

# KIC 003442055

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003442055-01	OBS	1218.01	29.619482	133.678845	313.3	5.796	36.2	38.2	1.00	5618	2.29	26.83
003442055-02	OBS	No	464.148159	583.485701	131.4	17.172	7.4	7.3	1.00	5618	1.27	0.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003442055-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003442055-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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 003442055-01

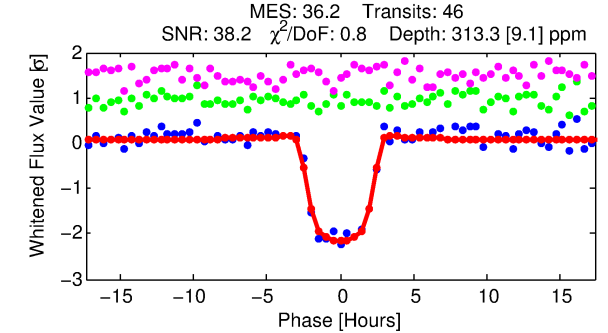
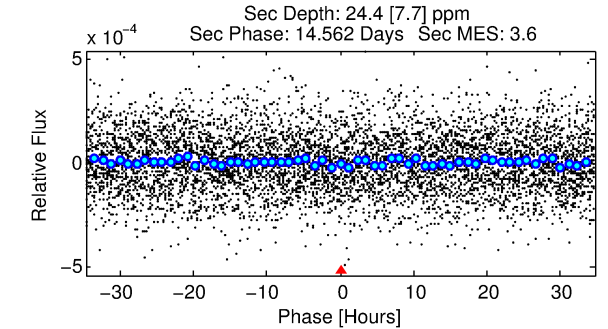
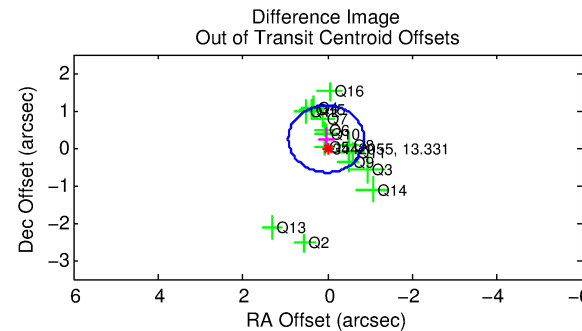
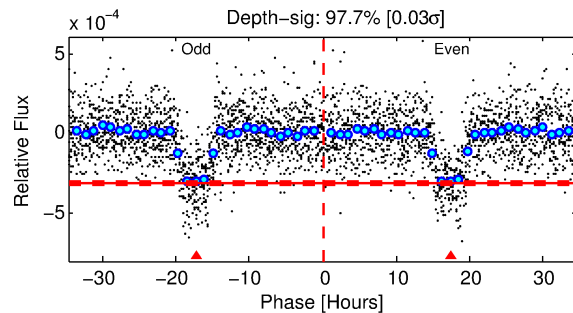
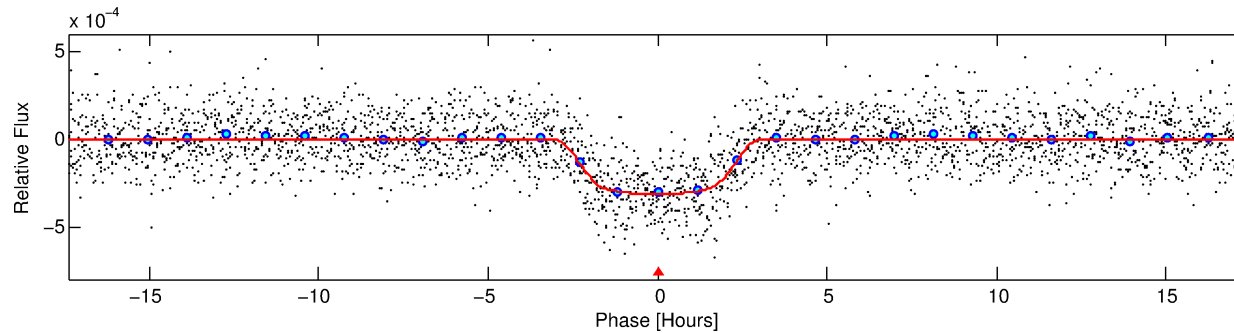
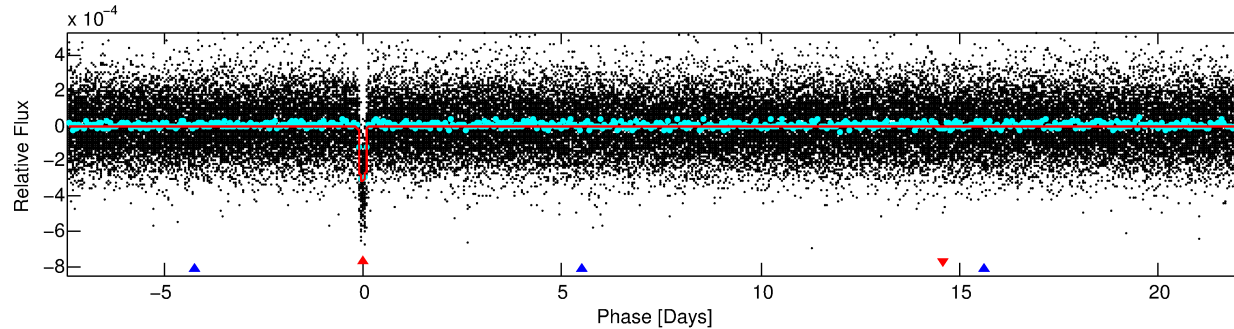
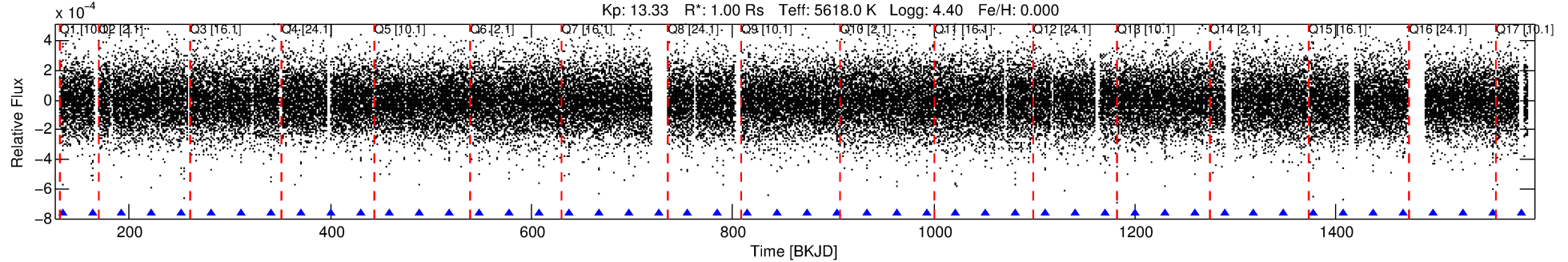
No Significant Match Found

# DV One-Page Summary

KIC: 3442055 Candidate: 1 of 2 Period: 29.619 d

KOI: K01218.01 Corr: 0.927

Kp: 13.33 R\*: 1.00 Rs Teff: 5618.0 K Logg: 4.40 Fe/H: 0.000



## DV Fit Results:

Period = 29.61948 [0.00012] d  
Epoch = 133.6788 [0.0032] BKJD  
Rp/R\* = 0.0211 [0.0006]  
a/R\* = 13.89 [1.33]  
b = 0.96 [0.01]  
Seff = 26.83 [5.22]  
Teq = 580 [28] K  
Rp = 2.29 [0.31] Re  
a = 0.1817 [0.0214] AU  
Ag = 84.50 [30.89] [2.70σ]  
Teffp = 2720 [224] K [9.48σ]

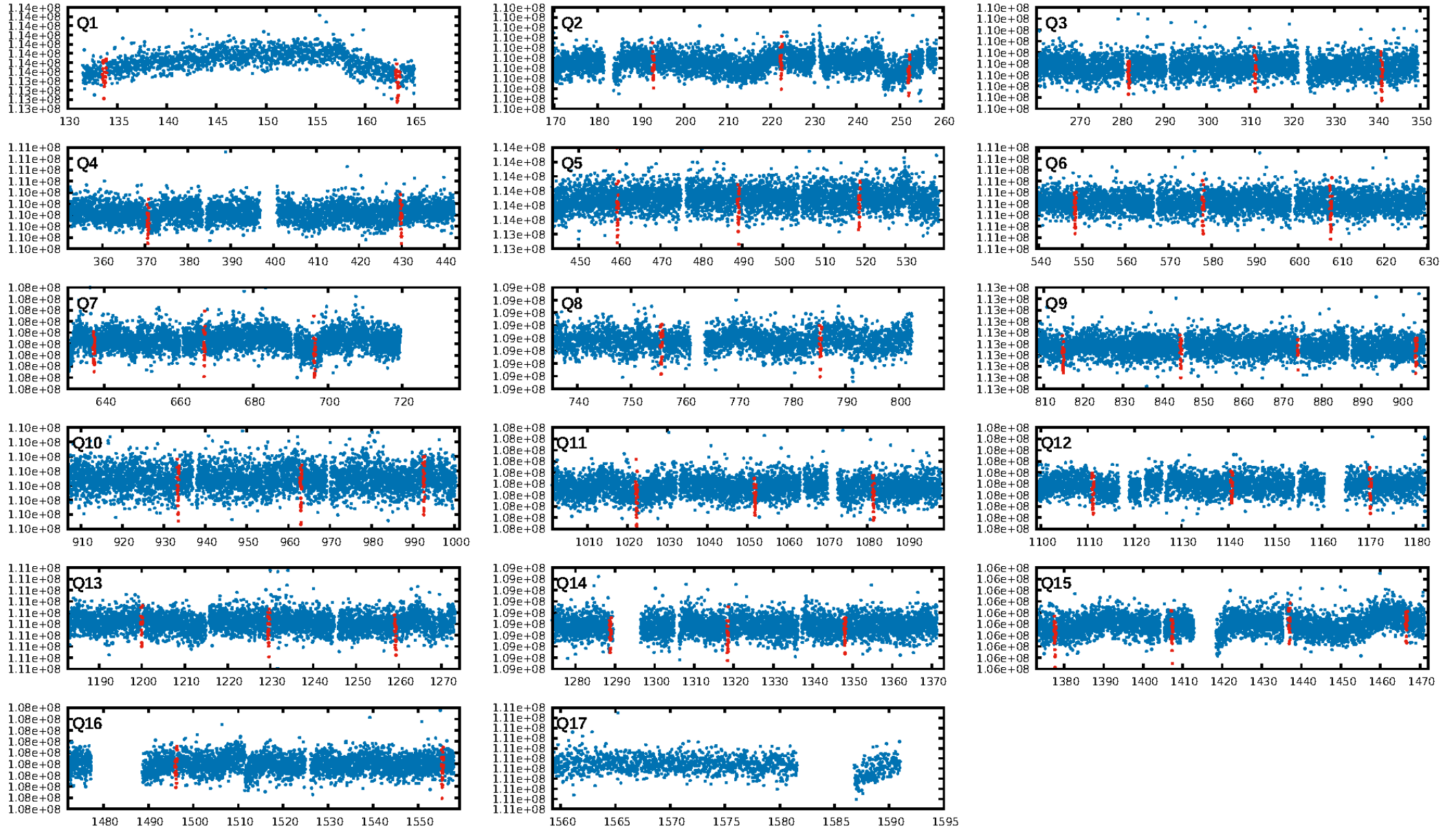
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [575.40σ]  
ModelChiSquare2-sig: 93.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.51e-285  
RollingBand-fgt: 1.00 [44/44]  
GhostDiagnostic-chr: 9.145  
Centroid-sig: 1.3%  
Centroid-so: 0.651 arcsec [1.75σ]  
OotOffset-rm: 0.242 arcsec [0.81σ]  
KicOffset-rm: 0.310 arcsec [1.03σ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 1.00 [16/16]

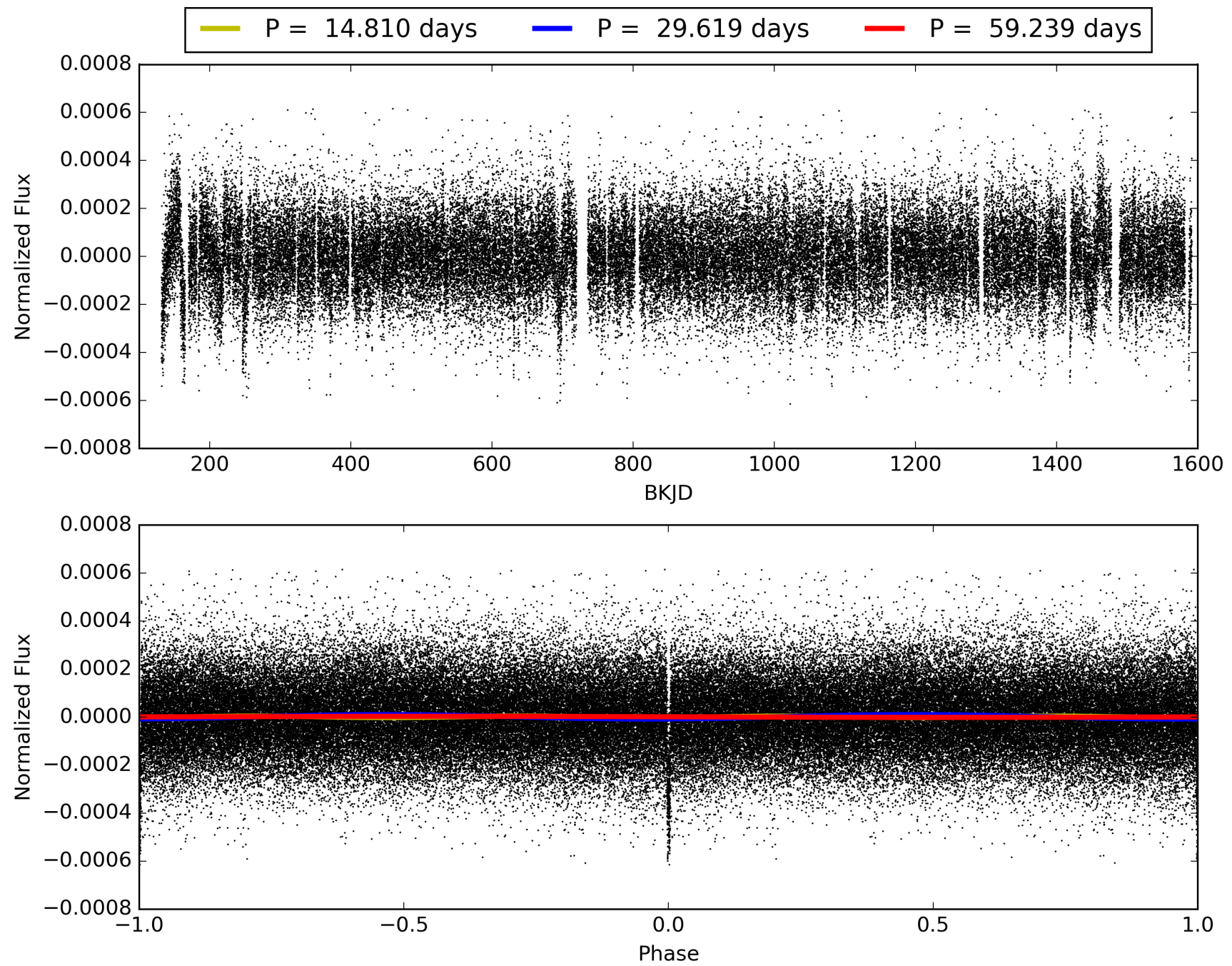
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:58:19 Z

