

# KIC 008480263

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008480263-01	OBS	No	5.253696	131.673874	15.5	19.528	9.0	7.4	1.55	6508	0.70	1021.71
008480263-02	OBS	No	316.502324	265.033481	143.9	7.437	7.7	7.7	1.55	6508	2.17	4.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008480263-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008480263-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—MOD_NONUNIQ_ALT—MOD_TER_ALT—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.

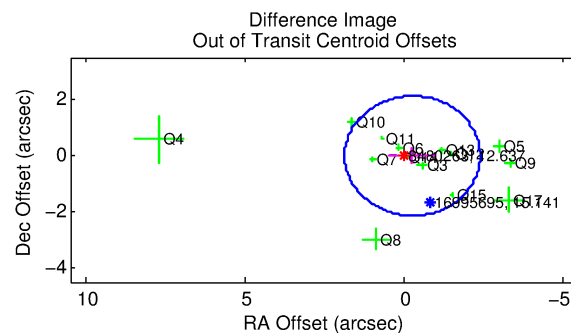
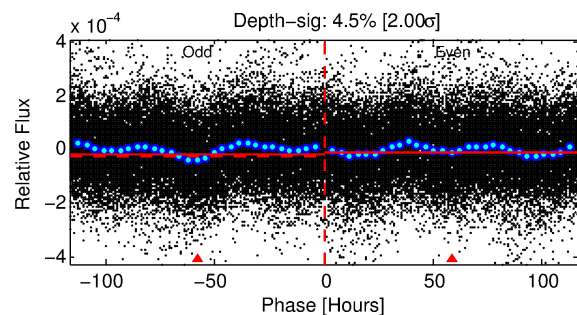
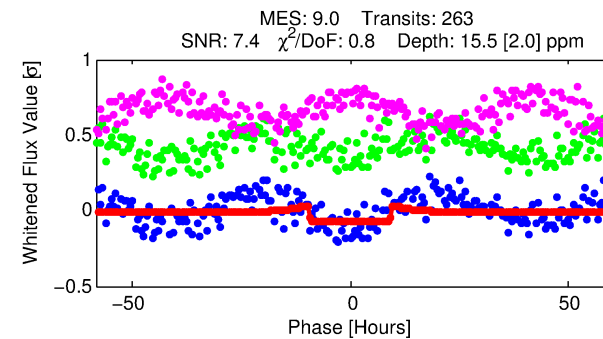
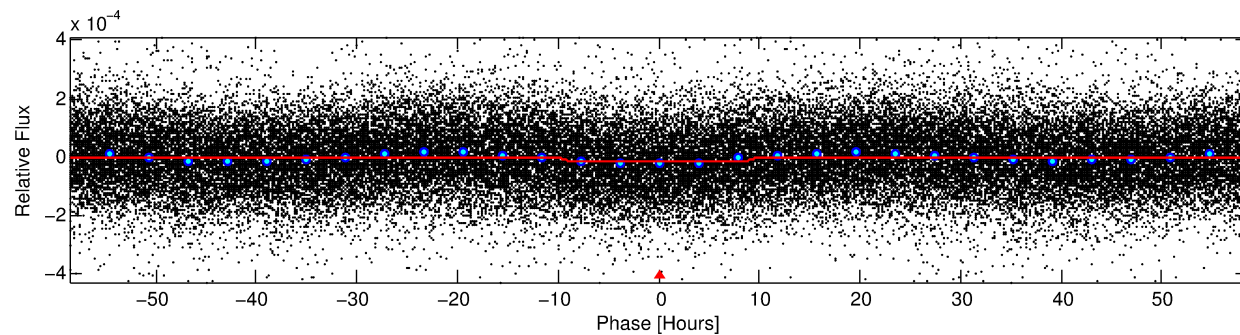
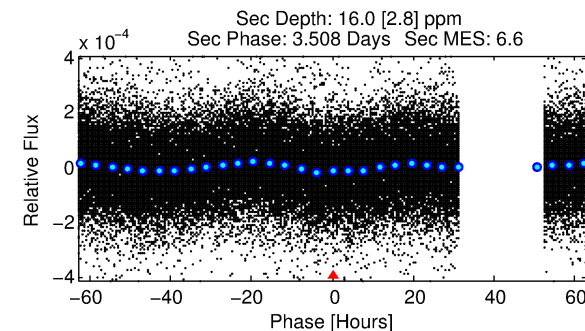
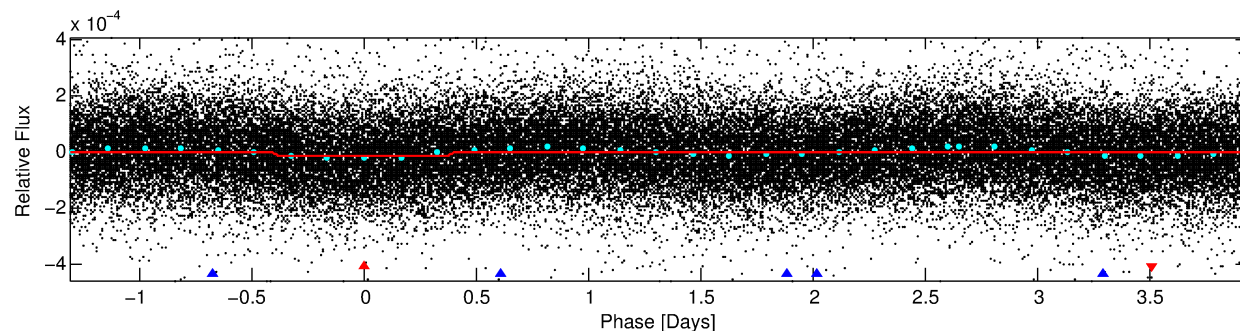
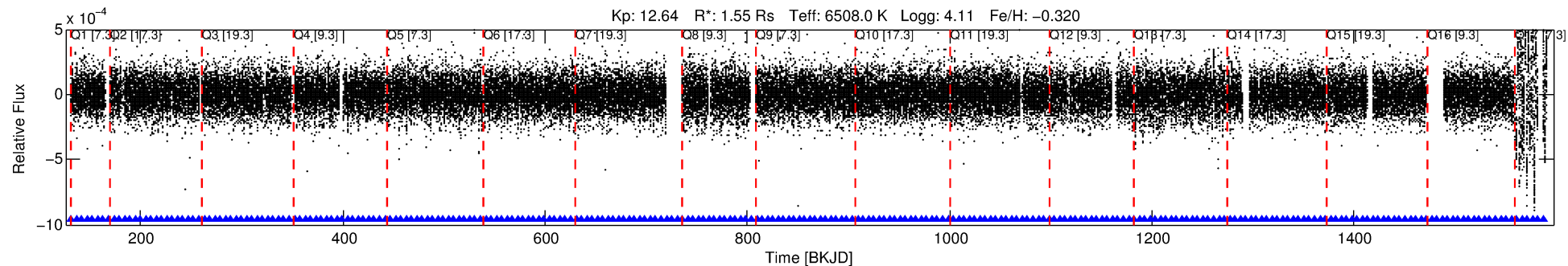
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008480263-01

No Significant Match Found

# DV One-Page Summary

KIC: 8480263 Candidate: 1 of 2 Period: 5.254 d



## DV Fit Results:

Period = 5.25370 [0.00011] d  
Epoch = 131.6739 [0.0151] BKJD  
Rp/R\* = 0.0041 [0.0007]  
a/R\* = 1.37 [0.54]  
b = 0.87 [0.23]  
Seff = 1021.71 [388.32]  
Teq = 1442 [137] K  
Rp = 0.70 [0.21] Re  
a = 0.0616 [0.0140] AU  
Ag = 67.92 [34.44] [1.94σ]  
Teffp = 6399 [623] K [7.77σ]

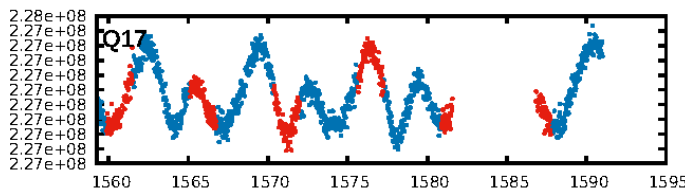
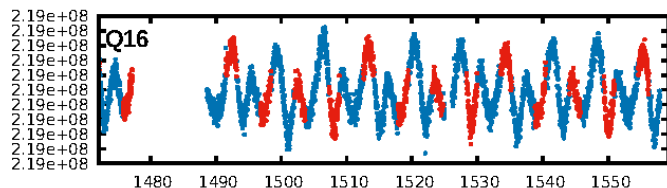
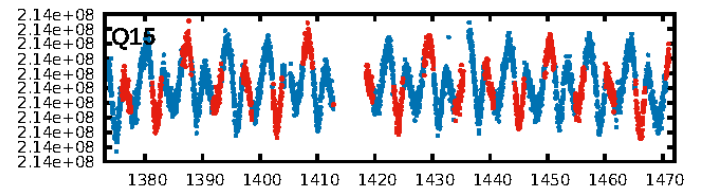
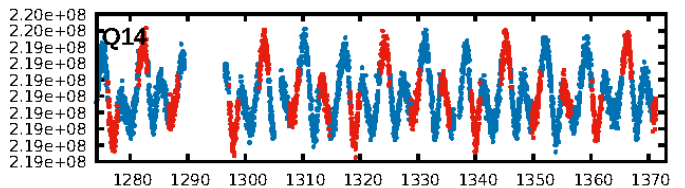
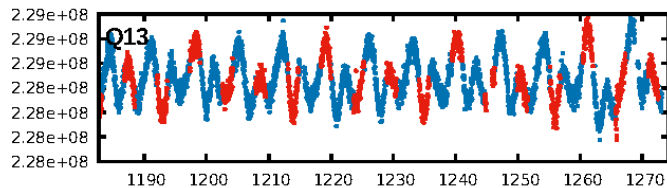
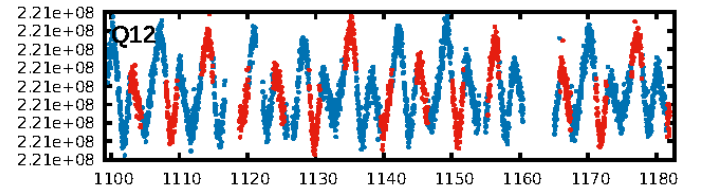
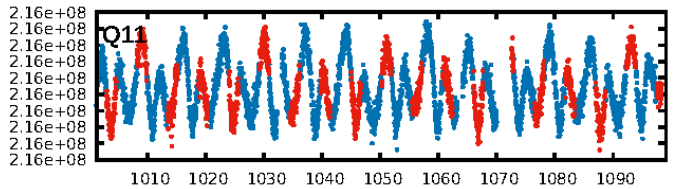
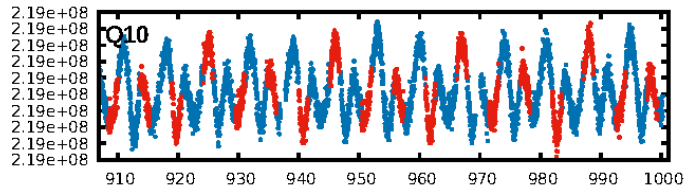
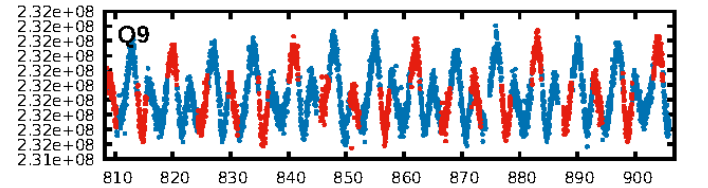
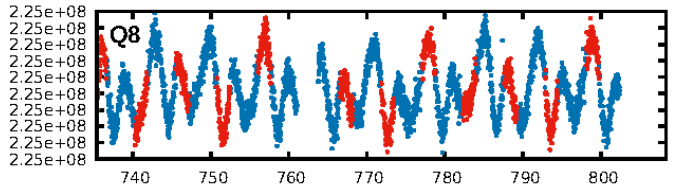
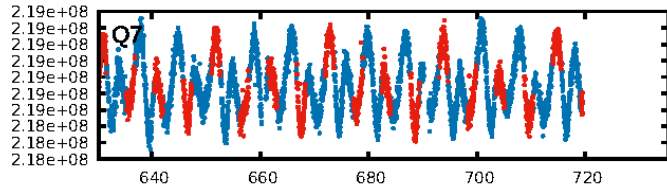
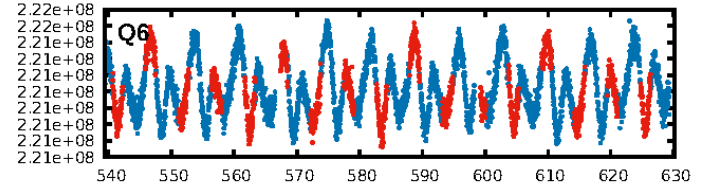
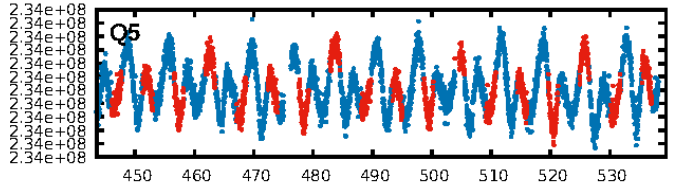
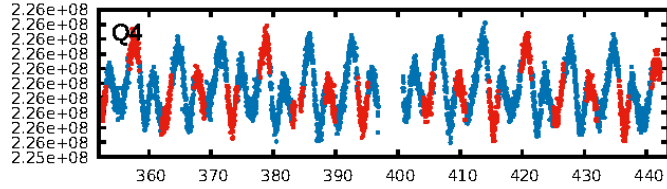
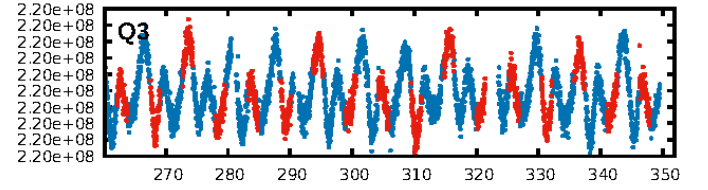
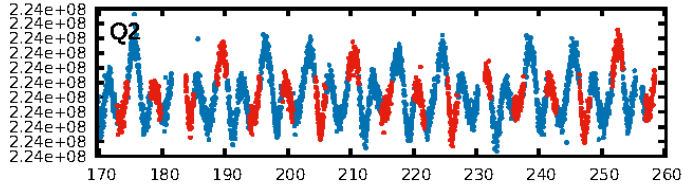
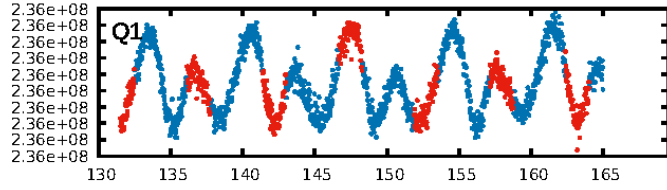
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [357.49σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.39e-14  
RollingBand-fgt: 1.00 [250/250]  
**GhostDiagnostic-chr: 0.3126**  
Centroid-sig: 38.5%  
Centroid-so: 0.823 arcsec [0.85σ]  
OotOffset-rm: 0.259 arcsec [0.36σ]  
KicOffset-rm: 0.175 arcsec [0.33σ]  
OotOffset-st: 3/4/3/4 [14]  
KicOffset-st: 3/4/3/4 [14]  
DiffImageQuality-fgm: 0.57 [8/14]  
DiffImageOverlap-fno: 1.00 [17/17]

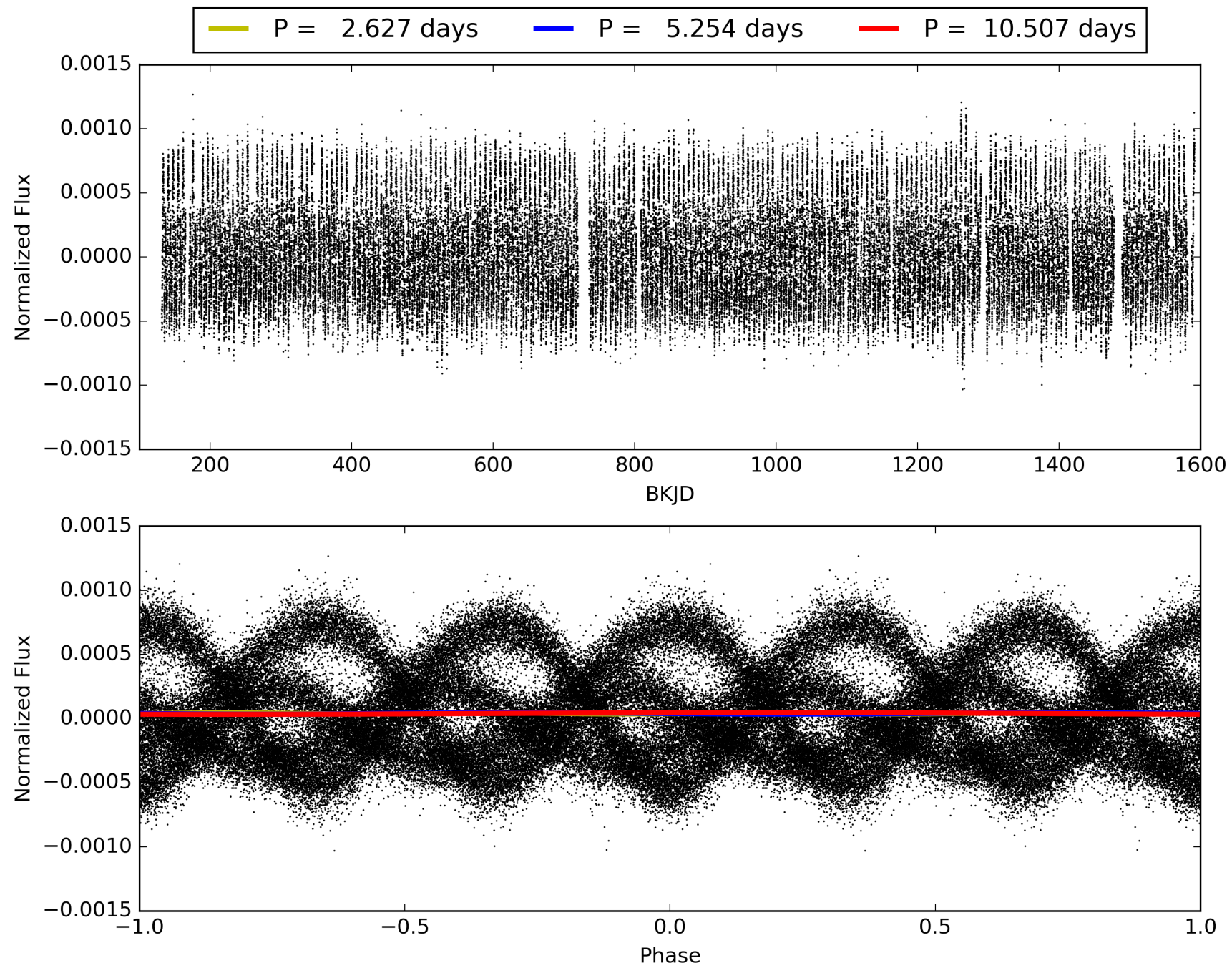
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:43:38 Z

