

# KIC 006021786

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006021786-01	OBS	No	0.552820	131.850477	215.8	6.634	126.1	13.3	0.69	4380	2.10	1130.62

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006021786-01	OBS	FP	0.00	1	0	0	0	LPP_DV

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

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

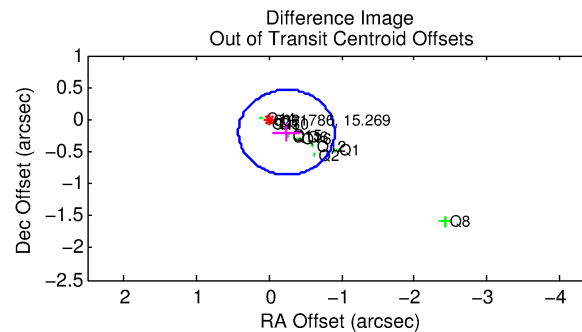
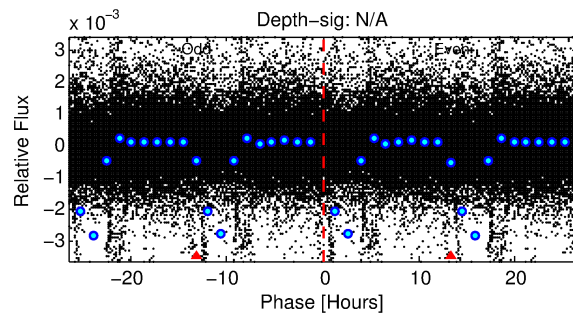
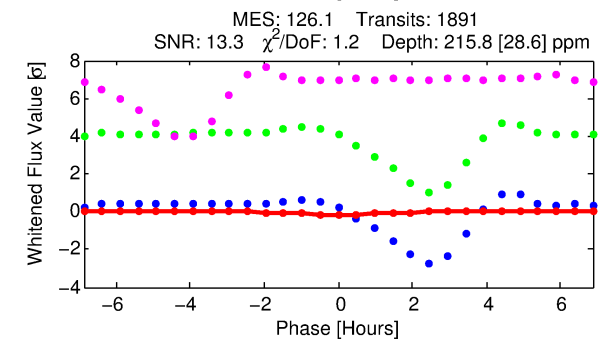
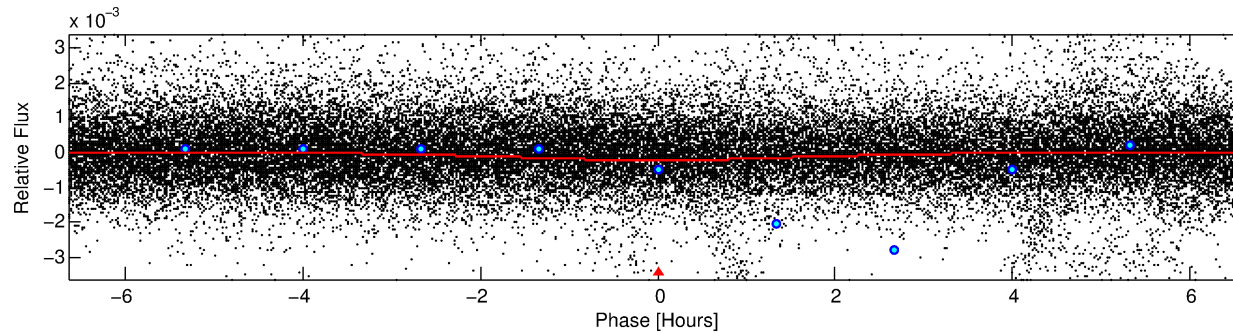
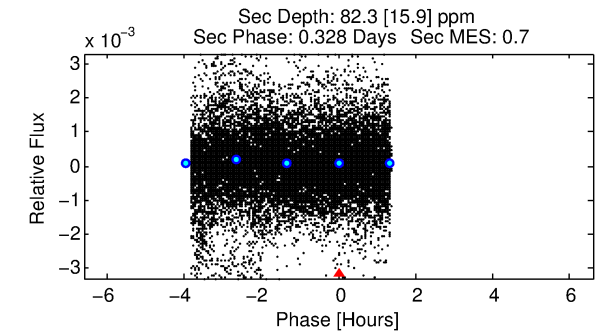
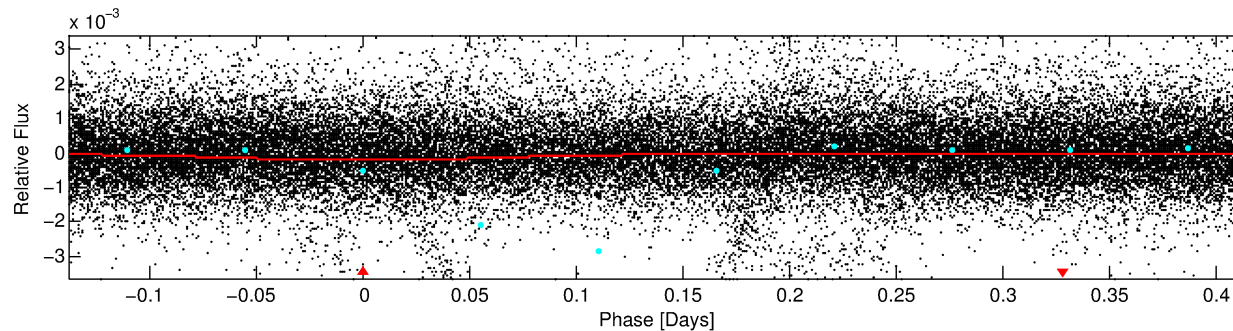
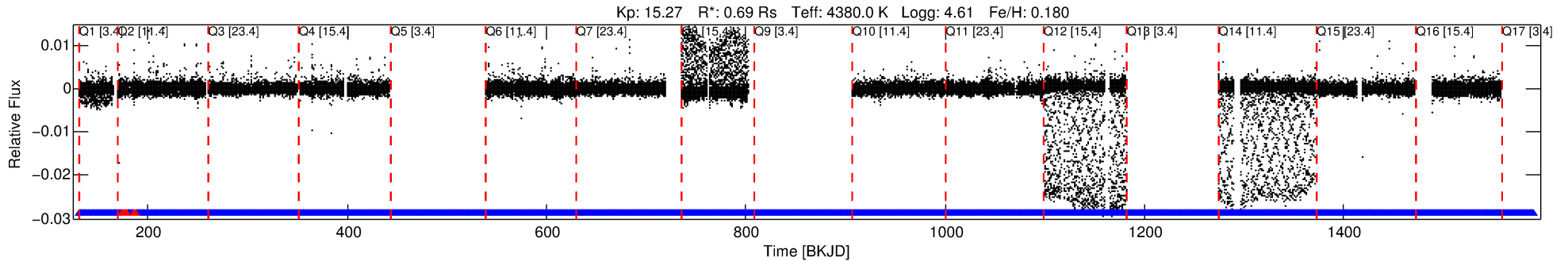
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006021786-01

No Significant Match Found

# DV One-Page Summary

KIC: 6021786 Candidate: 1 of 1 Period: 0.553 d



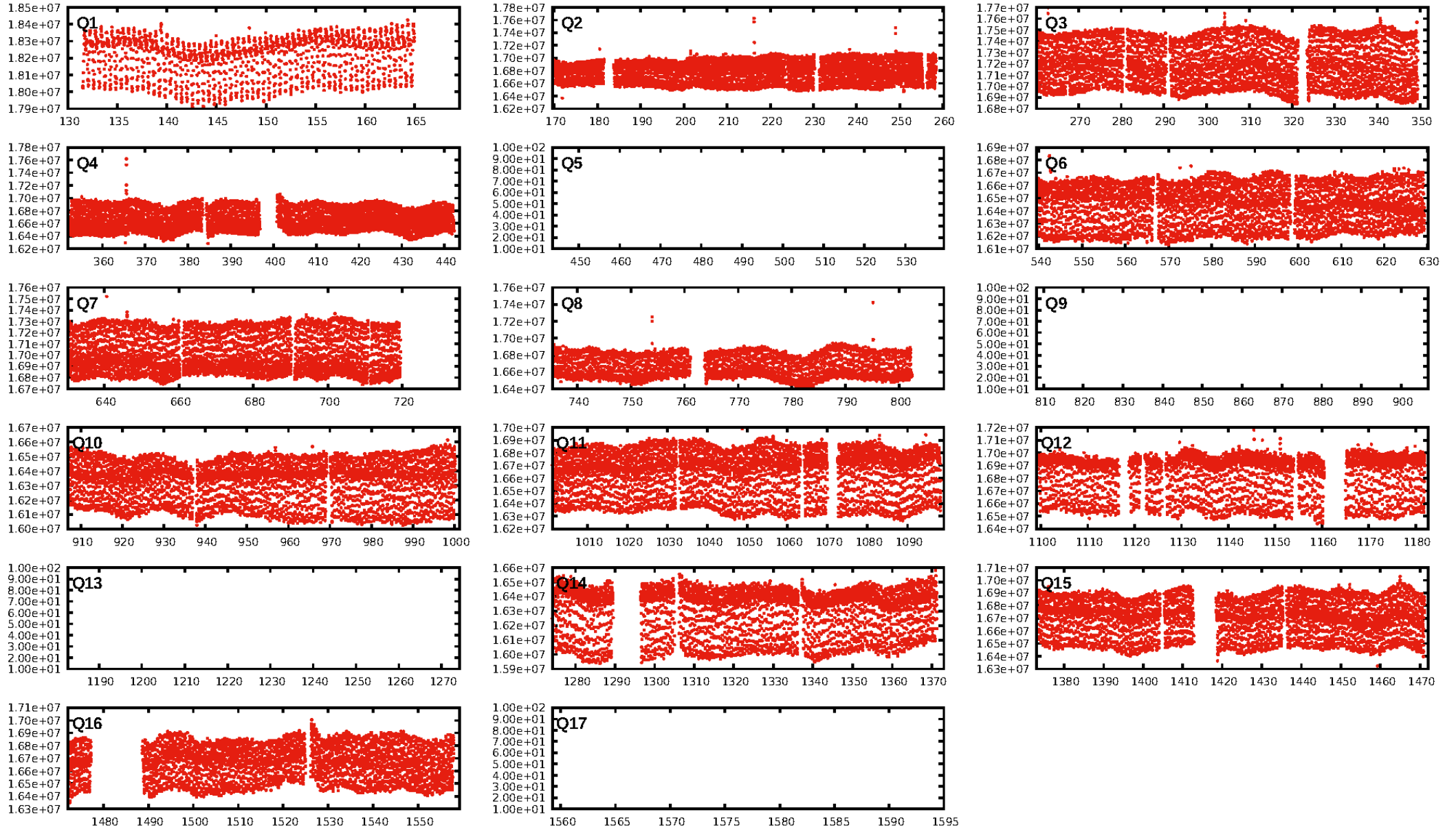
## DV Fit Results:

