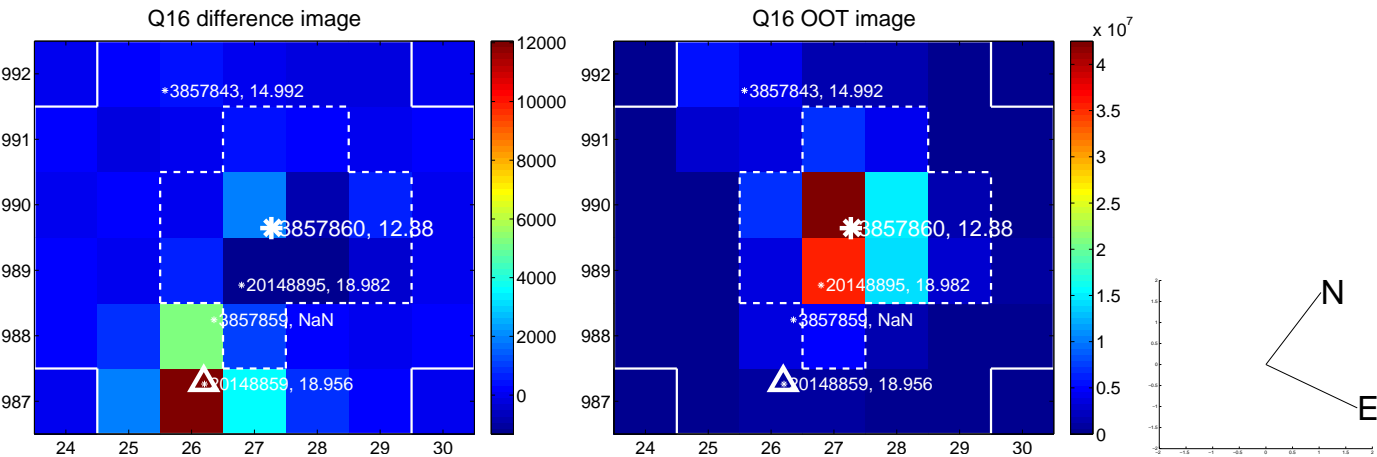
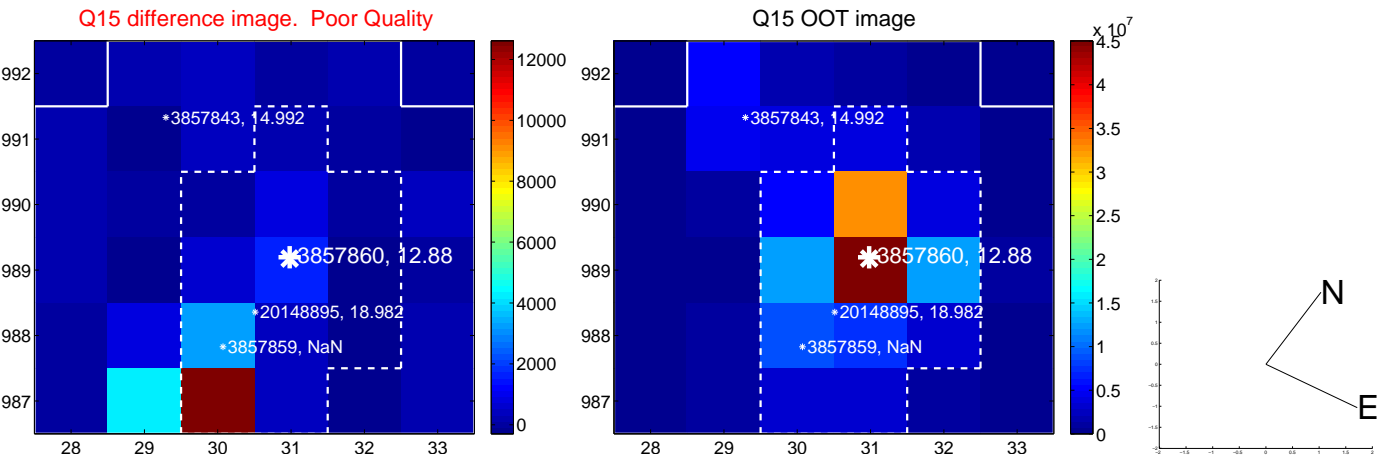
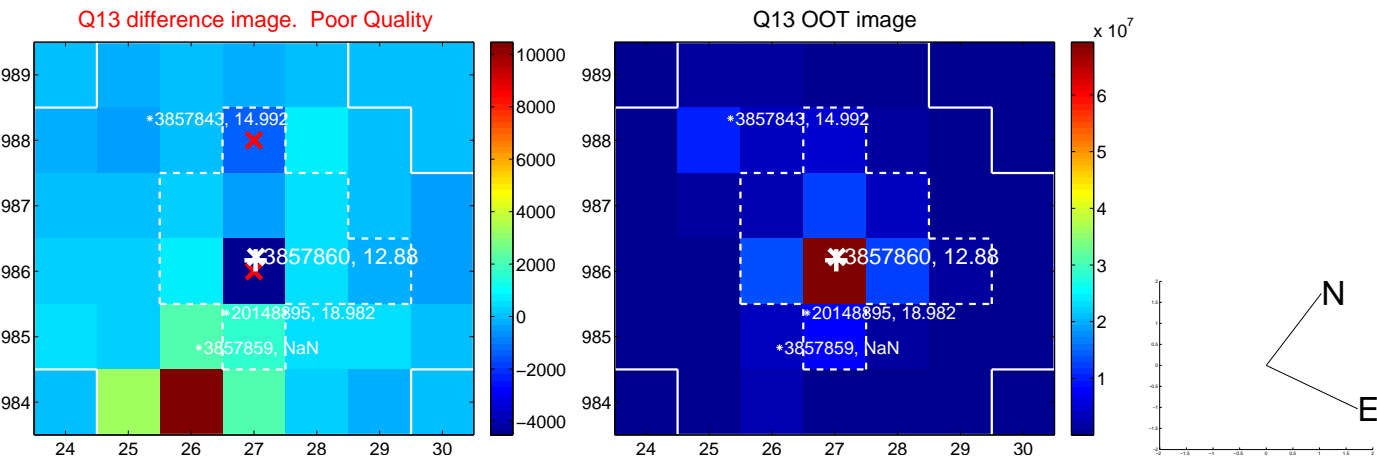




