

# KIC 010342248

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010342248-01	OBS	4315.01	0.933673	131.578014	60.4	4.840	12.1	10.8	0.80	5335	0.75	1449.92
010342248-02	OBS	No	64.915030	152.462576	278.7	12.236	8.5	6.1	0.80	5335	1.50	5.07

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010342248-01	OBS	FP	0.00	0	0	0	1	CENT_FEW_DIFFS—EPHEM_MATCH
010342248-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

**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.

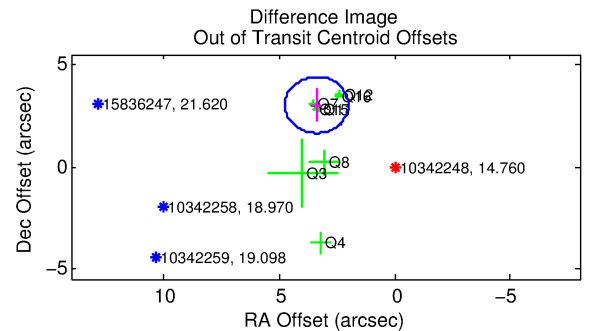
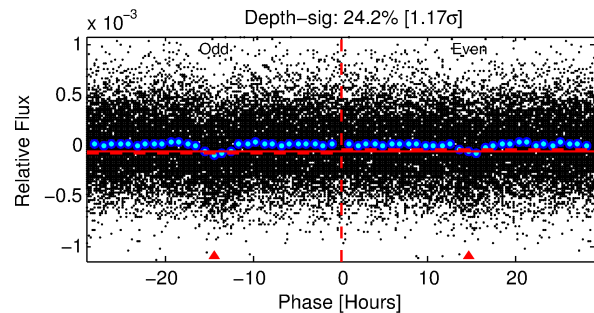
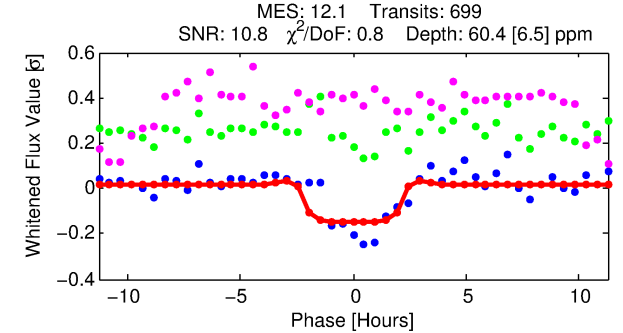
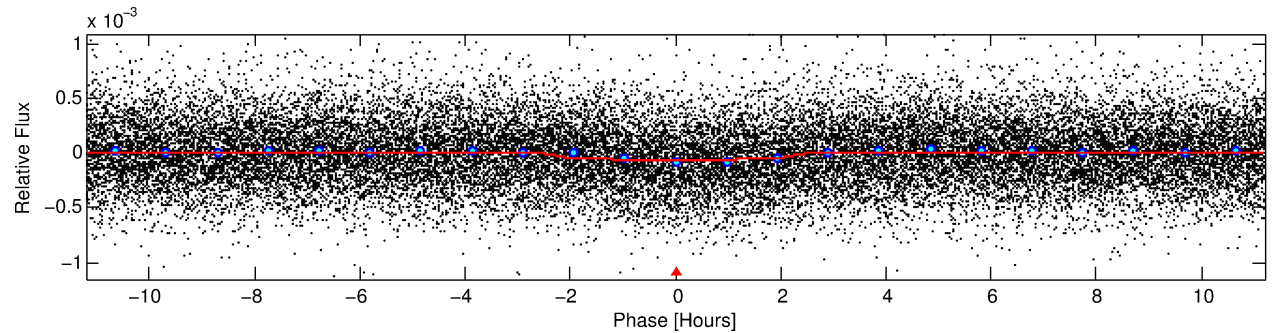
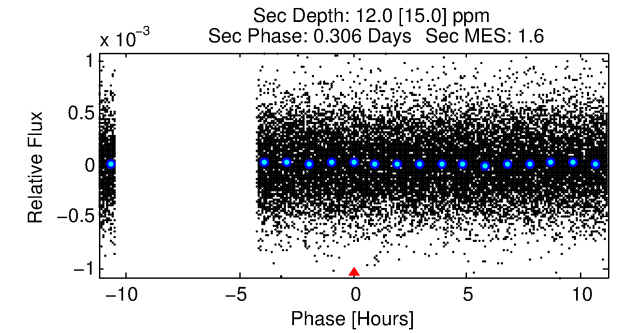
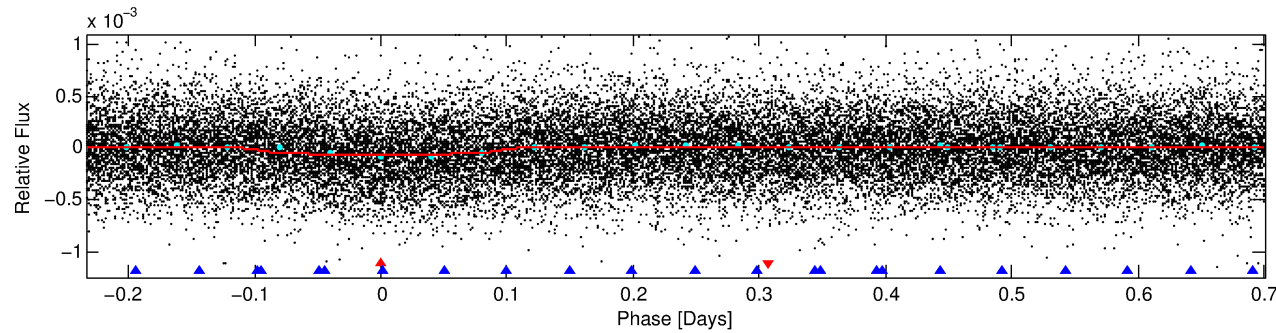
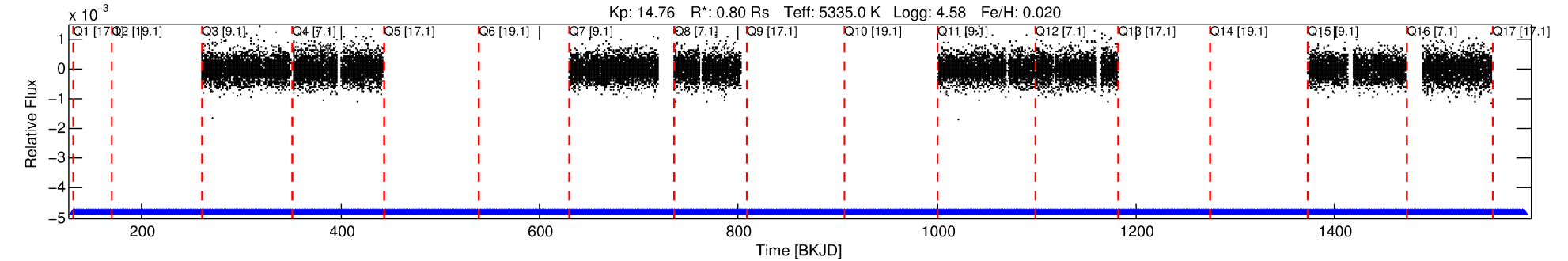
## Ephemeris Match Information For 010342248-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta\text{Row}$	$\Delta\text{Col}$	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
010342248-01	10342248	V2083-Cyg-pri	10342012	1:2	229.2	-34	-45	6.90	14.76	3305.40	Direct-PRF	0	0.07	2.26

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta\text{Row}$  and  $\Delta\text{Col}$  are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10342248 Candidate: 1 of 2 Period: 0.934 d  
KOI: K04315.01 Corr: 0.863



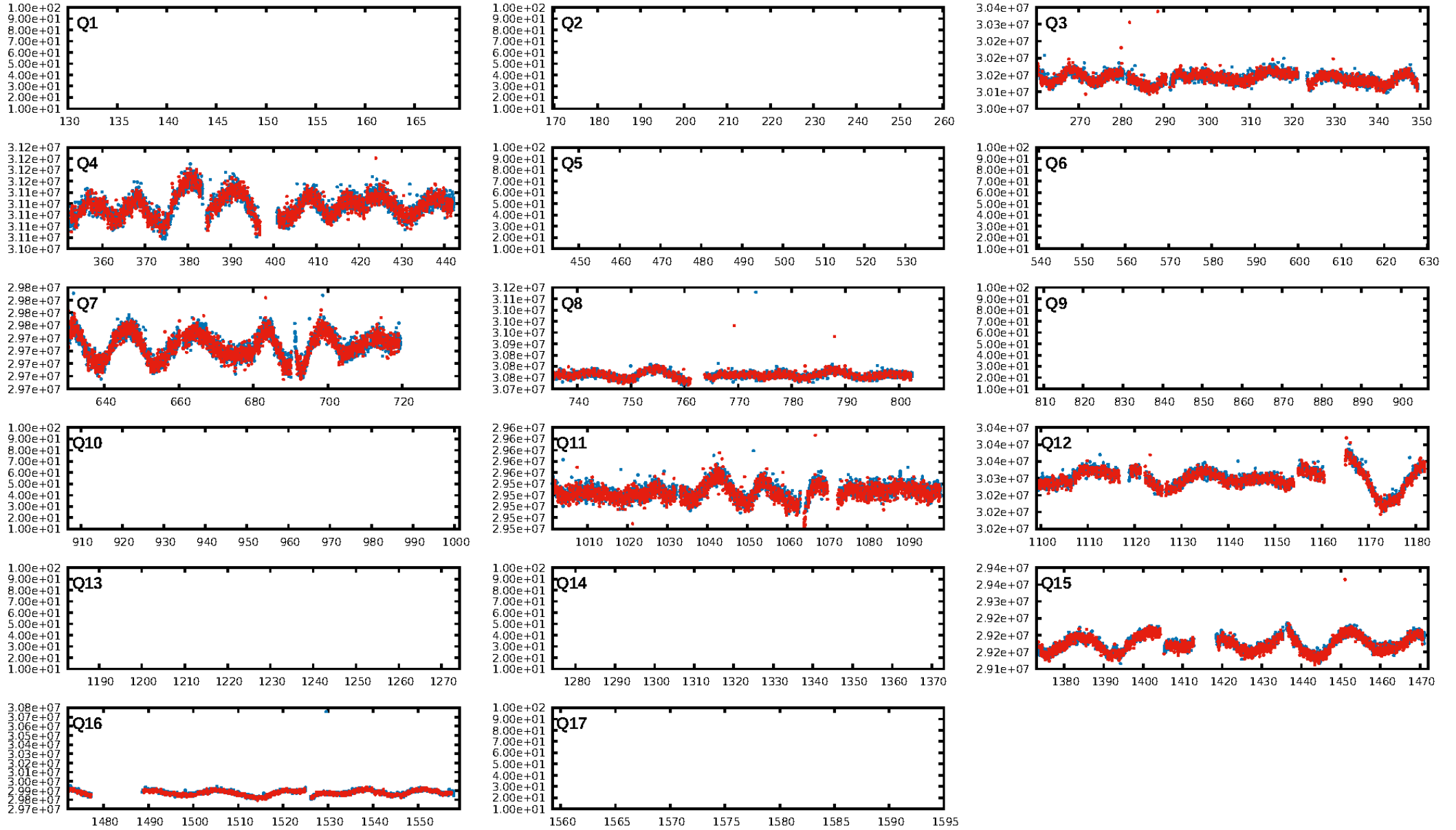
## DV Fit Results:

Period = 0.93367 [0.00001] d  
Epoch = 131.5780 [0.0041] BKJD  
Rp/R\* = 0.0086 [0.0038]  
a/R\* = 1.15 [0.56]  
b = 0.90 [0.41]  
Seff = 1449.92 [392.66]  
Teff = 1573 [107] K  
Rp = 0.75 [0.36] Re  
a = 0.0180 [0.0029] AU  
Ag = 3.76 [5.82] [0.47σ]  
Teffp = 3387 [1303] K [1.39σ]

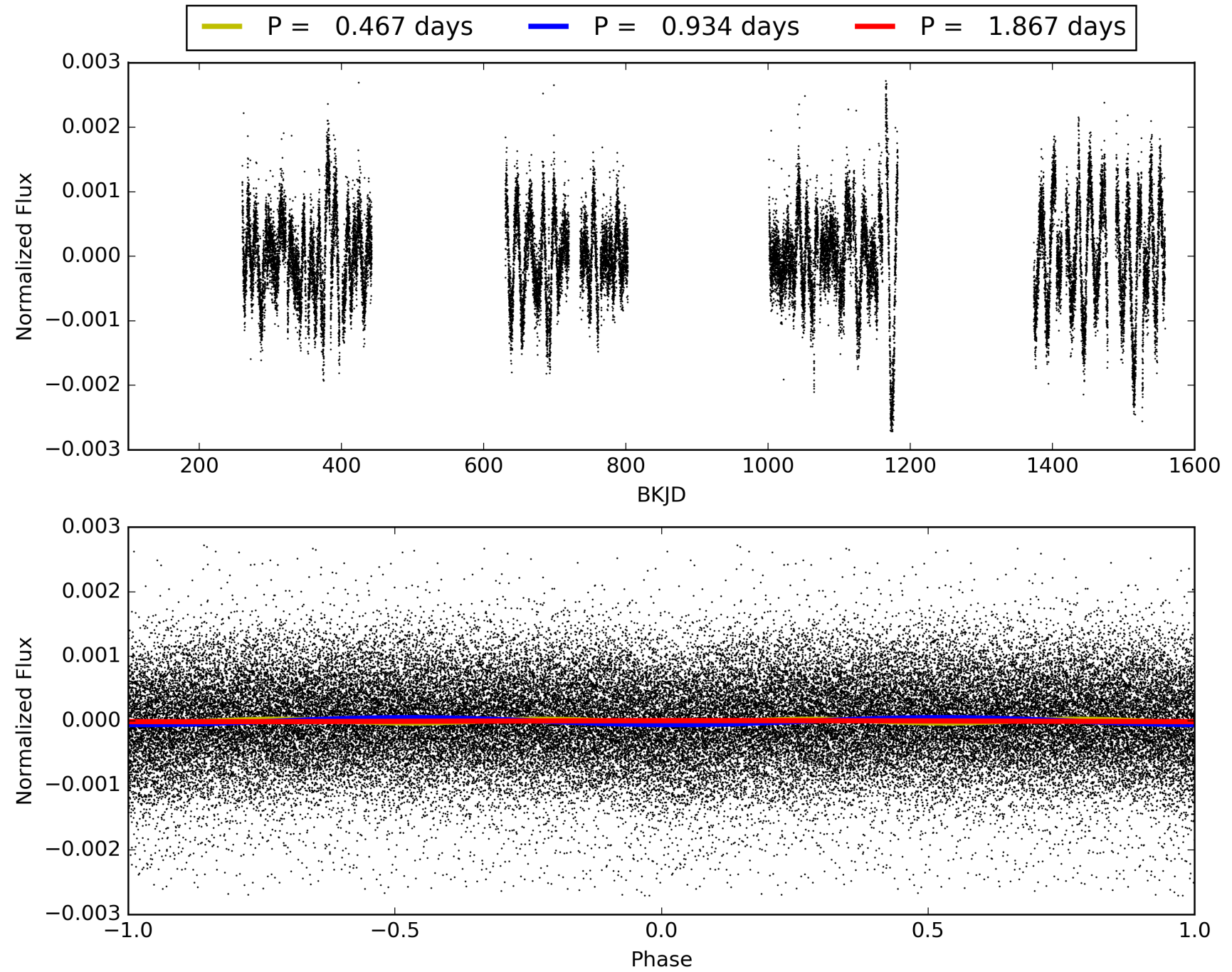
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [116.70σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.84e-21  
RollingBand-fgt: 1.00 [699/699]  
GhostDiagnostic-chr: 0.6819  
Centroid-sig: 0.0%  
Centroid-so: 4.342 arcsec [5.01σ]  
OotOffset-rm: 4.532 arcsec [9.90σ]  
KicOffset-rm: 4.303 arcsec [8.12σ]  
OotOffset-st: 0/4/4/0 [8]  
KicOffset-st: 0/4/4/0 [8]  
DiffImageQuality-fgm: 0.00 [0/8]  
DiffImageOverlap-fno: 1.00 [8/8]

