

# KIC 011671923

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011671923-01	OBS	No	347.527569	399.907719	23.6	46.687	7.3	4.5	2.15	10280	1.07	26.89
011671923-02	OBS	No	452.386564	188.054035	34.8	21.162	7.6	6.8	2.15	10280	1.43	18.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011671923-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_SATURATED
011671923-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

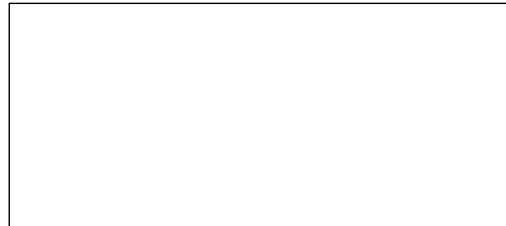
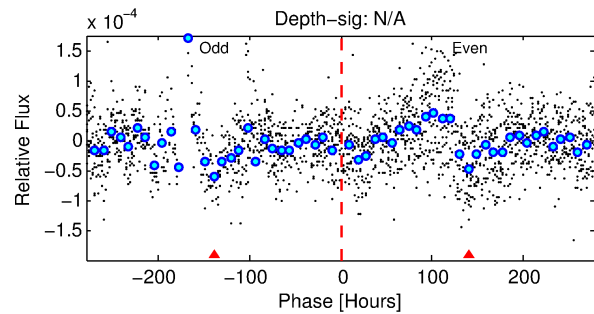
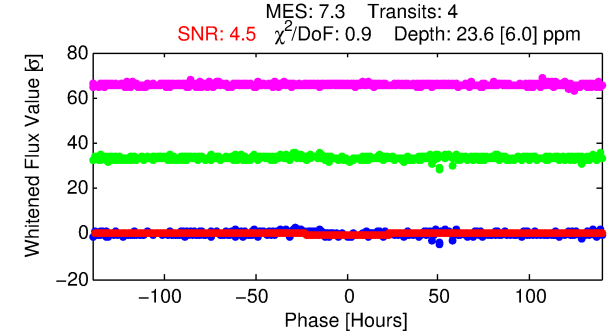
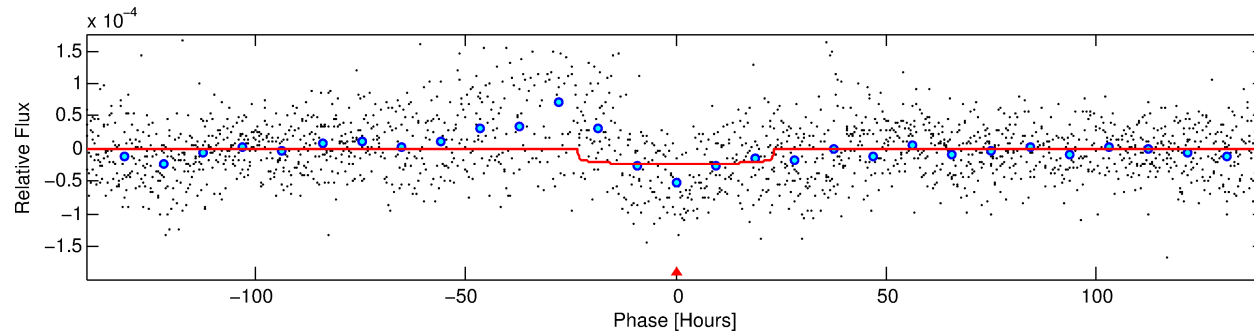
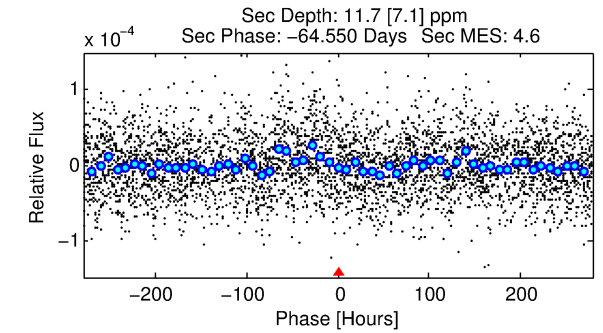
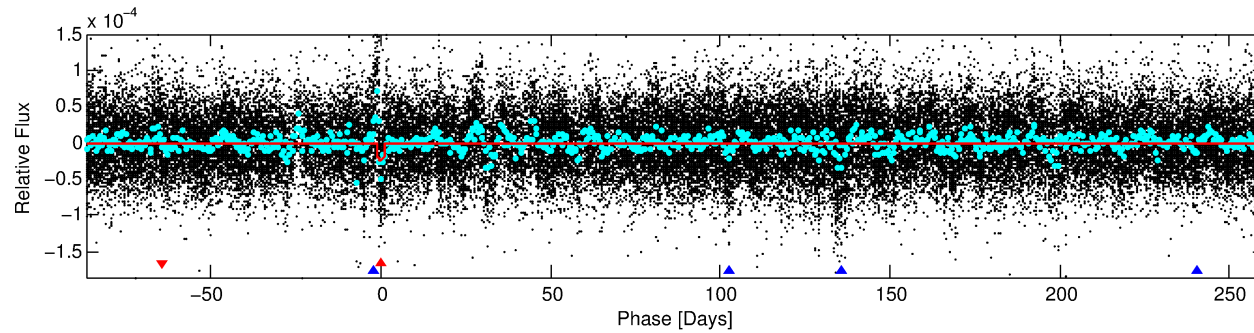
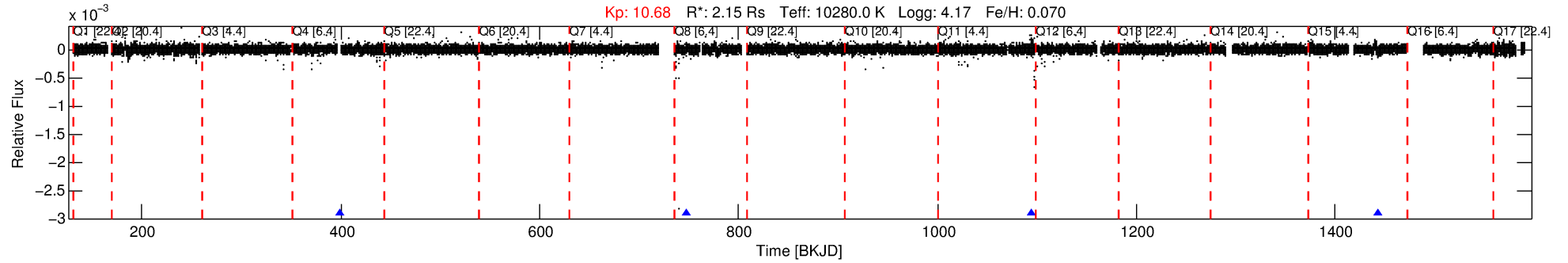
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011671923-01

No Significant Match Found

# DV One-Page Summary

KIC: 11671923 Candidate: 1 of 2 Period: 347.528 d



## DV Fit Results:

Period = 347.52757 [0.01912] d  
Epoch = 399.9077 [0.0401] BKJD  
Rp/R\* = 0.0046 [0.0062]  
a/R\* = 57.12 [576.61]  
b = 0.02 [601.83]  
Seff = 26.89 [14.01]  
Teff = 581 [76] K  
Rp = 1.07 [1.53] Re  
a = 1.3103 [0.4757] AU  
Ag = 9684.41 [27314.04] [0.35] $\sigma$   
Teffp = 8906 [6198] K [1.34] $\sigma$

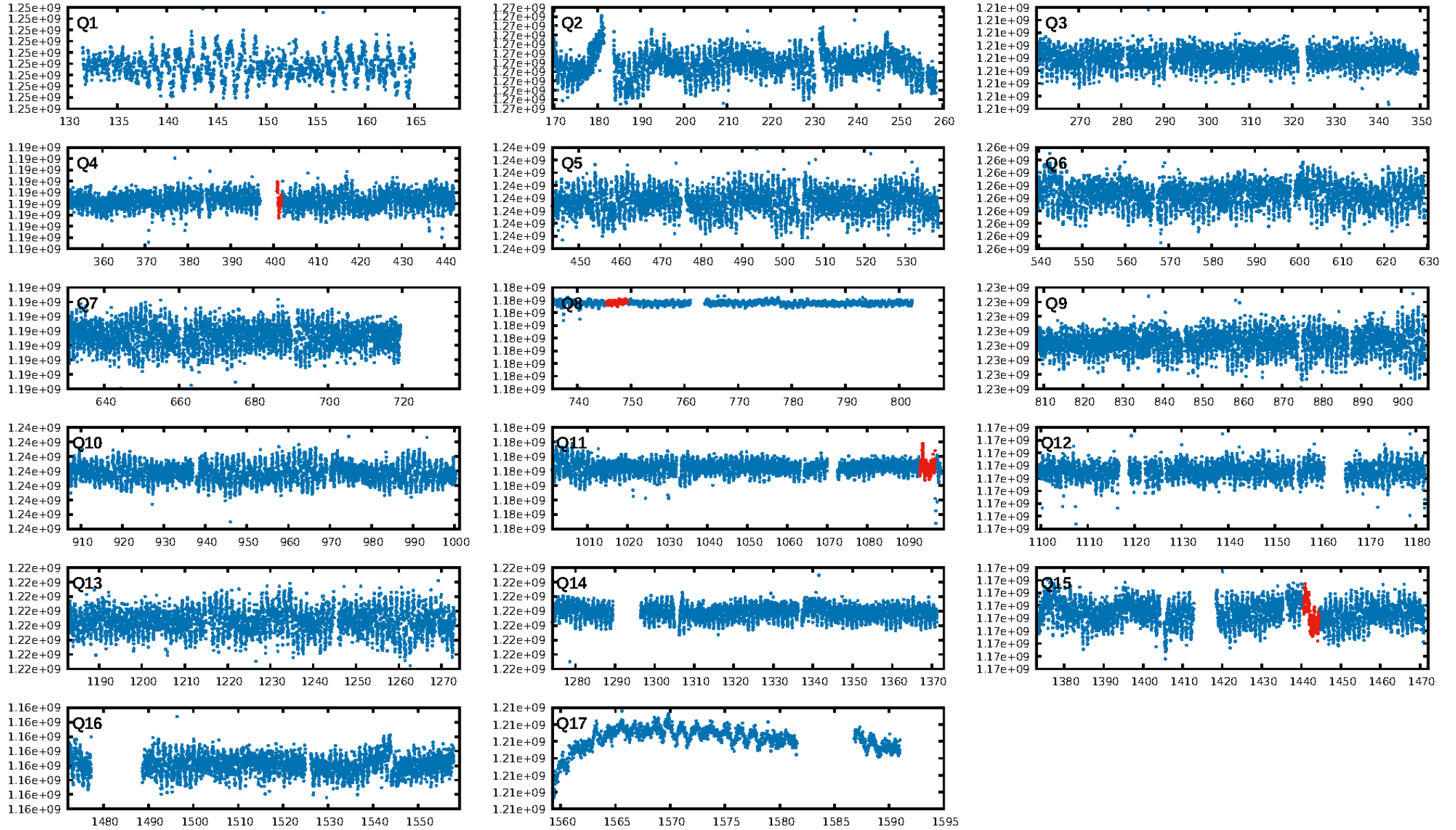
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [49.10] $\sigma$   
ModelChiSquare2-sig: 7.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.12e-08  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.8051  
Centroid-sig: 0.0%  
Centroid-so: 34.037 arcsec [5.44] $\sigma$   
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: 1.00 [2/2]

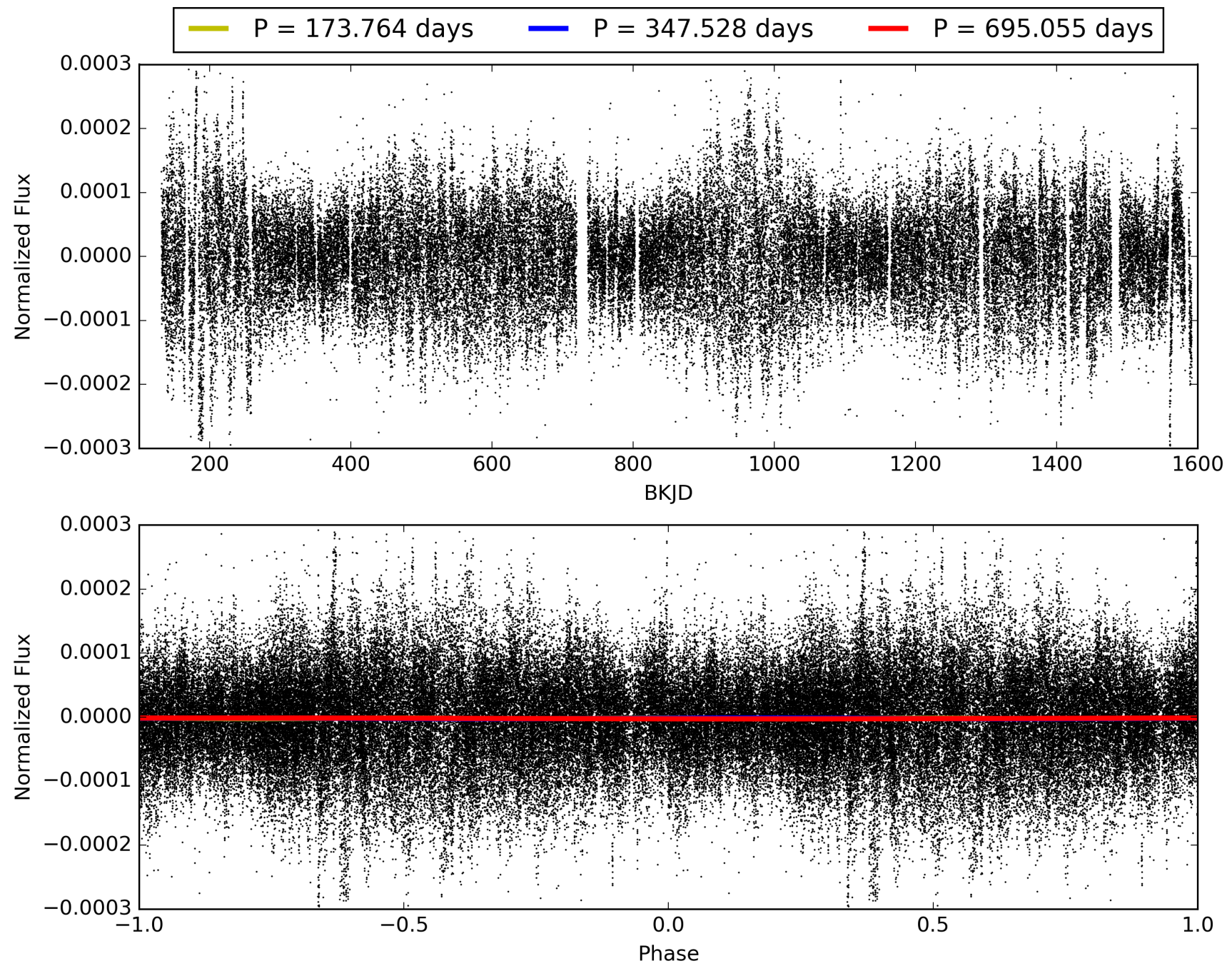
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:34:32 Z

