

# KIC 007421876

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007421876-01	OBS	6876.01	4.501460	134.357581	24.7	24.023	9.4	7.7	2.35	6635	1.34	2574.38

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007421876-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

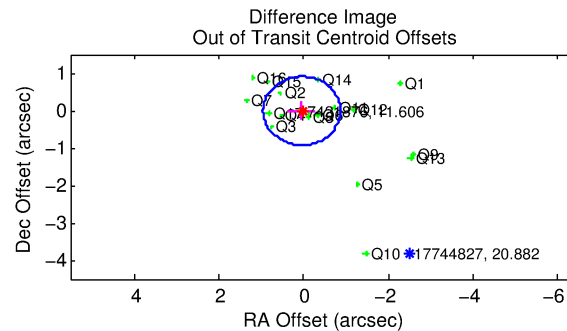
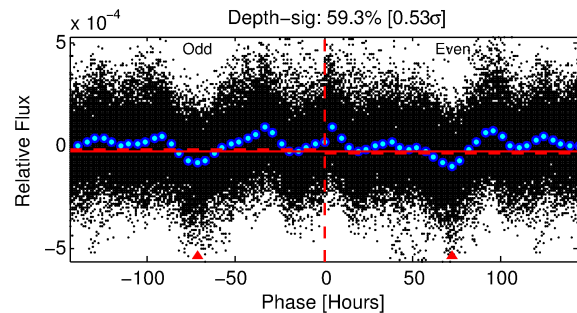
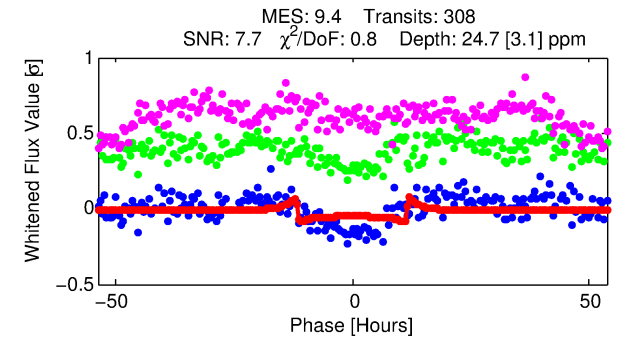
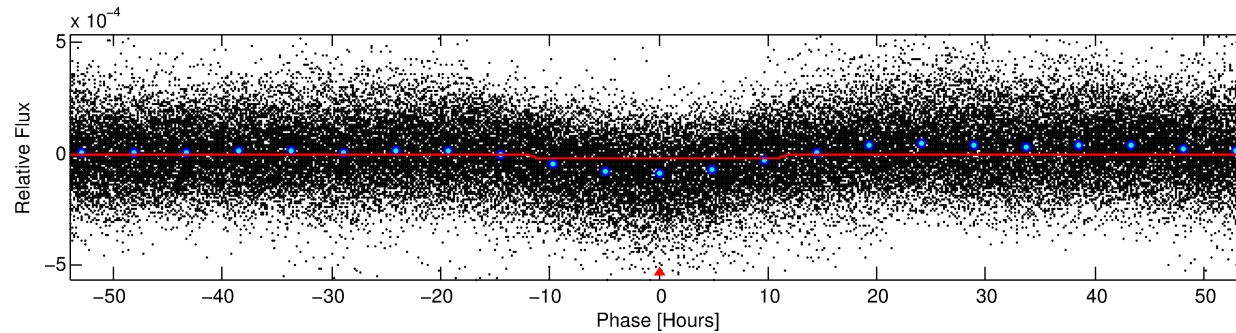
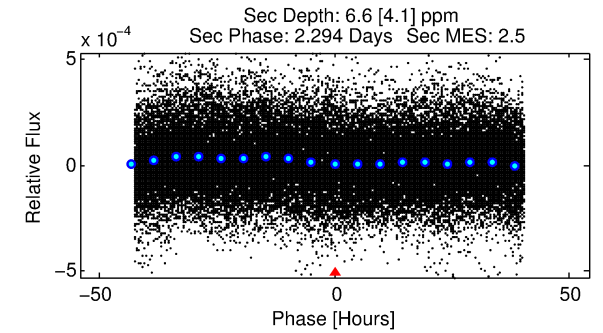
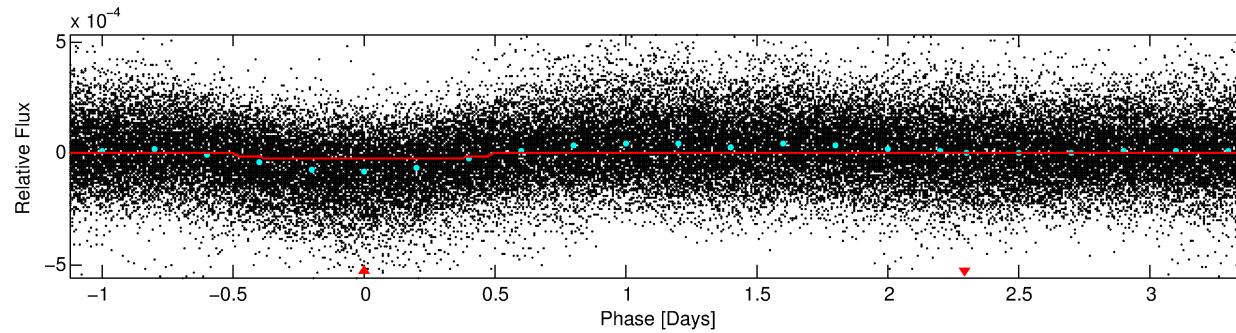
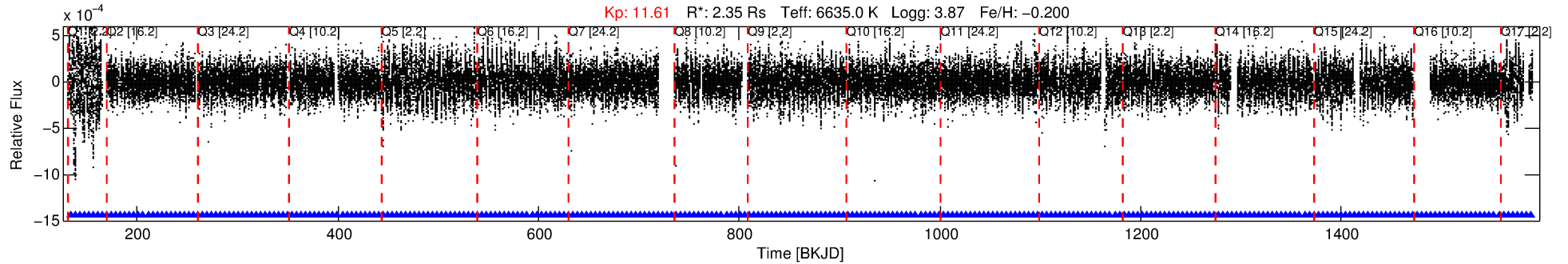
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007421876-01

No Significant Match Found

# DV One-Page Summary

KIC: 7421876 Candidate: 1 of 1 Period: 4.501 d  
KOI: K06876.01 Corr: 0.803



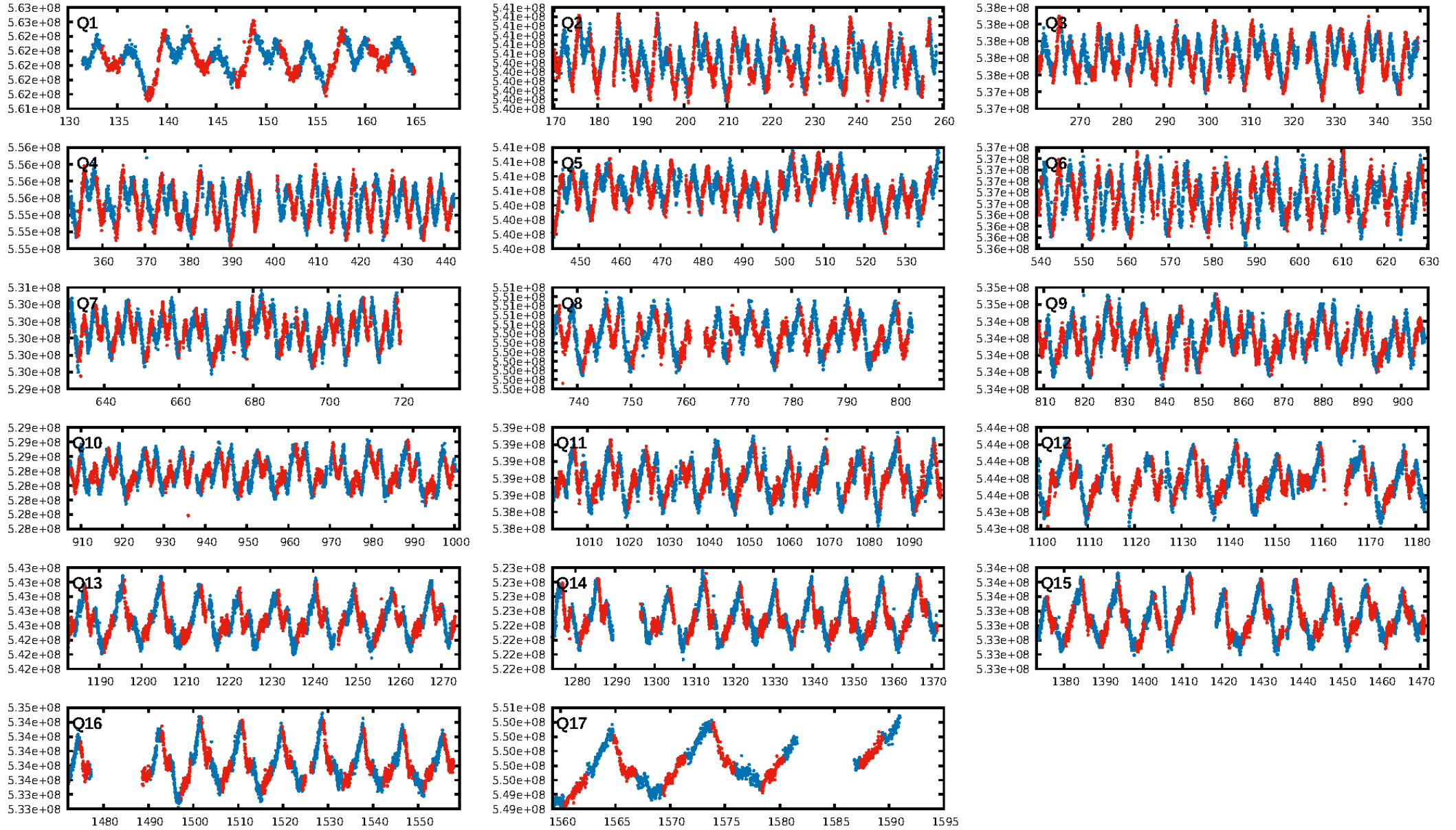
## DV Fit Results:

Period = 4.50146 [0.00006] d  
Epoch = 134.3576 [0.0089] BKJD  
Rp/R\* = 0.0052 [0.0005]  
a/R\* = 1.16 [0.12]  
b = 0.88 [0.11]  
Seff = 2574.38 [1263.21]  
Teq = 1816 [223] K  
Rp = 1.34 [0.48] Re  
a = 0.0609 [0.0190] AU  
Ag = 7.51 [6.08] [1.07 $\sigma$ ]  
Teffp = 4649 [770] K [3.54 $\sigma$ ]

