

# KIC 006934317

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006934317-01	OBS	No	544.253642	235.755039	213.4	7.191	8.9	5.9	1.86	5606	3.04	2.03
006934317-02	OBS	No	325.473026	420.397755	226.7	4.300	8.7	6.4	1.86	5606	3.10	4.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006934317-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006934317-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—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.

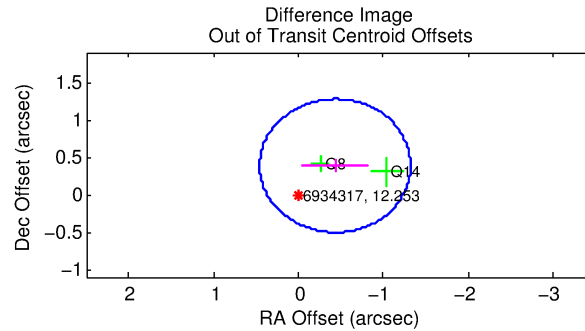
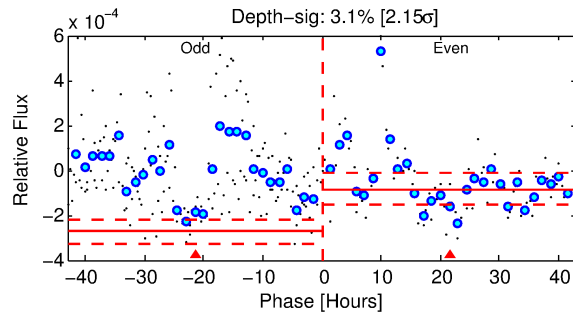
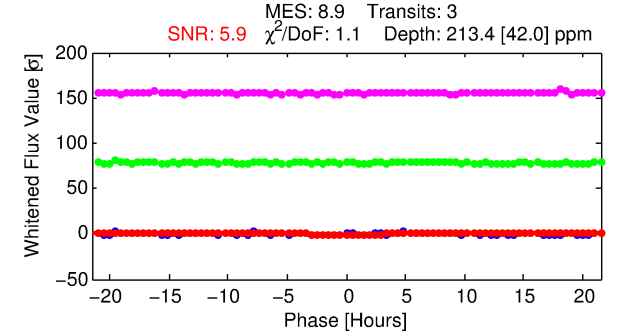
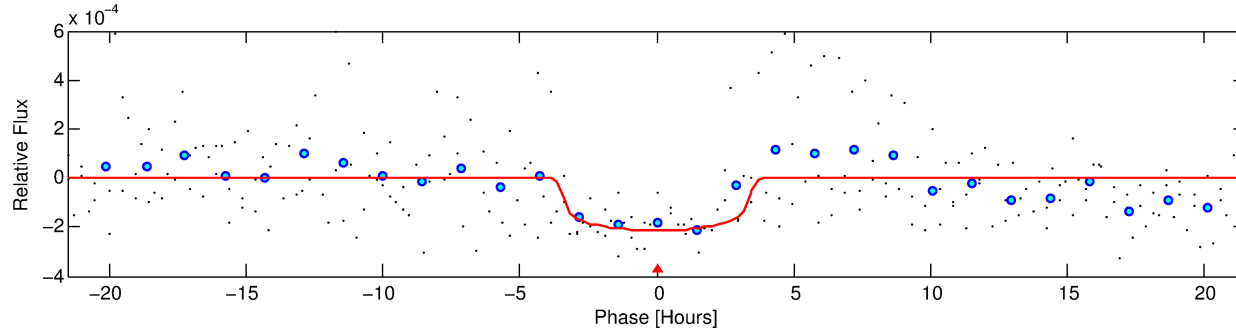
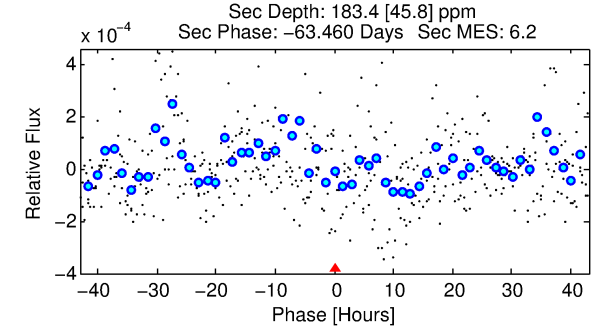
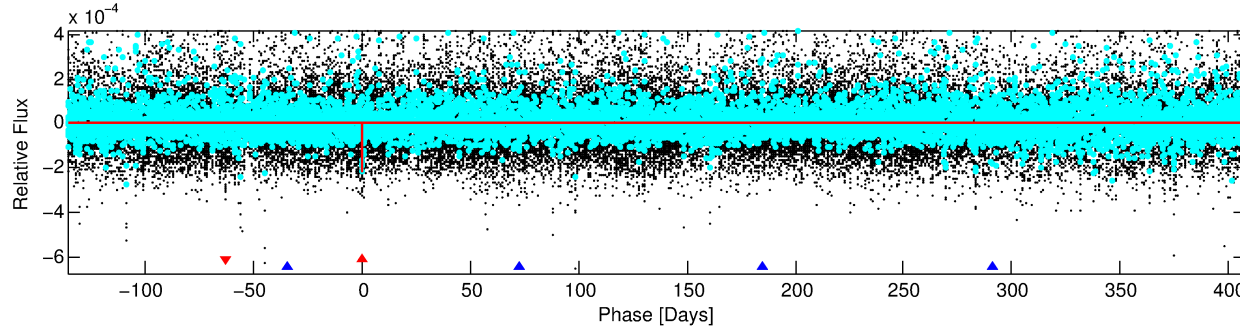
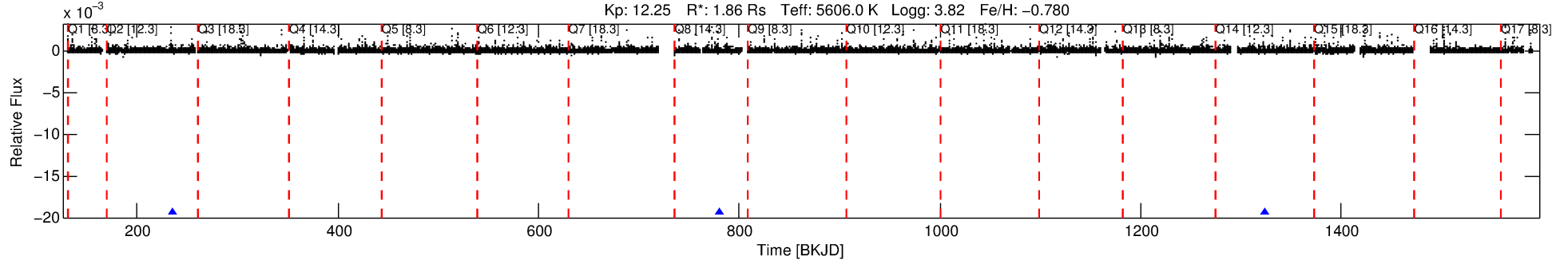
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006934317-01

No Significant Match Found

# DV One-Page Summary

KIC: 6934317 Candidate: 1 of 2 Period: 544.254 d



## DV Fit Results:

Period = 544.25364 [0.00975] d  
Epoch = 235.7550 [0.0146] BKJD  
Rp/R\* = 0.0149 [0.0068]  
a/R\* = 351.10 [758.66]  
b = 0.81 [0.90]  
Seff = 2.03 [0.83]  
Teq = 304 [31] K  
Rp = 3.04 [1.69] Re  
a = 1.2322 [0.3304] AU  
Ag = 16616.93 [16954.29] [0.98 $\sigma$ ]  
Teffp = 5341 [1273] K [3.95 $\sigma$ ]

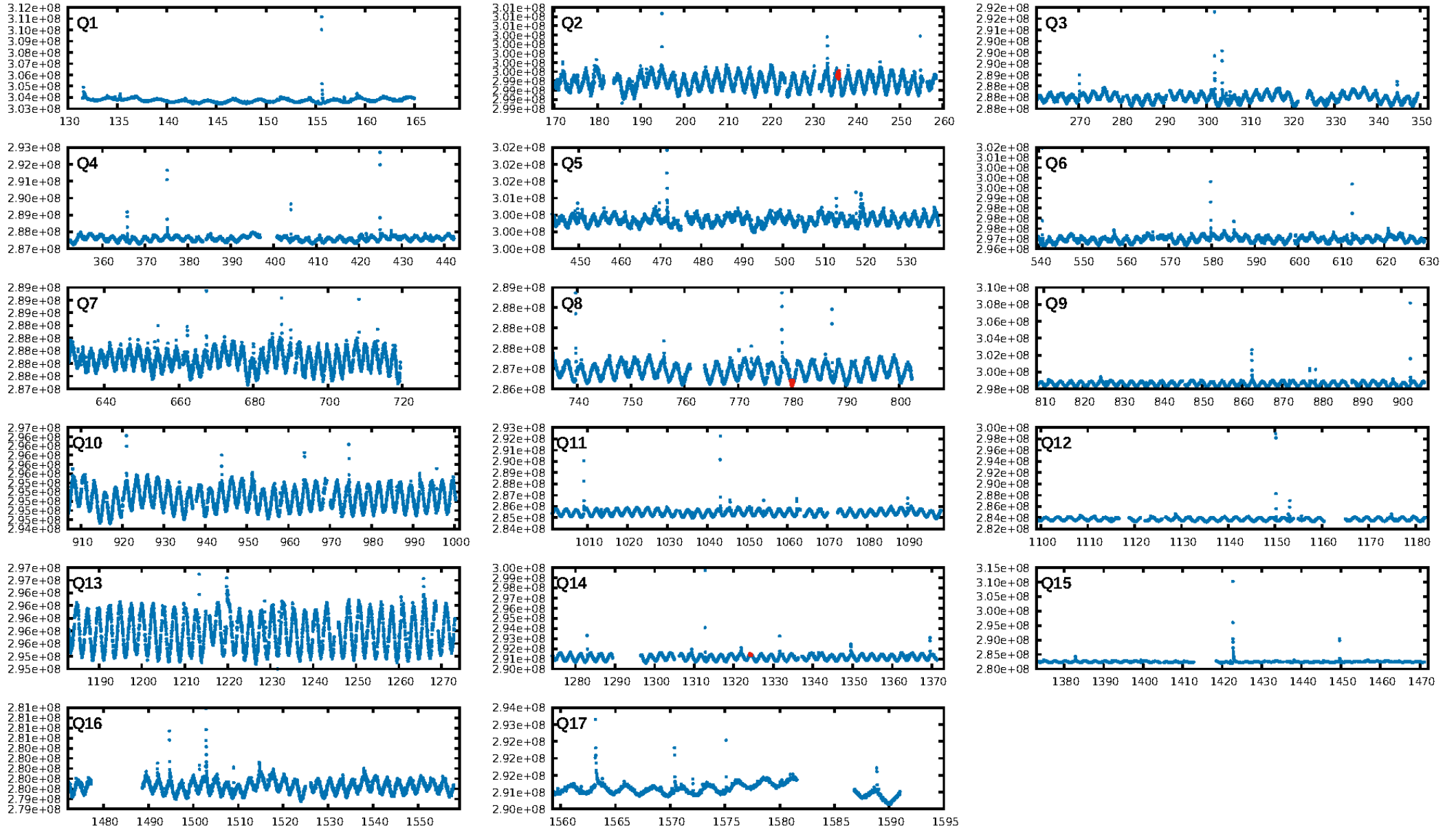
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [626.70 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 44.4%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 5.76e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.09  
Centroid-sig: 57.0%  
Centroid-so: 0.628 arcsec [0.78 $\sigma$ ]  
OotOffset-rm: 0.581 arcsec [1.96 $\sigma$ ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-rm: 0.581 arcsec [1.51 $\sigma$ ]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

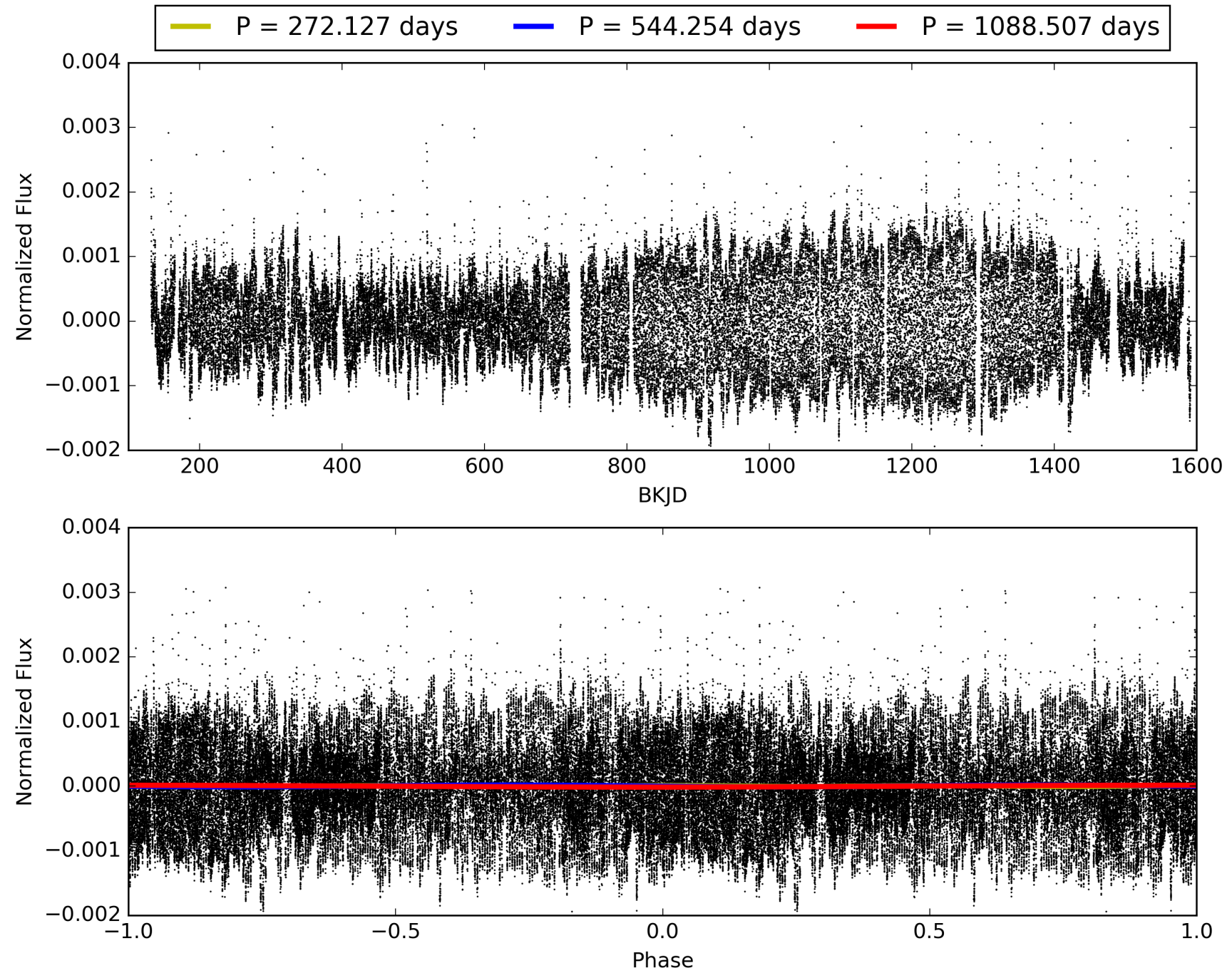
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 03:59:07 Z

