

# KIC 007590723

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007590723-01	OBS	No	0.953410	131.683624	92.8	1.289	10.6	8.8	0.82	5566	0.94	1826.03
007590723-02	OBS	No	0.953411	132.157980	57.7	1.597	9.2	6.1	0.82	5566	0.74	1826.03

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007590723-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
007590723-02	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

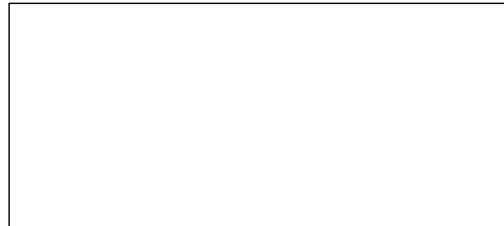
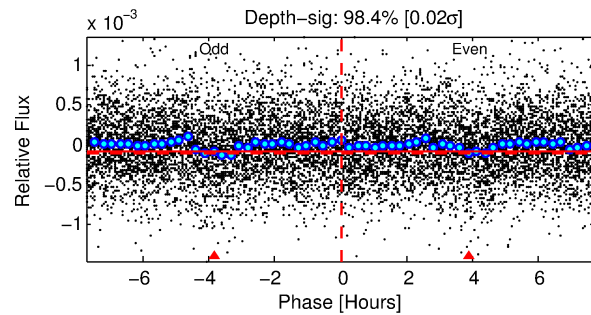
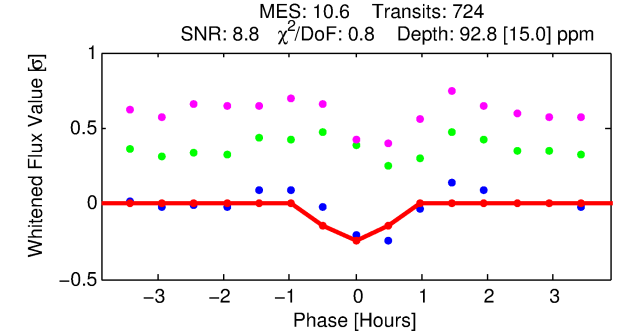
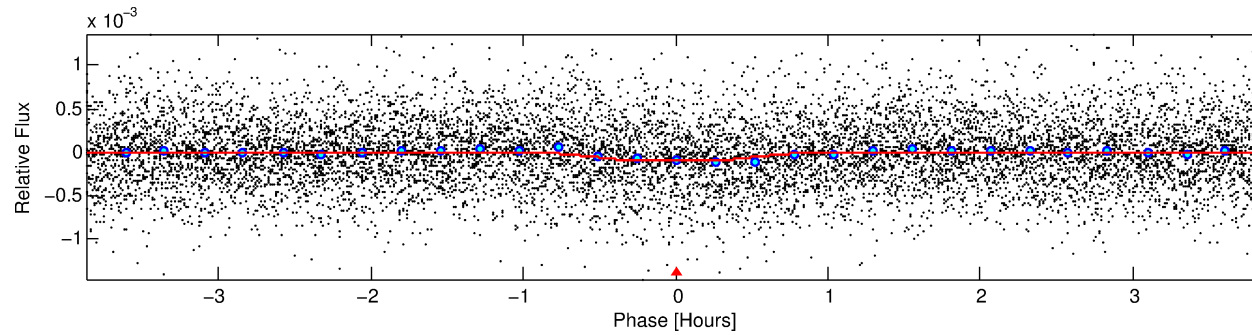
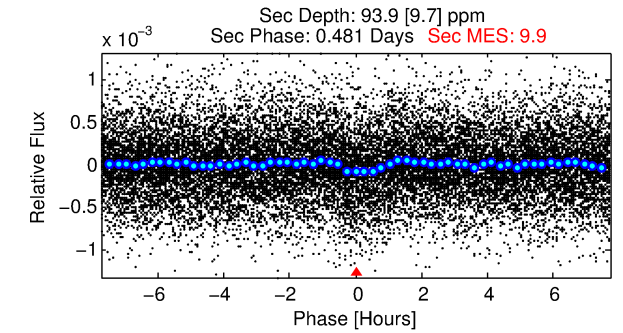
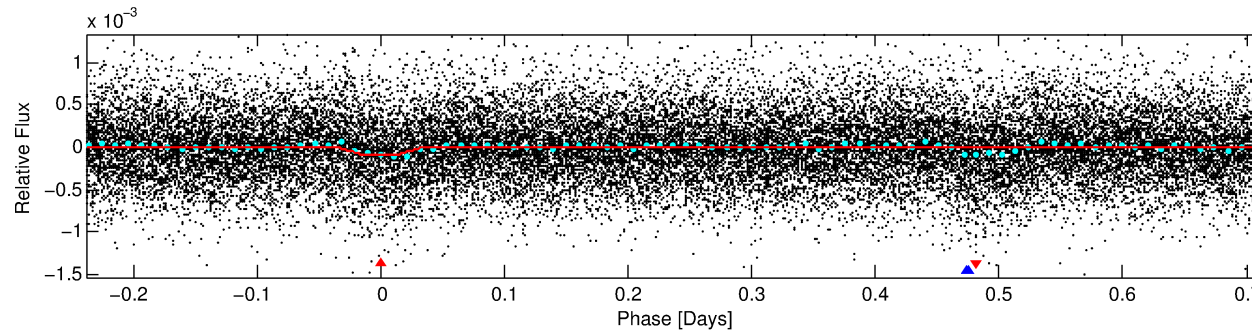
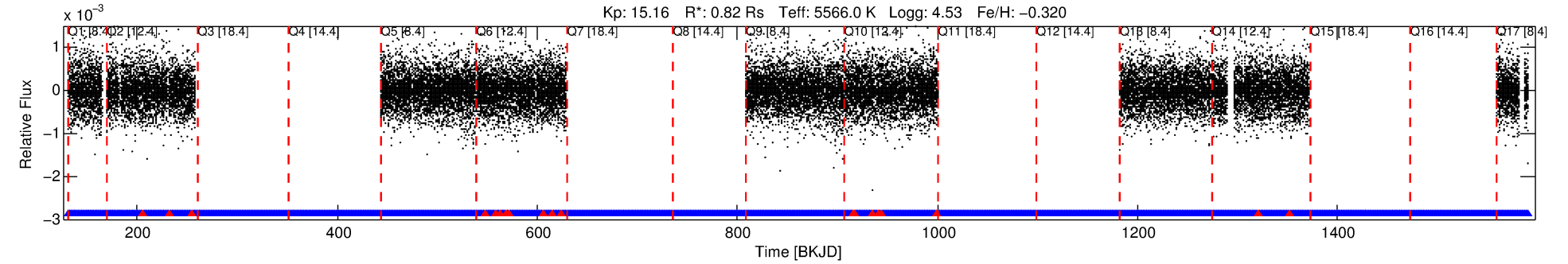
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007590723-01

No Significant Match Found

# DV One-Page Summary

KIC: 7590723 Candidate: 1 of 2 Period: 0.953 d



## DV Fit Results:

Period = 0.95341 [0.00001] d  
Epoch = 131.6836 [0.0023] BKJD  
Rp/R\* = 0.0106 [0.0101]  
a/R\* = 2.72 [10.63]  
b = 0.90 [0.94]  
Seff = 1826.03 [519.03]  
Teq = 1667 [118] K  
Rp = 0.95 [0.92] Re  
a = 0.0177 [0.0032] AU  
Ag = 18.17 [34.96] [0.49σ]  
Teffp = 5321 [2542] K [1.44σ]

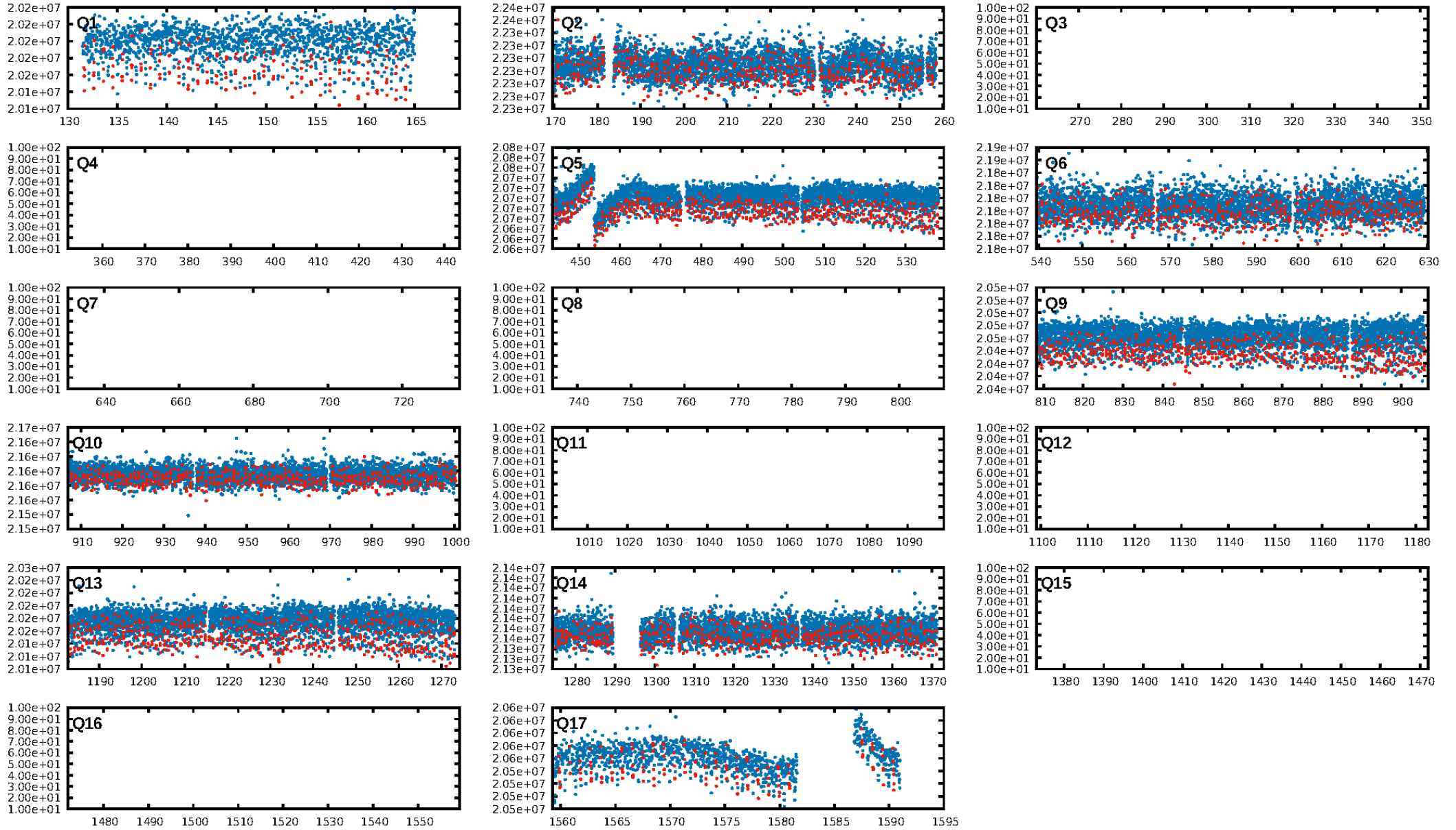
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
**LongPeriod-sig: 0.0% [0.00σ]**  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.14e-29  
RollingBand-fgt: 0.97 [642/662]  
**GhostDiagnostic-chr: -0.2618**  
Centroid-sig: 0.0%  
**Centroid-so: 175.894 arcsec [56.17σ]**  
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 [9/9]

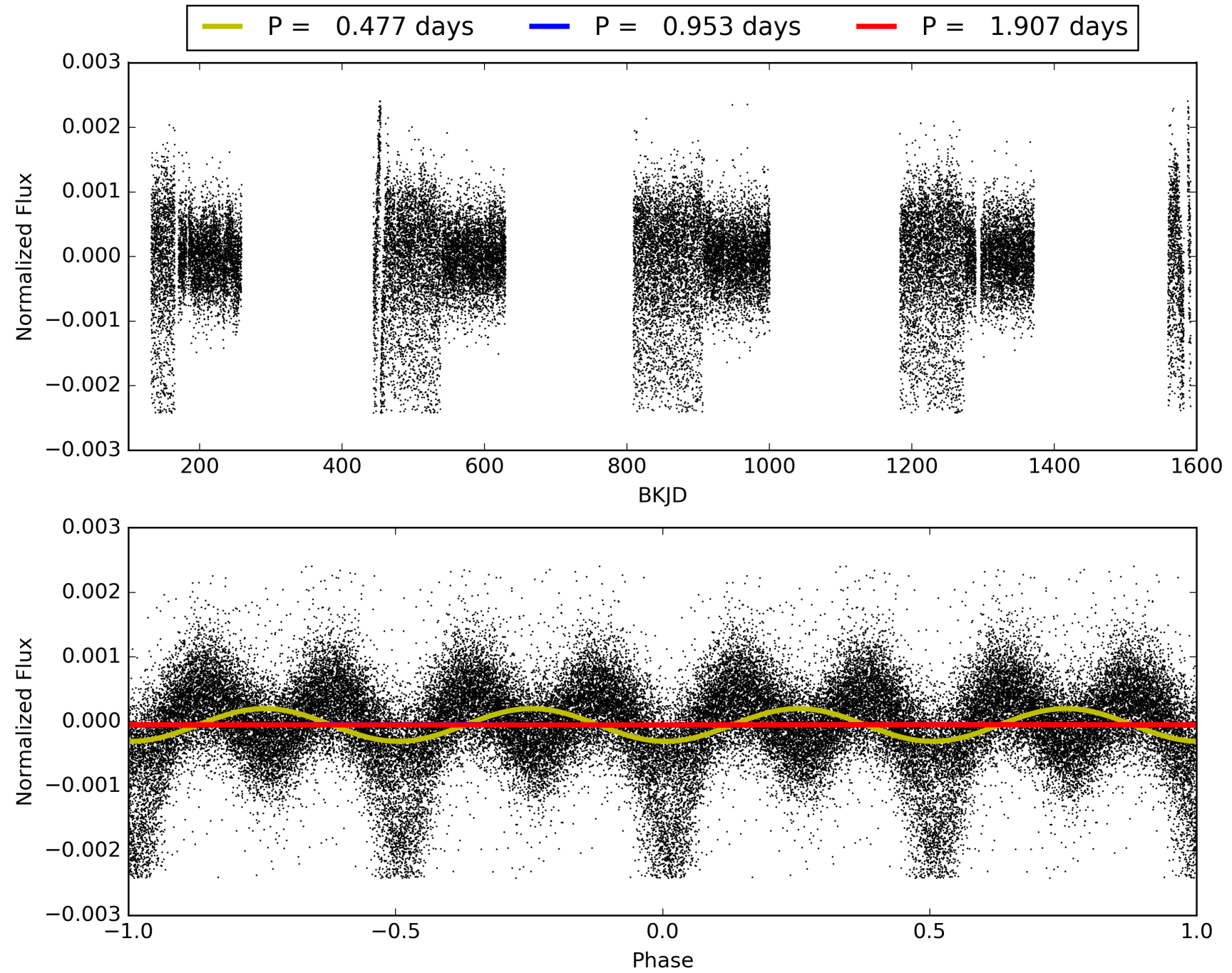
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 15:01:08 Z