Period = 0.55282 [0.00001] d  
Epoch = 131.8505 [0.0046] BKJD  
Rp/R\* = 0.0280 [0.0471]  
a/R\* = 1.02 [0.05]  
b = 1.00 [0.07]  
Seff = 1130.62 [161.76]  
Teq = 1479 [53] K  
Rp = 2.10 [3.53] Re  
a = 0.0117 [0.0007] AU  
Ag = 1.41 [4.76] [0.09σ]  
Teffp = 2493 [2100] K [0.48σ]

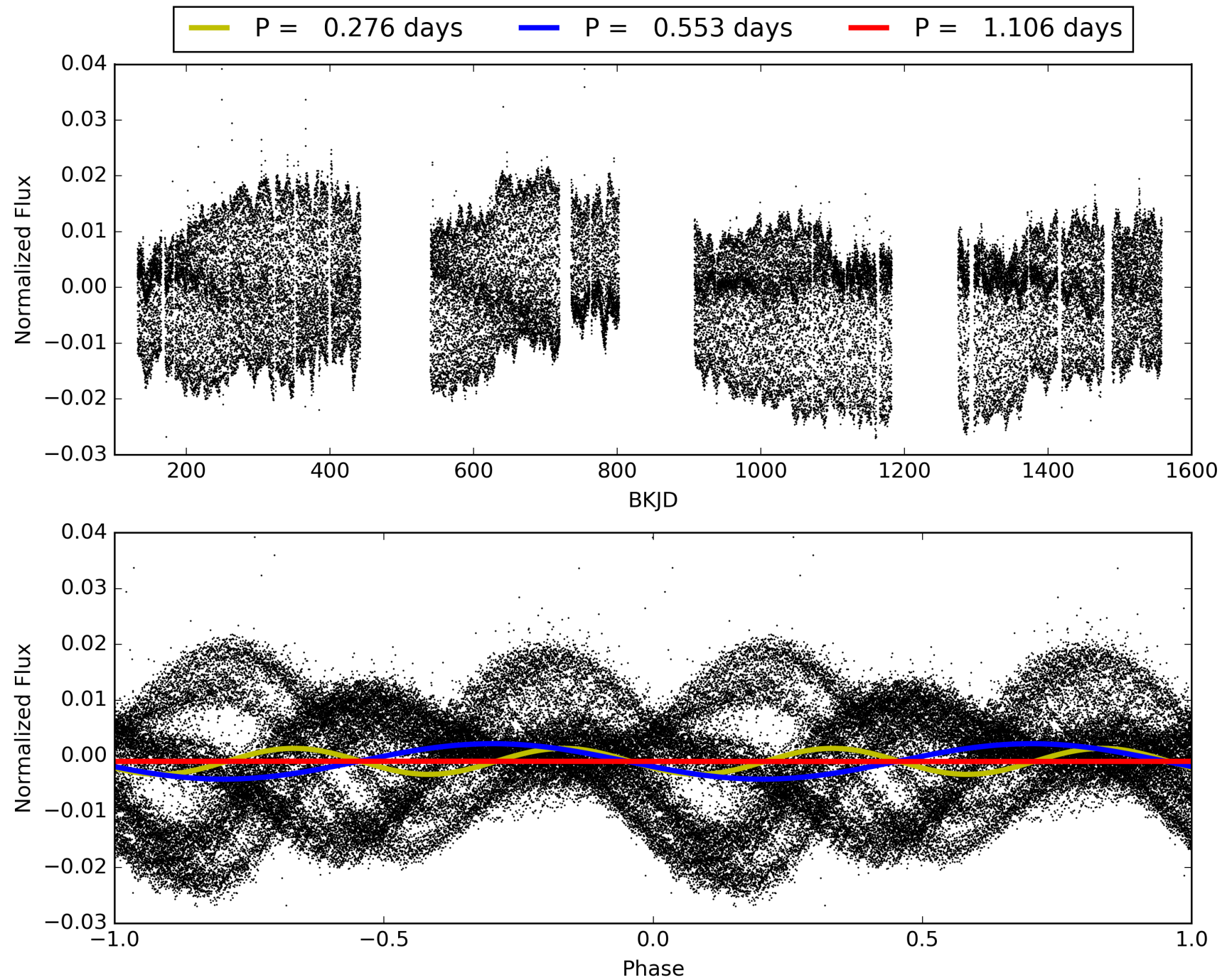
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1821/1830]  
GhostDiagnostic-chr: 1.417  
**Centroid-sig: 0.0%**  
Centroid-so: 1.033 arcsec [2.38σ]  
OotOffset-rm: 0.313 arcsec [1.42σ]  
KicOffset-rm: 0.460 arcsec [1.89σ]  
OotOffset-st: 4/4/4/1 [13]  
KicOffset-st: 4/4/4/1 [13]  
DiffImageQuality-fgm: 0.54 [7/13]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 006021786-01, PDC Light Curves

