

# KIC 005708815

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005708815-01	OBS	No	370.953435	264.334547	465.9	3.812	20.6	5.8	1.50	6651	3.64	3.10
005708815-03	OBS	No	490.596153	515.947992	1100.6	15.000	30.1	-1.0	1.50	6651	4.99	2.13
005708815-04	OBS	No	364.194151	280.376290	1370.3	15.000	28.9	-1.0	1.50	6651	5.57	3.18

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005708815-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005708815-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005708815-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

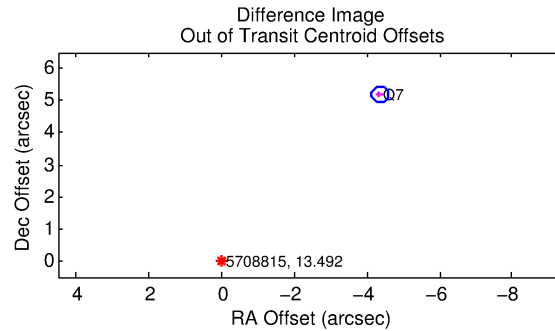
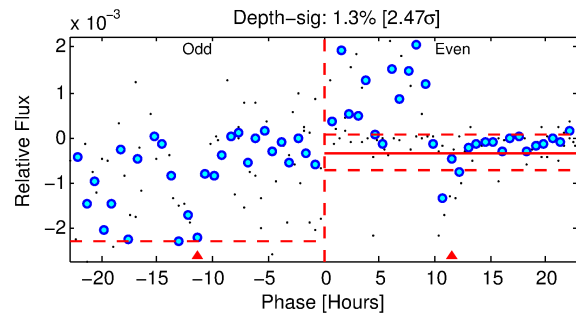
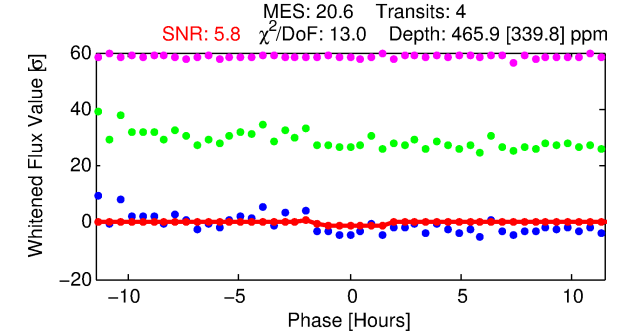
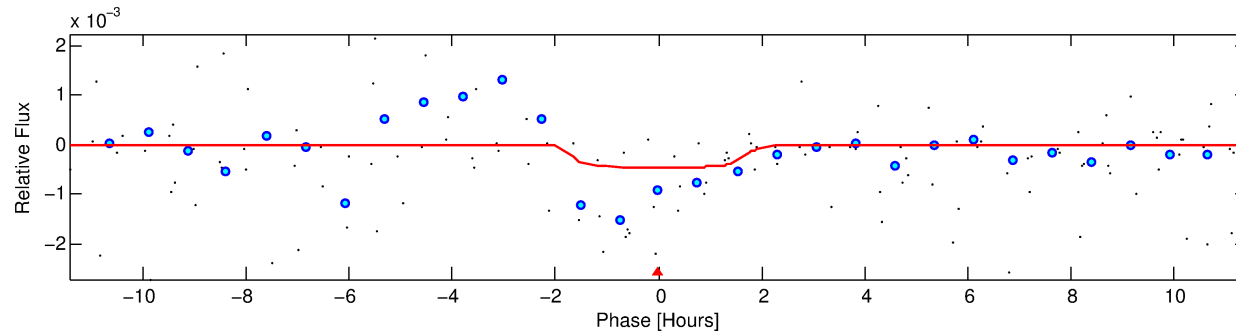
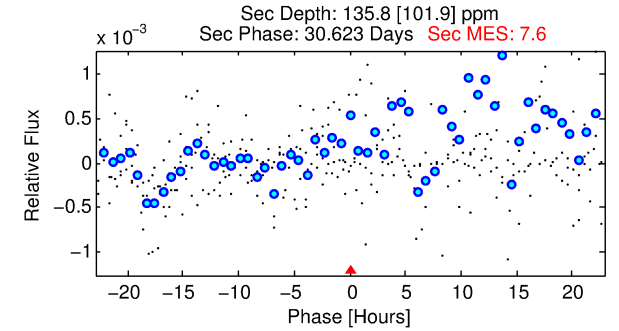
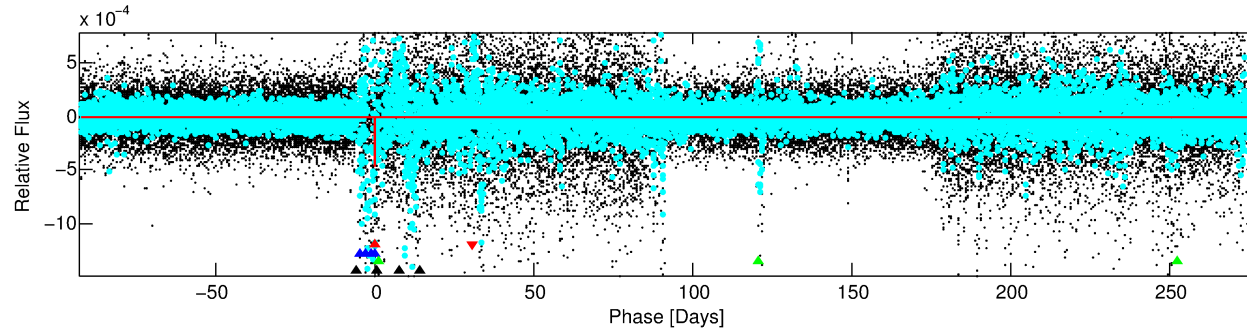
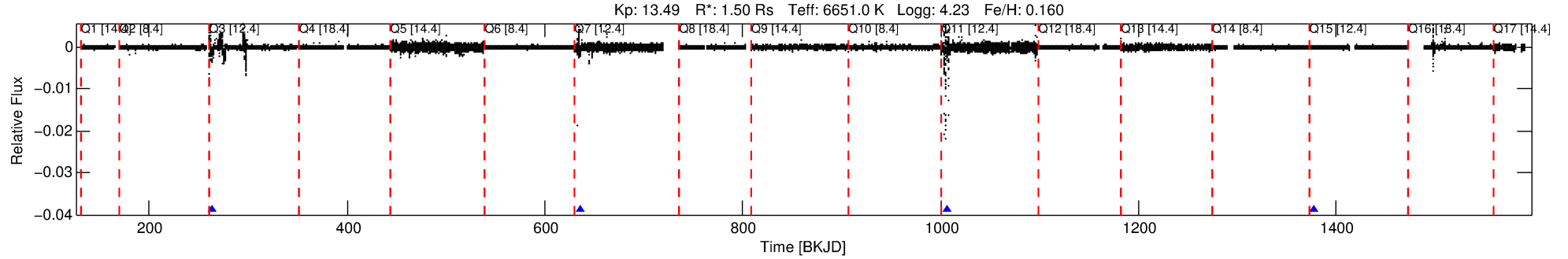
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005708815-01

No Significant Match Found

# DV One-Page Summary

KIC: 5708815 Candidate: 1 of 4 Period: 370.953 d



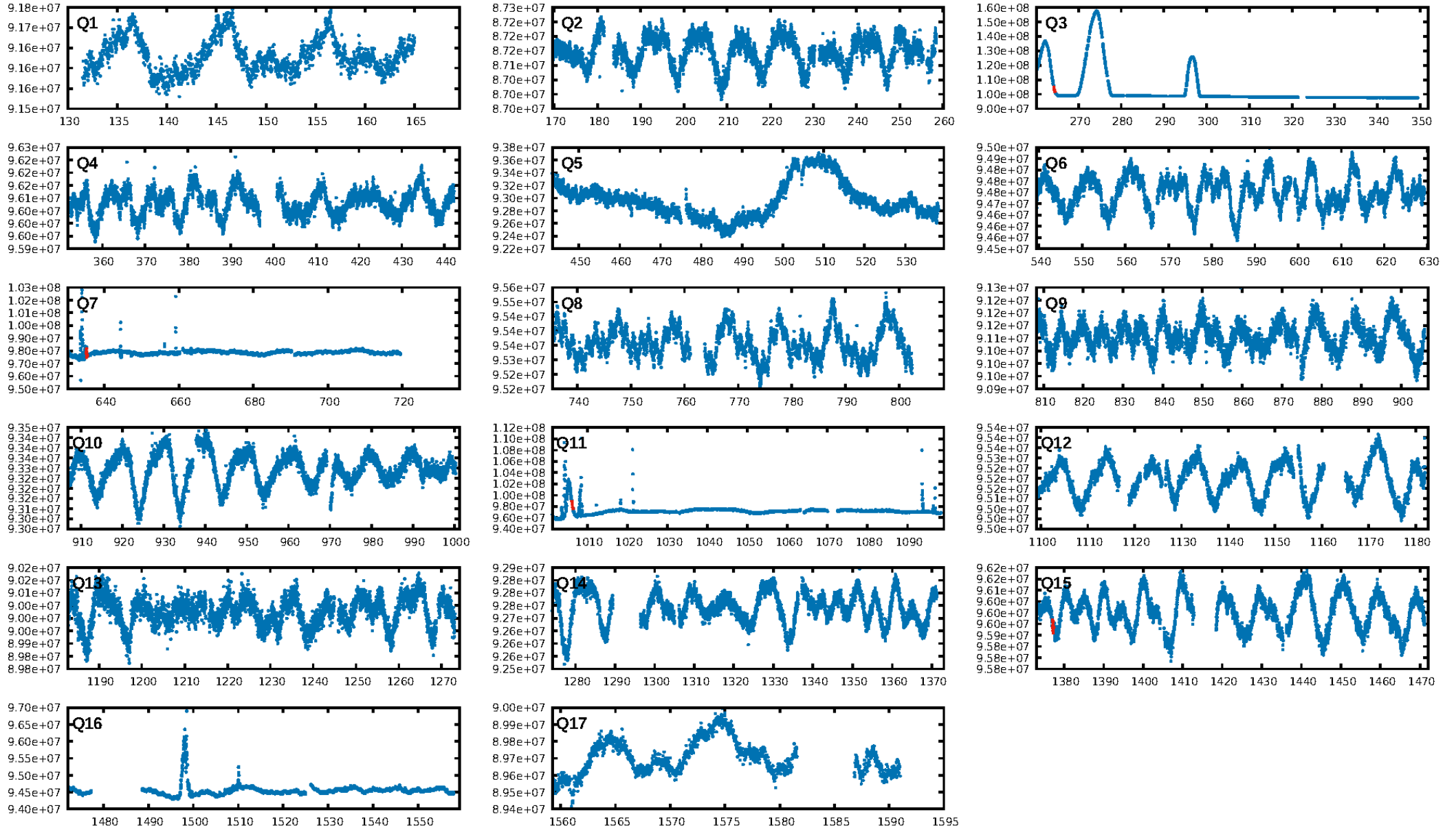
## DV Fit Results:

Period = 370.95343 [0.02445] d  
Epoch = 264.3345 [0.0634] BKJD  
Rp/R\* = 0.0223 [0.1033]  
a/R\* = 430.74 [11216.00]  
b = 0.84 [9.06]  
Seff = 3.10 [0.68]  
Teff = 338 [19] K  
Rp = 3.64 [16.87] Re  
a = 1.1251 [0.1665] AU  
Ag = 7153.83 [66570.10] [0.11σ]  
Teffp = 4811 [11189] K [0.40σ]

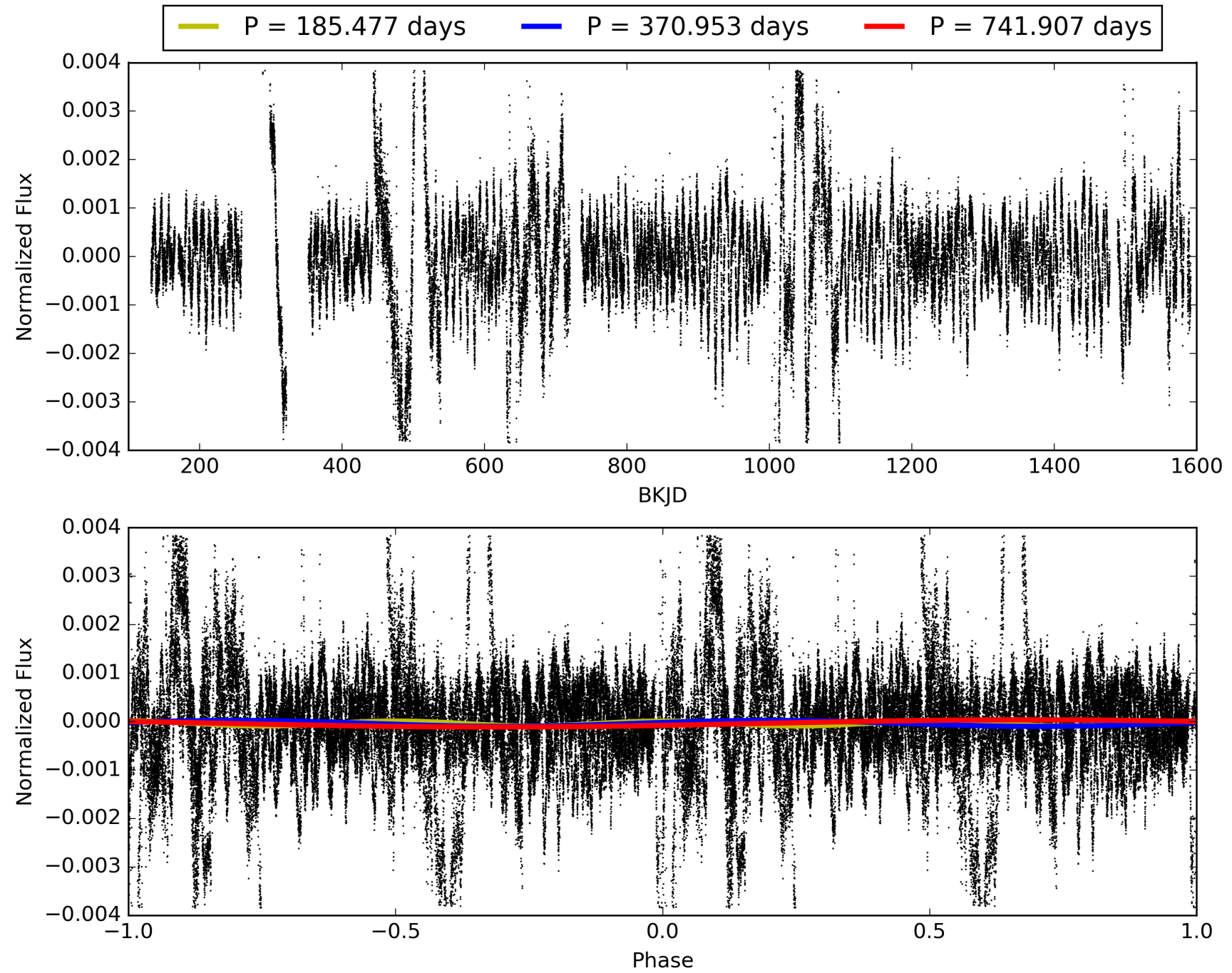
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.27σ]  
LongPeriod-sig: 100.0% [185.53σ]  
**ModelChiSquare2-sig: 0.0%**  
**ModelChiSquareGof-sig: 0.0%**  
Bootstrap-pfa: 1.91e-19  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: -1.303**  
Centroid-sig: 10.5%  
Centroid-so: 0.311 arcsec [0.07σ]  
**OotOffset-rm: 6.766 arcsec [86.55σ]**  
**KicOffset-rm: 3.301 arcsec [41.96σ]**  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.50 [2/4]