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

# TCE 003442055-01, PDC Light Curves

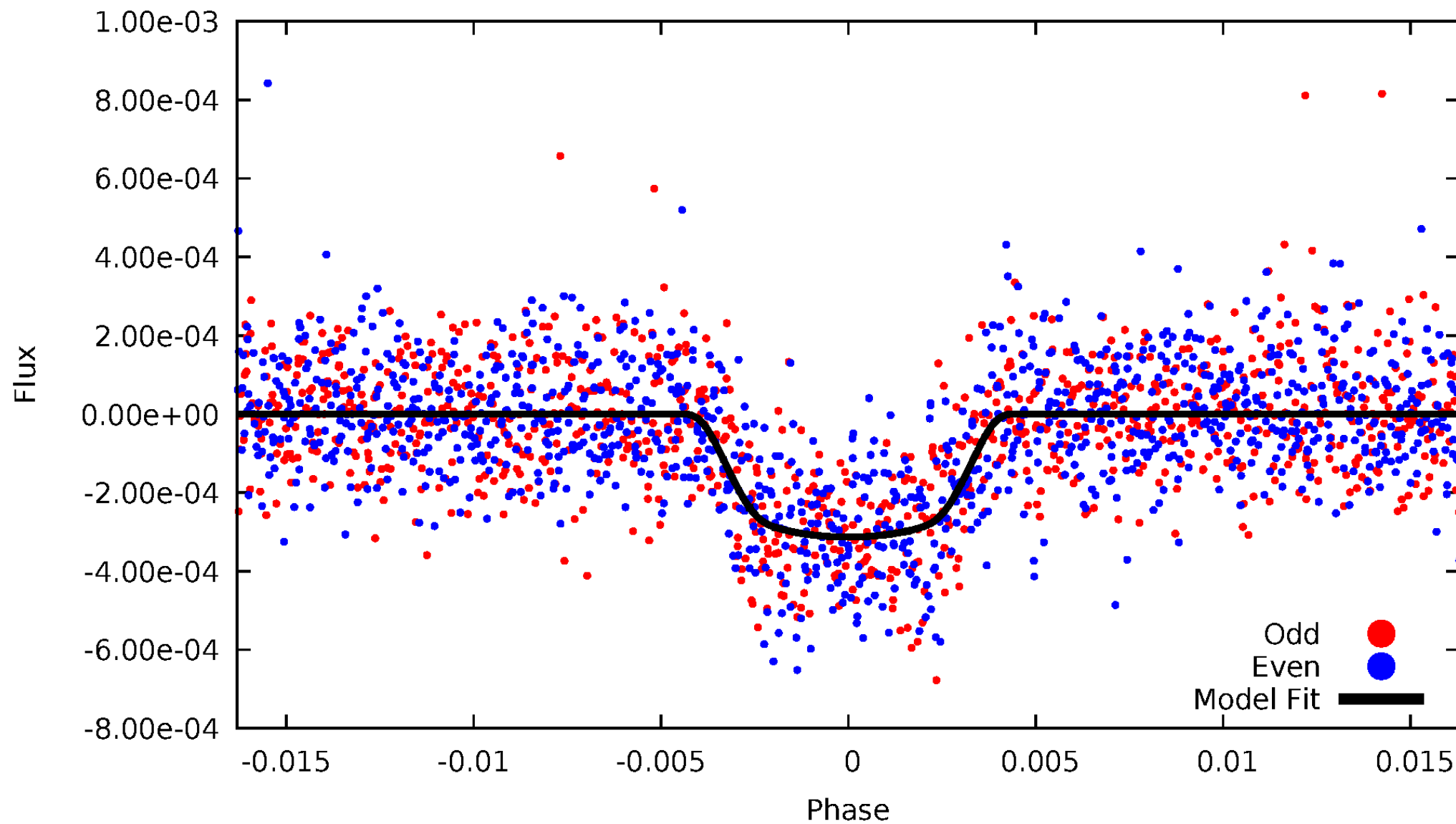


TCE 003442055-01



# DV Odd/Even

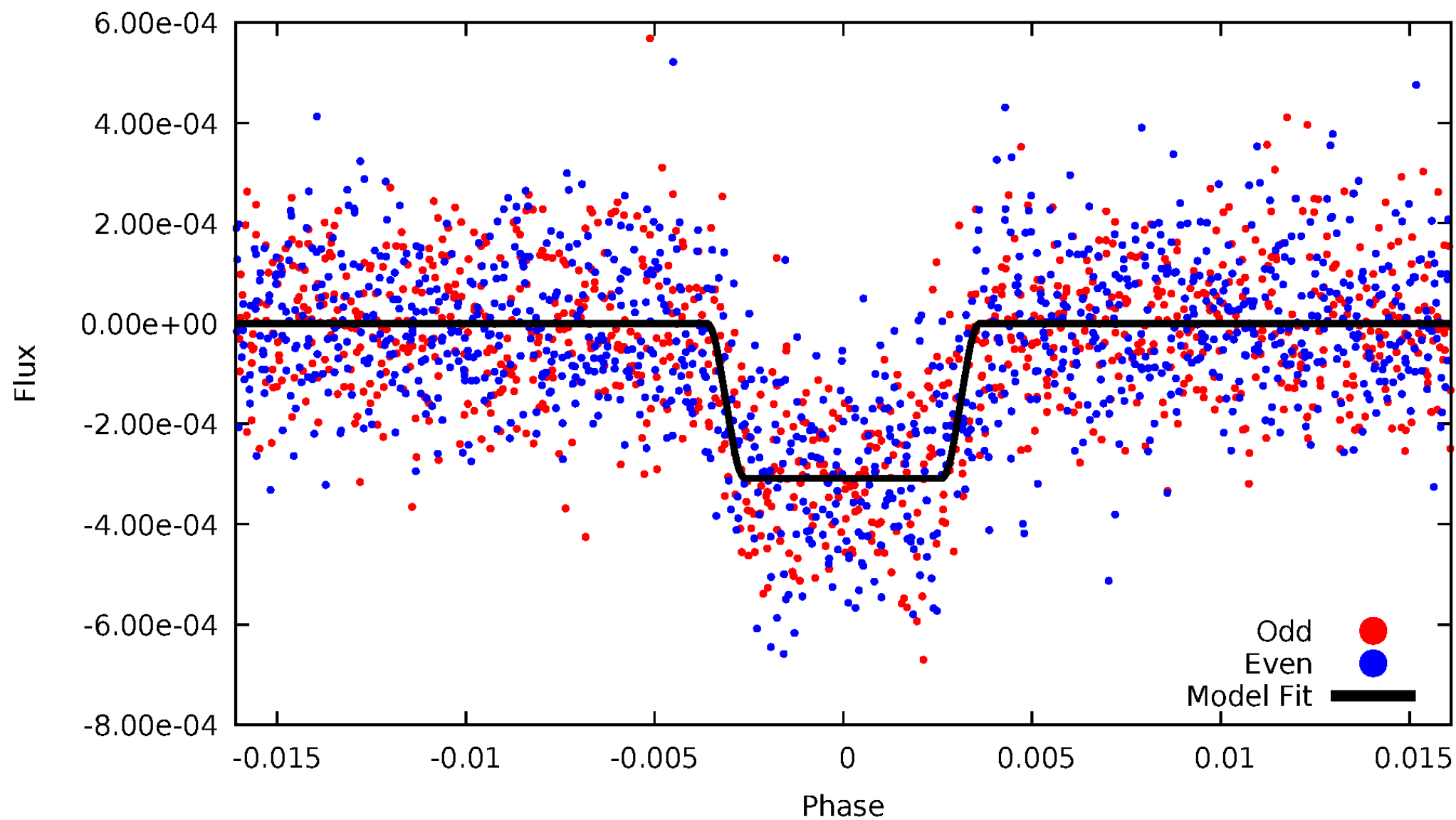
TCE 003442055-01





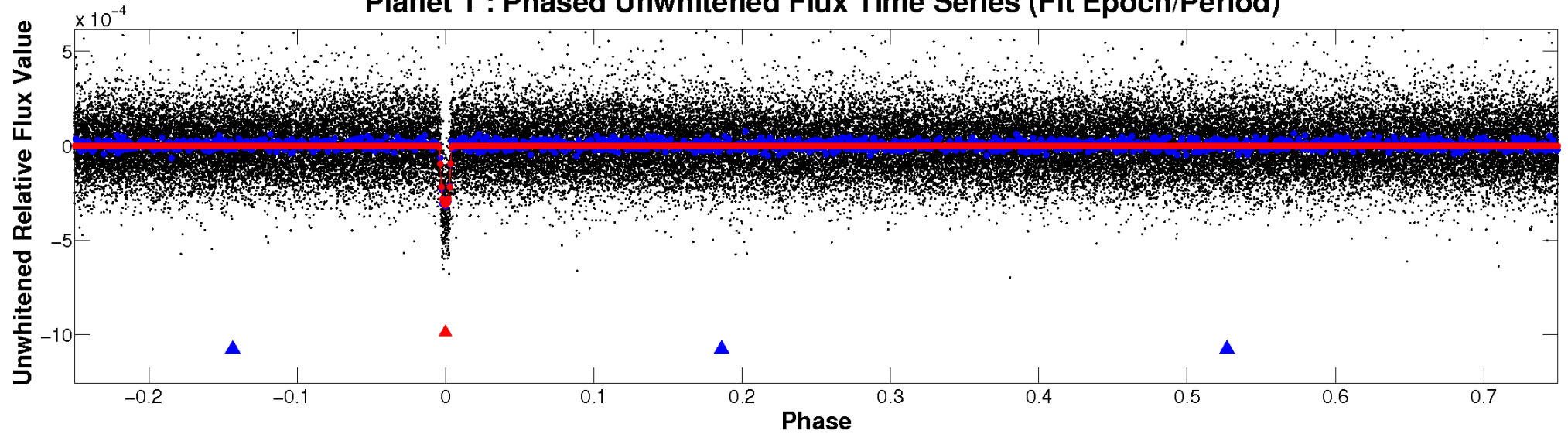
# ALT Odd/Even

TCE 003442055-01

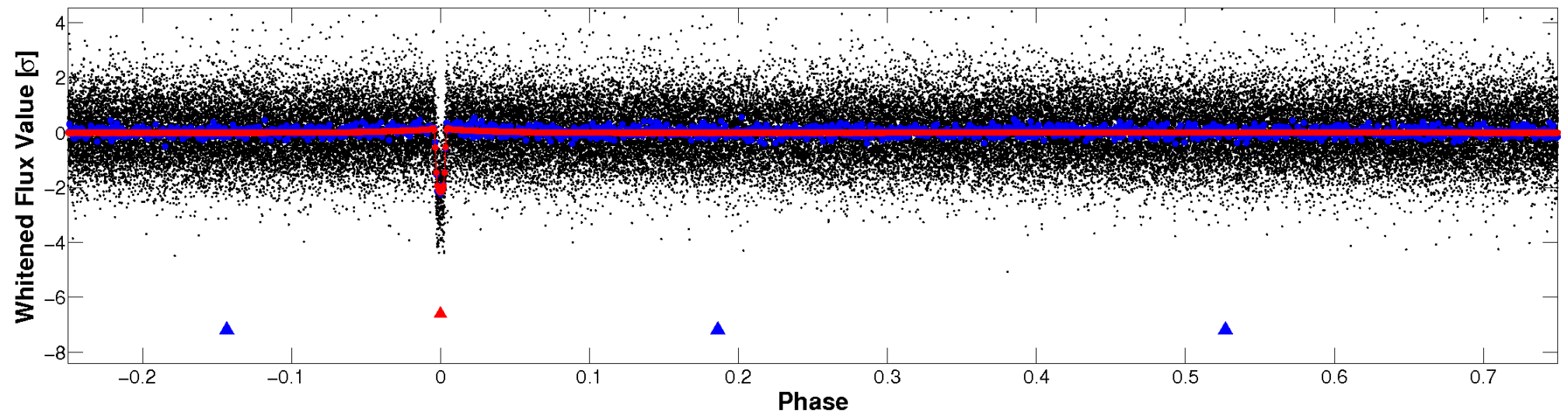


# Non-Whitened Vs. Whitened Light Curve

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

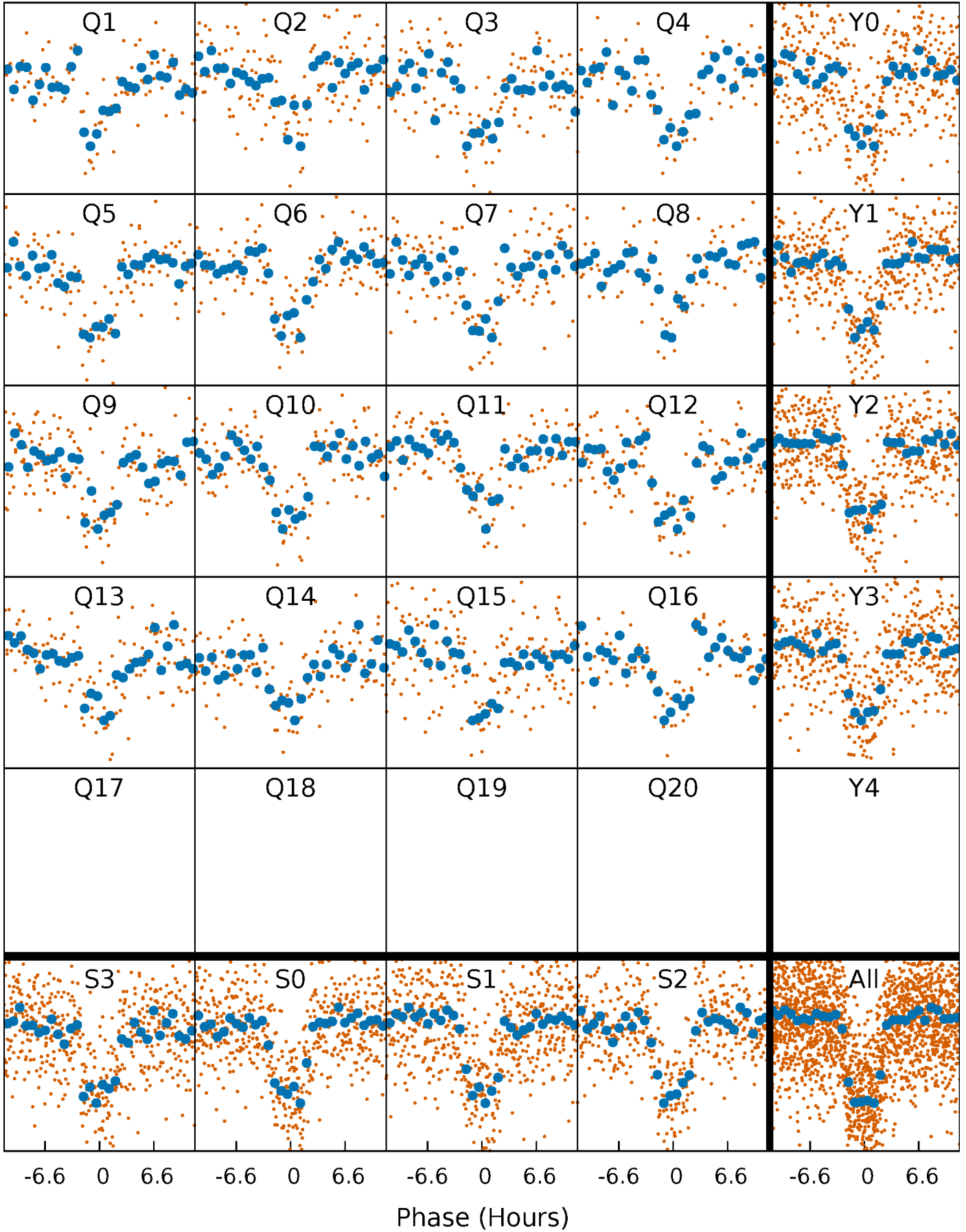


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

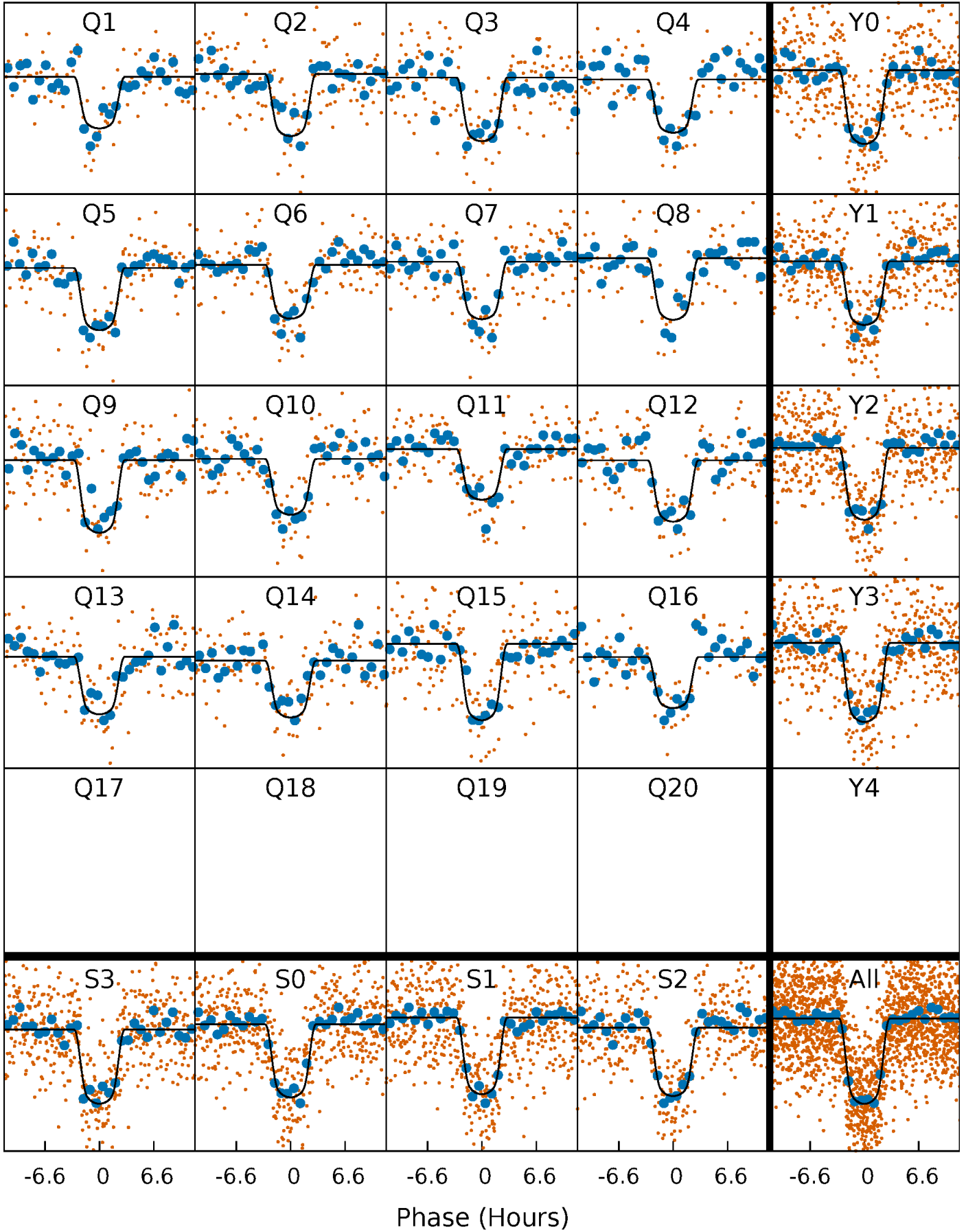
TCE 003442055-01 P= 29.619482 Days  $T_0=133.678845$  (BKJD)