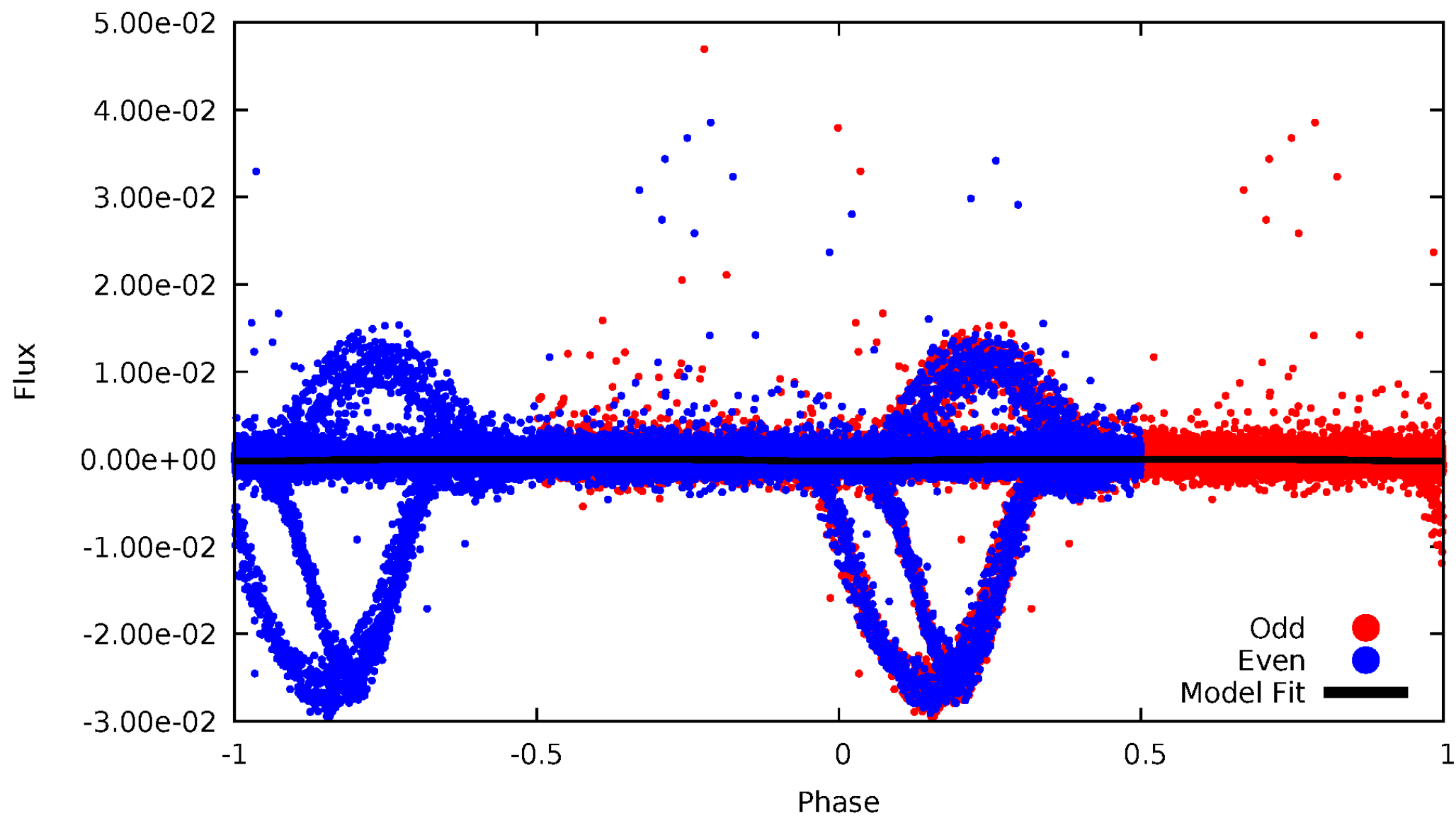


TCE 006021786-01



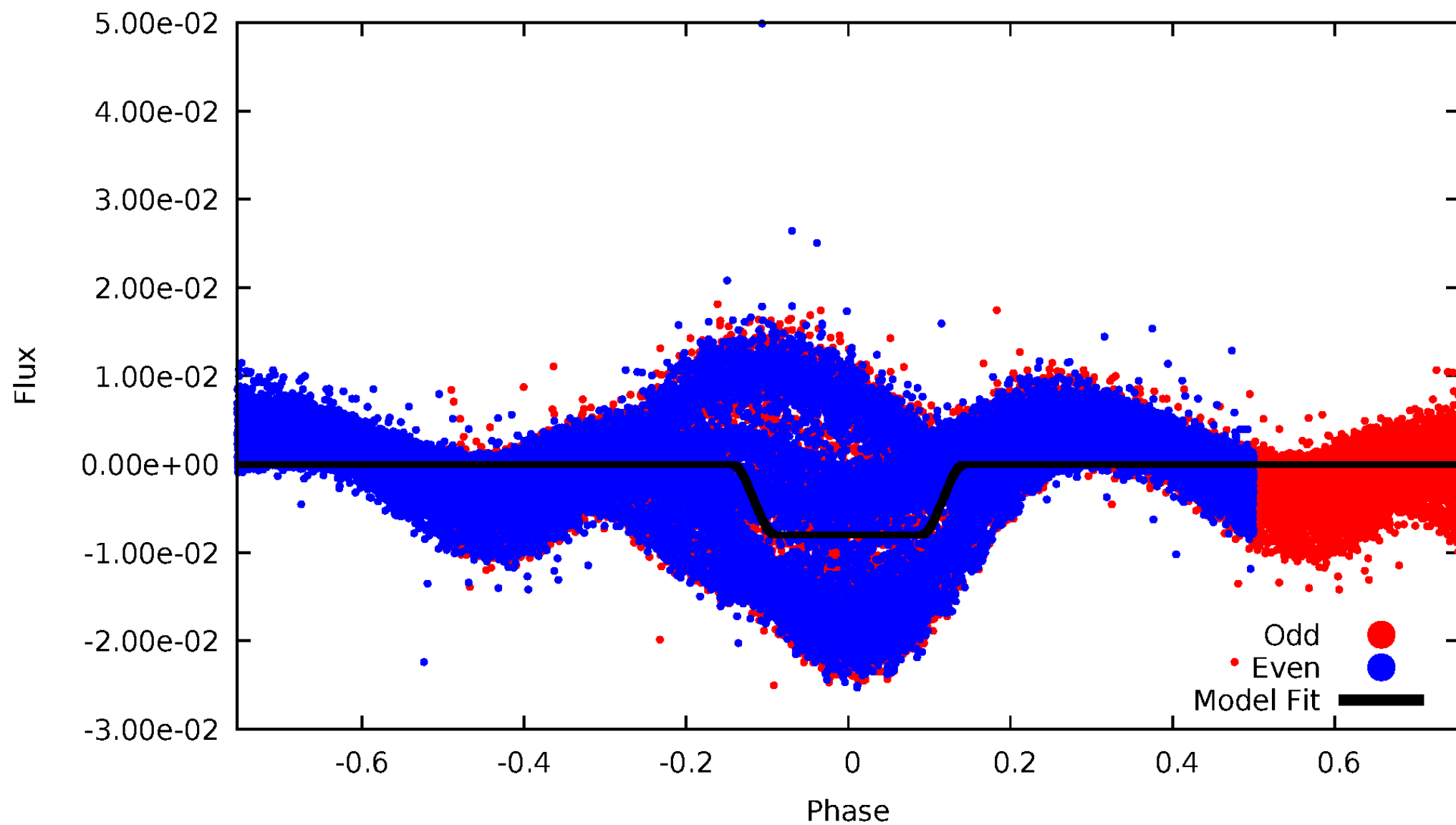
# DV Odd/Even

TCE 006021786-01



# ALT Odd/Even

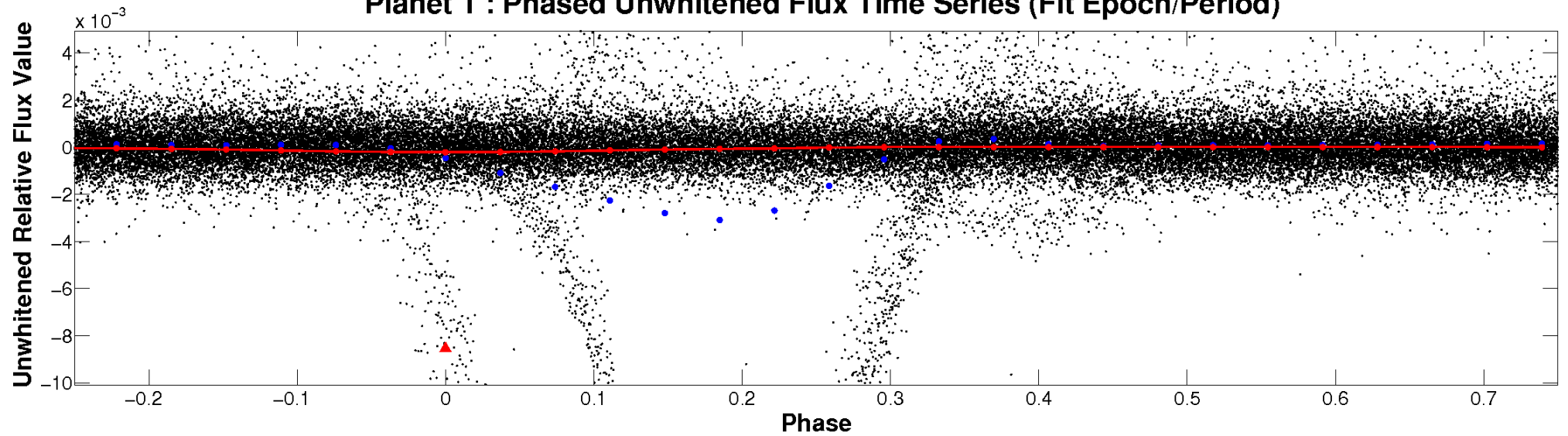
TCE 006021786-01



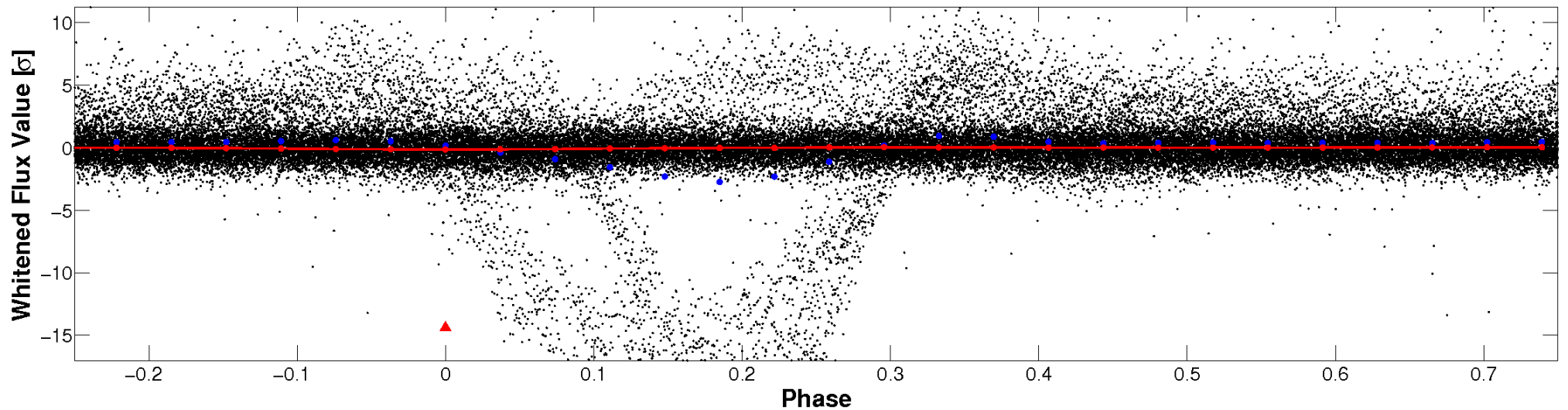