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

## TCE 008480263-01, PDC Light Curves



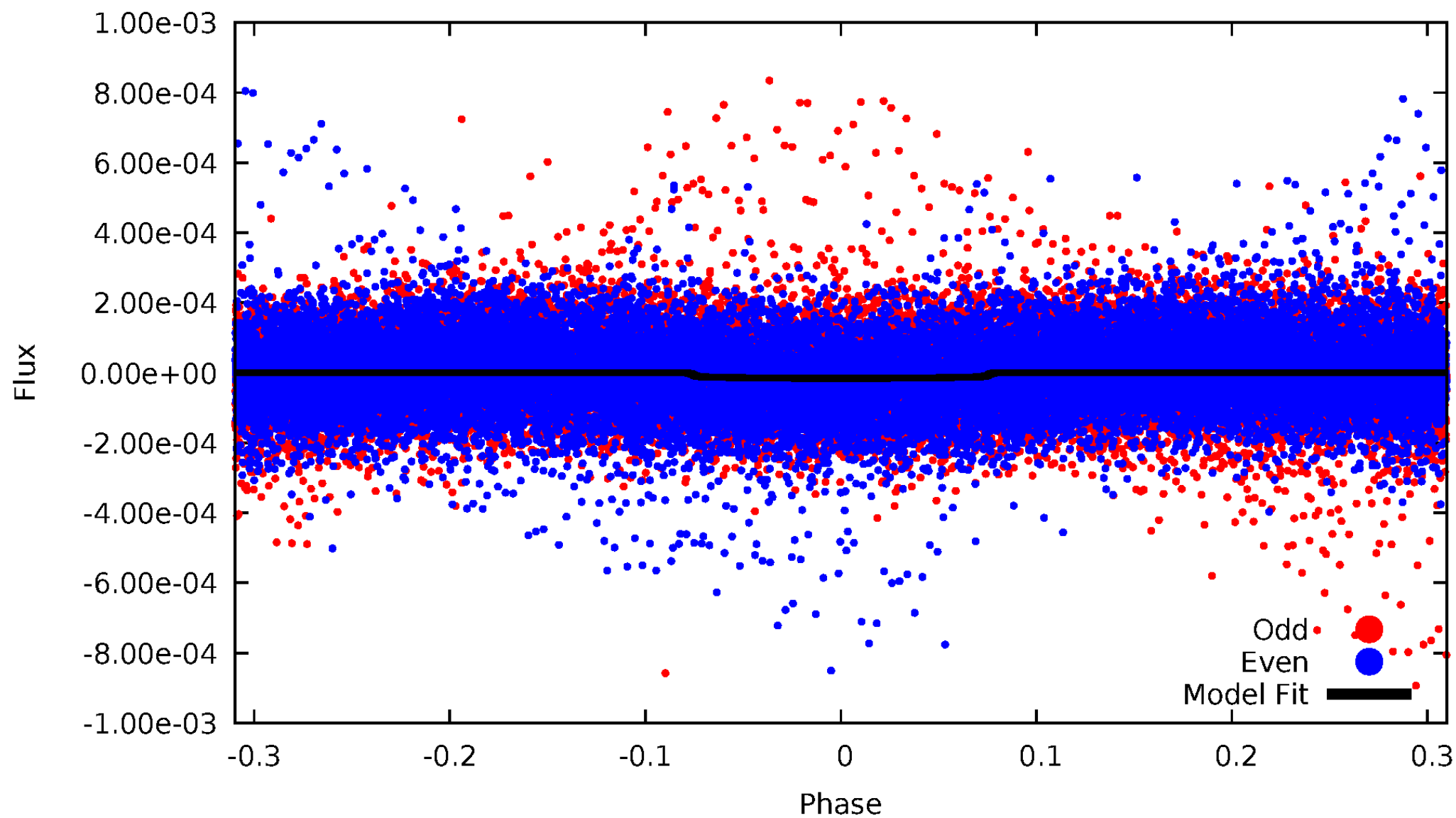
# TCE 008480263-01





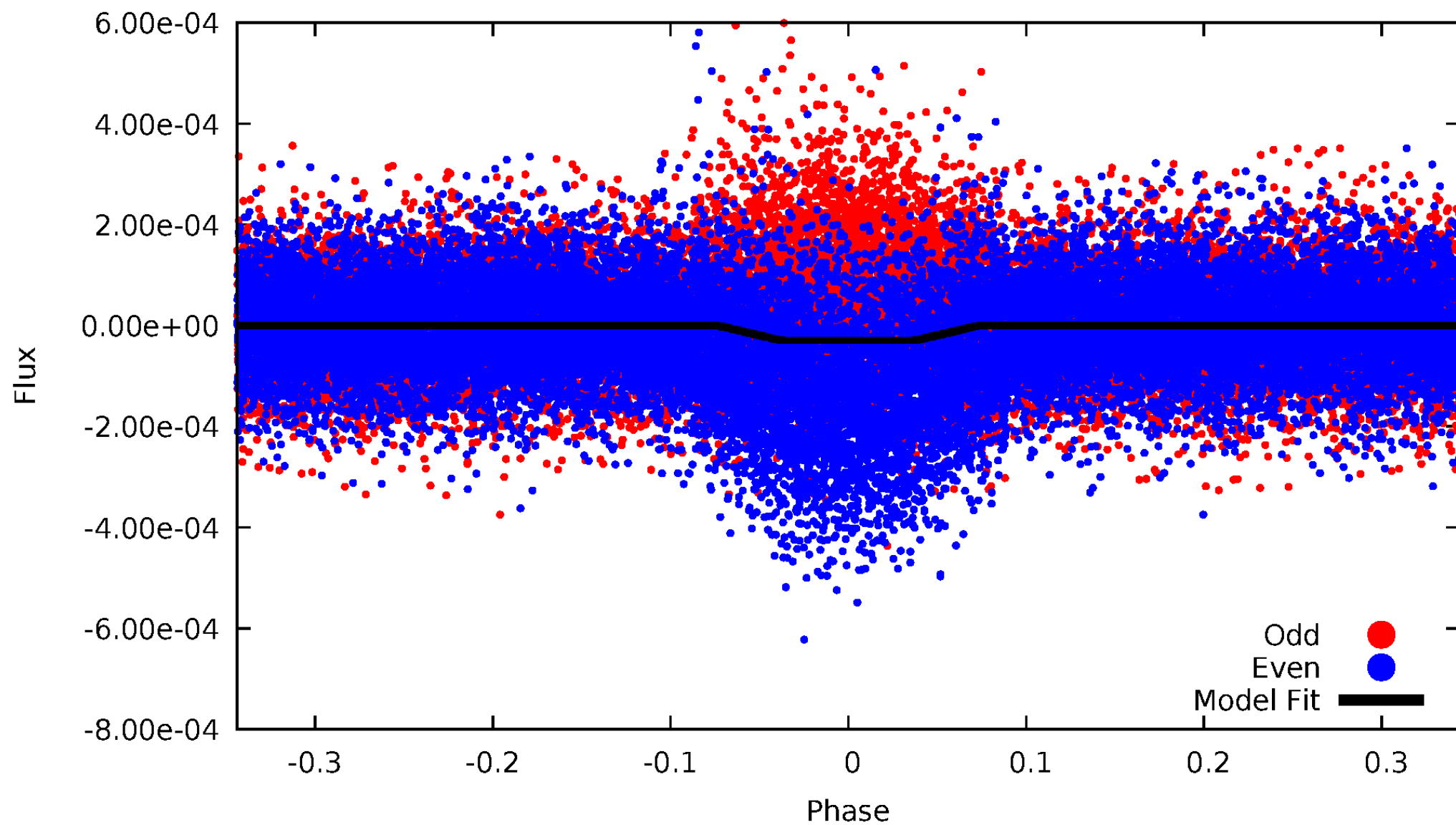
# DV Odd/Even

TCE 008480263-01



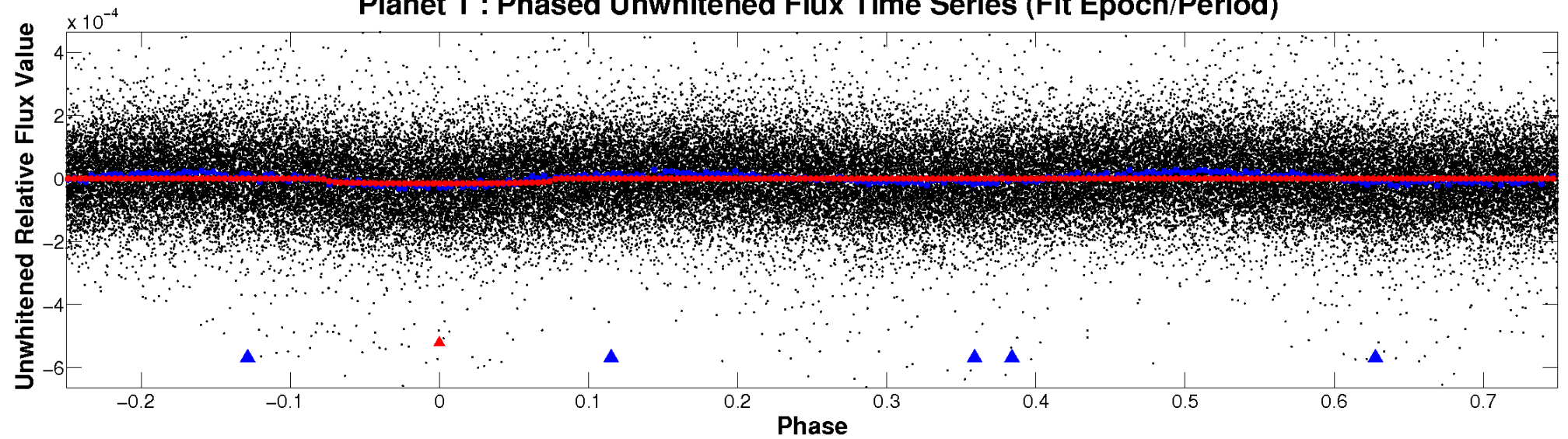
# ALT Odd/Even

TCE 008480263-01

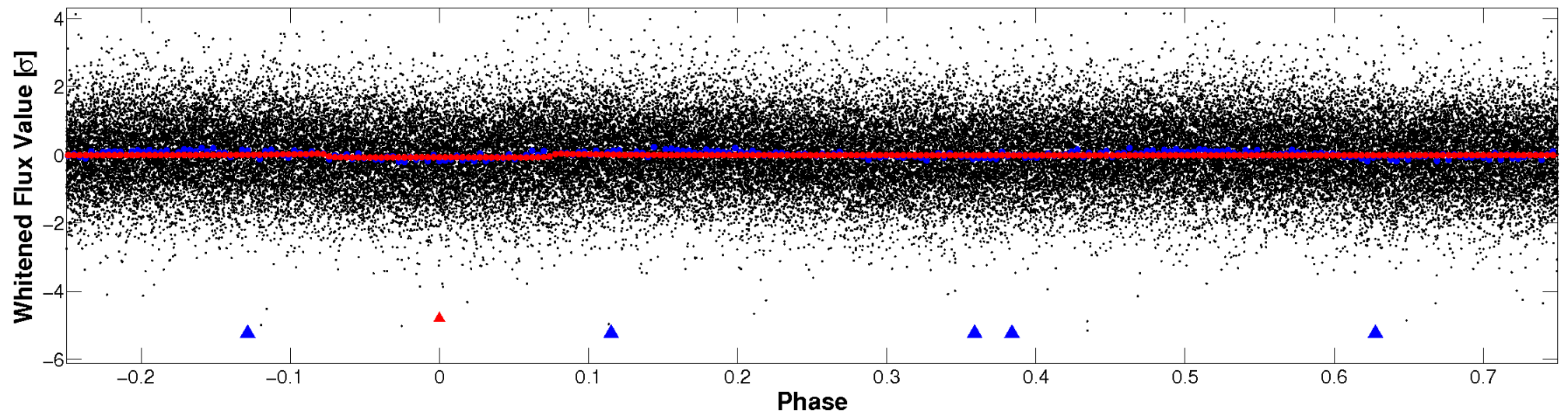


# Non-Whitened Vs. Whitened Light Curve

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

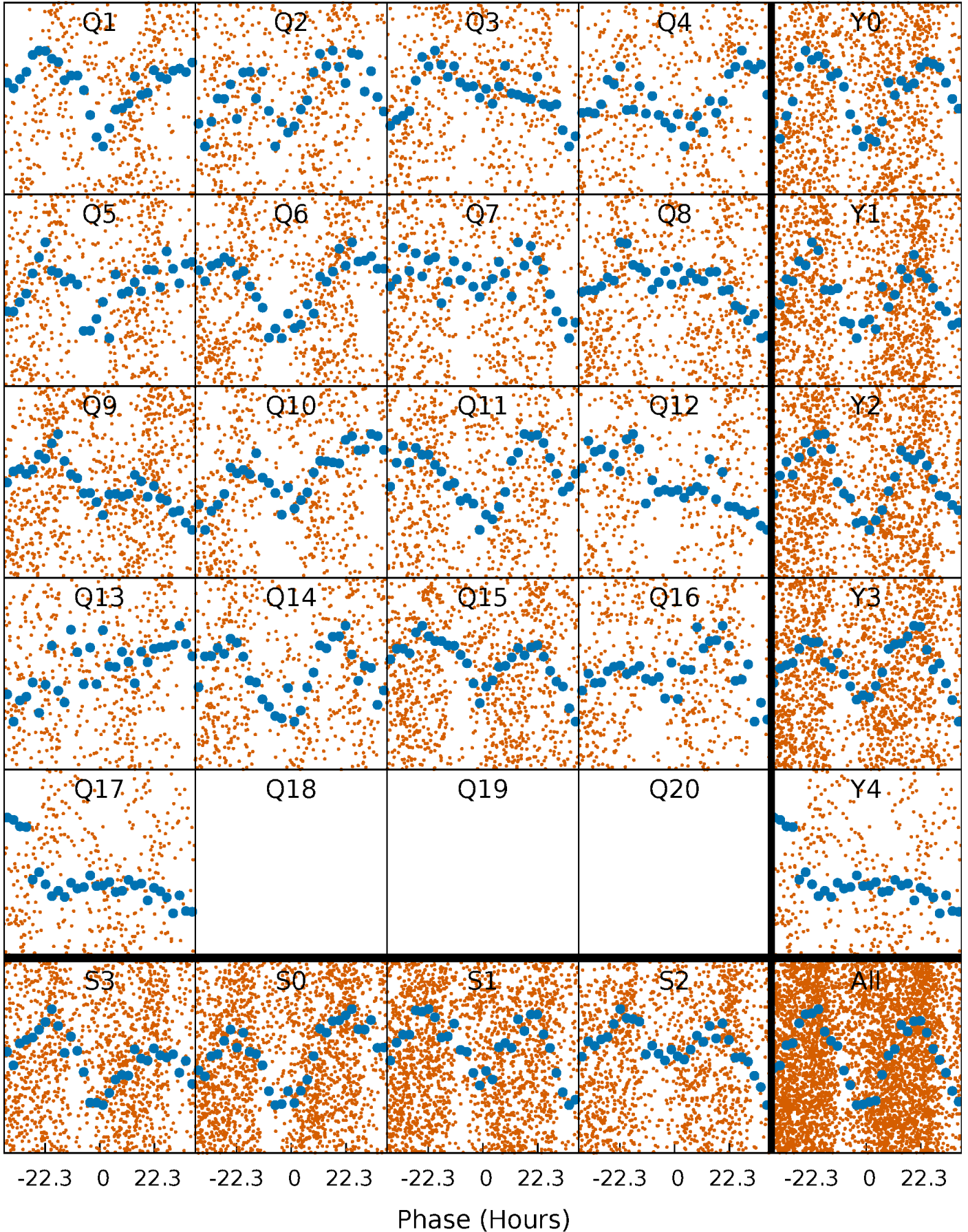


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

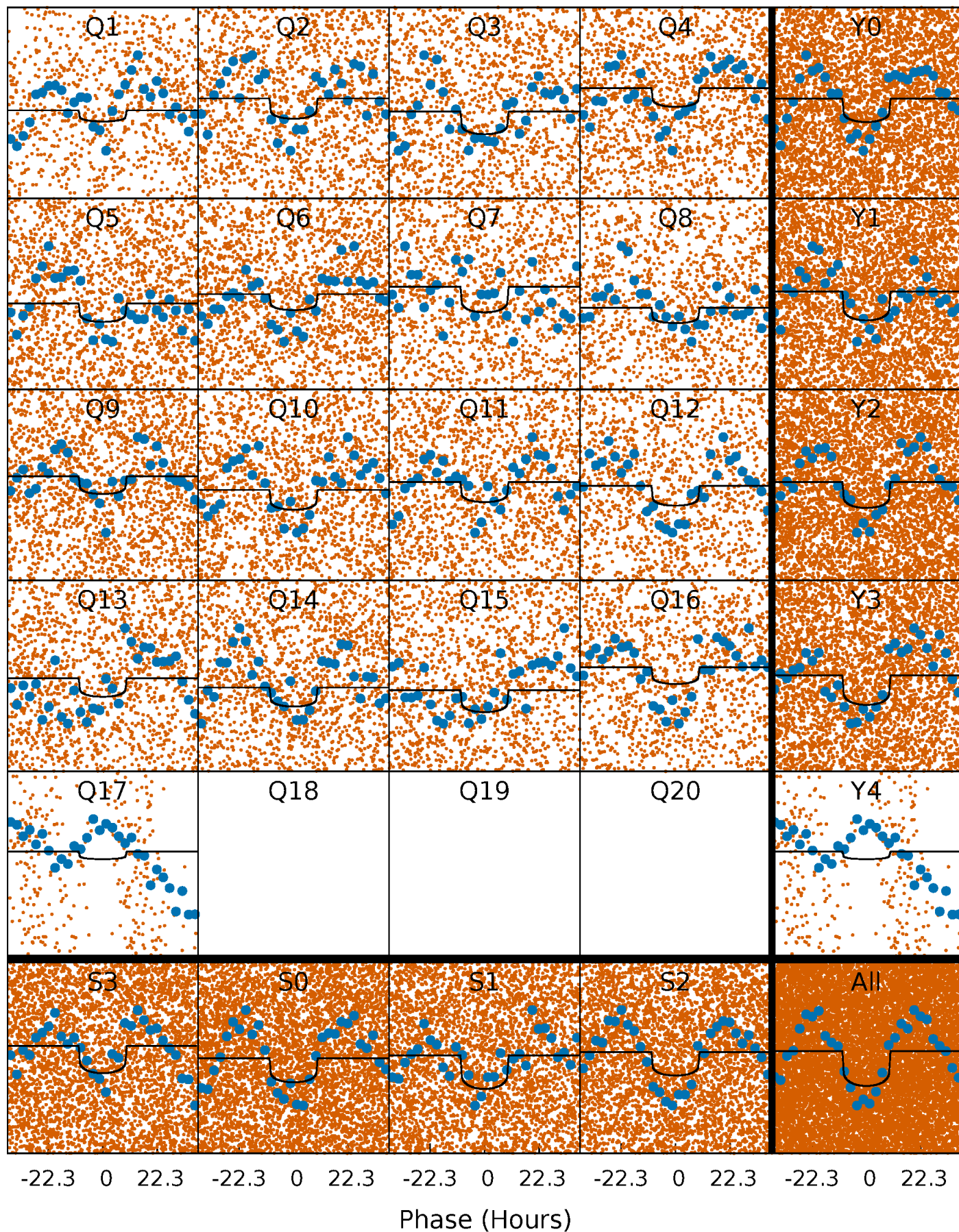
TCE 008480263-01   P= 5.253696 Days    $T_0=131.673874$  (BKJD)





