

# KIC 008196911

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008196911-01	OBS	No	0.718486	132.117486	10.9	2.366	8.1	8.2	2.62	8755	1.00	85617.69
008196911-02	OBS	No	271.991247	372.602699	157.8	11.289	11.9	9.3	2.62	8755	3.59	31.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196911-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008196911-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—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.

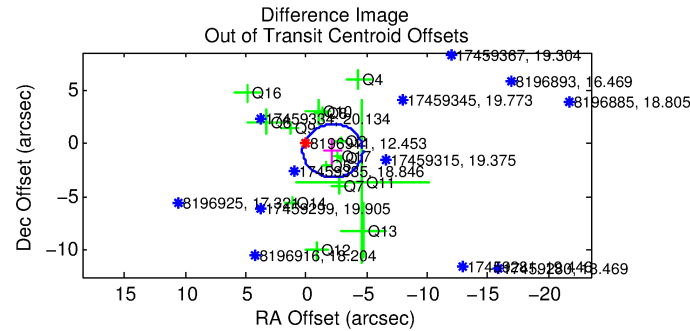
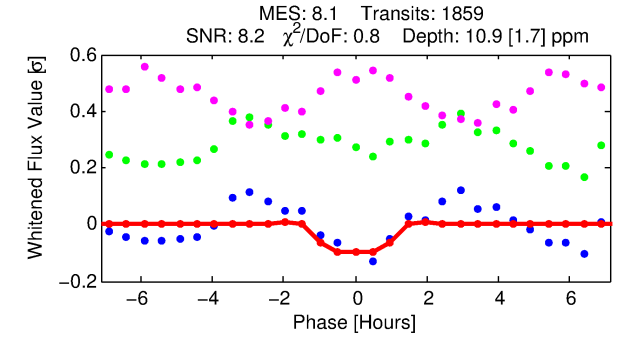
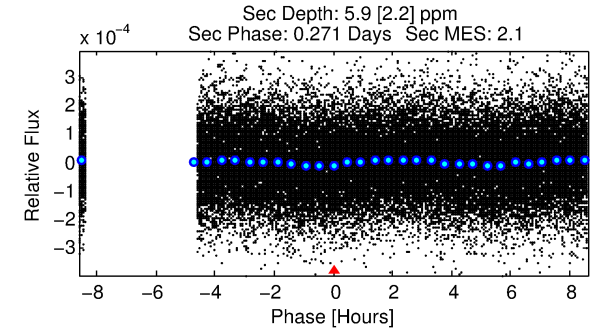
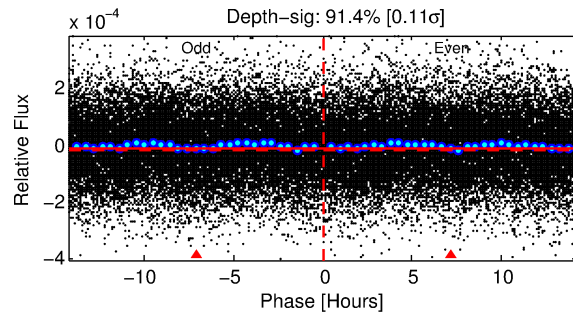
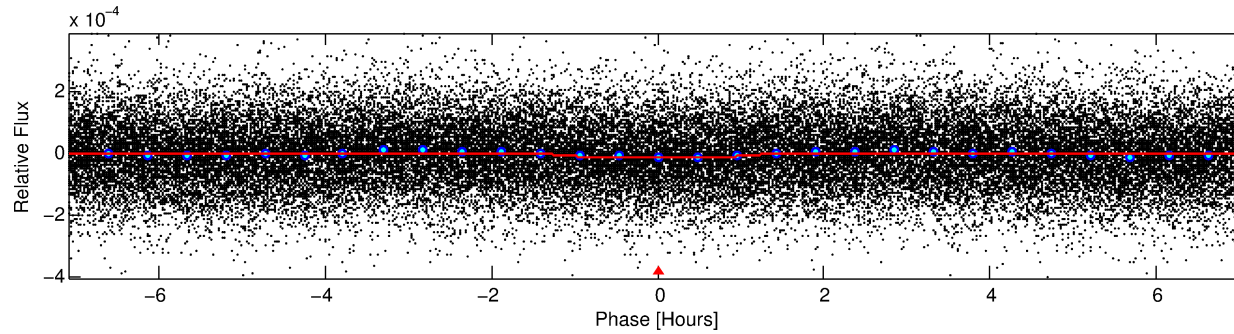
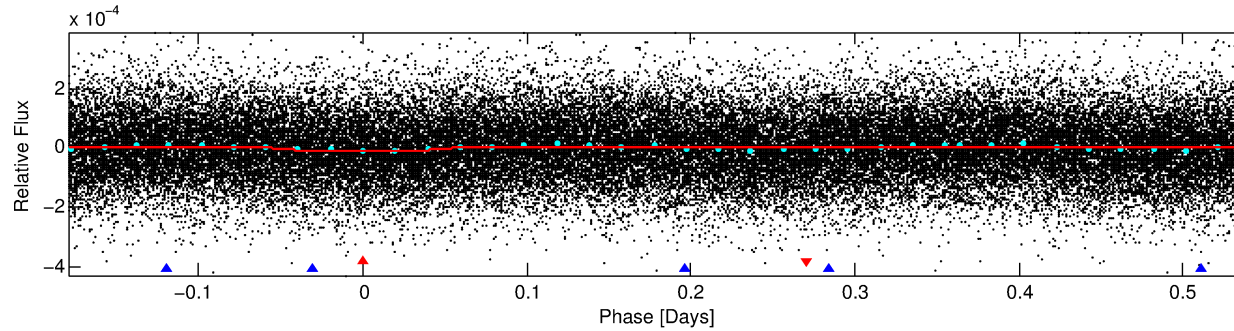
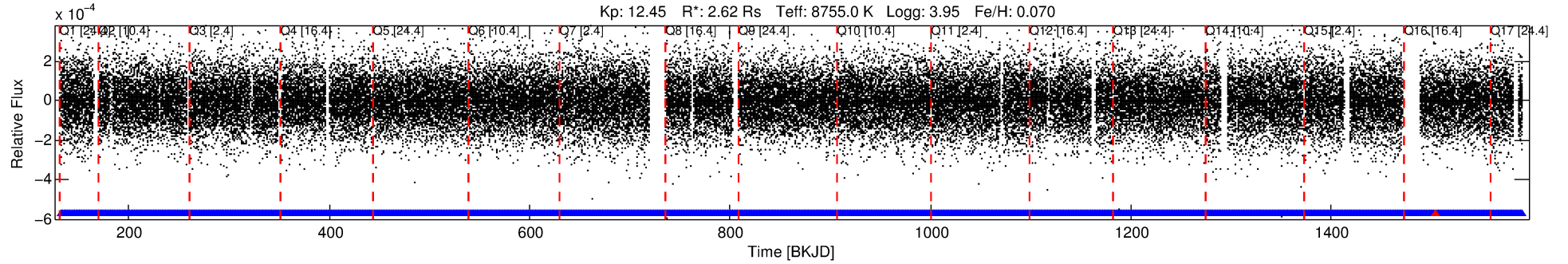
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008196911-01

No Significant Match Found

# DV One-Page Summary

KIC: 8196911 Candidate: 1 of 2 Period: 0.718 d



## DV Fit Results:

Period = 0.71849 [0.00001] d  
Epoch = 132.1175 [0.0037] BKJD  
Rp/R\* = 0.0035 [0.0009]  
a/R\* = 1.38 [1.11]  
b = 0.90 [0.35]  
Seff = 85617.69 [42636.67]  
Teq = 4362 [543] K  
Rp = 1.00 [0.43] Re  
a = 0.0205 [0.0063] AU  
Ag = 1.35 [1.05] [0.34σ]  
Teffp = 7276 [1181] K [2.24σ]

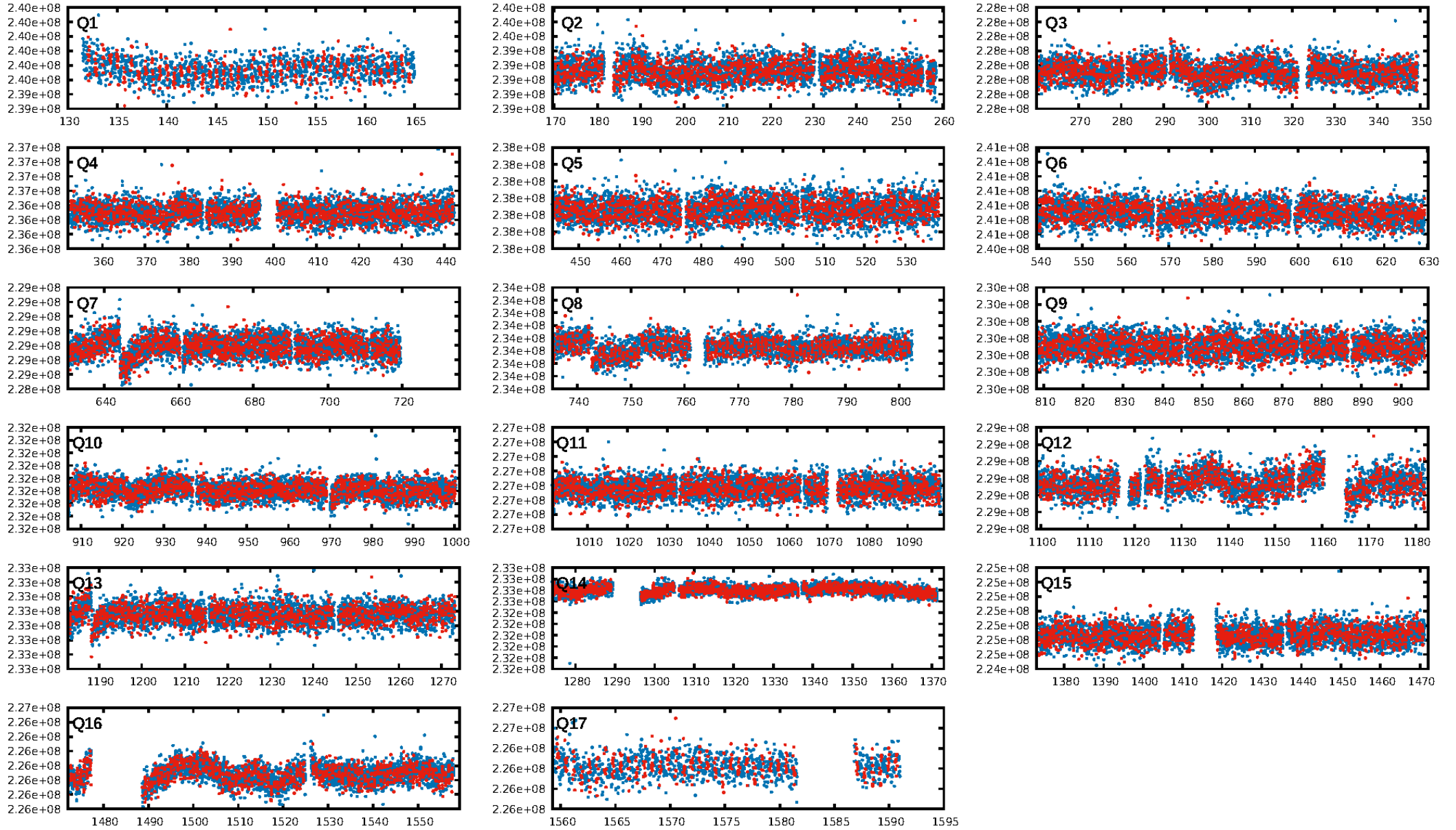
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [564.48σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.83e-16  
RollingBand-fgt: 1.00 [1775/1776]  
GhostDiagnostic-chr: -0.7073  
Centroid-sig: 86.3%  
Centroid-so: 0.601 arcsec [0.32σ]  
OotOffset-rm: 2.297 arcsec [2.77σ]  
KicOffset-rm: 2.253 arcsec [2.62σ]  
OotOffset-st: 4/2/4/5 [15]  
KicOffset-st: 4/2/4/5 [15]  
DiffImageQuality-fgm: 0.33 [5/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:16:05 Z

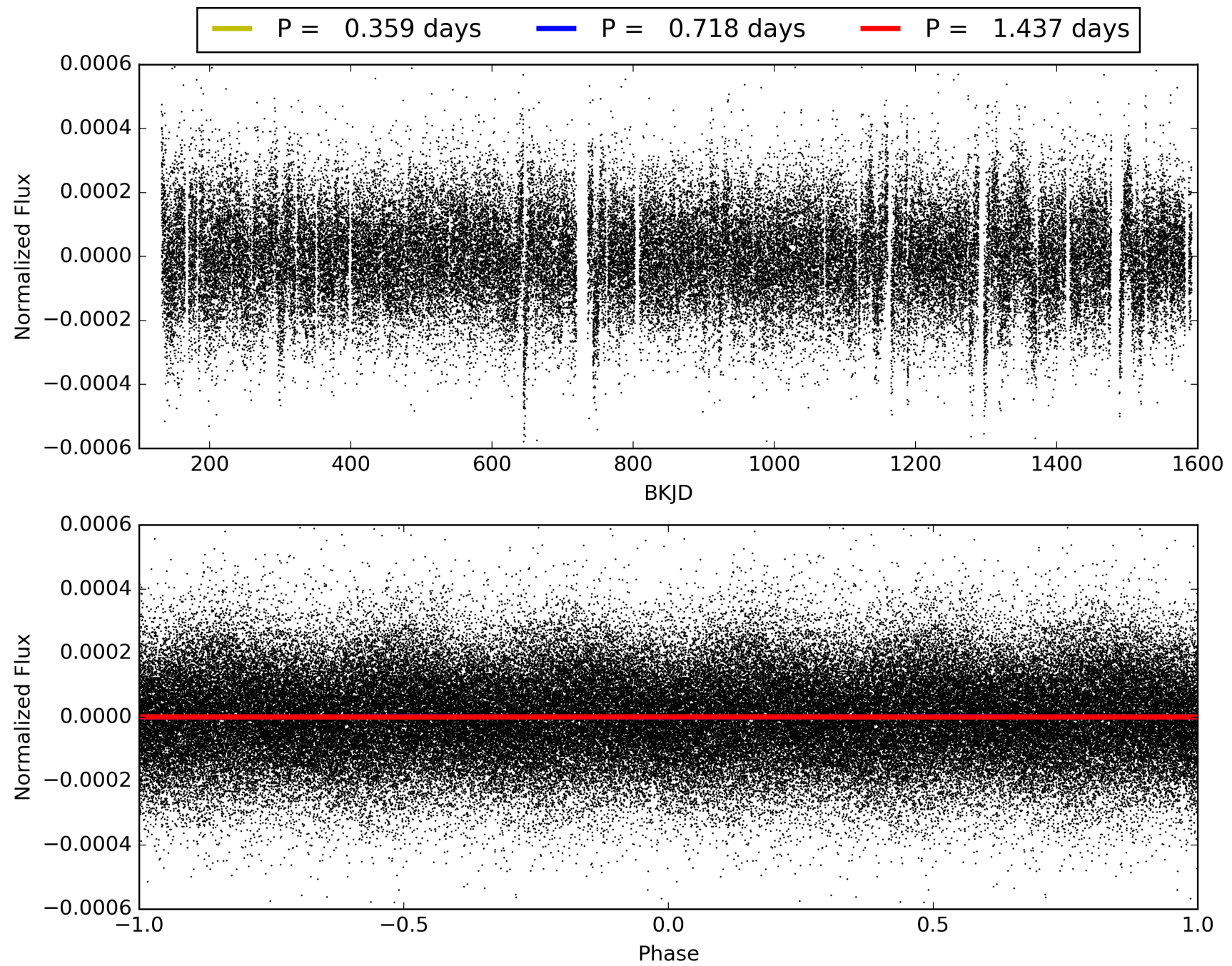
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008196911-01, PDC Light Curves



