

# KIC 007765762

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007765762-01	OBS	No	463.388793	218.848910	1129.2	6.218	12.8	6.6	0.60	4130	2.19	0.10
007765762-02	OBS	No	455.509672	586.800892	1146.3	4.888	13.4	6.9	0.60	4130	2.19	0.10
007765762-03	OBS	No	360.989247	368.122420	1212.0	3.697	10.7	7.2	0.60	4130	2.03	0.14
007765762-04	OBS	No	529.276097	318.564871	1403.8	13.525	11.3	7.1	0.60	4130	2.28	0.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007765762-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007765762-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765762-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765762-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS

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

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

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

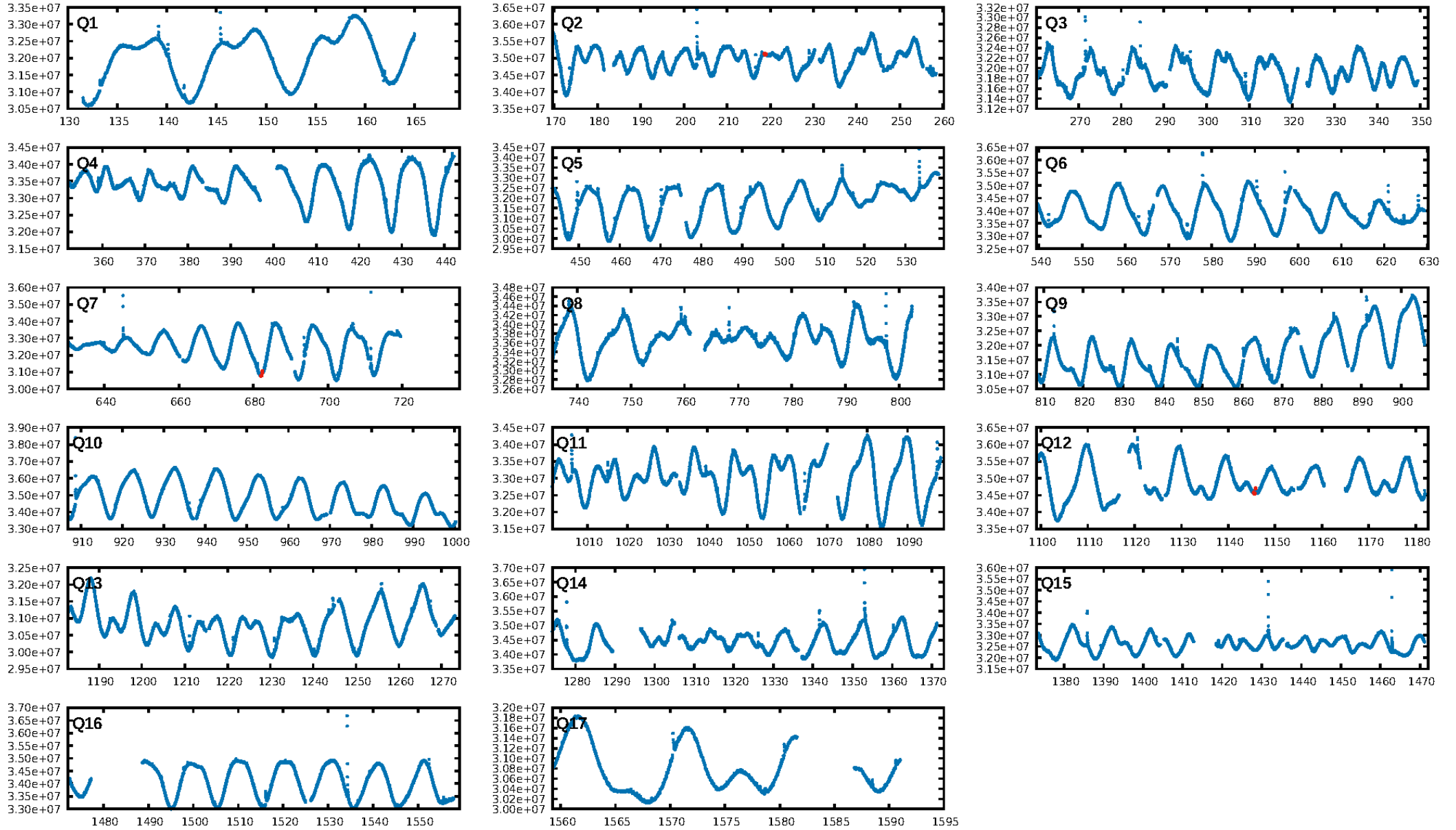
## Ephemeris Match Information For 007765762-01

No Significant Match Found

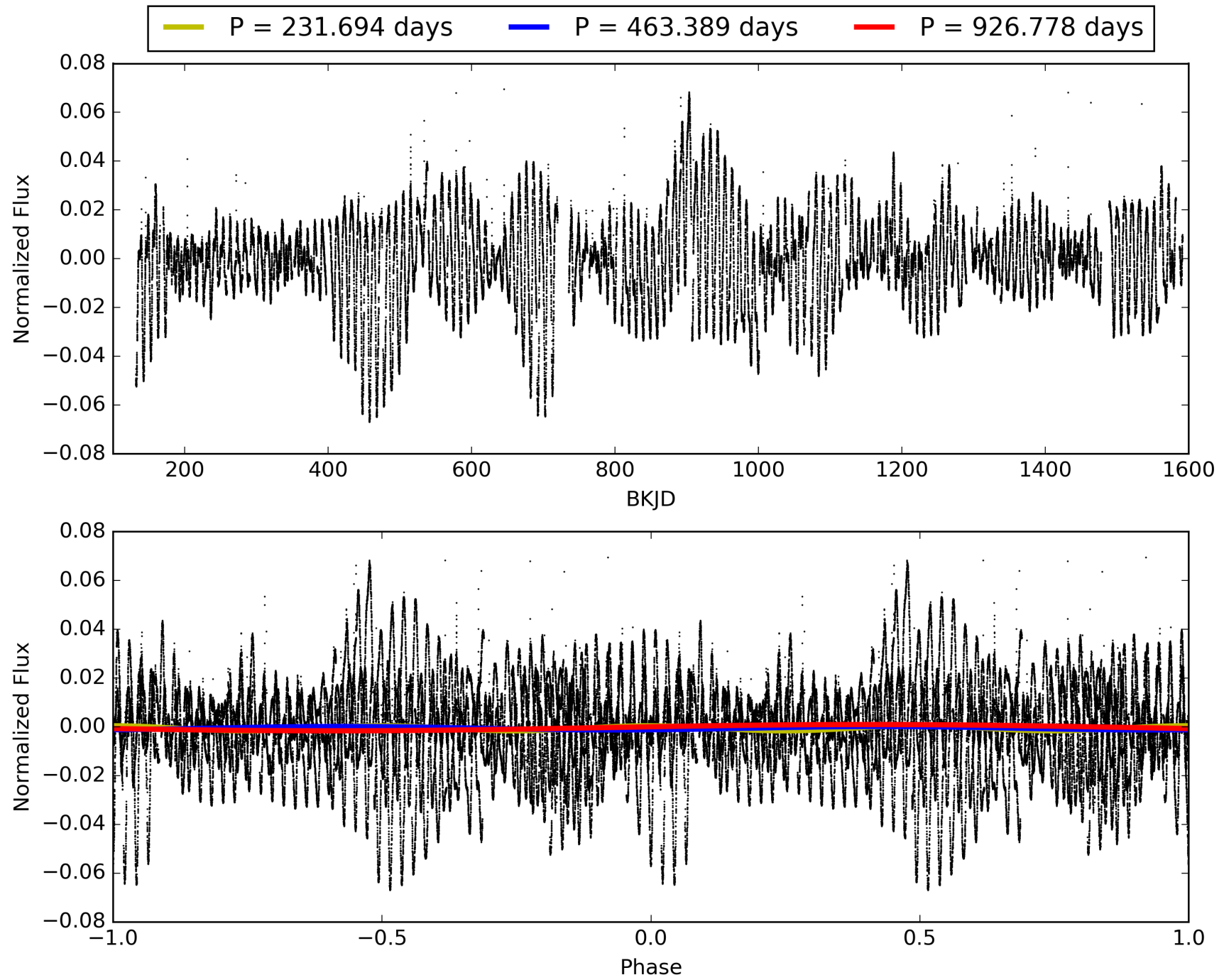
## KIC: 7765762    Candidate: 1 of 4    Period: 463.389 d



# TCE 007765762-01, PDC Light Curves

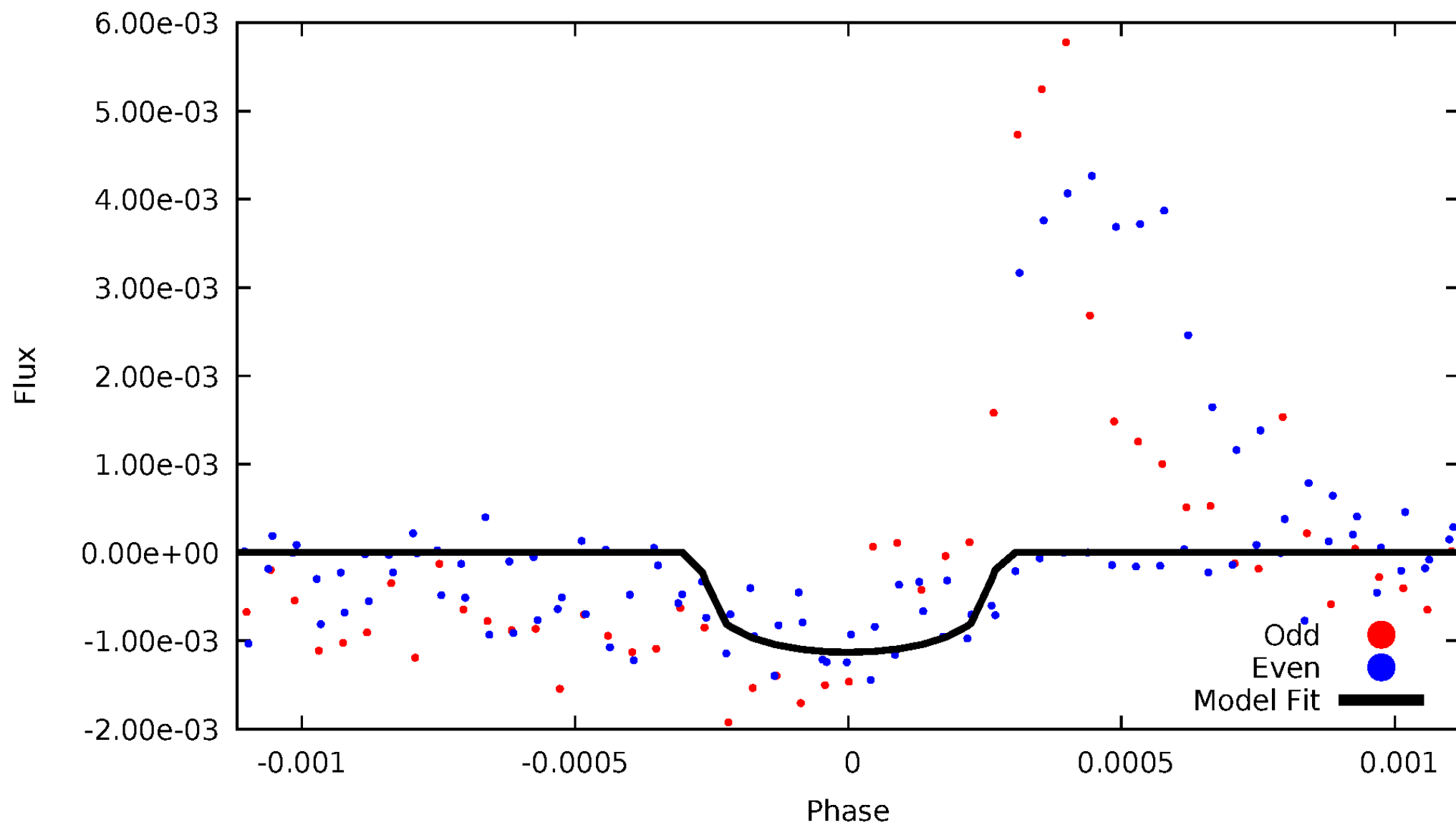


TCE 007765762-01



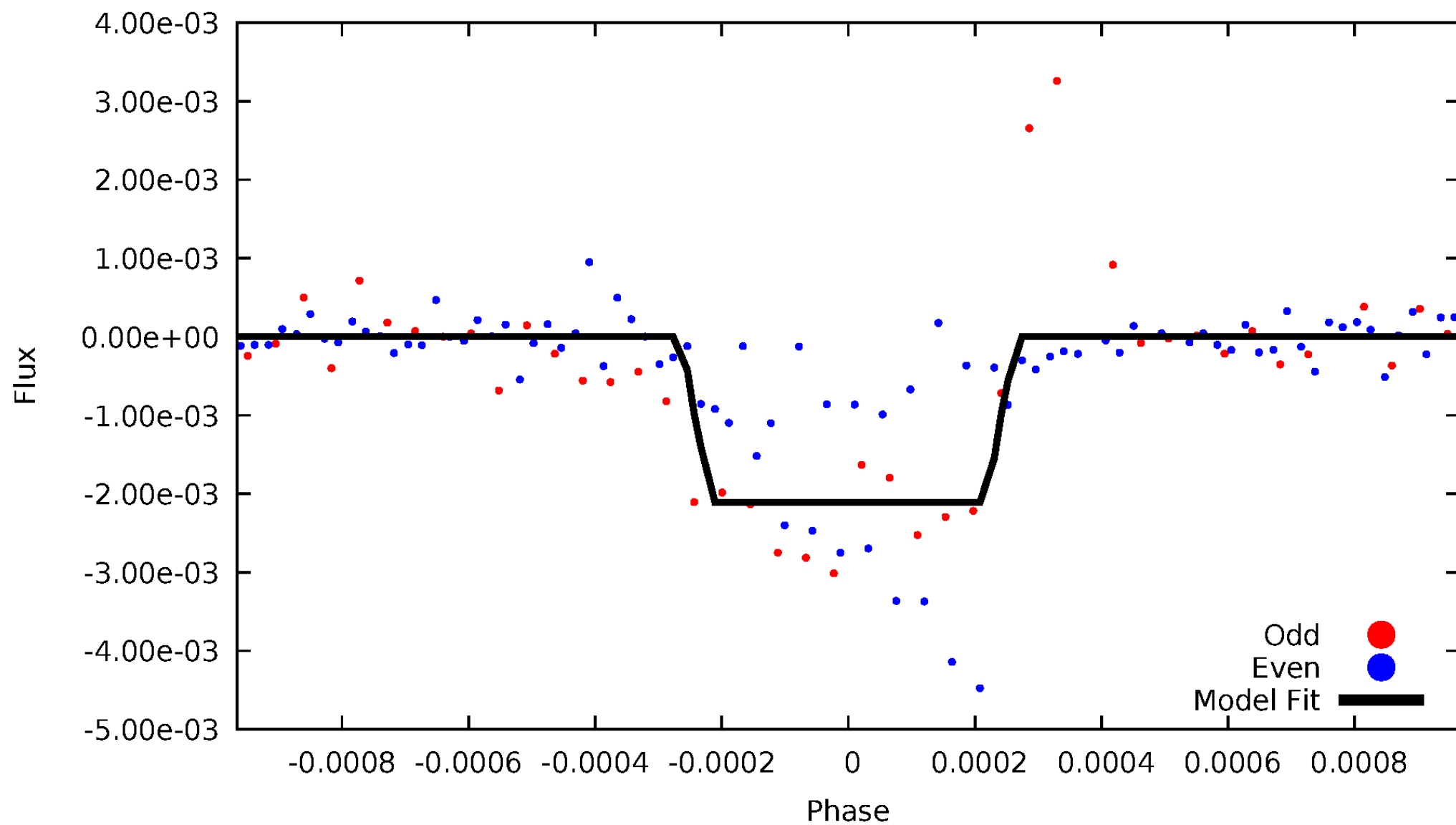
# DV Odd/Even

TCE 007765762-01



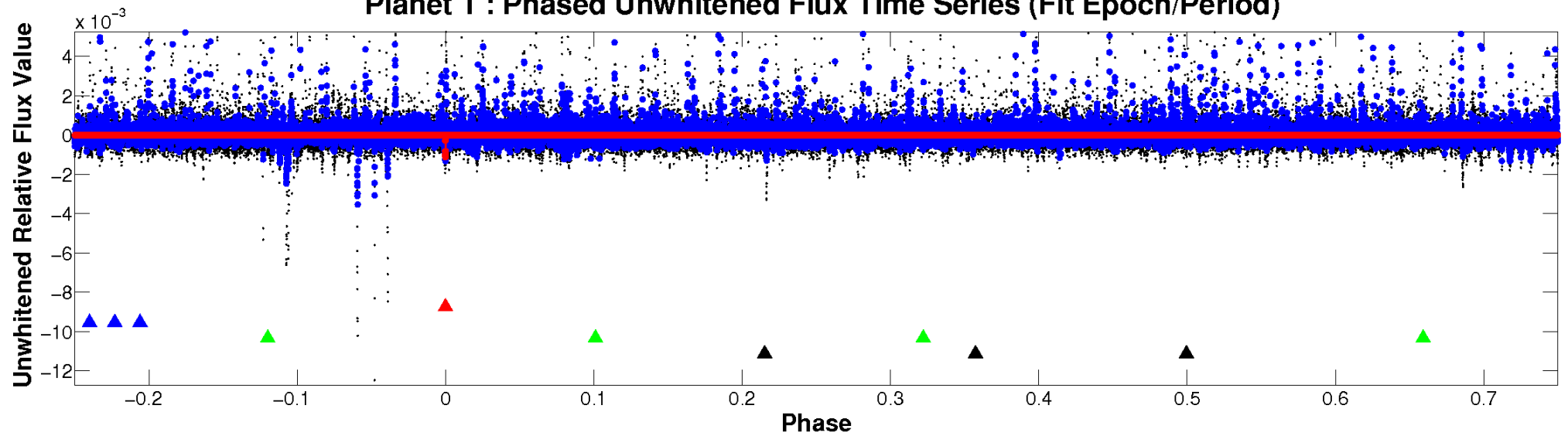
# ALT Odd/Even

TCE 007765762-01

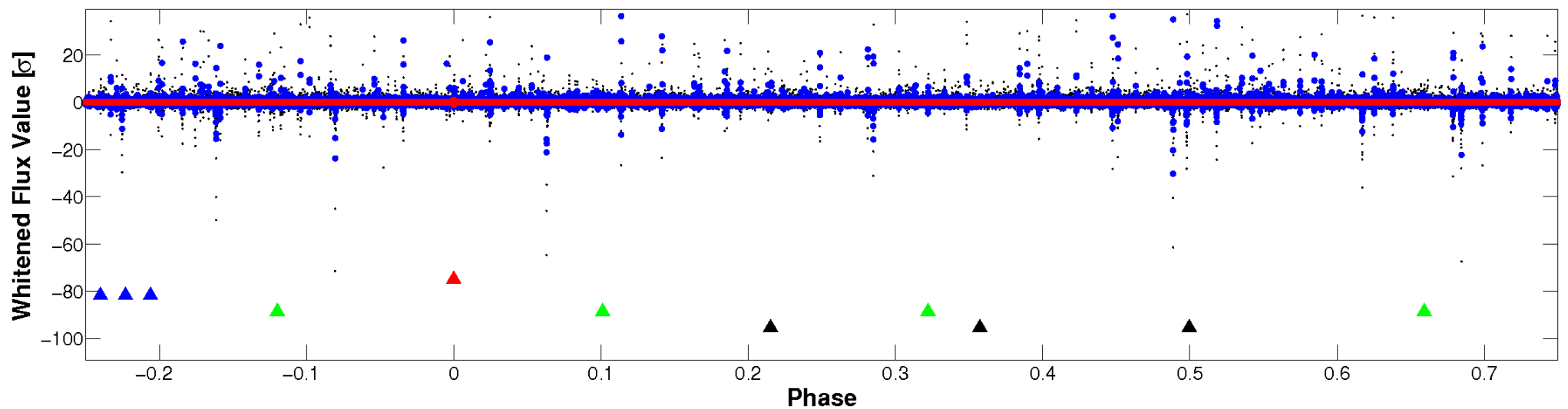


# Non-Whitened Vs. Whitened Light Curve

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

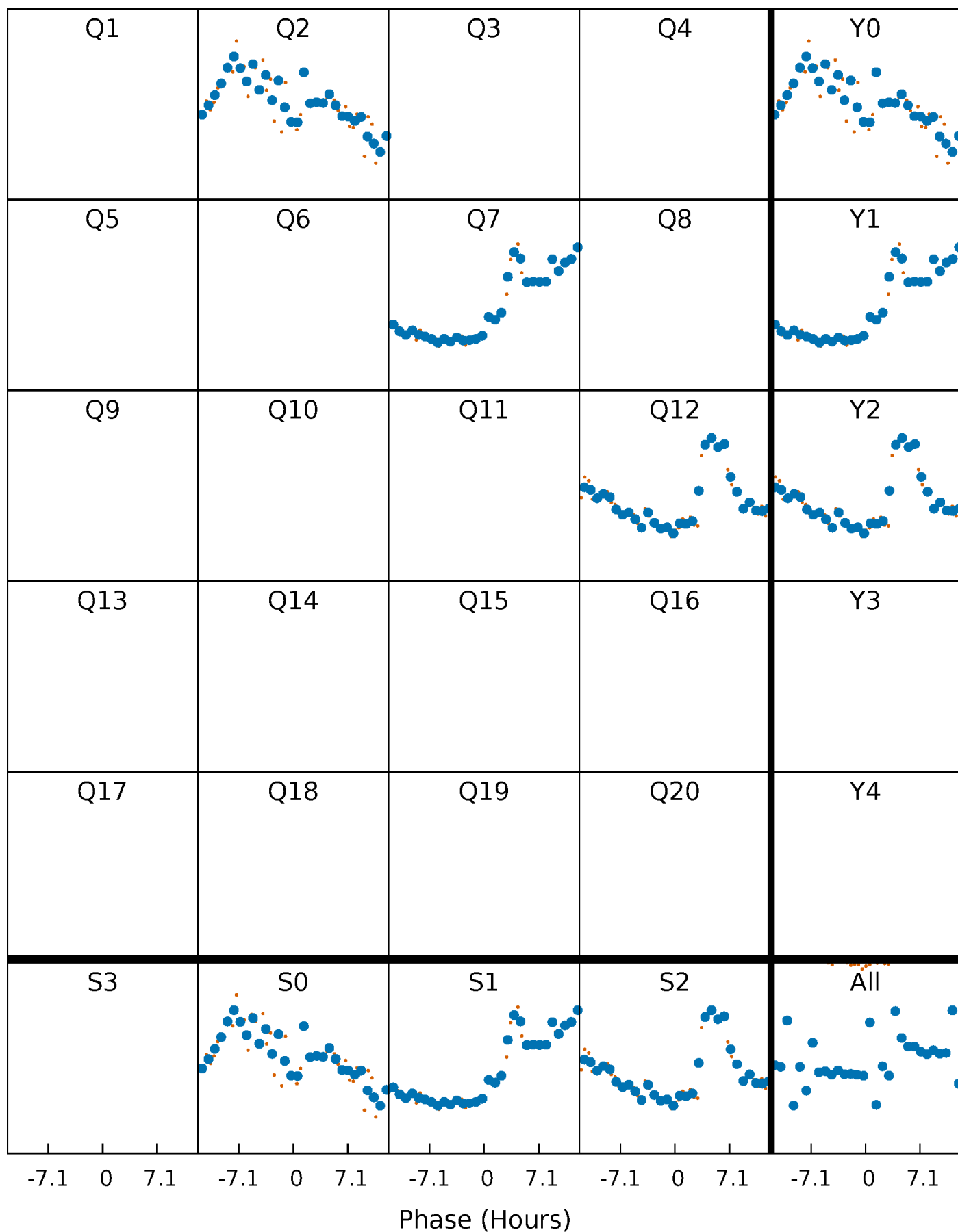


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

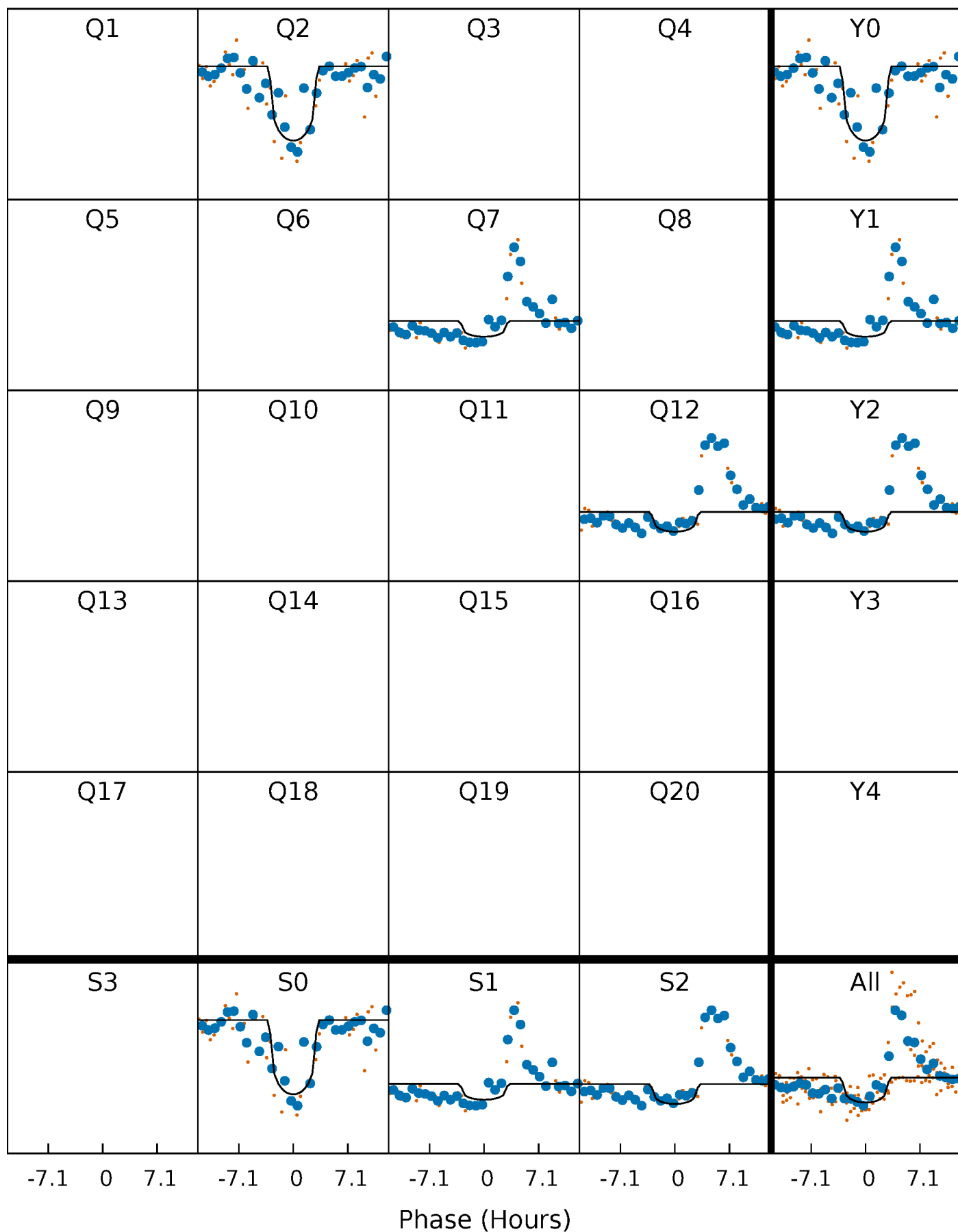
TCE 007765762-01 P=463.388793 Days  $T_0=218.848910$  (BKJD)





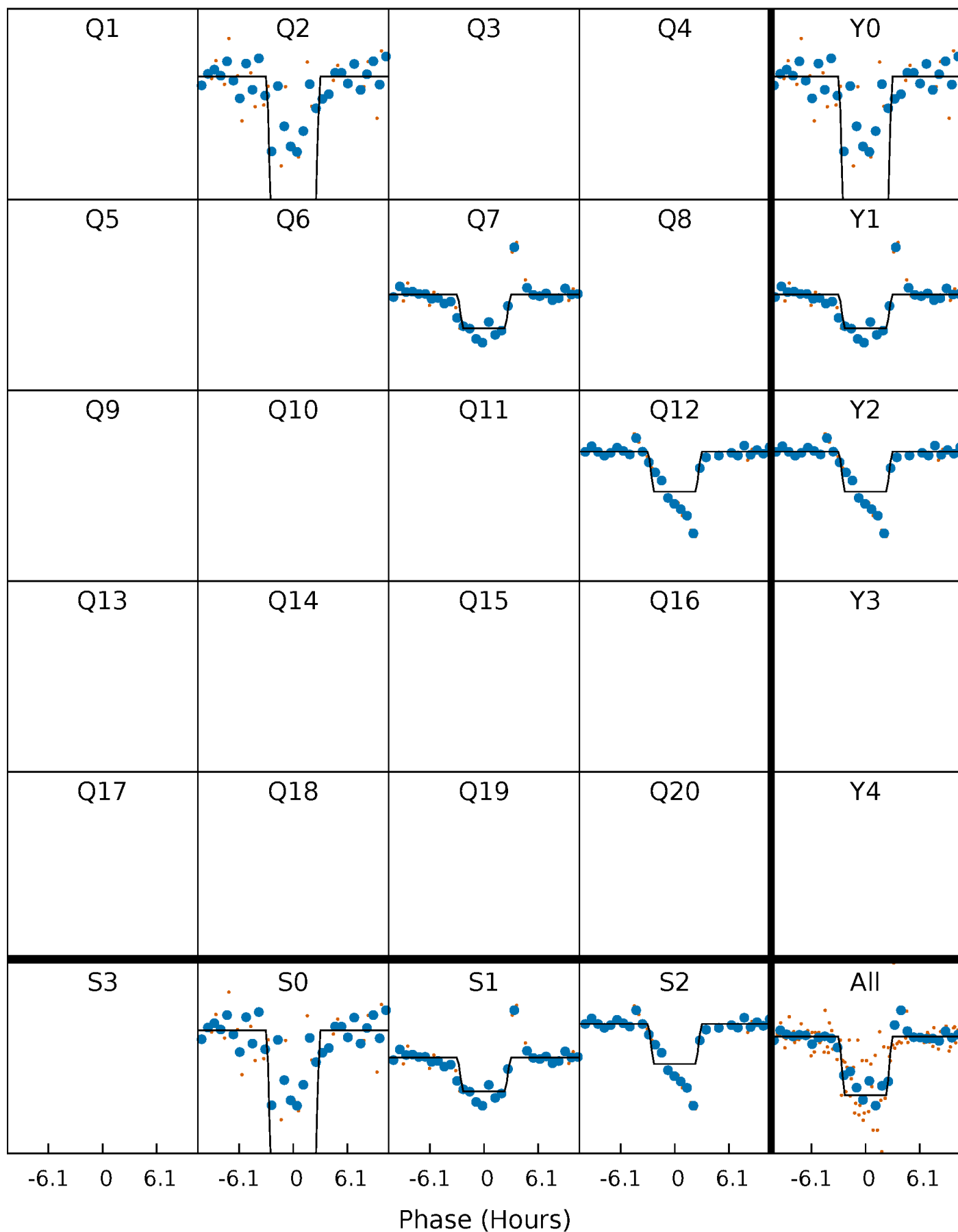
# DV Quarter-Phased Transit Curves

TCE 007765762-01 P=463.388793 Days  $T_0=218.848910$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

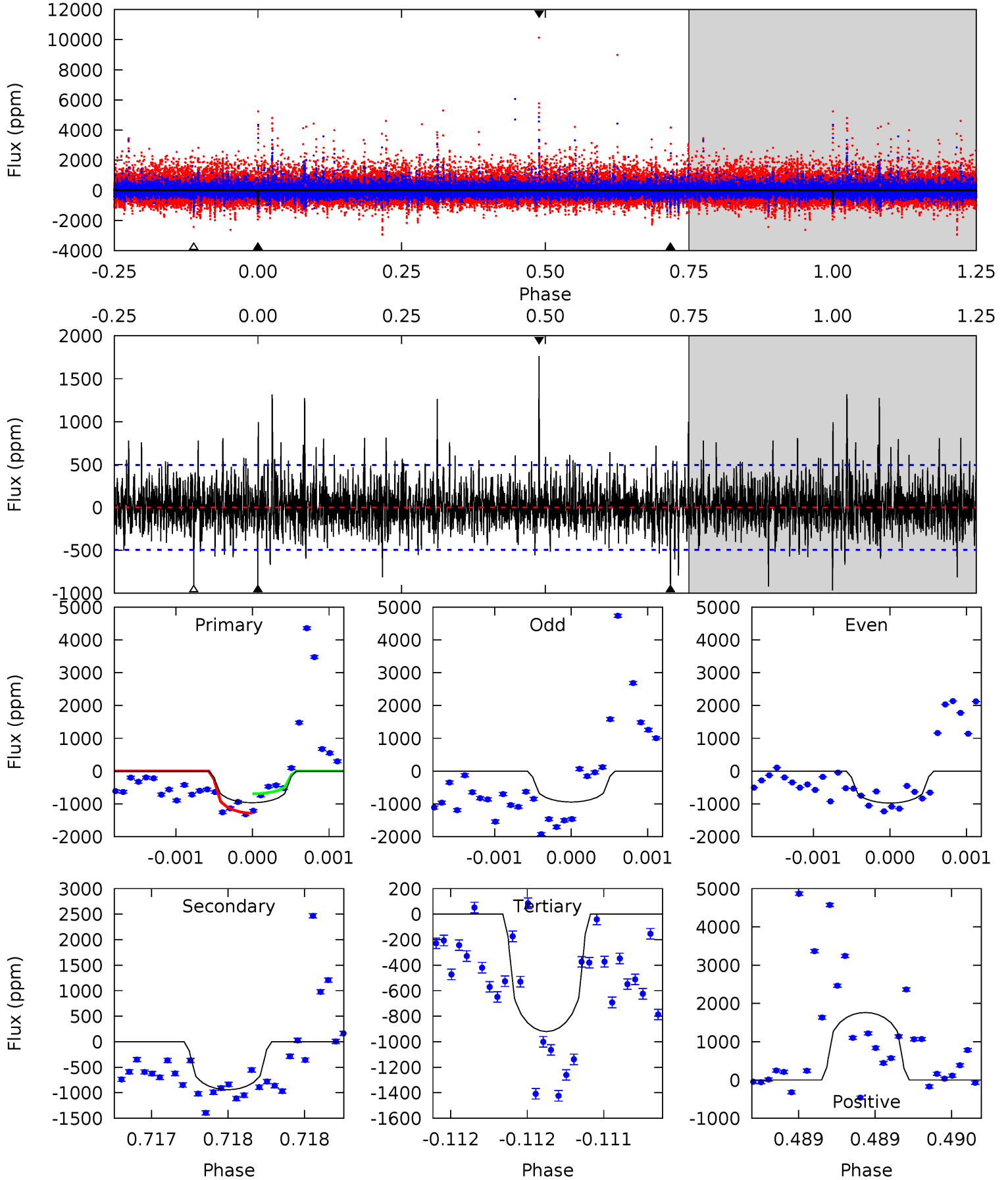
TCE 007765762-01 P=463.405896 Days  $T_0=218.843016$  (BKJD)