# DV Quarter-Phased Transit Curves

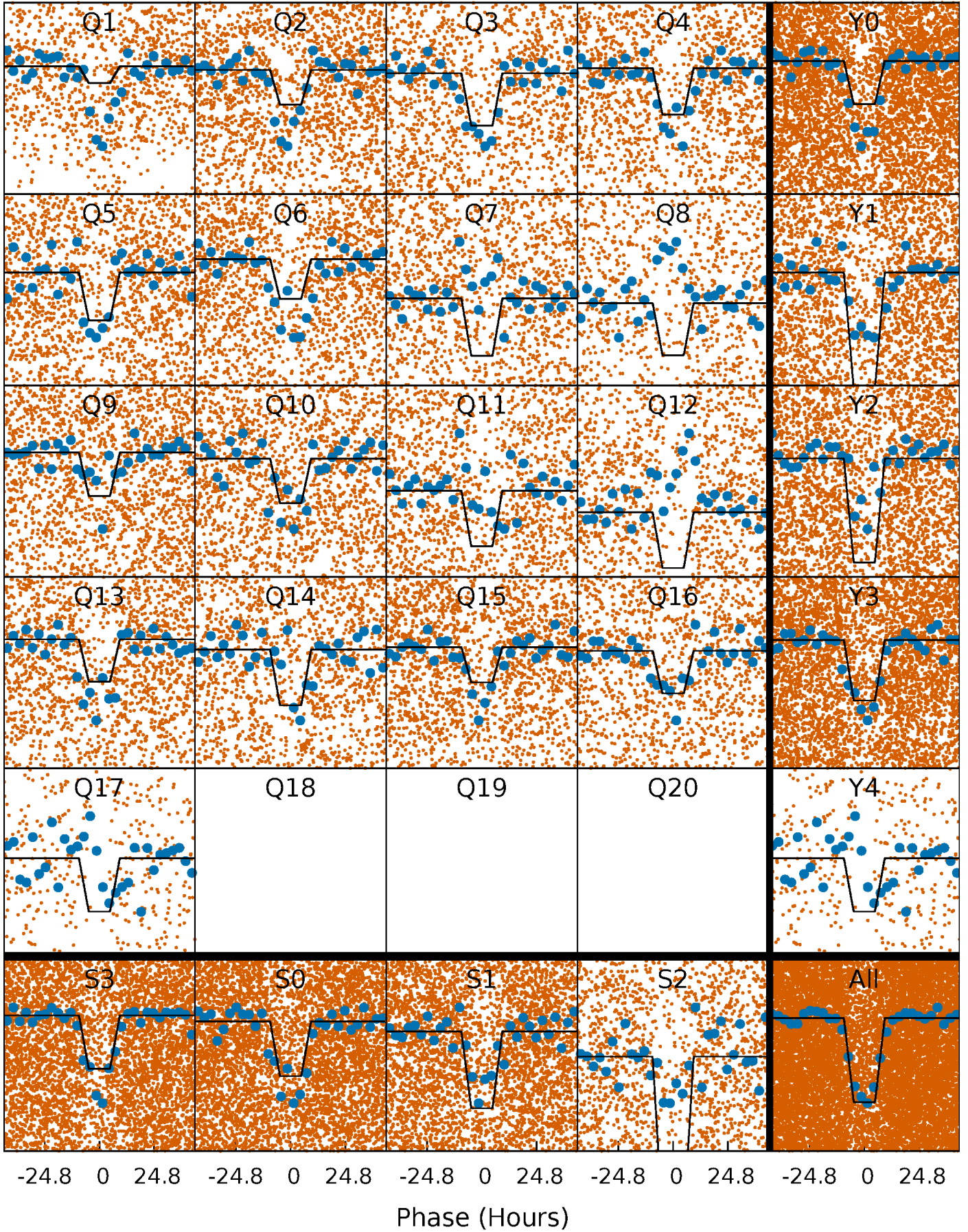
TCE 008480263-01 P= 5.253696 Days  $T_0=131.673874$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

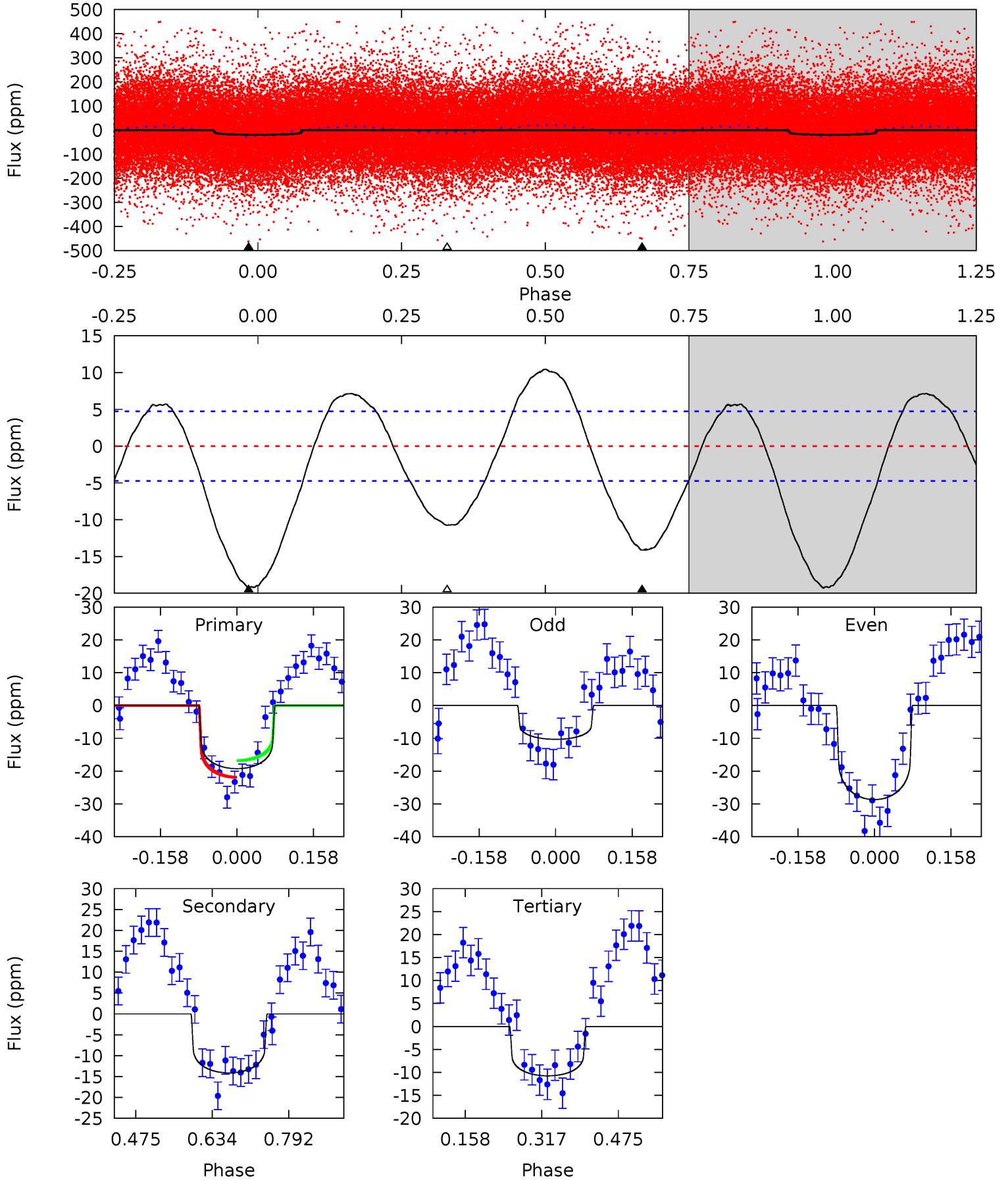
TCE 008480263-01 P= 5.253788 Days  $T_0=131.656658$  (BKJD)



# DV Model-Shift Uniqueness Test

008480263-01, P = 5.253696 Days, E = 126.420178 Days

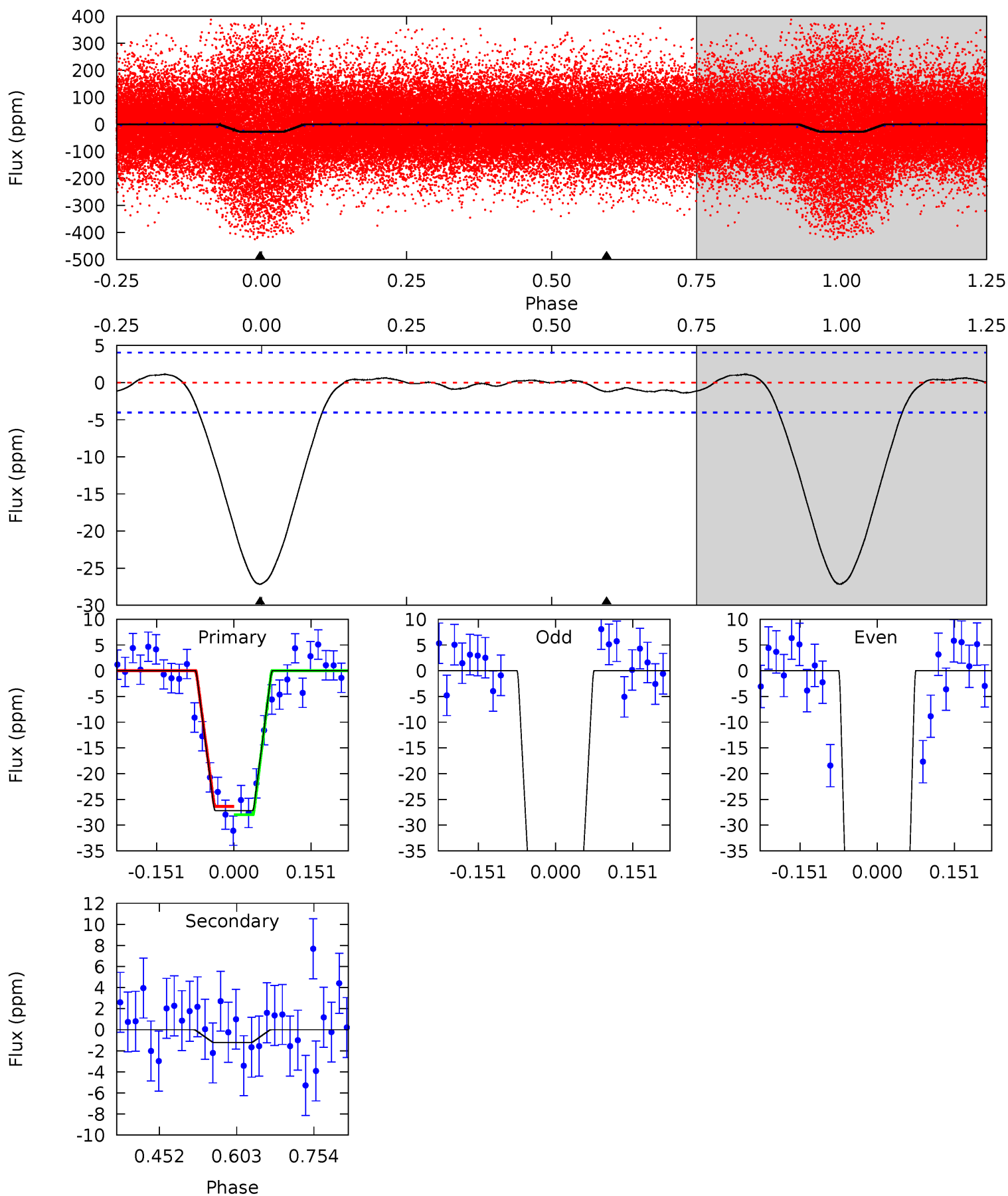
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	13.3	10.2	0	4.47	1.41	6.73	8.03	18.2	3.18	13.3	8.68	0.71	0.35	2.40



# Alt Model-Shift Uniqueness Test

008480263-01, P = 5.253788 Days, E = 126.402870 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
30.2	1.34	0	0	4.48	1.44	0.63	30.2	30.2	1.34	1.34	33.9	0.95	0.04	0.88





### Stellar Parameters For KIC 008480263

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6508^{+181}_{-227}$	$4.108^{+0.204}_{-0.119}$	$-0.320^{+0.250}_{-0.300}$	$1.552^{+0.313}_{-0.382}$	$1.125^{+0.193}_{-0.145}$	$0.424^{+0.512}_{-0.161}$
	+3%/-3%	+5%/-3%	+78%/-94%	+20%/-25%	+17%/-13%	+121%/-38%
Source	PHO1	FLK73	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 008480263-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-14 \pm 1$	$0.68^{+0.16}_{-0.13}$	$1985^{+124}_{-131}$	$6156^{+667}_{-507}$	$64^{+34}_{-22}$
Alt.	$-1 \pm 1$	$0.90^{+0.16}_{-0.14}$	$1992^{+126}_{-129}$	$3390^{+398}_{-700}$	$3.214^{+2.824}_{-2.393}$

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

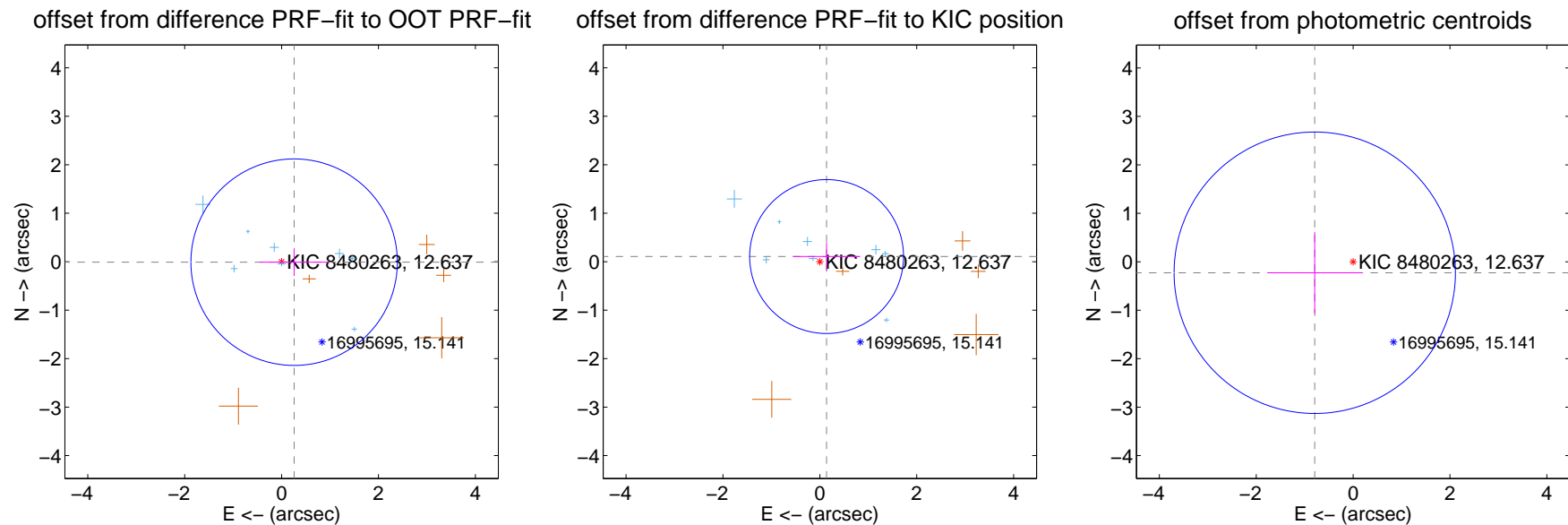
## DV Centroid Data

Supplemental centroid analysis for 008480263-01. Kepler magnitude: 12.64. Transit SNR 7.41

There are 8 quarters with good PRF difference image offsets

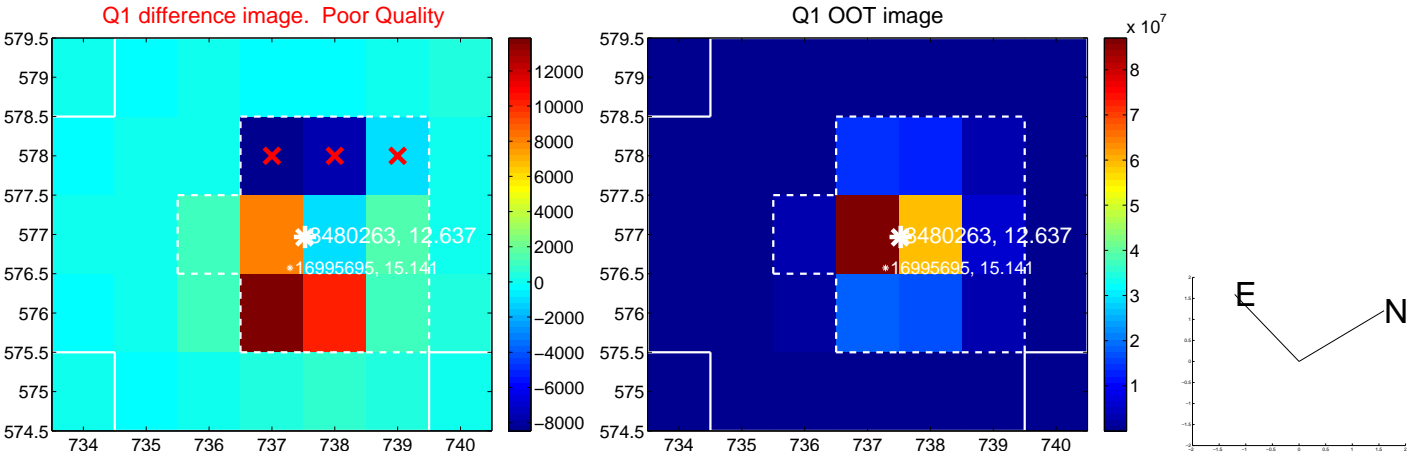
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.259 \pm 0.710$	0.36	$-0.259 \pm 0.709$	$-0.010 \pm 0.285$
PRF-fit source offset from KIC position	$0.175 \pm 0.529$	0.33	$-0.139 \pm 0.694$	$0.106 \pm 0.290$
photometric centroid source offset	$0.82 \pm 0.97$	0.85	$0.79 \pm 0.98$	$-0.23 \pm 0.84$