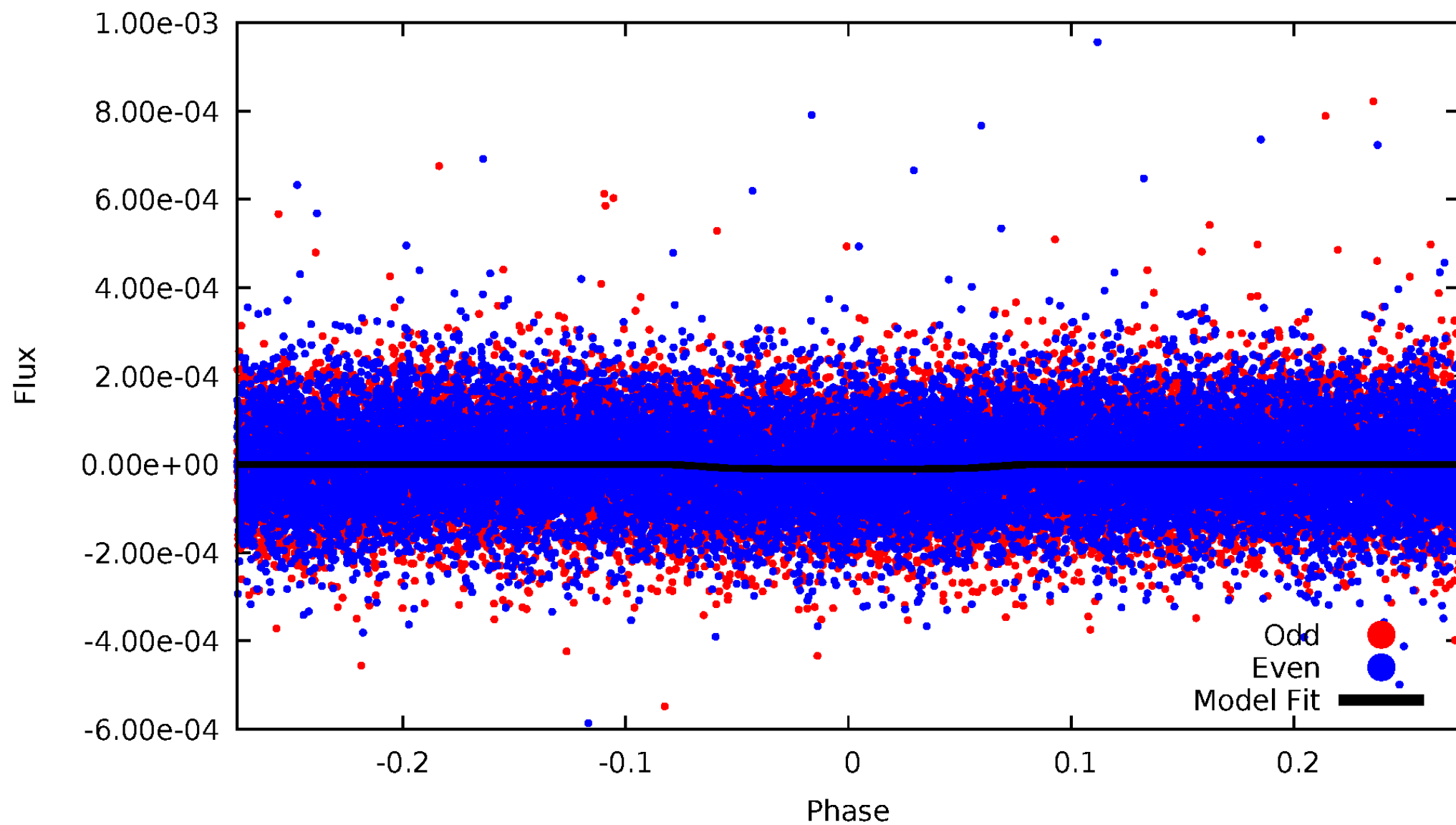


TCE 008196911-01



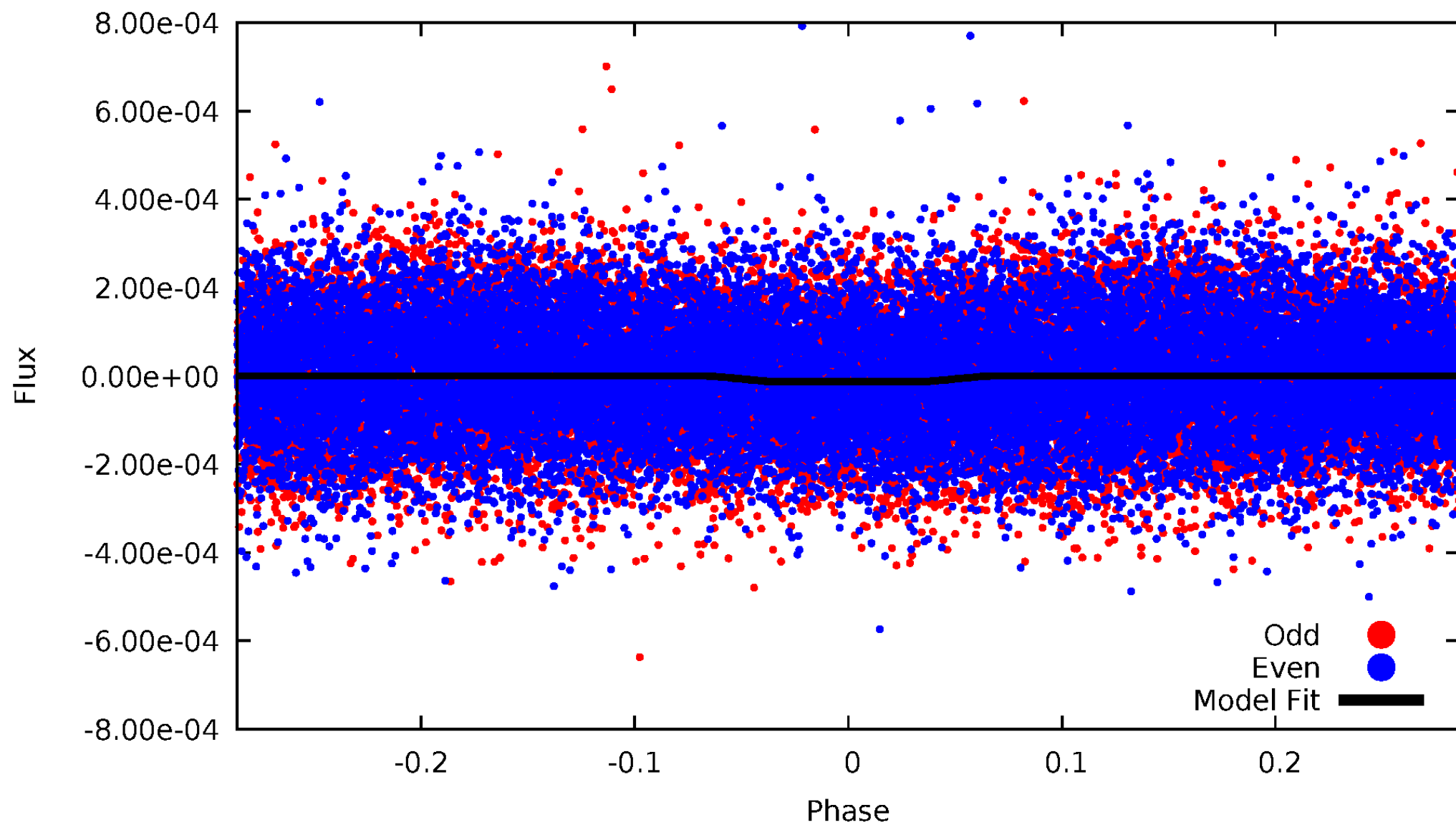
# DV Odd/Even

TCE 008196911-01



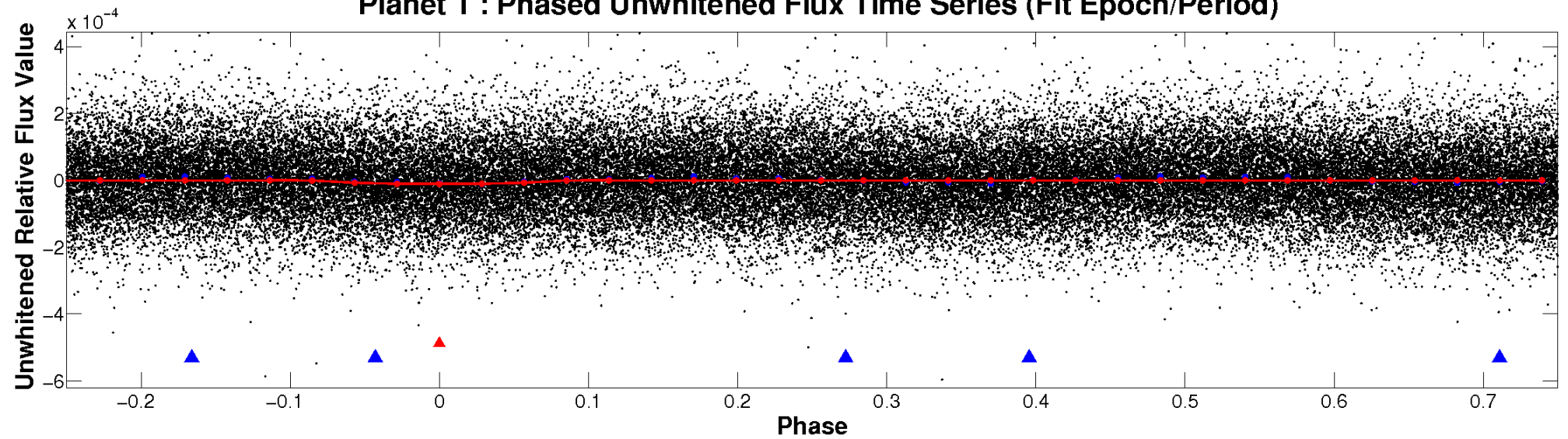
# ALT Odd/Even

TCE 008196911-01

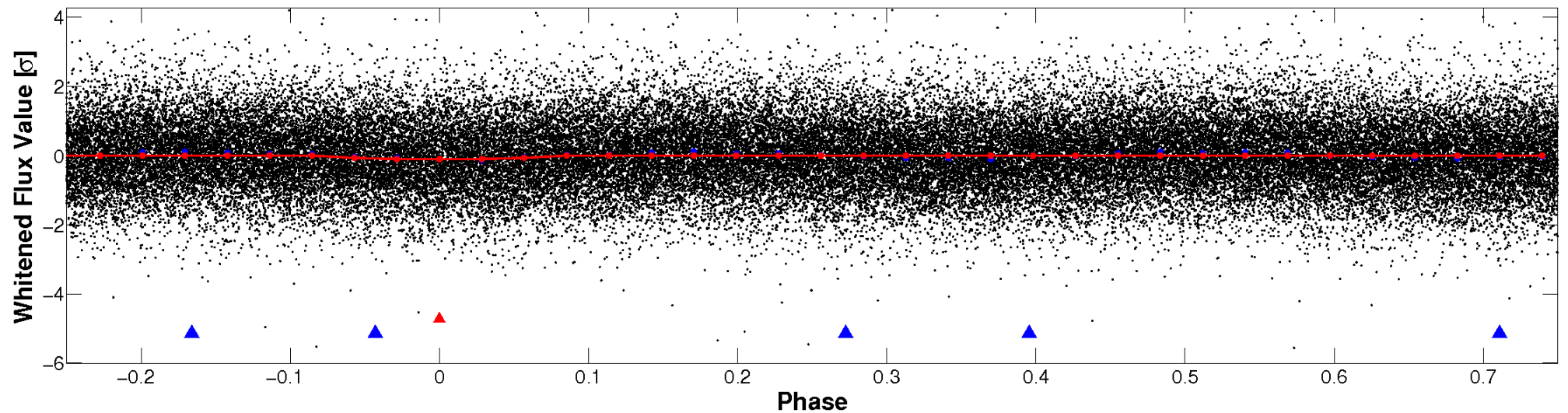


# Non-Whitened Vs. Whitened Light Curve

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



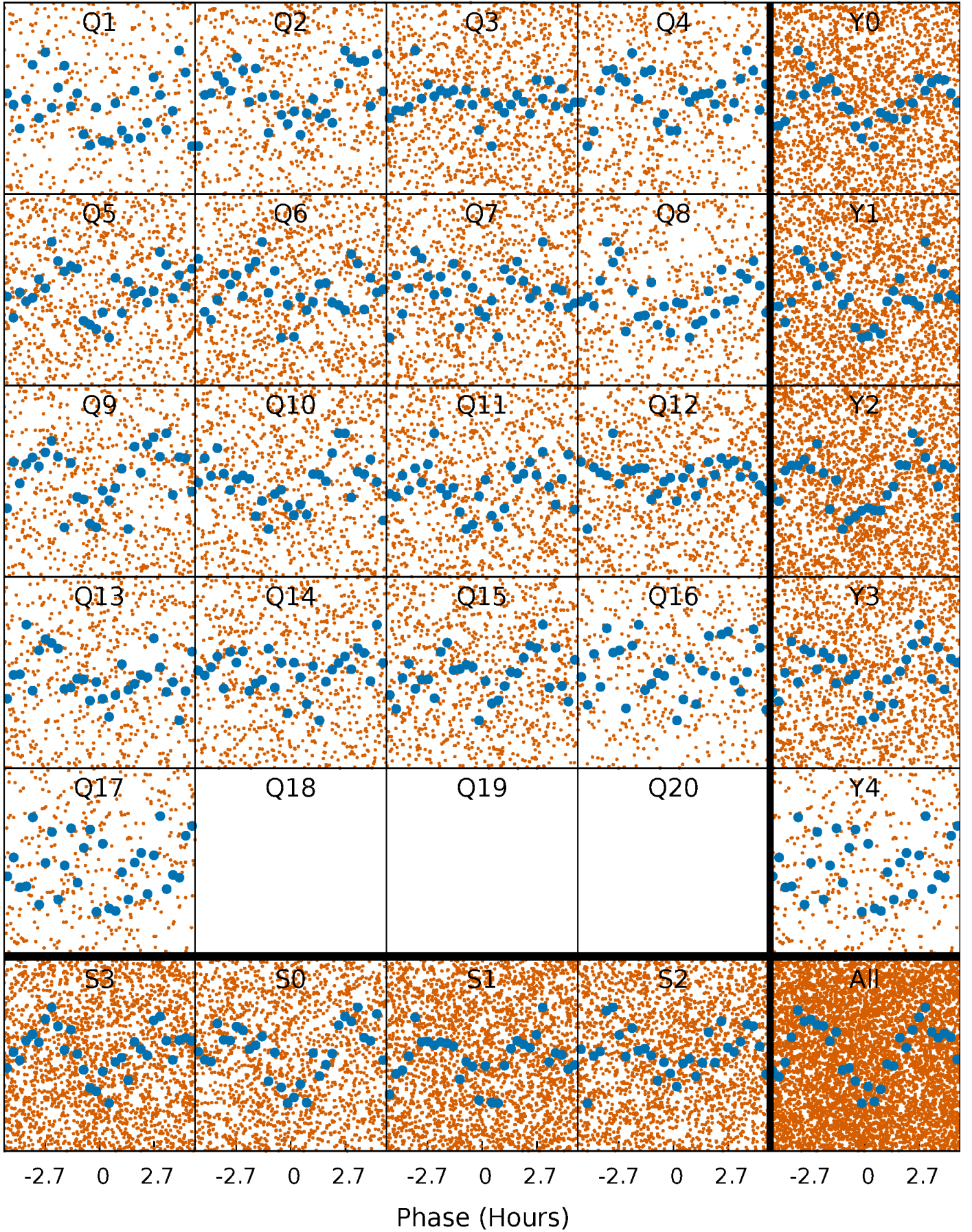
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

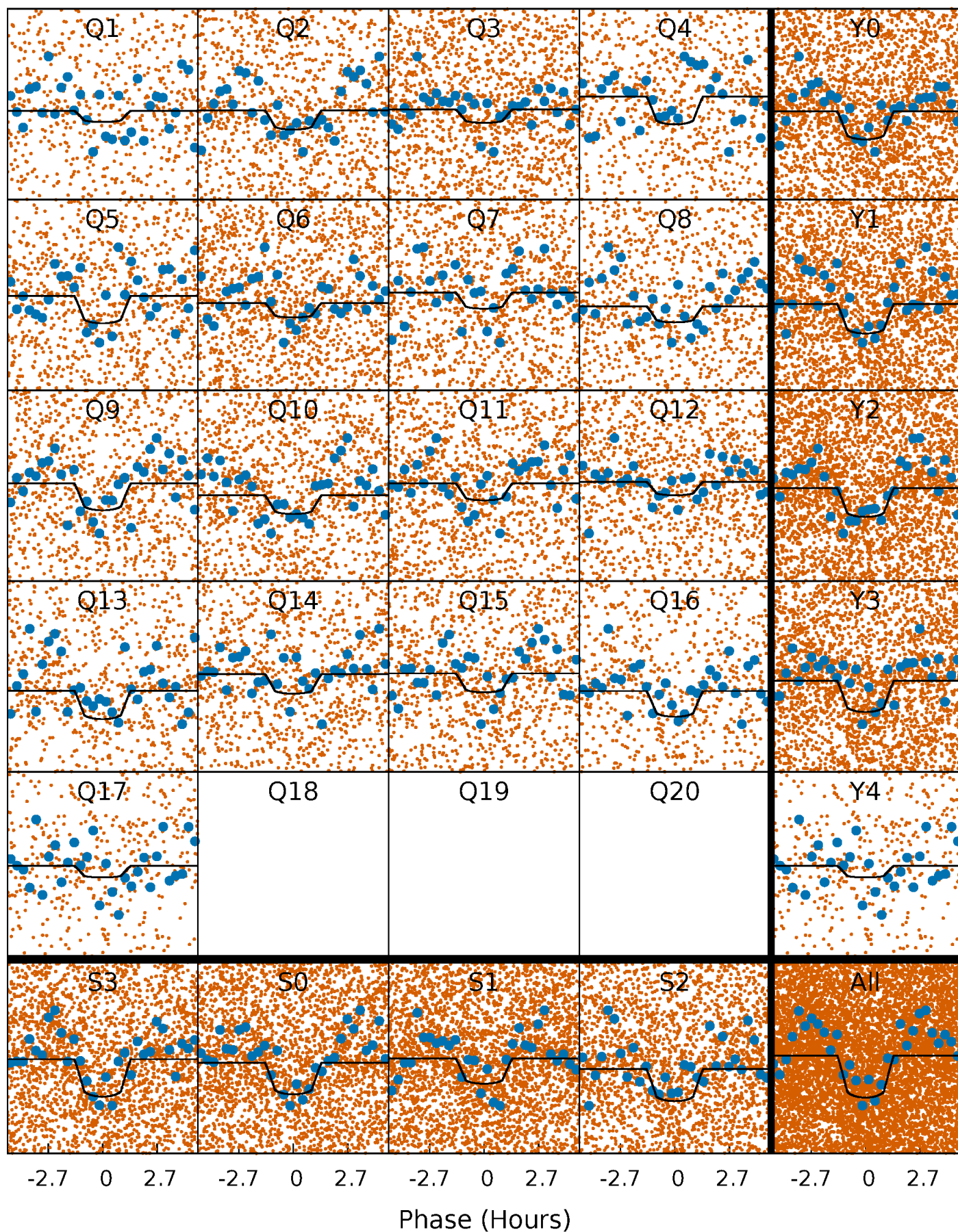
TCE 008196911-01 P= 0.718486 Days  $T_0=132.117486$  (BKJD)





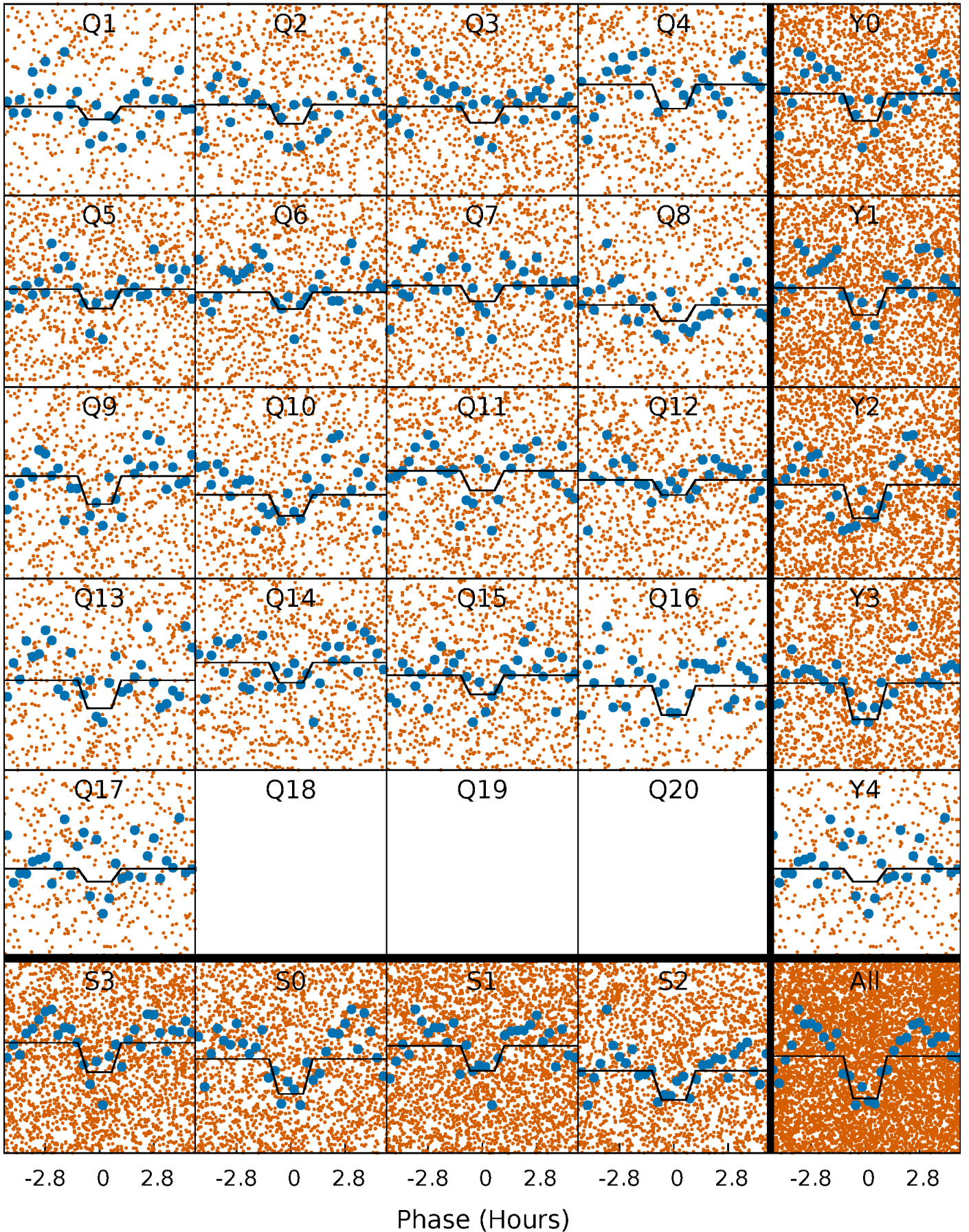
# DV Quarter-Phased Transit Curves

TCE 008196911-01 P= 0.718486 Days  $T_0=132.117486$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008196911-01 P= 0.718493 Days  $T_0=132.118217$  (BKJD)