# DV Model-Shift Uniqueness Test

007765762-01, P = 463.388793 Days, E = 218.848910 Days

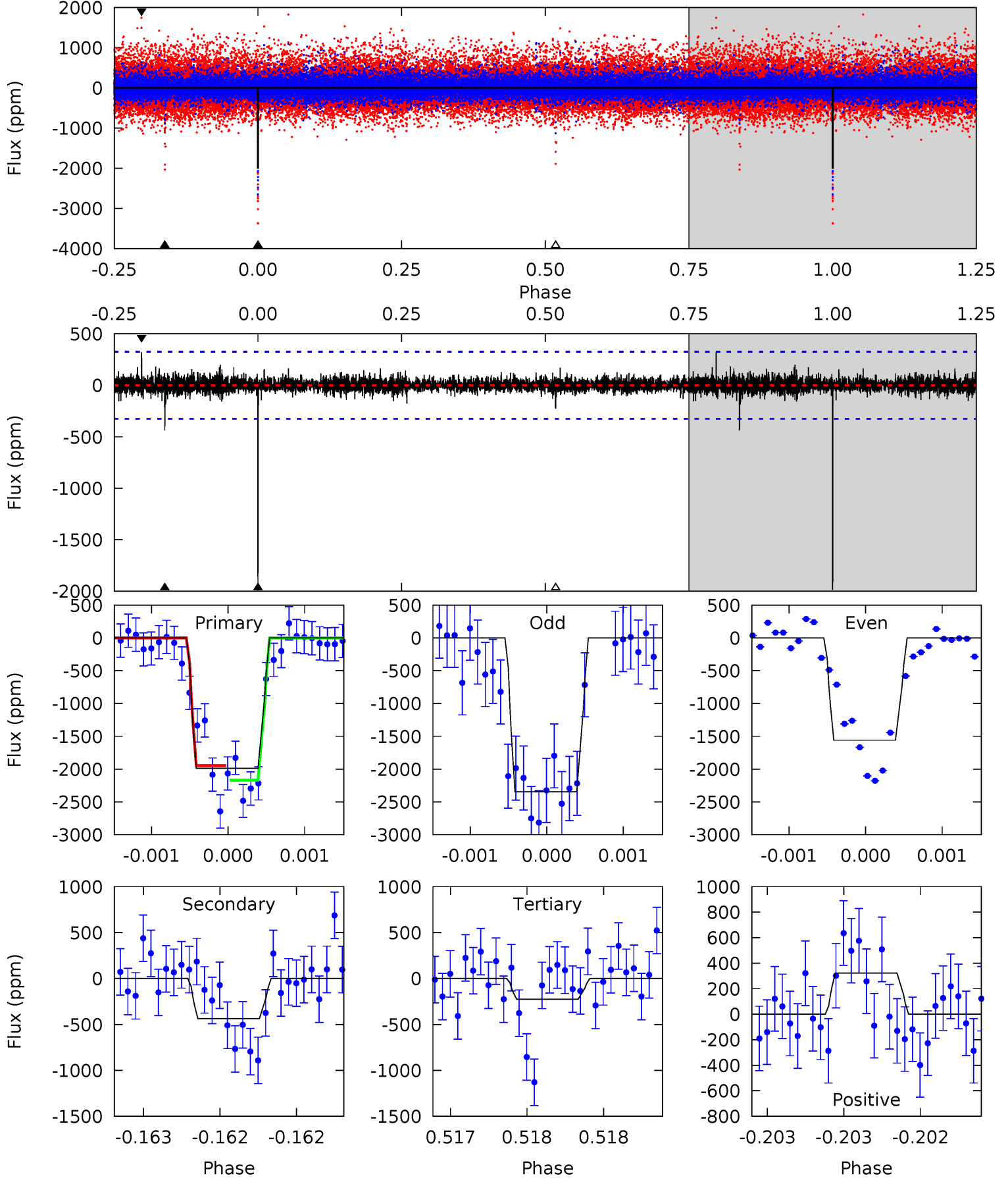
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	10.6	10.4	19.9	5.56	3.46	2.29	0.50	-9.00	0.22	-9.28	0.10	1.02	0.65	3.31



# Alt Model-Shift Uniqueness Test

007765762-01, P = 463.405896 Days, E = 218.843016 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
34.0	7.47	3.85	5.53	5.57	3.48	0.64	30.1	28.5	3.62	1.94	6.75	0.81	0.14	1.87



### Stellar Parameters For KIC 007765762

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4130^{+124}_{-124}$	$4.651^{+0.056}_{-0.020}$	$-0.140^{+0.300}_{-0.300}$	$0.602^{+0.044}_{-0.060}$	$0.593^{+0.060}_{-0.054}$	$3.819^{+1.040}_{-0.374}$
	+3%/-3%	+1%/-0%	+214%/-214%	+7%/-10%	+10%/-9%	+27%/-10%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007765762-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-940 \pm 89$	$3.24^{+2.47}_{-2.12}$	$197^{+7}_{-7}$	$3493^{+1735}_{-552}$	$49563^{+349164}_{-33899}$
Alt.	$-437 \pm 58$	$3.54^{+2.79}_{-2.10}$	$198^{+7}_{-7}$	$3032^{+1037}_{-467}$	$18684^{+96103}_{-13130}$

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

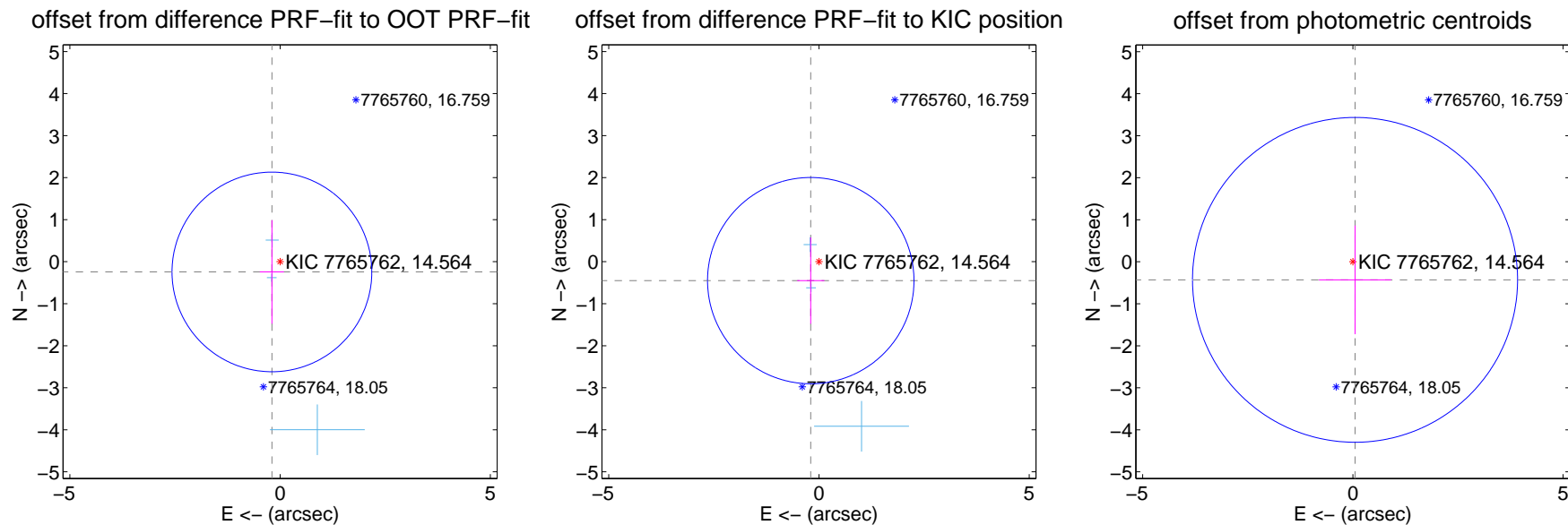
## DV Centroid Data

Supplemental centroid analysis for 007765762-01. Kepler magnitude: 14.56. Transit SNR 6.61

There are 3 quarters with good PRF difference image offsets

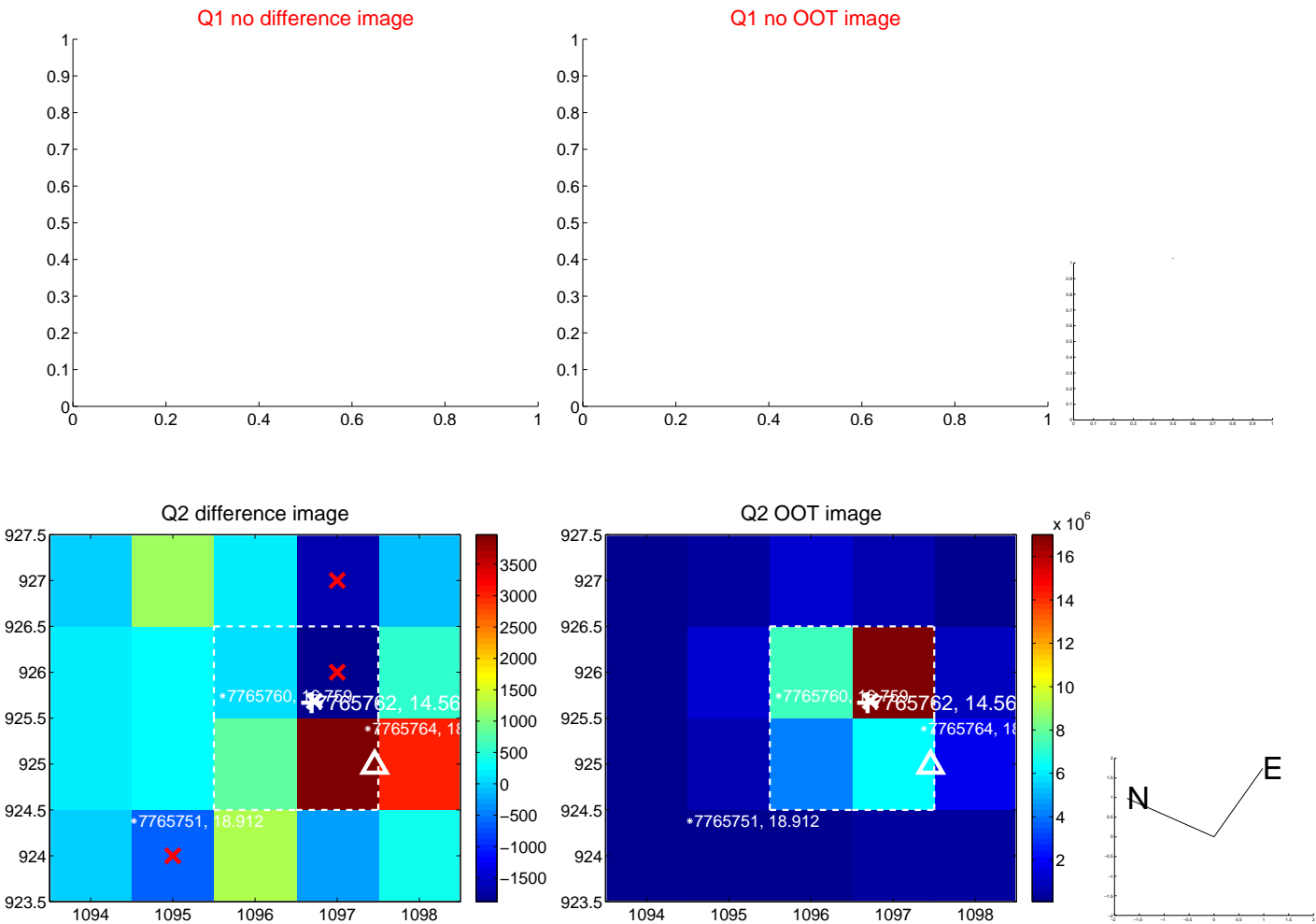
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.312 \pm 0.792$	0.39	$0.195 \pm 0.287$	$-0.244 \pm 1.232$
PRF-fit source offset from KIC position	$0.491 \pm 0.818$	0.60	$0.196 \pm 0.323$	$-0.450 \pm 1.027$
photometric centroid source offset	$0.43 \pm 1.29$	0.34	$-0.05 \pm 0.86$	$-0.43 \pm 1.29$



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.

Q5 no difference image



Q5 no OOT image



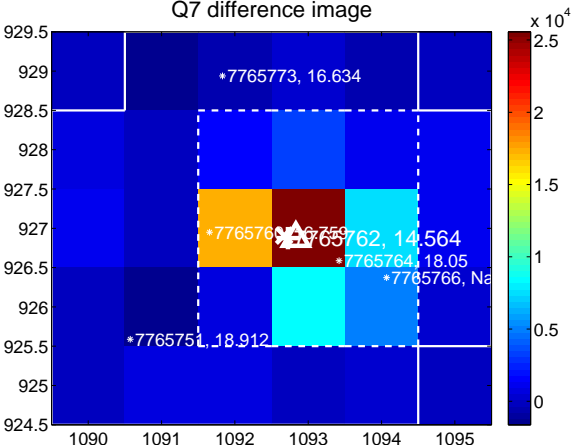
Q6 no difference image



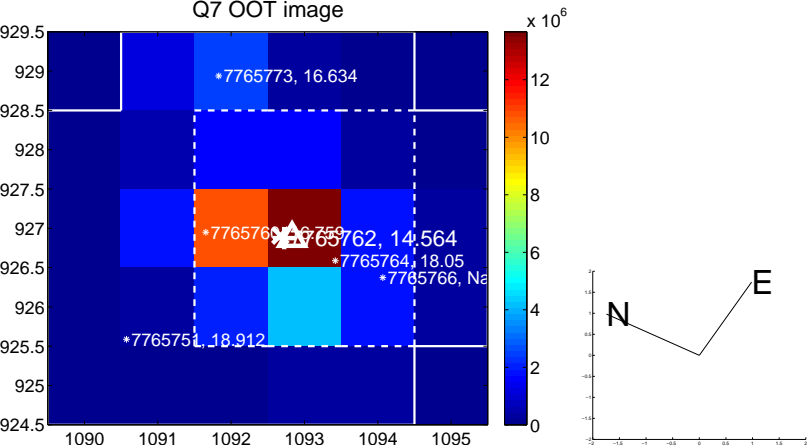
Q6 no OOT image



Q7 difference image



Q7 OOT image



Q8 no difference image

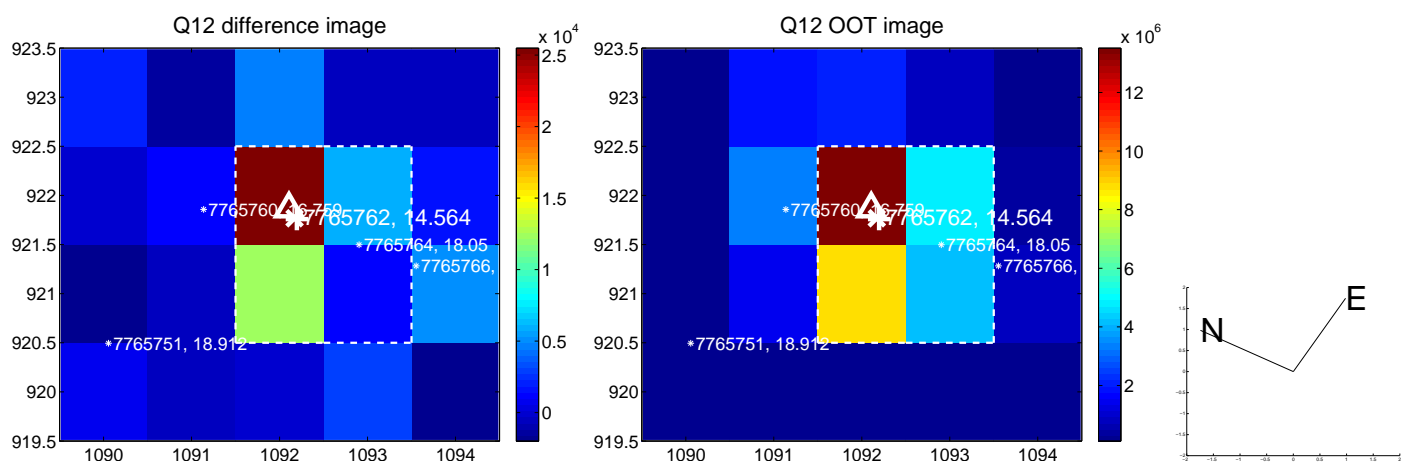
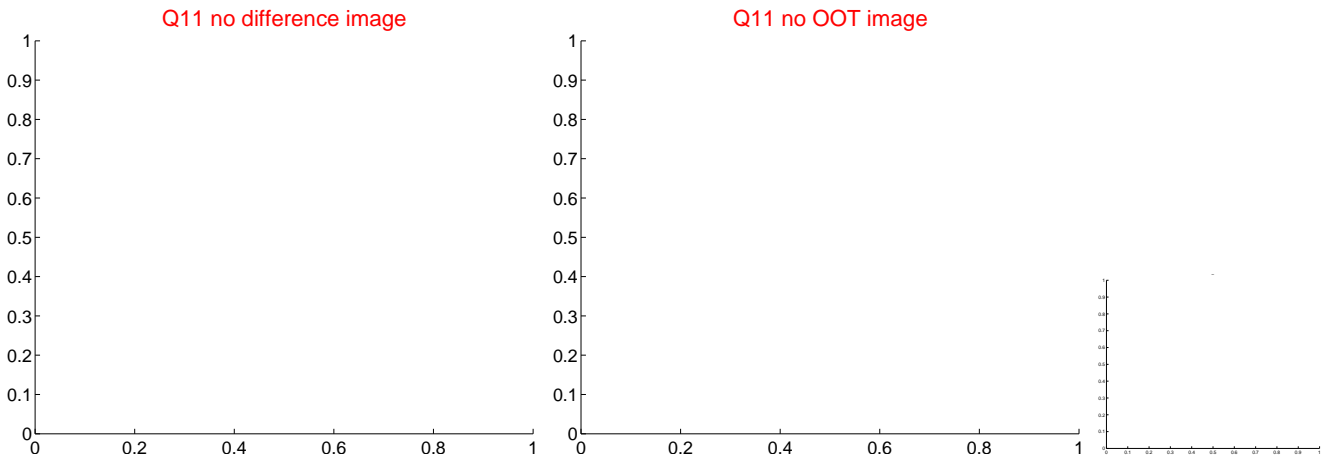
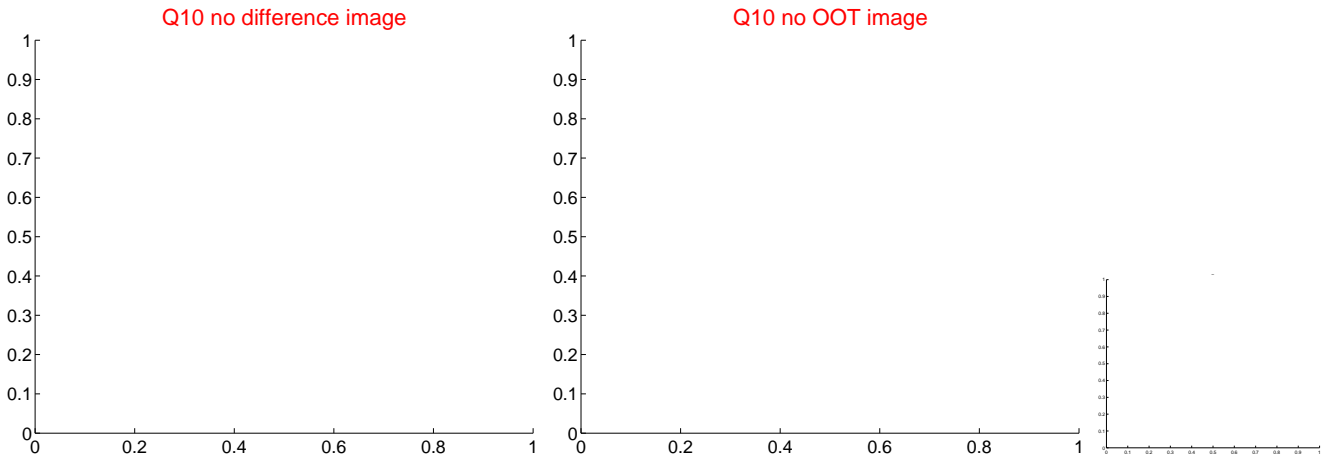
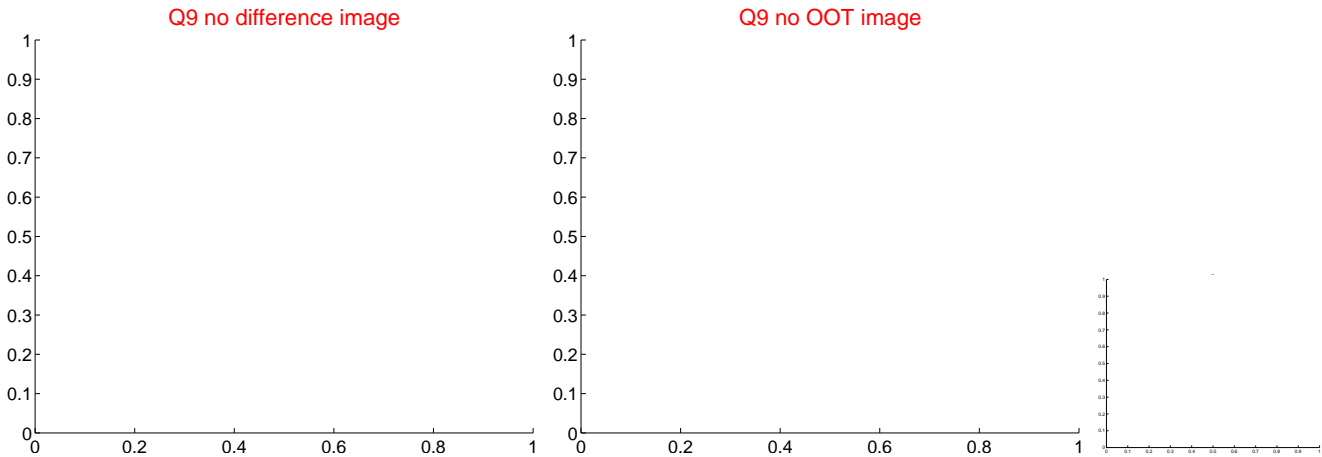


Q8 no OOT image





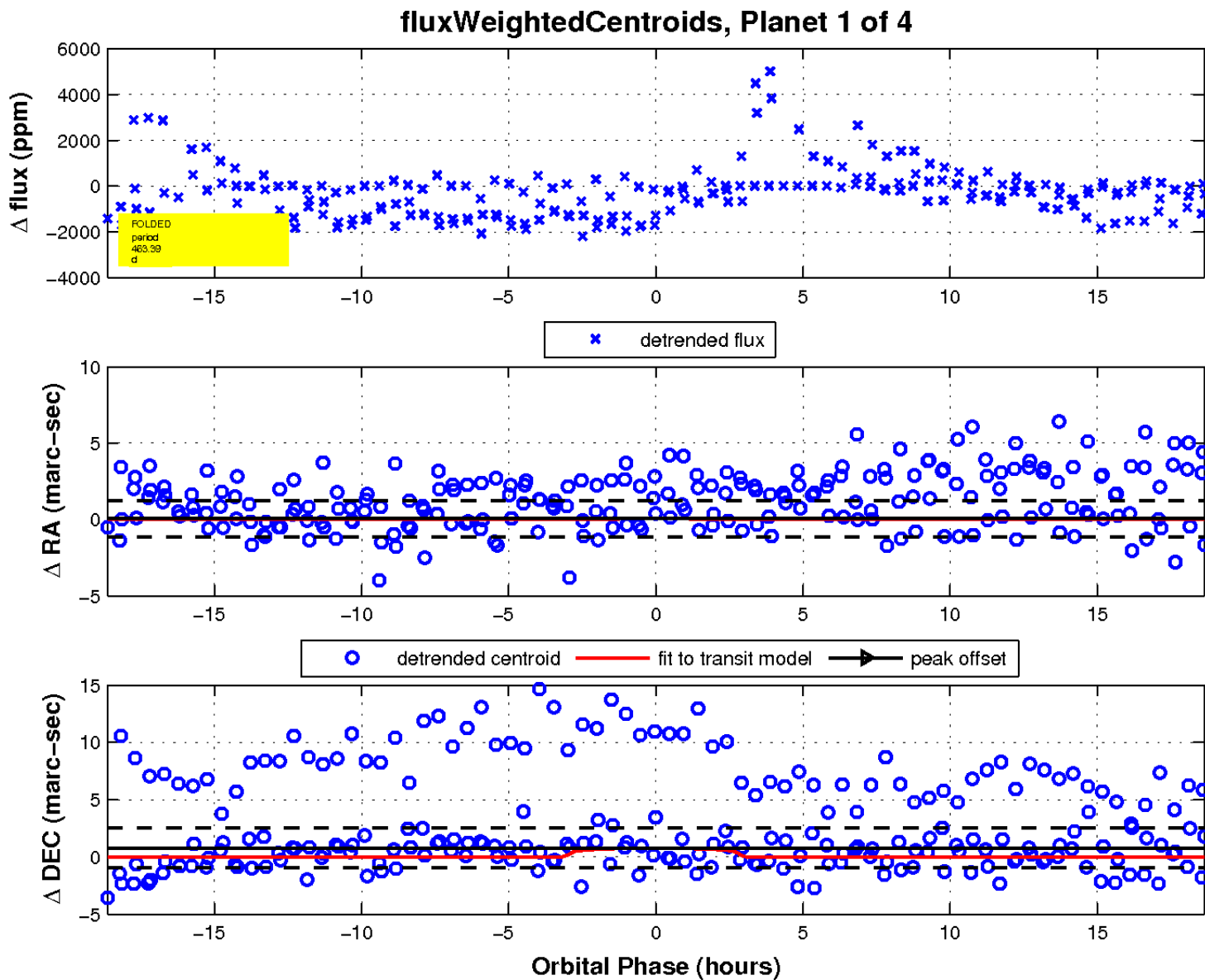
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

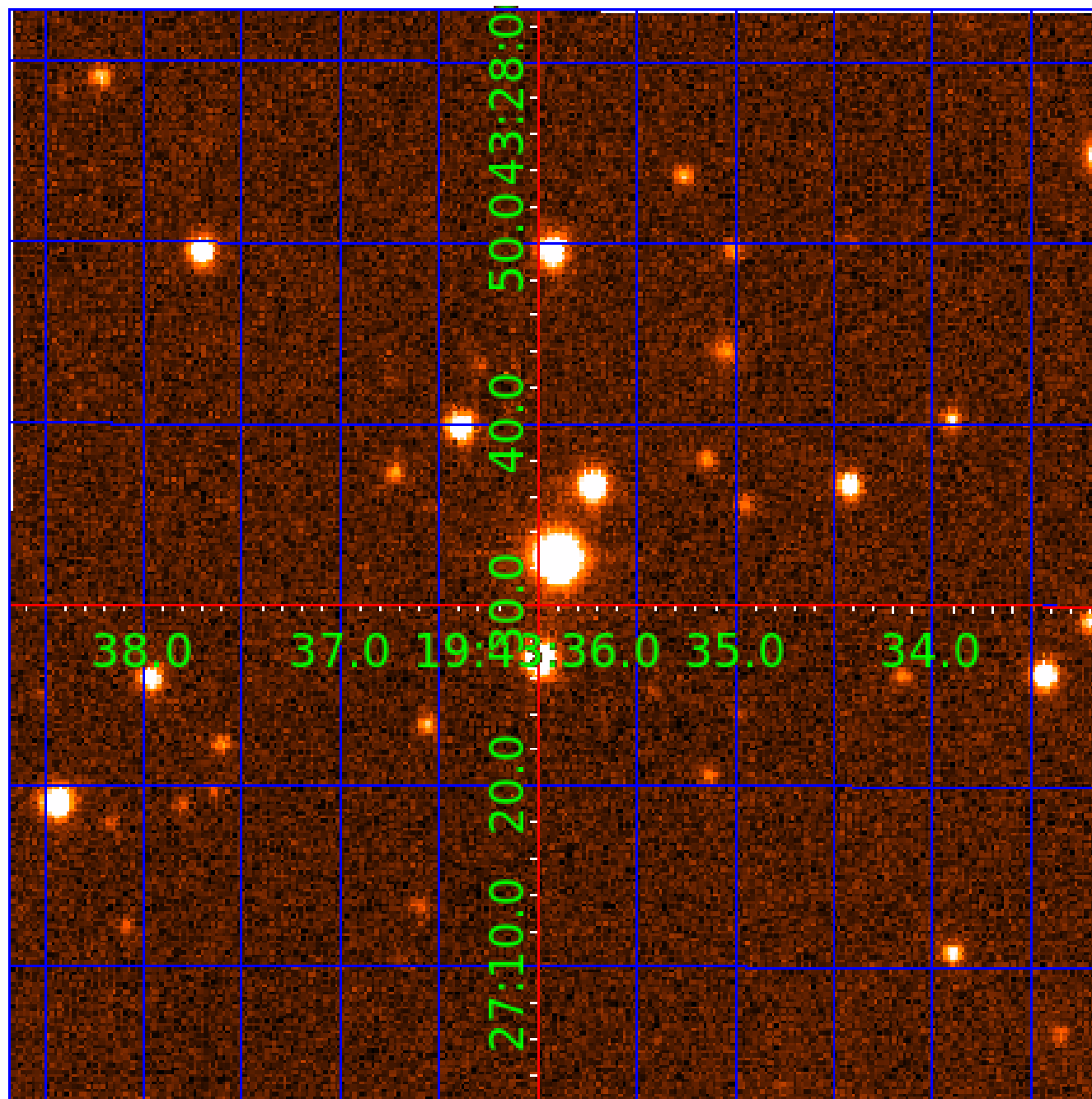


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007765762

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007765762-01	OBS	No	463.388793	218.848910	1129.2	6.218	12.8	6.6	0.60	4130	2.19	0.10
007765762-02	OBS	No	455.509672	586.800892	1146.3	4.888	13.4	6.9	0.60	4130	2.19	0.10
007765762-03	OBS	No	360.989247	368.122420	1212.0	3.697	10.7	7.2	0.60	4130	2.03	0.14
007765762-04	OBS	No	529.276097	318.564871	1403.8	13.525	11.3	7.1	0.60	4130	2.28	0.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007765762-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007765762-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765762-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765762-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS

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

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

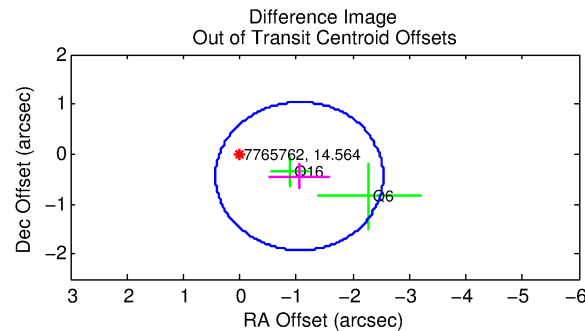
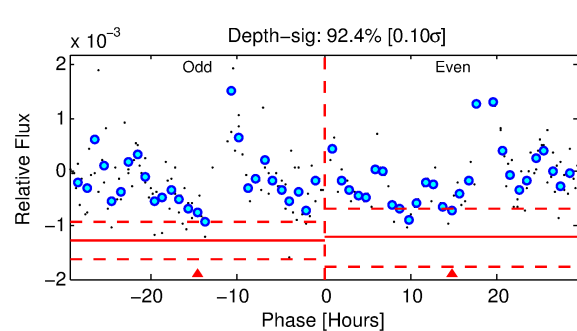
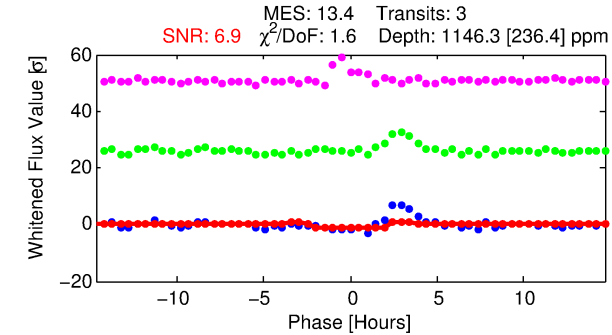
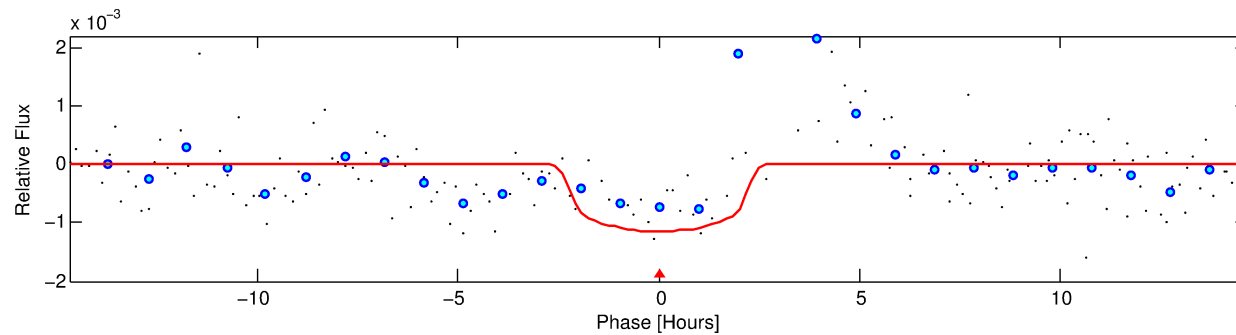
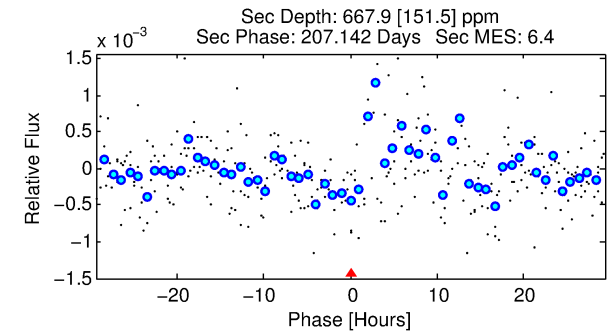
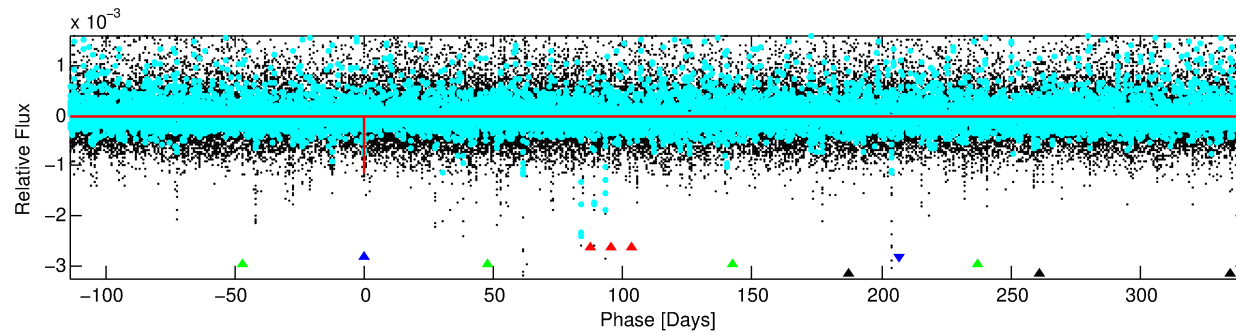
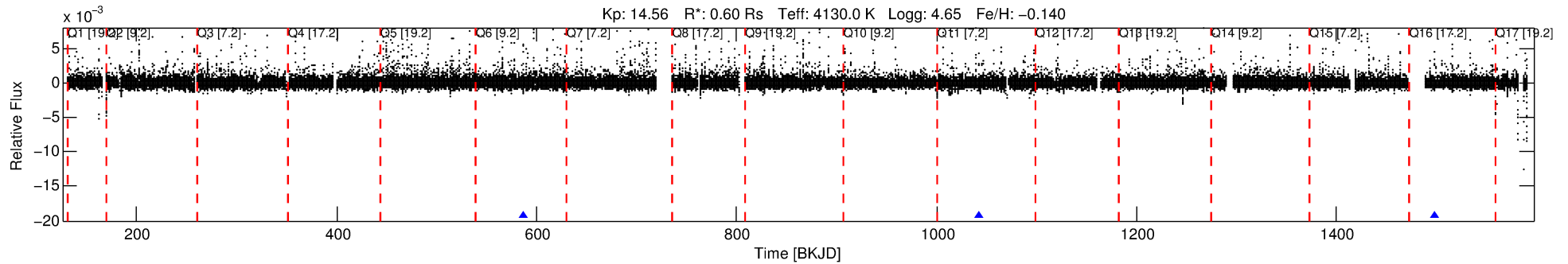
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007765762-02

