

# KIC 007686191

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007686191-02	OBS	8141.01	380.052324	387.610264	977.7	21.377	8.5	9.0	0.82	5477	3.05	0.55
007686191-03	OBS	No	365.361487	402.972021	1132.4	18.104	7.4	7.8	0.82	5477	5.36	0.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007686191-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007686191-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

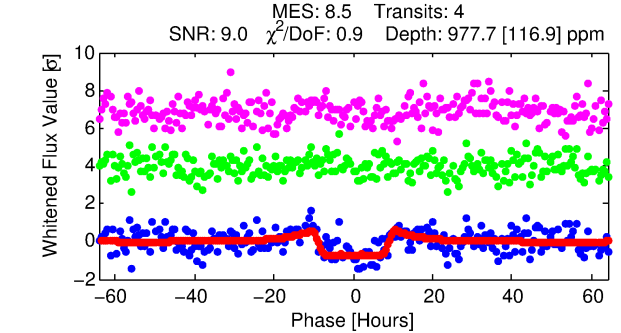
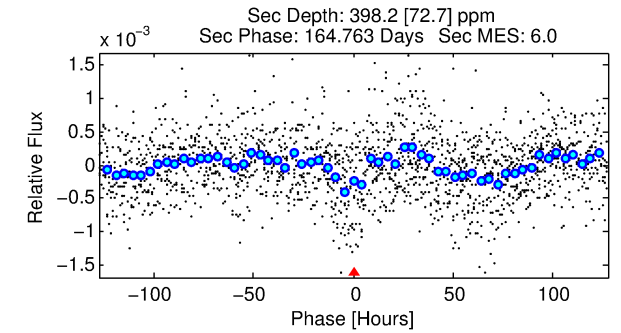
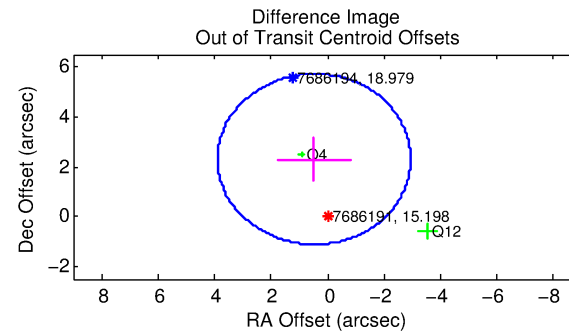
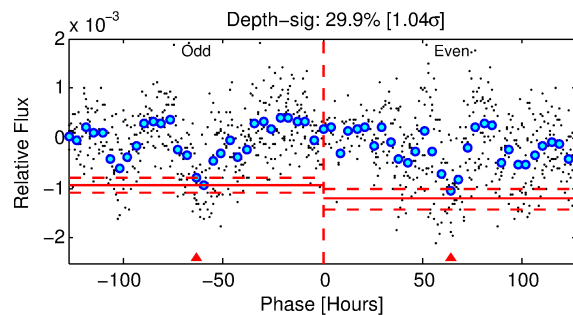
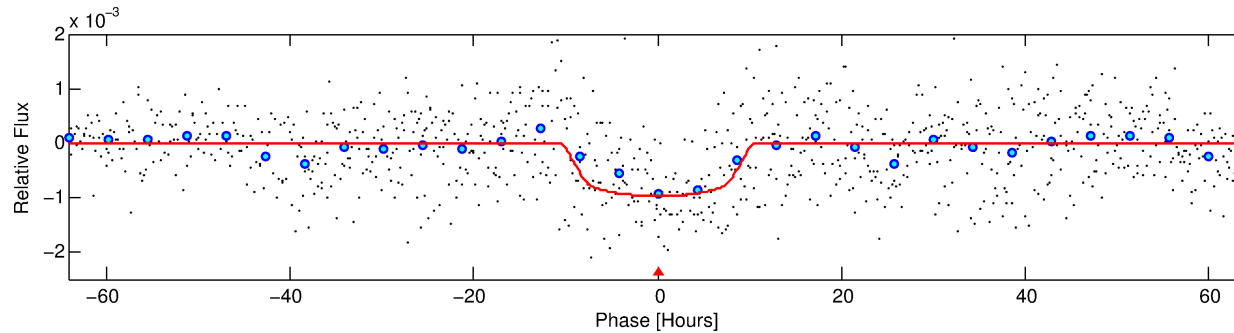
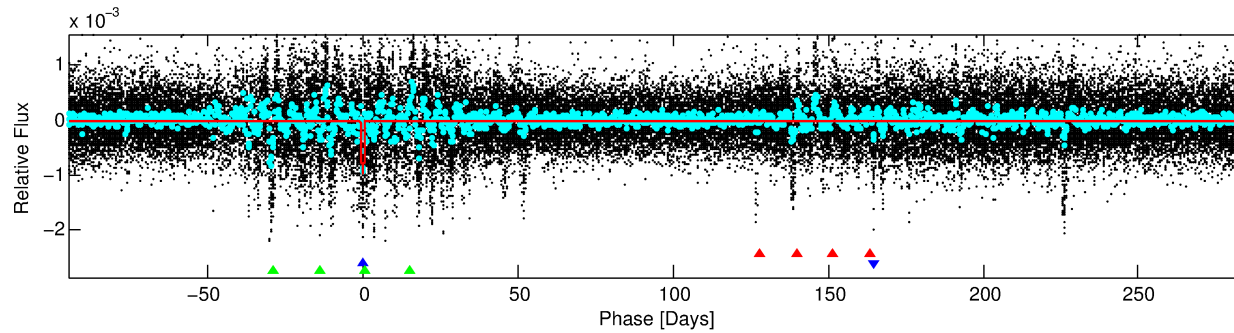
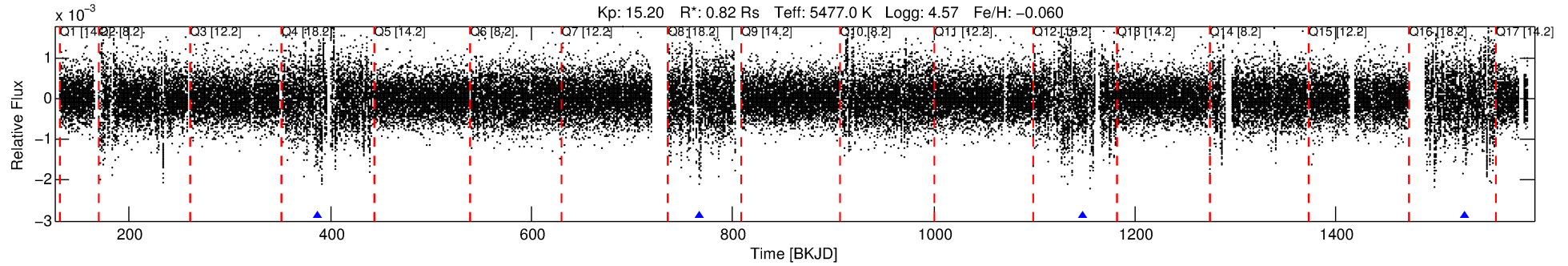
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007686191-02

No Significant Match Found

# DV One-Page Summary

KIC: 7686191 Candidate: 2 of 3 Period: 380.052 d



## DV Fit Results:

Period = 380.05232 [0.01228] d  
Epoch = 387.6103 [0.0232] BKJD  
Rp/R\* = 0.0342 [0.0029]  
a/R\* = 70.19 [15.07]  
b = 0.90 [0.05]  
Seff = 0.55 [0.17]  
Teq = 219 [17] K  
Rp = 3.05 [0.75] Re  
a = 0.9926 [0.1916] AU  
Ag = 23150.59 [8660.84] [2.67 $\sigma$ ]  
Teff = 4183 [288] K [13.76 $\sigma$ ]

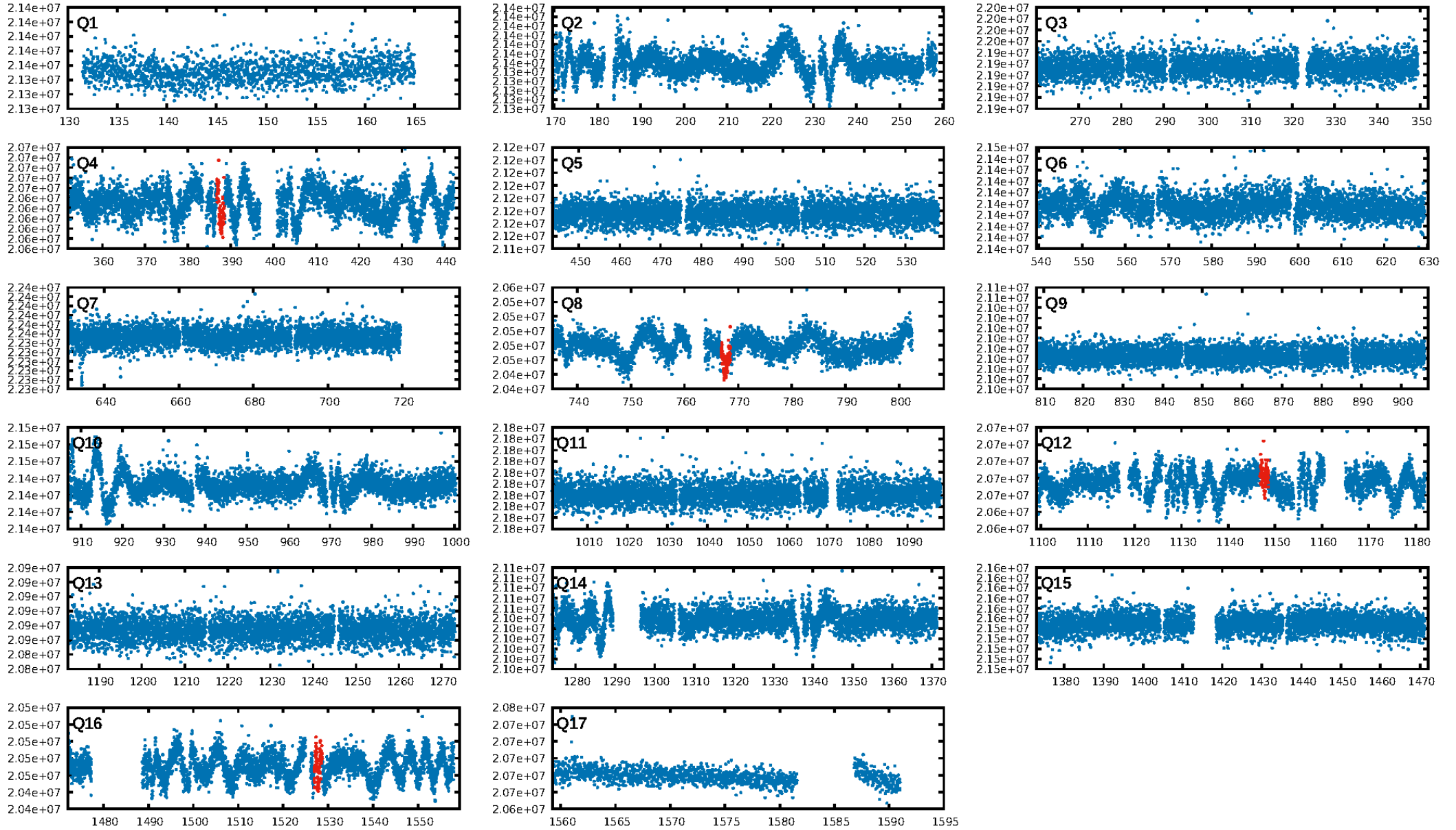
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.41 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 59.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 3.02e-09**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -3.135  
Centroid-sig: 91.6%  
Centroid-so: 0.565 arcsec [0.34 $\sigma$ ]  
OotOffset-rm: 2.348 arcsec [2.06 $\sigma$ ]  
KicOffset-rm: 2.293 arcsec [2.32 $\sigma$ ]  
OotOffset-st: 0/0/2/0 [2]  
KicOffset-st: 0/0/2/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.67 [2/3]

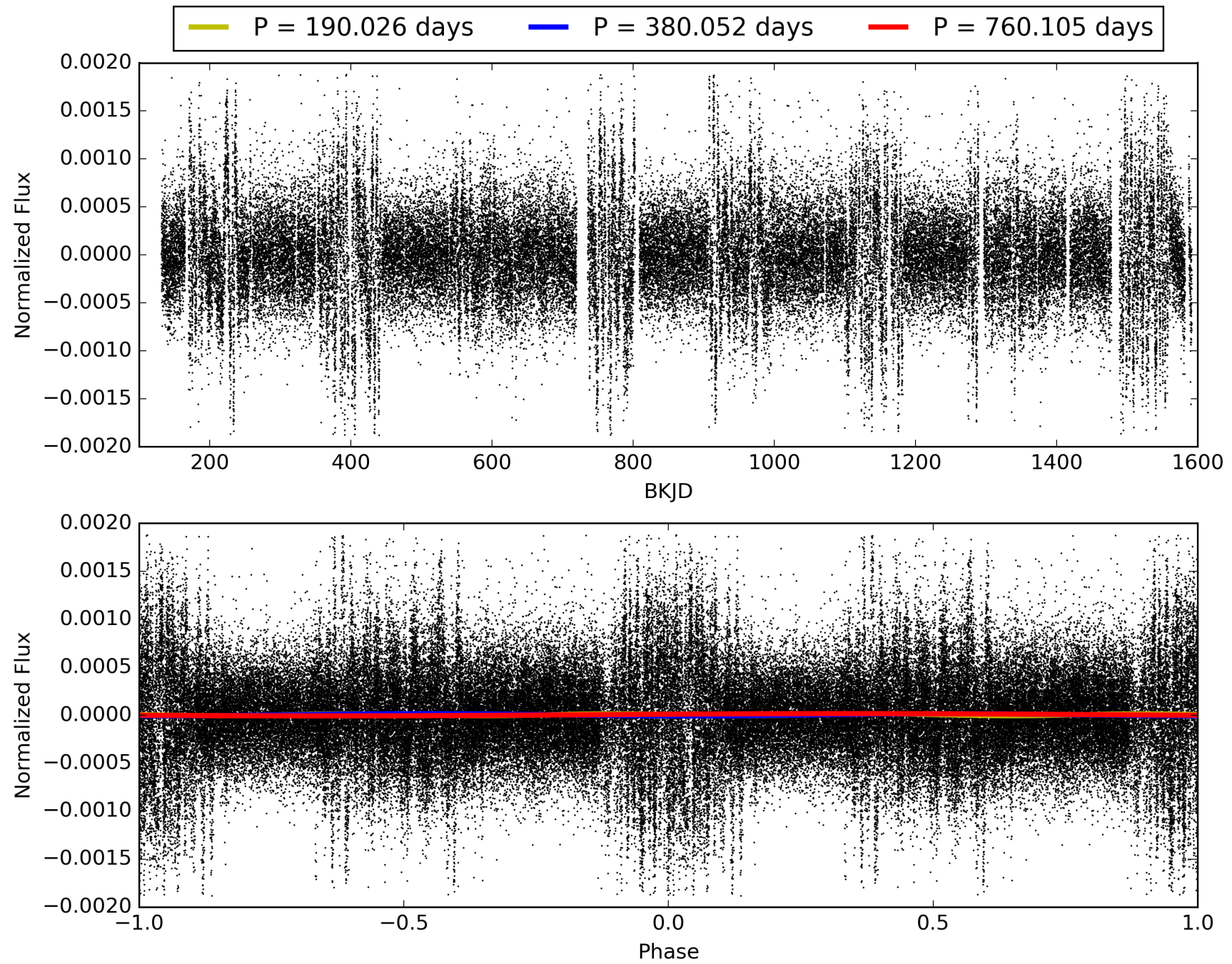
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:26:42 Z

