

# KIC 005632110

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005632110-01	OBS	No	234.894324	246.677501	1419.7	7.059	9.6	5.4	0.62	4117	2.27	0.25
005632110-02	OBS	No	287.288445	232.649101	2052.5	5.408	12.8	6.5	0.62	4117	2.79	0.19
005632110-03	OBS	No	196.817795	217.888590	1380.9	4.491	9.6	5.2	0.62	4117	2.23	0.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005632110-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS
005632110-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005632110-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—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.

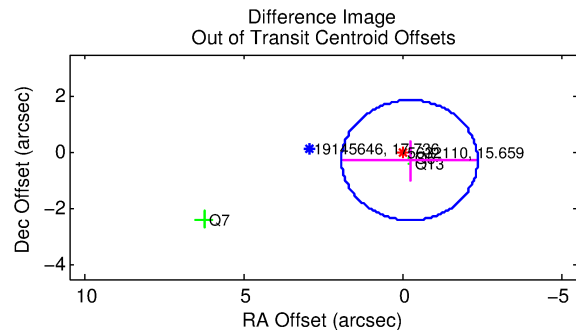
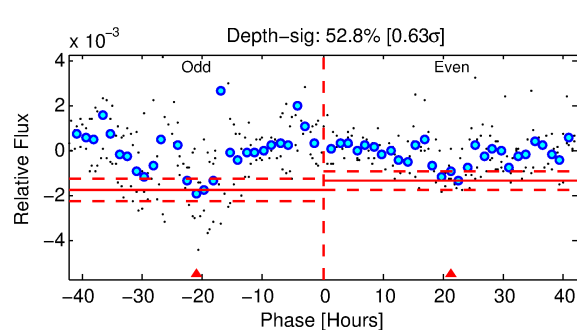
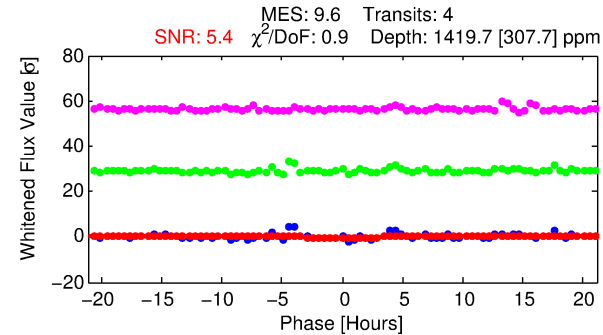
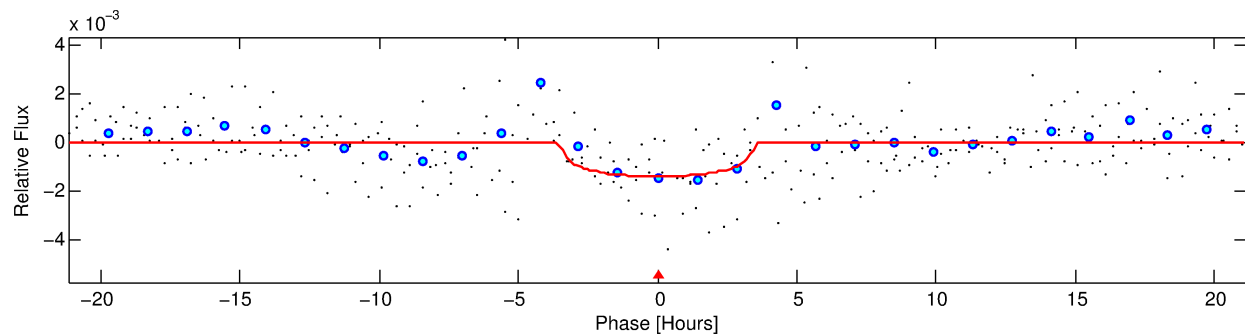
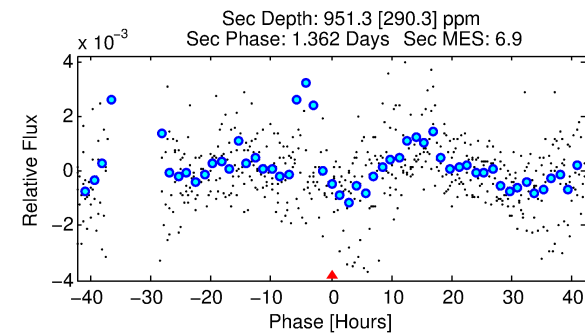
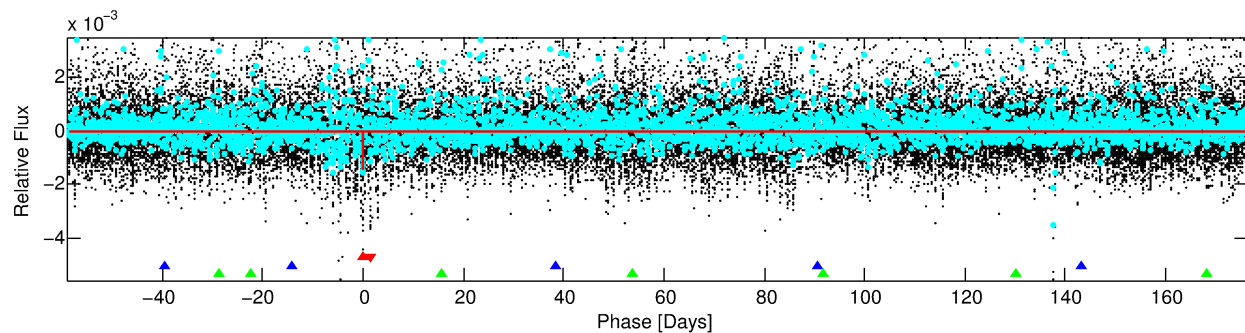
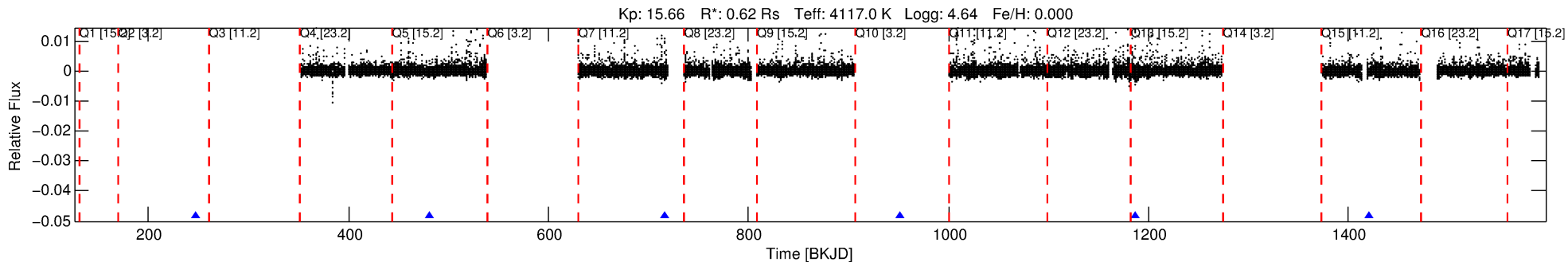
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005632110-01

No Significant Match Found

# DV One-Page Summary

KIC: 5632110 Candidate: 1 of 3 Period: 234.894 d



## DV Fit Results:

Period = 234.89432 [0.00431] d  
Epoch = 246.6775 [0.0142] BKJD  
Rp/R\* = 0.0335 [0.0361]  
a/R\* = 258.07 [899.85]  
b = 0.19 [17.55]  
Seff = 0.25 [0.05]  
Teq = 180 [9] K  
Rp = 2.27 [2.46] Re  
a = 0.6334 [0.0530] AU  
Ag = 40794.95 [88966.50] [0.46σ]  
Teffp = 3952 [2157] K [1.75σ]

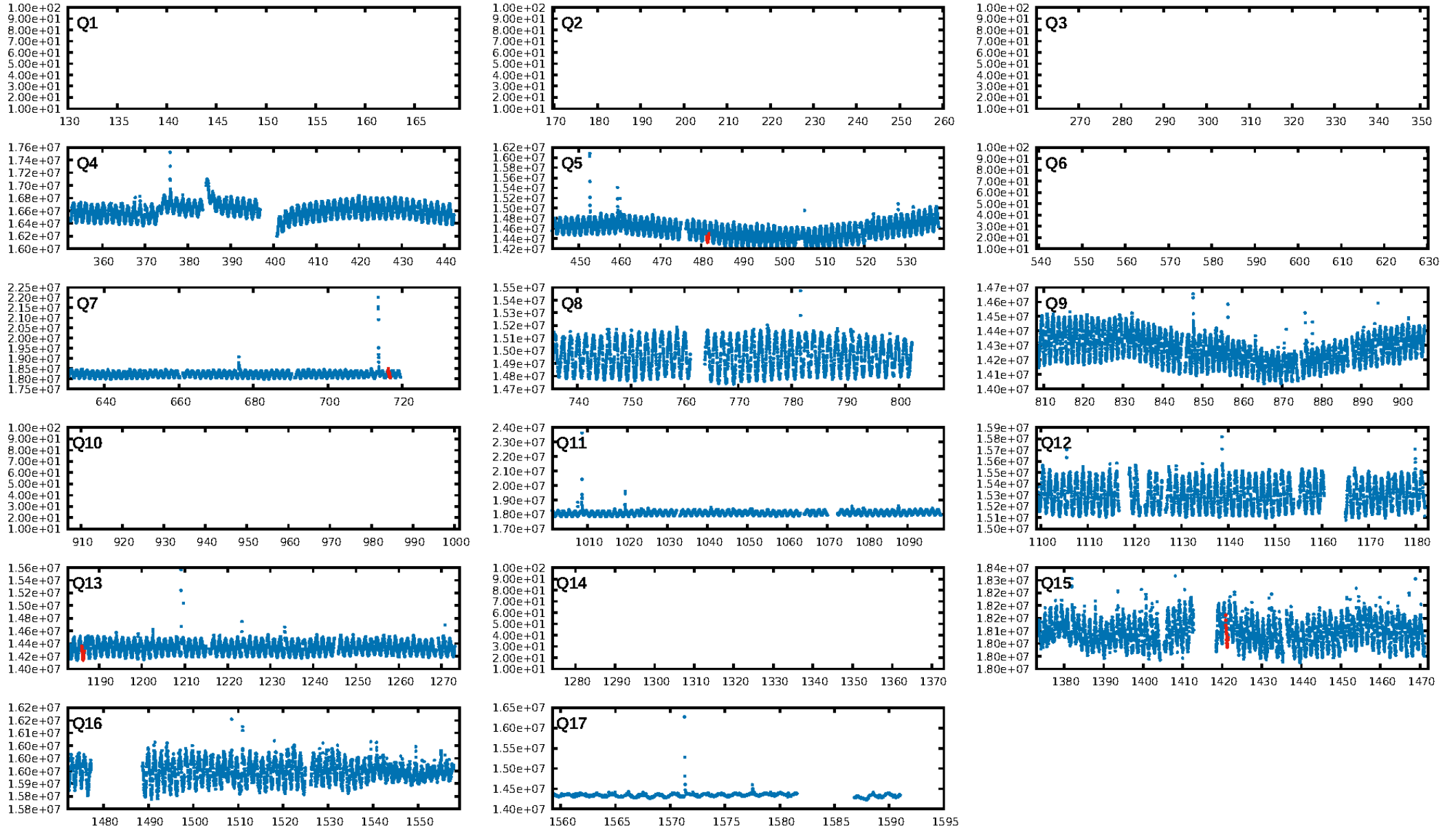
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [109.23σ]  
LongPeriod-sig: 100.0% [141.41σ]  
ModelChiSquare2-sig: 63.3%  
ModelChiSquareGof-sig: 97.6%  
**Bootstrap-pfa: 4.03e-09**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.5593**  
Centroid-sig: 0.0%  
**Centroid-so: 3.384 arcsec [4.85σ]**  
OotOffset-rm: 0.342 arcsec [0.48σ]  
KicOffset-rm: 0.048 arcsec [0.34σ]  
OotOffset-st: 0/1/0/2 [3]  
KicOffset-st: 0/1/0/2 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [4/4]

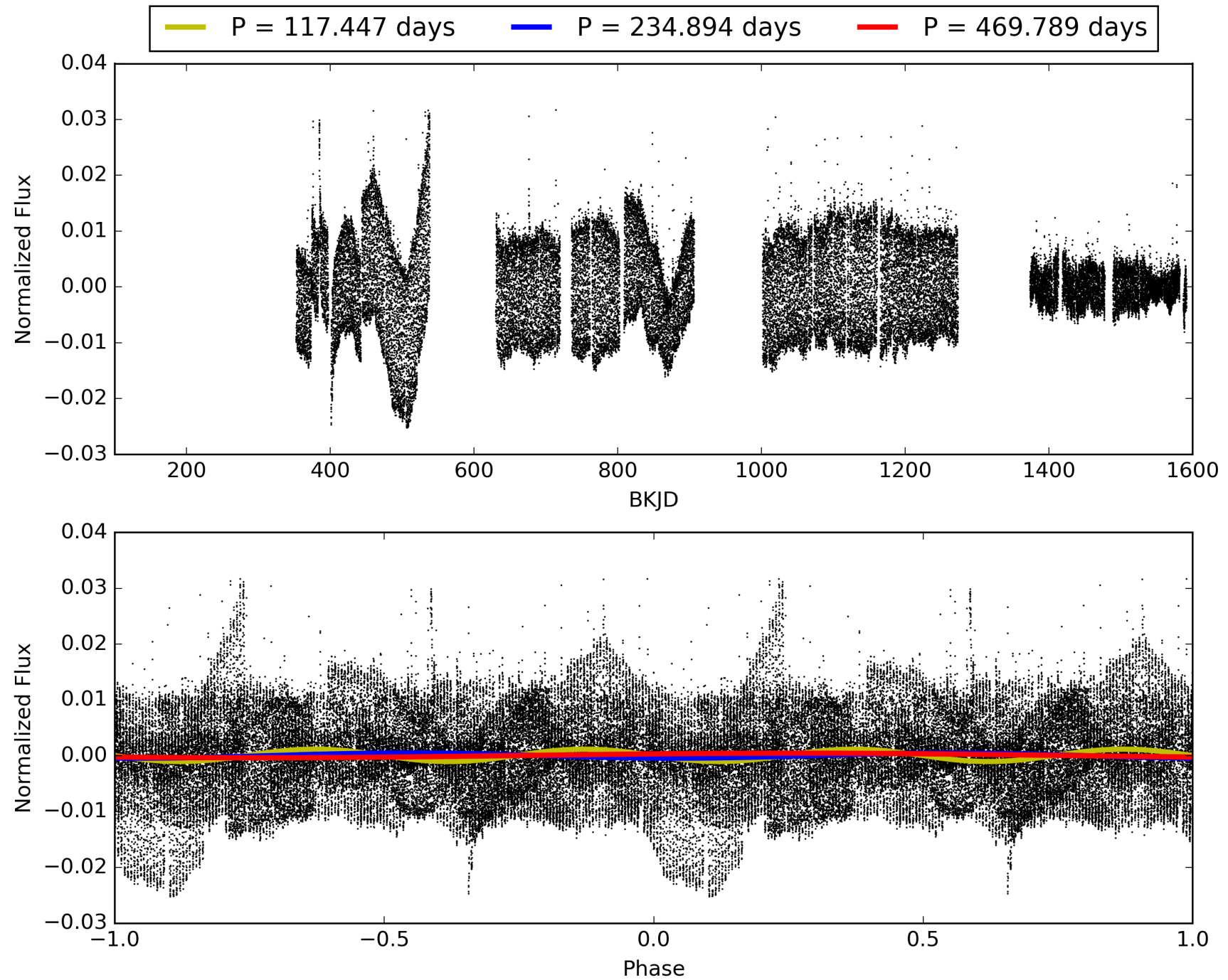
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 11:15:58 Z

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

# TCE 005632110-01, PDC Light Curves

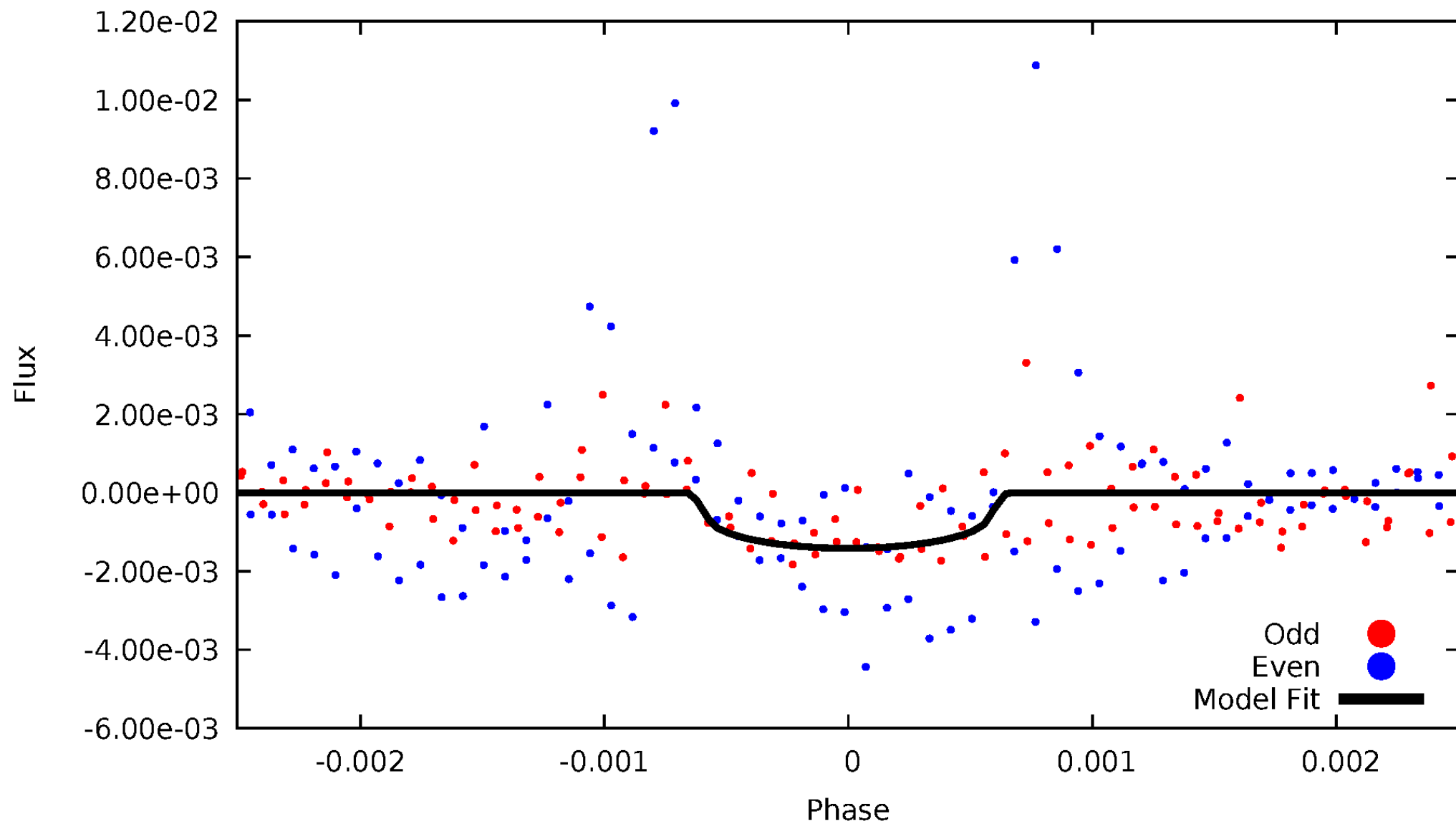


TCE 005632110-01



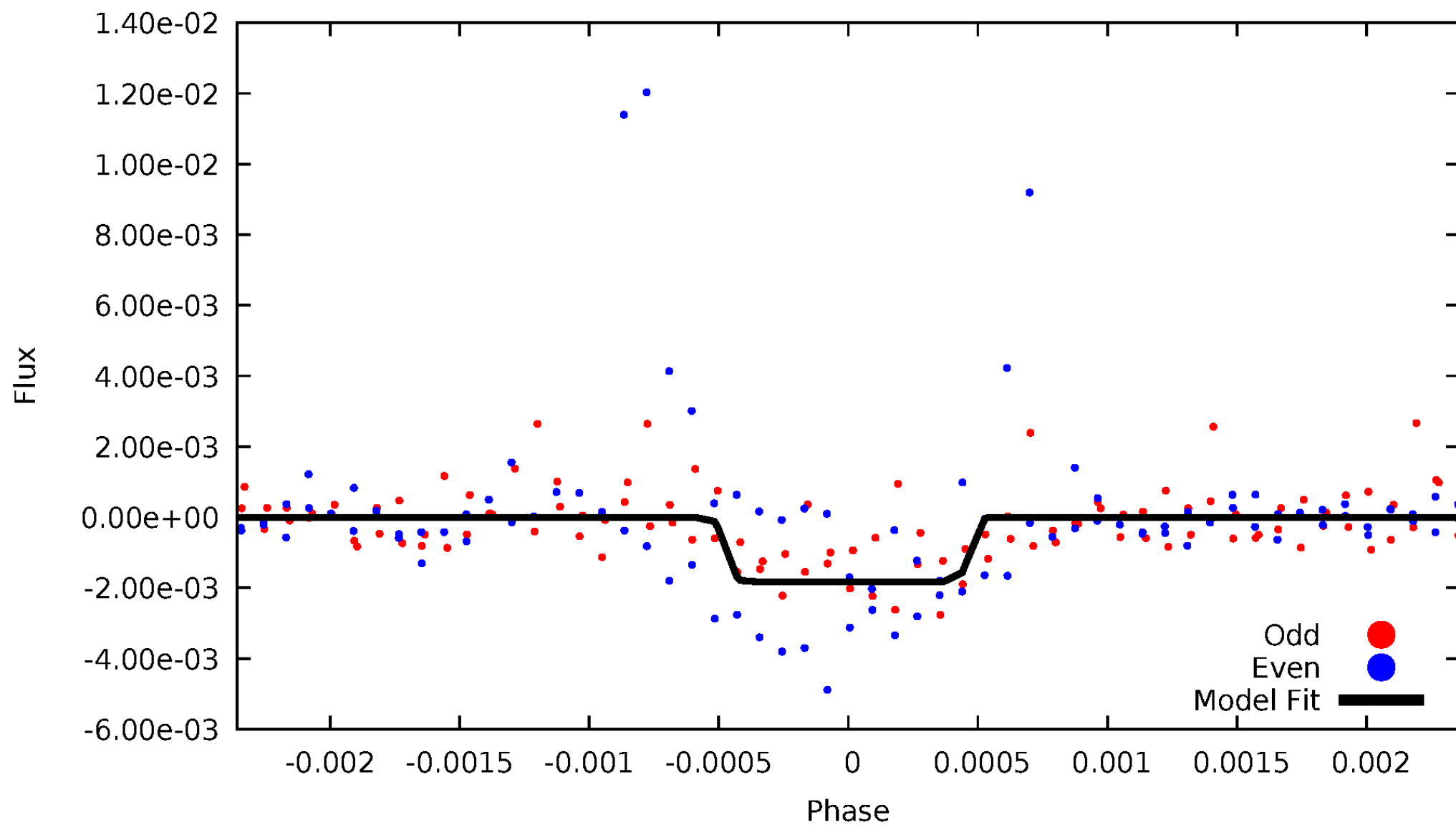
# DV Odd/Even

TCE 005632110-01

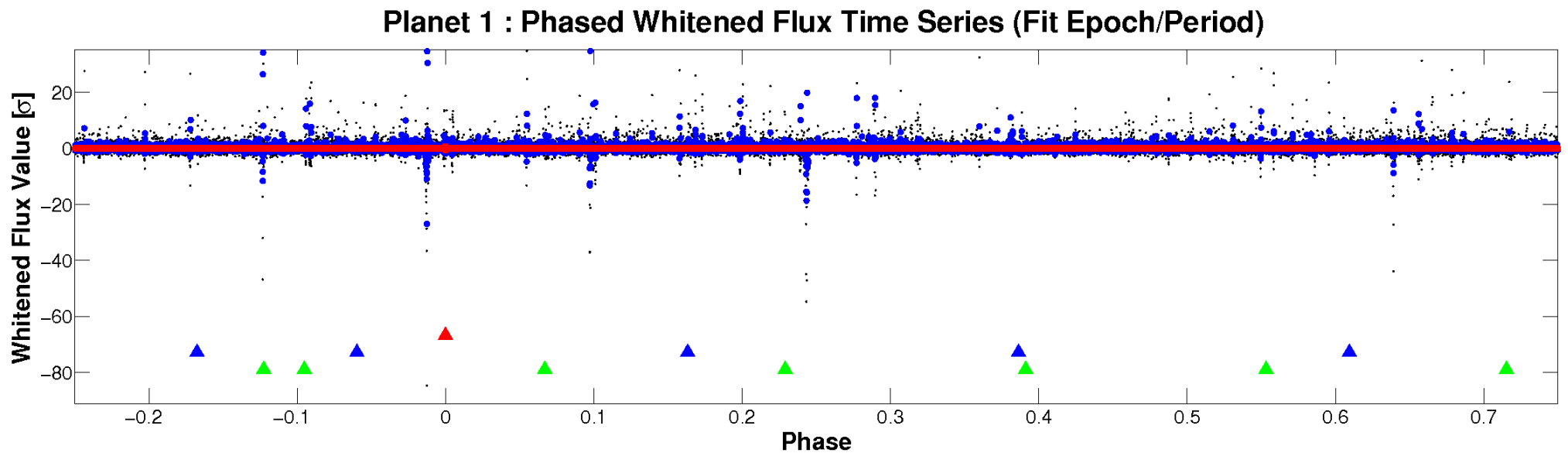
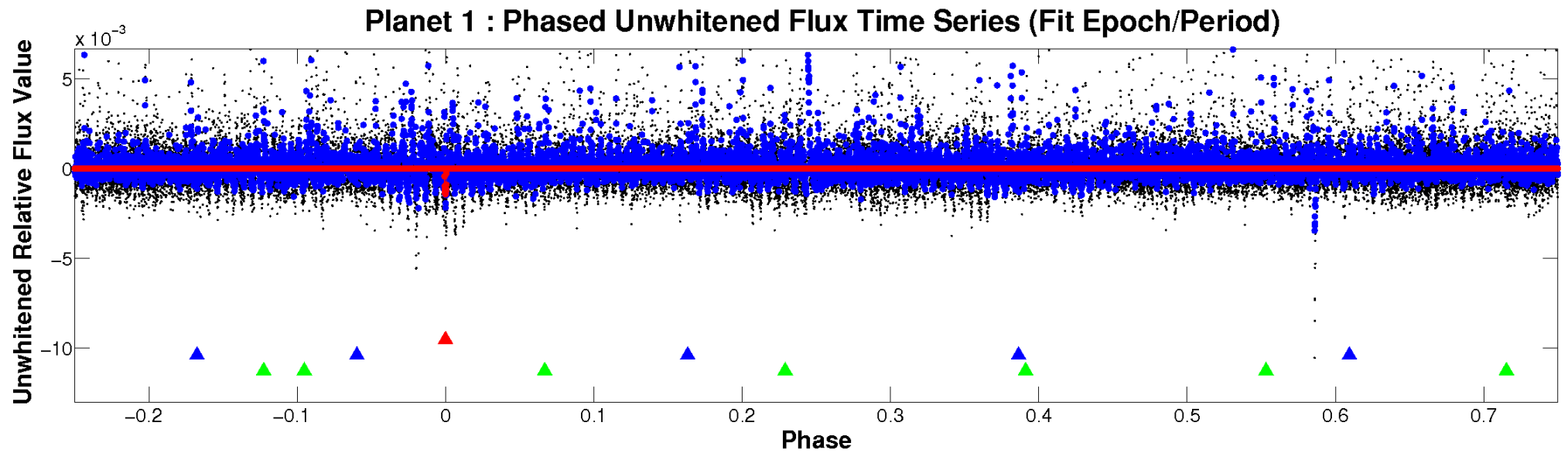