# TCE 005708815-01, PDC Light Curves

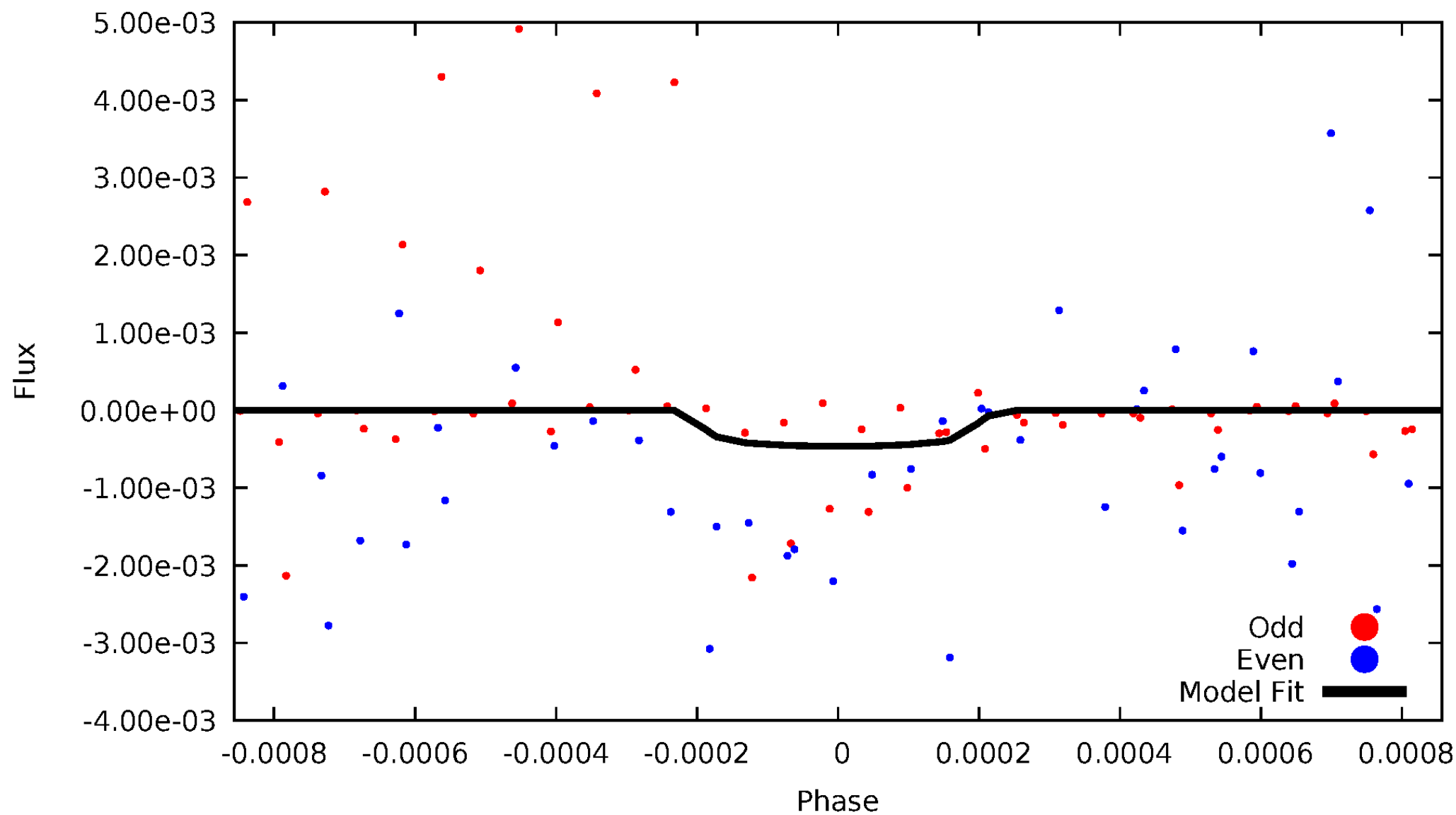


TCE 005708815-01



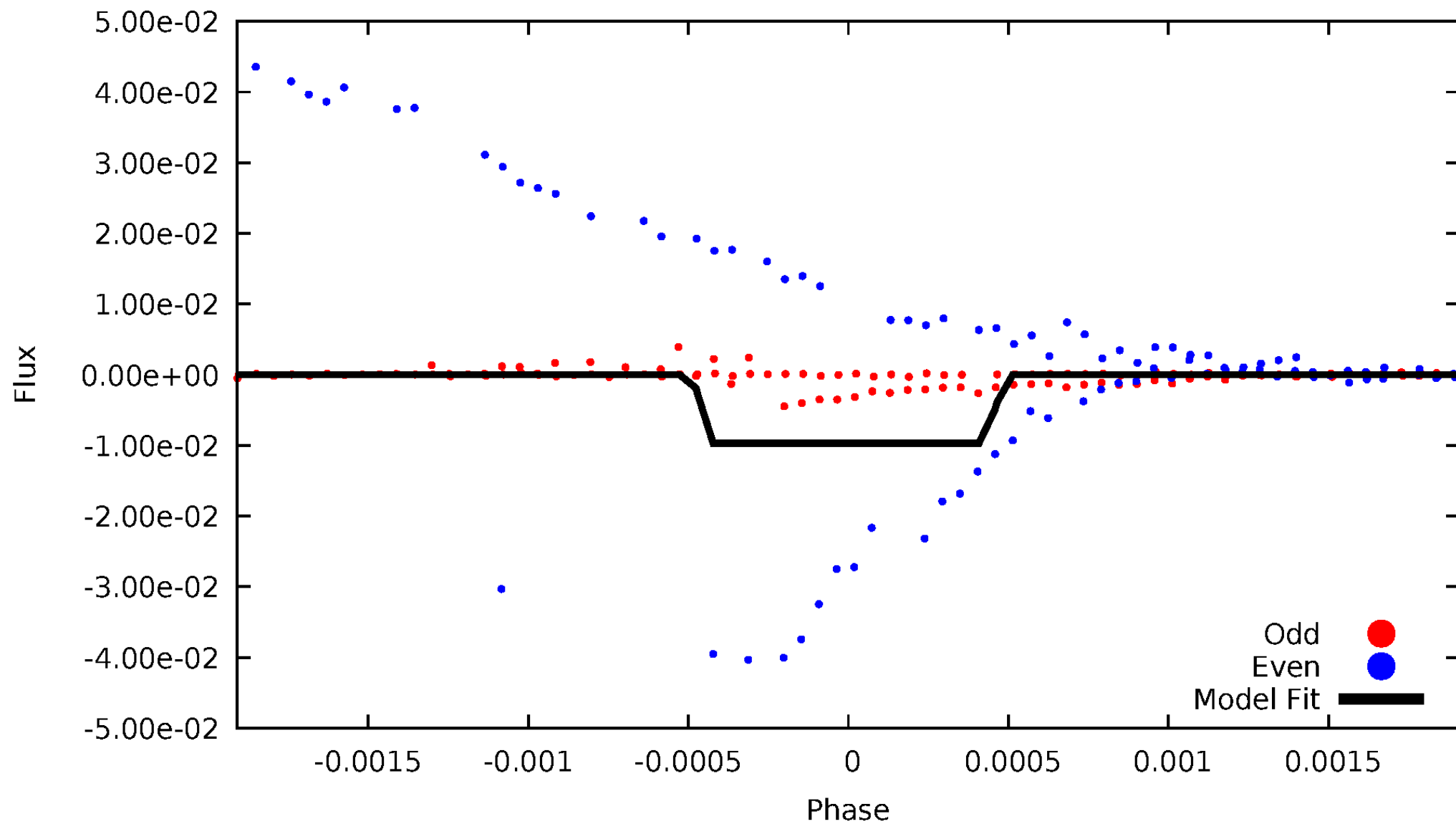
# DV Odd/Even

TCE 005708815-01



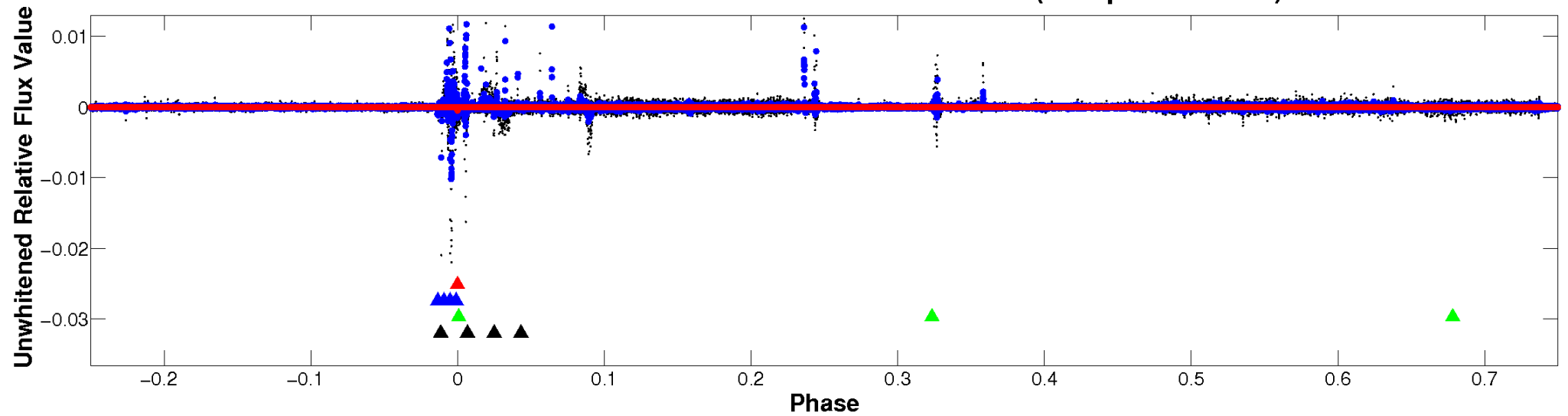
# ALT Odd/Even

TCE 005708815-01

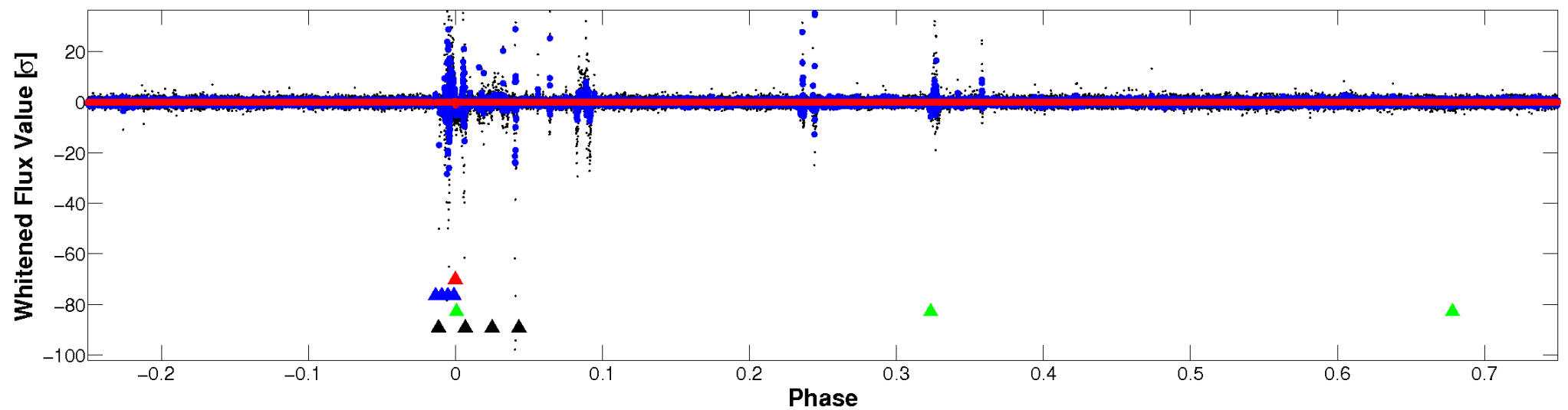


# Non-Whitened Vs. Whitened Light Curve

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

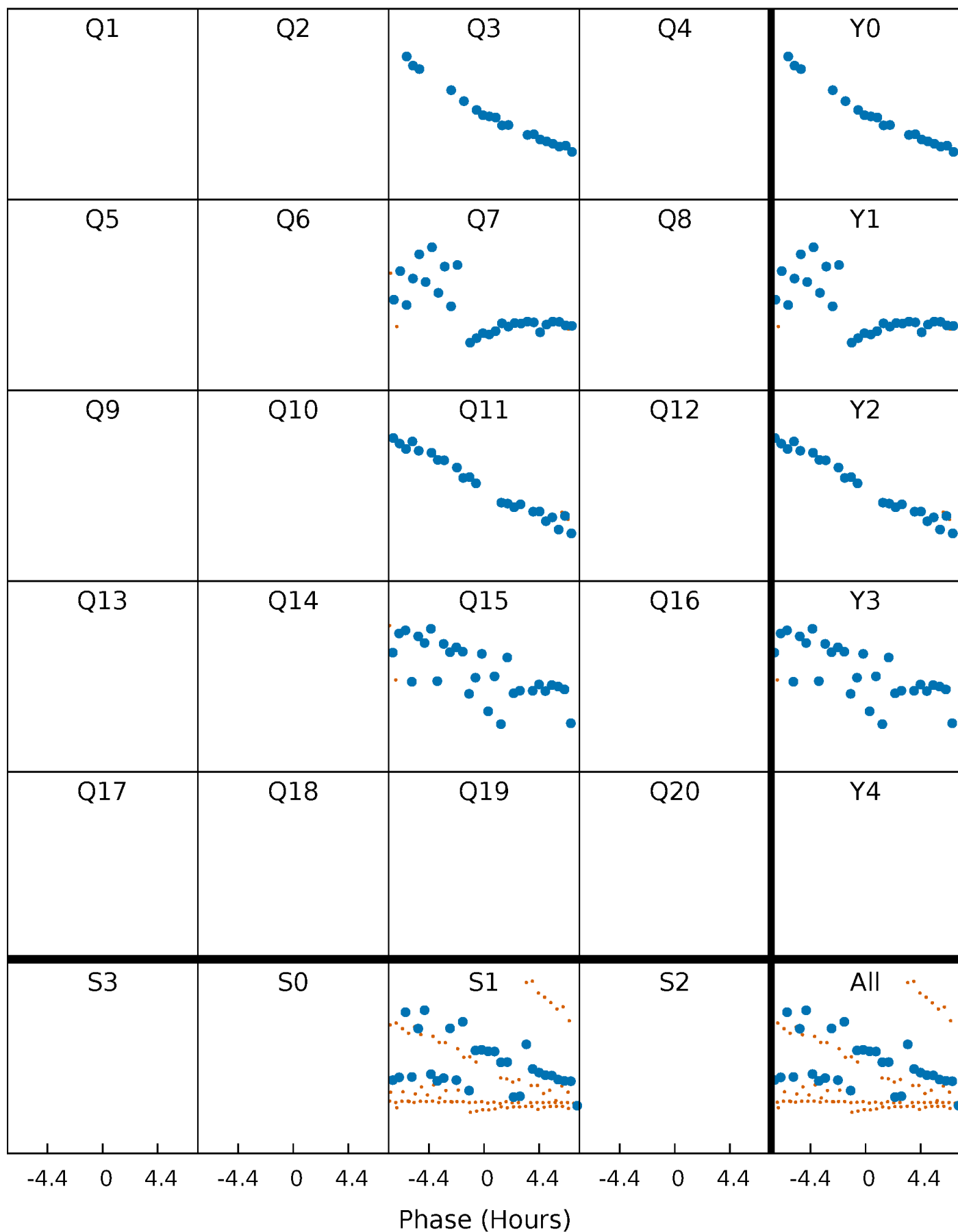


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

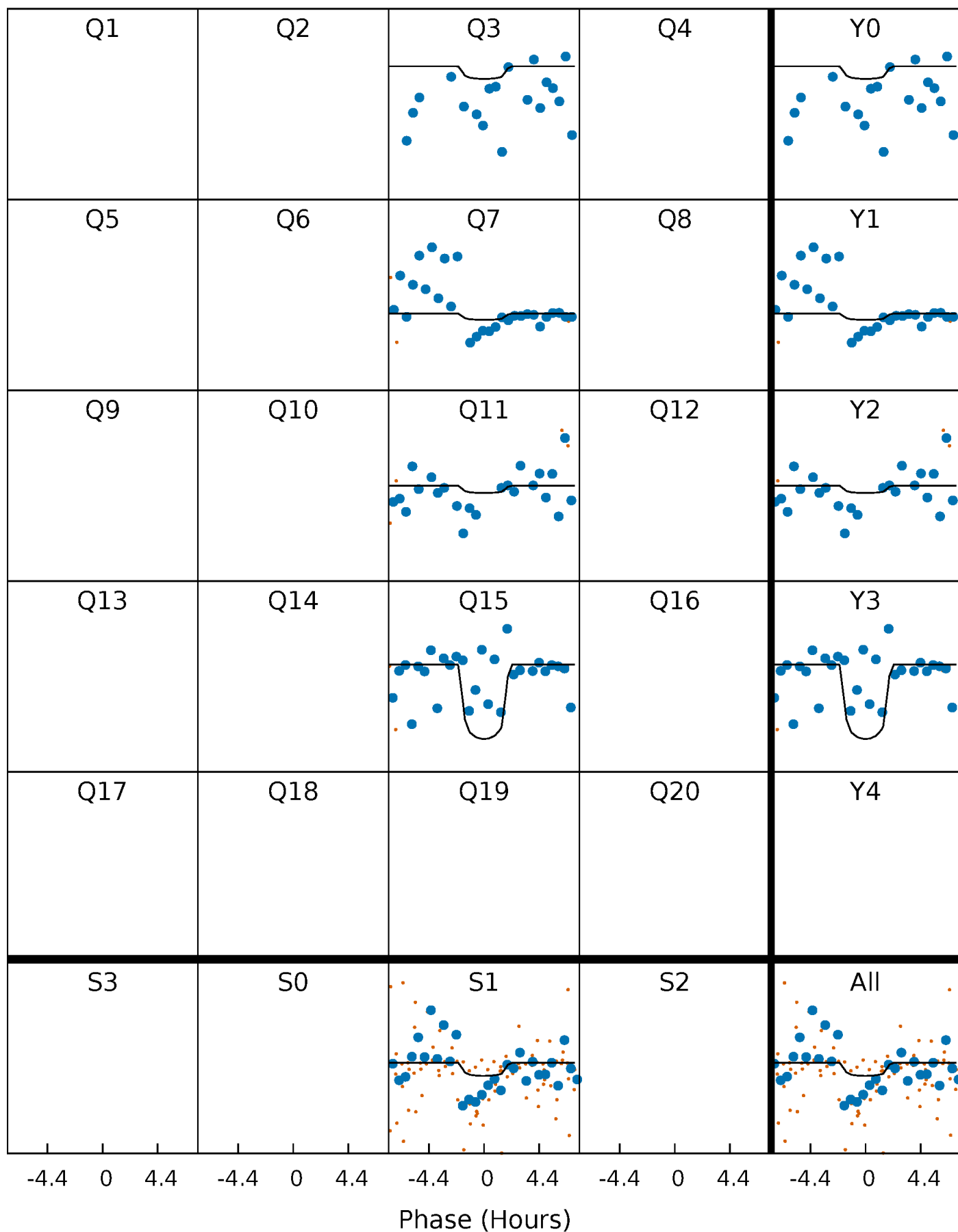
TCE 005708815-01 P=370.953435 Days  $T_0=264.334547$  (BKJD)





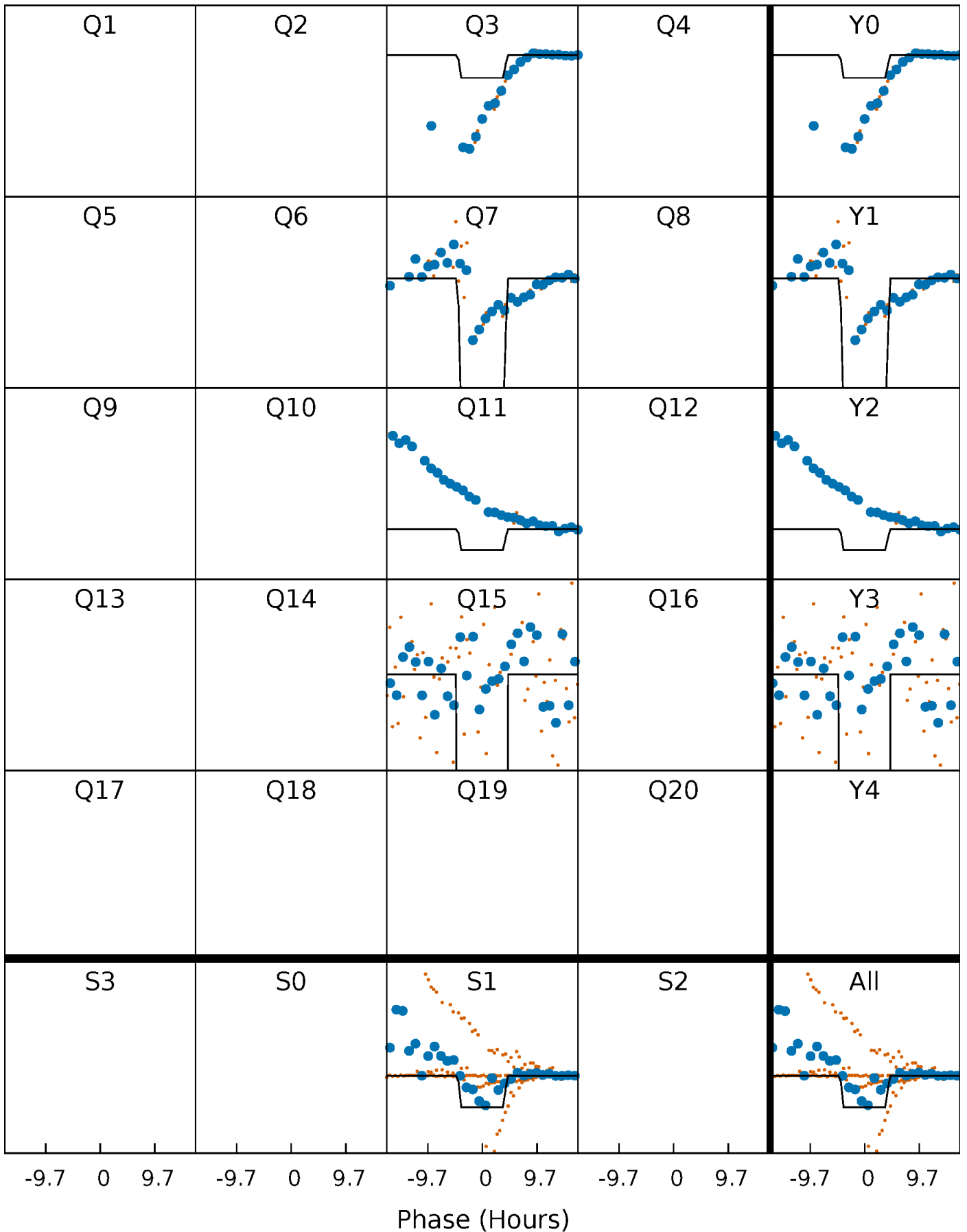
# DV Quarter-Phased Transit Curves

TCE 005708815-01 P=370.953435 Days  $T_0=264.334547$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

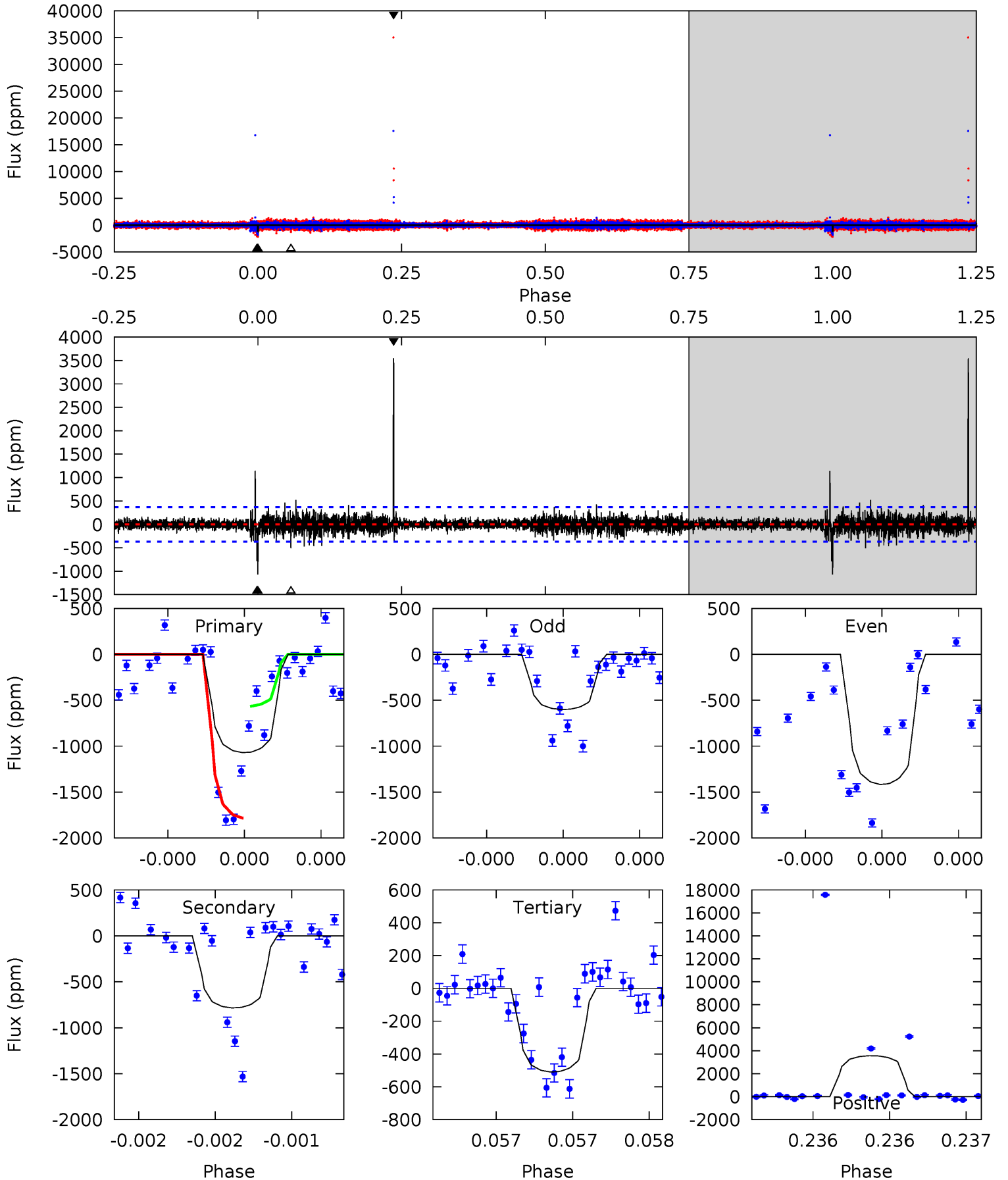
TCE 005708815-01 P=370.930415 Days  $T_0=264.386616$  (BKJD)



# DV Model-Shift Uniqueness Test

005708815-01, P = 370.953435 Days, E = 264.334547 Days

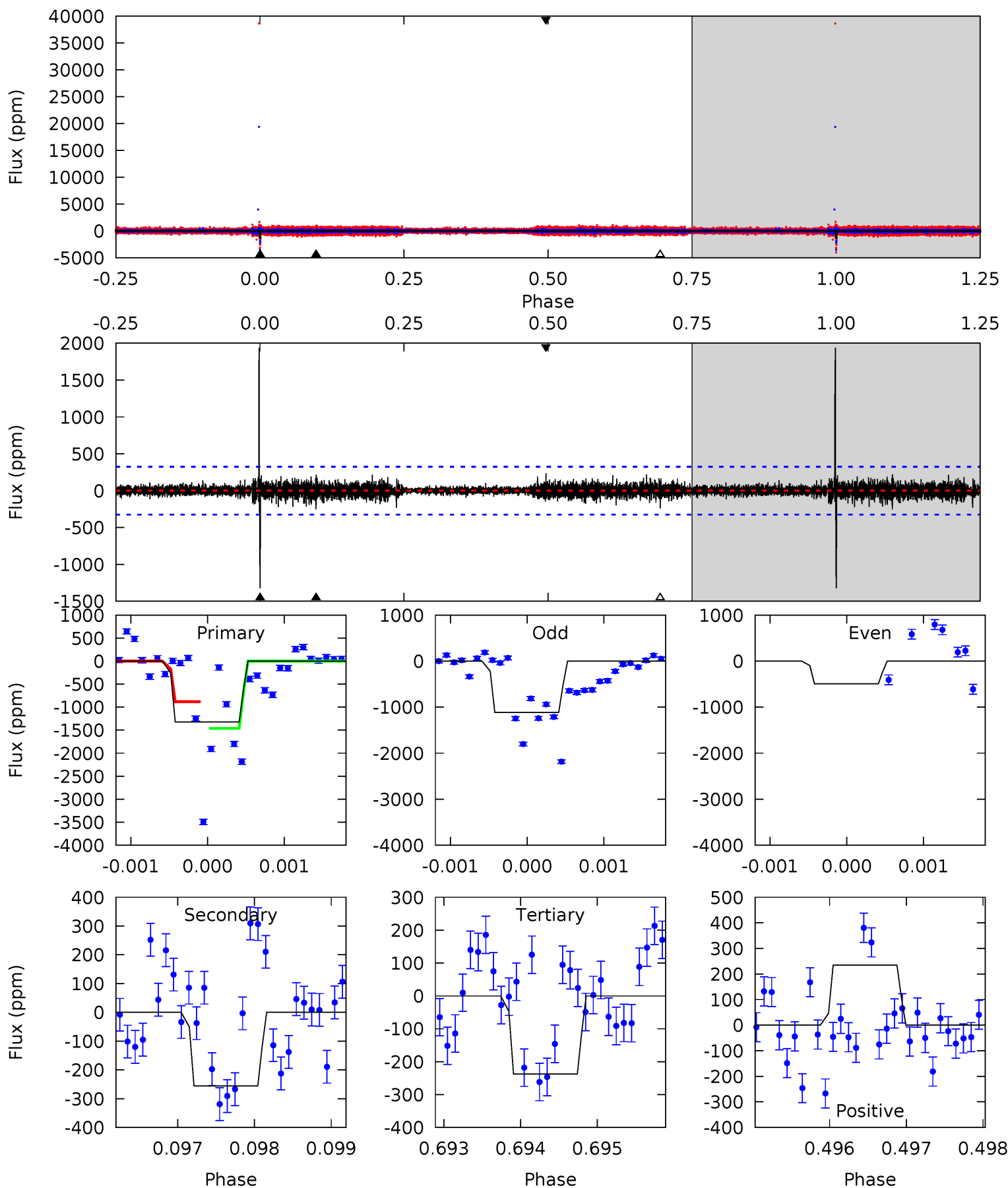
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	11.9	7.71	54.0	5.59	3.51	1.52	8.49	-37.8	4.16	-42.1	3.64	0.81	0.77	9.60



# Alt Model-Shift Uniqueness Test

005708815-01, P = 370.930415 Days, E = 264.386616 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
22.3	4.29	4.00	3.94	5.45	3.29	0.93	18.3	18.3	0.30	0.35	3.86	4.39	0.59	0



### Stellar Parameters For KIC 005708815

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6651^{+73}_{-86}$	$4.228^{+0.063}_{-0.117}$	$0.160^{+0.150}_{-0.150}$	$1.496^{+0.264}_{-0.142}$	$1.384^{+0.100}_{-0.092}$	$0.583^{+0.152}_{-0.203}$
	+1%/-1%	+1%/-3%	+94%/-94%	+18%/-9%	+7%/-7%	+26%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005708815-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-781 \pm 66$	$12.93^{+13.53}_{-8.97}$	$475^{+21}_{-12}$	$4279^{+3113}_{-918}$	$3355^{+31173}_{-2564}$
Alt.	$-255 \pm 59$	$19.85^{+15.02}_{-12.67}$	$476^{+21}_{-14}$	$3061^{+1139}_{-446}$	$442^{+2667}_{-306}$

