

# KIC 006956216

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006956216-01	OBS	3604.01	4.818863	131.677834	65087.6	6.208	4905.9	4293.3	1.94	6313	51.06	1531.20
006956216-02	OBS	No	2.409413	131.663765	4548.8	5.922	366.0	353.4	1.94	6313	14.73	3858.42
006956216-03	OBS	No	302.403128	319.065715	431.3	4.913	10.1	5.2	1.94	6313	4.36	6.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006956216-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006956216-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006956216-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_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.

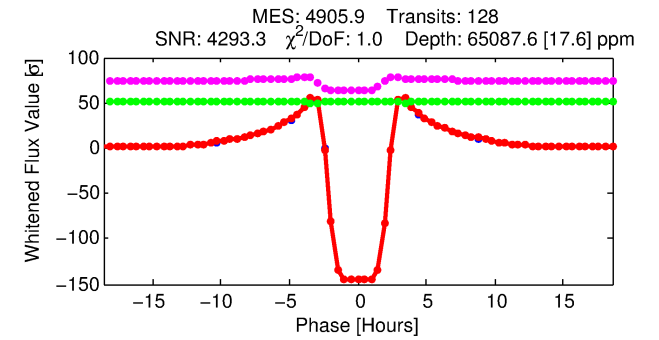
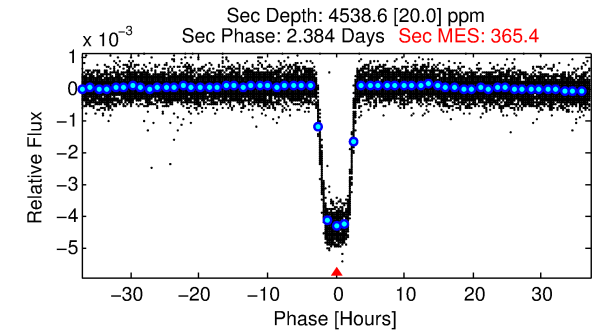
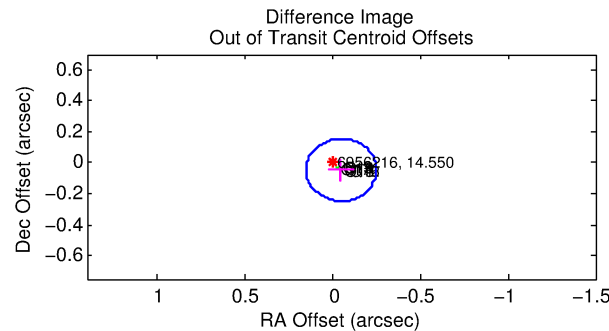
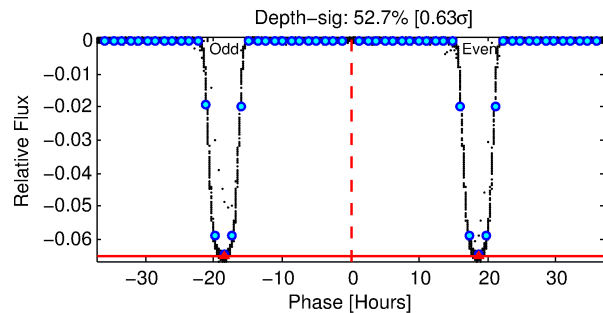
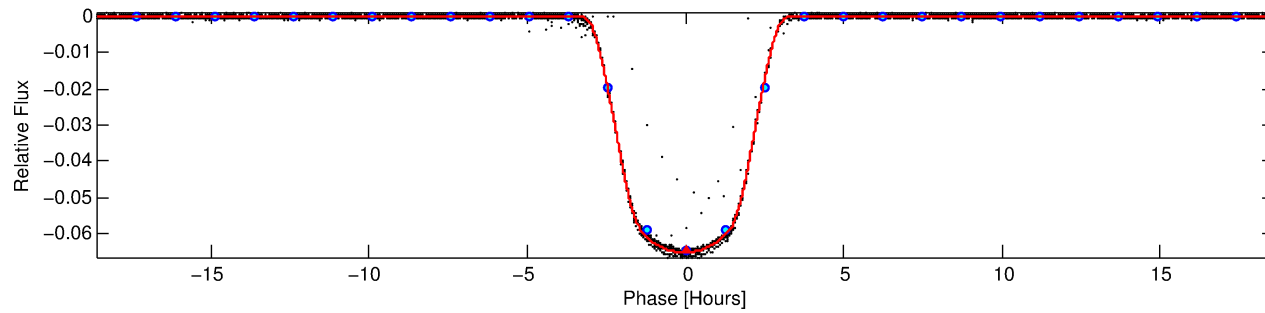
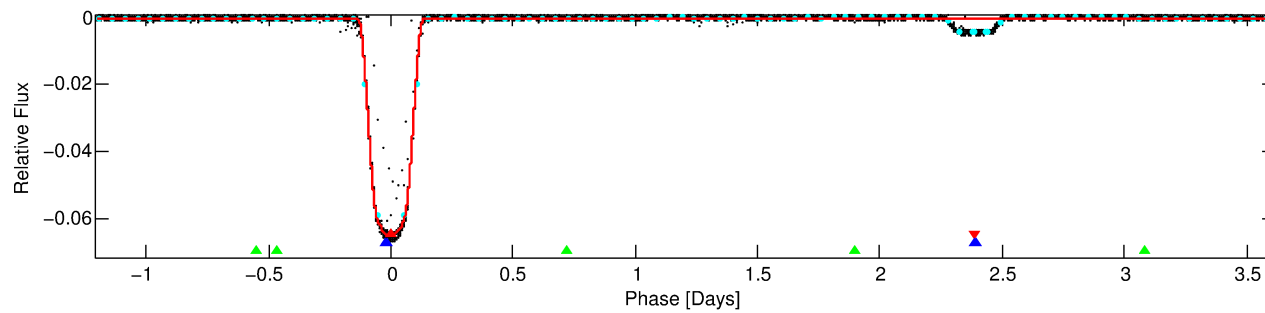
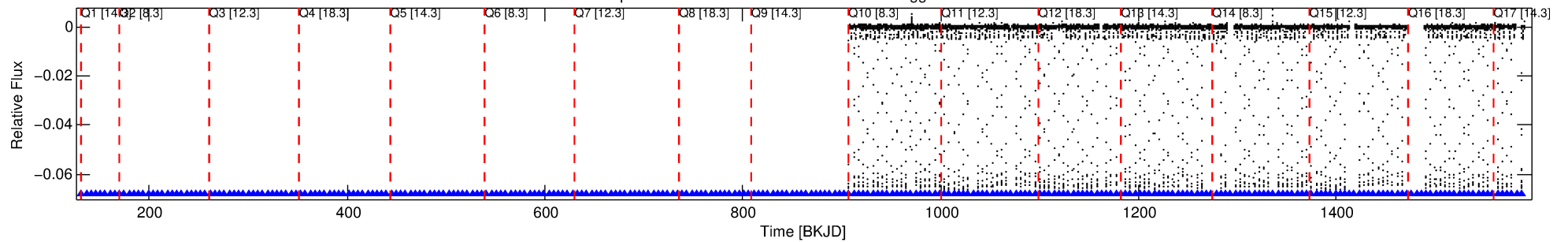
## Ephemeris Match Information For 006956216-01

No Significant Match Found

# DV One-Page Summary

KIC: 6956216 Candidate: 1 of 3 Period: 4.819 d  
KOI: K03604.01 Corr: 1.000

Kp: 14.55 R\*: 1.94 Rs Teff: 6313.0 K Logg: 3.94 Fe/H: -0.260



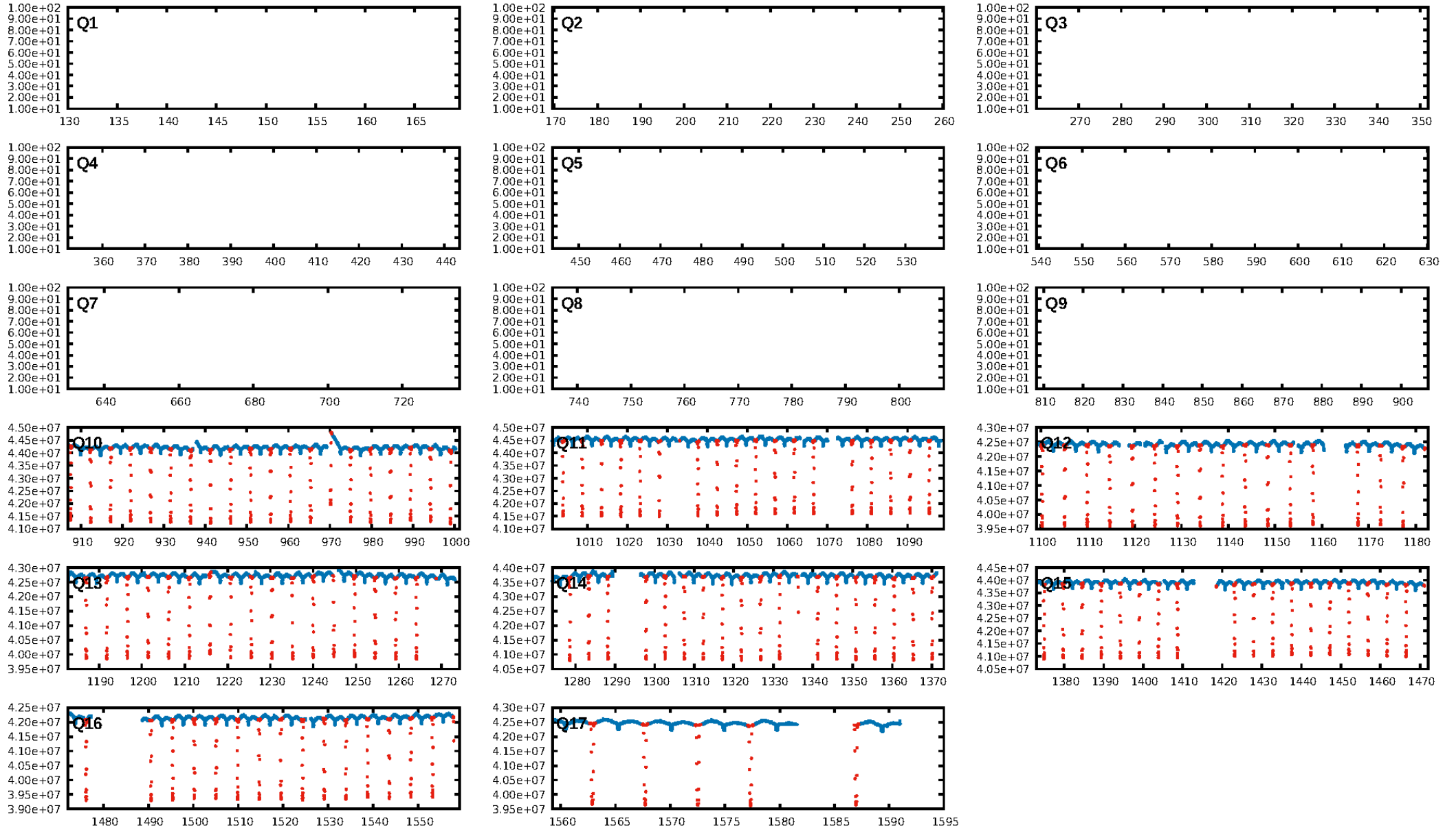
## DV Fit Results:

Period = 4.81886 [0.00000] d  
Epoch = 131.6778 [0.0000] BKJD  
Rp/R\* = 0.2418 [0.0000]  
a/R\* = 6.83 [0.00]  
b = 0.49 [0.00]  
Seff = 1531.20 [1093.06]  
Teff = 1595 [285] K  
Rp = 51.07 [22.59] Re  
a = 0.0590 [0.0255] AU  
Ag = 3.33 [2.33] [1.00σ]  
Teffp = 3332 [120] K [5.62σ]

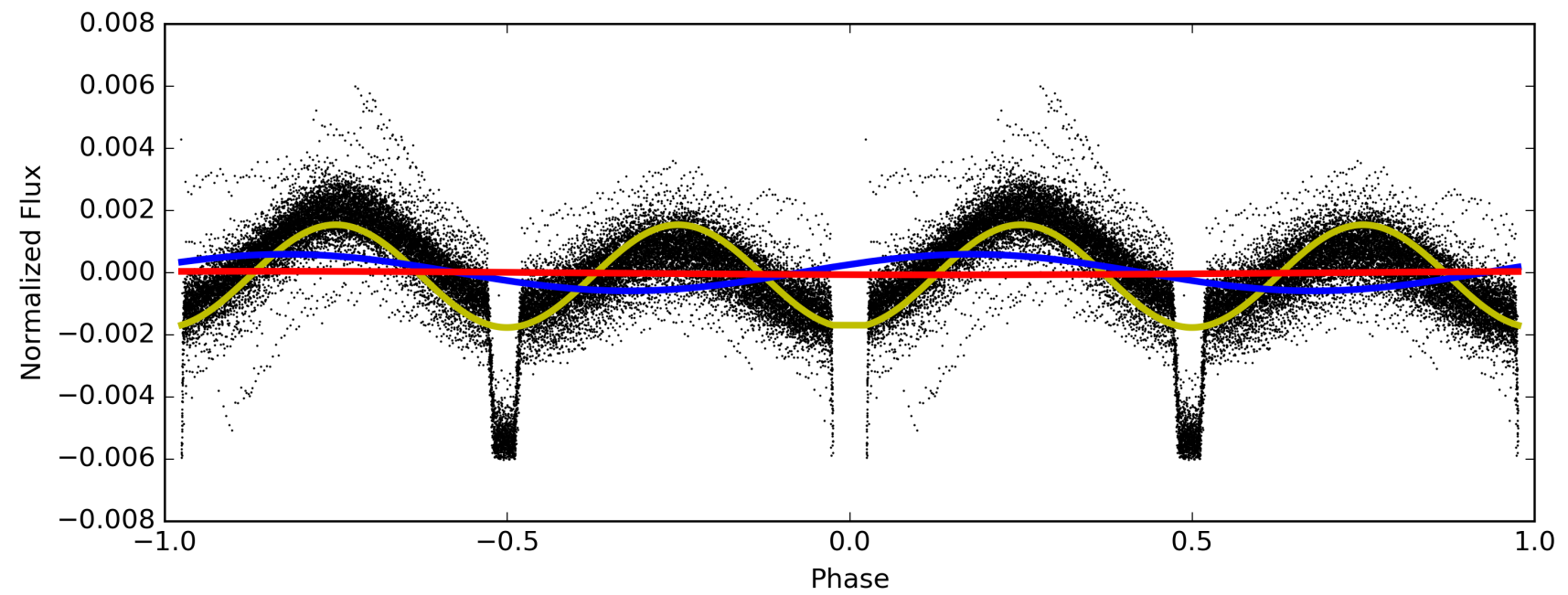
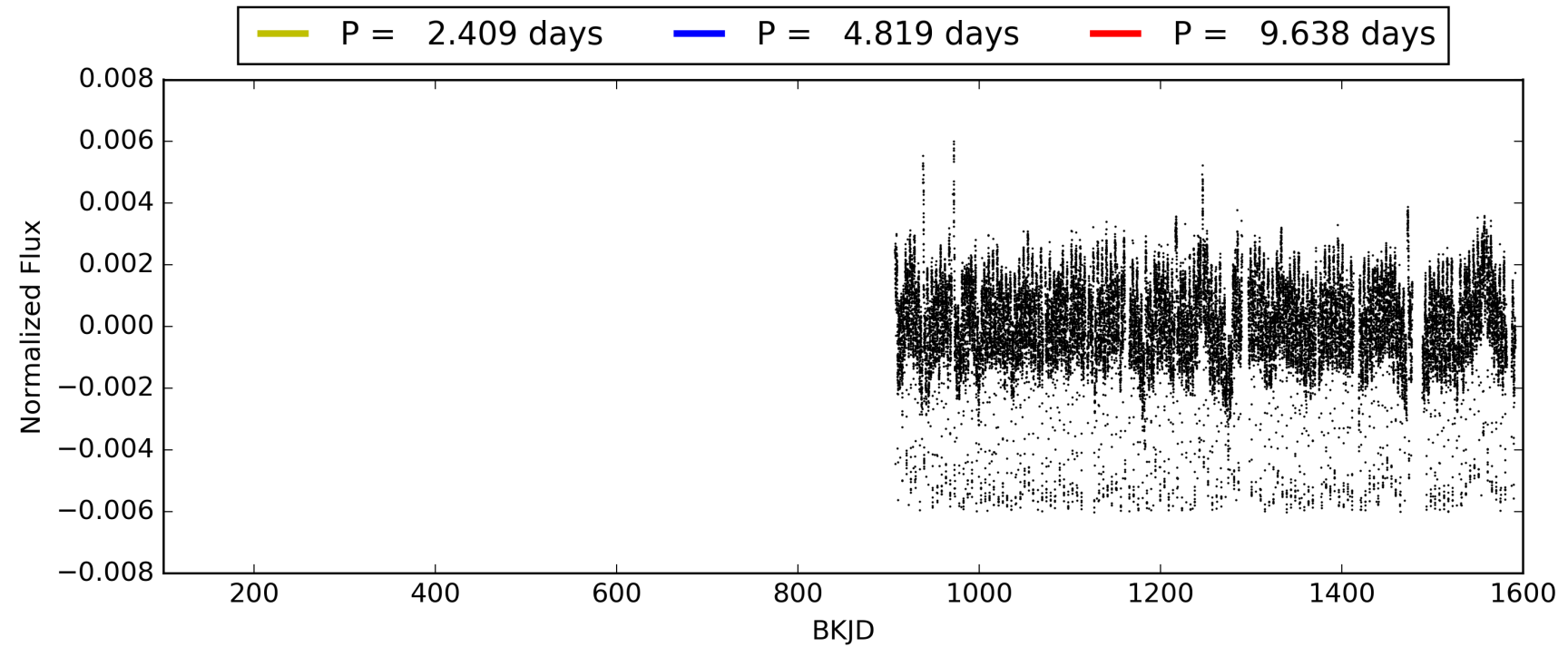
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.74σ]  
LongPeriod-sig: 100.0% [902.17σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [123/123]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.0%  
Centroid-so: 0.333 arcsec [106.53σ]  
OotOffset-rm: 0.067 arcsec [1.01σ]  
KicOffset-rm: 0.095 arcsec [1.26σ]  
OotOffset-st: 2/2/2/2 [8]  
KicOffset-st: 2/2/2/2 [8]  
DiffImageQuality-fgm: 1.00 [8/8]  
DiffImageOverlap-fno: 0.00 [0/8]