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

# TCE 006934317-01, PDC Light Curves

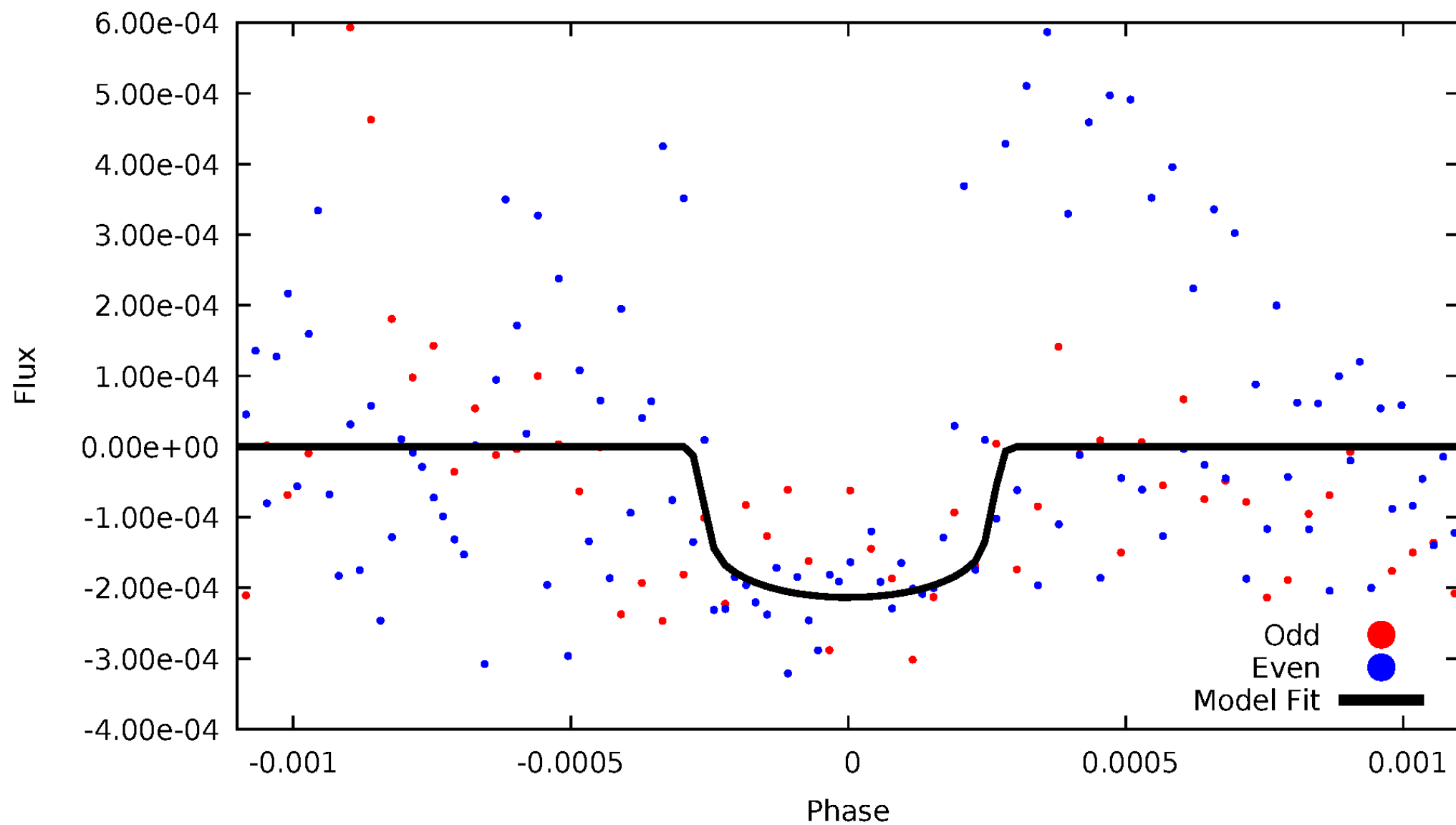


TCE 006934317-01



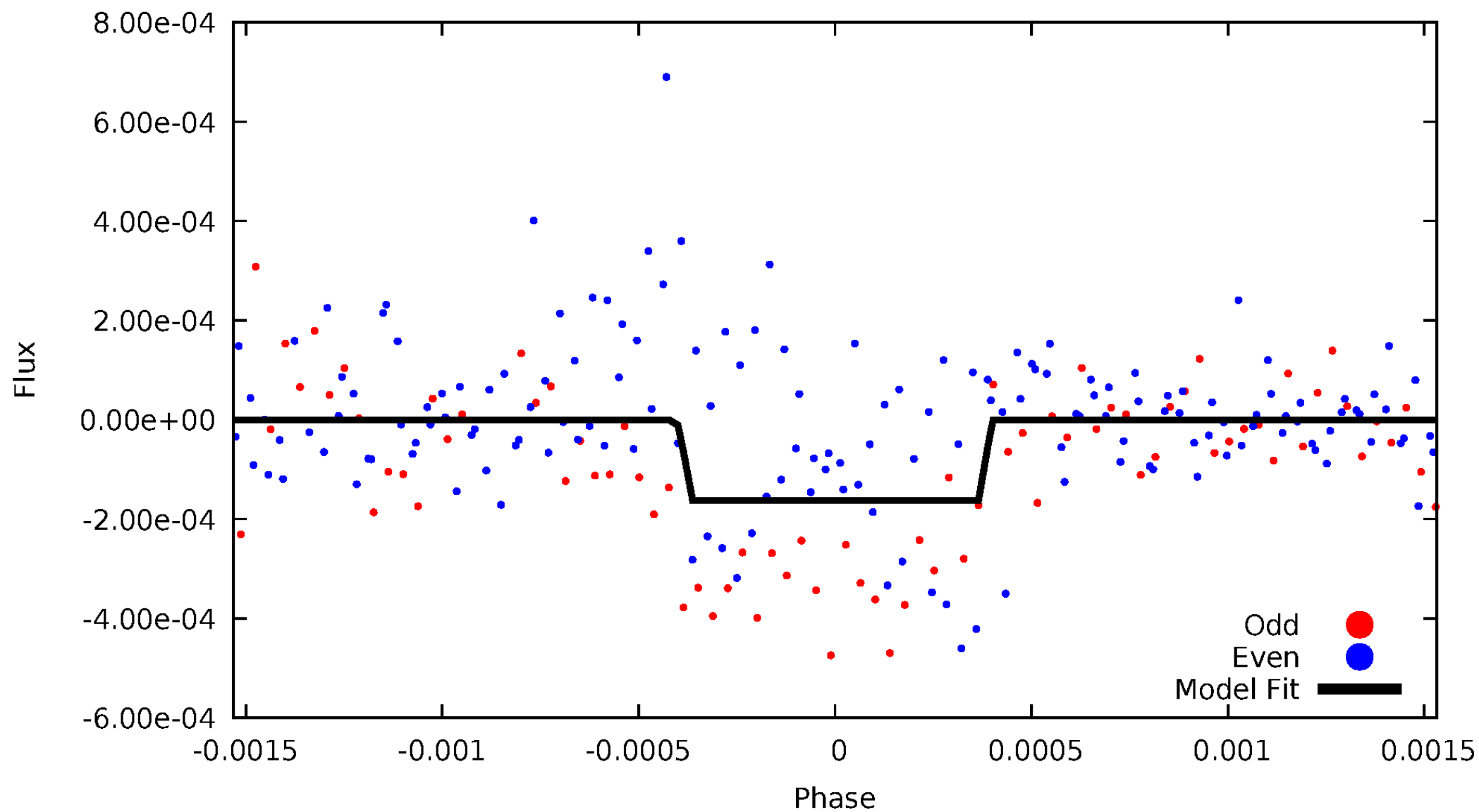
# DV Odd/Even

TCE 006934317-01



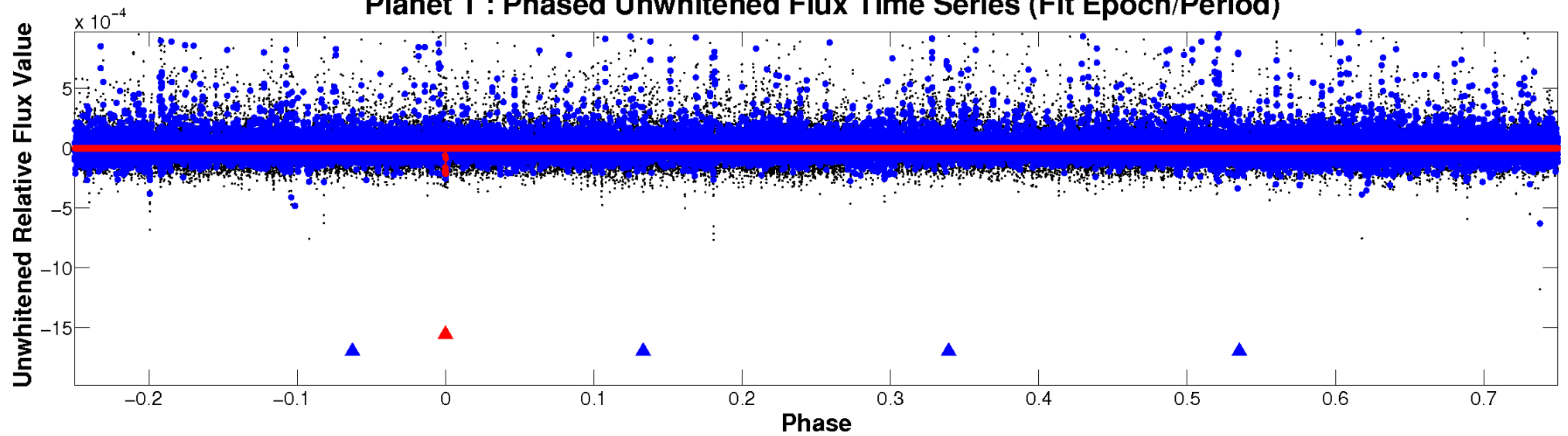
# ALT Odd/Even

TCE 006934317-01

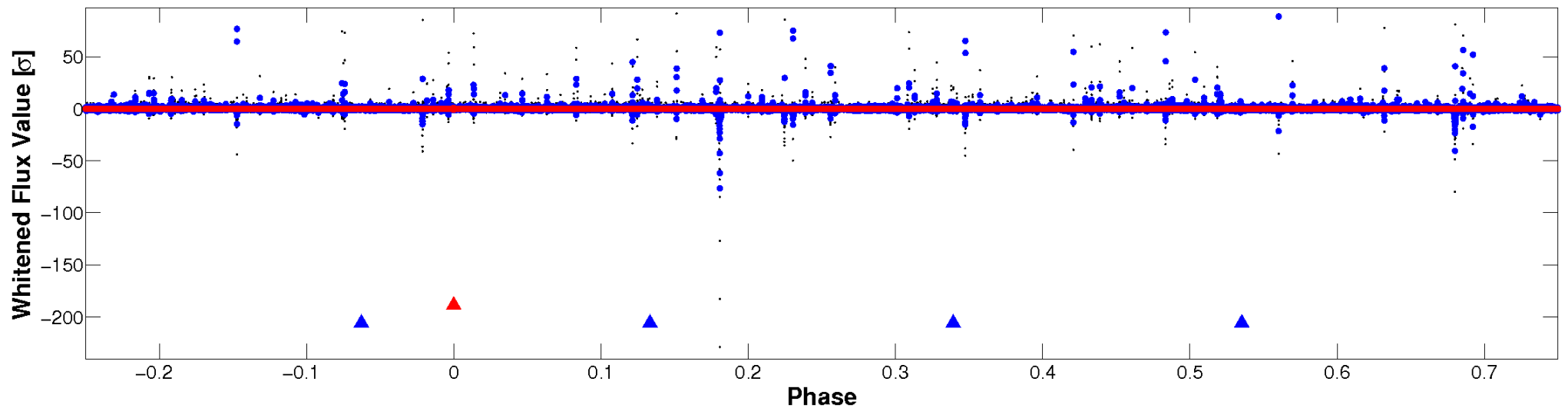


# Non-Whitened Vs. Whitened Light Curve

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

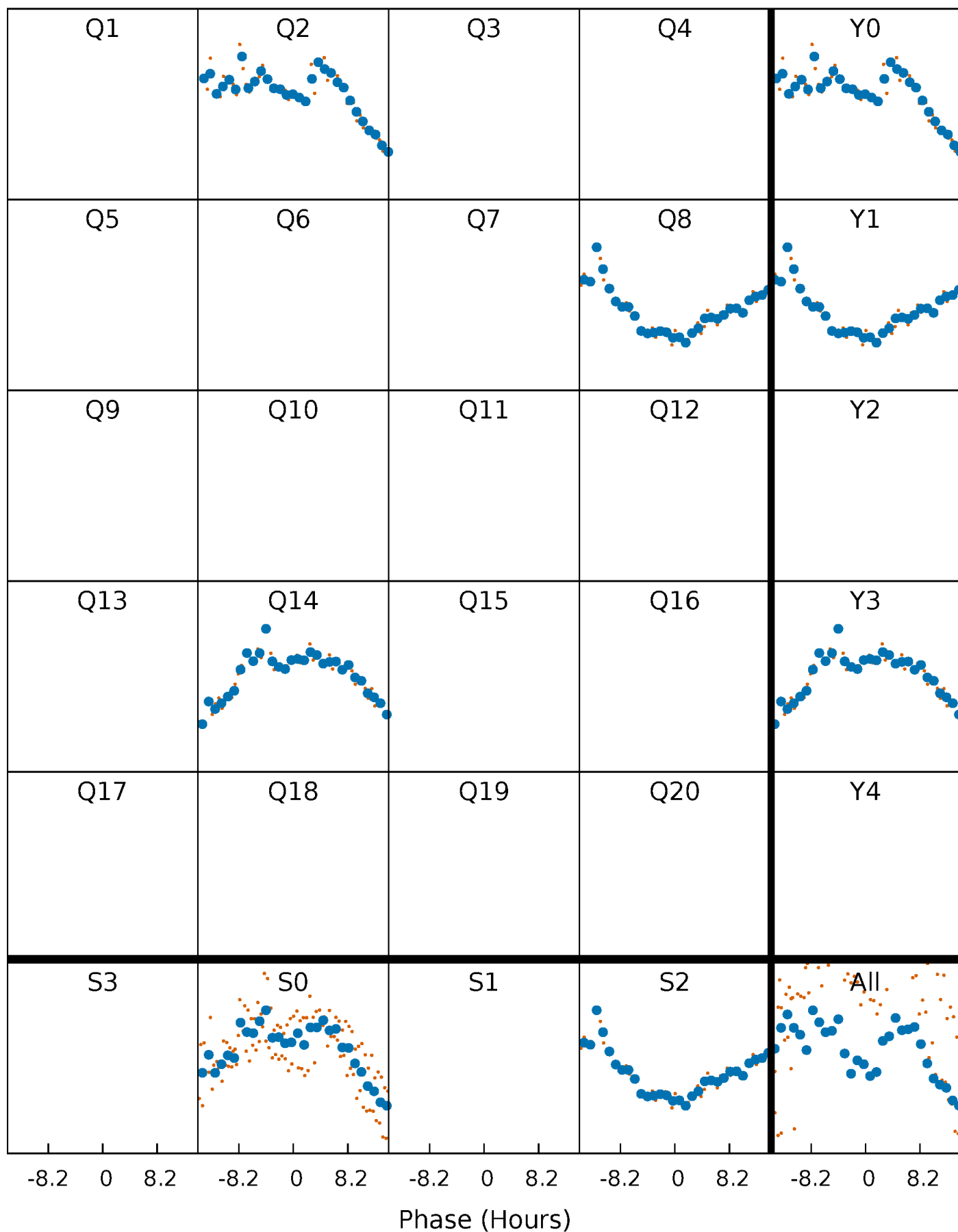


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

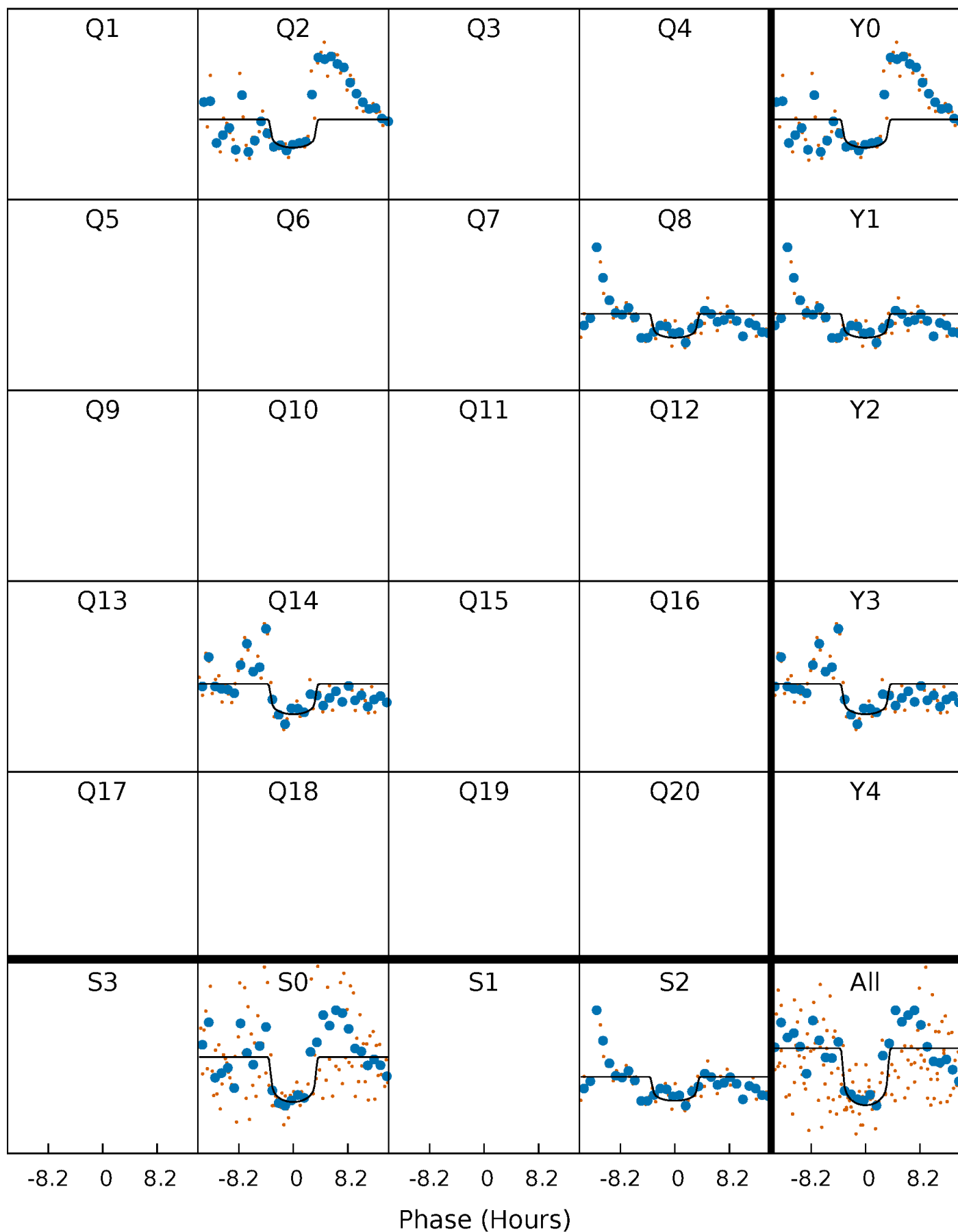
TCE 006934317-01 P=544.253642 Days  $T_0=235.755039$  (BKJD)