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

# TCE 007590723-01, PDC Light Curves

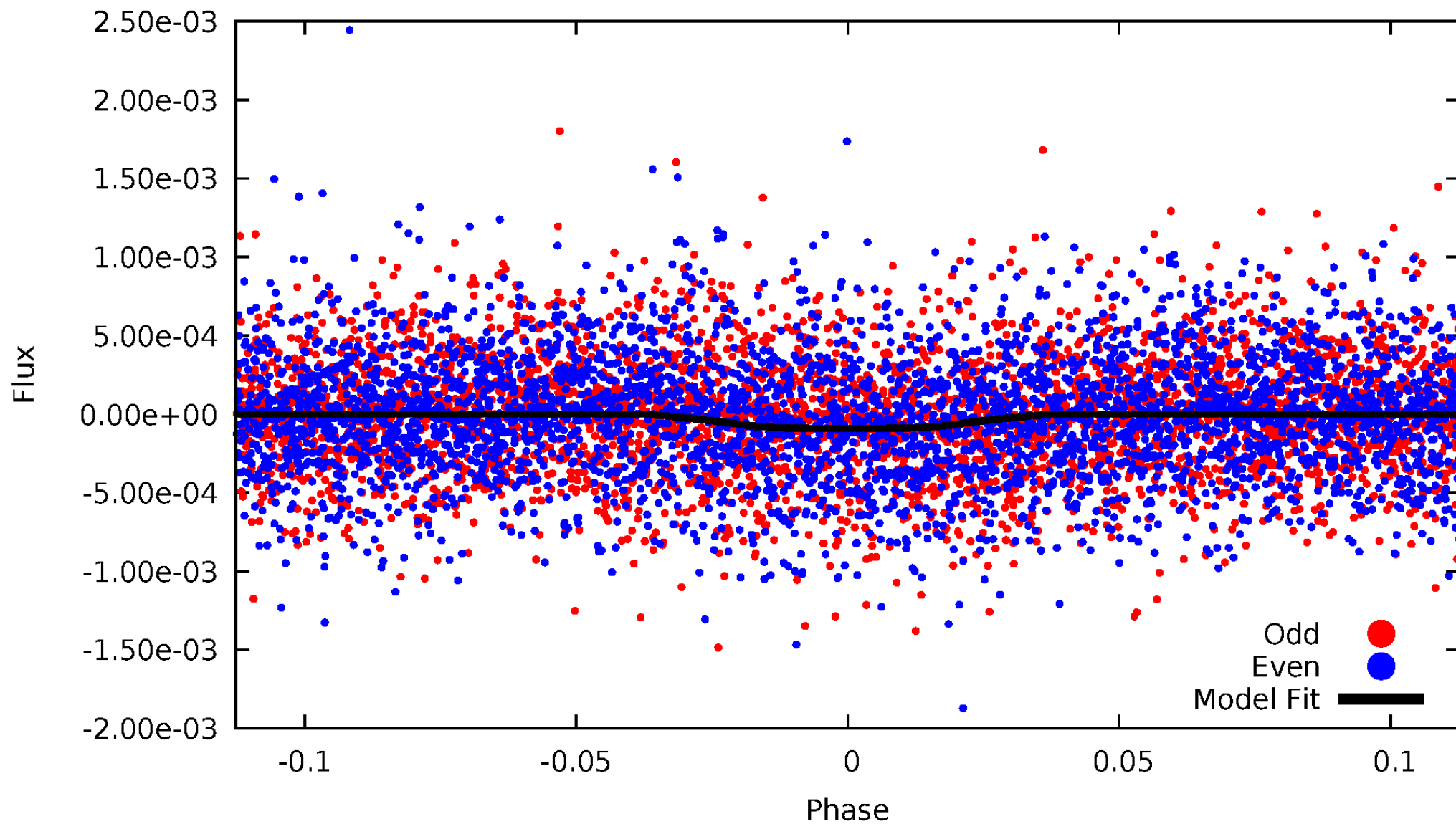


TCE 007590723-01



# DV Odd/Even

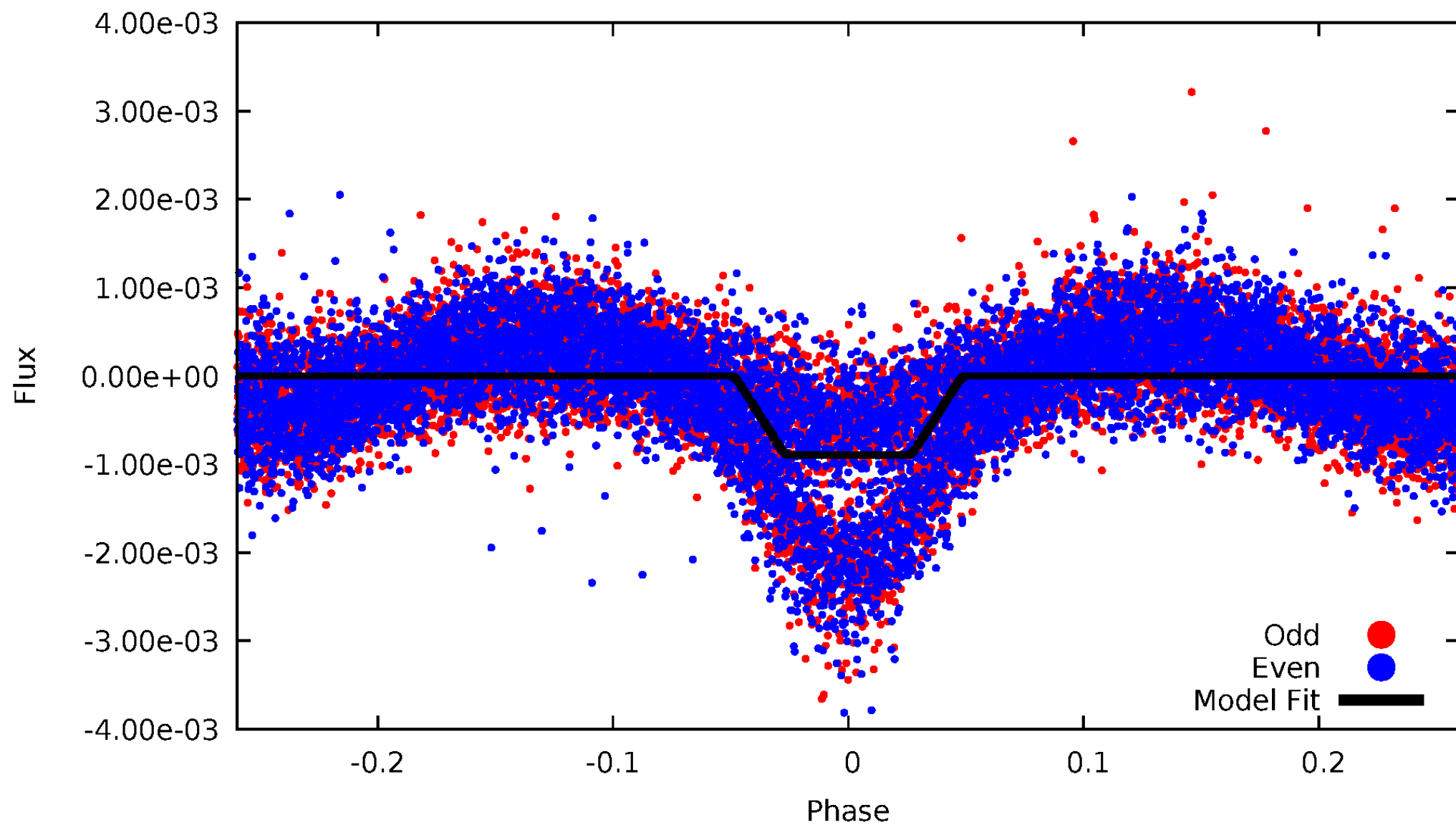
TCE 007590723-01





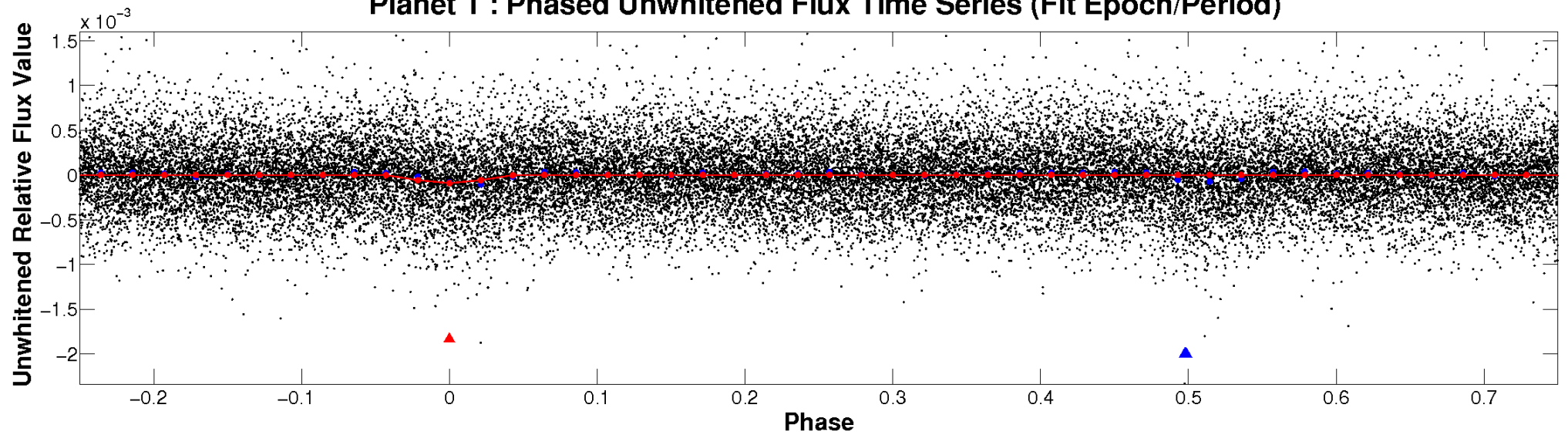
# ALT Odd/Even

TCE 007590723-01

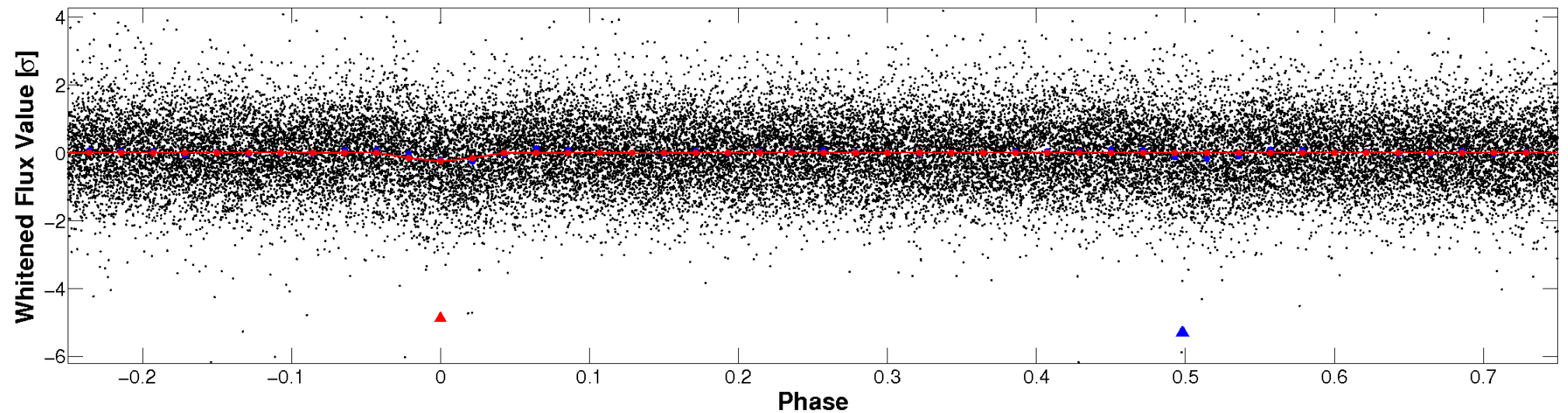


# Non-Whitened Vs. Whitened Light Curve

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

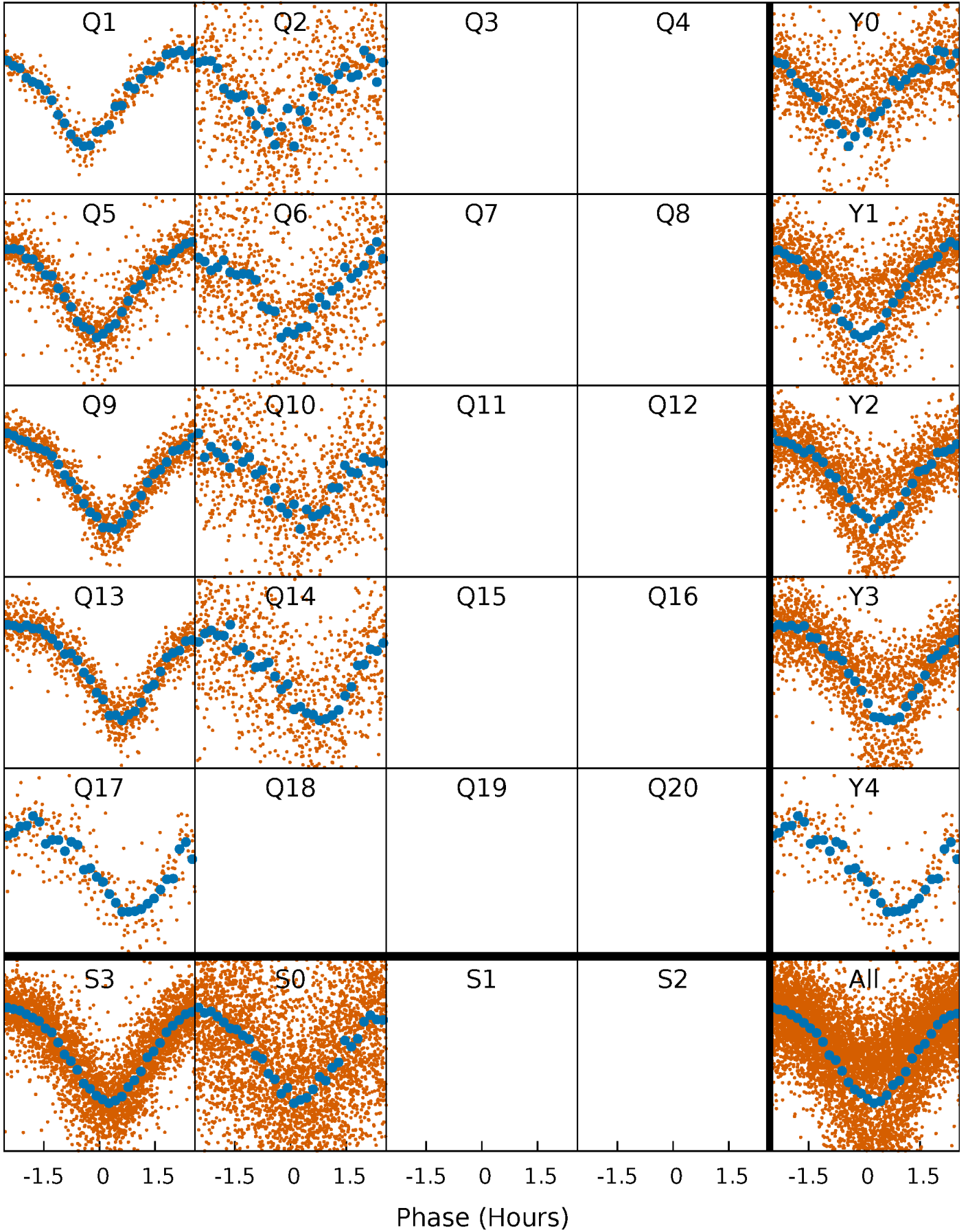


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

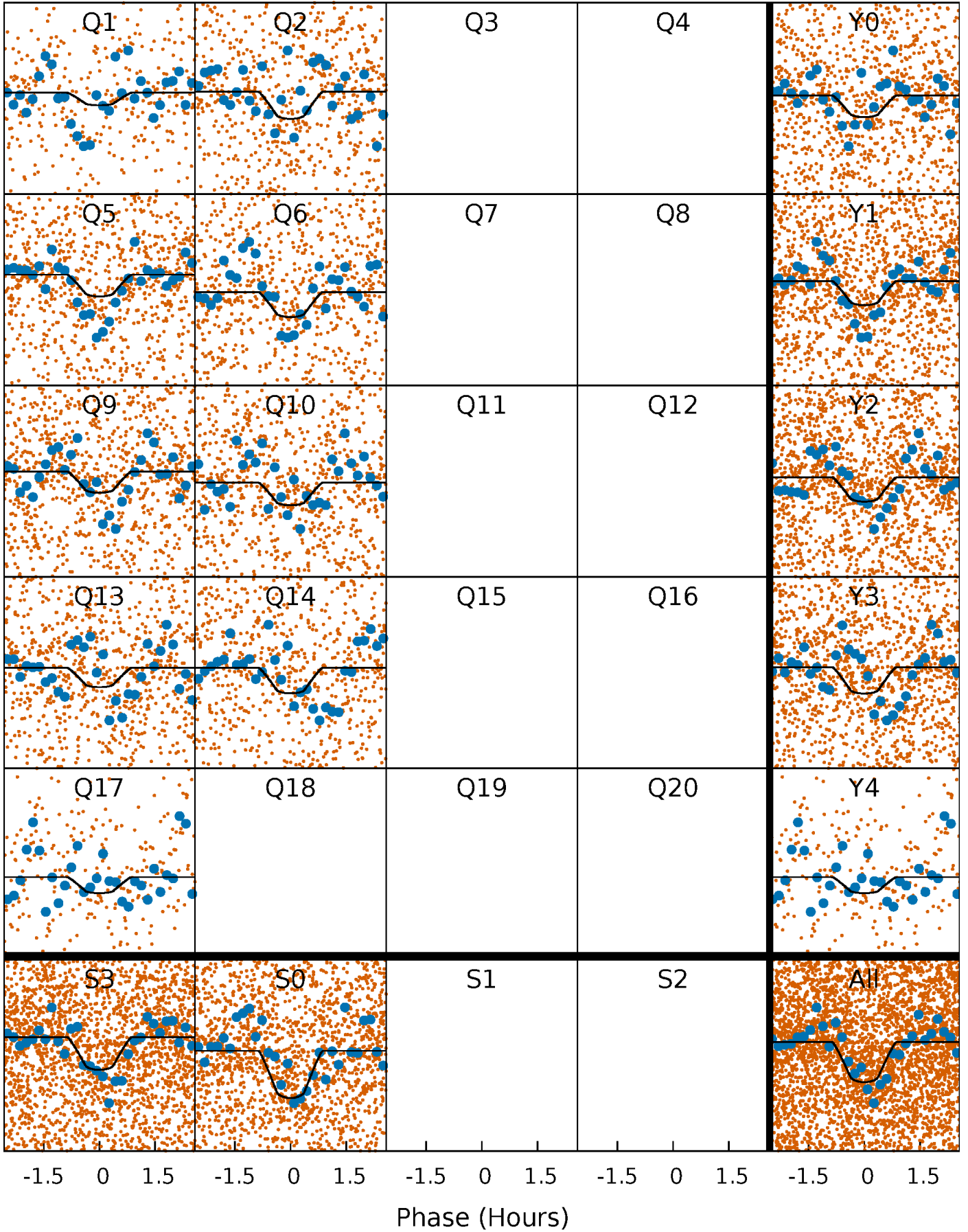
TCE 007590723-01 P= 0.953410 Days  $T_0=131.683624$  (BKJD)





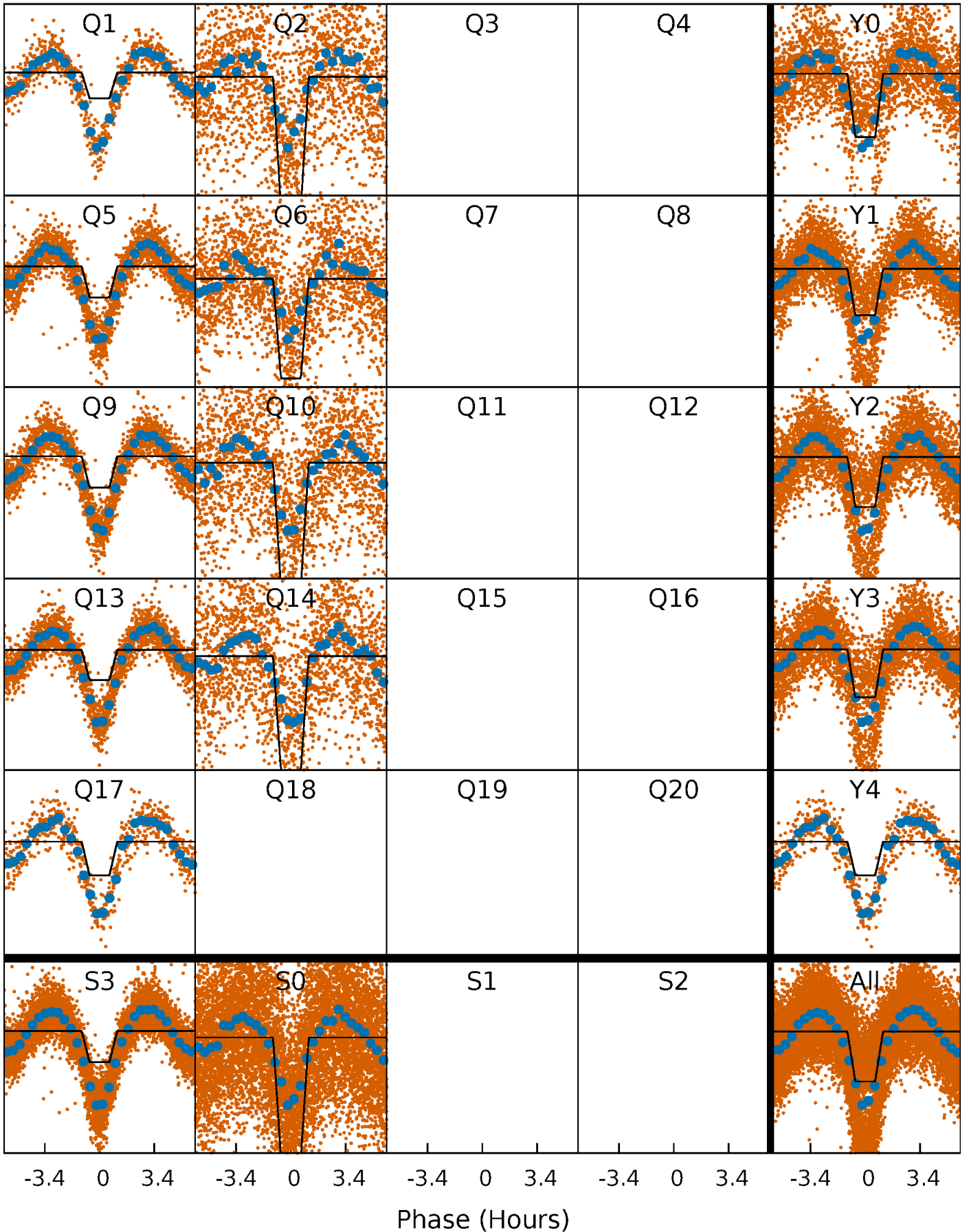
# DV Quarter-Phased Transit Curves

TCE 007590723-01   P= 0.953410 Days    $T_0=131.683624$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