# TCE 010342248-01, PDC Light Curves

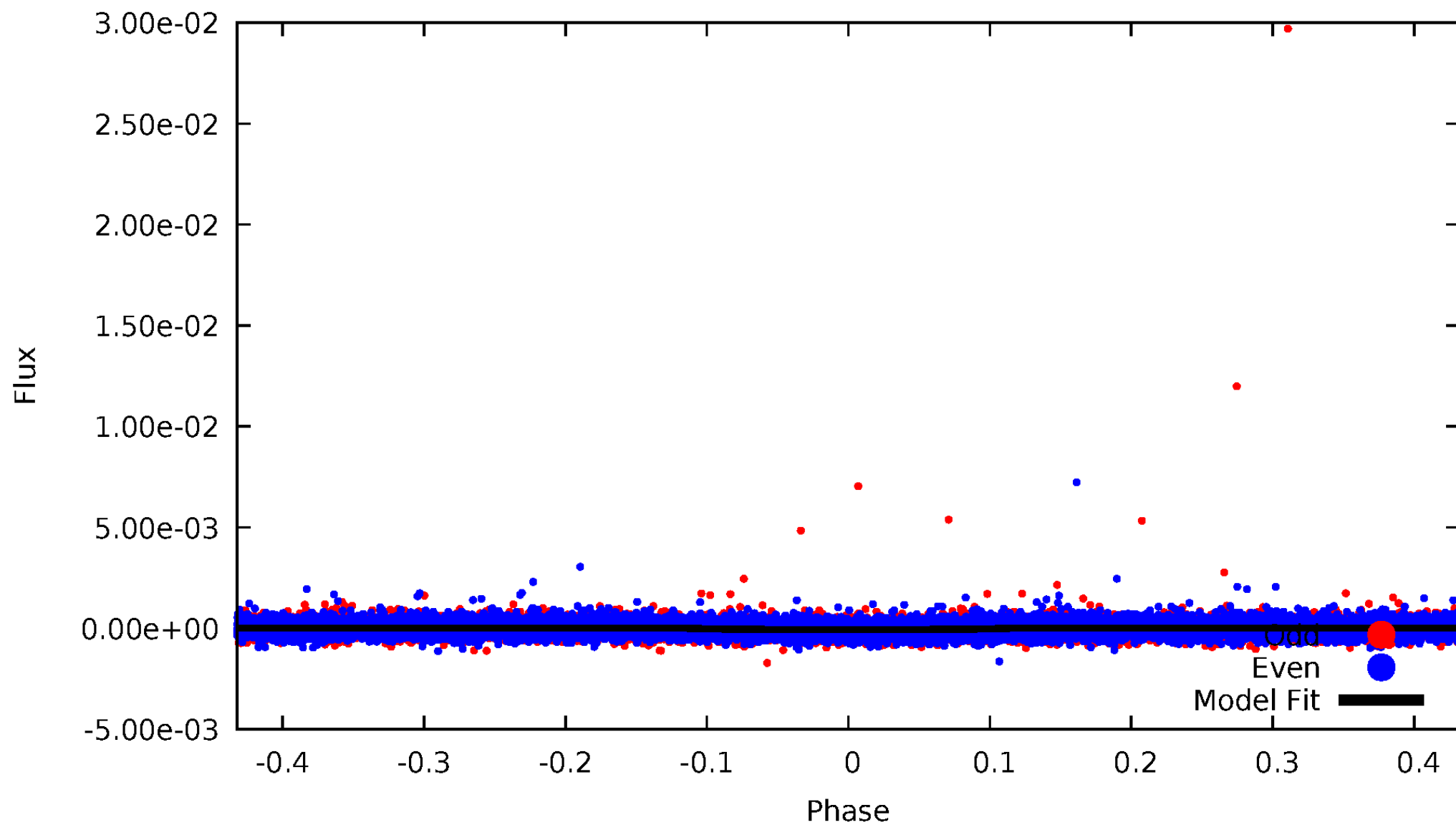


# TCE 010342248-01



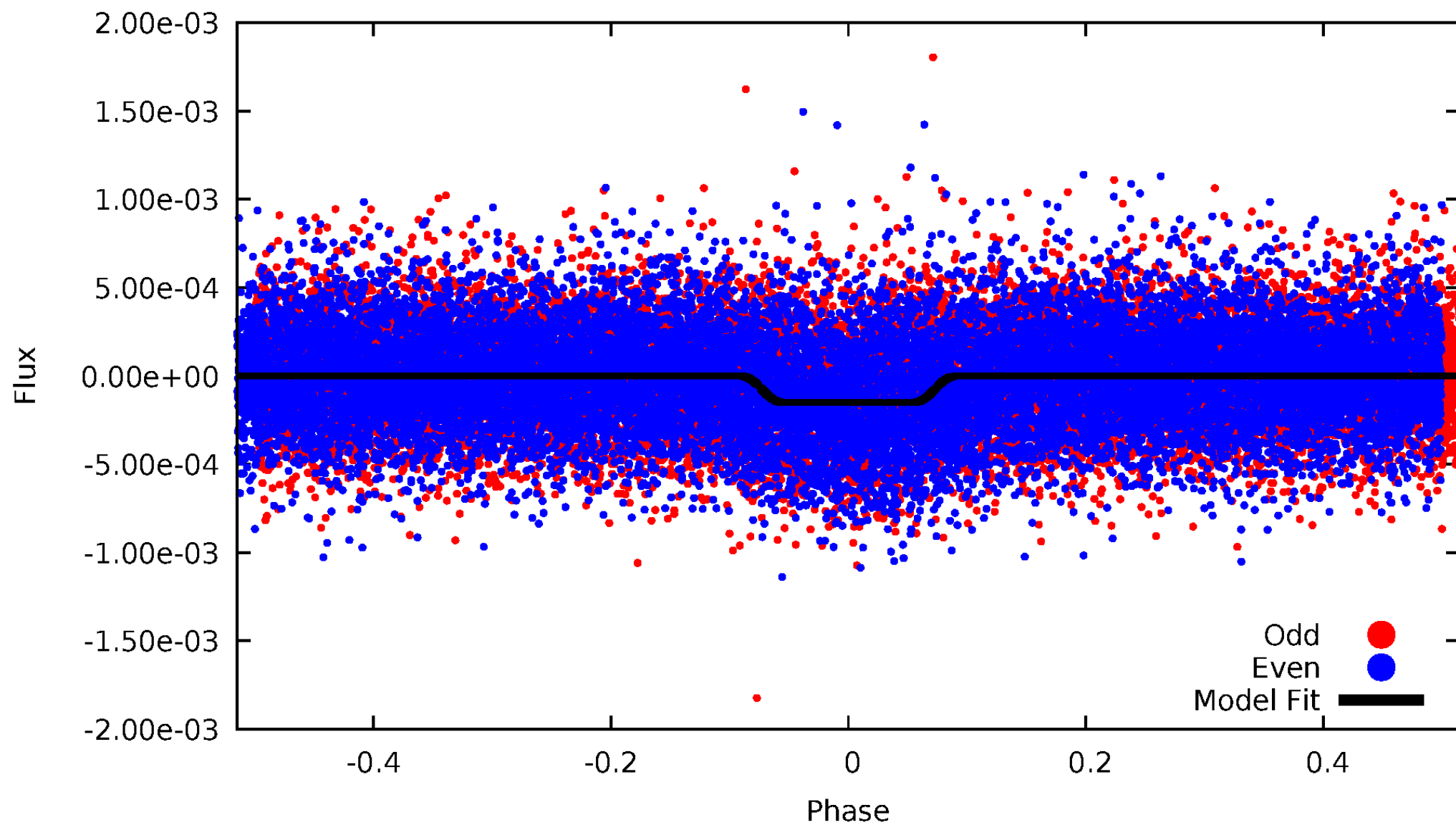
# DV Odd/Even

TCE 010342248-01



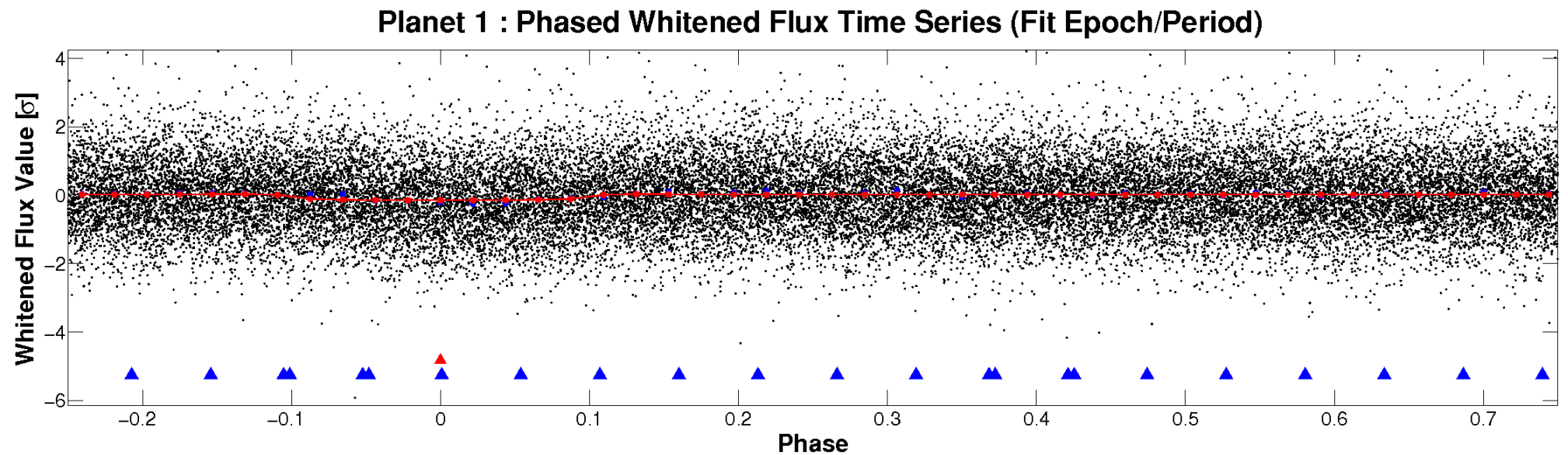
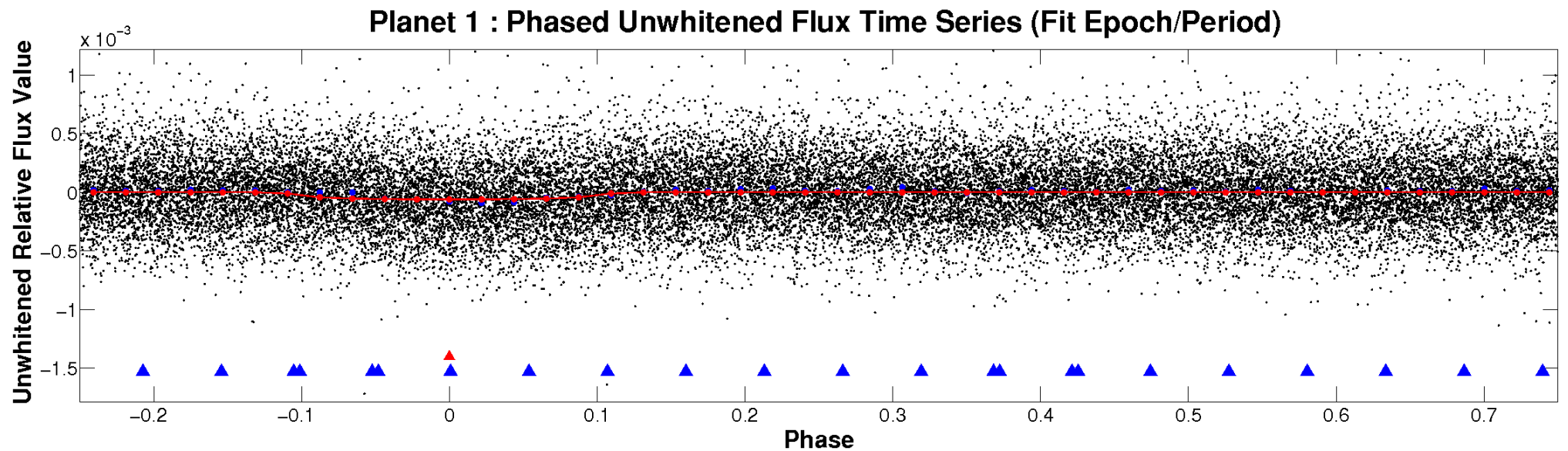
# ALT Odd/Even

TCE 010342248-01



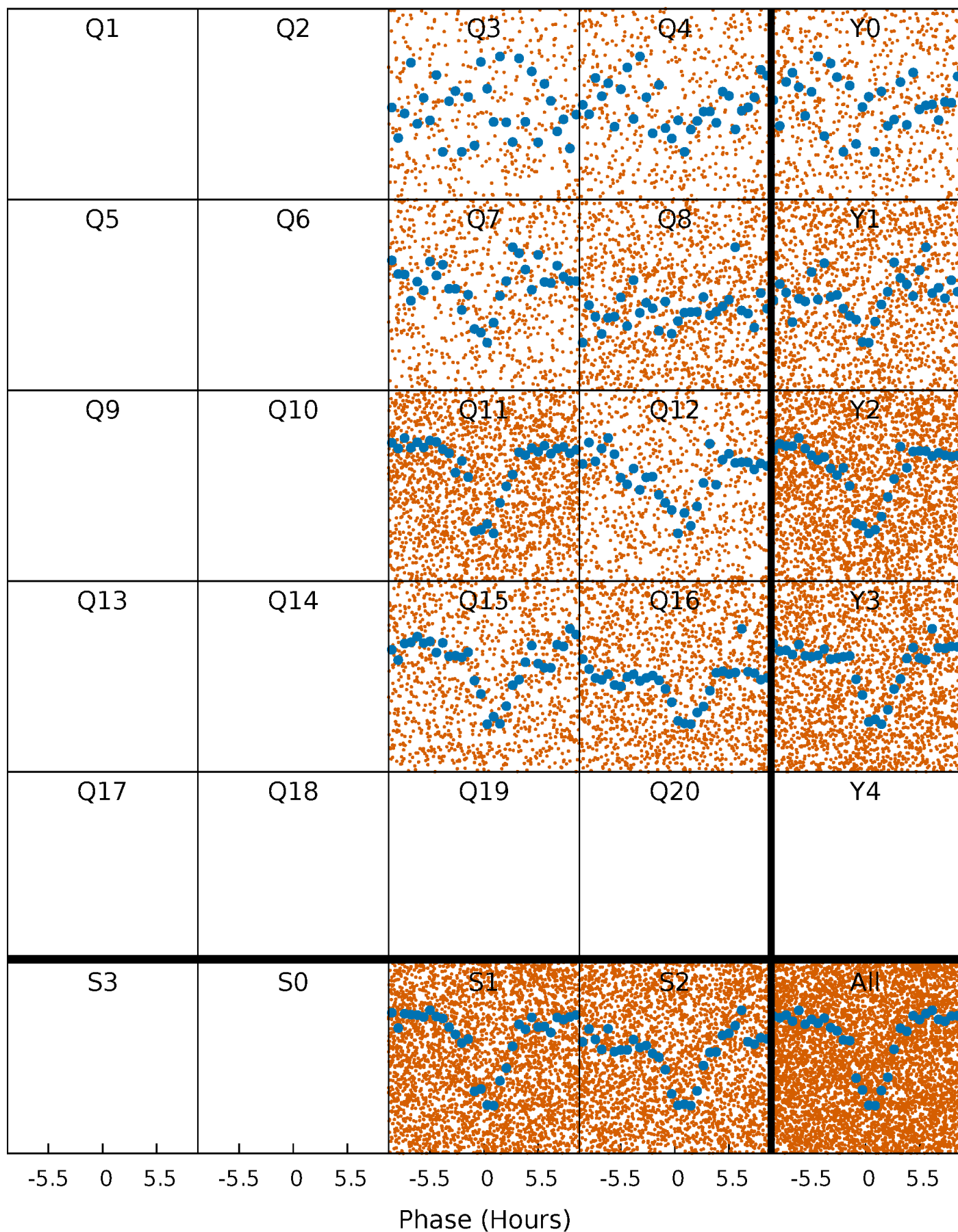


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

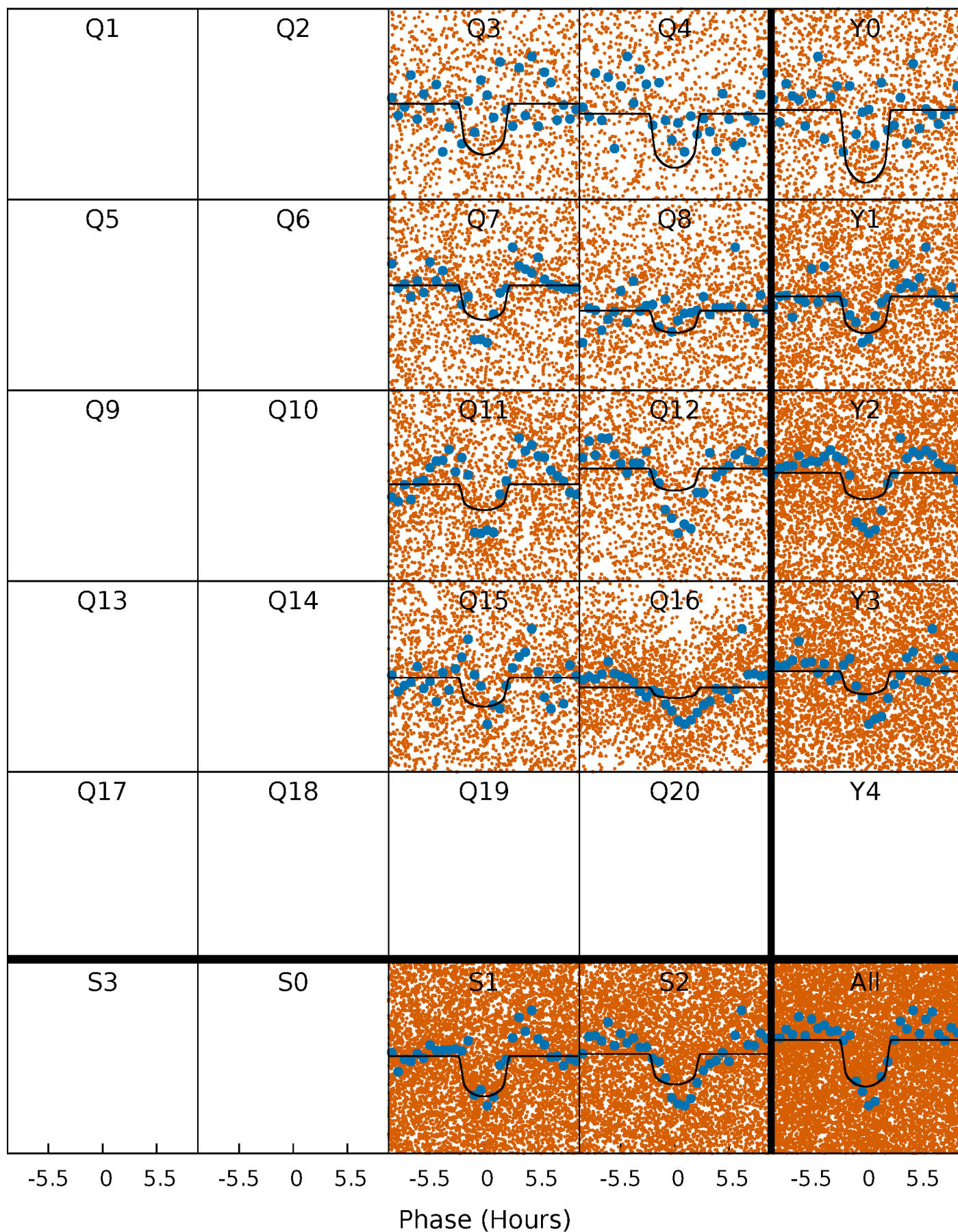
TCE 010342248-01 P= 0.933673 Days  $T_0=131.578014$  (BKJD)