No Significant Match Found

# DV One-Page Summary

KIC: 7765762 Candidate: 2 of 4 Period: 455.510 d



## DV Fit Results:

Period = 455.50967 [0.00838] d  
Epoch = 586.8009 [0.0103] BKJD  
Rp/R\* = 0.0333 [0.0320]  
a/R\* = 532.46 [1873.49]  
b = 0.71 [2.46]  
Seff = 0.10 [0.02]  
Teq = 143 [6] K  
Rp = 2.19 [2.12] Re  
a = 0.9730 [0.0770] AU  
Ag = 72744.79 [141258.95] [0.51 $\sigma$ ]  
Teffp = 3639 [1767] K [1.98 $\sigma$ ]

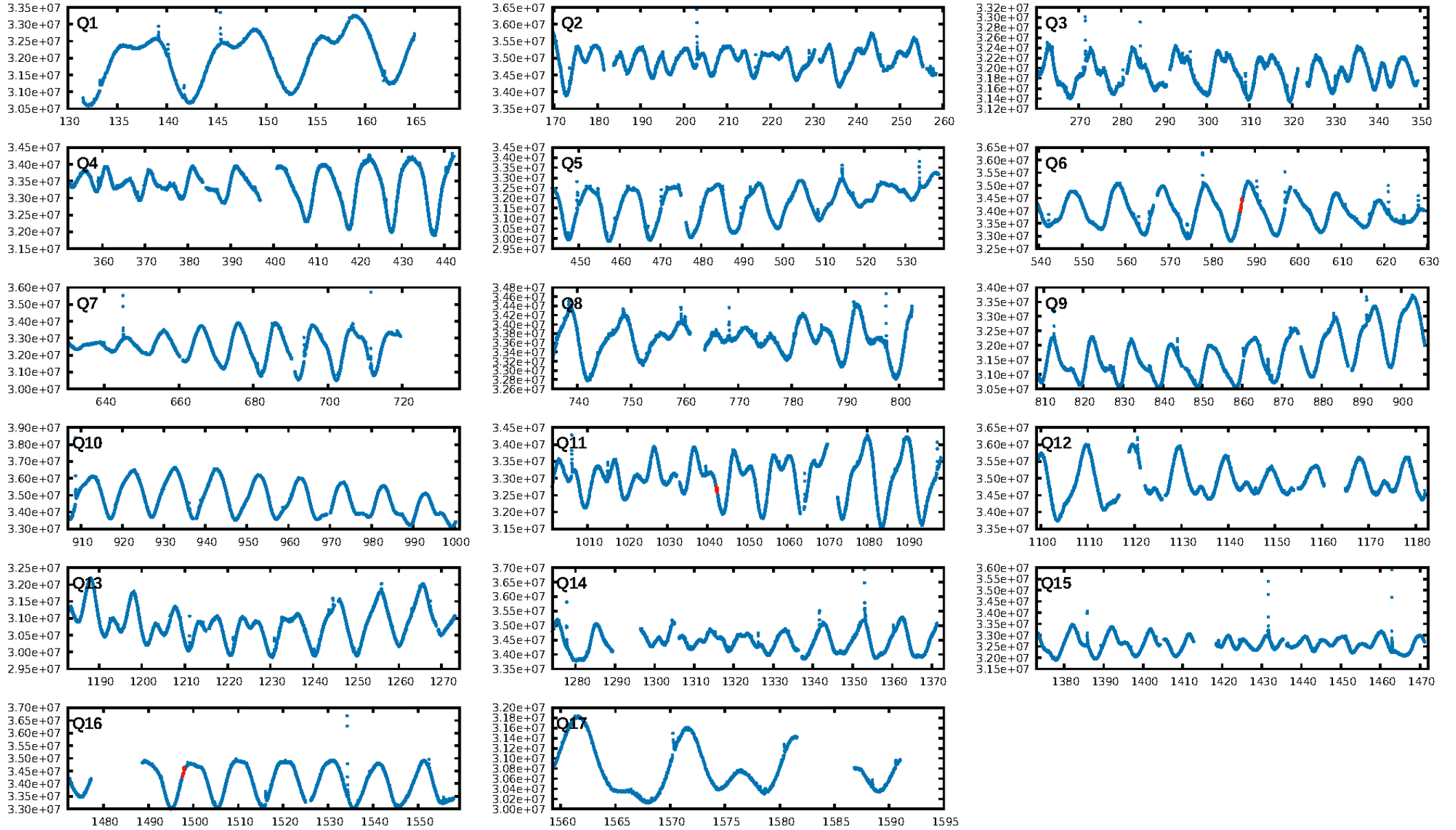
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [370.13 $\sigma$ ]  
LongPeriod-sig: 100.0% [23.91 $\sigma$ ]  
ModelChiSquare2-sig: 21.5%  
ModelChiSquareGof-sig: 84.9%  
Bootstrap-pfa: 8.51e-11  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.9182  
Centroid-sig: 40.2%  
Centroid-so: 1.180 arcsec [0.82 $\sigma$ ]  
OotOffset-rm: 1.141 arcsec [2.31 $\sigma$ ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-rm: 1.234 arcsec [2.48 $\sigma$ ]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

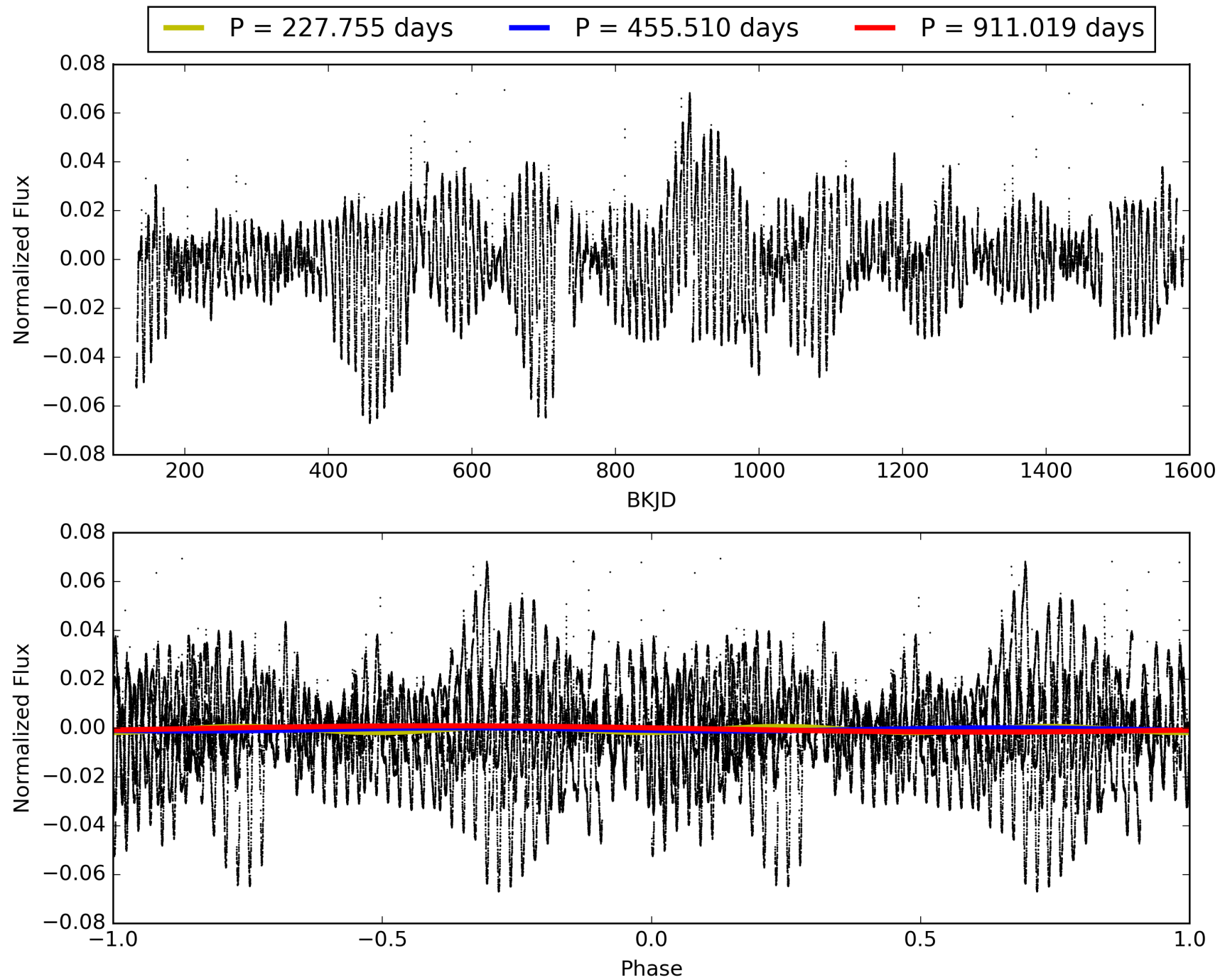
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:54:10 Z

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

# TCE 007765762-02, PDC Light Curves



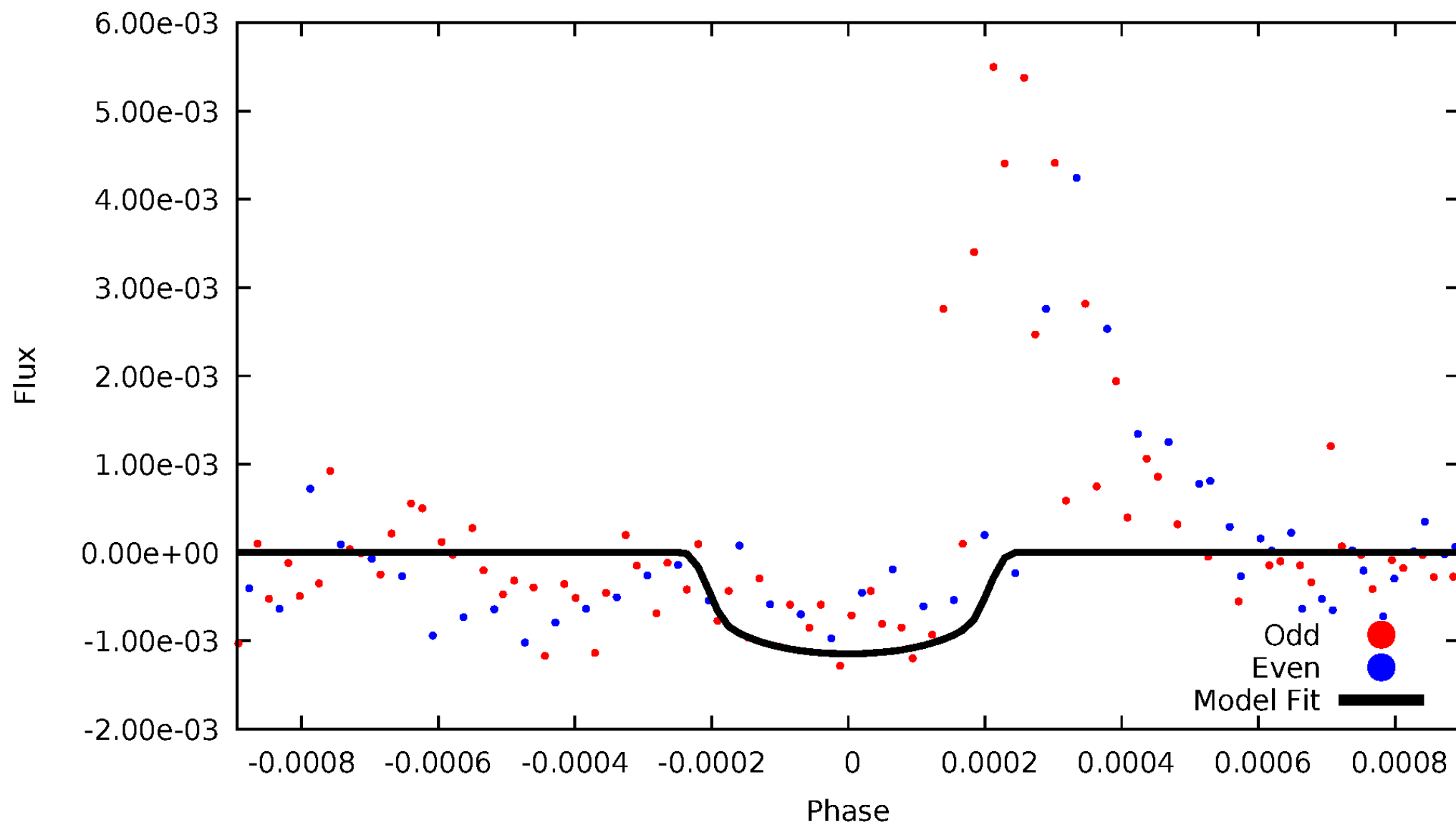
TCE 007765762-02





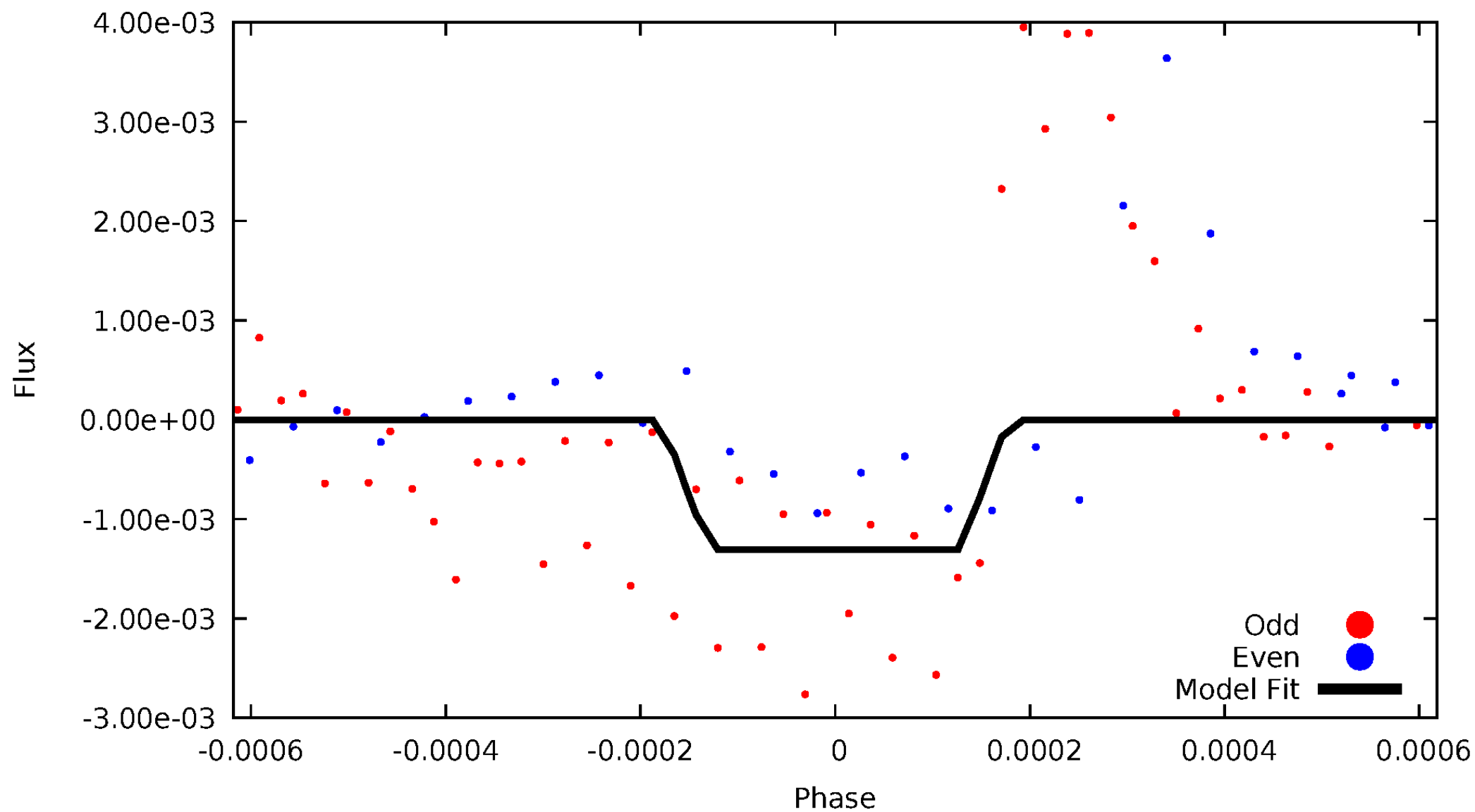
# DV Odd/Even

TCE 007765762-02



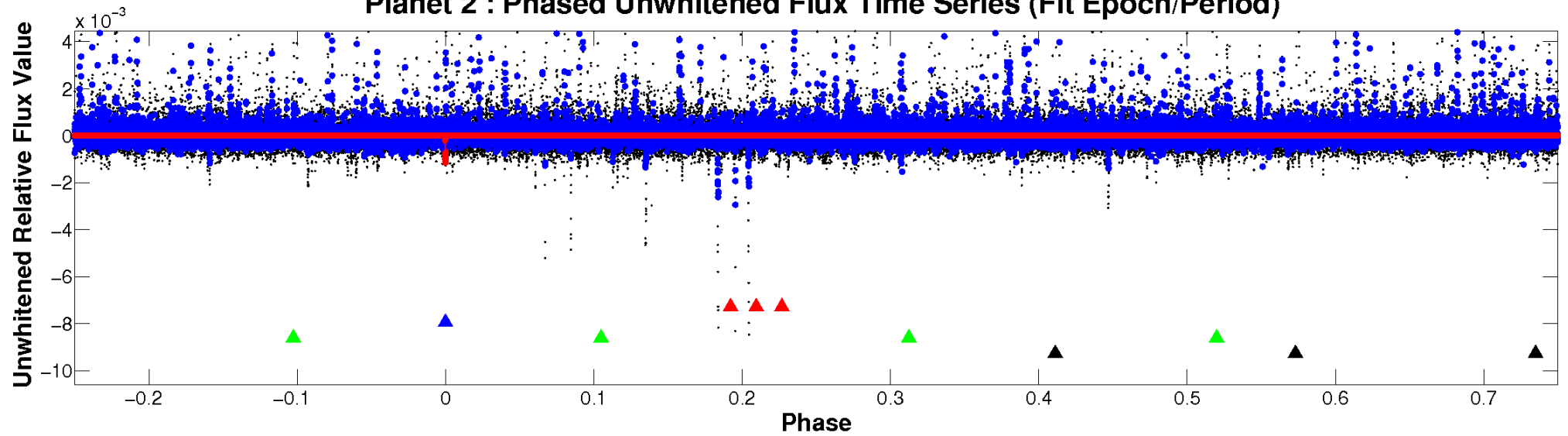
# ALT Odd/Even

TCE 007765762-02

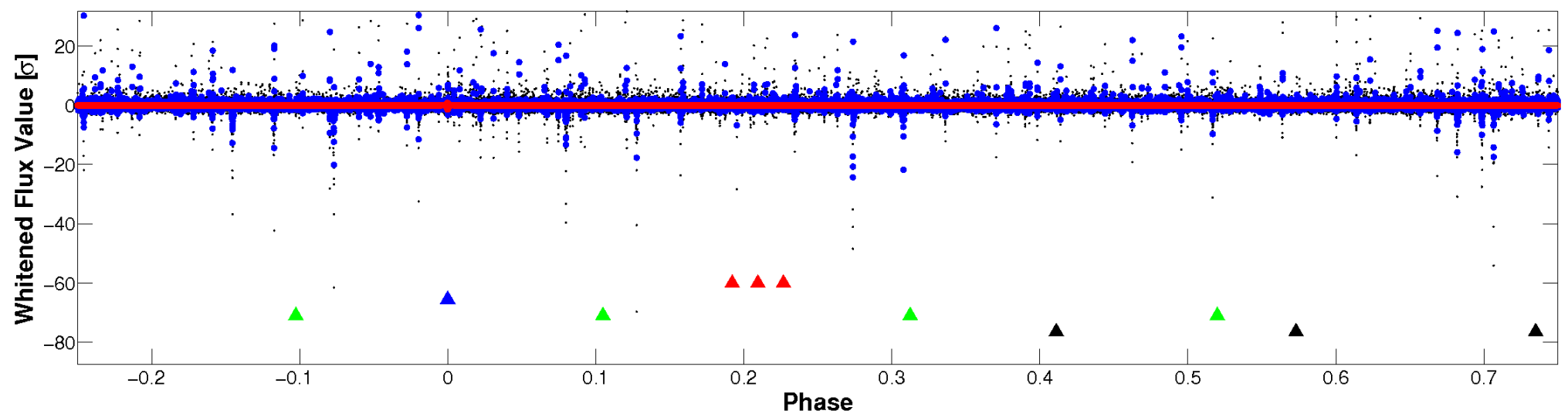


# Non-Whitened Vs. Whitened Light Curve

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

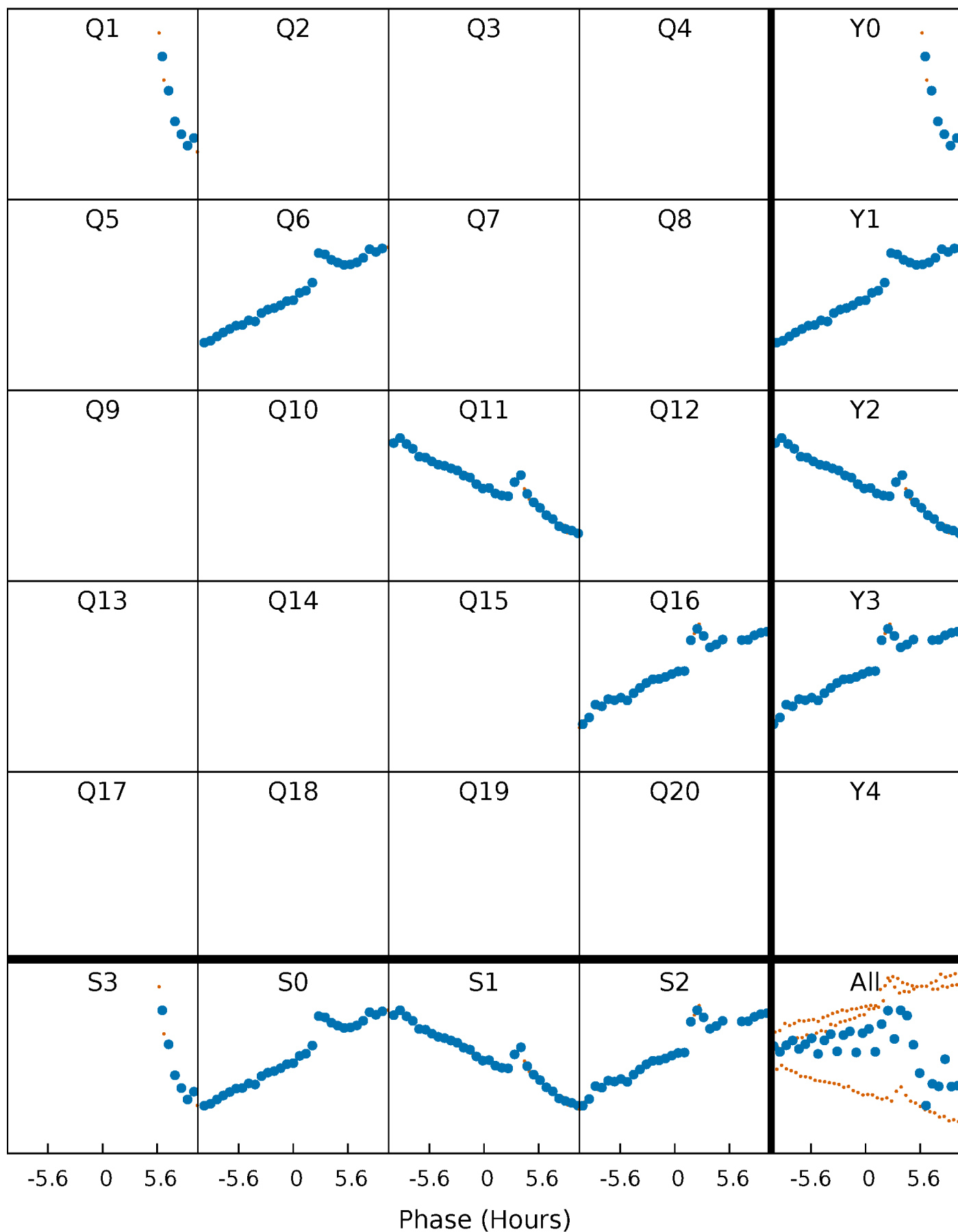


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



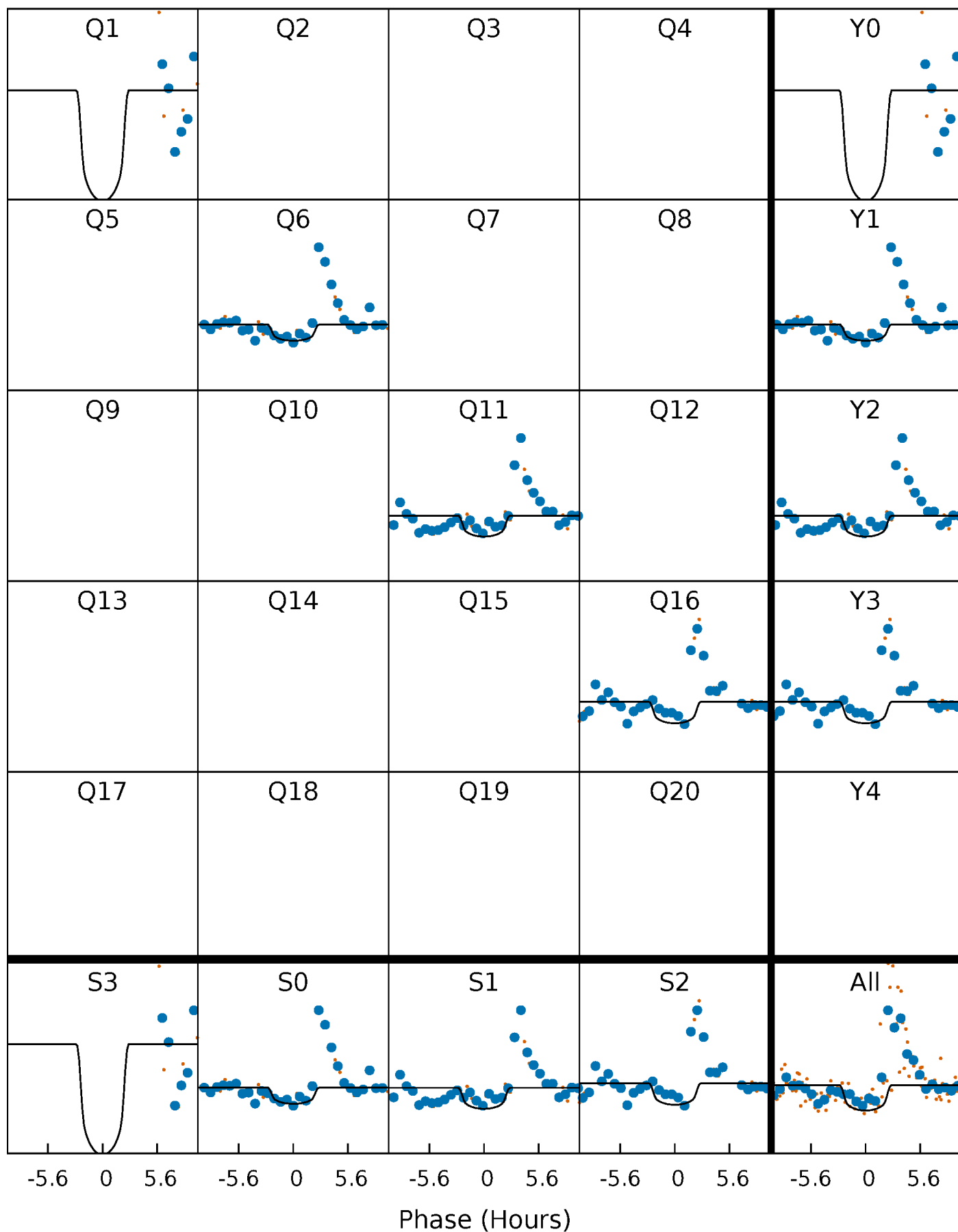
# PDC Quarter-Phased Transit Curves

TCE 007765762-02 P=455.509672 Days  $T_0=586.800892$  (BKJD)



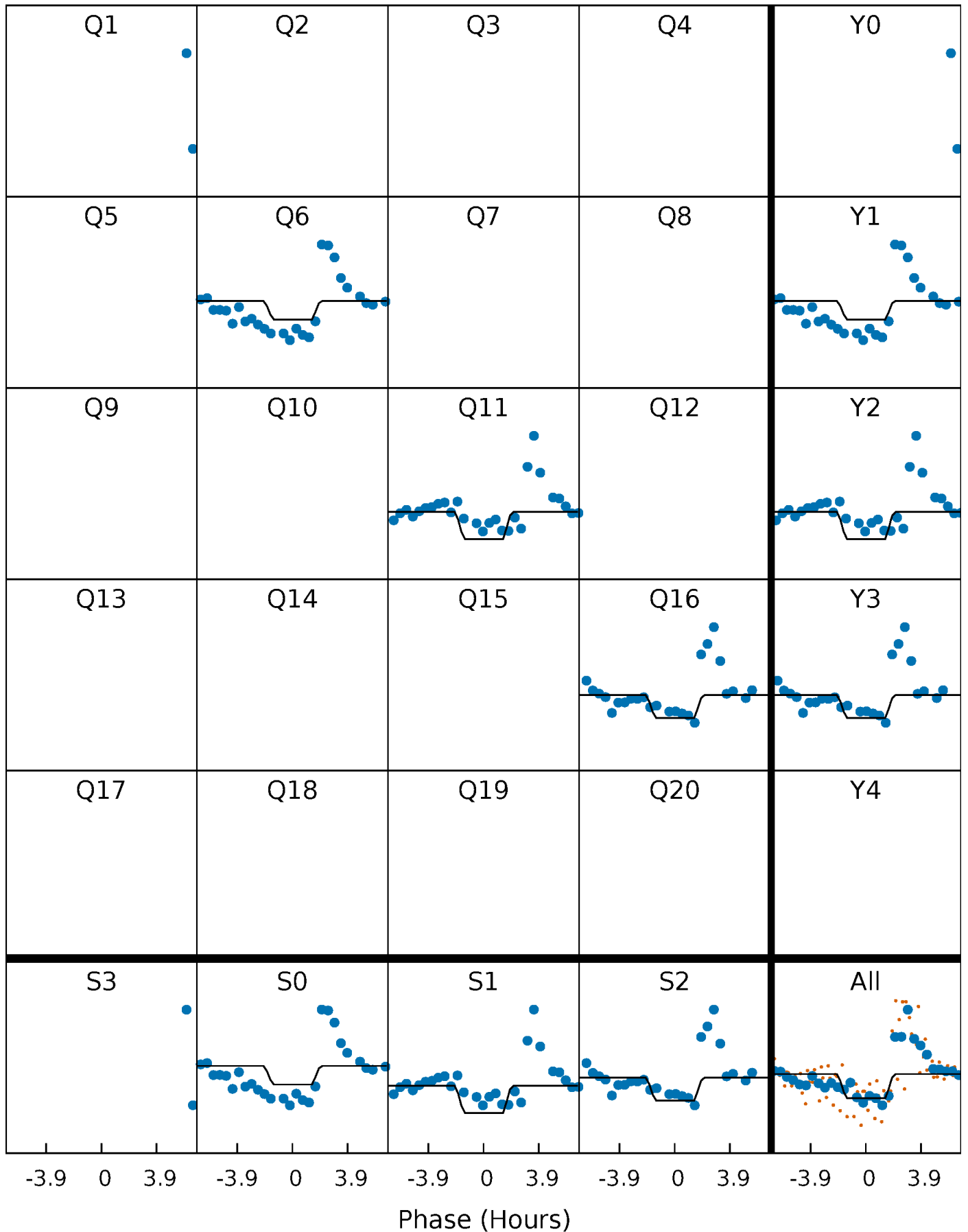
# DV Quarter-Phased Transit Curves

TCE 007765762-02 P=455.509672 Days  $T_0=586.800892$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

