

# KIC 012647577

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012647577-01	OBS	4530.01	12.635999	134.470498	120.8	4.042	9.9	10.5	0.99	5772	1.33	85.19

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012647577-01	OBS	PC	1.00	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.

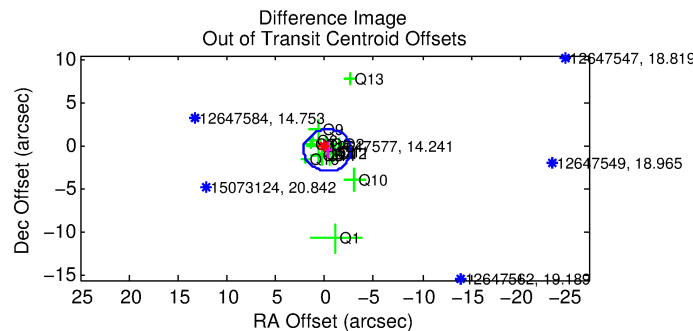
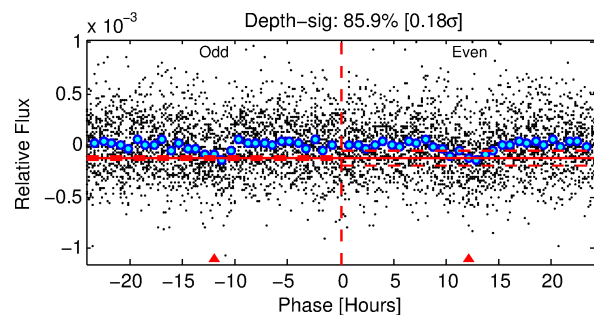
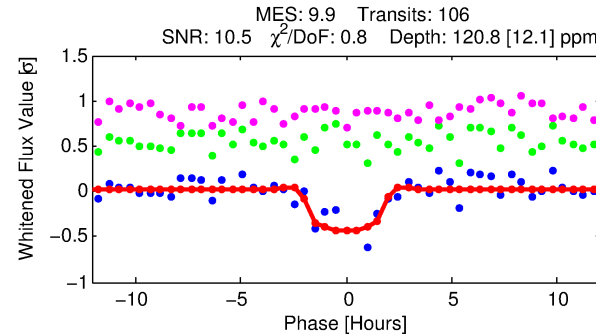
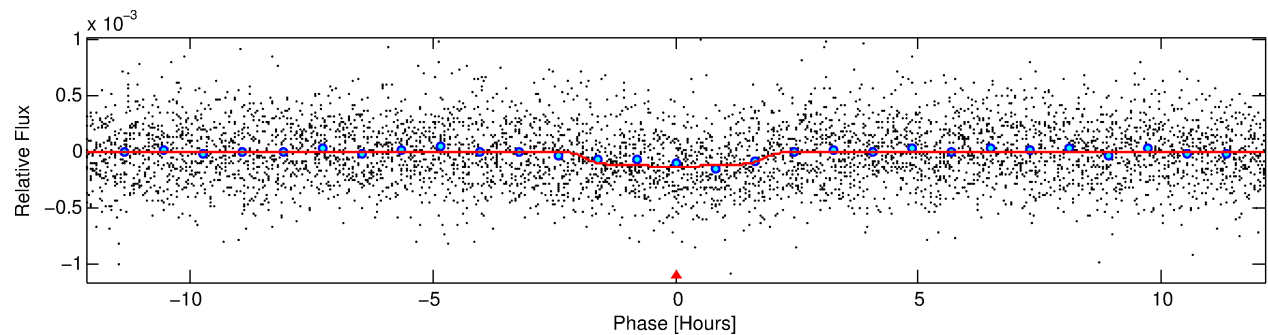
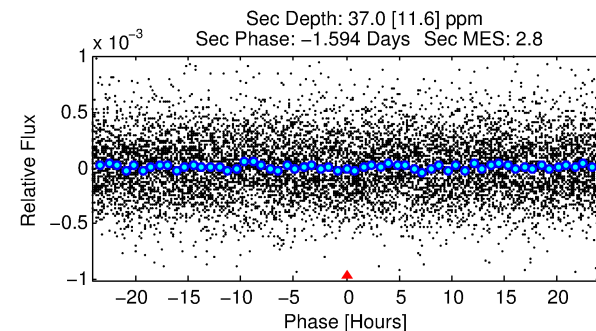
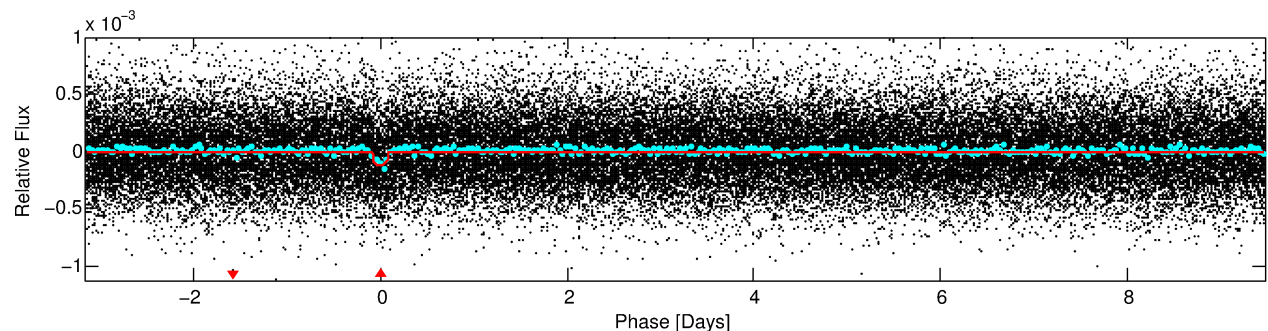
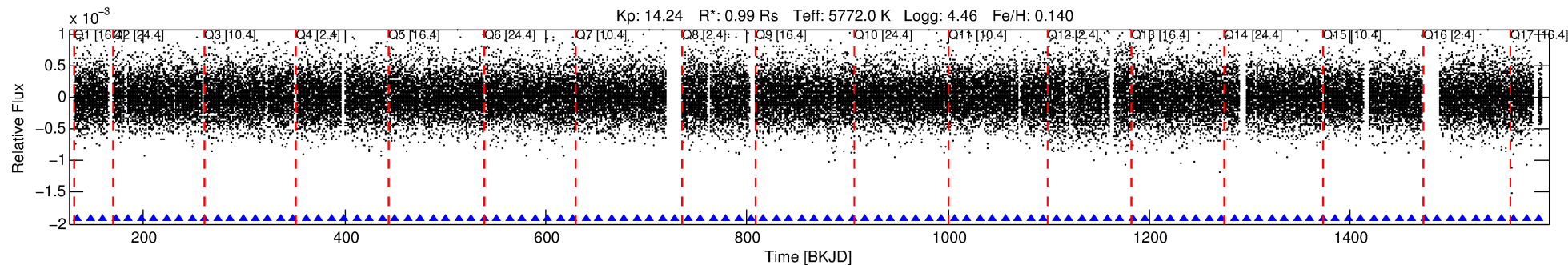
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012647577-01

No Significant Match Found

# DV One-Page Summary

KIC: 12647577 Candidate: 1 of 1 Period: 12.636 d  
KOI: K04530.01 Corr: 0.975



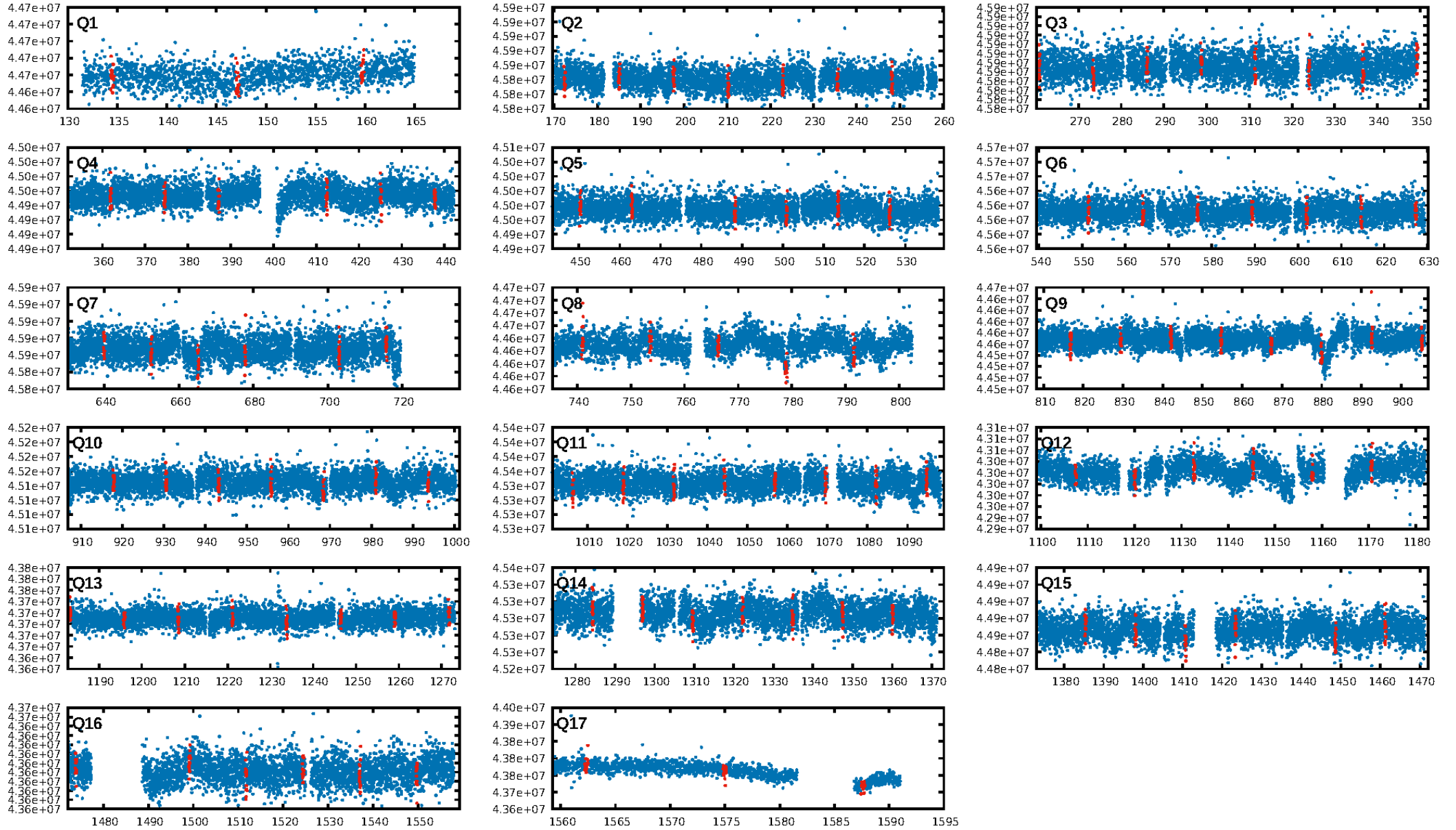
## DV Fit Results:

Period = 12.63600 [0.00012] d  
Epoch = 134.4705 [0.0081] BKJD  
Rp/R\* = 0.0123 [0.0046]  
a/R\* = 10.01 [18.07]  
b = 0.92 [0.30]  
Seff = 85.19 [18.52]  
Teff = 775 [42] K  
Rp = 1.33 [0.54] Re  
a = 0.1072 [0.0145] AU  
Ag = 131.91 [111.28] [1.18σ]  
Teffp = 4059 [832] K [3.94σ]

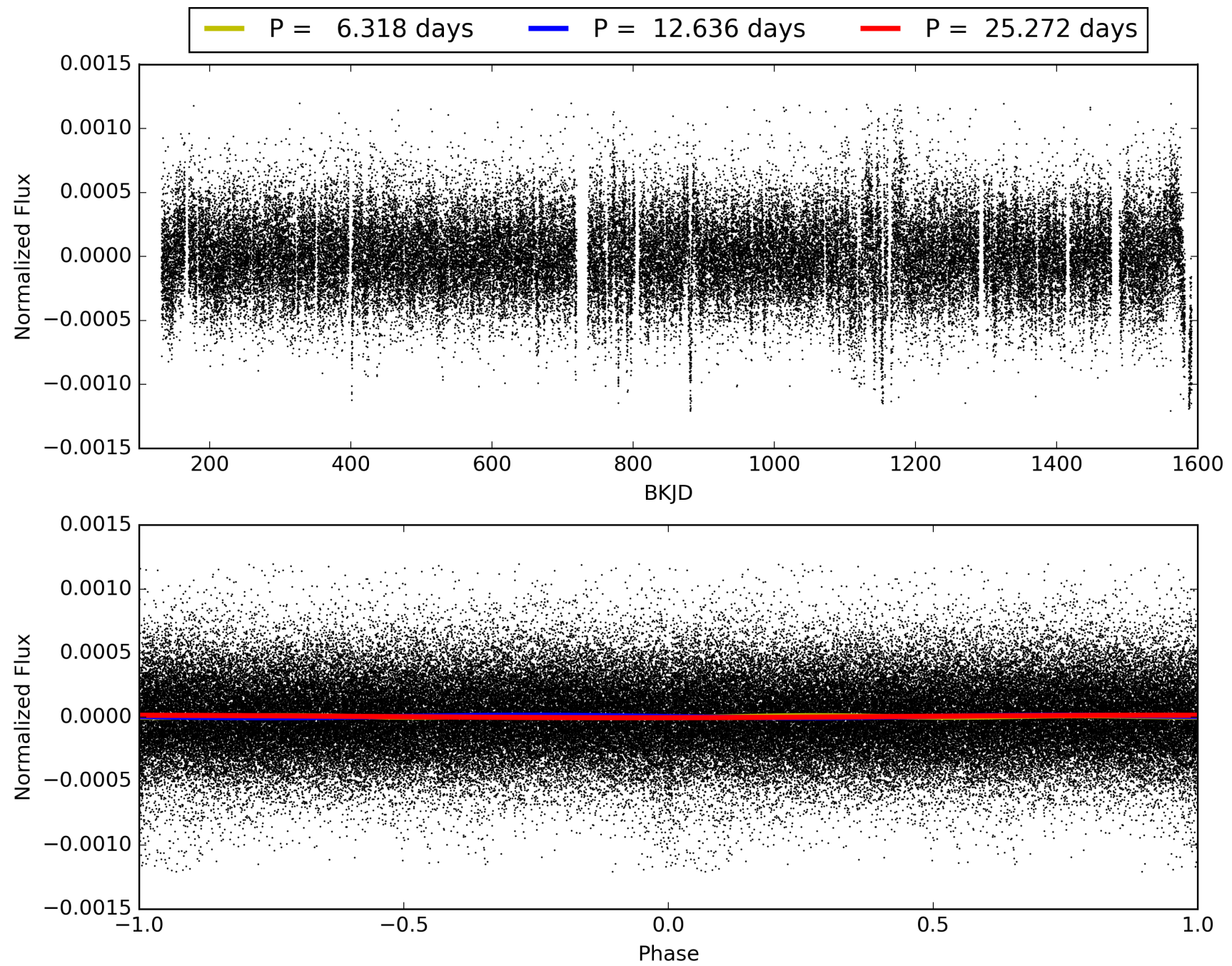
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.76e-22  
RollingBand-fgt: 1.00 [100/100]  
GhostDiagnostic-chr: 1.15  
Centroid-sig: 7.5%  
Centroid-so: 2.036 arcsec [1.51σ]  
OotOffset-rm: 0.567 arcsec [0.70σ]  
KicOffset-rm: 0.425 arcsec [0.48σ]  
OotOffset-st: 4/3/4/4 [15]  
KicOffset-st: 4/3/4/4 [15]  
DiffImageQuality-fgm: 0.40 [6/15]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 012647577-01, PDC Light Curves