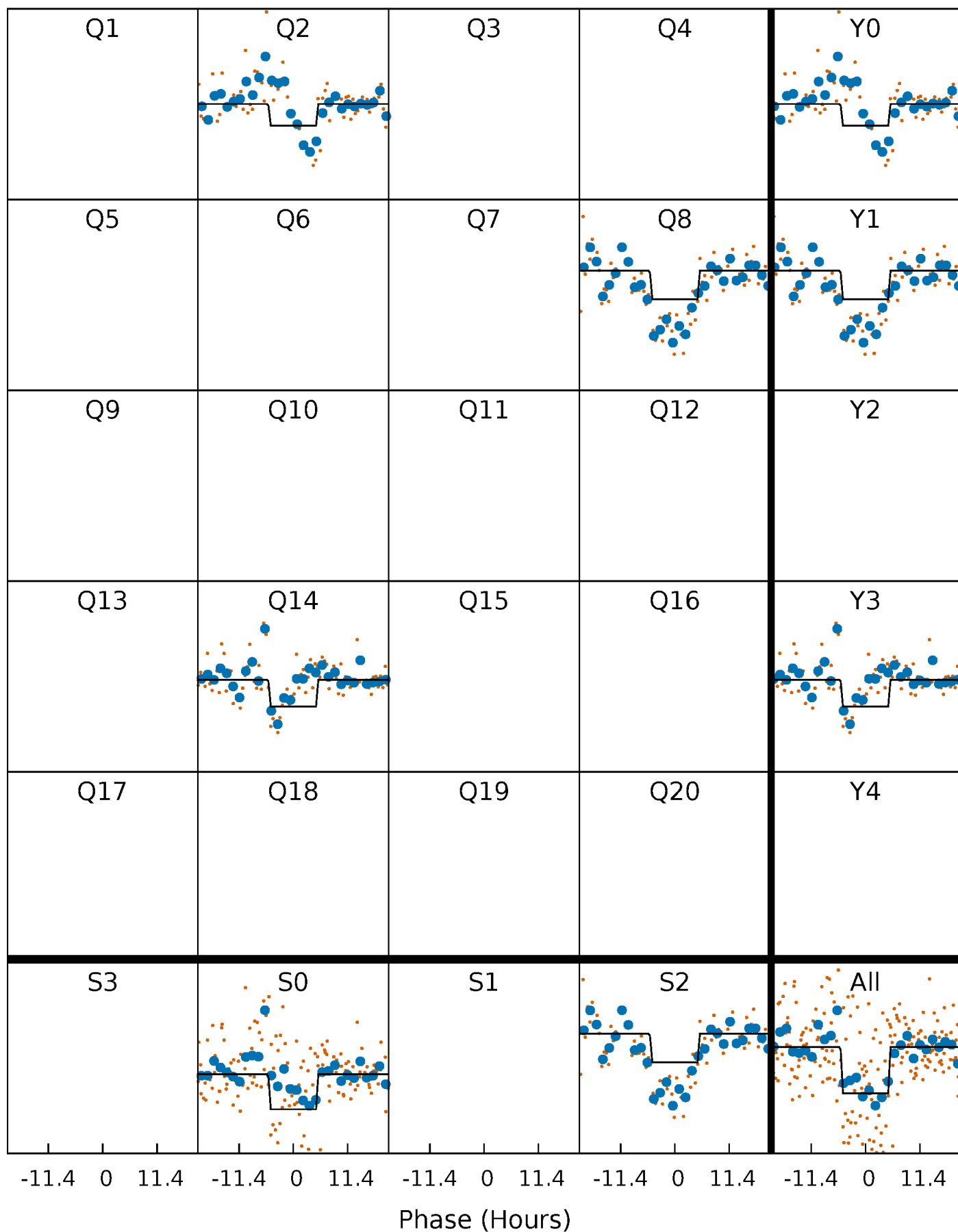
# DV Quarter-Phased Transit Curves

TCE 006934317-01 P=544.253642 Days  $T_0=235.755039$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

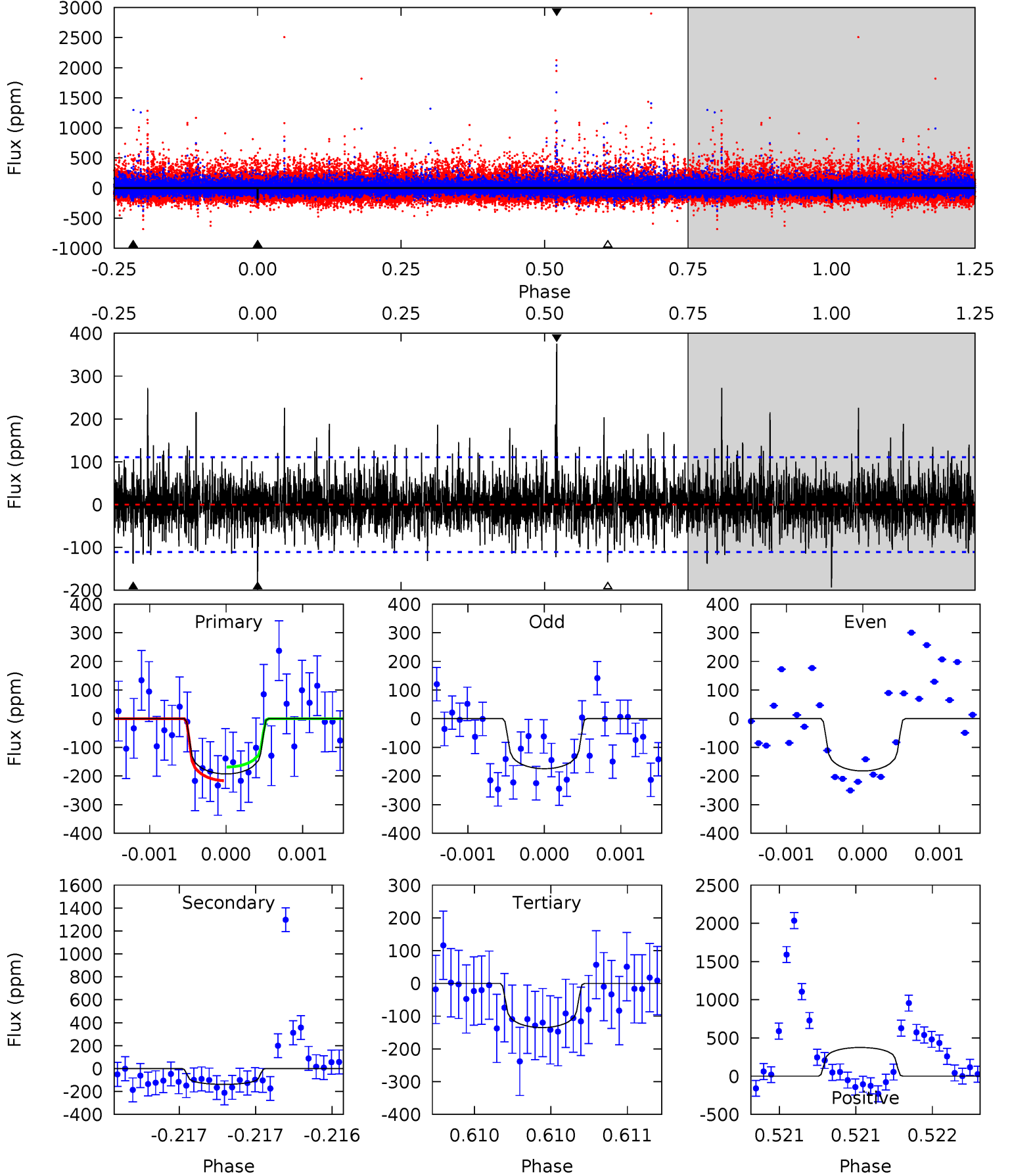
TCE 006934317-01 P=544.343227 Days  $T_0=235.652467$  (BKJD)



# DV Model-Shift Uniqueness Test

006934317-01, P = 544.253642 Days, E = 235.755039 Days

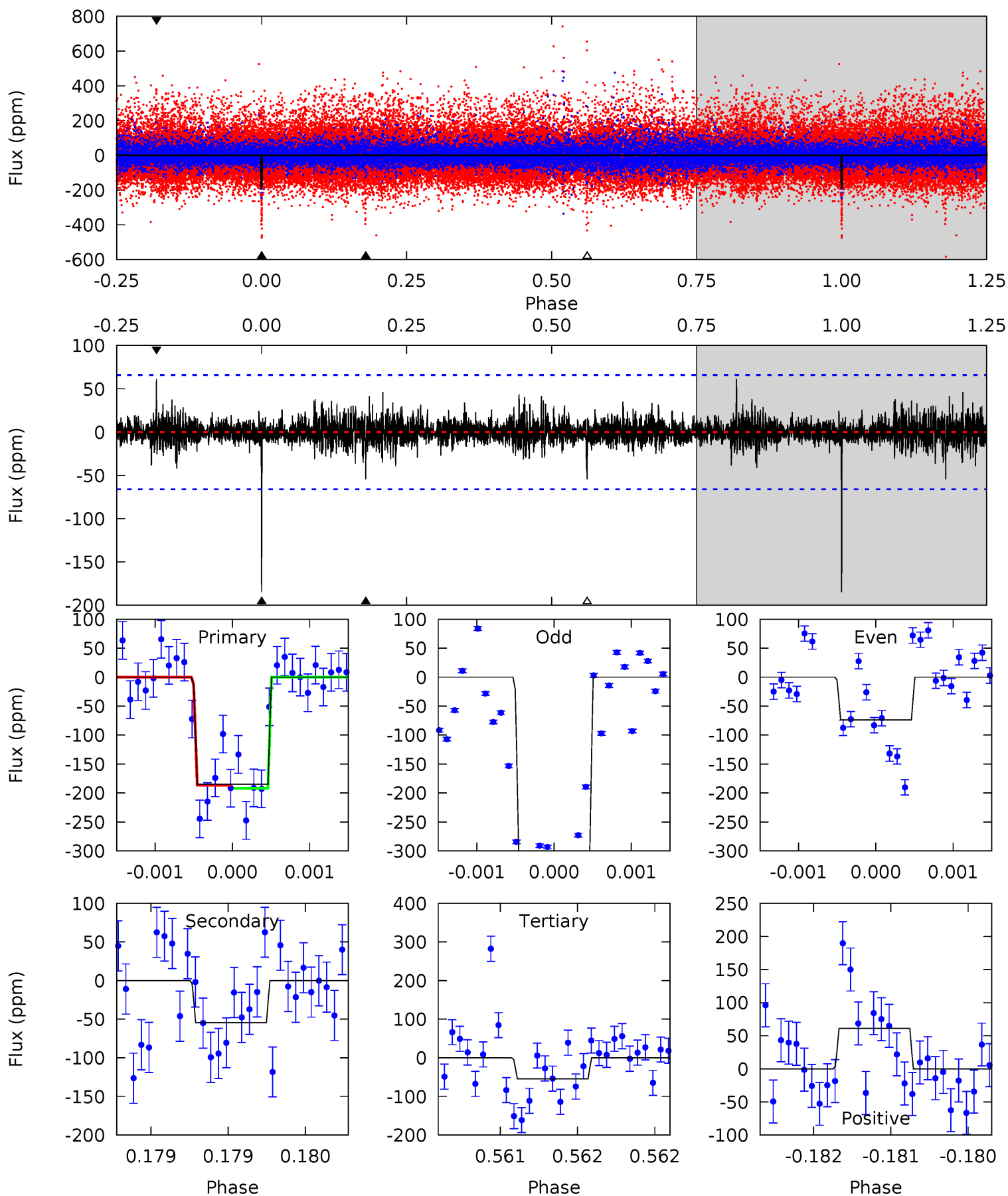
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.70	6.94	6.79	18.9	5.56	3.46	2.12	2.91	-9.19	0.15	-11.9	0.09	1.03	0.66	1.19



# Alt Model-Shift Uniqueness Test

006934317-01, P = 544.343227 Days, E = 235.652467 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
15.4	4.53	4.51	5.10	5.49	3.35	0.77	10.9	10.3	0.02	-0.57	9.31	1.95	0.25	0.21



### Stellar Parameters For KIC 006934317

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5606^{+185}_{-152}$	$3.822^{+0.209}_{-0.190}$	$-0.780^{+0.400}_{-0.200}$	$1.865^{+0.601}_{-0.401}$	$0.842^{+0.167}_{-0.042}$	$0.183^{+0.184}_{-0.091}$
	+3%/-3%	+5%/-5%	+51%/-26%	+32%/-22%	+20%/-5%	+101%/-50%
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 006934317-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-138 \pm 20$	$3.07^{+1.48}_{-1.30}$	$423^{+36}_{-30}$	$5059^{+1338}_{-717}$	$12894^{+25748}_{-7151}$
Alt.	$-54 \pm 12$	$2.70^{+1.59}_{-1.39}$	$429^{+34}_{-35}$	$4413^{+1526}_{-663}$	$6405^{+19719}_{-4015}$

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

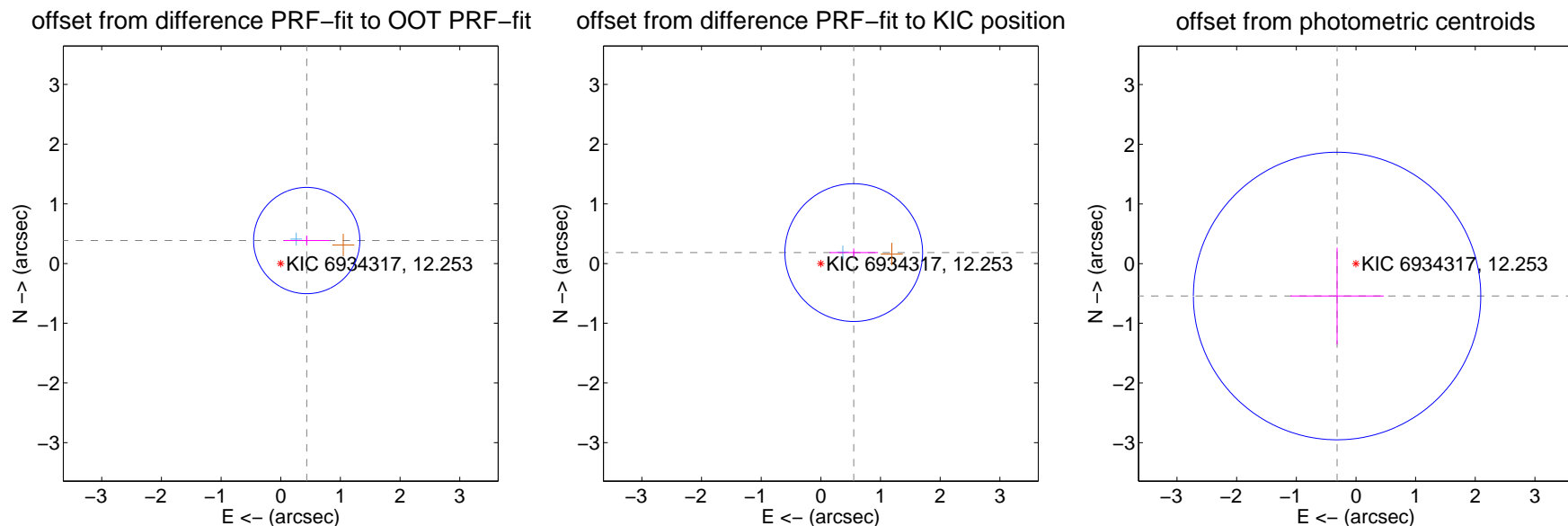
## DV Centroid Data

Supplemental centroid analysis for 006934317-01. Kepler magnitude: 12.25. Transit SNR 5.93

