

# KIC 004758368

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004758368-01	OBS	6448.01	1.874967	132.702862	29188.1	9.476	1024.2	1216.4	18.33	4588	359.72	0.00
004758368-02	OBS	No	3.749689	133.503266	38.0	12.000	13.8	-1.0	18.33	4588	10.81	36543.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004758368-01	OBS	FP	0.00	0	1	0	0	PLANET_IN_STAR—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_SATURATED
004758368-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_SATURATED

**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.

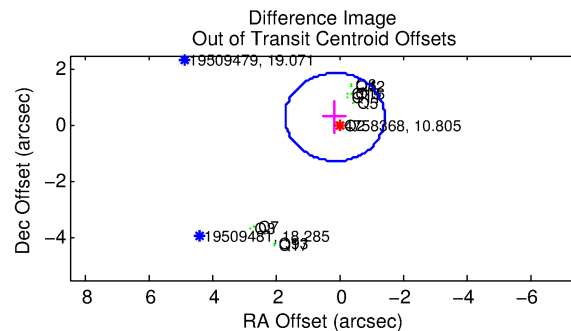
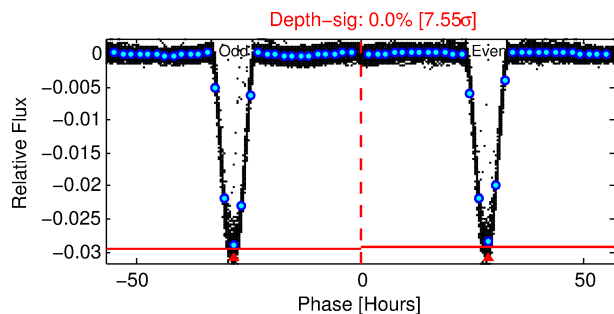
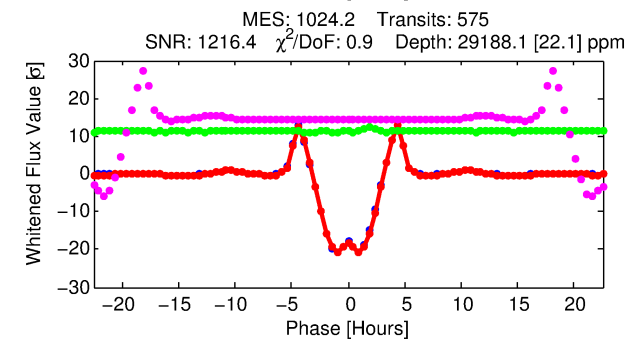
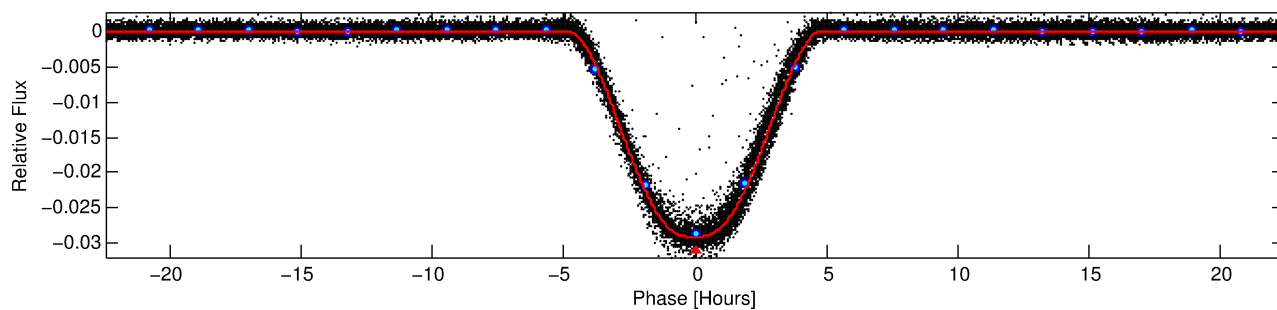
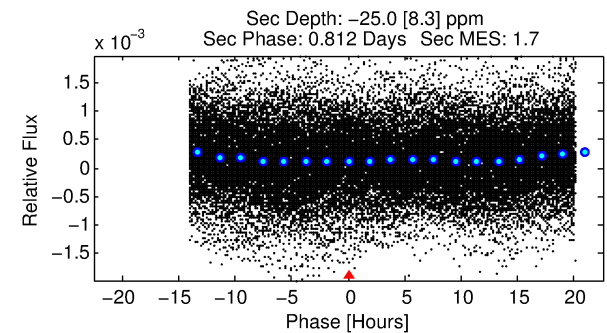
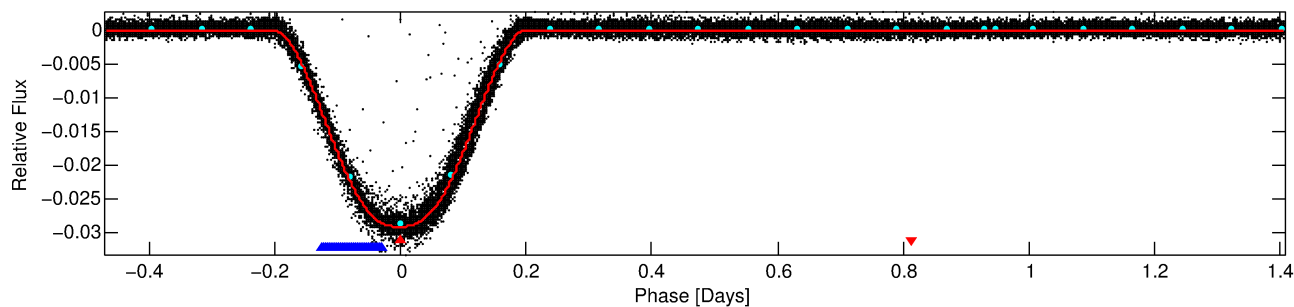
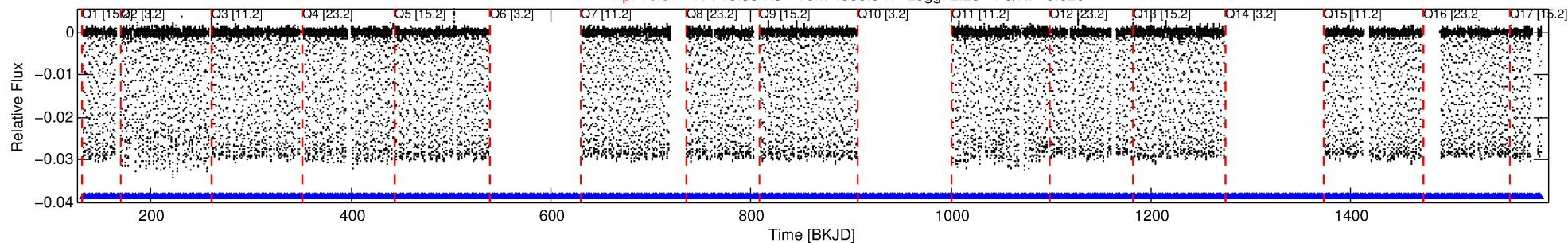
## Ephemeris Match Information For 004758368-01

No Significant Match Found

# DV One-Page Summary

KIC: 4758368 Candidate: 1 of 2 Period: 1.875 d  
KOI: K06448.01 Corr: 0.964

Kp: 10.81 R\*: 18.33 Rs Teff: 4588.0 K Logg: 2.23 Fe/H: -0.020



## DV Fit Results:

Period = 1.87497 [0.00000] d  
Epoch = 132.7029 [0.0000] BKJD  
Rp/R\* = 0.1799 [0.0001]  
a/R\* = 1.62 [0.00]  
b = 0.81 [0.00]  
Seff = N/A  
Teq = N/A  
Rp = 359.72 [126.85] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

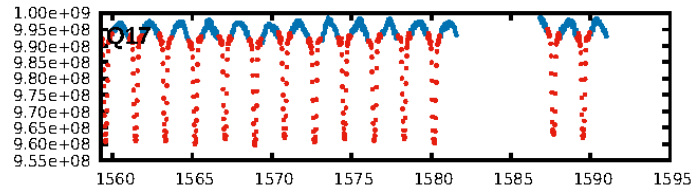
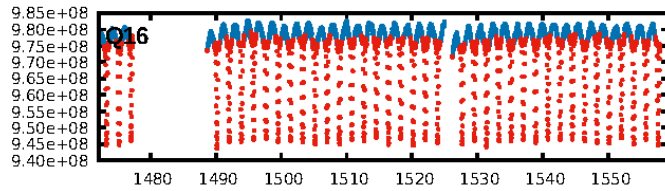
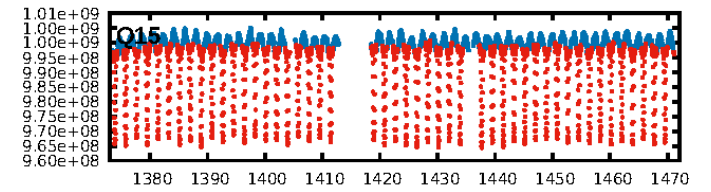
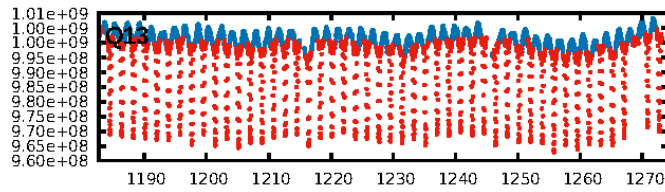
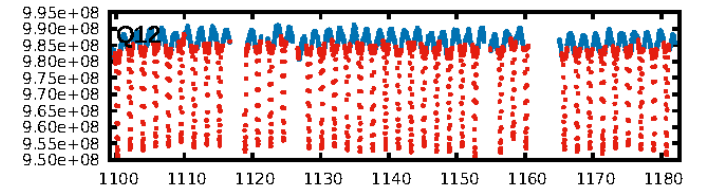
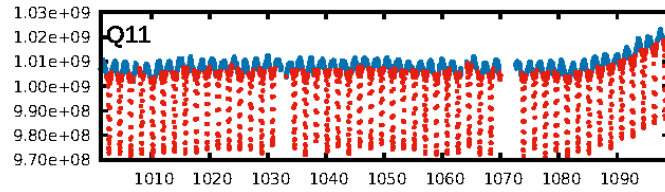
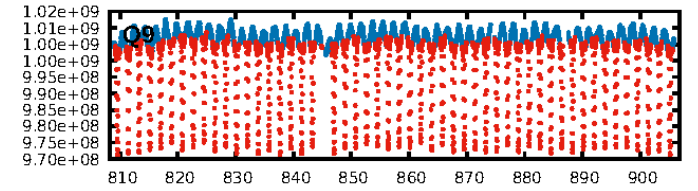
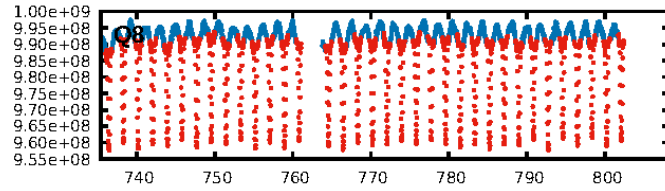
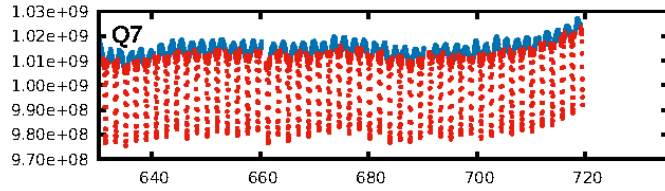
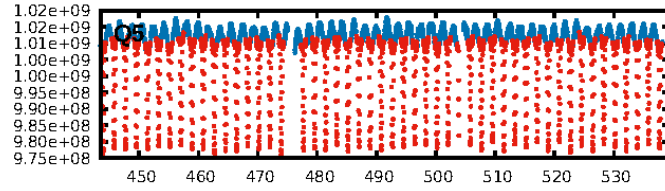
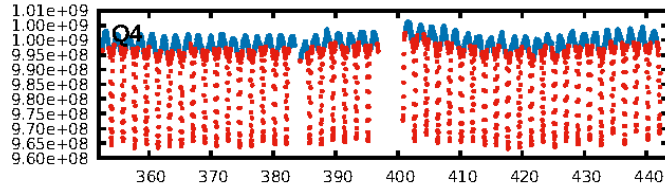
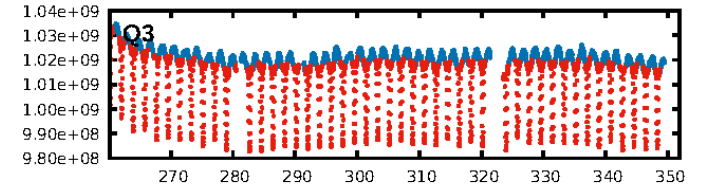
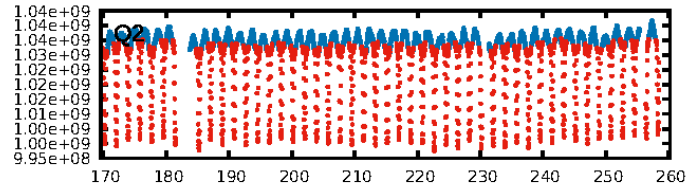
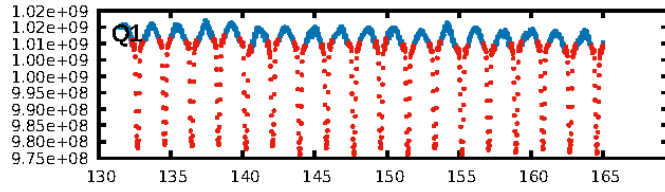
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 99.7% [2.94σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [543/543]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.343 arcsec [0.66σ]  
KicOffset-rm: 0.868 arcsec [1.15σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.43 [6/14]  
DiffImageOverlap-fno: 1.00 [14/14]

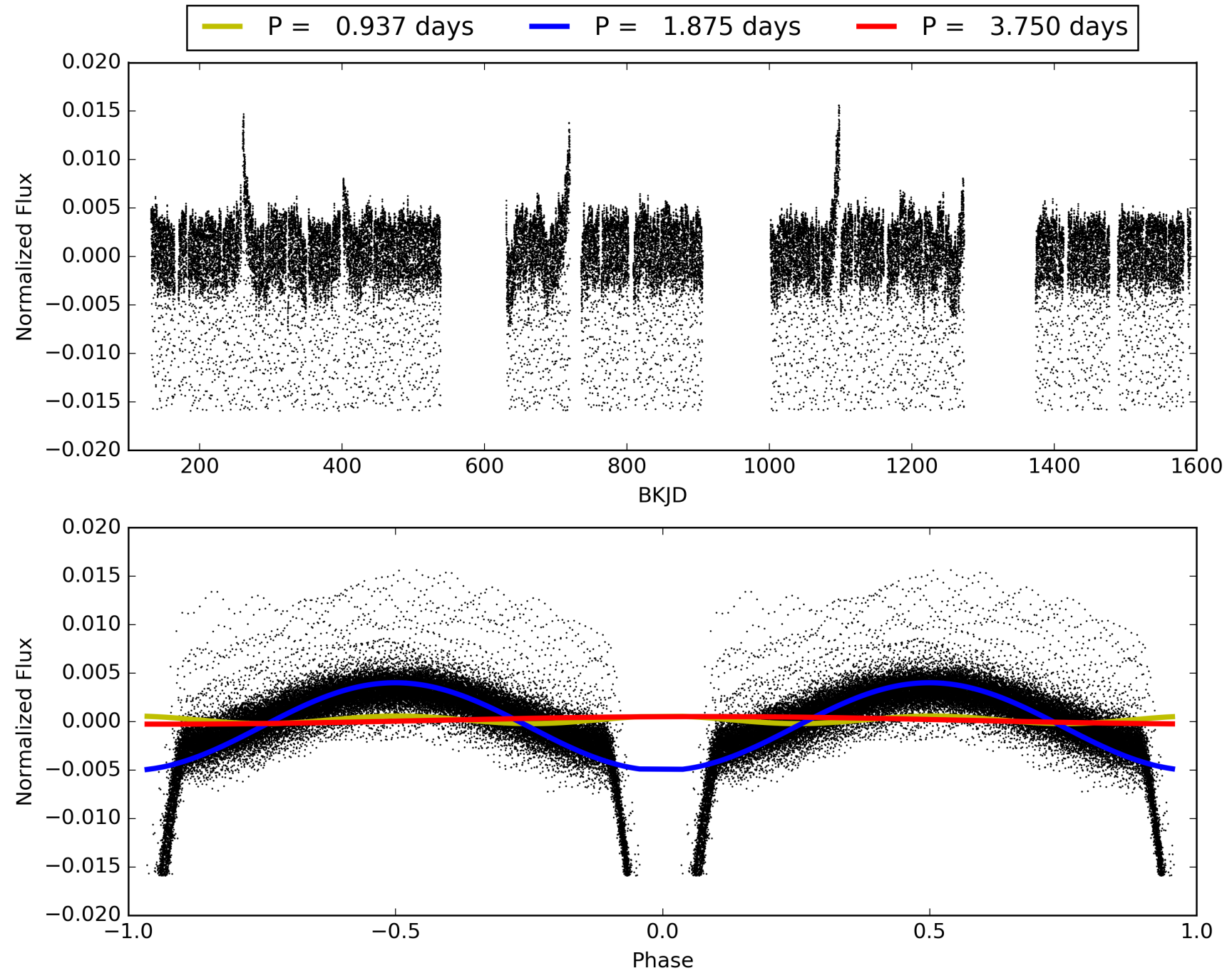
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:55:56 Z