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

# TCE 011671923-01, PDC Light Curves

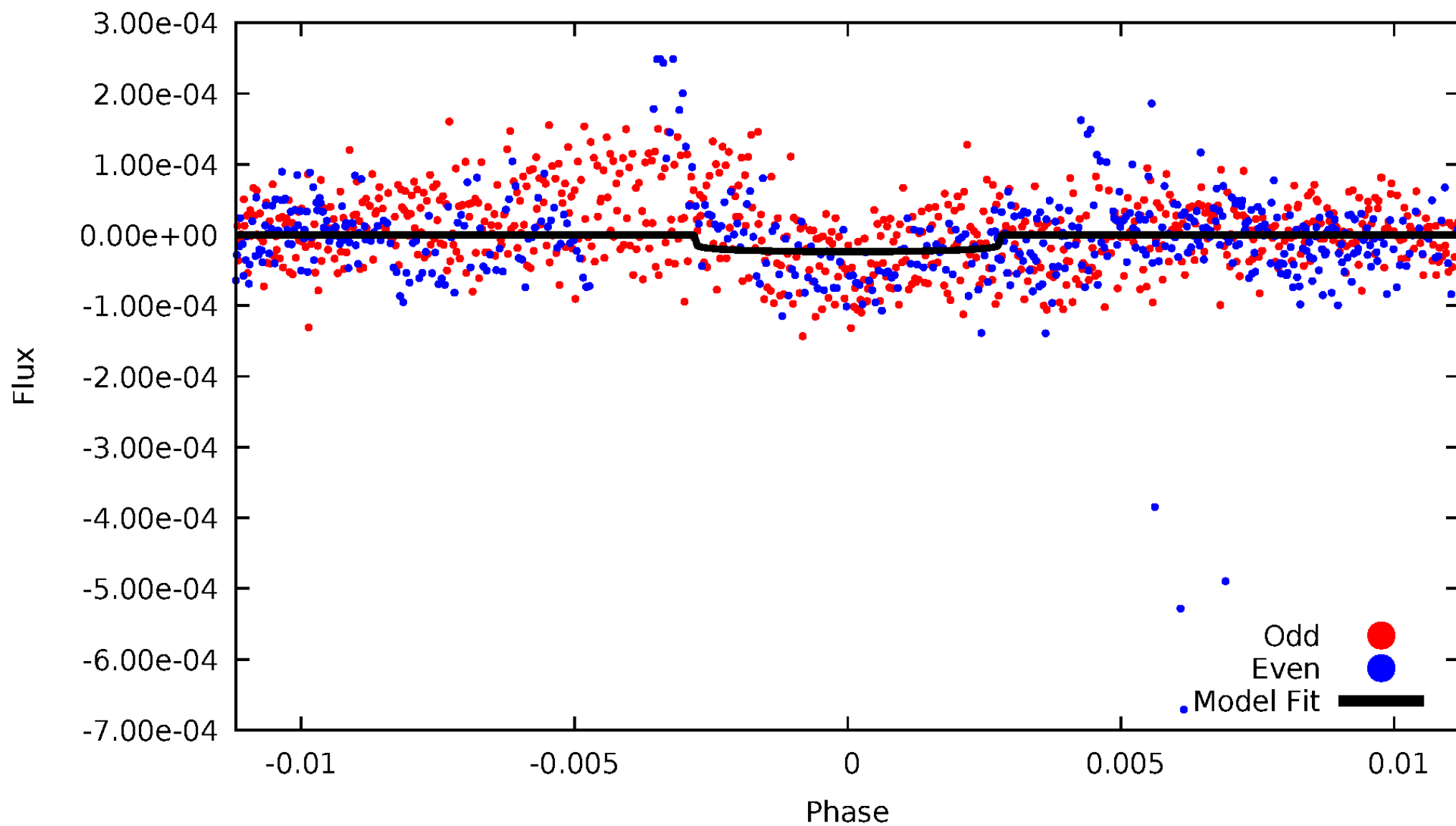


TCE 011671923-01



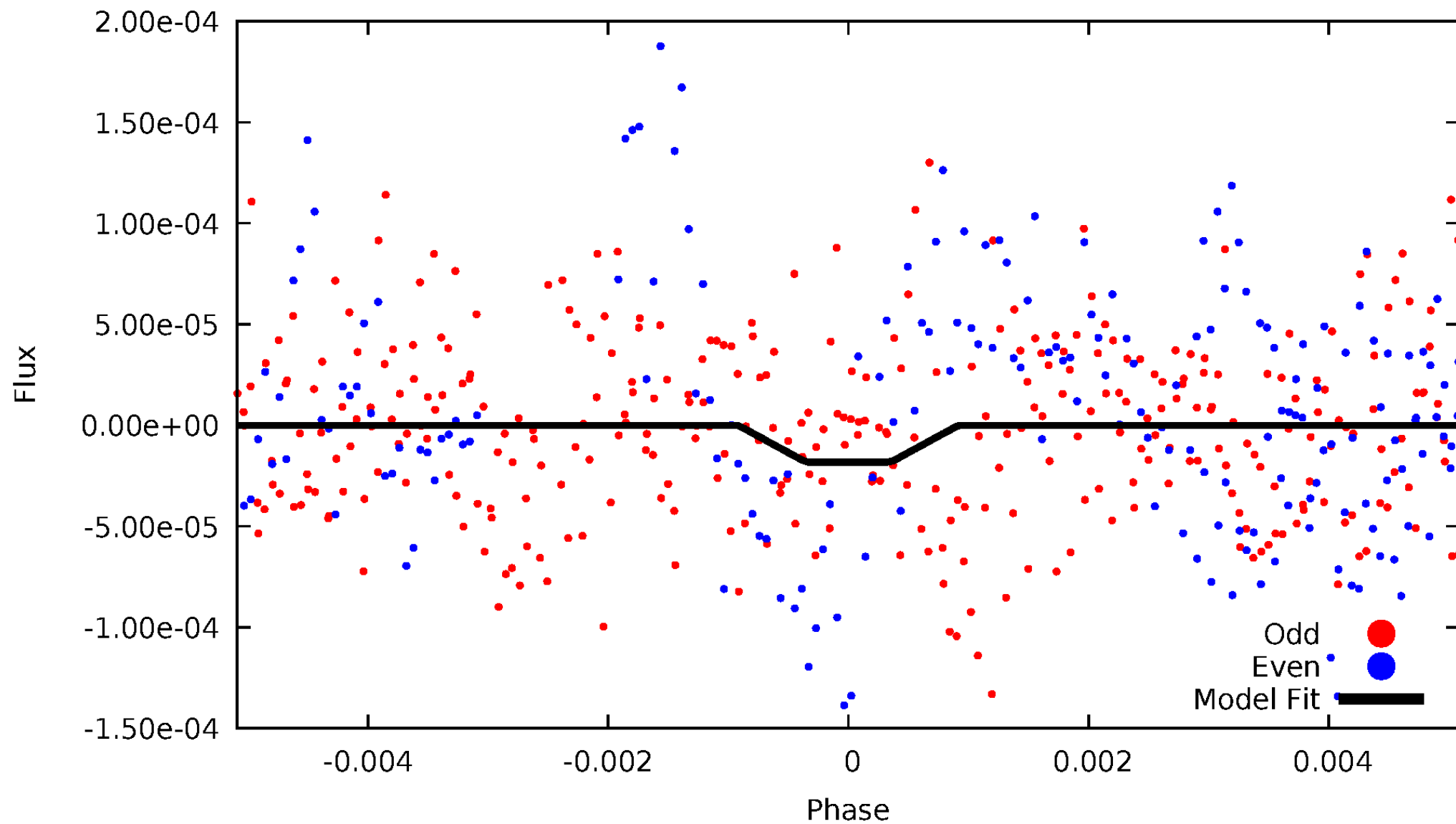
# DV Odd/Even

TCE 011671923-01



# ALT Odd/Even

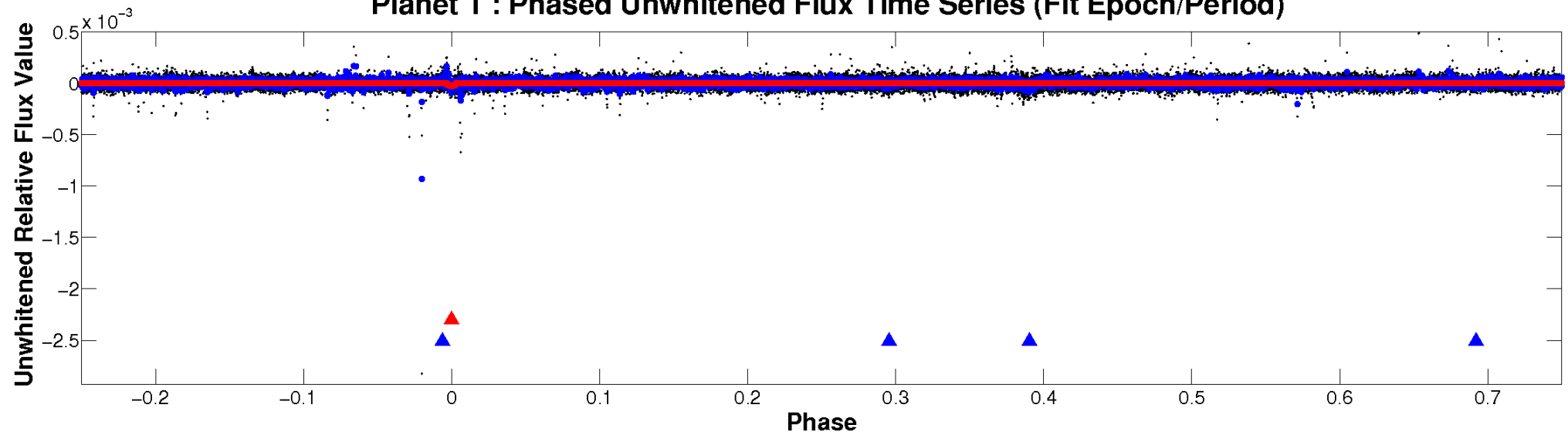
TCE 011671923-01



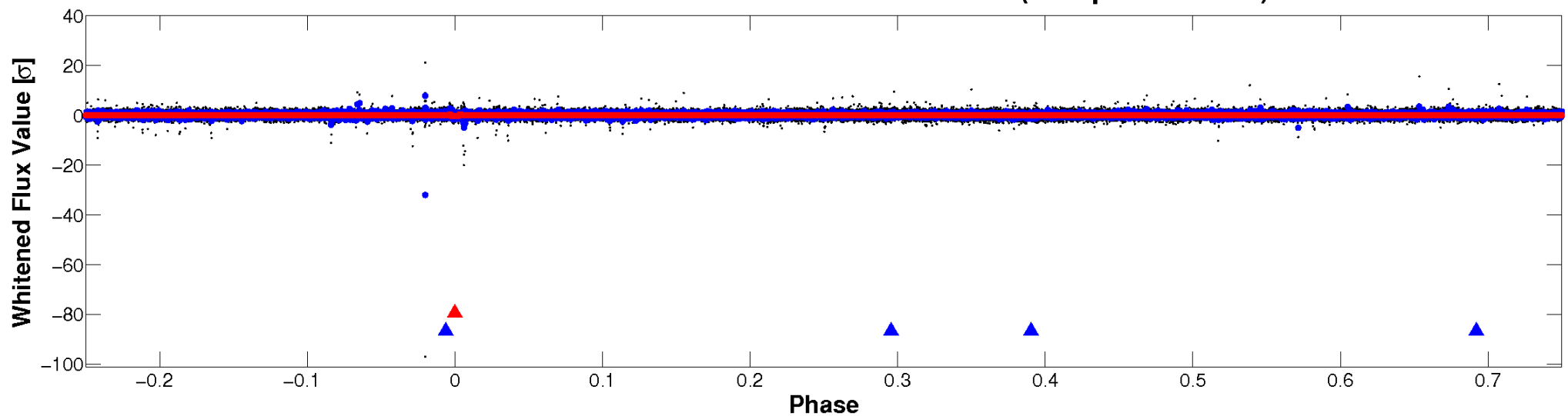


# Non-Whitened Vs. Whitened Light Curve

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

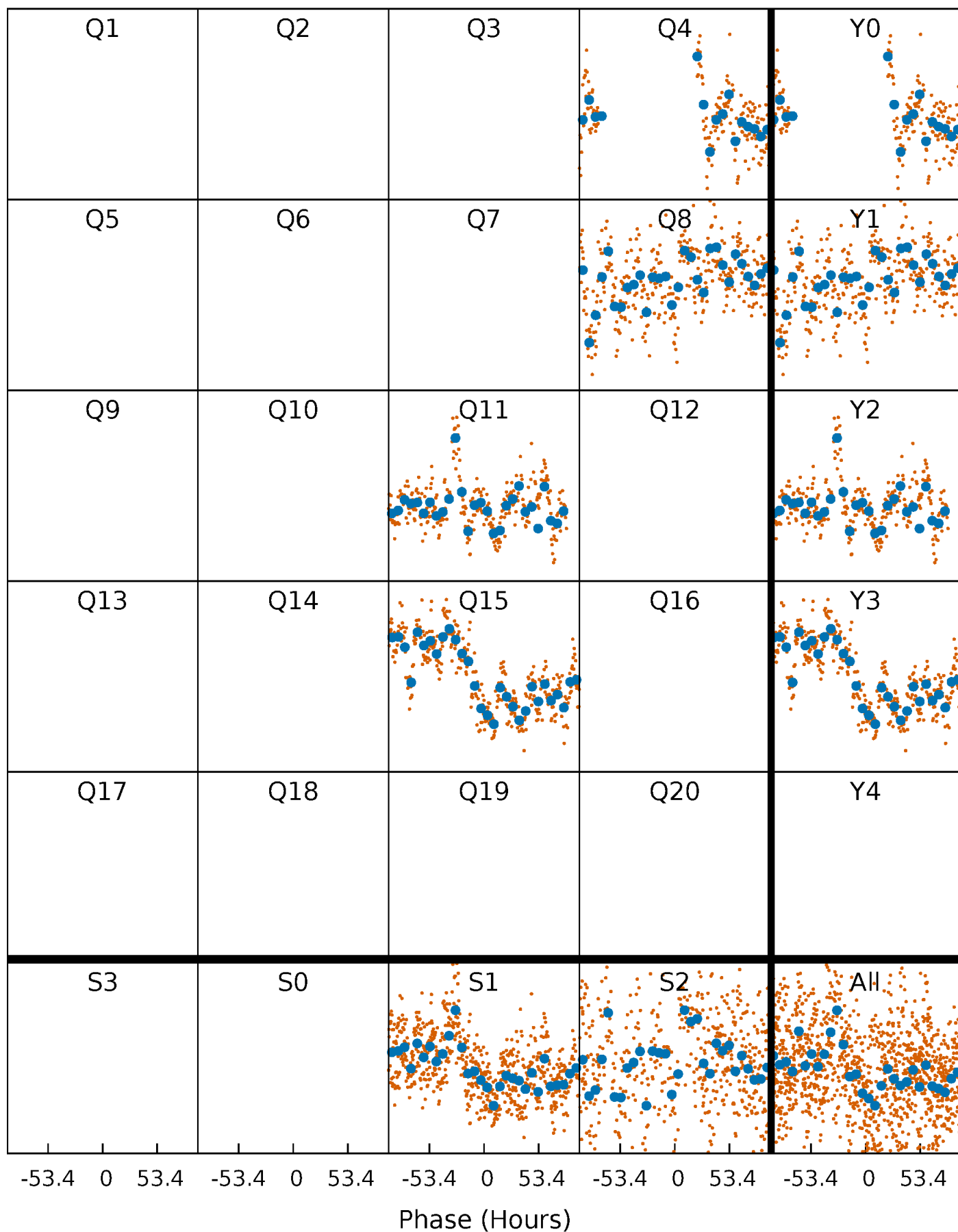


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

TCE 011671923-01 P=347.527569 Days  $T_0=399.907719$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 011671923-01 P=347.527569 Days  $T_0=399.907719$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