There are 1 quarters with good PRF difference image offsets

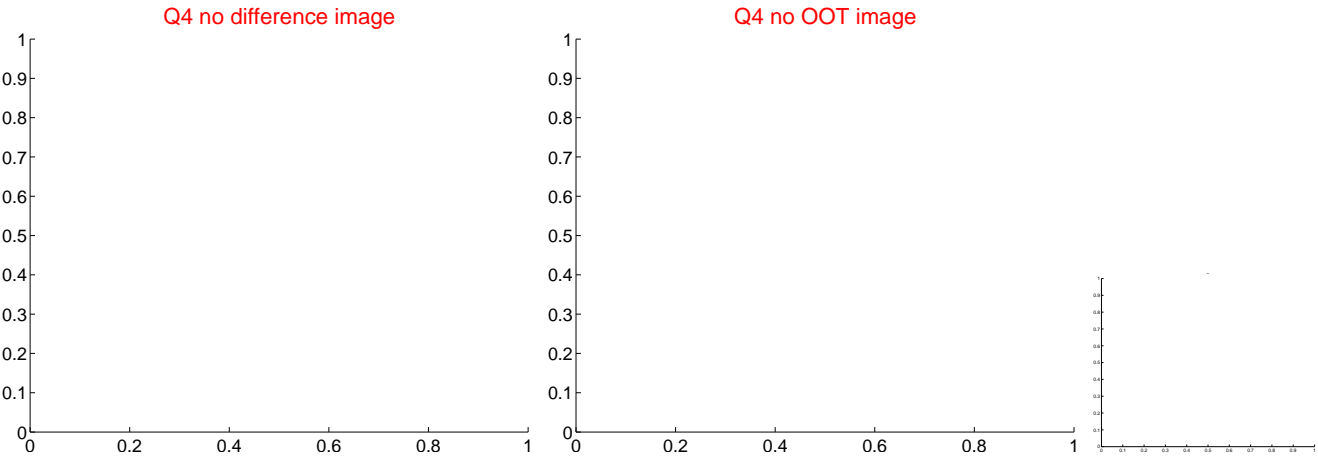
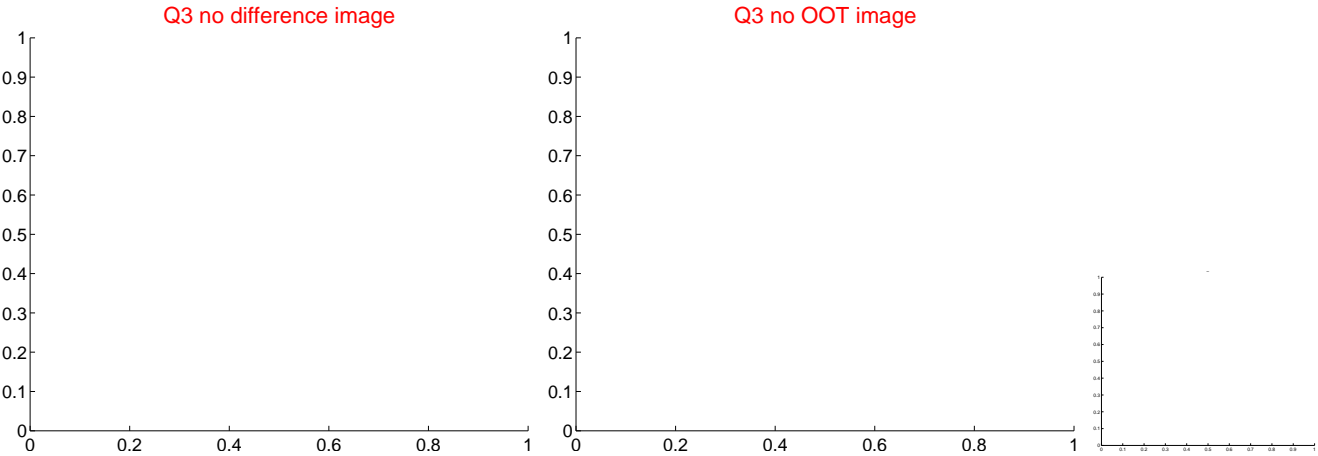
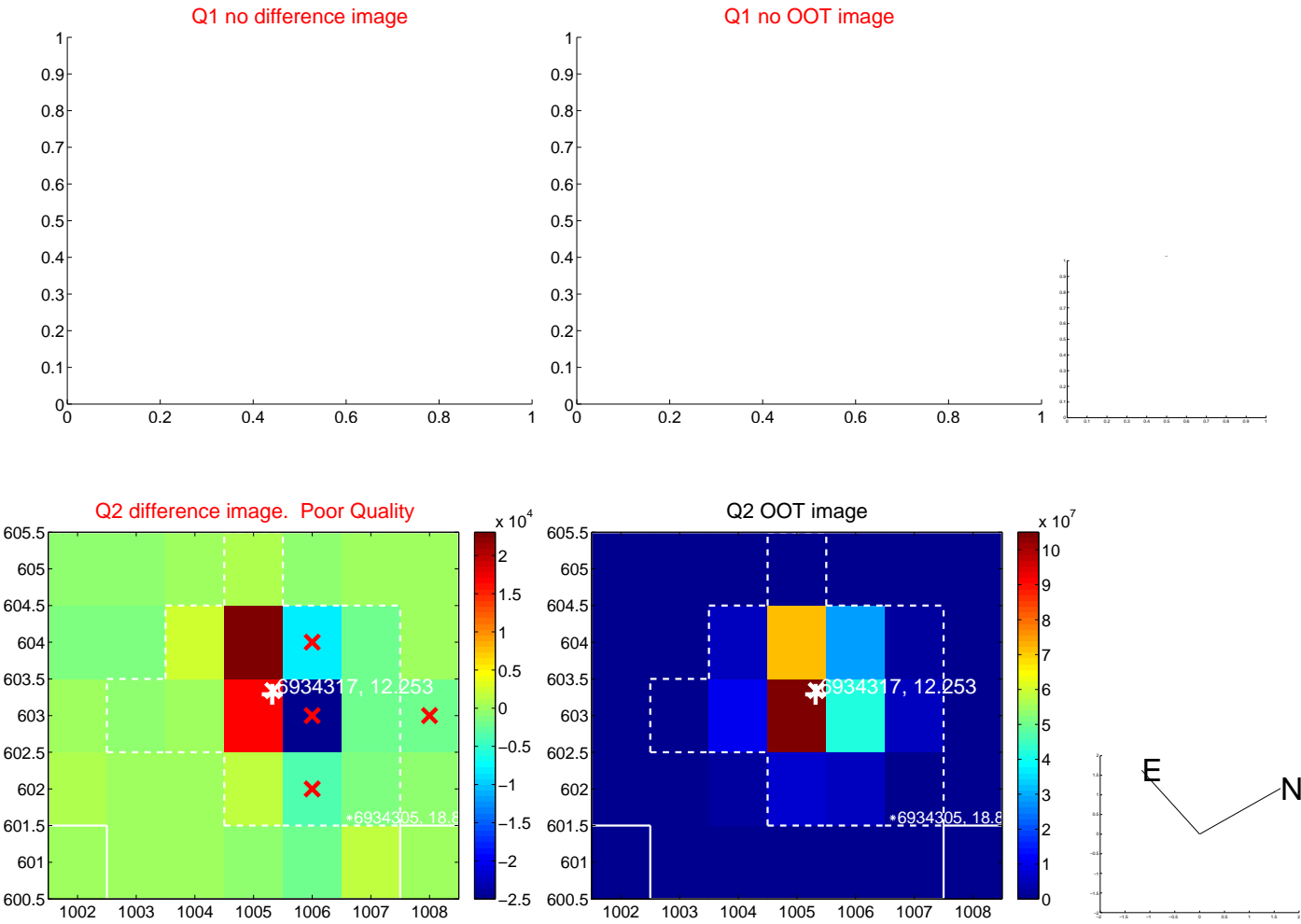
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.581 \pm 0.297$	1.96	$-0.435 \pm 0.389$	$0.385 \pm 0.083$
PRF-fit source offset from KIC position	$0.581 \pm 0.385$	1.51	$-0.551 \pm 0.405$	$0.183 \pm 0.069$
photometric centroid source offset	$0.63 \pm 0.80$	0.78	$0.32 \pm 0.78$	$-0.54 \pm 0.81$