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

# TCE 004758368-01, PDC Light Curves

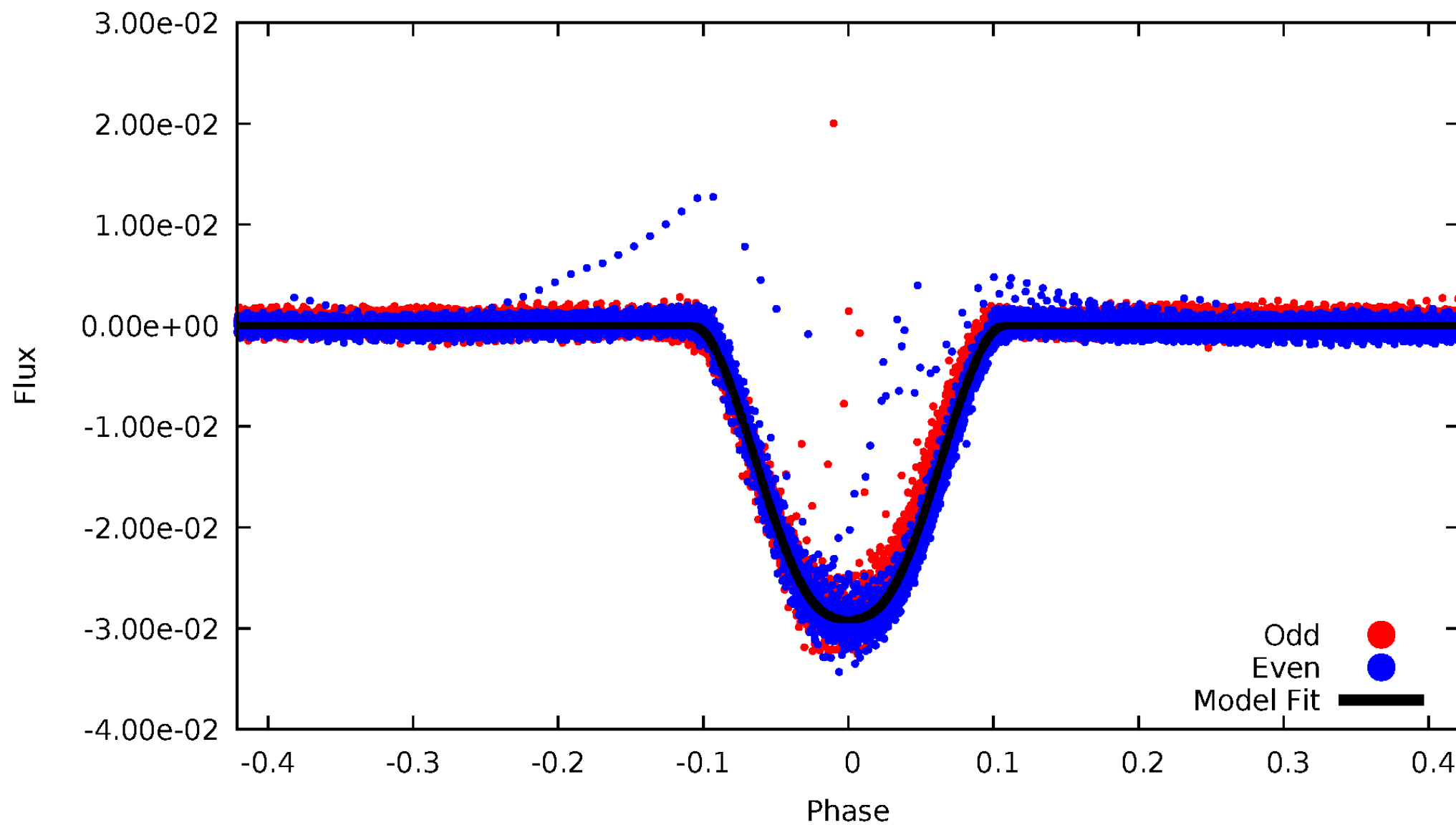


TCE 004758368-01



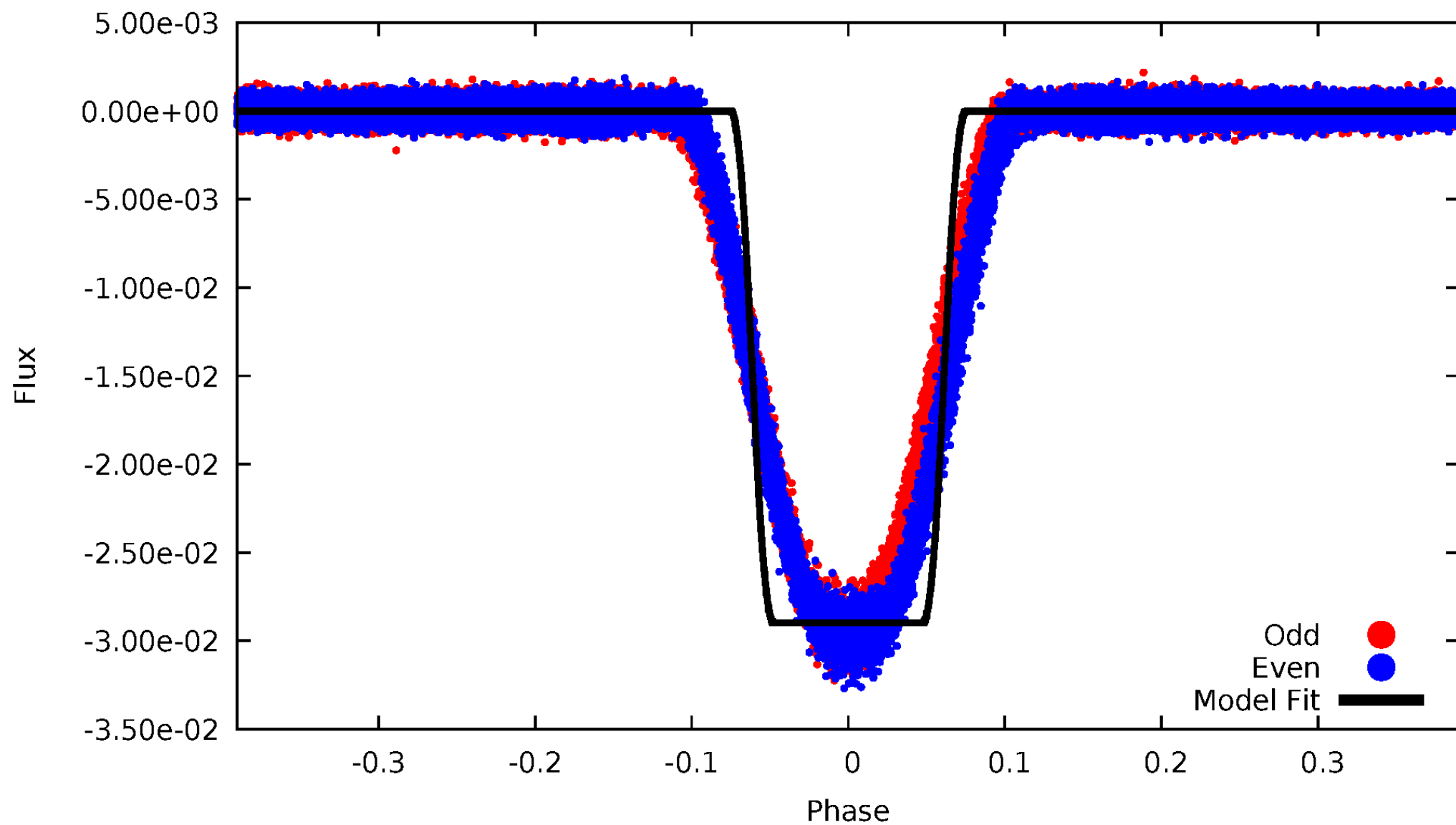
# DV Odd/Even

TCE 004758368-01



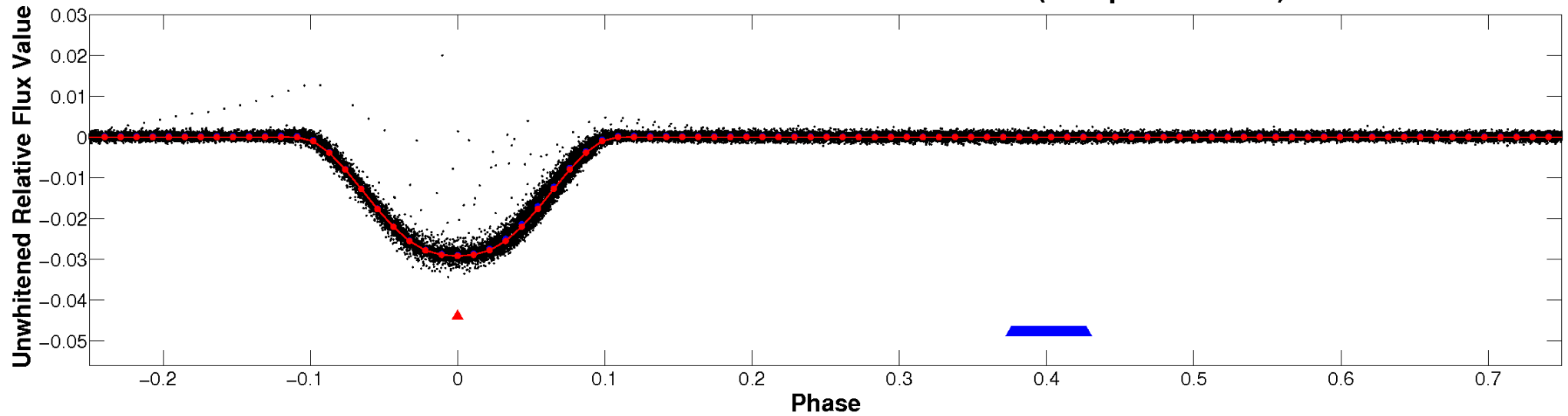
# ALT Odd/Even

TCE 004758368-01

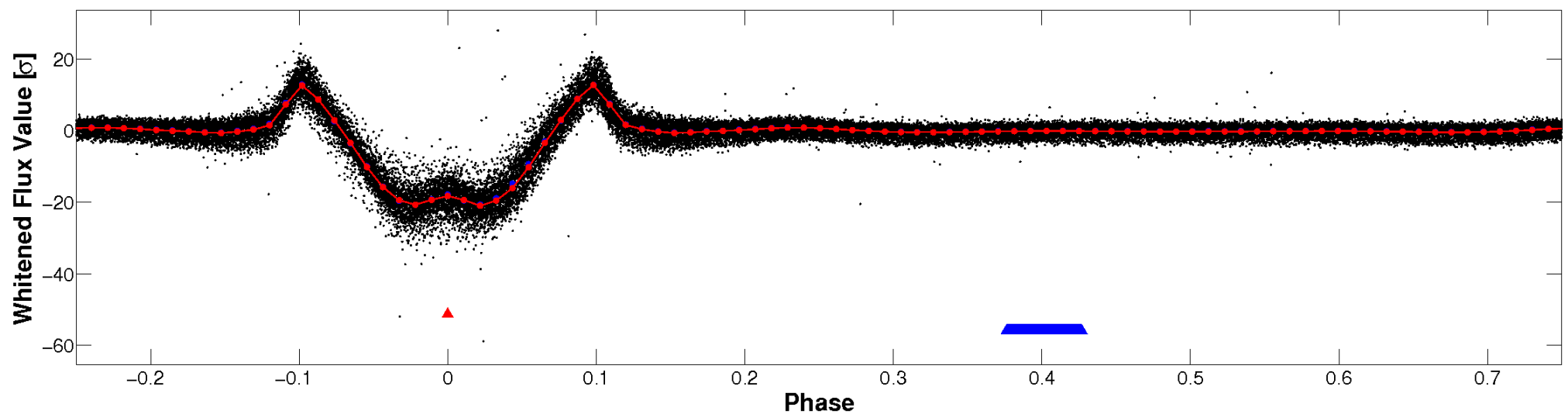


# Non-Whitened Vs. Whitened Light Curve

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

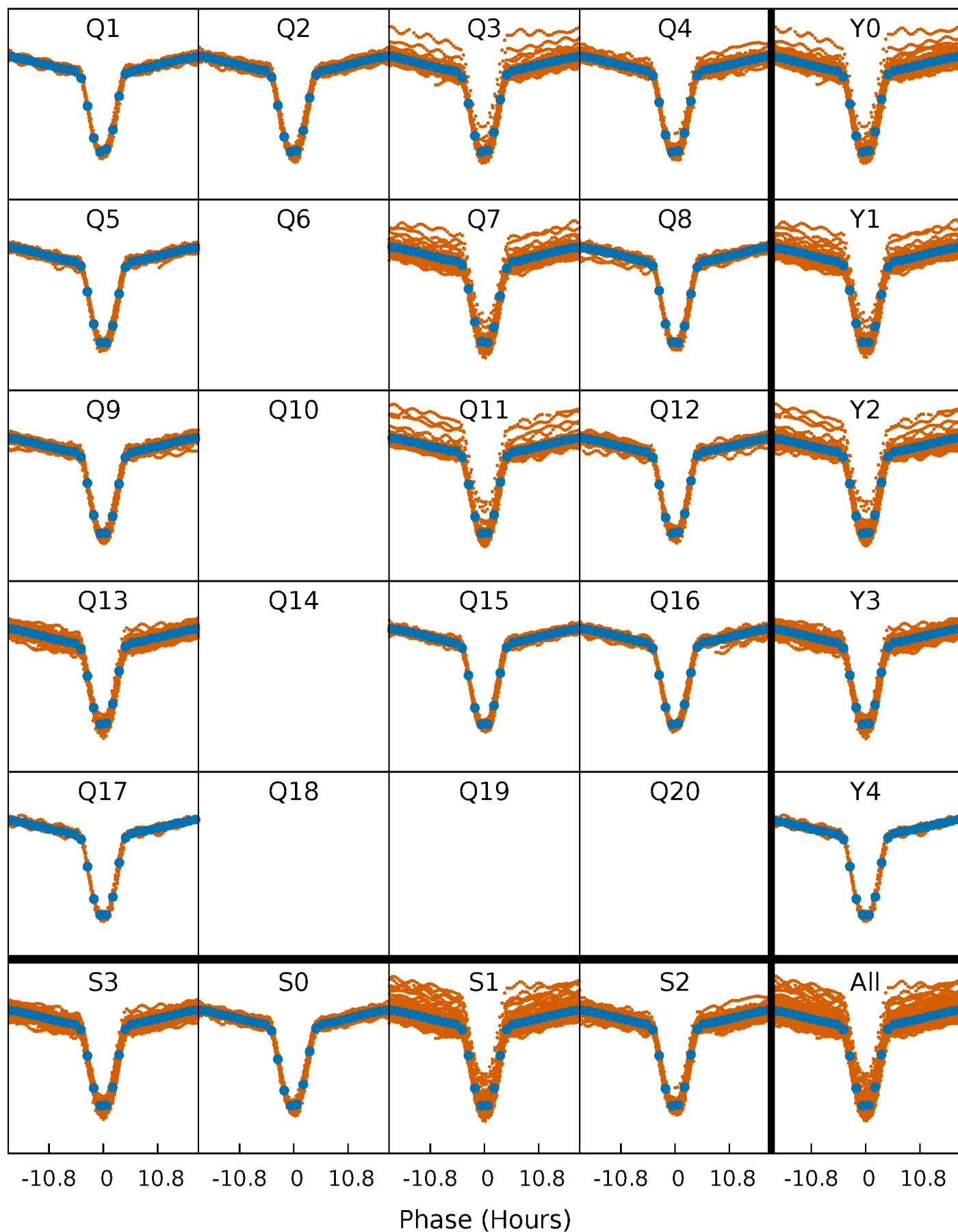


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

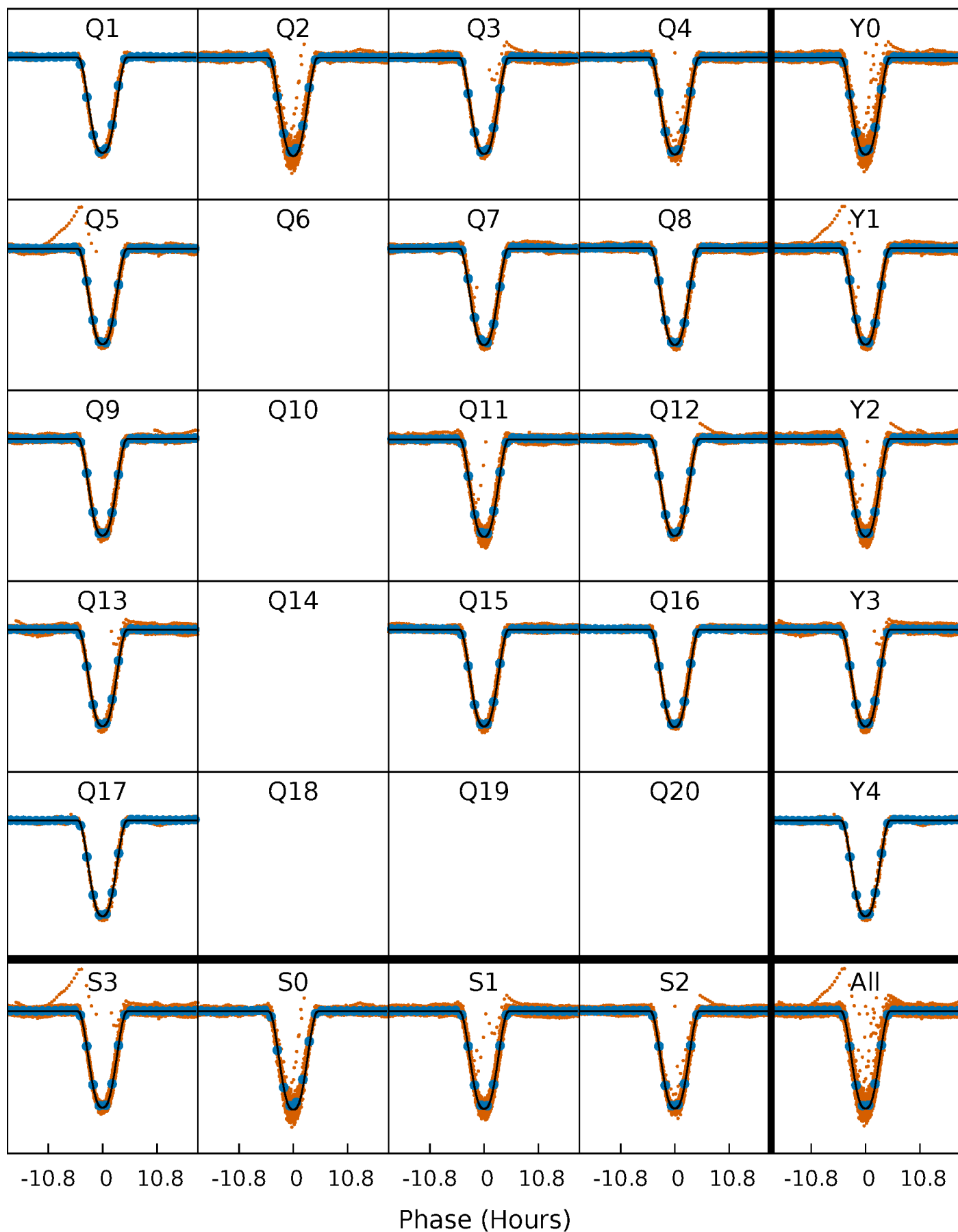
TCE 004758368-01   P= 1.874967 Days    $T_0=132.702862$  (BKJD)





