

# KIC 007287683

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007287683-01	OBS	1622.01	69.834577	168.787051	244.3	8.331	33.2	35.3	2.02	7732	3.44	81.12
007287683-02	OBS	No	2.117886	132.155560	10.5	6.861	8.0	8.6	2.02	7732	0.76	8577.86

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007287683-01	OBS	PC	0.85	0	0	0	0	NO_COMMENT
007287683-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT

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

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

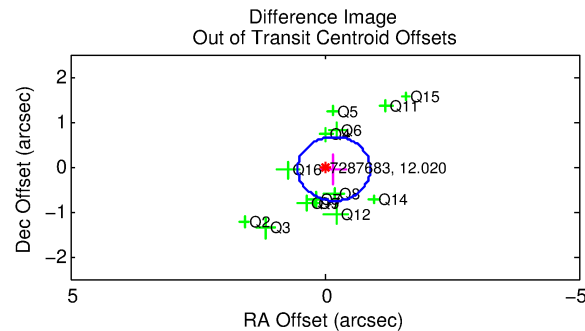
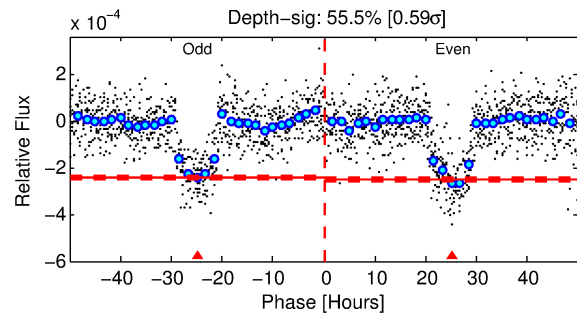
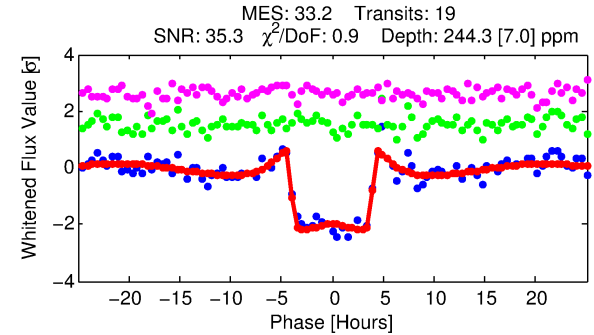
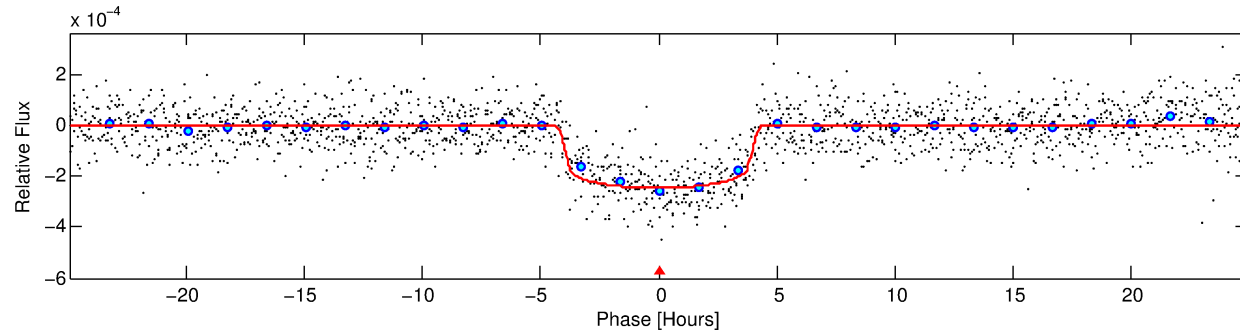
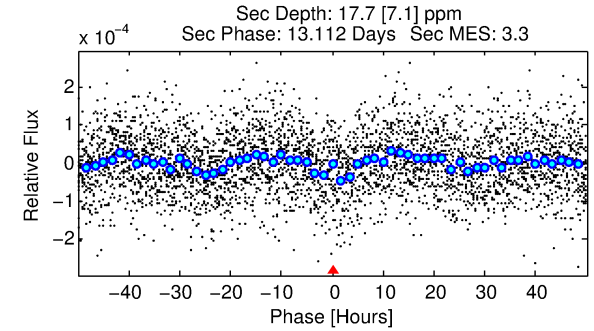
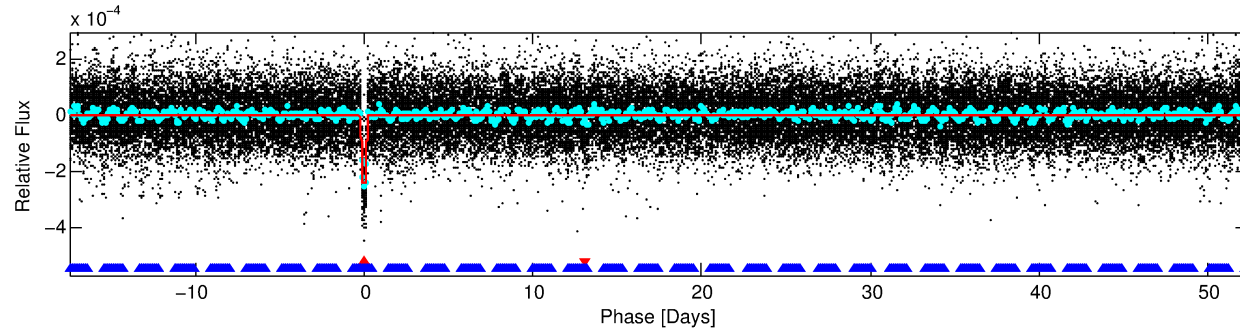
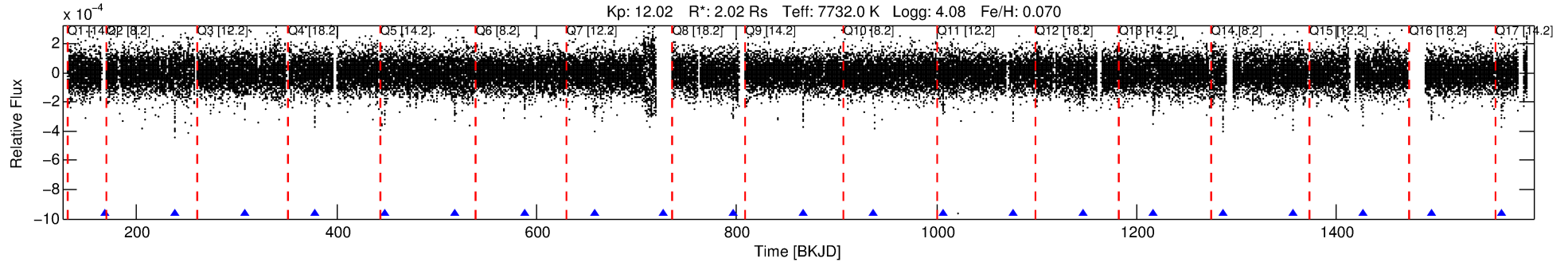
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007287683-01

No Significant Match Found

# DV One-Page Summary

KIC: 7287683 Candidate: 1 of 2 Period: 69.835 d  
KOI: K01622.01 Corr: 0.992



## DV Fit Results:

Period = 69.83458 [0.00024] d  
Epoch = 168.7871 [0.0030] BKJD  
Rp/R\* = 0.0156 [0.0012]  
a/R\* = 42.84 [19.25]  
b = 0.76 [0.25]  
Seff = 81.13 [28.43]  
Teff = 765 [67] K  
Rp = 3.44 [0.94] Re  
a = 0.4017 [0.0870] AU  
Ag = 132.57 [69.66] [1.89σ]  
Teffp = 4015 [459] K [7.01σ]

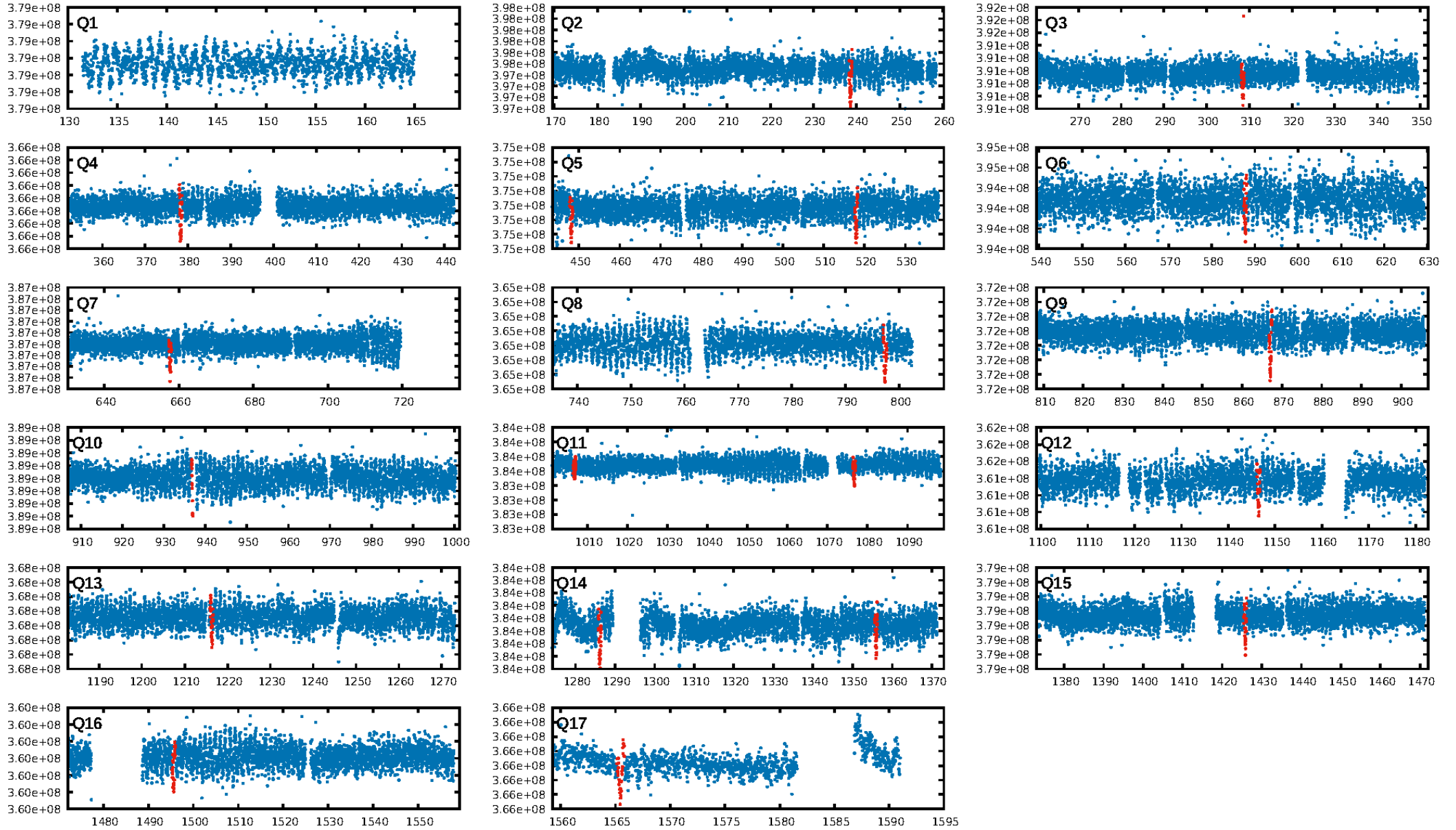
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [150.58σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 68.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.54e-153  
RollingBand-fgt: 1.00 [18/18]  
GhostDiagnostic-chr: 8.948  
Centroid-sig: 0.0%  
Centroid-so: 0.793 arcsec [3.23σ]  
OotOffset-rm: 0.188 arcsec [0.79σ]  
KicOffset-rm: 0.126 arcsec [0.59σ]  
OotOffset-st: 3/4/4/3 [14]  
KicOffset-st: 3/4/4/3 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 0.00 [0/14]

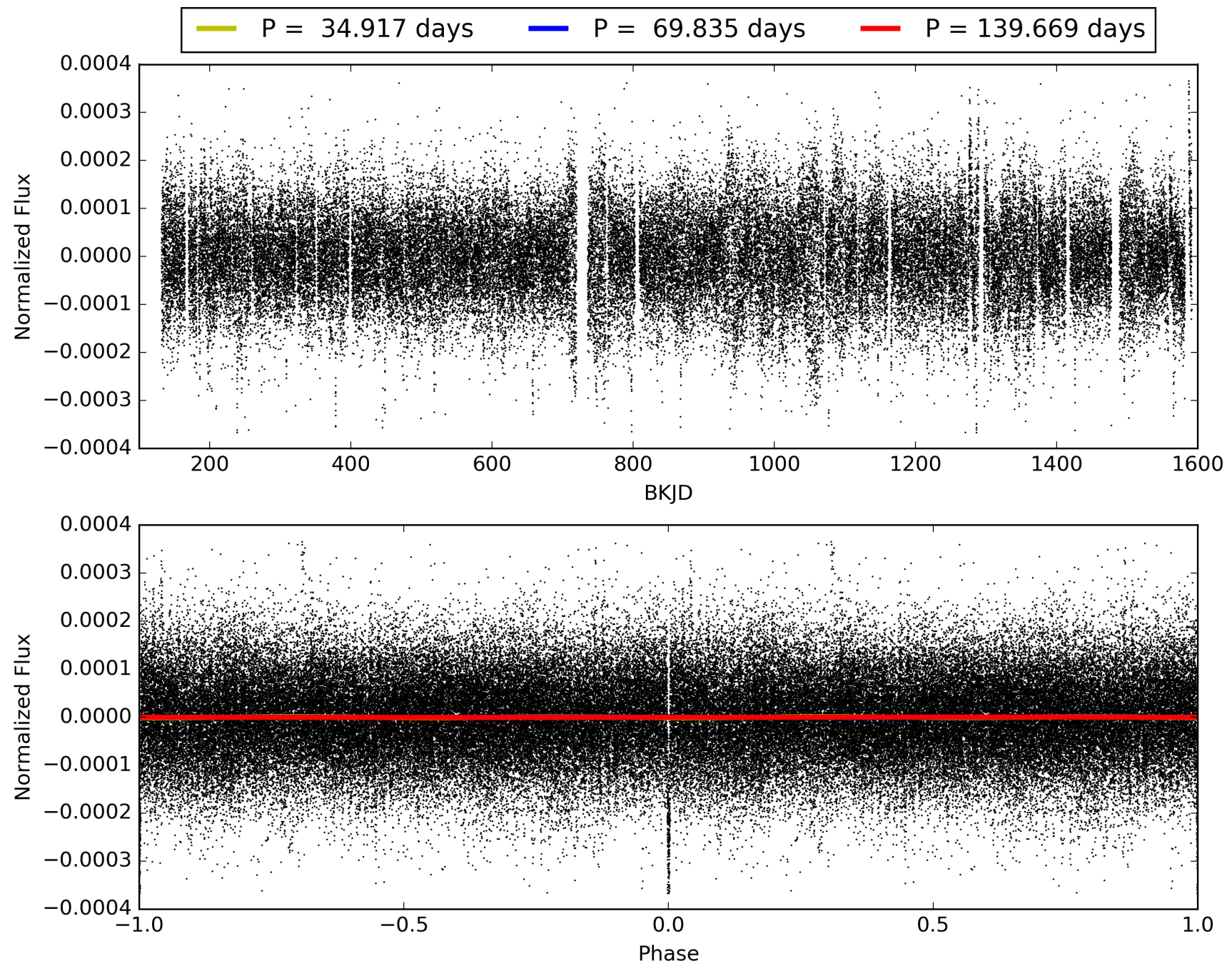
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:04:04 Z