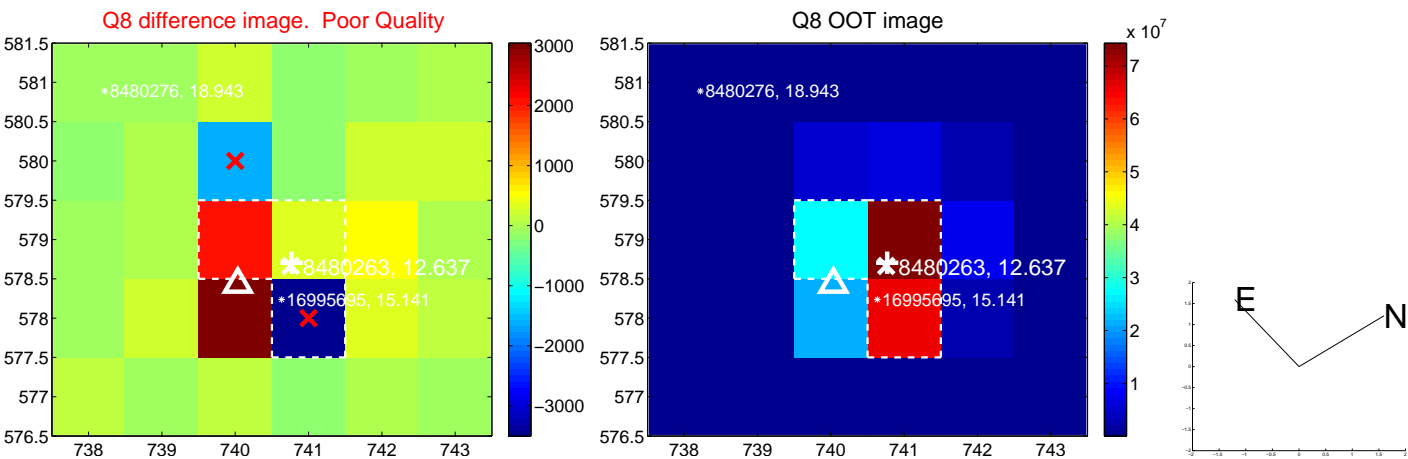
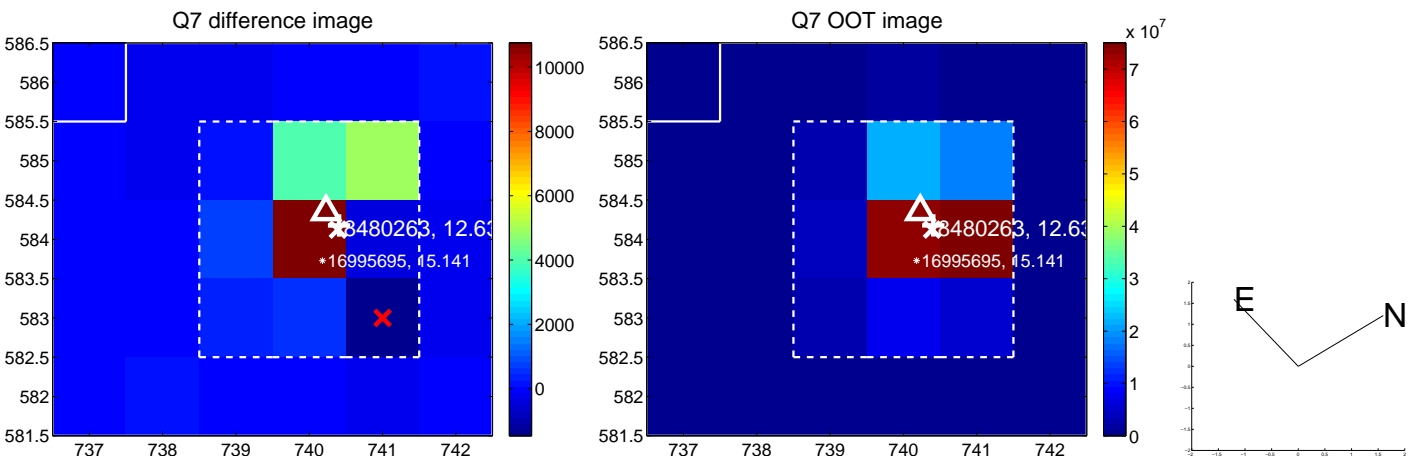
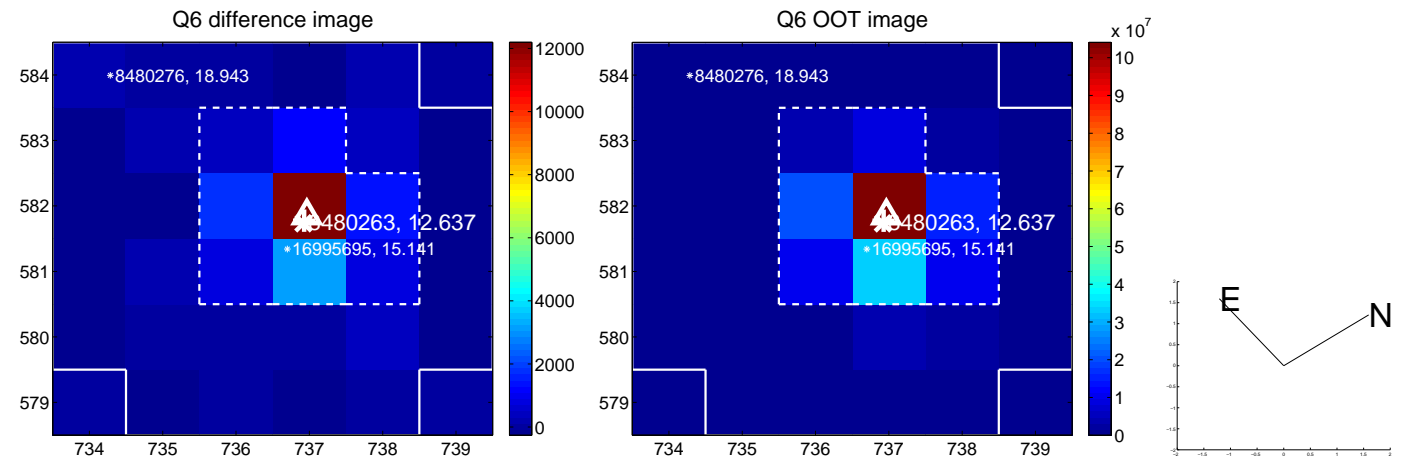
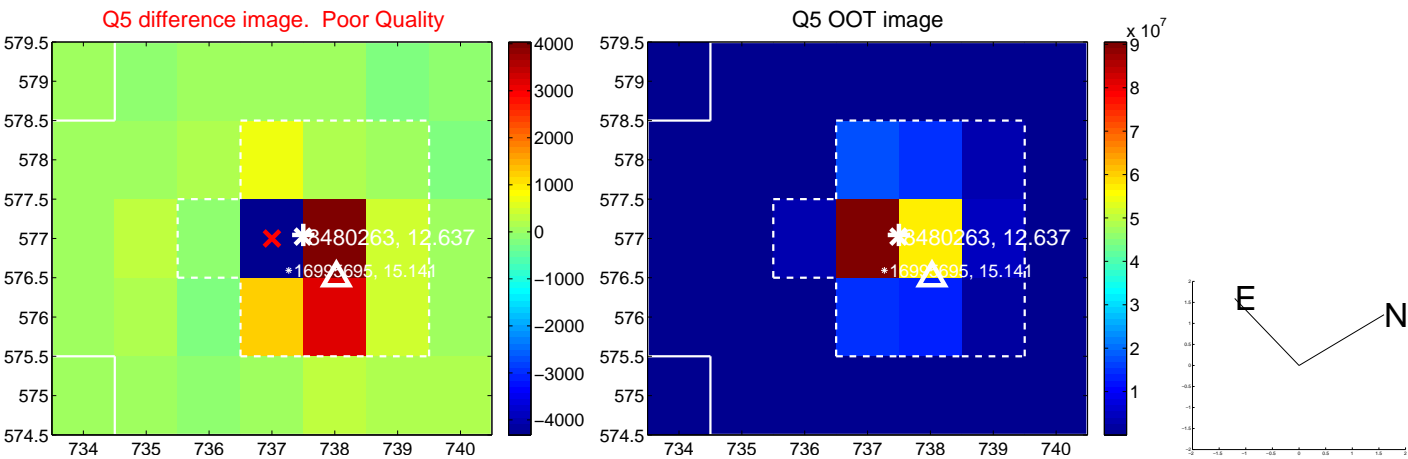


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

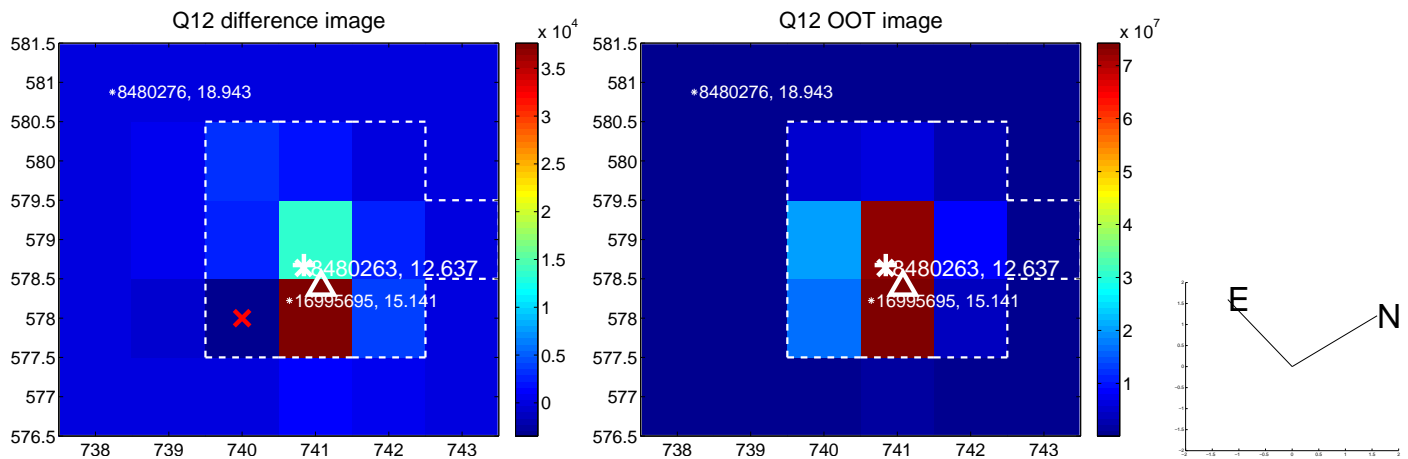
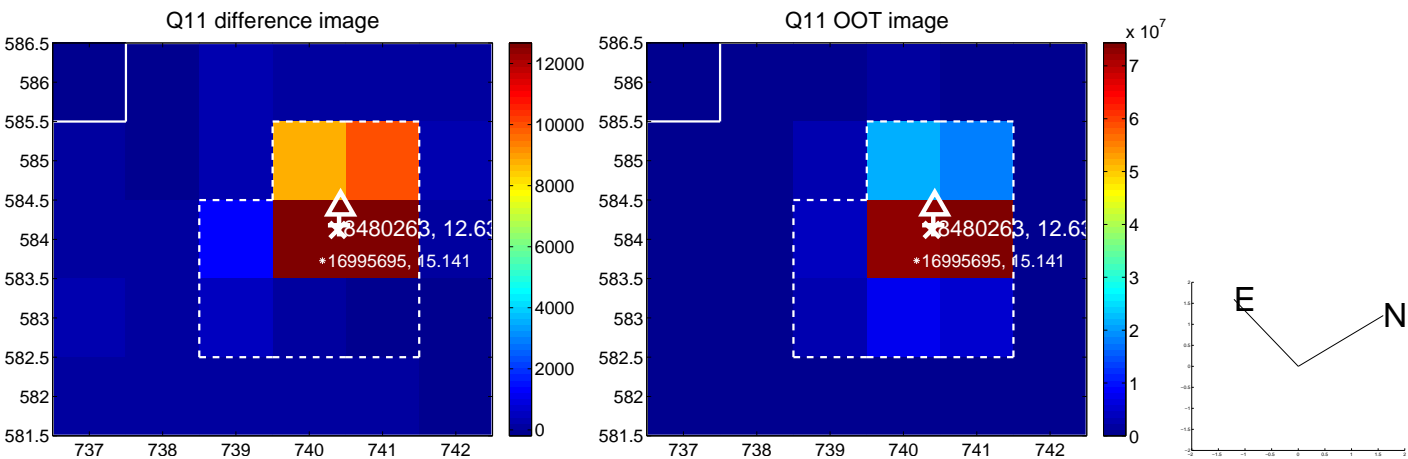
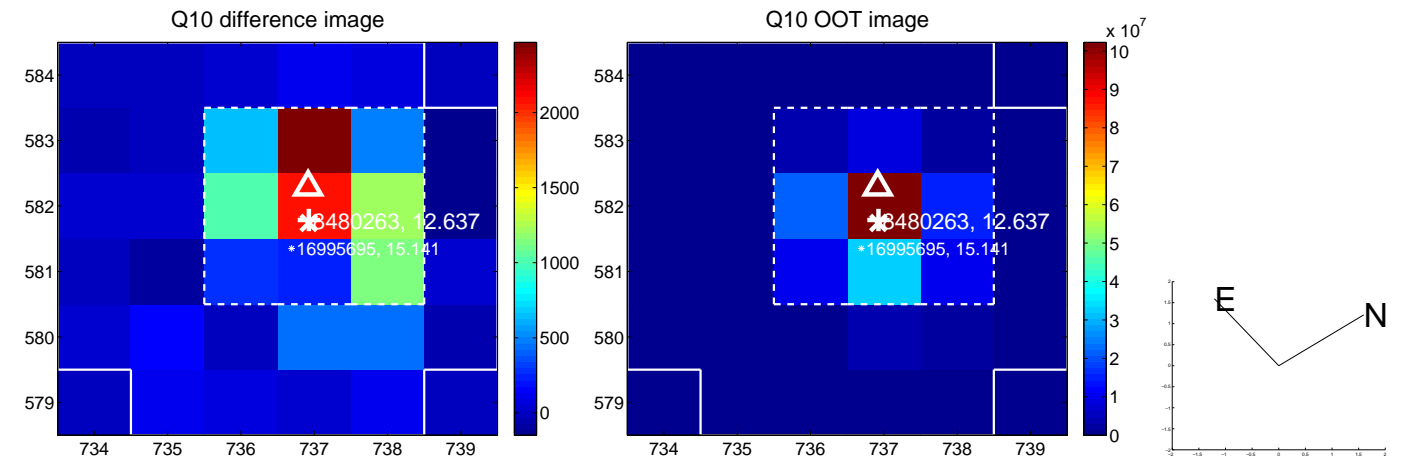
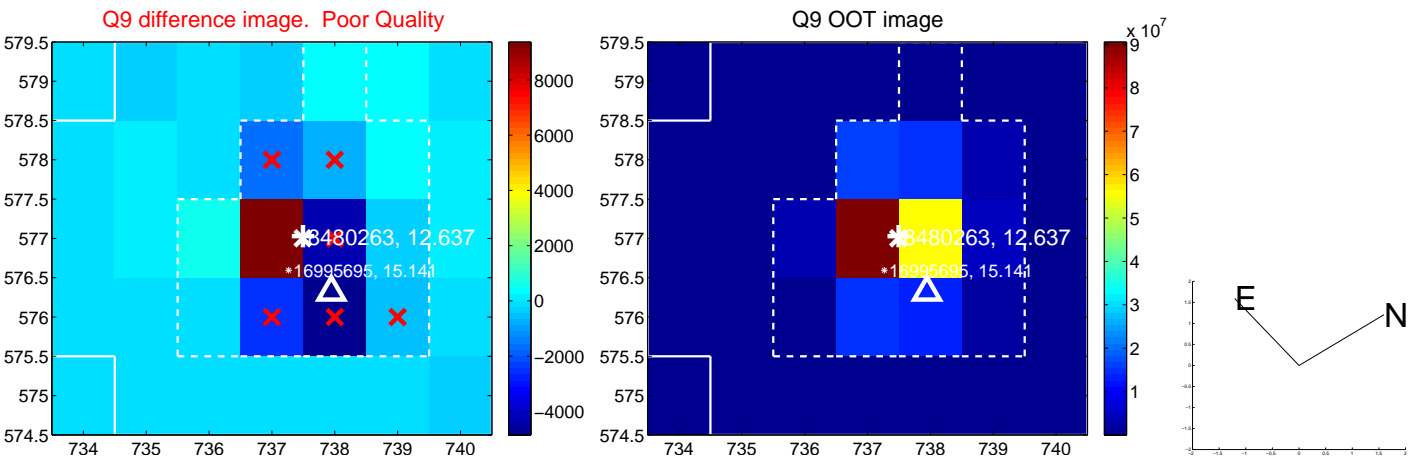


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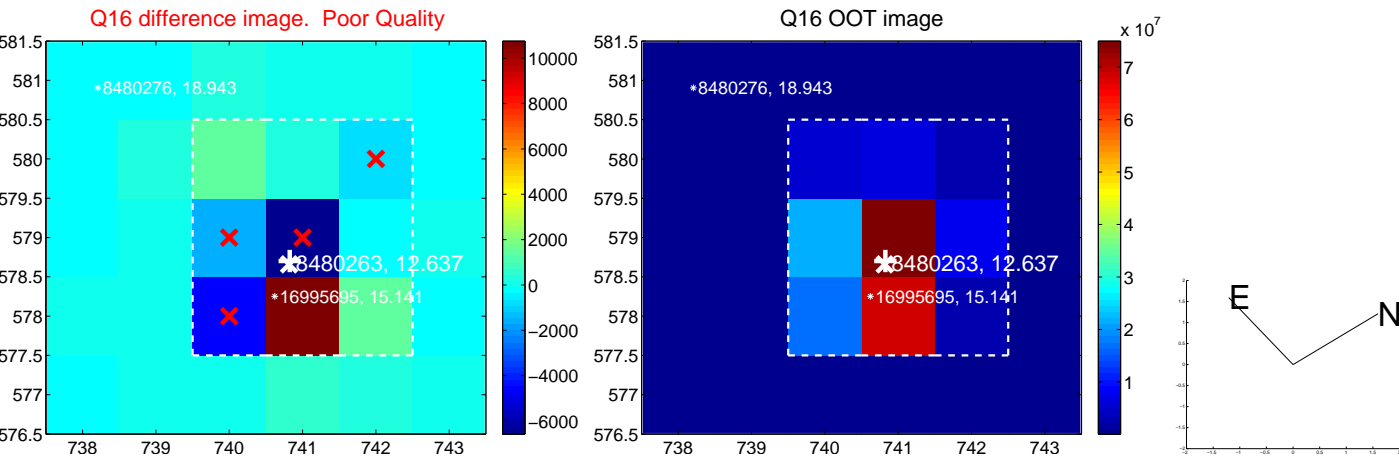
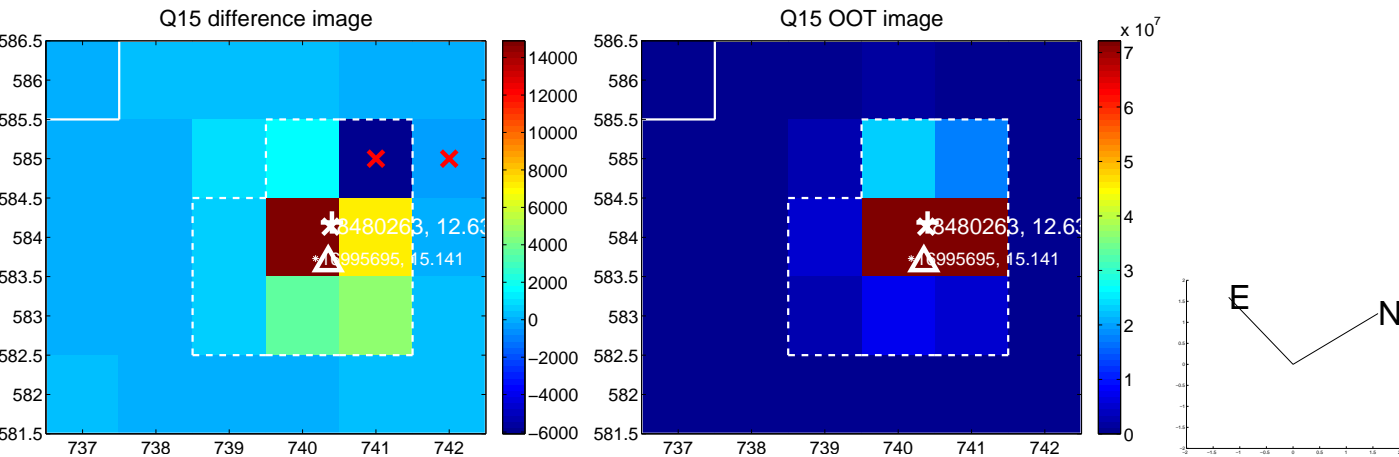
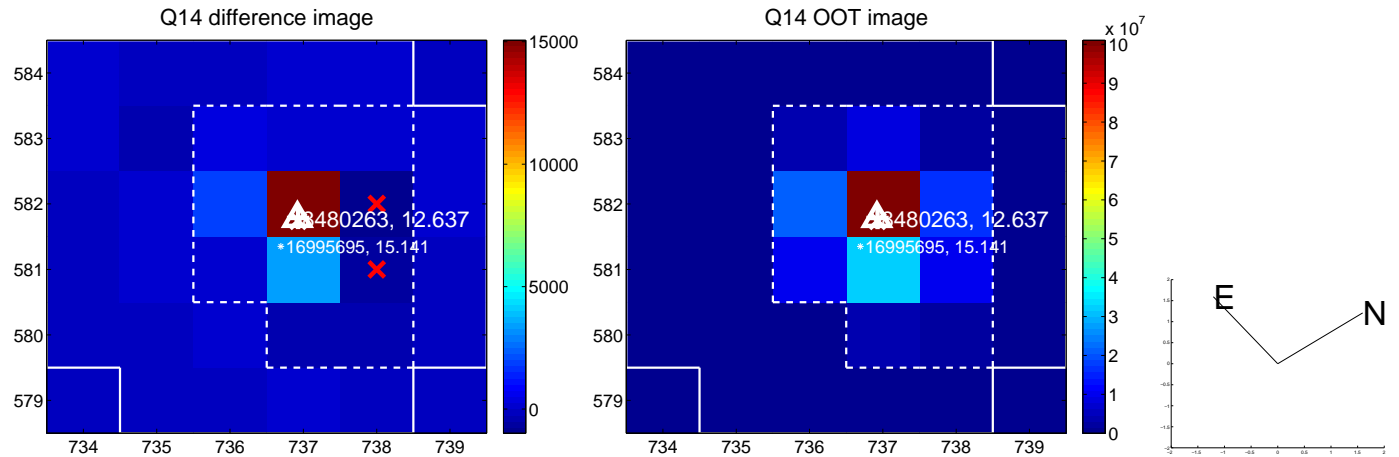
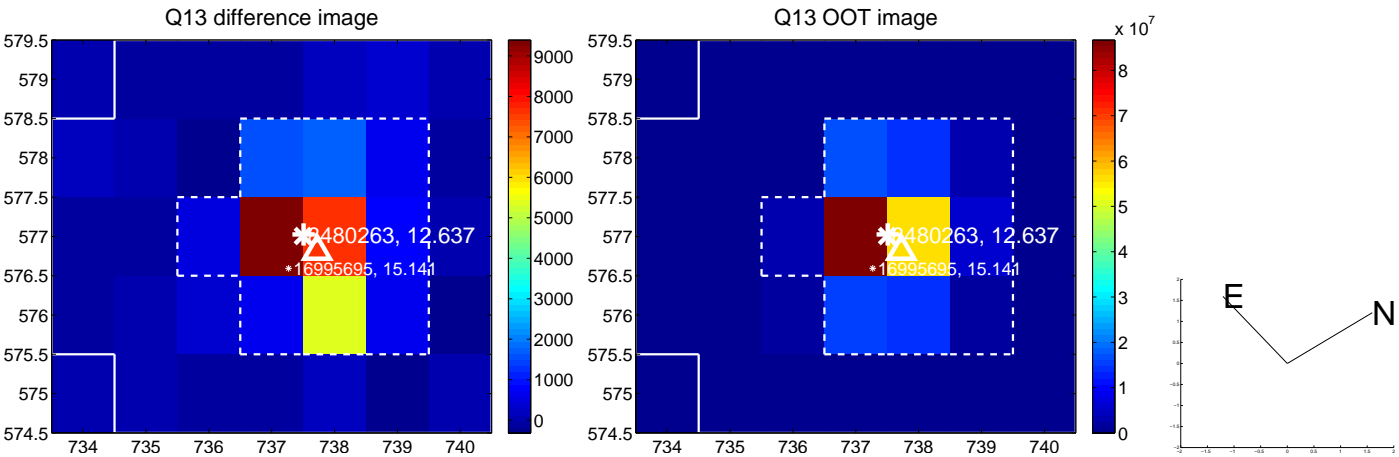