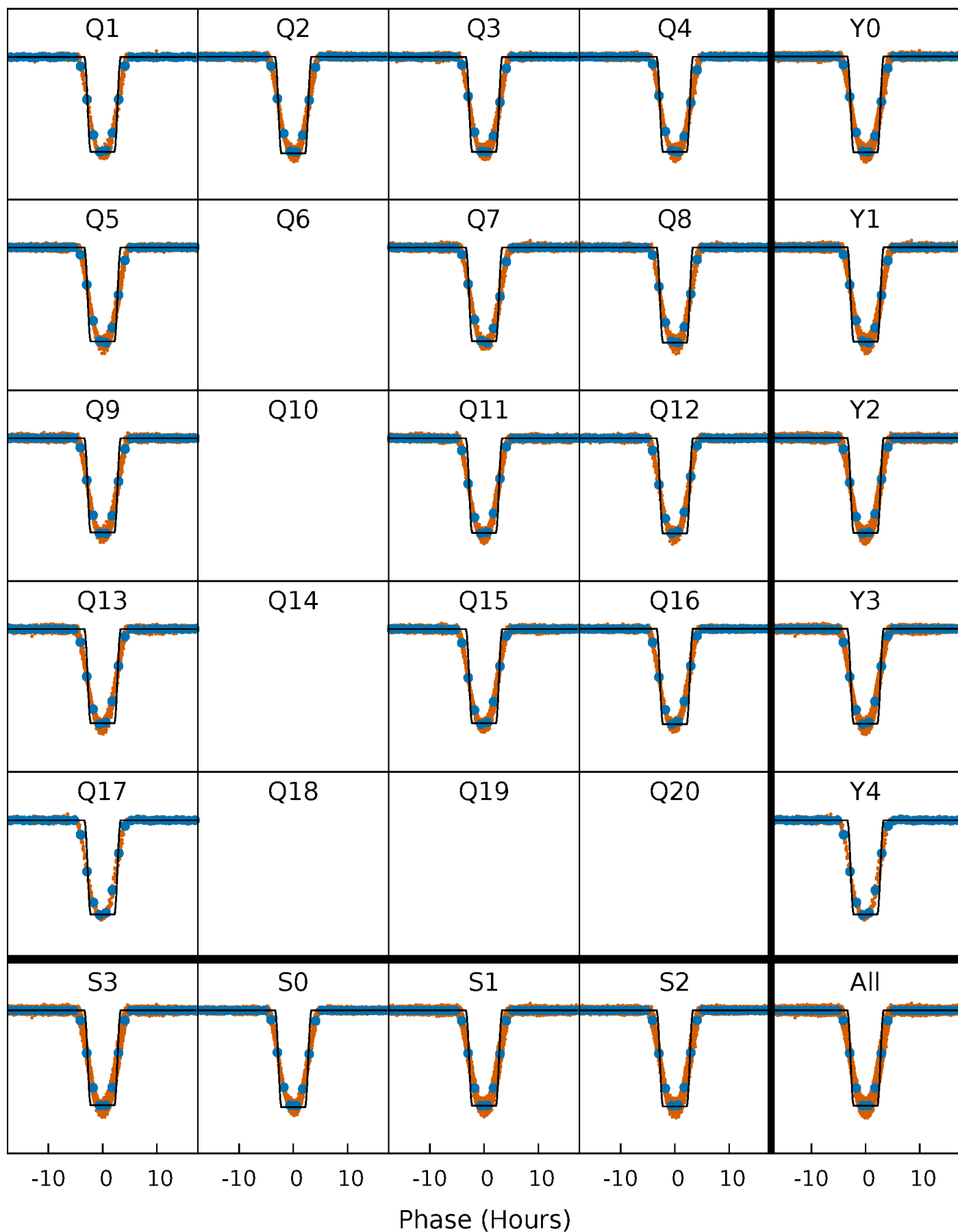
# DV Quarter-Phased Transit Curves

TCE 004758368-01 P= 1.874967 Days  $T_0=132.702862$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

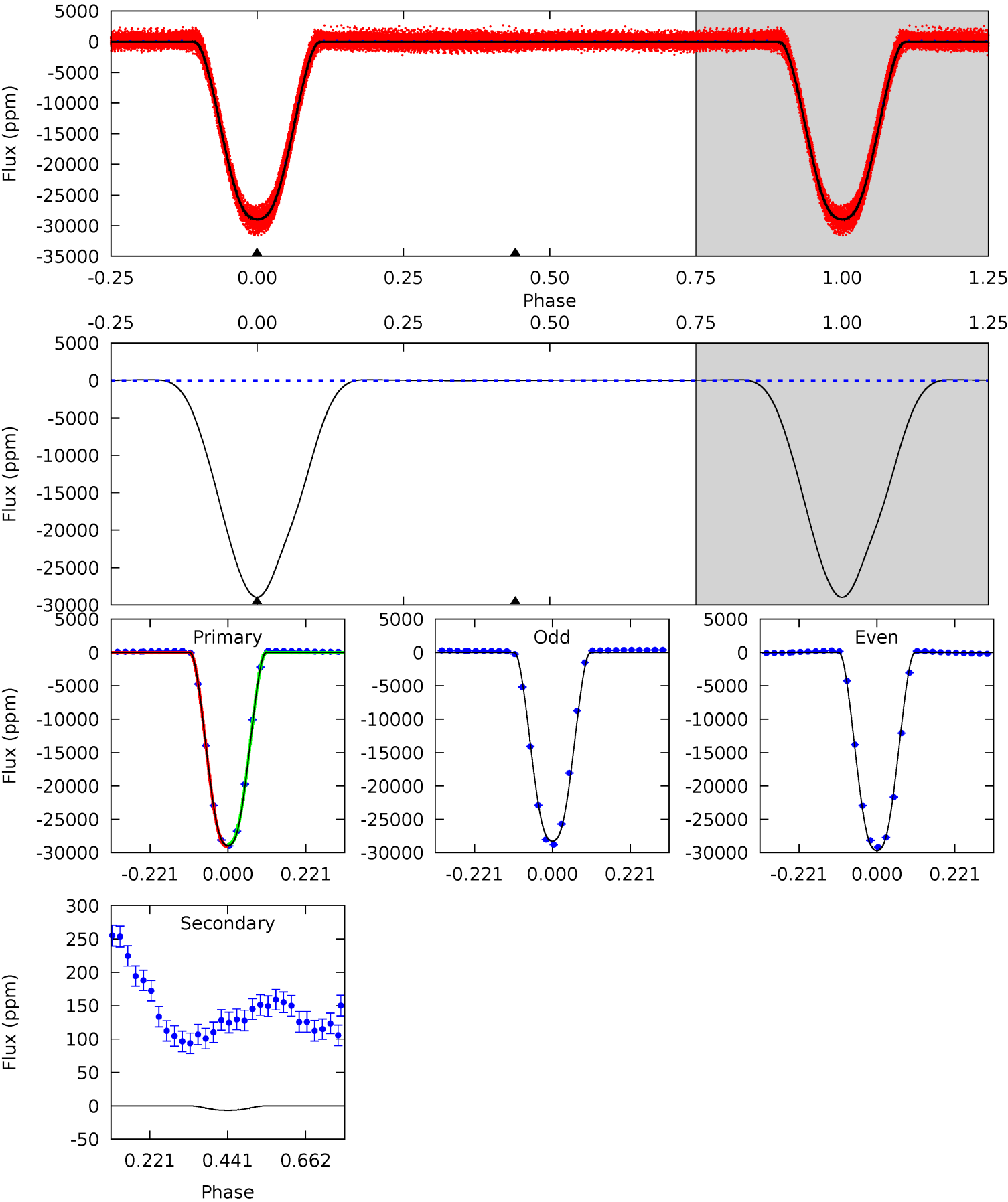
TCE 004758368-01 P= 1.874987 Days  $T_0=132.694569$  (BKJD)



DV Model-Shift Uniqueness Test

004758368-01, P = 1.874967 Days, E = 130.827895 Days

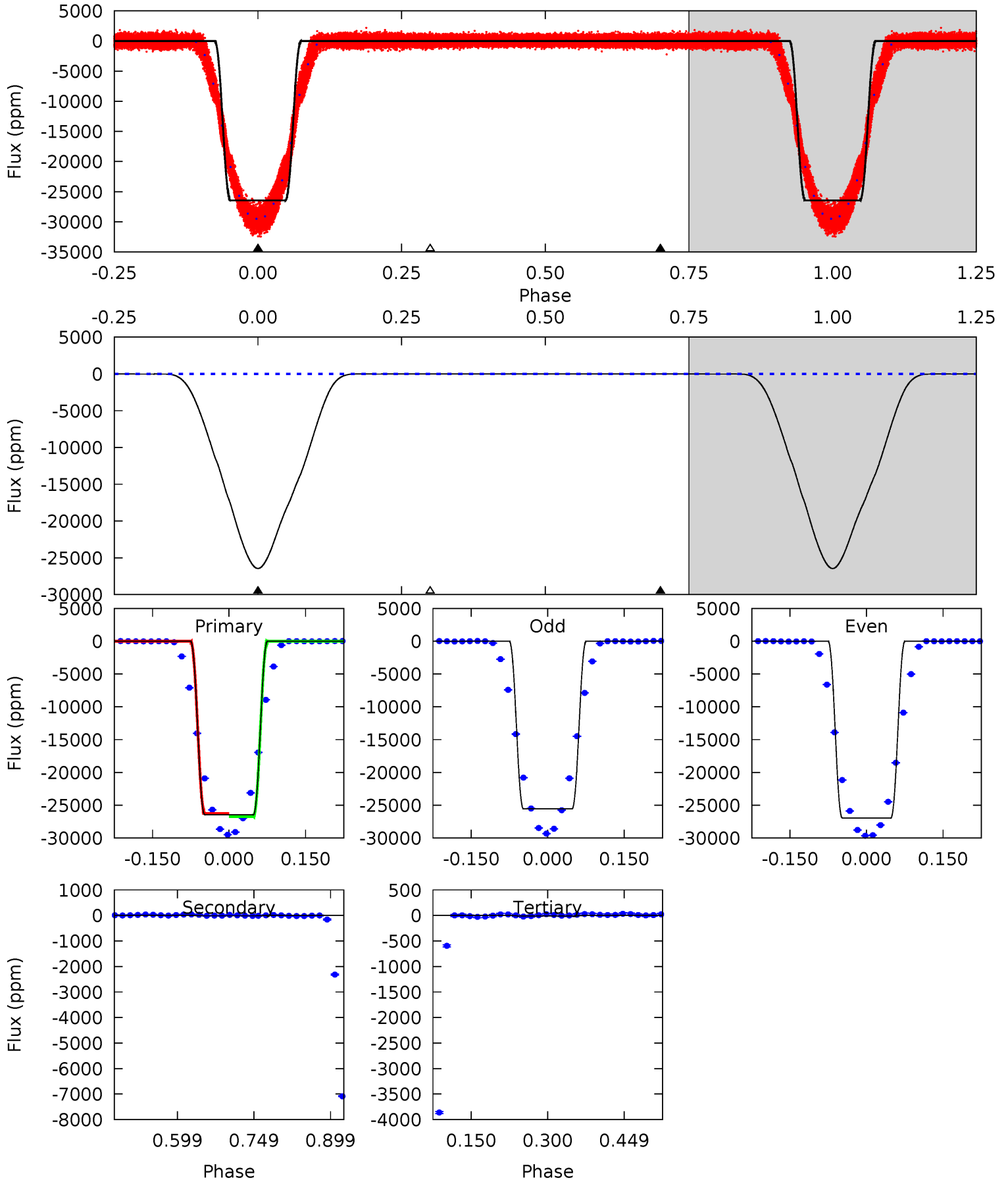
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5468	1.26	0	0	4.40	1.23	2.88	5468	5468	1.26	1.26	131.5	0.99	0.00	29.2



# Alt Model-Shift Uniqueness Test

004758368-01, P = 1.874987 Days, E = 130.819582 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
4438	2.37	2.12	0	4.48	1.44	3.97	4436	4438	0.24	2.37	118.3	1.00	0.00	38.7



### Stellar Parameters For KIC 004758368

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4588^{+55}_{-75}$	$2.232^{+0.176}_{-0.095}$	$-0.020^{+0.100}_{-0.150}$	$18.328^{+2.154}_{-6.463}$	$2.090^{+0.889}_{-0.889}$	$0.000^{+0.001}_{-0.000}$
	+1%/-2%	+8%/-4%	+500%/-750%	+12%/-35%	+43%/-43%	+135%/-25%
Source	SPE74	SPE74	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 004758368-01 / KOI 6448.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-7 \pm 5$	$369.15^{+32.86}_{-61.83}$	$6137^{+251}_{-369}$	$-4938^{+250}_{-176}$	$0.000^{+0.000}_{-0.000}$
Alt.	$-14 \pm 6$	$350.52^{+32.82}_{-65.60}$	$6121^{+261}_{-354}$	$-4930^{+241}_{-182}$	$0.000^{+0.000}_{-0.000}$

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

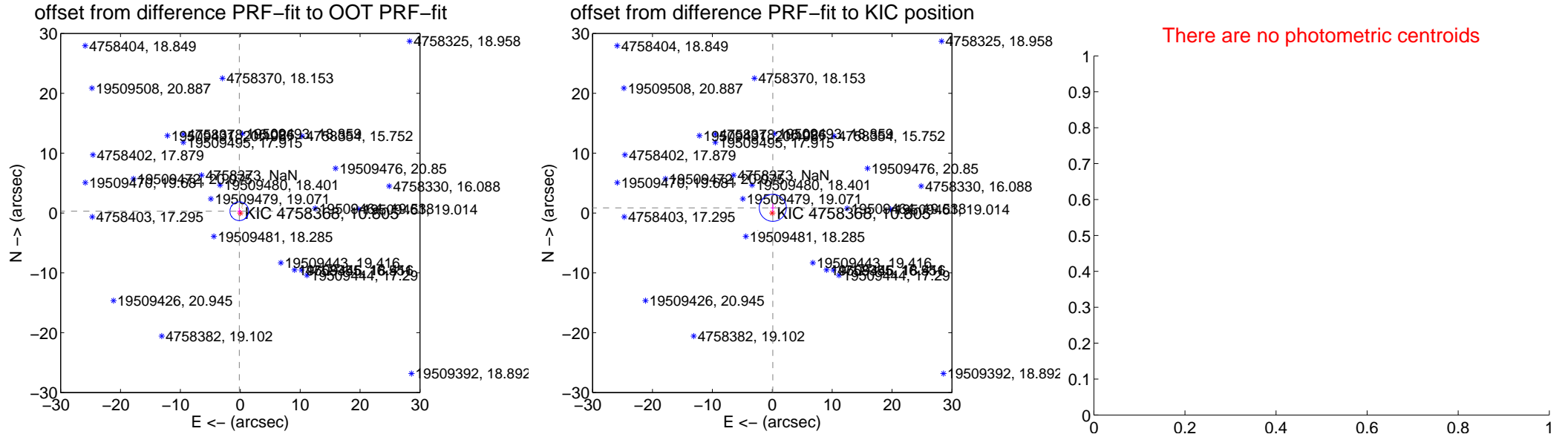
## DV Centroid Data

Supplemental centroid analysis for 004758368-01. **Kepler magnitude: 10.80.** Transit SNR 1216.40