# ALT Odd/Even

TCE 005632110-01

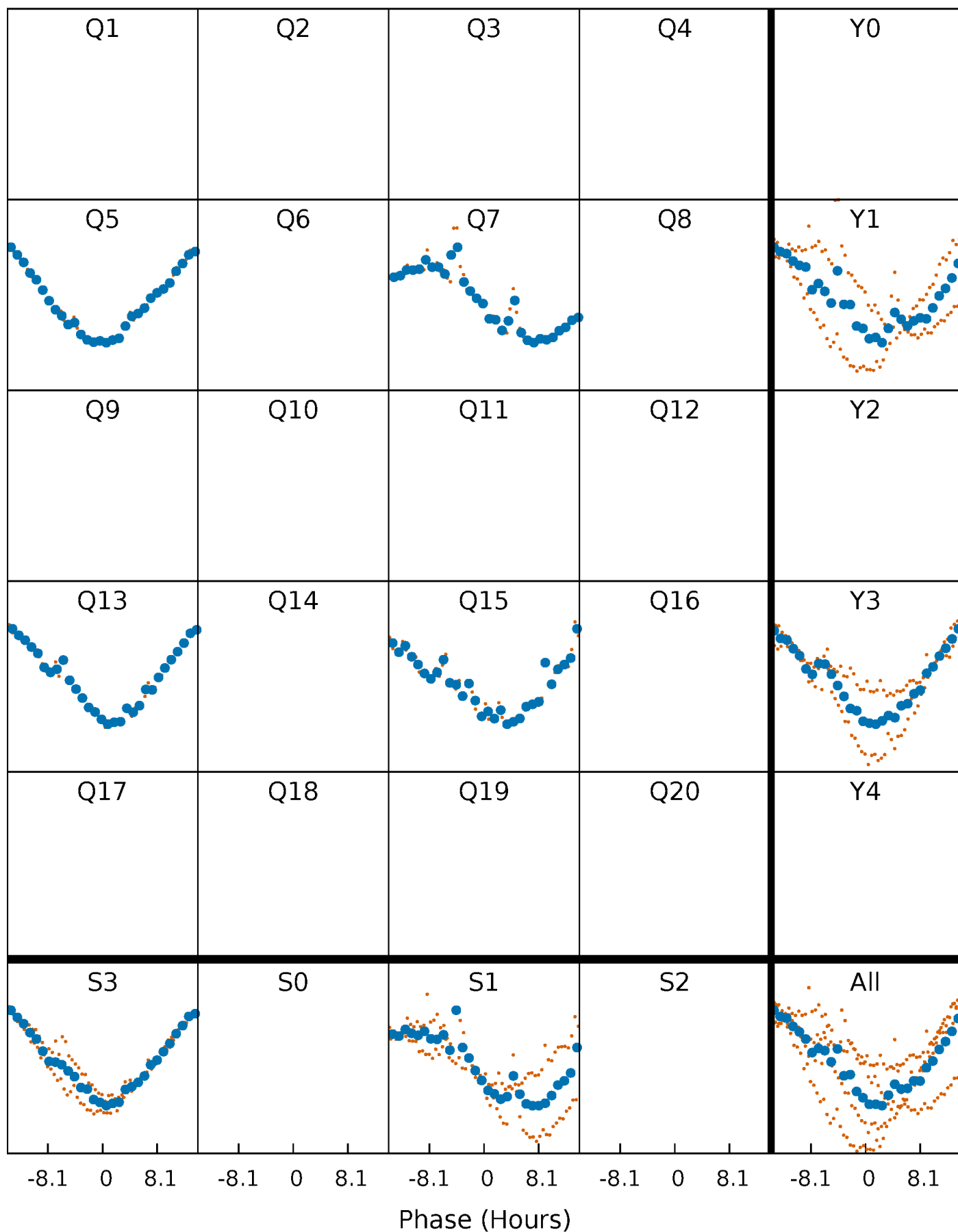


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

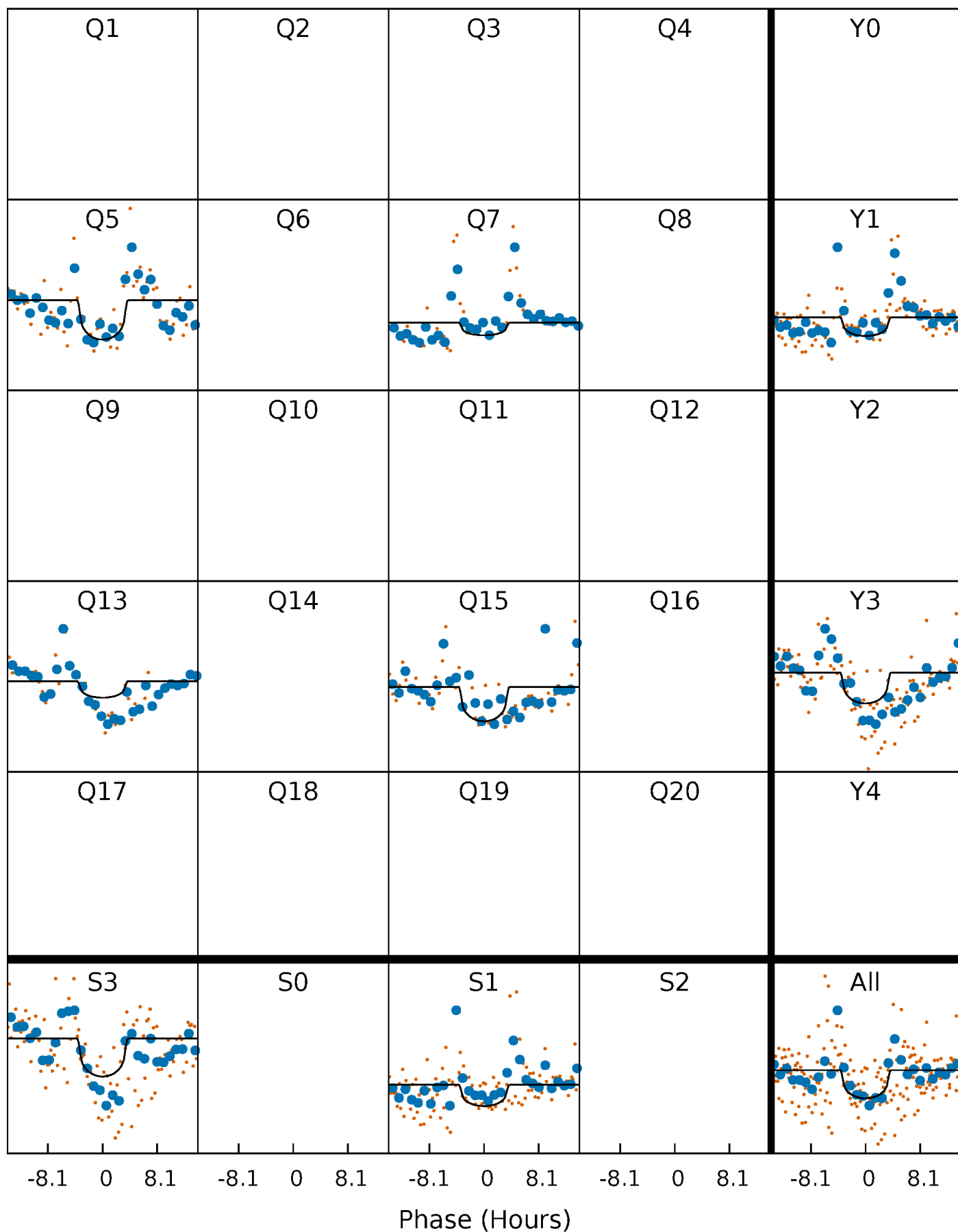
TCE 005632110-01 P=234.894324 Days  $T_0=246.677501$  (BKJD)





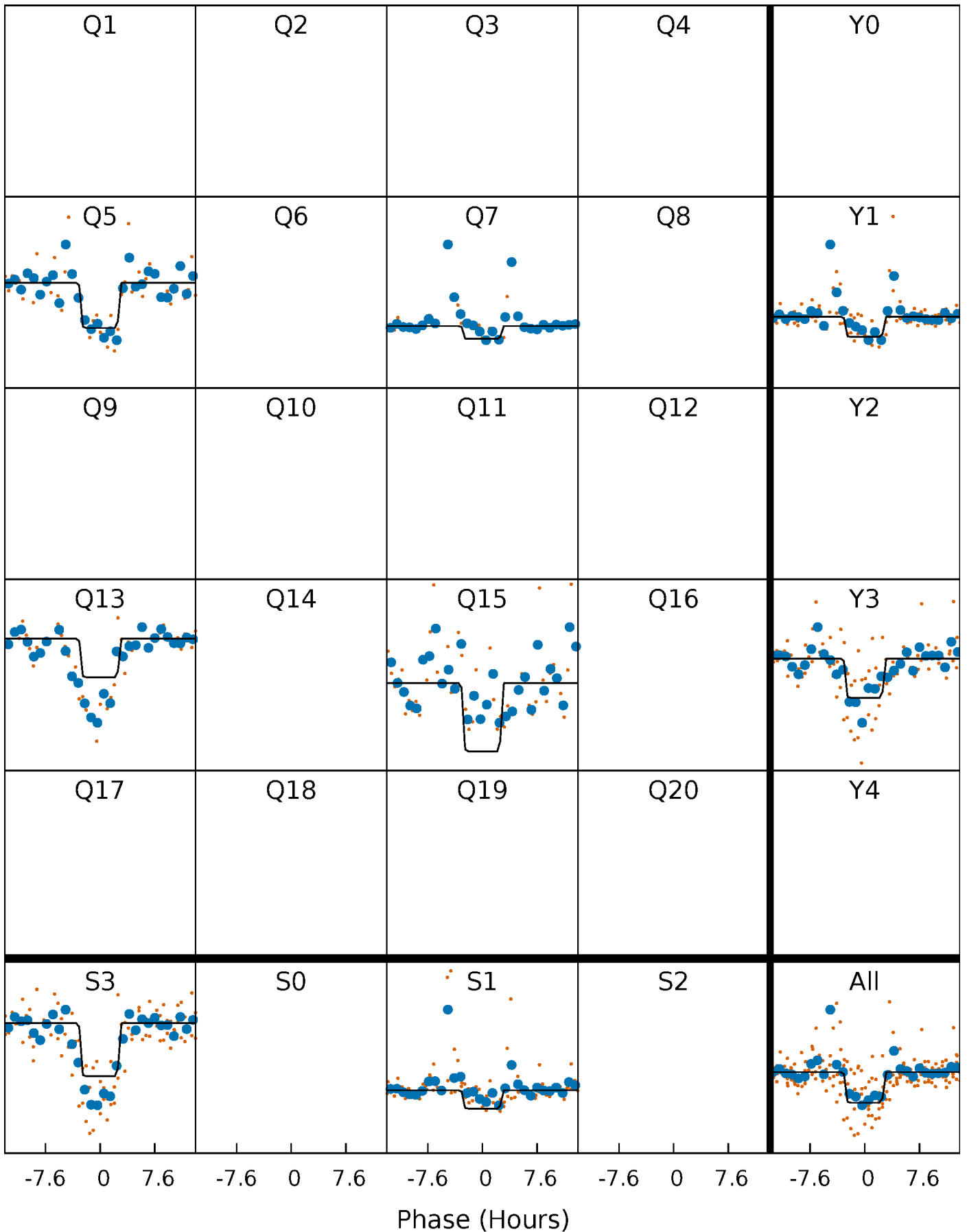
# DV Quarter-Phased Transit Curves

TCE 005632110-01   P=234.894324 Days    $T_0=246.677501$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

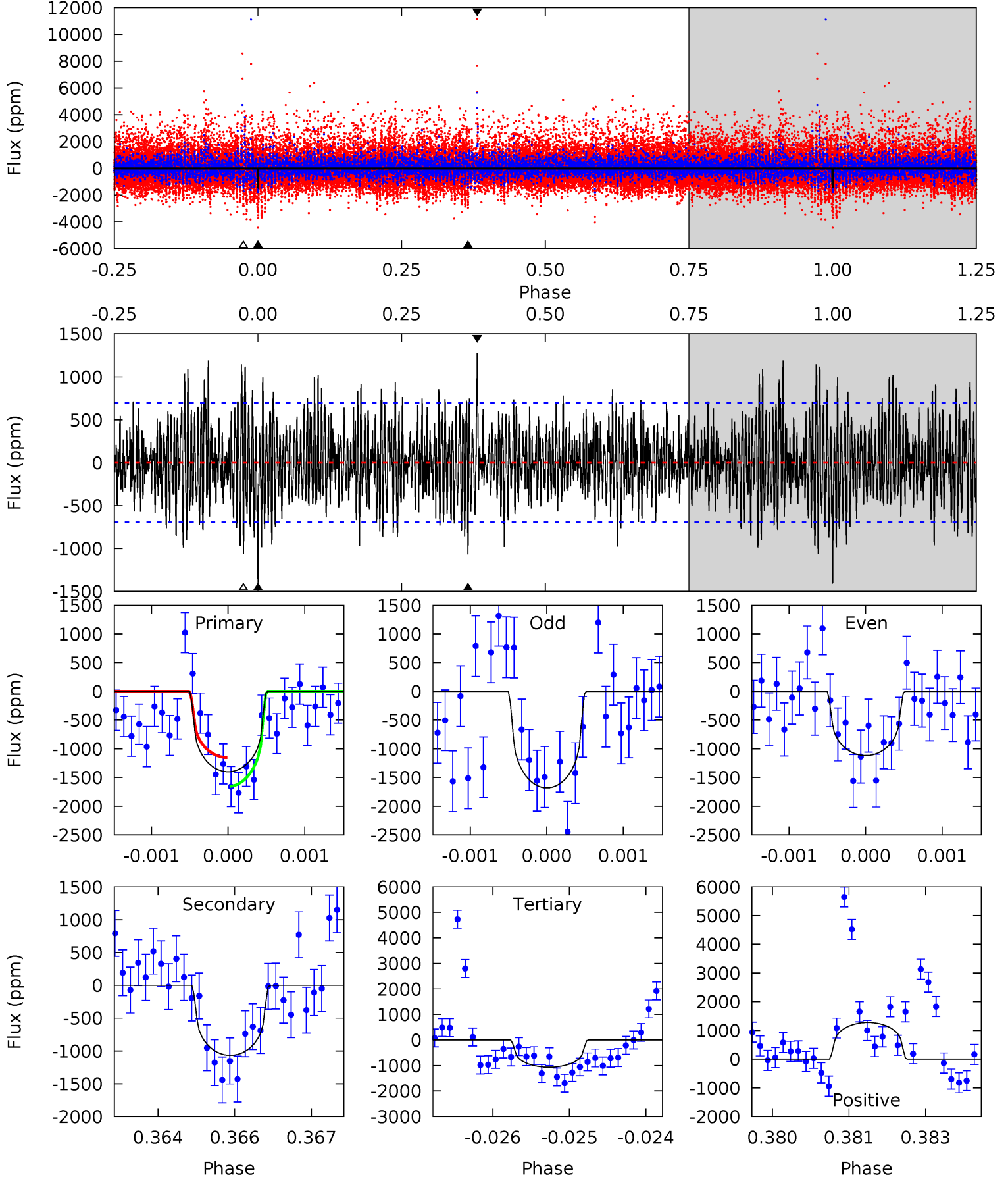
TCE 005632110-01 P=234.904206 Days  $T_0=246.673886$  (BKJD)



# DV Model-Shift Uniqueness Test

005632110-01, P = 234.894324 Days, E = 246.677501 Days

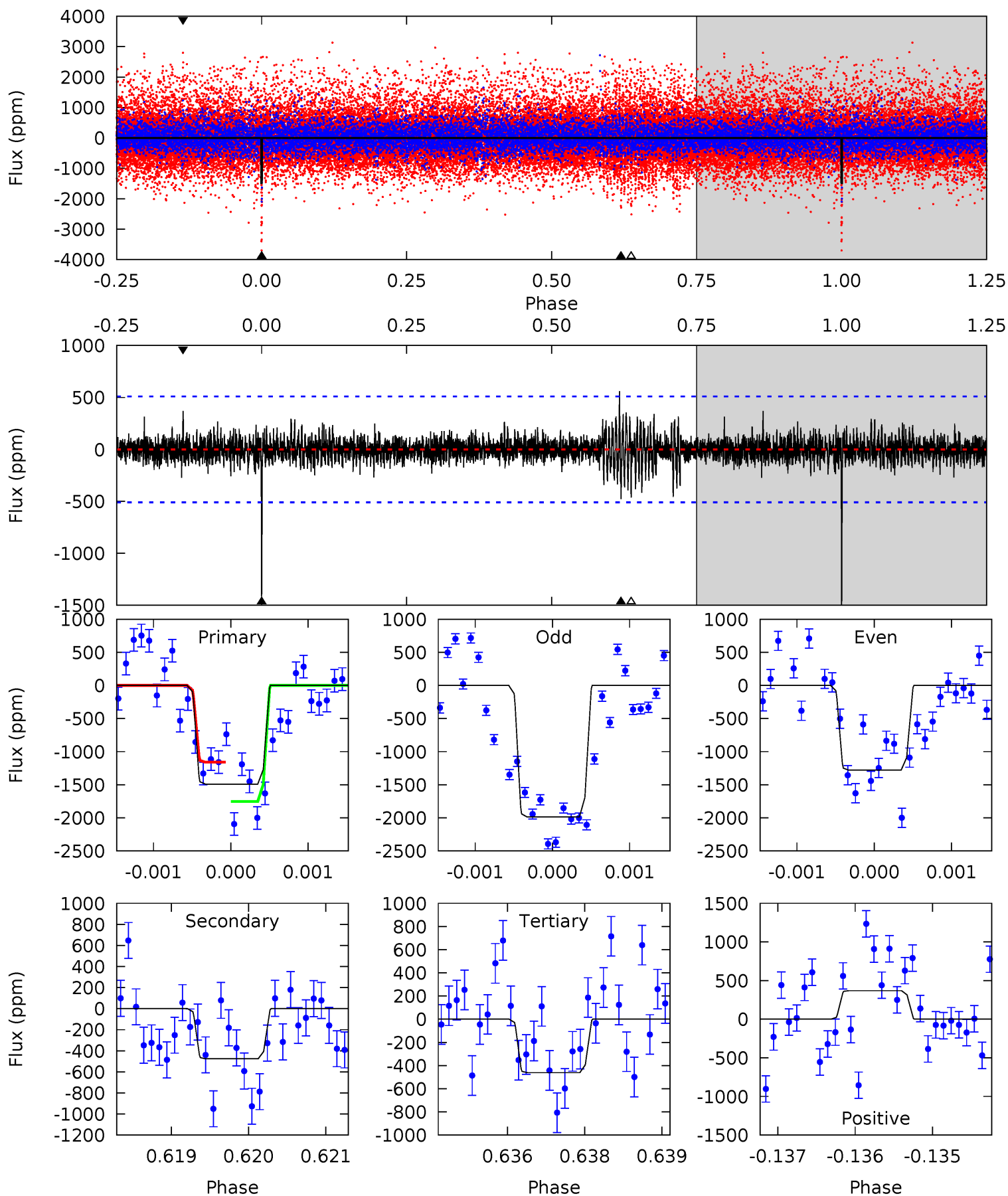
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	8.31	8.28	9.93	5.40	3.21	2.68	2.60	0.96	0.02	-1.62	1.01	1.25	0.48	1.96



# Alt Model-Shift Uniqueness Test

005632110-01, P = 234.904206 Days, E = 246.673886 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
15.9	5.09	4.93	3.95	5.44	3.28	0.96	11.0	12.0	0.16	1.14	3.84	1.17	0.27	3.17



### Stellar Parameters For KIC 005632110

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4117^{+129}_{-158}$	$4.640^{+0.060}_{-0.020}$	$0.000^{+0.300}_{-0.300}$	$0.621^{+0.038}_{-0.065}$	$0.614^{+0.058}_{-0.064}$	$3.613^{+0.990}_{-0.334}$
	+3%/-4%	+1%/-0%	+inf%/-inf%	+6%/-10%	+9%/-10%	+27%/-9%
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 005632110-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1068 \pm 129$	$2.85^{+2.04}_{-1.87}$	$249^{+9}_{-10}$	$3751^{+2111}_{-613}$	$28947^{+238874}_{-19031}$
Alt.	$-476 \pm 94$	$3.34^{+2.13}_{-1.92}$	$249^{+9}_{-10}$	$3166^{+997}_{-437}$	$10095^{+42752}_{-6594}$

$T_{max}$  = 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

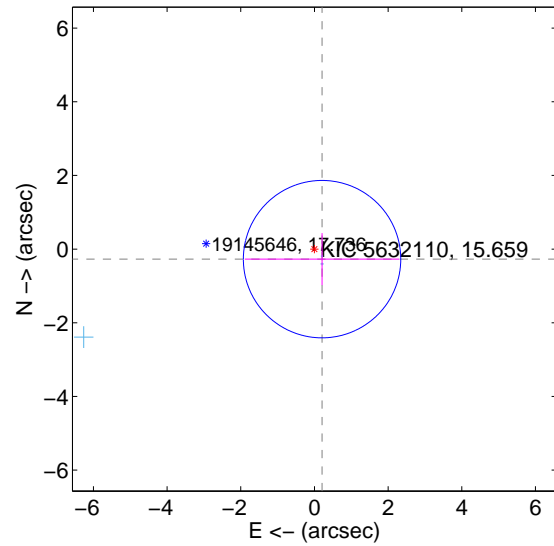
Supplemental centroid analysis for 005632110-01. Kepler magnitude: 15.66. Transit SNR 5.38

There are 3 quarters with good PRF difference image offsets

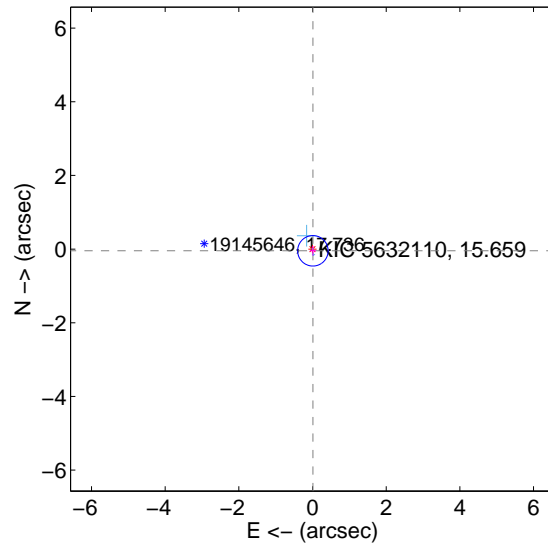
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.342 \pm 0.712$	0.48	$-0.207 \pm 2.097$	$-0.273 \pm 0.705$
PRF-fit source offset from KIC position	$0.048 \pm 0.138$	0.34	$-0.010 \pm 0.082$	$-0.047 \pm 0.132$
photometric centroid source offset	$3.38 \pm 0.70$	4.85	$-1.87 \pm 0.90$	$2.82 \pm 0.59$

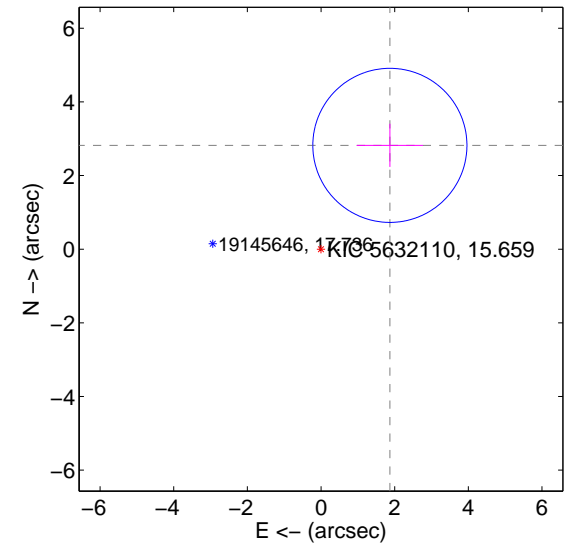
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

