

## KIC 009118695

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118695-01	OBS	No	1.212130	131.991523	66.9	5.233	11.4	10.5	0.89	5491	0.73	1532.44
009118695-03	OBS	No	229.548298	188.269898	310.0	0.528	18.1	1.5	0.89	5491	1.98	1.41
009118695-04	OBS	No	229.550613	189.072332	1287.8	15.000	18.3	-1.0	0.89	5491	3.14	1.41
009118695-06	OBS	No	114.100566	214.813030	476.3	4.871	12.8	4.9	0.89	5491	2.18	3.58
009118695-07	OBS	No	179.141021	245.717566	749.1	12.000	12.2	-1.0	0.89	5491	2.40	1.96
009118695-08	OBS	No	194.864364	230.808037	803.2	12.542	15.1	5.6	0.89	5491	2.56	1.75
009118695-09	OBS	No	444.098224	158.648730	0.5	4.711	10.2	0.0	0.89	5491	0.07	0.58
009118695-10	OBS	No	183.107433	183.225305	3055.0	27.280	10.6	9.0	0.89	5491	4.85	1.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118695-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009118695-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009118695-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS
009118695-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

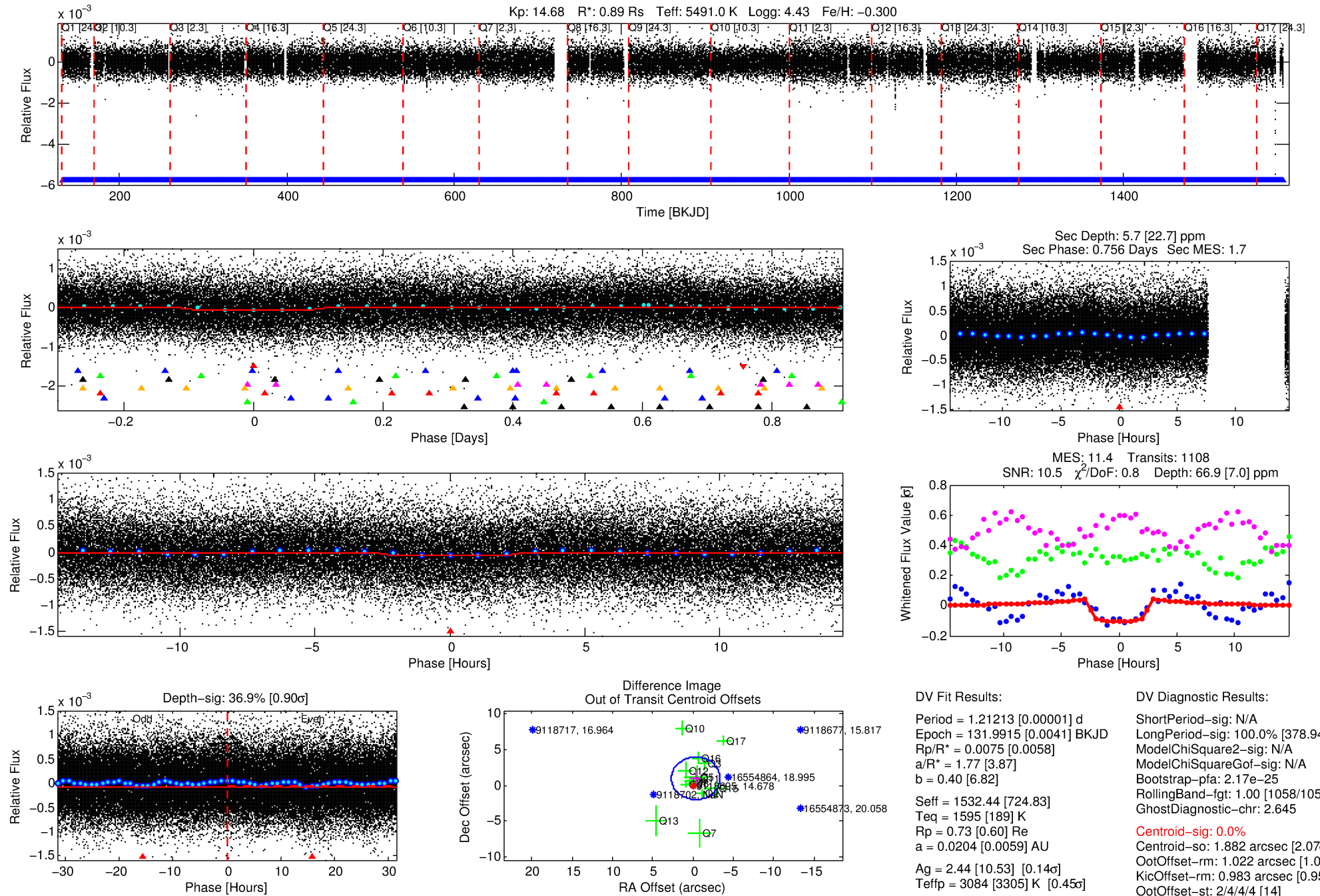
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009118695-01

No Significant Match Found

# DV One-Page Summary

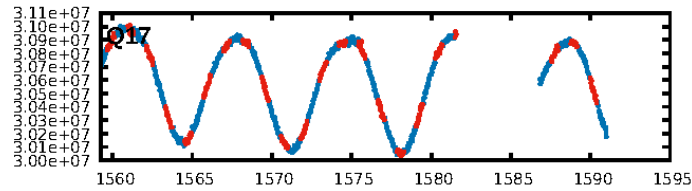
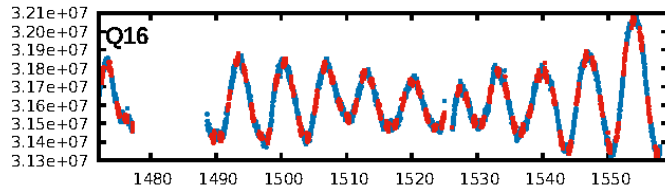
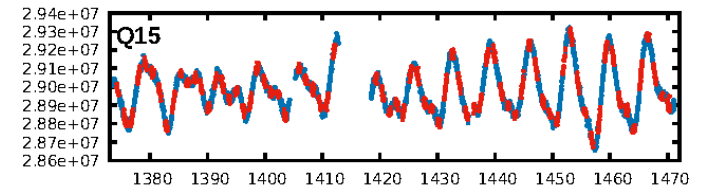
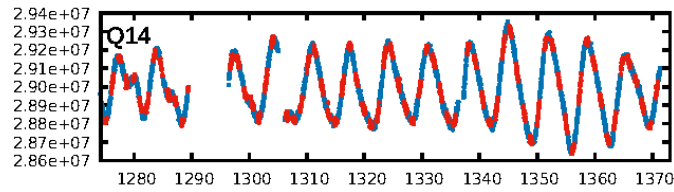
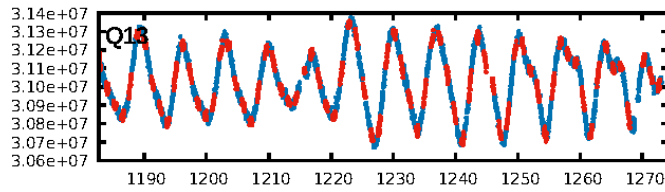
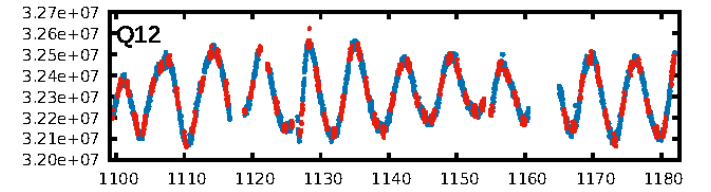
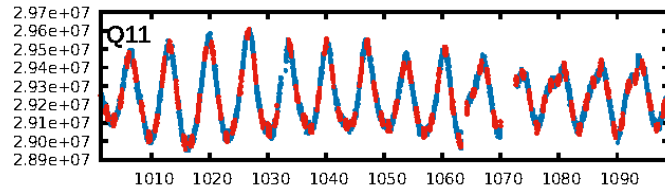
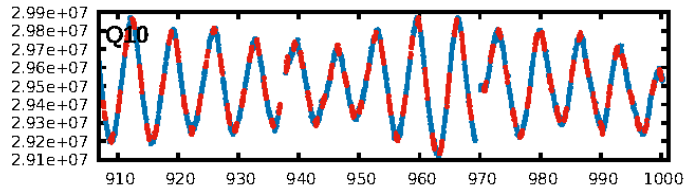
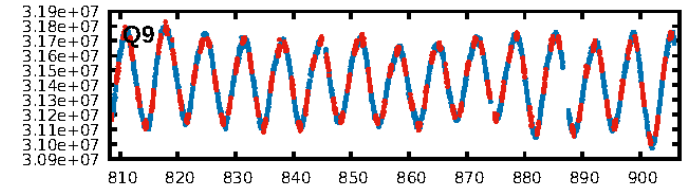
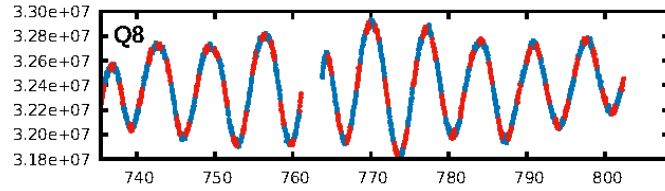
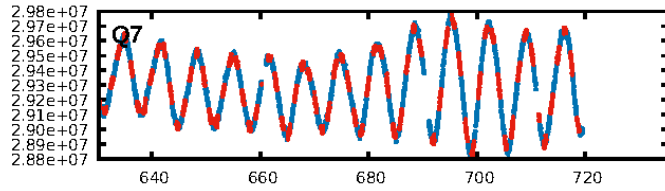
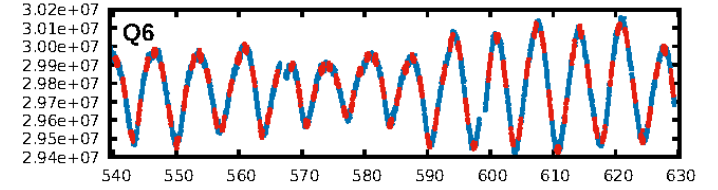
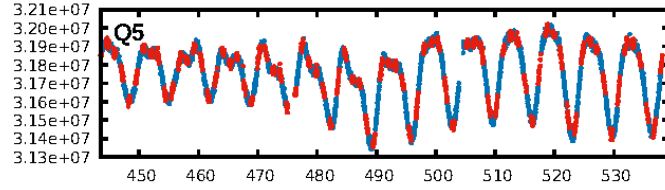
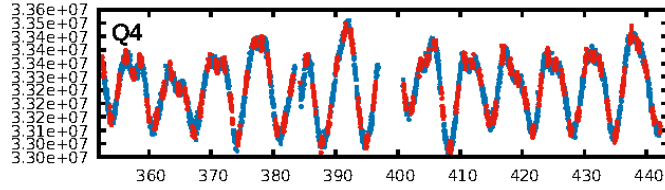
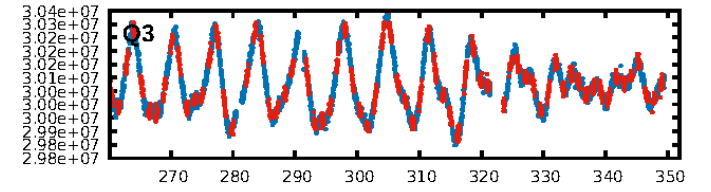
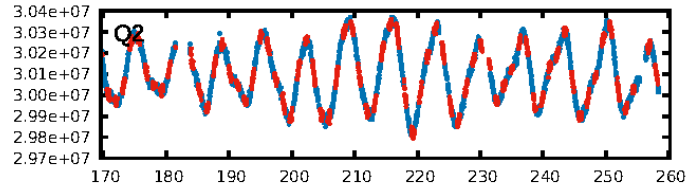
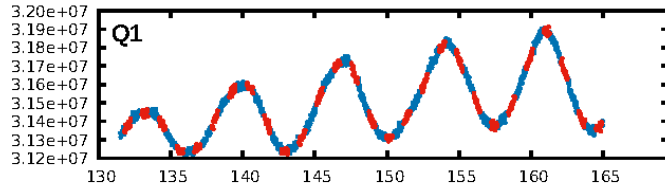
KIC: 9118695 Candidate: 1 of 10 Period: 1.212 d



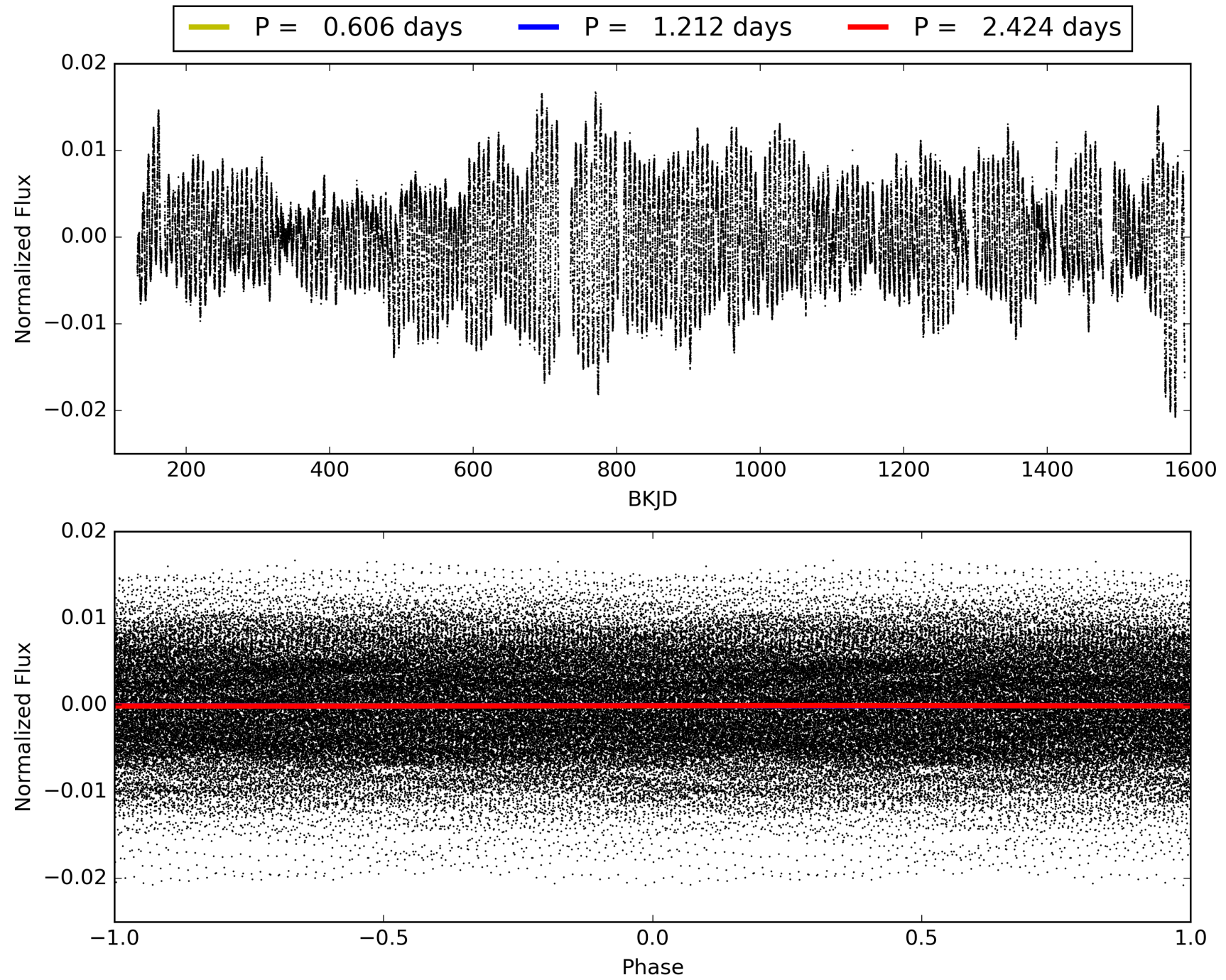
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:44:25 Z

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

# TCE 009118695-01, PDC Light Curves



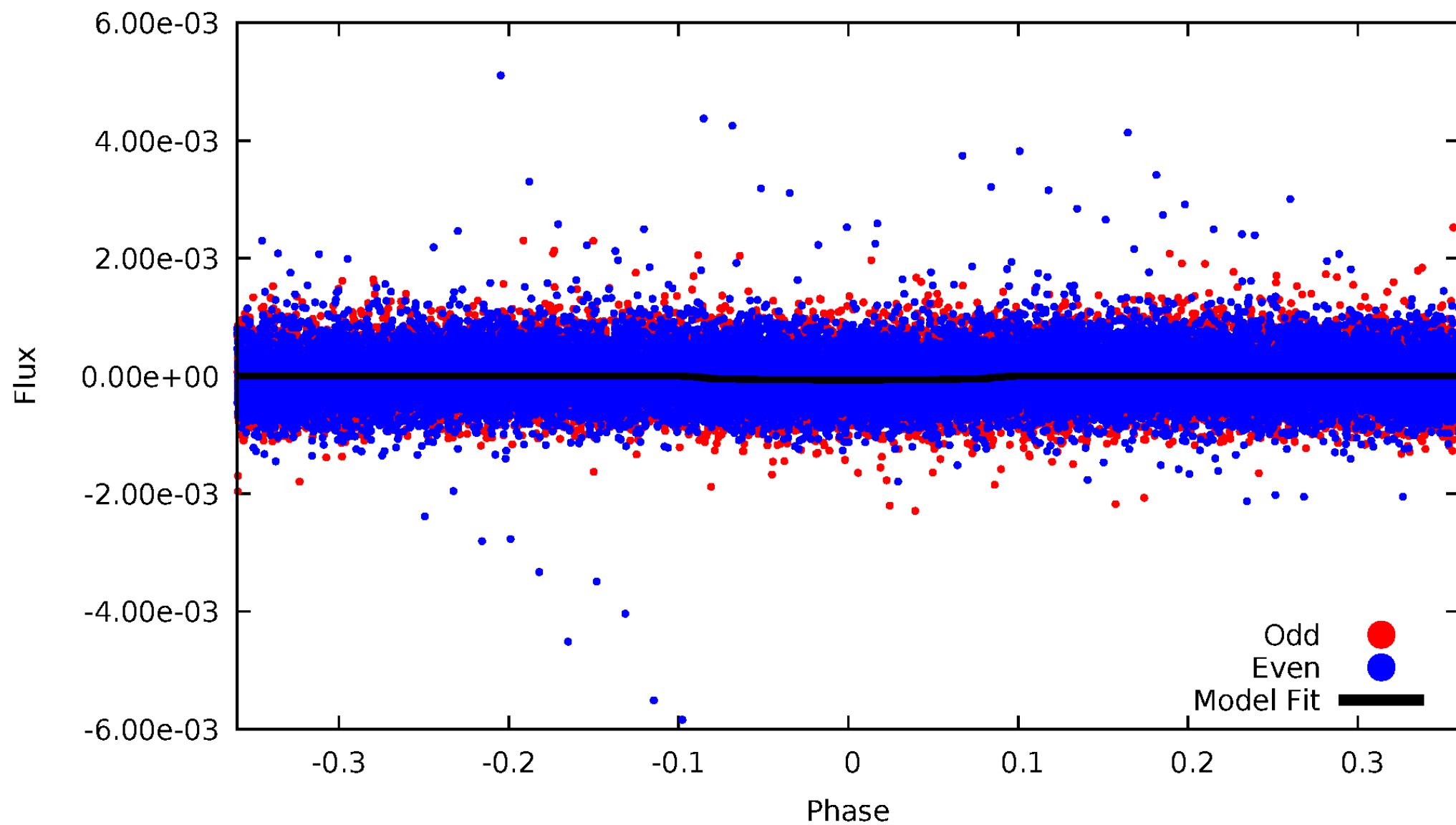
TCE 009118695-01





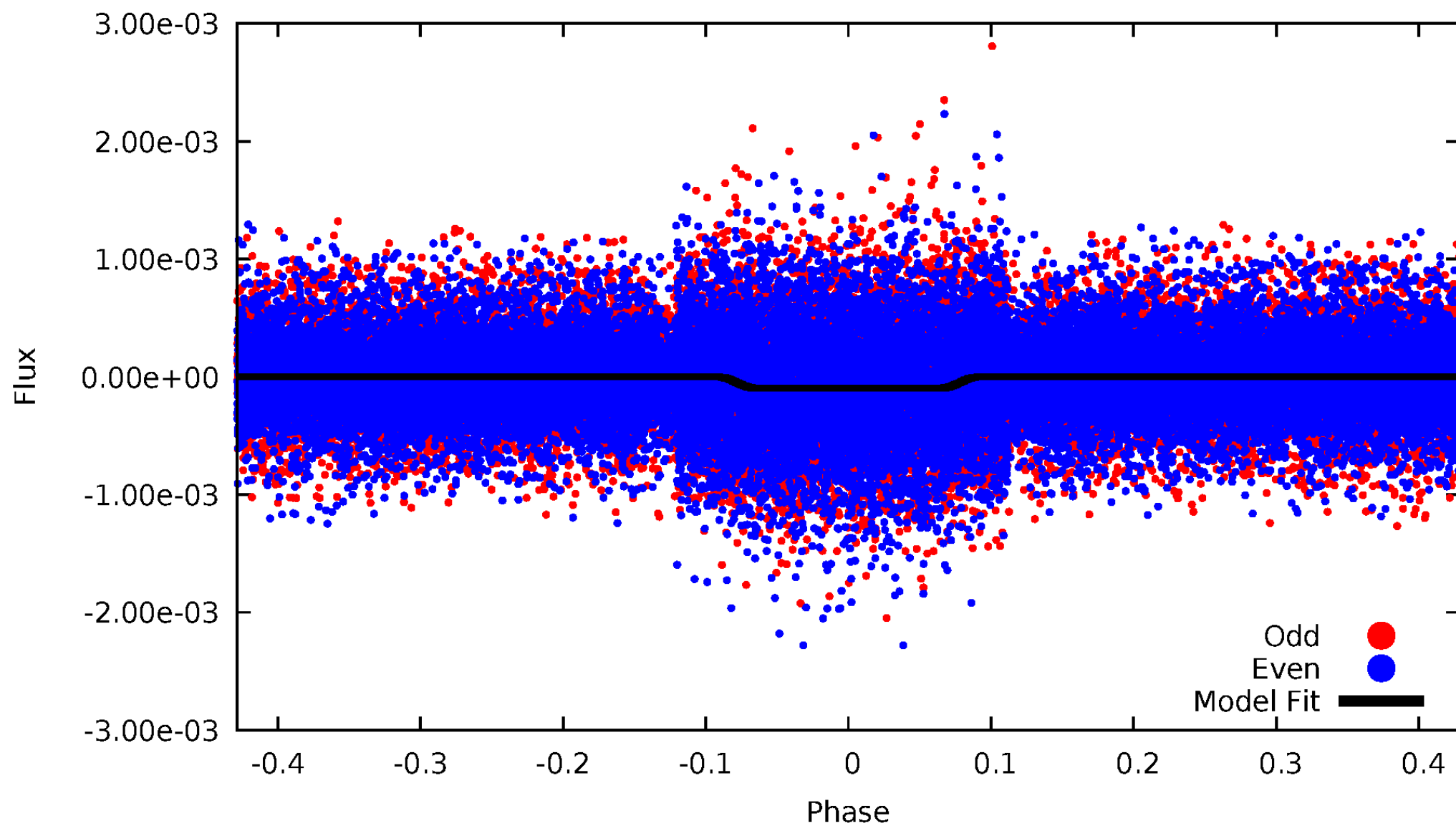
# DV Odd/Even

TCE 009118695-01



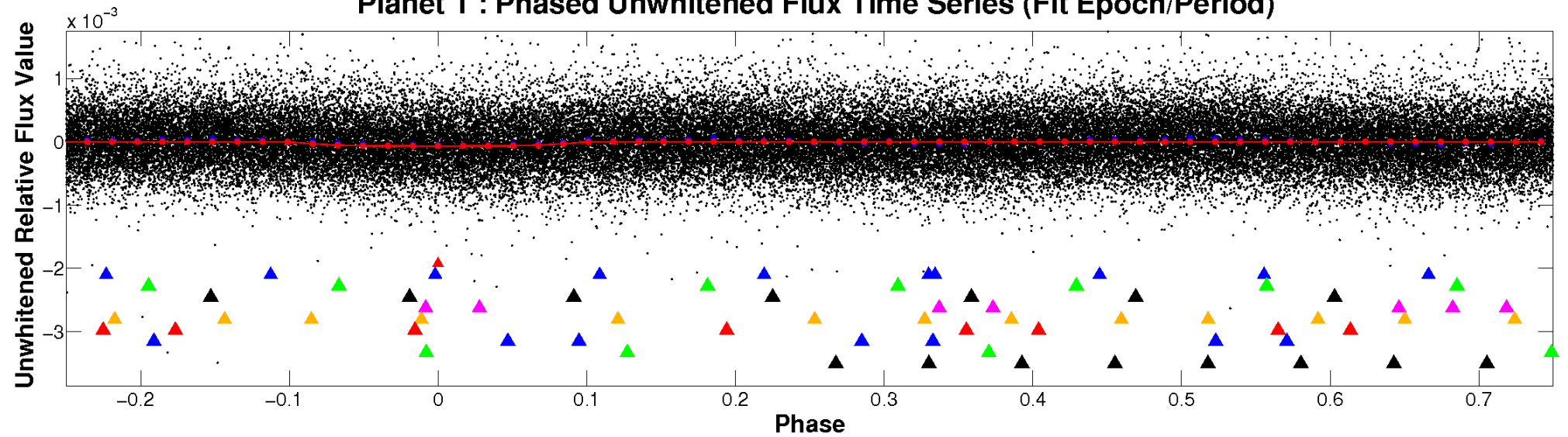
# ALT Odd/Even

TCE 009118695-01

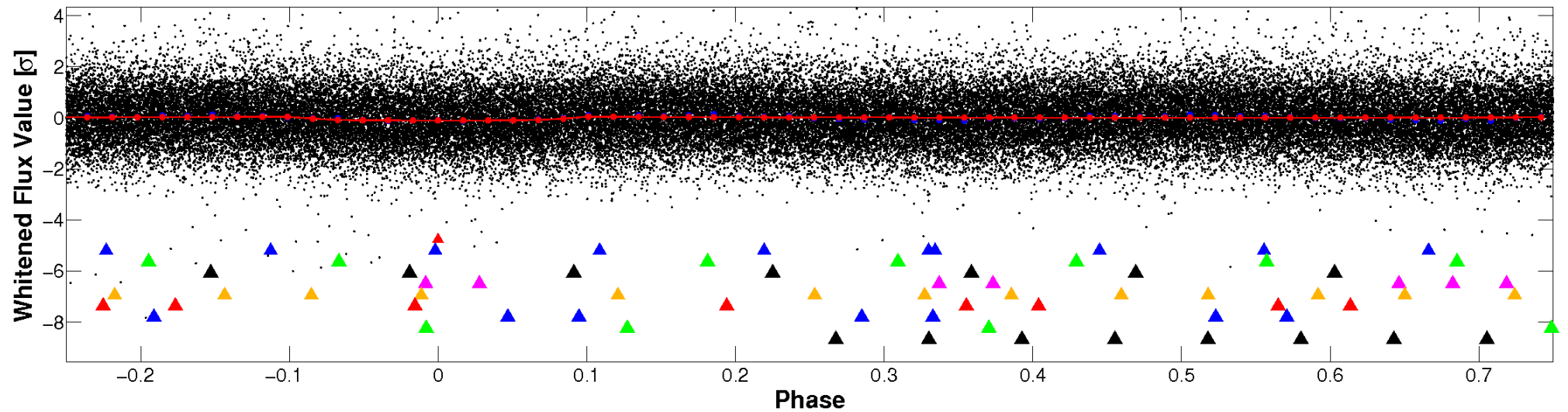


# Non-Whitened Vs. Whitened Light Curve

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

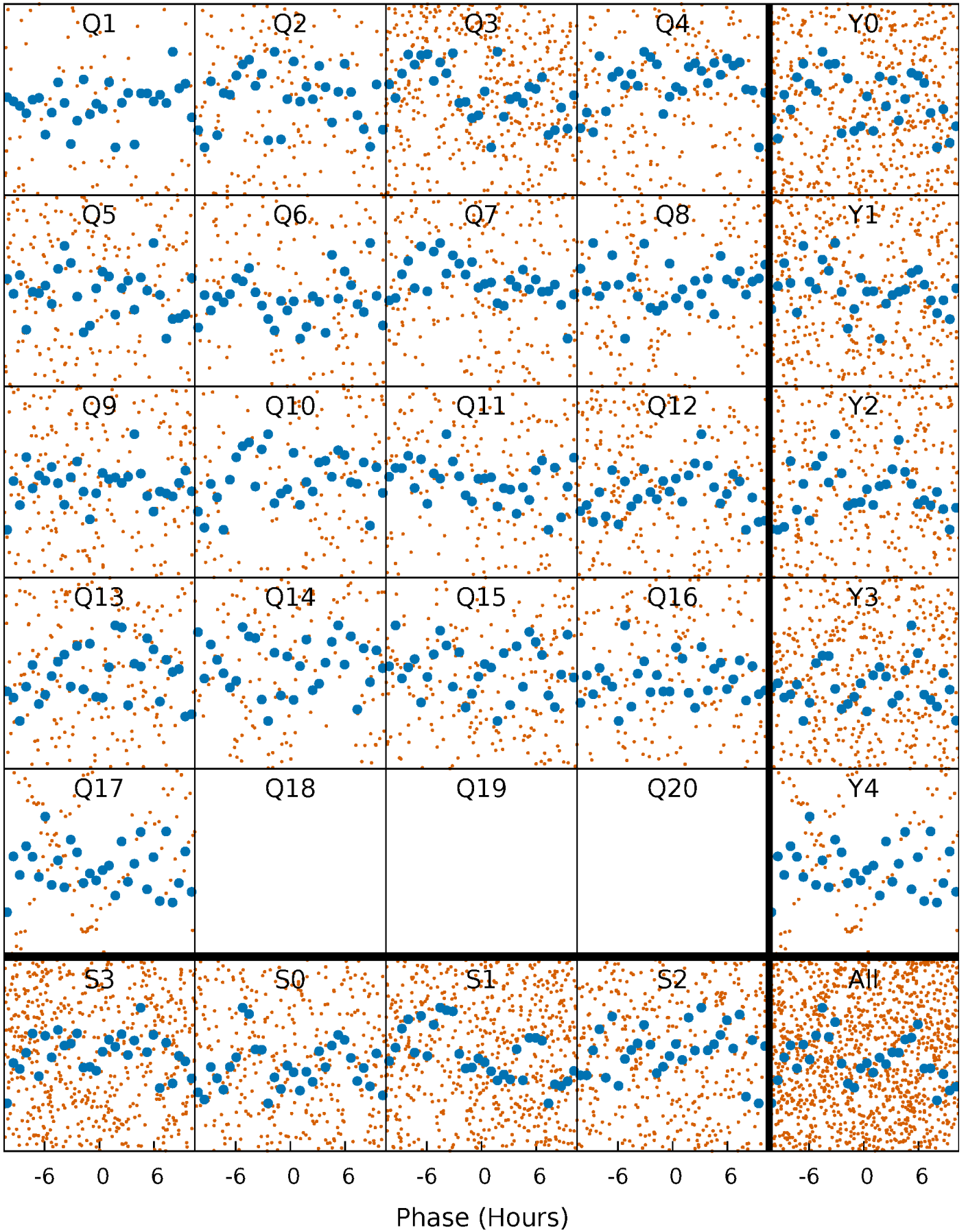


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

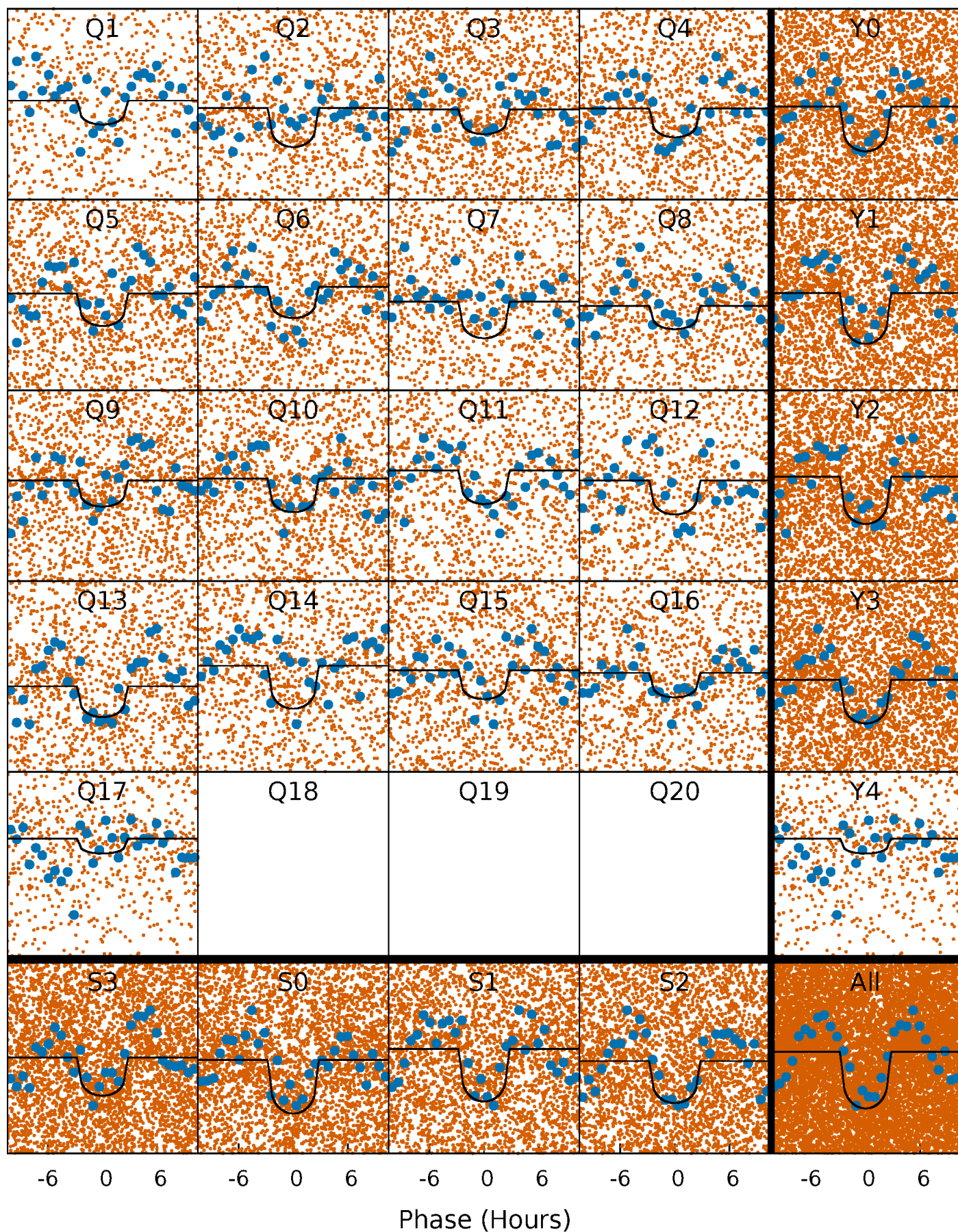
TCE 009118695-01 P= 1.212130 Days  $T_0=131.991523$  (BKJD)