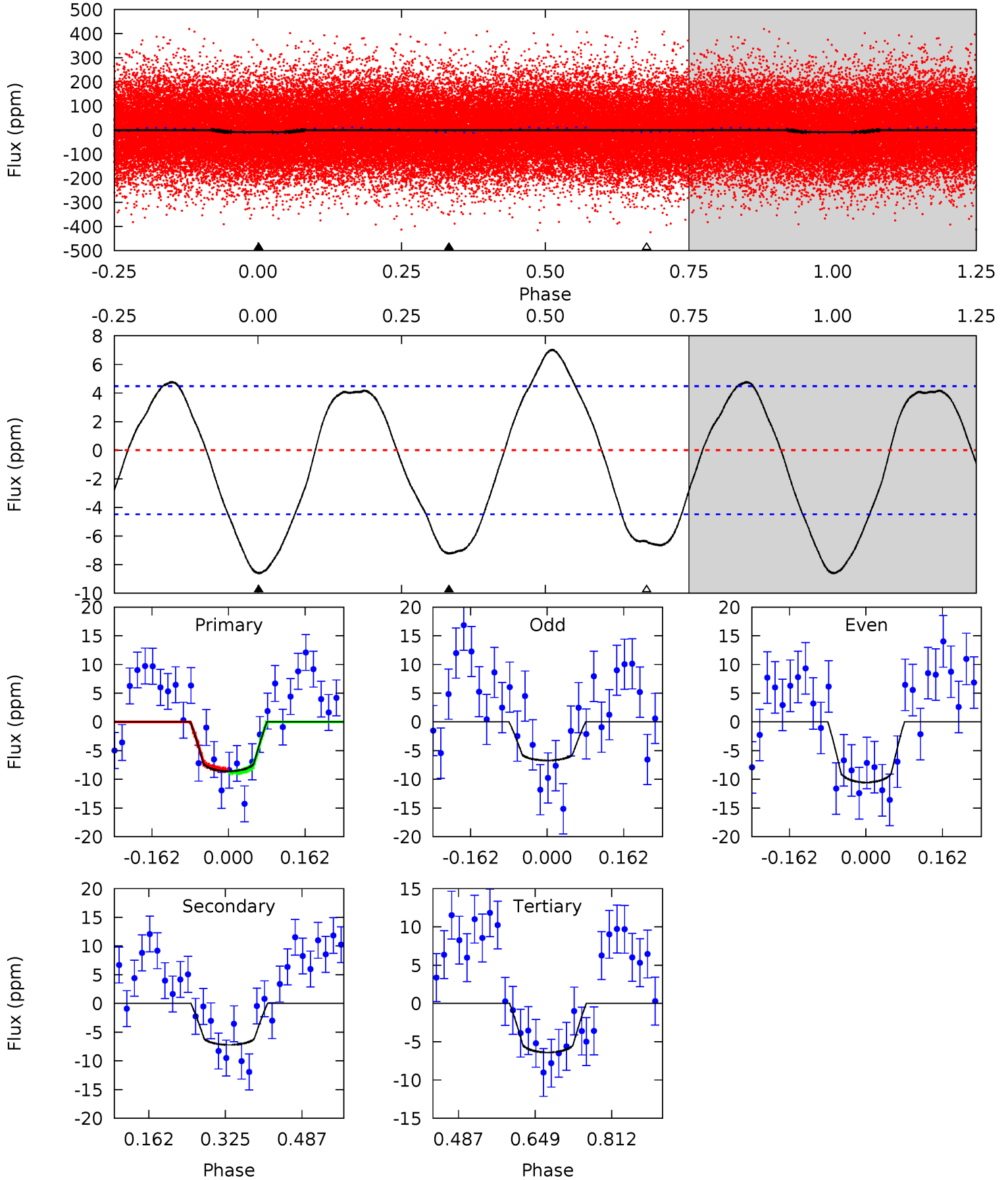




# DV Model-Shift Uniqueness Test

008196911-01, P = 0.718486 Days, E = 131.399000 Days

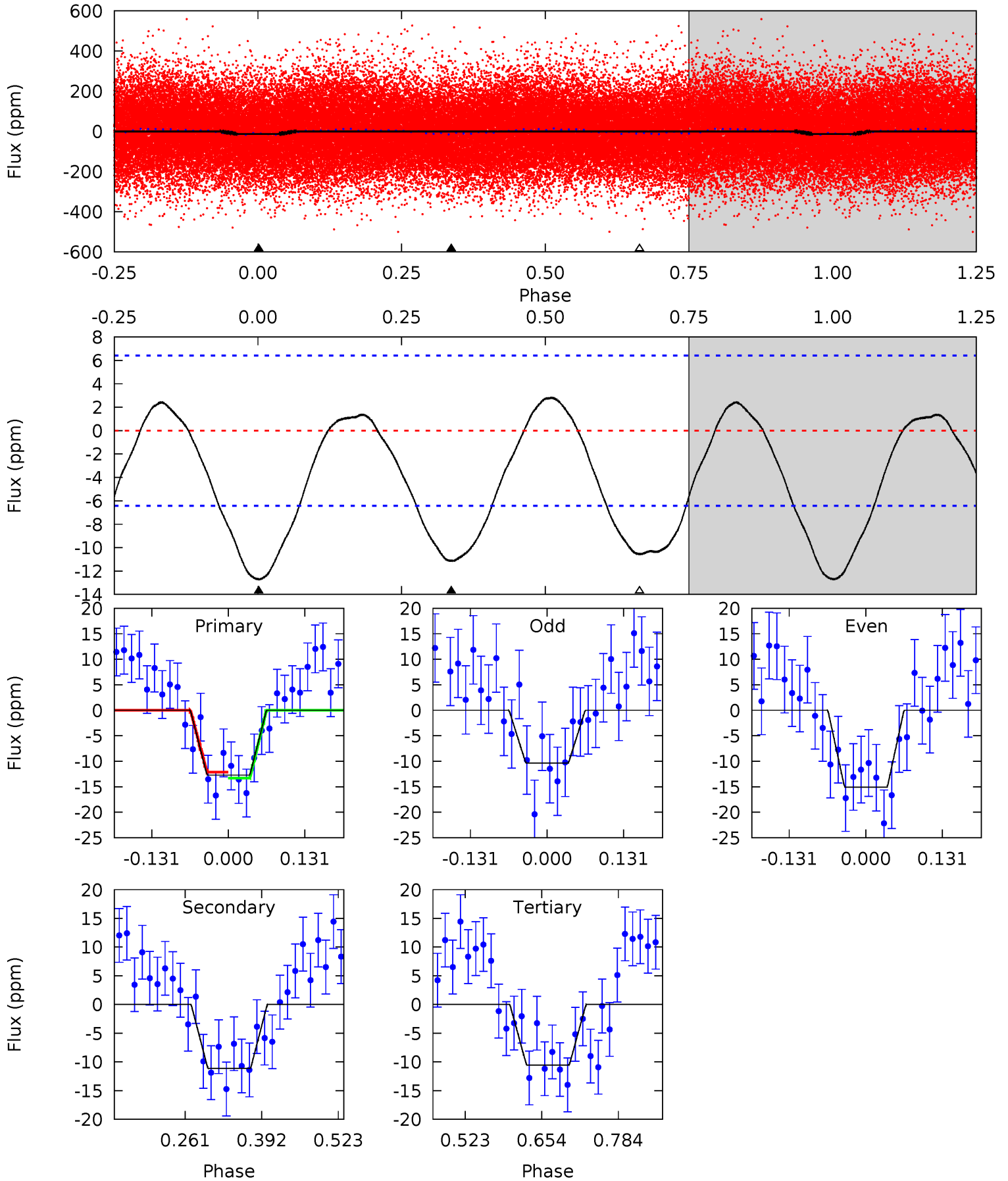
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.57	7.20	6.38	0	4.46	1.40	4.64	2.19	8.57	0.82	7.20	1.92	0.93	0.45	0.26



# Alt Model-Shift Uniqueness Test

008196911-01, P = 0.718493 Days, E = 131.399724 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
8.92	7.82	7.41	0	4.51	1.51	3.38	1.51	8.92	0.41	7.82	1.67	1.07	0.18	0.41





### Stellar Parameters For KIC 008196911

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8755^{+240}_{-412}$	$3.951^{+0.260}_{-0.140}$	$0.070^{+0.250}_{-0.600}$	$2.617^{+0.741}_{-0.906}$	$2.231^{+0.345}_{-0.641}$	$0.175^{+0.316}_{-0.075}$
	+3%/-5%	+7%/-4%	+357%/-857%	+28%/-35%	+15%/-29%	+180%/-43%
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 008196911-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-7 \pm 1$	$0.98^{+0.30}_{-0.30}$	$5988^{+451}_{-516}$	$6914^{+1614}_{-1008}$	$1.728^{+1.709}_{-0.703}$
Alt.	$-11 \pm 1$	$0.97^{+0.31}_{-0.28}$	$5950^{+487}_{-500}$	$8058^{+1752}_{-1285}$	$2.741^{+2.201}_{-1.184}$

$T_{\text{max}}$  = 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

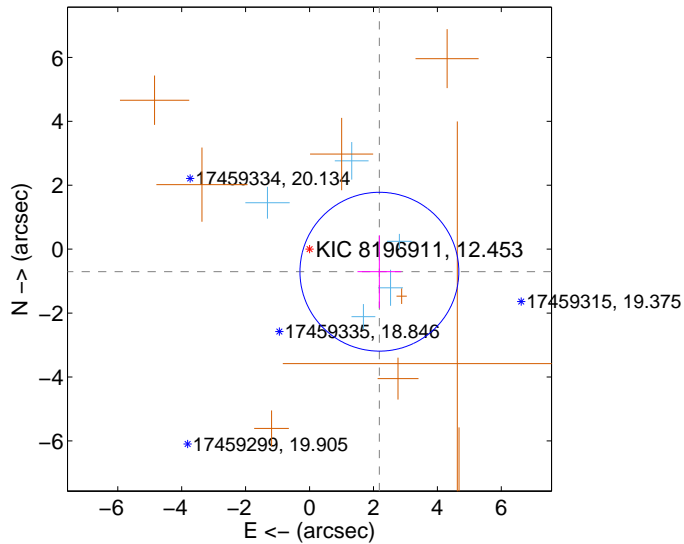
Supplemental centroid analysis for 008196911-01. Kepler magnitude: 12.45. Transit SNR 8.24

There are 5 quarters with good PRF difference image offsets

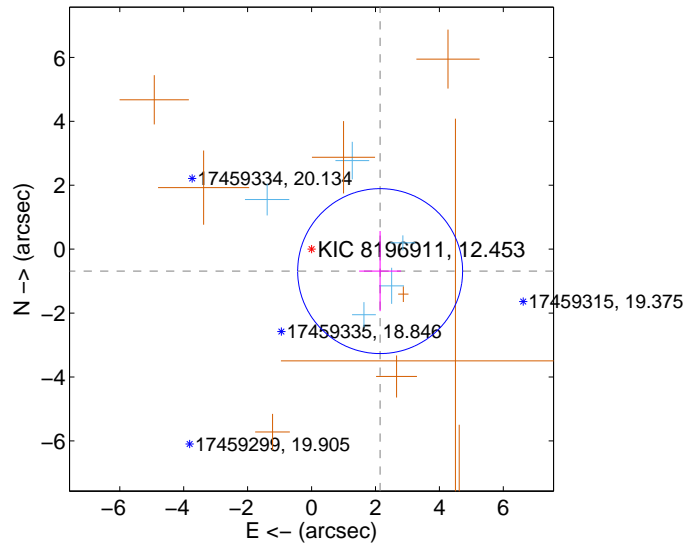
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.297 \pm 0.829$	2.77	$-2.186 \pm 0.688$	$-0.705 \pm 1.135$
PRF-fit source offset from KIC position	$2.253 \pm 0.860$	2.62	$-2.146 \pm 0.656$	$-0.687 \pm 1.254$
photometric centroid source offset	$0.60 \pm 1.90$	0.32	$-0.39 \pm 2.20$	$0.46 \pm 1.65$

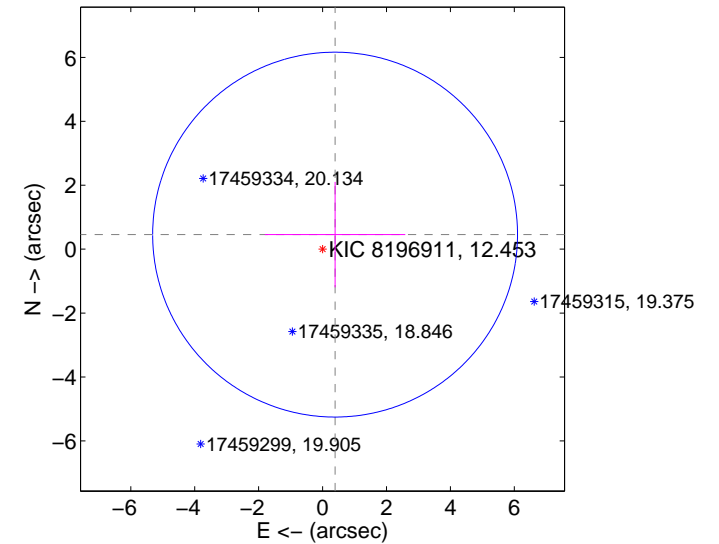
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