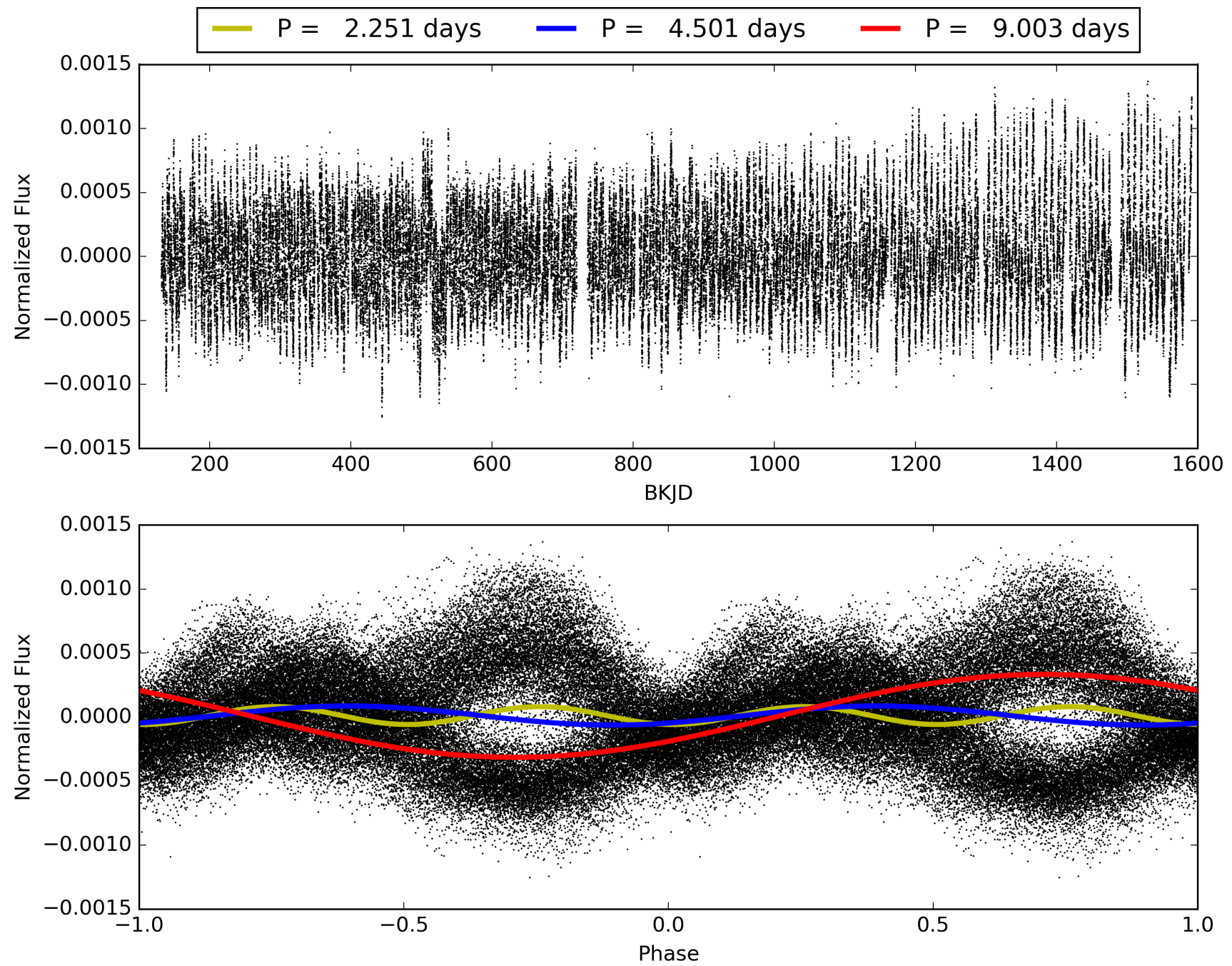
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.07e-18  
RollingBand-fgt: 1.00 [295/295]  
**GhostDiagnostic-chr: 0.6868**  
Centroid-sig: 25.6%  
Centroid-so: 0.545 arcsec [1.14 $\sigma$ ]  
OotOffset-rm: 0.044 arcsec [0.15 $\sigma$ ]  
KicOffset-rm: 0.114 arcsec [0.32 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007421876-01, PDC Light Curves