# DV Quarter-Phased Transit Curves

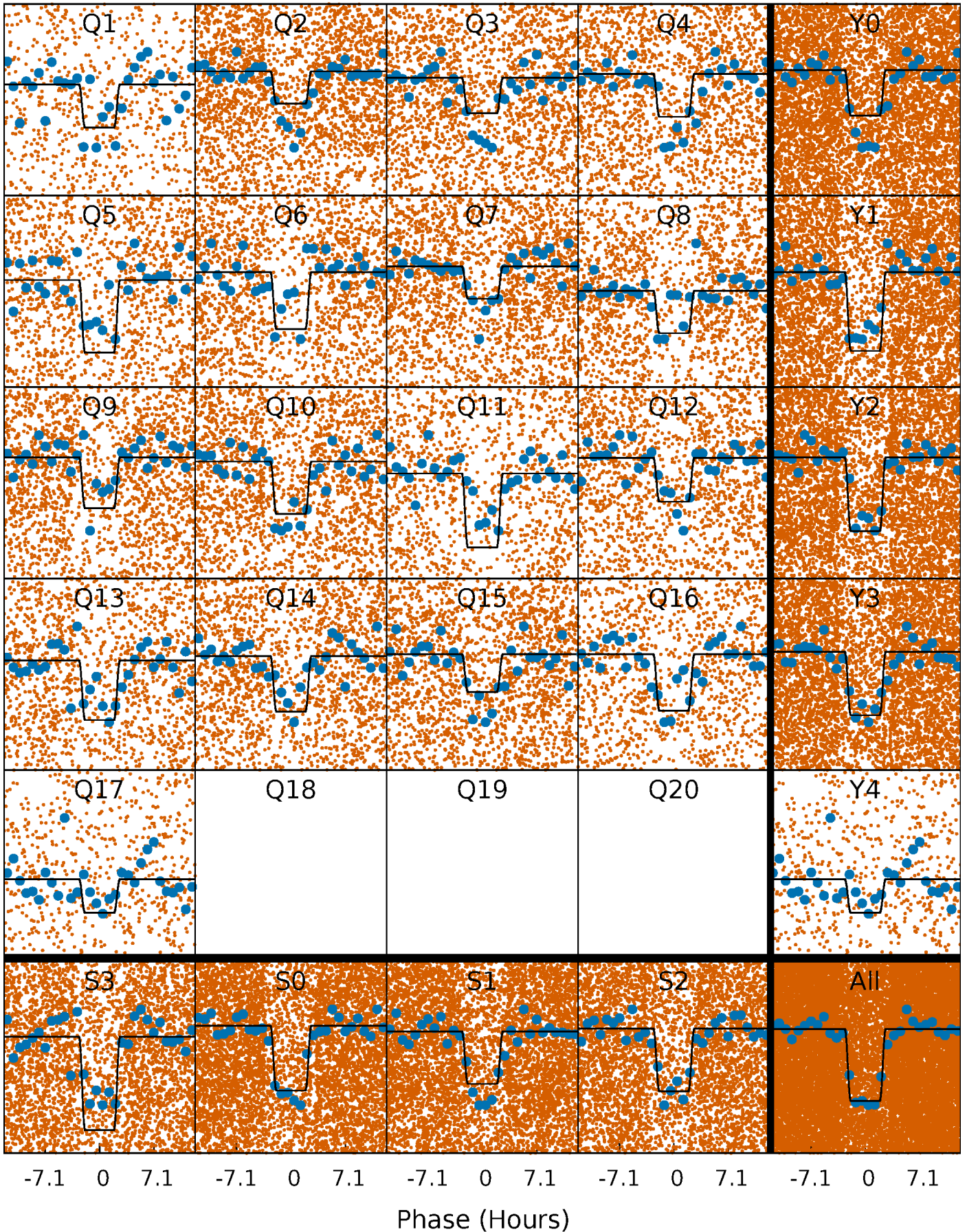
TCE 009118695-01 P= 1.212130 Days  $T_0=131.991523$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

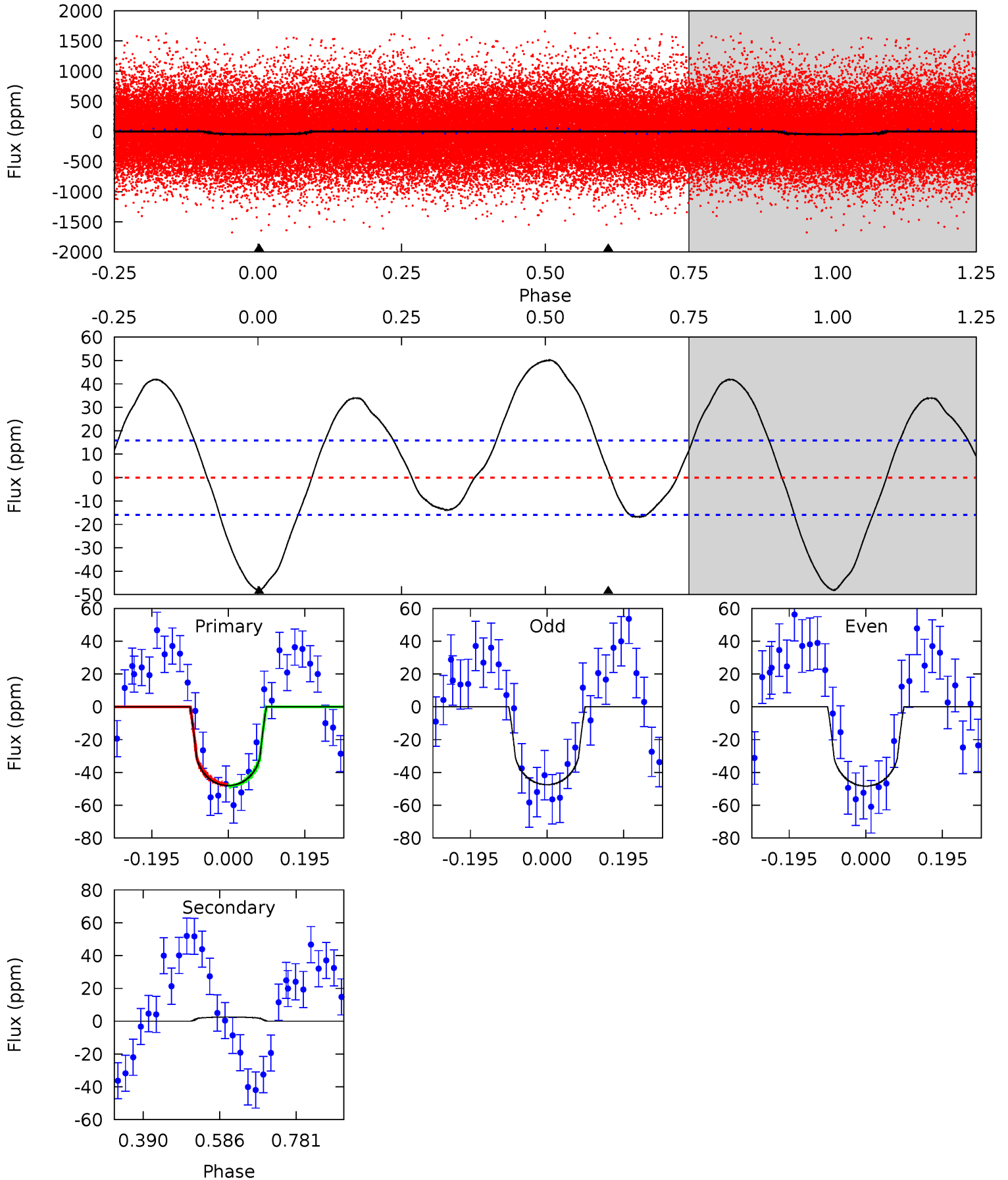
TCE 009118695-01 P= 1.212160 Days  $T_0=131.966409$  (BKJD)



# DV Model-Shift Uniqueness Test

009118695-01, P = 1.212130 Days, E = 130.779393 Days

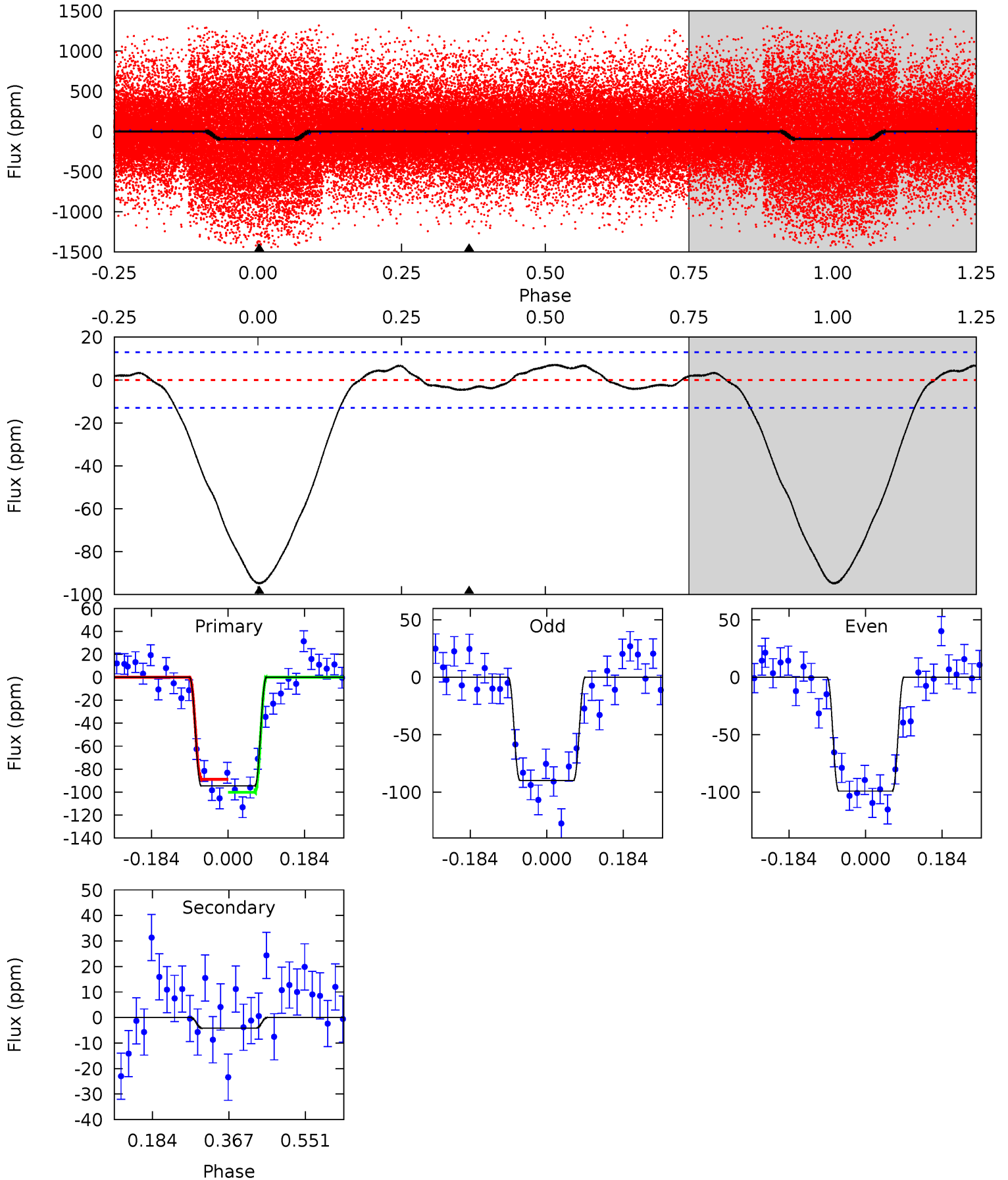
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	-0.71	0	0	4.42	1.30	3.72	13.4	13.4	-0.71	-0.71	0.12	0.97	0.51	0.14



# Alt Model-Shift Uniqueness Test

009118695-01, P = 1.212160 Days, E = 130.754249 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
32.4	1.43	0	0	4.44	1.33	1.10	32.4	32.4	1.43	1.43	1.58	0.87	0.07	1.95





### Stellar Parameters For KIC 009118695

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5491^{+164}_{-164}$	$4.432^{+0.143}_{-0.266}$	$-0.300^{+0.350}_{-0.250}$	$0.887^{+0.275}_{-0.148}$	$0.776^{+0.126}_{-0.054}$	$1.566^{+0.974}_{-0.928}$
	+3%/-3%	+3%/-6%	+117%/-83%	+31%/-17%	+16%/-7%	+62%/-59%
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 009118695-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$3 \pm 4$	$0.81^{+0.55}_{-0.47}$	$2267^{+204}_{-164}$	$-3096^{+1142}_{-965}$	$-0.619^{+0.901}_{-3.775}$
Alt.	$-4 \pm 3$	$1.05^{+0.62}_{-0.55}$	$2264^{+206}_{-155}$	$2821^{+919}_{-5234}$	$0.791^{+3.051}_{-0.625}$

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

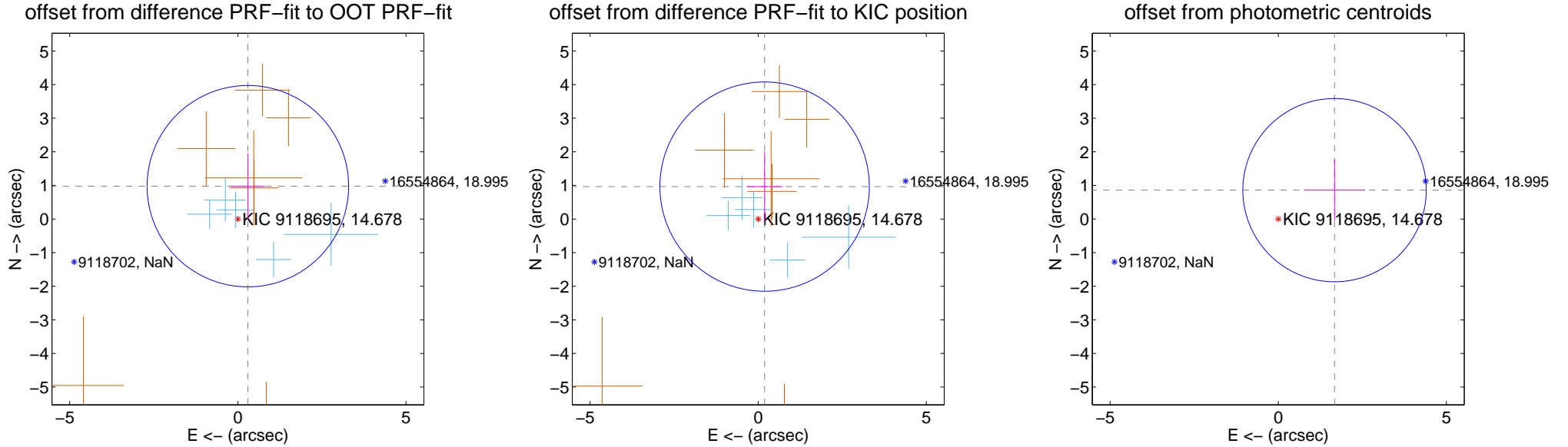
## DV Centroid Data

Supplemental centroid analysis for 009118695-01. Kepler magnitude: 14.68. Transit SNR 10.49

There are 5 quarters with good PRF difference image offsets

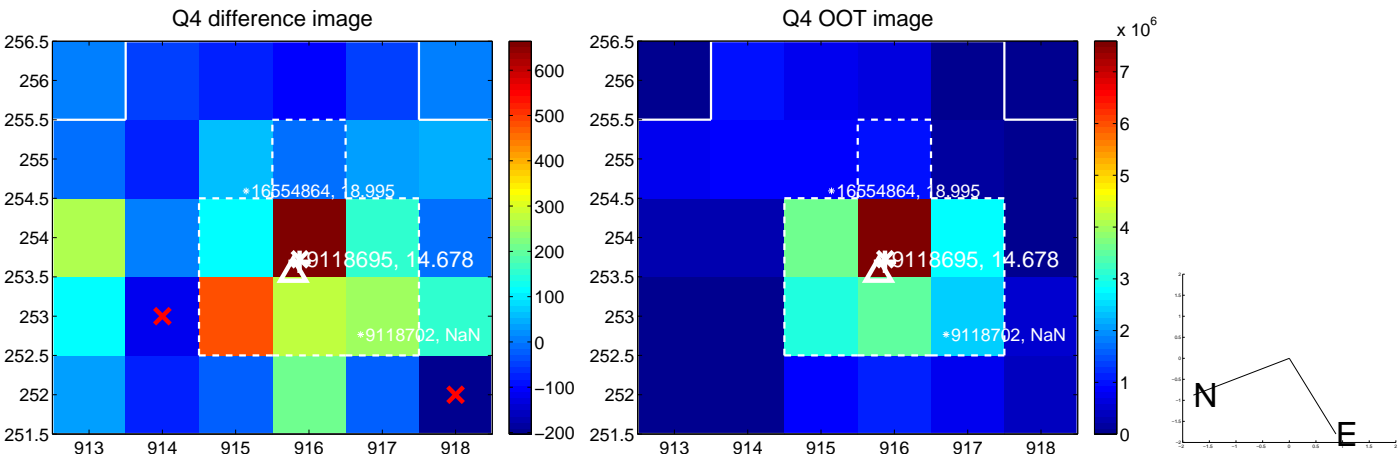
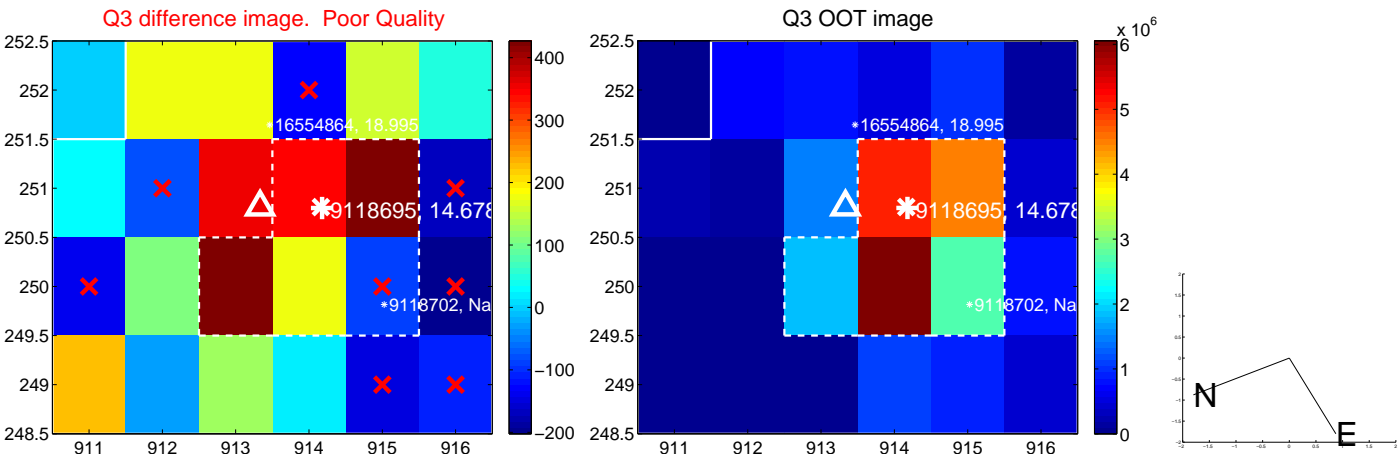
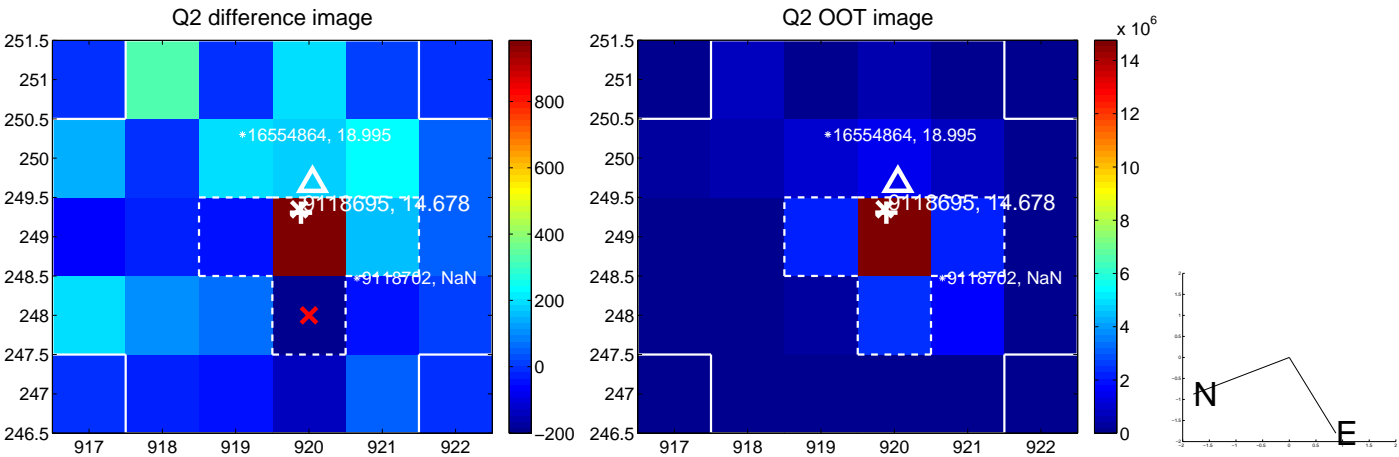
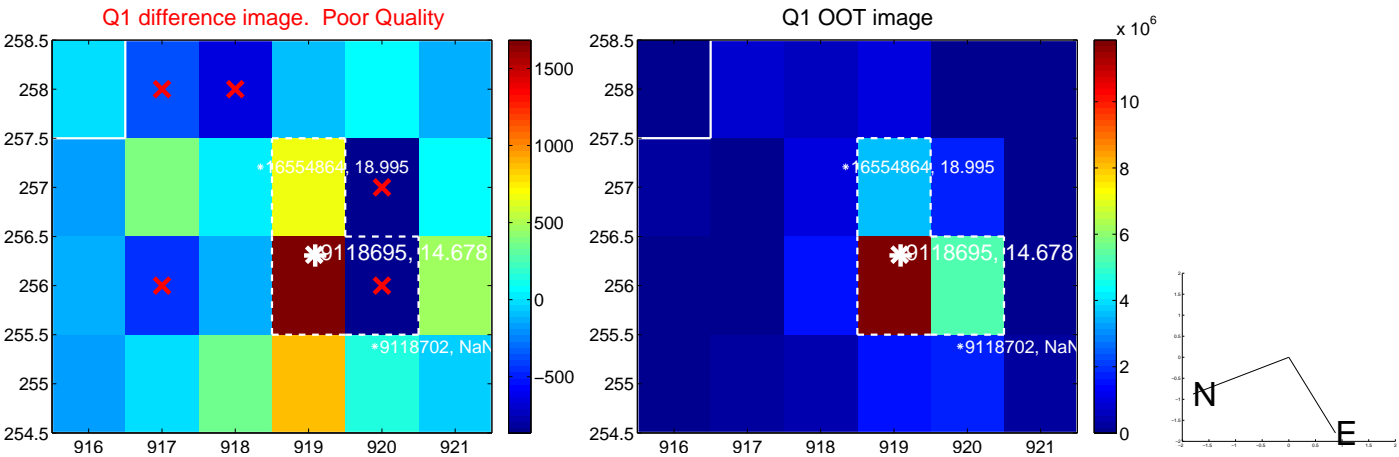
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.022 \pm 0.999$	1.02	$-0.297 \pm 0.504$	$0.977 \pm 0.976$
PRF-fit source offset from KIC position	$0.983 \pm 1.038$	0.95	$-0.190 \pm 0.541$	$0.964 \pm 1.023$
photometric centroid source offset	$1.88 \pm 0.91$	2.07	$-1.67 \pm 0.91$	$0.86 \pm 0.91$

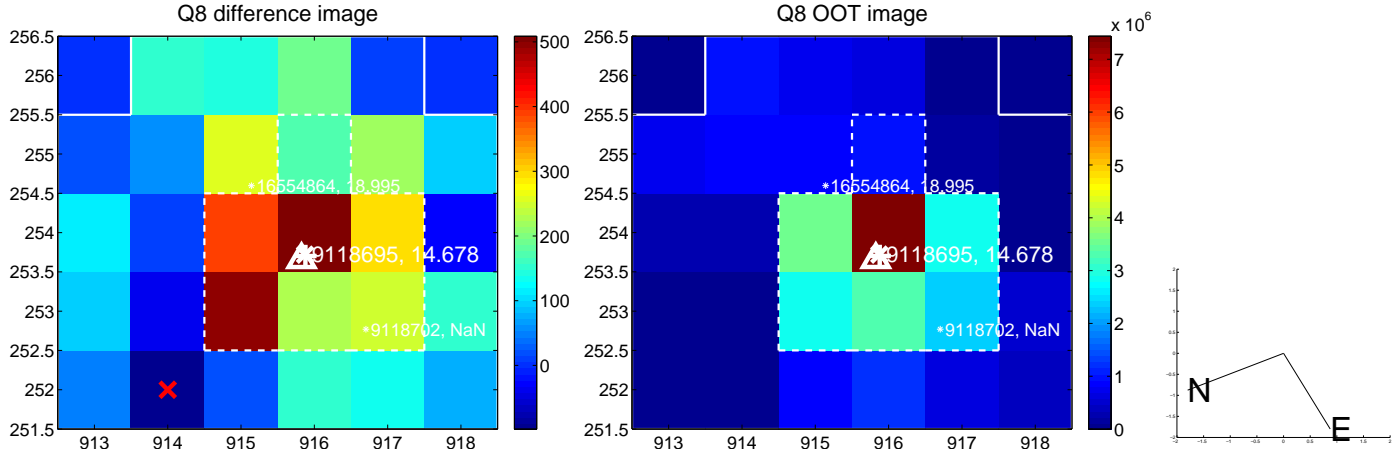
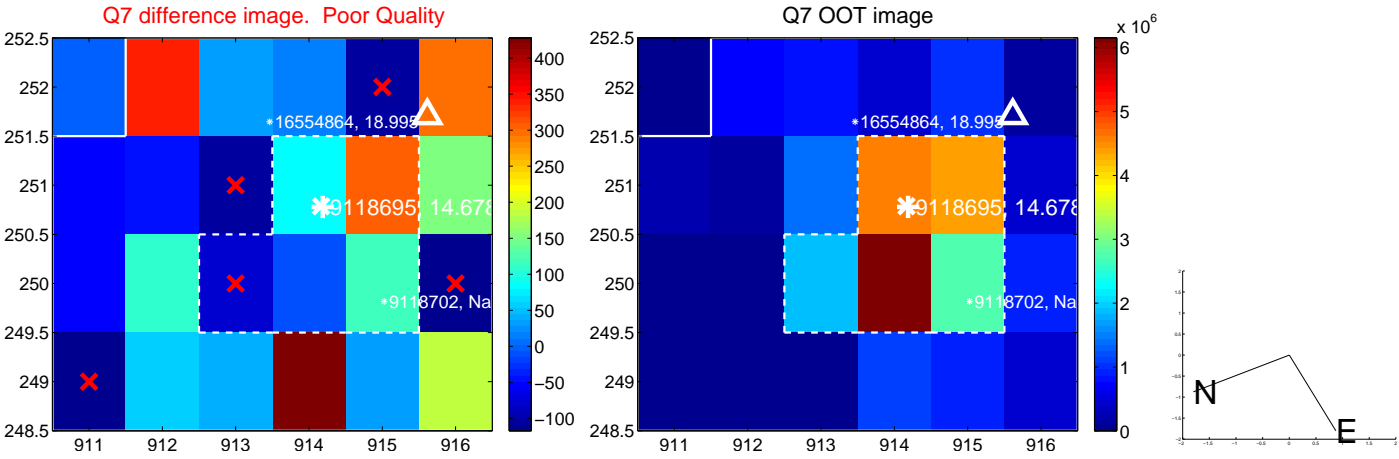
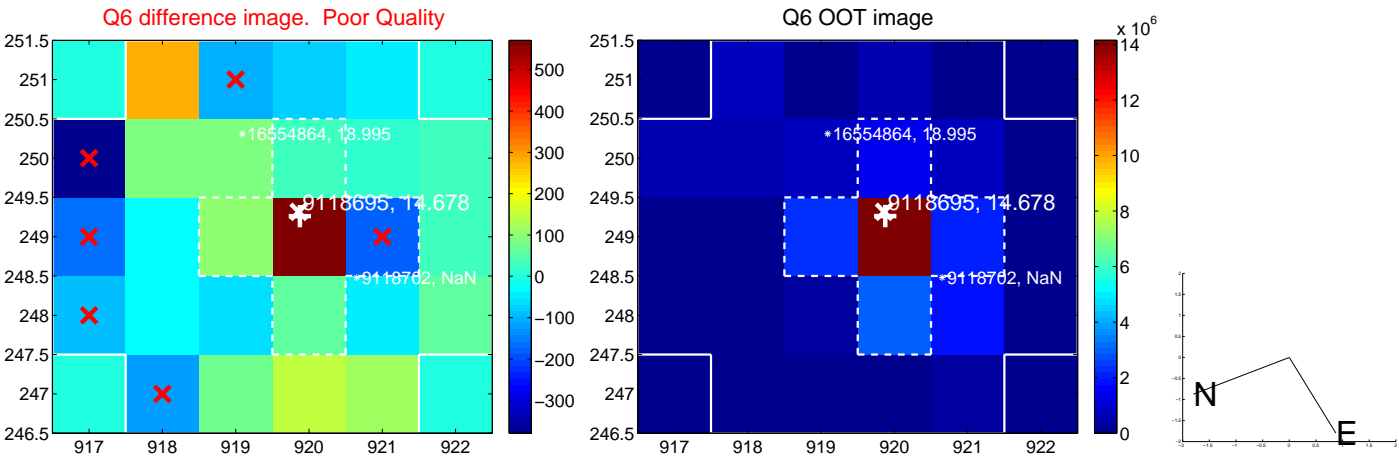
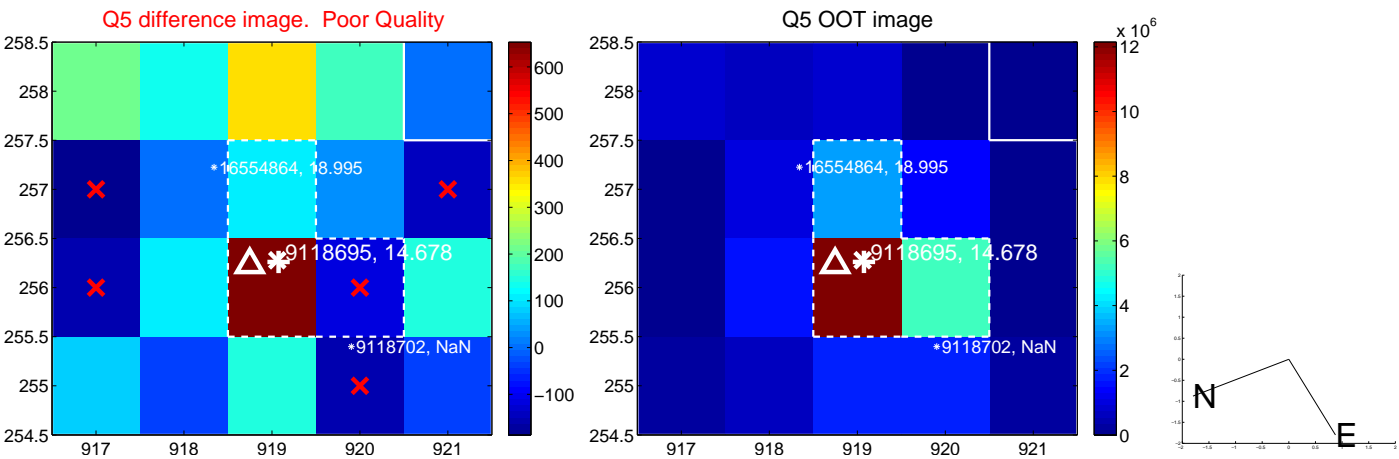