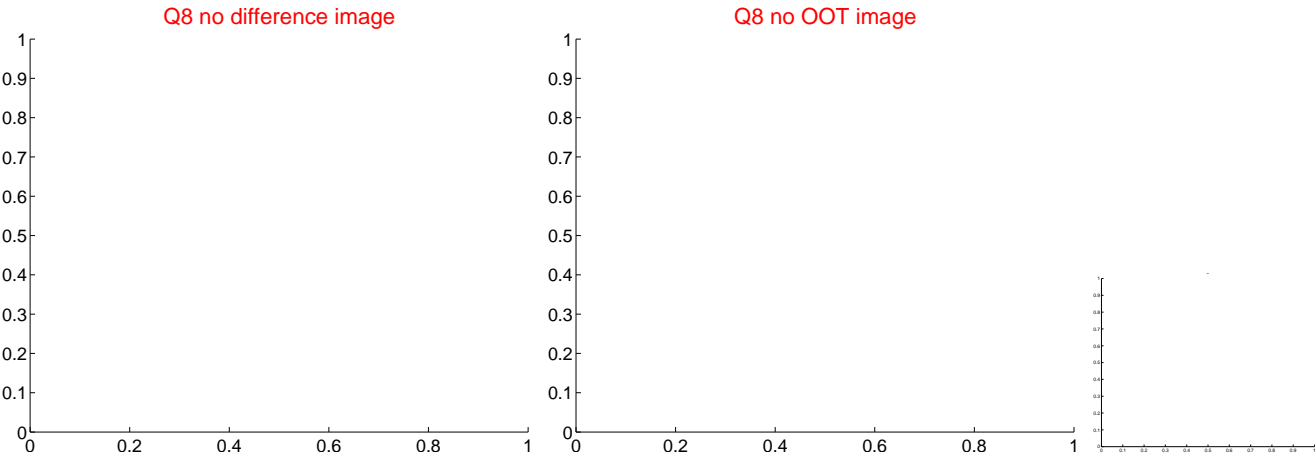
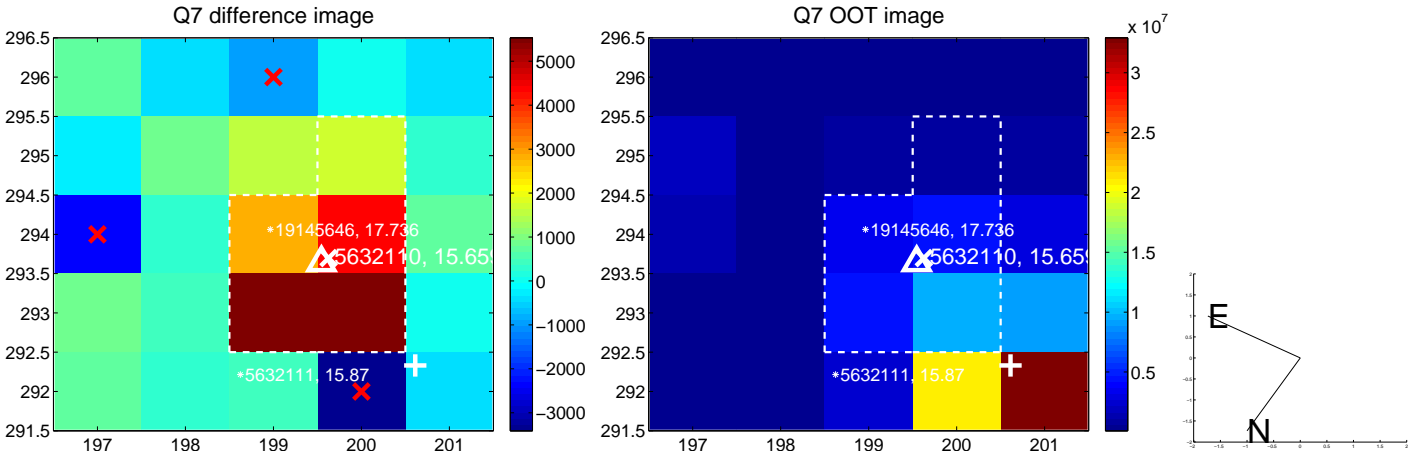
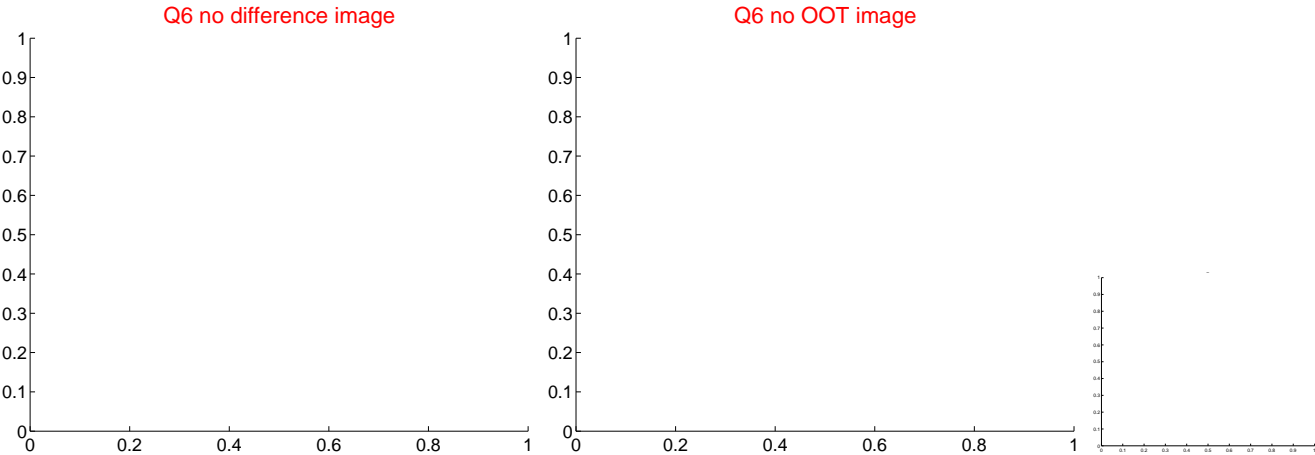
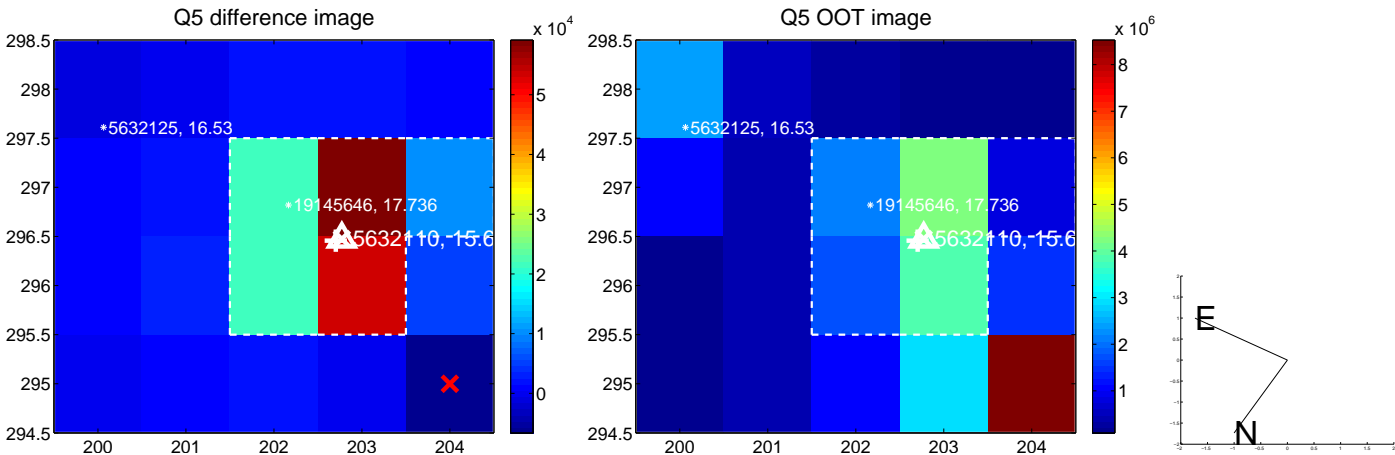


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

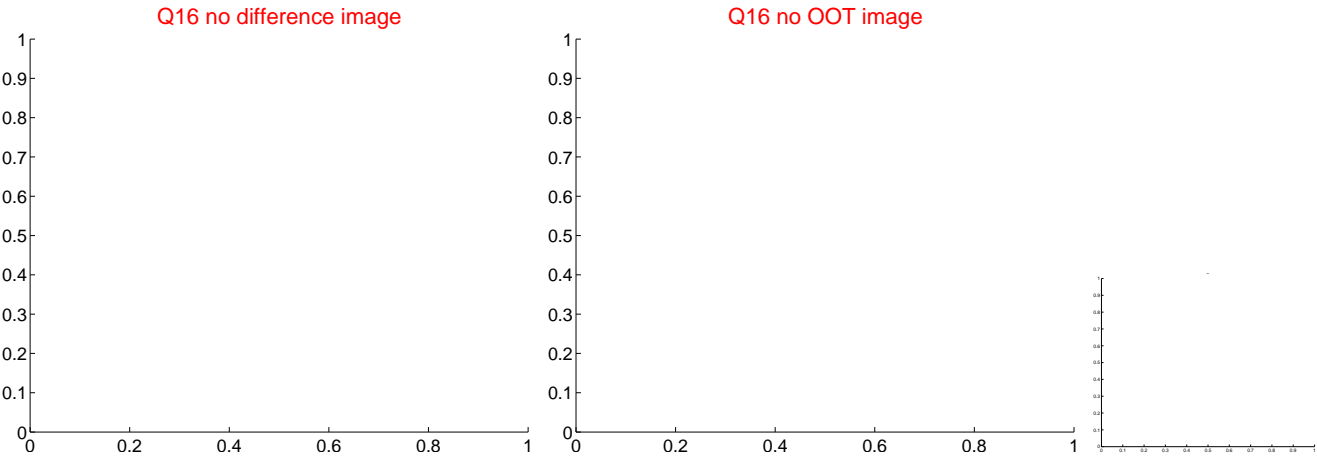
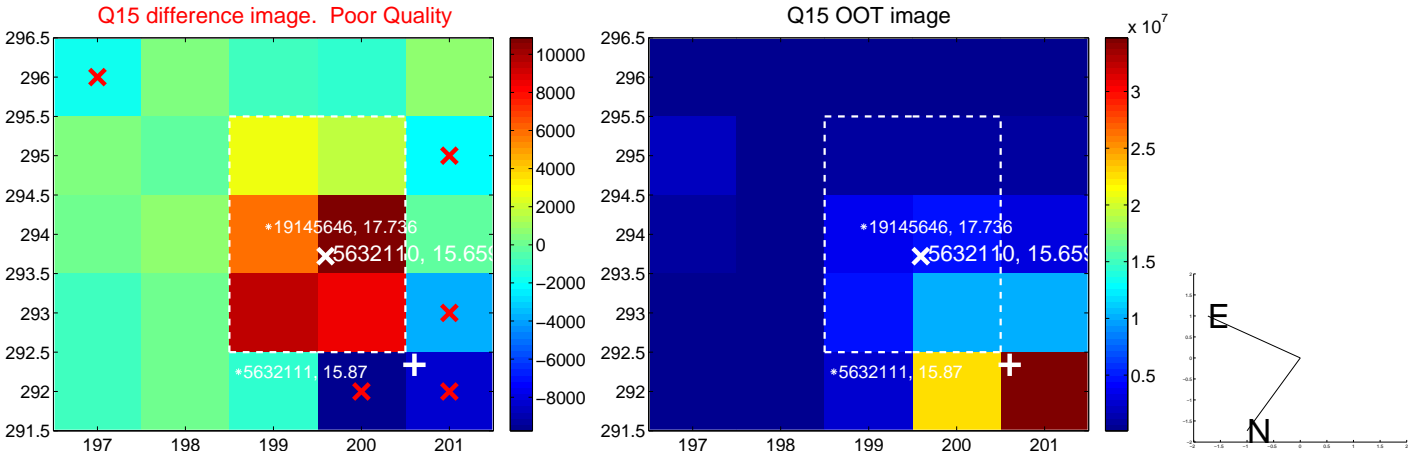
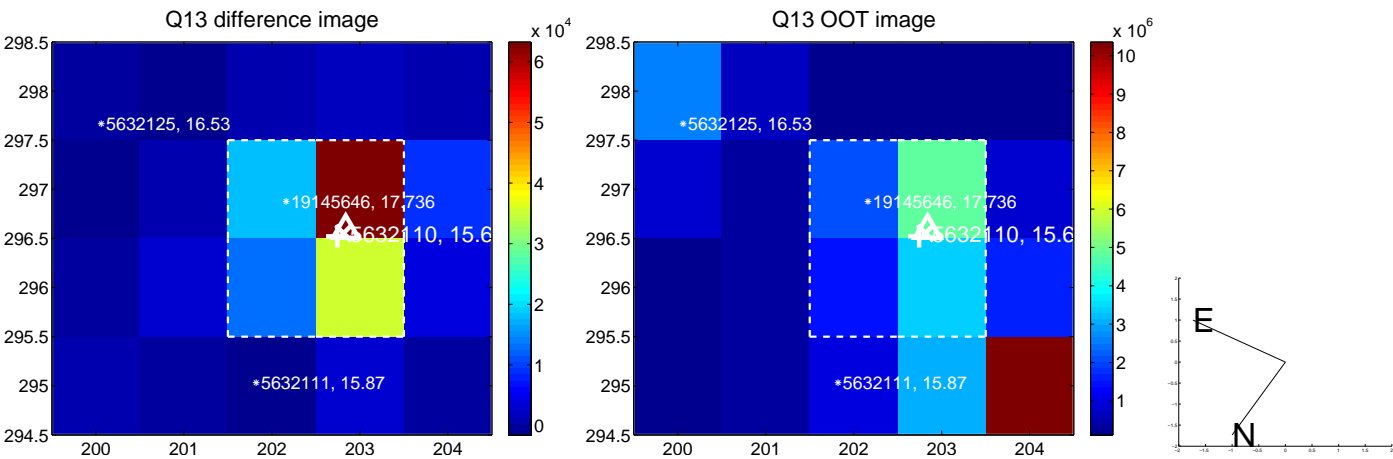




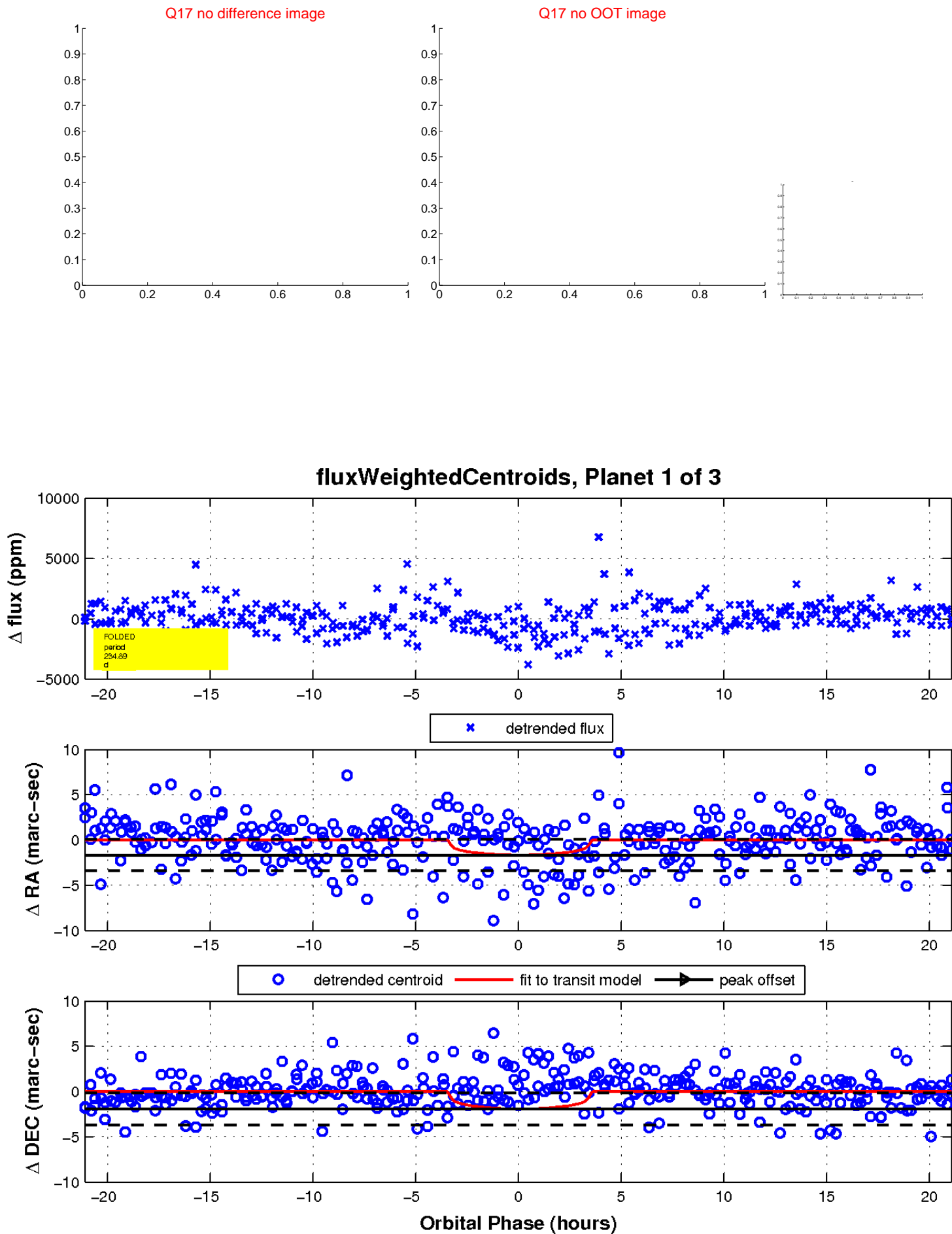
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

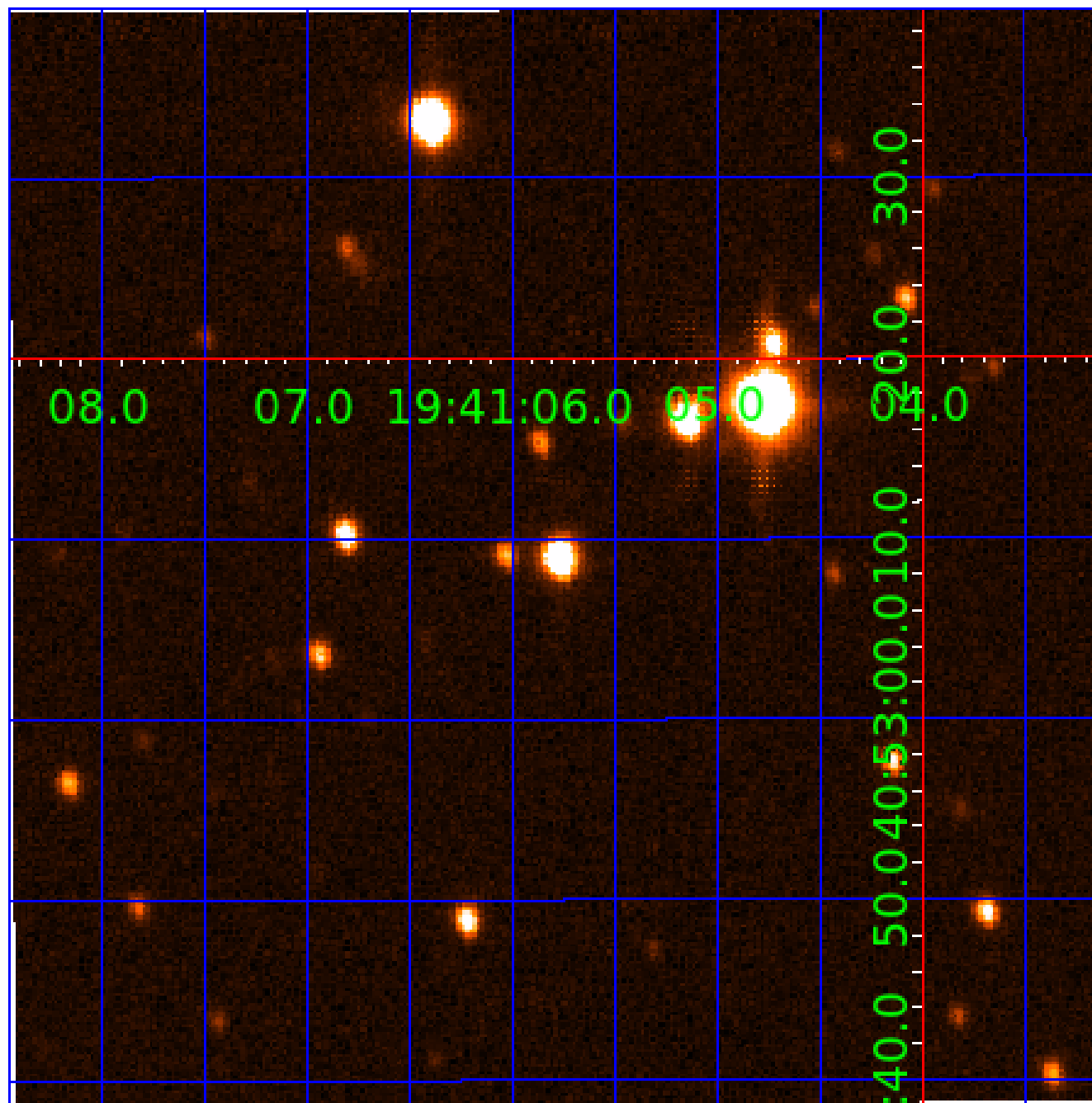


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005632110

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005632110-01	OBS	No	234.894324	246.677501	1419.7	7.059	9.6	5.4	0.62	4117	2.27	0.25
005632110-02	OBS	No	287.288445	232.649101	2052.5	5.408	12.8	6.5	0.62	4117	2.79	0.19
005632110-03	OBS	No	196.817795	217.888590	1380.9	4.491	9.6	5.2	0.62	4117	2.23	0.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005632110-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS
005632110-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005632110-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—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.

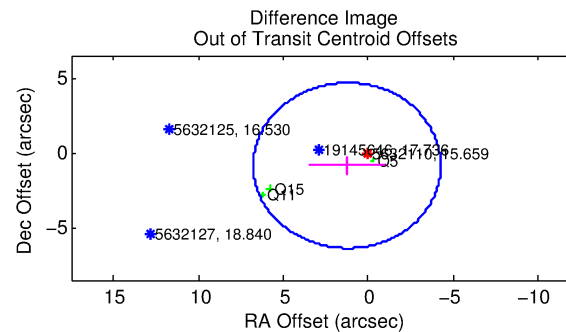
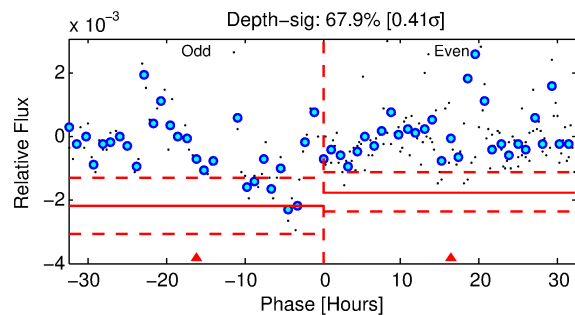
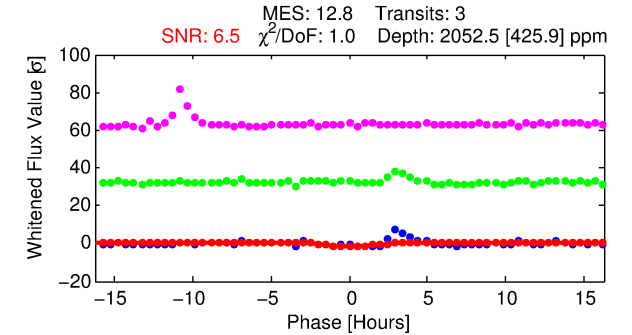
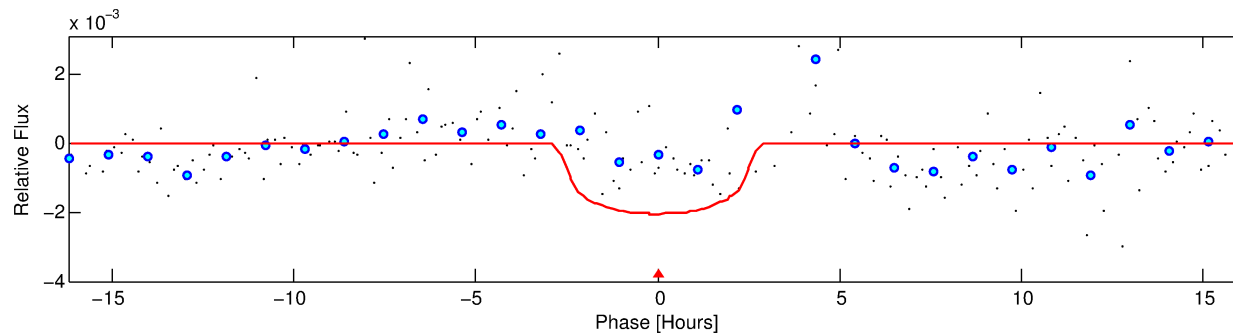
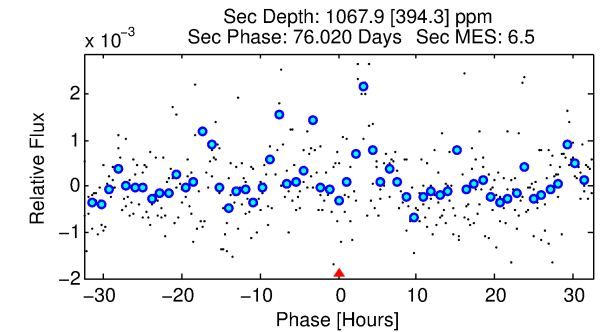
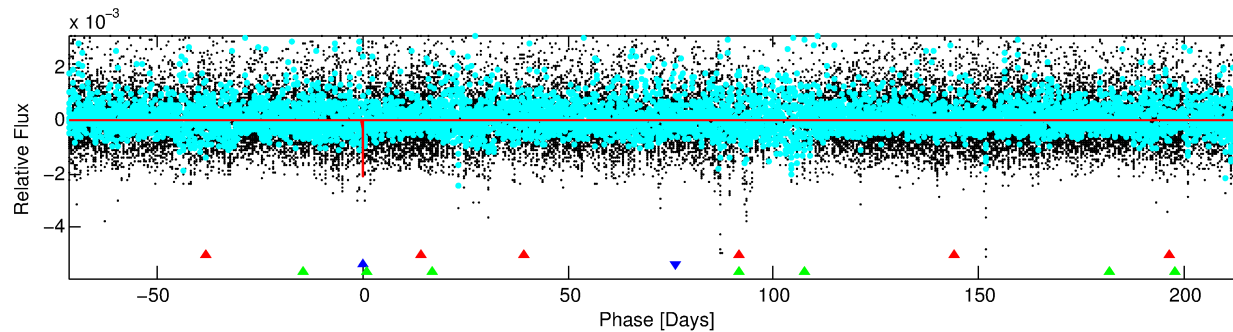
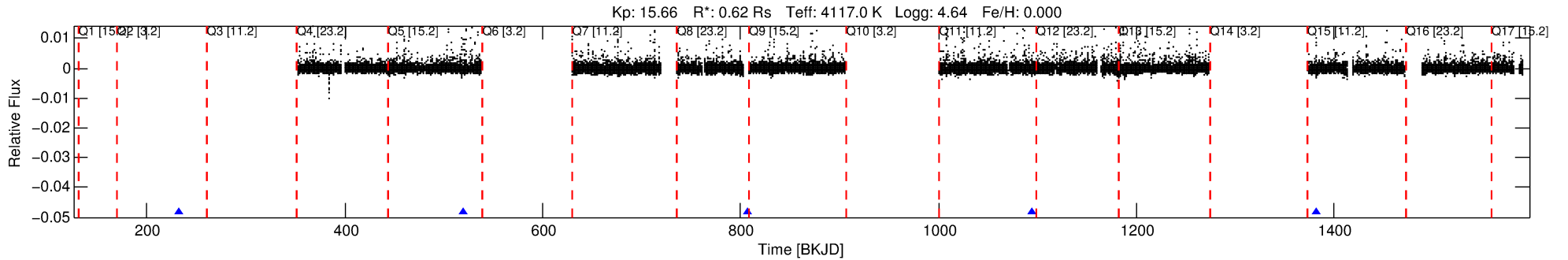
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005632110-02