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

# TCE 007287683-01, PDC Light Curves

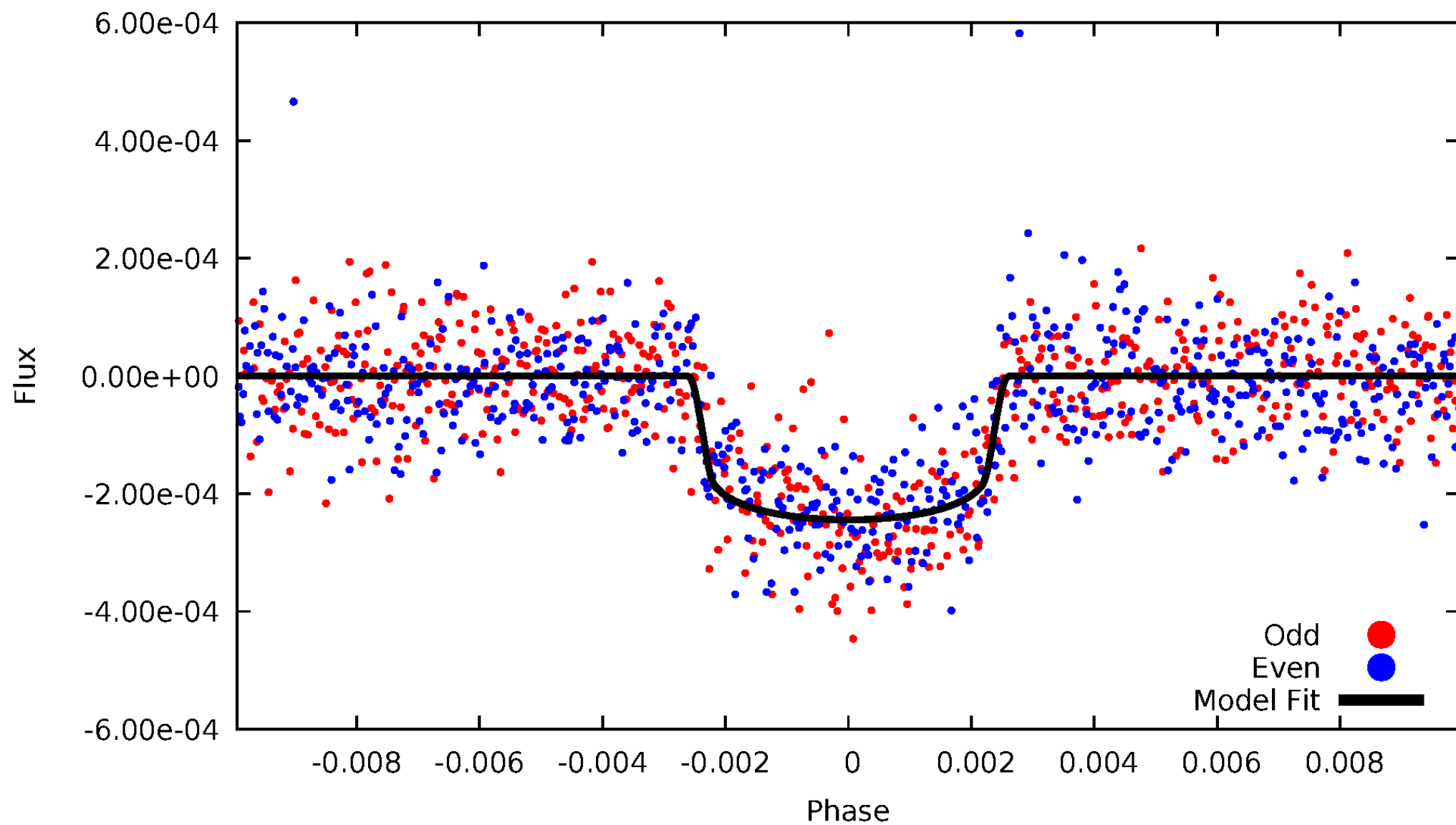


# TCE 007287683-01



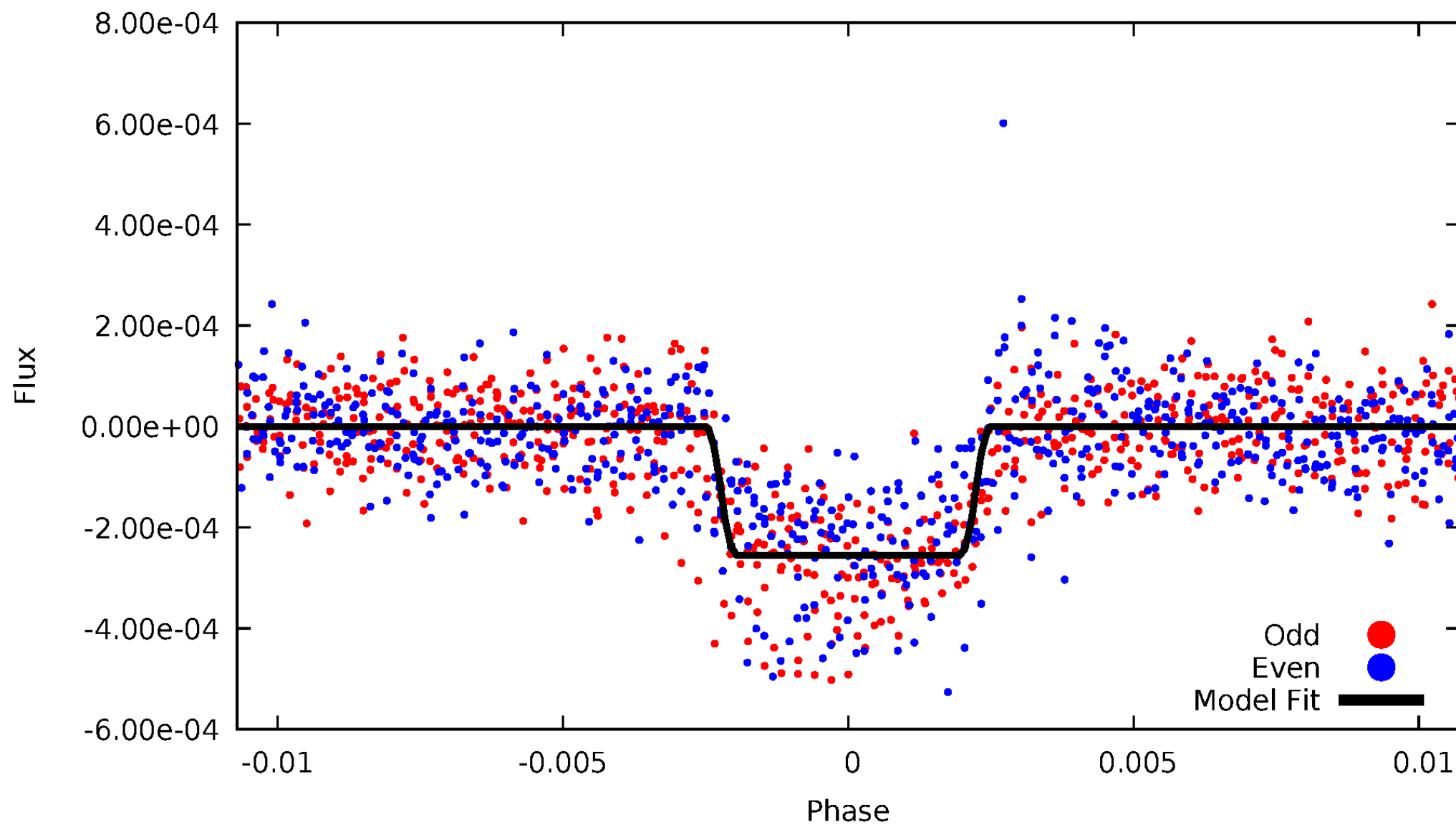
# DV Odd/Even

TCE 007287683-01



# ALT Odd/Even

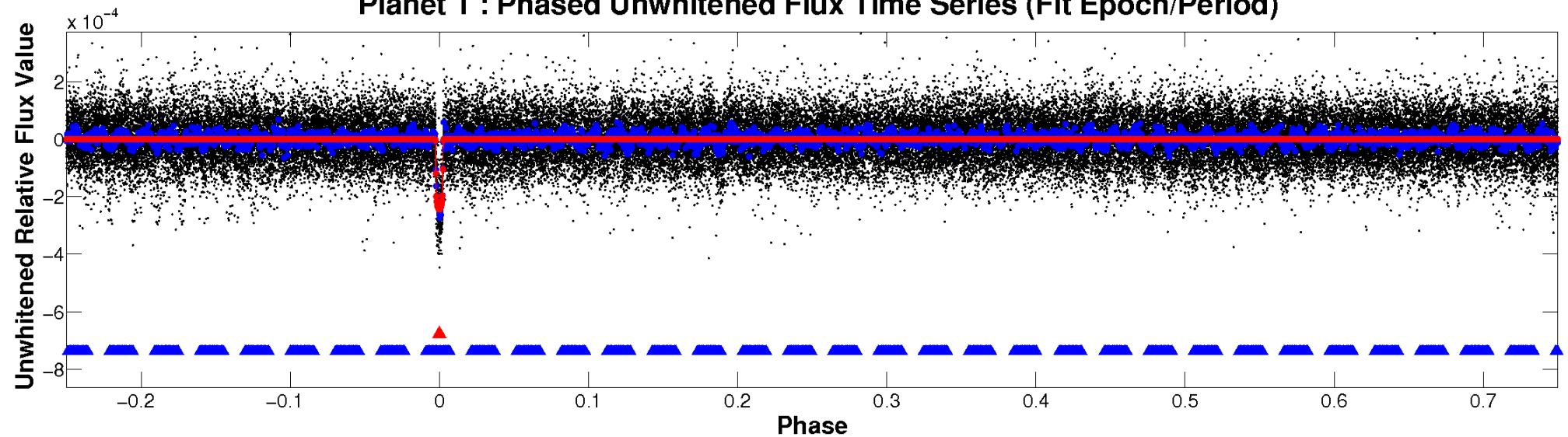
TCE 007287683-01



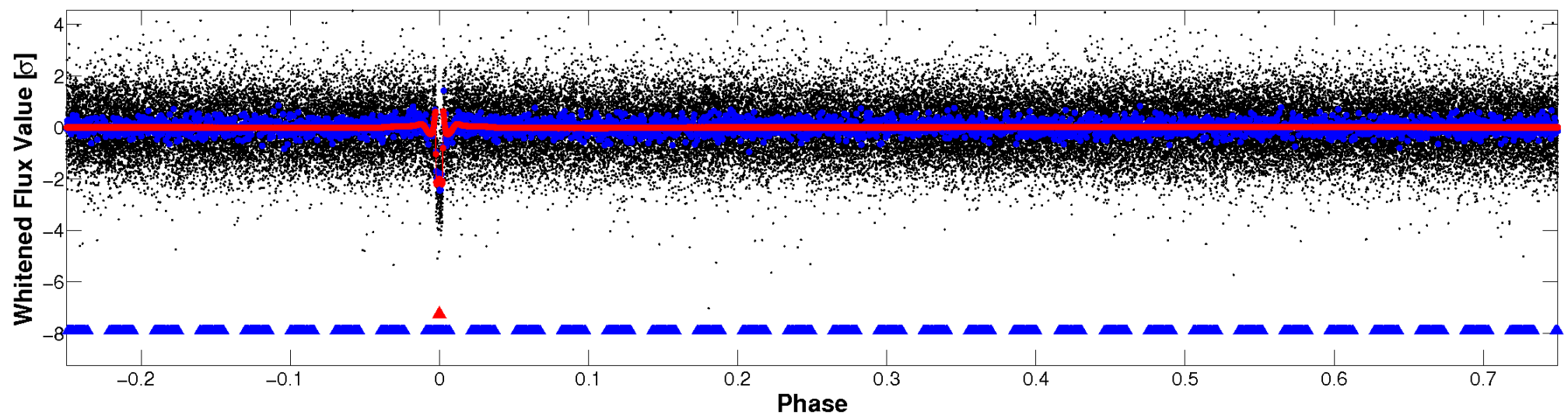


# Non-Whitened Vs. Whitened Light Curve

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

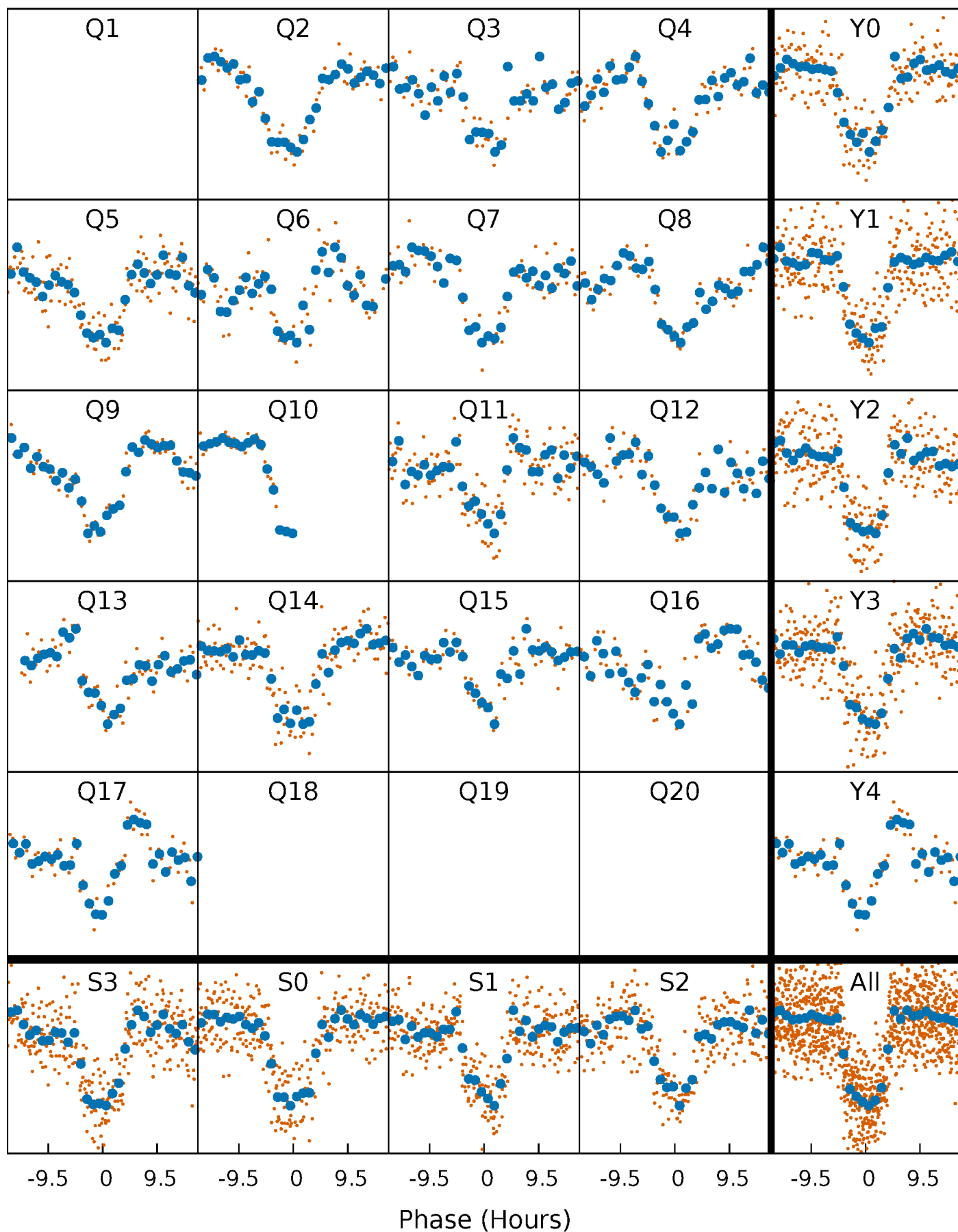


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

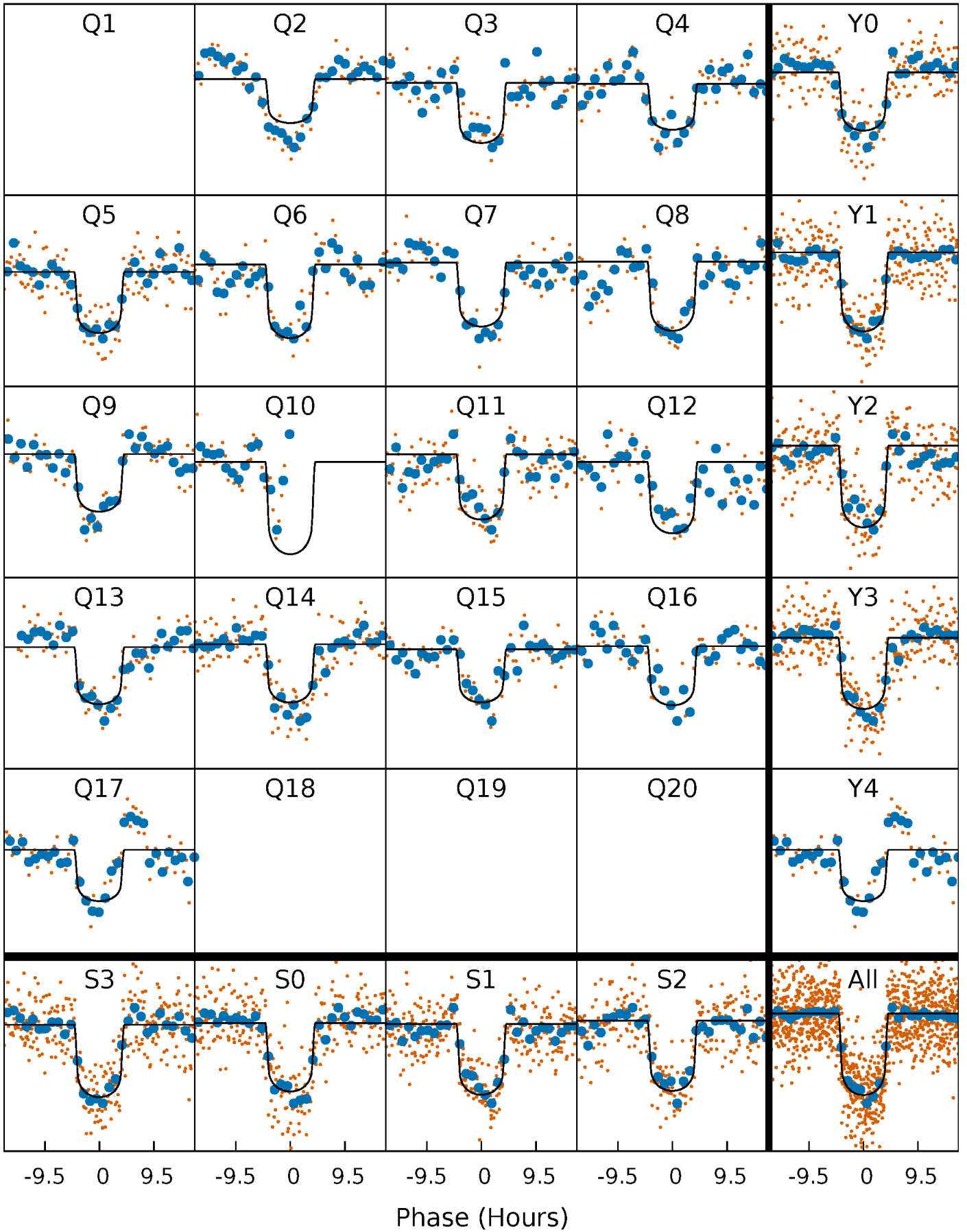
TCE 007287683-01 P= 69.834577 Days  $T_0=168.787051$  (BKJD)





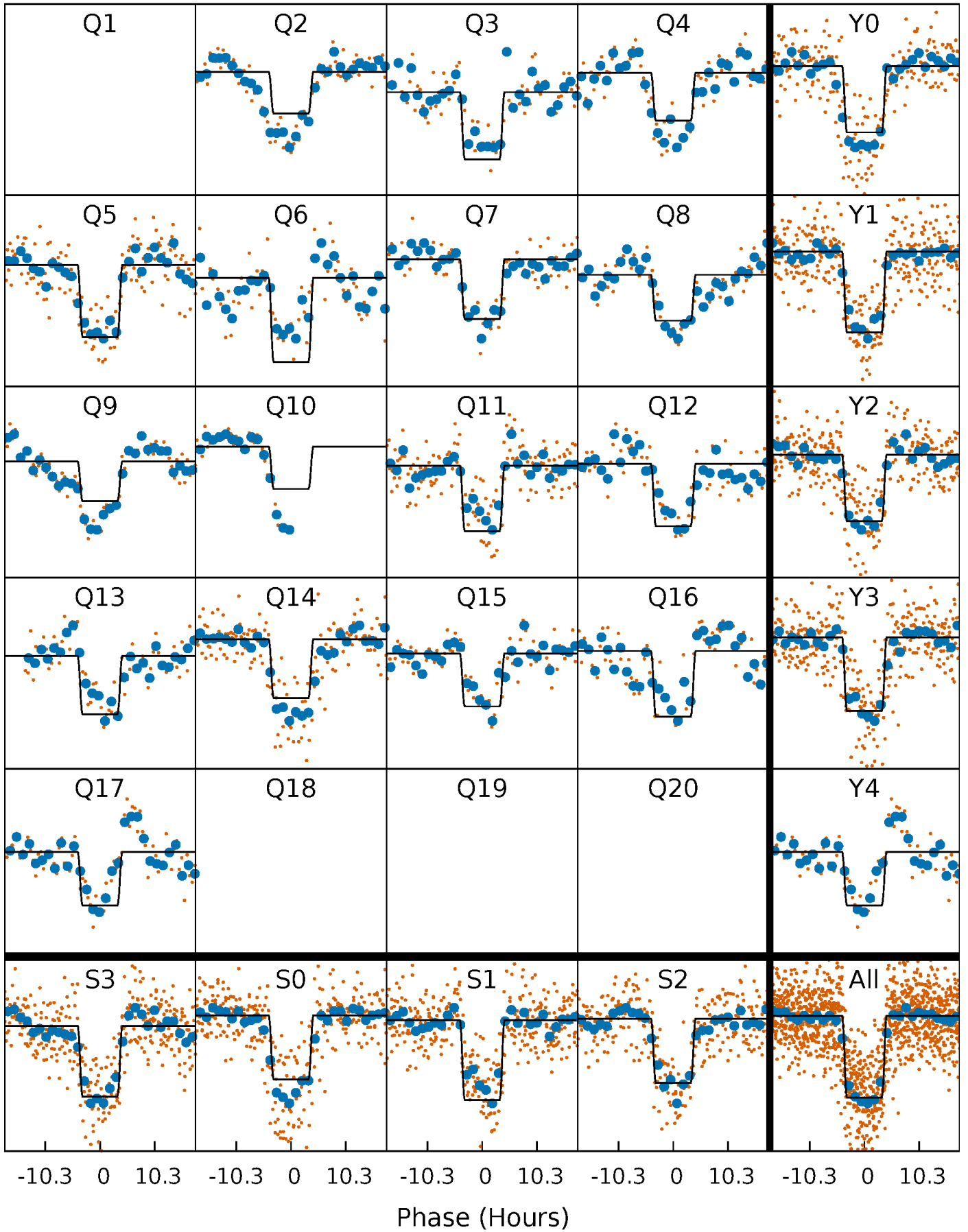
# DV Quarter-Phased Transit Curves

TCE 007287683-01 P= 69.834577 Days  $T_0=168.787051$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

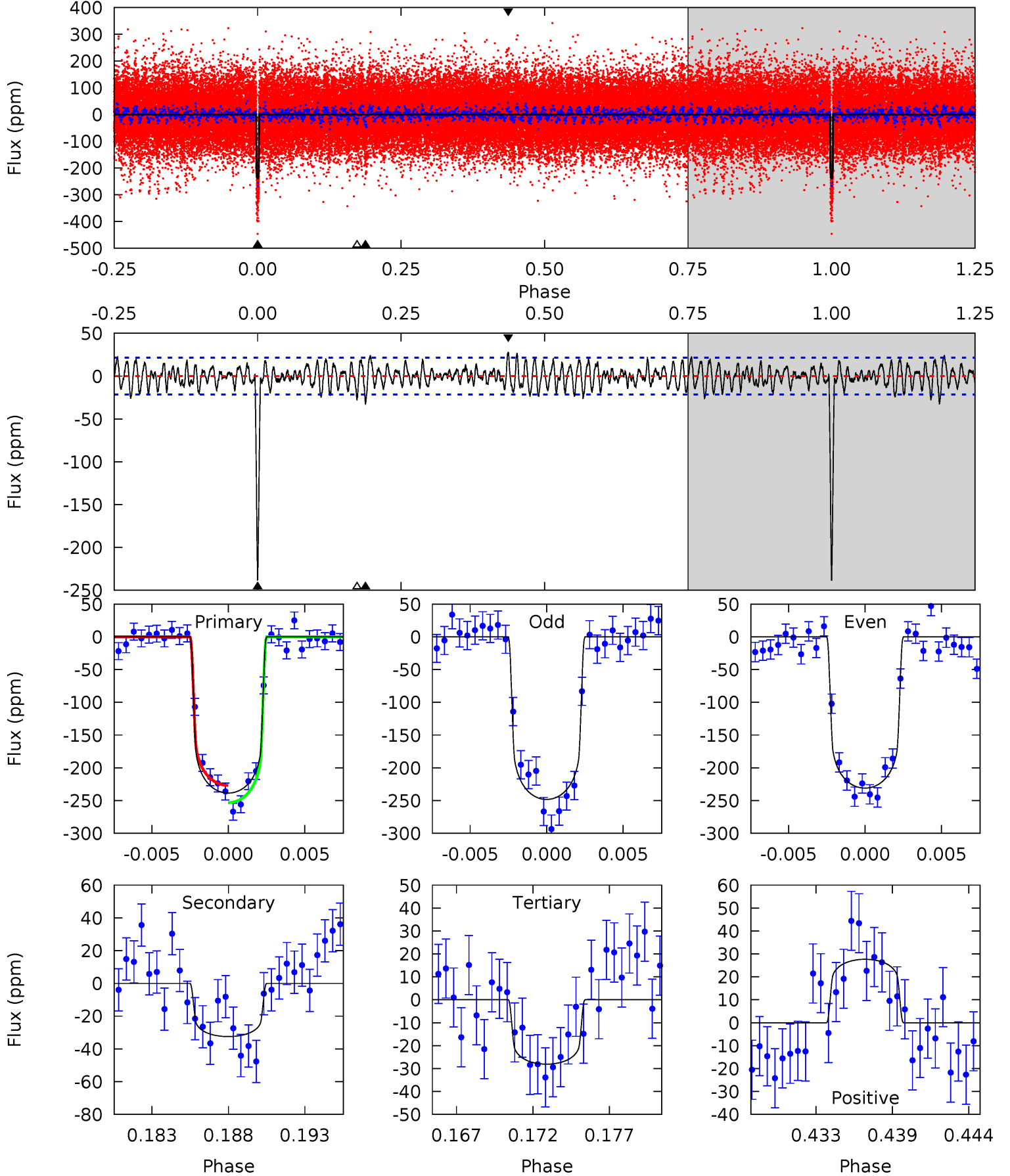
TCE 007287683-01 P= 69.833893 Days  $T_0=168.793214$  (BKJD)