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

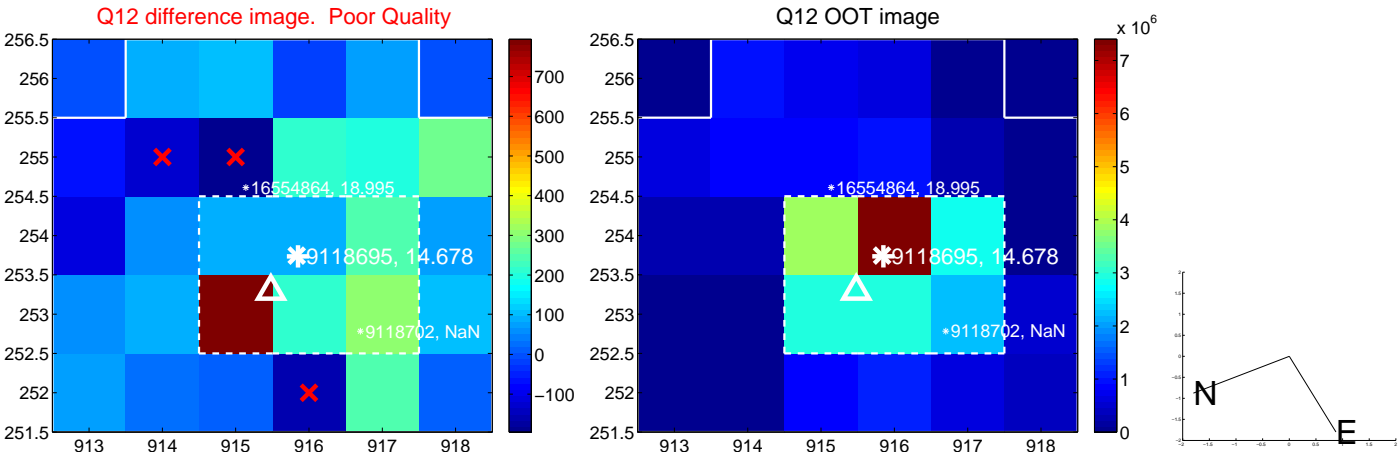
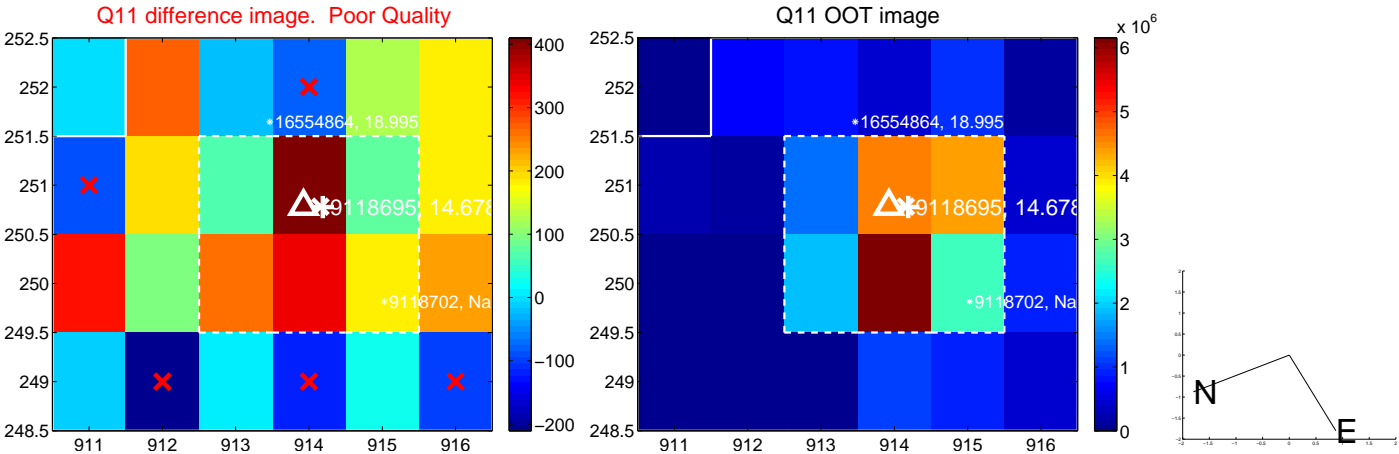
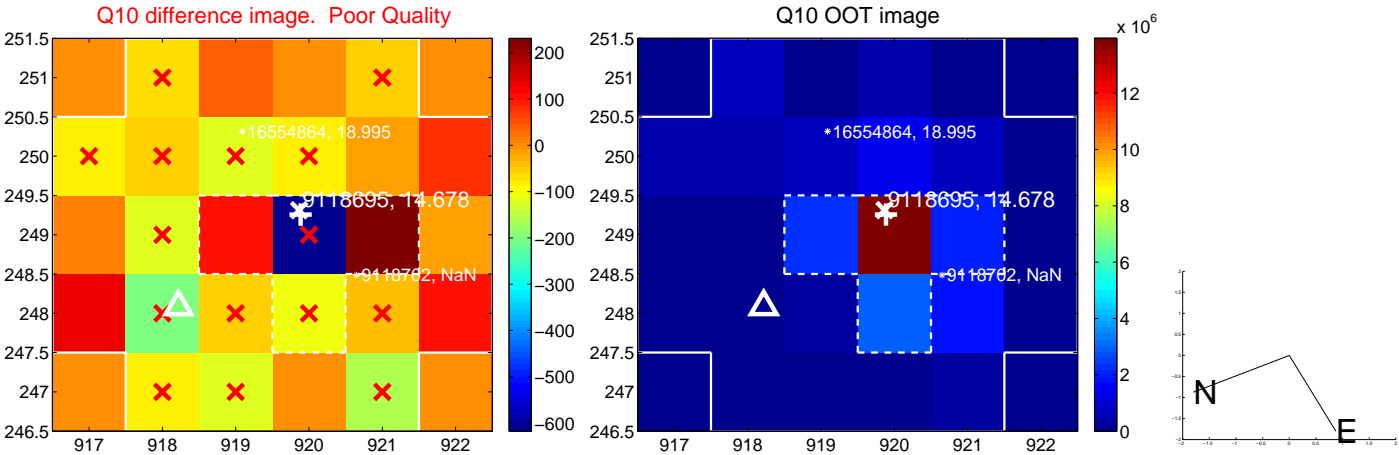
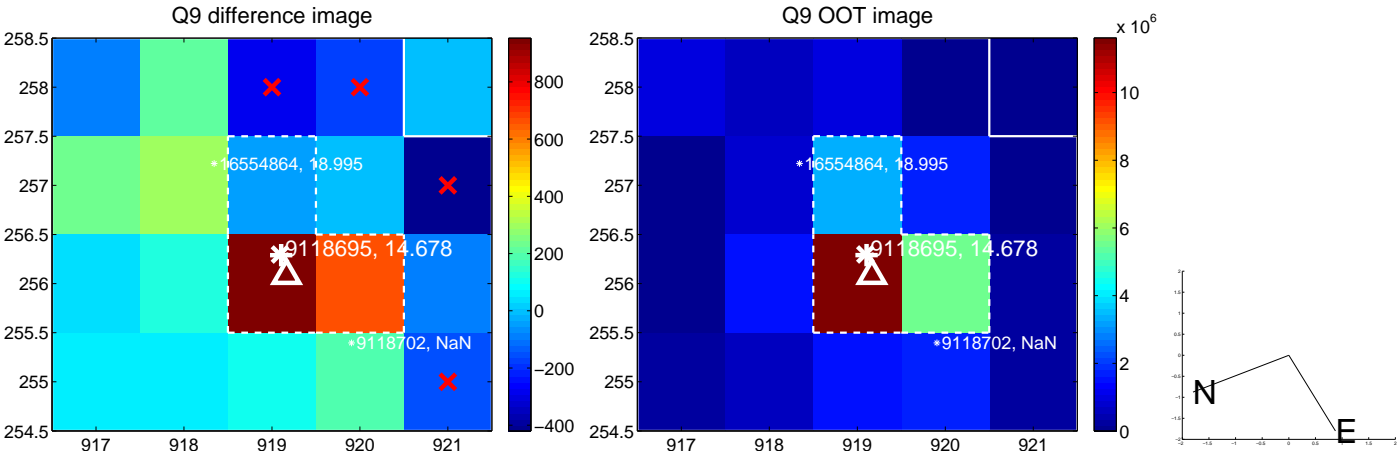


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

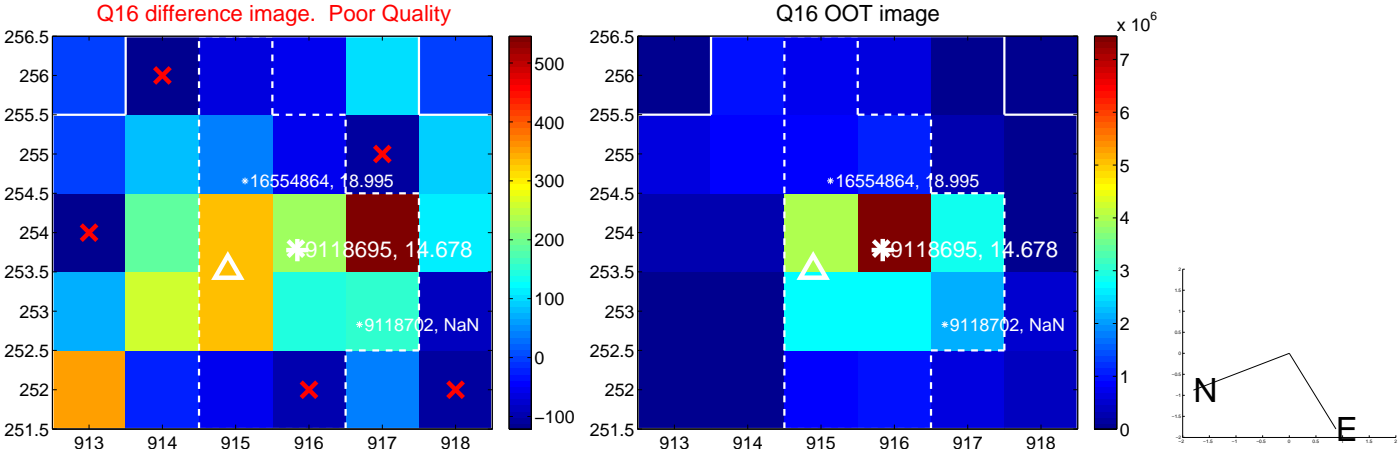
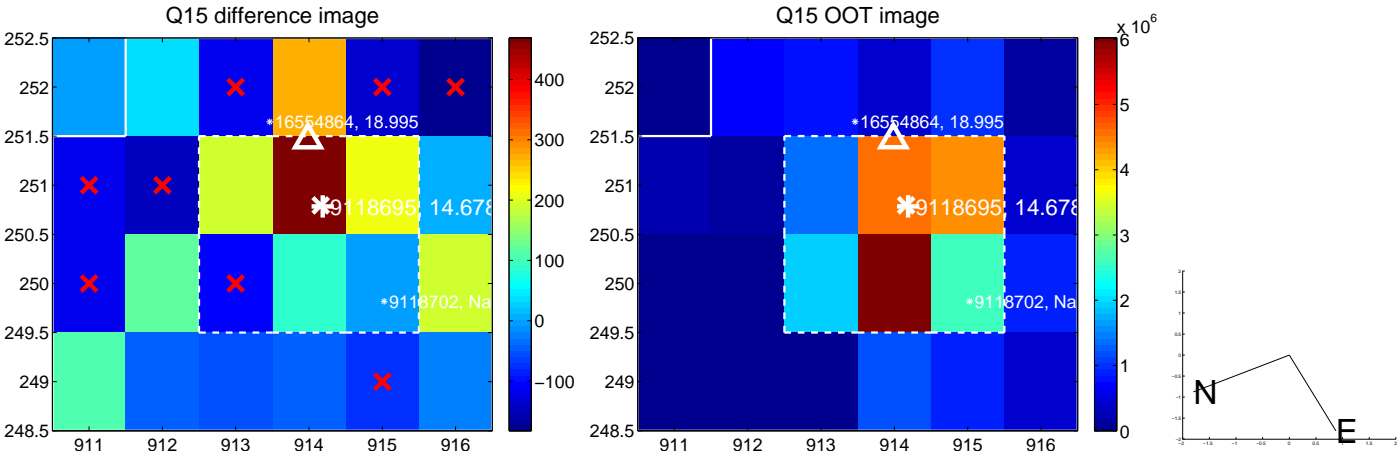
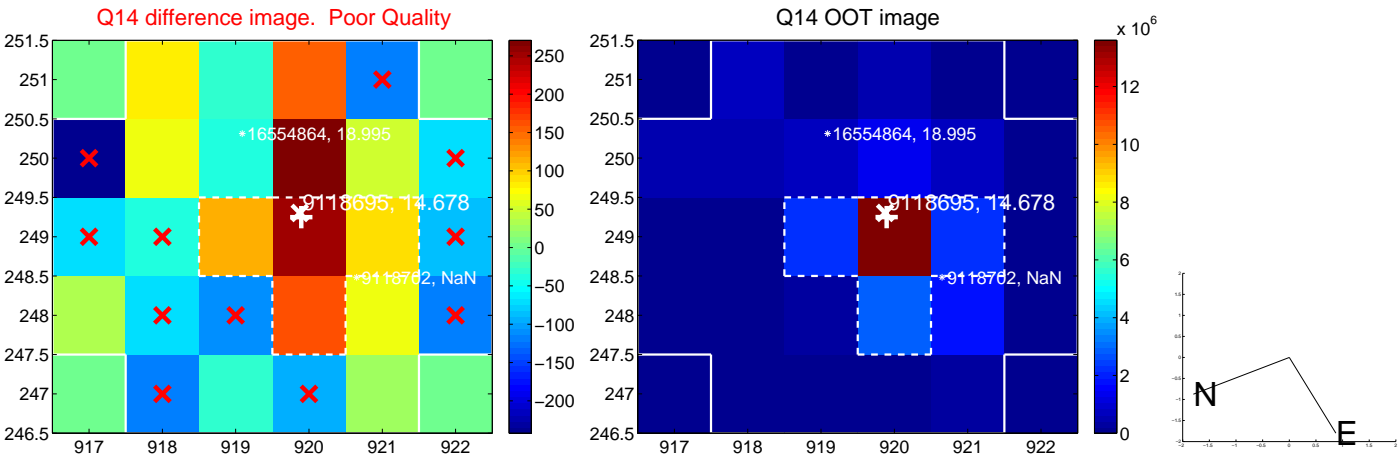
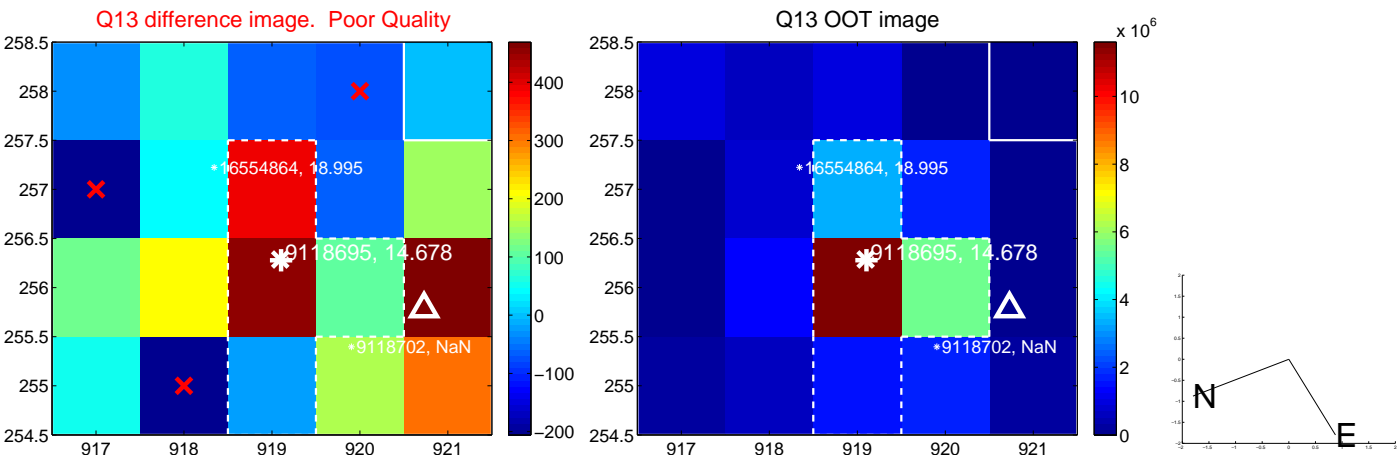




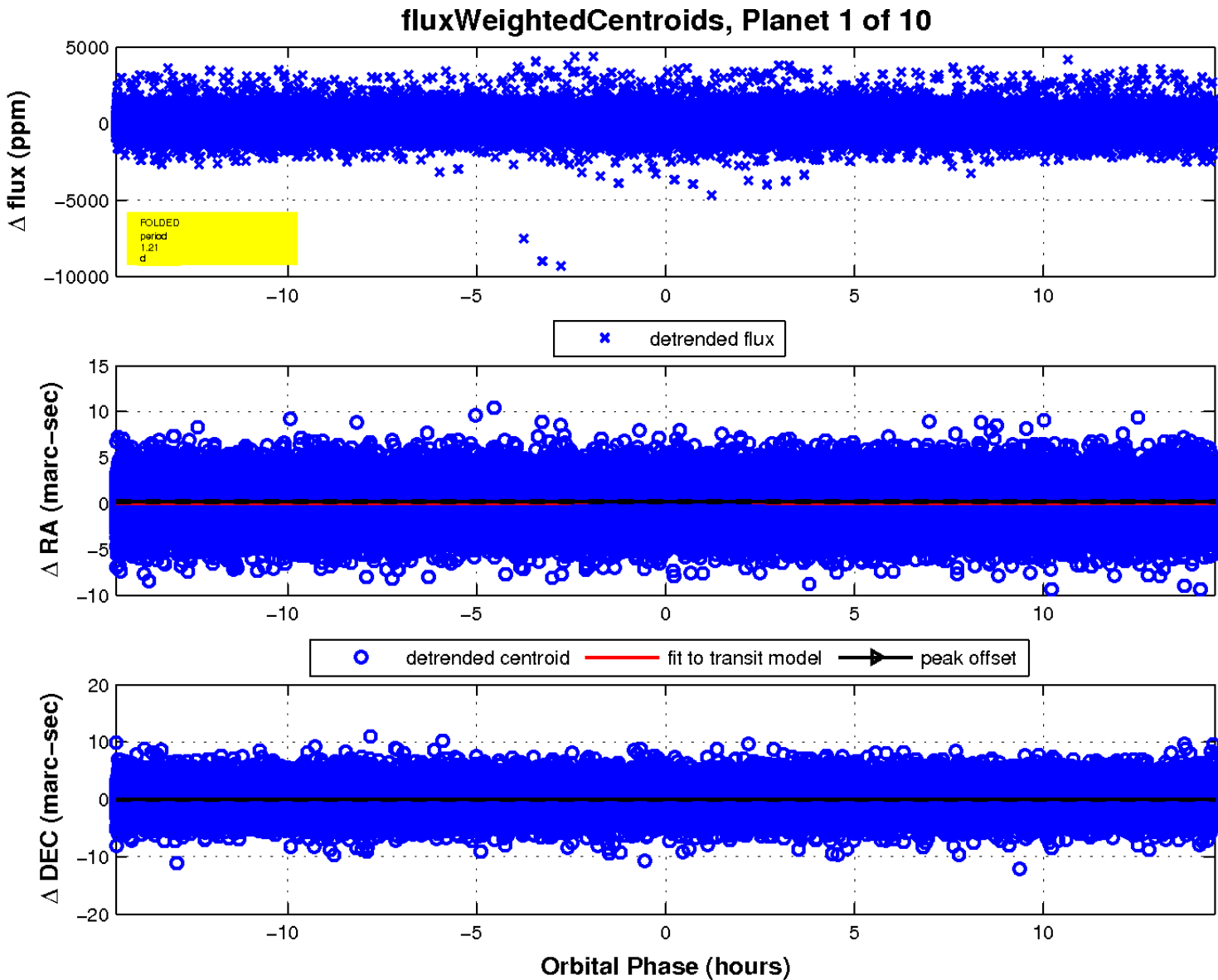
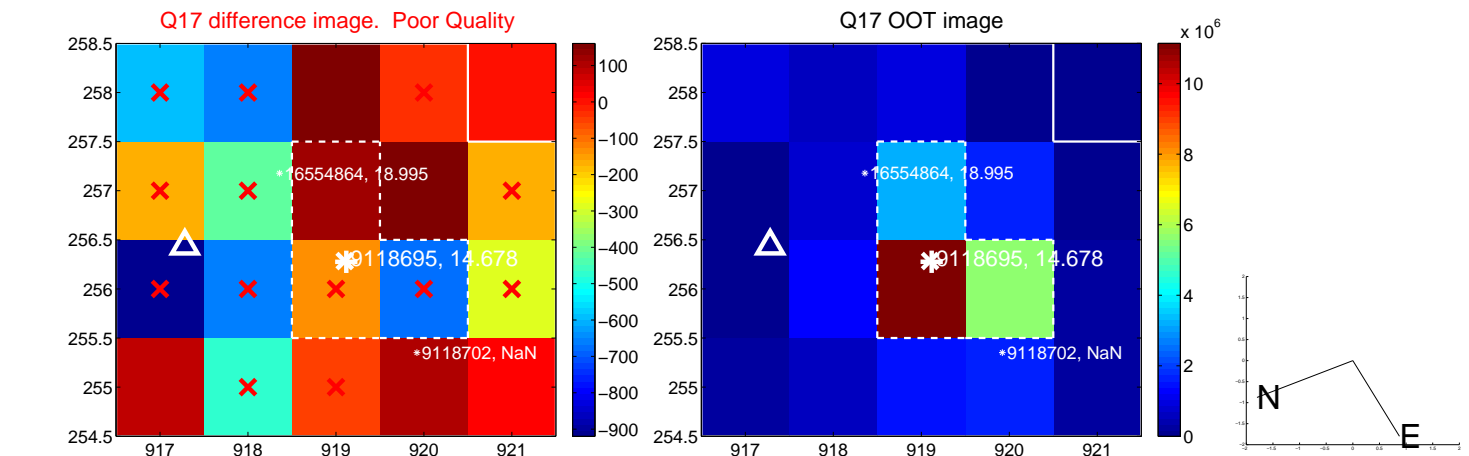
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

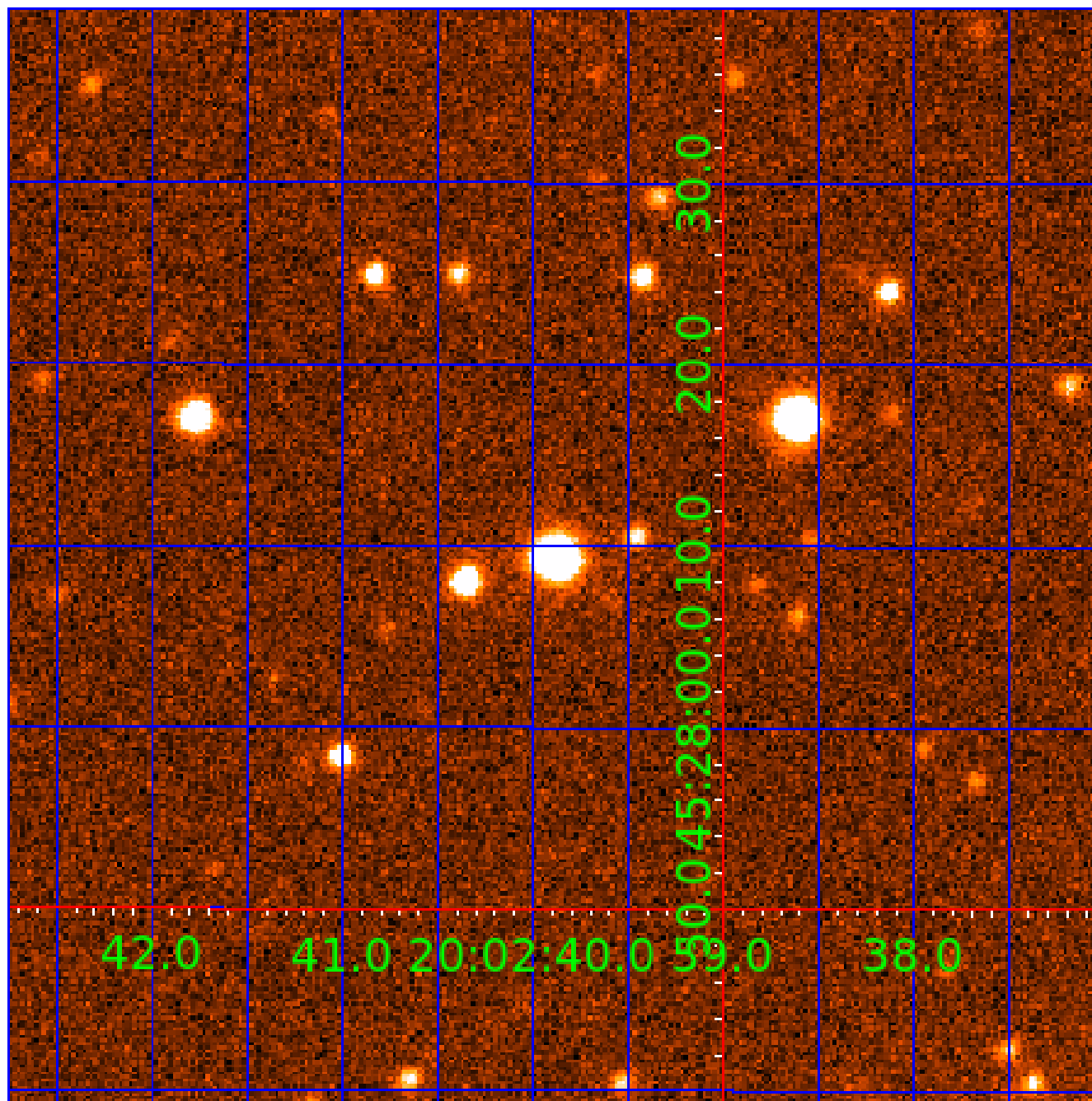


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





## KIC 009118695

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118695-01	OBS	No	1.212130	131.991523	66.9	5.233	11.4	10.5	0.89	5491	0.73	1532.44
009118695-03	OBS	No	229.548298	188.269898	310.0	0.528	18.1	1.5	0.89	5491	1.98	1.41
009118695-04	OBS	No	229.550613	189.072332	1287.8	15.000	18.3	-1.0	0.89	5491	3.14	1.41
009118695-06	OBS	No	114.100566	214.813030	476.3	4.871	12.8	4.9	0.89	5491	2.18	3.58
009118695-07	OBS	No	179.141021	245.717566	749.1	12.000	12.2	-1.0	0.89	5491	2.40	1.96
009118695-08	OBS	No	194.864364	230.808037	803.2	12.542	15.1	5.6	0.89	5491	2.56	1.75
009118695-09	OBS	No	444.098224	158.648730	0.5	4.711	10.2	0.0	0.89	5491	0.07	0.58
009118695-10	OBS	No	183.107433	183.225305	3055.0	27.280	10.6	9.0	0.89	5491	4.85	1.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118695-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009118695-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009118695-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS
009118695-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS
009118695-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

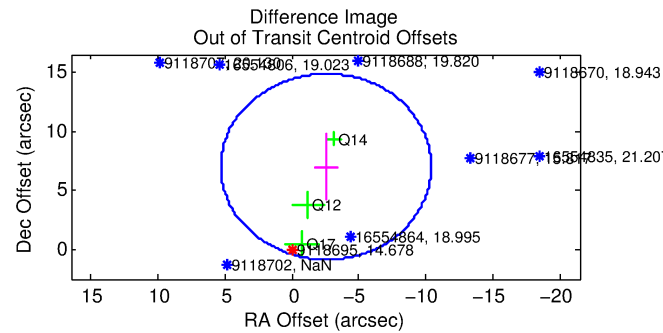
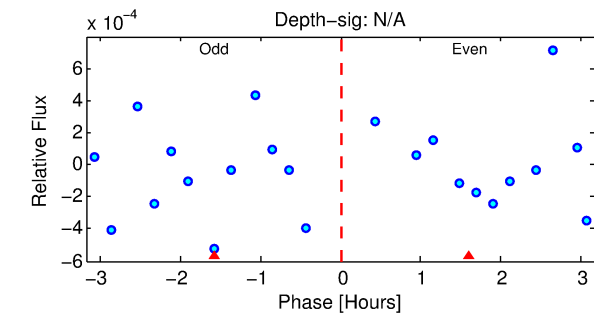
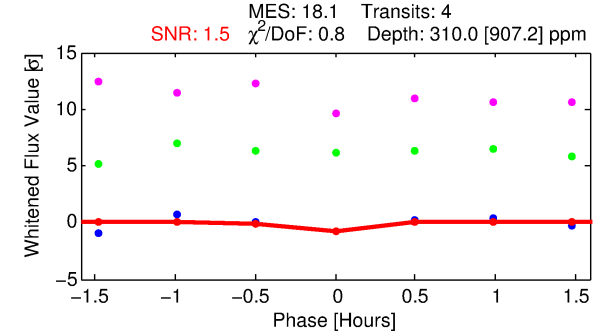
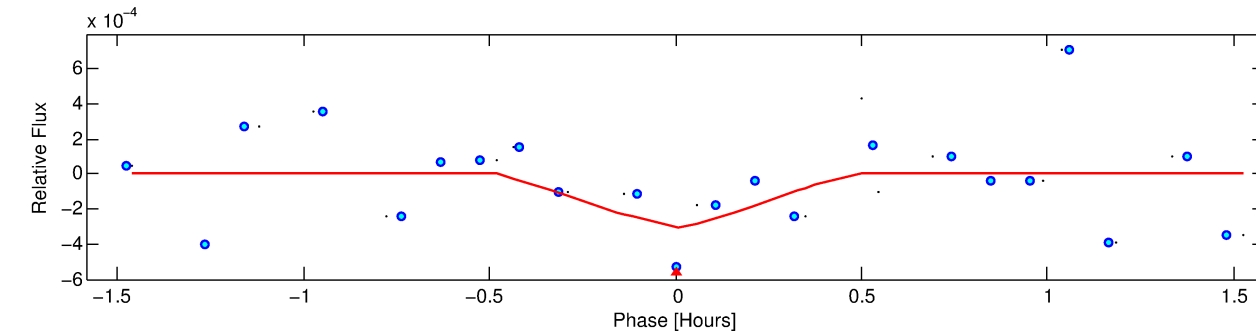
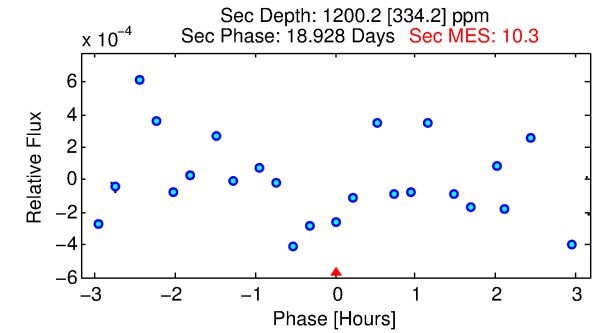
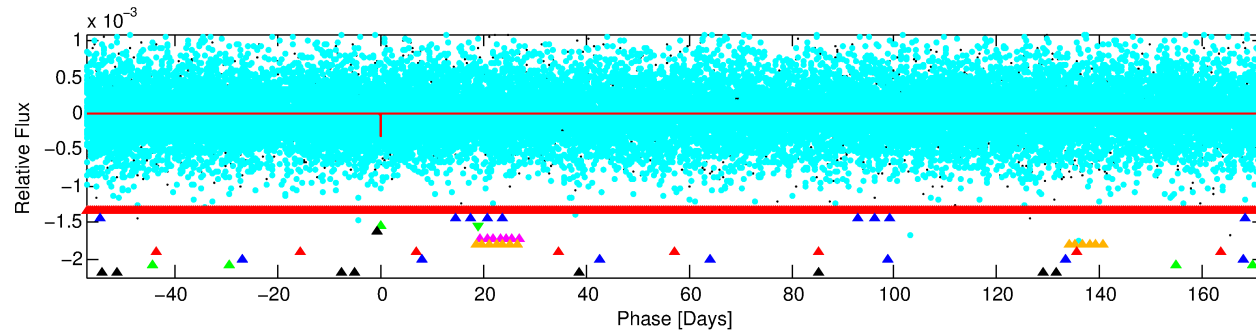
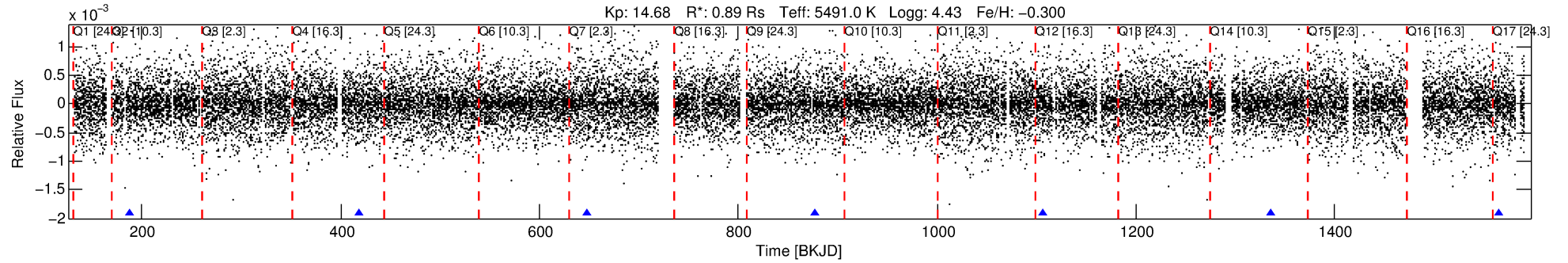
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009118695-03

No Significant Match Found

# DV One-Page Summary

KIC: 9118695 Candidate: 3 of 10 Period: 229.548 d



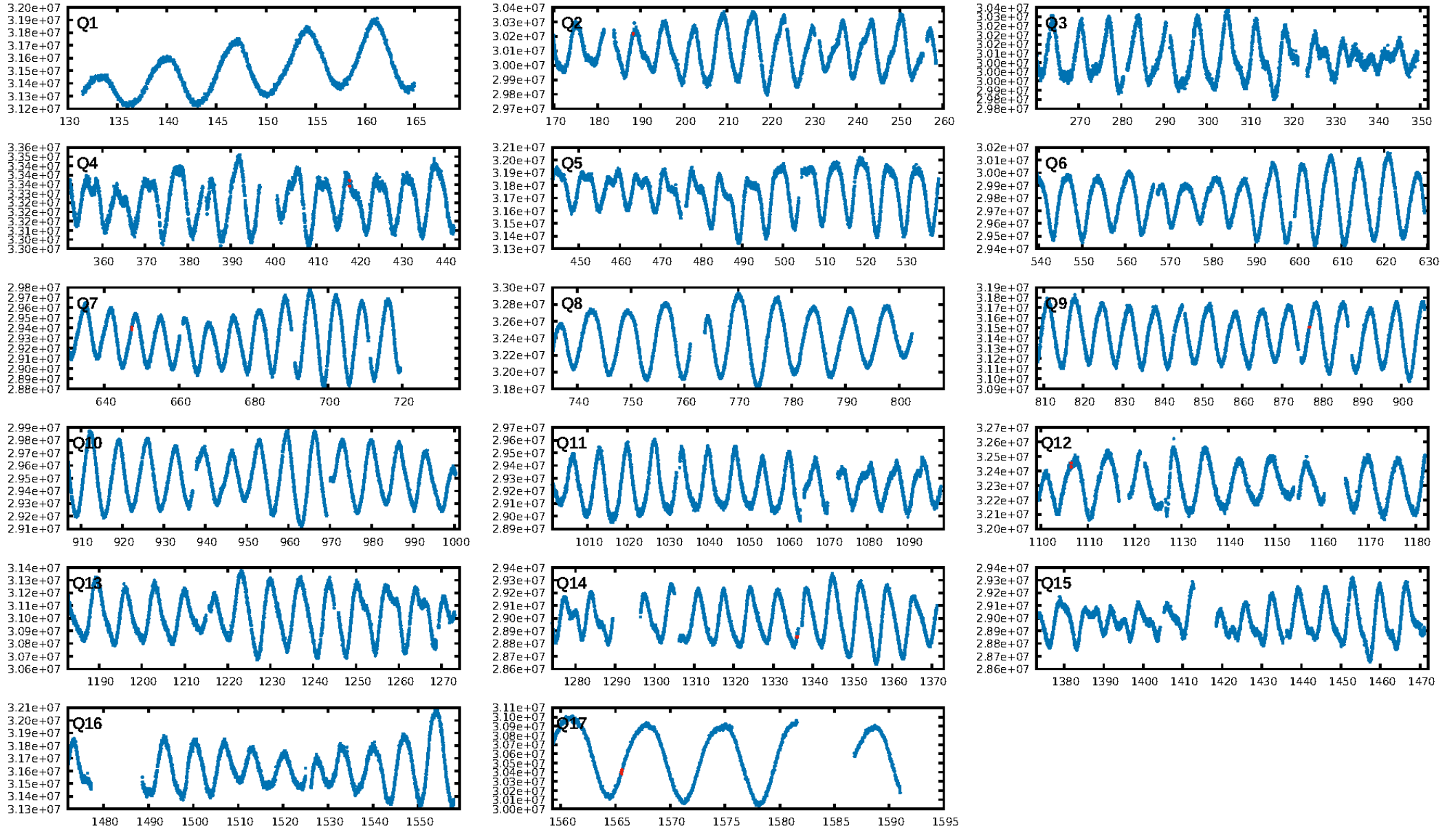
## DV Fit Results:

Period = 229.54830 [0.00357] d  
Epoch = 188.2699 [0.0110] BKJD  
Rp/R\* = 0.0204 [0.0959]  
a/R\* = 1627.77 [25865.00]  
b = 0.90 [3.97]  
Seff = 1.41 [0.67]  
Teq = 278 [33] K  
Rp = 1.98 [9.30] Re  
a = 0.6744 [0.1959] AU  
Ag = 76843.27 [722857.34] [0.11] $\sigma$   
Teff = 7152 [16800] K [0.4] $\sigma$