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

# TCE 007686191-02, PDC Light Curves

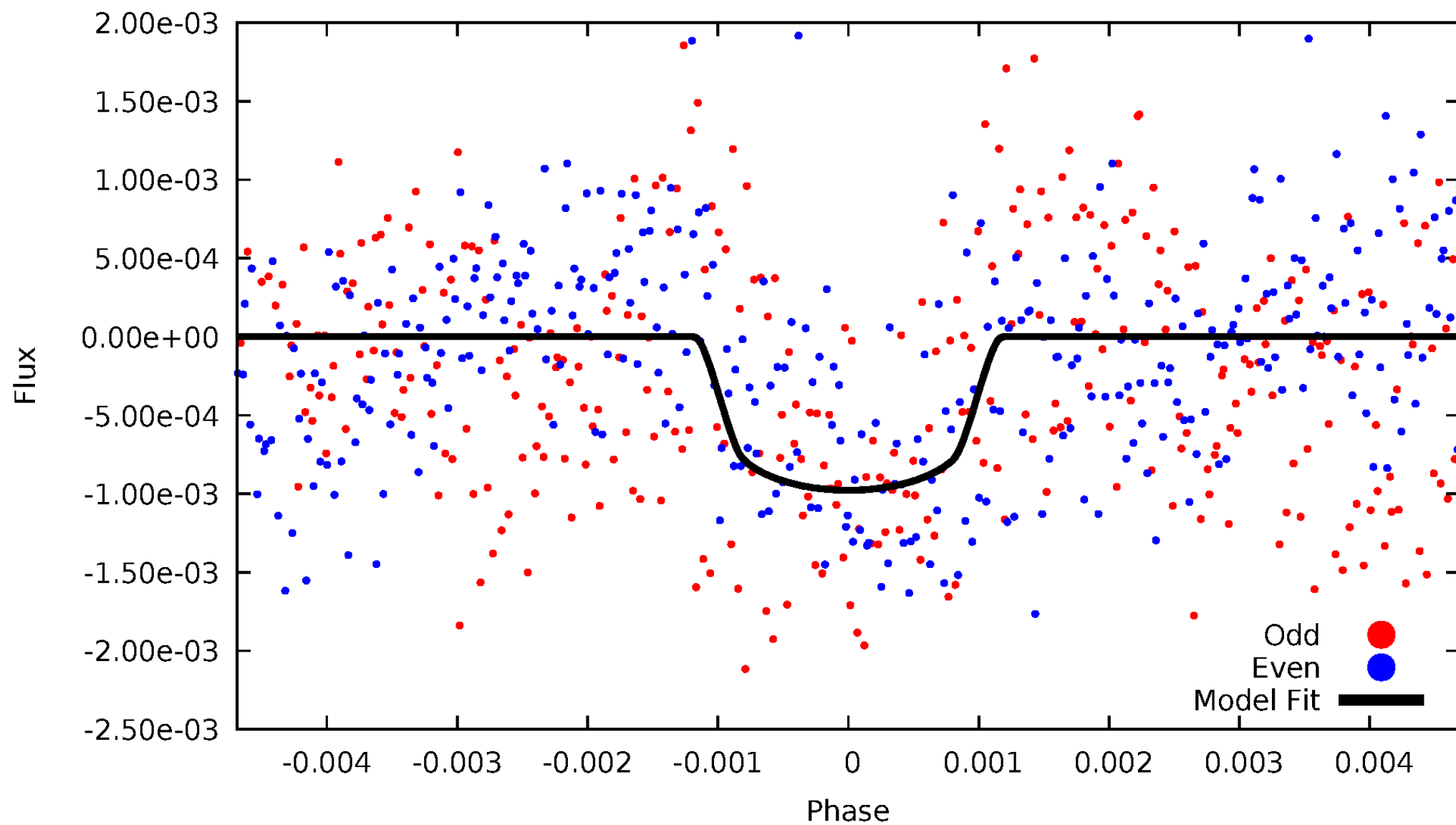


TCE 007686191-02



# DV Odd/Even

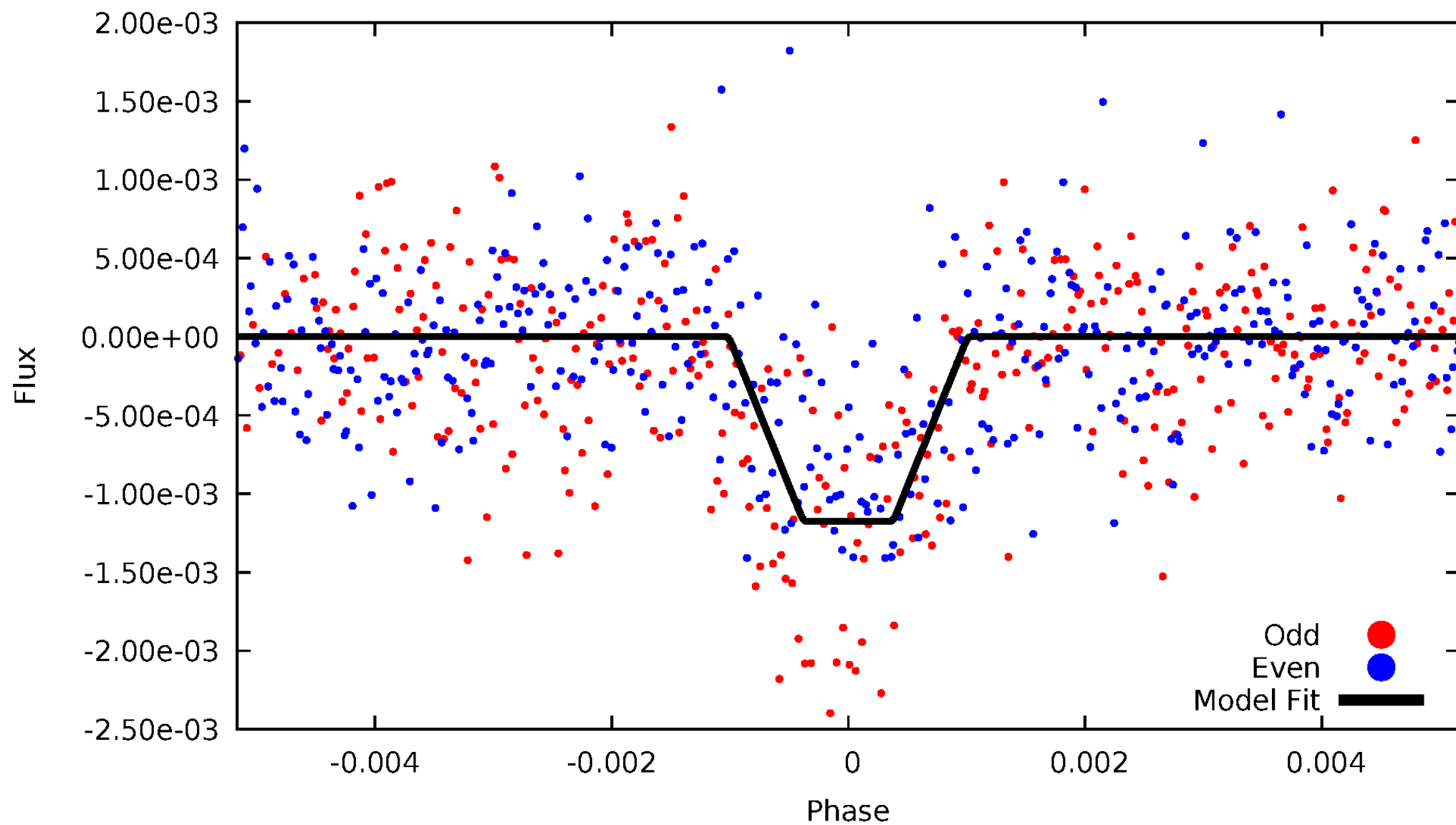
TCE 007686191-02





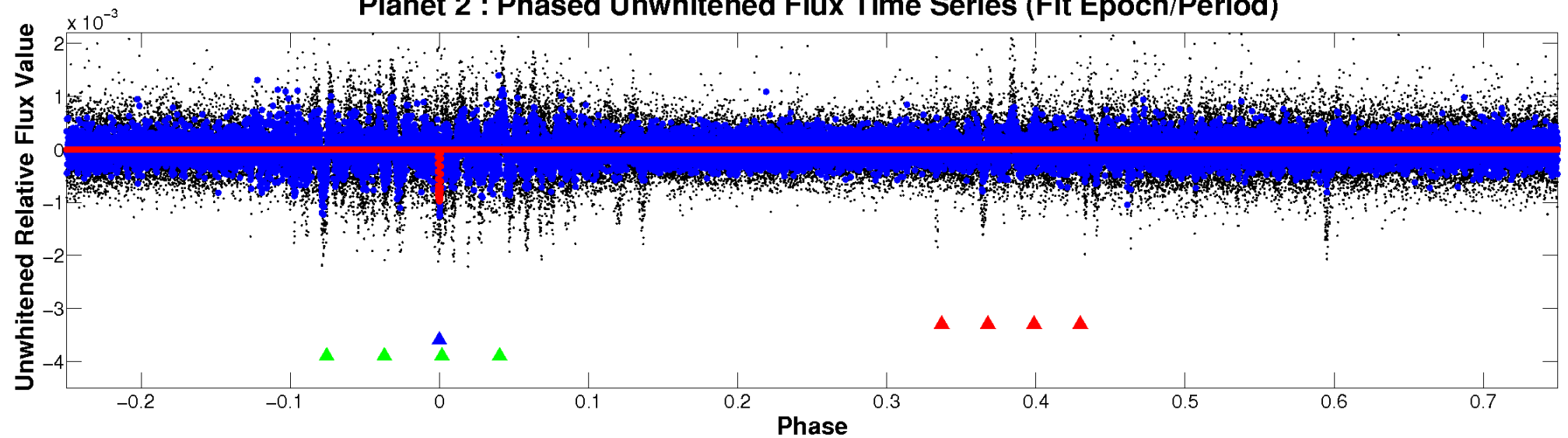
# ALT Odd/Even

TCE 007686191-02

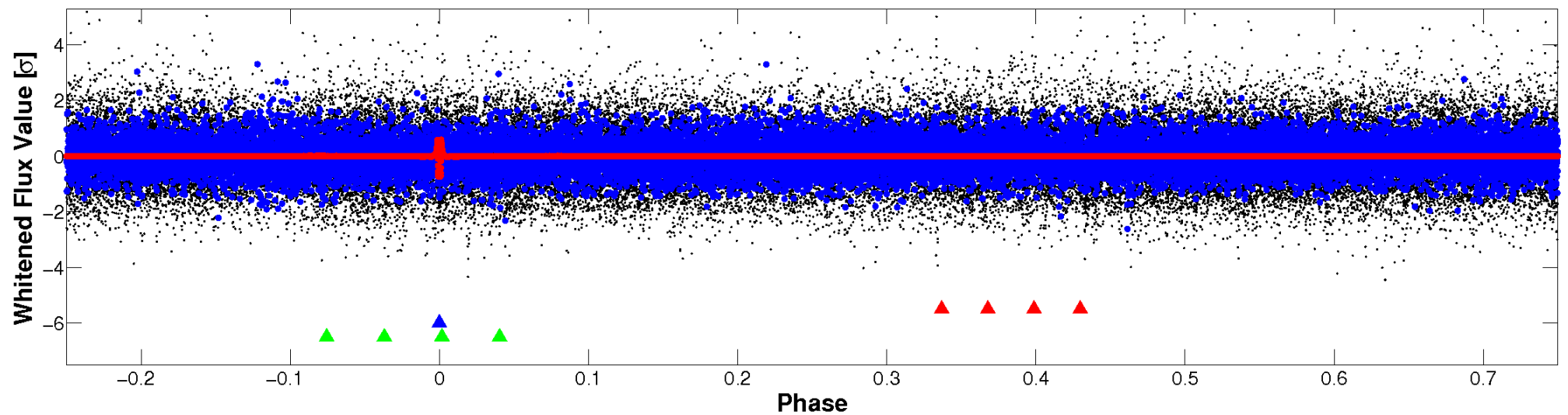


# Non-Whitened Vs. Whitened Light Curve

## 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

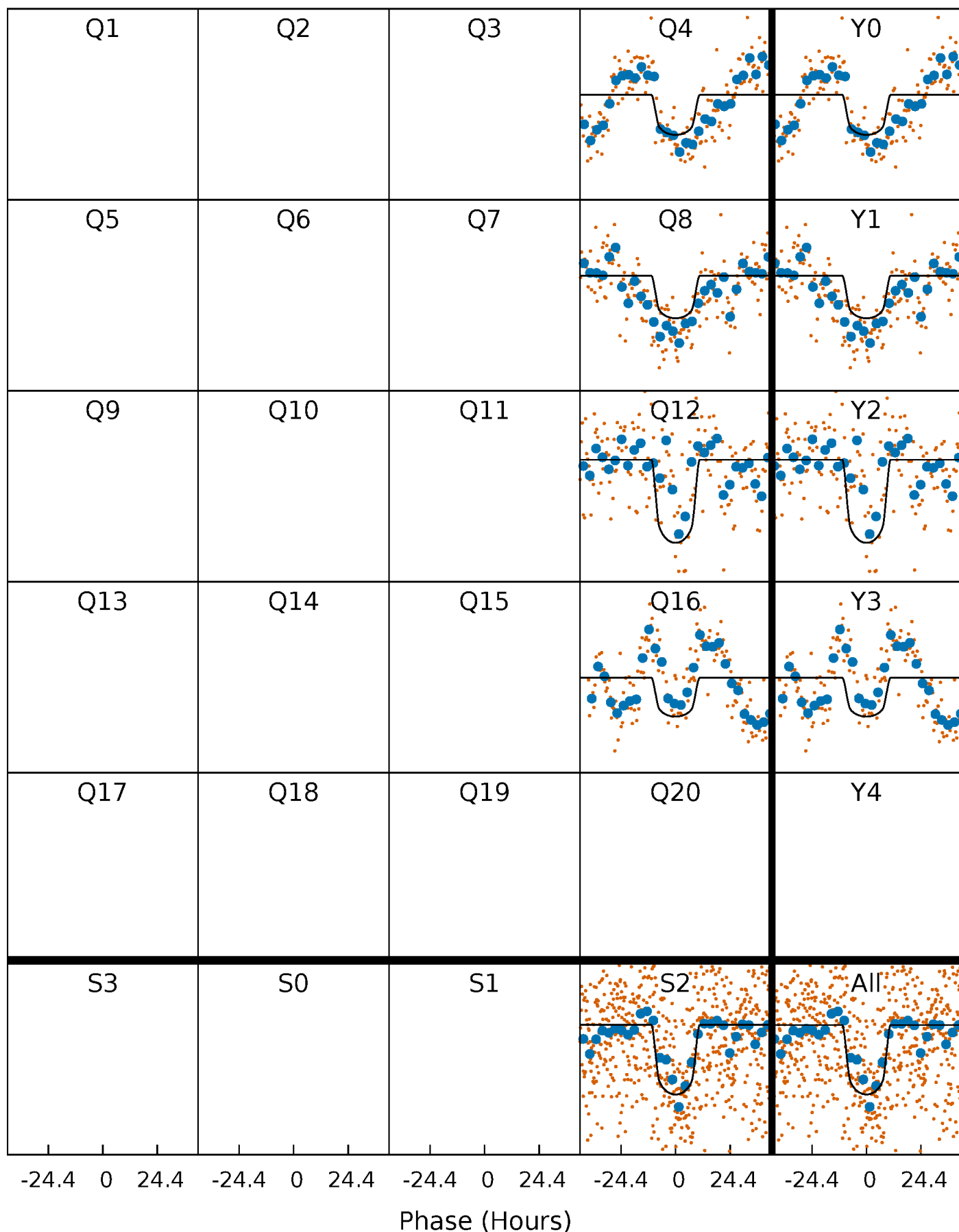
TCE 007686191-02     $P=380.052323$  Days     $T_0=387.610264$  (BKJD)