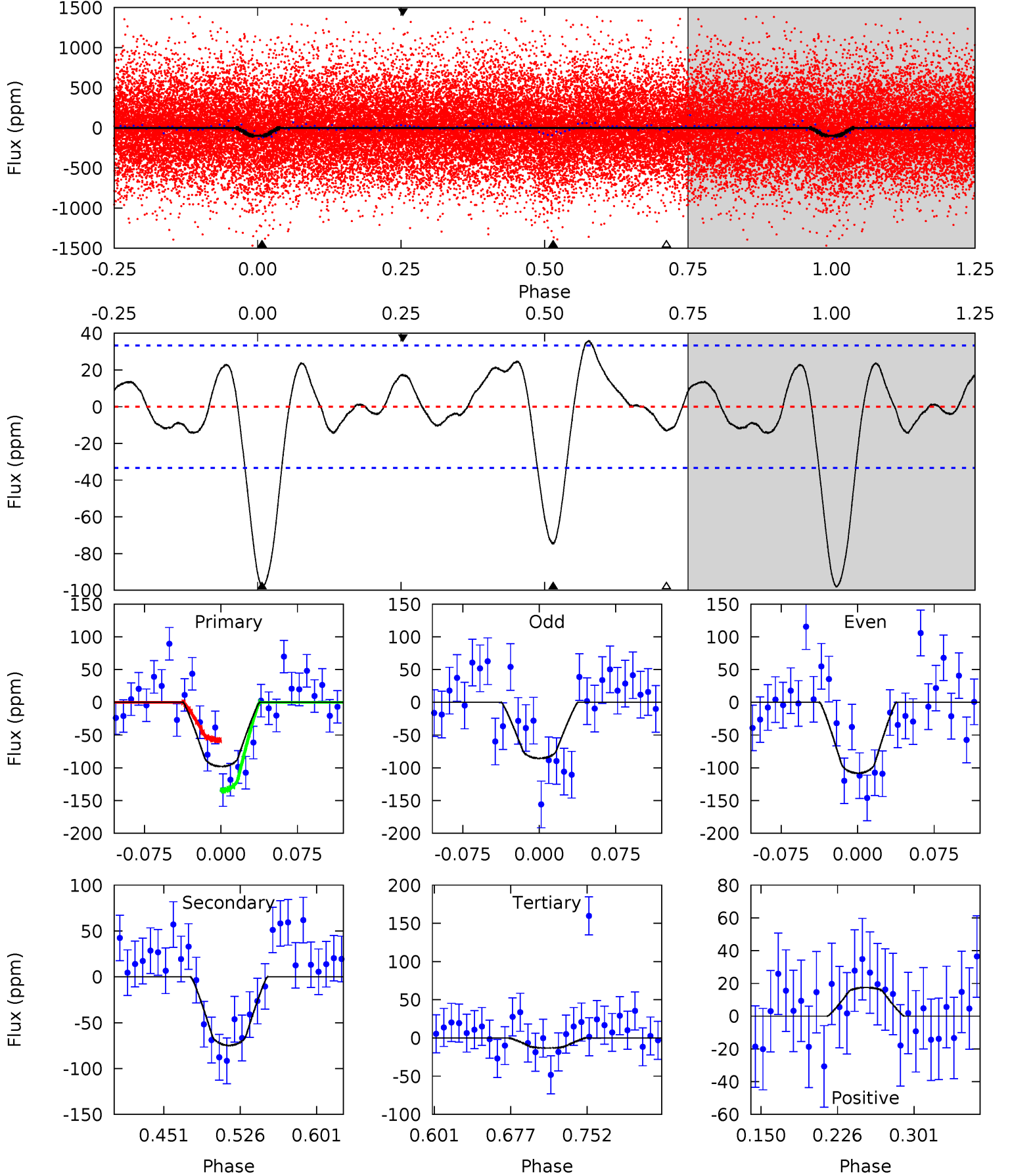
TCE 007590723-01   P= 0.953442 Days    $T_0=131.670797$  (BKJD)



# DV Model-Shift Uniqueness Test

007590723-01, P = 0.953410 Days, E = 130.730214 Days

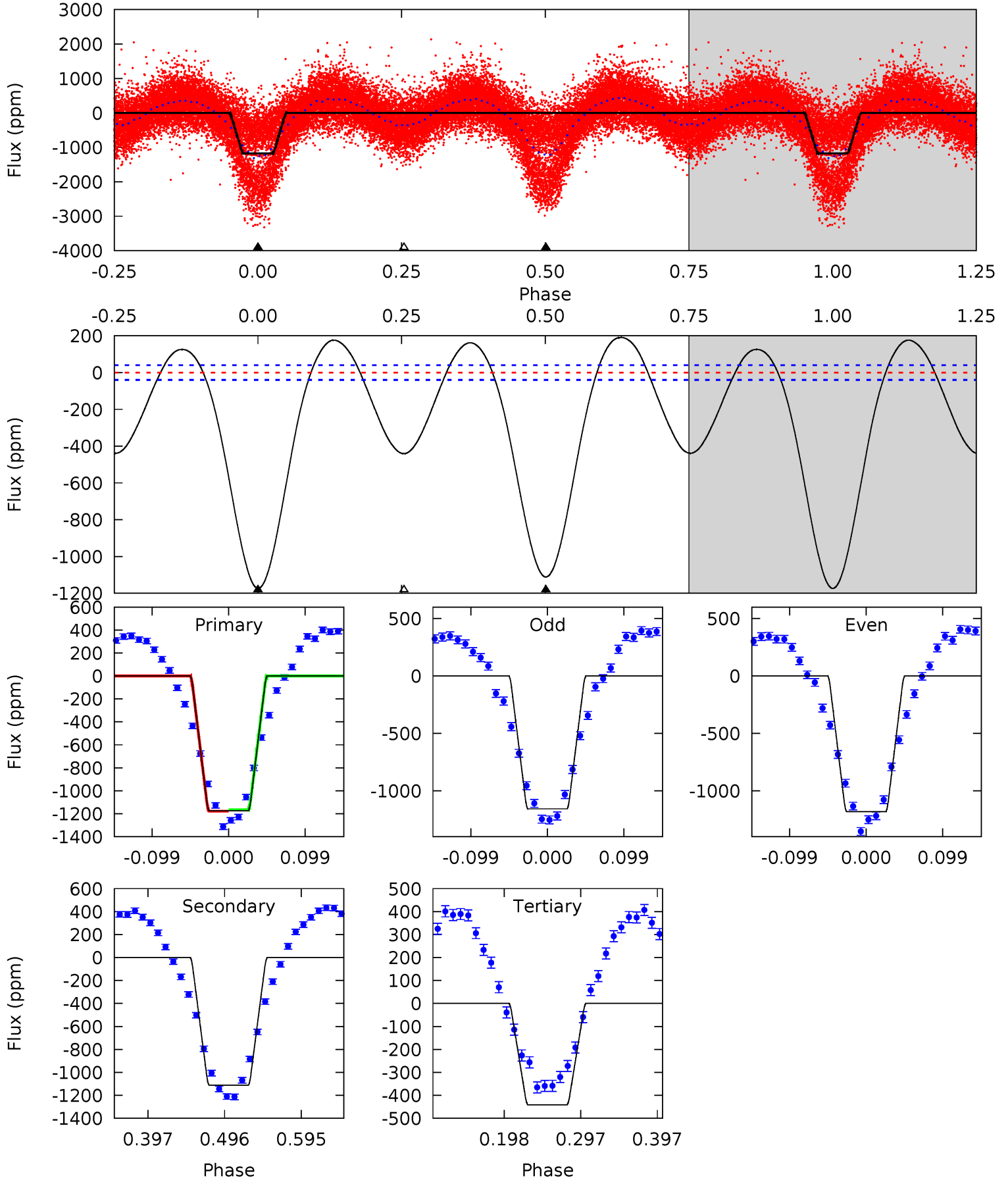
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	10.4	1.83	2.42	4.62	1.78	1.46	11.8	11.2	8.54	7.94	1.57	1.21	0.27	5.36



# Alt Model-Shift Uniqueness Test

007590723-01, P = 0.953442 Days, E = 130.717355 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
133.1	126.1	50.0	0	4.57	1.65	24.7	83.1	133.1	76.0	126.1	1.37	1.36	0.14	0.74



### Stellar Parameters For KIC 007590723

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5566^{+169}_{-152}$	$4.526^{+0.063}_{-0.137}$	$-0.320^{+0.300}_{-0.300}$	$0.817^{+0.181}_{-0.090}$	$0.818^{+0.097}_{-0.071}$	$2.114^{+0.643}_{-0.823}$
	+3%/-3%	+1%/-3%	+94%/-94%	+22%/-11%	+12%/-9%	+30%/-39%
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 007590723-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-75 \pm 7$	$1.20^{+0.80}_{-0.72}$	$2350^{+131}_{-101}$	$4635^{+2559}_{-850}$	$8.929^{+48.976}_{-5.769}$
Alt.	$-1111 \pm 9$	$2.68^{+1.03}_{-0.90}$	$2356^{+133}_{-97}$	$5918^{+1419}_{-789}$	$27^{+34}_{-13}$

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



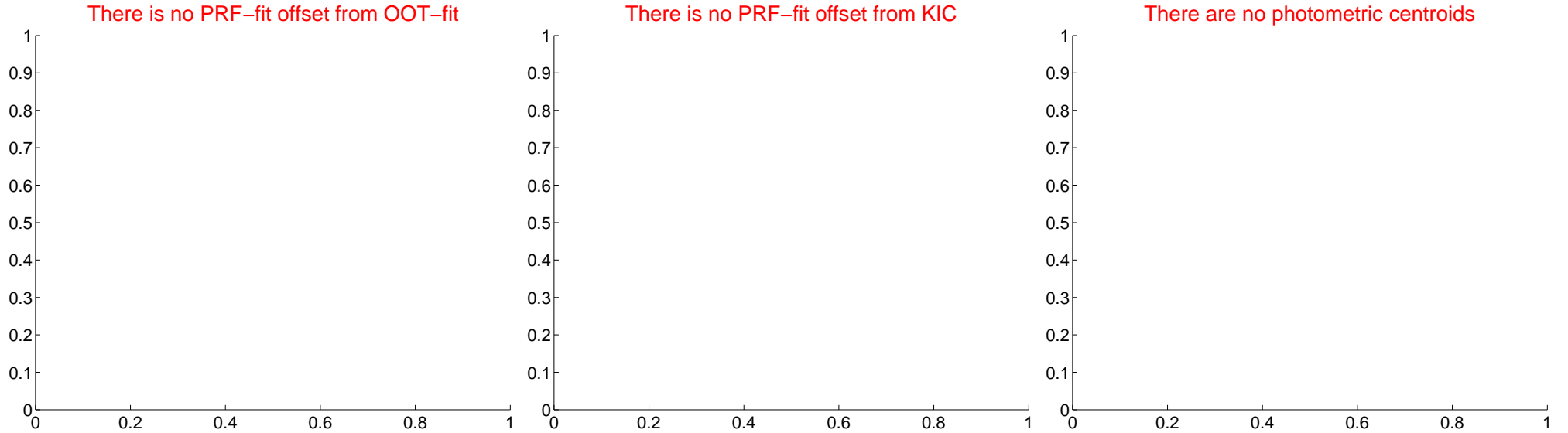
## DV Centroid Data

Supplemental centroid analysis for 007590723-01. Kepler magnitude: 15.16. Transit SNR 8.76

There are 0 quarters with good PRF difference image offsets

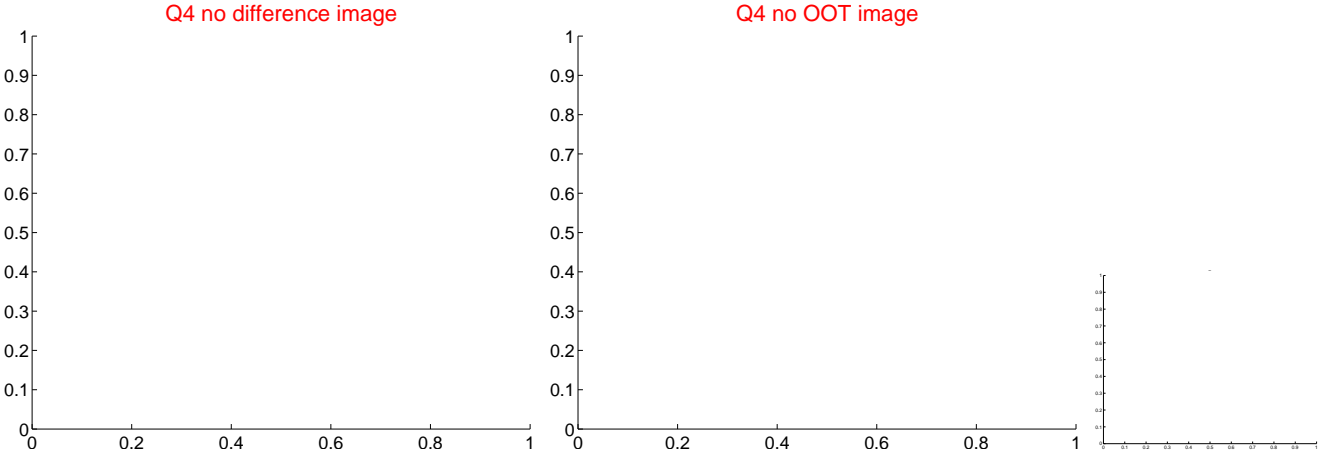
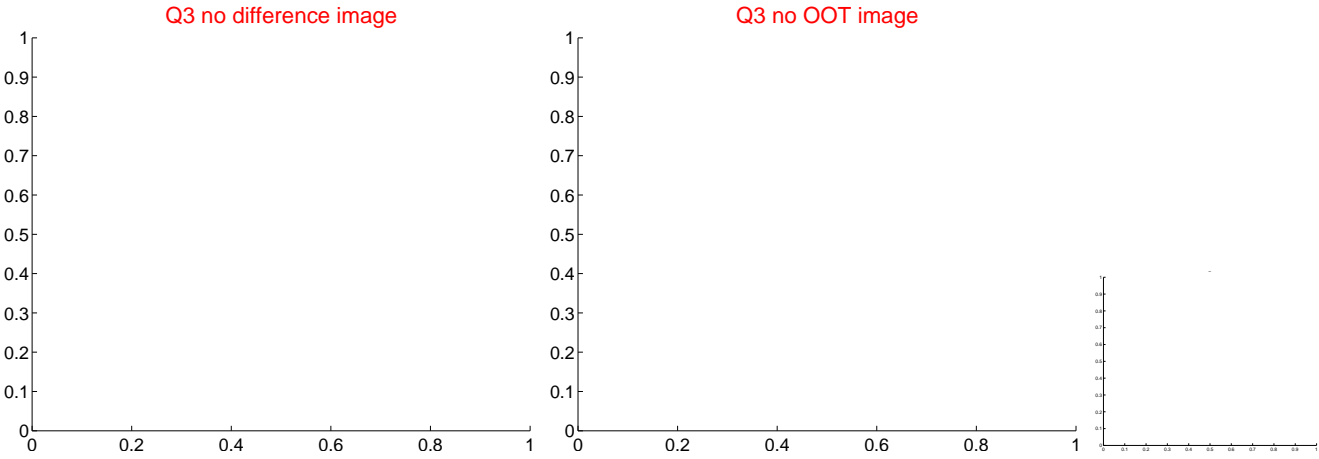
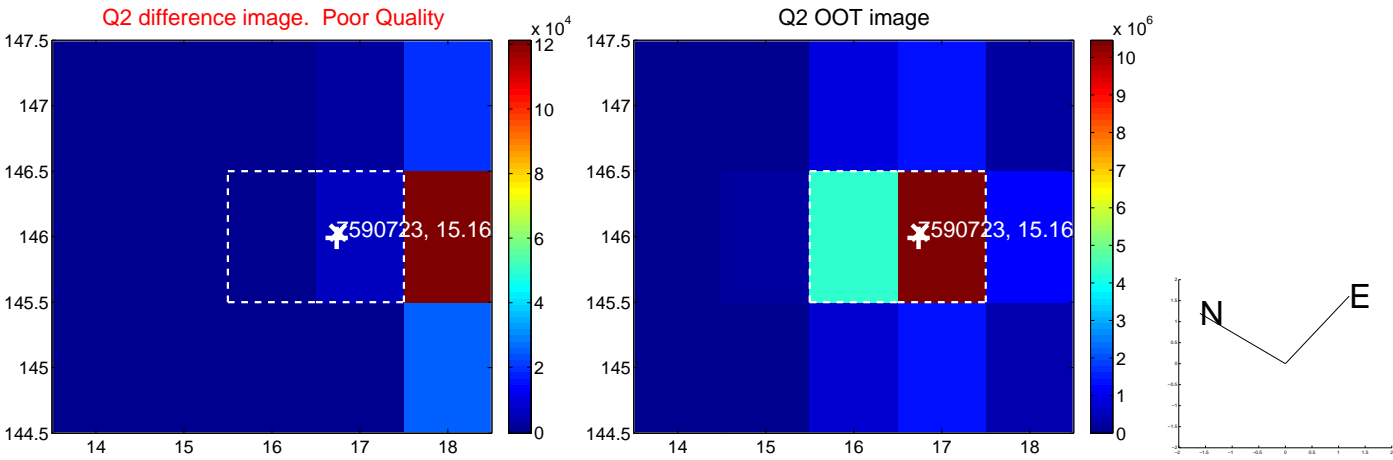
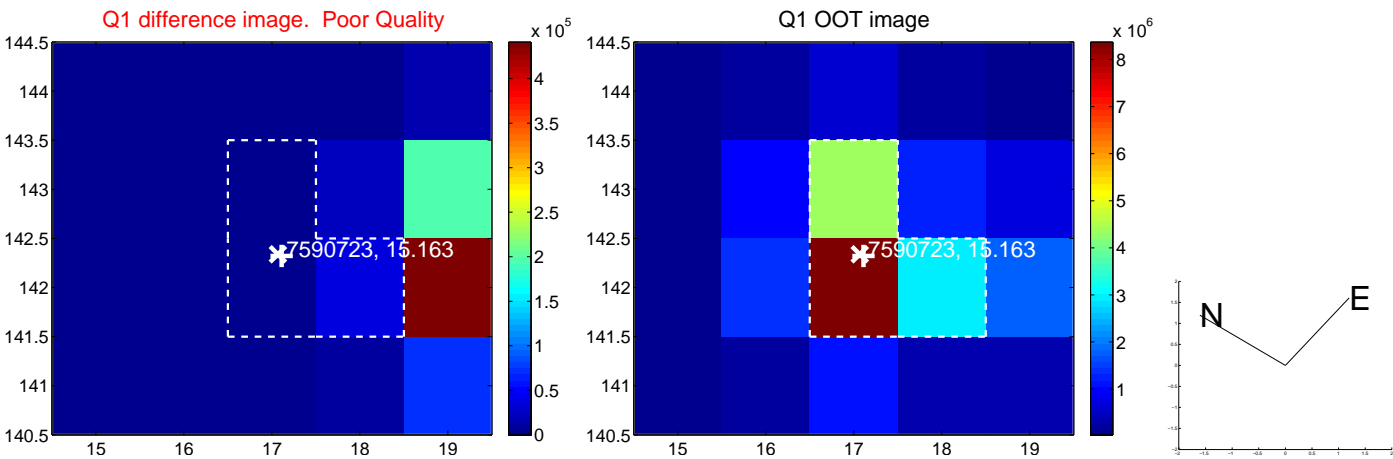
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	—	—	—	—