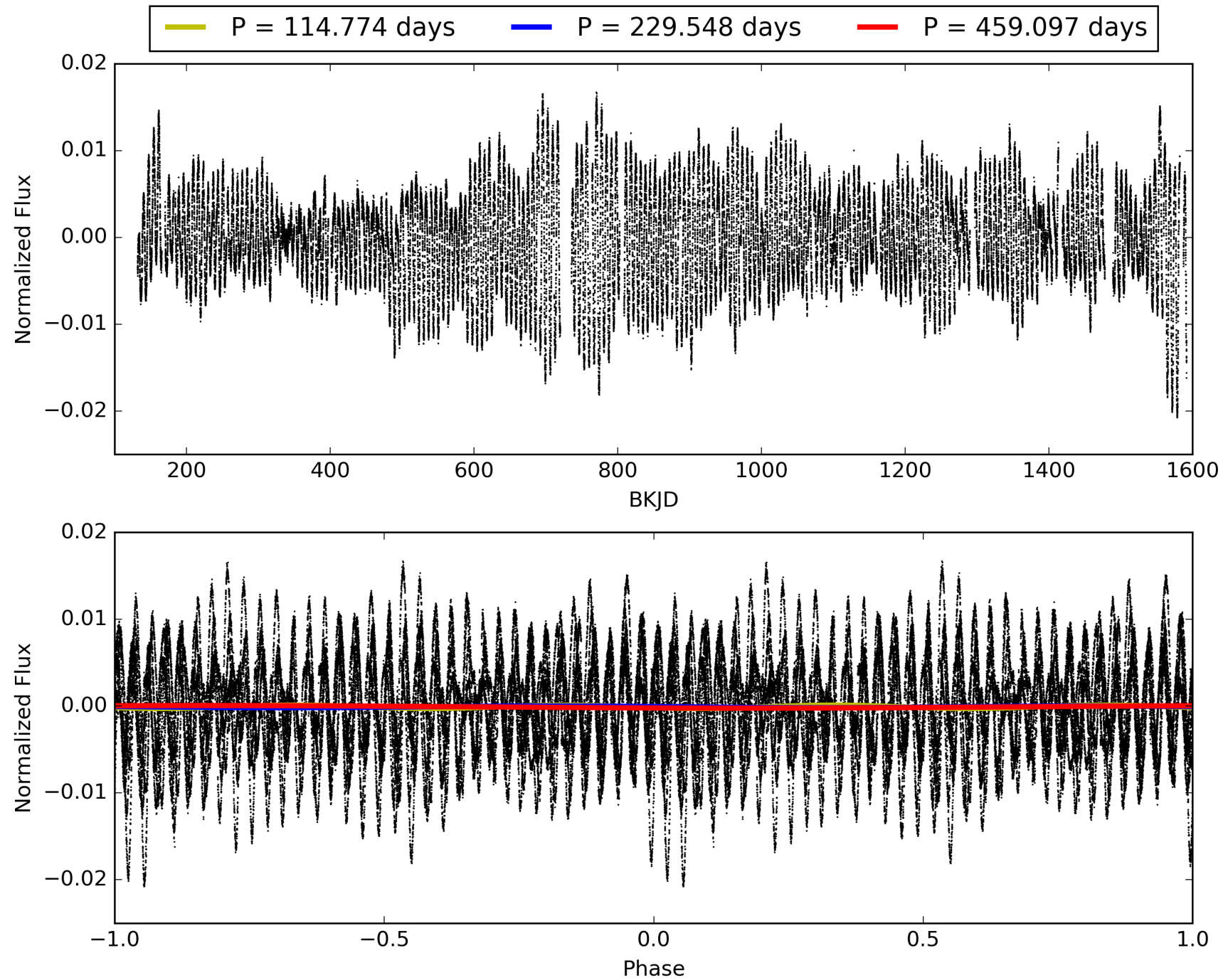
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.58] $\sigma$   
LongPeriod-sig: 0.3% [0.00] $\sigma$   
ModelChiSquare2-sig: 46.2%  
ModelChiSquareGof-sig: 95.5%  
Bootstrap-pfa: 1.83e-25  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -7.46  
Centroid-sig: 33.7%  
Centroid-so: 6.346 arcsec [0.81] $\sigma$   
OotOffset-rm: 7.442 arcsec [2.84] $\sigma$   
KicOffset-rm: 7.366 arcsec [2.79] $\sigma$   
OotOffset-st: 1/0/1/1 [3]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 0.00 [0/3]

# TCE 009118695-03, PDC Light Curves

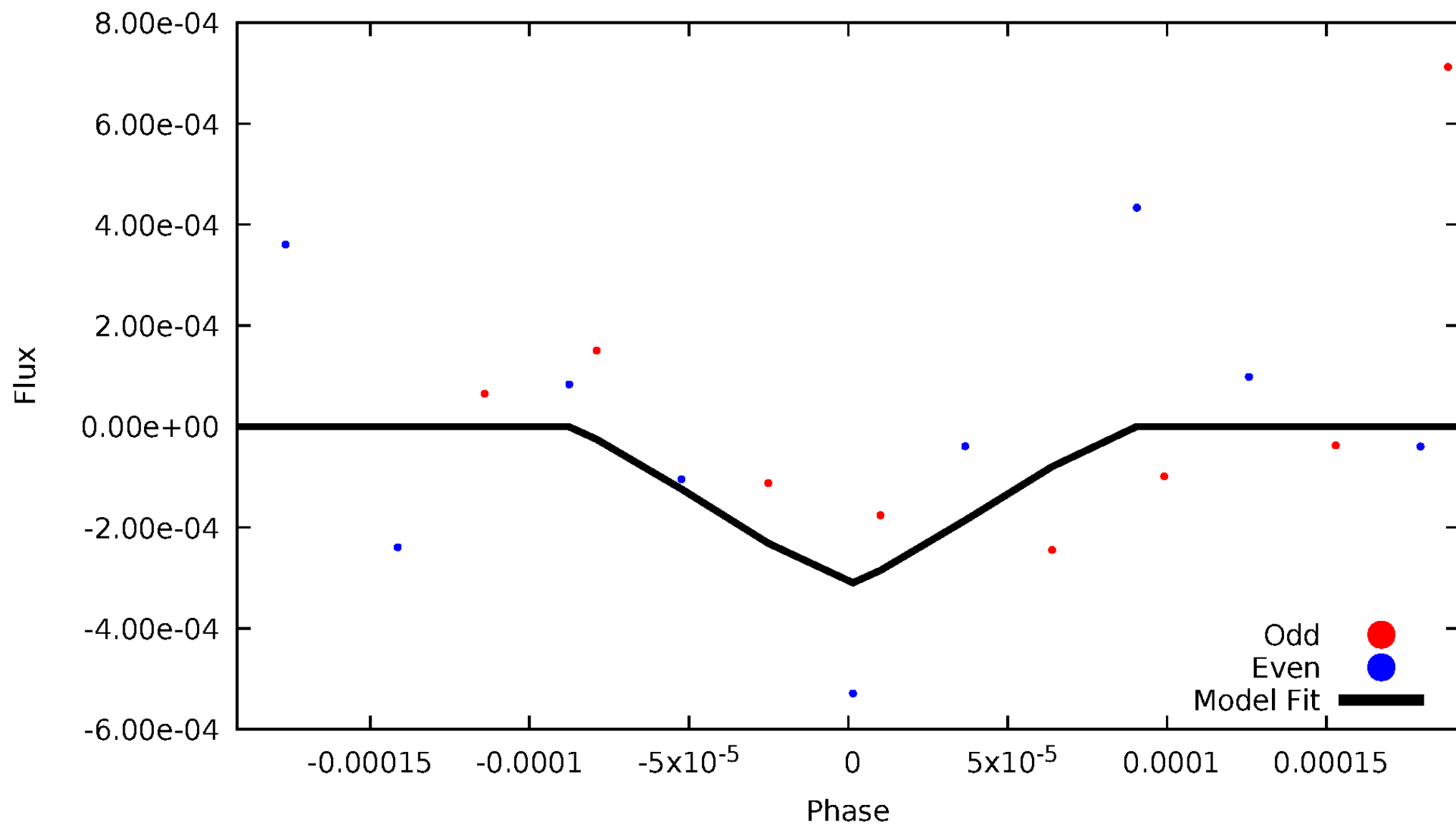


TCE 009118695-03



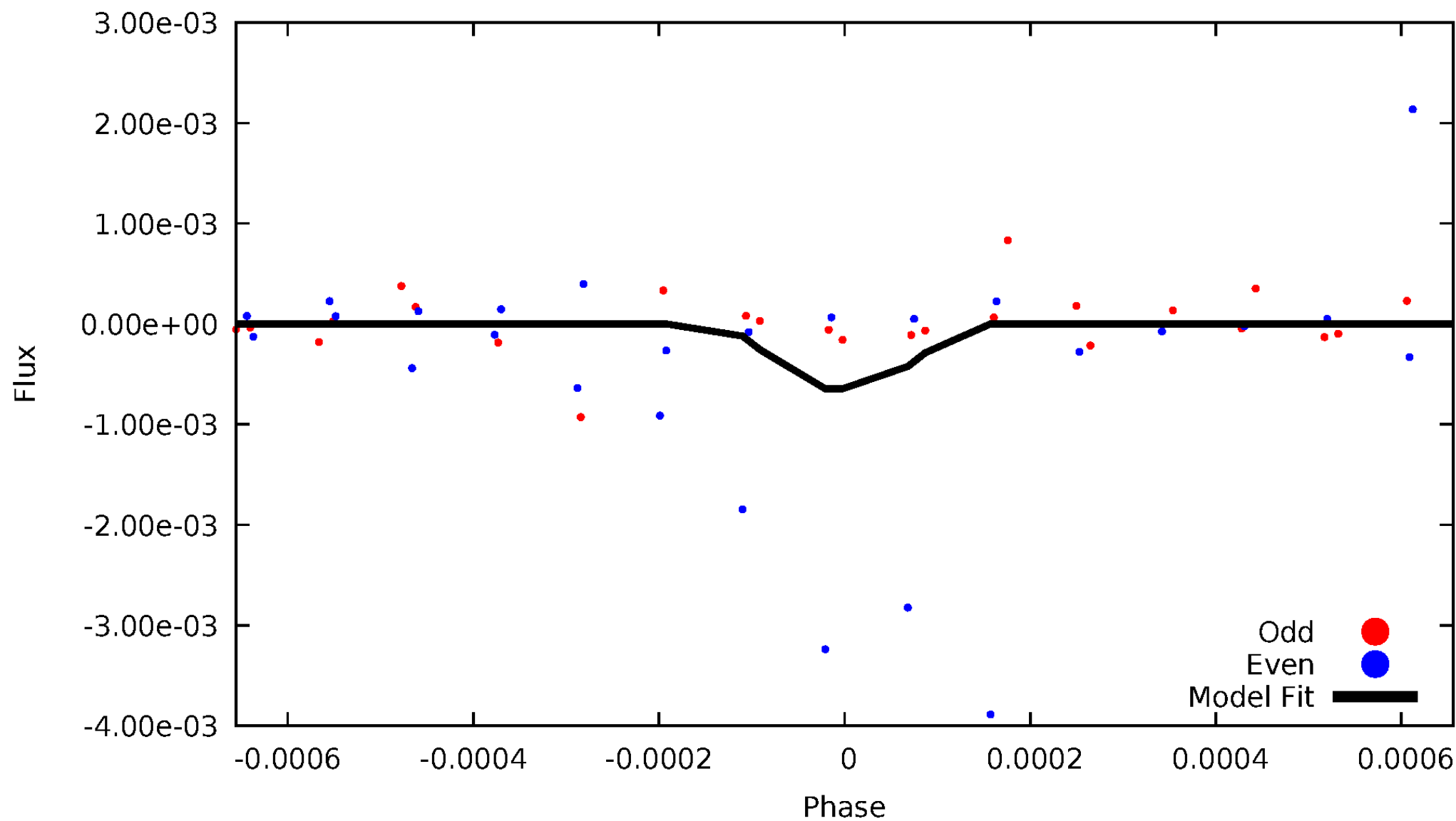
# DV Odd/Even

TCE 009118695-03



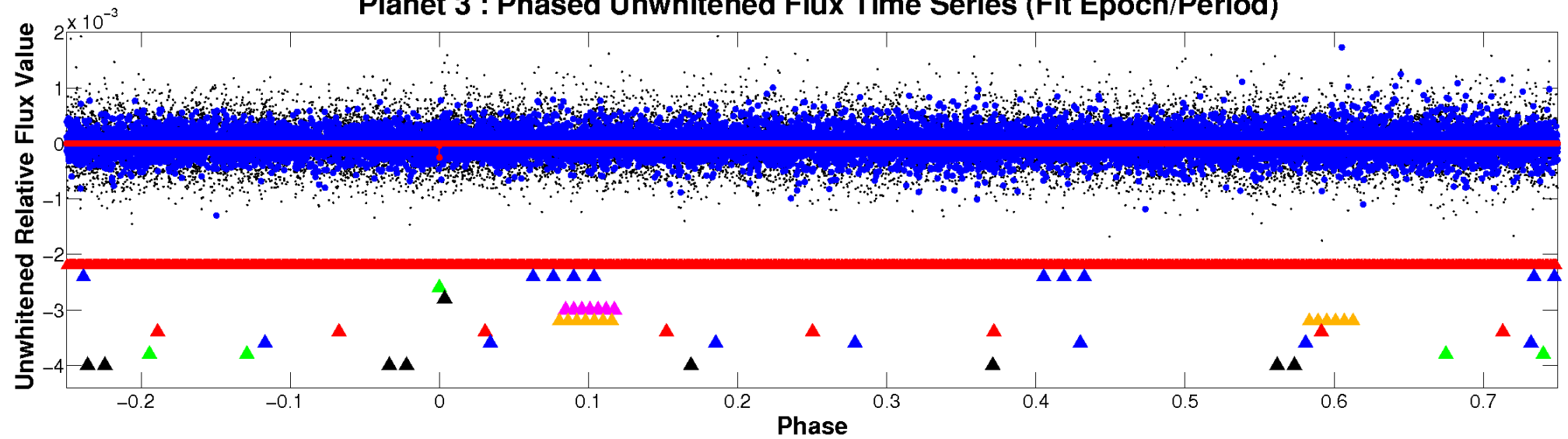
# ALT Odd/Even

TCE 009118695-03

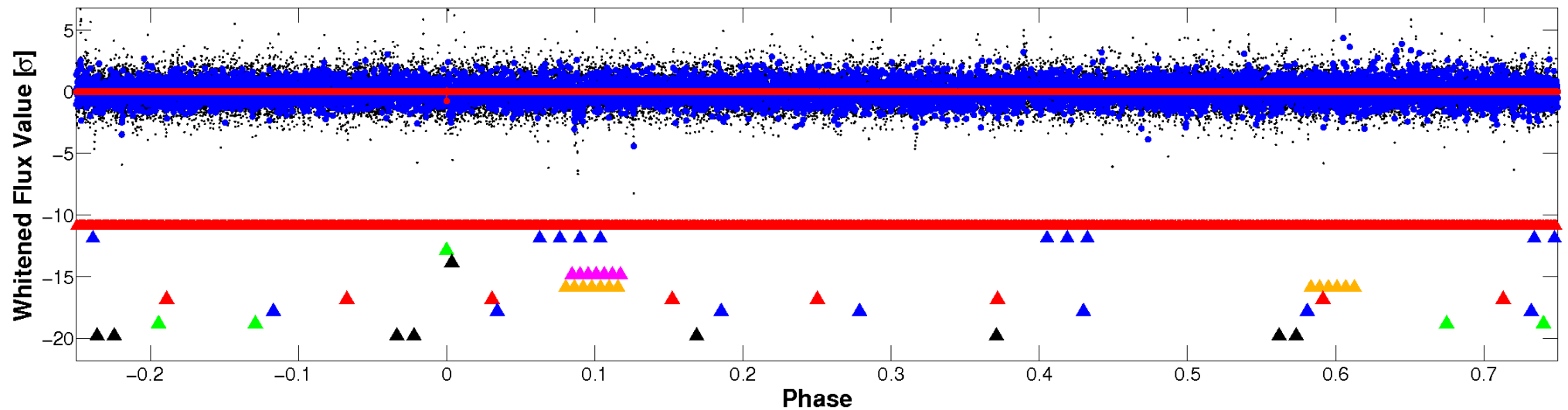


# Non-Whitened Vs. Whitened Light Curve

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



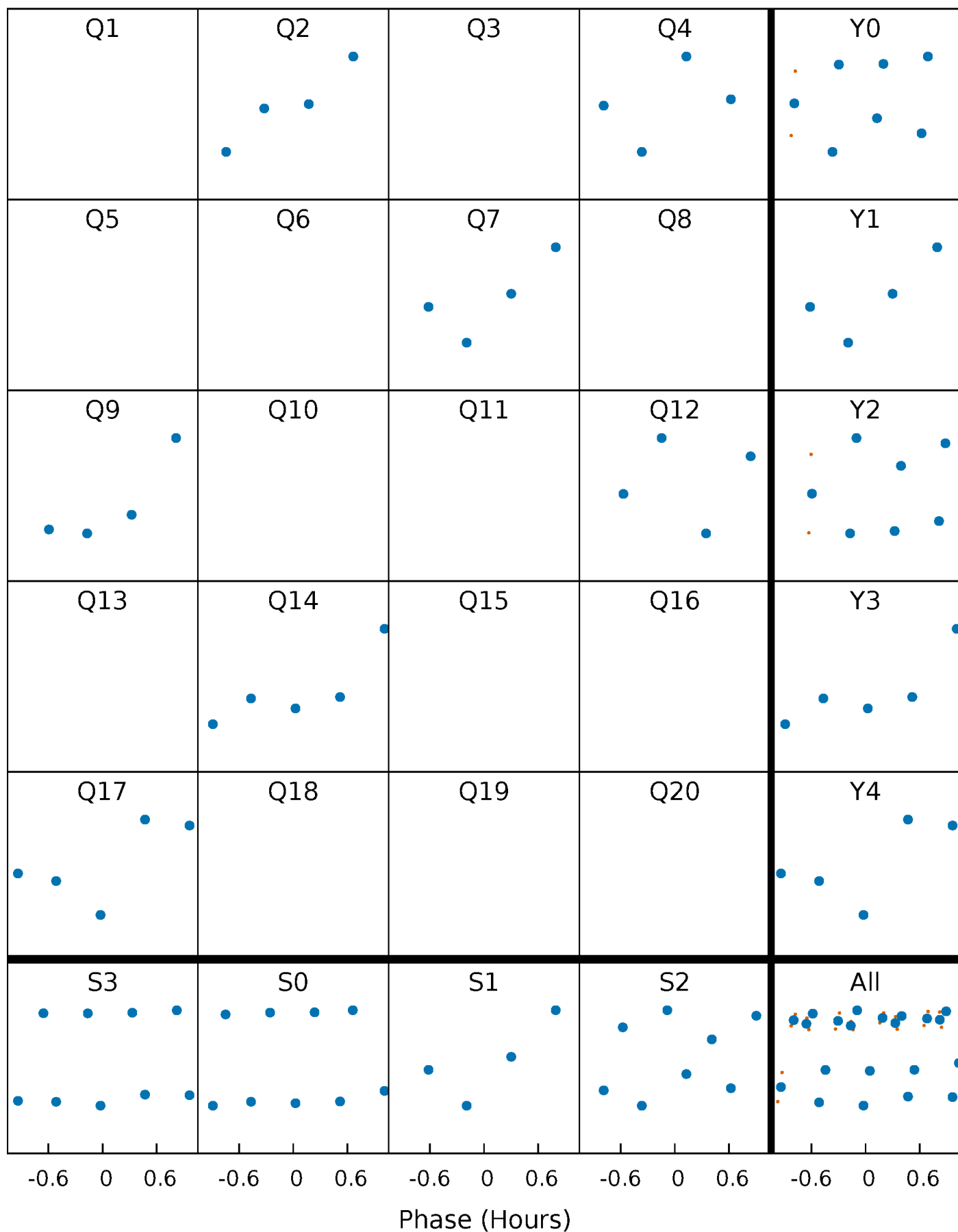
Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





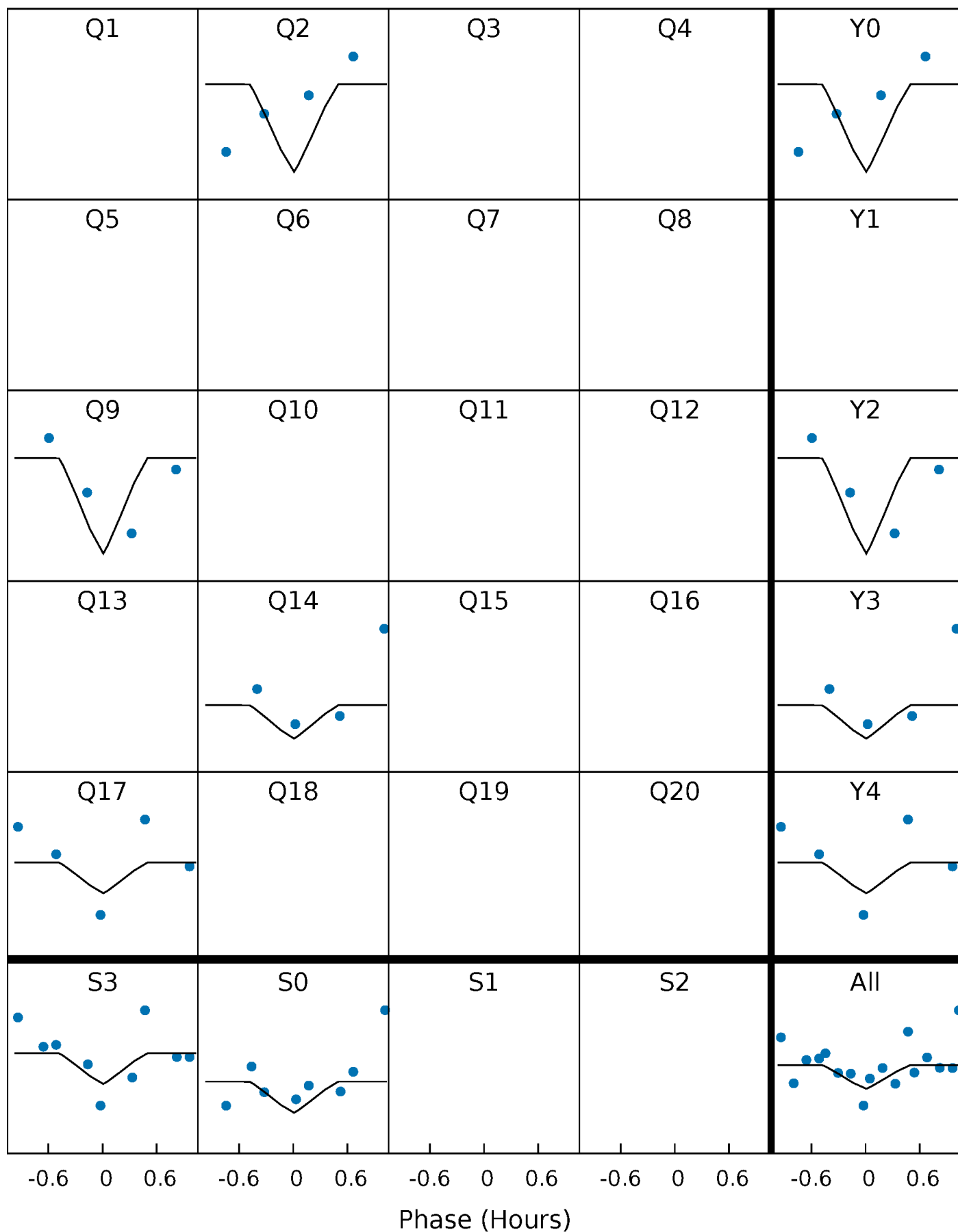
# PDC Quarter-Phased Transit Curves

TCE 009118695-03     $P=229.548298$  Days     $T_0=188.269898$  (BKJD)



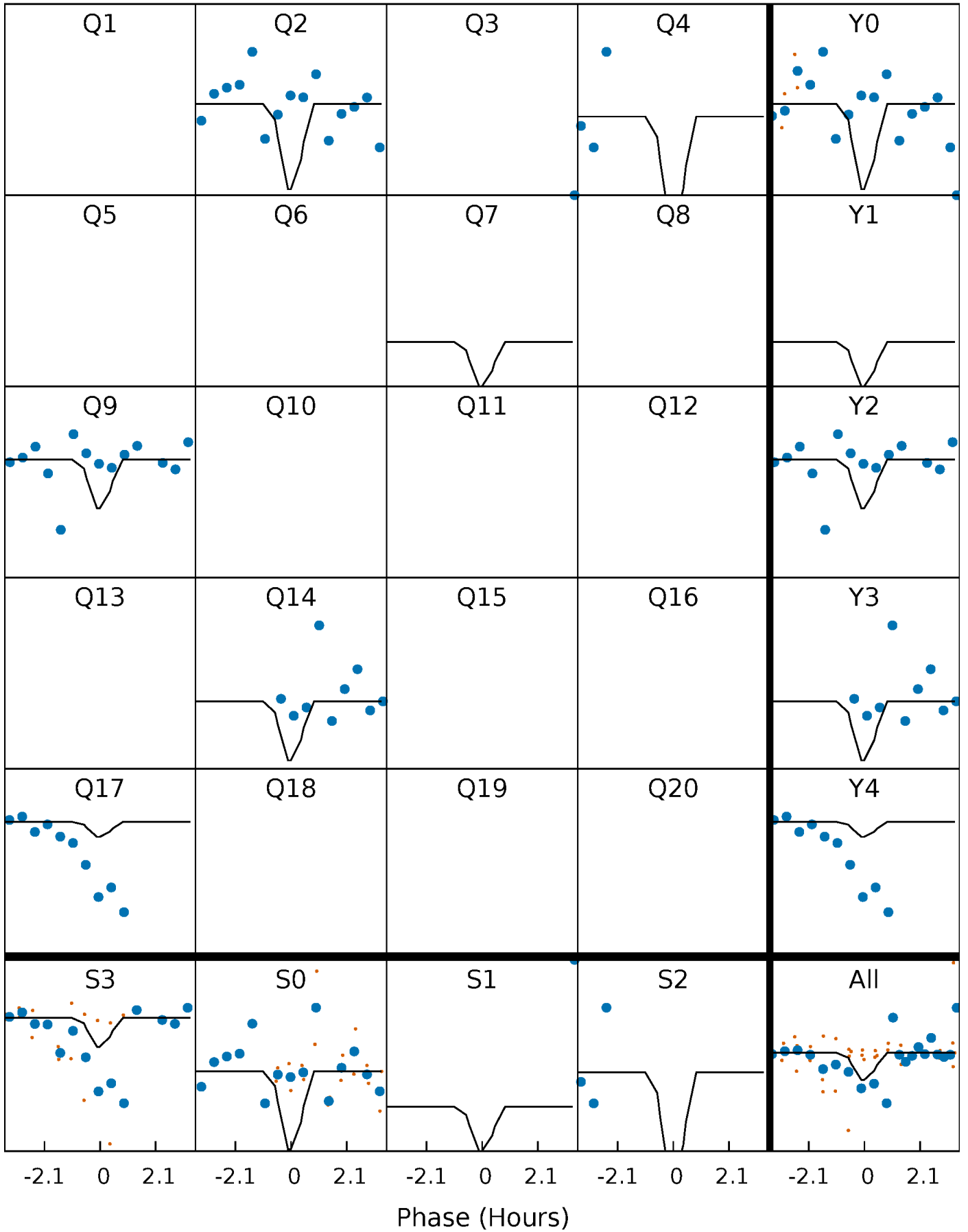
# DV Quarter-Phased Transit Curves

TCE 009118695-03 P=229.548298 Days  $T_0=188.269898$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

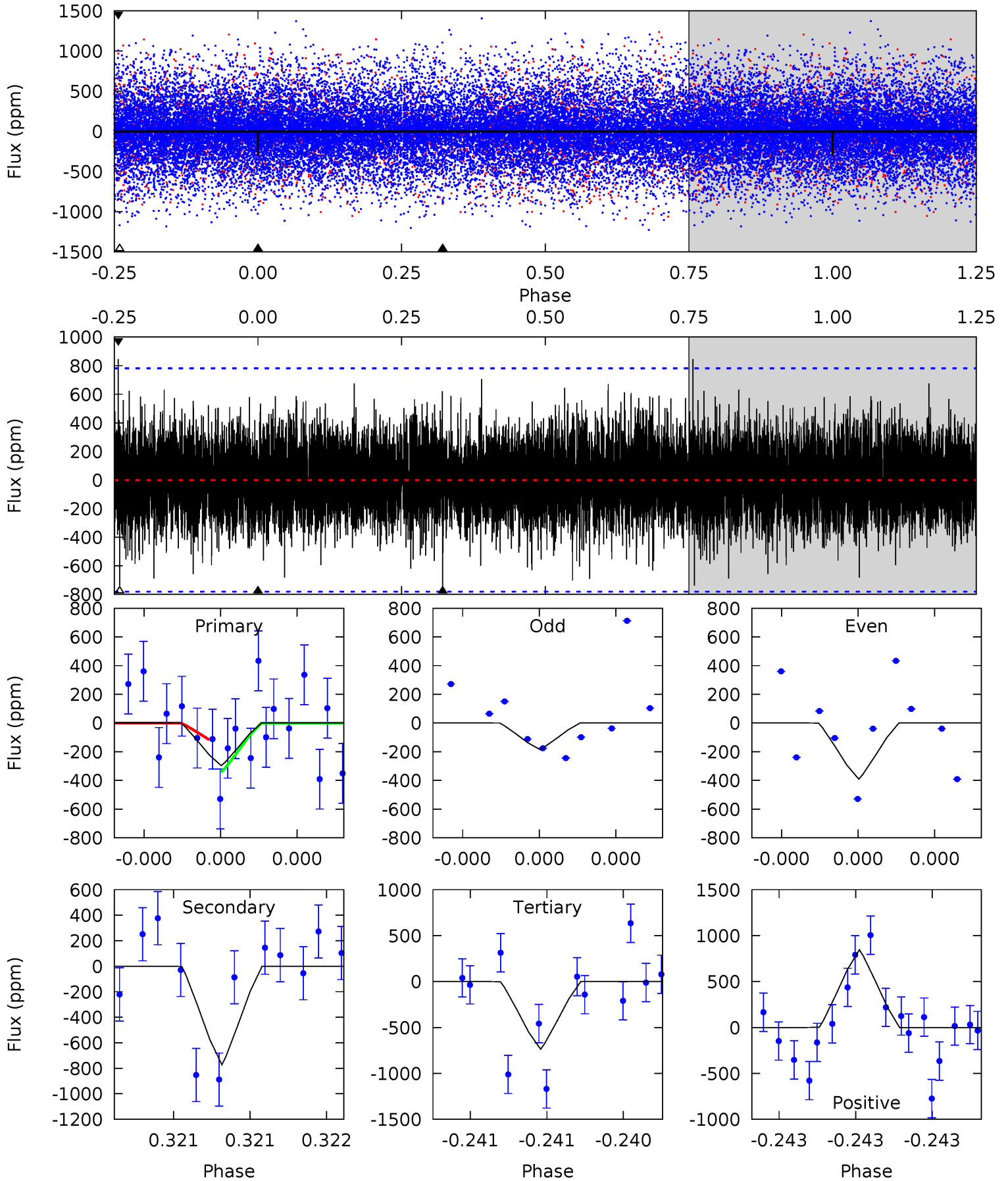
TCE 009118695-03 P=229.550613 Days  $T_0=188.261132$  (BKJD)



# DV Model-Shift Uniqueness Test

009118695-03, P = 229.548298 Days, E = 188.269898 Days

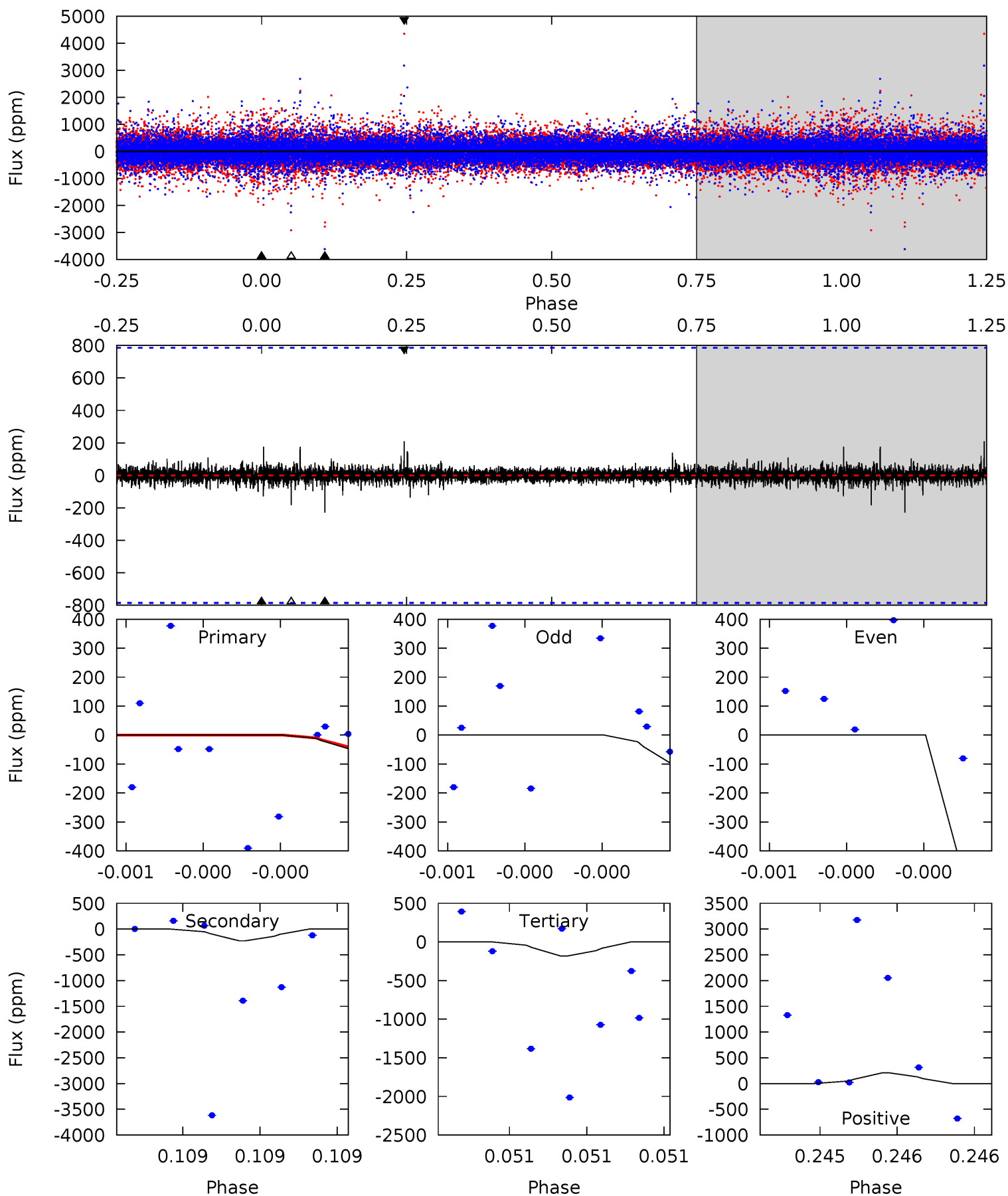
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.19	5.70	5.43	6.23	5.76	3.76	1.31	-3.24	-4.04	0.26	-0.54	0.77	1.30	0.52	0.79



# Alt Model-Shift Uniqueness Test

009118695-03, P = 229.550613 Days, E = 188.261132 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
0.36	1.67	1.34	1.53	5.73	3.72	0.18	-0.98	-1.17	0.33	0.14	6.36	9.45	0.48	0.01



### Stellar Parameters For KIC 009118695

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5491^{+164}_{-164}$	$4.432^{+0.143}_{-0.266}$	$-0.300^{+0.350}_{-0.250}$	$0.887^{+0.275}_{-0.148}$	$0.776^{+0.126}_{-0.054}$	$1.566^{+0.974}_{-0.928}$
	+3%/-3%	+3%/-6%	+117%/-83%	+31%/-17%	+16%/-7%	+62%/-59%
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 009118695-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-772 \pm 136$	$7.12^{+8.01}_{-4.89}$	$393^{+35}_{-25}$	$3839^{+2263}_{-788}$	$3886^{+35365}_{-3032}$
Alt.	$-229 \pm 137$	$7.47^{+7.63}_{-5.34}$	$392^{+37}_{-23}$	$2997^{+1680}_{-547}$	$817^{+9500}_{-660}$

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

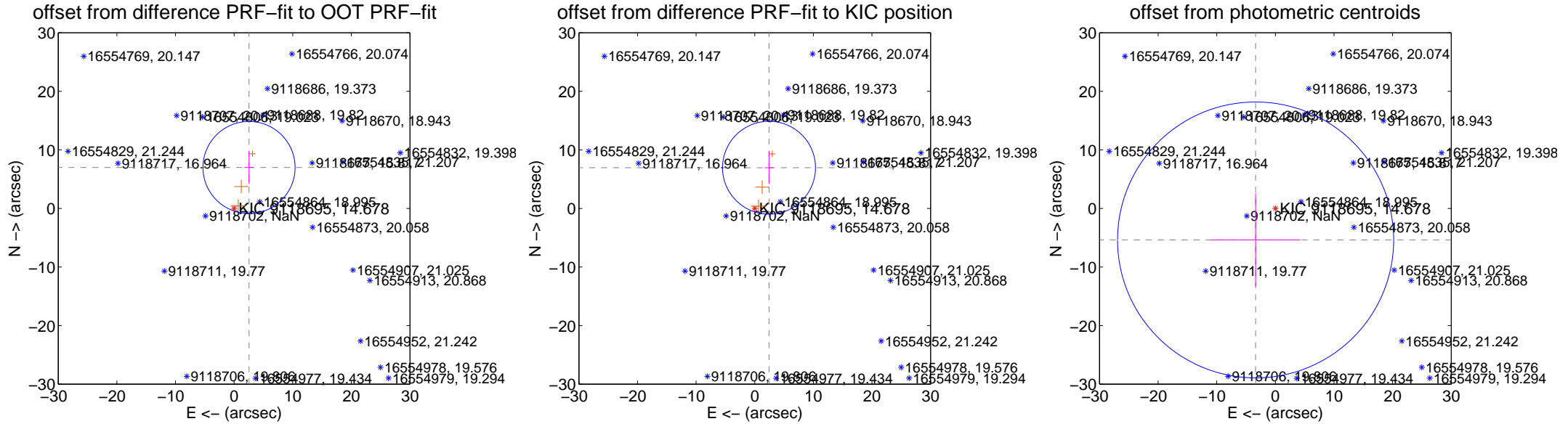
## DV Centroid Data

Supplemental centroid analysis for 009118695-03. Kepler magnitude: 14.68. Transit SNR 1.45

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.442 \pm 2.620$	2.84	$-2.546 \pm 0.812$	$6.992 \pm 2.773$
PRF-fit source offset from KIC position	$7.366 \pm 2.643$	2.79	$-2.434 \pm 0.746$	$6.952 \pm 2.788$
photometric centroid source offset	$6.35 \pm 7.85$	0.81	$3.37 \pm 7.62$	$-5.38 \pm 7.94$



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.