# TCE 006956216-01, PDC Light Curves

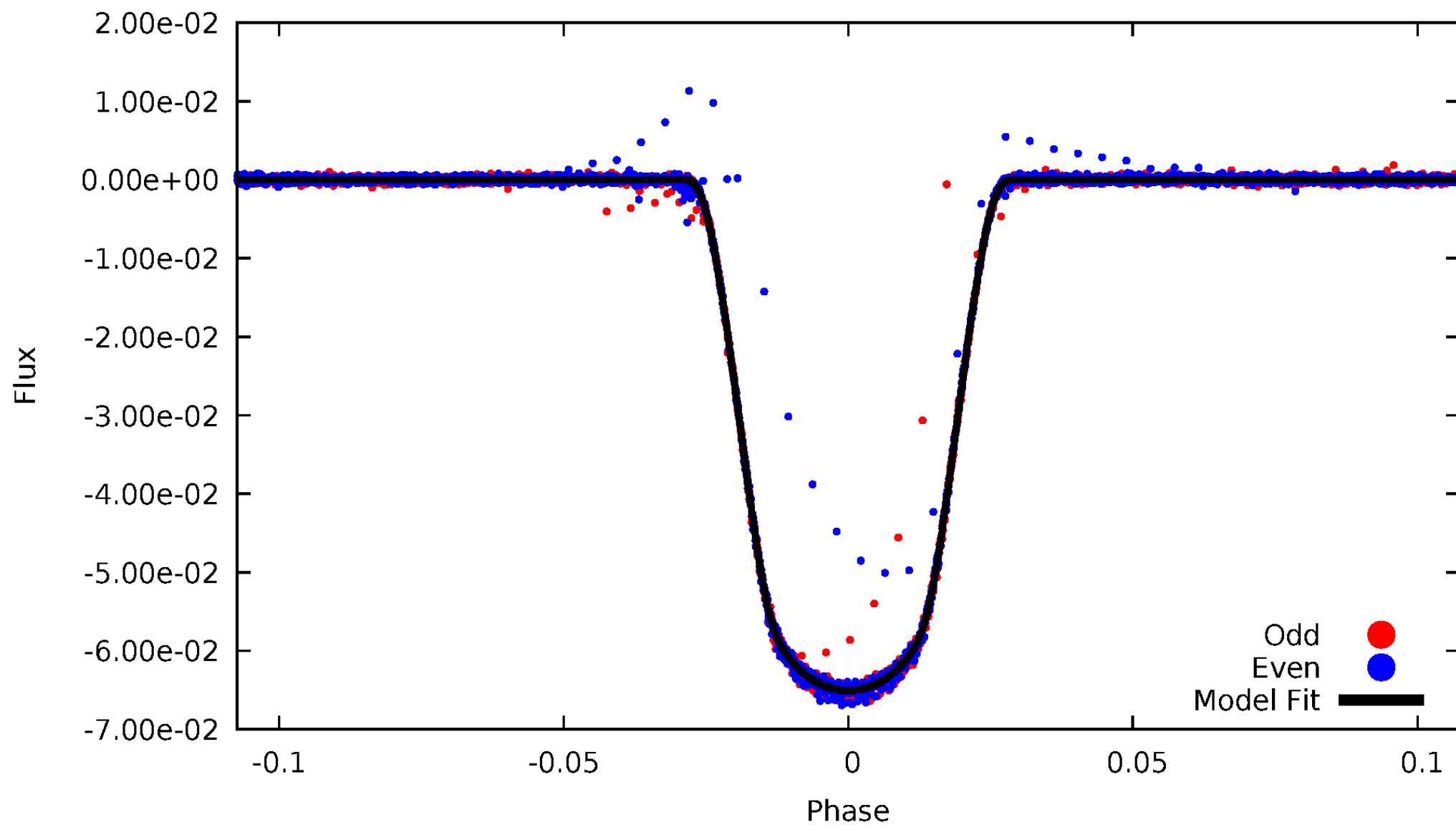


TCE 006956216-01



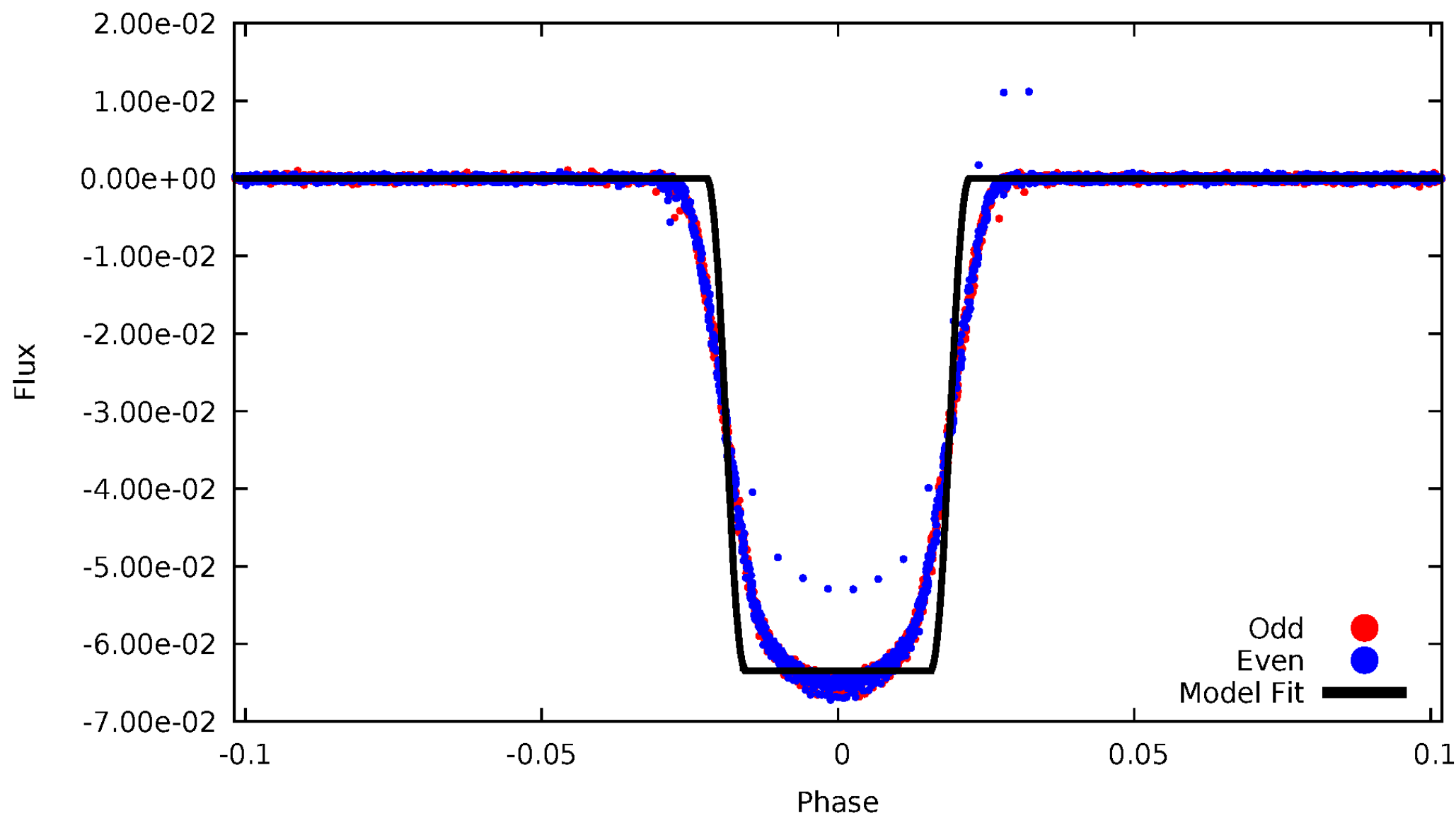
# DV Odd/Even

TCE 006956216-01



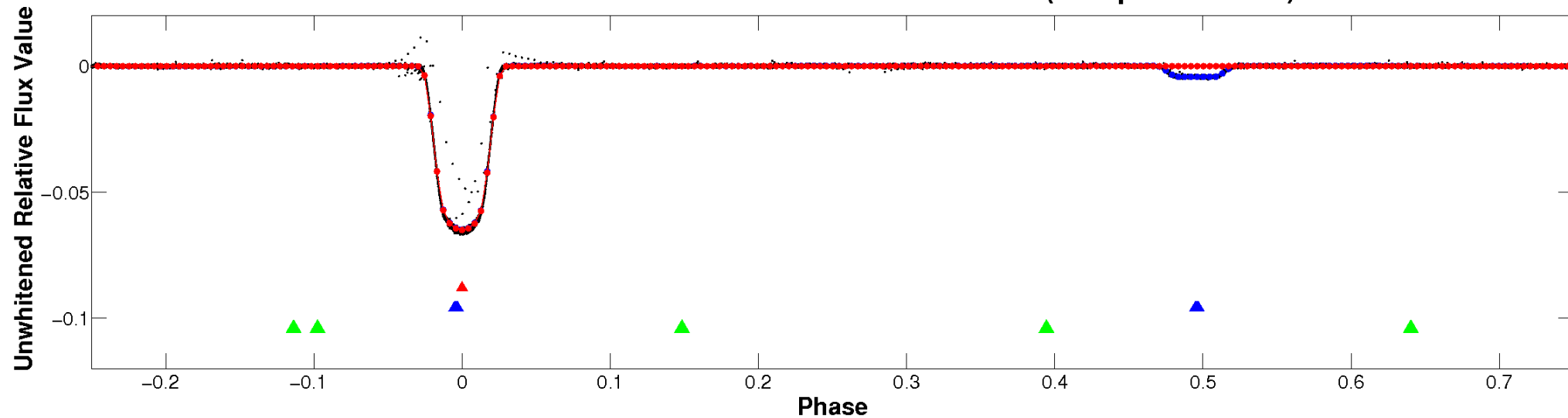
# ALT Odd/Even

TCE 006956216-01

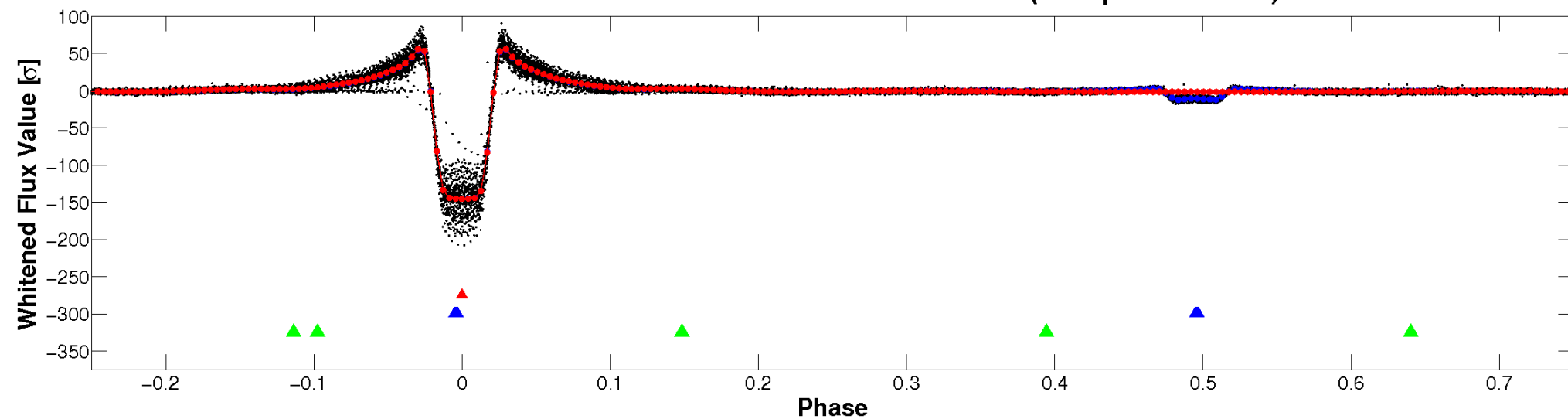


# Non-Whitened Vs. Whitened Light Curve

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

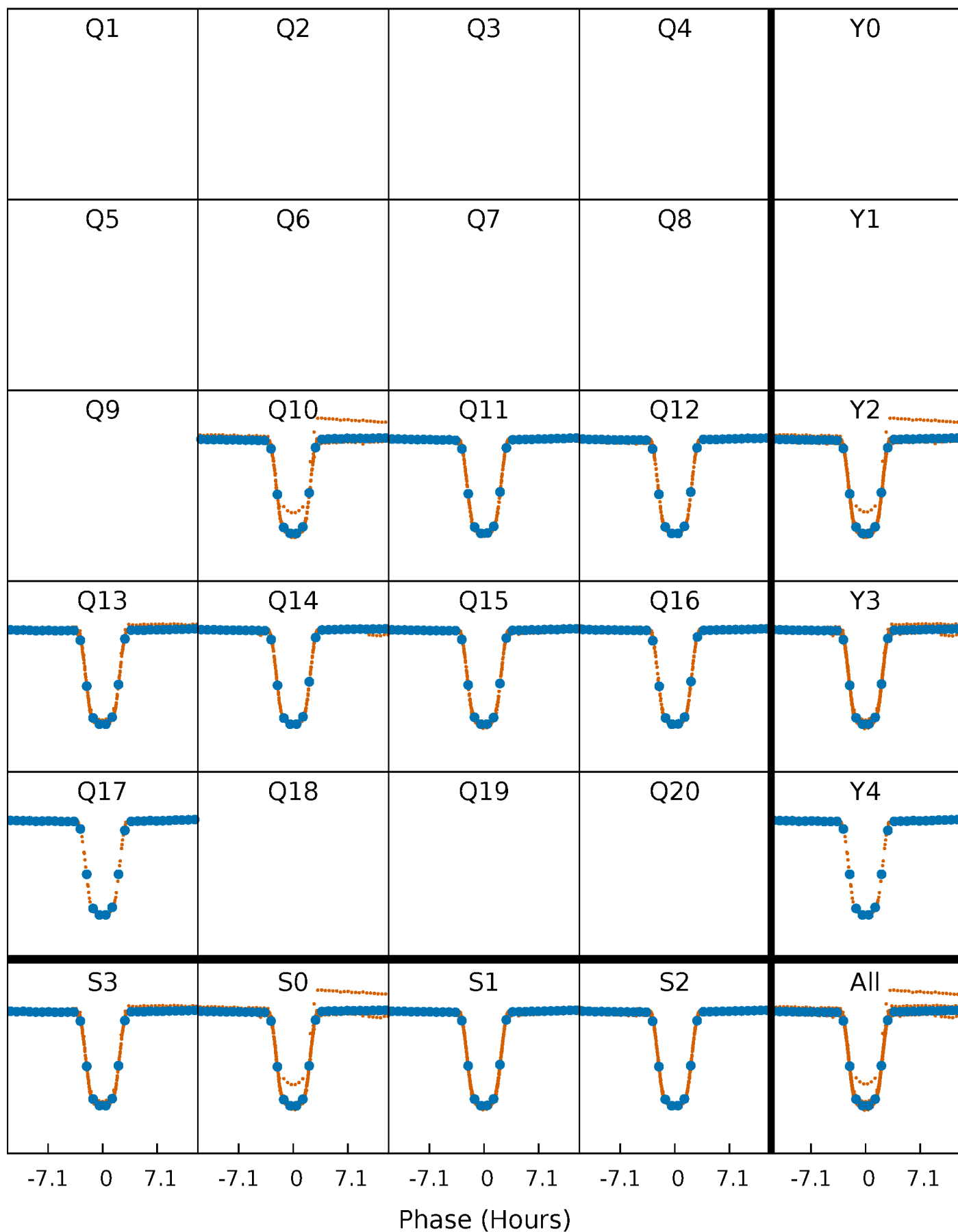


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

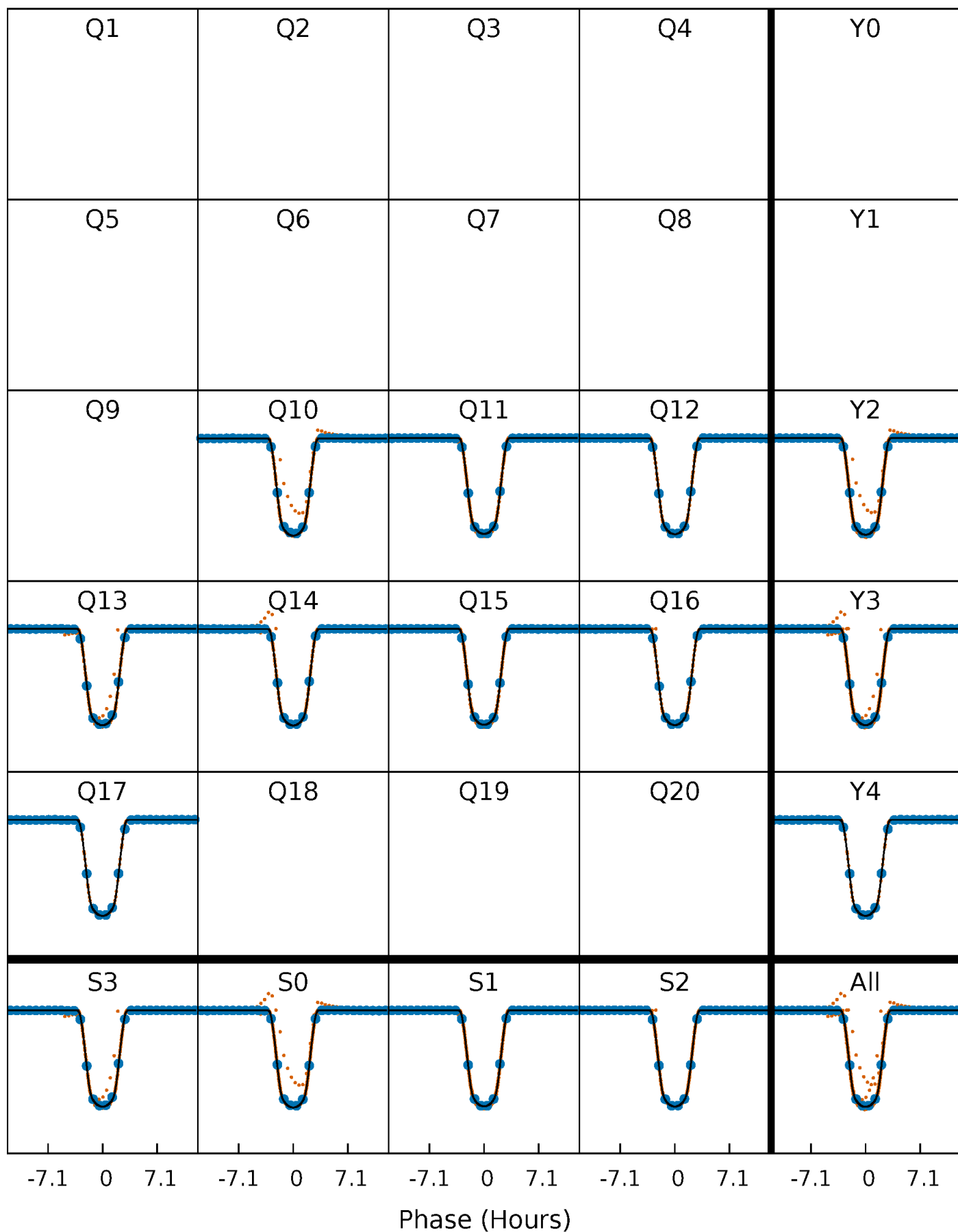
TCE 006956216-01 P= 4.818864 Days  $T_0=131.677834$  (BKJD)





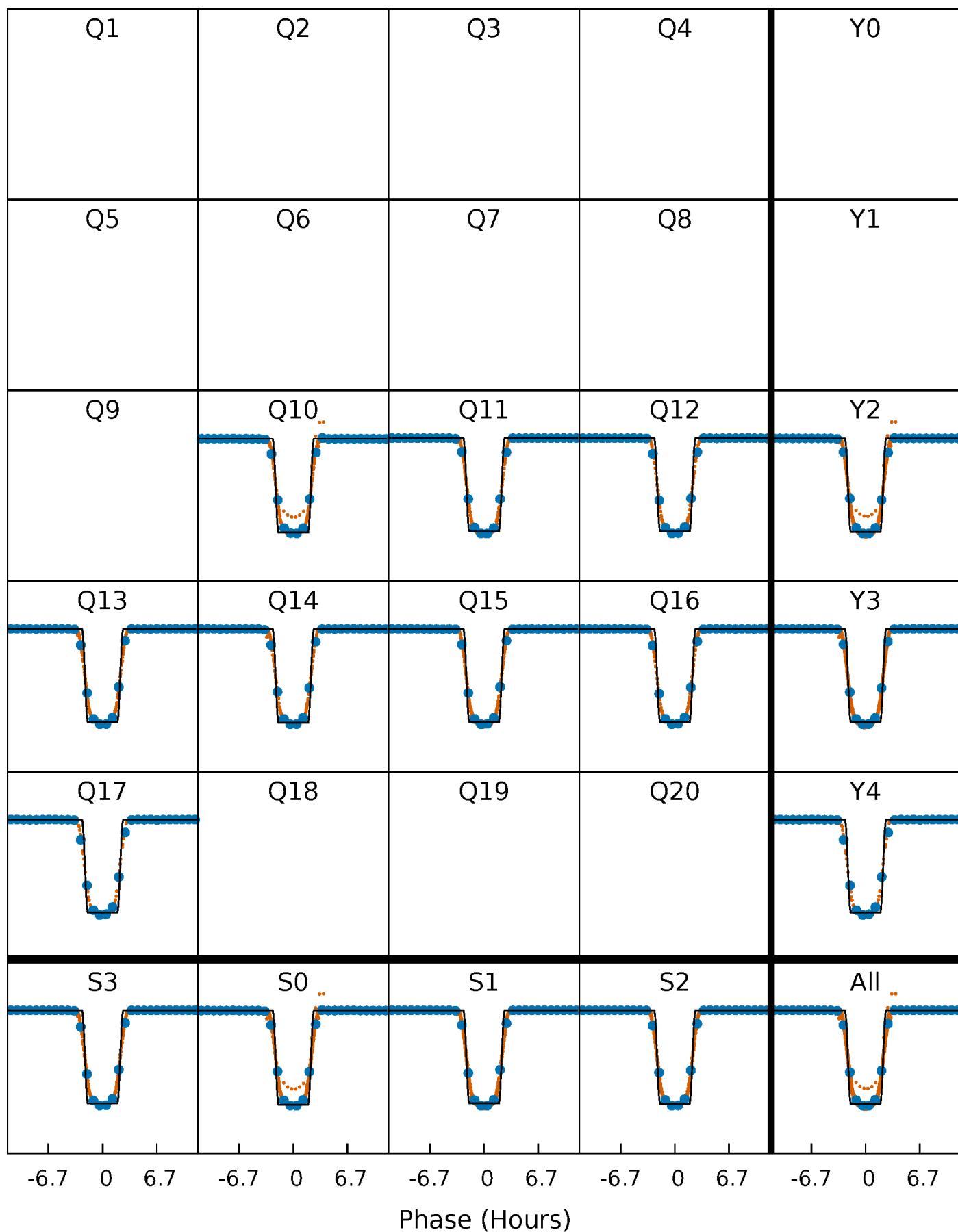
# DV Quarter-Phased Transit Curves

TCE 006956216-01 P= 4.818864 Days  $T_0=131.677834$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

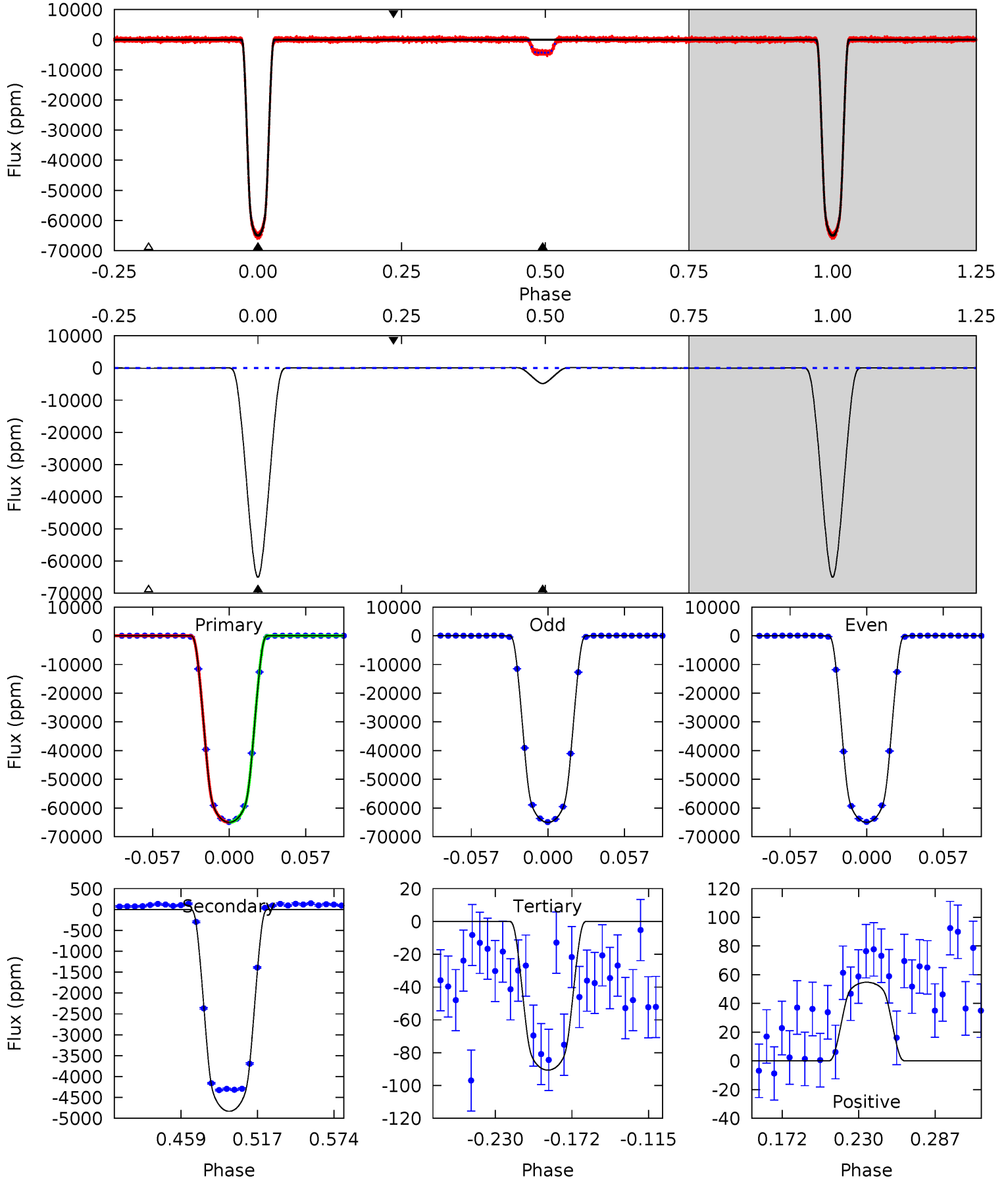
TCE 006956216-01 P= 4.818892 Days  $T_0=131.671106$  (BKJD)



# DV Model-Shift Uniqueness Test

006956216-01, P = 4.818864 Days, E = 131.677834 Days

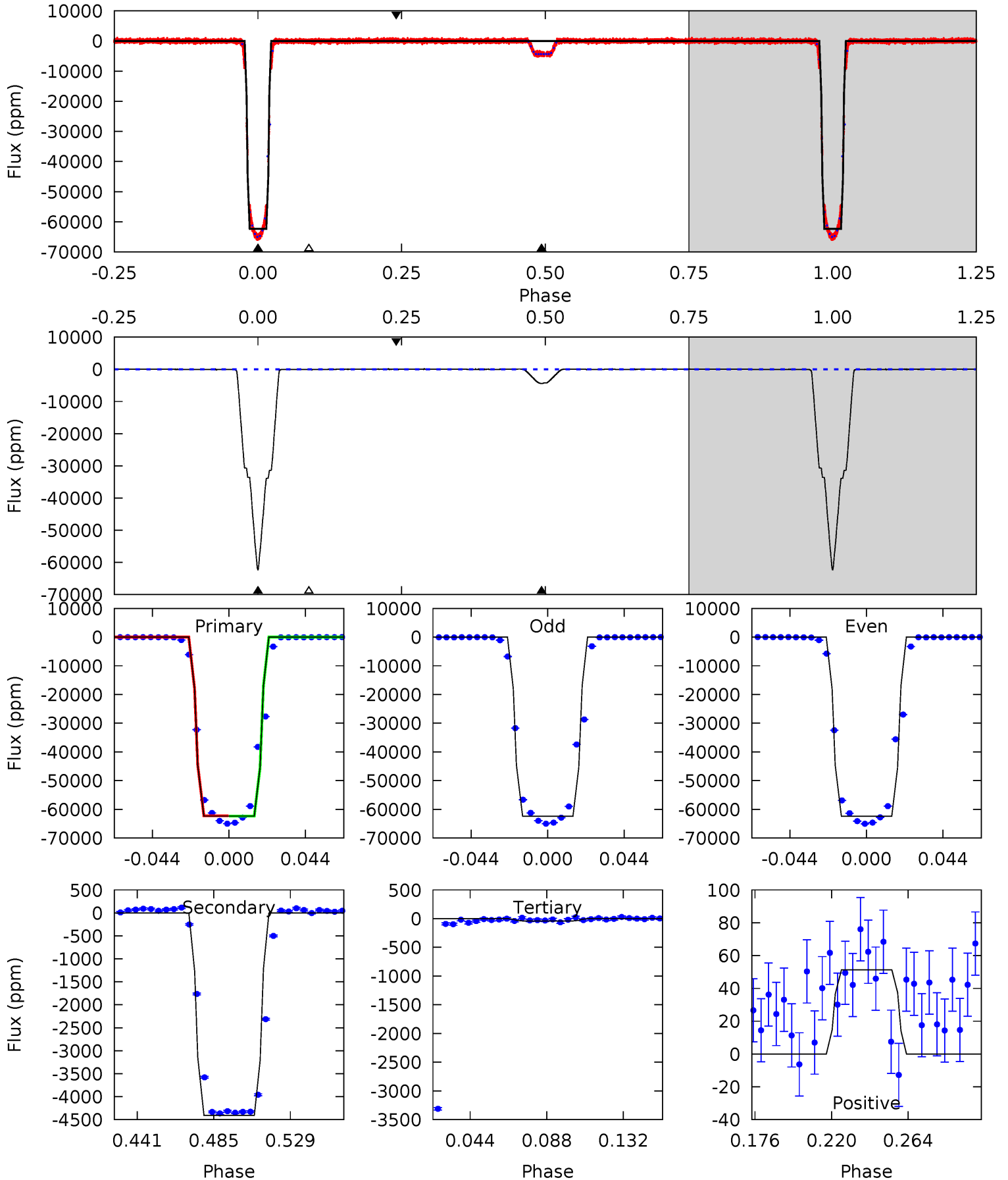
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9483	705.1	13.2	7.99	4.68	1.90	8.50	9470	9475	691.8	697.1	1.74	0.98	0.00	0



# Alt Model-Shift Uniqueness Test

006956216-01, P = 4.818892 Days, E = 131.671106 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
7360	520.3	4.73	6.06	4.73	2.01	2.66	7355	7354	515.5	514.2	4.76	1.00	0.00	7.02



### Stellar Parameters For KIC 006956216

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6313^{+181}_{-227}$	$3.936^{+0.413}_{-0.138}$	$-0.260^{+0.300}_{-0.300}$	$1.935^{+0.527}_{-0.856}$	$1.179^{+0.201}_{-0.221}$	$0.229^{+0.731}_{-0.093}$
	+3%/-4%	+10%/-4%	+115%/-115%	+27%/-44%	+17%/-19%	+319%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 006956216-01 / KOI 3604.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-4833 \pm 7$	$49.79^{+7.69}_{-12.20}$	$2174^{+175}_{-262}$	$3731^{+70}_{-90}$	$3.801^{+2.651}_{-0.871}$
Alt.	$-4408 \pm 8$	$52.68^{+7.36}_{-12.31}$	$2176^{+188}_{-256}$	$3606^{+71}_{-91}$	$3.119^{+2.050}_{-0.689}$

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

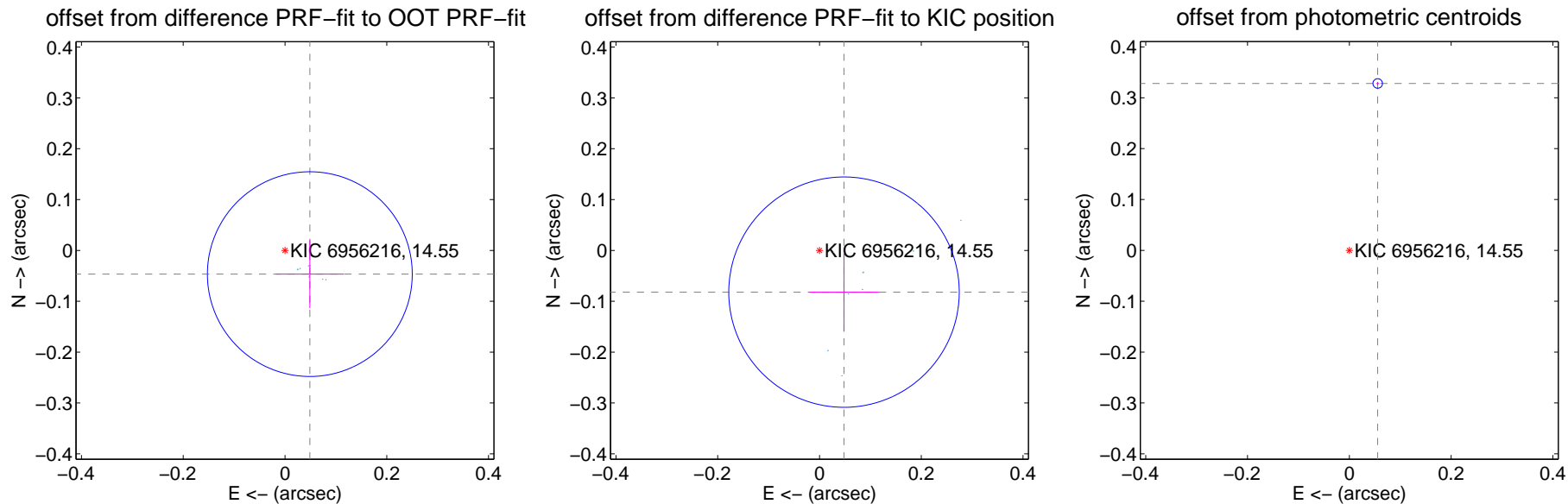
## DV Centroid Data

Supplemental centroid analysis for 006956216-01. Kepler magnitude: 14.55. Transit SNR 4293.32

There are 8 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.067 \pm 0.067$	1.01	$-0.049 \pm 0.067$	$-0.047 \pm 0.067$
PRF-fit source offset from KIC position	$0.095 \pm 0.075$	1.26	$-0.048 \pm 0.069$	$-0.082 \pm 0.078$
photometric centroid source offset	$0.33 \pm 0.00$	106.53	$-0.06 \pm 0.00$	$0.33 \pm 0.00$



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.