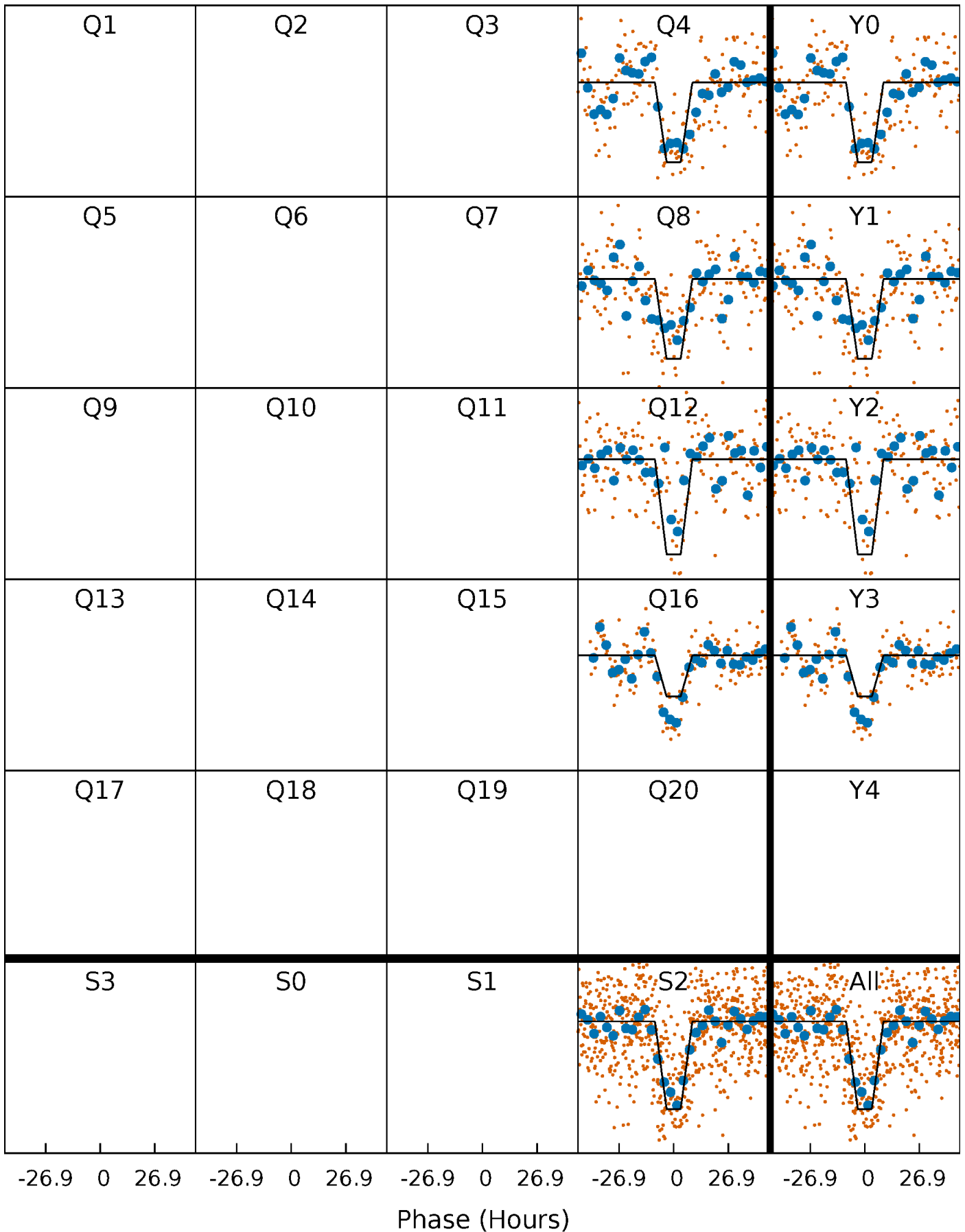
# DV Quarter-Phased Transit Curves

TCE 007686191-02     $P=380.052323$  Days     $T_0=387.610264$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

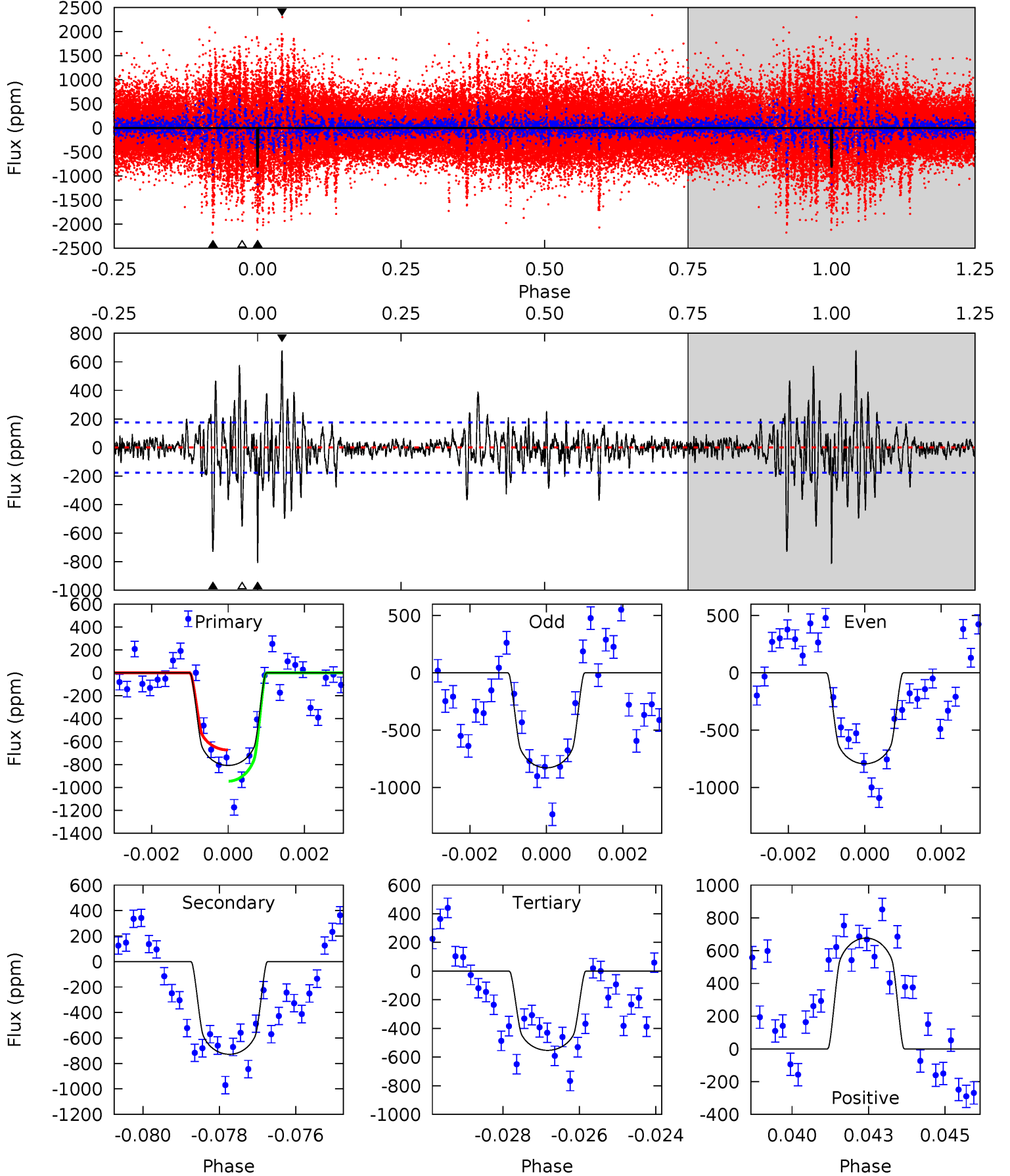
TCE 007686191-02     $P=380.098272$  Days     $T_0=387.561577$  (BKJD)



# DV Model-Shift Uniqueness Test

007686191-02, P = 380.052323 Days, E = 7.557941 Days

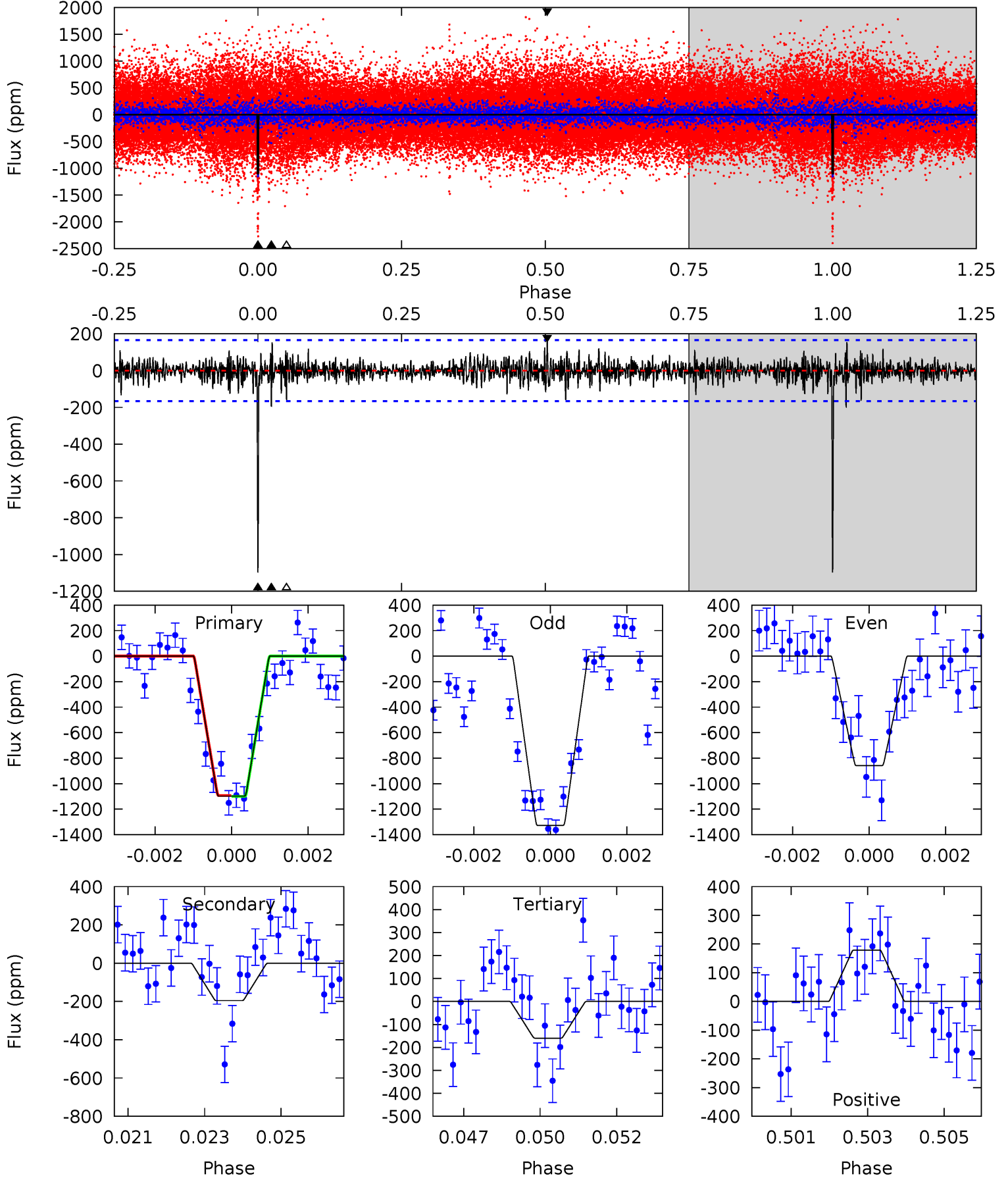
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.4	22.0	16.7	20.4	5.30	3.04	3.44	7.70	3.98	5.28	1.55	0.53	1.04	0.46	4.12



# Alt Model-Shift Uniqueness Test

007686191-02, P = 380.098272 Days, E = 7.463305 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
35.2	6.28	5.13	5.74	5.32	3.08	1.17	30.1	29.4	1.15	0.54	7.51	1.12	0.14	0.12



### Stellar Parameters For KIC 007686191

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5477^{+164}_{-164}$	$4.568^{+0.036}_{-0.153}$	$-0.060^{+0.300}_{-0.300}$	$0.818^{+0.188}_{-0.063}$	$0.905^{+0.082}_{-0.099}$	$2.331^{+0.440}_{-0.991}$
	+3%/-3%	+1%/-3%	+500%/-500%	+23%/-8%	+9%/-11%	+19%/-42%
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 007686191-02 / KOI 8141.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-728 \pm 33$	$3.14^{+0.42}_{-0.34}$	$313^{+17}_{-13}$	$4953^{+238}_{-214}$	$38930^{+10173}_{-7909}$
Alt.	$-196 \pm 31$	$3.15^{+0.44}_{-0.36}$	$312^{+16}_{-12}$	$3839^{+184}_{-168}$	$10362^{+3094}_{-2680}$

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

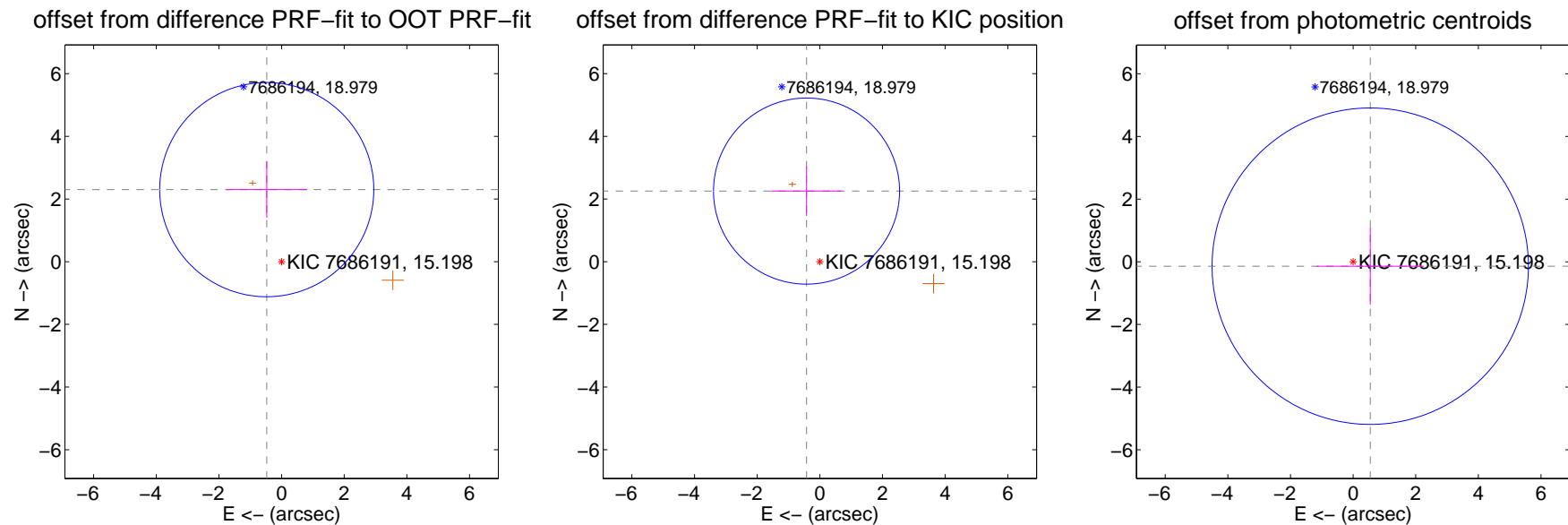
## DV Centroid Data

Supplemental centroid analysis for 007686191-02. Kepler magnitude: 15.20. Transit SNR 8.97

