

# KIC 007200301

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007200301-01	OBS	6844.01	0.566750	131.854956	20.0	3.255	11.9	7.3	0.89	5691	0.40	4102.75
007200301-02	OBS	No	110.240986	138.833050	517.3	2.163	7.6	7.9	0.89	5691	2.40	3.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007200301-01	OBS	FP	0.00	1	0	0	1	LPP_DV—EPHEM_MATCH
007200301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

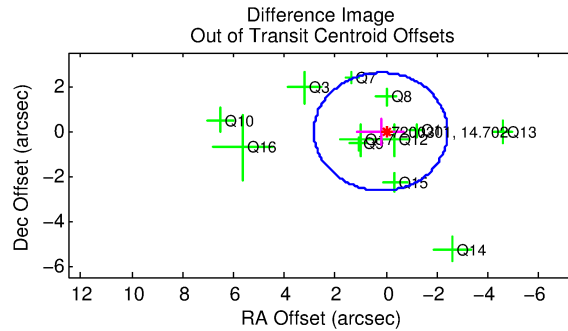
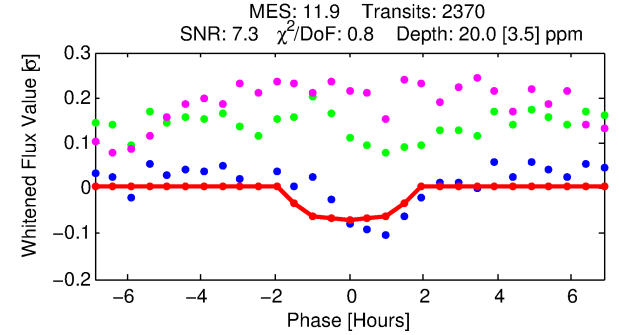
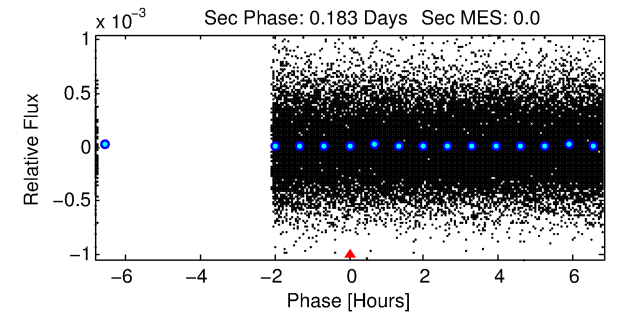
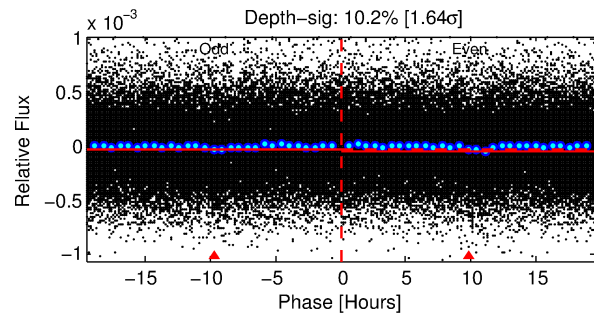
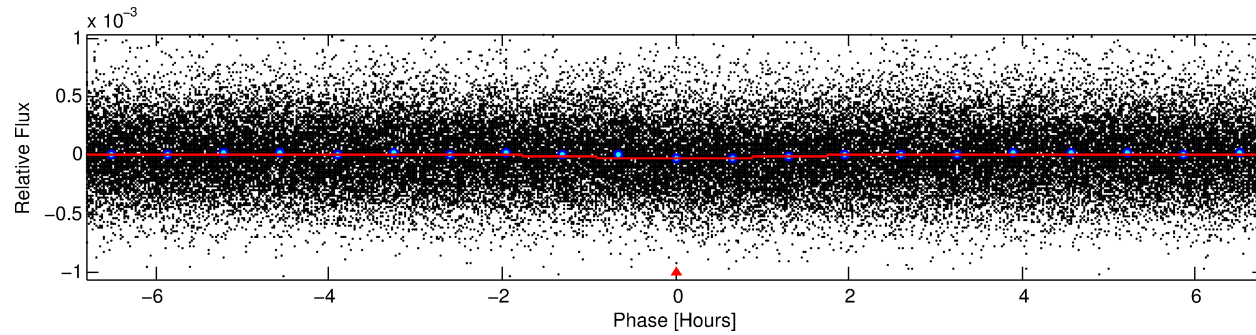
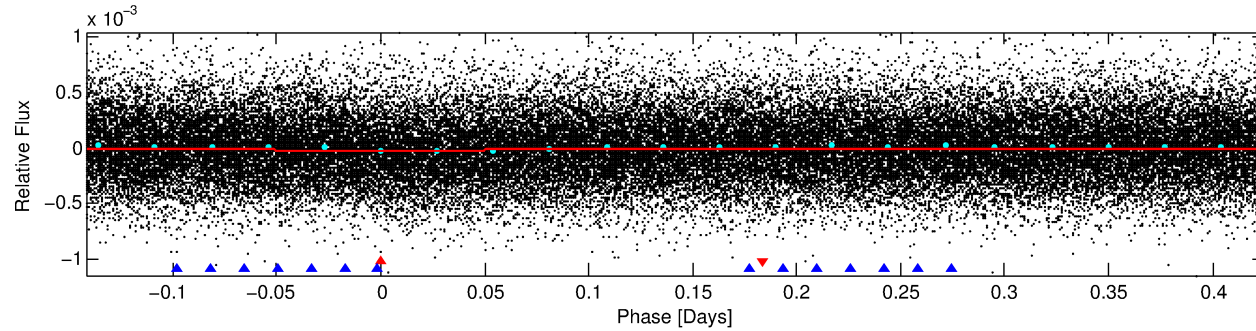
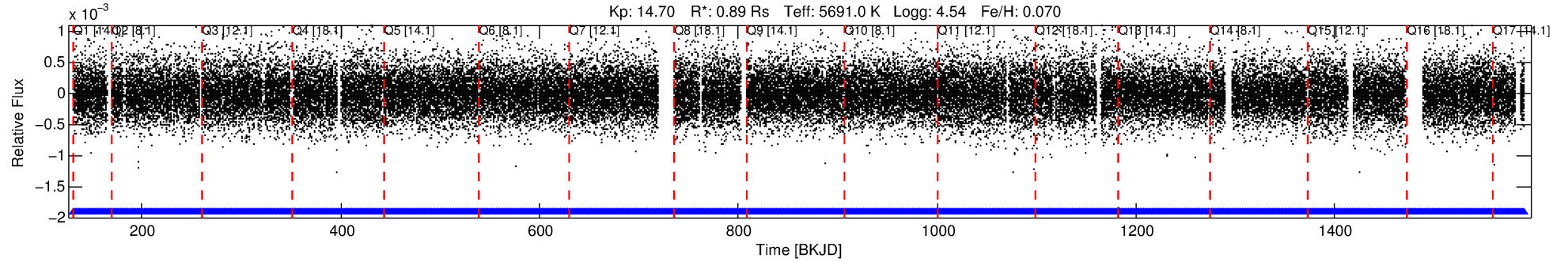
## Ephemeris Match Information For 007200301-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007200301-01	7200301	RR-Lyr-pri	7198959	1:1	1066.9	164	212	7.86	14.70	31165.00	Direct-PRF	0	0.48	22.83

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

# DV One-Page Summary

KIC: 7200301 Candidate: 1 of 2 Period: 0.567 d  
KOI: K06844.01 Corr: 0.813



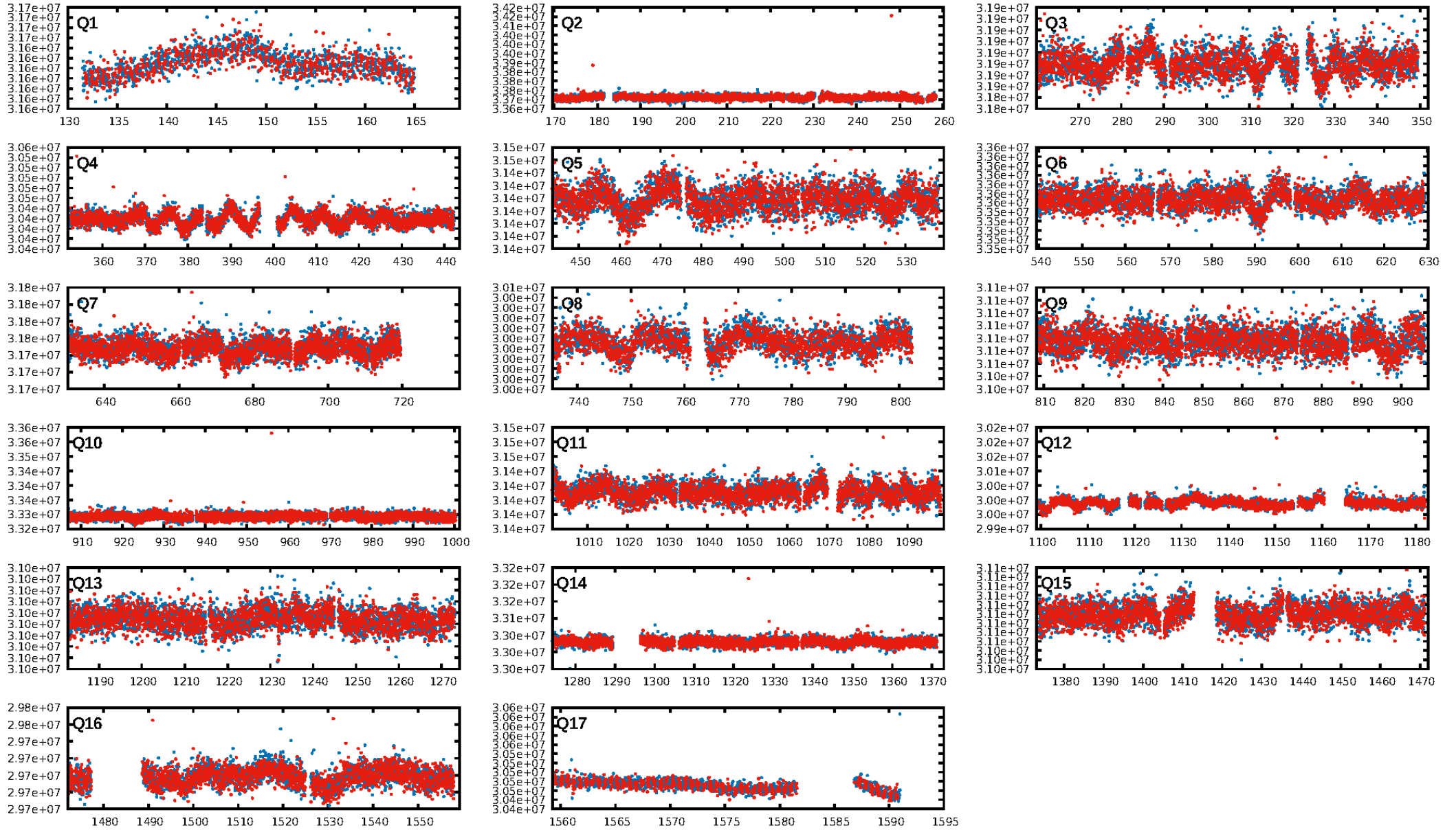
## DV Fit Results:

Period = 0.56675 [0.00001] d  
Epoch = 131.8550 [0.0054] BKJD  
Rp/R\* = 0.0041 [0.0074]  
a/R\* = 1.44 [5.72]  
b = 0.27 [26.98]  
Seff = 4102.75 [1383.44]  
Teff = 2041 [172] K  
Rp = 0.40 [0.72] Re  
a = 0.0134 [0.0028] AU  
Ag = N/A  
Teffp = N/A

## DV Diagnostic Results:

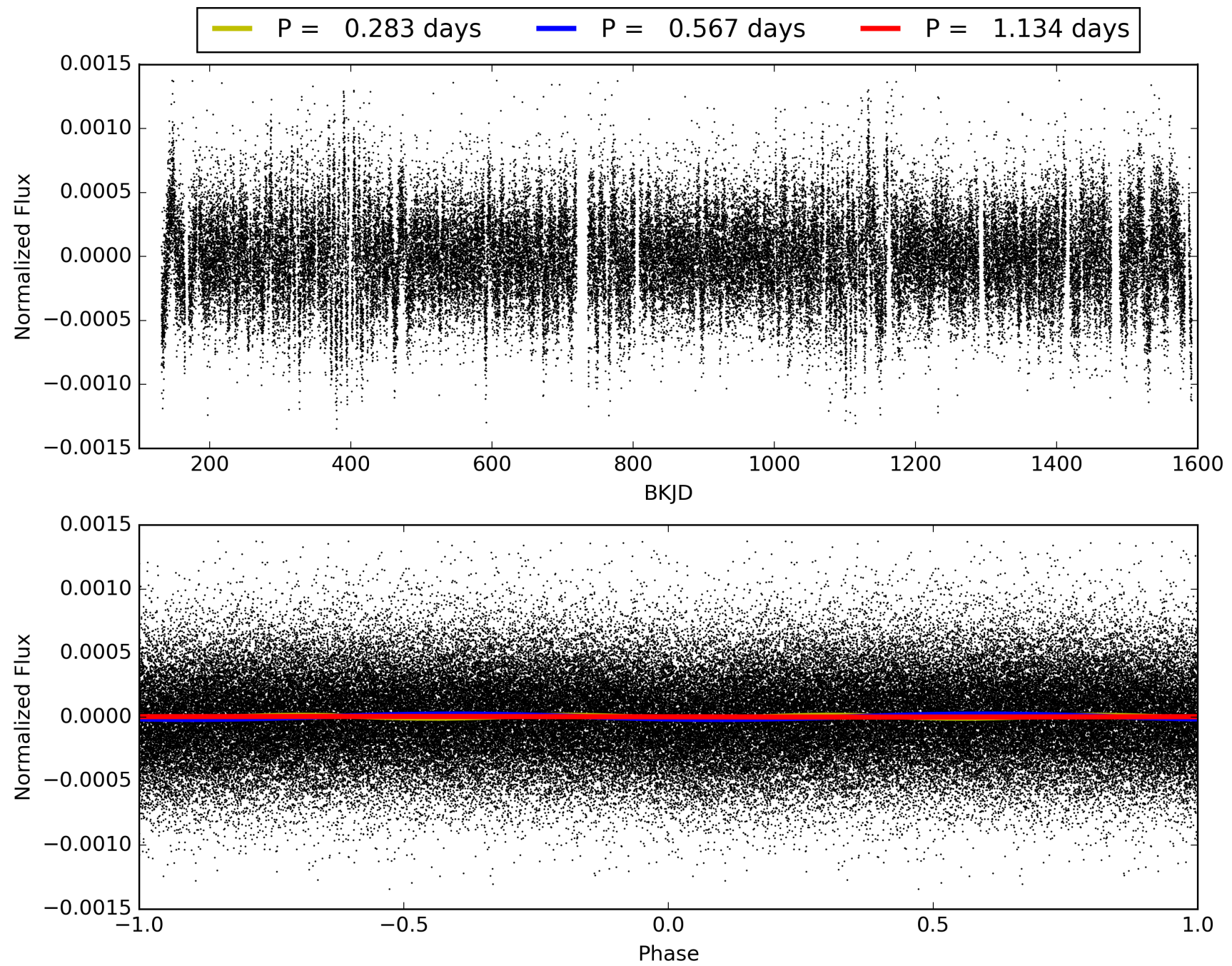
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [673.51 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.15e-26  
RollingBand-fgt: 1.00 [2264/2264]  
GhostDiagnostic-chr: 0.3267  
Centroid-sig: 0.0%  
Centroid-so: 6.848 arcsec [3.40 $\sigma$ ]  
OotOffset-rm: 0.209 arcsec [0.24 $\sigma$ ]  
KicOffset-rm: 0.088 arcsec [0.12 $\sigma$ ]  
OotOffset-st: 2/4/3/3 [12]  
KicOffset-st: 2/4/3/3 [12]  
DiffImageQuality-fgm: 0.08 [1/12]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007200301-01, PDC Light Curves