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

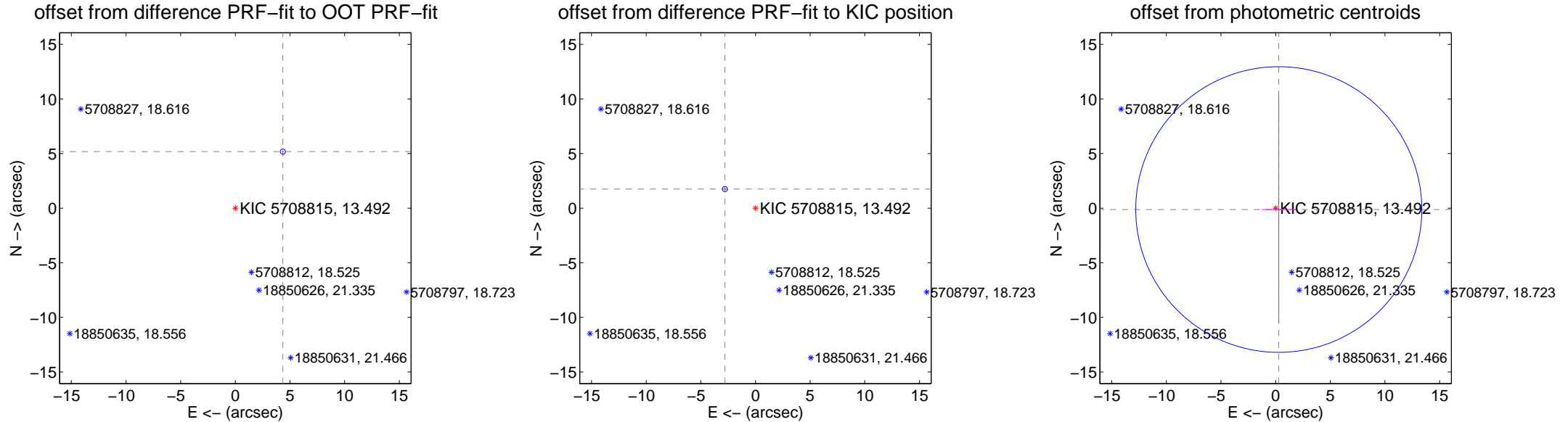
## DV Centroid Data

Supplemental centroid analysis for 005708815-01. Kepler magnitude: 13.49. Transit SNR 5.78

There are 0 quarters with good PRF difference image offsets

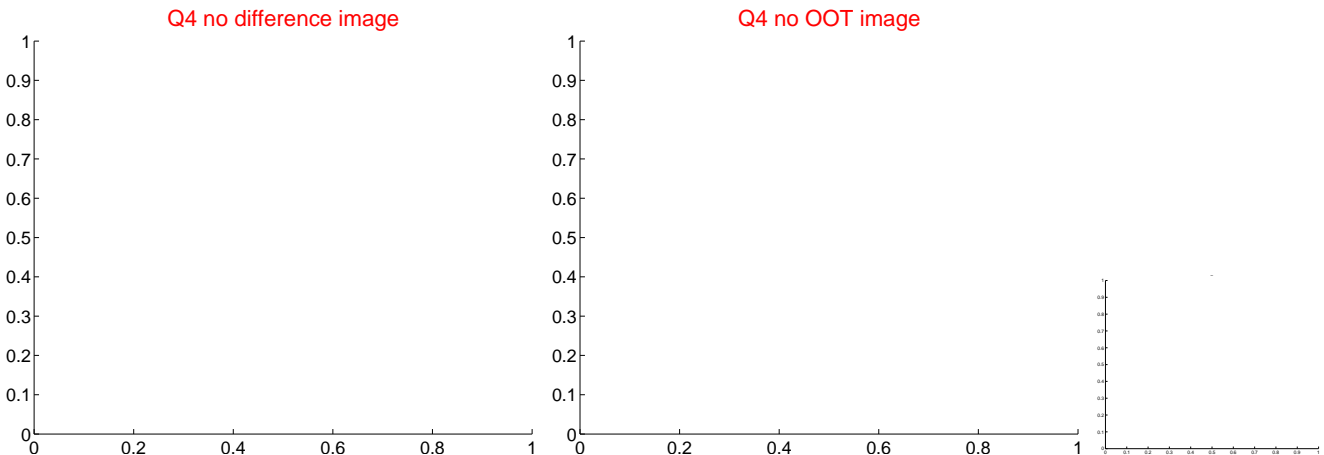
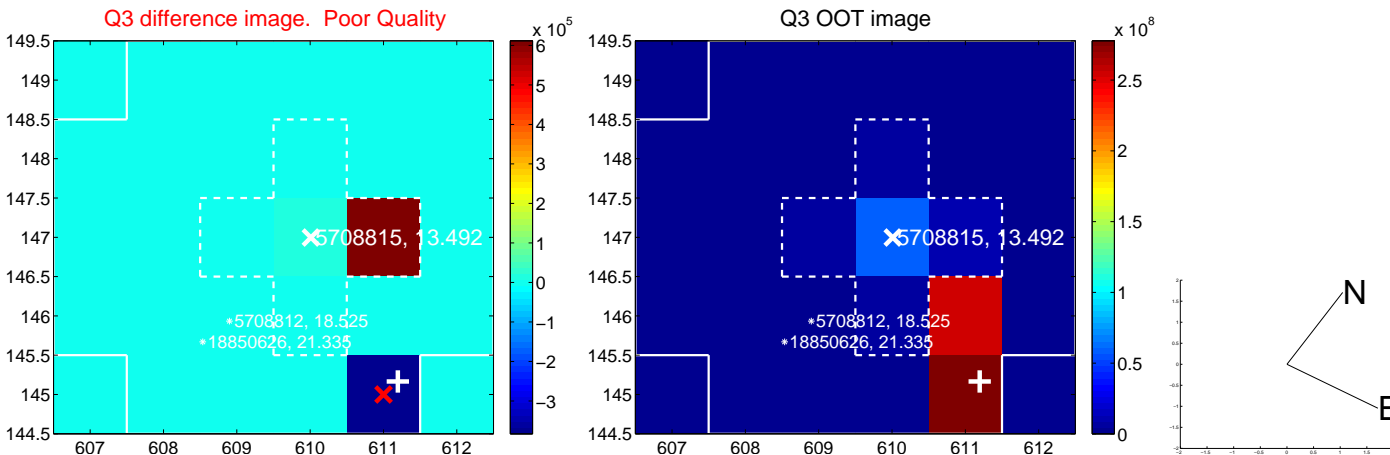
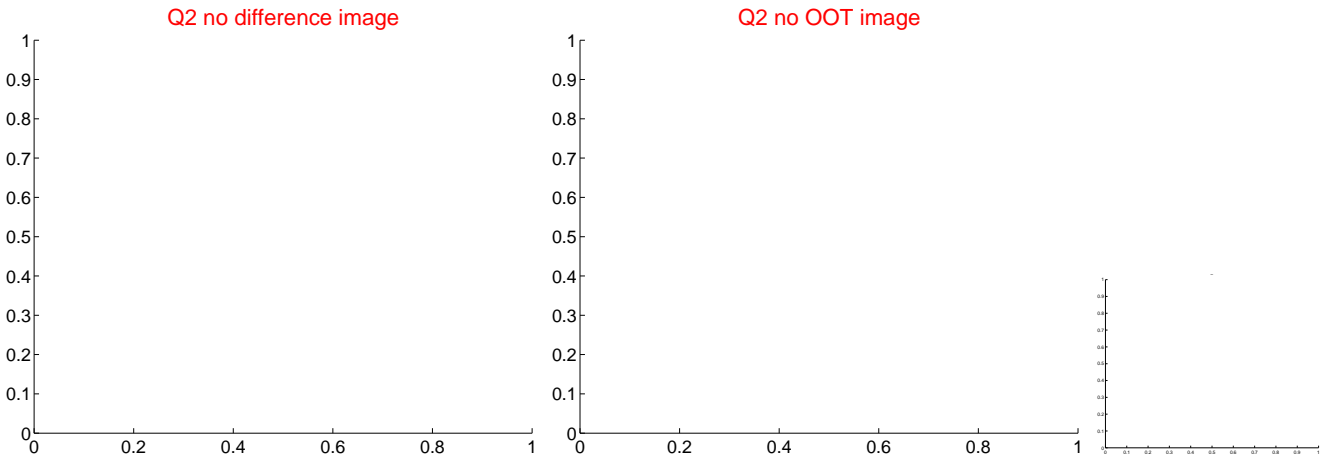
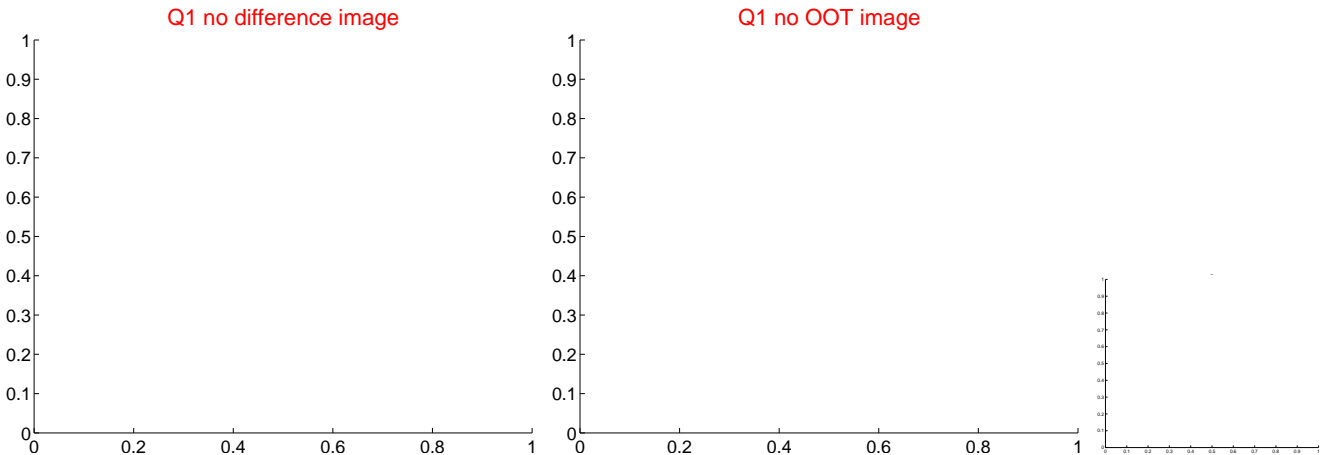
The OOT PRF centroid is offset from the target star catalog position by about 7.93 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.766 \pm 0.078$	86.55	$-4.347 \pm 0.079$	$5.185 \pm 0.077$
PRF-fit source offset from KIC position	$3.301 \pm 0.079$	41.96	$2.797 \pm 0.079$	$1.753 \pm 0.077$
photometric centroid source offset	$0.31 \pm 4.36$	0.07	$-0.28 \pm 1.55$	$-0.12 \pm 10.37$

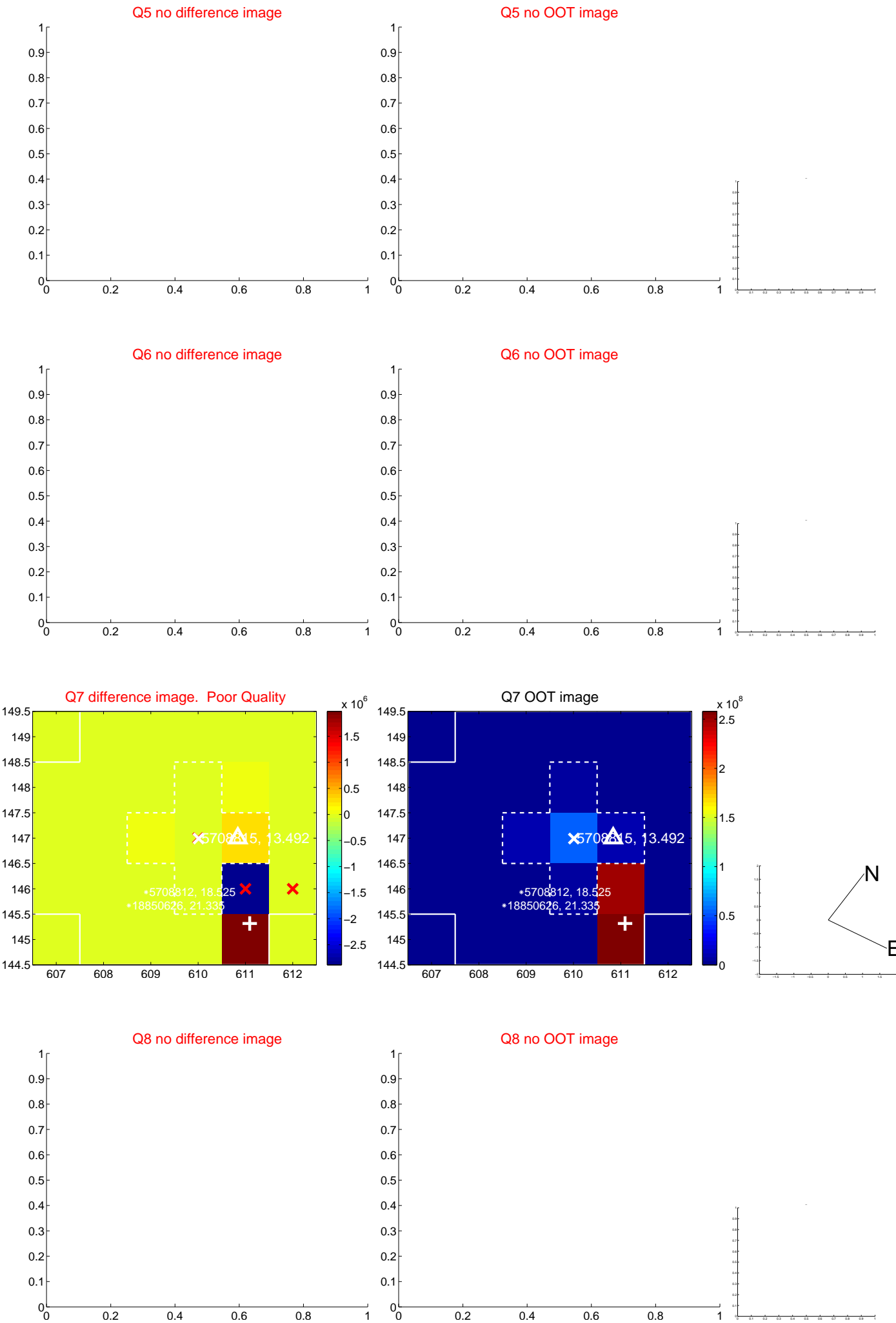


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



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





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

Q9 no difference image



Q9 no OOT image



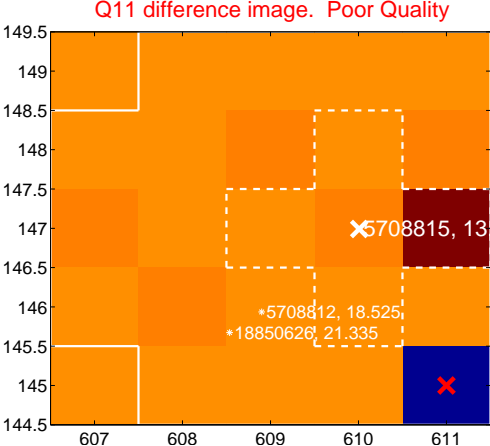
Q10 no difference image



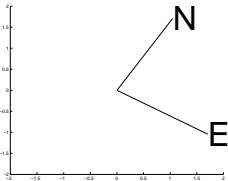
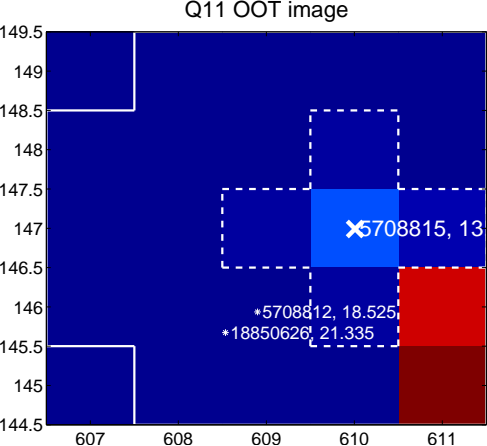
Q10 no OOT image