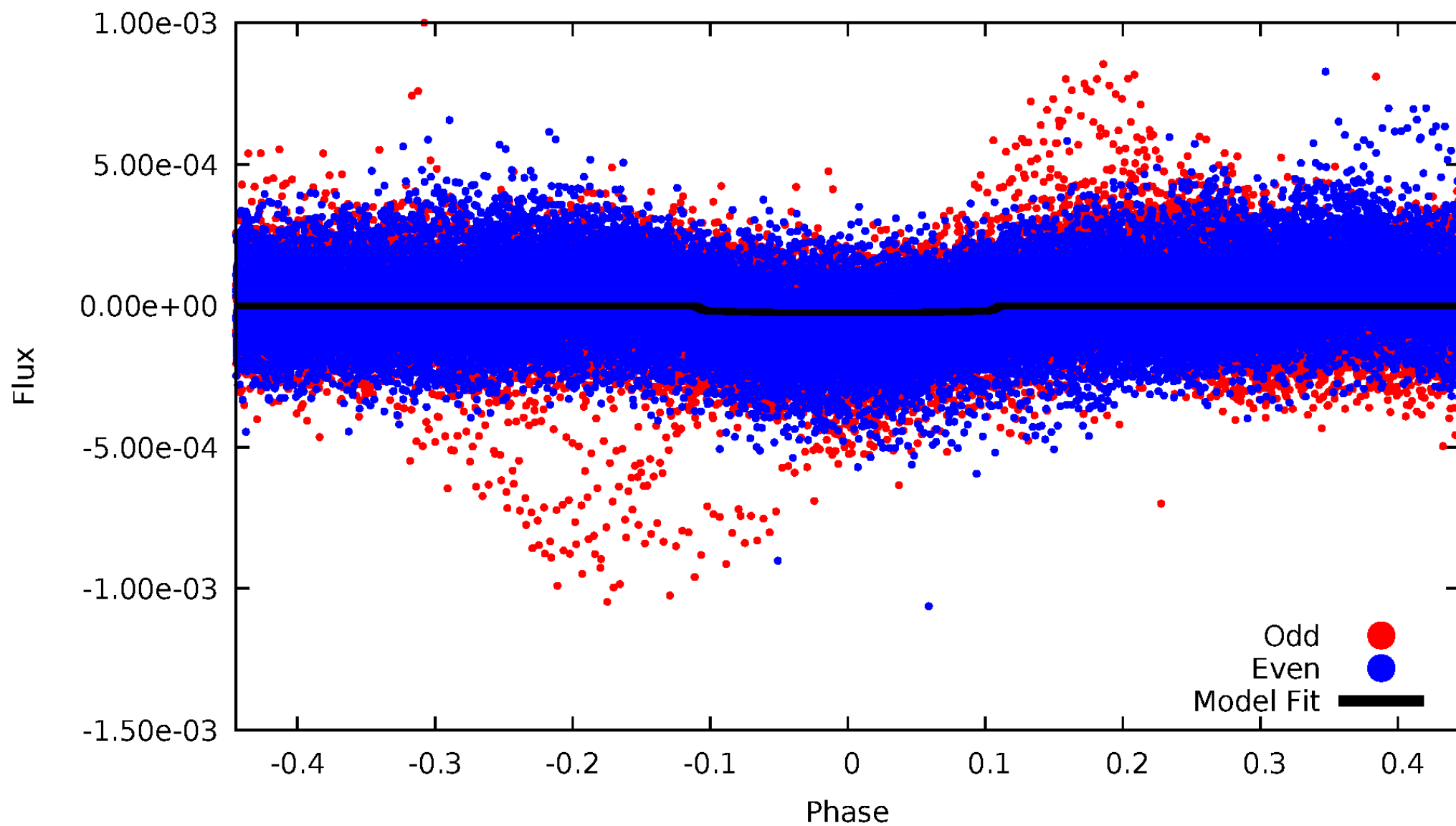


TCE 007421876-01



# DV Odd/Even

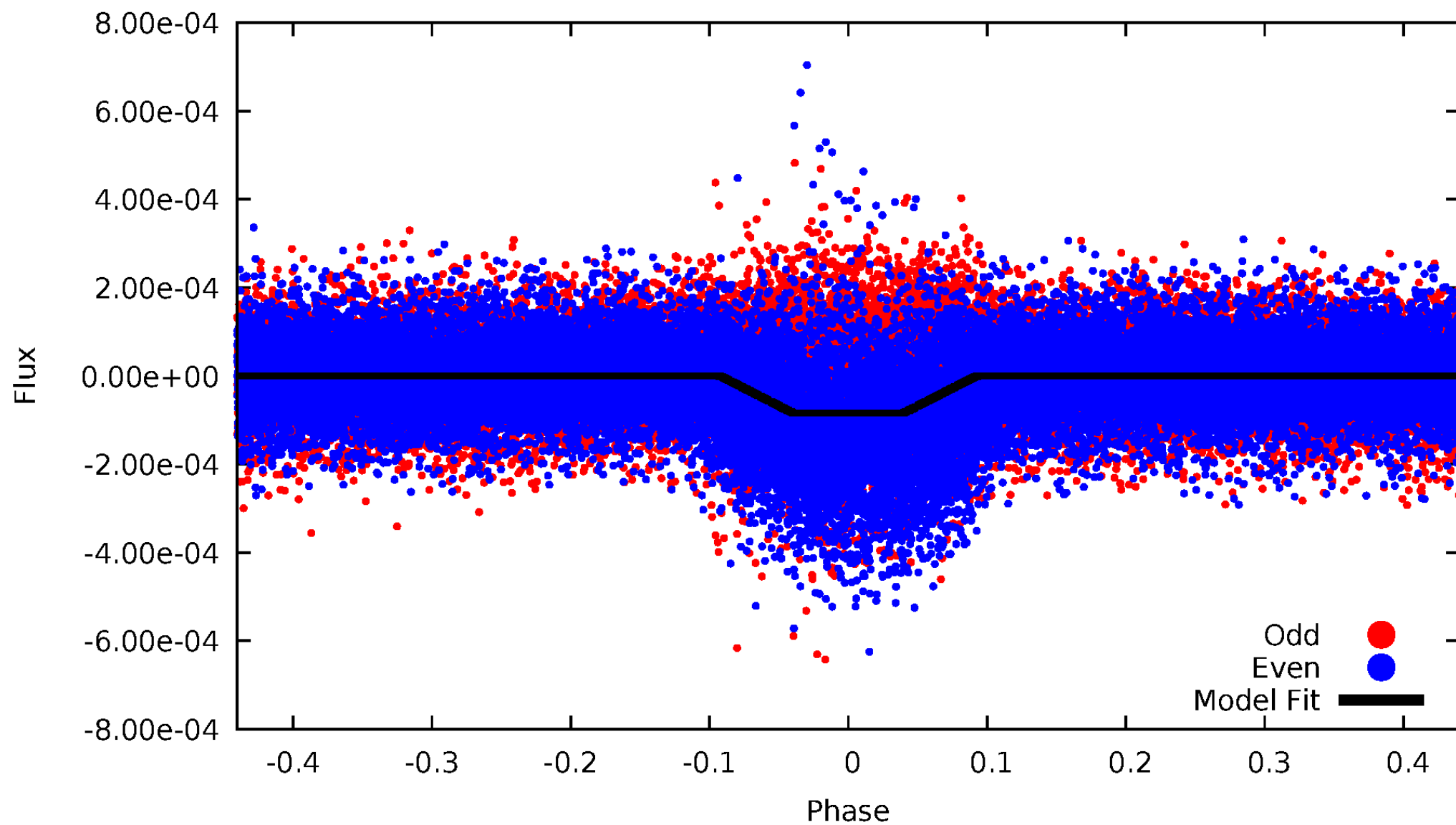
TCE 007421876-01





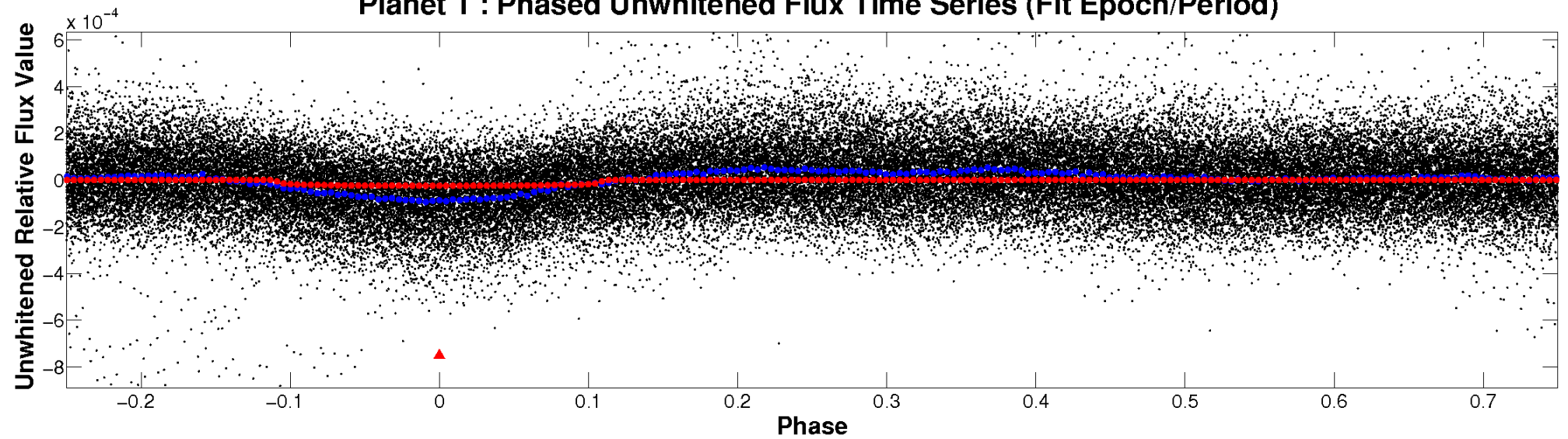
# ALT Odd/Even

TCE 007421876-01

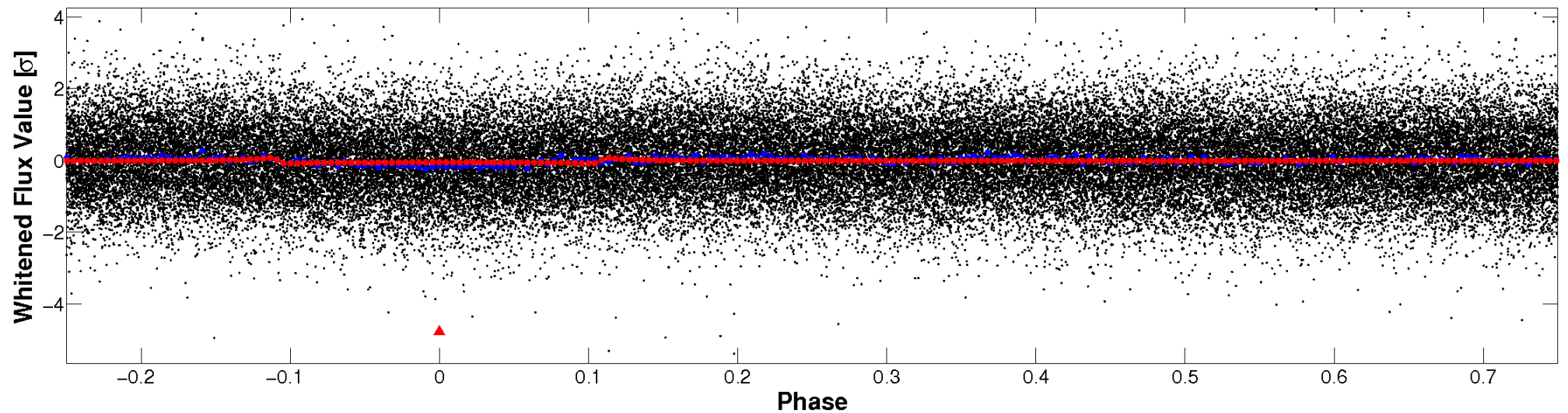


# Non-Whitened Vs. Whitened Light Curve

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

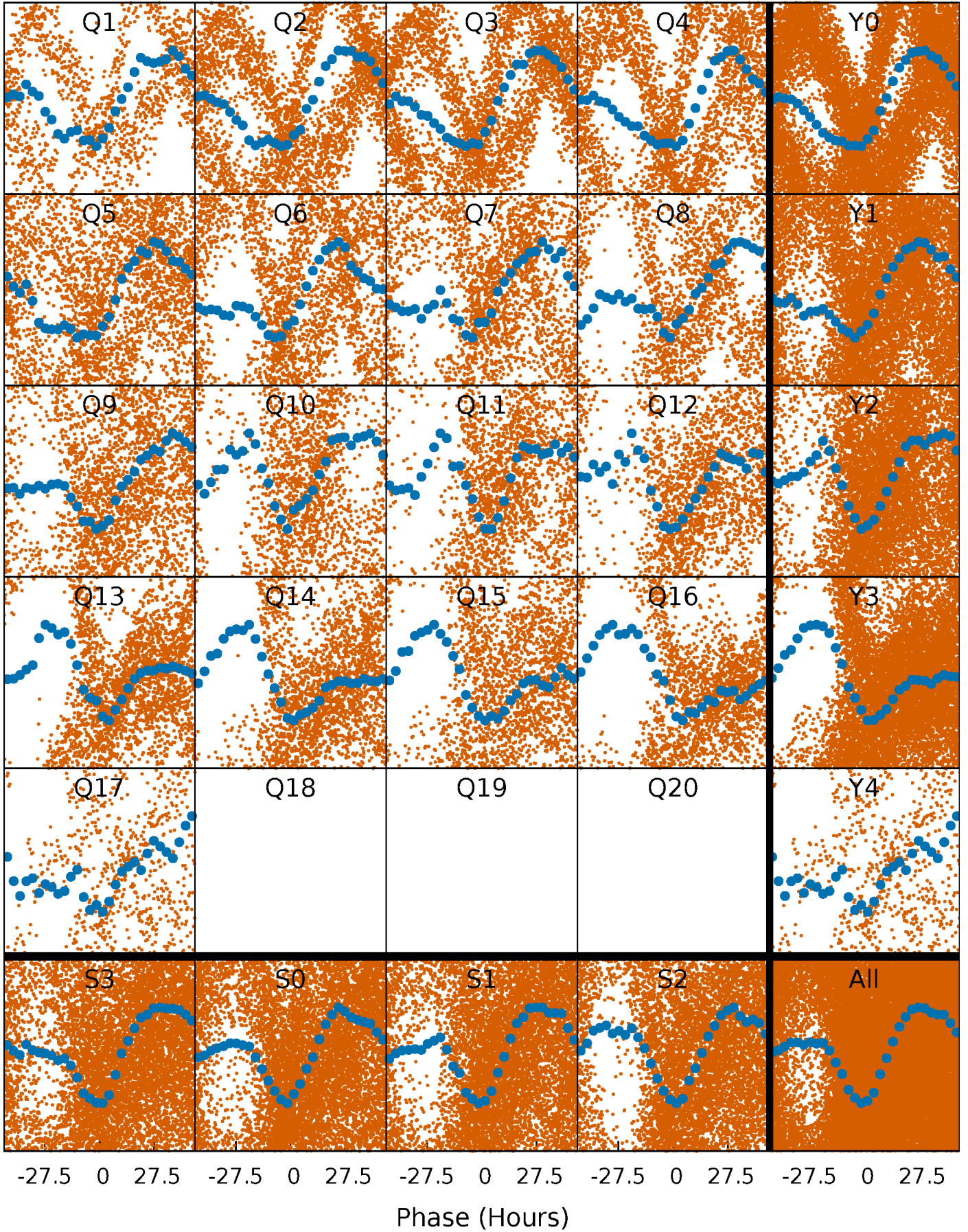


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

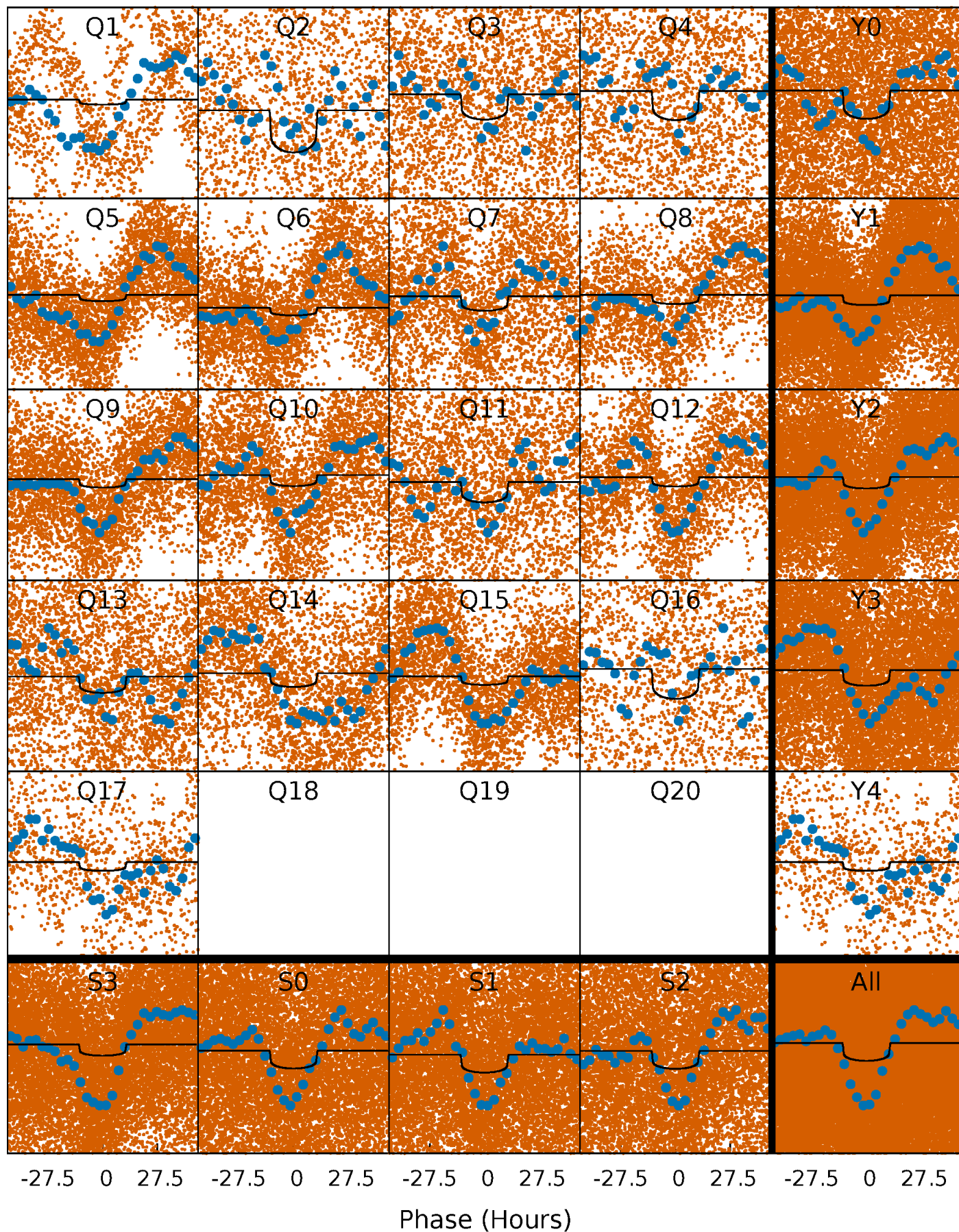
TCE 007421876-01 P= 4.501460 Days  $T_0=134.357581$  (BKJD)