There are 6 quarters with good PRF difference image offsets

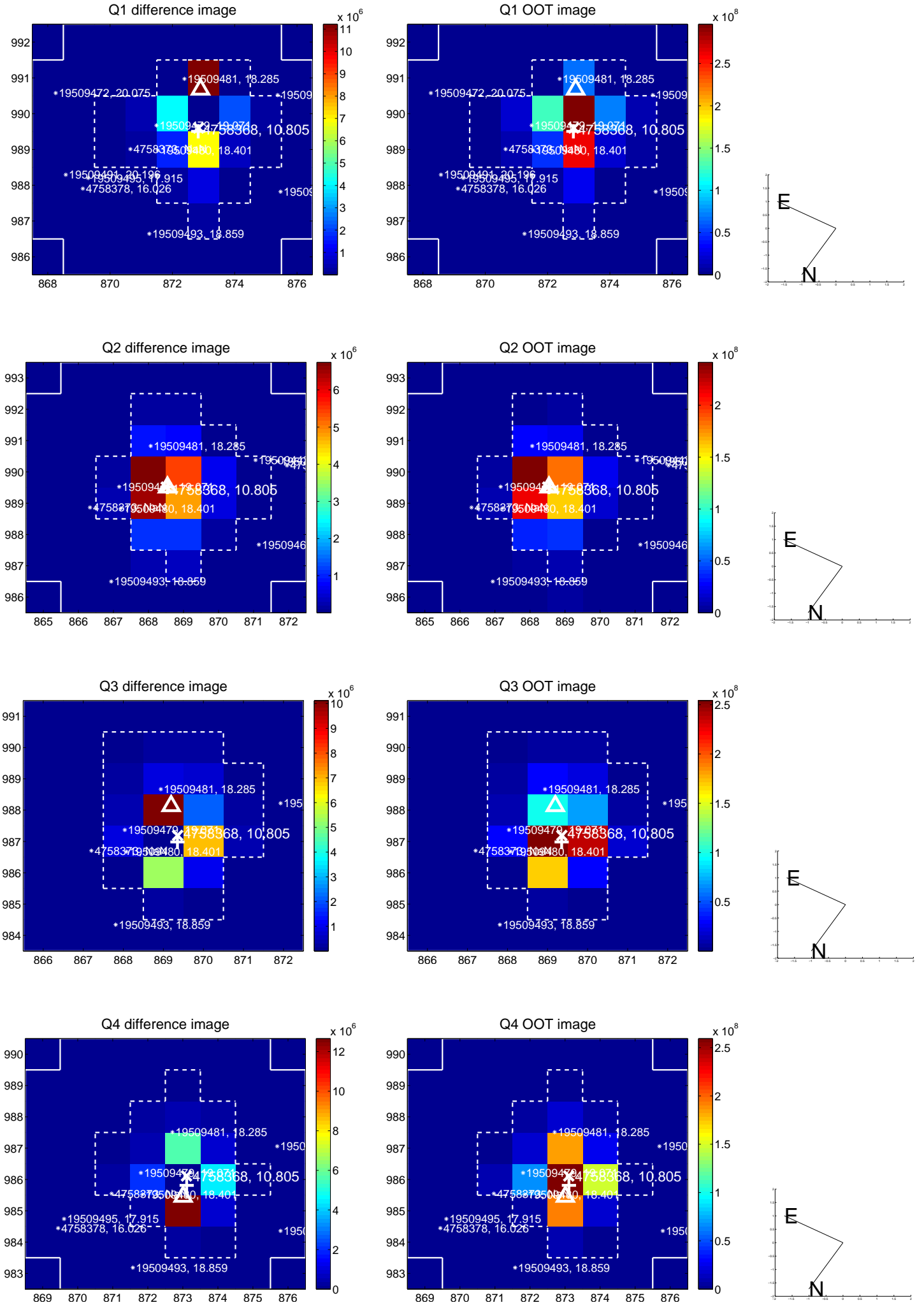
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.343 \pm 0.522$	0.66	$0.164 \pm 0.355$	$0.301 \pm 0.562$
PRF-fit source offset from KIC position	$0.868 \pm 0.752$	1.15	$-0.087 \pm 0.377$	$0.864 \pm 0.720$
photometric centroid source offset	—	—	—	—

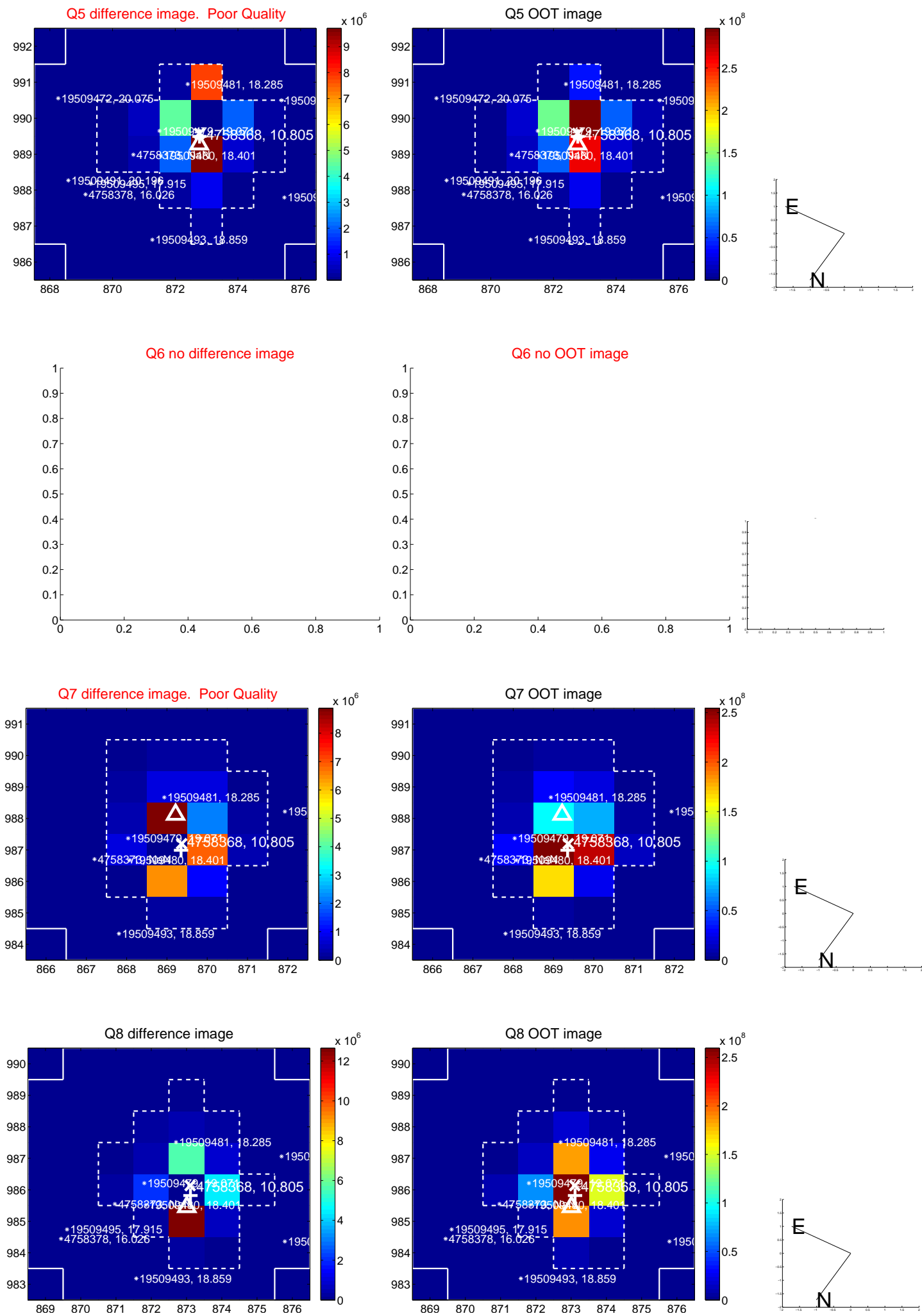


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

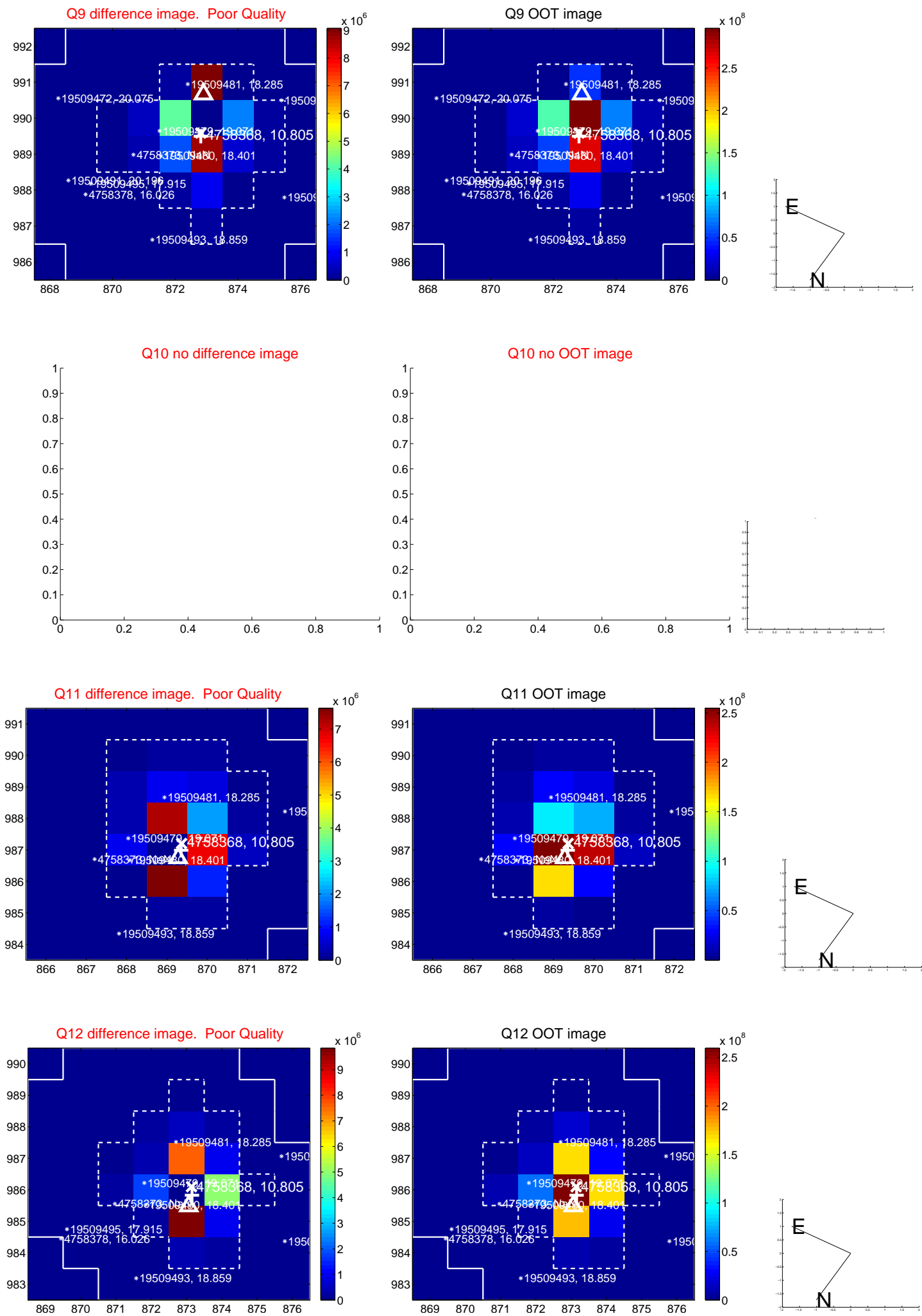


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

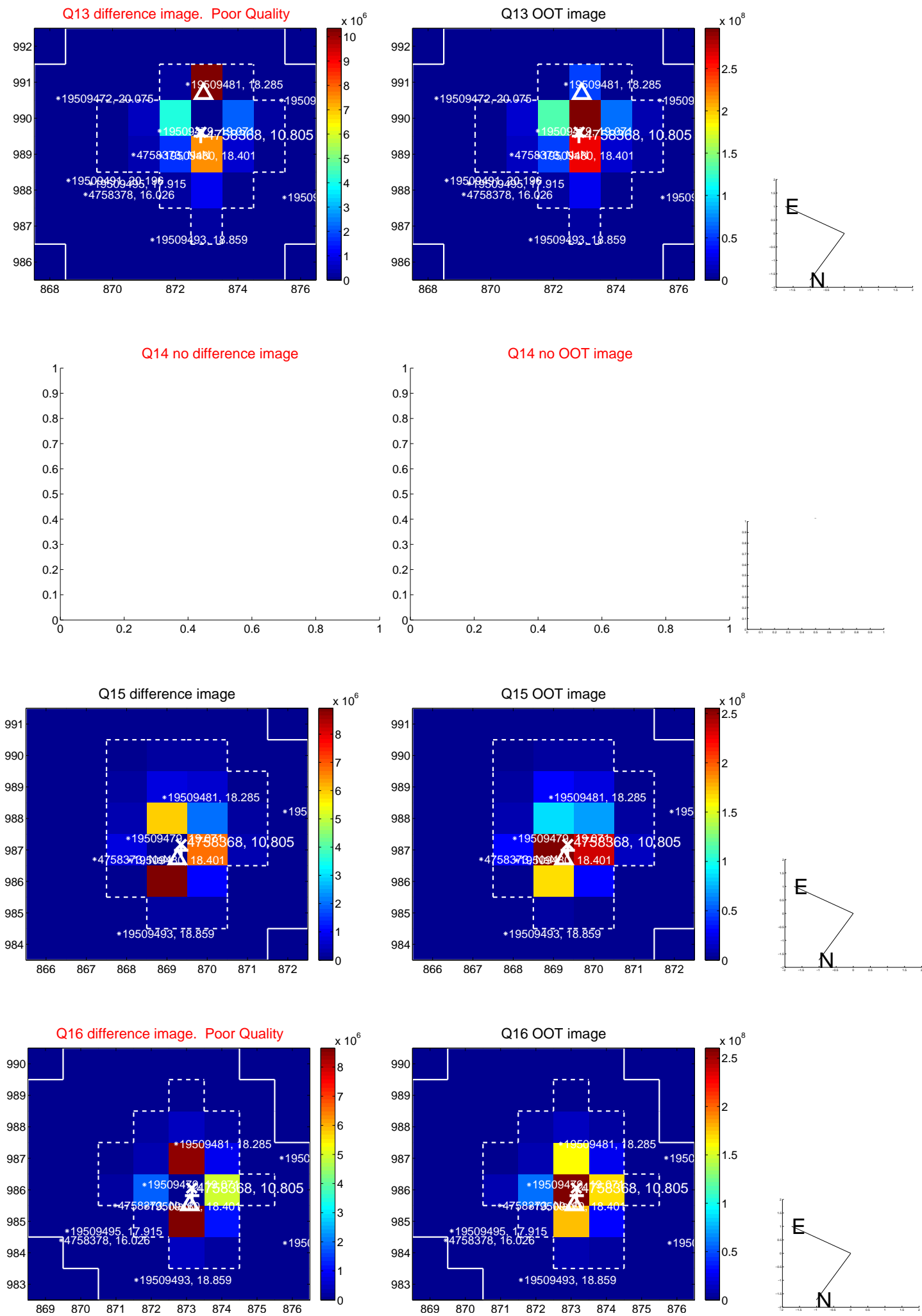




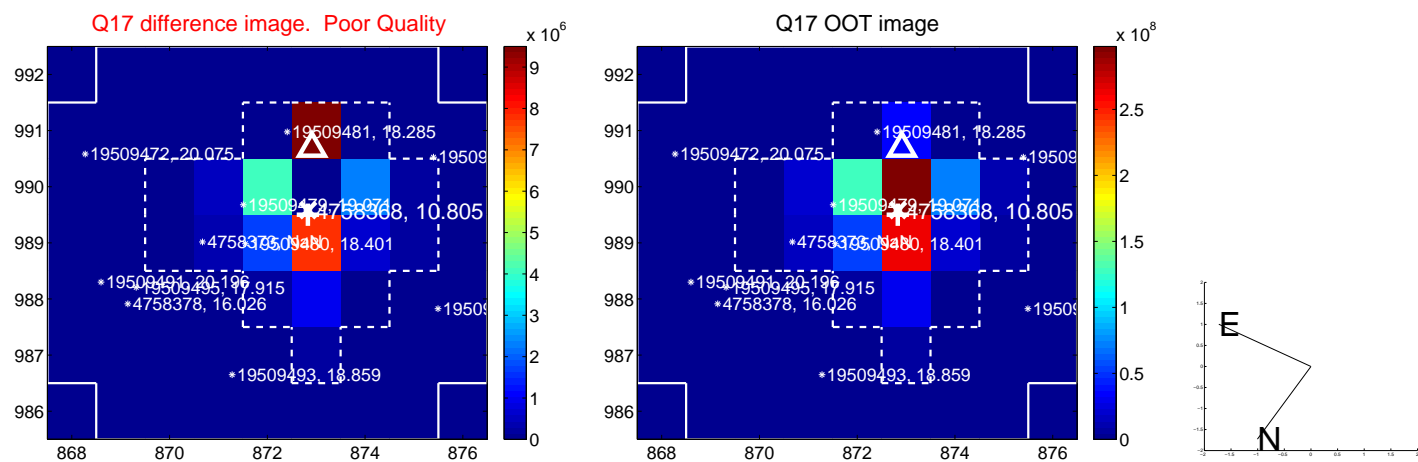
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