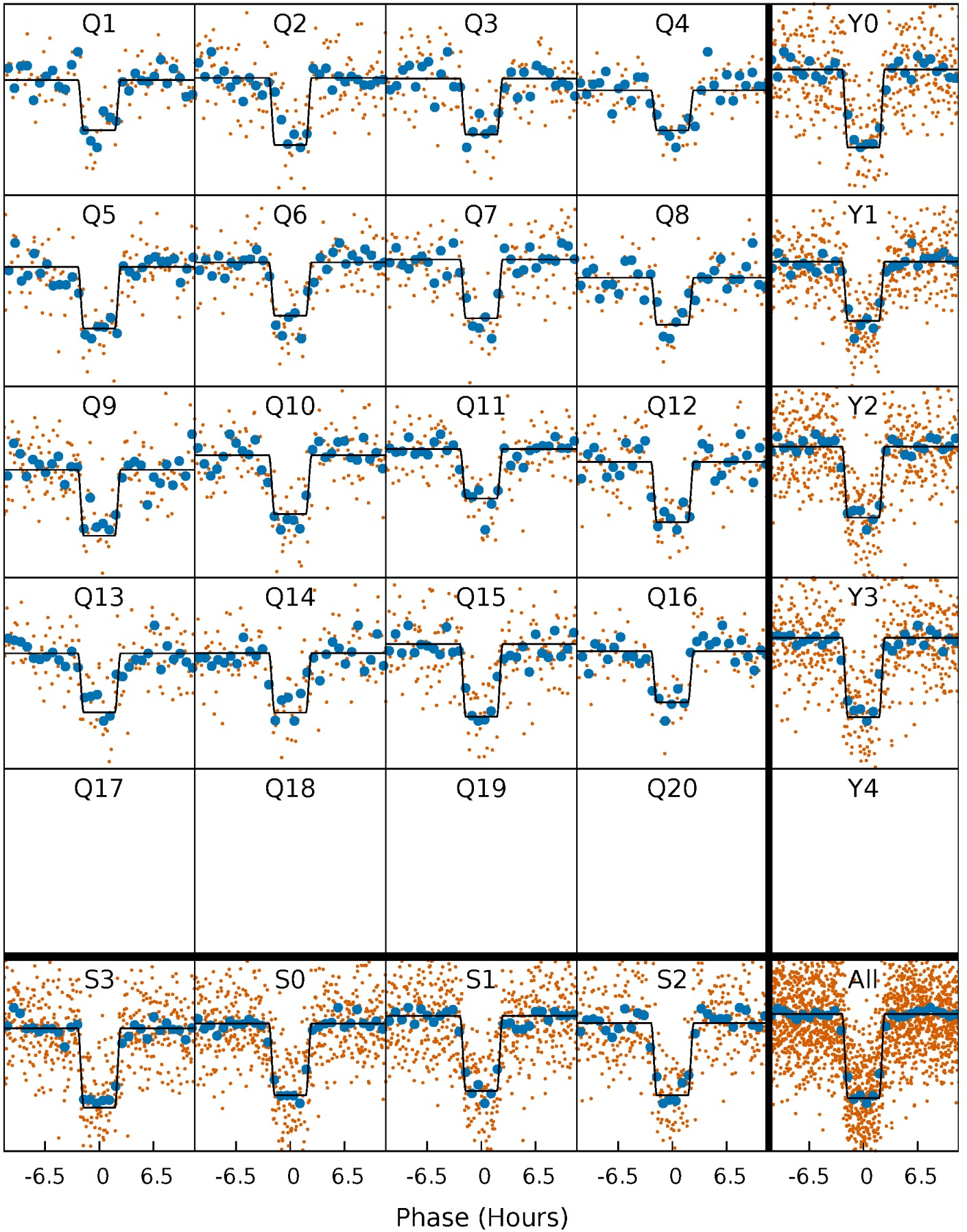
# DV Quarter-Phased Transit Curves

TCE 003442055-01 P= 29.619482 Days  $T_0=133.678845$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

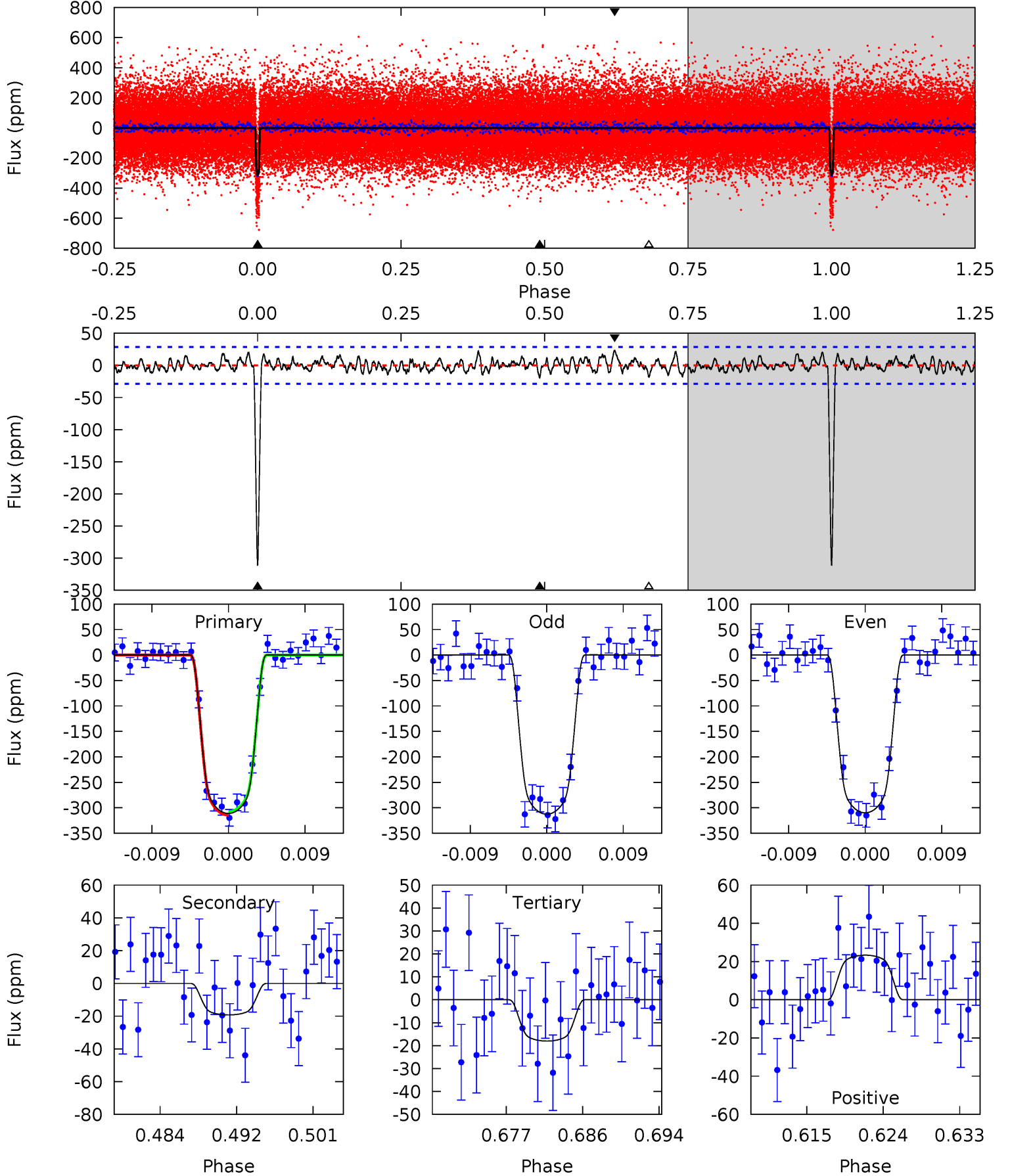
TCE 003442055-01 P= 29.619845 Days  $T_0=133.670039$  (BKJD)



# DV Model-Shift Uniqueness Test

003442055-01, P = 29.619482 Days, E = 104.059363 Days

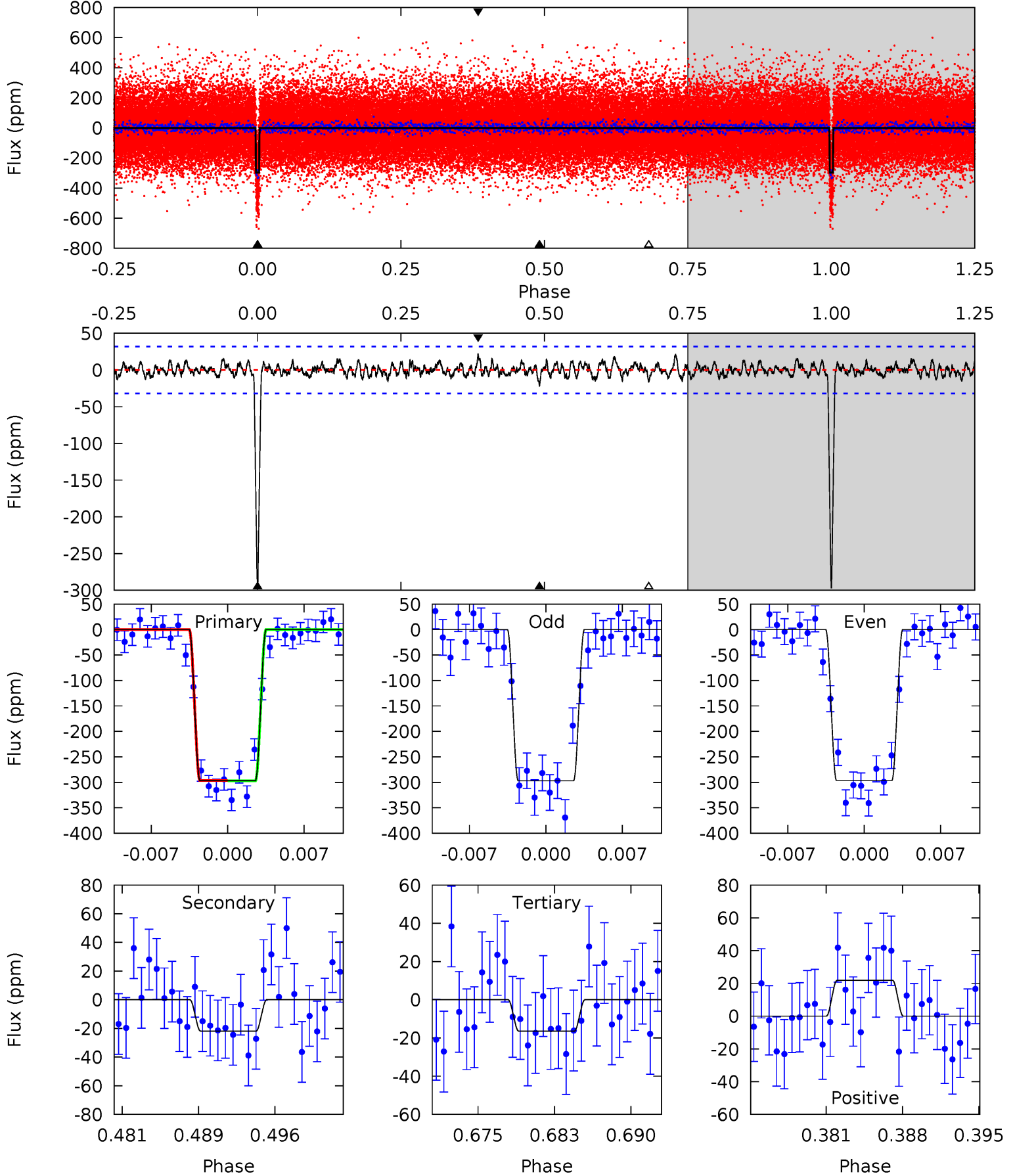
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.7	3.39	3.17	4.10	5.05	2.62	1.29	51.5	50.6	0.22	-0.72	0.24	0.99	0.07	0.58



# Alt Model-Shift Uniqueness Test

003442055-01, P = 29.619845 Days, E = 104.050194 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
47.3	3.49	2.63	3.49	5.09	2.69	1.02	44.7	43.9	0.86	0.00	0.04	1.02	0.07	0.05



### Stellar Parameters For KIC 003442055

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5618^{+112}_{-101}$	$4.401^{+0.100}_{-0.100}$	$0.000^{+0.150}_{-0.150}$	$0.996^{+0.133}_{-0.109}$	$0.911^{+0.068}_{-0.046}$	$1.298^{+0.560}_{-0.392}$
	+2%/-2%	+2%/-2%	+inf%/-inf%	+13%/-11%	+7%/-5%	+43%/-30%
Source	SPE57	SPE57	SPE57	DSEP		

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

### Secondary Eclipse Parameters for KIC 003442055-01 / KOI 1218.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-19 \pm 6$	$2.30^{+0.18}_{-0.16}$	$811^{+34}_{-32}$	$3147^{+142}_{-146}$	$65^{+24}_{-20}$
Alt.	$-22 \pm 6$	$1.92^{+0.15}_{-0.14}$	$812^{+32}_{-32}$	$3411^{+156}_{-185}$	$108^{+36}_{-33}$

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



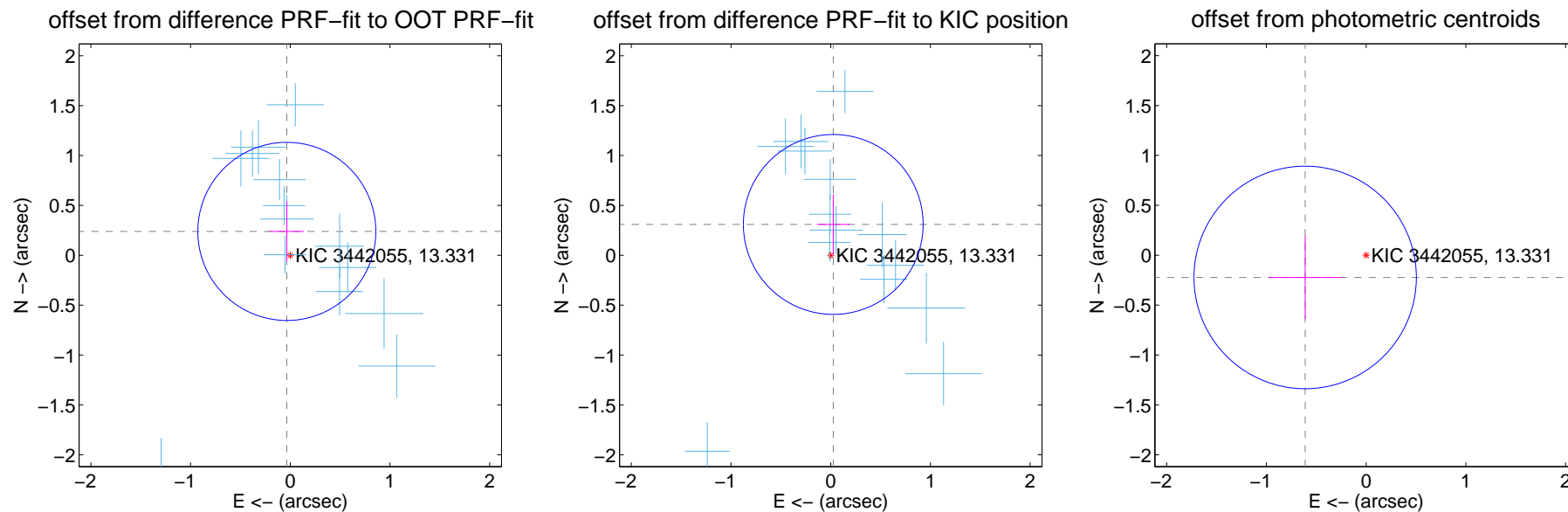
## DV Centroid Data

Supplemental centroid analysis for 003442055-01. Kepler magnitude: 13.33. Transit SNR 38.19