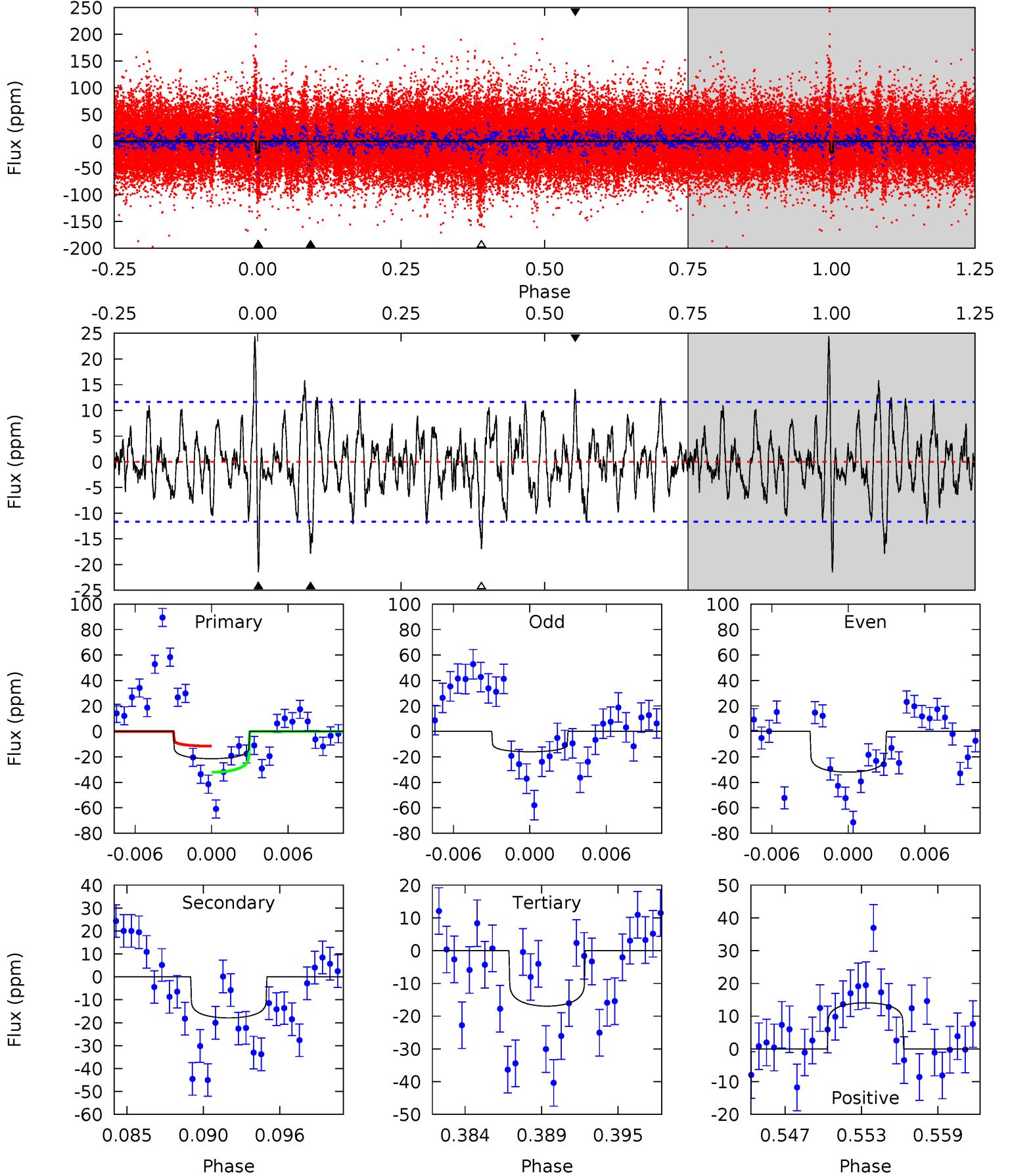
TCE 011671923-01 P=347.288786 Days  $T_0=399.817163$  (BKJD)



# DV Model-Shift Uniqueness Test

011671923-01, P = 347.527569 Days, E = 52.380150 Days

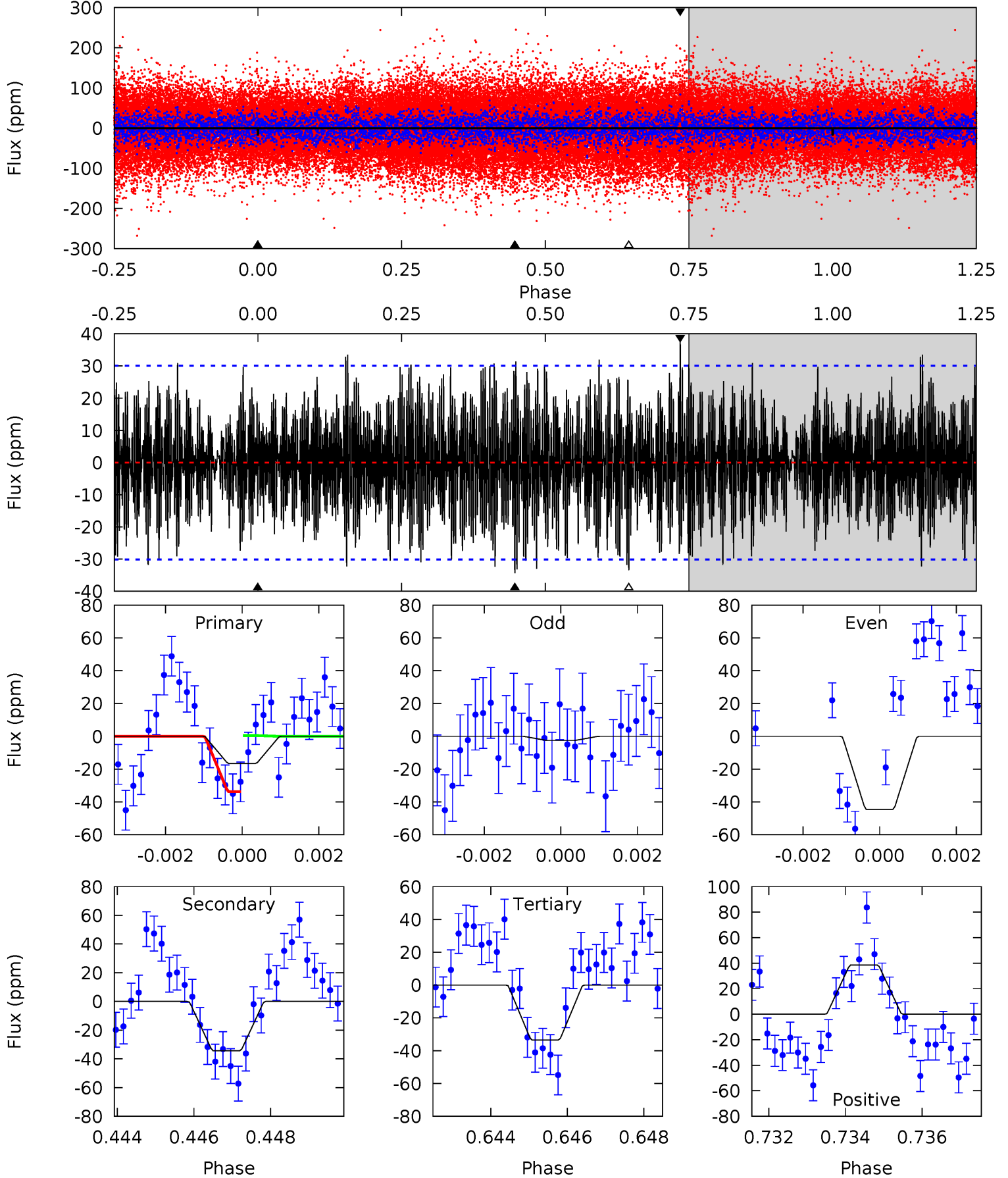
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.45	7.91	7.48	6.21	5.13	2.77	2.20	1.97	3.24	0.43	1.69	3.37	0.74	0.53	4.56



# Alt Model-Shift Uniqueness Test

011671923-01,  $P = 347.288786$  Days,  $E = 52.528377$  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
2.94	6.09	5.93	6.84	5.34	3.11	2.23	-2.99	-3.90	0.16	-0.75	3.50	1.27	0.53	2.95



### Stellar Parameters For KIC 011671923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$10280^{+250}_{-464}$	$4.169^{+0.164}_{-0.246}$	$0.070^{+0.200}_{-0.600}$	$2.148^{+0.999}_{-0.538}$	$2.483^{+0.410}_{-0.455}$	$0.353^{+0.324}_{-0.222}$
	+2%/-5%	+4%/-6%	+286%/-857%	+47%/-25%	+17%/-18%	+92%/-63%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011671923-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-18 \pm 2$	$1.54^{+1.35}_{-0.99}$	$813^{+82}_{-59}$	$7765^{+10001}_{-2179}$	$7265^{+48329}_{-5245}$
Alt.	$-34 \pm 6$	$1.49^{+1.42}_{-0.99}$	$814^{+86}_{-60}$	$9776^{+18419}_{-3144}$	$14796^{+112720}_{-10960}$

$T_{\text{max}}$  = 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

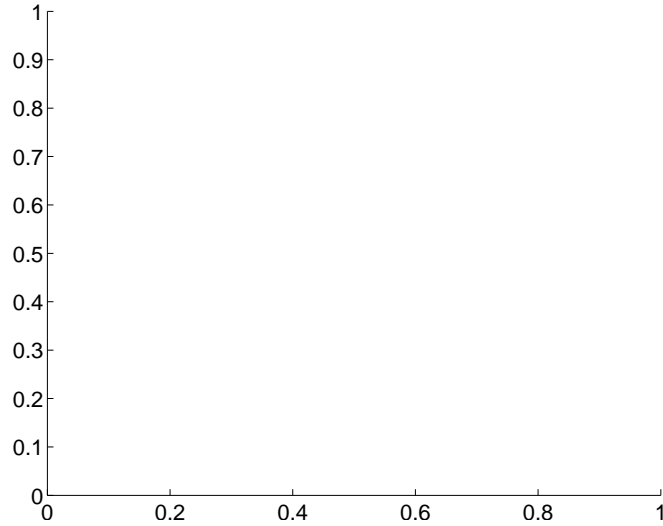
Supplemental centroid analysis for 011671923-01. **Kepler magnitude: 10.68.** Transit SNR 4.52

**There are 0 quarters with good PRF difference image offsets**

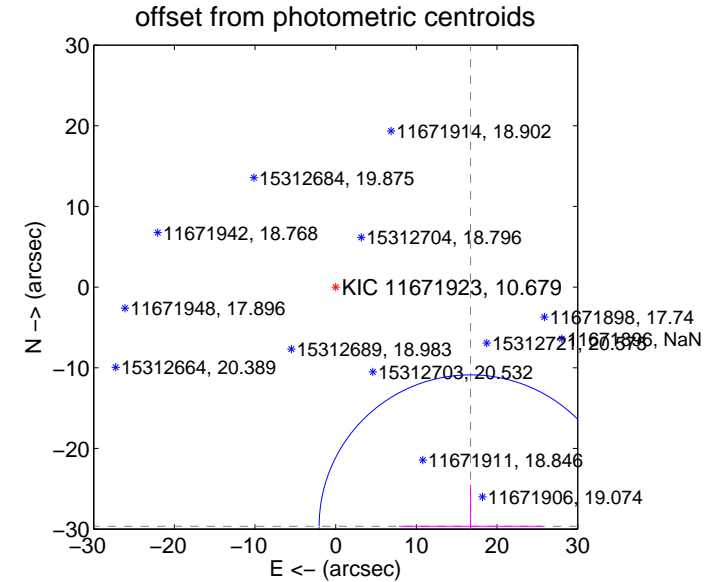
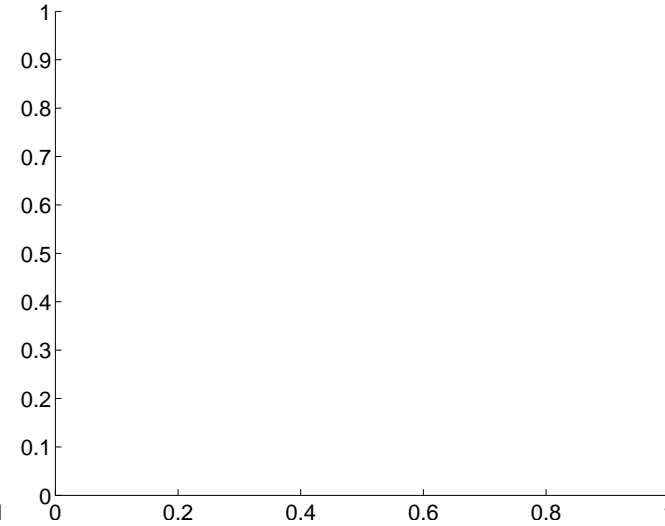
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	<b><math>34.04 \pm 6.26</math></b>	<b>5.44</b>	$-16.72 \pm 8.89$	$-29.65 \pm 5.14$

**There is no PRF-fit offset from OOT-fit**



**There is no PRF-fit offset from KIC**



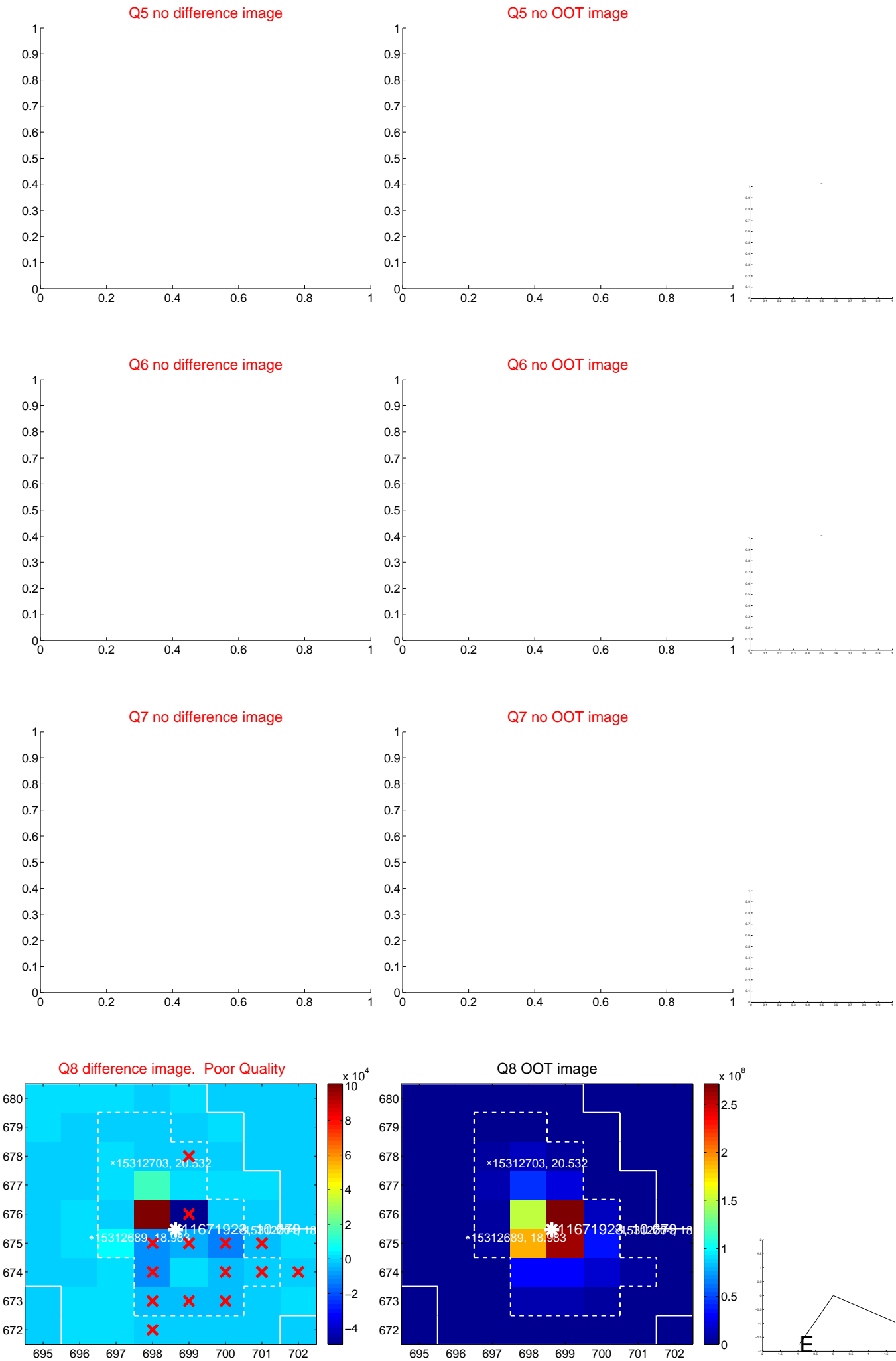
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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