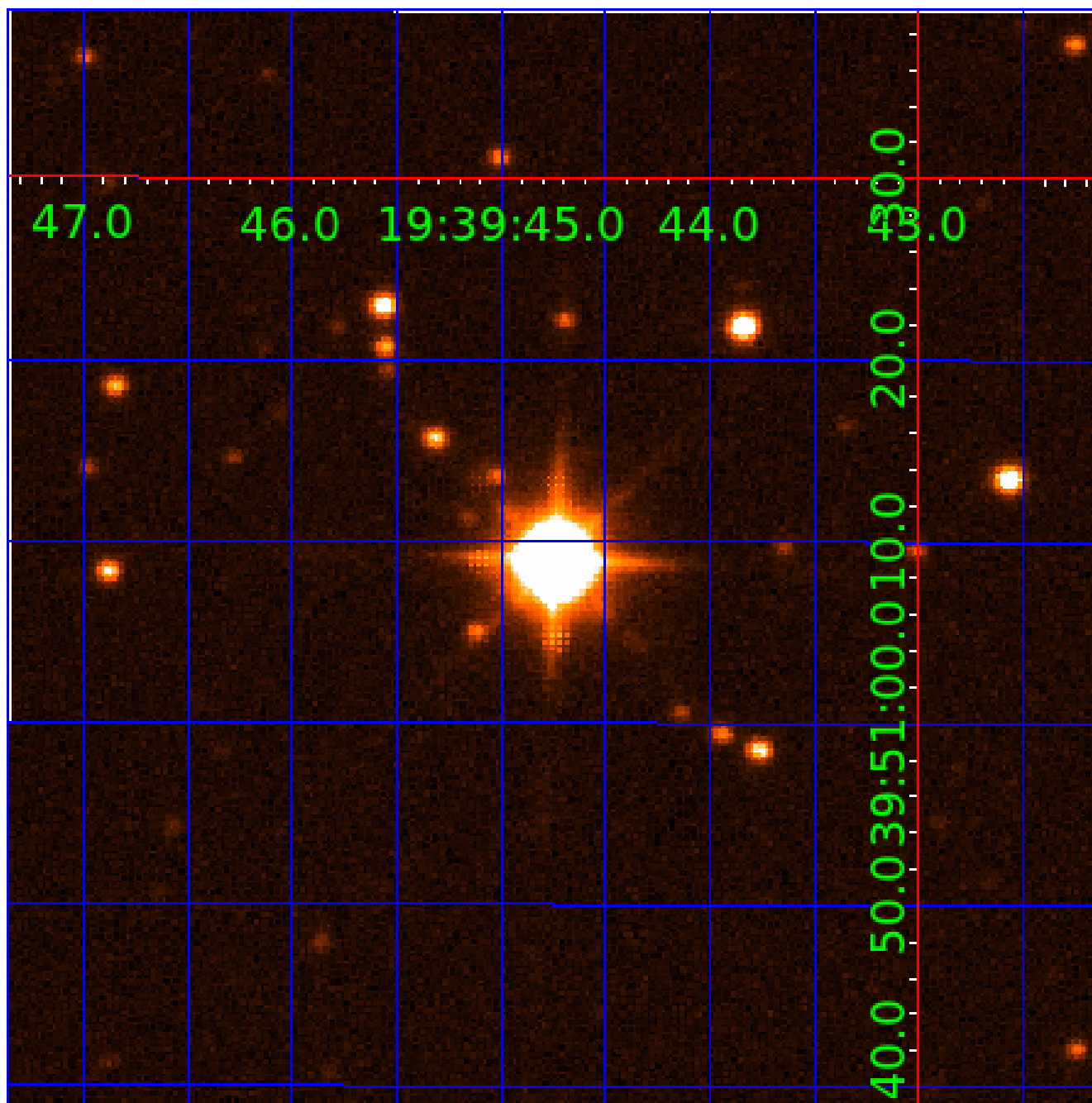


folded centroid time series figure for this object.



UKIRT Image

Declination



# KIC 004758368

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004758368-01	OBS	6448.01	1.874967	132.702862	29188.1	9.476	1024.2	1216.4	18.33	4588	359.72	0.00
004758368-02	OBS	No	3.749689	133.503266	38.0	12.000	13.8	-1.0	18.33	4588	10.81	36543.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004758368-01	OBS	FP	0.00	0	1	0	0	PLANET_IN_STAR—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_SATURATED
004758368-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_SATURATED

**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.

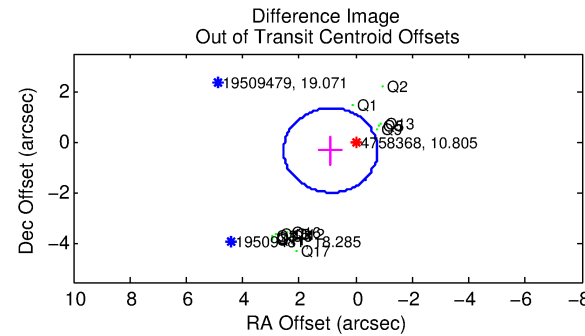
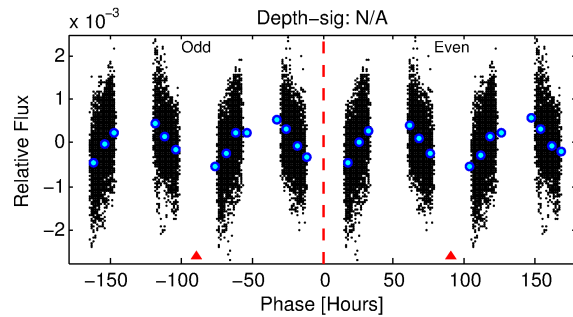
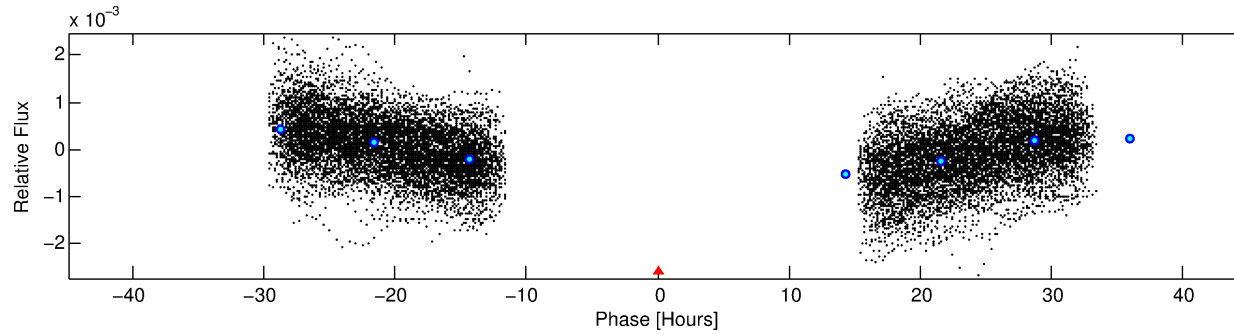
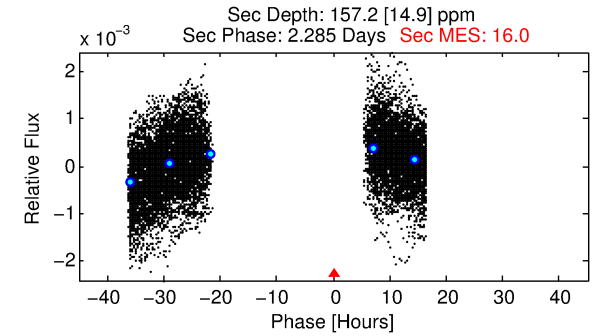
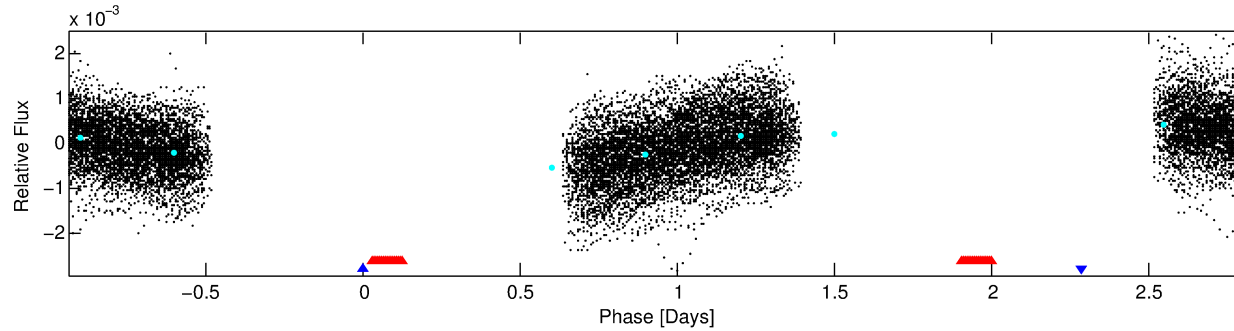
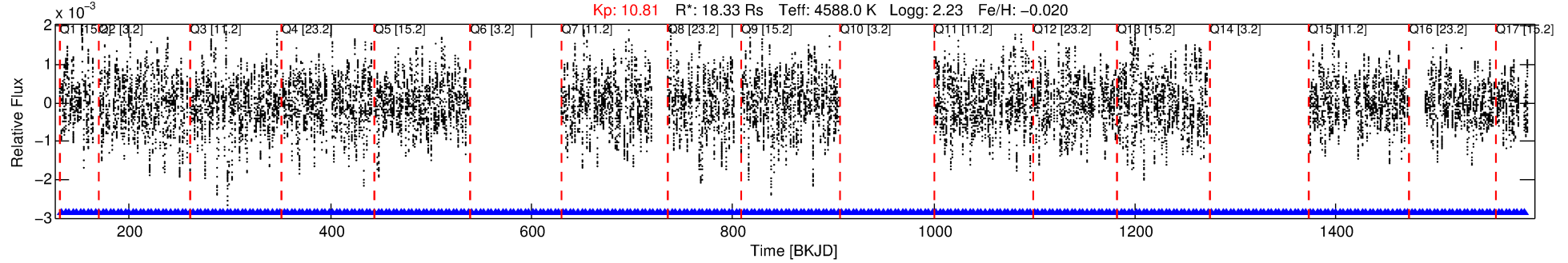
## Ephemeris Match Information For 004758368-02

No Significant Match Found

# DV One-Page Summary

KIC: 4758368 Candidate: 2 of 2 Period: 3.750 d  
KOI: K06448 Corr: No Ephemeris Match

Kp: 10.81 R\*: 18.33 Rs Teff: 4588.0 K Logg: 2.23 Fe/H: -0.020



## TPS TCE Results:

Period = 3.74969 d  
Epoch = 133.5033 BKJD

DV fit results are unavailable

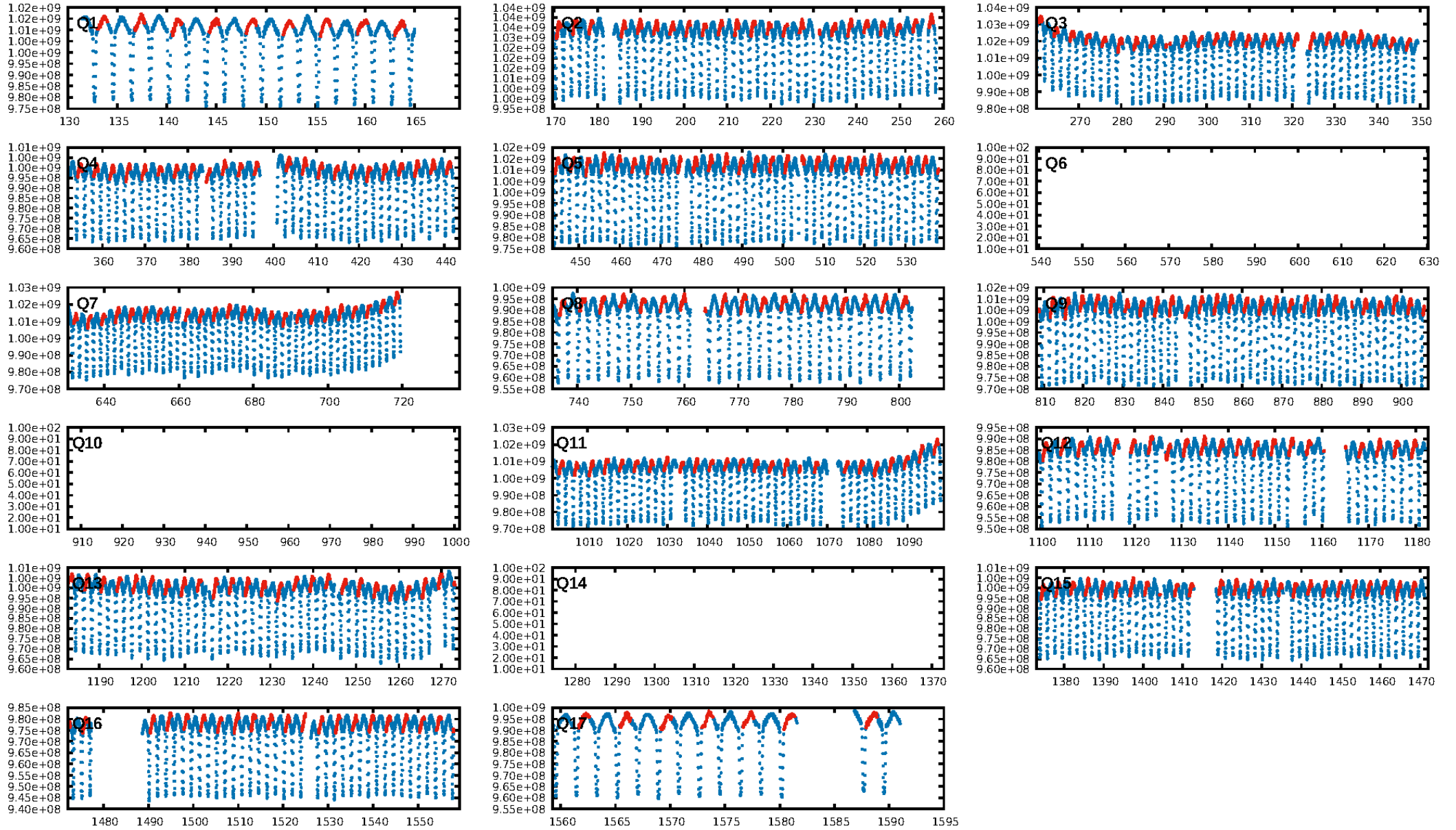
## DV Diagnostic Results:

ShortPeriod-sig: 99.7% [2.94σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [282/282]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.943 arcsec [1.70σ]  
KicOffset-rm: 0.633 arcsec [1.38σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.86 [12/14]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:56:09 Z

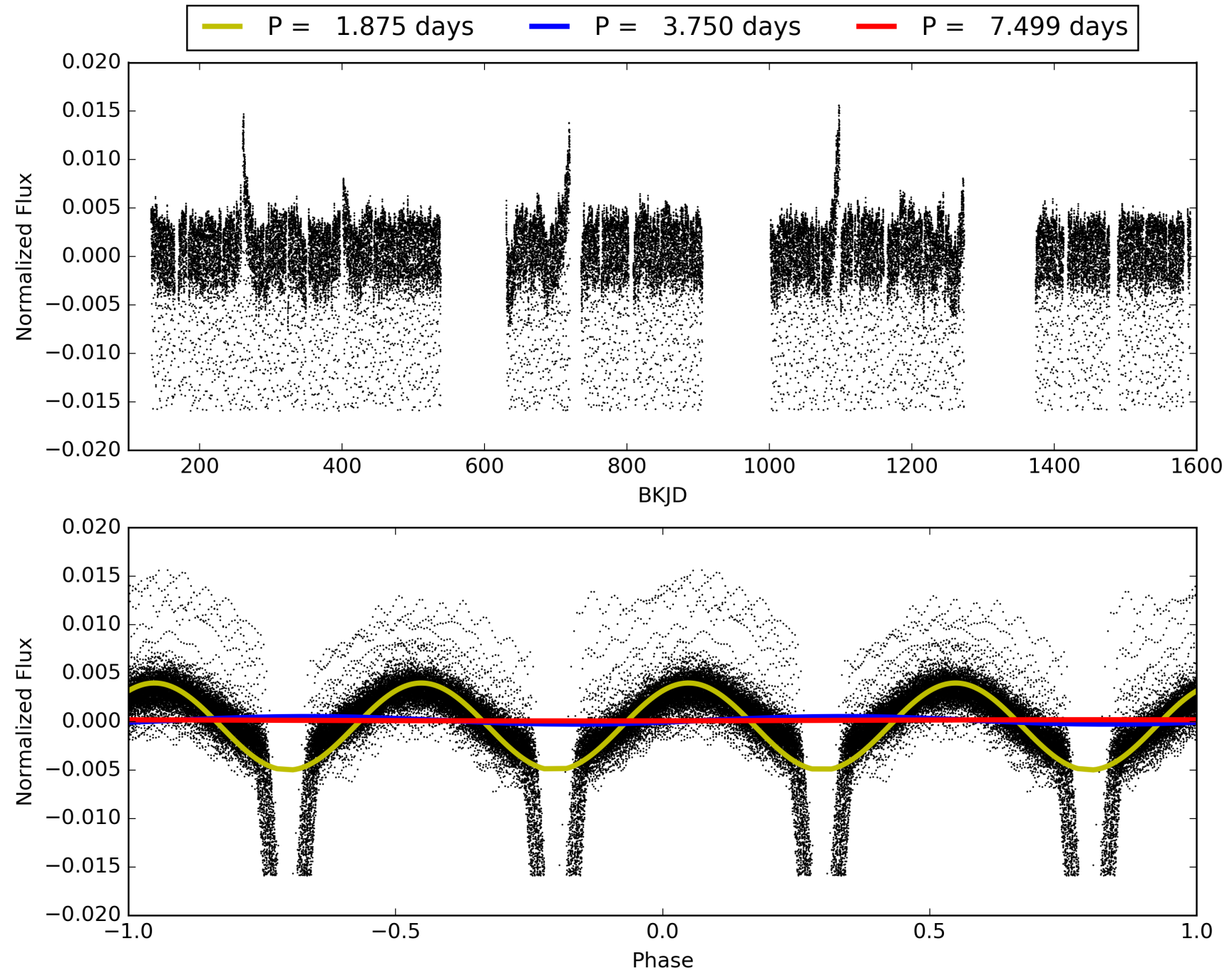
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004758368-02, PDC Light Curves