No Significant Match Found

# DV One-Page Summary

KIC: 5632110 Candidate: 2 of 3 Period: 287.288 d



## DV Fit Results:

Period = 287.28845 [0.00486] d  
Epoch = 232.6491 [0.0154] BKJD  
Rp/R\* = 0.0412 [0.0614]  
a/R\* = 387.48 [1890.50]  
b = 0.42 [9.85]  
Seff = 0.19 [0.04]  
Teq = 168 [8] K  
Rp = 2.79 [4.17] Re  
a = 0.7244 [0.0606] AU  
Ag = 39508.09 [118689.43] [0.33σ]  
Teffp = 3666 [2755] K [1.27σ]

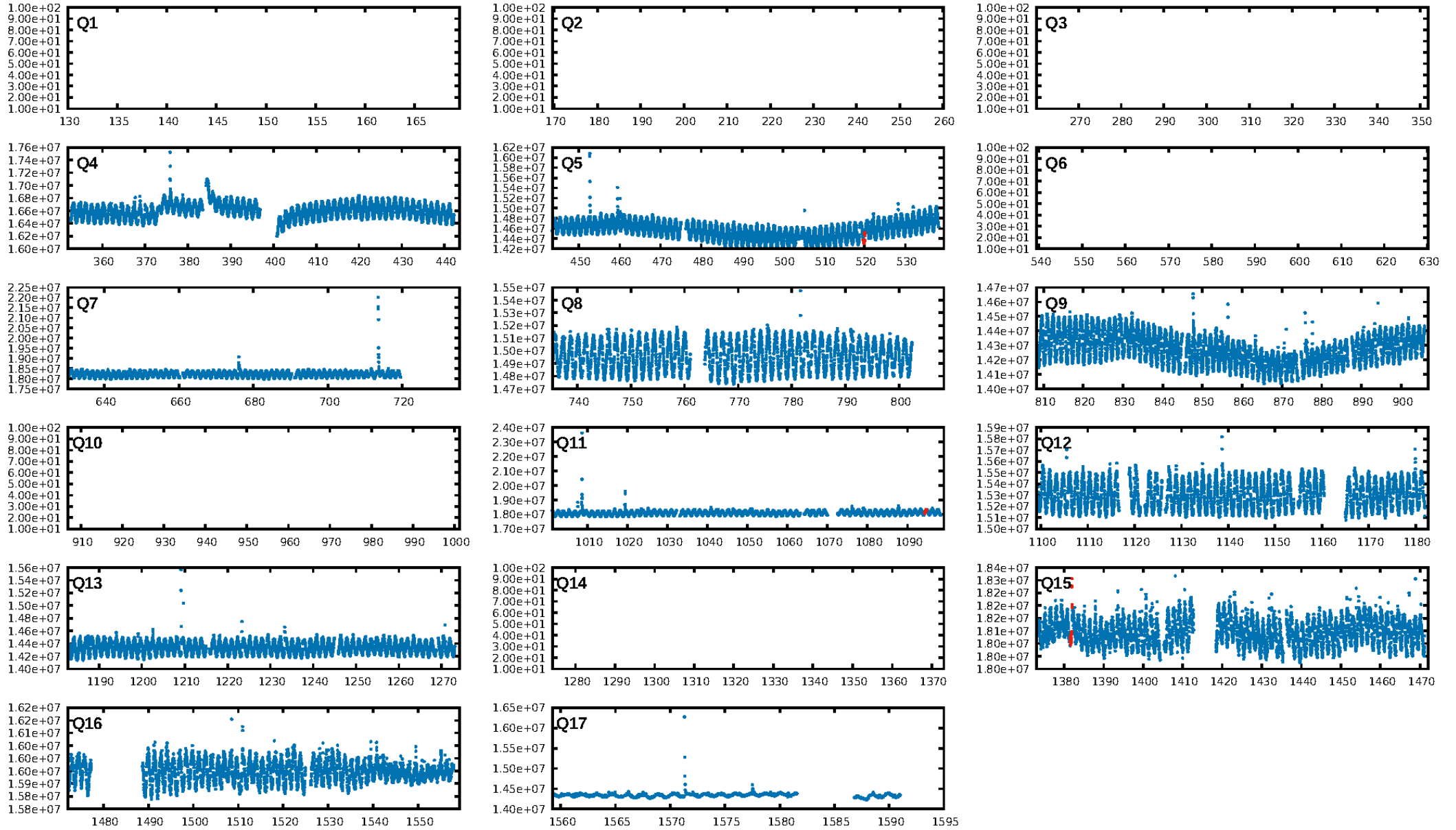
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [141.41σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 2.8%  
ModelChiSquareGof-sig: 97.7%  
Bootstrap-pfa: 8.36e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.3138  
Centroid-sig: 0.2%  
Centroid-so: 2.227 arcsec [3.85σ]  
OotOffset-rm: 1.504 arcsec [0.82σ]  
KicOffset-rm: 0.343 arcsec [2.51σ]  
OotOffset-st: 0/2/0/1 [3]  
KicOffset-st: 0/2/0/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

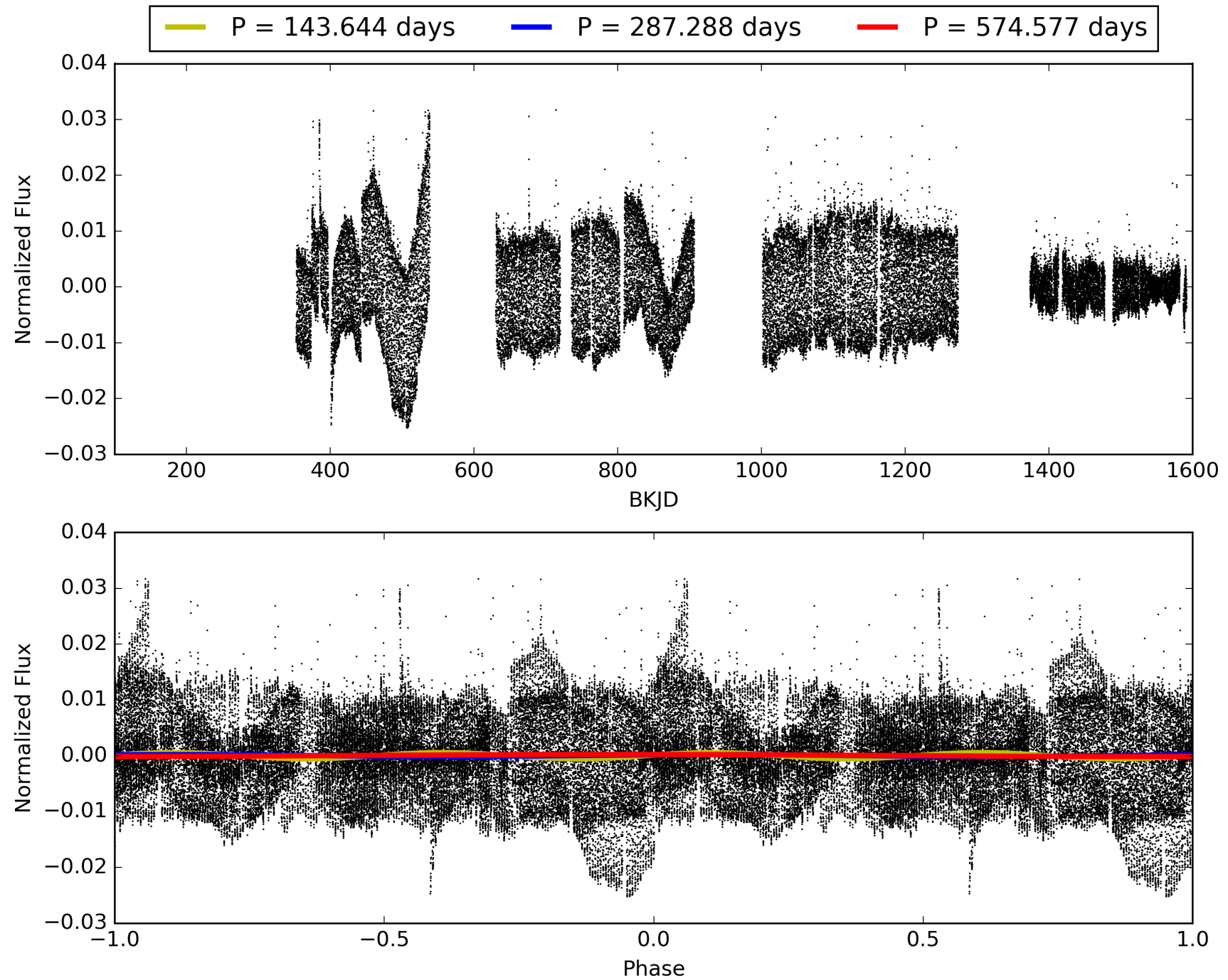
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 11:16:06 Z

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

# TCE 005632110-02, PDC Light Curves



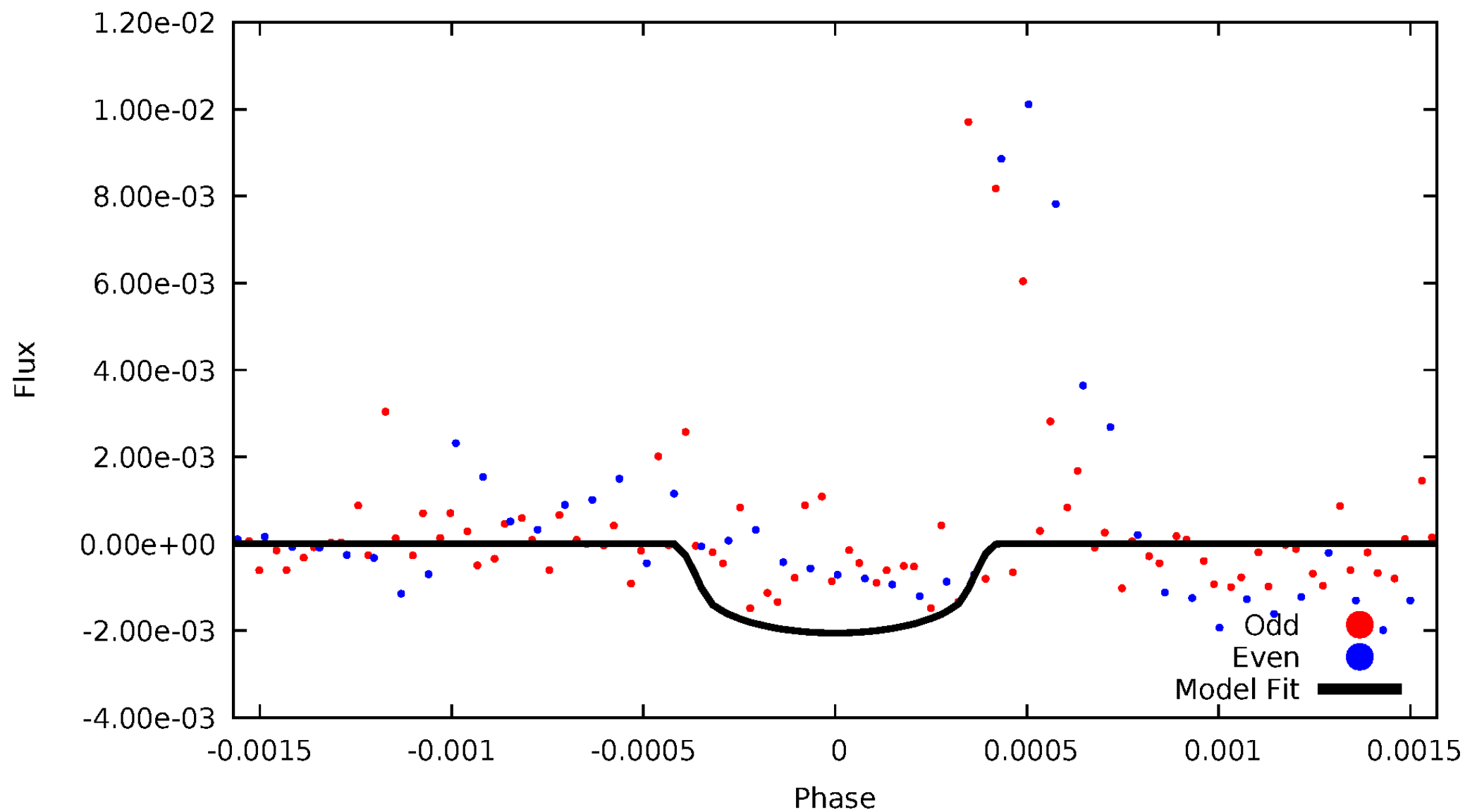
TCE 005632110-02





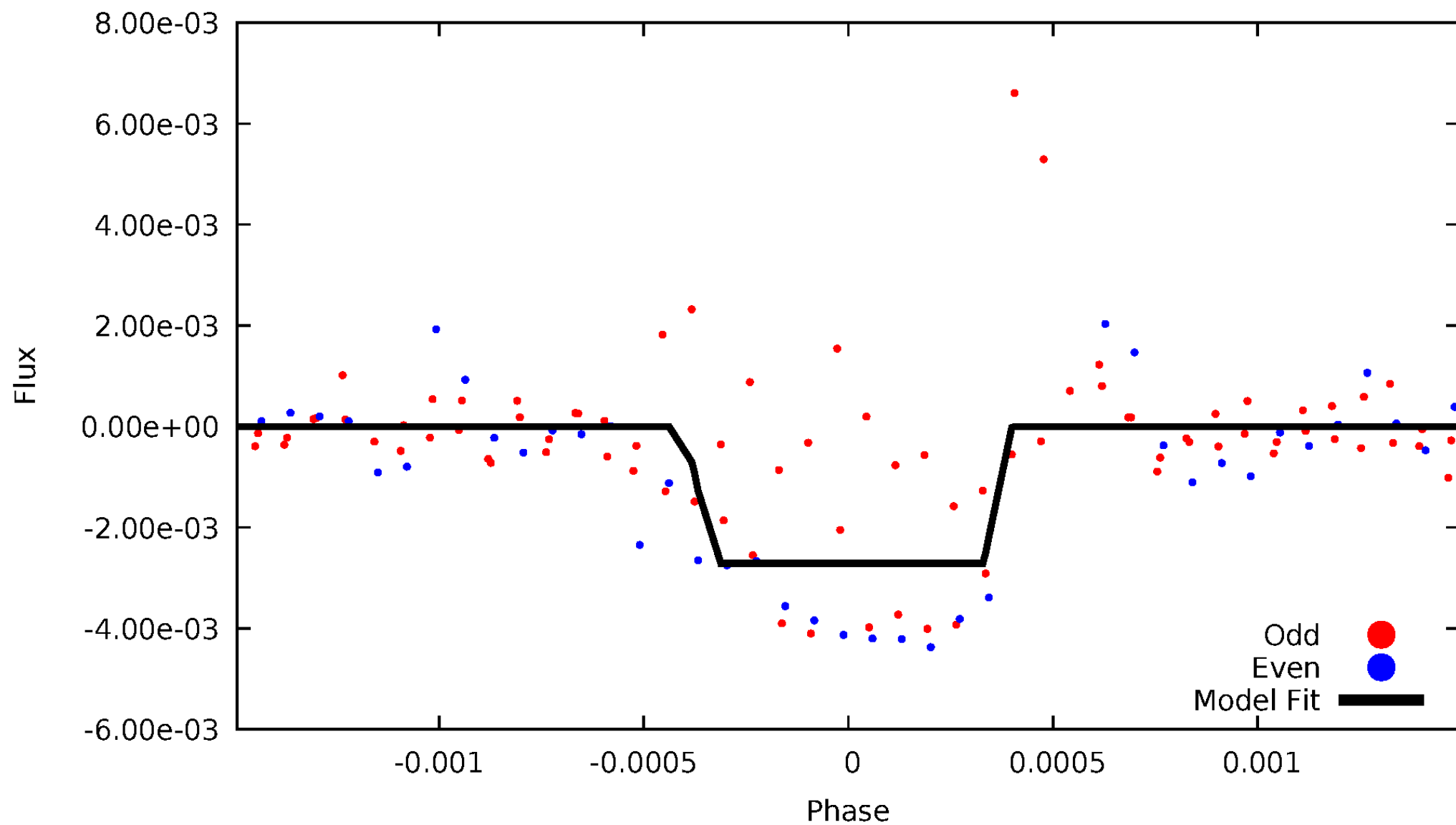
# DV Odd/Even

TCE 005632110-02



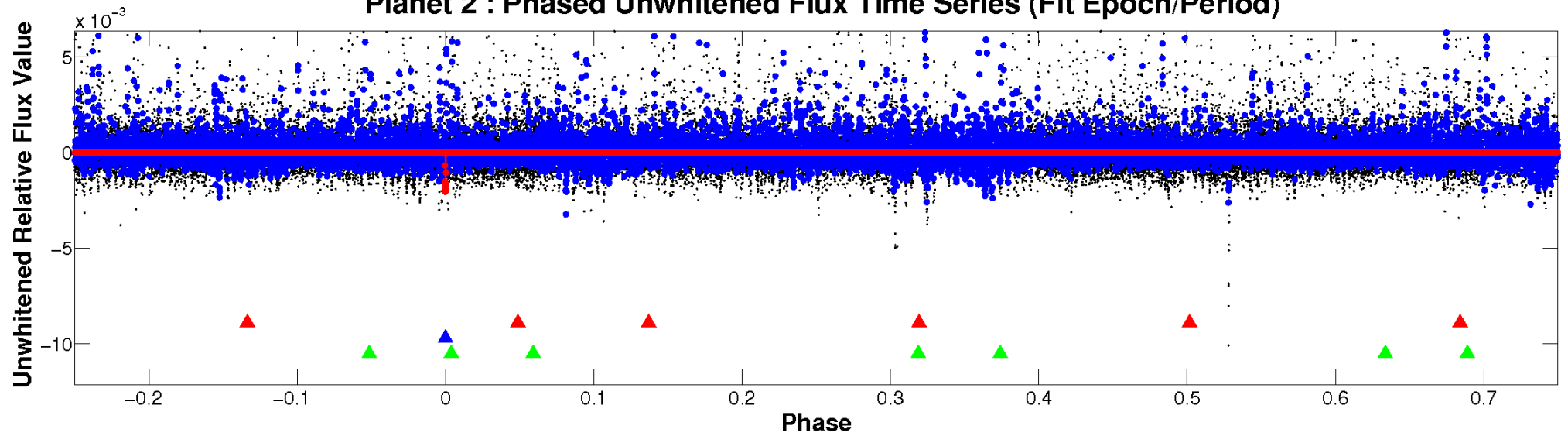
# ALT Odd/Even

TCE 005632110-02

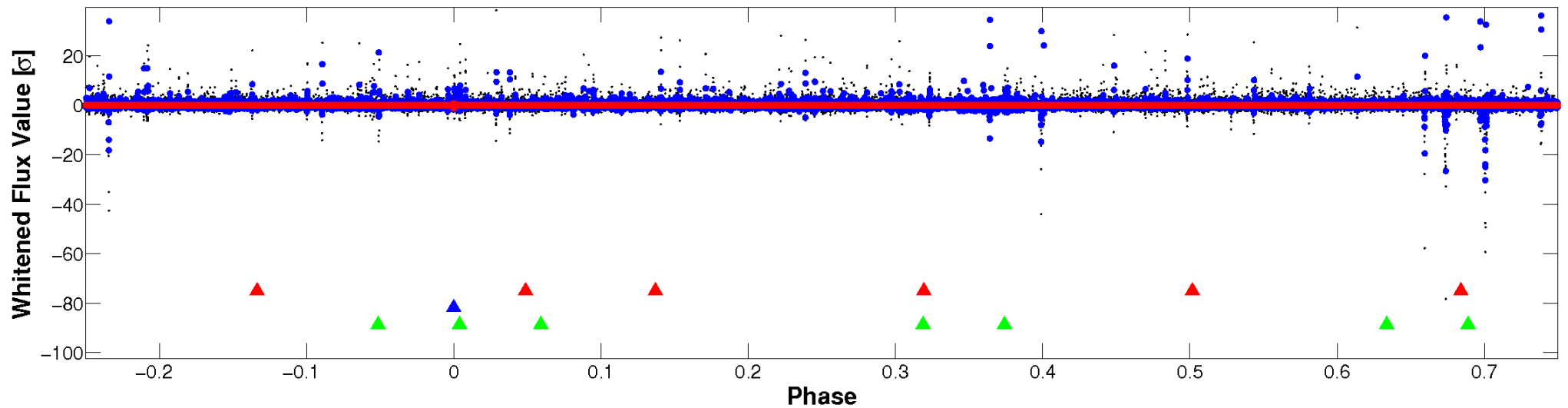


# Non-Whitened Vs. Whitened Light Curve

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

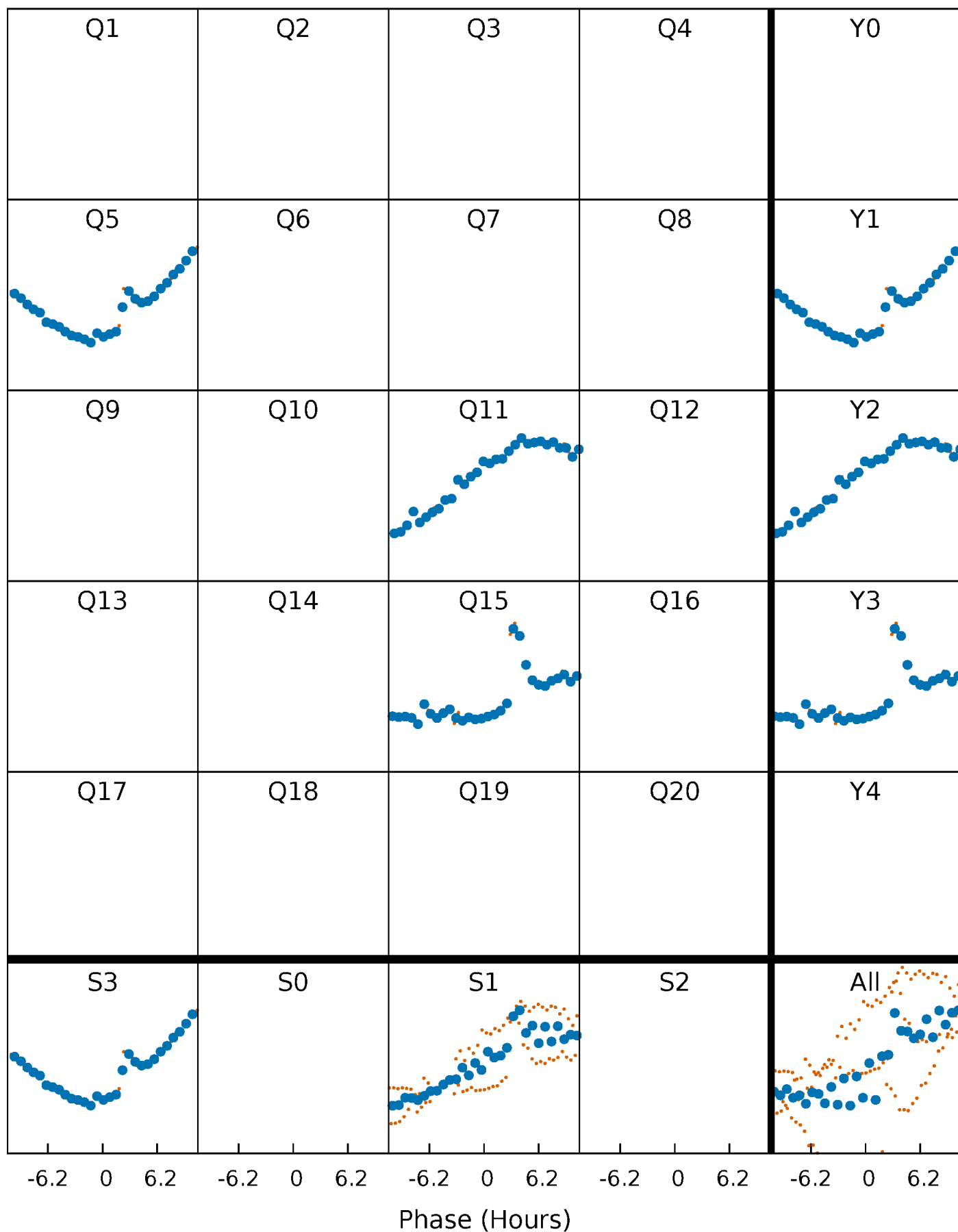


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



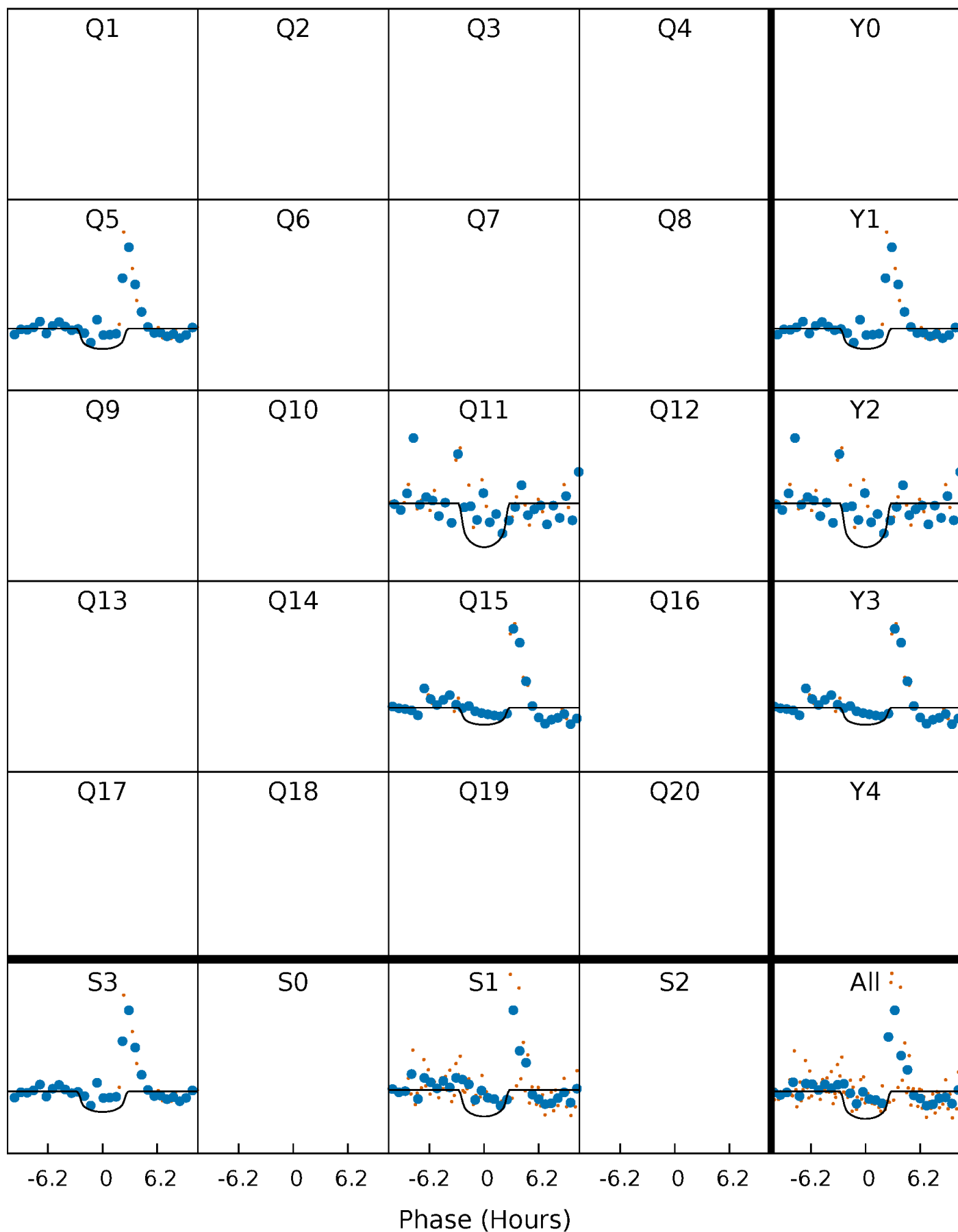
# PDC Quarter-Phased Transit Curves

TCE 005632110-02 P=287.288445 Days  $T_0=232.649101$  (BKJD)