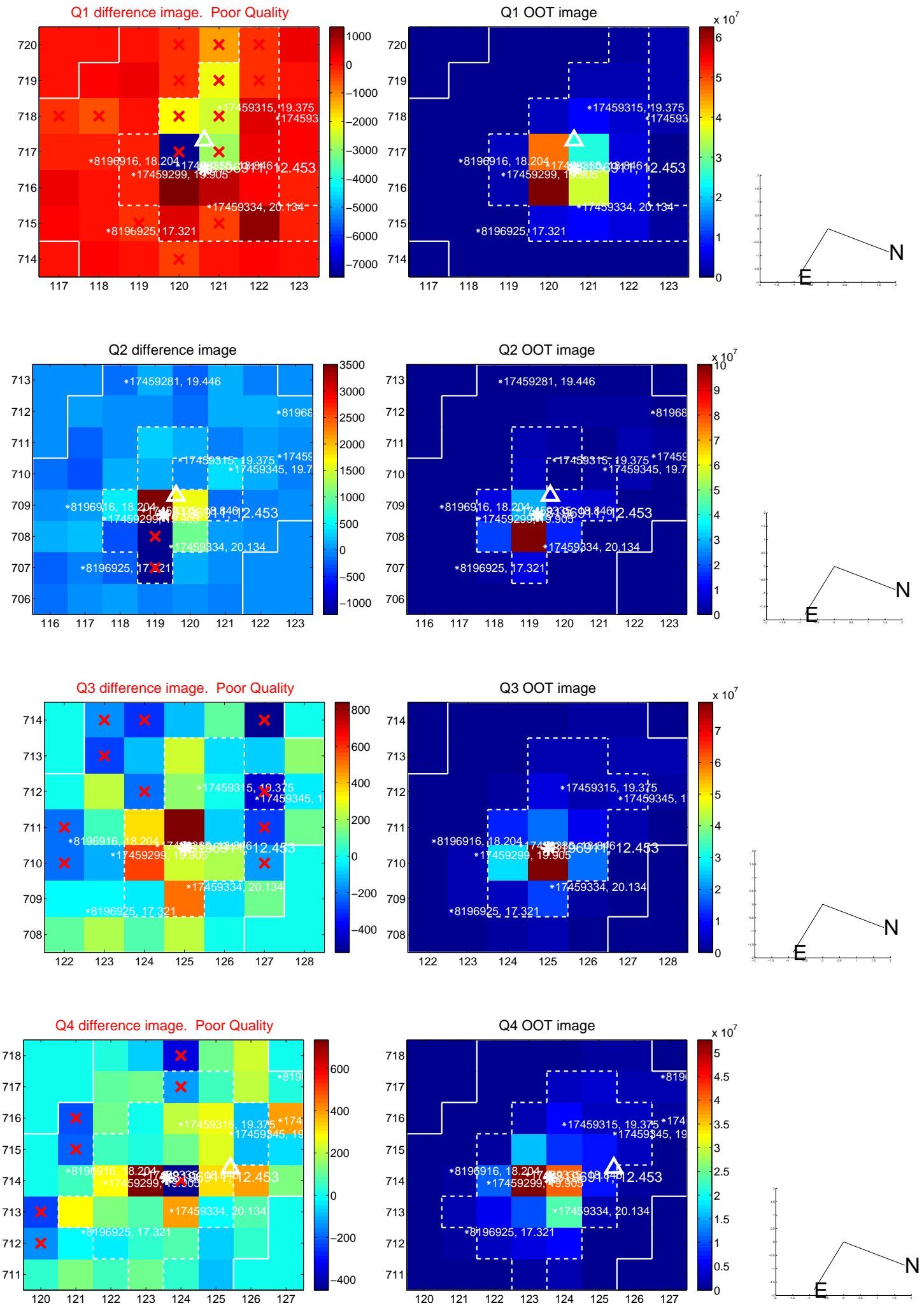


offset from photometric centroids

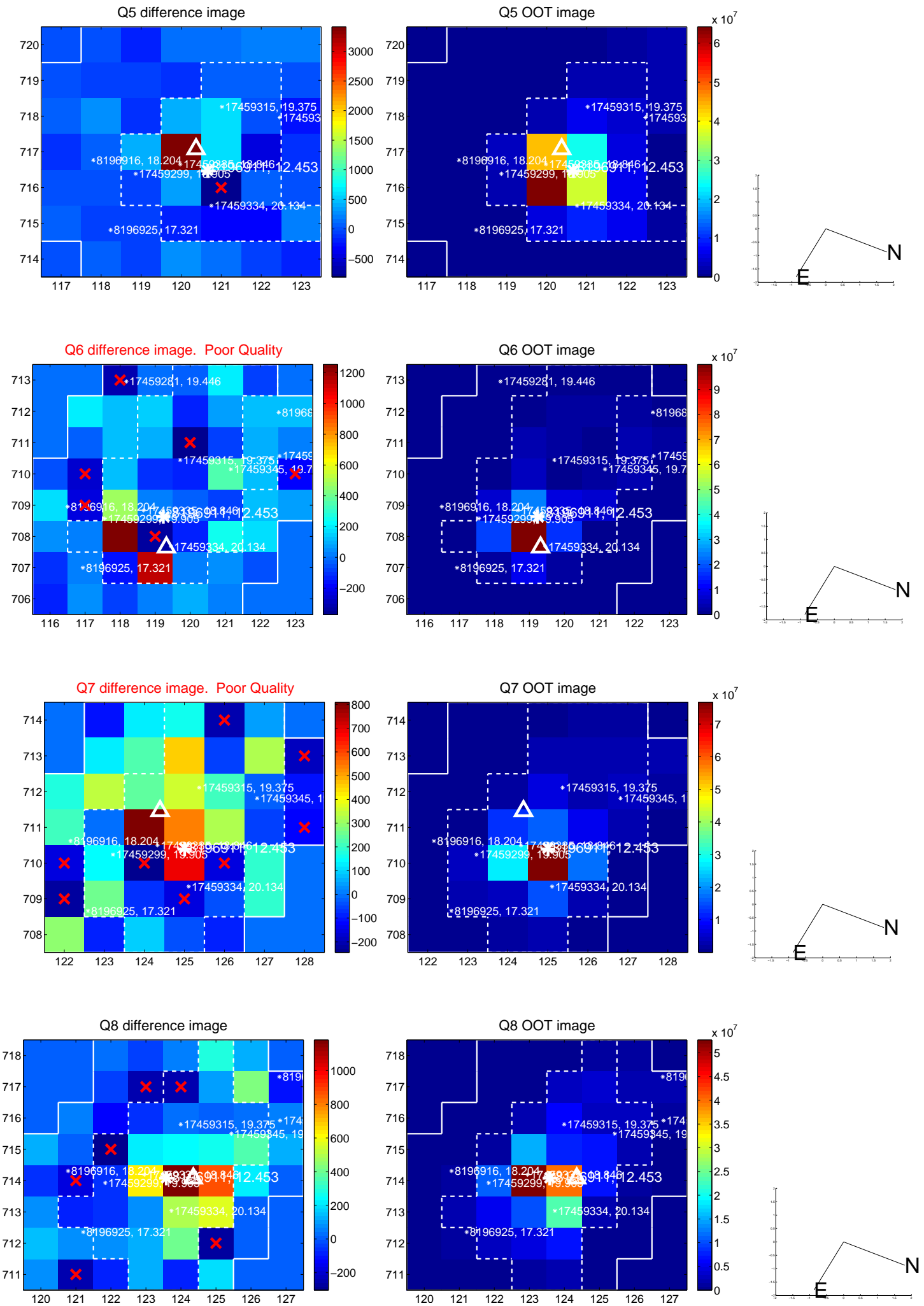


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

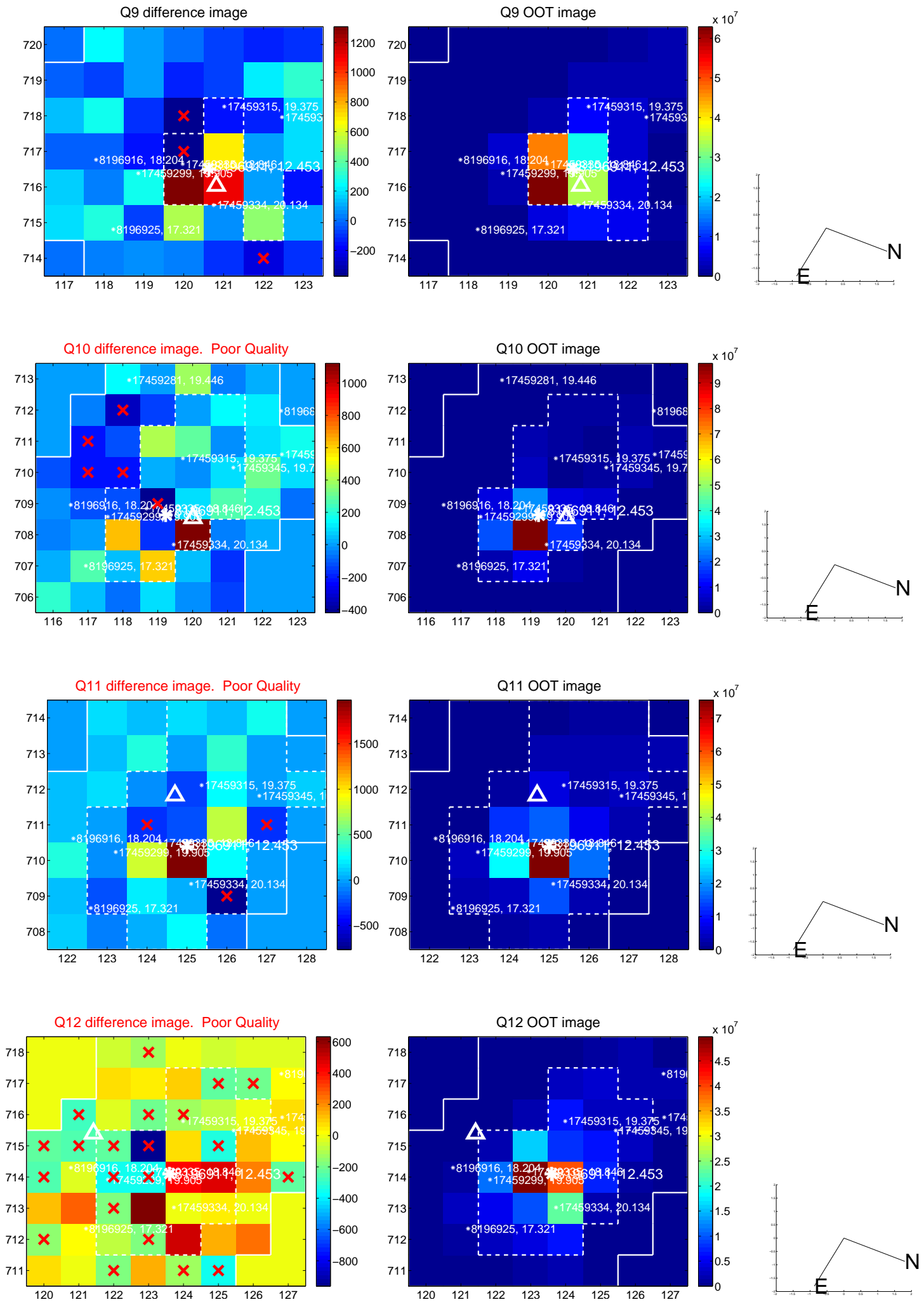


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

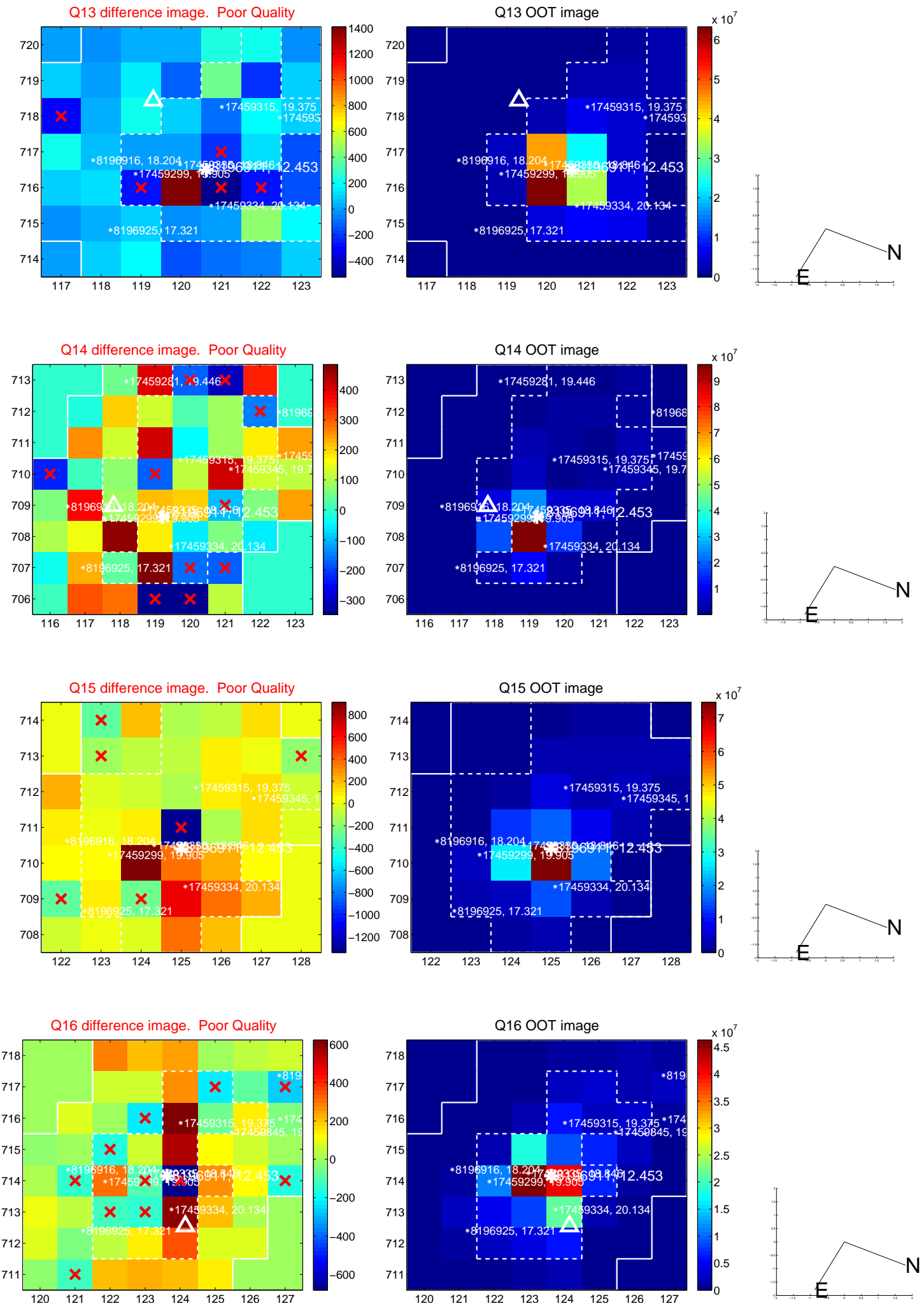




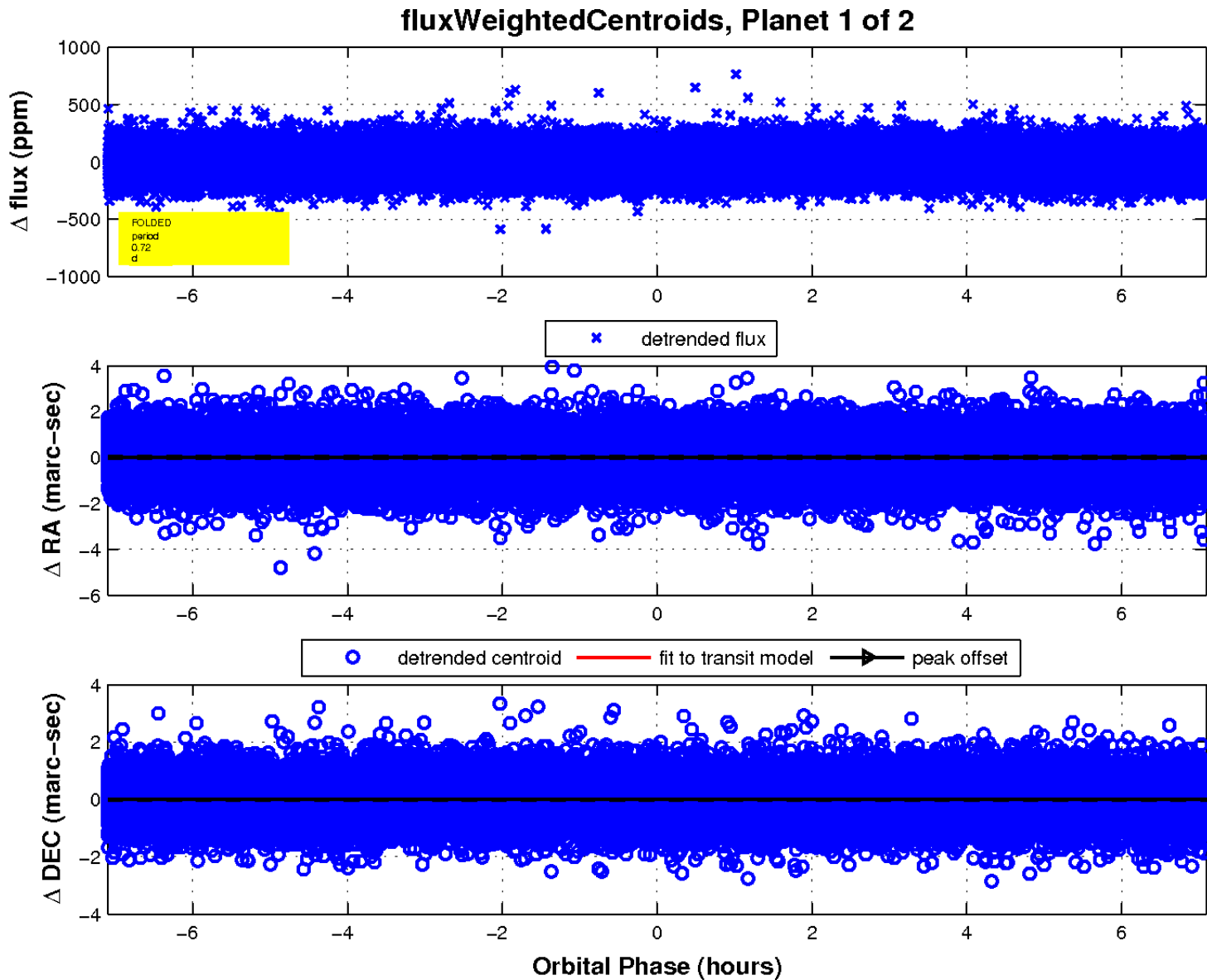
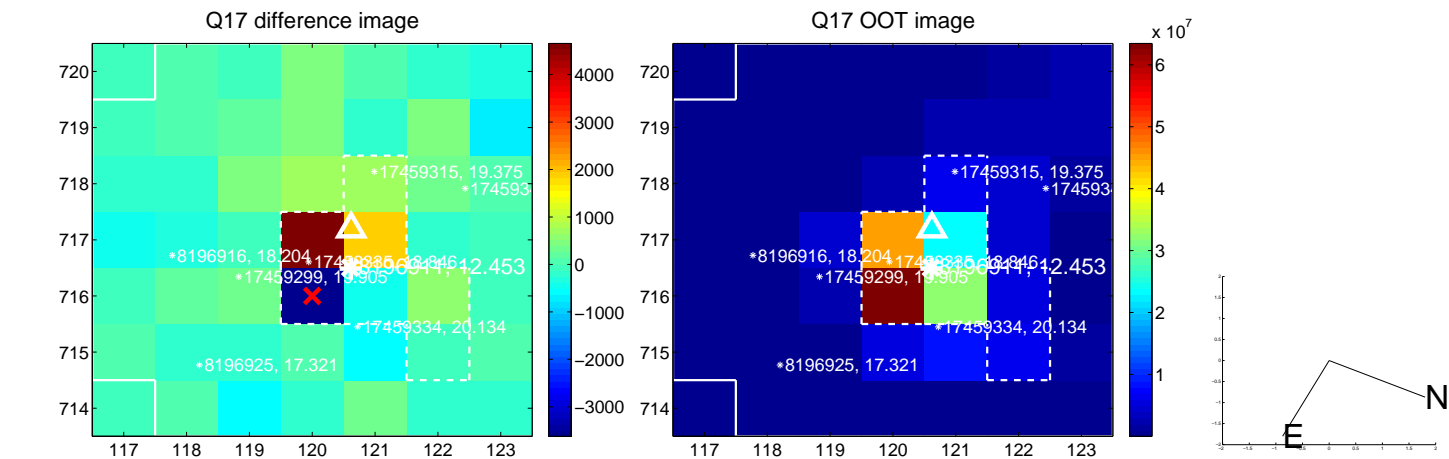
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

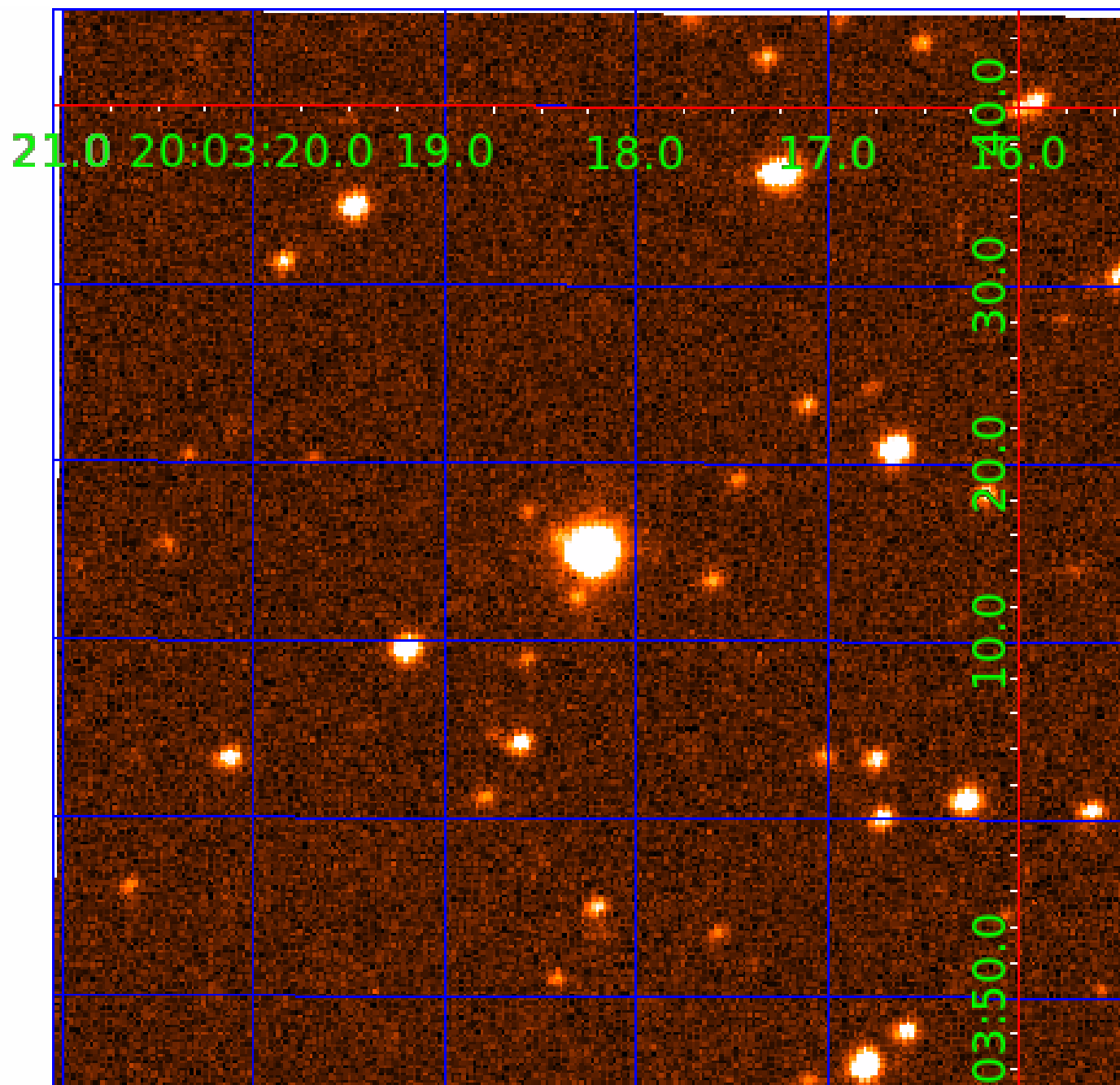


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008196911

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008196911-01	OBS	No	0.718486	132.117486	10.9	2.366	8.1	8.2	2.62	8755	1.00	85617.69
008196911-02	OBS	No	271.991247	372.602699	157.8	11.289	11.9	9.3	2.62	8755	3.59	31.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008196911-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008196911-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—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.

