

# KIC 007765677

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007765677-01	OBS	No	424.104144	548.997311	1366.7	17.216	7.8	8.4	0.52	4266	2.43	0.10
007765677-02	OBS	No	362.303186	369.208209	1111.8	8.263	8.4	7.9	0.52	4266	1.76	0.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007765677-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765677-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

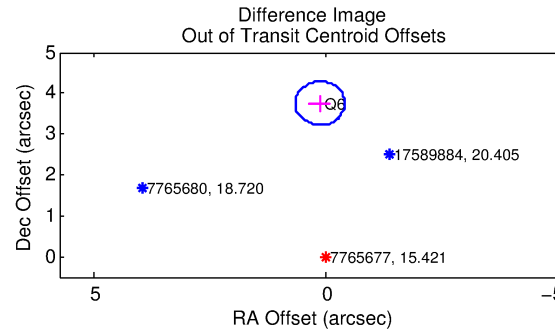
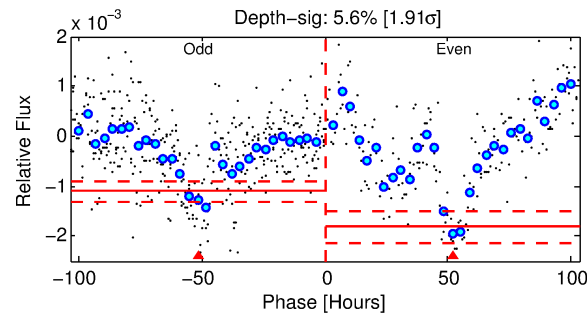
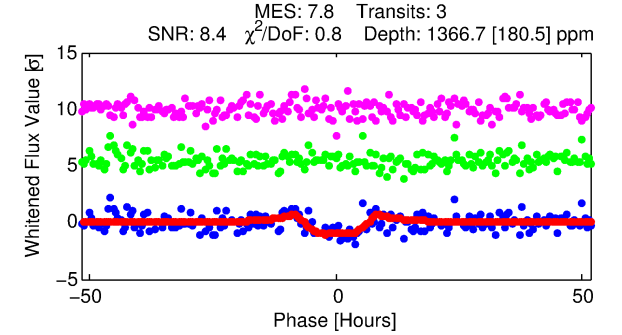
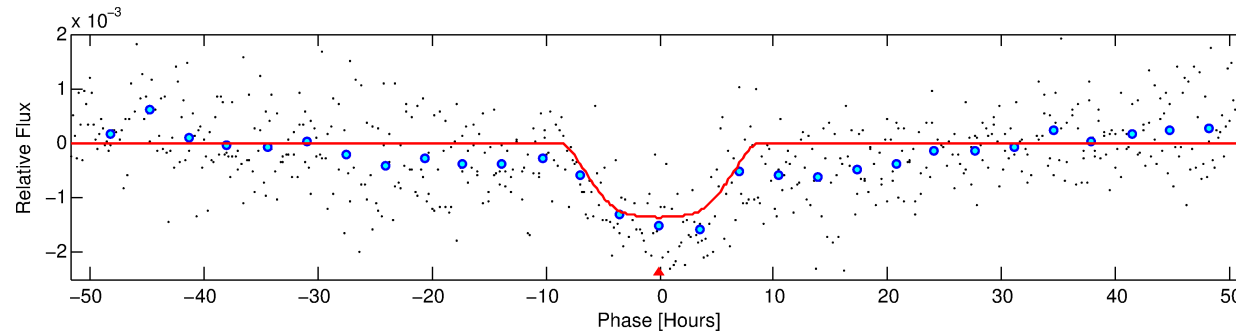
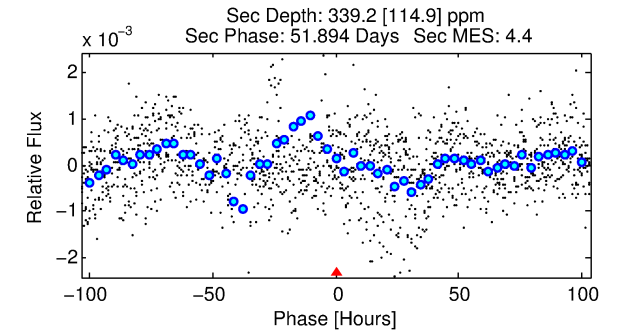
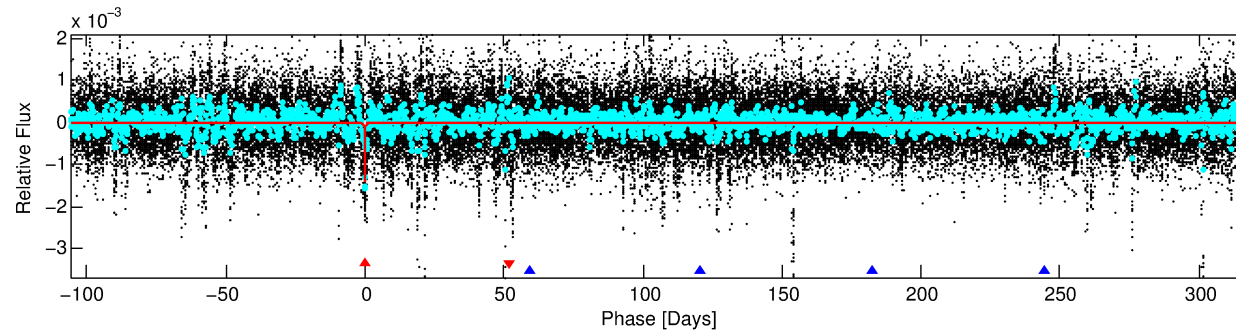
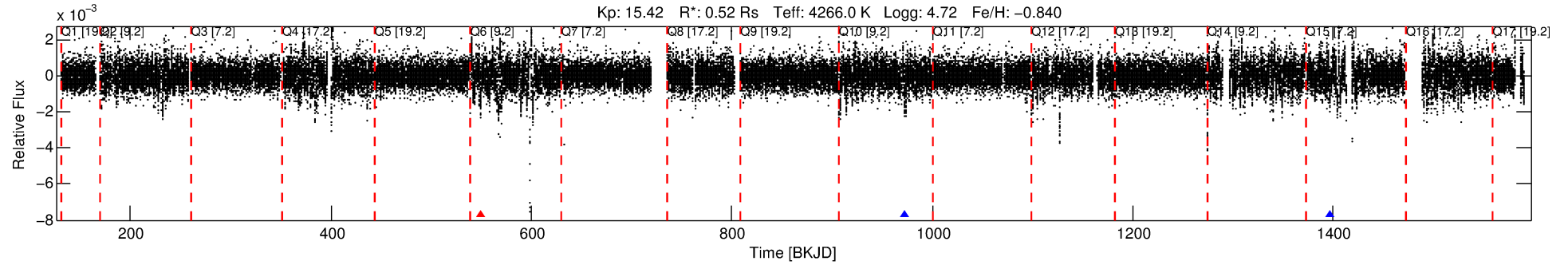
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007765677-01

No Significant Match Found

# DV One-Page Summary

KIC: 7765677 Candidate: 1 of 2 Period: 424.104 d



## DV Fit Results:

Period = 424.10414 [0.02211] d  
Epoch = 548.9973 [0.0251] BKJD  
Rp/R\* = 0.0428 [0.0036]  
a/R\* = 84.12 [12.19]  
b = 0.94 [0.02]  
Seff = 0.10 [0.02]  
Teq = 144 [7] K  
Rp = 2.43 [0.34] Re  
a = 0.8856 [0.0821] AU  
Ag = 24735.86 [9888.39] [2.50σ]  
Teff = 2799 [280] K [9.49σ]

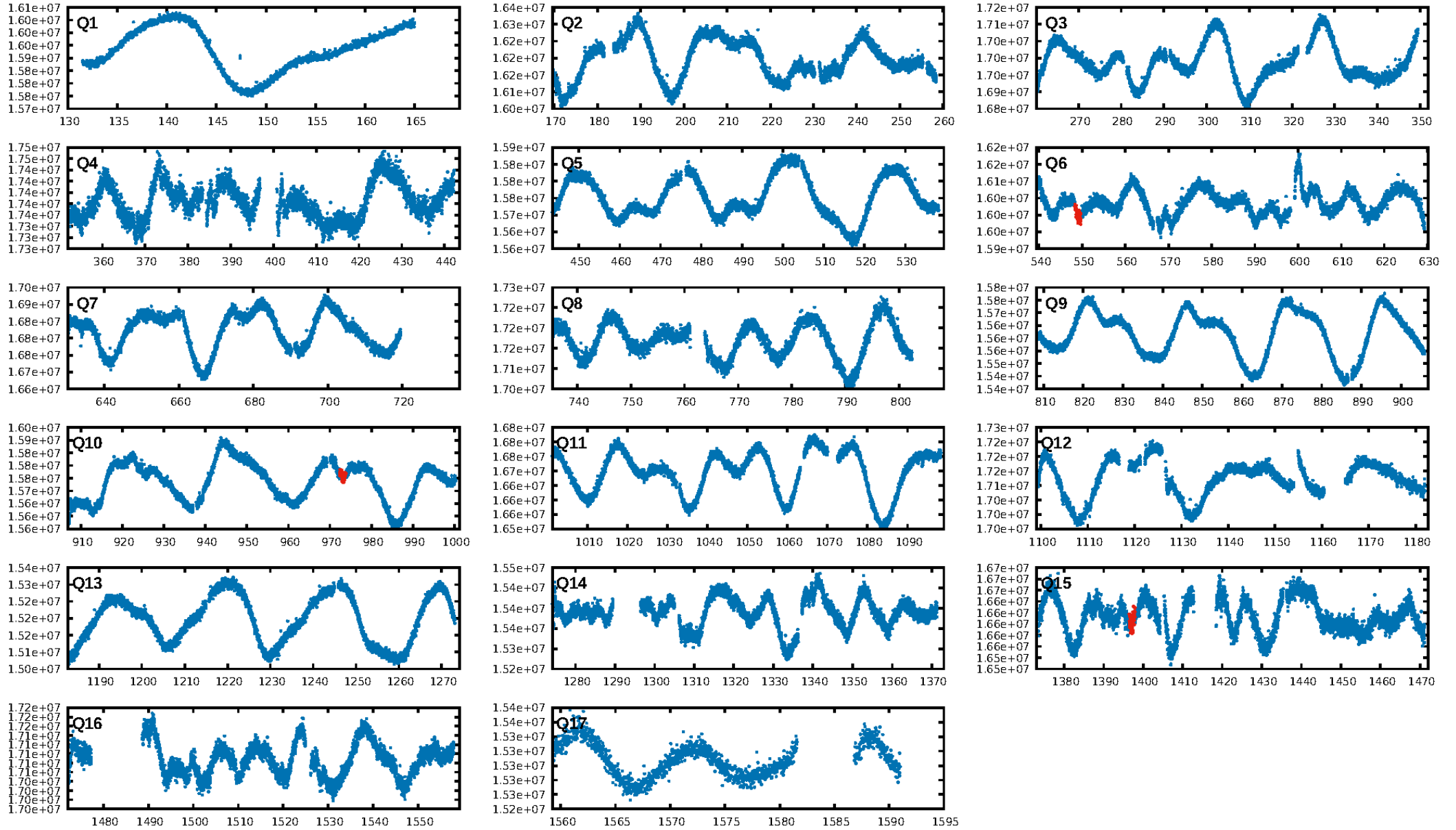
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.67σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 42.4%  
ModelChiSquareGoF-sig: 100.0%  
Bootstrap-pfa: 2.07e-07  
RollingBand-fgt: 0.67 [2/3]  
GhostDiagnostic-chr: 11.66  
Centroid-sig: 25.5%  
Centroid-so: 0.990 arcsec [1.10σ]  
OotOffset-rm: 3.756 arcsec [21.14σ]  
KicOffset-rm: 3.520 arcsec [19.81σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

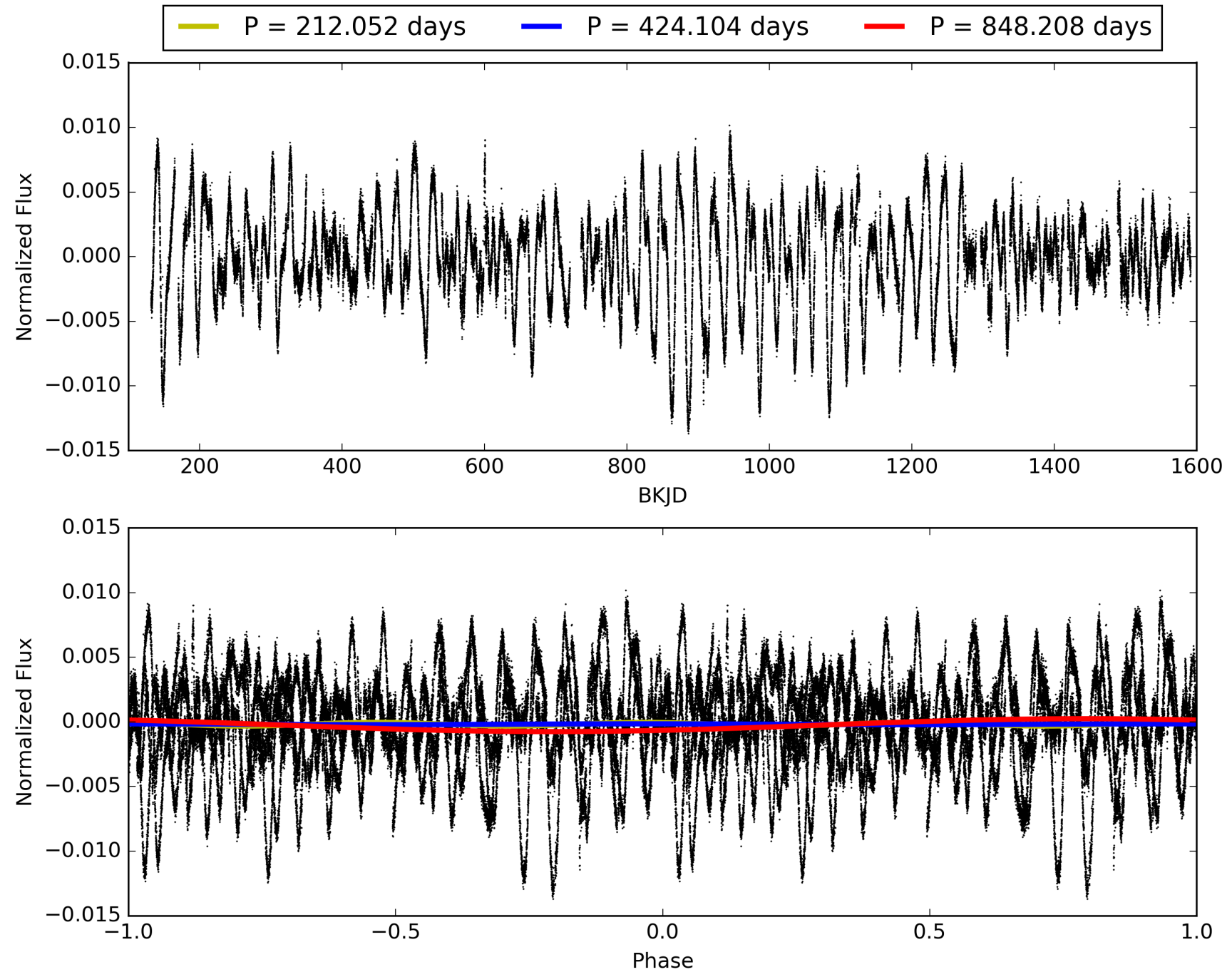
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 04:13:55 Z