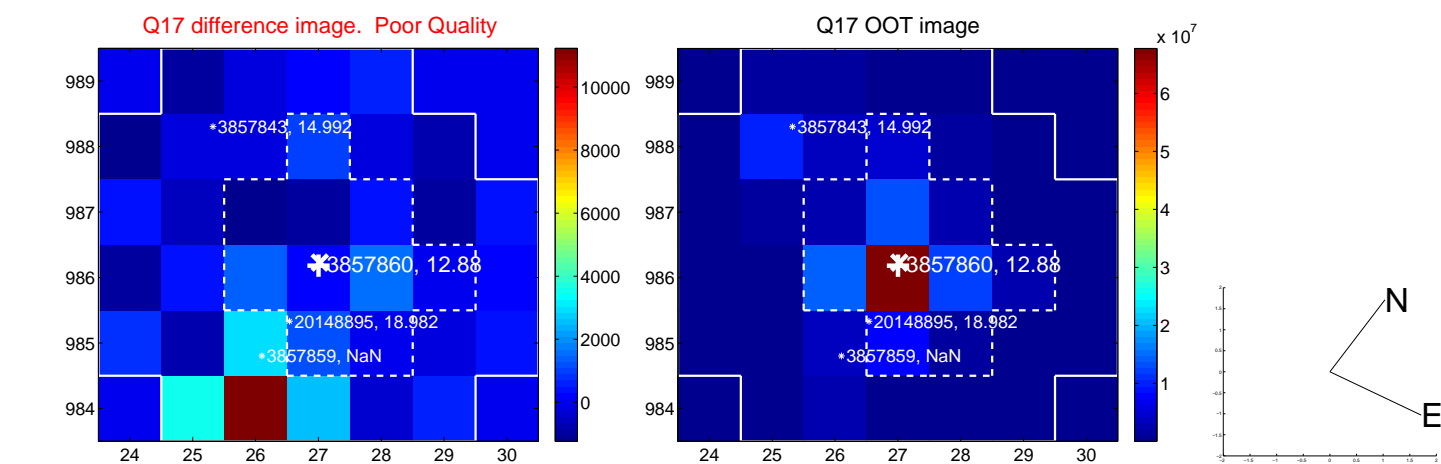
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