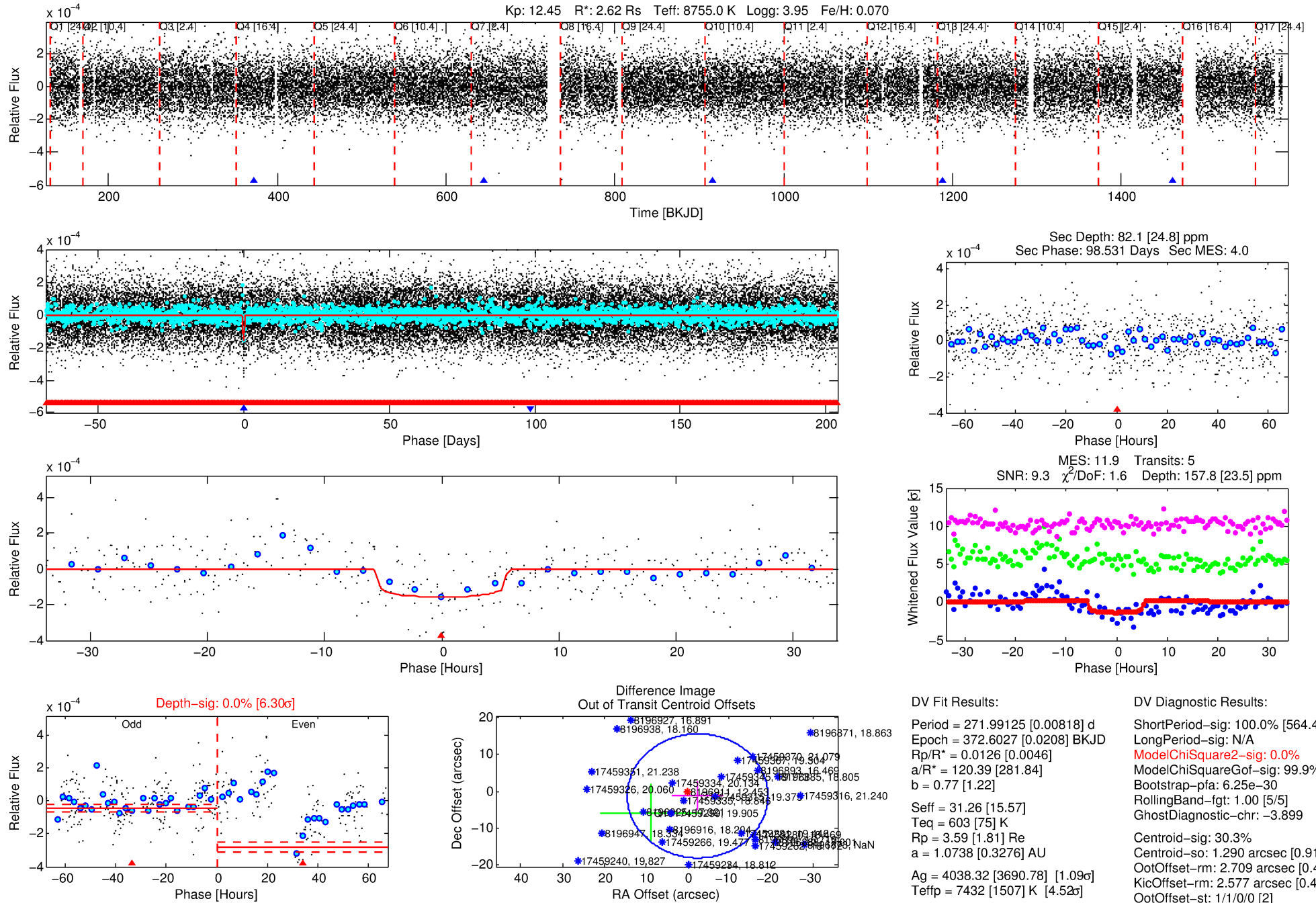
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008196911-02

No Significant Match Found

# DV One-Page Summary

KIC: 8196911 Candidate: 2 of 2 Period: 271.991 d



## DV Fit Results:

Period = 271.99125 [0.00818] d  
Epoch = 372.6027 [0.0208] BKJD  
Rp/R\* = 0.0126 [0.0046]  
a/R\* = 120.39 [281.84]  
b = 0.77 [1.22]  
Seff = 31.26 [15.57]  
Teq = 603 [75] K  
Rp = 3.59 [1.81] Re  
a = 1.0738 [0.3276] AU  
Ag = 4038.32 [3690.78] [1.09σ]  
Teffp = 7432 [1507] K [4.52σ]

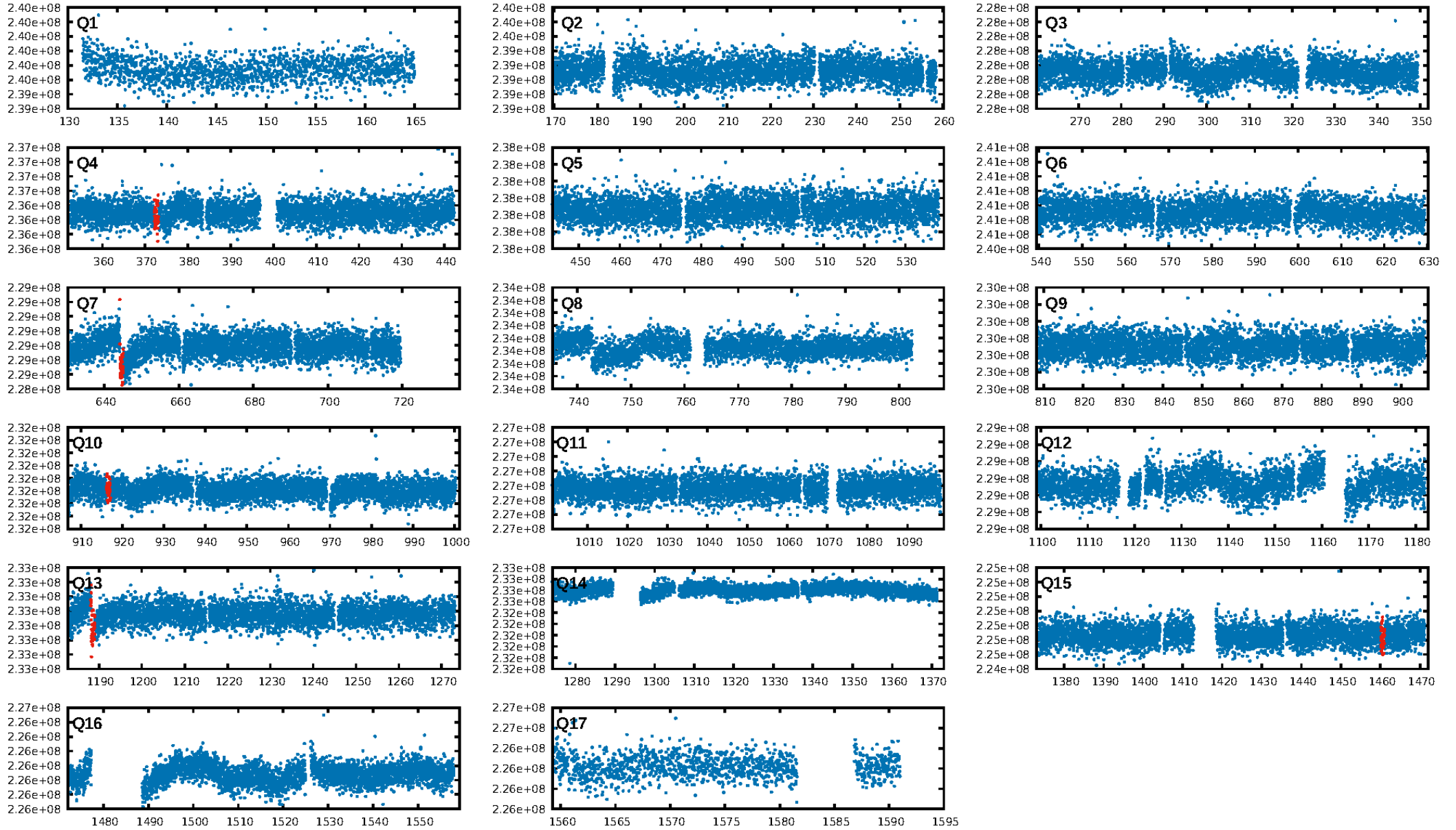
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [564.48σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 6.25e-30  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -3.899  
Centroid-sig: 30.3%  
Centroid-so: 1.290 arcsec [0.91σ]  
OotOffset-rm: 2.709 arcsec [0.48σ]  
KicOffset-rm: 2.577 arcsec [0.46σ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.00 [0/2]

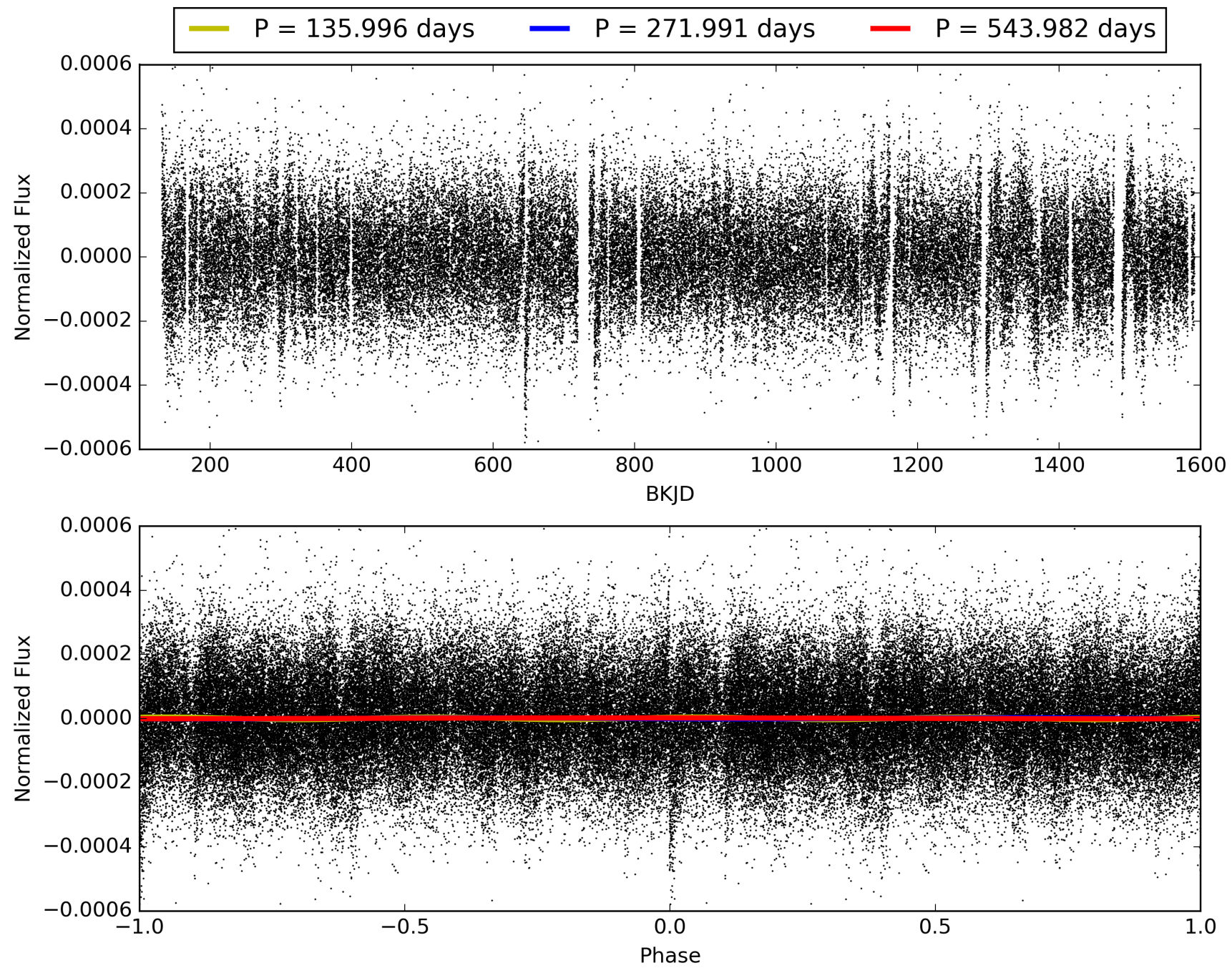
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:16:16 Z

