

# KIC 005427445

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005427445-01	OBS	No	0.643972	131.786419	376.6	7.660	28.6	11.5	0.51	4619	1.10	773.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005427445-01	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.

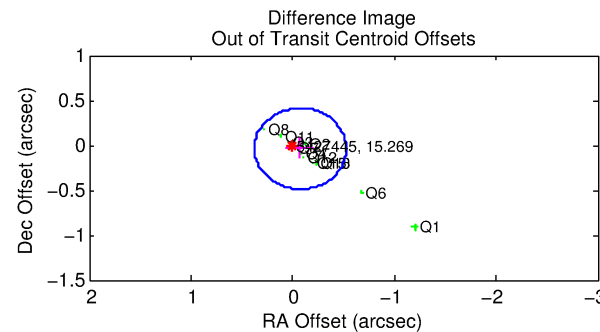
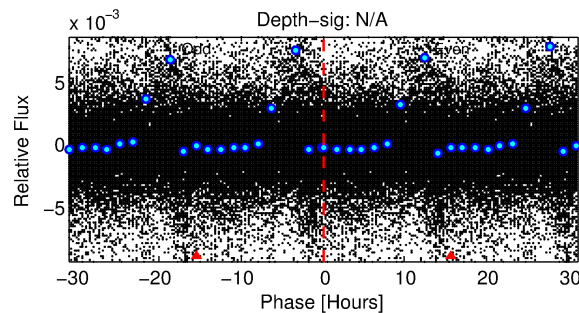
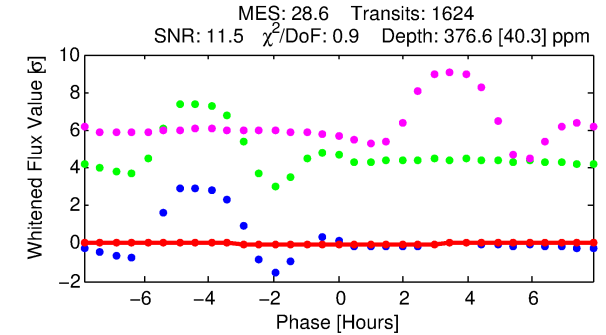
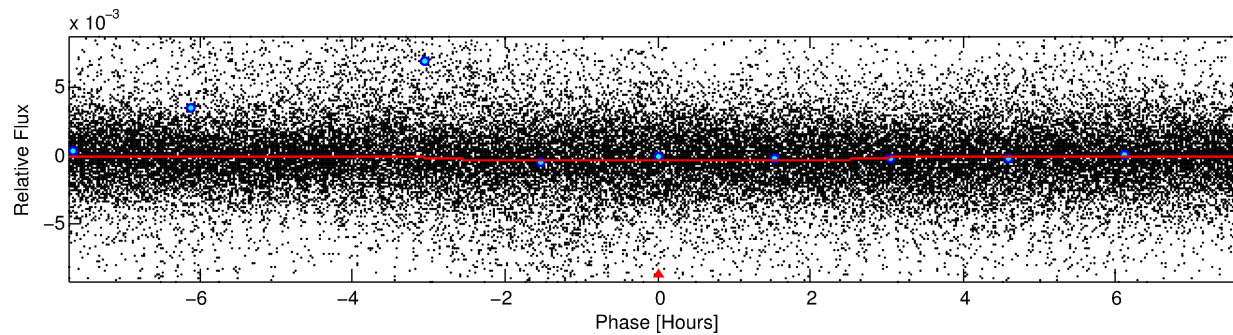
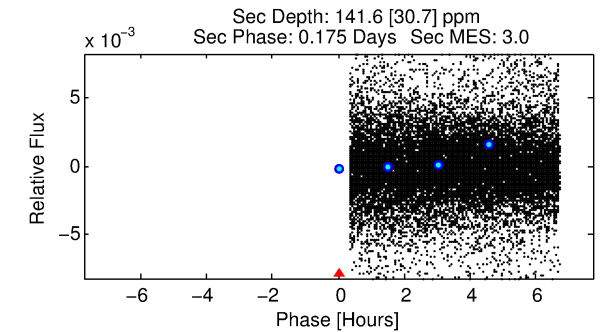
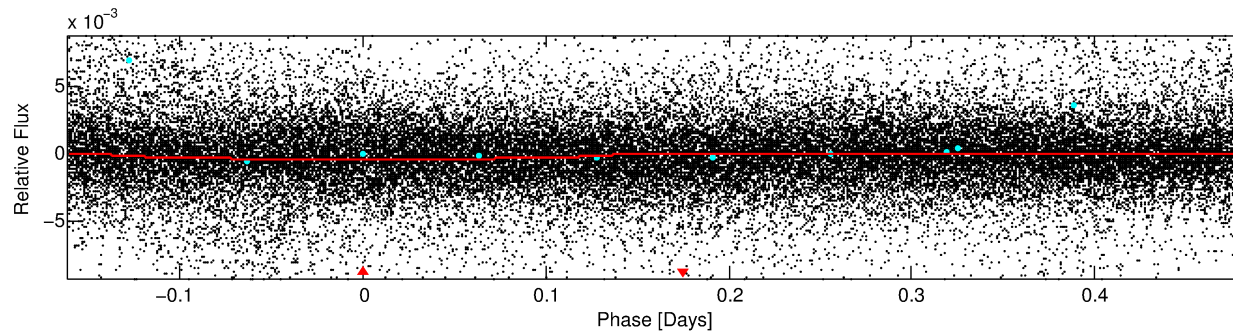
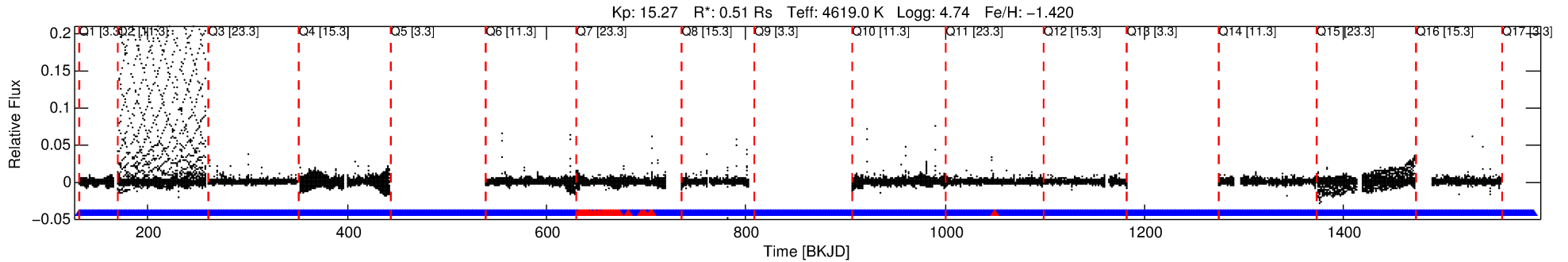
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005427445-01

No Significant Match Found

# DV One-Page Summary

KIC: 5427445 Candidate: 1 of 1 Period: 0.644 d



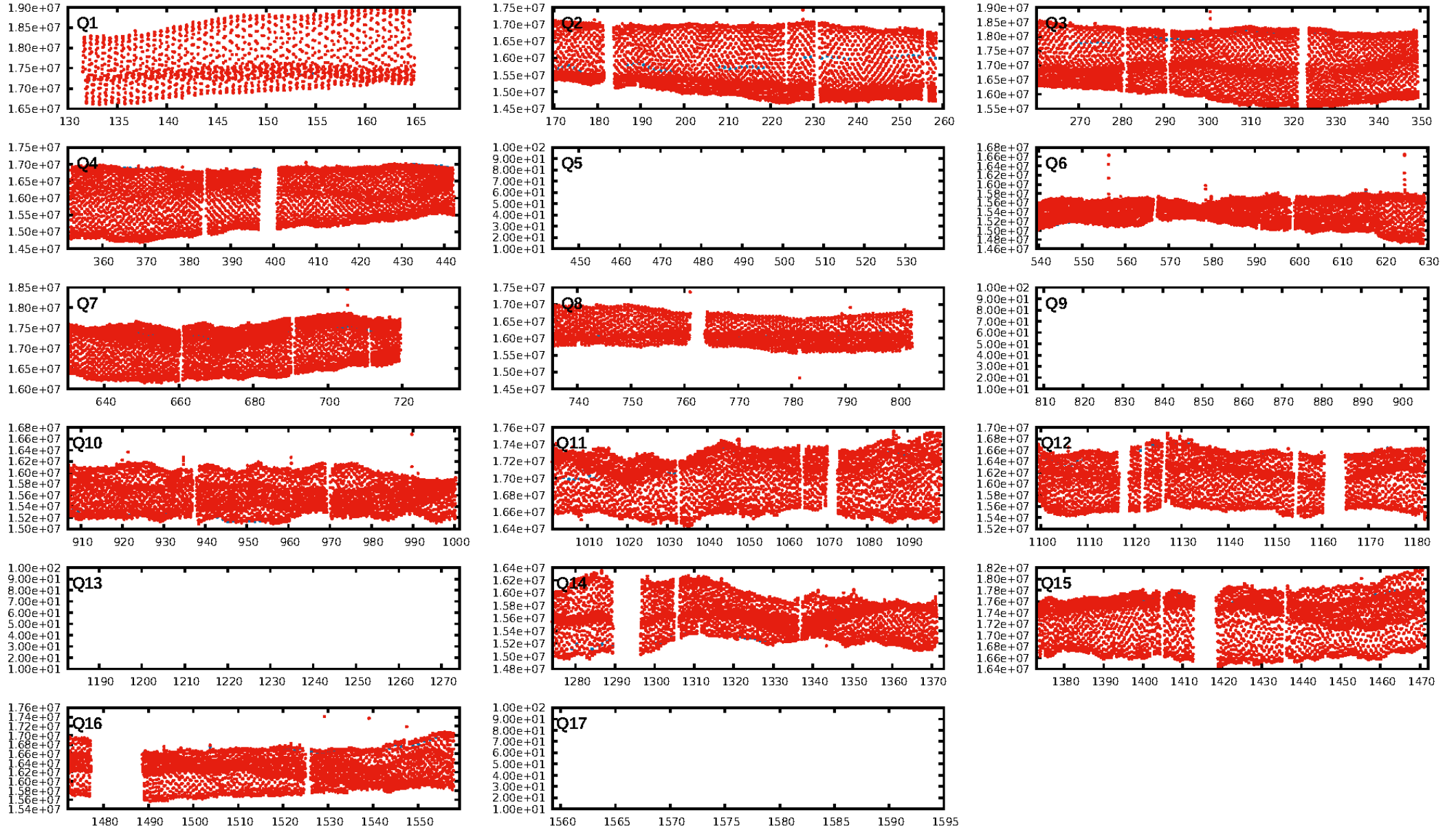
## DV Fit Results:

Period = 0.64397 [0.00001] d  
Epoch = 131.7864 [0.0026] BKJD  
Rp/R\* = 0.0197 [0.0013]  
a/R\* = 1.02 [0.01]  
b = 0.79 [0.07]  
Seff = 773.06 [114.45]  
Teff = 1345 [50] K  
Rp = 1.10 [0.10] Re  
a = 0.0117 [0.0007] AU  
Ag = 8.90 [2.38] [3.32σ]  
Teffp = 3590 [251] K [8.78σ]

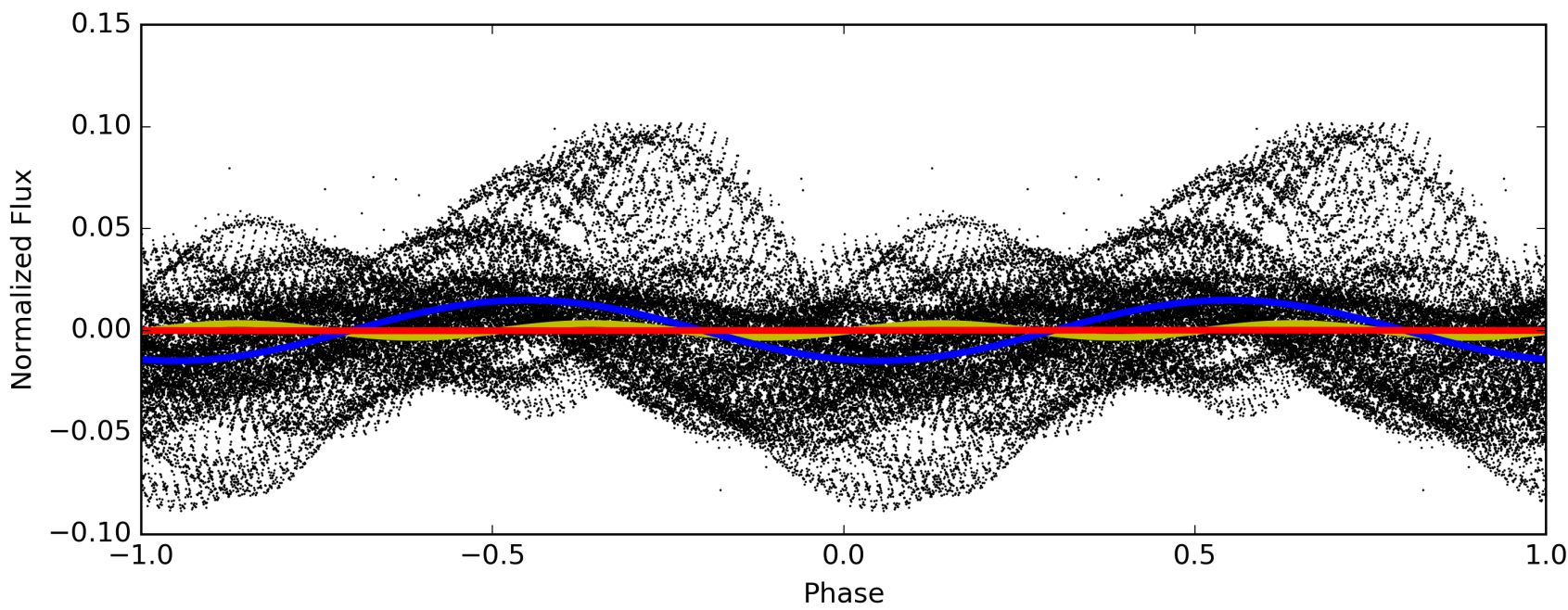
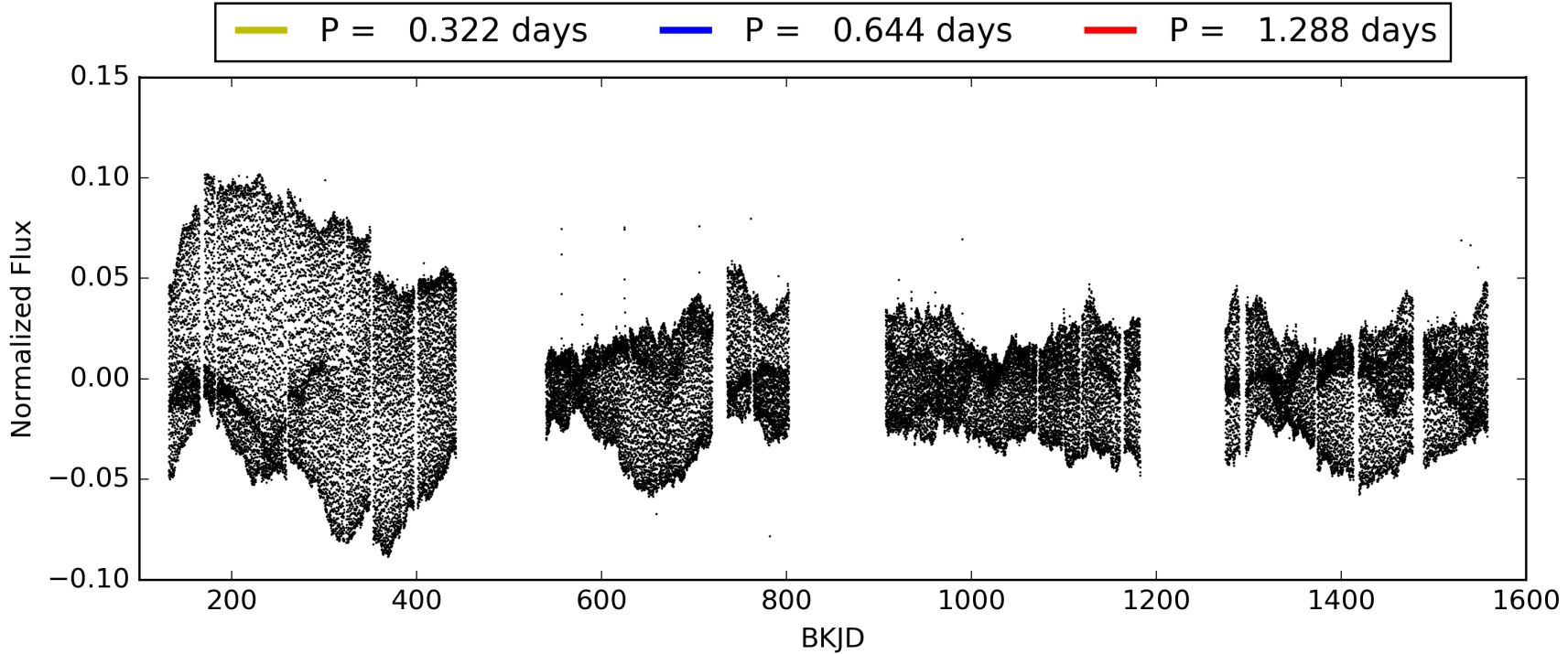
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.97 [1530/1572]  
GhostDiagnostic-chr: 5.041  
Centroid-sig: 0.0%  
Centroid-so: 0.446 arcsec [2.30σ]  
OotOffset-rm: 0.083 arcsec [0.55σ]  
KicOffset-rm: 0.175 arcsec [2.50σ]  
OotOffset-st: 3/4/4/1 [12]  
KicOffset-st: 3/4/4/1 [12]  
DiffImageQuality-fgm: 0.75 [9/12]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 005427445-01, PDC Light Curves