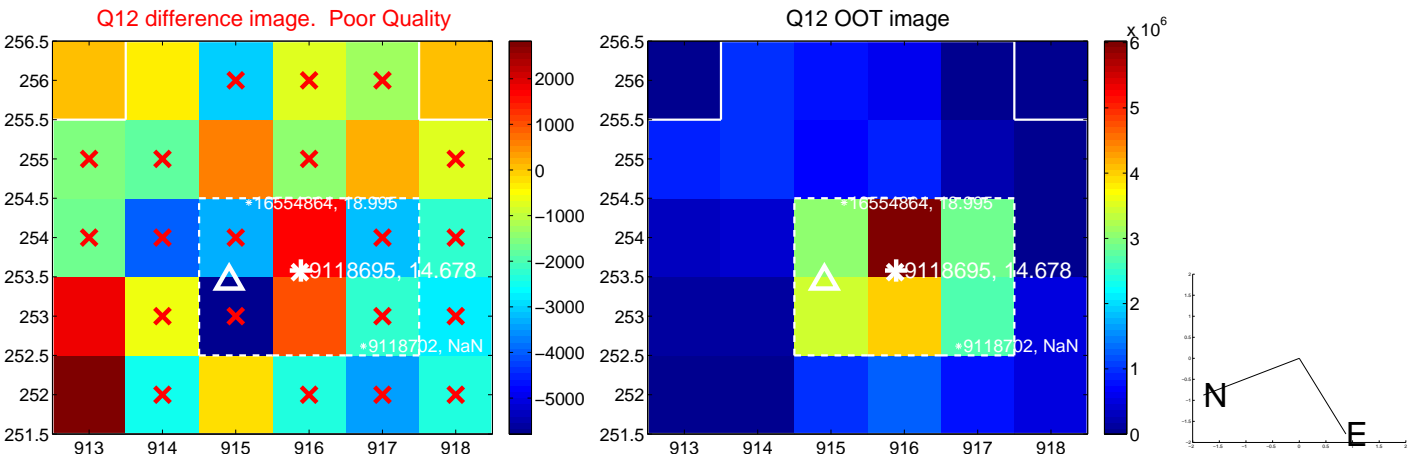
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



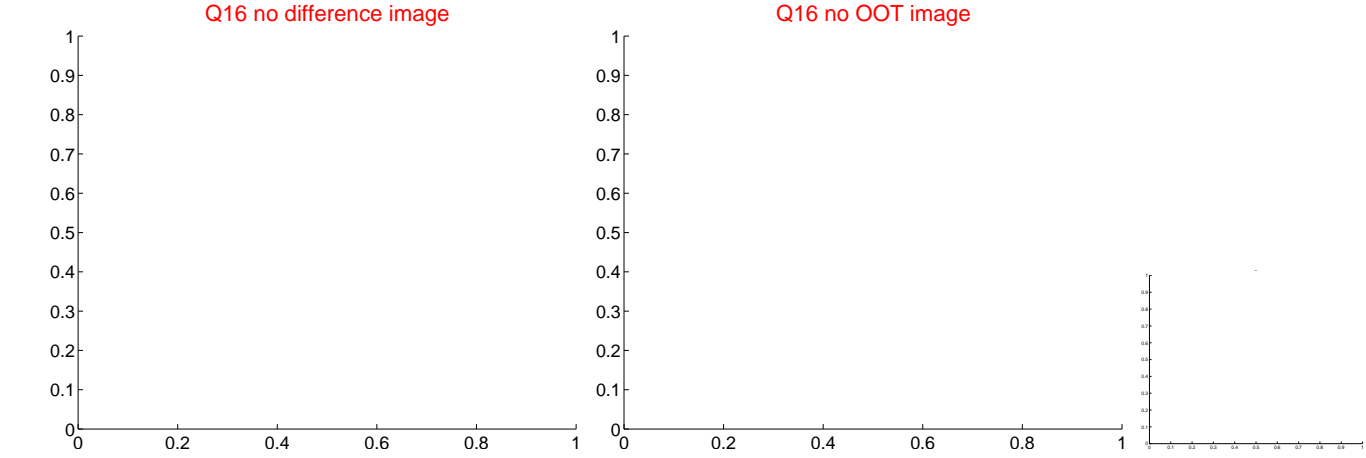
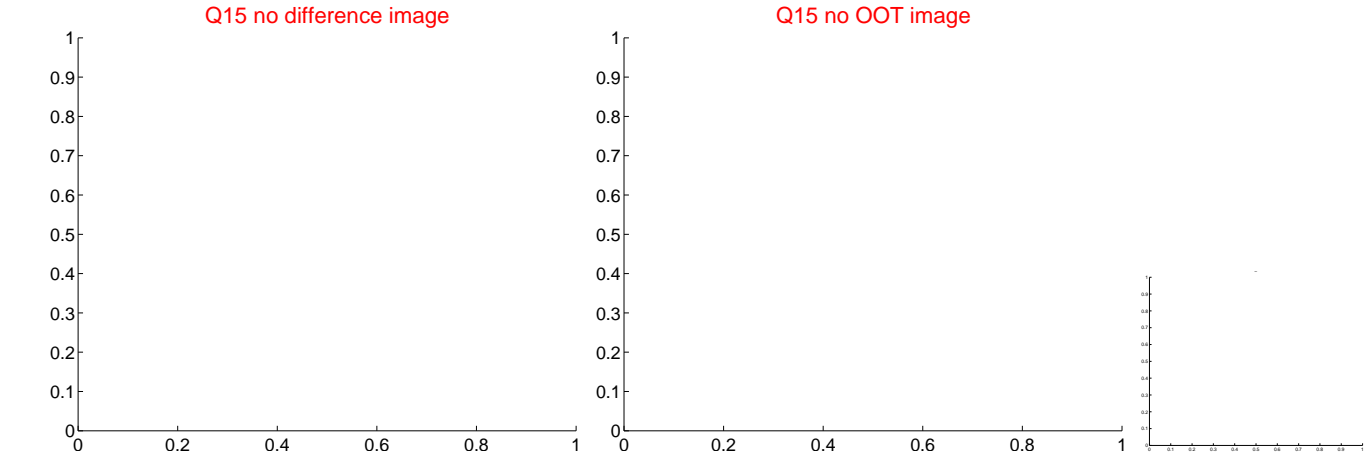
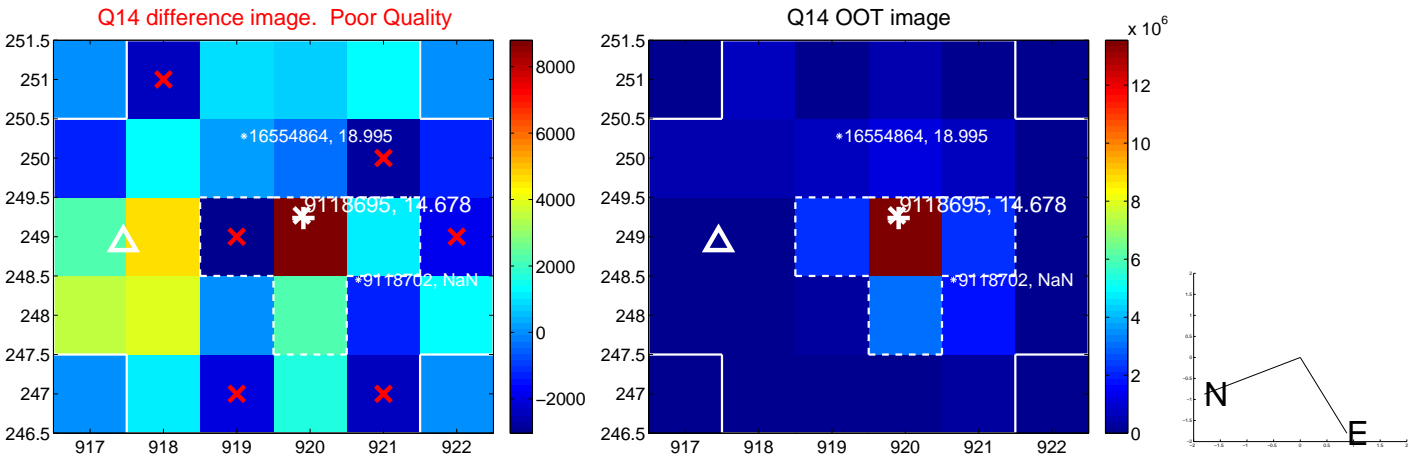
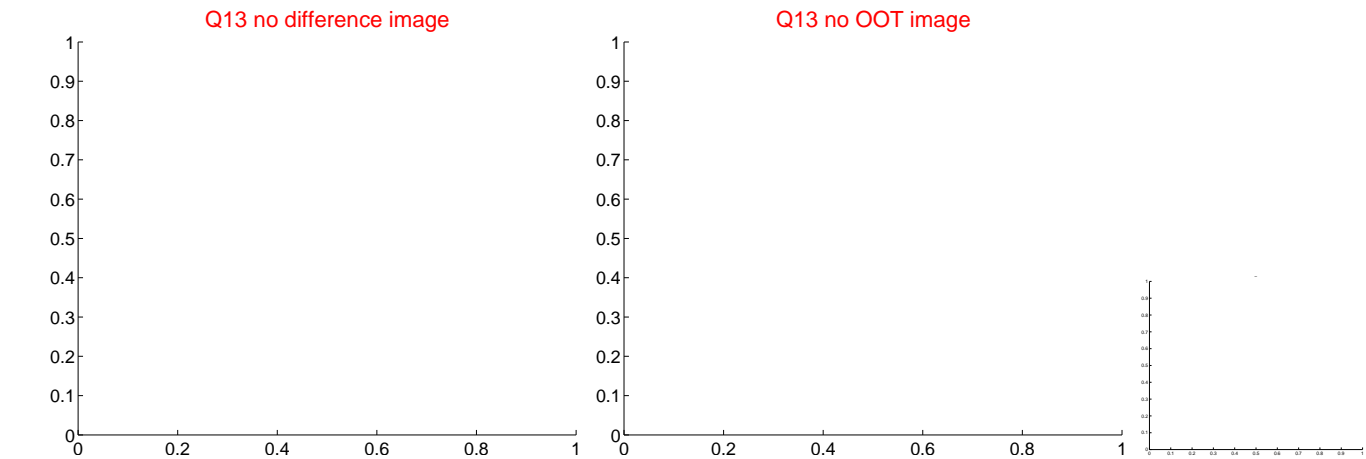
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



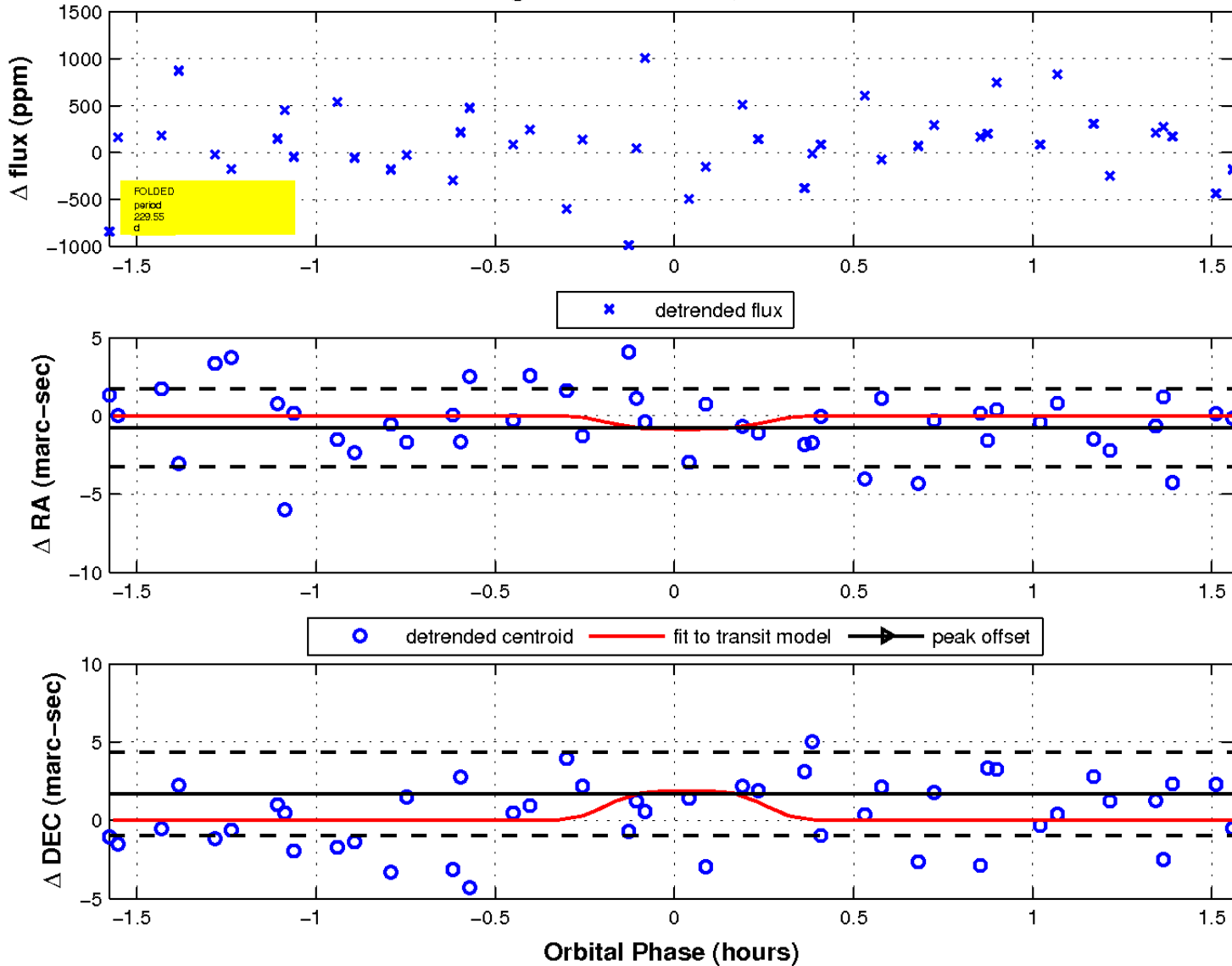
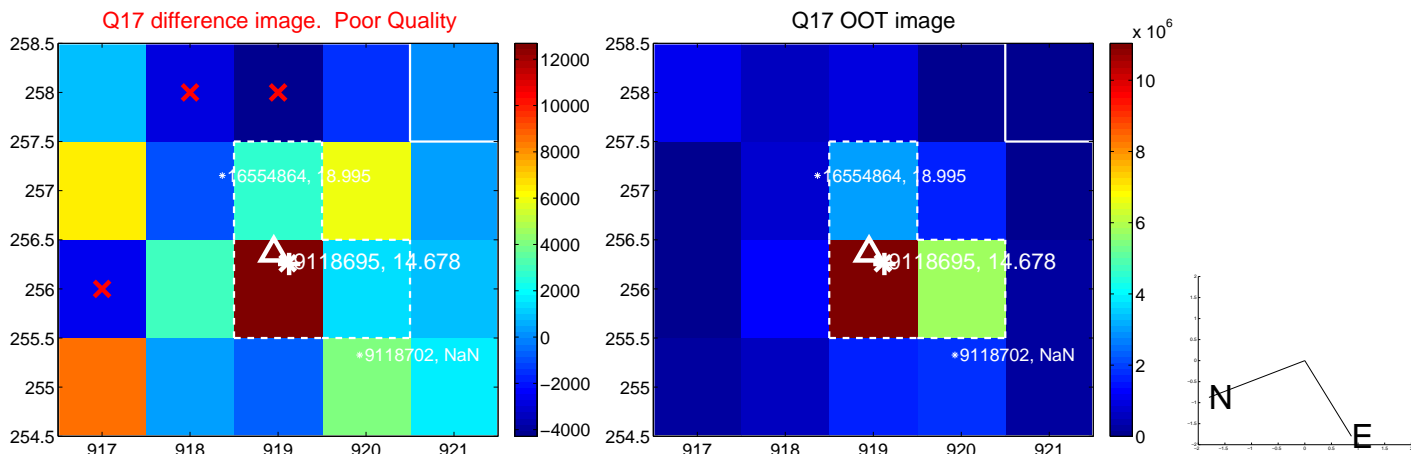
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

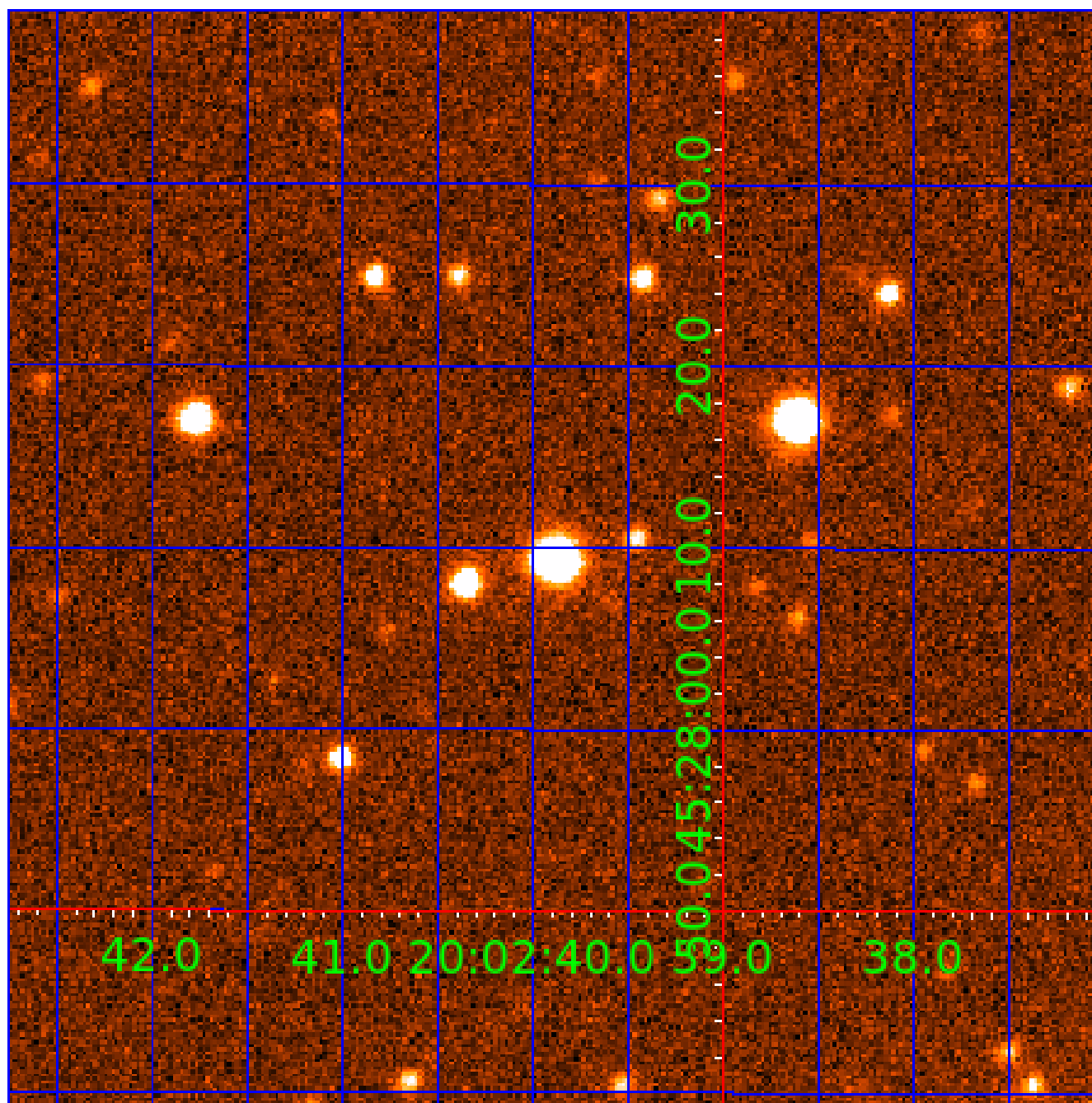


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009118695

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118695-01	OBS	No	1.212130	131.991523	66.9	5.233	11.4	10.5	0.89	5491	0.73	1532.44
009118695-03	OBS	No	229.548298	188.269898	310.0	0.528	18.1	1.5	0.89	5491	1.98	1.41
009118695-04	OBS	No	229.550613	189.072332	1287.8	15.000	18.3	-1.0	0.89	5491	3.14	1.41
009118695-06	OBS	No	114.100566	214.813030	476.3	4.871	12.8	4.9	0.89	5491	2.18	3.58
009118695-07	OBS	No	179.141021	245.717566	749.1	12.000	12.2	-1.0	0.89	5491	2.40	1.96
009118695-08	OBS	No	194.864364	230.808037	803.2	12.542	15.1	5.6	0.89	5491	2.56	1.75
009118695-09	OBS	No	444.098224	158.648730	0.5	4.711	10.2	0.0	0.89	5491	0.07	0.58
009118695-10	OBS	No	183.107433	183.225305	3055.0	27.280	10.6	9.0	0.89	5491	4.85	1.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118695-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009118695-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009118695-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS
009118695-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS
009118695-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

**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.

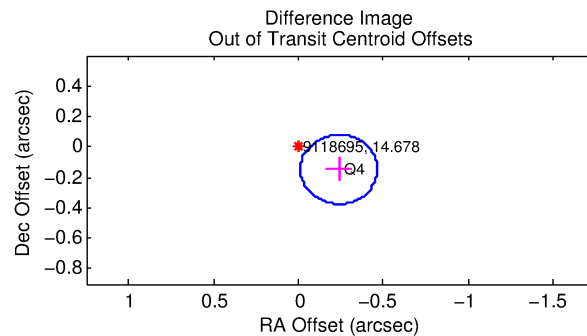
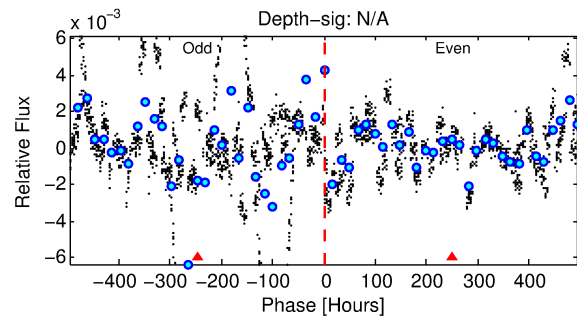
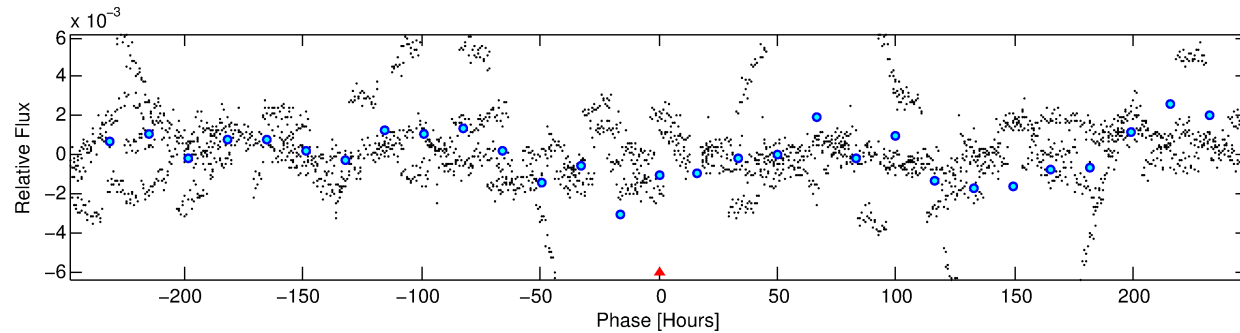
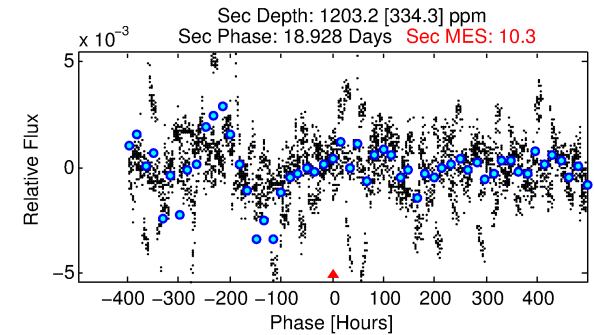
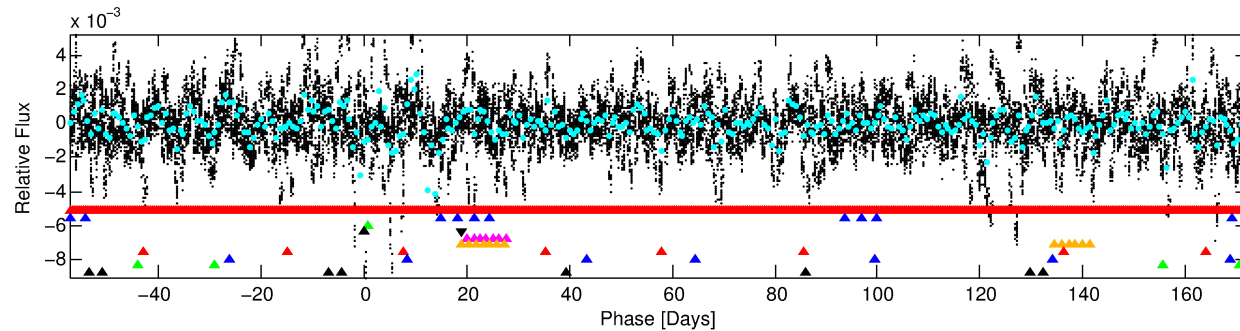
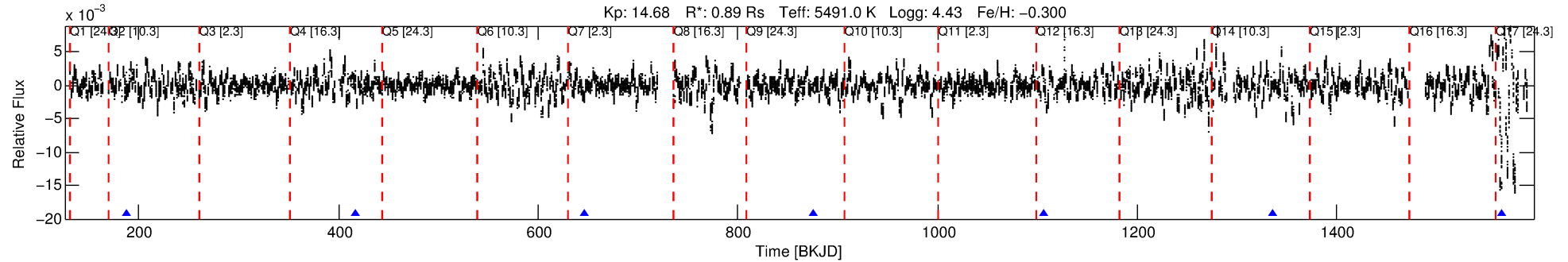
Ephemeris Match Information For 009118695-04

No Significant Match Found



# DV One-Page Summary

KIC: 9118695 Candidate: 4 of 10 Period: 229.551 d



## TPS TCE Results:

Period = 229.55061 d  
Epoch = 189.0723 BKJD

**DV fit results are unavailable**

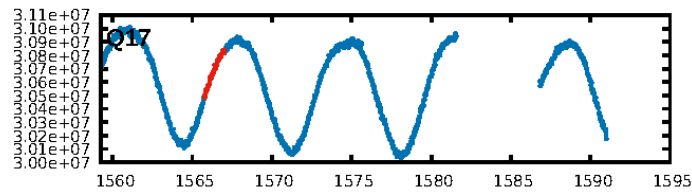
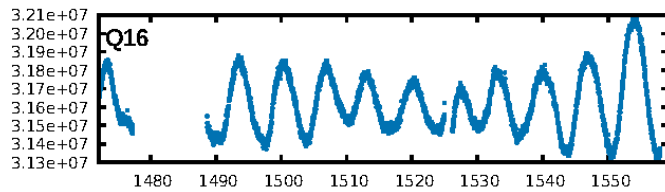
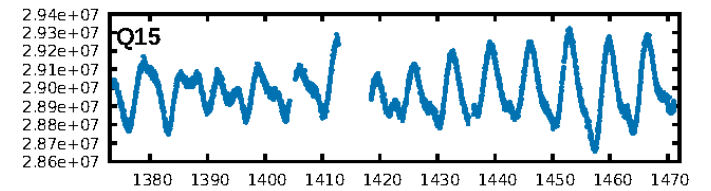
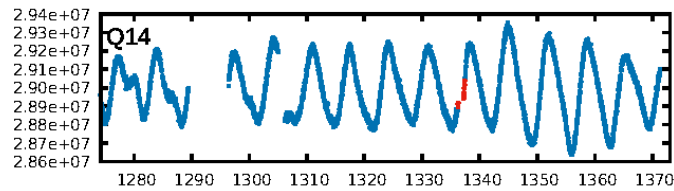
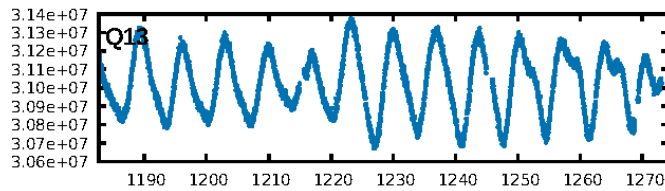
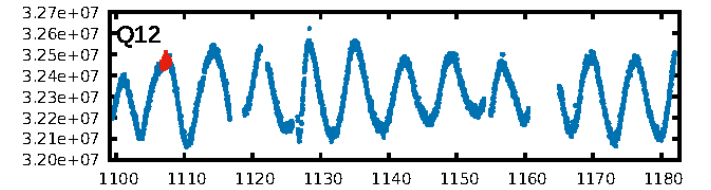
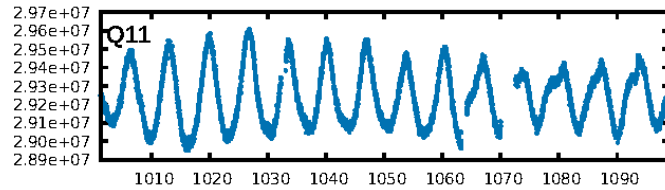
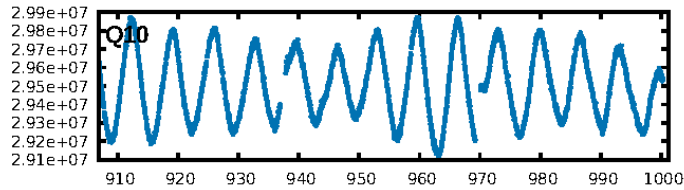
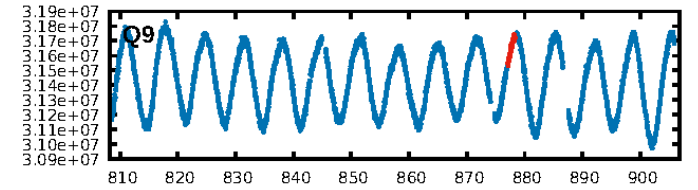
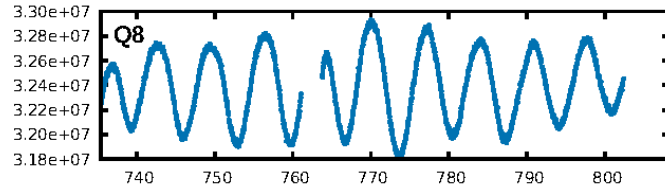
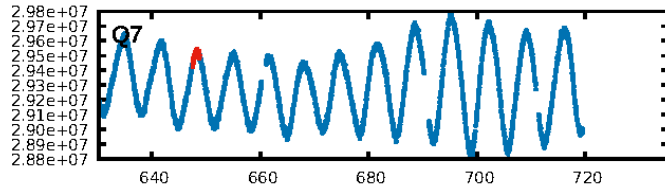
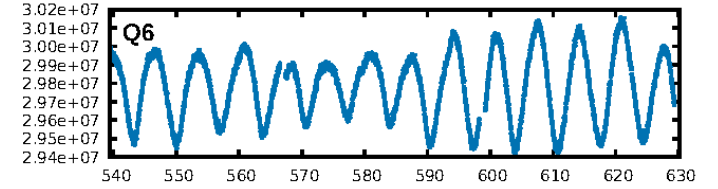
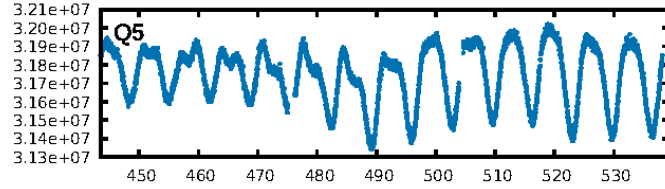
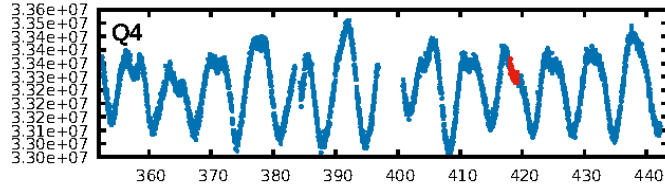
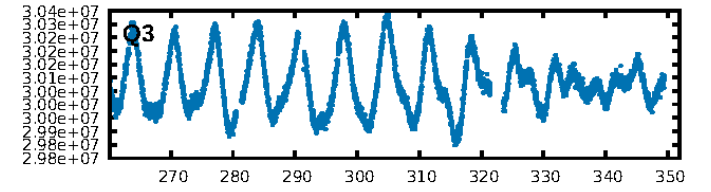
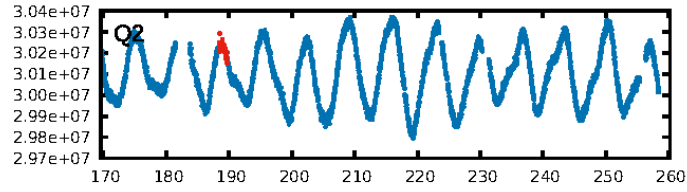
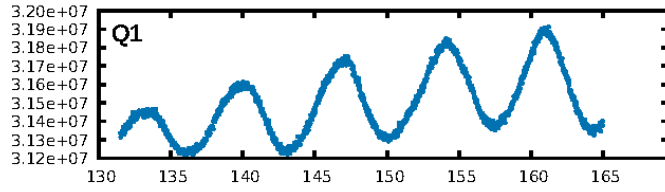
## DV Diagnostic Results:

ShortPeriod-sig: 0.3% [0.00σ]  
LongPeriod-sig: 100.0% [327.50σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.50e-26  
RollingBand-fgt: 1.00 [6/6]  
**GhostDiagnostic-chr: 0.3695**  
Centroid-sig: 64.6%  
Centroid-so: 2.134 arcsec [0.66σ]  
**OotOffset-rm: 0.281 arcsec [3.72σ]**  
KicOffset-rm: 0.177 arcsec [2.34σ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/1]

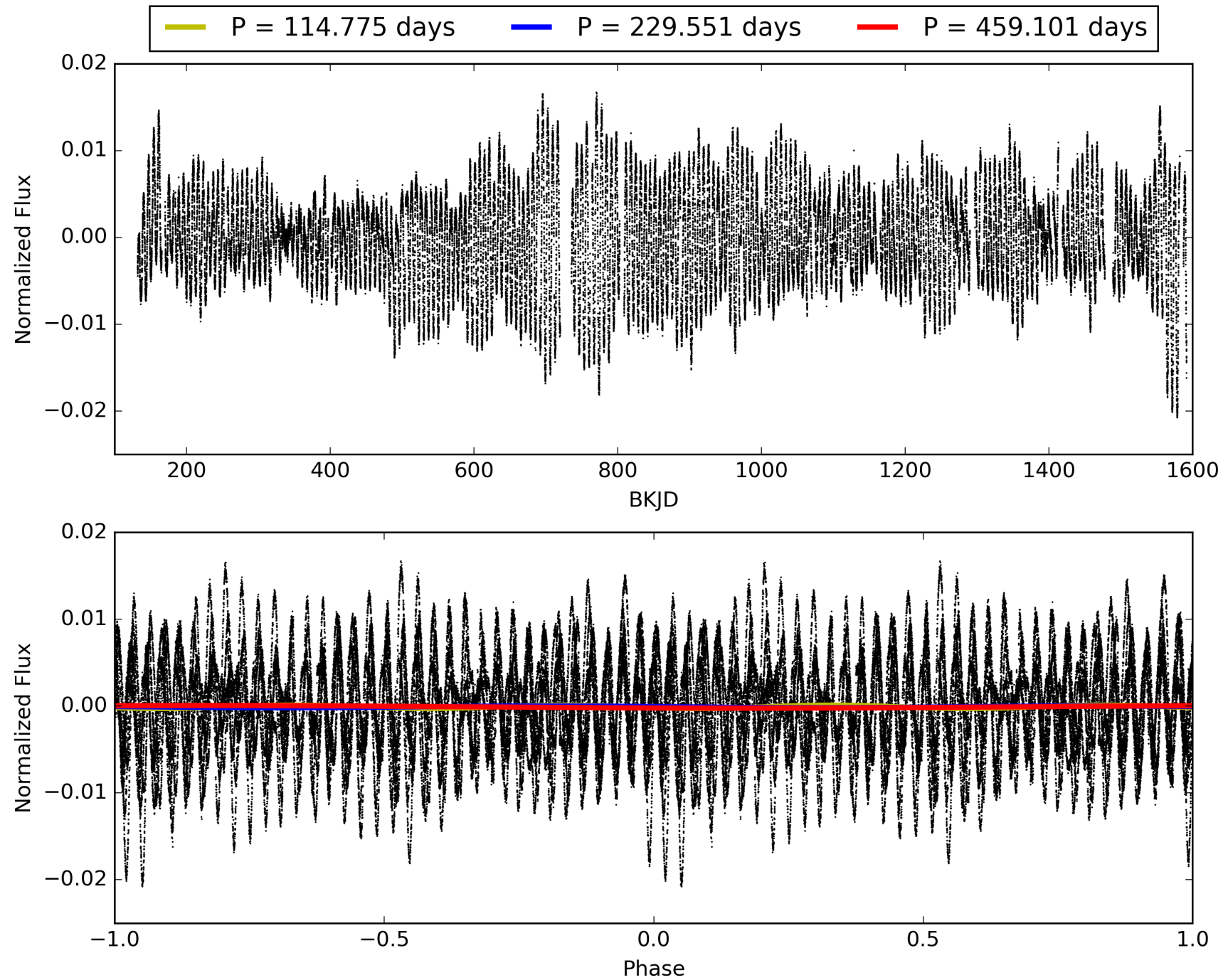
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:45:12 Z

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

# TCE 009118695-04, PDC Light Curves

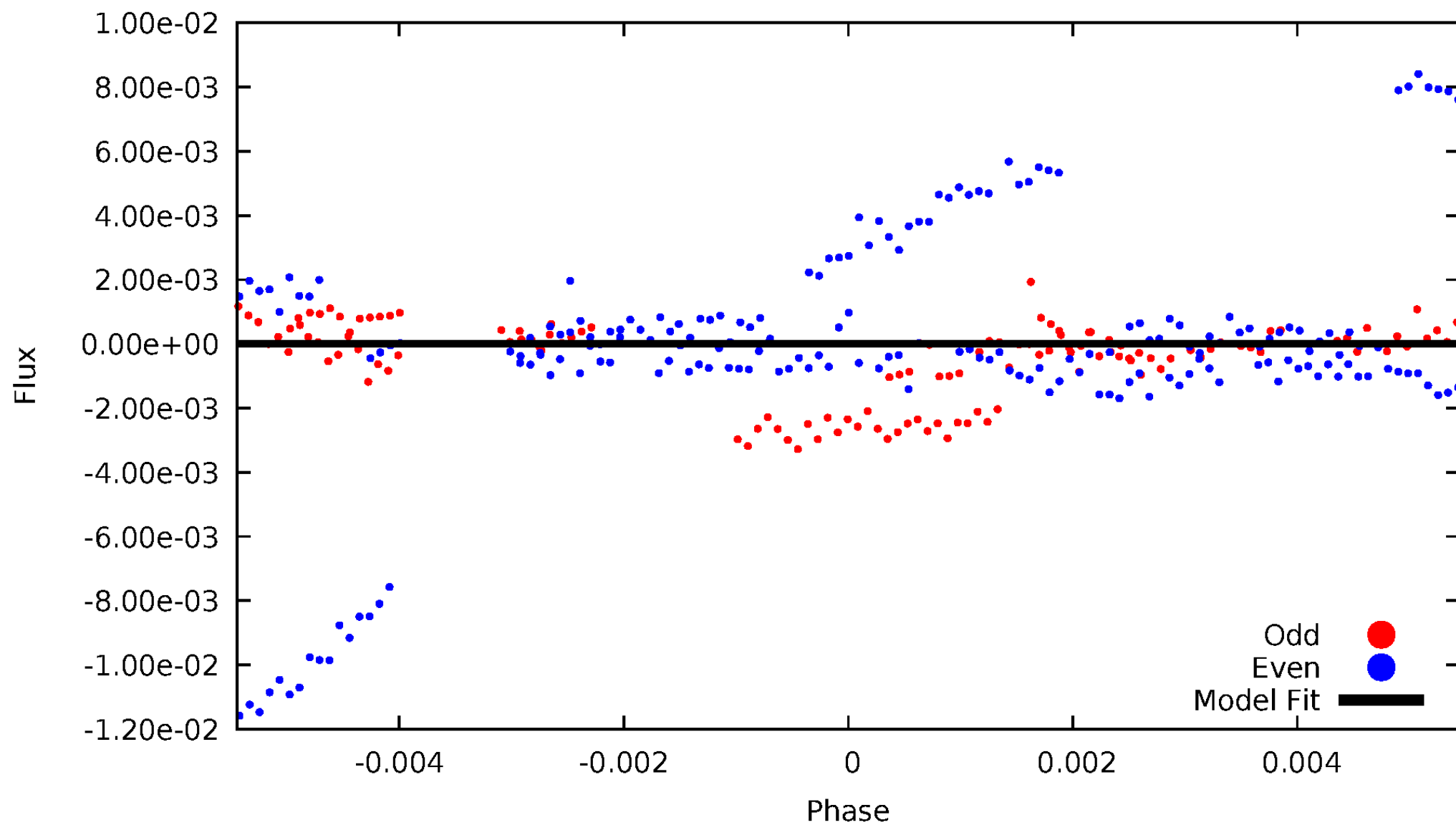


TCE 009118695-04



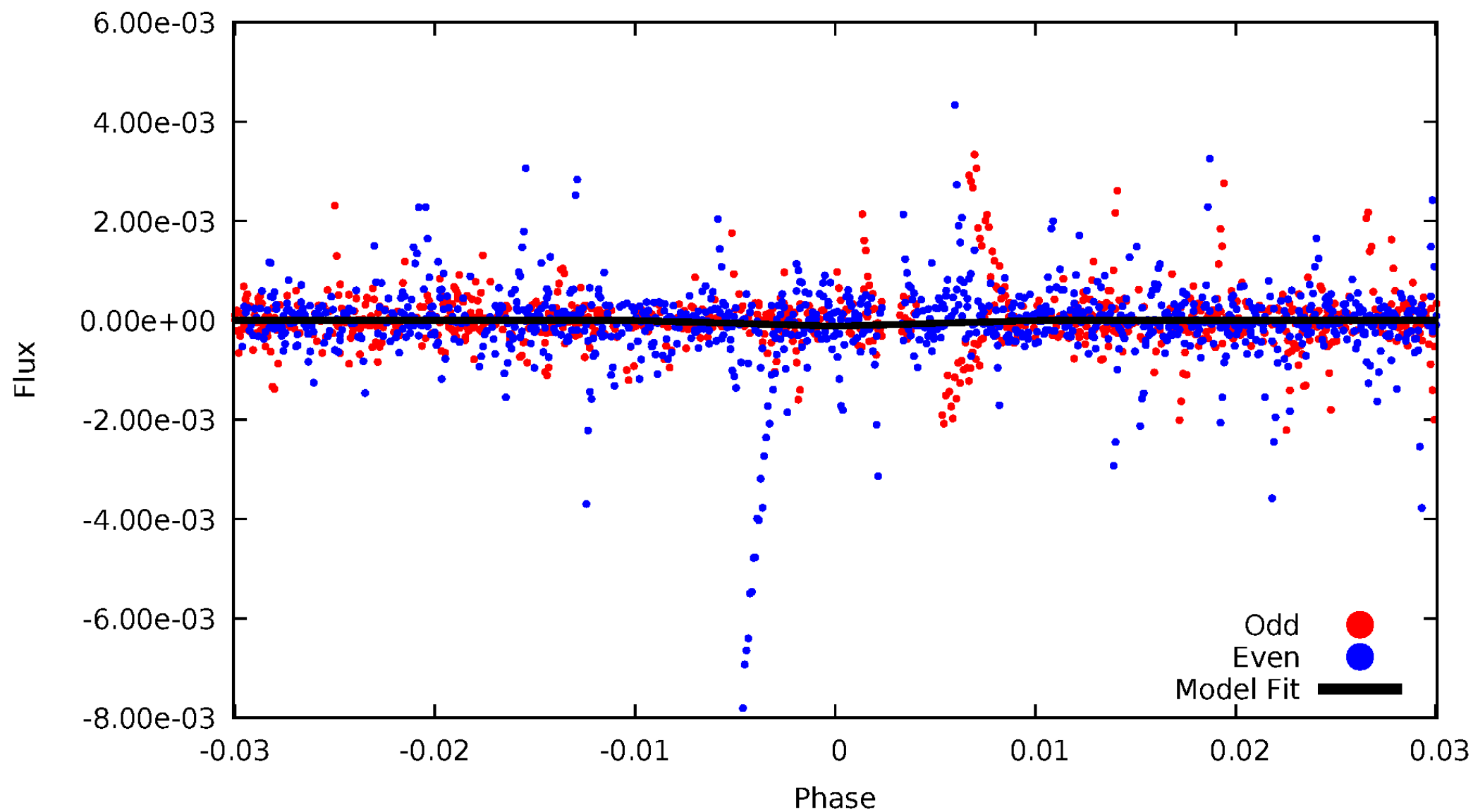
# DV Odd/Even

TCE 009118695-04



# ALT Odd/Even

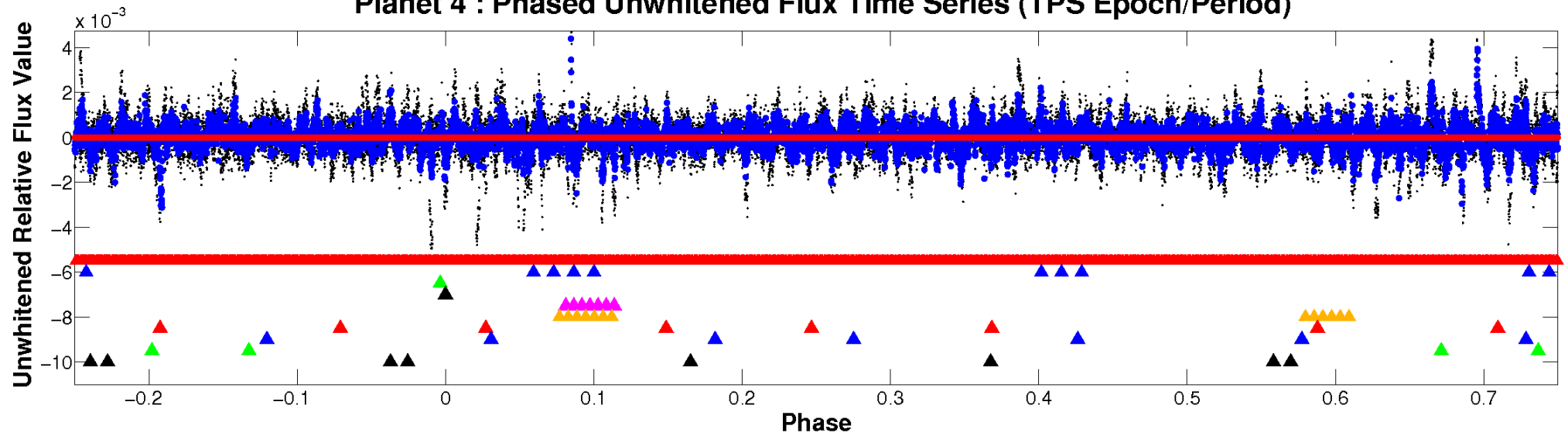
TCE 009118695-04



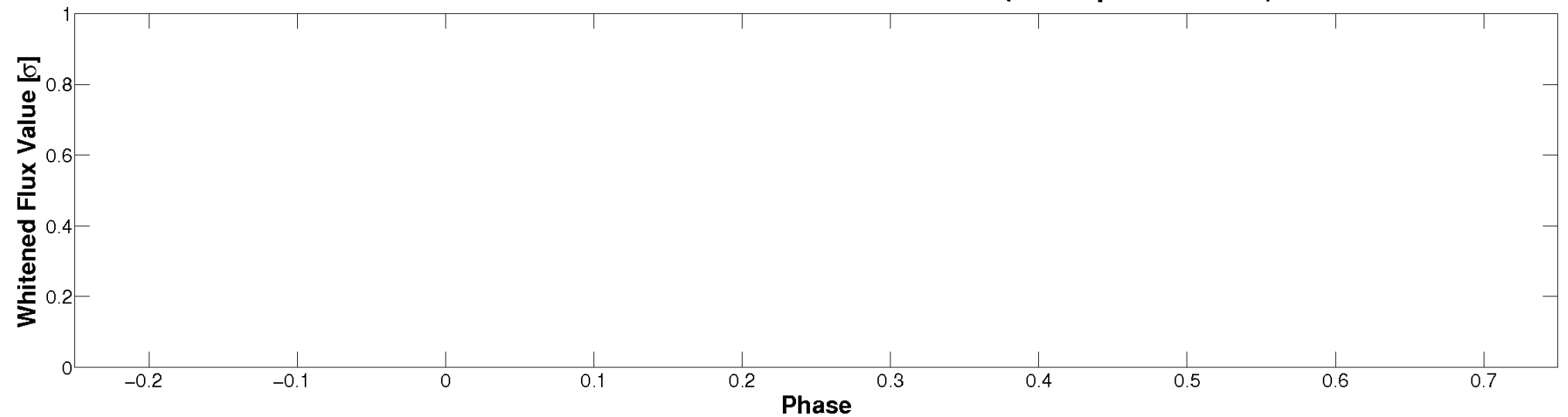


# Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

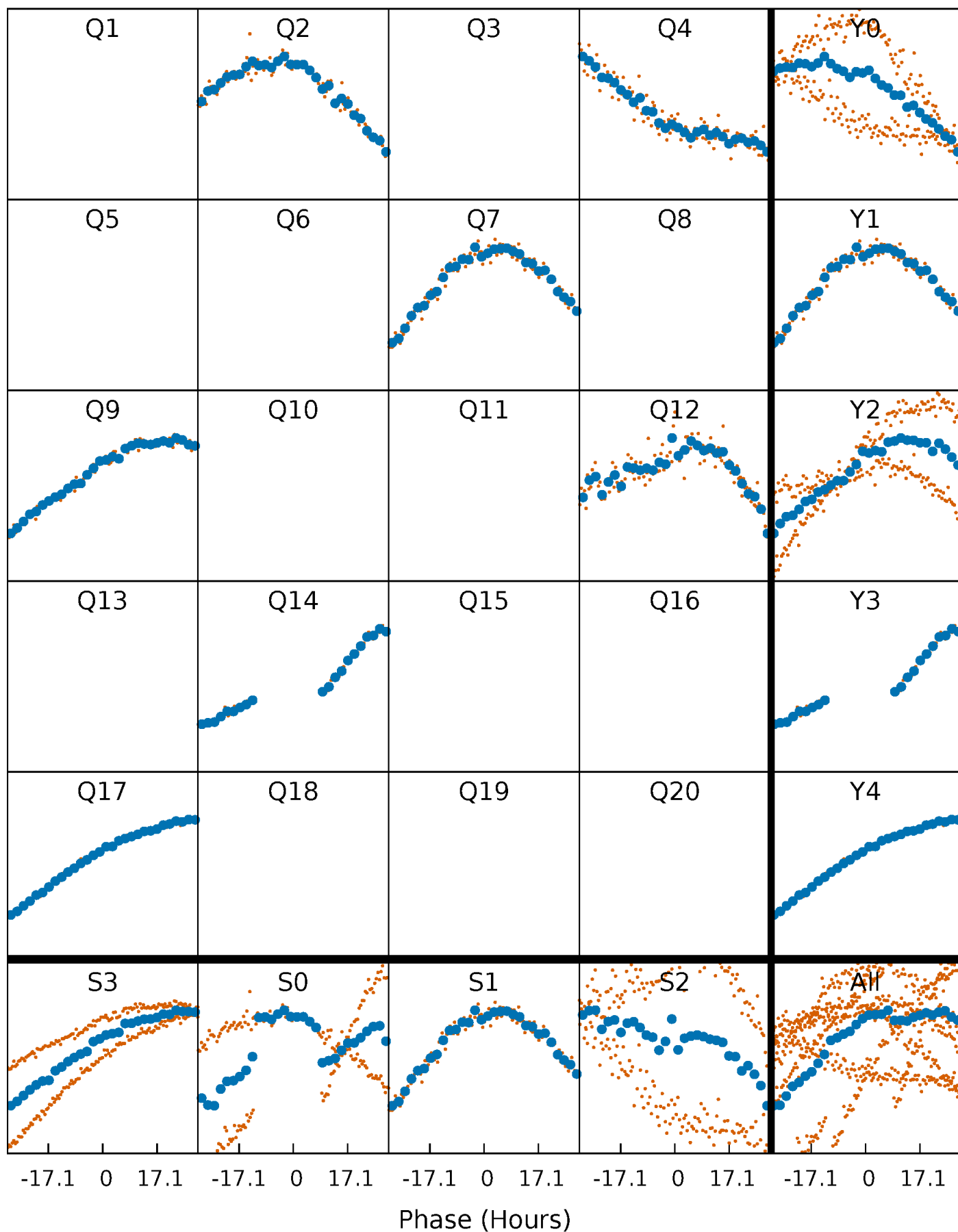


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



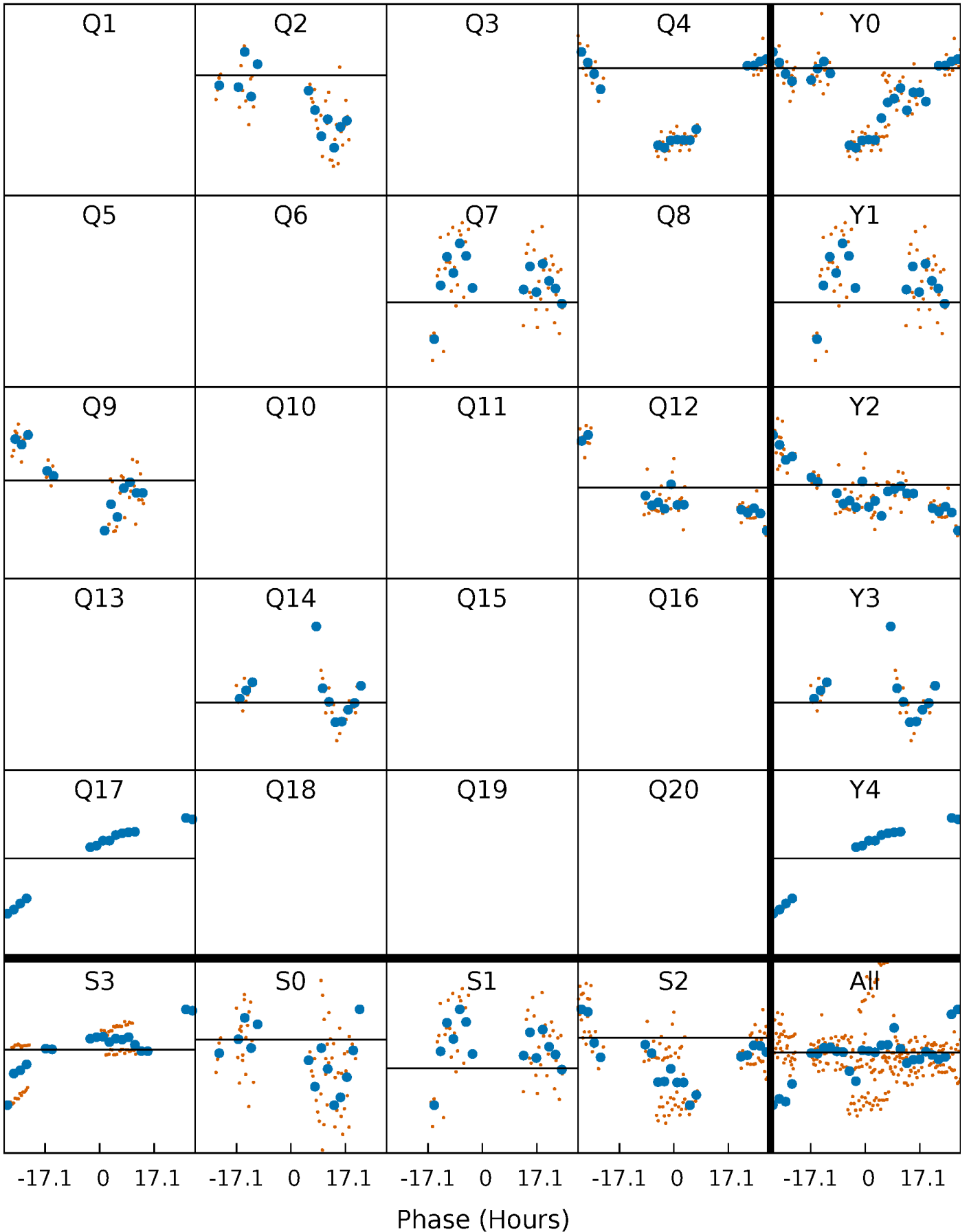
# PDC Quarter-Phased Transit Curves

TCE 009118695-04 P=229.550613 Days  $T_0=189.072332$  (BKJD)



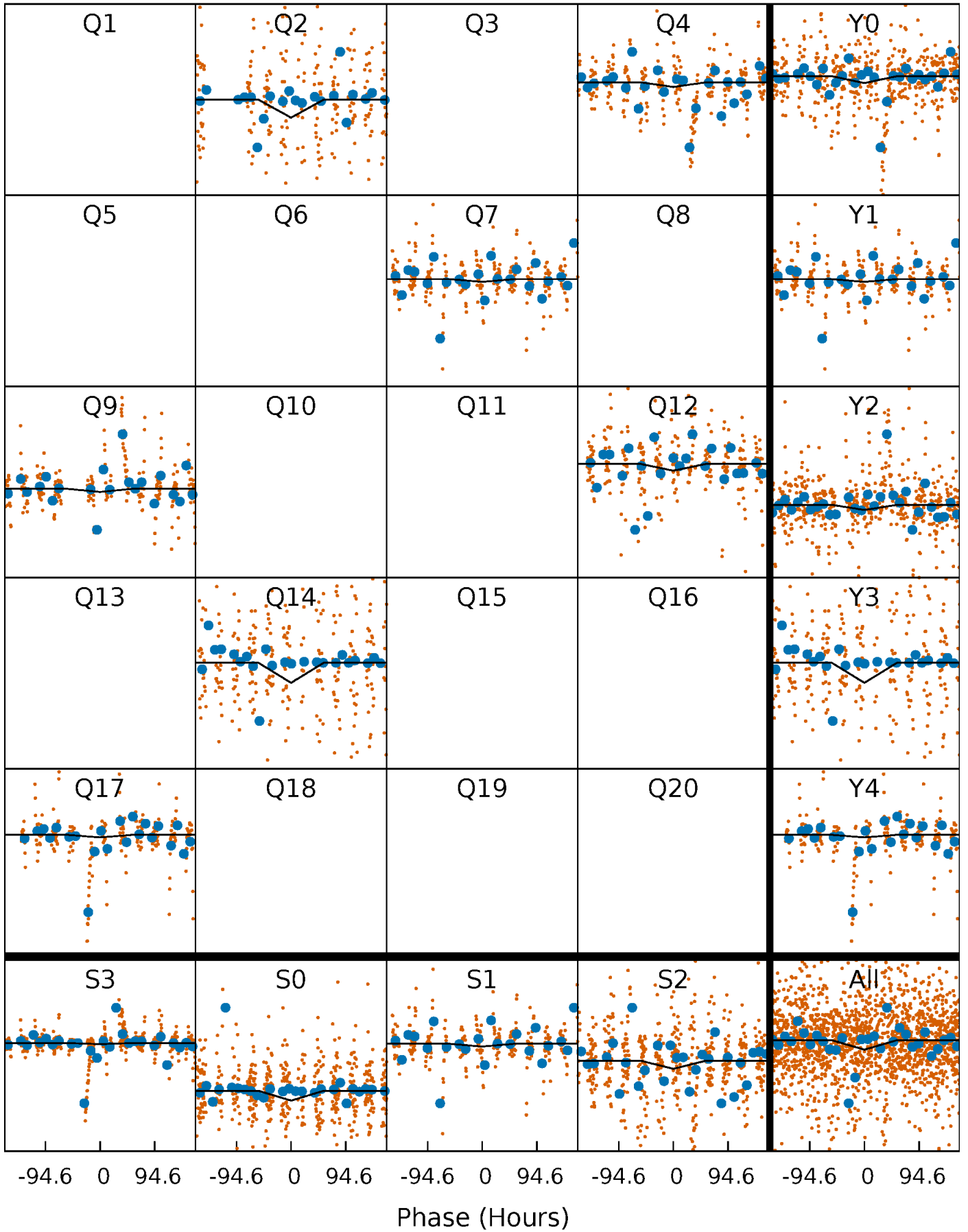
# DV Quarter-Phased Transit Curves

TCE 009118695-04 P=229.550613 Days  $T_0=189.072332$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

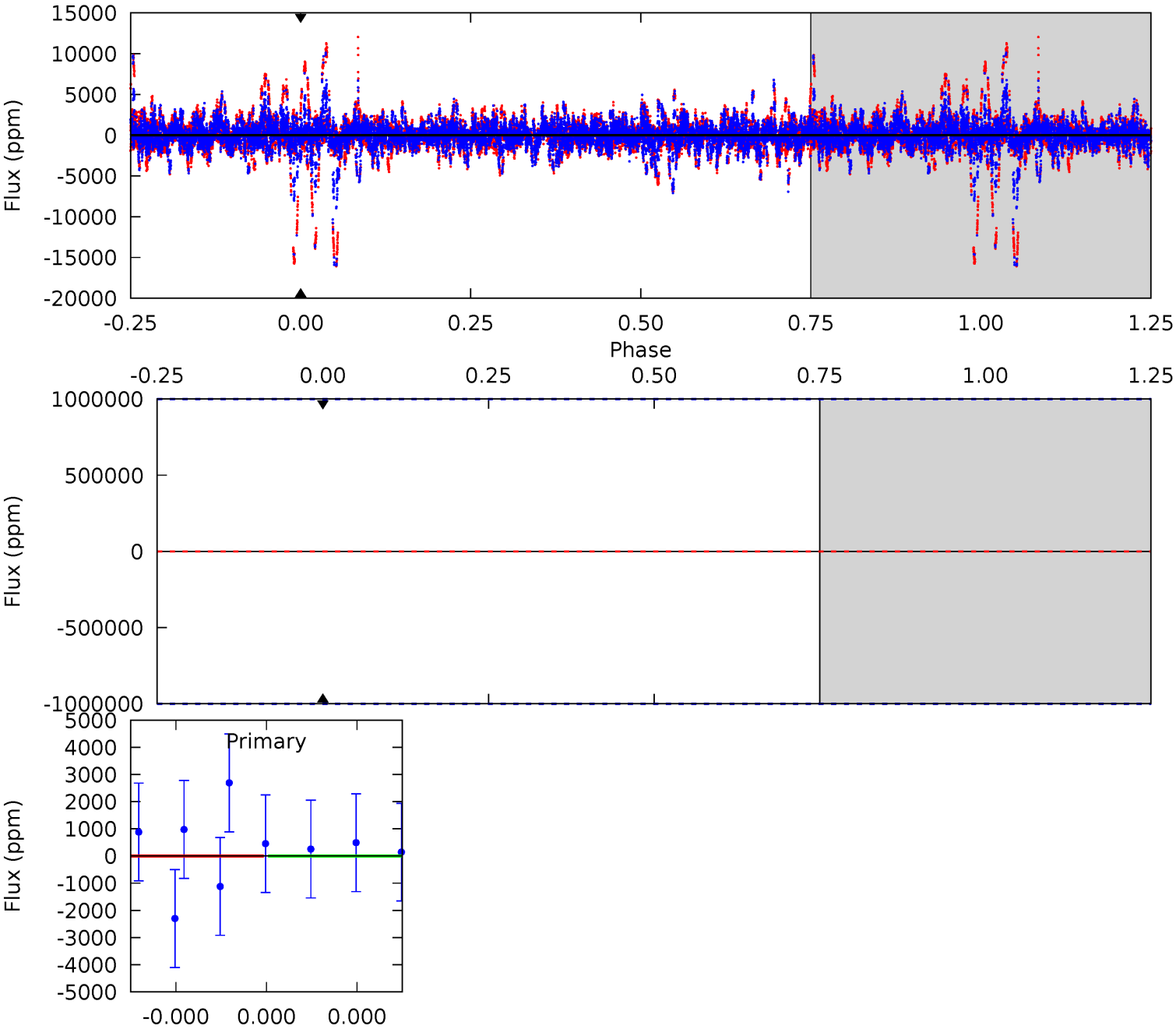
TCE 009118695-04 P=229.550613 Days  $T_0=187.619348$  (BKJD)



# DV Model-Shift Uniqueness Test

009118695-04, P = 229.550613 Days, E = 189.072332 Days

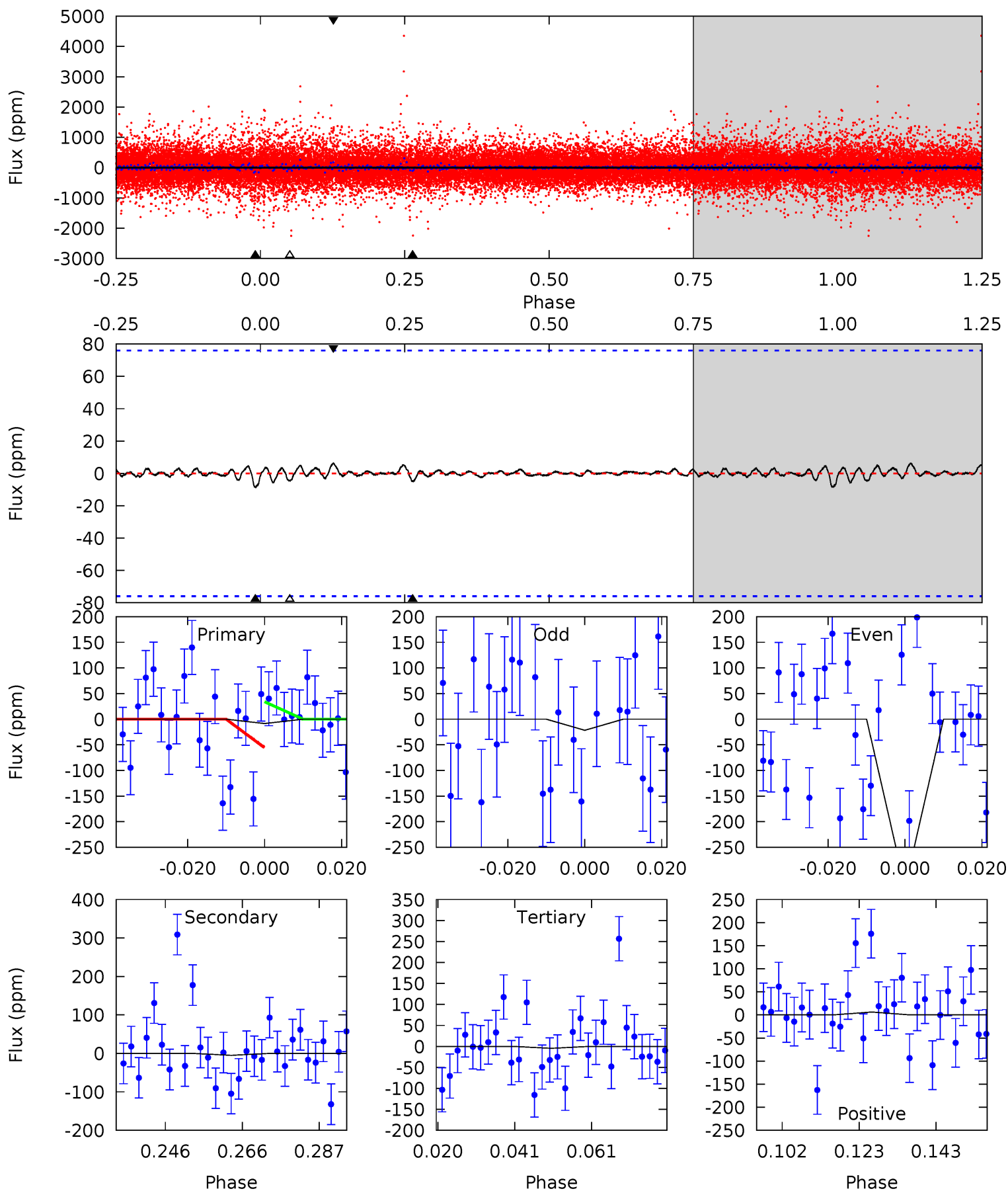
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009118695-04, P = 229.550613 Days, E = 187.619348 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
0.55	0.33	0.29	0.40	4.89	2.32	0.10	0.25	0.14	0.03	-0.08	8.97	43.5	0.43	0.70