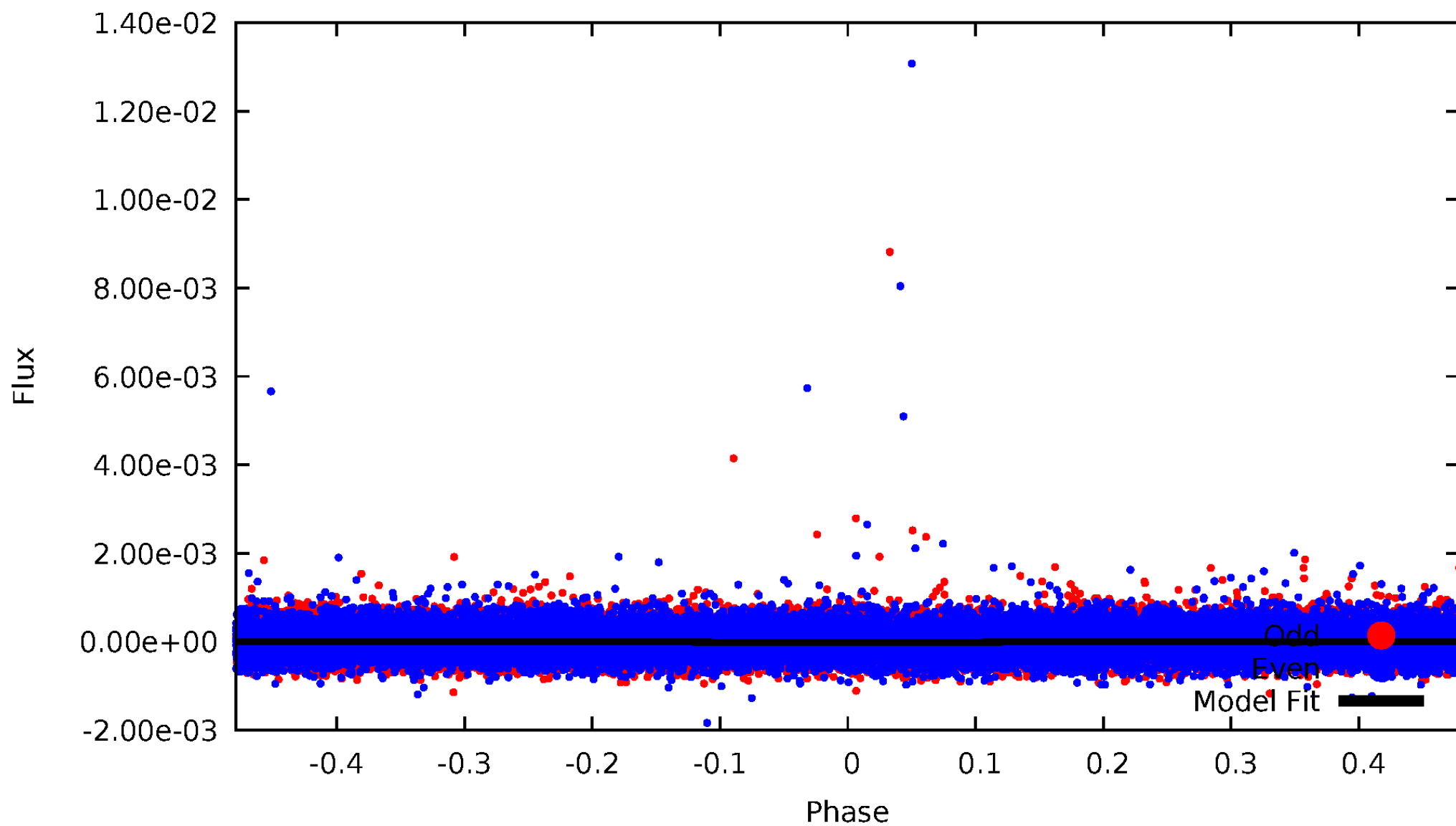


TCE 007200301-01



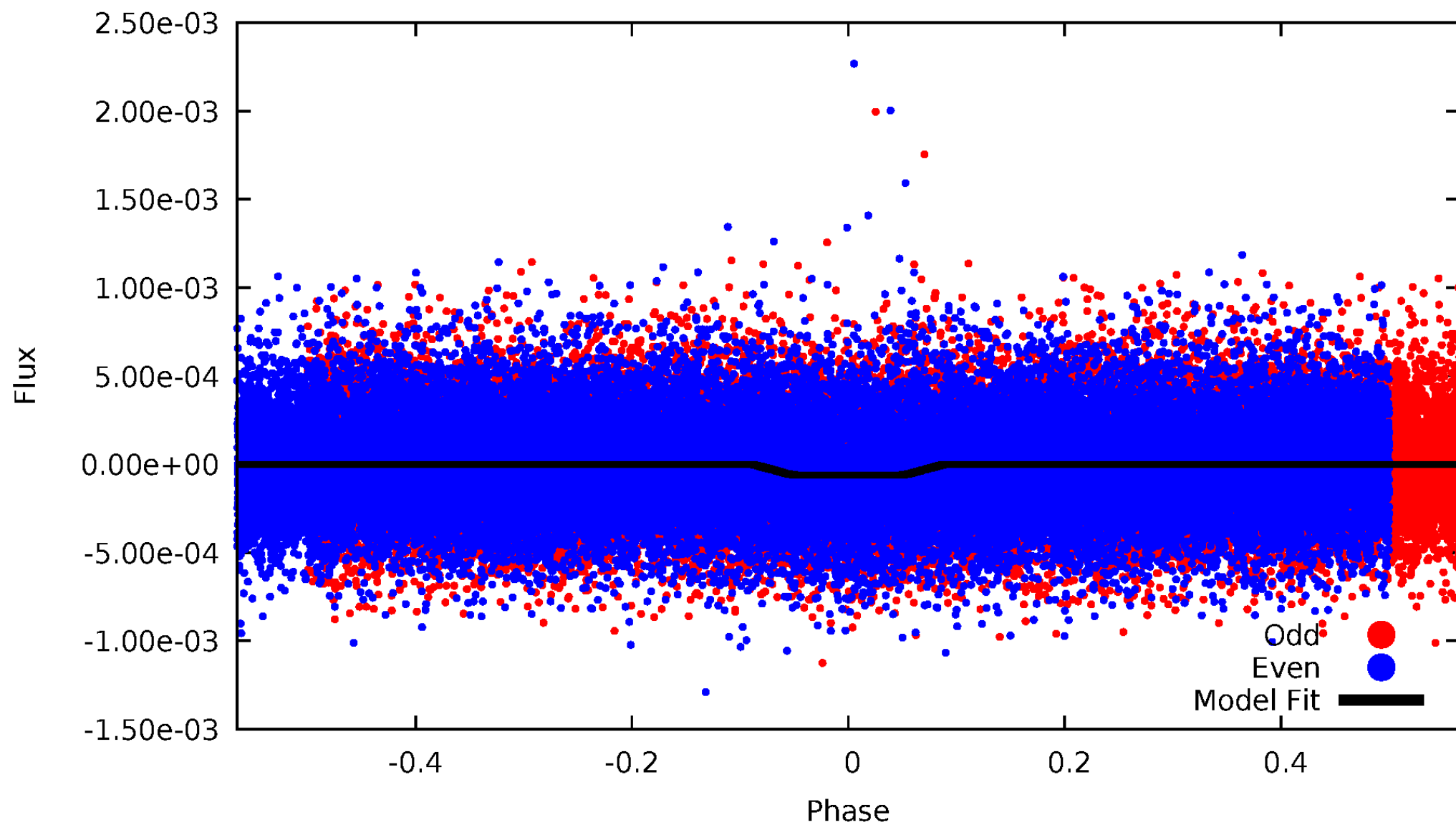
# DV Odd/Even

TCE 007200301-01

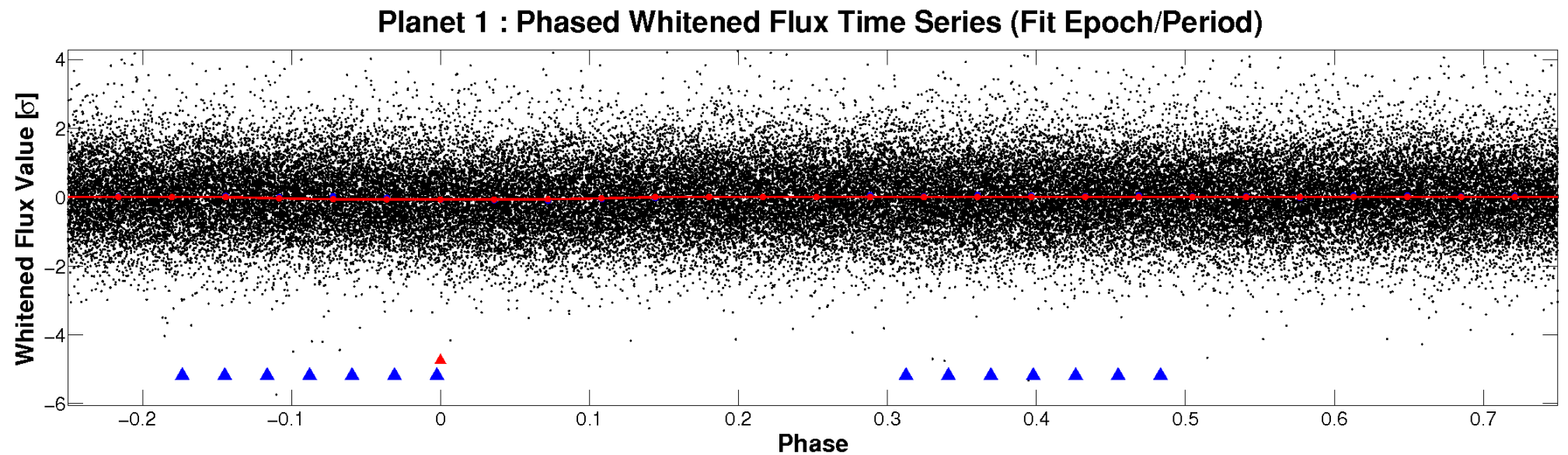
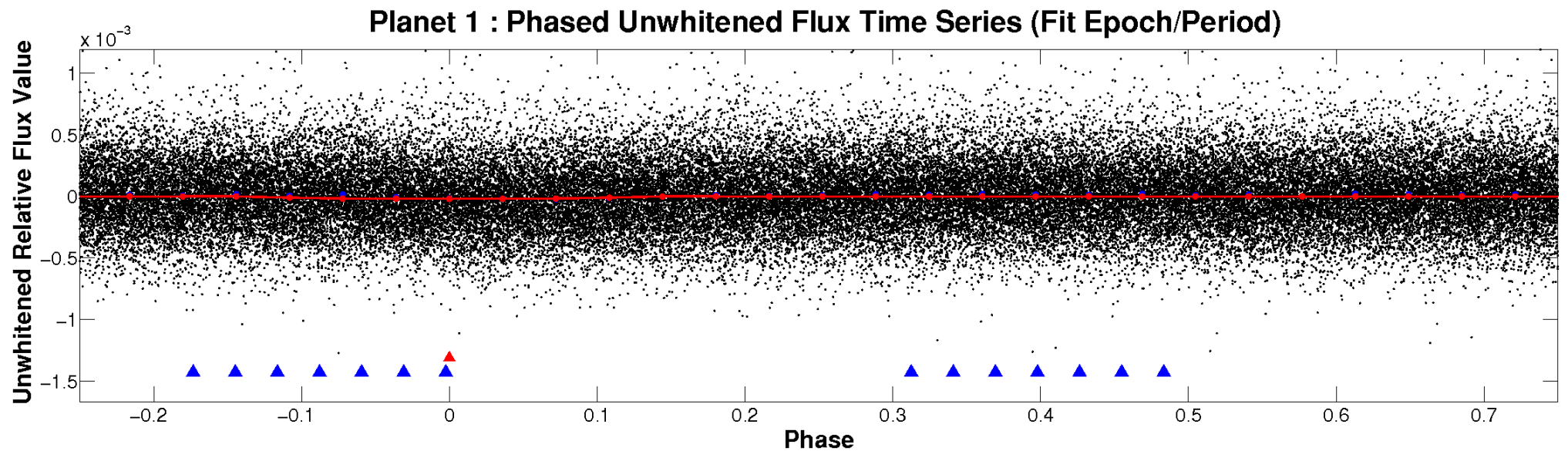


# ALT Odd/Even

TCE 007200301-01



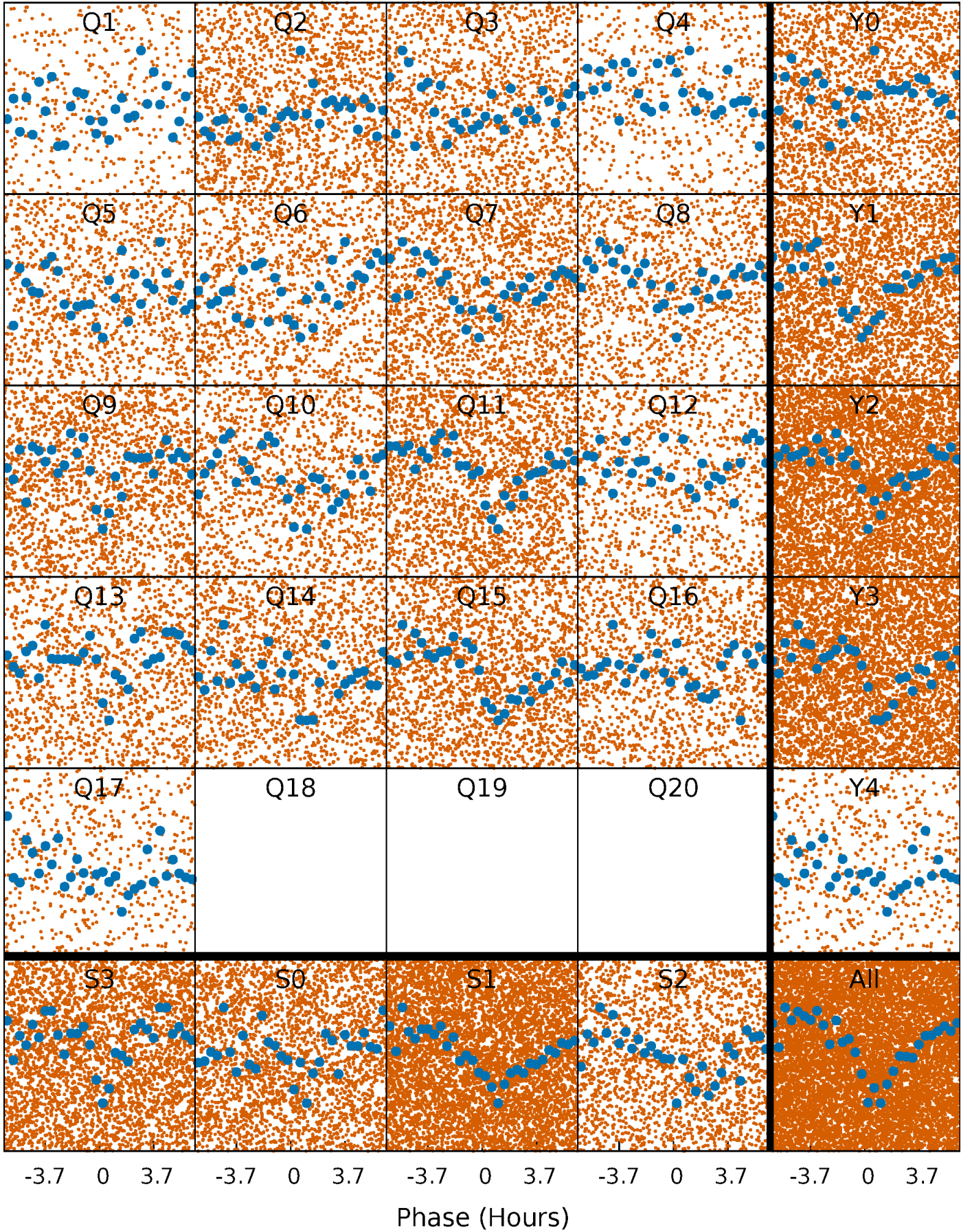
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

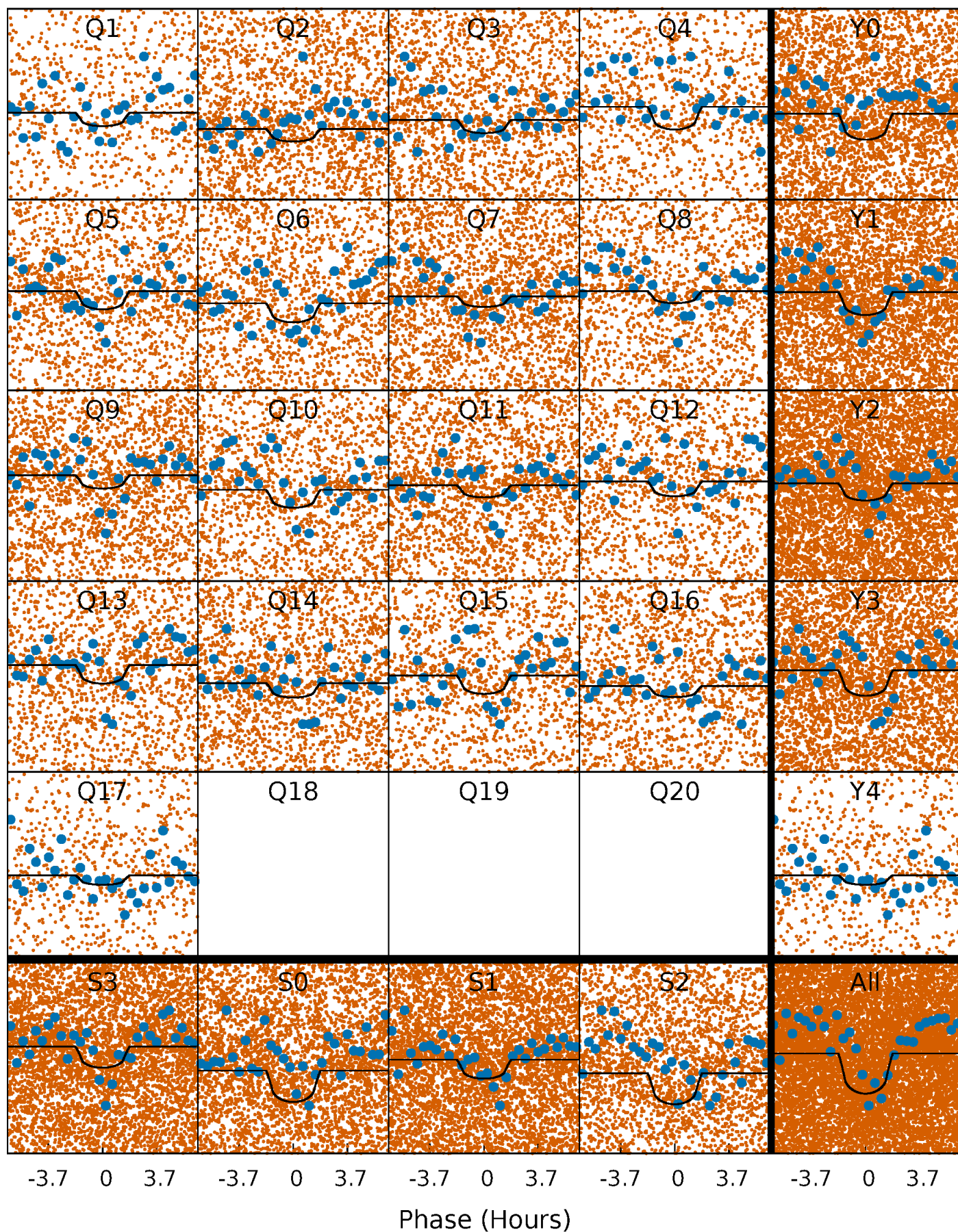
TCE 007200301-01 P= 0.566750 Days  $T_0=131.854956$  (BKJD)





# DV Quarter-Phased Transit Curves

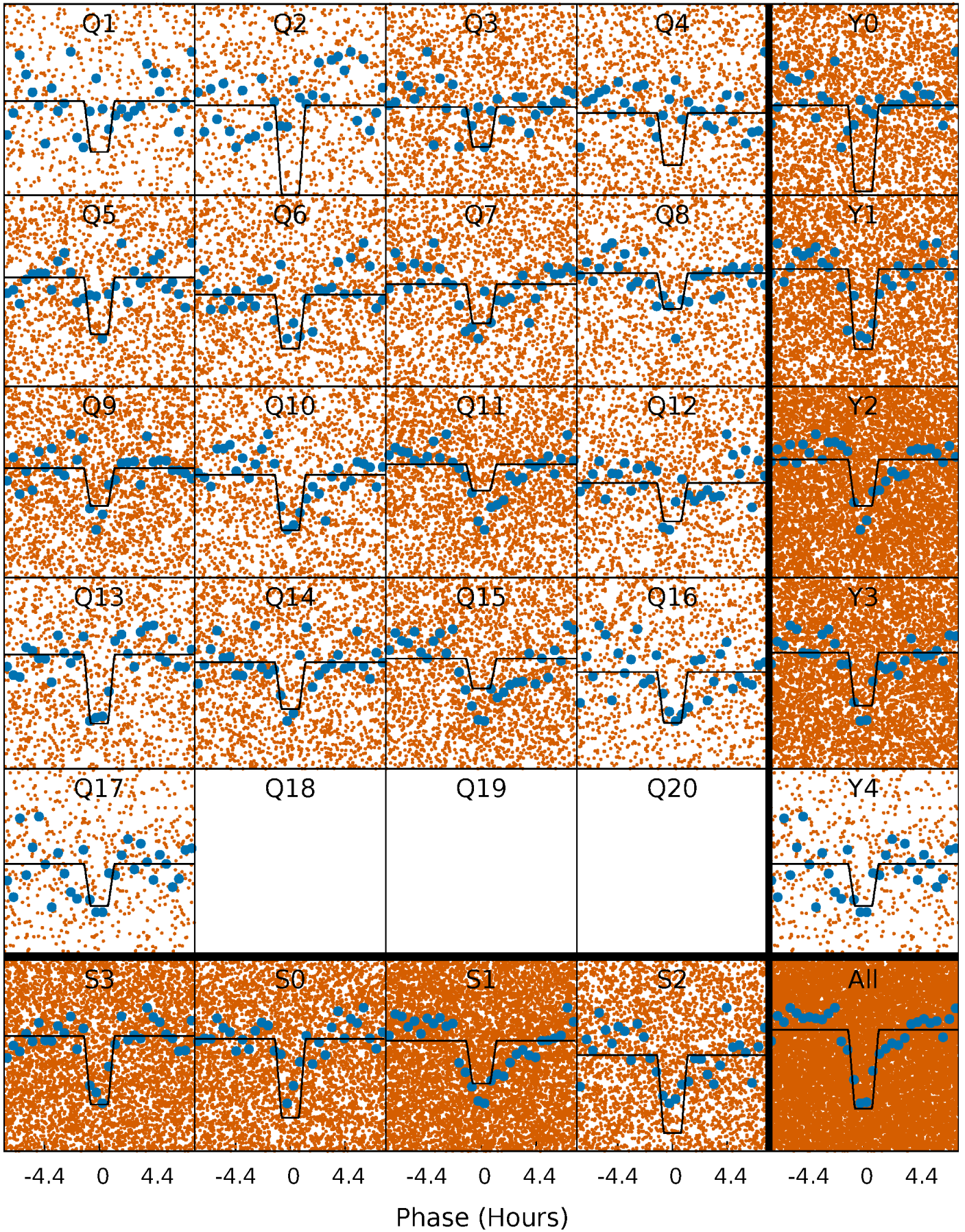
TCE 007200301-01 P= 0.566750 Days  $T_0=131.854956$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

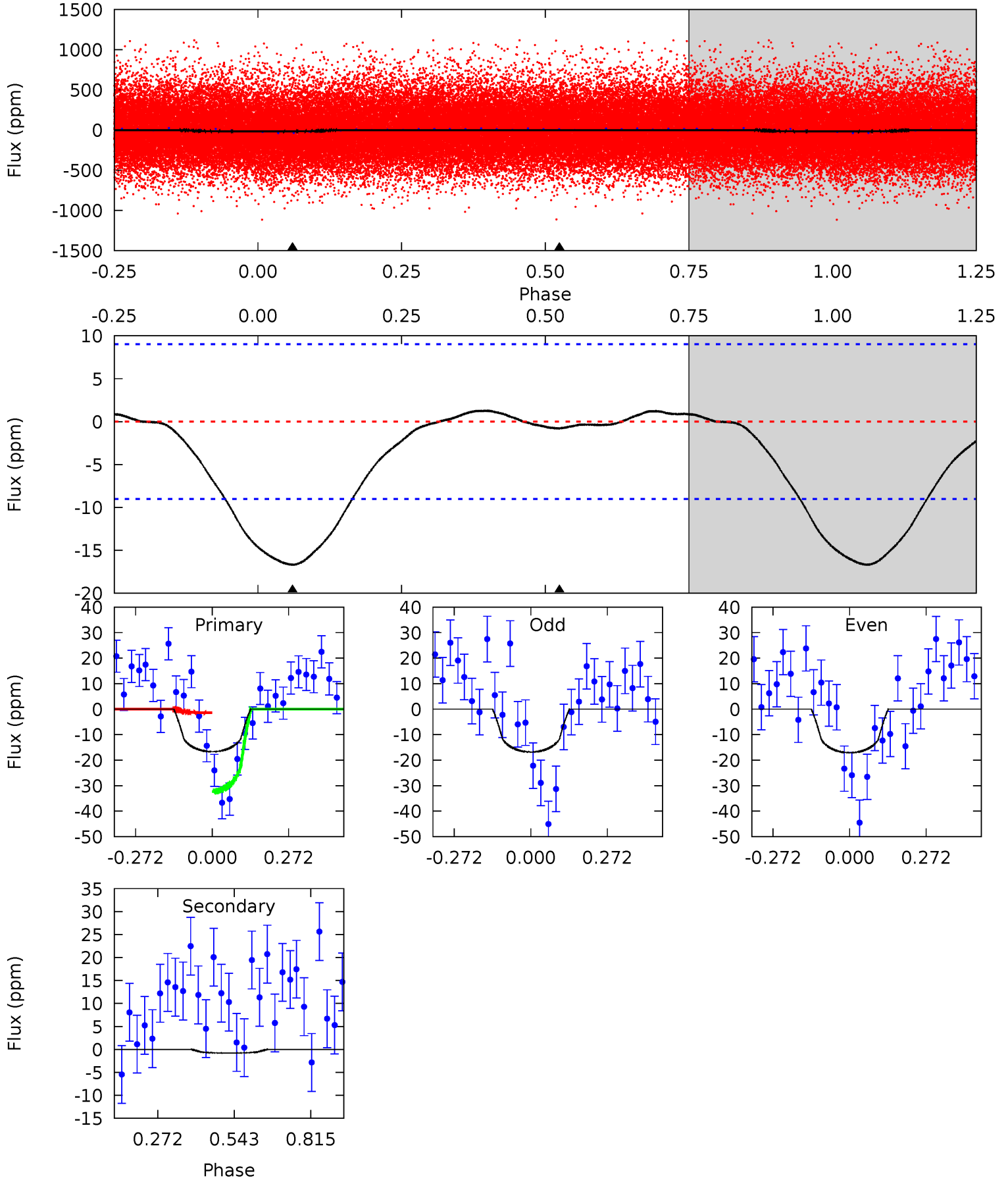
TCE 007200301-01 P= 0.566795 Days  $T_0=131.812912$  (BKJD)