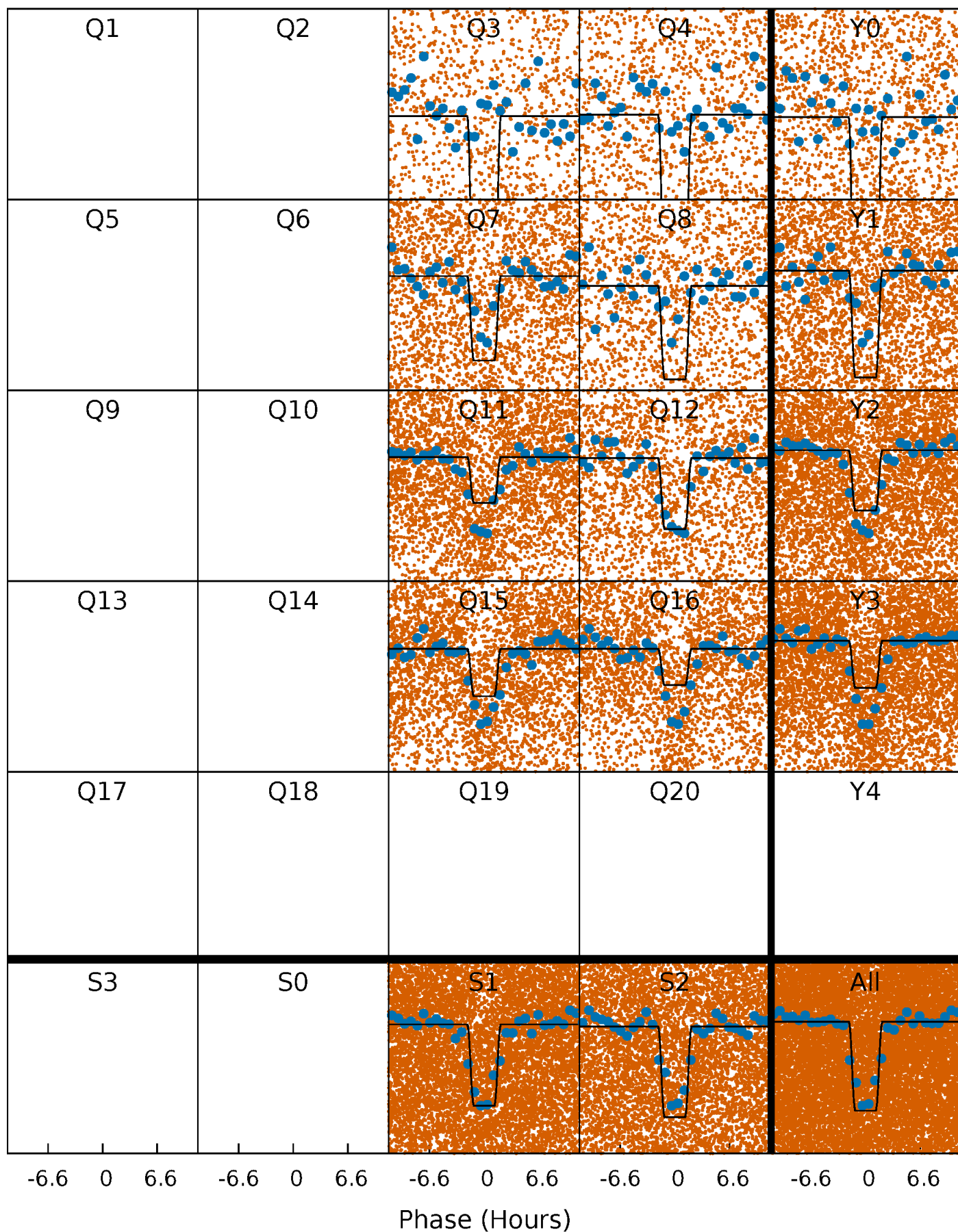
# DV Quarter-Phased Transit Curves

TCE 010342248-01   P= 0.933673 Days    $T_0=131.578014$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

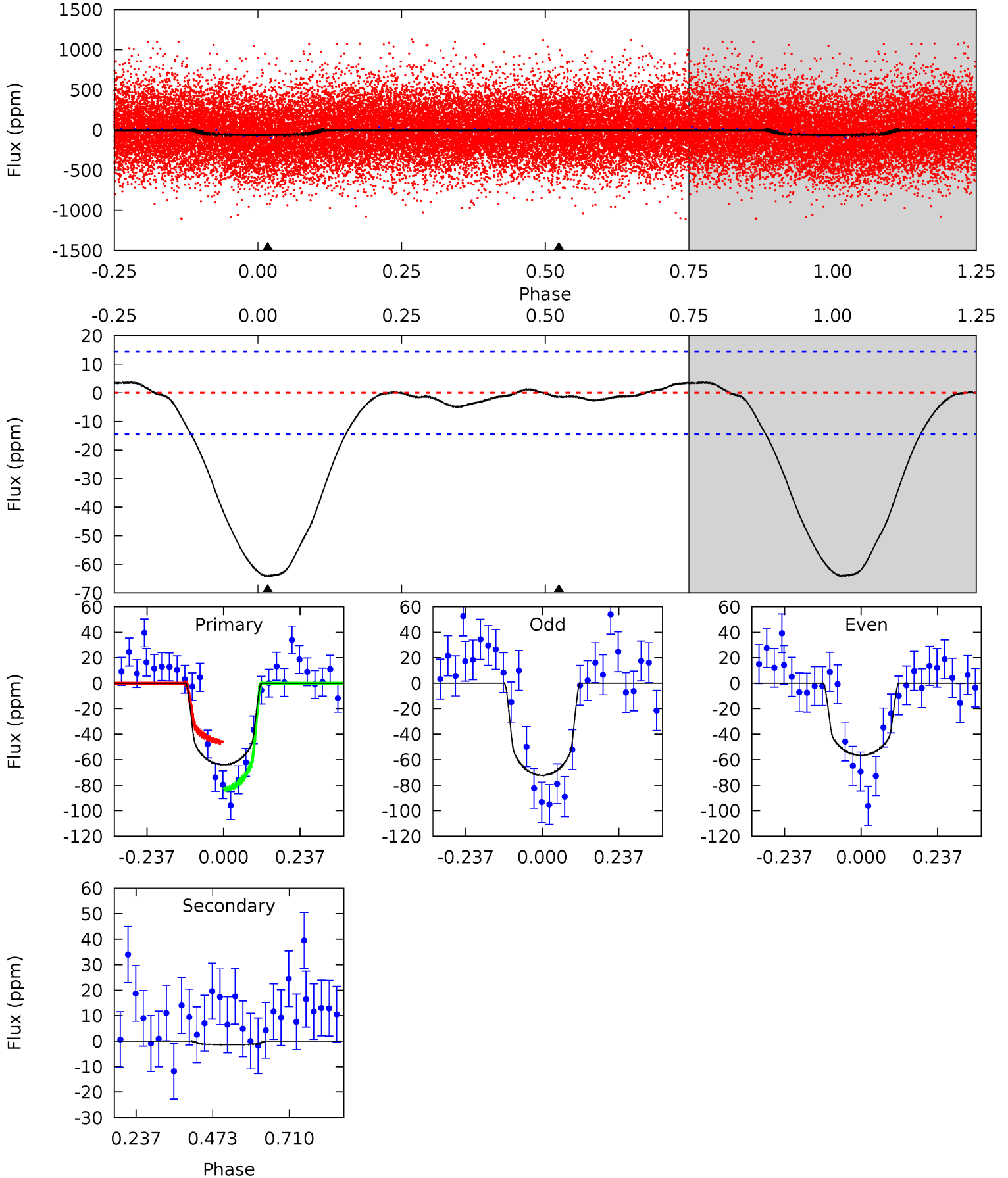
TCE 010342248-01 P= 0.933716 Days  $T_0=131.555251$  (BKJD)



# DV Model-Shift Uniqueness Test

010342248-01, P = 0.933673 Days, E = 131.578014 Days

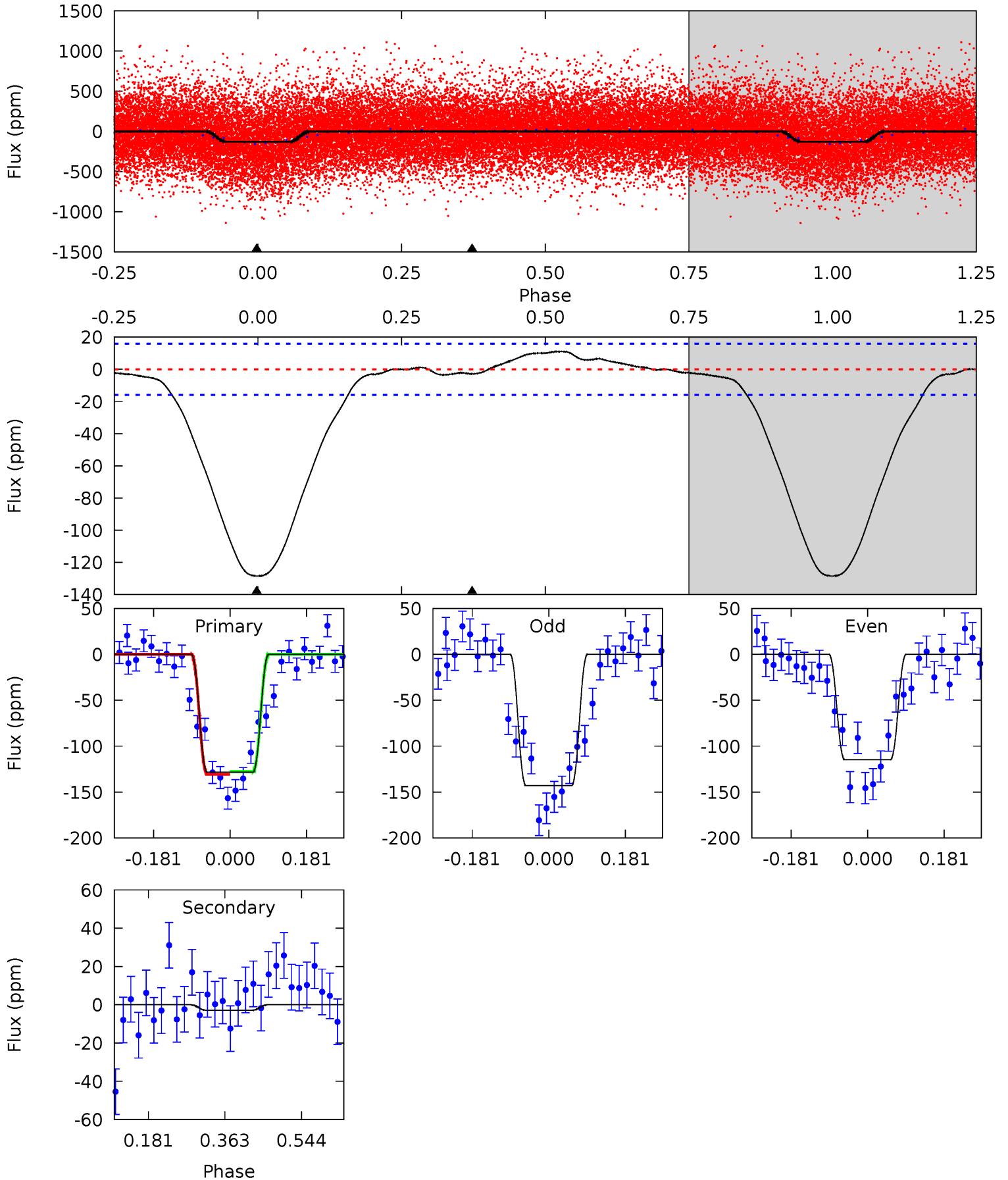
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	0.43	0	0	4.38	1.18	0.66	19.3	19.3	0.43	0.43	2.37	1.01	0.05	5.64



# Alt Model-Shift Uniqueness Test

010342248-01, P = 0.933716 Days, E = 131.555251 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
35.7	0.80	0	0	4.44	1.34	1.06	35.7	35.7	0.80	0.80	3.91	0.99	0.08	0.43



### Stellar Parameters For KIC 010342248

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5335^{+185}_{-185}$	$4.577^{+0.030}_{-0.127}$	$0.020^{+0.250}_{-0.300}$	$0.804^{+0.153}_{-0.061}$	$0.891^{+0.070}_{-0.096}$	$2.418^{+0.405}_{-0.897}$
	+3%/-3%	+1%/-3%	+1250%/-1500%	+19%/-8%	+8%/-11%	+17%/-37%
Source	KIC0	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 010342248-01 / KOI 4315.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1 \pm 3$	$0.76^{+0.34}_{-0.32}$	$2230^{+112}_{-91}$	$-1546^{+4826}_{-1544}$	$0.299^{+1.615}_{-0.986}$
Alt.	$-3 \pm 4$	$1.12^{+0.34}_{-0.39}$	$2237^{+109}_{-102}$	$2221^{+841}_{-4948}$	$0.360^{+0.879}_{-0.438}$

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



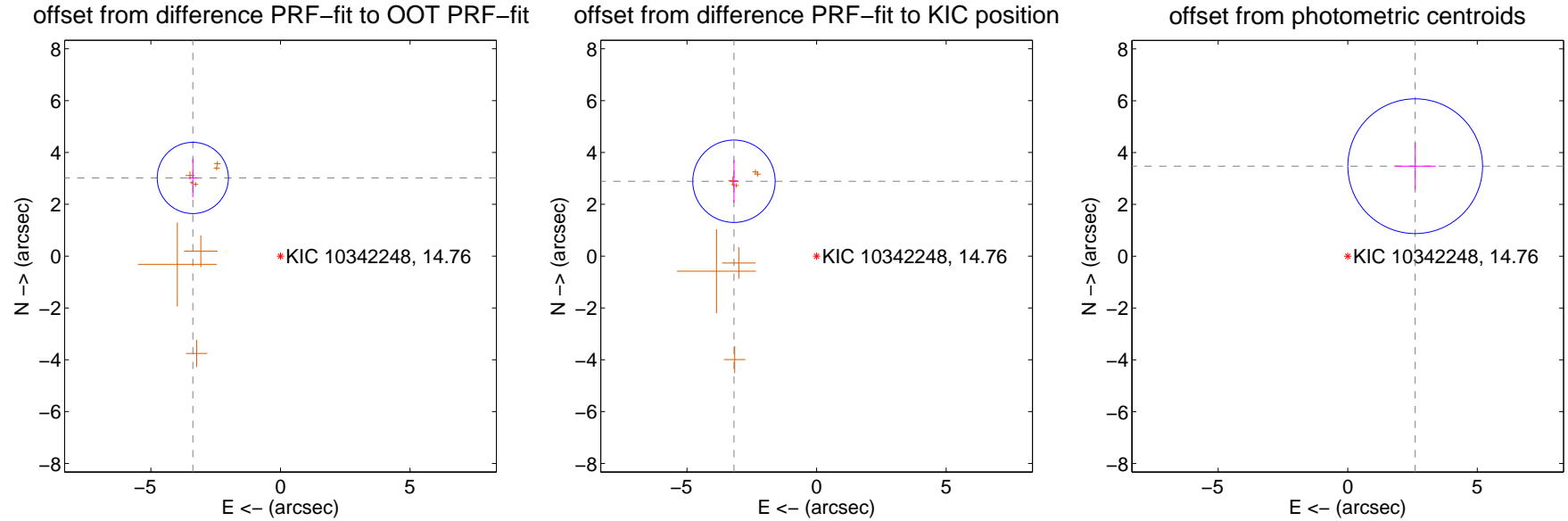
## DV Centroid Data

Supplemental centroid analysis for 010342248-01. Kepler magnitude: 14.76. Transit SNR 10.79

There are 0 quarters with good PRF difference image offsets

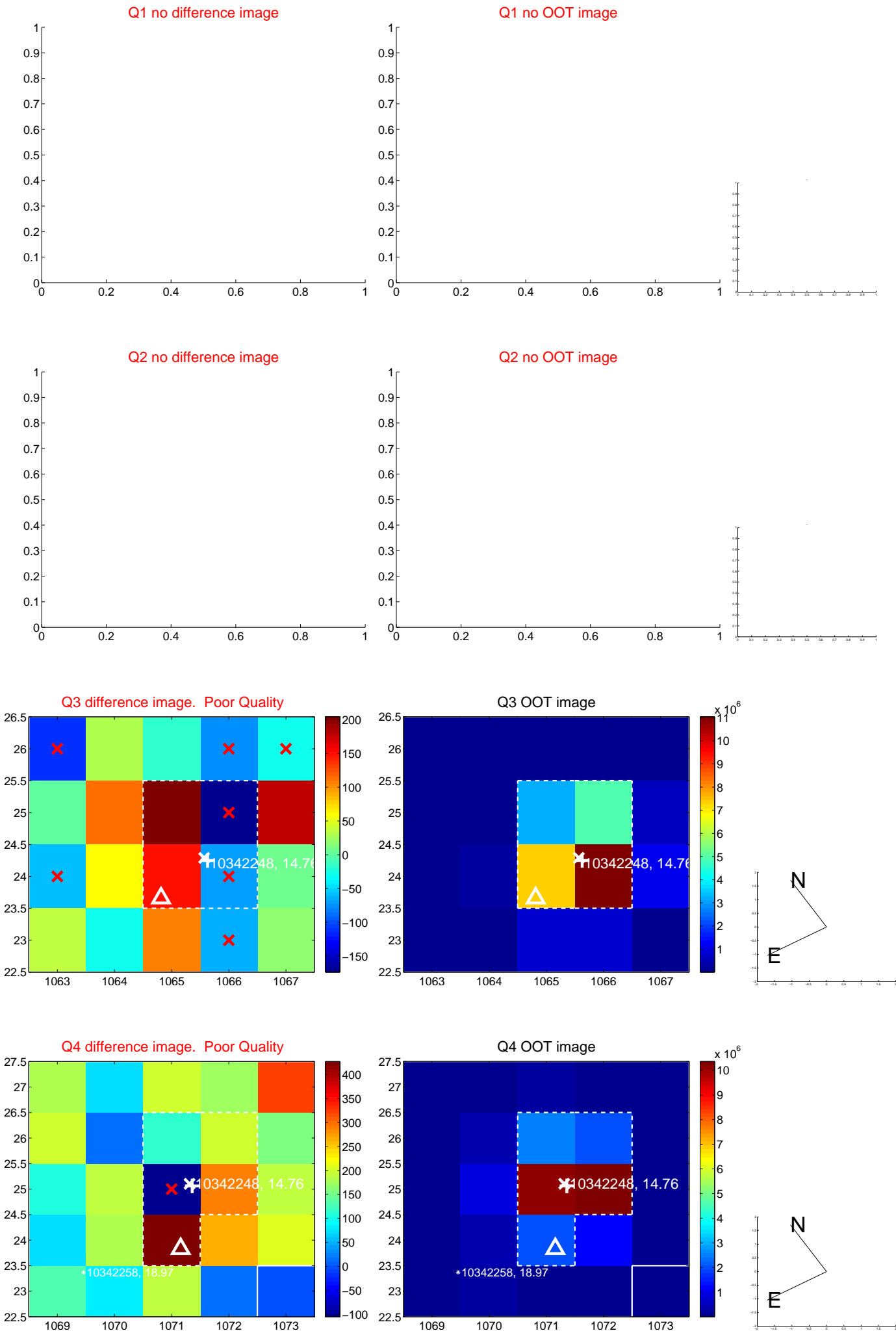
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.532 \pm 0.458$	9.90	$3.382 \pm 0.188$	$3.017 \pm 0.746$
PRF-fit source offset from KIC position	$4.303 \pm 0.530$	8.12	$3.188 \pm 0.186$	$2.890 \pm 0.823$
photometric centroid source offset	$4.34 \pm 0.87$	5.01	$-2.61 \pm 0.80$	$3.47 \pm 0.90$