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

# TCE 007765677-01, PDC Light Curves

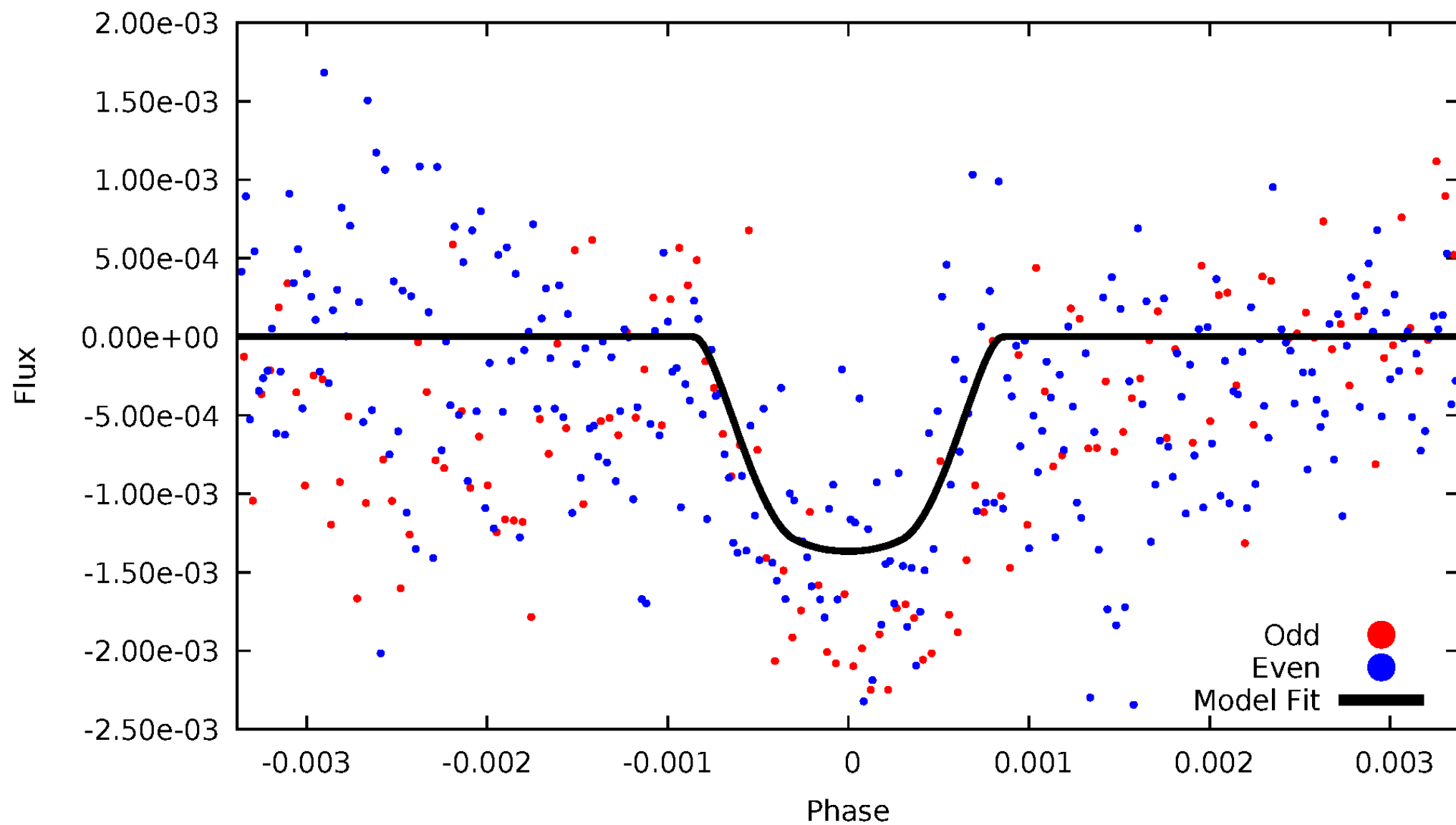


TCE 007765677-01



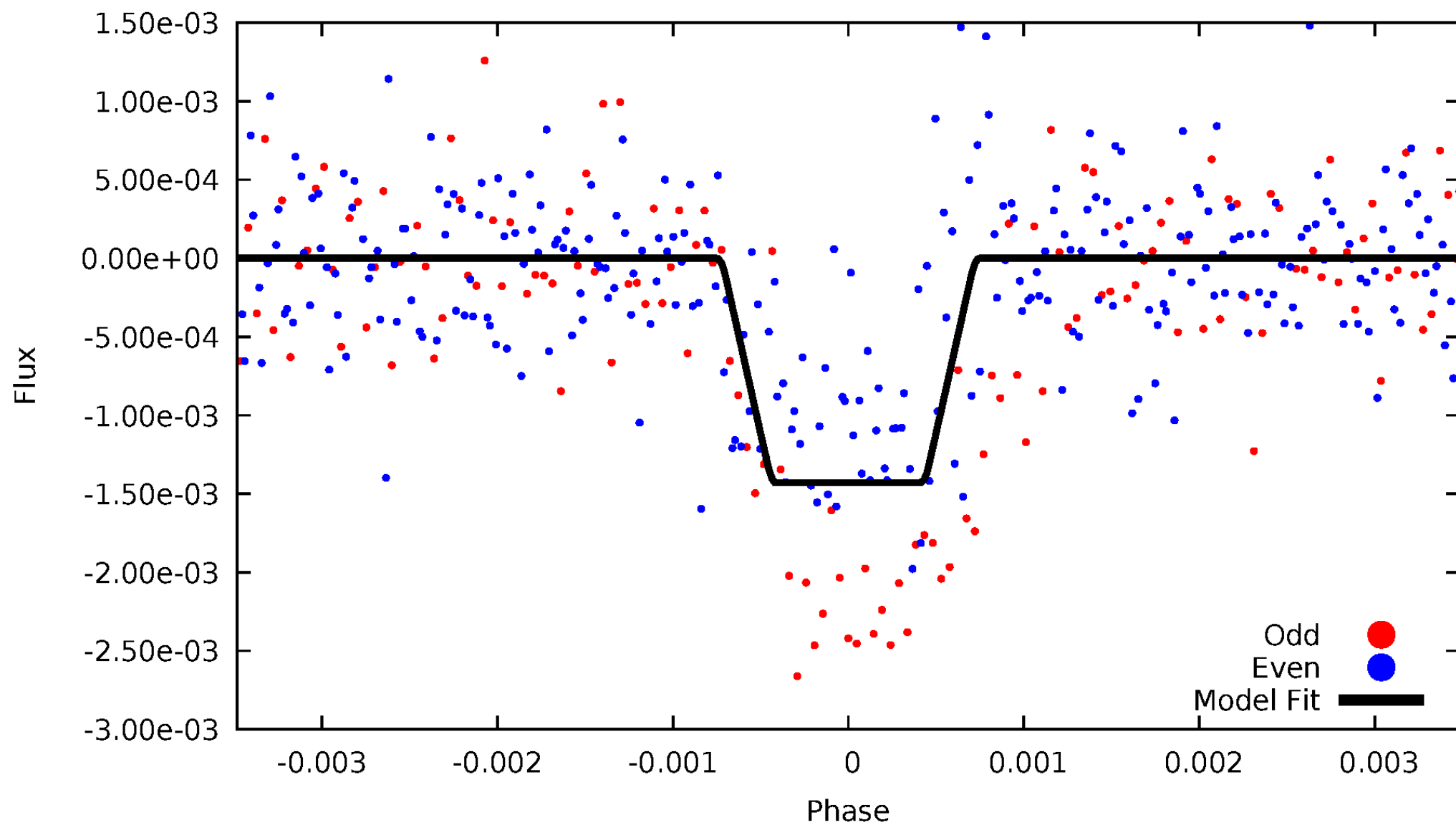
# DV Odd/Even

TCE 007765677-01



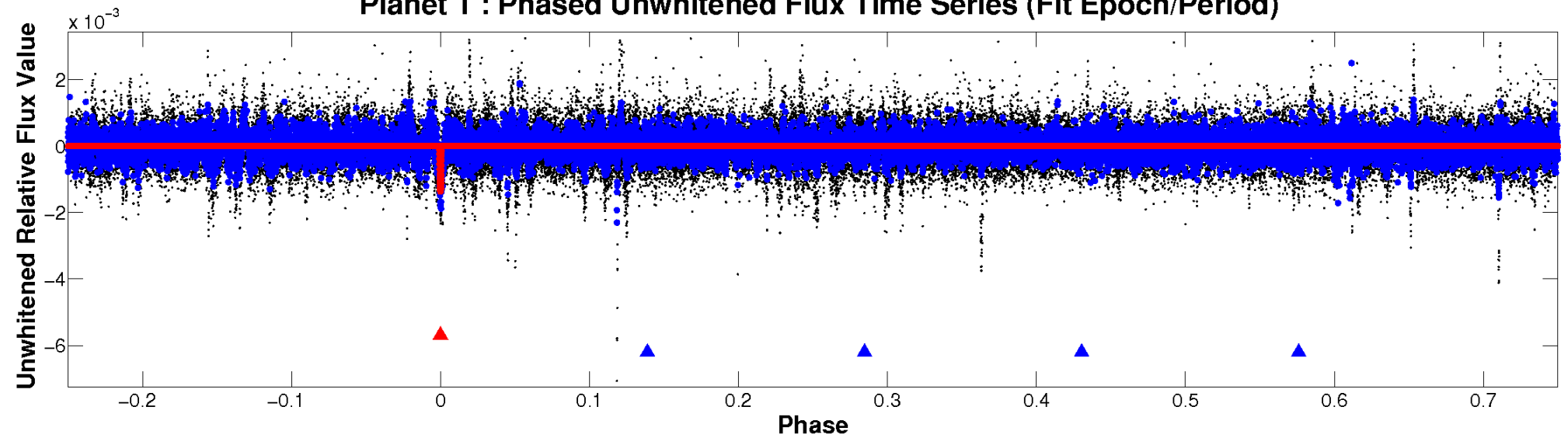
# ALT Odd/Even

TCE 007765677-01

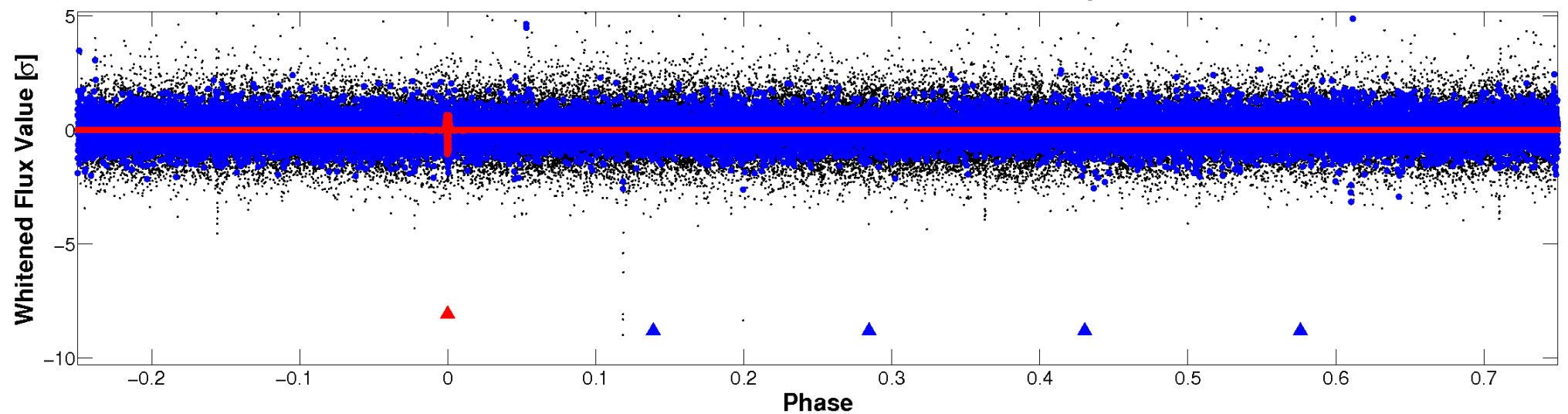


# Non-Whitened Vs. Whitened Light Curve

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

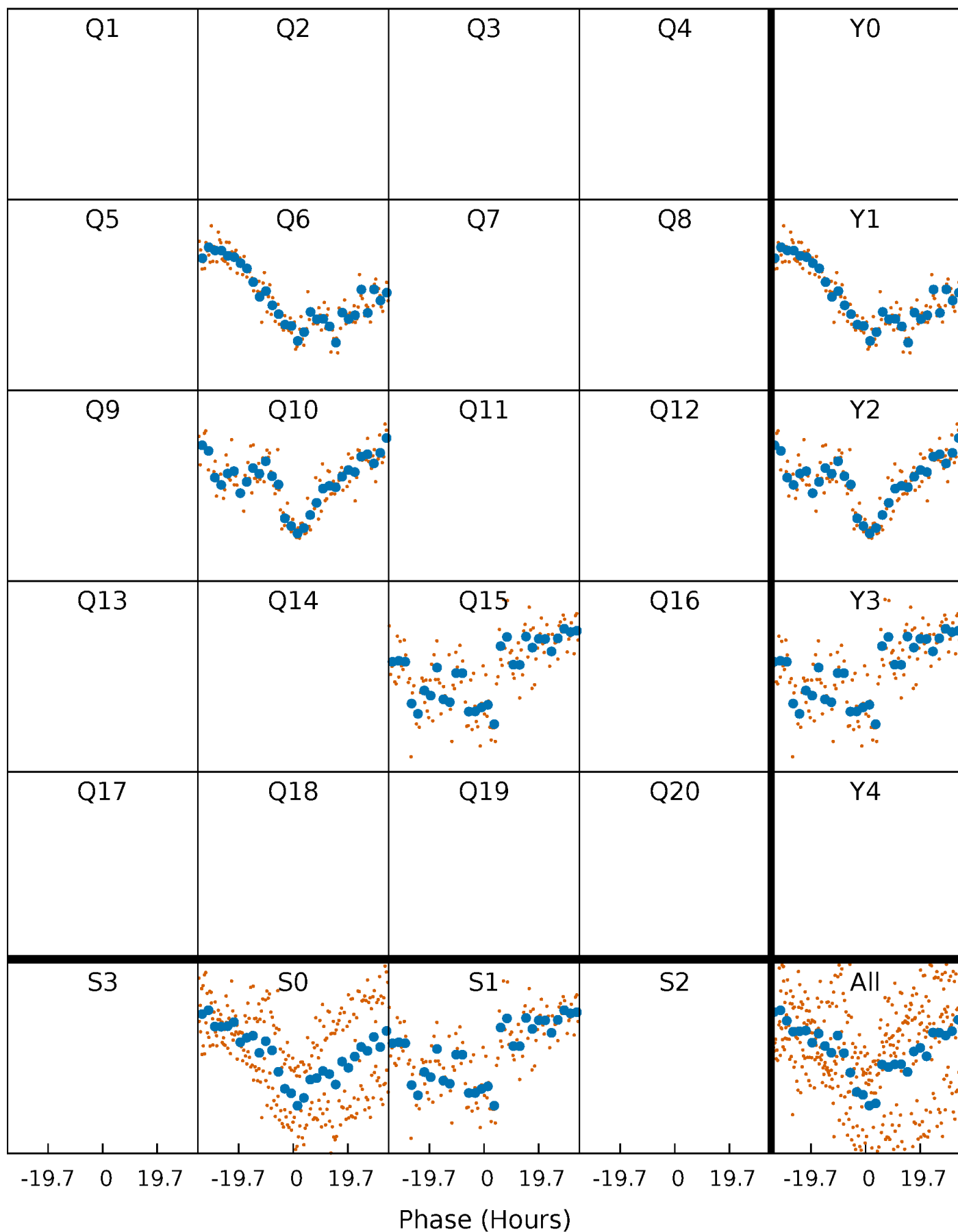


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

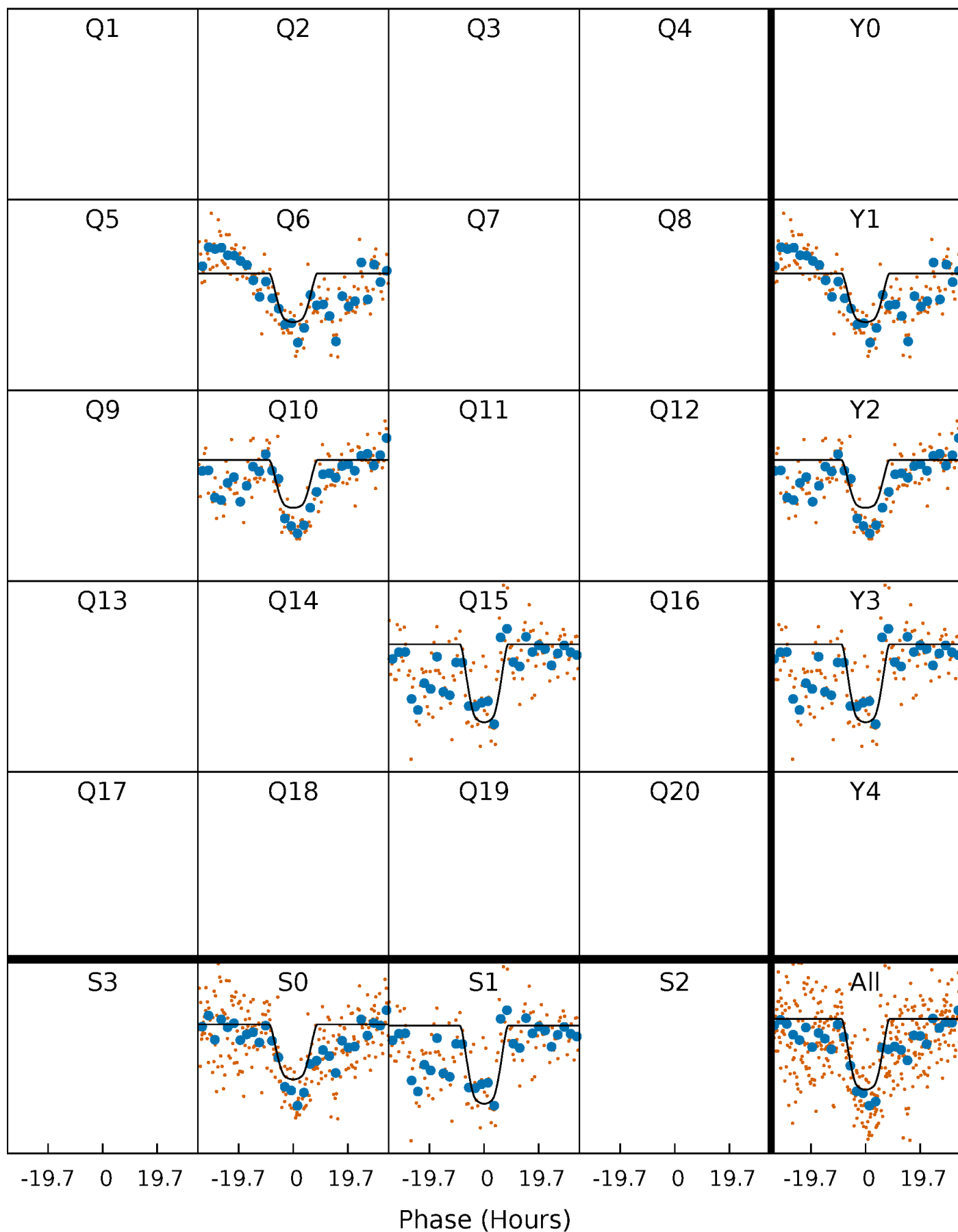
TCE 007765677-01 P=424.104144 Days  $T_0=548.997311$  (BKJD)