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

# TCE 008196911-02, PDC Light Curves



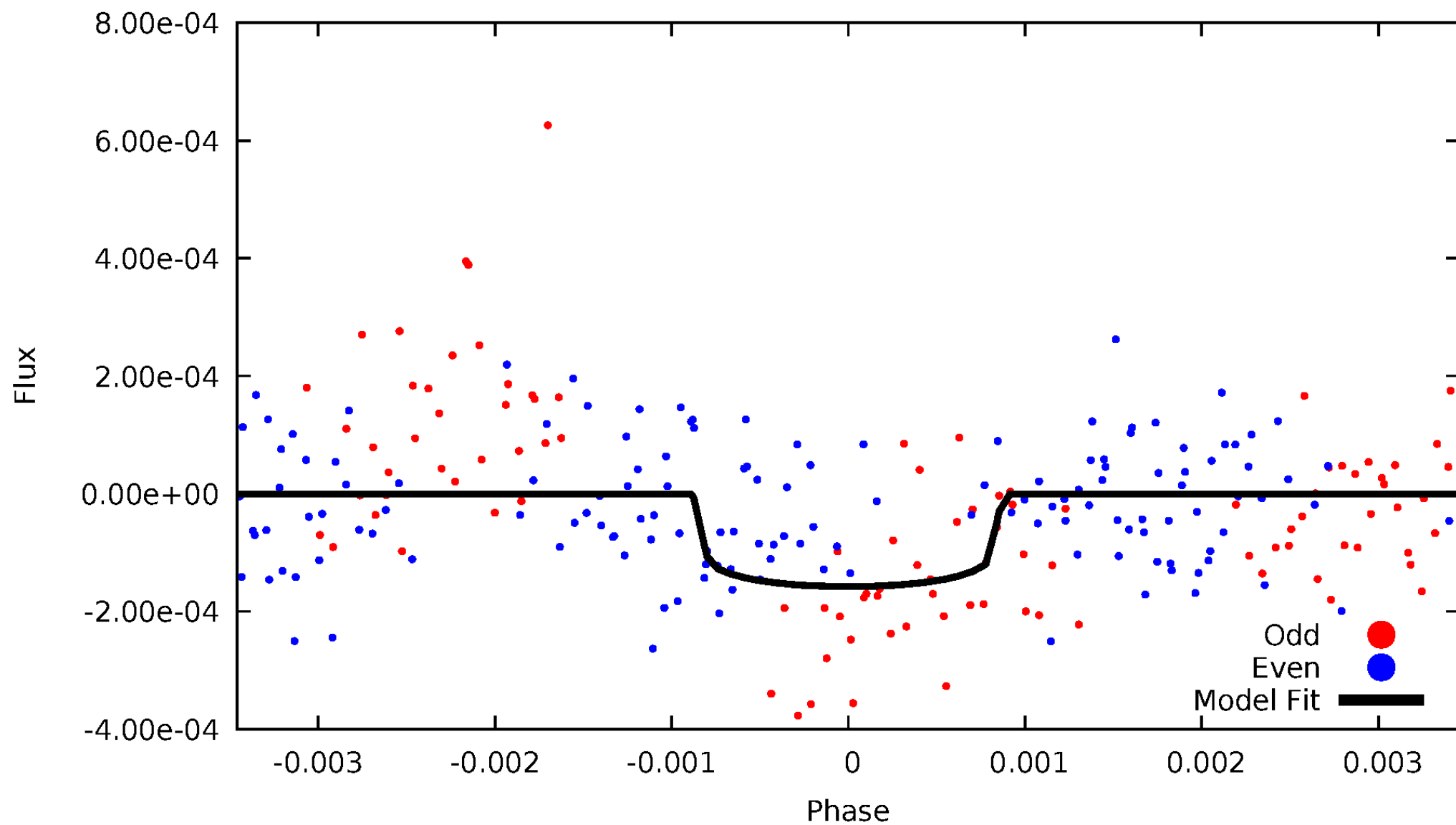
# TCE 008196911-02





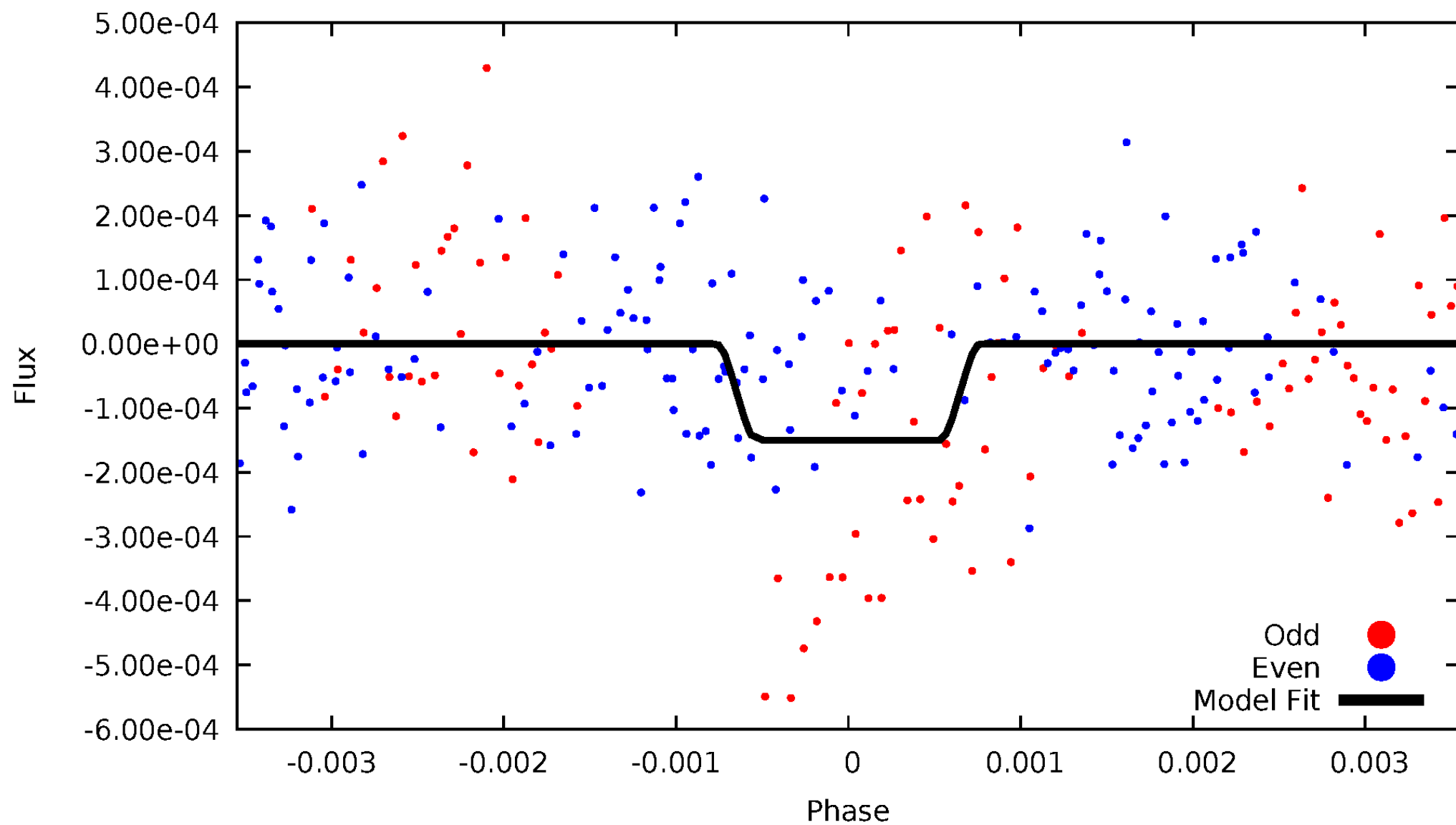
# DV Odd/Even

TCE 008196911-02



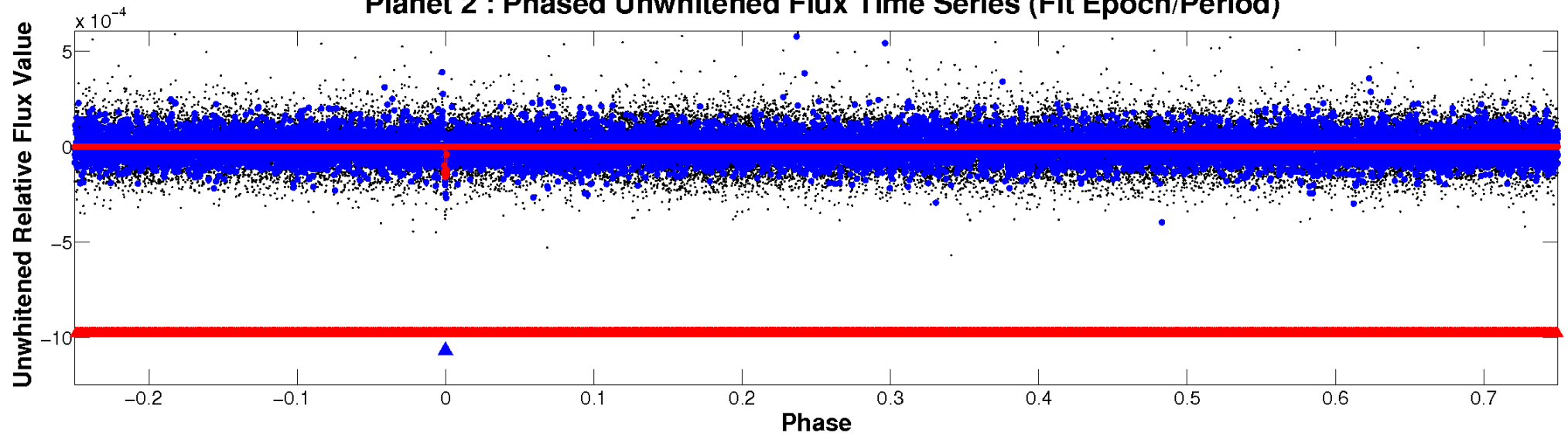
# ALT Odd/Even

TCE 008196911-02

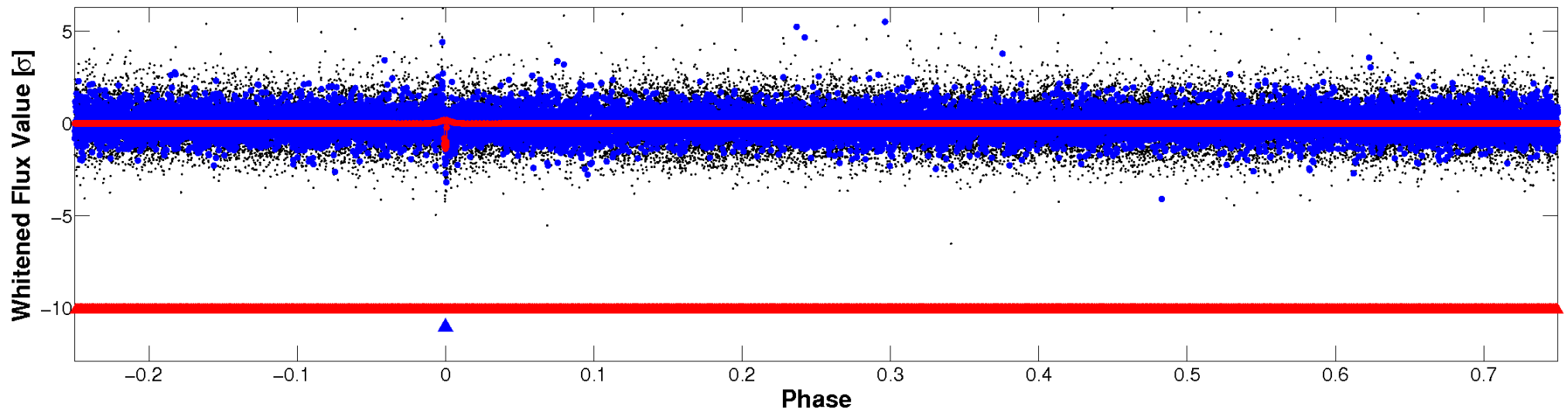


# Non-Whitened Vs. Whitened Light Curve

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

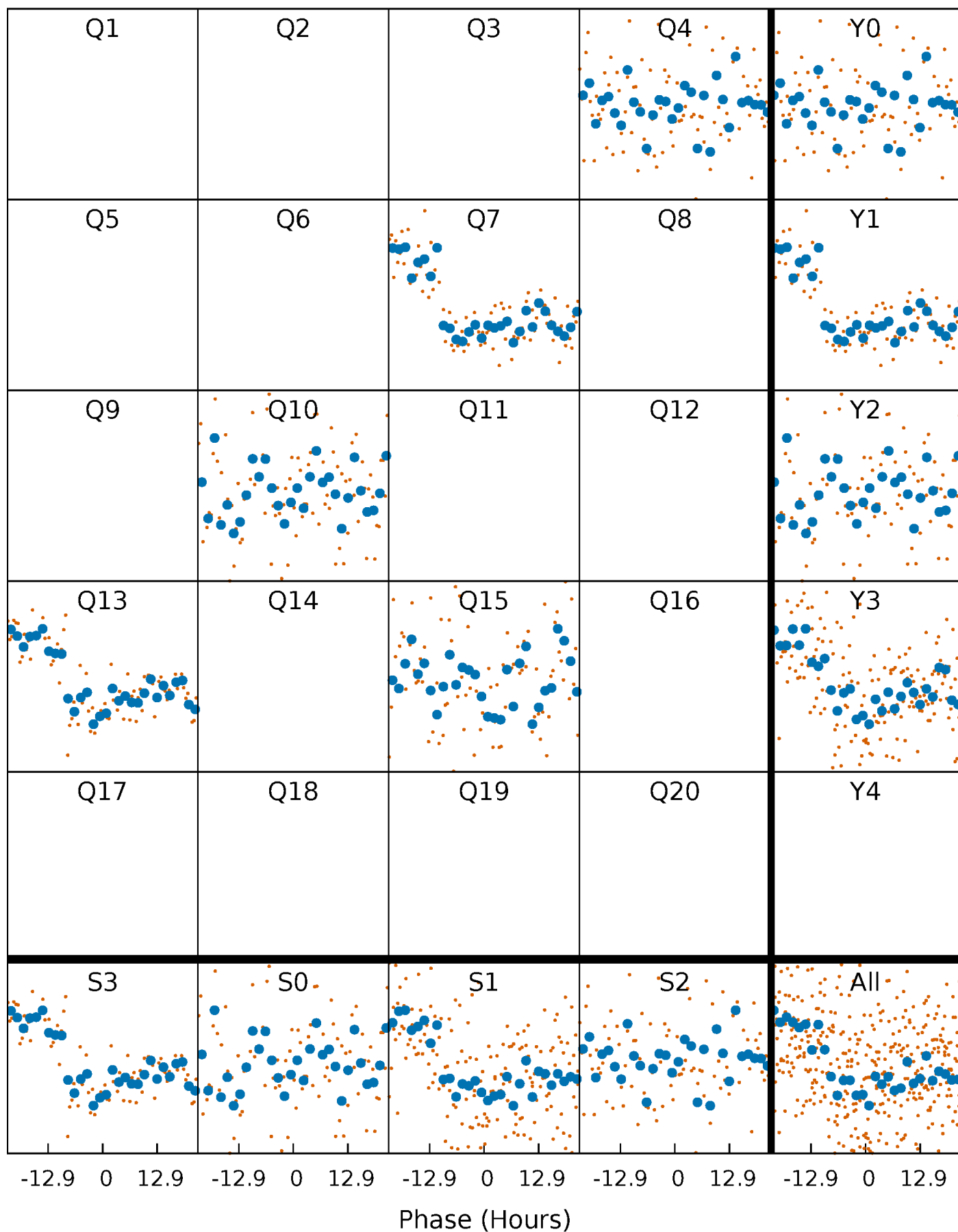


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



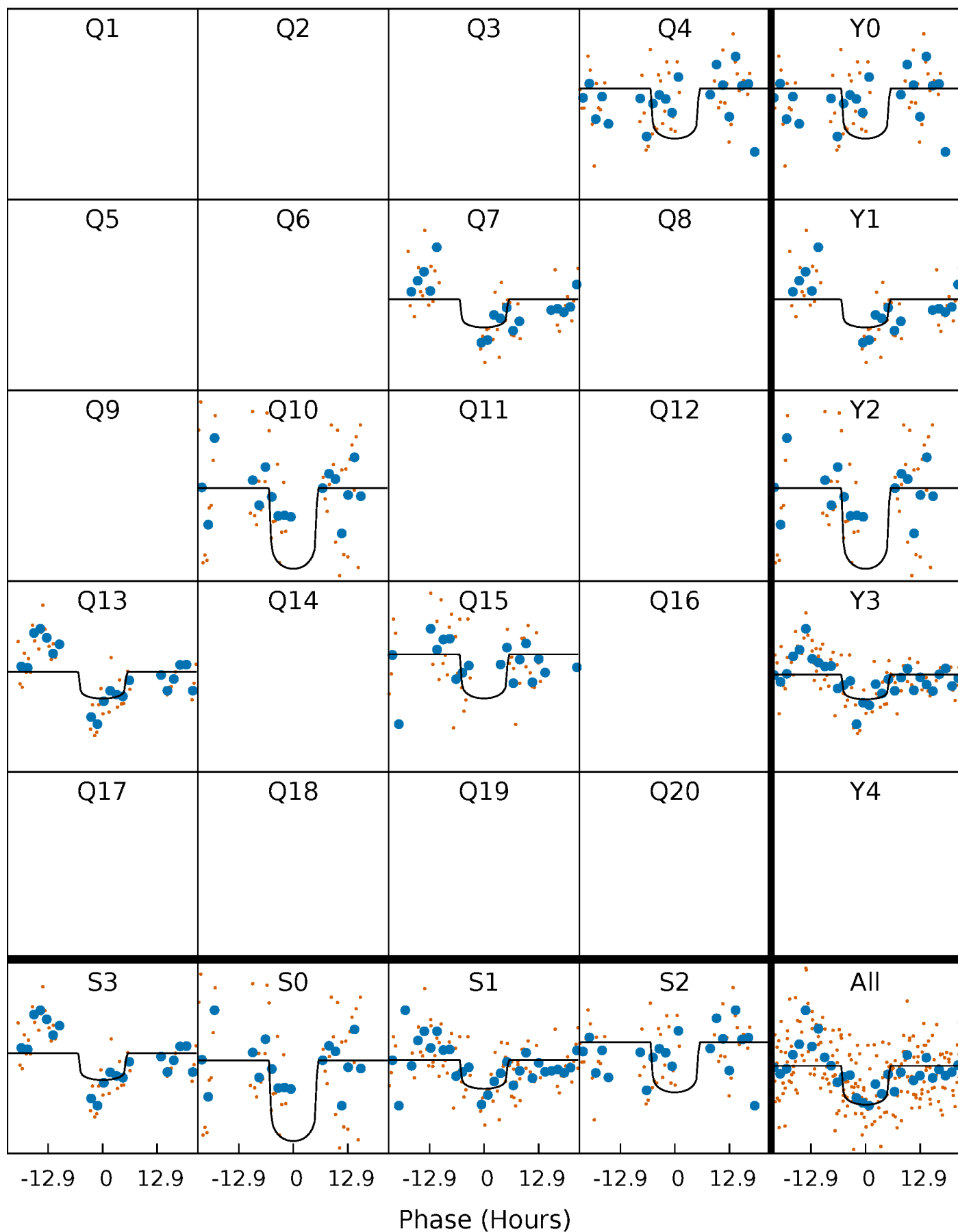
# PDC Quarter-Phased Transit Curves

TCE 008196911-02 P=271.991247 Days  $T_0=372.602699$  (BKJD)



# DV Quarter-Phased Transit Curves

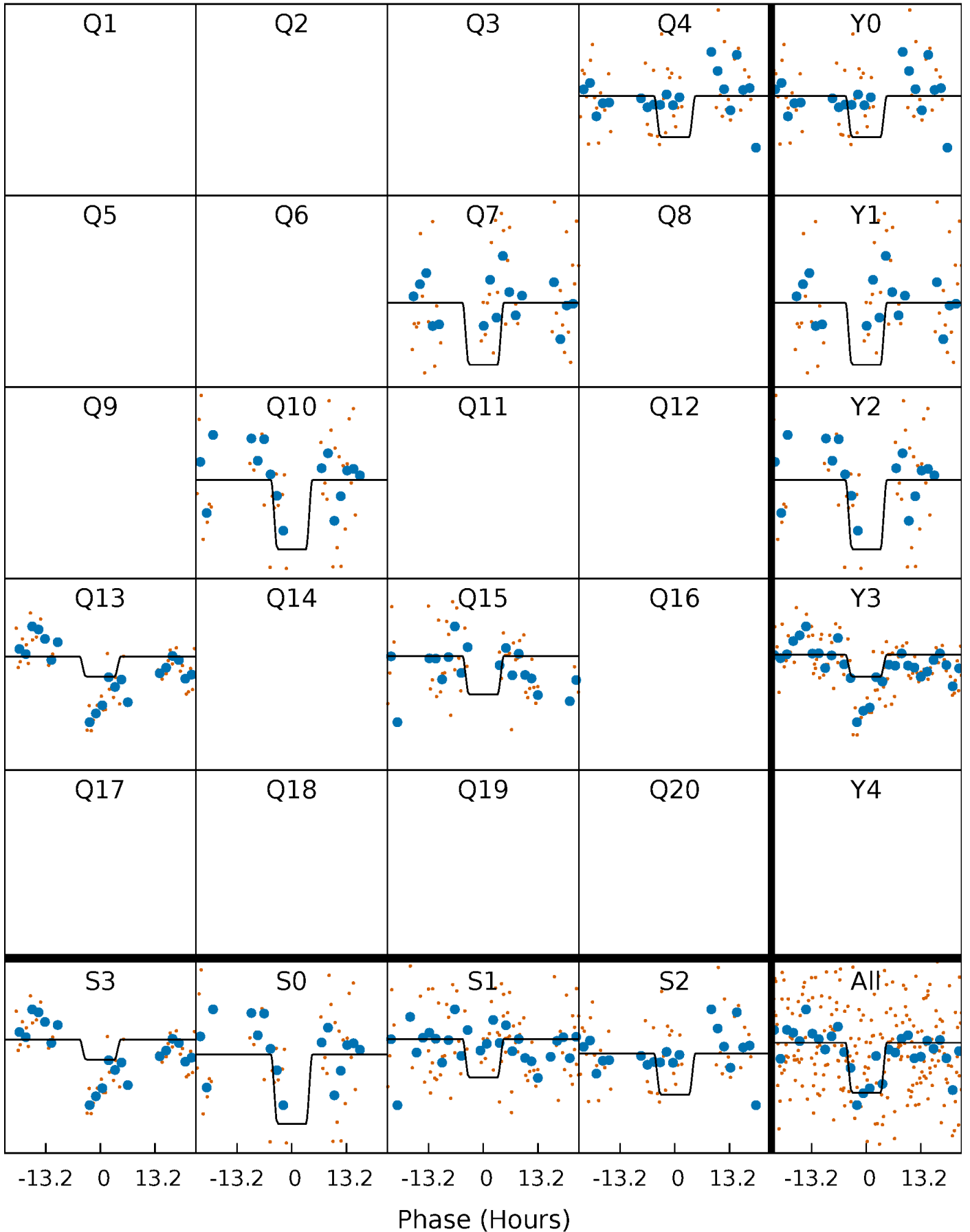
TCE 008196911-02 P=271.991247 Days  $T_0=372.602699$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

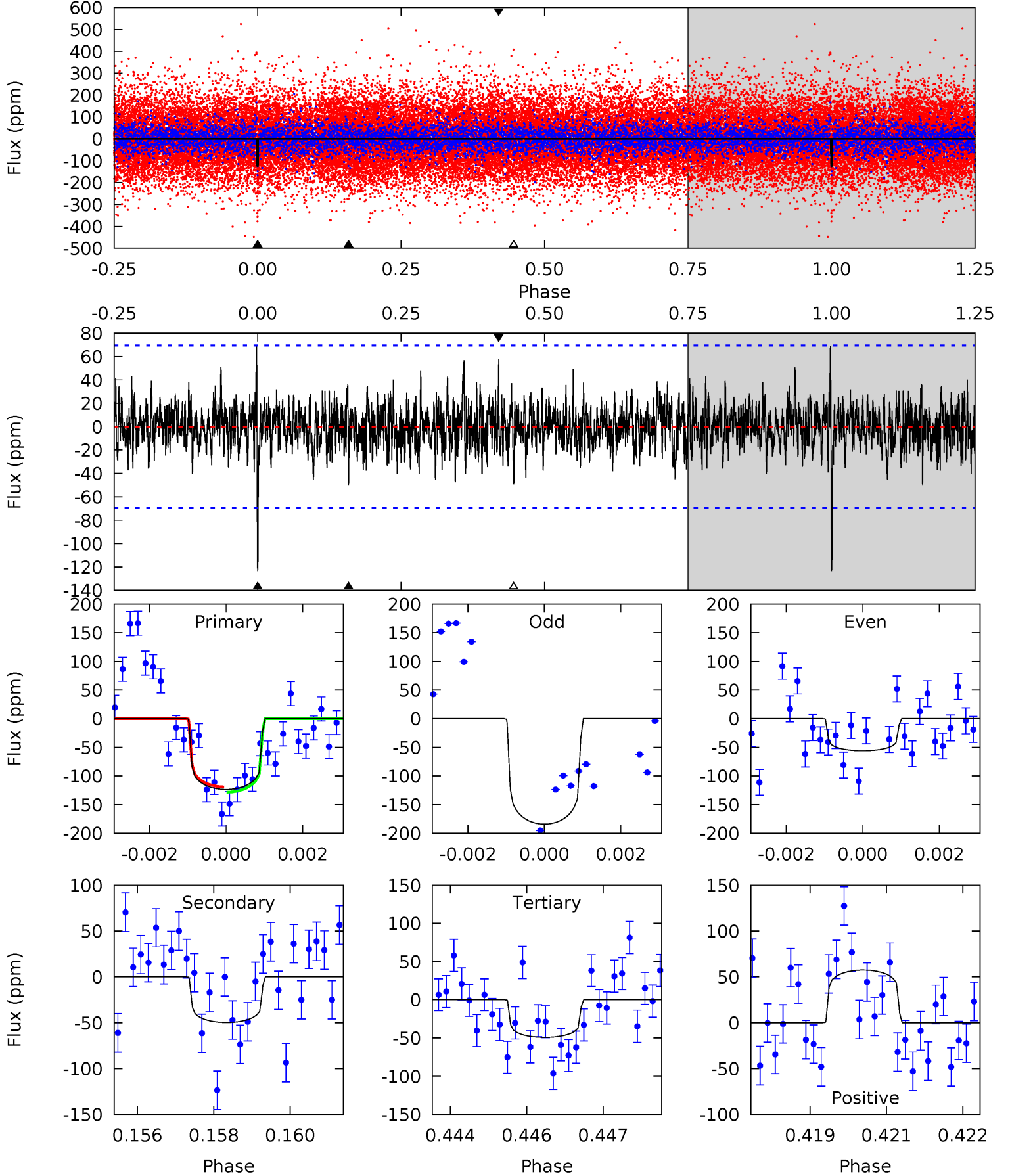
TCE 008196911-02 P=272.004740 Days  $T_0=372.575124$  (BKJD)



# DV Model-Shift Uniqueness Test

008196911-02, P = 271.991247 Days, E = 100.611452 Days

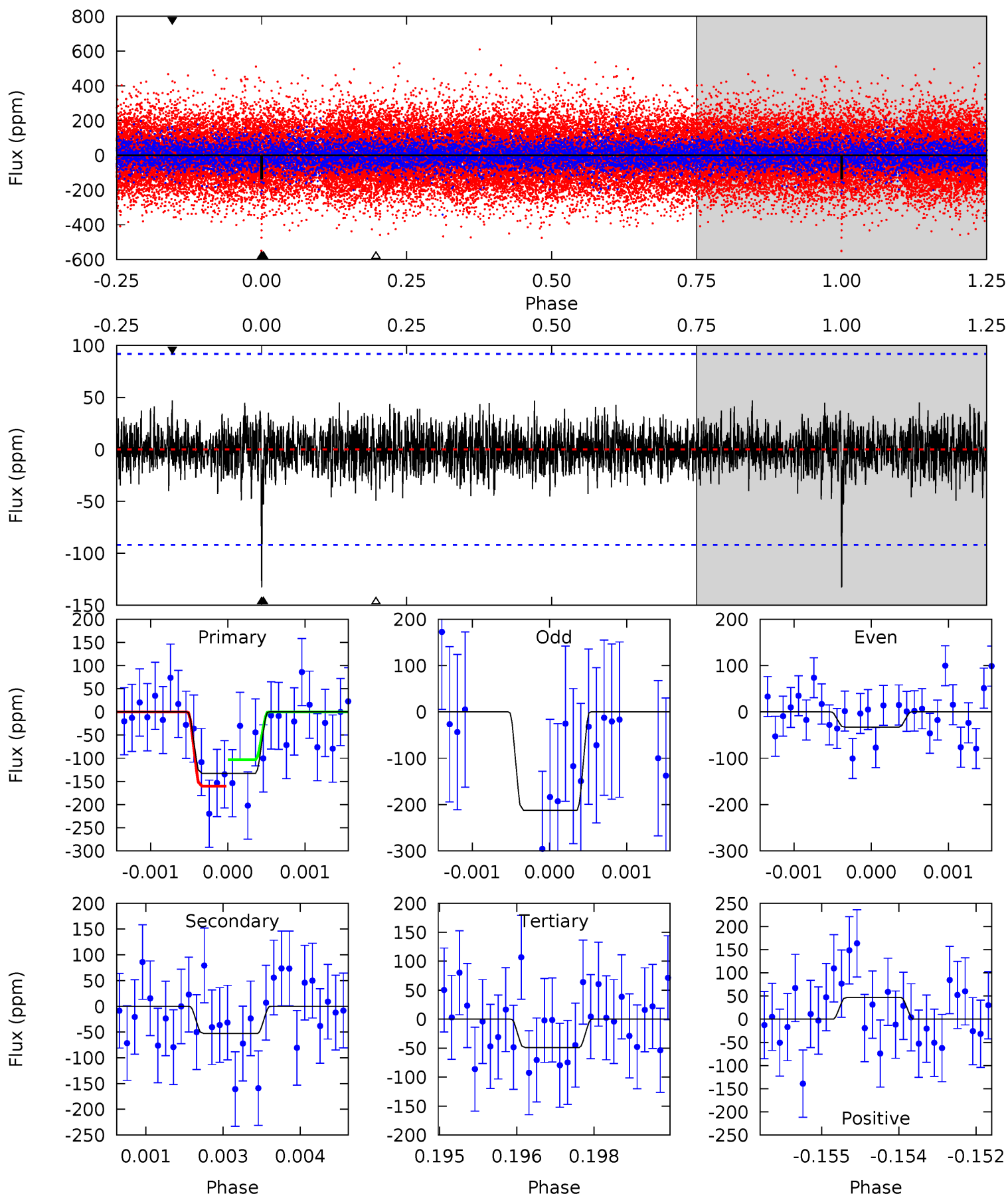
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.50	3.83	3.79	4.42	5.35	3.12	1.15	5.72	5.08	0.05	-0.59	4.92	1.55	0.36	0.35