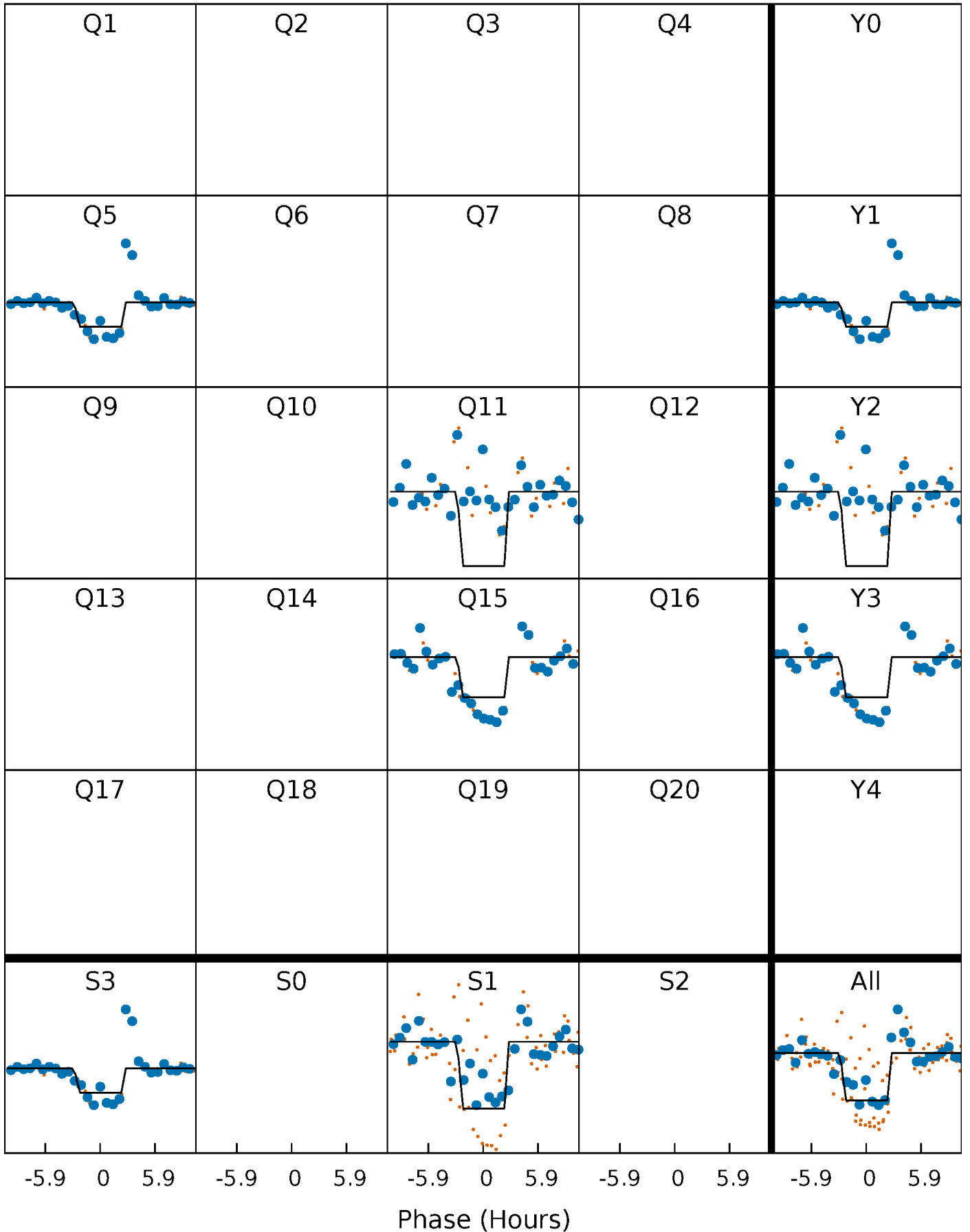
# DV Quarter-Phased Transit Curves

TCE 005632110-02     $P=287.288445$  Days     $T_0=232.649101$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

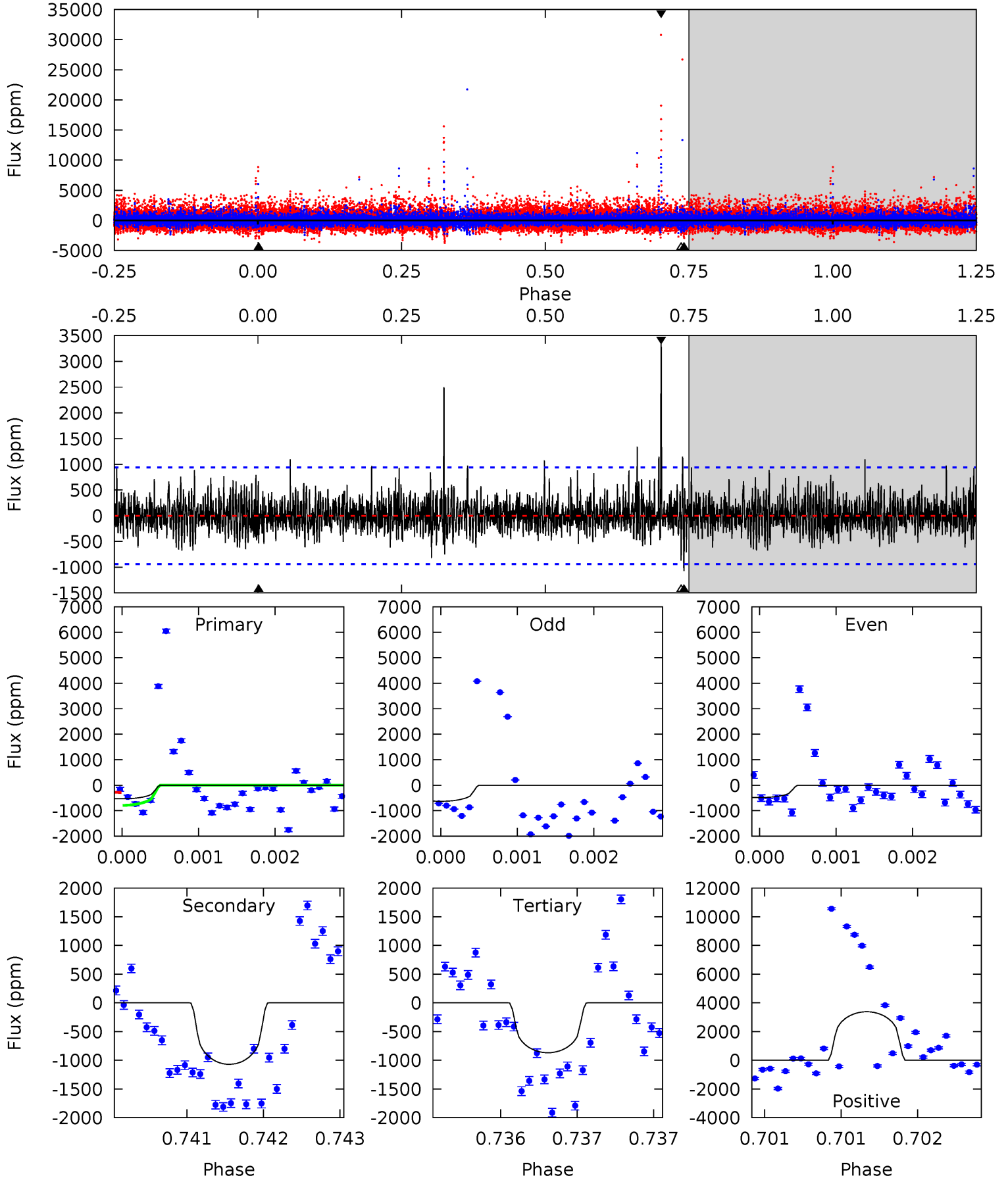
TCE 005632110-02 P=287.295854 Days  $T_0=232.624809$  (BKJD)



# DV Model-Shift Uniqueness Test

005632110-02, P = 287.288445 Days, E = 232.649101 Days

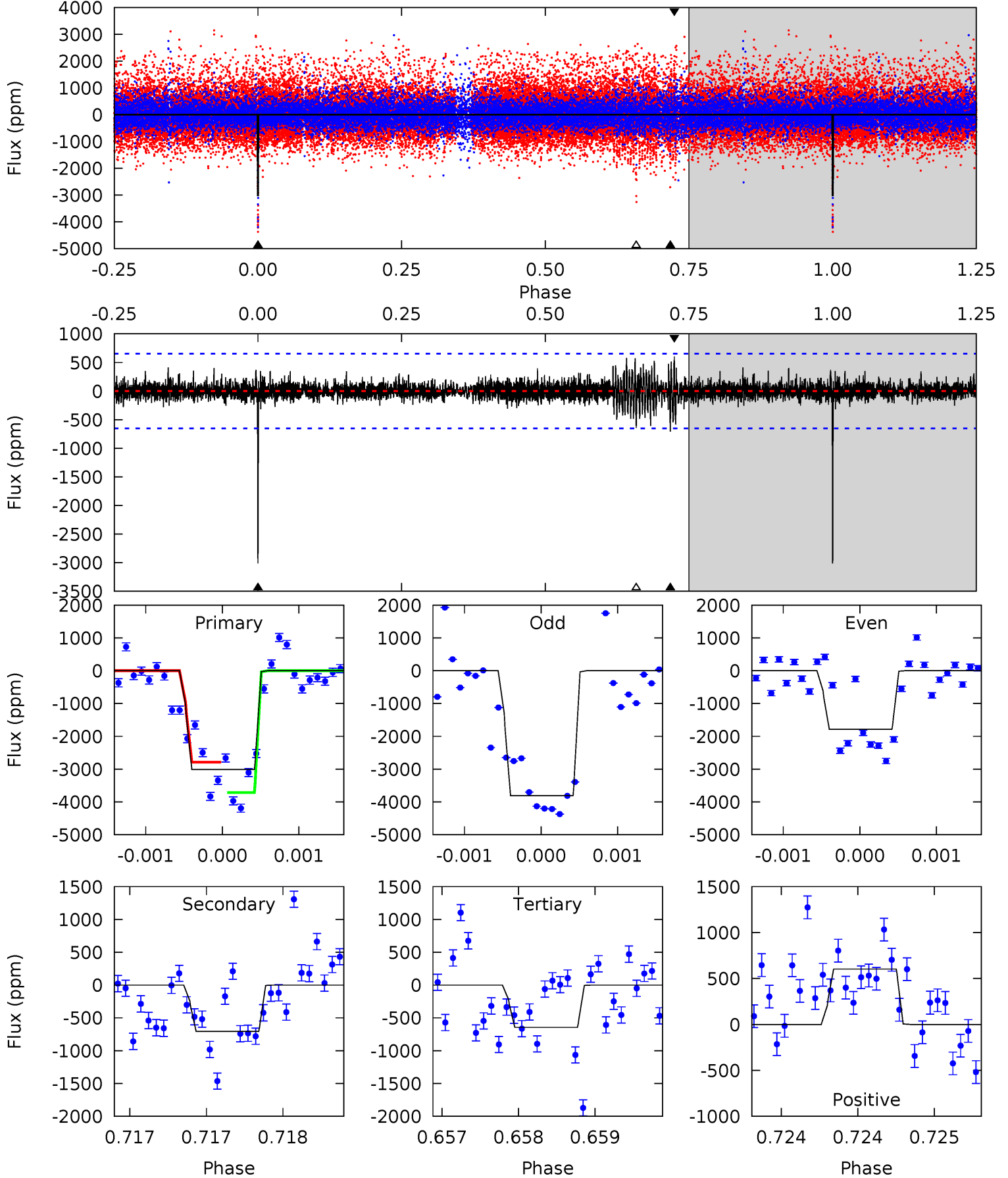
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.11	6.25	5.07	19.7	5.48	3.34	1.52	-1.96	-16.6	1.18	-13.5	0.26	0.73	0.76	1.49



# Alt Model-Shift Uniqueness Test

005632110-02, P = 287.295854 Days, E = 232.624809 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
25.3	5.95	5.43	5.07	5.49	3.36	0.94	19.9	20.3	0.52	0.88	8.20	0.74	0.17	3.74





### Stellar Parameters For KIC 005632110

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4117^{+129}_{-158}$	$4.640^{+0.060}_{-0.020}$	$0.000^{+0.300}_{-0.300}$	$0.621^{+0.038}_{-0.065}$	$0.614^{+0.058}_{-0.064}$	$3.613^{+0.990}_{-0.334}$
	+3%/-4%	+1%/-0%	+inf%/-inf%	+6%/-10%	+9%/-10%	+27%/-9%
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 005632110-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1071 \pm 171$	$4.15^{+3.53}_{-2.81}$	$233^{+8}_{-10}$	$3325^{+1696}_{-556}$	$18223^{+153033}_{-13079}$
Alt.	$-707 \pm 119$	$4.58^{+3.76}_{-2.96}$	$233^{+8}_{-9}$	$3058^{+1199}_{-480}$	$10219^{+66239}_{-7336}$

$T_{max}$  = 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

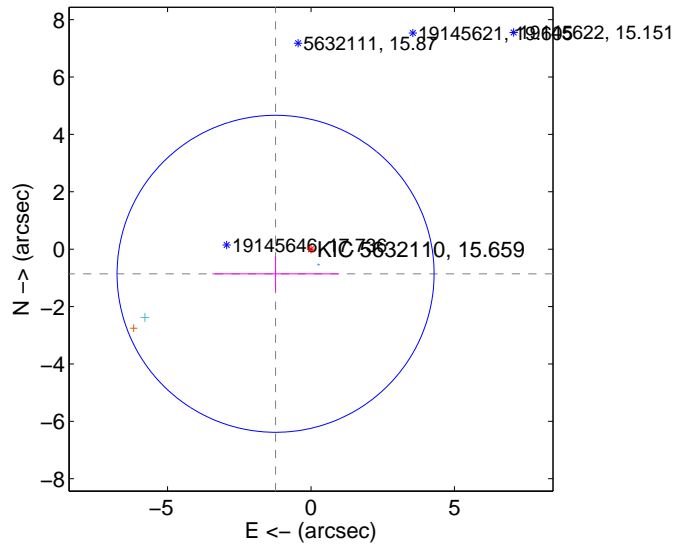
Supplemental centroid analysis for 005632110-02. Kepler magnitude: 15.66. Transit SNR 6.51

There are 2 quarters with good PRF difference image offsets

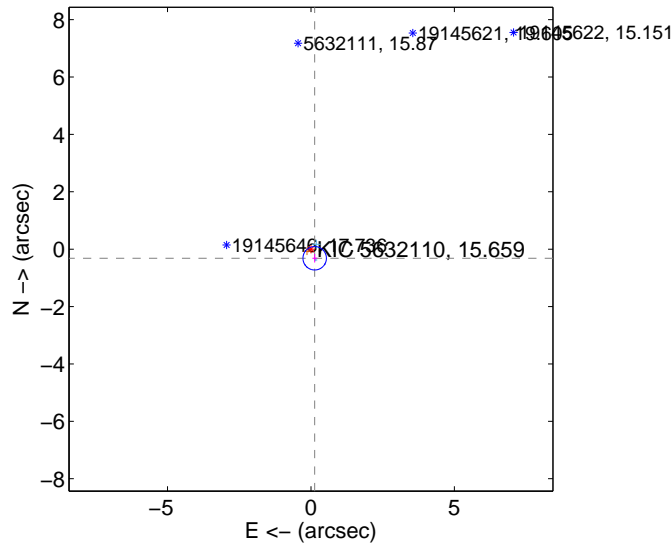
The OOT PRF centroid is offset from the target star catalog position by about 6.50 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.504 \pm 1.842$	0.82	$1.234 \pm 2.203$	$-0.859 \pm 0.606$
PRF-fit source offset from KIC position	$0.343 \pm 0.136$	2.51	$-0.130 \pm 0.082$	$-0.317 \pm 0.150$
photometric centroid source offset	$2.23 \pm 0.58$	3.85	$-1.99 \pm 0.62$	$1.00 \pm 0.39$

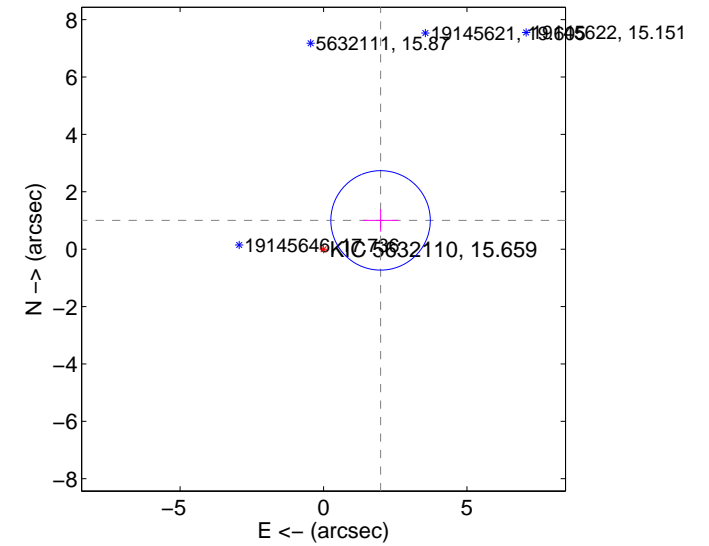
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

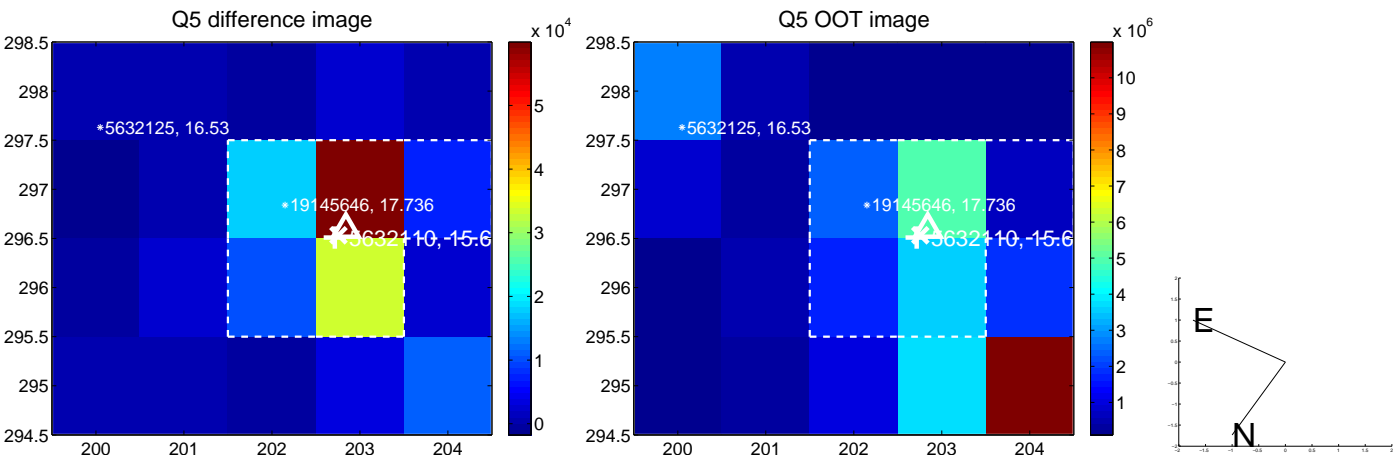


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000 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



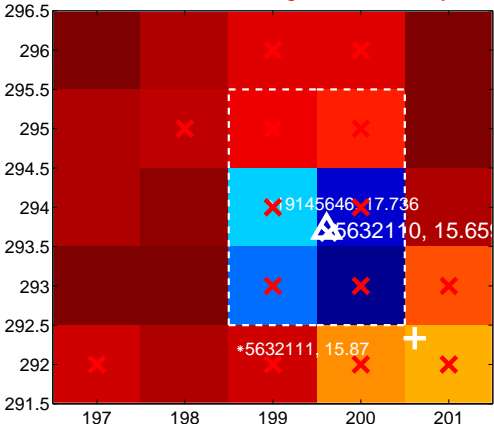
Q10 no difference image



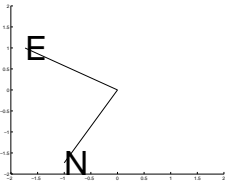
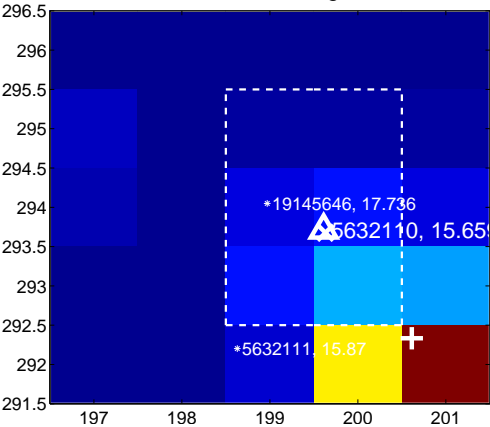
Q10 no OOT image