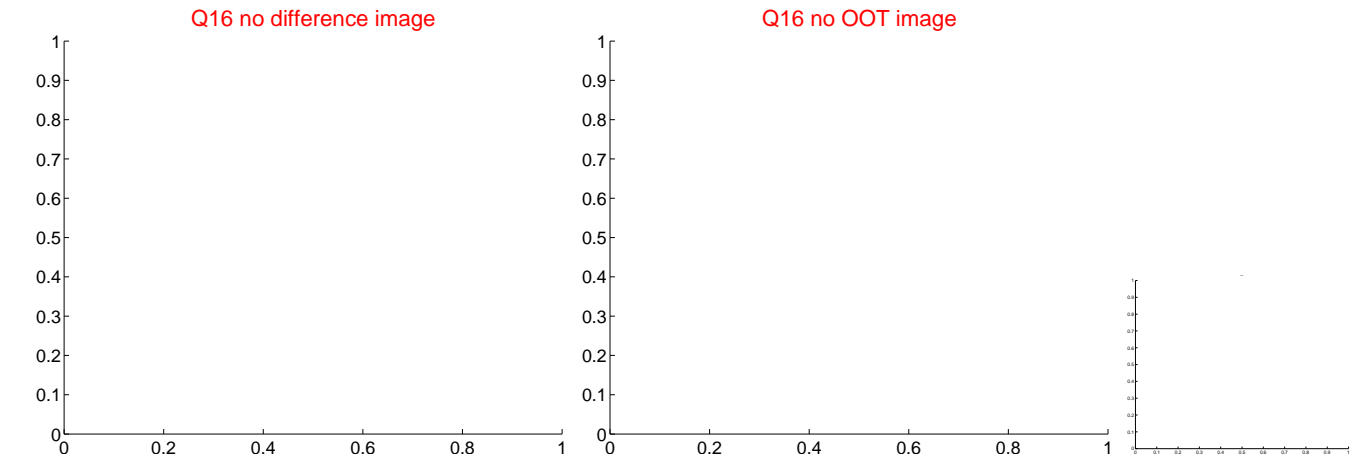
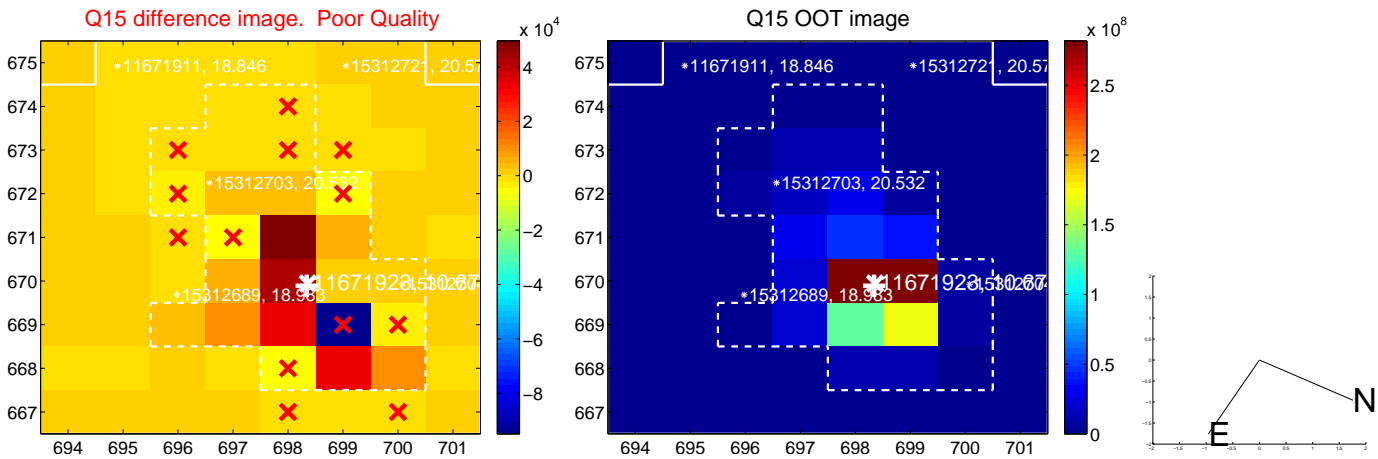
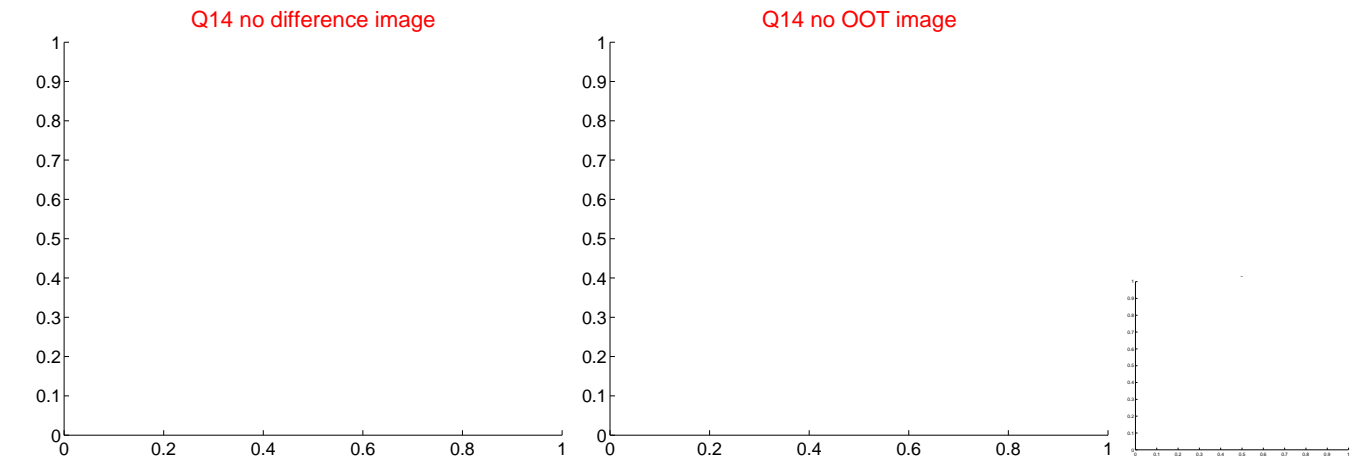
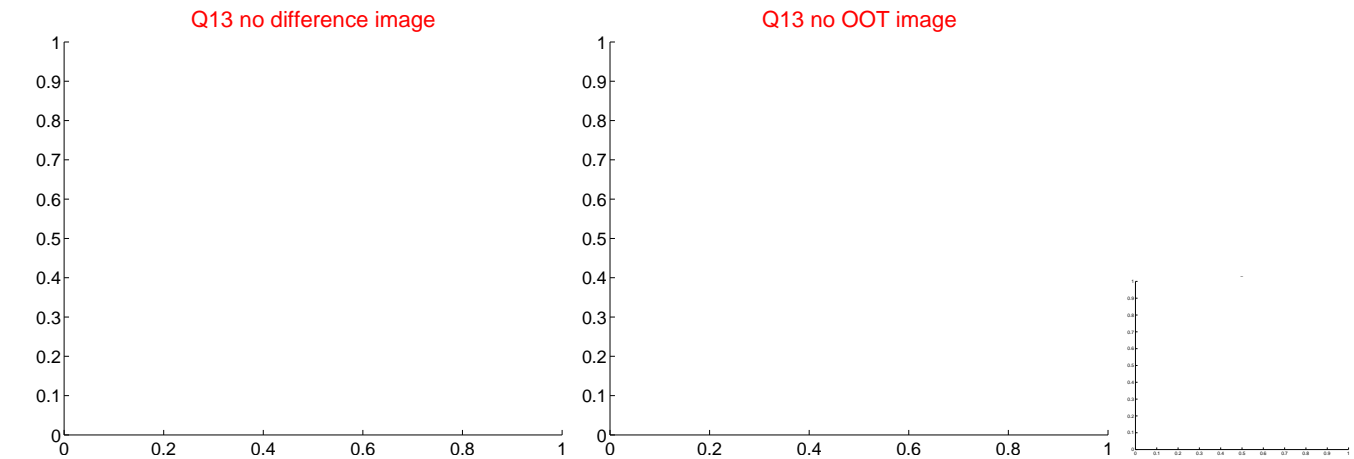
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



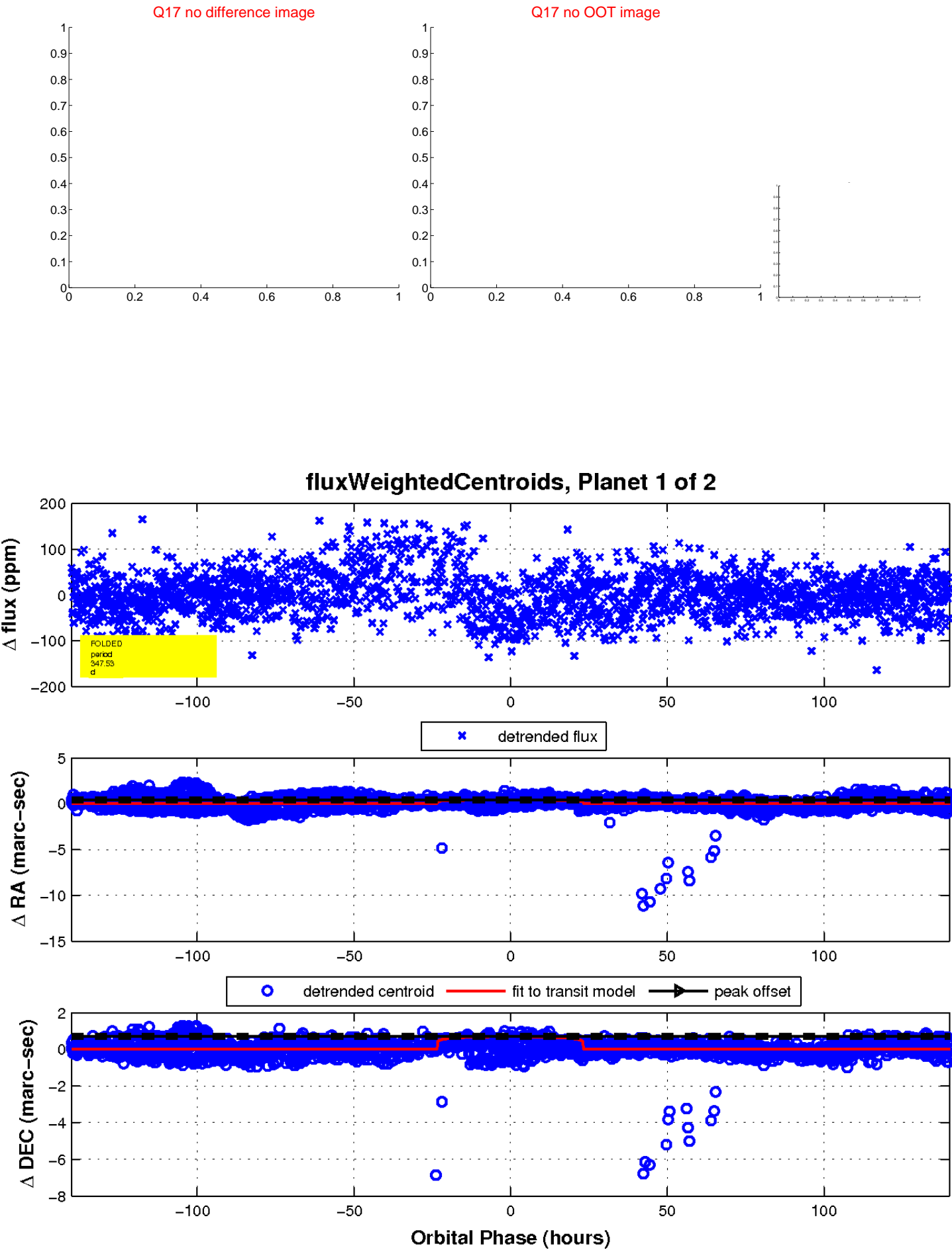
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



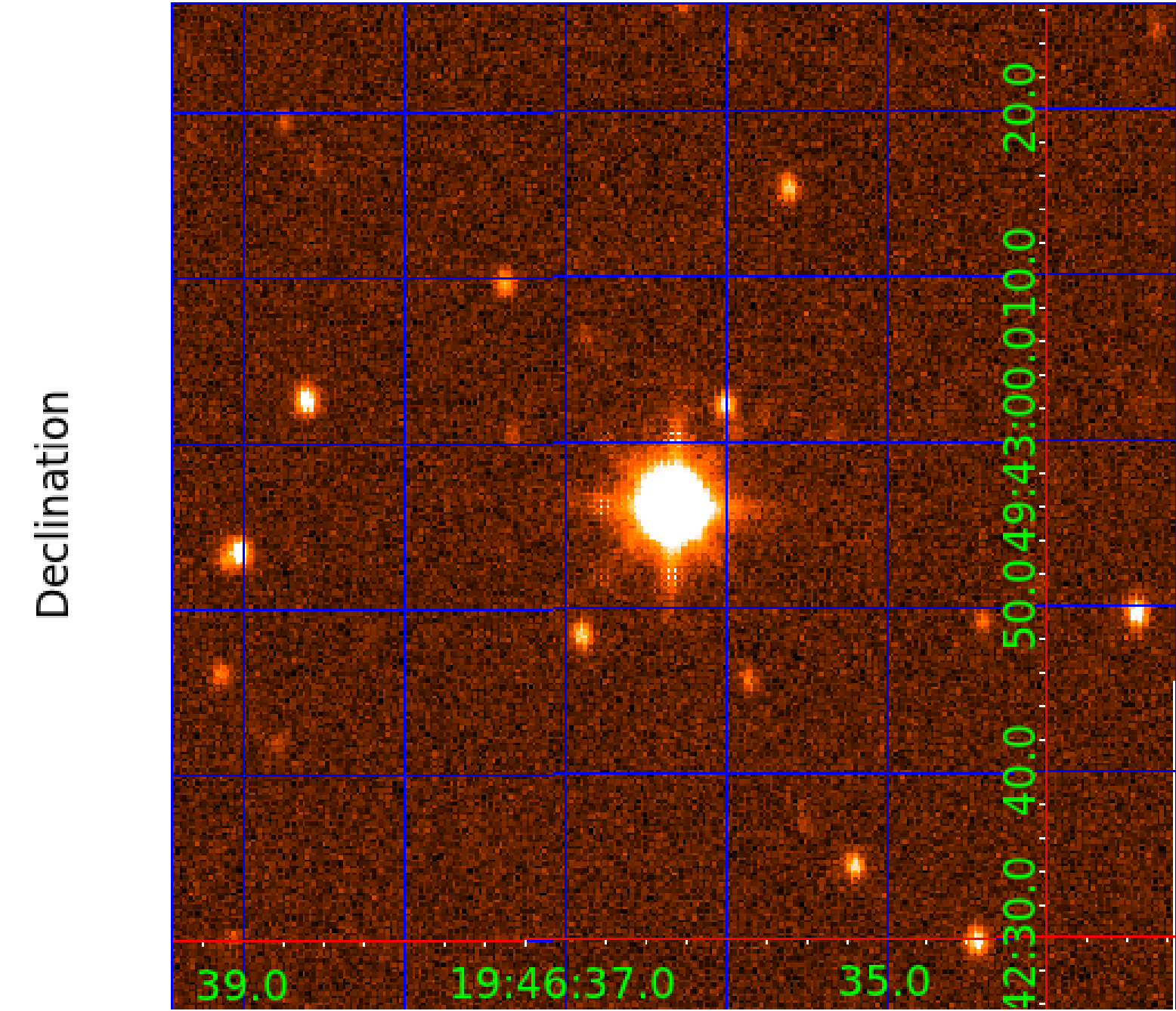
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 011671923

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011671923-01	OBS	No	347.527569	399.907719	23.6	46.687	7.3	4.5	2.15	10280	1.07	26.89
011671923-02	OBS	No	452.386564	188.054035	34.8	21.162	7.6	6.8	2.15	10280	1.43	18.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011671923-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_SATURATED
011671923-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