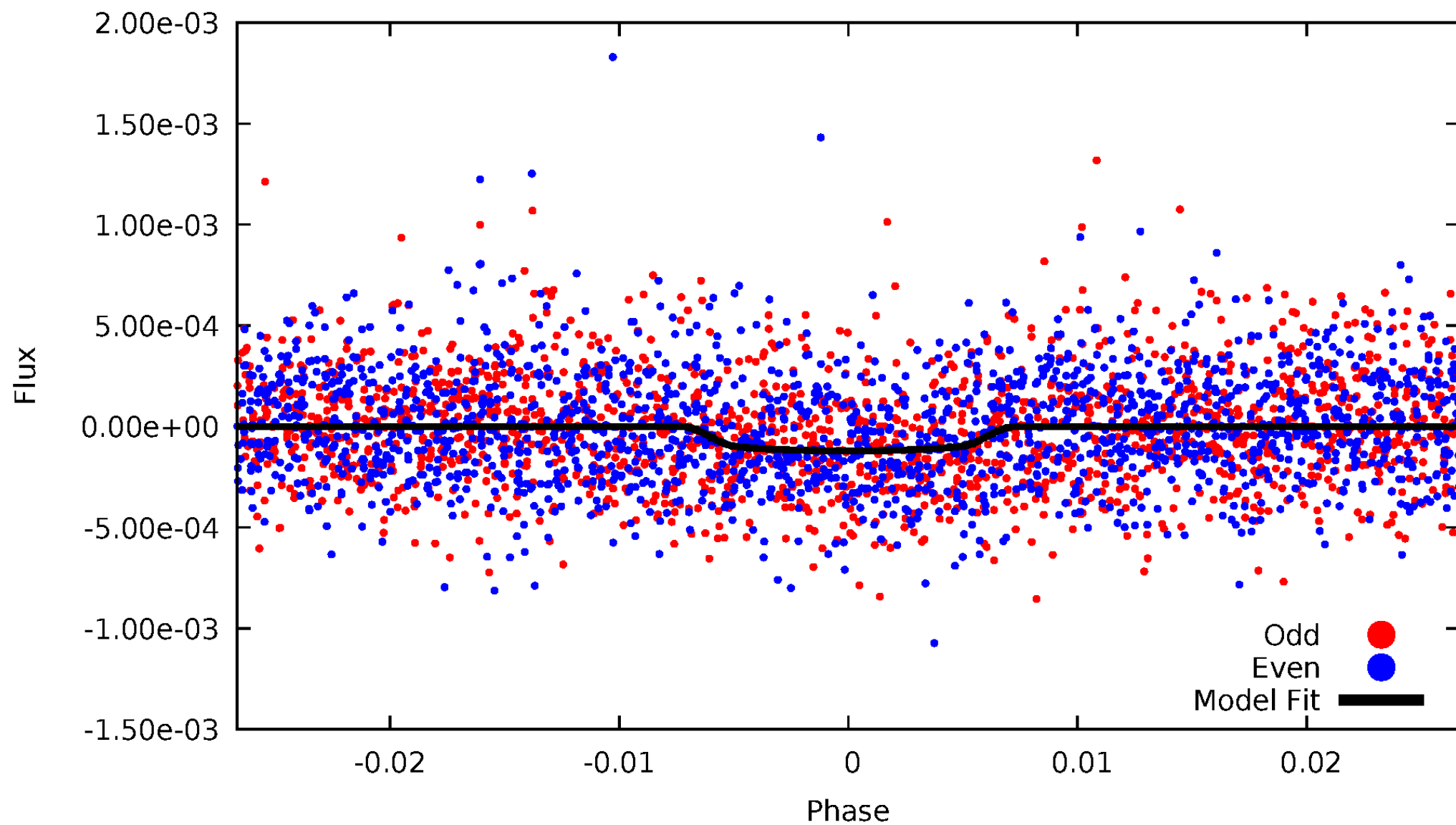


TCE 012647577-01



# DV Odd/Even

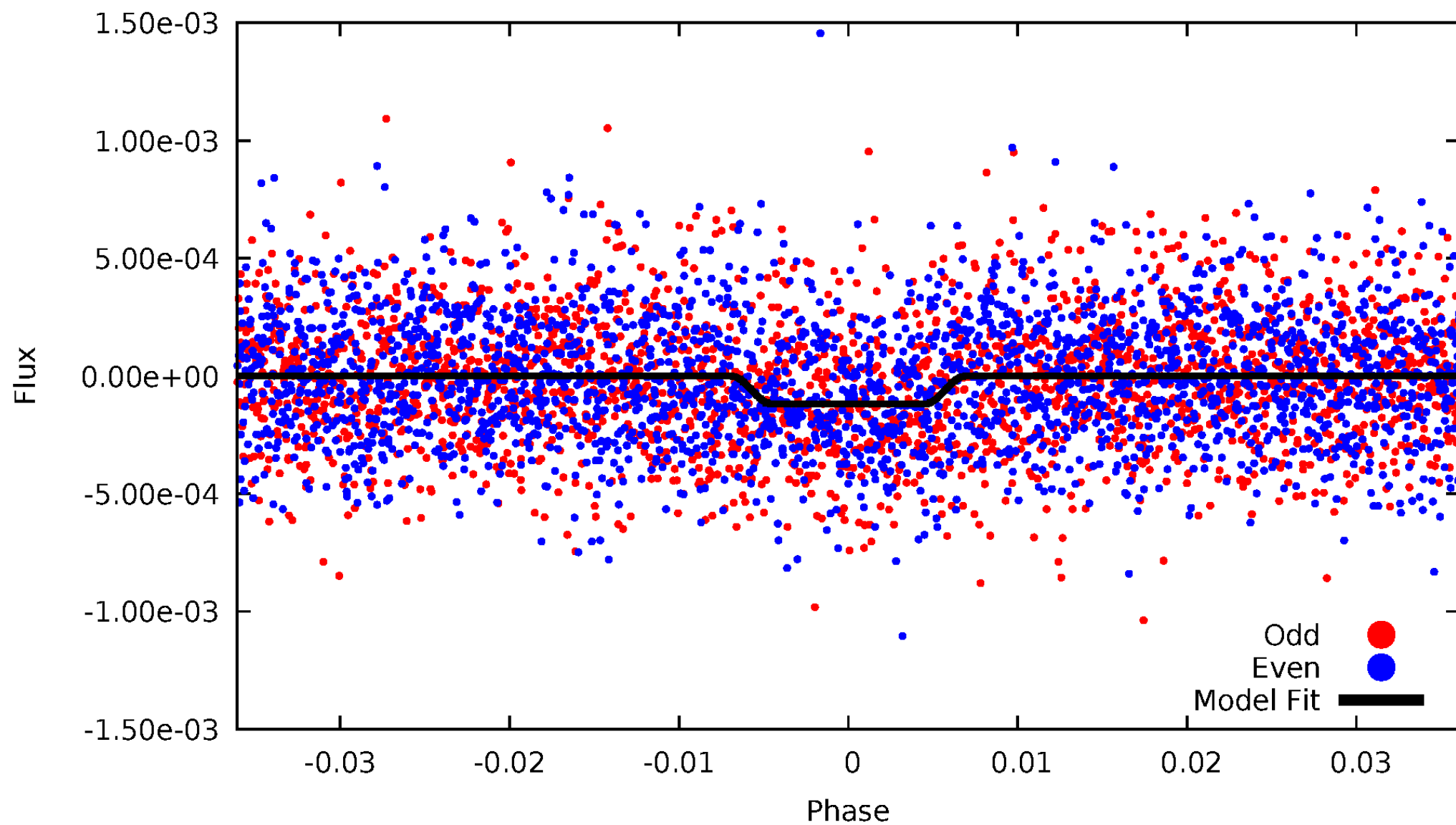
TCE 012647577-01



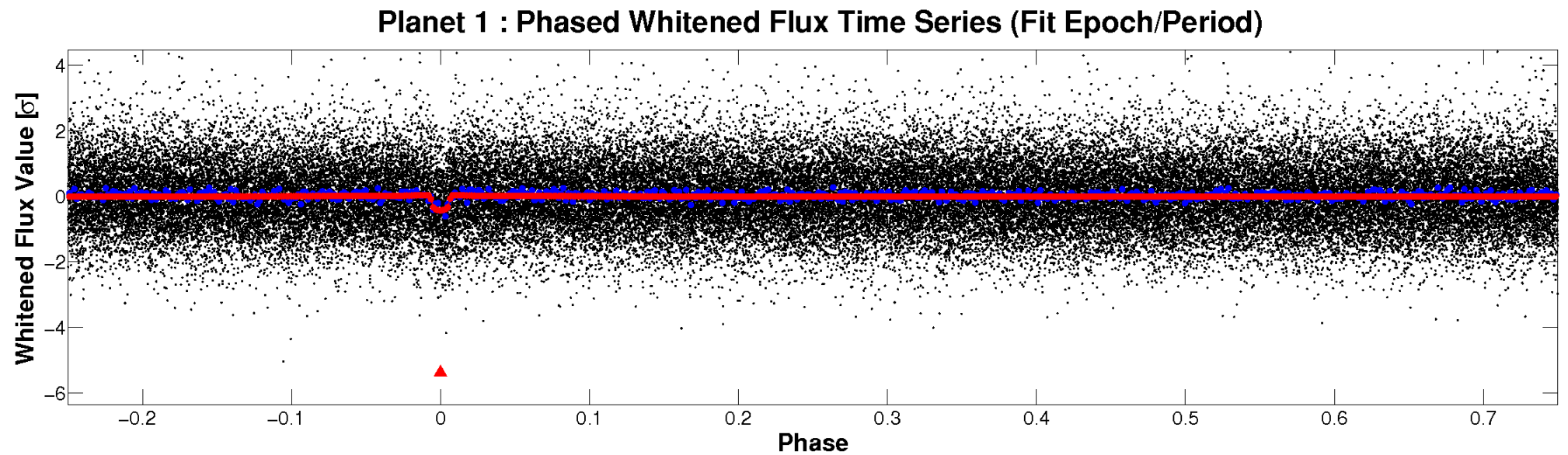
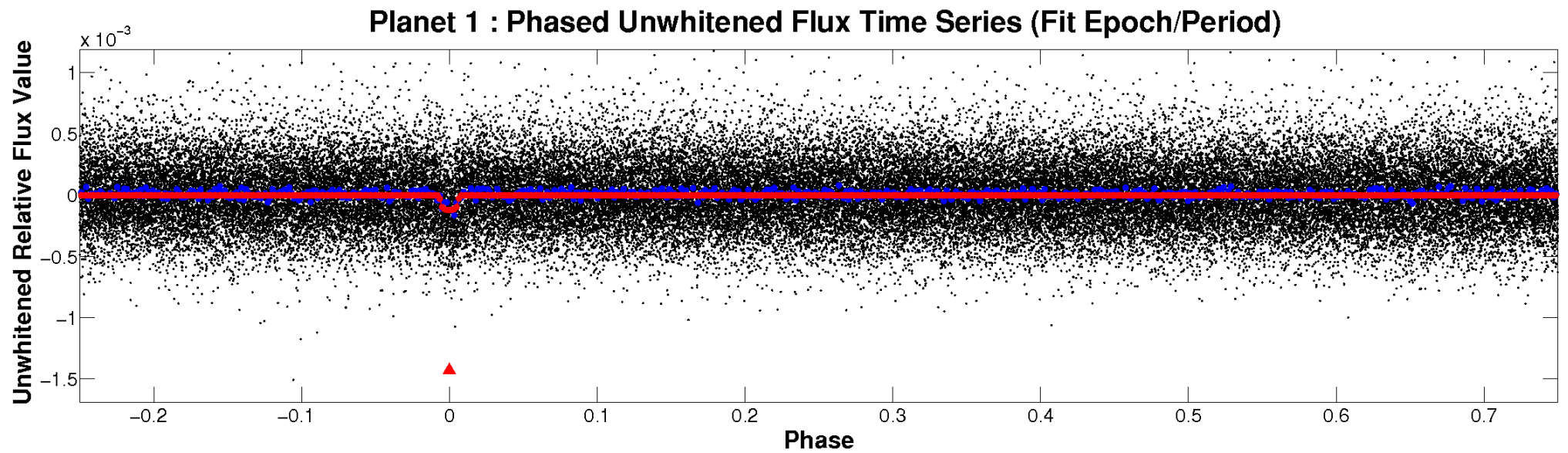