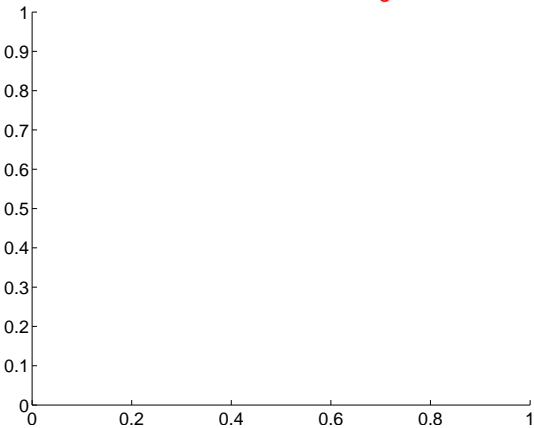
Q11 difference image. Poor Quality



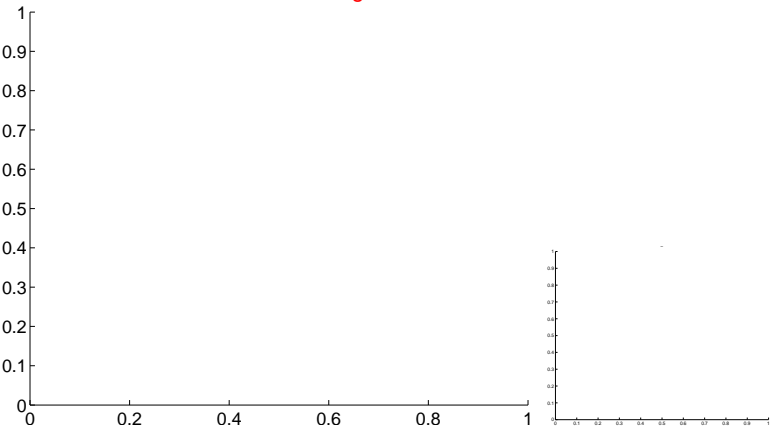
Q11 OOT image



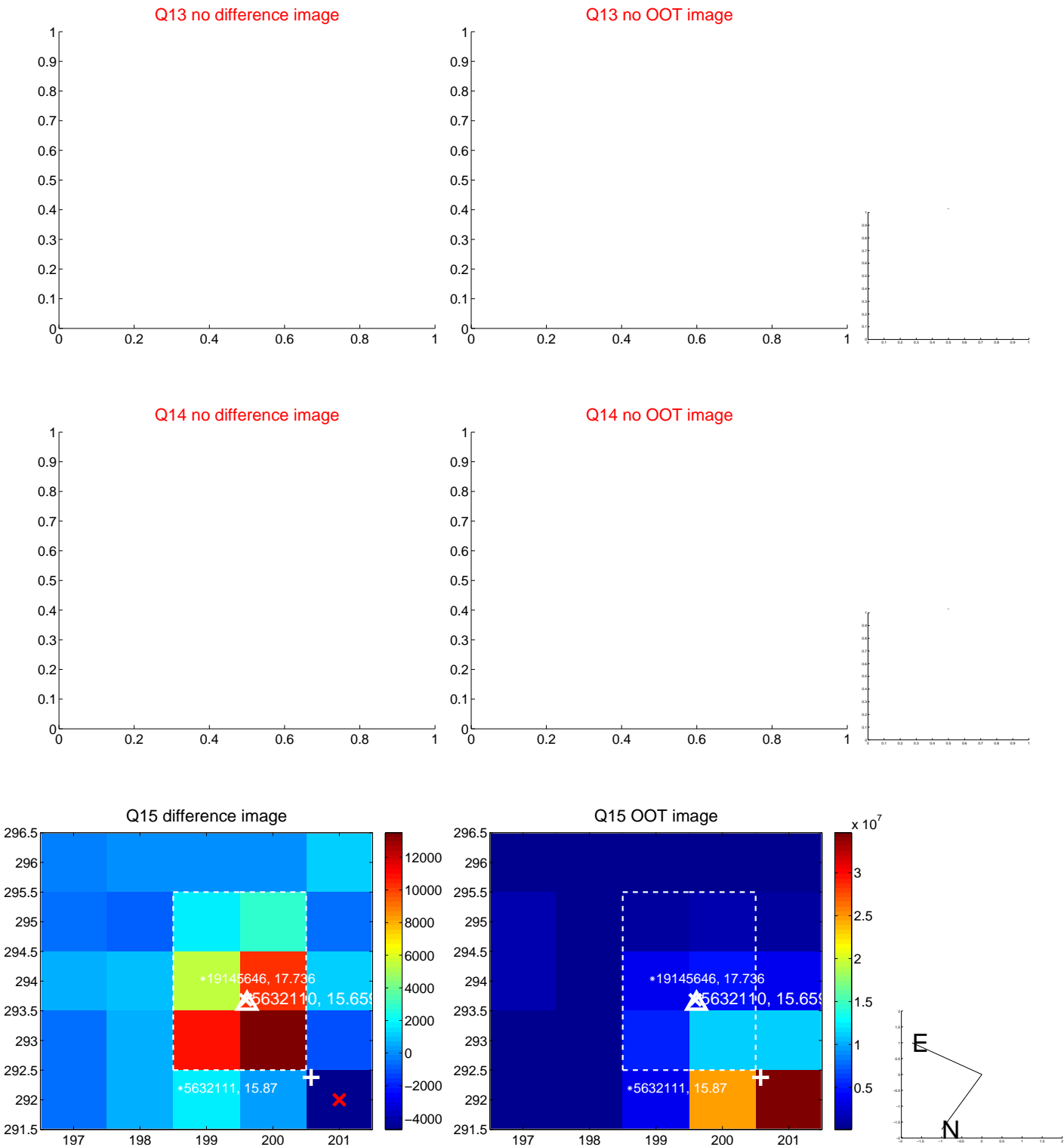
Q12 no difference image



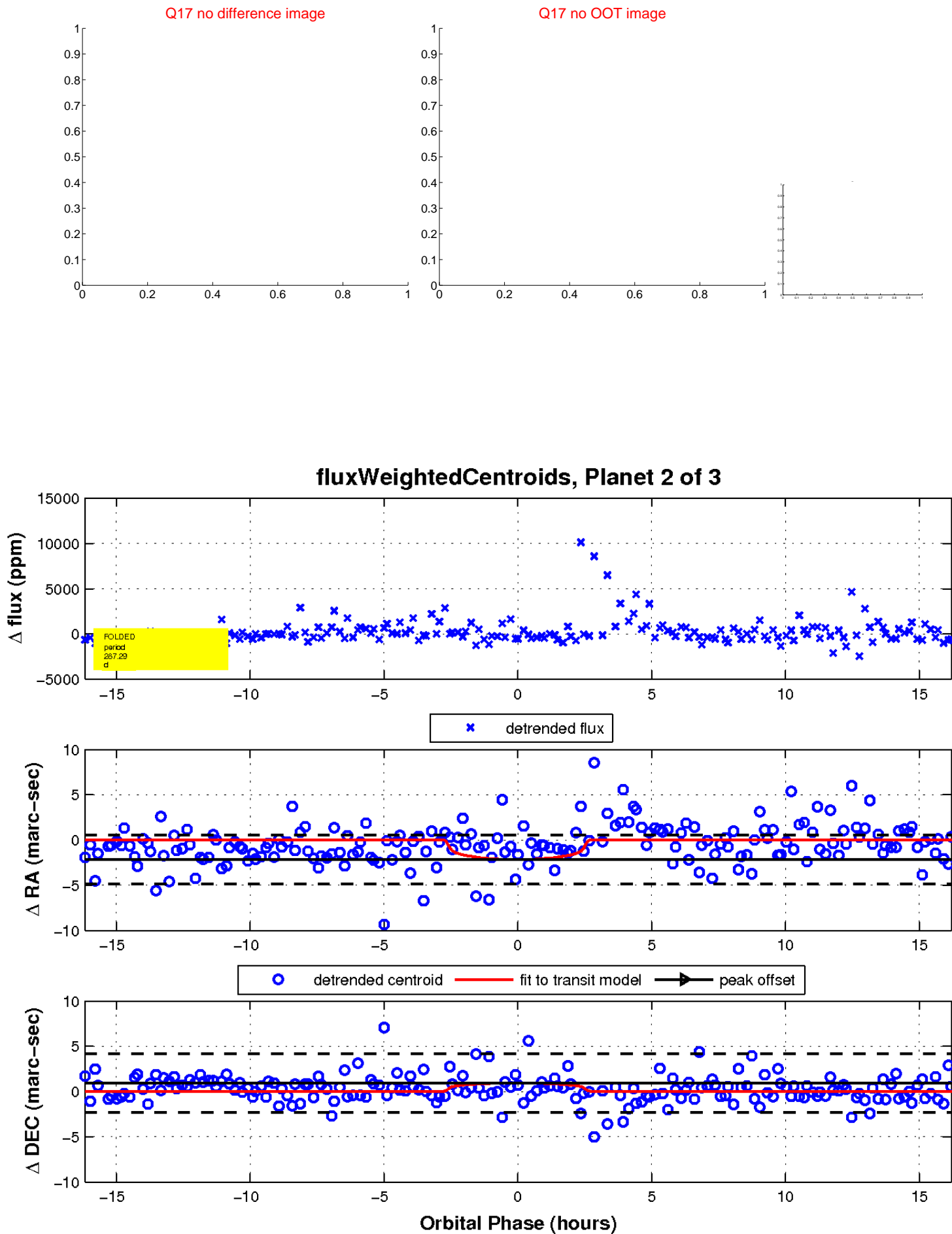
Q12 no OOT image



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

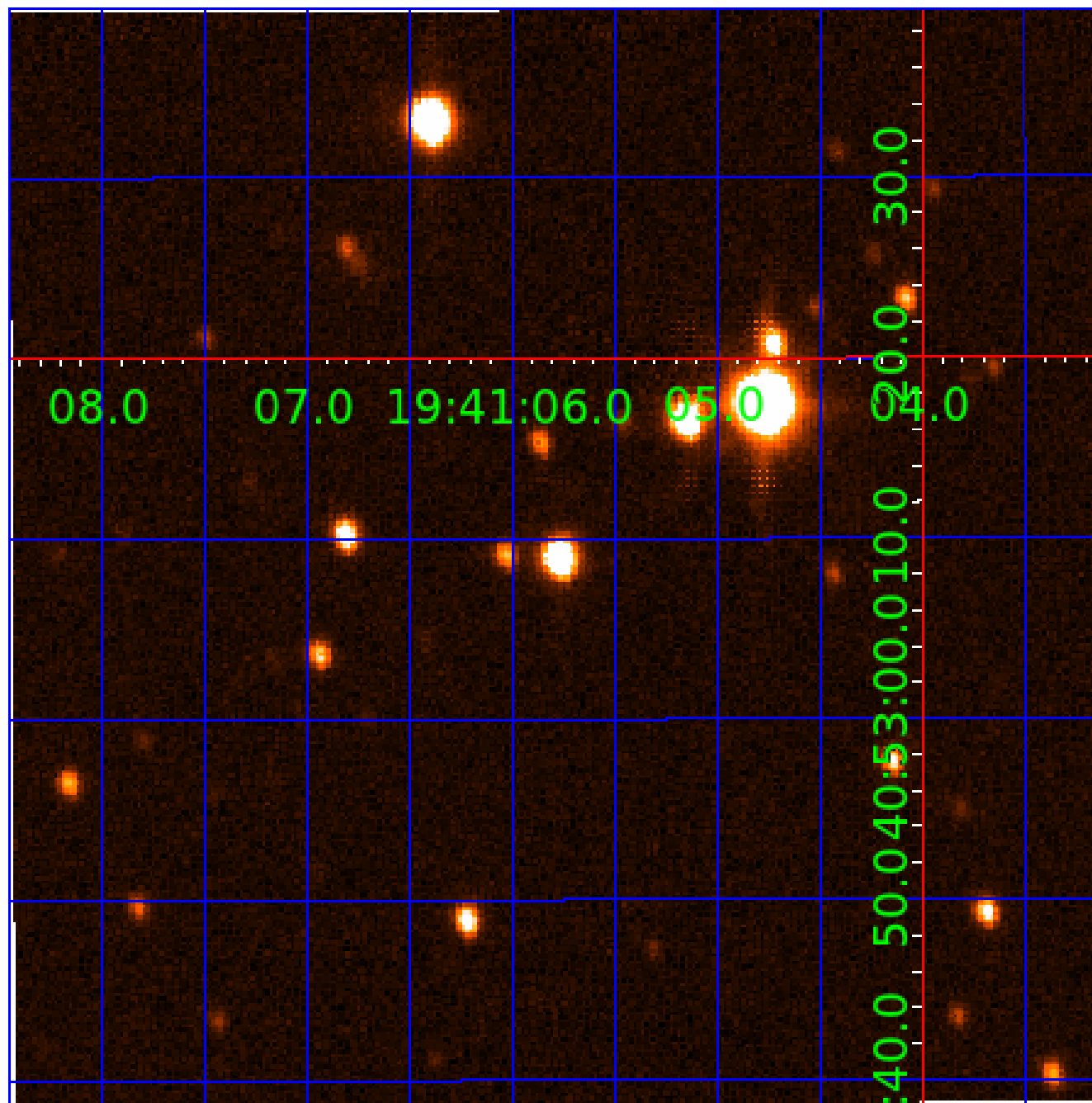


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 005632110

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005632110-01	OBS	No	234.894324	246.677501	1419.7	7.059	9.6	5.4	0.62	4117	2.27	0.25
005632110-02	OBS	No	287.288445	232.649101	2052.5	5.408	12.8	6.5	0.62	4117	2.79	0.19
005632110-03	OBS	No	196.817795	217.888590	1380.9	4.491	9.6	5.2	0.62	4117	2.23	0.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005632110-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_MEAS
005632110-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005632110-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—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.

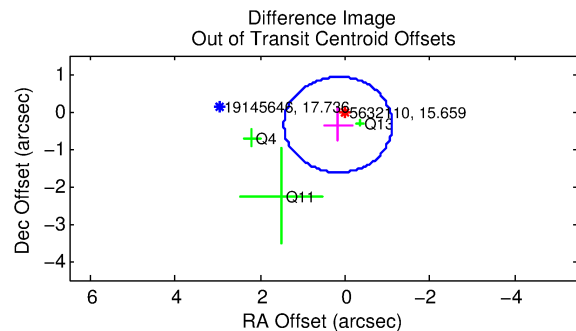
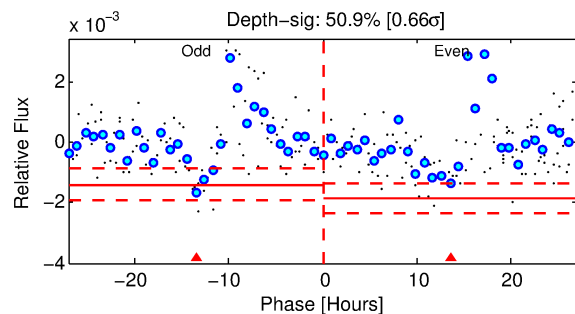
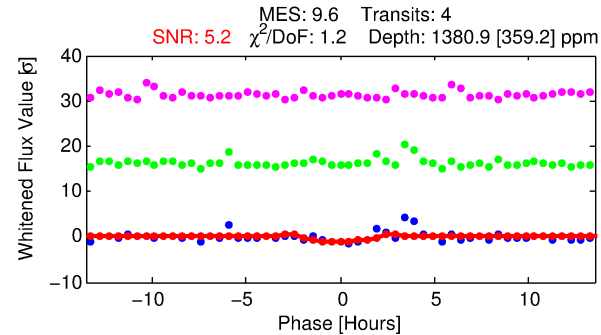
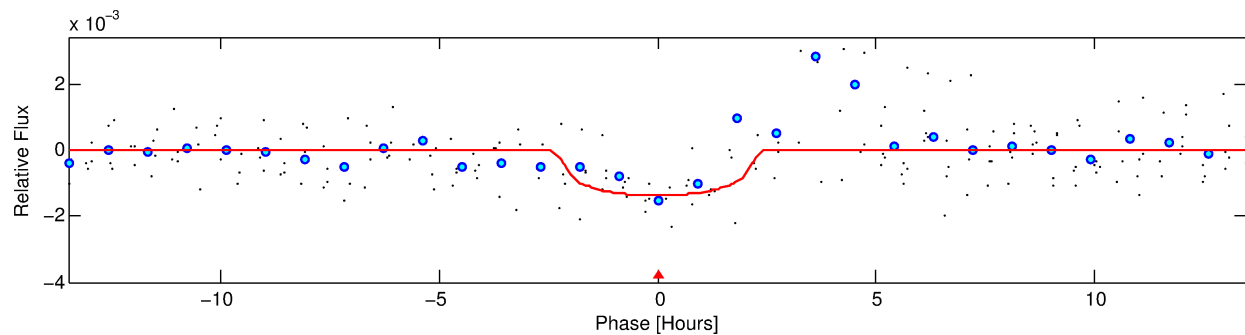
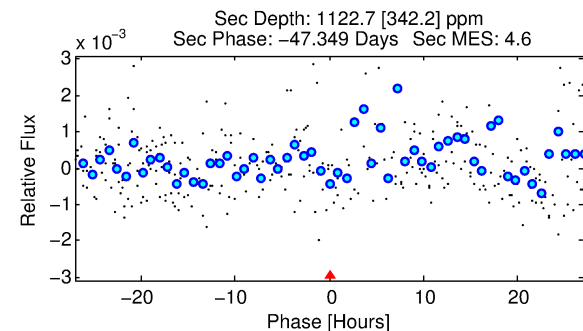
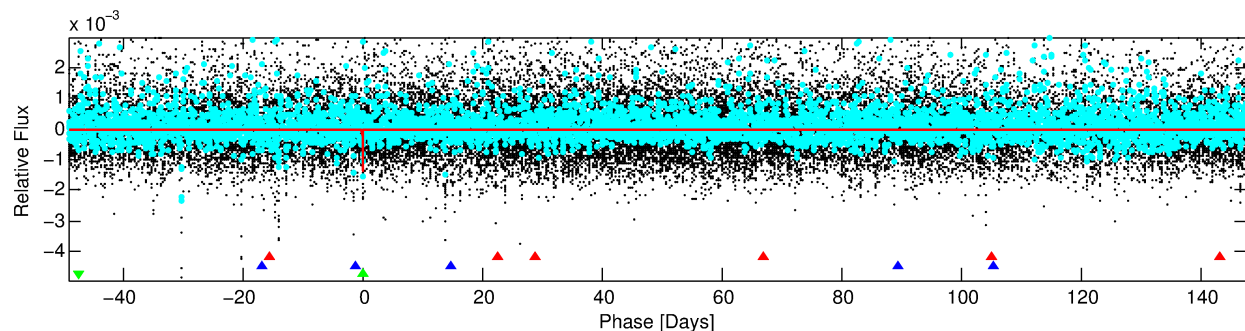
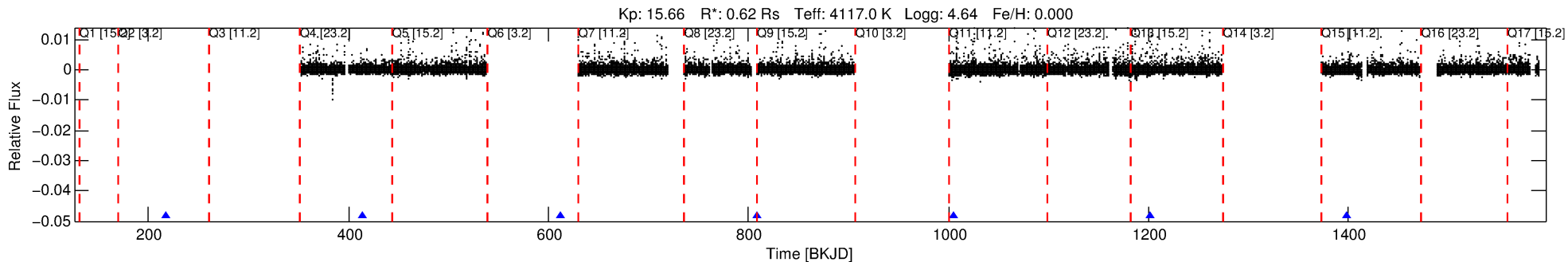
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005632110-03

No Significant Match Found

# DV One-Page Summary

KIC: 5632110 Candidate: 3 of 3 Period: 196.818 d



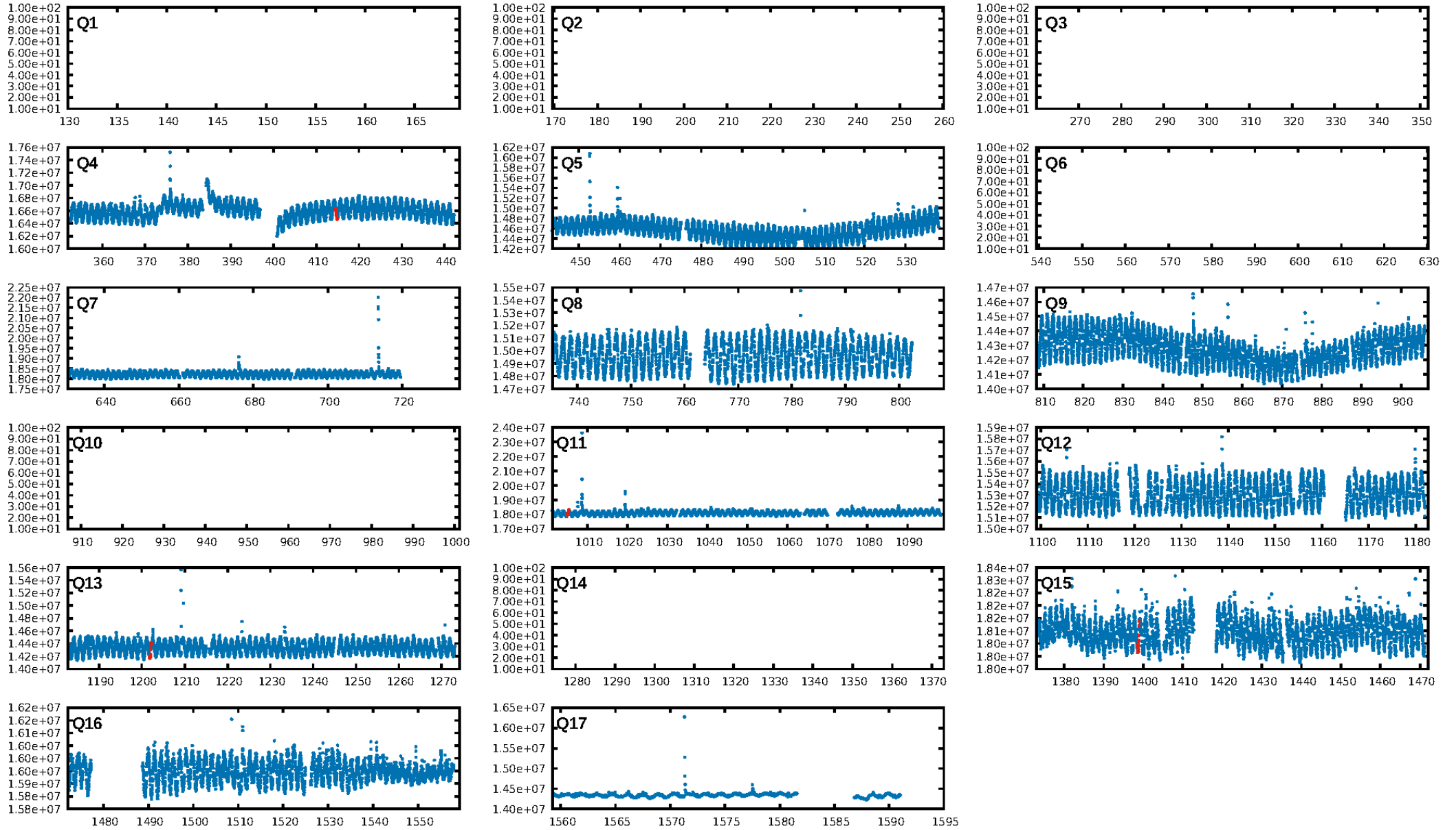
## DV Fit Results:

Period = 196.81779 [0.00365] d  
Epoch = 217.8886 [0.0149] BKJD  
Rp/R\* = 0.0328 [0.0579]  
a/R\* = 345.78 [1964.65]  
b = 0.00 [2201.19]  
Seff = 0.31 [0.06]  
Teq = 191 [9] K  
Rp = 2.22 [3.93] Re  
a = 0.5629 [0.0471] AU  
Ag = 39541.23 [139963.09] [0.28σ]  
Teffp = 4159 [3682] K [1.08σ]

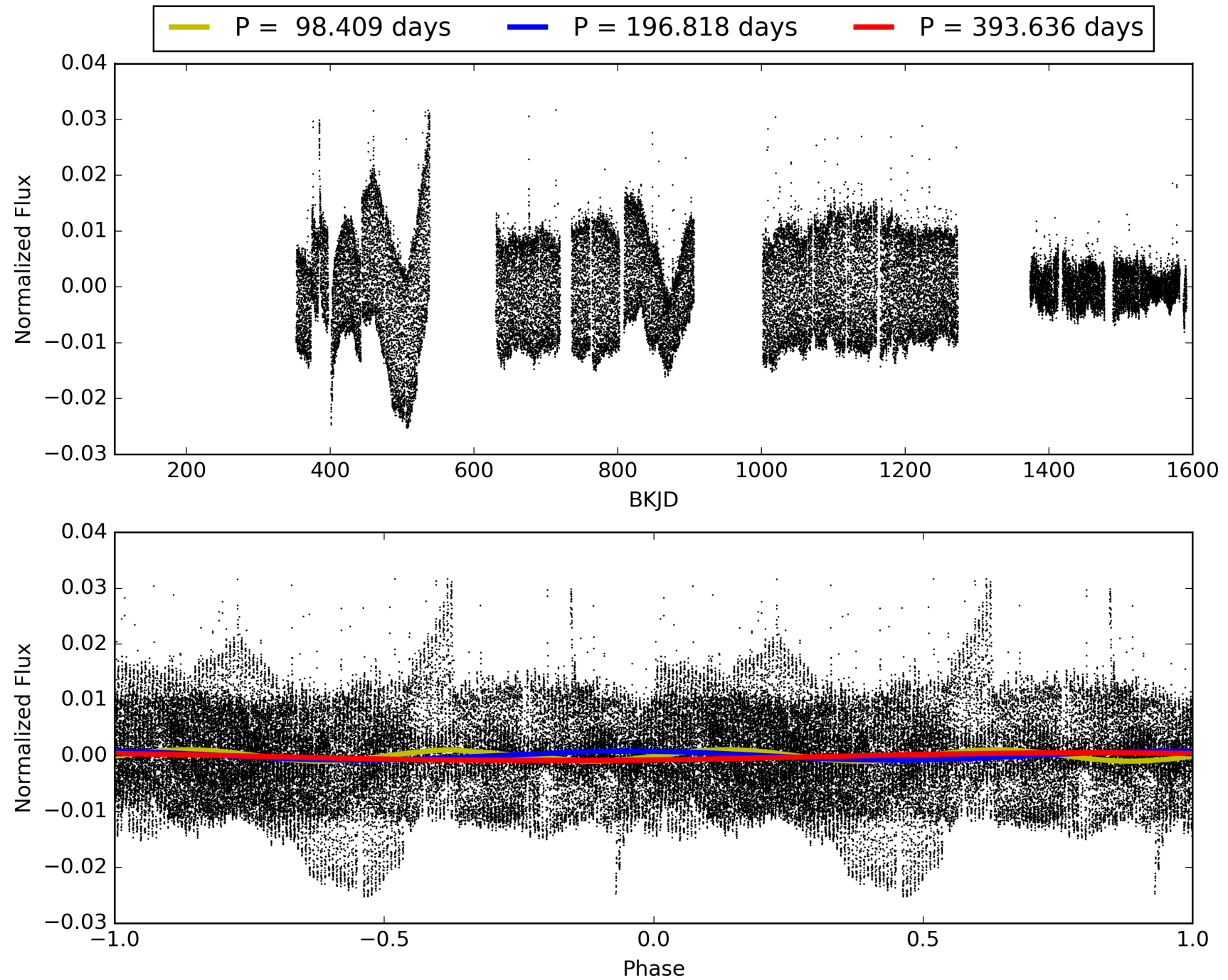
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [109.23σ]  
ModelChiSquare2-sig: 1.0%  
ModelChiSquareGof-sig: 77.0%  
**Bootstrap-pfa: 2.66e-09**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 4.584  
Centroid-sig: 12.5%  
**Centroid-so: 2.899 arcsec [3.29σ]**  
OotOffset-rm: 0.386 arcsec [0.91σ]  
KicOffset-rm: 0.133 arcsec [0.17σ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [4/4]