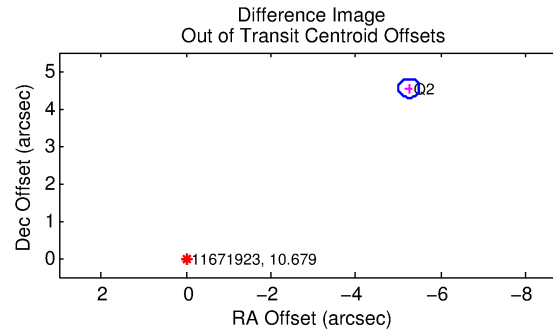
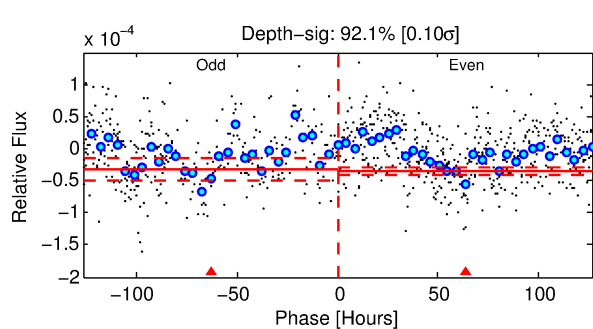
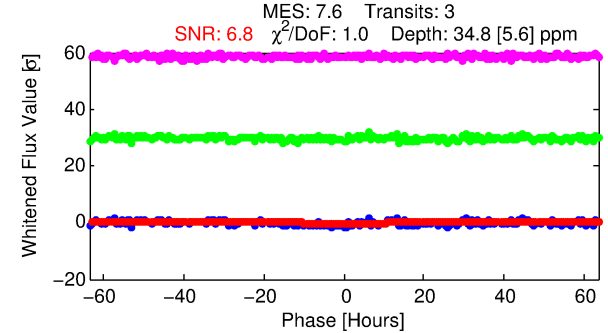
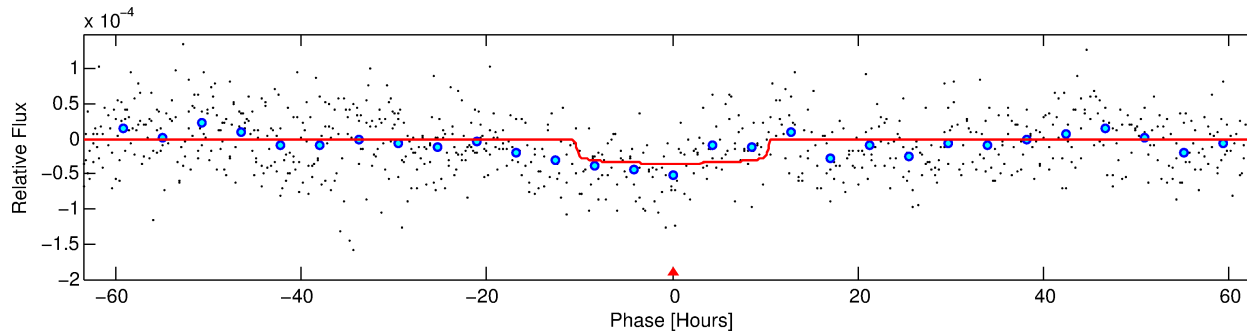
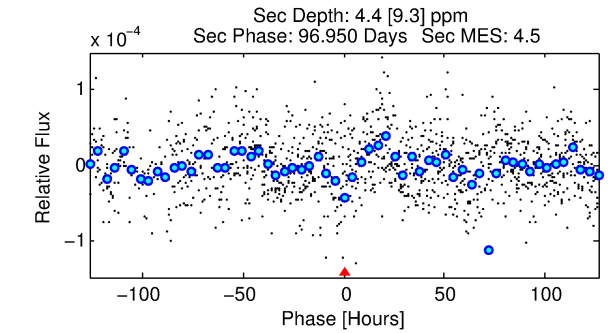
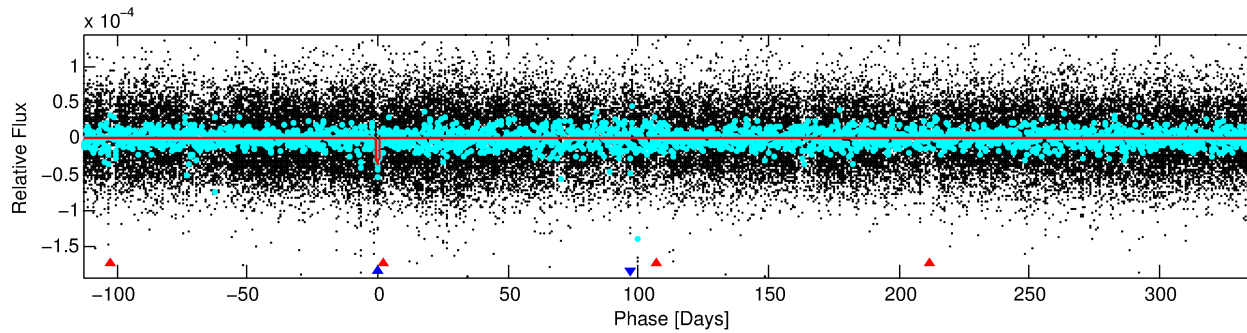
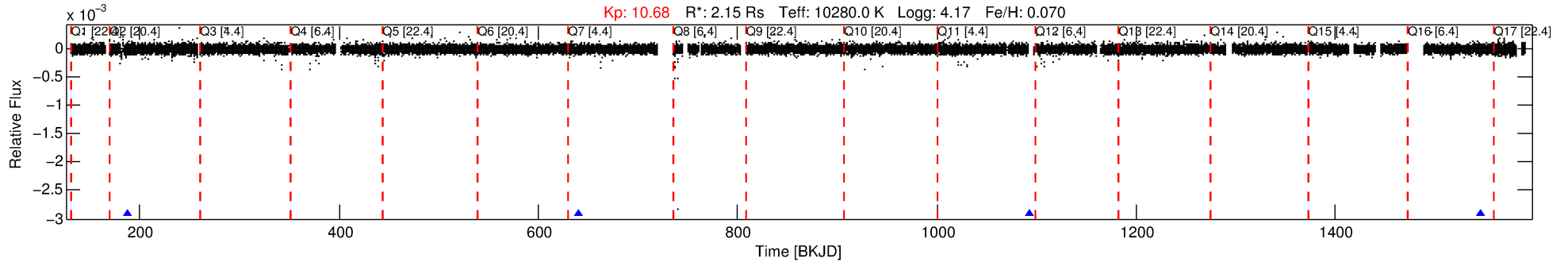
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011671923-02

No Significant Match Found

# DV One-Page Summary

KIC: 11671923 Candidate: 2 of 2 Period: 452.387 d



## DV Fit Results:

Period = 452.38656 [0.01289] d  
Epoch = 188.0540 [0.0243] BKJD  
Rp/R\* = 0.0061 [0.0008]  
a/R\* = 82.55 [72.83]  
b = 0.87 [0.25]  
Seff = 18.92 [9.85]  
Teq = 532 [69] K  
Rp = 1.43 [0.69] Re  
a = 1.5622 [0.5671] AU  
Ag = 2895.74 [6338.93] [0.46σ]  
Teffp = 6032 [3229] K [1.70σ]

## DV Diagnostic Results:

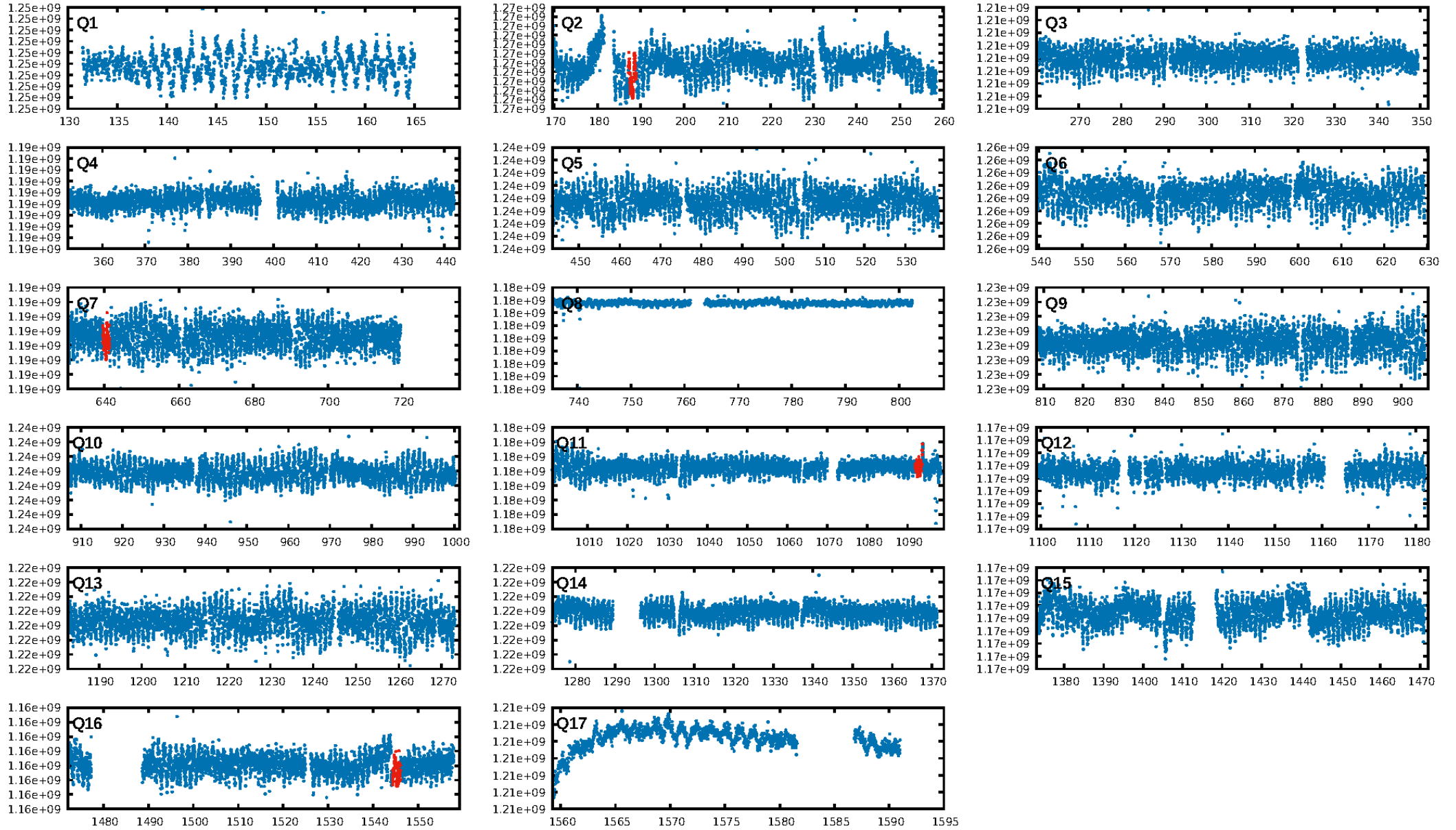
ShortPeriod-sig: 100.0% [49.10σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 75.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.37e-10  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.1126  
Centroid-sig: 6.4%  
Centroid-so: 10.036 arcsec [1.75σ]  
OotOffset-rm: 6.942 arcsec [82.76σ]  
KicOffset-rm: 6.798 arcsec [79.96σ]  
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 00:34:40 Z

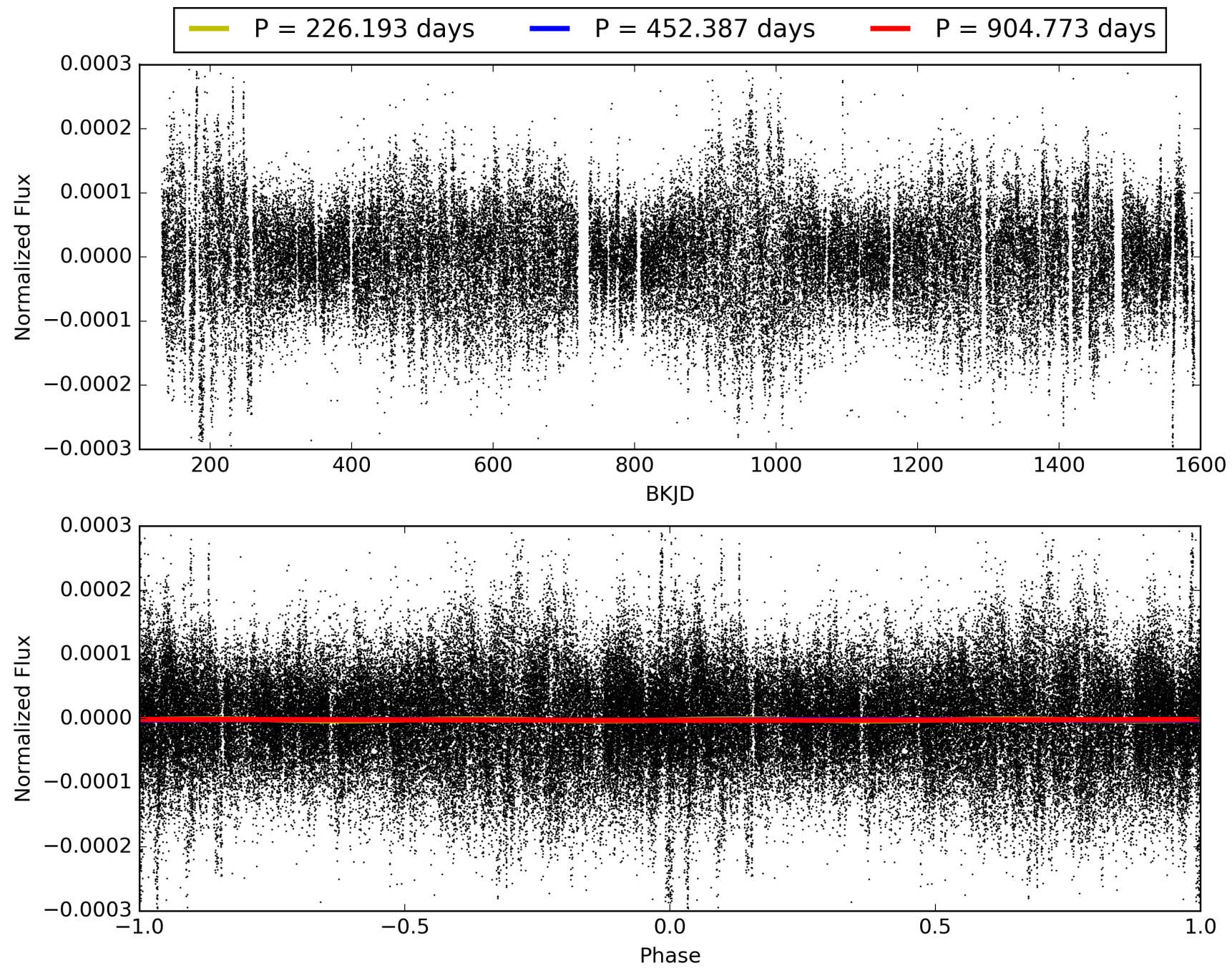
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 011671923-02, PDC Light Curves