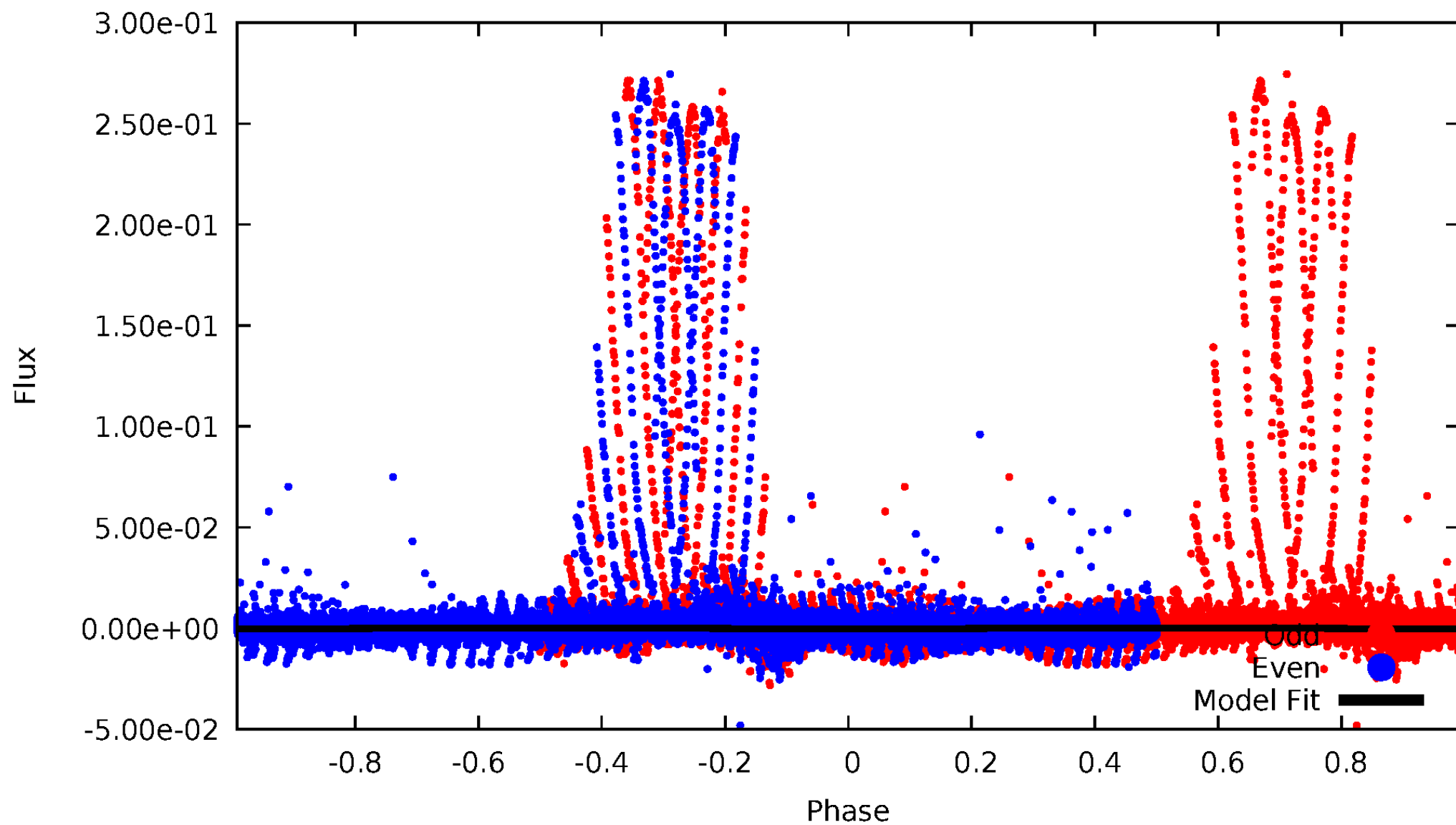


TCE 005427445-01



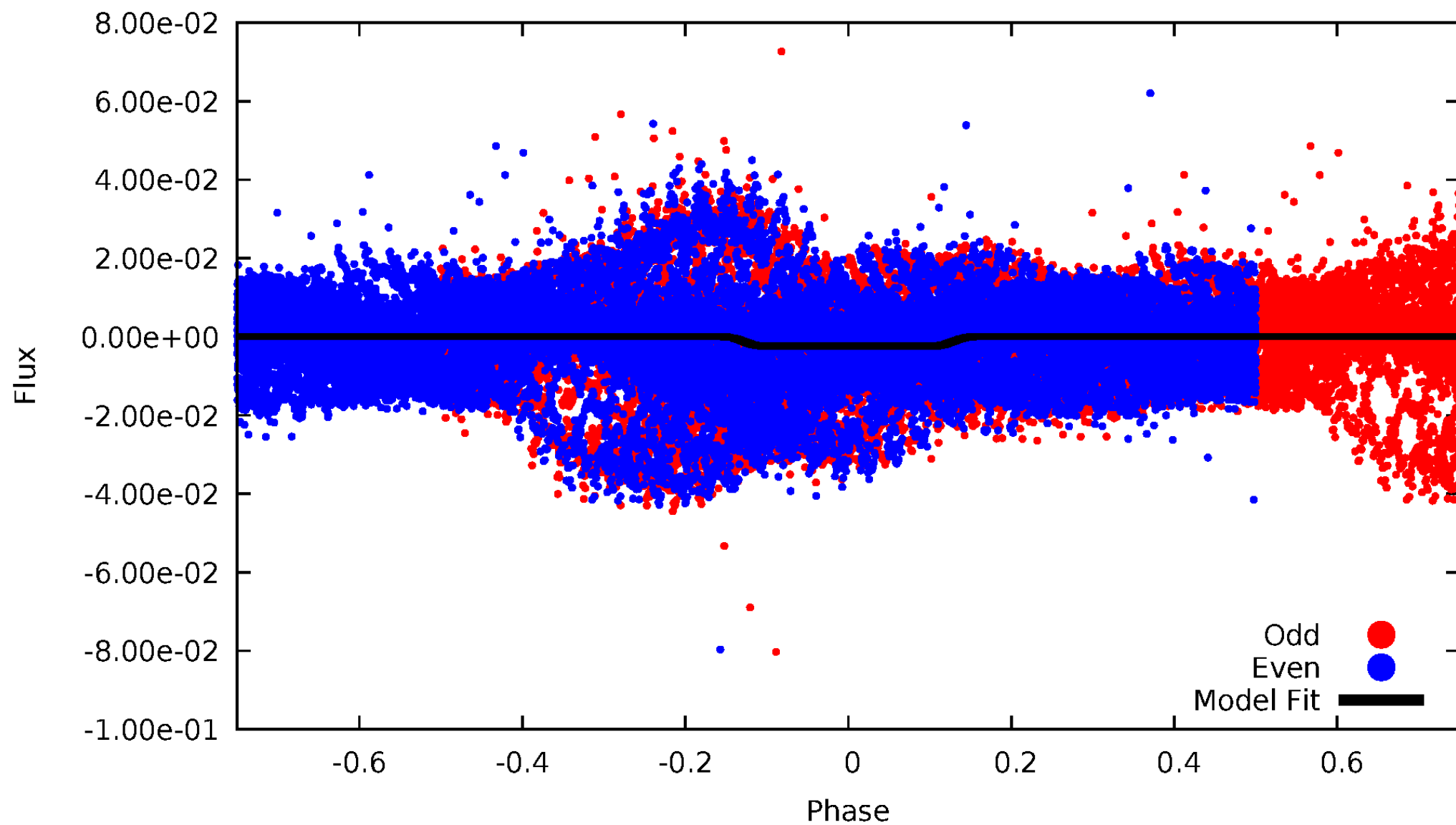
# DV Odd/Even

TCE 005427445-01



# ALT Odd/Even

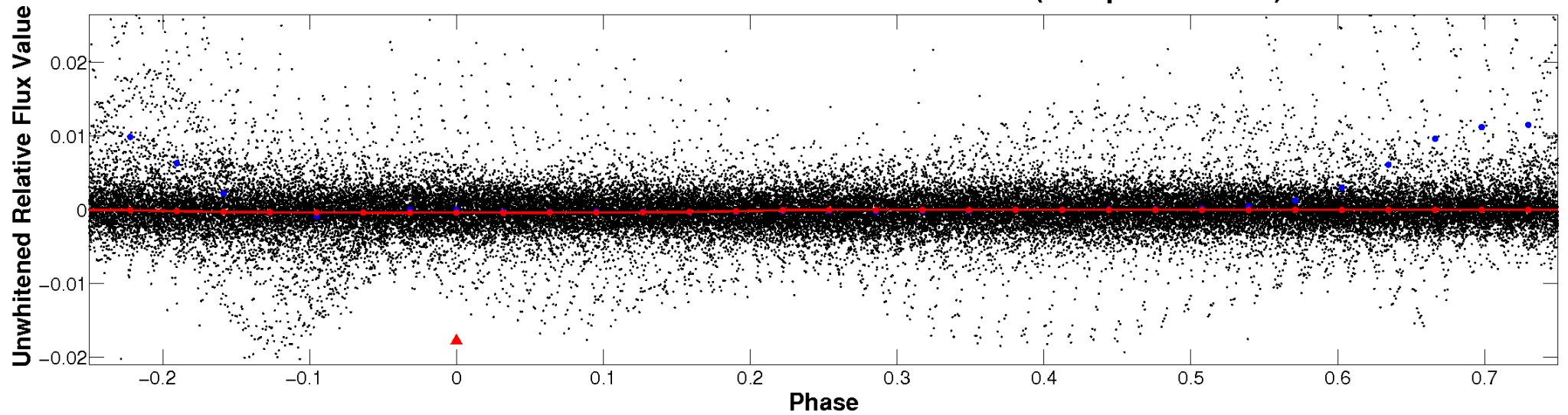
TCE 005427445-01



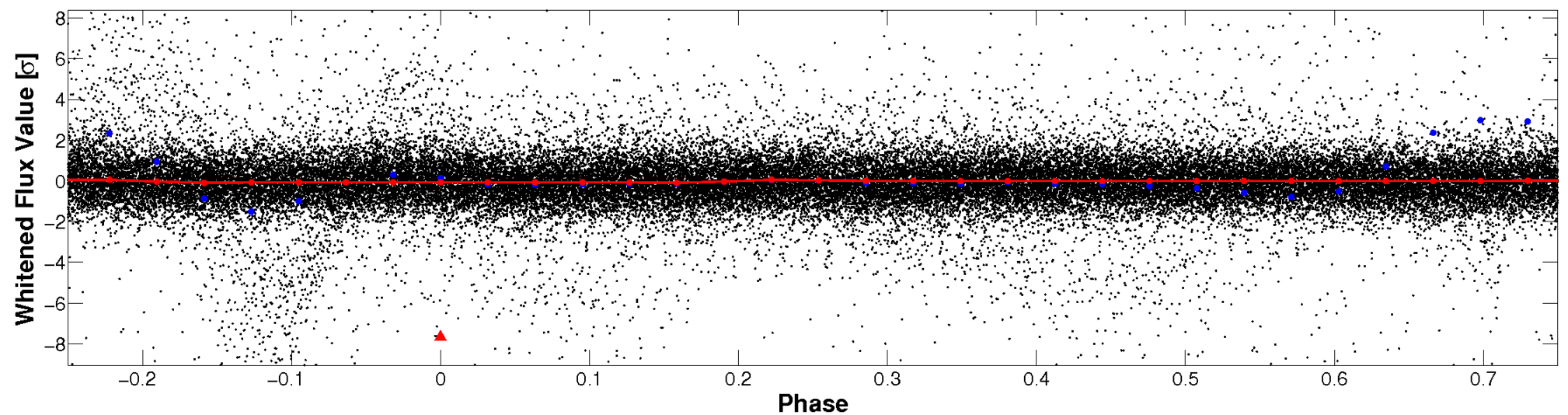