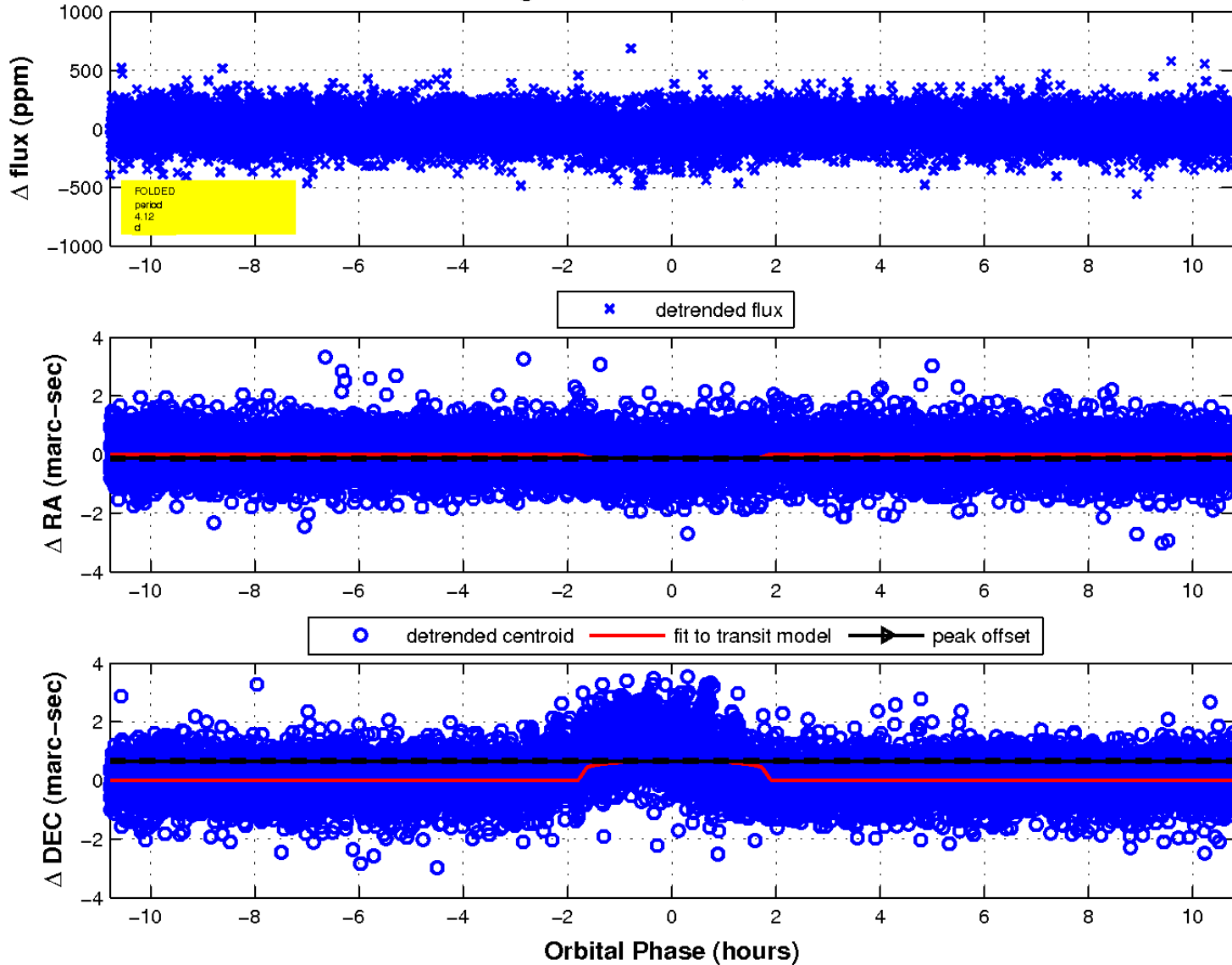
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

