

# KIC 008655354

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008655354-01	OBS	0917.01	6.719691	133.039614	977.0	2.955	39.3	43.9	0.87	5931	3.99	194.66
008655354-02	OBS	No	3.359823	133.044366	280.5	2.345	13.4	13.6	0.87	5931	1.71	490.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008655354-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
008655354-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS

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

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

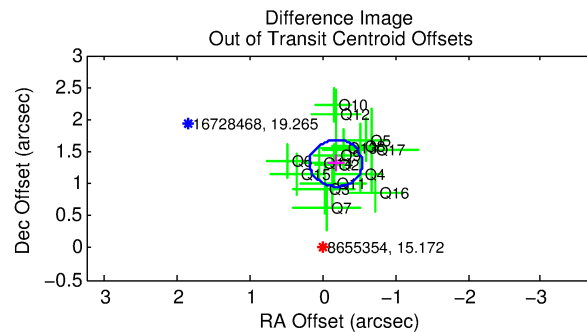
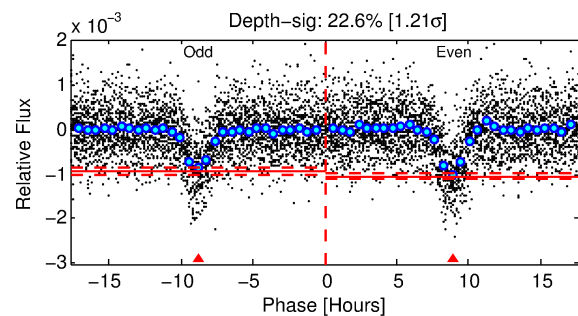
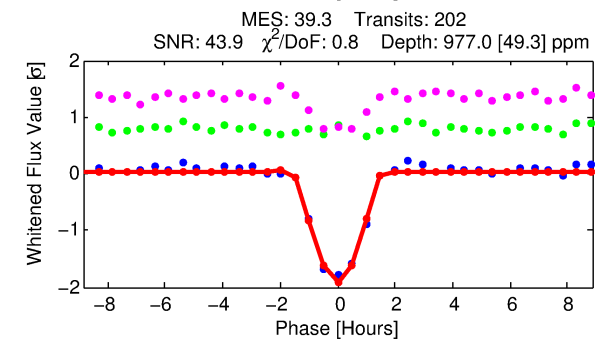
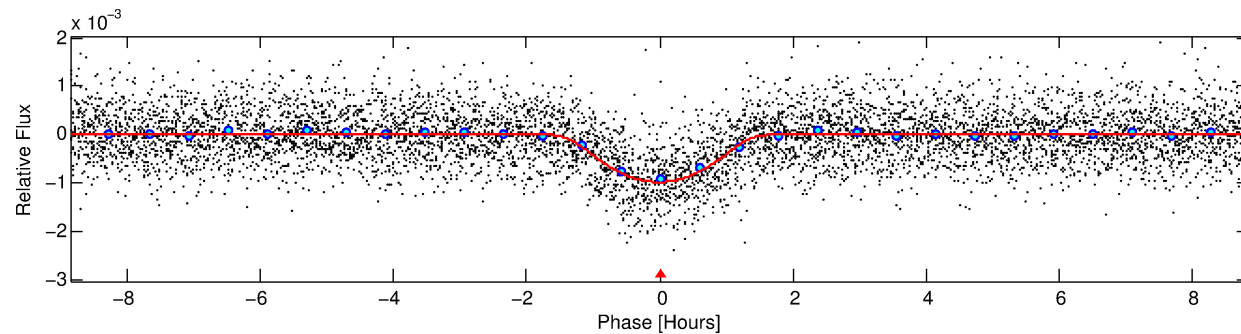
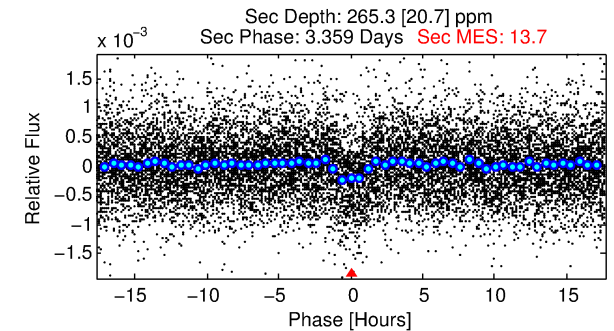
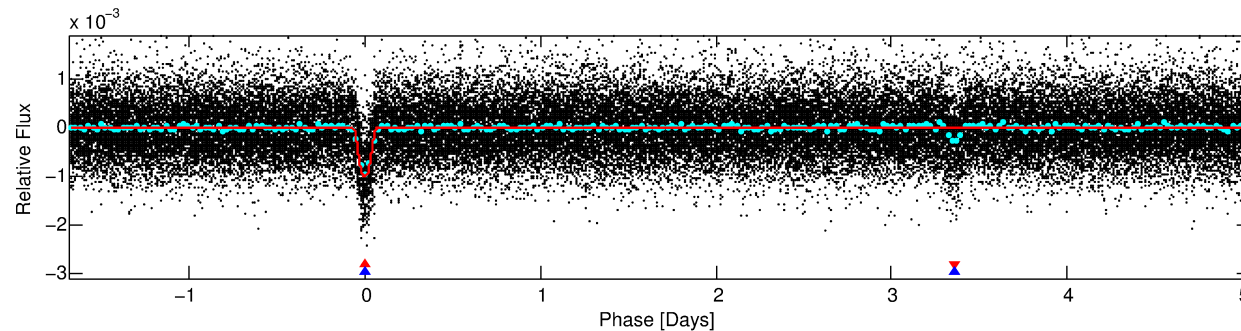
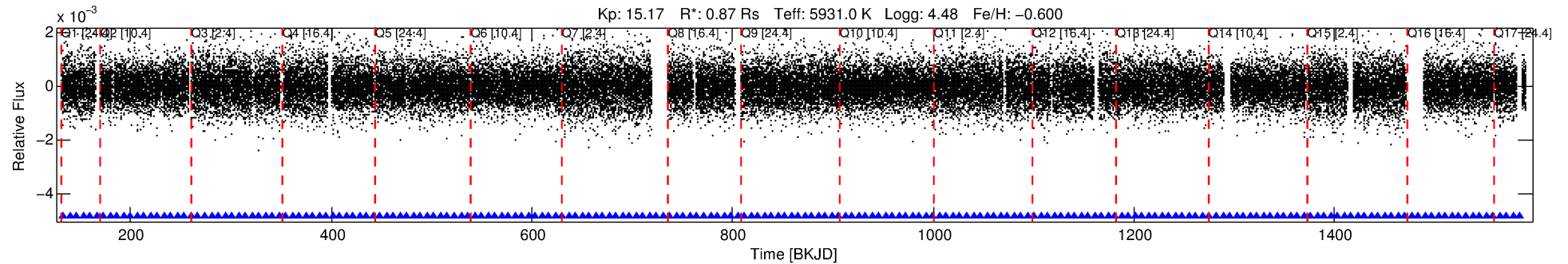
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008655354-01

No Significant Match Found

# DV One-Page Summary

KIC: 8655354 Candidate: 1 of 2 Period: 6.720 d  
KOI: K00917.01 Corr: 0.991



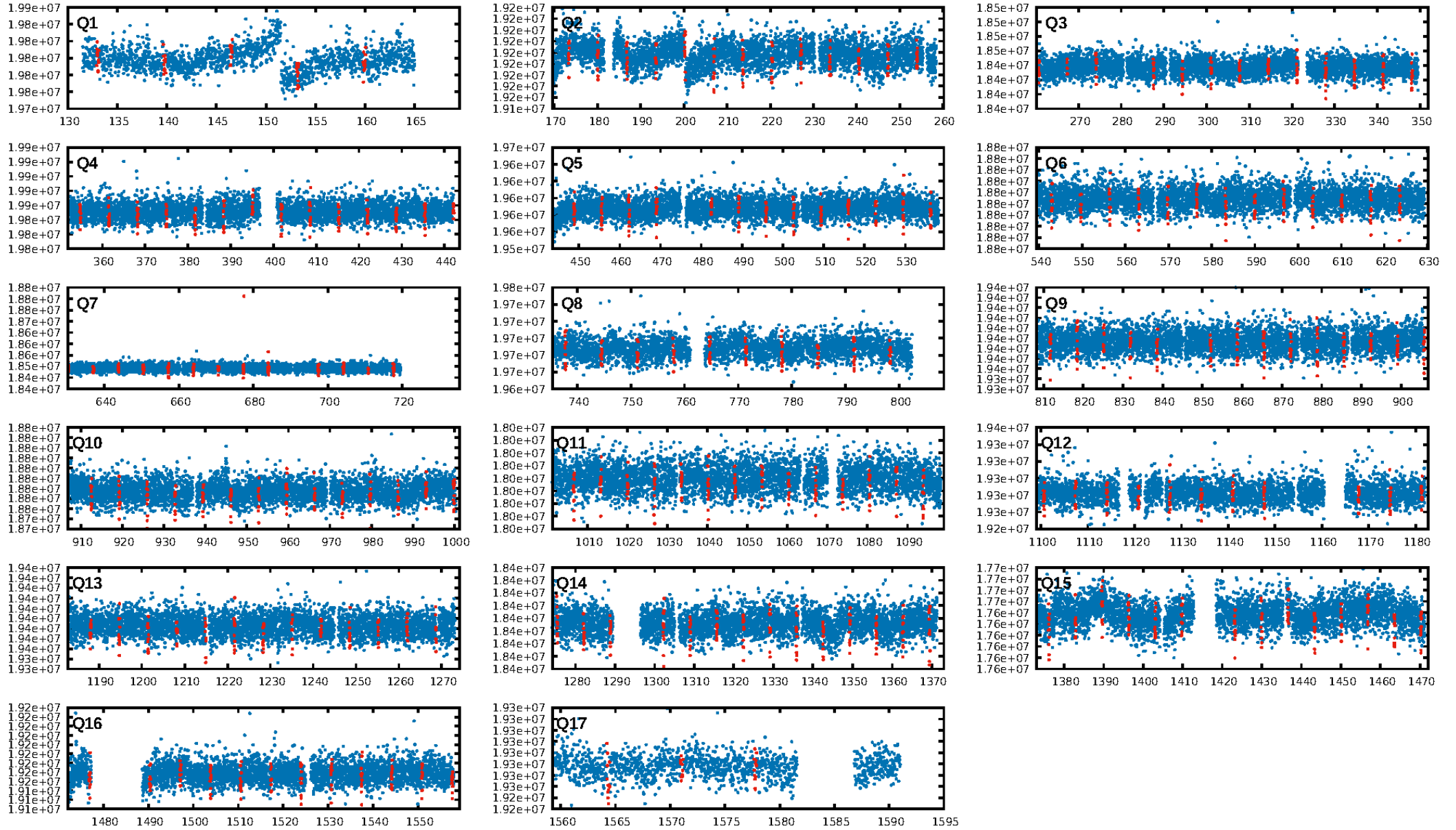
## DV Fit Results:

Period = 6.71969 [0.00001] d  
Epoch = 133.0396 [0.0016] BKJD  
Rp/R\* = 0.0422 [0.0132]  
a/R\* = 6.33 [0.86]  
b = 0.98 [0.03]  
Seff = 194.66 [65.31]  
Teq = 952 [80] K  
Rp = 3.99 [1.58] Re  
a = 0.0654 [0.0137] AU  
Ag = 39.19 [27.59] [1.38σ]  
Teff = 3684 [591] K [4.58σ]

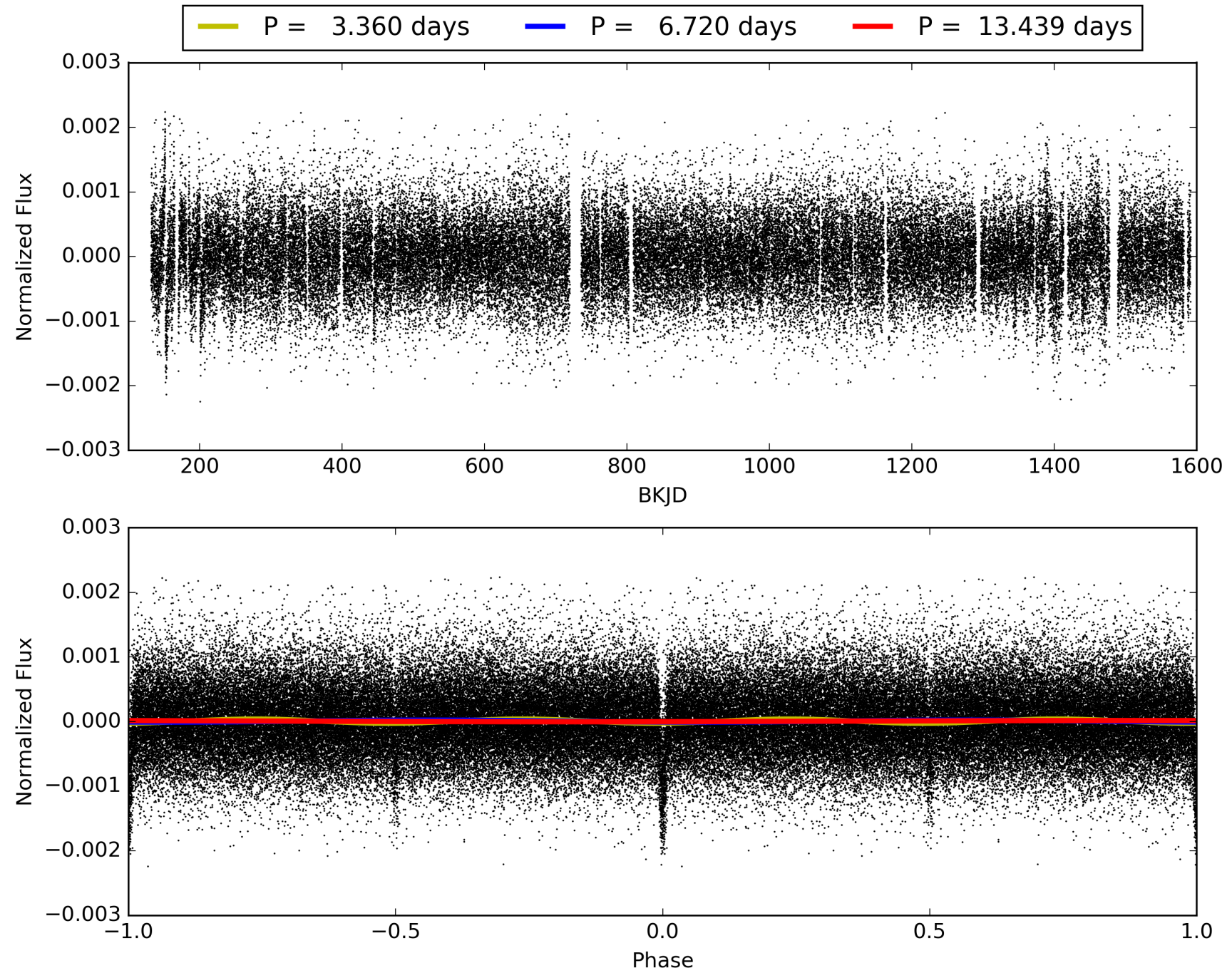
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [21.38σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [194/194]  
GhostDiagnostic-chr: 13.66  
Centroid-sig: 4.0%  
Centroid-so: 1.874 arcsec [4.54σ]  
OotOffset-rm: 1.330 arcsec [10.99σ]  
KicOffset-rm: 1.586 arcsec [13.12σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 008655354-01, PDC Light Curves