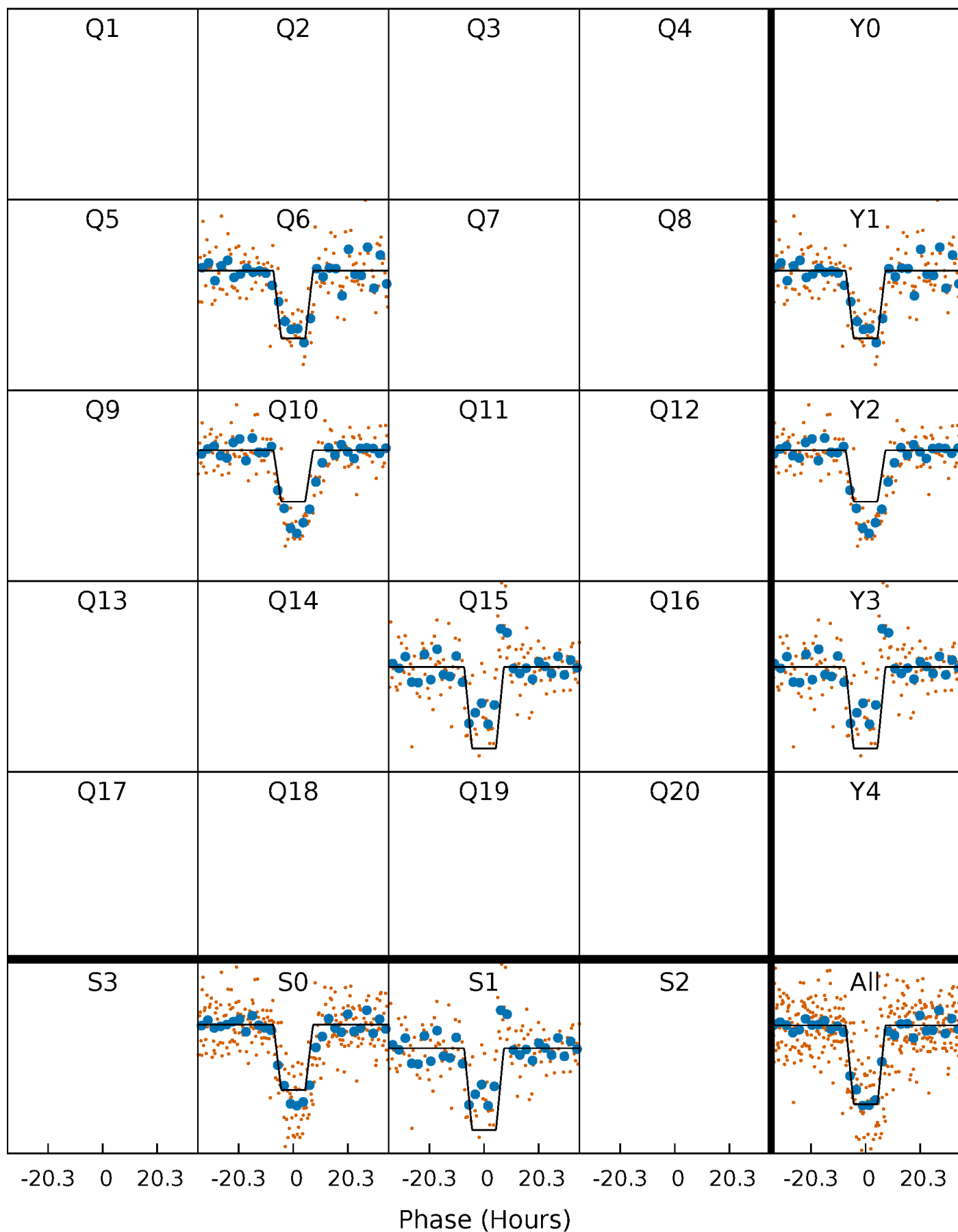
# DV Quarter-Phased Transit Curves

TCE 007765677-01 P=424.104144 Days  $T_0=548.997311$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

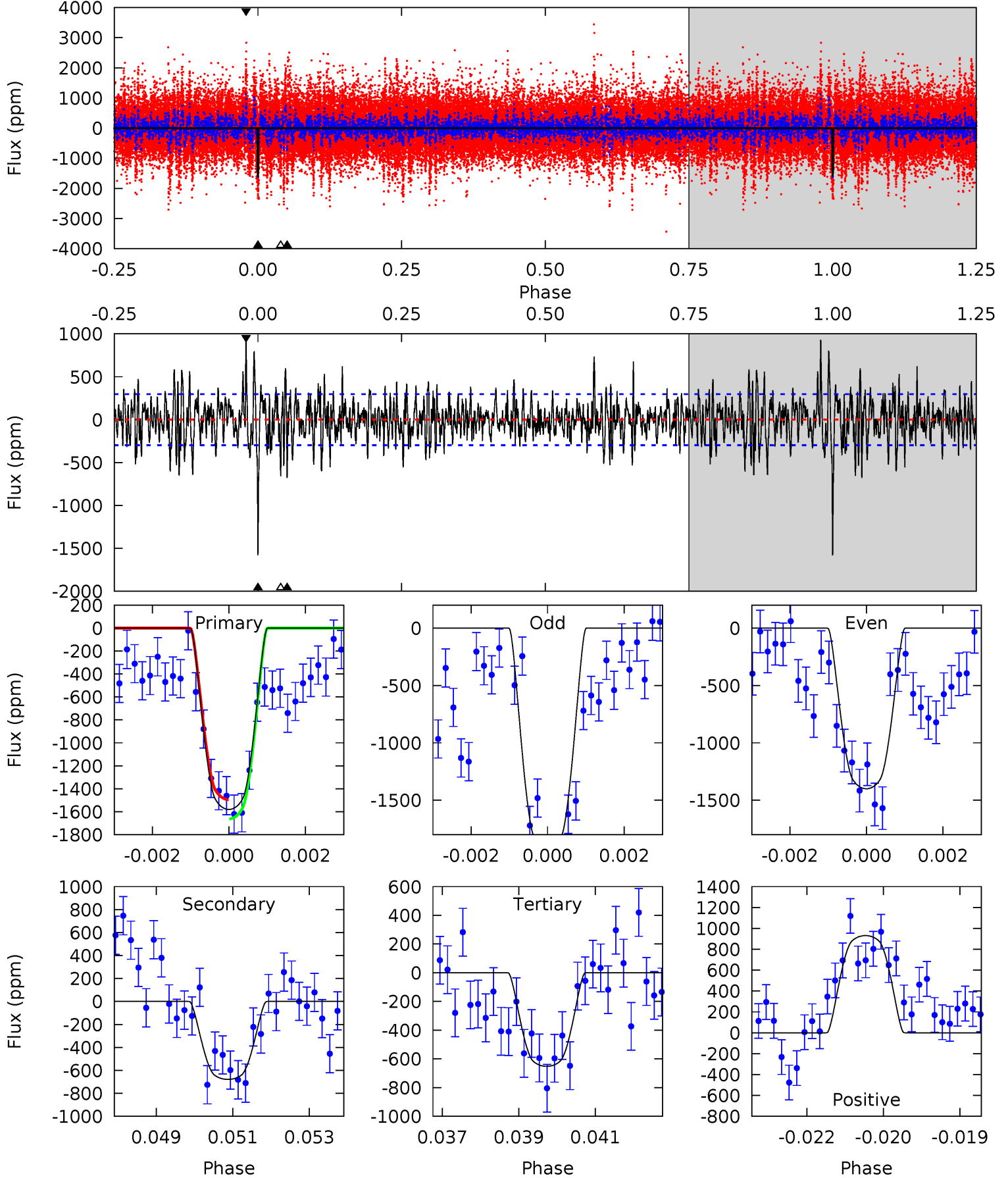
TCE 007765677-01 P=424.173461 Days  $T_0=548.878540$  (BKJD)



# DV Model-Shift Uniqueness Test

007765677-01, P = 424.104144 Days, E = 124.893167 Days

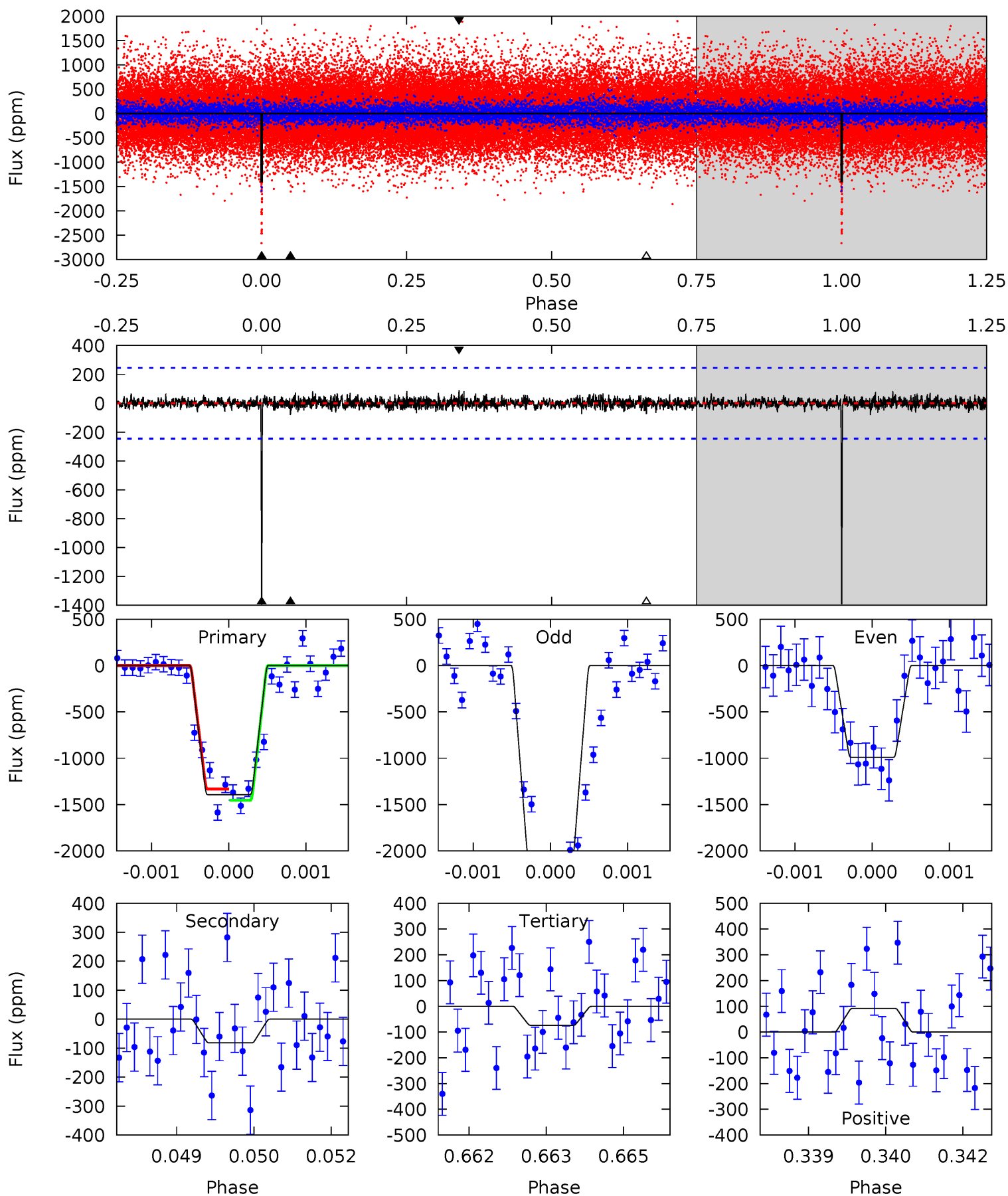
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.4	12.2	11.7	16.7	5.36	3.14	3.53	16.7	11.7	0.48	-4.53	4.58	0.97	0.37	1.50



# Alt Model-Shift Uniqueness Test

007765677-01, P = 424.173461 Days, E = 124.705079 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
30.6	1.80	1.62	2.01	5.38	3.18	0.44	28.9	28.5	0.17	-0.22	11.7	1.09	0.06	1.34



### Stellar Parameters For KIC 007765677

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4266^{+114}_{-140}$	$4.716^{+0.070}_{-0.030}$	$-0.840^{+0.300}_{-0.350}$	$0.521^{+0.044}_{-0.059}$	$0.514^{+0.047}_{-0.042}$	$5.119^{+1.678}_{-0.724}$
	+3%/-3%	+1%/-1%	+36%/-42%	+8%/-11%	+9%/-8%	+33%/-14%
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 007765677-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-679 \pm 56$	$2.39^{+0.23}_{-0.23}$	$200^{+7}_{-8}$	$3597^{+144}_{-144}$	$51388^{+12150}_{-8912}$
Alt.	$-82 \pm 46$	$2.12^{+0.23}_{-0.23}$	$200^{+7}_{-7}$	$2735^{+191}_{-251}$	$8299^{+4979}_{-4629}$

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

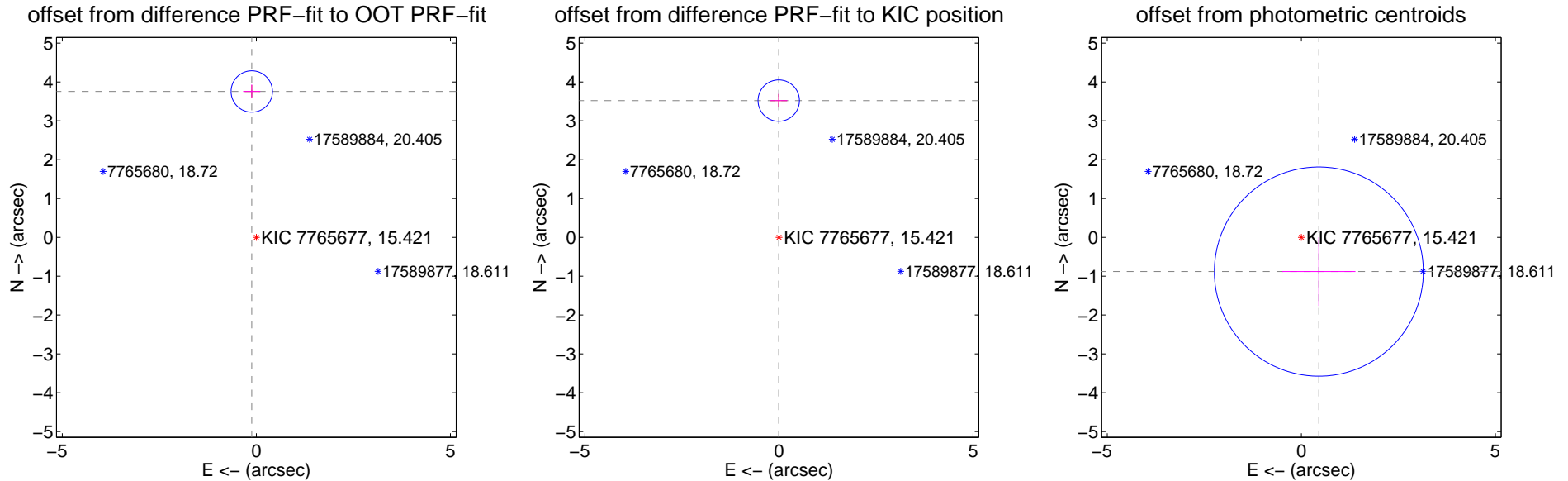
## DV Centroid Data

Supplemental centroid analysis for 007765677-01. Kepler magnitude: 15.42. Transit SNR 8.43