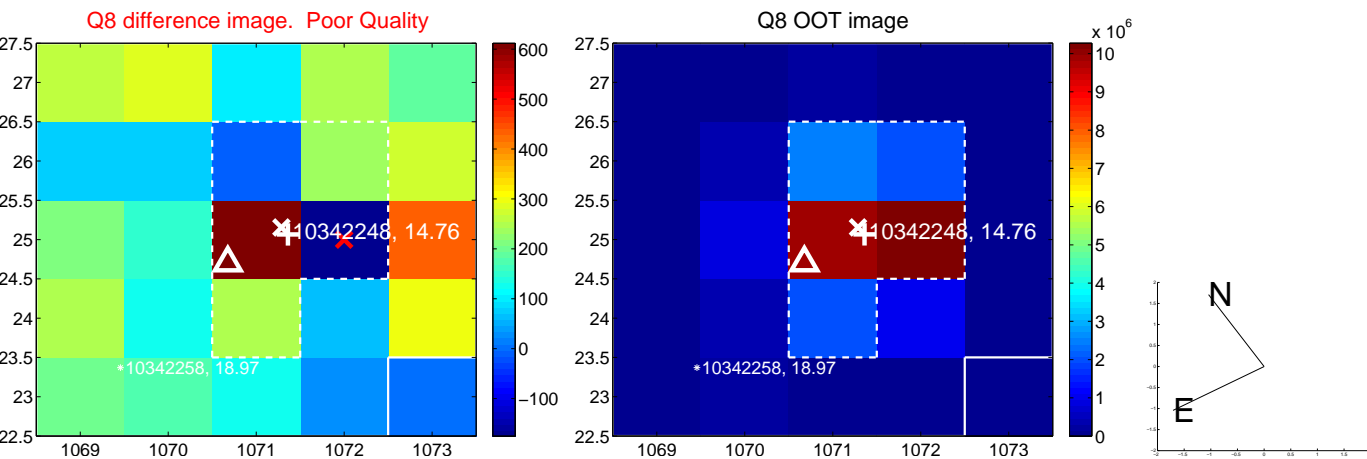
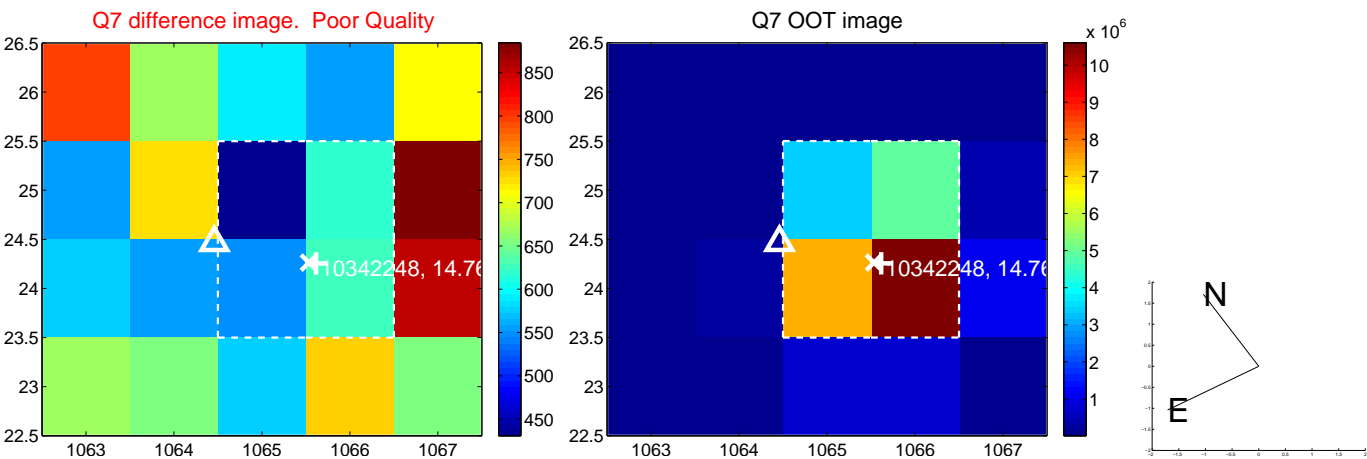
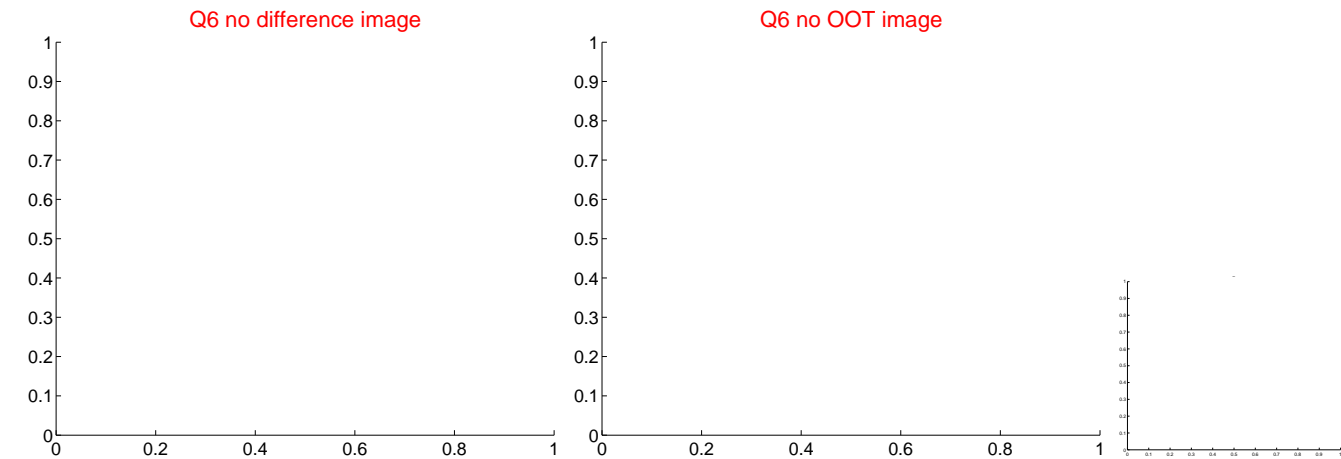
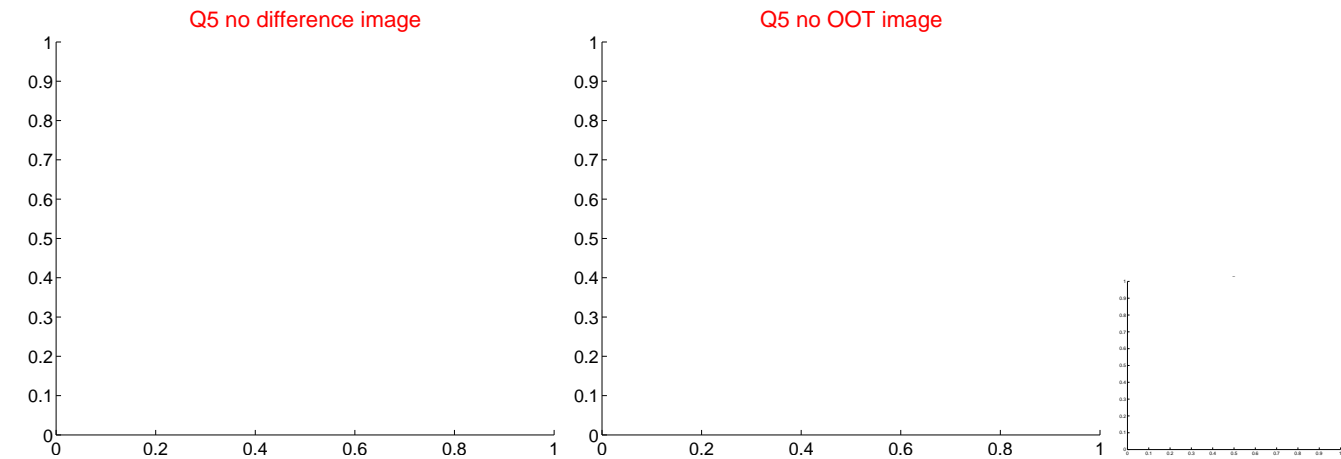


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

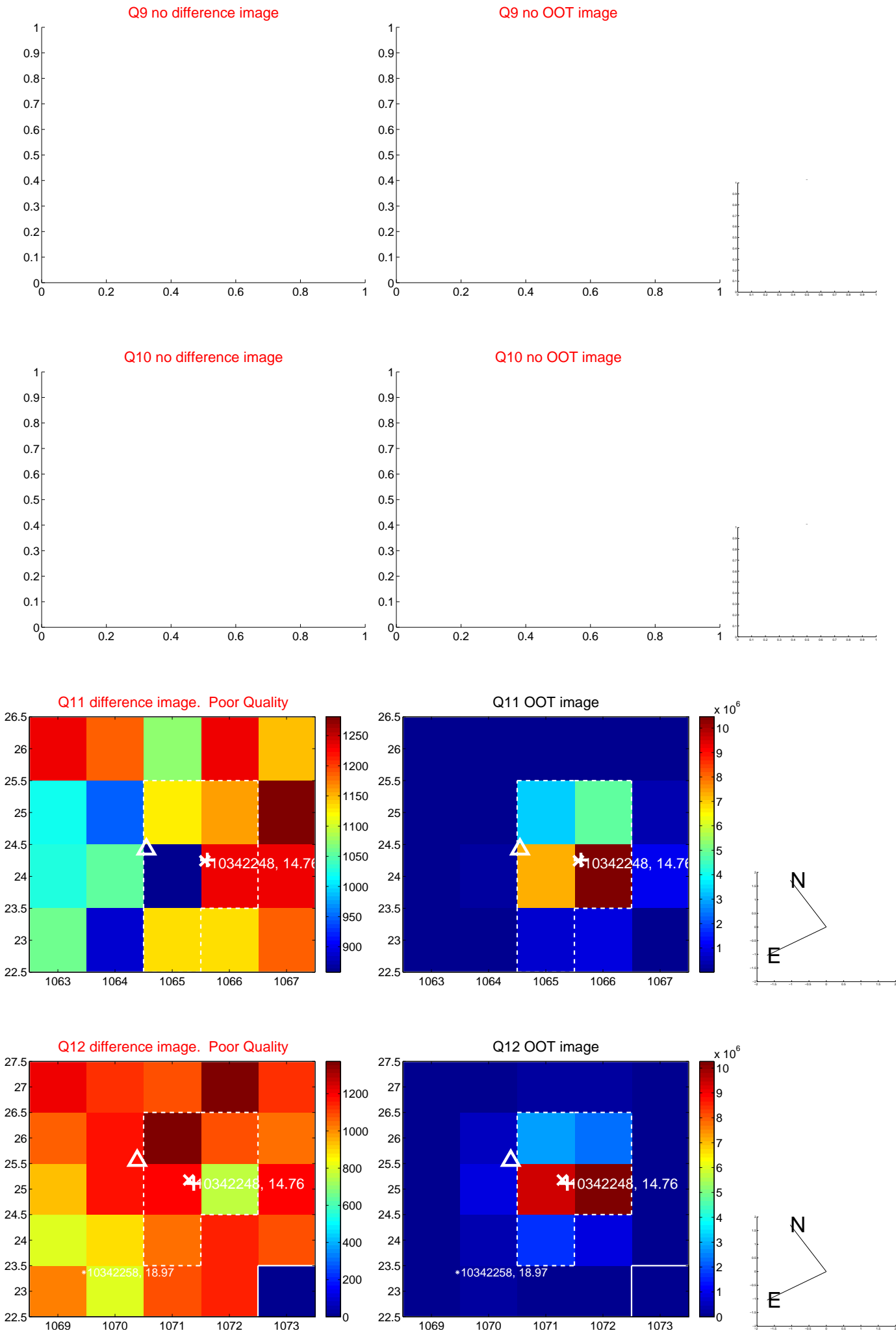
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



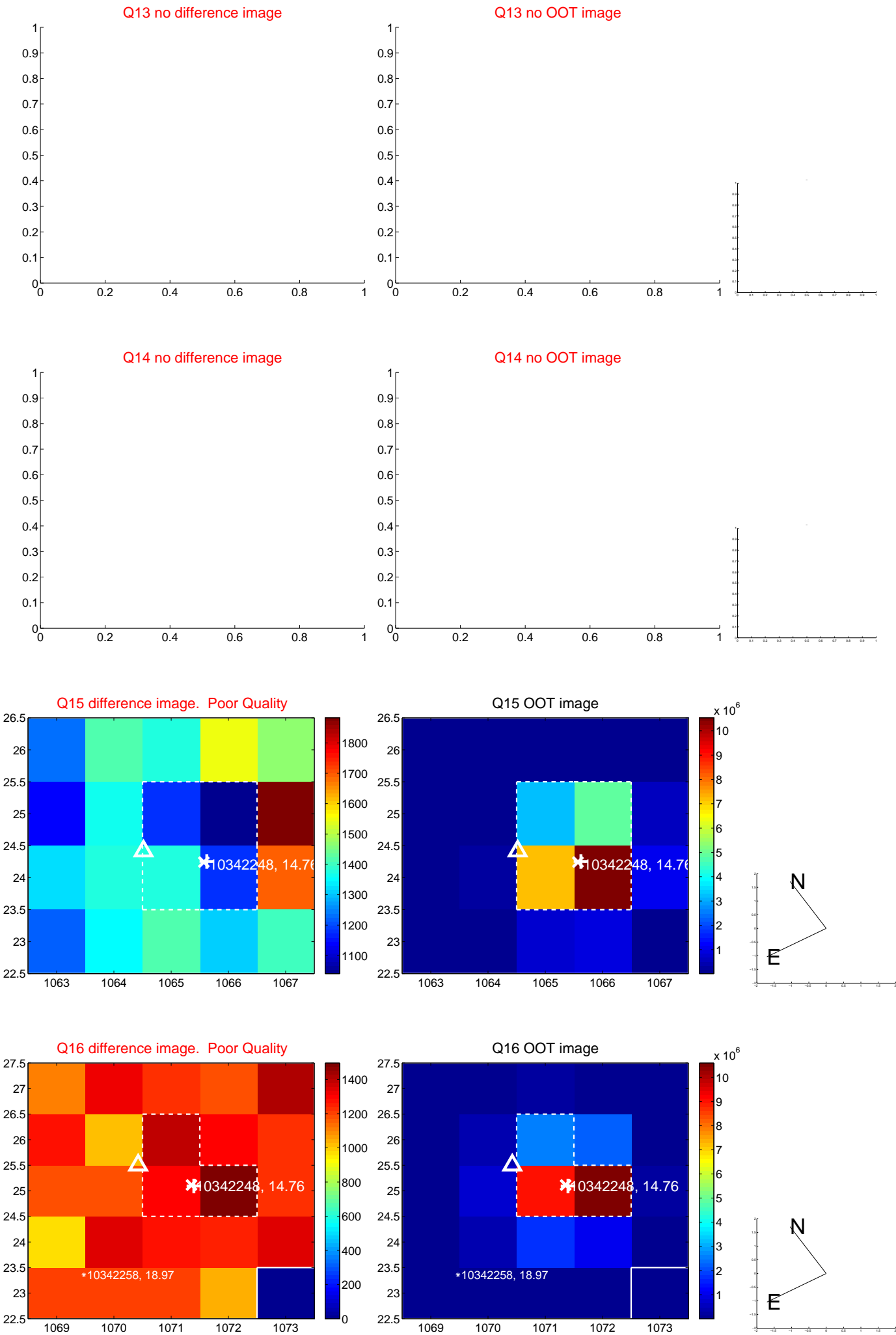
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