# ALT Odd/Even

TCE 012647577-01

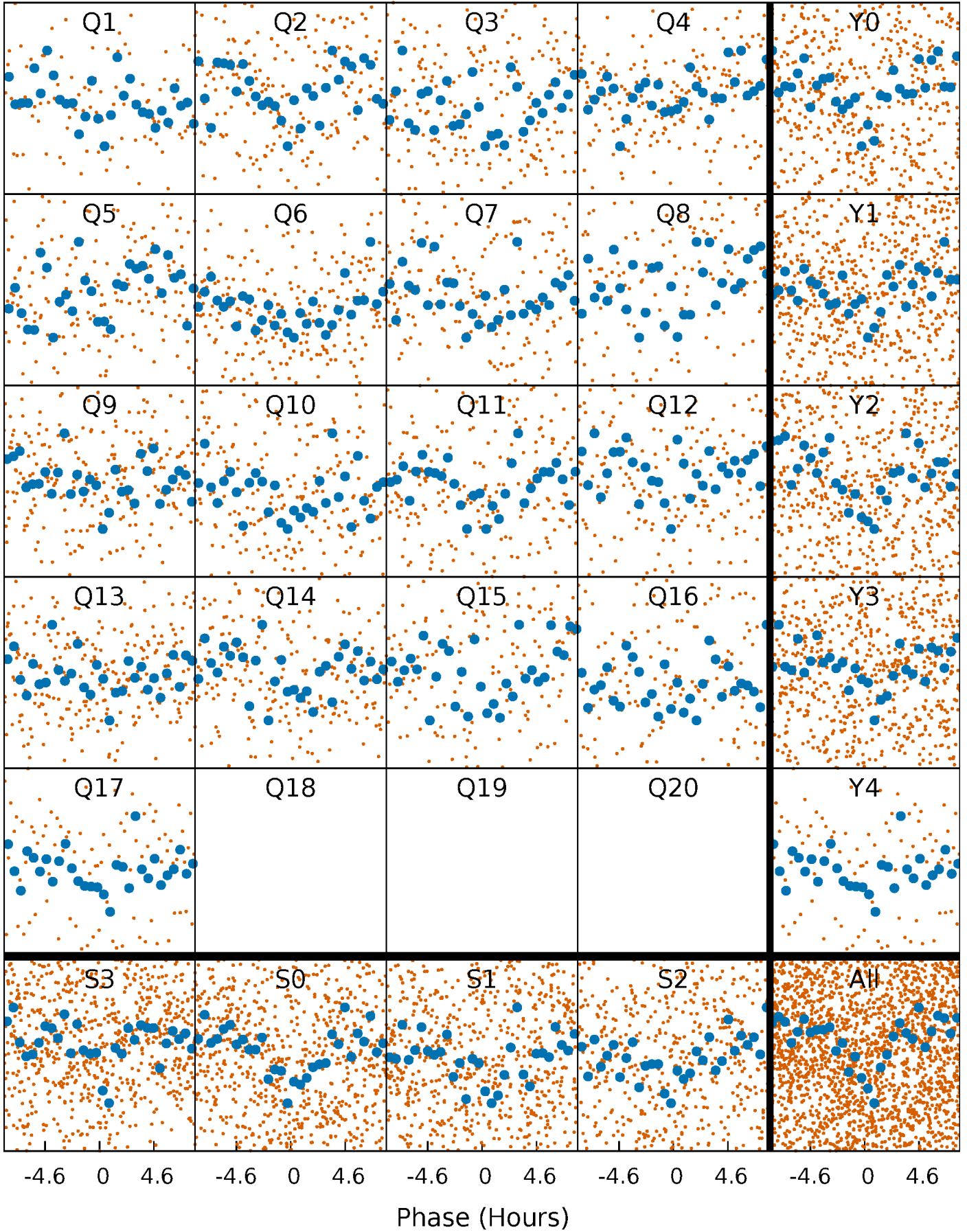


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

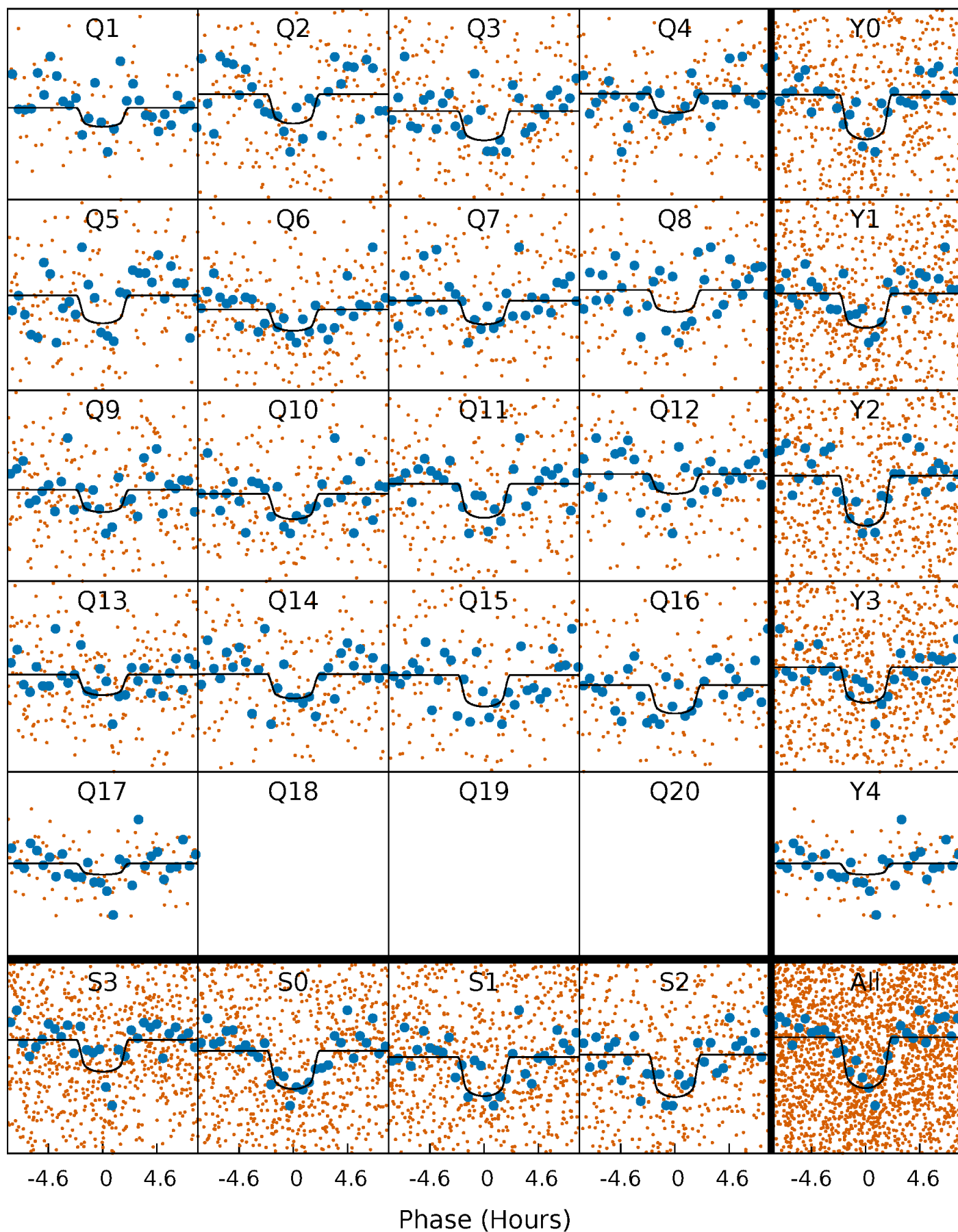
TCE 012647577-01 P= 12.635999 Days  $T_0=134.470498$  (BKJD)





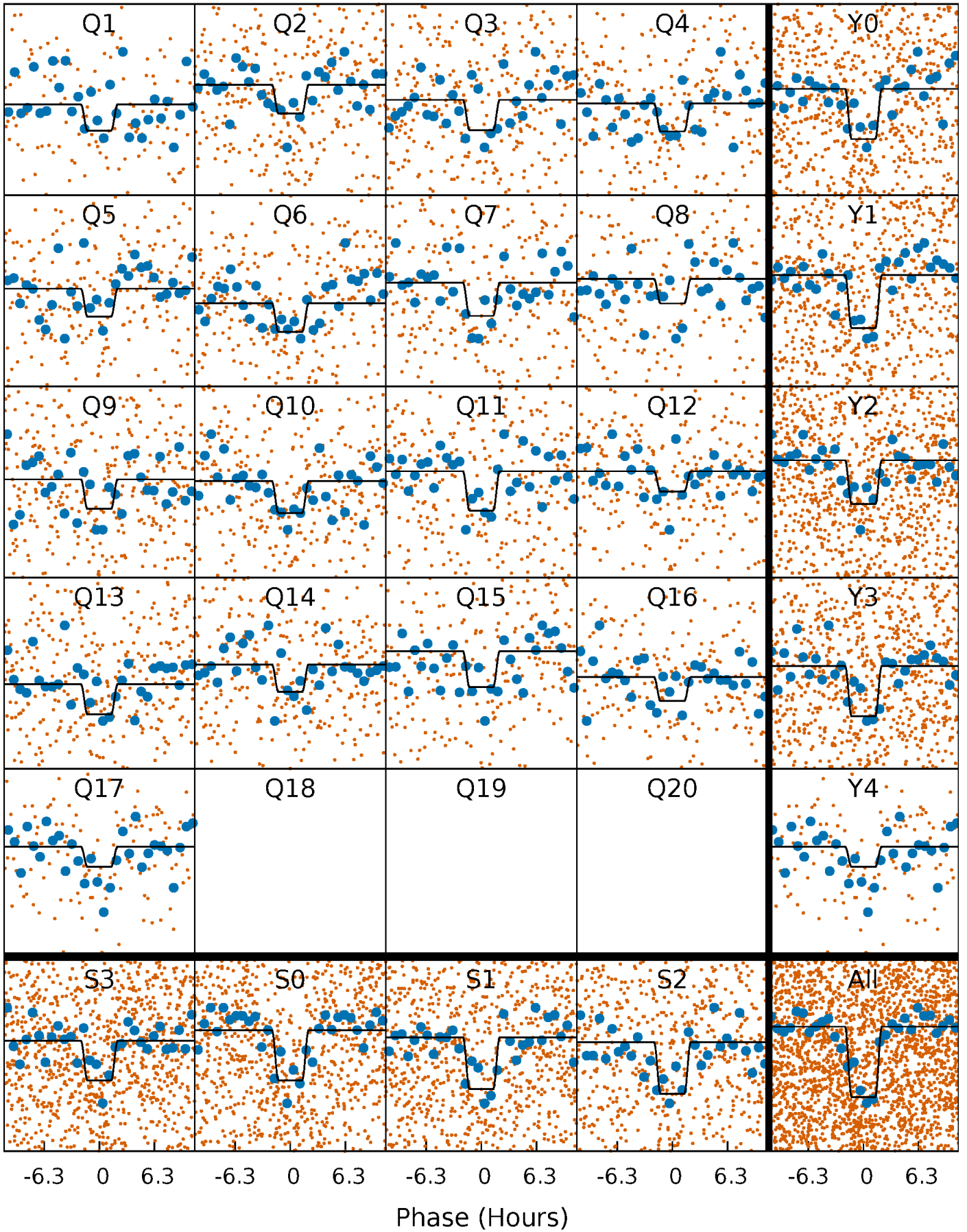
# DV Quarter-Phased Transit Curves

TCE 012647577-01 P= 12.635999 Days  $T_0=134.470498$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