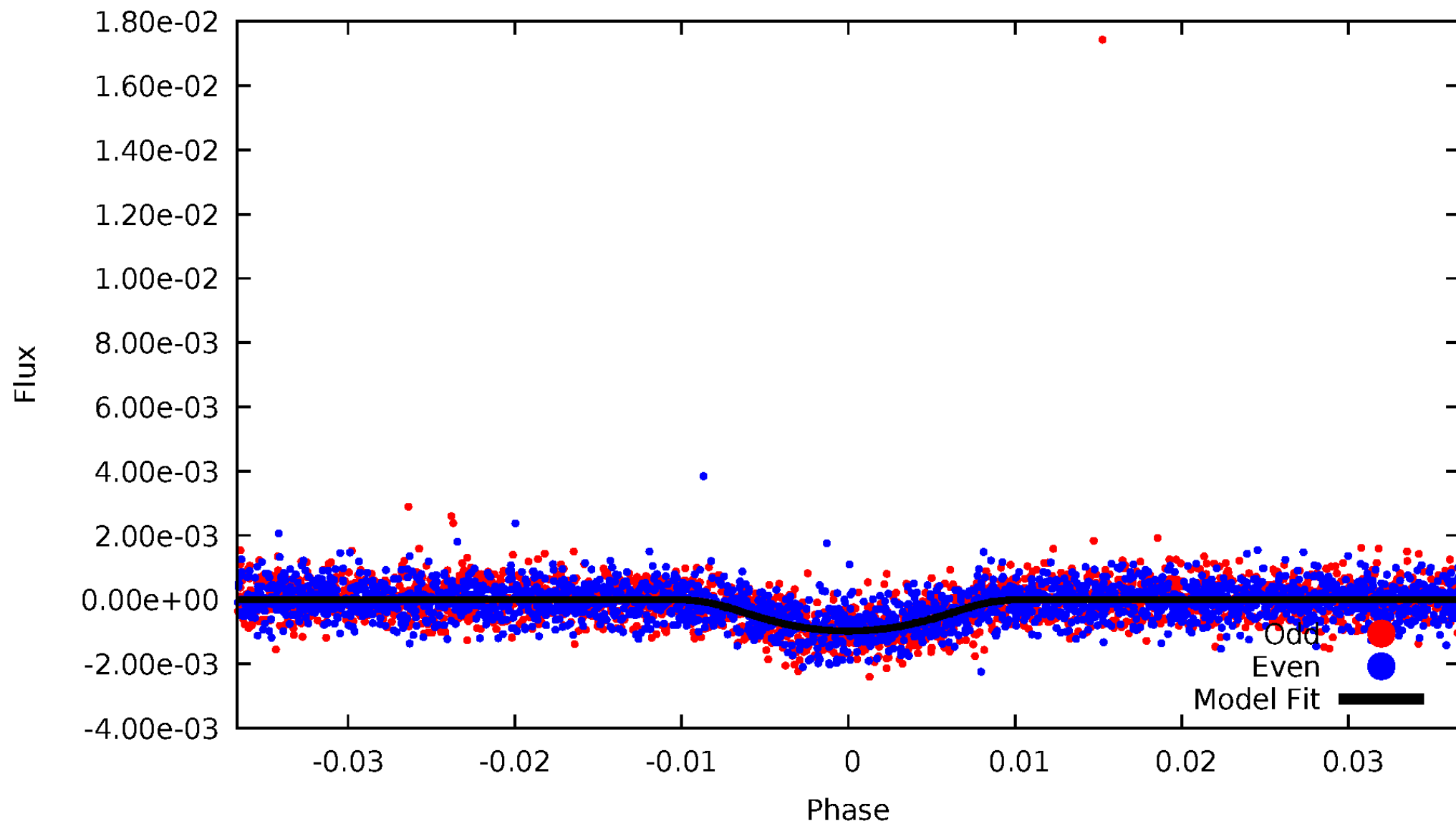


TCE 008655354-01



# DV Odd/Even

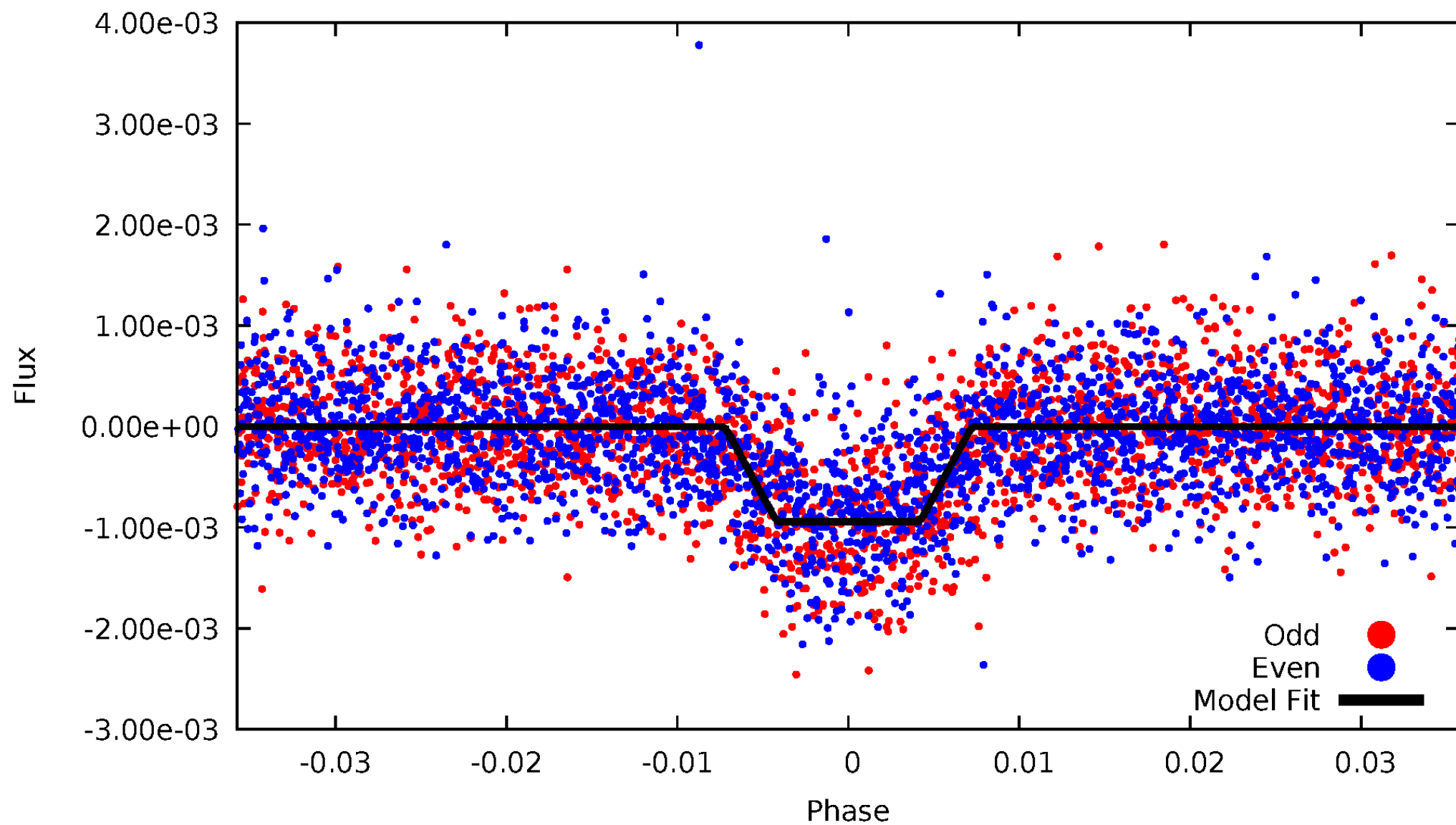
TCE 008655354-01



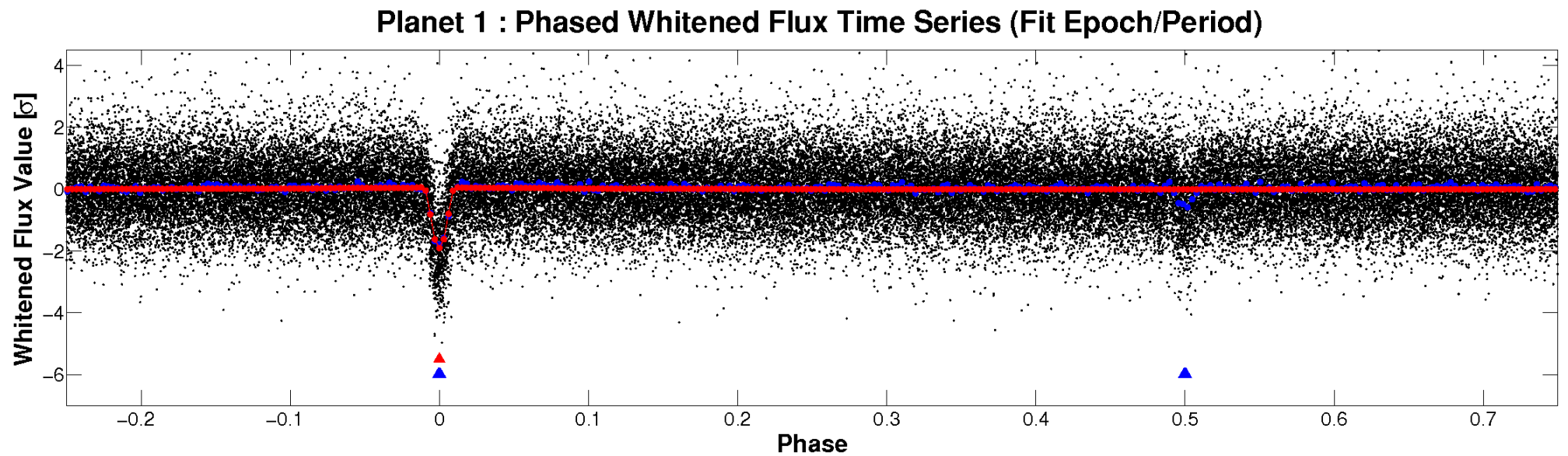
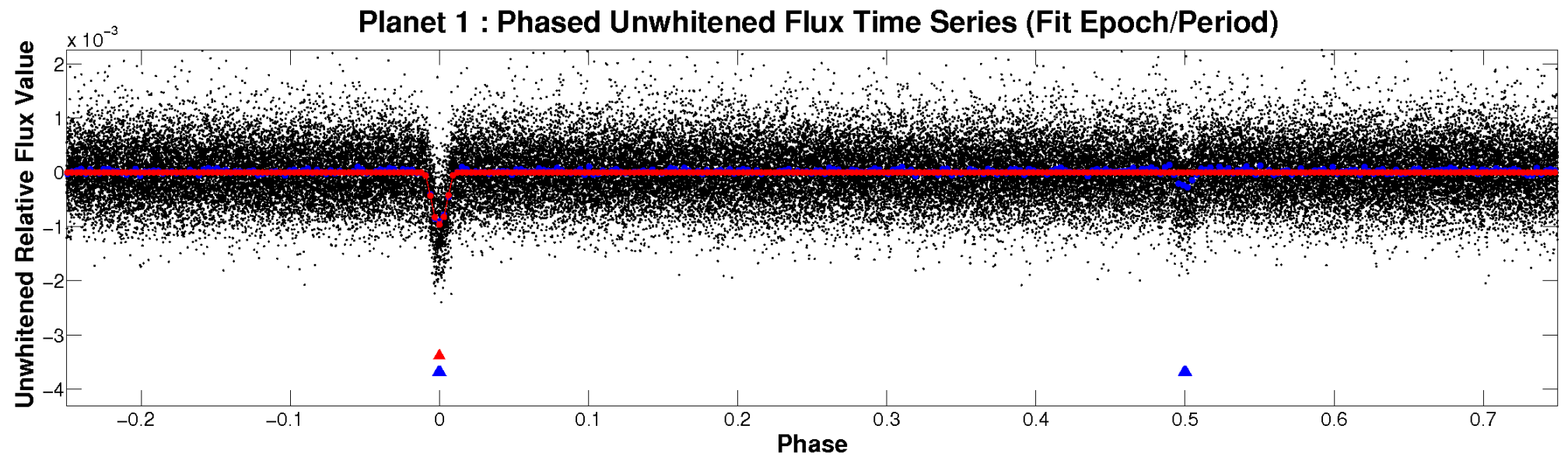


# ALT Odd/Even

TCE 008655354-01

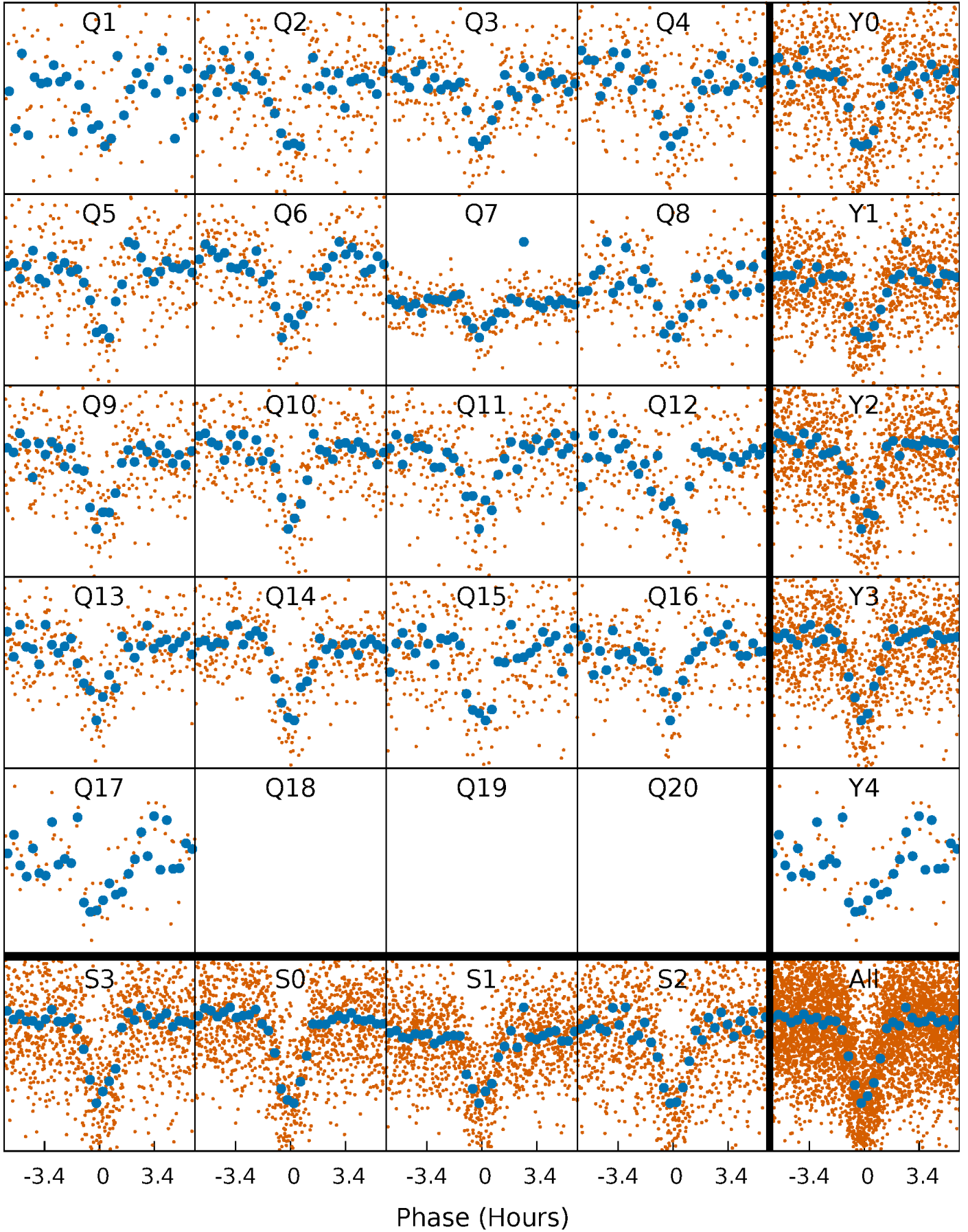


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

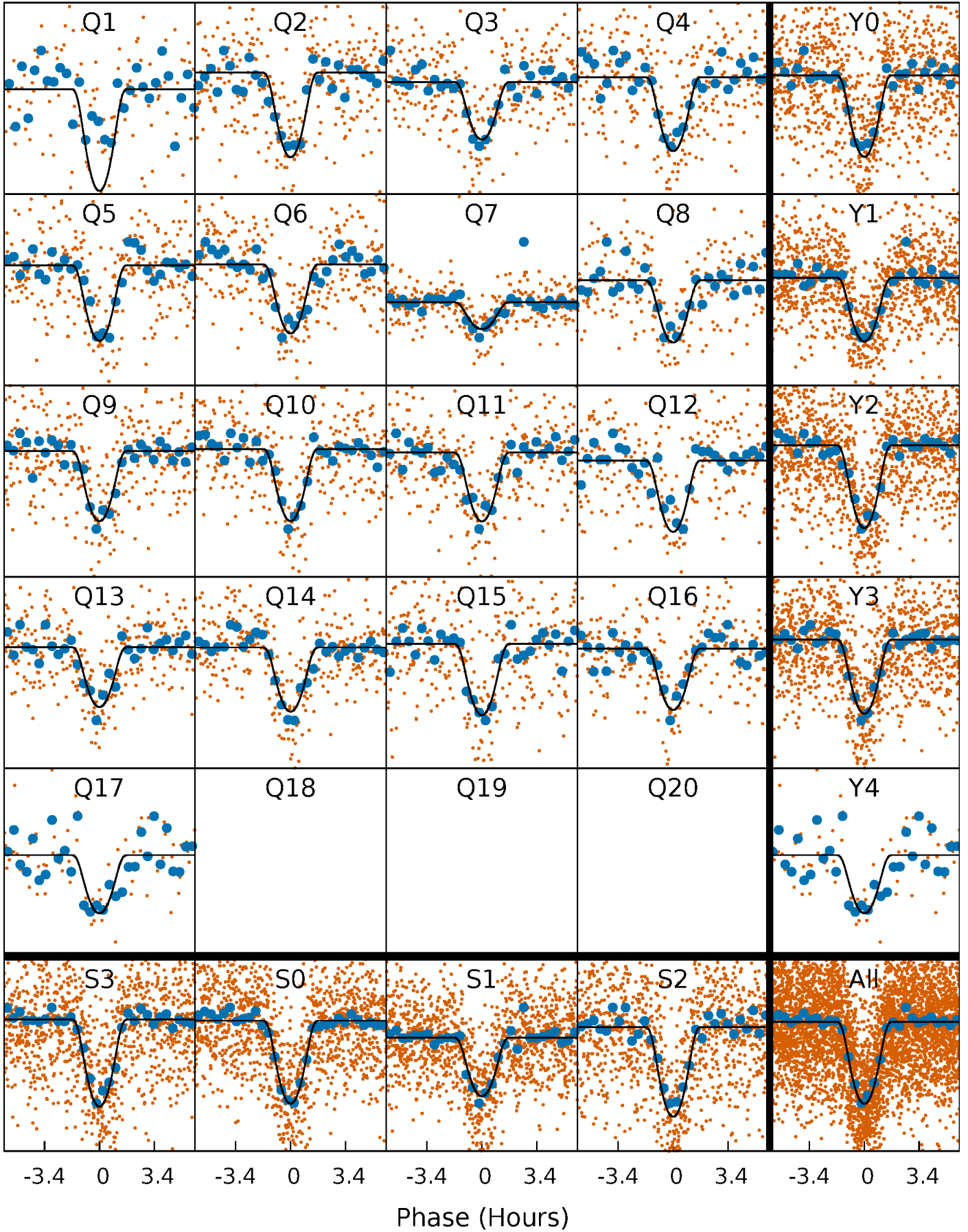
TCE 008655354-01 P= 6.719691 Days  $T_0=133.039614$  (BKJD)





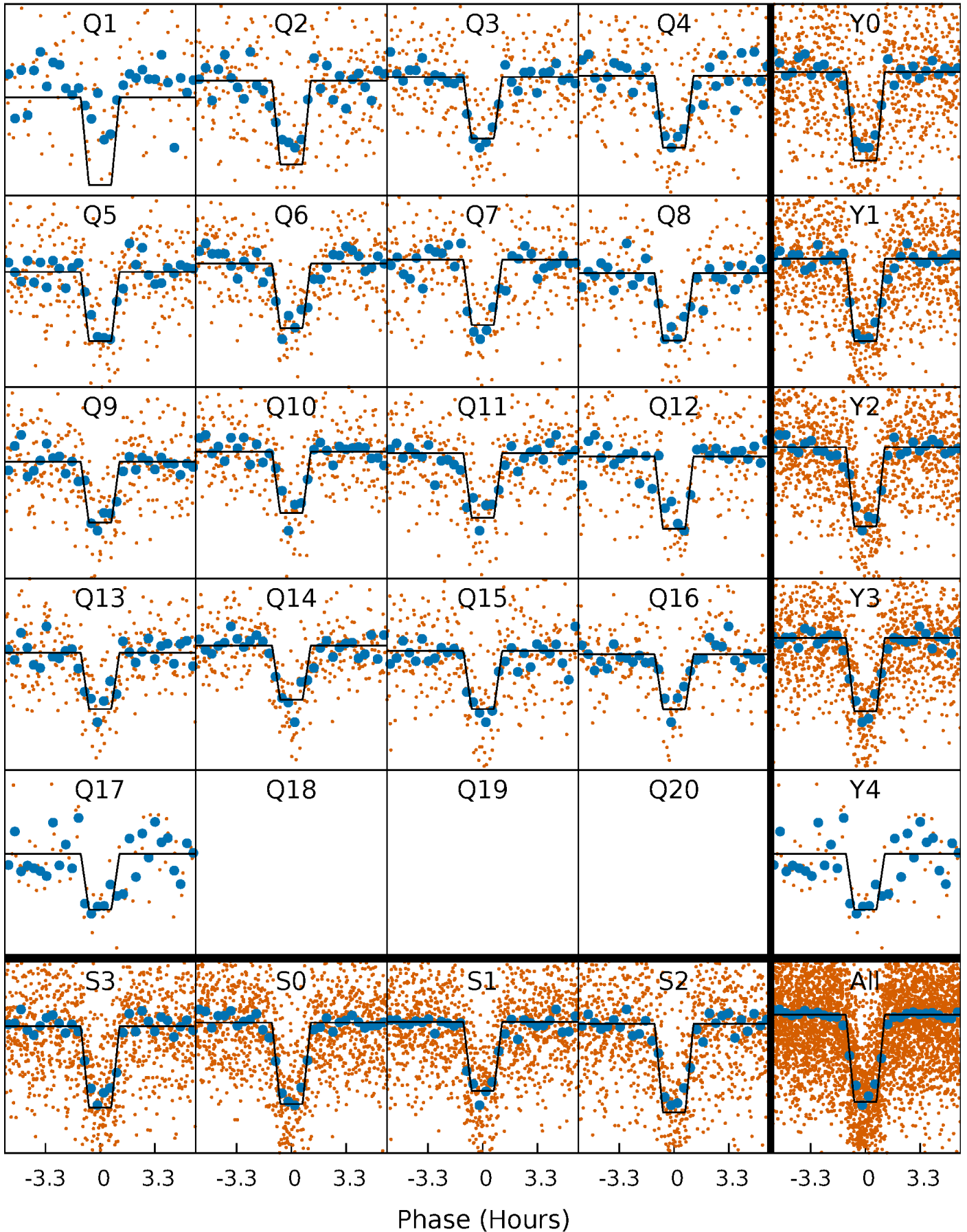
# DV Quarter-Phased Transit Curves

TCE 008655354-01   P= 6.719691 Days    $T_0=133.039614$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

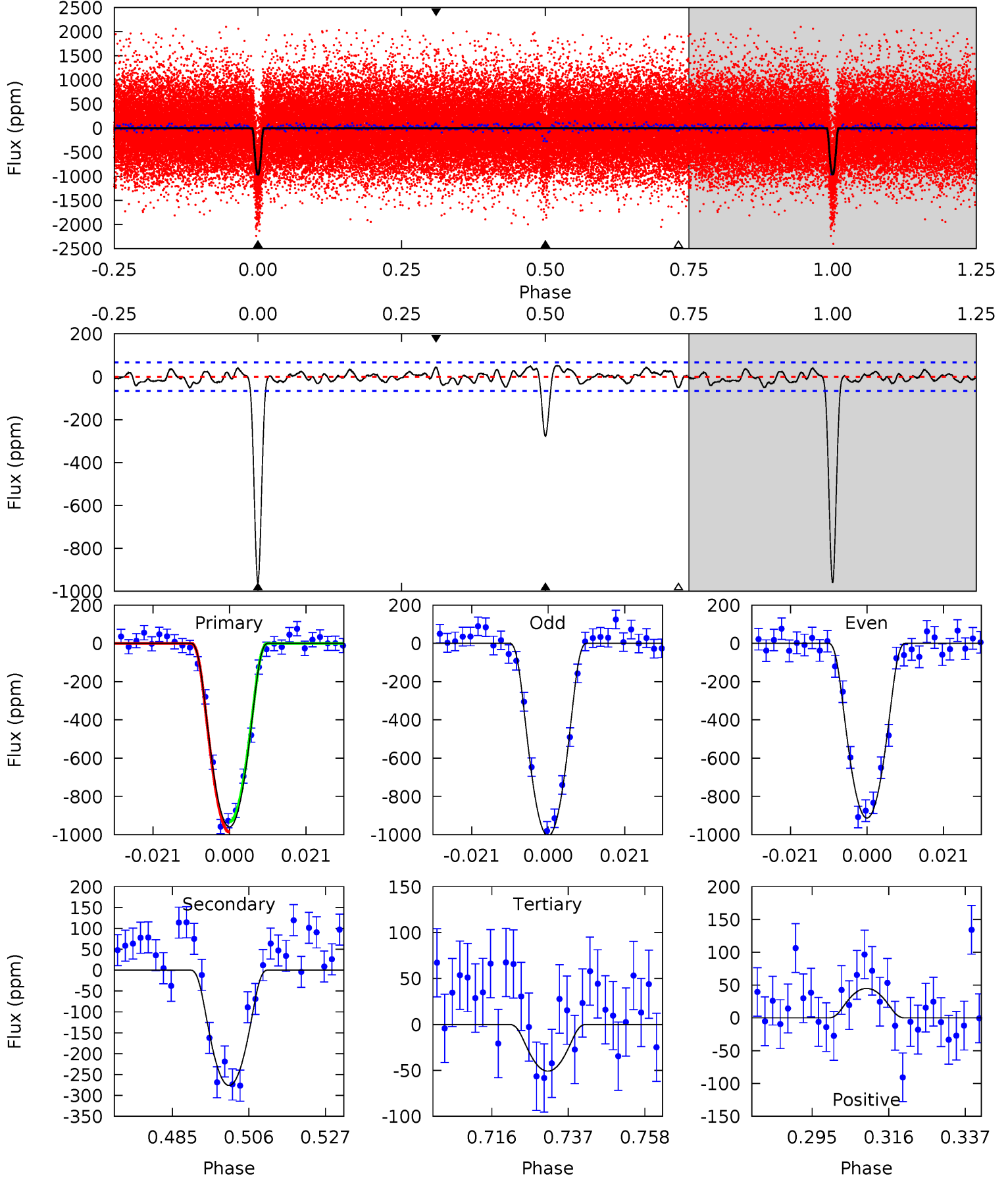
TCE 008655354-01 P= 6.719686 Days  $T_0=133.040280$  (BKJD)



# DV Model-Shift Uniqueness Test

008655354-01, P = 6.719691 Days, E = 126.319923 Days

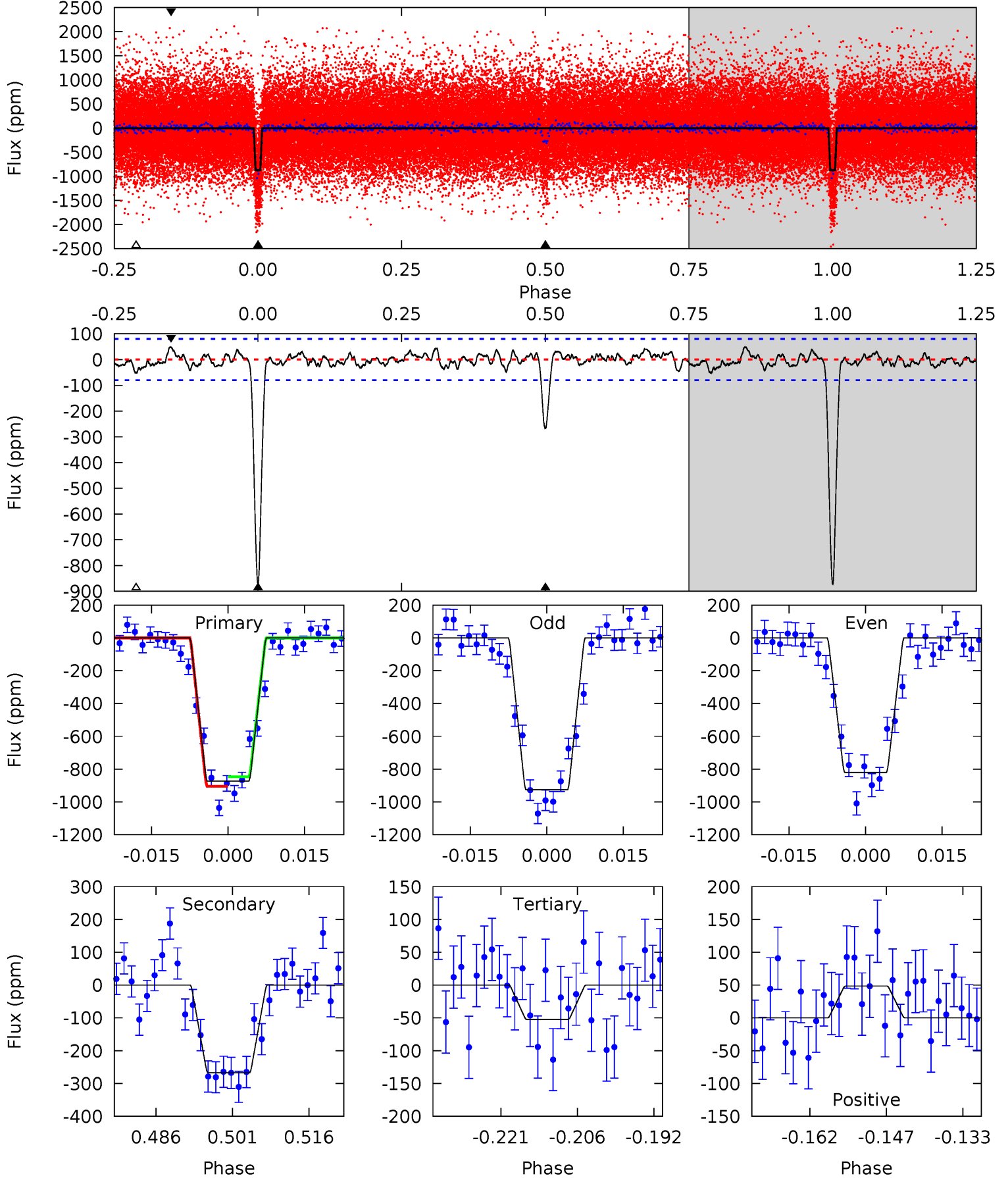
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.7	20.3	3.75	3.30	4.88	2.31	1.52	66.9	67.4	16.6	17.0	3.45	1.00	0.05	1.99