# DV Model-Shift Uniqueness Test

007287683-01, P = 69.834577 Days, E = 98.952474 Days

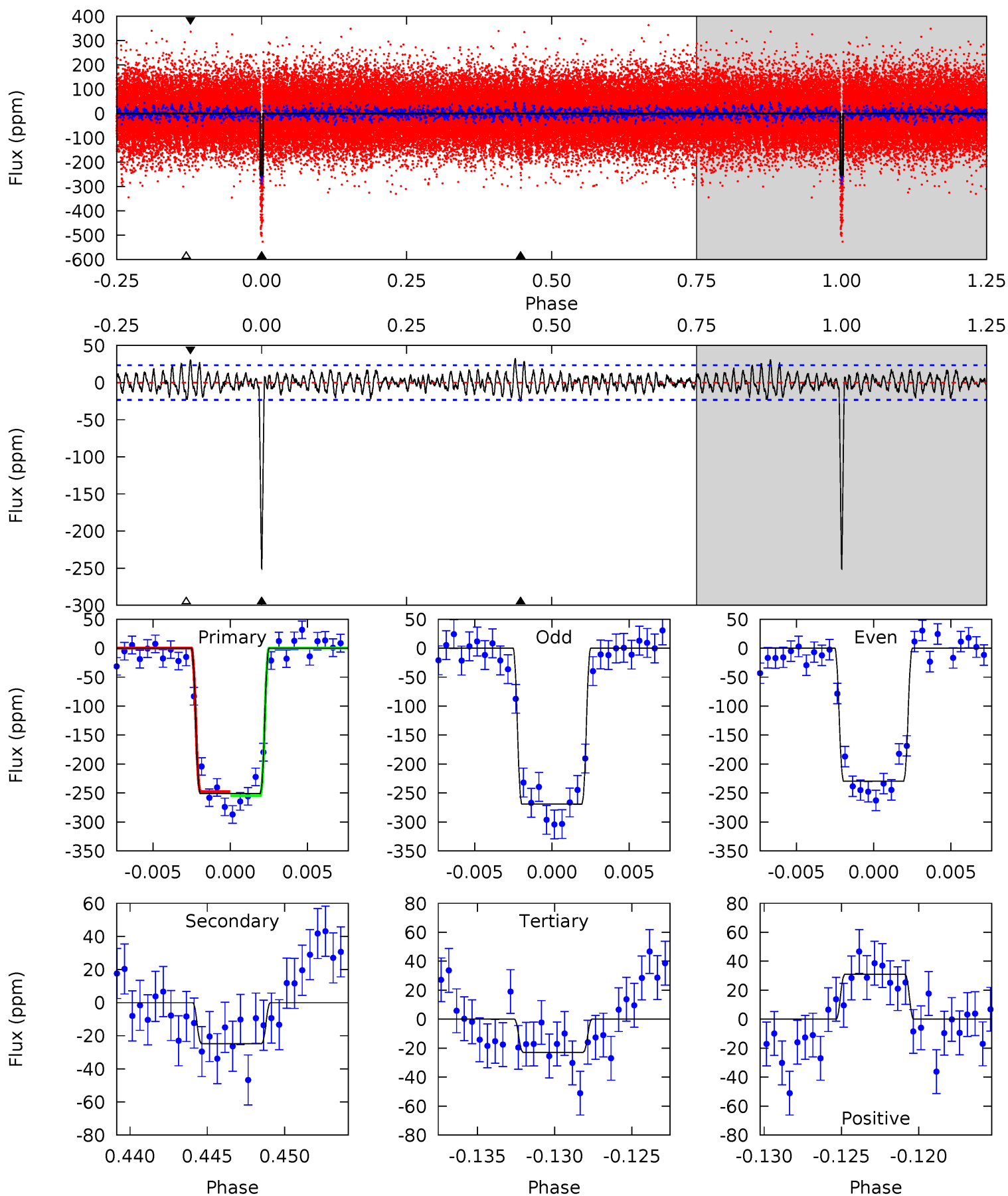
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.9	7.75	6.70	6.60	5.15	2.79	2.35	50.2	50.3	1.05	1.15	2.06	1.03	0.10	3.14



# Alt Model-Shift Uniqueness Test

007287683-01, P = 69.833893 Days, E = 98.959321 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
55.3	5.45	5.04	6.82	5.16	2.81	1.90	50.2	48.4	0.41	-1.37	4.37	1.11	0.11	0.79



### Stellar Parameters For KIC 007287683

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7732^{+214}_{-322}$	$4.075^{+0.135}_{-0.165}$	$0.070^{+0.150}_{-0.350}$	$2.022^{+0.533}_{-0.436}$	$1.774^{+0.181}_{-0.294}$	$0.302^{+0.234}_{-0.132}$
	+3%/-4%	+3%/-4%	+214%/-500%	+26%/-22%	+10%/-17%	+78%/-44%
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 007287683-01 / KOI 1622.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-32 \pm 4$	$3.44^{+0.57}_{-0.46}$	$1066^{+79}_{-65}$	$4709^{+214}_{-216}$	$242^{+78}_{-68}$
Alt.	$-25 \pm 5$	$3.54^{+0.54}_{-0.46}$	$1072^{+71}_{-70}$	$4396^{+240}_{-207}$	$170^{+63}_{-49}$

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

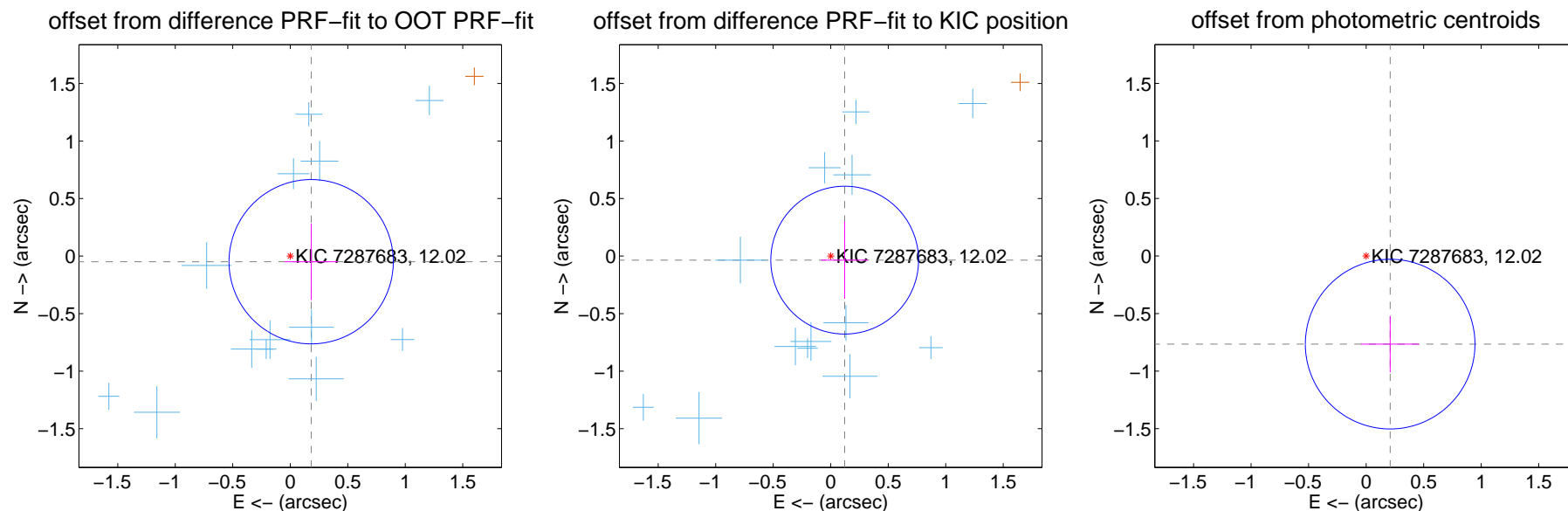
## DV Centroid Data

Supplemental centroid analysis for 007287683-01. Kepler magnitude: 12.02. Transit SNR 35.29

There are 13 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

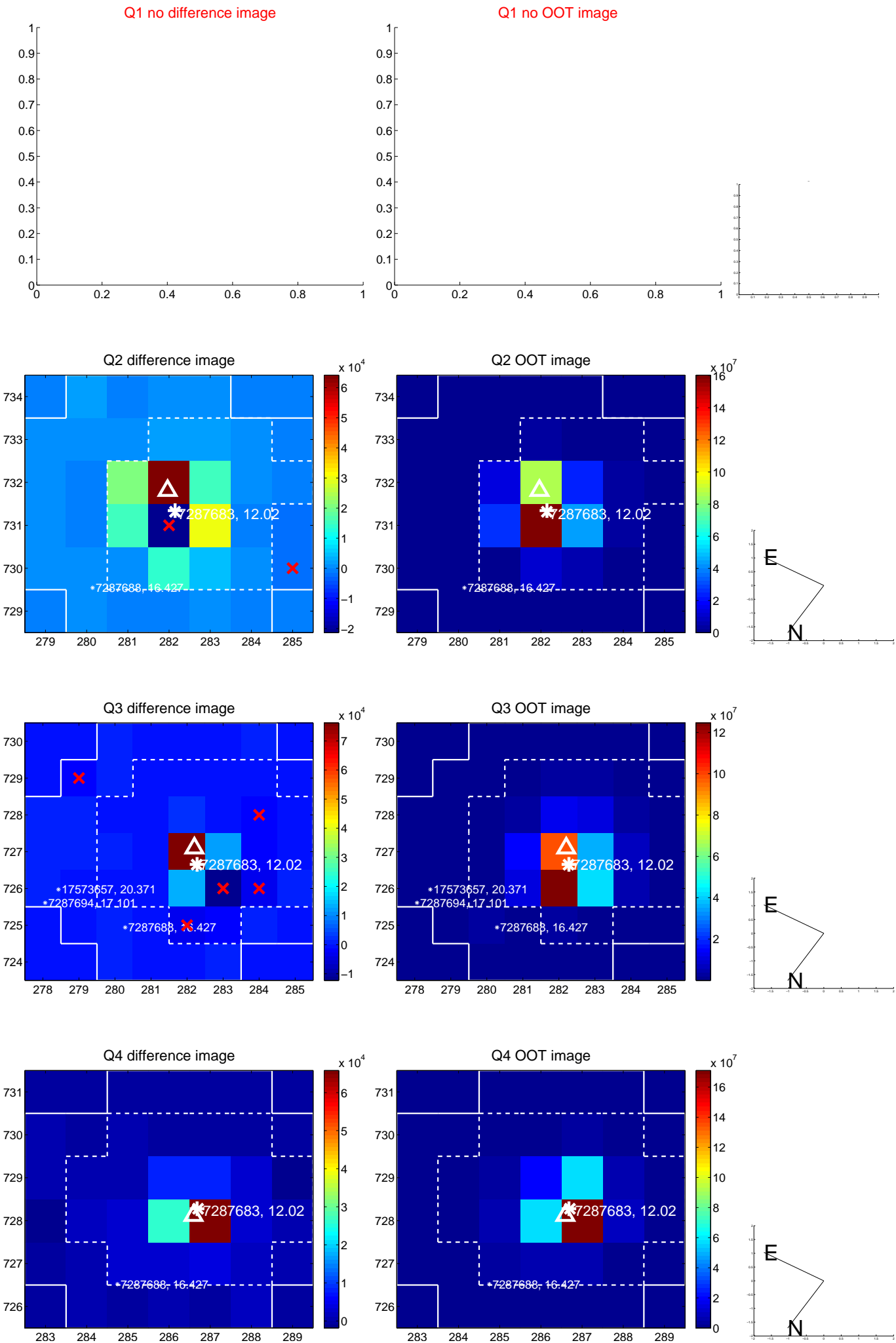
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.188 \pm 0.238$	0.79	$-0.182 \pm 0.230$	$-0.049 \pm 0.333$
PRF-fit source offset from KIC position	$0.126 \pm 0.214$	0.59	$-0.121 \pm 0.201$	$-0.035 \pm 0.336$
photometric centroid source offset	$0.79 \pm 0.25$	3.23	$-0.21 \pm 0.25$	$-0.77 \pm 0.25$



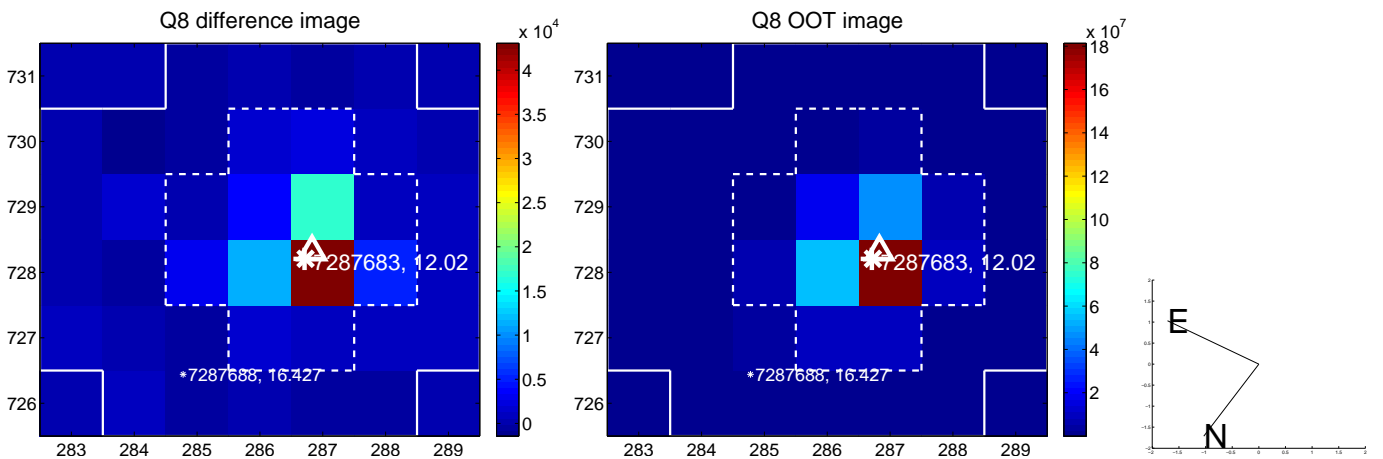
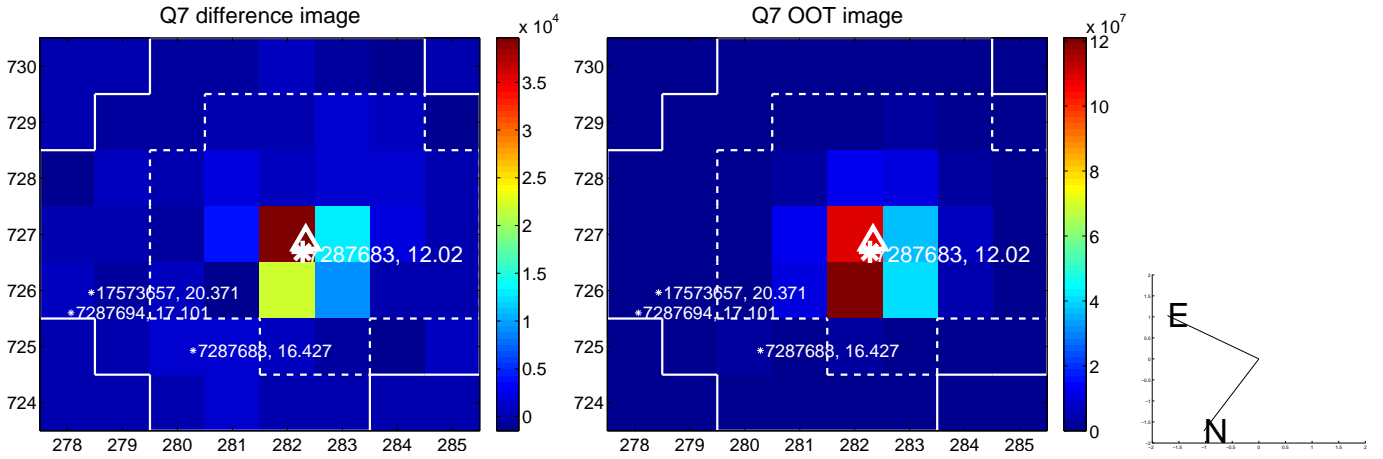
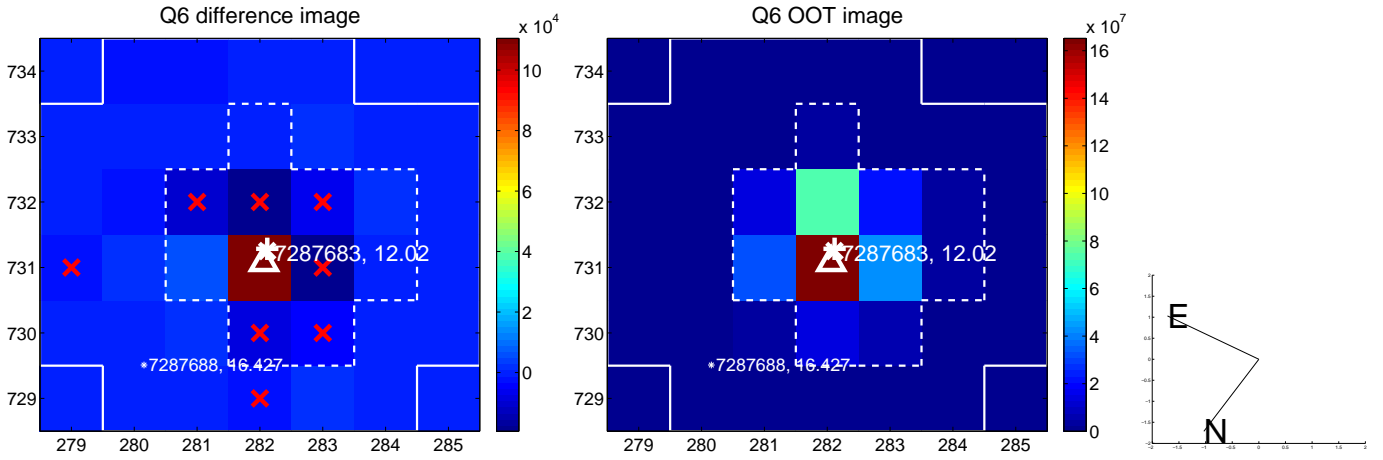
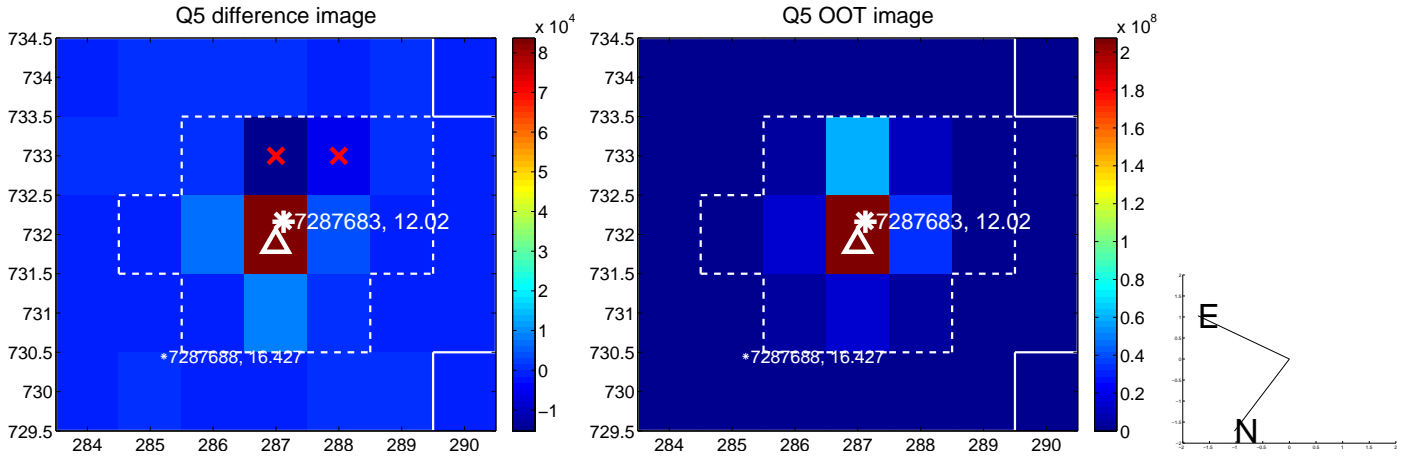
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