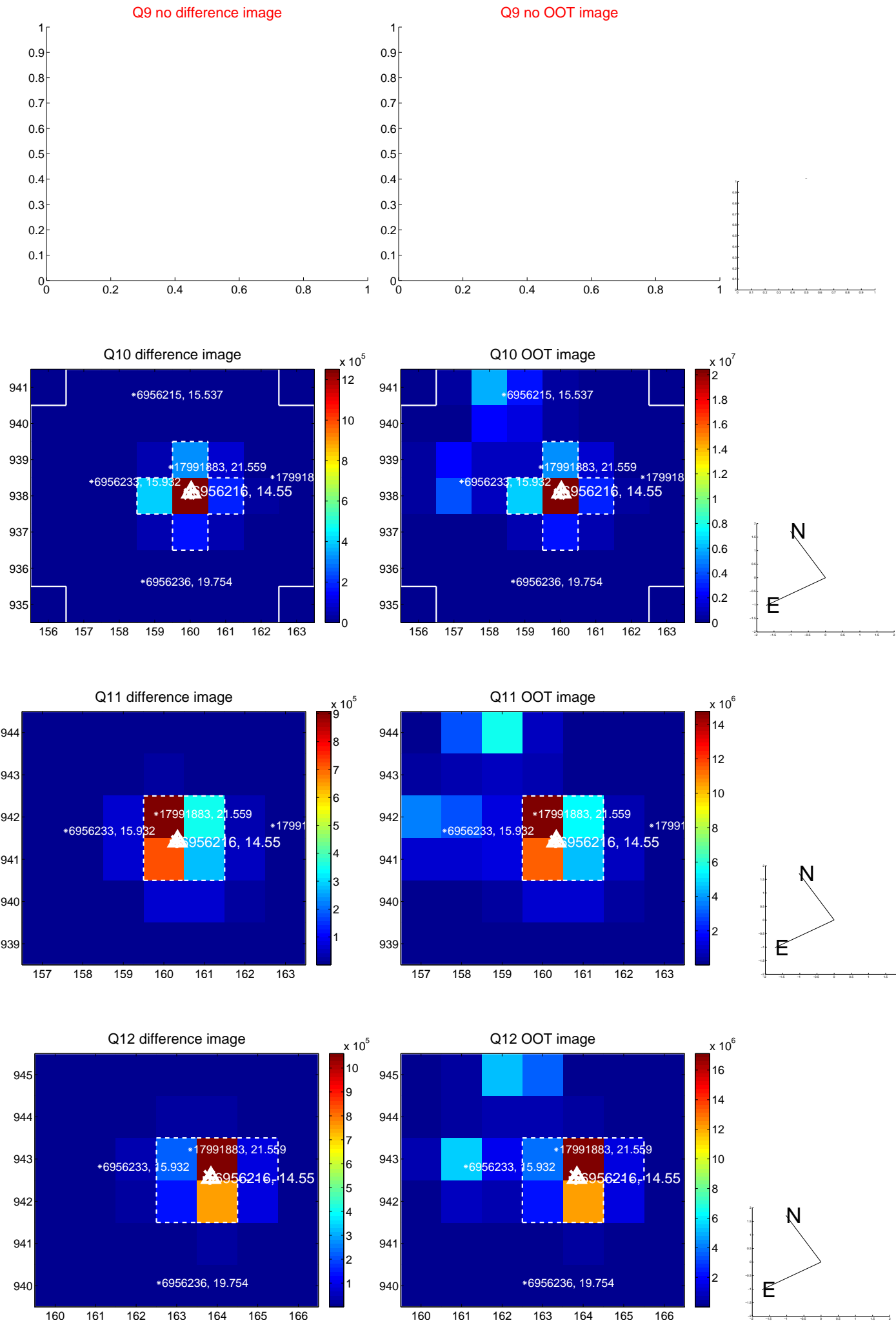


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

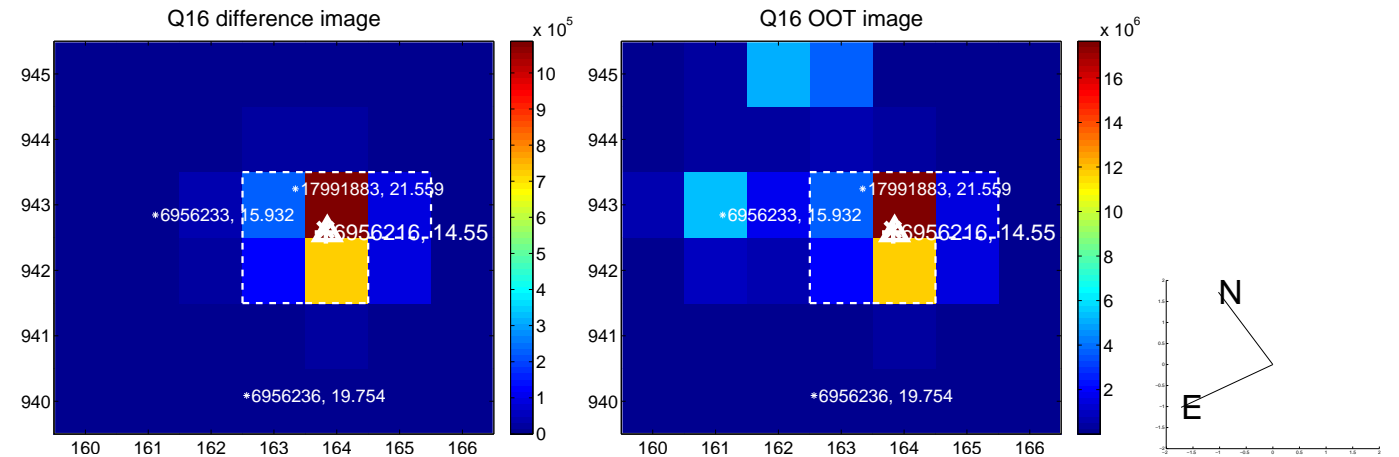
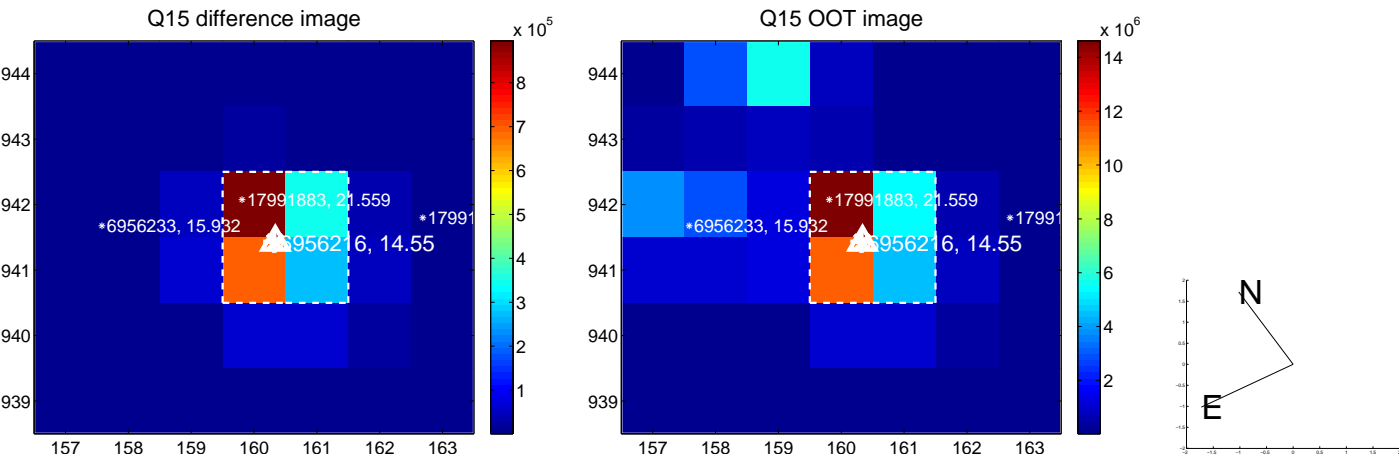
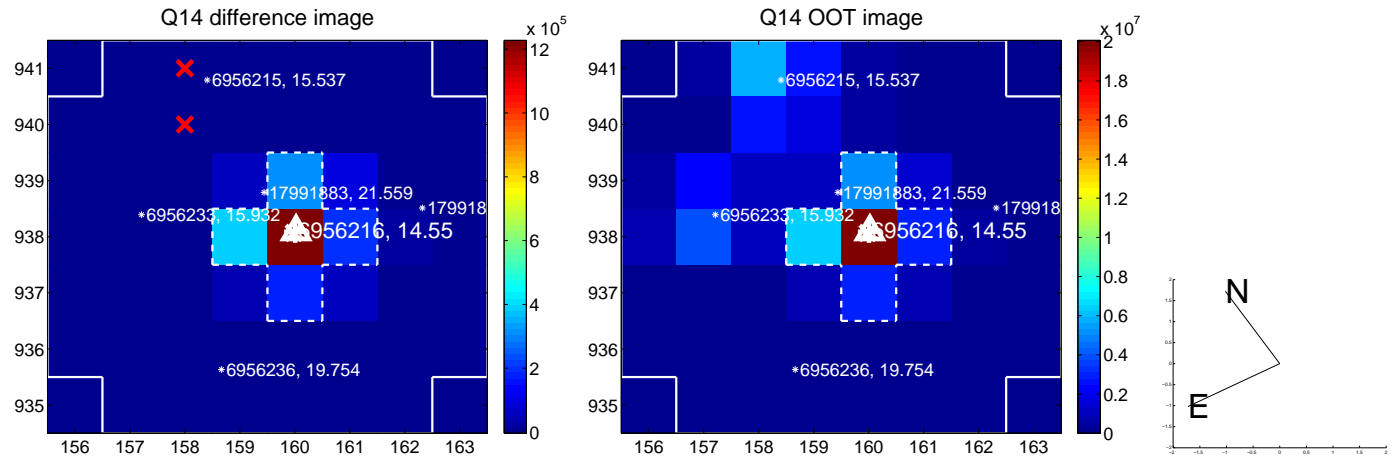
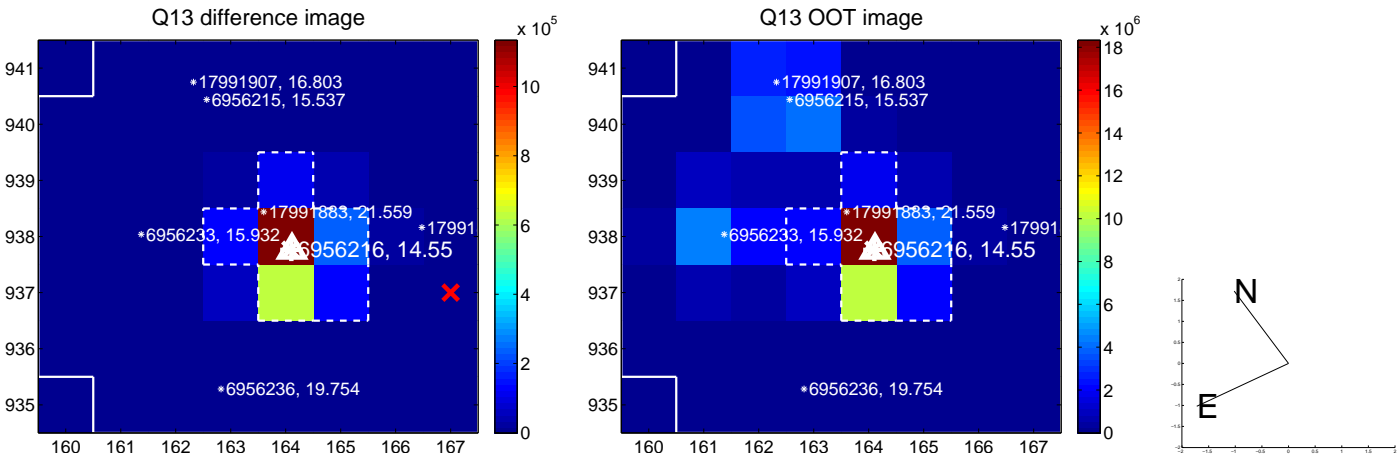




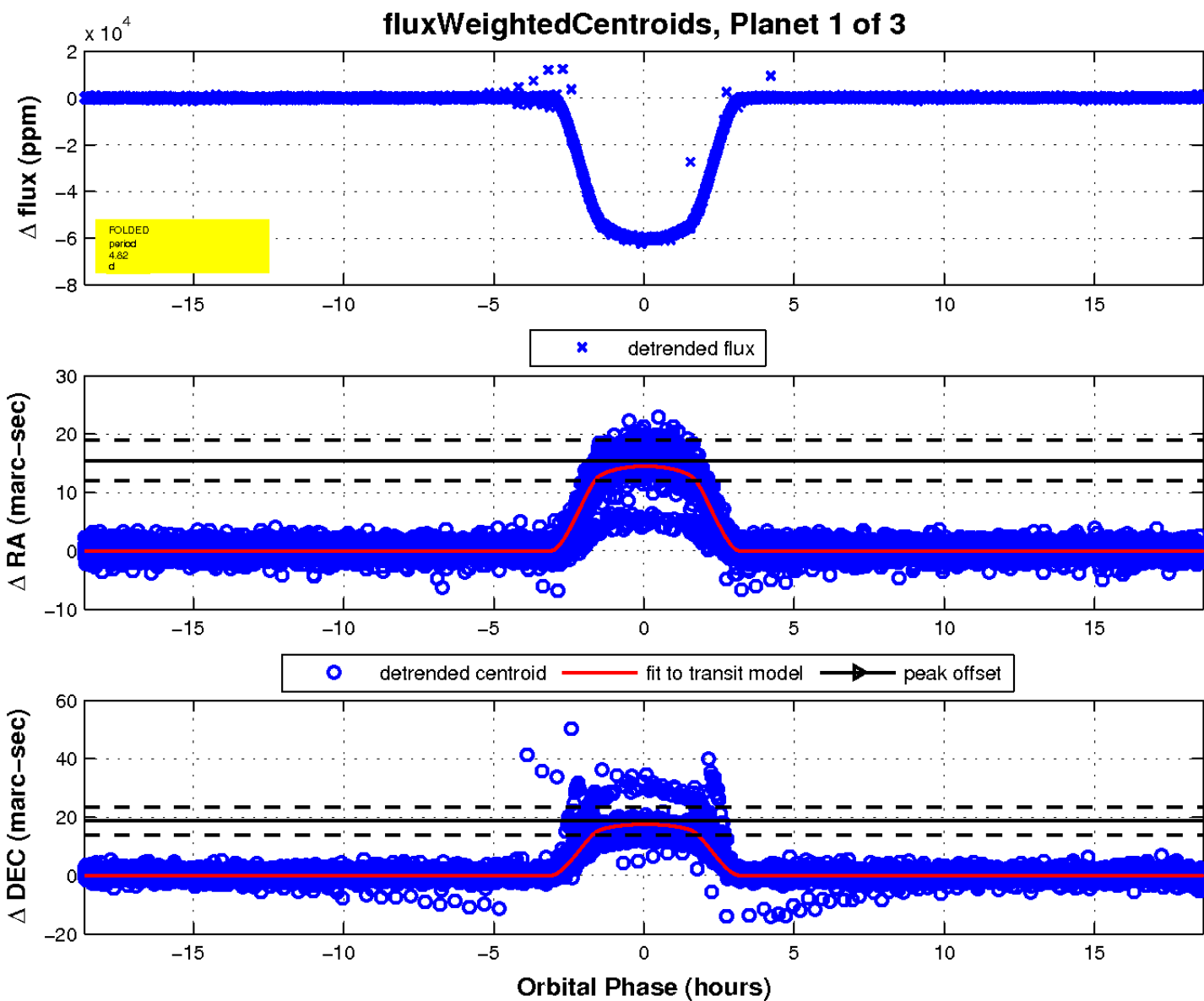
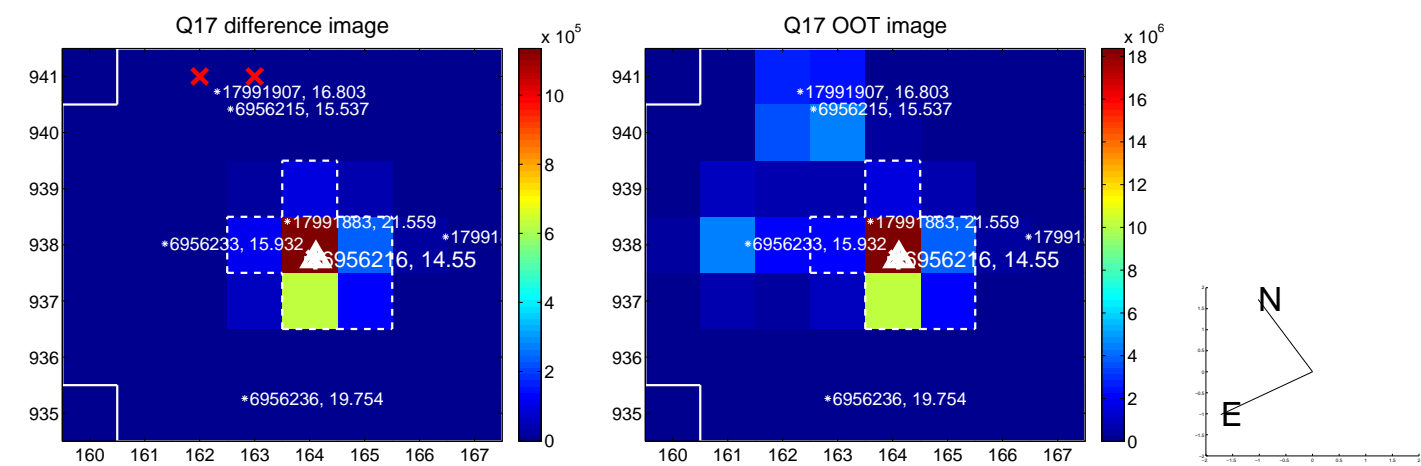
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

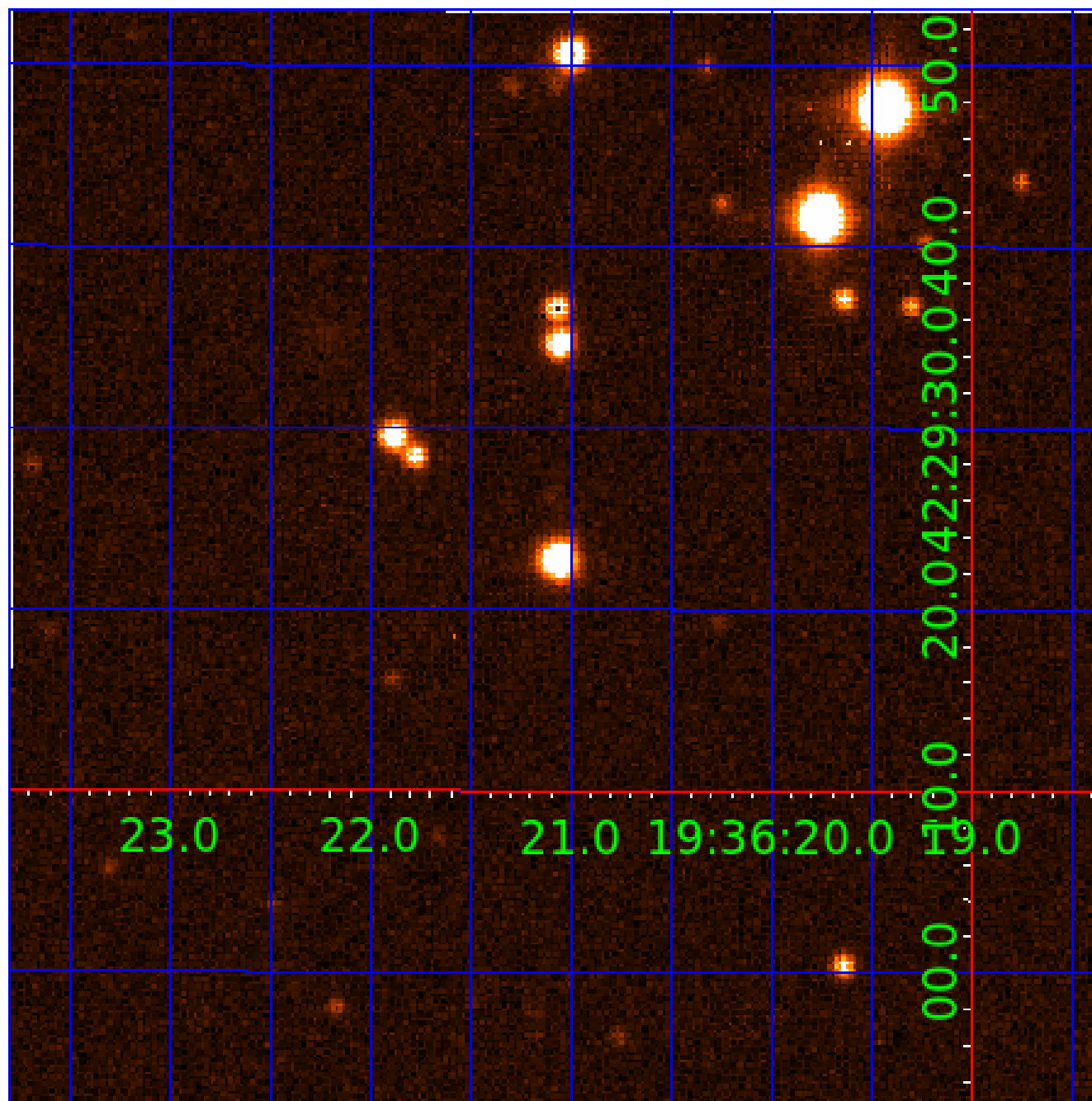


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006956216

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006956216-01	OBS	3604.01	4.818863	131.677834	65087.6	6.208	4905.9	4293.3	1.94	6313	51.06	1531.20
006956216-02	OBS	No	2.409413	131.663765	4548.8	5.922	366.0	353.4	1.94	6313	14.73	3858.42
006956216-03	OBS	No	302.403128	319.065715	431.3	4.913	10.1	5.2	1.94	6313	4.36	6.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006956216-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006956216-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006956216-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_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.