# DV Model-Shift Uniqueness Test

007200301-01, P = 0.566750 Days, E = 131.288206 Days

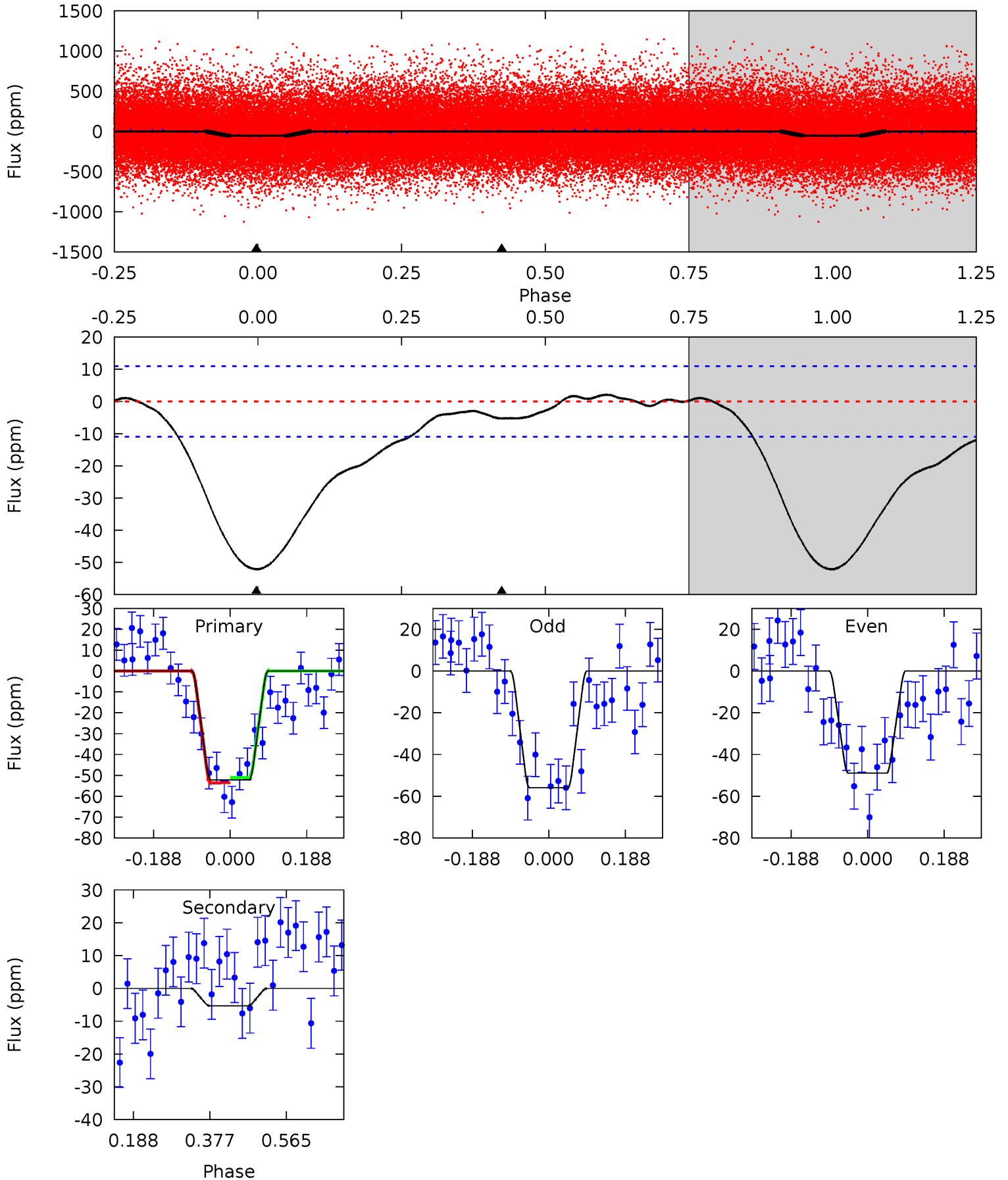
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.05	0.39	0	0	4.35	1.10	0.20	8.05	8.05	0.39	0.39	0.07	0.73	0.07	7.62



# Alt Model-Shift Uniqueness Test

007200301-01, P = 0.566795 Days, E = 131.246117 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
21.1	2.15	0	0	4.43	1.32	2.66	21.1	21.1	2.15	2.15	1.41	0.91	0.04	0.49





### Stellar Parameters For KIC 007200301

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5691^{+152}_{-169}$	$4.544^{+0.033}_{-0.176}$	$0.070^{+0.200}_{-0.350}$	$0.887^{+0.217}_{-0.078}$	$1.003^{+0.080}_{-0.137}$	$2.025^{+0.348}_{-0.904}$
	+3%/-3%	+1%/-4%	+286%/-500%	+24%/-9%	+8%/-14%	+17%/-45%
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 007200301-01 / KOI 6844.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1 \pm 2$	$0.65^{+0.71}_{-0.42}$	$2920^{+184}_{-124}$	$-2910^{+6692}_{-466}$	$0.081^{+1.482}_{-0.351}$
Alt.	$-5 \pm 2$	$0.94^{+0.68}_{-0.58}$	$2917^{+174}_{-121}$	$2884^{+1698}_{-5674}$	$0.501^{+3.401}_{-0.350}$

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

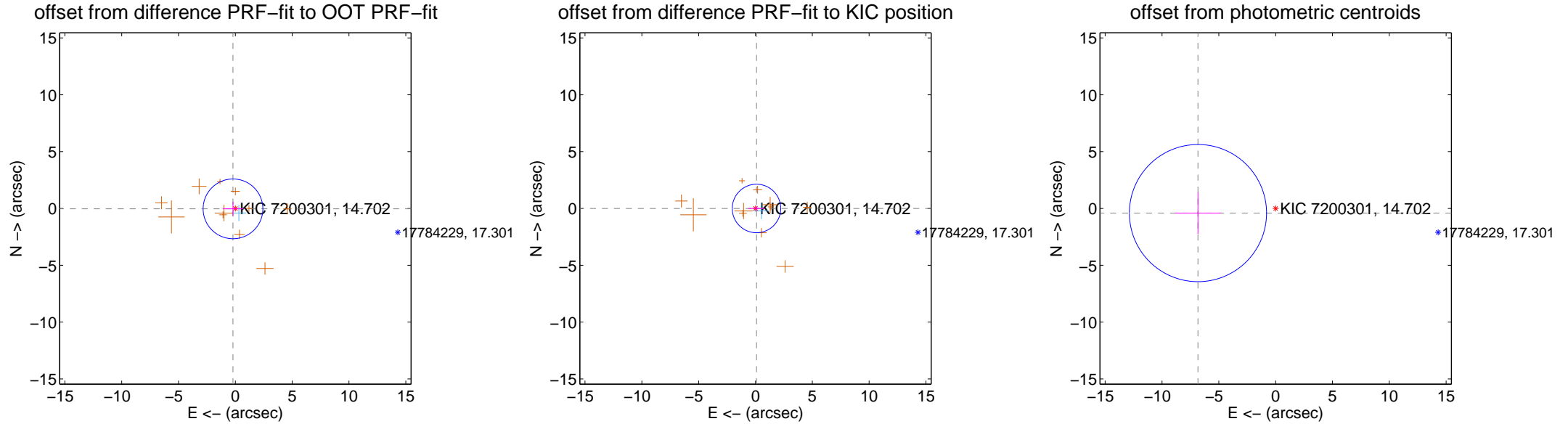
## DV Centroid Data

Supplemental centroid analysis for 007200301-01. Kepler magnitude: 14.70. Transit SNR 7.25

There are 1 quarters with good PRF difference image offsets

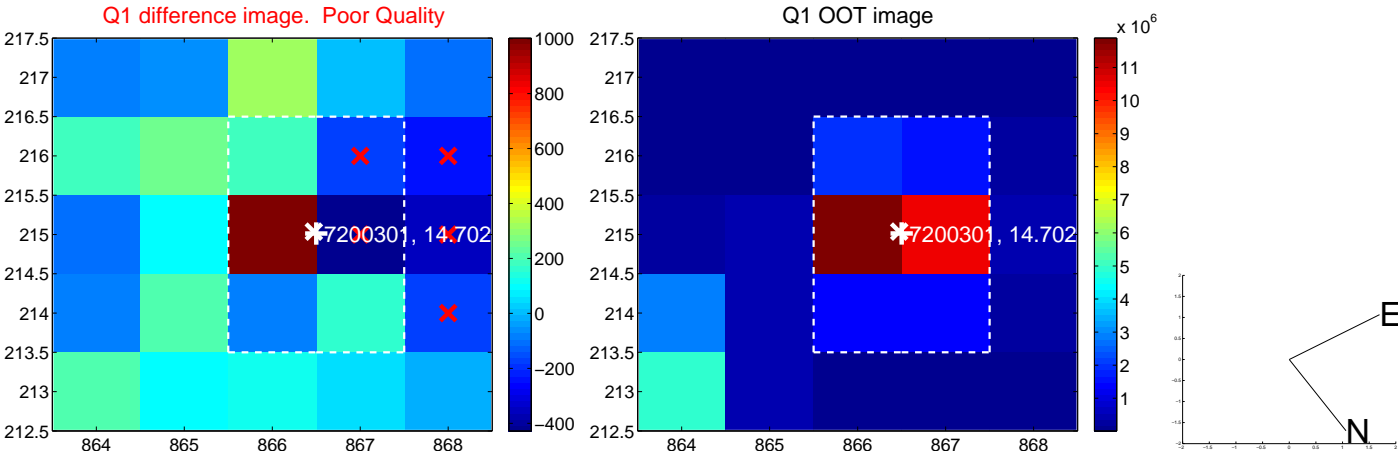
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.209 \pm 0.876$	0.24	$0.206 \pm 0.917$	$-0.036 \pm 0.614$
PRF-fit source offset from KIC position	$0.088 \pm 0.711$	0.12	$-0.088 \pm 0.712$	$-0.003 \pm 0.214$
photometric centroid source offset	$6.85 \pm 2.01$	3.40	$6.84 \pm 2.01$	$-0.41 \pm 1.84$

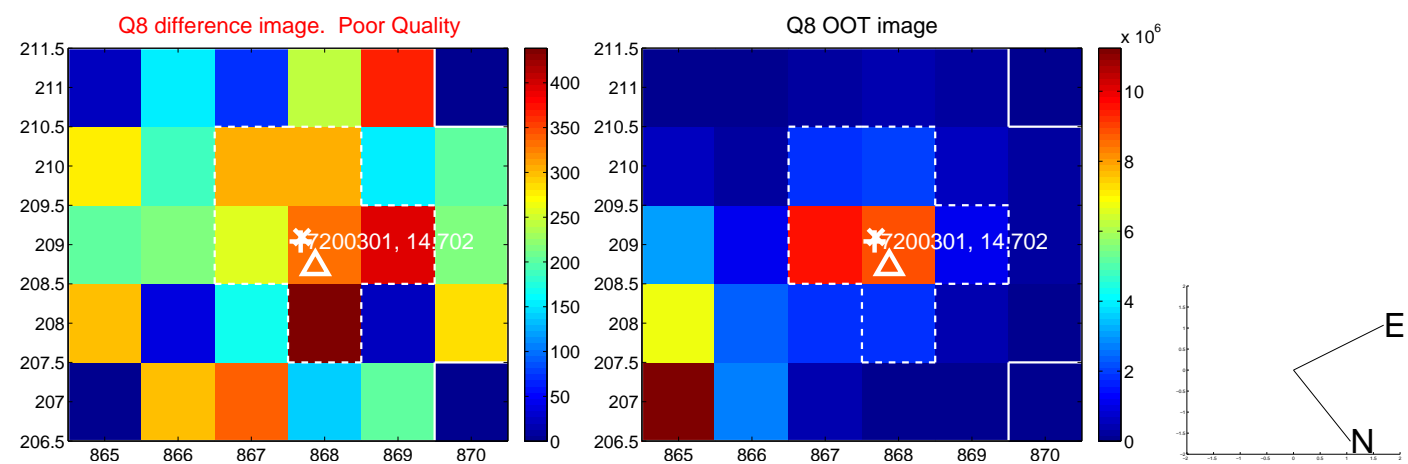
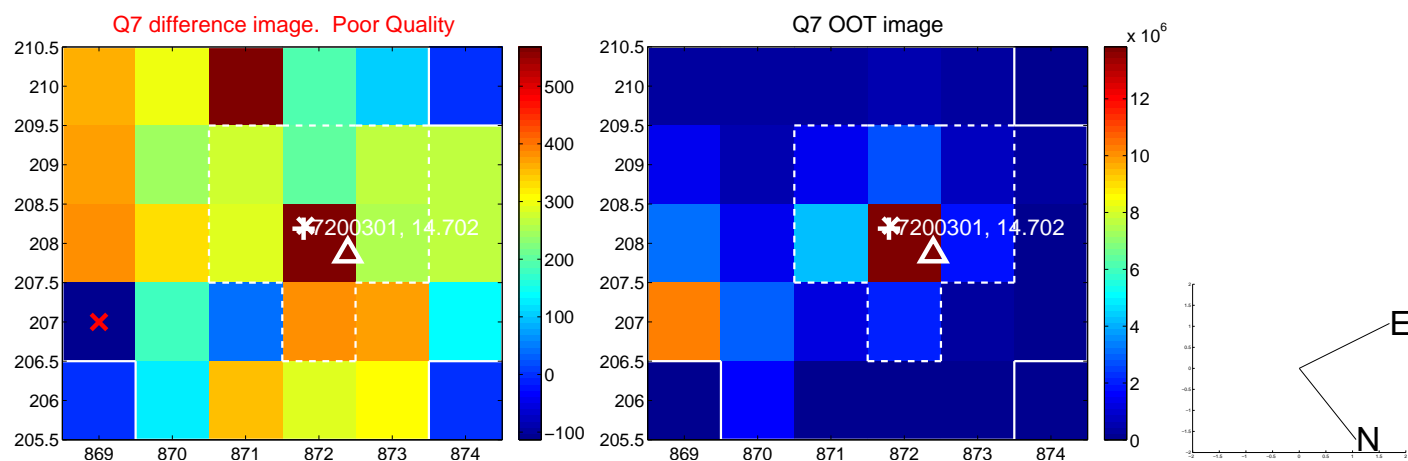
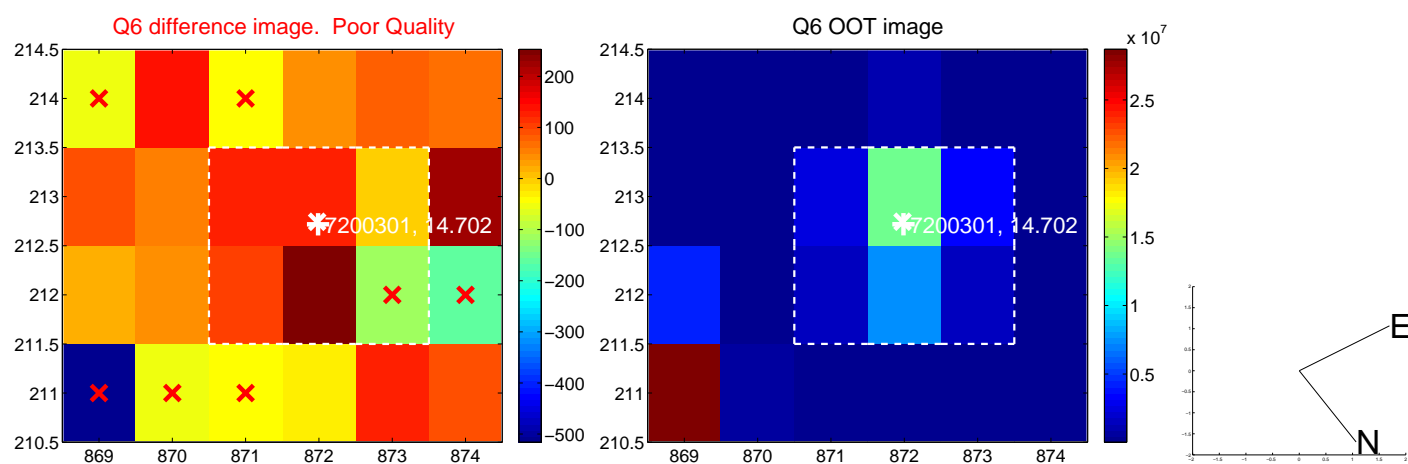
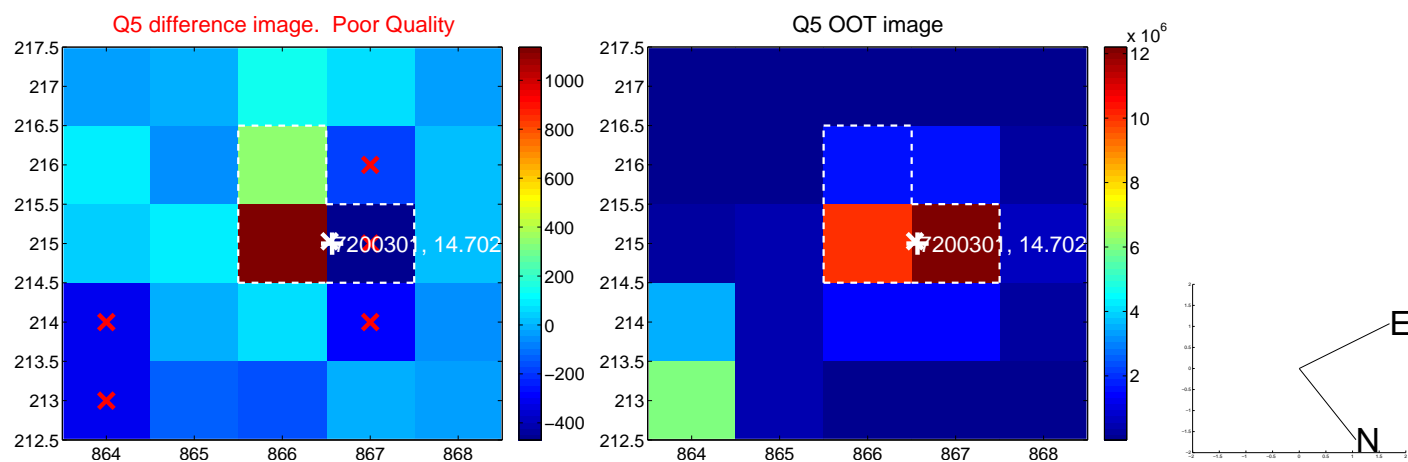