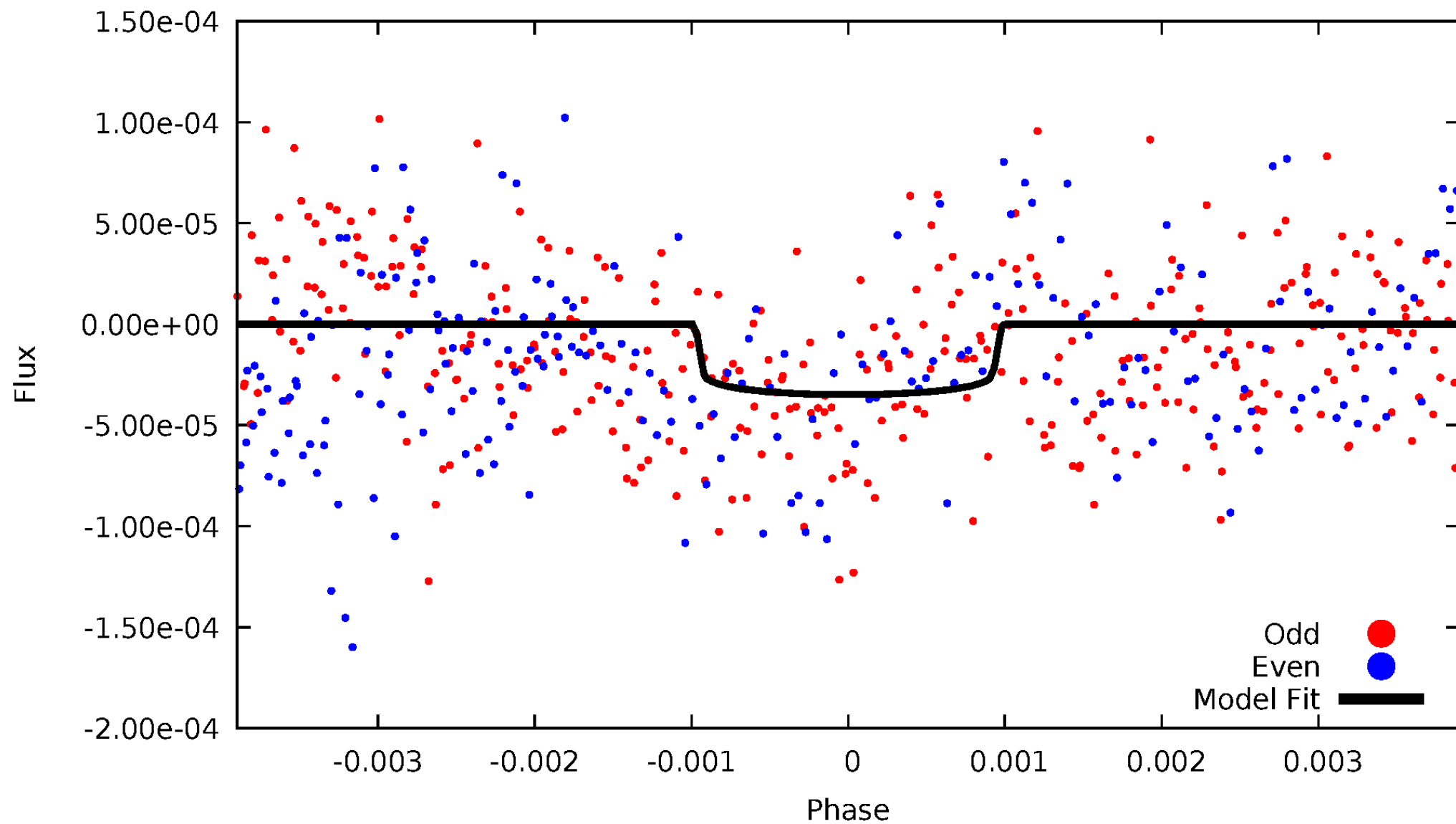


# TCE 011671923-02



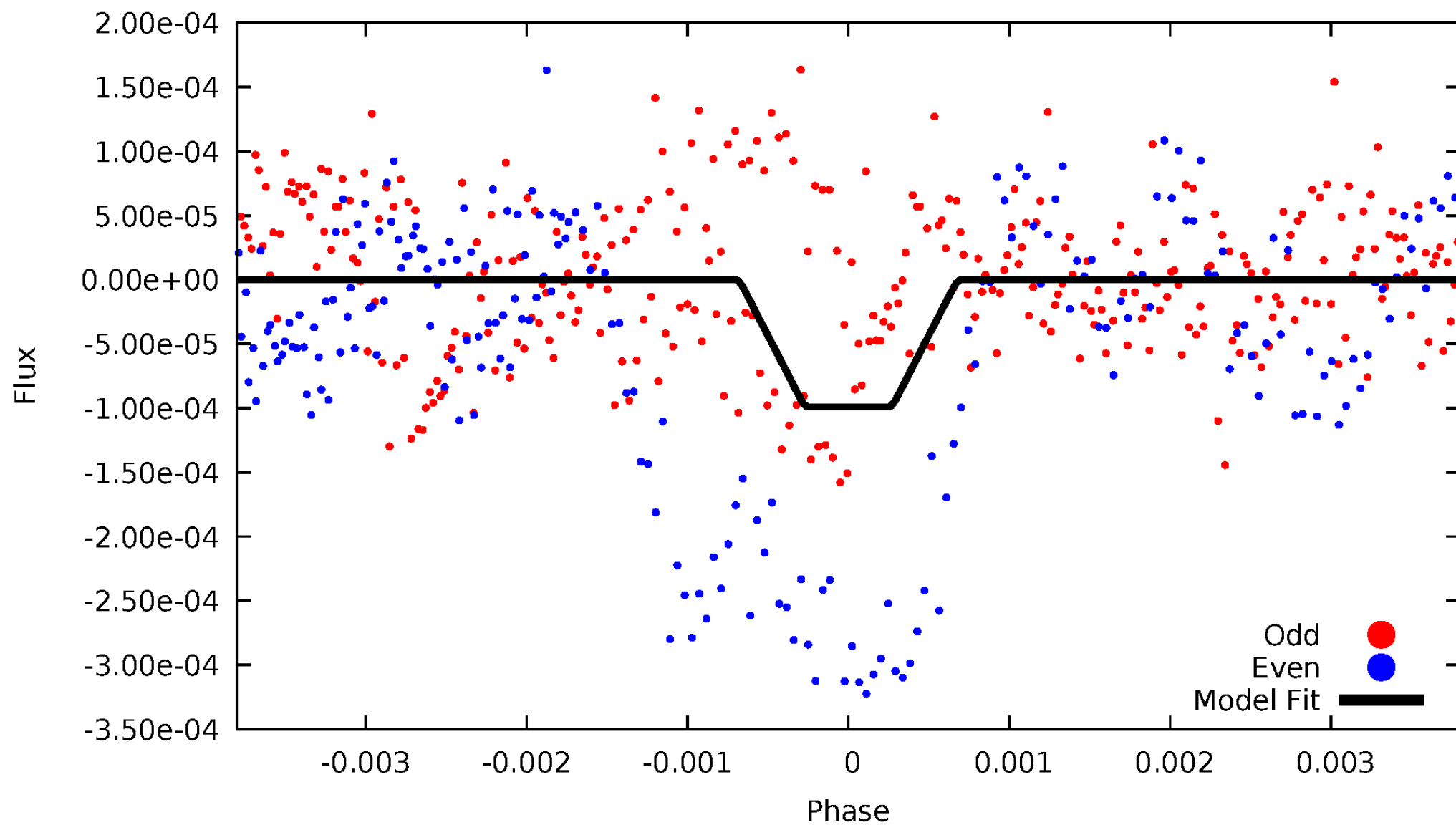
DV Odd/Even

TCE 011671923-02



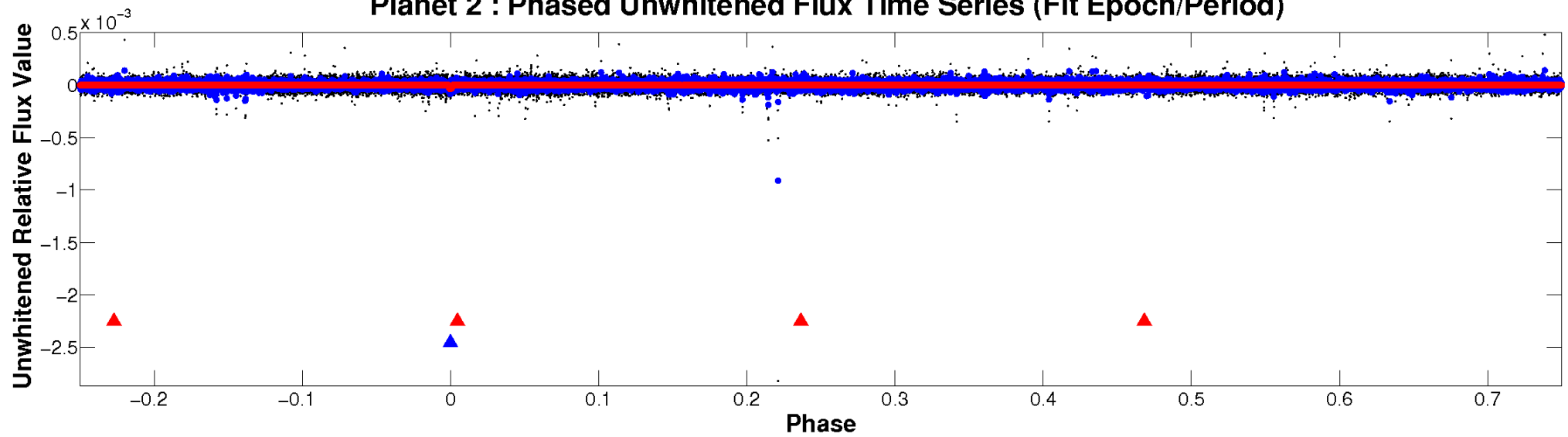
# ALT Odd/Even

TCE 011671923-02

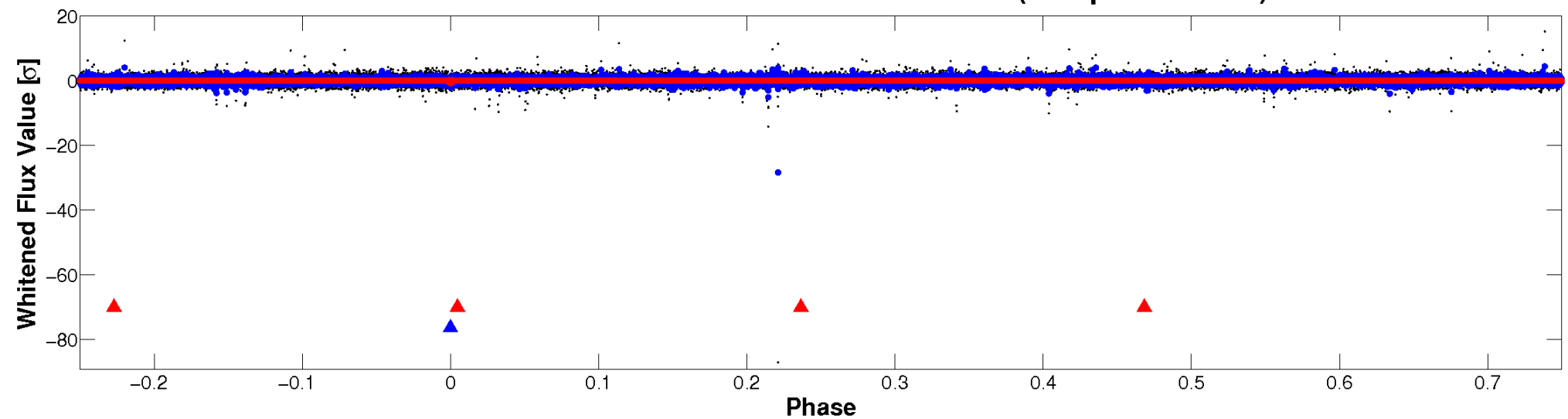


# Non-Whitened Vs. Whitened Light Curve

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

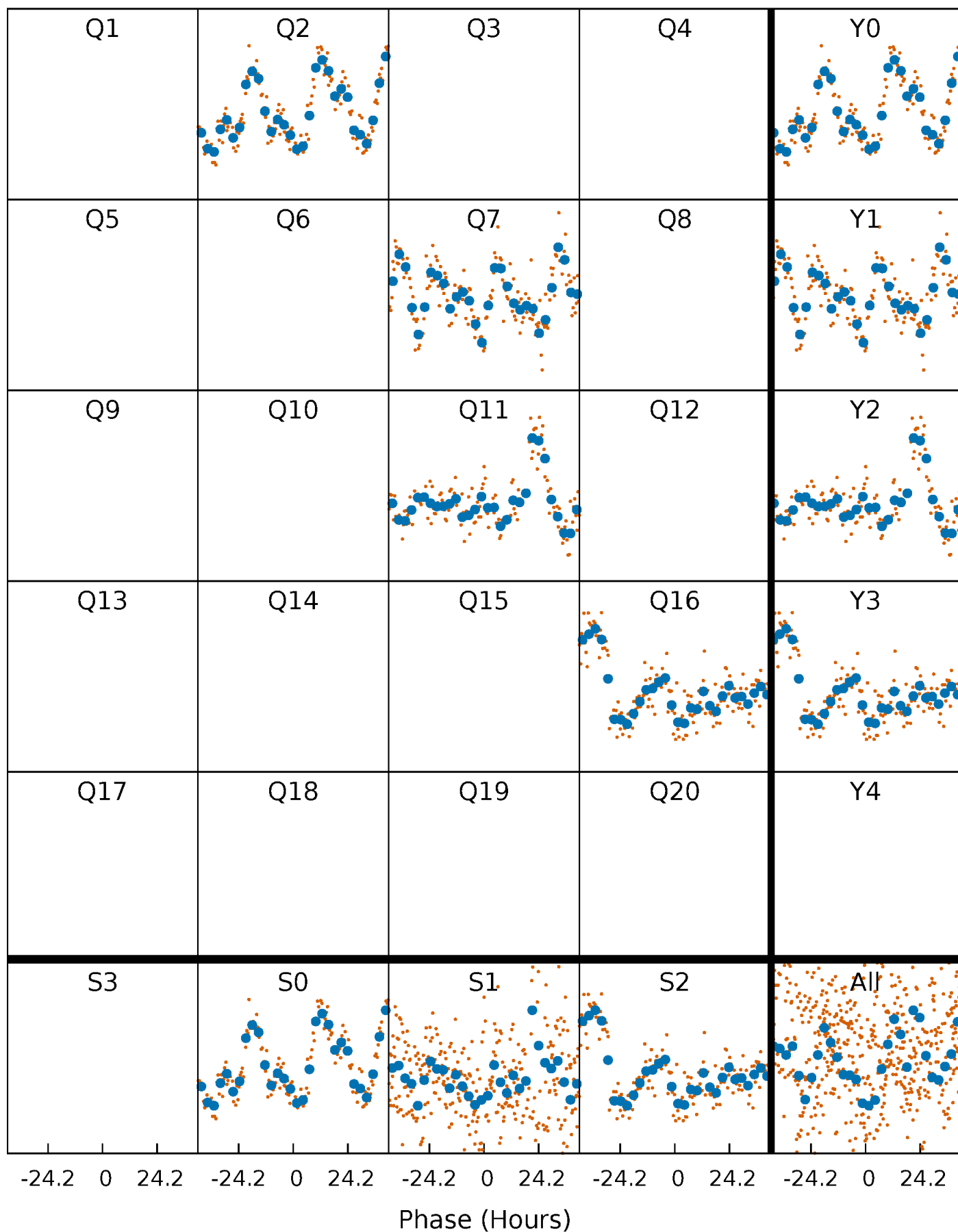


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



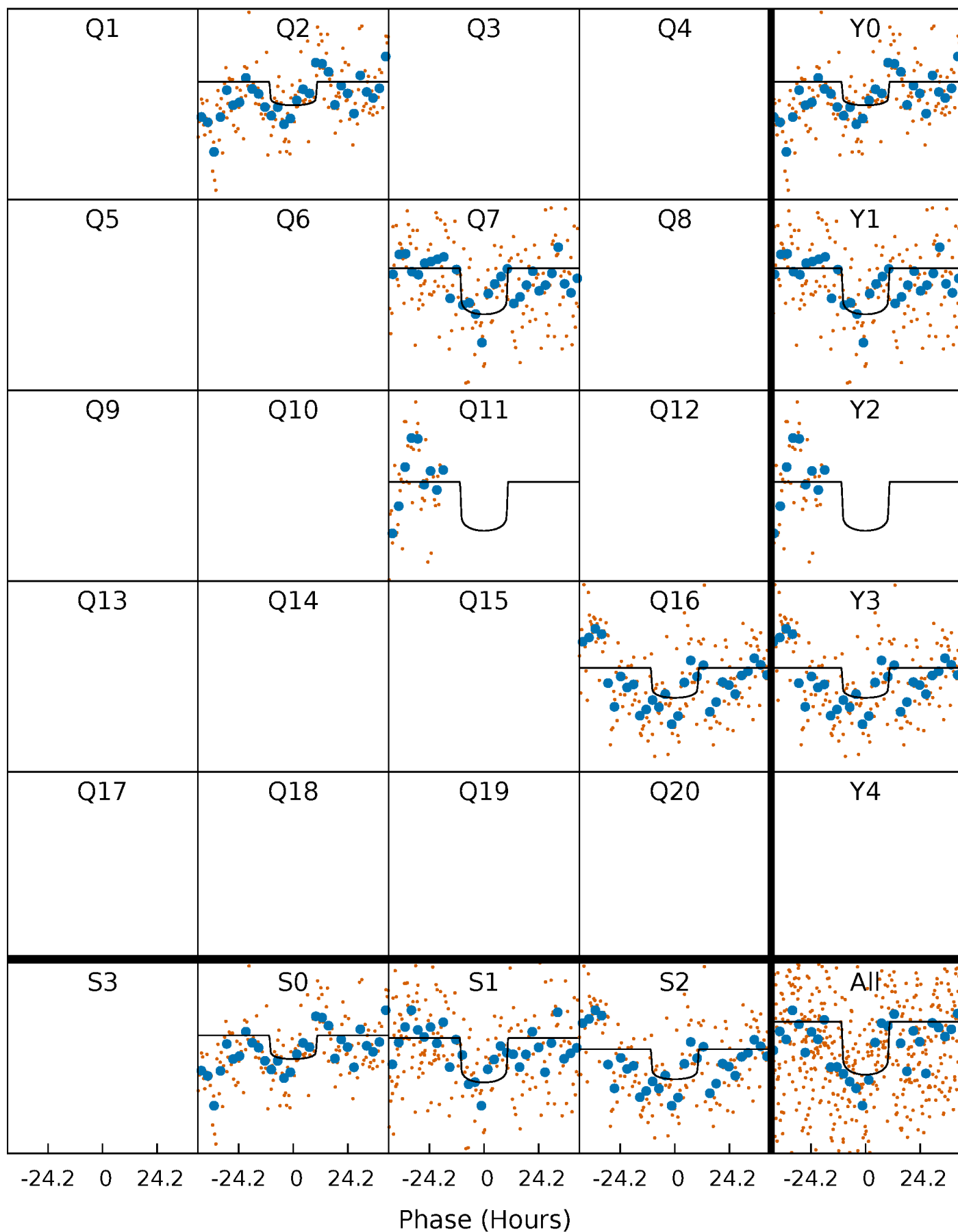
# PDC Quarter-Phased Transit Curves

TCE 011671923-02 P=452.386564 Days  $T_0=188.054035$  (BKJD)