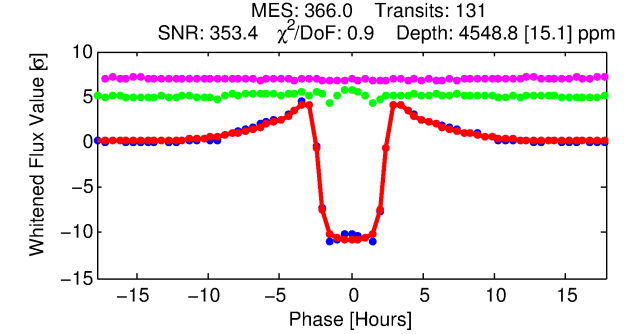
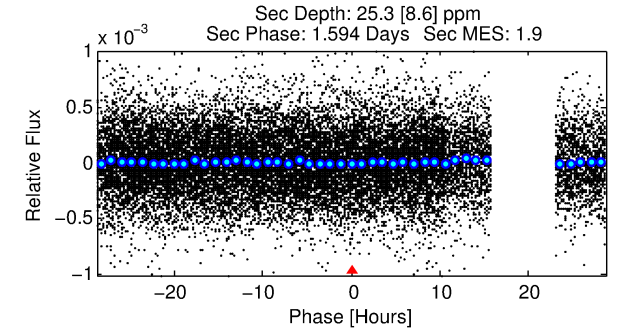
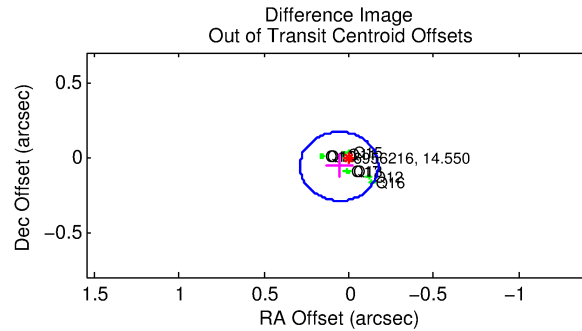
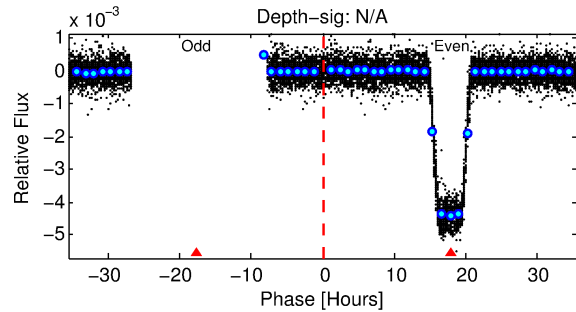
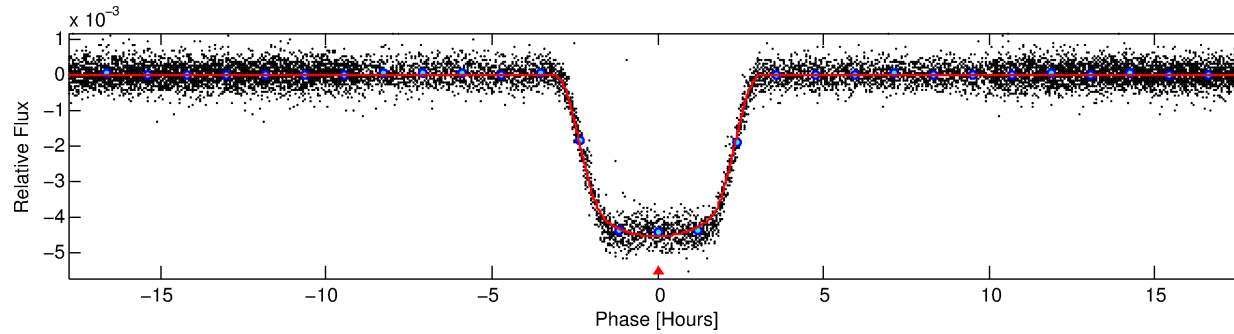
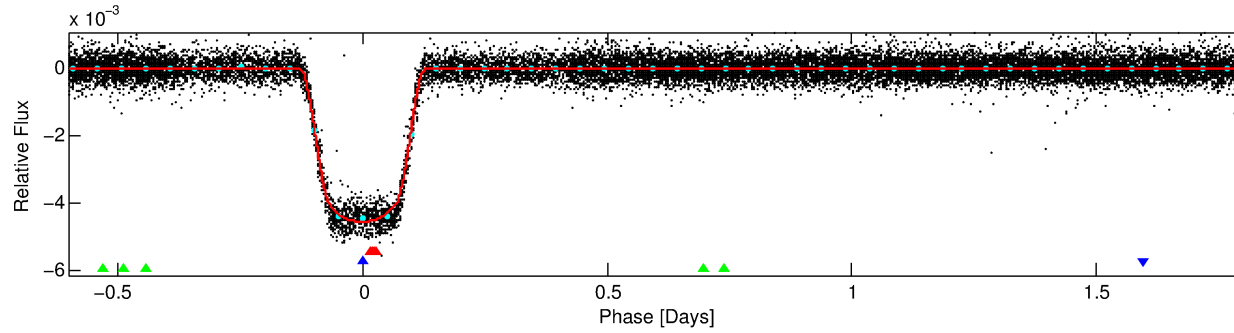
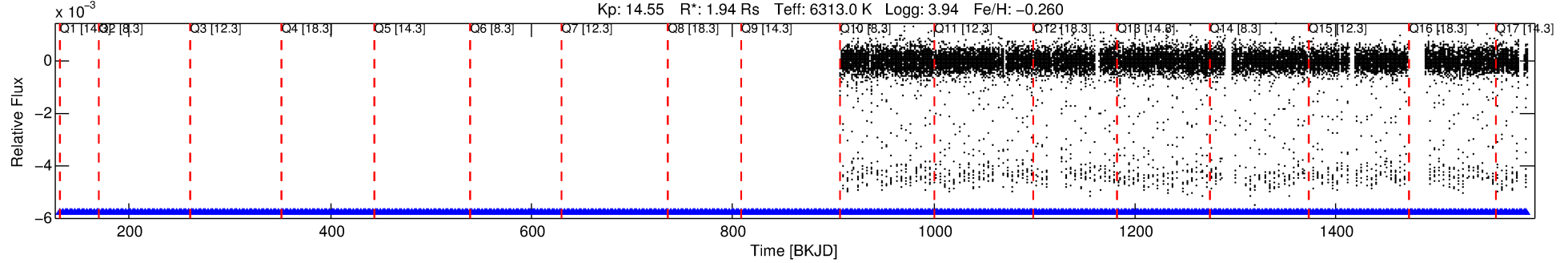
## Ephemeris Match Information For 006956216-02

No Significant Match Found

# DV One-Page Summary

KIC: 6956216 Candidate: 2 of 3 Period: 2.409 d  
KOI: K03604 Corr: No Ephemeris Match

Kp: 14.55 R\*: 1.94 Rs Teff: 6313.0 K Logg: 3.94 Fe/H: -0.260



## DV Fit Results:

Period = 2.40941 [0.00000] d  
Epoch = 131.6638 [0.0002] BKJD  
Rp/R\* = 0.0698 [0.0002]  
a/R\* = 2.25 [0.02]  
b = 0.84 [0.00]  
Seff = 3858.42 [2754.36]  
Teff = 2010 [359] K  
Rp = 14.73 [6.52] Re  
a = 0.0372 [0.0161] AU  
Ag = 0.09 [0.07] [-13.22σ]  
Teffp = 1696 [156] K [-0.80σ]

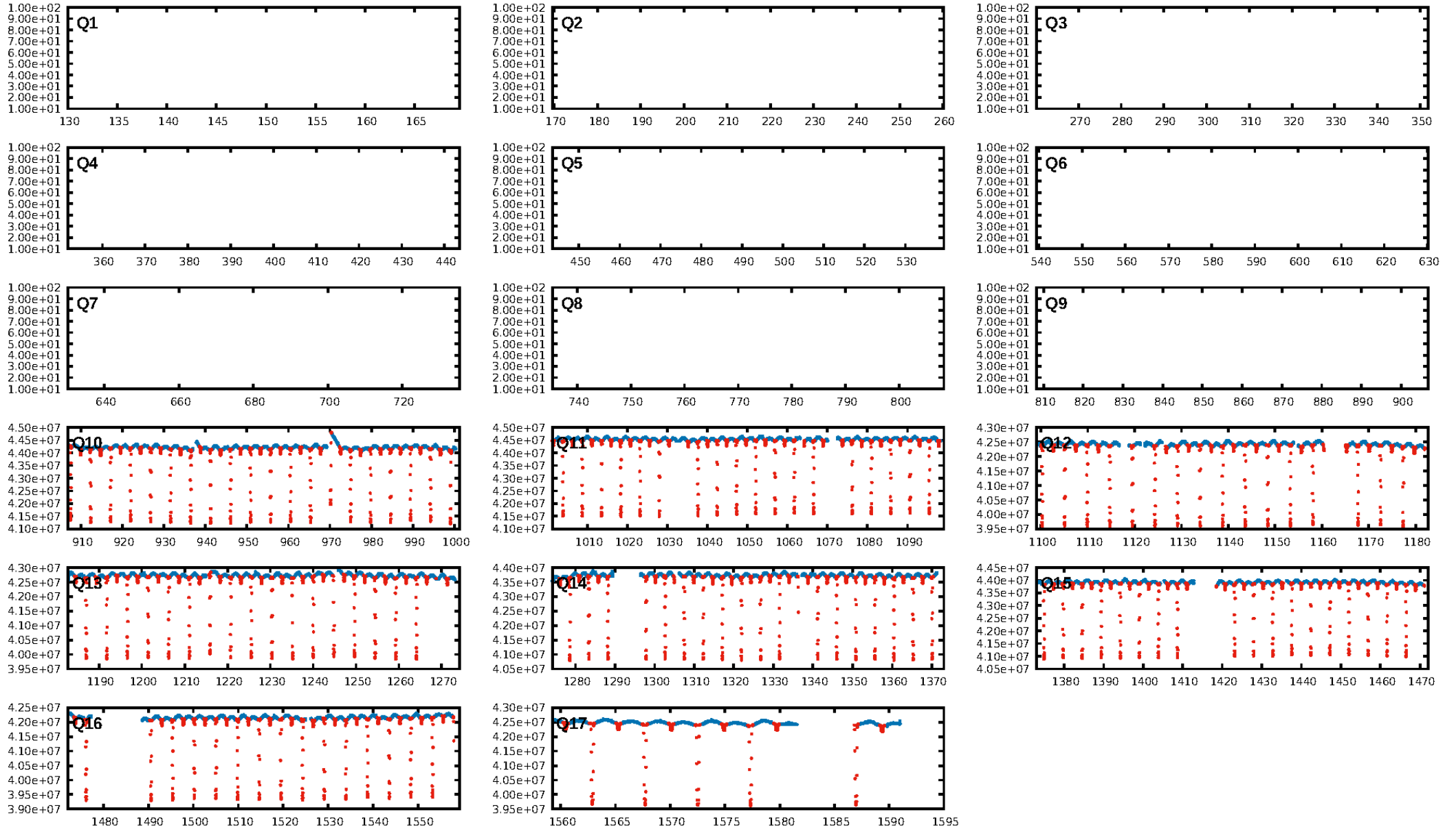
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.74σ]  
ModelChiSquare2-sig: 67.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [125/125]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.0%  
Centroid-so: 0.294 arcsec [9.76σ]  
OotOffset-rm: 0.085 arcsec [1.10σ]  
KicOffset-rm: 0.109 arcsec [1.18σ]  
OotOffset-st: 2/2/2/2 [8]  
KicOffset-st: 2/2/2/2 [8]  
DiffImageQuality-fgm: 1.00 [8/8]  
DiffImageOverlap-fno: 1.00 [8/8]

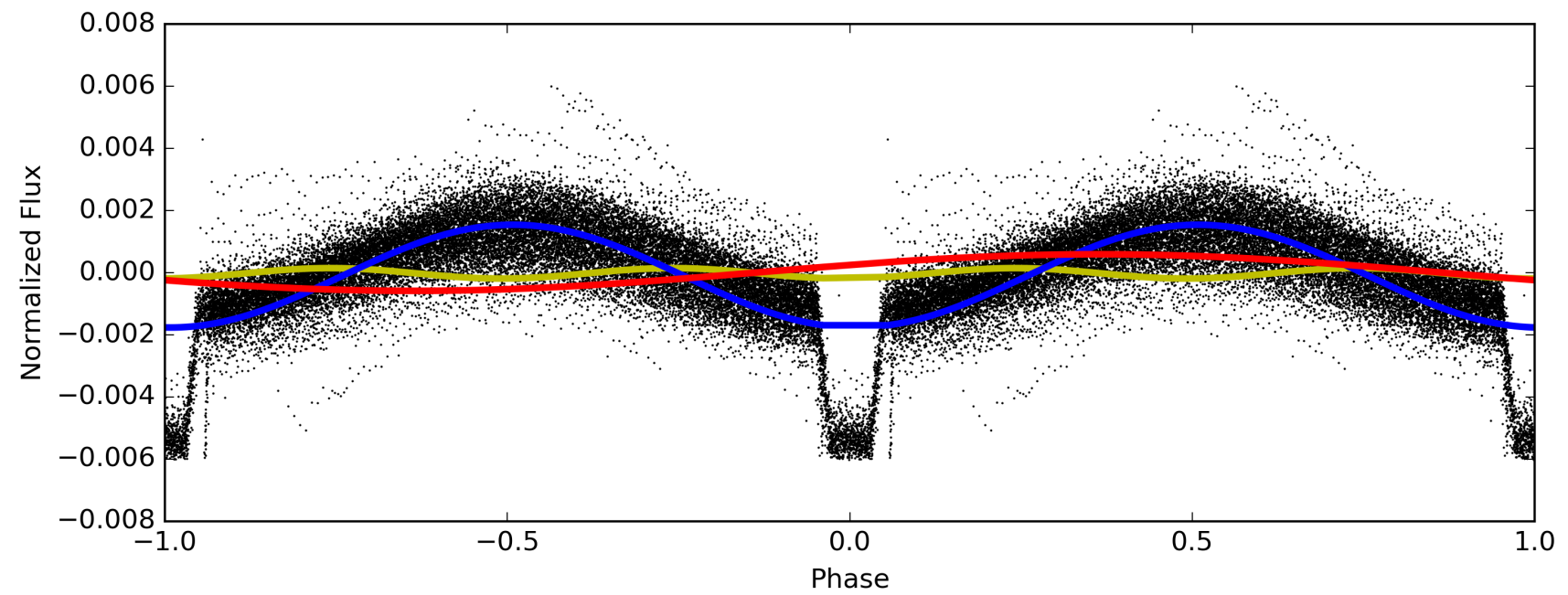
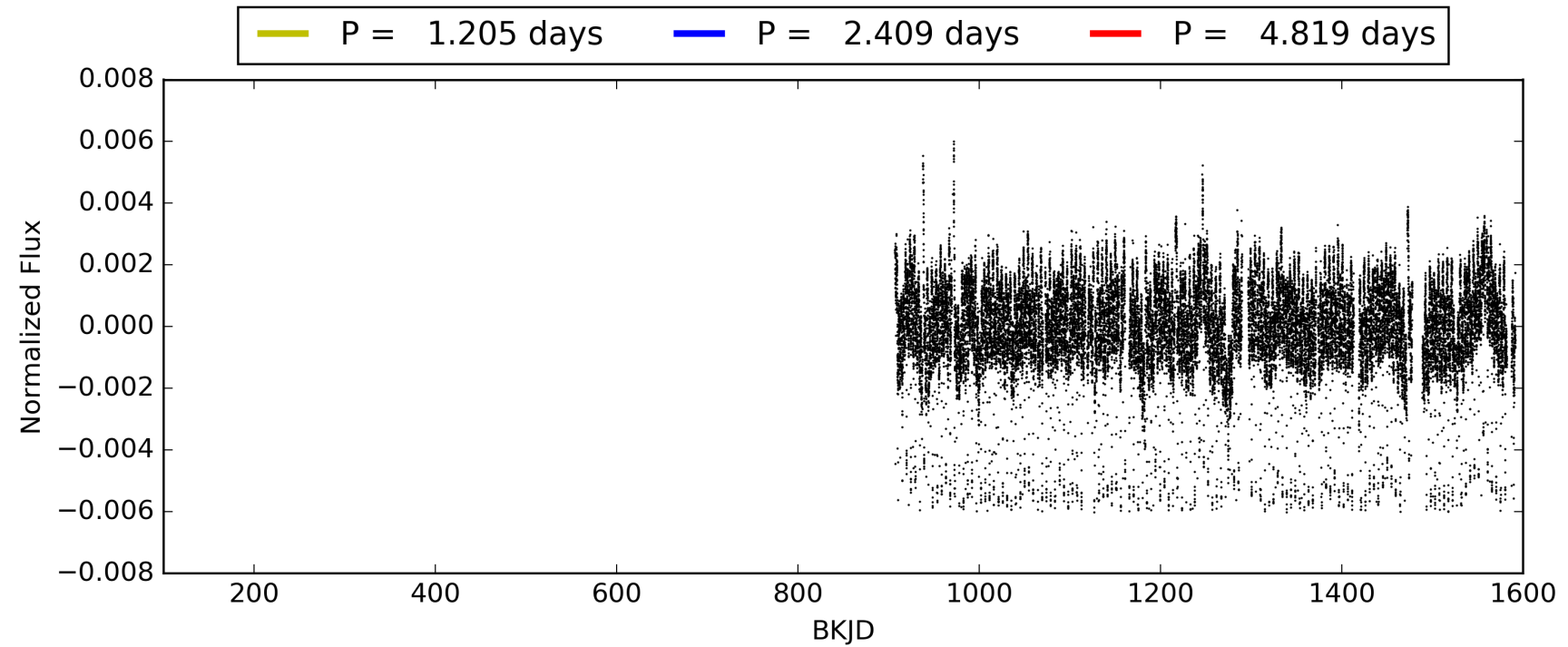
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 04:15:54 Z