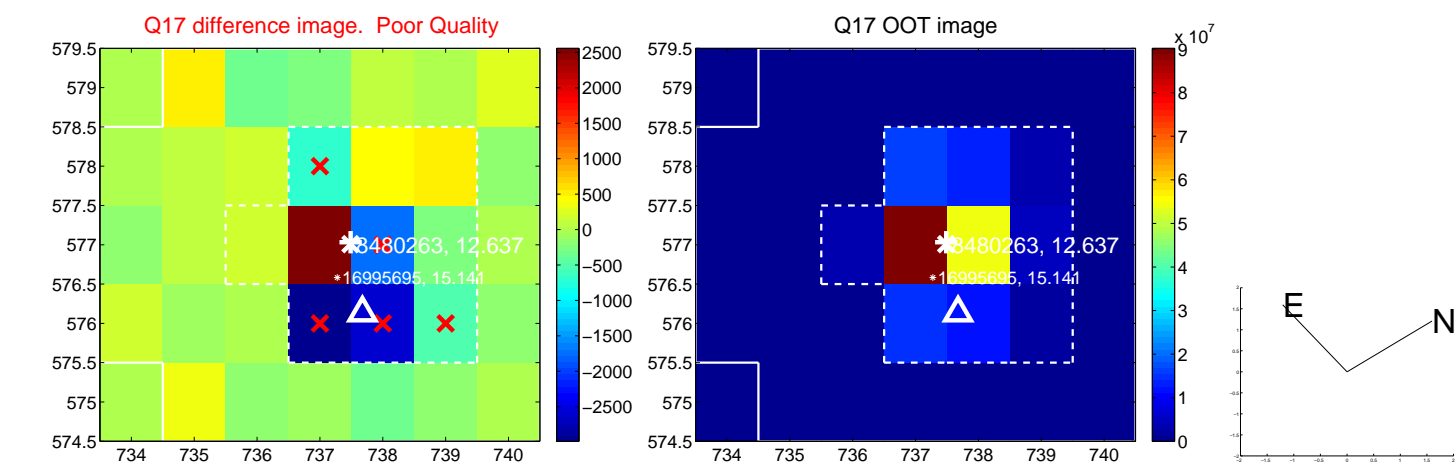
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



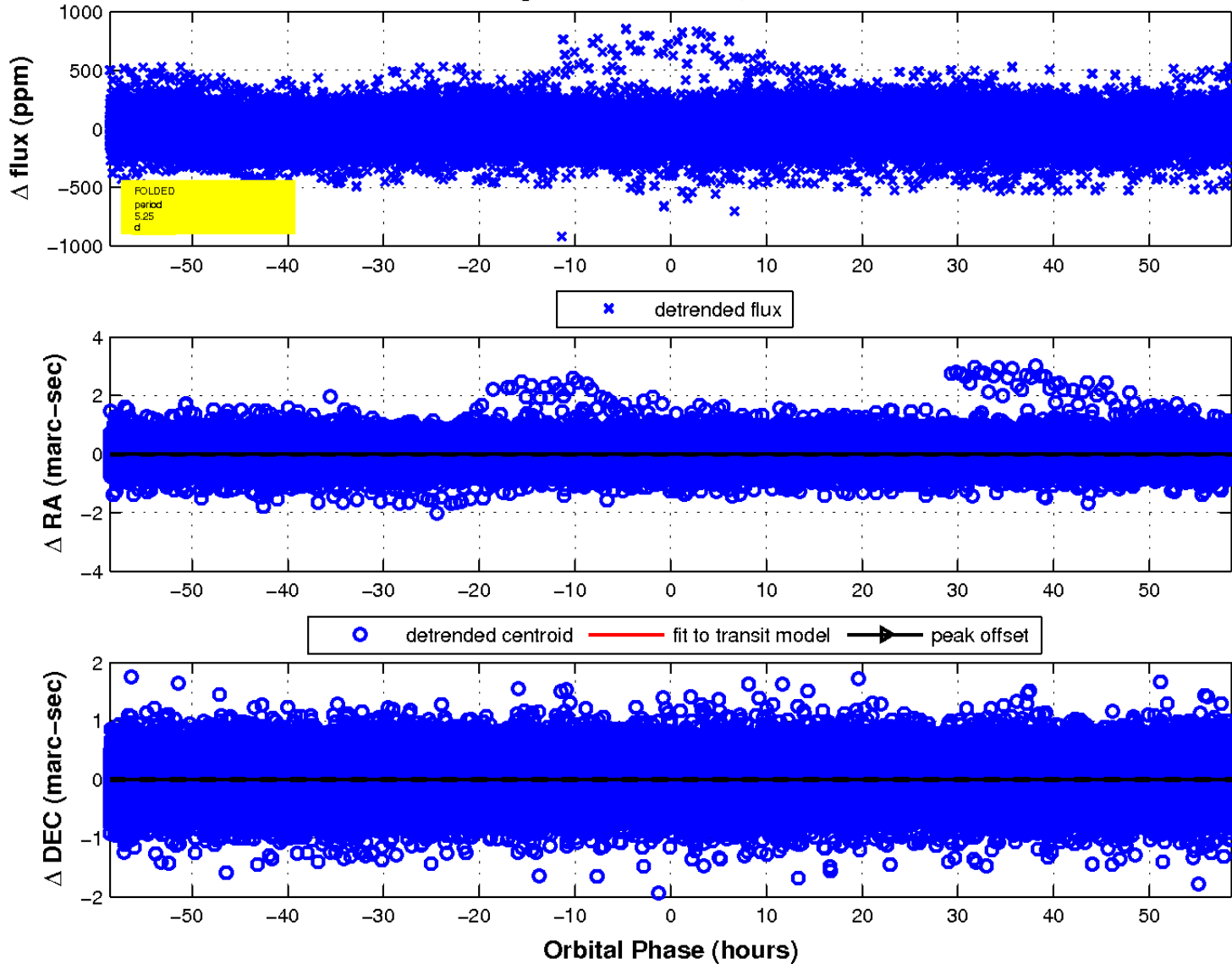
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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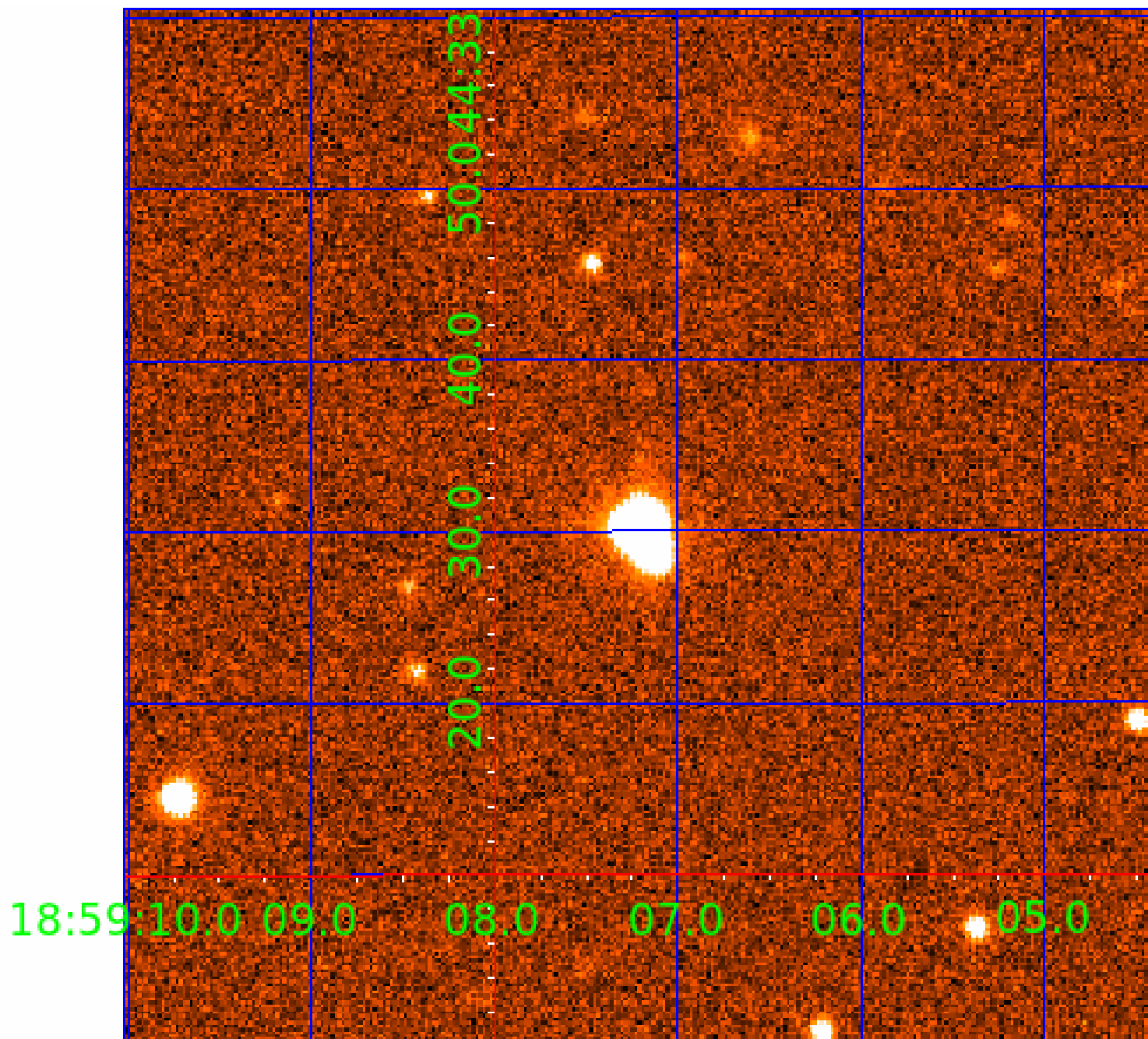


### fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 008480263

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008480263-01	OBS	No	5.253696	131.673874	15.5	19.528	9.0	7.4	1.55	6508	0.70	1021.71
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008480263-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008480263-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—MOD_NONUNIQ_ALT—MOD_TER_ALT—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.

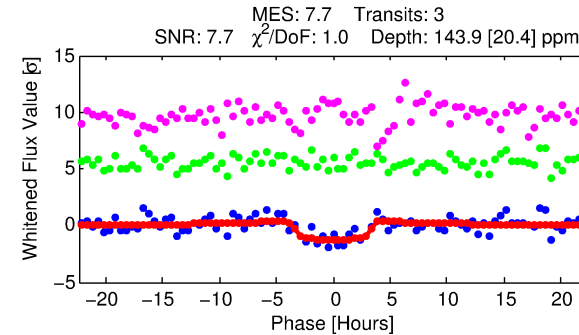
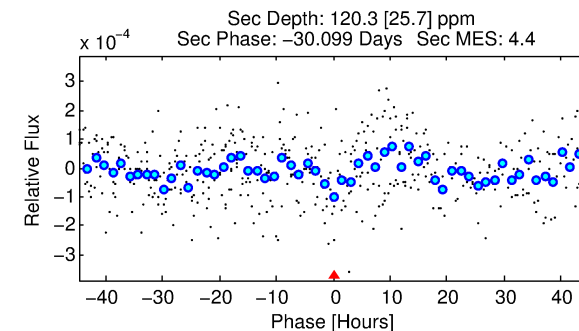
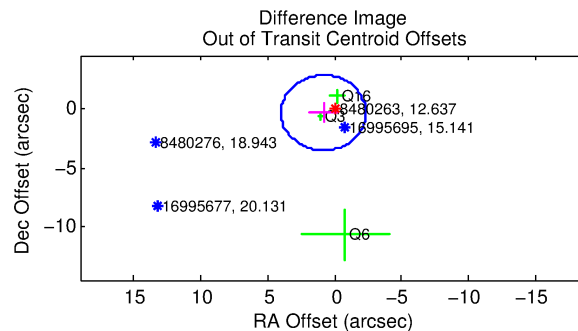
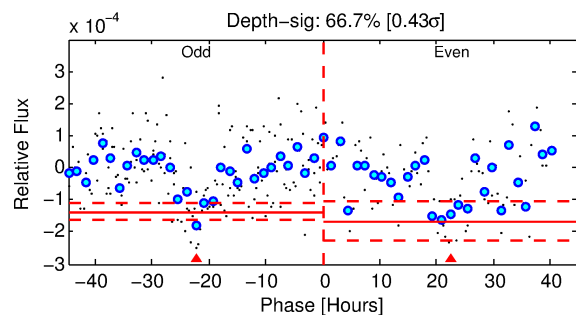
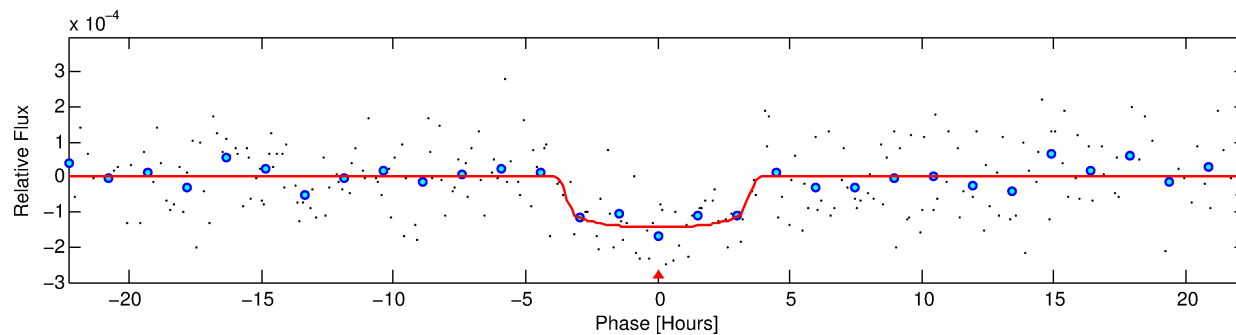
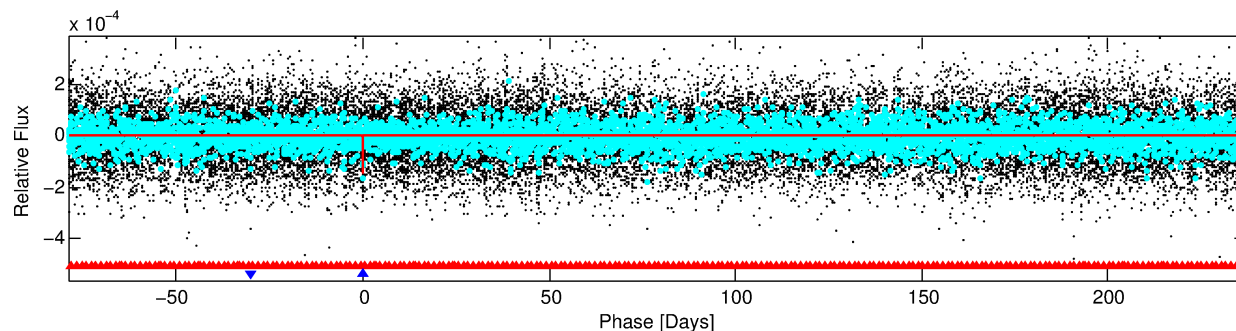
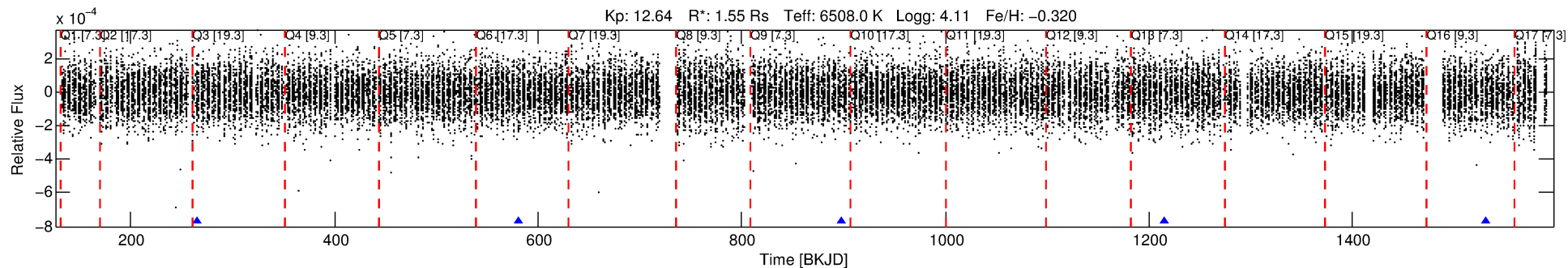
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008480263-02

No Significant Match Found

# DV One-Page Summary

KIC: 8480263 Candidate: 2 of 2 Period: 316.502 d



## DV Fit Results:

Period = 316.50232 [0.00554] d  
Epoch = 265.0335 [0.0140] BKJD  
Rp/R\* = 0.0128 [0.0033]  
a/R\* = 152.63 [209.40]  
b = 0.90 [0.30]  
Seff = 4.33 [1.64]  
Teq = 368 [35] K  
Rp = 2.17 [0.77] Re  
a = 0.9460 [0.2146] AU  
Ag = 12603.76 [8292.65] [1.52σ]  
Teffp = 6024 [862] K [6.66σ]