# Alt Model-Shift Uniqueness Test

008196911-02,  $P = 272.004740$  Days,  $E = 100.570384$  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
7.78	3.10	2.88	2.76	5.38	3.18	0.85	4.90	5.01	0.22	0.33	5.25	9.03	0.26	1.68



### Stellar Parameters For KIC 008196911

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8755^{+240}_{-412}$	$3.951^{+0.260}_{-0.140}$	$0.070^{+0.250}_{-0.600}$	$2.617^{+0.741}_{-0.906}$	$2.231^{+0.345}_{-0.641}$	$0.175^{+0.316}_{-0.075}$
	+3%/-5%	+7%/-4%	+357%/-857%	+28%/-35%	+15%/-29%	+180%/-43%
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 008196911-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-50 \pm 13$	$3.42^{+1.37}_{-1.28}$	$829^{+66}_{-75}$	$6221^{+1779}_{-910}$	$2612^{+4134}_{-1338}$
Alt.	$-53 \pm 17$	$3.34^{+1.52}_{-1.29}$	$822^{+69}_{-78}$	$6310^{+2189}_{-978}$	$2948^{+5182}_{-1683}$

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

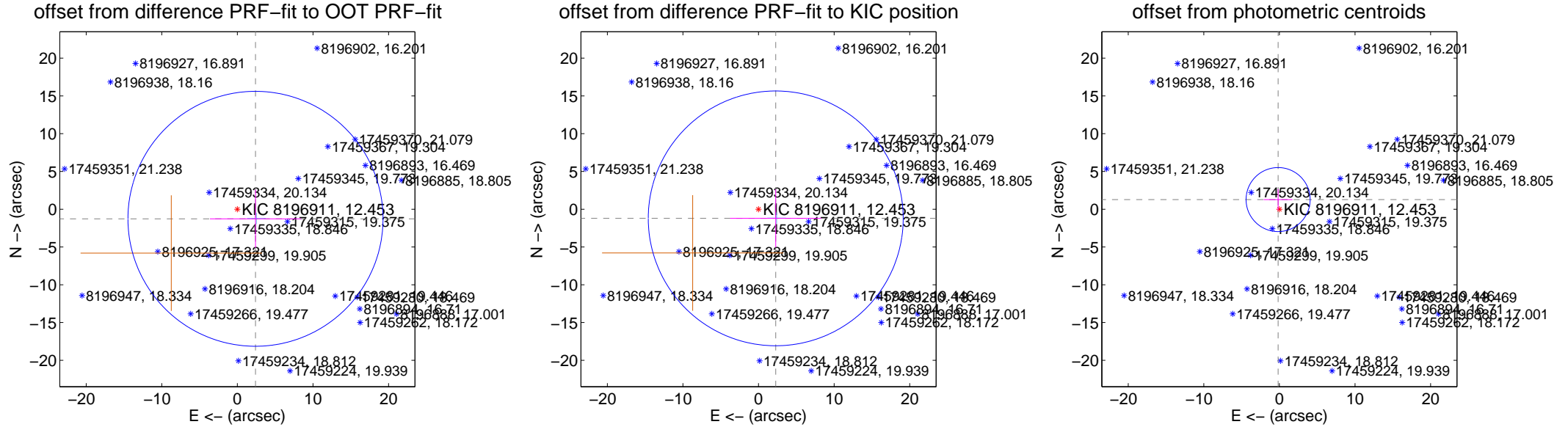
# DV Centroid Data

Supplemental centroid analysis for 008196911-02. Kepler magnitude: 12.45. Transit SNR 9.32

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

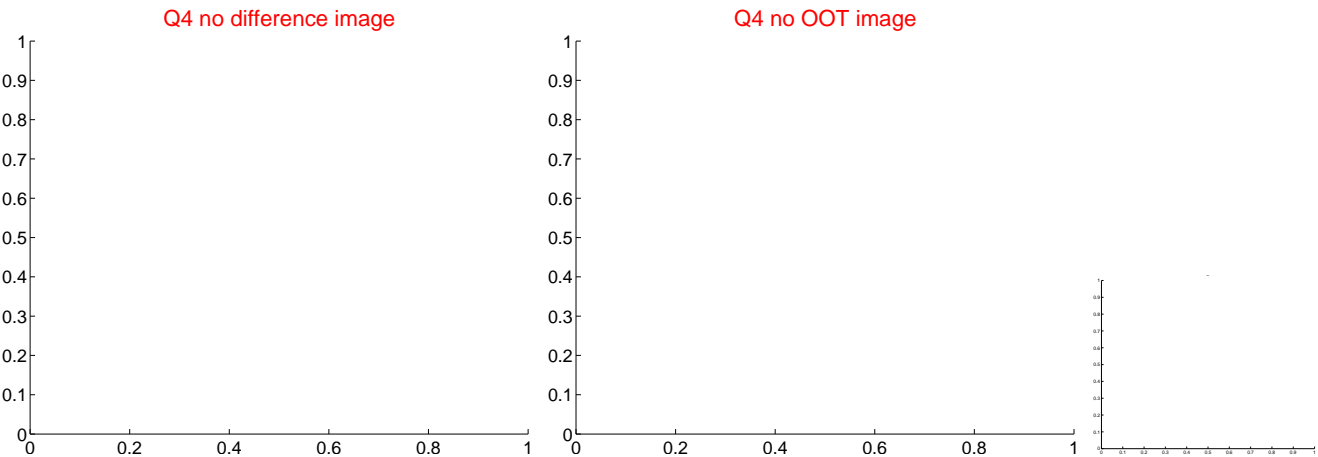
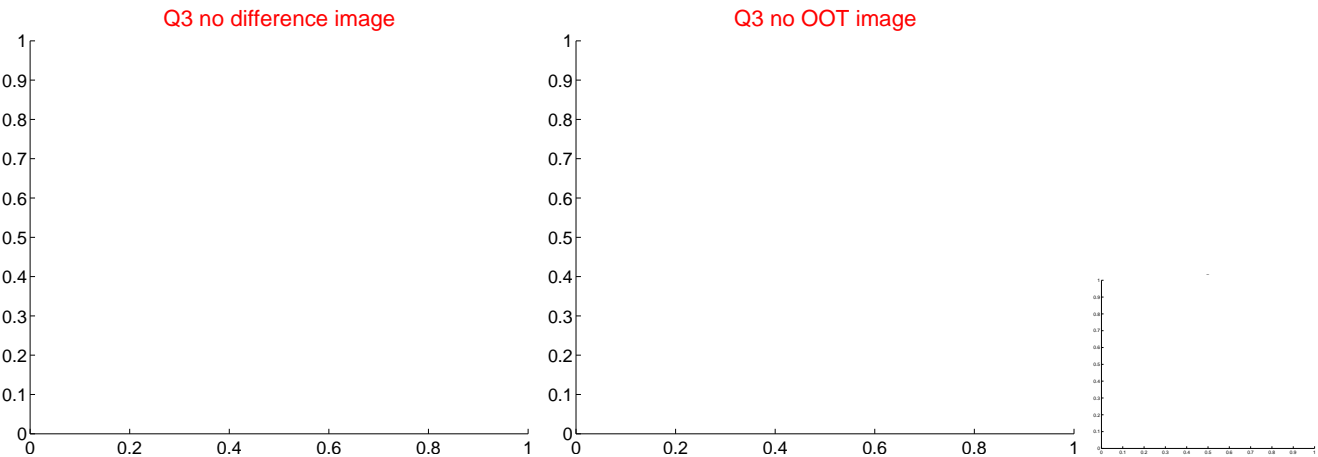
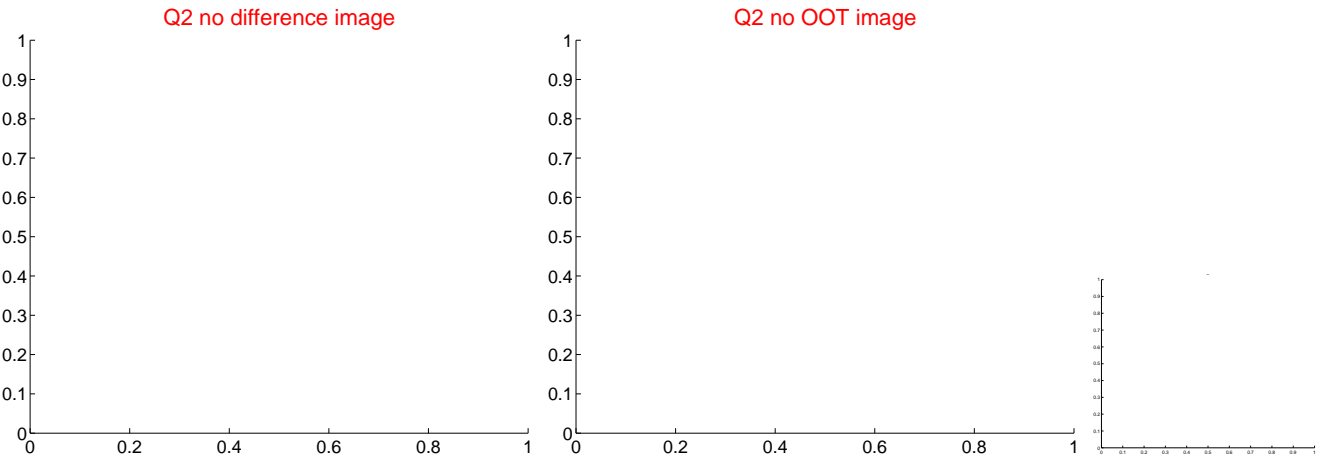
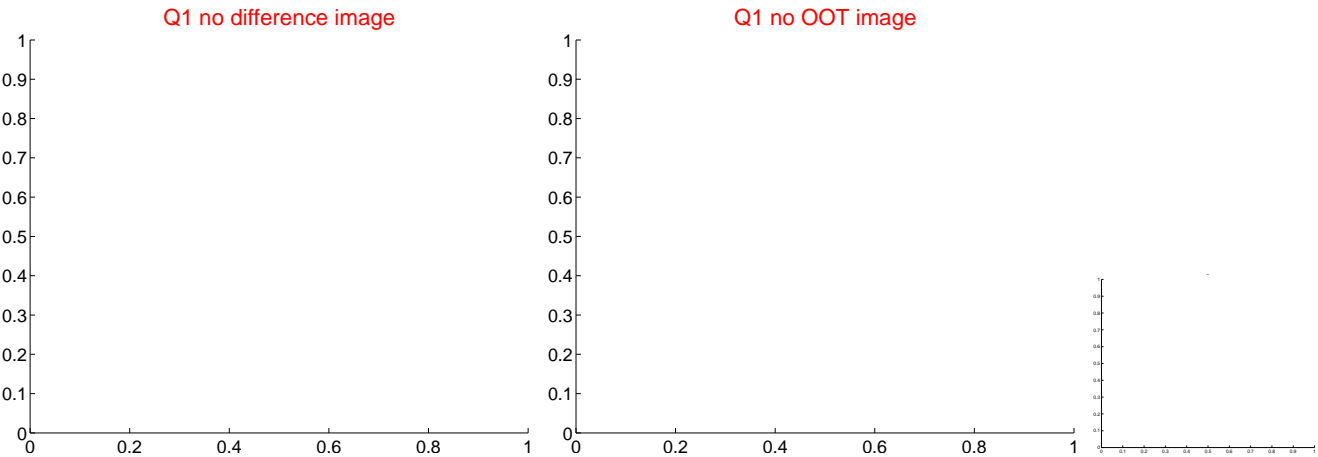
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.709 \pm 5.625$	0.48	$-2.394 \pm 6.031$	$-1.269 \pm 3.846$
PRF-fit source offset from KIC position	$2.577 \pm 5.622$	0.46	$-2.275 \pm 6.031$	$-1.211 \pm 3.846$
photometric centroid source offset	$1.29 \pm 1.41$	0.91	$0.17 \pm 1.91$	$1.28 \pm 1.40$



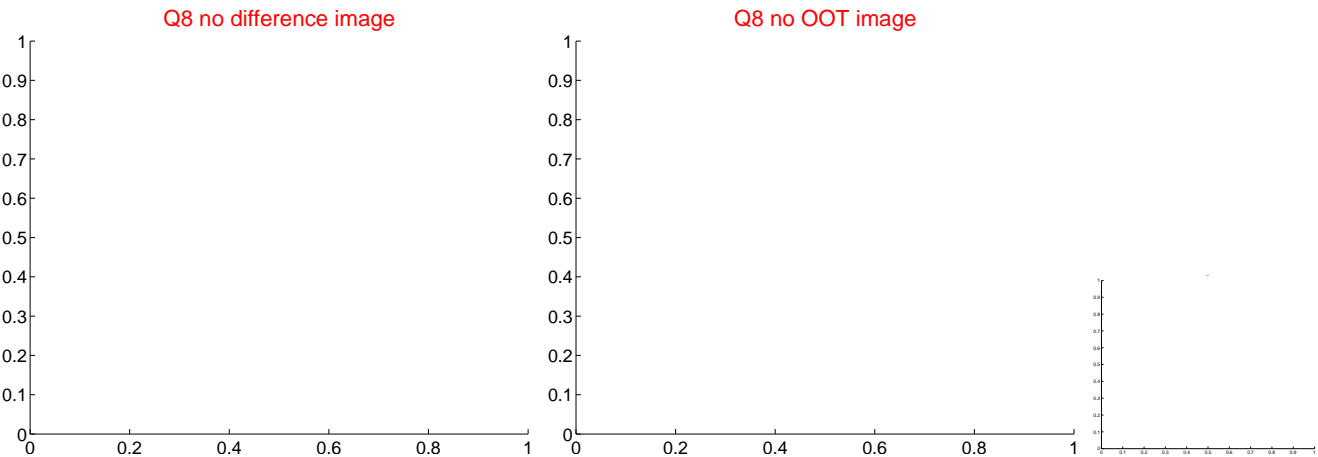
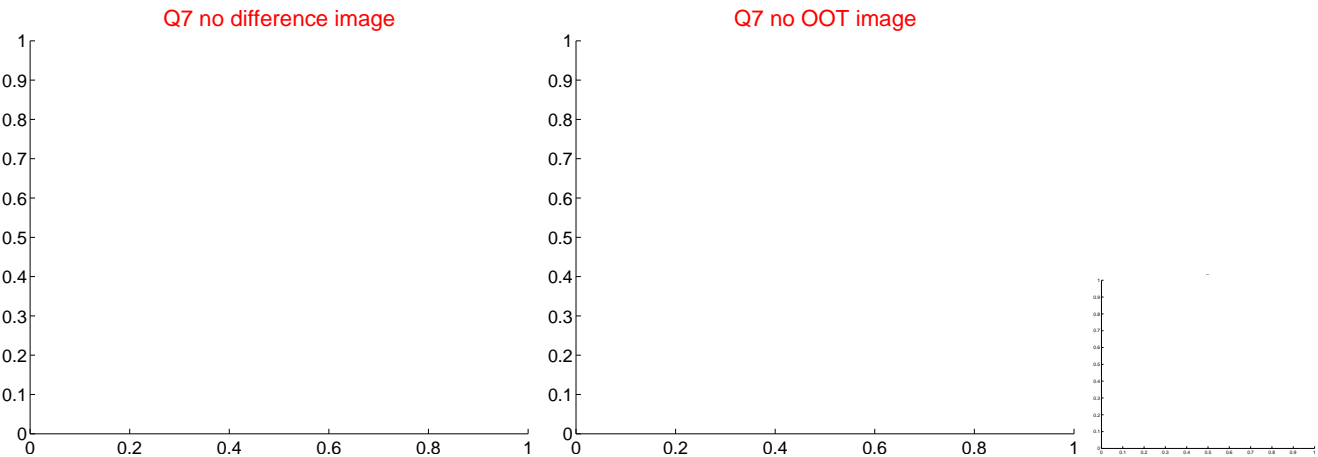
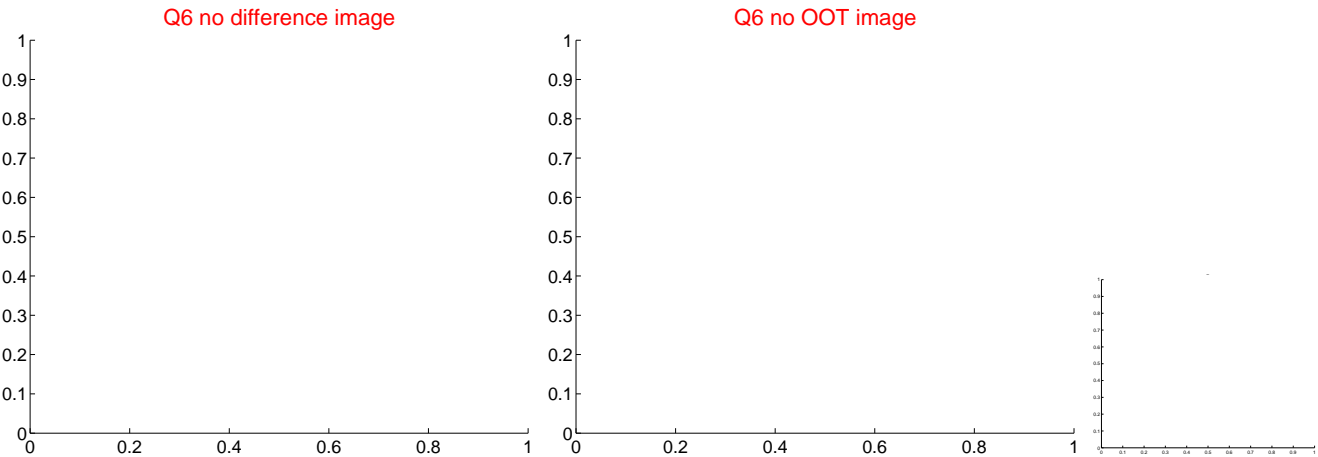
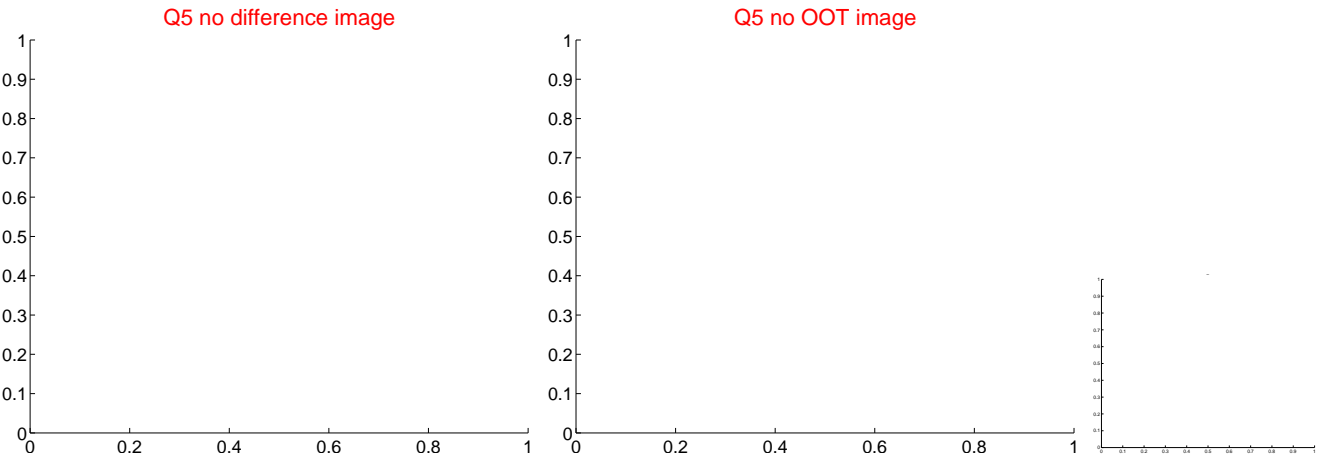
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