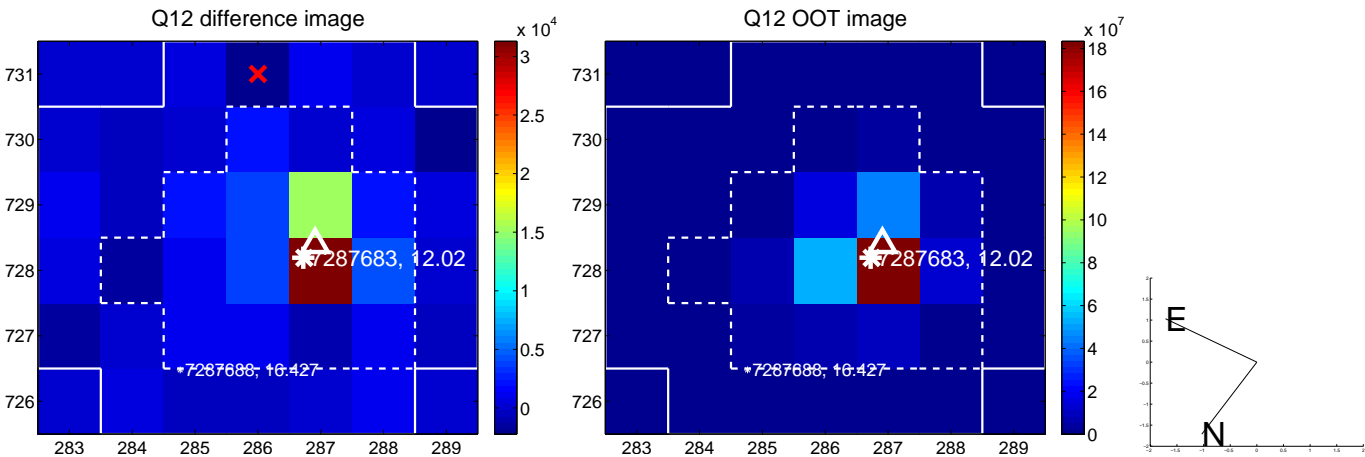
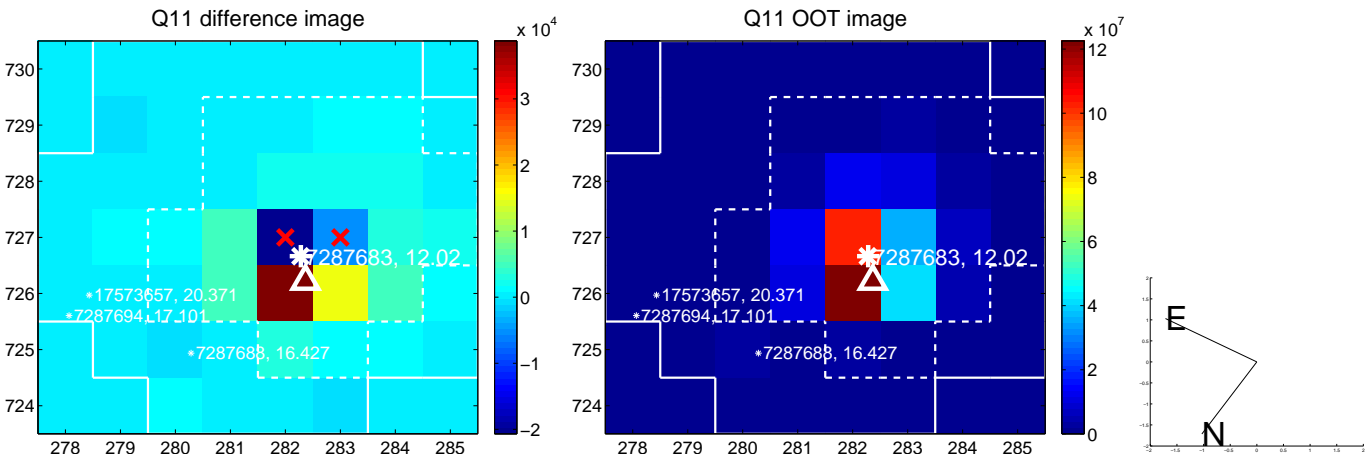
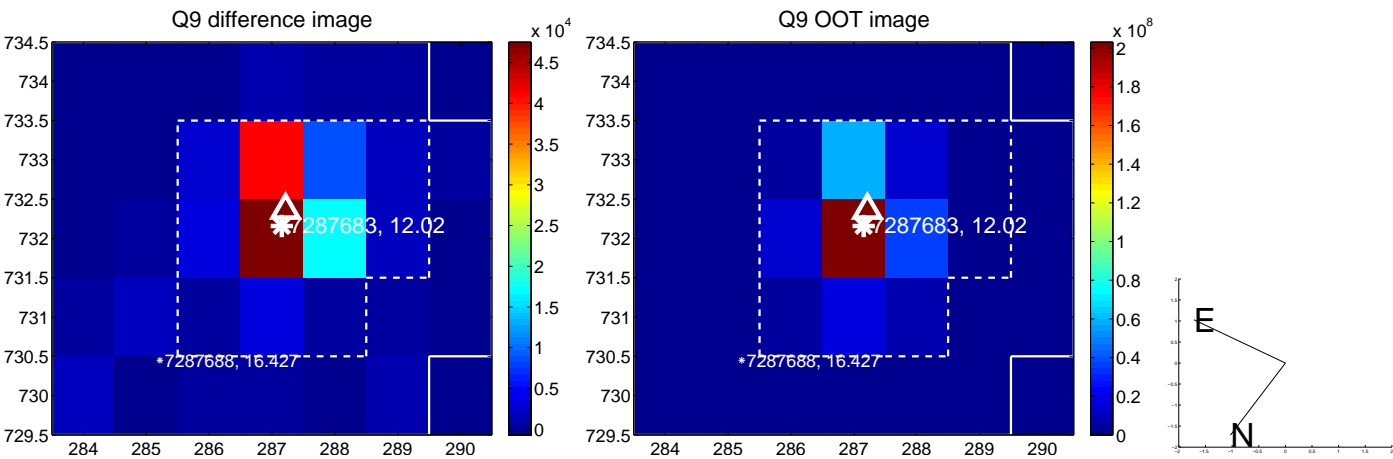
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



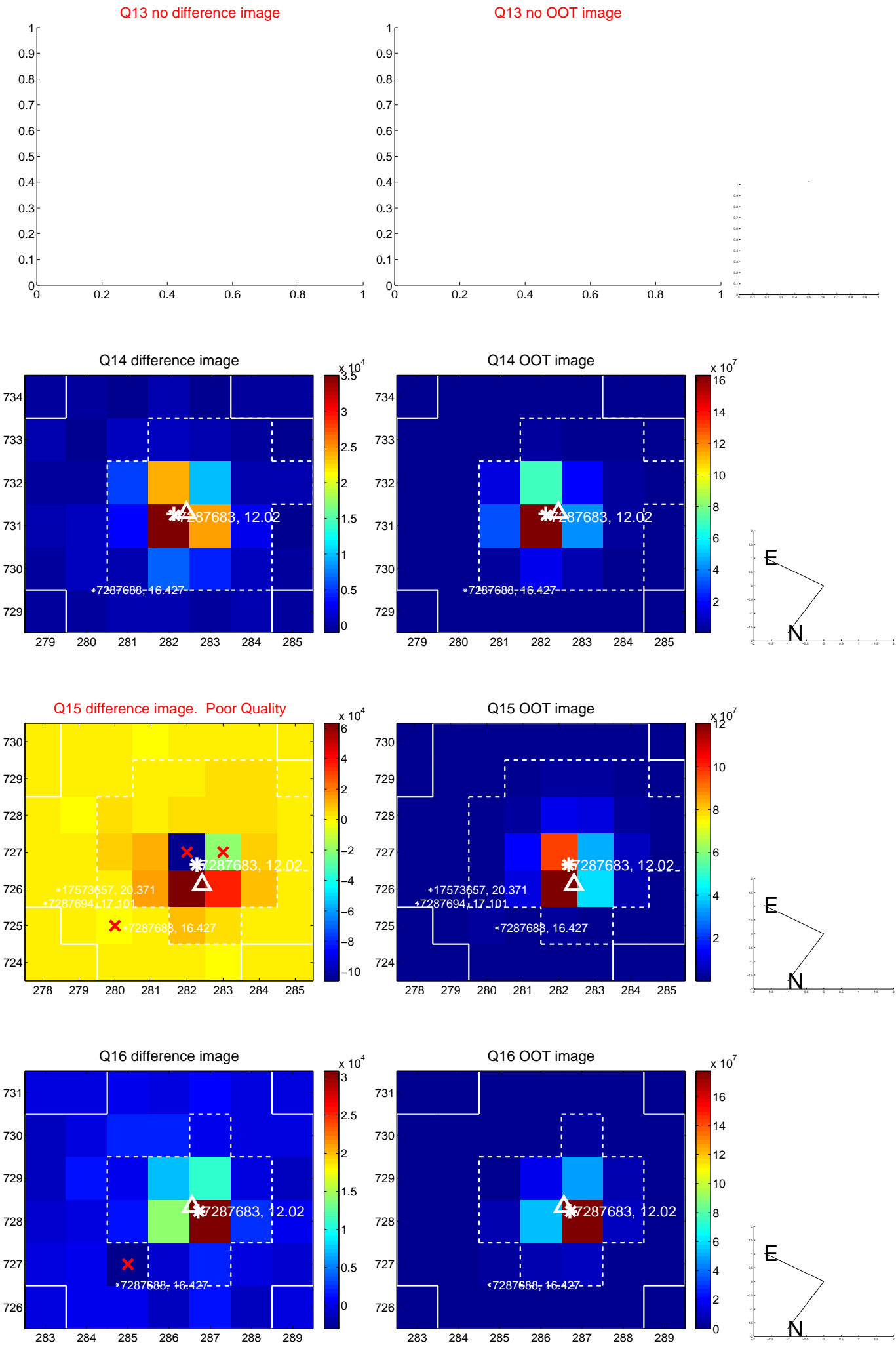
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



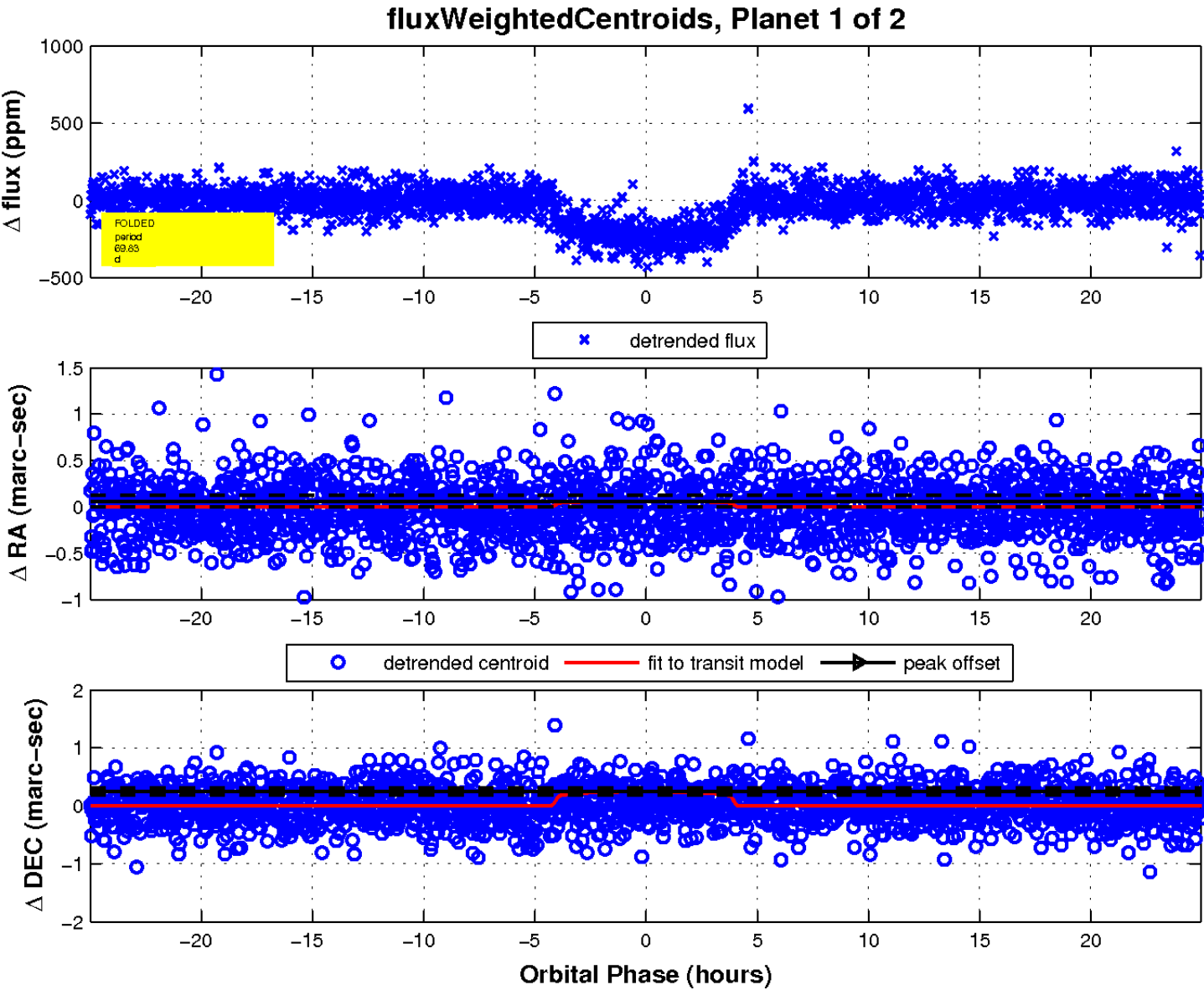
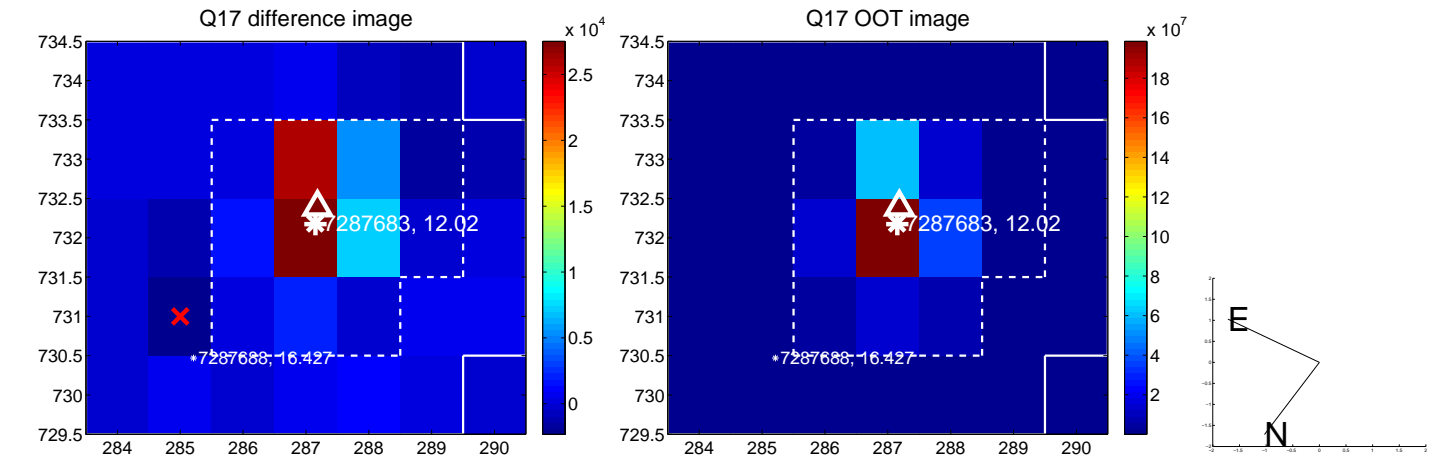
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

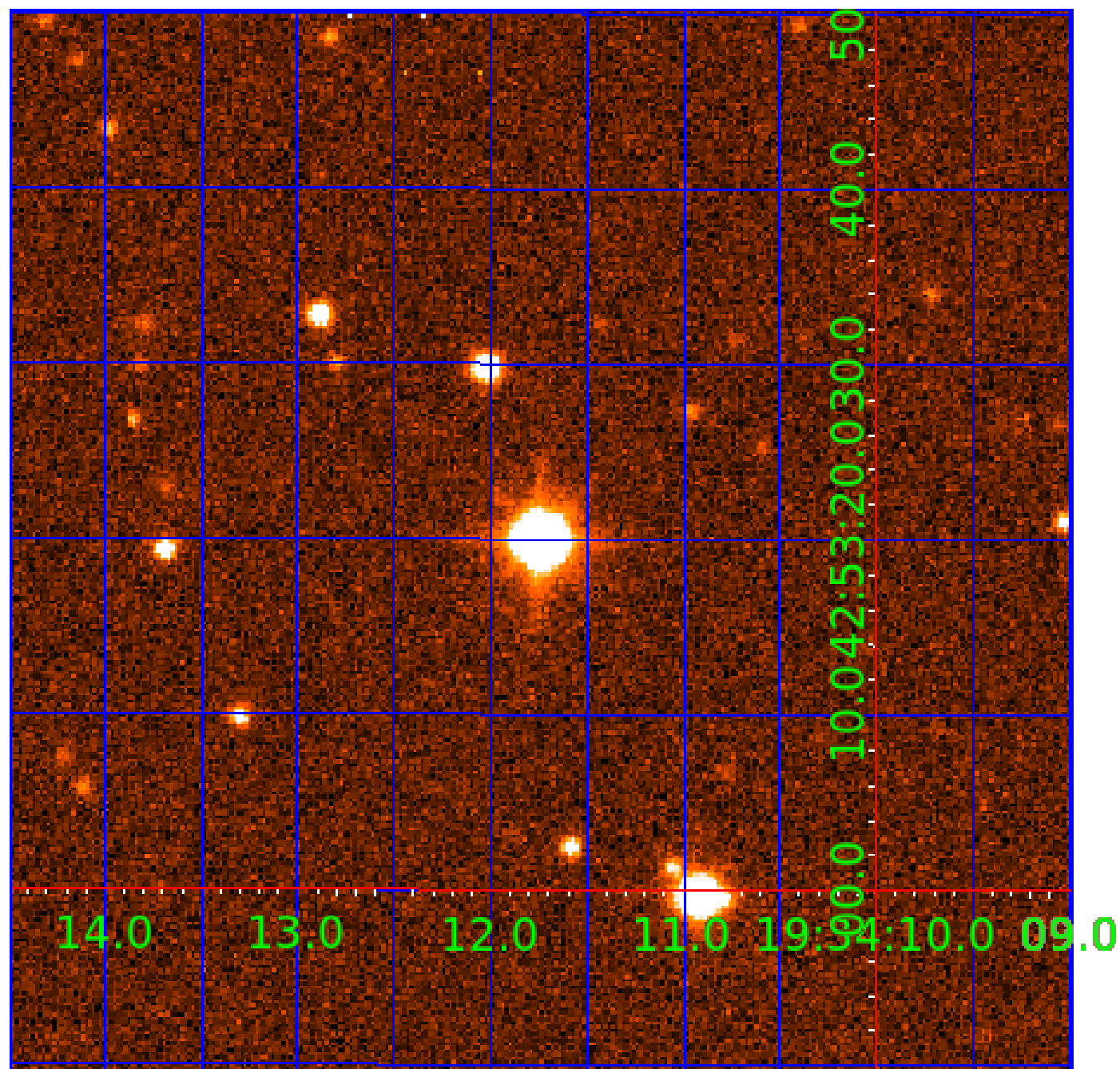


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007287683

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007287683-01	OBS	1622.01	69.834577	168.787051	244.3	8.331	33.2	35.3	2.02	7732	3.44	81.12
007287683-02	OBS	No	2.117886	132.155560	10.5	6.861	8.0	8.6	2.02	7732	0.76	8577.86

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007287683-01	OBS	PC	0.85	0	0	0	0	NO_COMMENT
007287683-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT