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.756 \pm 0.178$	21.14	$0.118 \pm 0.222$	$3.755 \pm 0.178$
PRF-fit source offset from KIC position	$3.520 \pm 0.178$	19.81	$0.007 \pm 0.222$	$3.520 \pm 0.178$
photometric centroid source offset	$0.99 \pm 0.90$	1.10	$-0.45 \pm 0.94$	$-0.88 \pm 0.89$

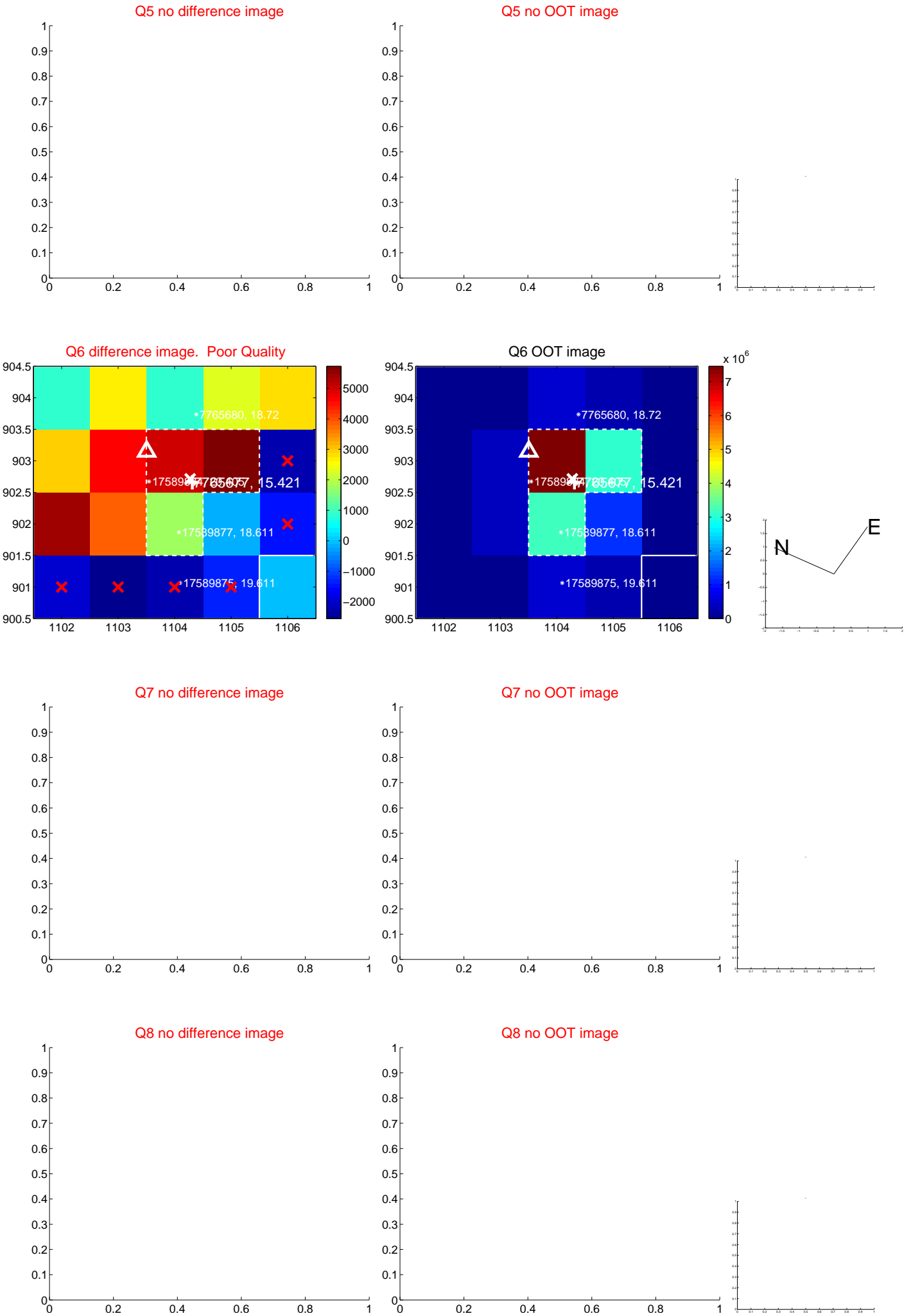


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

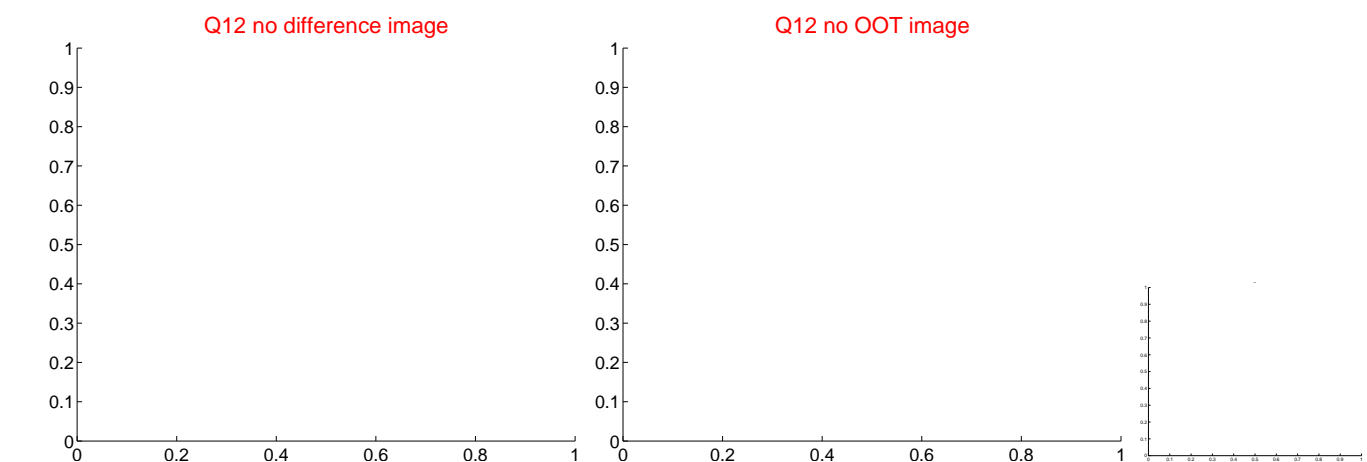
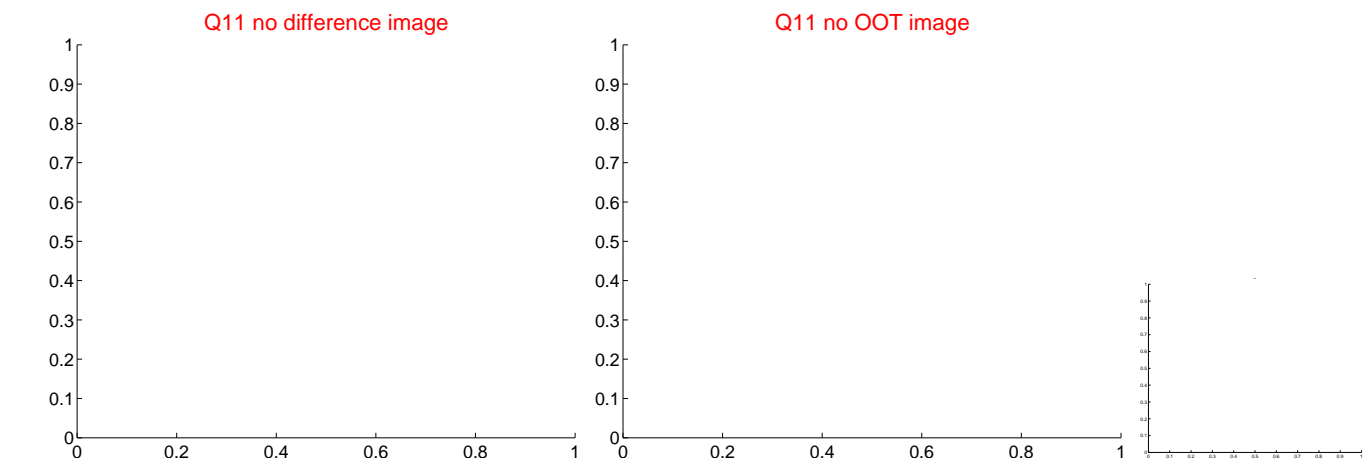
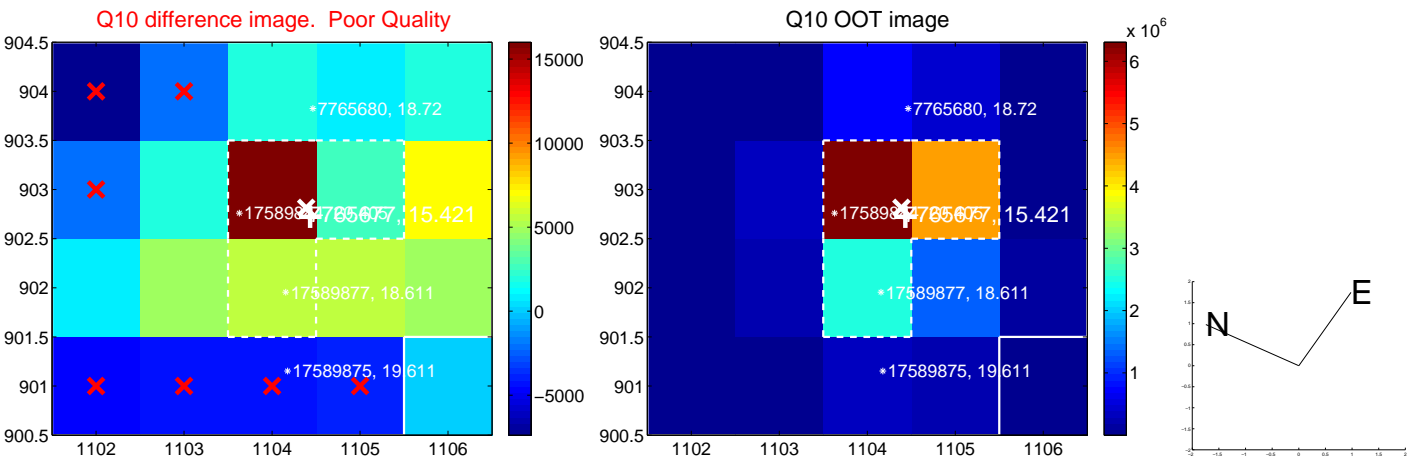
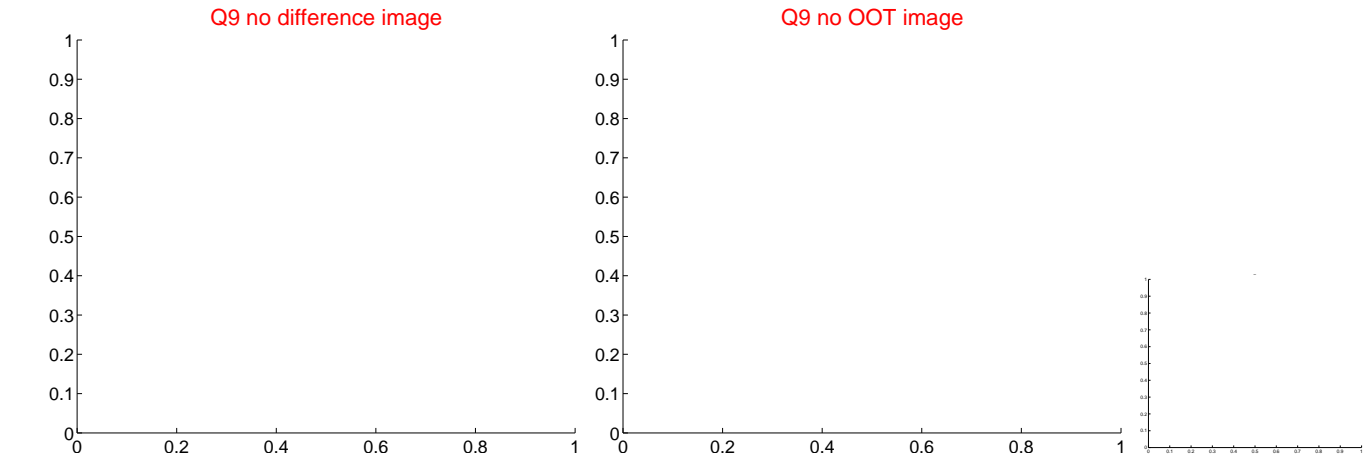


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





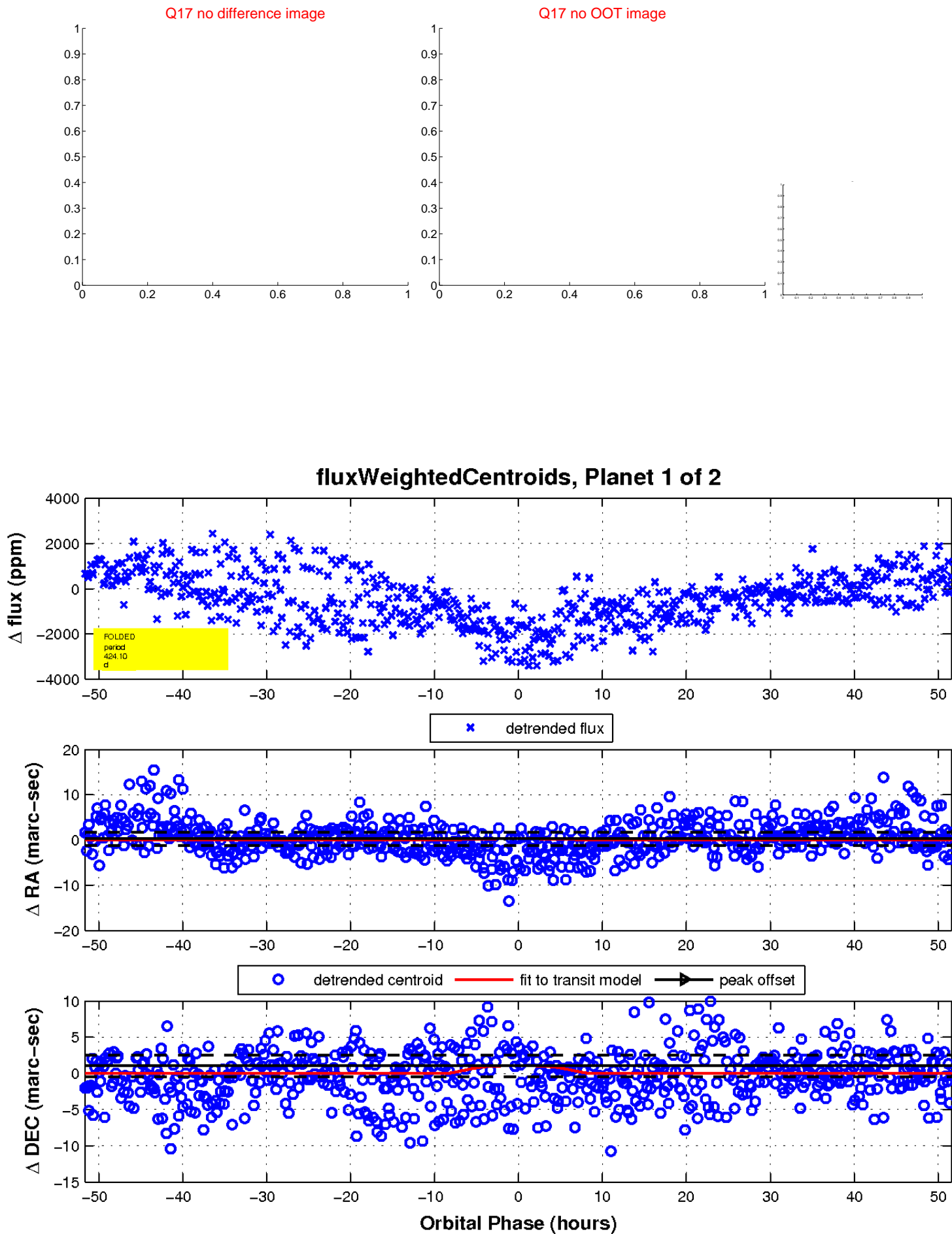
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