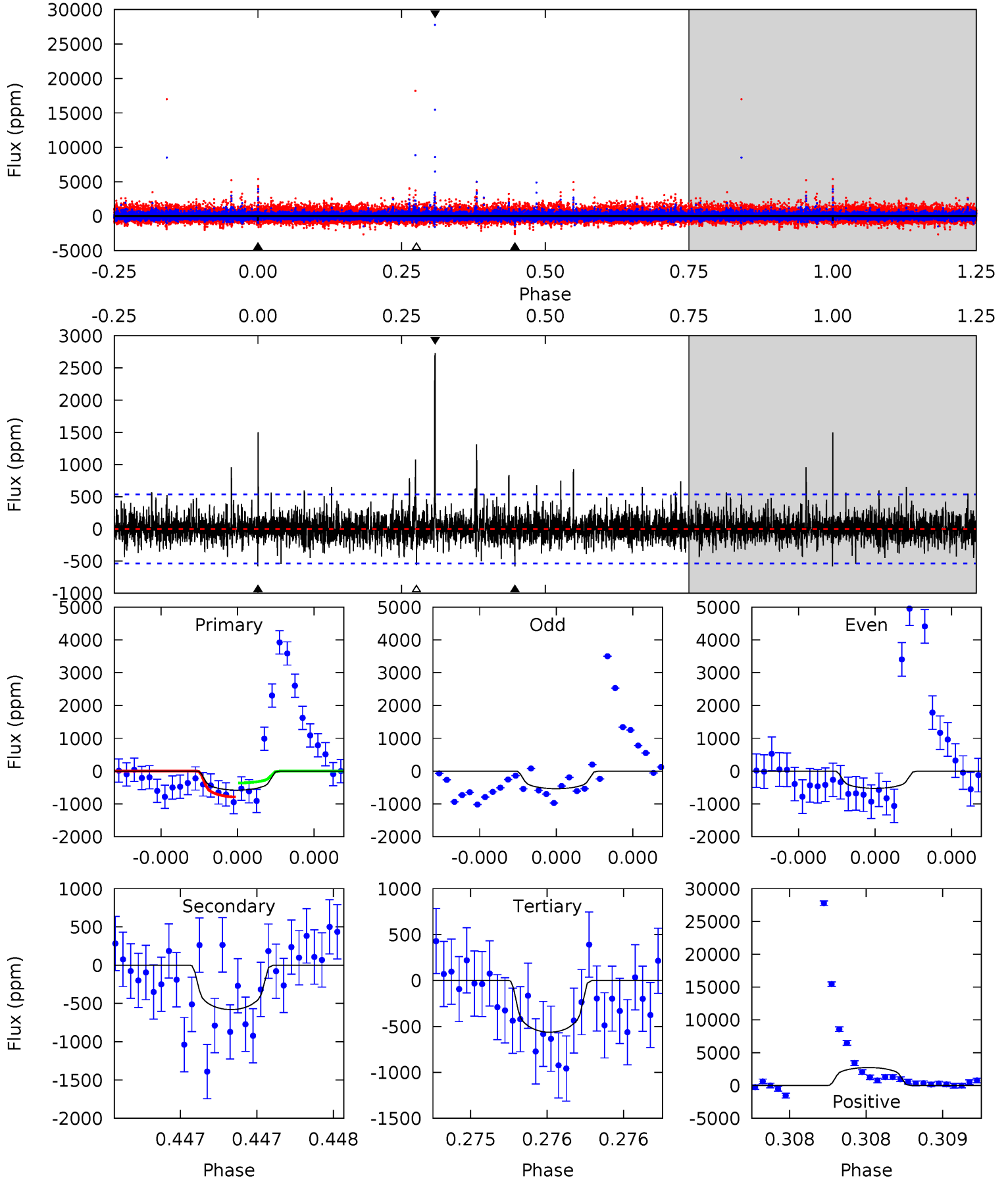
TCE 007765762-02 P=455.498108 Days  $T_0=586.809466$  (BKJD)



# DV Model-Shift Uniqueness Test

007765762-02, P = 455.509672 Days, E = 131.291220 Days

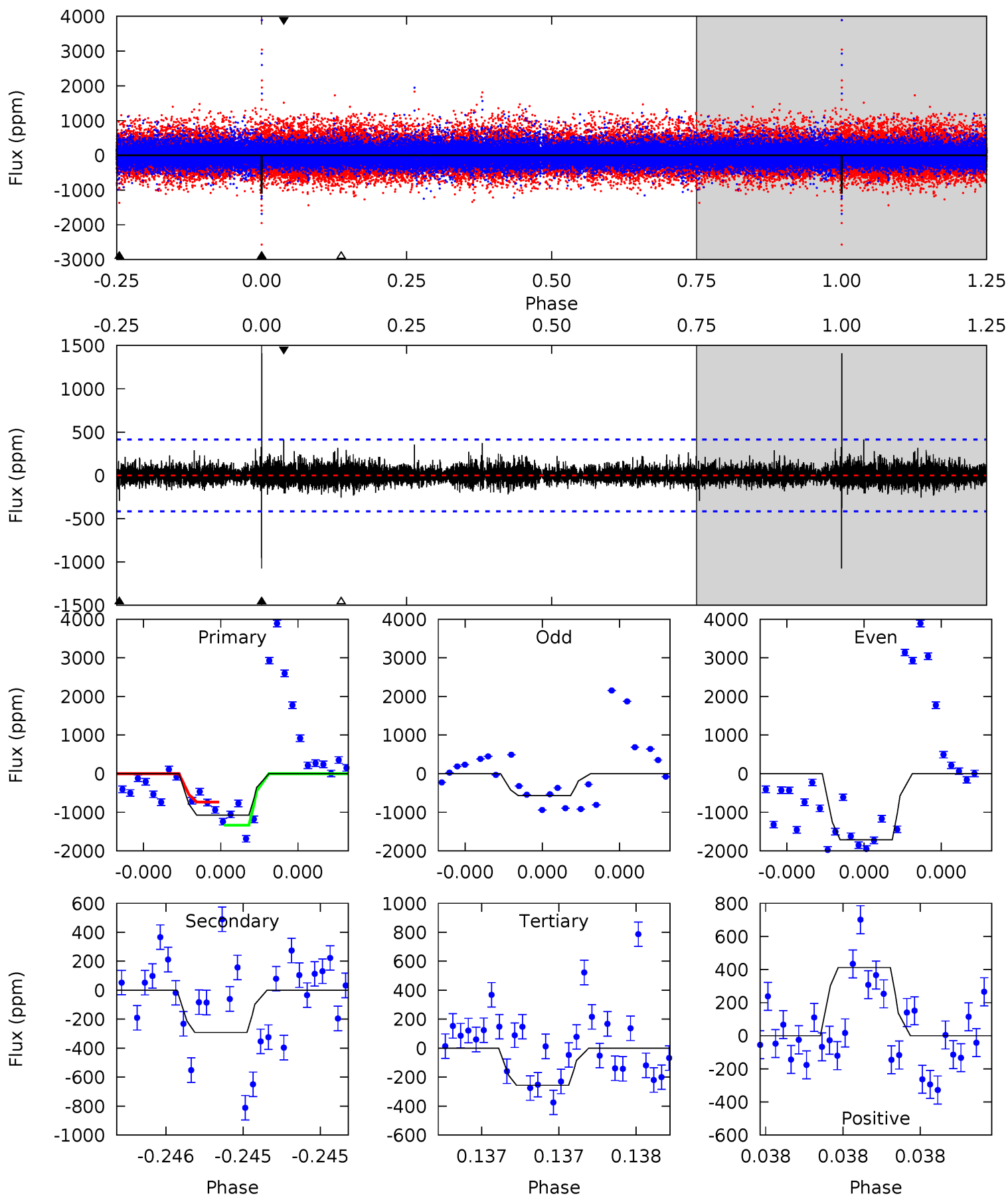
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.03	6.04	5.86	28.4	5.59	3.50	1.64	0.17	-22.4	0.18	-22.4	0.03	0.72	0.82	2.24



# Alt Model-Shift Uniqueness Test

007765762-02, P = 455.498108 Days, E = 131.311358 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
14.6	3.97	3.48	5.60	5.64	3.58	0.82	11.1	9.00	0.49	-1.64	8.23	1.34	0.57	4.05





### Stellar Parameters For KIC 007765762

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4130^{+124}_{-124}$	$4.651^{+0.056}_{-0.020}$	$-0.140^{+0.300}_{-0.300}$	$0.602^{+0.044}_{-0.060}$	$0.593^{+0.060}_{-0.054}$	$3.819^{+1.040}_{-0.374}$
	+3%/-3%	+1%/-0%	+214%/-214%	+7%/-10%	+10%/-9%	+27%/-10%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007765762-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-580 \pm 96$	$2.42^{+1.96}_{-1.51}$	$198^{+7}_{-6}$	$3553^{+1522}_{-581}$	$51555^{+288346}_{-36225}$
Alt.	$-292 \pm 74$	$2.71^{+1.96}_{-1.68}$	$198^{+7}_{-7}$	$3086^{+1158}_{-427}$	$20802^{+115392}_{-13880}$

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

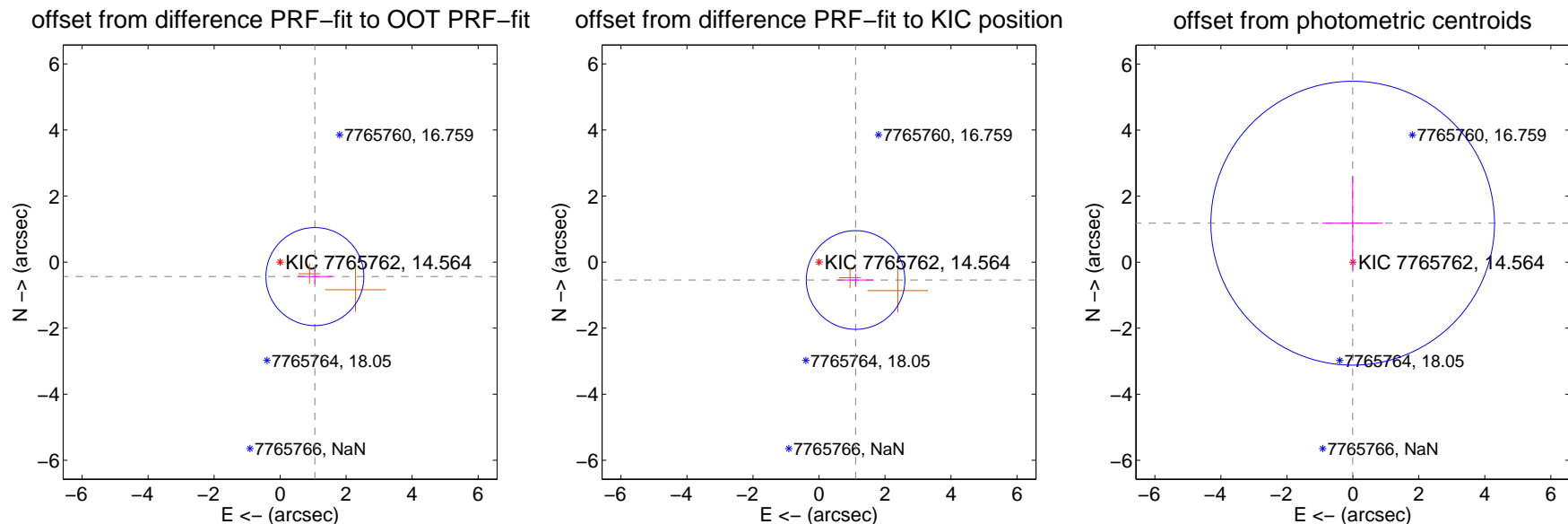
## DV Centroid Data

Supplemental centroid analysis for 007765762-02. Kepler magnitude: 14.56. Transit SNR 6.93

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.141 \pm 0.495$	2.31	$-1.054 \pm 0.527$	$-0.439 \pm 0.228$
PRF-fit source offset from KIC position	$1.234 \pm 0.498$	2.48	$-1.109 \pm 0.547$	$-0.542 \pm 0.186$
photometric centroid source offset	$1.18 \pm 1.43$	0.82	$0.01 \pm 0.92$	$1.18 \pm 1.43$

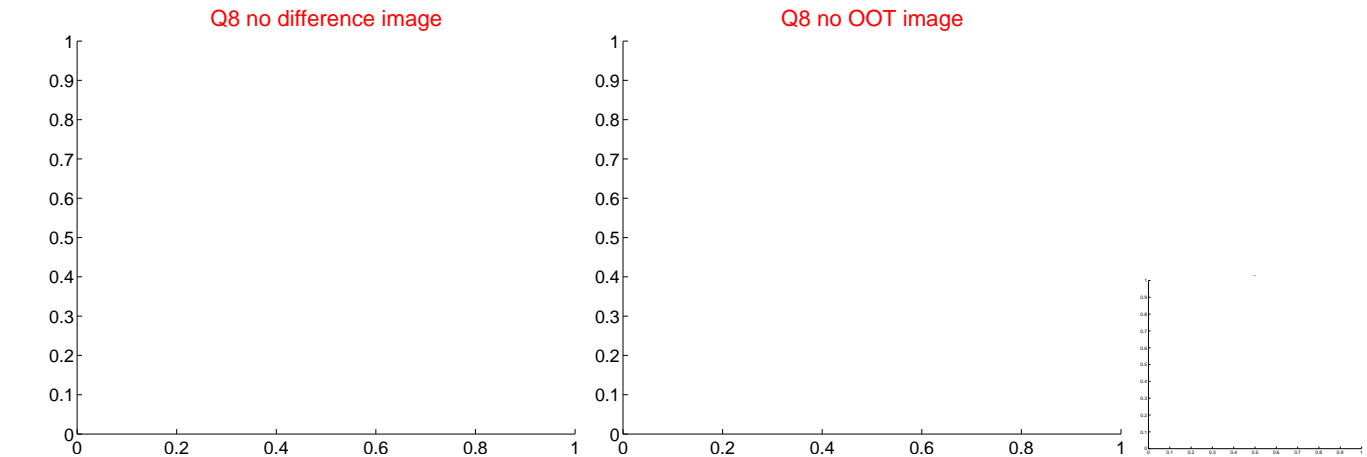
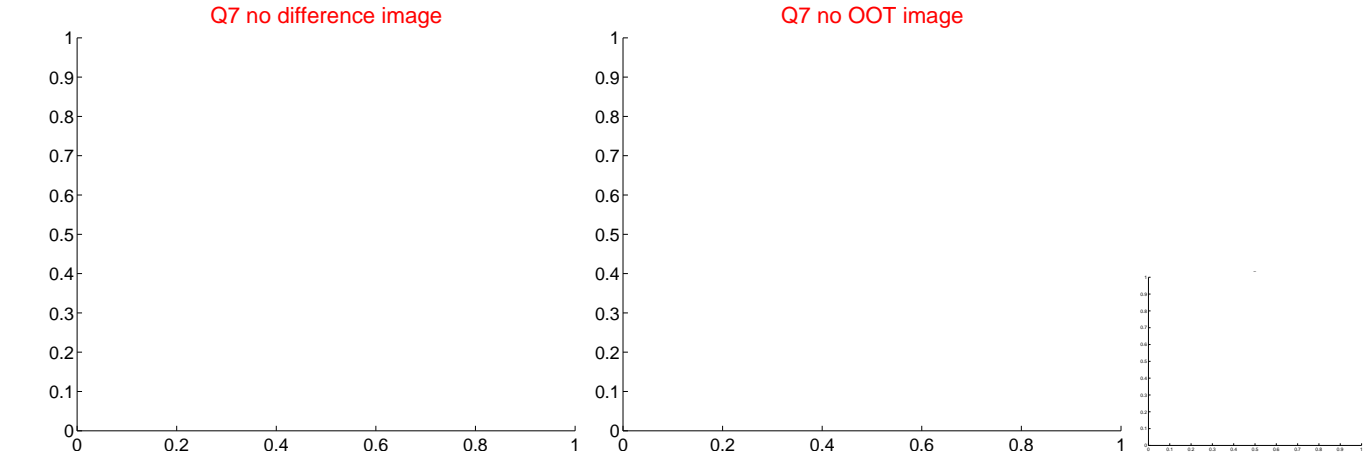
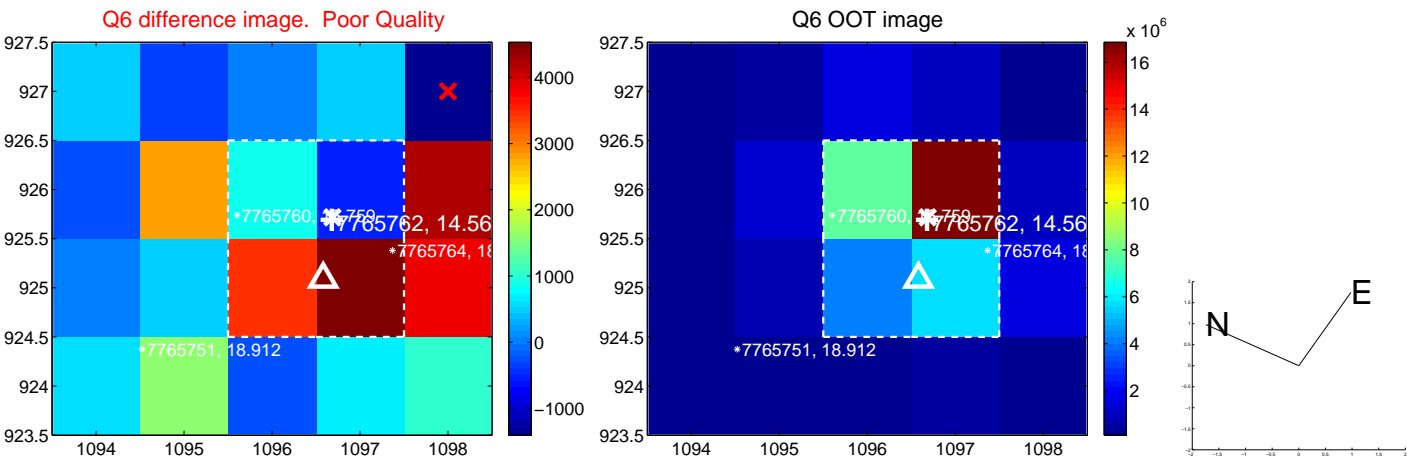
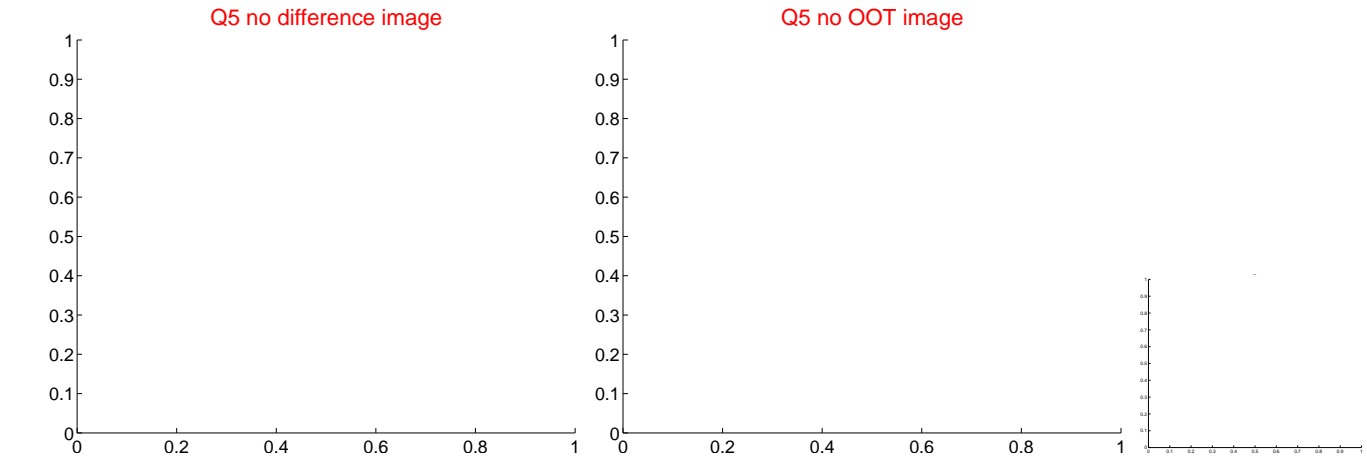


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

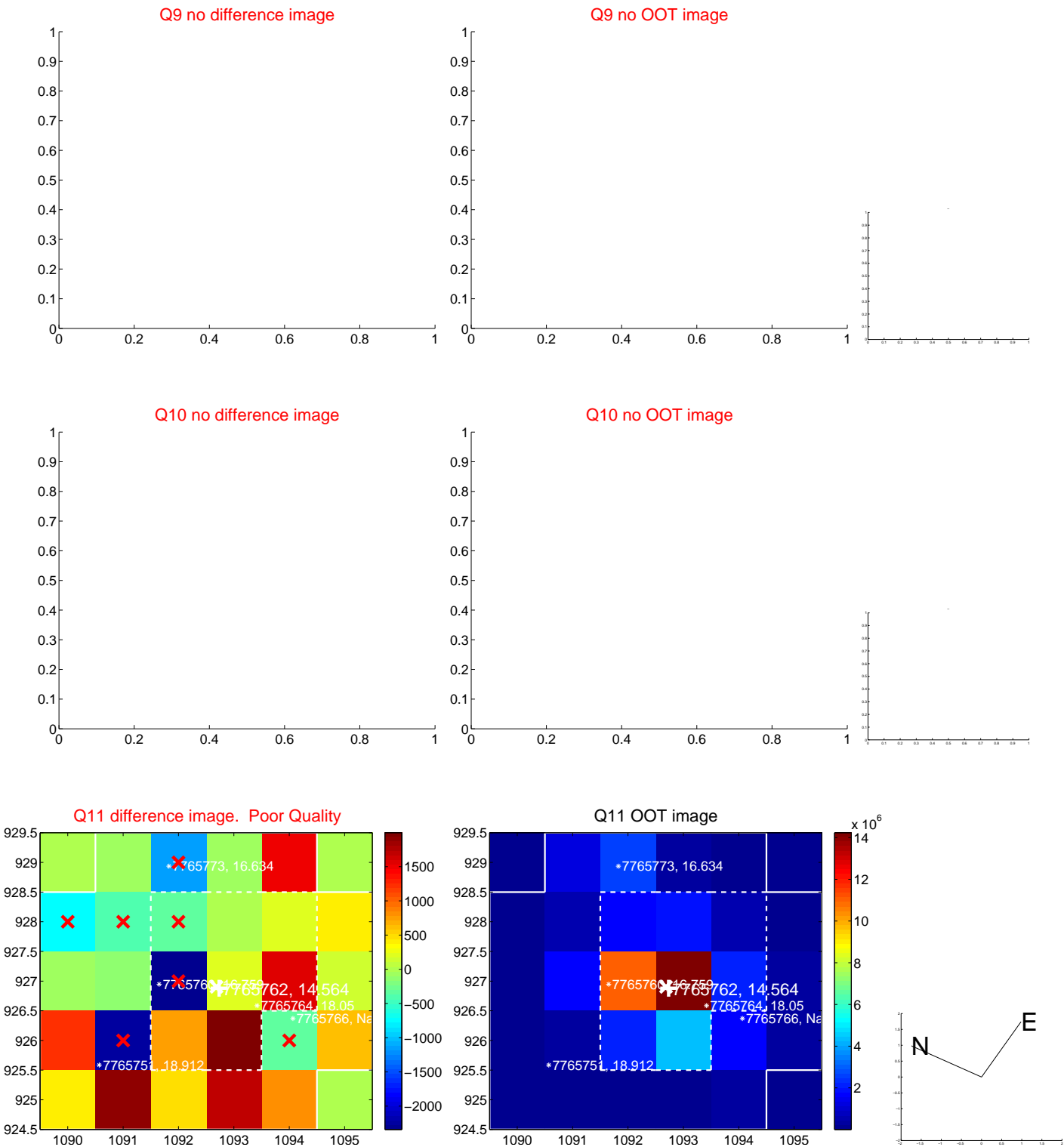
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

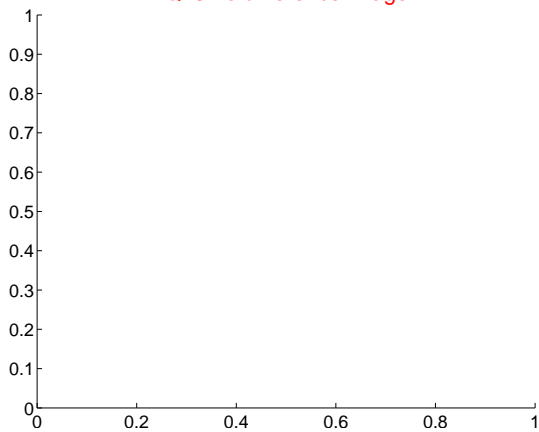


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

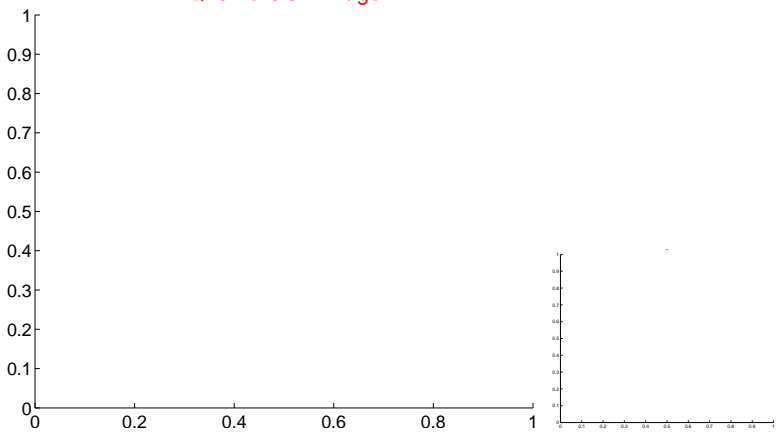


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

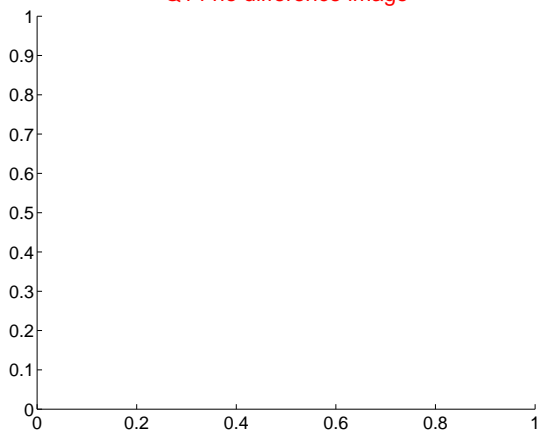
Q13 no difference image



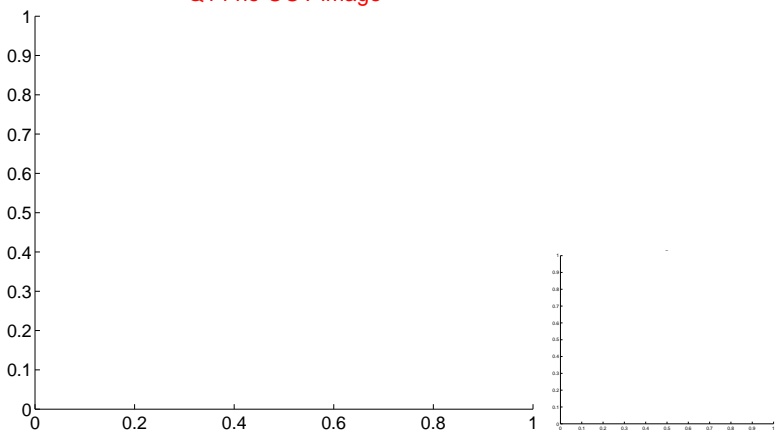
Q13 no OOT image



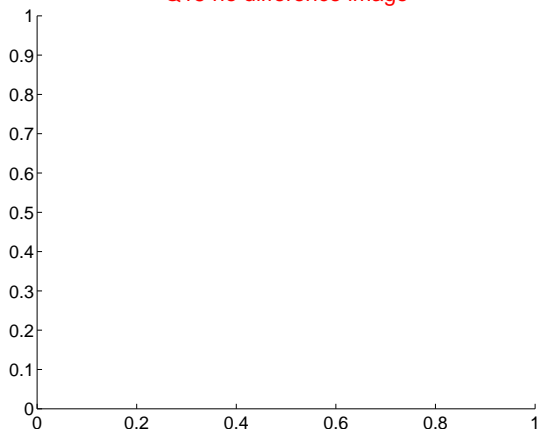
Q14 no difference image



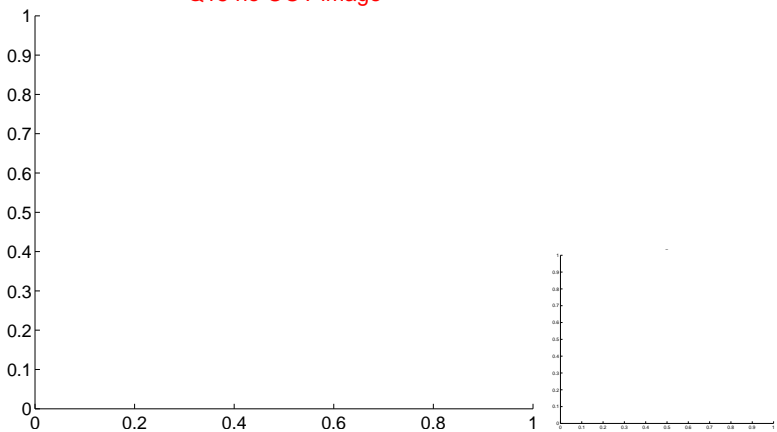
Q14 no OOT image



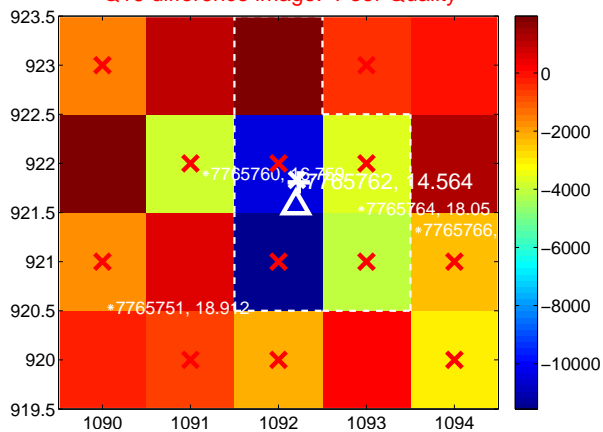
Q15 no difference image



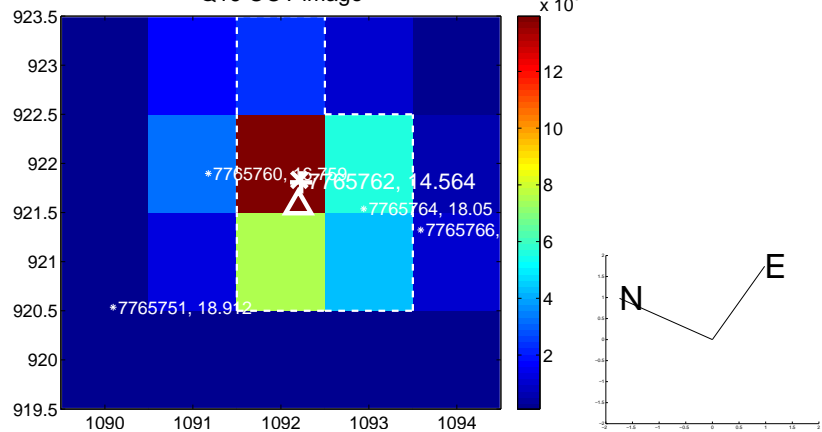
Q15 no OOT image



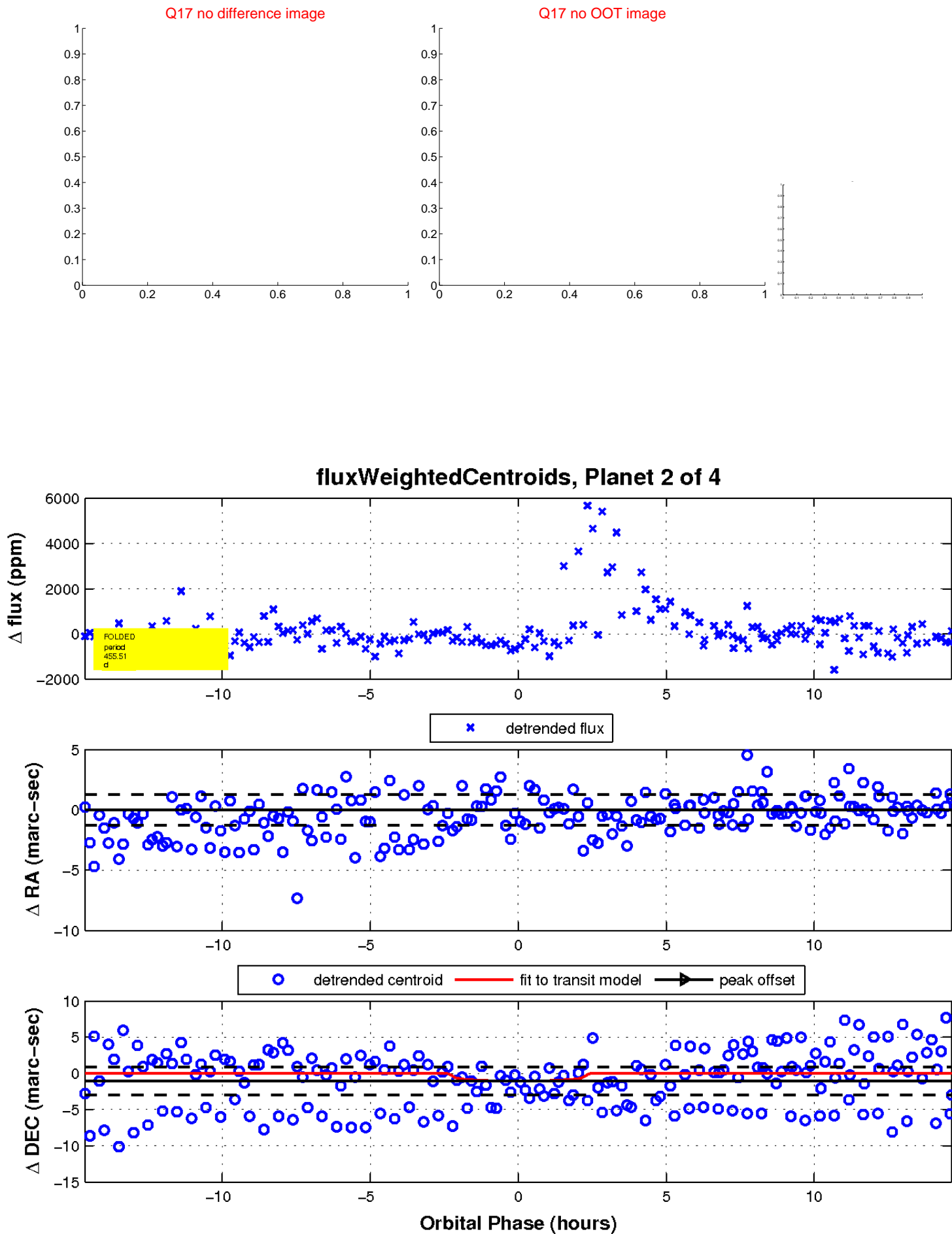
Q16 difference image. Poor Quality



Q16 OOT image

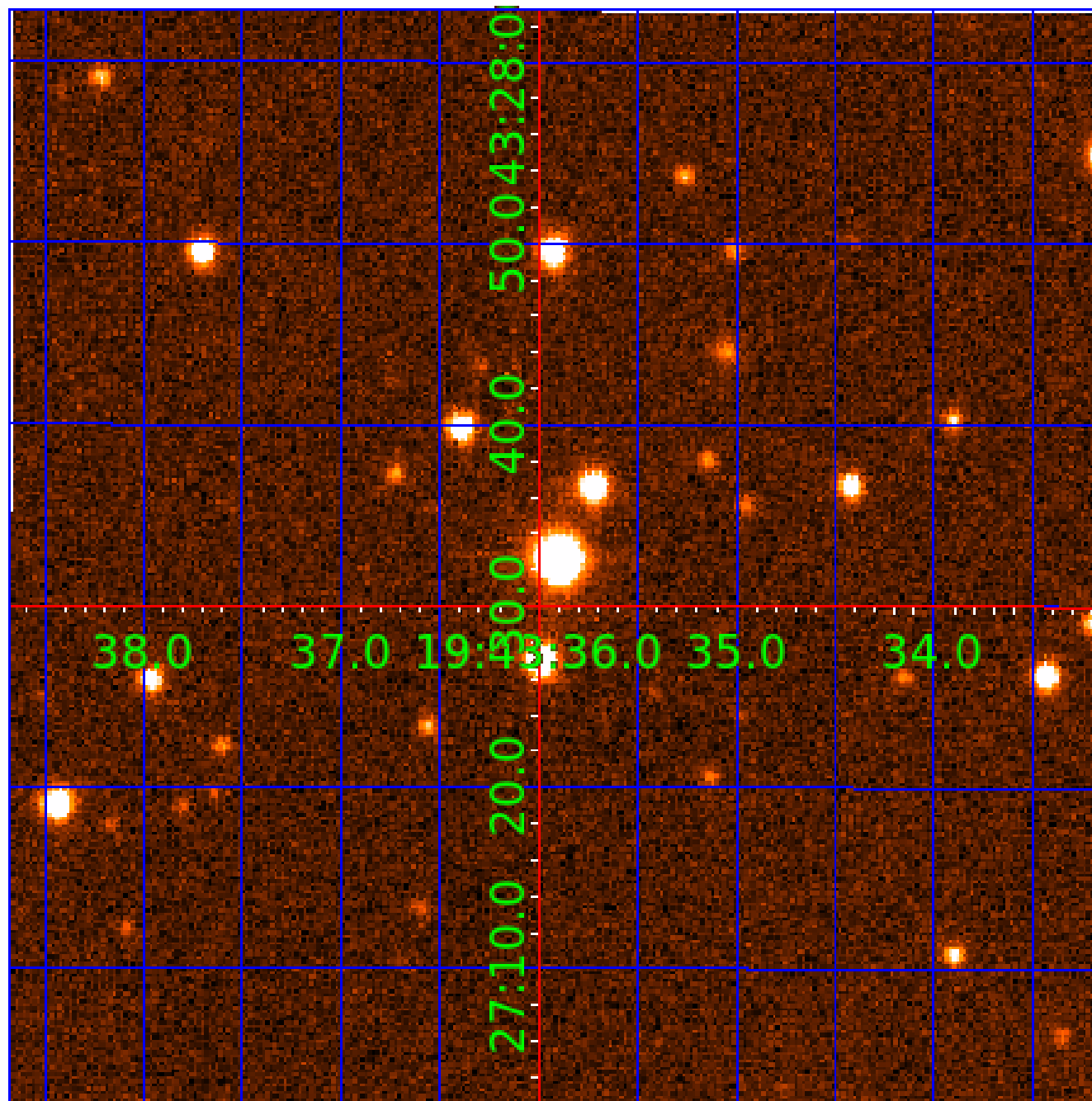


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007765762

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007765762-01	OBS	No	463.388793	218.848910	1129.2	6.218	12.8	6.6	0.60	4130	2.19	0.10
007765762-02	OBS	No	455.509672	586.800892	1146.3	4.888	13.4	6.9	0.60	4130	2.19	0.10
007765762-03	OBS	No	360.989247	368.122420	1212.0	3.697	10.7	7.2	0.60	4130	2.03	0.14
007765762-04	OBS	No	529.276097	318.564871	1403.8	13.525	11.3	7.1	0.60	4130	2.28	0.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007765762-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007765762-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765762-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765762-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS

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

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

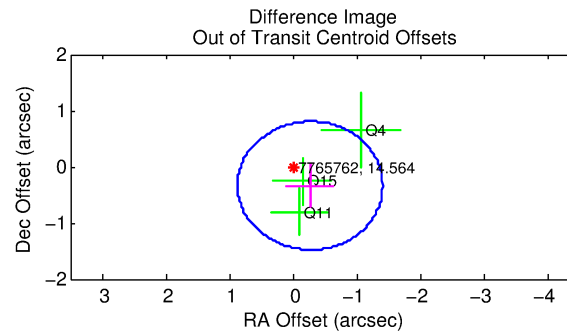
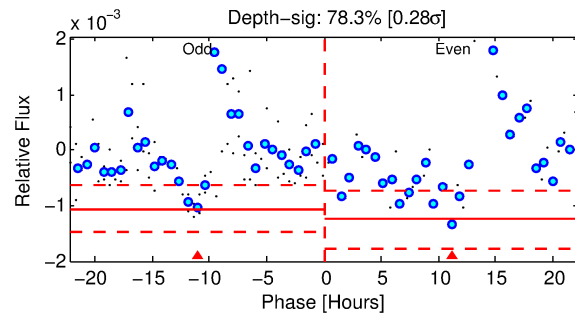
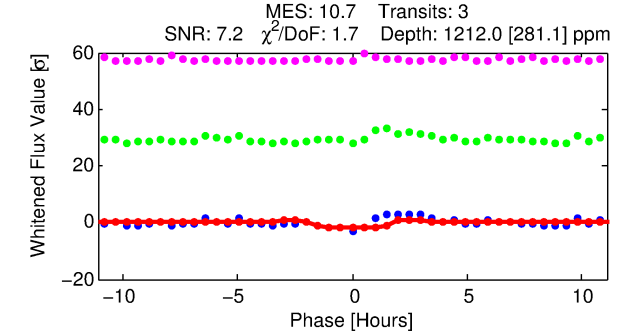
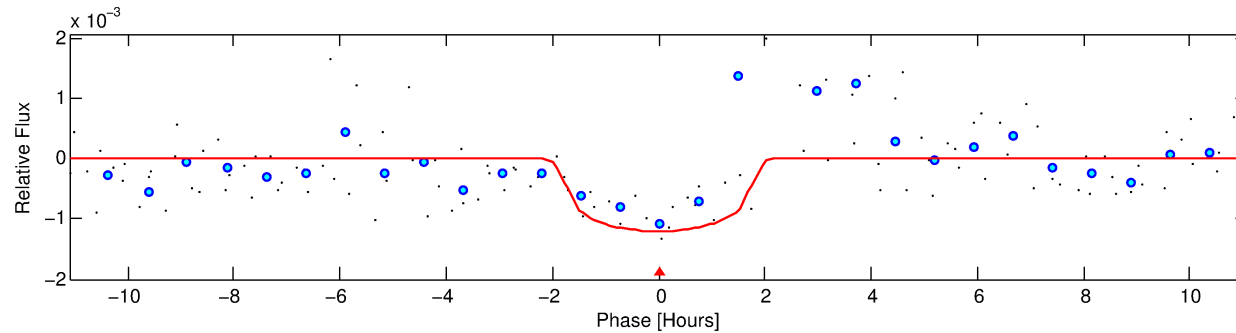
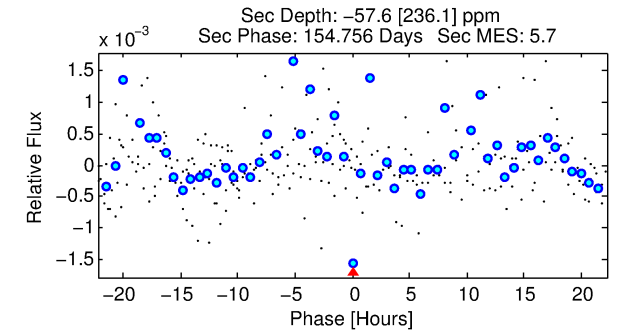
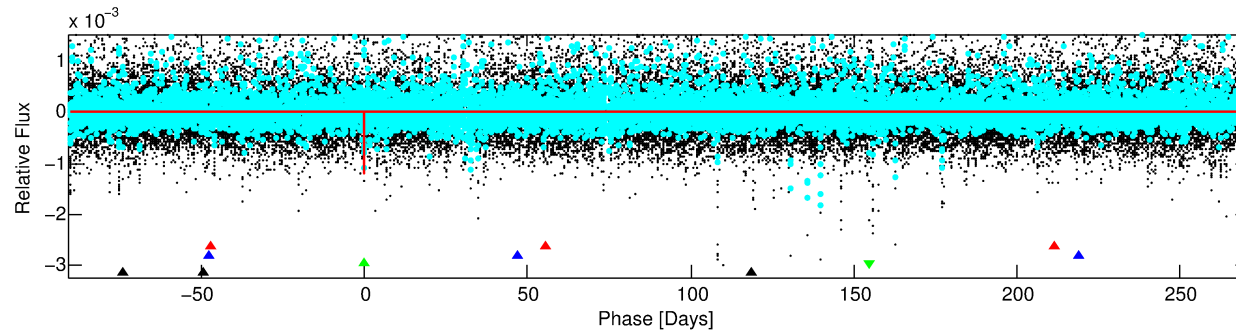
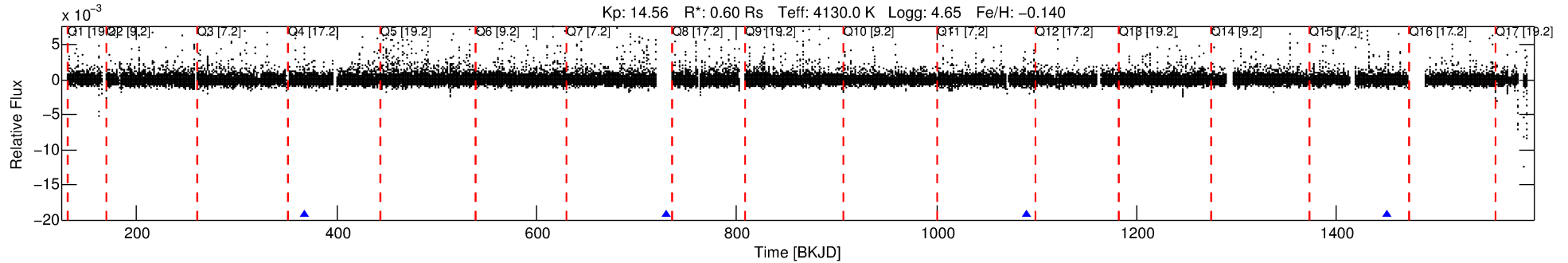
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007765762-03

No Significant Match Found

# DV One-Page Summary

KIC: 7765762 Candidate: 3 of 4 Period: 360.989 d



## DV Fit Results:

Period = 360.98925 [0.00470] d  
Epoch = 368.1224 [0.0087] BKJD  
Rp/R\* = 0.0309 [0.0681]  
a/R\* = 768.73 [5704.47]  
b = 0.02 [324.58]  
Seff = 0.14 [0.02]  
Teq = 155 [6] K  
Rp = 2.03 [4.48] Re  
a = 0.8332 [0.0659] AU  
Ag = N/A  
Teffp = N/A

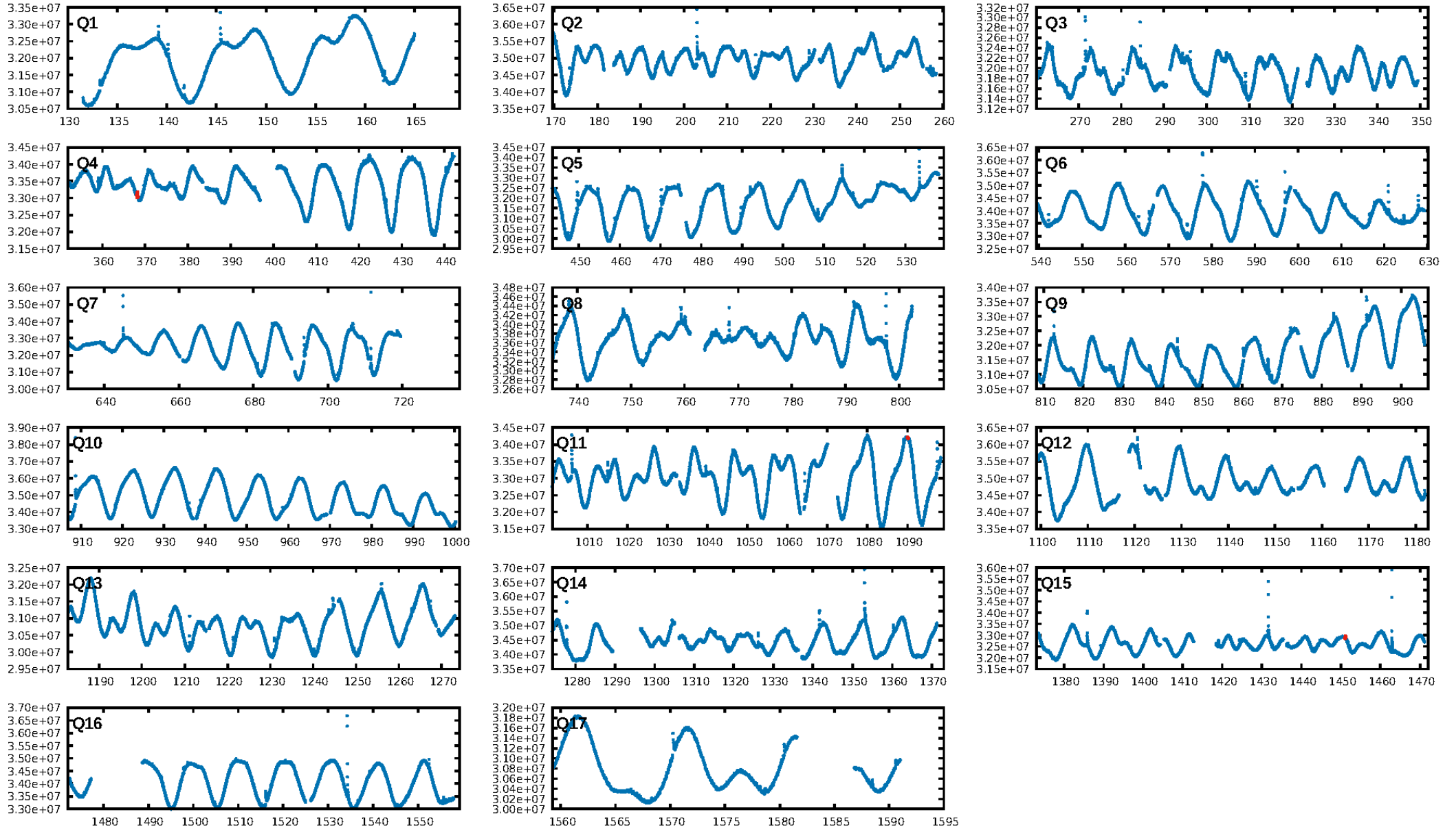
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [370.13 $\sigma$ ]  
ModelChiSquare2-sig: 3.9%  
ModelChiSquareGof-sig: 68.6%  
**Bootstrap-pfa: 2.65e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 5.974  
Centroid-sig: 18.8%  
Centroid-so: 0.916 arcsec [0.87 $\sigma$ ]  
OotOffset-rm: 0.434 arcsec [1.14 $\sigma$ ]  
OotOffset-st: 0/2/1/0 [3]  
KicOffset-rm: 0.613 arcsec [1.55 $\sigma$ ]  
KicOffset-st: 0/2/1/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [3/3]

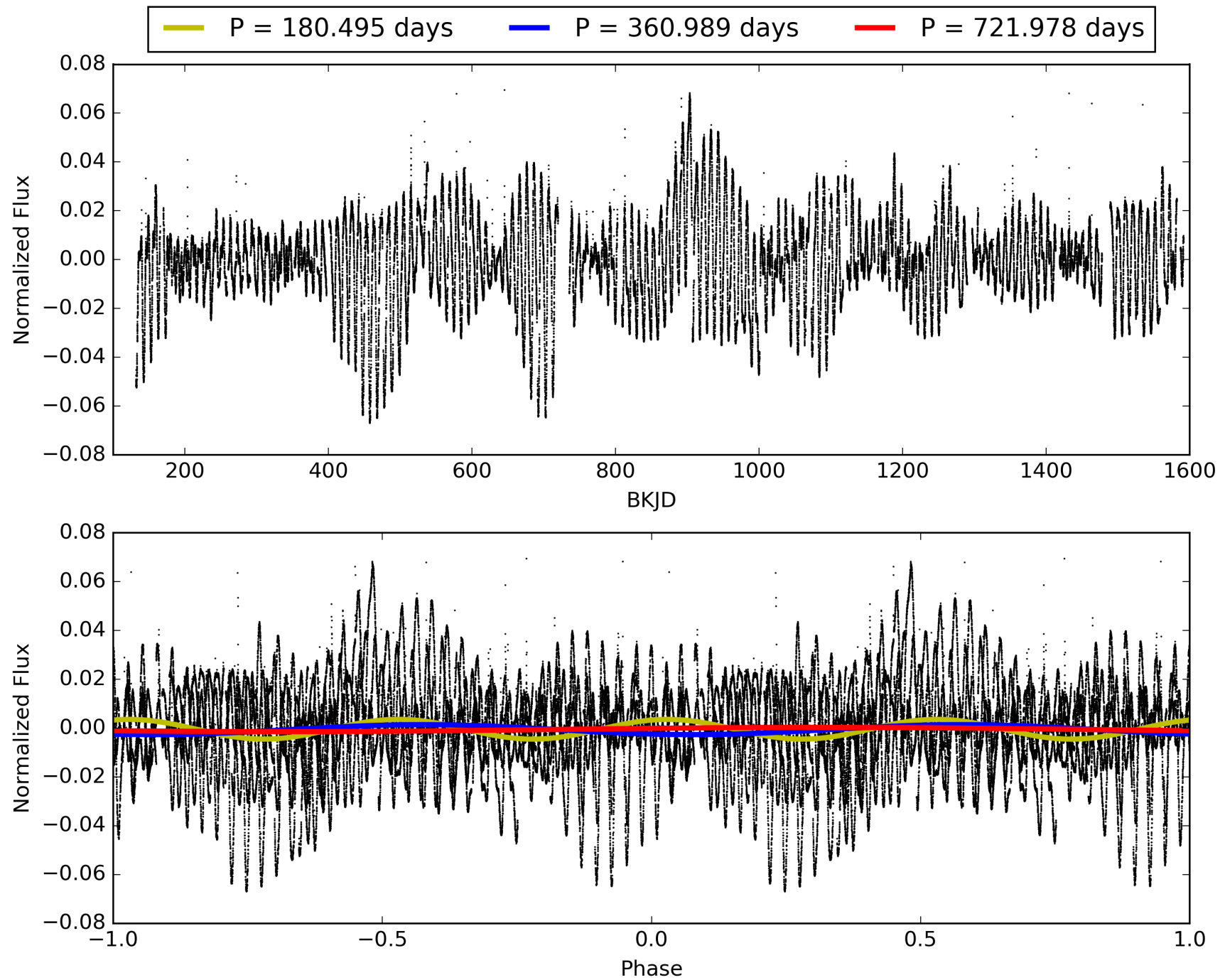
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:54:25 Z

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

# TCE 007765762-03, PDC Light Curves

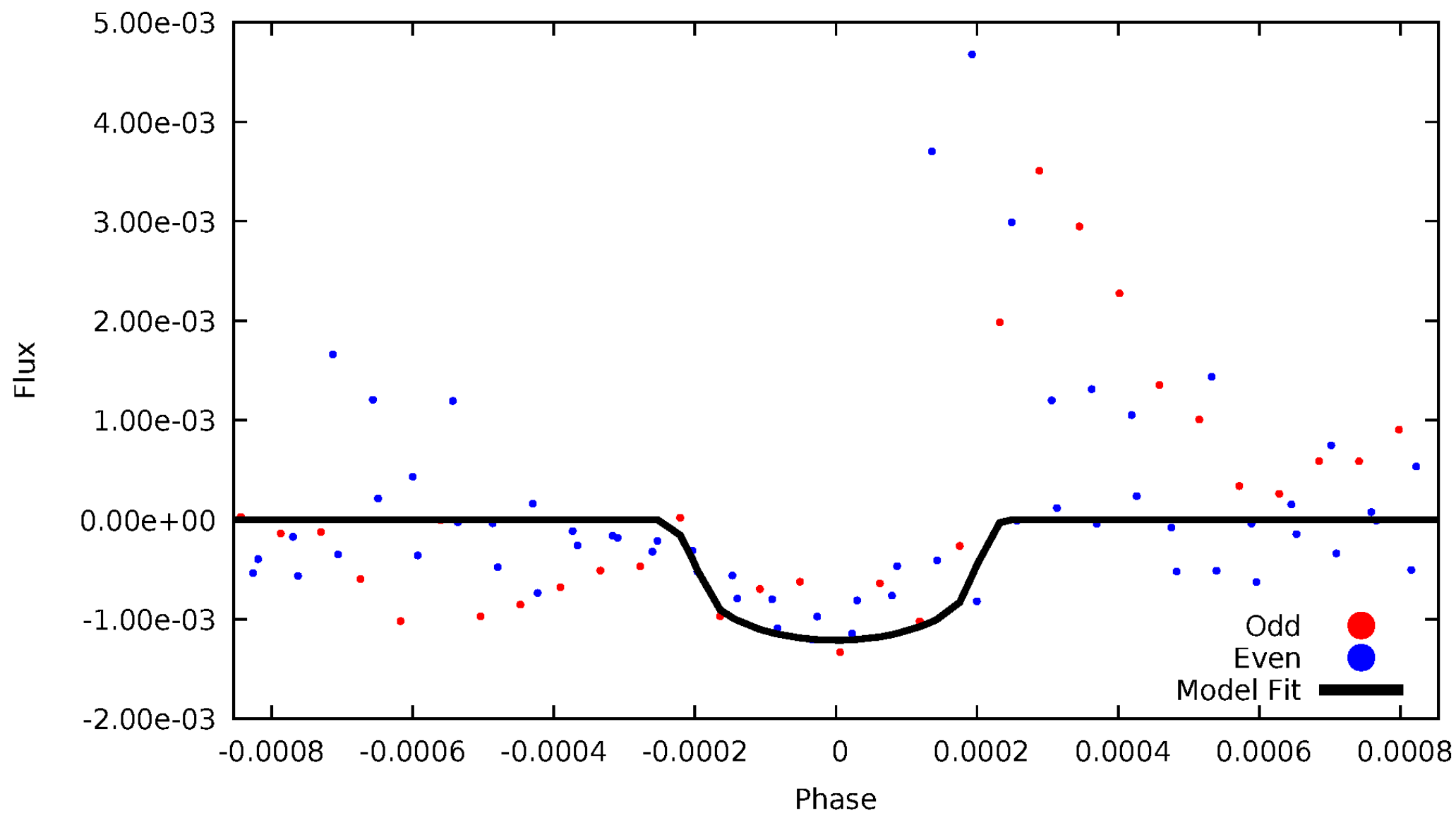


# TCE 007765762-03



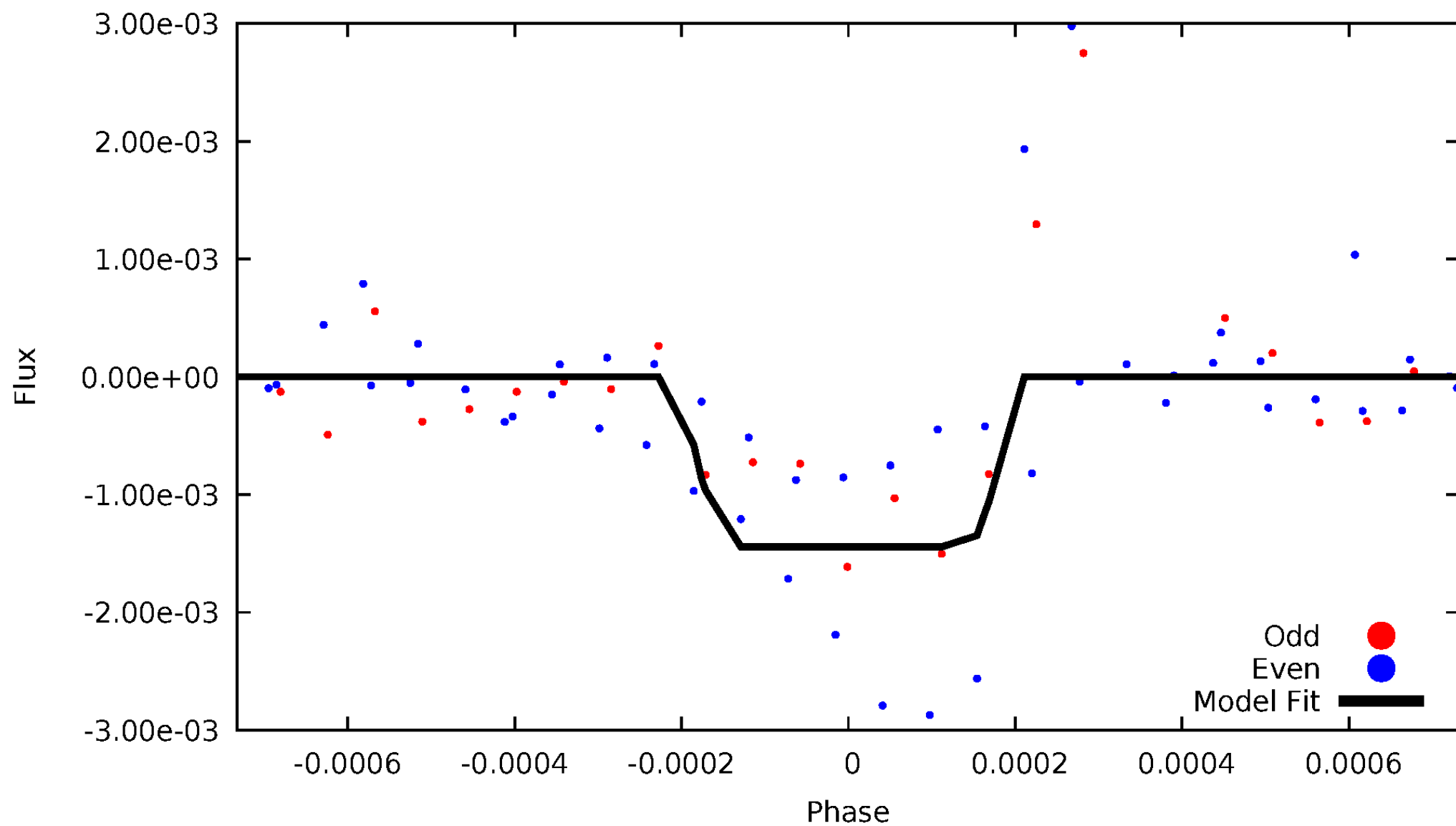
# DV Odd/Even

TCE 007765762-03



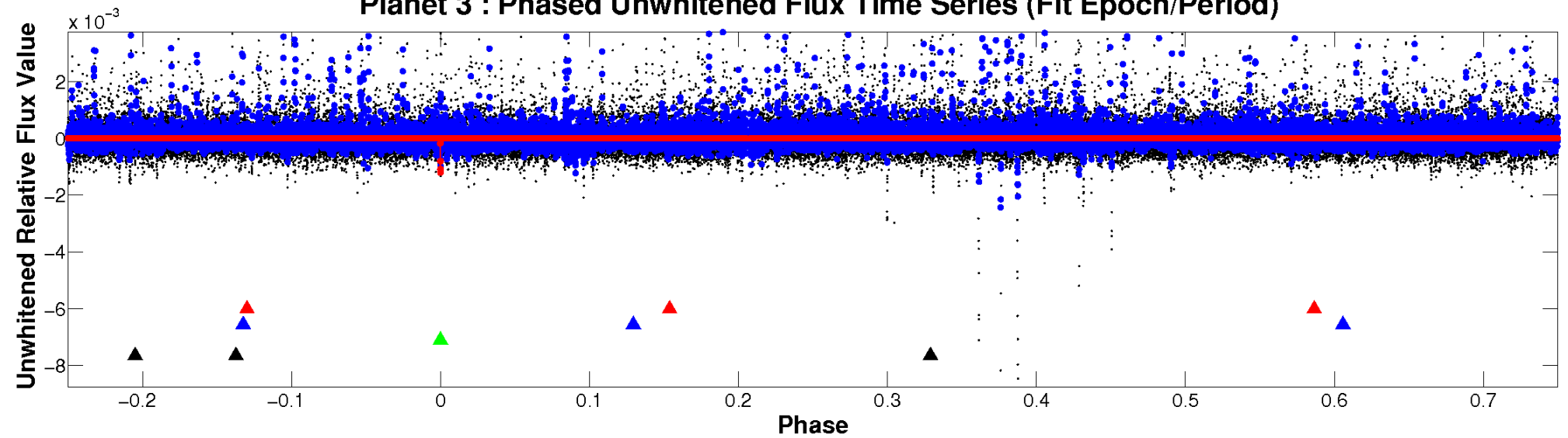
# ALT Odd/Even

TCE 007765762-03

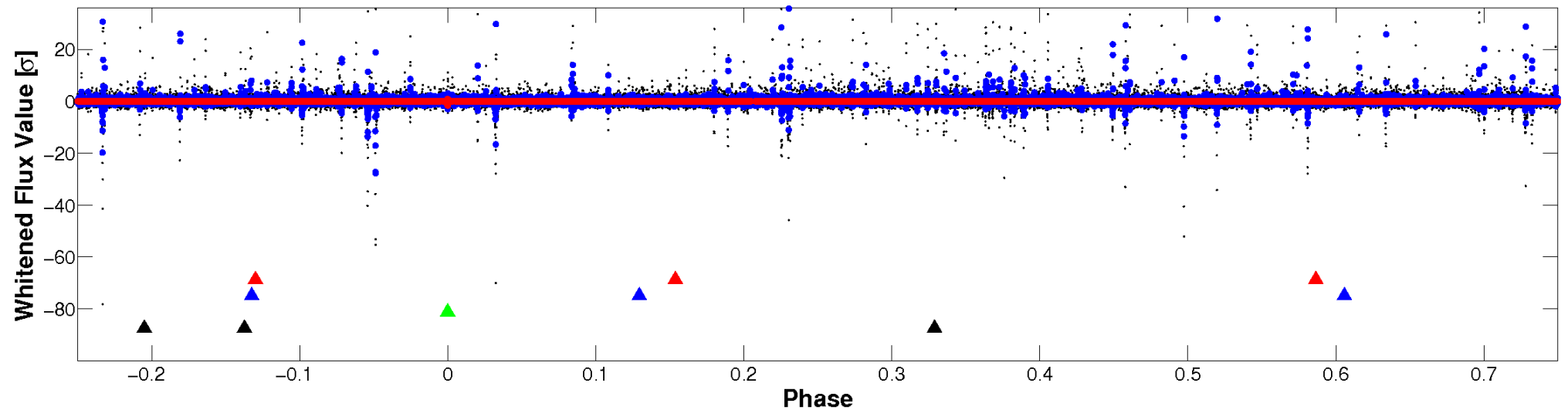


# Non-Whitened Vs. Whitened Light Curve

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

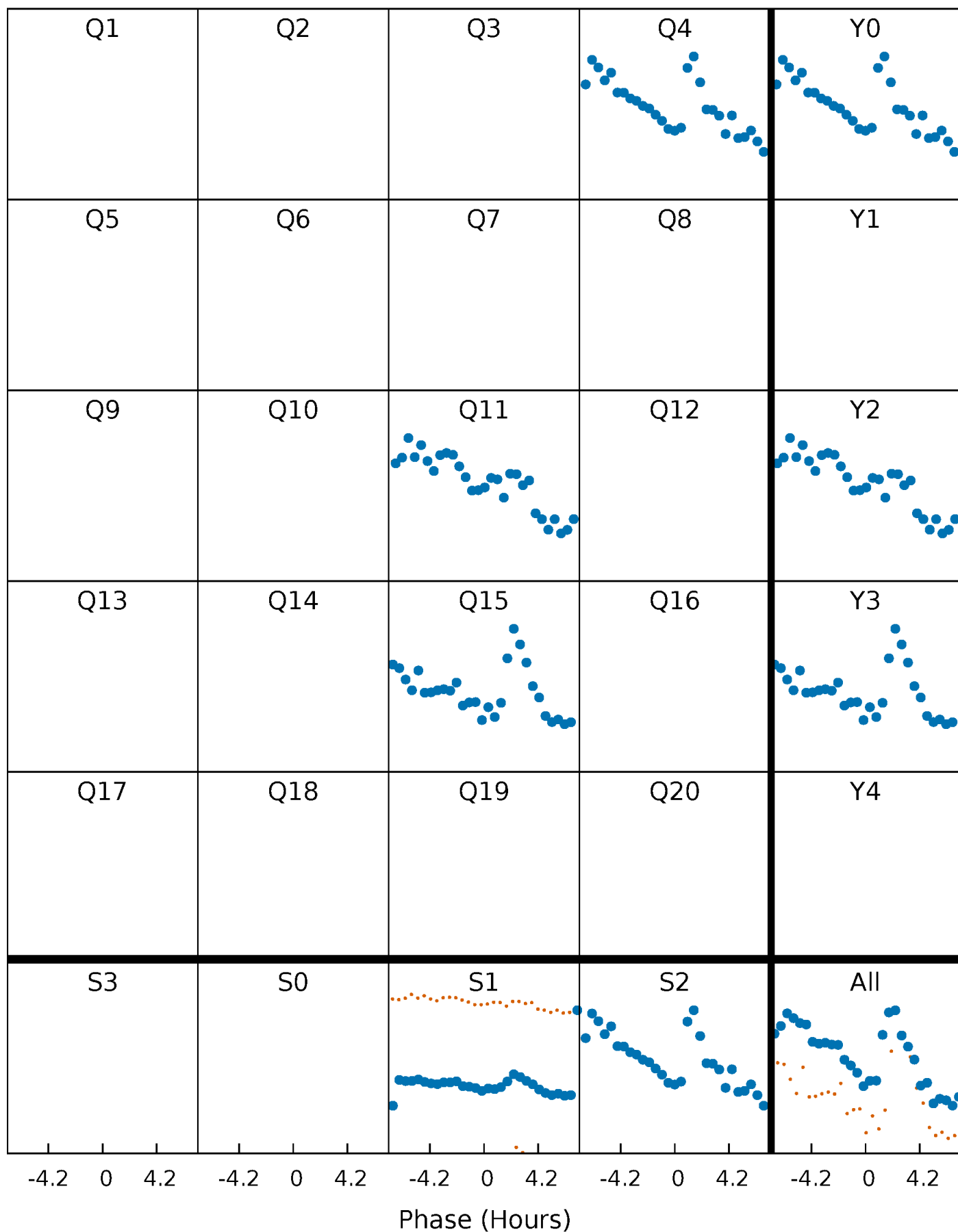


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

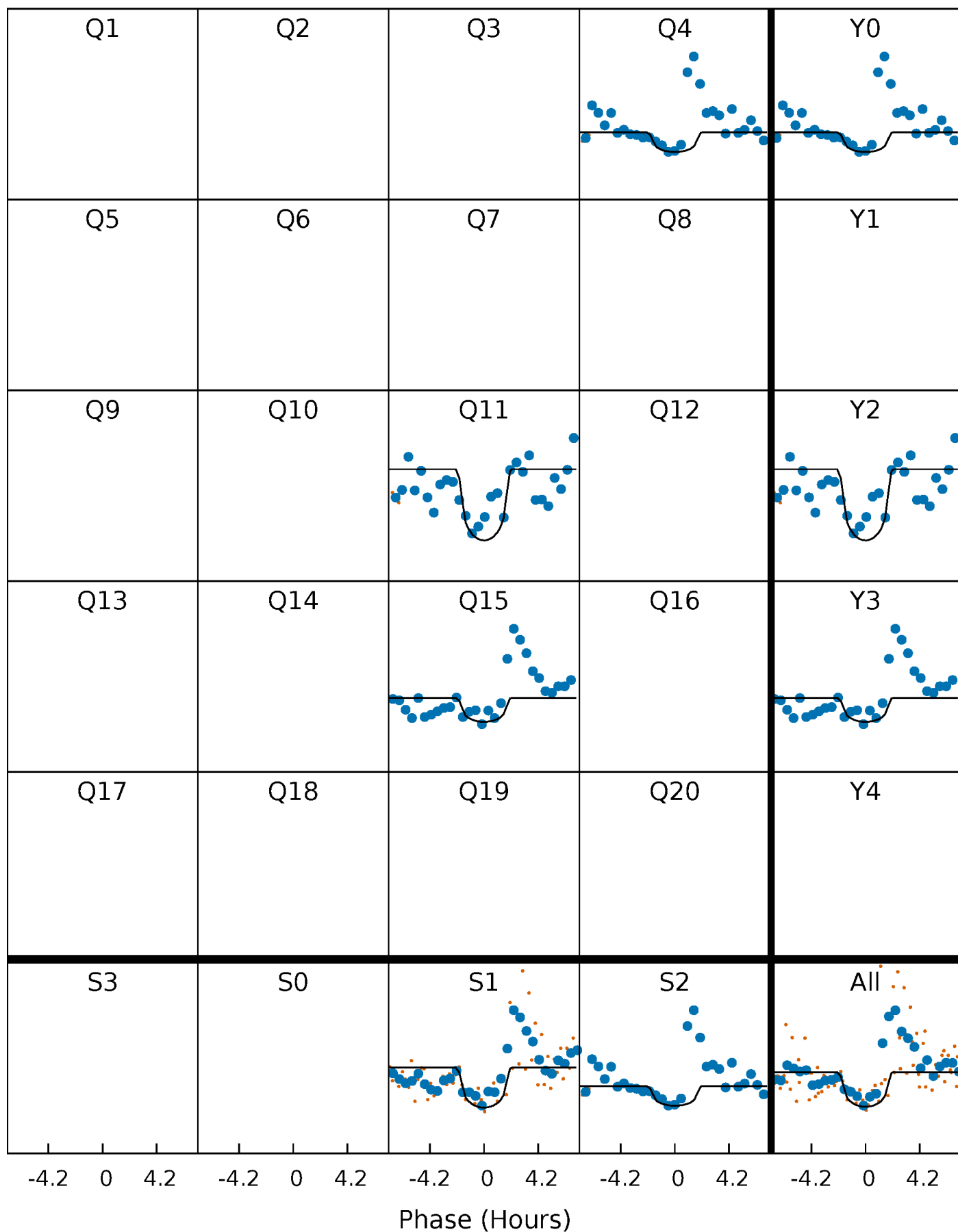
TCE 007765762-03 P=360.989247 Days  $T_0=368.122420$  (BKJD)