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

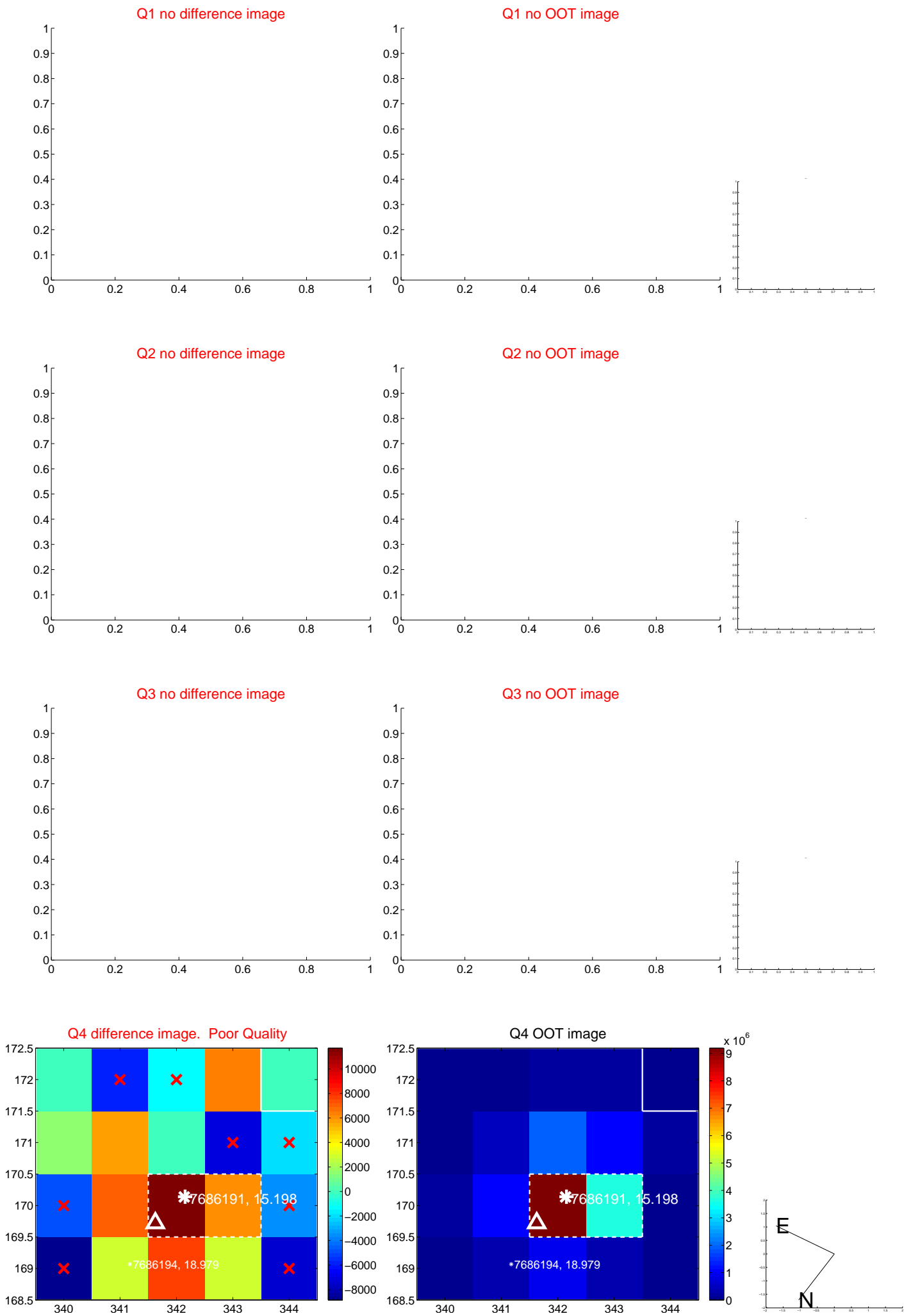
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.348 \pm 1.139$	2.06	$0.474 \pm 1.293$	$2.299 \pm 0.897$
PRF-fit source offset from KIC position	$2.293 \pm 0.990$	2.32	$0.425 \pm 1.129$	$2.253 \pm 0.795$
photometric centroid source offset	$0.57 \pm 1.68$	0.34	$-0.55 \pm 1.71$	$-0.14 \pm 1.23$



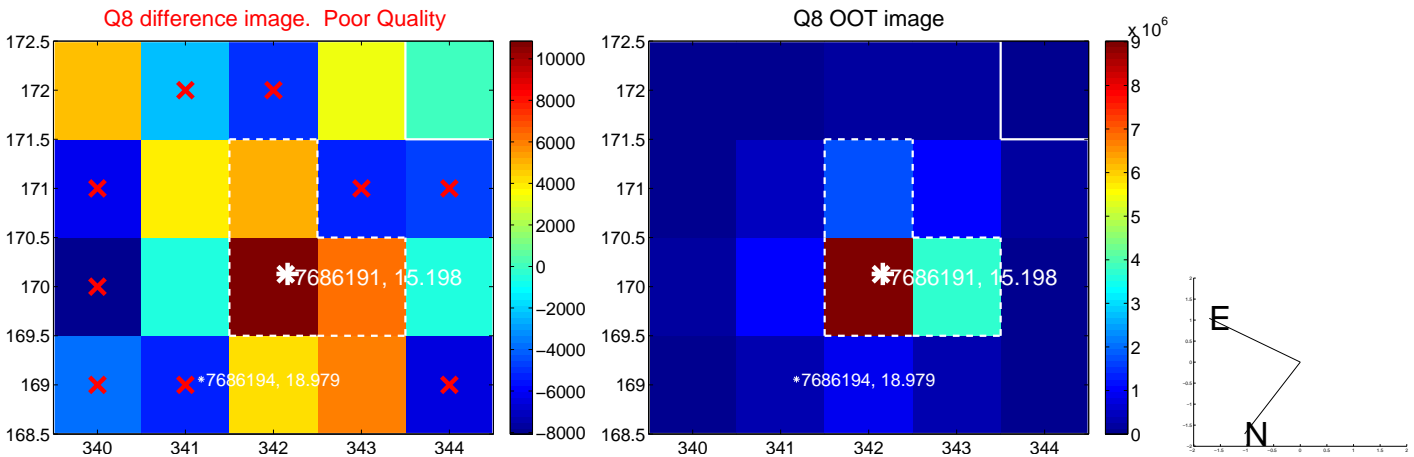
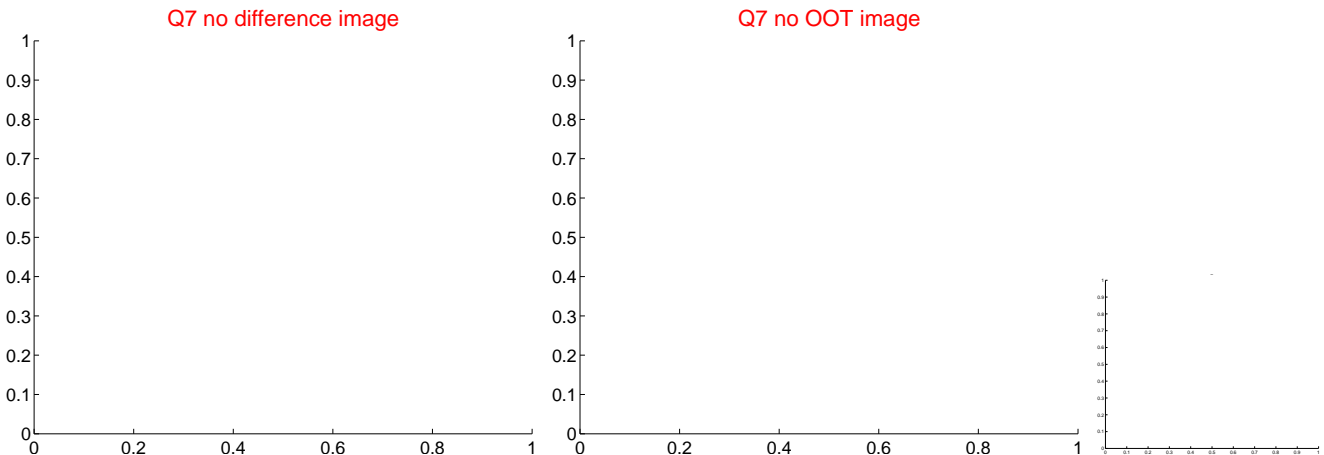
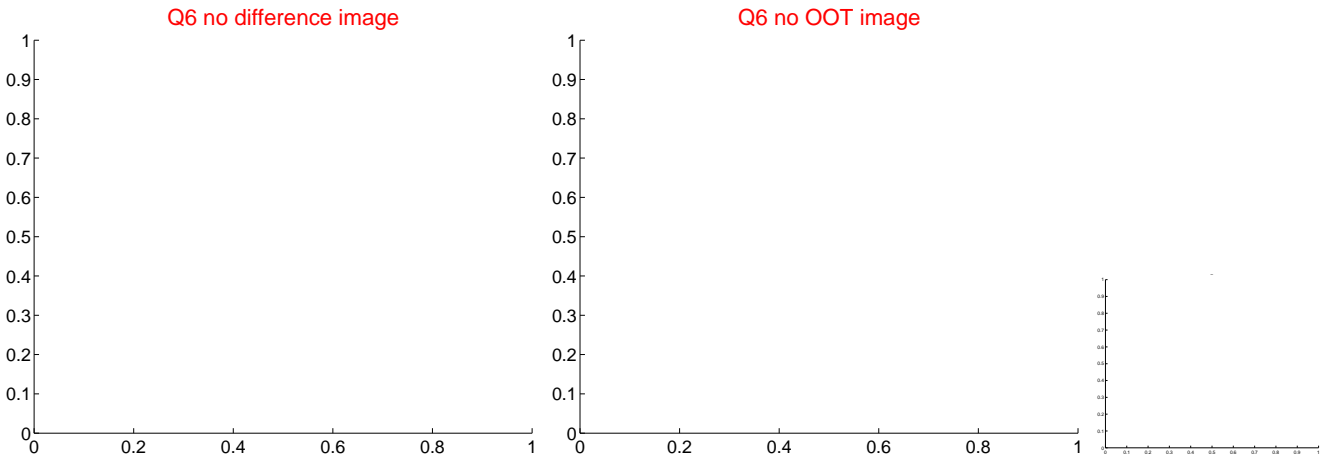
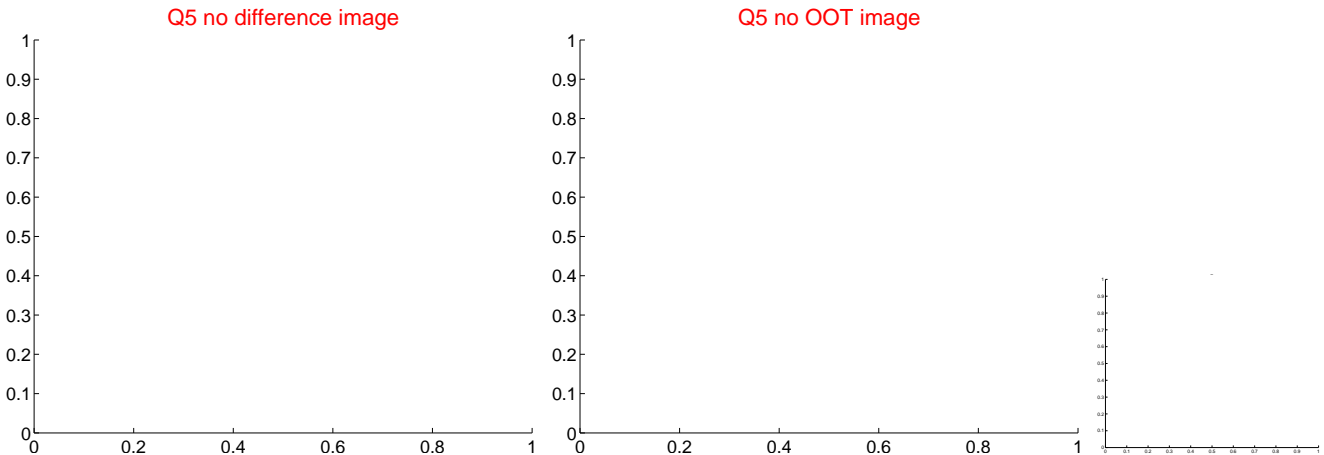
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



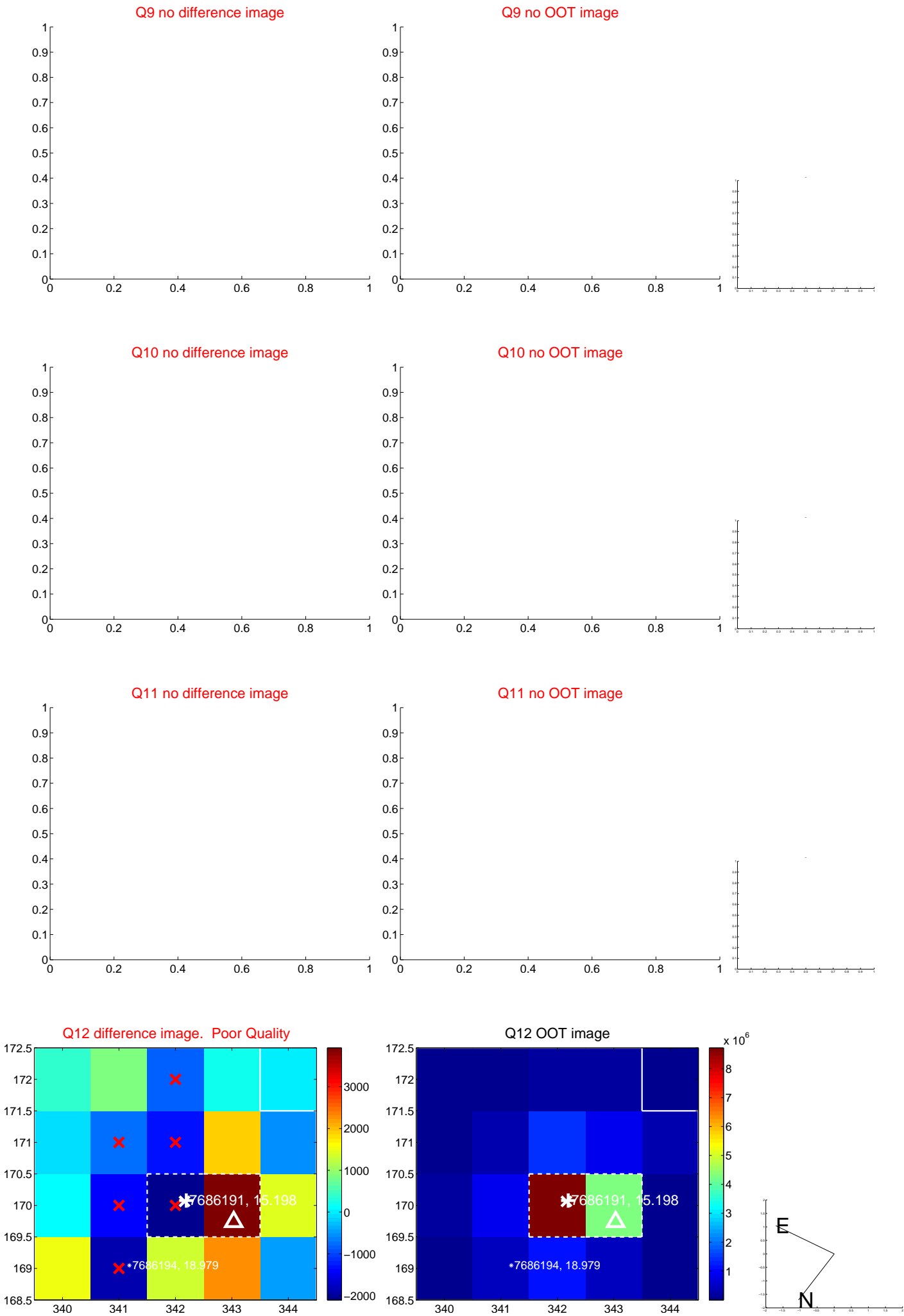
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