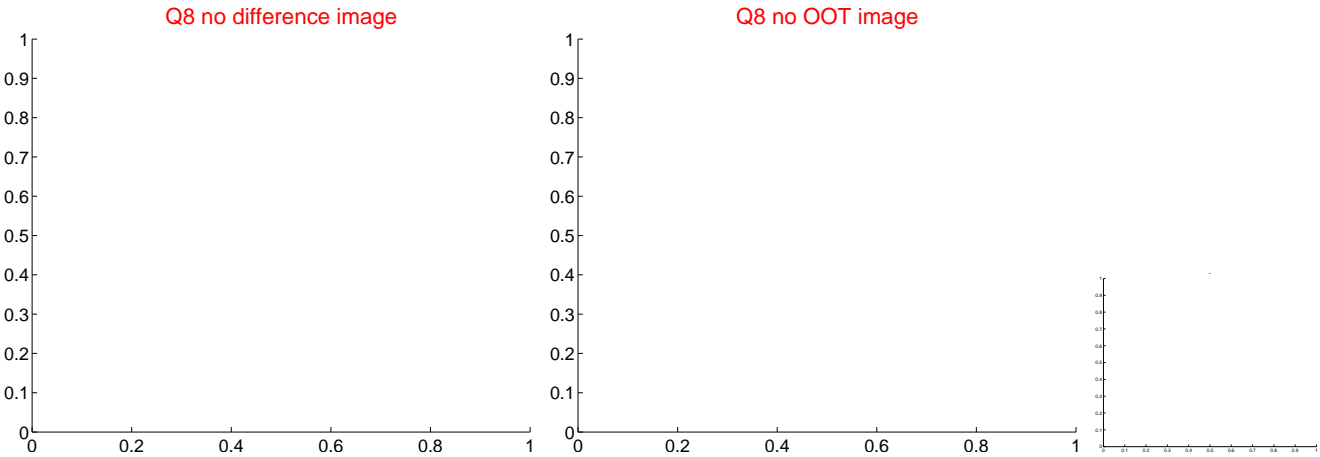
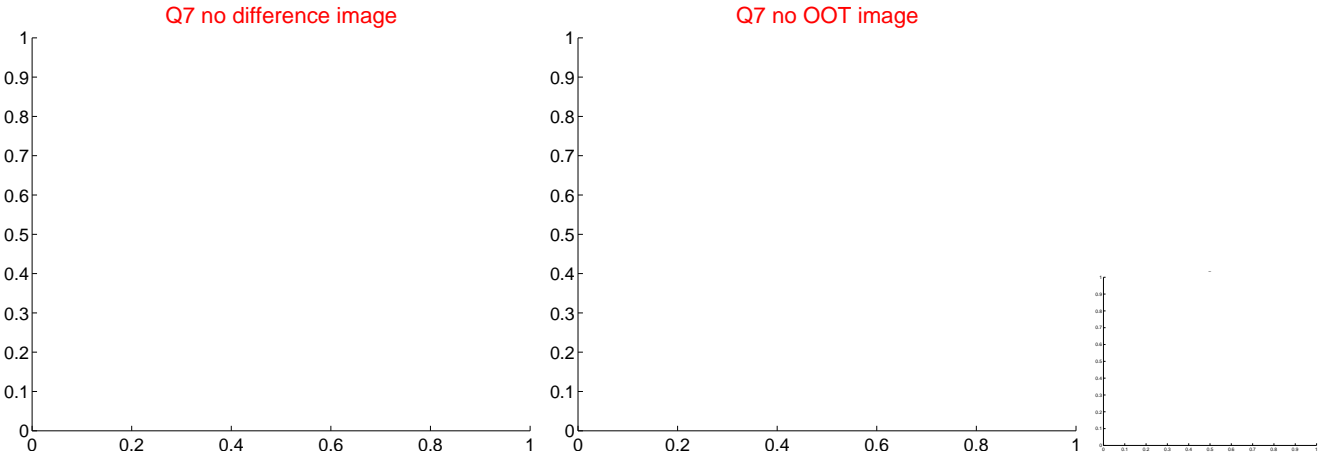
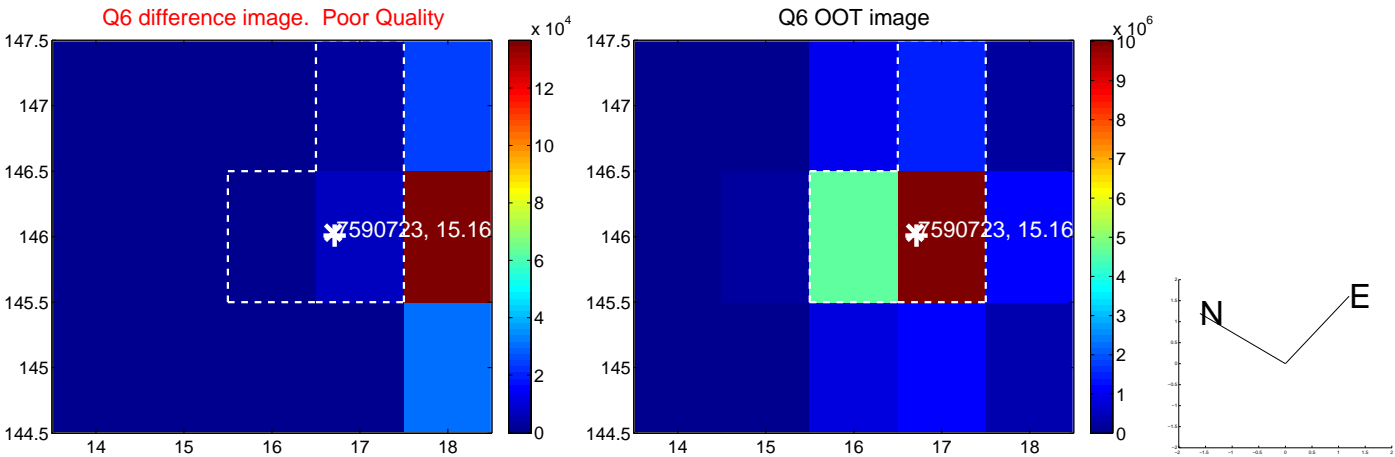
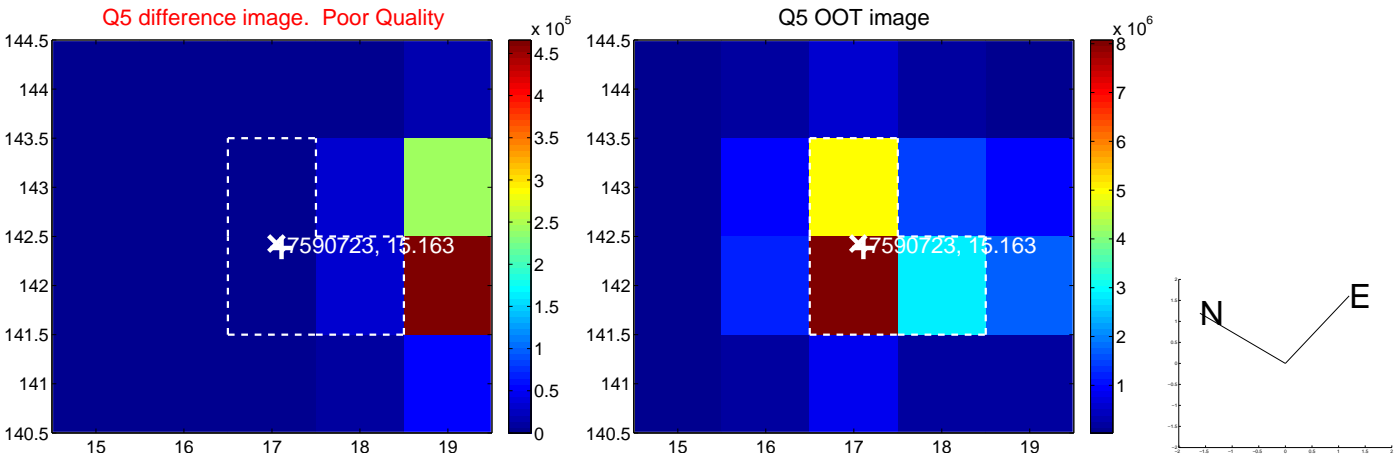


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

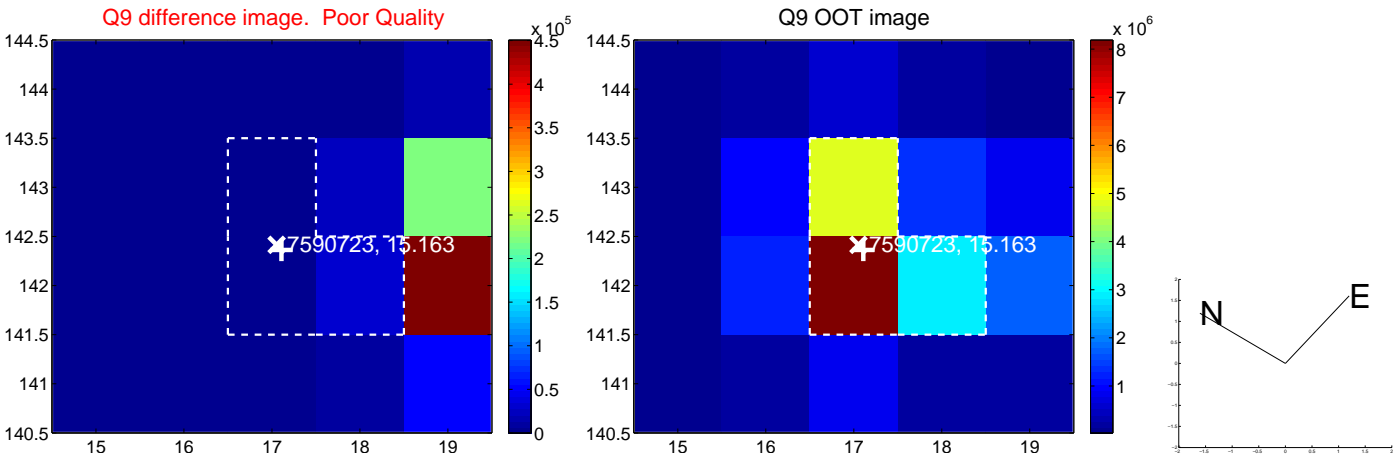
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



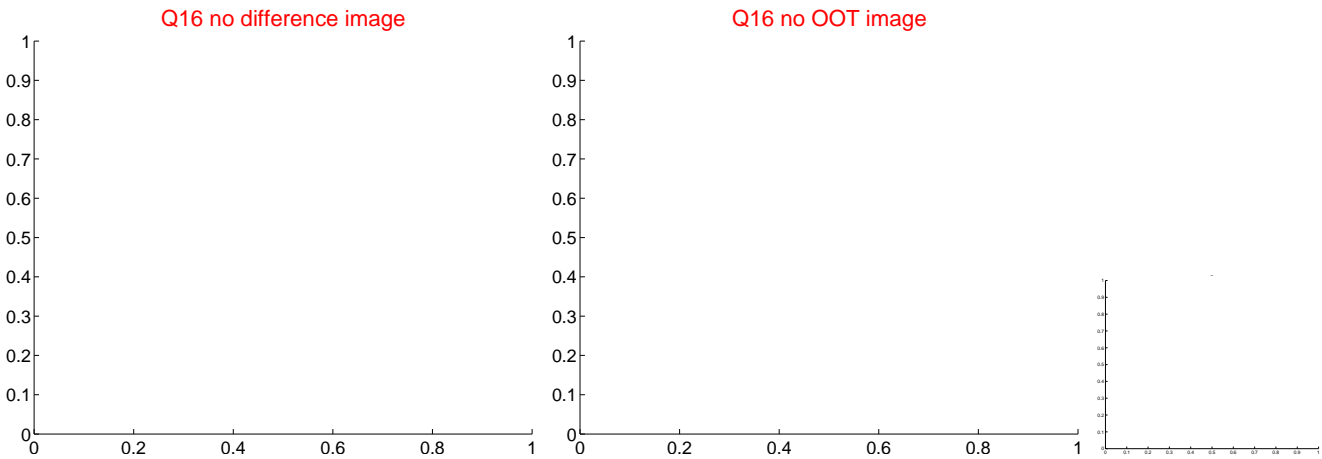
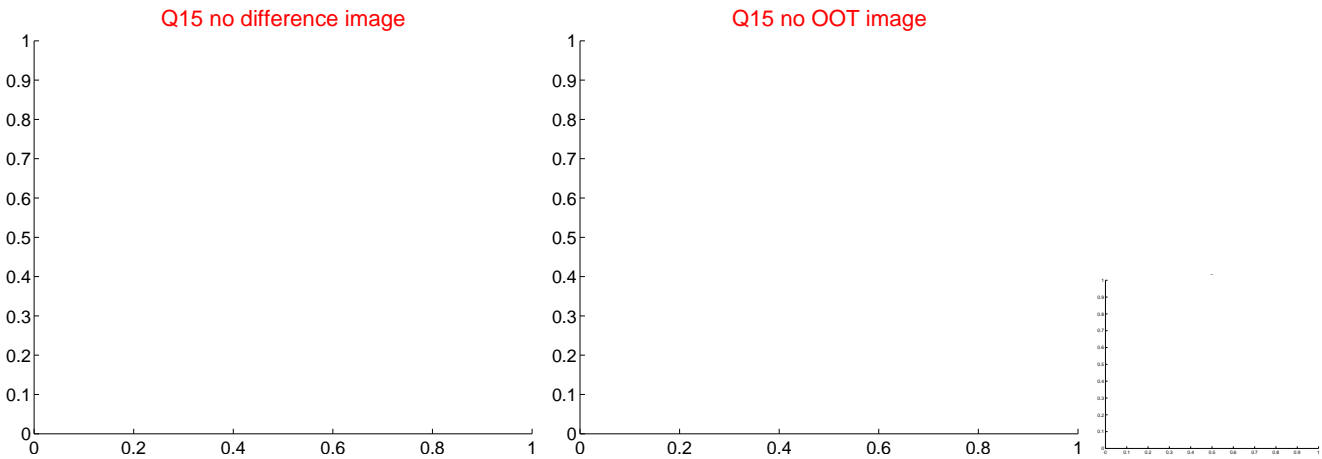
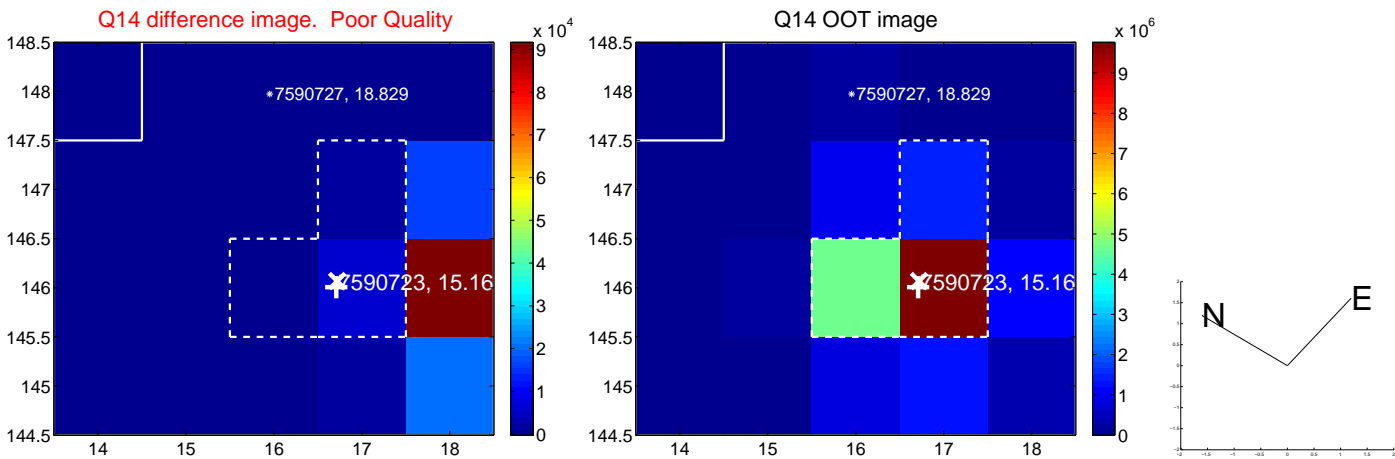
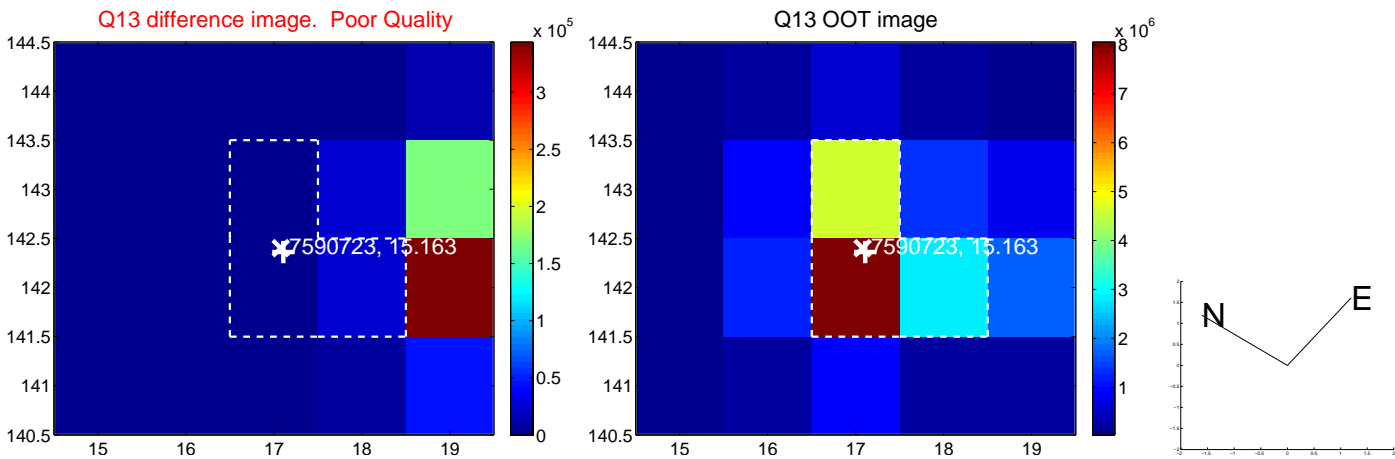
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

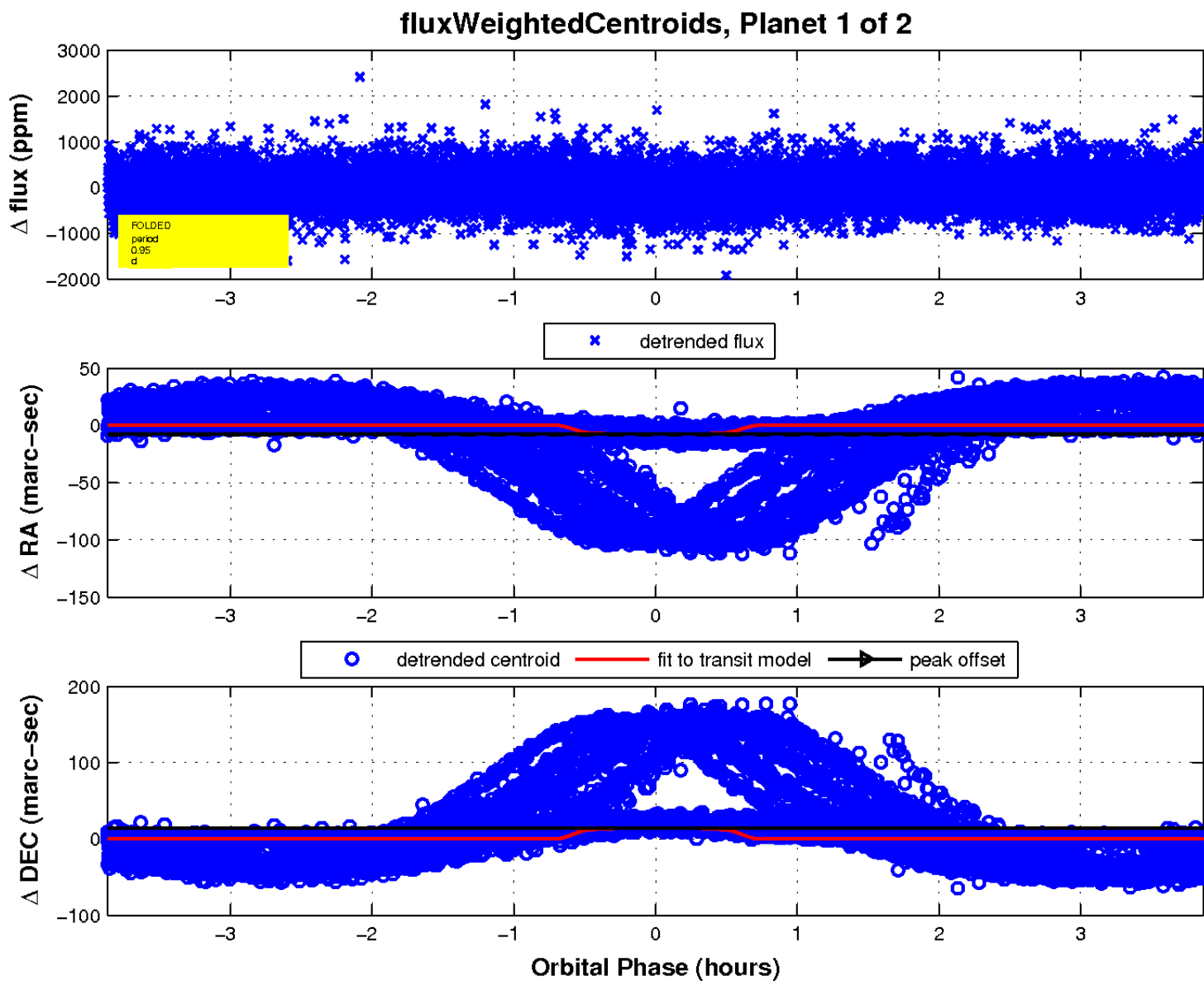
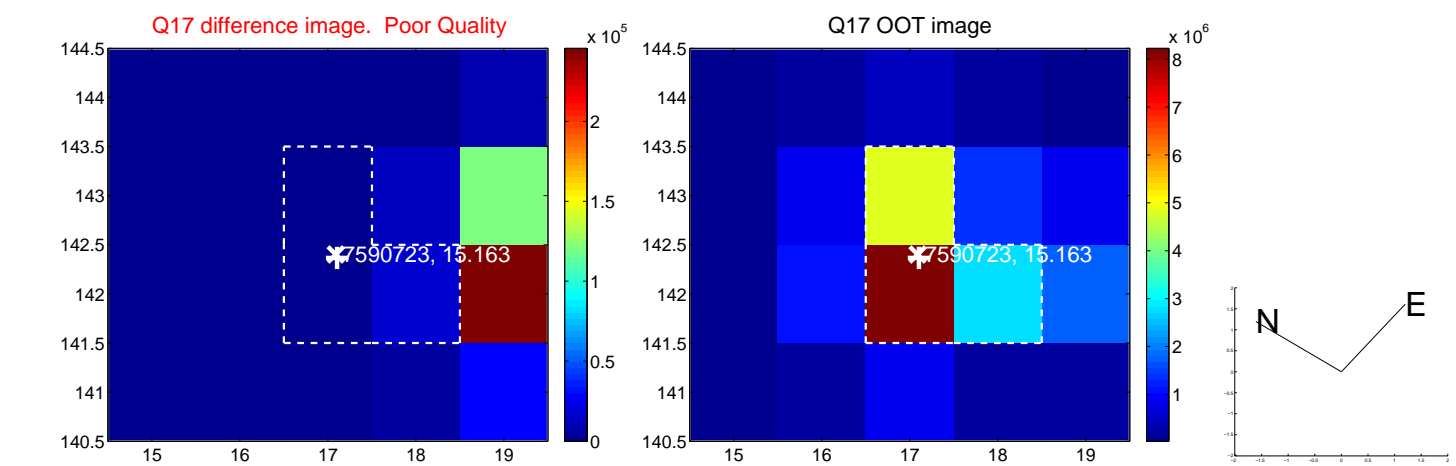