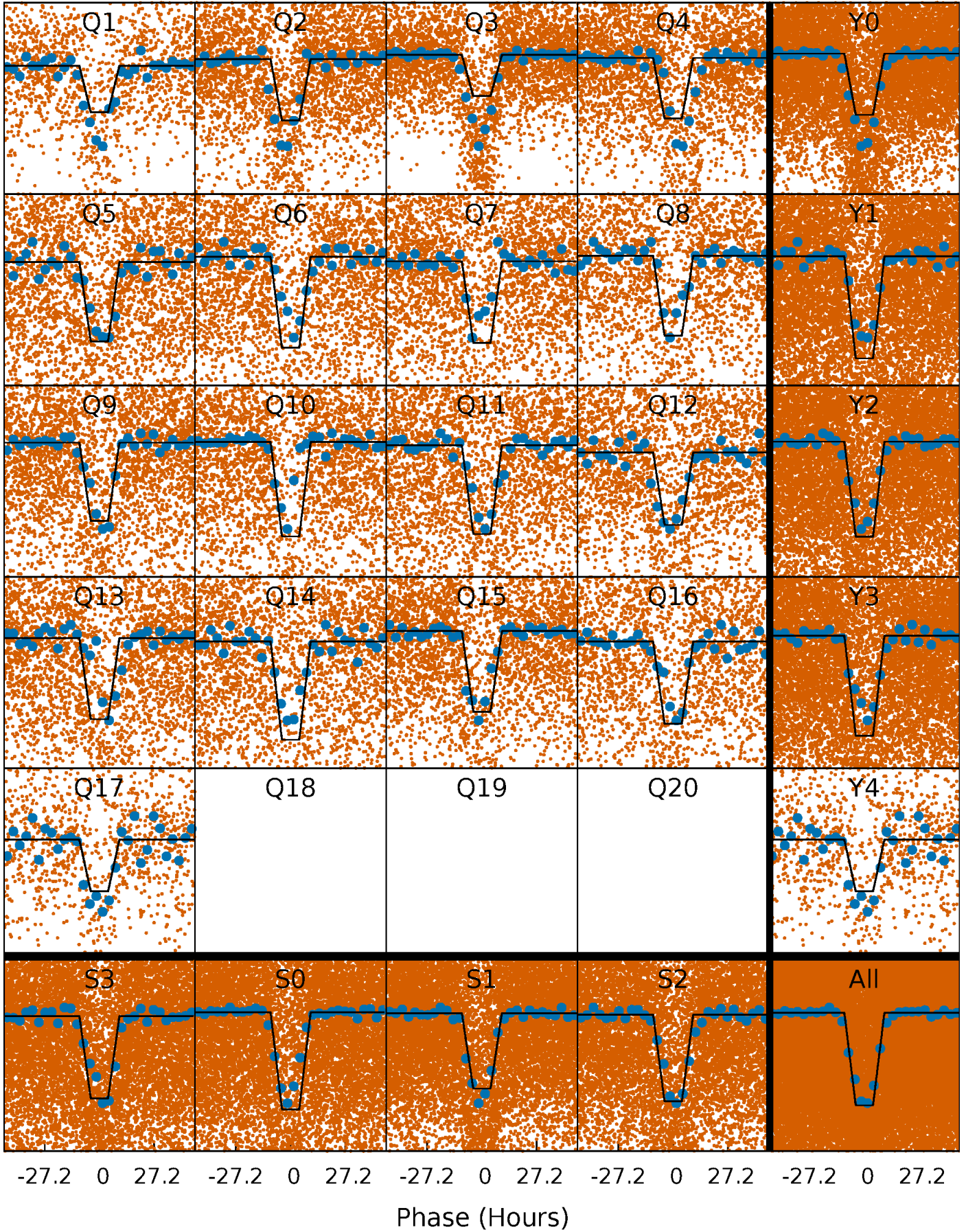
# DV Quarter-Phased Transit Curves

TCE 007421876-01 P= 4.501460 Days  $T_0=134.357581$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007421876-01 P= 4.501304 Days  $T_0=134.384750$  (BKJD)

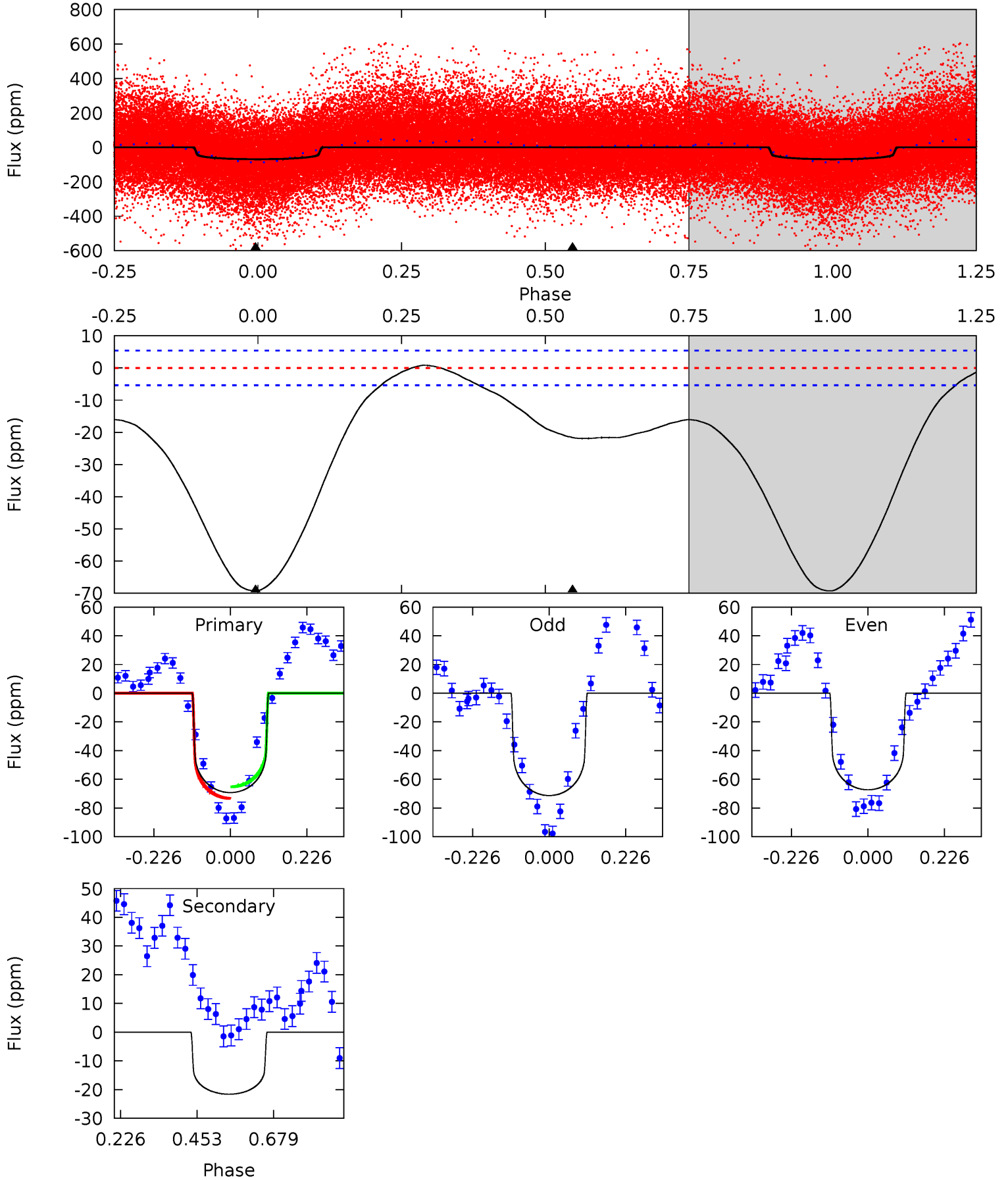




# DV Model-Shift Uniqueness Test

007421876-01, P = 4.501460 Days, E = 129.856121 Days

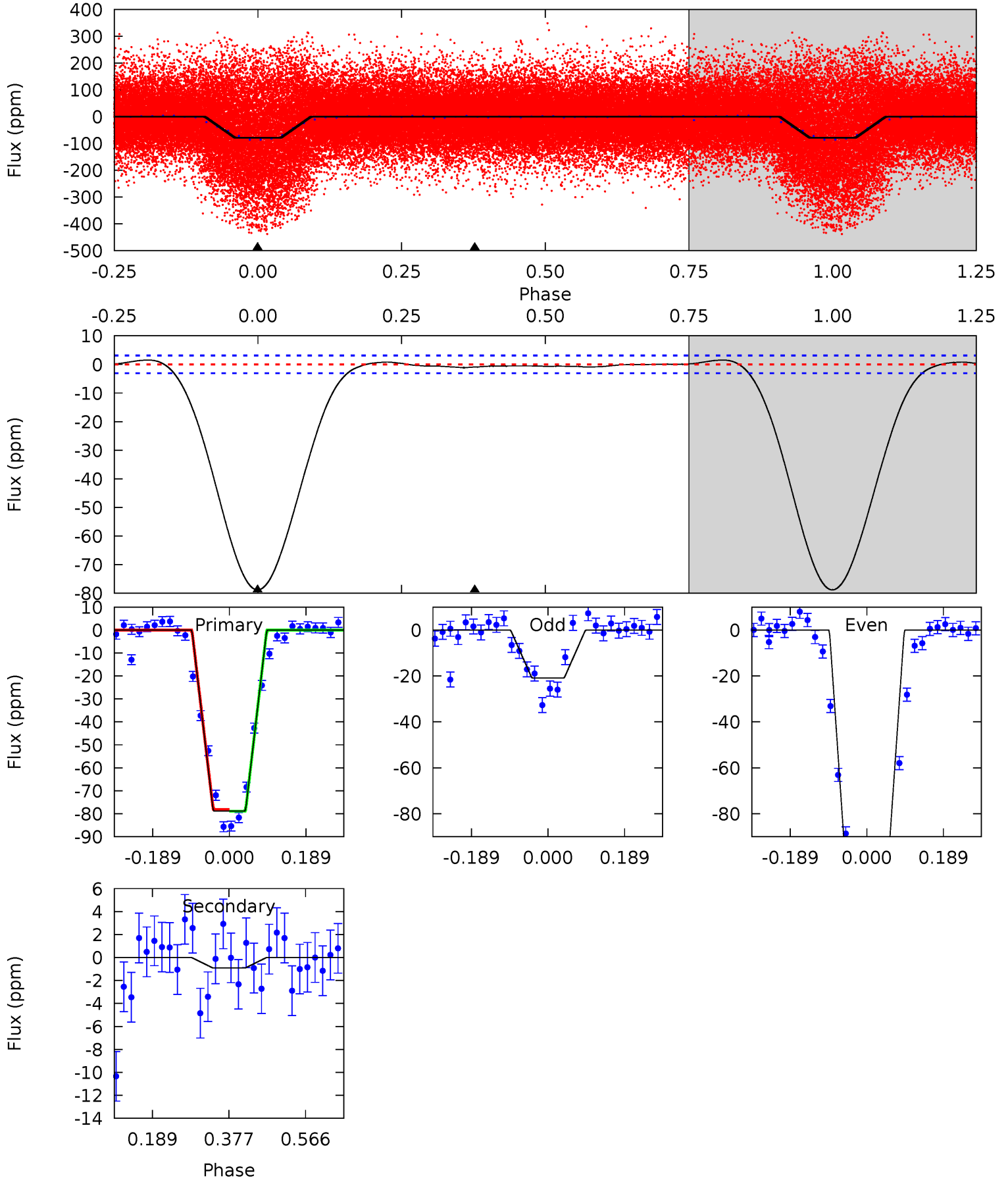
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.4	17.6	0	0	4.39	1.21	1.21	56.4	56.4	17.6	17.6	1.63	1.18	0.01	3.34