# Non-Whitened Vs. Whitened Light Curve

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

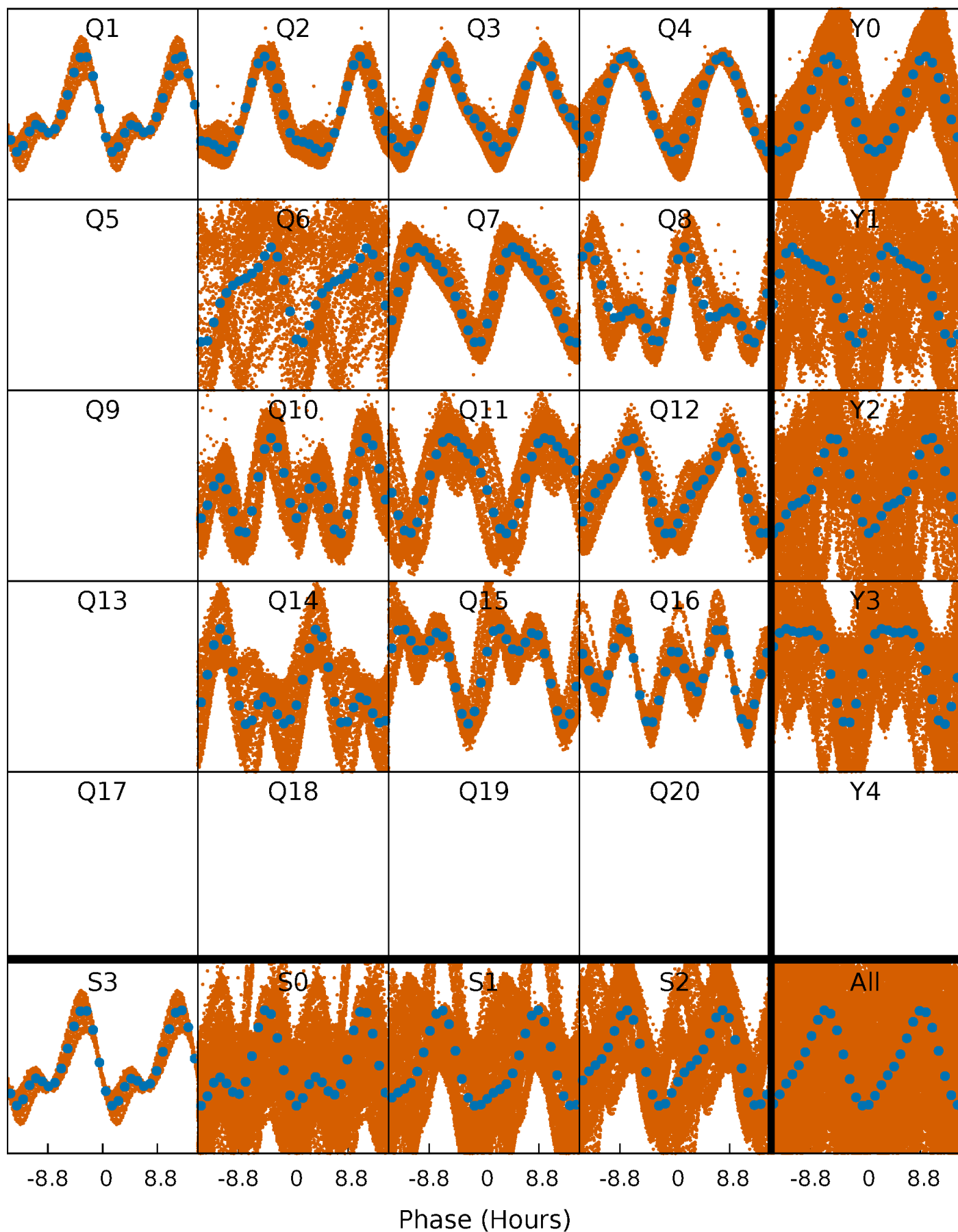


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

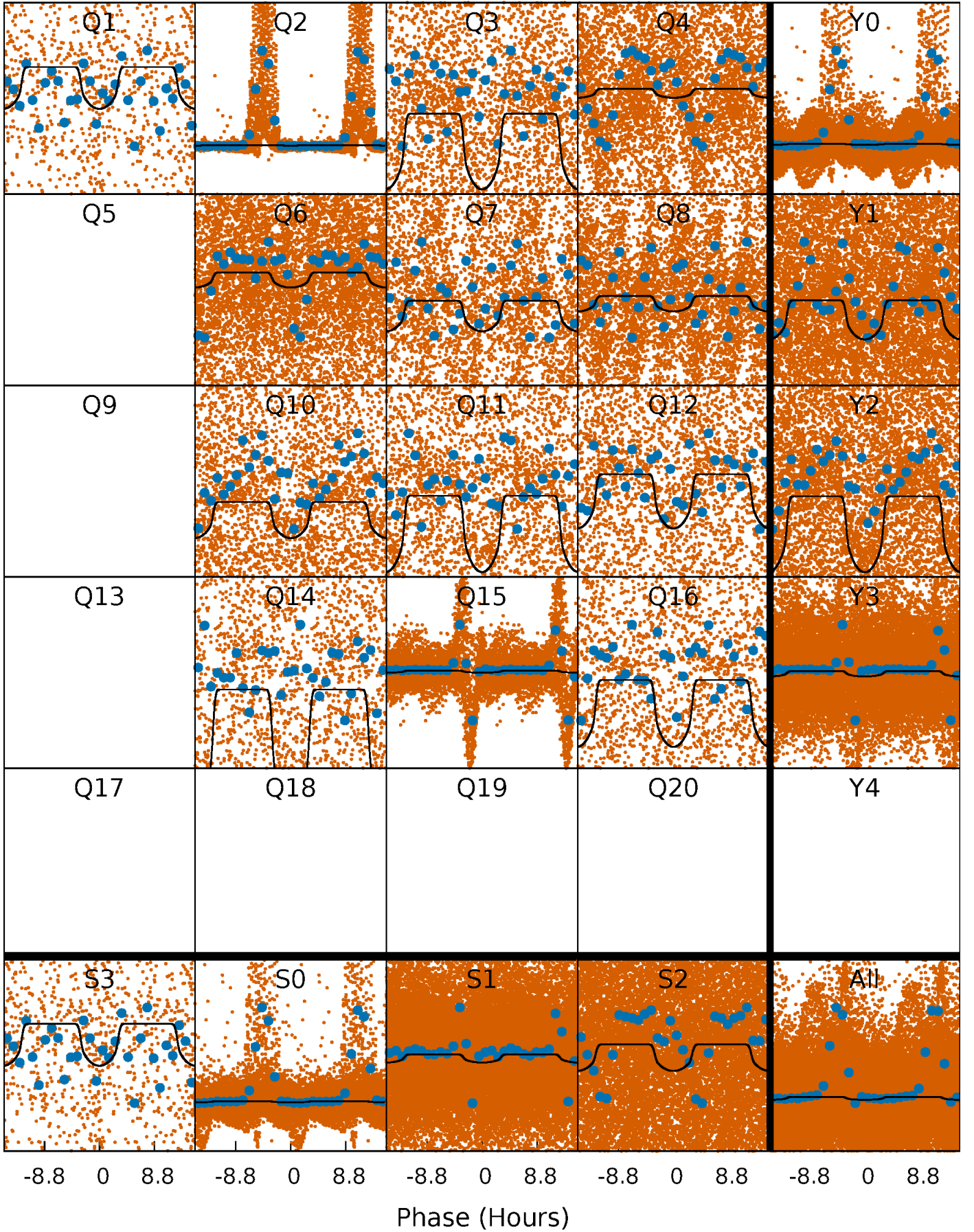
TCE 005427445-01 P= 0.643972 Days  $T_0=131.786419$  (BKJD)