# DV Quarter-Phased Transit Curves

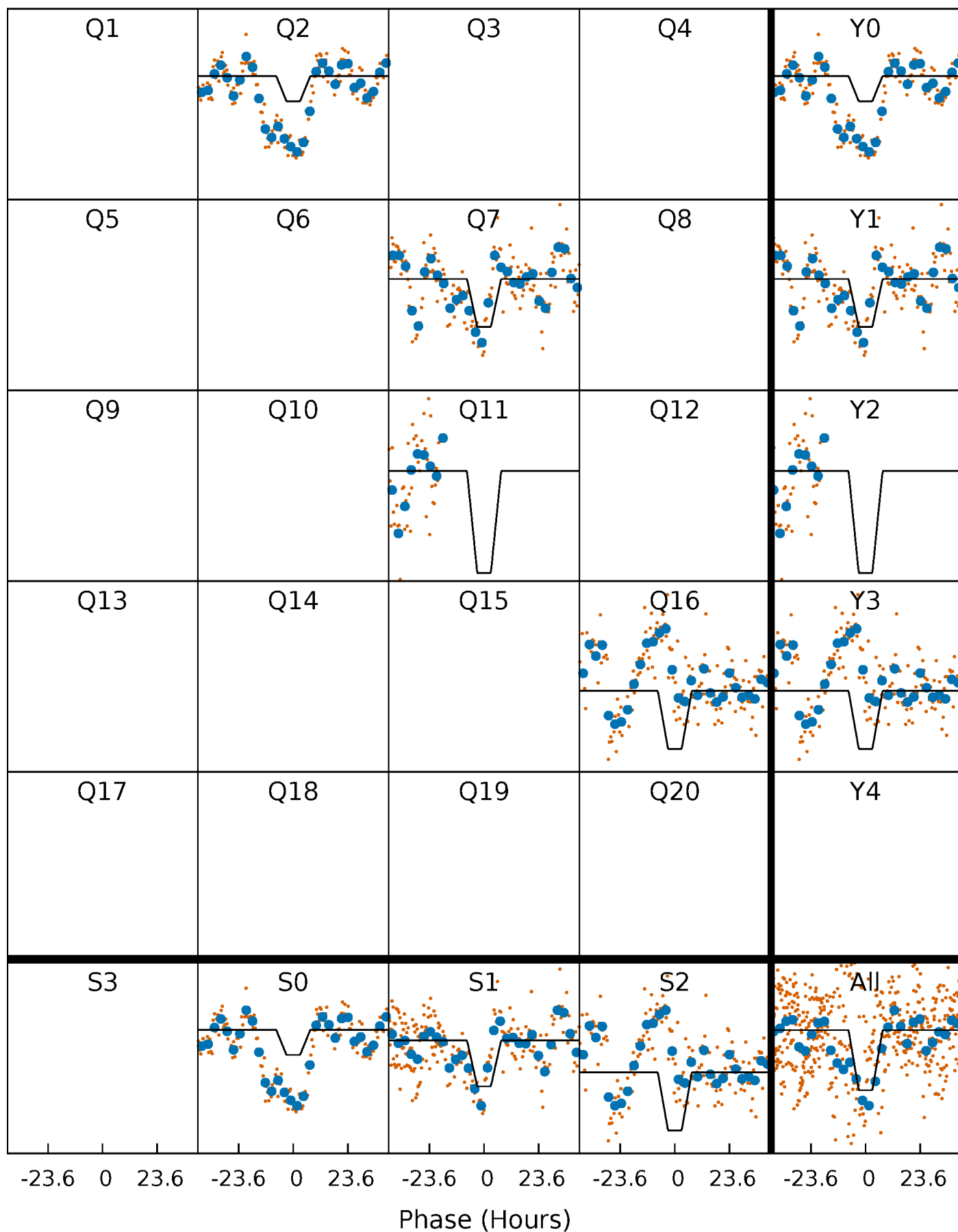
TCE 011671923-02     $P=452.386564$  Days     $T_0=188.054035$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

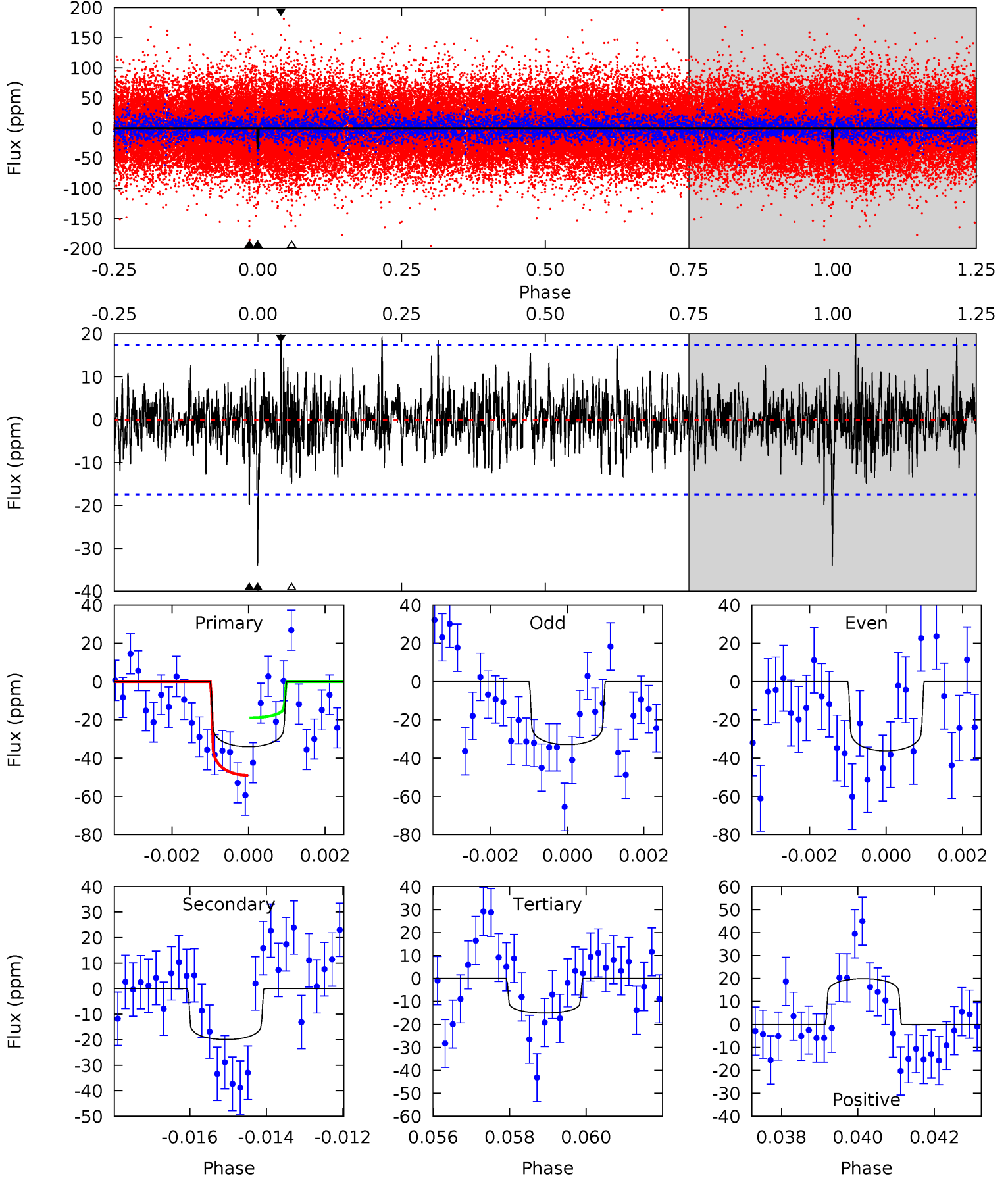
TCE 011671923-02     $P=452.371774$  Days     $T_0=188.084153$  (BKJD)



# DV Model-Shift Uniqueness Test

011671923-02, P = 452.386564 Days, E = 188.054035 Days

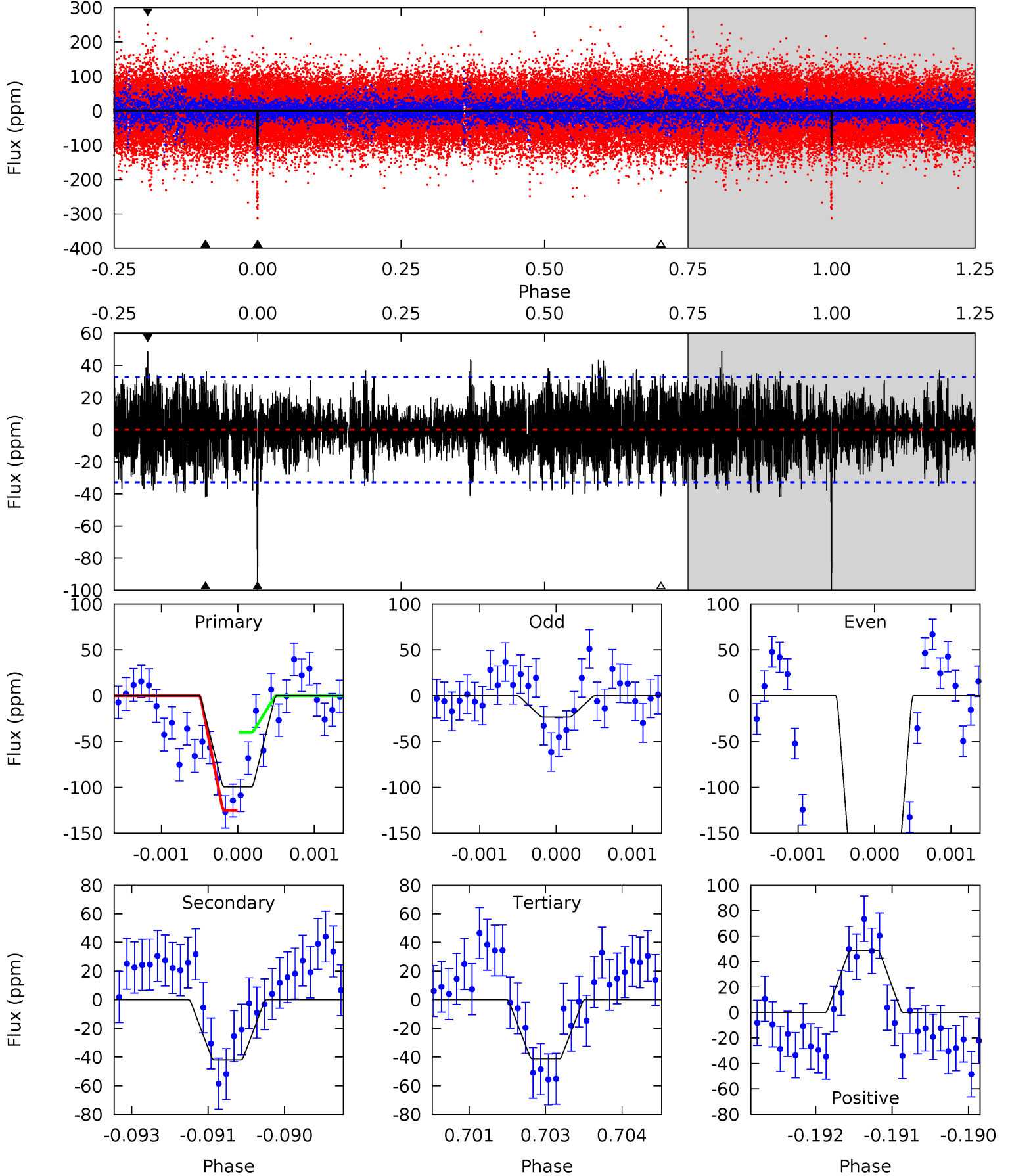
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	6.10	4.59	6.10	5.33	3.09	1.44	5.82	4.32	1.51	0.00	0.46	0.94	0.37	4.61



# Alt Model-Shift Uniqueness Test

011671923-02, P = 452.371774 Days, E = 188.084153 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	6.92	6.82	8.04	5.39	3.20	2.44	9.60	8.38	0.10	-1.12	23.8	1.48	0.33	6.93



### Stellar Parameters For KIC 011671923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$10280^{+250}_{-464}$	$4.169^{+0.164}_{-0.246}$	$0.070^{+0.200}_{-0.600}$	$2.148^{+0.999}_{-0.538}$	$2.483^{+0.410}_{-0.455}$	$0.353^{+0.324}_{-0.222}$
	+2%/-5%	+4%/-6%	+286%/-857%	+47%/-25%	+17%/-18%	+92%/-63%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011671923-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-20 \pm 3$	$1.43^{+0.35}_{-0.28}$	$740^{+75}_{-51}$	$8281^{+992}_{-793}$	$12727^{+7123}_{-4578}$
Alt.	$-42 \pm 6$	$2.37^{+0.56}_{-0.38}$	$745^{+77}_{-54}$	$7678^{+627}_{-525}$	$9987^{+4194}_{-3586}$

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

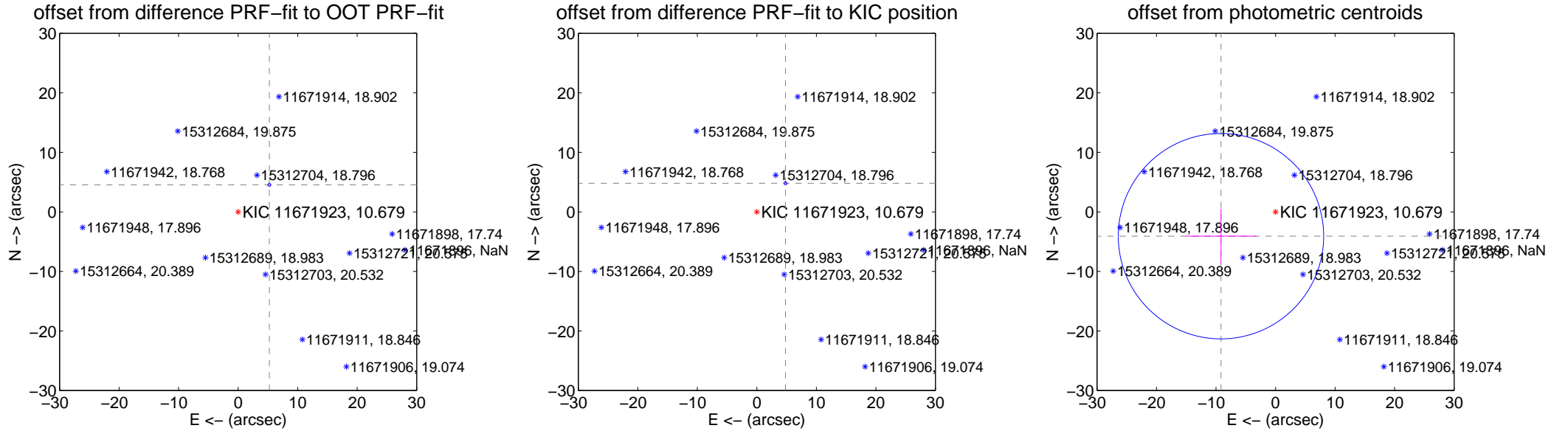
## DV Centroid Data

Supplemental centroid analysis for 011671923-02. **Kepler magnitude: 10.68.** Transit SNR 6.78