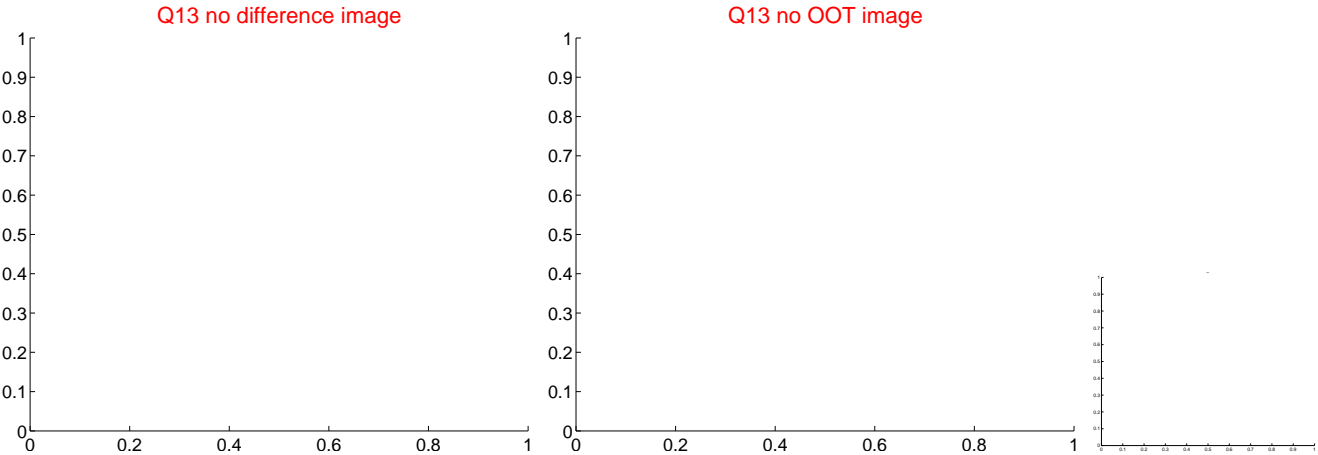
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



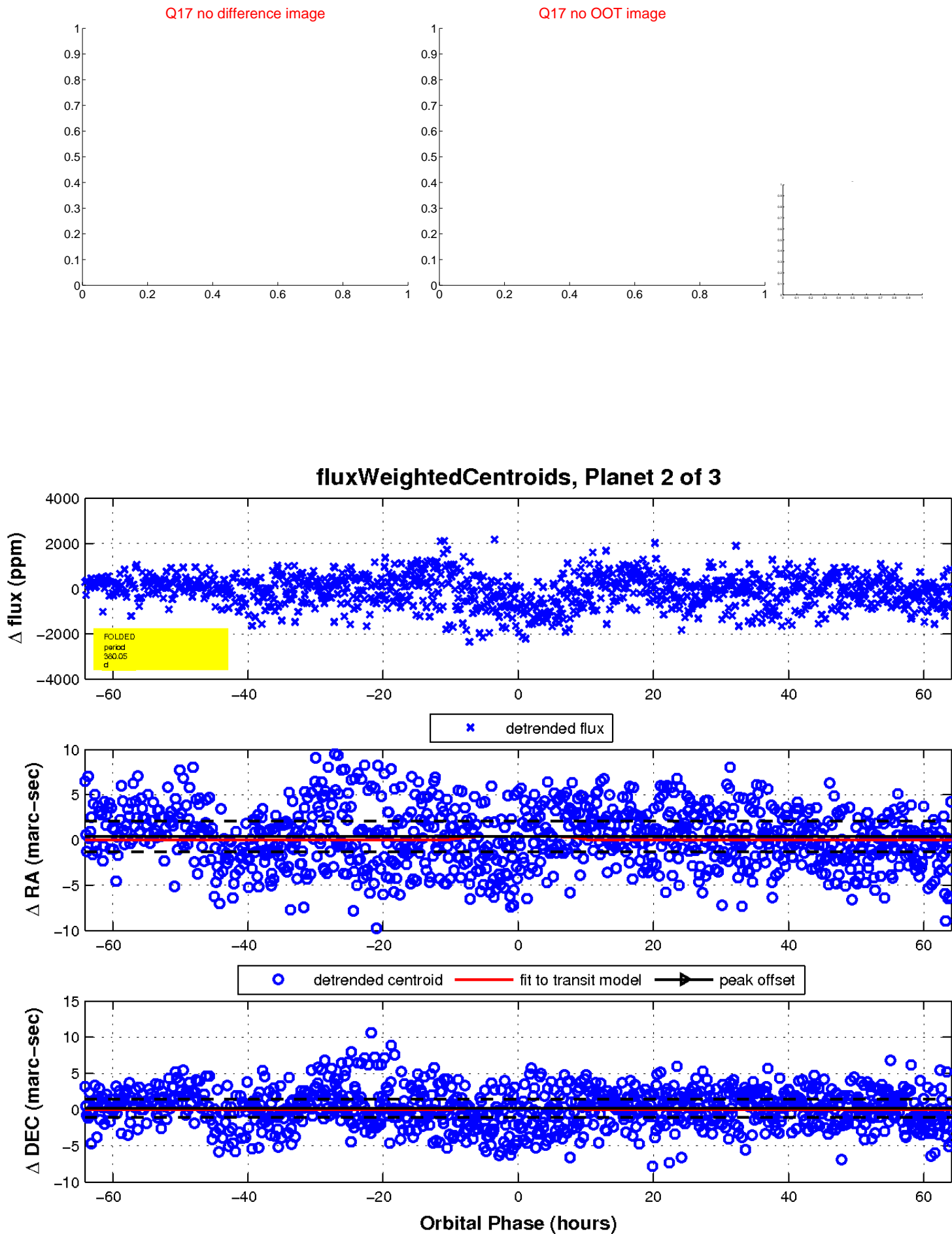
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

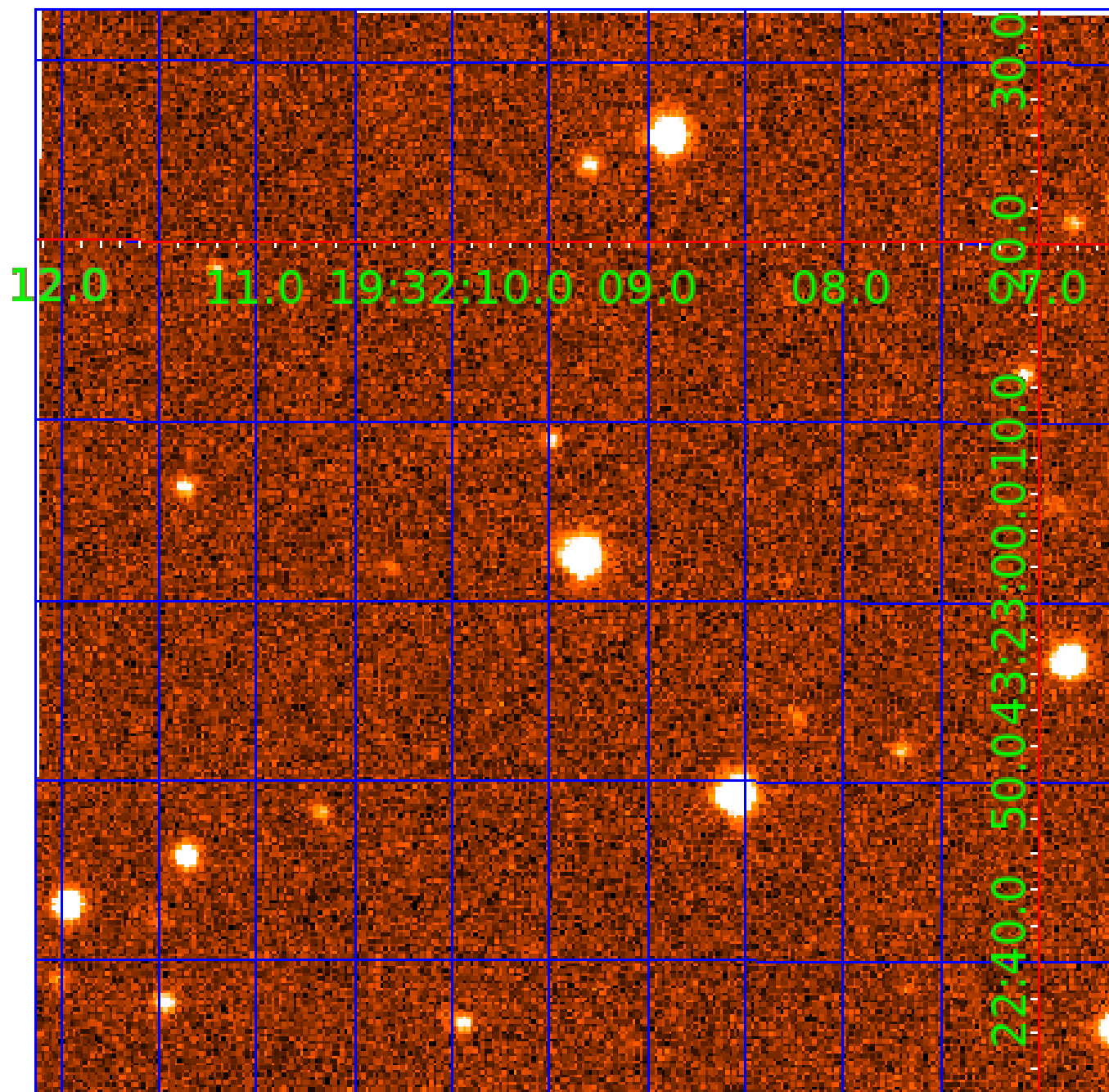


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007686191

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007686191-02	OBS	8141.01	380.052324	387.610264	977.7	21.377	8.5	9.0	0.82	5477	3.05	0.55
007686191-03	OBS	No	365.361487	402.972021	1132.4	18.104	7.4	7.8	0.82	5477	5.36	0.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007686191-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007686191-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

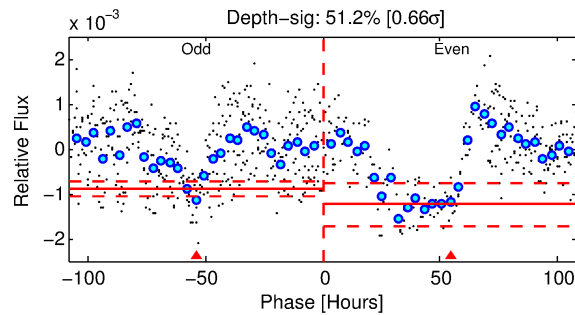
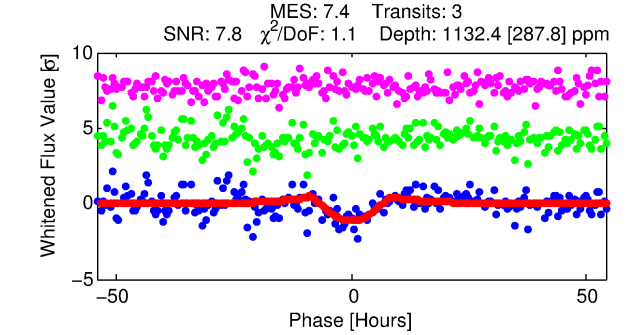
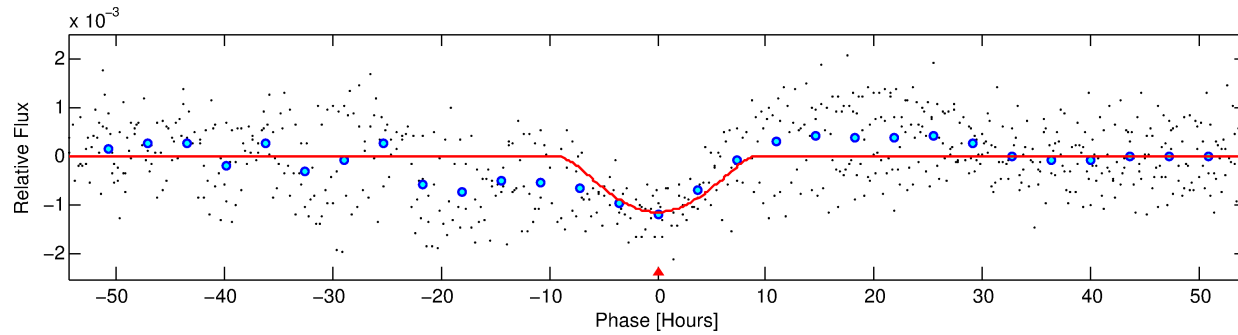
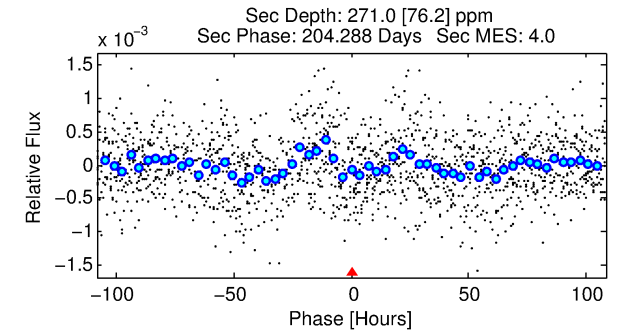
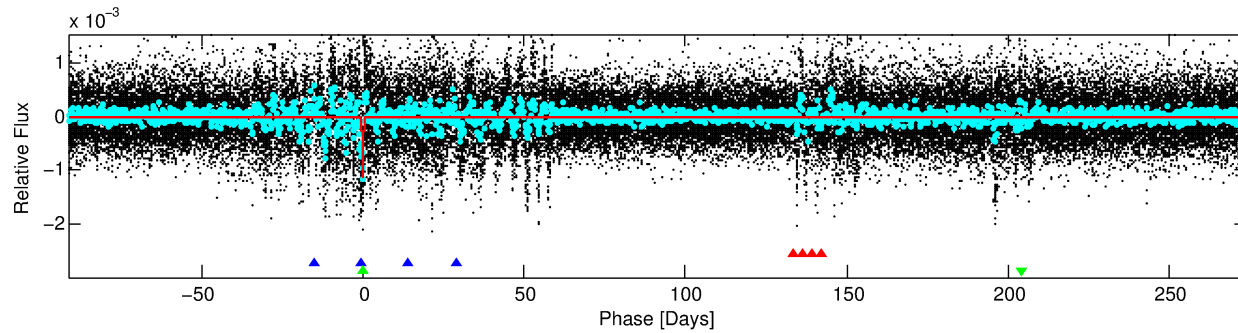
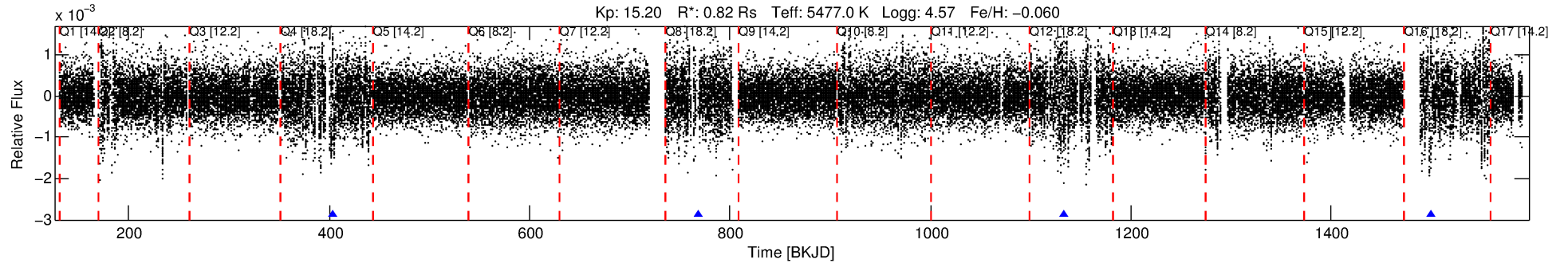
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007686191-03

No Significant Match Found

# DV One-Page Summary

KIC: 7686191 Candidate: 3 of 3 Period: 365.361 d



## DV Fit Results:

Period = 365.36149 [0.01823] d  
Epoch = 402.9720 [0.0347] BKJD  
Rp/R\* = 0.0601 [0.1960]  
a/R\* = 54.70 [41.44]  
b = 1.00 [0.29]  
Seff = 0.58 [0.18]  
Teq = 222 [17] K  
Rp = 5.36 [17.54] Re  
a = 0.9668 [0.1866] AU  
Ag = 4846.67 [31679.61] [0.15σ]  
Teffp = 2867 [4682] K [0.56σ]