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

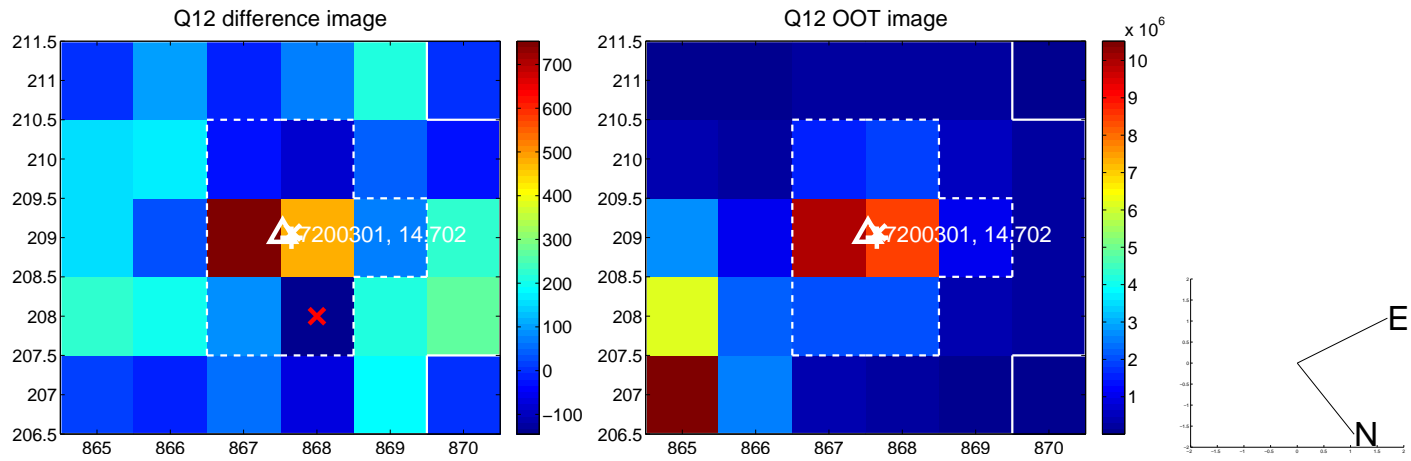
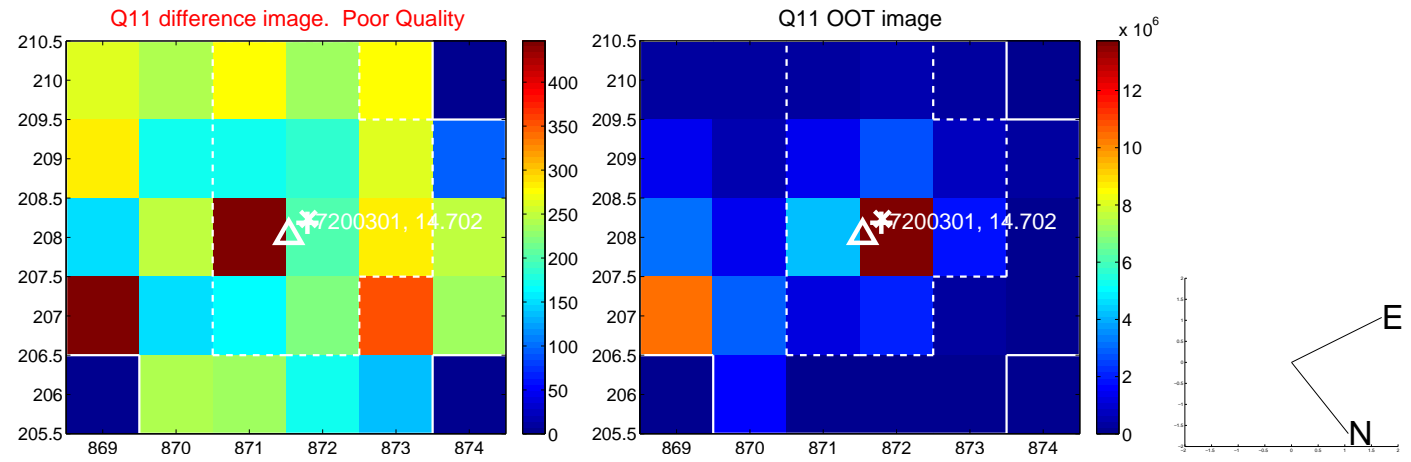
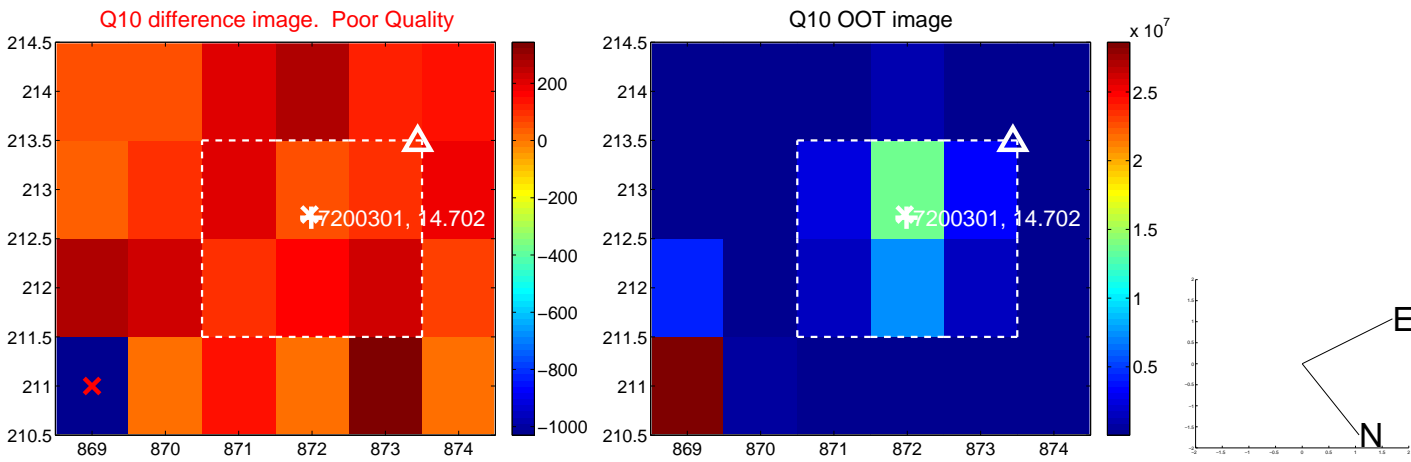
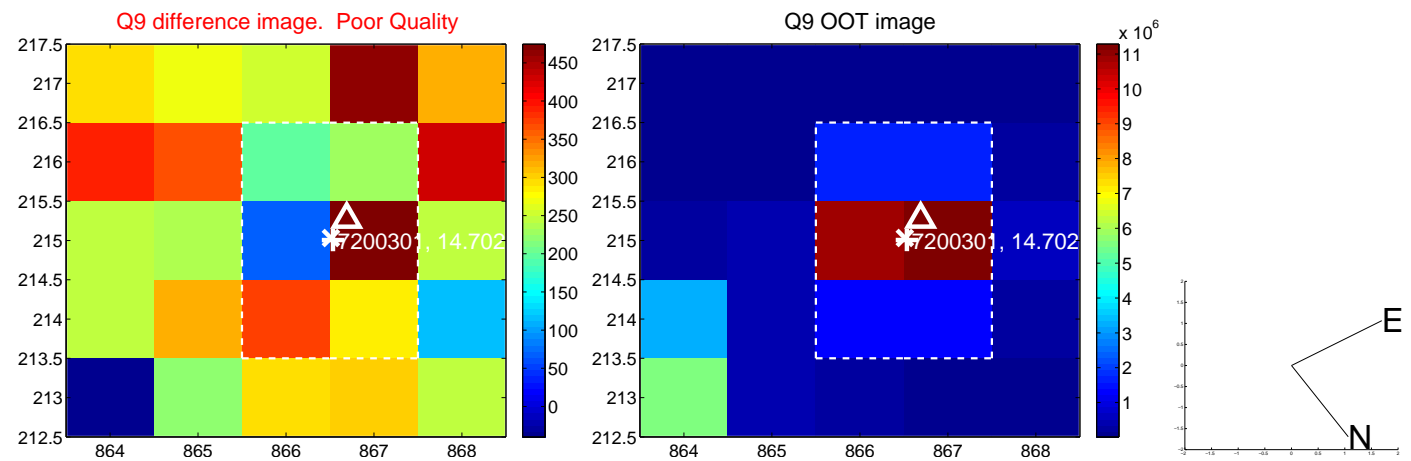


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

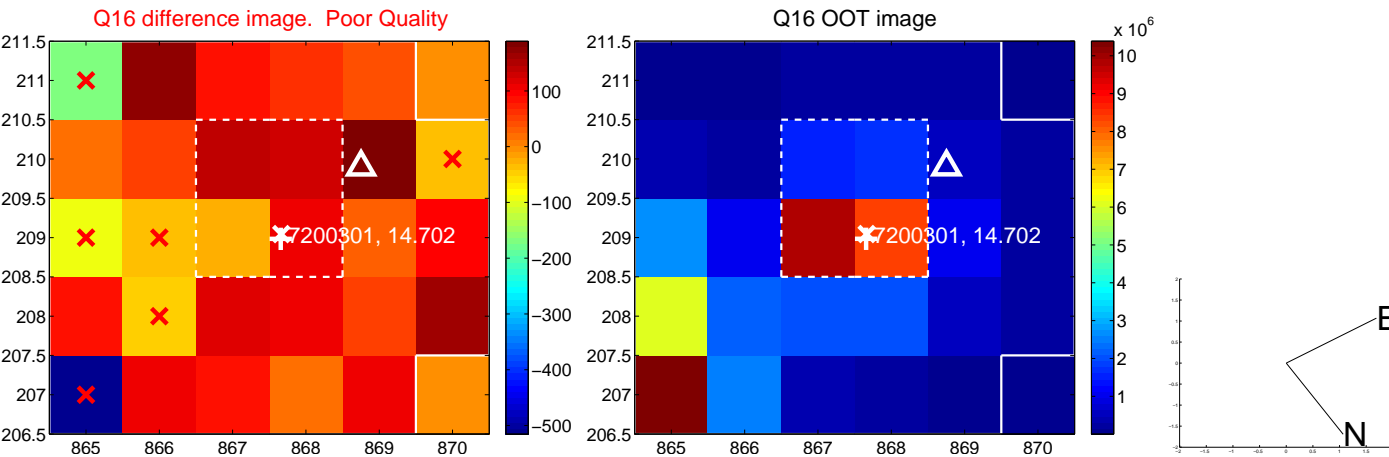
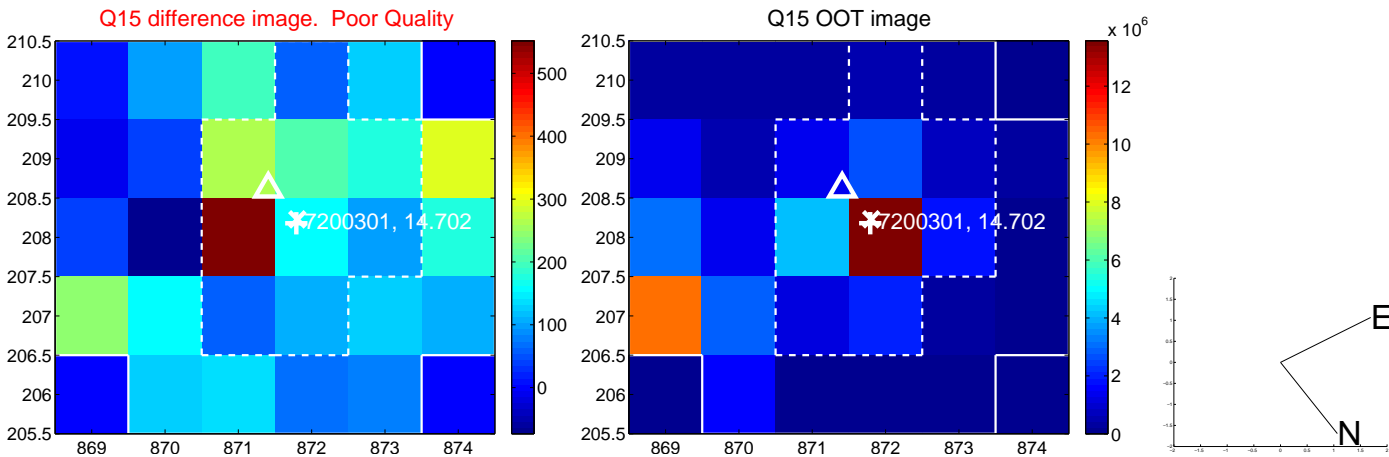
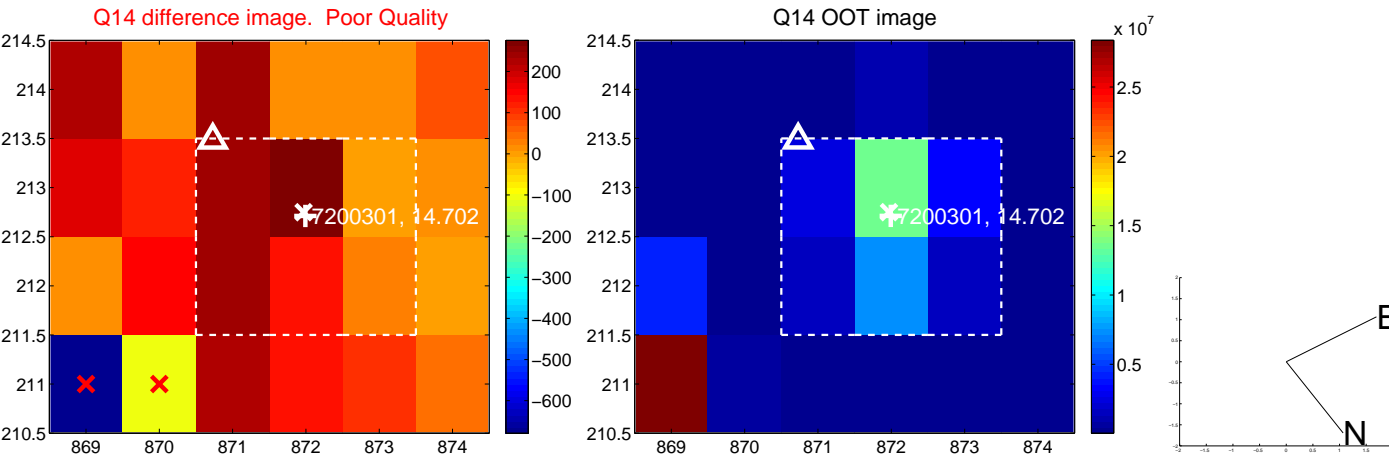
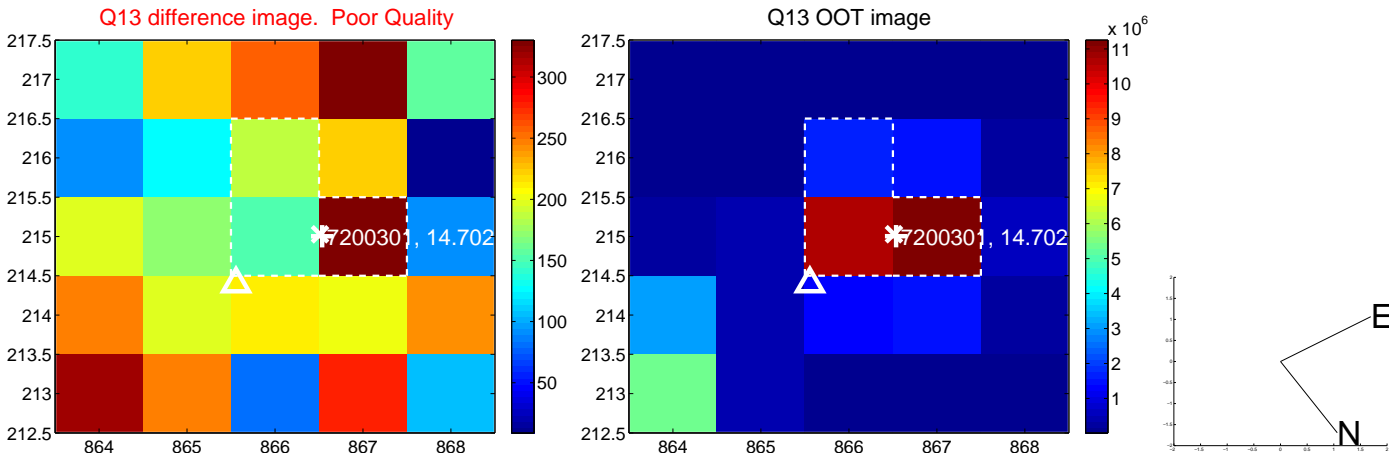




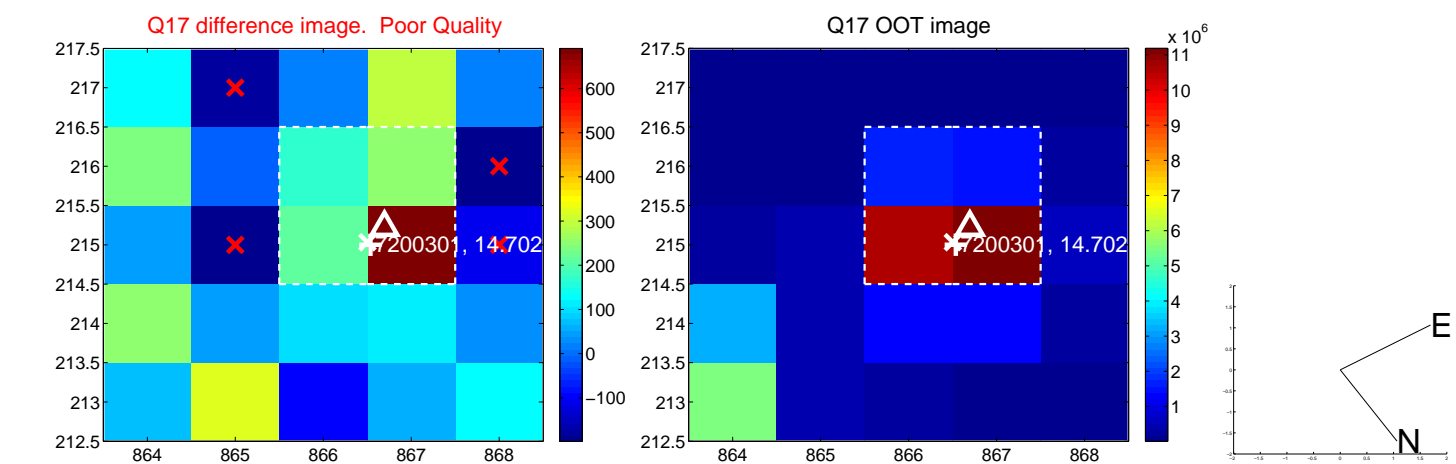
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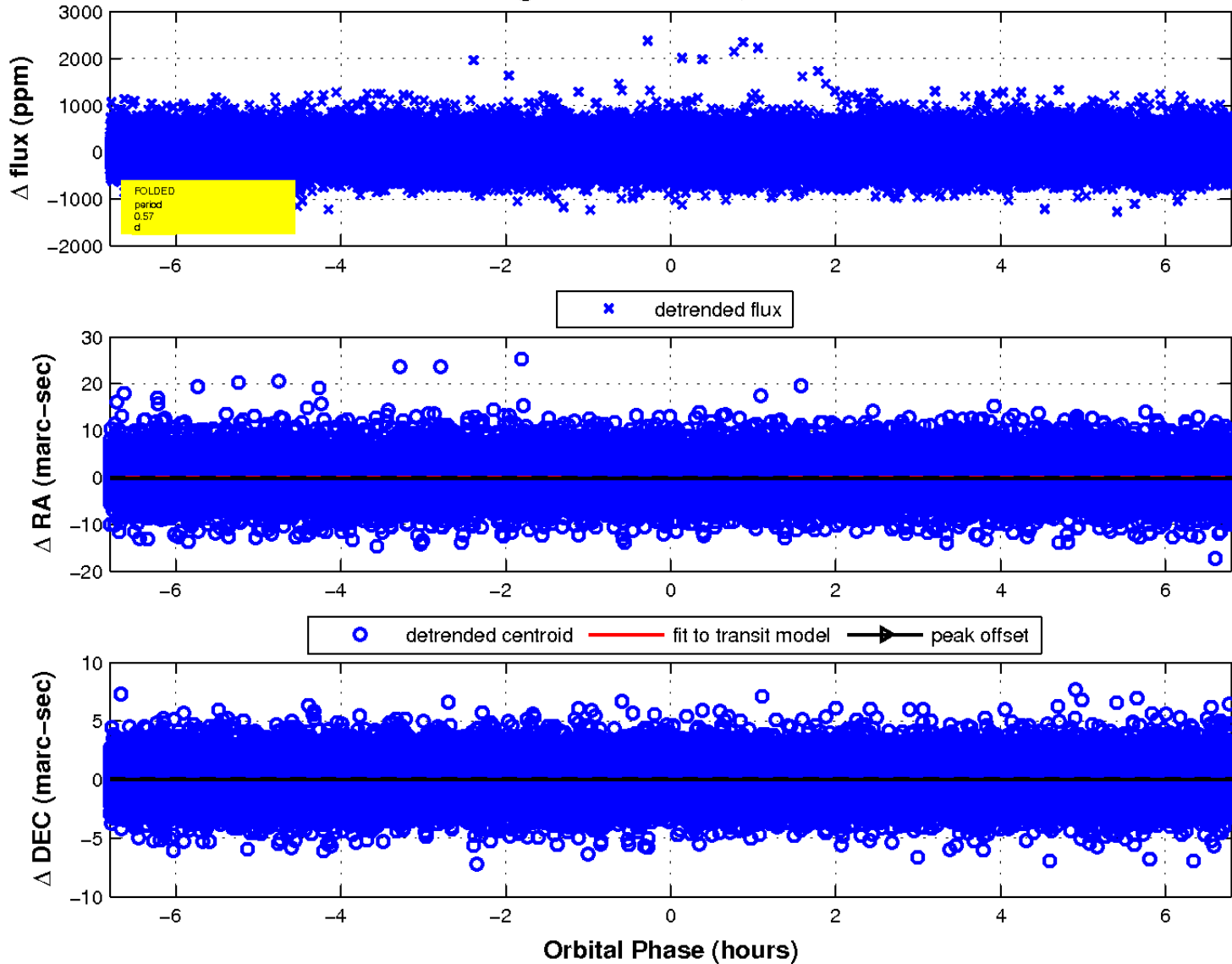
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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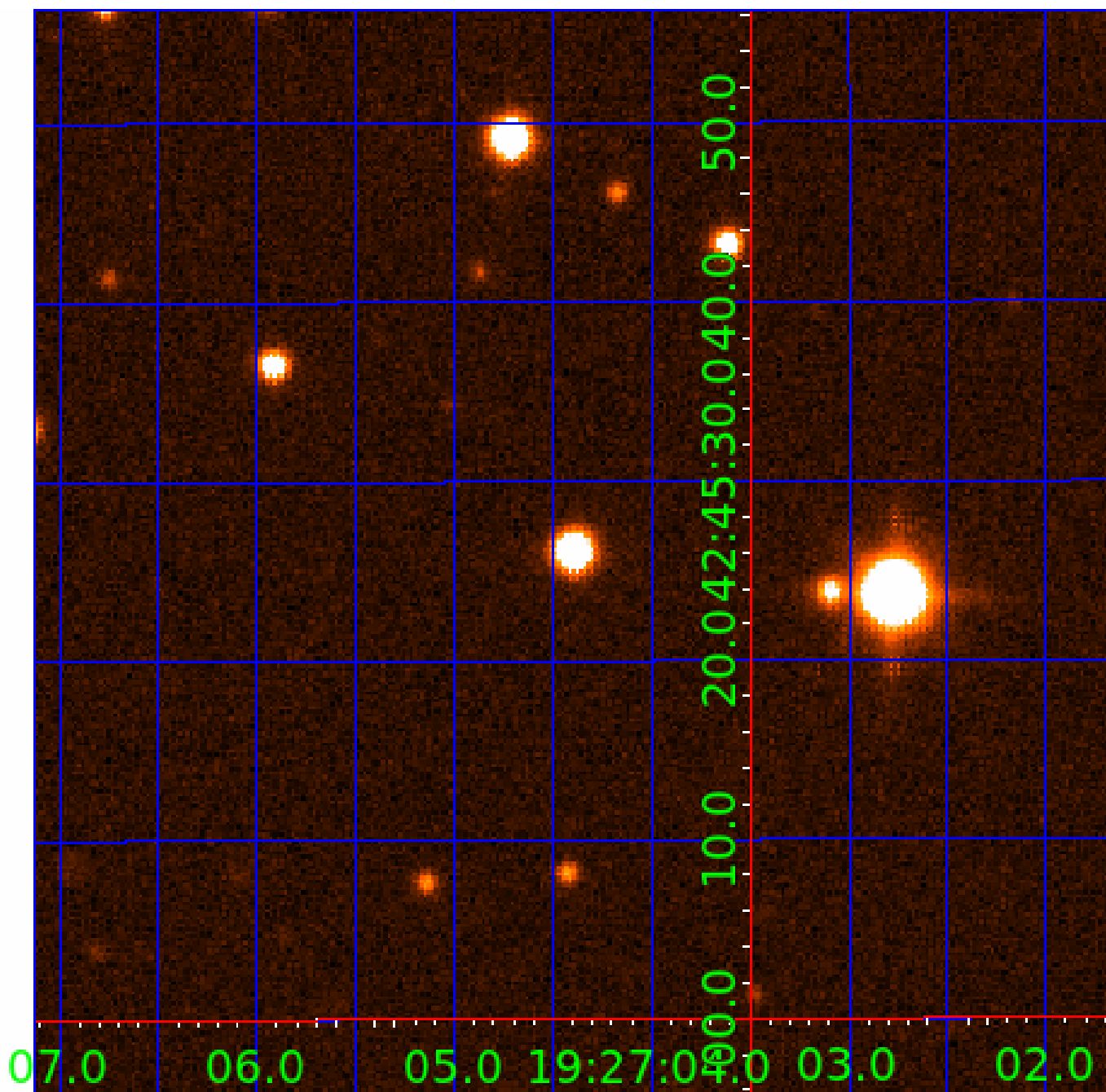