There are 15 quarters with good PRF difference image offsets

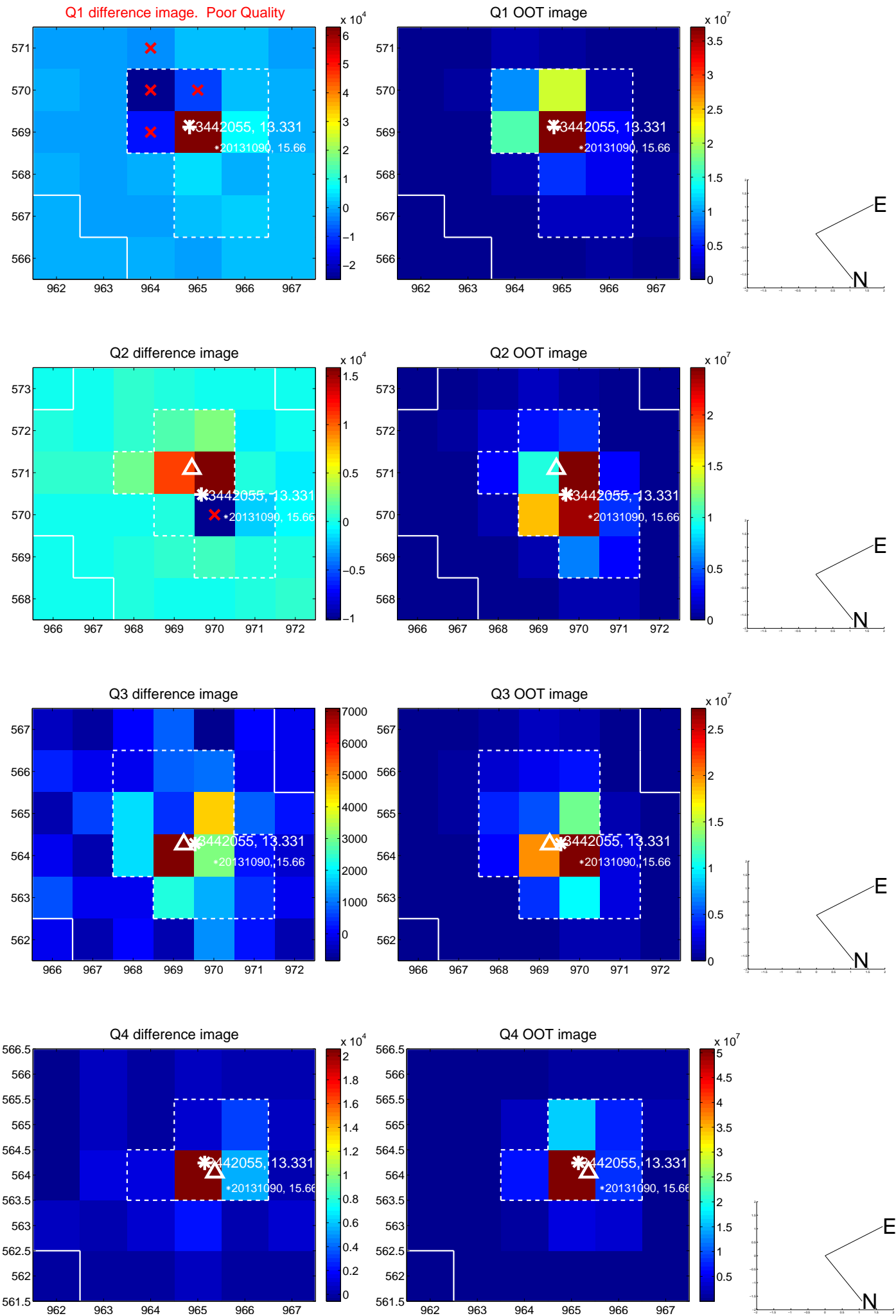
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.242 \pm 0.298$	0.81	$0.035 \pm 0.173$	$0.239 \pm 0.302$
PRF-fit source offset from KIC position	$0.310 \pm 0.301$	1.03	$-0.025 \pm 0.164$	$0.309 \pm 0.301$
photometric centroid source offset	$0.65 \pm 0.37$	1.75	$0.61 \pm 0.37$	$-0.22 \pm 0.42$

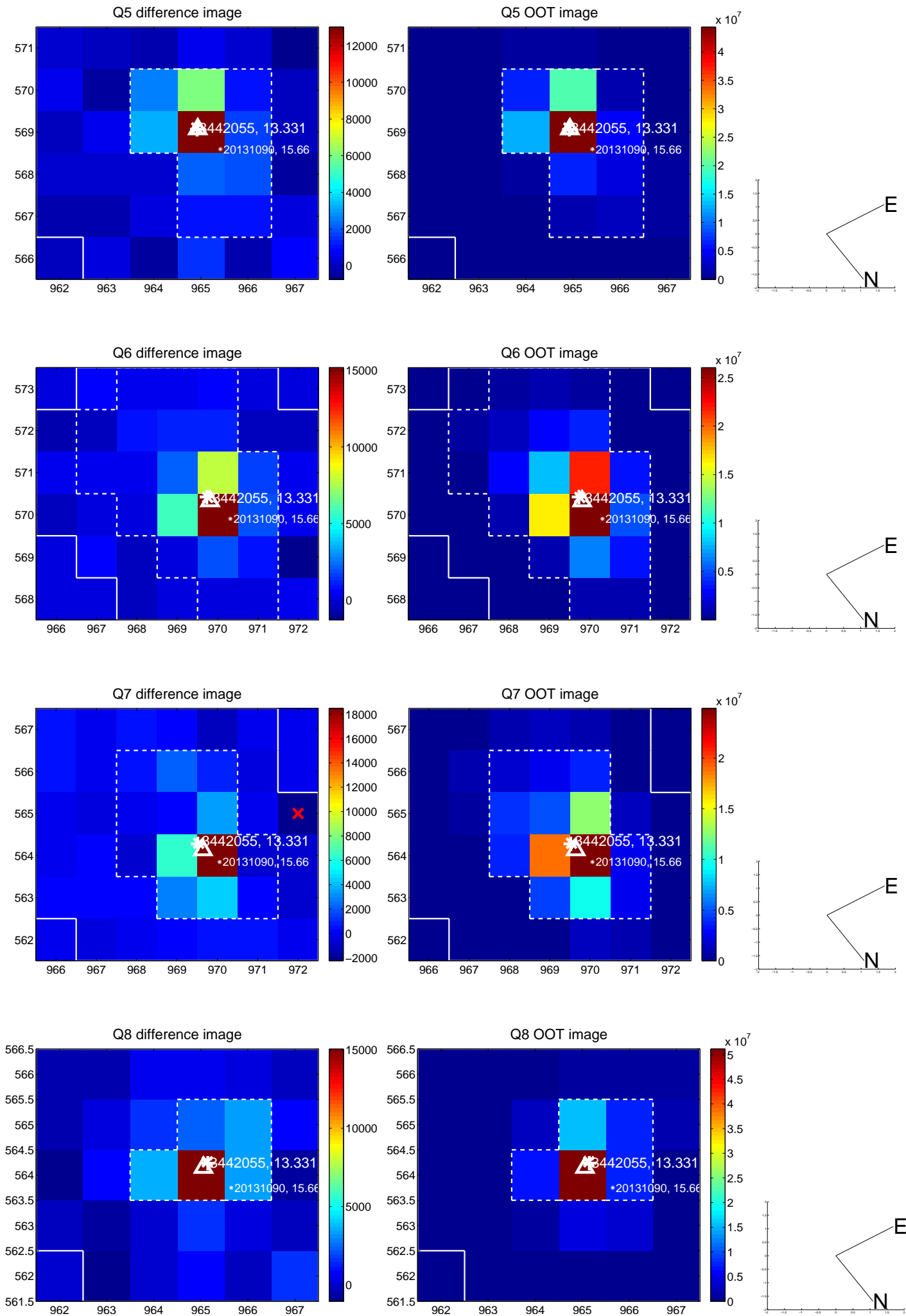


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

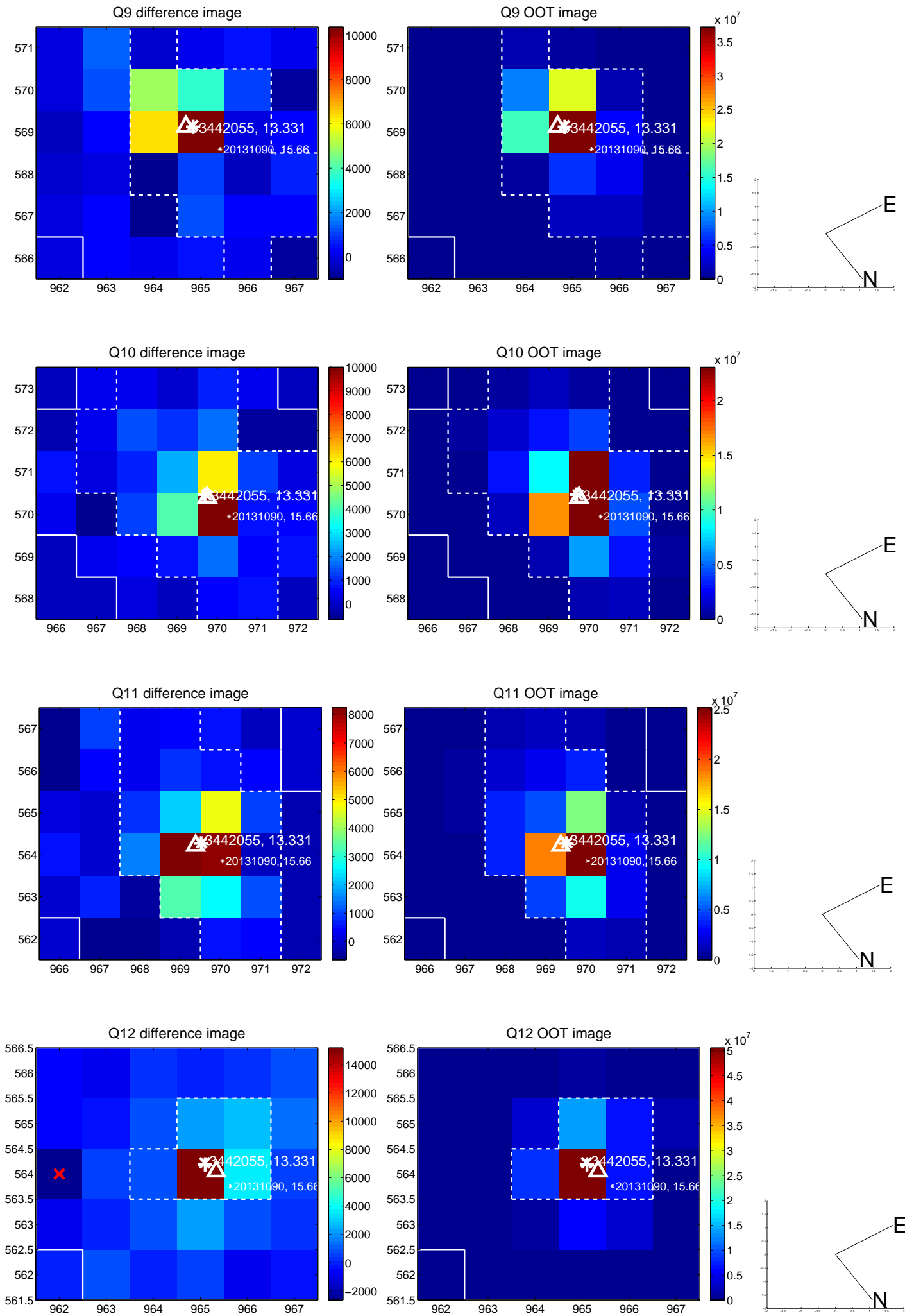
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



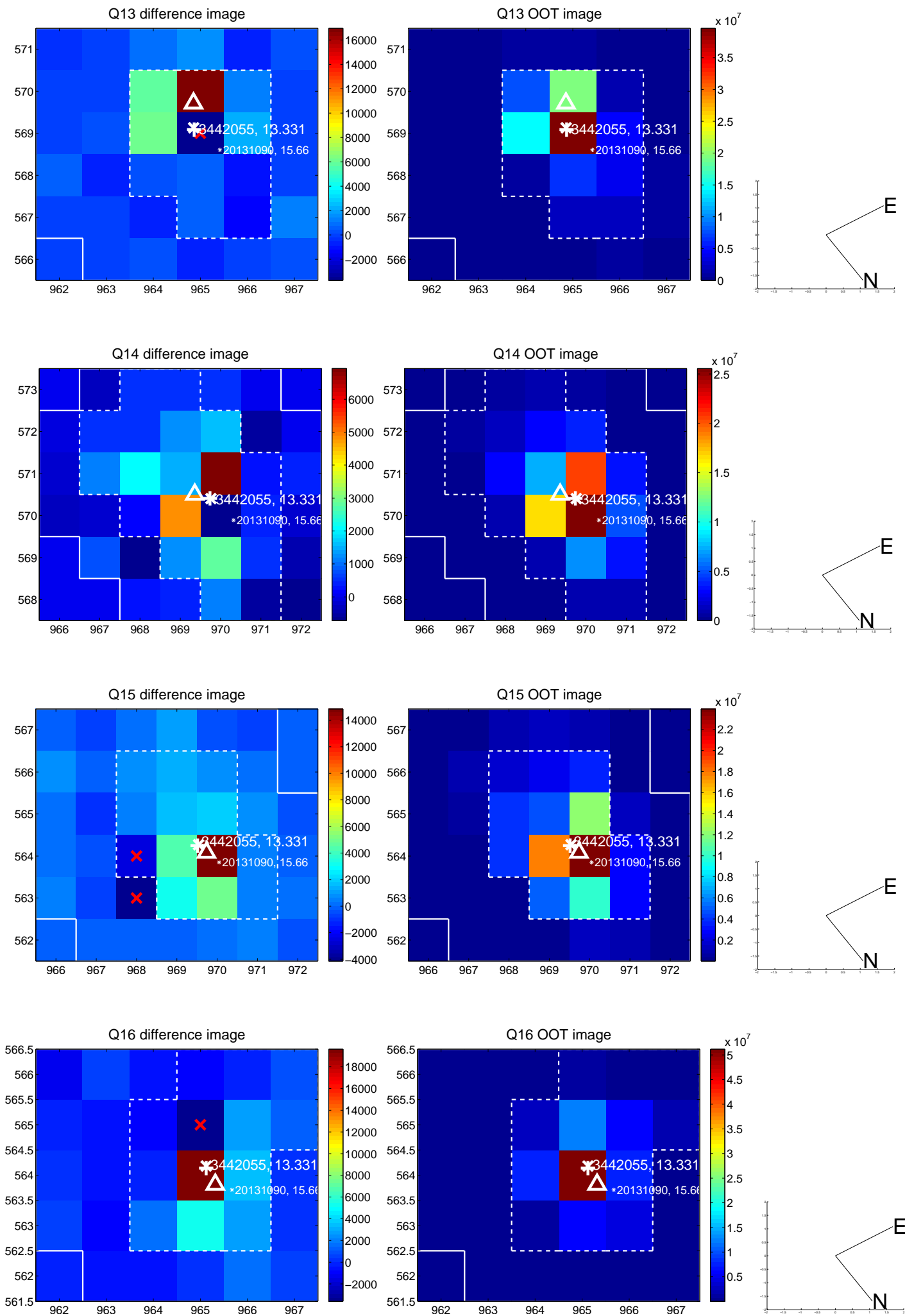
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