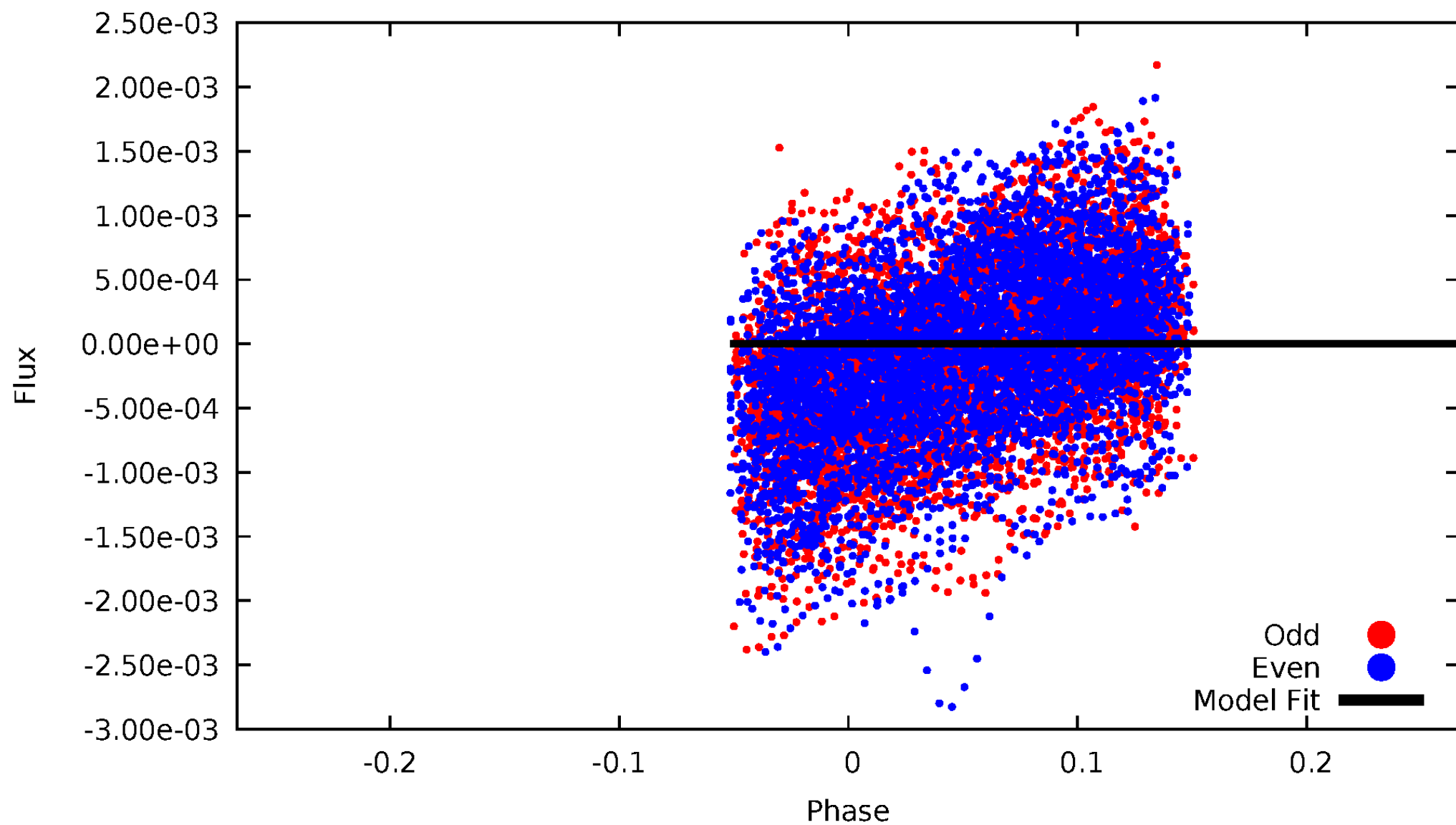
TCE 004758368-02





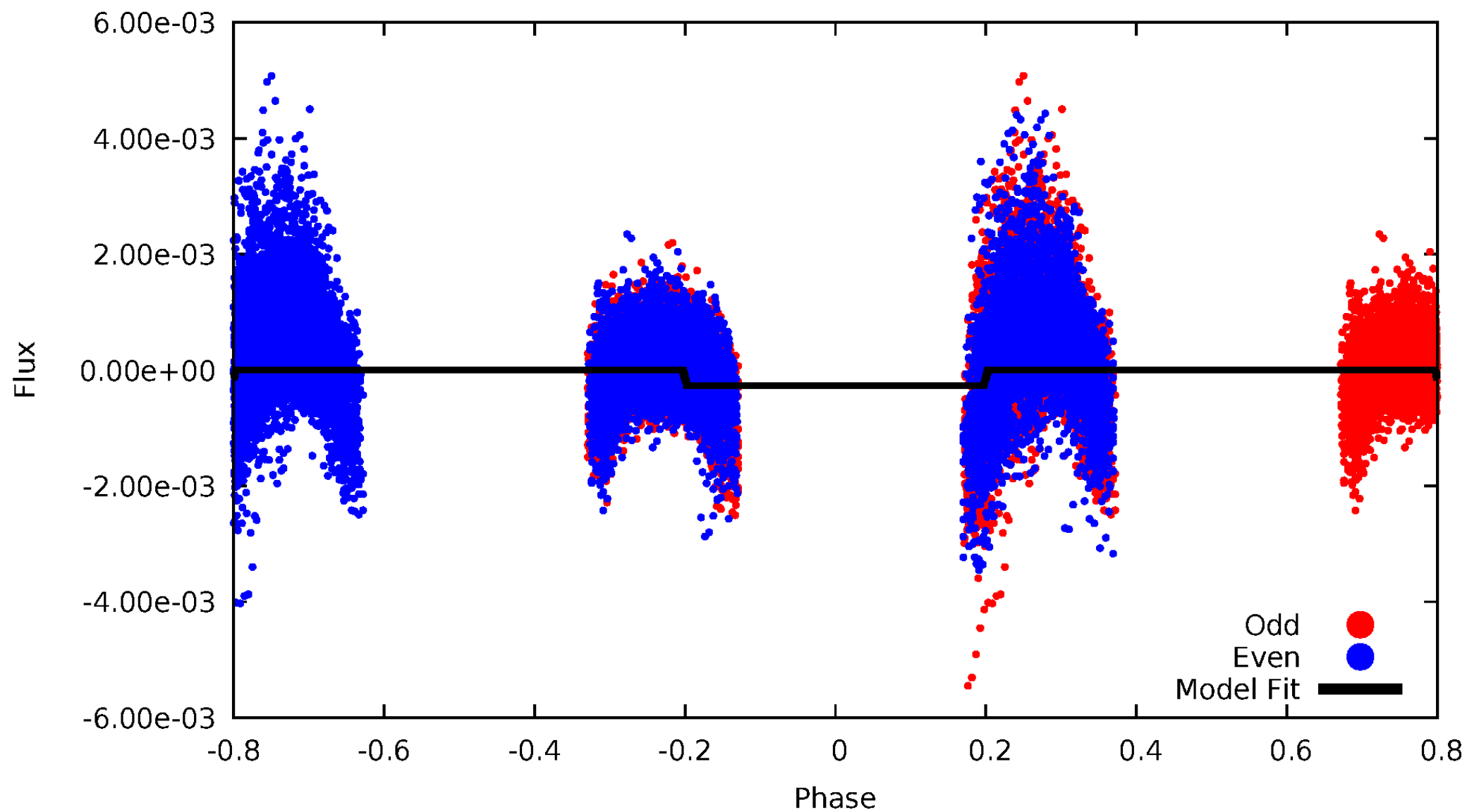
DV Odd/Even

TCE 004758368-02



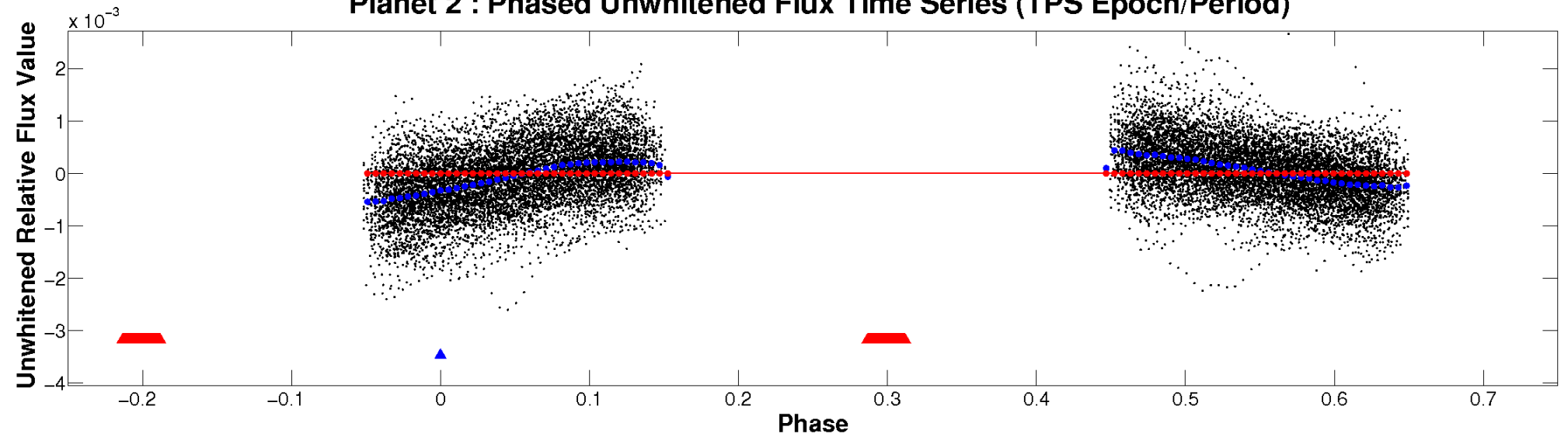
# ALT Odd/Even

TCE 004758368-02



# Non-Whitened Vs. Whitened Light Curve

**Planet 2 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

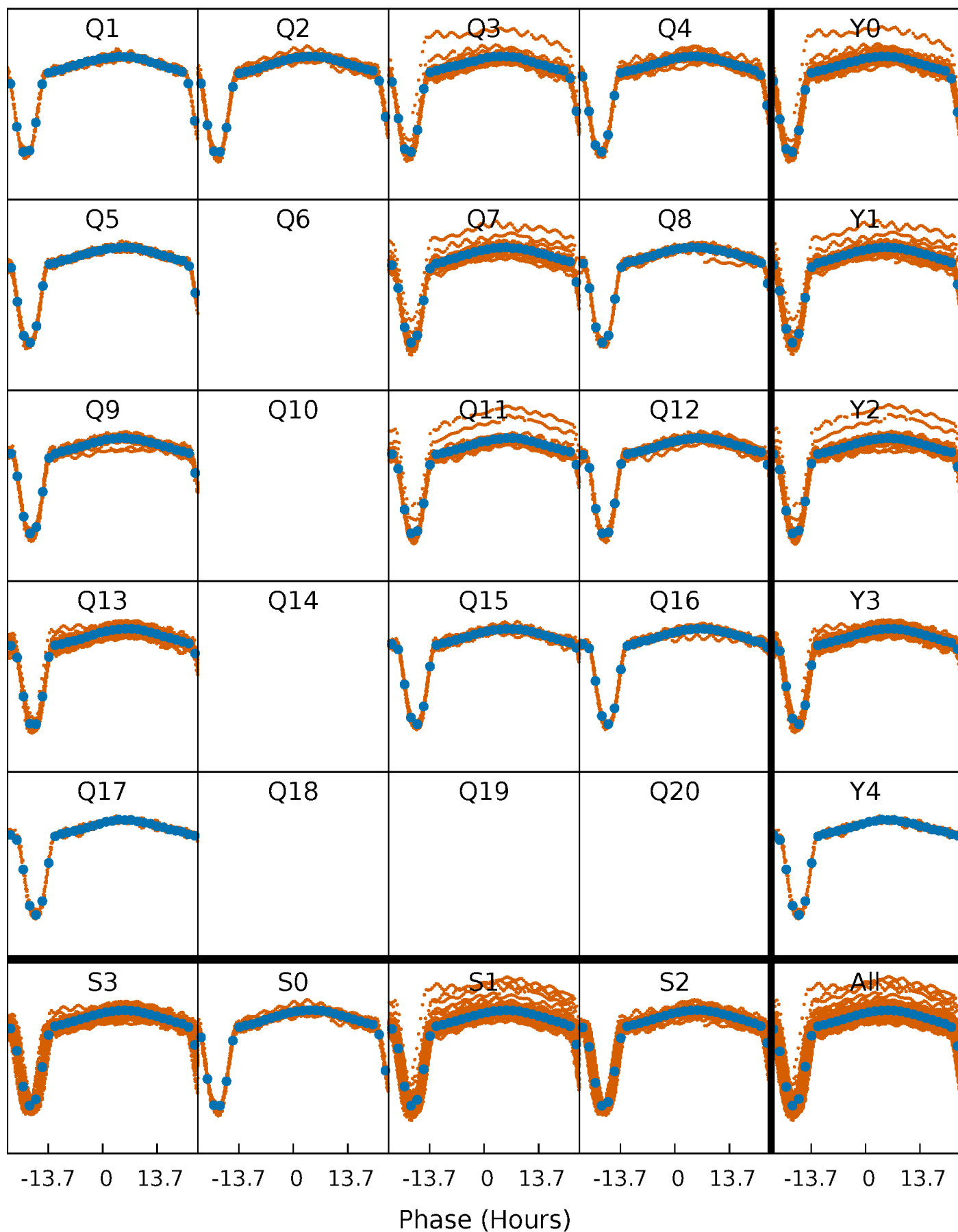


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



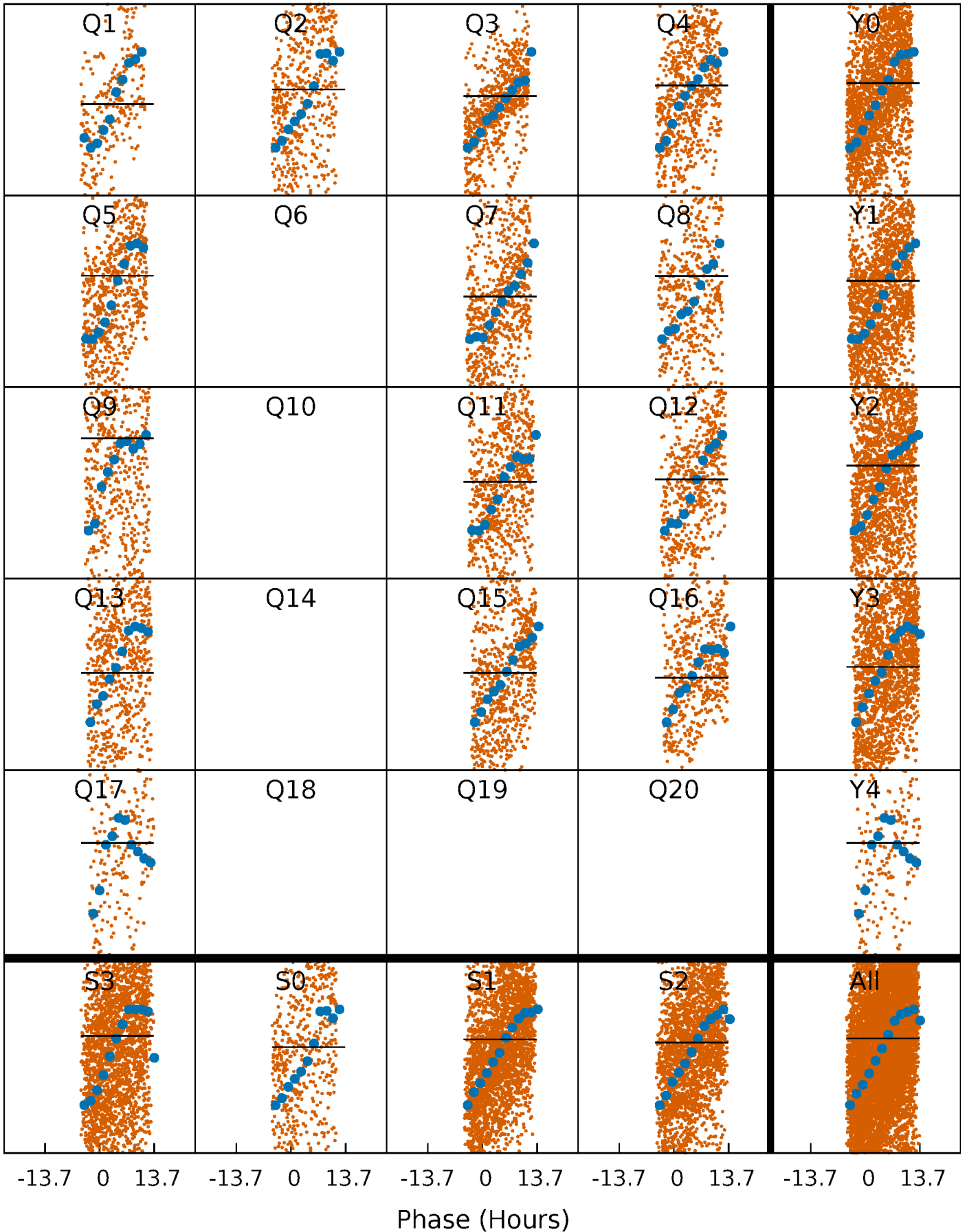
# PDC Quarter-Phased Transit Curves

TCE 004758368-02     $P = 3.749689$  Days     $T_0 = 133.503266$  (BKJD)