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 007200301

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007200301-01	OBS	6844.01	0.566750	131.854956	20.0	3.255	11.9	7.3	0.89	5691	0.40	4102.75
007200301-02	OBS	No	110.240986	138.833050	517.3	2.163	7.6	7.9	0.89	5691	2.40	3.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007200301-01	OBS	FP	0.00	1	0	0	1	LPP_DV—EPHEM_MATCH
007200301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

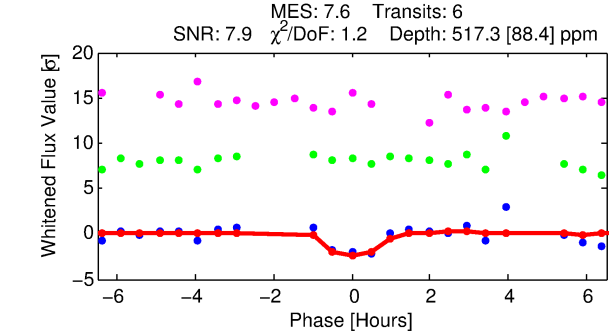
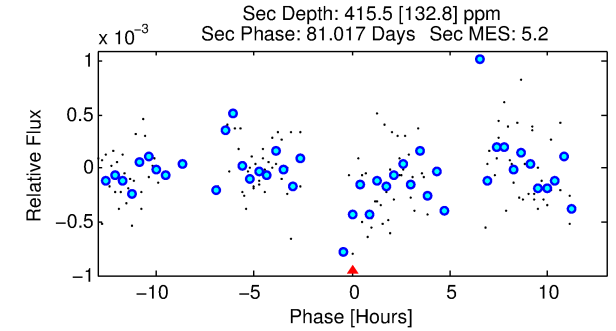
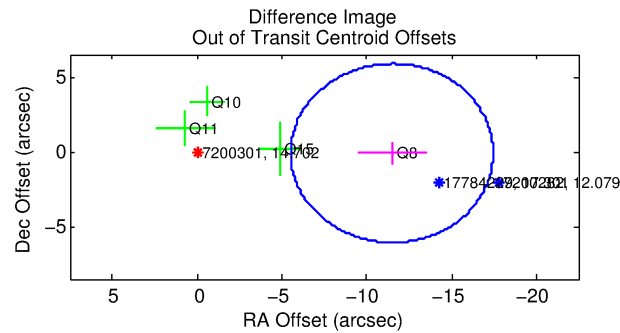
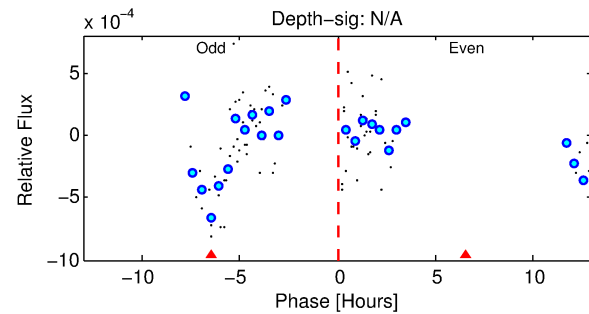
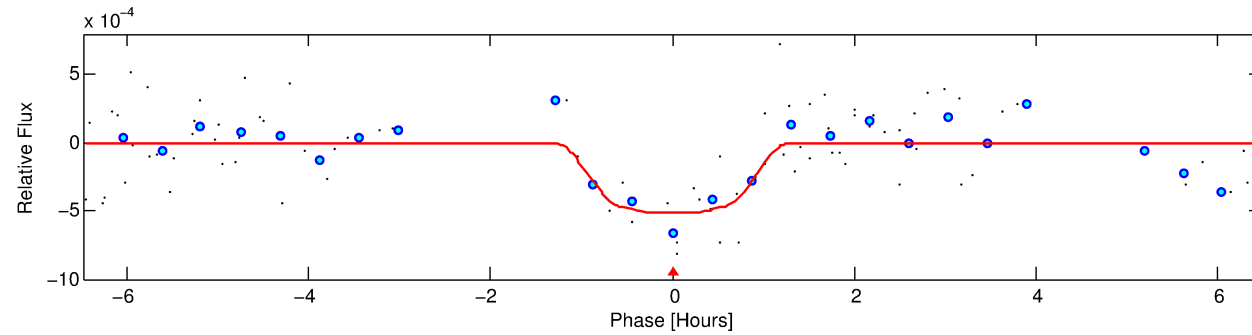
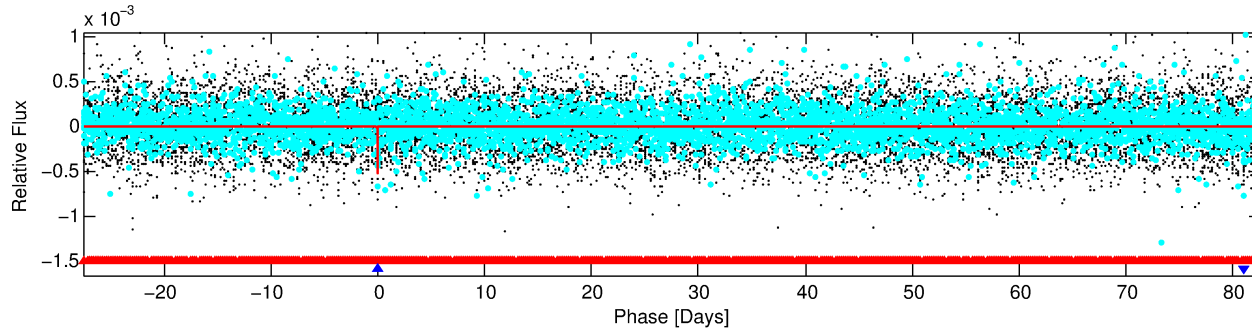
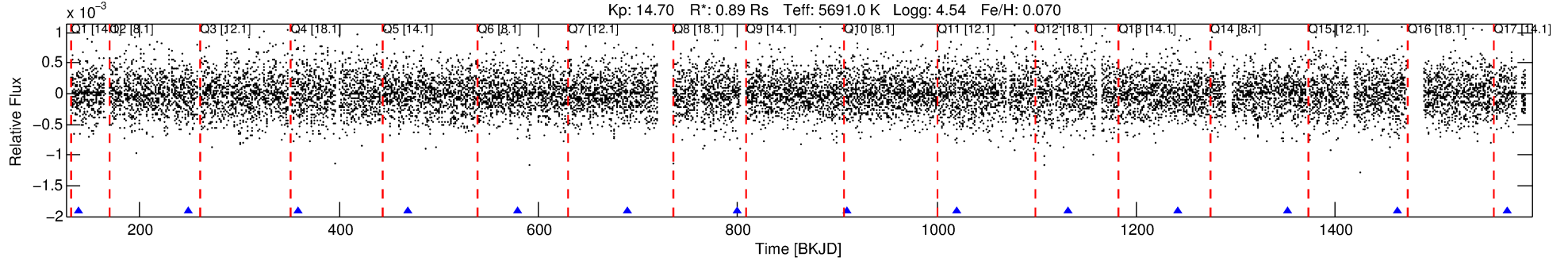
## Ephemeris Match Information For 007200301-02

No Significant Match Found

# DV One-Page Summary

KIC: 7200301 Candidate: 2 of 2 Period: 110.241 d  
KOI: K06844 Corr: No Ephemeris Match

Kp: 14.70 R\*: 0.89 Rs Teff: 5691.0 K Logg: 4.54 Fe/H: 0.070



## DV Fit Results:

Period = 110.24099 [0.00142] d  
Epoch = 138.8331 [0.0143] BKJD  
Rp/R\* = 0.0248 [0.0156]  
a/R\* = 194.17 [552.99]  
b = 0.90 [0.64]  
Seff = 3.64 [1.23]  
Teq = 352 [30] K  
Rp = 2.40 [1.62] Re  
a = 0.4507 [0.0954] AU  
Ag = 8053.26 [10764.89] [0.75σ]  
Teffp = 5159 [1682] K [2.86σ]

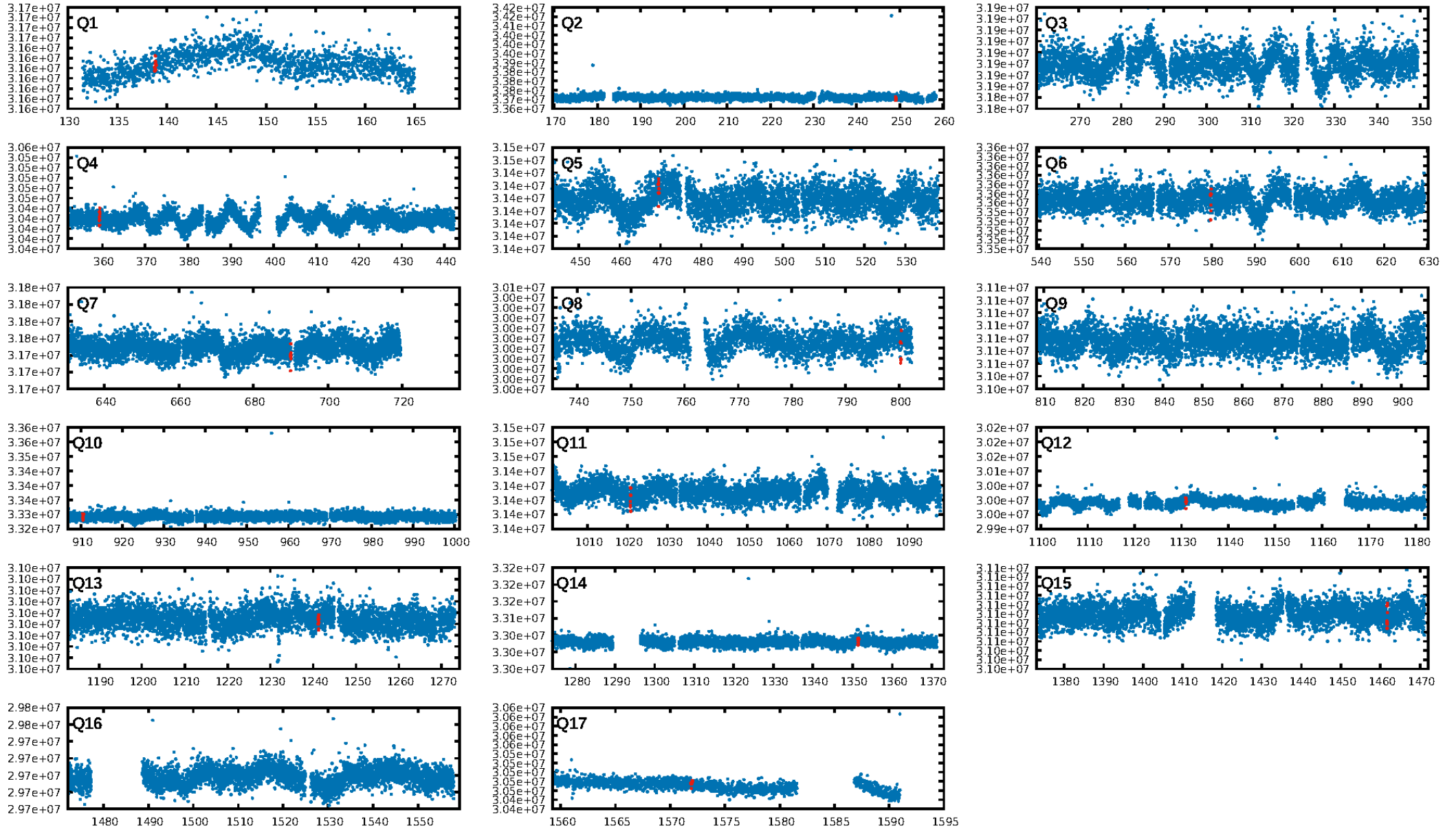
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [673.51σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 24.5%  
ModelChiSquareGof-sig: 98.5%  
**Bootstrap-pfa: 1.90e-09**  
RollingBand-fgt: 1.00 [6/6]  
**GhostDiagnostic-chr: -0.724**  
Centroid-sig: 72.6%  
Centroid-so: 1.147 arcsec [0.93σ]  
**OotOffset-rm: 11.497 arcsec [5.78σ]**  
**KicOffset-rm: 11.684 arcsec [4.10σ]**  
OotOffset-st: 1/2/1/0 [4]  
KicOffset-st: 1/2/1/0 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.00 [0/13]

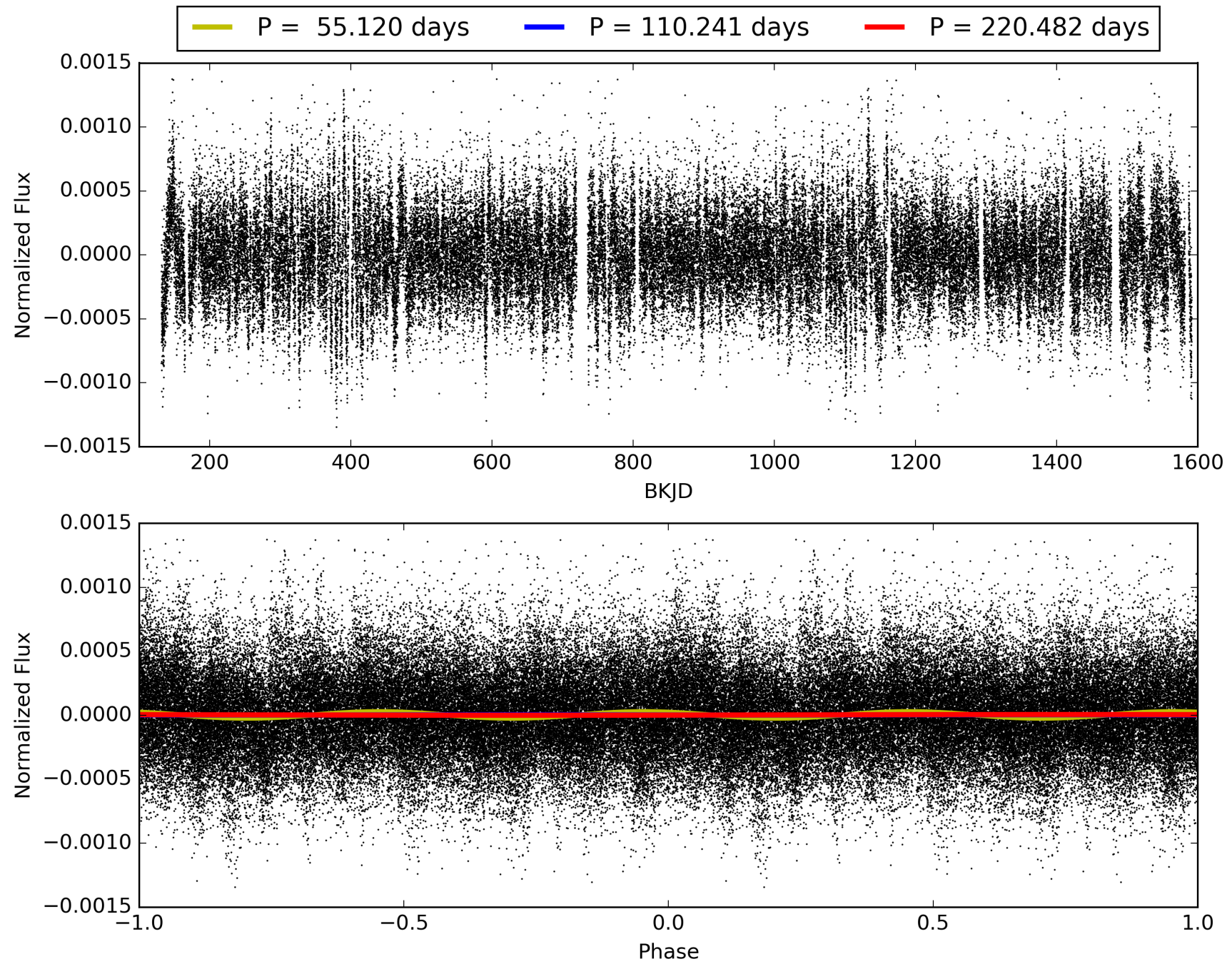
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:08:18 Z