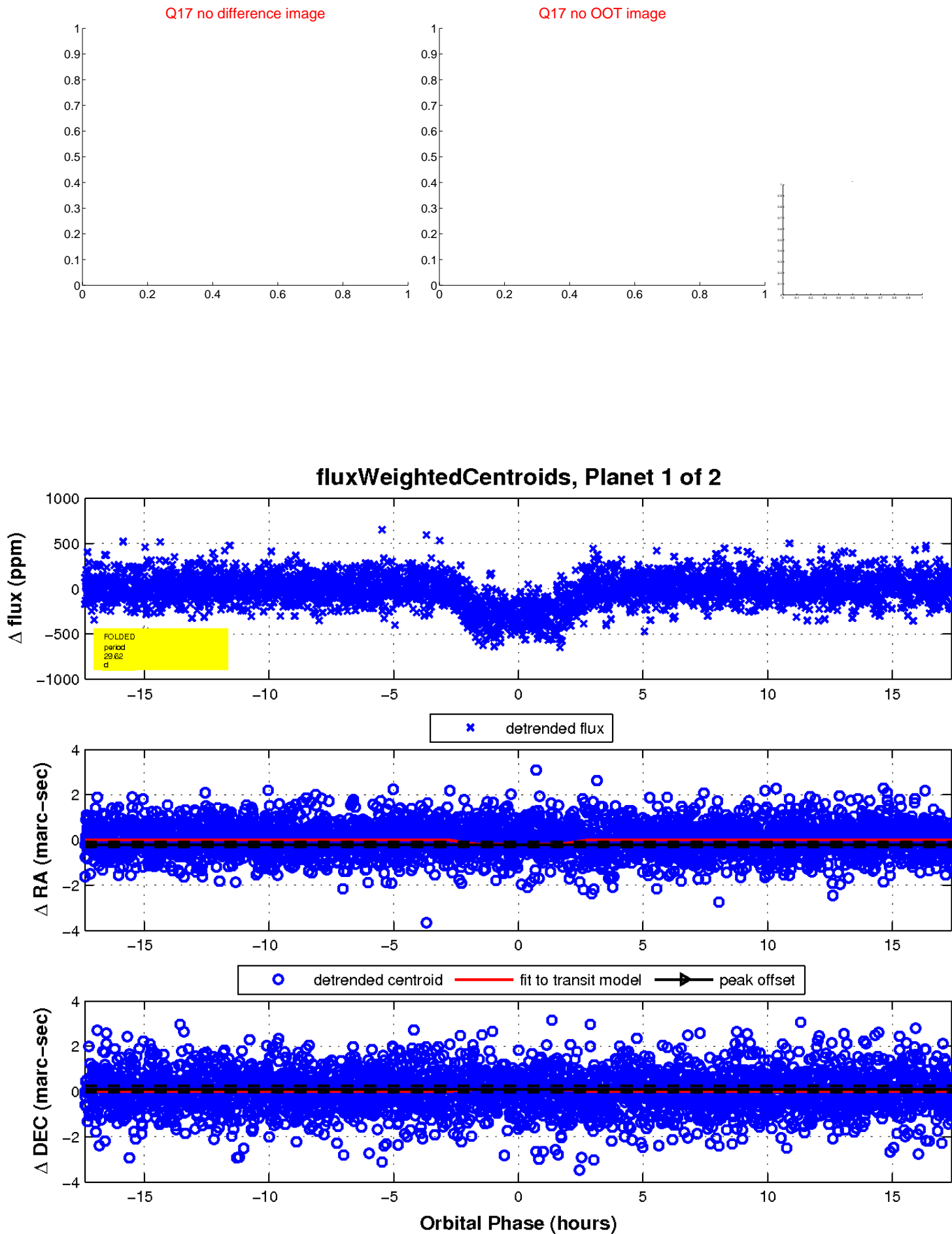


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



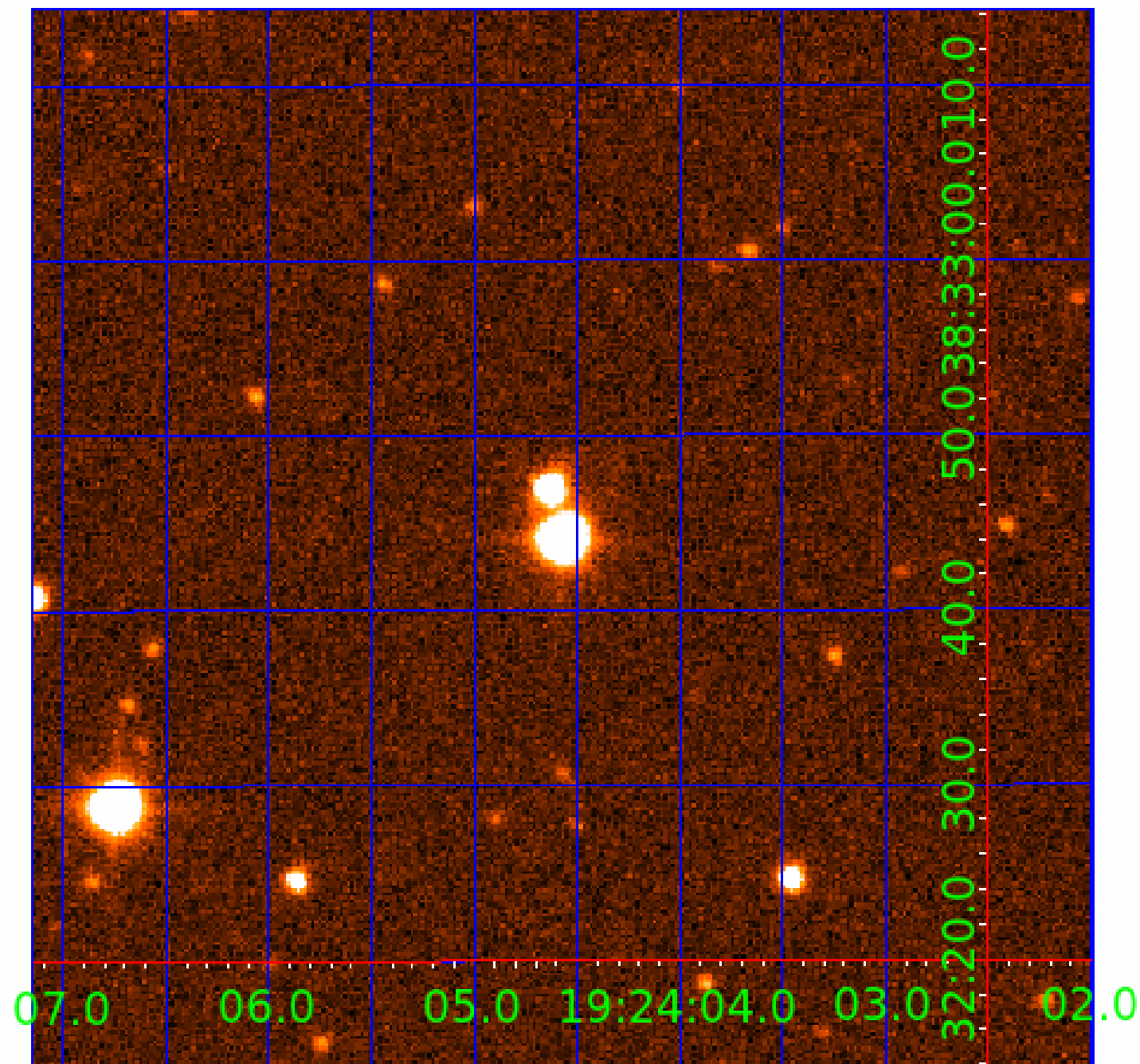


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 003442055

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003442055-01	OBS	1218.01	29.619482	133.678845	313.3	5.796	36.2	38.2	1.00	5618	2.29	26.83
003442055-02	OBS	No	464.148159	583.485701	131.4	17.172	7.4	7.3	1.00	5618	1.27	0.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003442055-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003442055-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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.

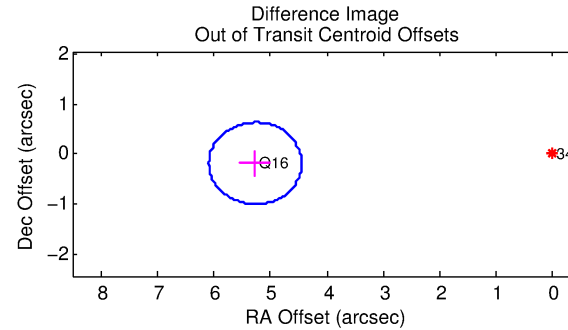
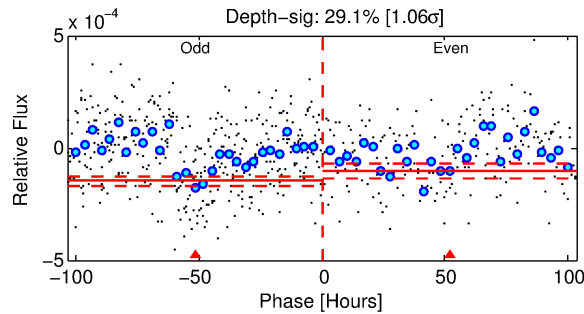
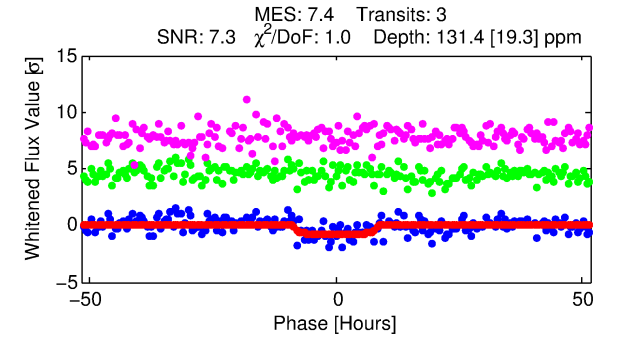
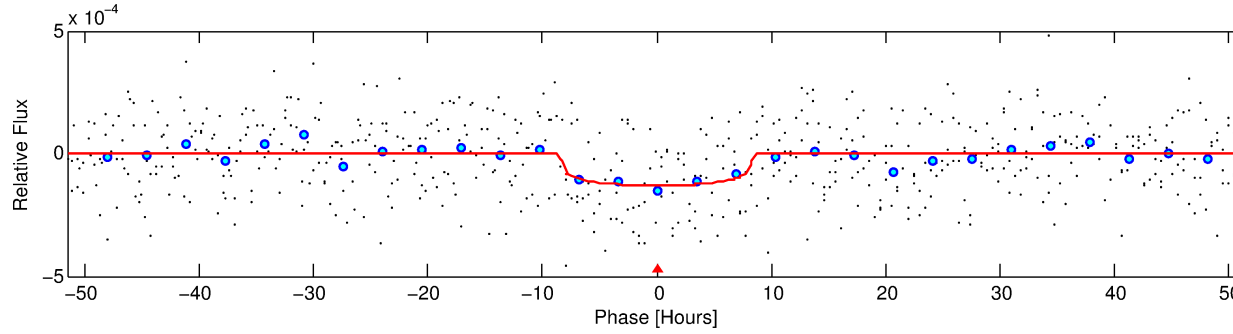
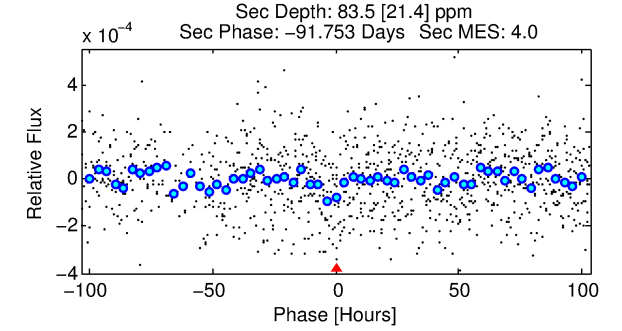
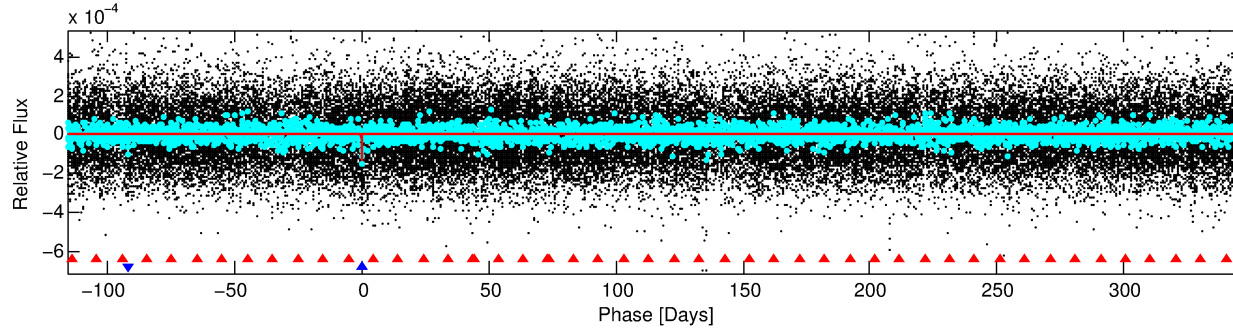
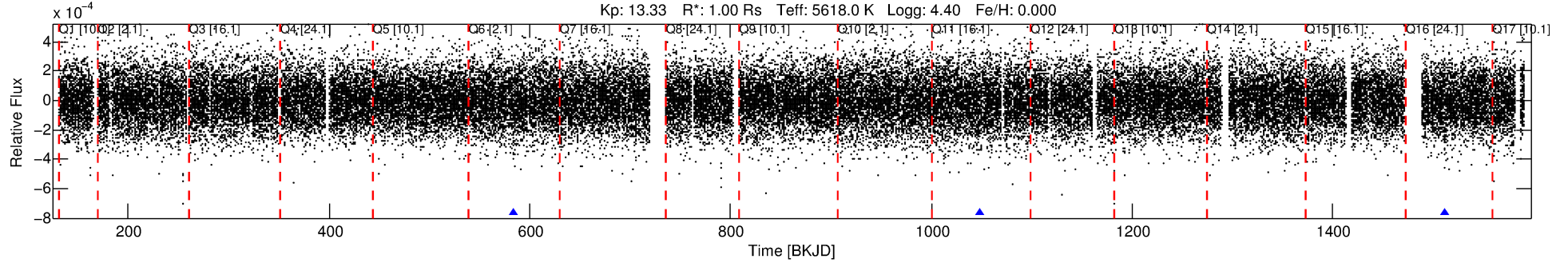
## Ephemeris Match Information For 003442055-02

No Significant Match Found

# DV One-Page Summary

KIC: 3442055 Candidate: 2 of 2 Period: 464.148 d  
KOI: K01218 Corr: No Ephemeris Match

Kp: 13.33 R\*: 1.00 Rs Teff: 5618.0 K Logg: 4.40 Fe/H: 0.000



## DV Fit Results:

Period = 464.14816 [0.02459] d  
Epoch = 583.4857 [0.0290] BKJD  
Rp/R\* = 0.0116 [0.0087]  
a/R\* = 129.04 [419.22]  
b = 0.80 [1.52]  
Seff = 0.68 [0.13]  
Teq = 232 [11] K  
Rp = 1.27 [0.96] Re  
a = 1.1376 [0.1337] AU  
Ag = 37093.65 [56547.22] [0.66σ]  
Teff = 4976 [1886] K [2.52σ]

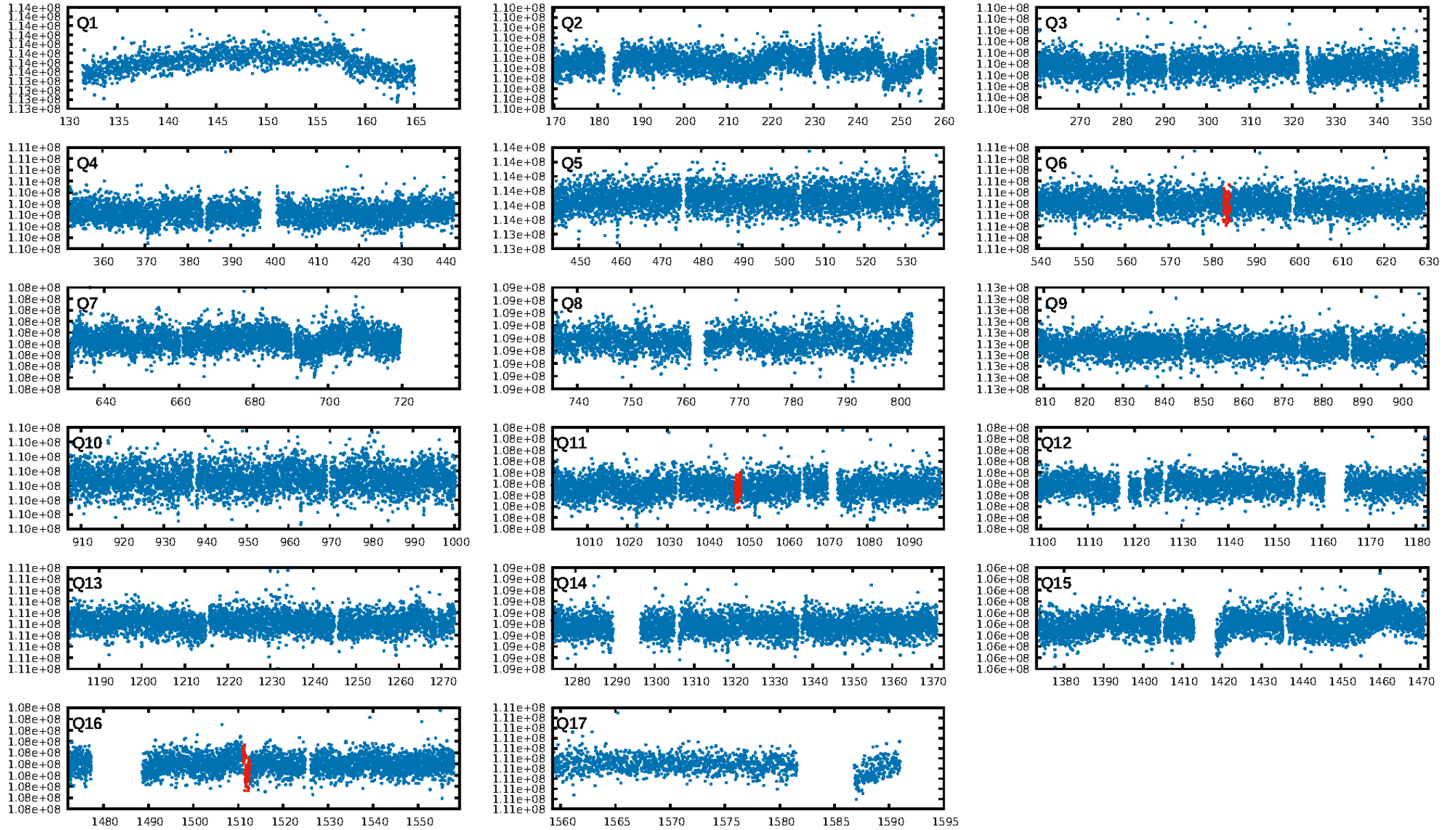
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [575.40σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 2.8%  
ModelChiSquareGof-sig: 92.3%  
Bootstrap-pfa: 6.71e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -2.225  
Centroid-sig: 3.0%  
Centroid-so: 3.768 arcsec [1.58σ]  
OotOffset-rm: 5.270 arcsec [19.27σ]  
KicOffset-rm: 5.213 arcsec [19.07σ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:58:28 Z