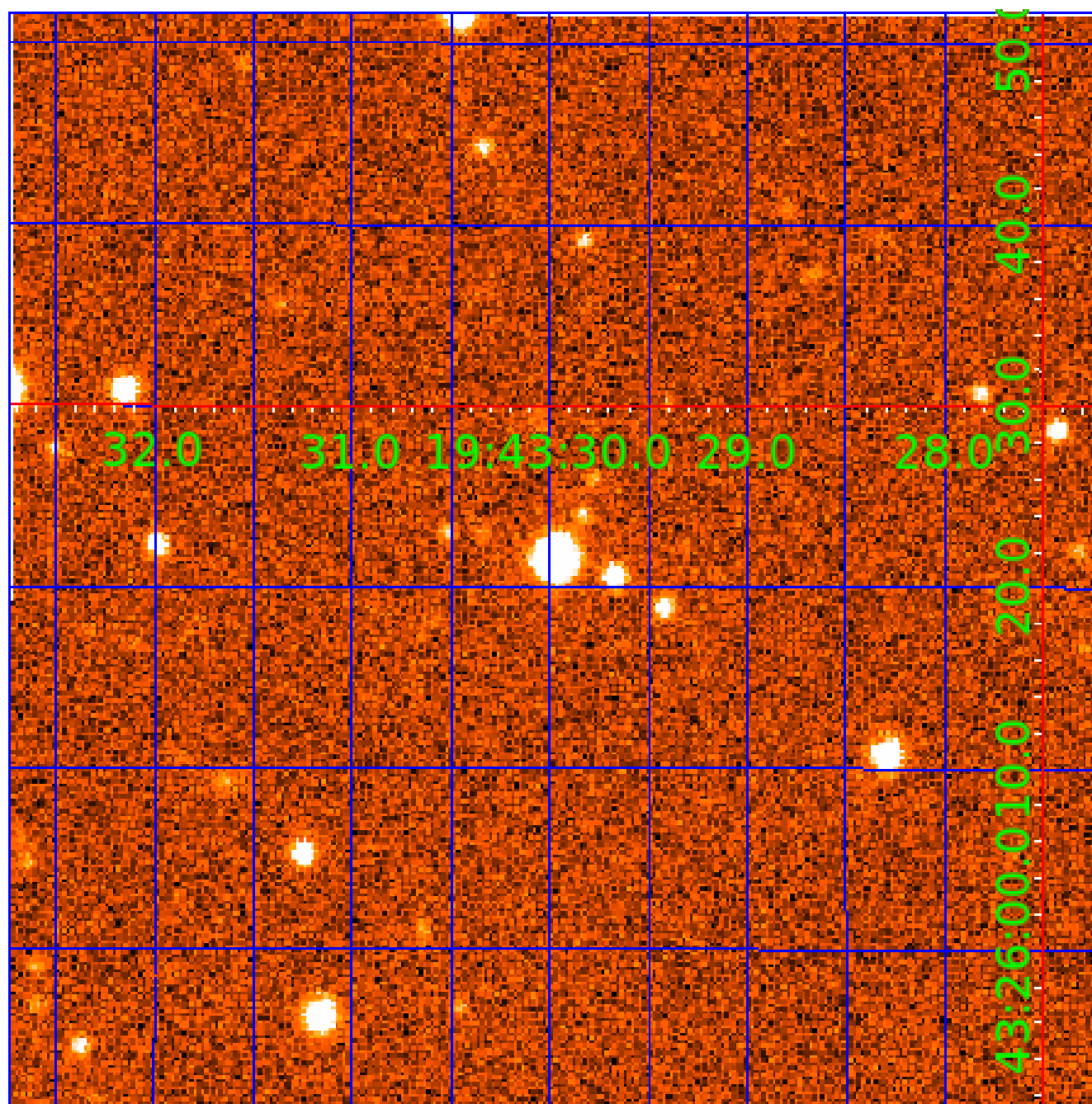


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007765677

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007765677-01	OBS	No	424.104144	548.997311	1366.7	17.216	7.8	8.4	0.52	4266	2.43	0.10
007765677-02	OBS	No	362.303186	369.208209	1111.8	8.263	8.4	7.9	0.52	4266	1.76	0.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007765677-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007765677-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

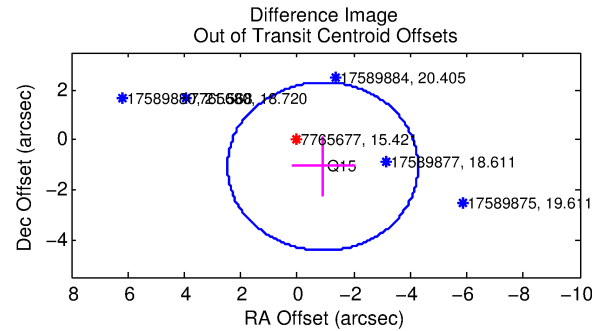
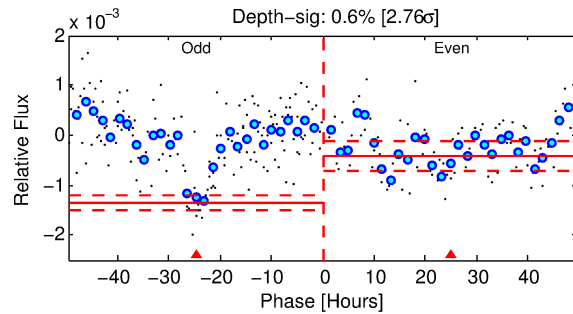
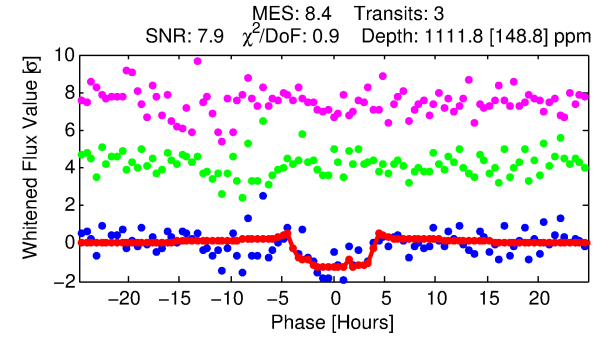
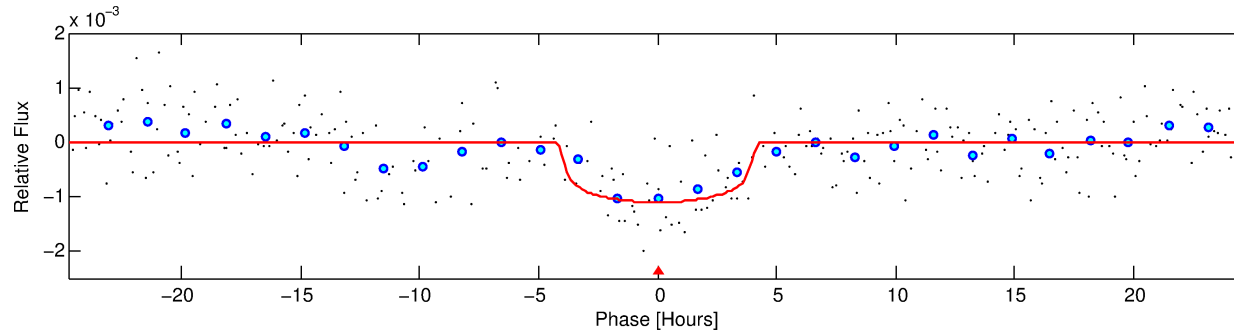
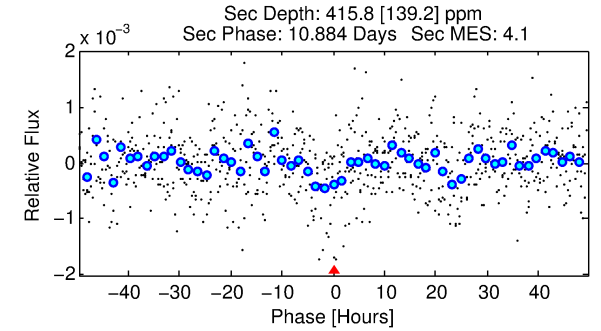
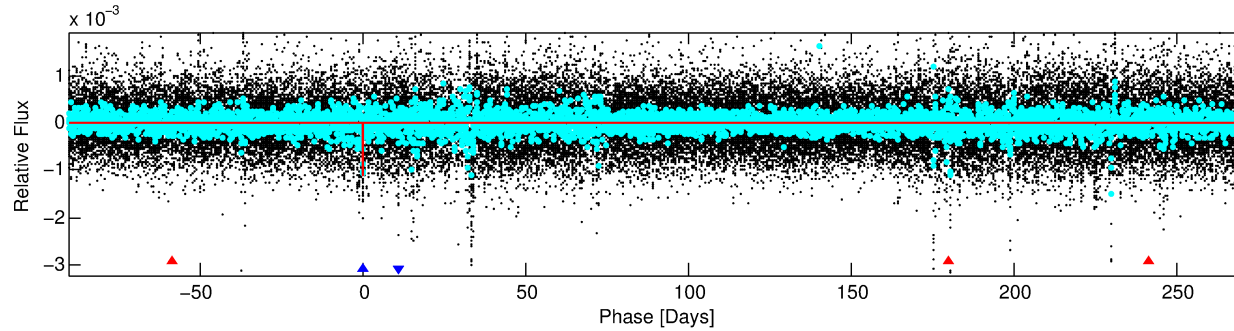
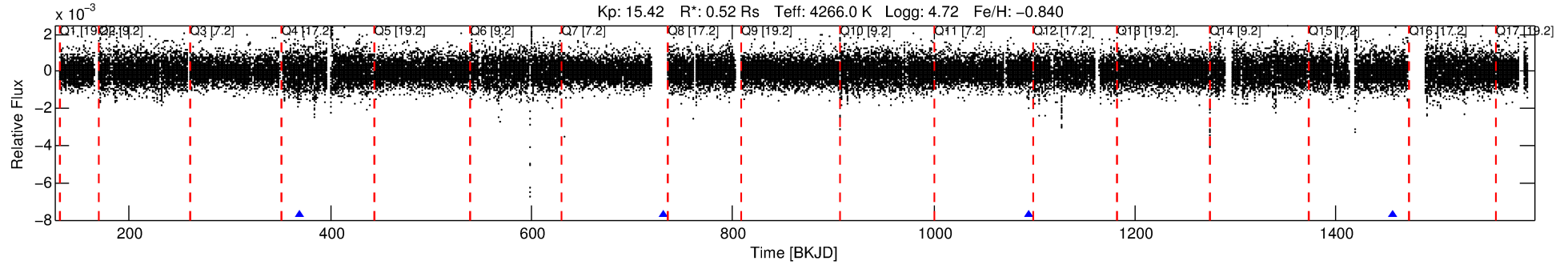
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007765677-02

No Significant Match Found

# DV One-Page Summary

KIC: 7765677 Candidate: 2 of 2 Period: 362.303 d



## DV Fit Results:

Period = 362.30319 [0.00548] d  
Epoch = 369.2082 [0.0128] BKJD  
Rp/R\* = 0.0309 [0.0283]  
a/R\* = 310.98 [1154.49]  
b = 0.45 [6.67]  
Seff = 0.13 [0.02]  
Teq = 152 [7] K  
Rp = 1.76 [1.62] Re  
a = 0.7973 [0.0739] AU  
Ag = 47091.75 [87778.20] [0.54σ]  
Teffp = 3465 [1615] K [2.05σ]

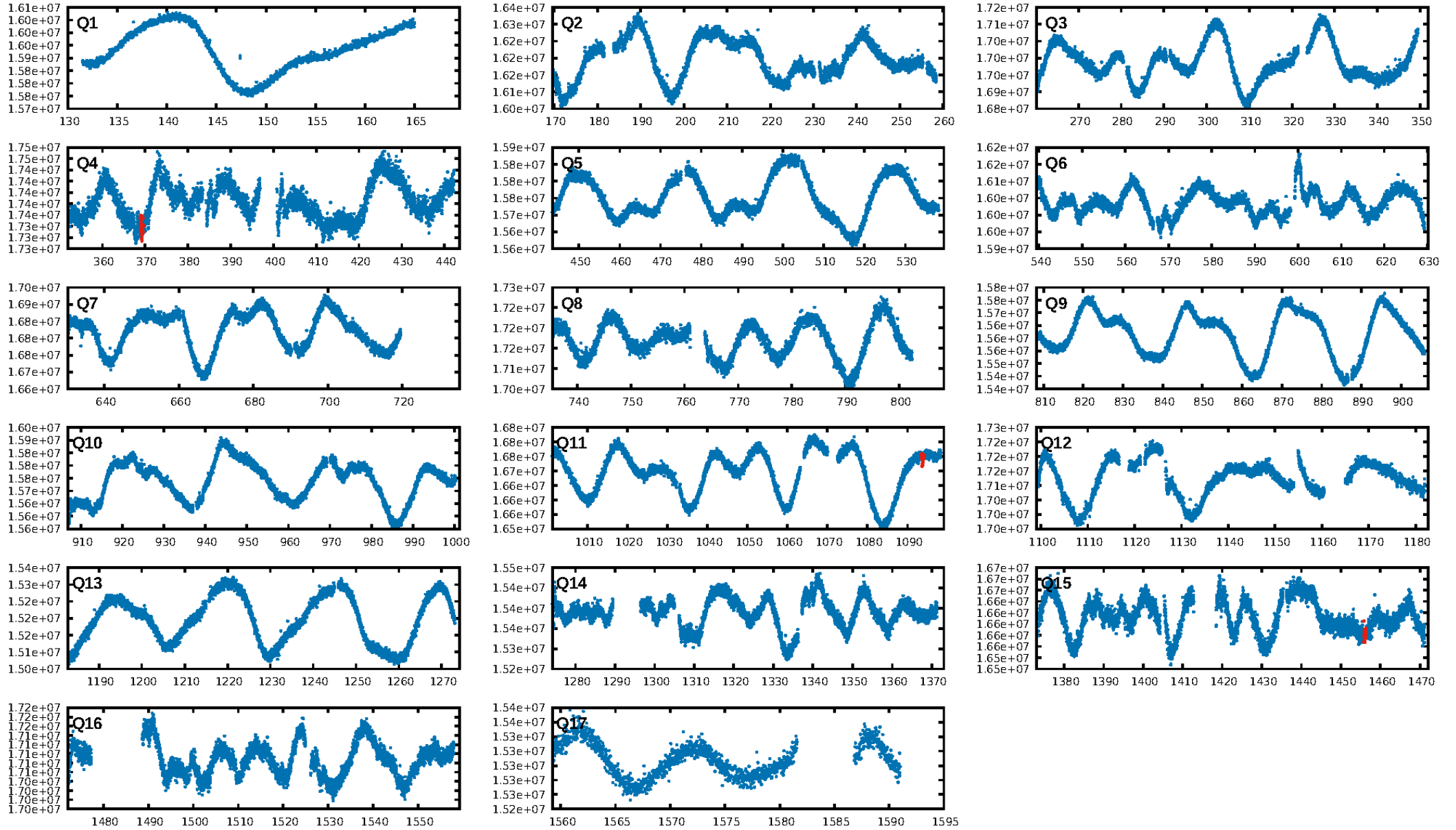
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [77.67σ]  
ModelChiSquare2-sig: 9.0%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.49e-08**  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.5857**  
Centroid-sig: 47.5%  
Centroid-so: 1.077 arcsec [1.02σ]  
OotOffset-rm: 1.404 arcsec [1.25σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-rm: 1.570 arcsec [1.40σ]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