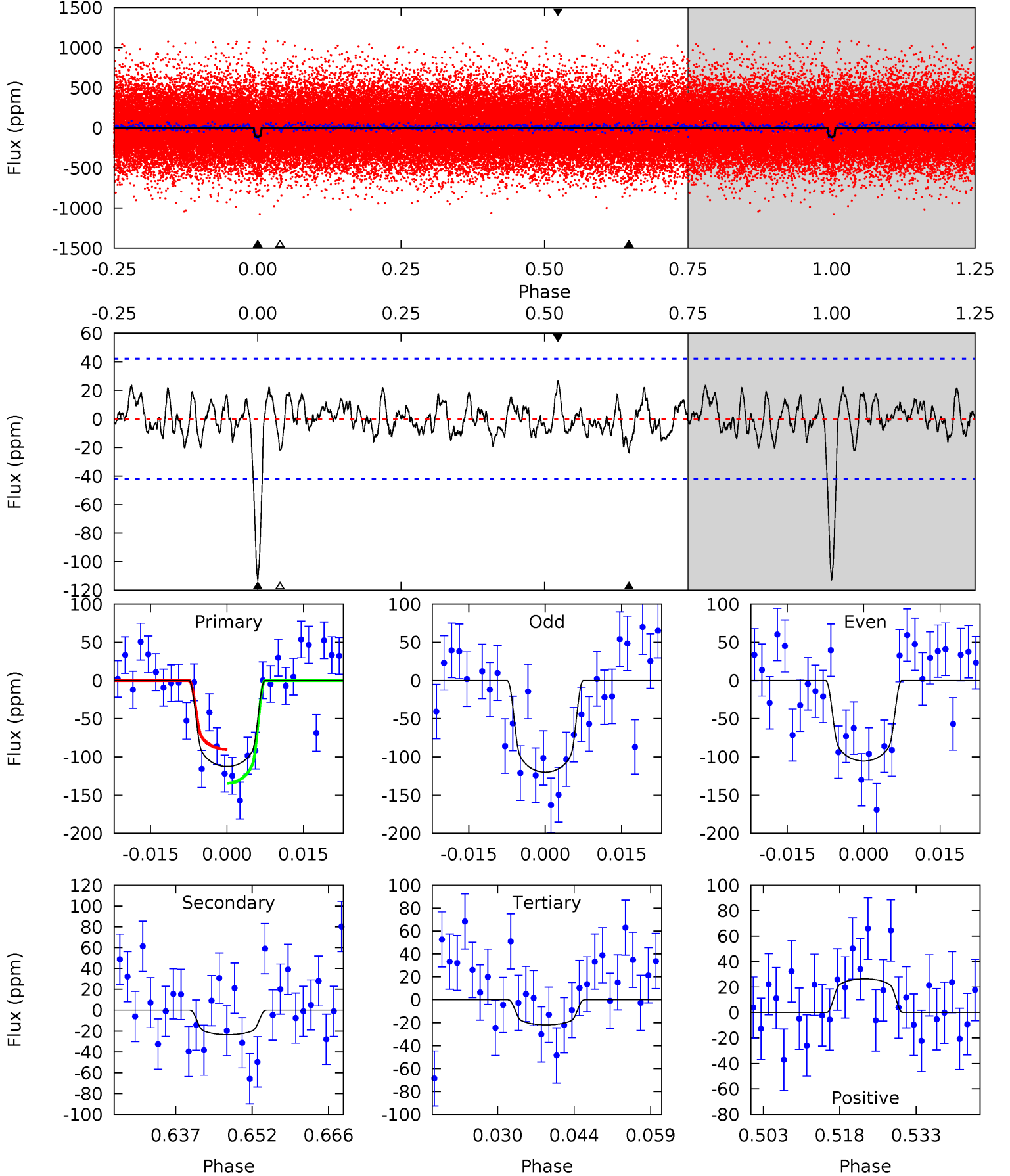
TCE 012647577-01 P= 12.636021 Days  $T_0=134.475074$  (BKJD)



# DV Model-Shift Uniqueness Test

012647577-01, P = 12.635999 Days, E = 121.834499 Days

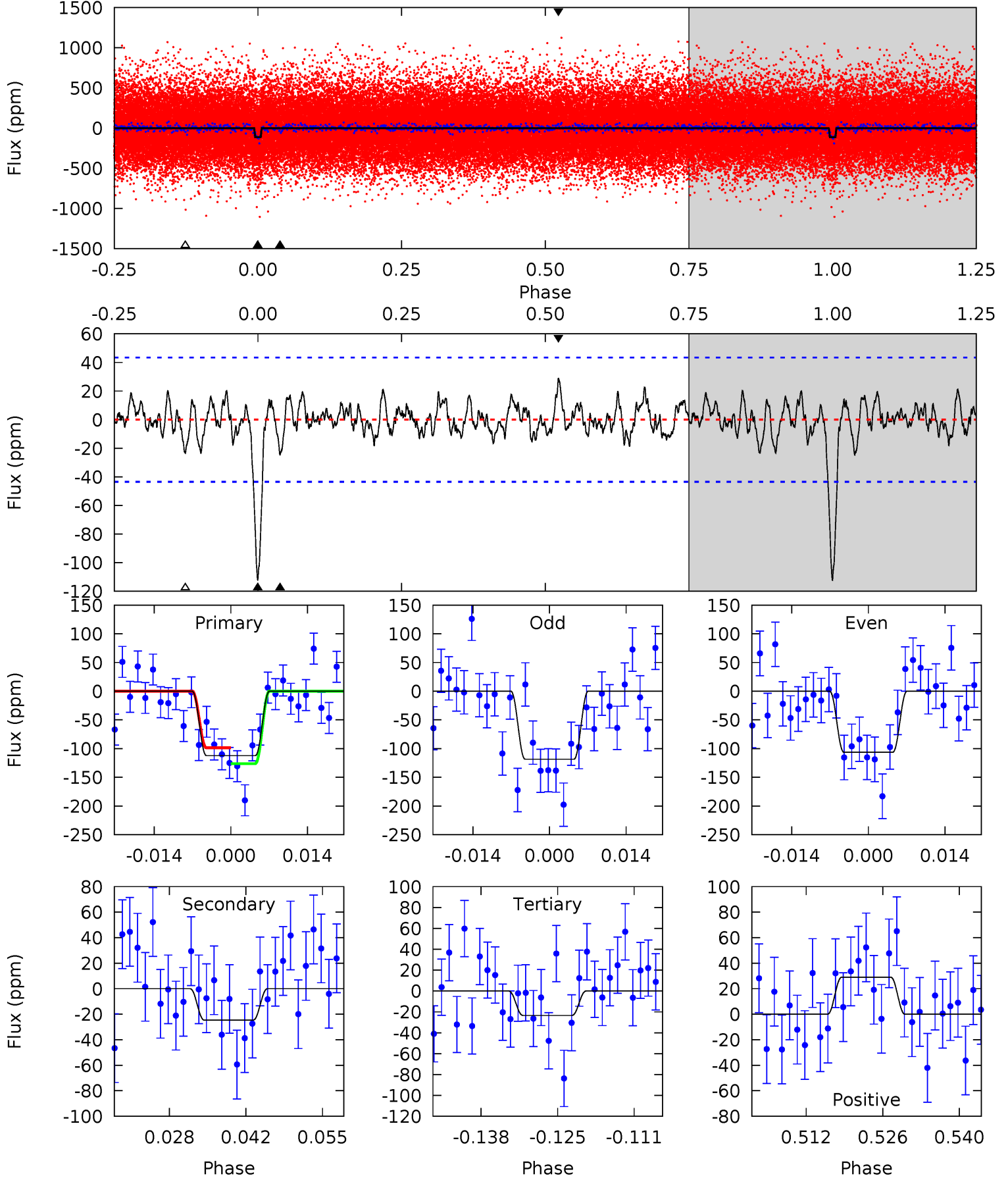
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	2.77	2.58	3.12	4.95	2.44	1.09	10.7	10.2	0.19	-0.35	0.86	1.02	0.19	2.62



# Alt Model-Shift Uniqueness Test

012647577-01, P = 12.636021 Days, E = 121.839053 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
12.8	2.82	2.68	3.32	4.96	2.46	1.00	10.2	9.52	0.13	-0.51	0.69	1.18	0.21	1.58



### Stellar Parameters For KIC 012647577

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5772^{+78}_{-86}$	$4.457^{+0.040}_{-0.120}$	$0.140^{+0.150}_{-0.150}$	$0.992^{+0.147}_{-0.063}$	$1.028^{+0.056}_{-0.062}$	$1.482^{+0.276}_{-0.486}$
	+1%/-1%	+1%/-3%	+107%/-107%	+15%/-6%	+5%/-6%	+19%/-33%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 012647577-01 / KOI 4530.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-24 \pm 8$	$1.34^{+0.48}_{-0.46}$	$1094^{+40}_{-30}$	$3928^{+735}_{-470}$	$78^{+113}_{-43}$
Alt.	$-25 \pm 9$	$1.22^{+0.51}_{-0.54}$	$1091^{+44}_{-28}$	$4120^{+1045}_{-568}$	$99^{+209}_{-57}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$