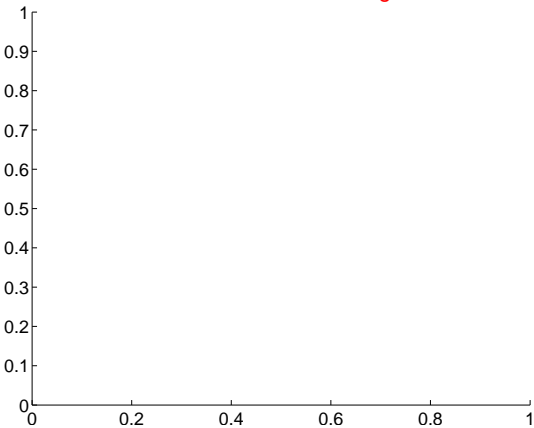
Q11 difference image. Poor Quality



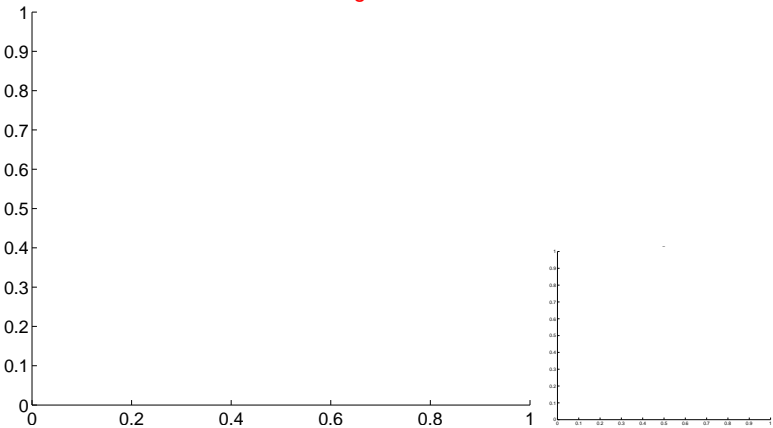
Q11 OOT image



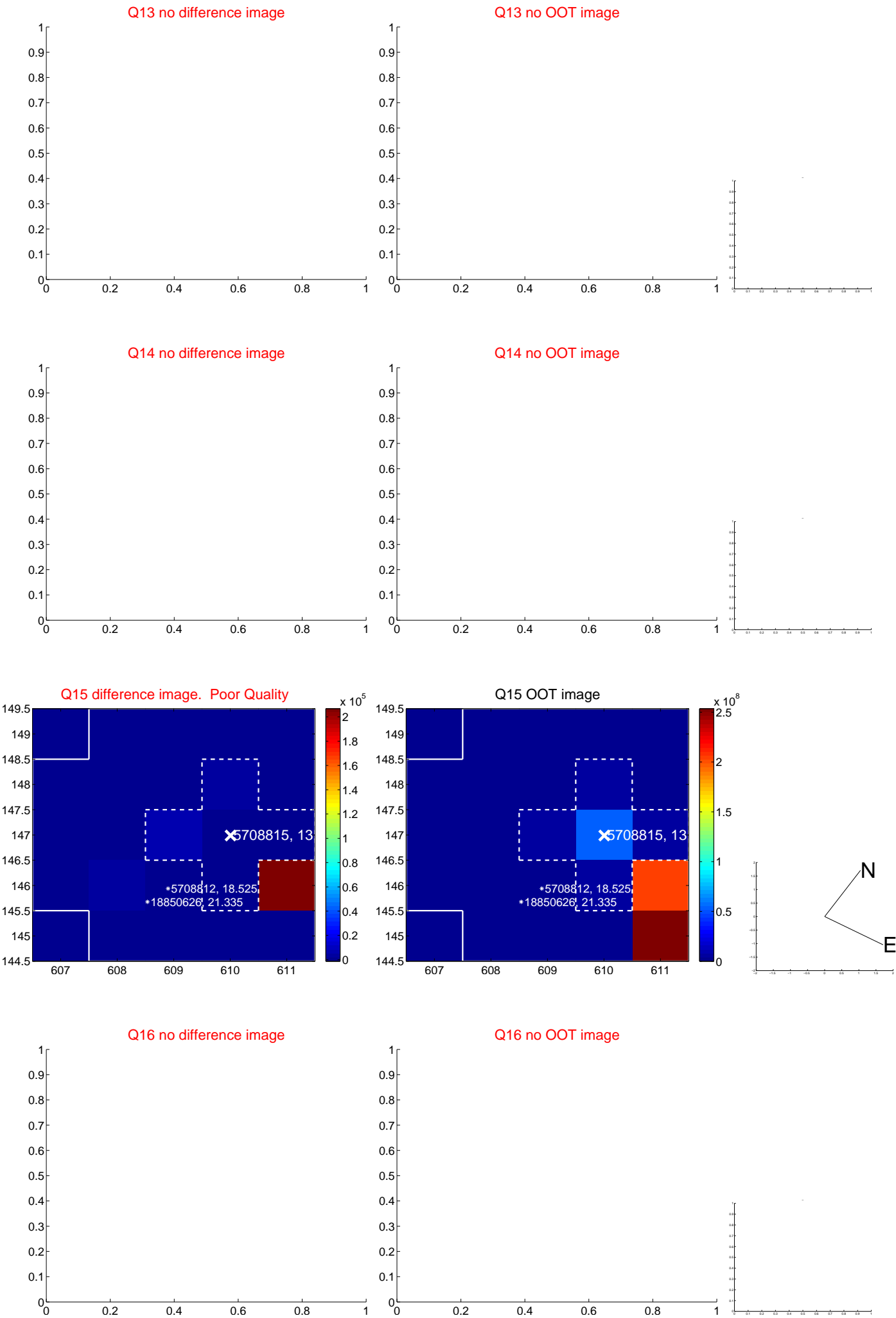
Q12 no difference image



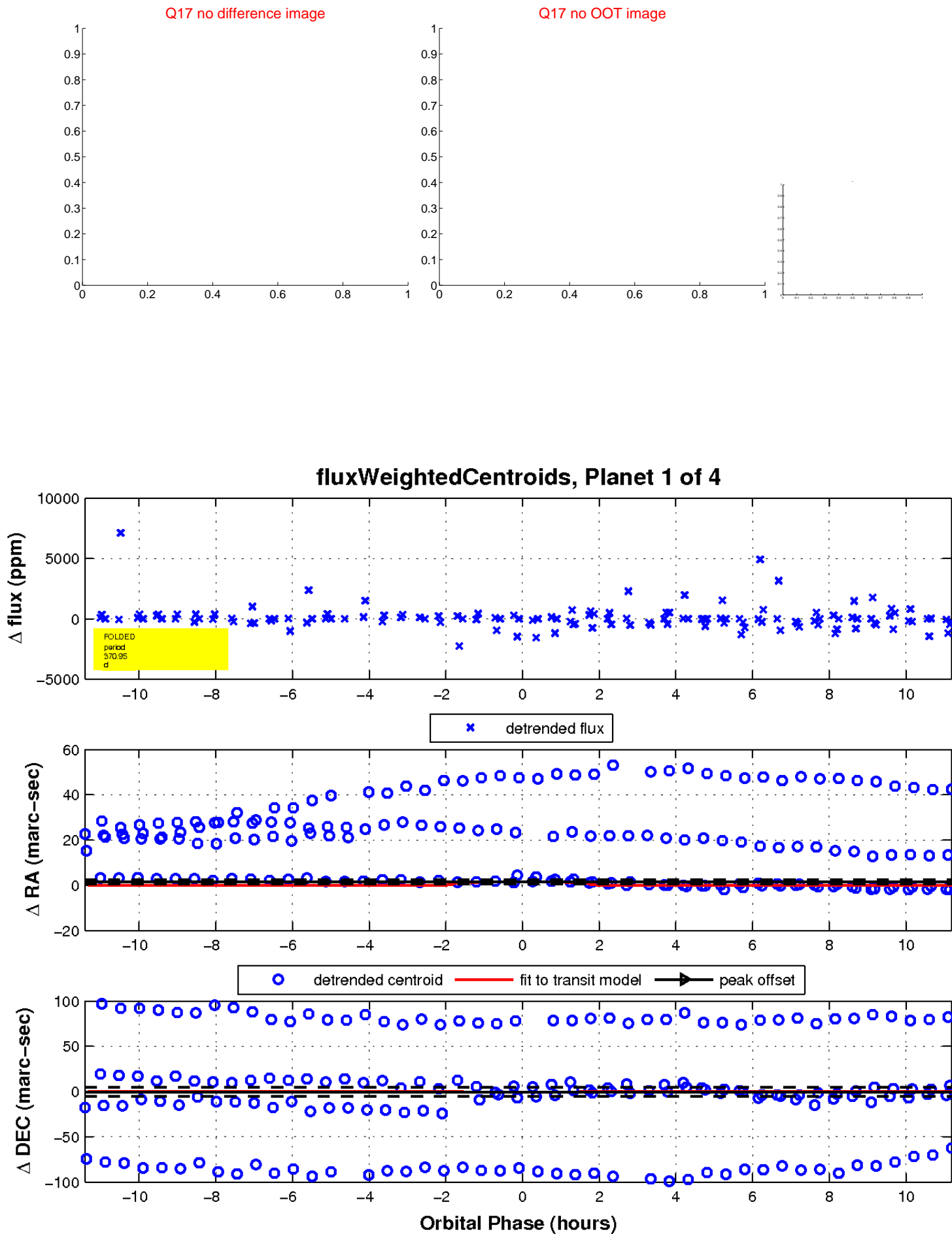
Q12 no OOT image



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

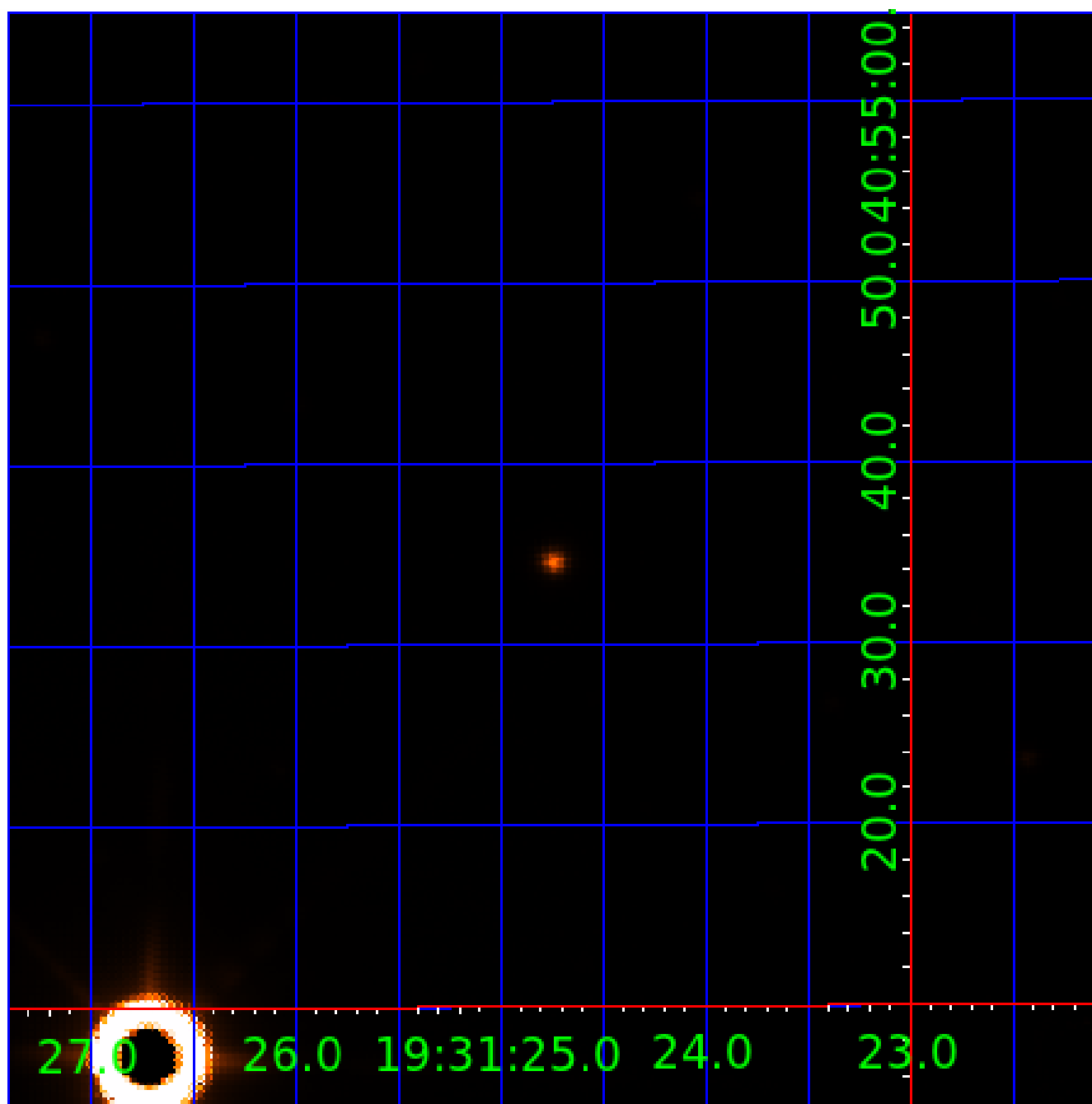


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 005708815

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005708815-01	OBS	No	370.953435	264.334547	465.9	3.812	20.6	5.8	1.50	6651	3.64	3.10
005708815-03	OBS	No	490.596153	515.947992	1100.6	15.000	30.1	-1.0	1.50	6651	4.99	2.13
005708815-04	OBS	No	364.194151	280.376290	1370.3	15.000	28.9	-1.0	1.50	6651	5.57	3.18

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005708815-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005708815-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005708815-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

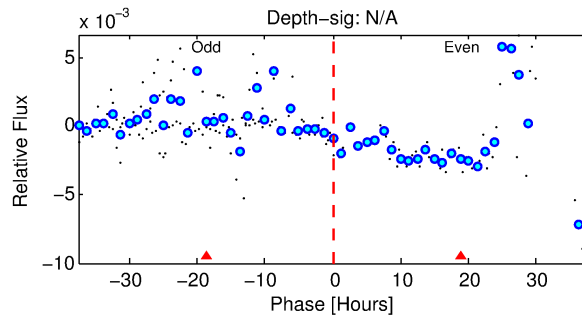
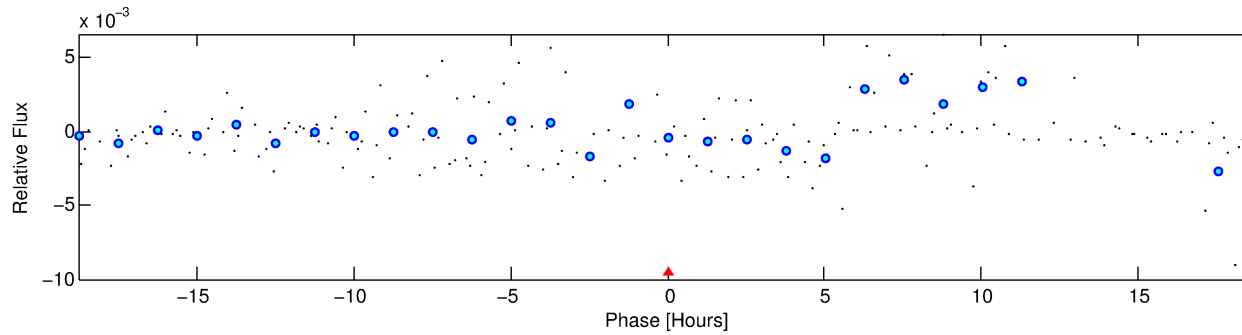
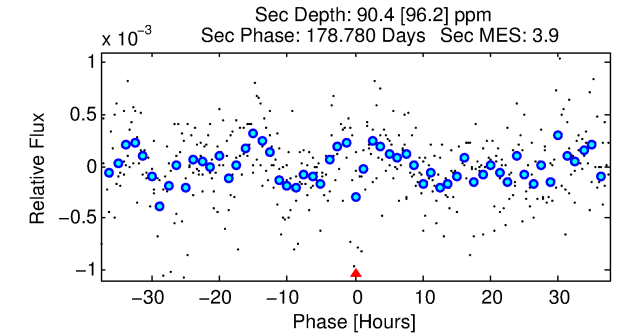
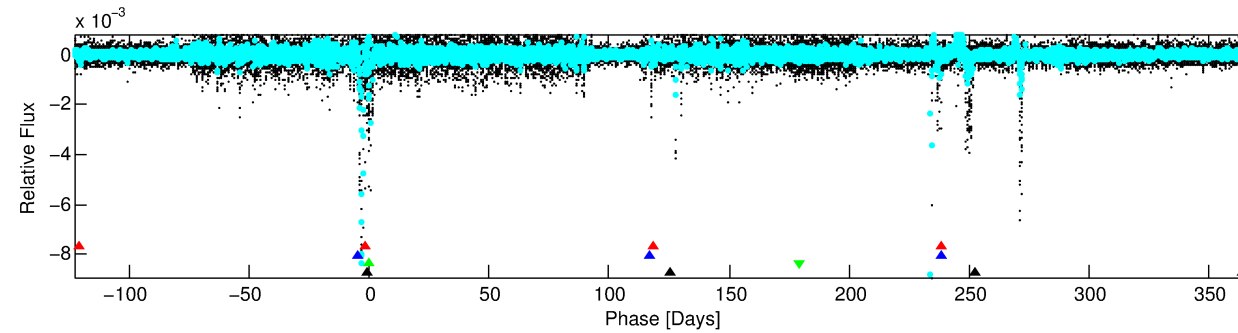
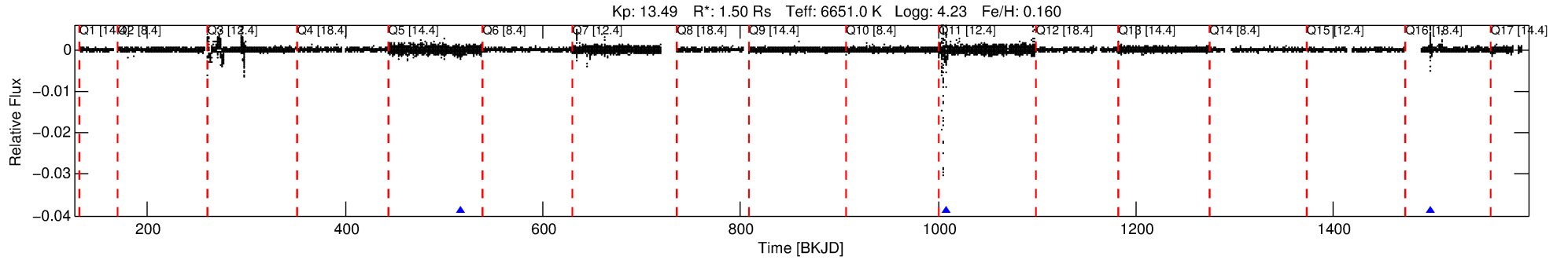
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005708815-03

No Significant Match Found

# DV One-Page Summary

KIC: 5708815 Candidate: 3 of 4 Period: 490.596 d



## TPS TCE Results:

Period = 490.59615 d  
Epoch = 515.9480 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

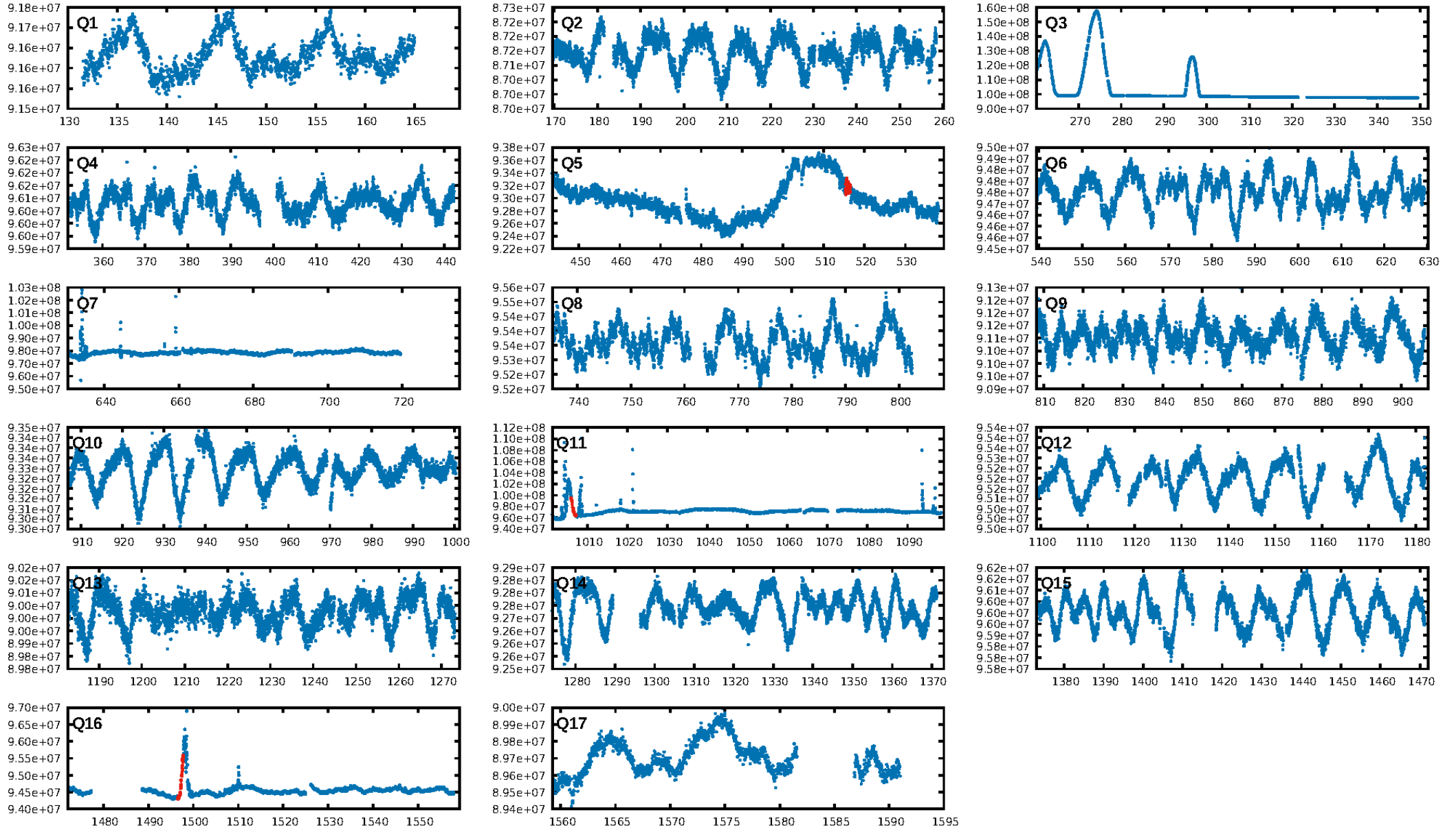
ShortPeriod-sig: 100.0% [185.53σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.88e-18  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.845

Centroid-sig: 60.2%  
Centroid-so: 2.966 arcsec [40.47σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 0.50 [1/2]

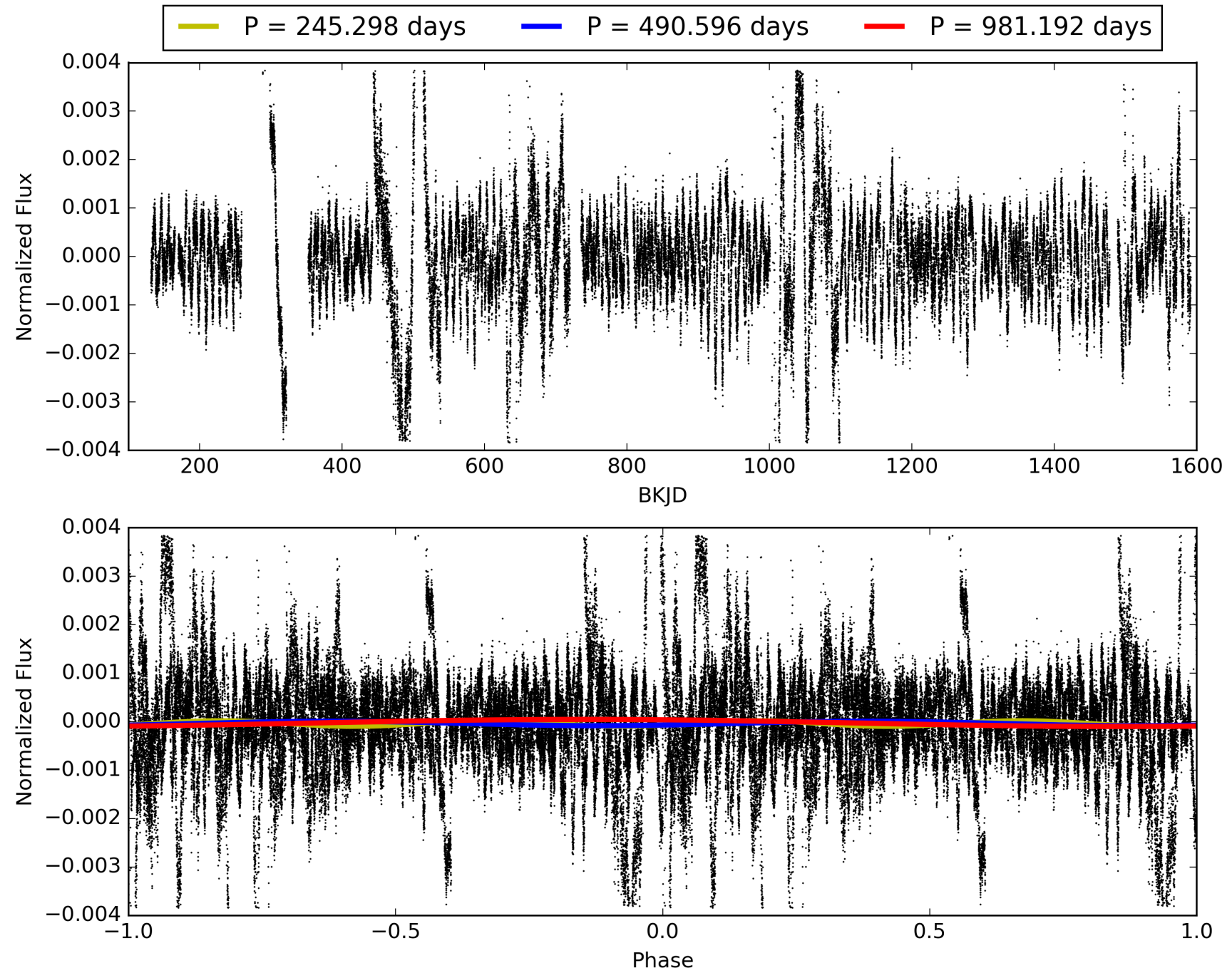
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:30:47 Z