# Alt Model-Shift Uniqueness Test

008655354-01, P = 6.719686 Days, E = 126.320594 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
53.9	16.5	3.24	2.99	4.95	2.44	1.17	50.6	50.9	13.3	13.5	3.26	0.98	0.05	1.80



### Stellar Parameters For KIC 008655354

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5931^{+177}_{-177}$	$4.479^{+0.094}_{-0.175}$	$-0.600^{+0.300}_{-0.300}$	$0.866^{+0.210}_{-0.113}$	$0.825^{+0.096}_{-0.070}$	$1.789^{+0.708}_{-0.820}$
	+3%/-3%	+2%/-4%	+50%/-50%	+24%/-13%	+12%/-8%	+40%/-46%
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 008655354-01 / KOI 0917.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-276 \pm 14$	$4.15^{+1.31}_{-1.32}$	$1347^{+90}_{-66}$	$4030^{+634}_{-346}$	$38^{+43}_{-16}$
Alt.	$-268 \pm 16$	$3.04^{+1.21}_{-1.24}$	$1345^{+92}_{-67}$	$4488^{+1143}_{-542}$	$69^{+128}_{-35}$

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



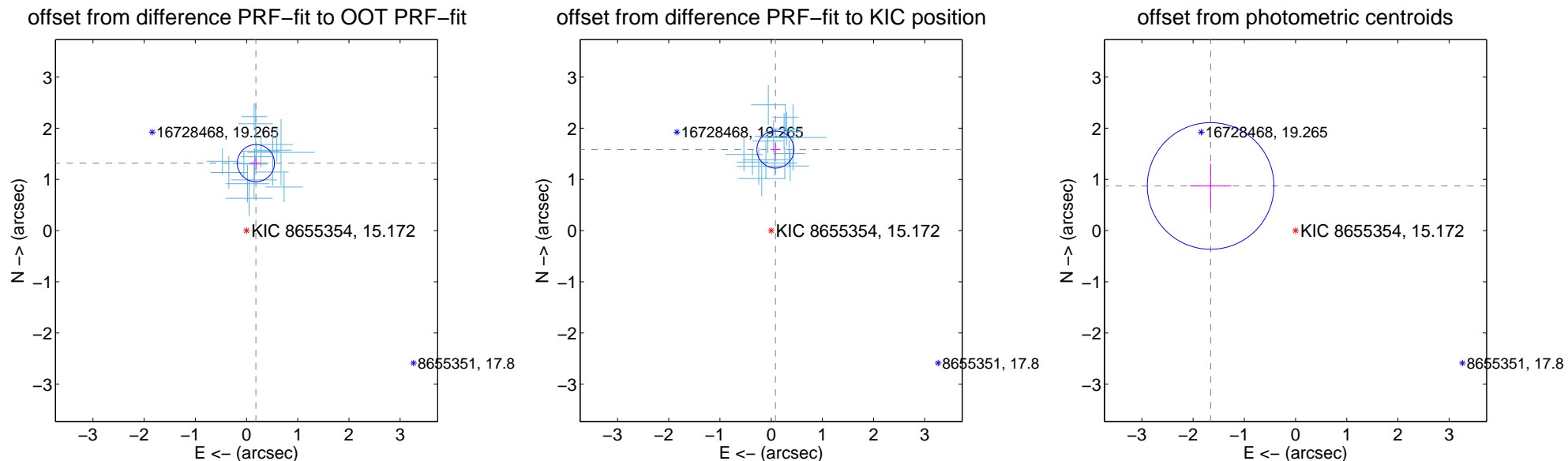
## DV Centroid Data

Supplemental centroid analysis for 008655354-01. Kepler magnitude: 15.17. Transit SNR 43.93

There are 16 quarters with good PRF difference image offsets

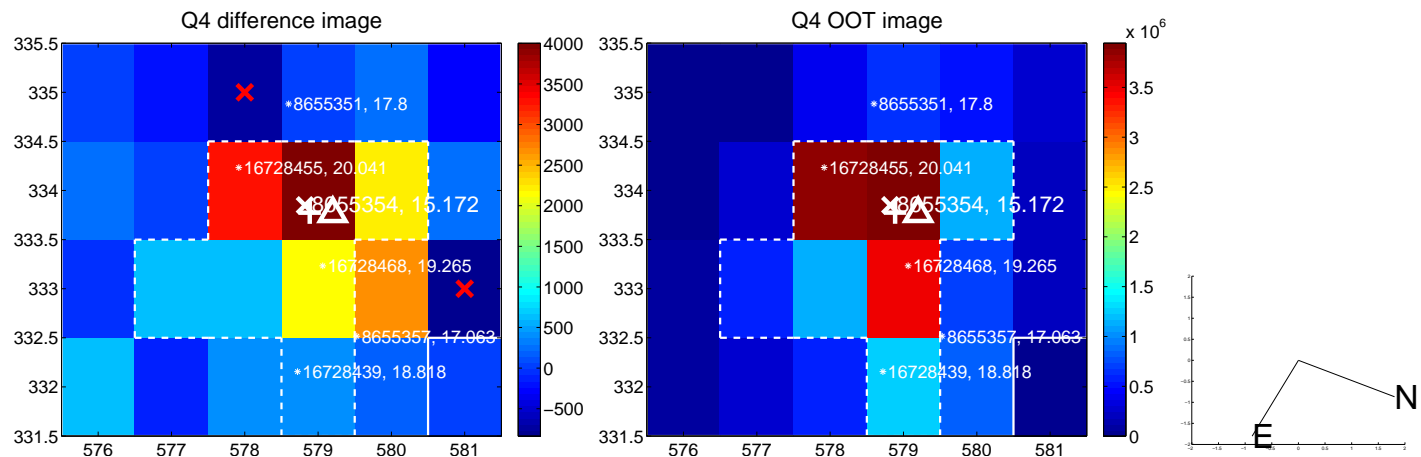
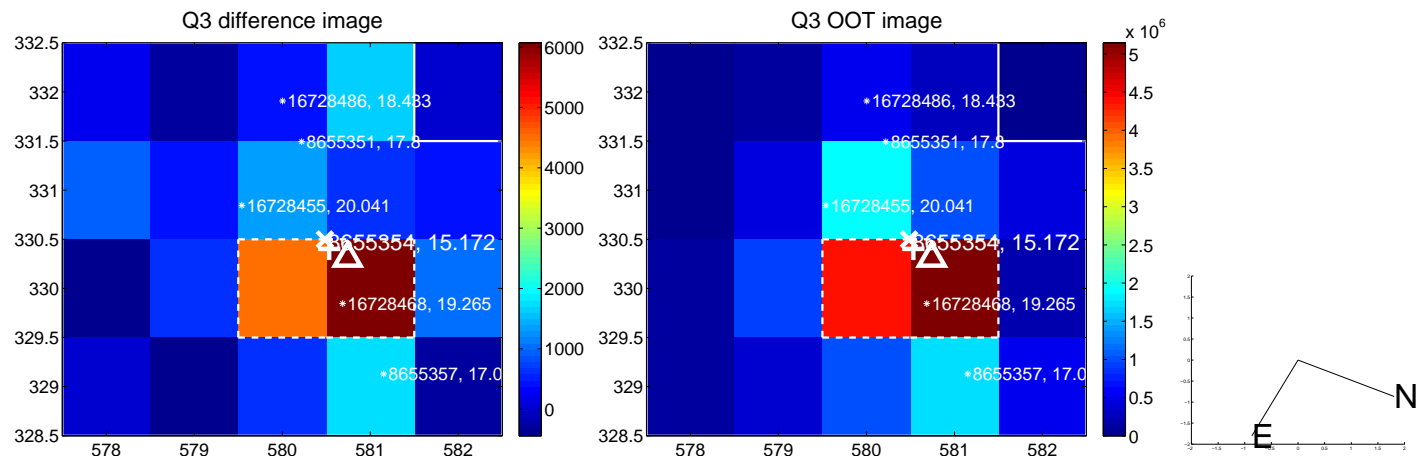
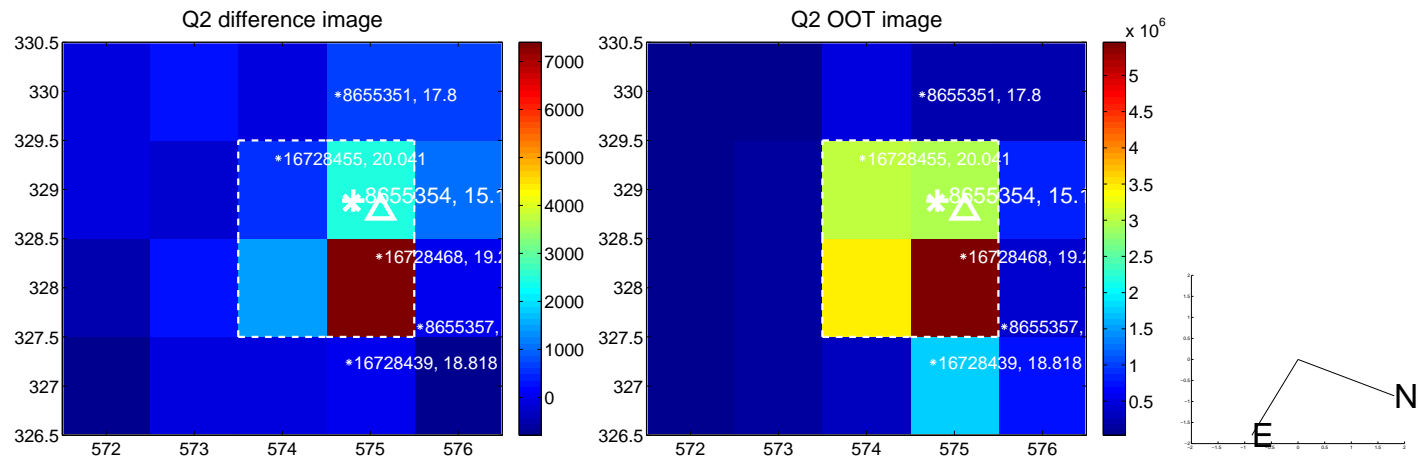
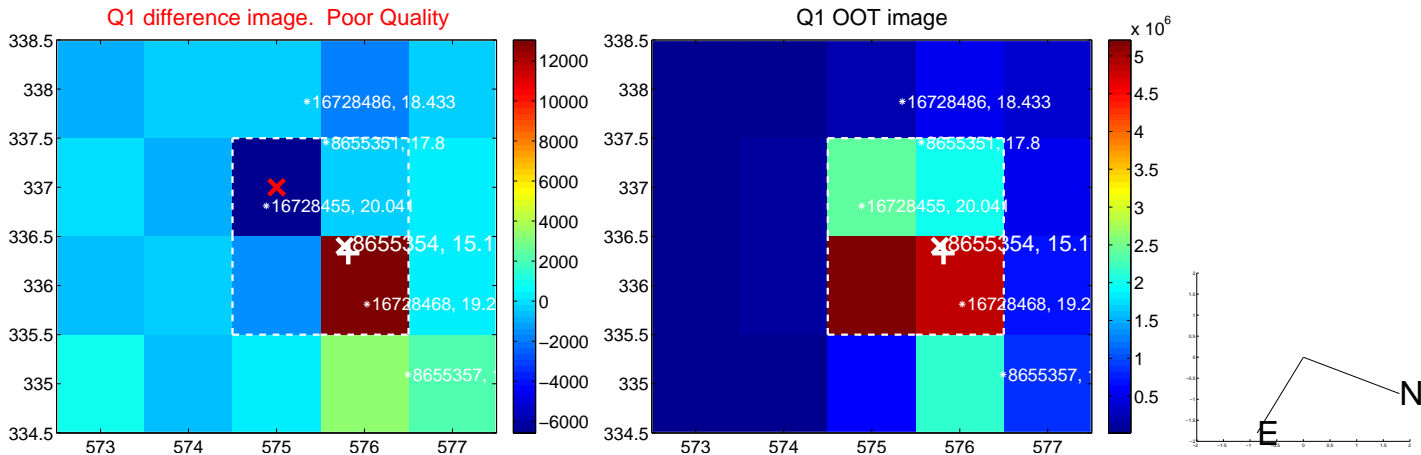
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.330 \pm 0.121$	10.99	$-0.183 \pm 0.109$	$1.318 \pm 0.121$
PRF-fit source offset from KIC position	$1.586 \pm 0.121$	13.12	$-0.083 \pm 0.097$	$1.584 \pm 0.121$
photometric centroid source offset	$1.87 \pm 0.41$	4.54	$1.66 \pm 0.41$	$0.87 \pm 0.44$

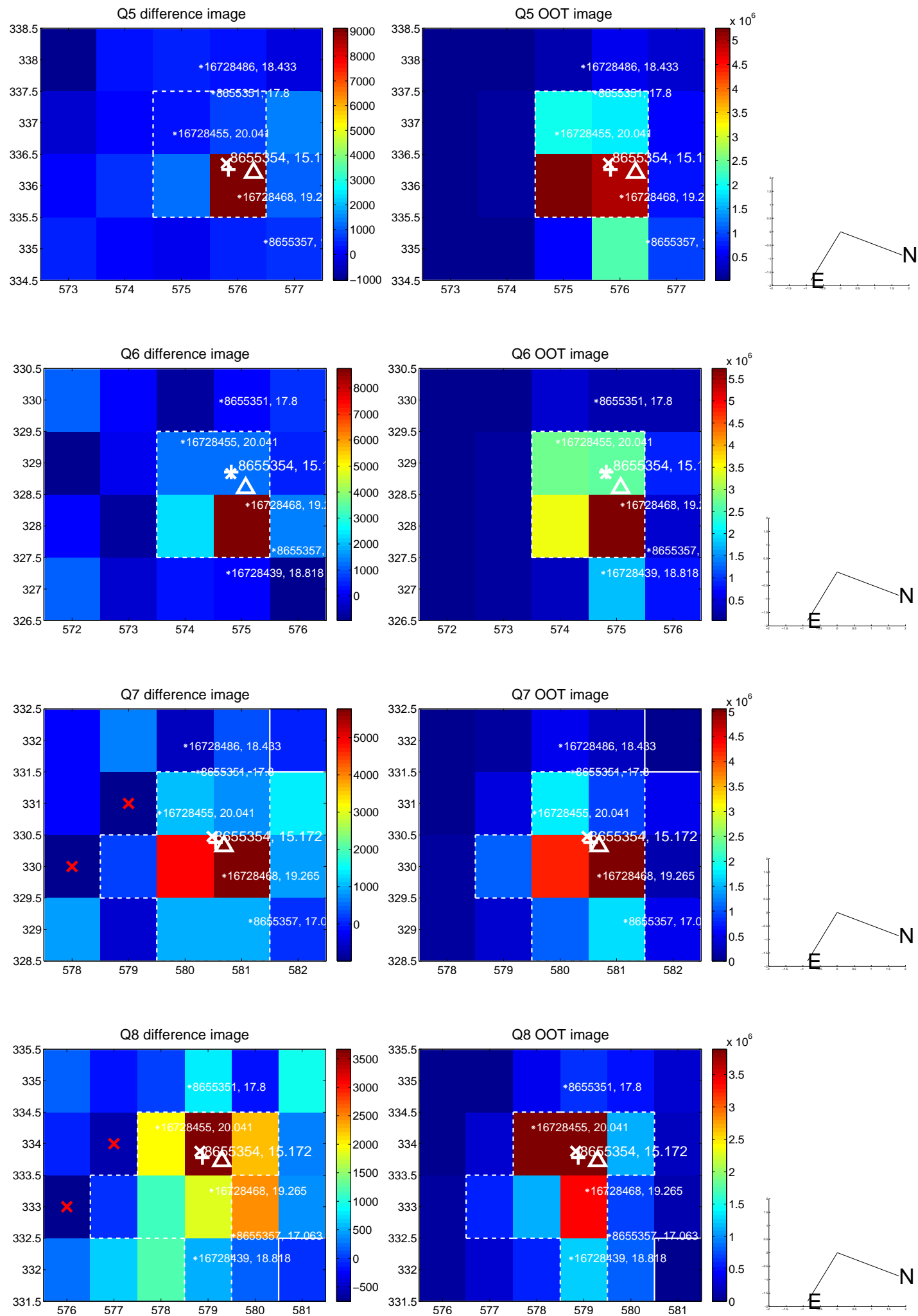


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

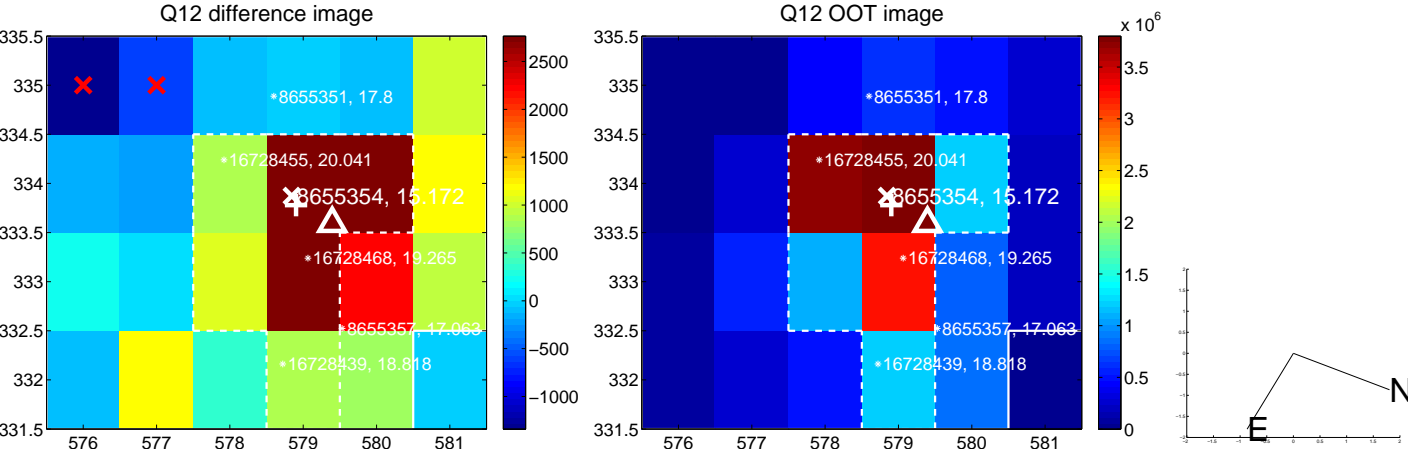
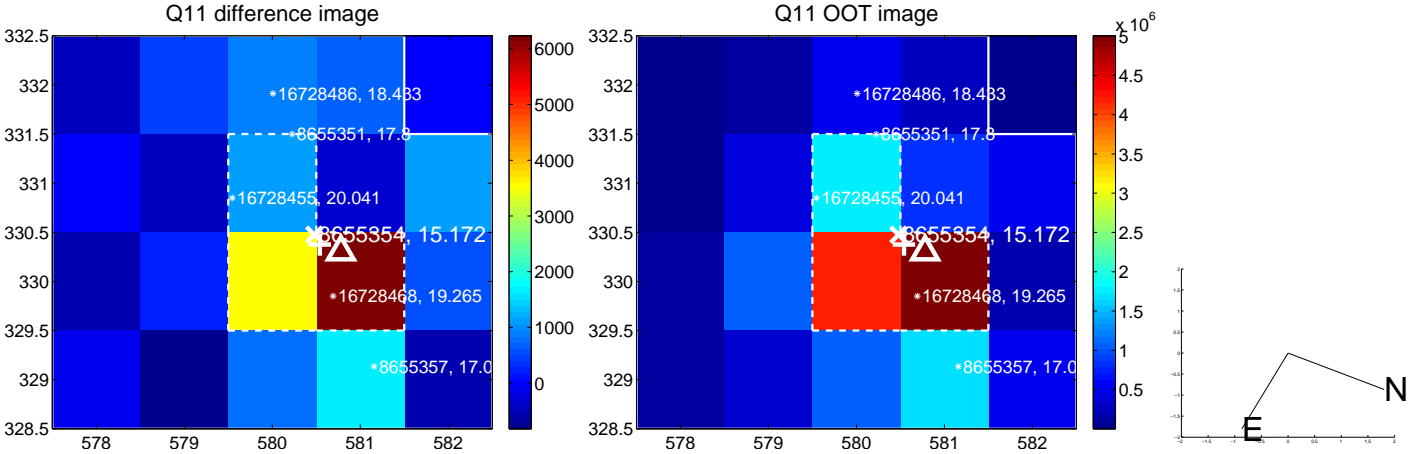
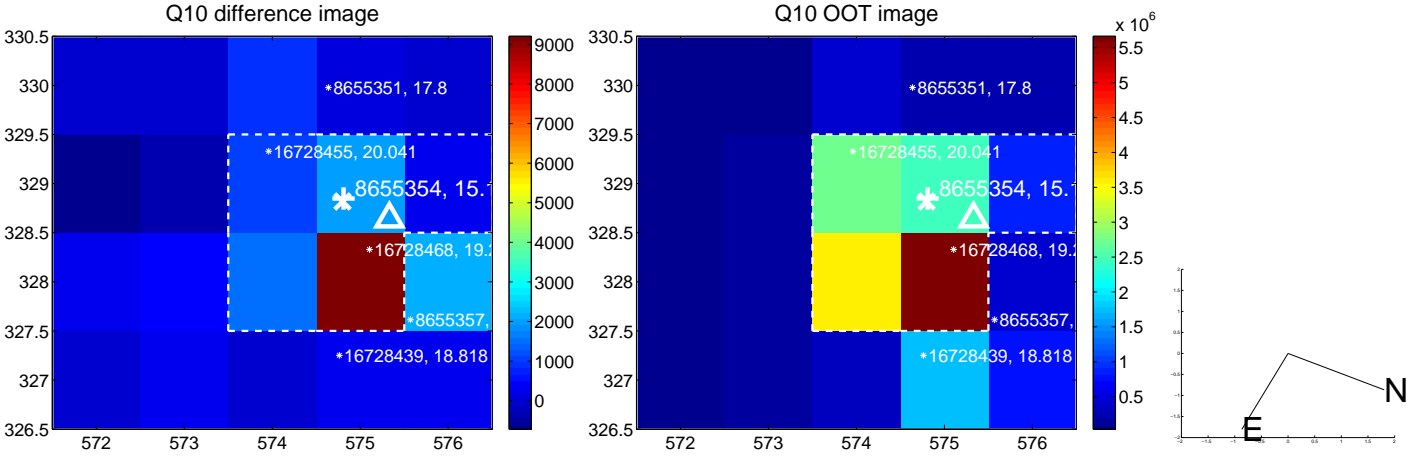
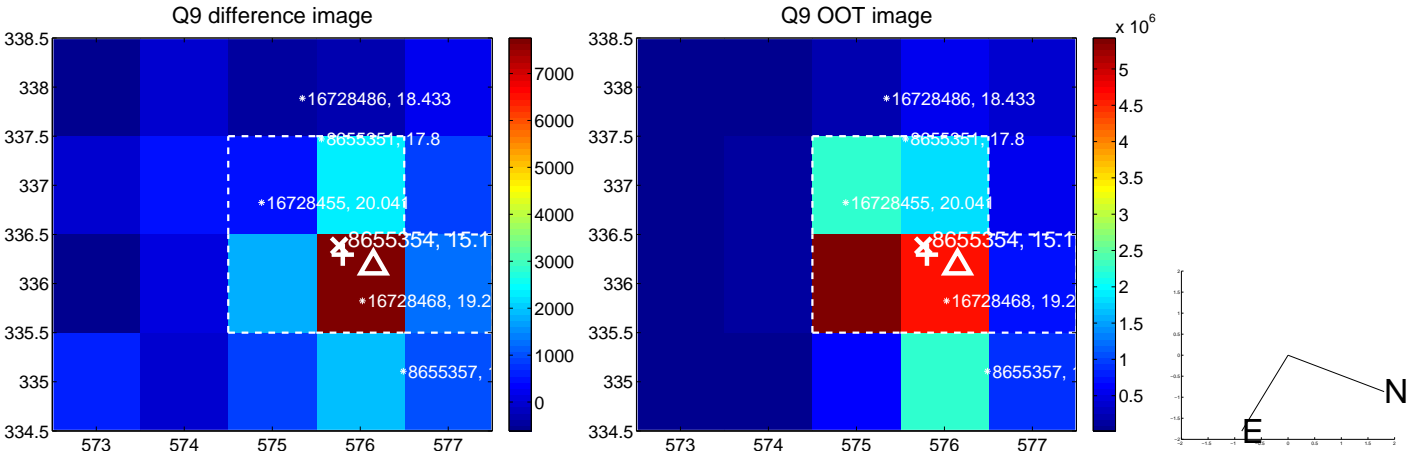
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