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



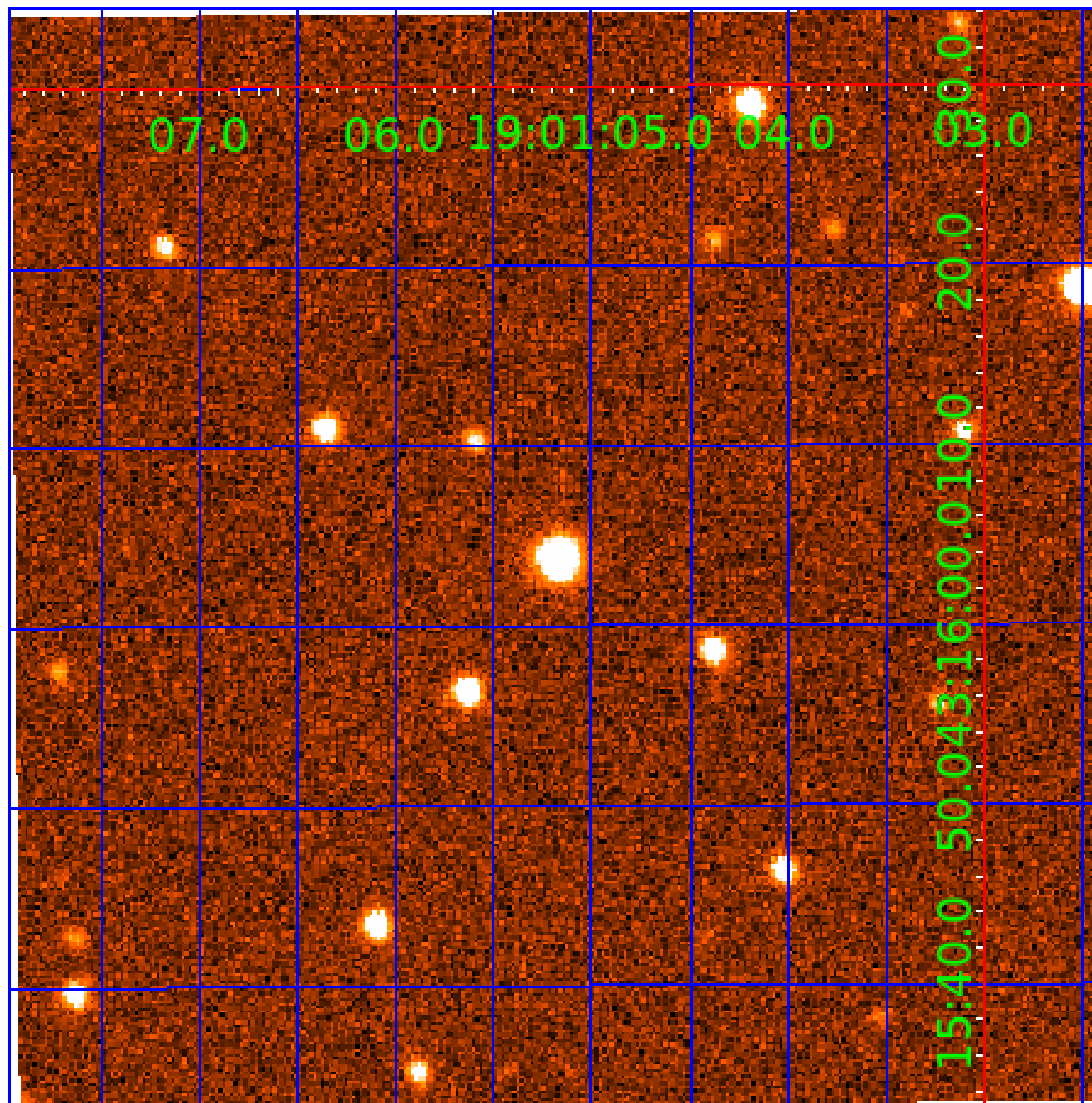


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007590723

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007590723-01	OBS	No	0.953410	131.683624	92.8	1.289	10.6	8.8	0.82	5566	0.94	1826.03
007590723-02	OBS	No	0.953411	132.157980	57.7	1.597	9.2	6.1	0.82	5566	0.74	1826.03

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007590723-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
007590723-02	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

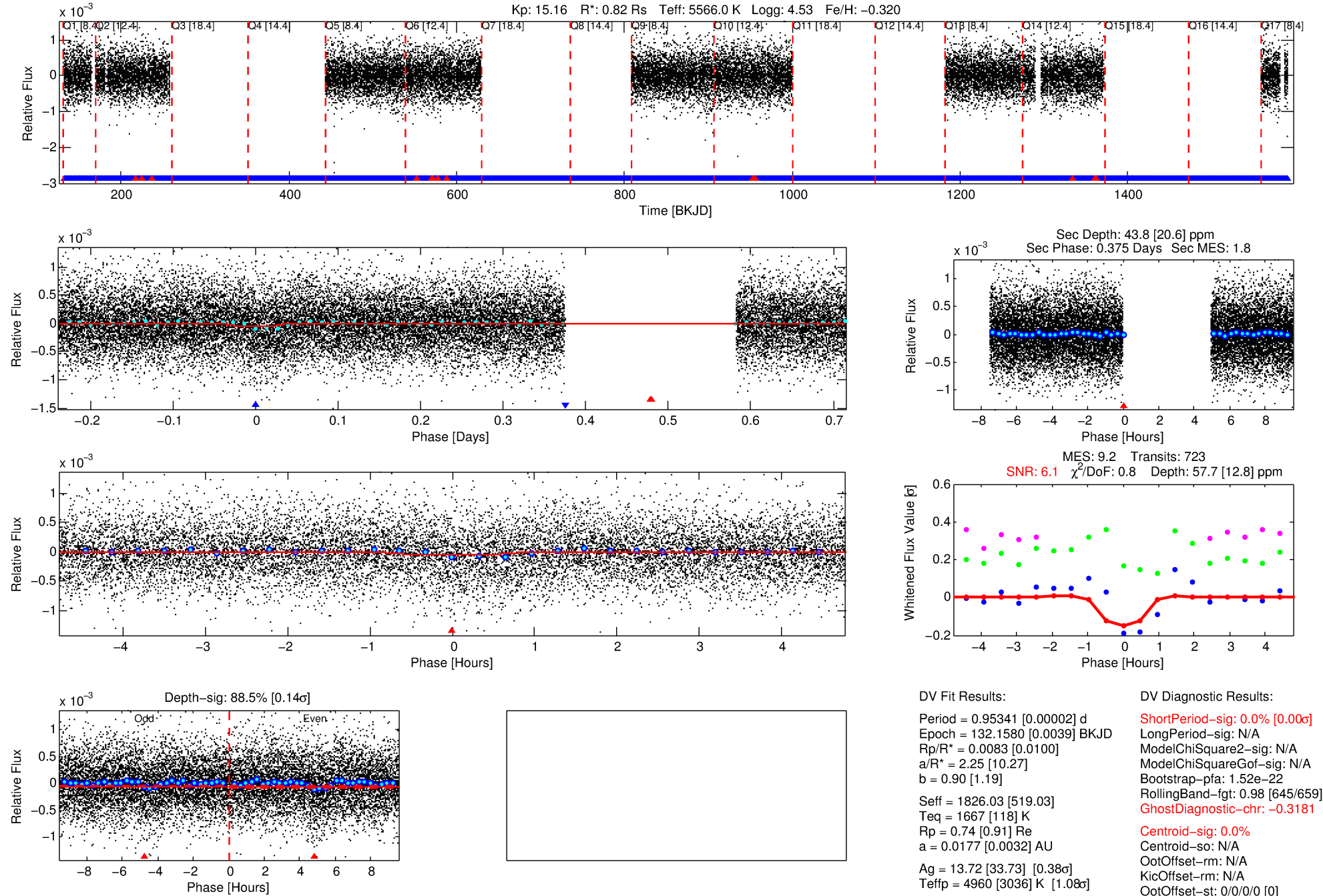
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007590723-02

No Significant Match Found

# DV One-Page Summary

KIC: 7590723 Candidate: 2 of 2 Period: 0.953 d



## DV Fit Results:

Period = 0.95341 [0.00002] d  
Epoch = 132.1580 [0.0039] BKJD  
Rp/R\* = 0.0083 [0.0100]  
a/R\* = 2.25 [10.27]  
b = 0.90 [1.19]  
Seff = 1826.03 [519.03]  
Teq = 1667 [118] K  
Rp = 0.74 [0.91] Re  
a = 0.0177 [0.0032] AU  
Ag = 13.72 [33.73] [0.38 $\sigma$ ]  
Teffp = 4960 [3036] K [1.08 $\sigma$ ]

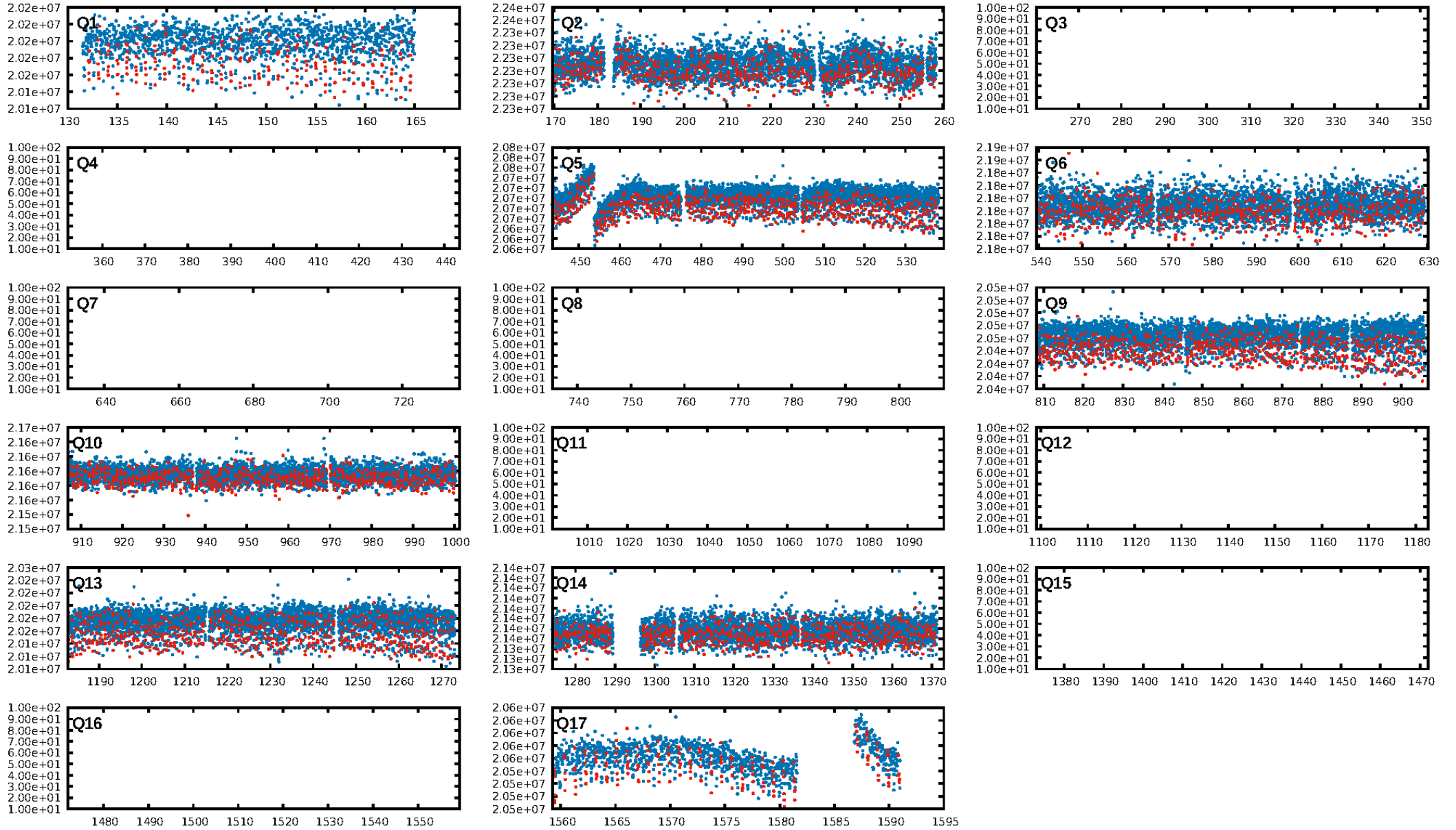
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.52e-22  
RollingBand-fgt: 0.98 [645/659]  
GhostDiagnostic-chr: -0.3181  
Centroid-sig: 0.0%  
Centroid-so: N/A  
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 [9/9]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 15:01:15 Z

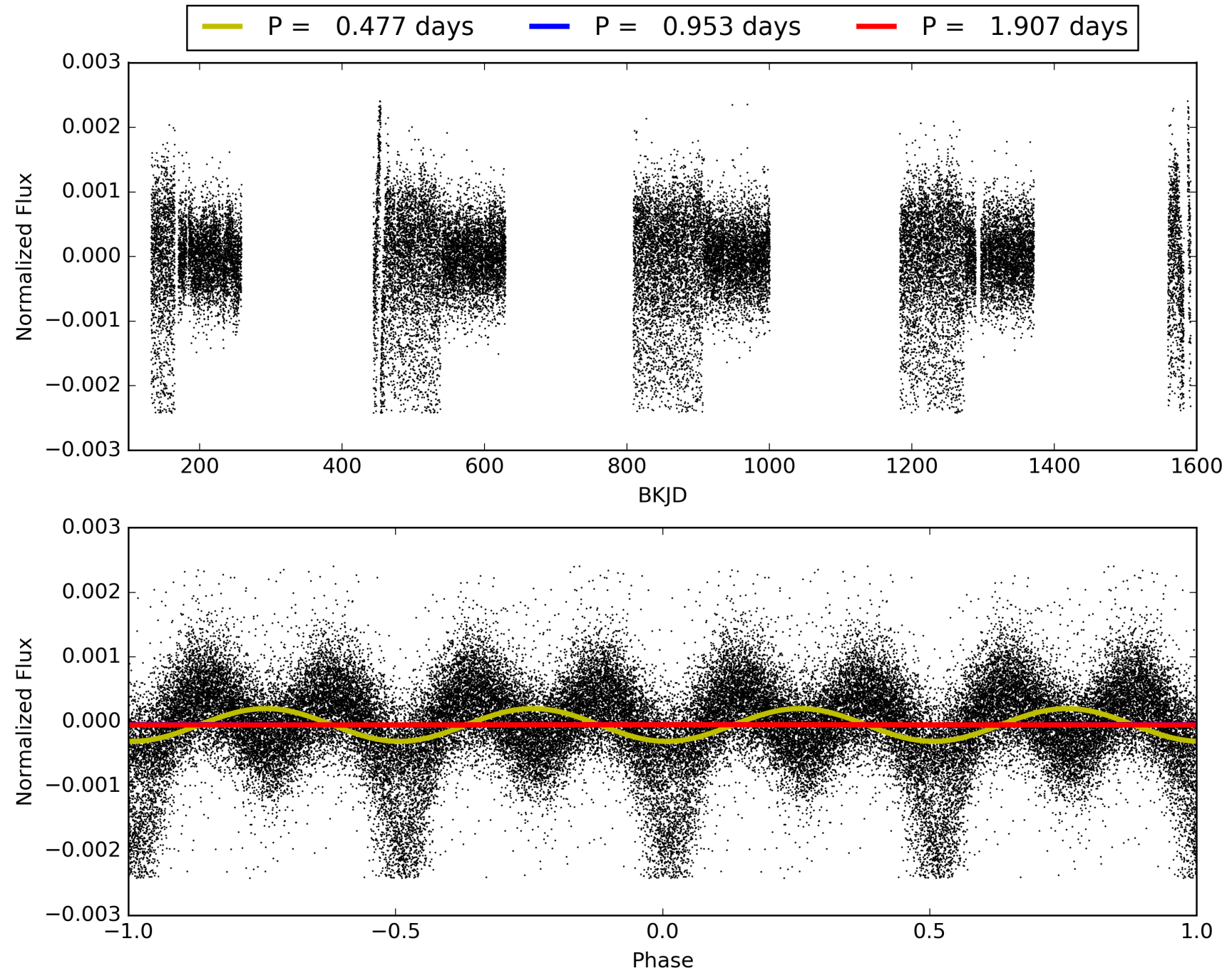
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007590723-02, PDC Light Curves