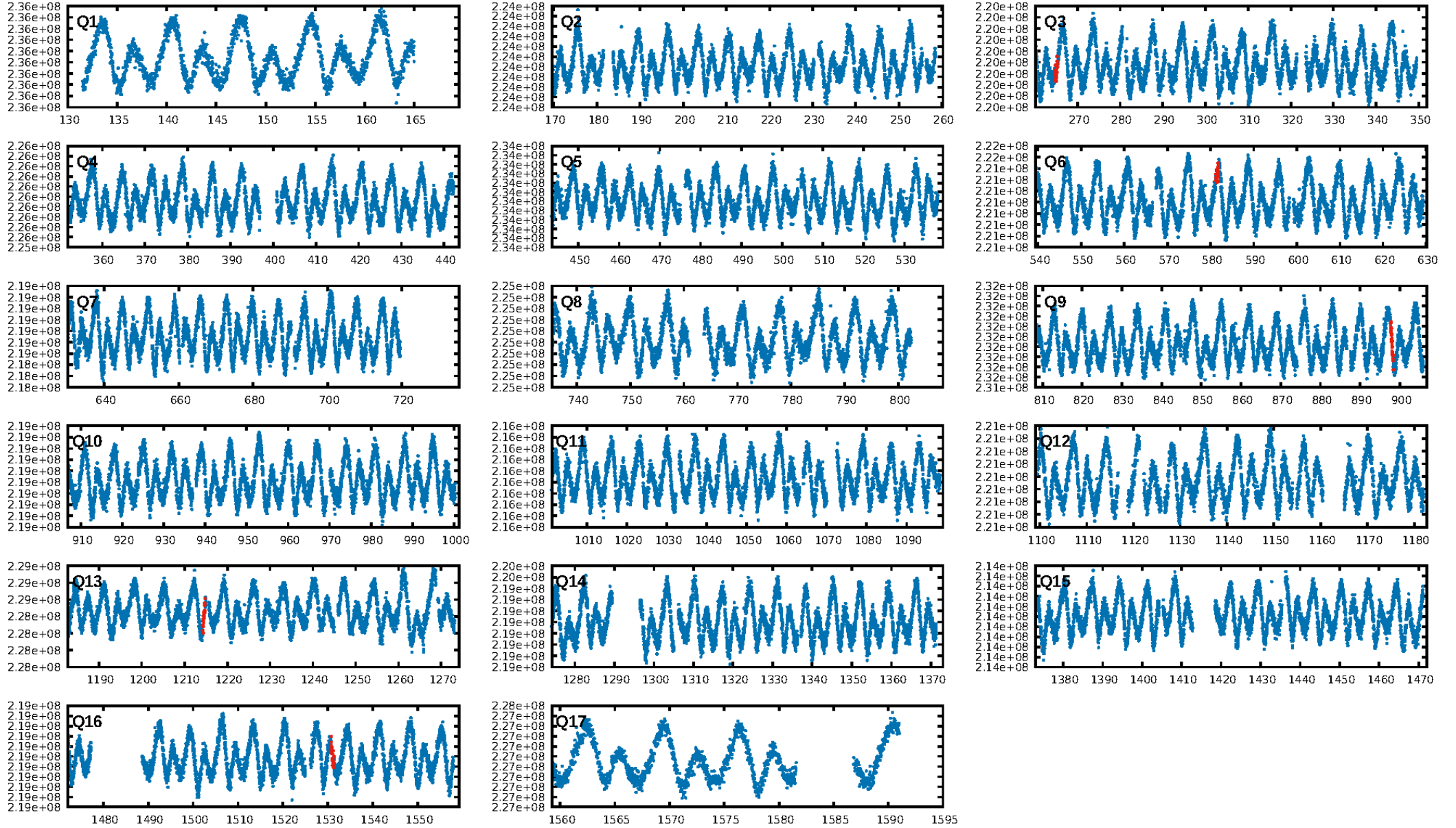
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [357.49σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 36.8%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.89e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -5.03  
Centroid-sig: 8.9%  
Centroid-so: 1.188 arcsec [1.17σ]  
OotOffset-rm: 0.912 arcsec [0.86σ]  
KicOffset-rm: 0.986 arcsec [0.90σ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.75 [3/4]

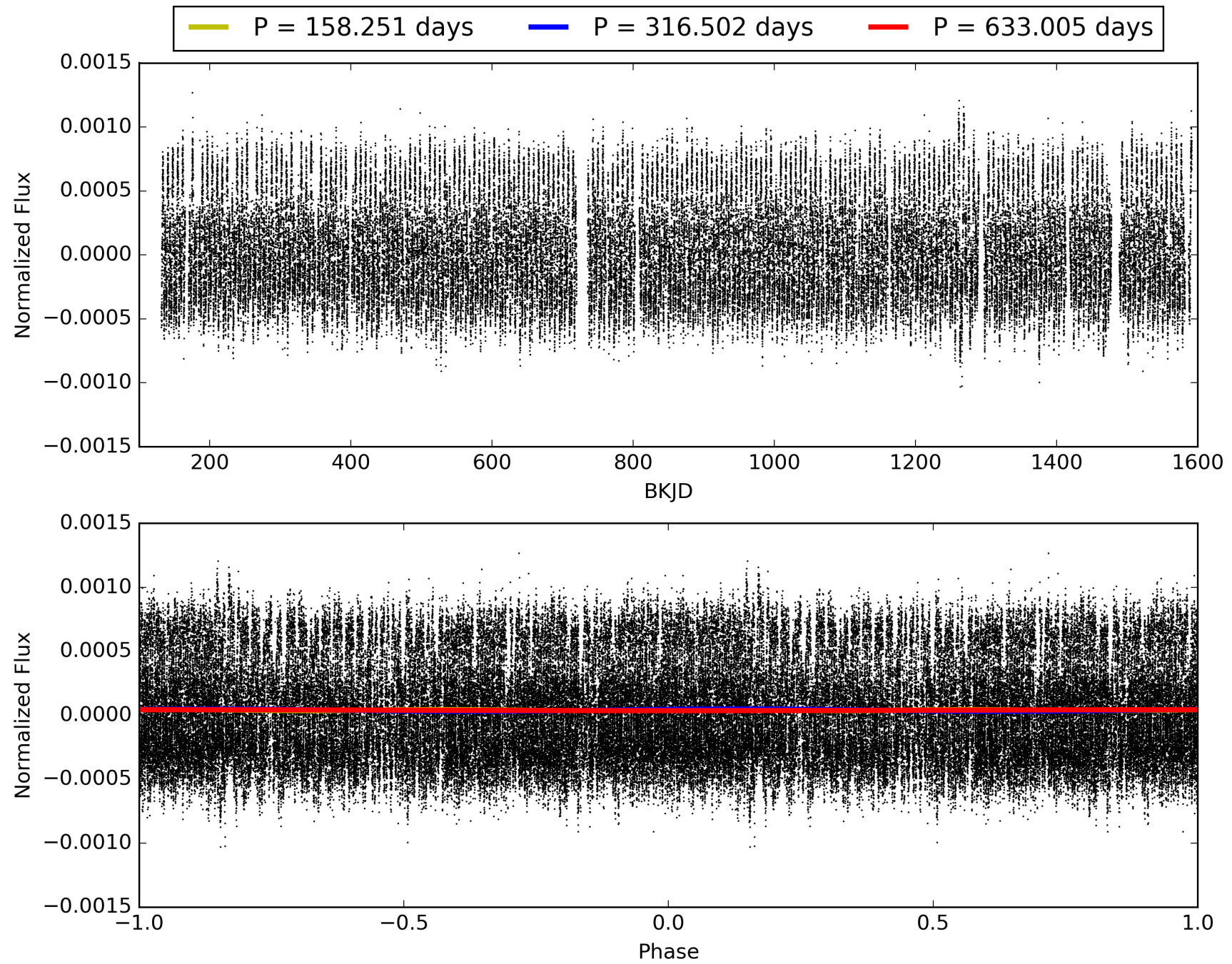
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:43:50 Z