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

# TCE 005708815-03, PDC Light Curves



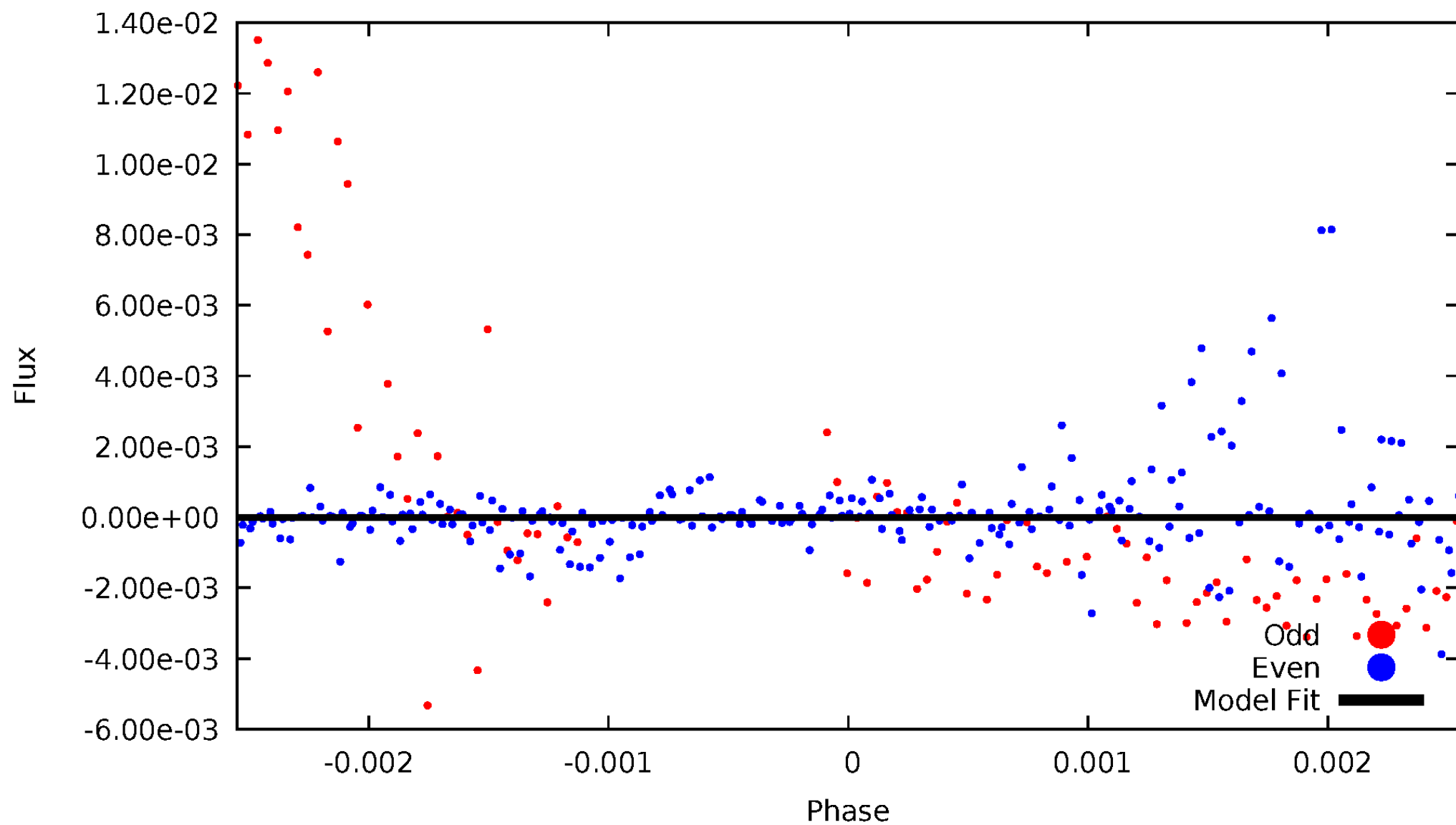
TCE 005708815-03





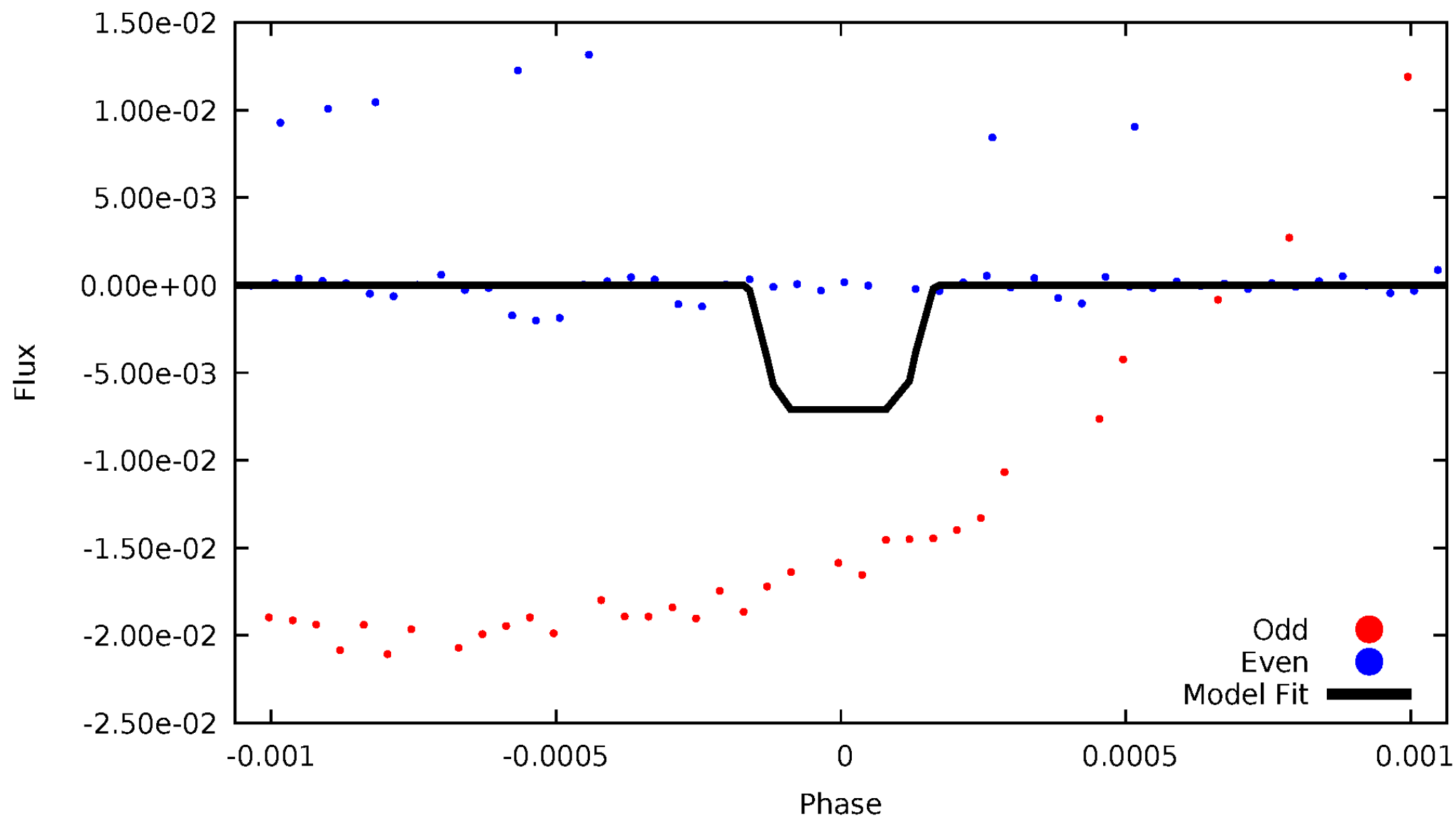
# DV Odd/Even

TCE 005708815-03



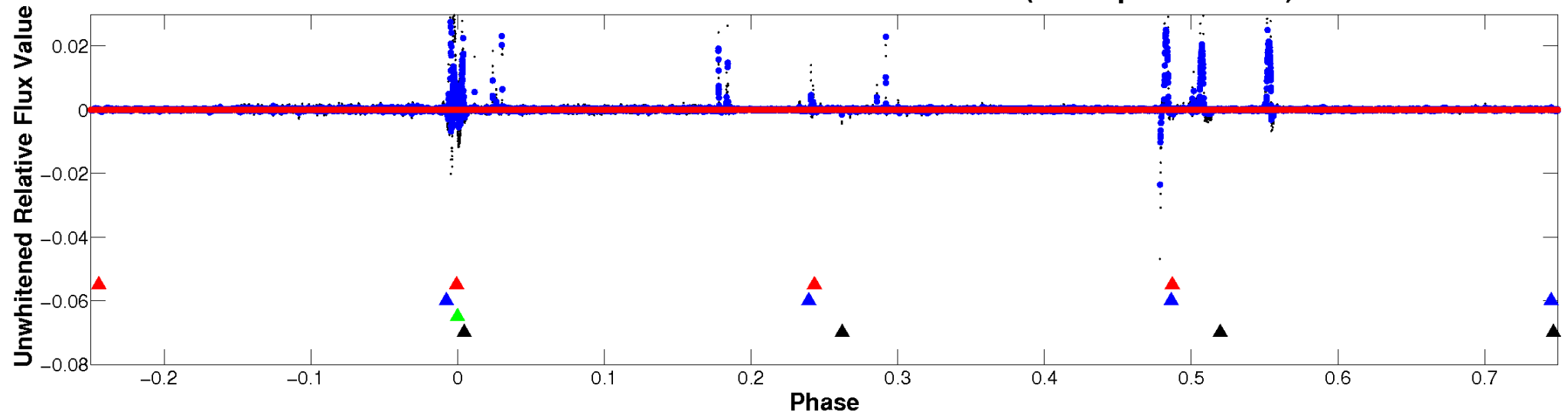
# ALT Odd/Even

TCE 005708815-03

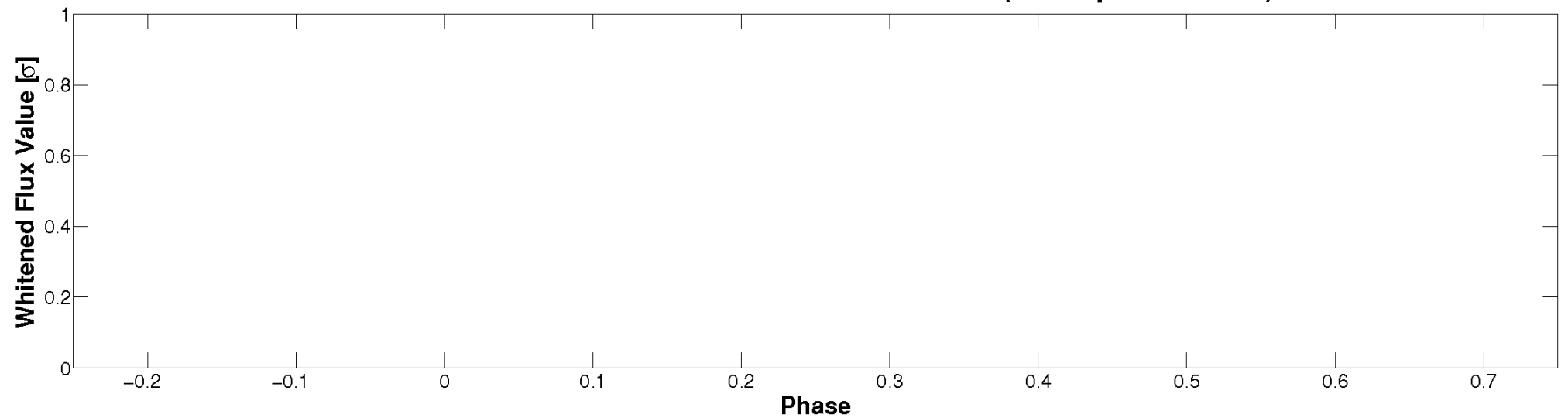


# Non-Whitened Vs. Whitened Light Curve

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

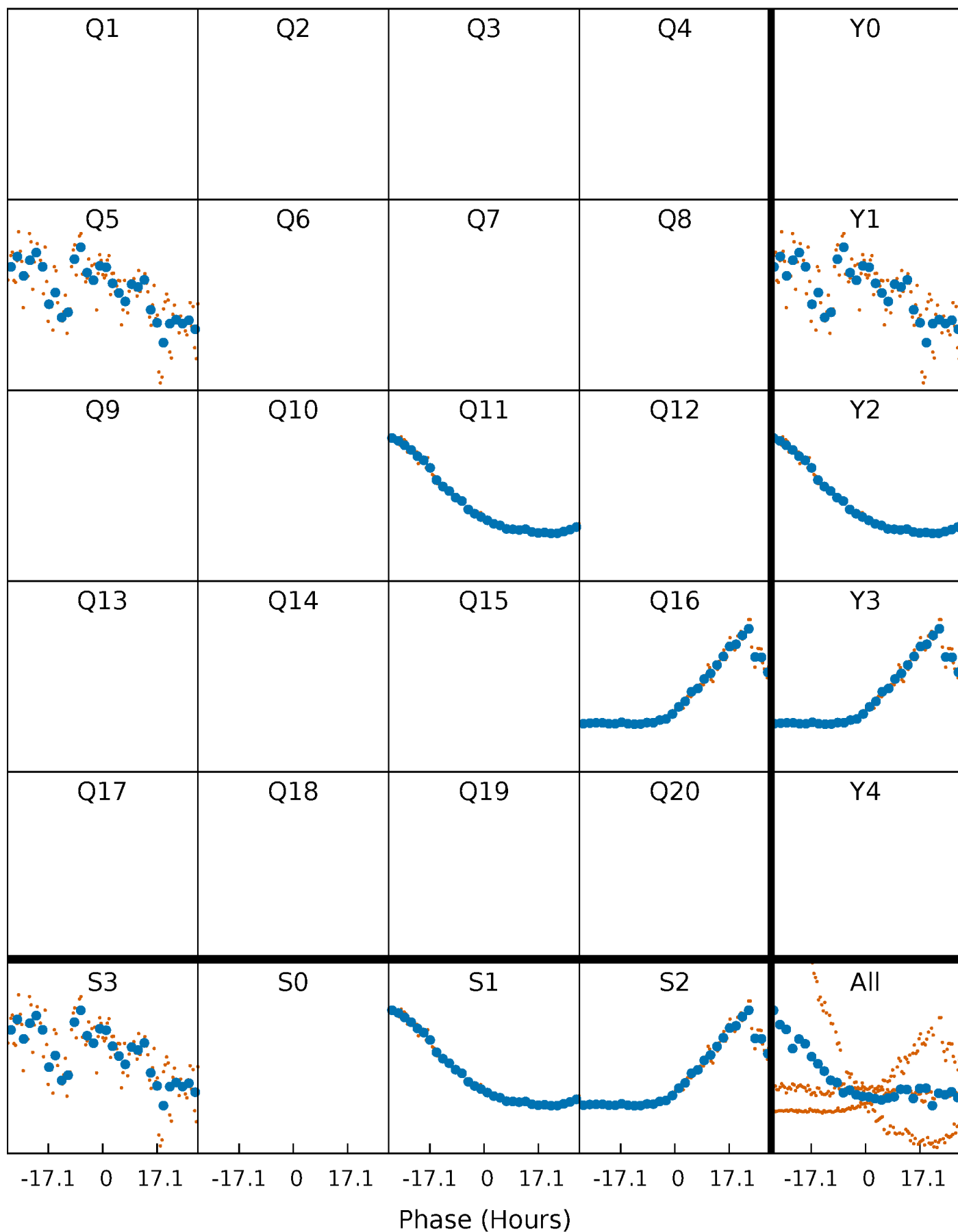


**Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



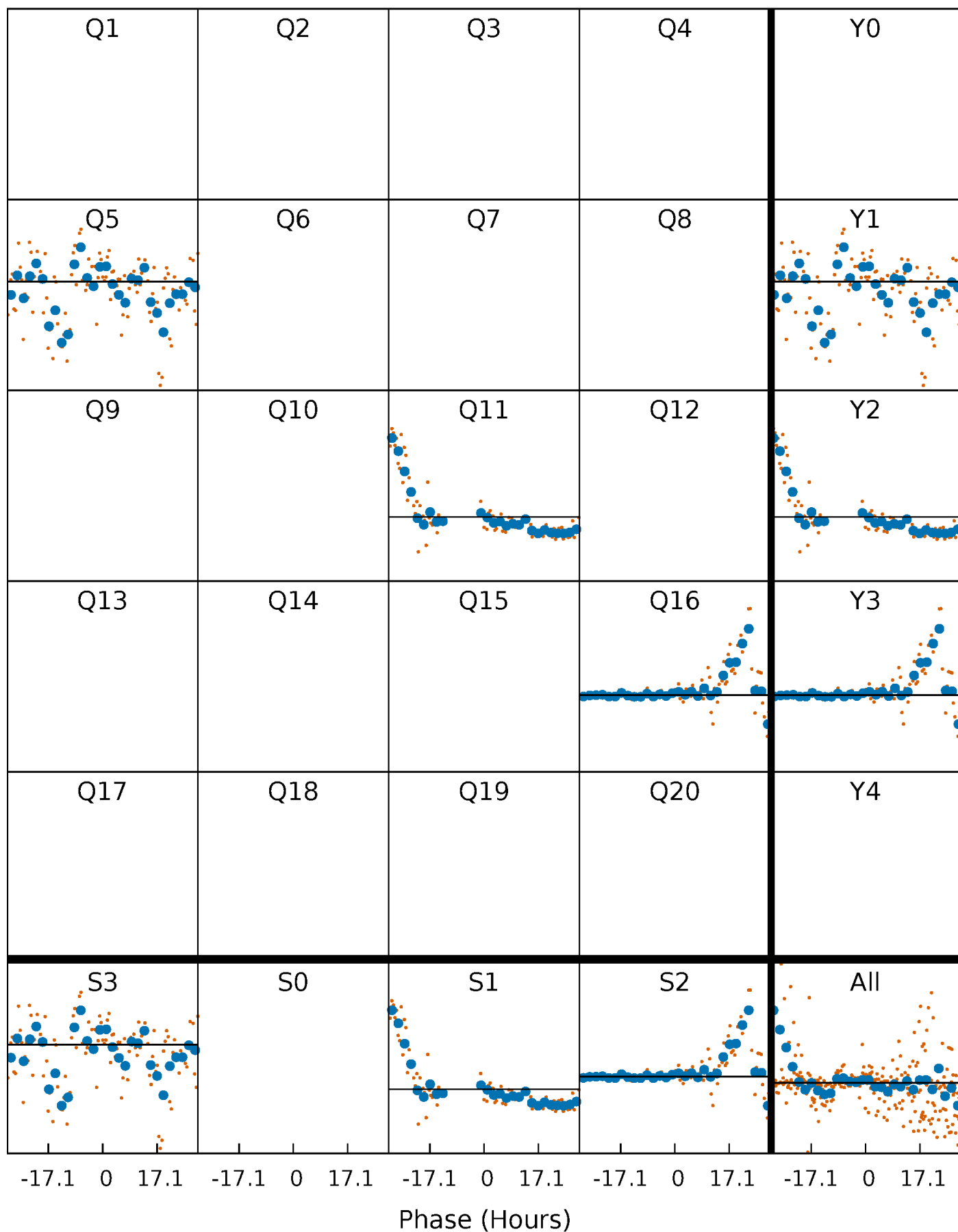
# PDC Quarter-Phased Transit Curves

TCE 005708815-03 P=490.596153 Days  $T_0=515.947992$  (BKJD)



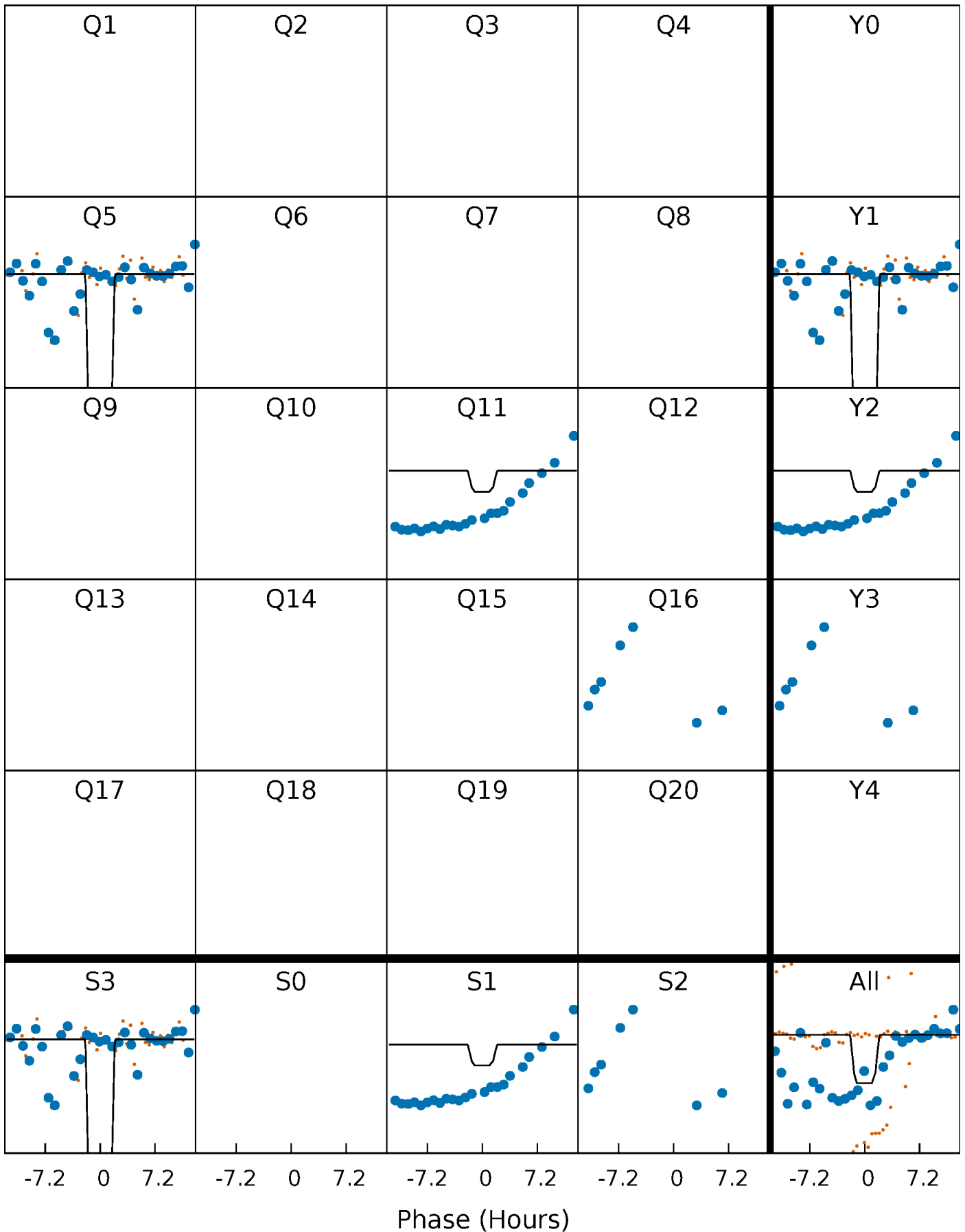
# DV Quarter-Phased Transit Curves

TCE 005708815-03   P=490.596153 Days    $T_0=515.947992$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

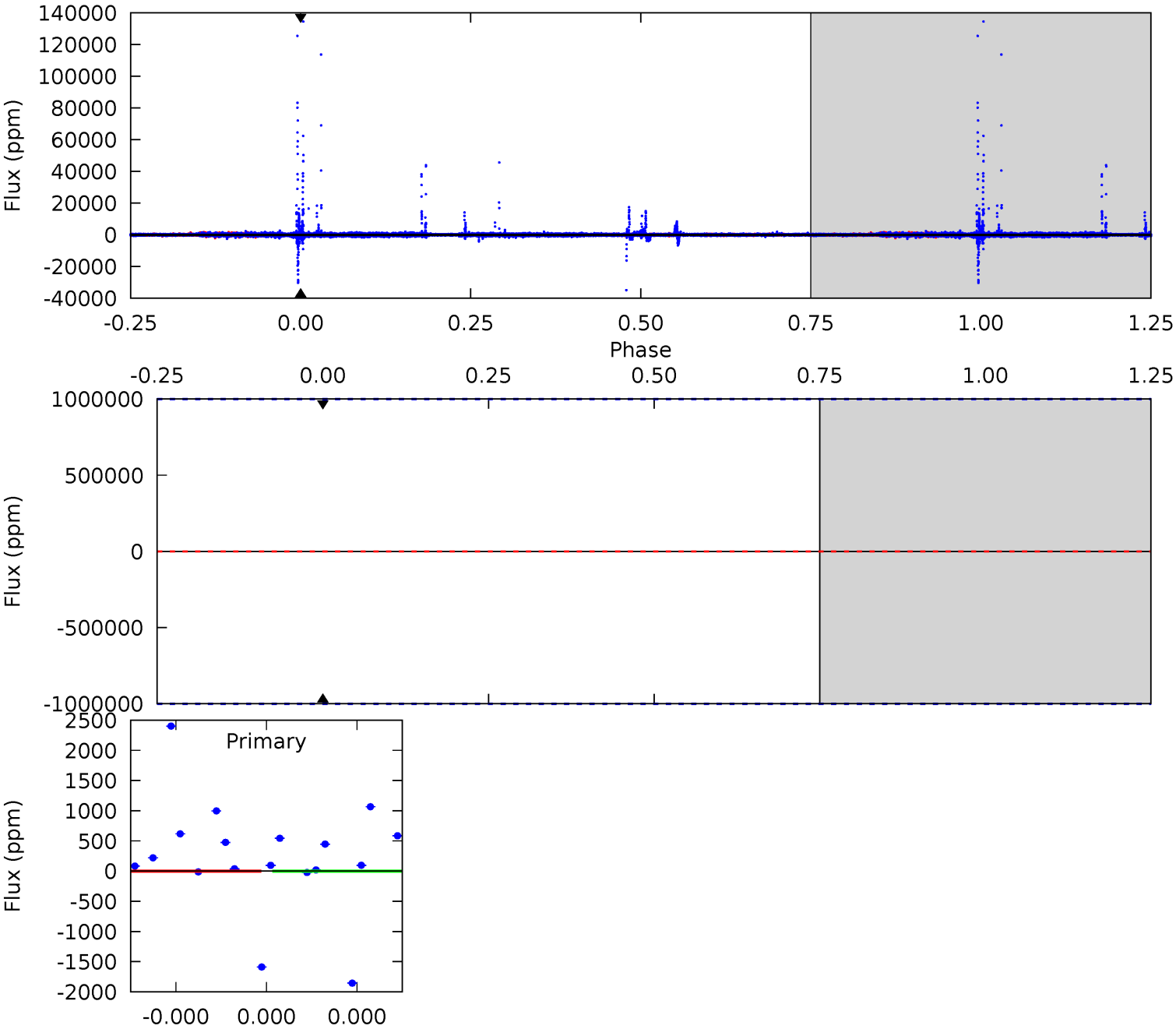
TCE 005708815-03 P=490.596153 Days  $T_0=516.969339$  (BKJD)