# Non-Whitened Vs. Whitened Light Curve

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

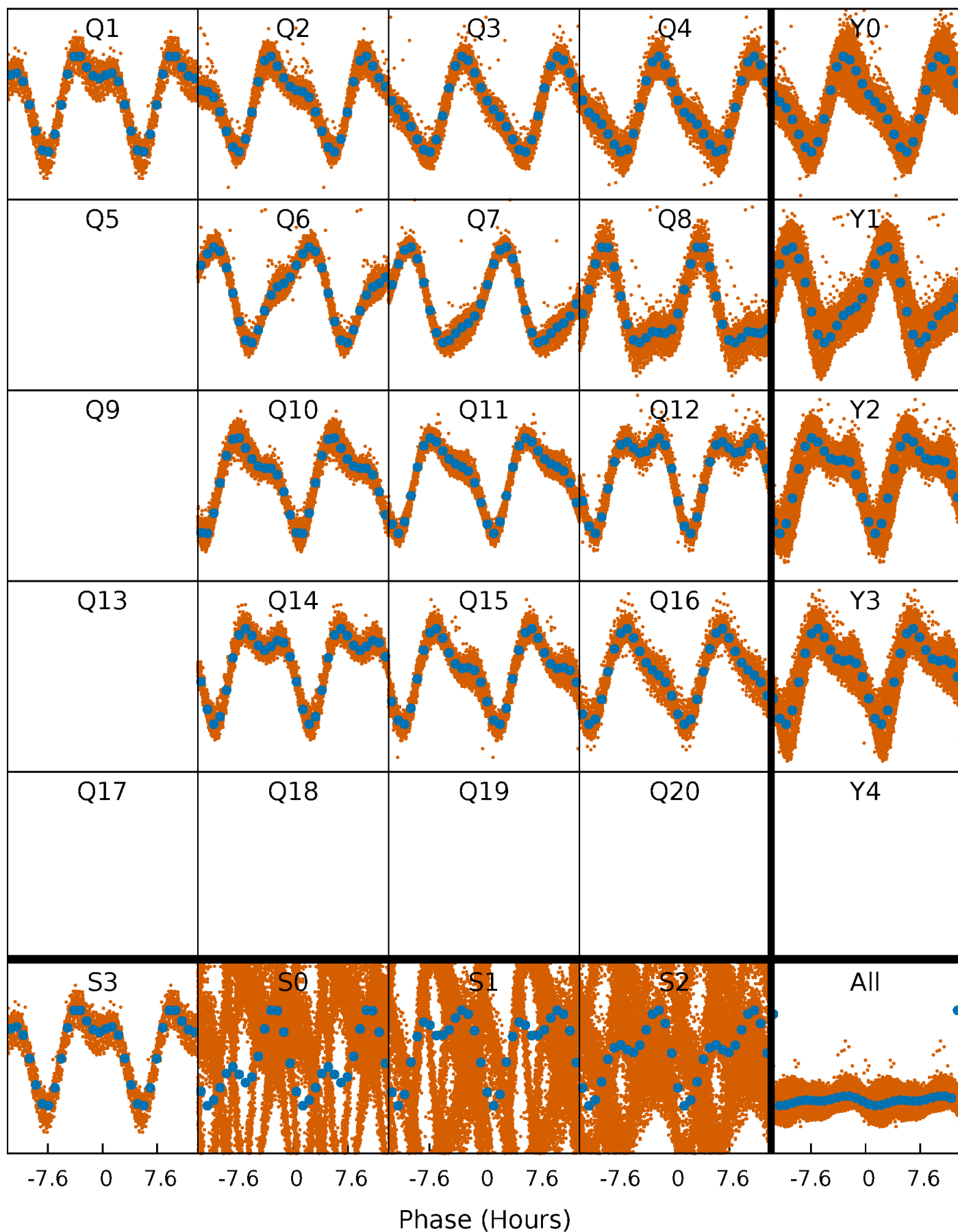


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

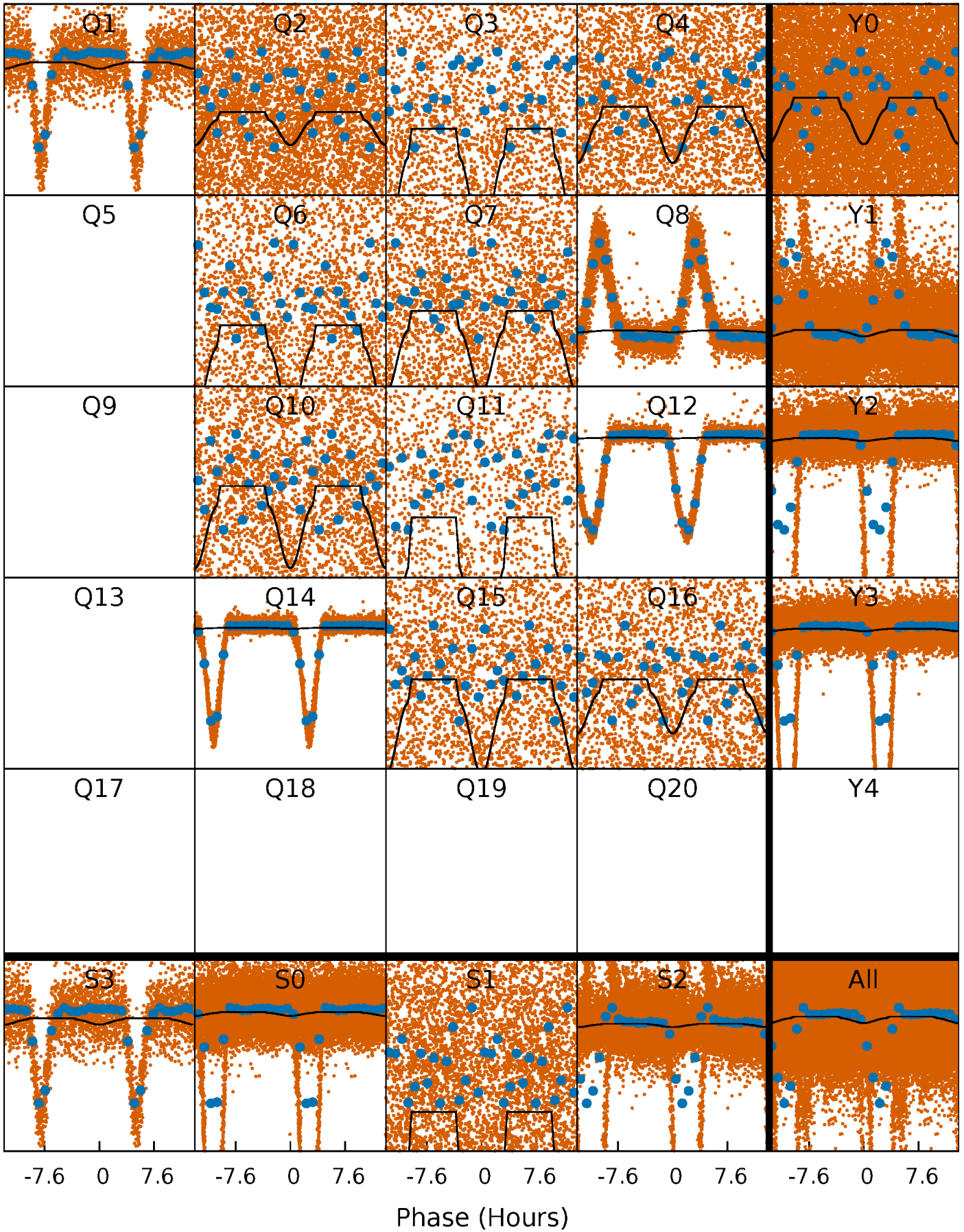
TCE 006021786-01 P= 0.552820 Days  $T_0=131.850477$  (BKJD)