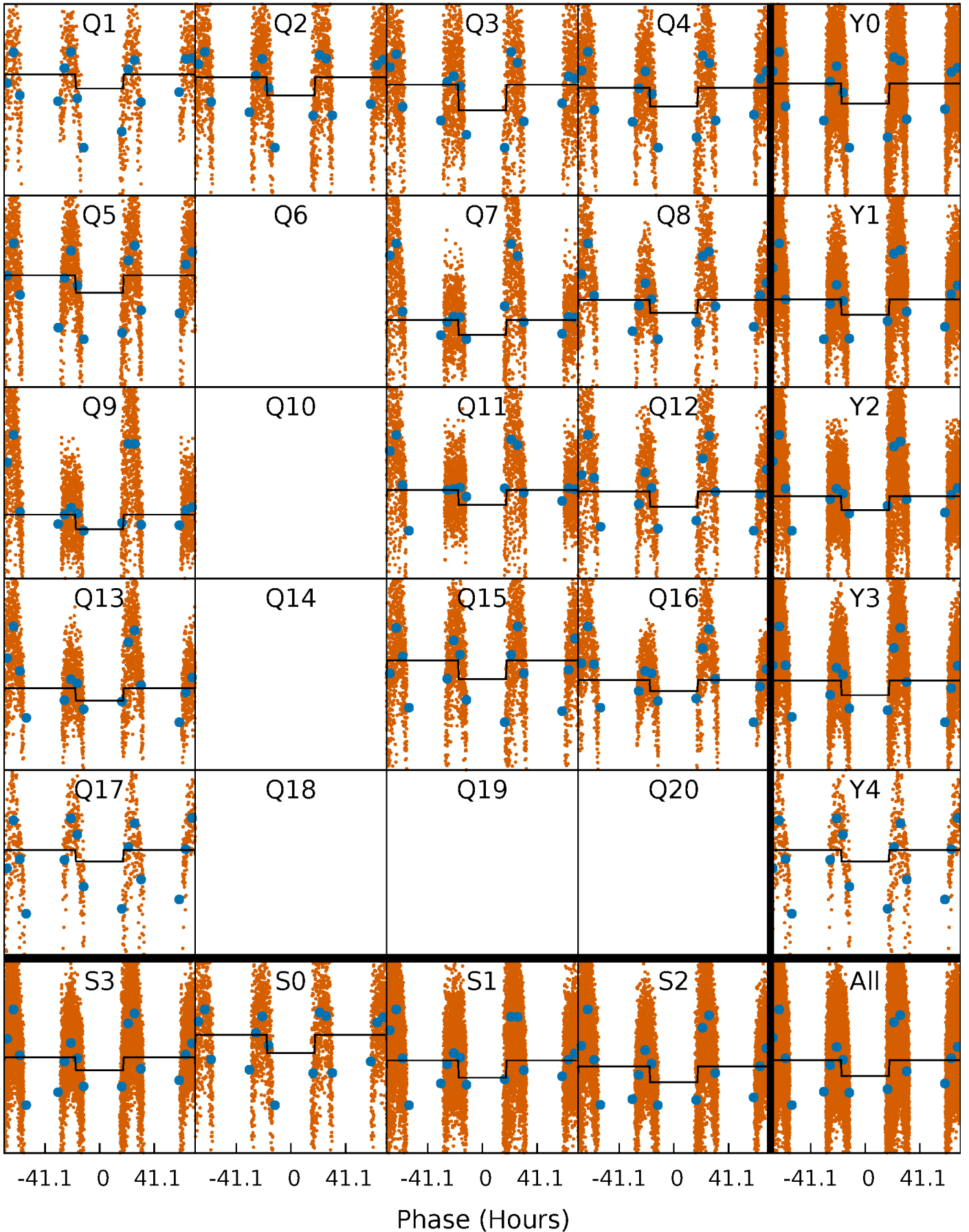
# DV Quarter-Phased Transit Curves

TCE 004758368-02     $P = 3.749689$  Days     $T_0 = 133.503266$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

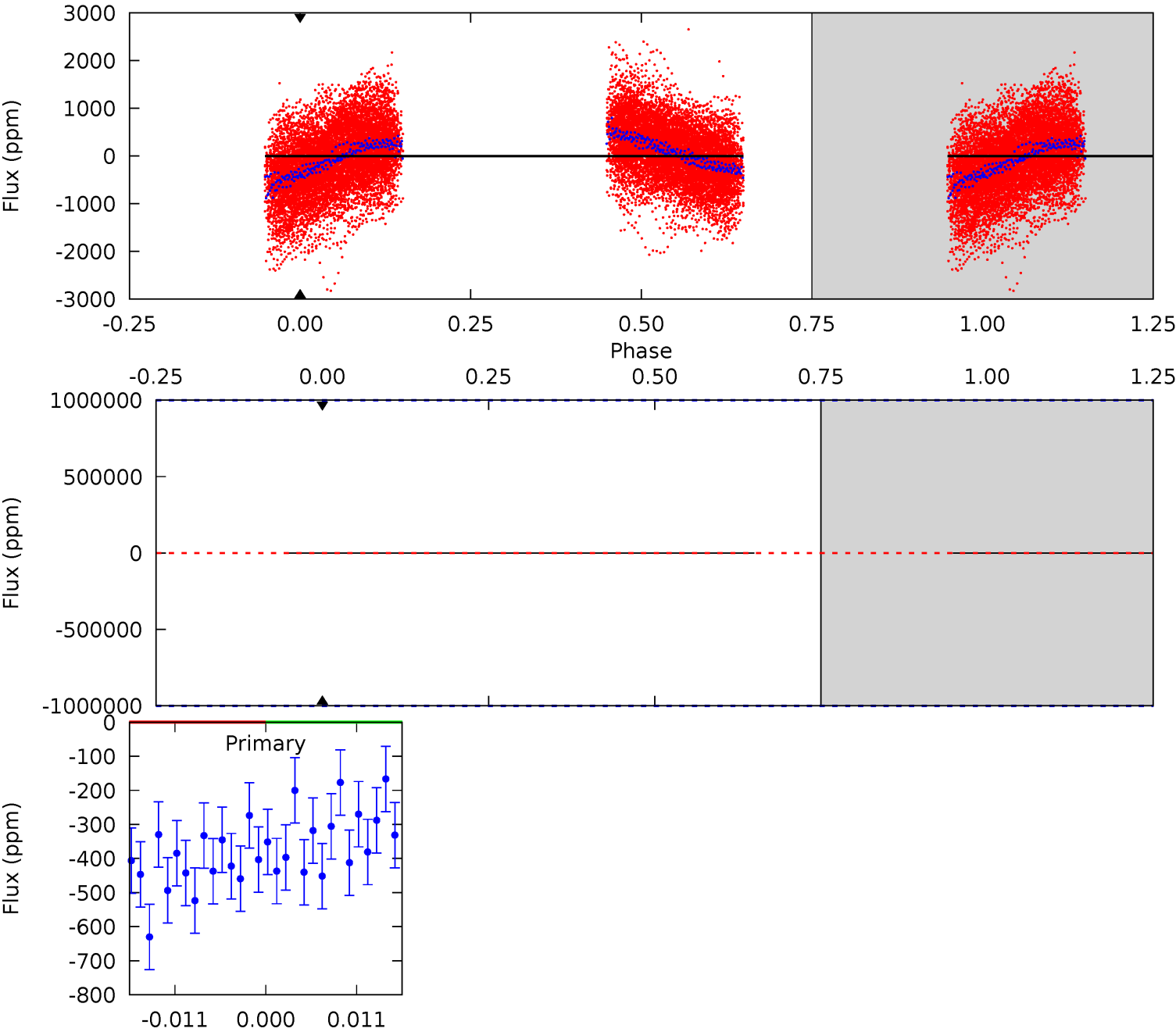
TCE 004758368-02   P= 3.749689 Days    $T_0=132.673311$  (BKJD)



DV Model-Shift Uniqueness Test

004758368-02, P = 3.749689 Days, E = 129.753577 Days

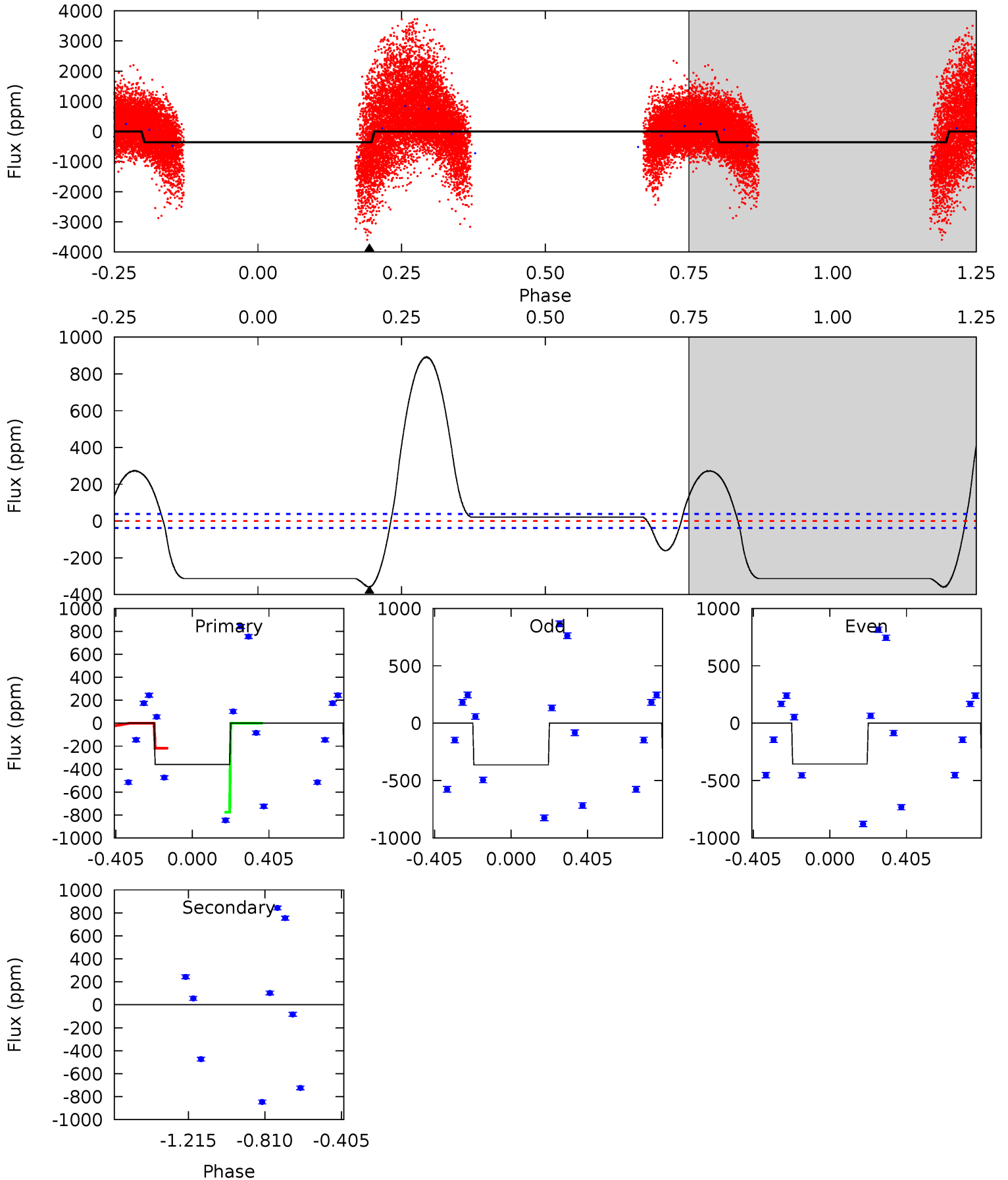
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004758368-02, P = 3.749689 Days, E = 128.923622 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
40.2	0	0	0	4.26	0.83	18.1	40.2	40.2	0	0	0.46	1.33	0.71	16.1





### Stellar Parameters For KIC 004758368

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4588^{+55}_{-75}$	$2.232^{+0.176}_{-0.095}$	$-0.020^{+0.100}_{-0.150}$	$18.328^{+2.154}_{-6.463}$	$2.090^{+0.889}_{-0.889}$	$0.000^{+0.001}_{-0.000}$
	+1%/-2%	+8%/-4%	+500%/-750%	+12%/-35%	+43%/-43%	+135%/-25%
Source	SPE74	SPE74	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 004758368-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$137.80^{+154.33}_{-100.59}$	$4878^{+202}_{-269}$	$-5000^{+17742}_{-8831}$	$-0.459^{+20.548}_{-20.599}$
Alt.	$0 \pm 9$	$133.66^{+158.23}_{-92.50}$	$4884^{+196}_{-309}$	$-4132^{+205}_{-138}$	$0.000^{+0.002}_{-0.002}$

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

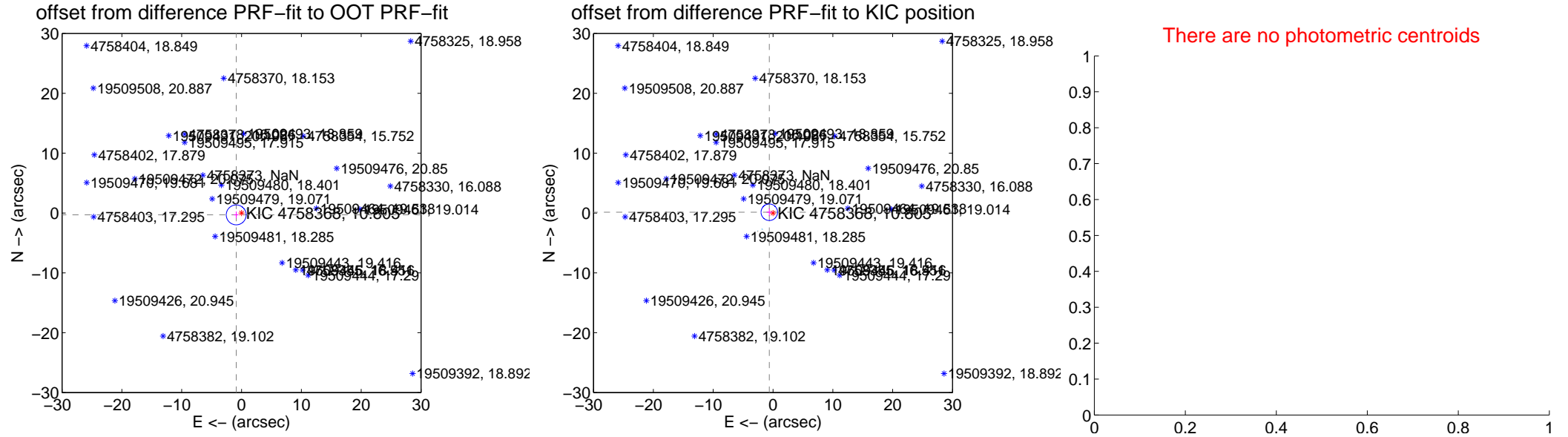
## DV Centroid Data

Supplemental centroid analysis for 004758368-02. **Kepler magnitude: 10.80.** Transit SNR -1.00

There are 12 quarters with good PRF difference image offsets

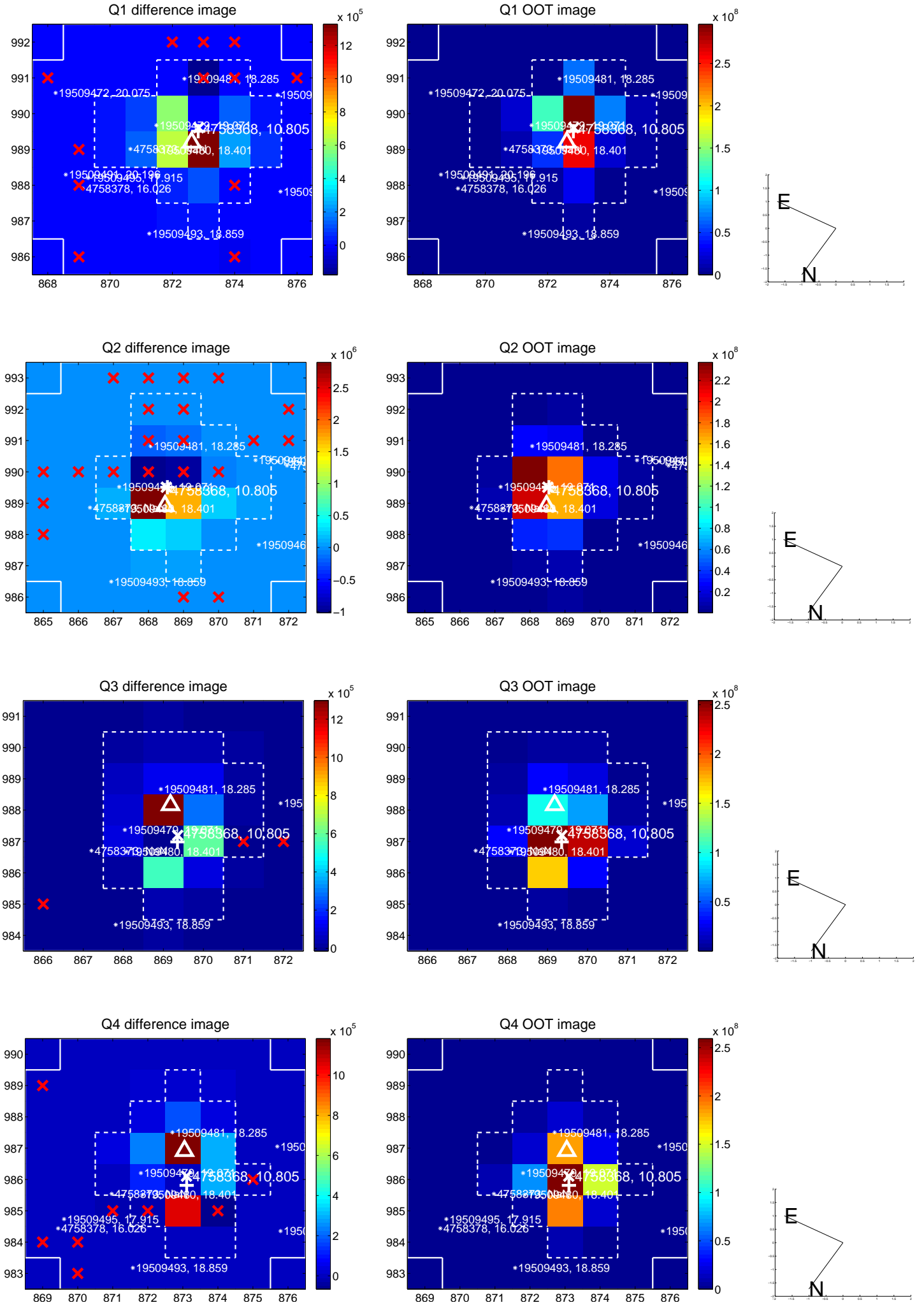
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.943 \pm 0.554$	1.70	$0.890 \pm 0.399$	$-0.312 \pm 0.565$
PRF-fit source offset from KIC position	$0.633 \pm 0.460$	1.38	$0.620 \pm 0.450$	$0.128 \pm 0.644$
photometric centroid source offset	—	—	—	—