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

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

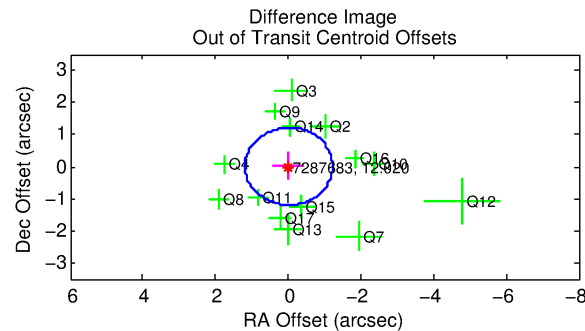
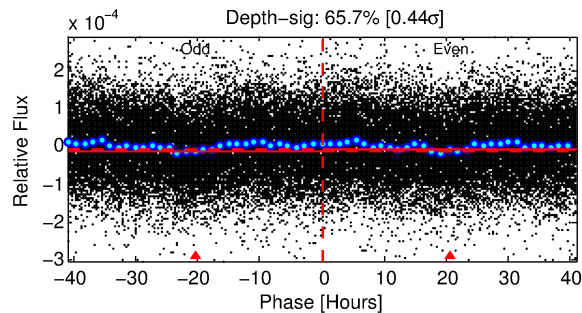
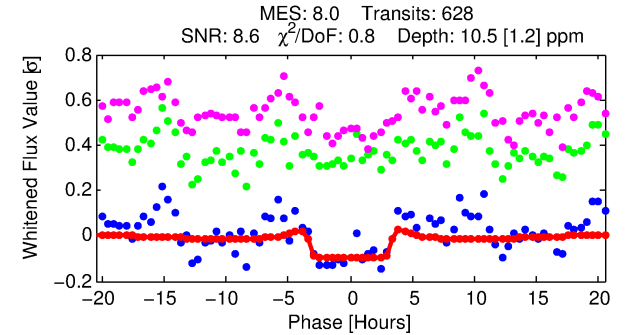
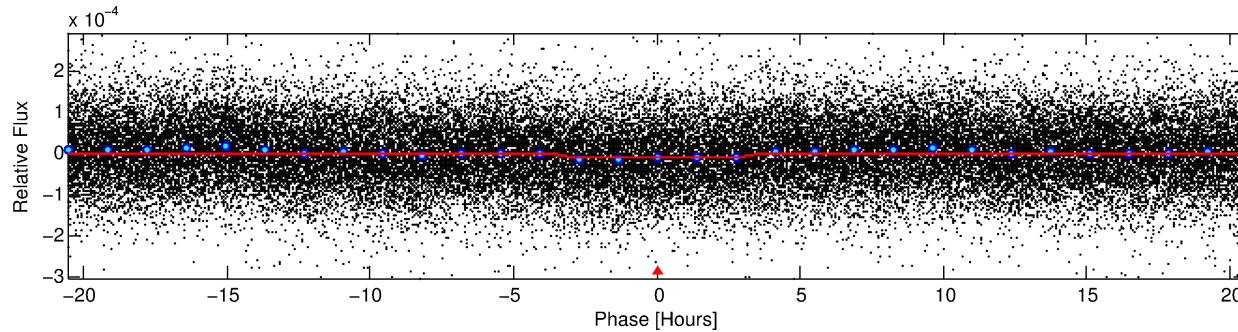
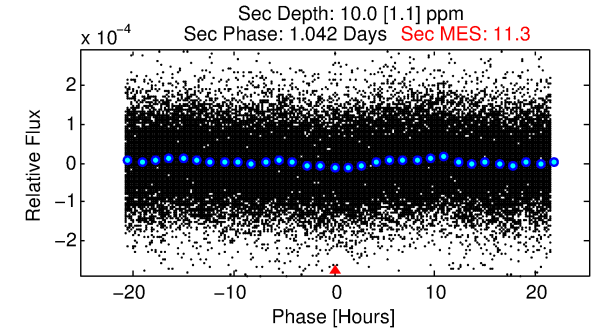
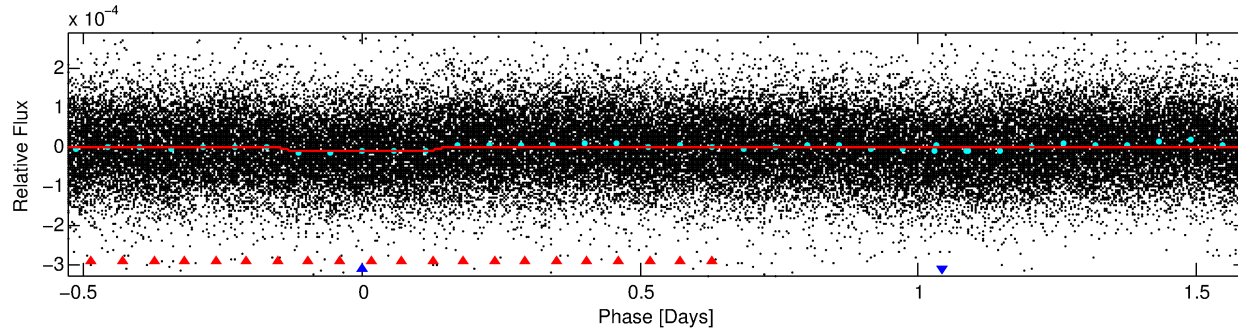
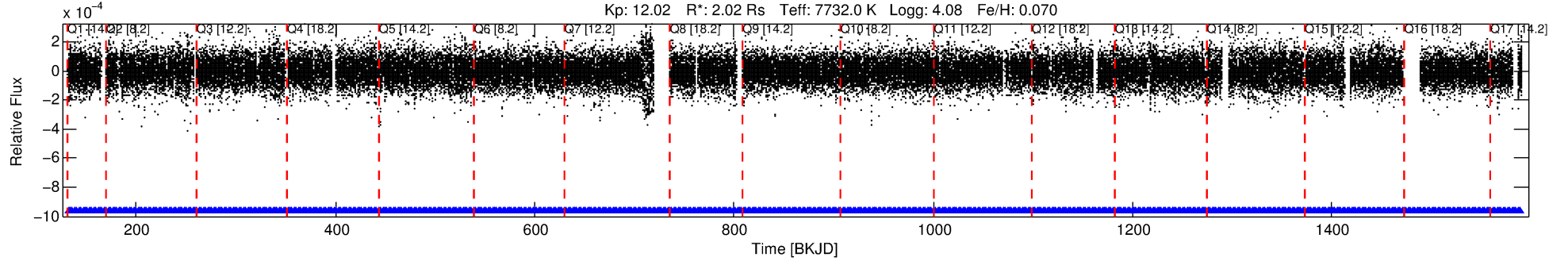
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007287683-02

No Significant Match Found

# DV One-Page Summary

KIC: 7287683 Candidate: 2 of 2 Period: 2.118 d  
KOI: K01622 Corr: No Ephemeris Match



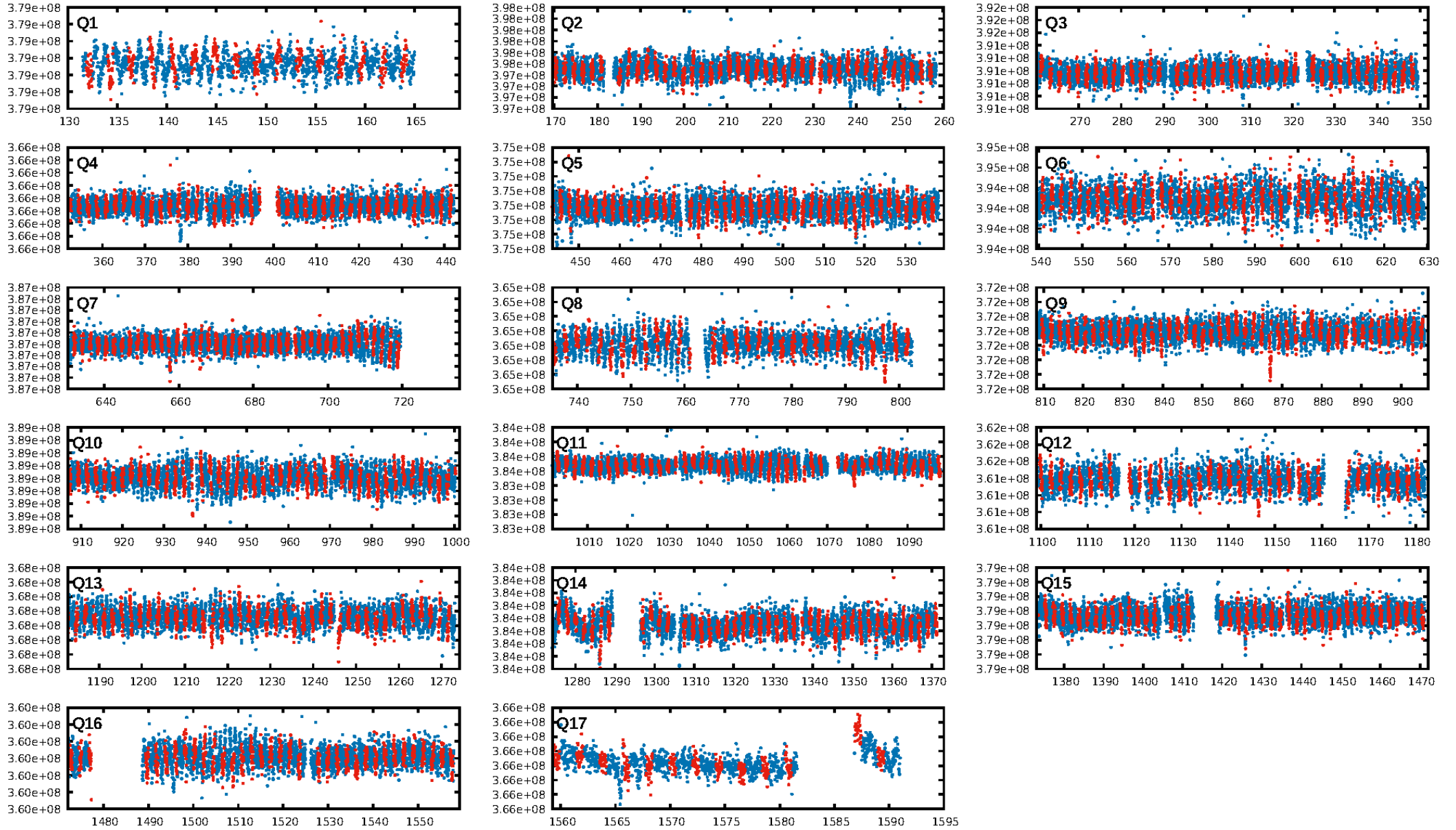
## DV Fit Results:

Period = 2.11789 [0.00002] d  
Epoch = 132.1556 [0.0059] BKJD  
Rp/R\* = 0.0034 [0.0006]  
a/R\* = 1.42 [0.81]  
b = 0.89 [0.26]  
Seff = 8577.86 [3005.73]  
Teq = 2454 [215] K  
Rp = 0.76 [0.24] Re  
a = 0.0391 [0.0085] AU  
Ag = 14.74 [7.21] [1.91σ]  
**Teffp = 7434 [771] K [6.22σ]**

## DV Diagnostic Results:

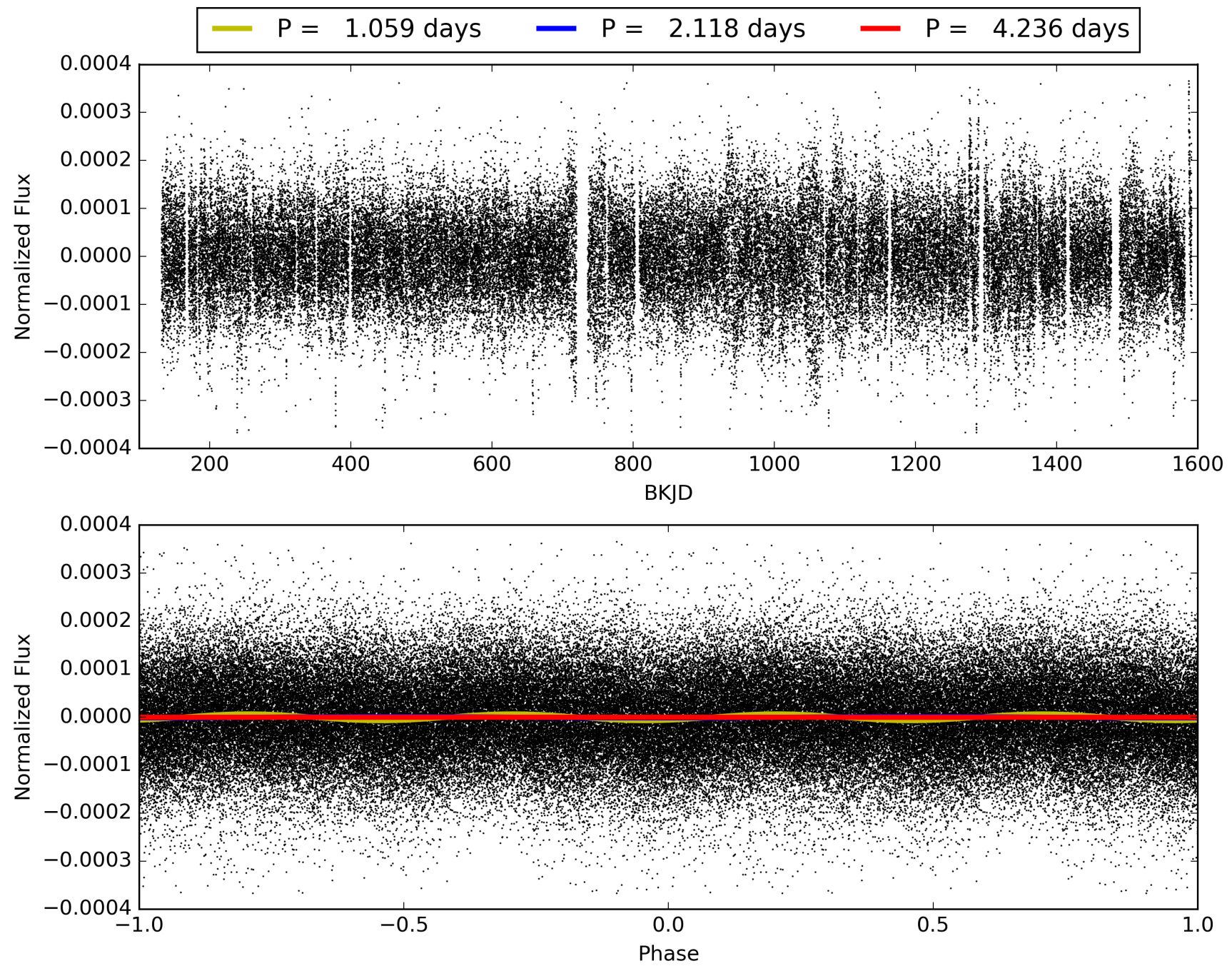
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [150.58σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.60e-11**  
RollingBand-fgt: 1.00 [599/599]  
GhostDiagnostic-chr: -2.32  
Centroid-sig: 14.7%  
Centroid-so: 1.145 arcsec [1.14σ]  
OotOffset-rm: 0.017 arcsec [0.04σ]  
OotOffset-st: 3/4/4/3 [14]  
KicOffset-rm: 0.006 arcsec [0.01σ]  
KicOffset-st: 3/4/4/3 [14]  
DiffImageQuality-fgm: 0.86 [12/14]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007287683-02, PDC Light Curves