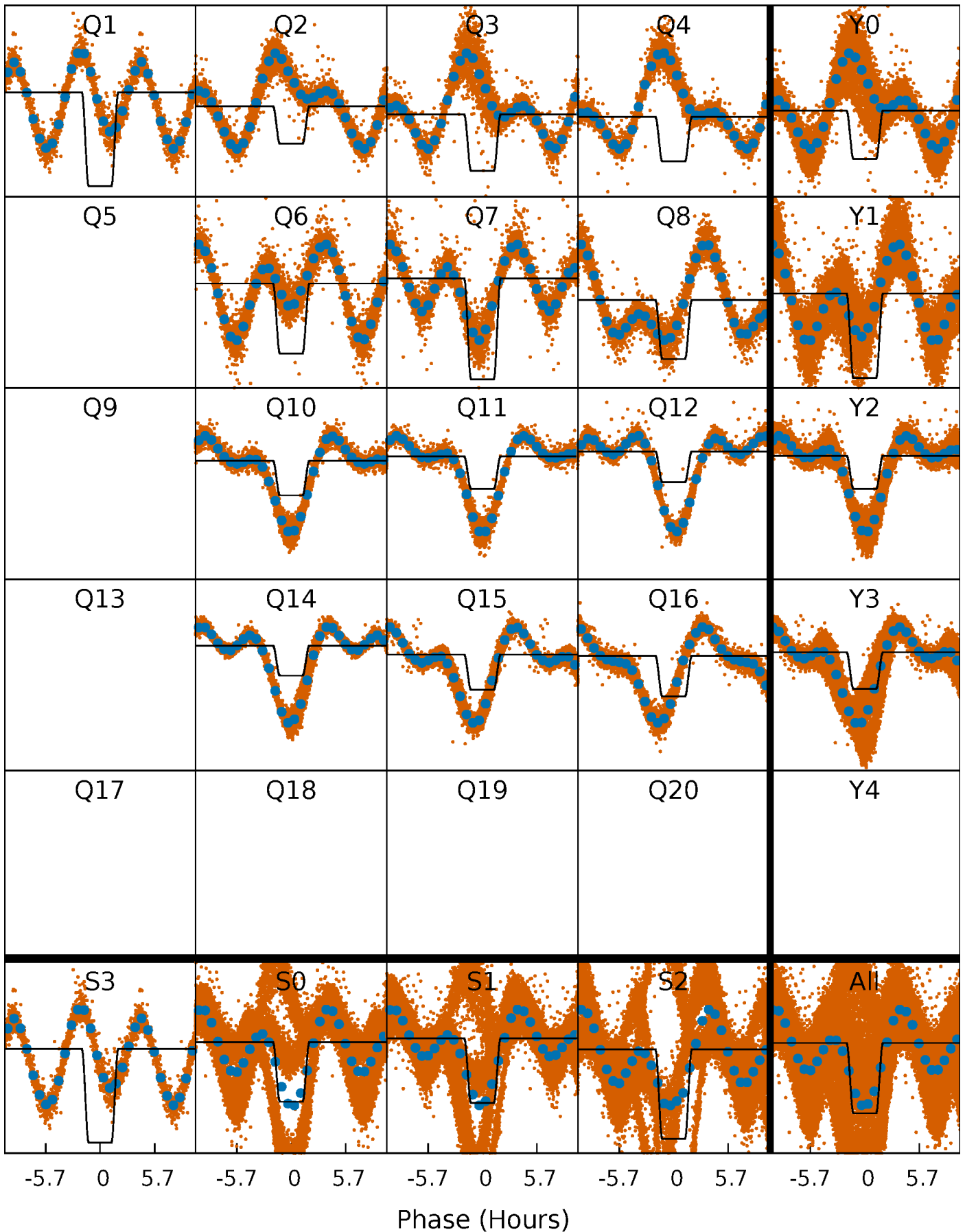
# DV Quarter-Phased Transit Curves

TCE 006021786-01 P= 0.552820 Days  $T_0=131.850477$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

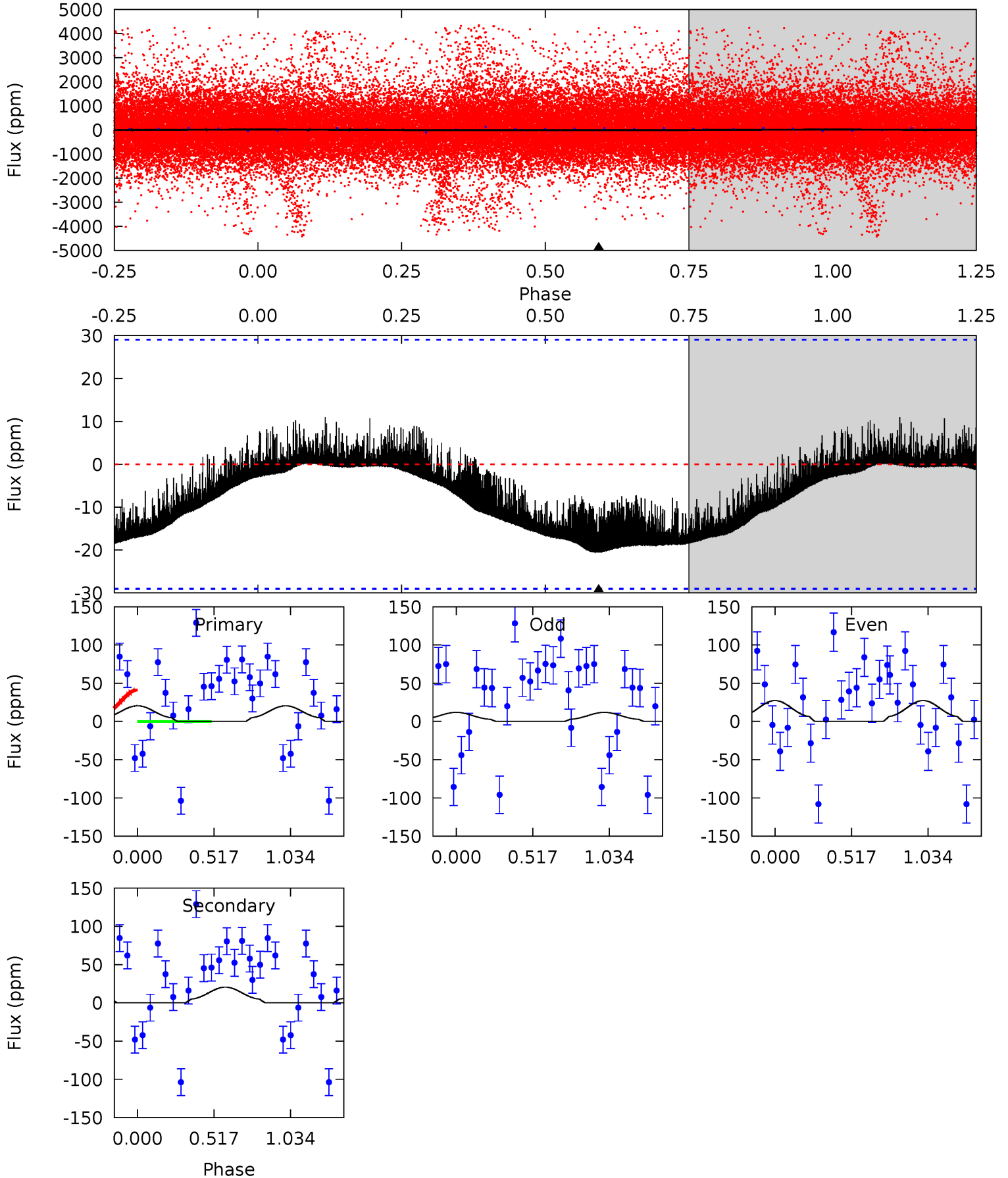
TCE 006021786-01 P= 0.552912 Days  $T_0=131.756535$  (BKJD)



# DV Model-Shift Uniqueness Test

006021786-01, P = 0.552820 Days, E = 131.297657 Days

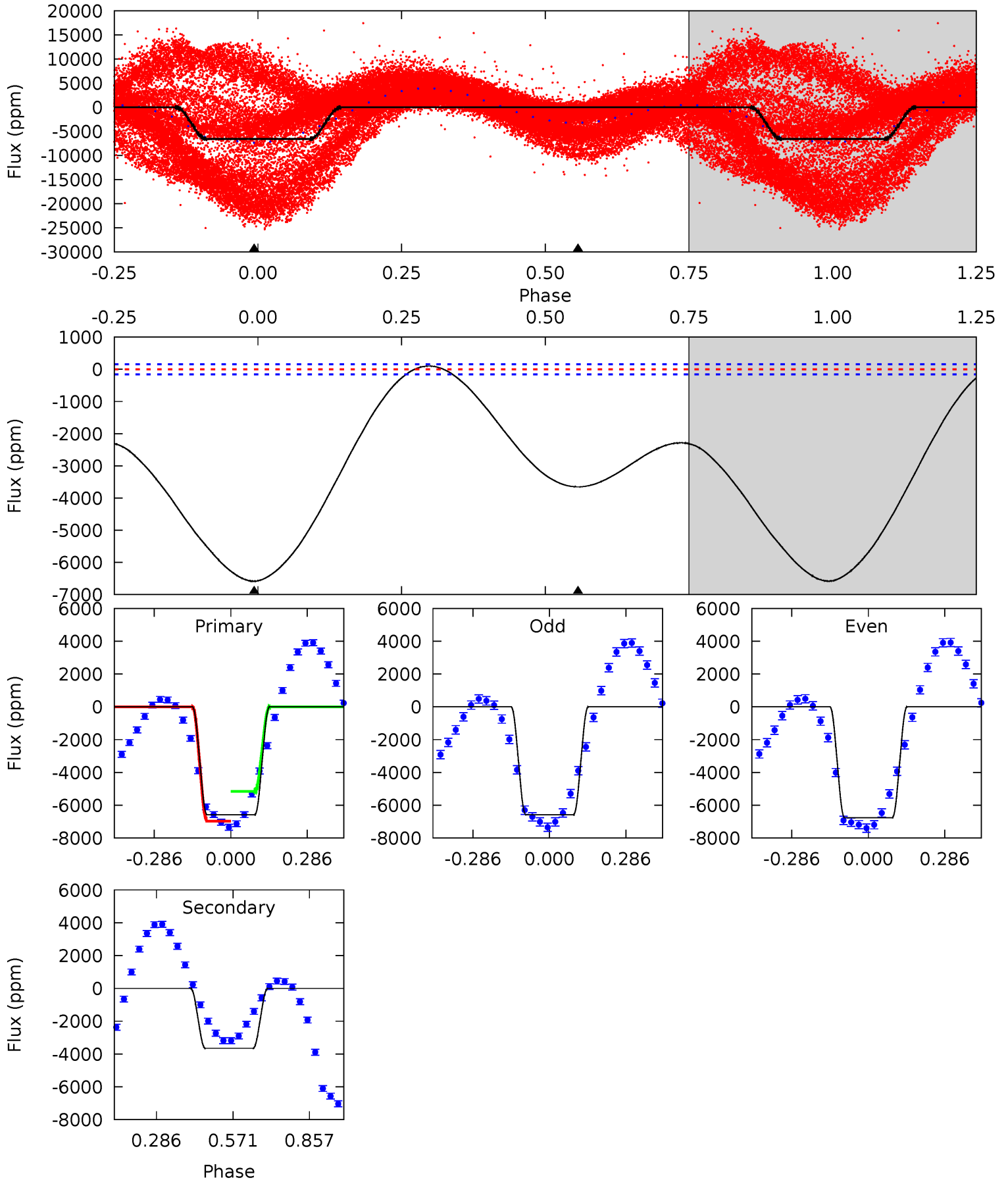
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.98	2.98	0	0	4.21	0.65	0.15	2.98	2.98	2.98	2.98	1.15	22.4	0.35	3.39