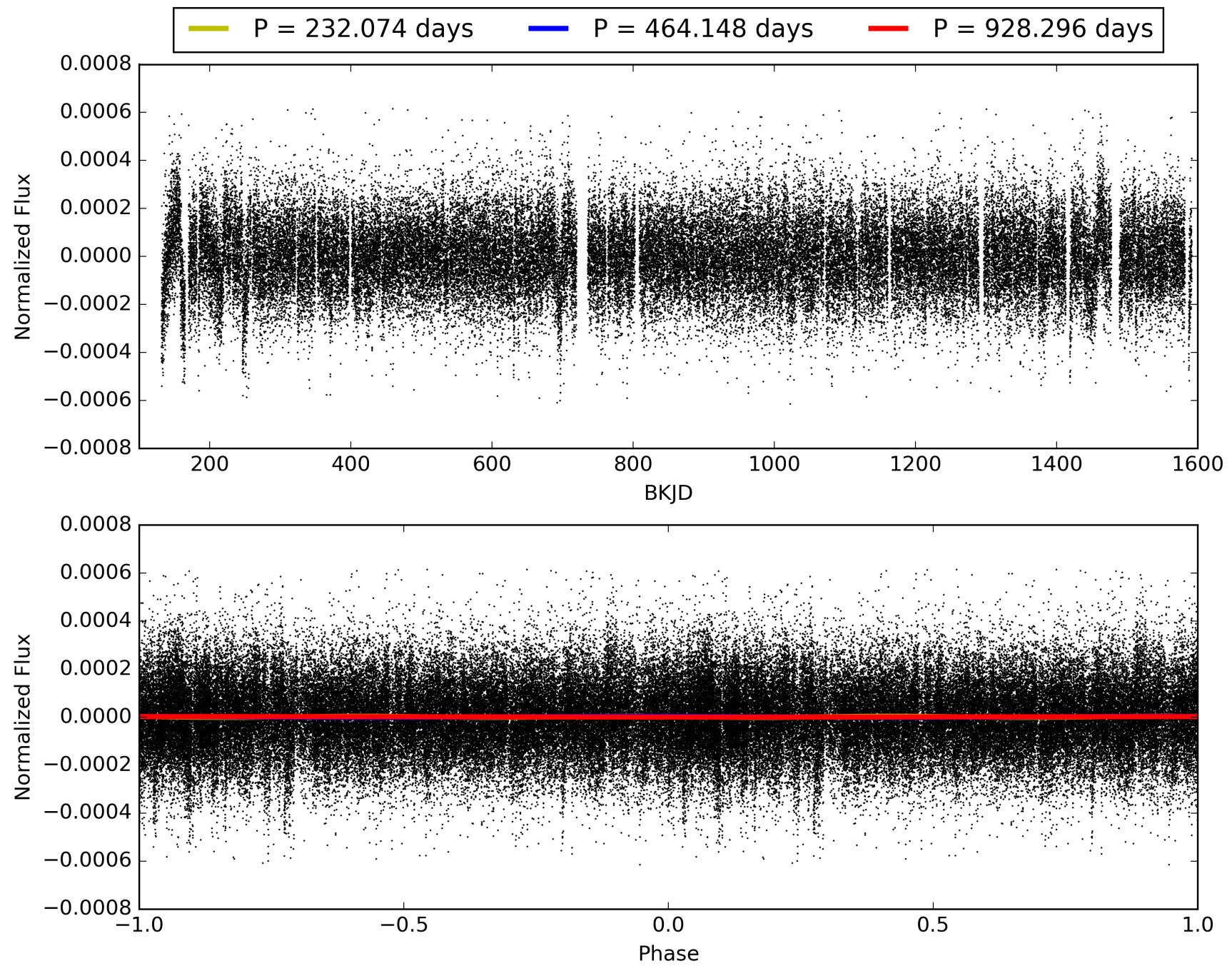
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003442055-02, PDC Light Curves