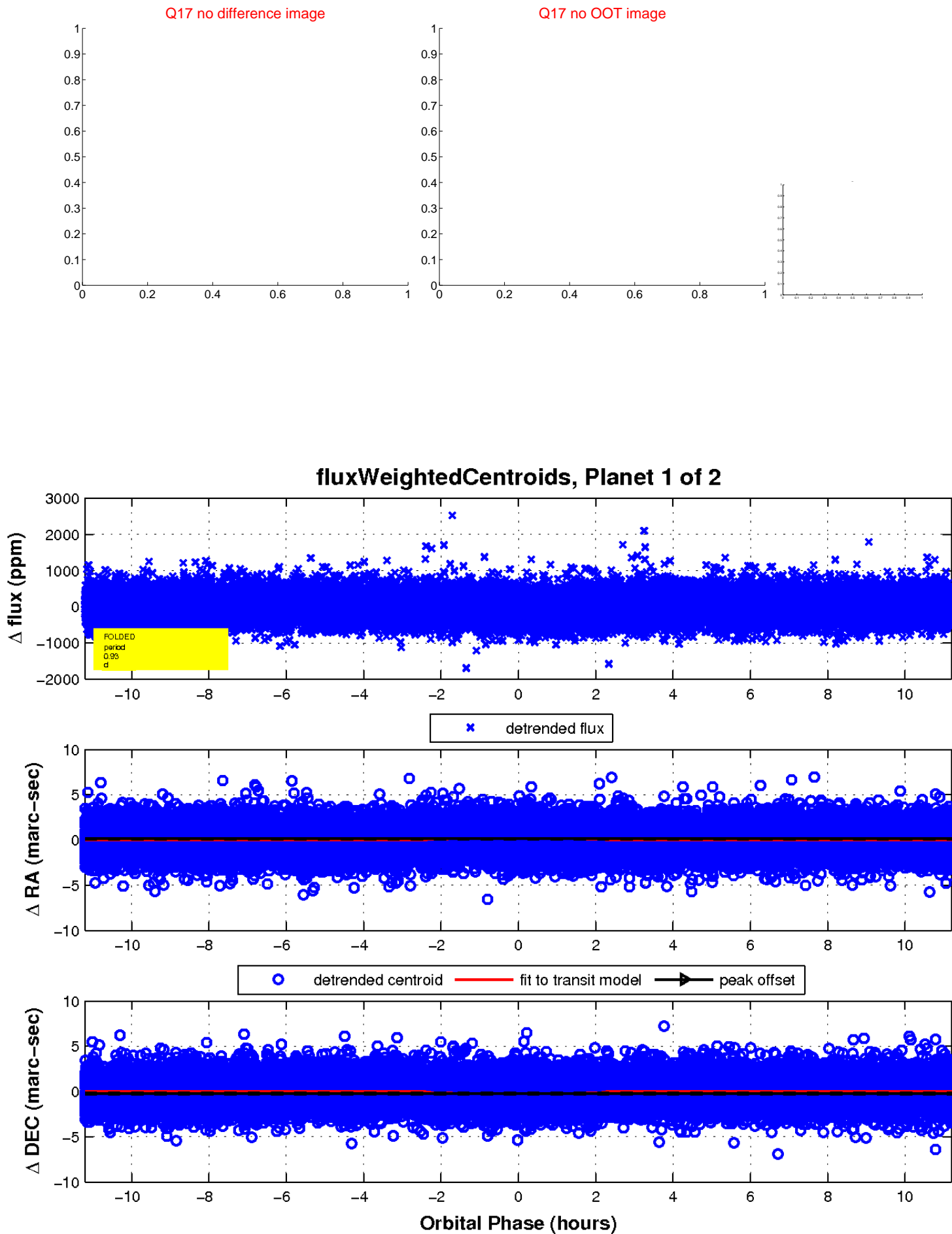


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



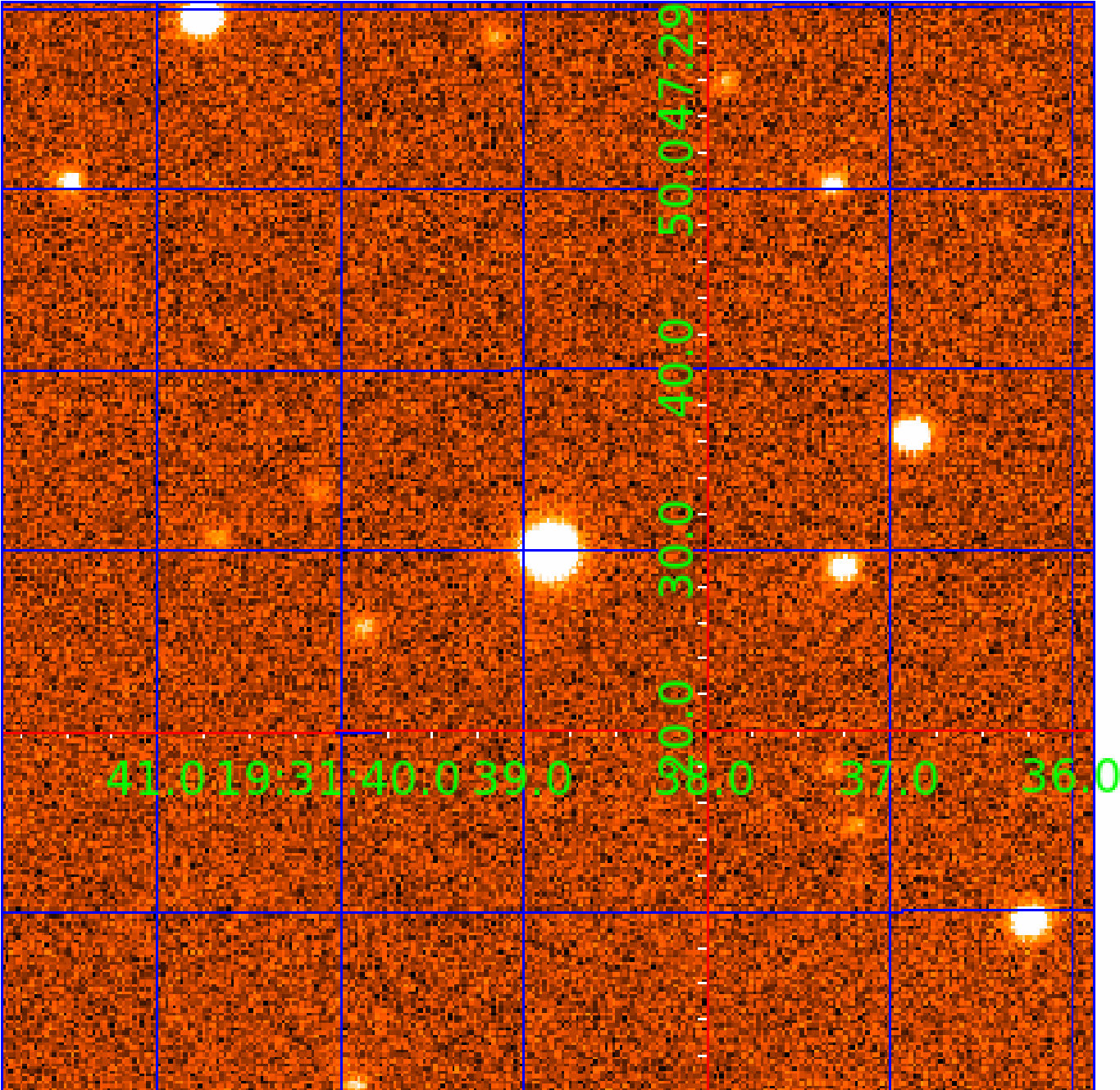


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010342248

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010342248-01	OBS	4315.01	0.933673	131.578014	60.4	4.840	12.1	10.8	0.80	5335	0.75	1449.92
010342248-02	OBS	No	64.915030	152.462576	278.7	12.236	8.5	6.1	0.80	5335	1.50	5.07

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010342248-01	OBS	FP	0.00	0	0	0	1	CENT_FEW_DIFFS—EPHEM_MATCH
010342248-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

**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.

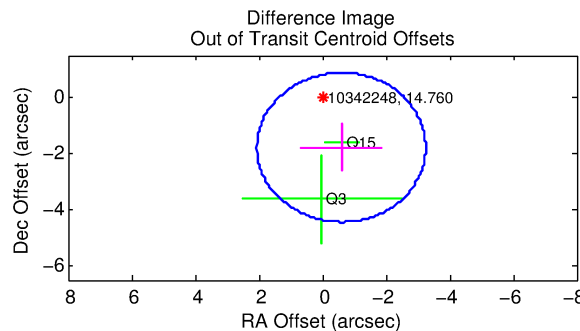
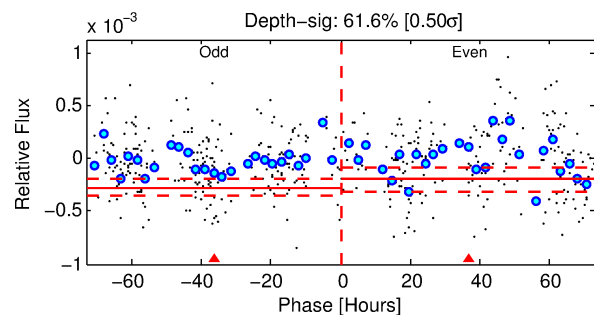
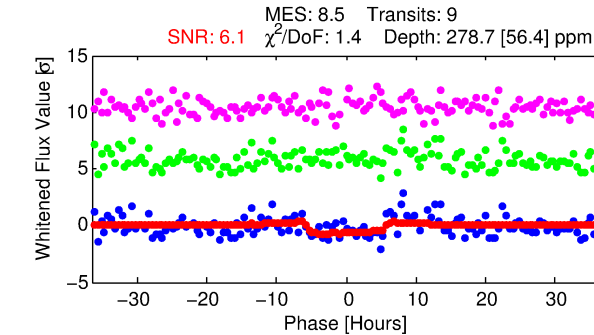
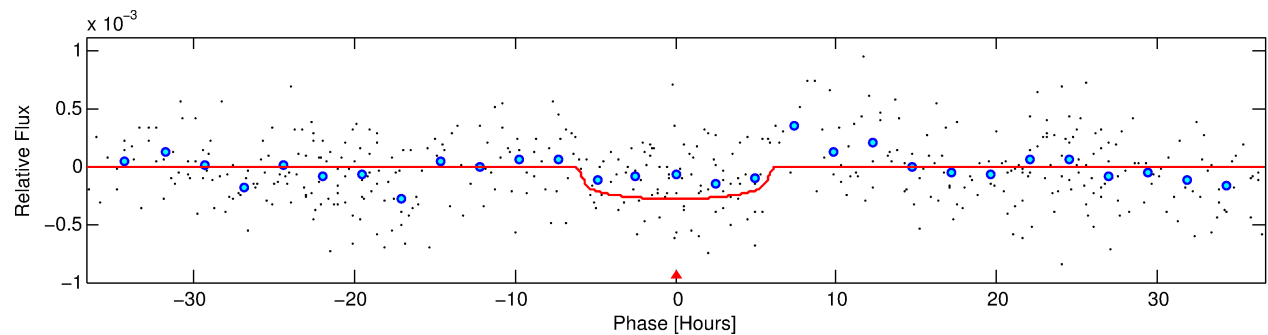
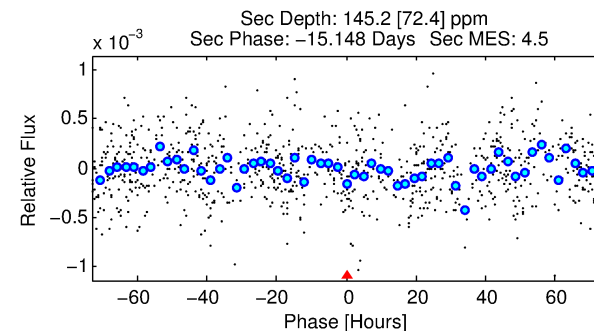
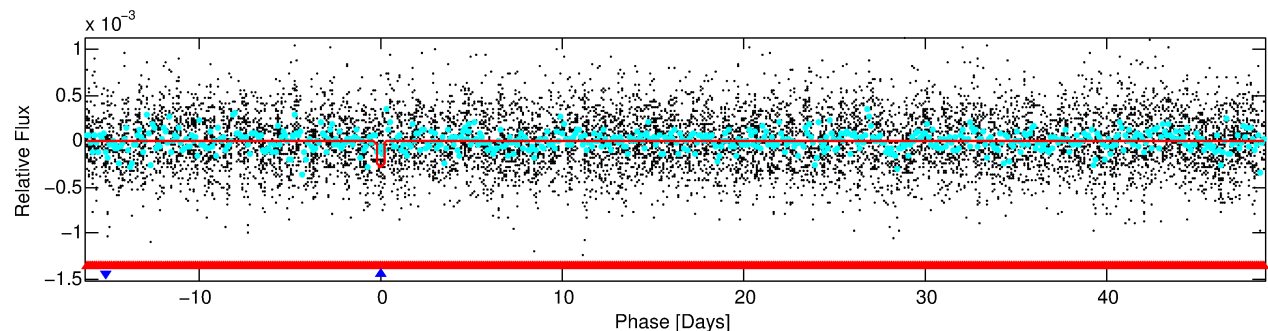
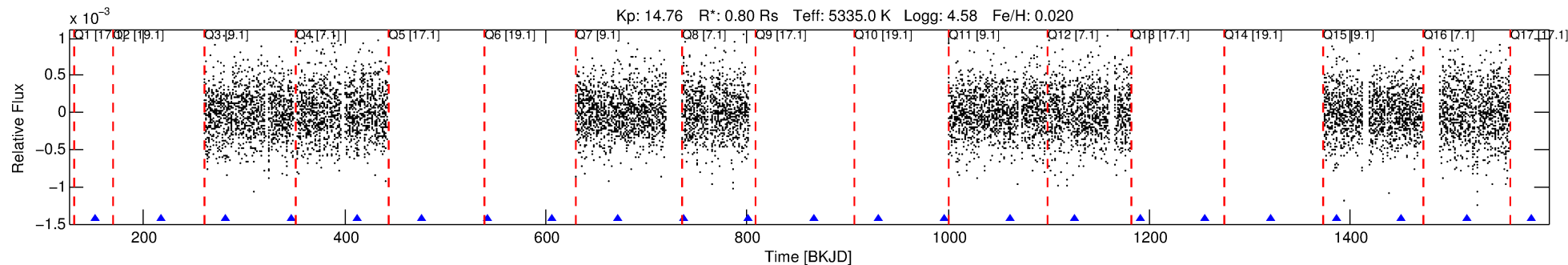
## Ephemeris Match Information For 010342248-02

No Significant Match Found

# DV One-Page Summary

KIC: 10342248 Candidate: 2 of 2 Period: 64.915 d  
KOI: K04315 Corr: No Ephemeris Match

Kp: 14.76 R\*: 0.80 Rs Teff: 5335.0 K Logg: 4.58 Fe/H: 0.020



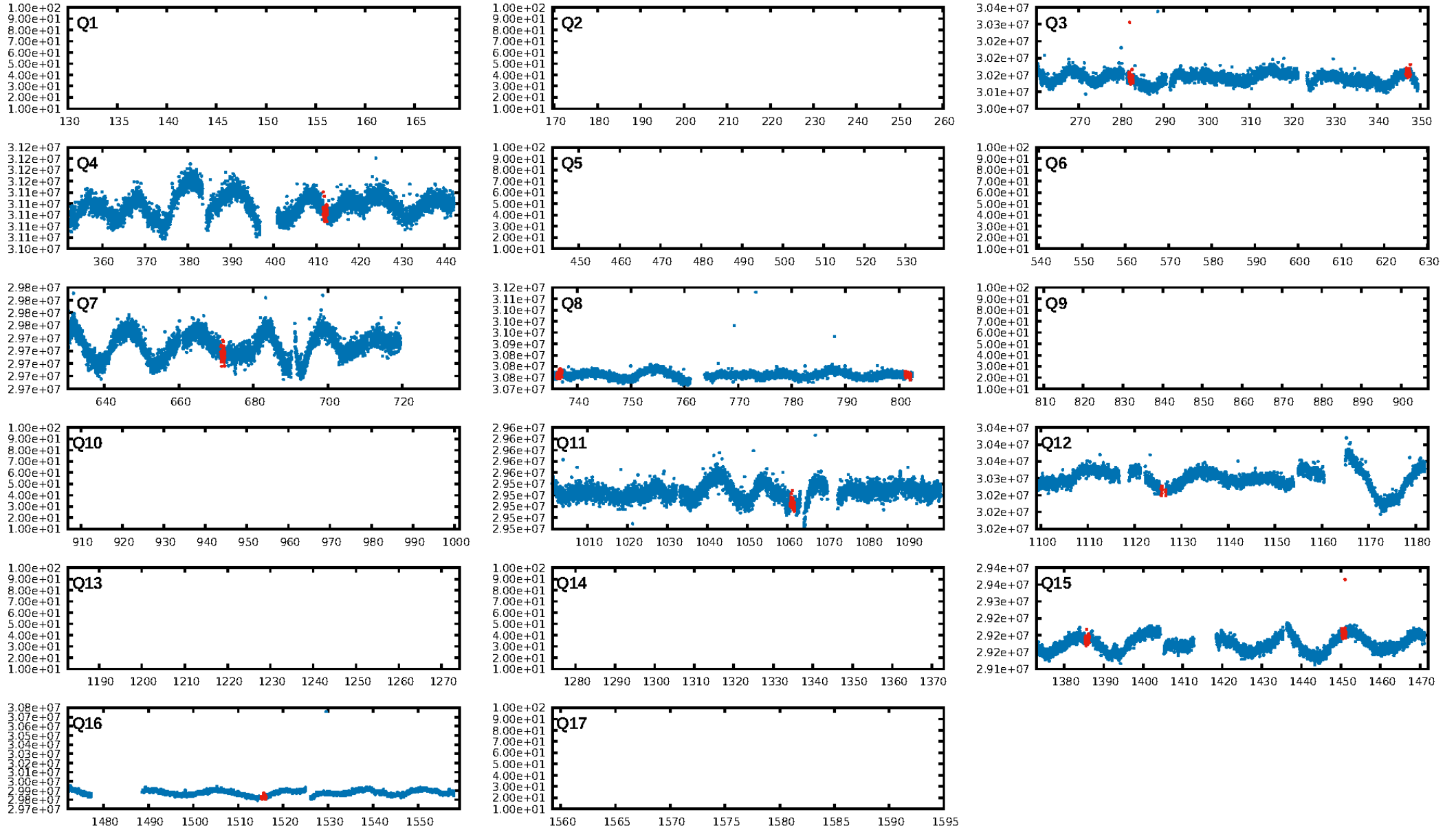
## DV Fit Results:

Period = 64.91503 [0.00362] d  
Epoch = 152.4626 [0.0534] BKJD  
Rp/R\* = 0.0171 [0.0106]  
a/R\* = 25.05 [60.57]  
b = 0.81 [1.06]  
Seff = 5.07 [1.37]  
Teq = 383 [26] K  
Rp = 1.50 [0.97] Re  
a = 0.3042 [0.0487] AU  
Ag = 3269.80 [4424.43] [0.74sigma]  
Teffp = 4474 [1499] K [2.73sigma]

## DV Diagnostic Results:

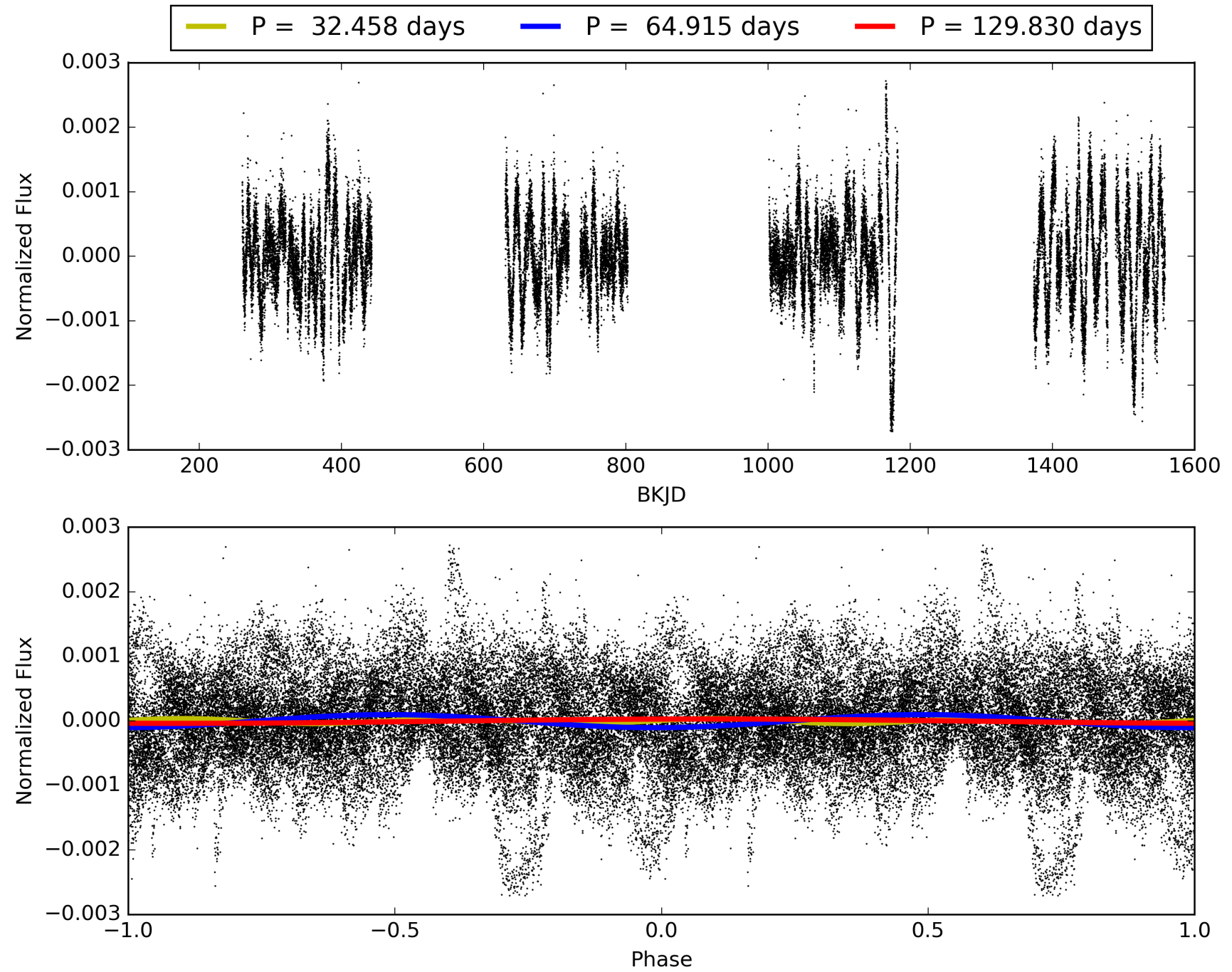
ShortPeriod-sig: 100.0% [116.70sigma]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.48e-11  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -0.005505  
Centroid-sig: 0.2%  
Centroid-so: 1.730 arcsec [1.72sigma]  
OotOffset-rm: 1.876 arcsec [2.12sigma]  
KicOffset-rm: 2.006 arcsec [2.18sigma]  
OotOffset-st: 0/2/0/0 [2]  
KicOffset-st: 0/2/0/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.00 [0/5]