# Alt Model-Shift Uniqueness Test

006021786-01, P = 0.552912 Days, E = 131.203623 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
183.9	102.1	0	0	4.34	1.07	6.79	183.9	183.9	102.1	102.1	2.48	1.21	0.02	28.1



### Stellar Parameters For KIC 006021786

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4380^{+132}_{-132}$	$4.612^{+0.039}_{-0.024}$	$0.180^{+0.200}_{-0.300}$	$0.687^{+0.033}_{-0.050}$	$0.704^{+0.043}_{-0.054}$	$3.055^{+0.550}_{-0.296}$
	+3%/-3%	+1%/-1%	+111%/-167%	+5%/-7%	+6%/-8%	+18%/-10%
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 006021786-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-21 \pm 7$	$3.52^{+2.81}_{-2.46}$	$2061^{+70}_{-69}$	$-2314^{+5198}_{-128}$	$0.122^{+1.230}_{-0.086}$
Alt.	$-3653 \pm 36$	$6.82^{+3.28}_{-3.08}$	$2061^{+64}_{-69}$	$3749^{+932}_{-486}$	$5.965^{+13.839}_{-3.236}$

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

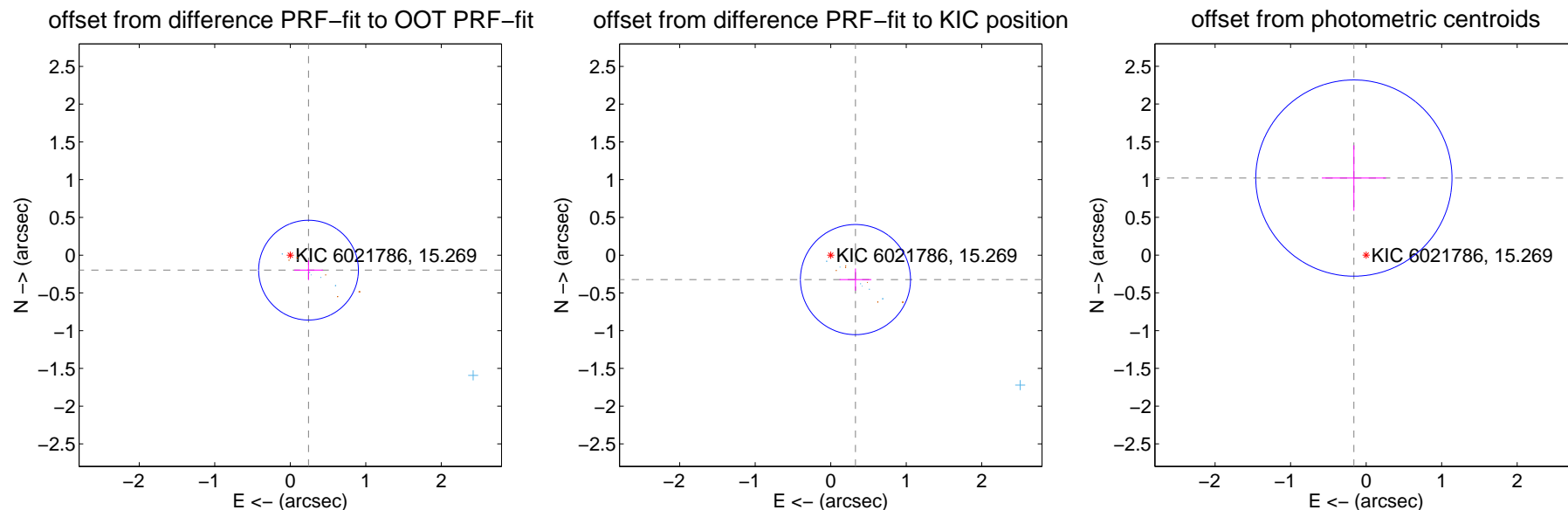
## DV Centroid Data

Supplemental centroid analysis for 006021786-01. Kepler magnitude: 15.27. Transit SNR 13.32

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

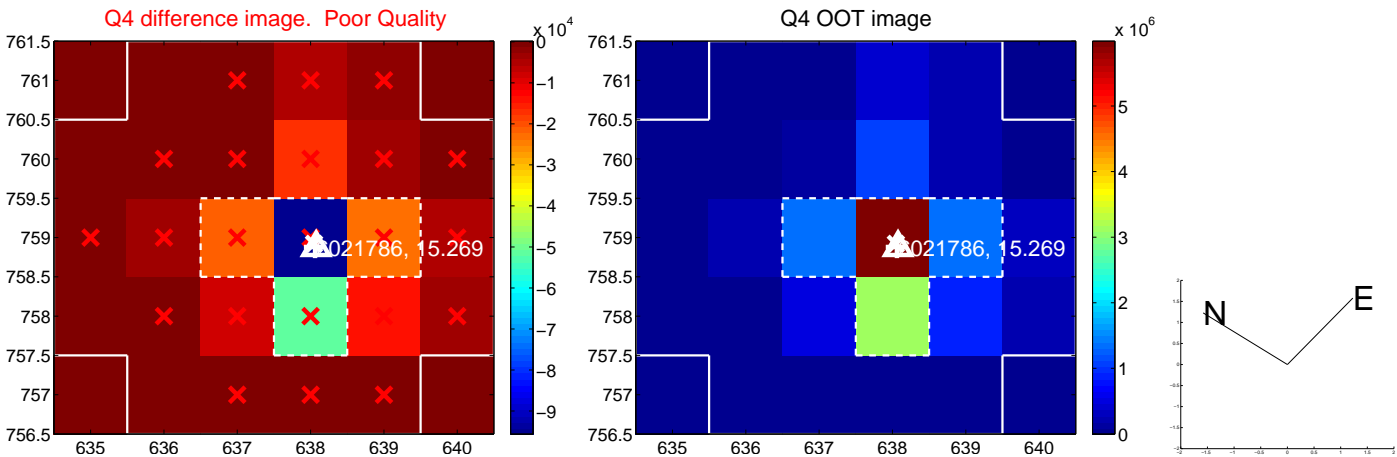
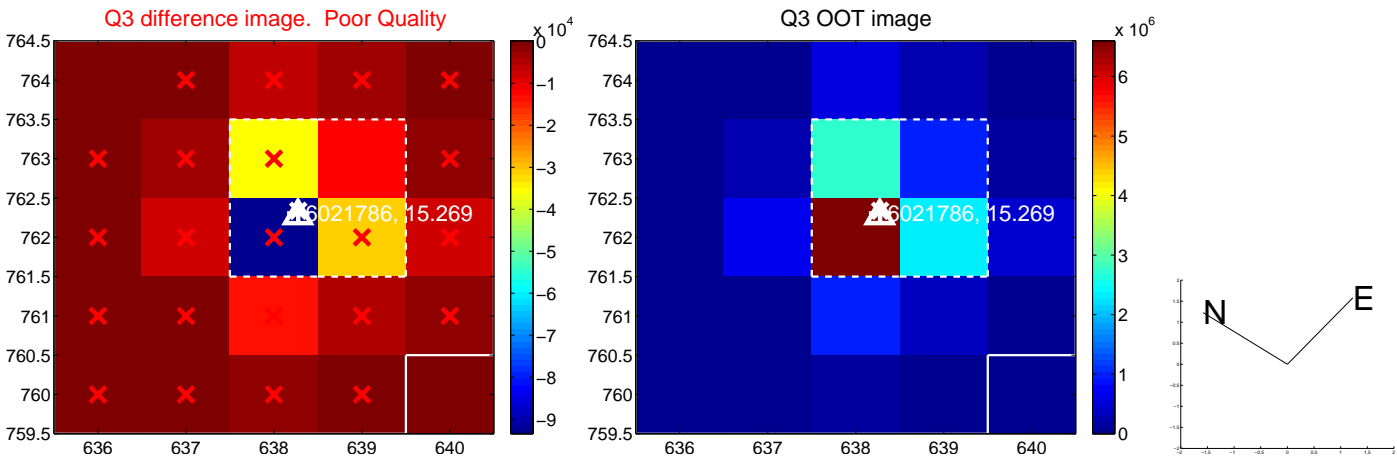
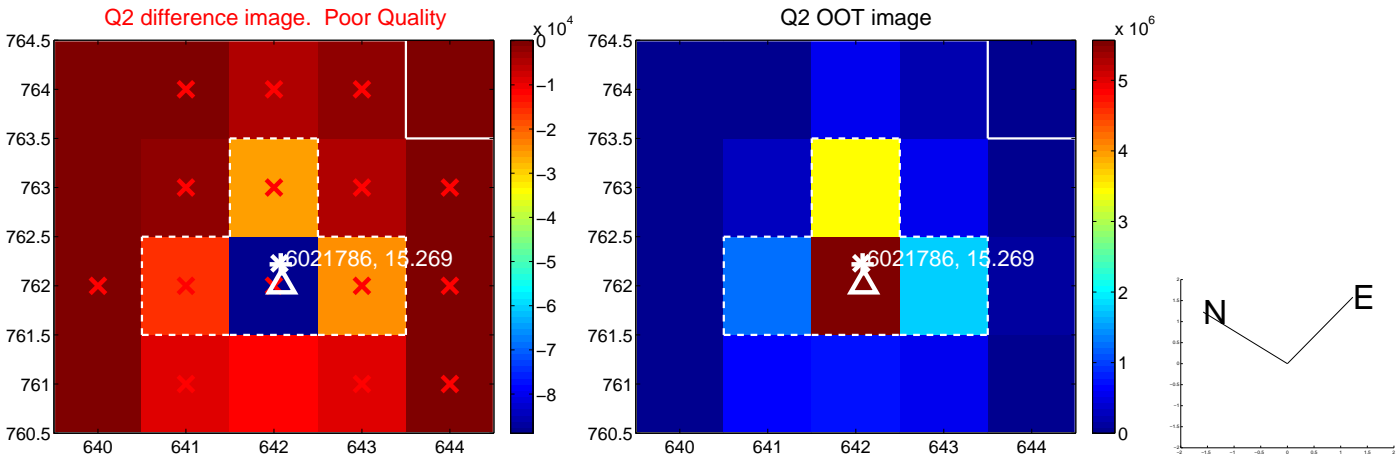
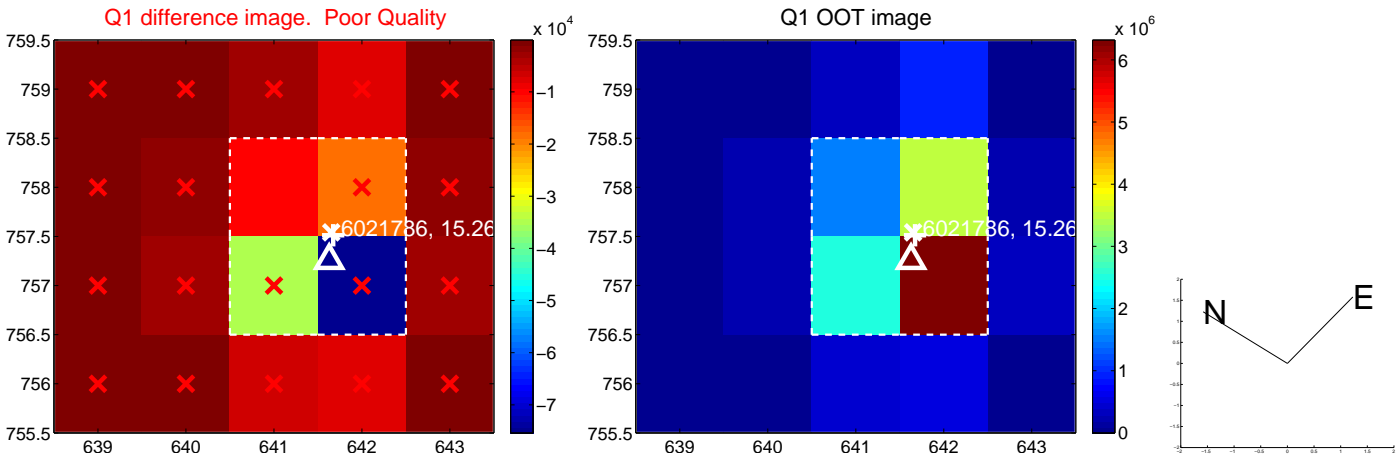
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.313 \pm 0.220$	1.42	$-0.242 \pm 0.190$	$-0.199 \pm 0.132$
PRF-fit source offset from KIC position	$0.460 \pm 0.243$	1.89	$-0.328 \pm 0.211$	$-0.324 \pm 0.147$
photometric centroid source offset	$1.03 \pm 0.43$	2.38	$0.16 \pm 0.43$	$1.02 \pm 0.43$