### Stellar Parameters For KIC 009118695

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5491^{+164}_{-164}$	$4.432^{+0.143}_{-0.266}$	$-0.300^{+0.350}_{-0.250}$	$0.887^{+0.275}_{-0.148}$	$0.776^{+0.126}_{-0.054}$	$1.566^{+0.974}_{-0.928}$
	+3%/-3%	+3%/-6%	+117%/-83%	+31%/-17%	+16%/-7%	+62%/-59%
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 009118695-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$8.68^{+7.82}_{-6.07}$	$394^{+37}_{-26}$	$-4075^{+20727}_{-11535}$	$-3307.671^{+608037.490}_{-636698.613}$
Alt.	$-5 \pm 16$	$7.29^{+7.94}_{-4.88}$	$393^{+34}_{-26}$	$1850^{+687}_{-3990}$	$13^{+221}_{-67}$

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



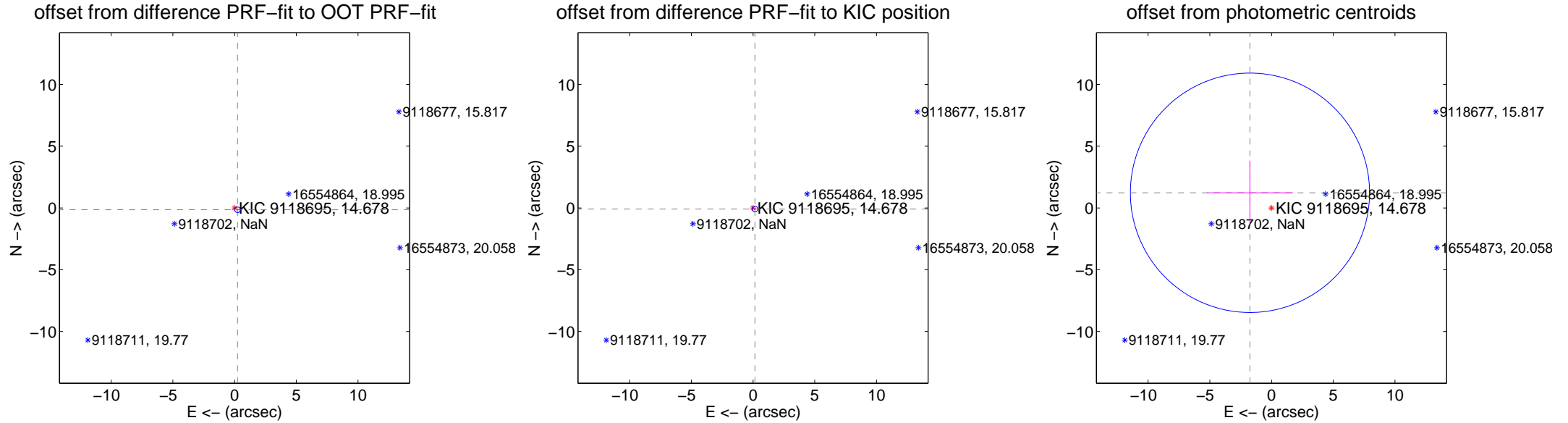
## DV Centroid Data

Supplemental centroid analysis for 009118695-04. Kepler magnitude: 14.68. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

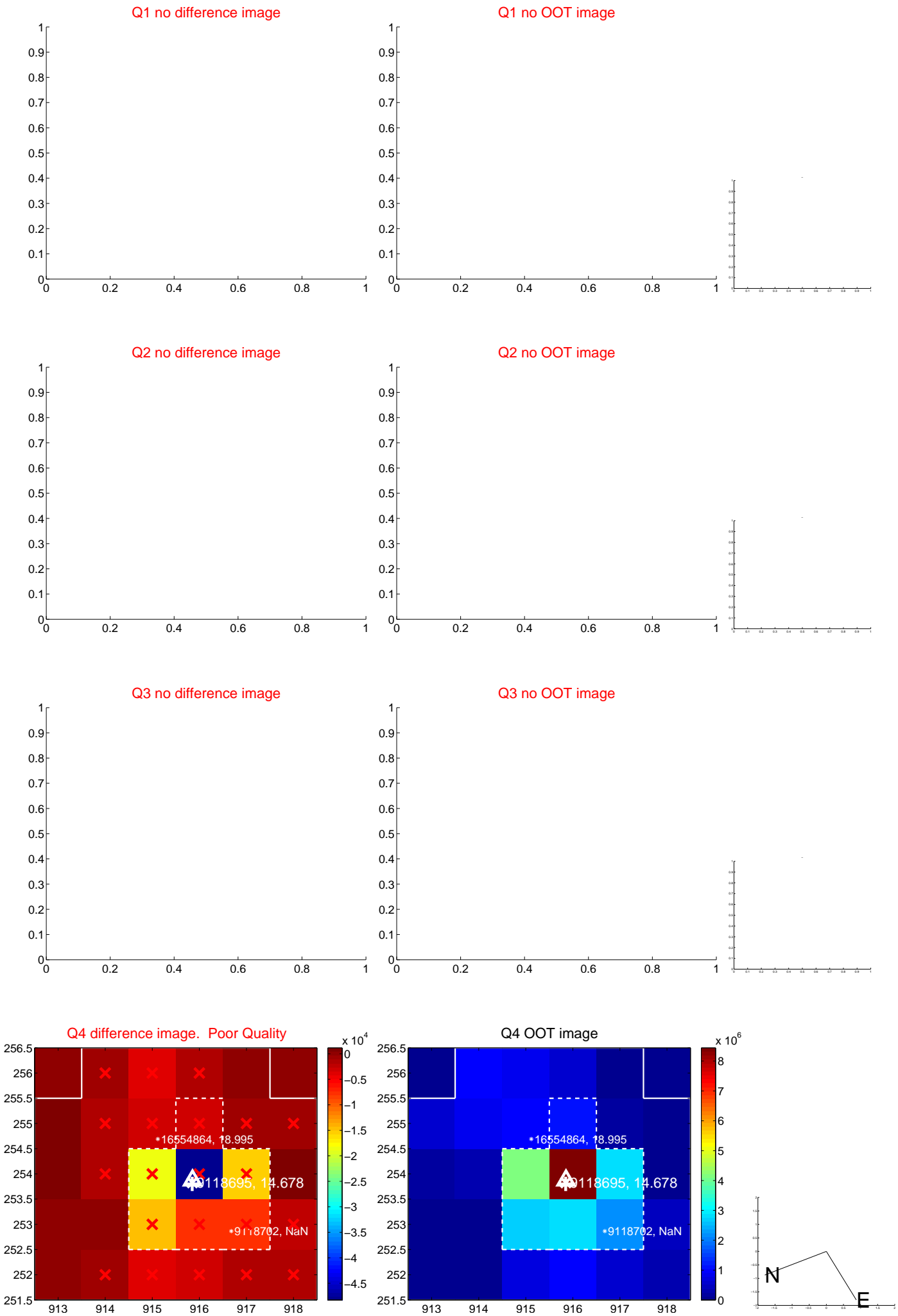
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.281 \pm 0.075$	$3.72$	$-0.239 \pm 0.076$	$-0.148 \pm 0.073$
PRF-fit source offset from KIC position	$0.177 \pm 0.076$	$2.34$	$-0.153 \pm 0.076$	$-0.089 \pm 0.073$
photometric centroid source offset	$2.13 \pm 3.23$	$0.66$	$1.75 \pm 3.49$	$1.23 \pm 2.61$

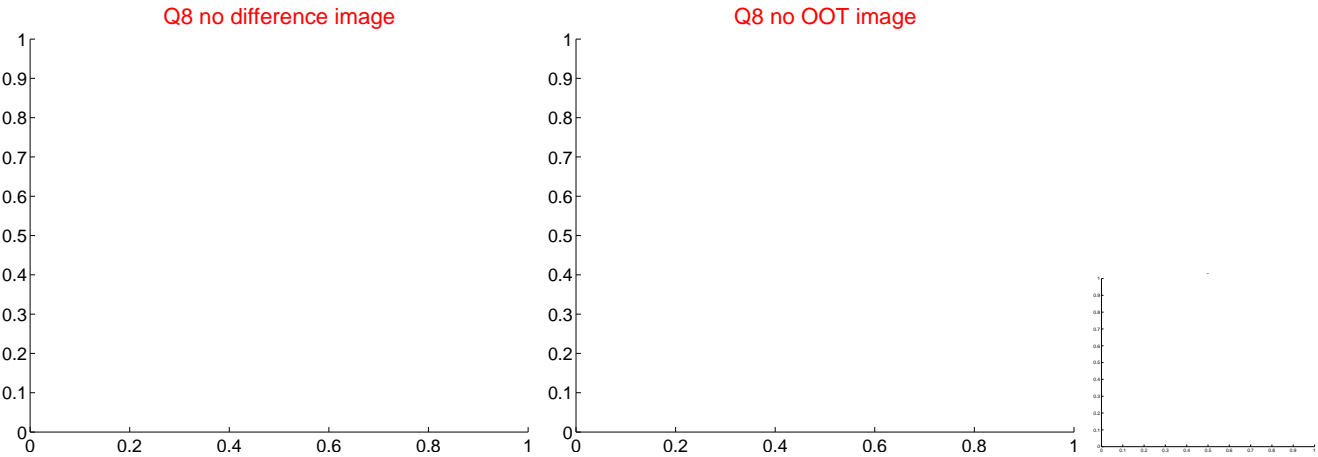
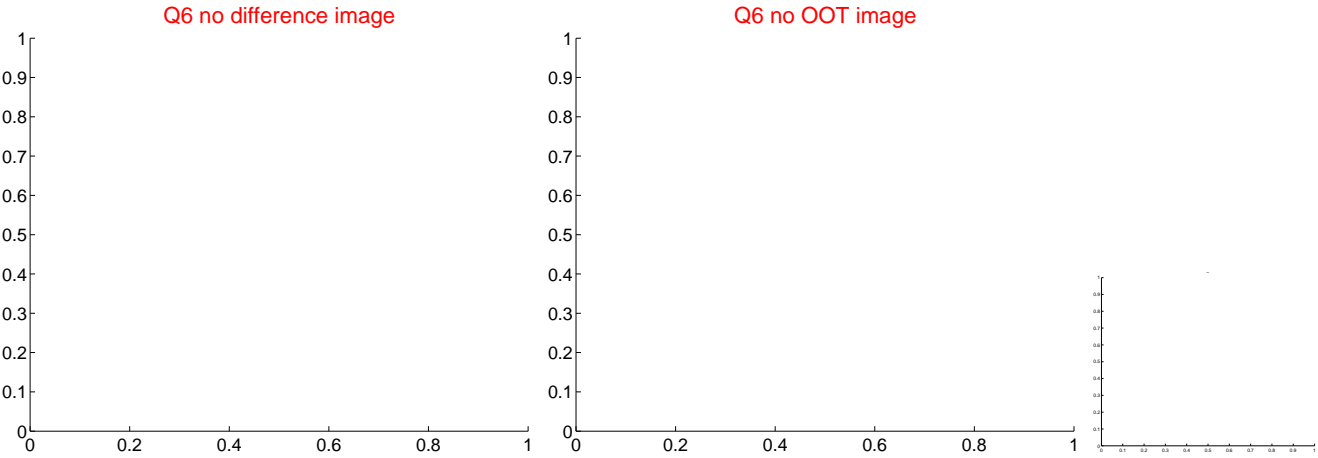
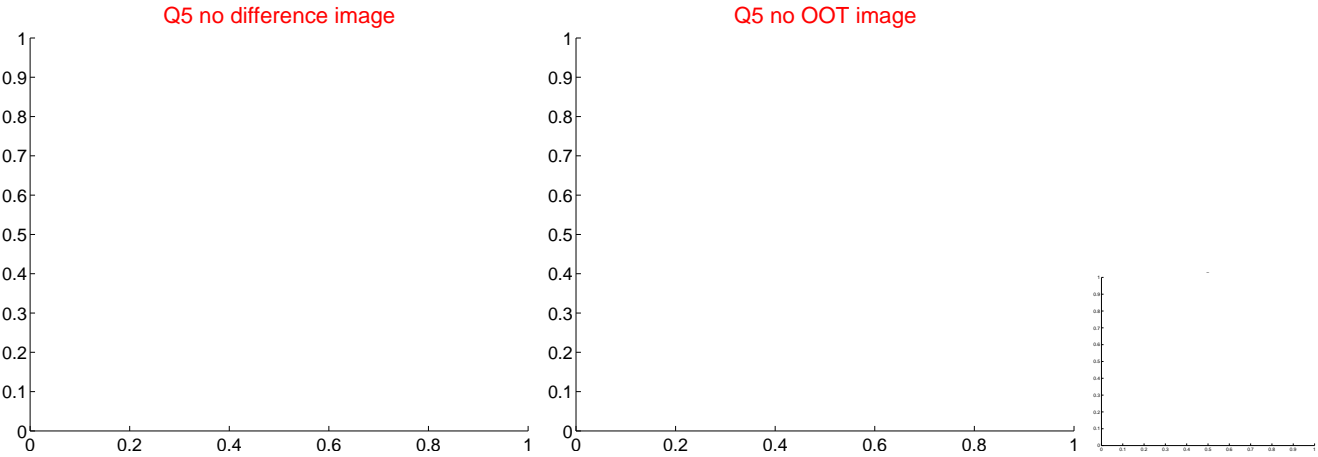


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



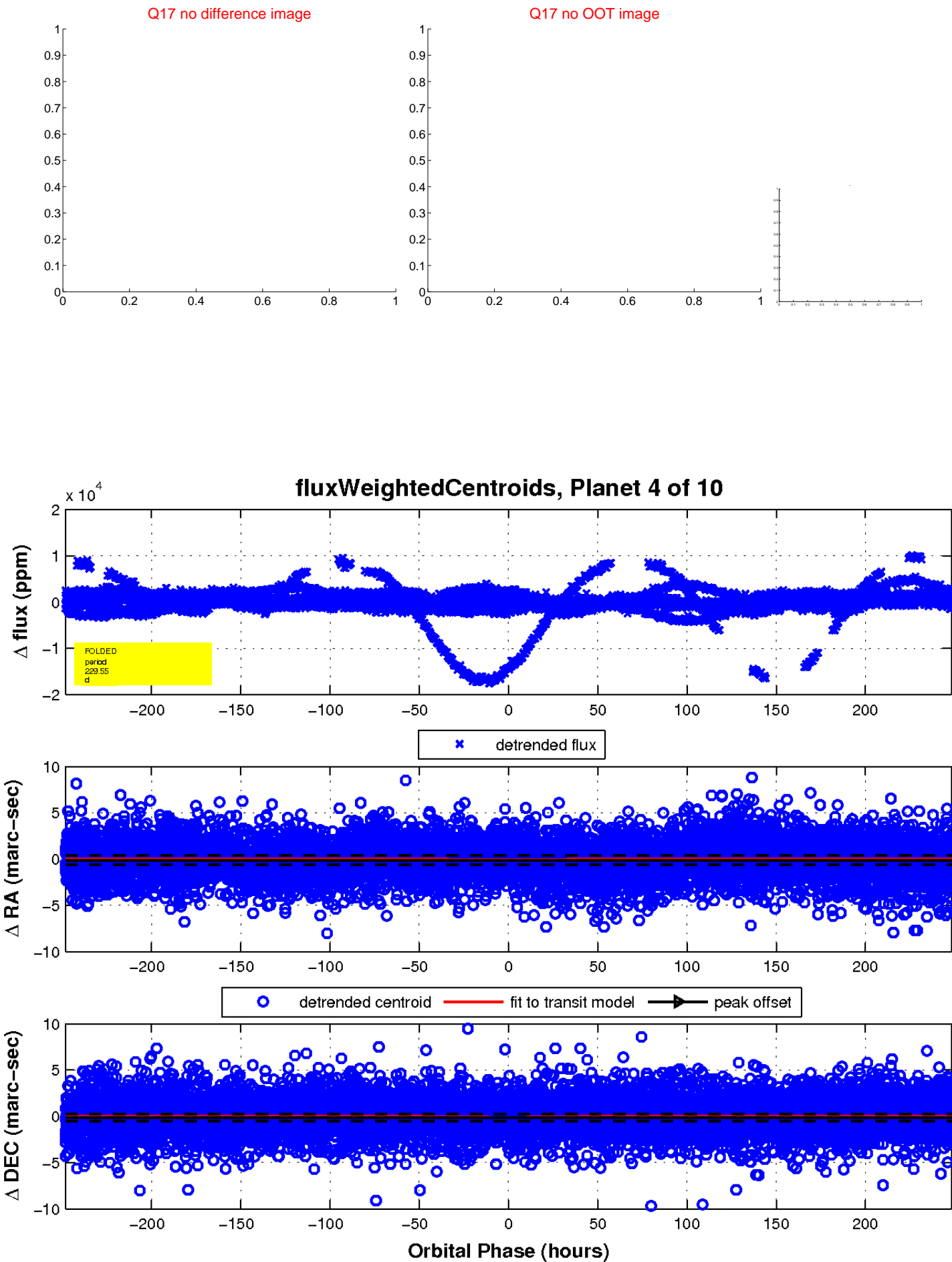
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

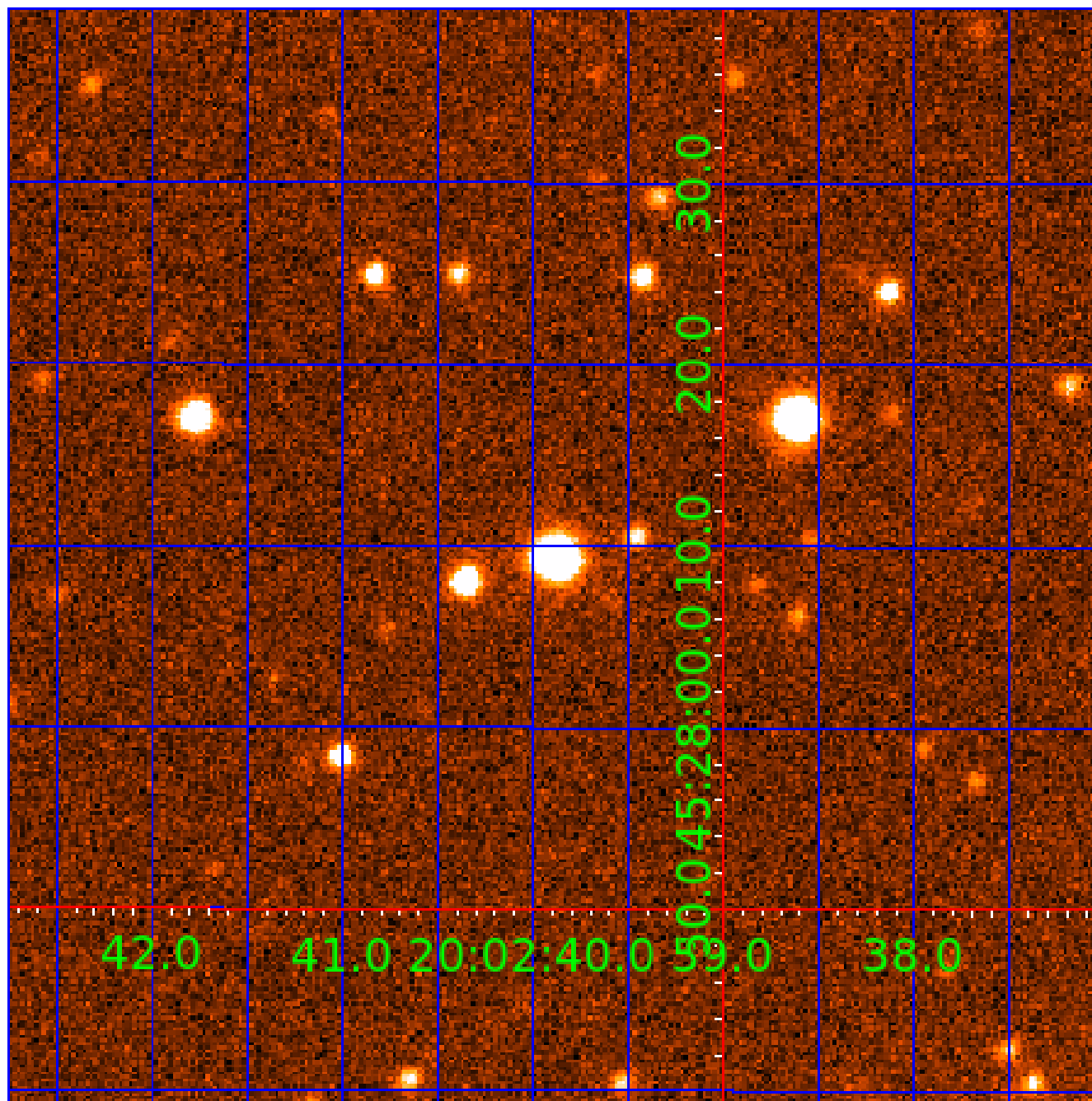


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





## KIC 009118695

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118695-01	OBS	No	1.212130	131.991523	66.9	5.233	11.4	10.5	0.89	5491	0.73	1532.44
009118695-03	OBS	No	229.548298	188.269898	310.0	0.528	18.1	1.5	0.89	5491	1.98	1.41
009118695-04	OBS	No	229.550613	189.072332	1287.8	15.000	18.3	-1.0	0.89	5491	3.14	1.41
009118695-06	OBS	No	114.100566	214.813030	476.3	4.871	12.8	4.9	0.89	5491	2.18	3.58
009118695-07	OBS	No	179.141021	245.717566	749.1	12.000	12.2	-1.0	0.89	5491	2.40	1.96
009118695-08	OBS	No	194.864364	230.808037	803.2	12.542	15.1	5.6	0.89	5491	2.56	1.75
009118695-09	OBS	No	444.098224	158.648730	0.5	4.711	10.2	0.0	0.89	5491	0.07	0.58
009118695-10	OBS	No	183.107433	183.225305	3055.0	27.280	10.6	9.0	0.89	5491	4.85	1.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118695-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009118695-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009118695-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS
009118695-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS
009118695-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

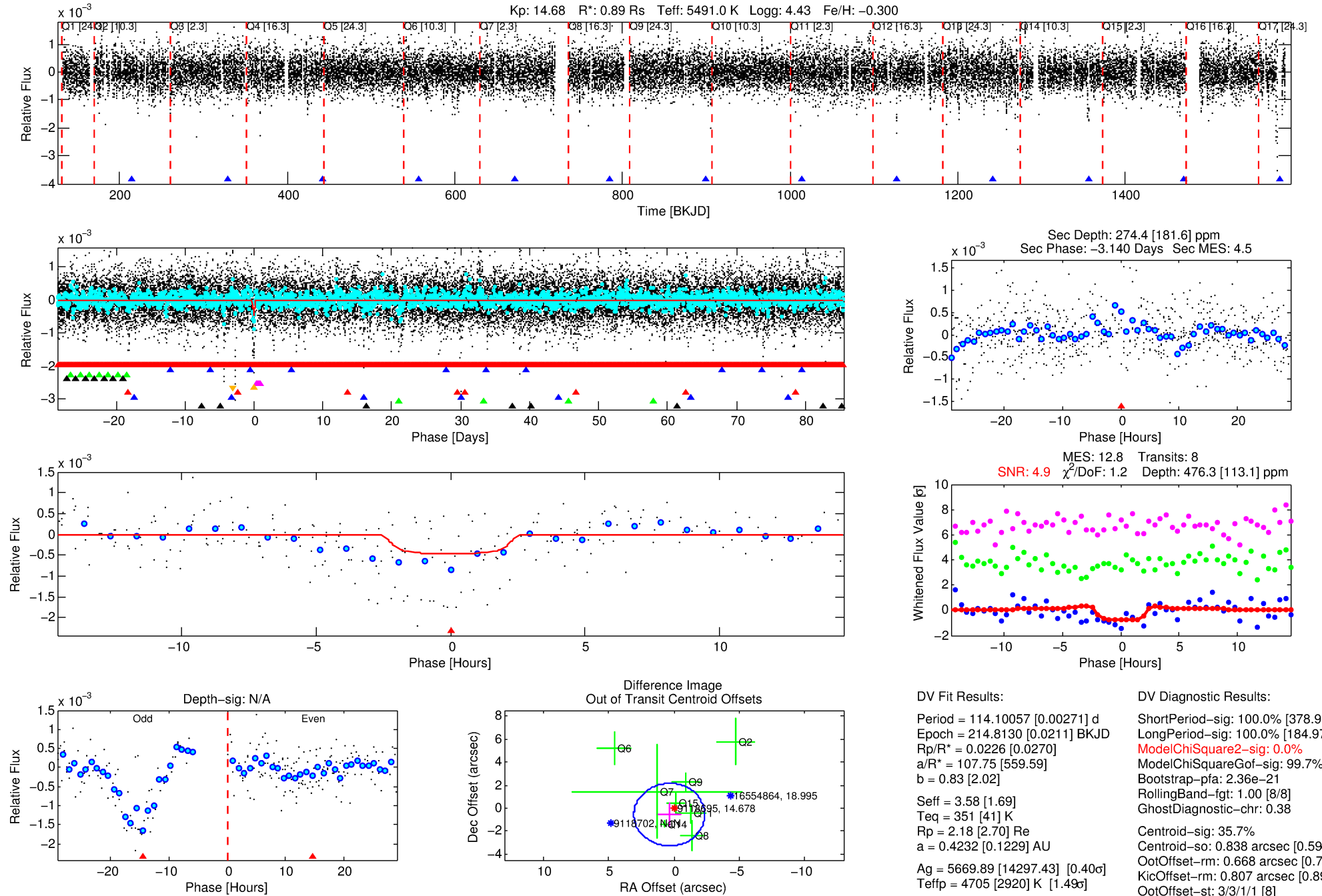
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009118695-06

No Significant Match Found

# DV One-Page Summary

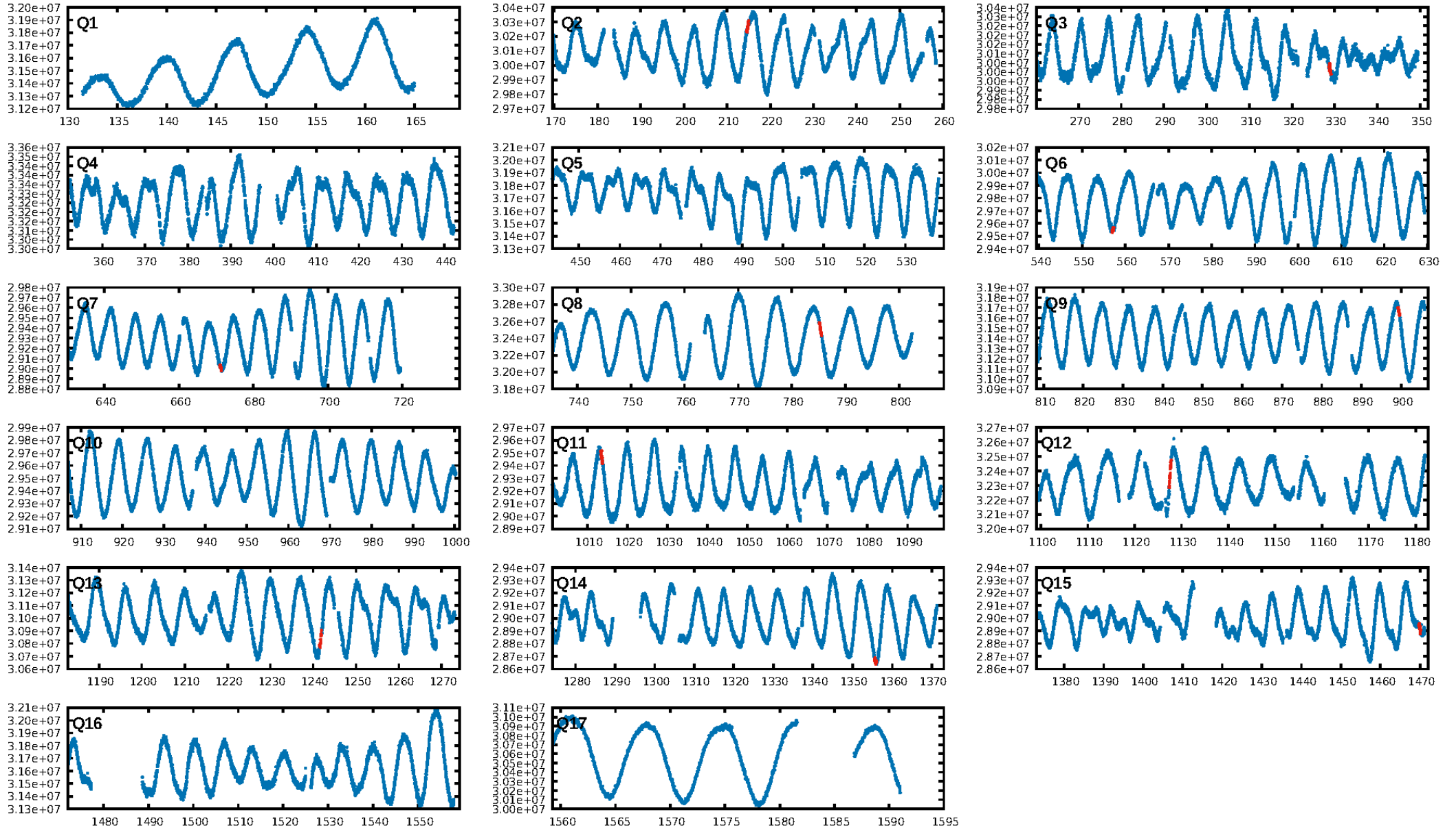
KIC: 9118695 Candidate: 6 of 10 Period: 114.101 d



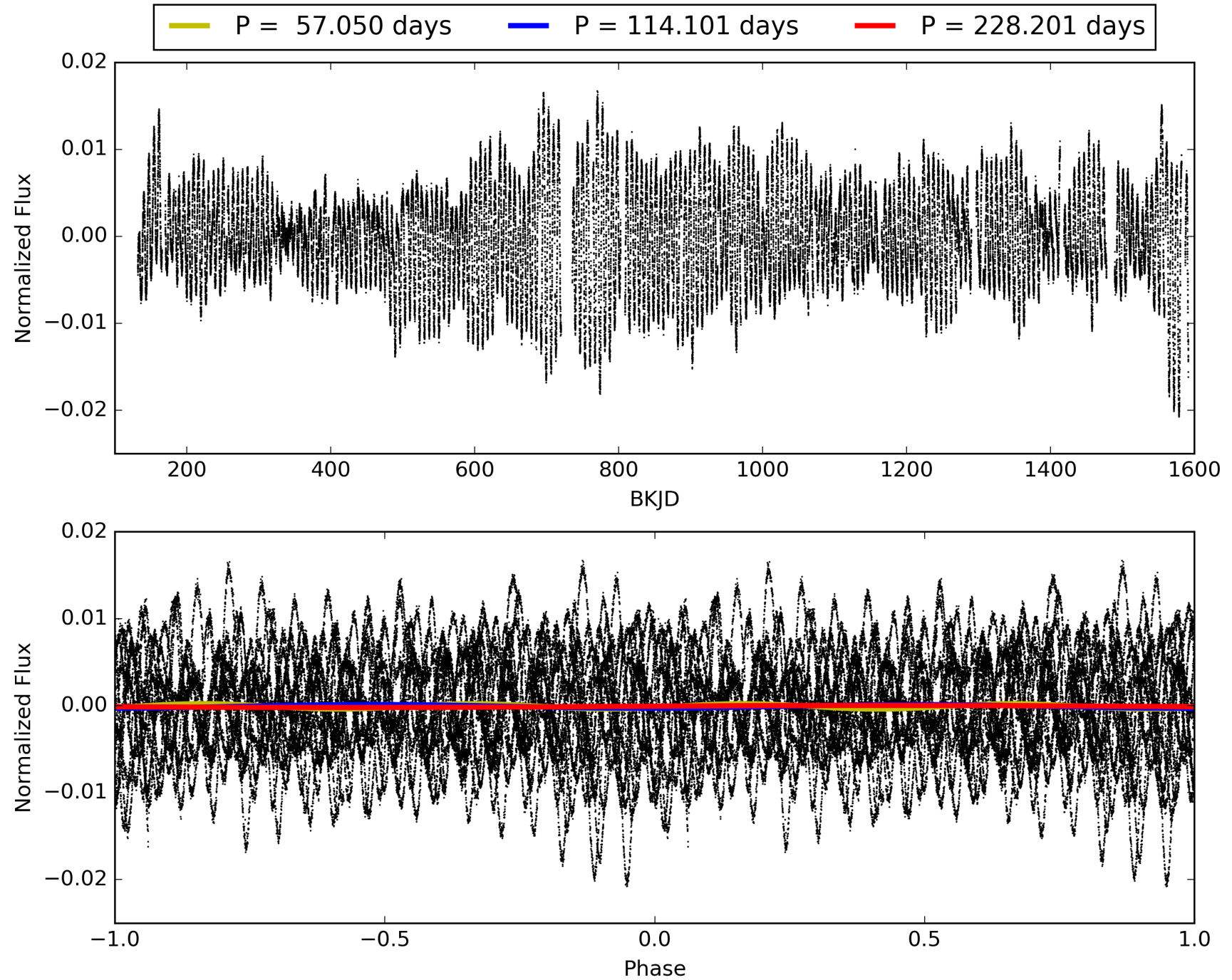
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:45:23 Z