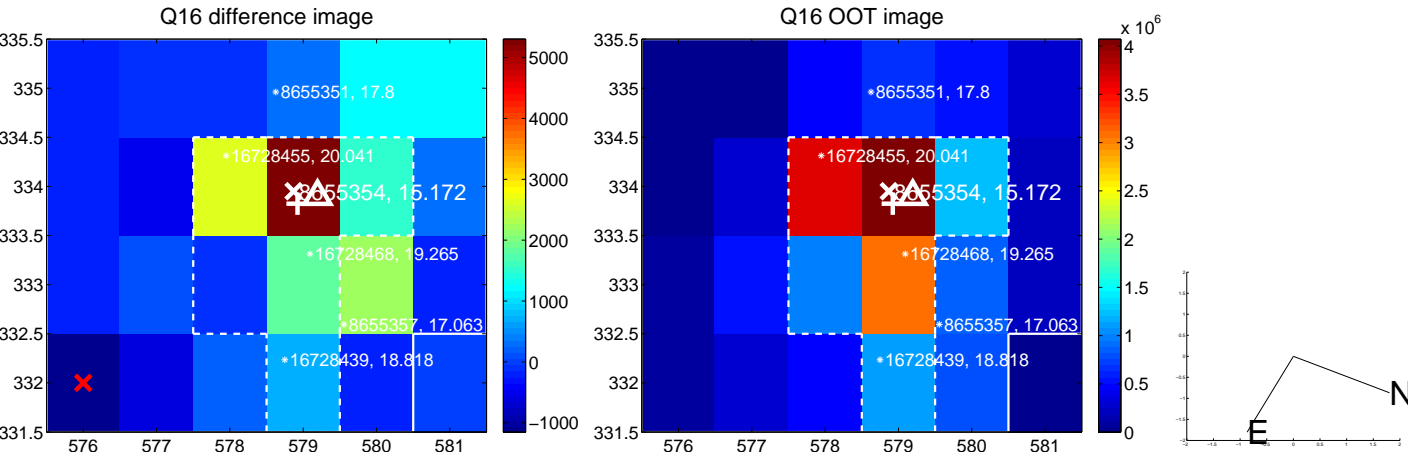
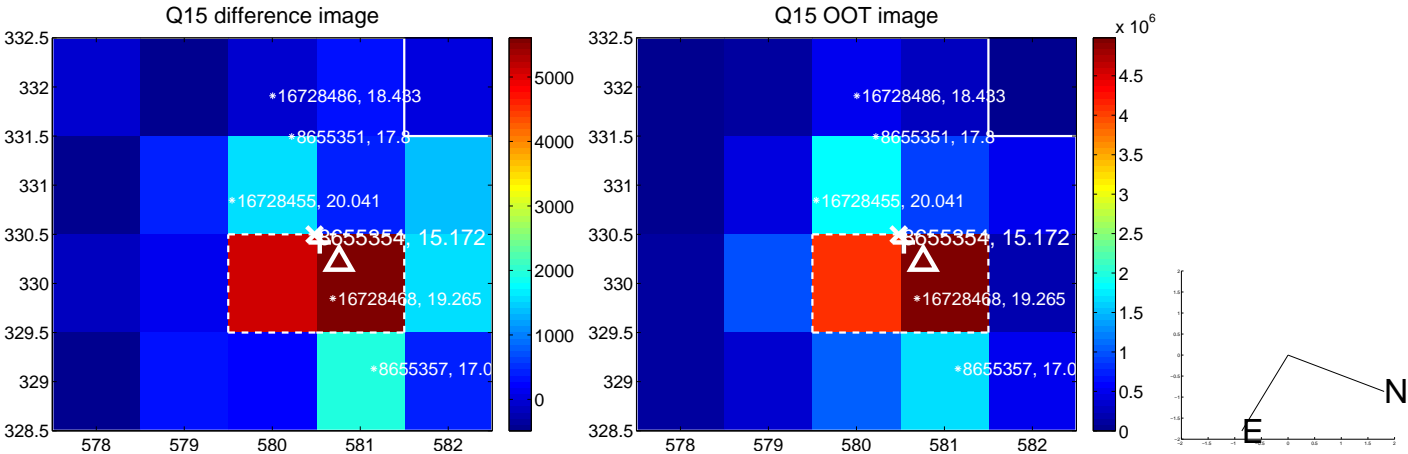
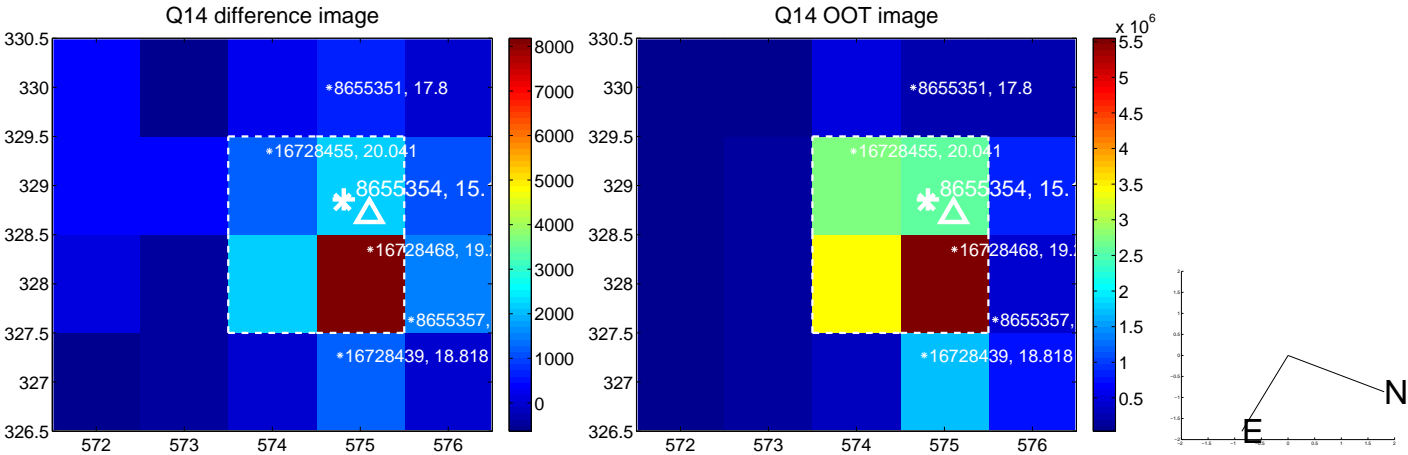
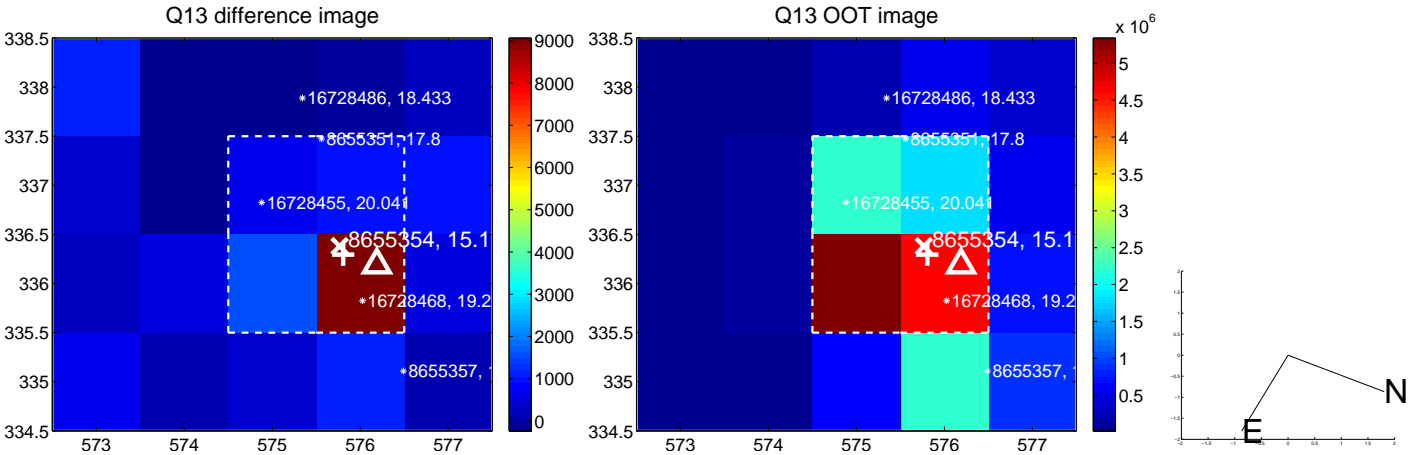
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

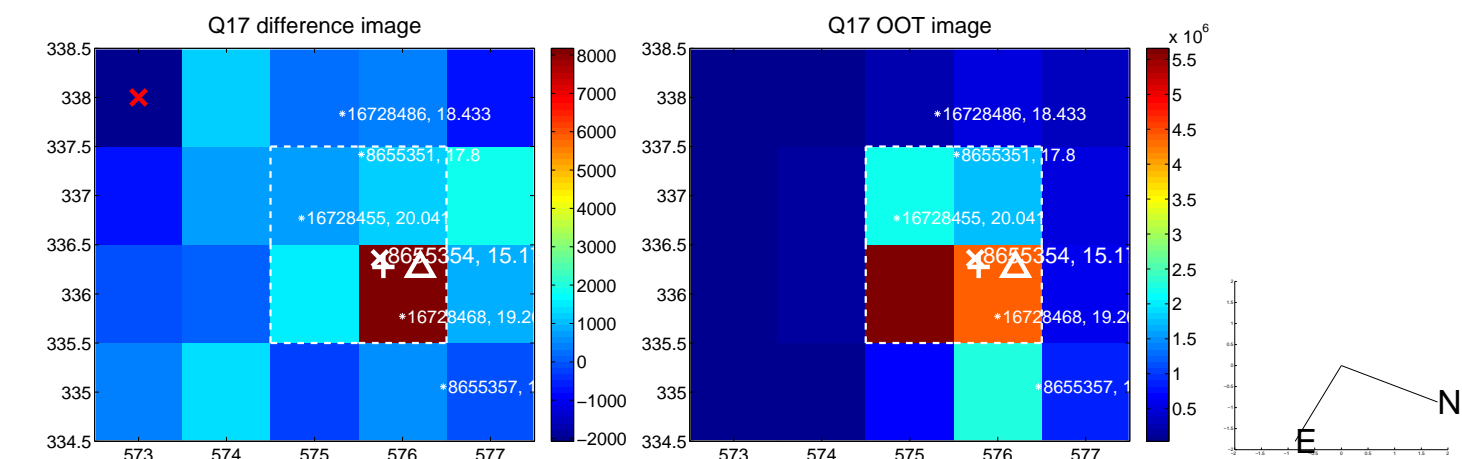


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

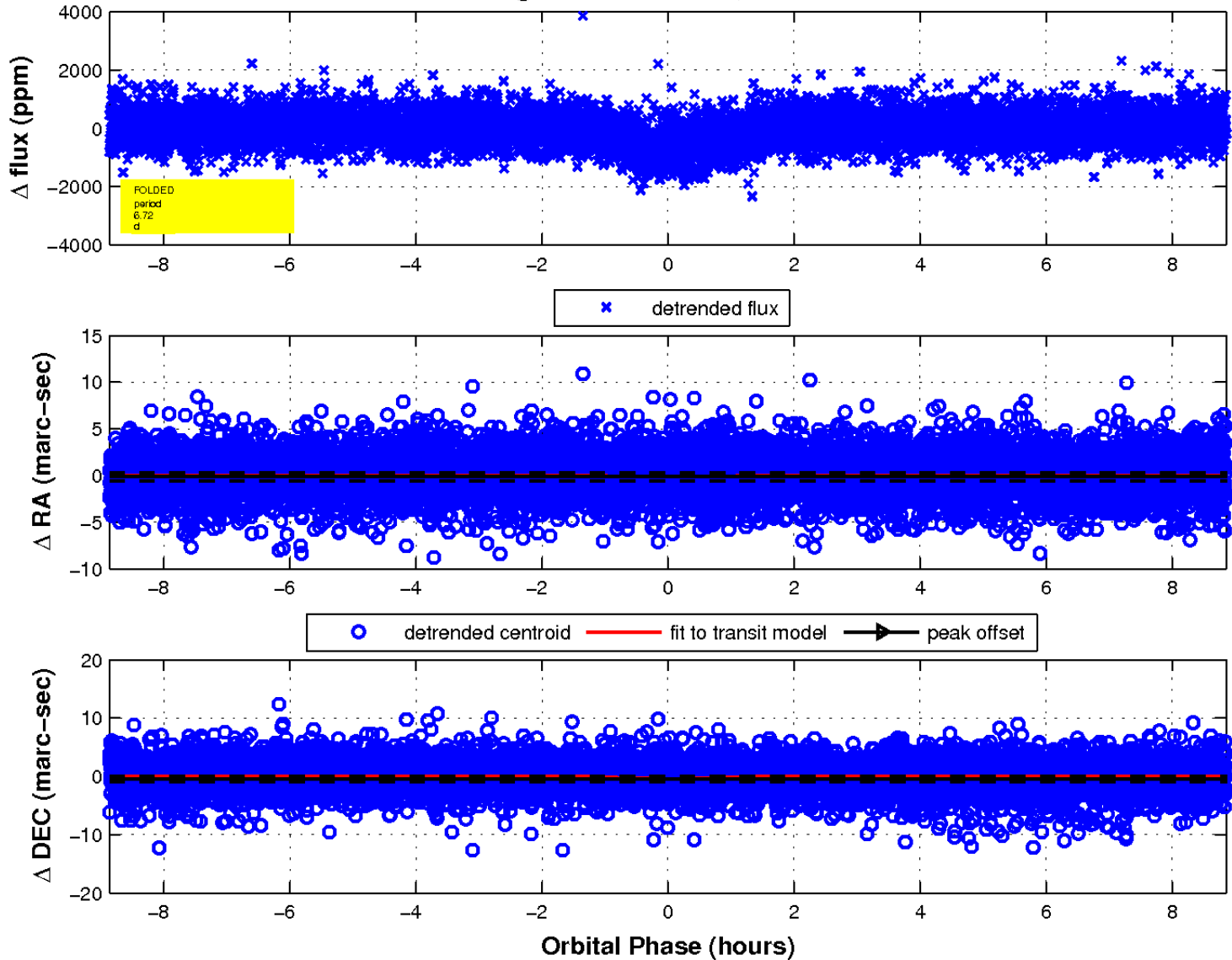




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

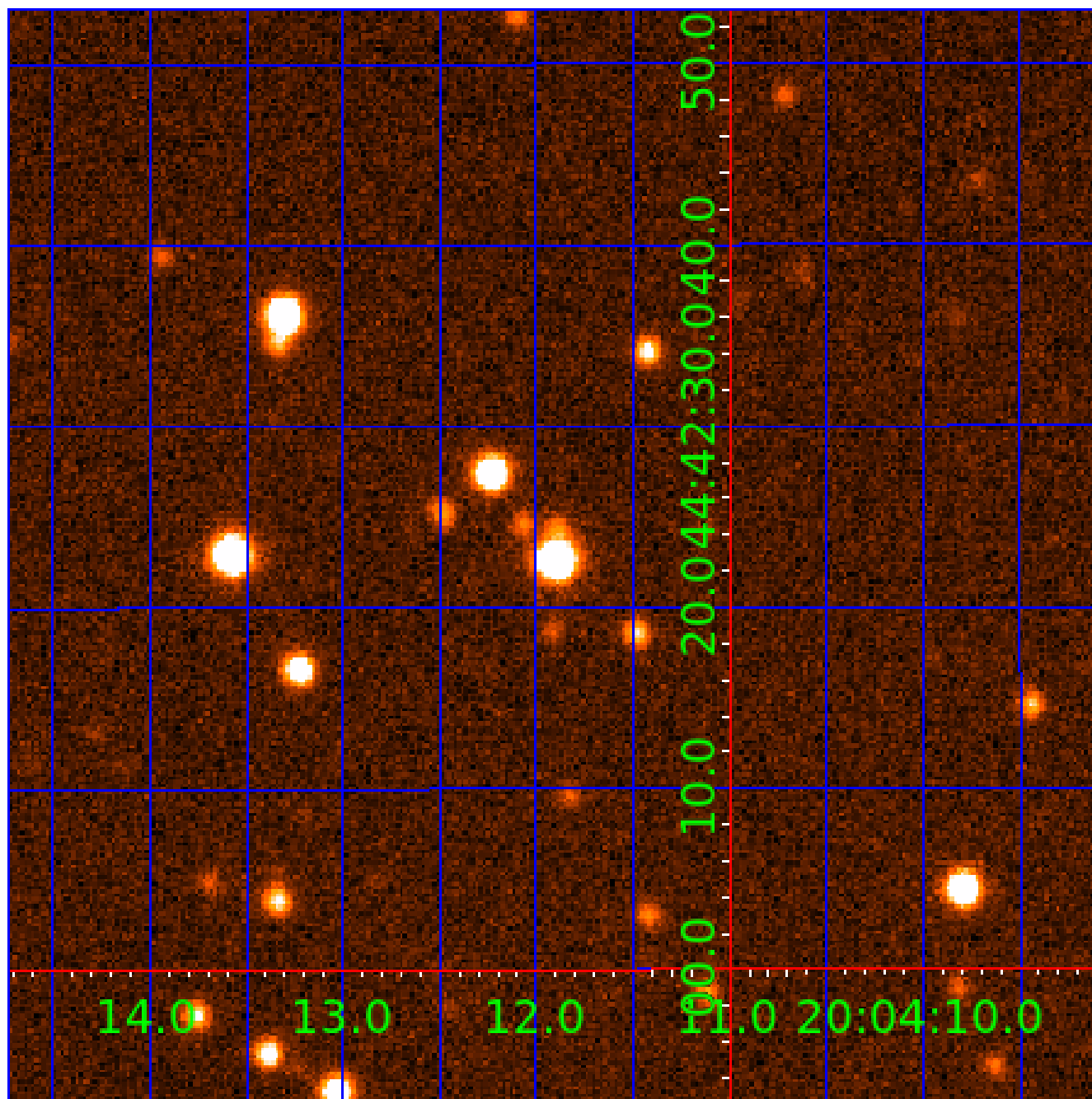


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



# KIC 008655354

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008655354-01	OBS	0917.01	6.719691	133.039614	977.0	2.955	39.3	43.9	0.87	5931	3.99	194.66
008655354-02	OBS	No	3.359823	133.044366	280.5	2.345	13.4	13.6	0.87	5931	1.71	490.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008655354-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
008655354-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS

**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.

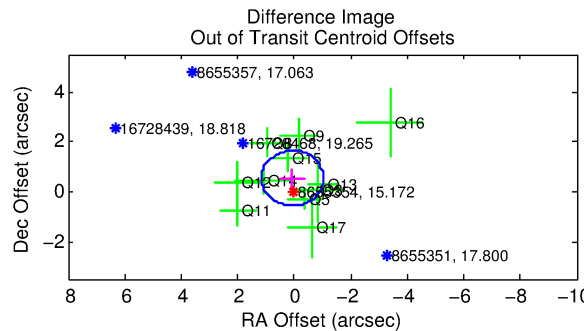
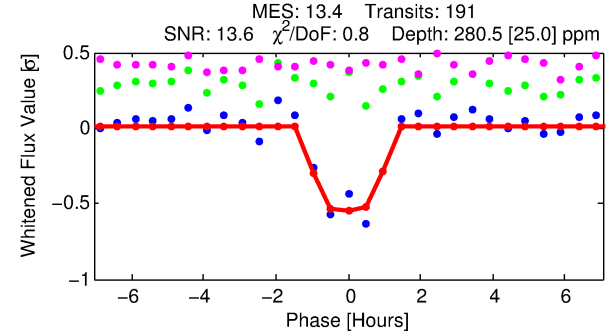
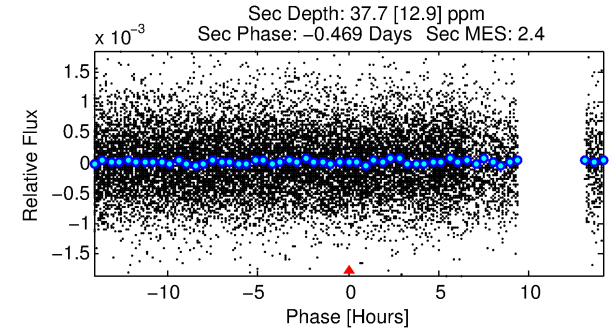
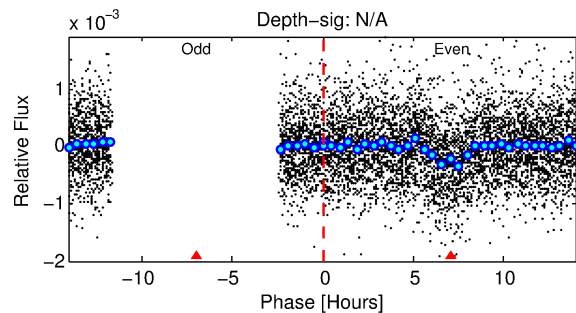
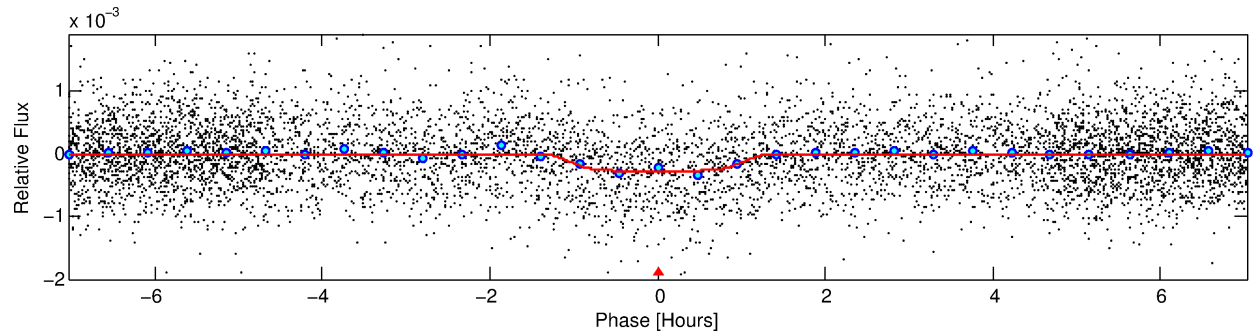
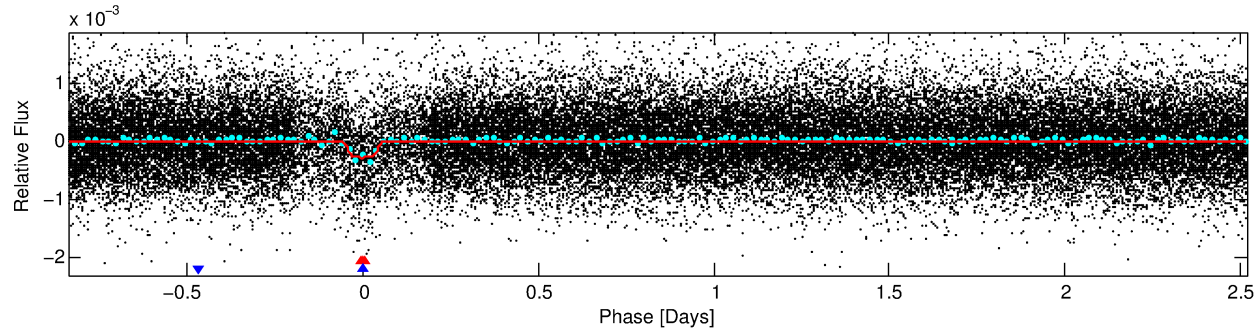
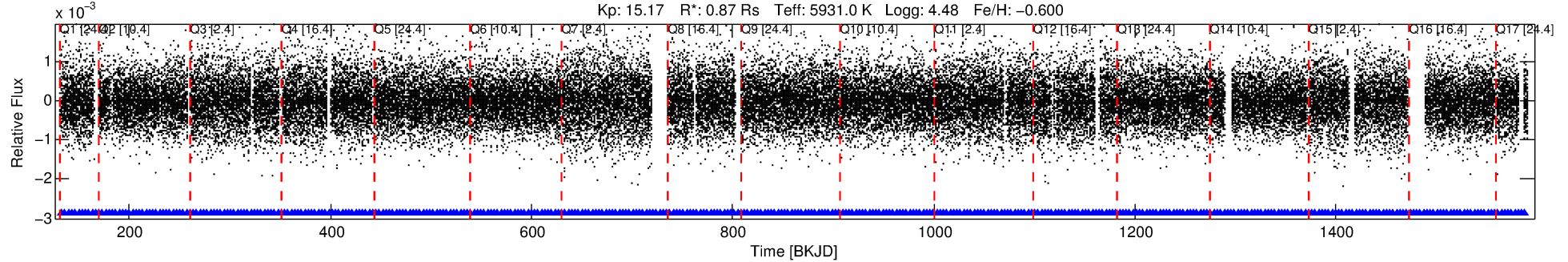
## Ephemeris Match Information For 008655354-02

No Significant Match Found

# DV One-Page Summary

KIC: 8655354 Candidate: 2 of 2 Period: 3.360 d  
KOI: K00917 Corr: No Ephemeris Match

Kp: 15.17 R\*: 0.87 Rs Teff: 5931.0 K Logg: 4.48 Fe/H: -0.600



## DV Fit Results:

Period = 3.35982 [0.00002] d  
Epoch = 133.0444 [0.0030] BKJD  
Rp/R\* = 0.0181 [0.0069]  
a/R\* = 5.28 [10.31]  
b = 0.90 [0.43]  
Seff = 490.53 [164.56]  
Teq = 1200 [101] K  
Rp = 1.71 [0.77] Re  
a = 0.0412 [0.0087] AU  
Ag = 12.06 [10.80] [1.02σ]  
Teffp = 3457 [732] K [3.05σ]

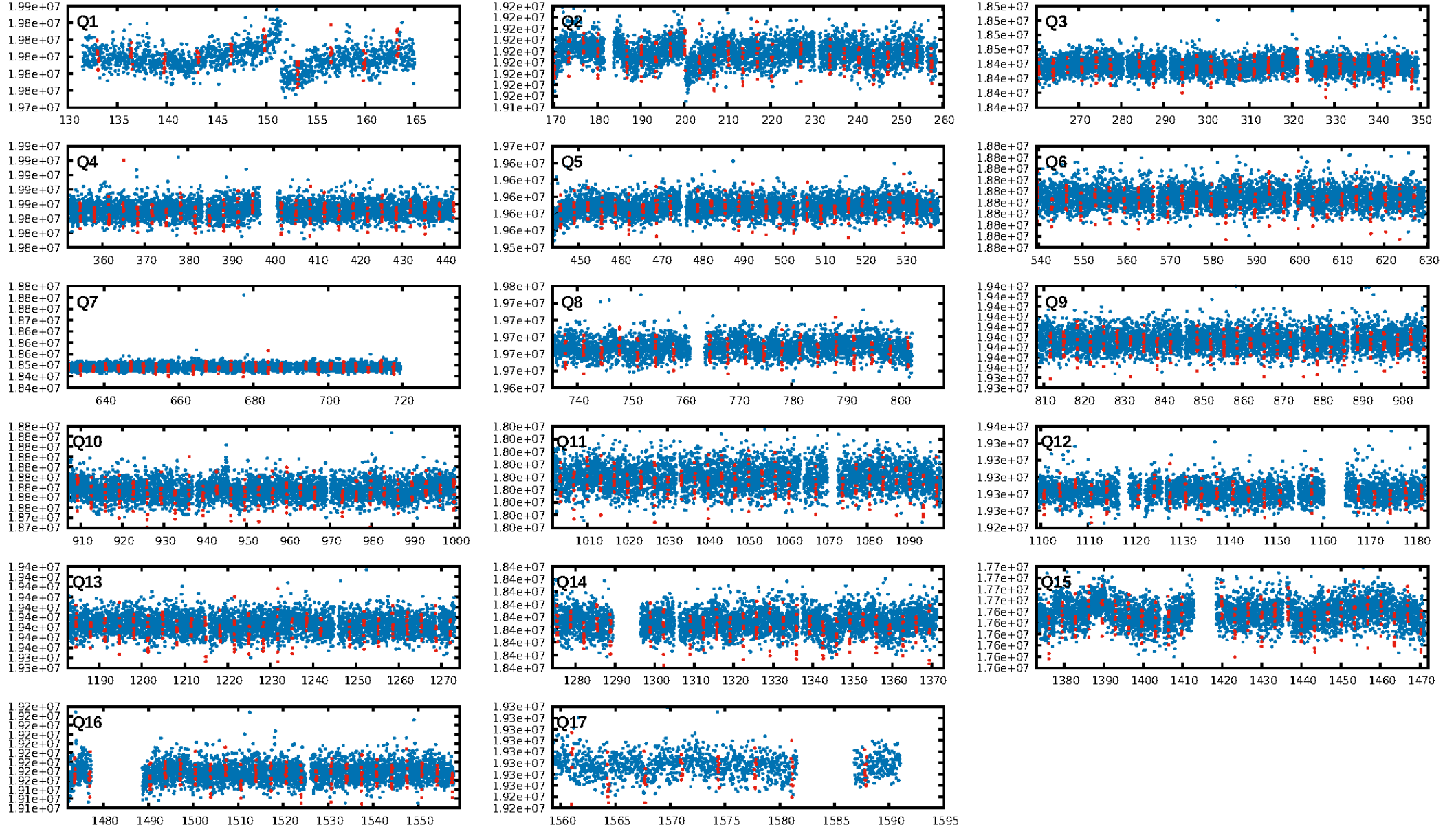
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [21.38σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.25e-42  
RollingBand-fgt: 1.00 [181/181]  
GhostDiagnostic-chr: 1.587  
Centroid-sig: 0.0%  
Centroid-so: 2.194 arcsec [2.24σ]  
OotOffset-rm: 0.541 arcsec [1.47σ]  
KicOffset-rm: 0.882 arcsec [2.40σ]  
OotOffset-st: 1/3/3/4 [11]  
KicOffset-st: 1/3/3/4 [11]  
DiffImageQuality-fgm: 0.64 [7/11]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:55:19 Z

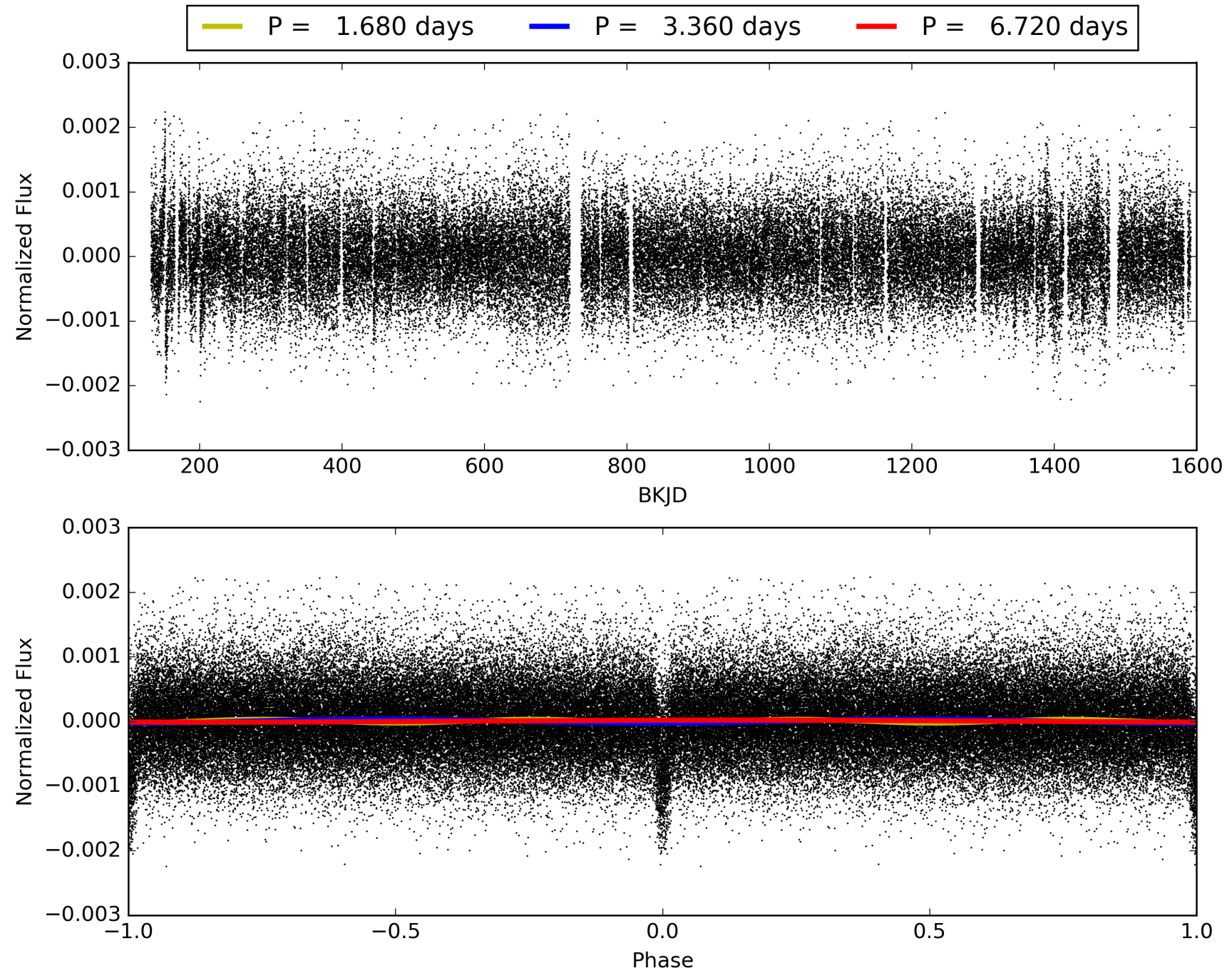
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008655354-02, PDC Light Curves