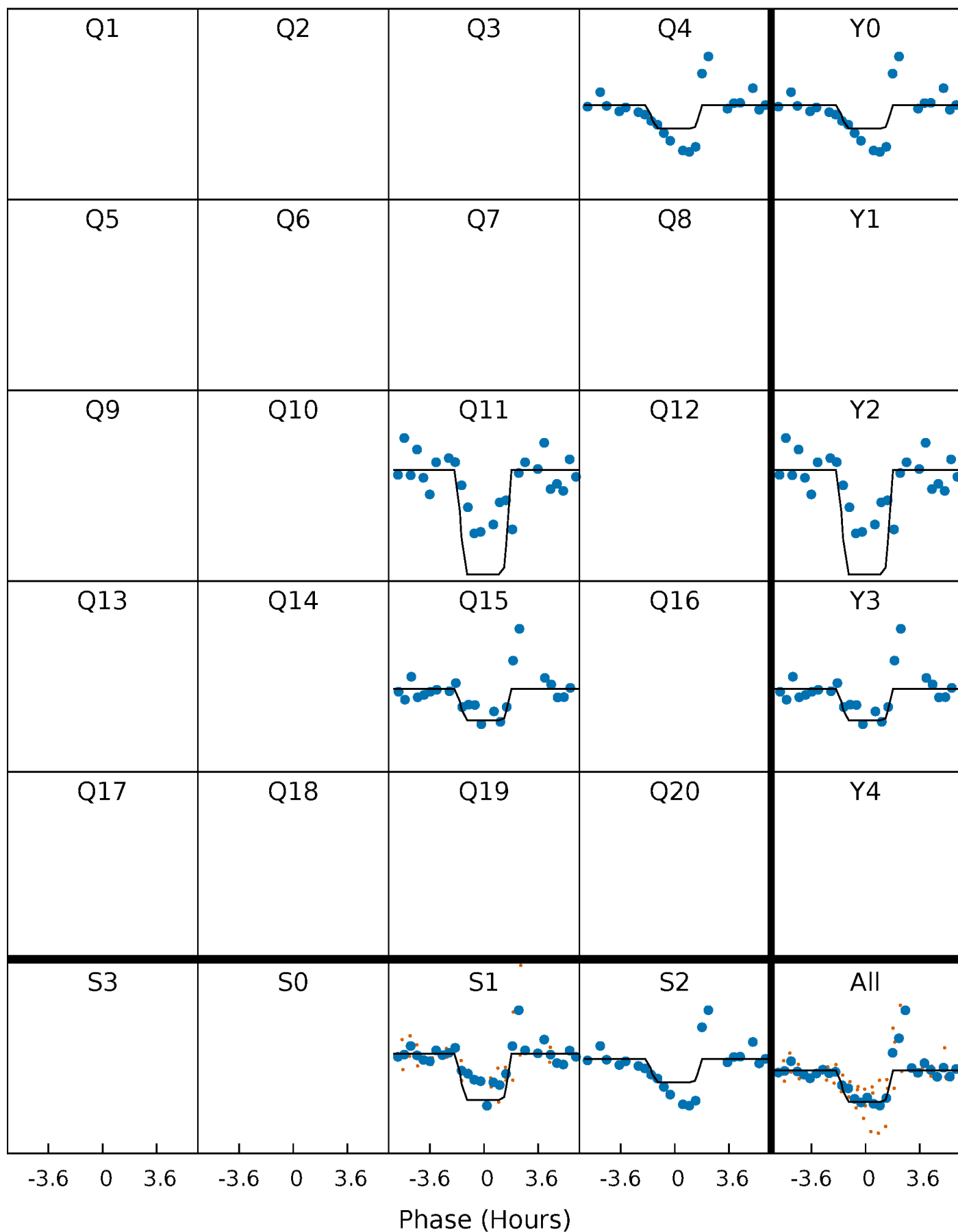
# DV Quarter-Phased Transit Curves

TCE 007765762-03     $P=360.989247$  Days     $T_0=368.122420$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

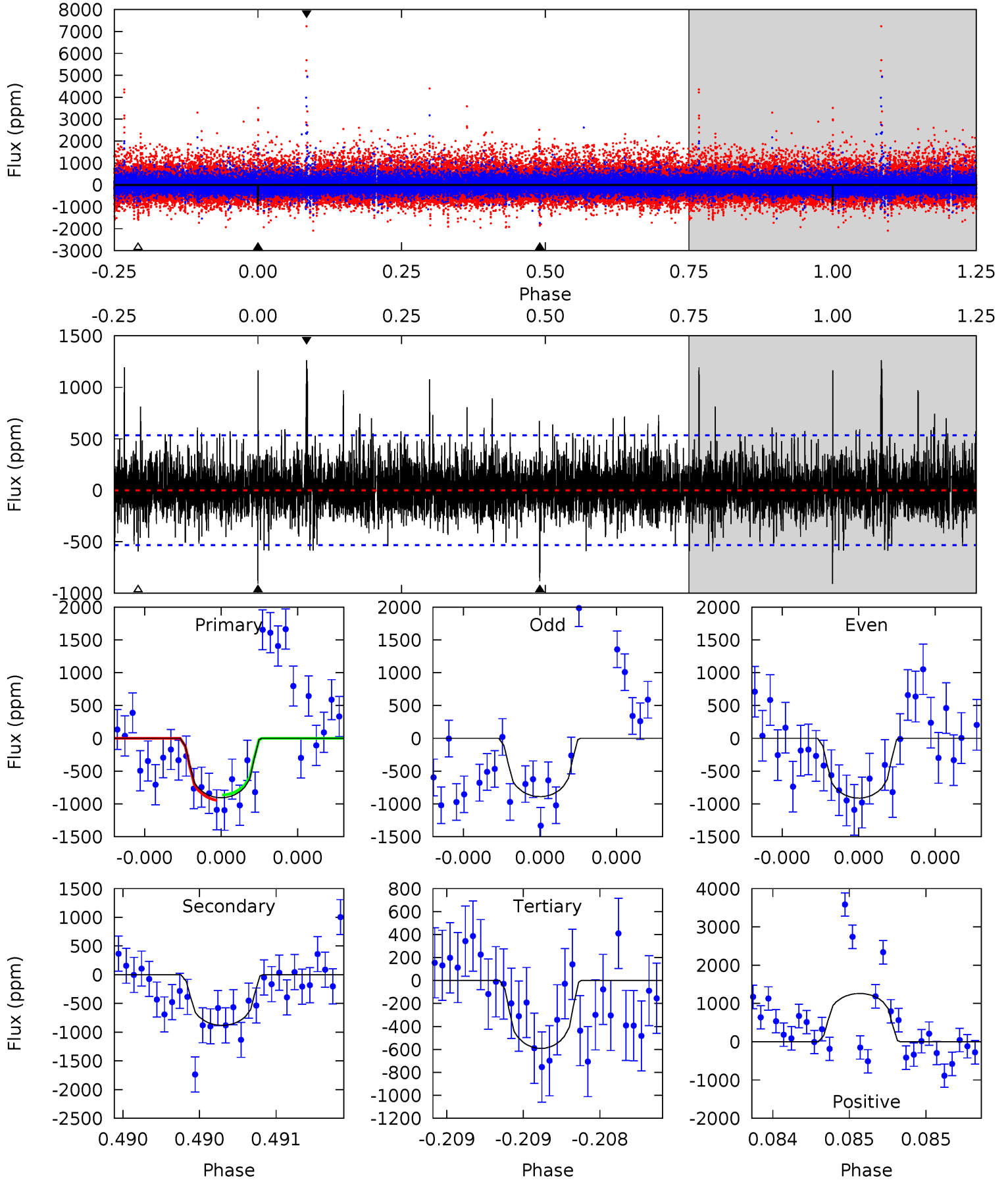
TCE 007765762-03 P=360.999079 Days  $T_0=368.095369$  (BKJD)



# DV Model-Shift Uniqueness Test

007765762-03, P = 360.989247 Days, E = 7.133173 Days

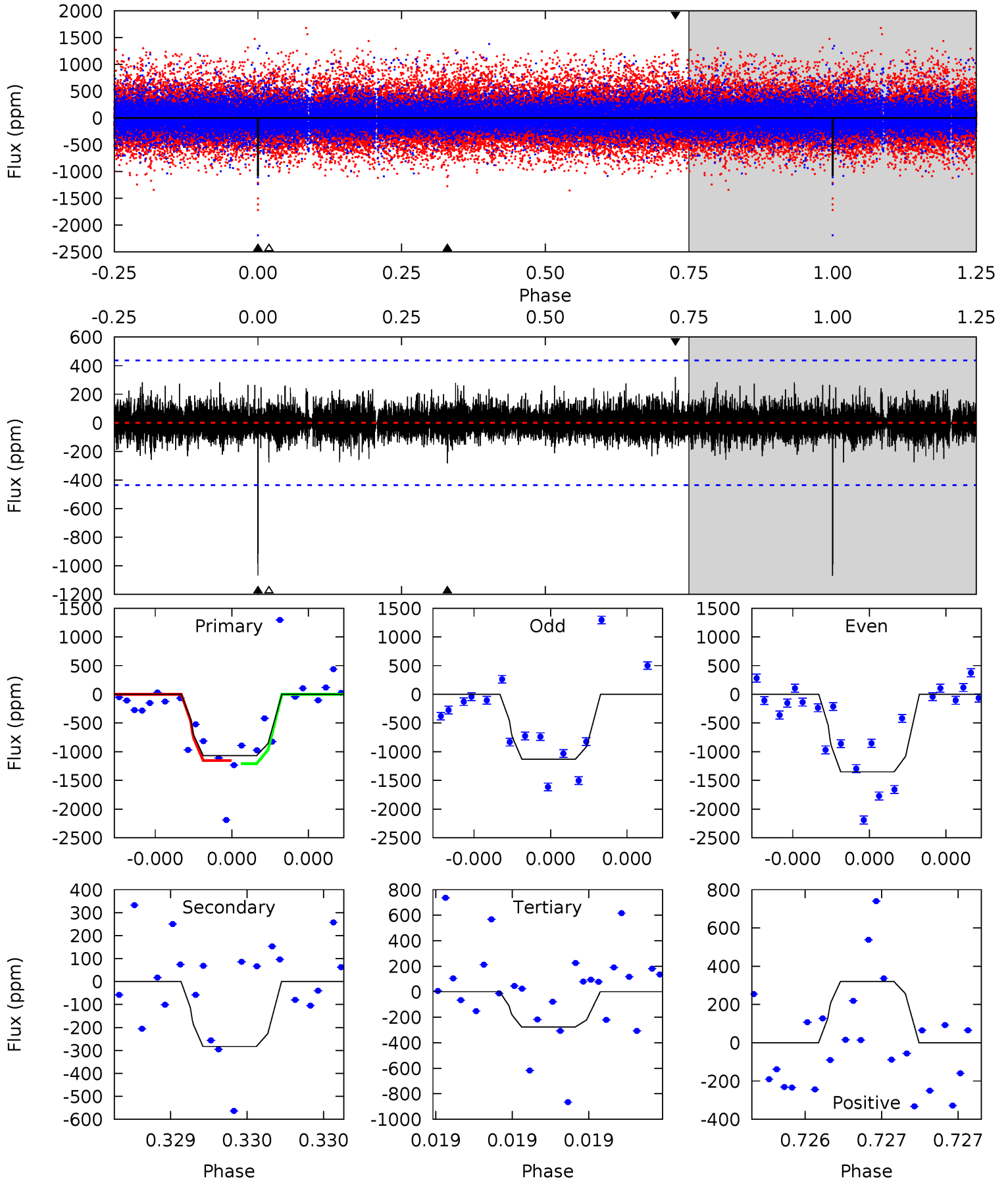
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.50	9.24	6.20	13.2	5.58	3.50	1.81	3.30	-3.72	3.04	-3.98	0.08	0.61	0.58	0.42



# Alt Model-Shift Uniqueness Test

007765762-03, P = 360.999079 Days, E = 7.096290 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
13.8	3.66	3.58	4.15	5.64	3.58	0.82	10.2	9.67	0.08	-0.49	1.38	1.19	0.23	0.35



### Stellar Parameters For KIC 007765762

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4130^{+124}_{-124}$	$4.651^{+0.056}_{-0.020}$	$-0.140^{+0.300}_{-0.300}$	$0.602^{+0.044}_{-0.060}$	$0.593^{+0.060}_{-0.054}$	$3.819^{+1.040}_{-0.374}$
	+3%/-3%	+1%/-0%	+214%/-214%	+7%/-10%	+10%/-9%	+27%/-10%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007765762-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-882 \pm 95$	$3.68^{+3.43}_{-2.60}$	$215^{+8}_{-8}$	$3340^{+1809}_{-585}$	$25103^{+272707}_{-18540}$
Alt.	$-283 \pm 77$	$4.10^{+3.82}_{-2.81}$	$214^{+8}_{-7}$	$2753^{+1074}_{-417}$	$6301^{+55564}_{-4554}$

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

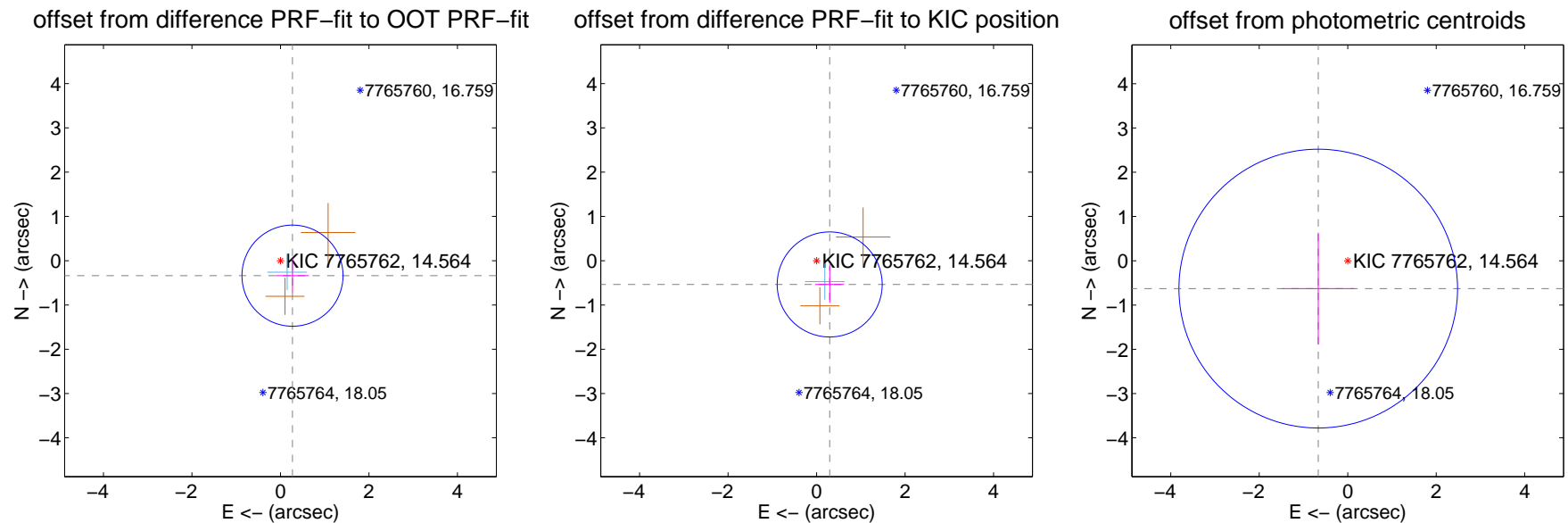
## DV Centroid Data

Supplemental centroid analysis for 007765762-03. Kepler magnitude: 14.56. Transit SNR 7.18

There are 1 quarters with good PRF difference image offsets

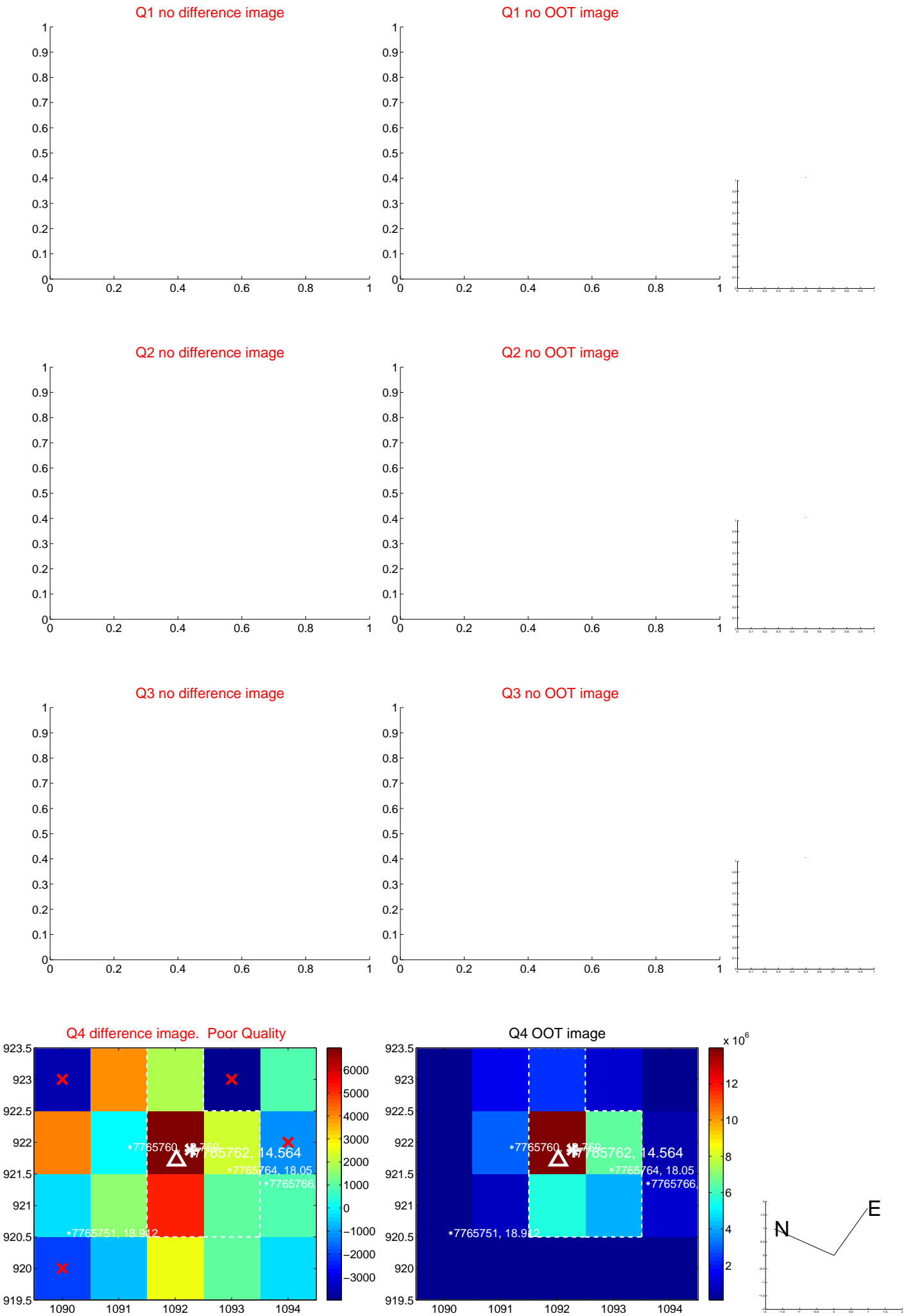
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.434 \pm 0.381$	1.14	$-0.272 \pm 0.374$	$-0.338 \pm 0.385$
PRF-fit source offset from KIC position	$0.613 \pm 0.396$	1.55	$-0.296 \pm 0.327$	$-0.537 \pm 0.414$
photometric centroid source offset	$0.92 \pm 1.05$	0.87	$0.67 \pm 0.82$	$-0.63 \pm 1.26$



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.

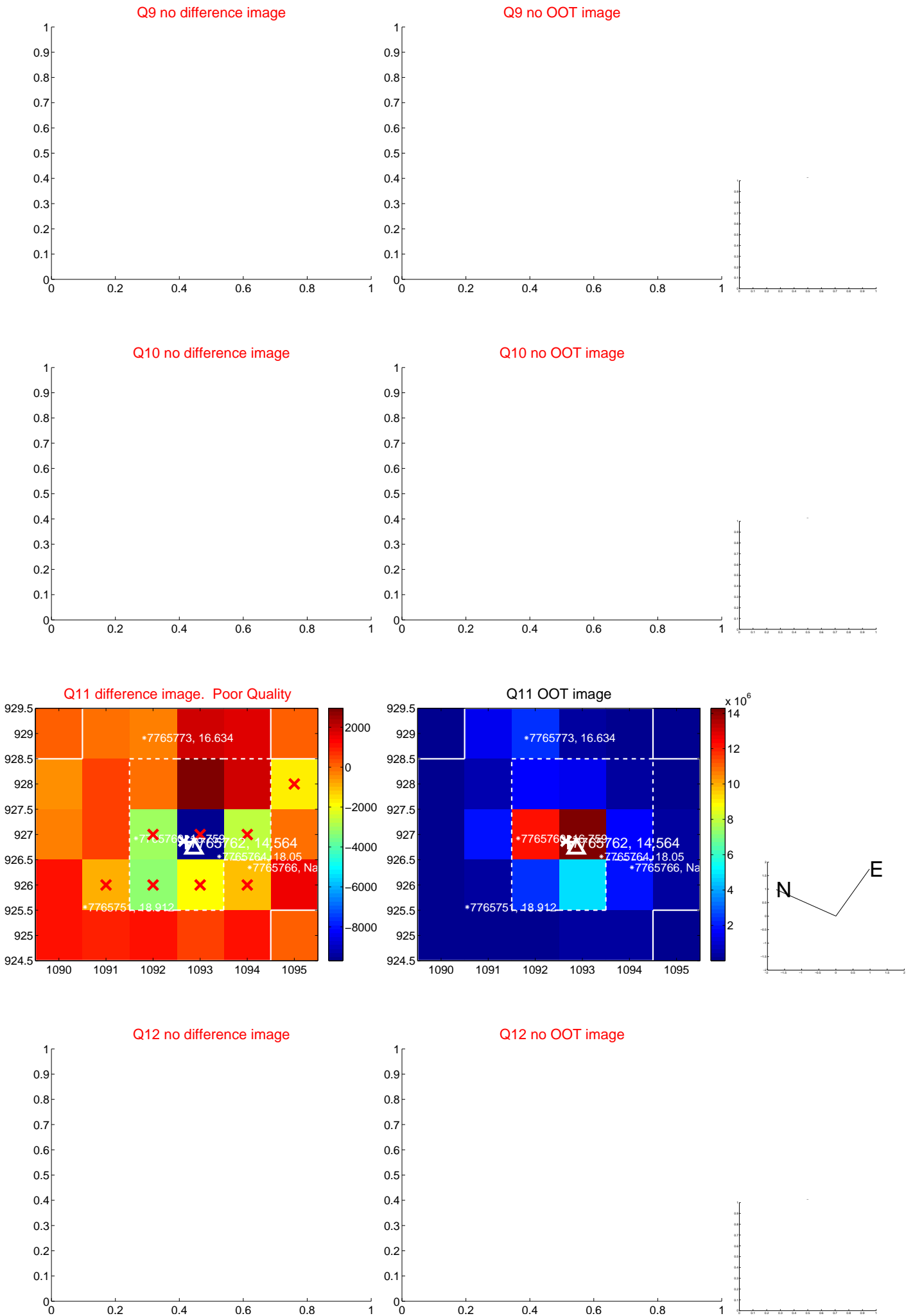


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

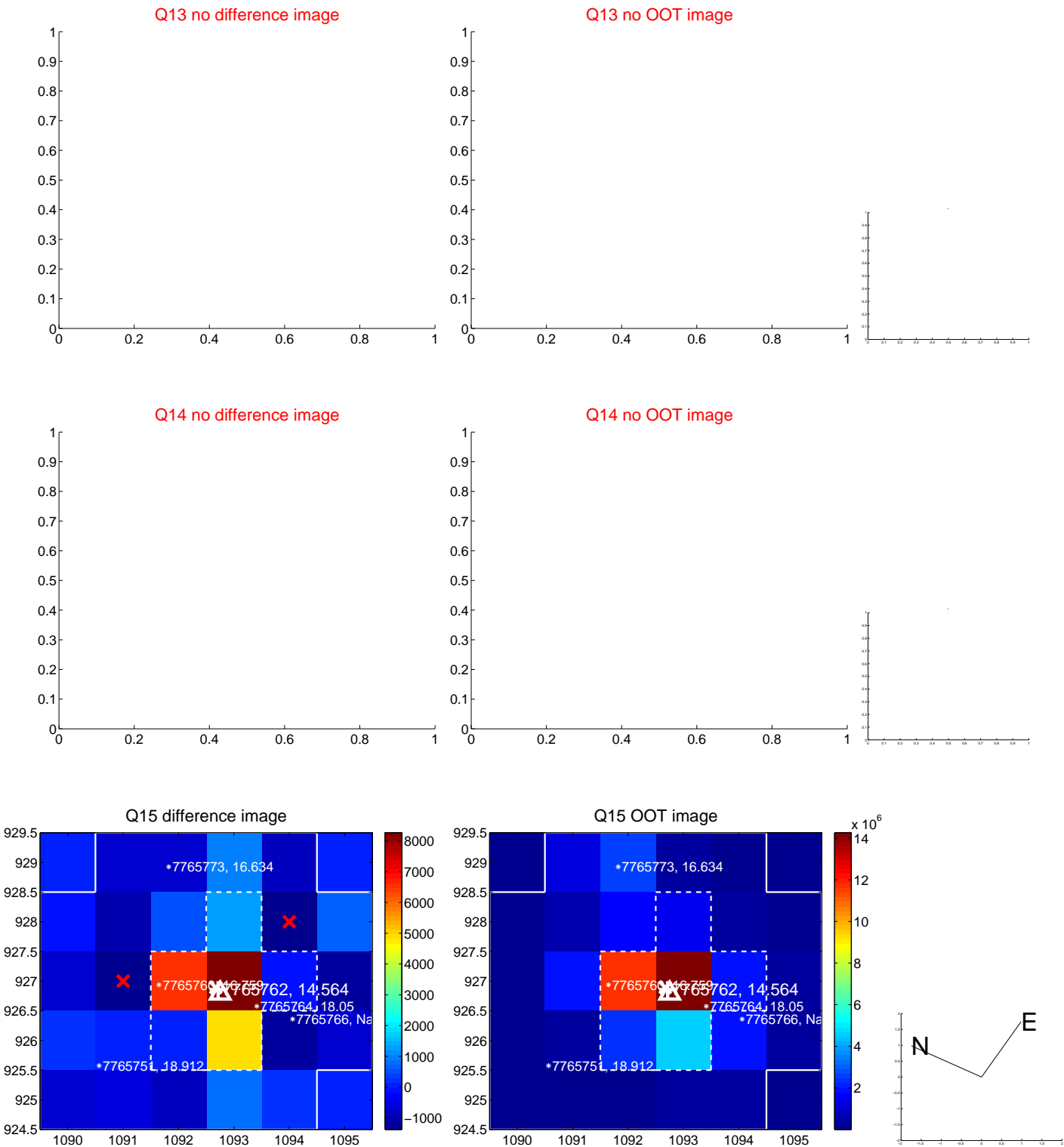




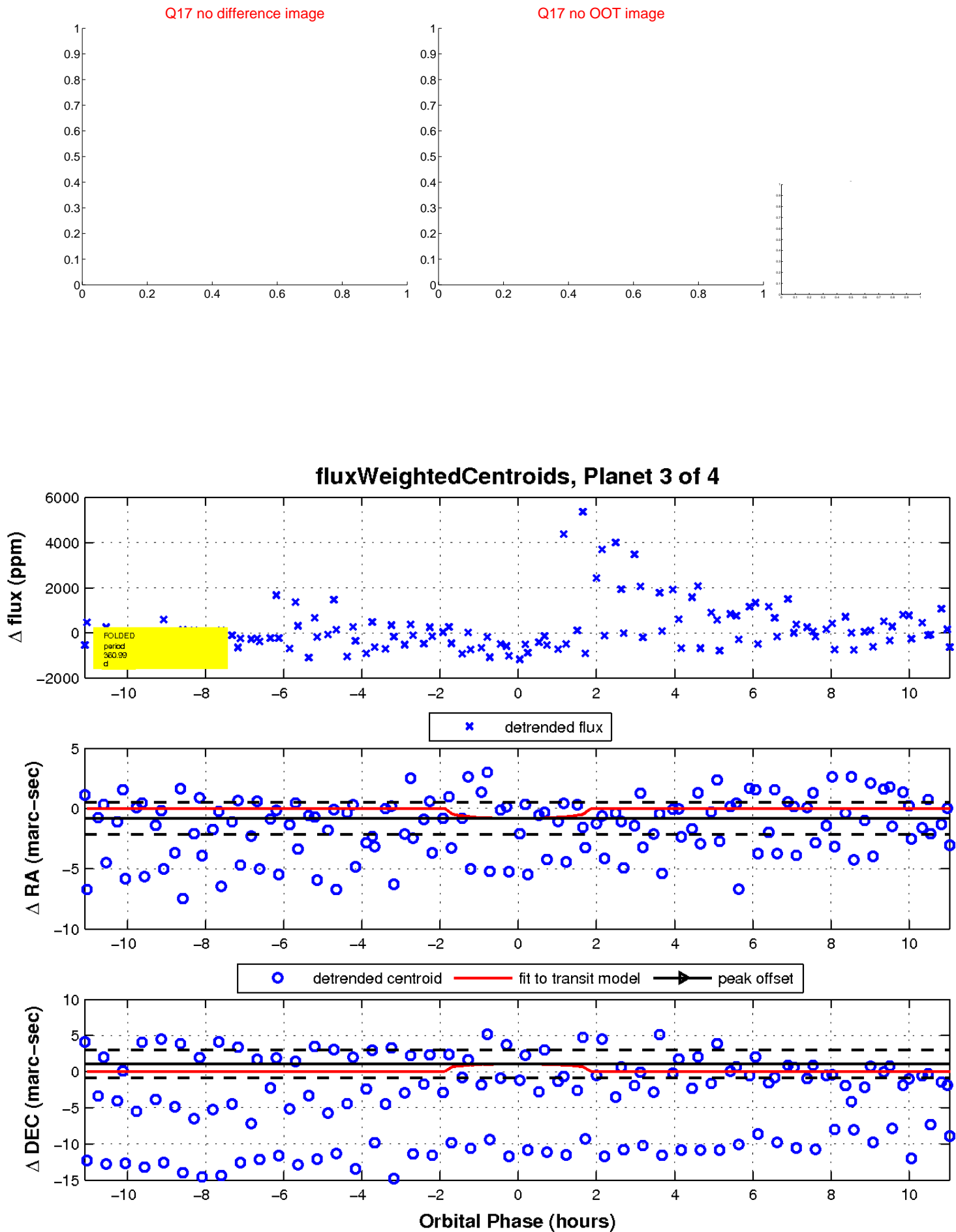
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