# DV Model-Shift Uniqueness Test

005708815-03, P = 490.596153 Days, E = 25.351839 Days

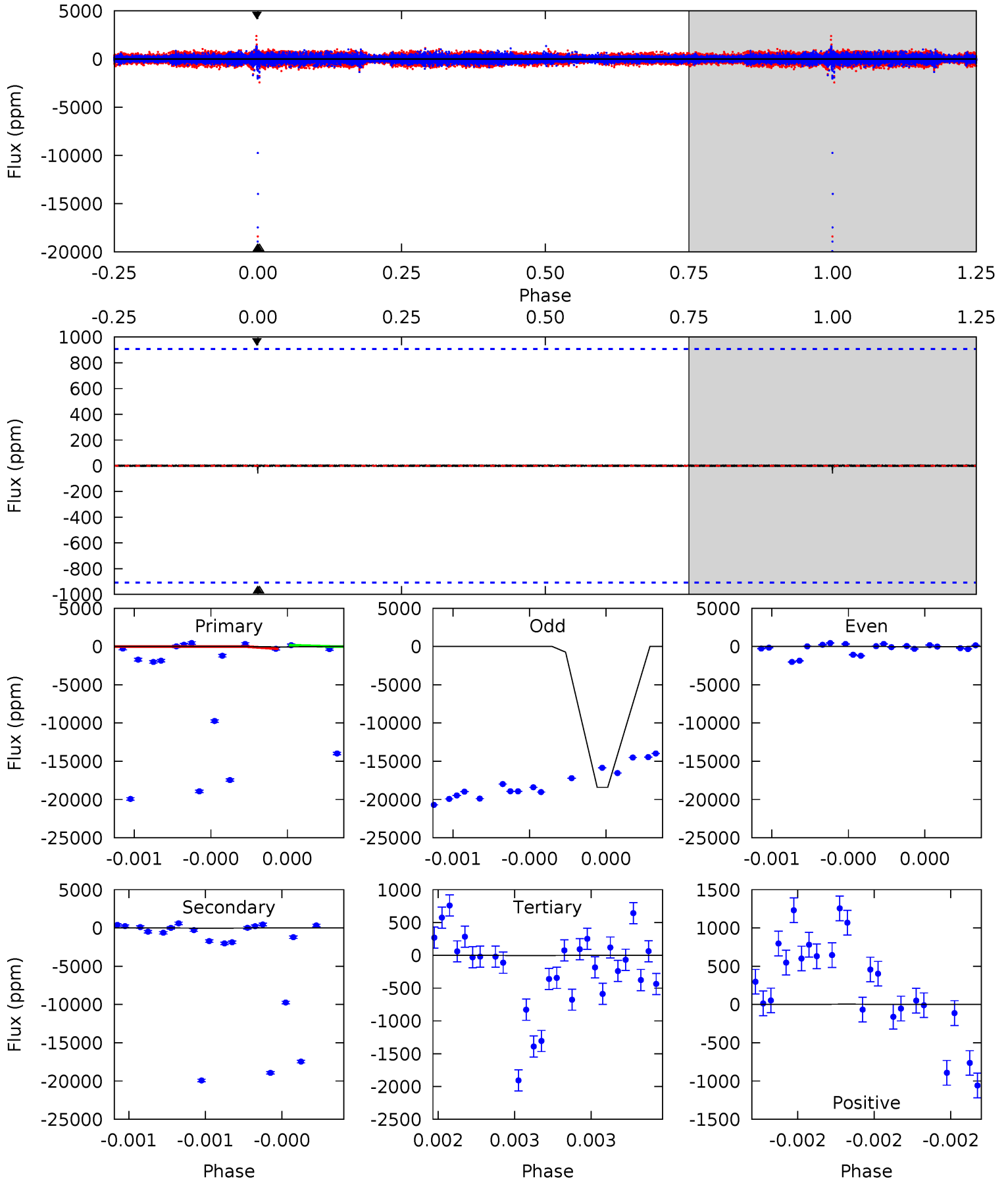
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005708815-03, P = 490.596153 Days, E = 26.373186 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
0.37	0.22	0.03	0.03	5.66	3.61	0.00	0.34	0.35	0.18	0.19	37.9	1.00	0.07	0





### Stellar Parameters For KIC 005708815

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$6651^{+73}_{-86}$	$4.228^{+0.063}_{-0.117}$	$0.160^{+0.150}_{-0.150}$	$1.496^{+0.264}_{-0.142}$	$1.384^{+0.100}_{-0.092}$	$0.583^{+0.152}_{-0.203}$
	+1%/-1%	+1%/-3%	+94%/-94%	+18%/-9%	+7%/-7%	+26%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005708815-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$13.14^{+13.03}_{-9.37}$	$433^{+20}_{-13}$	$4764^{+23552}_{-30833}$	$9511^{+970590}_{-982670}$
Alt.	$-35 \pm 160$	$17.88^{+16.04}_{-11.97}$	$433^{+19}_{-13}$	$2300^{+1143}_{-5241}$	$71^{+1310}_{-570}$

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

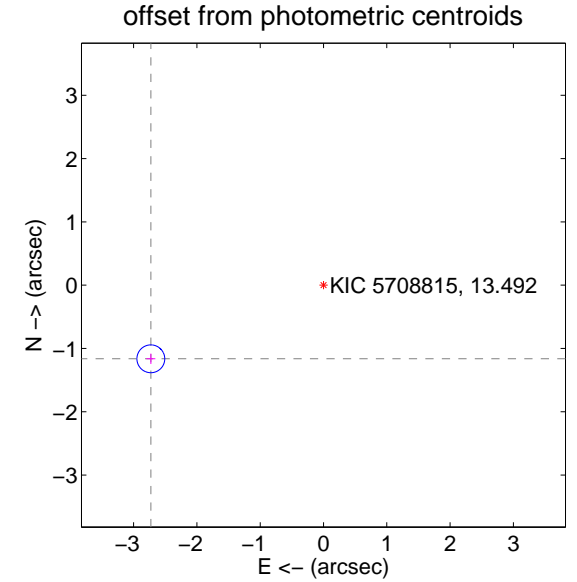
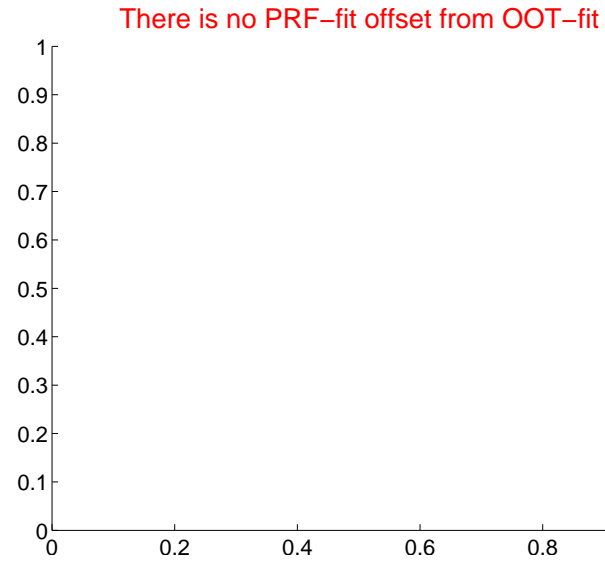
## DV Centroid Data

Supplemental centroid analysis for 005708815-03. Kepler magnitude: 13.49. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$2.97 \pm 0.07$	40.47	$2.73 \pm 0.07$	$-1.16 \pm 0.08$

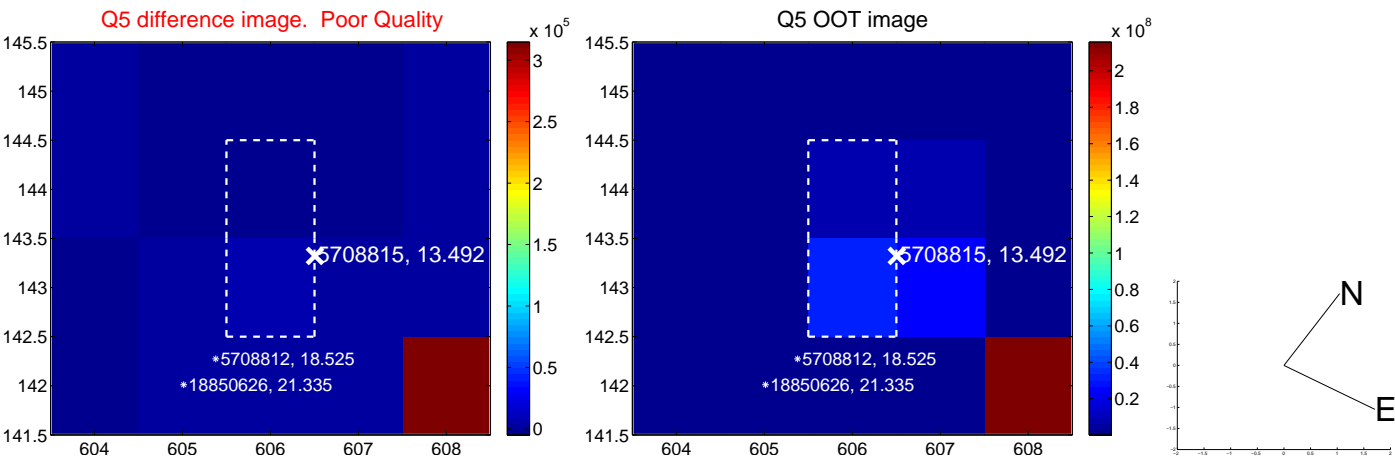


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

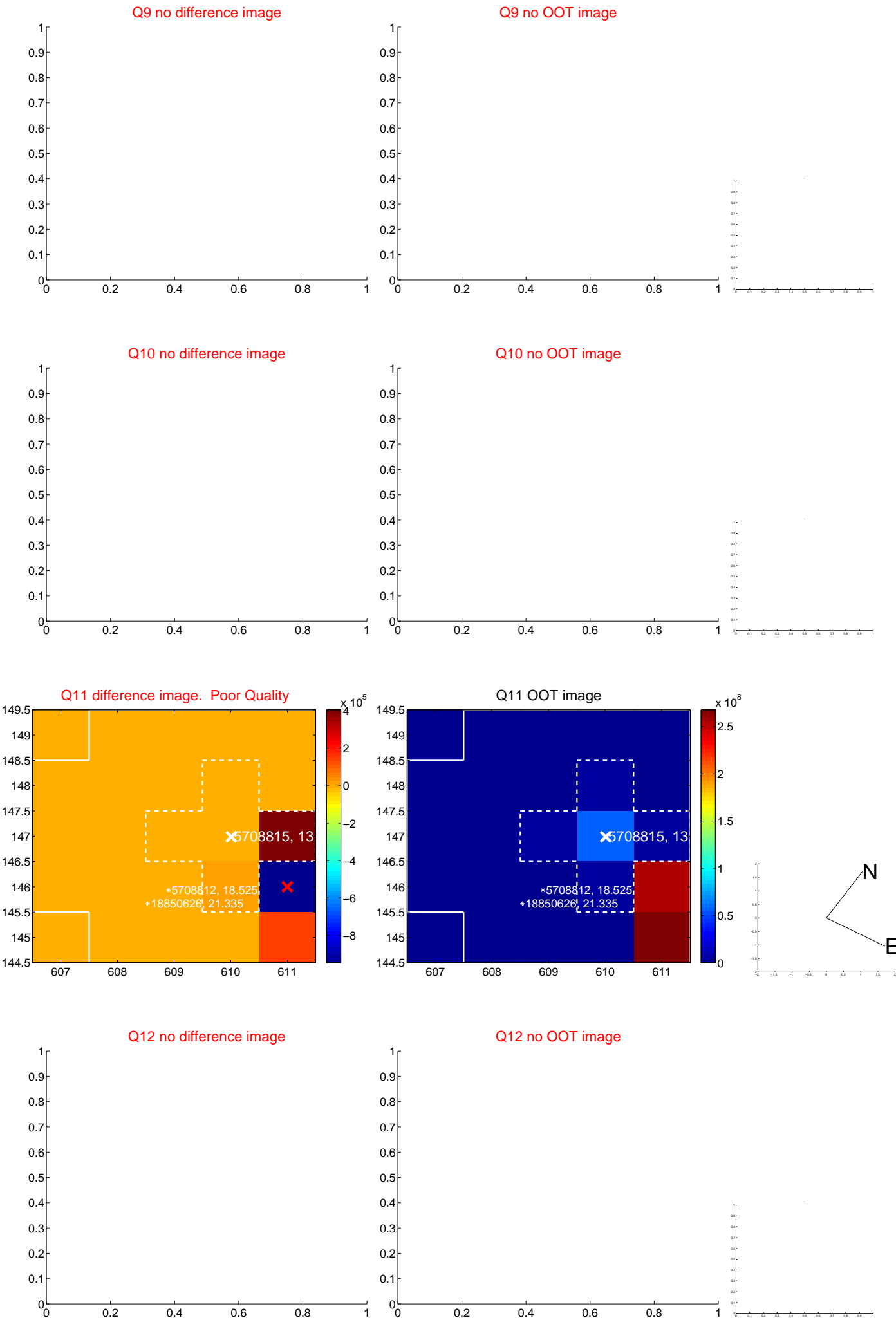
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



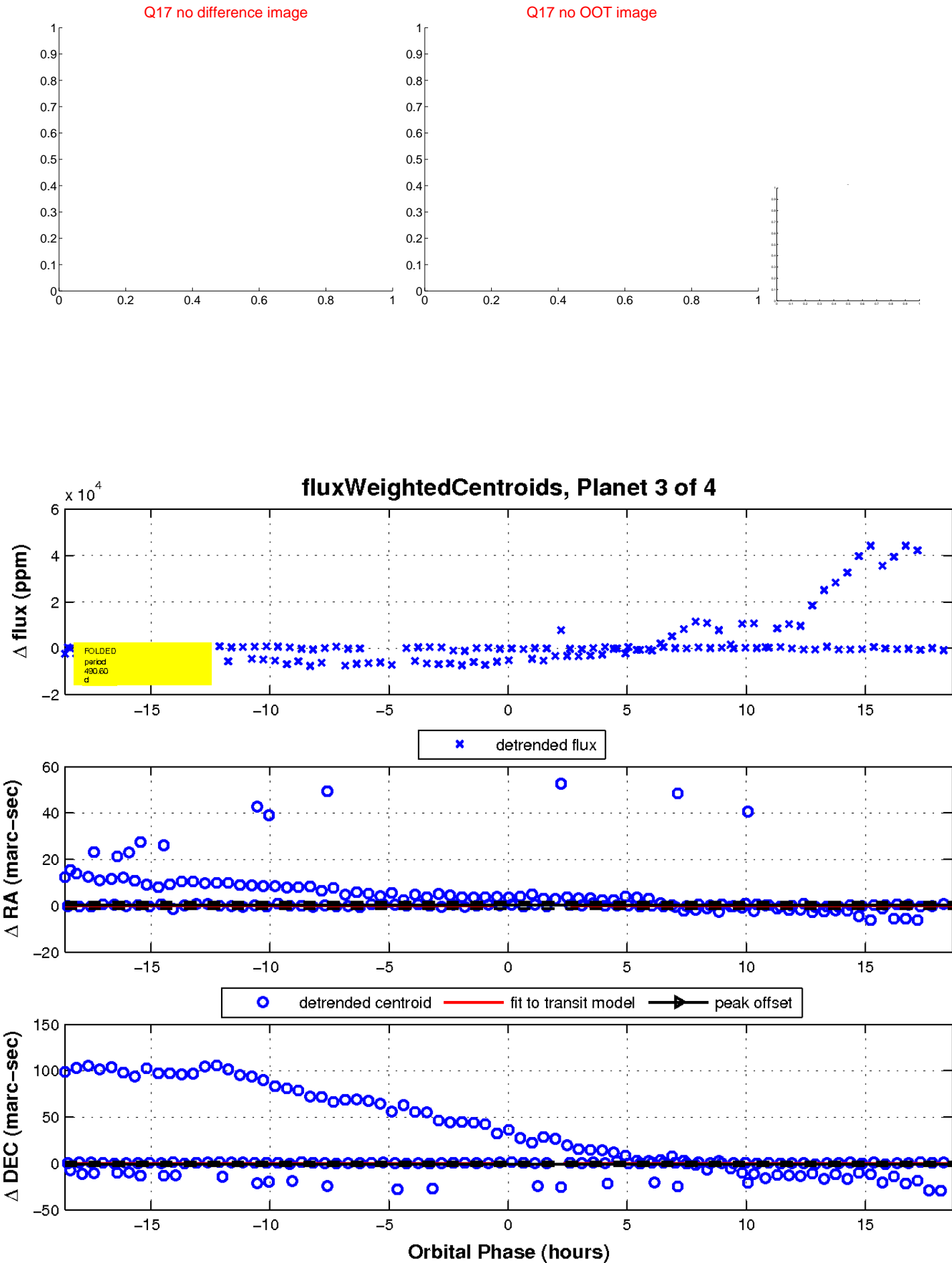
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

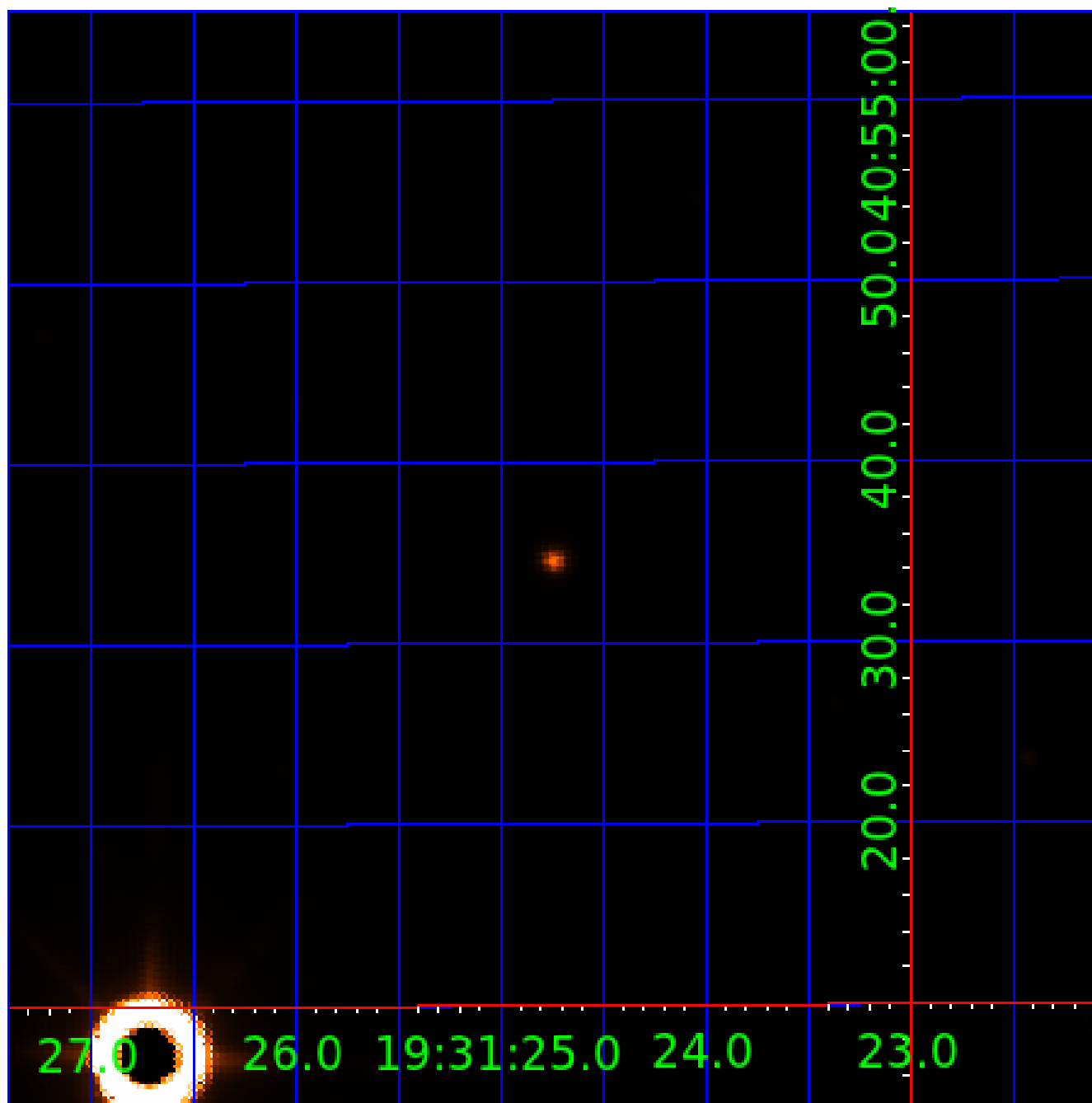


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 005708815

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005708815-01	OBS	No	370.953435	264.334547	465.9	3.812	20.6	5.8	1.50	6651	3.64	3.10
005708815-03	OBS	No	490.596153	515.947992	1100.6	15.000	30.1	-1.0	1.50	6651	4.99	2.13
005708815-04	OBS	No	364.194151	280.376290	1370.3	15.000	28.9	-1.0	1.50	6651	5.57	3.18

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005708815-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005708815-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005708815-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

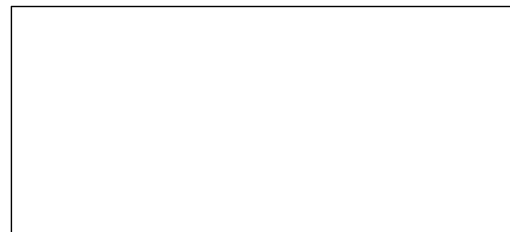
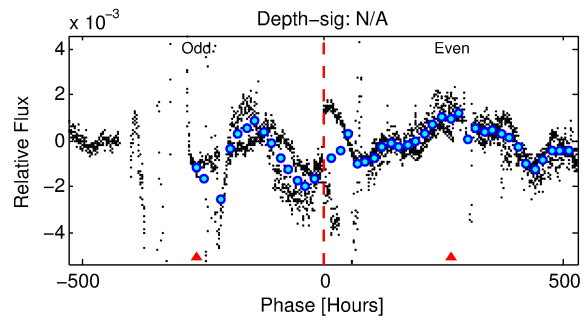
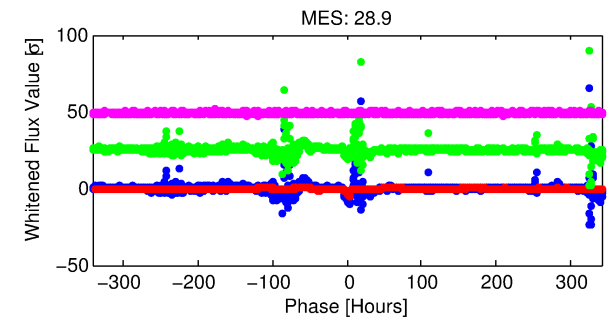
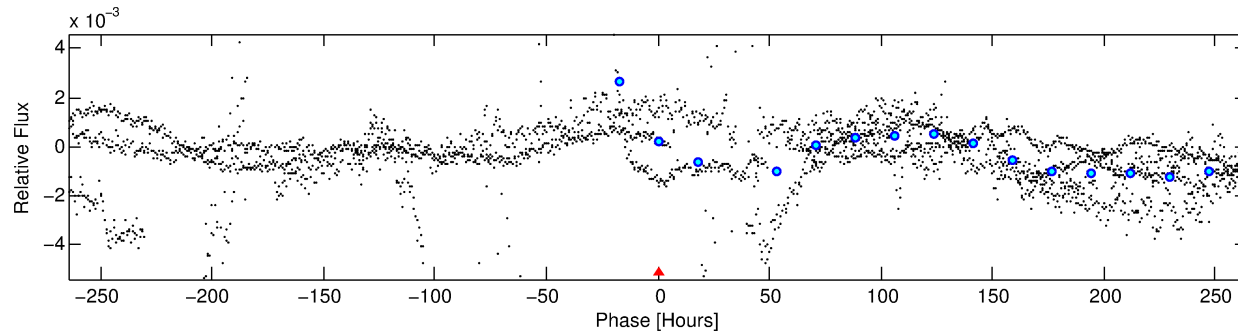
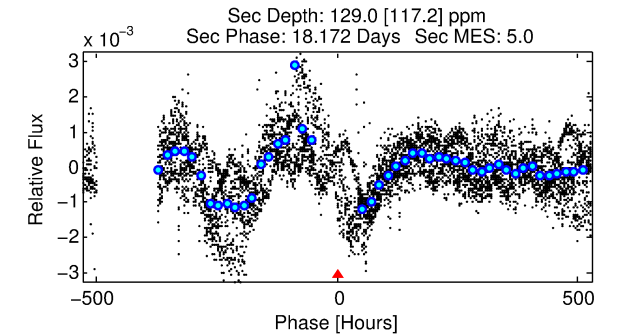
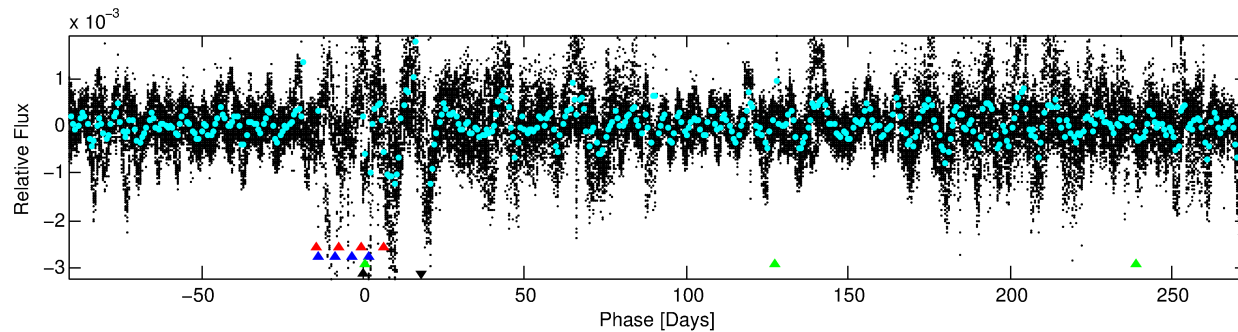
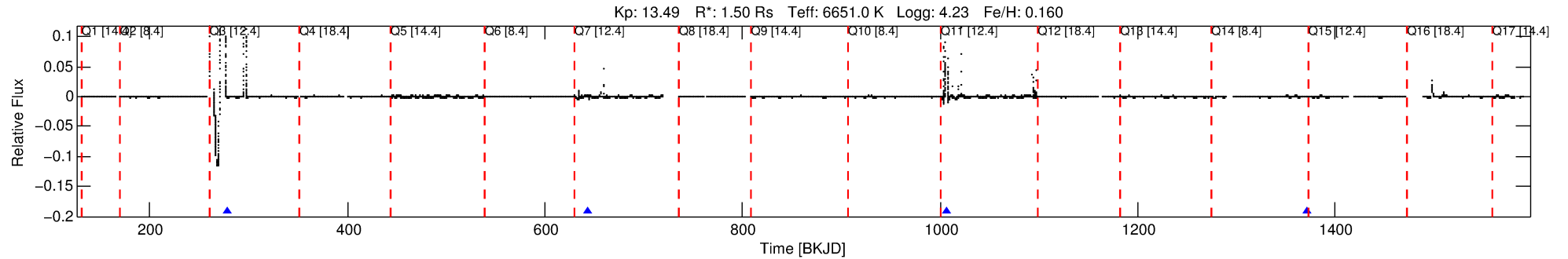
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005708815-04