# Alt Model-Shift Uniqueness Test

007421876-01, P = 4.501304 Days, E = 129.883446 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
112.5	1.30	0	0	4.43	1.31	0.89	112.5	112.5	1.30	1.30	80.9	0.94	0.02	0.52





### Stellar Parameters For KIC 007421876

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6635^{+166}_{-182}$	$3.870^{+0.273}_{-0.117}$	$-0.200^{+0.300}_{-0.250}$	$2.346^{+0.499}_{-0.811}$	$1.486^{+0.202}_{-0.302}$	$0.162^{+0.297}_{-0.059}$
	+3%/-3%	+7%/-3%	+150%/-125%	+21%/-35%	+14%/-20%	+183%/-36%
Source	PHO1	FLK73	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 007421876-01 / KOI 6876.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-22 \pm 1$	$1.31^{+0.24}_{-0.27}$	$2504^{+161}_{-218}$	$6206^{+359}_{-316}$	$26^{+14}_{-7}$
Alt.	$-1 \pm 1$	$2.28^{+0.35}_{-0.43}$	$2494^{+163}_{-205}$	$2135^{+693}_{-4805}$	$0.330^{+0.353}_{-0.239}$

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

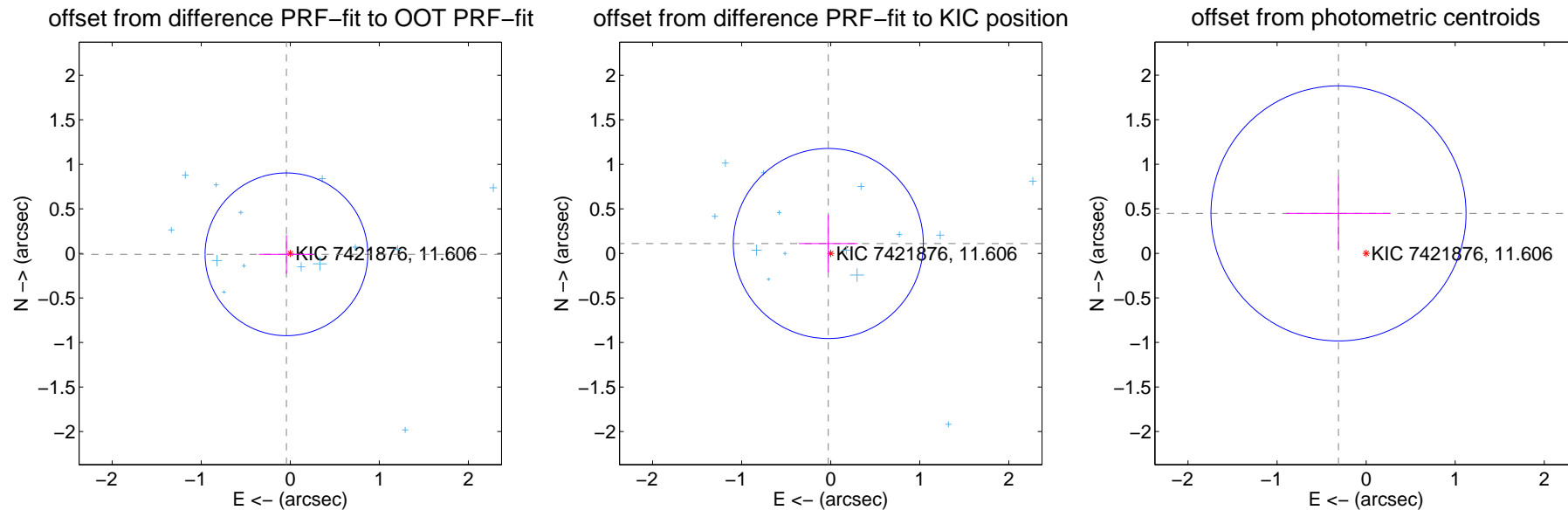
## DV Centroid Data

Supplemental centroid analysis for 007421876-01. **Kepler magnitude: 11.61.** Transit SNR 7.73

There are 14 quarters with good PRF difference image offsets

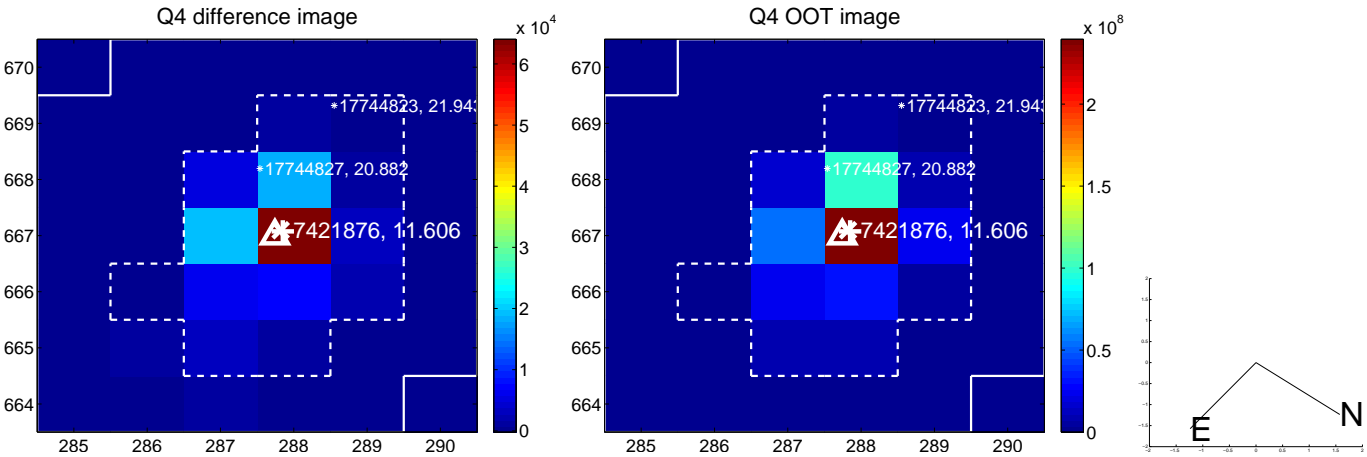
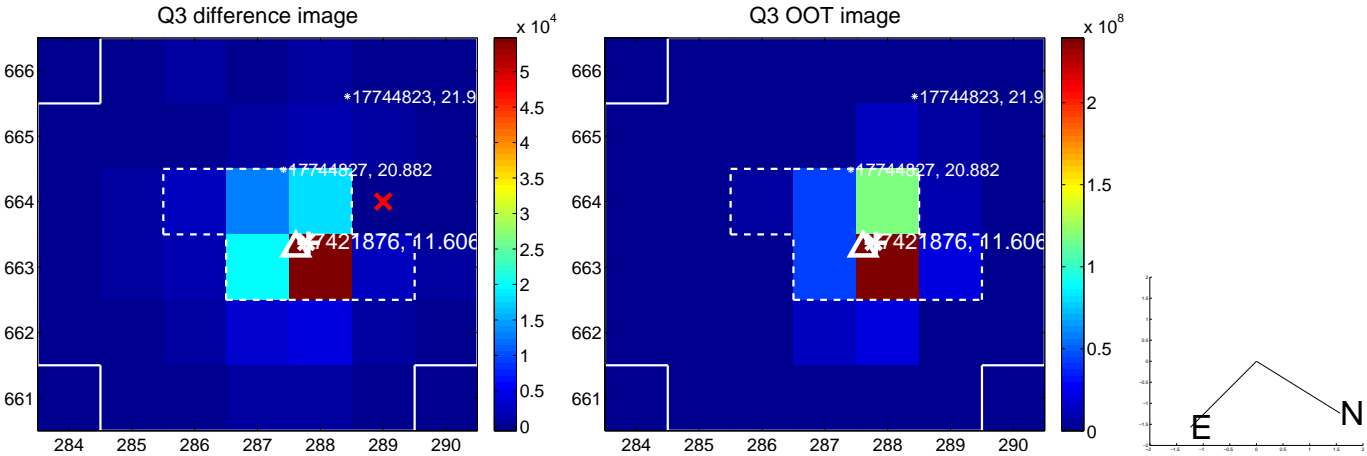
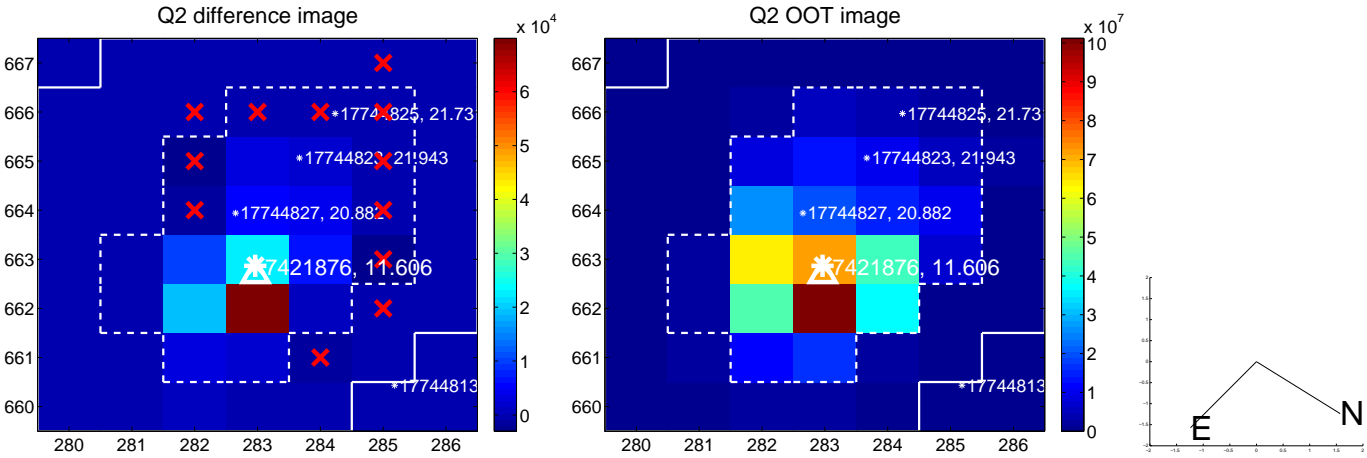
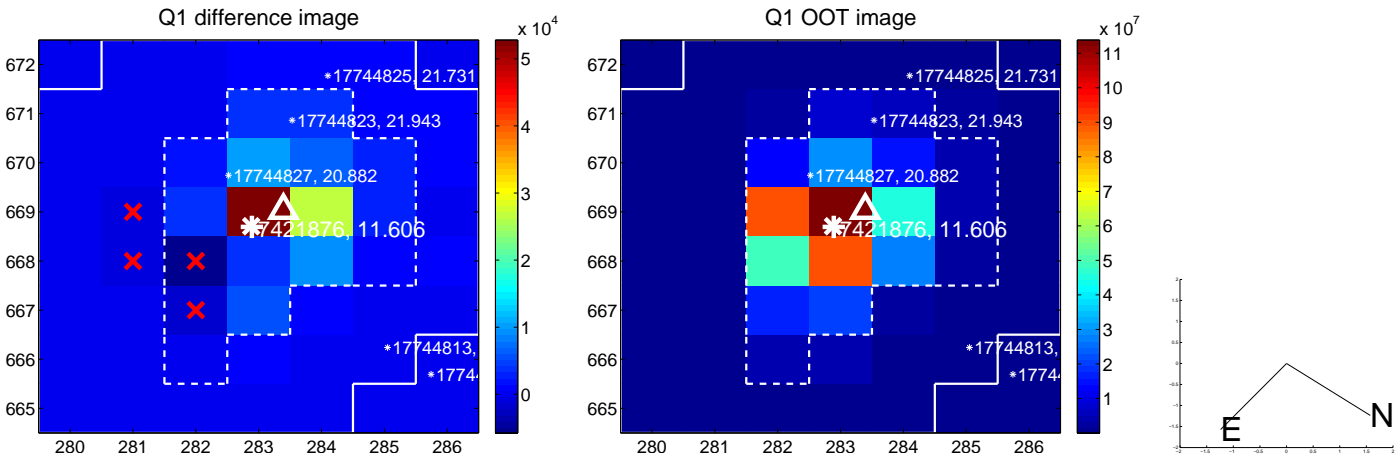
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.044 \pm 0.304$	0.15	$0.043 \pm 0.309$	$-0.010 \pm 0.216$
PRF-fit source offset from KIC position	$0.114 \pm 0.356$	0.32	$0.027 \pm 0.331$	$0.111 \pm 0.320$
photometric centroid source offset	$0.55 \pm 0.48$	1.14	$0.31 \pm 0.58$	$0.45 \pm 0.42$