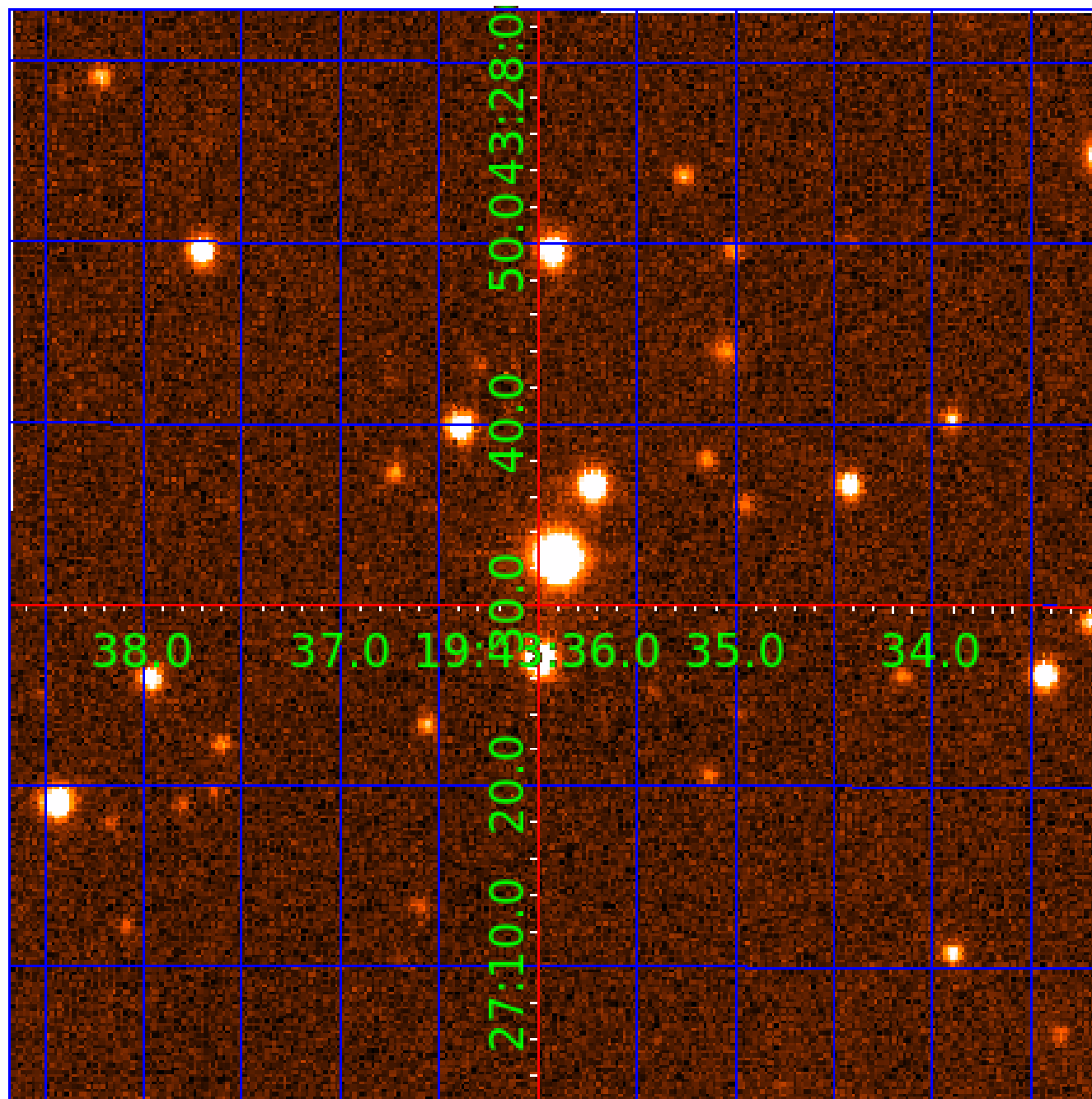


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007765762

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007765762-01	OBS	No	463.388793	218.848910	1129.2	6.218	12.8	6.6	0.60	4130	2.19	0.10
007765762-02	OBS	No	455.509672	586.800892	1146.3	4.888	13.4	6.9	0.60	4130	2.19	0.10
007765762-03	OBS	No	360.989247	368.122420	1212.0	3.697	10.7	7.2	0.60	4130	2.03	0.14
007765762-04	OBS	No	529.276097	318.564871	1403.8	13.525	11.3	7.1	0.60	4130	2.28	0.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007765762-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007765762-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765762-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765762-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS

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

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

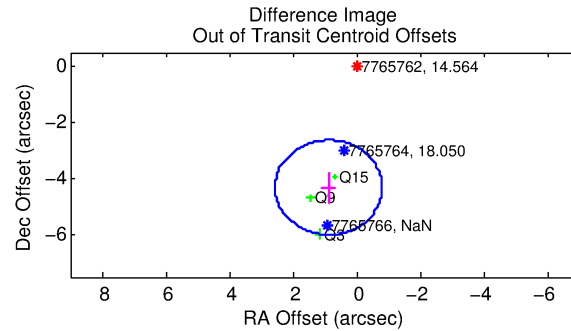
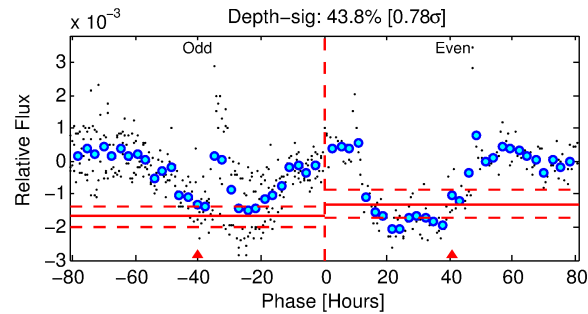
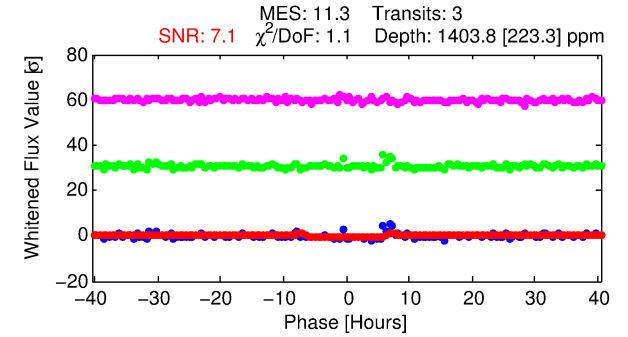
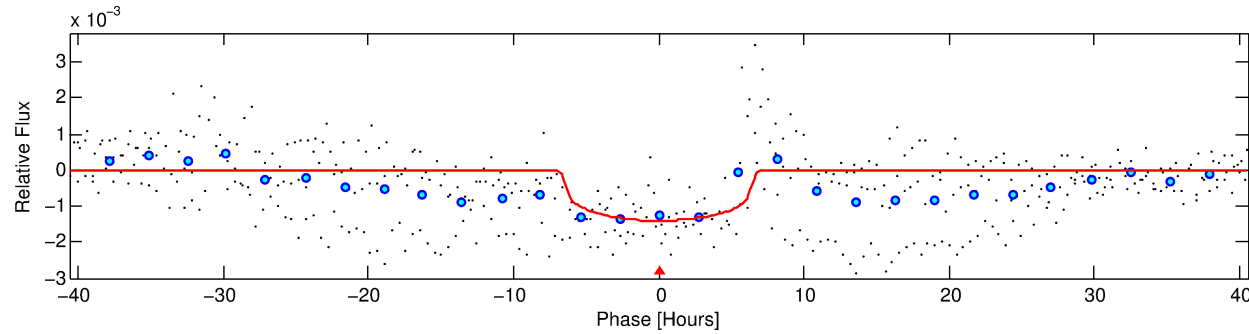
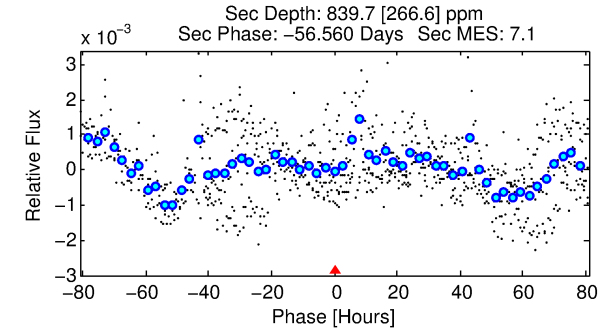
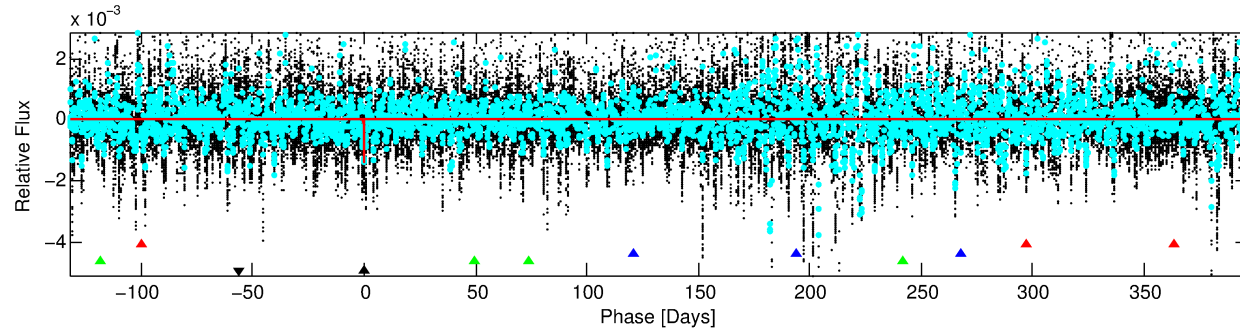
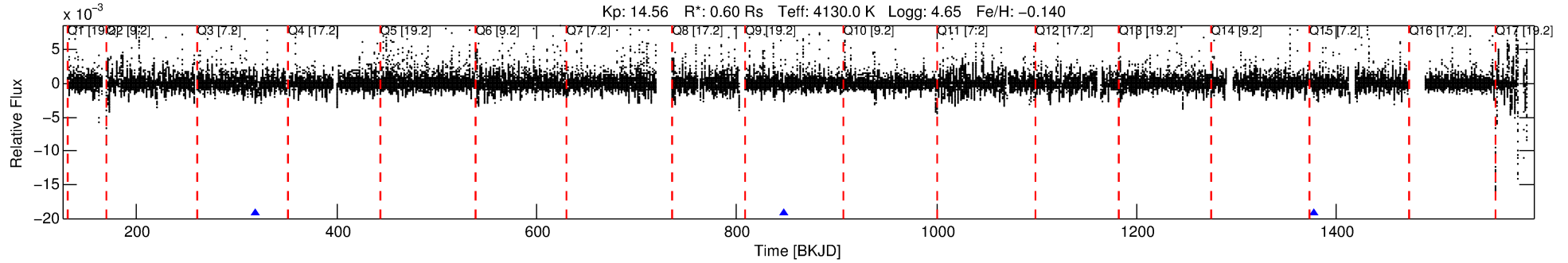
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007765762-04

No Significant Match Found

# DV One-Page Summary

KIC: 7765762 Candidate: 4 of 4 Period: 529.276 d



## DV Fit Results:

Period = 529.27610 [0.00791] d  
Epoch = 318.5649 [0.0102] BKJD  
Rp/R\* = 0.0346 [0.0082]  
a/R\* = 272.22 [203.51]  
b = 0.49 [1.17]  
Seff = 0.08 [0.01]  
Teq = 136 [6] K  
Rp = 2.28 [0.59] Re  
a = 1.0753 [0.0851] AU  
Ag = 103127.62 [59889.14] [1.72 $\sigma$ ]  
Teffp = 3777 [550] K [6.61 $\sigma$ ]

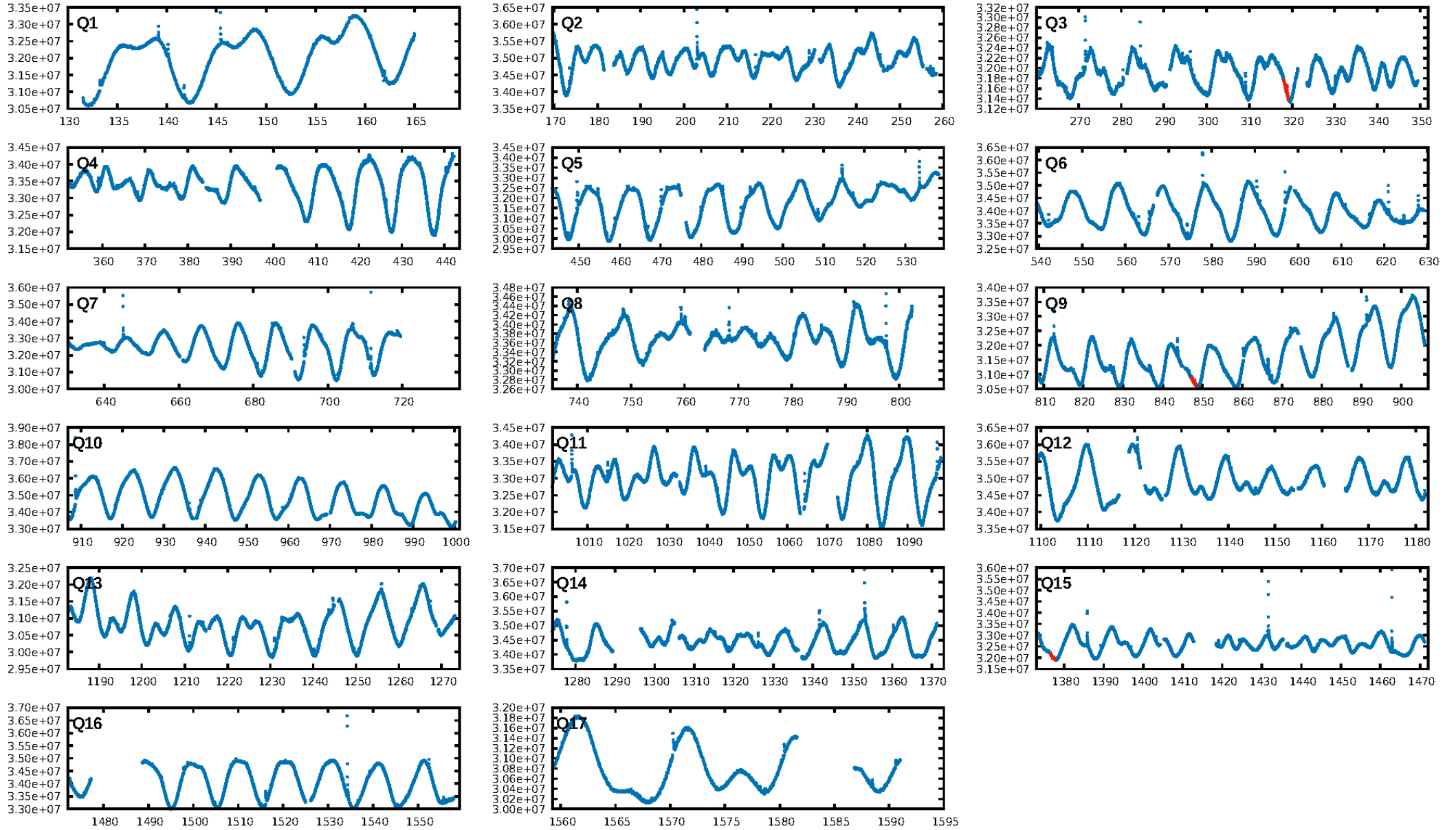
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [106.23 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 36.6%  
ModelChiSquareGof-sig: 99.5%  
**Bootstrap-pfa: 2.67e-08**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 7.704  
Centroid-sig: 67.8%  
Centroid-so: 0.178 arcsec [0.23 $\sigma$ ]  
**OotOffset-rm: 4.399 arcsec [7.84 $\sigma$ ]**  
**KicOffset-rm: 4.578 arcsec [7.94 $\sigma$ ]**  
OotOffset-st: 0/2/0/1 [3]  
KicOffset-st: 0/2/0/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

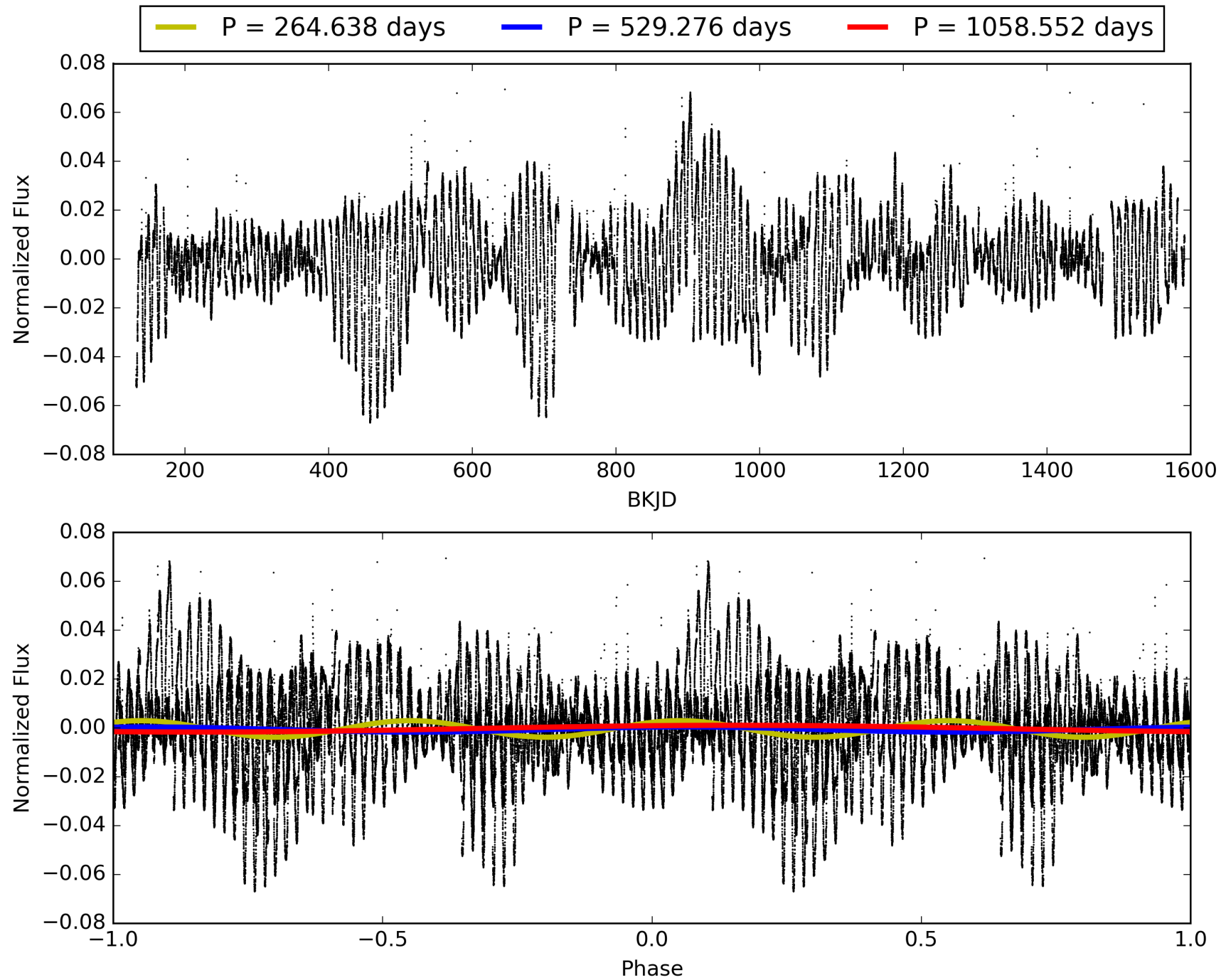
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:54:35 Z

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

# TCE 007765762-04, PDC Light Curves



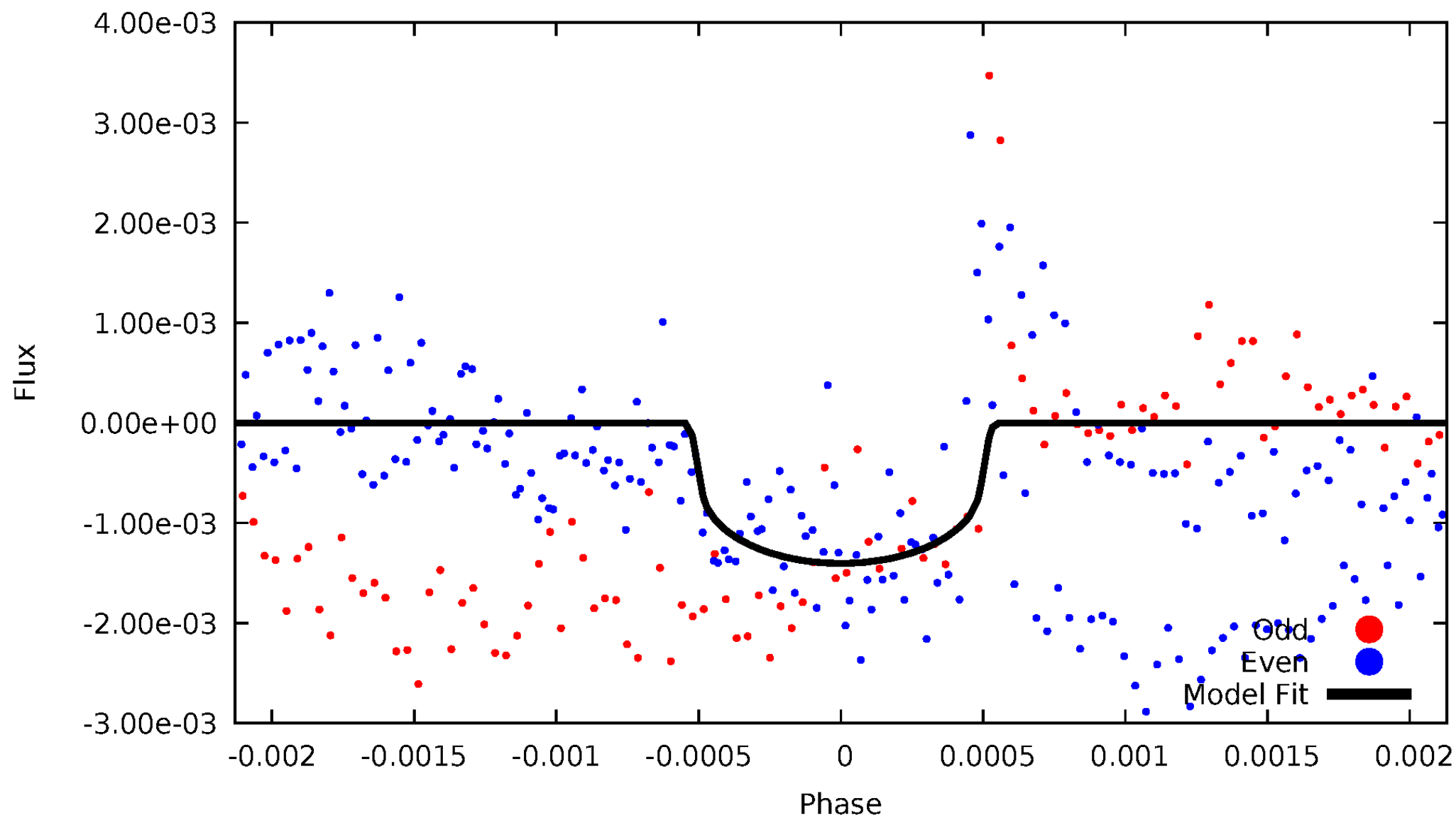
TCE 007765762-04





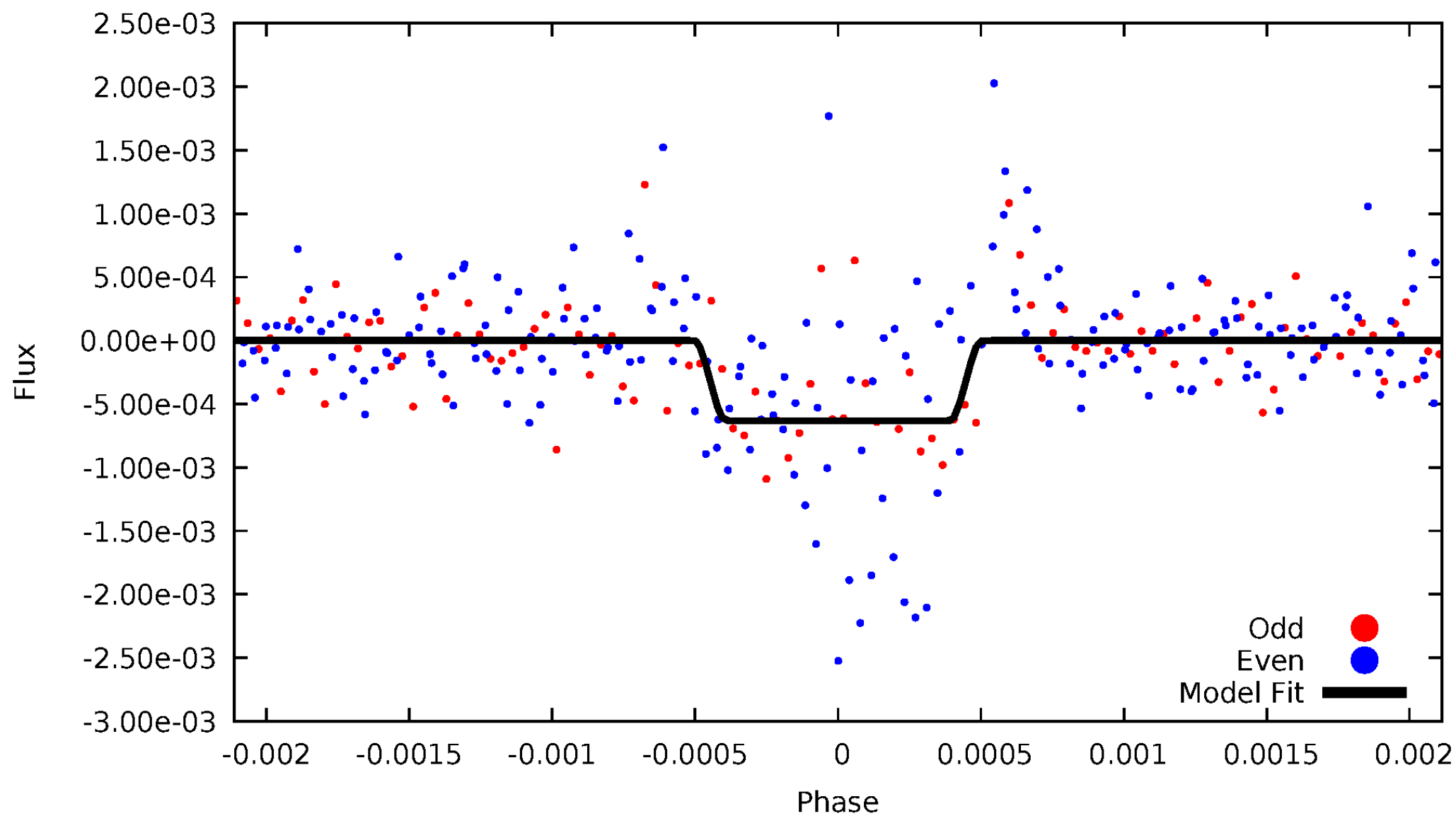
# DV Odd/Even

TCE 007765762-04



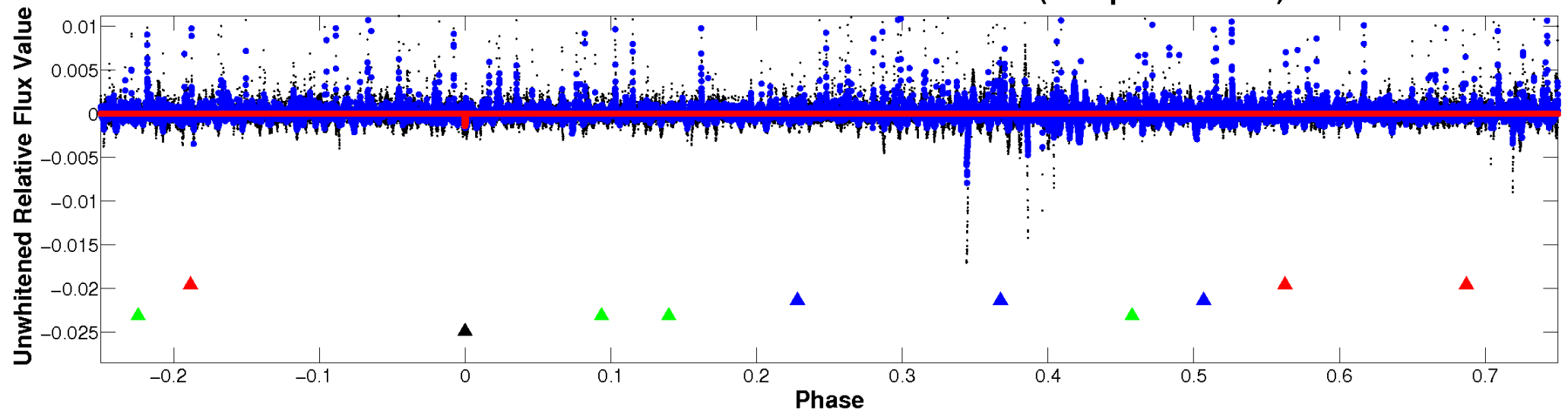
# ALT Odd/Even

TCE 007765762-04

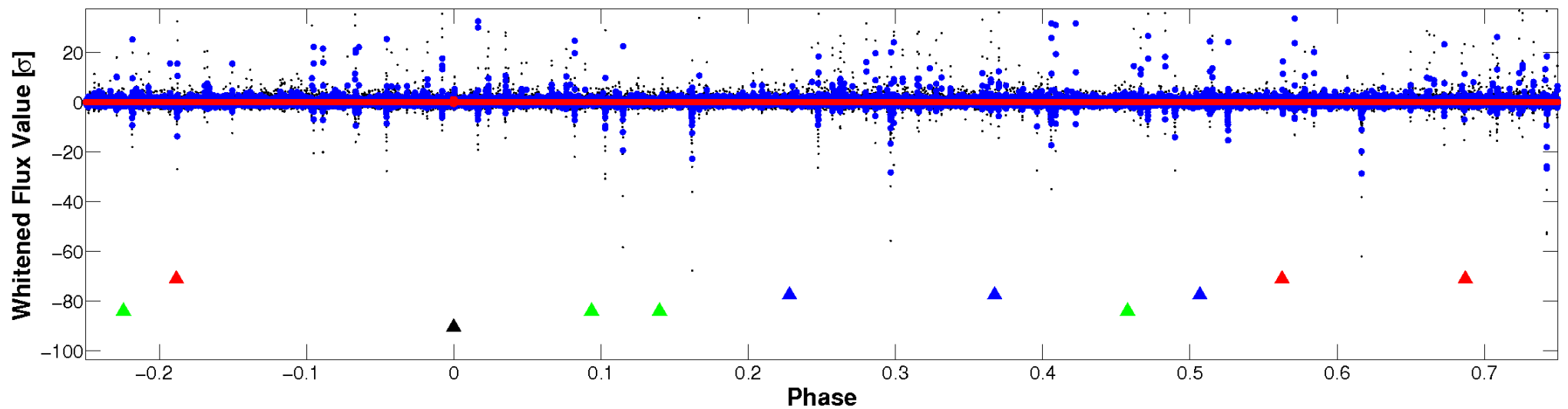


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

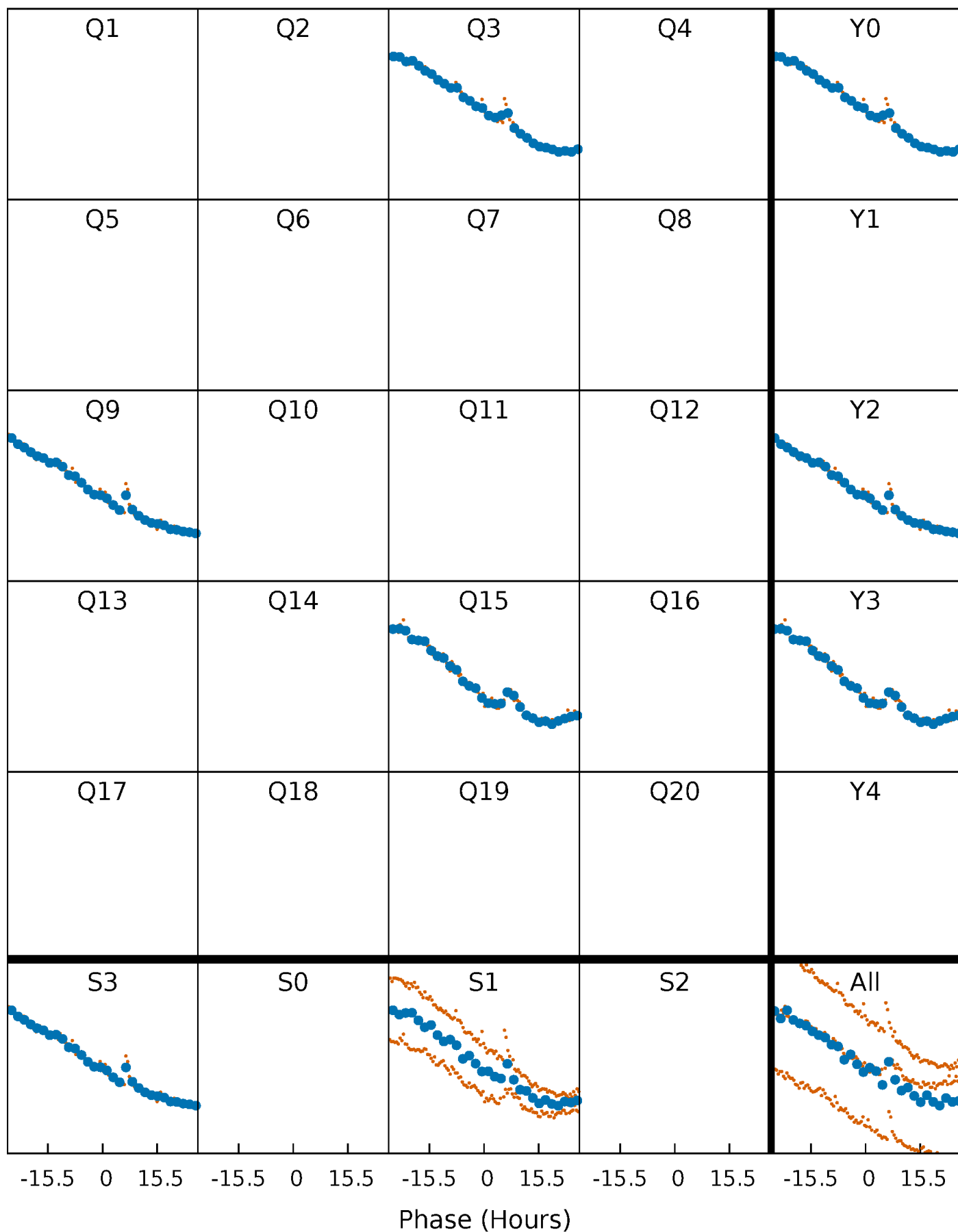


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



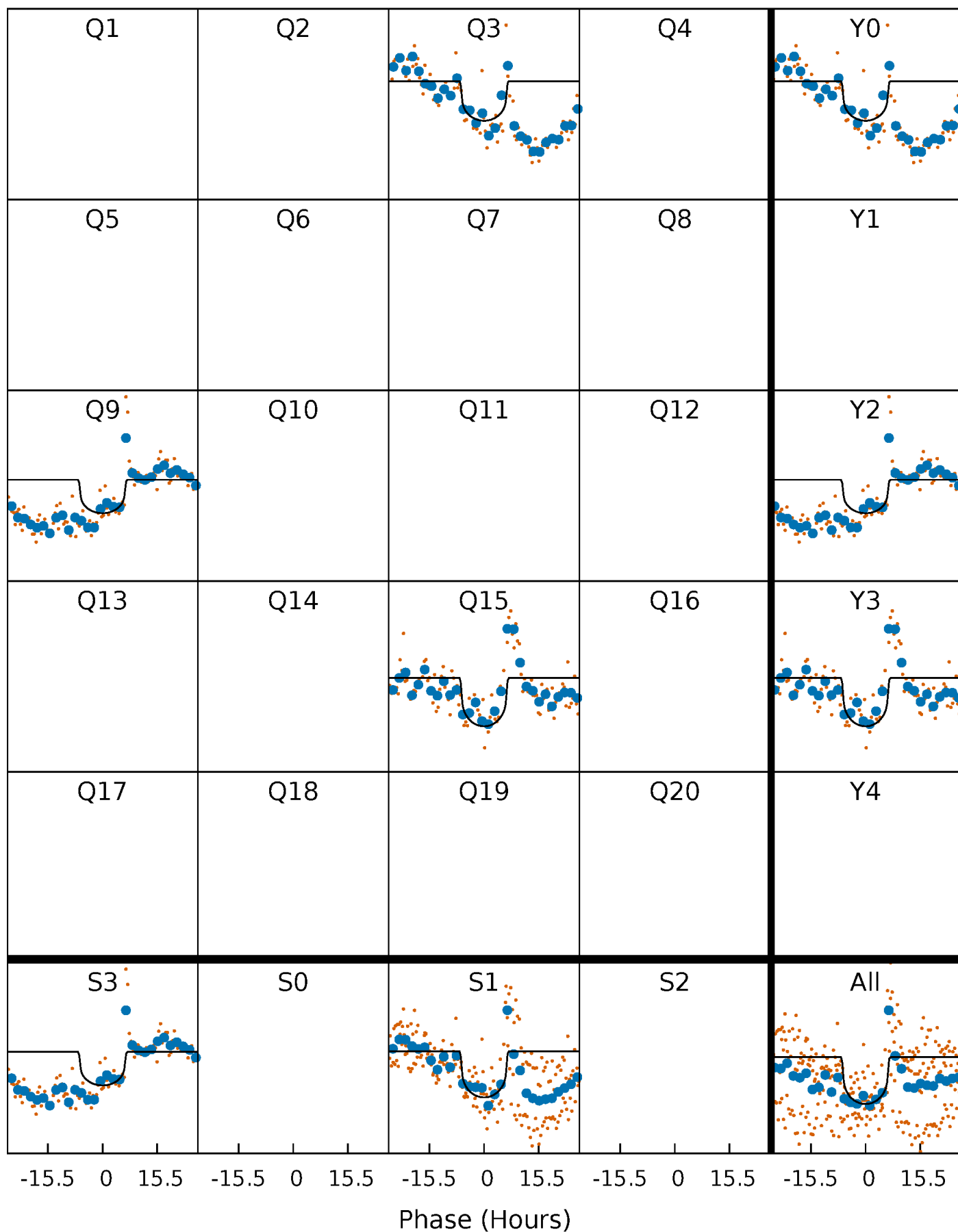
# PDC Quarter-Phased Transit Curves

TCE 007765762-04 P=529.276097 Days  $T_0=318.564871$  (BKJD)