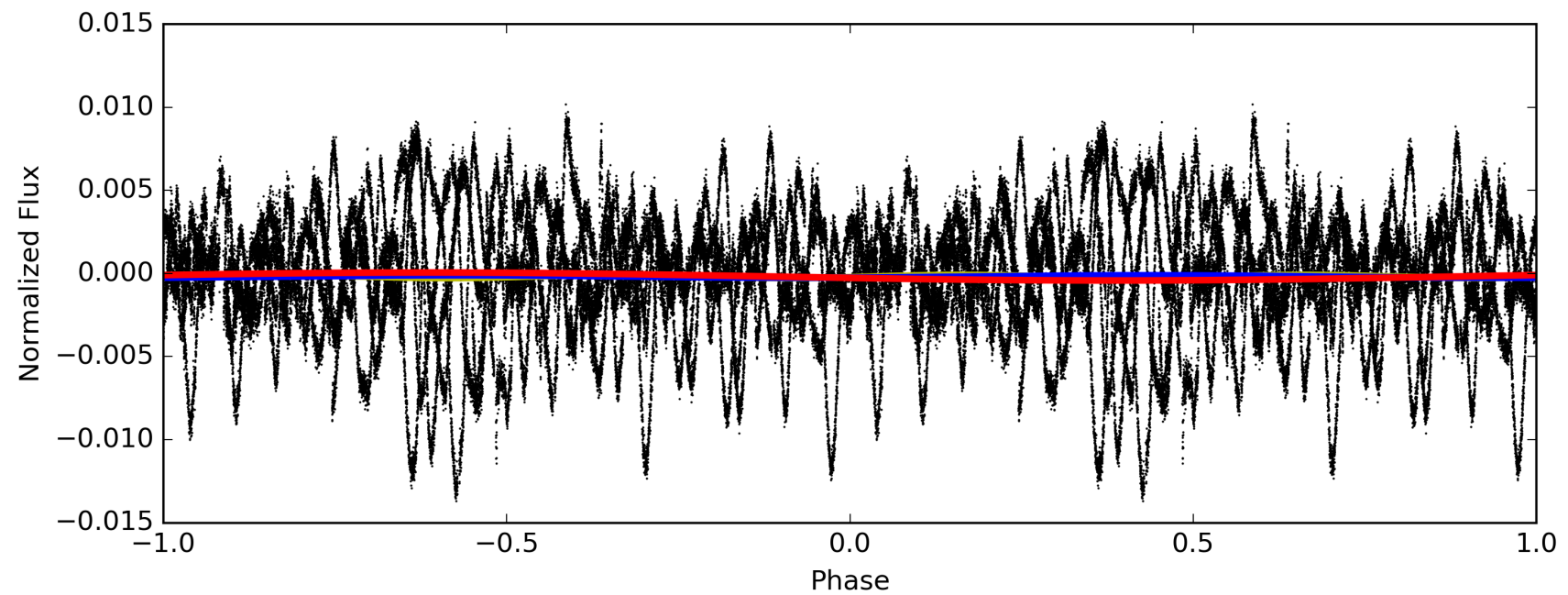
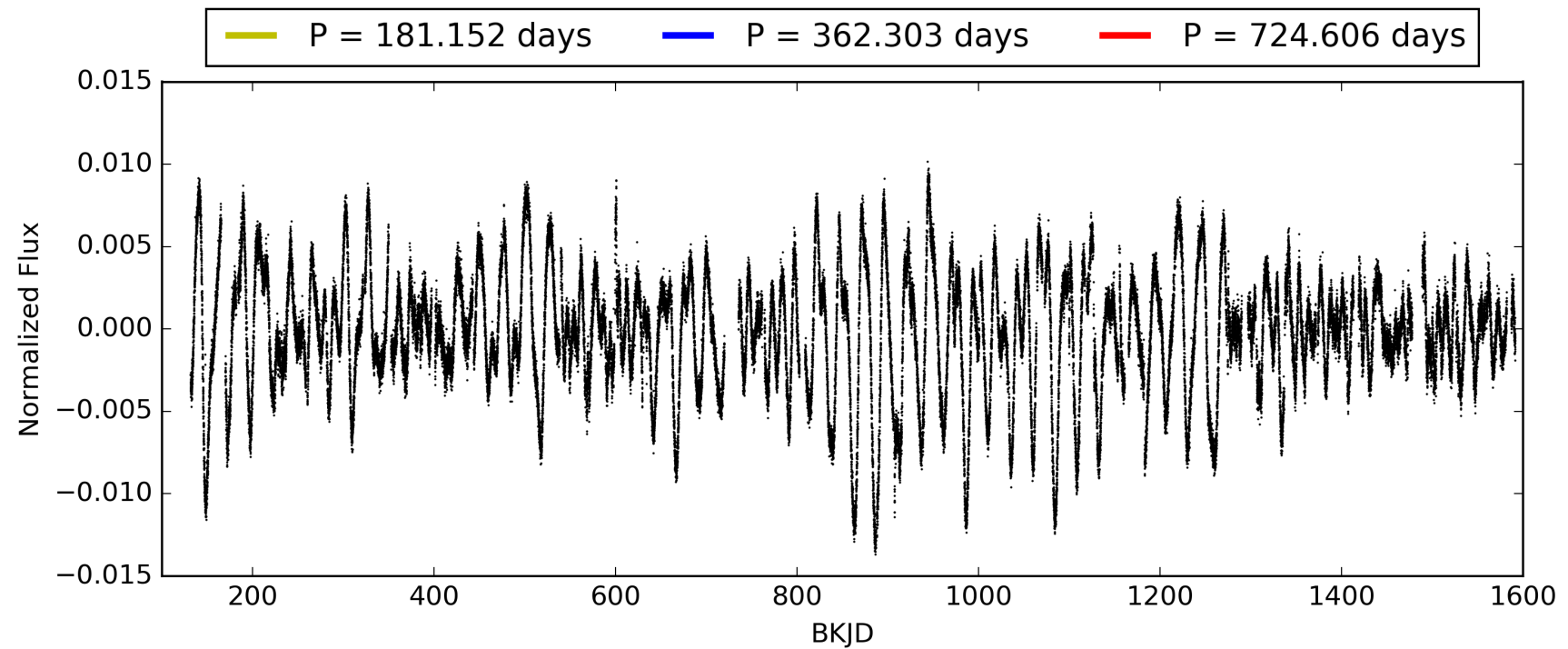
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 04:14:05 Z