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

# TCE 006956216-02, PDC Light Curves



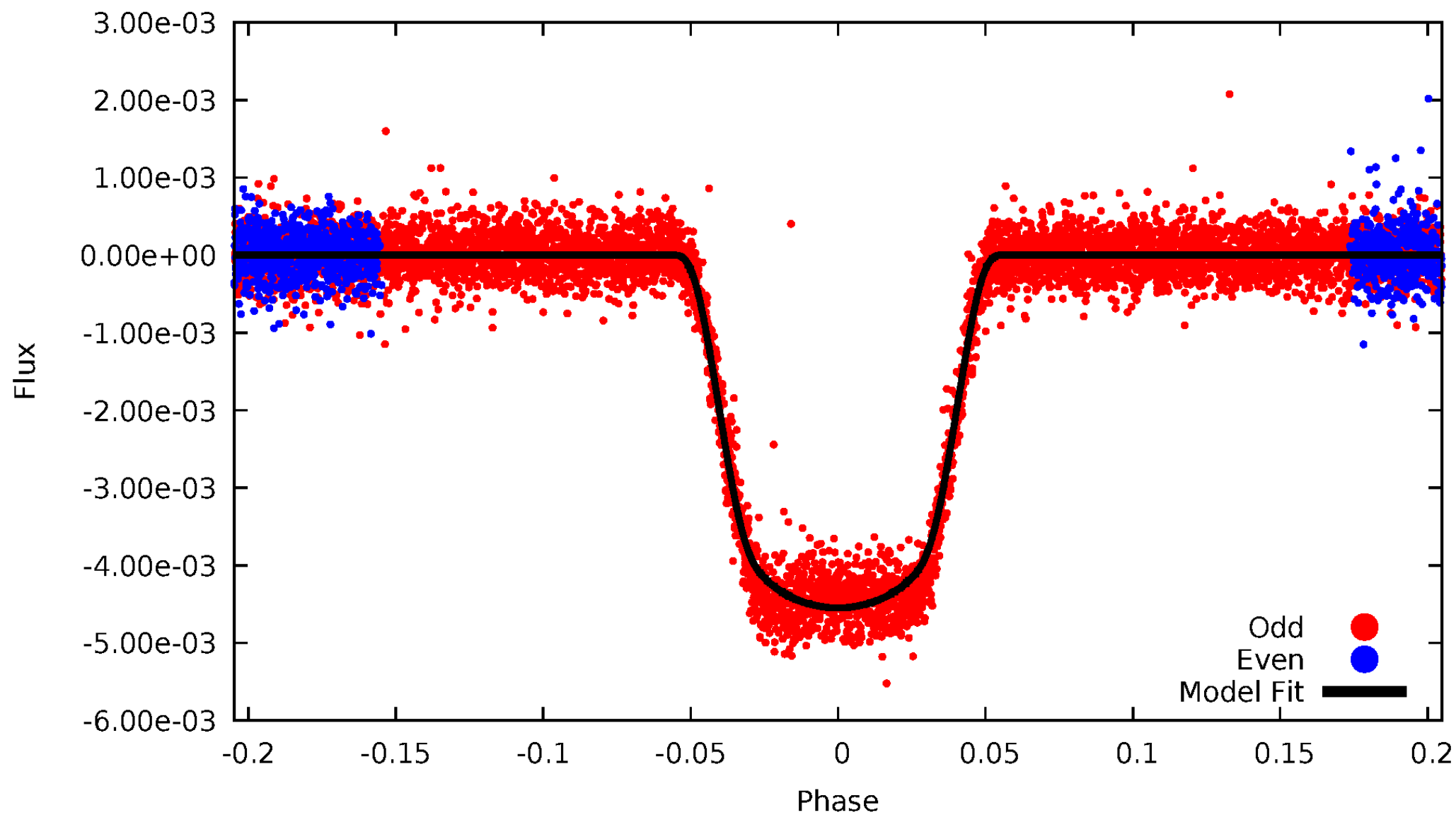
TCE 006956216-02





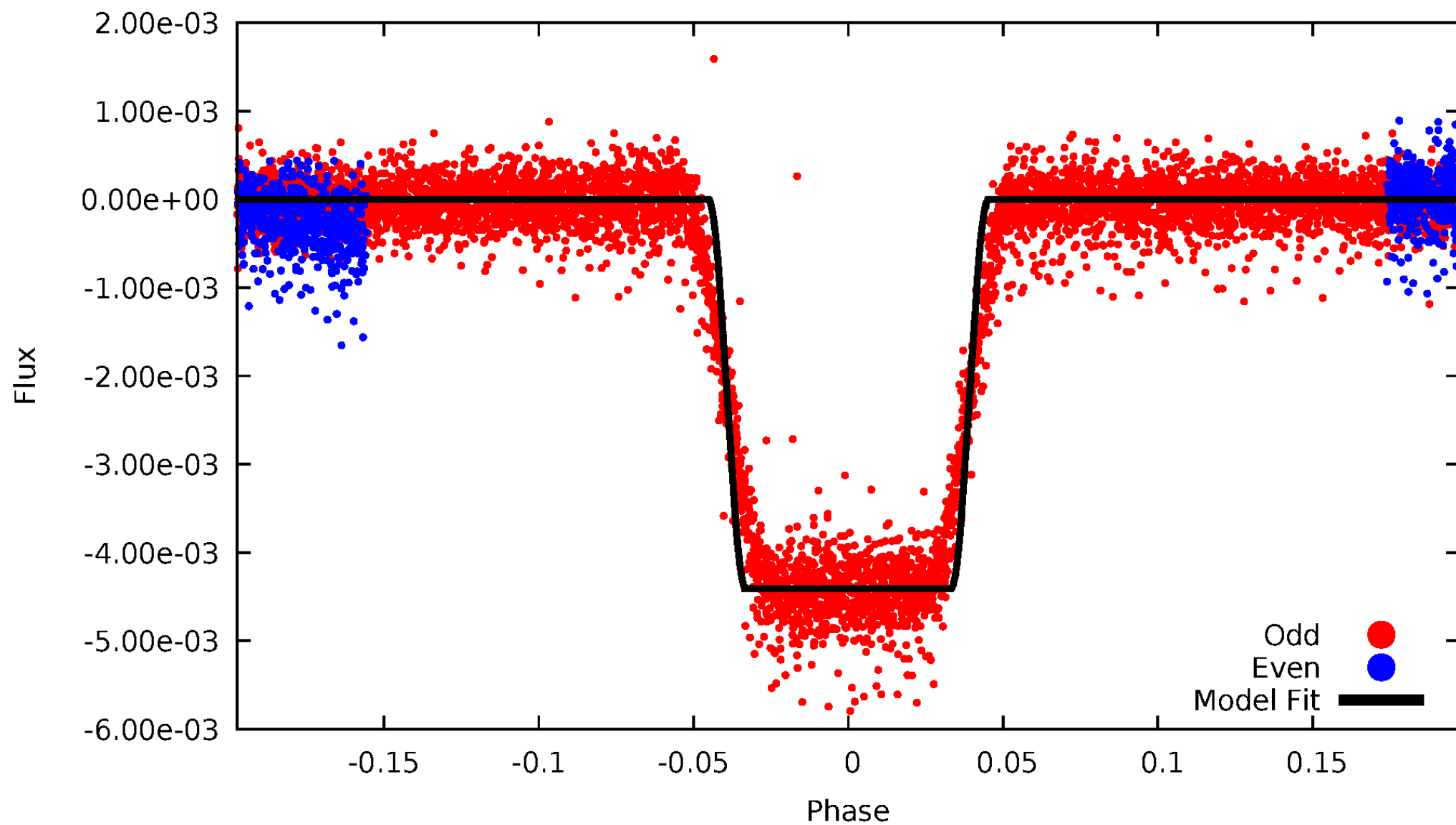
# DV Odd/Even

TCE 006956216-02



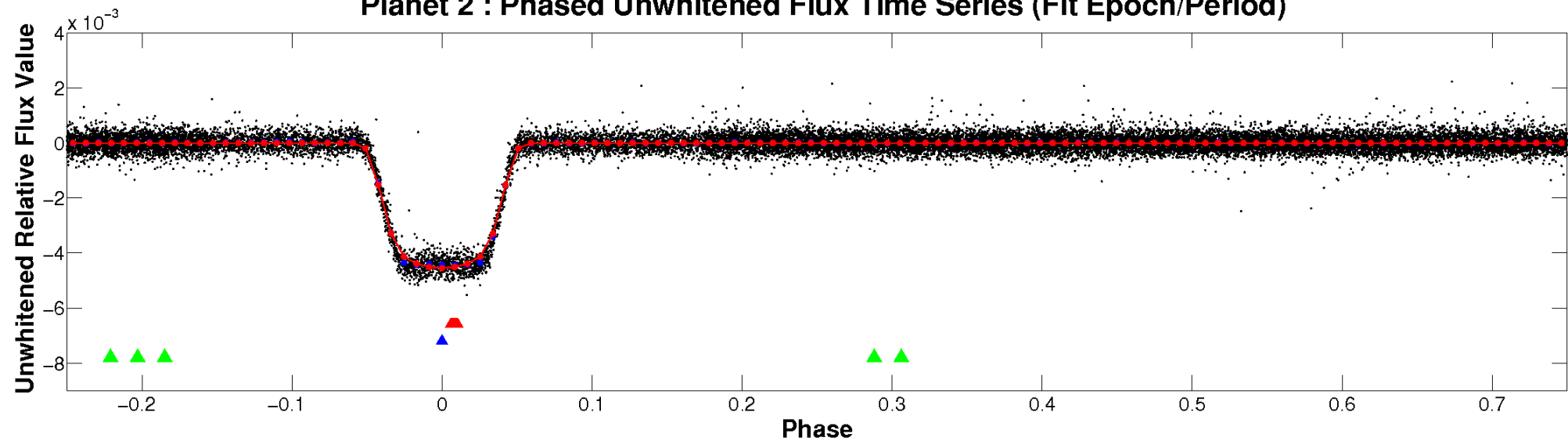
# ALT Odd/Even

TCE 006956216-02

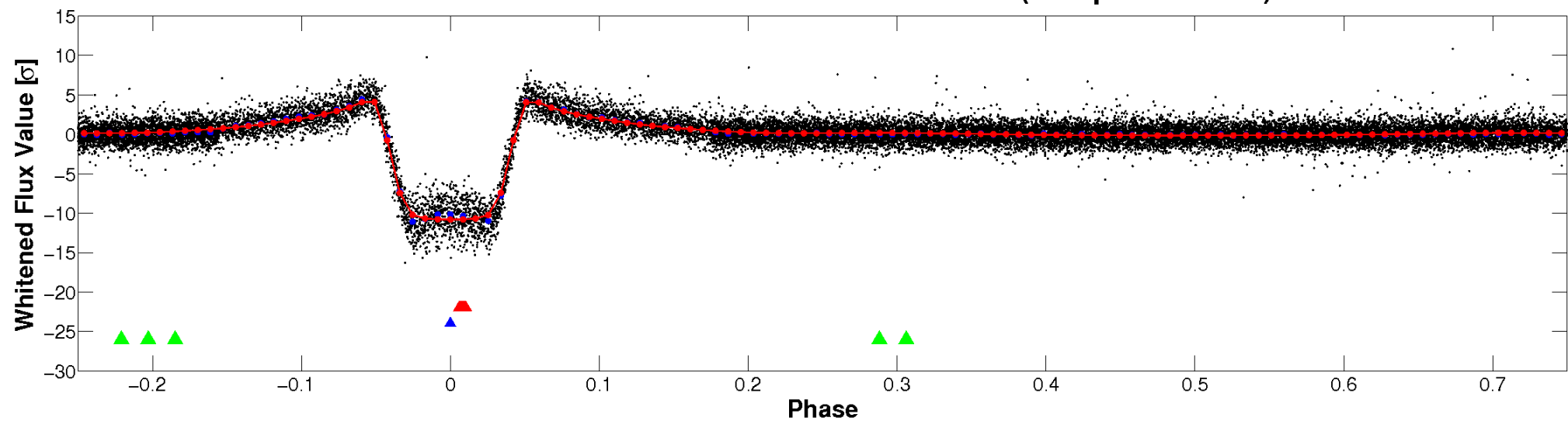


# Non-Whitened Vs. Whitened Light Curve

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

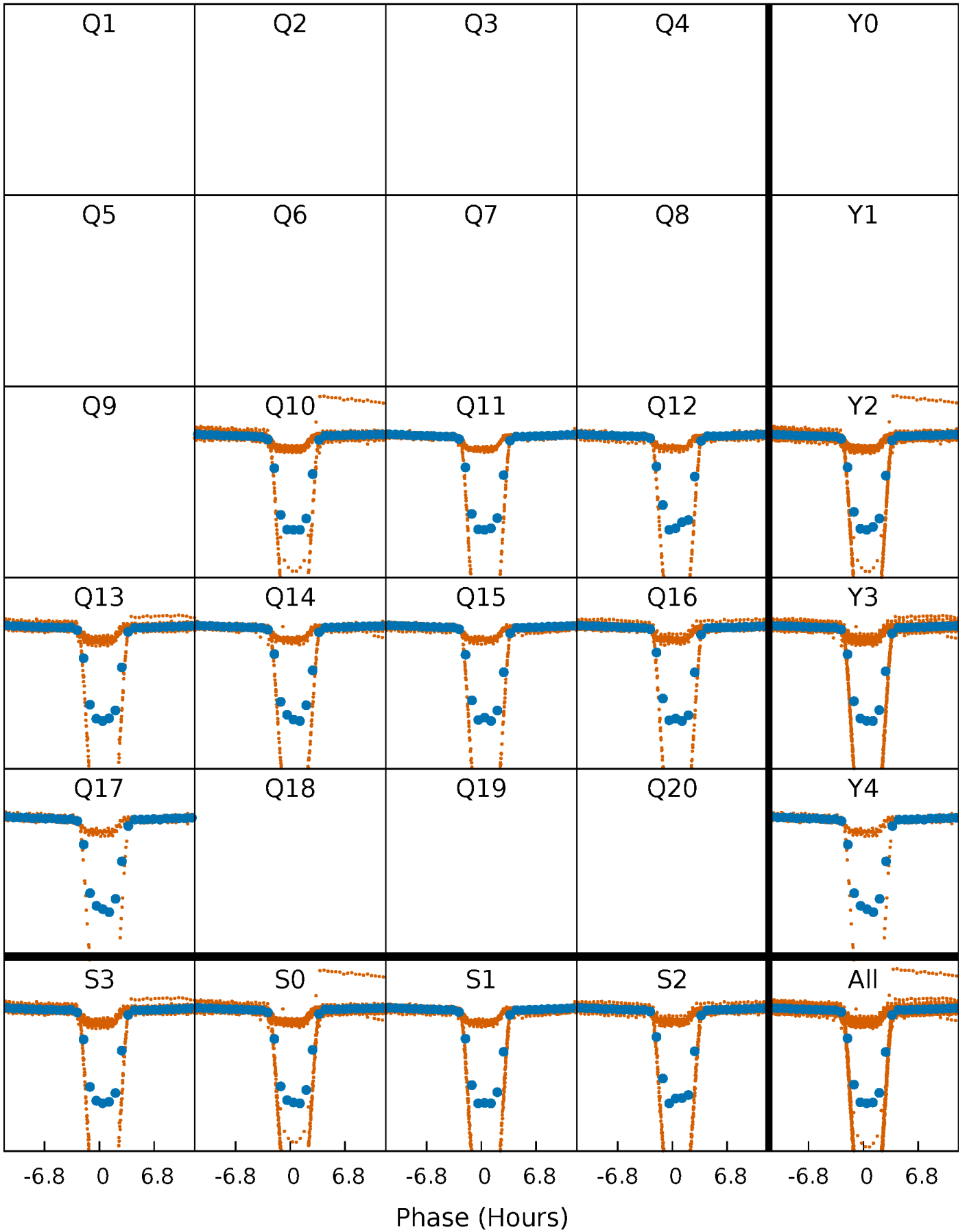


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



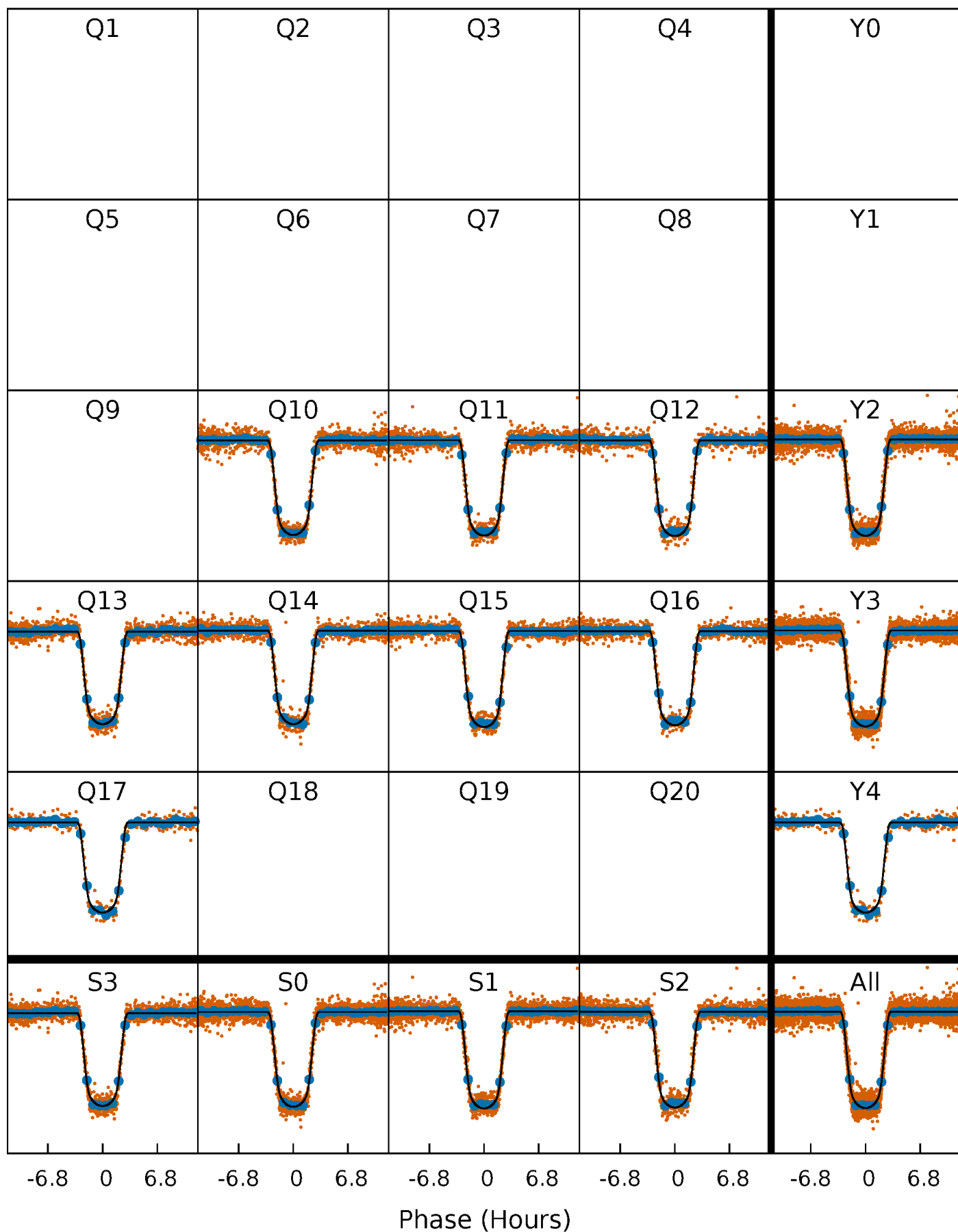
# PDC Quarter-Phased Transit Curves

TCE 006956216-02 P= 2.409413 Days  $T_0=131.663765$  (BKJD)



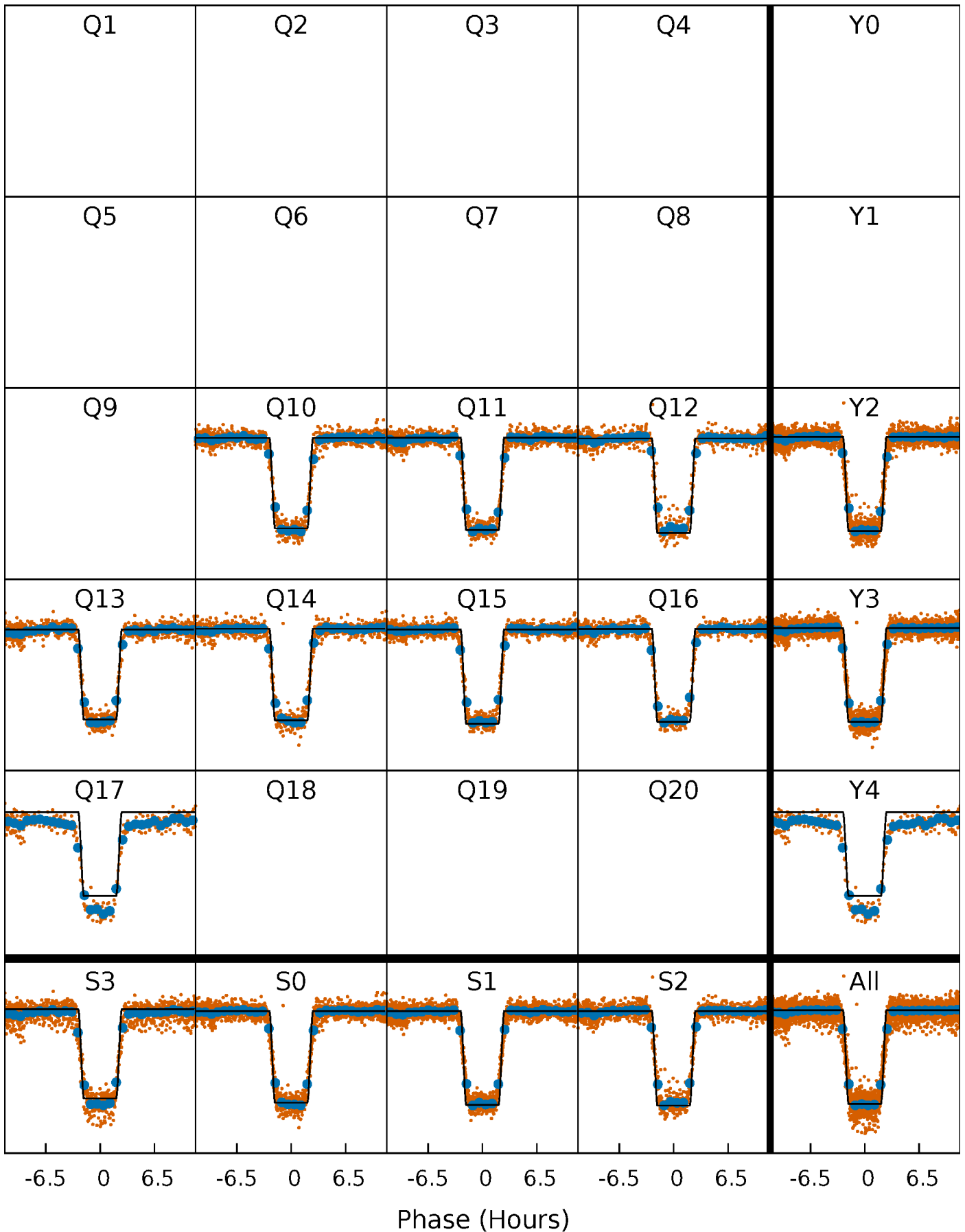
# DV Quarter-Phased Transit Curves

TCE 006956216-02   P= 2.409413 Days    $T_0=131.663765$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

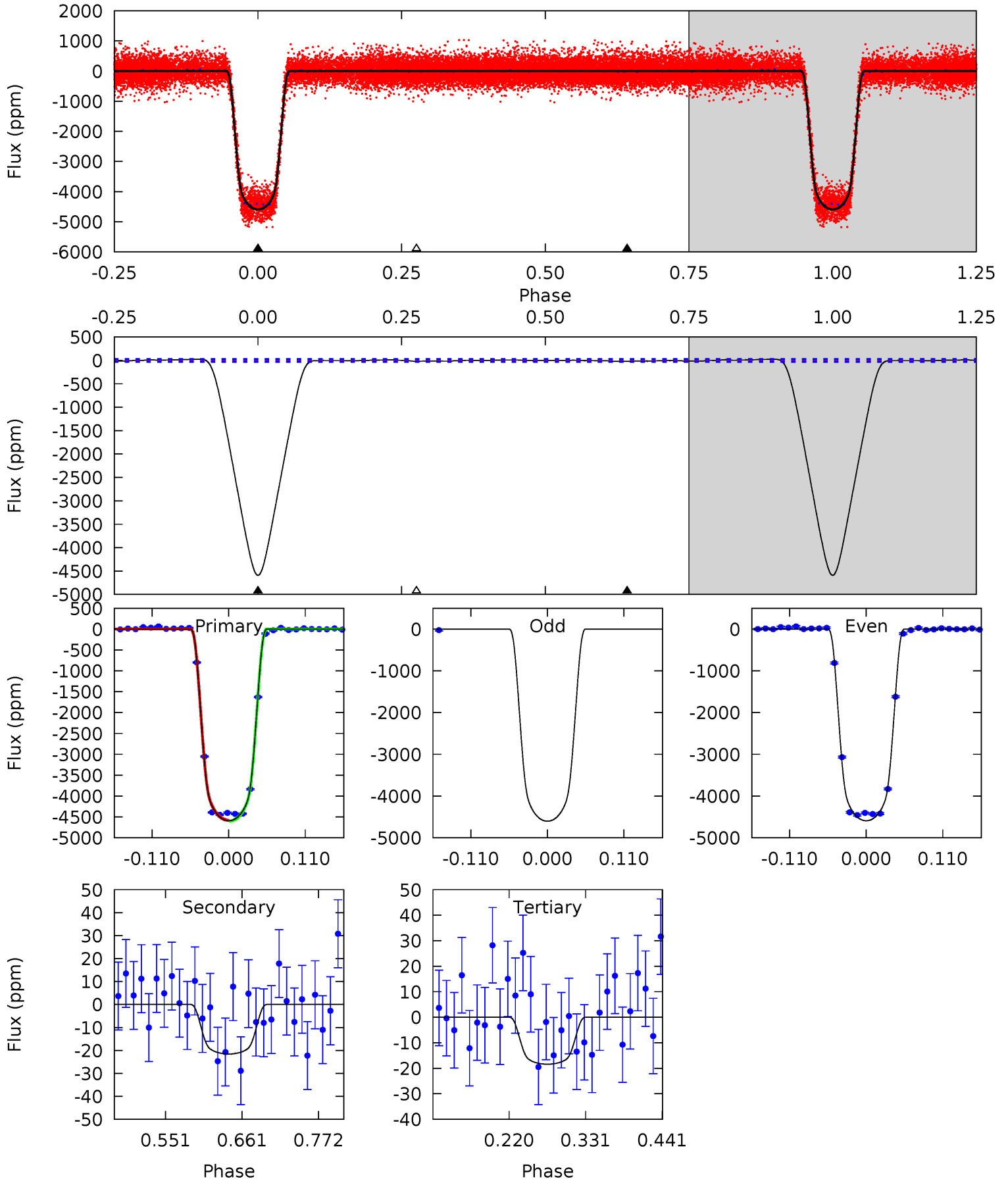
TCE 006956216-02   P= 2.409443 Days    $T_0=131.650721$  (BKJD)



# DV Model-Shift Uniqueness Test

006956216-02, P = 2.409413 Days, E = 131.663765 Days

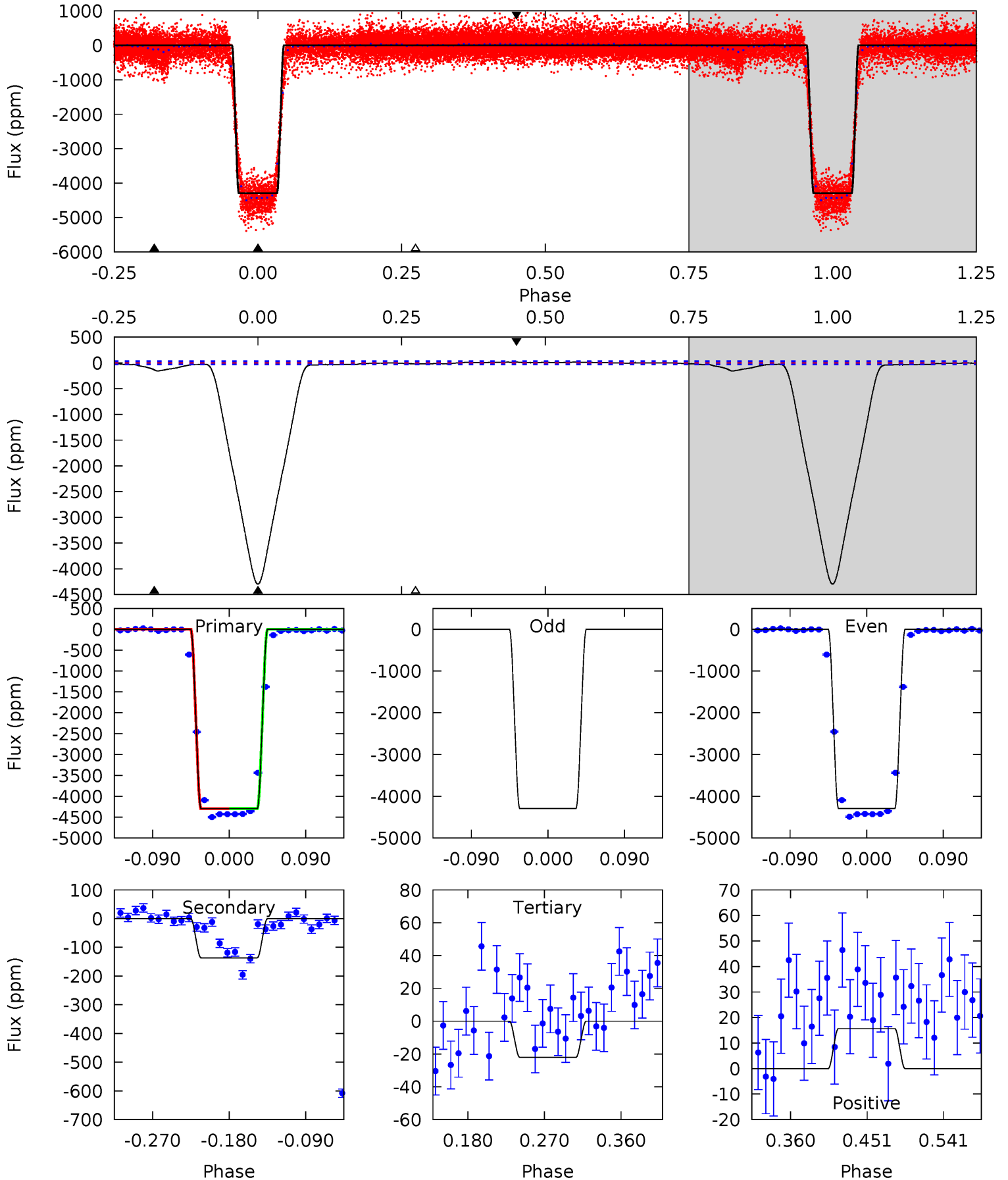
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
716.3	3.36	2.87	0	4.54	1.60	1.38	713.4	716.3	0.49	3.36	0.97	1.00	0.01	1.68



# Alt Model-Shift Uniqueness Test

006956216-02, P = 2.409443 Days, E = 131.650721 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
662.7	21.0	3.40	2.42	4.59	1.69	2.02	659.3	660.3	17.6	18.6	0.20	1.01	0.00	0.36





### Stellar Parameters For KIC 006956216

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6313^{+181}_{-227}$	$3.936^{+0.413}_{-0.138}$	$-0.260^{+0.300}_{-0.300}$	$1.935^{+0.527}_{-0.856}$	$1.179^{+0.201}_{-0.221}$	$0.229^{+0.731}_{-0.093}$
	+3%/-4%	+10%/-4%	+115%/-115%	+27%/-44%	+17%/-19%	+319%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 006956216-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-22 \pm 6$	$14.19^{+2.45}_{-3.12}$	$2728^{+227}_{-309}$	$-2807^{+254}_{-158}$	$0.083^{+0.055}_{-0.029}$
Alt.	$-136 \pm 6$	$13.55^{+2.27}_{-3.11}$	$2729^{+241}_{-314}$	$2902^{+156}_{-196}$	$0.576^{+0.341}_{-0.146}$

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

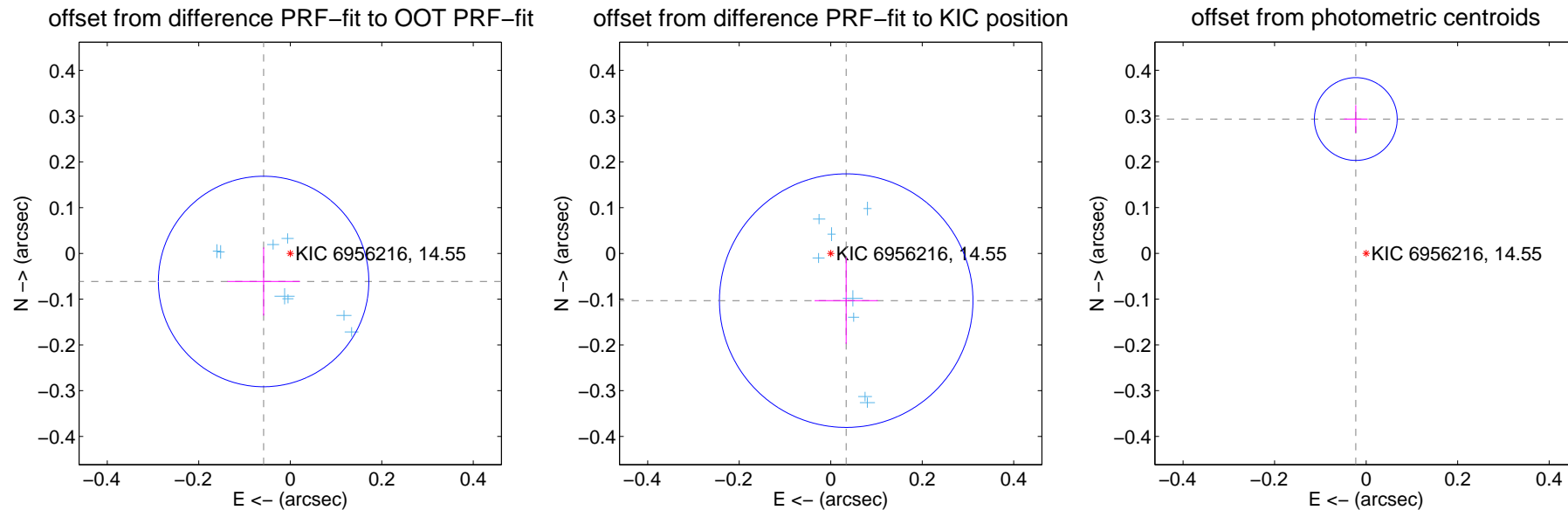
## DV Centroid Data

Supplemental centroid analysis for 006956216-02. Kepler magnitude: 14.55. Transit SNR 353.36

There are 8 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.085 \pm 0.077$	1.10	$0.058 \pm 0.079$	$-0.061 \pm 0.074$
PRF-fit source offset from KIC position	$0.109 \pm 0.092$	1.18	$-0.034 \pm 0.069$	$-0.103 \pm 0.095$
photometric centroid source offset	$0.29 \pm 0.03$	9.76	$0.02 \pm 0.03$	$0.29 \pm 0.03$



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.