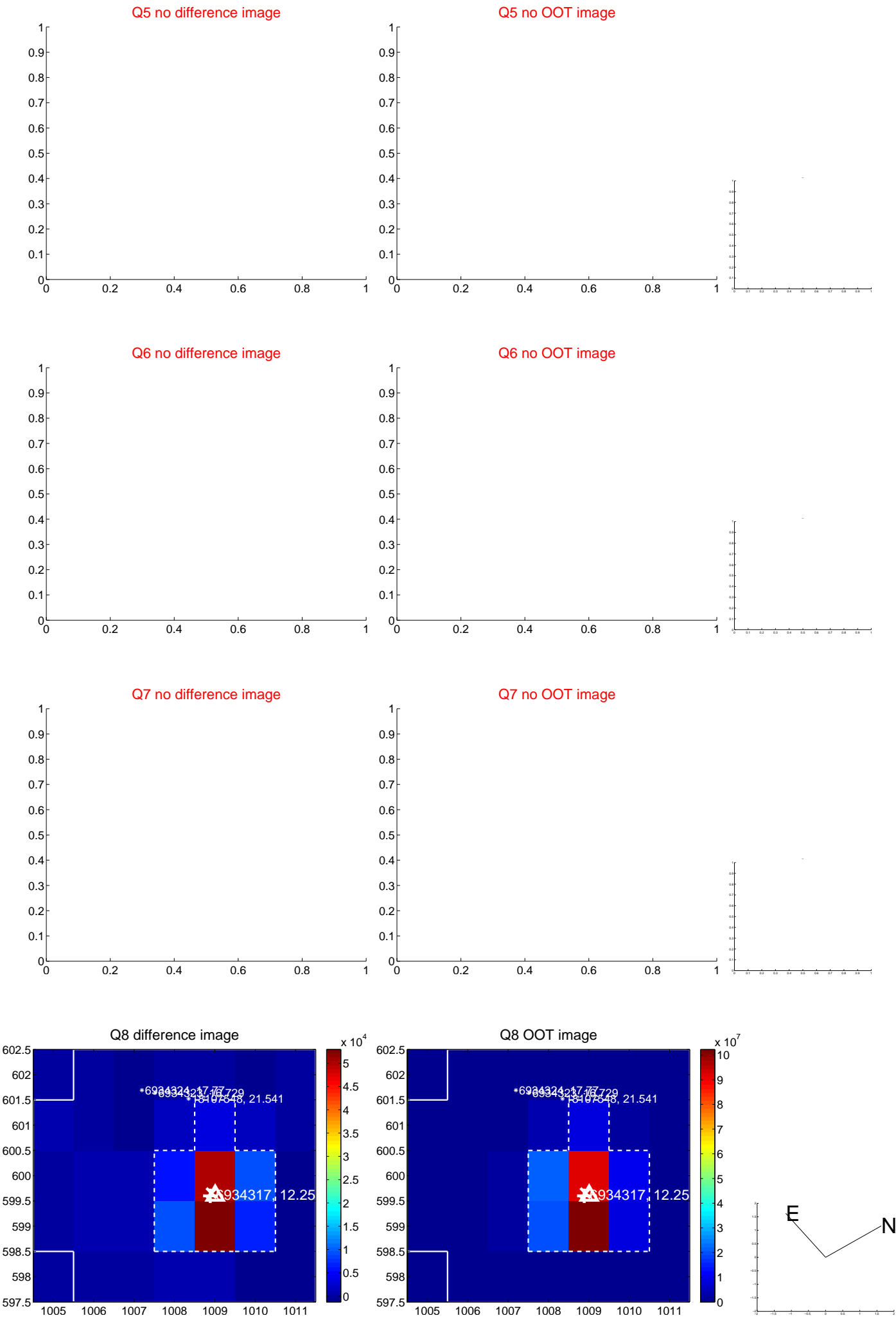


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

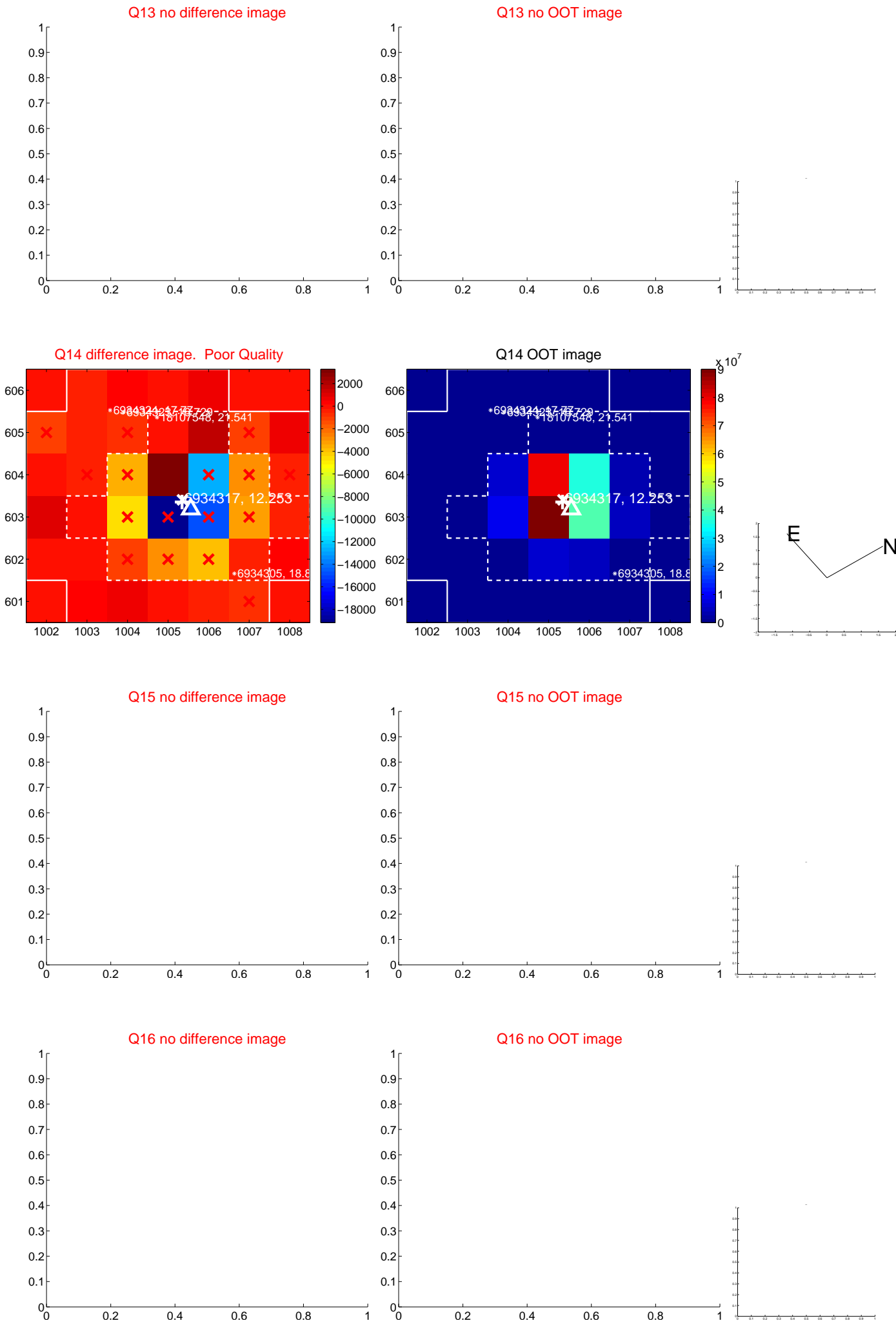




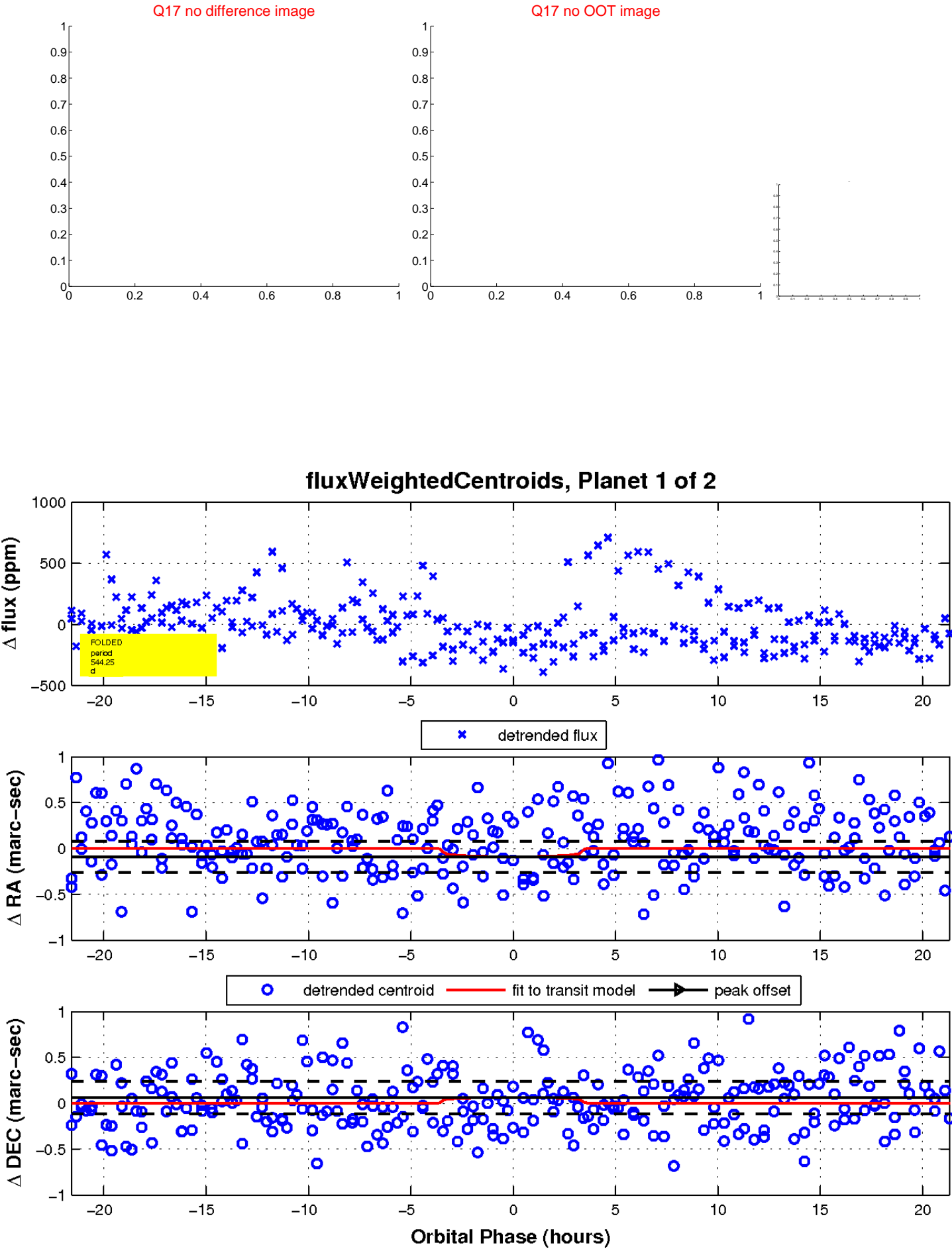
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

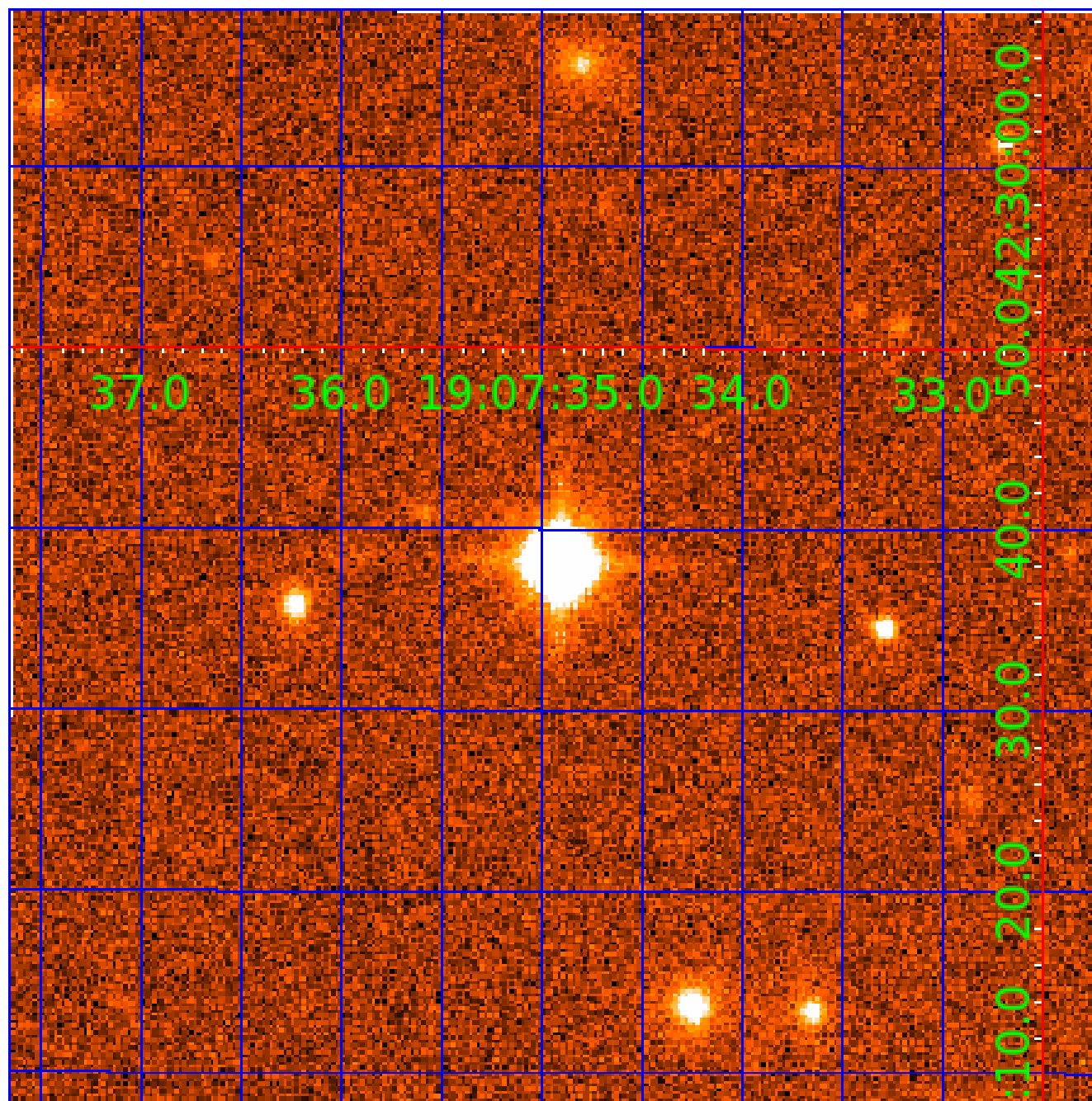


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006934317

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006934317-01	OBS	No	544.253642	235.755039	213.4	7.191	8.9	5.9	1.86	5606	3.04	2.03
006934317-02	OBS	No	325.473026	420.397755	226.7	4.300	8.7	6.4	1.86	5606	3.10	4.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006934317-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
006934317-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—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.

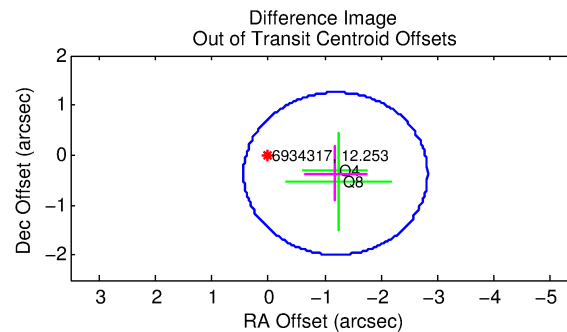
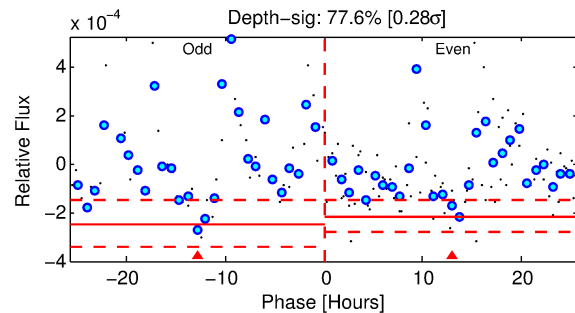
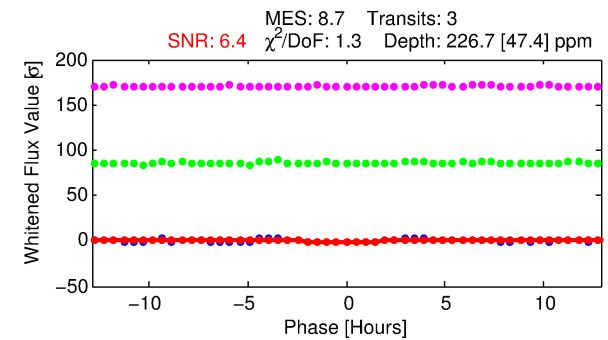
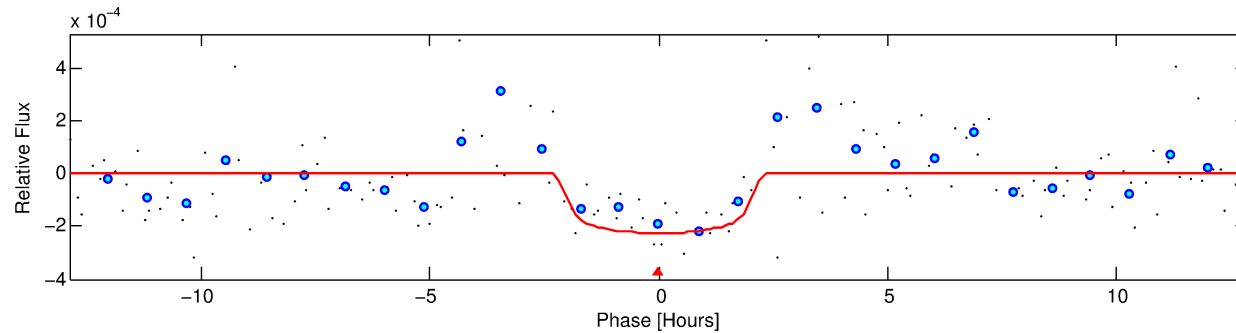
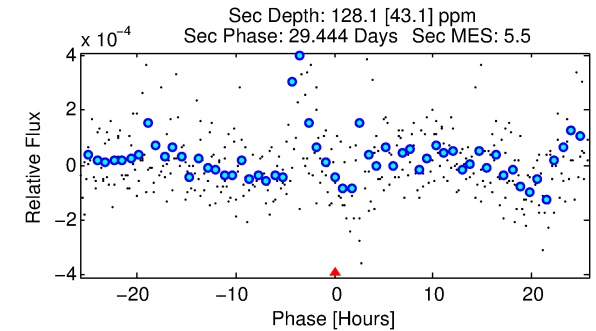
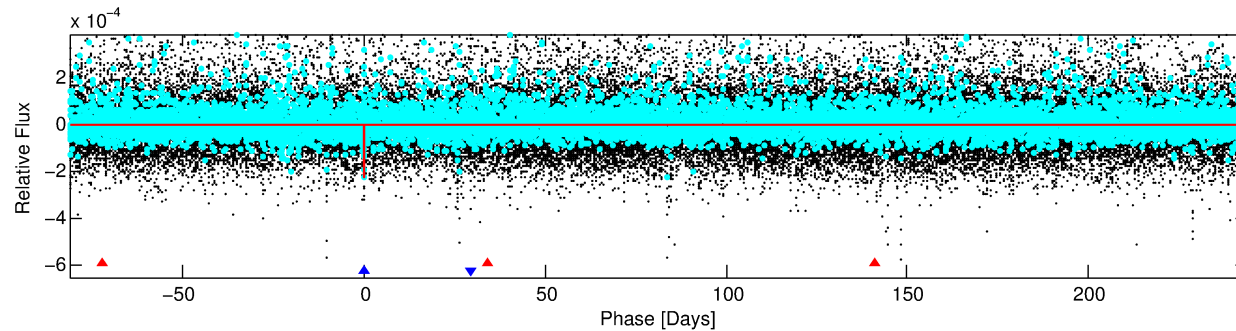
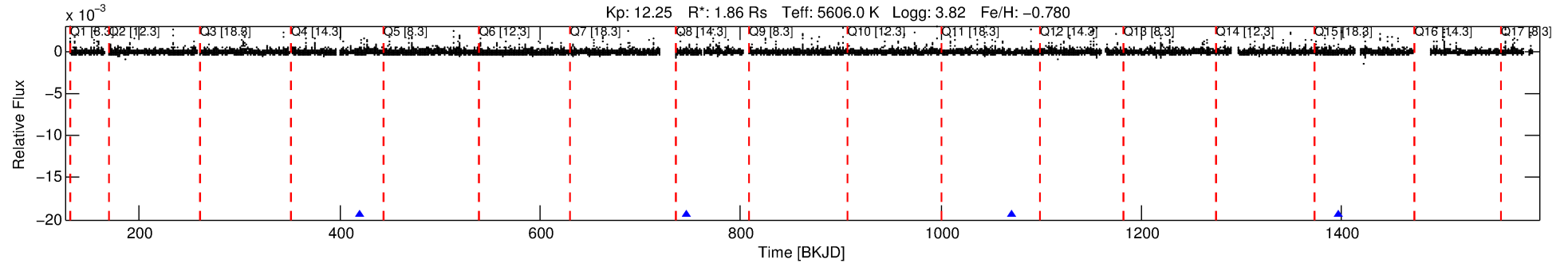
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006934317-02

No Significant Match Found

# DV One-Page Summary

KIC: 6934317 Candidate: 2 of 2 Period: 325.473 d



## DV Fit Results:

Period = 325.47303 [0.00574] d  
Epoch = 420.3978 [0.0107] BKJD  
Rp/R\* = 0.0152 [0.0186]  
a/R\* = 367.92 [2166.81]  
b = 0.79 [2.82]  
Seff = 4.02 [1.64]  
Teq = 361 [37] K  
Rp = 3.10 [3.92] Re  
a = 0.8746 [0.2345] AU  
Ag = 5612.69 [14043.33] [0.40 $\sigma$ ]  
Teffp = 4833 [2991] K [1.49 $\sigma$ ]

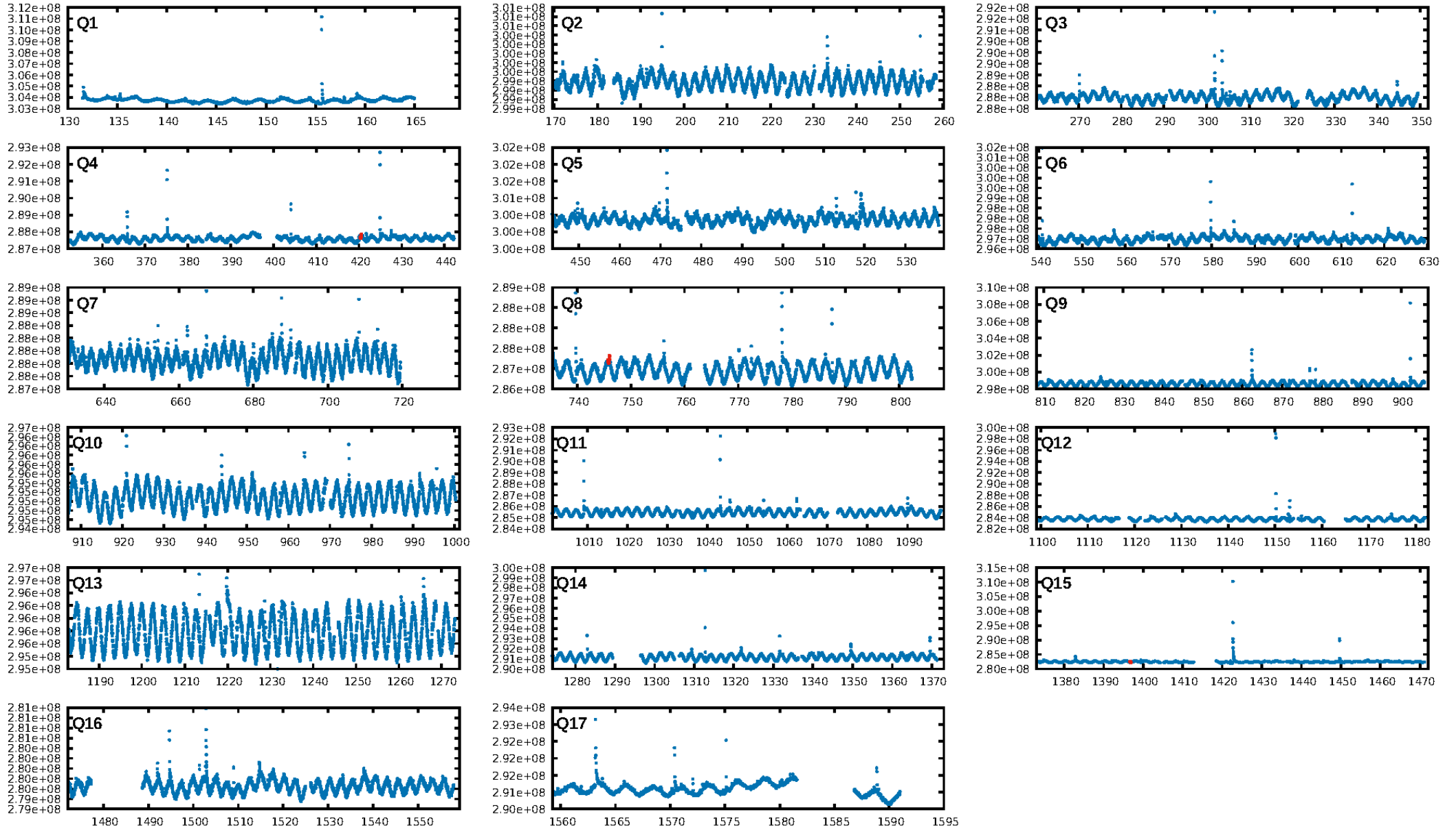
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [626.70 $\sigma$ ]  
ModelChiSquare2-sig: 74.9%  
ModelChiSquareGof-sig: 99.8%  
**Bootstrap-pfa: 1.10e-08**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.27  
Centroid-sig: 55.1%  
Centroid-so: 0.726 arcsec [0.85 $\sigma$ ]  
OotOffset-rm: 1.252 arcsec [2.31 $\sigma$ ]  
OotOffset-st: 0/0/2/0 [2]  
KicOffset-rm: 1.434 arcsec [2.64 $\sigma$ ]  
KicOffset-st: 0/0/2/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