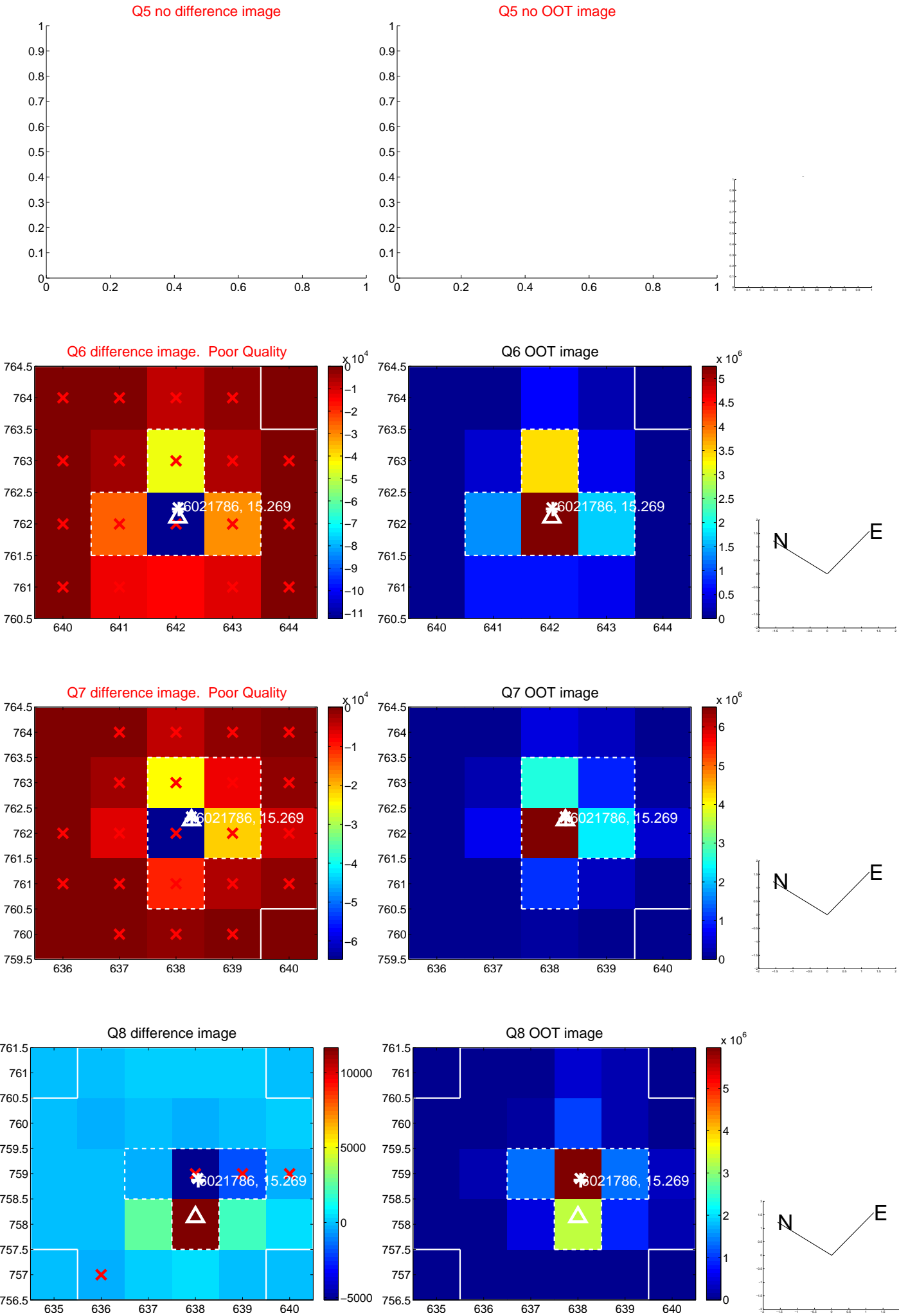
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



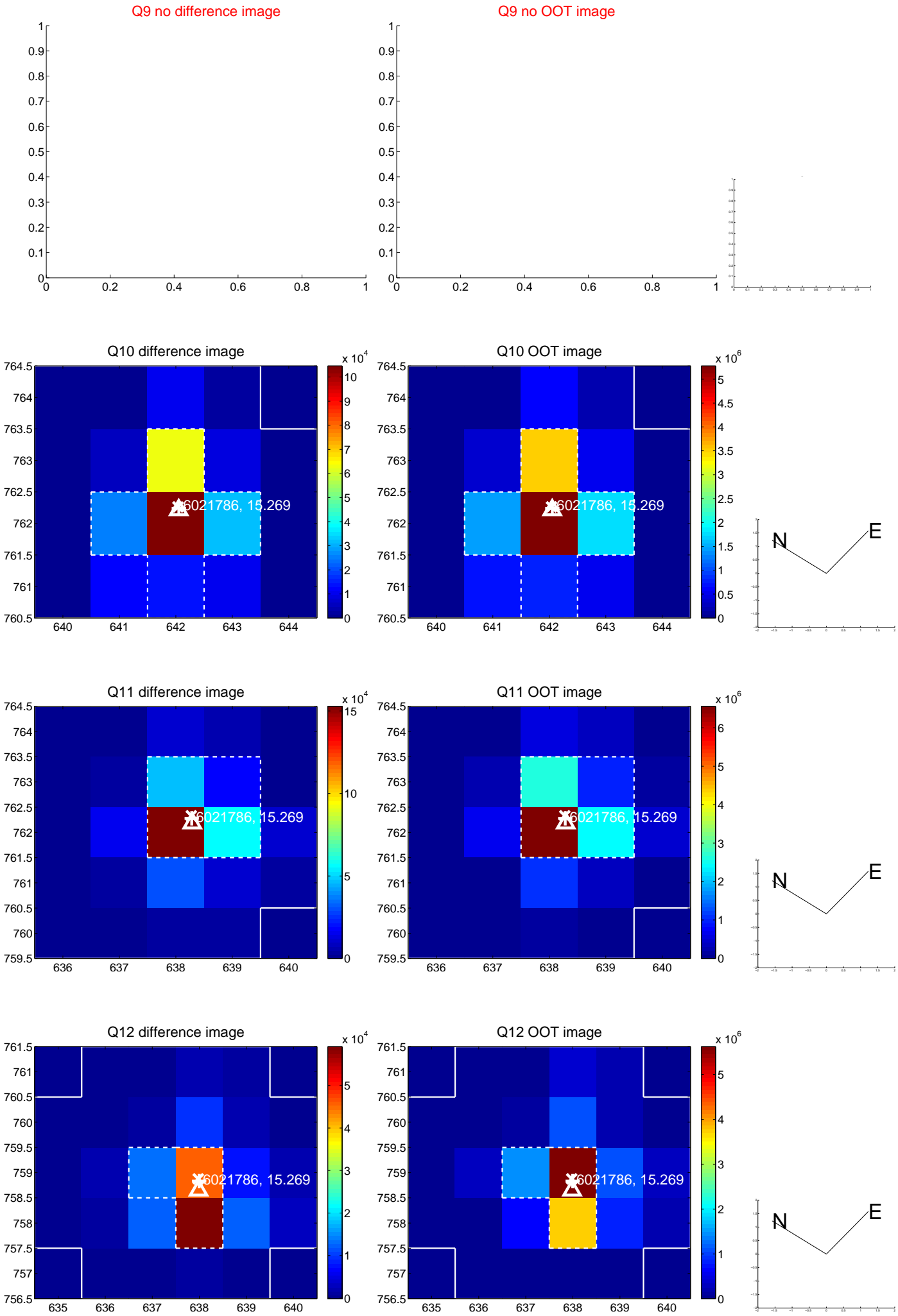
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