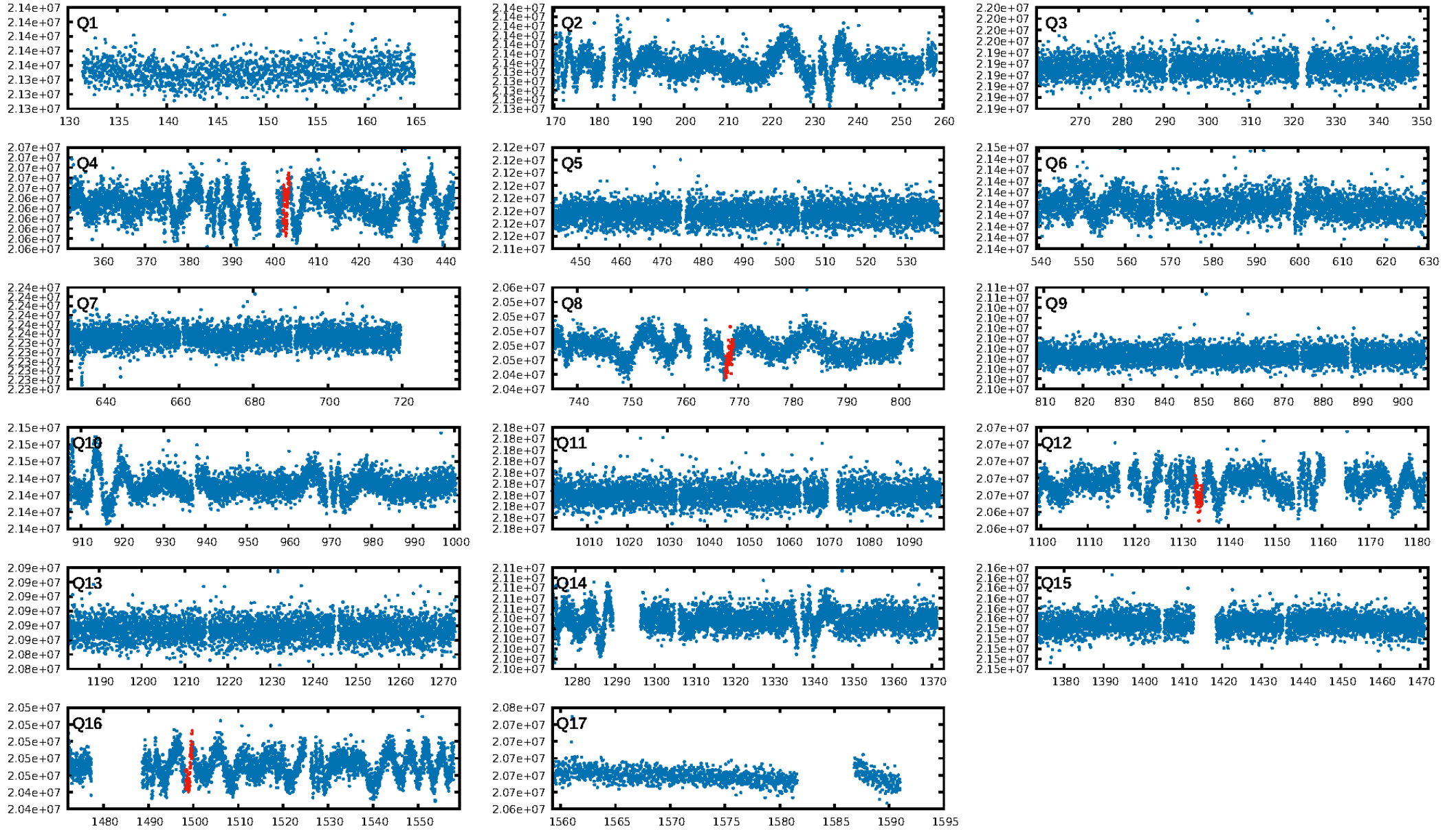
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 99.9% [3.19σ]  
ModelChiSquare2-sig: 5.5%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 7.09e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -2.048  
Centroid-sig: 50.9%  
Centroid-so: 1.483 arcsec [0.86σ]  
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: 0.00 [0/1]

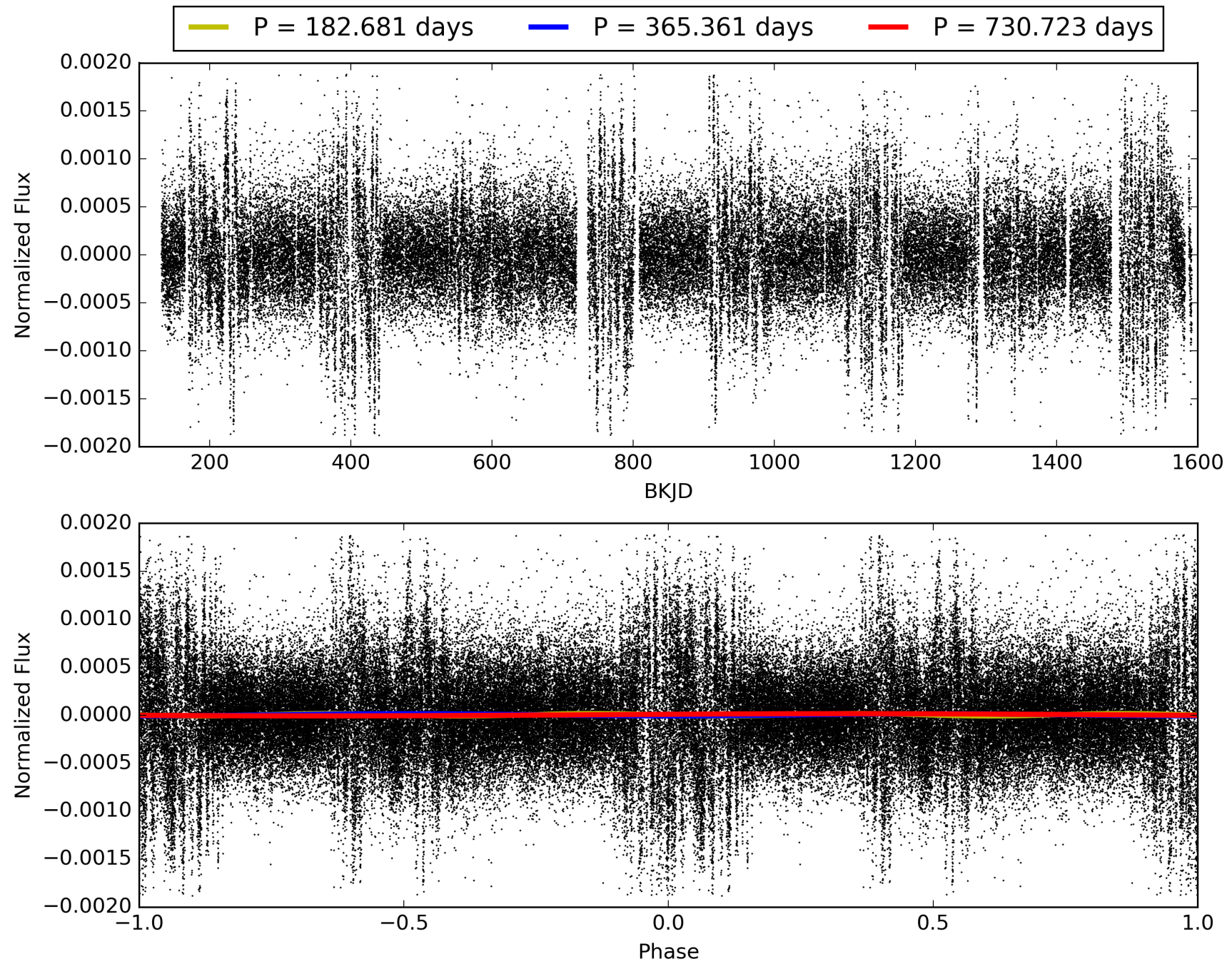
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:26:50 Z