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

# TCE 007765677-02, PDC Light Curves



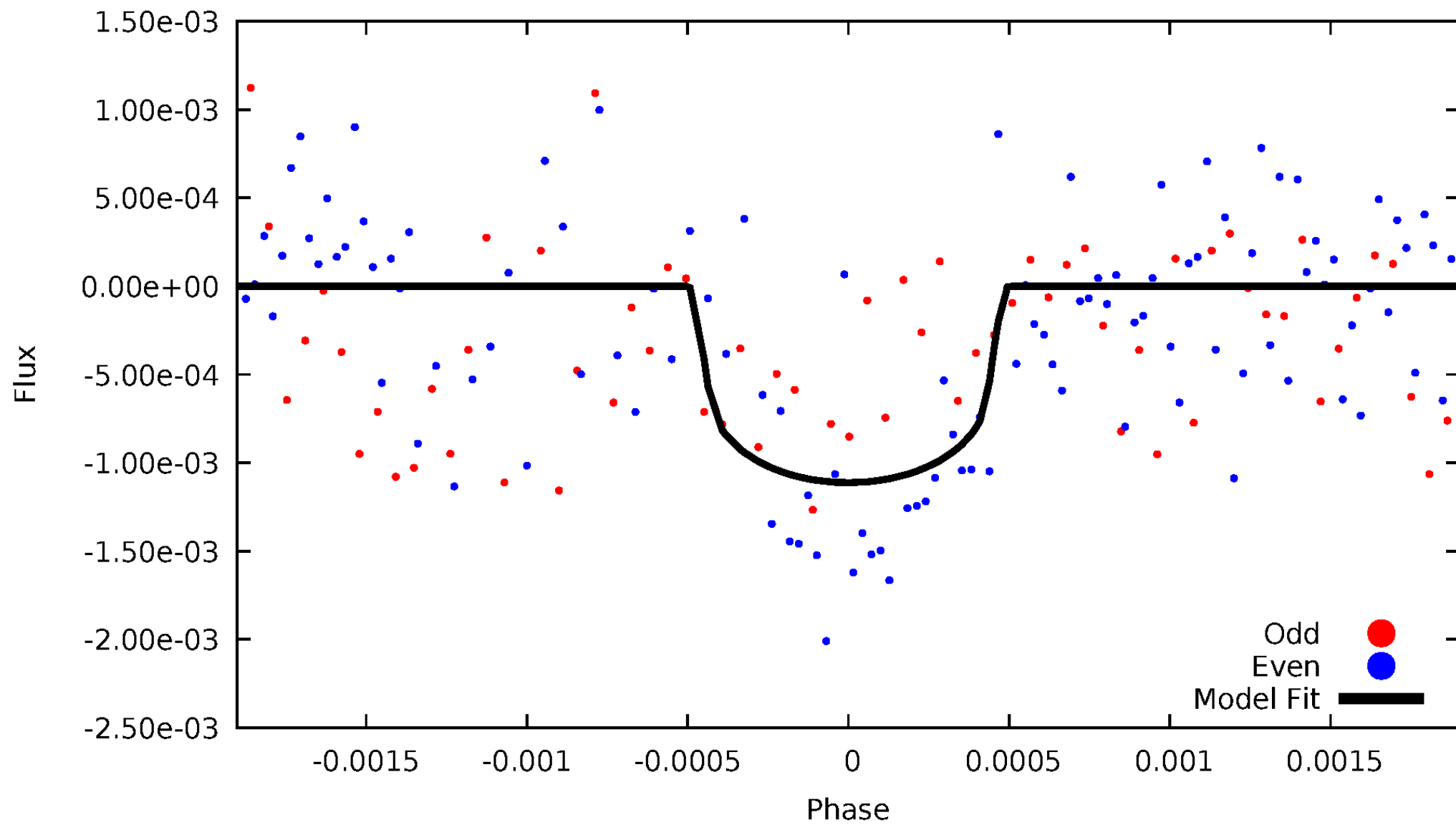
TCE 007765677-02





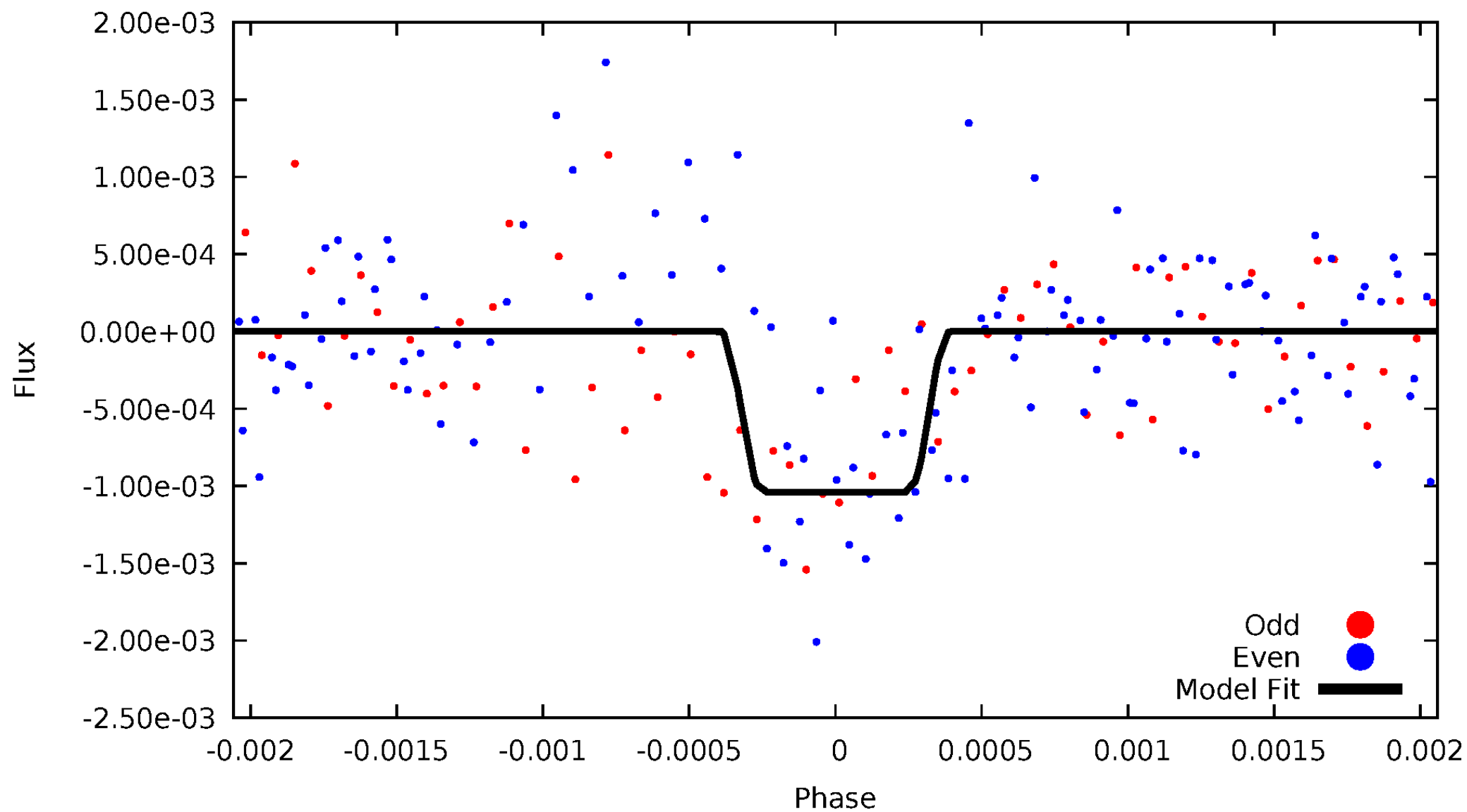
DV Odd/Even

TCE 007765677-02



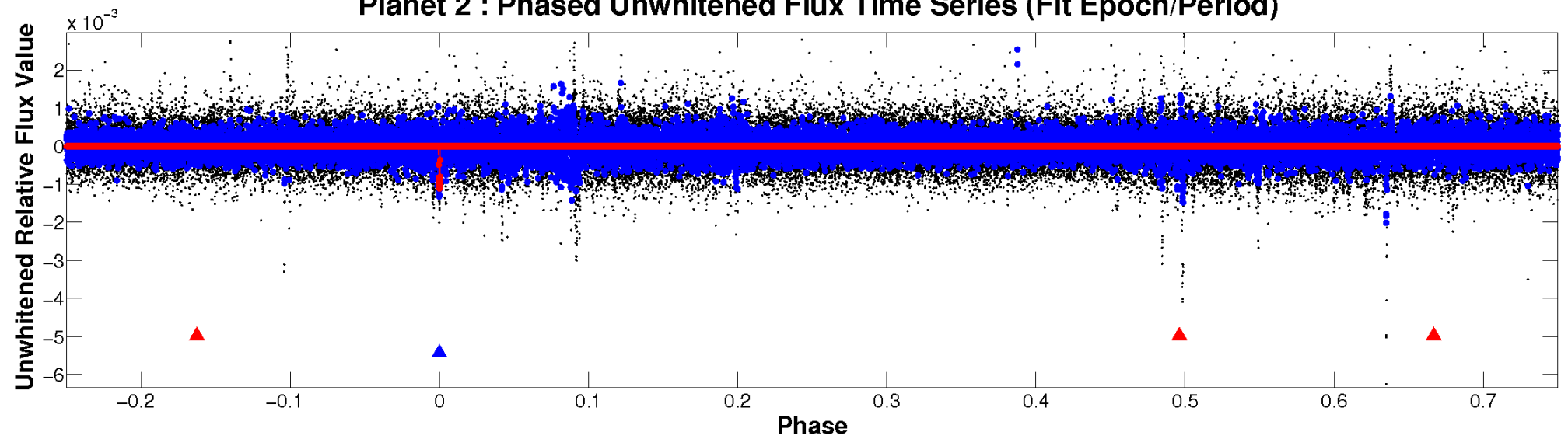
# ALT Odd/Even

TCE 007765677-02

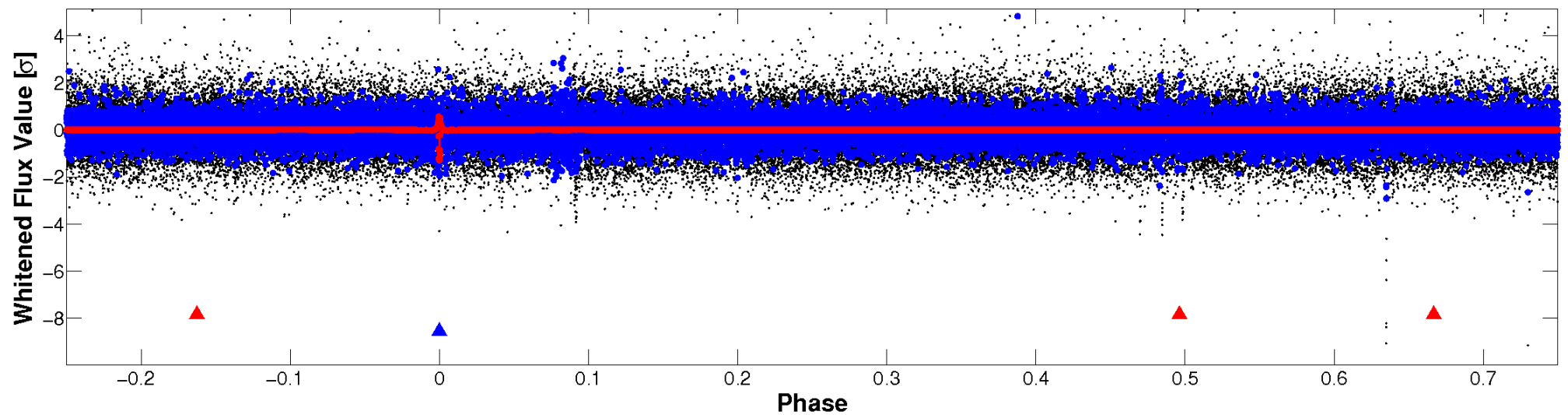


# Non-Whitened Vs. Whitened Light Curve

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

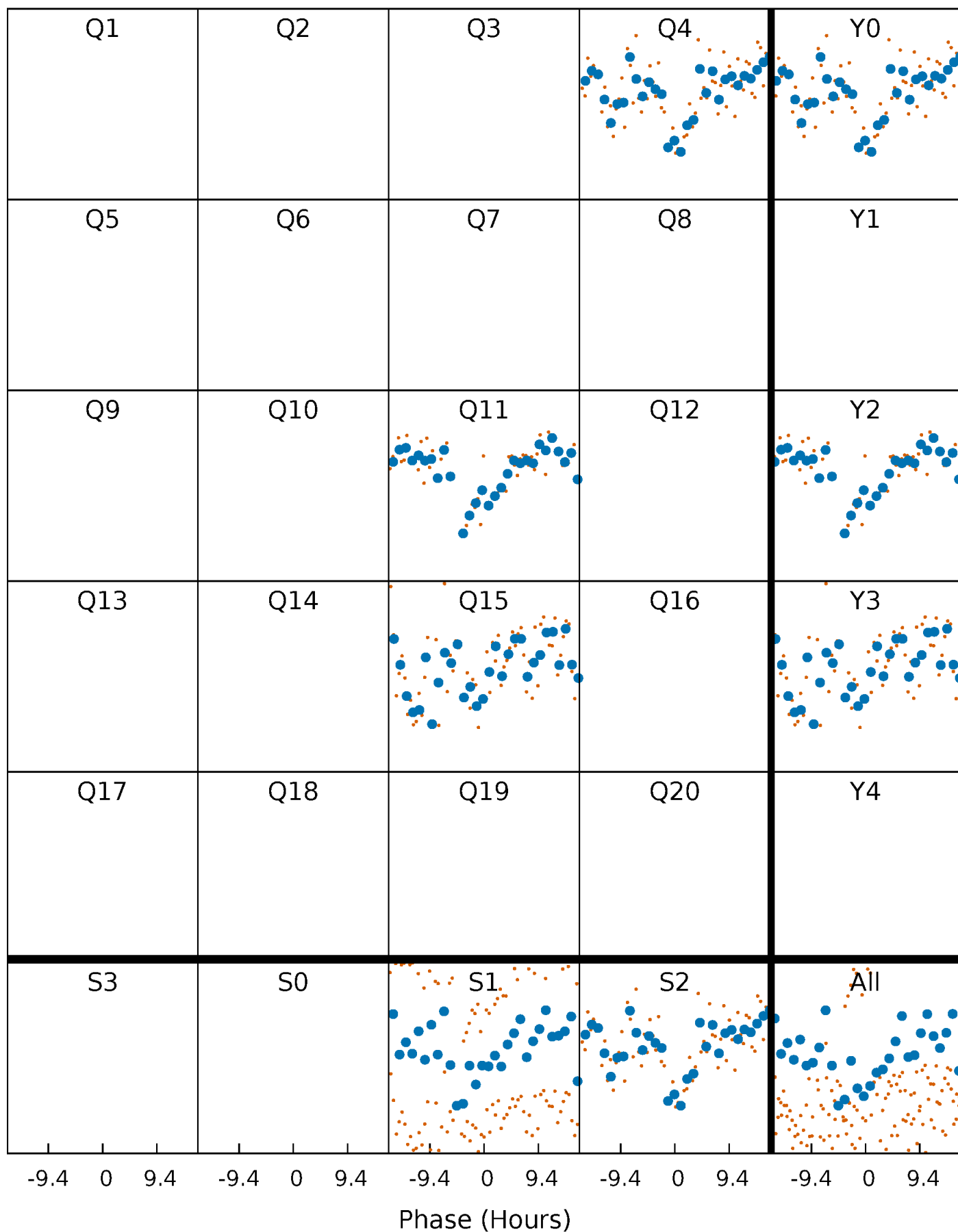


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



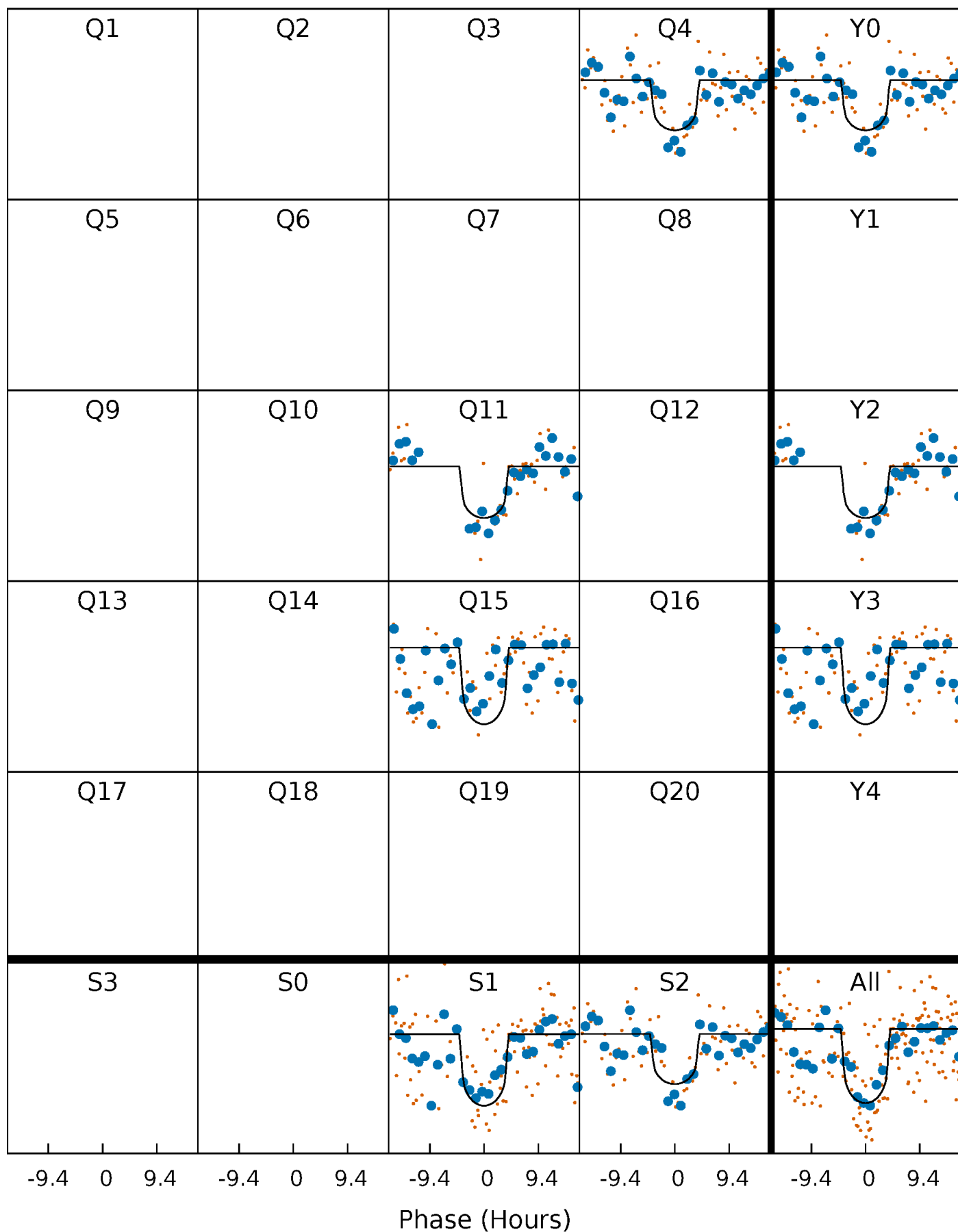
# PDC Quarter-Phased Transit Curves

TCE 007765677-02 P=362.303186 Days  $T_0=369.208209$  (BKJD)



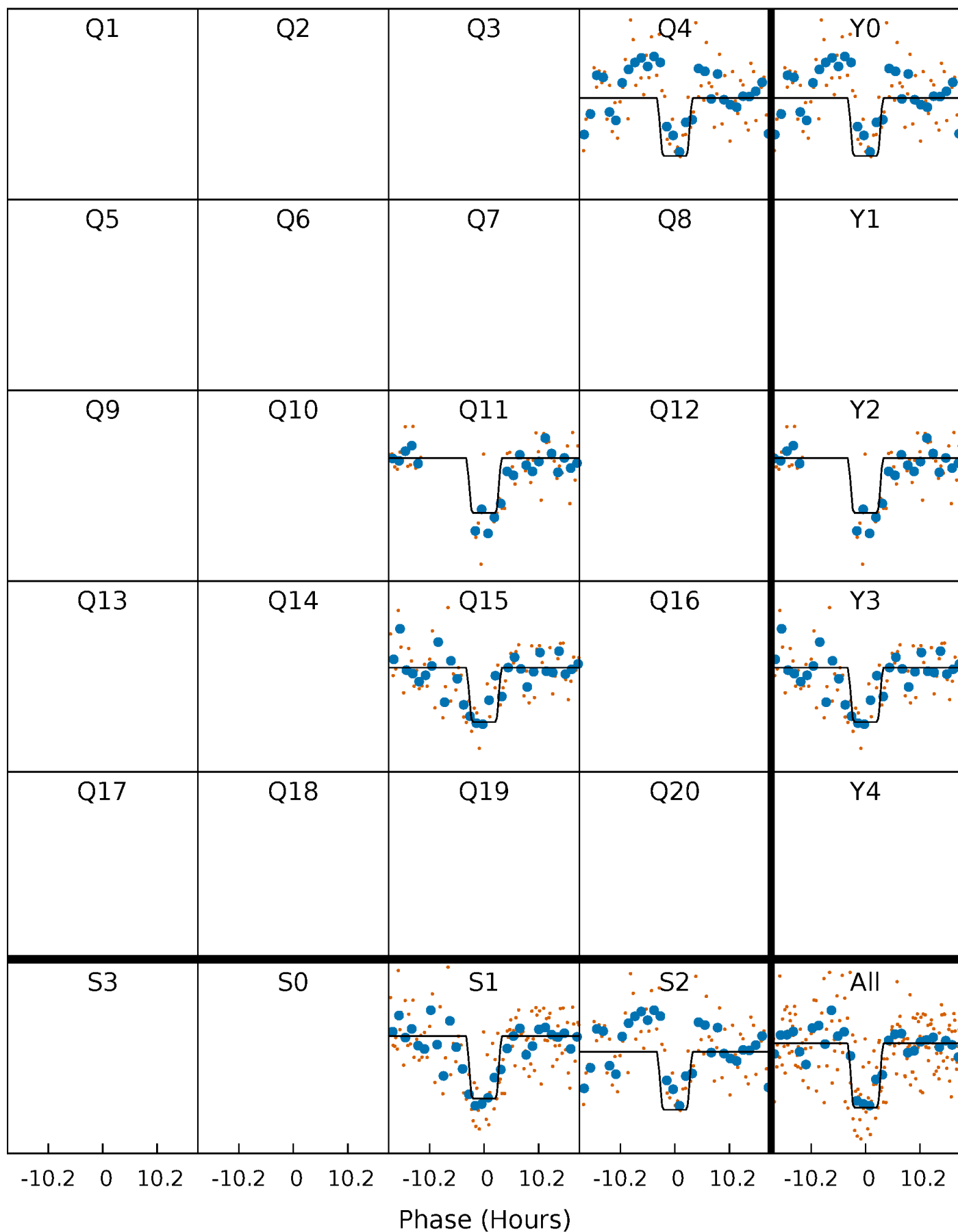
# DV Quarter-Phased Transit Curves

TCE 007765677-02 P=362.303186 Days  $T_0=369.208209$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

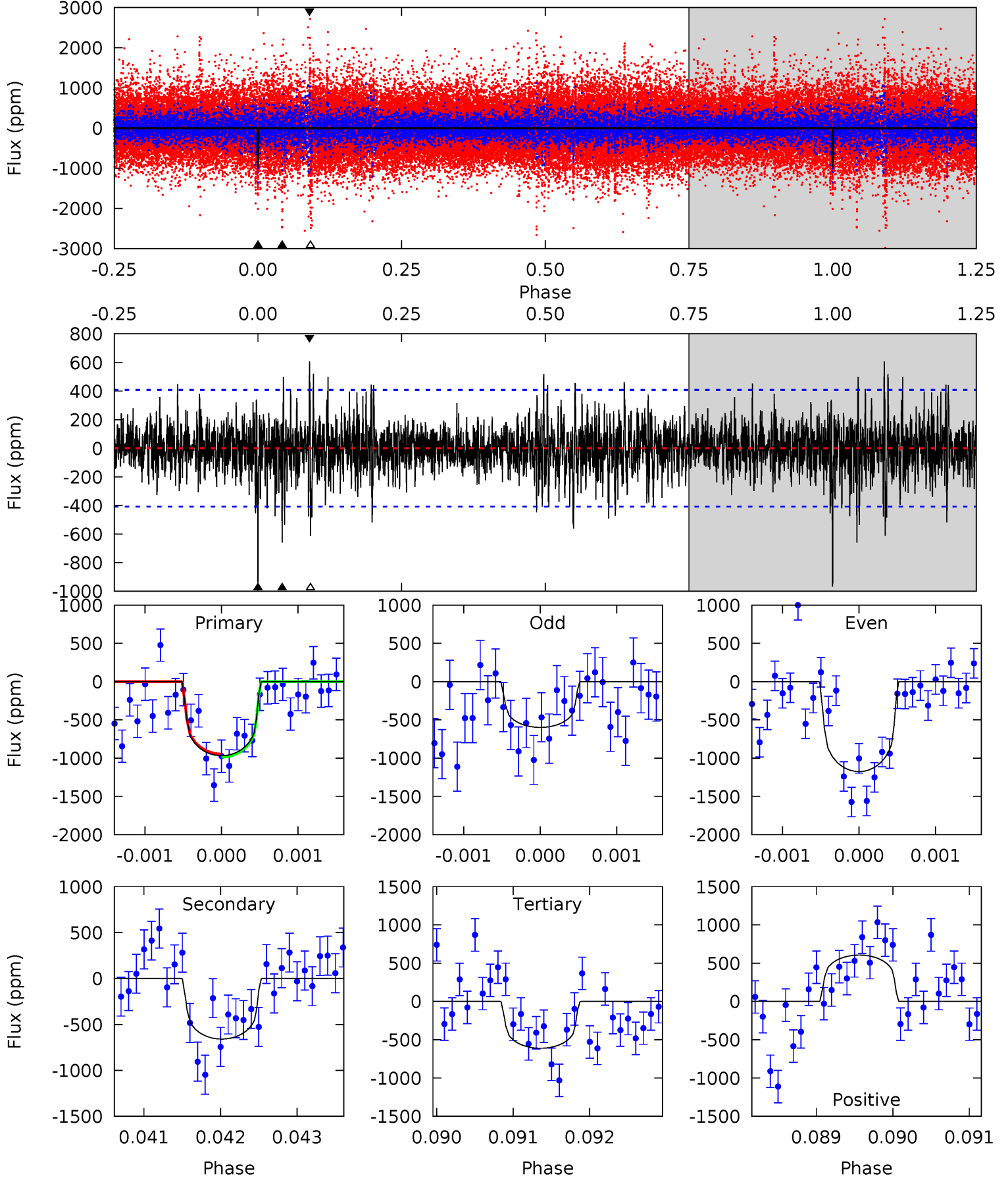
TCE 007765677-02 P=362.300641 Days  $T_0=369.211954$  (BKJD)



# DV Model-Shift Uniqueness Test

007765677-02, P = 362.303186 Days, E = 6.905023 Days

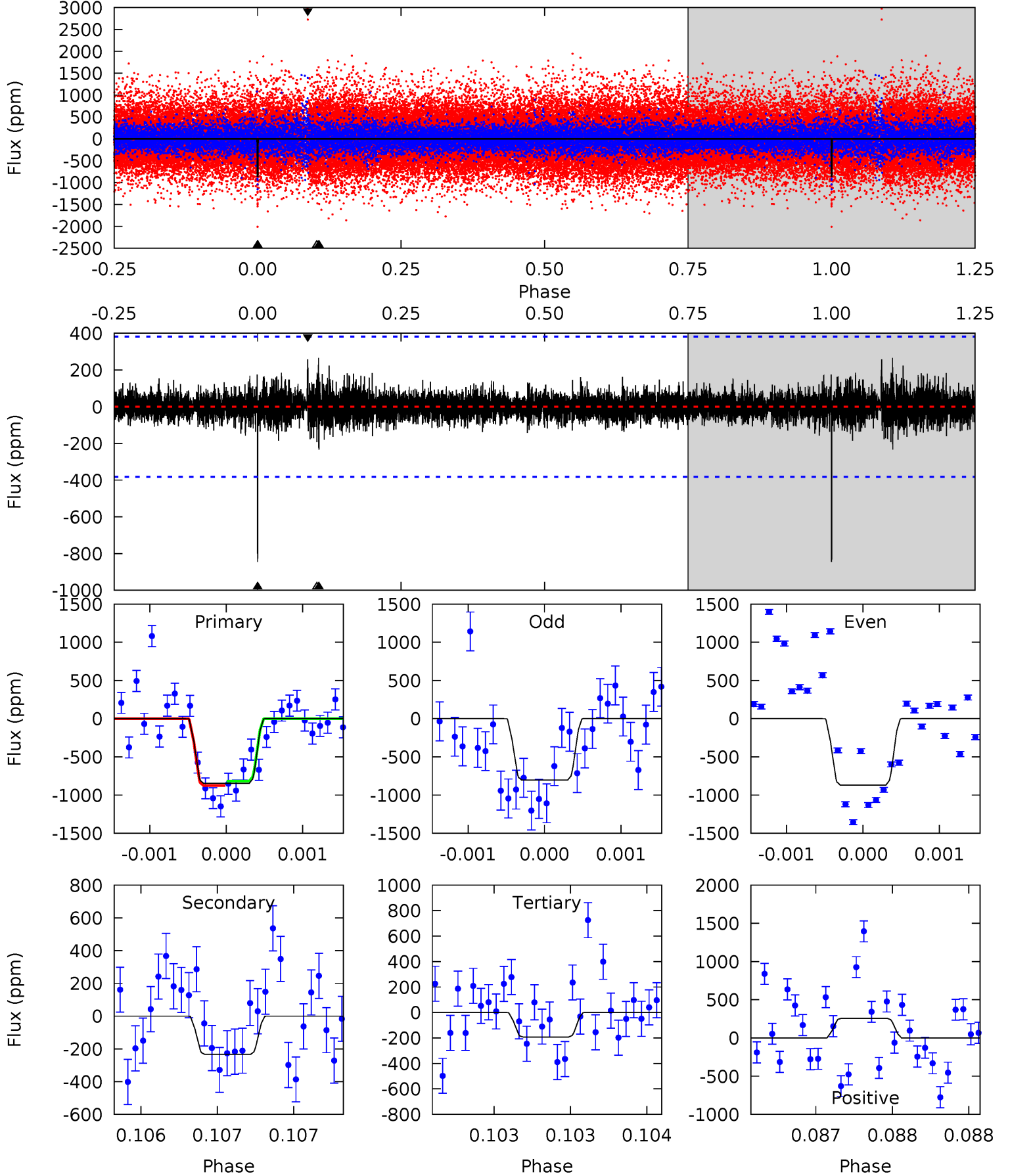
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	8.80	8.16	8.09	5.46	3.30	1.74	4.75	4.83	0.64	0.71	3.61	0.91	0.39	0.27