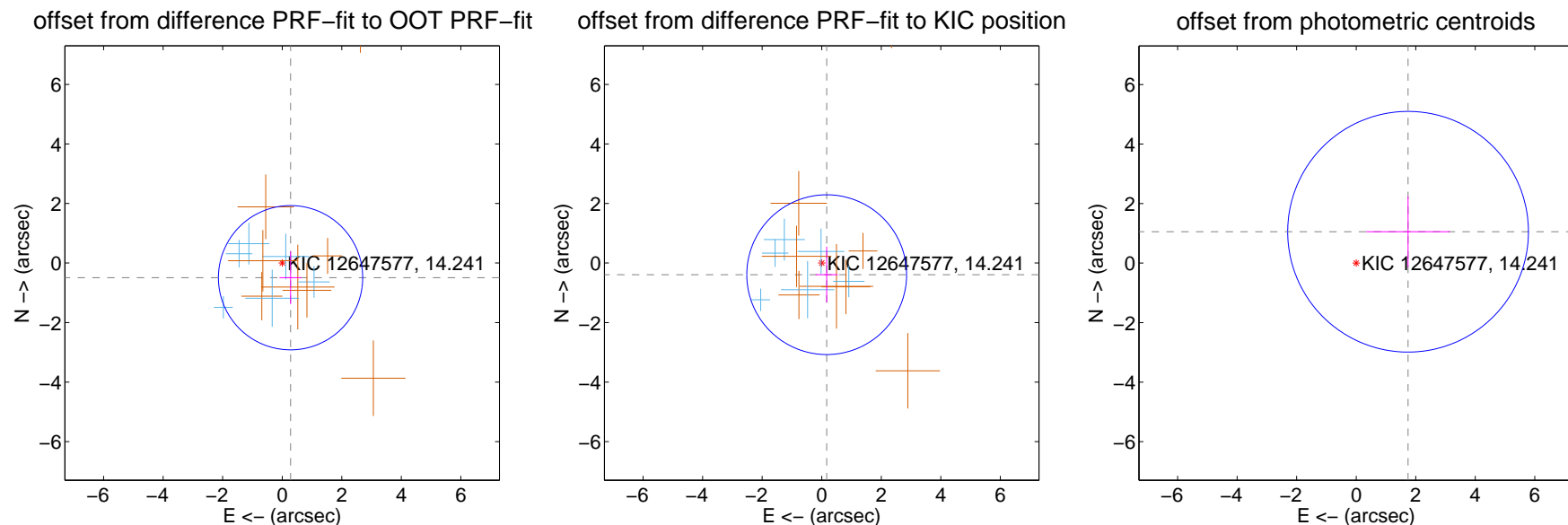
## DV Centroid Data

Supplemental centroid analysis for 012647577-01. Kepler magnitude: 14.24. Transit SNR 10.50

There are 6 quarters with good PRF difference image offsets

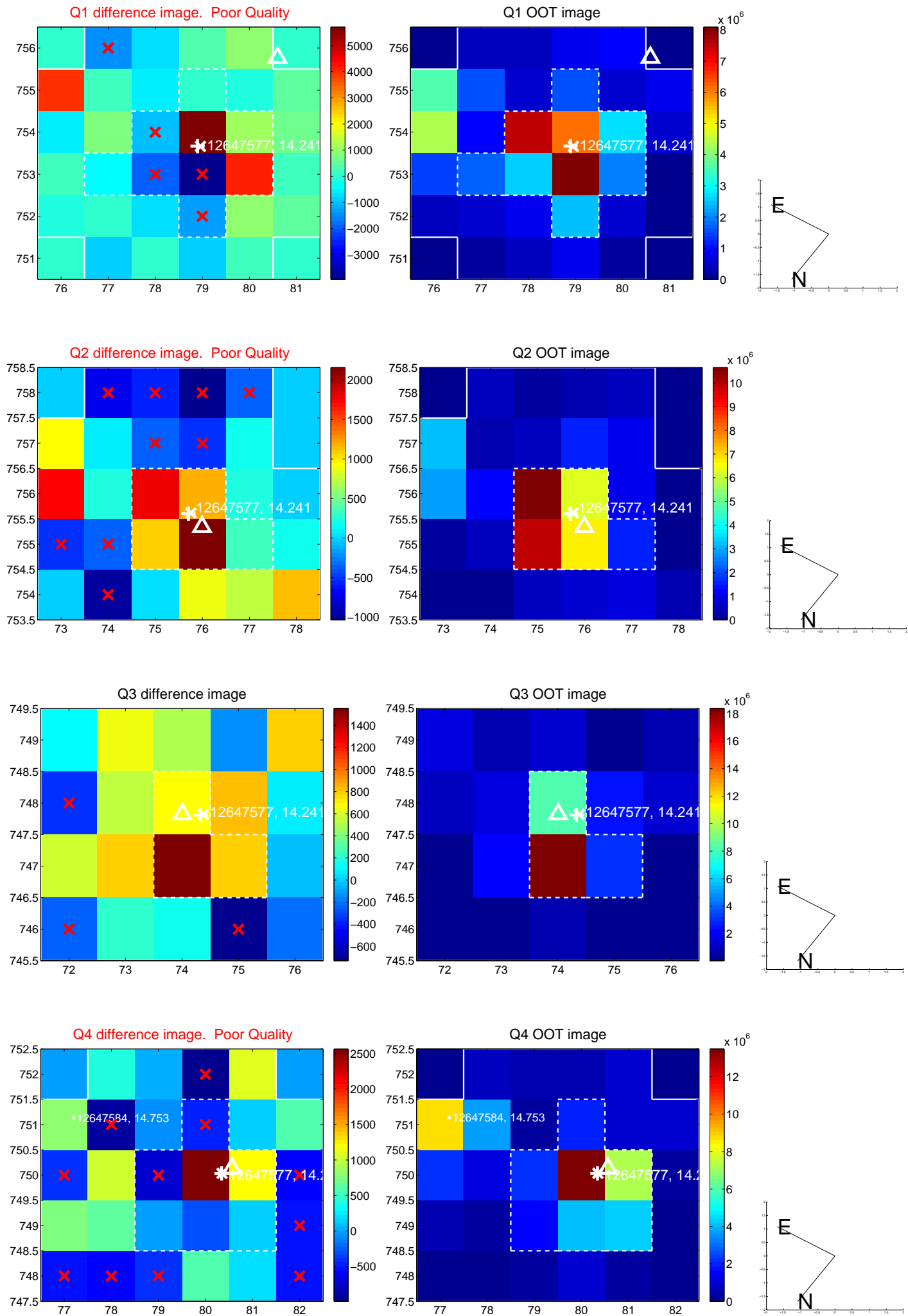
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.567 \pm 0.808$	0.70	$-0.280 \pm 0.371$	$-0.493 \pm 0.890$
PRF-fit source offset from KIC position	$0.425 \pm 0.895$	0.48	$-0.167 \pm 0.373$	$-0.391 \pm 0.938$
photometric centroid source offset	$2.04 \pm 1.35$	1.51	$-1.74 \pm 1.40$	$1.05 \pm 1.19$