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

# TCE 008480263-02, PDC Light Curves



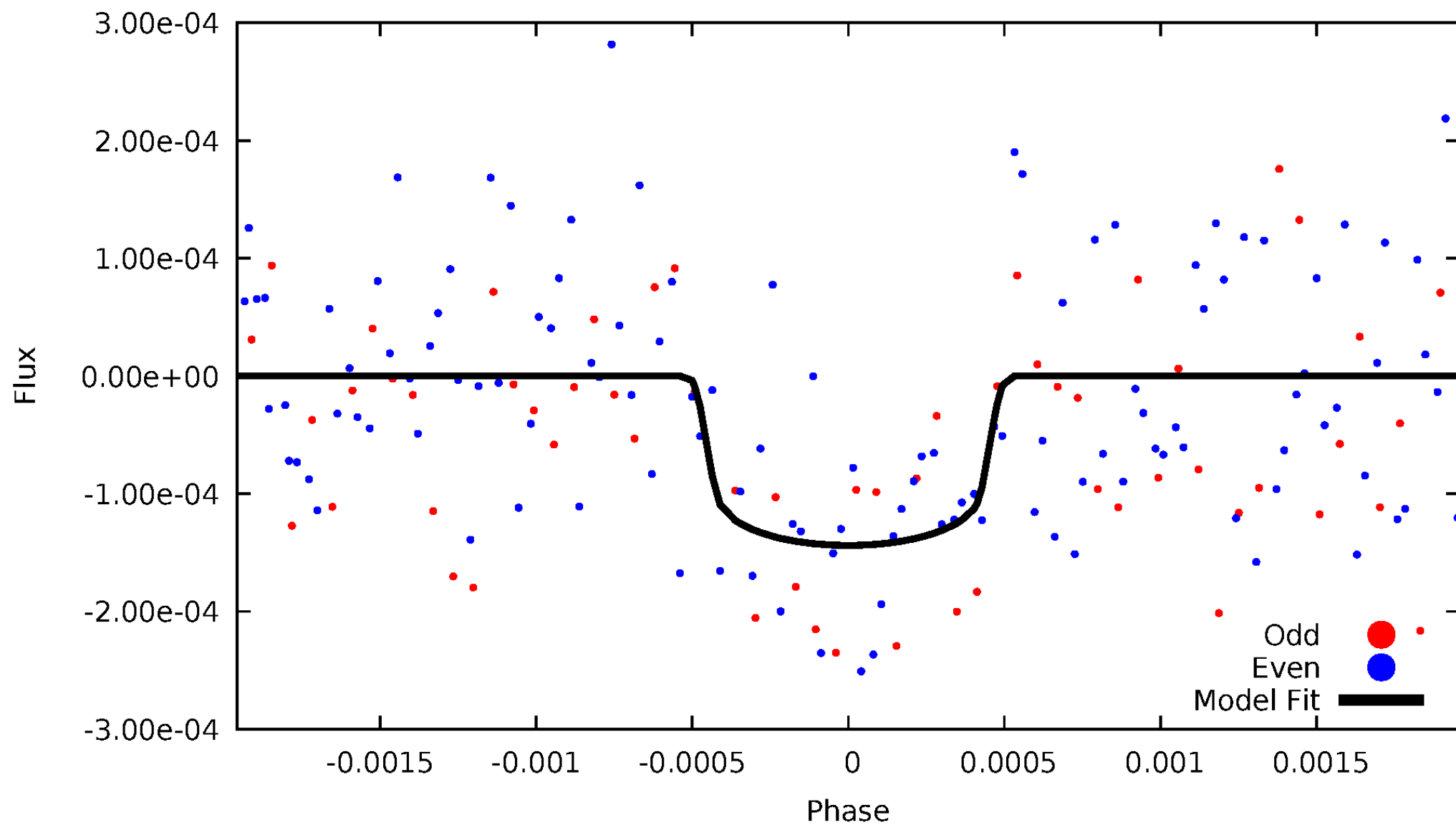
TCE 008480263-02





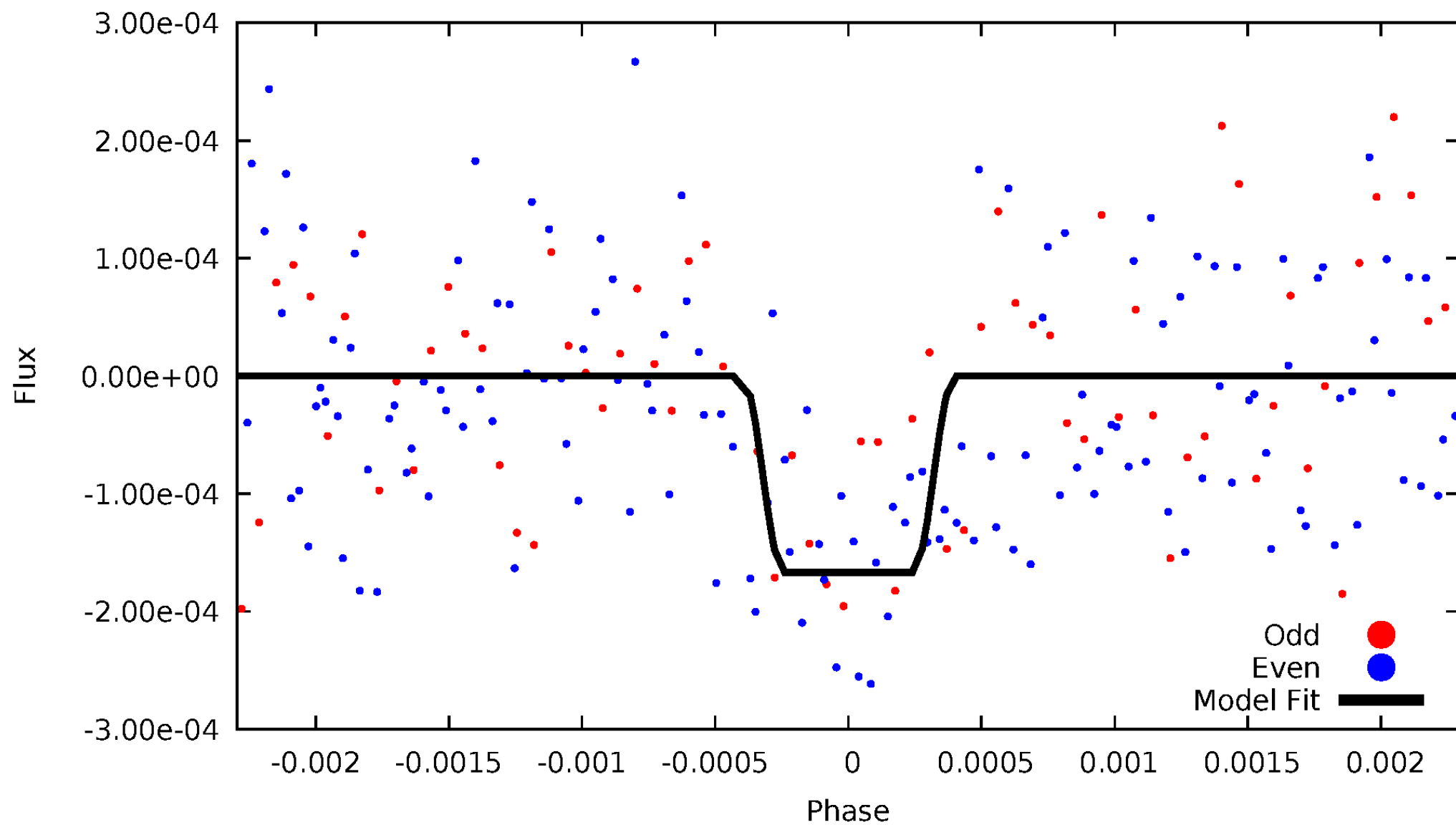
# DV Odd/Even

TCE 008480263-02



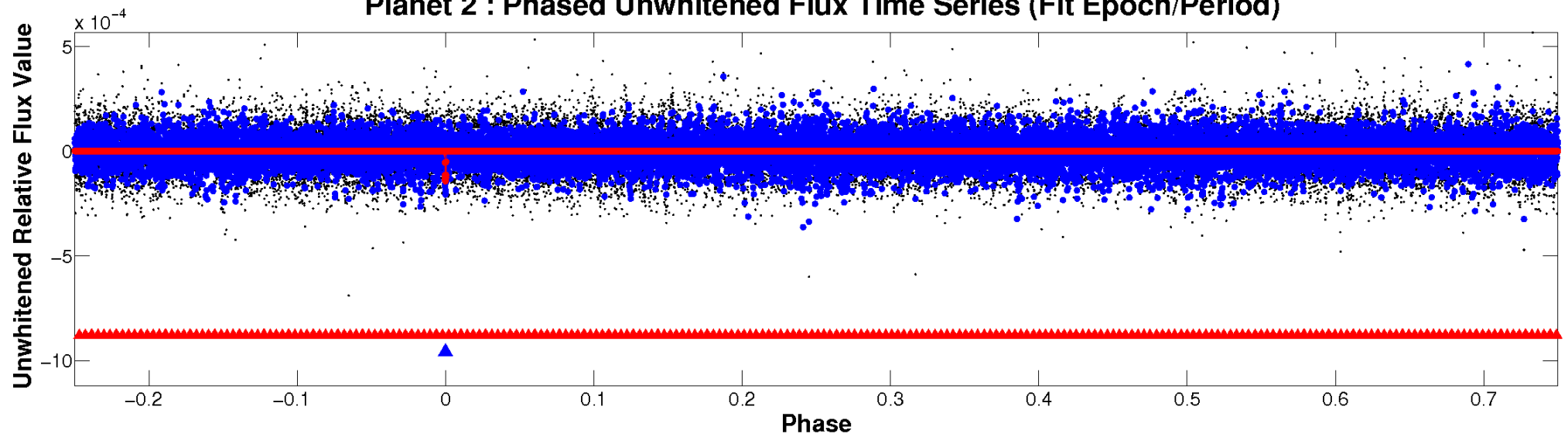
# ALT Odd/Even

TCE 008480263-02

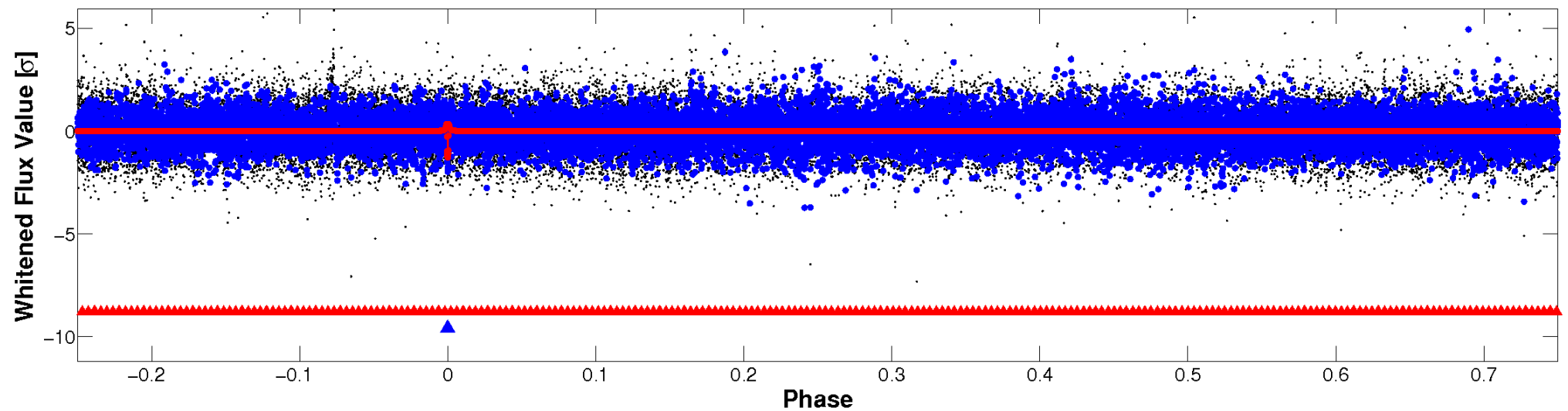


# Non-Whitened Vs. Whitened Light Curve

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

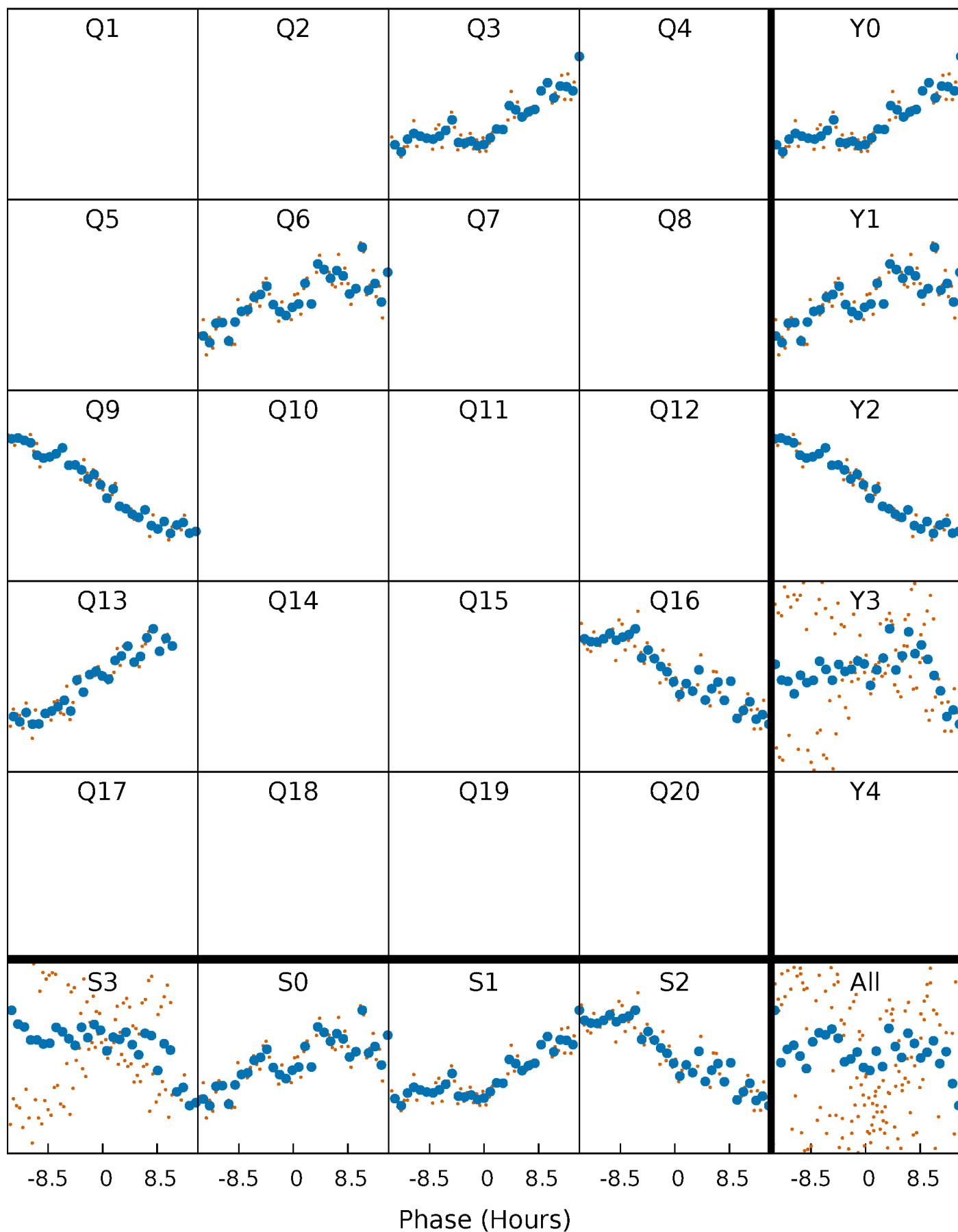


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



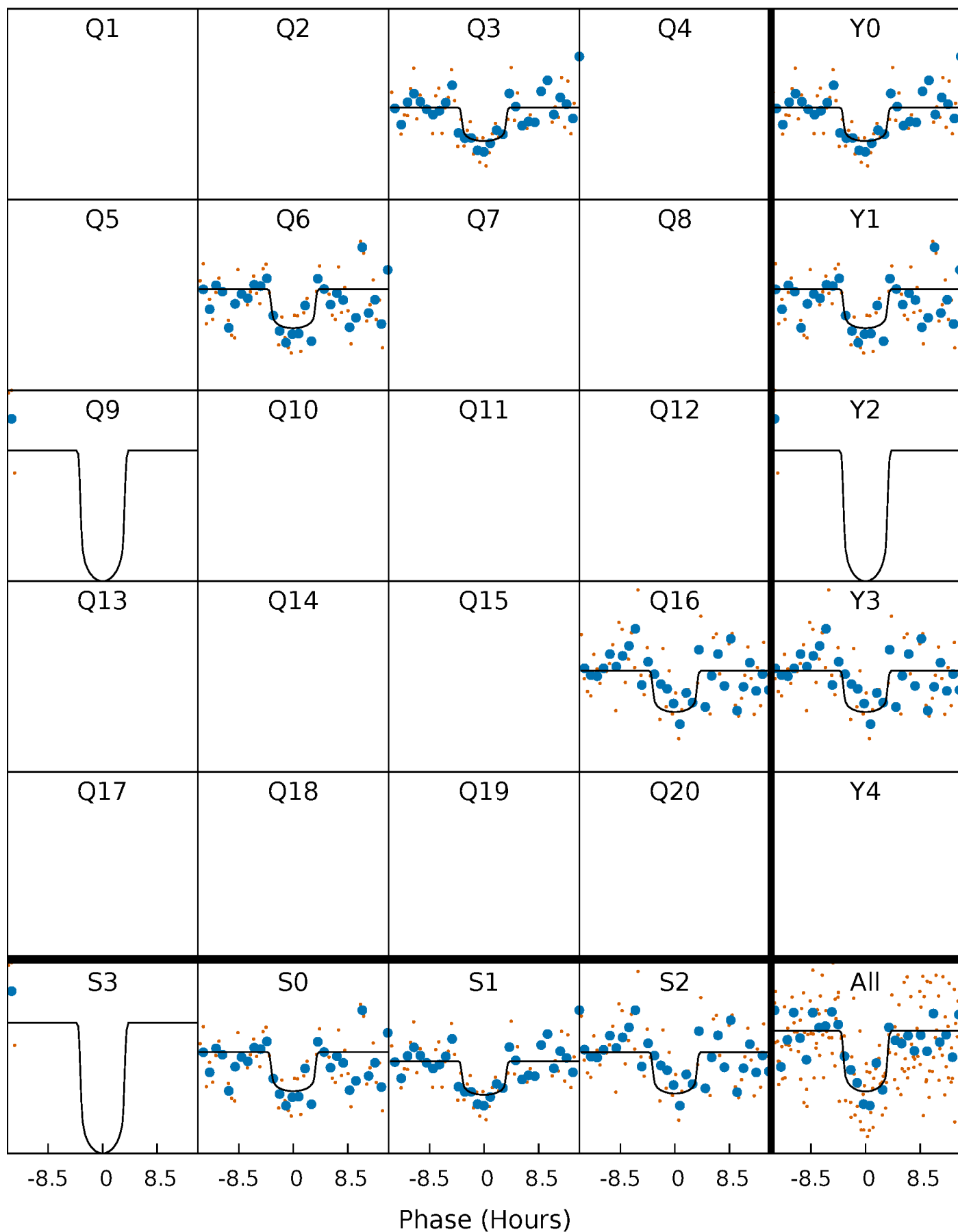
# PDC Quarter-Phased Transit Curves

TCE 008480263-02     $P=316.502324$  Days     $T_0=265.033481$  (BKJD)



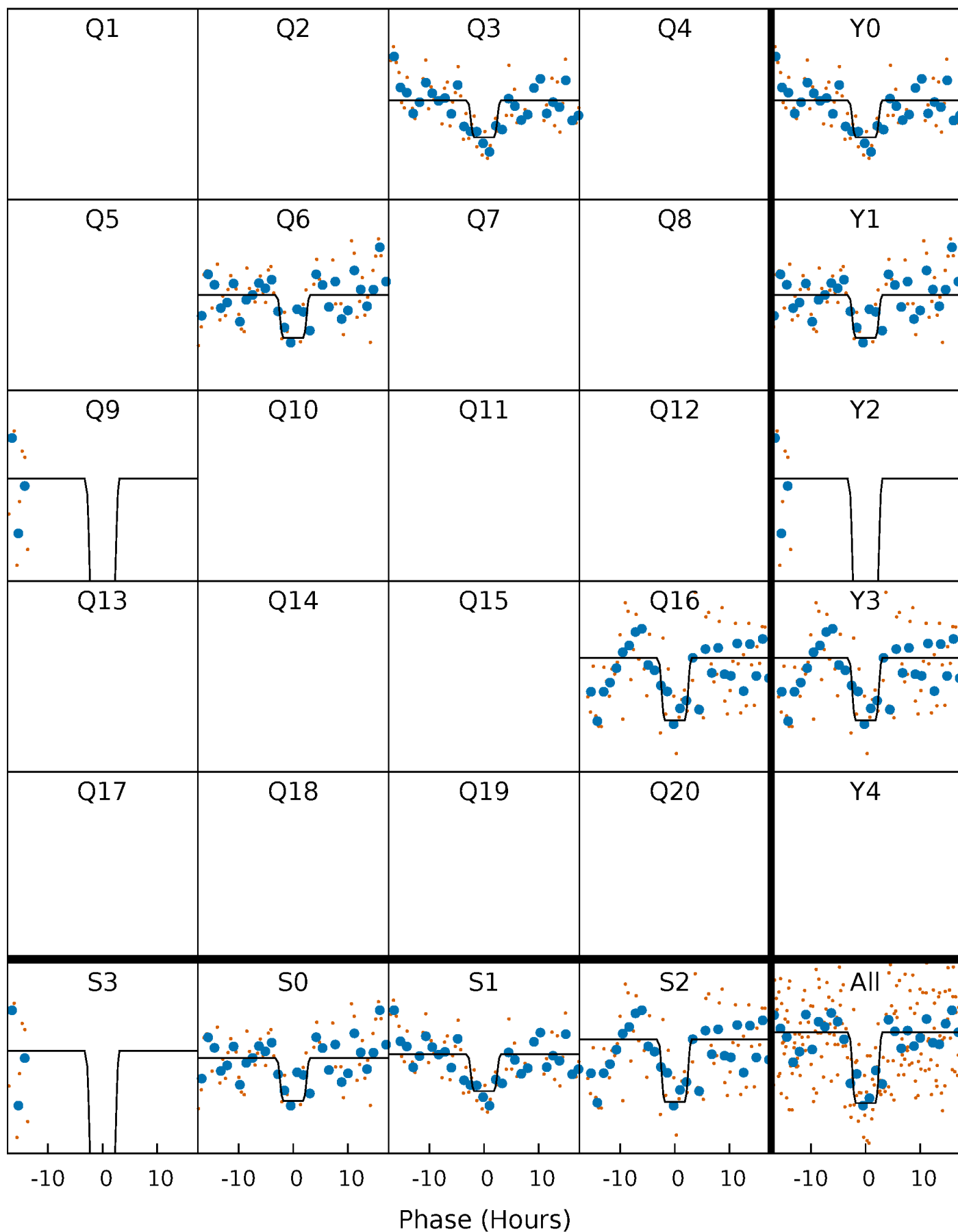
# DV Quarter-Phased Transit Curves

TCE 008480263-02     $P=316.502324$  Days     $T_0=265.033481$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008480263-02 P=316.509033 Days  $T_0=265.019891$  (BKJD)

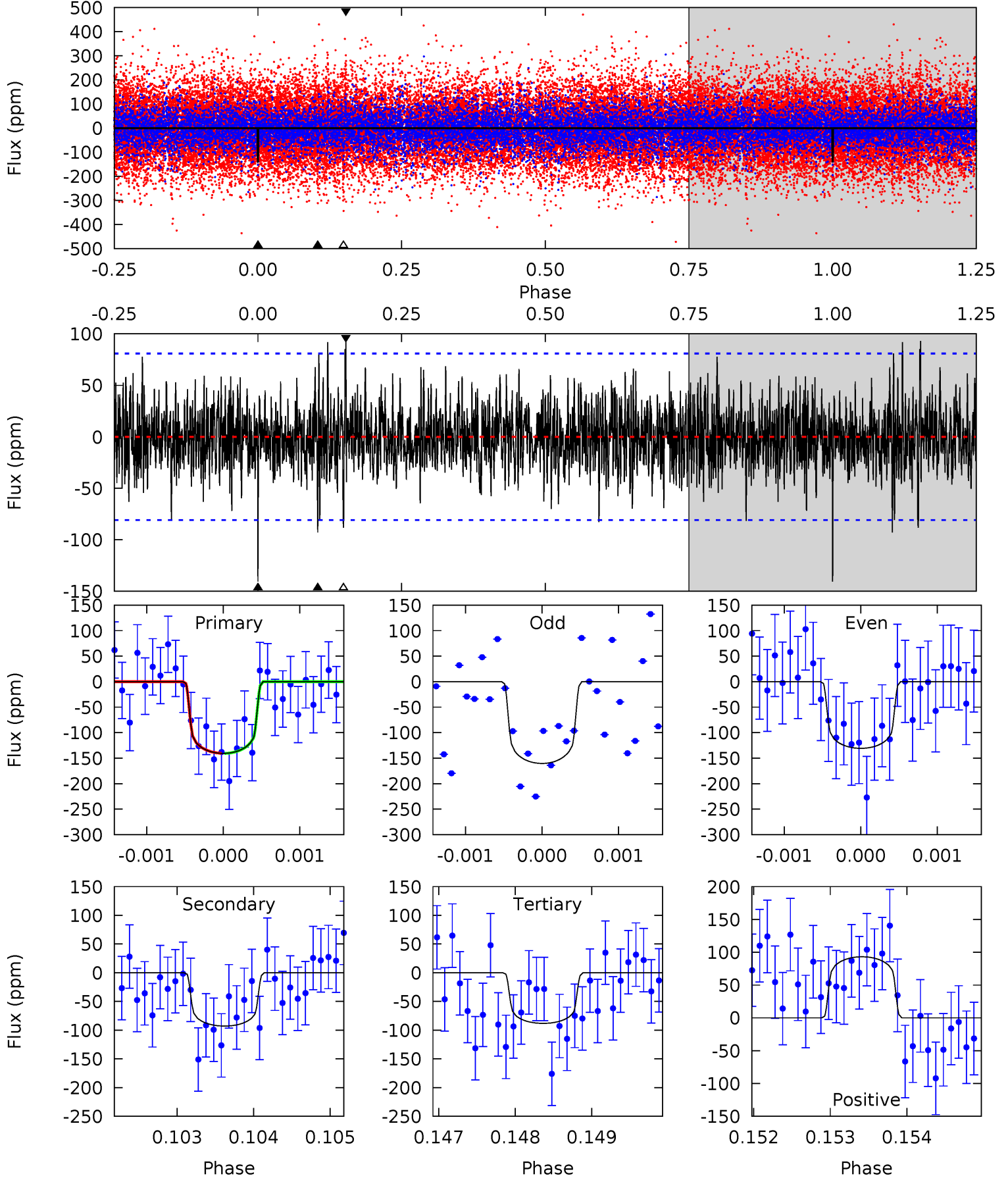




# DV Model-Shift Uniqueness Test

008480263-02,  $P = 316.502324$  Days,  $E = 265.033481$  Days

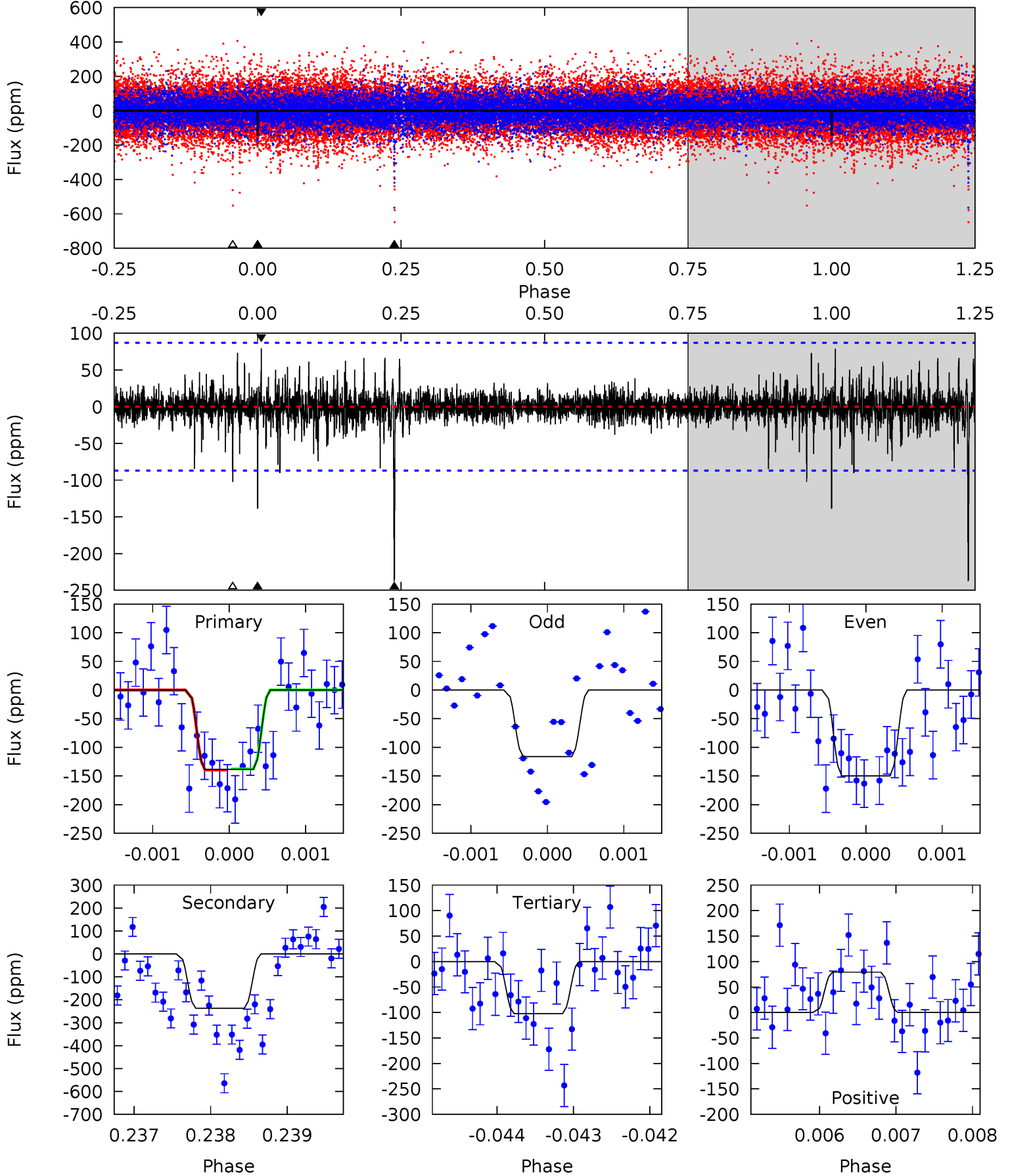
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.47	6.25	5.94	6.27	5.45	3.28	1.62	3.53	3.20	0.31	-0.02	0.94	0.89	0.40	0.01



# Alt Model-Shift Uniqueness Test

008480263-02, P = 316.509033 Days, E = 265.019891 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
8.77	15.0	6.48	5.00	5.50	3.37	0.95	2.29	3.77	8.55	10.0	1.02	1.09	0.25	0.07