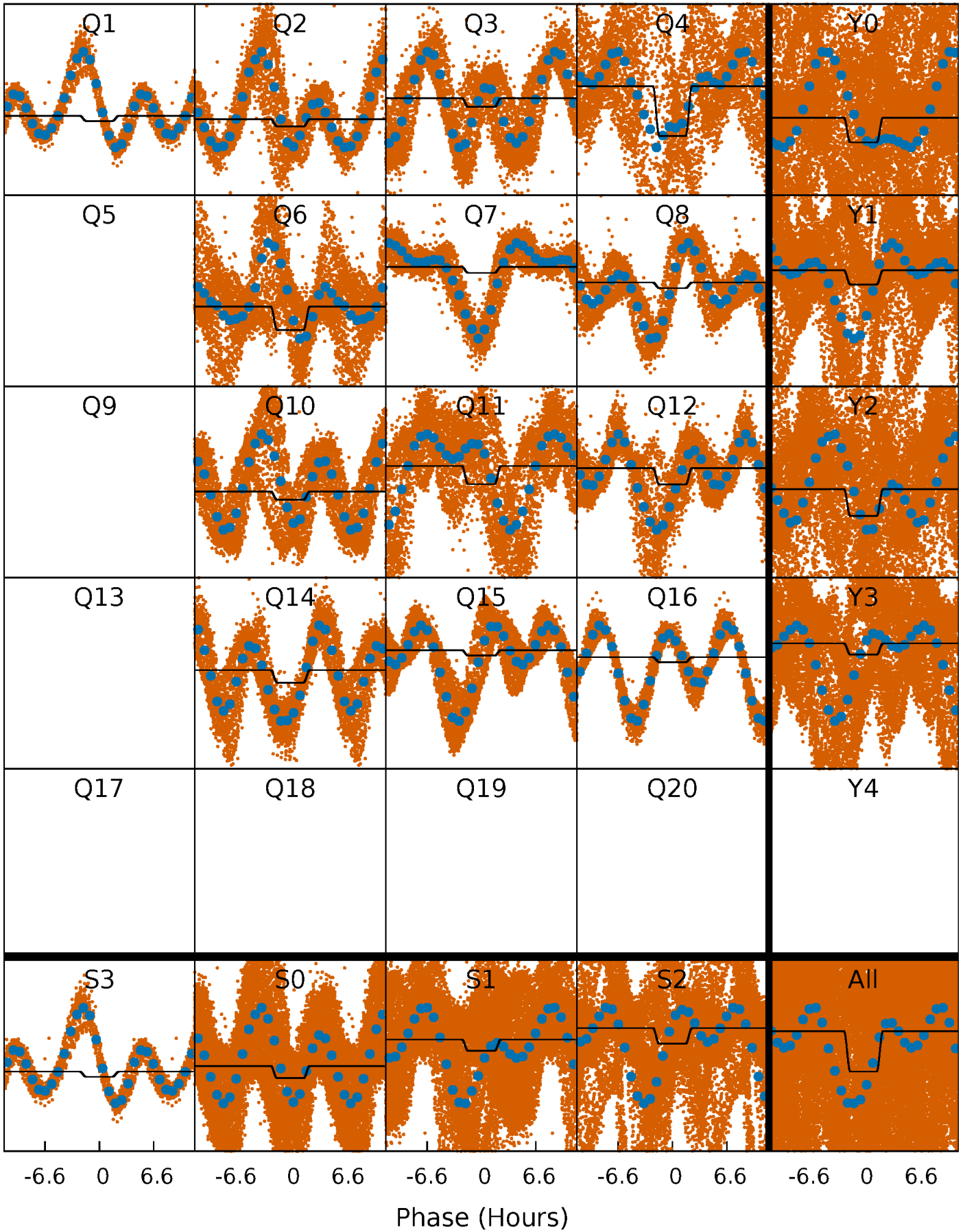
# DV Quarter-Phased Transit Curves

TCE 005427445-01 P= 0.643972 Days  $T_0=131.786419$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

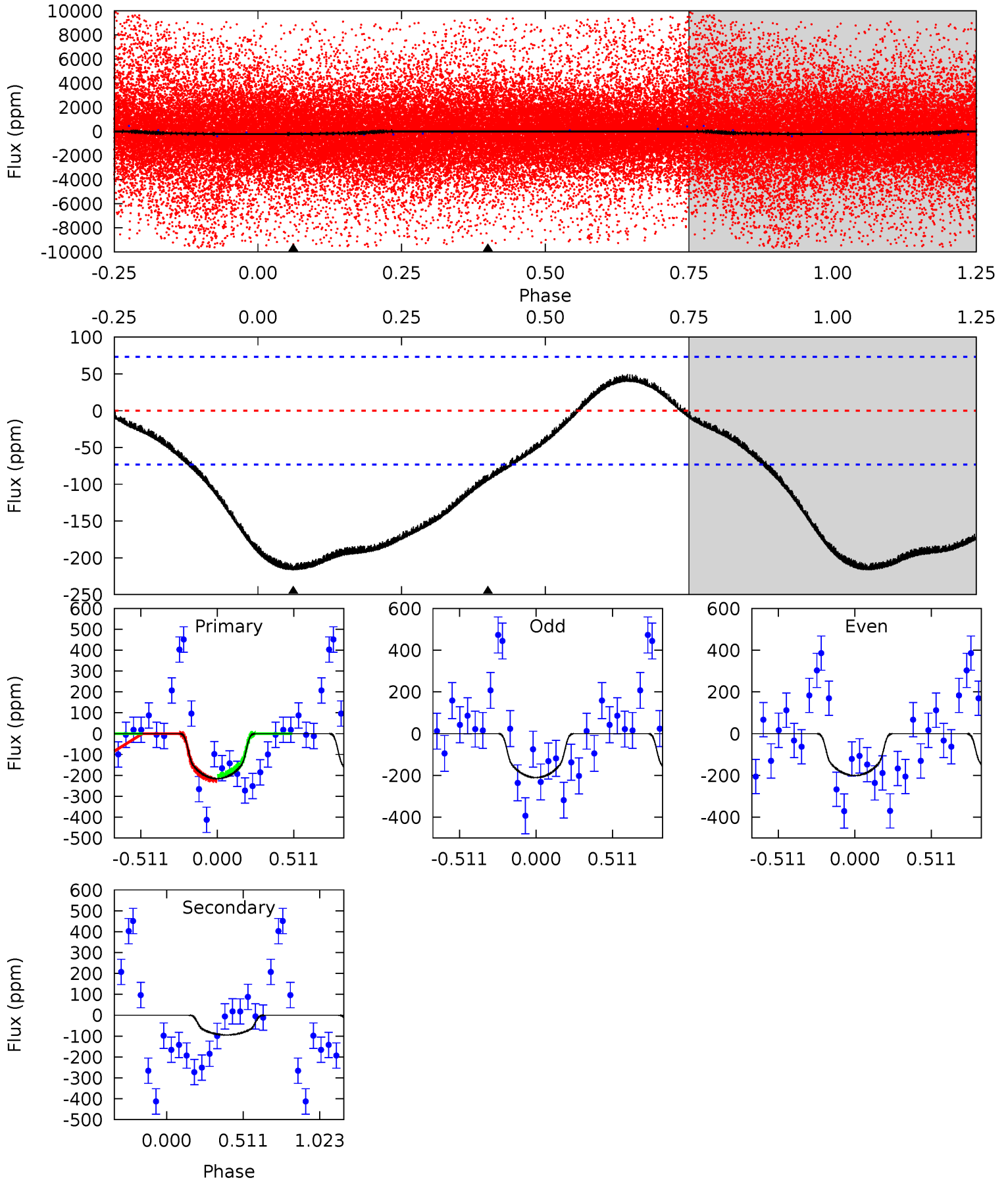
TCE 005427445-01 P= 0.643995 Days  $T_0=131.751145$  (BKJD)



# DV Model-Shift Uniqueness Test

005427445-01, P = 0.643972 Days, E = 131.142447 Days

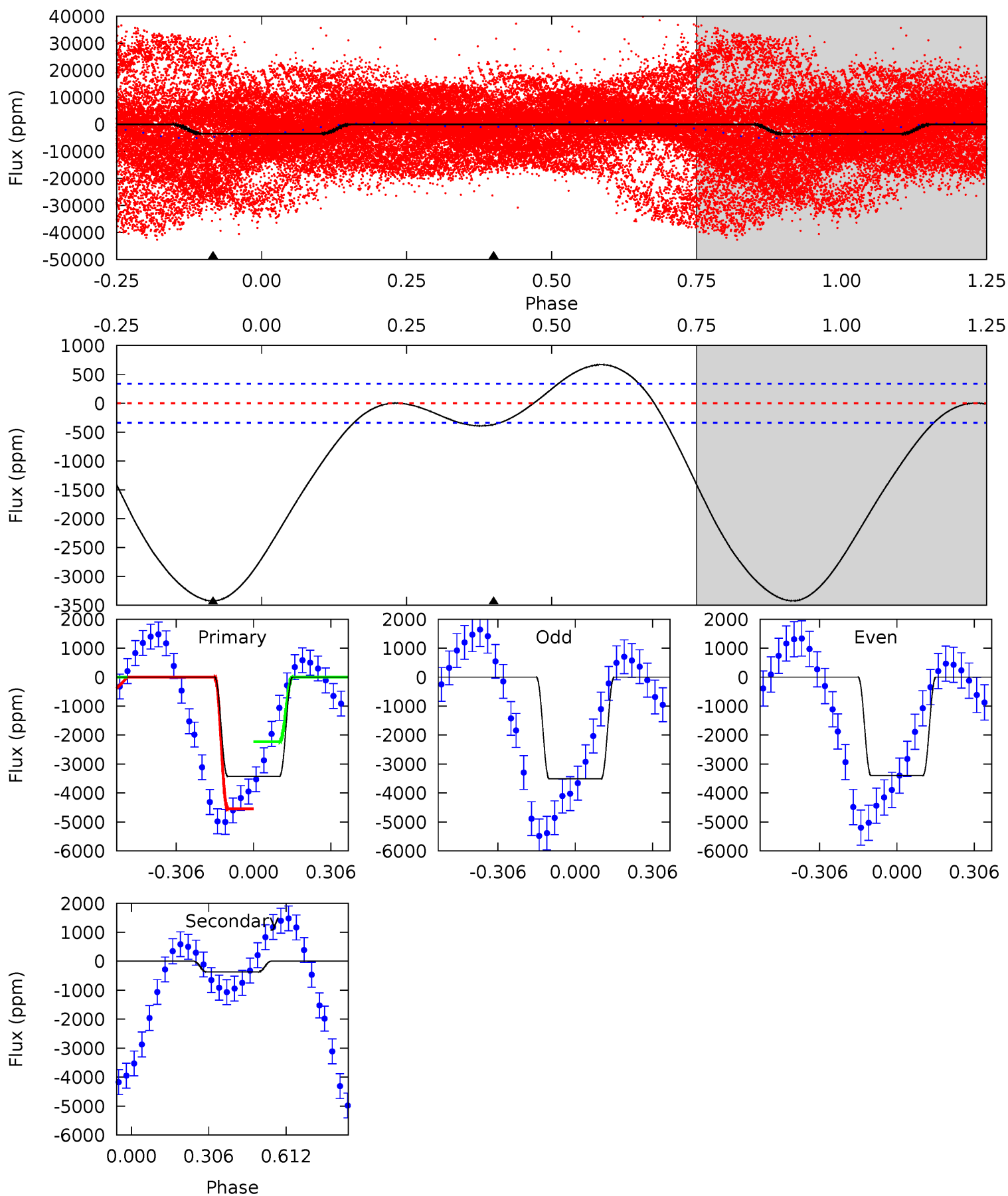
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	5.43	0	0	4.21	0.66	1.06	12.4	12.4	5.43	5.43	0.28	-17.9	0.19	0.66