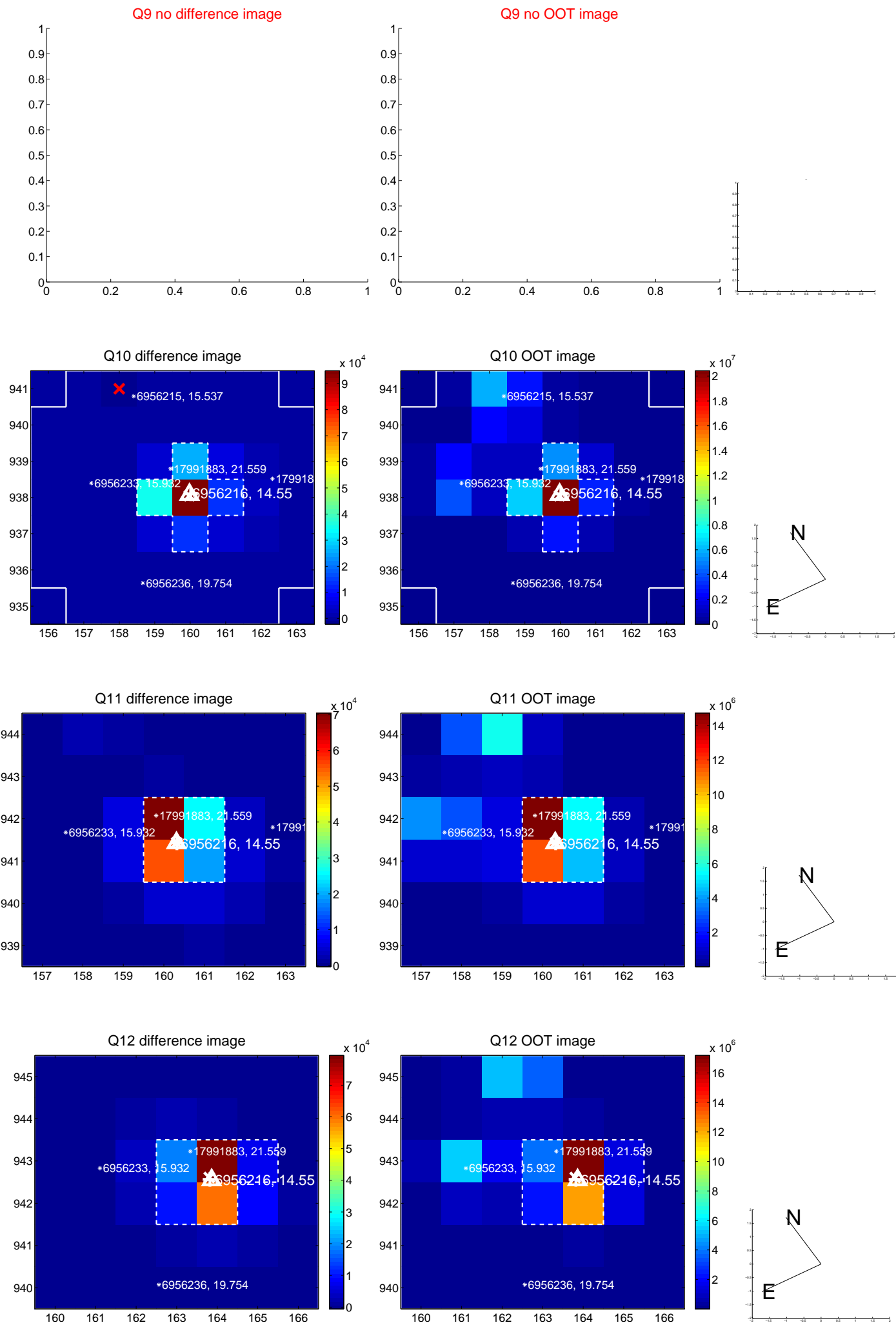
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



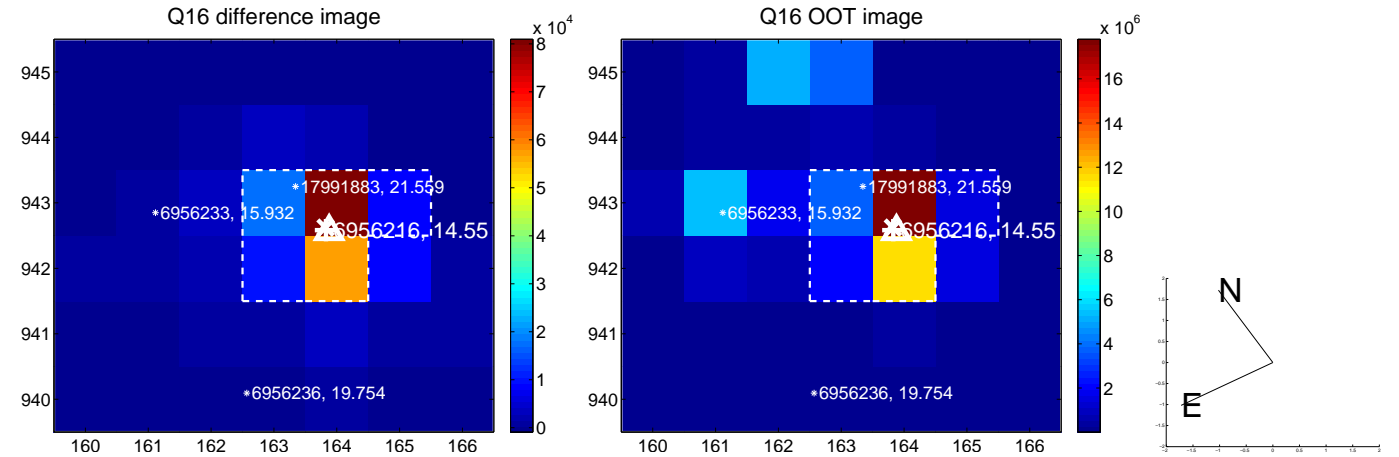
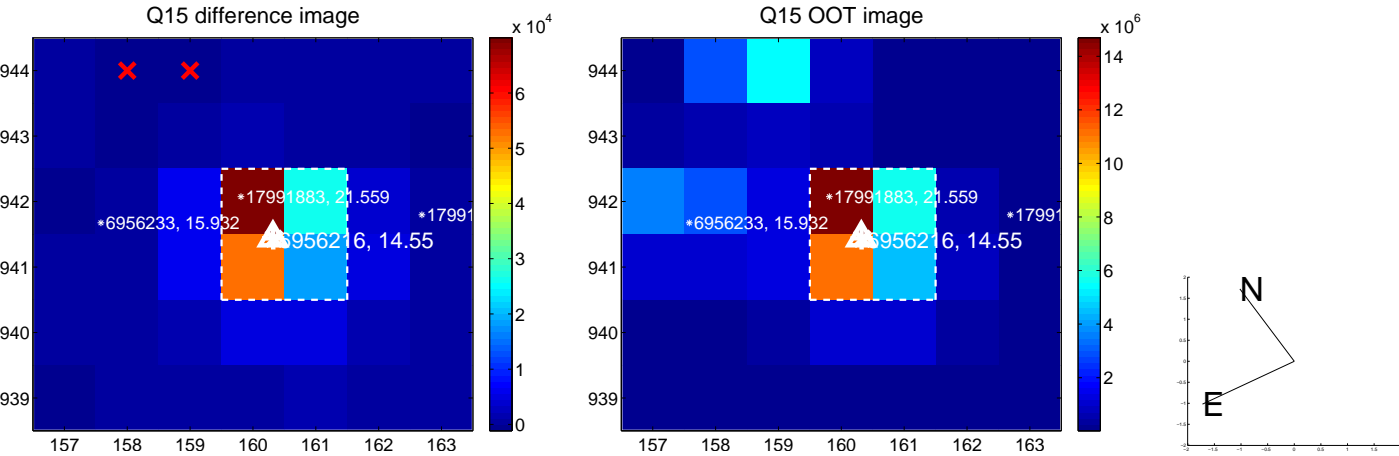
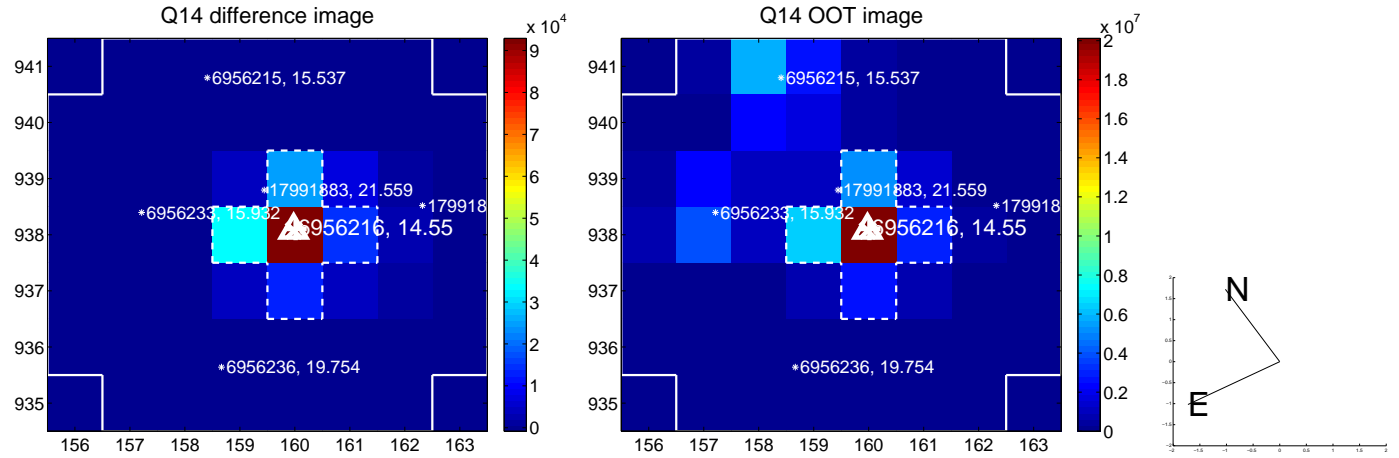
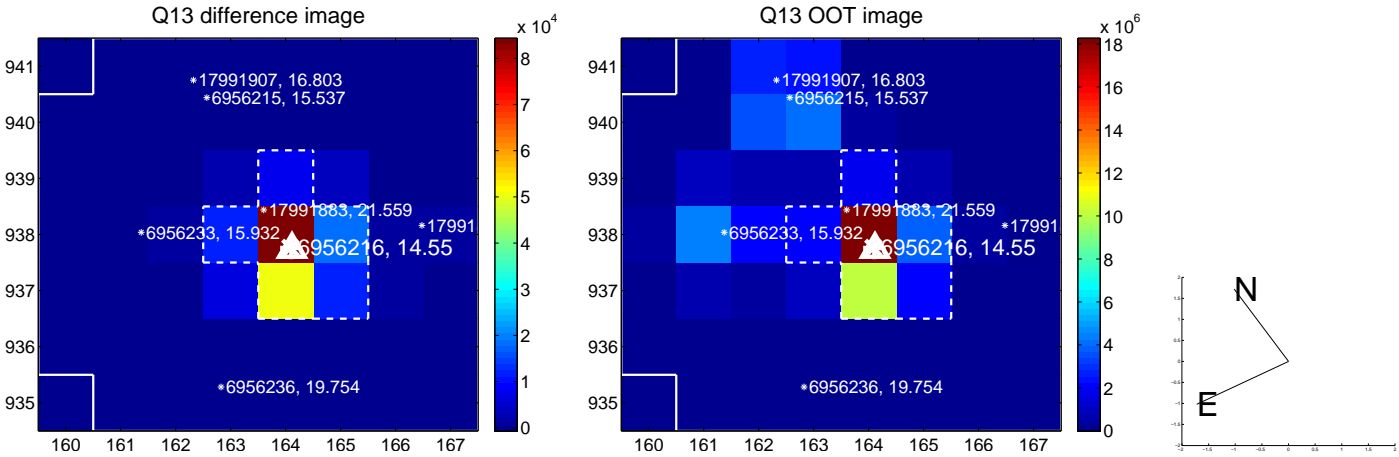
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



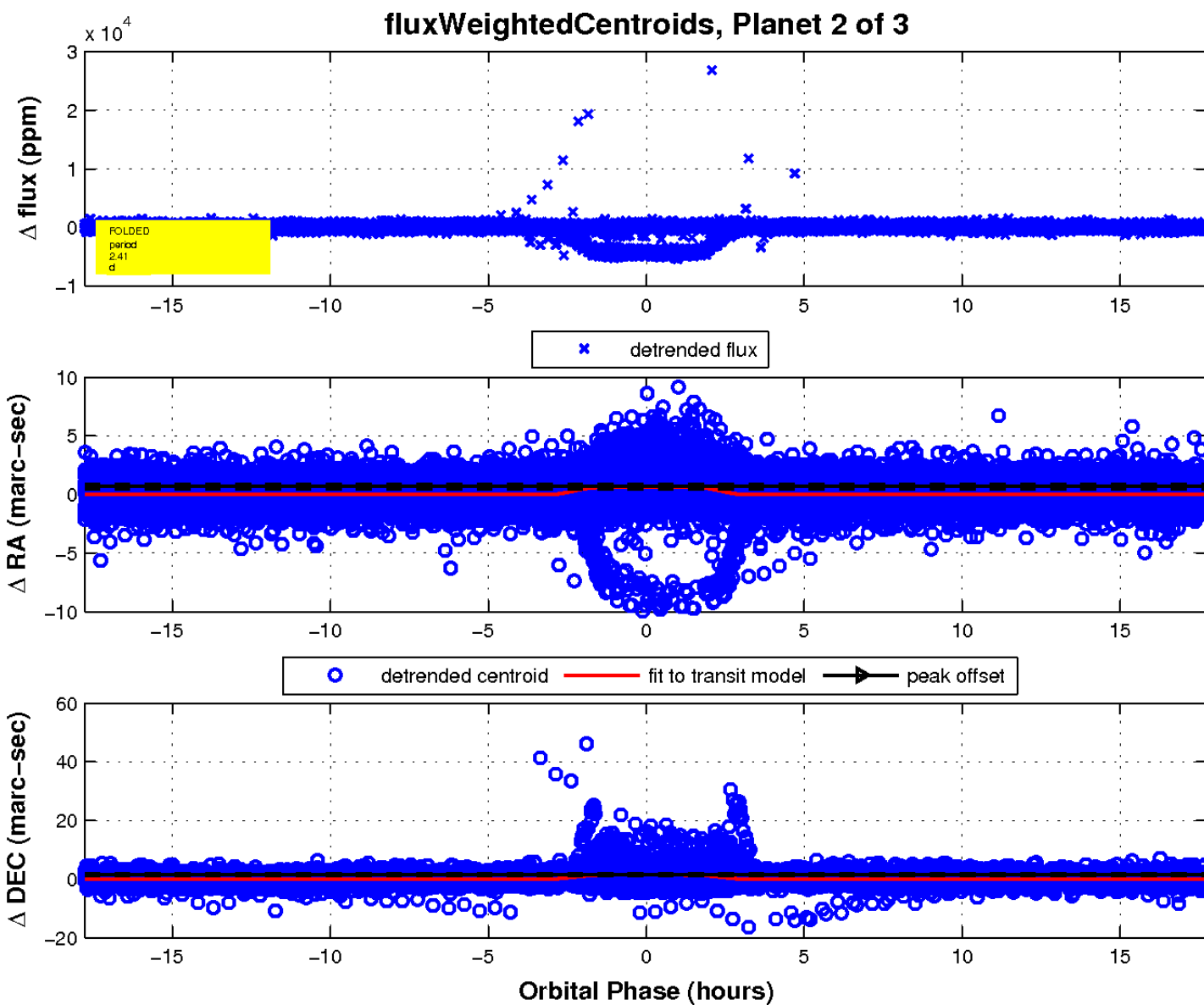
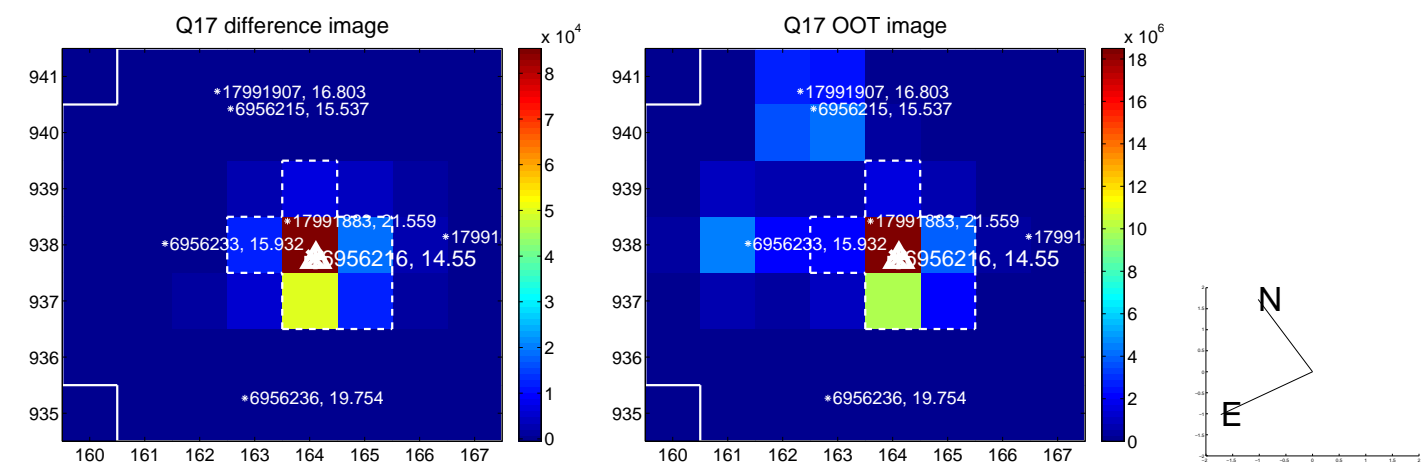
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

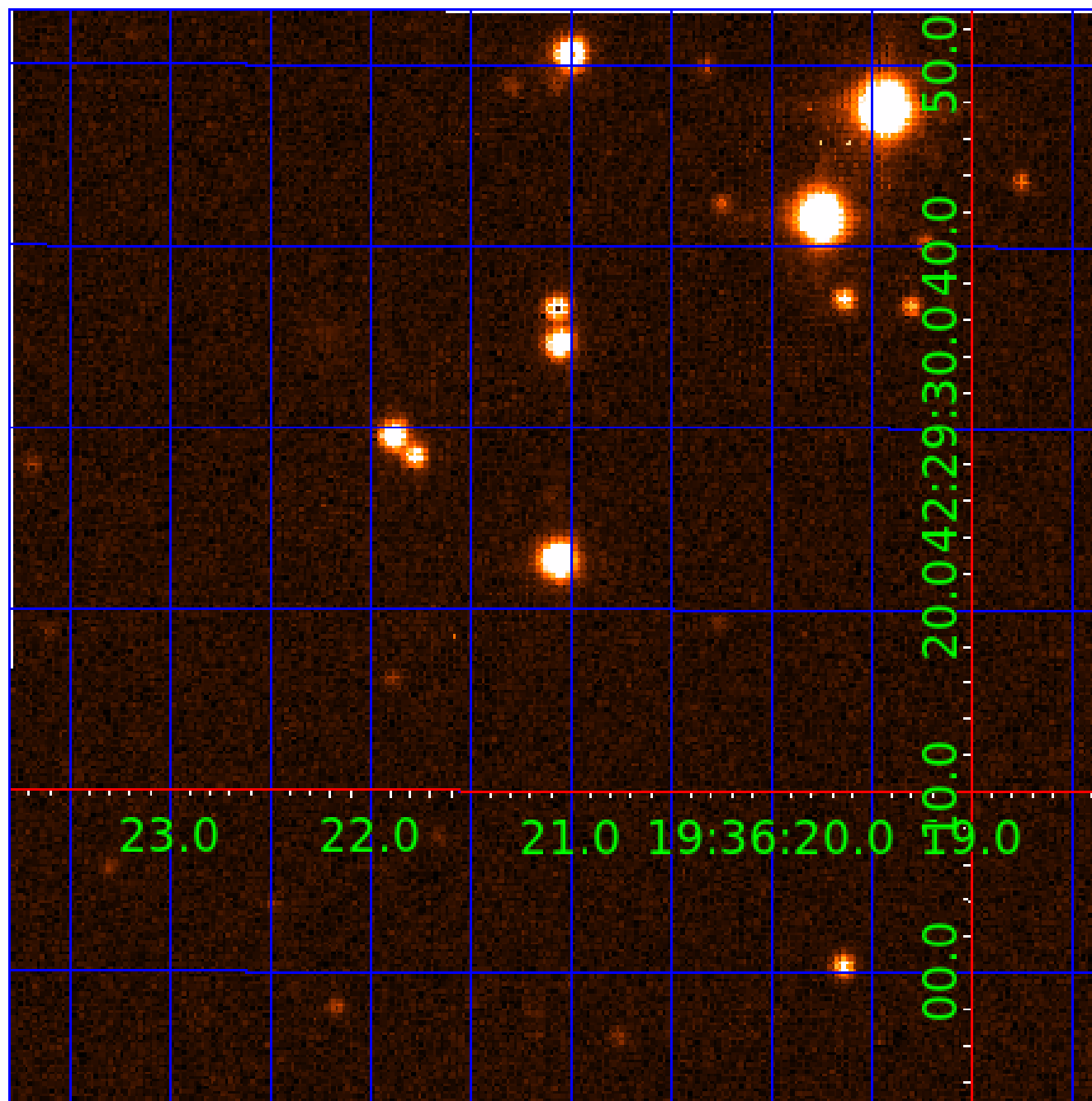


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006956216

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006956216-01	OBS	3604.01	4.818863	131.677834	65087.6	6.208	4905.9	4293.3	1.94	6313	51.06	1531.20
006956216-02	OBS	No	2.409413	131.663765	4548.8	5.922	366.0	353.4	1.94	6313	14.73	3858.42
006956216-03	OBS	No	302.403128	319.065715	431.3	4.913	10.1	5.2	1.94	6313	4.36	6.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006956216-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006956216-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006956216-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_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.

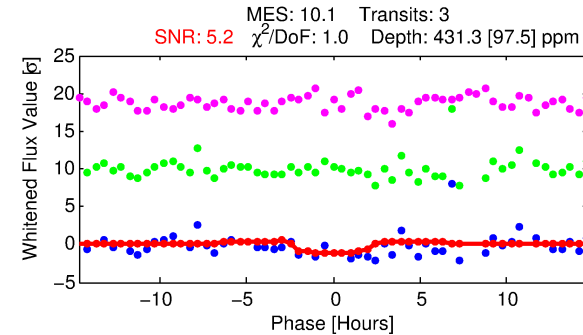
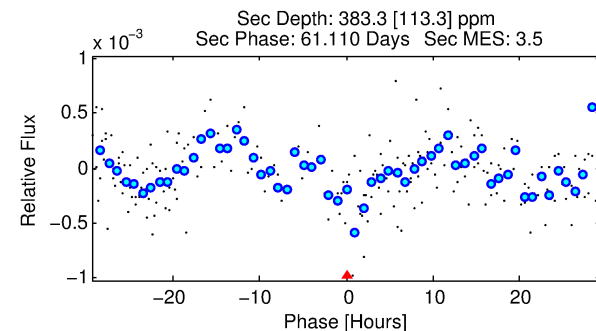
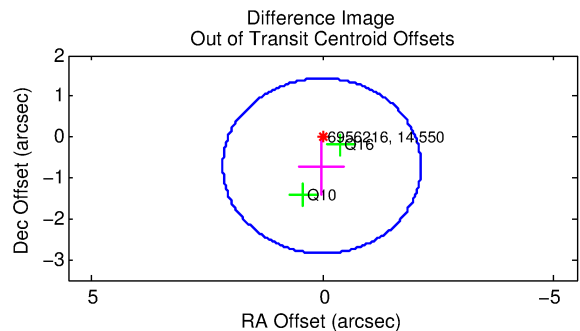
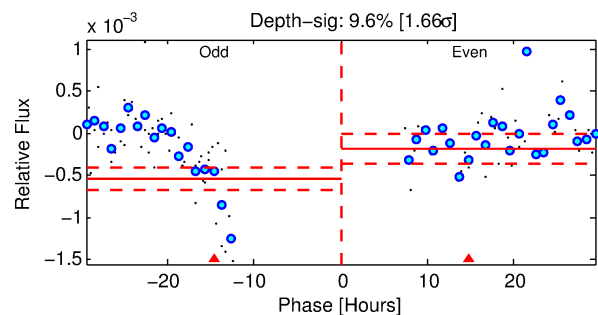
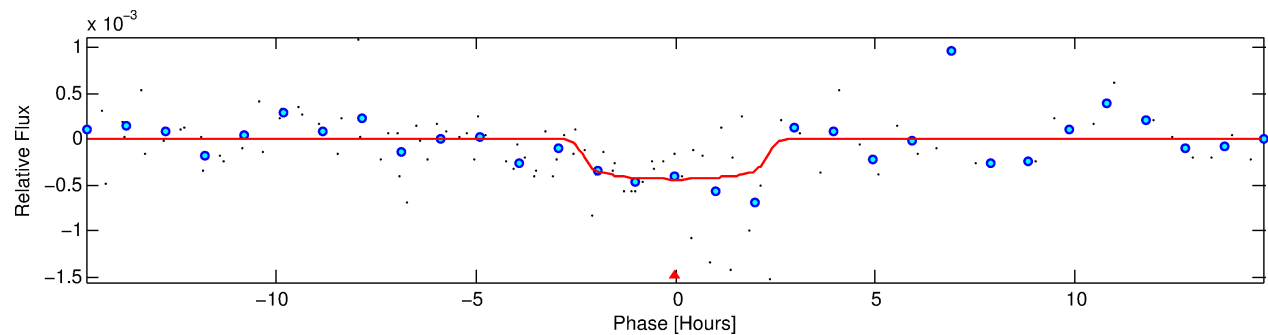
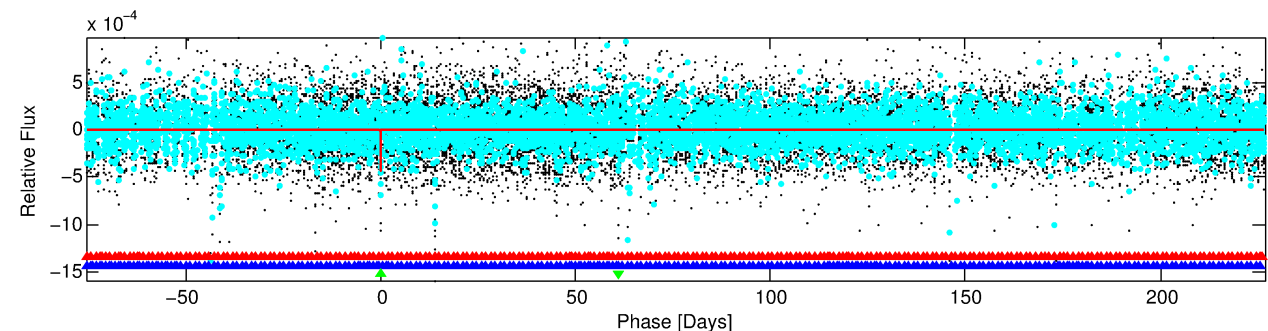
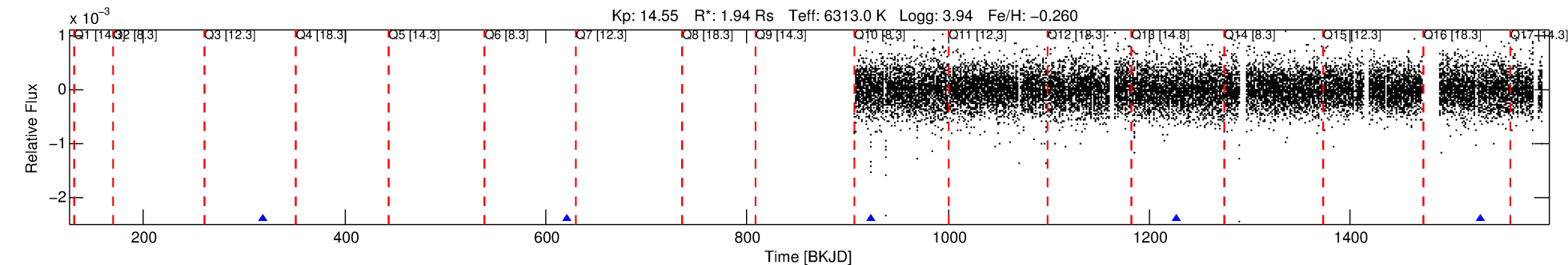
## Ephemeris Match Information For 006956216-03

No Significant Match Found

# DV One-Page Summary

KIC: 6956216 Candidate: 3 of 3 Period: 302.403 d  
KOI: K03604 Corr: No Ephemeris Match