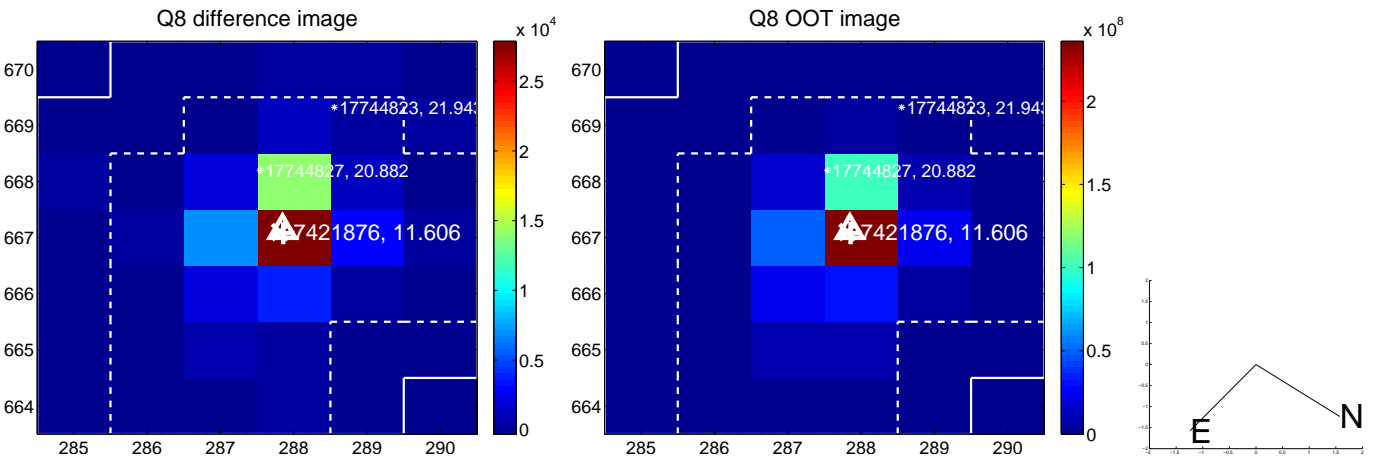
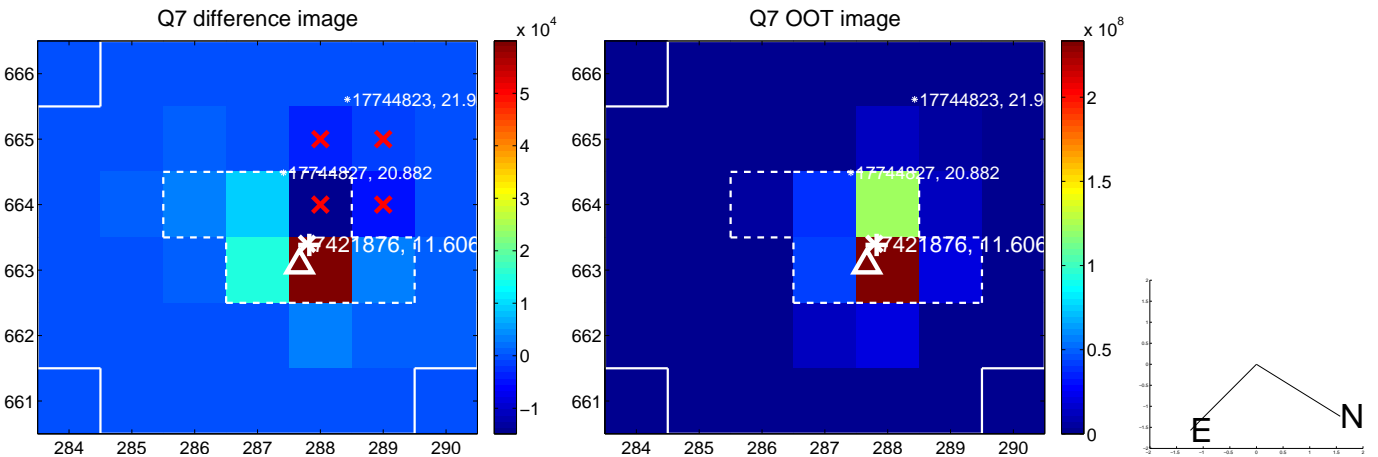
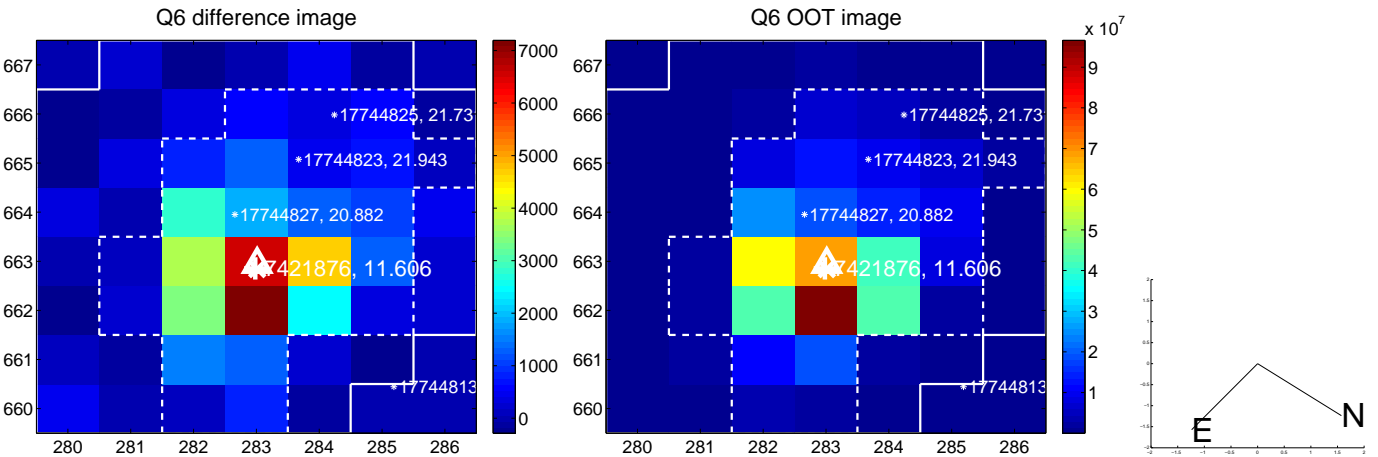
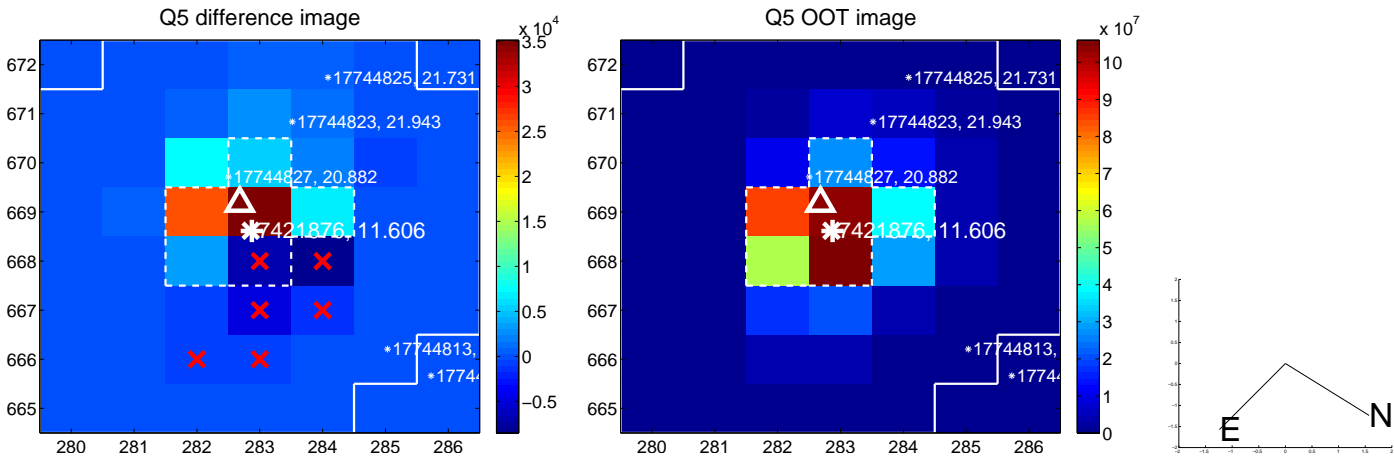