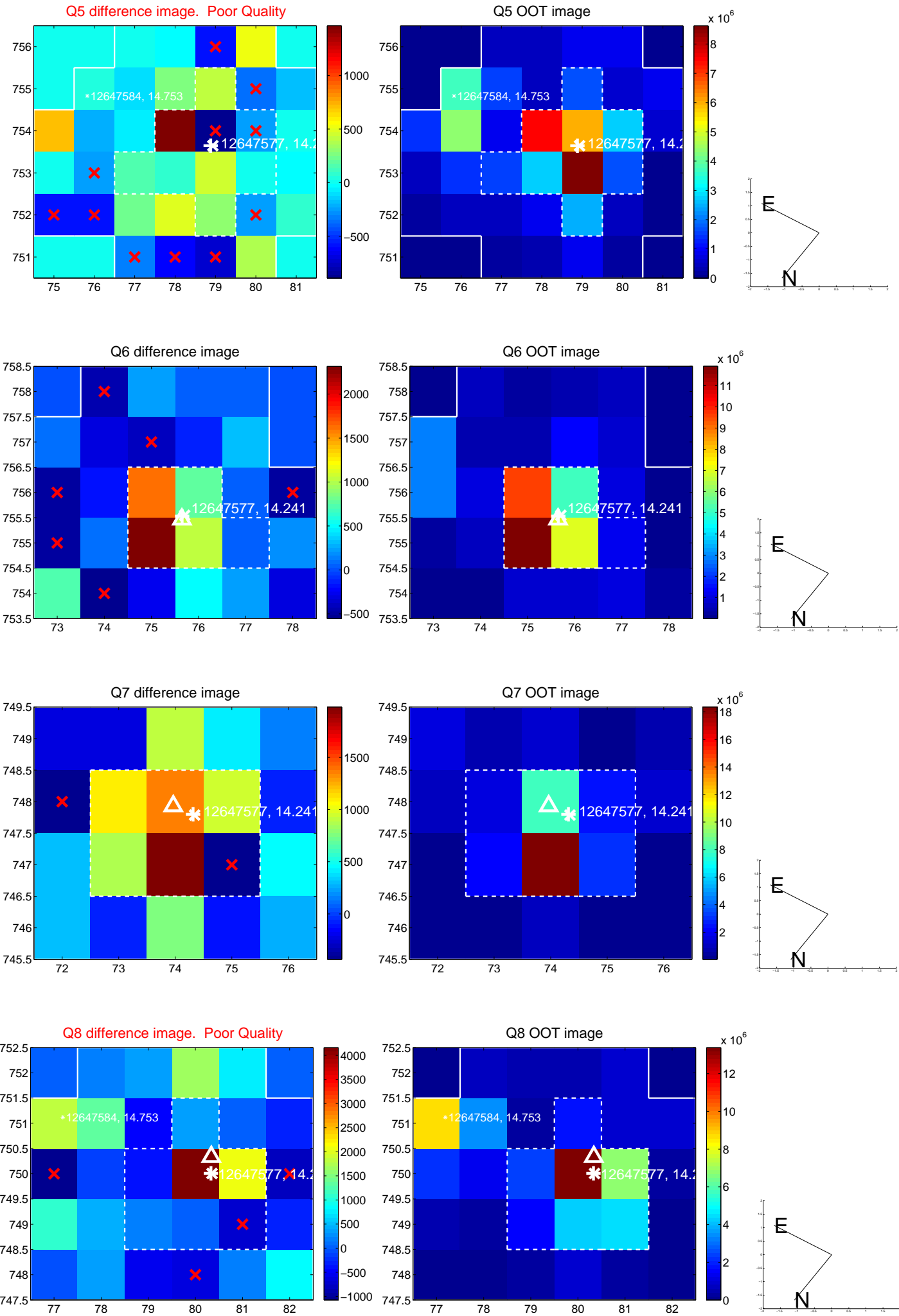


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

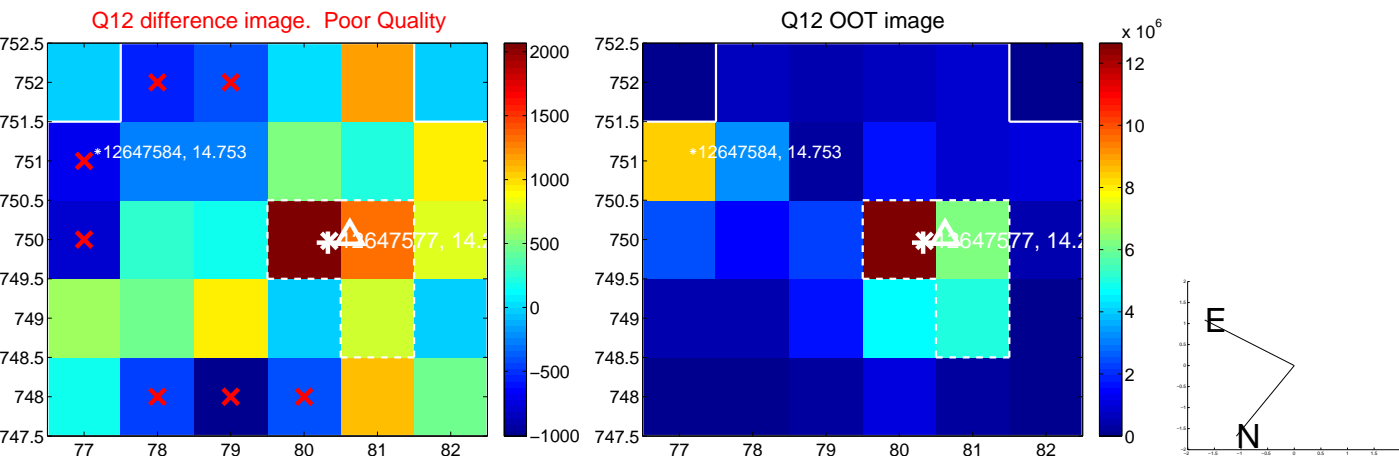
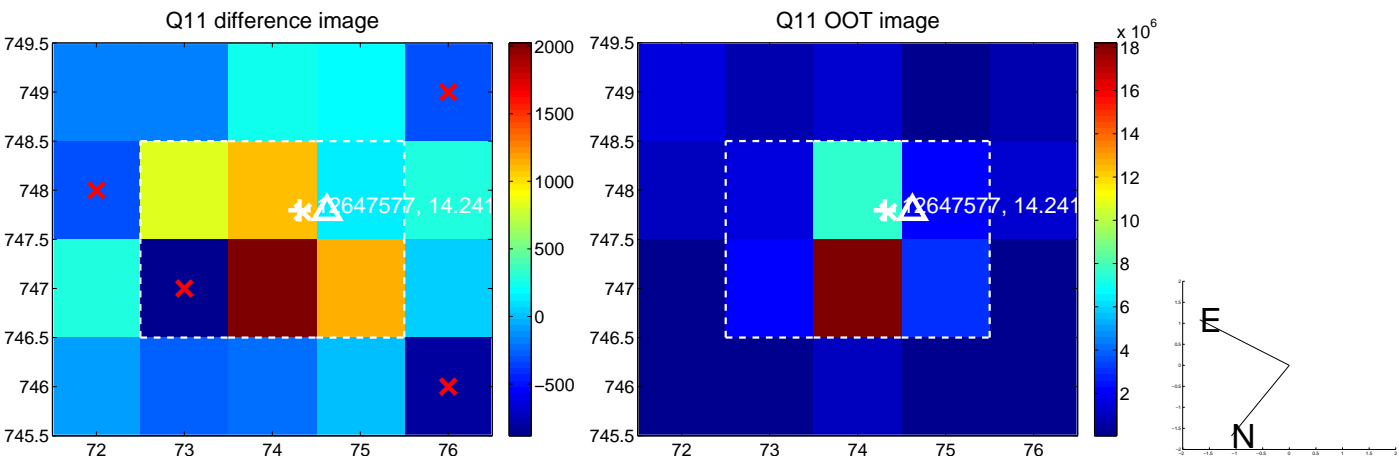
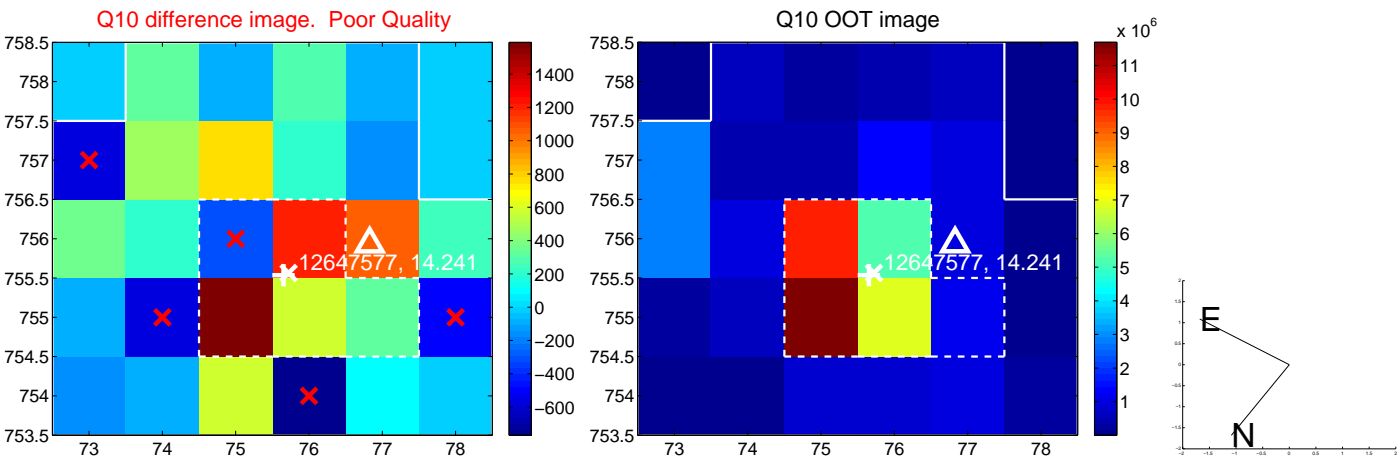
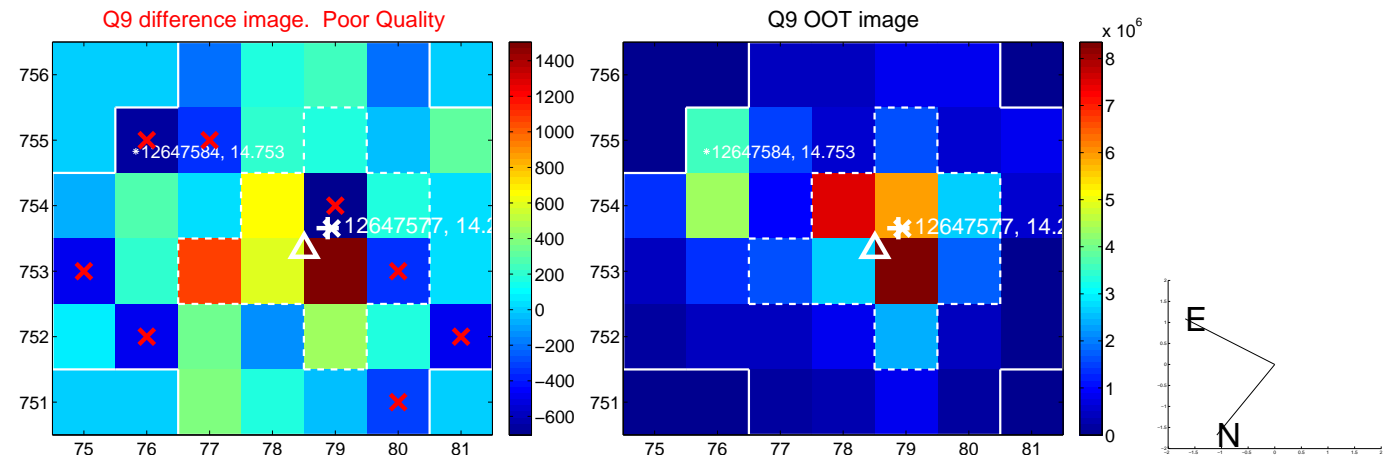
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