# TCE 010342248-02, PDC Light Curves



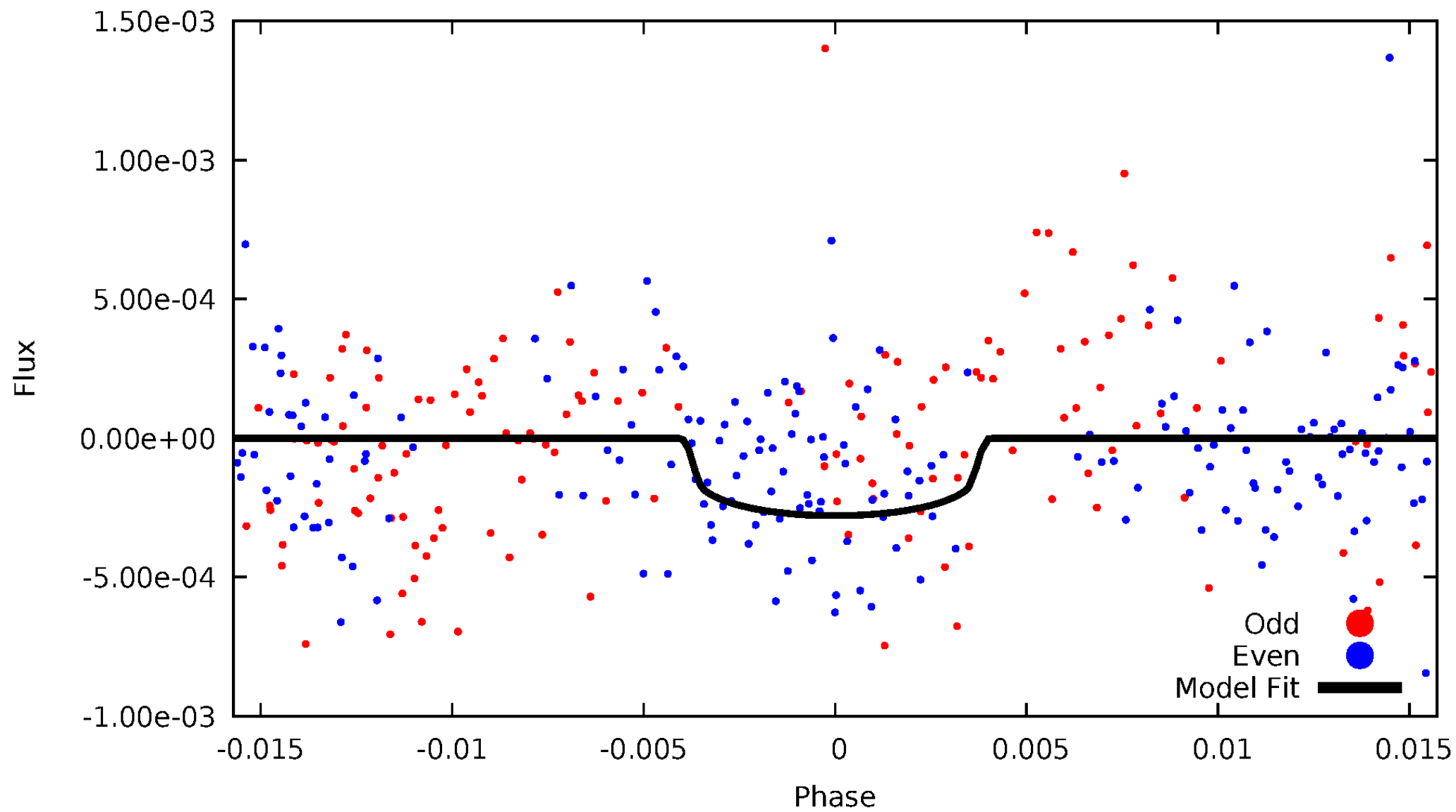


# TCE 010342248-02



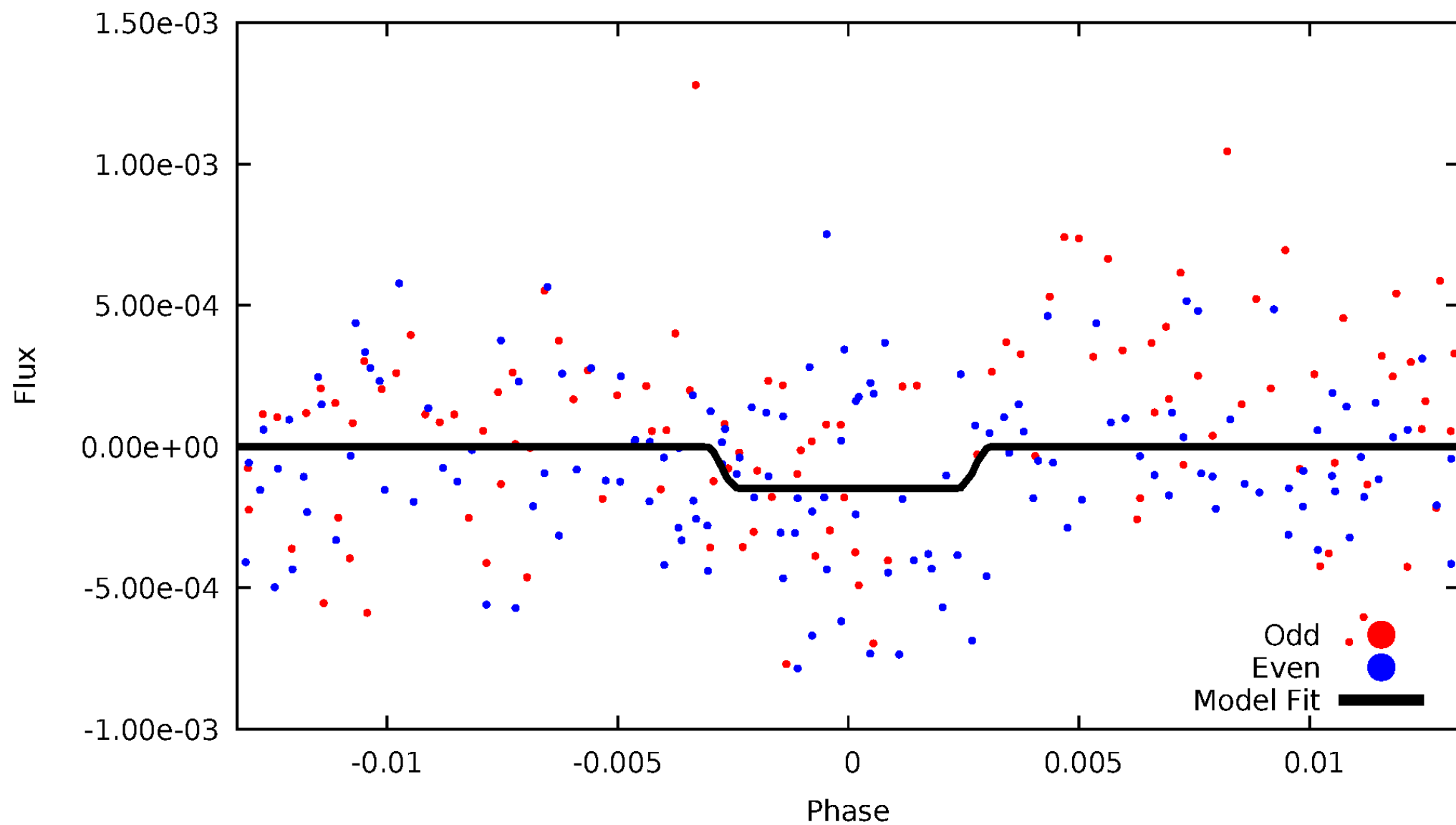
# DV Odd/Even

TCE 010342248-02



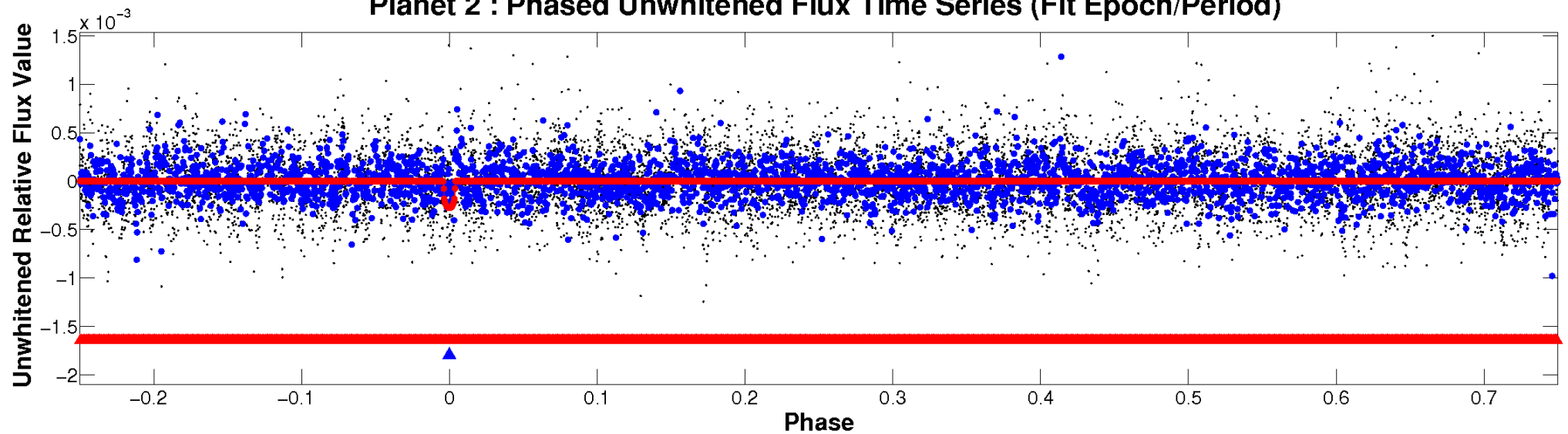
# ALT Odd/Even

TCE 010342248-02

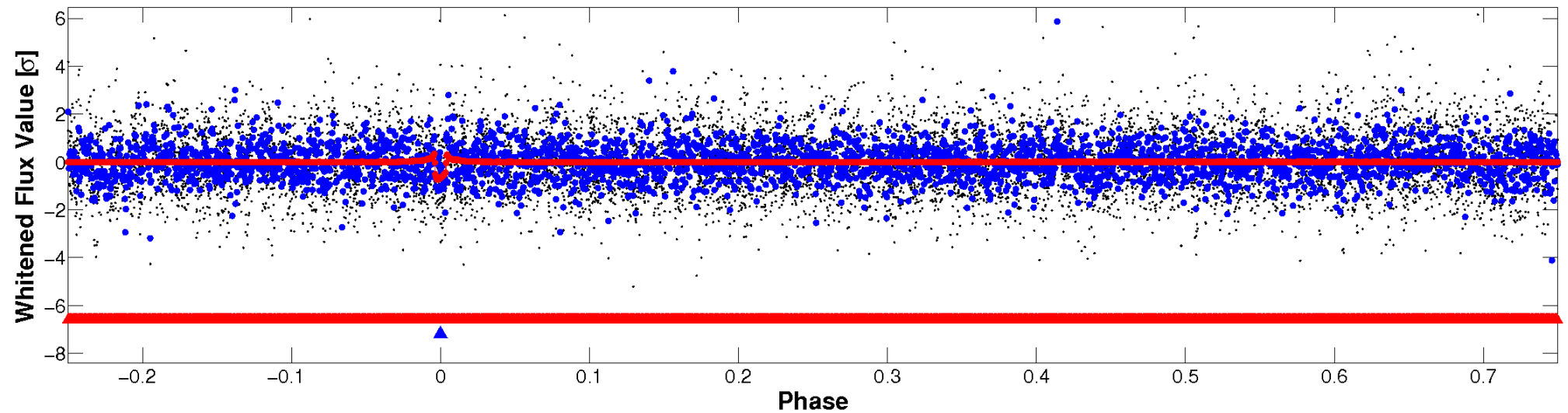


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

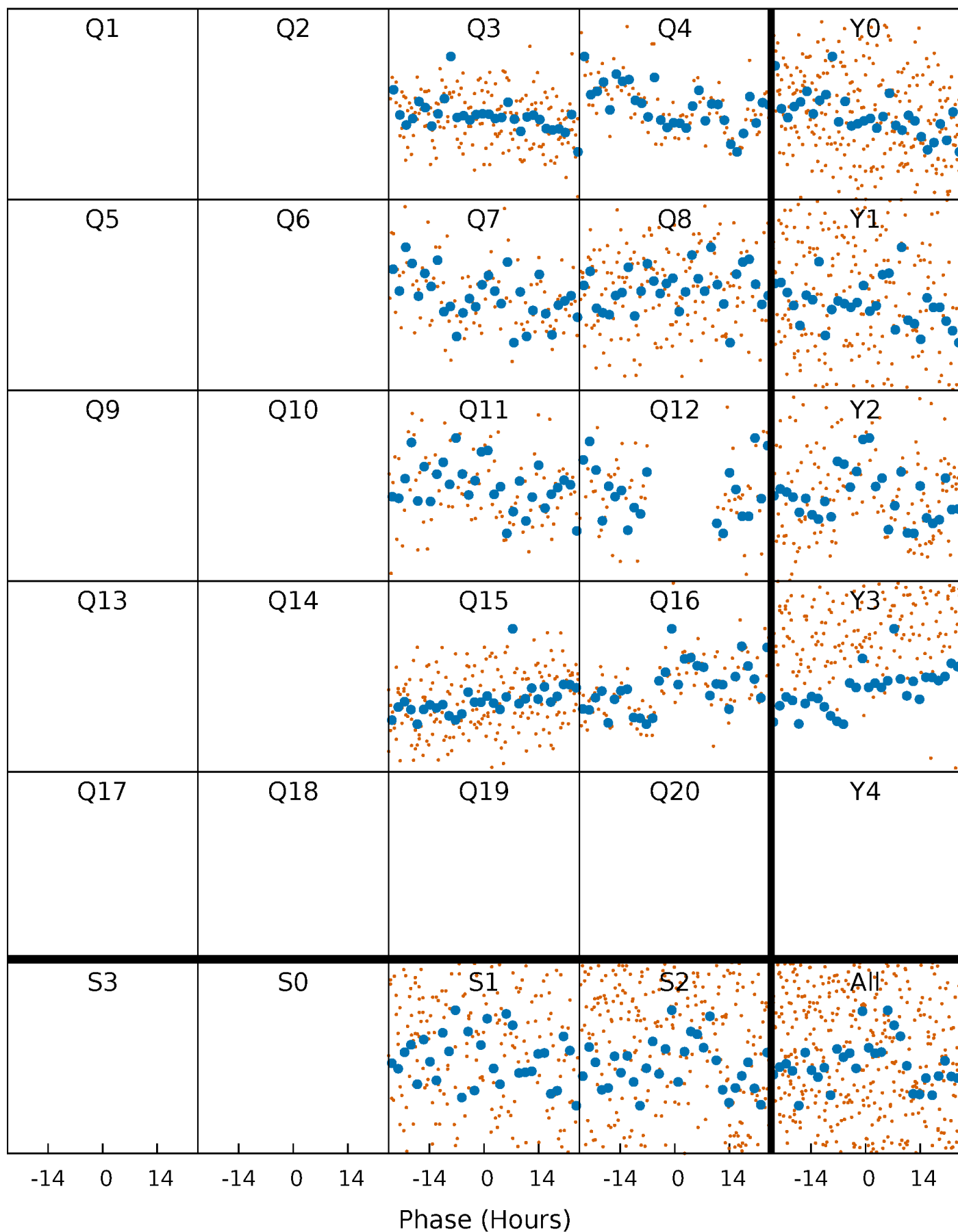


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

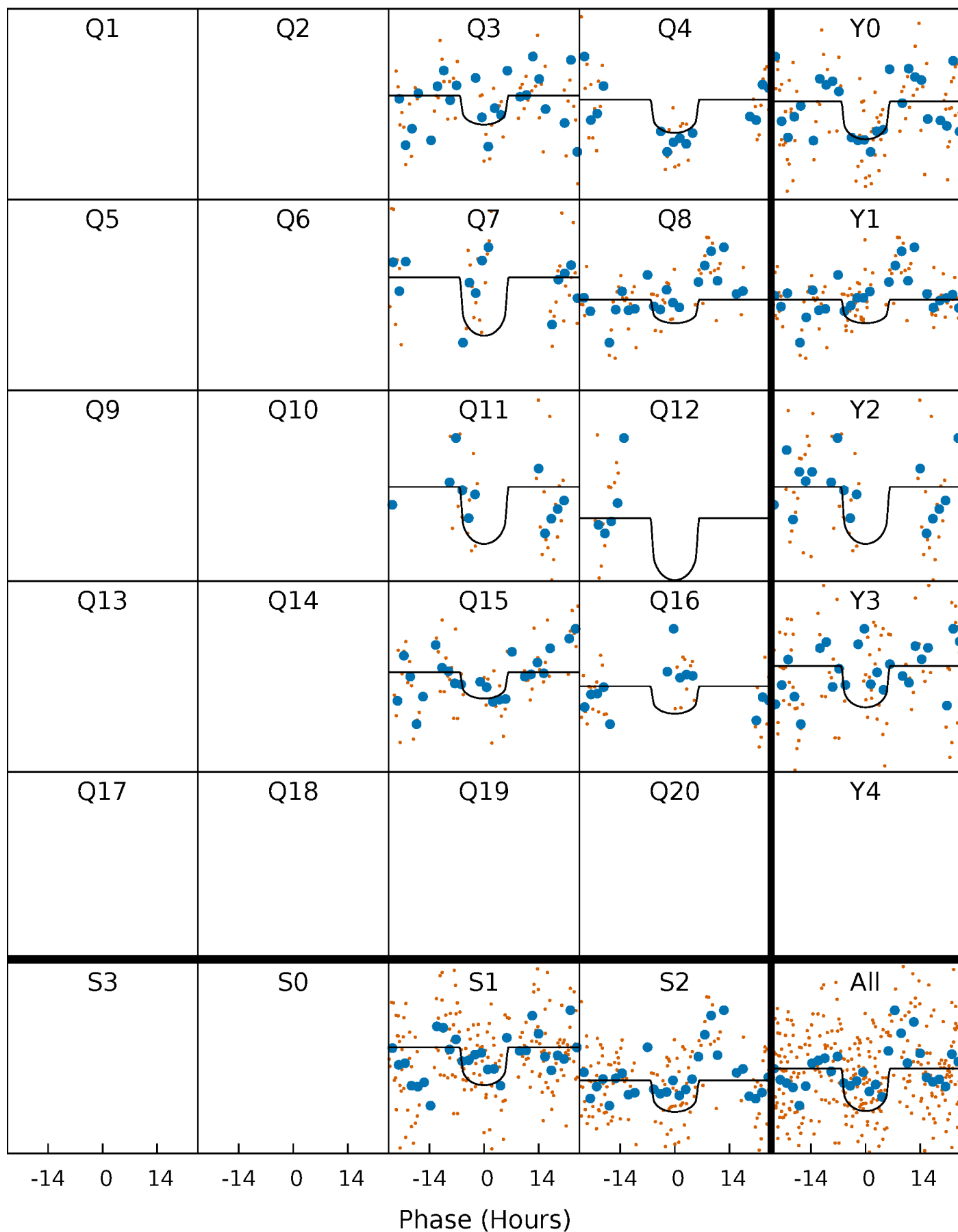
TCE 010342248-02     $P = 64.915030$  Days     $T_0 = 152.462576$  (BKJD)