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

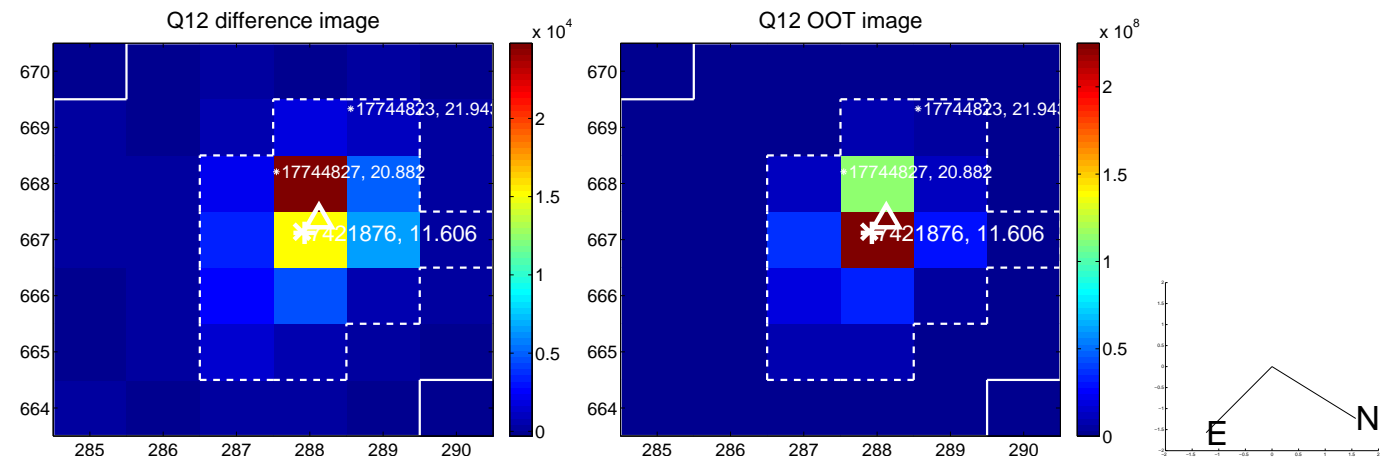
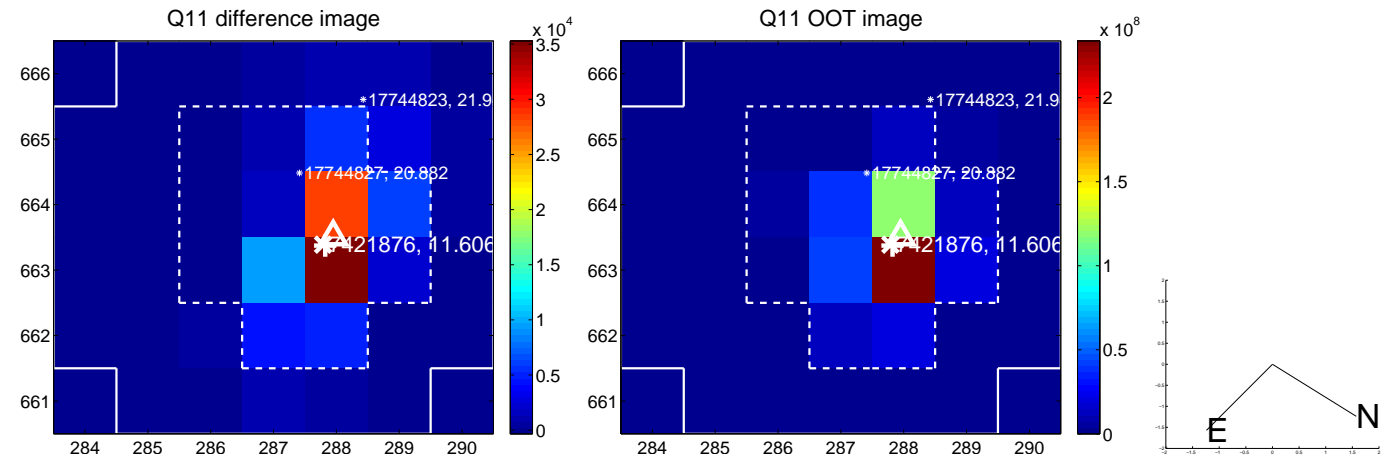
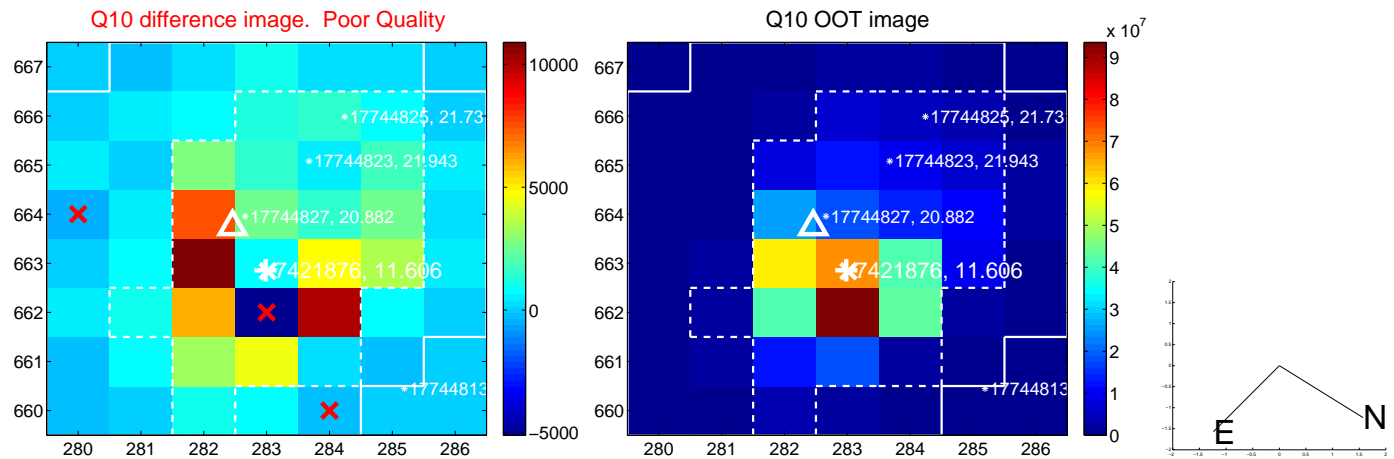
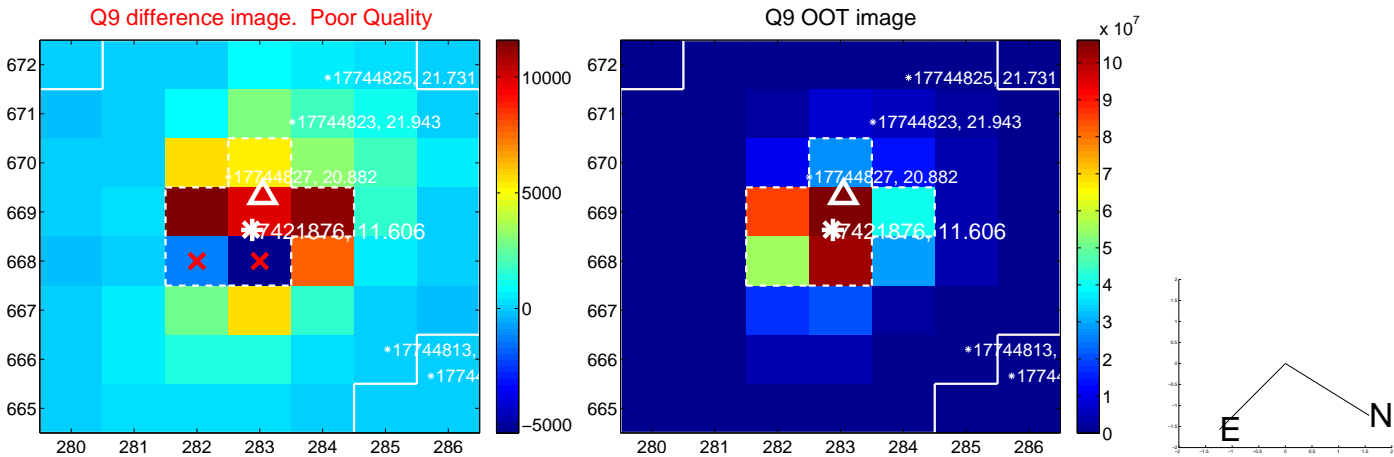