# TCE 005632110-03, PDC Light Curves

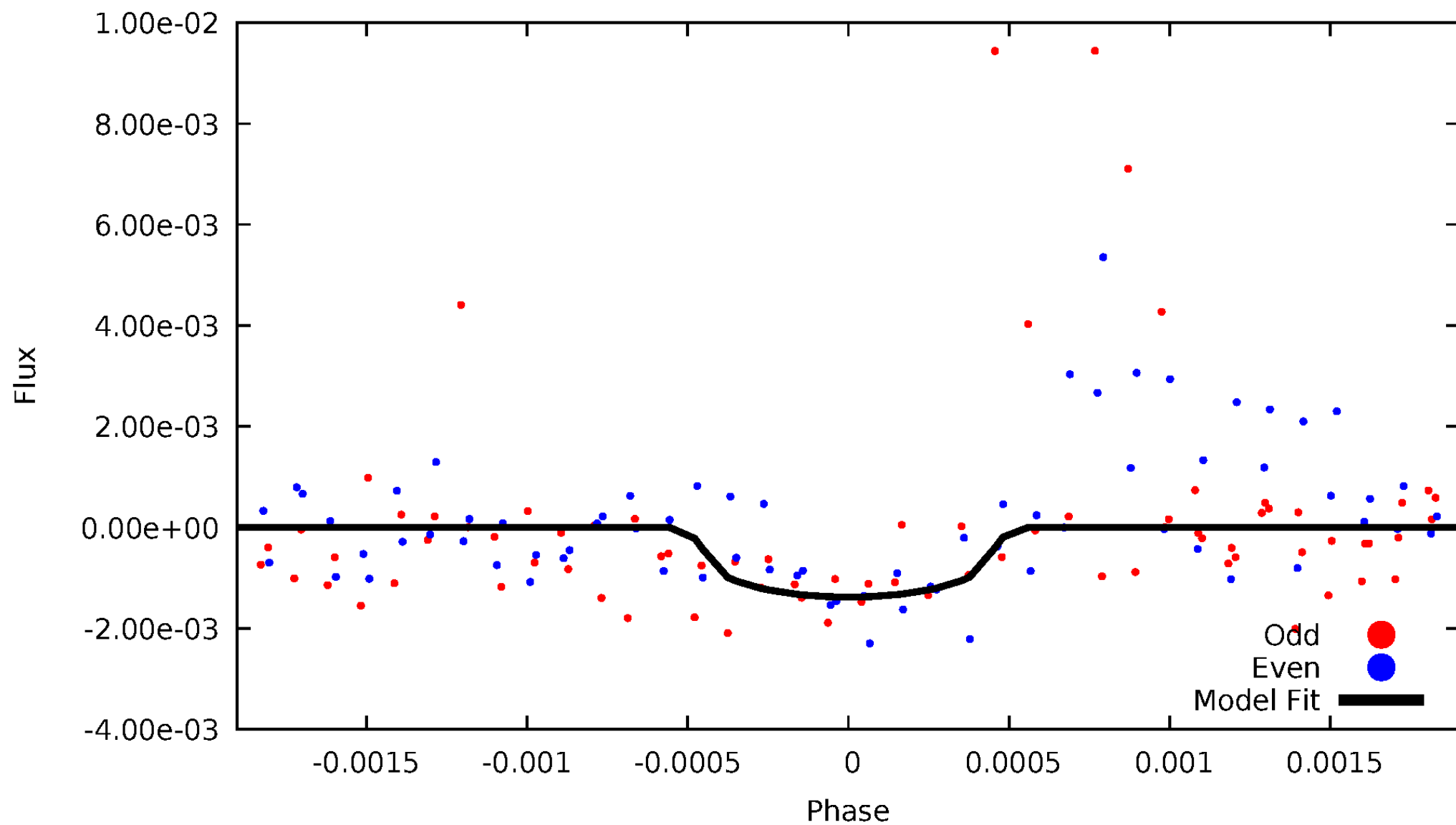


TCE 005632110-03



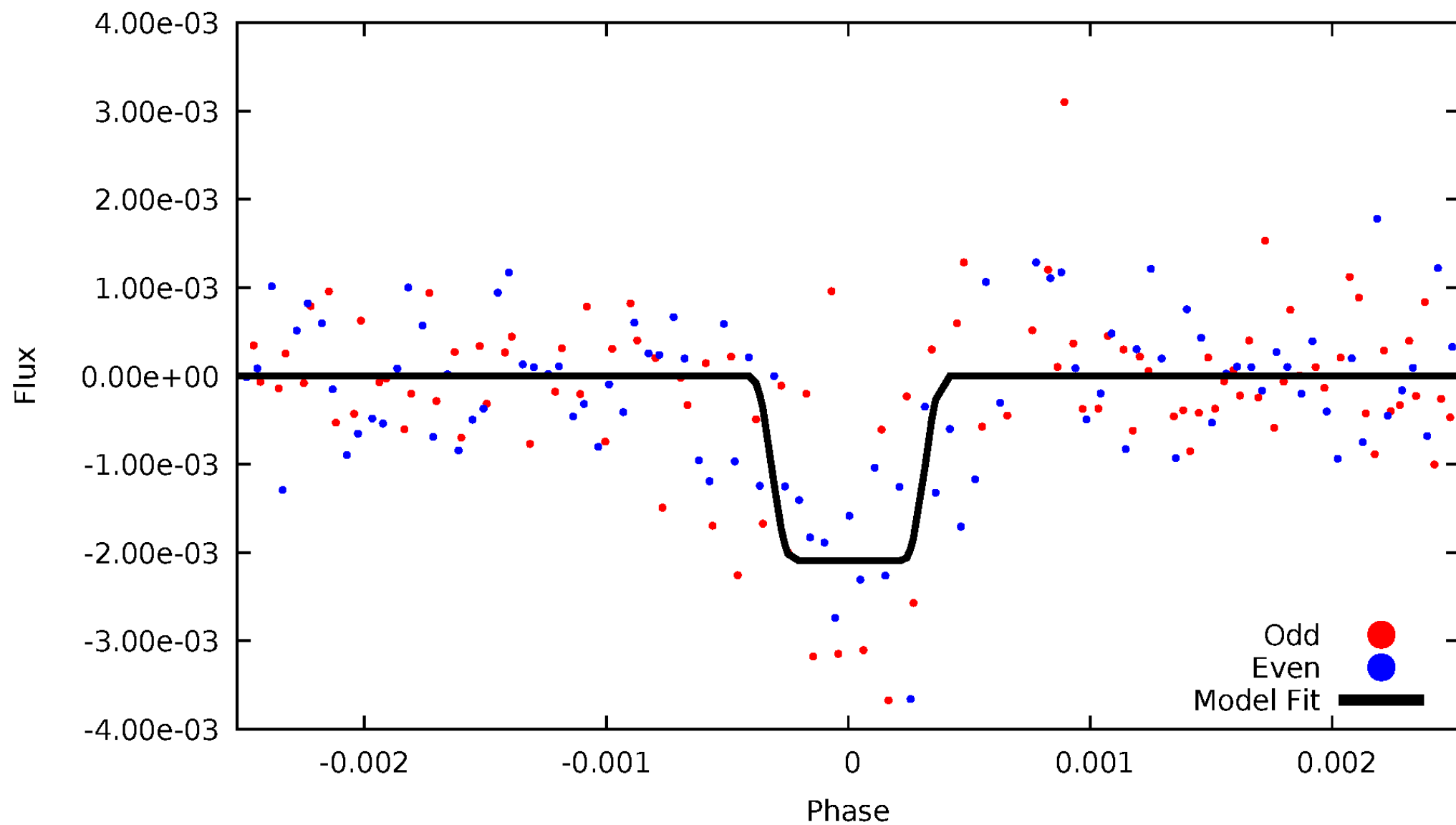
# DV Odd/Even

TCE 005632110-03

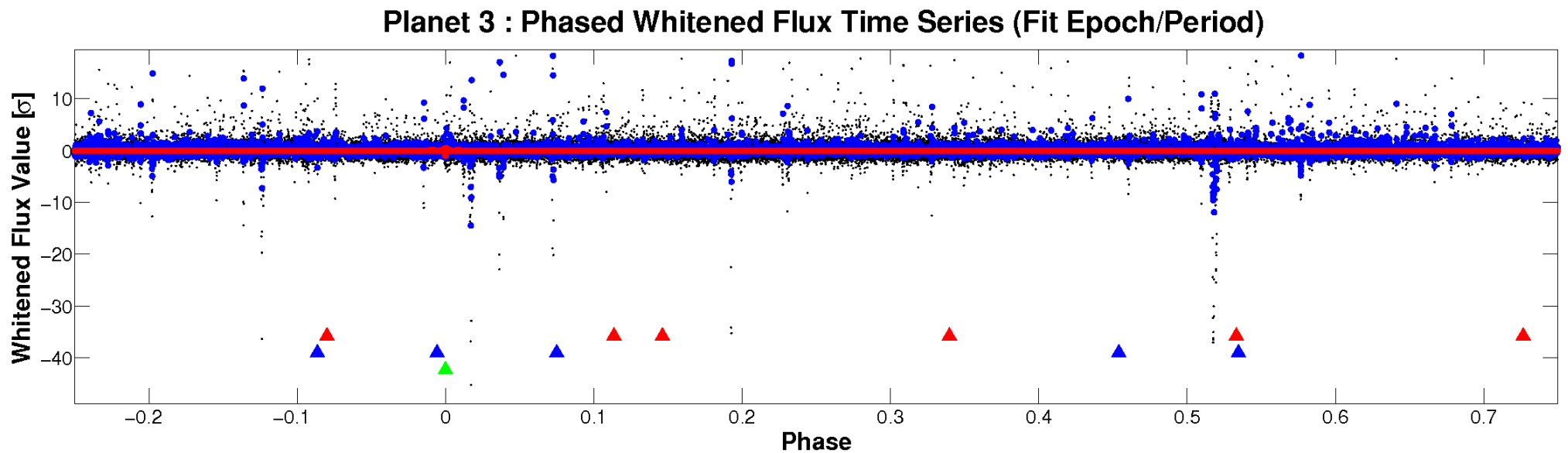
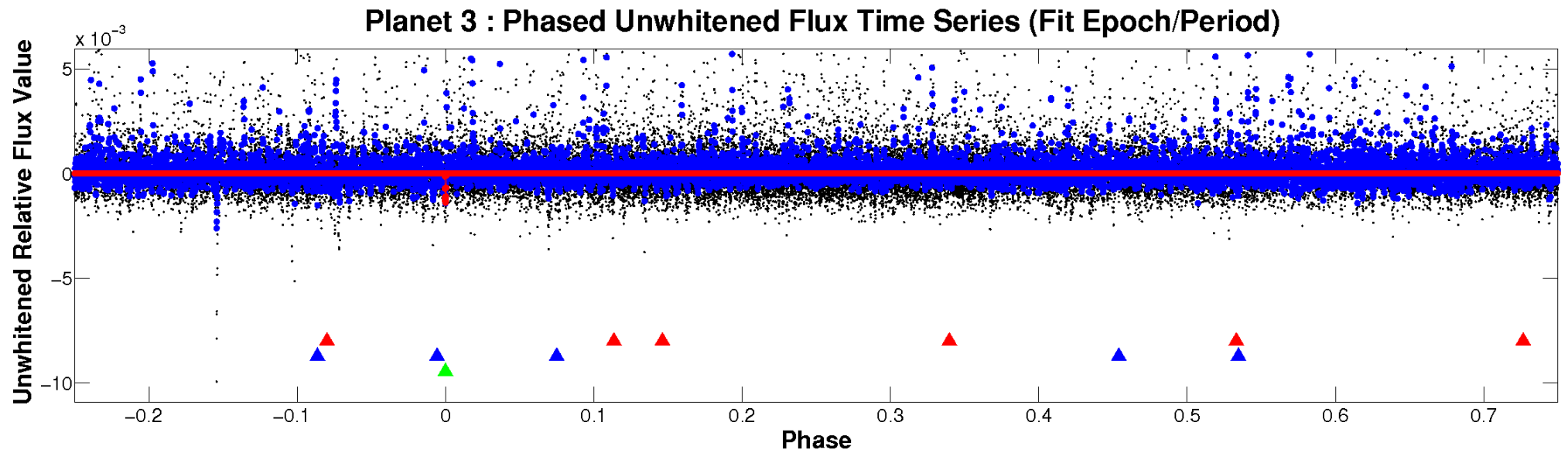


# ALT Odd/Even

TCE 005632110-03

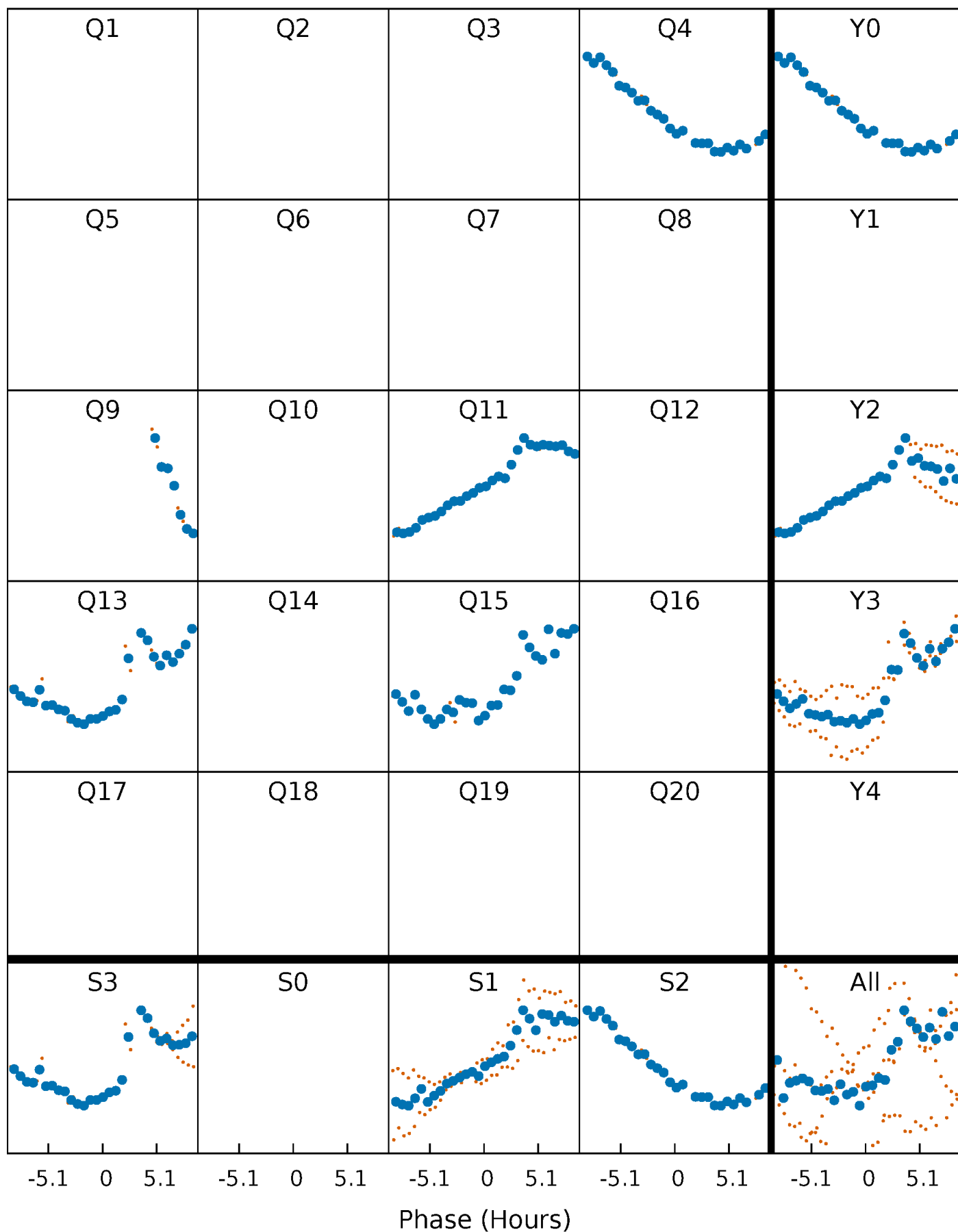


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

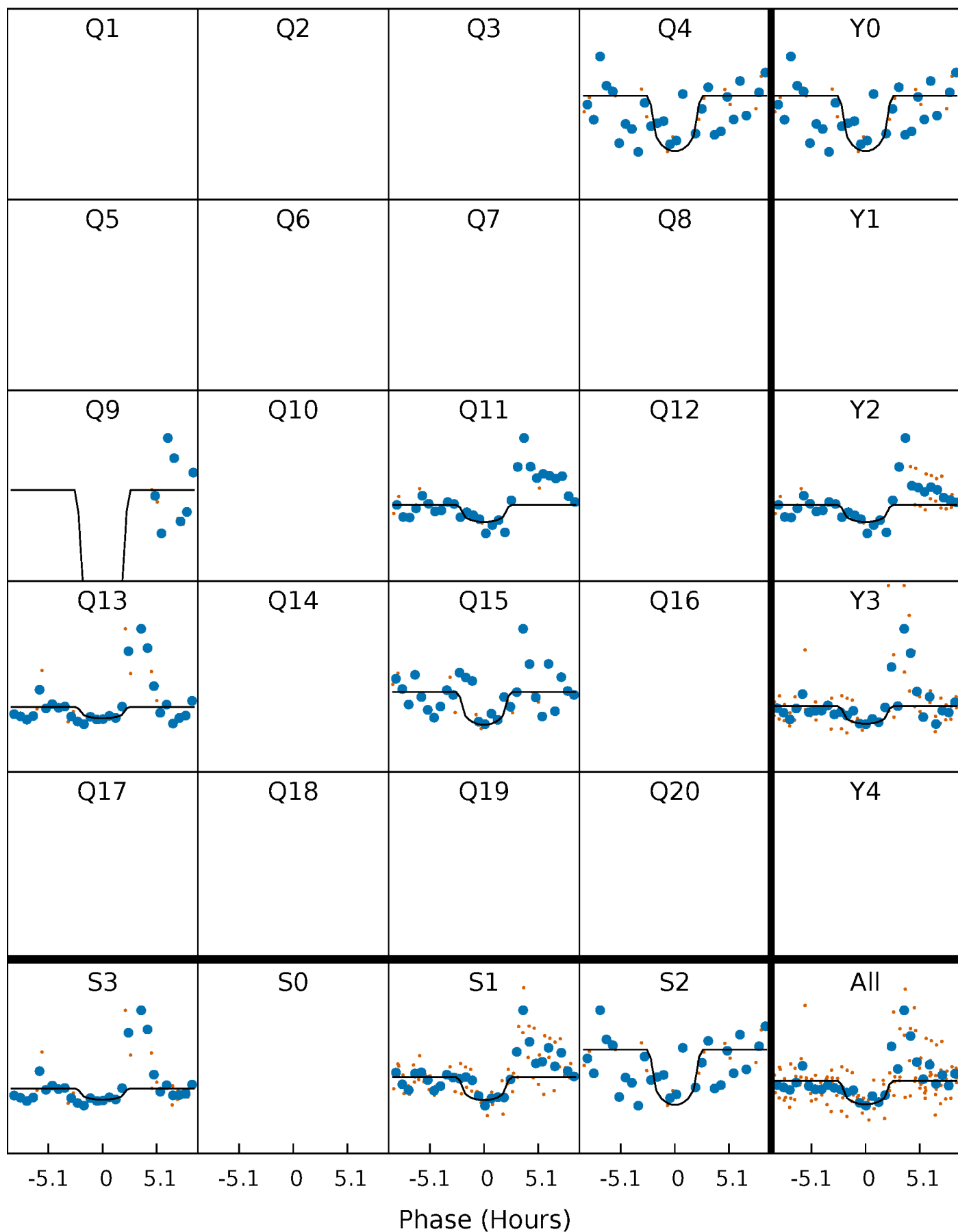
TCE 005632110-03 P=196.817795 Days  $T_0=217.888590$  (BKJD)





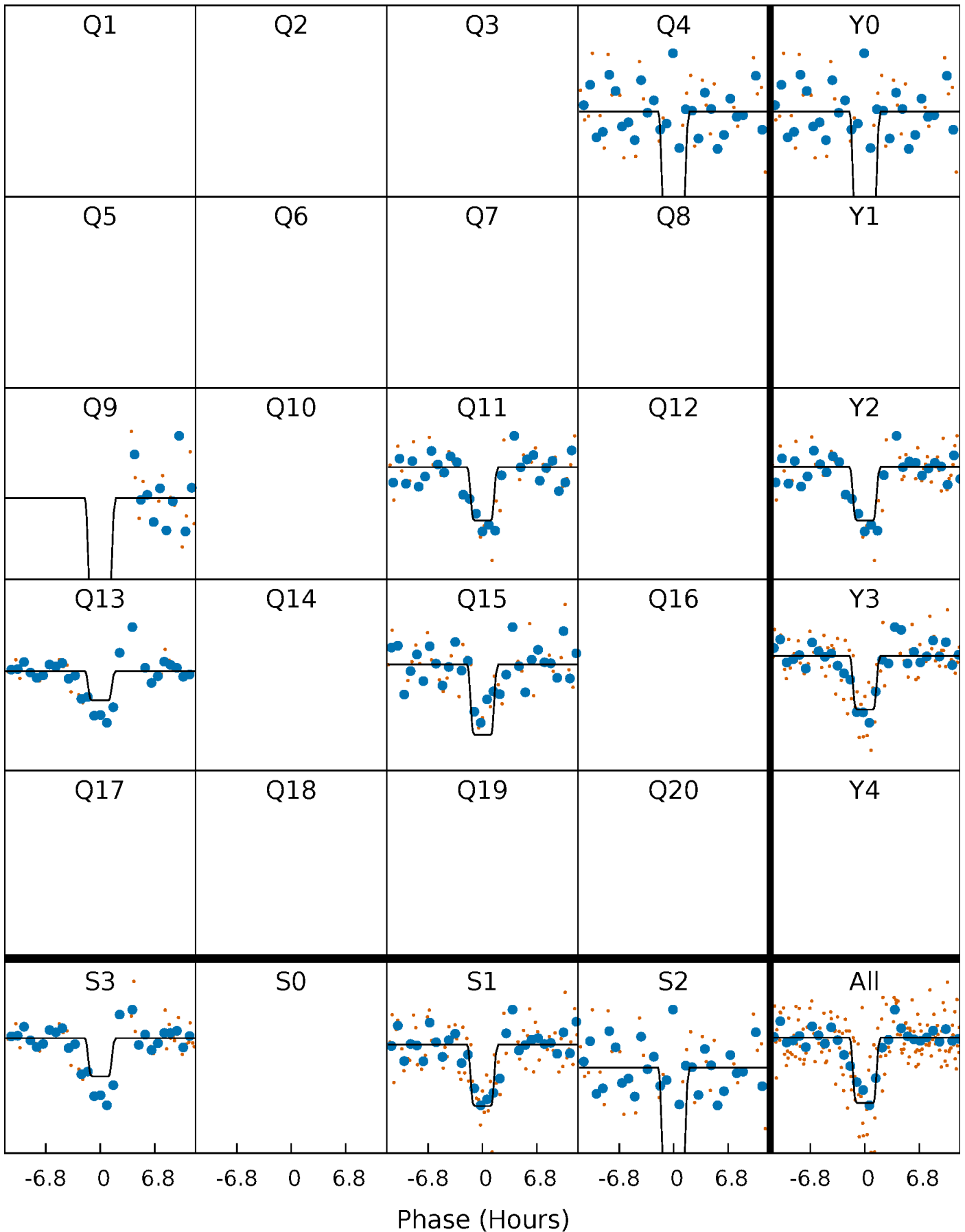
# DV Quarter-Phased Transit Curves

TCE 005632110-03   P=196.817795 Days    $T_0=217.888590$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

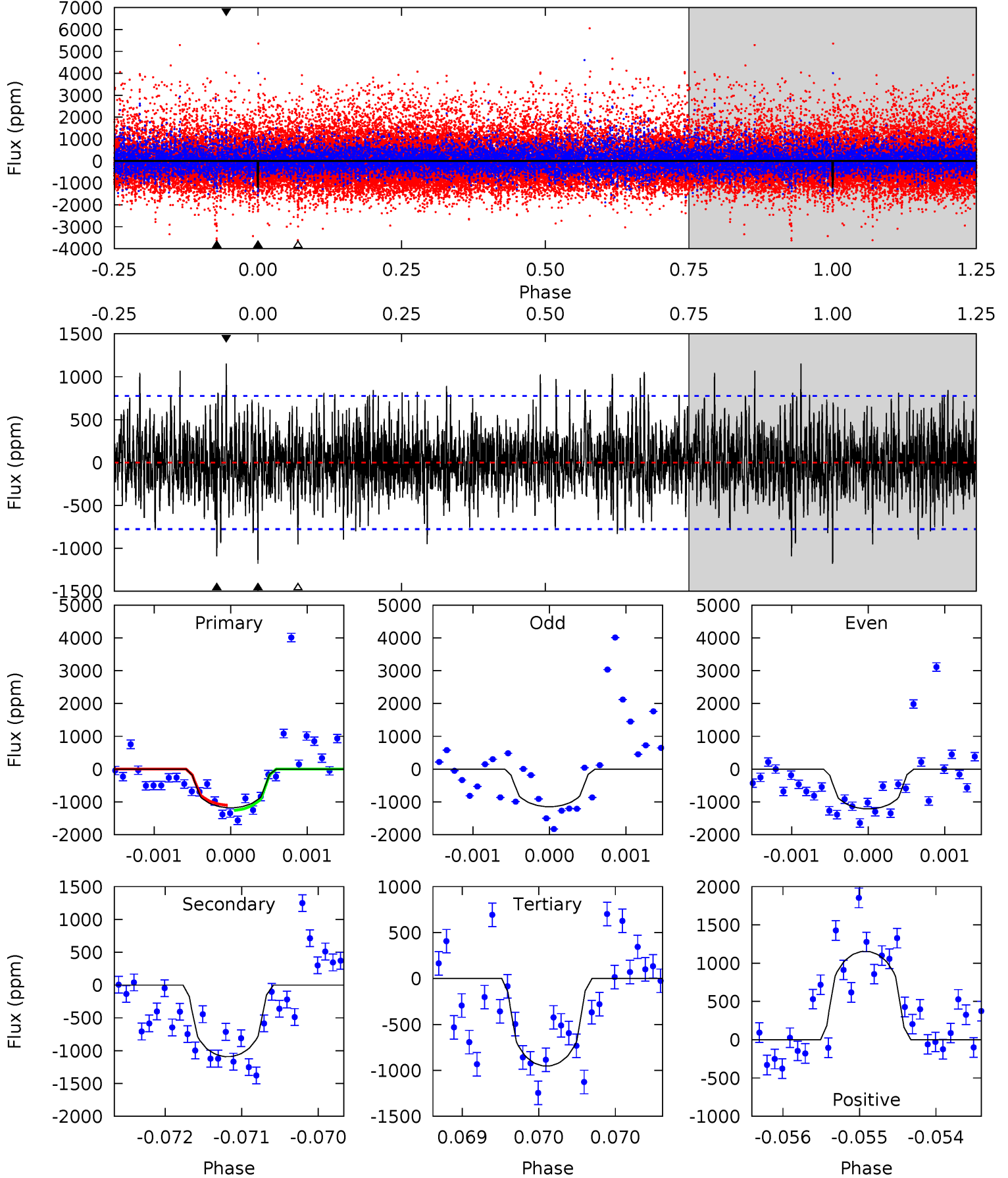
TCE 005632110-03 P=196.810220 Days  $T_0=217.942667$  (BKJD)