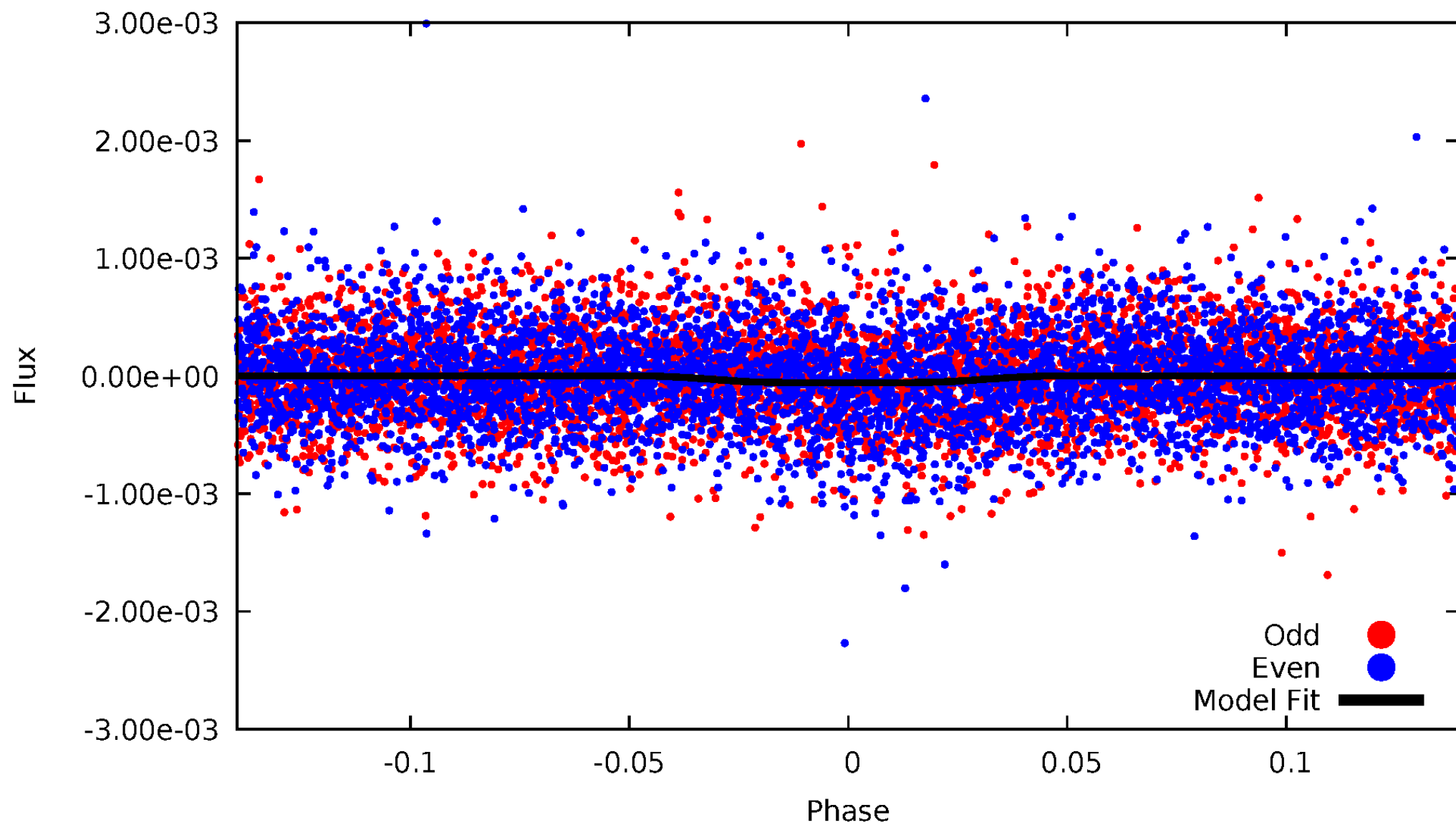


# TCE 007590723-02



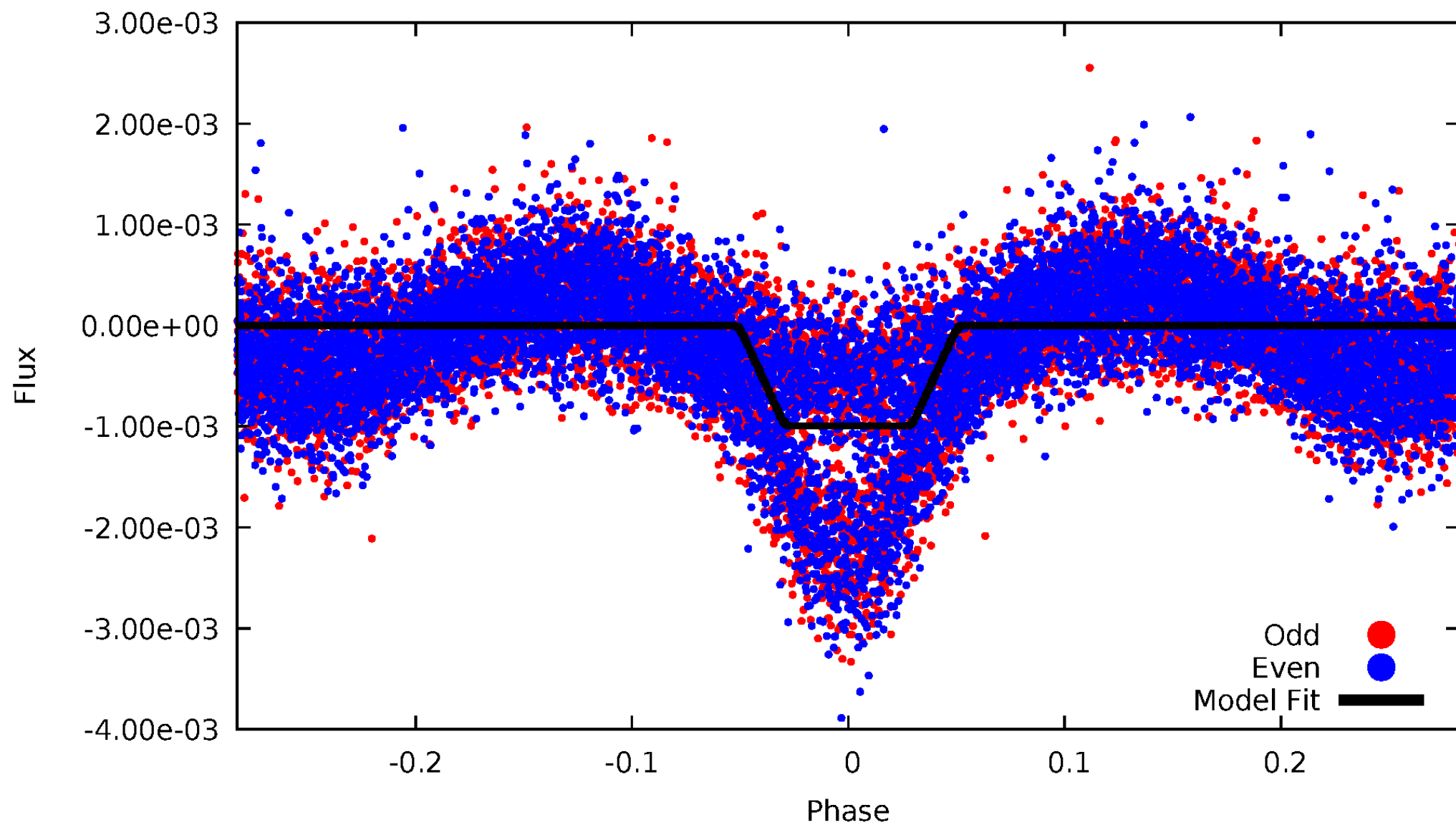
# DV Odd/Even

TCE 007590723-02



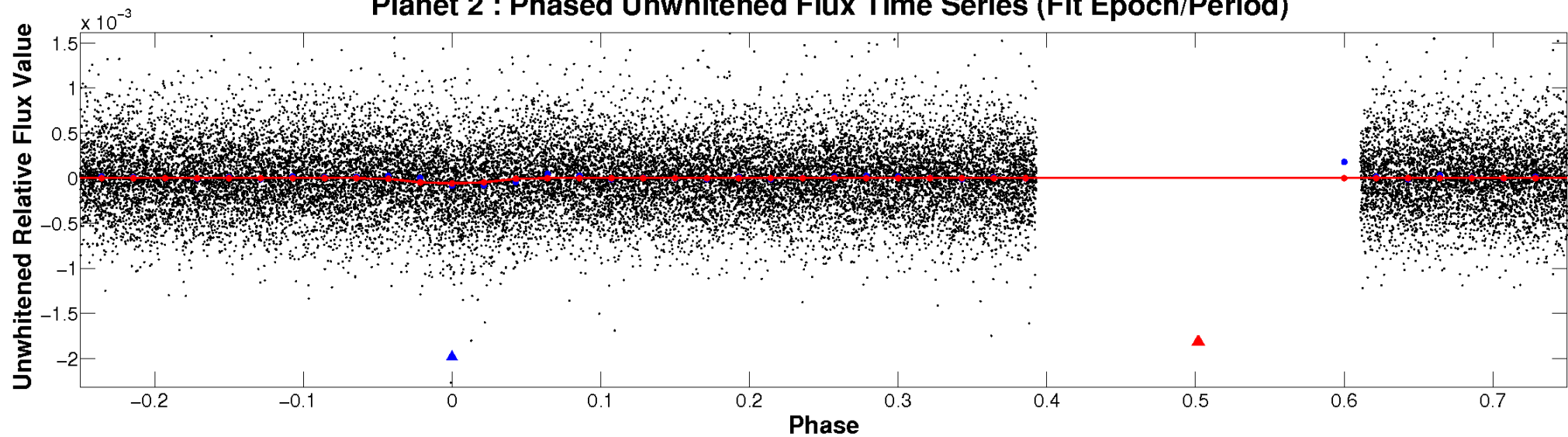
# ALT Odd/Even

TCE 007590723-02

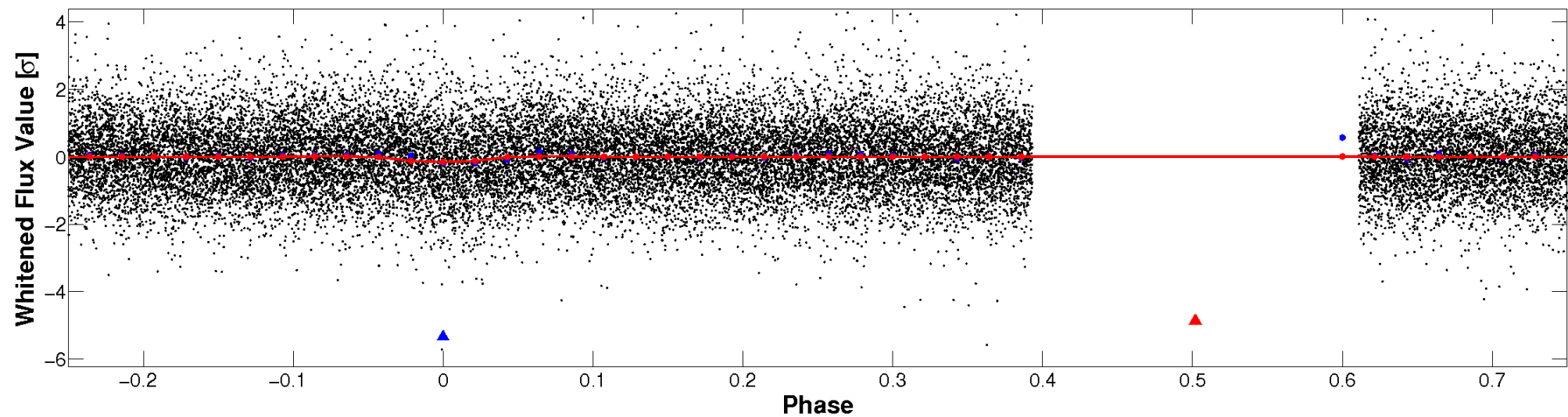


# Non-Whitened Vs. Whitened Light Curve

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

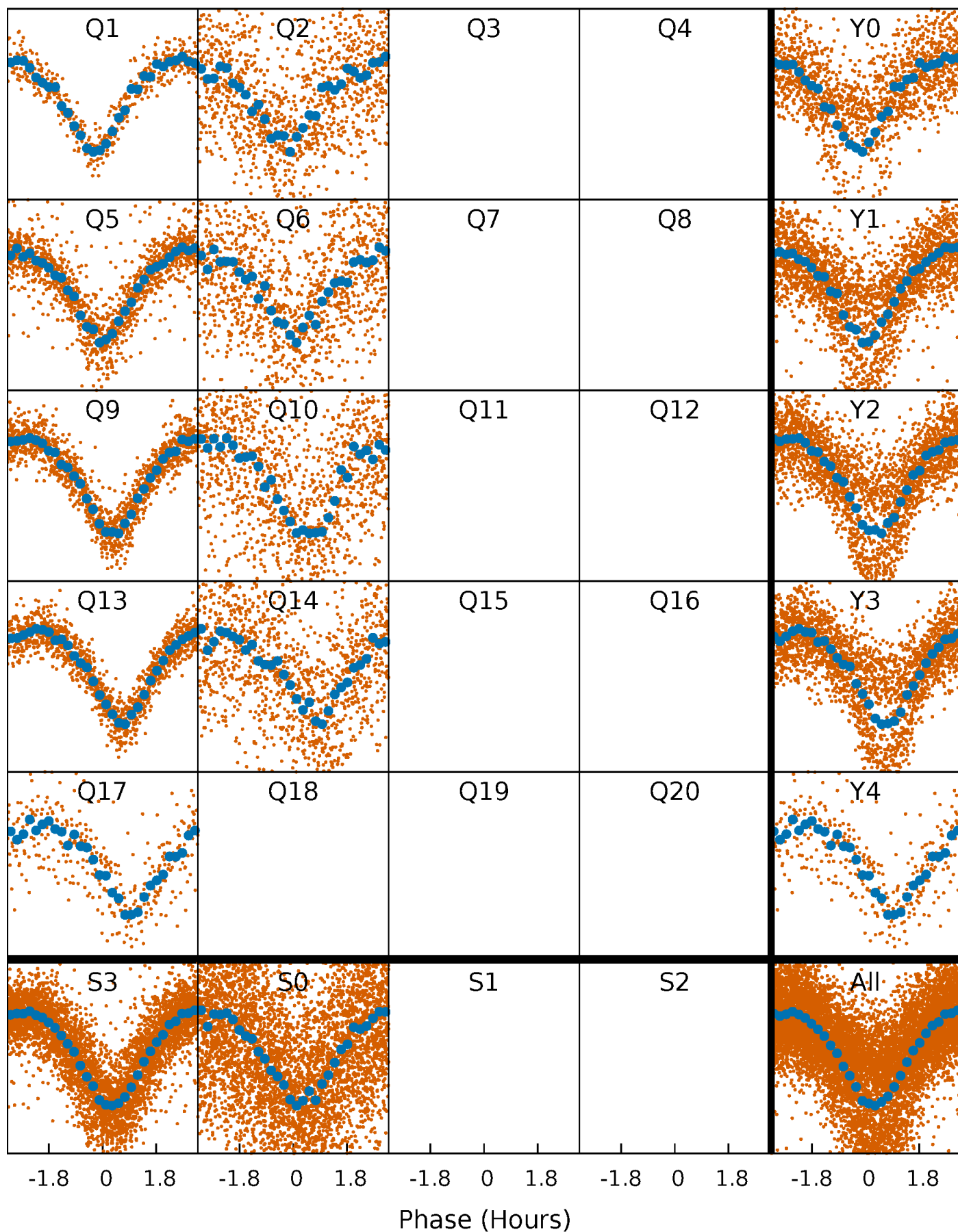


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

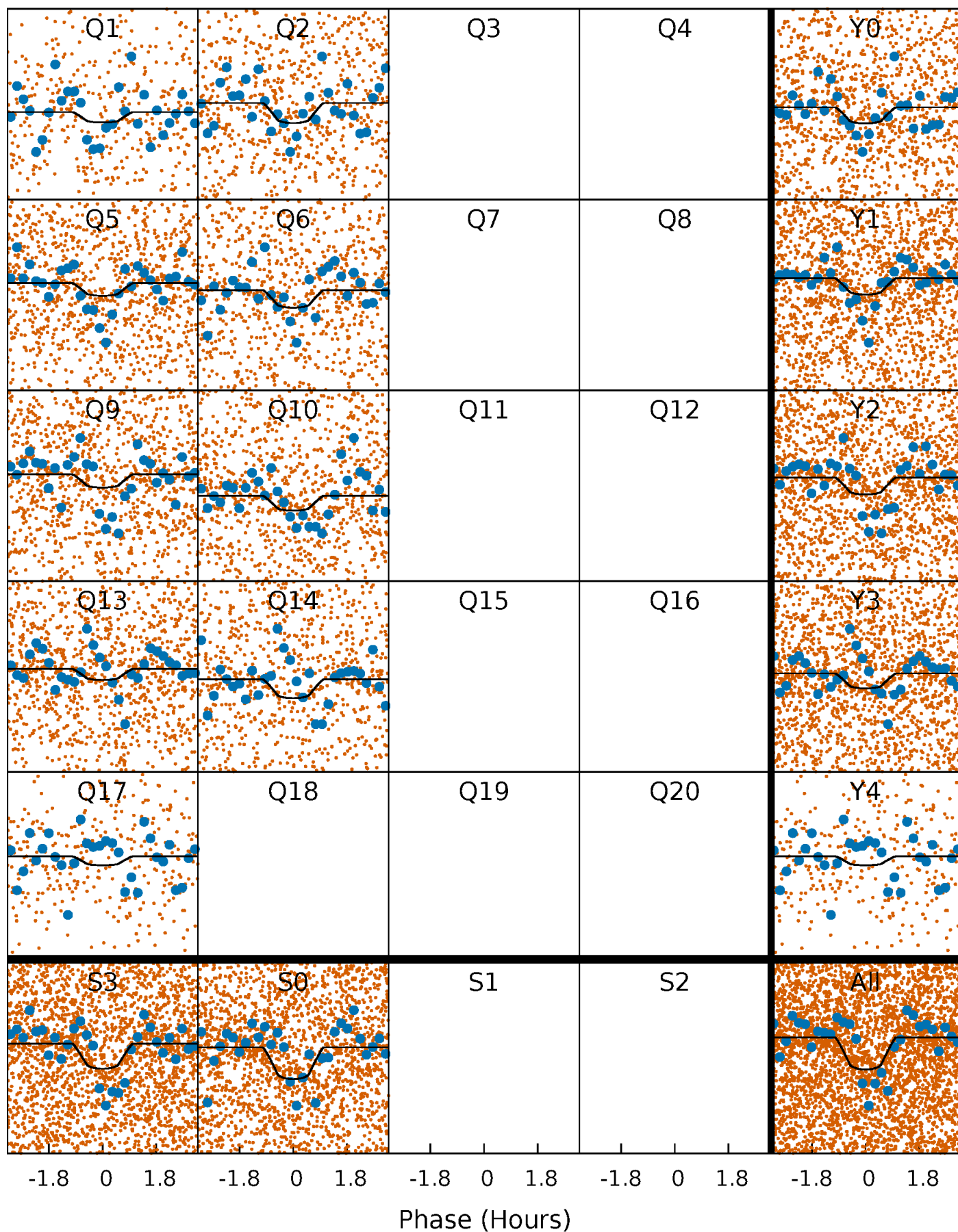
TCE 007590723-02 P= 0.953411 Days  $T_0=132.157980$  (BKJD)





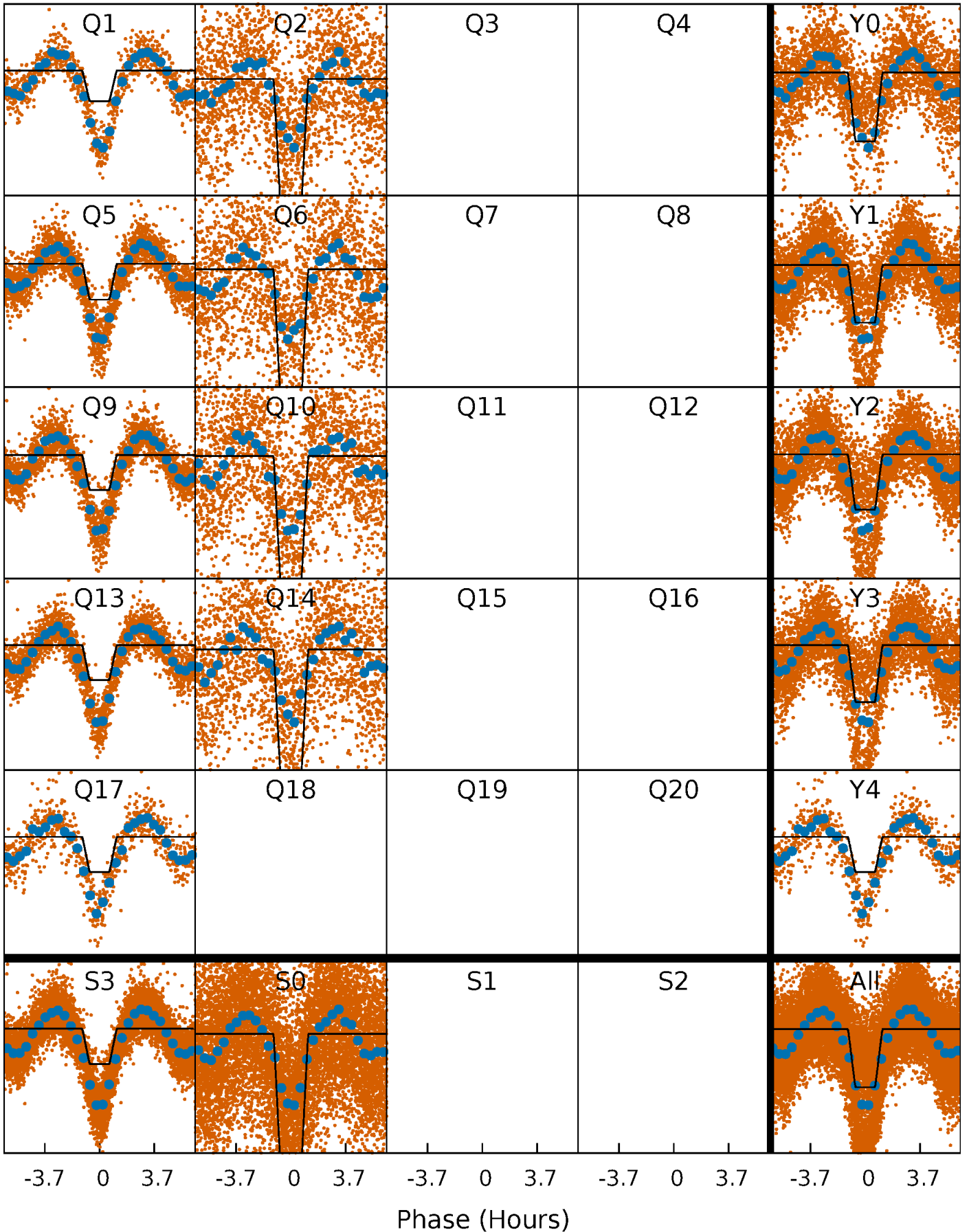
# DV Quarter-Phased Transit Curves

TCE 007590723-02   P= 0.953411 Days    $T_0=132.157980$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