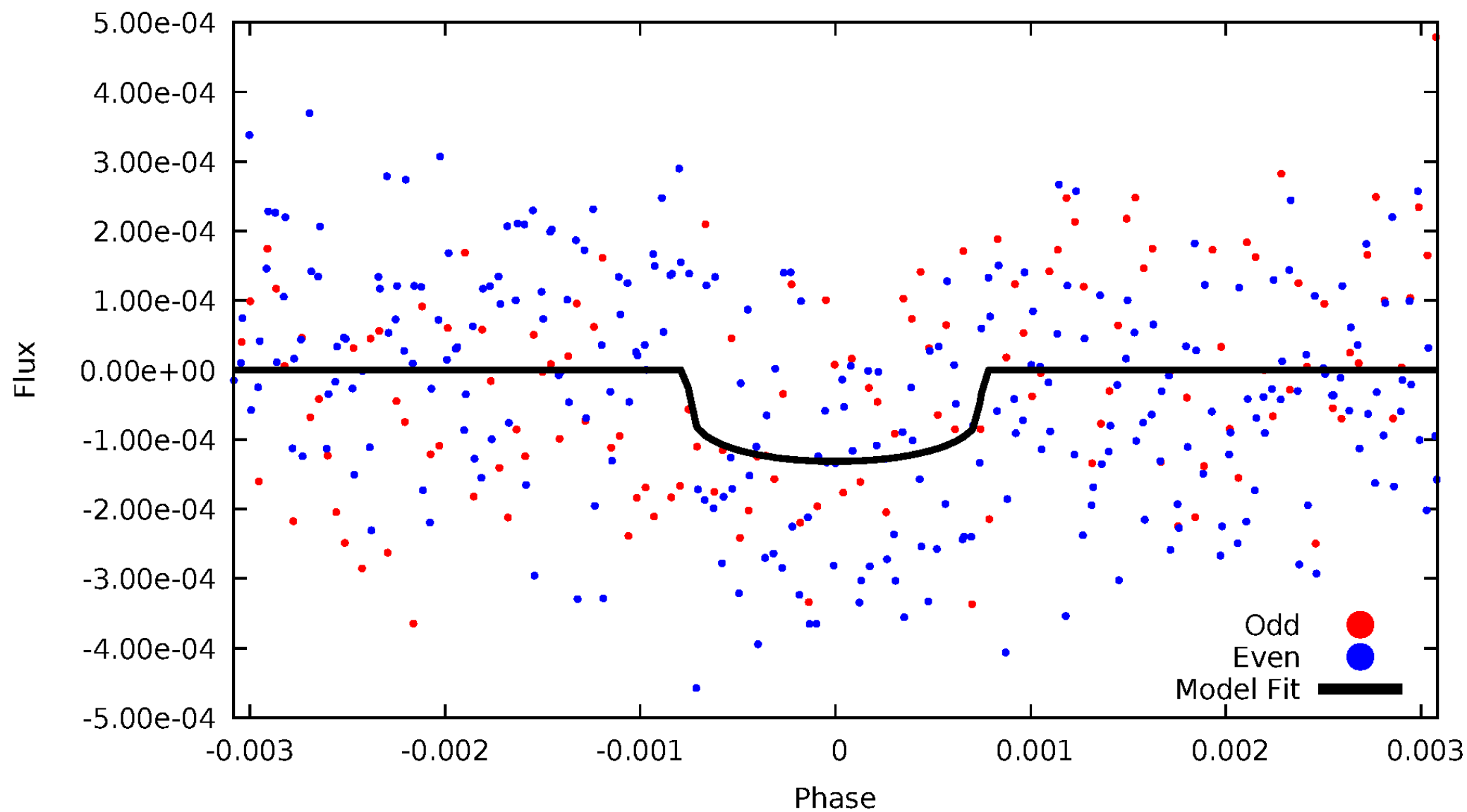


TCE 003442055-02



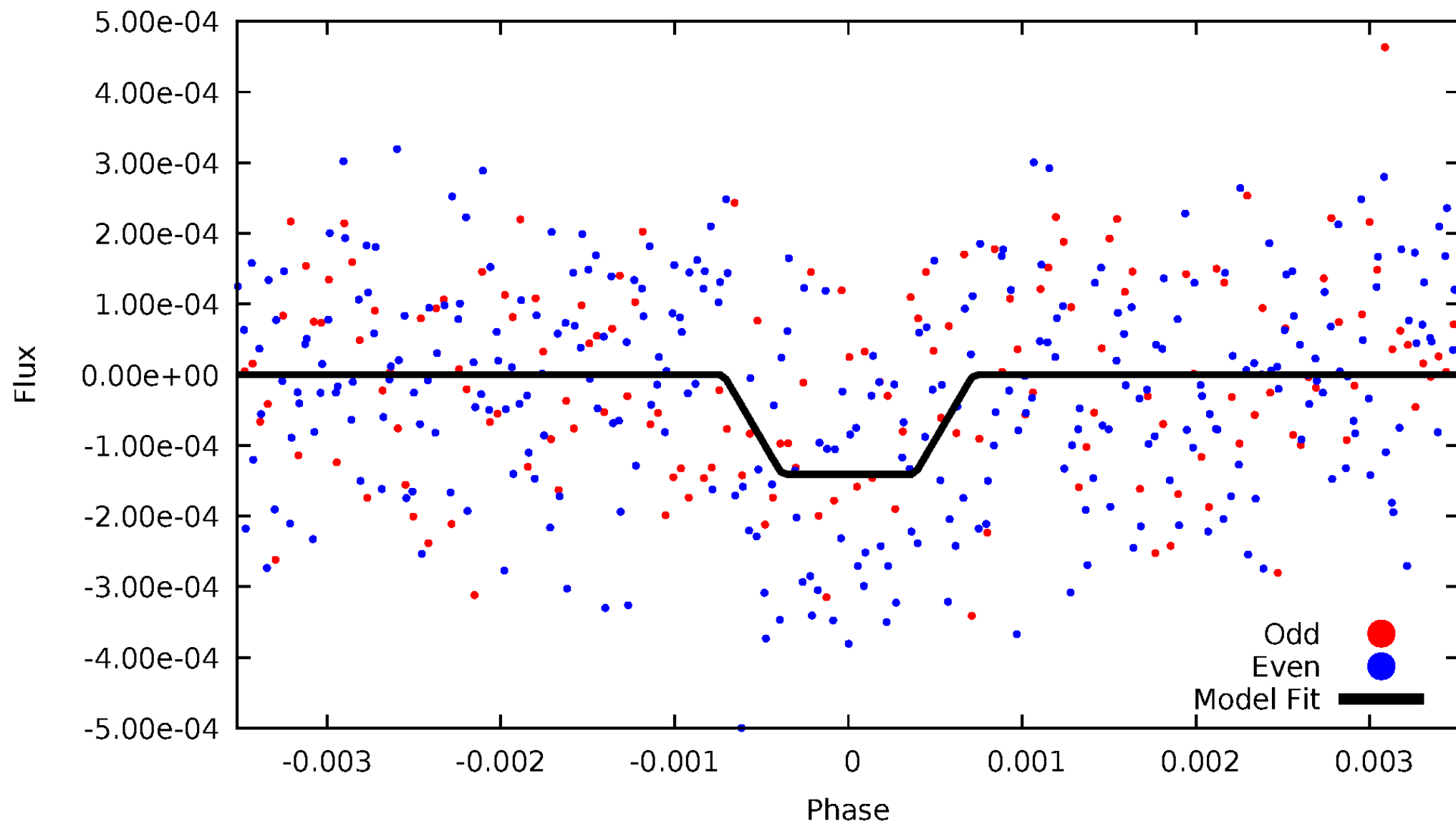
# DV Odd/Even

TCE 003442055-02



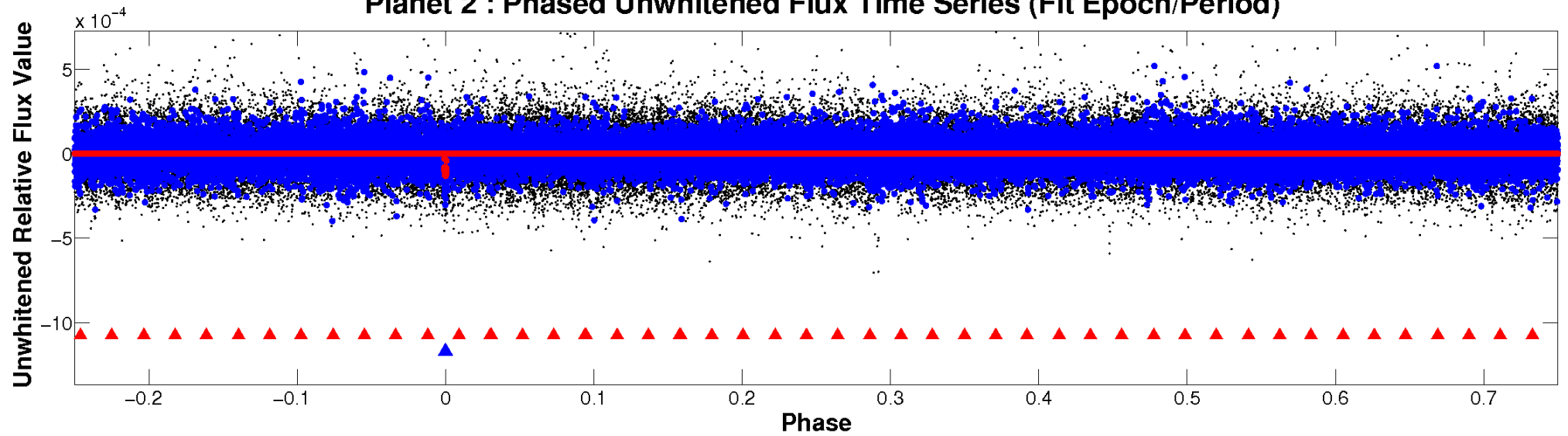
# ALT Odd/Even

TCE 003442055-02

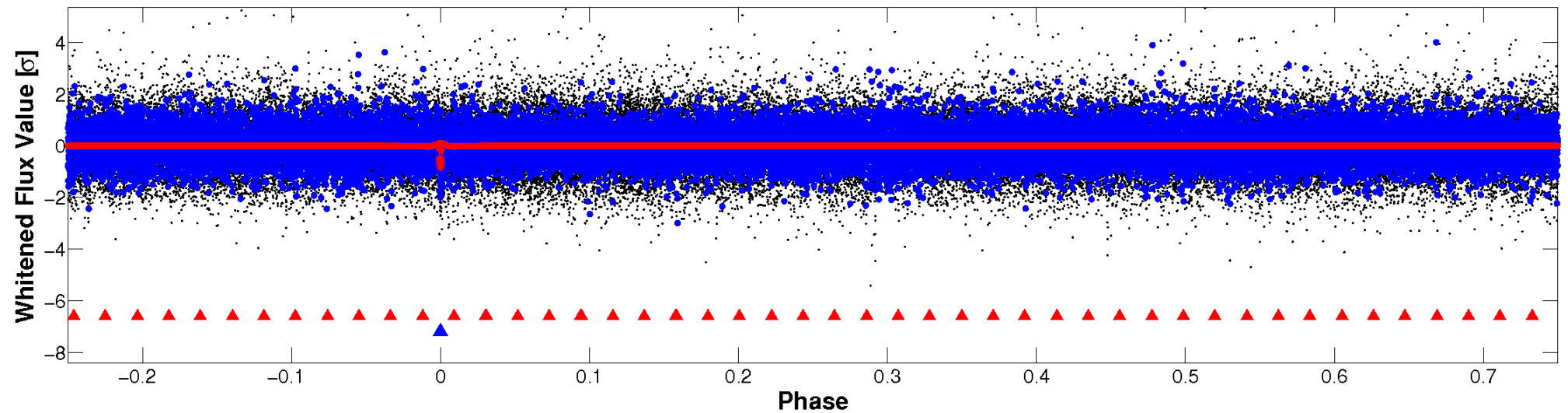


# Non-Whitened Vs. Whitened Light Curve

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

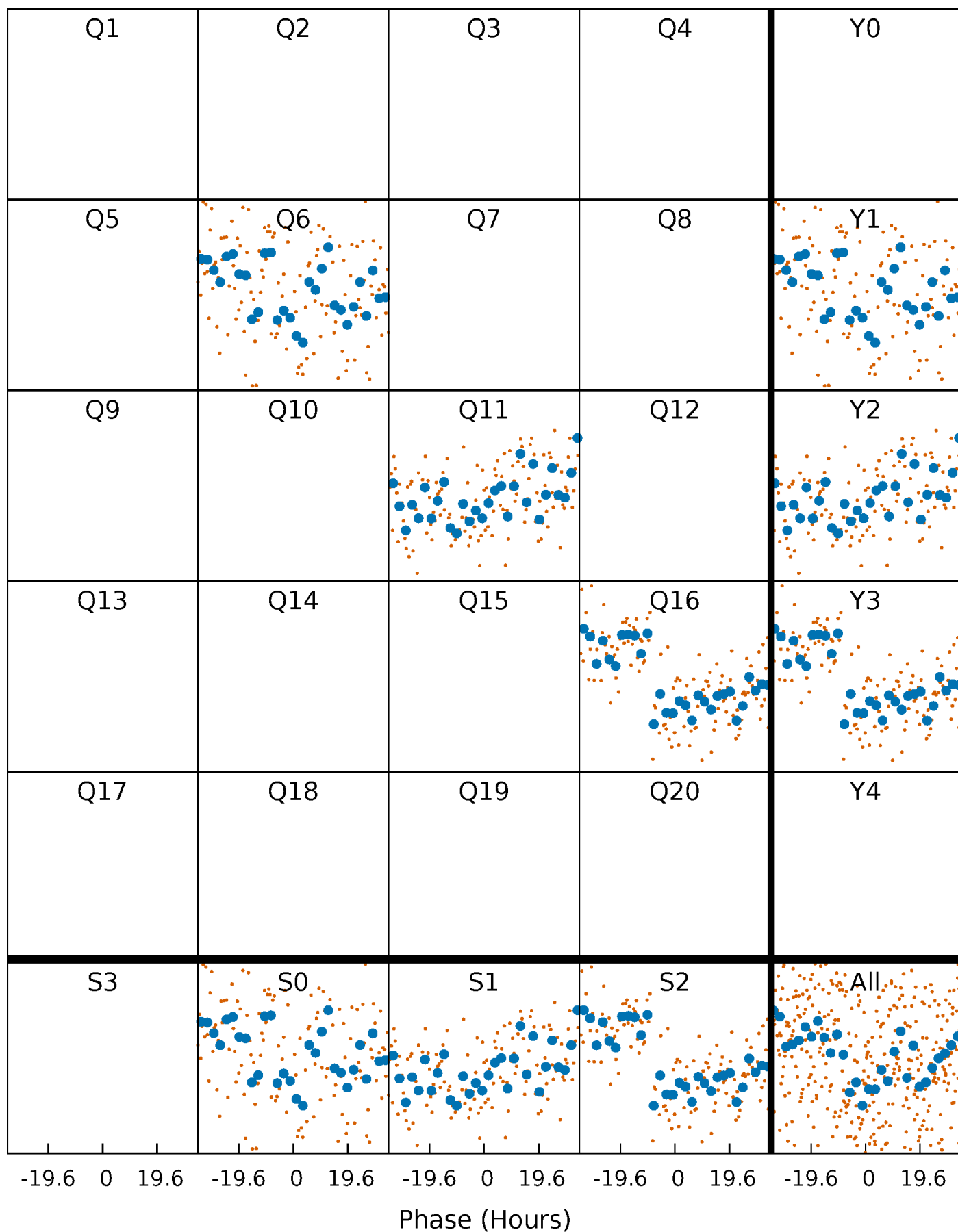


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

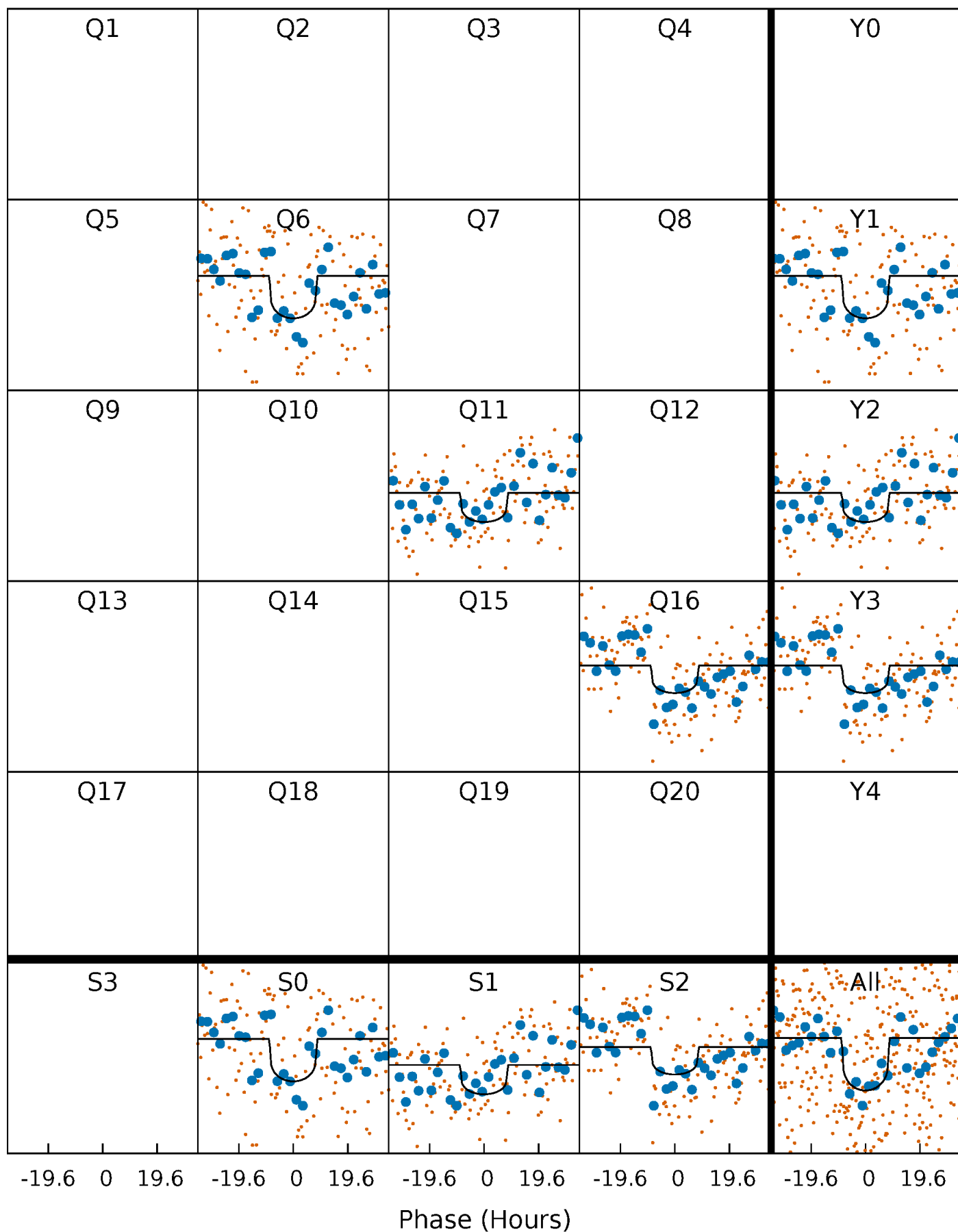
TCE 003442055-02 P=464.148159 Days  $T_0=583.485701$  (BKJD)





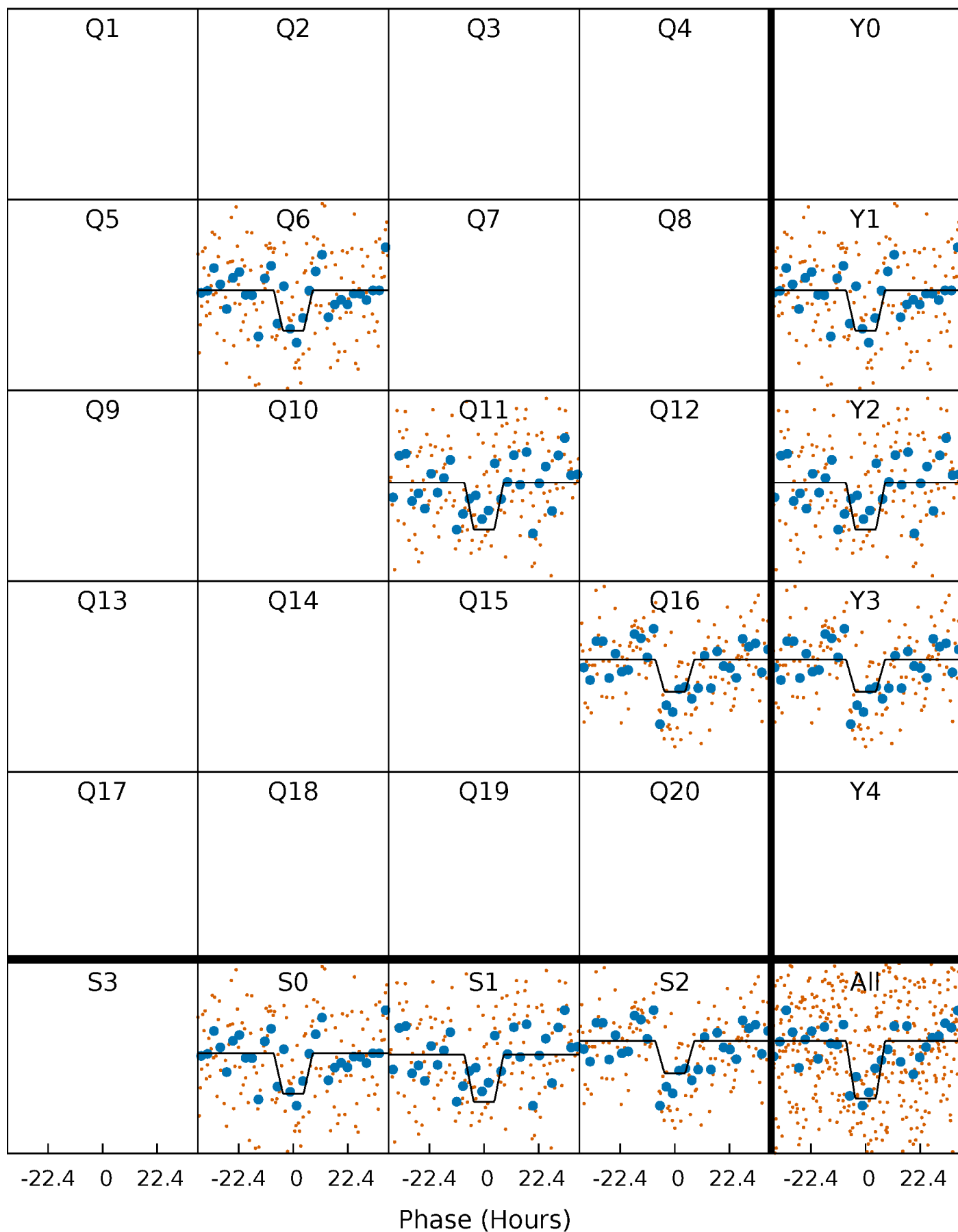
# DV Quarter-Phased Transit Curves

TCE 003442055-02 P=464.148159 Days  $T_0=583.485701$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

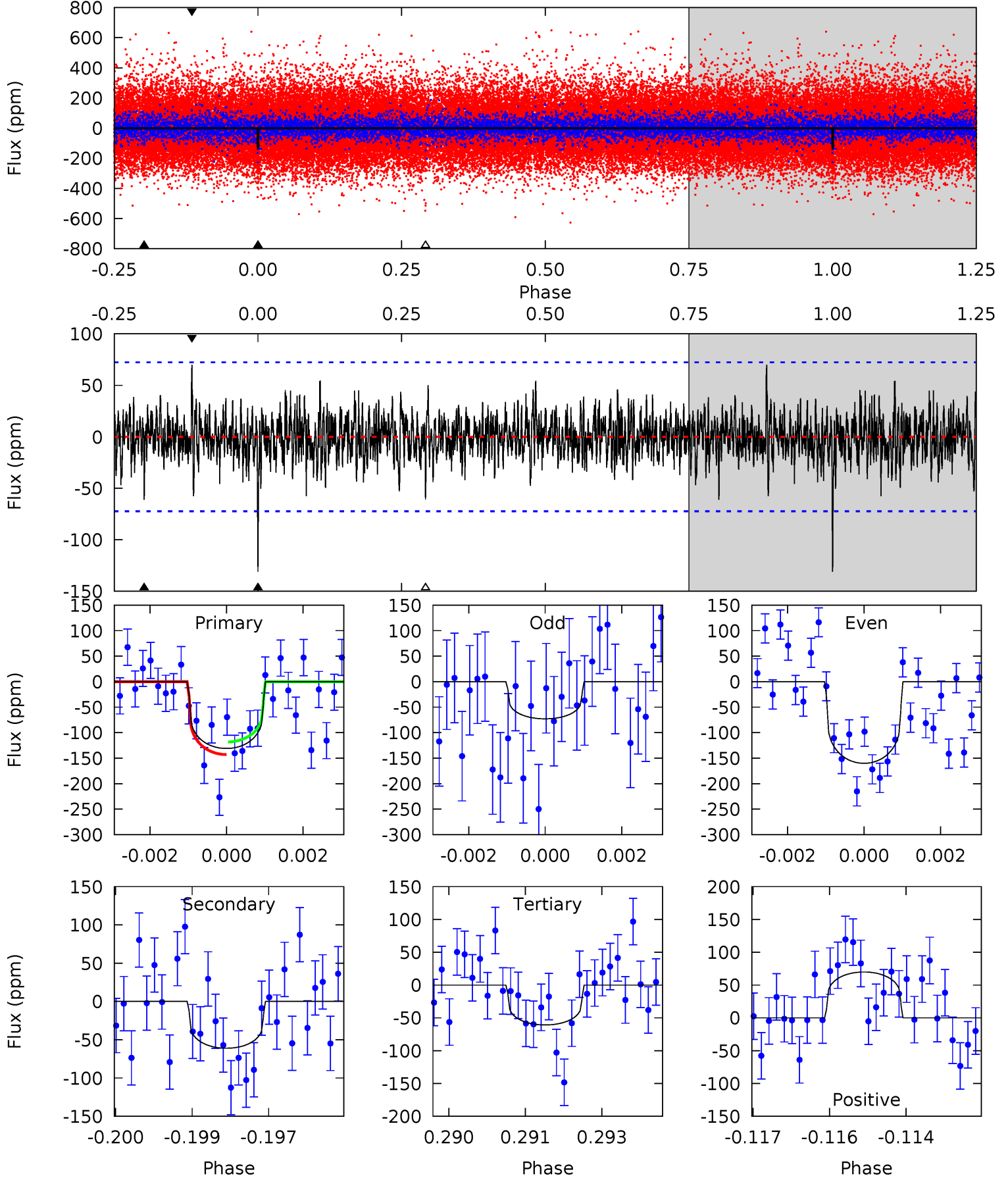
TCE 003442055-02 P=464.107448 Days  $T_0=583.521619$  (BKJD)



# DV Model-Shift Uniqueness Test

003442055-02, P = 464.148159 Days, E = 119.337542 Days

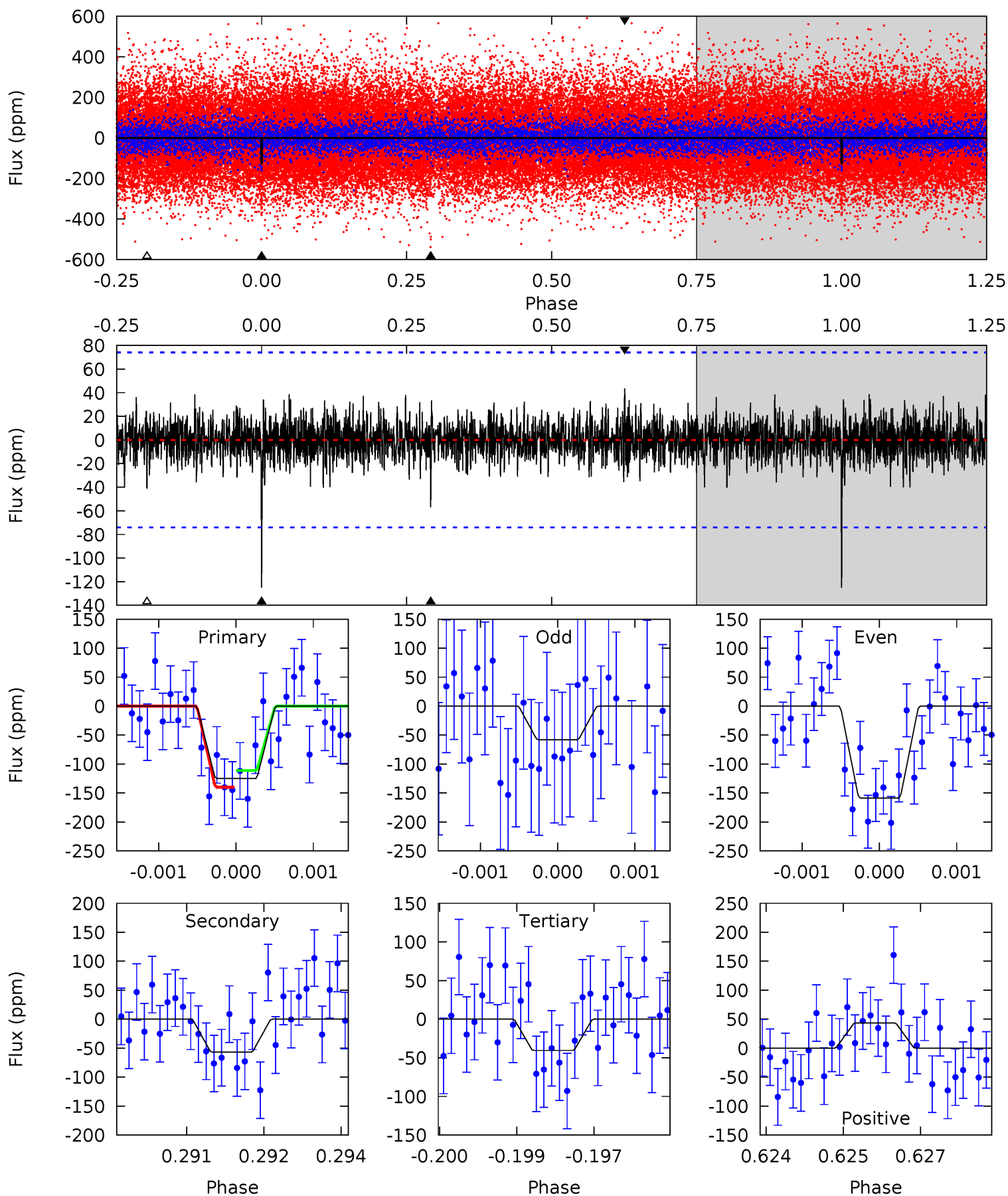
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.74	4.54	4.52	5.19	5.37	3.17	1.23	5.22	4.54	0.02	-0.65	3.03	1.01	0.35	0.92



# Alt Model-Shift Uniqueness Test

003442055-02, P = 464.107448 Days, E = 119.414171 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
9.10	4.14	2.95	3.17	5.39	3.19	0.86	6.15	5.94	1.20	0.98	3.48	1.08	0.26	1.05



### Stellar Parameters For KIC 003442055

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5618^{+112}_{-101}$	$4.401^{+0.100}_{-0.100}$	$0.000^{+0.150}_{-0.150}$	$0.996^{+0.133}_{-0.109}$	$0.911^{+0.068}_{-0.046}$	$1.298^{+0.560}_{-0.392}$
	+2%/-2%	+2%/-2%	+inf%/-inf%	+13%/-11%	+7%/-5%	+43%/-30%
Source	SPE57	SPE57	SPE57	DSEP		

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

### Secondary Eclipse Parameters for KIC 003442055-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-61 \pm 13$	$1.39^{+0.87}_{-0.79}$	$324^{+14}_{-12}$	$4519^{+2243}_{-708}$	$21930^{+101468}_{-13581}$
Alt.	$-57 \pm 14$	$1.34^{+0.83}_{-0.78}$	$325^{+12}_{-12}$	$4583^{+2245}_{-794}$	$22997^{+107974}_{-15032}$