Kp: 14.55 R\*: 1.94 Rs Teff: 6313.0 K Logg: 3.94 Fe/H: -0.260



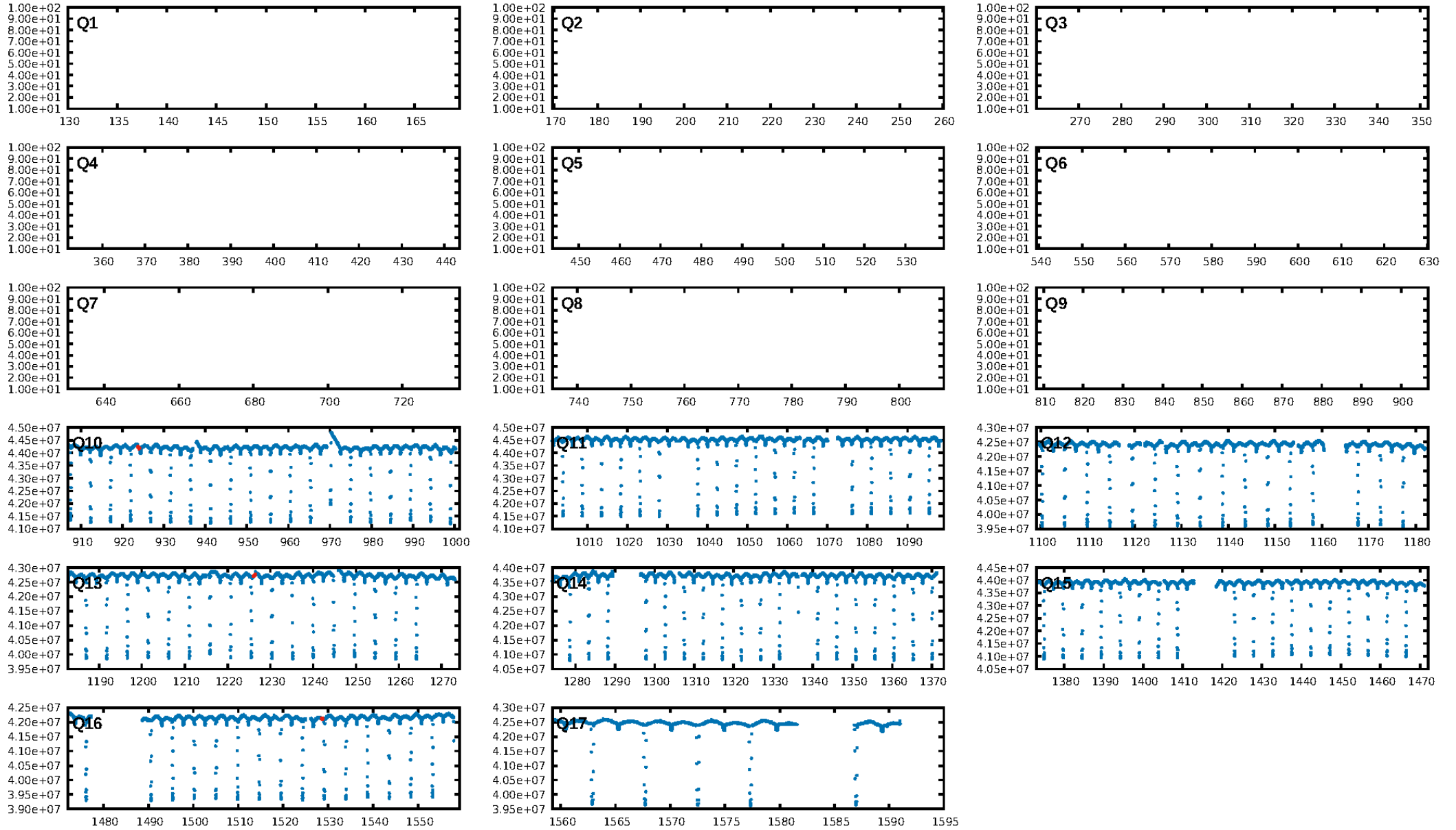
## DV Fit Results:

Period = 302.40313 [0.01181] d  
Epoch = 319.0657 [0.0349] BKJD  
Rp/R\* = 0.0207 [0.0271]  
a/R\* = 325.37 [2288.14]  
b = 0.75 [4.10]  
Seff = 6.14 [4.38]  
Teff = 401 [72] K  
Rp = 4.36 [6.03] Re  
a = 0.9316 [0.4033] AU  
Ag = 9613.77 [26234.34] [0.37σ]  
Teffp = 6145 [4058] K [1.42σ]

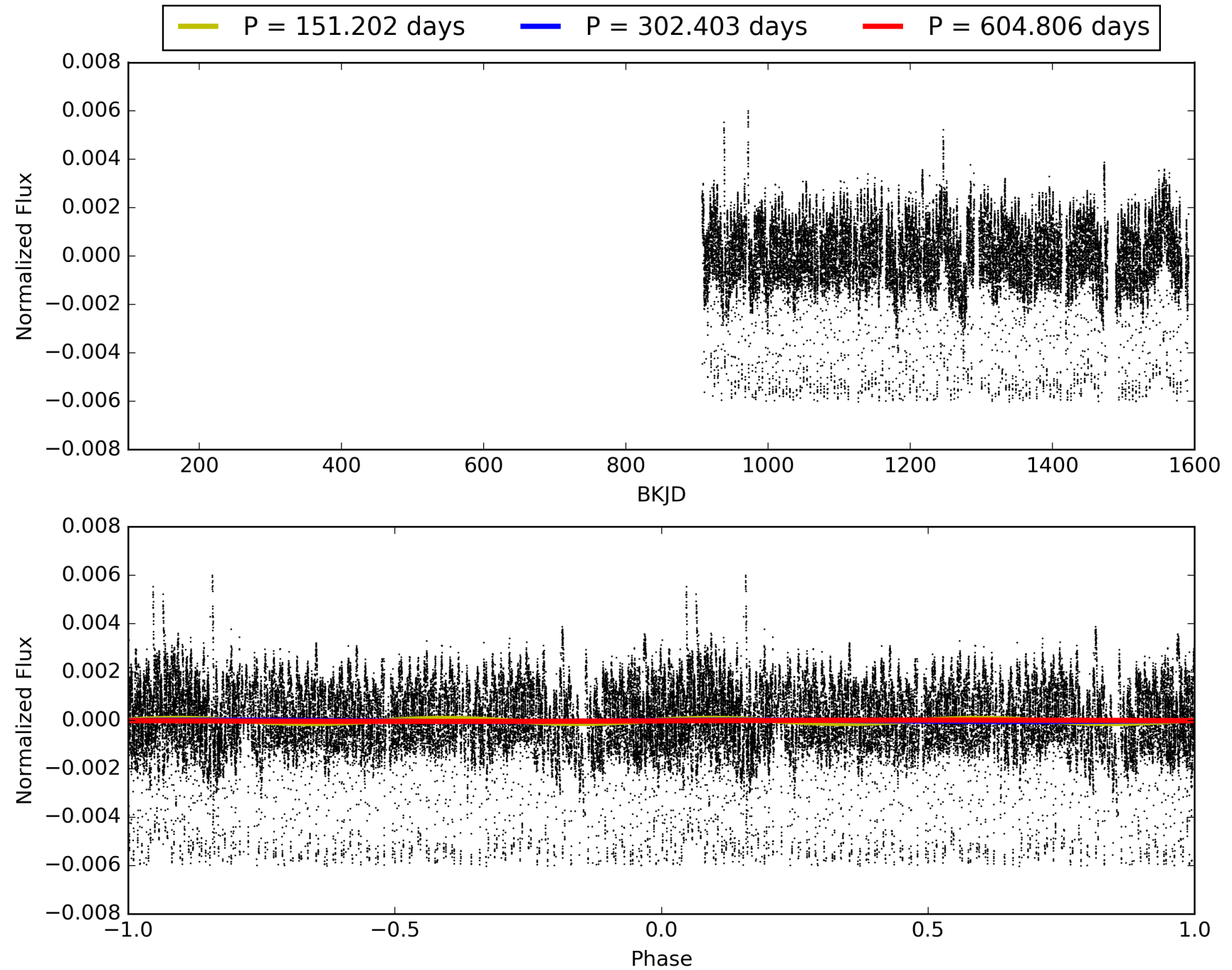
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [902.17σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 21.2%  
ModelChiSquareGof-sig: 93.9%  
**Bootstrap-pfa: 4.22e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 61.2%  
Centroid-so: 0.602 arcsec [0.29σ]  
OotOffset-rm: 0.707 arcsec [0.99σ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-rm: 0.751 arcsec [1.31σ]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.00 [0/2]

# TCE 006956216-03, PDC Light Curves

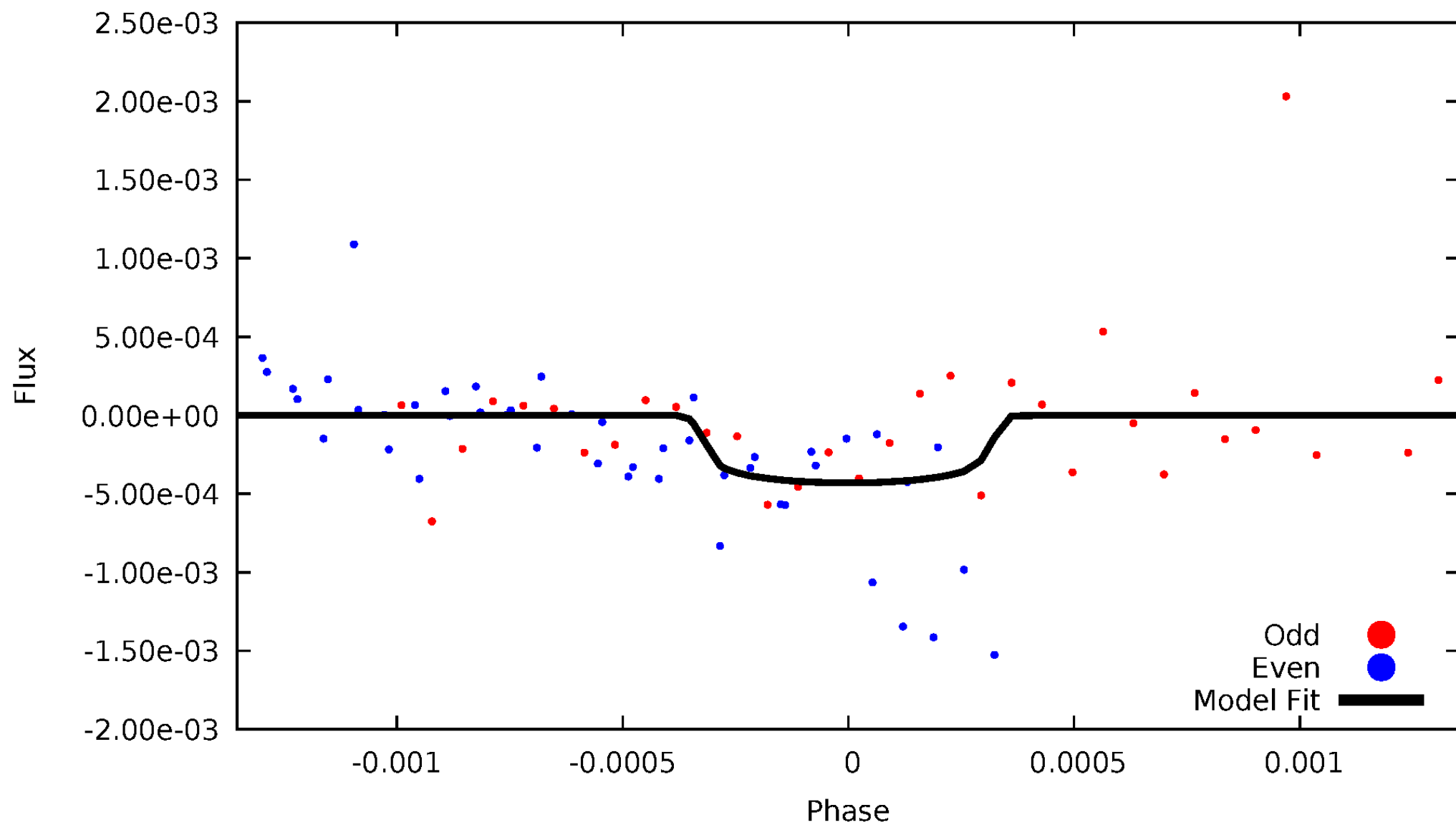


# TCE 006956216-03



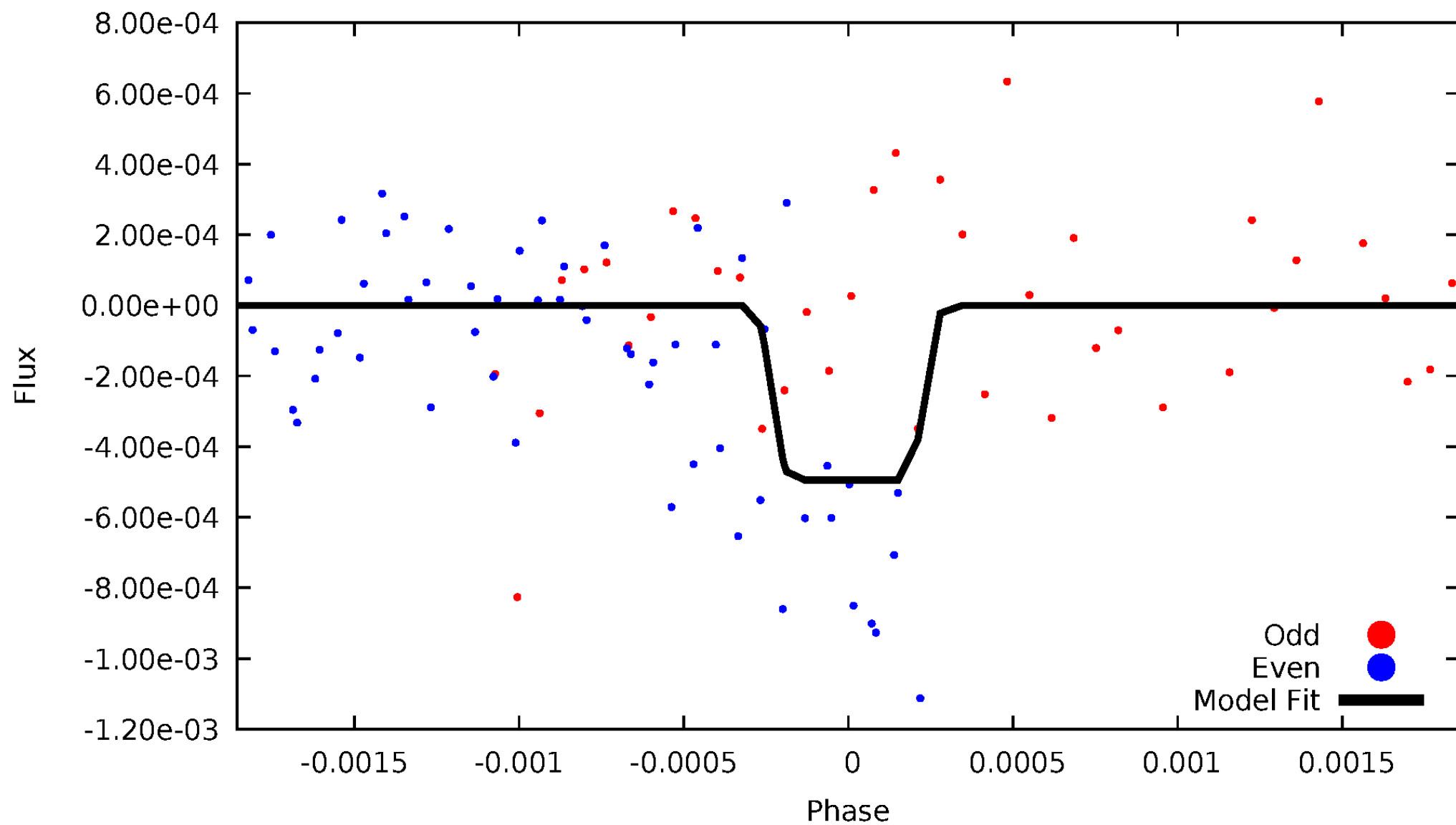
# DV Odd/Even

TCE 006956216-03



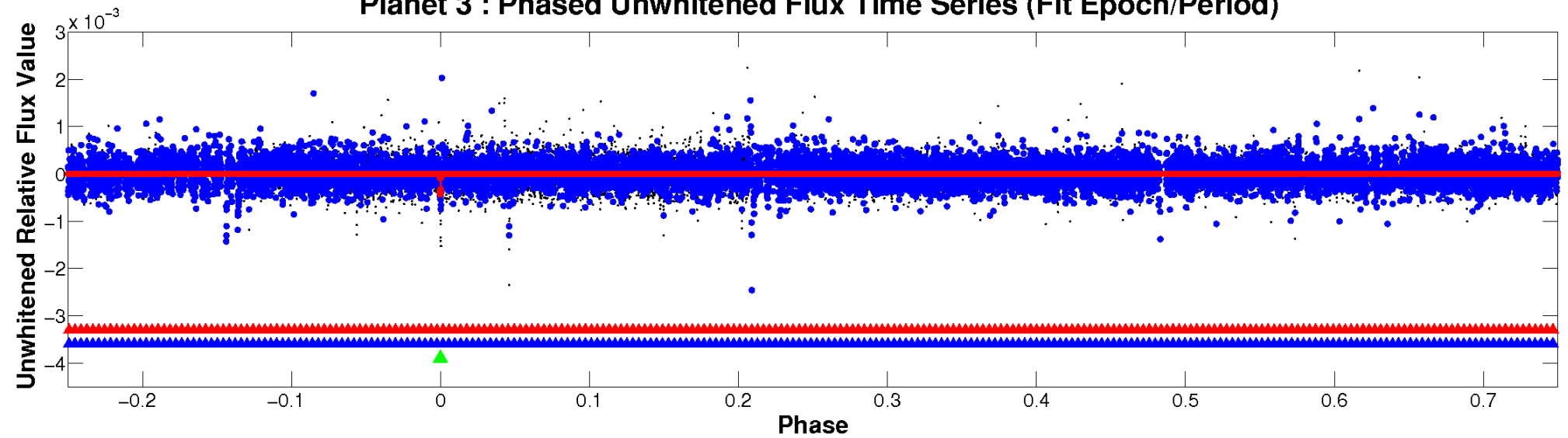
# ALT Odd/Even

TCE 006956216-03

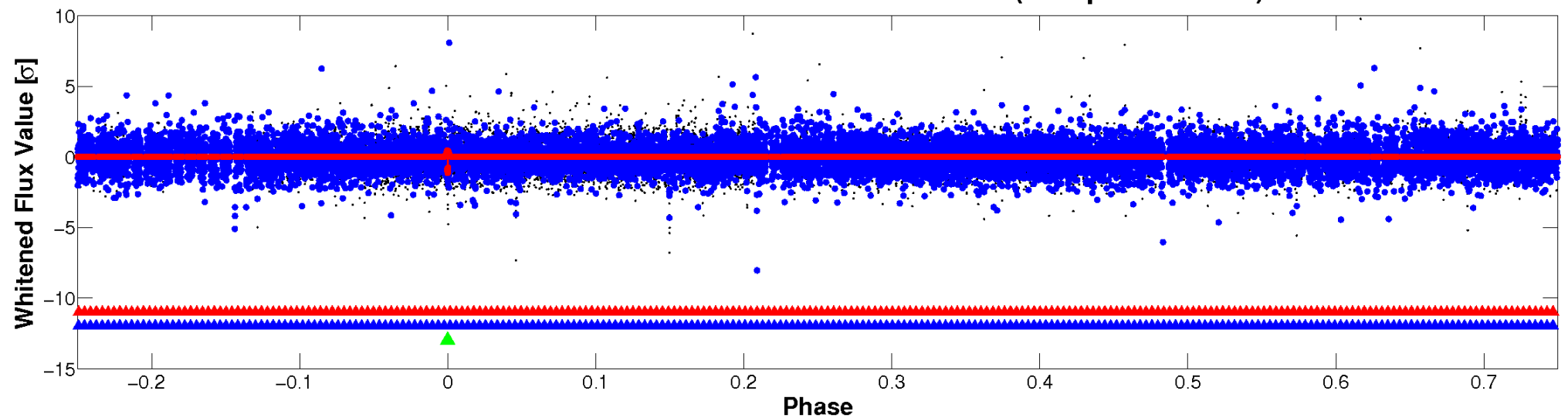


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

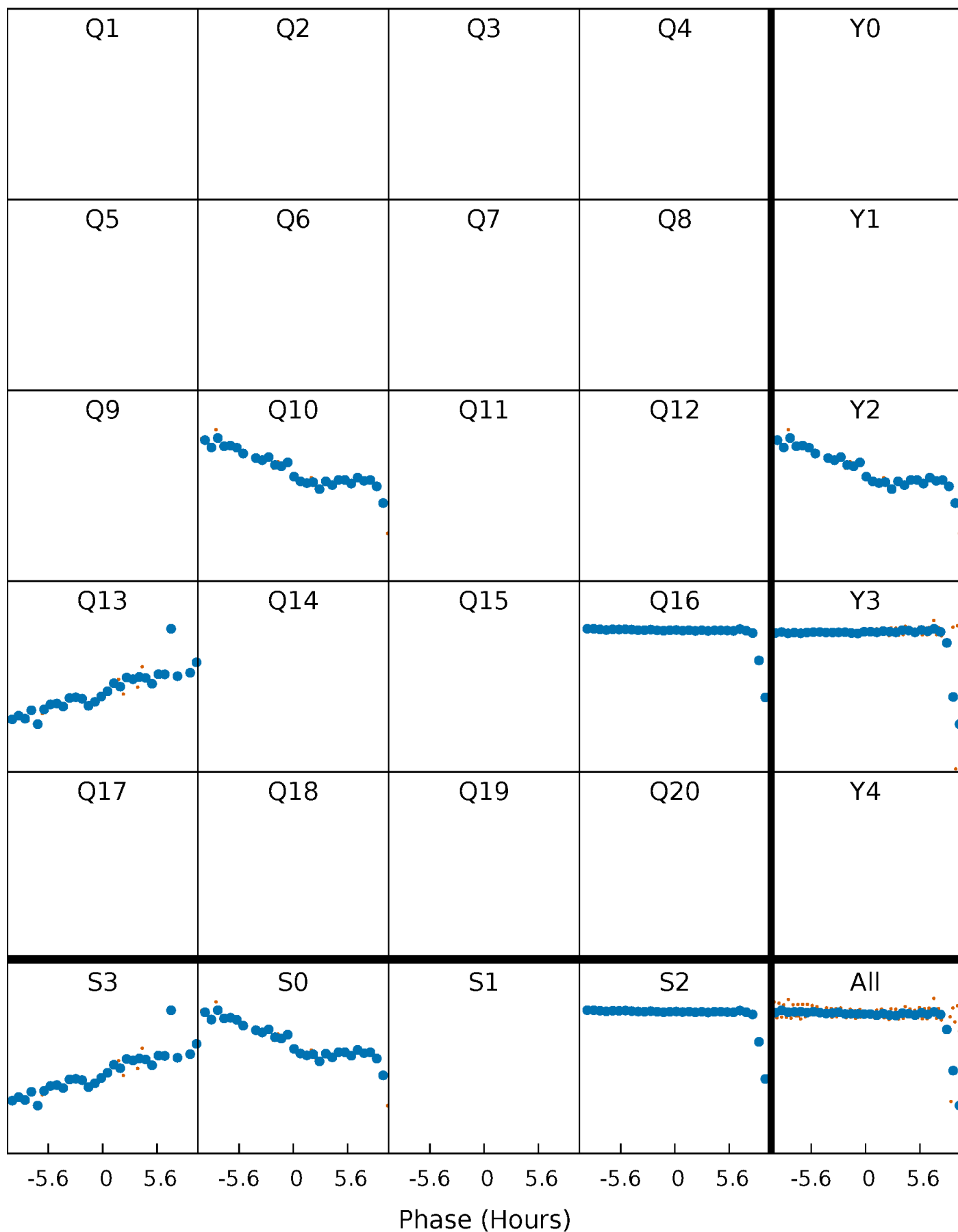


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

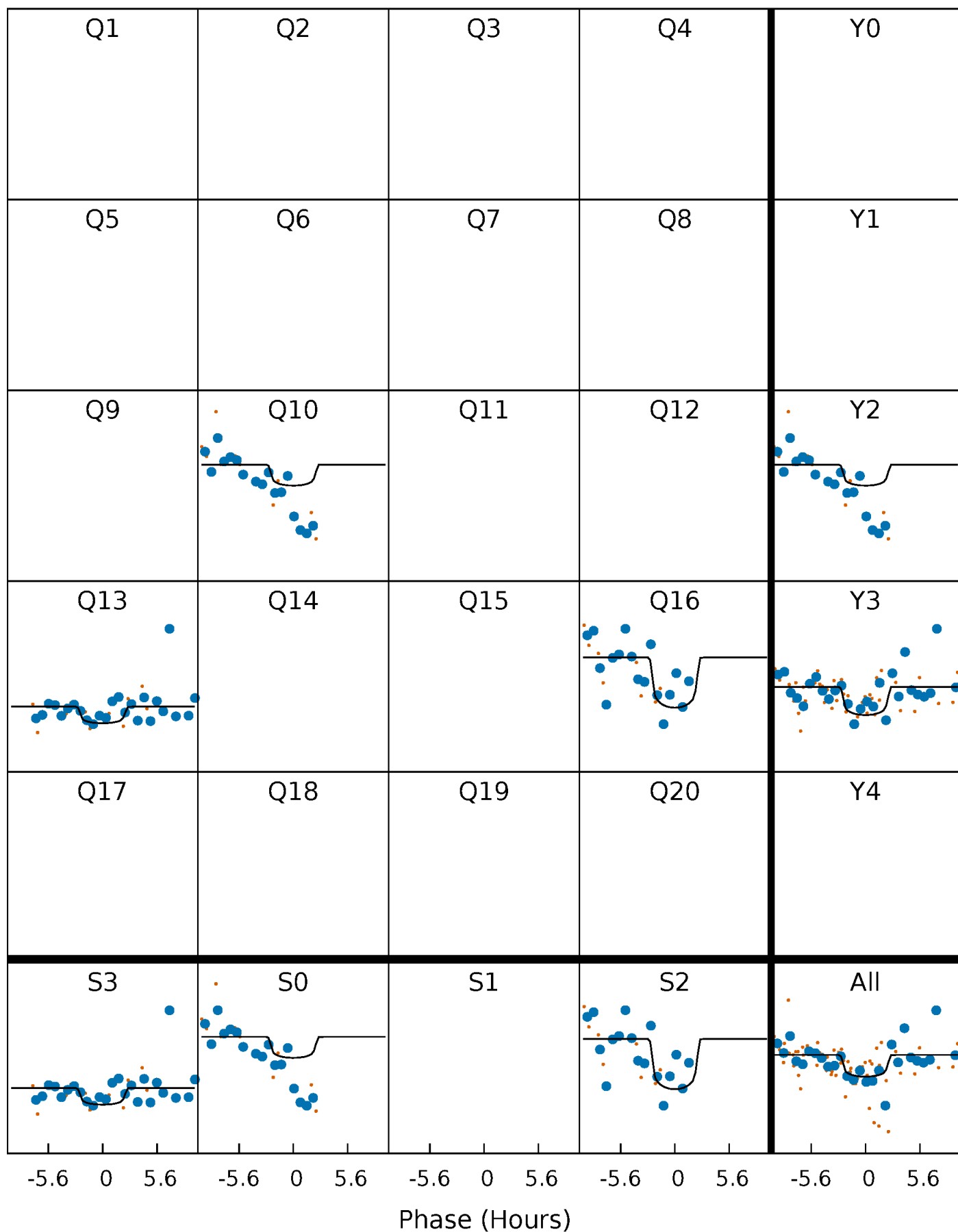
TCE 006956216-03 P=302.403128 Days  $T_0=319.065715$  (BKJD)