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

# TCE 007200301-02, PDC Light Curves

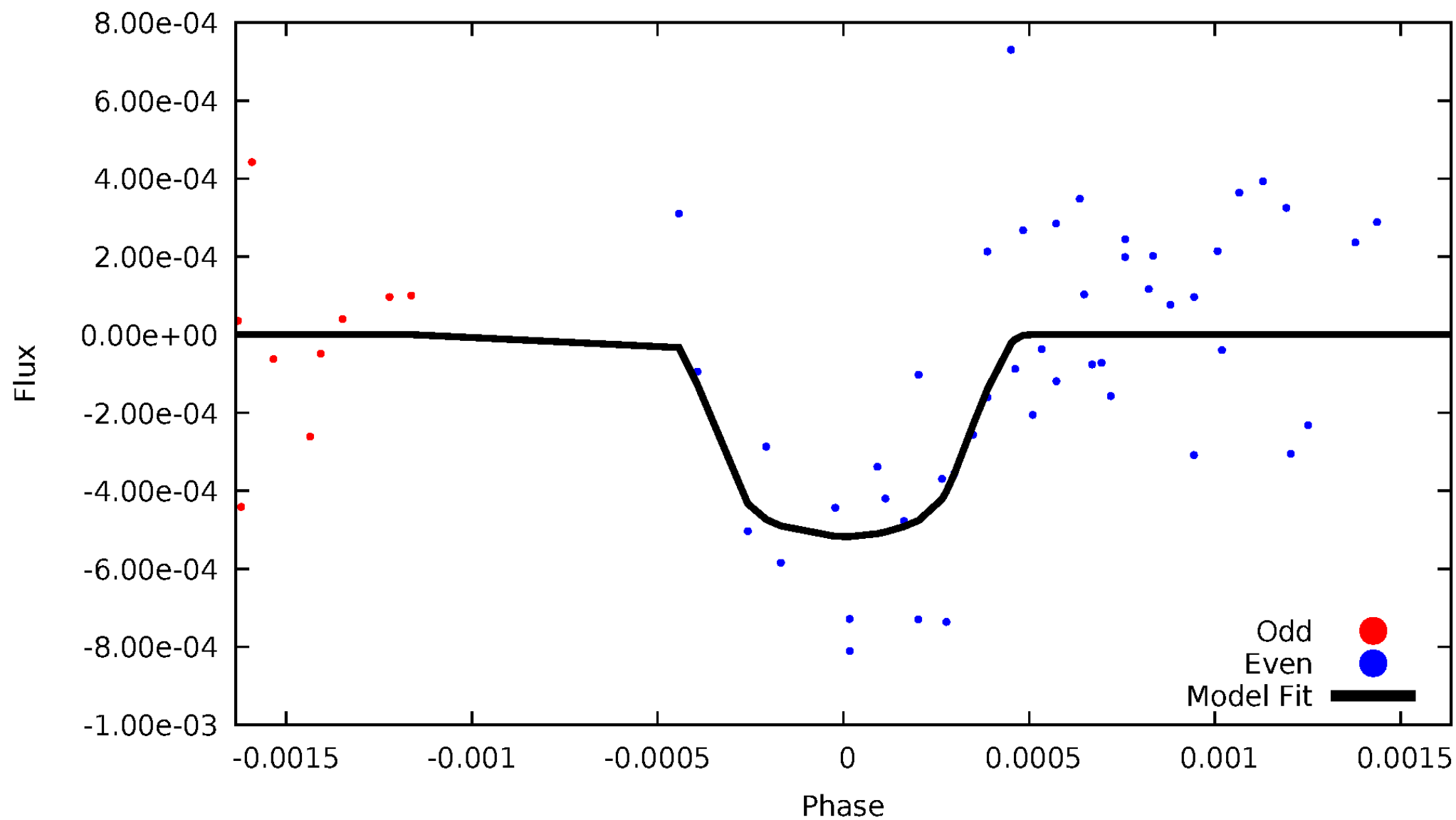


TCE 007200301-02



# DV Odd/Even

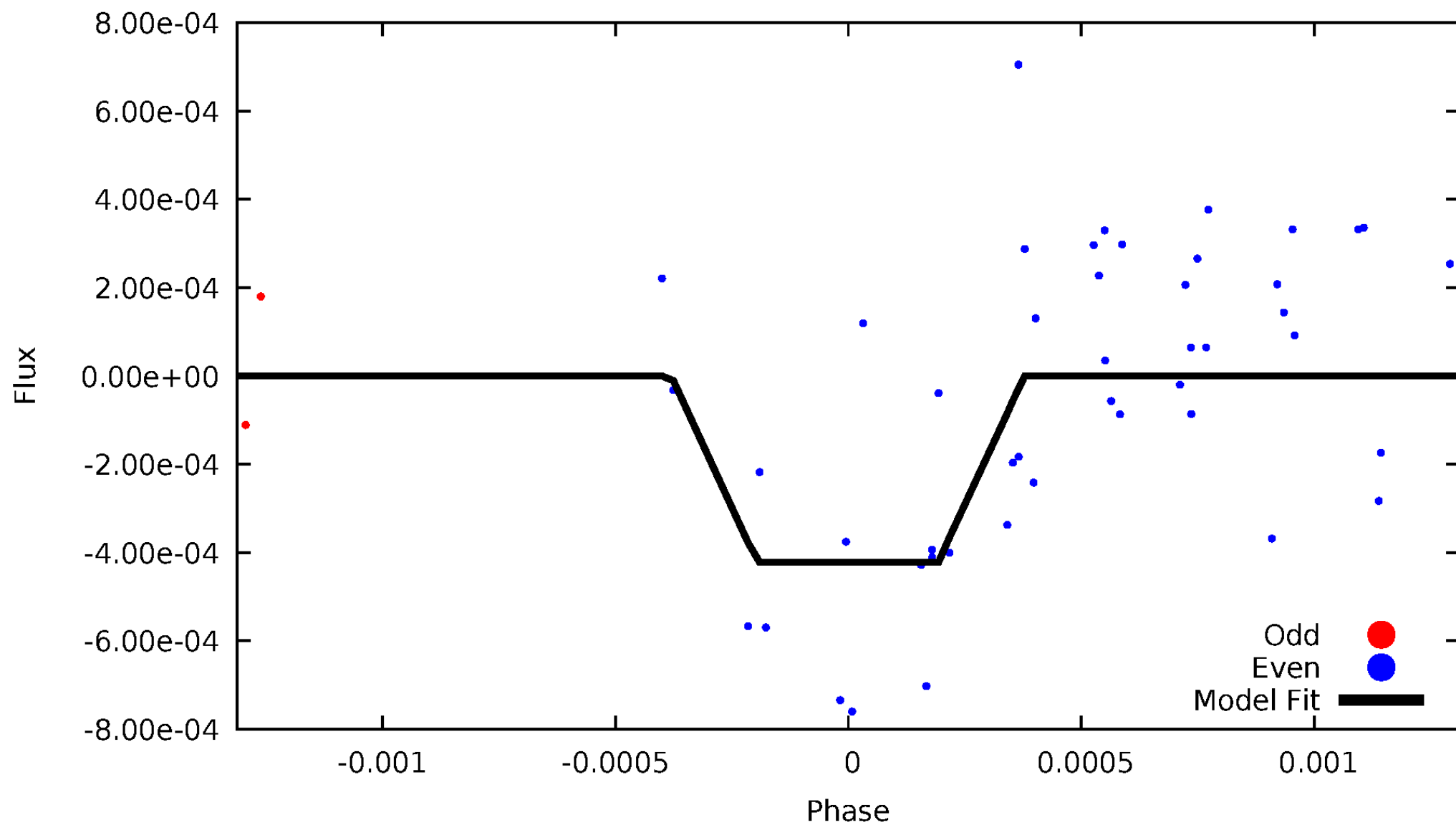
TCE 007200301-02





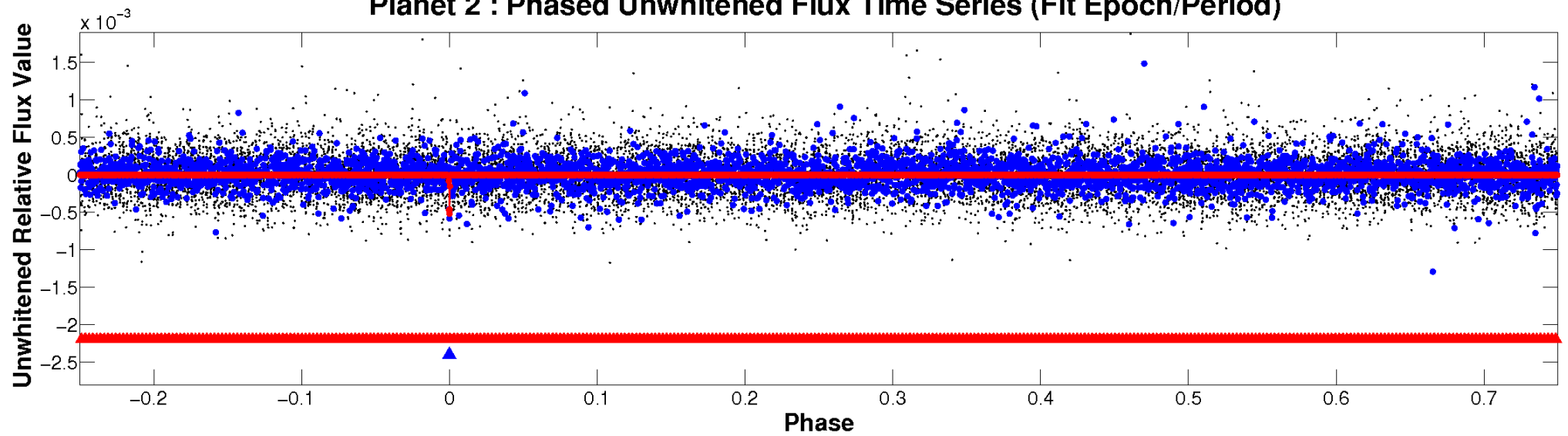
# ALT Odd/Even

TCE 007200301-02

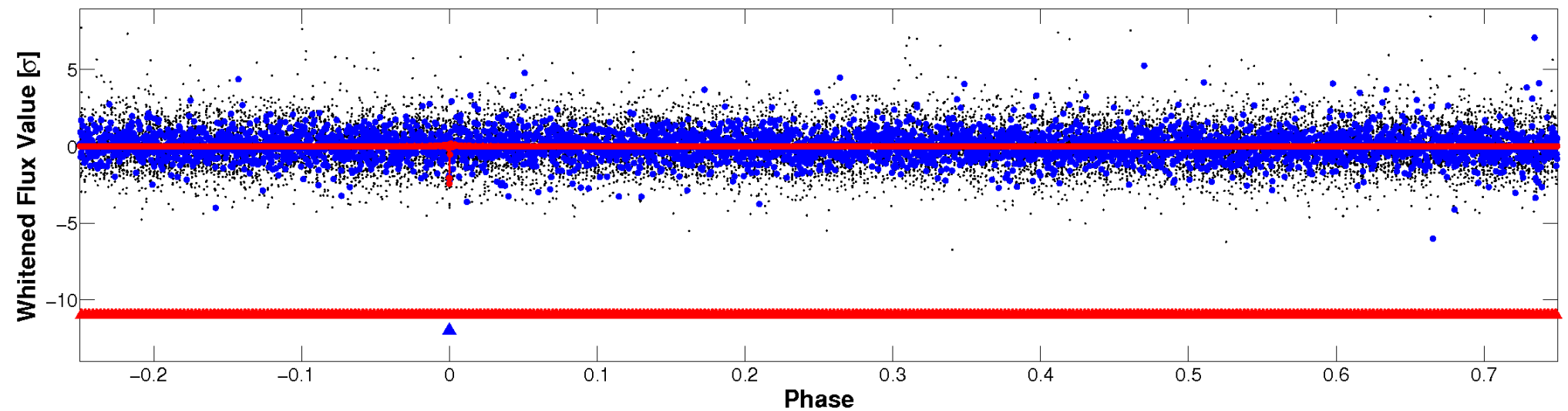


# Non-Whitened Vs. Whitened Light Curve

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

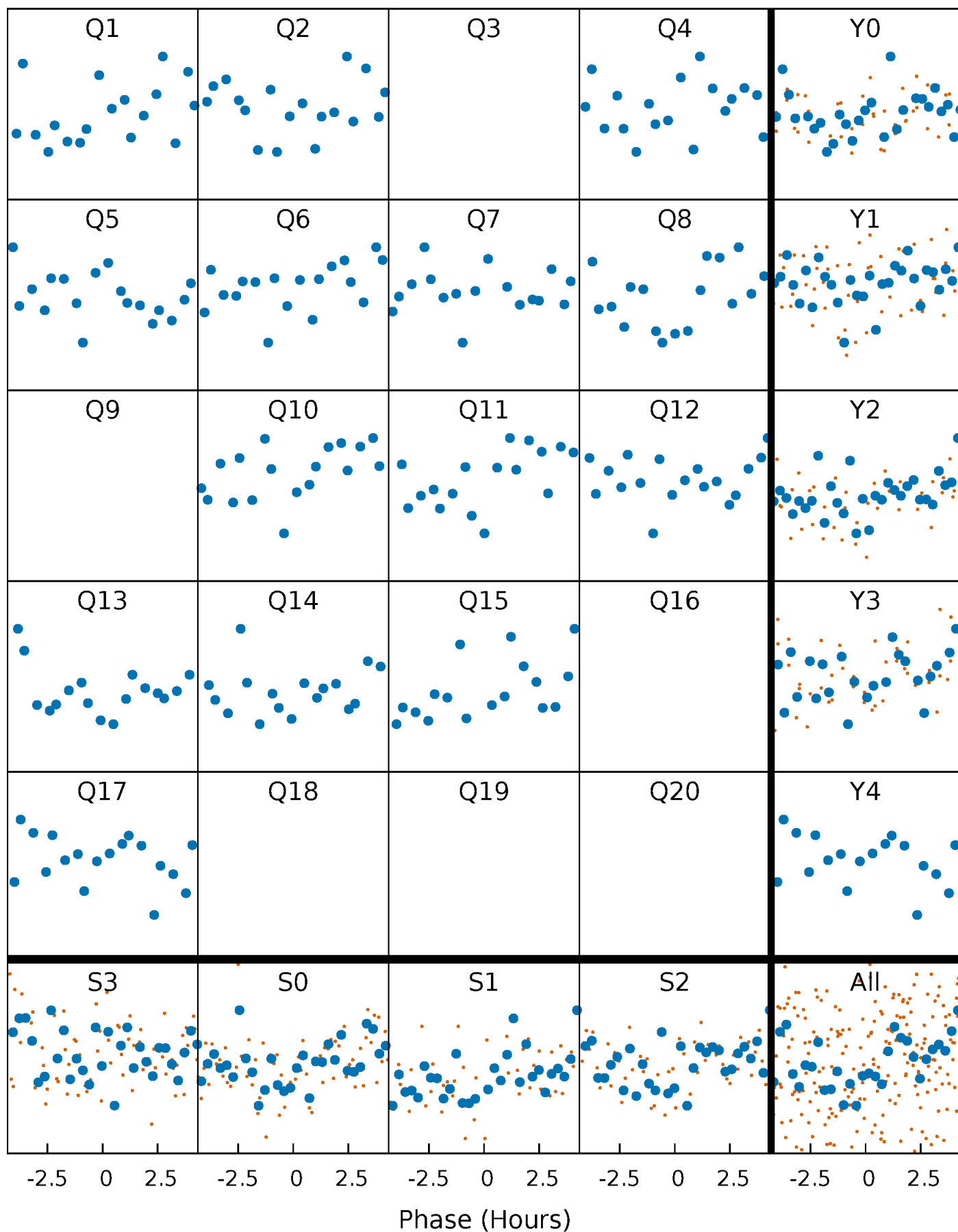


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



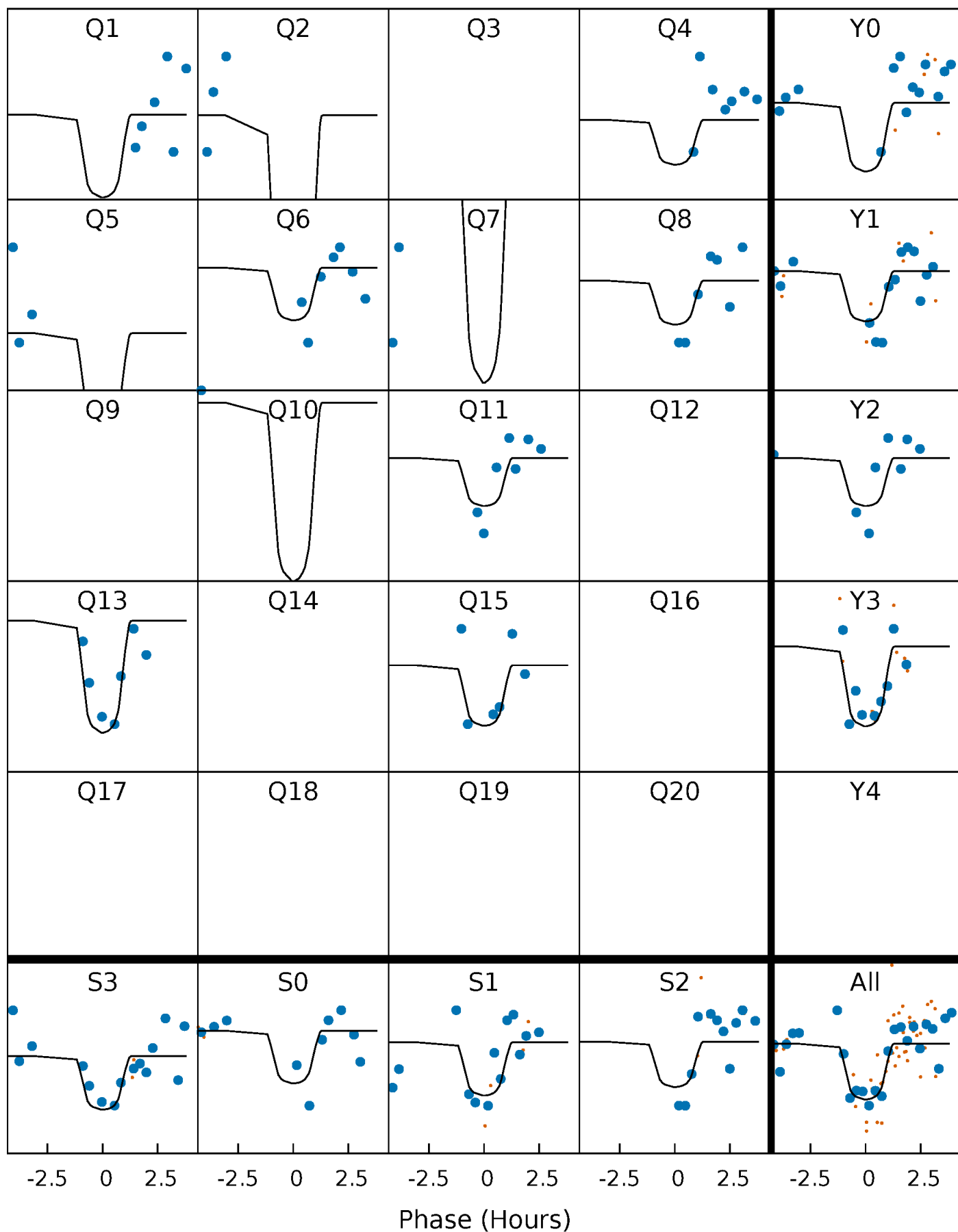
# PDC Quarter-Phased Transit Curves

TCE 007200301-02   P=110.240986 Days    $T_0=138.833050$  (BKJD)



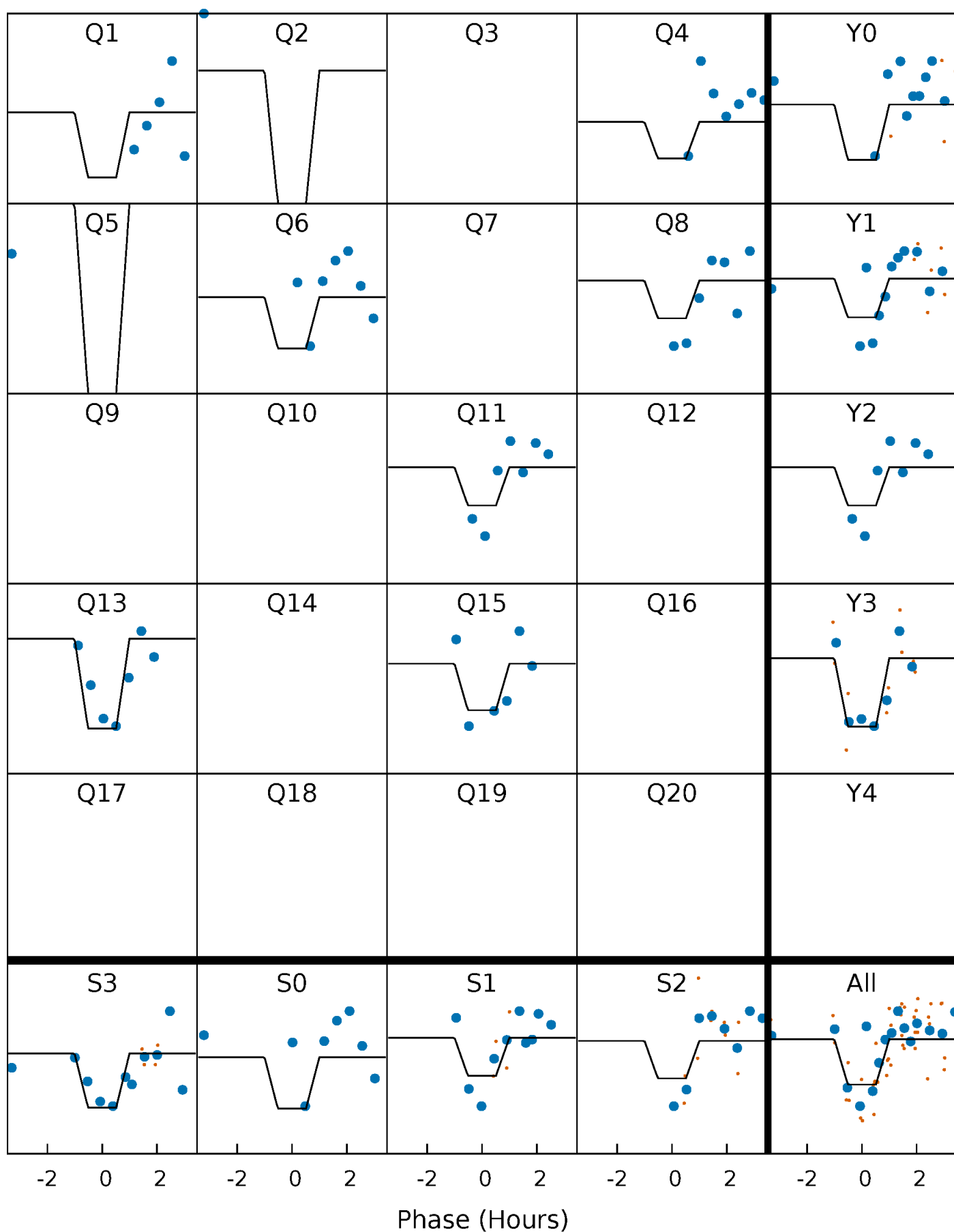
# DV Quarter-Phased Transit Curves

TCE 007200301-02 P=110.240986 Days  $T_0=138.833050$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007200301-02 P=110.239568 Days  $T_0=138.845358$  (BKJD)