### Stellar Parameters For KIC 008480263

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6508^{+181}_{-227}$	$4.108^{+0.204}_{-0.119}$	$-0.320^{+0.250}_{-0.300}$	$1.552^{+0.313}_{-0.382}$	$1.125^{+0.193}_{-0.145}$	$0.424^{+0.512}_{-0.161}$
	+3%/-3%	+5%/-3%	+78%/-94%	+20%/-25%	+17%/-13%	+121%/-38%
Source	PHO1	FLK73	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 008480263-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-93 \pm 15$	$2.14^{+0.64}_{-0.63}$	$509^{+31}_{-36}$	$5632^{+1035}_{-636}$	$10160^{+10164}_{-4455}$
Alt.	$-237 \pm 16$	$2.13^{+0.67}_{-0.59}$	$509^{+30}_{-35}$	$7176^{+1374}_{-889}$	$26311^{+22753}_{-11305}$

$T_{max}$  = 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

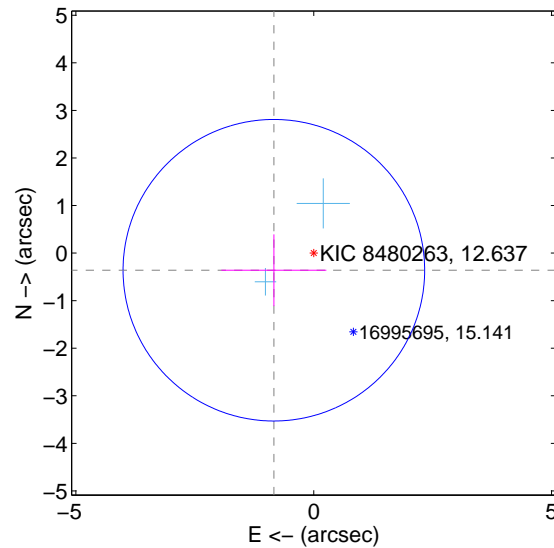
Supplemental centroid analysis for 008480263-02. Kepler magnitude: 12.64. Transit SNR 7.68

There are 2 quarters with good PRF difference image offsets

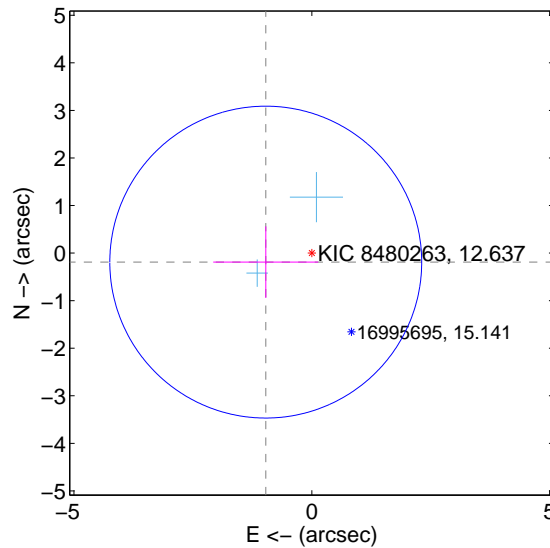
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.912 \pm 1.057$	0.86	$0.838 \pm 1.104$	$-0.360 \pm 0.753$
PRF-fit source offset from KIC position	$0.986 \pm 1.093$	0.90	$0.968 \pm 1.104$	$-0.190 \pm 0.753$
photometric centroid source offset	$1.19 \pm 1.02$	1.17	$0.65 \pm 1.07$	$-0.99 \pm 0.99$

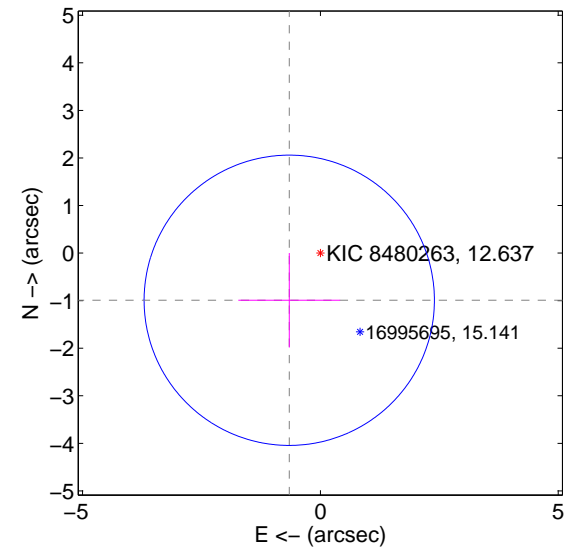
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

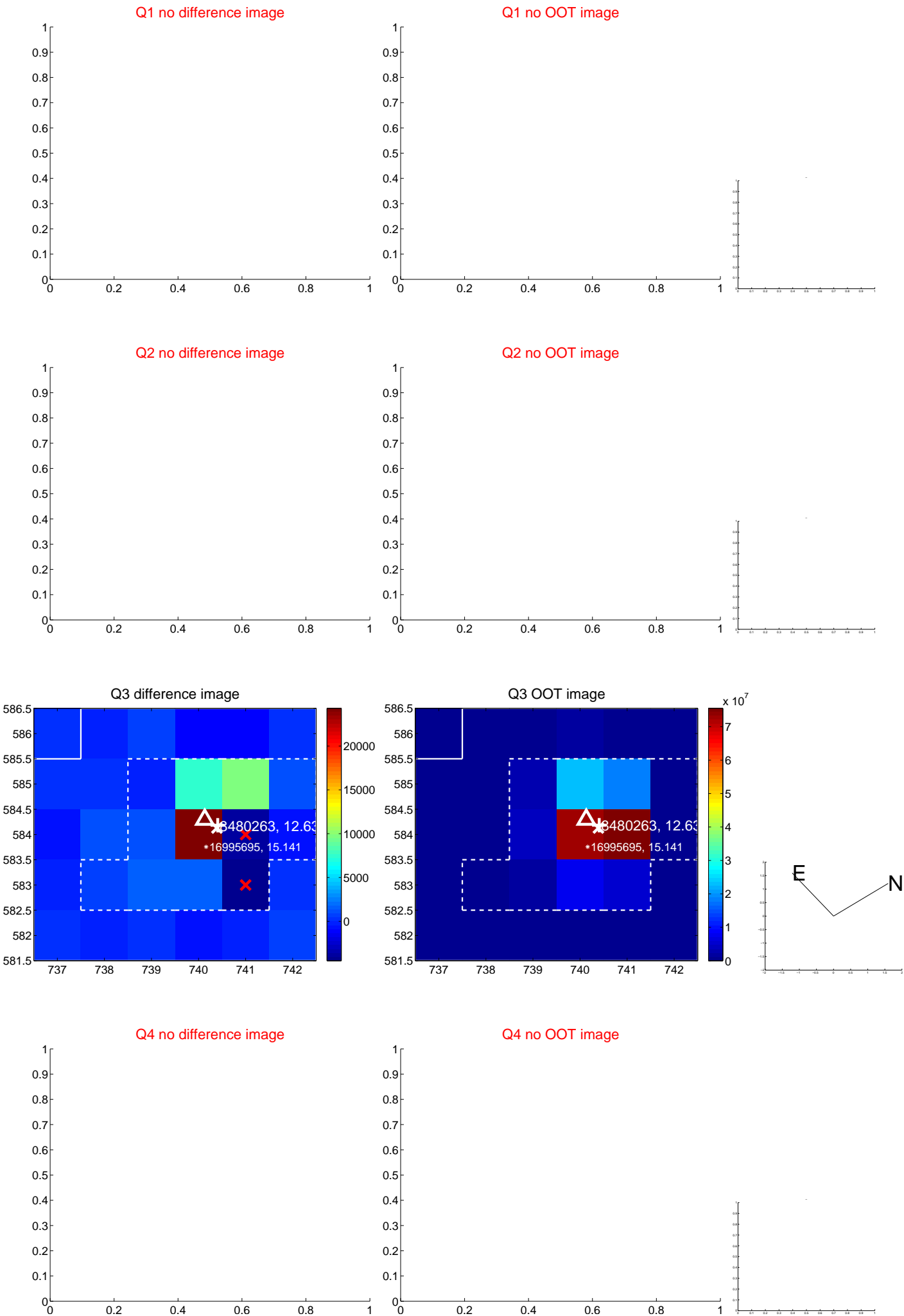


offset from photometric centroids



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.

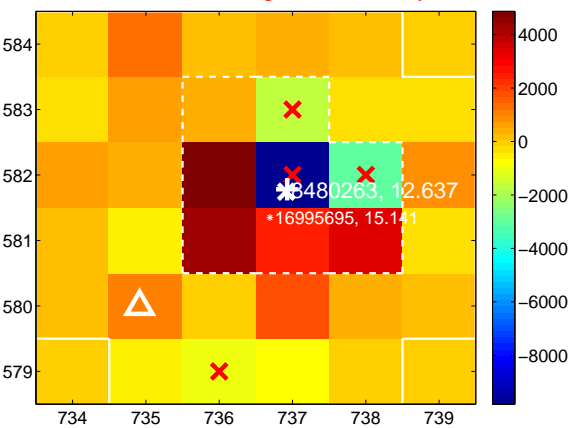
Q5 no difference image



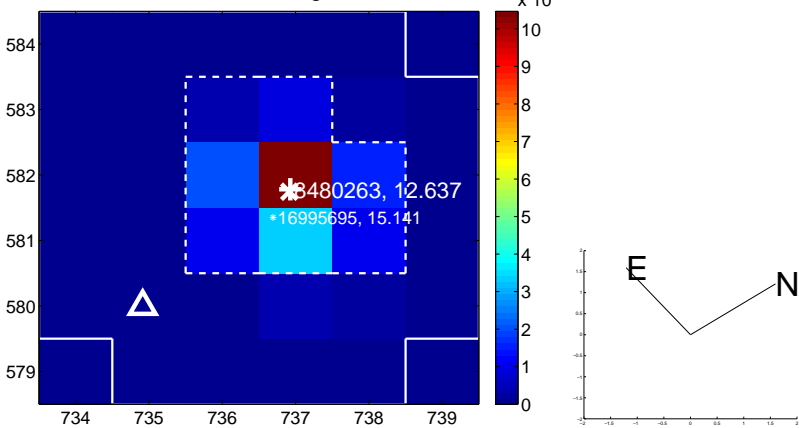
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



Q7 no difference image



Q7 no OOT image



Q8 no difference image

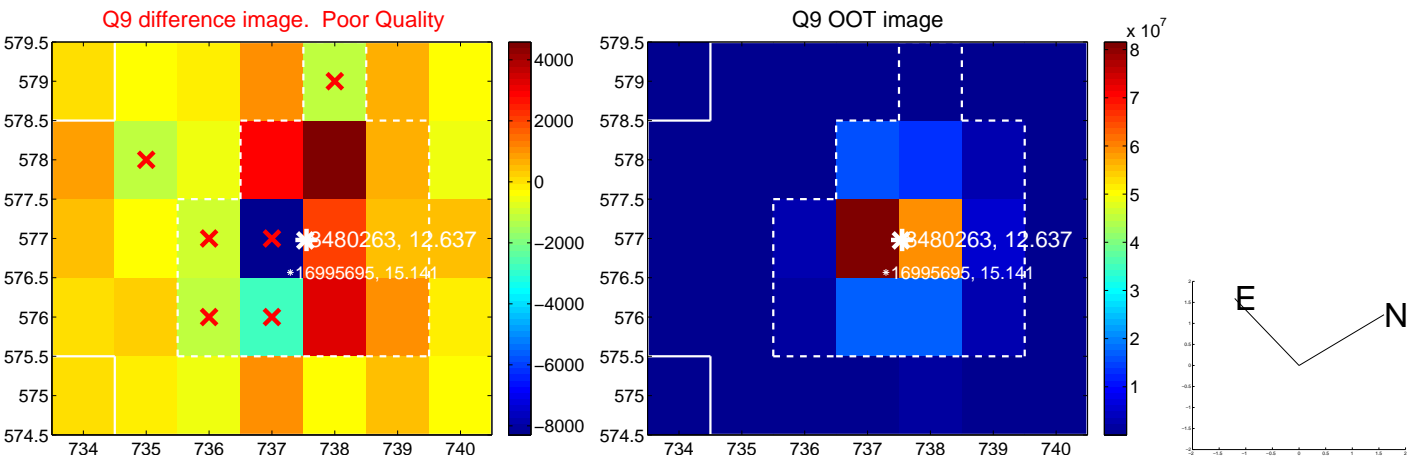


Q8 no OOT image

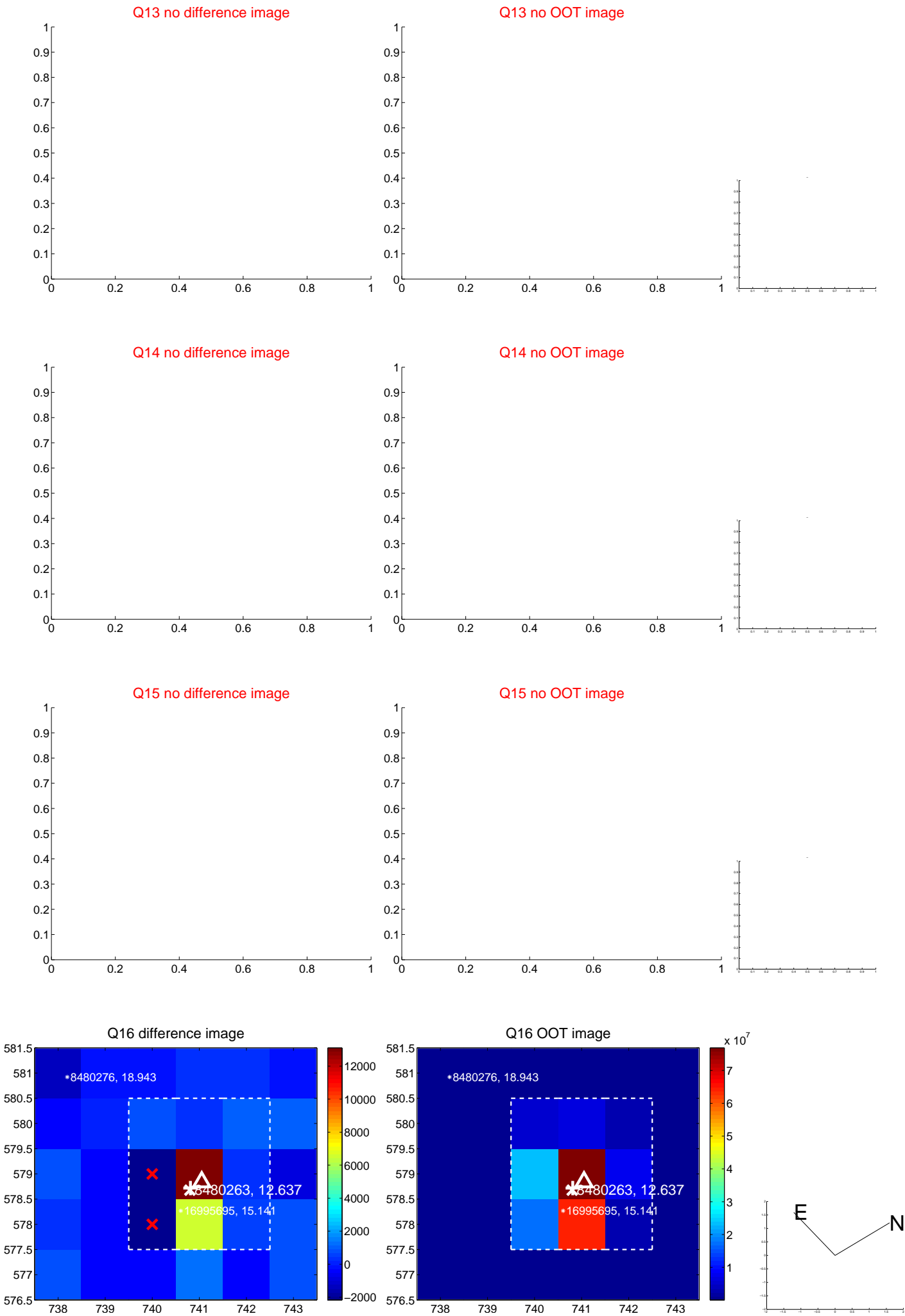




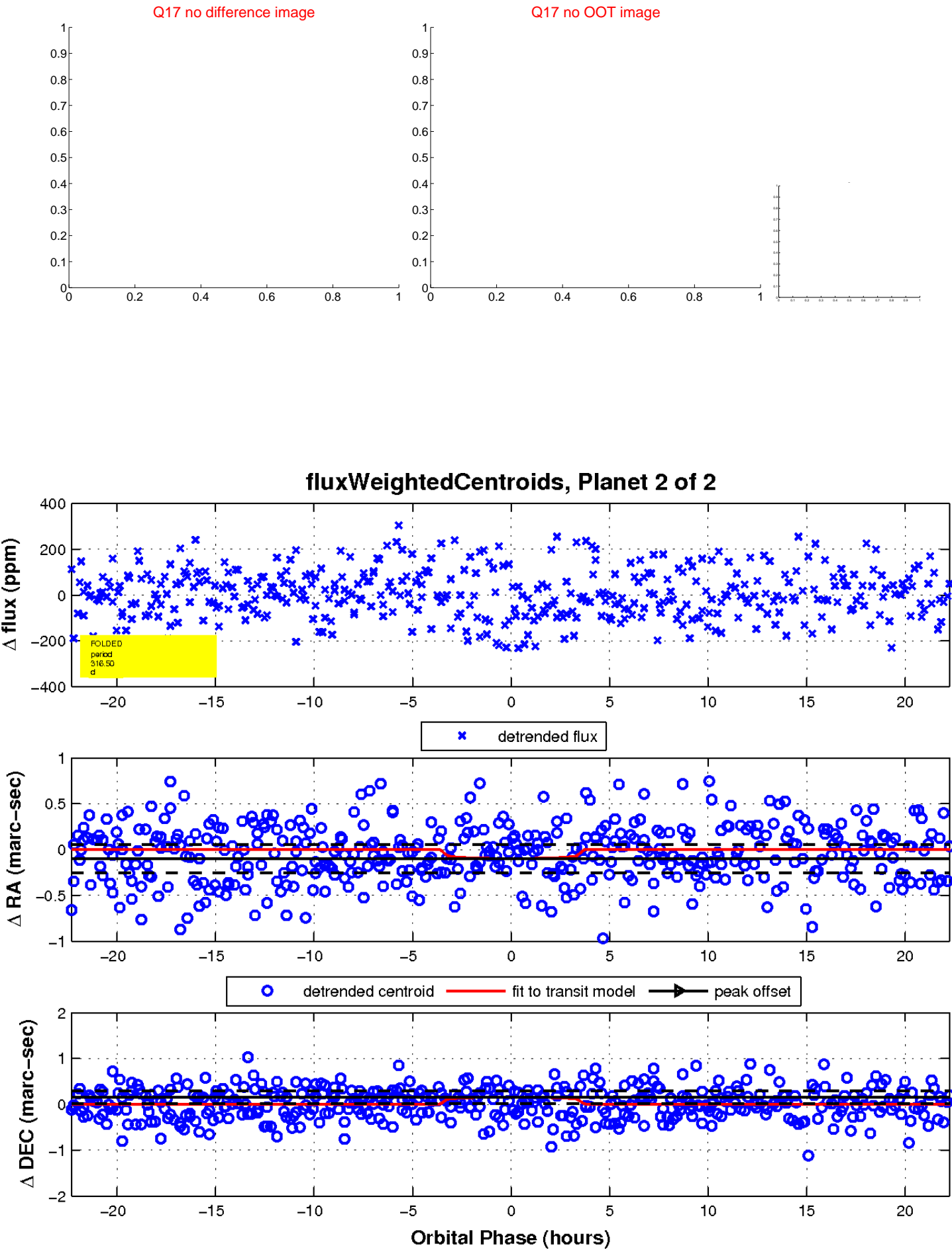
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