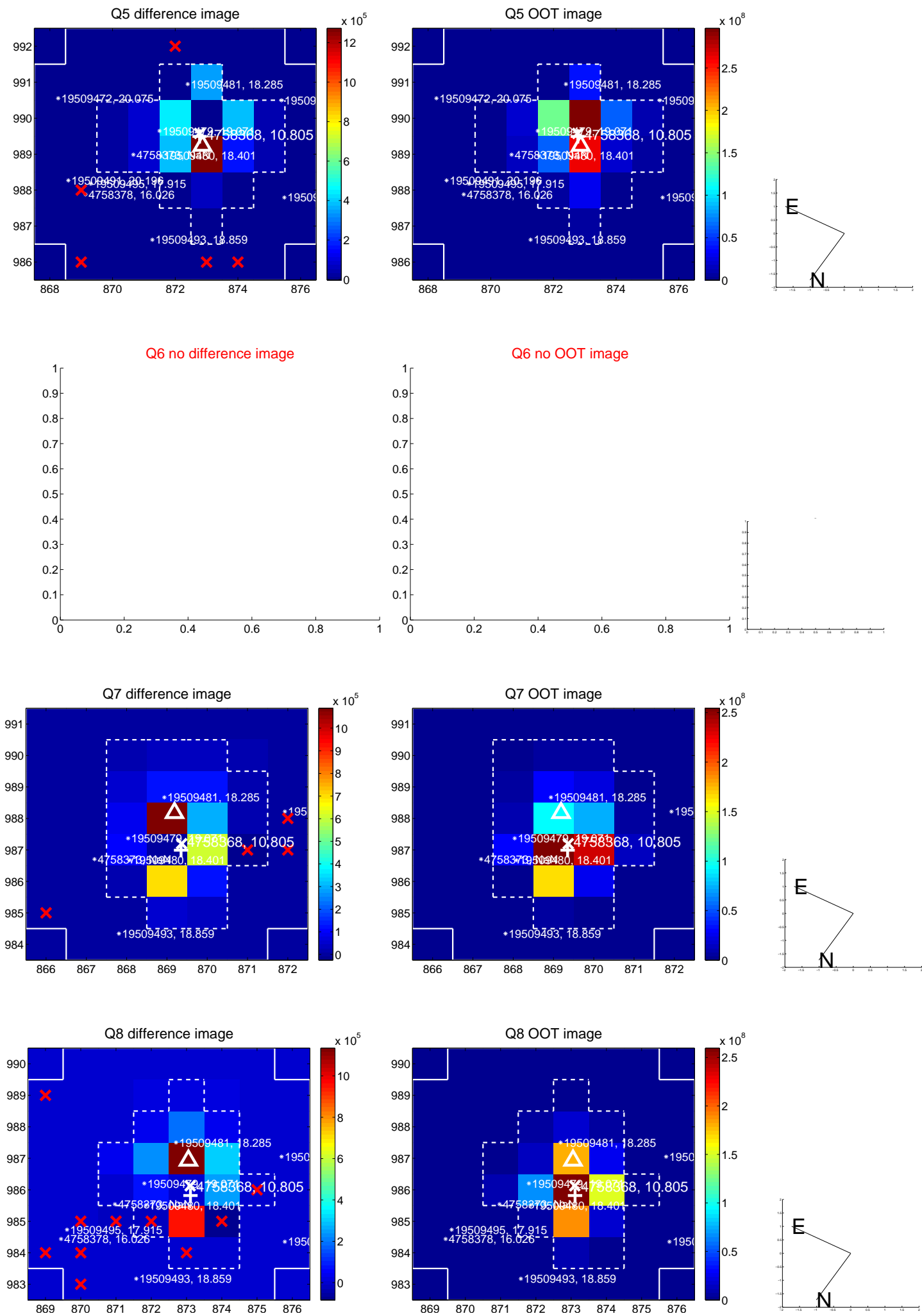


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

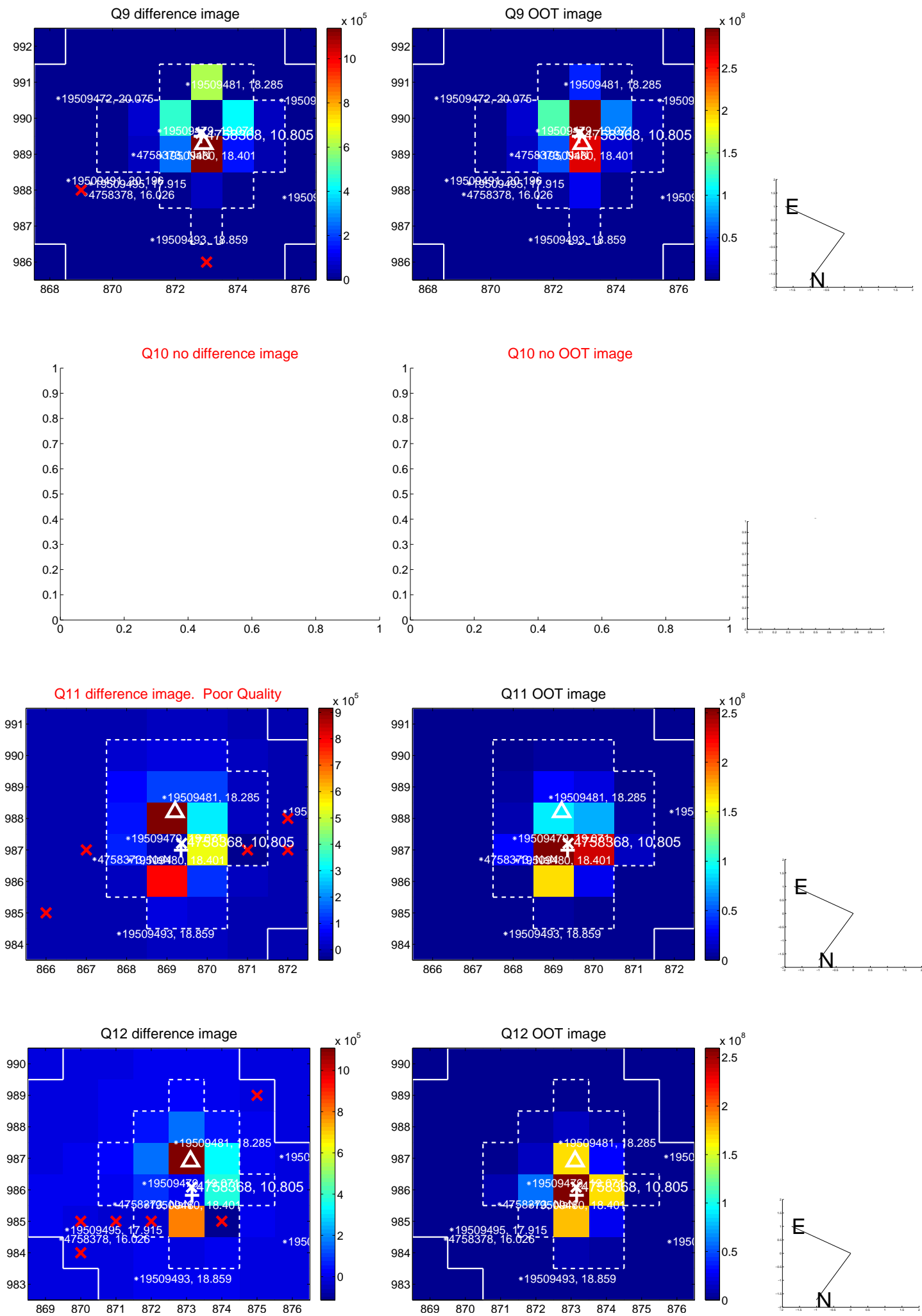
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



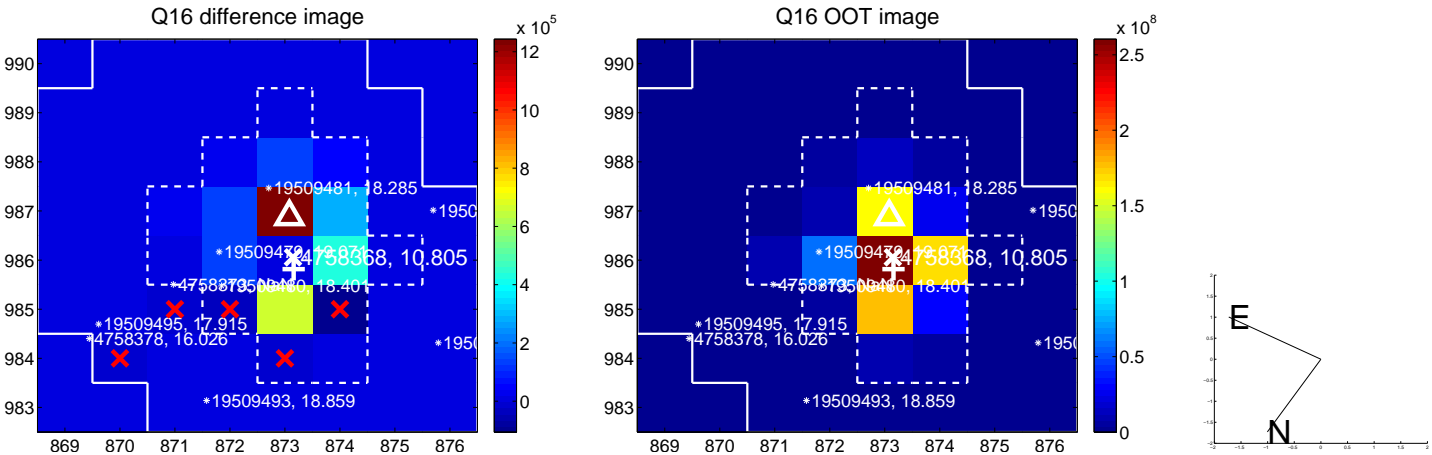
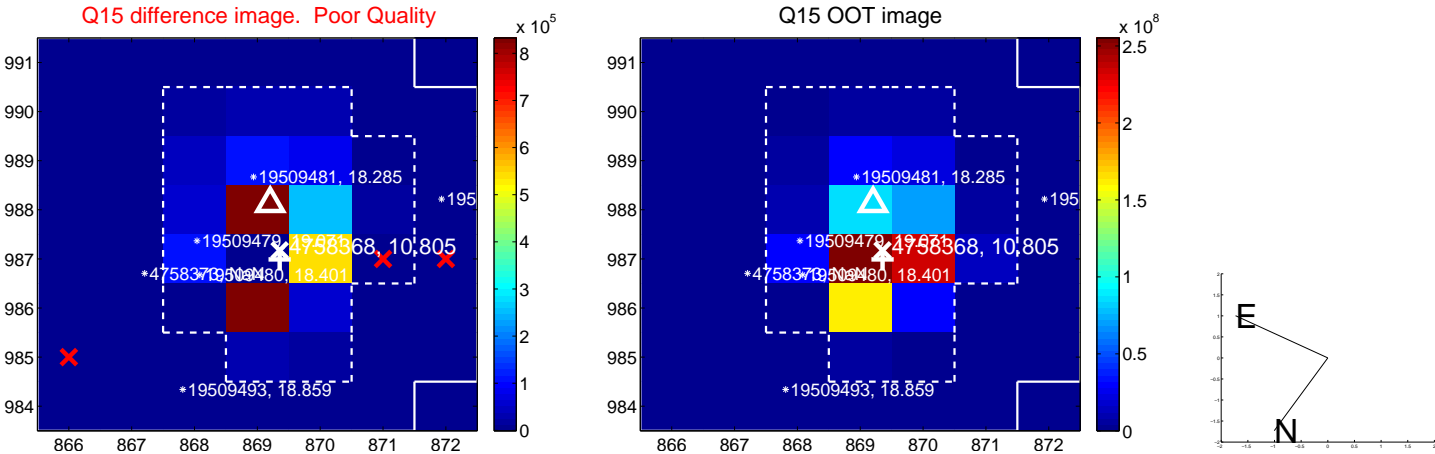
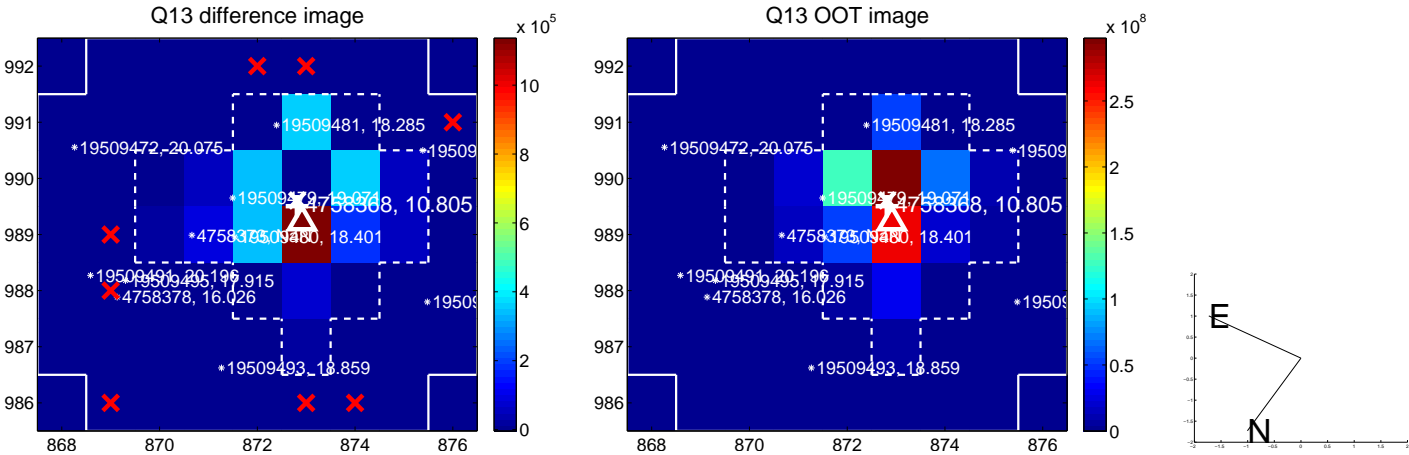
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



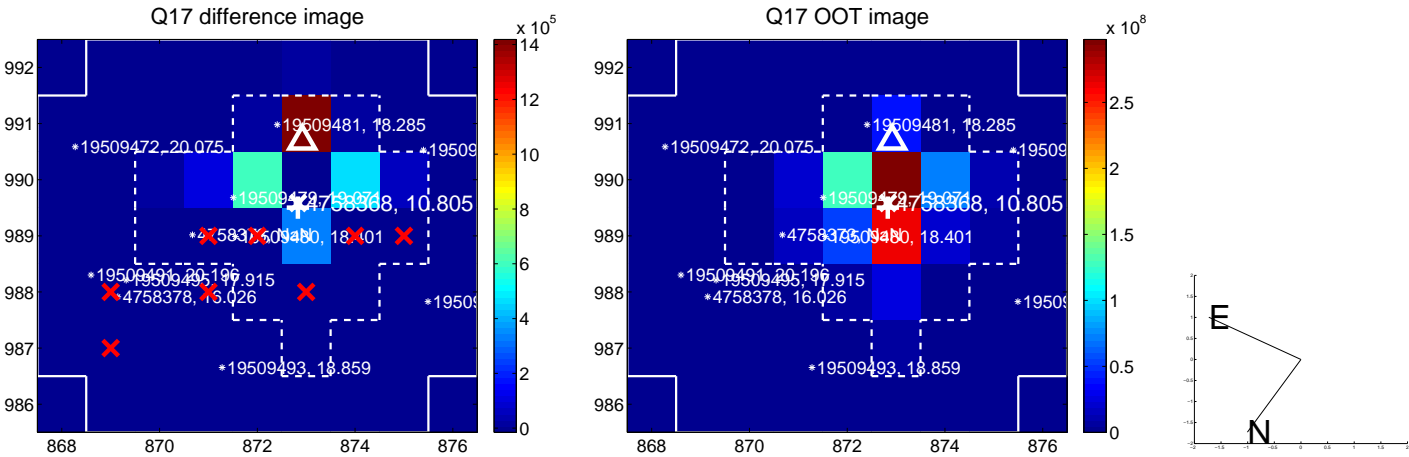
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



folded centroid time series figure for this object.

UKIRT Image

Declination