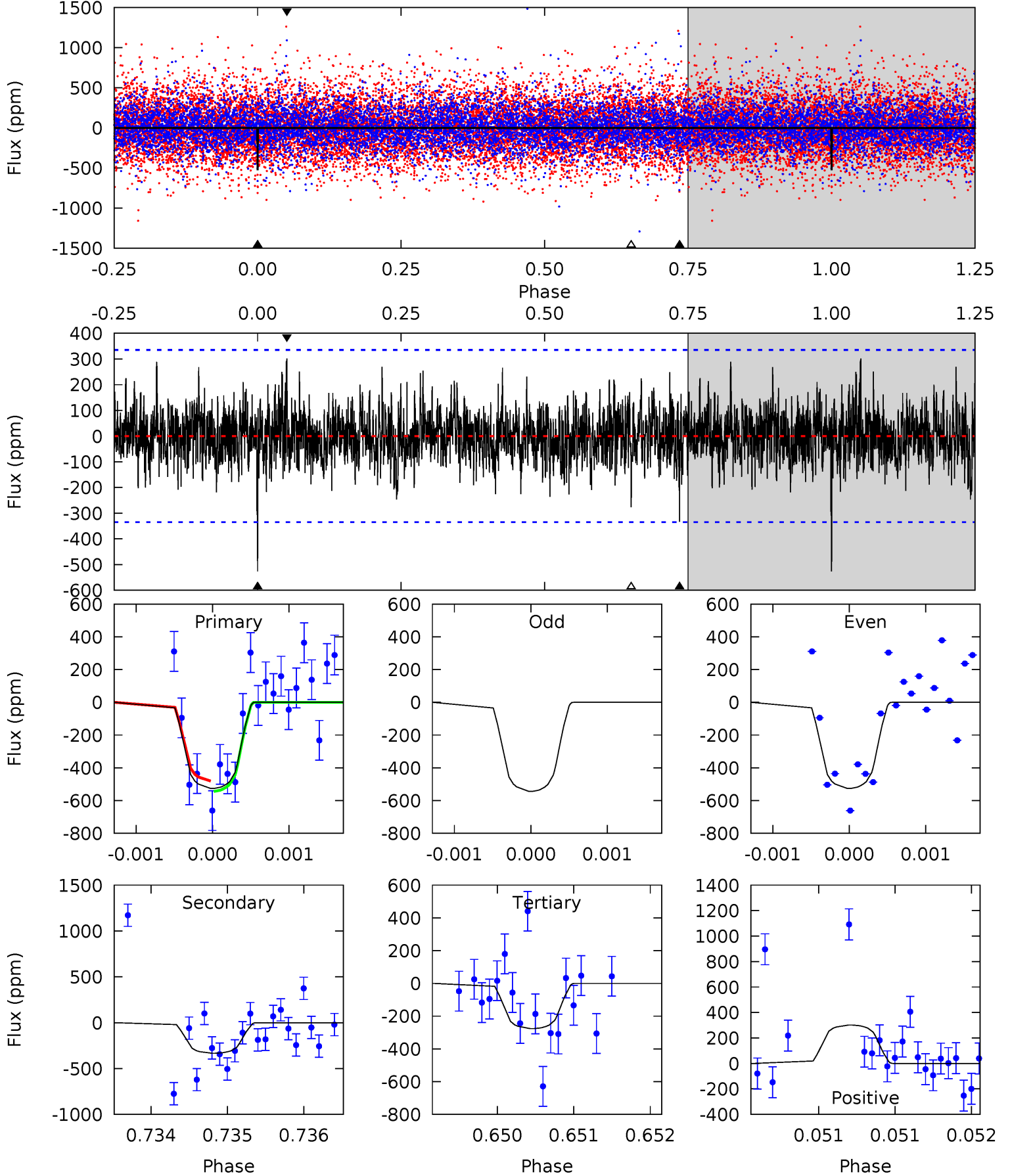




# DV Model-Shift Uniqueness Test

007200301-02, P = 110.240986 Days, E = 28.592064 Days

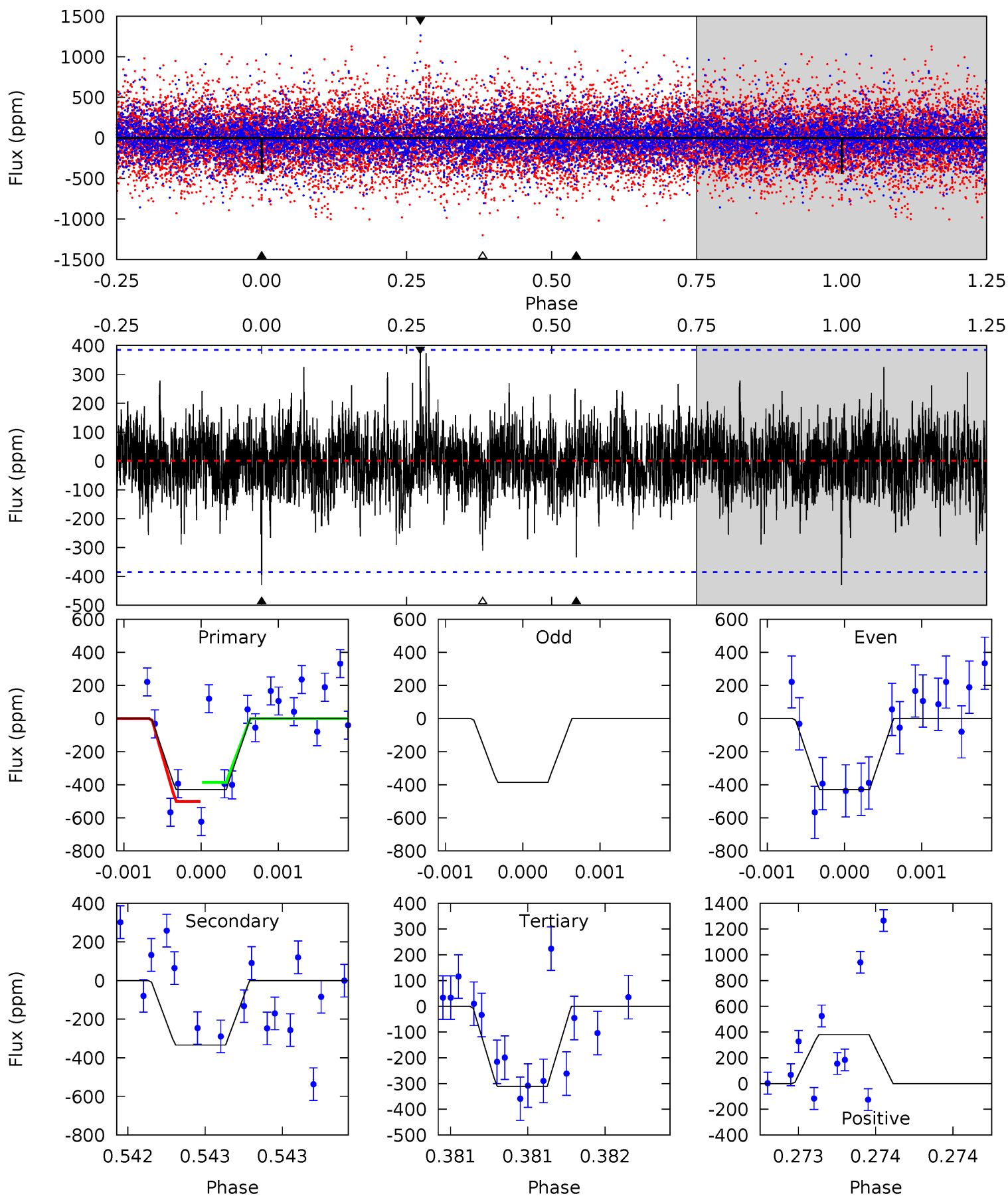
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.59	5.43	4.51	4.92	5.47	3.32	1.28	4.08	3.67	0.93	0.51	0.20	1.06	0.36	0.42



# Alt Model-Shift Uniqueness Test

007200301-02, P = 110.239568 Days, E = 28.605790 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
6.19	4.81	4.47	5.48	5.54	3.43	1.16	1.71	0.70	0.33	-0.68	0.39	1.06	0.47	0.73



### Stellar Parameters For KIC 007200301

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5691^{+152}_{-169}$	$4.544^{+0.033}_{-0.176}$	$0.070^{+0.200}_{-0.350}$	$0.887^{+0.217}_{-0.078}$	$1.003^{+0.080}_{-0.137}$	$2.025^{+0.348}_{-0.904}$
	+3%/-3%	+1%/-4%	+286%/-500%	+24%/-9%	+8%/-14%	+17%/-45%
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 007200301-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-333 \pm 61$	$2.62^{+1.47}_{-1.50}$	$503^{+30}_{-21}$	$4910^{+2475}_{-854}$	$5375^{+24322}_{-3280}$
Alt.	$-334 \pm 69$	$2.19^{+1.52}_{-1.23}$	$503^{+30}_{-20}$	$5230^{+2914}_{-993}$	$7406^{+35260}_{-4873}$

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

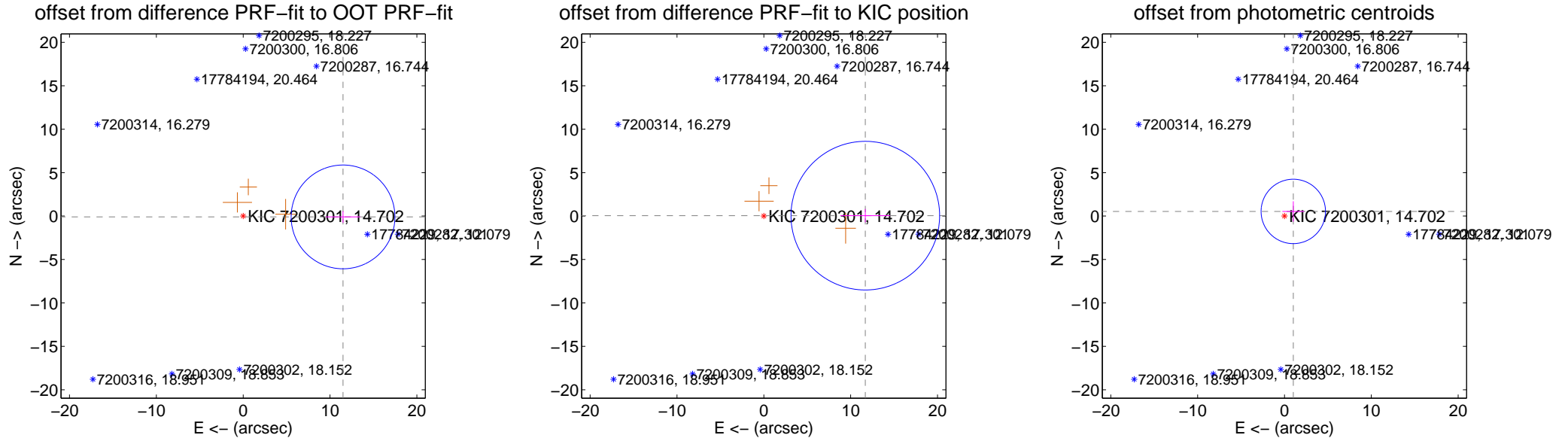
## DV Centroid Data

Supplemental centroid analysis for 007200301-02. Kepler magnitude: 14.70. Transit SNR 7.87

There are 1 quarters with good PRF difference image offsets

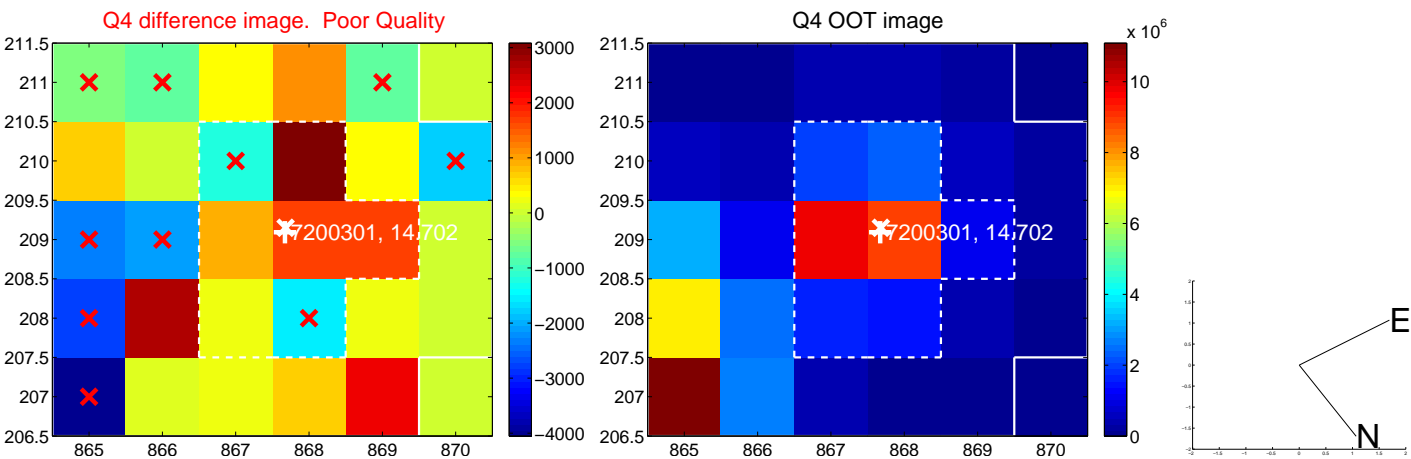
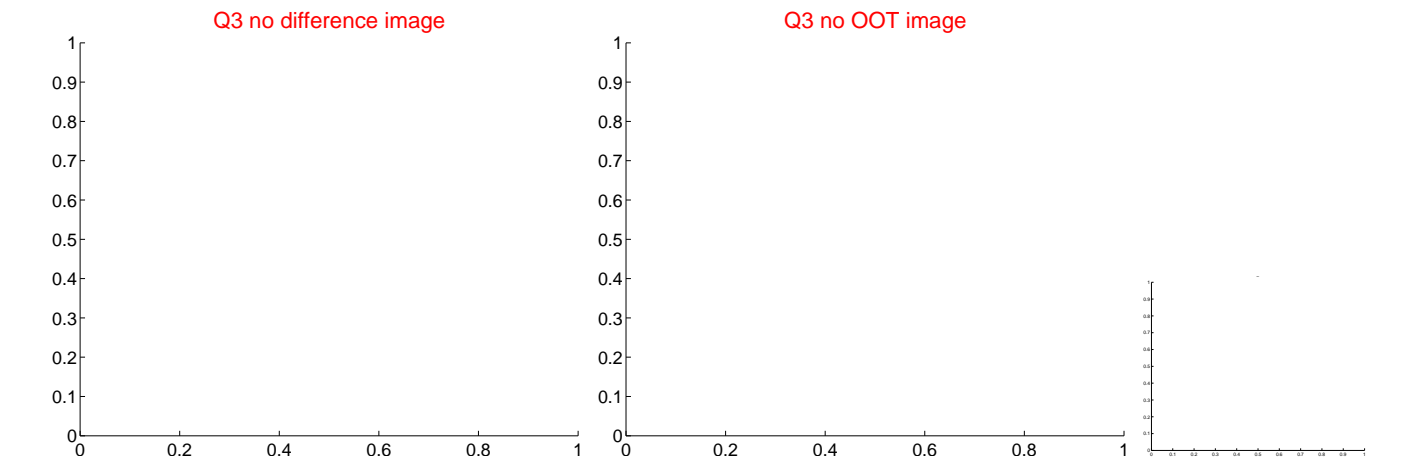
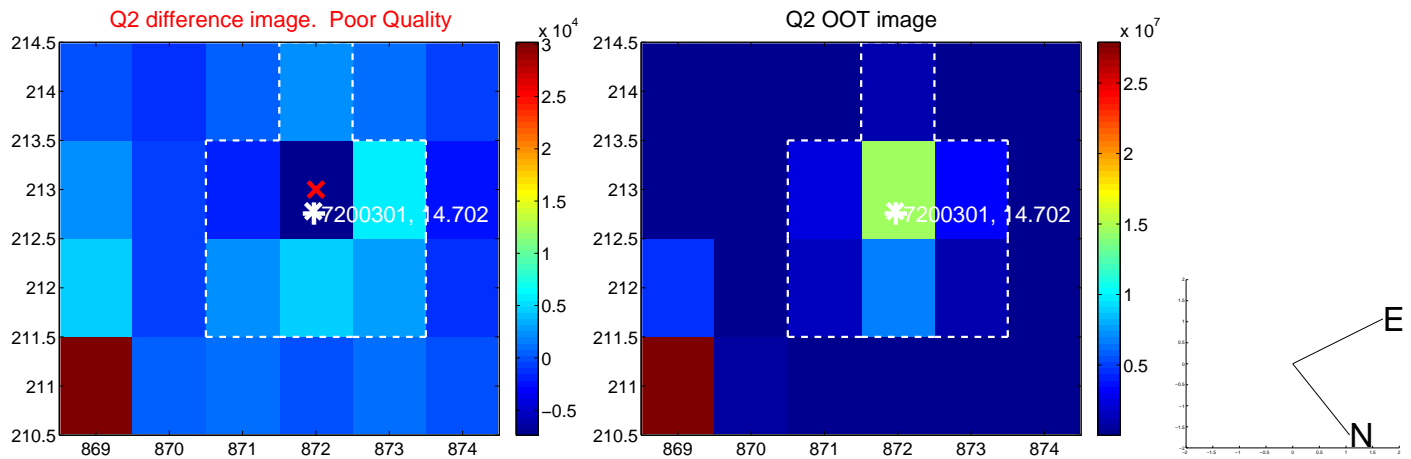
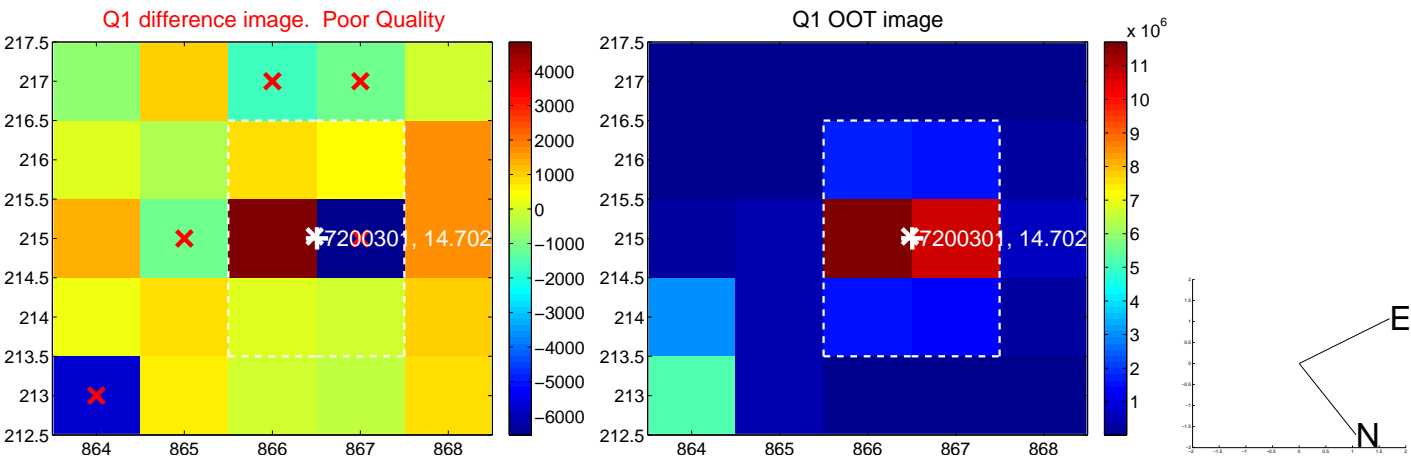
The OOT PRF centroid is offset from the target star catalog position by about 4.81 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$11.497 \pm 1.991$	5.78	$-11.497 \pm 1.987$	$-0.096 \pm 0.670$
PRF-fit source offset from KIC position	$11.684 \pm 2.852$	4.10	$-11.684 \pm 2.854$	$0.047 \pm 0.768$
photometric centroid source offset	$1.15 \pm 1.24$	0.93	$-1.02 \pm 1.25$	$0.53 \pm 1.17$