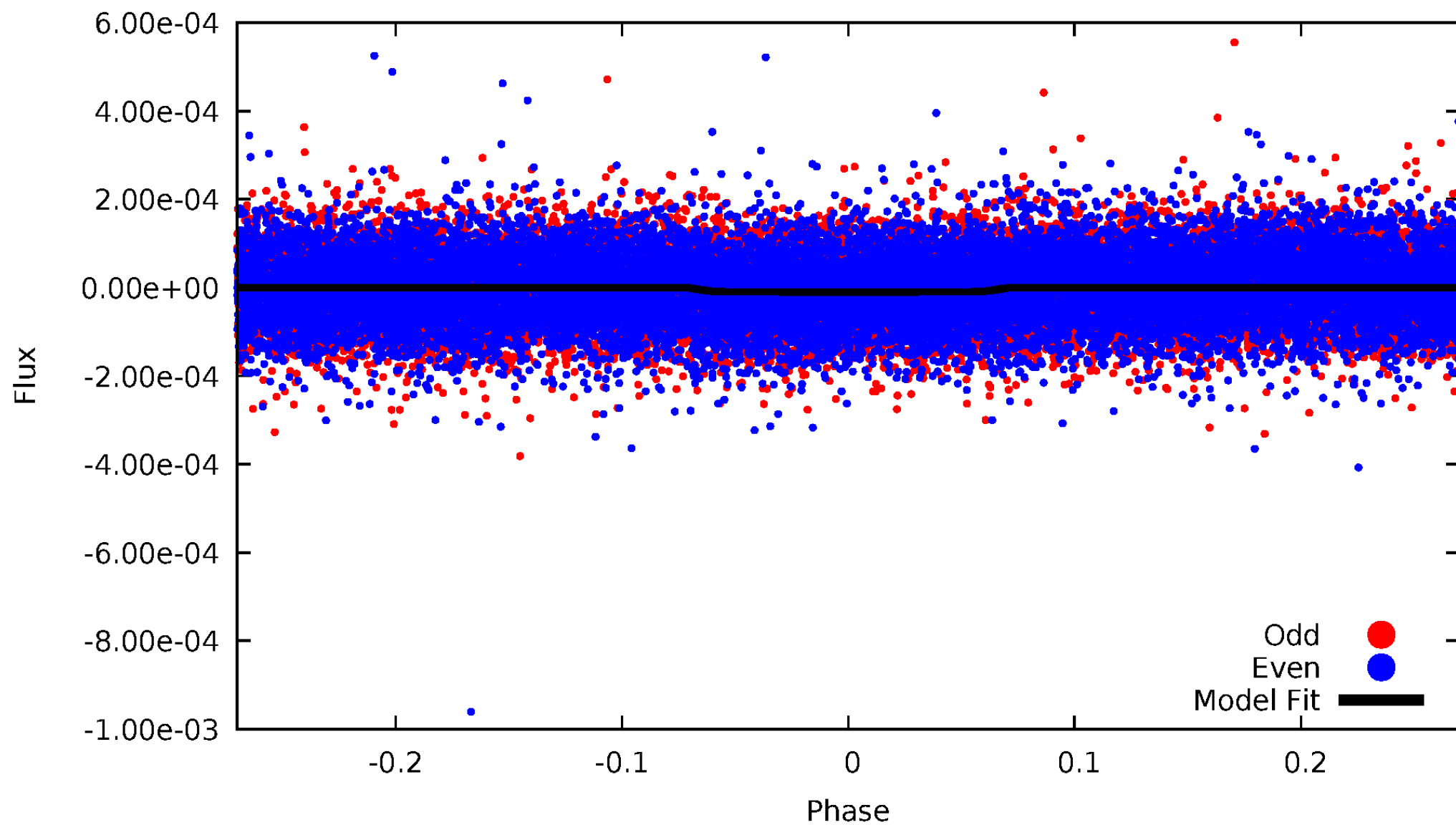


TCE 007287683-02



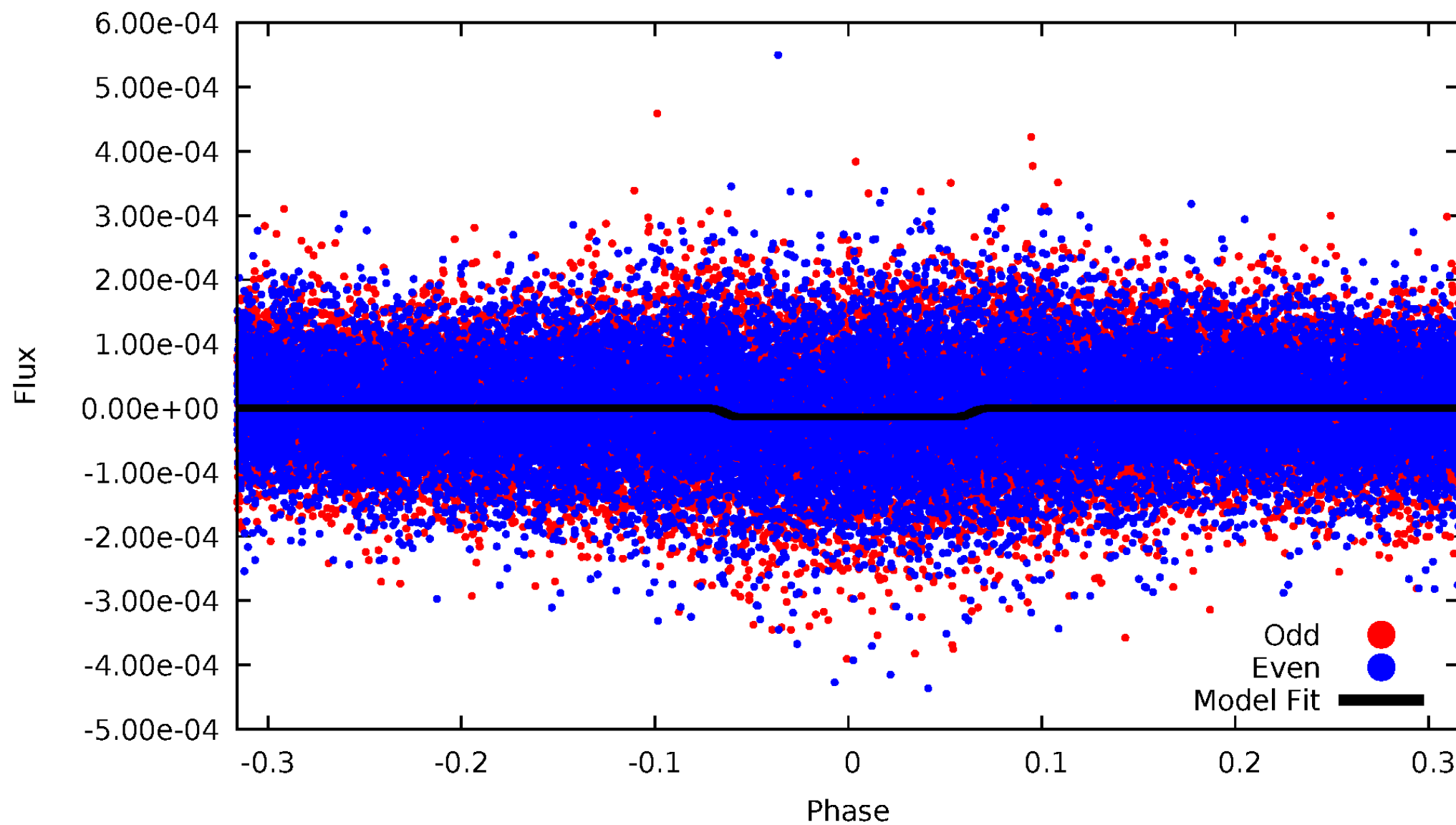
# DV Odd/Even

TCE 007287683-02



# ALT Odd/Even

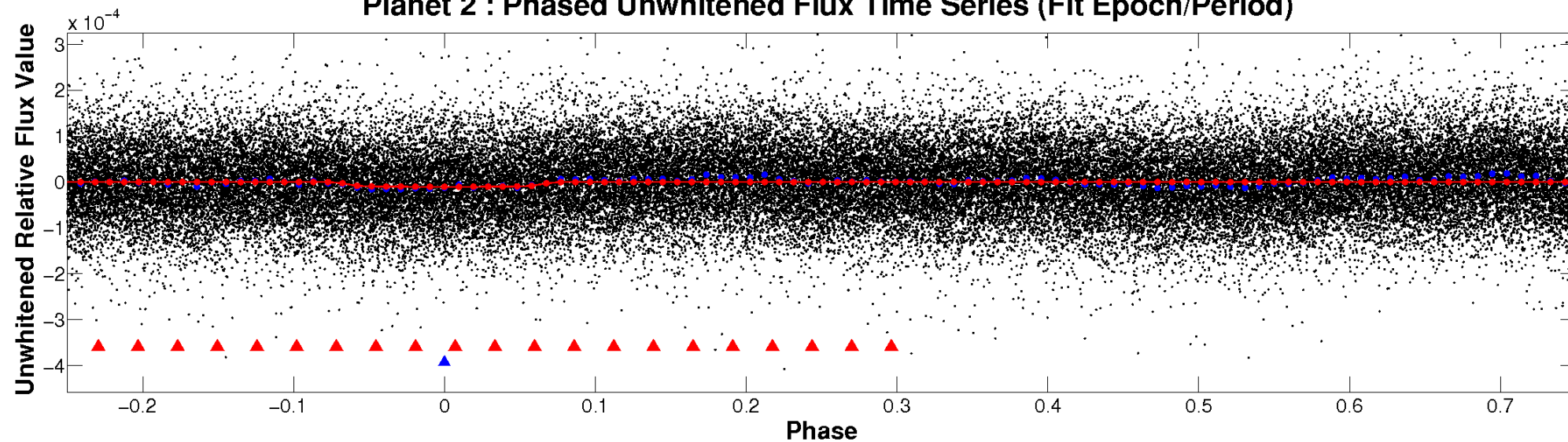
TCE 007287683-02



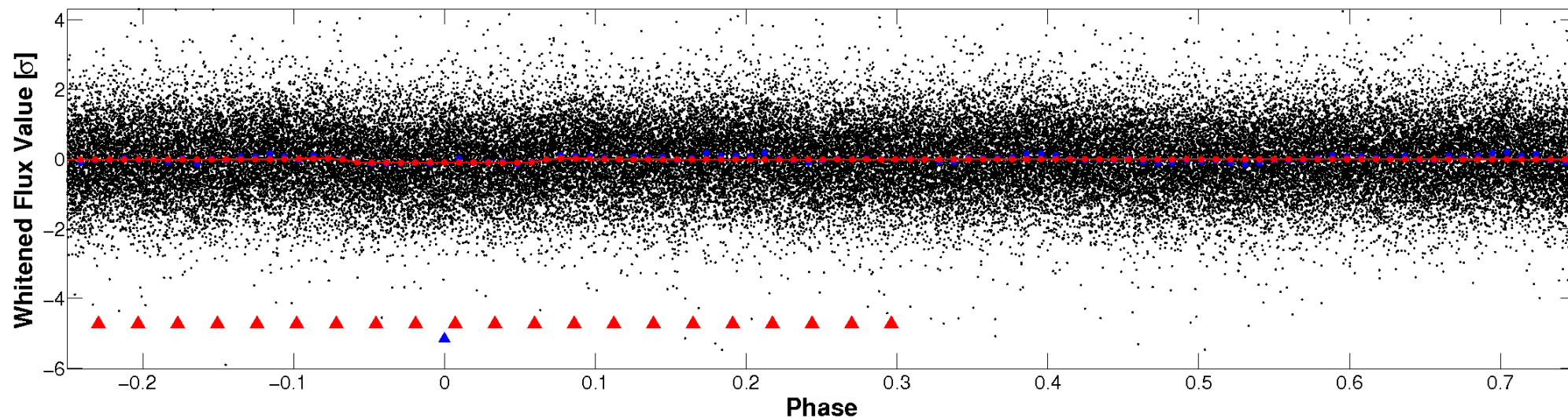


# Non-Whitened Vs. Whitened Light Curve

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

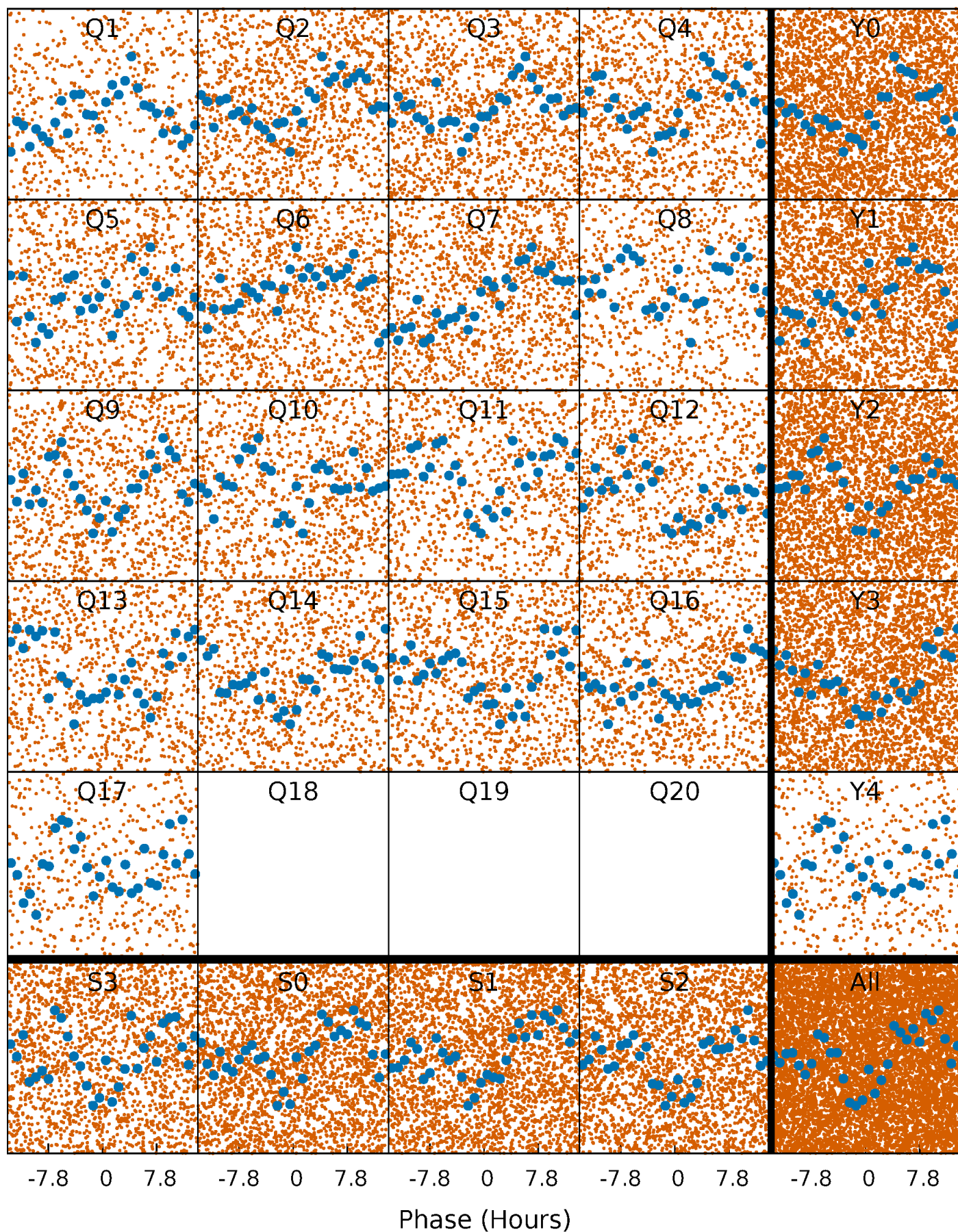


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

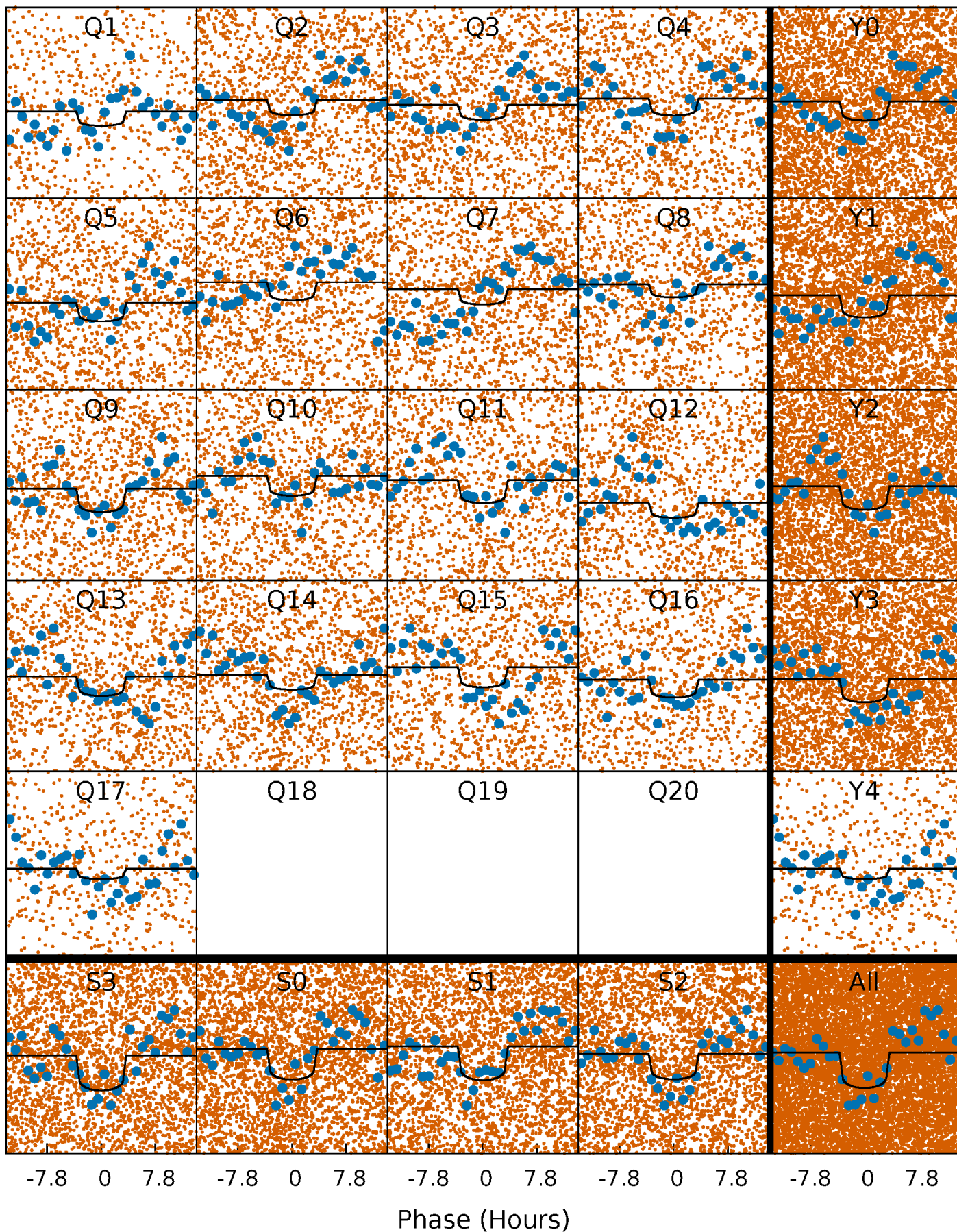
TCE 007287683-02 P= 2.117886 Days  $T_0=132.155560$  (BKJD)





# DV Quarter-Phased Transit Curves

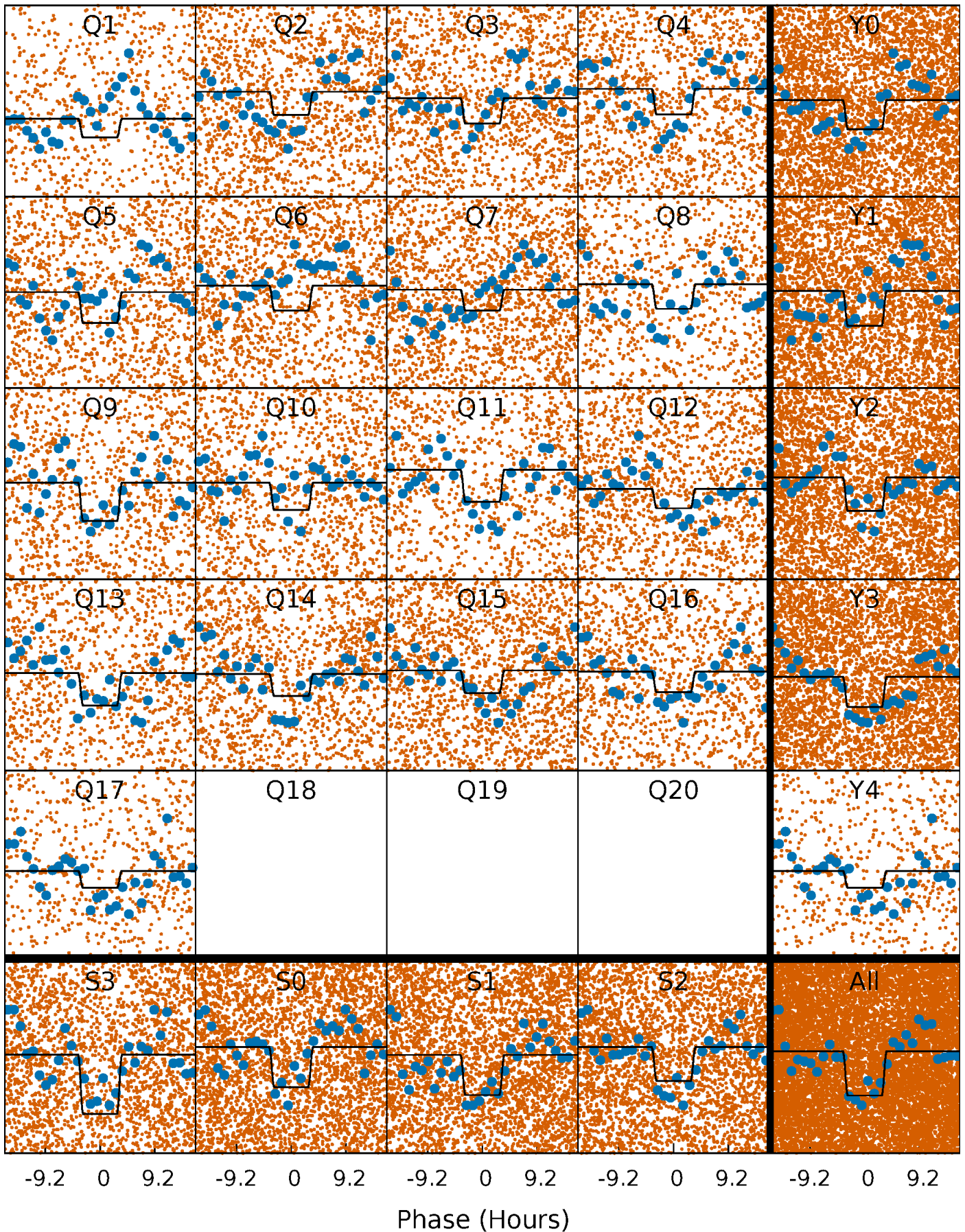
TCE 007287683-02   P= 2.117886 Days    $T_0=132.155560$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

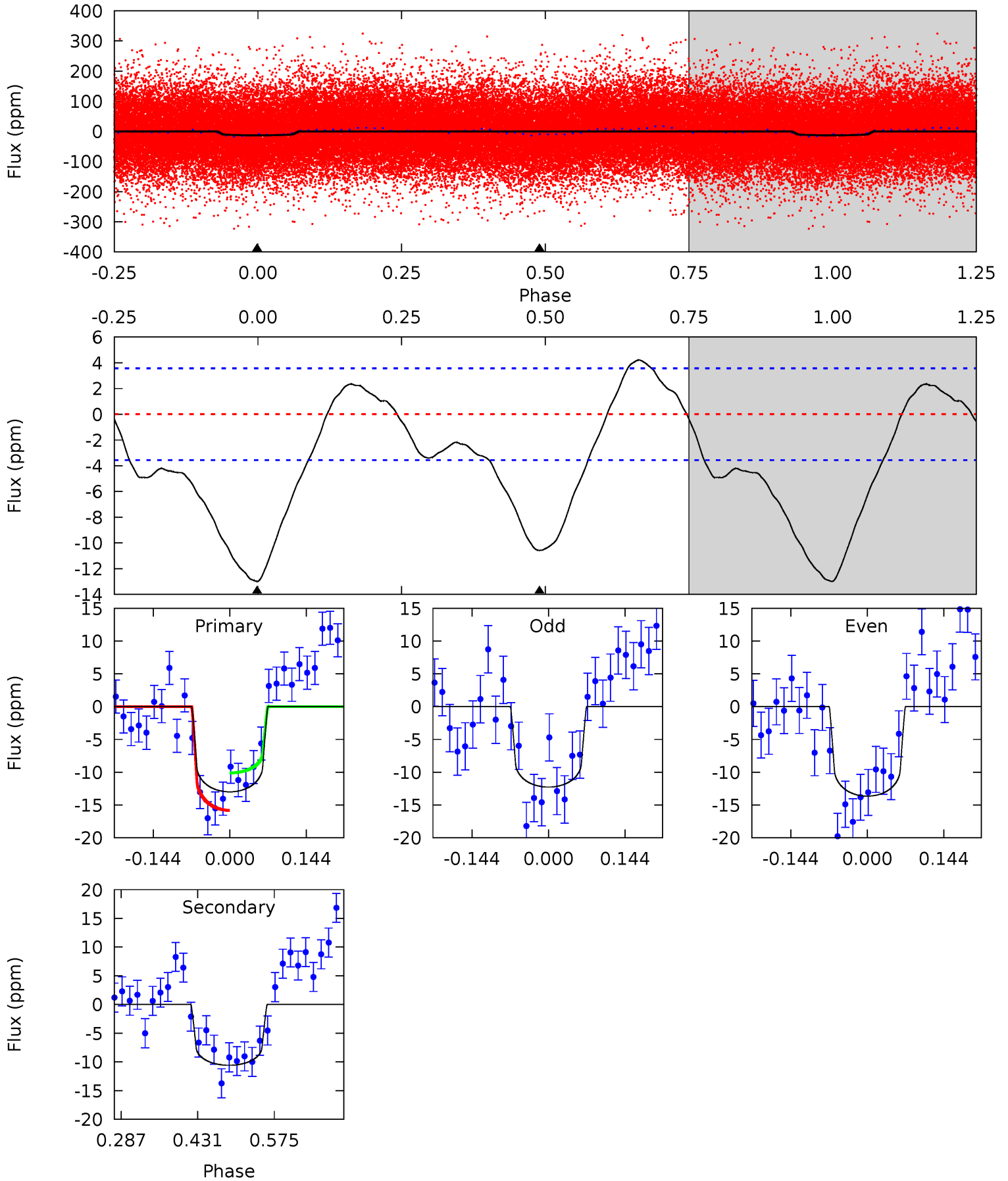
TCE 007287683-02 P= 2.117923 Days  $T_0=132.133843$  (BKJD)



# DV Model-Shift Uniqueness Test

007287683-02, P = 2.117886 Days, E = 130.037674 Days

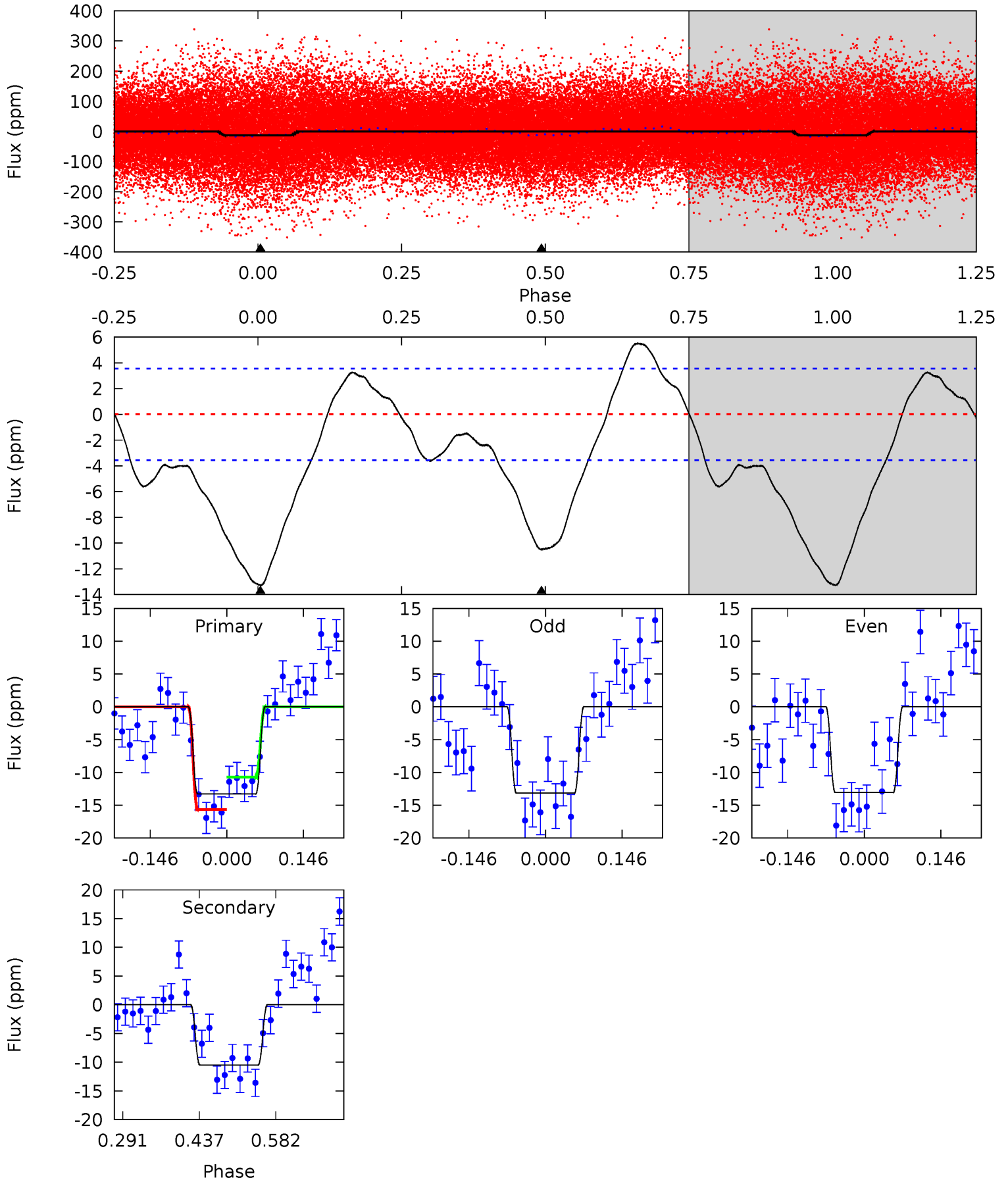
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	13.3	0	0	4.49	1.46	3.67	16.3	16.3	13.3	13.3	0.87	1.09	0.25	3.61