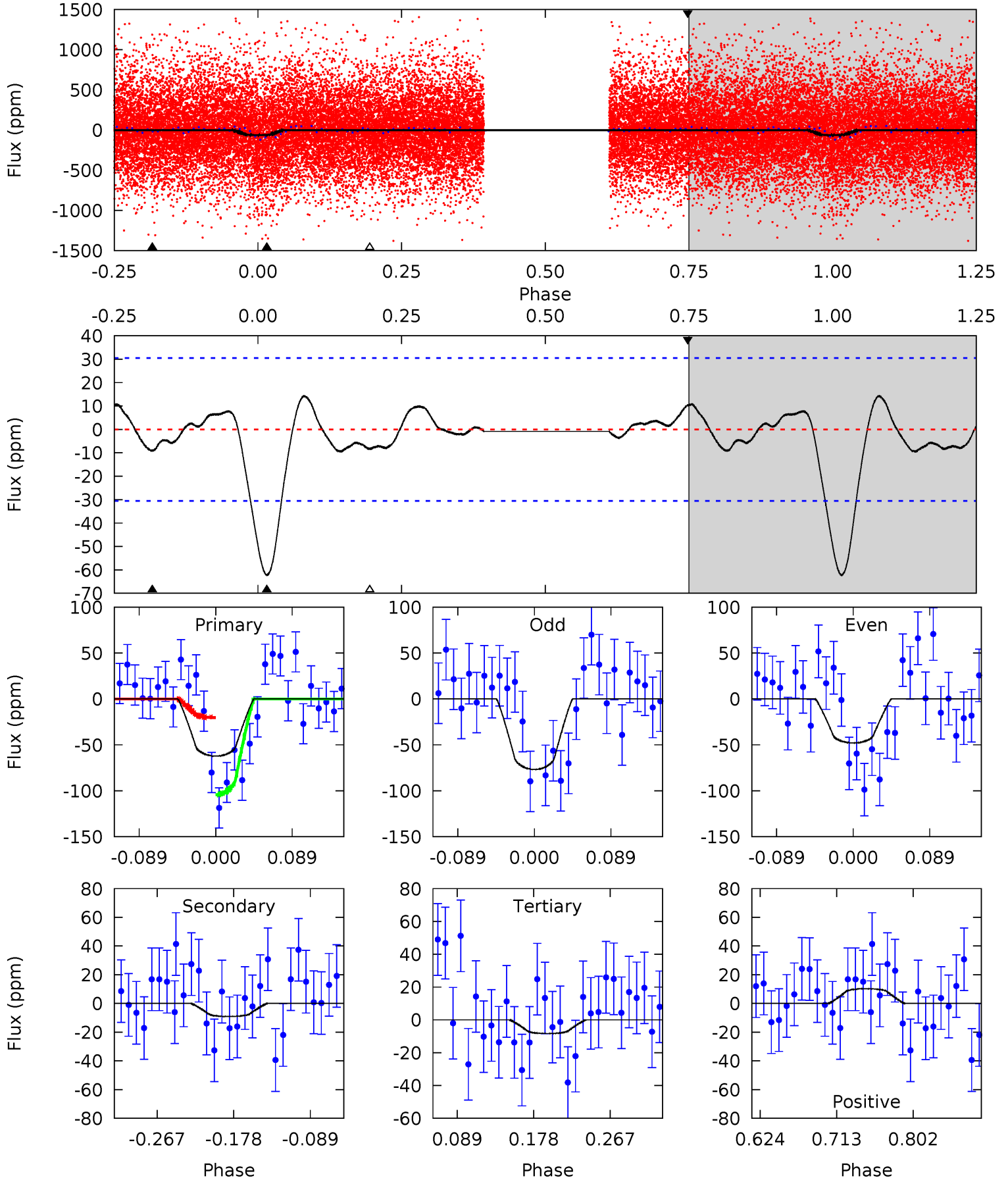
TCE 007590723-02   P= 0.953450 Days    $T_0=132.142066$  (BKJD)



# DV Model-Shift Uniqueness Test

007590723-02, P = 0.953411 Days, E = 131.204569 Days

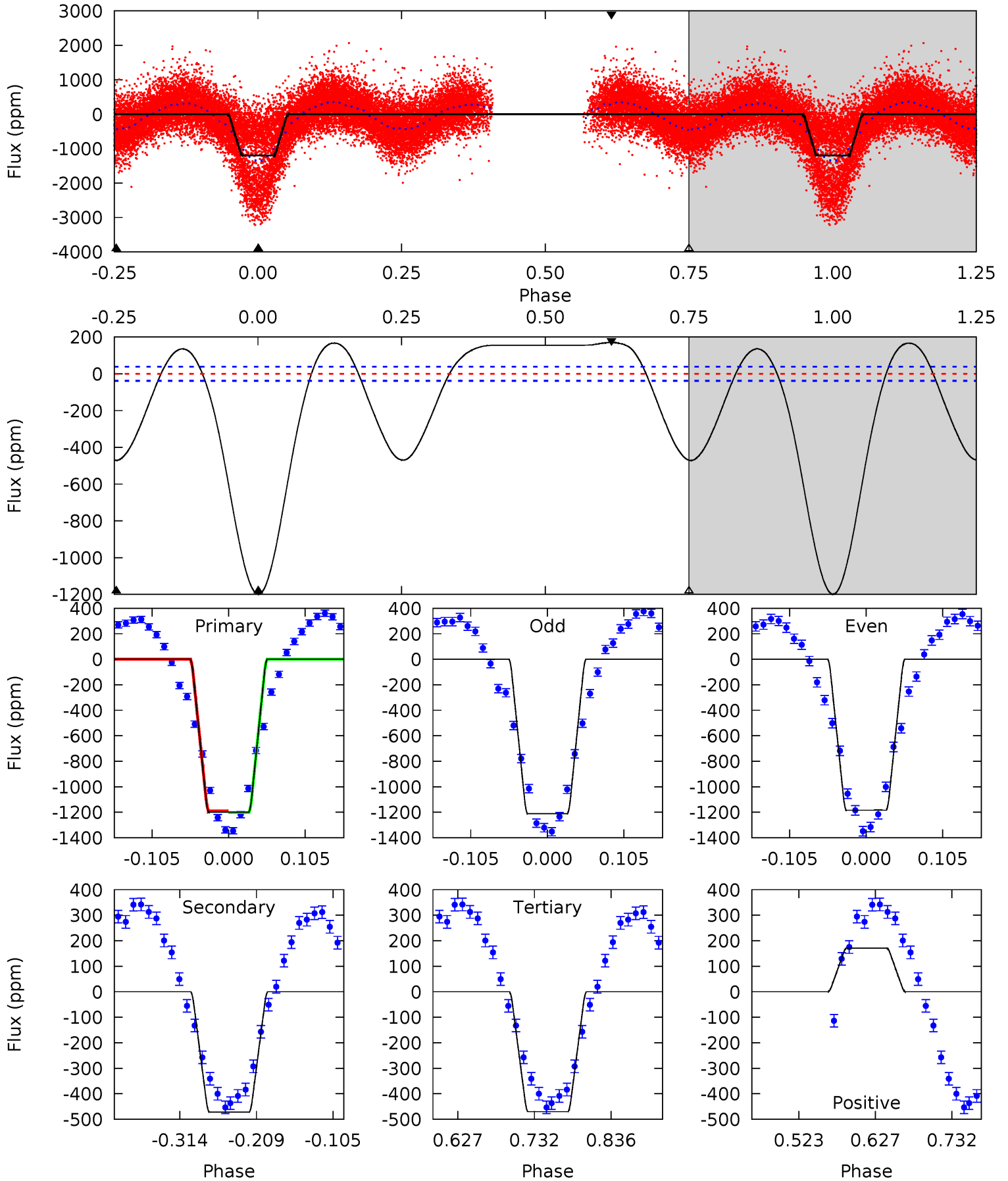
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.37	1.36	1.25	1.55	4.59	1.70	0.81	8.12	7.82	0.11	-0.19	2.18	1.50	0.19	6.32



# Alt Model-Shift Uniqueness Test

007590723-02, P = 0.953450 Days, E = 131.188616 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
142.2	55.9	55.8	20.3	4.56	1.62	26.9	86.5	121.9	0.20	35.6	1.55	1.27	0.13	0.79



### Stellar Parameters For KIC 007590723

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5566^{+169}_{-152}$	$4.526^{+0.063}_{-0.137}$	$-0.320^{+0.300}_{-0.300}$	$0.817^{+0.181}_{-0.090}$	$0.818^{+0.097}_{-0.071}$	$2.114^{+0.643}_{-0.823}$
	+3%/-3%	+1%/-3%	+94%/-94%	+22%/-11%	+12%/-9%	+30%/-39%
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 007590723-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-9 \pm 7$	$1.00^{+0.82}_{-0.65}$	$2360^{+131}_{-97}$	$3176^{+1592}_{-5423}$	$1.260^{+8.780}_{-1.021}$
Alt.	$-472 \pm 8$	$2.83^{+1.00}_{-0.90}$	$2358^{+129}_{-99}$	$4742^{+929}_{-510}$	$10^{+12}_{-5}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

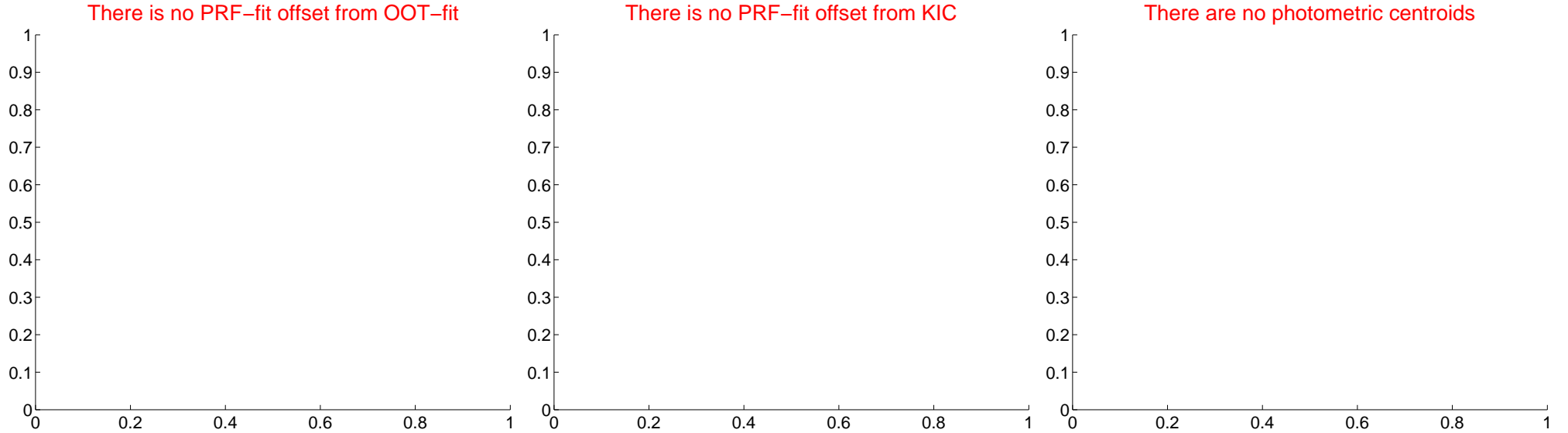
## DV Centroid Data

Supplemental centroid analysis for 007590723-02. Kepler magnitude: 15.16. Transit SNR 6.12

There are 0 quarters with good PRF difference image offsets

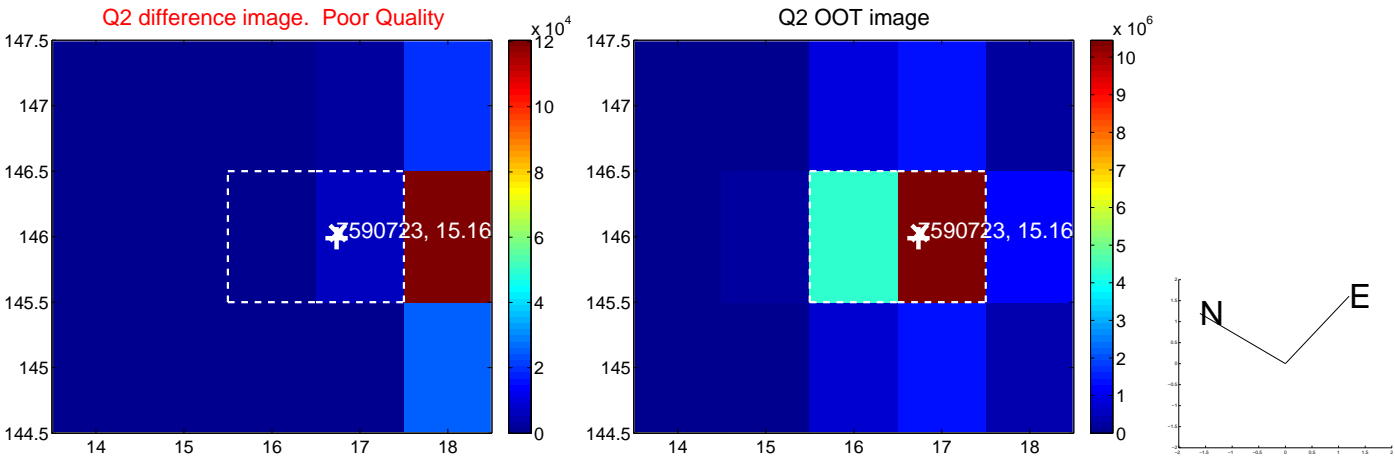
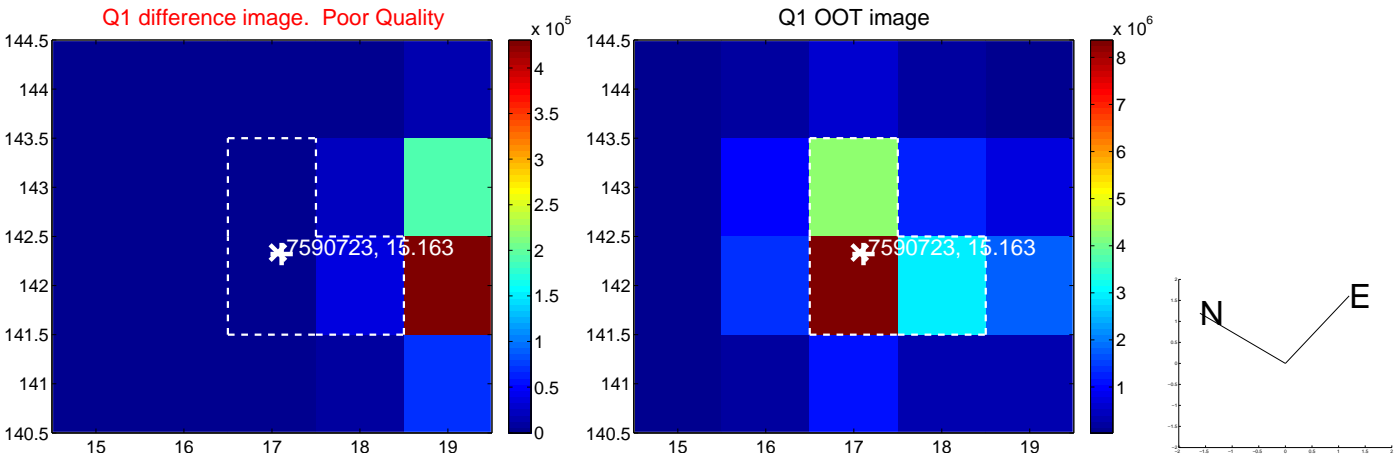
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	—	—	—	—