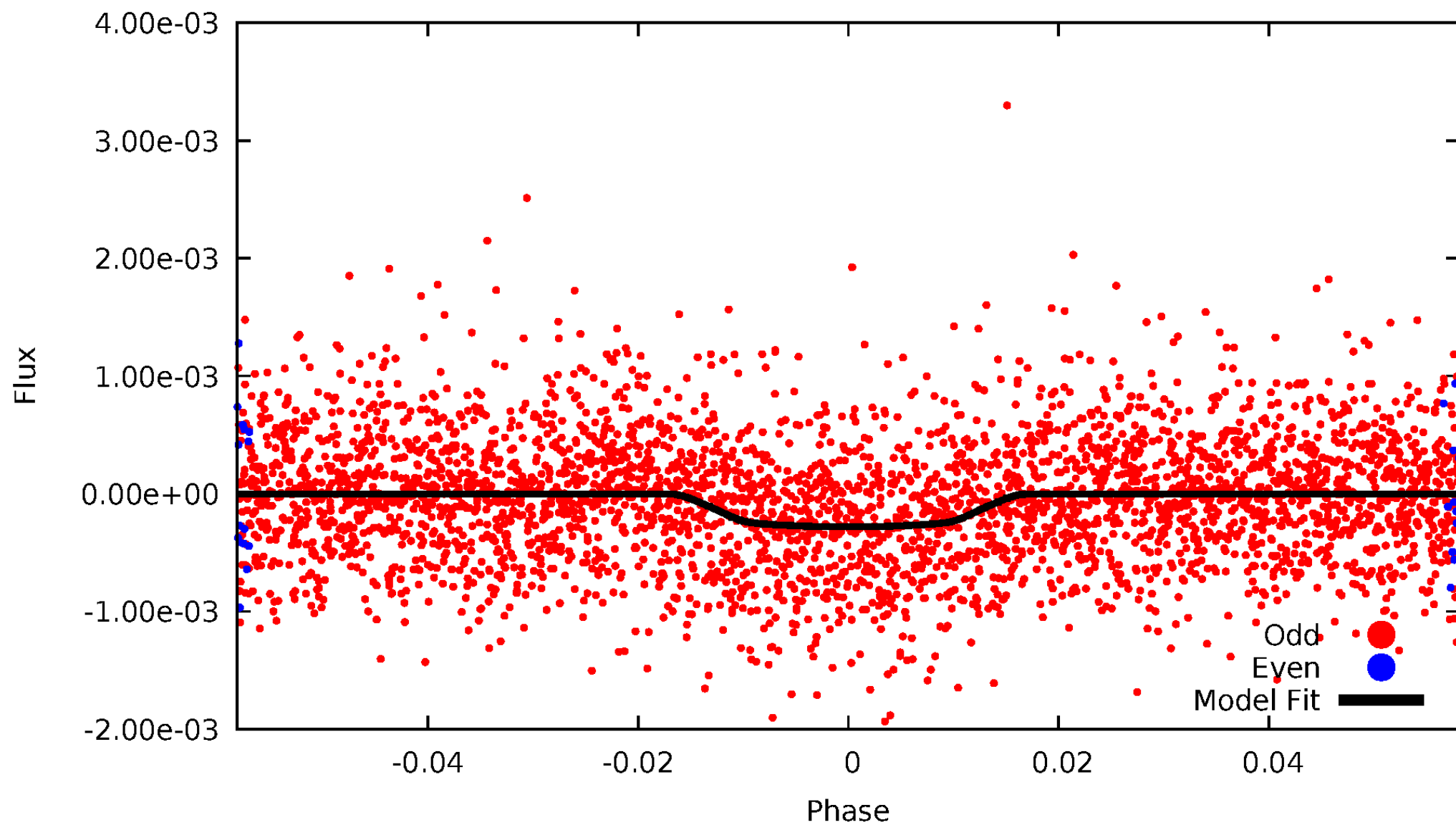


TCE 008655354-02



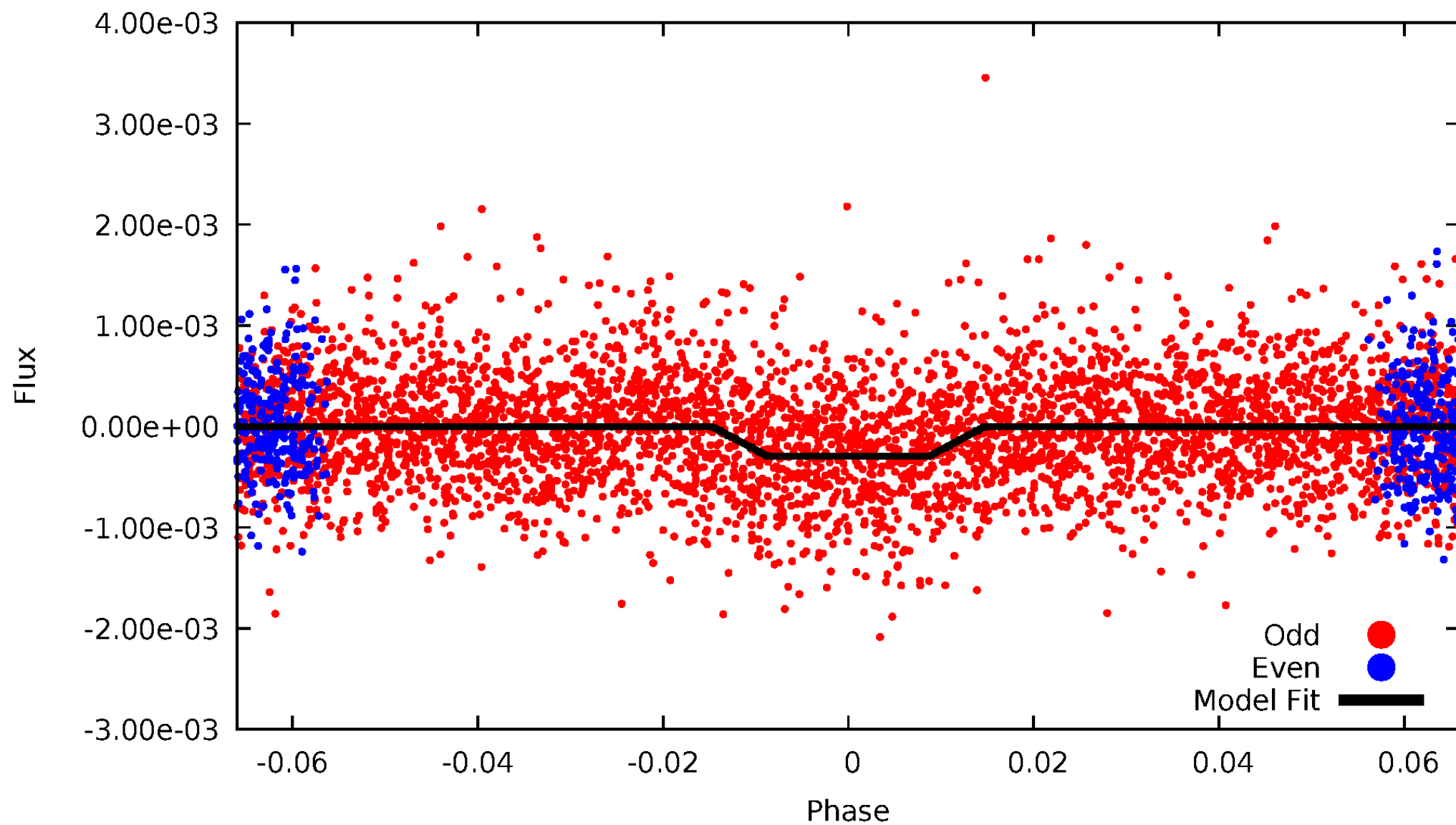
# DV Odd/Even

TCE 008655354-02



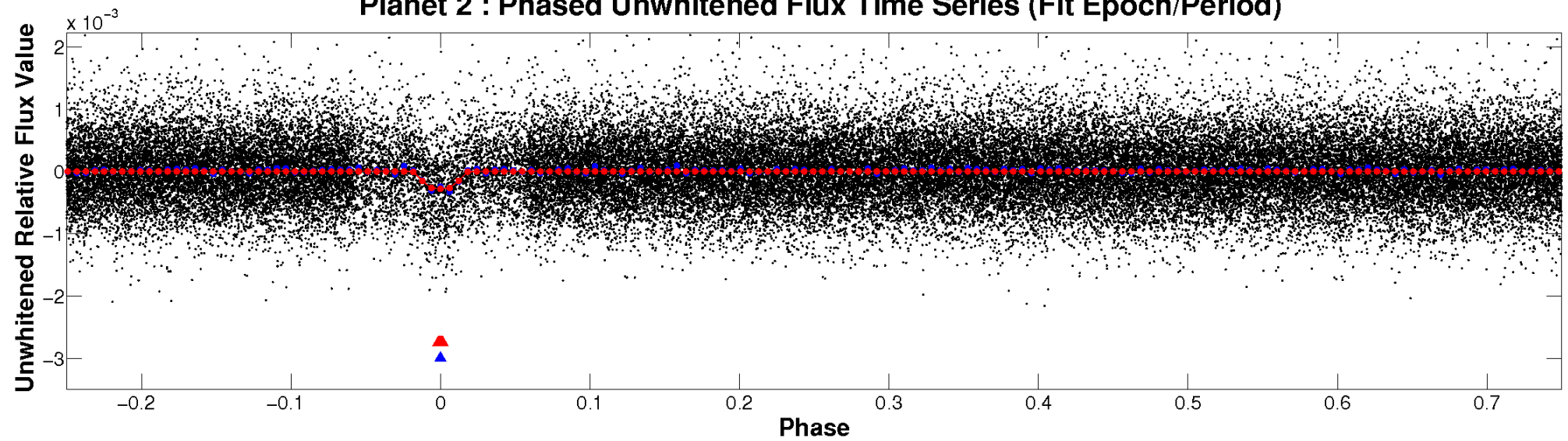
# ALT Odd/Even

TCE 008655354-02

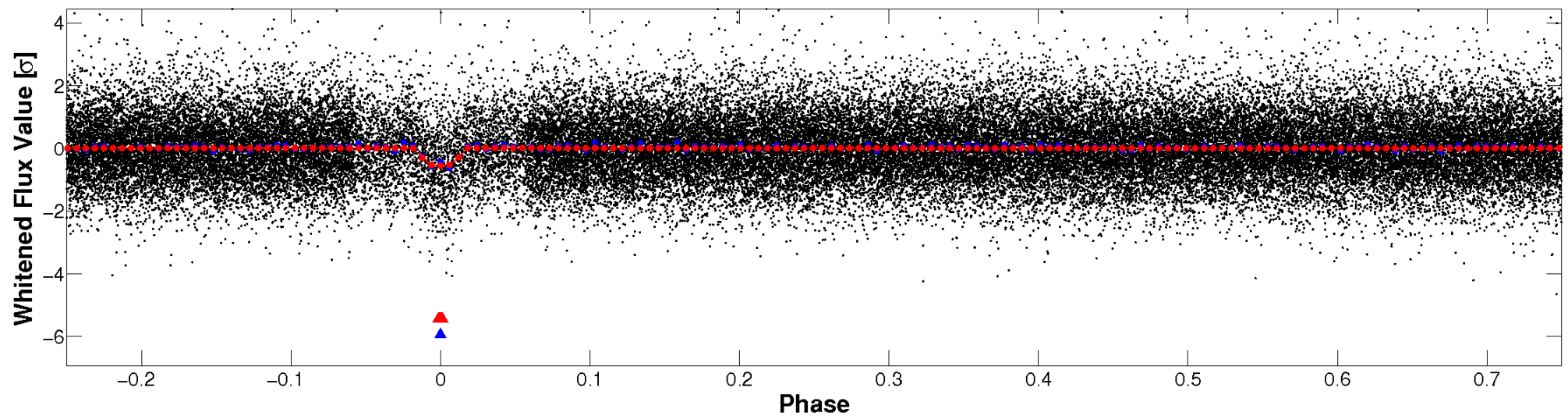


# Non-Whitened Vs. Whitened Light Curve

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



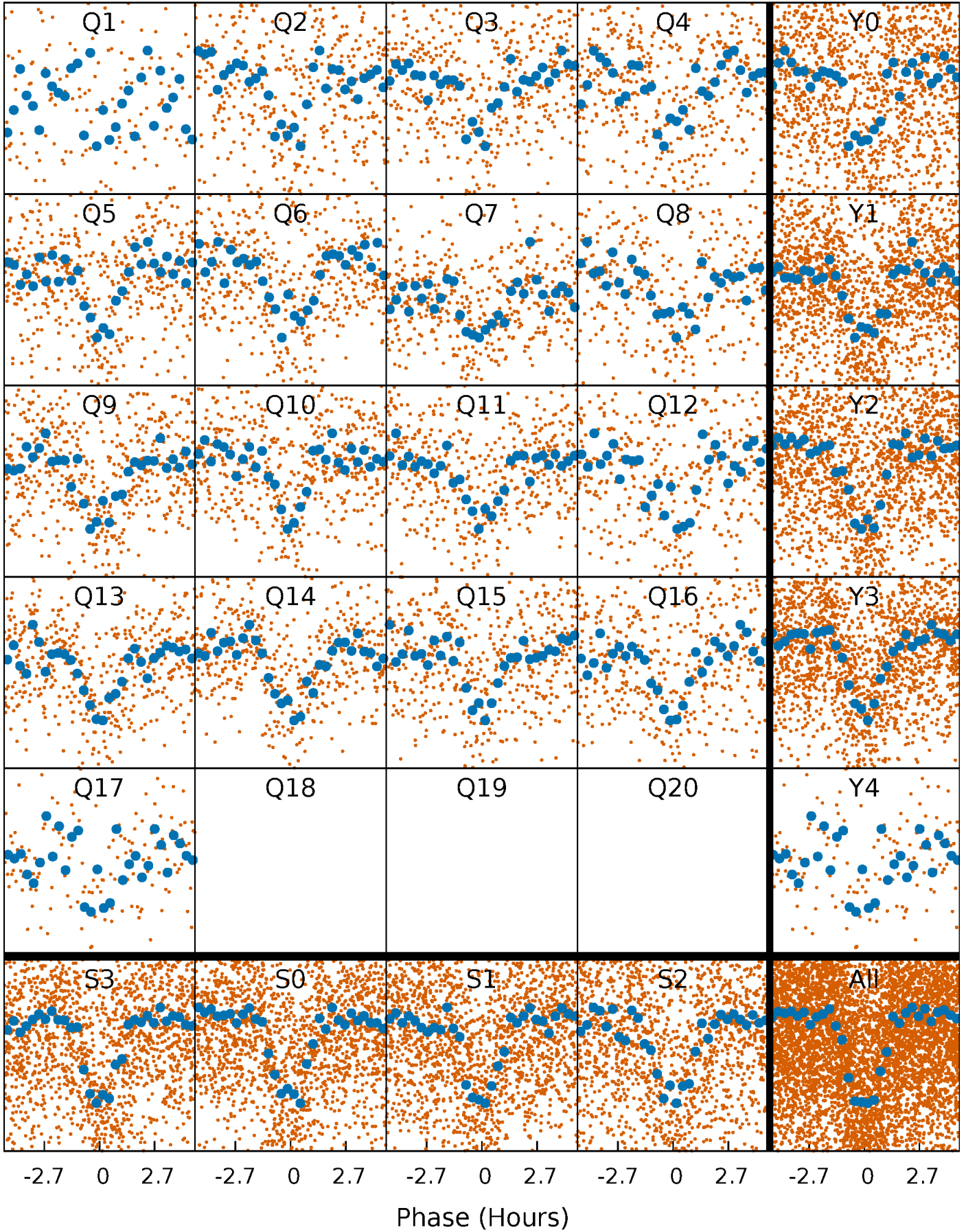
**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

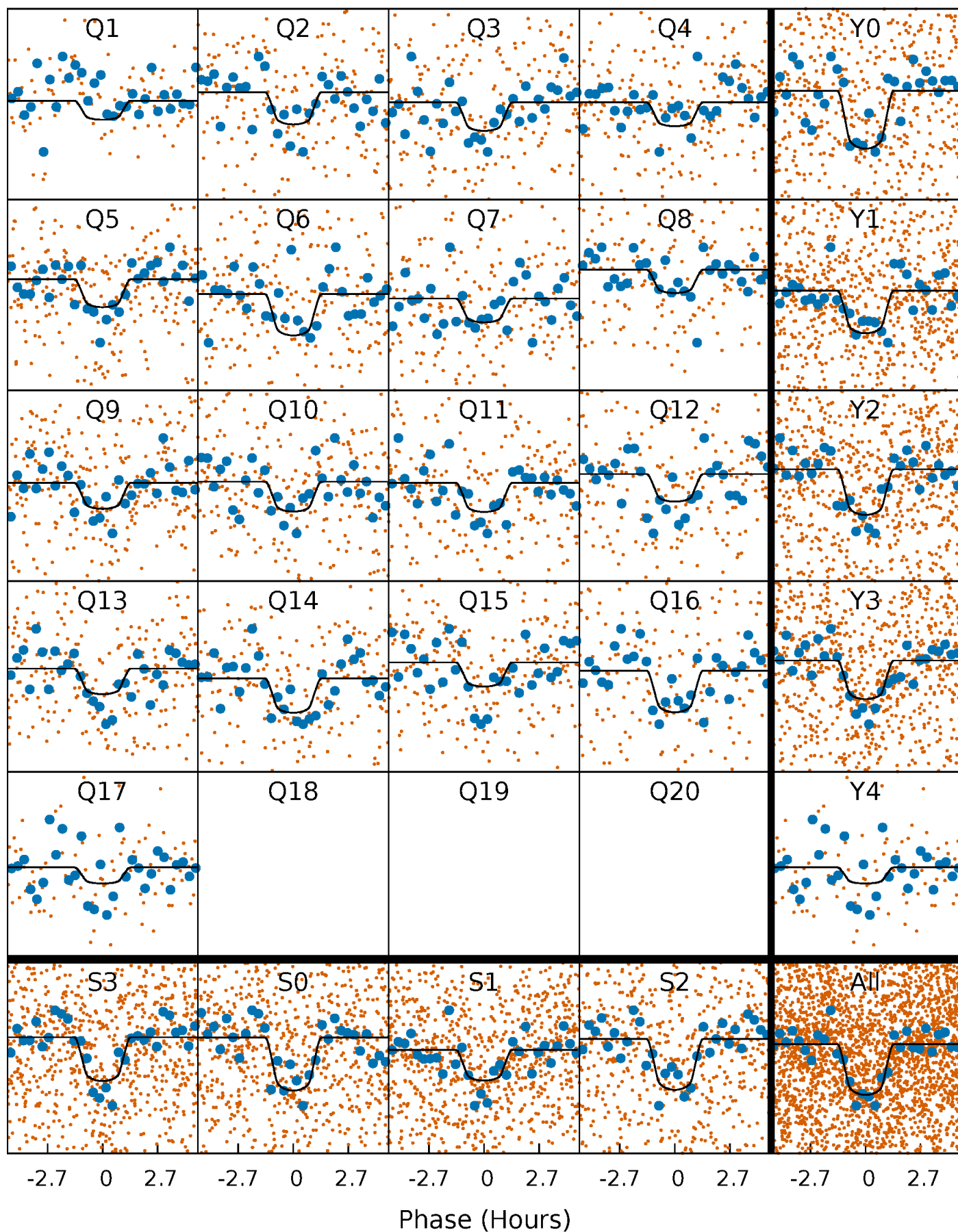
TCE 008655354-02 P= 3.359823 Days  $T_0=133.044366$  (BKJD)





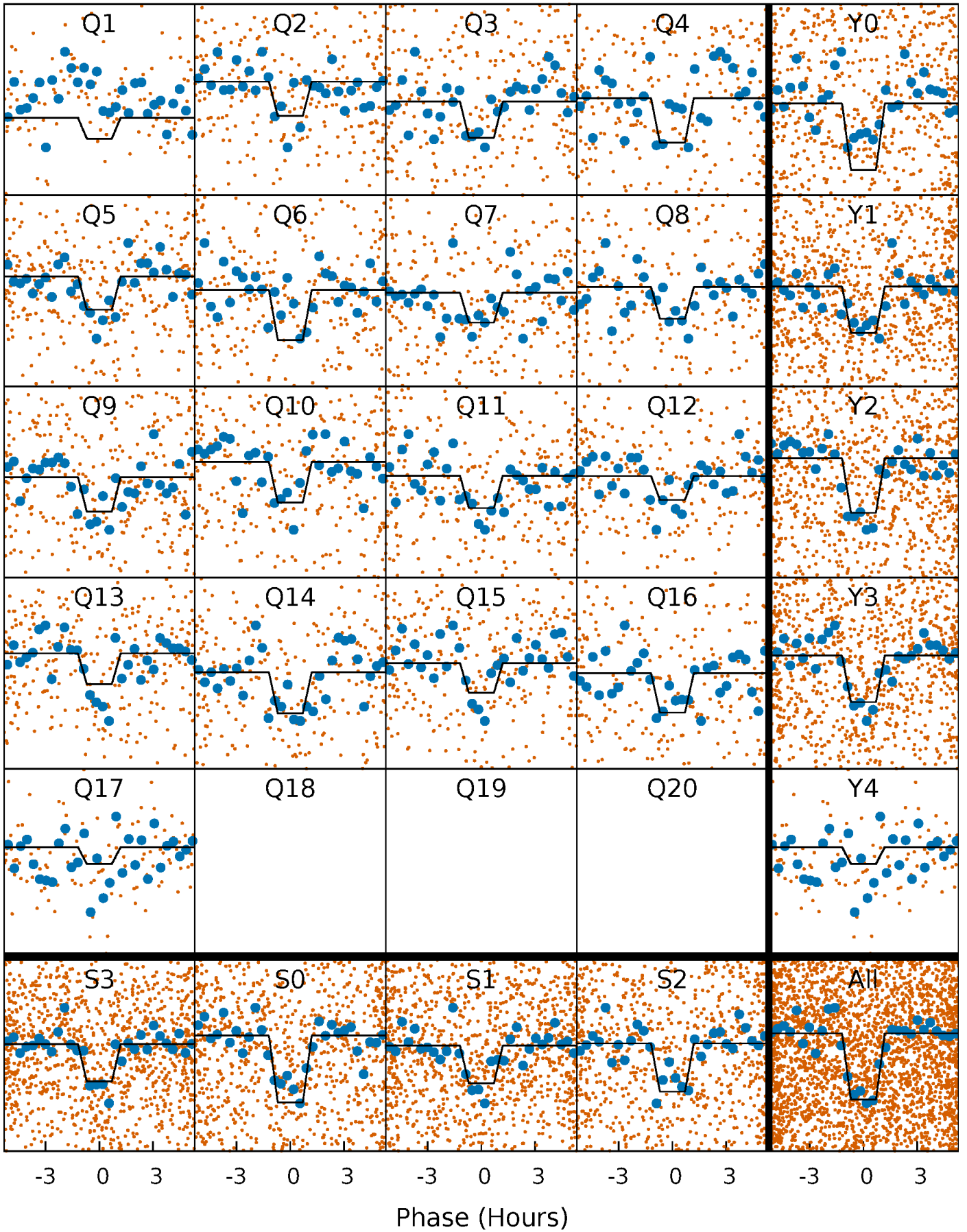
# DV Quarter-Phased Transit Curves

TCE 008655354-02     $P = 3.359823$  Days     $T_0 = 133.044366$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

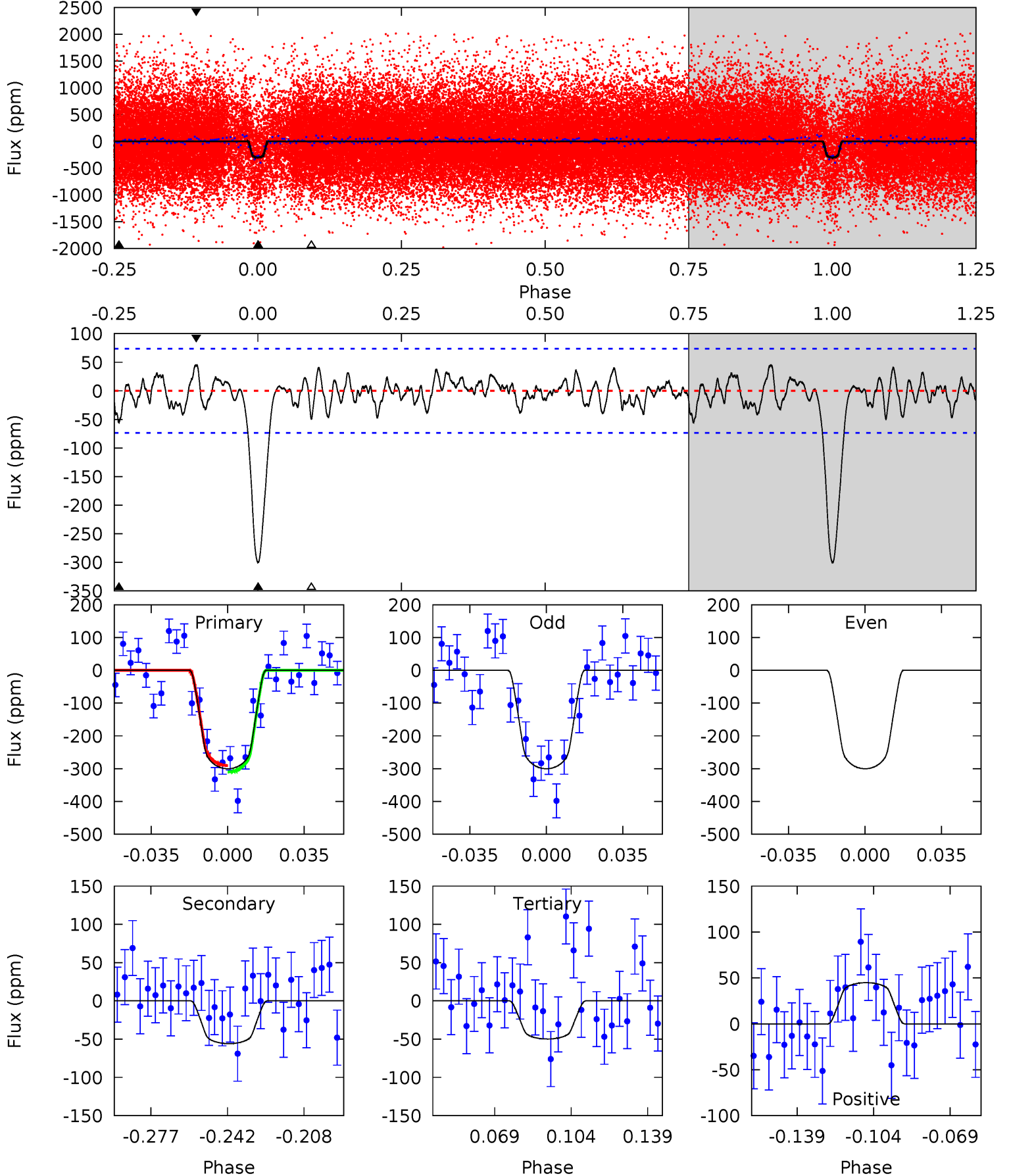
TCE 008655354-02 P= 3.359813 Days  $T_0=133.046065$  (BKJD)



# DV Model-Shift Uniqueness Test

008655354-02, P = 3.359823 Days, E = 129.684543 Days

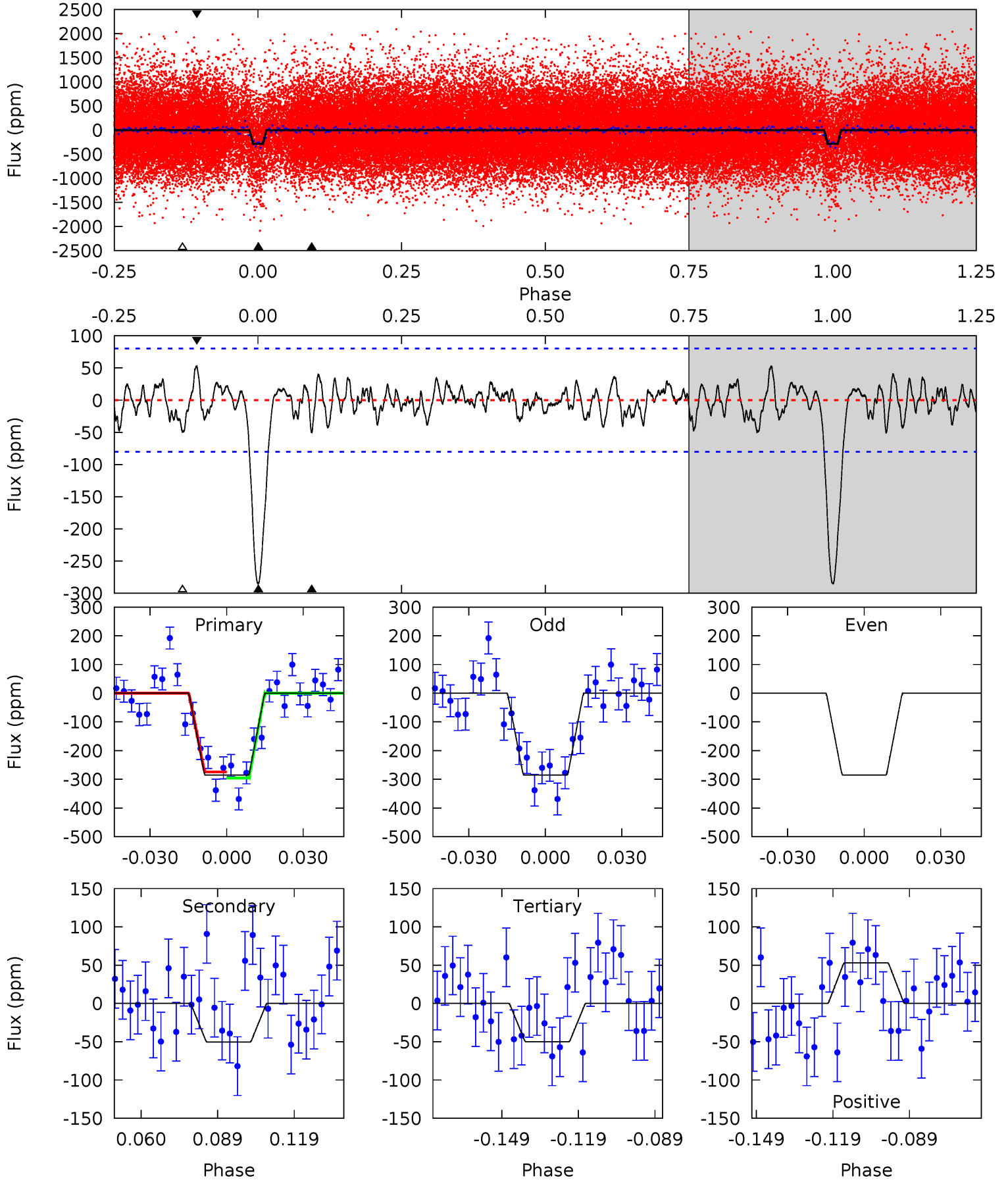
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.5	3.63	3.24	2.91	4.78	2.11	1.20	16.3	16.6	0.39	0.72	0	0.90	0.13	0.64