# Alt Model-Shift Uniqueness Test

005427445-01, P = 0.643995 Days, E = 131.107150 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
44.0	4.74	0	0	4.32	1.02	4.35	44.0	44.0	4.74	4.74	0.74	1.51	0.16	11.6



### Stellar Parameters For KIC 005427445

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4619^{+138}_{-138}$	$4.737^{+0.048}_{-0.024}$	$-1.420^{+0.300}_{-0.300}$	$0.511^{+0.027}_{-0.036}$	$0.521^{+0.035}_{-0.024}$	$5.491^{+1.078}_{-0.545}$
	+3%/-3%	+1%/-1%	+21%/-21%	+5%/-7%	+7%/-5%	+20%/-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 005427445-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-95 \pm 17$	$1.10^{+0.08}_{-0.09}$	$1871^{+63}_{-66}$	$3555^{+165}_{-159}$	$6.033^{+1.579}_{-1.251}$
Alt.	$-369 \pm 78$	$2.73^{+0.12}_{-0.13}$	$1870^{+67}_{-61}$	$3289^{+135}_{-149}$	$3.768^{+0.902}_{-0.800}$

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



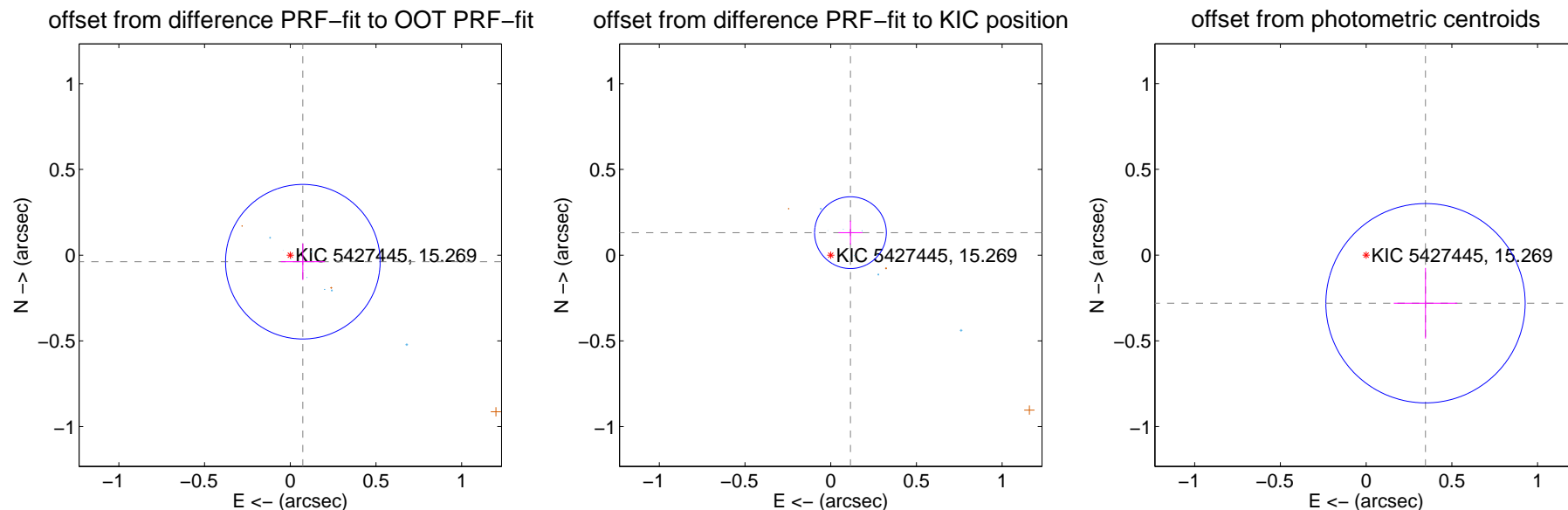
## DV Centroid Data

Supplemental centroid analysis for 005427445-01. Kepler magnitude: 15.27. Transit SNR 11.52

There are 9 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

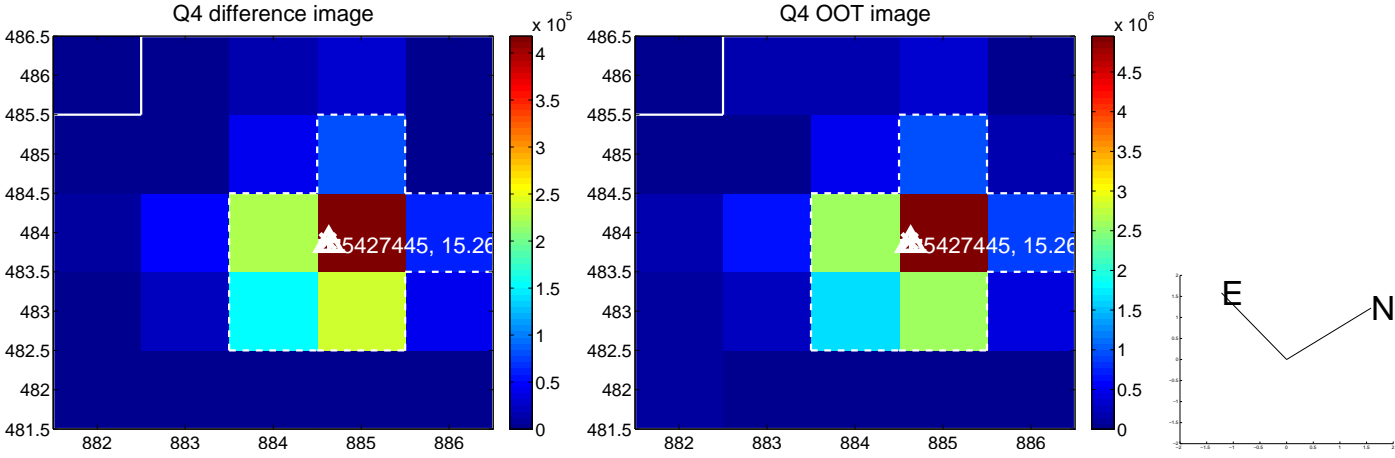
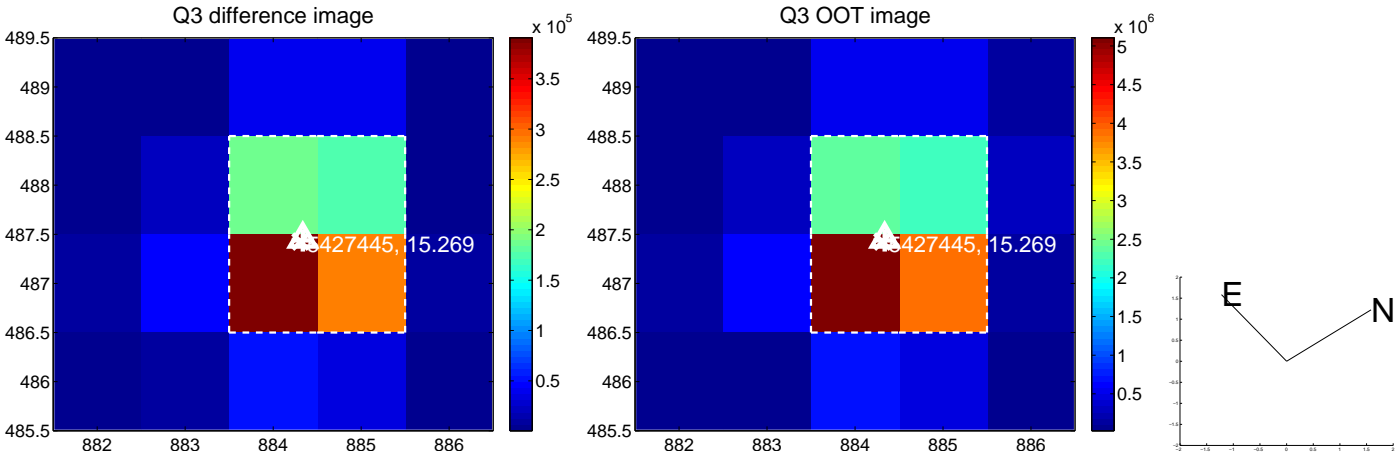
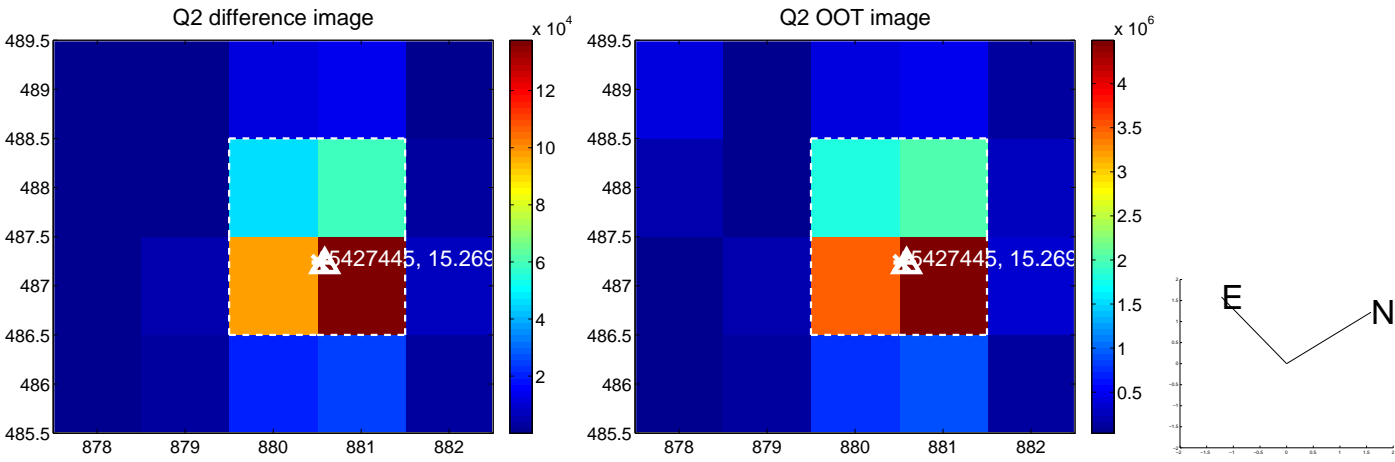
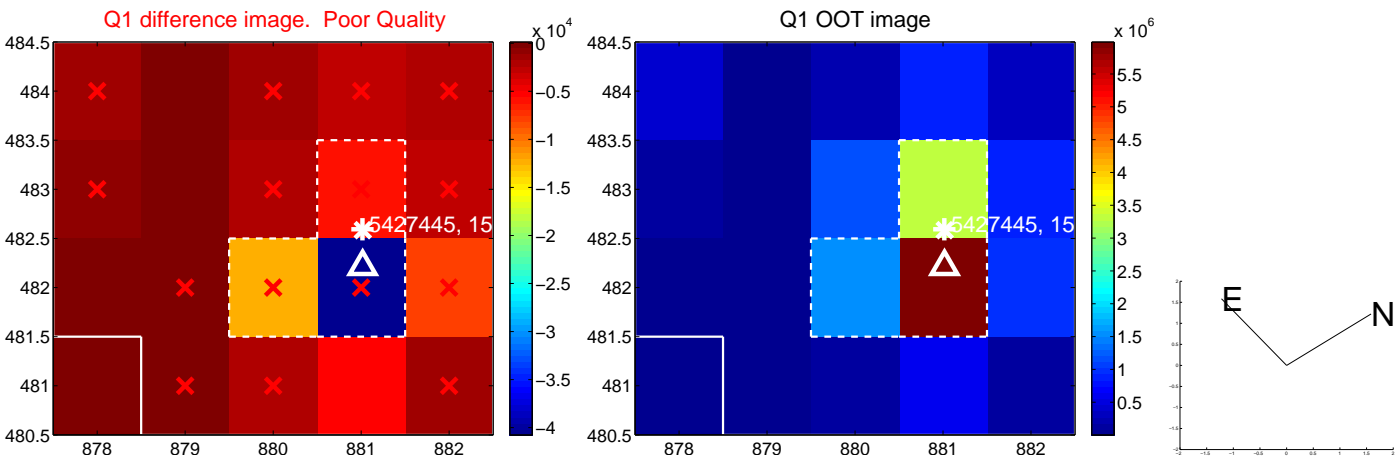
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.083 \pm 0.150$	0.55	$-0.073 \pm 0.128$	$-0.038 \pm 0.106$
PRF-fit source offset from KIC position	$0.175 \pm 0.070$	2.50	$-0.115 \pm 0.070$	$0.131 \pm 0.070$
photometric centroid source offset	$0.45 \pm 0.19$	2.30	$-0.35 \pm 0.19$	$-0.28 \pm 0.21$