# Alt Model-Shift Uniqueness Test

007287683-02, P = 2.117923 Days, E = 130.015920 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
16.7	13.2	0	0	4.49	1.46	4.24	16.7	16.7	13.2	13.2	0.06	1.00	0.29	3.12





### Stellar Parameters For KIC 007287683

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7732^{+214}_{-322}$	$4.075^{+0.135}_{-0.165}$	$0.070^{+0.150}_{-0.350}$	$2.022^{+0.533}_{-0.436}$	$1.774^{+0.181}_{-0.294}$	$0.302^{+0.234}_{-0.132}$
	+3%/-4%	+3%/-4%	+214%/-500%	+26%/-22%	+10%/-17%	+78%/-44%
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 007287683-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	-11±1	$0.76^{+0.18}_{-0.15}$	$3439^{+248}_{-223}$	$7416^{+1090}_{-774}$	$15^{+9}_{-5}$
Alt.	-10±1	$0.82^{+0.18}_{-0.17}$	$3428^{+261}_{-213}$	$7074^{+917}_{-629}$	$13^{+8}_{-4}$

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

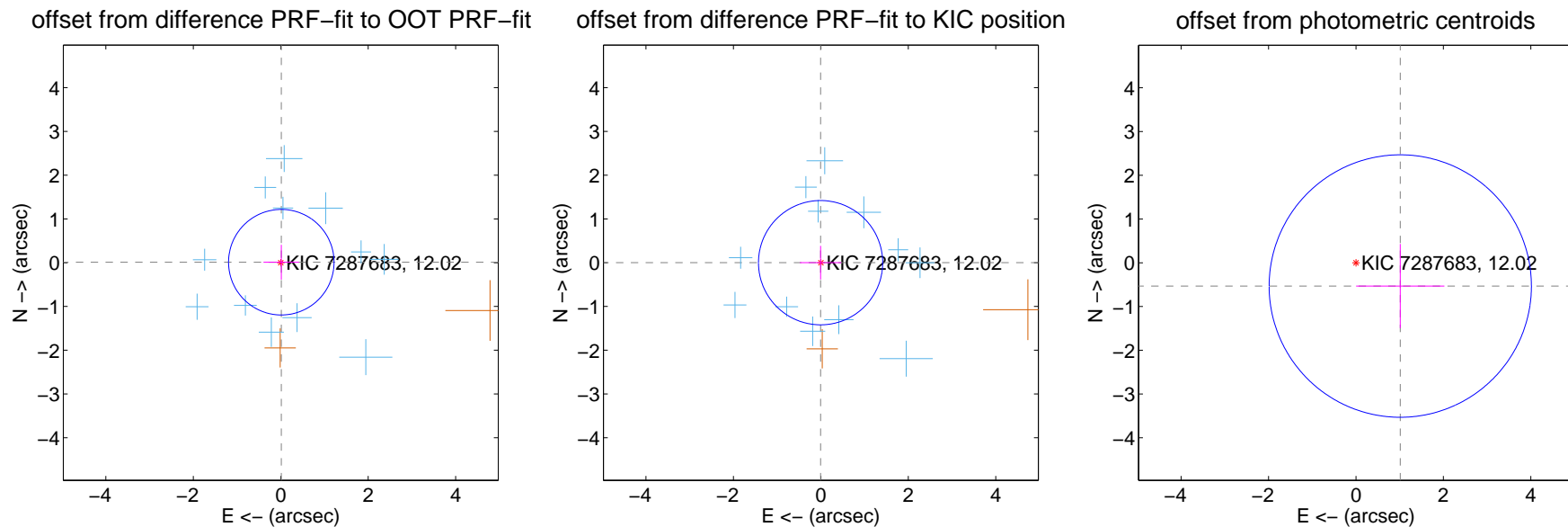
## DV Centroid Data

Supplemental centroid analysis for 007287683-02. Kepler magnitude: 12.02. Transit SNR 8.65

There are 12 quarters with good PRF difference image offsets

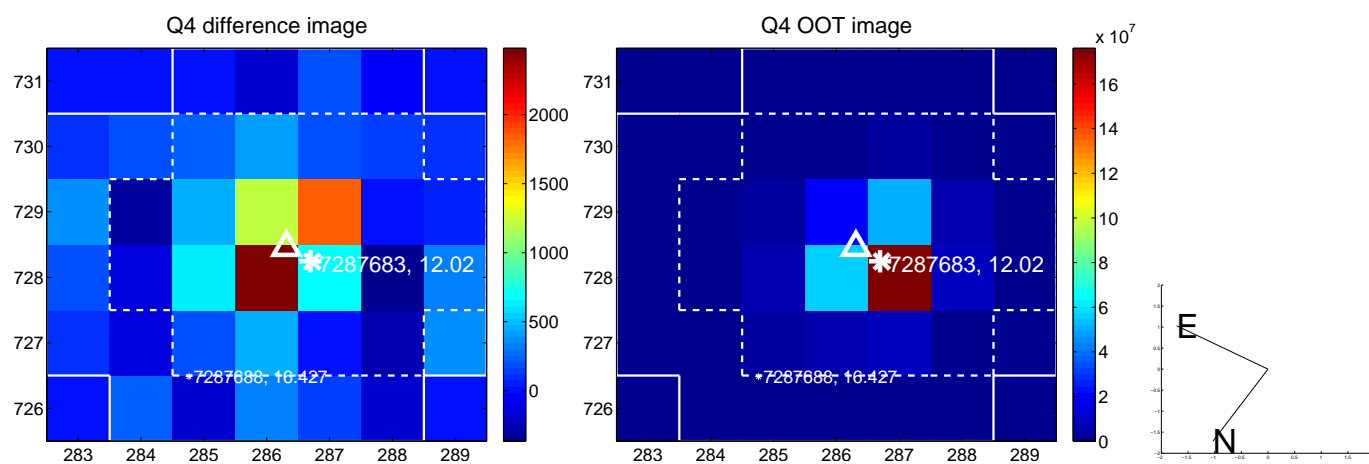
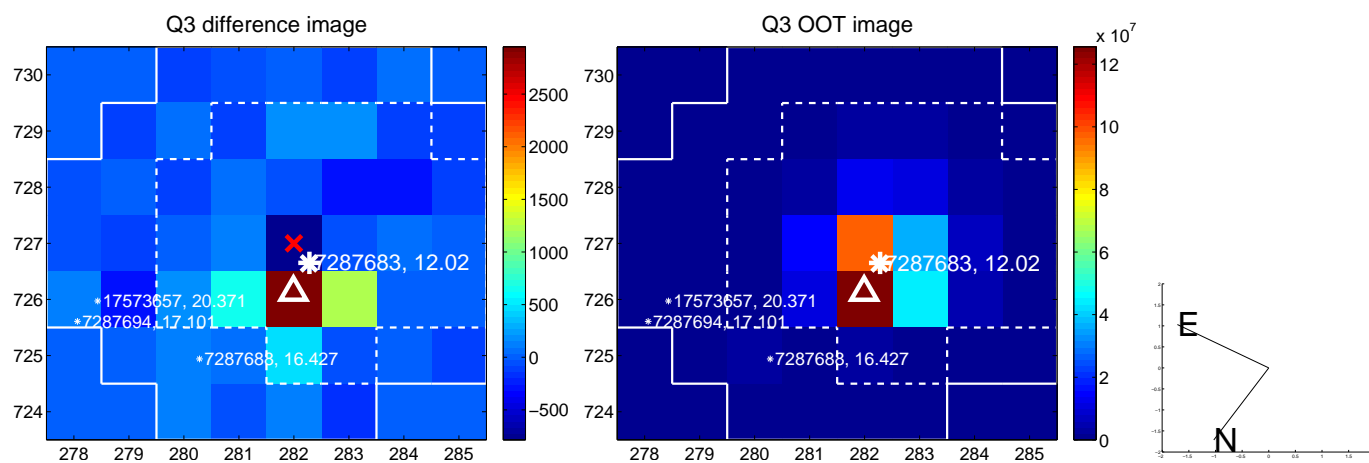
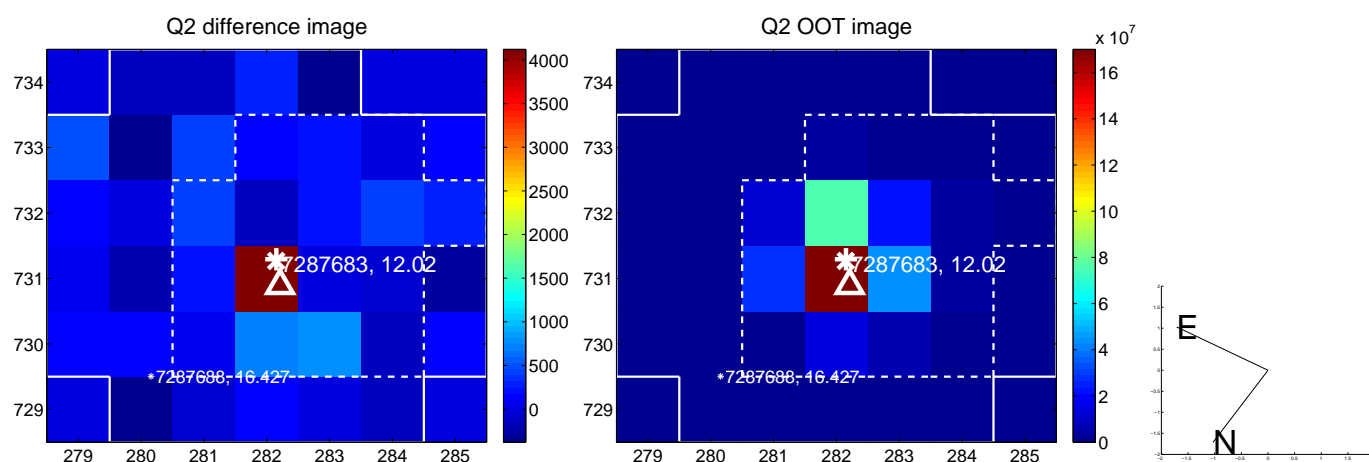
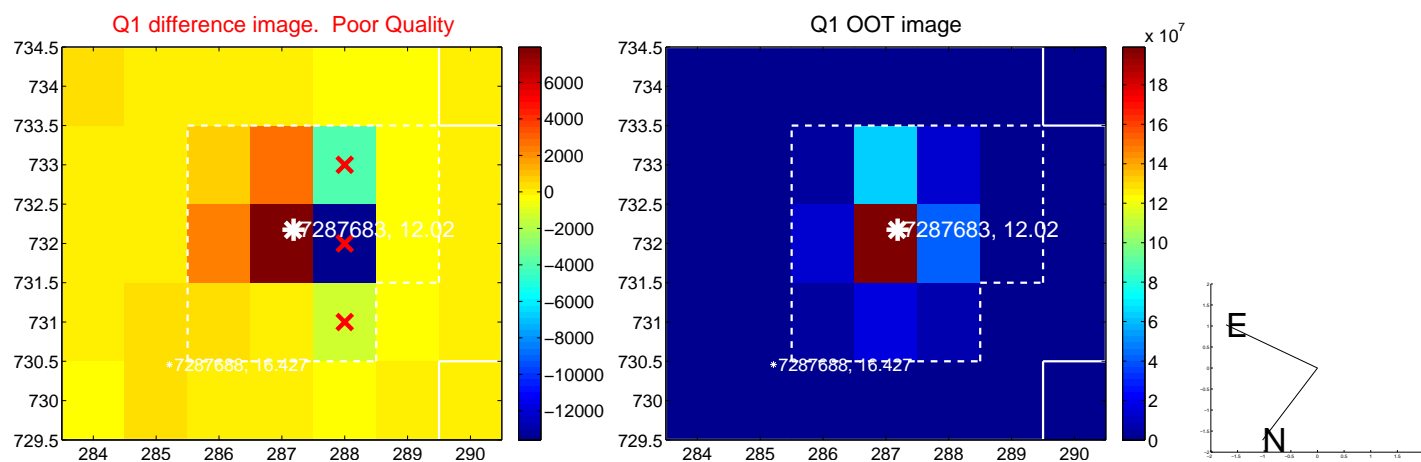
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.017 \pm 0.402$	0.04	$-0.012 \pm 0.406$	$0.011 \pm 0.398$
PRF-fit source offset from KIC position	$0.006 \pm 0.473$	0.01	$0.006 \pm 0.473$	$0.000 \pm 0.384$
photometric centroid source offset	$1.14 \pm 1.00$	1.14	$-1.01 \pm 1.01$	$-0.53 \pm 0.96$

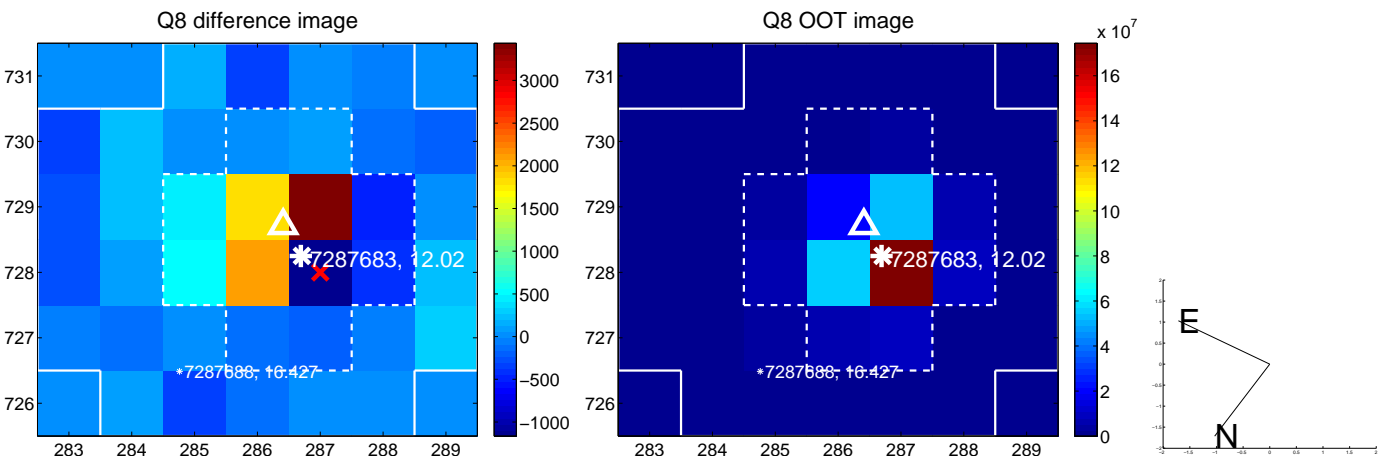
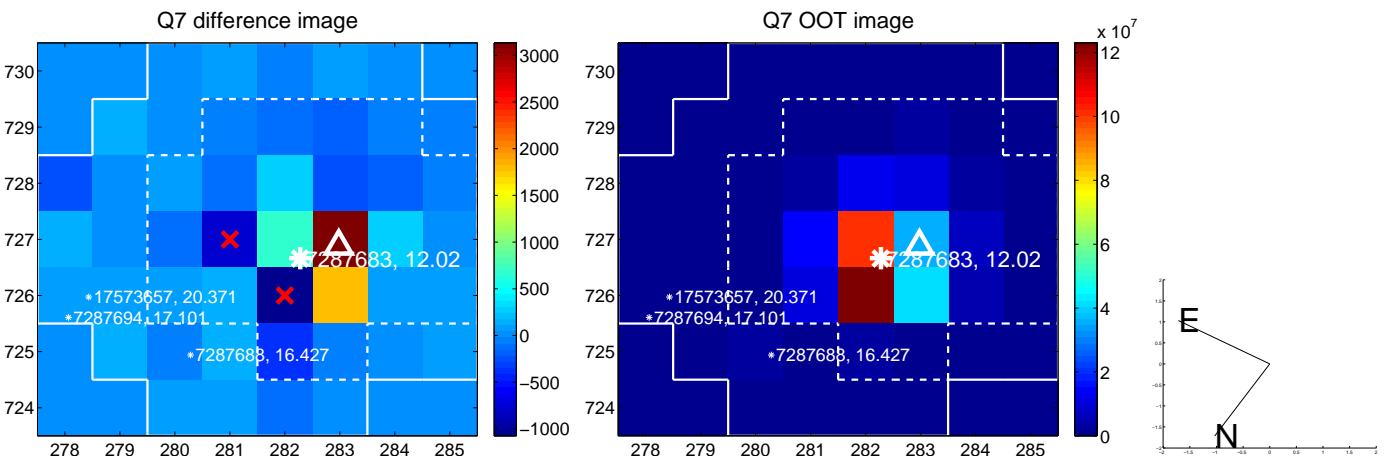
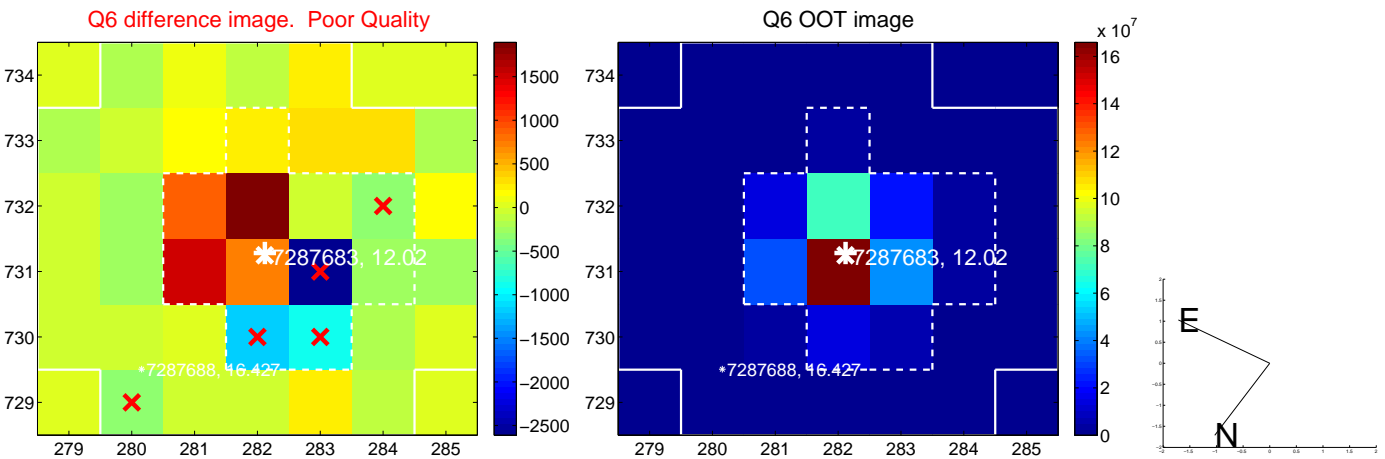
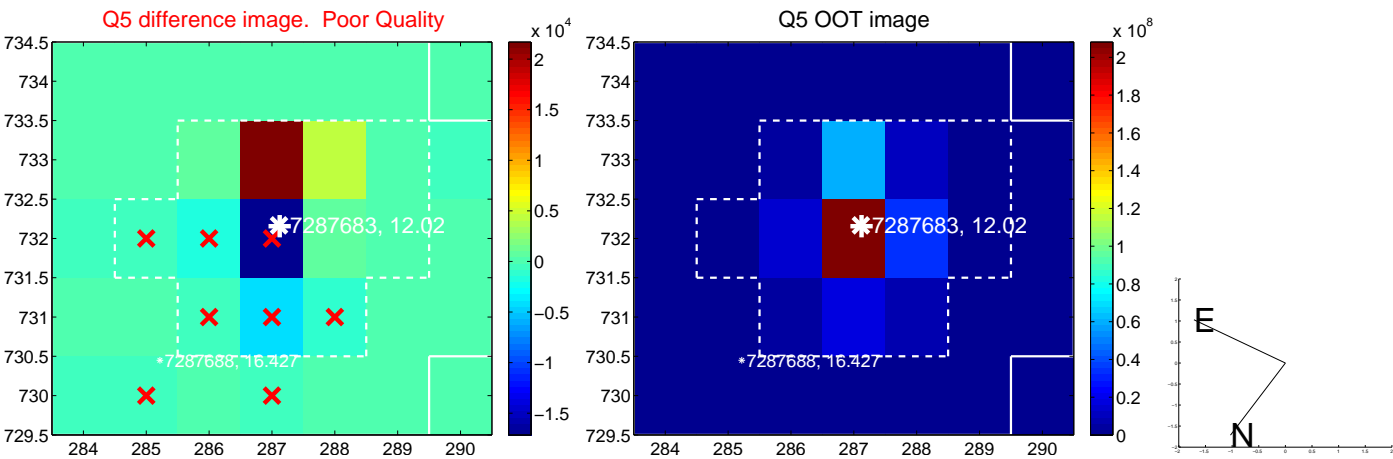