# Alt Model-Shift Uniqueness Test

008655354-02, P = 3.359813 Days, E = 129.686252 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
17.1	3.02	2.99	3.18	4.81	2.17	1.08	14.1	13.9	0.03	-0.16	0	0.94	0.16	0.64



### Stellar Parameters For KIC 008655354

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5931^{+177}_{-177}$	$4.479^{+0.094}_{-0.175}$	$-0.600^{+0.300}_{-0.300}$	$0.866^{+0.210}_{-0.113}$	$0.825^{+0.096}_{-0.070}$	$1.789^{+0.708}_{-0.820}$
	+3%/-3%	+2%/-4%	+50%/-50%	+24%/-13%	+12%/-8%	+40%/-46%
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 008655354-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-56 \pm 15$	$1.69^{+0.71}_{-0.61}$	$1698^{+106}_{-96}$	$4131^{+829}_{-516}$	$18^{+25}_{-10}$
Alt.	$-50 \pm 17$	$1.67^{+0.70}_{-0.68}$	$1692^{+110}_{-82}$	$4025^{+955}_{-499}$	$16^{+31}_{-9}$

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

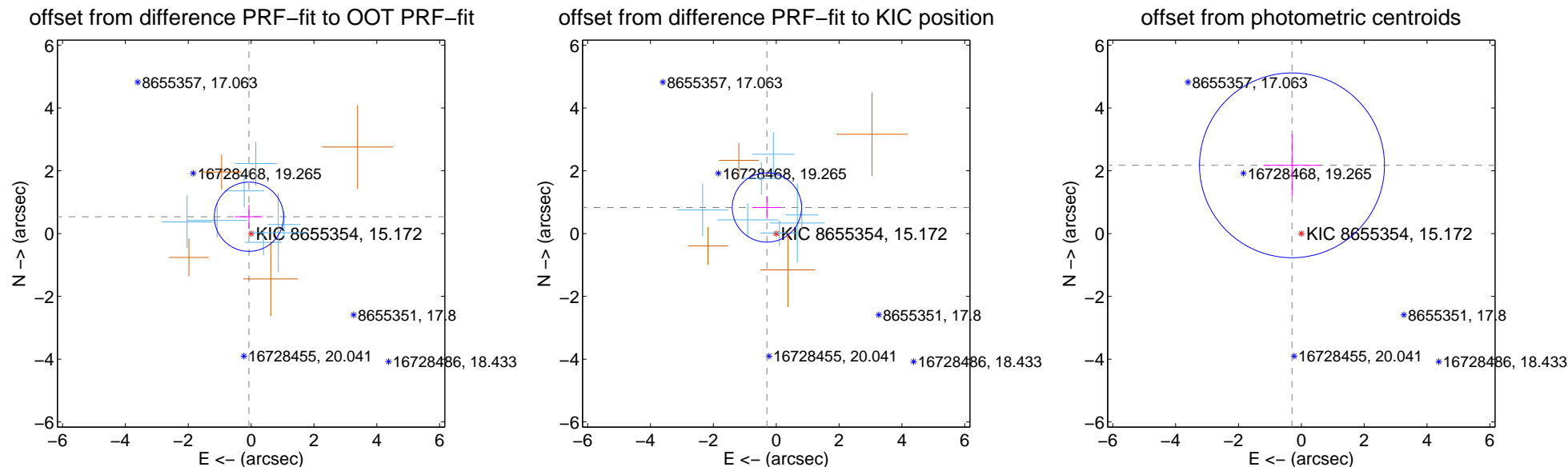
## DV Centroid Data

Supplemental centroid analysis for 008655354-02. Kepler magnitude: 15.17. Transit SNR 13.63

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

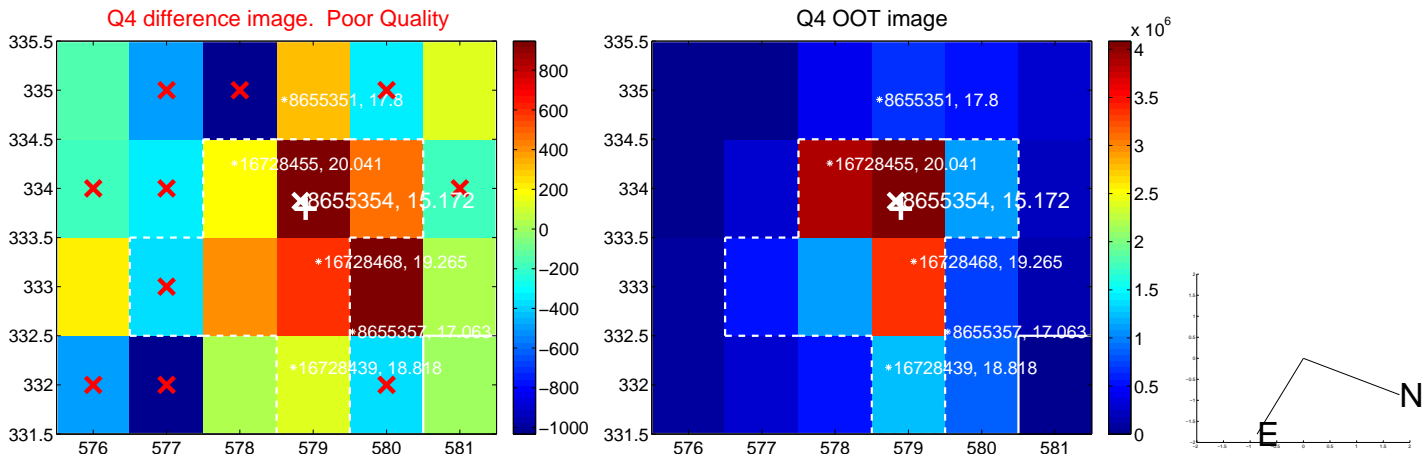
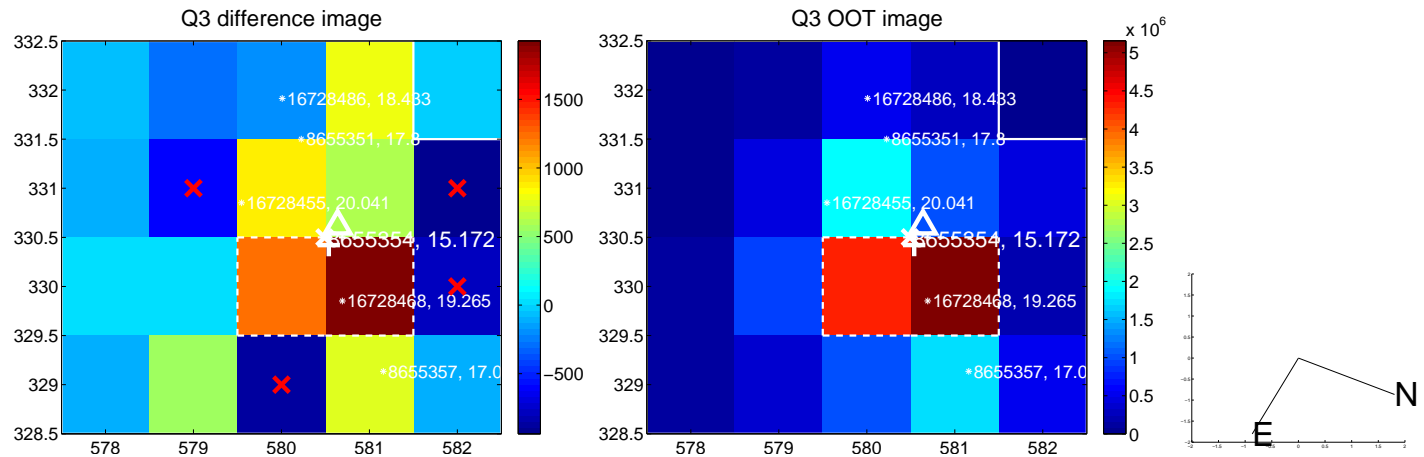
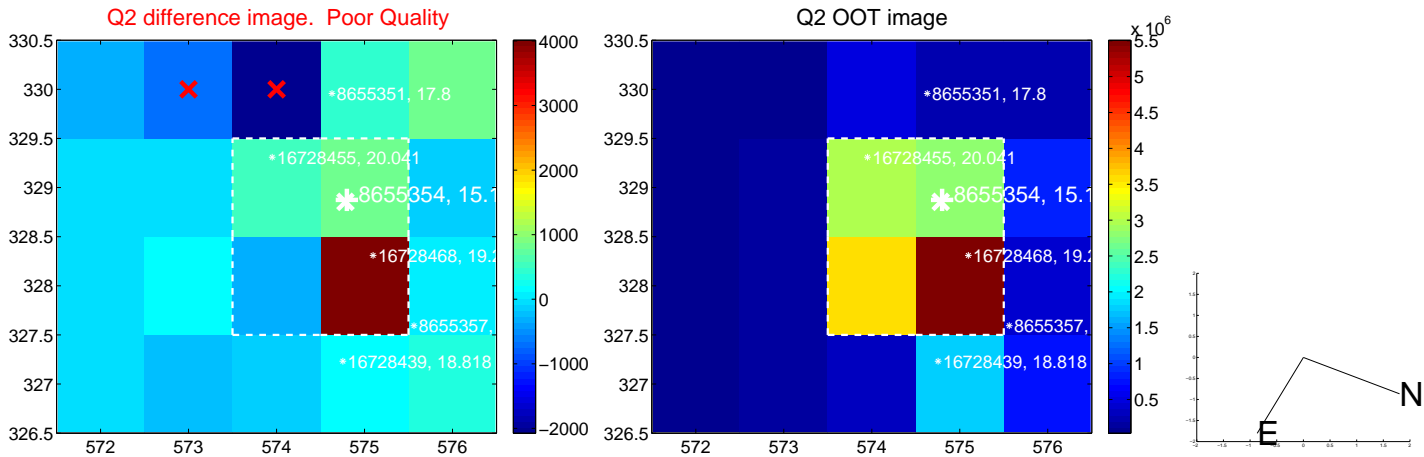
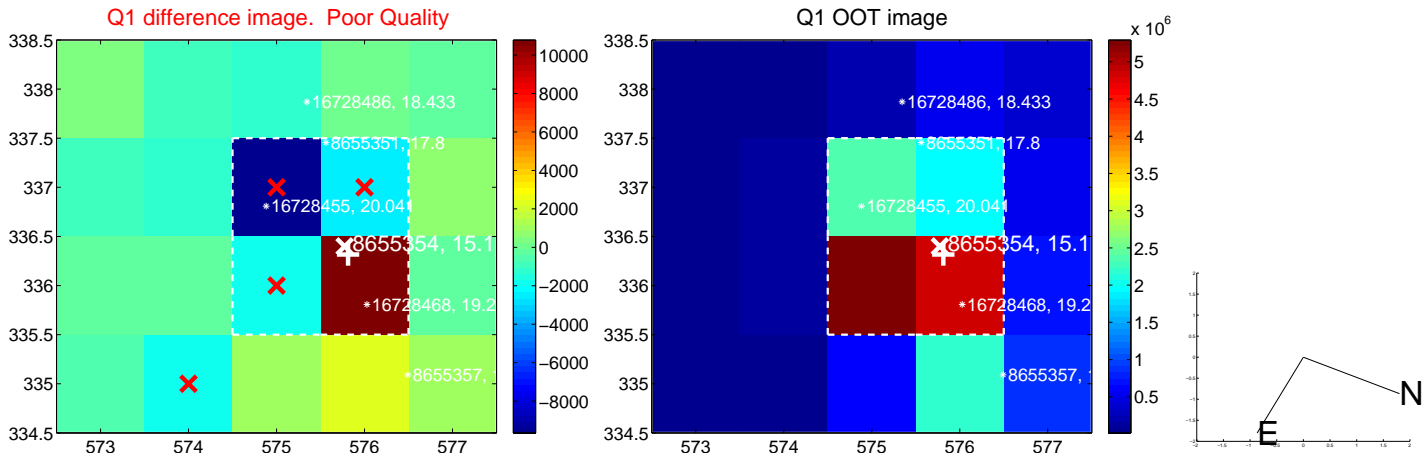
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.541 \pm 0.367$	1.47	$0.069 \pm 0.443$	$0.536 \pm 0.378$
PRF-fit source offset from KIC position	$0.882 \pm 0.368$	2.40	$0.296 \pm 0.449$	$0.831 \pm 0.356$
photometric centroid source offset	$2.19 \pm 0.98$	2.24	$0.30 \pm 0.91$	$2.17 \pm 0.98$



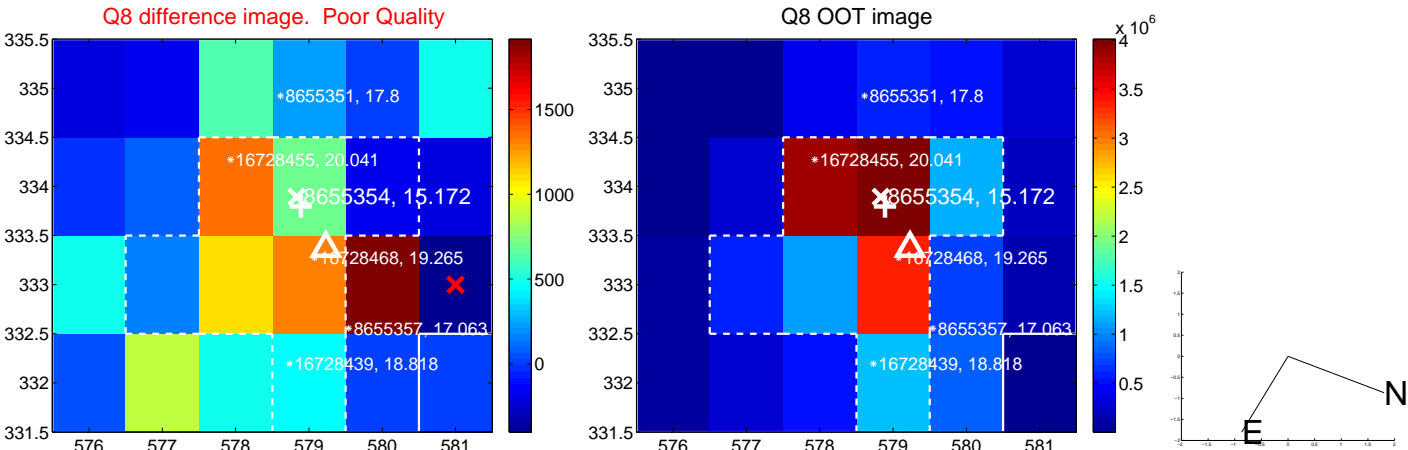
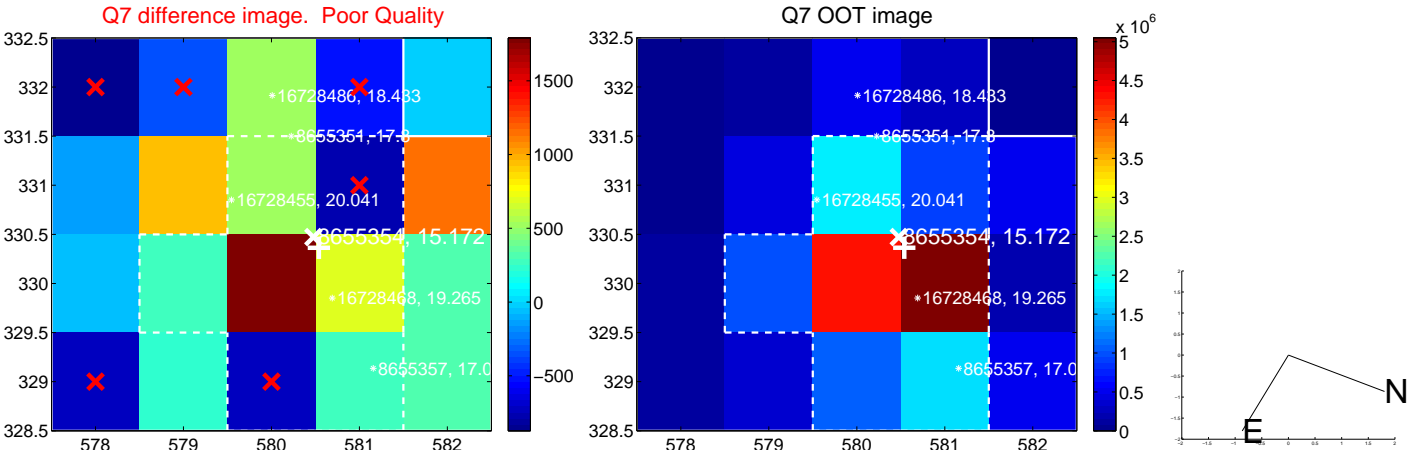
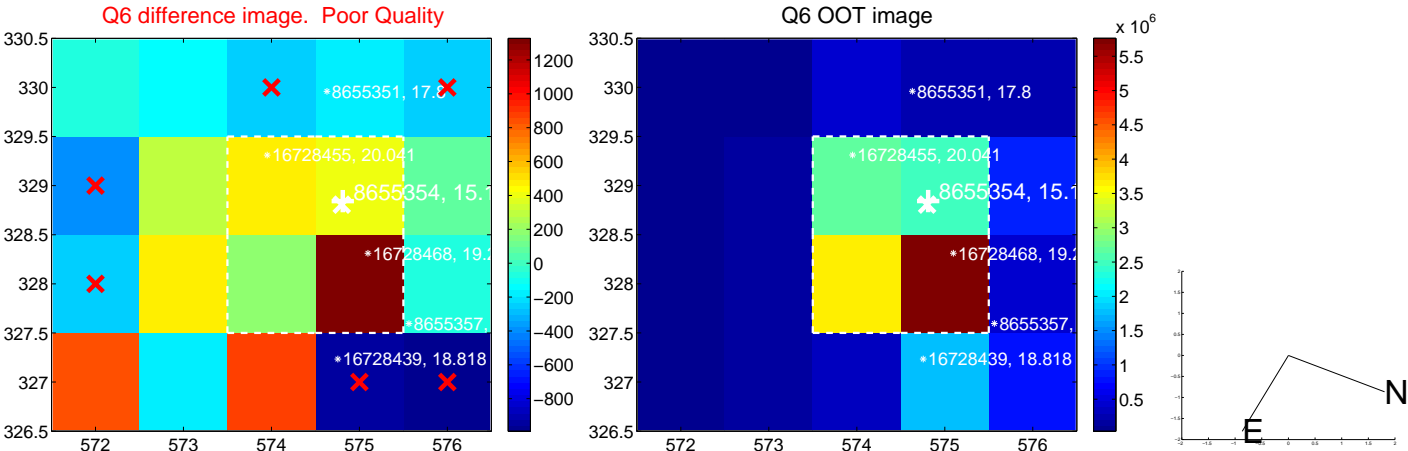
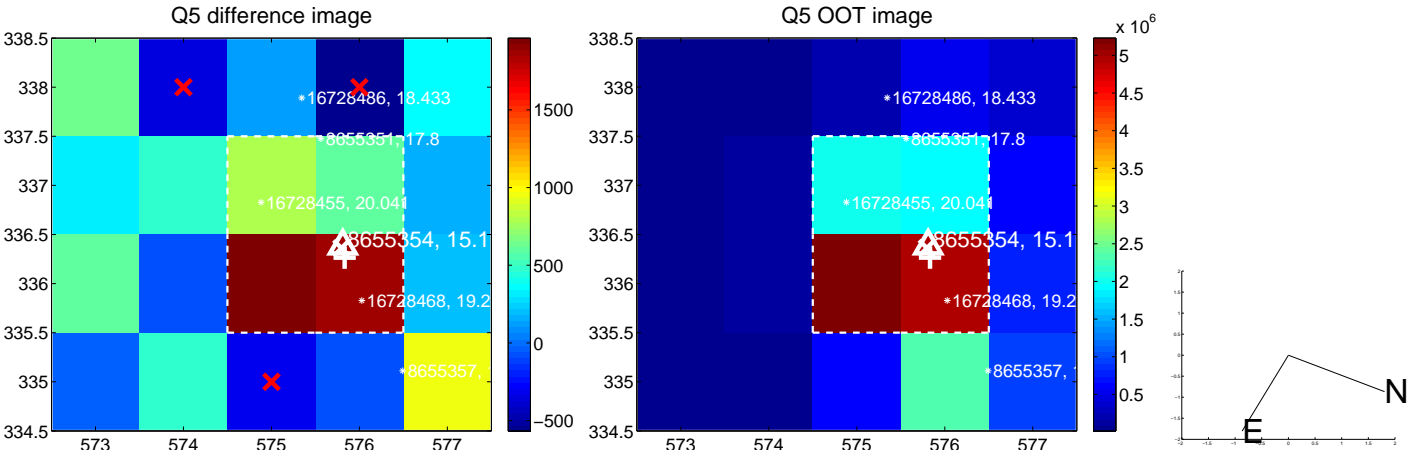
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