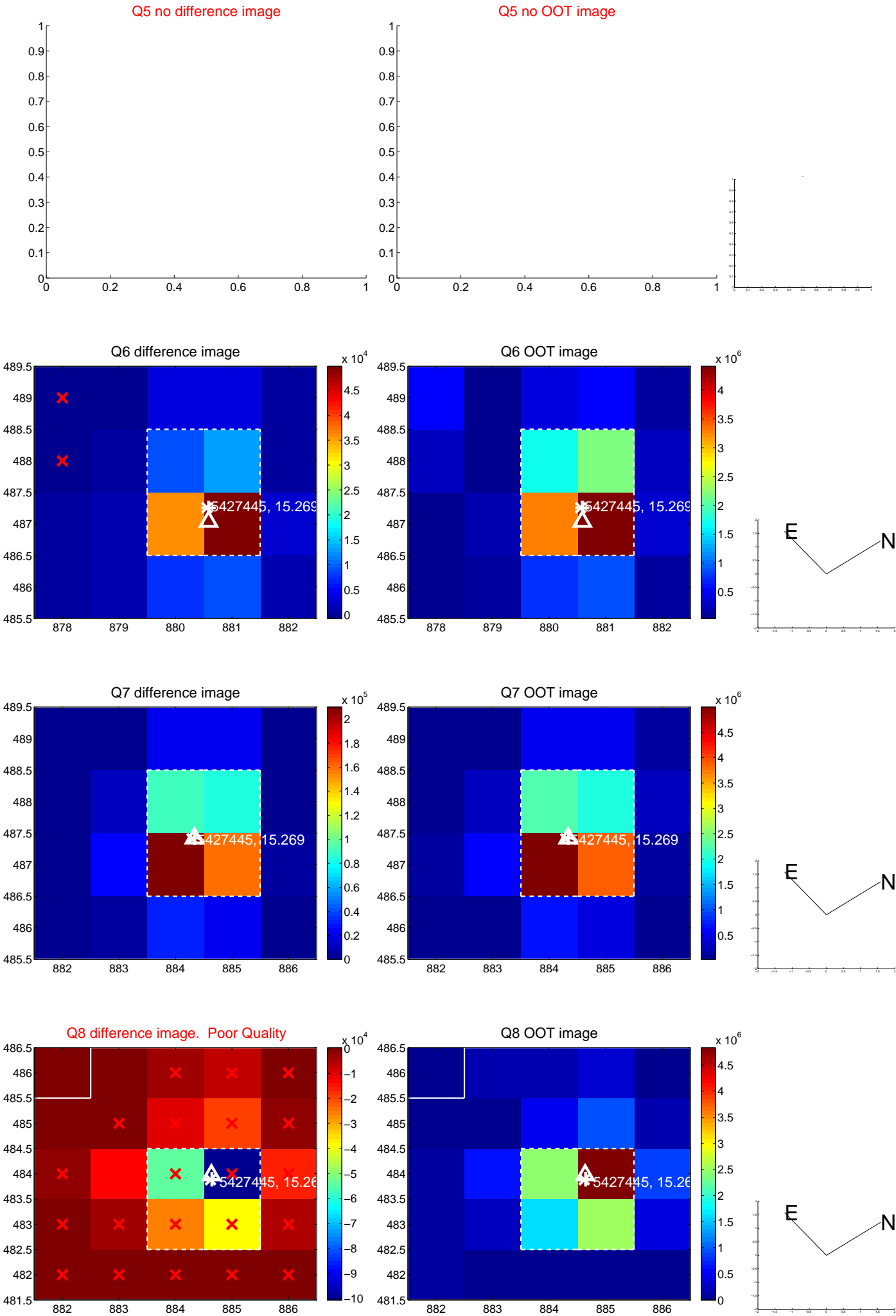
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