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

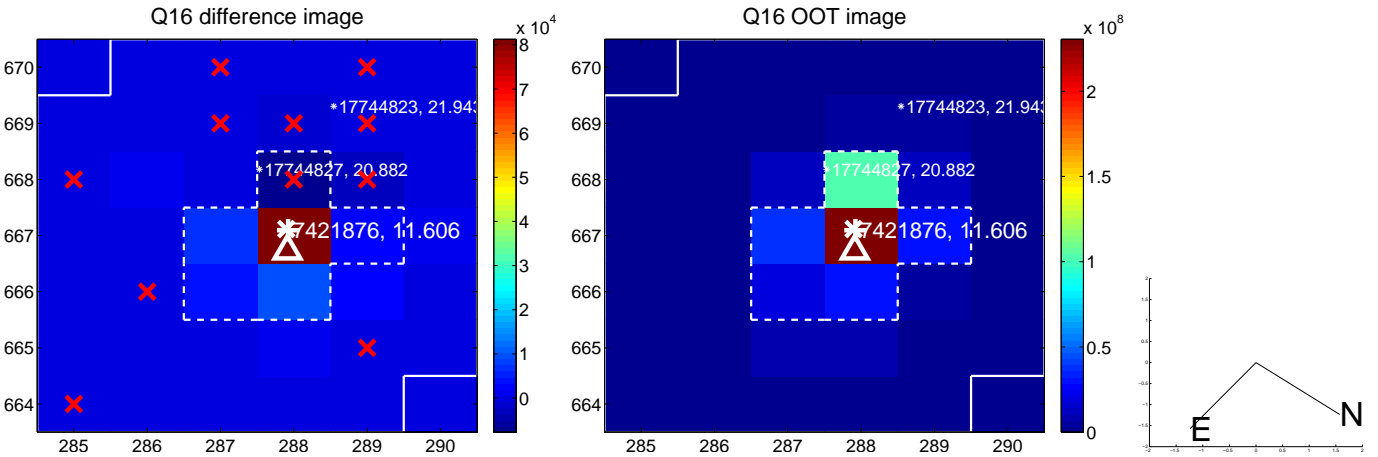
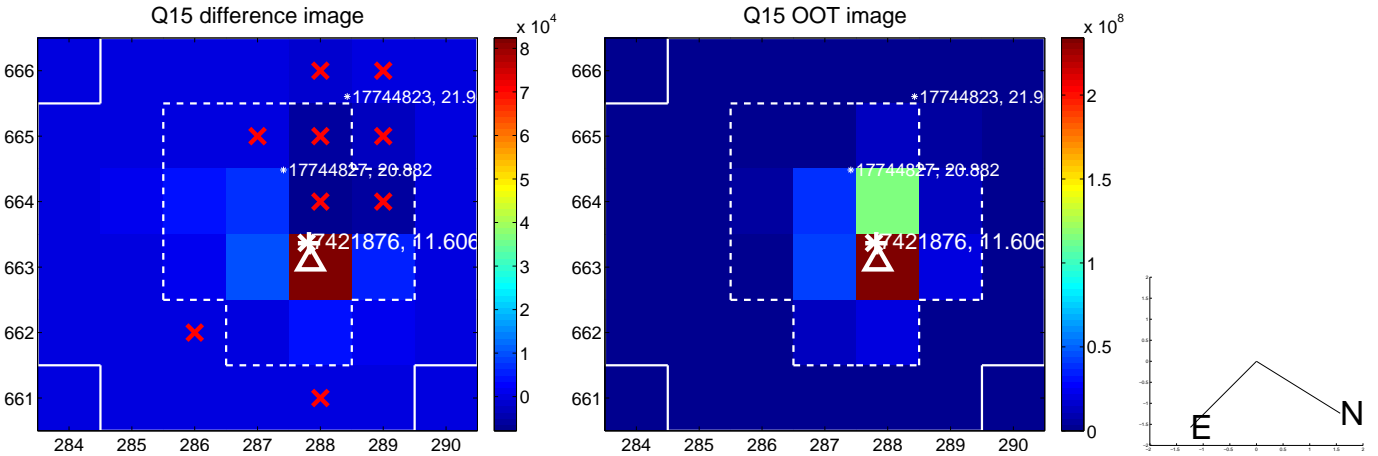
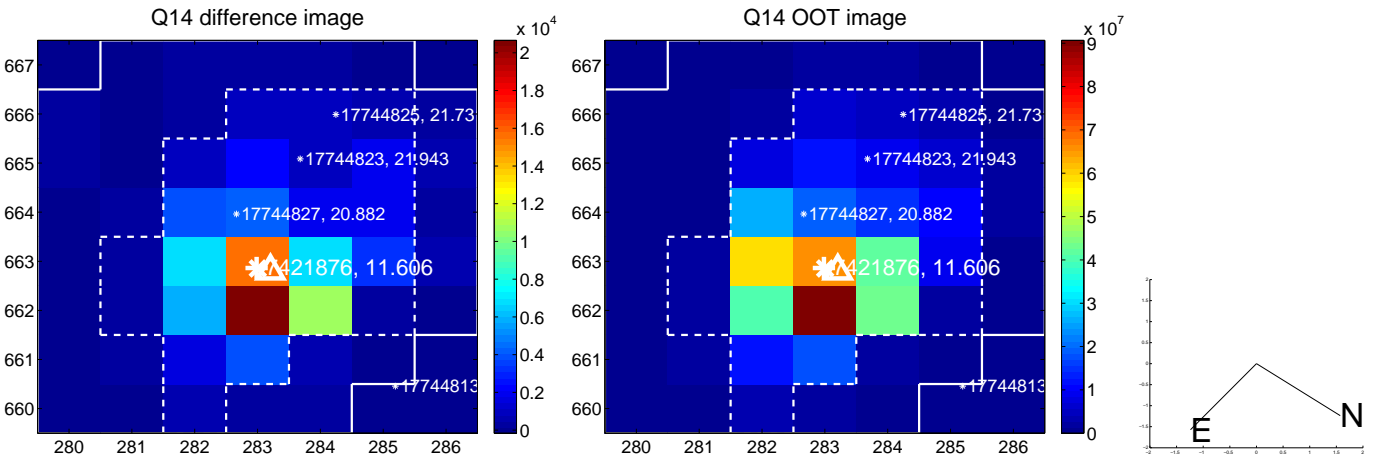
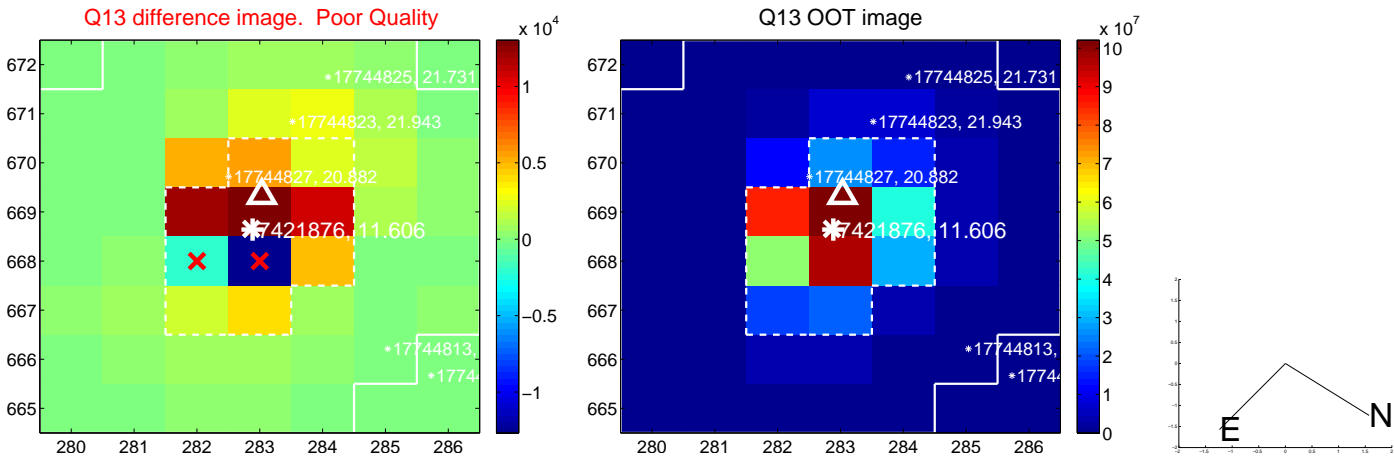




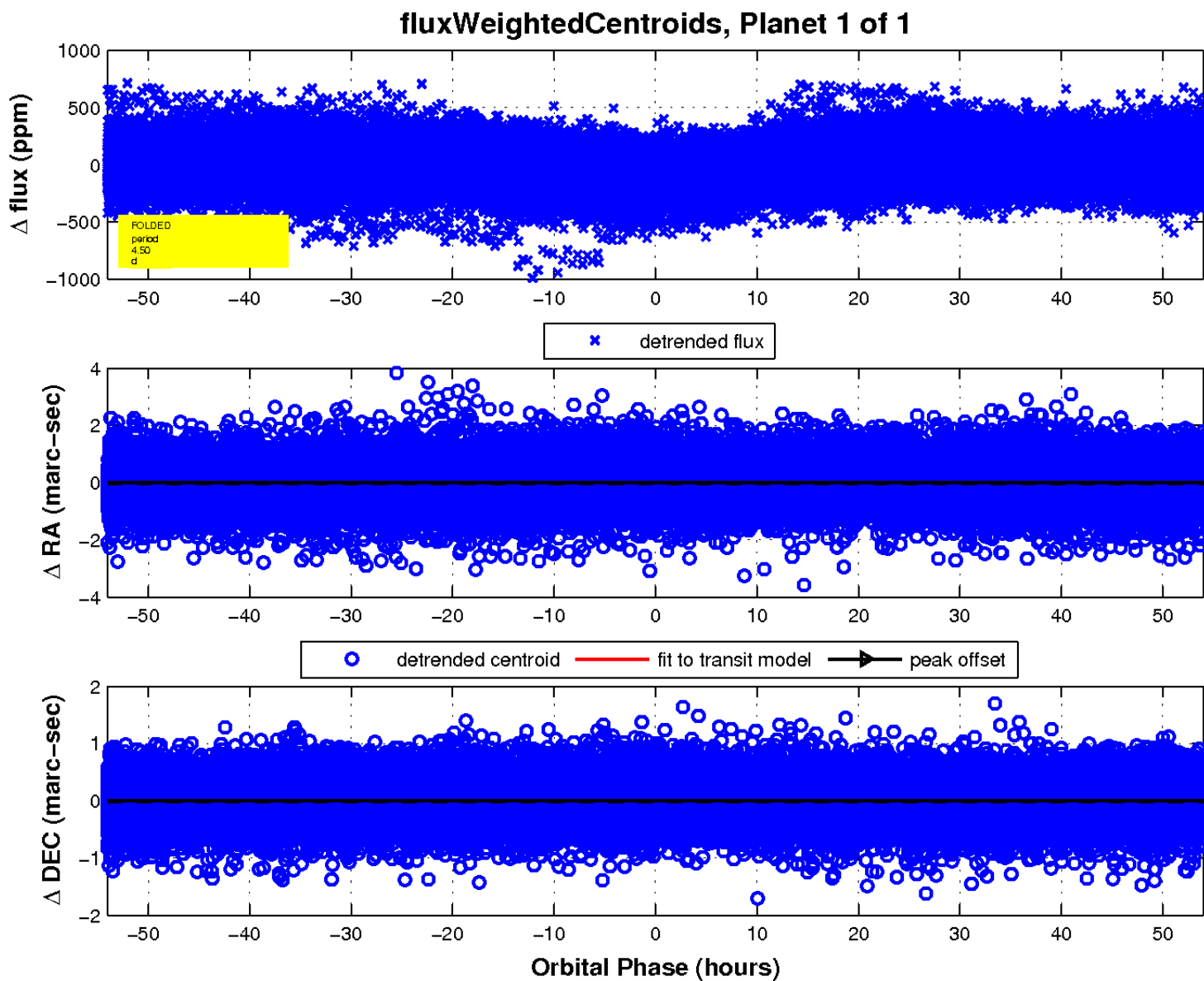
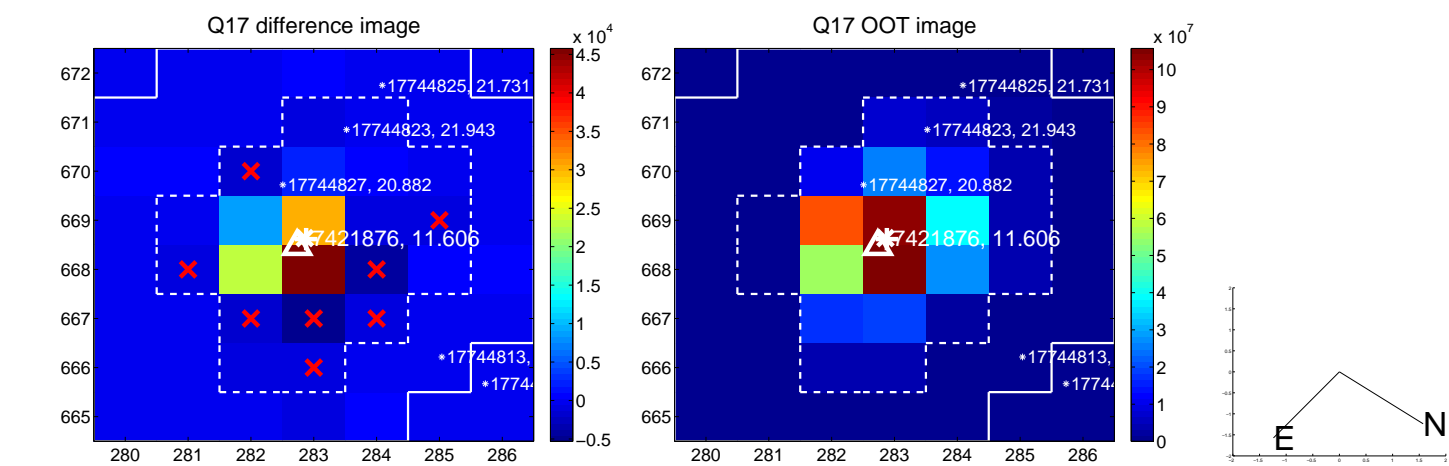
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



# UKIRT Image

Declination