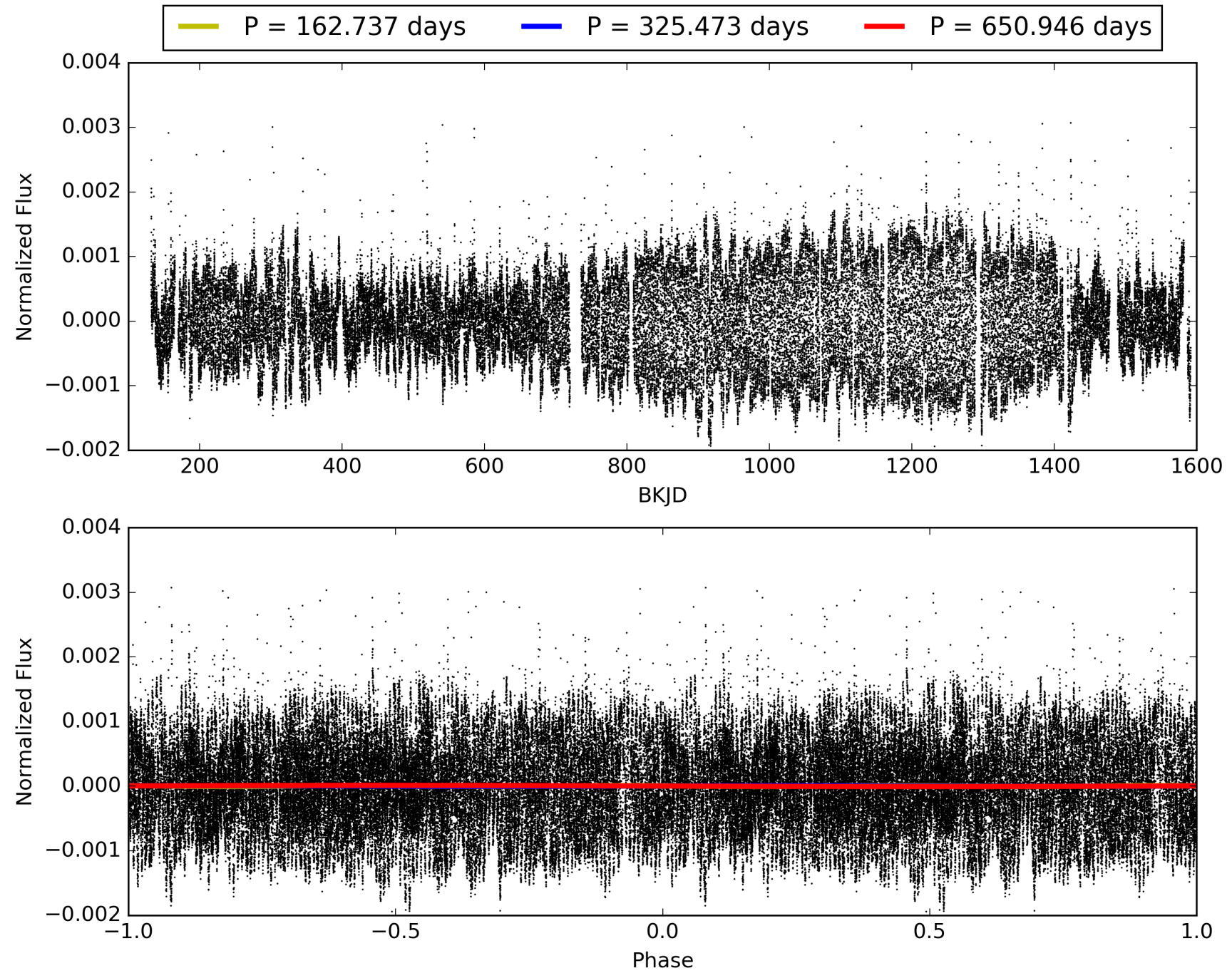
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 03:59:20 Z