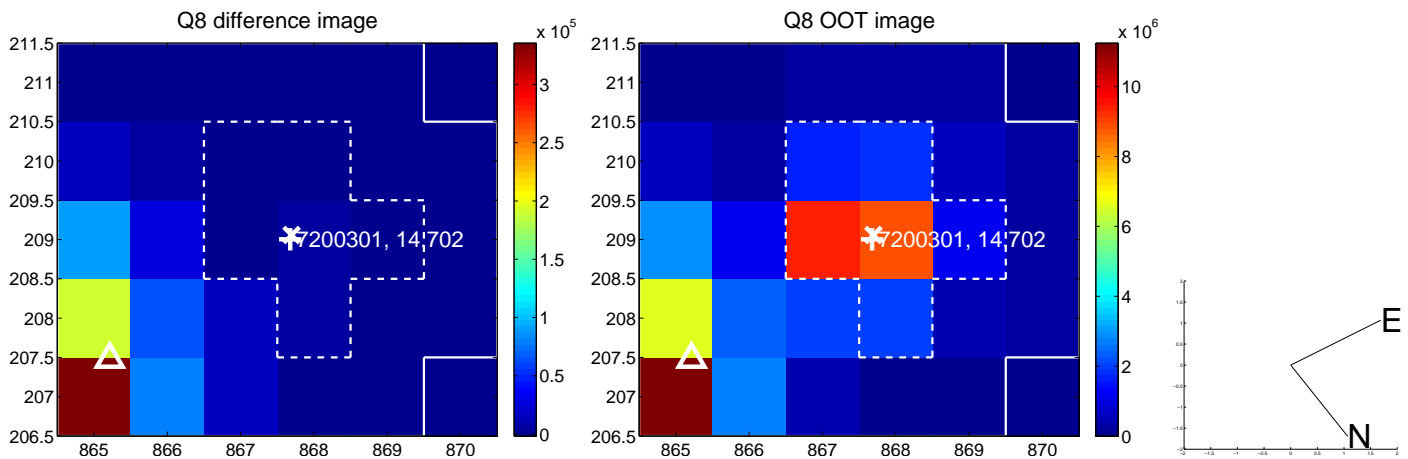
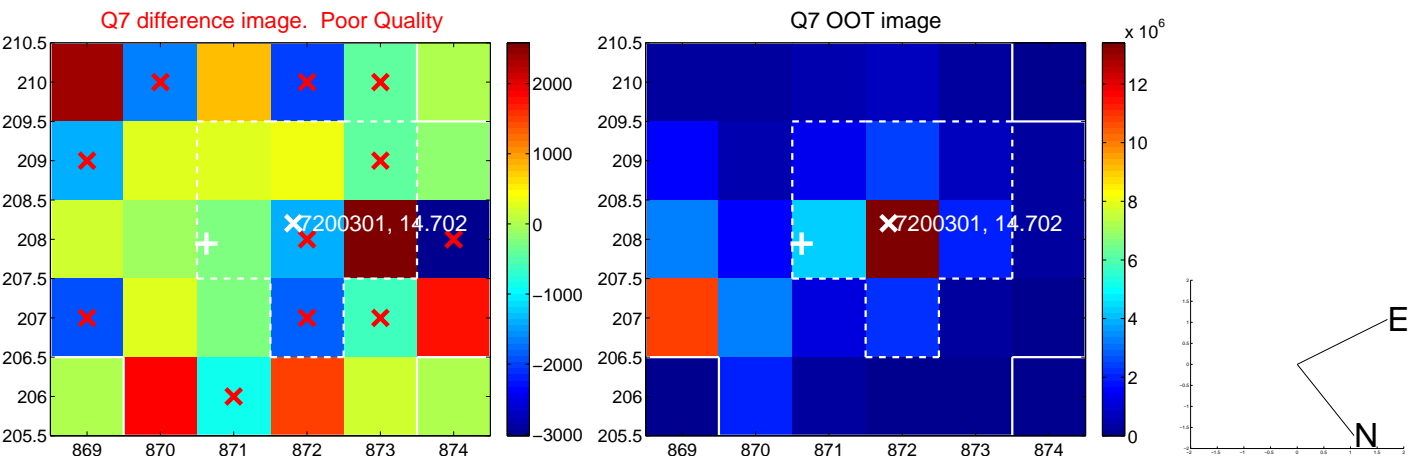
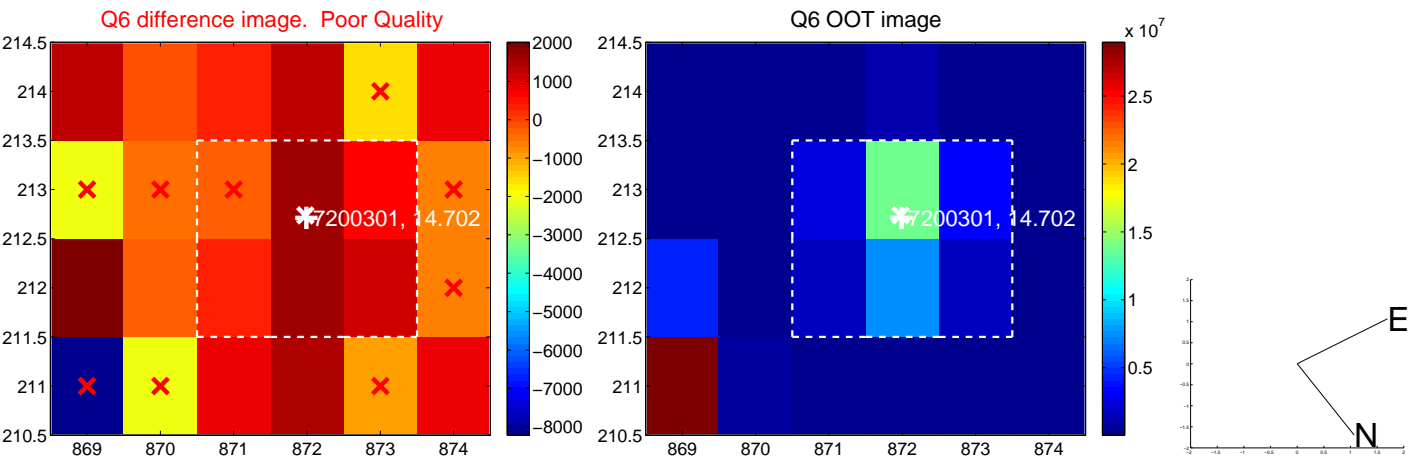
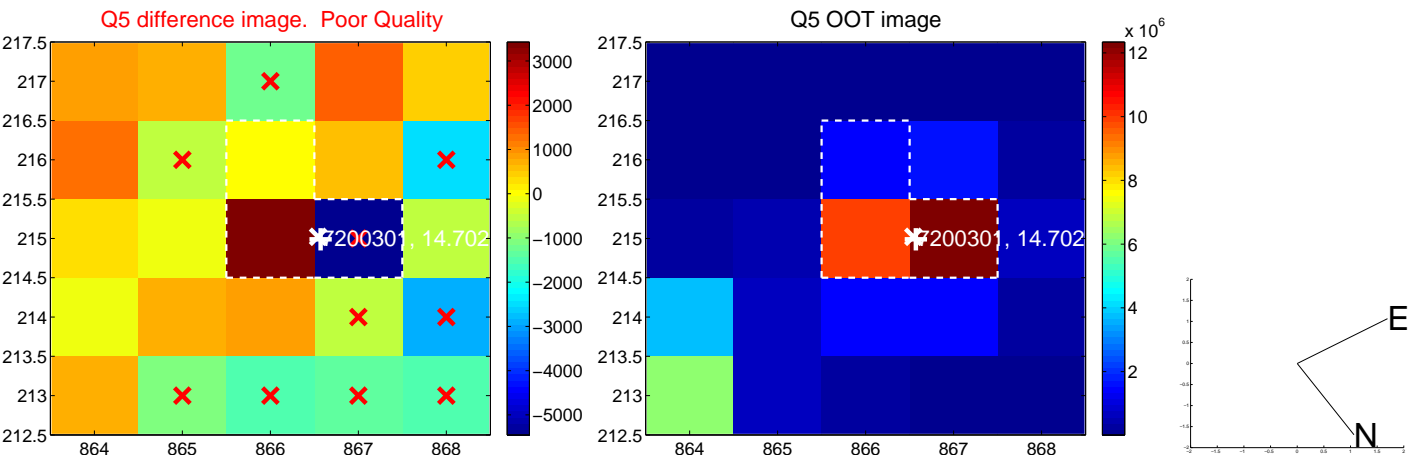
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

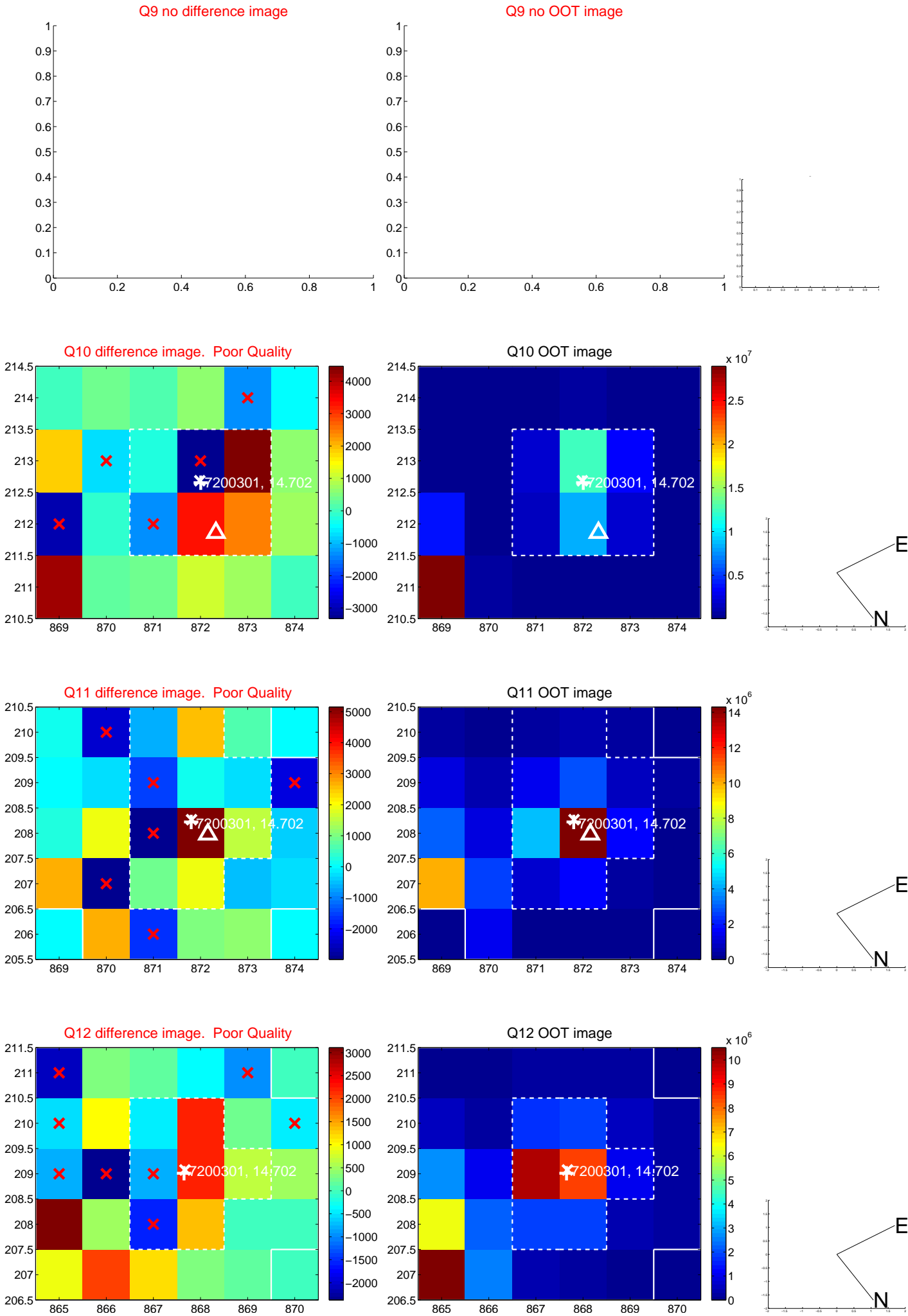




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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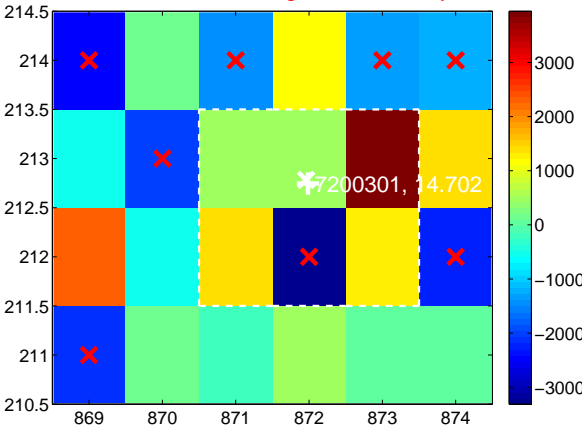
Q13 no difference image



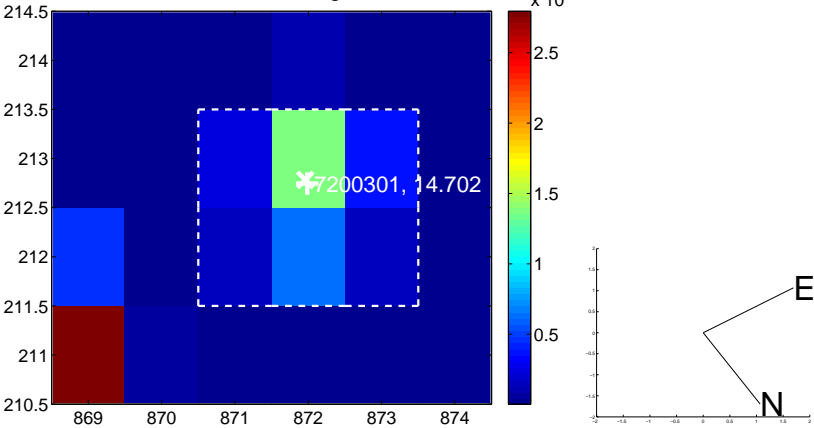
Q13 no OOT image



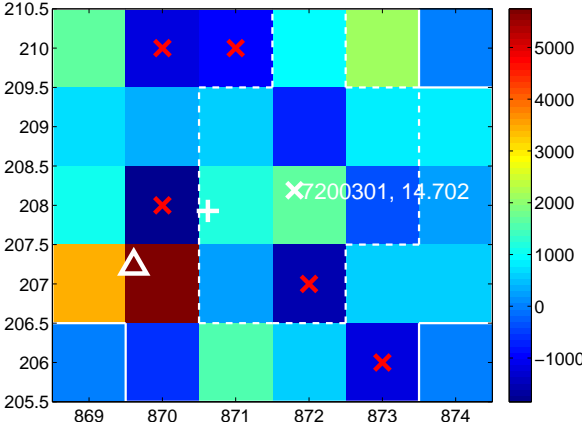
Q14 difference image. Poor Quality



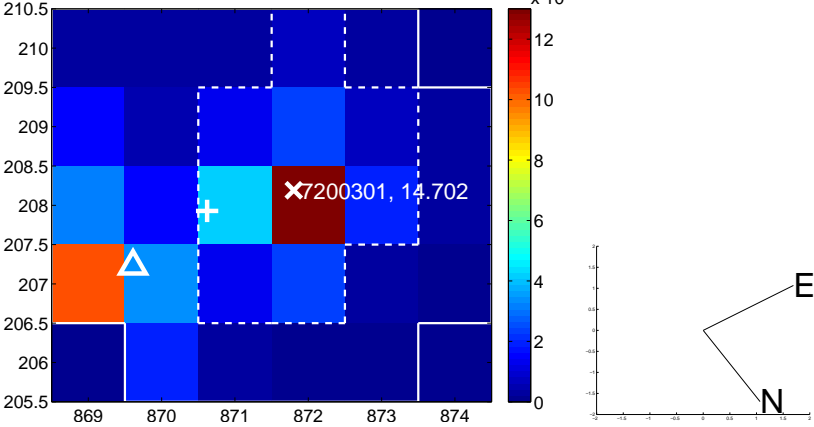
Q14 OOT image



Q15 difference image. Poor Quality



Q15 OOT image



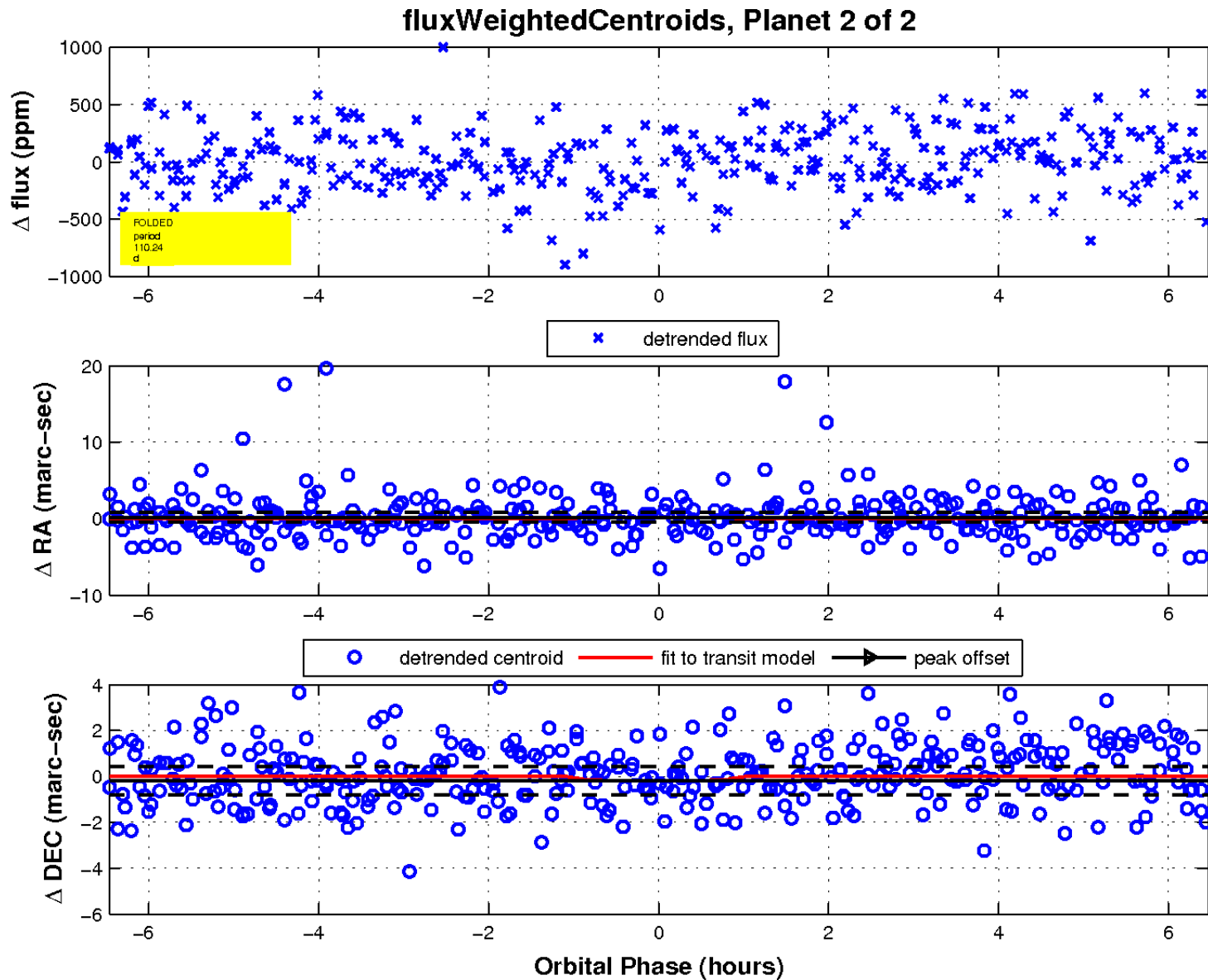
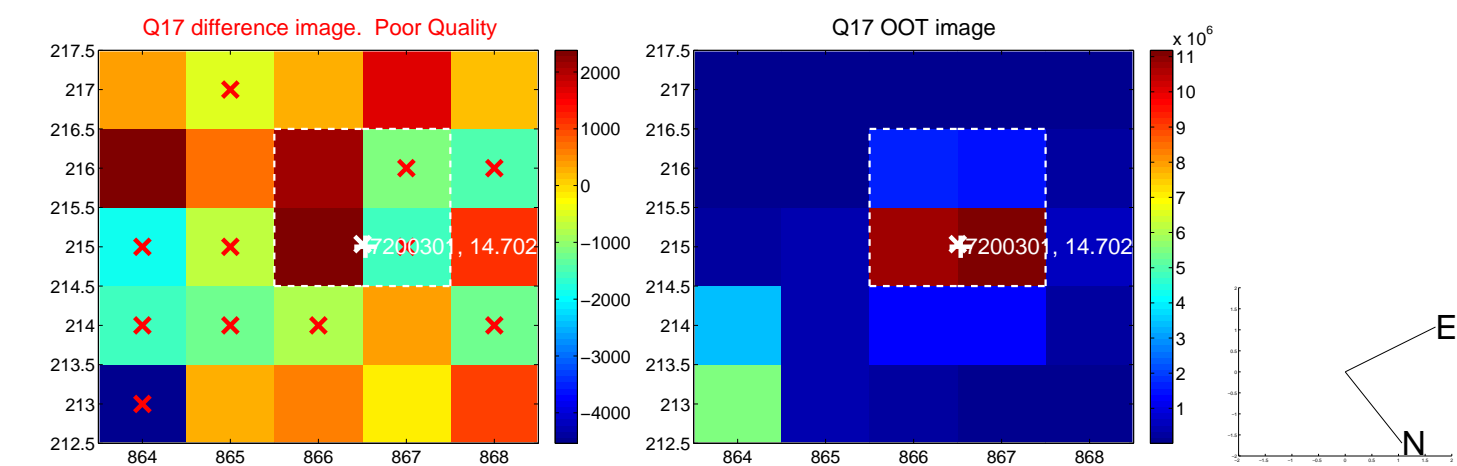
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