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

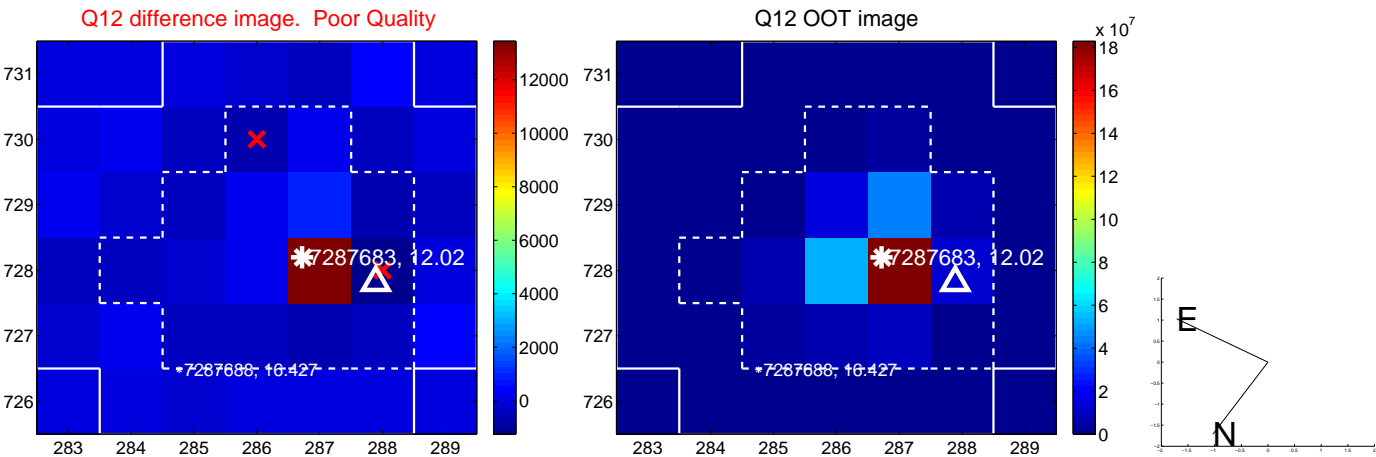
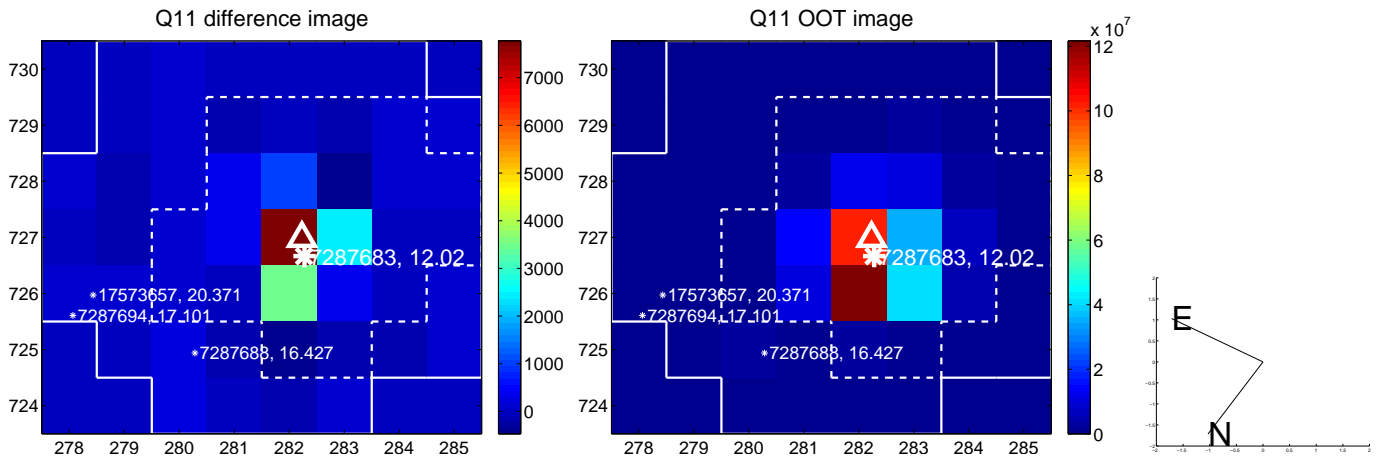
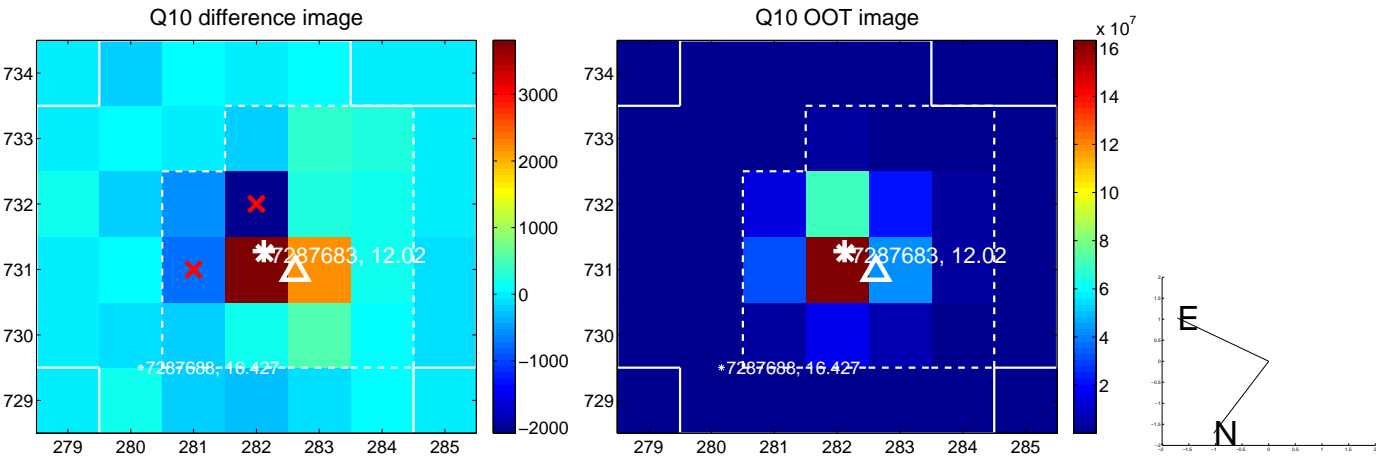
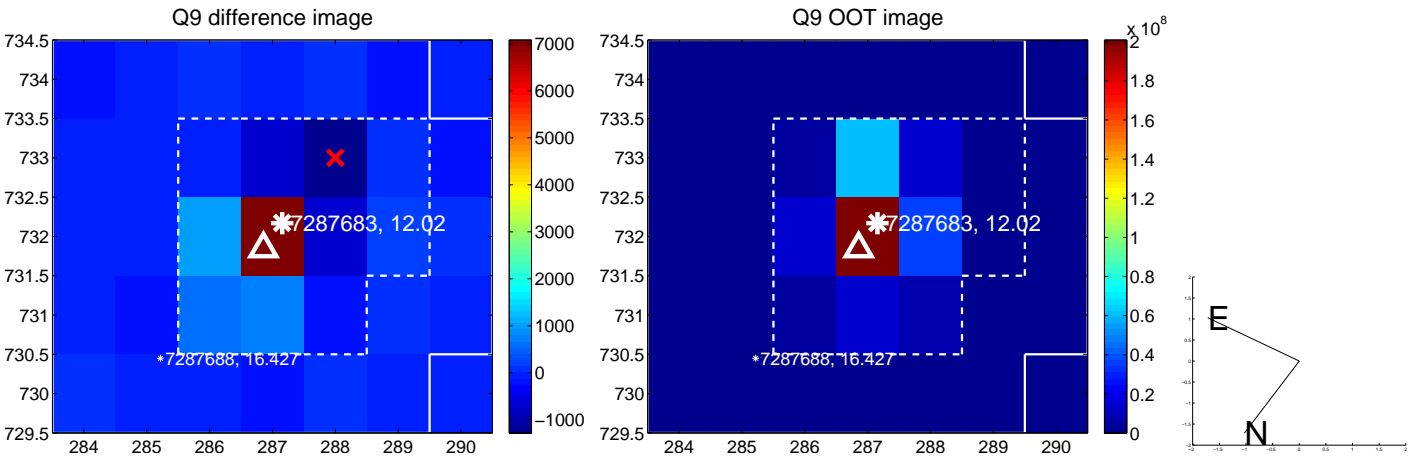
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



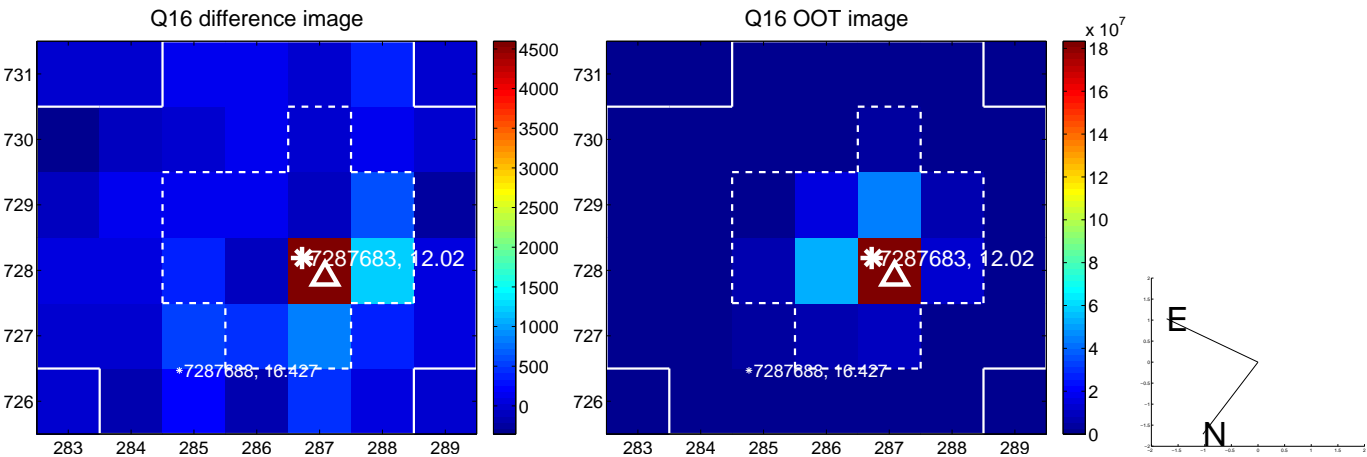
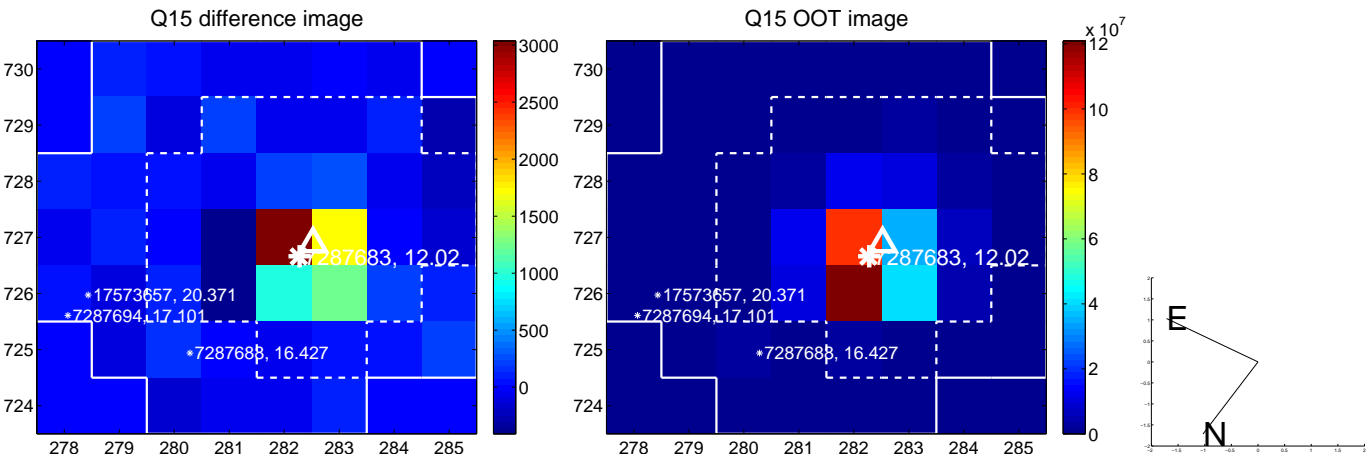
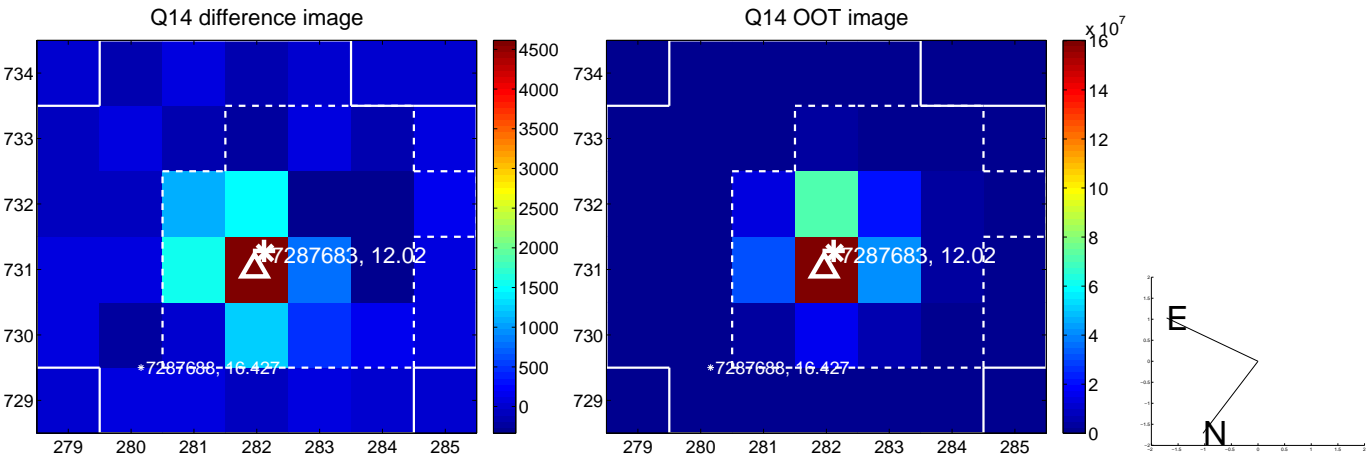
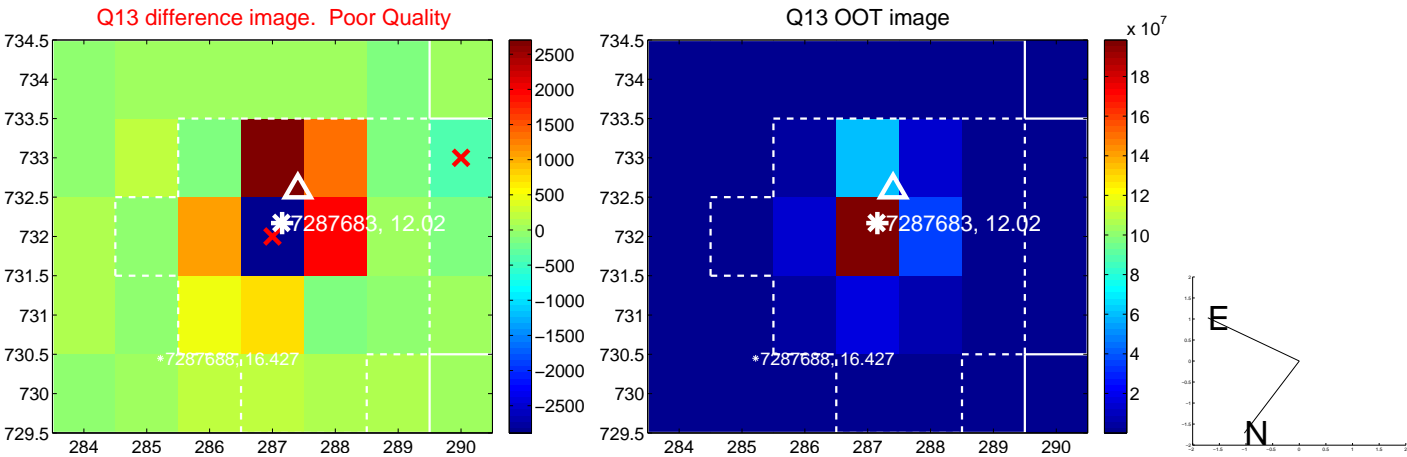
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



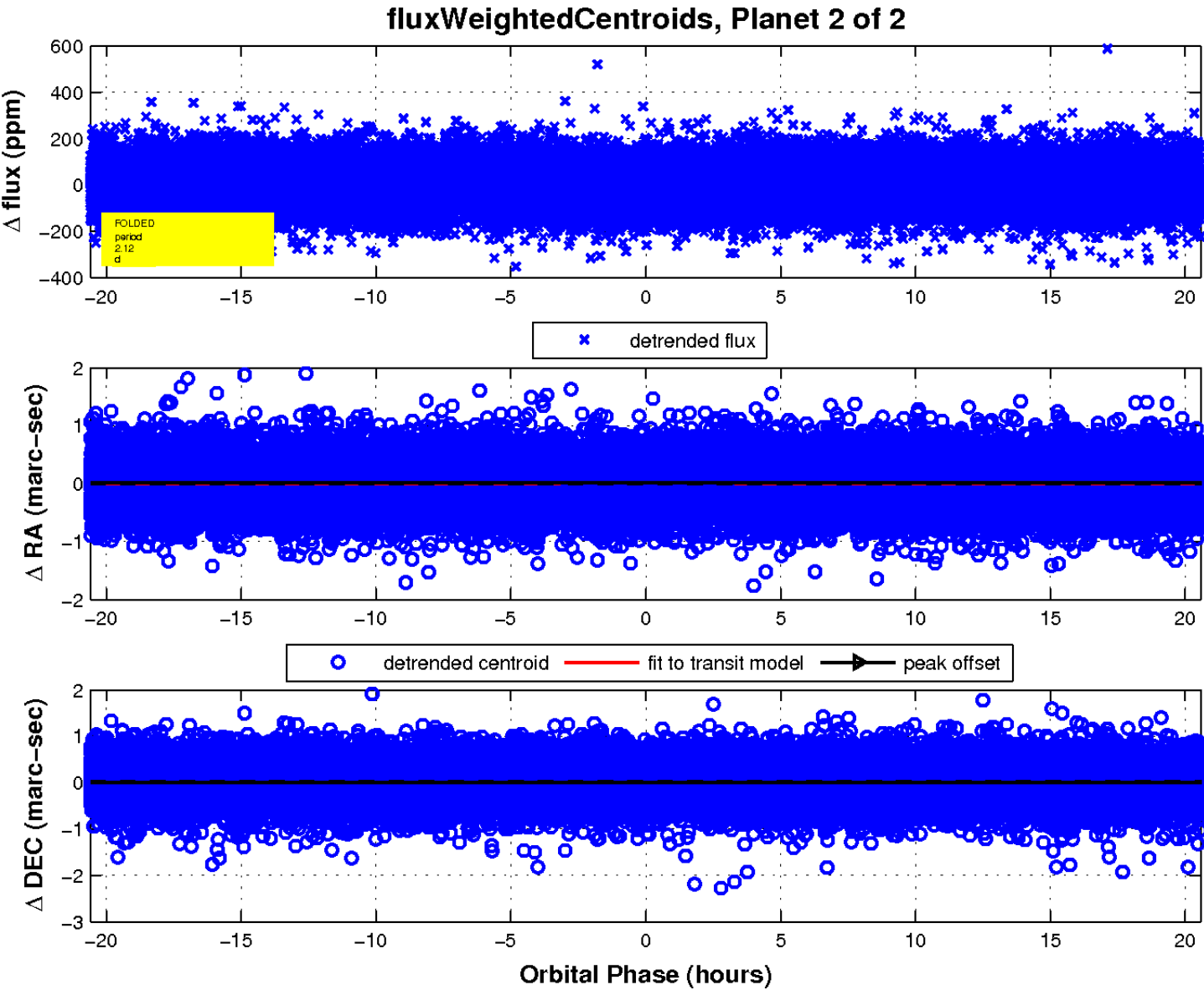
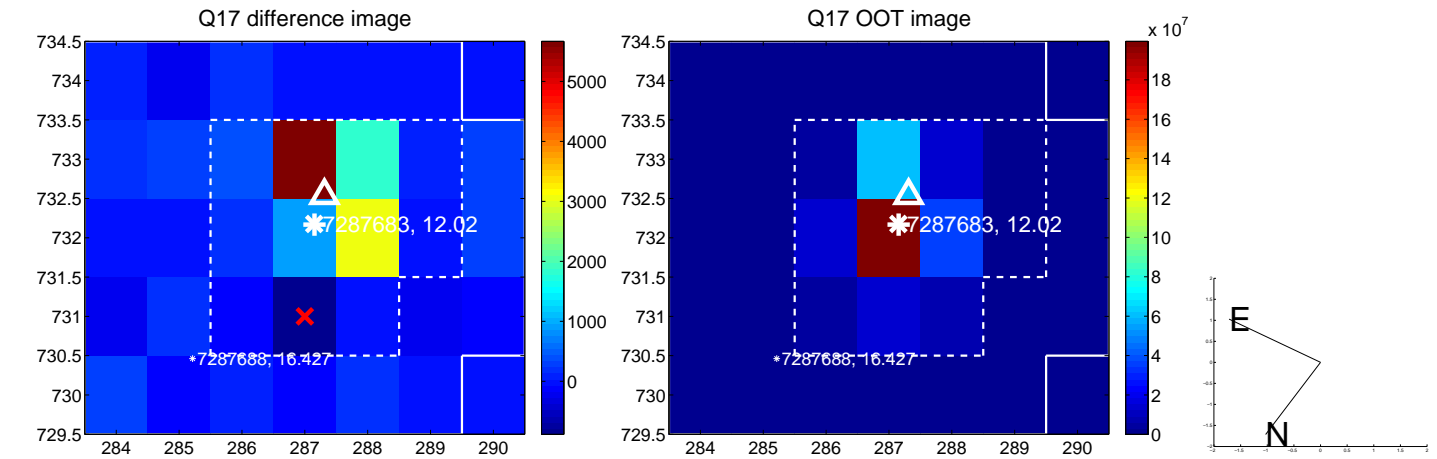
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UKIRT Image

Declination