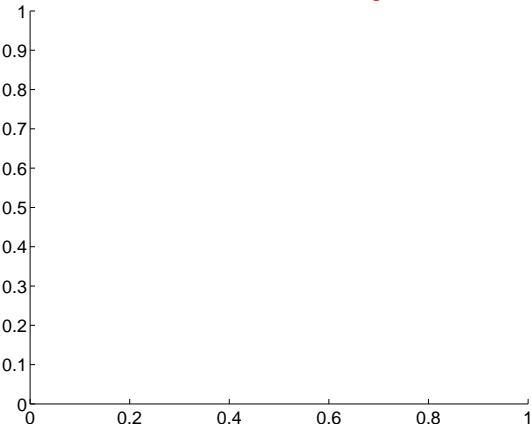


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

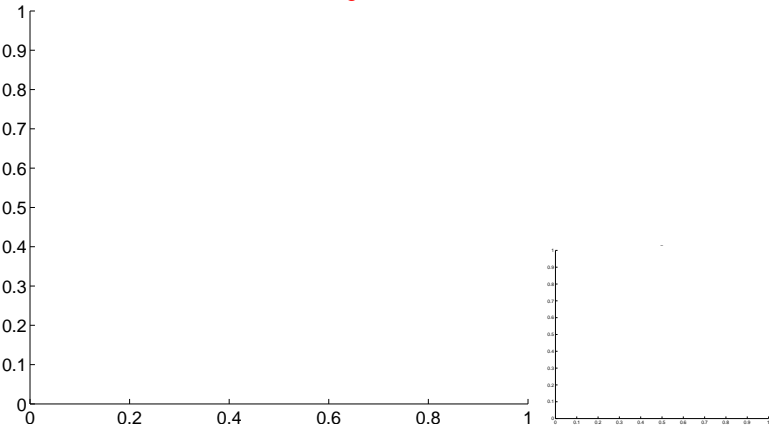


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

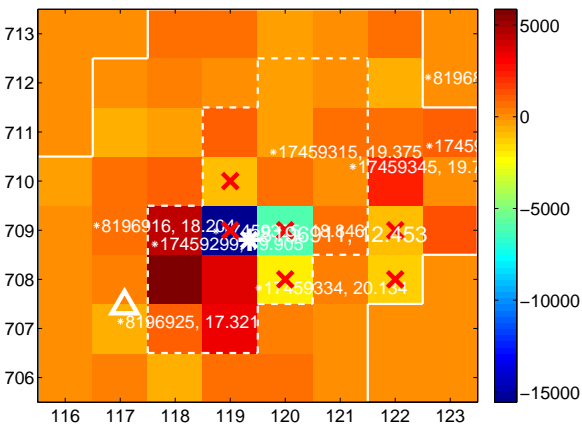
Q9 no difference image



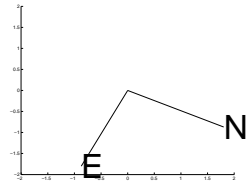
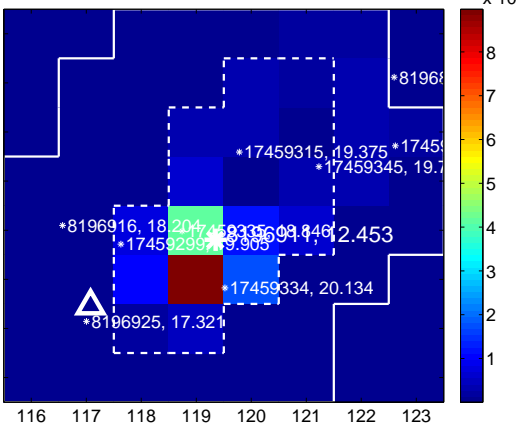
Q9 no OOT image



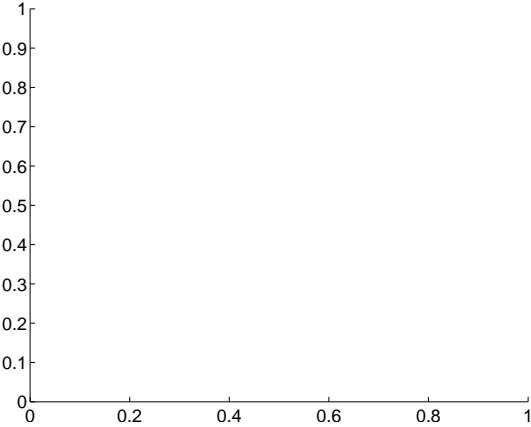
Q10 difference image. Poor Quality



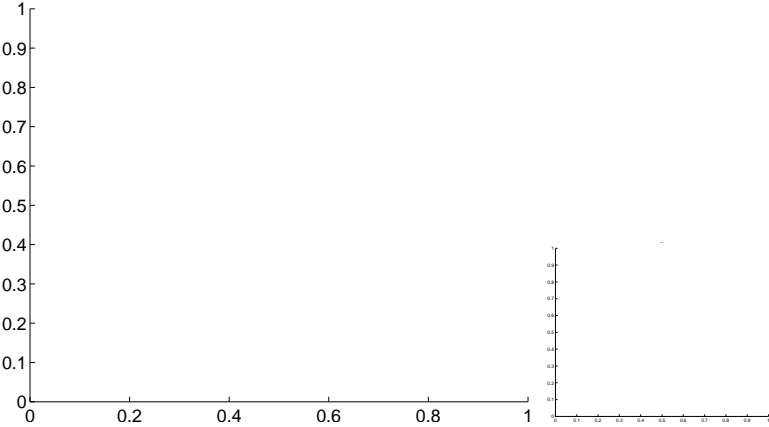
Q10 OOT image



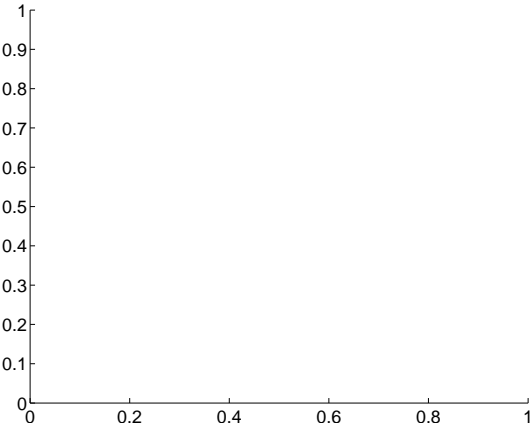
Q11 no difference image



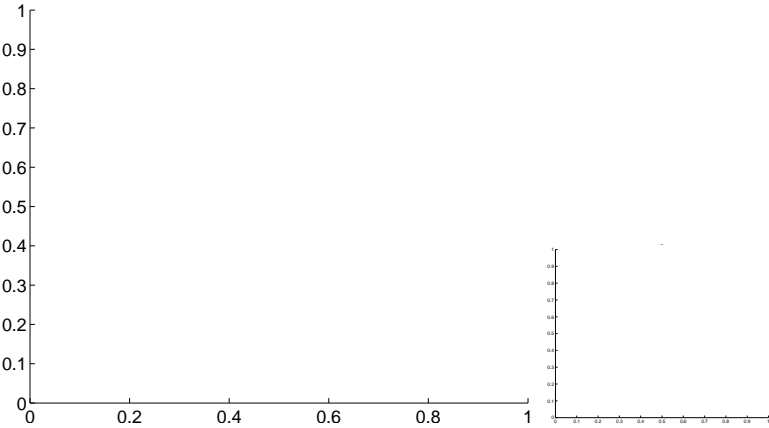
Q11 no OOT image



Q12 no difference image

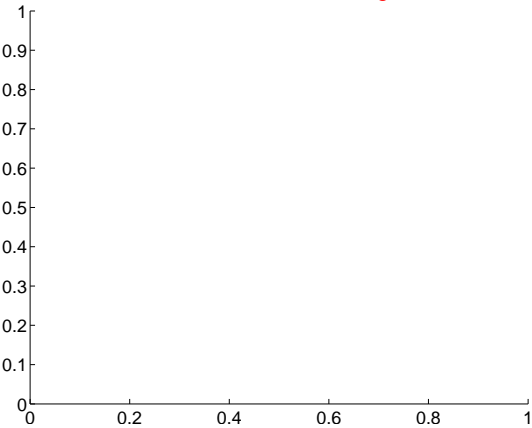


Q12 no OOT image

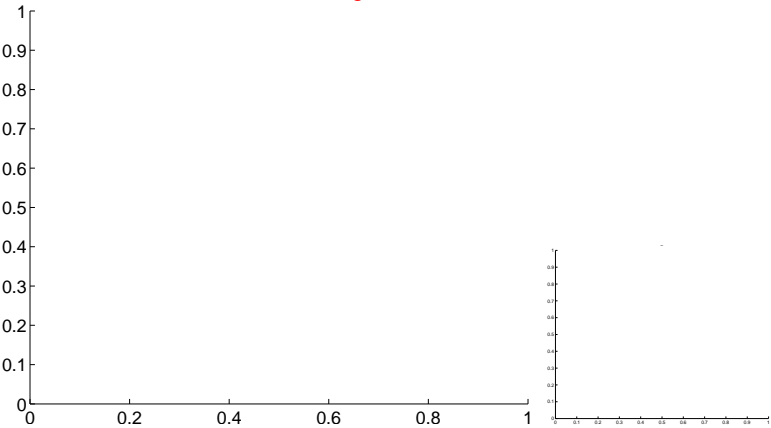


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

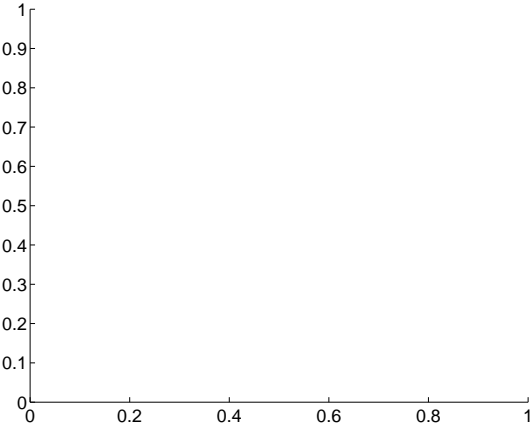
Q13 no difference image



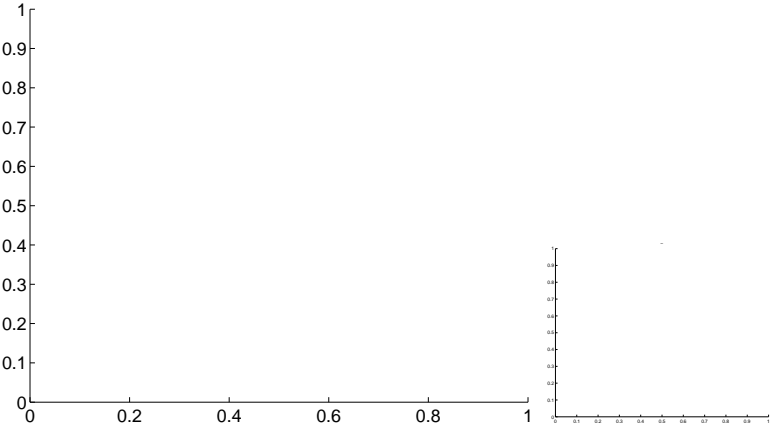
Q13 no OOT image



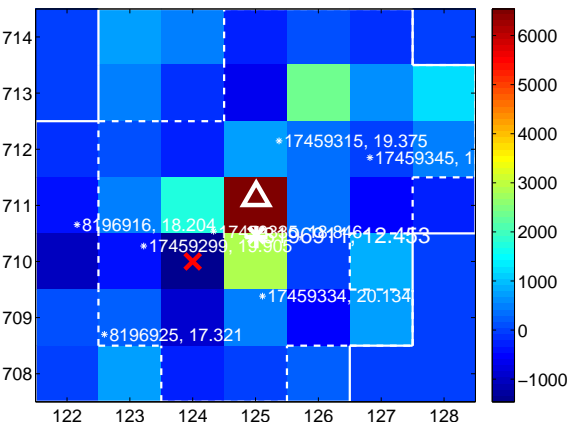
Q14 no difference image



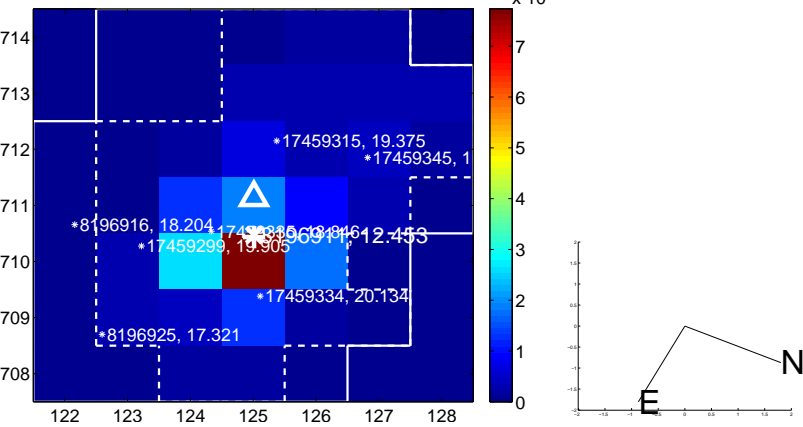
Q14 no OOT image



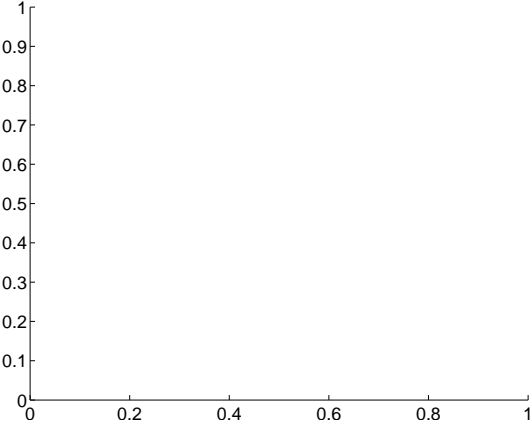
Q15 difference image



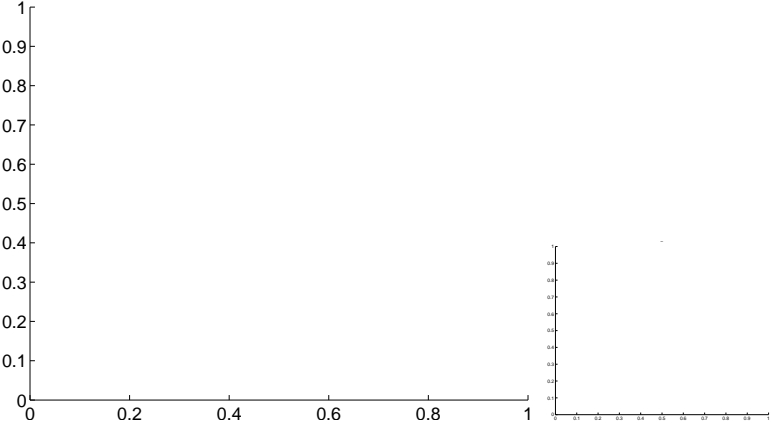
Q15 OOT image



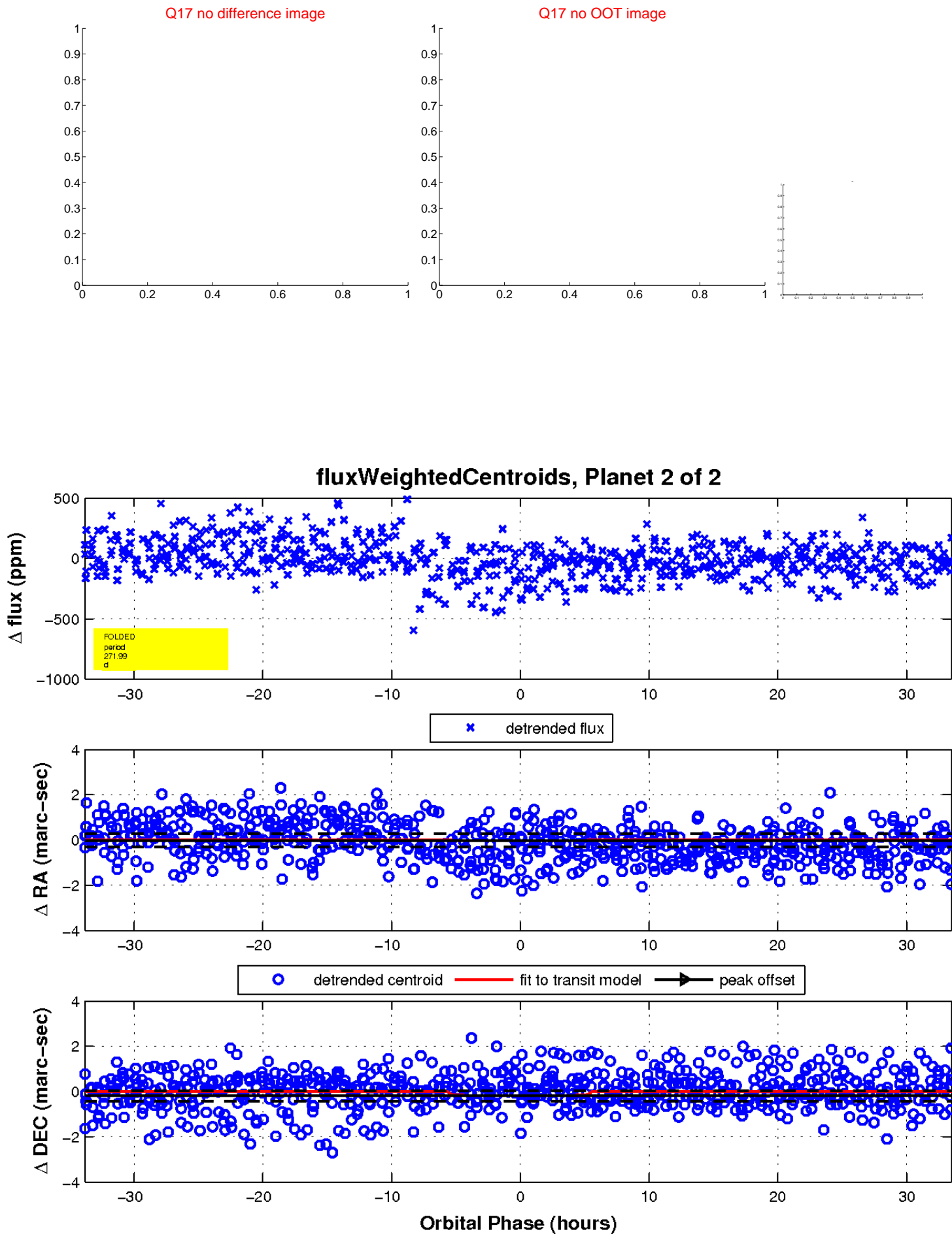
Q16 no difference image



Q16 no OOT image



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





UKIRT Image

Declination