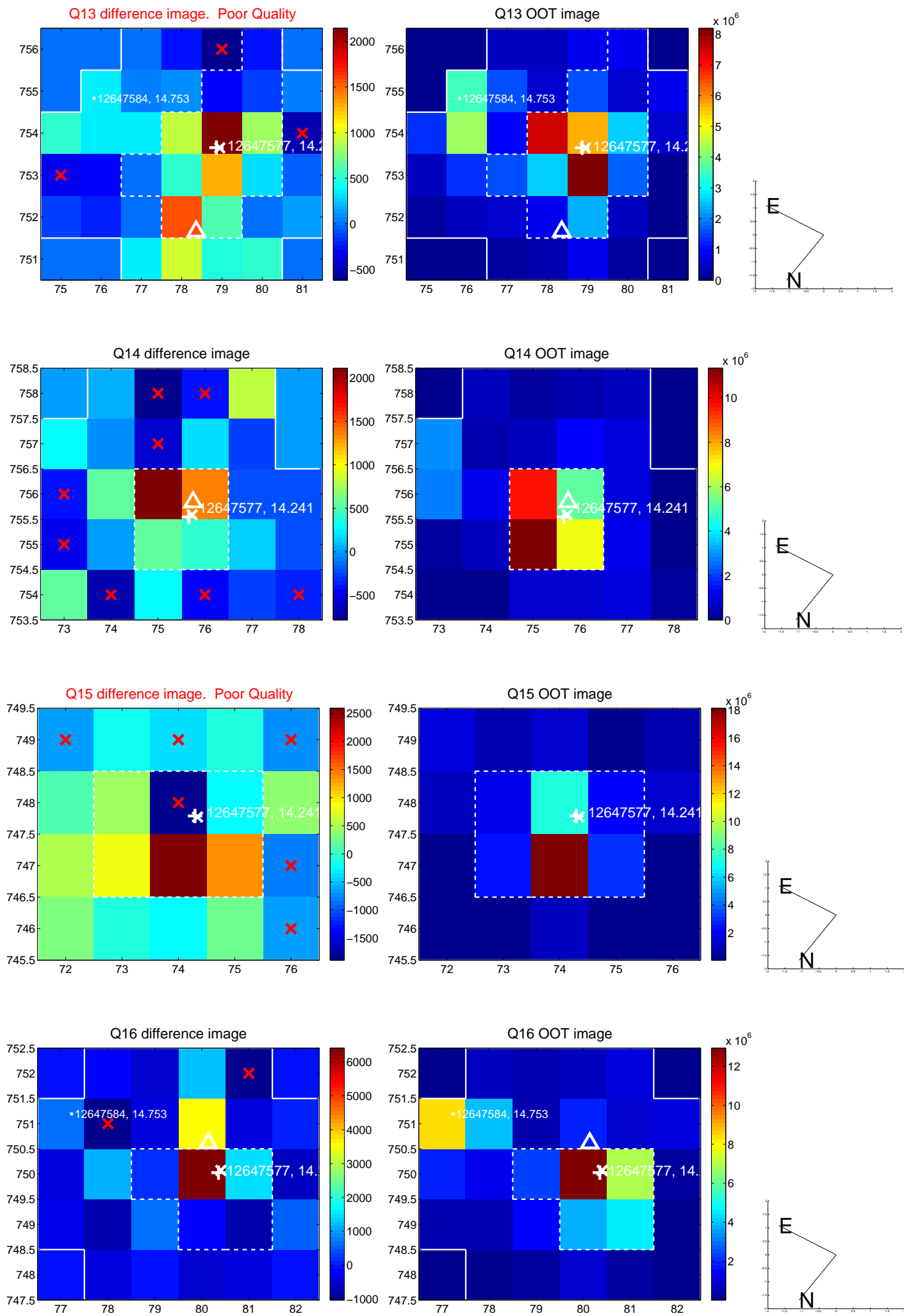
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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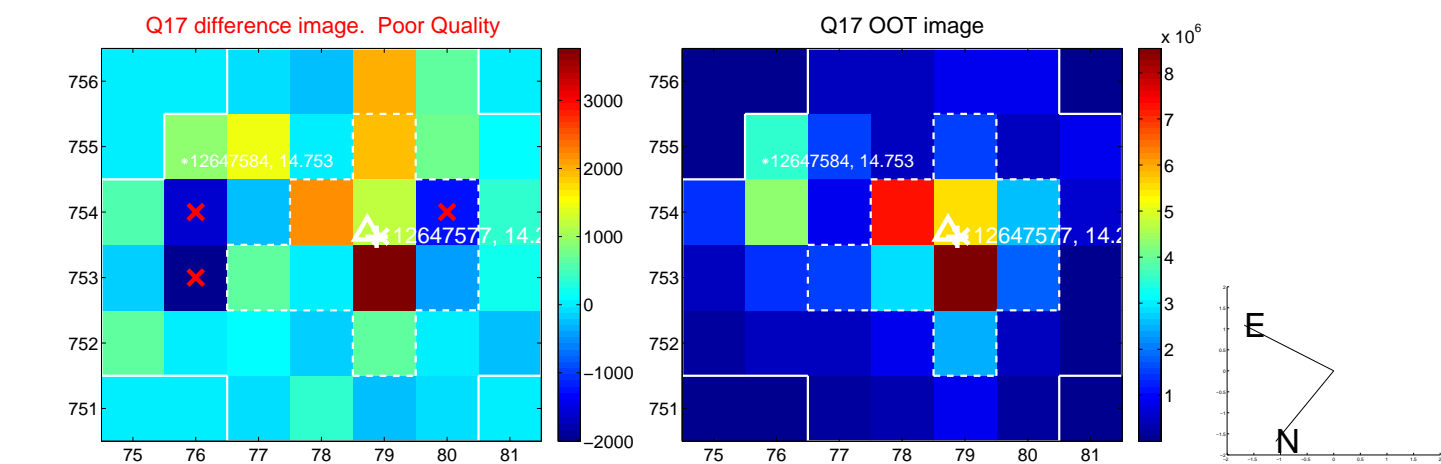


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

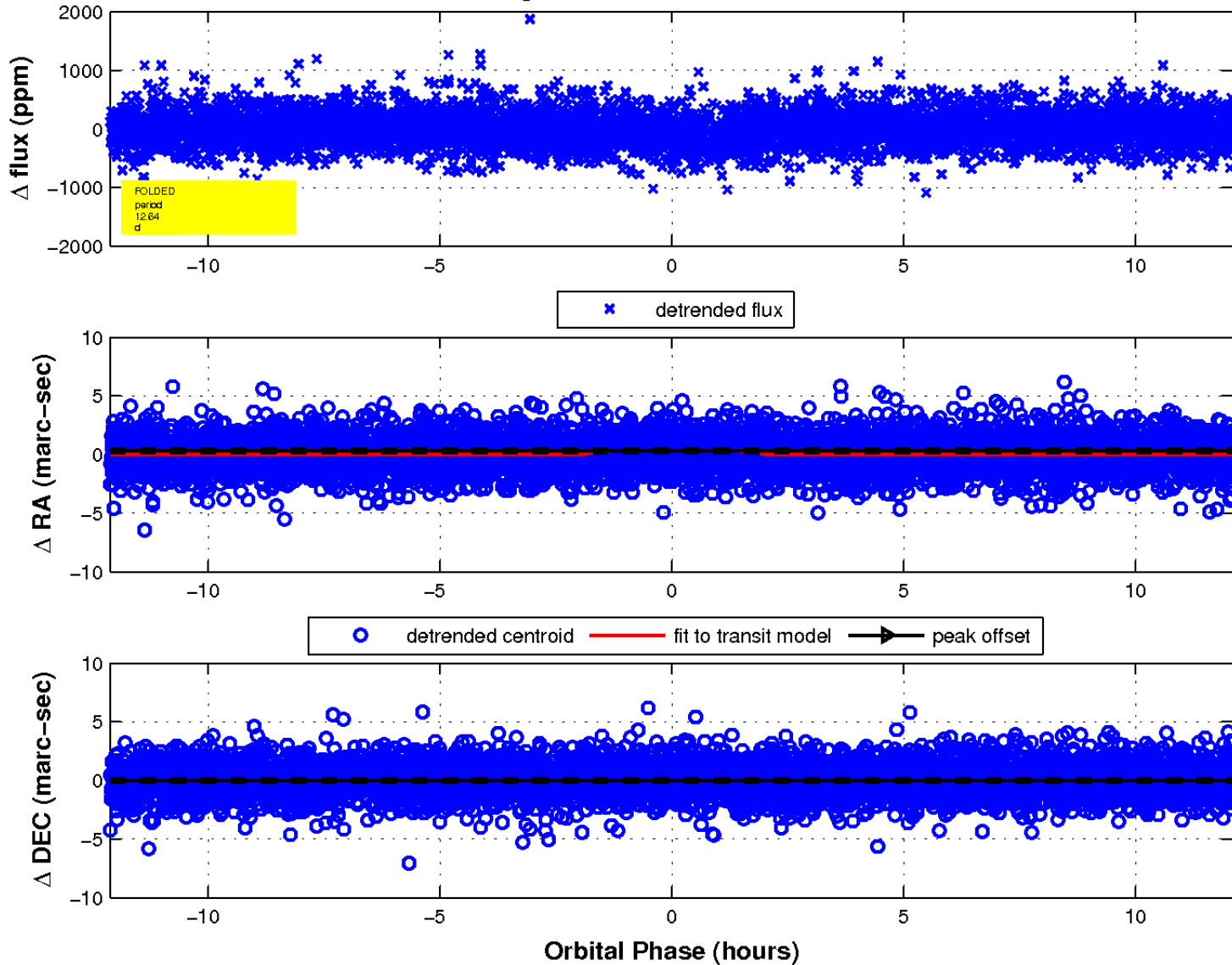




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