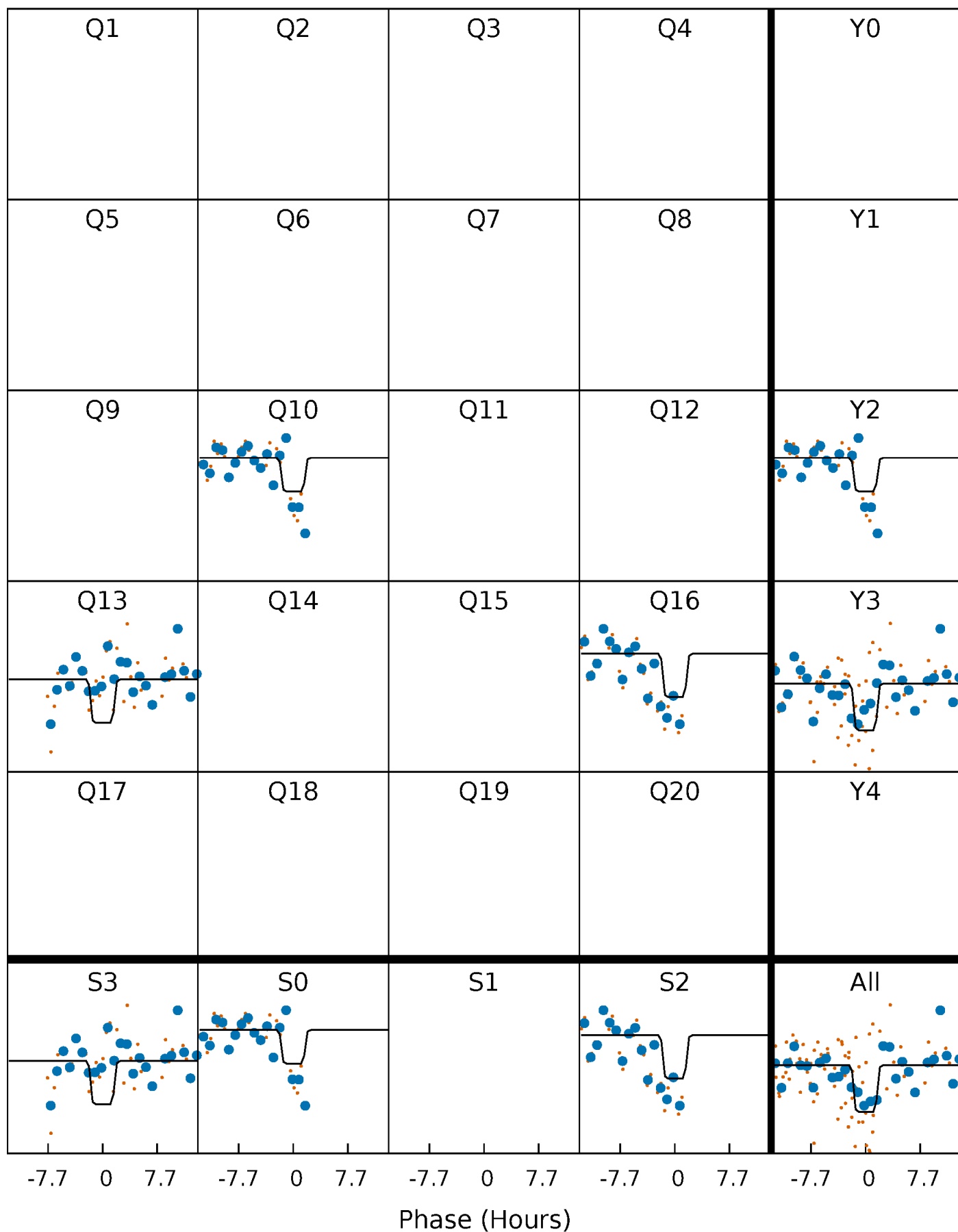
# DV Quarter-Phased Transit Curves

TCE 006956216-03     $P=302.403128$  Days     $T_0=319.065715$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

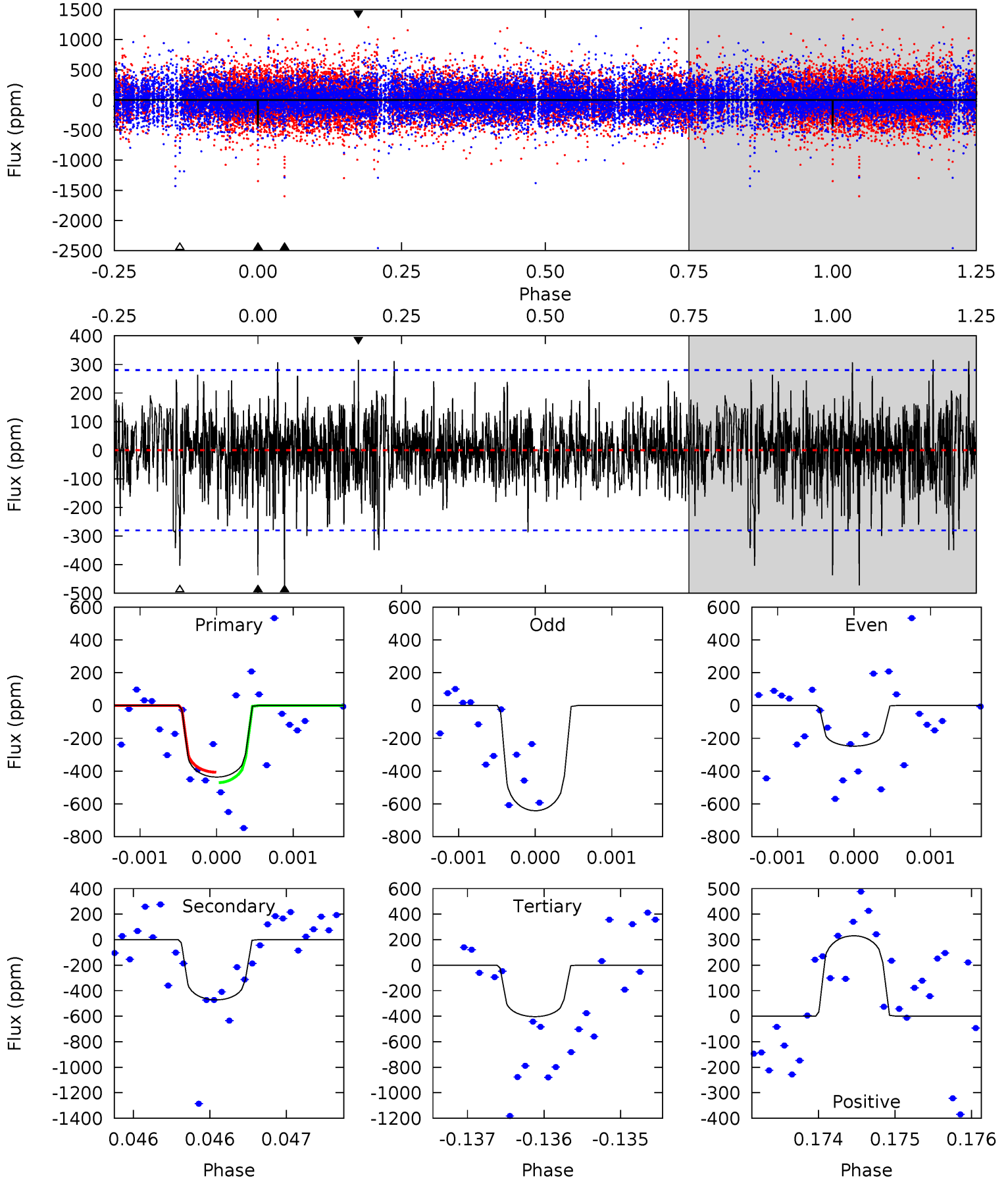
TCE 006956216-03     $P=302.396254$  Days     $T_0=319.111274$  (BKJD)



# DV Model-Shift Uniqueness Test

006956216-03, P = 302.403128 Days, E = 319.065715 Days

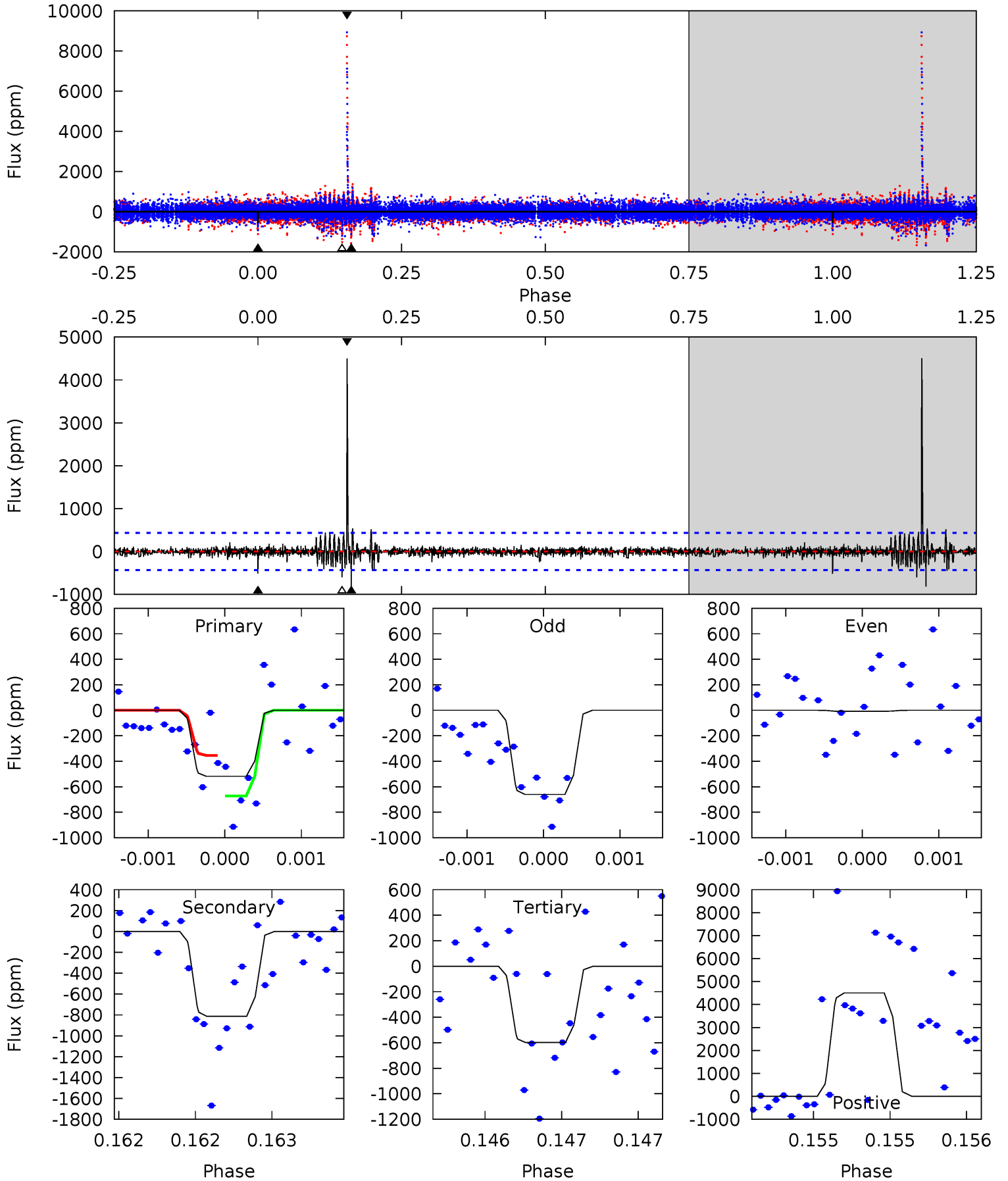
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.57	9.27	7.92	6.19	5.50	3.36	1.66	0.65	2.38	1.35	3.08	4.01	1.62	0.40	0.63



# Alt Model-Shift Uniqueness Test

006956216-03, P = 302.396254 Days, E = 319.111274 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
6.64	10.4	7.67	57.7	5.56	3.46	2.31	-1.03	-51.1	2.75	-47.3	4.30	0.69	0.85	2.08



### Stellar Parameters For KIC 006956216

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6313^{+181}_{-227}$	$3.936^{+0.413}_{-0.138}$	$-0.260^{+0.300}_{-0.300}$	$1.935^{+0.527}_{-0.856}$	$1.179^{+0.201}_{-0.221}$	$0.229^{+0.731}_{-0.093}$
	+3%/-4%	+10%/-4%	+115%/-115%	+27%/-44%	+17%/-19%	+319%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 006956216-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-472 \pm 51$	$5.43^{+5.19}_{-3.62}$	$548^{+47}_{-64}$	$5582^{+4959}_{-1308}$	$7955^{+63664}_{-5975}$
Alt.	$-813 \pm 78$	$5.67^{+5.09}_{-3.65}$	$549^{+44}_{-66}$	$6195^{+5692}_{-1473}$	$12309^{+83651}_{-8952}$

$T_{\text{max}}$  = 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

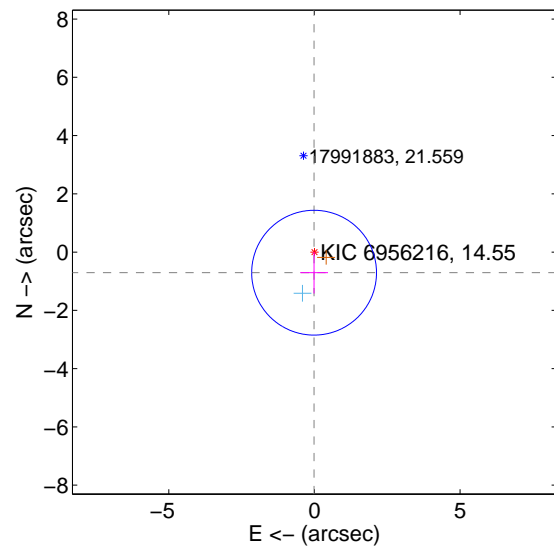
Supplemental centroid analysis for 006956216-03. Kepler magnitude: 14.55. Transit SNR 5.18

There are 1 quarters with good PRF difference image offsets

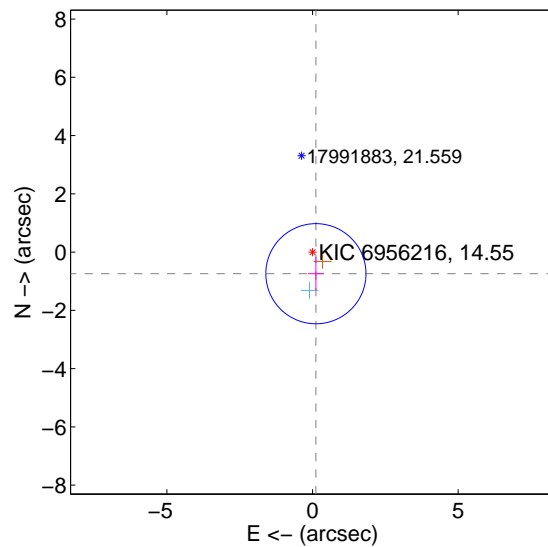
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.707 \pm 0.714$	0.99	$0.012 \pm 0.478$	$-0.707 \pm 0.714$
PRF-fit source offset from KIC position	$0.751 \pm 0.573$	1.31	$-0.116 \pm 0.269$	$-0.742 \pm 0.578$
photometric centroid source offset	$0.60 \pm 2.11$	0.29	$0.25 \pm 1.81$	$-0.55 \pm 2.16$

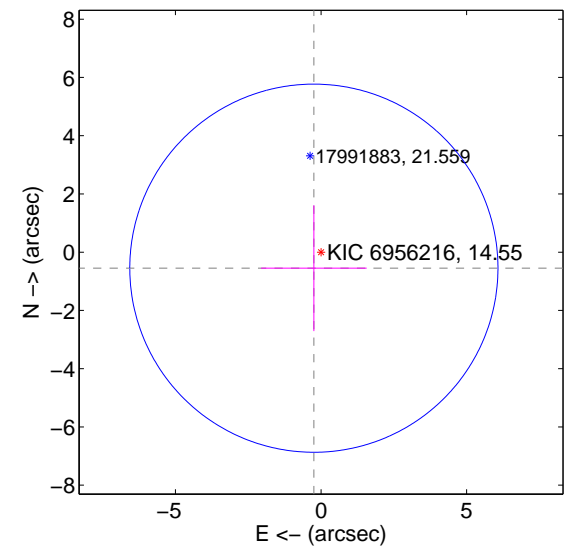
offset from difference PRF-fit to OOT PRF-fit



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

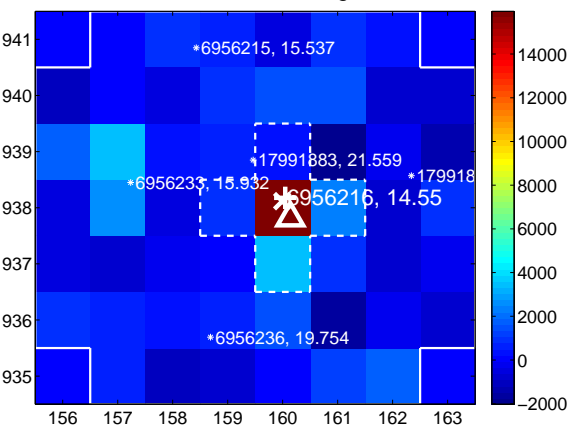
Q9 no difference image



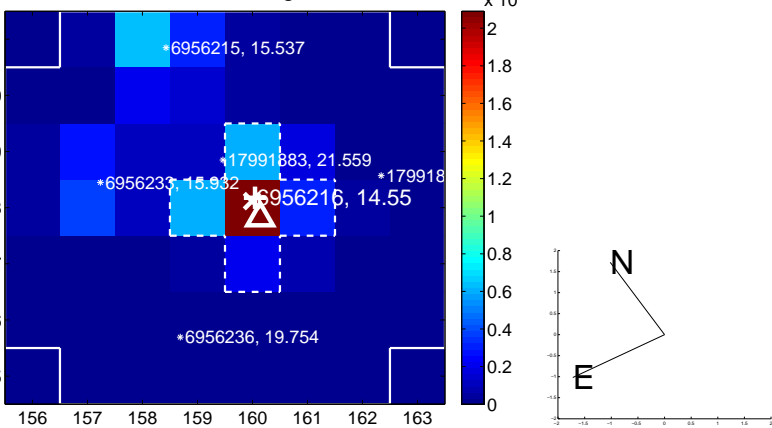
Q9 no OOT image



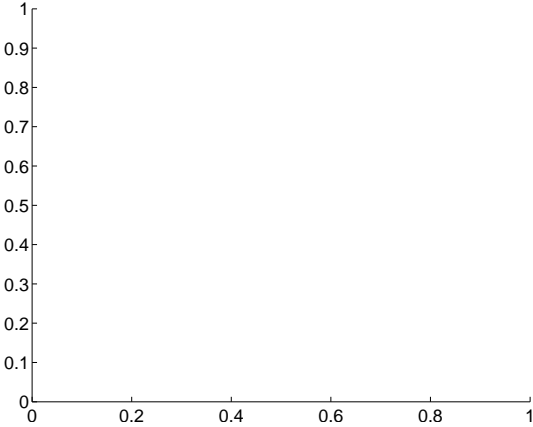
Q10 difference image



Q10 OOT image



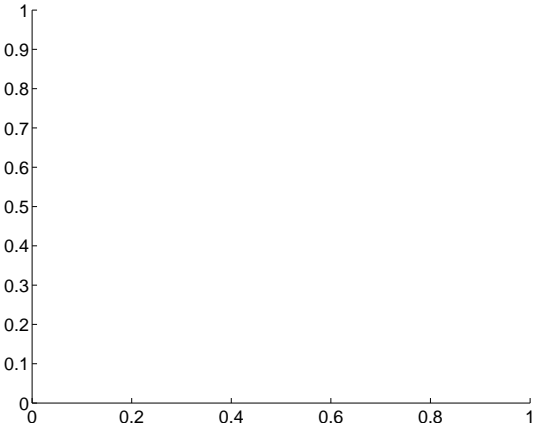
Q11 no difference image



Q11 no OOT image



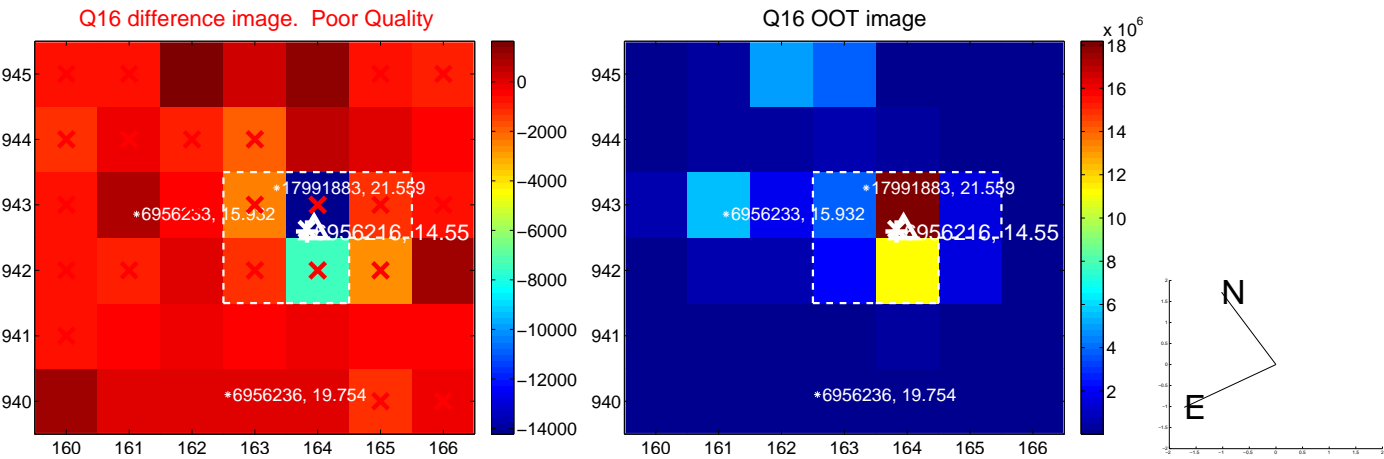
Q12 no difference image



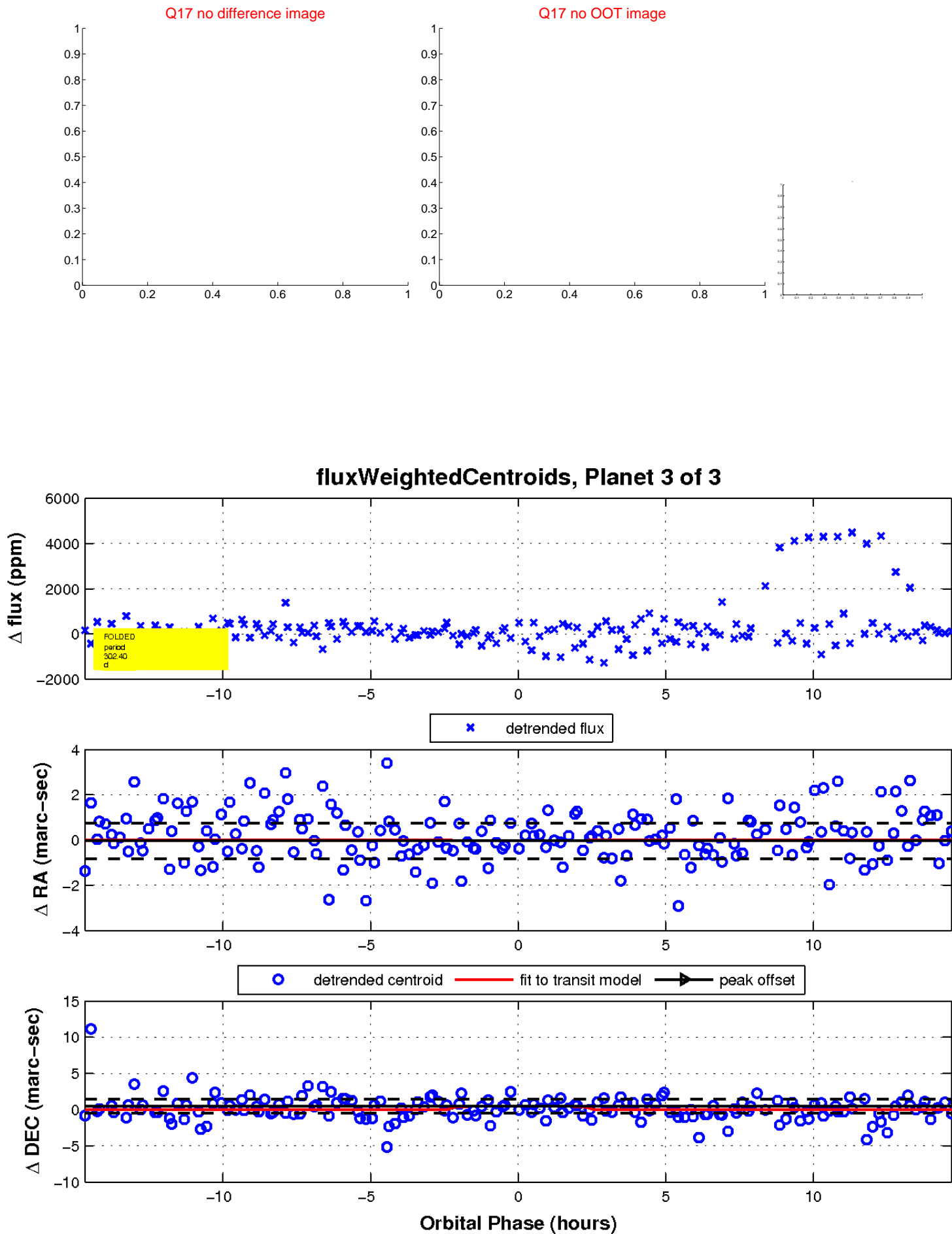
Q12 no OOT image



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.



UKIRT Image

Declination