# Alt Model-Shift Uniqueness Test

007765677-02, P = 362.300641 Days, E = 6.911313 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
12.2	3.36	2.77	3.69	5.49	3.36	0.65	9.39	8.47	0.59	-0.33	0.44	1.08	0.24	0.41





### Stellar Parameters For KIC 007765677

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4266^{+114}_{-140}$	$4.716^{+0.070}_{-0.030}$	$-0.840^{+0.300}_{-0.350}$	$0.521^{+0.044}_{-0.059}$	$0.514^{+0.047}_{-0.042}$	$5.119^{+1.678}_{-0.724}$
	+3%/-3%	+1%/-1%	+36%/-42%	+8%/-11%	+9%/-8%	+33%/-14%
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 007765677-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-659 \pm 75$	$1.97^{+1.49}_{-1.21}$	$210^{+7}_{-9}$	$3795^{+1707}_{-606}$	$60377^{+329551}_{-41042}$
Alt.	$-233 \pm 70$	$2.13^{+1.41}_{-1.34}$	$210^{+8}_{-8}$	$3146^{+1263}_{-430}$	$18398^{+121631}_{-12268}$

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

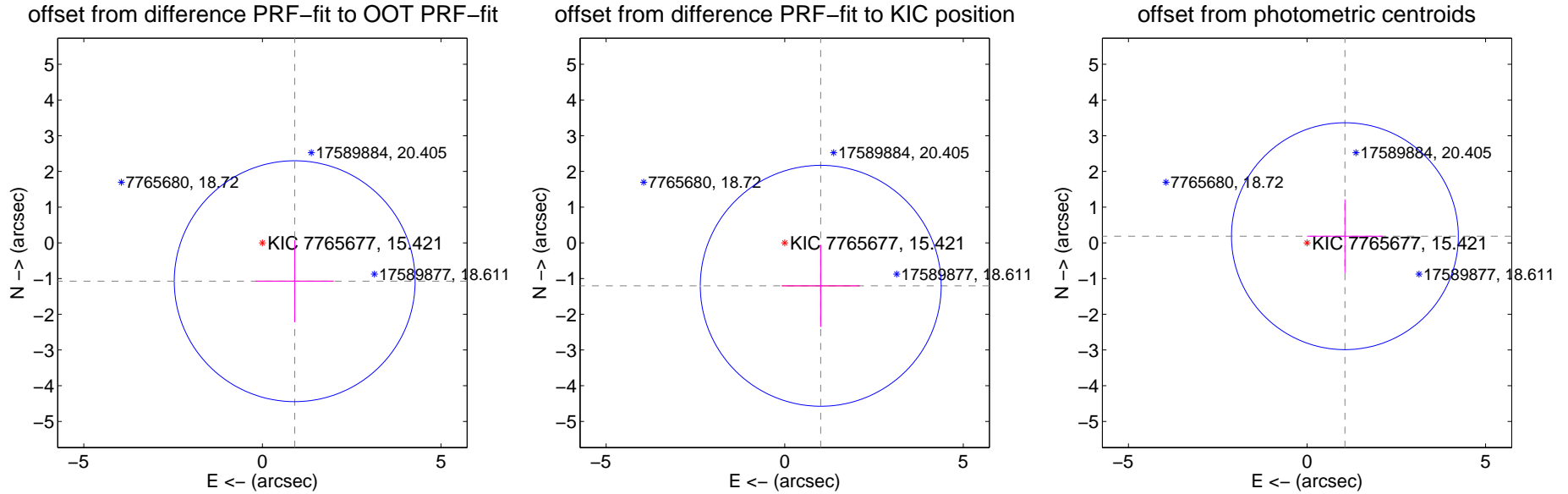
## DV Centroid Data

Supplemental centroid analysis for 007765677-02. Kepler magnitude: 15.42. Transit SNR 7.89

There are 0 quarters with good PRF difference image offsets

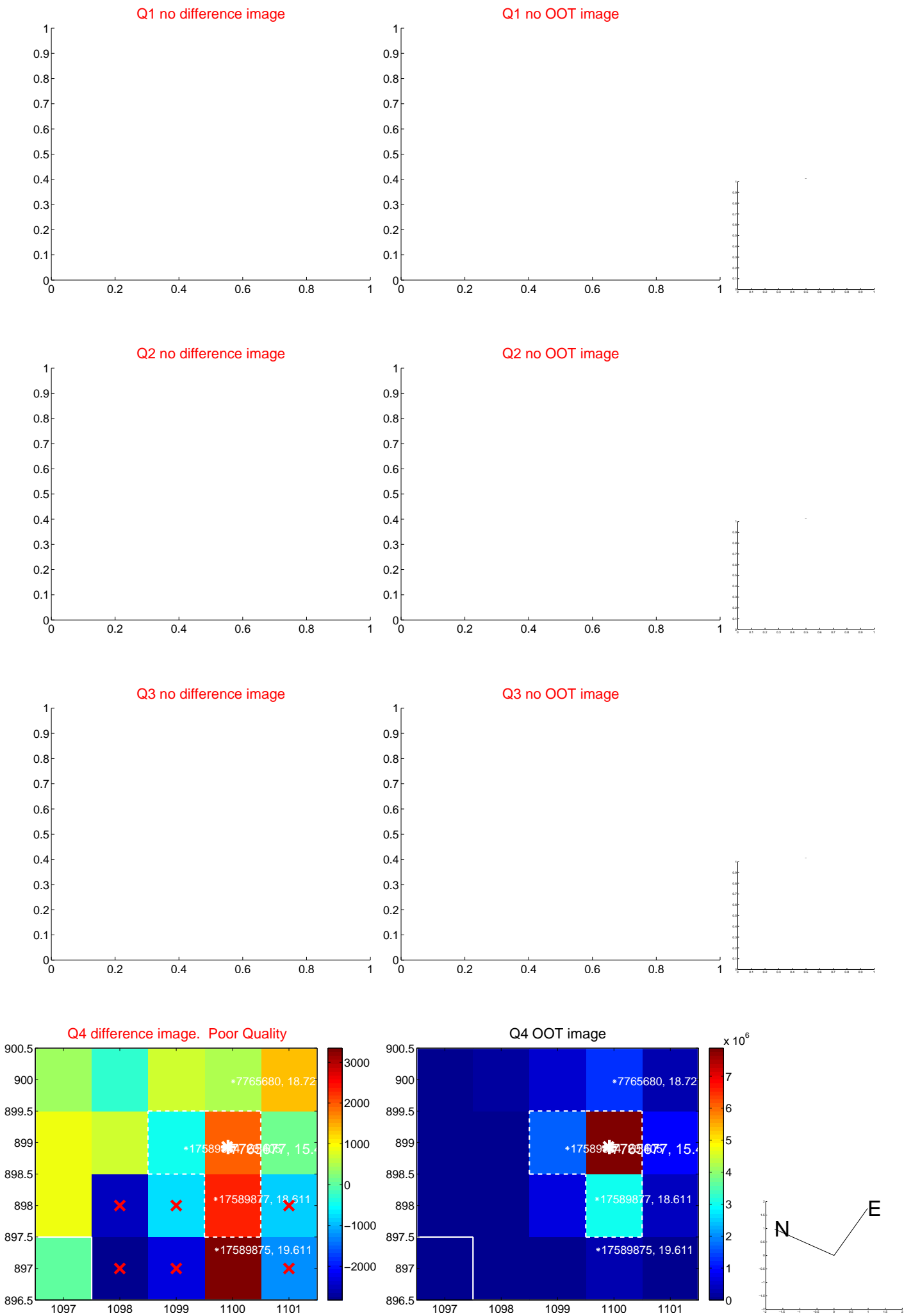
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.404 \pm 1.124$	1.25	$-0.905 \pm 1.091$	$-1.074 \pm 1.147$
PRF-fit source offset from KIC position	$1.570 \pm 1.124$	1.40	$-1.009 \pm 1.091$	$-1.202 \pm 1.147$
photometric centroid source offset	$1.08 \pm 1.06$	1.02	$-1.06 \pm 1.06$	$0.19 \pm 1.03$



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

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



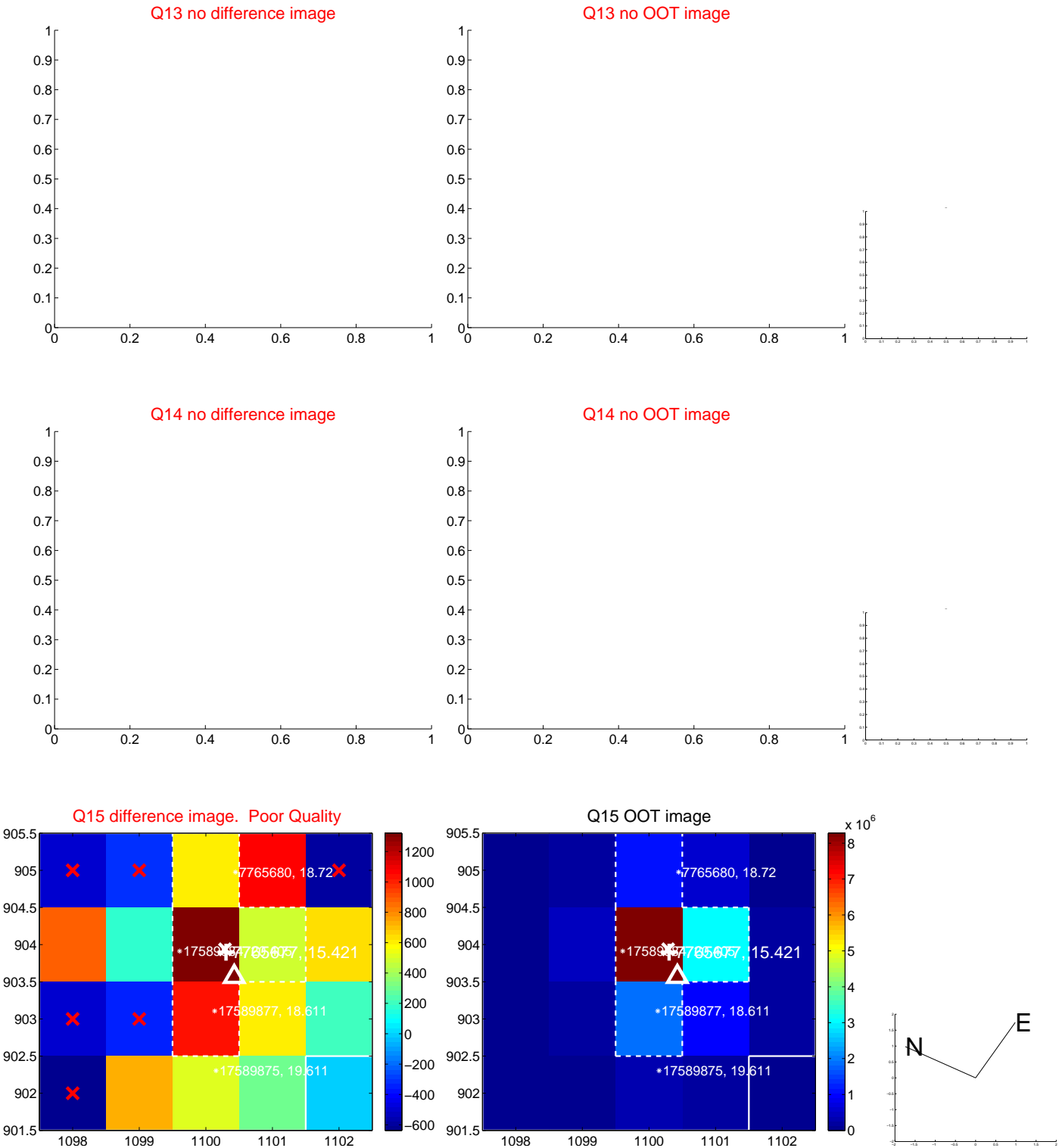
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



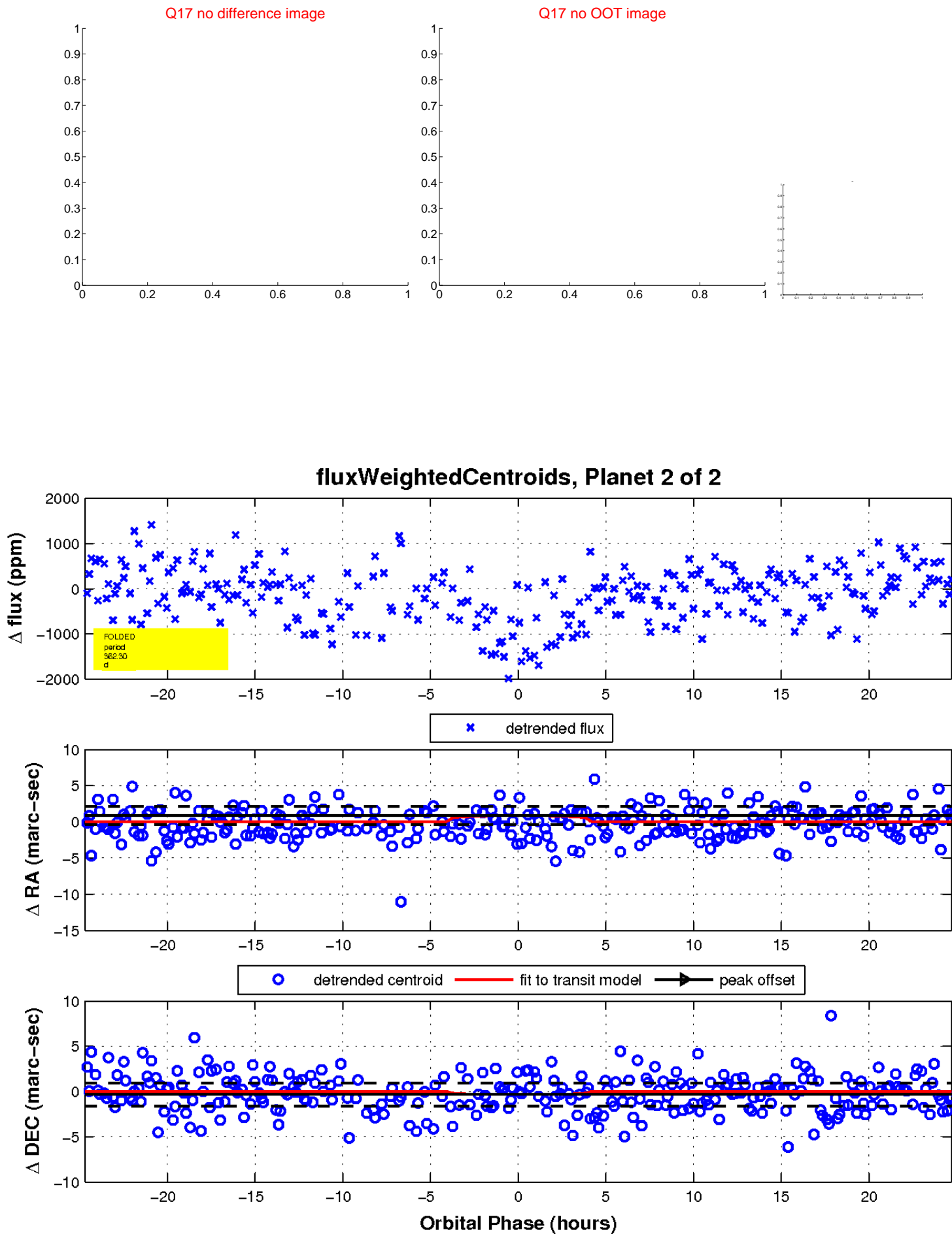
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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