# DV Model-Shift Uniqueness Test

005632110-03, P = 196.817795 Days, E = 217.888590 Days

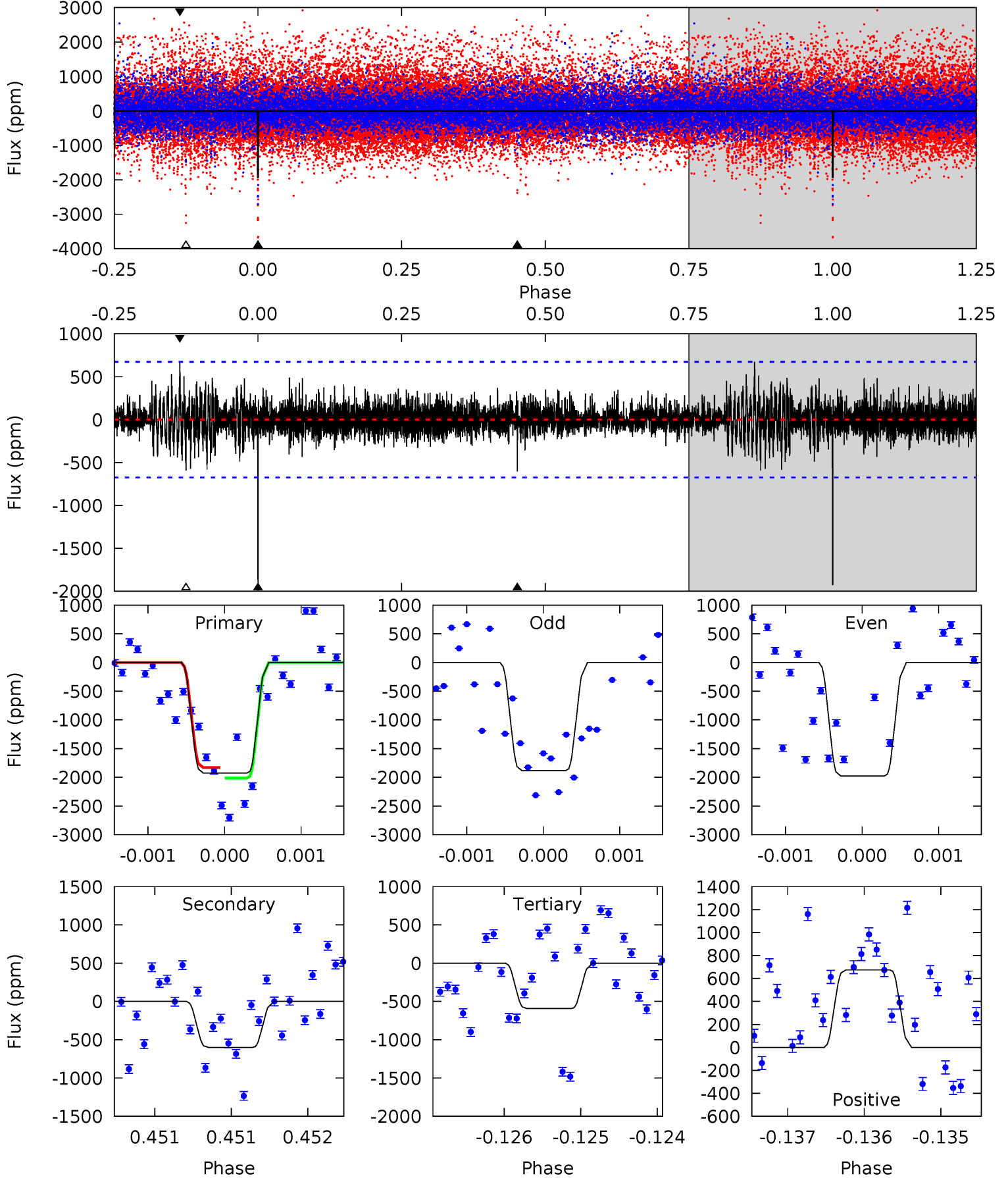
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.28	7.67	6.69	8.11	5.46	3.30	1.97	1.59	0.17	0.97	-0.44	0.19	1.08	0.49	0.56



# Alt Model-Shift Uniqueness Test

005632110-03, P = 196.810220 Days, E = 217.942667 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
15.8	4.92	4.85	5.52	5.51	3.38	1.05	10.9	10.2	0.07	-0.60	0.36	0.91	0.26	0.76



### Stellar Parameters For KIC 005632110

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4117^{+129}_{-158}$	$4.640^{+0.060}_{-0.020}$	$0.000^{+0.300}_{-0.300}$	$0.621^{+0.038}_{-0.065}$	$0.614^{+0.058}_{-0.064}$	$3.613^{+0.990}_{-0.334}$
	+3%/-4%	+1%/-0%	+inf%/-inf%	+6%/-10%	+9%/-10%	+27%/-9%
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 005632110-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1090 \pm 142$	$3.76^{+3.21}_{-2.54}$	$264^{+10}_{-11}$	$3416^{+1831}_{-571}$	$13182^{+121441}_{-9368}$
Alt.	$-601 \pm 122$	$3.85^{+3.47}_{-2.37}$	$264^{+9}_{-10}$	$3110^{+1207}_{-501}$	$7114^{+42607}_{-5190}$

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

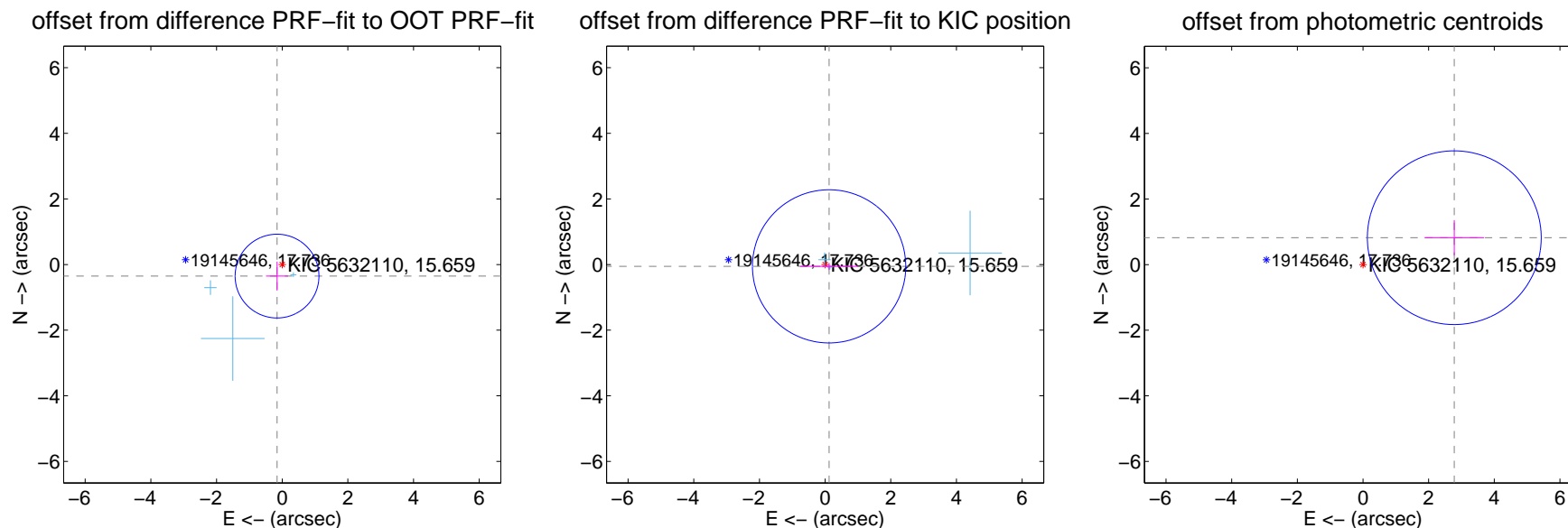
## DV Centroid Data

Supplemental centroid analysis for 005632110-03. Kepler magnitude: 15.66. Transit SNR 5.23

There are 3 quarters with good PRF difference image offsets

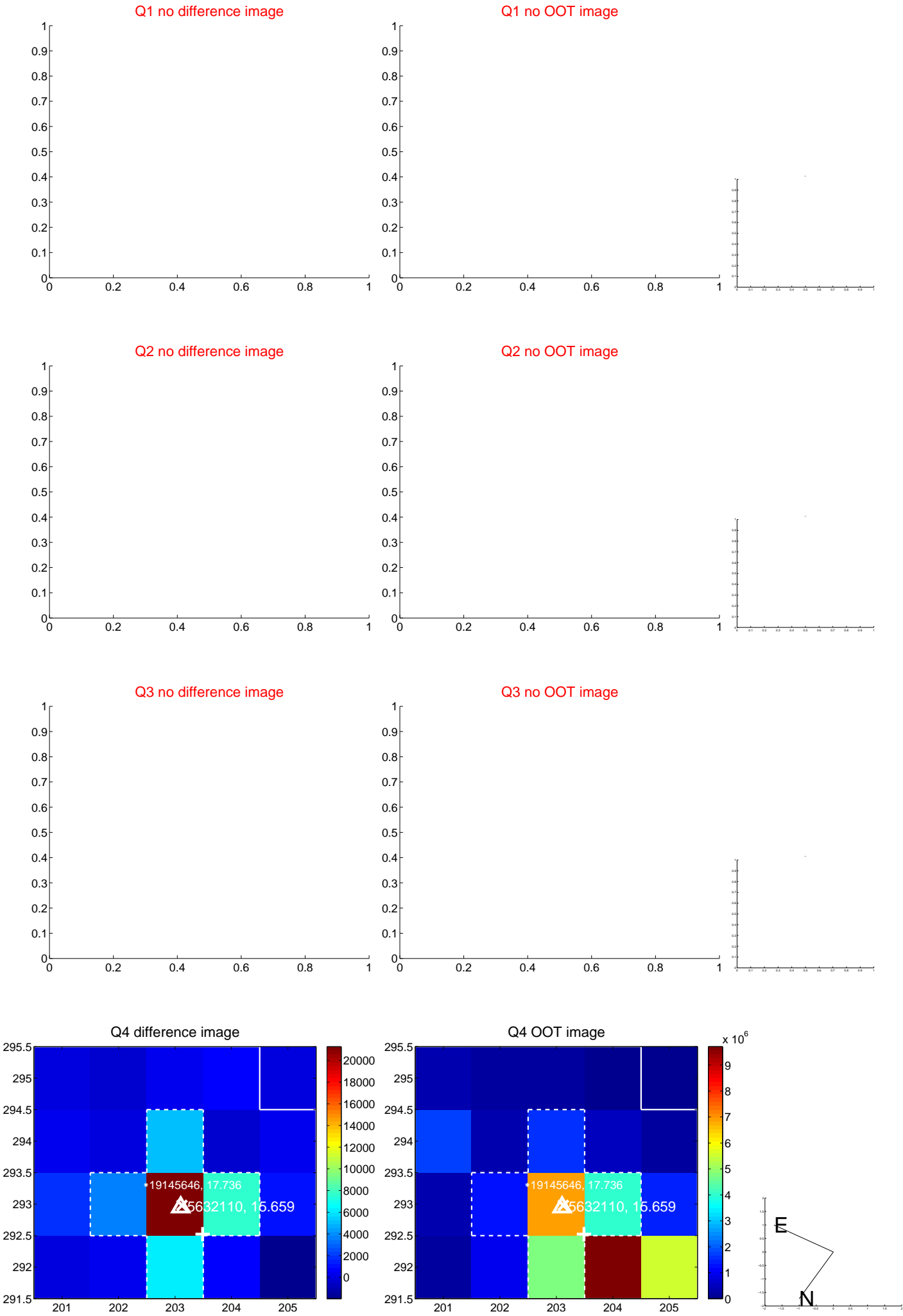
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.386 \pm 0.425$	0.91	$0.157 \pm 0.337$	$-0.352 \pm 0.441$
PRF-fit source offset from KIC position	$0.133 \pm 0.778$	0.17	$-0.121 \pm 0.879$	$-0.055 \pm 0.105$
photometric centroid source offset	$2.90 \pm 0.88$	3.29	$-2.78 \pm 0.91$	$0.82 \pm 0.54$



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.

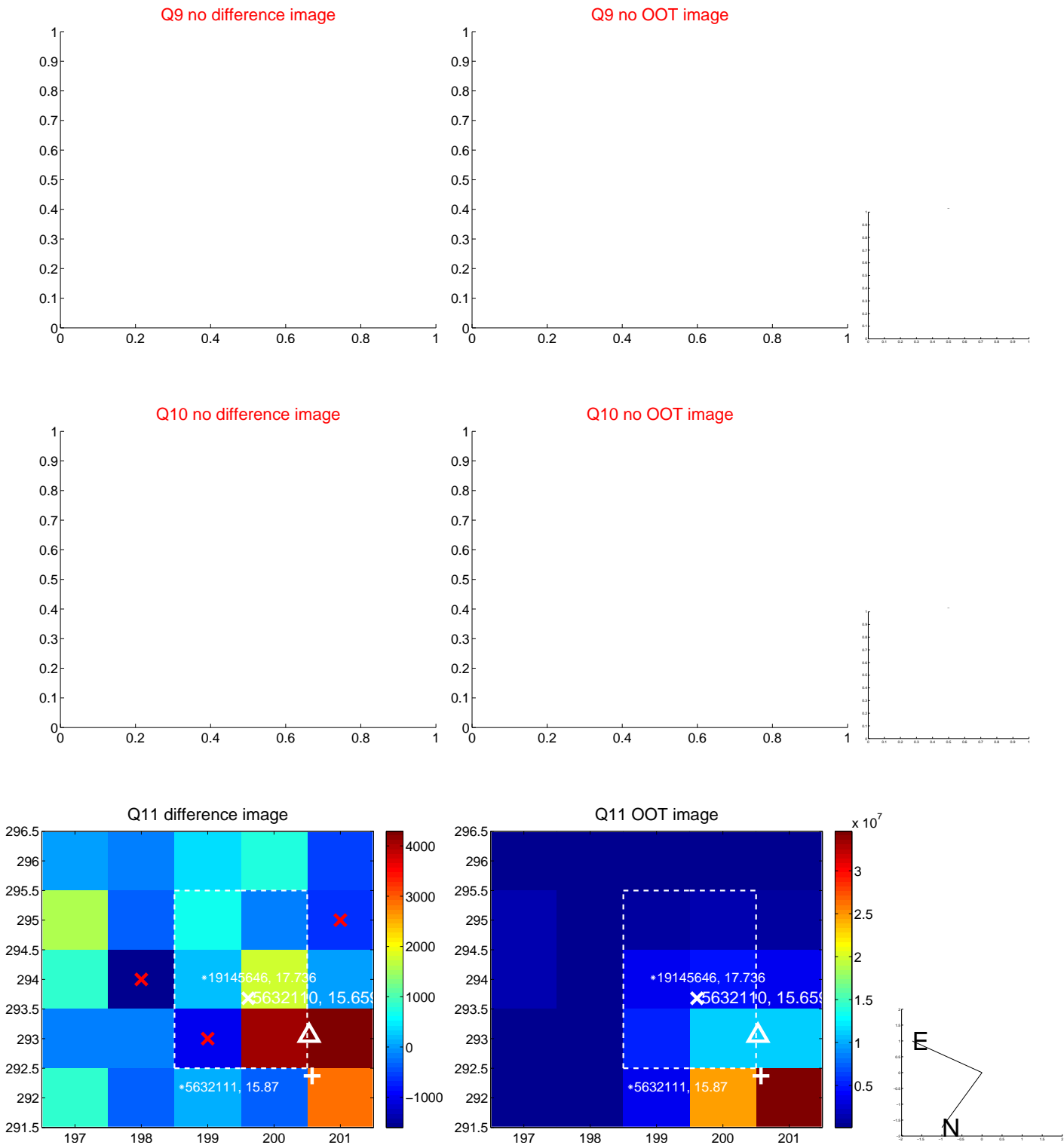


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

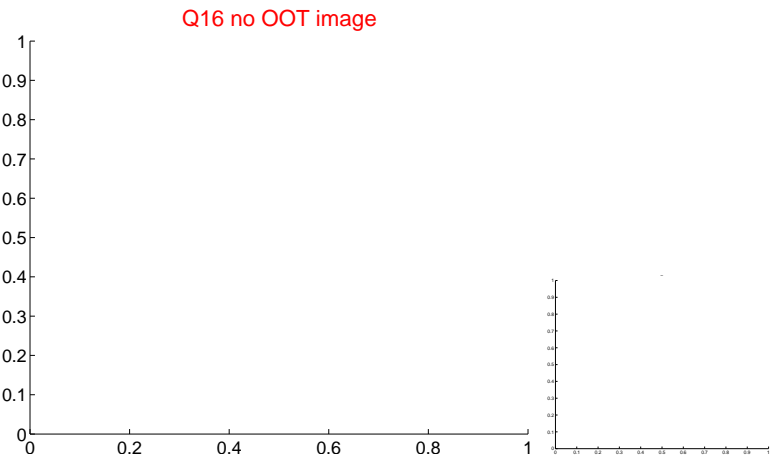
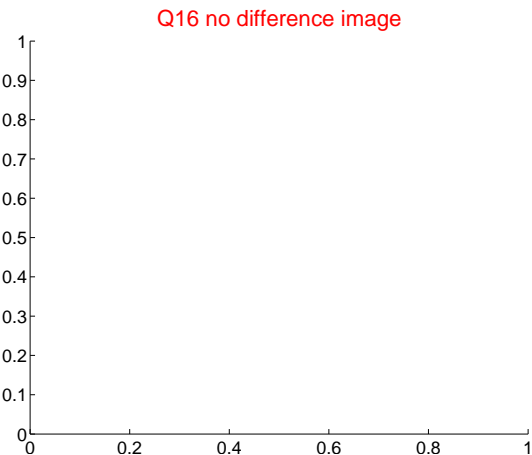
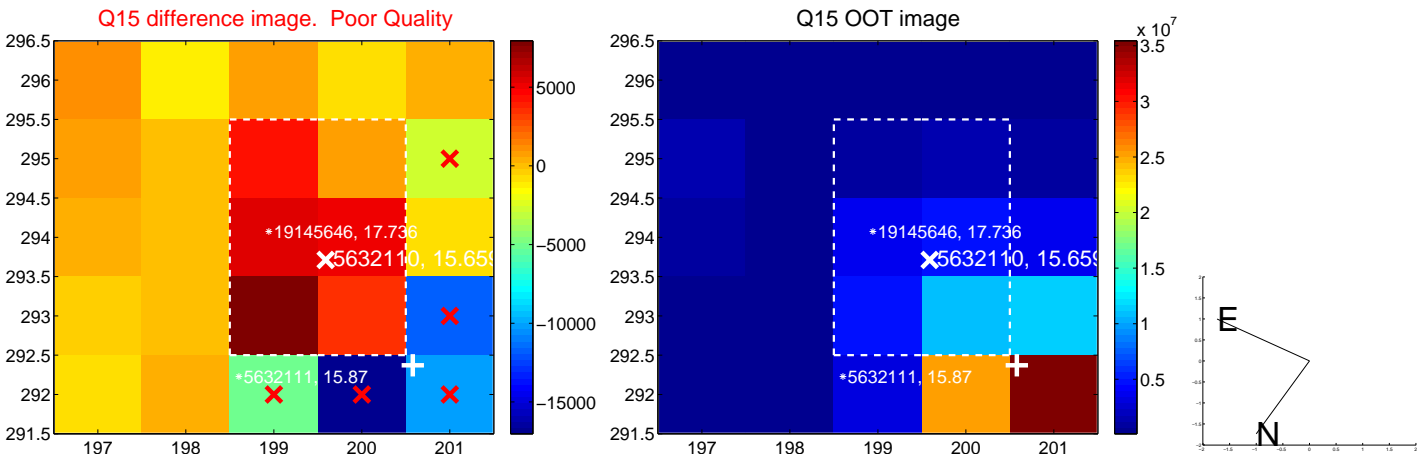
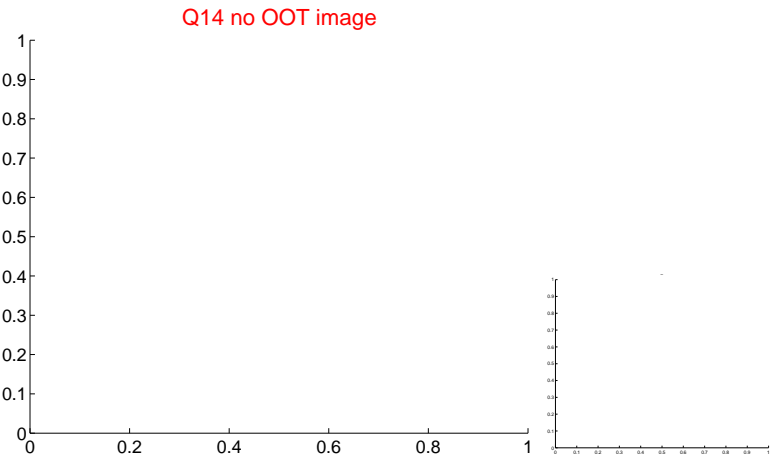
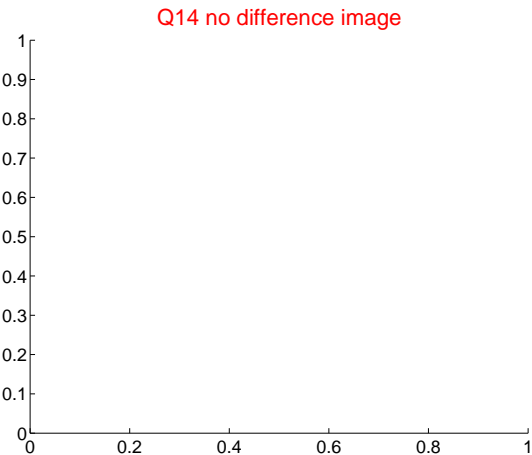
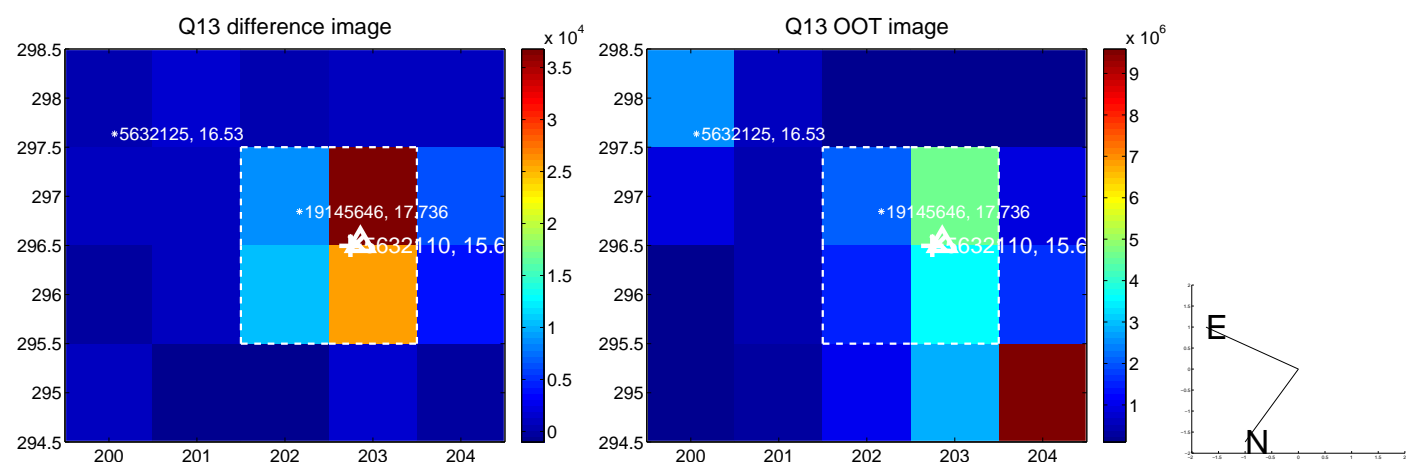




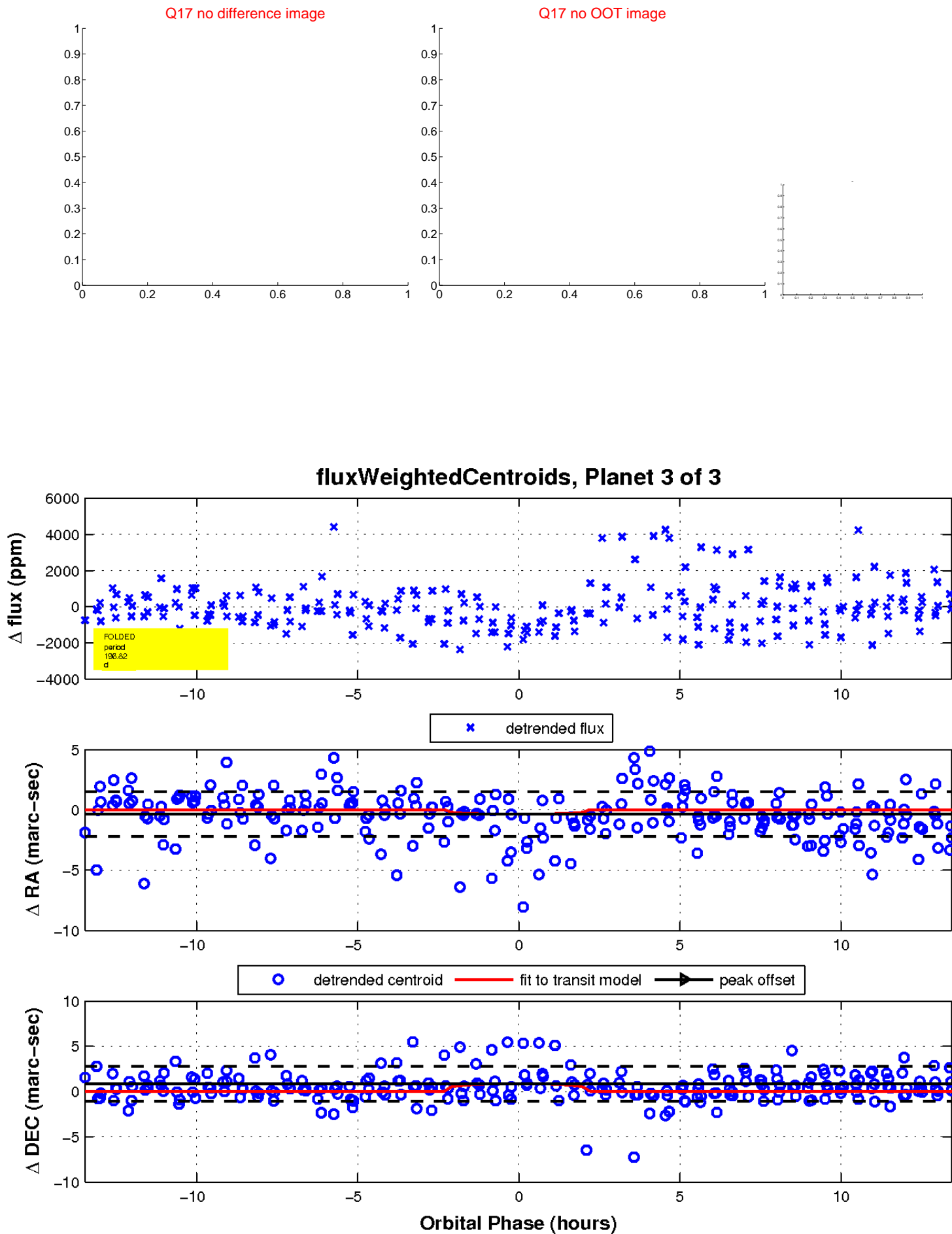
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