**There are 0 quarters with good PRF difference image offsets**

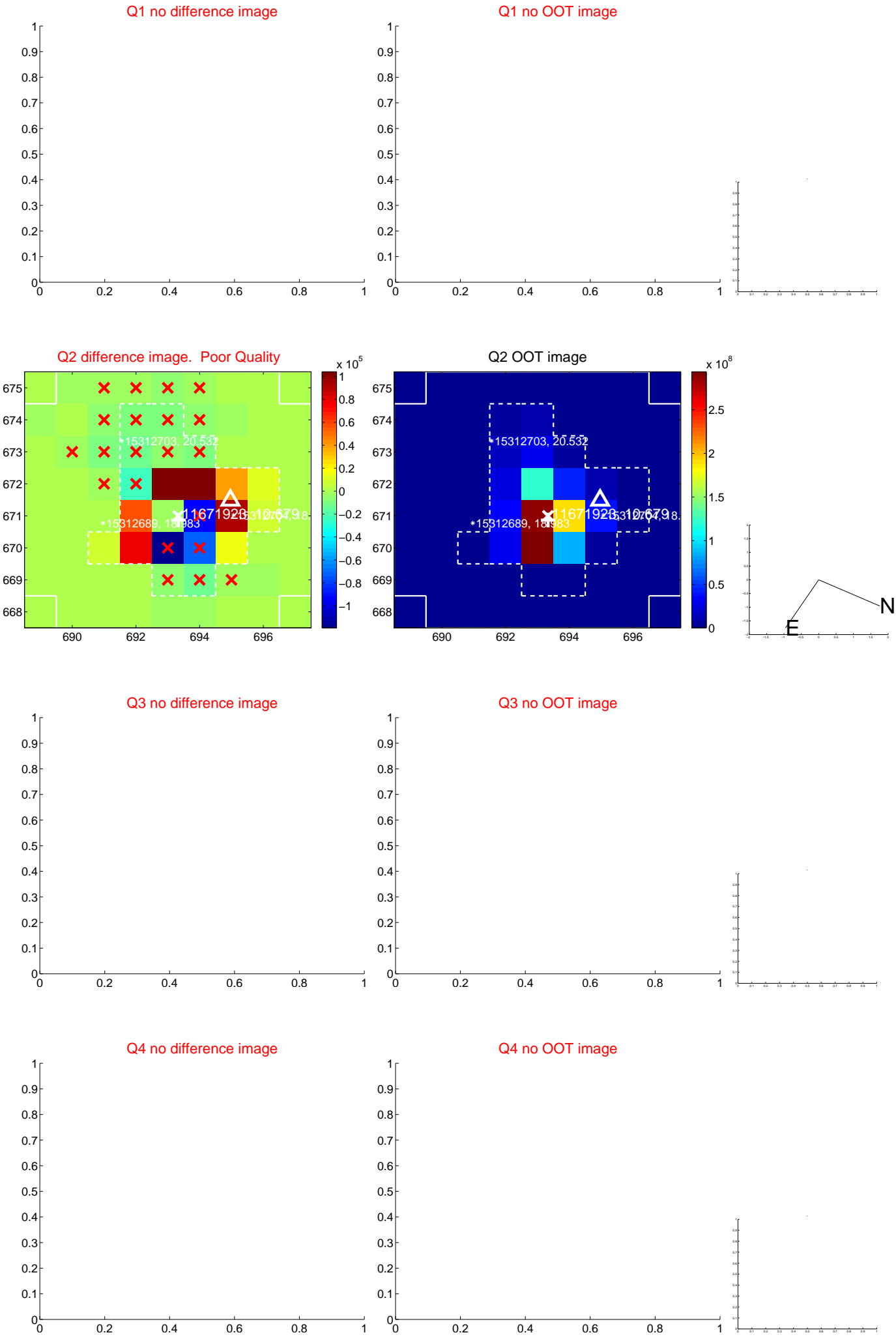
The direct PRF centroid is offset from the target star catalog position by about 0.51 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>6.942 <math>\pm</math> 0.084</b>	<b>82.76</b>	-5.252 $\pm$ 0.077	4.540 $\pm$ 0.093
PRF-fit source offset from KIC position	<b>6.798 <math>\pm</math> 0.085</b>	<b>79.96</b>	-4.813 $\pm$ 0.077	4.800 $\pm$ 0.093
photometric centroid source offset	10.04 $\pm$ 5.75	1.75	9.17 $\pm$ 5.95	-4.08 $\pm$ 4.61

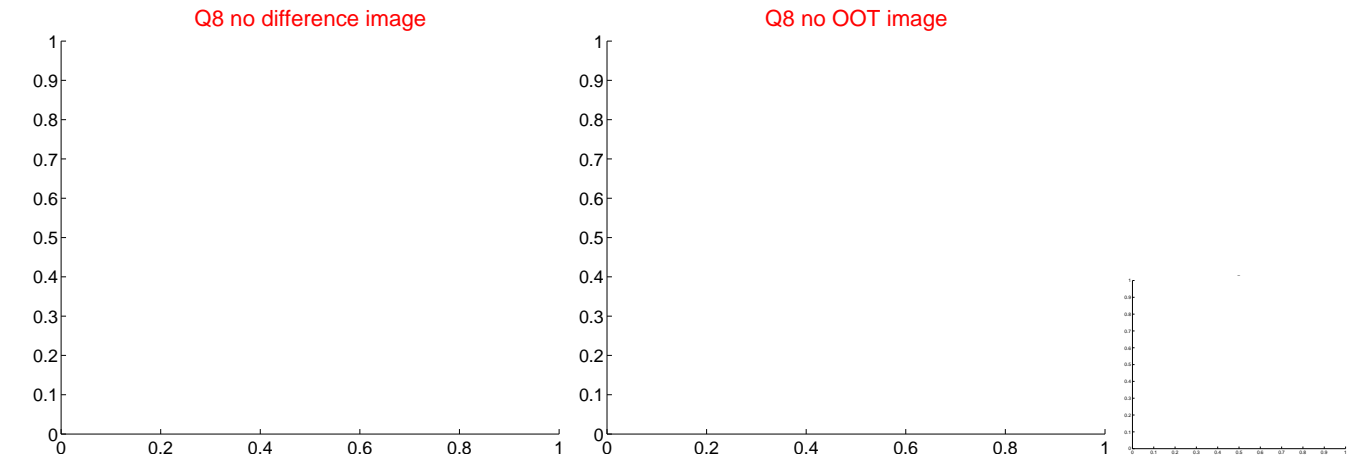
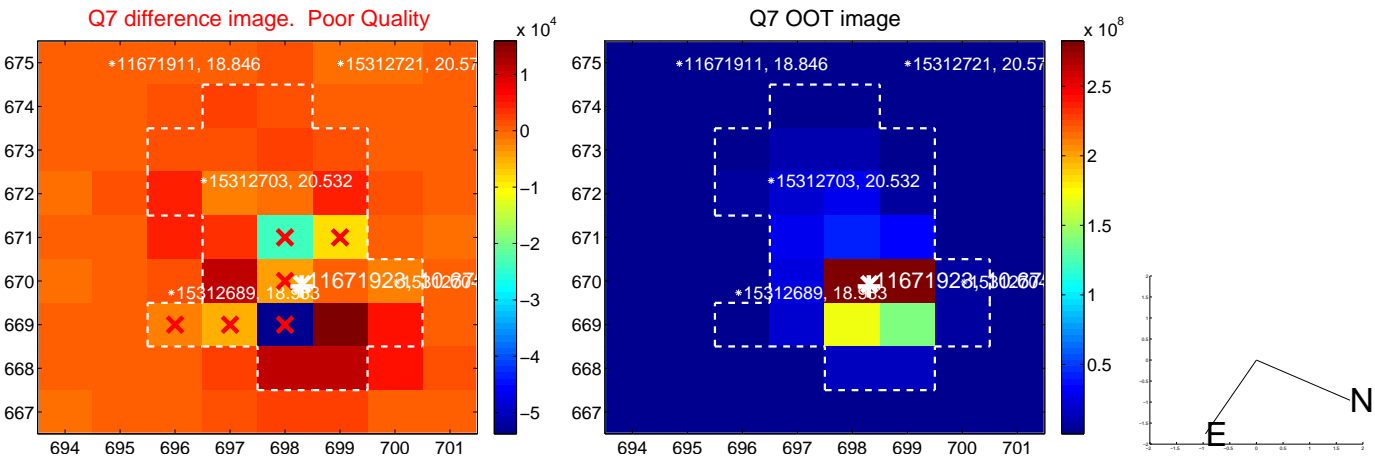
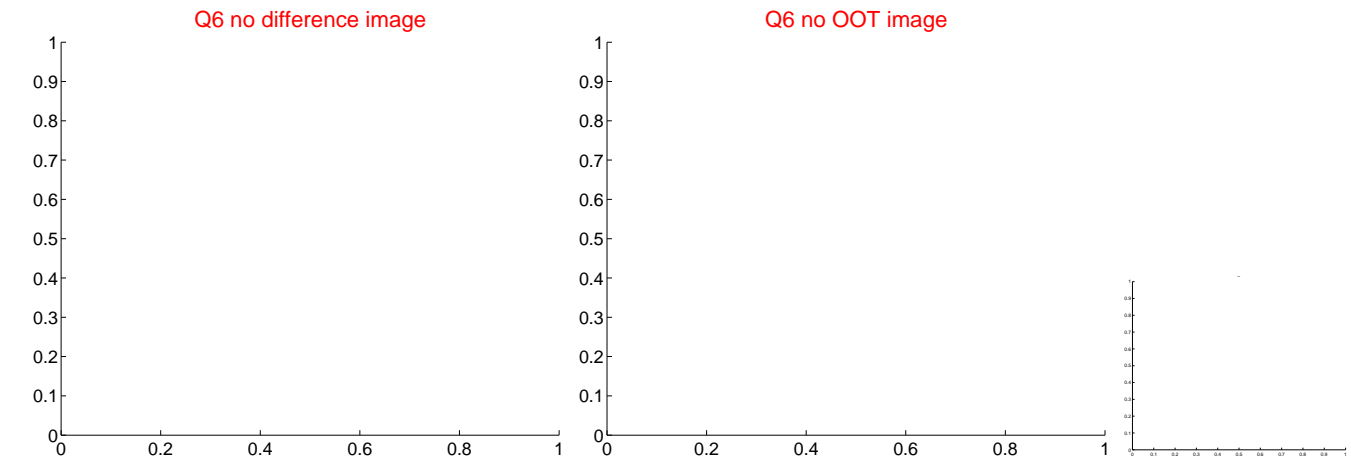
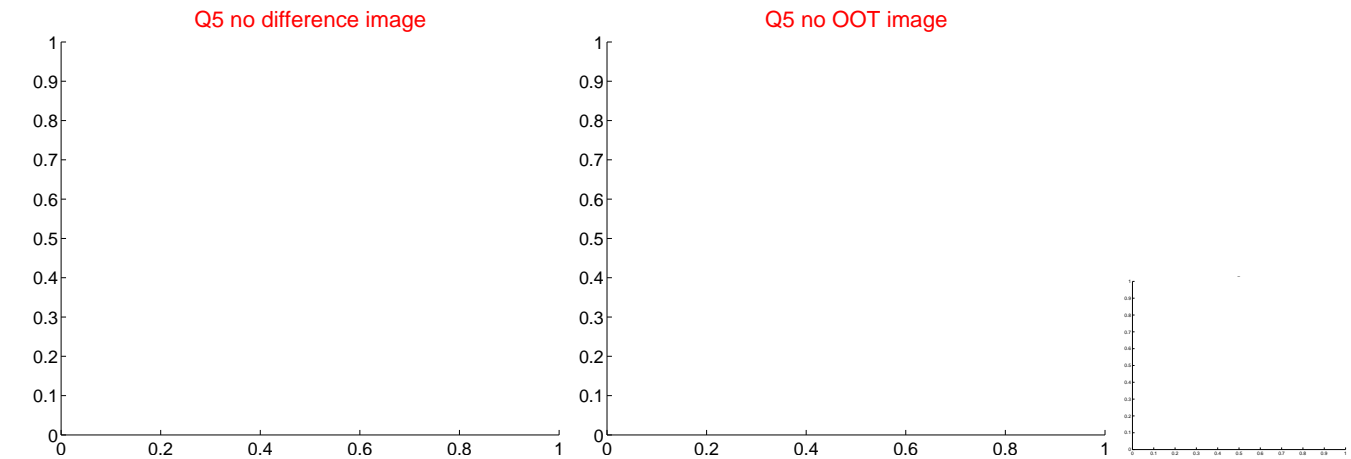


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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





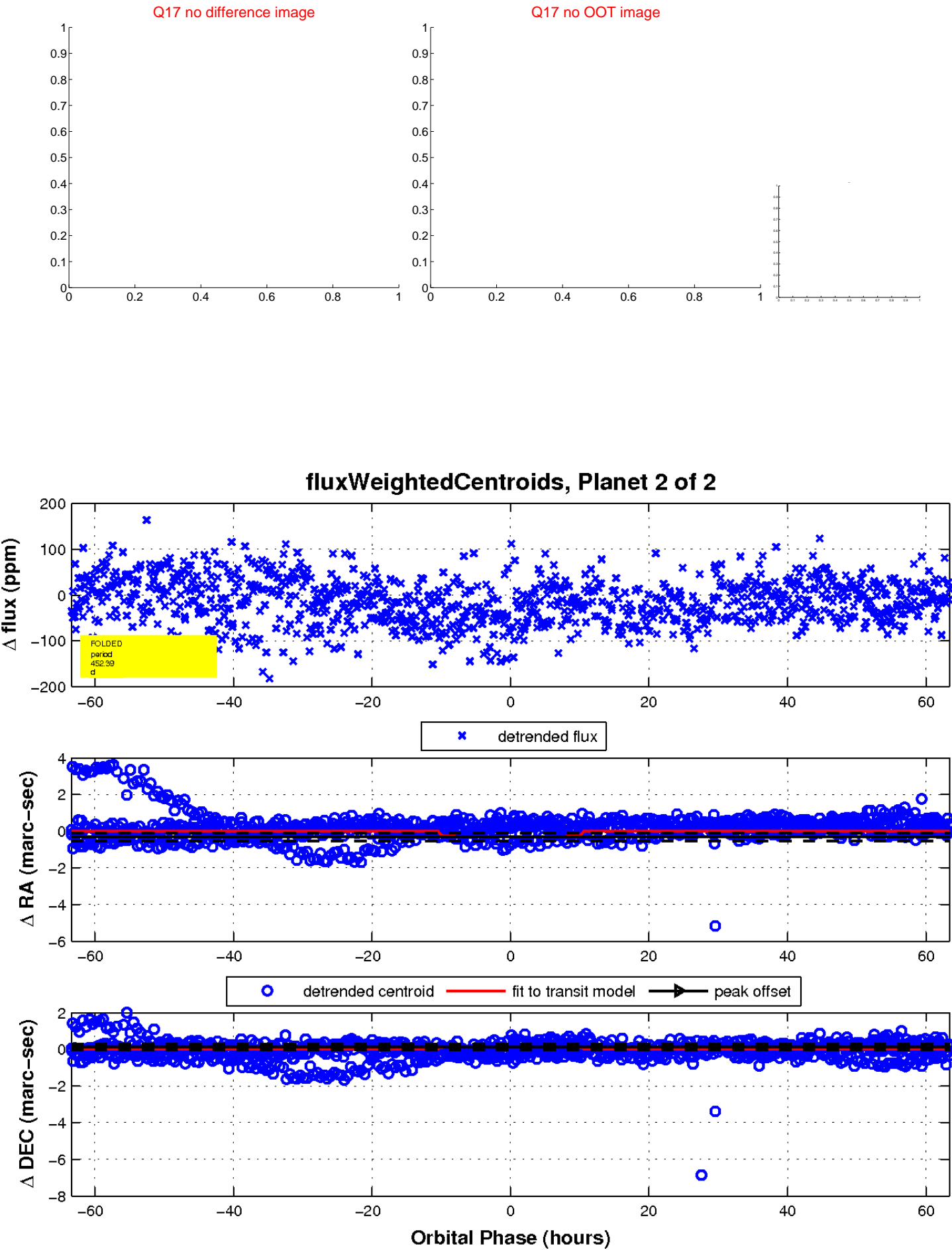
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