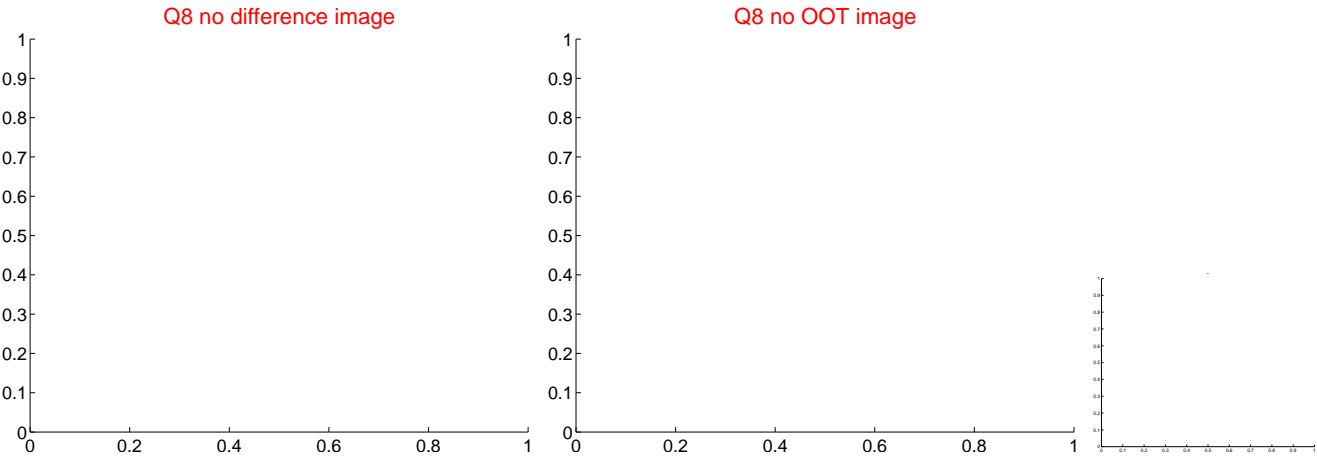
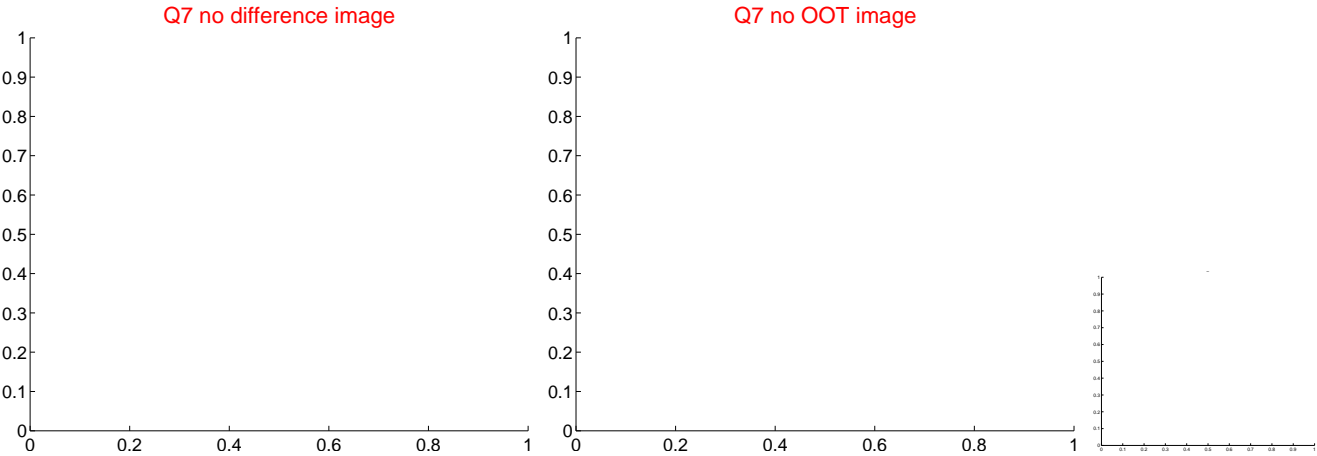
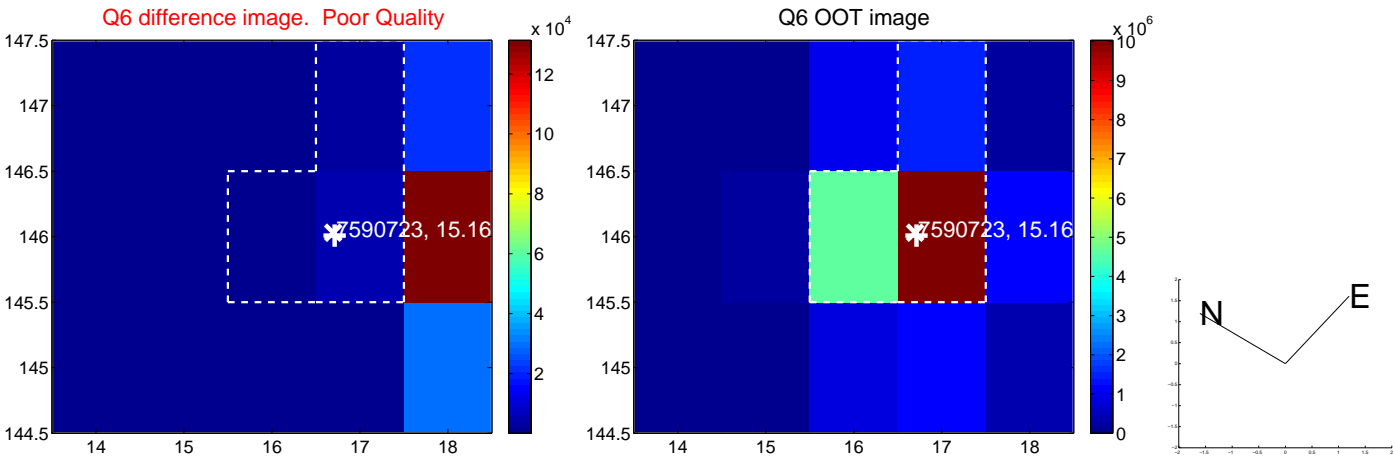
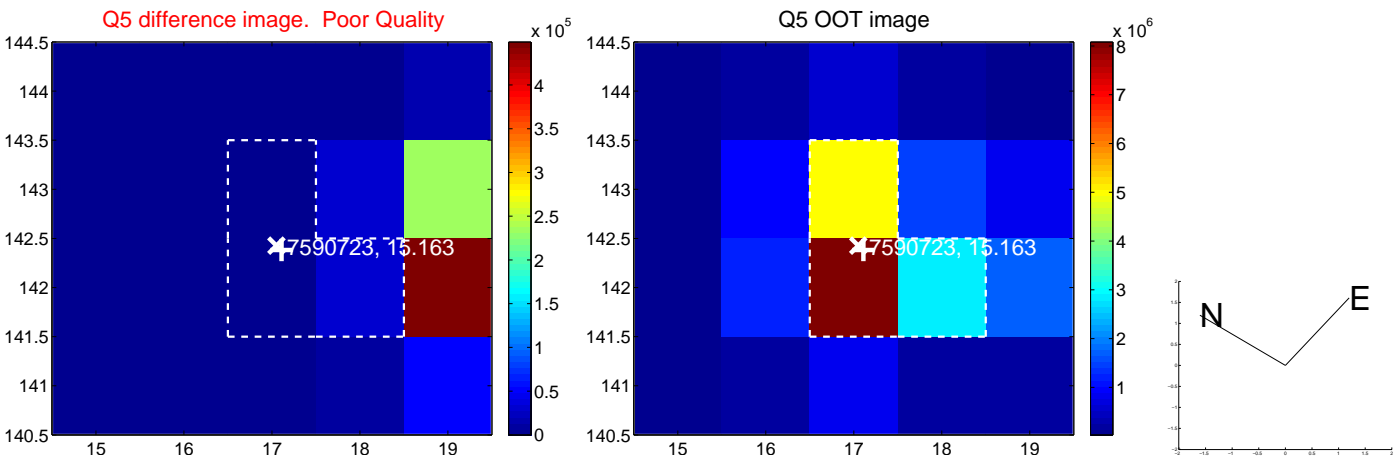
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

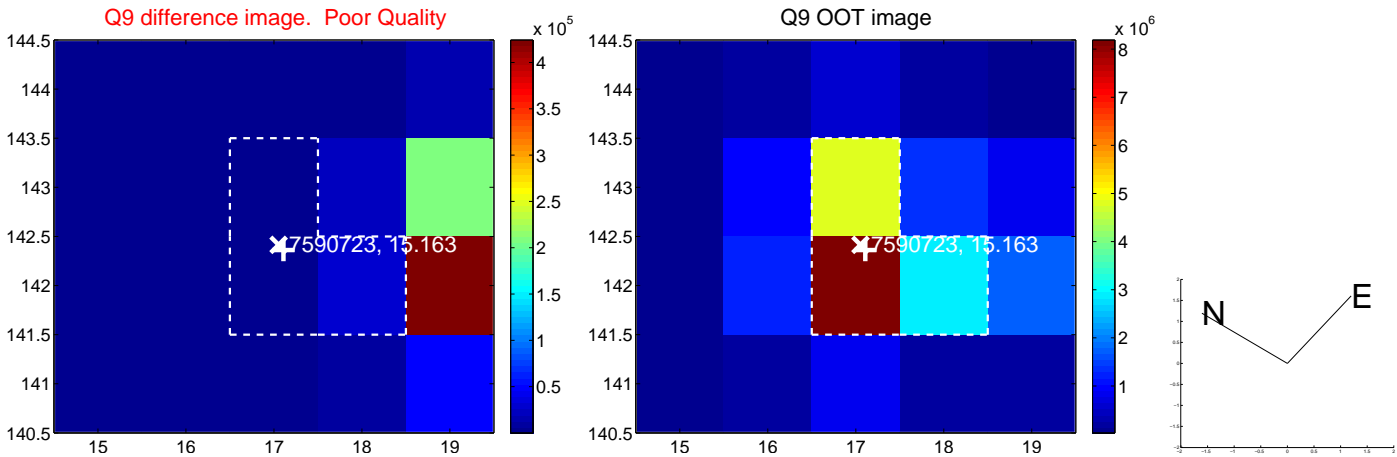




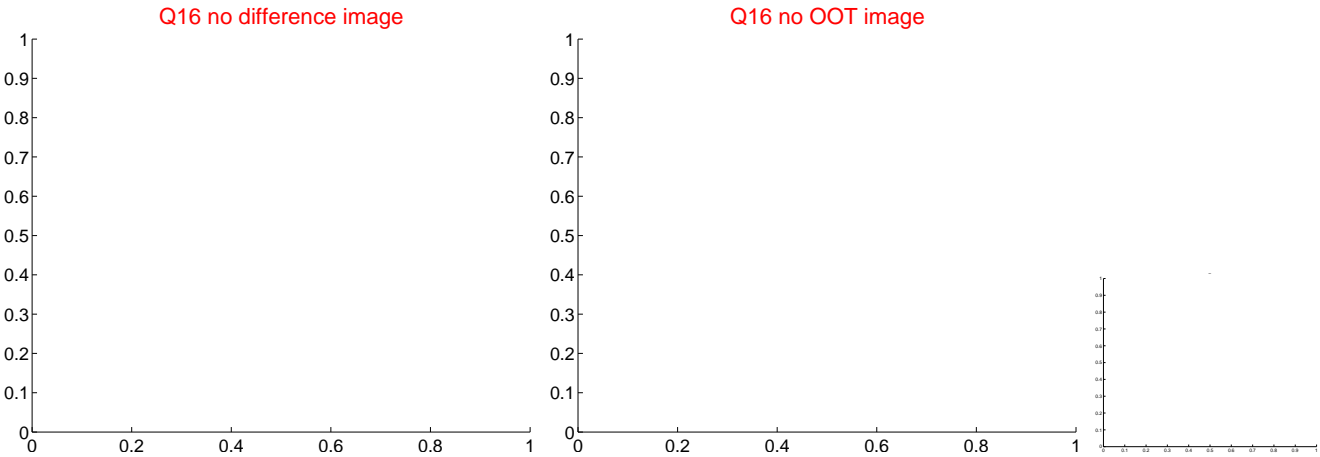
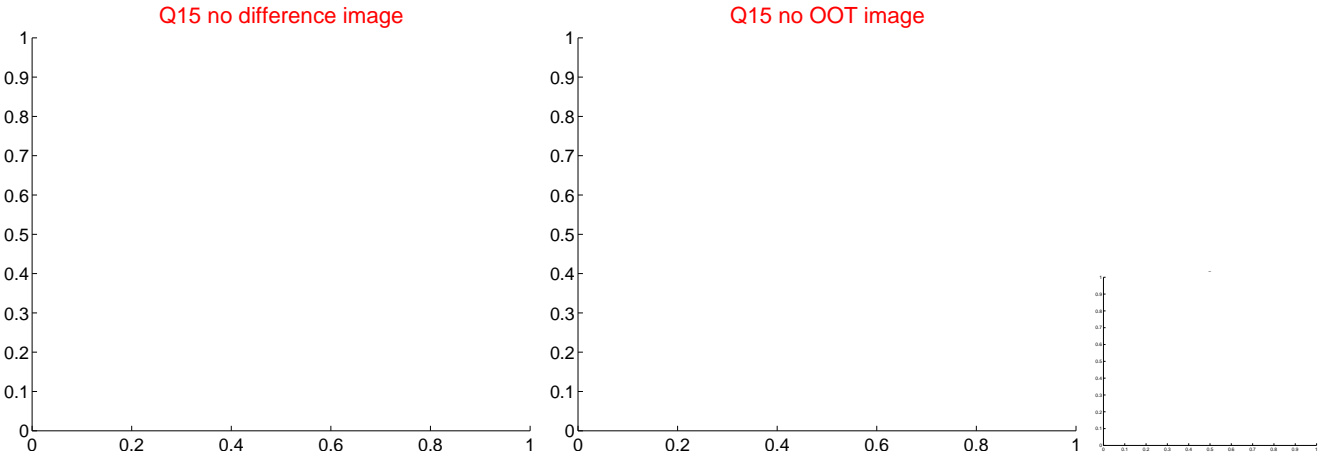
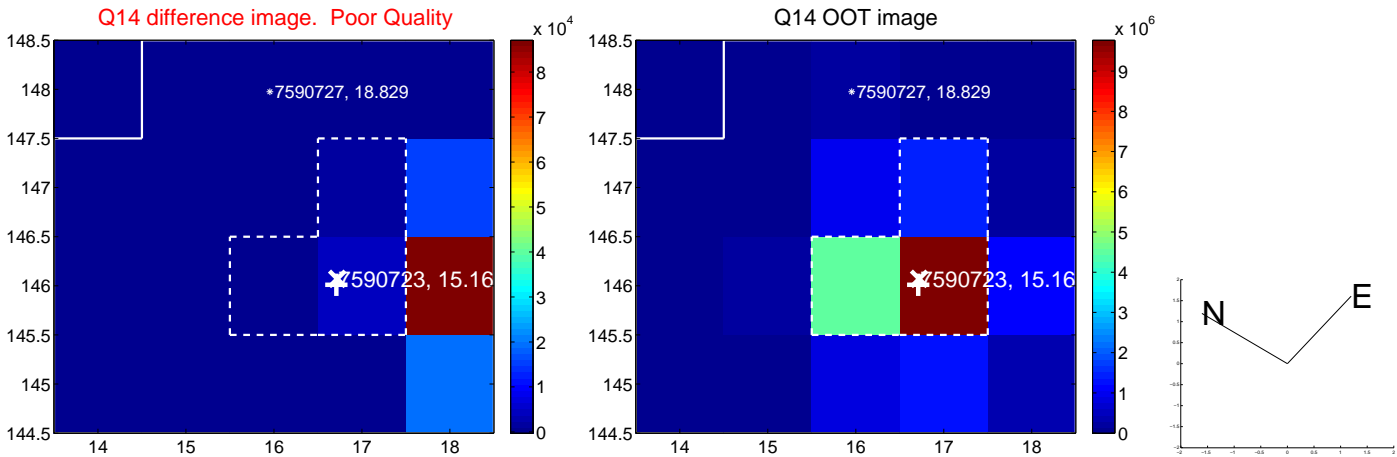
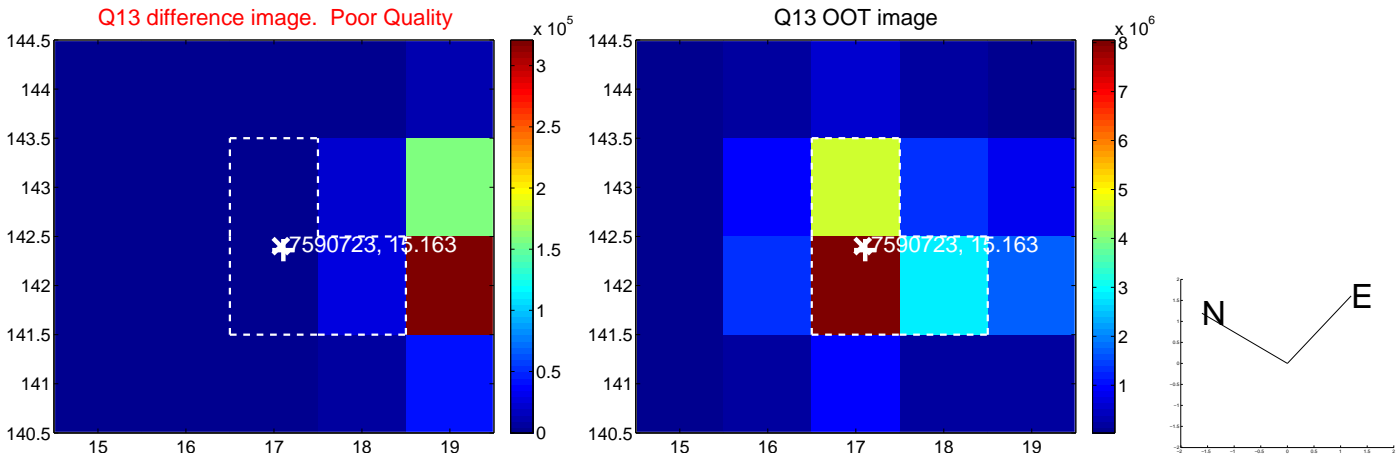
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



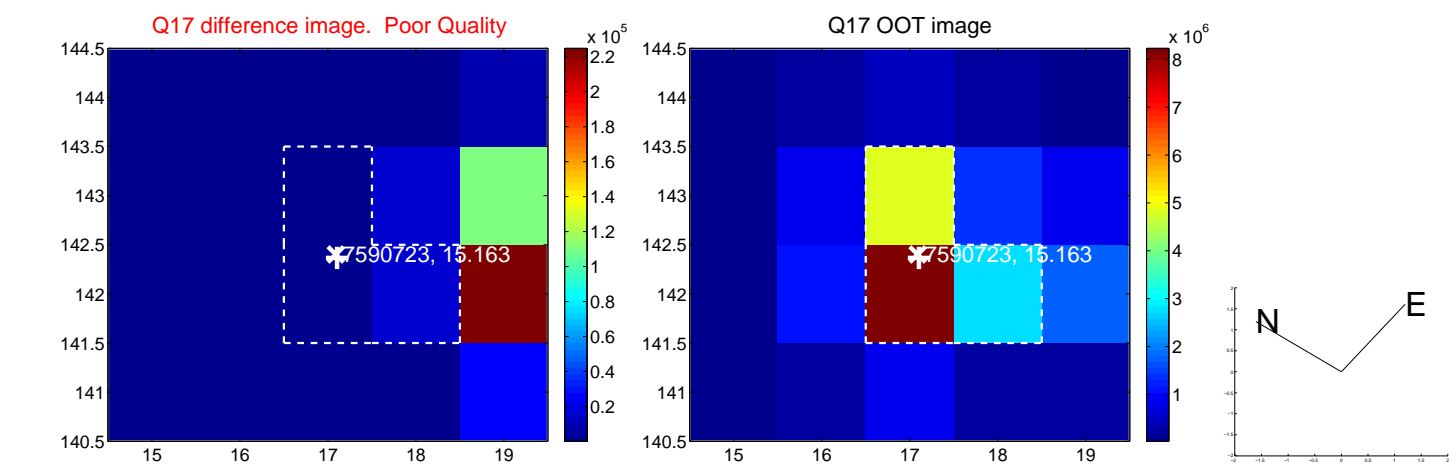
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



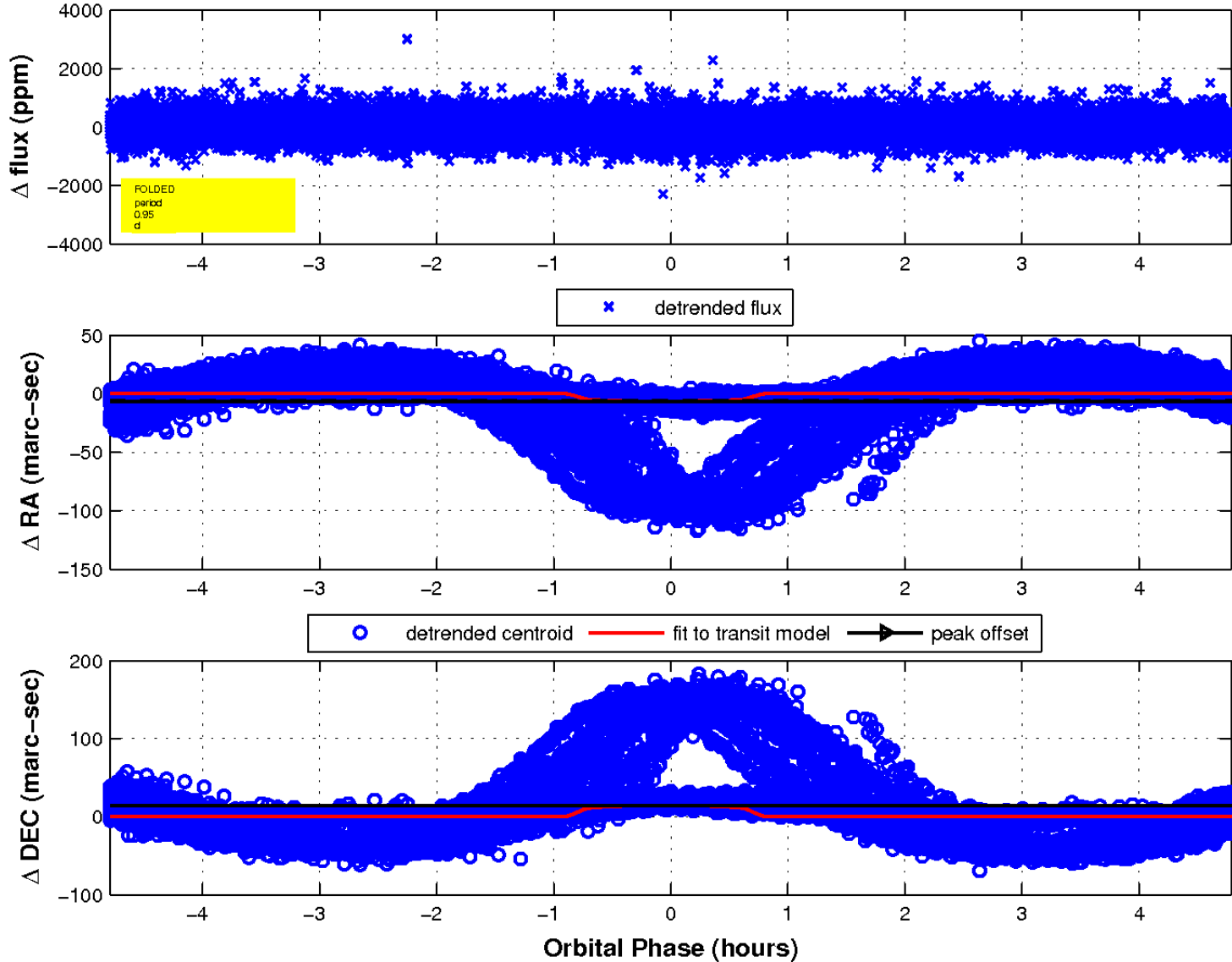
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



# UKIRT Image

Declination