No Significant Match Found

# DV One-Page Summary

KIC: 5708815 Candidate: 4 of 4 Period: 364.194 d



## TPS TCE Results:

Period = 364.19415 d  
Epoch = 280.3763 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

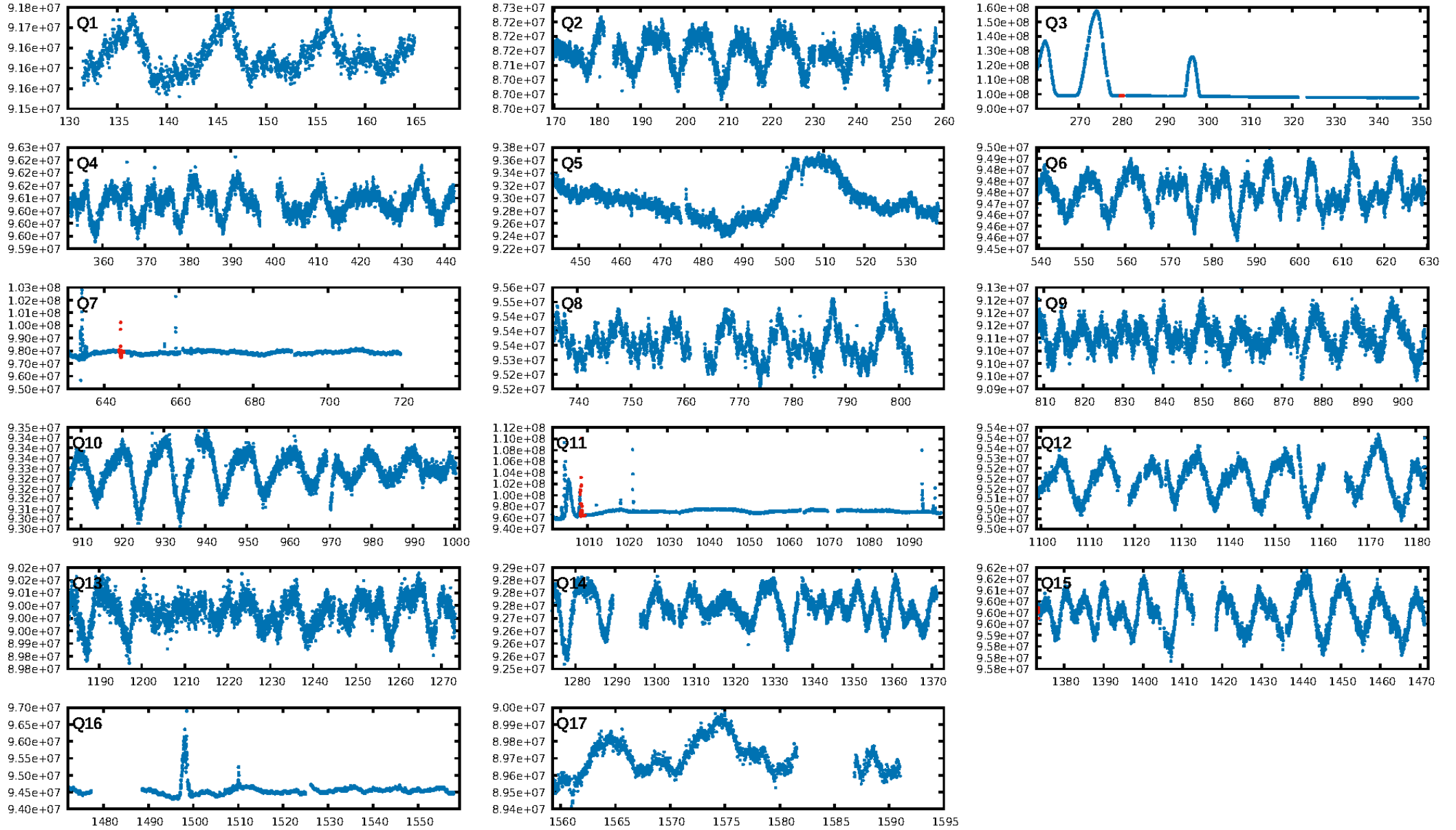
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [8.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.80e-22  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 2.788

Centroid-sig: 0.0%  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

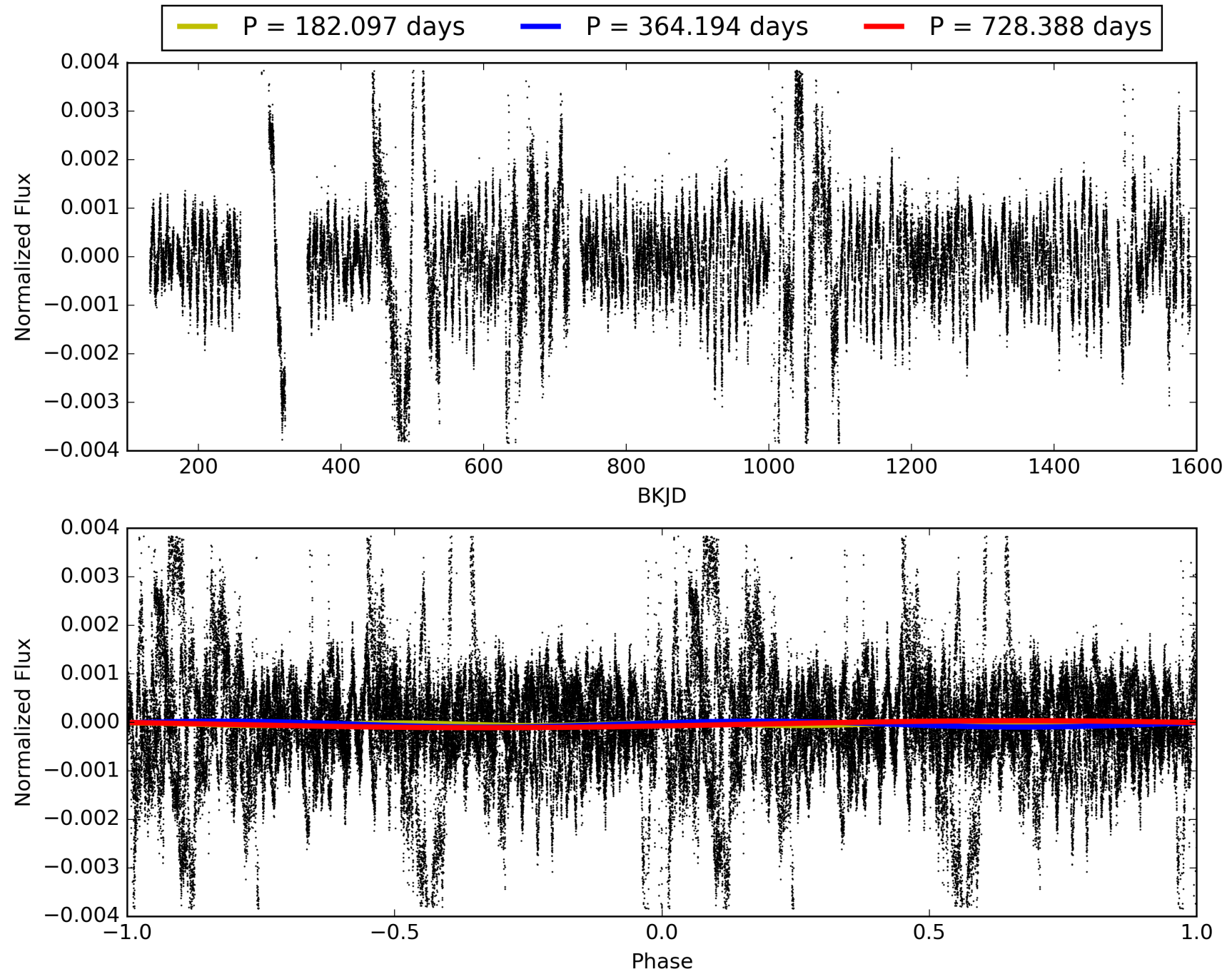
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:30:55 Z