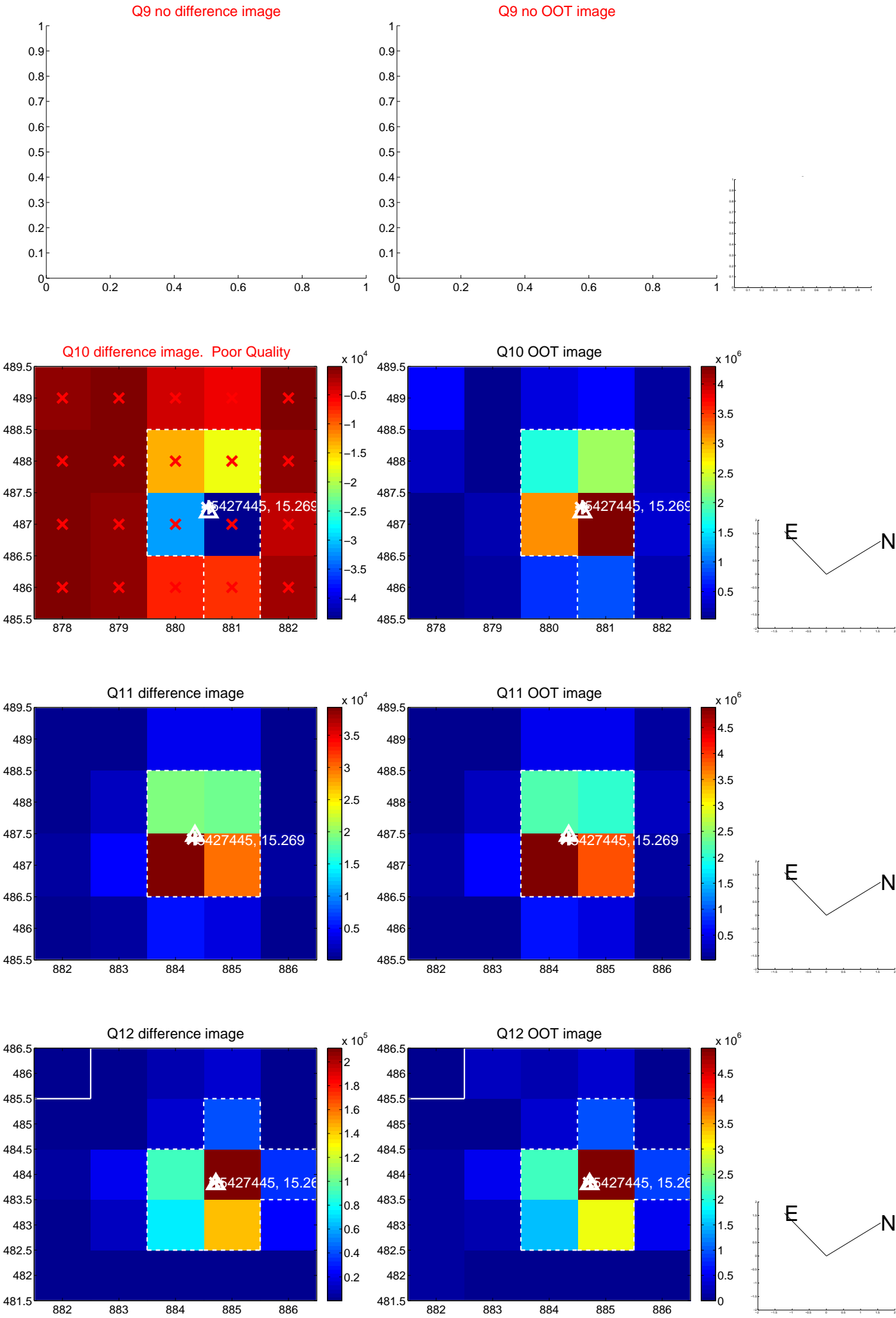
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



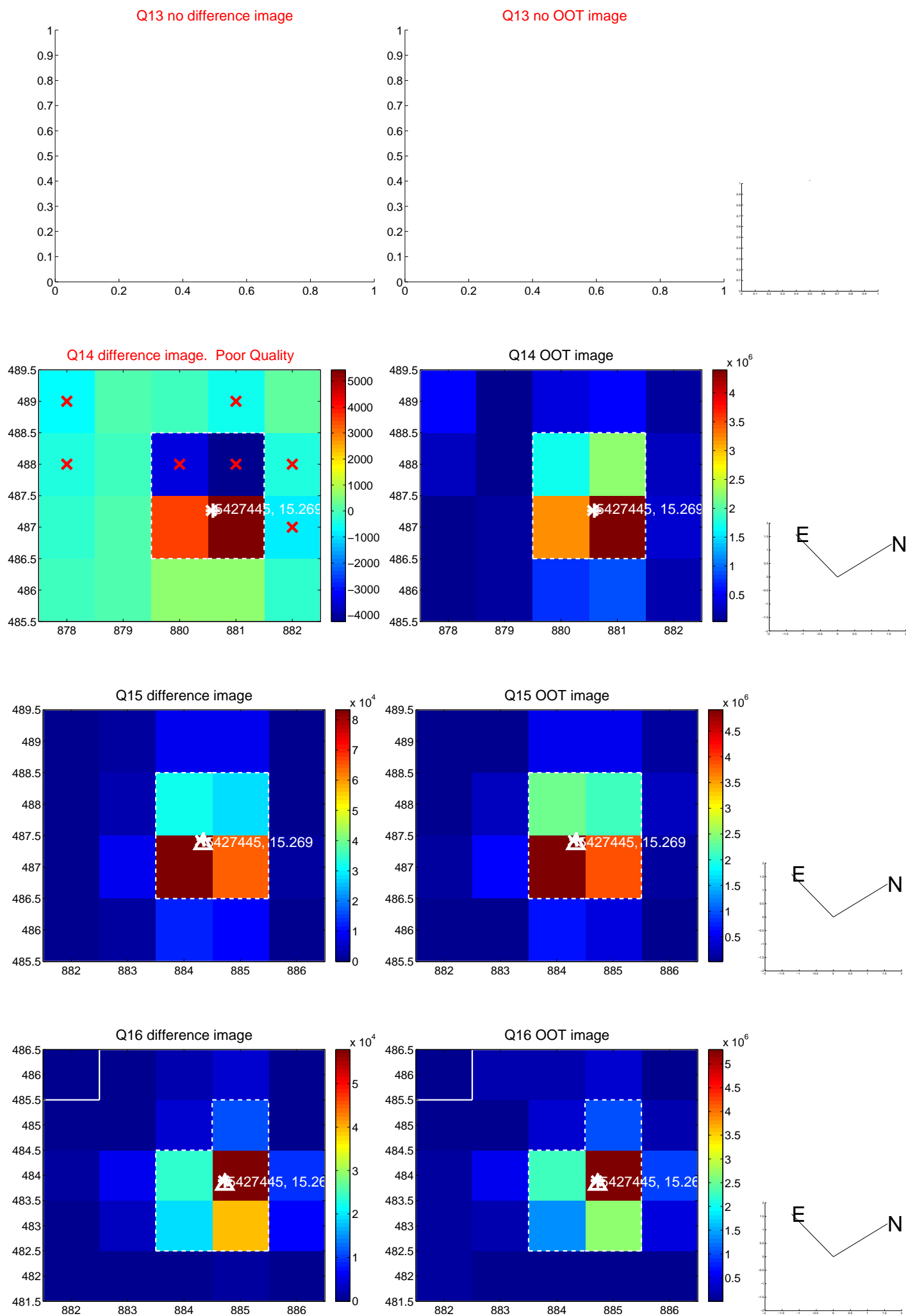
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



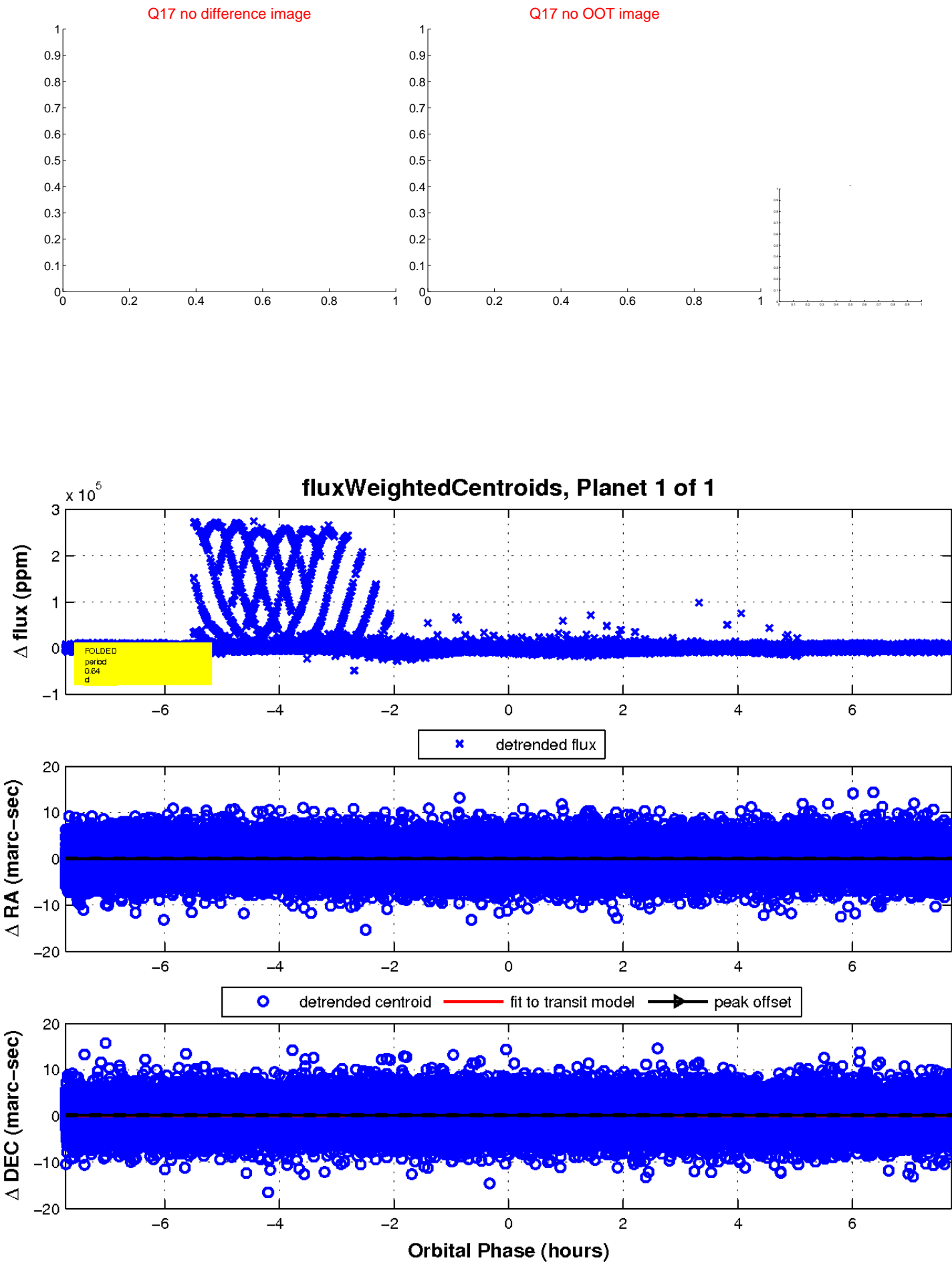
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