$T_{max}$  = 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

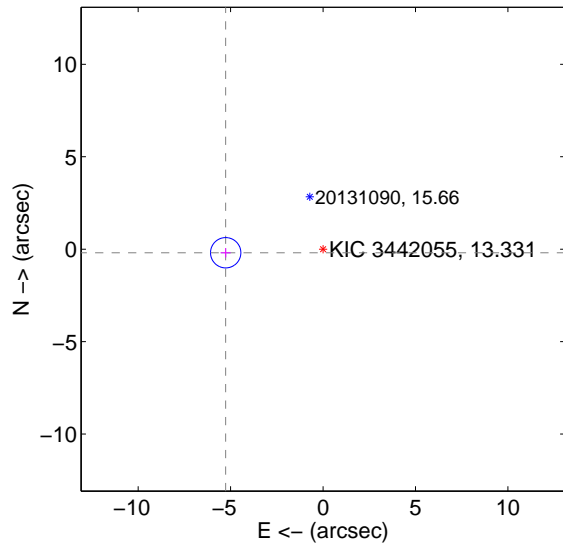
Supplemental centroid analysis for 003442055-02. Kepler magnitude: 13.33. Transit SNR 7.31

There are 1 quarters with good PRF difference image offsets

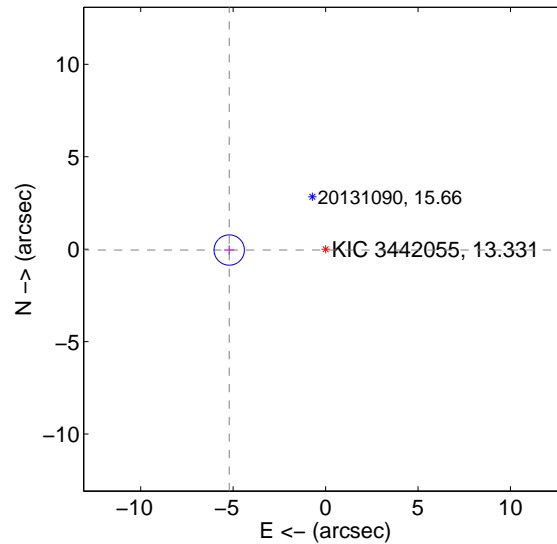
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.270 \pm 0.273$	19.27	$5.266 \pm 0.273$	$-0.193 \pm 0.253$
PRF-fit source offset from KIC position	$5.213 \pm 0.273$	19.07	$5.213 \pm 0.273$	$-0.047 \pm 0.253$
photometric centroid source offset	$3.77 \pm 2.38$	1.58	$1.95 \pm 2.27$	$3.22 \pm 2.42$

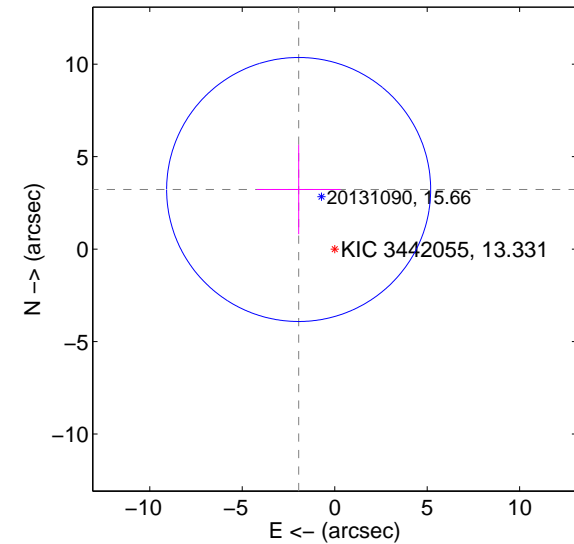
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



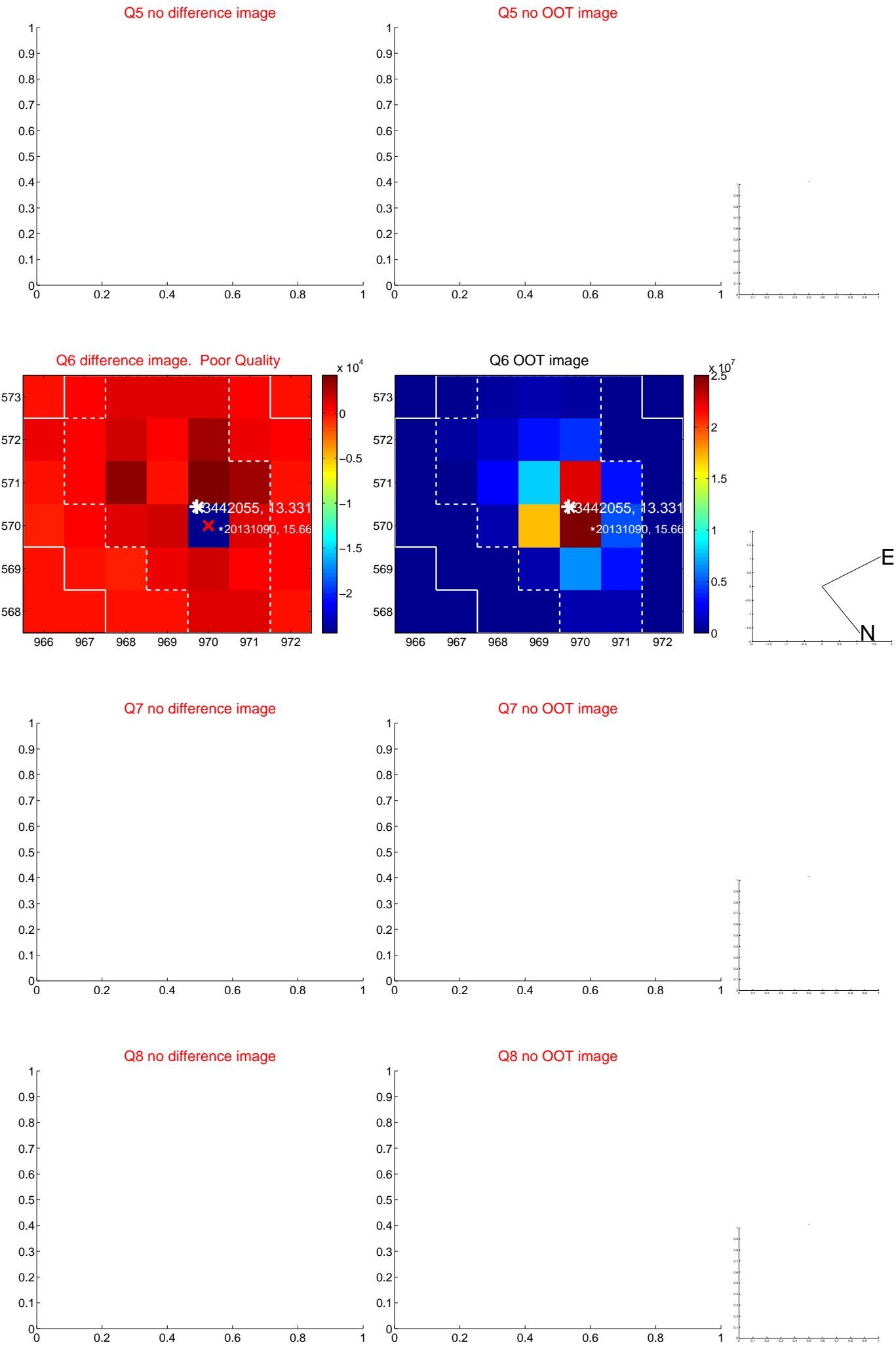
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

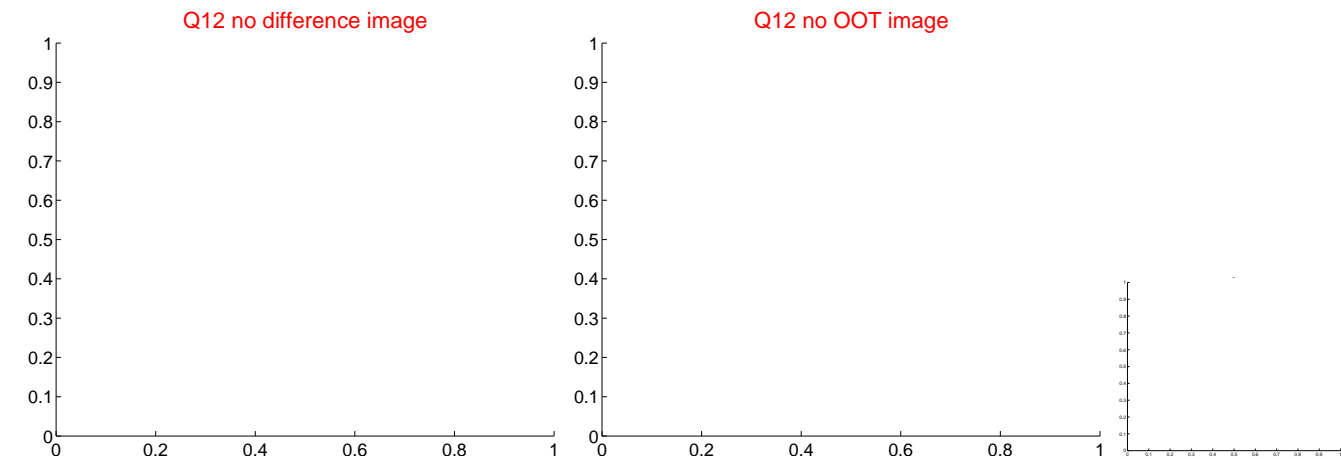
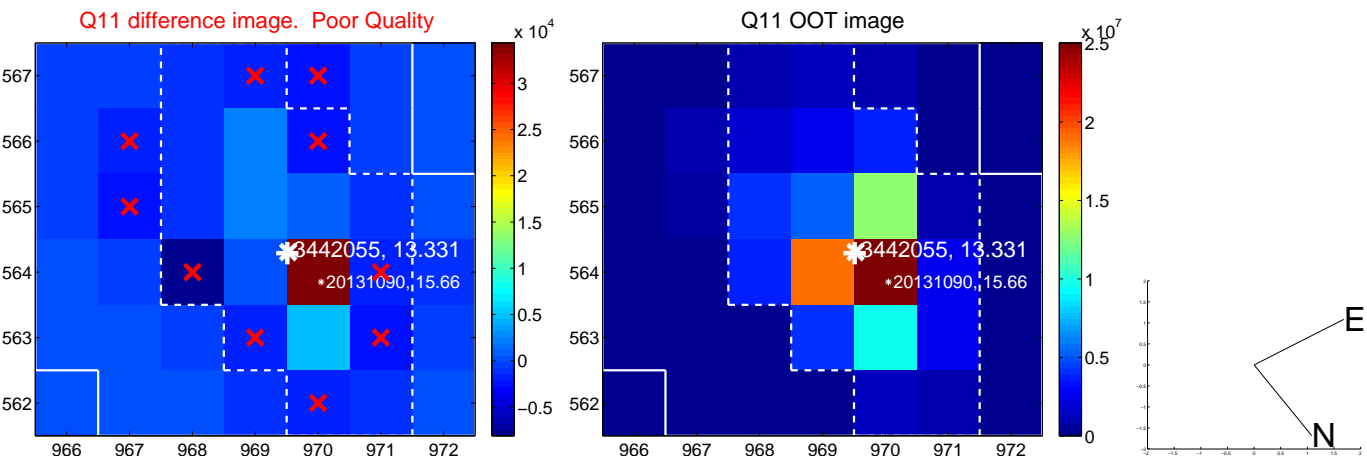




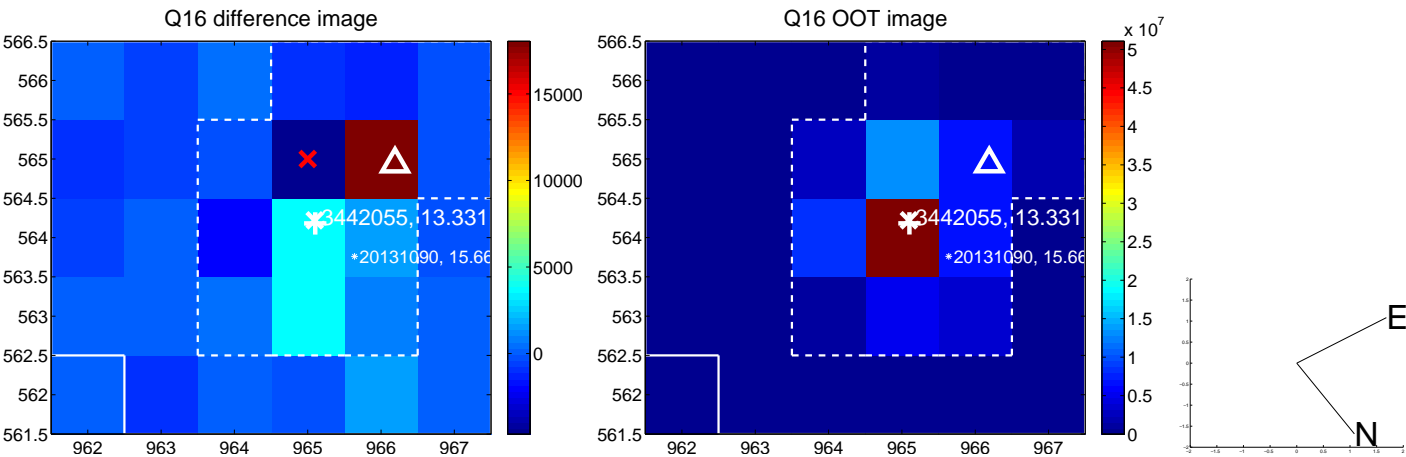
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



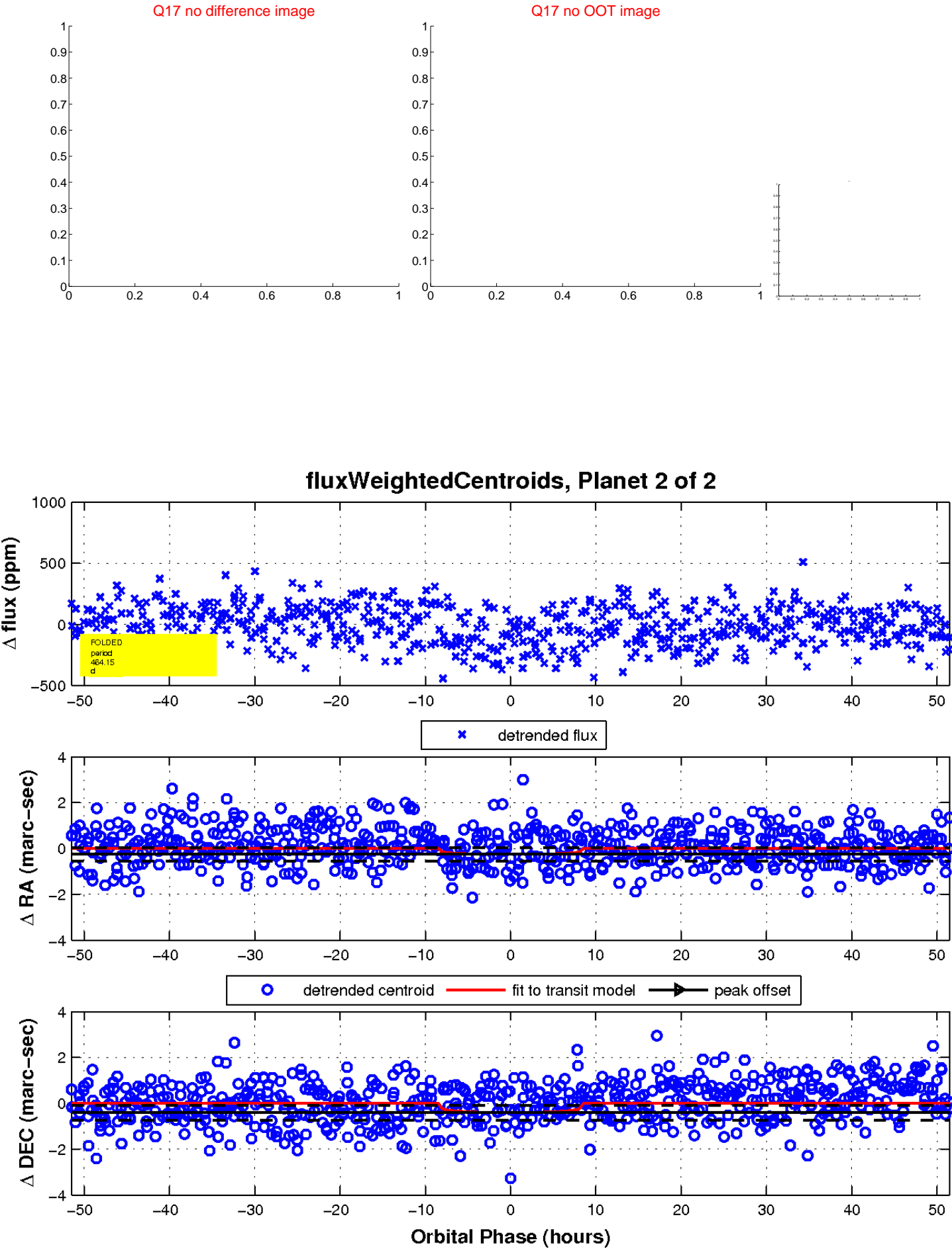
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