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

# TCE 006934317-02, PDC Light Curves



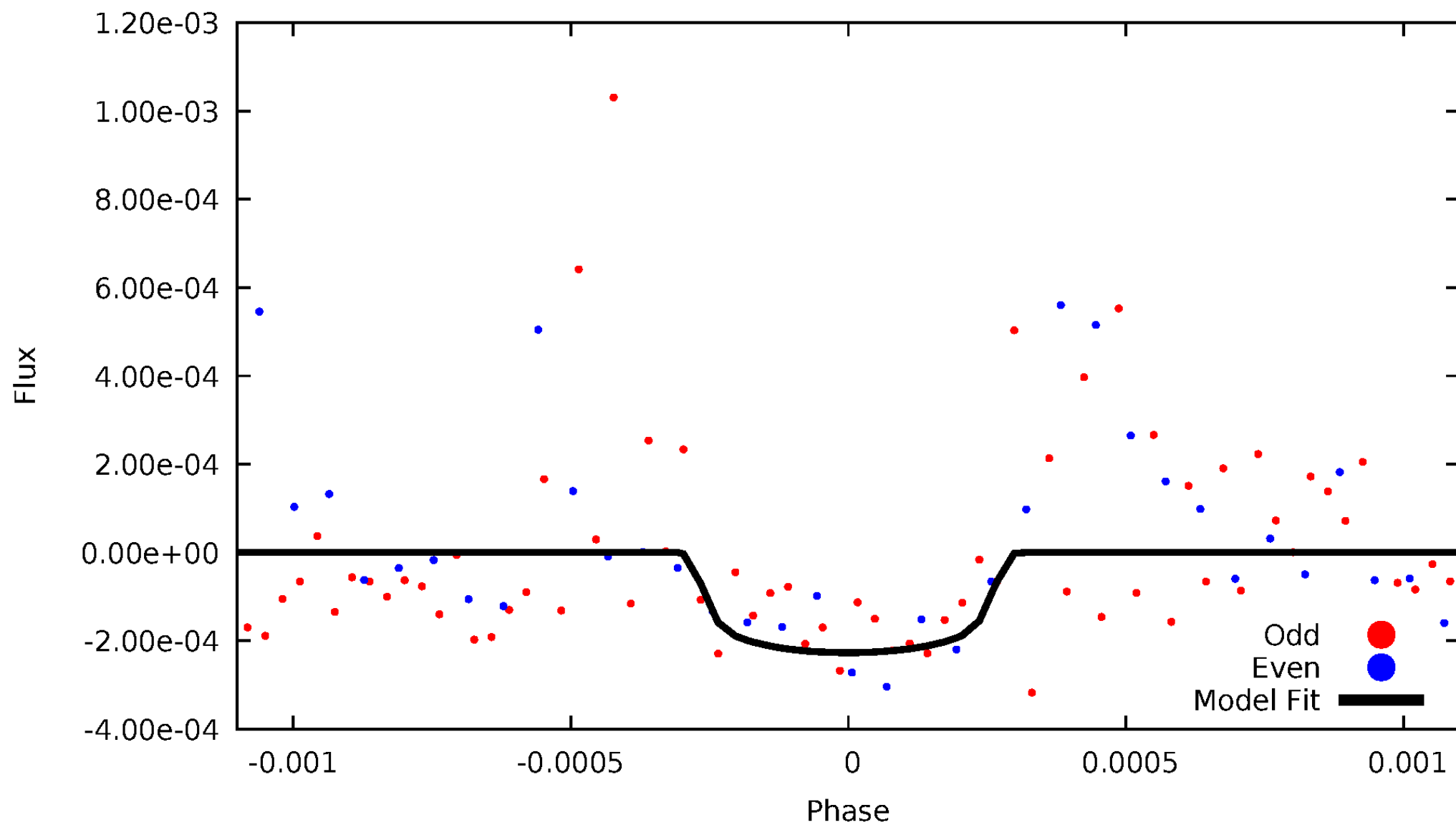
TCE 006934317-02





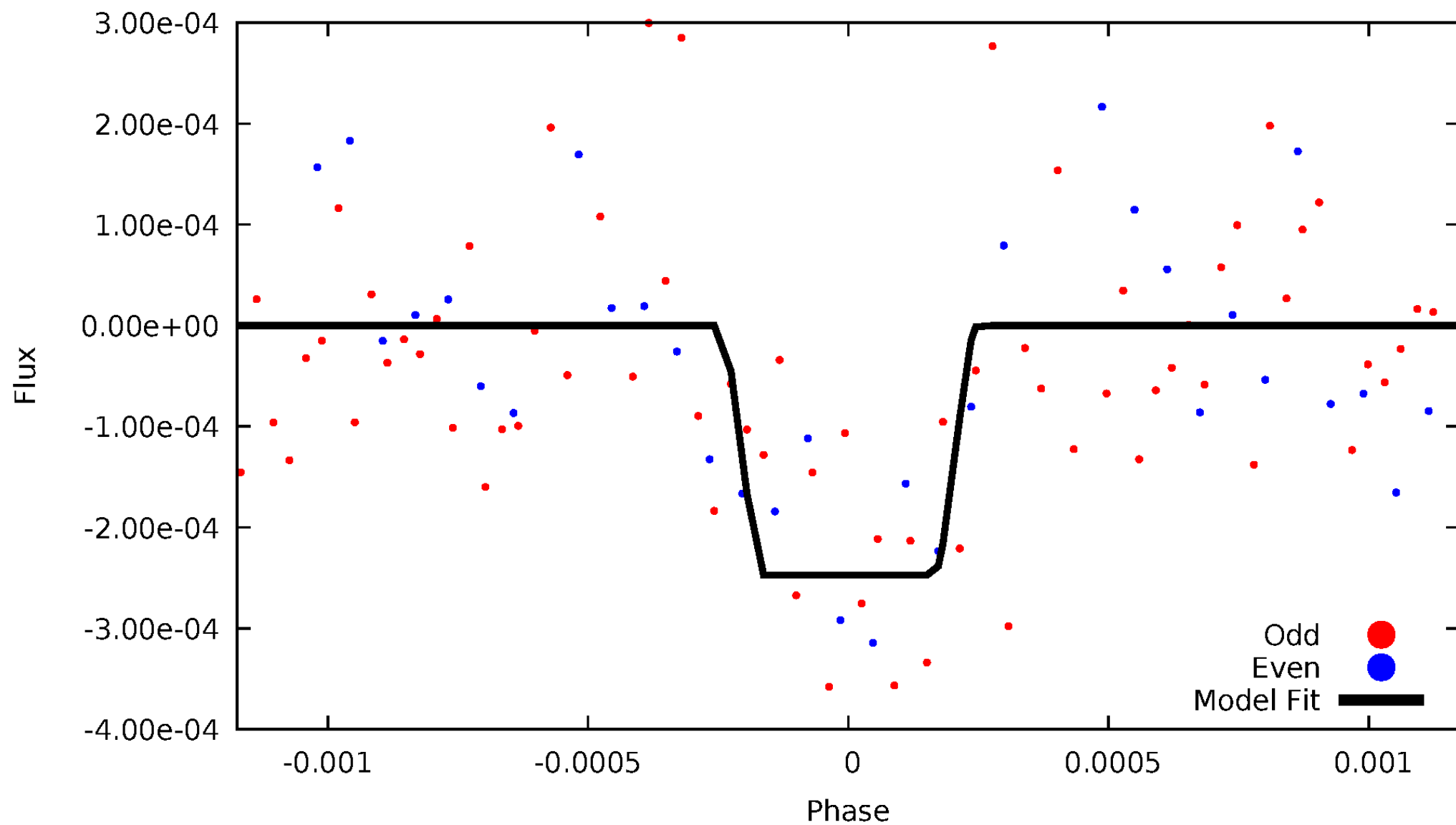
# DV Odd/Even

TCE 006934317-02



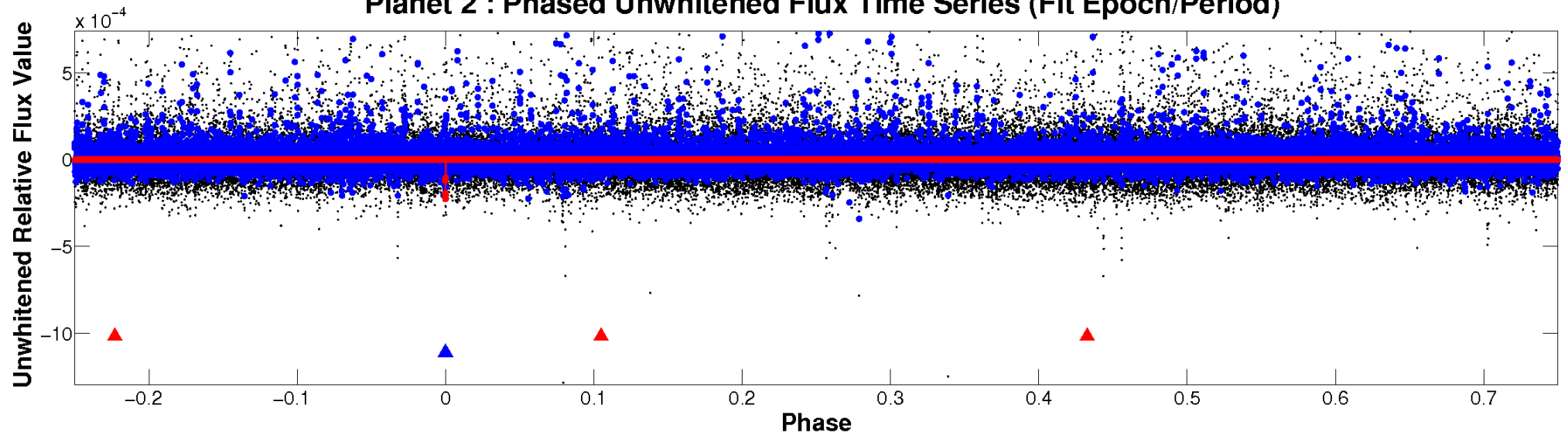
# ALT Odd/Even

TCE 006934317-02

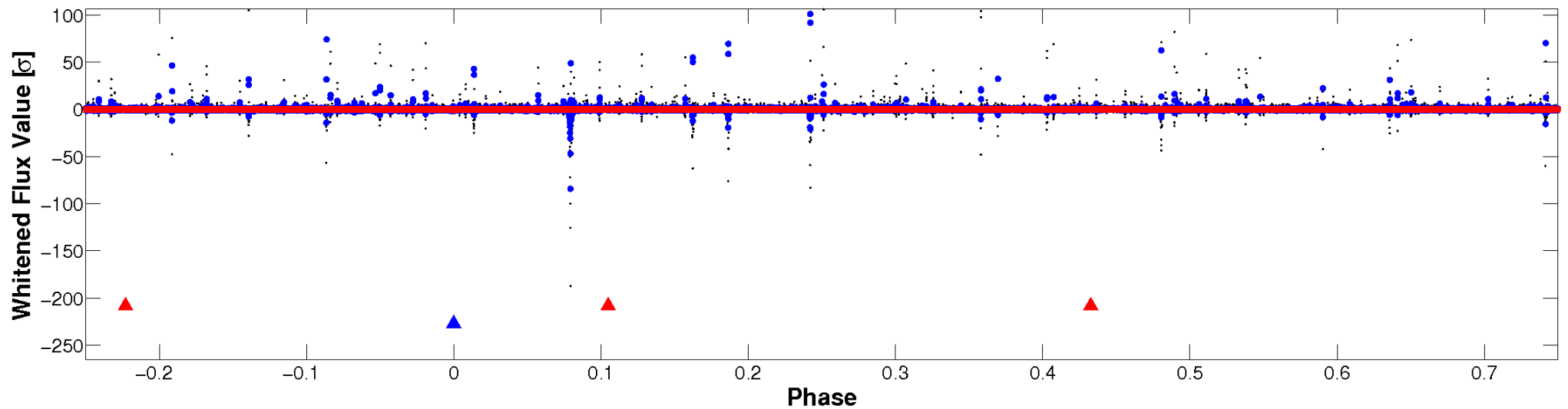


# Non-Whitened Vs. Whitened Light Curve

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

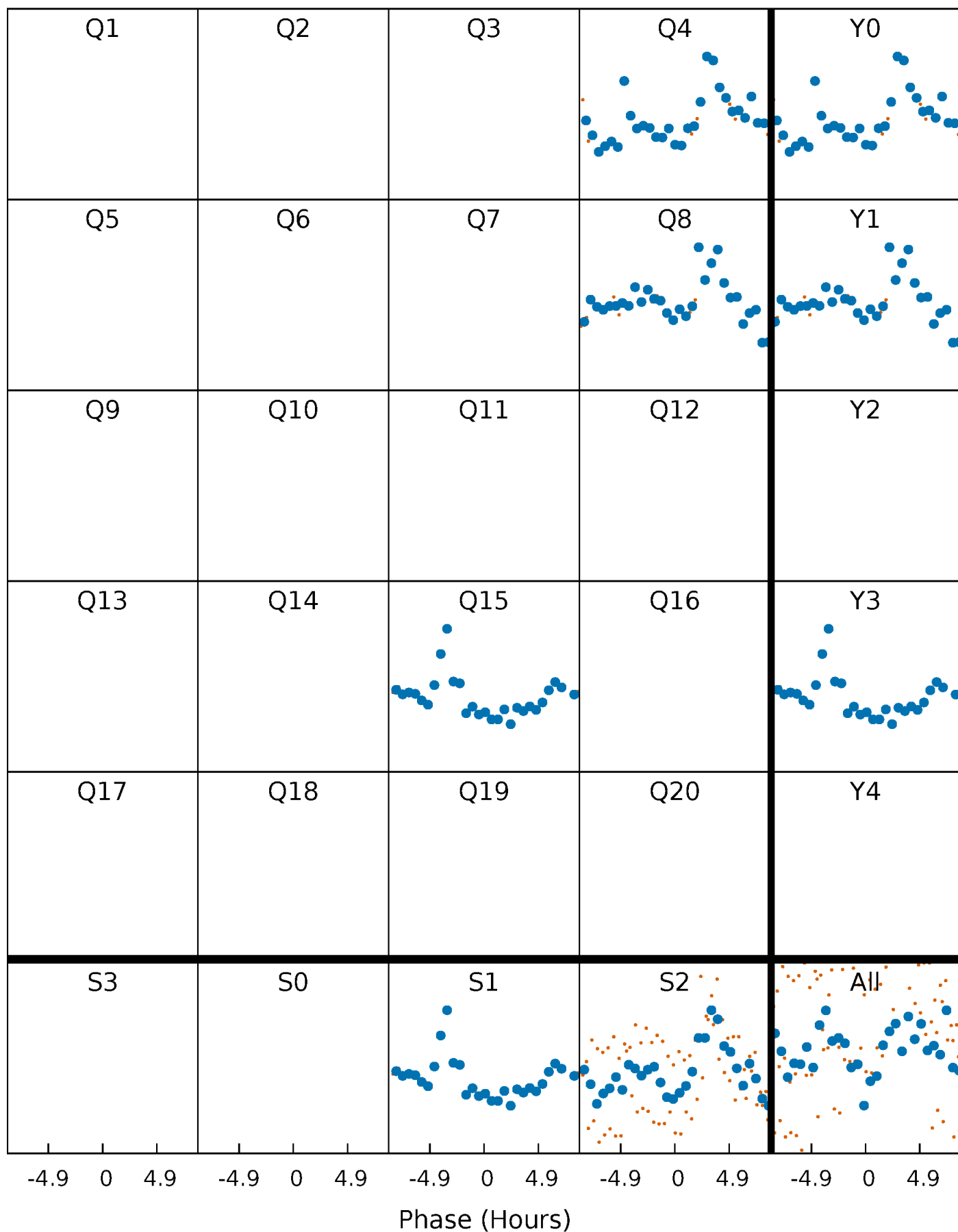


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



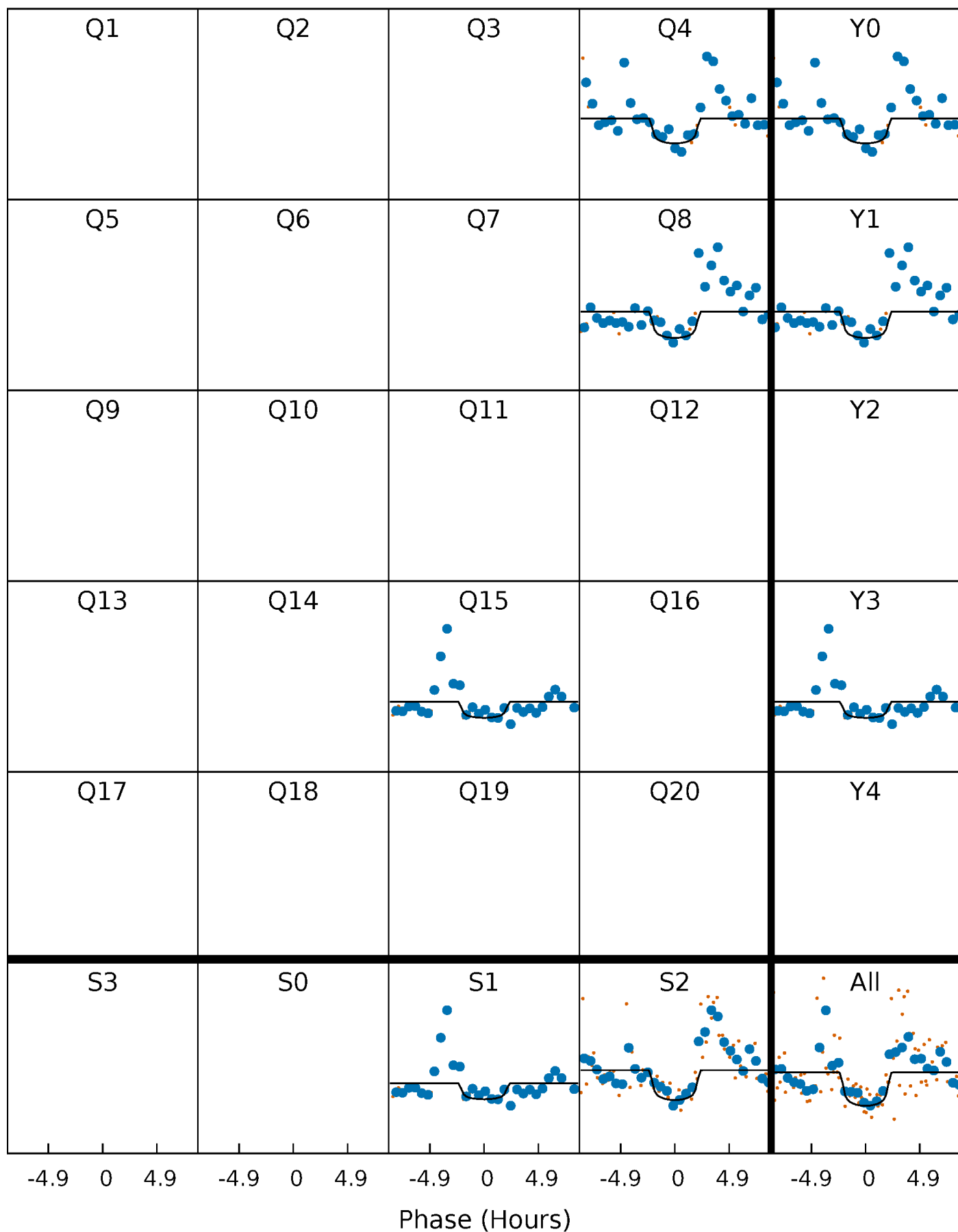
# PDC Quarter-Phased Transit Curves

TCE 006934317-02 P=325.473026 Days  $T_0=420.397755$  (BKJD)



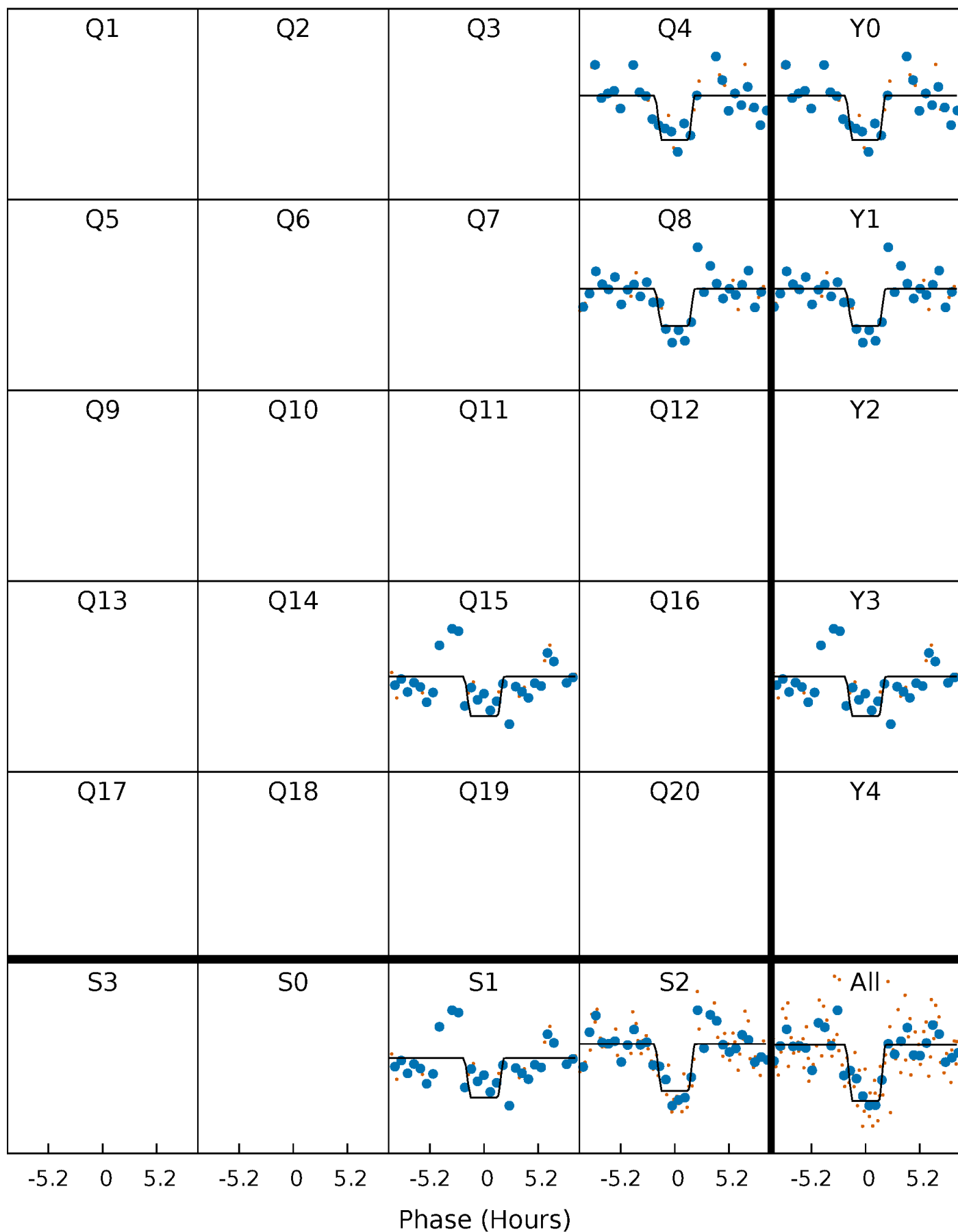
# DV Quarter-Phased Transit Curves

TCE 006934317-02     $P=325.473026$  Days     $T_0=420.397755$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

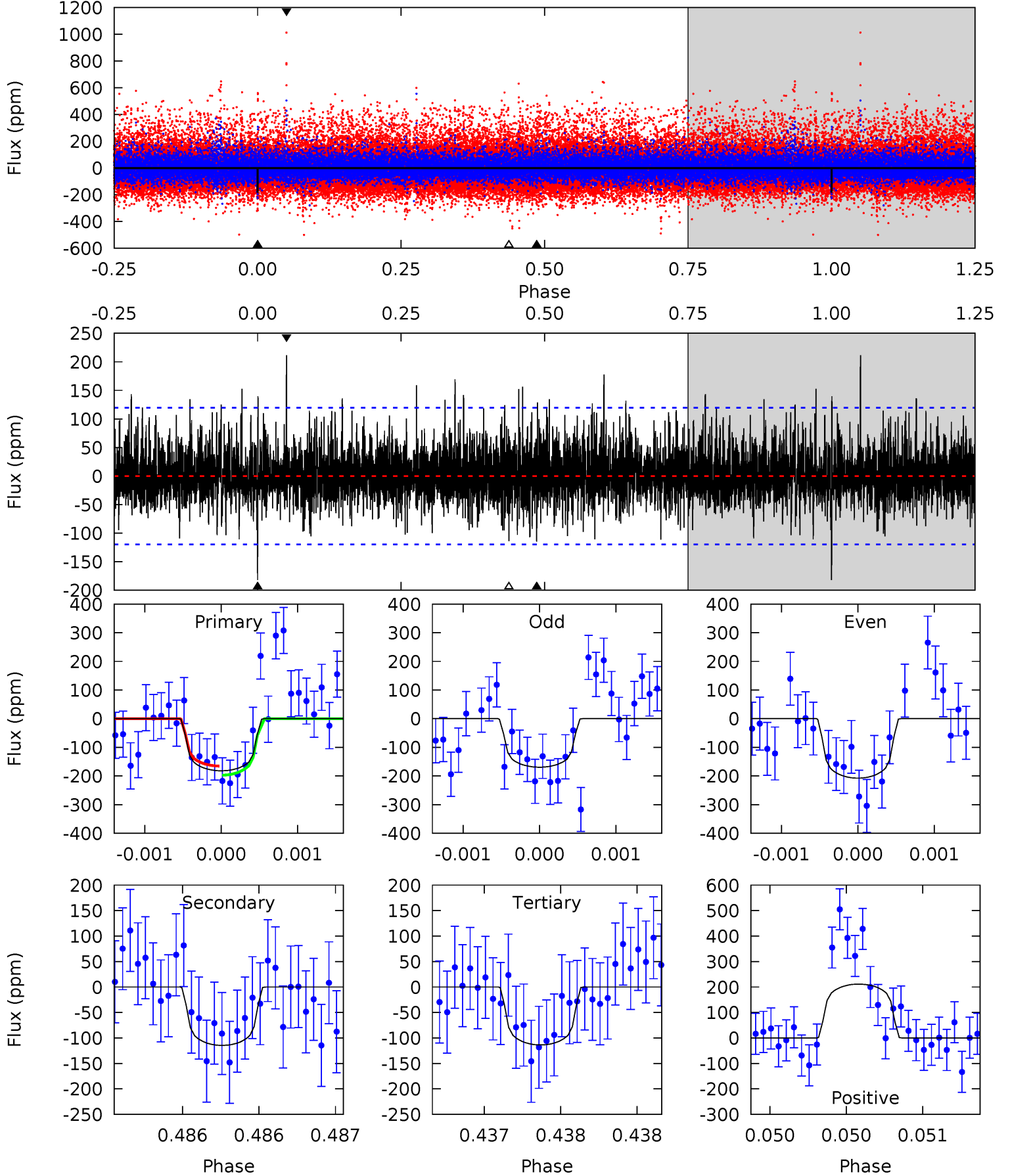
TCE 006934317-02 P=325.473177 Days  $T_0=420.404839$  (BKJD)