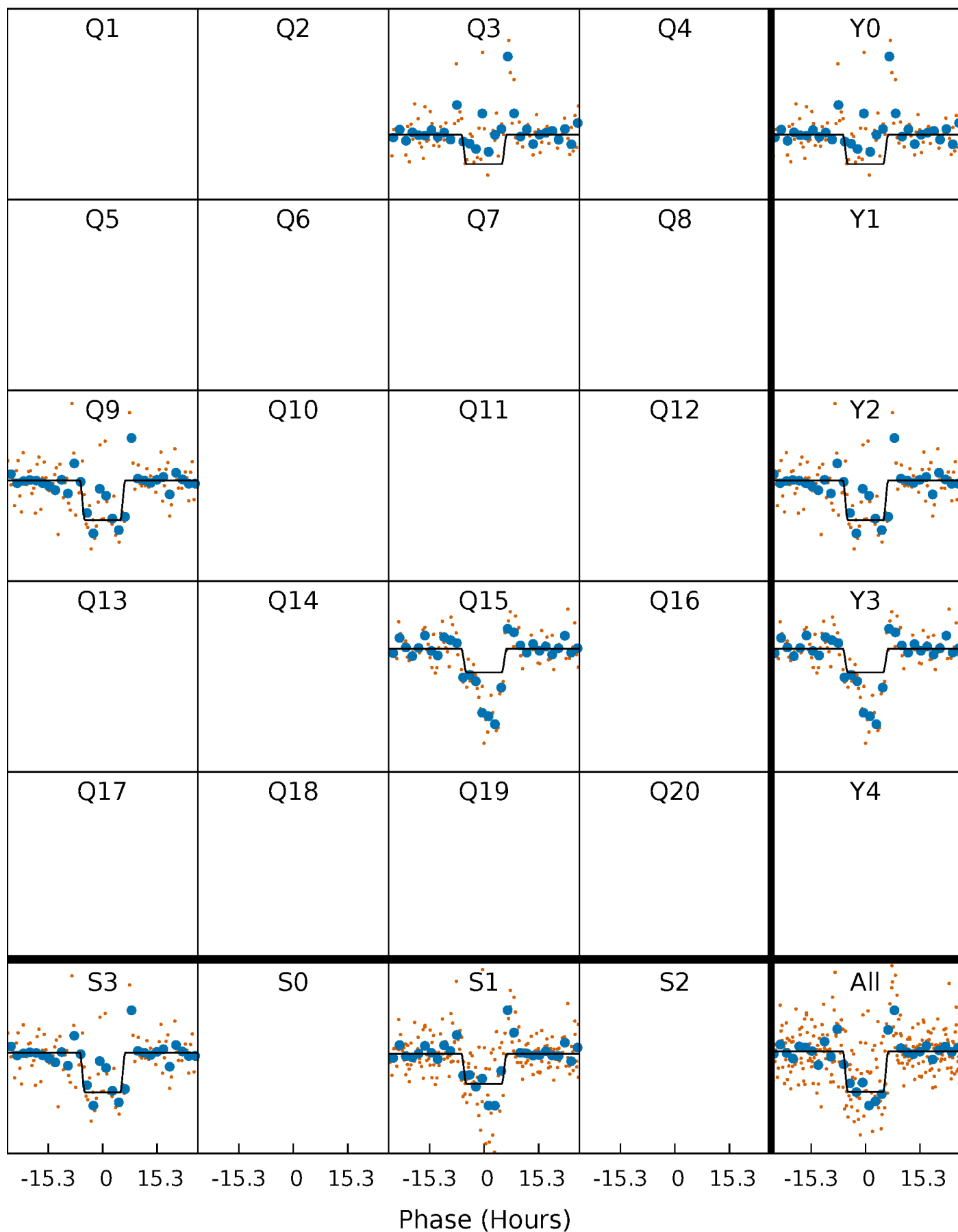
# DV Quarter-Phased Transit Curves

TCE 007765762-04 P=529.276097 Days  $T_0=318.564871$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

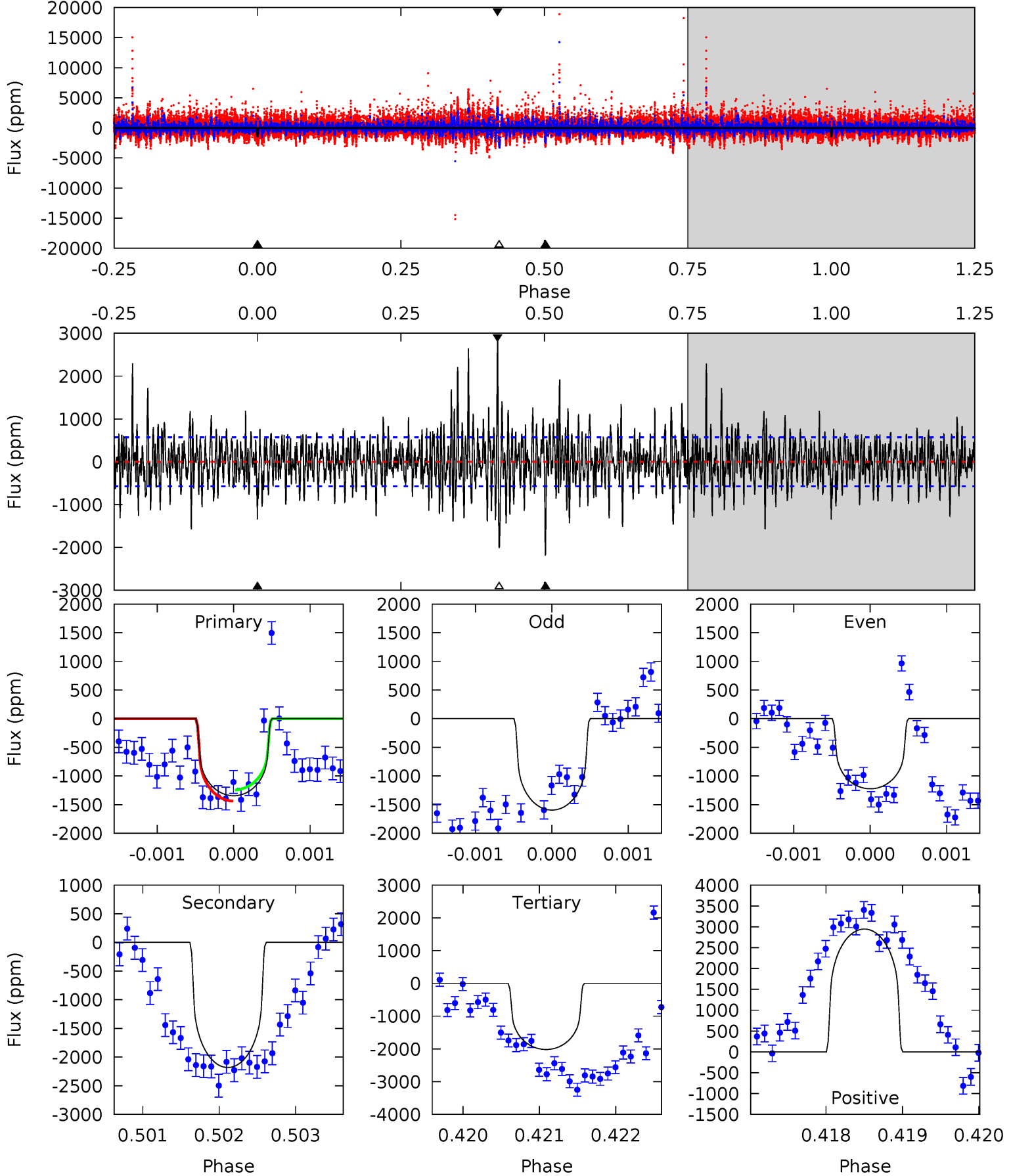
TCE 007765762-04 P=529.283694 Days  $T_0=318.557719$  (BKJD)



# DV Model-Shift Uniqueness Test

007765762-04, P = 529.276097 Days, E = 318.564871 Days

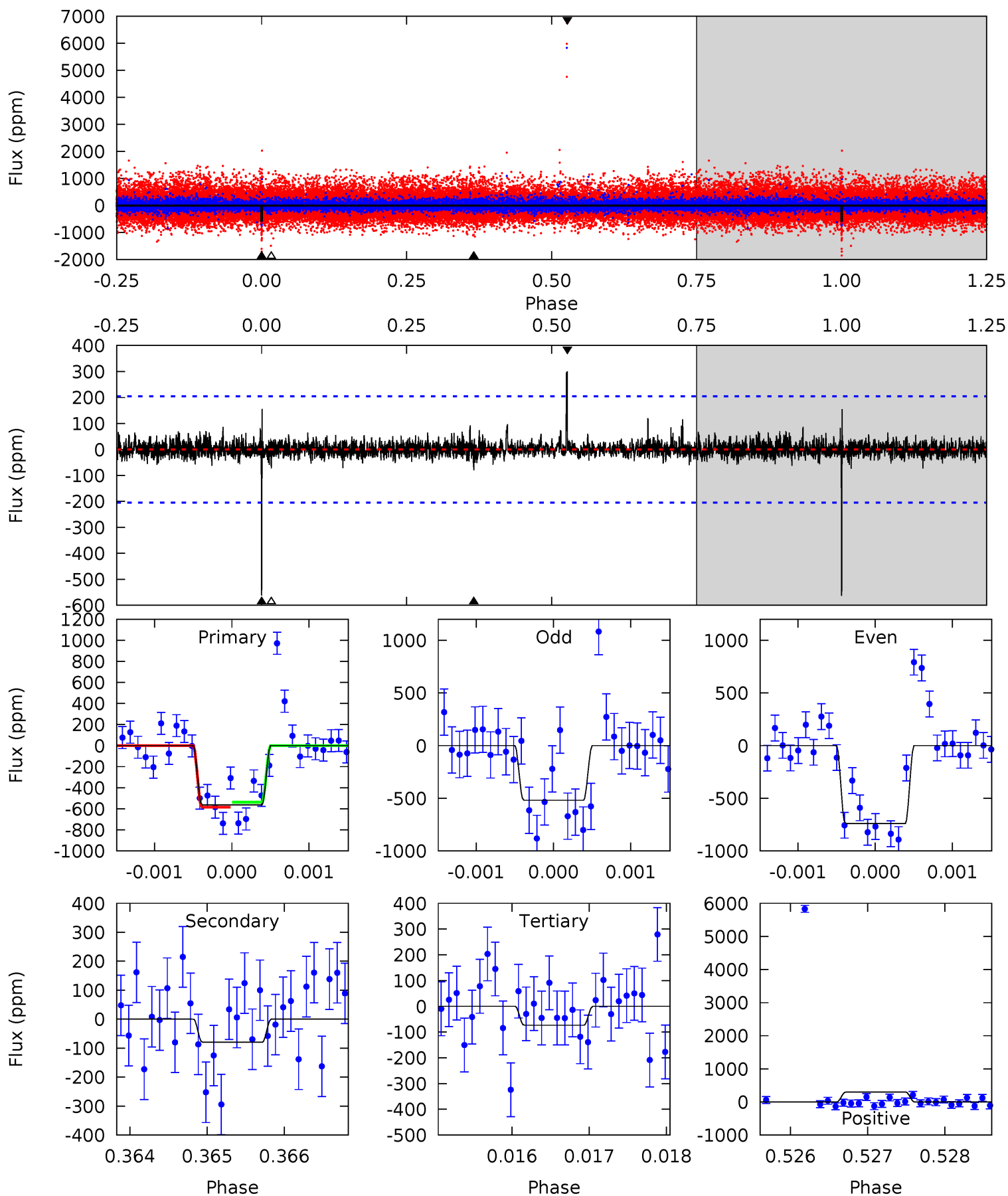
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	20.8	19.2	28.0	5.43	3.26	4.73	-6.41	-15.2	1.56	-7.27	1.17	0.96	0.57	0.93



# Alt Model-Shift Uniqueness Test

007765762-04, P = 529.283694 Days, E = 318.557719 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
15.0	2.12	1.95	8.00	5.45	3.29	0.55	13.1	7.01	0.17	-5.87	2.80	1.28	0.35	0.63





### Stellar Parameters For KIC 007765762

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4130^{+124}_{-124}$	$4.651^{+0.056}_{-0.020}$	$-0.140^{+0.300}_{-0.300}$	$0.602^{+0.044}_{-0.060}$	$0.593^{+0.060}_{-0.054}$	$3.819^{+1.040}_{-0.374}$
	+3%/-3%	+1%/-0%	+214%/-214%	+7%/-10%	+10%/-9%	+27%/-10%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007765762-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2182 \pm 105$	$2.24^{+0.61}_{-0.54}$	$189^{+6}_{-7}$	$4627^{+598}_{-424}$	$281821^{+219037}_{-106266}$
Alt.	$-80 \pm 38$	$1.64^{+0.53}_{-0.53}$	$189^{+6}_{-6}$	$2964^{+386}_{-330}$	$18190^{+23567}_{-10057}$

$T_{\text{max}}$  = 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

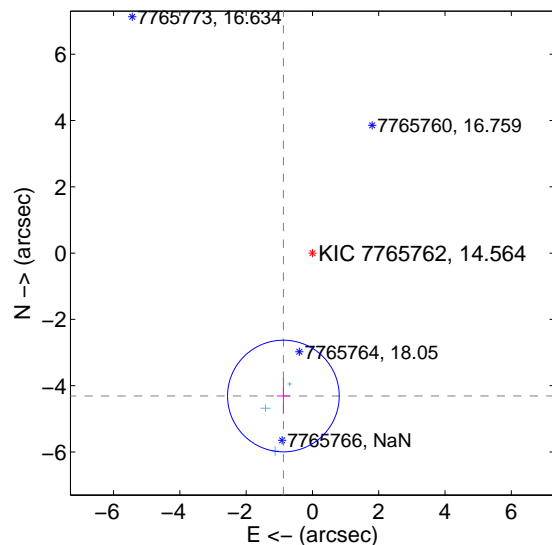
Supplemental centroid analysis for 007765762-04. Kepler magnitude: 14.56. Transit SNR 7.06

There are 3 quarters with good PRF difference image offsets

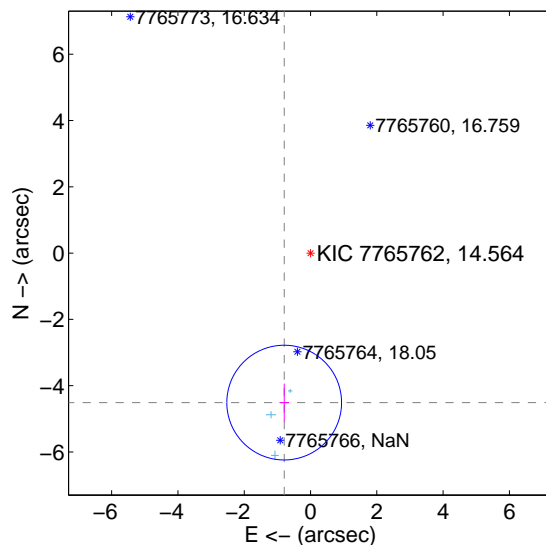
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.399 \pm 0.561$	7.84	$0.876 \pm 0.201$	$-4.311 \pm 0.538$
PRF-fit source offset from KIC position	$4.578 \pm 0.577$	7.94	$0.794 \pm 0.145$	$-4.509 \pm 0.571$
photometric centroid source offset	$0.18 \pm 0.78$	0.23	$0.12 \pm 0.60$	$-0.13 \pm 0.90$

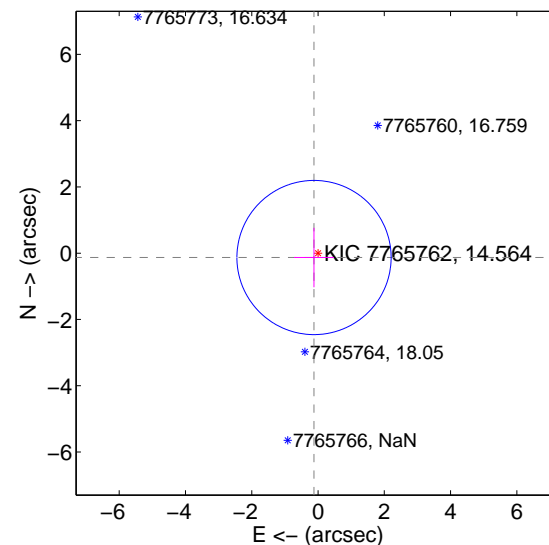
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

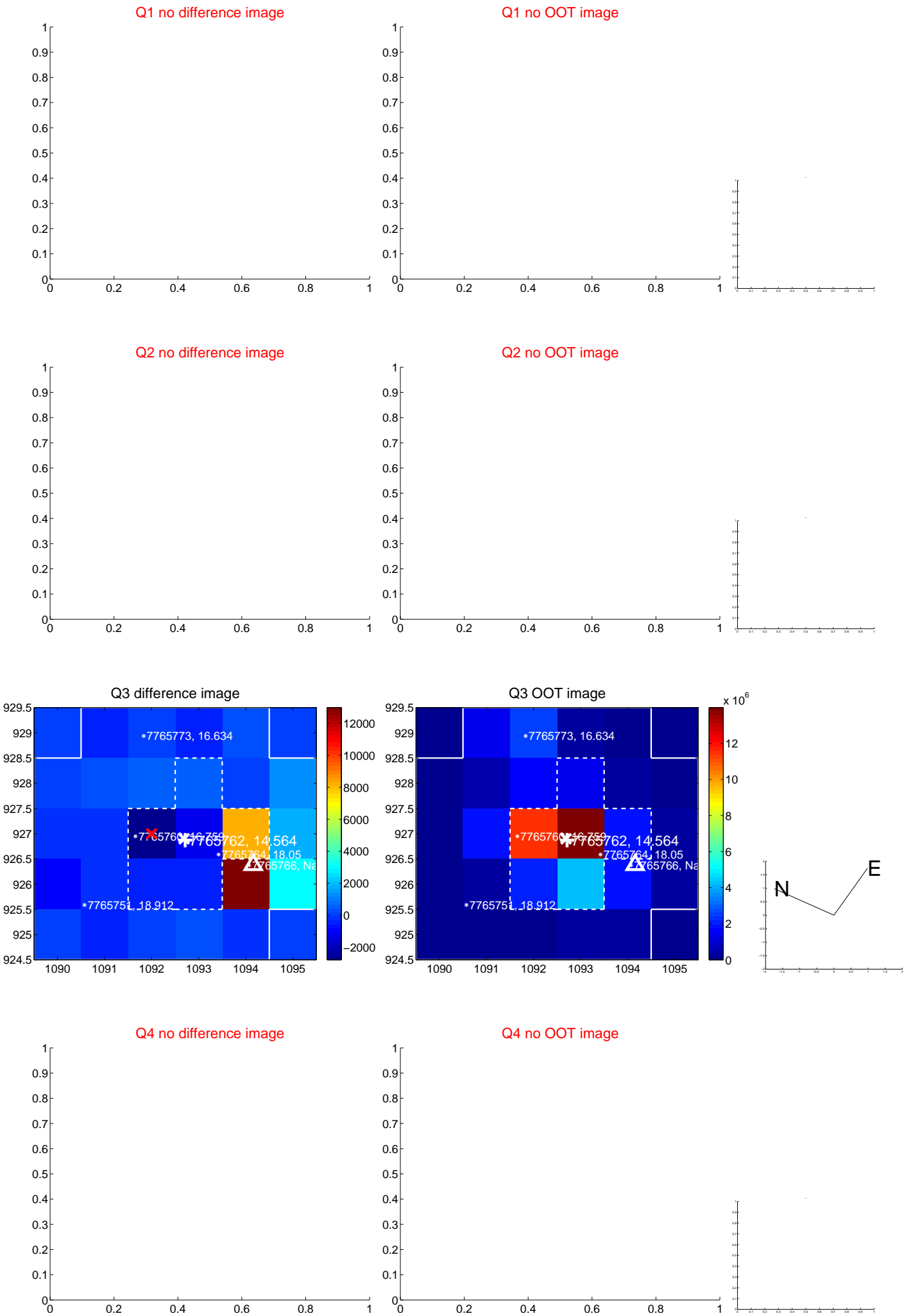


offset from photometric centroids



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.

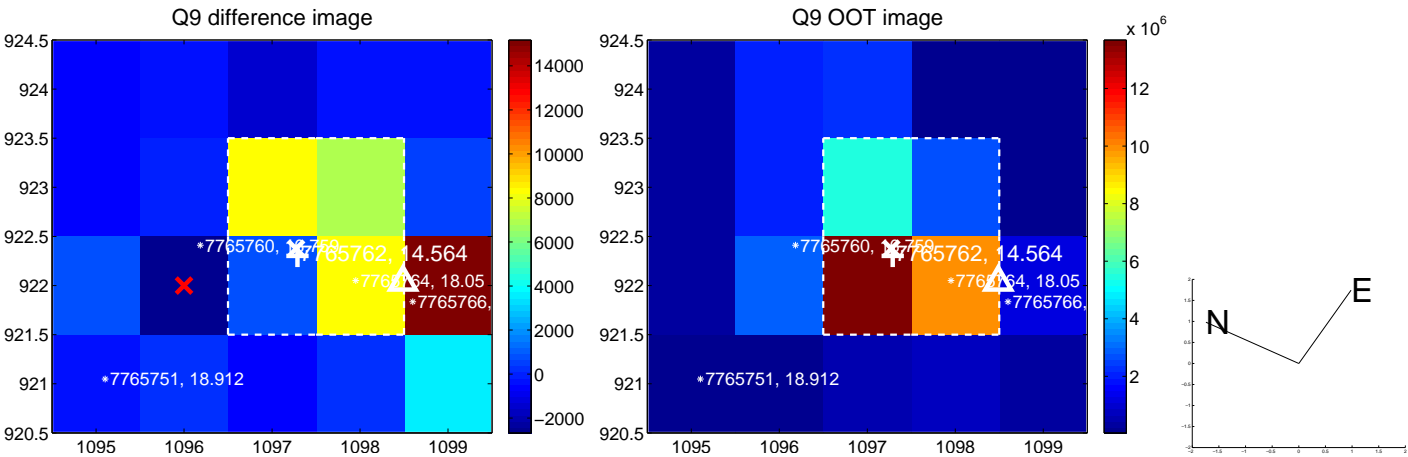
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



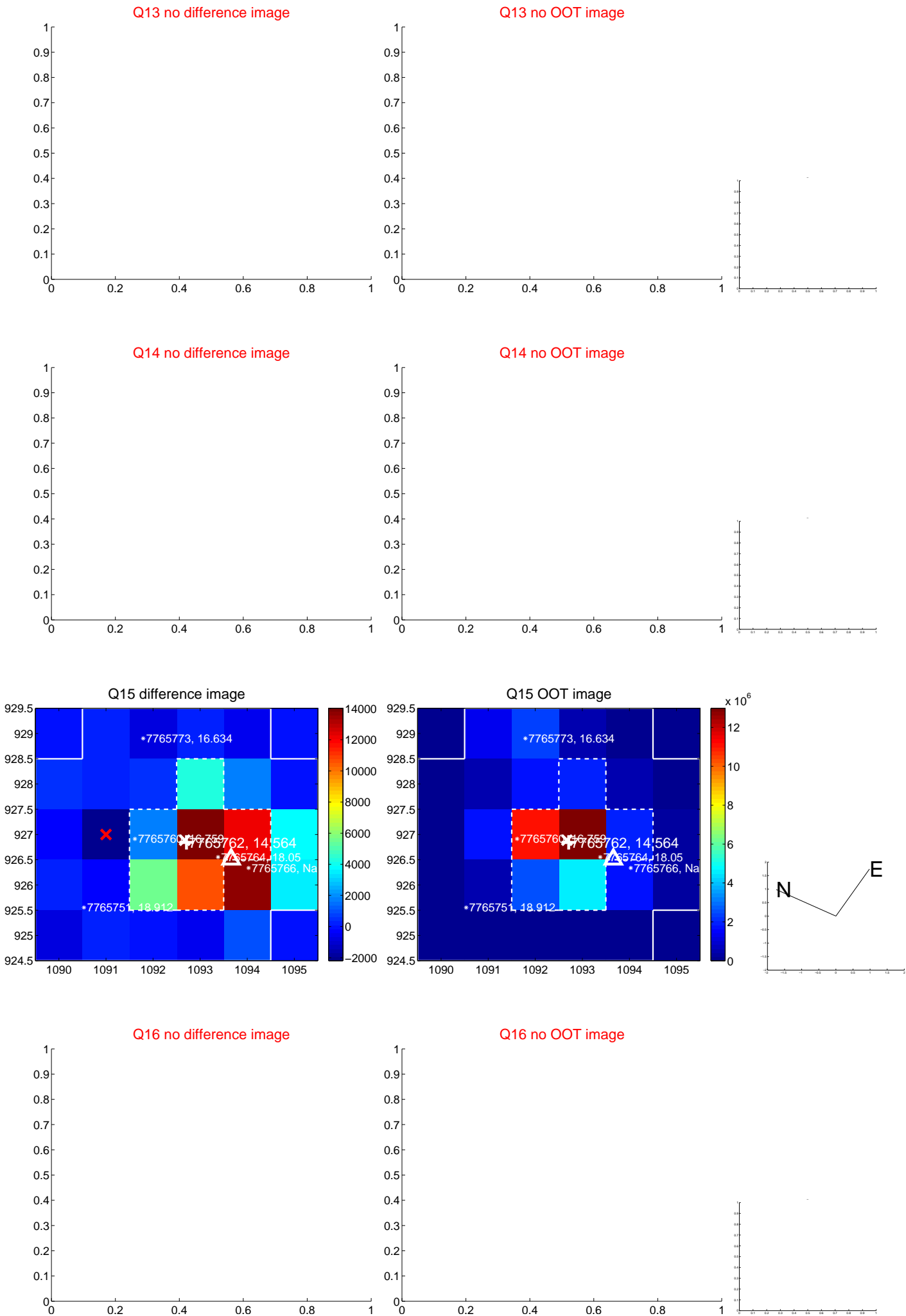
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



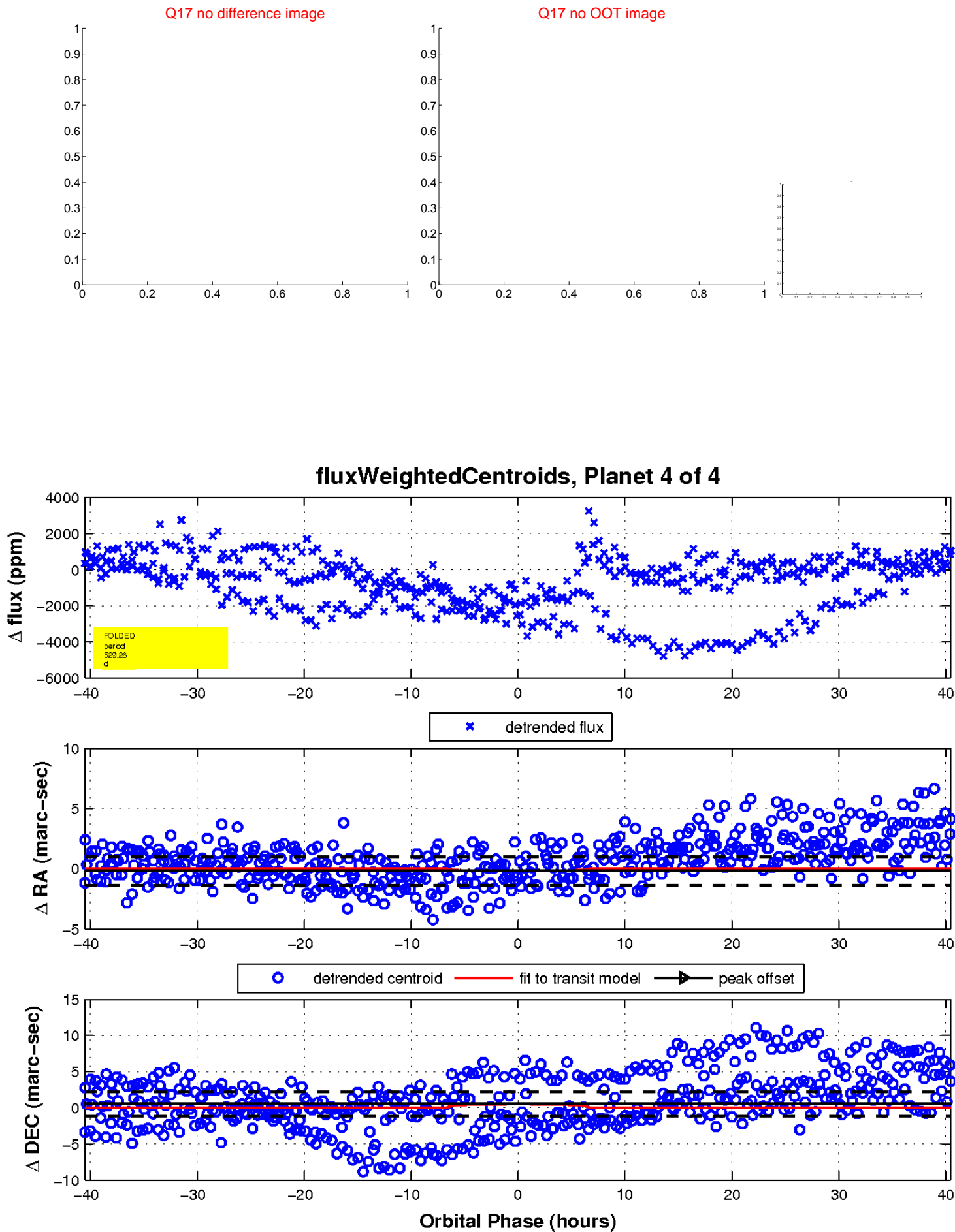
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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