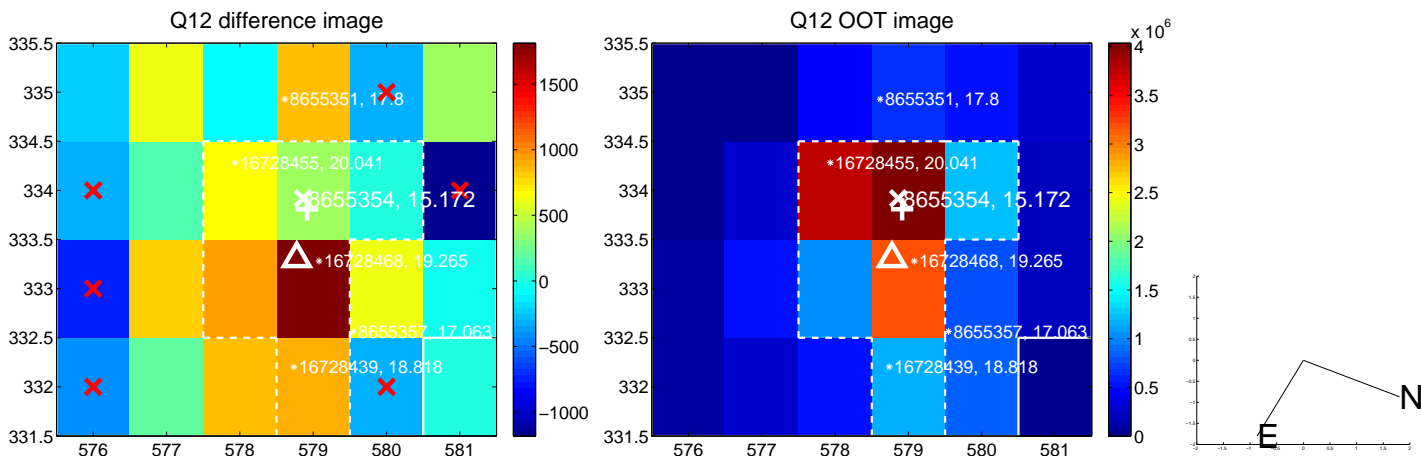
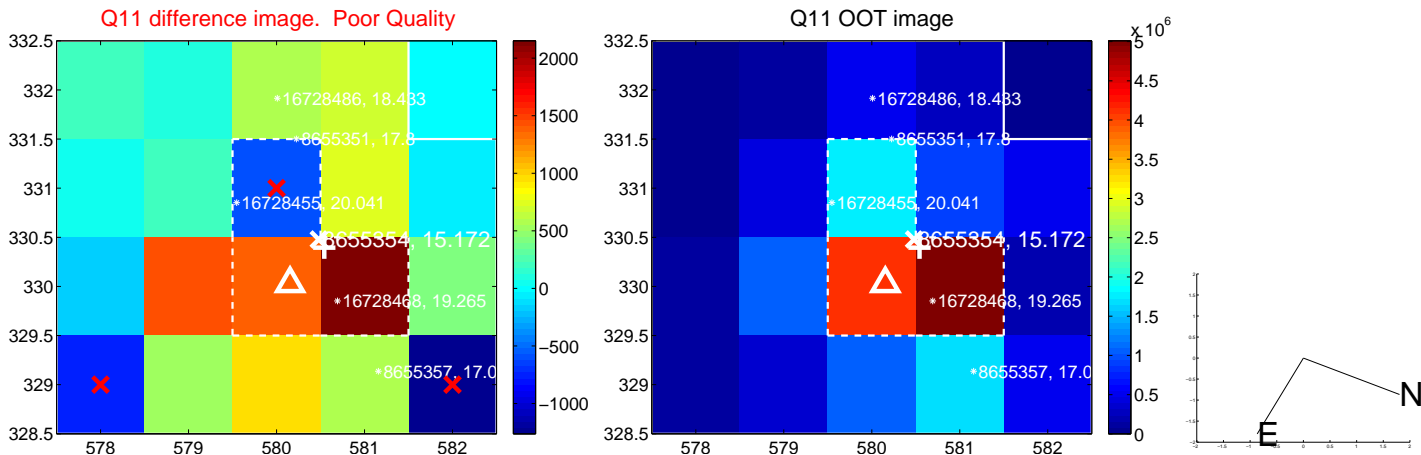
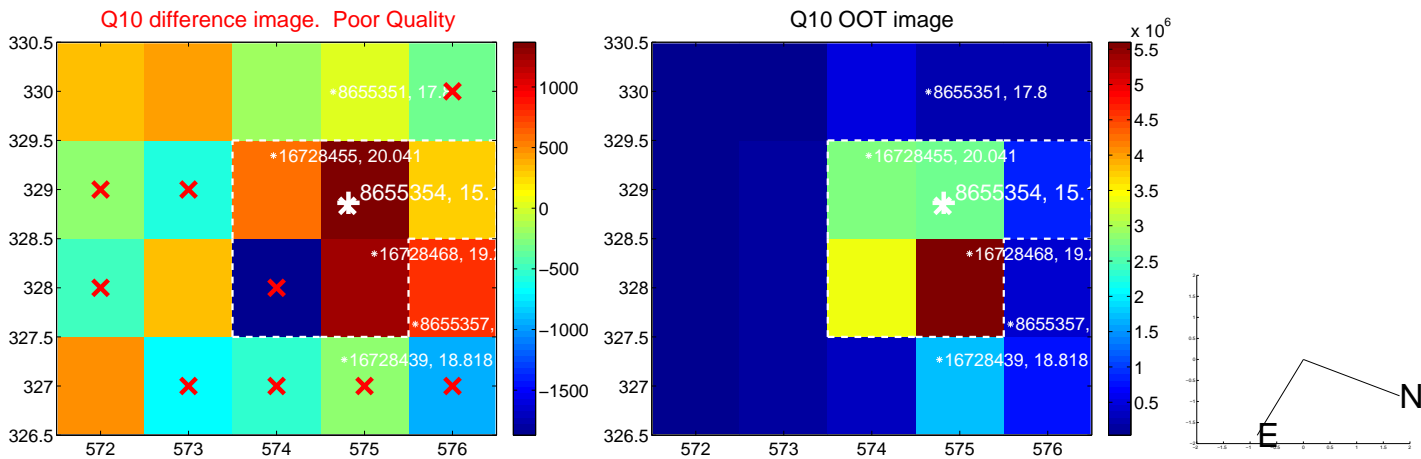
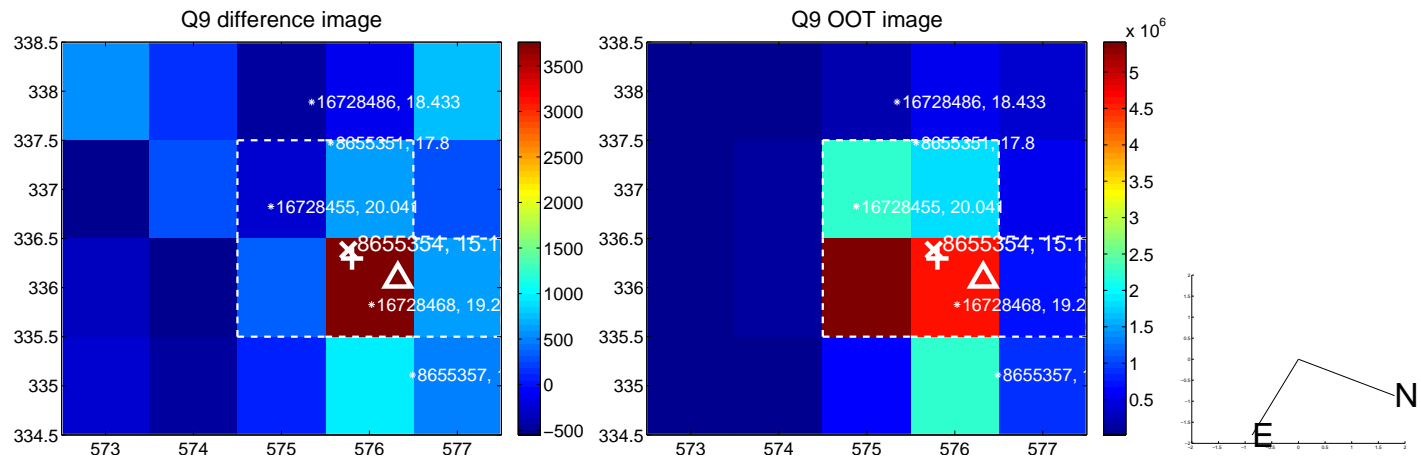
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



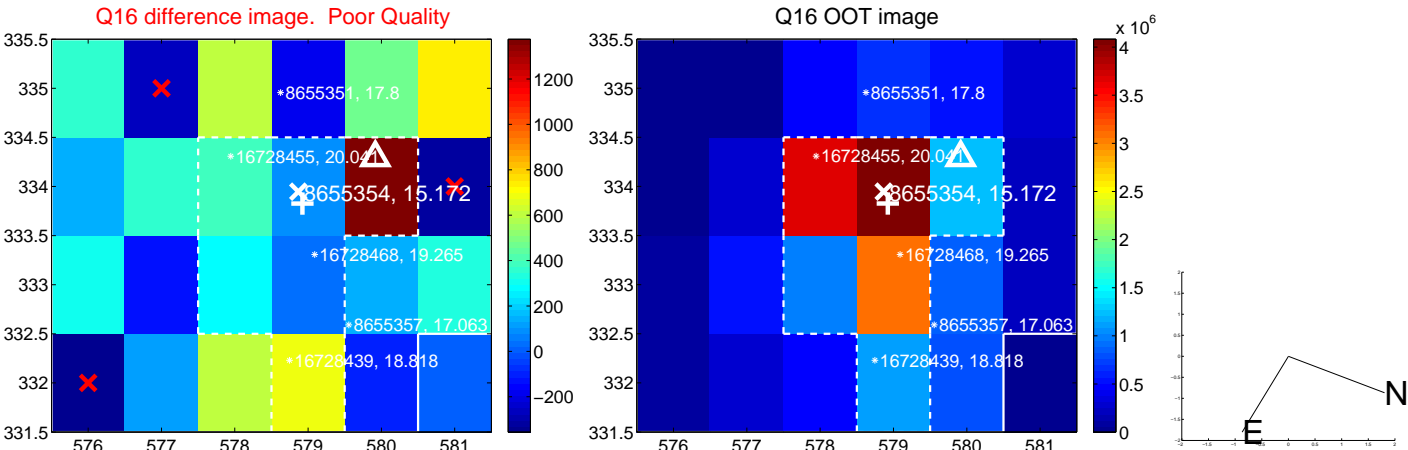
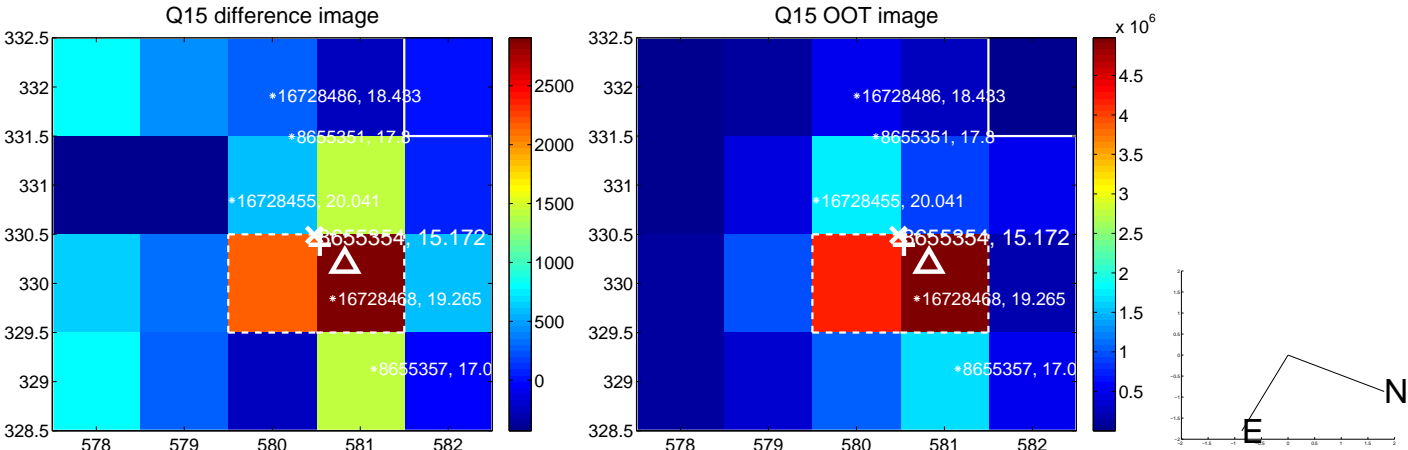
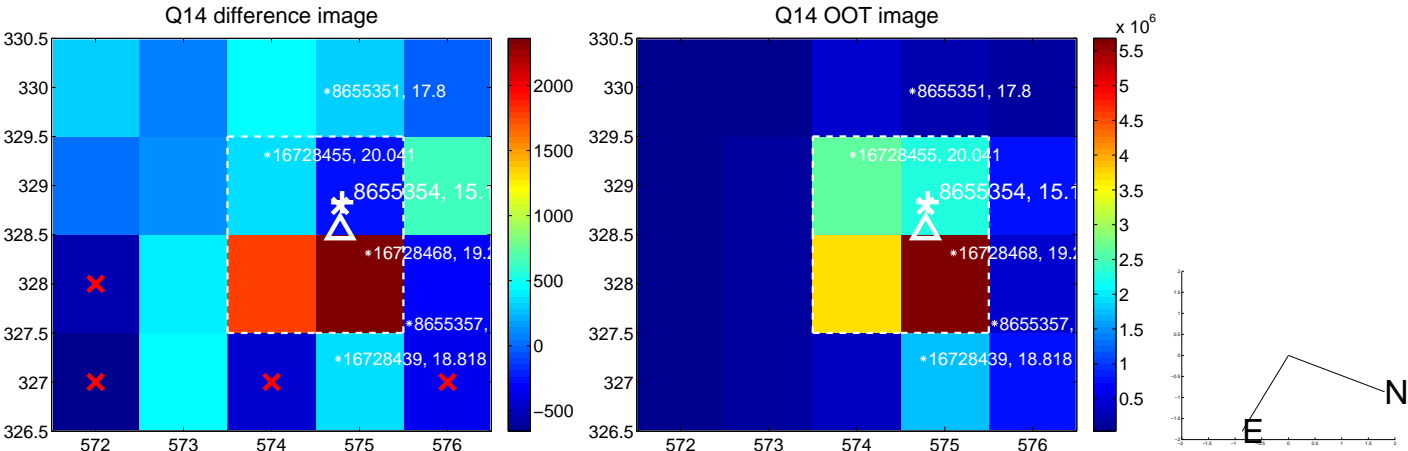
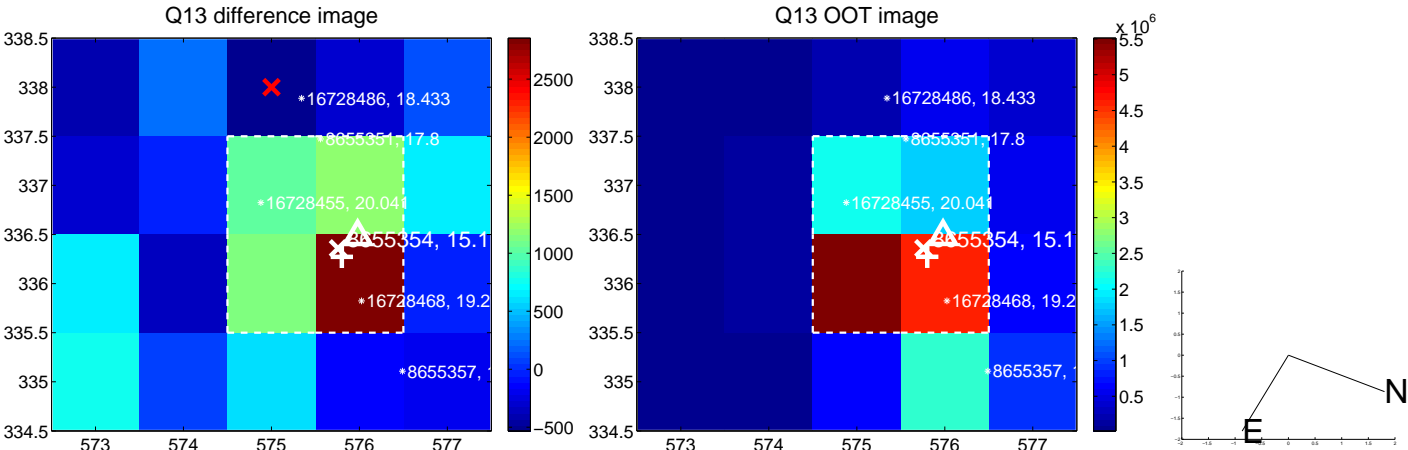
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



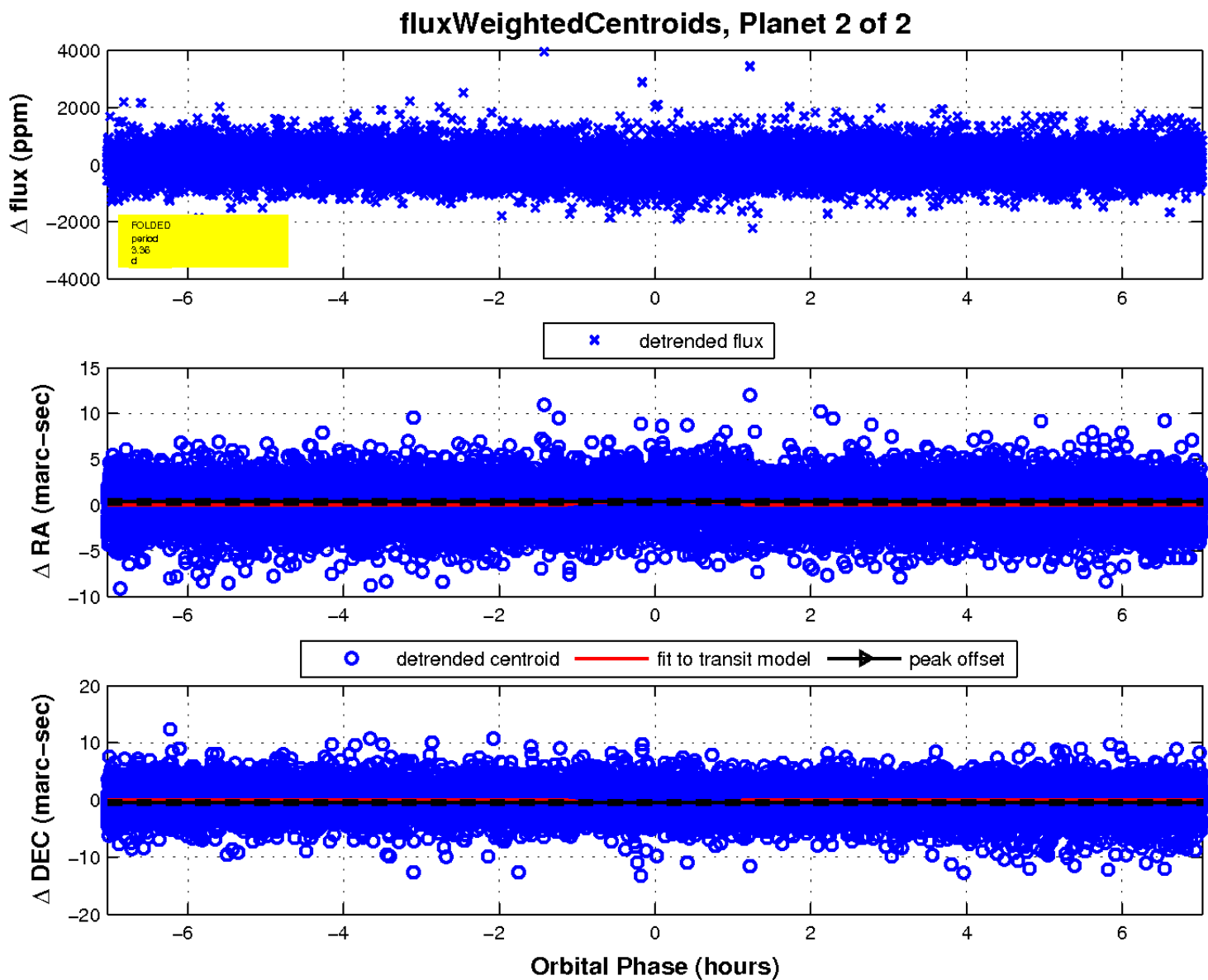
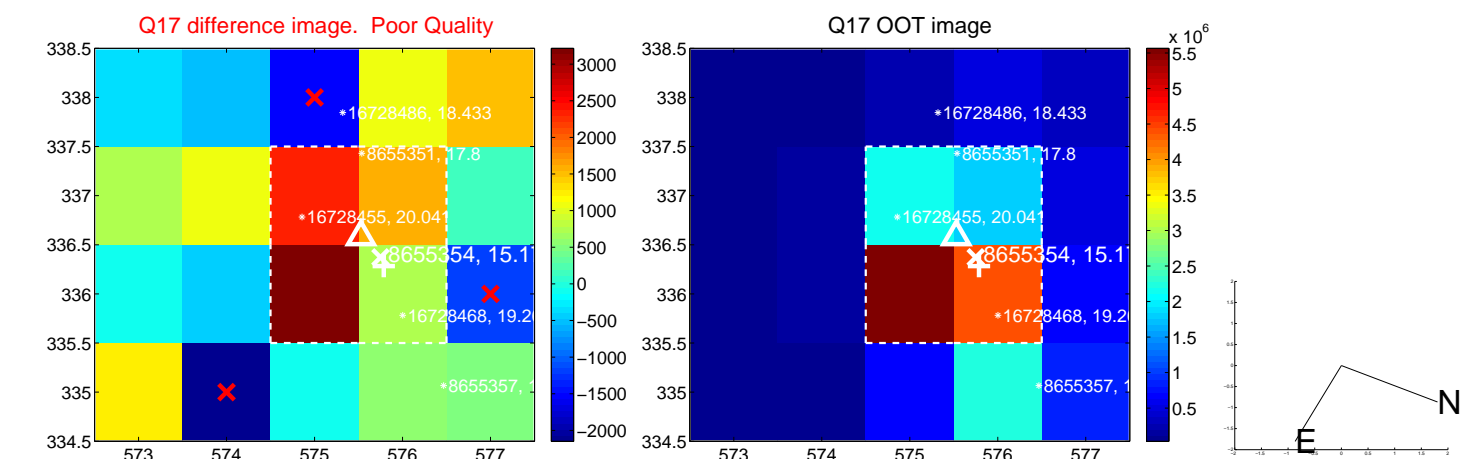
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