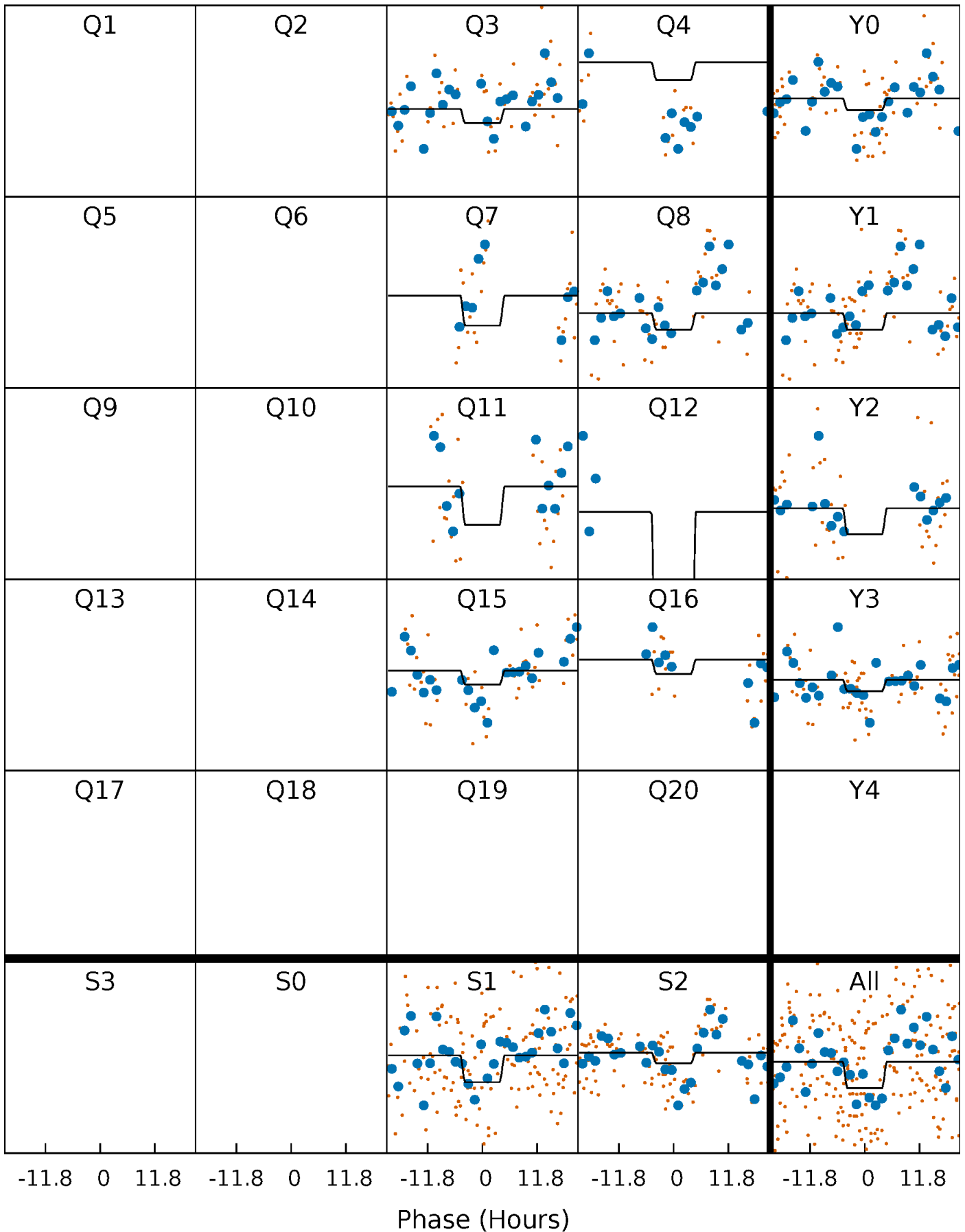
# DV Quarter-Phased Transit Curves

TCE 010342248-02   P= 64.915030 Days    $T_0=152.462576$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

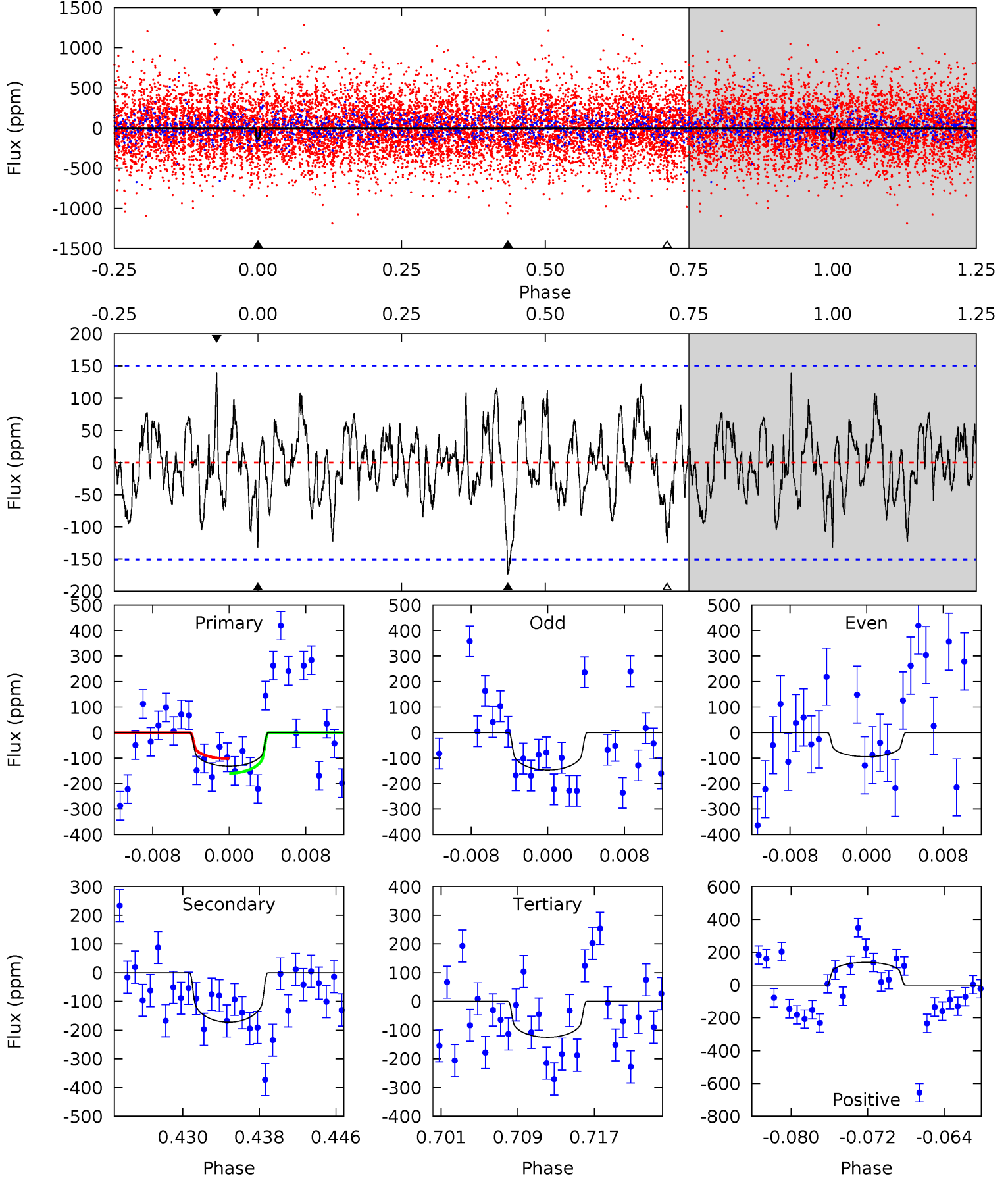
TCE 010342248-02   P= 64.928388 Days    $T_0=152.379844$  (BKJD)



# DV Model-Shift Uniqueness Test

010342248-02, P = 64.915030 Days, E = 152.462576 Days

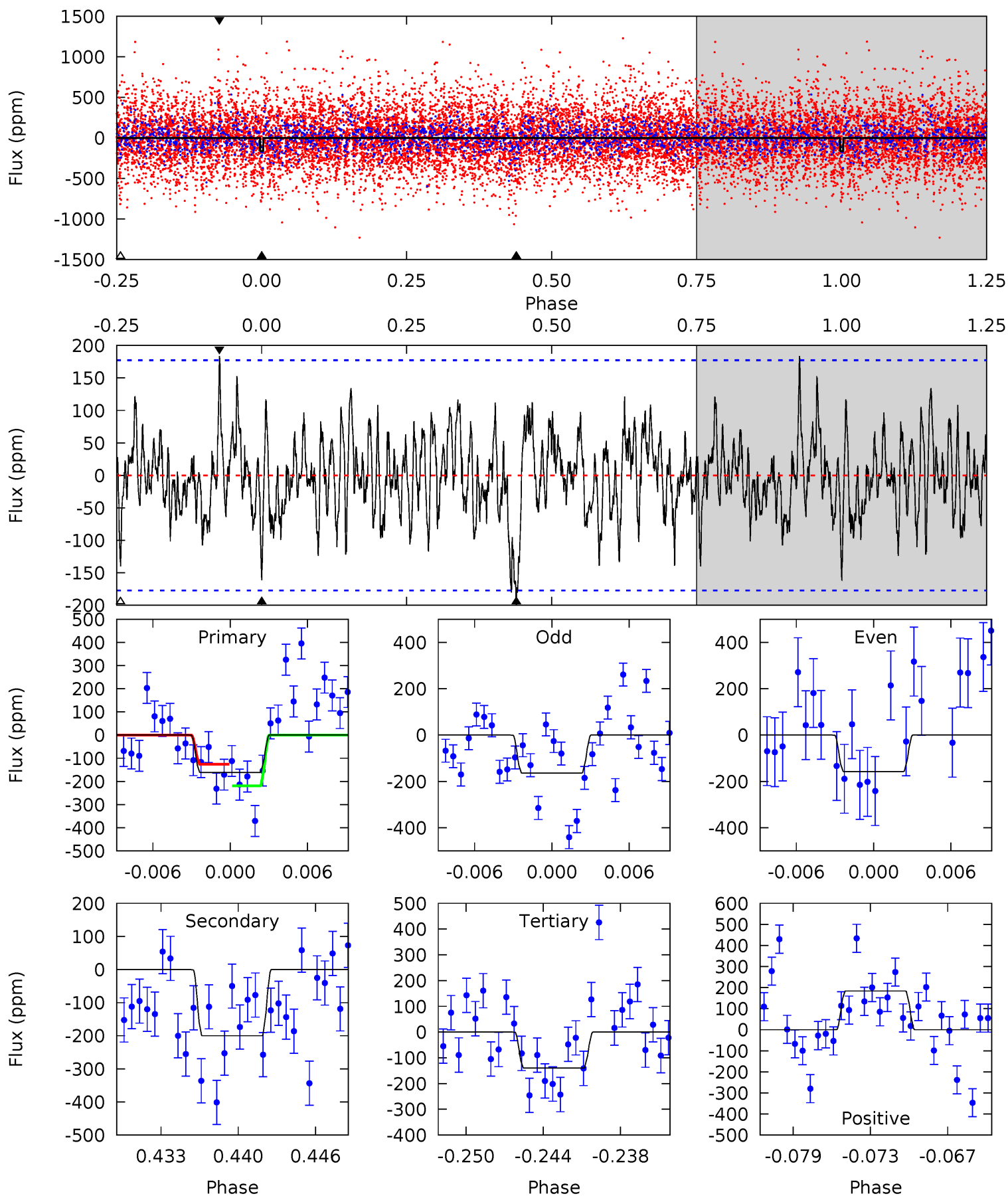
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.42	5.80	4.19	4.66	5.07	2.65	1.60	0.23	-0.24	1.60	1.14	0.80	0.90	0.45	0.97



# Alt Model-Shift Uniqueness Test

010342248-02, P = 64.928388 Days, E = 152.379844 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
4.66	5.78	4.04	5.31	5.12	2.74	1.53	0.62	-0.65	1.73	0.46	0.09	5.54	0.48	1.31



### Stellar Parameters For KIC 010342248

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5335^{+185}_{-185}$	$4.577^{+0.030}_{-0.127}$	$0.020^{+0.250}_{-0.300}$	$0.804^{+0.153}_{-0.061}$	$0.891^{+0.070}_{-0.096}$	$2.418^{+0.405}_{-0.897}$
	+3%/-3%	+1%/-3%	+1250%/-1500%	+19%/-8%	+8%/-11%	+17%/-37%
Source	KIC0	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 010342248-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-172 \pm 30$	$1.62^{+0.96}_{-0.83}$	$544^{+30}_{-23}$	$4656^{+1787}_{-730}$	$3329^{+10214}_{-2061}$
Alt.	$-200 \pm 35$	$1.37^{+0.86}_{-0.77}$	$542^{+29}_{-23}$	$5177^{+2685}_{-961}$	$5346^{+22366}_{-3446}$

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

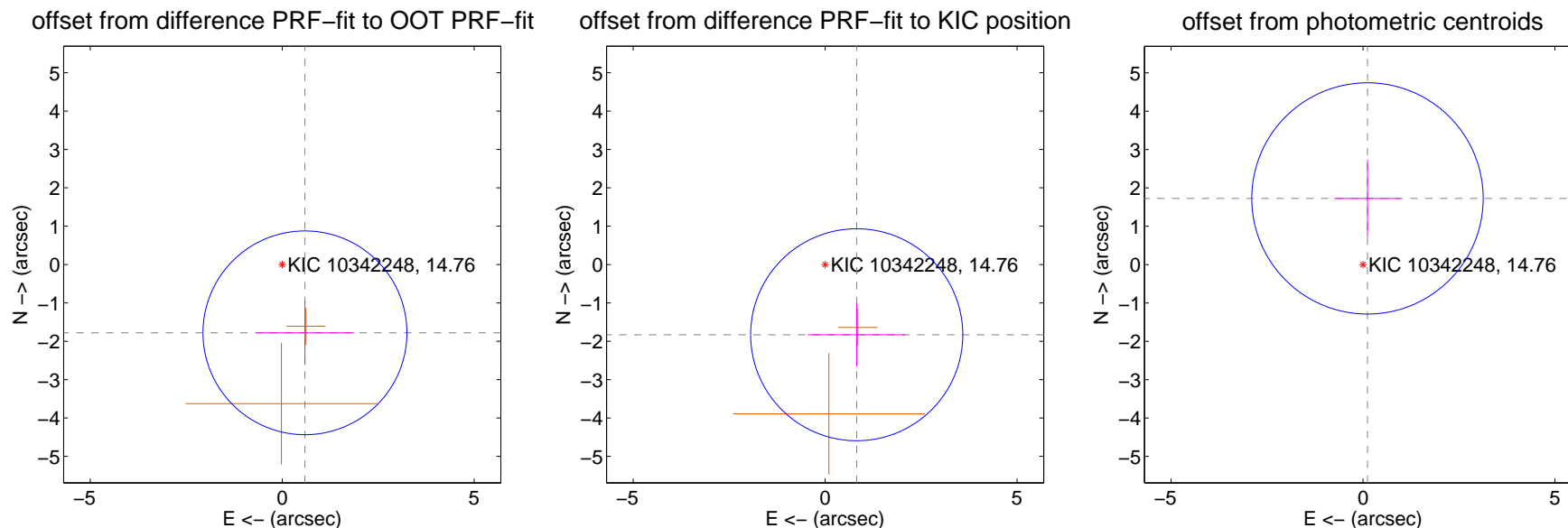
## DV Centroid Data

Supplemental centroid analysis for 010342248-02. Kepler magnitude: 14.76. Transit SNR 6.12