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

# TCE 007686191-03, PDC Light Curves

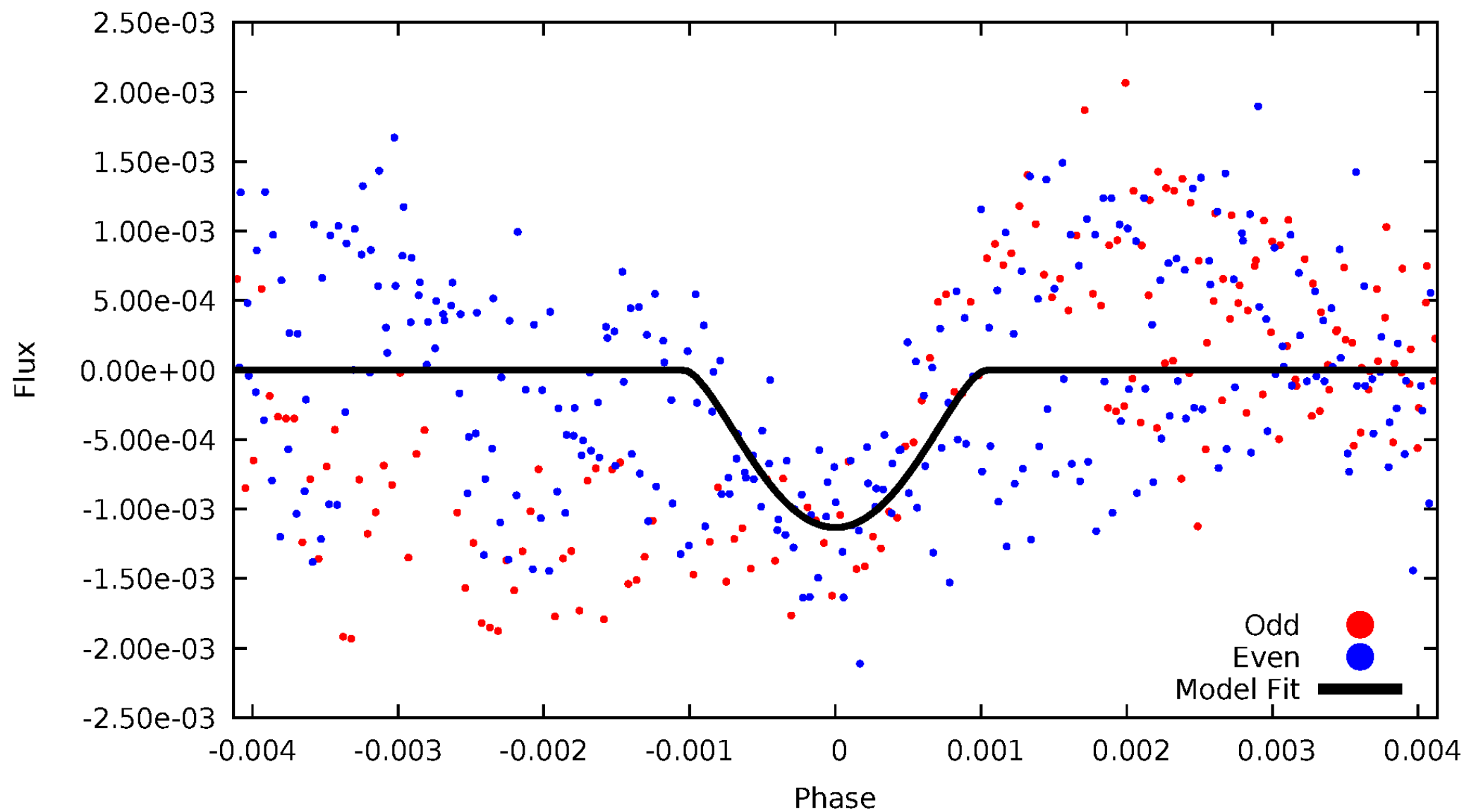


TCE 007686191-03



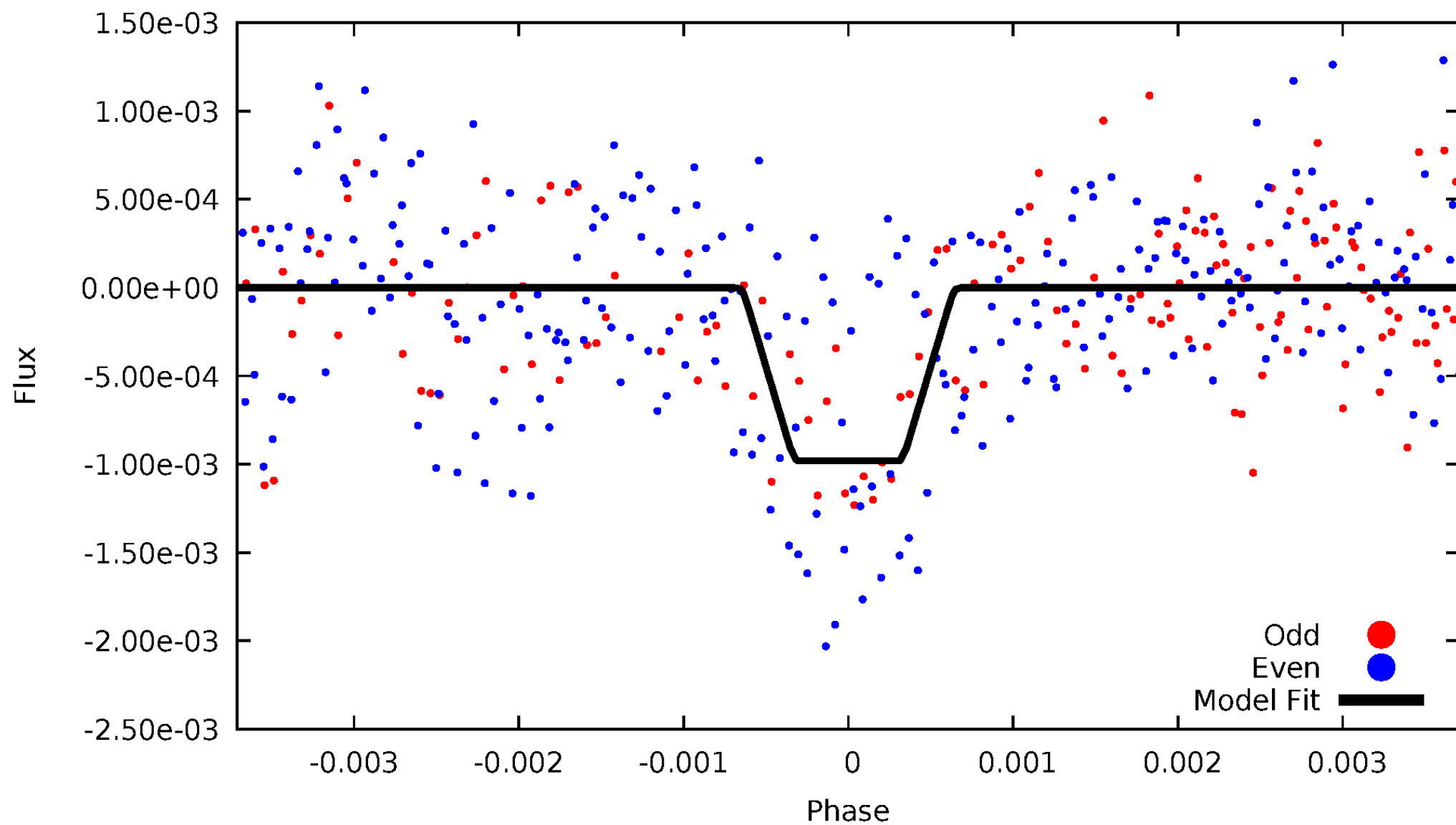
# DV Odd/Even

TCE 007686191-03



# ALT Odd/Even

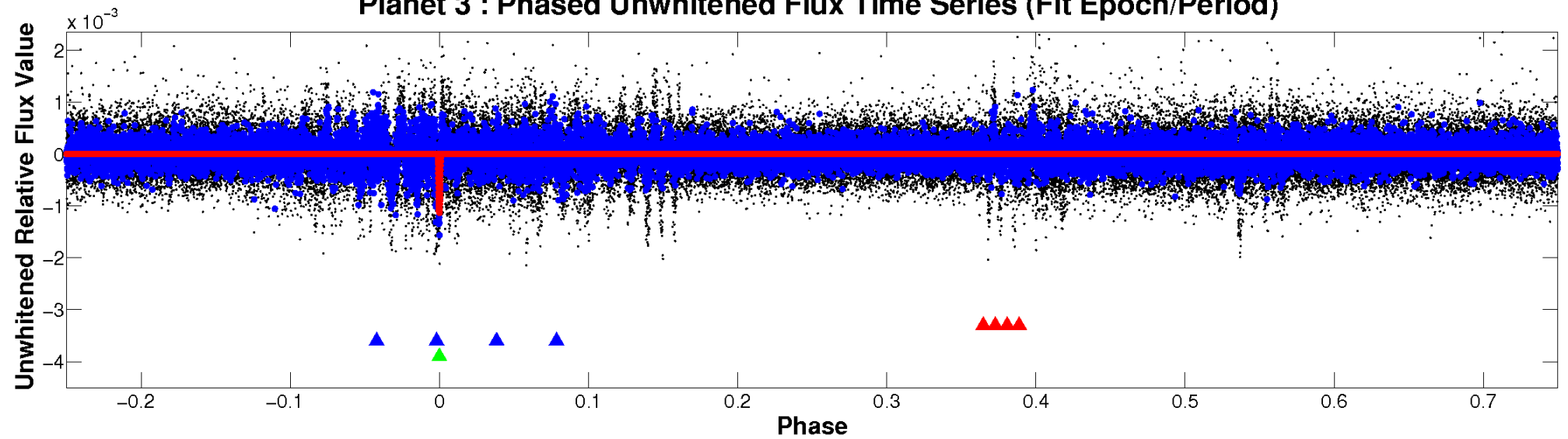
TCE 007686191-03



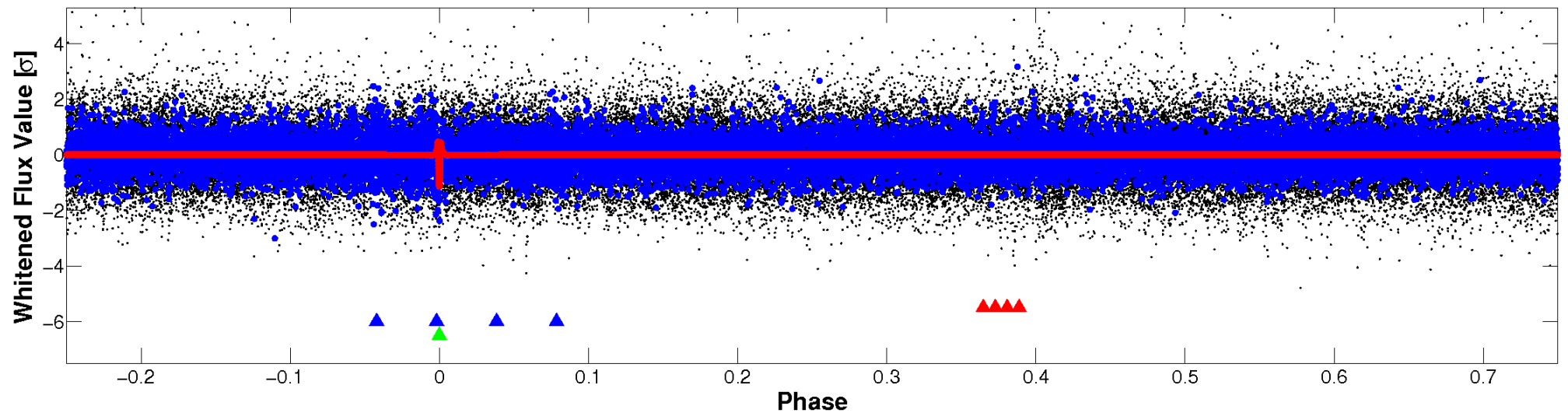


# Non-Whitened Vs. Whitened Light Curve

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



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



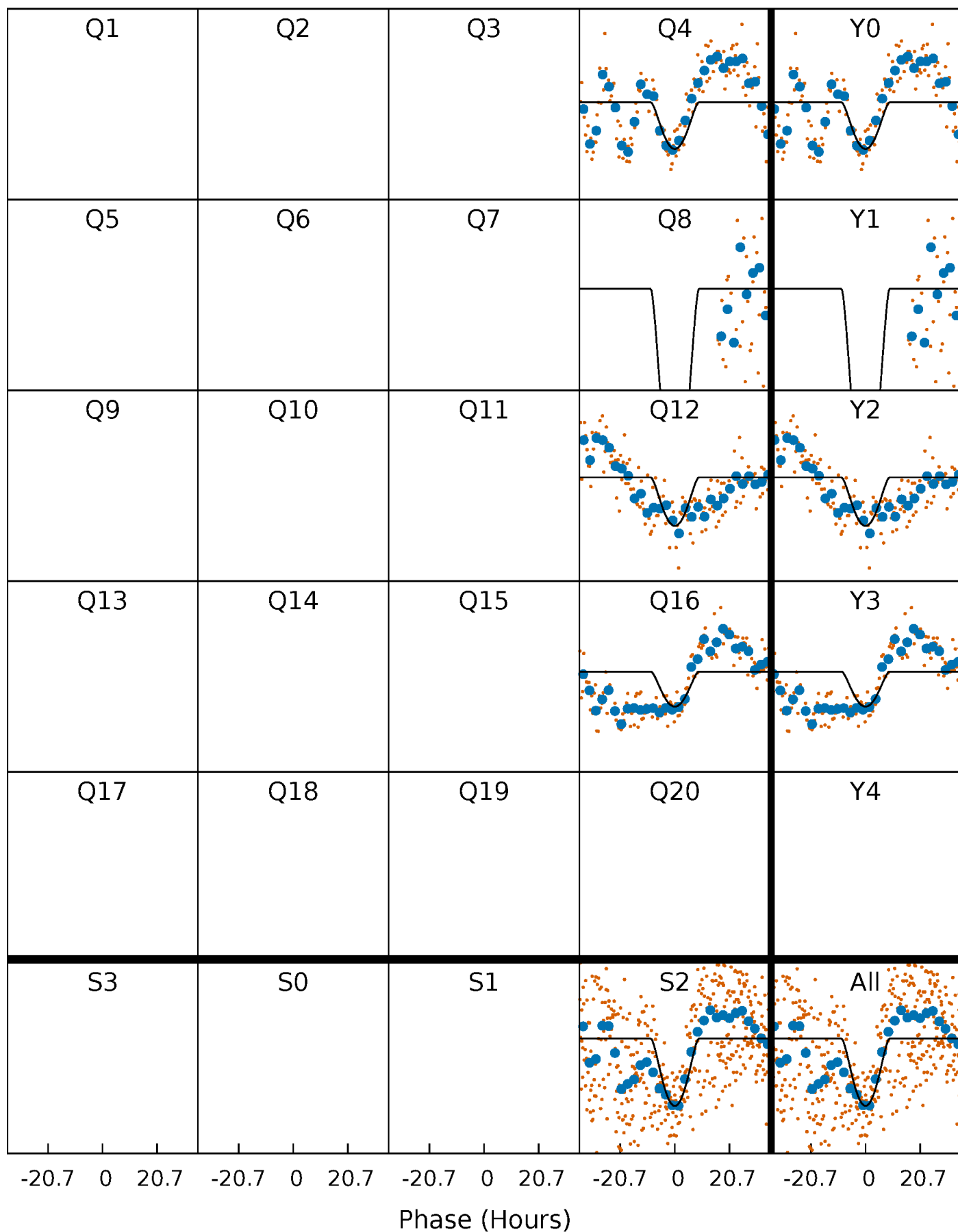
# PDC Quarter-Phased Transit Curves

TCE 007686191-03     $P=365.361487$  Days     $T_0=402.972021$  (BKJD)



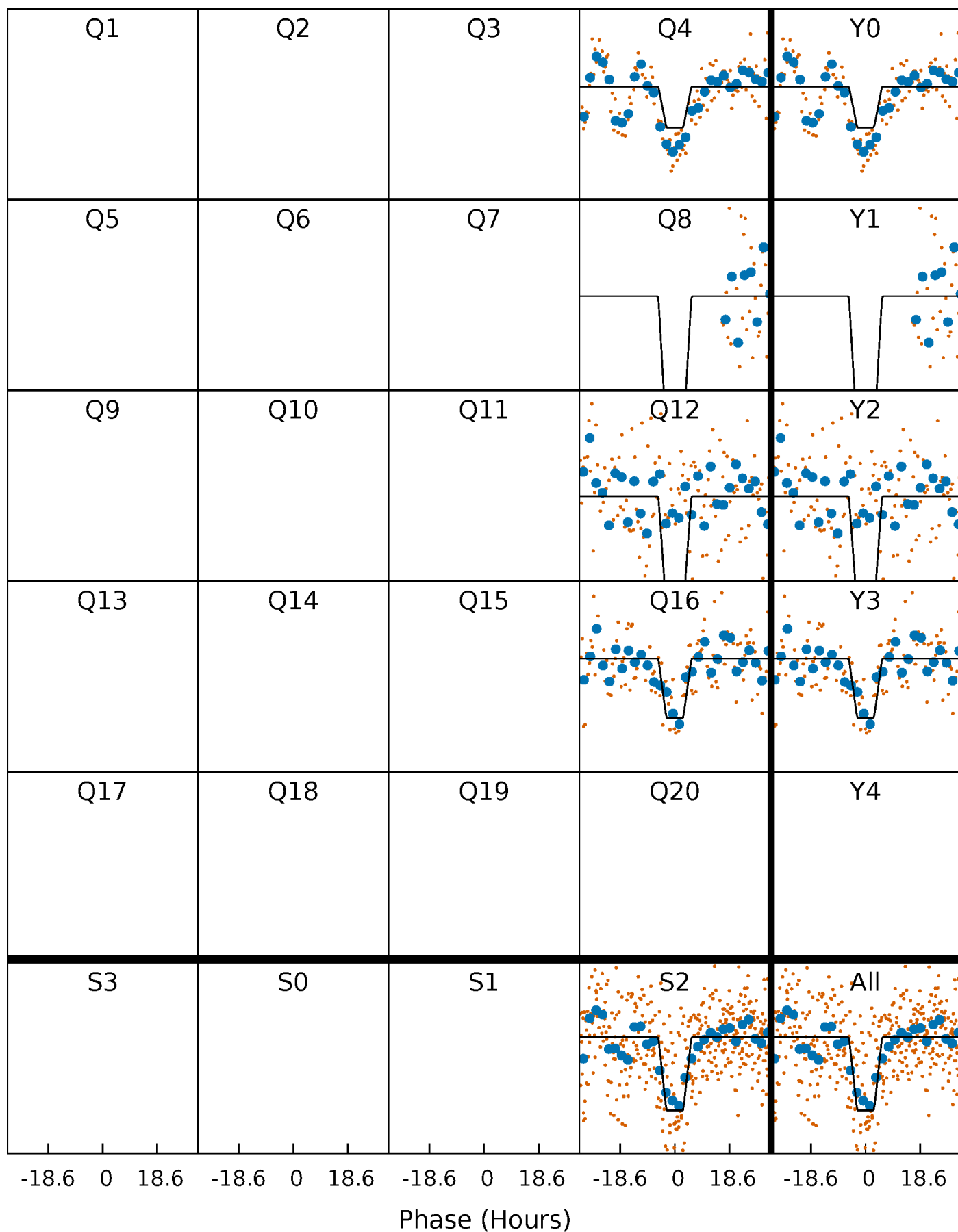
# DV Quarter-Phased Transit Curves

TCE 007686191-03     $P=365.361487$  Days     $T_0=402.972021$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

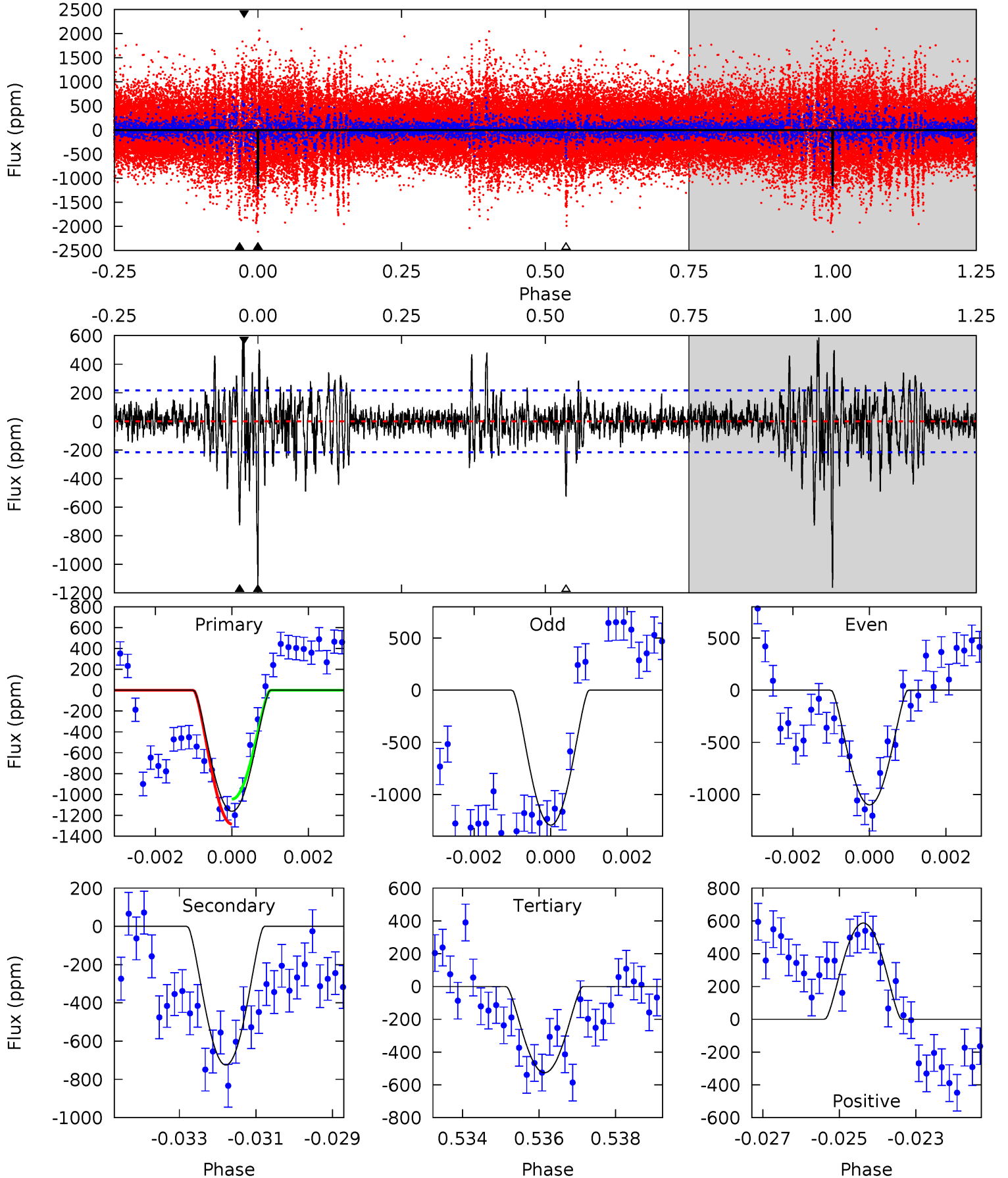
TCE 007686191-03 P=365.386109 Days  $T_0=402.958116$  (BKJD)