# DV Model-Shift Uniqueness Test

006934317-02, P = 325.473026 Days, E = 94.924729 Days

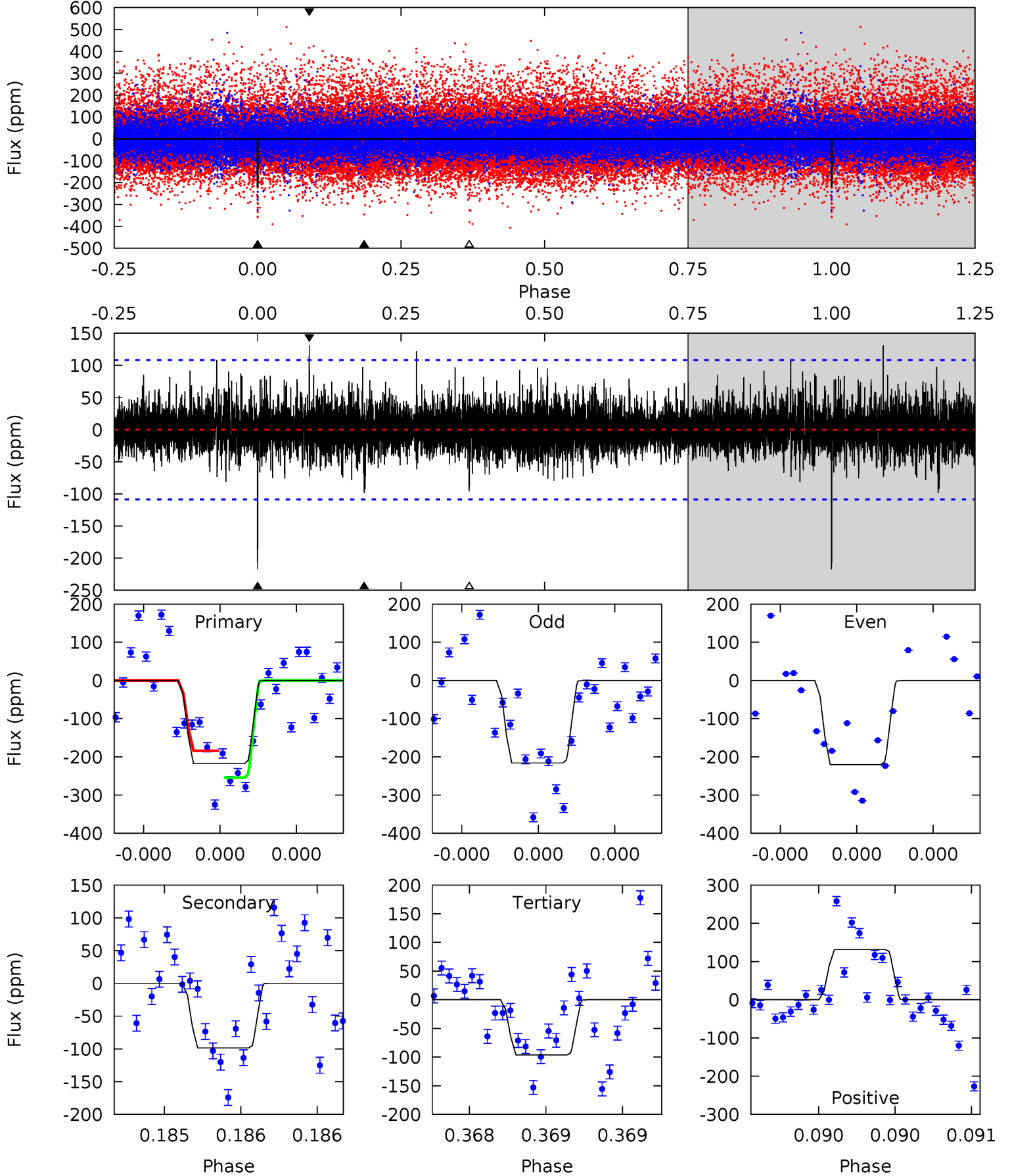
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.44	5.31	5.27	9.81	5.55	3.45	1.69	3.16	-1.37	0.04	-4.50	0.74	1.05	0.54	0.74



# Alt Model-Shift Uniqueness Test

006934317-02, P = 325.473177 Days, E = 94.931662 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
11.2	5.08	4.96	6.77	5.58	3.50	1.19	6.24	4.43	0.12	-1.69	0.10	0.99	0.38	1.83





### Stellar Parameters For KIC 006934317

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5606^{+185}_{-152}$	$3.822^{+0.209}_{-0.190}$	$-0.780^{+0.400}_{-0.200}$	$1.865^{+0.601}_{-0.401}$	$0.842^{+0.167}_{-0.042}$	$0.183^{+0.184}_{-0.091}$
	+3%/-3%	+5%/-5%	+51%/-26%	+32%/-22%	+20%/-5%	+101%/-50%
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 006934317-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-115 \pm 22$	$3.92^{+3.53}_{-2.34}$	$504^{+44}_{-35}$	$4408^{+2337}_{-875}$	$3304^{+18281}_{-2438}$
Alt.	$-99 \pm 19$	$4.27^{+3.41}_{-2.77}$	$504^{+41}_{-36}$	$4143^{+2273}_{-754}$	$2325^{+15777}_{-1630}$

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

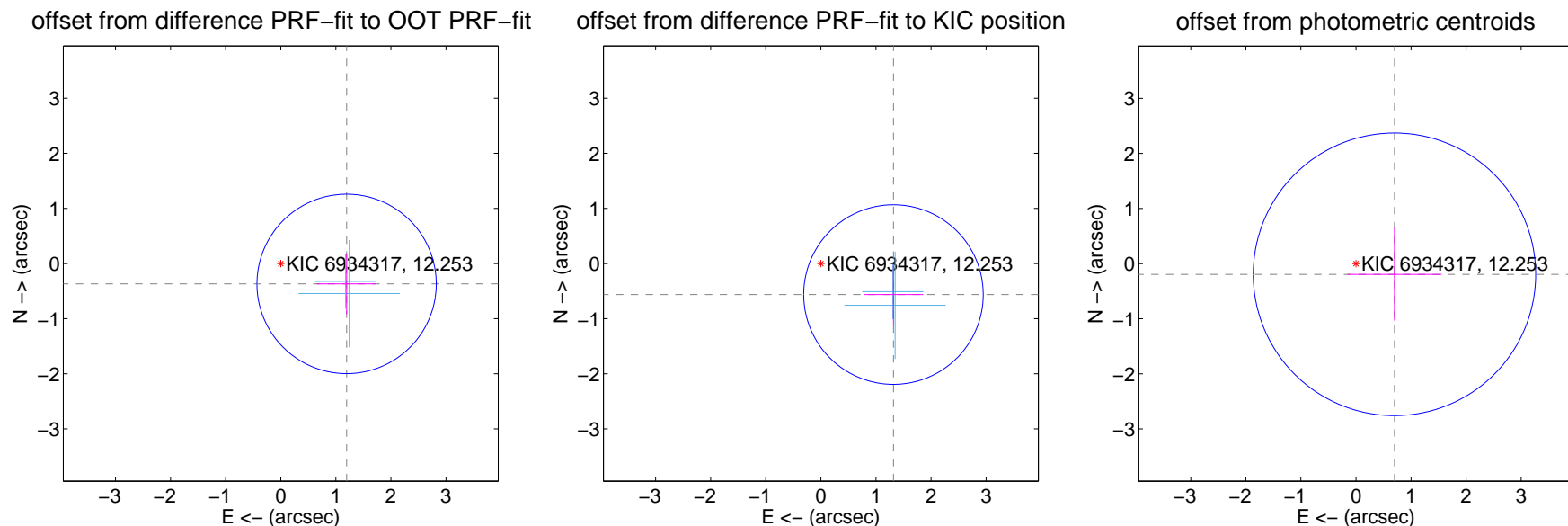
## DV Centroid Data

Supplemental centroid analysis for 006934317-02. Kepler magnitude: 12.25. Transit SNR 6.36

There are 2 quarters with good PRF difference image offsets

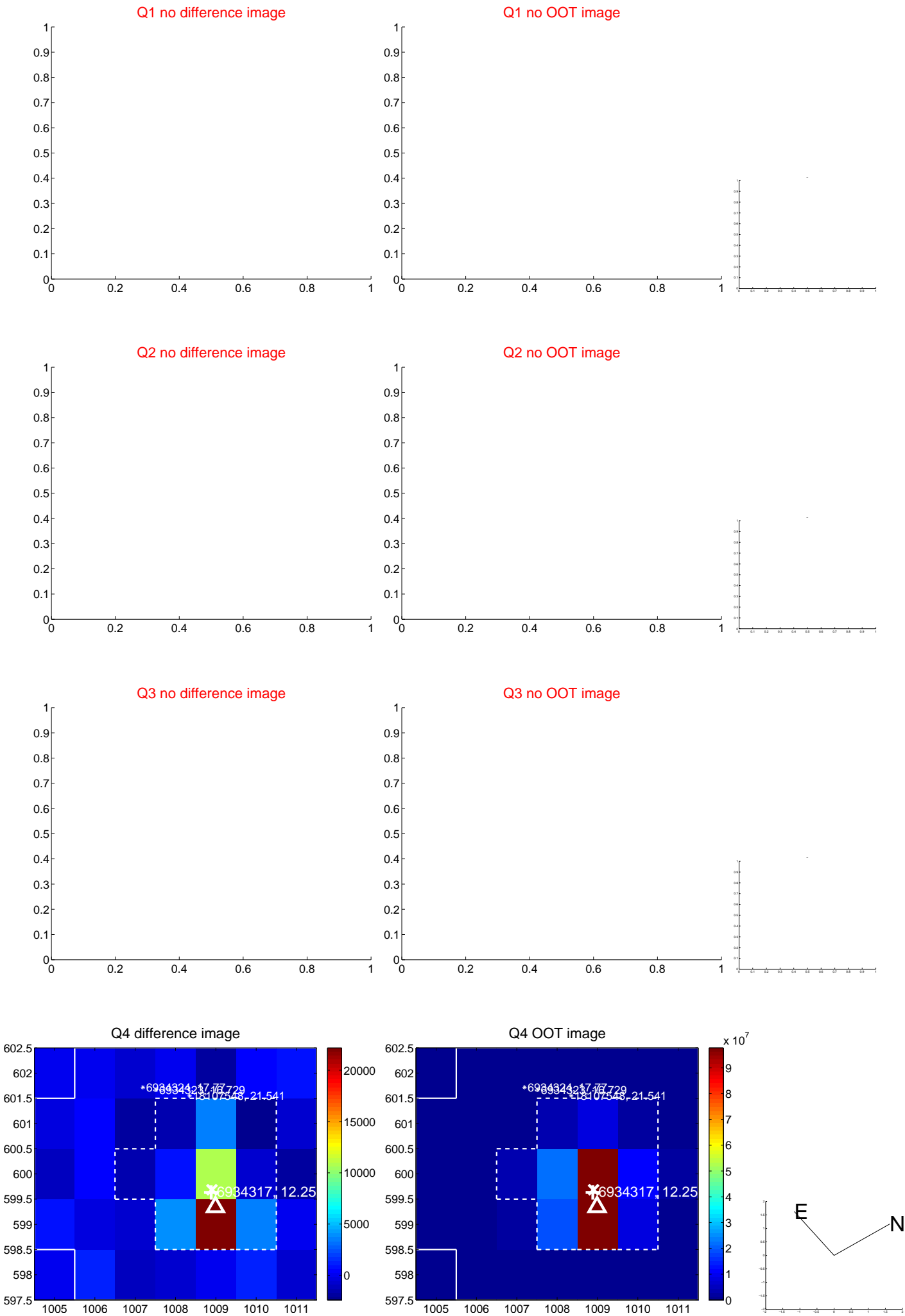
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.252 \pm 0.543$	2.31	$-1.196 \pm 0.542$	$-0.370 \pm 0.551$
PRF-fit source offset from KIC position	$1.434 \pm 0.543$	2.64	$-1.318 \pm 0.542$	$-0.563 \pm 0.551$
photometric centroid source offset	$0.73 \pm 0.86$	0.85	$-0.70 \pm 0.86$	$-0.19 \pm 0.84$



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 ×: 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.

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



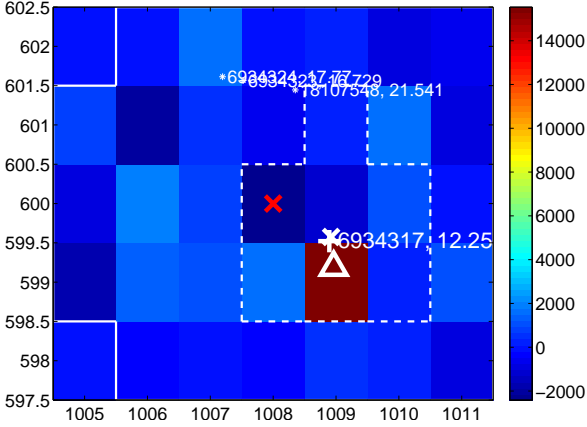
Q7 no difference image



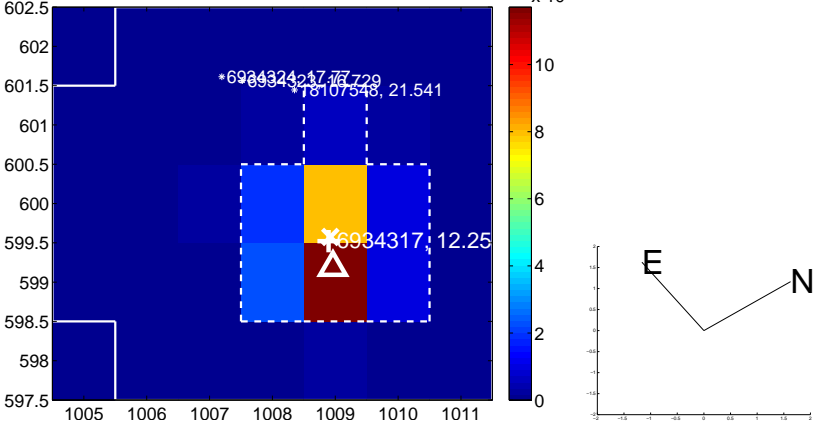
Q7 no OOT image



Q8 difference image



Q8 OOT image



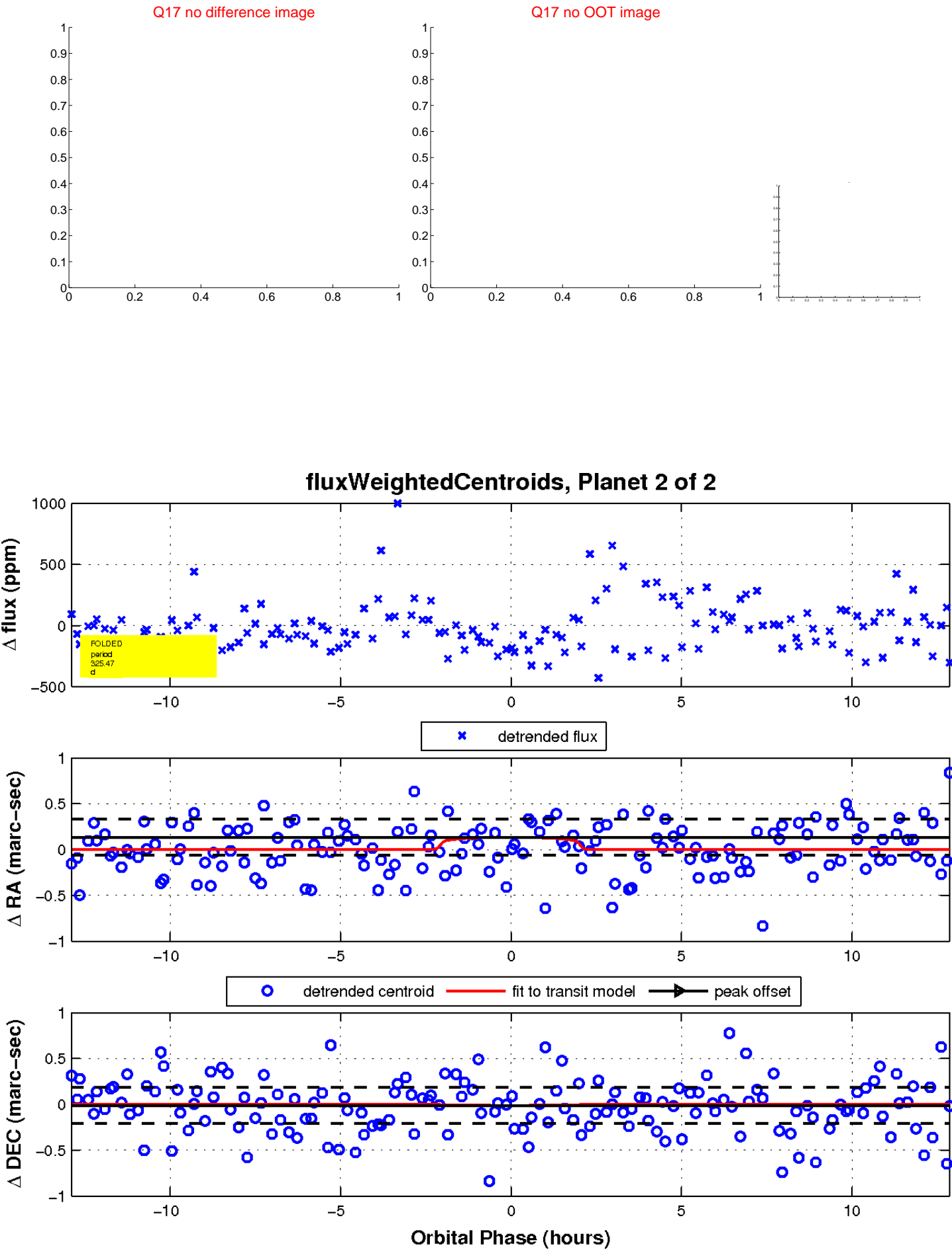
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