There are 0 quarters with good PRF difference image offsets

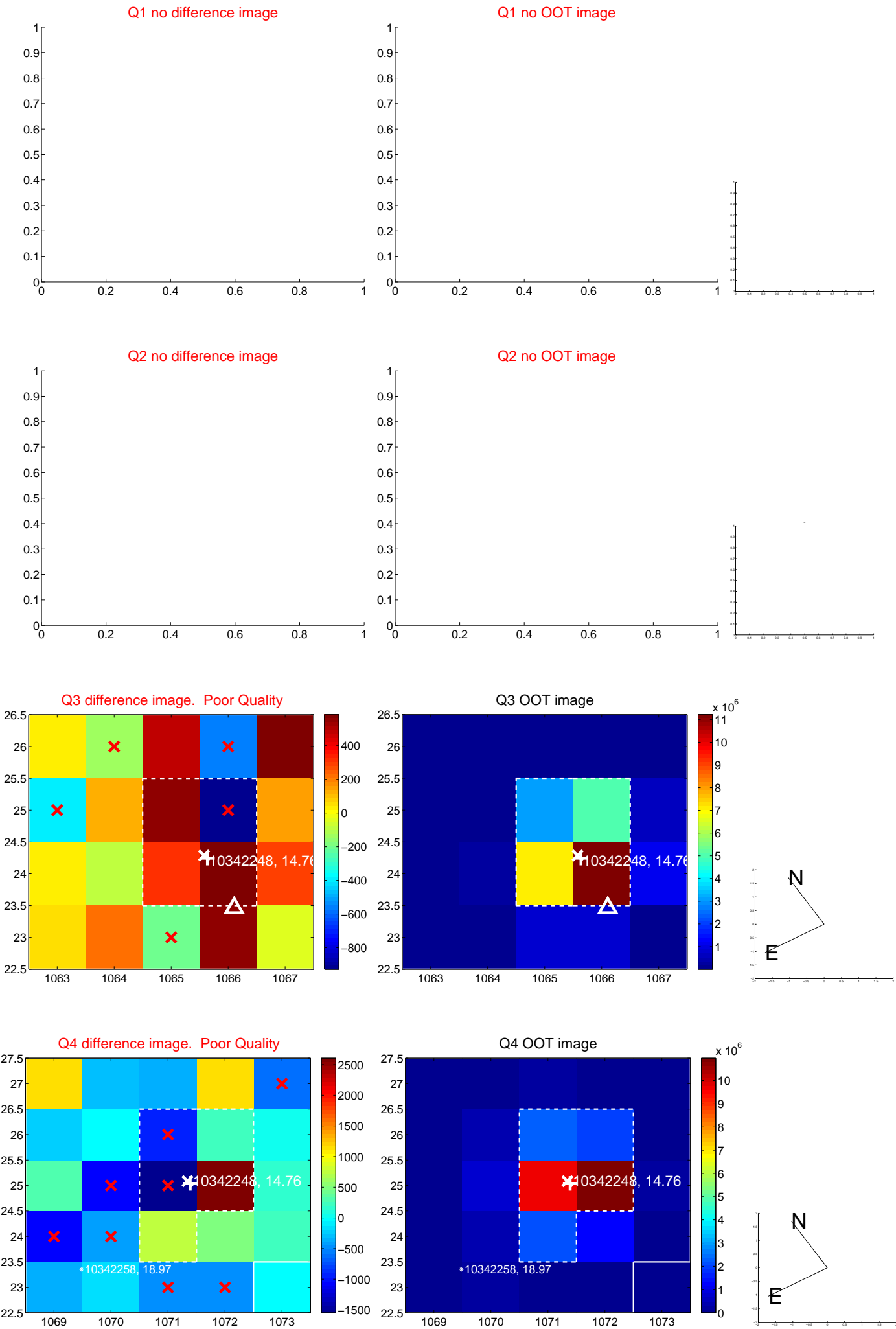
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.876 \pm 0.885$	2.12	$-0.592 \pm 1.276$	$-1.780 \pm 0.831$
PRF-fit source offset from KIC position	$2.006 \pm 0.921$	2.18	$-0.822 \pm 1.276$	$-1.830 \pm 0.831$
photometric centroid source offset	$1.73 \pm 1.00$	1.72	$-0.12 \pm 0.87$	$1.73 \pm 1.01$



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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

Q5 no difference image



Q5 no OOT image



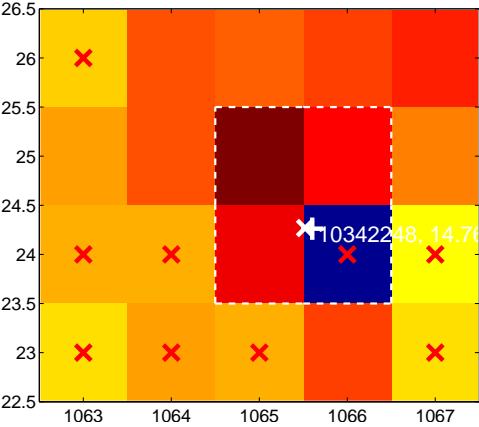
Q6 no difference image



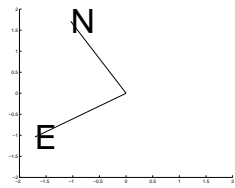
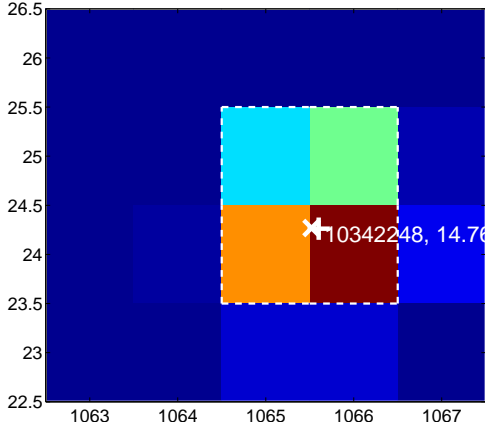
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



Q9 no OOT image



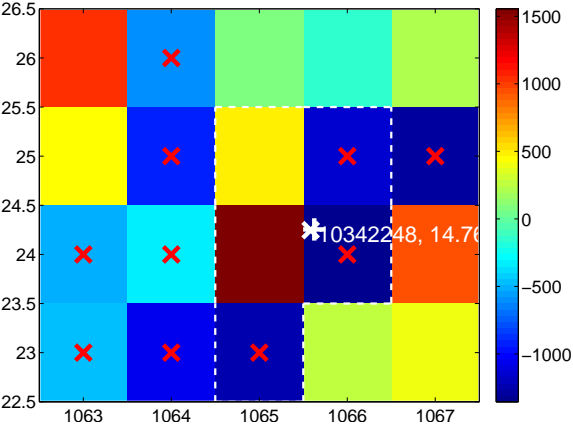
Q10 no difference image



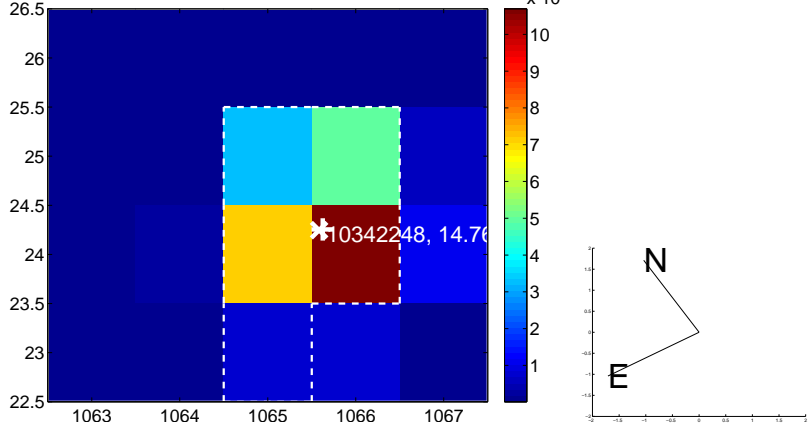
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



Q12 no difference image

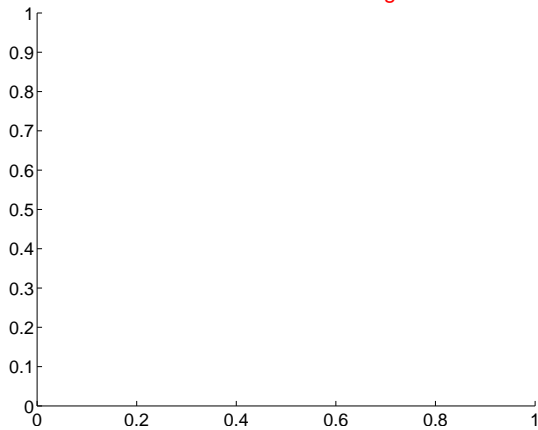


Q12 no OOT image

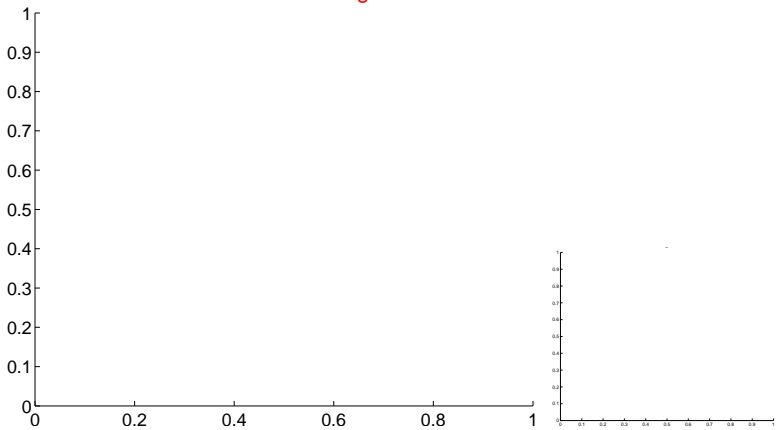


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

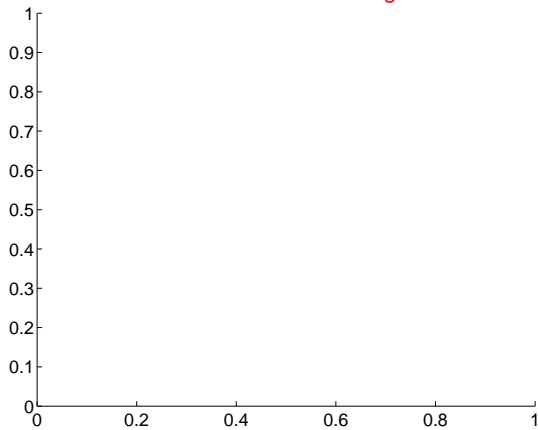
Q13 no difference image



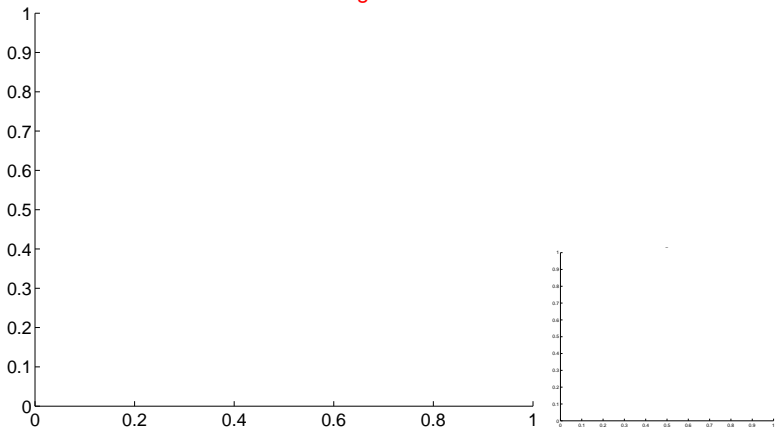
Q13 no OOT image



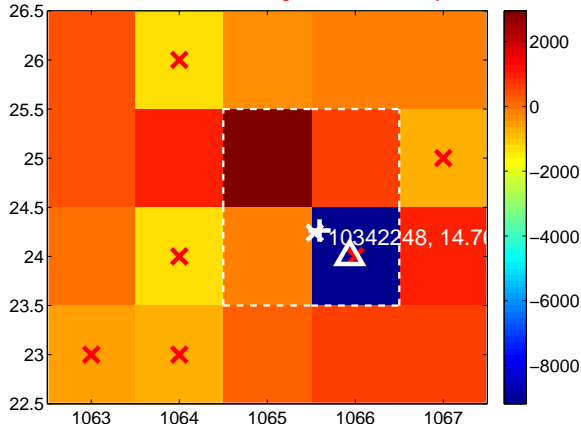
Q14 no difference image



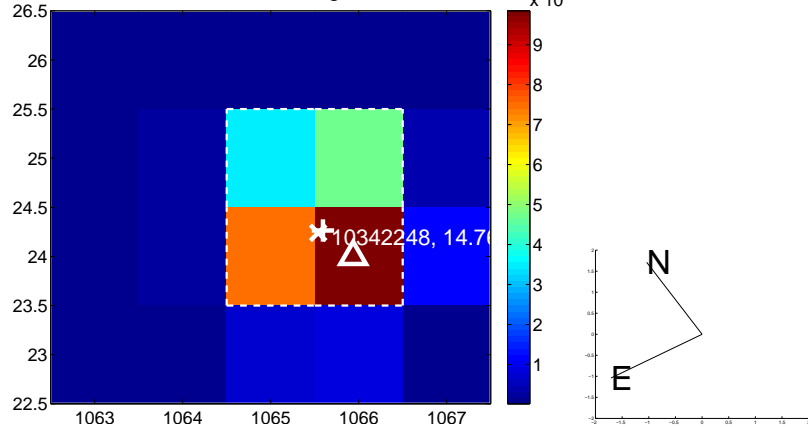
Q14 no OOT image



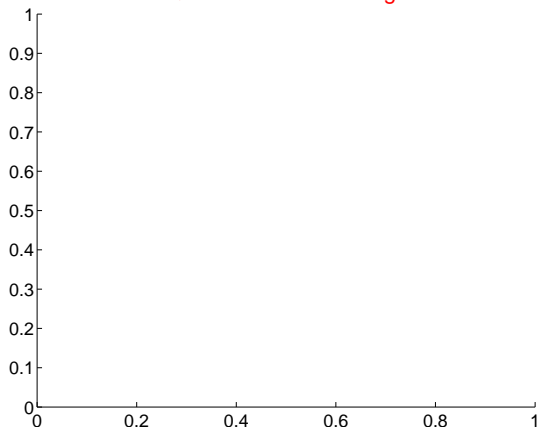
Q15 difference image. Poor Quality



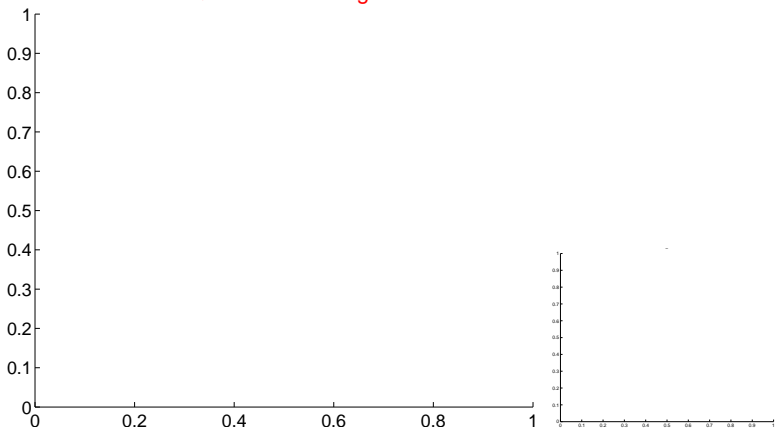
Q15 OOT image



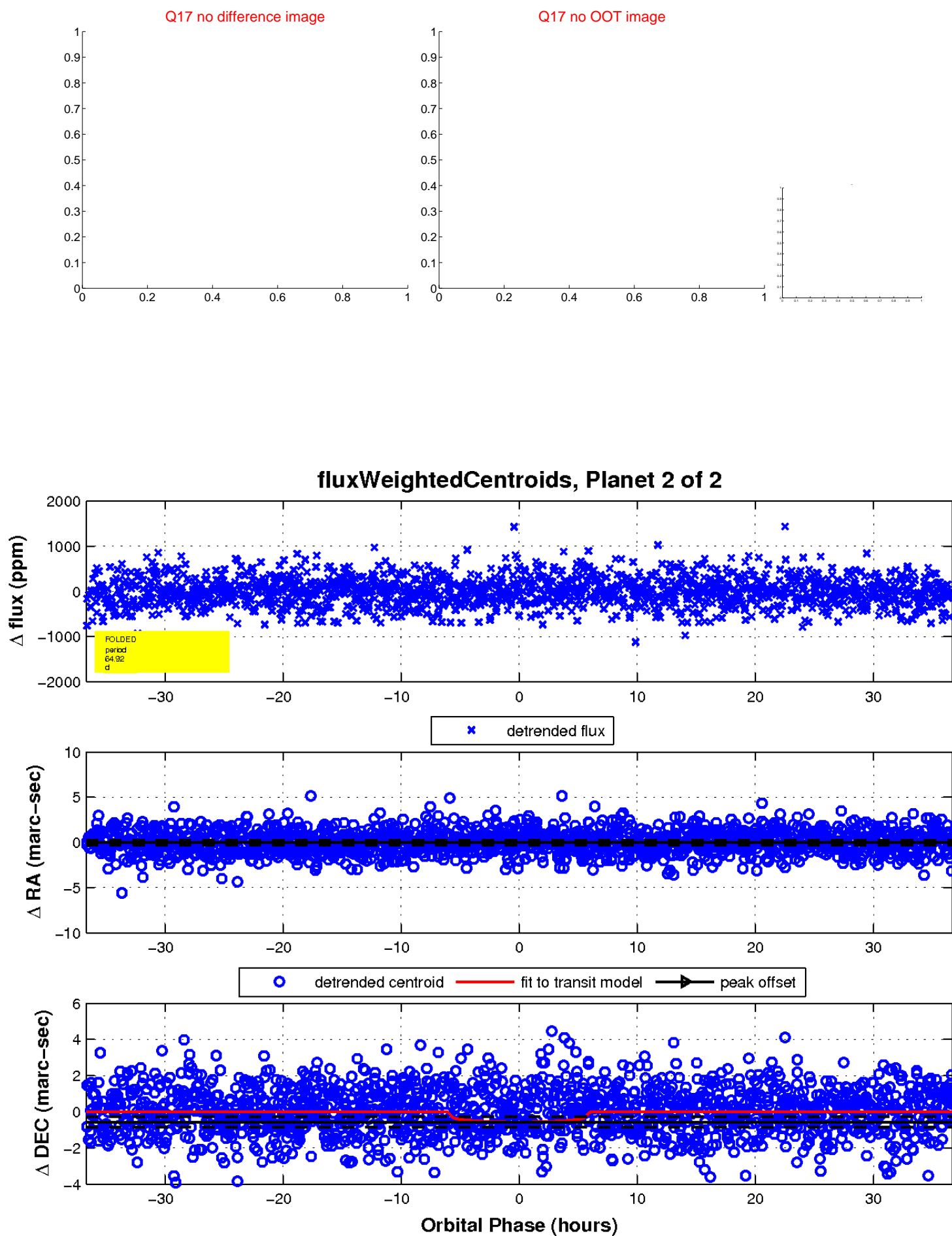
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