# DV Model-Shift Uniqueness Test

007686191-03,  $P = 365.361487$  Days,  $E = 37.610534$  Days

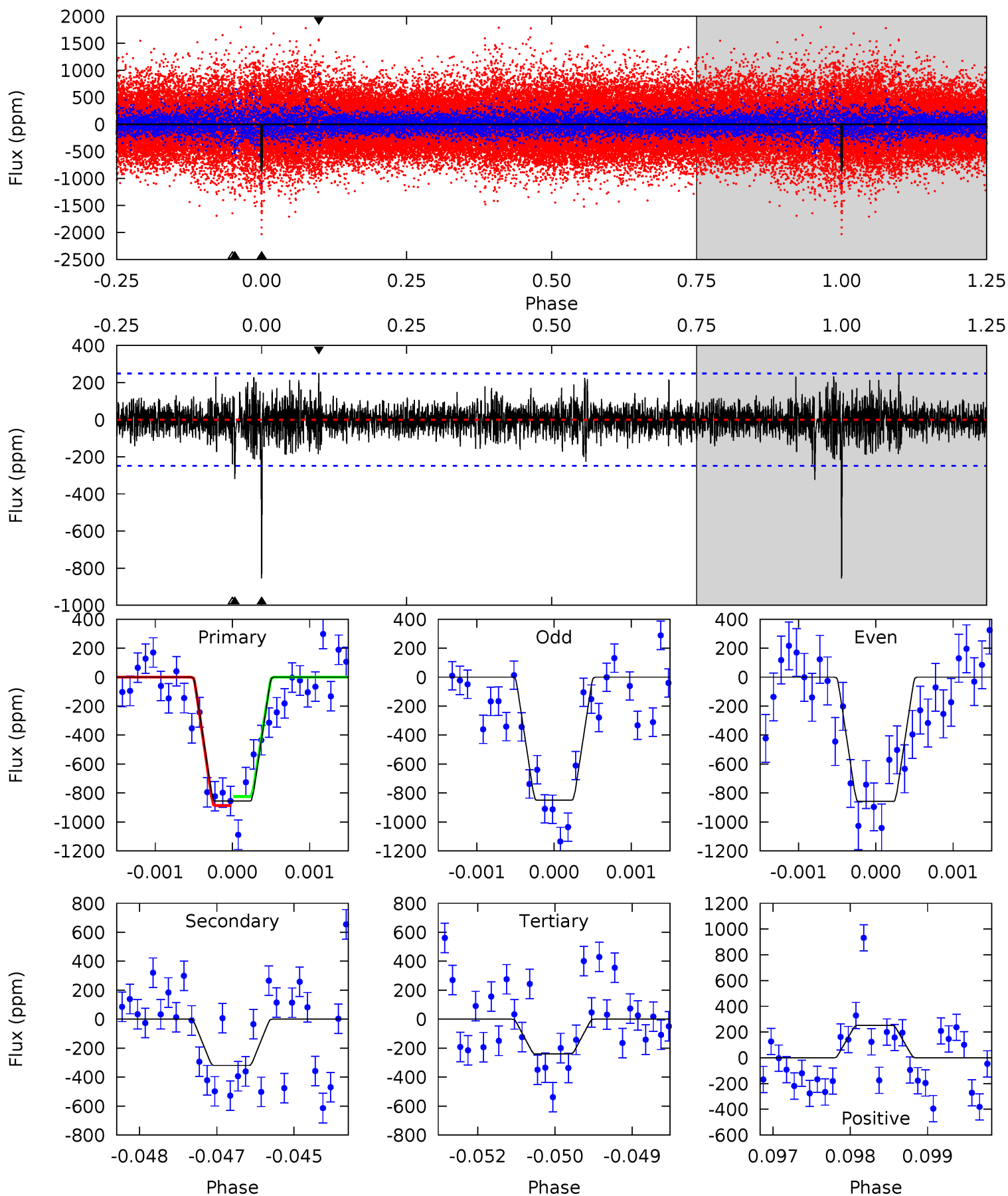
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.6	17.9	13.0	14.4	5.32	3.08	2.85	15.6	14.2	4.89	3.41	2.24	0.99	0.34	2.94



# Alt Model-Shift Uniqueness Test

007686191-03, P = 365.386109 Days, E = 37.572007 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
18.6	6.94	5.22	5.45	5.41	3.22	1.25	13.3	13.1	1.72	1.48	0.10	1.01	0.23	0.68





### Stellar Parameters For KIC 007686191

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5477^{+164}_{-164}$	$4.568^{+0.036}_{-0.153}$	$-0.060^{+0.300}_{-0.300}$	$0.818^{+0.188}_{-0.063}$	$0.905^{+0.082}_{-0.099}$	$2.331^{+0.440}_{-0.991}$
	+3%/-3%	+1%/-3%	+500%/-500%	+23%/-8%	+9%/-11%	+19%/-42%
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 007686191-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-725 \pm 41$	$14.87^{+13.96}_{-10.31}$	$316^{+18}_{-13}$	$2932^{+1318}_{-466}$	$1660^{+14939}_{-1235}$
Alt.	$-319 \pm 46$	$13.74^{+14.26}_{-9.52}$	$315^{+18}_{-12}$	$2672^{+1136}_{-417}$	$836^{+8037}_{-630}$

$T_{\text{max}}$  = 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

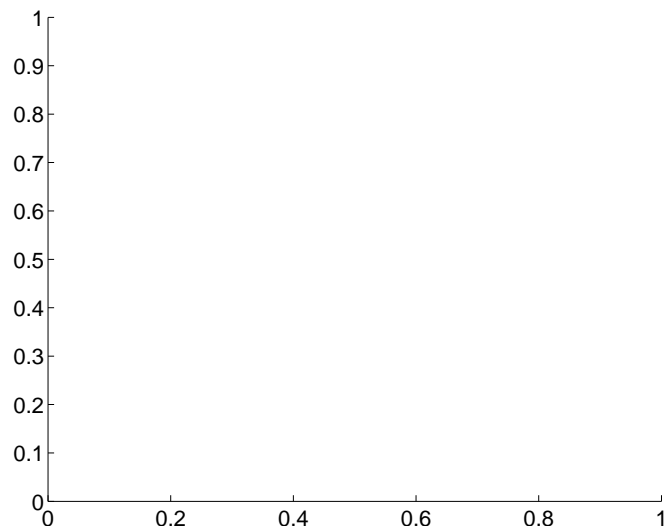
Supplemental centroid analysis for 007686191-03. Kepler magnitude: 15.20. Transit SNR 7.83

There are 0 quarters with good PRF difference image offsets

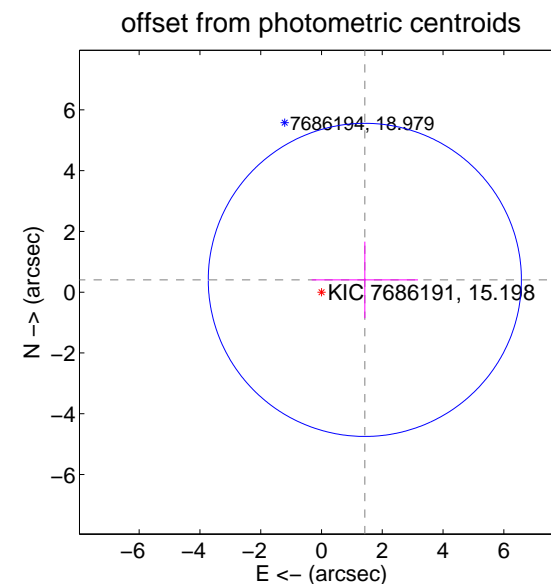
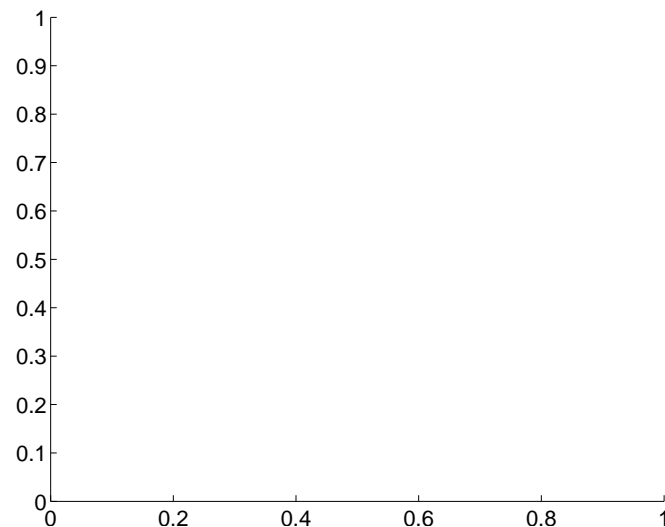
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	$1.48 \pm 1.72$	0.86	$-1.43 \pm 1.75$	$0.40 \pm 1.26$

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC

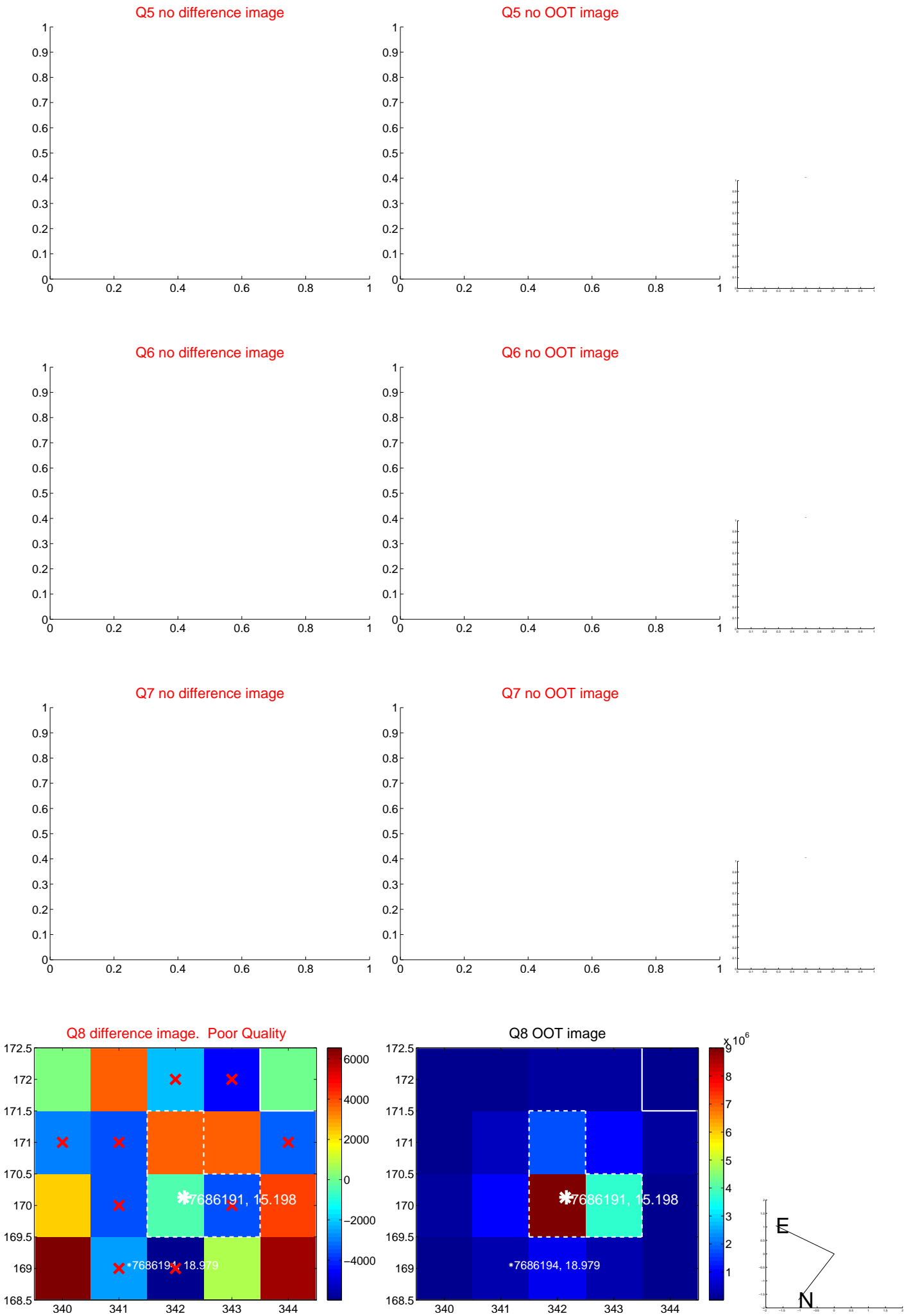


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



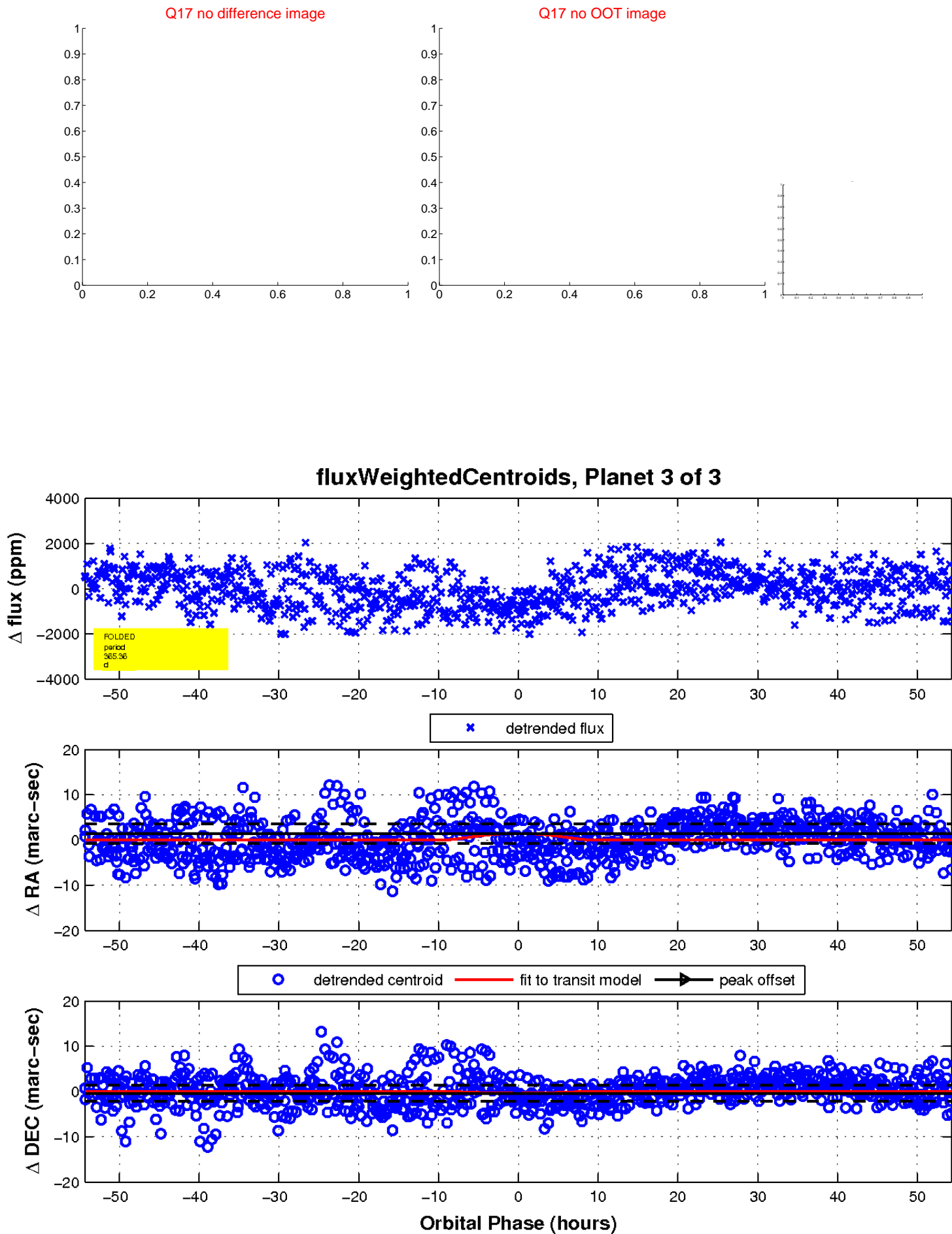
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