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

# TCE 005708815-04, PDC Light Curves

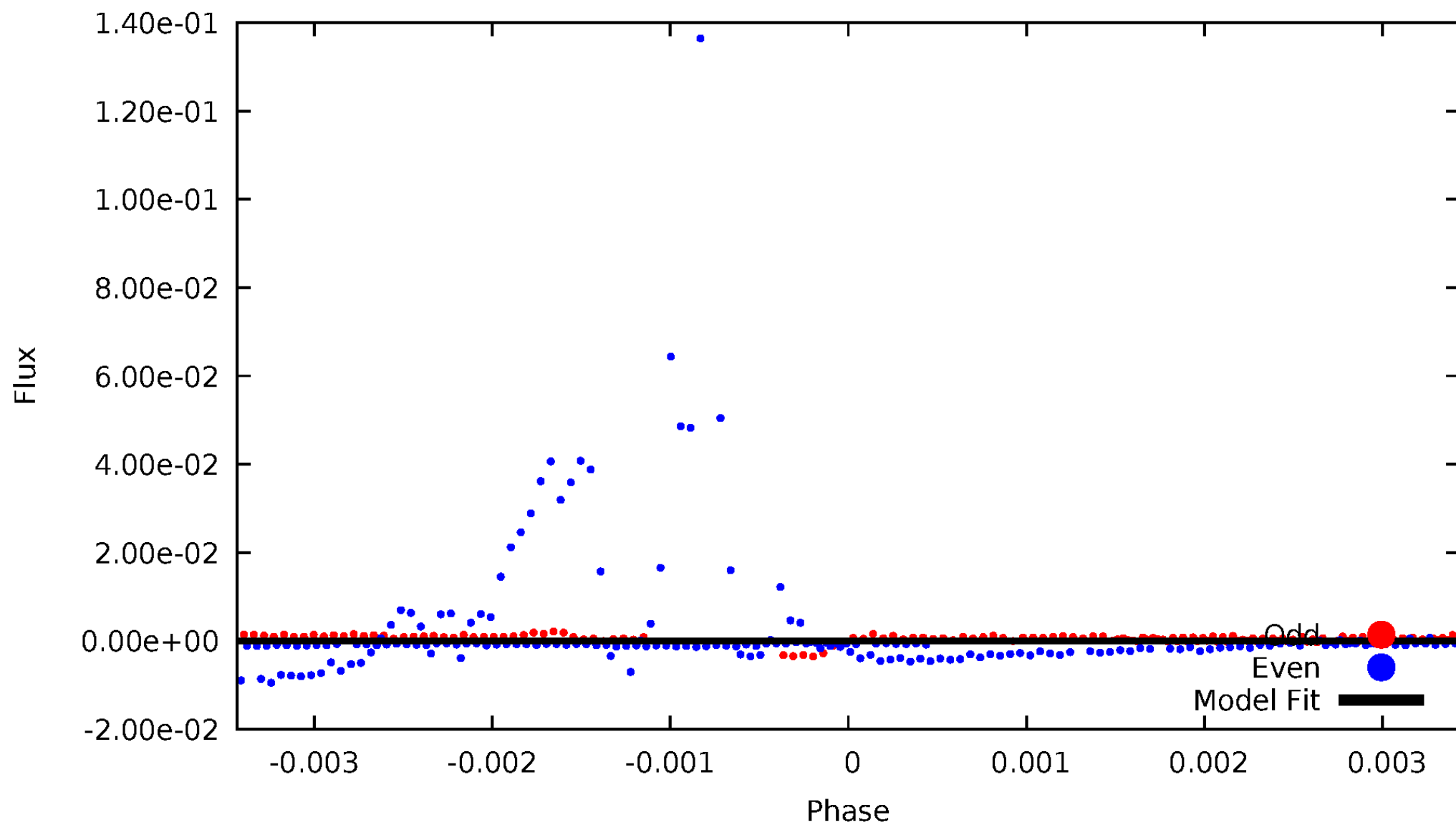


TCE 005708815-04



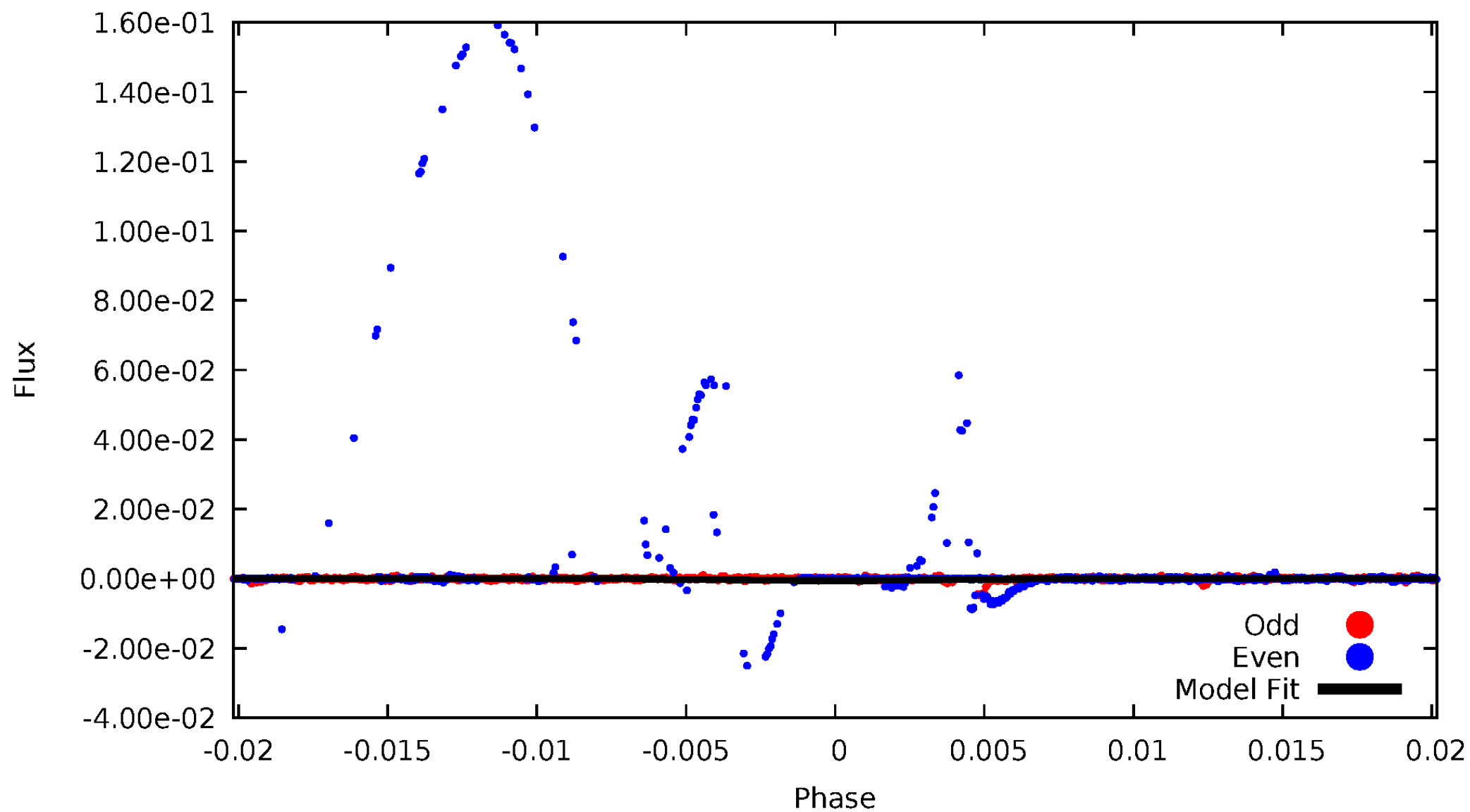
# DV Odd/Even

TCE 005708815-04



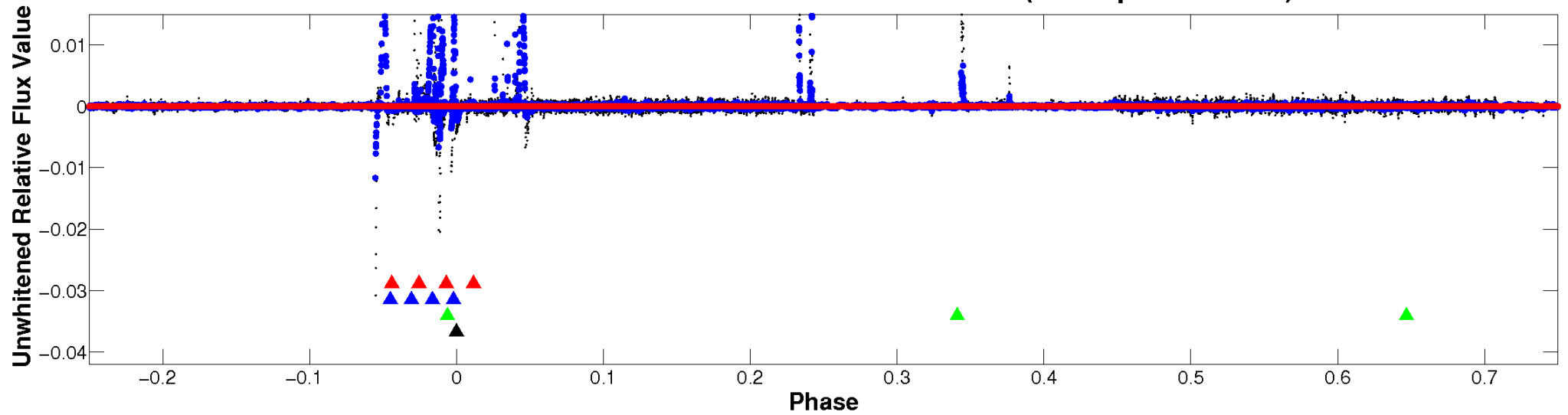
# ALT Odd/Even

TCE 005708815-04

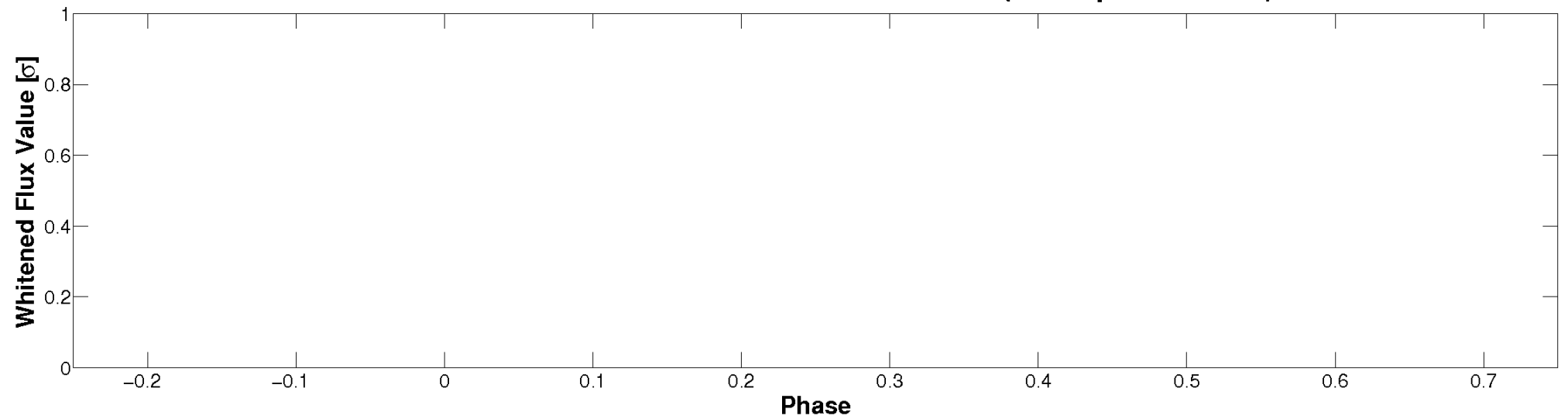


# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

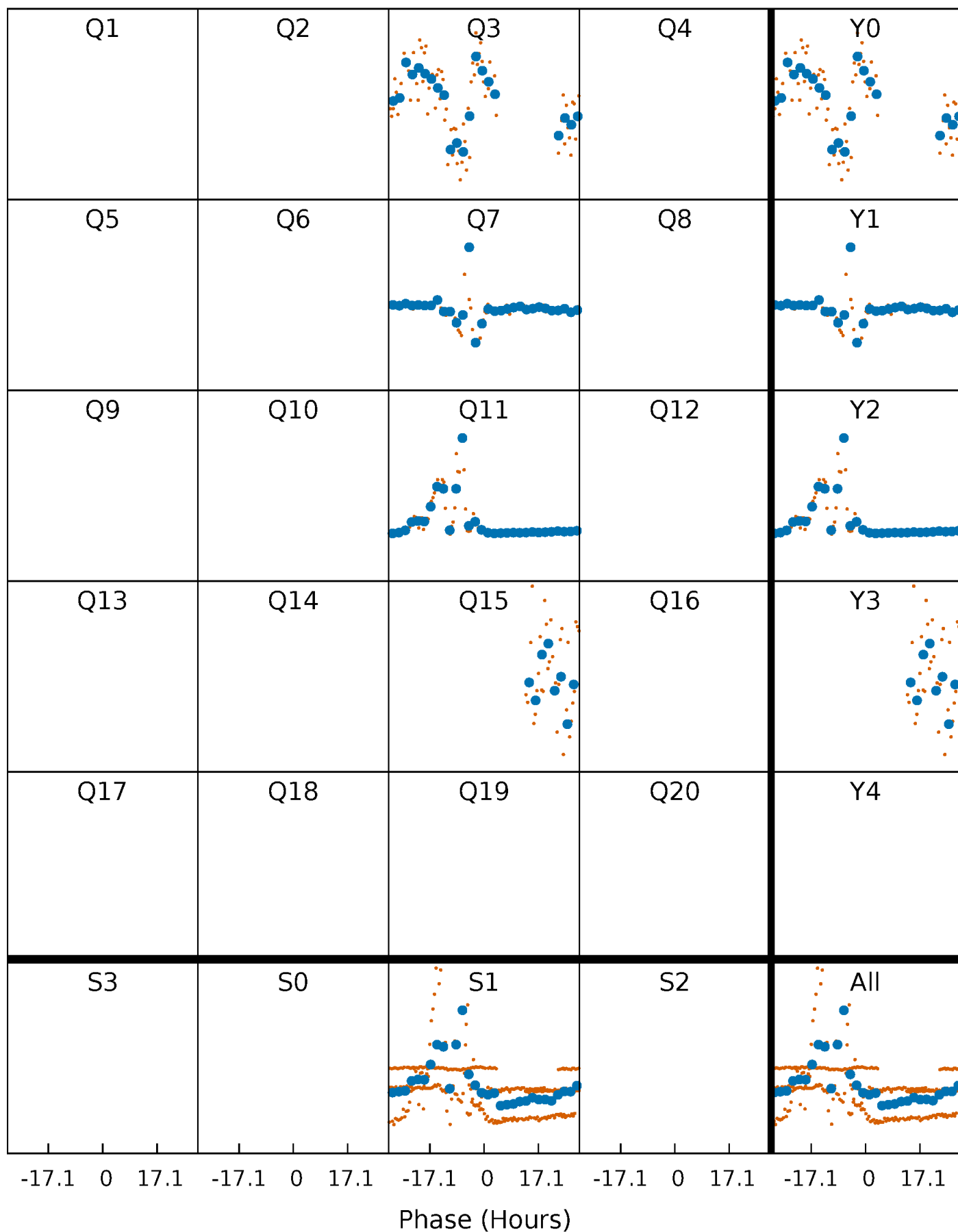


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

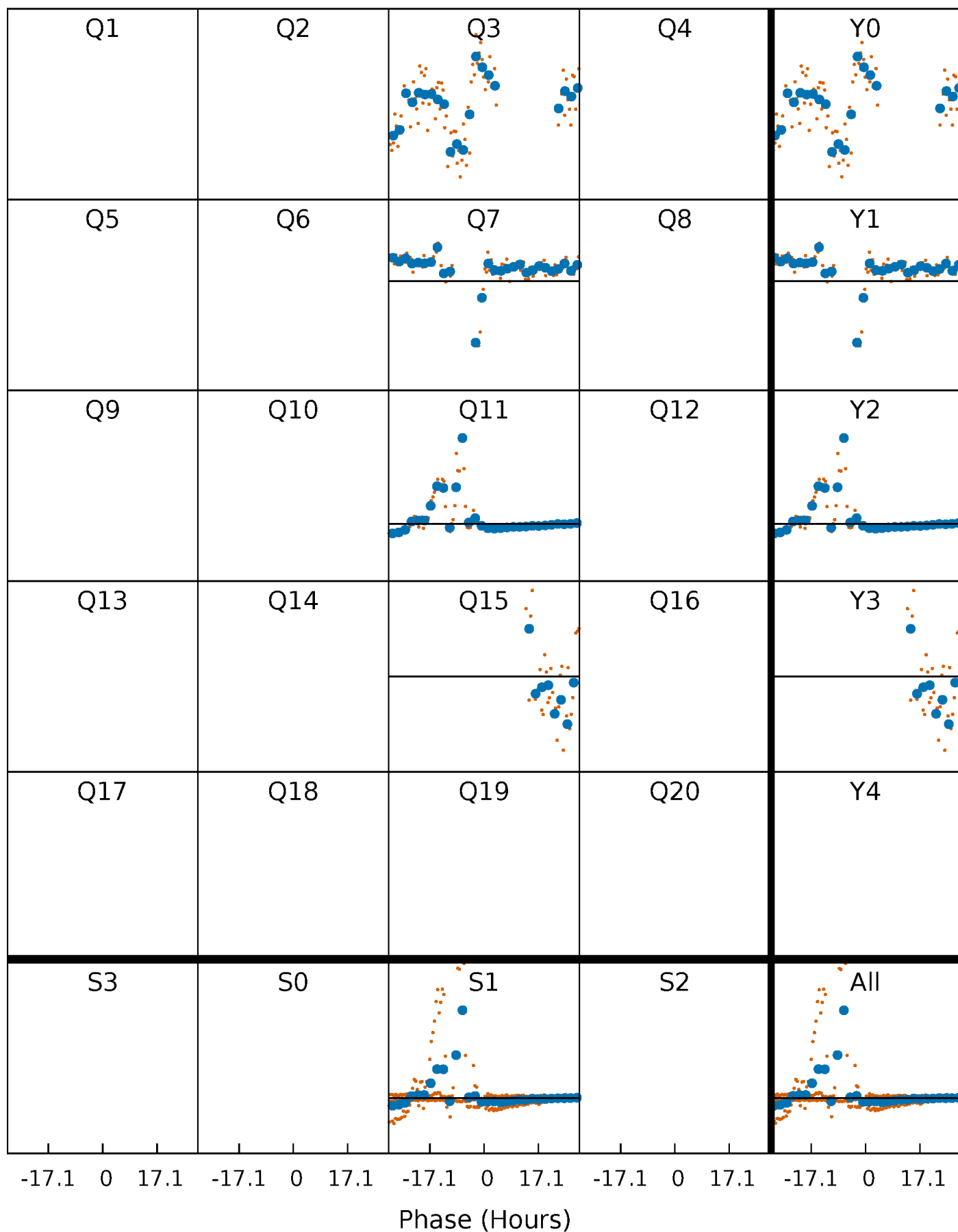
TCE 005708815-04     $P=364.194151$  Days     $T_0=280.376290$  (BKJD)





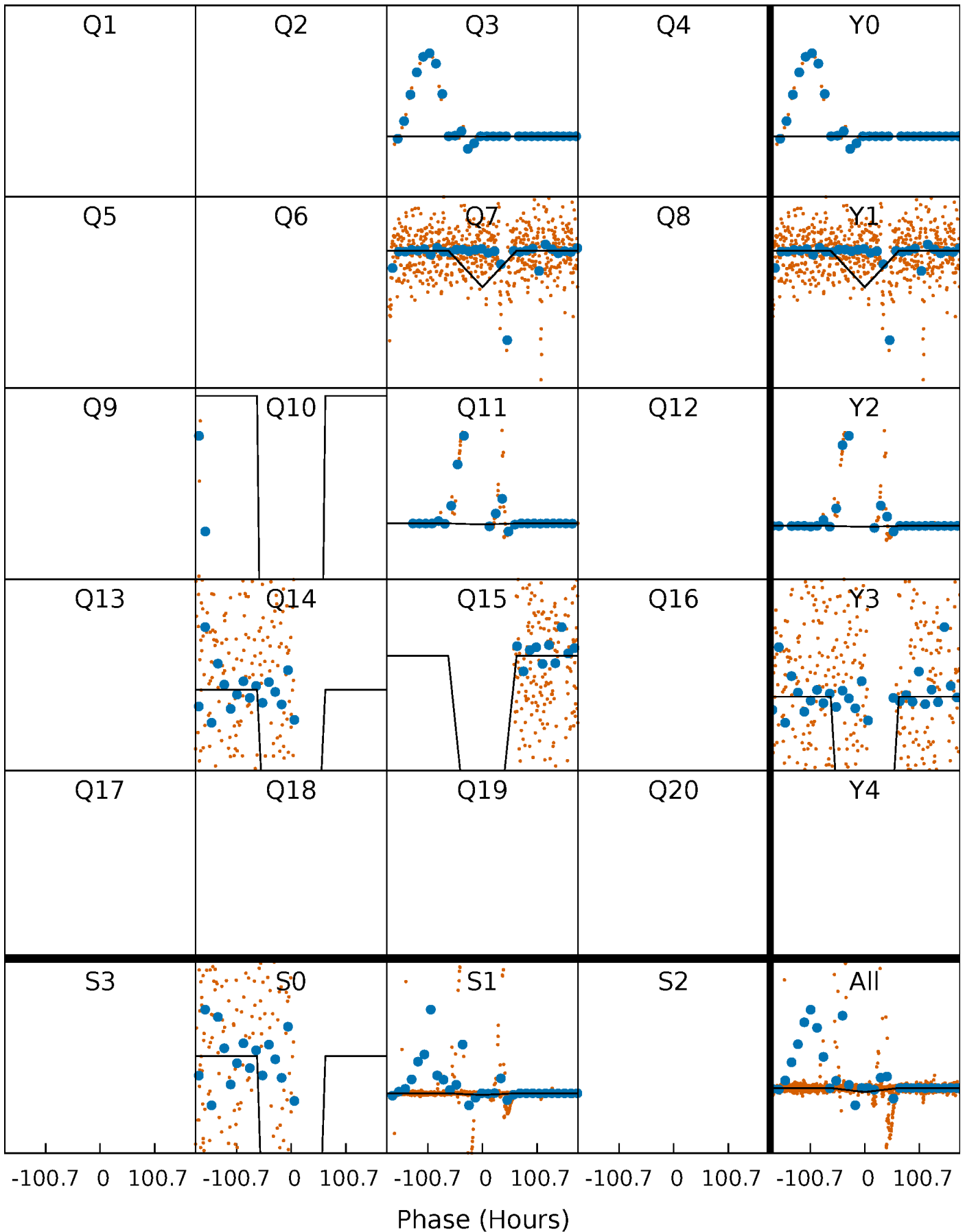
# DV Quarter-Phased Transit Curves

TCE 005708815-04 P=364.194151 Days  $T_0=280.376290$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

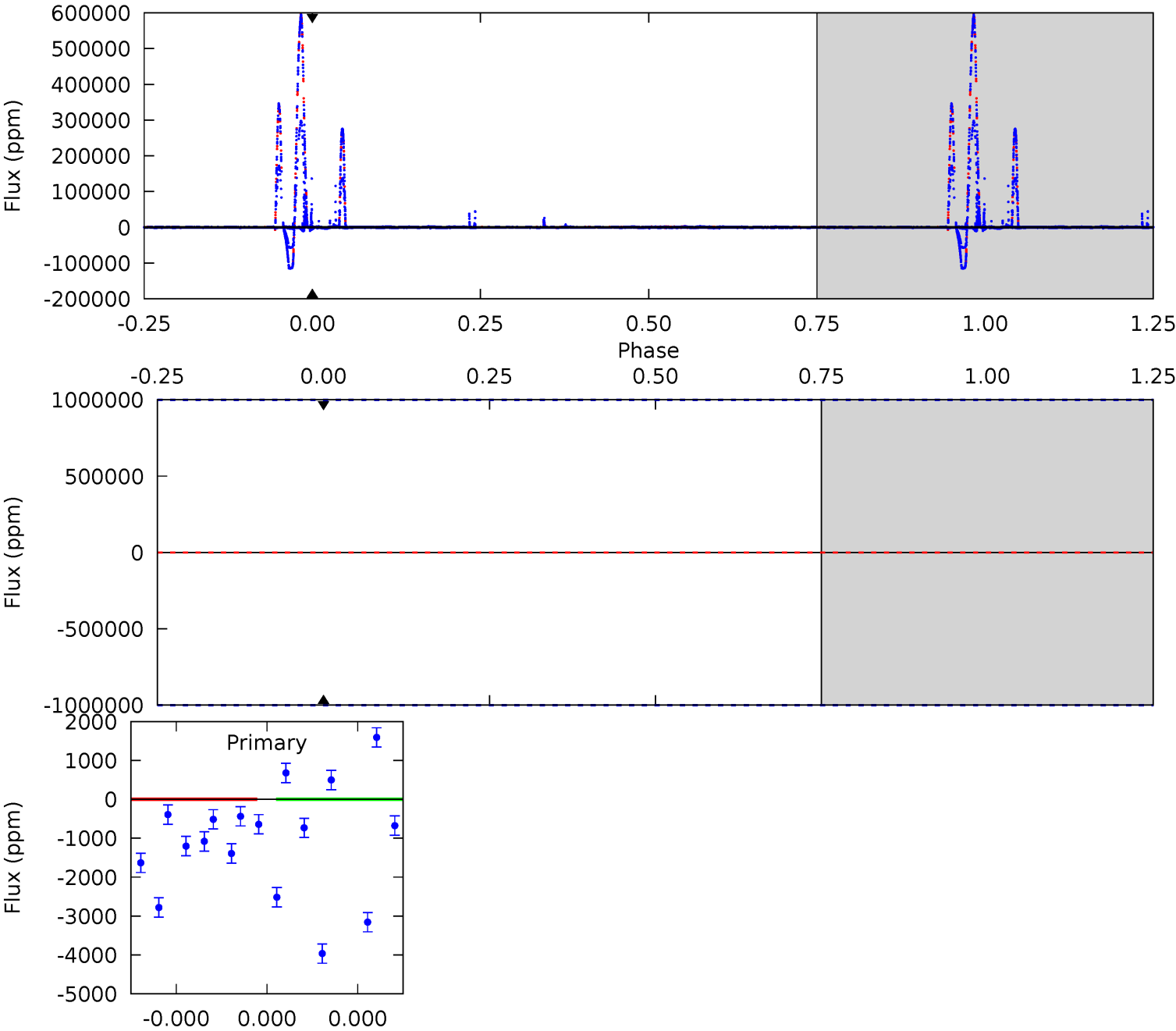
TCE 005708815-04 P=364.194151 Days  $T_0=278.504671$  (BKJD)



# DV Model-Shift Uniqueness Test

005708815-04, P = 364.194151 Days, E = 280.376290 Days

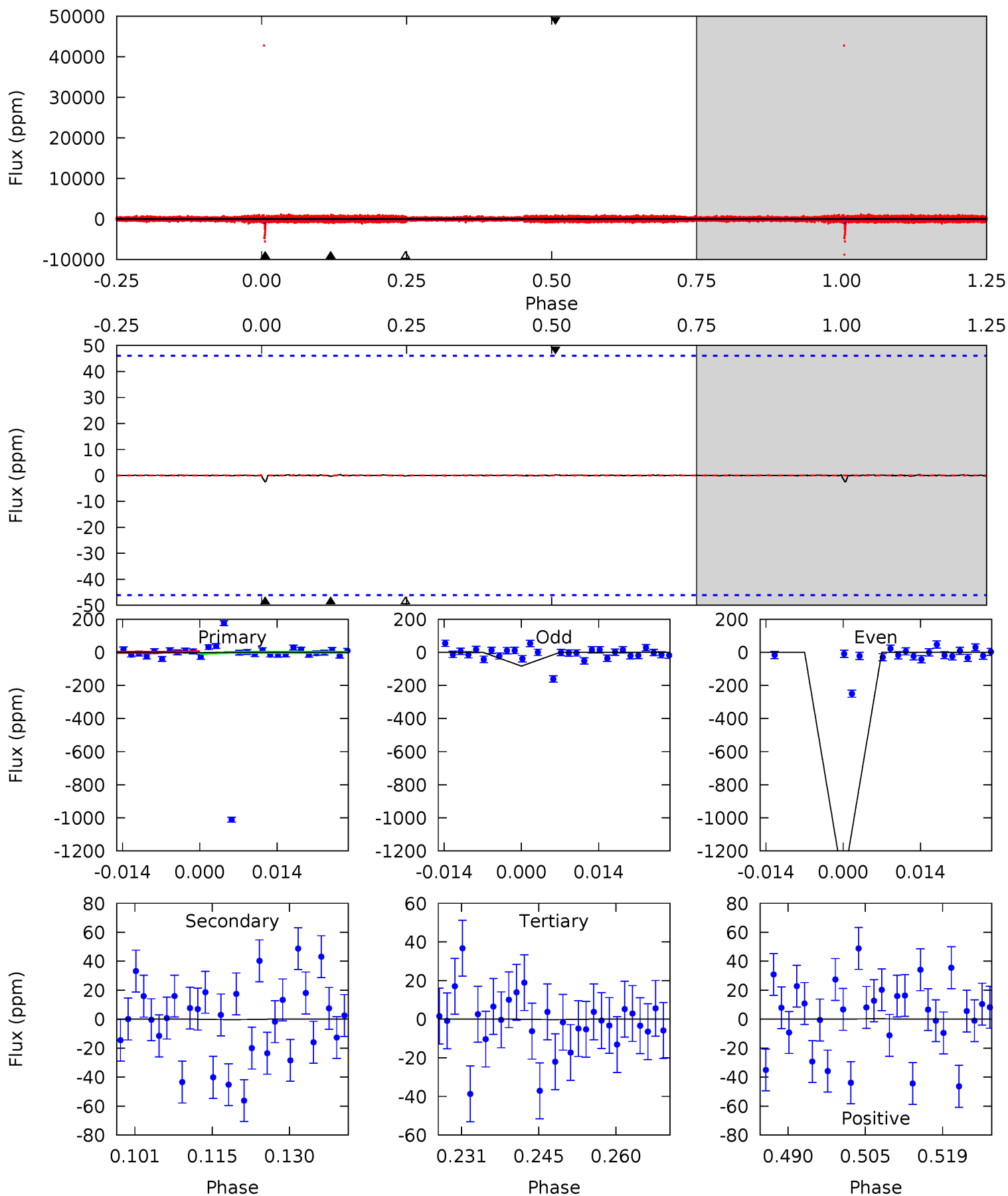
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005708815-04, P = 364.194151 Days, E = 278.504671 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
0.27	0.04	0.02	0.03	4.96	2.45	0.01	0.24	0.24	0.01	0.01	47.1	-85.0	0.10	0.14



### Stellar Parameters For KIC 005708815

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6651^{+73}_{-86}$	$4.228^{+0.063}_{-0.117}$	$0.160^{+0.150}_{-0.150}$	$1.496^{+0.264}_{-0.142}$	$1.384^{+0.100}_{-0.092}$	$0.583^{+0.152}_{-0.203}$
	+1%/-1%	+1%/-3%	+94%/-94%	+18%/-9%	+7%/-7%	+26%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005708815-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$12.92^{+13.60}_{-8.58}$	$479^{+20}_{-14}$	$-4610^{+32062}_{-21349}$	$-4620.793^{+702593.569}_{-687809.586}$
Alt.	$-0 \pm 9$	$12.78^{+12.99}_{-8.39}$	$477^{+21}_{-14}$	$1392^{+1031}_{-3739}$	$0.426^{+68.595}_{-56.643}$

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

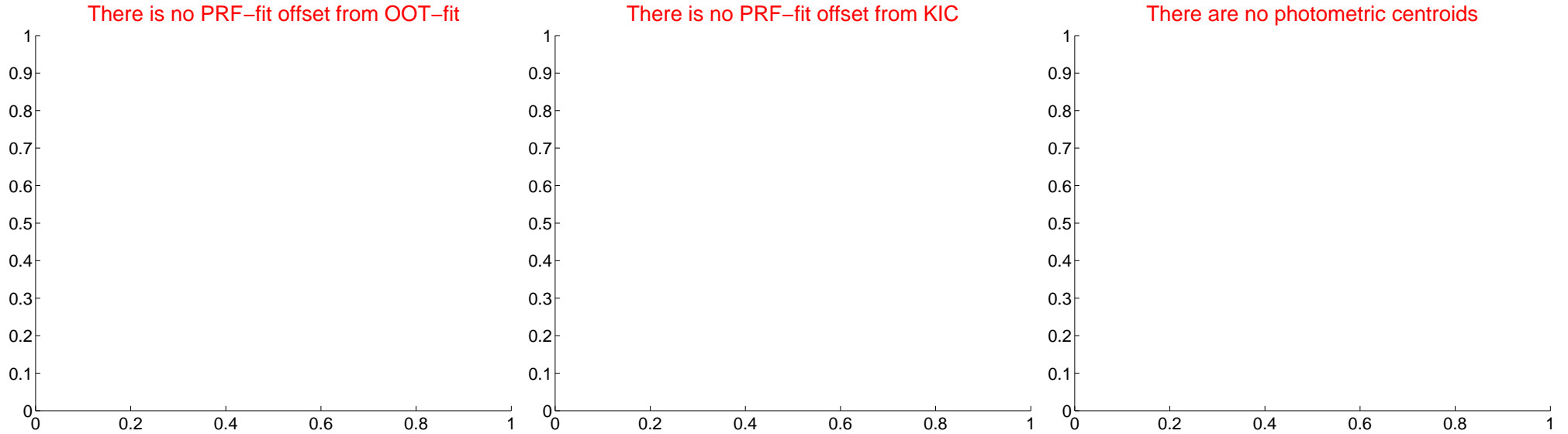
## DV Centroid Data

Supplemental centroid analysis for 005708815-04. Kepler magnitude: 13.49. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—



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.





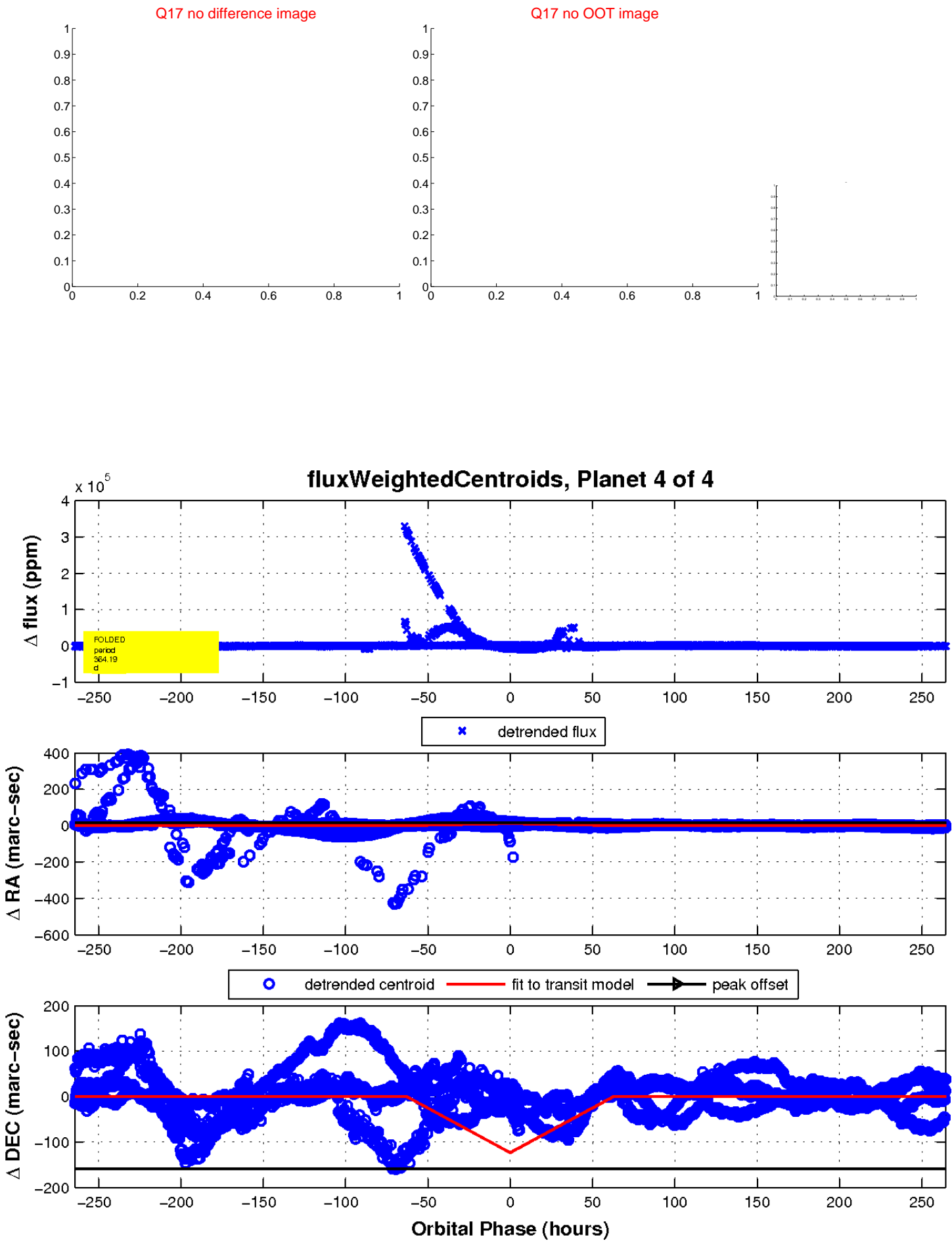
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