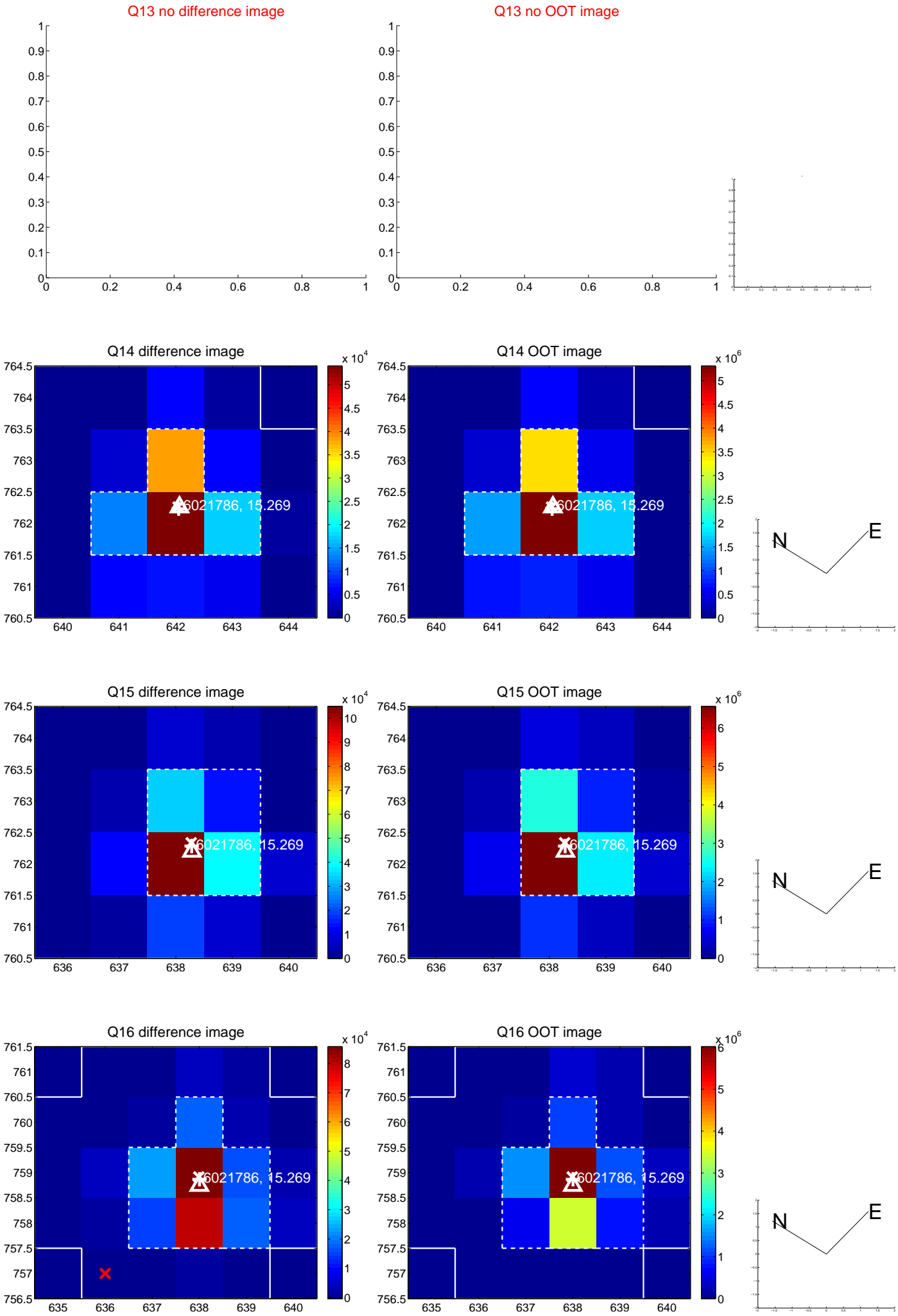
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



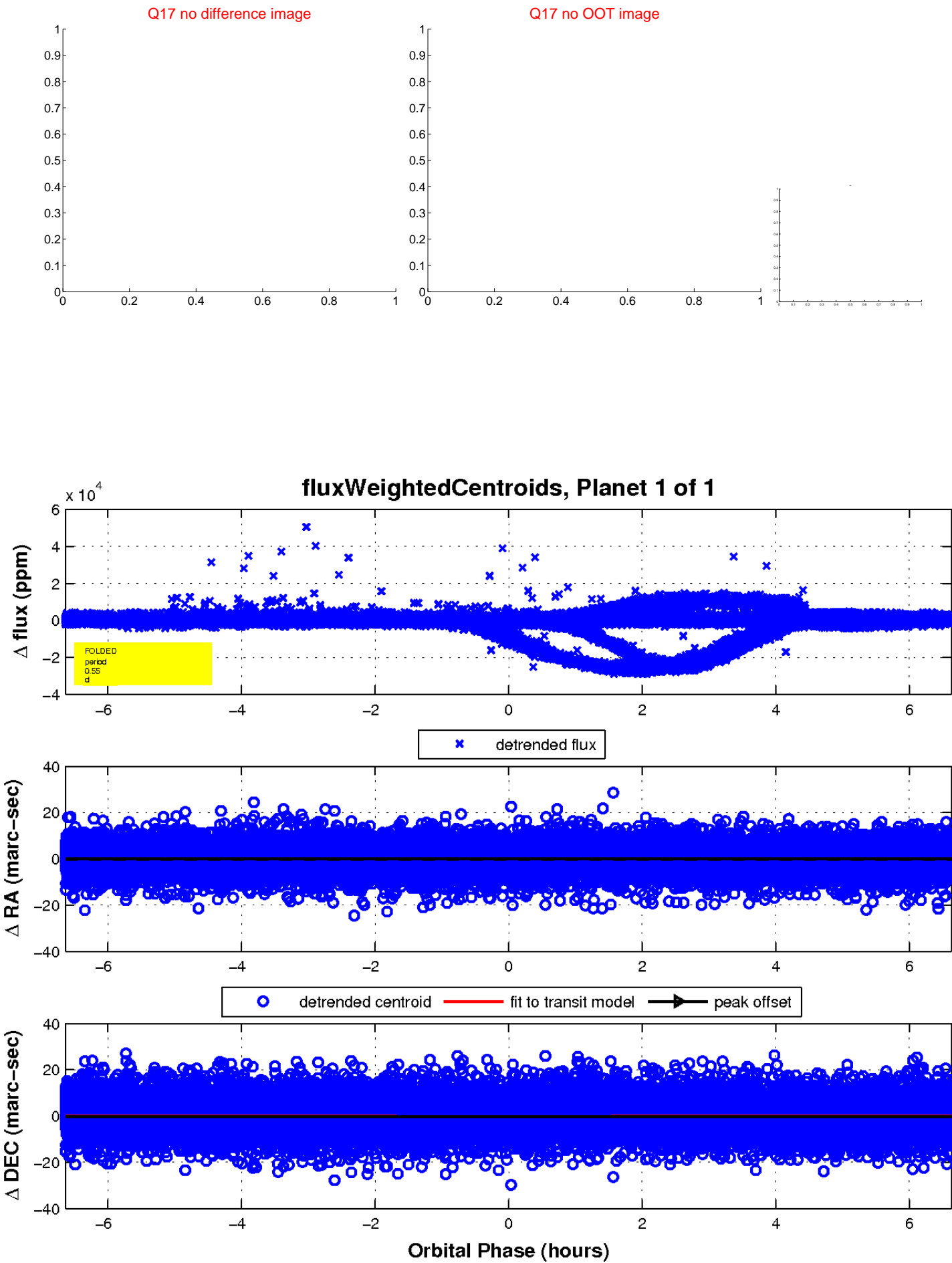
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



# UKIRT Image

Declination