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

# TCE 009118695-06, PDC Light Curves

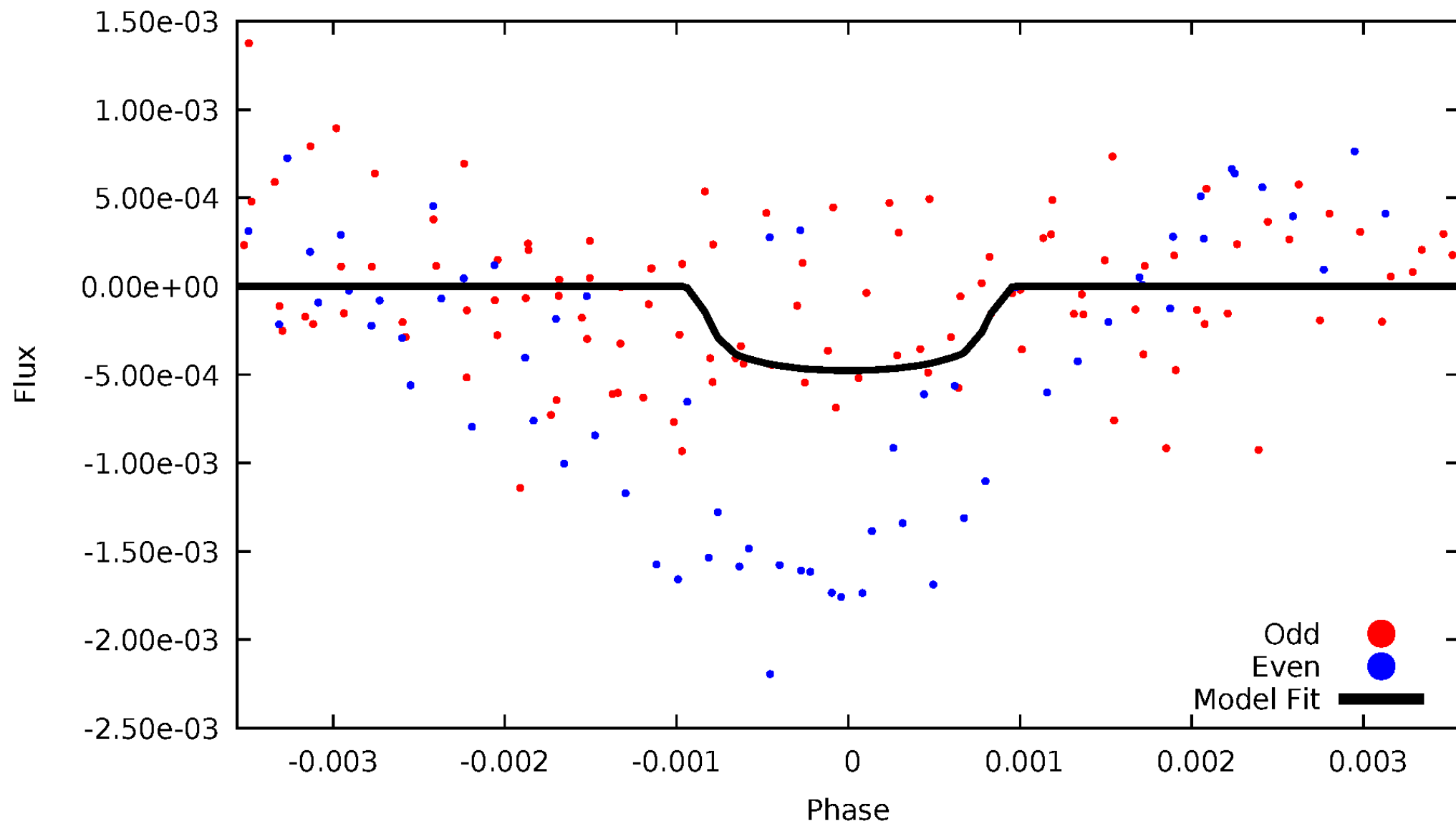


# TCE 009118695-06



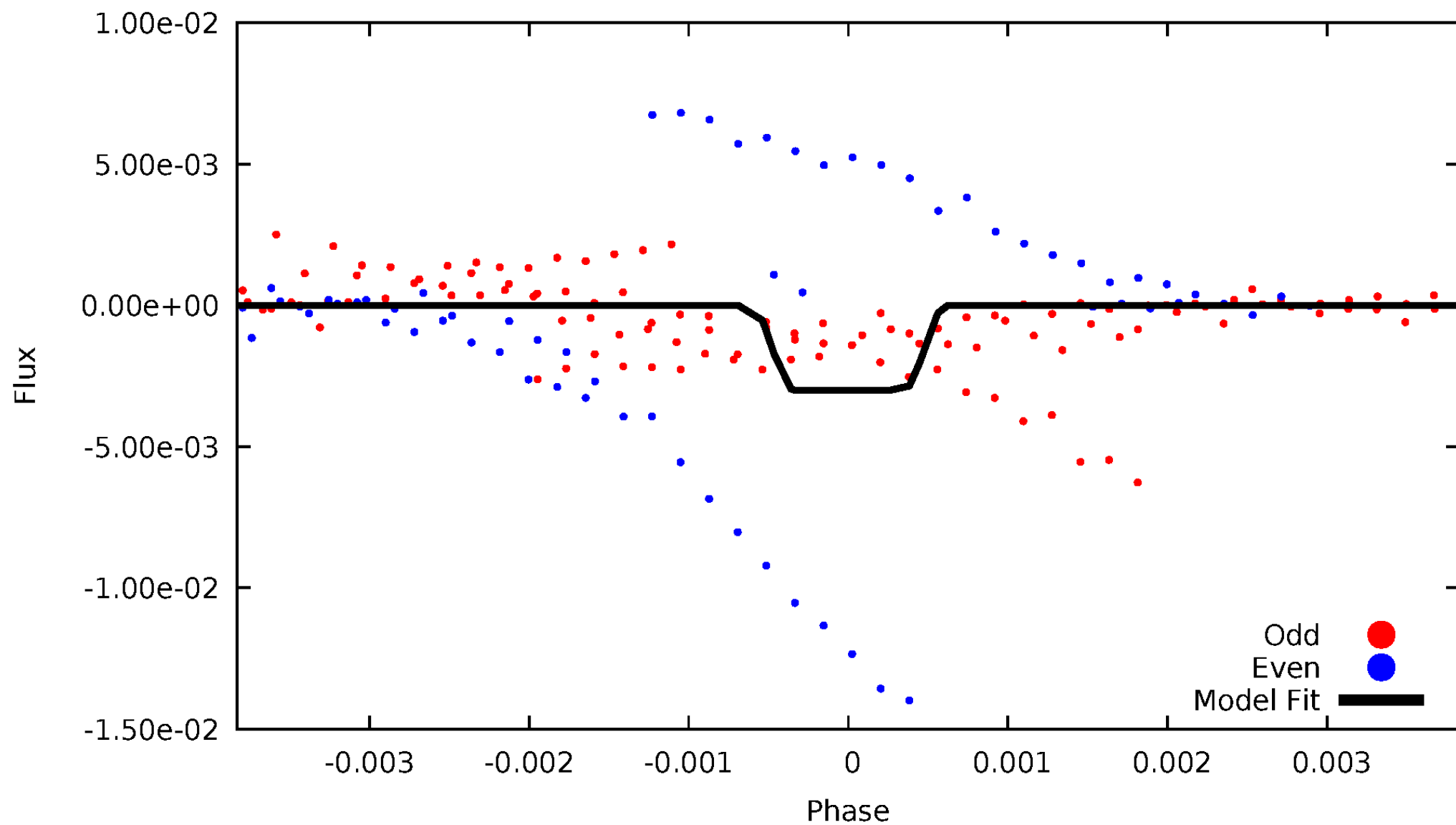
# DV Odd/Even

TCE 009118695-06



# ALT Odd/Even

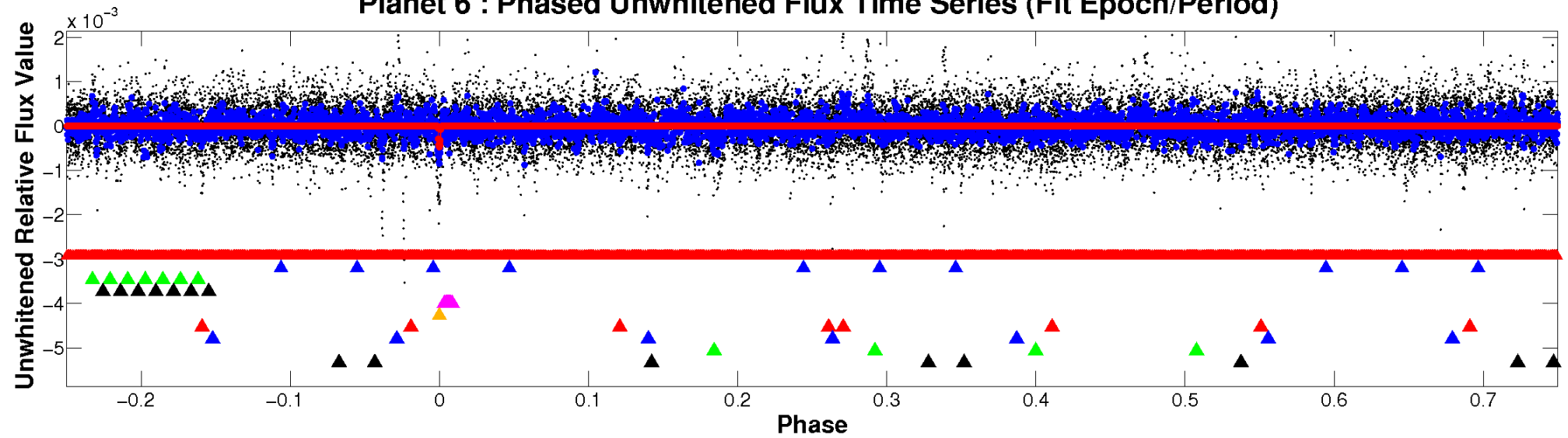
TCE 009118695-06



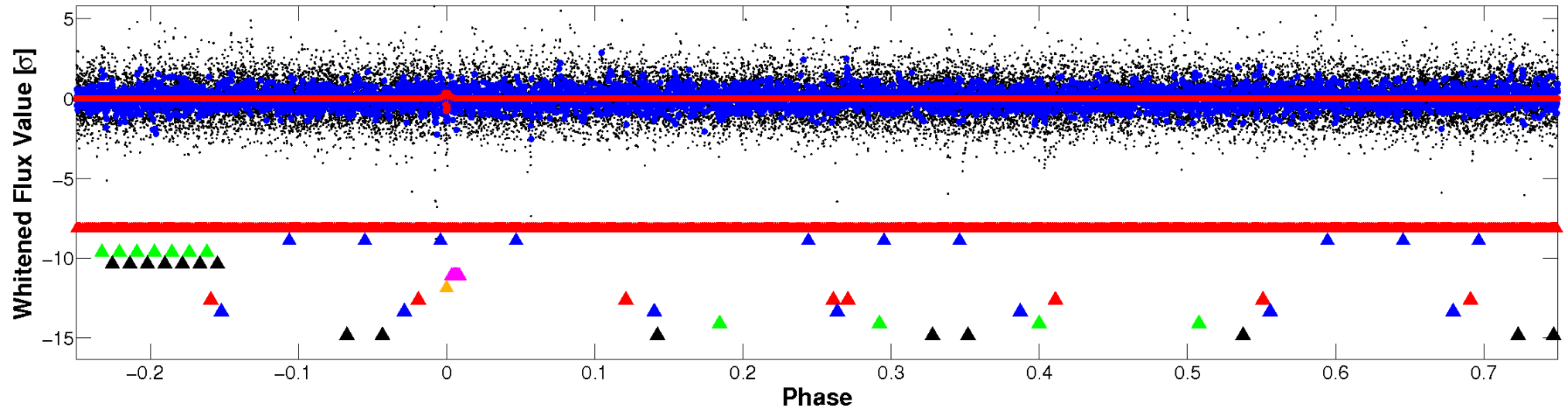


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



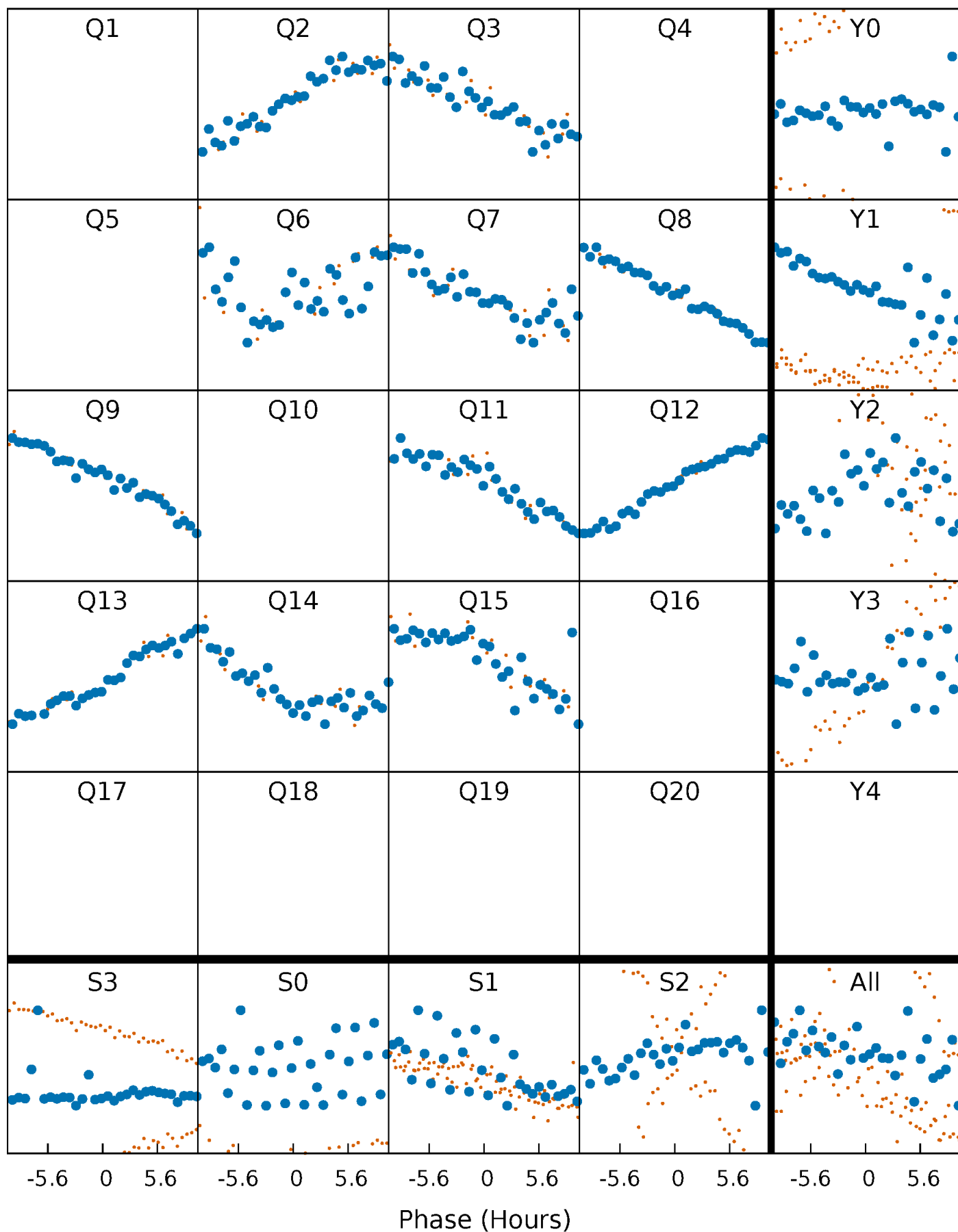
## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)





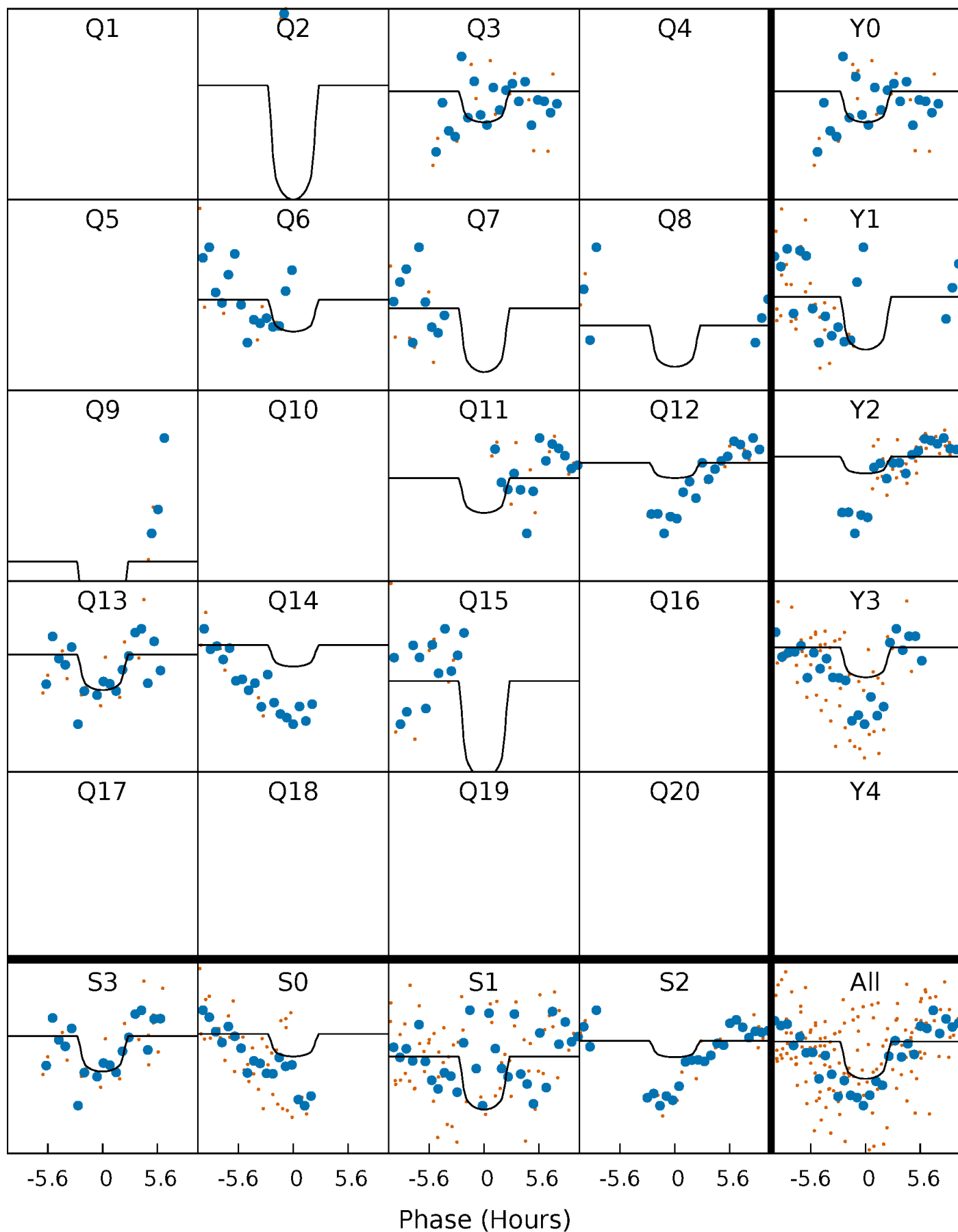
# PDC Quarter-Phased Transit Curves

TCE 009118695-06 P=114.100566 Days  $T_0=214.813030$  (BKJD)



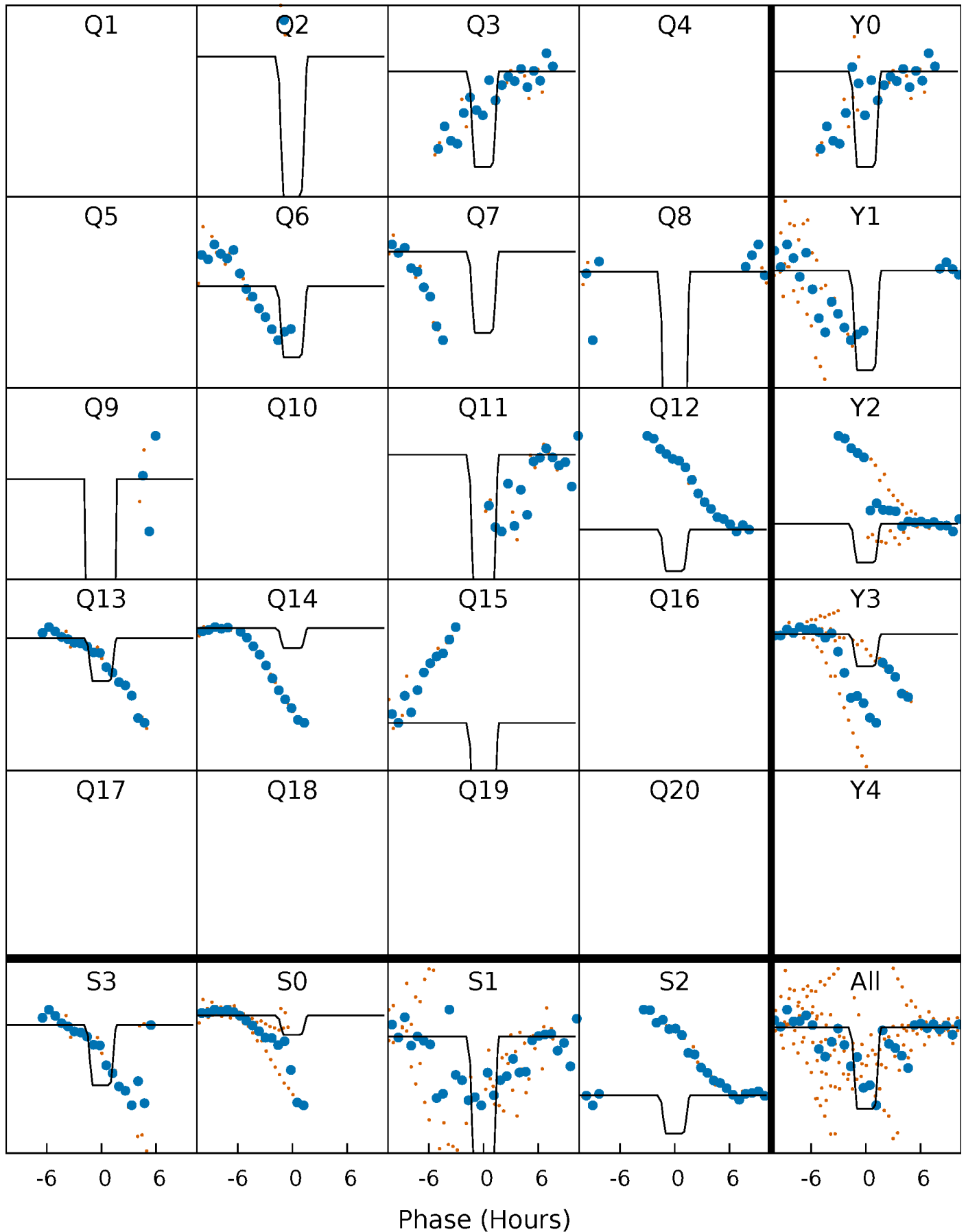
# DV Quarter-Phased Transit Curves

TCE 009118695-06 P=114.100566 Days  $T_0=214.813030$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

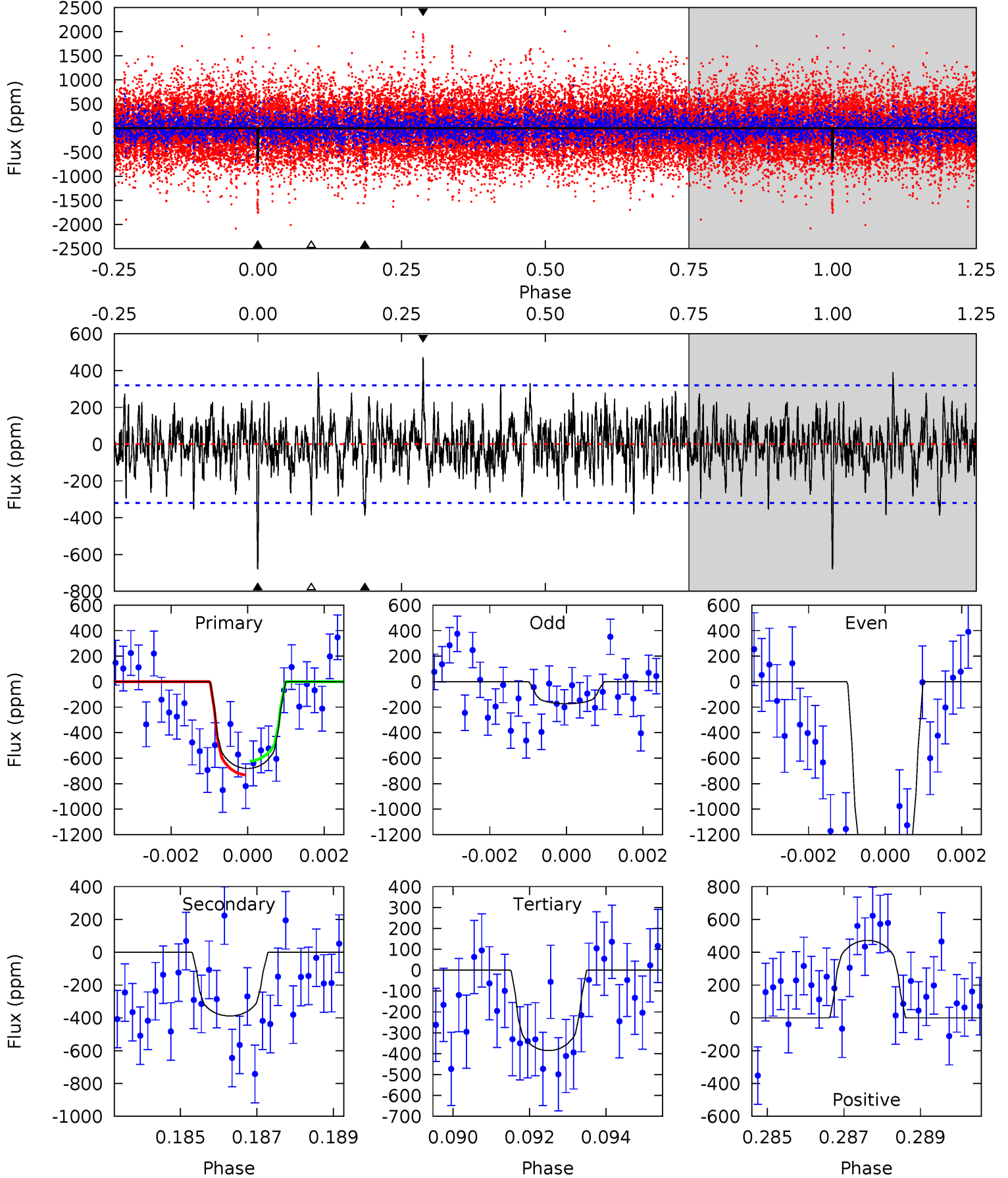
TCE 009118695-06 P=114.103802 Days  $T_0=214.813975$  (BKJD)



# DV Model-Shift Uniqueness Test

009118695-06, P = 114.100566 Days, E = 100.712464 Days

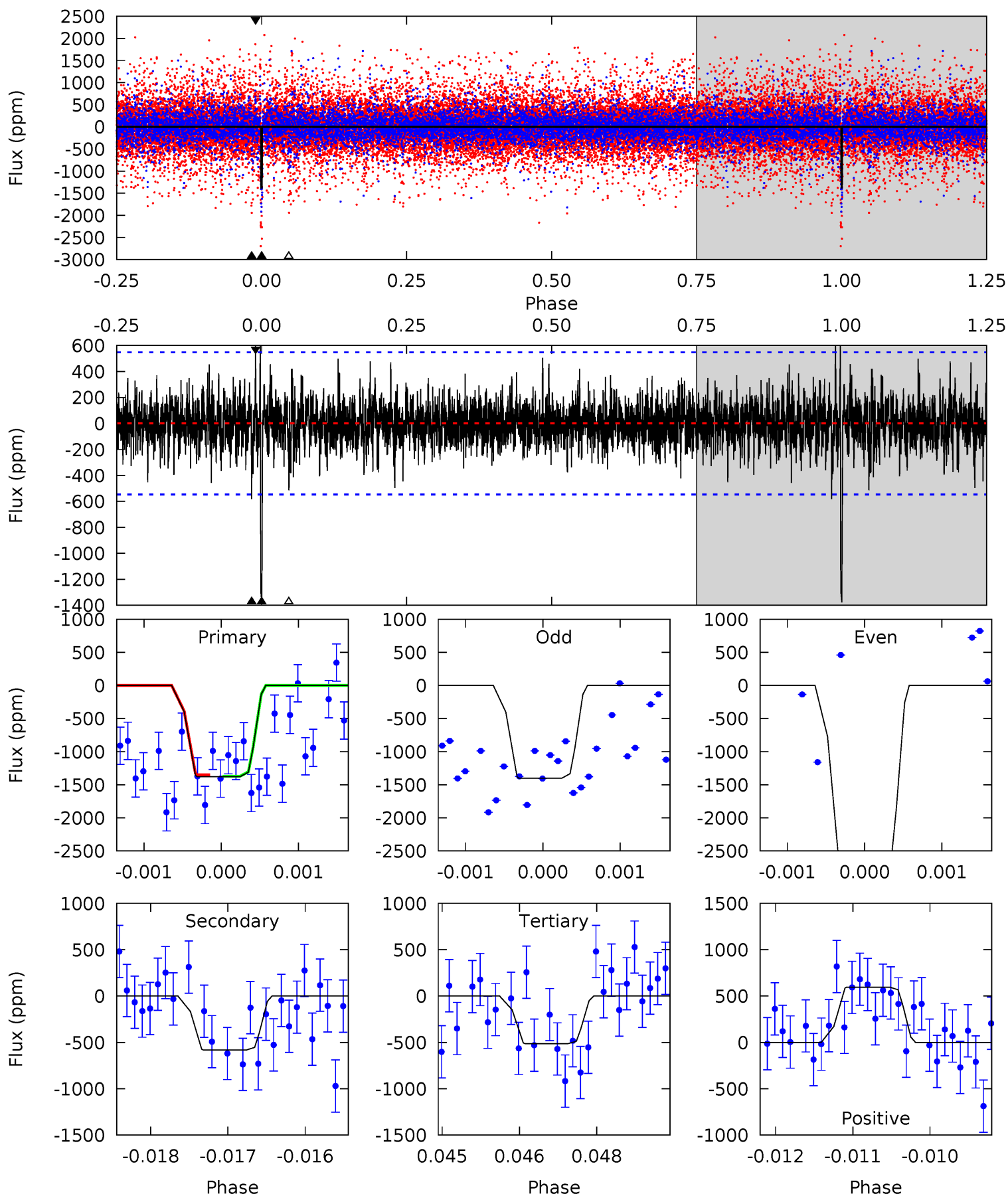
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	6.49	6.44	7.88	5.33	3.10	1.77	4.93	3.49	0.05	-1.40	11.6	3.57	0.41	0.90



# Alt Model-Shift Uniqueness Test

009118695-06, P = 114.103802 Days, E = 100.710173 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
13.7	5.78	5.11	5.92	5.44	3.27	1.27	8.58	7.76	0.68	-0.14	5.80	1.55	0.30	0



### Stellar Parameters For KIC 009118695

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5491^{+164}_{-164}$	$4.432^{+0.143}_{-0.266}$	$-0.300^{+0.350}_{-0.250}$	$0.887^{+0.275}_{-0.148}$	$0.776^{+0.126}_{-0.054}$	$1.566^{+0.974}_{-0.928}$
	+3%/-3%	+3%/-6%	+117%/-83%	+31%/-17%	+16%/-7%	+62%/-59%
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 009118695-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-388 \pm 60$	$3.20^{+2.31}_{-2.03}$	$497^{+44}_{-34}$	$4488^{+2639}_{-836}$	$3798^{+24098}_{-2590}$
Alt.	$-582 \pm 101$	$5.72^{+2.77}_{-2.76}$	$497^{+45}_{-33}$	$3923^{+1033}_{-511}$	$1813^{+4903}_{-1047}$

$T_{\text{max}}$  = 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

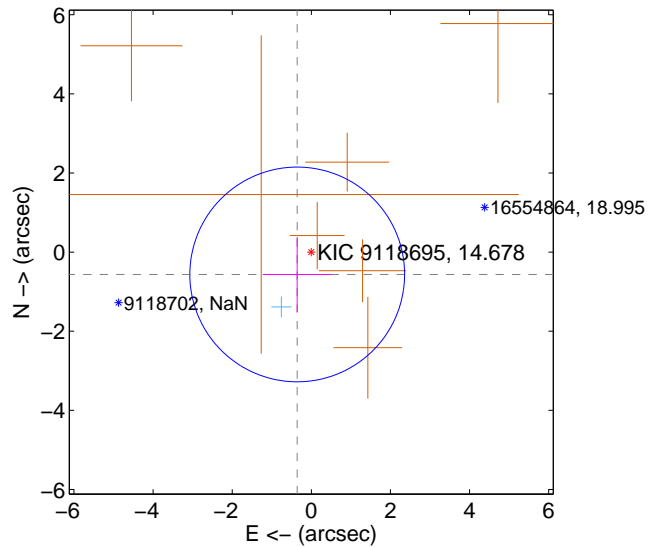
Supplemental centroid analysis for 009118695-06. Kepler magnitude: 14.68. Transit SNR 4.91

There are 1 quarters with good PRF difference image offsets

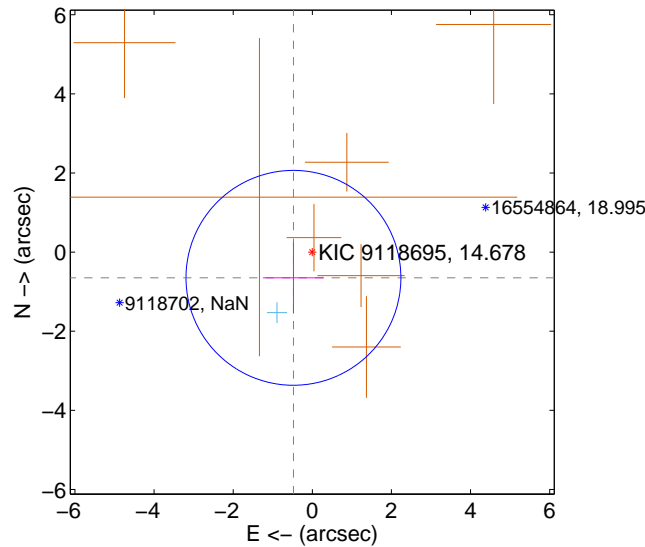
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.668 \pm 0.904$	0.74	$0.356 \pm 0.869$	$-0.565 \pm 0.950$
PRF-fit source offset from KIC position	$0.807 \pm 0.905$	0.89	$0.477 \pm 0.768$	$-0.650 \pm 0.902$
photometric centroid source offset	$0.84 \pm 1.42$	0.59	$-0.03 \pm 1.40$	$-0.84 \pm 1.42$

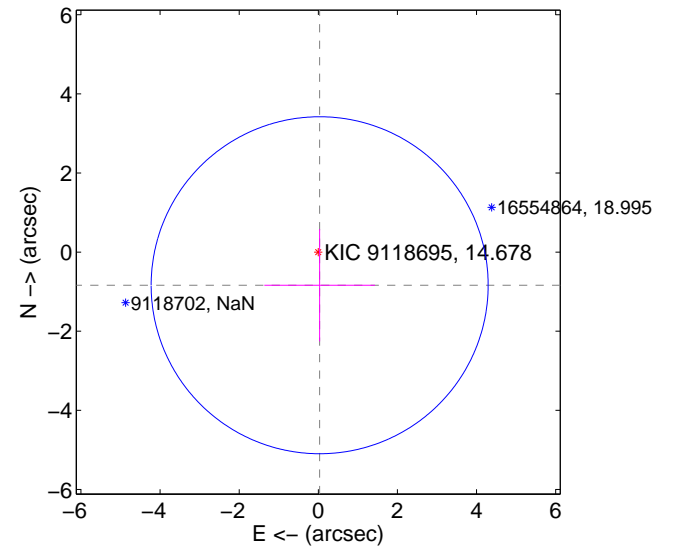
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



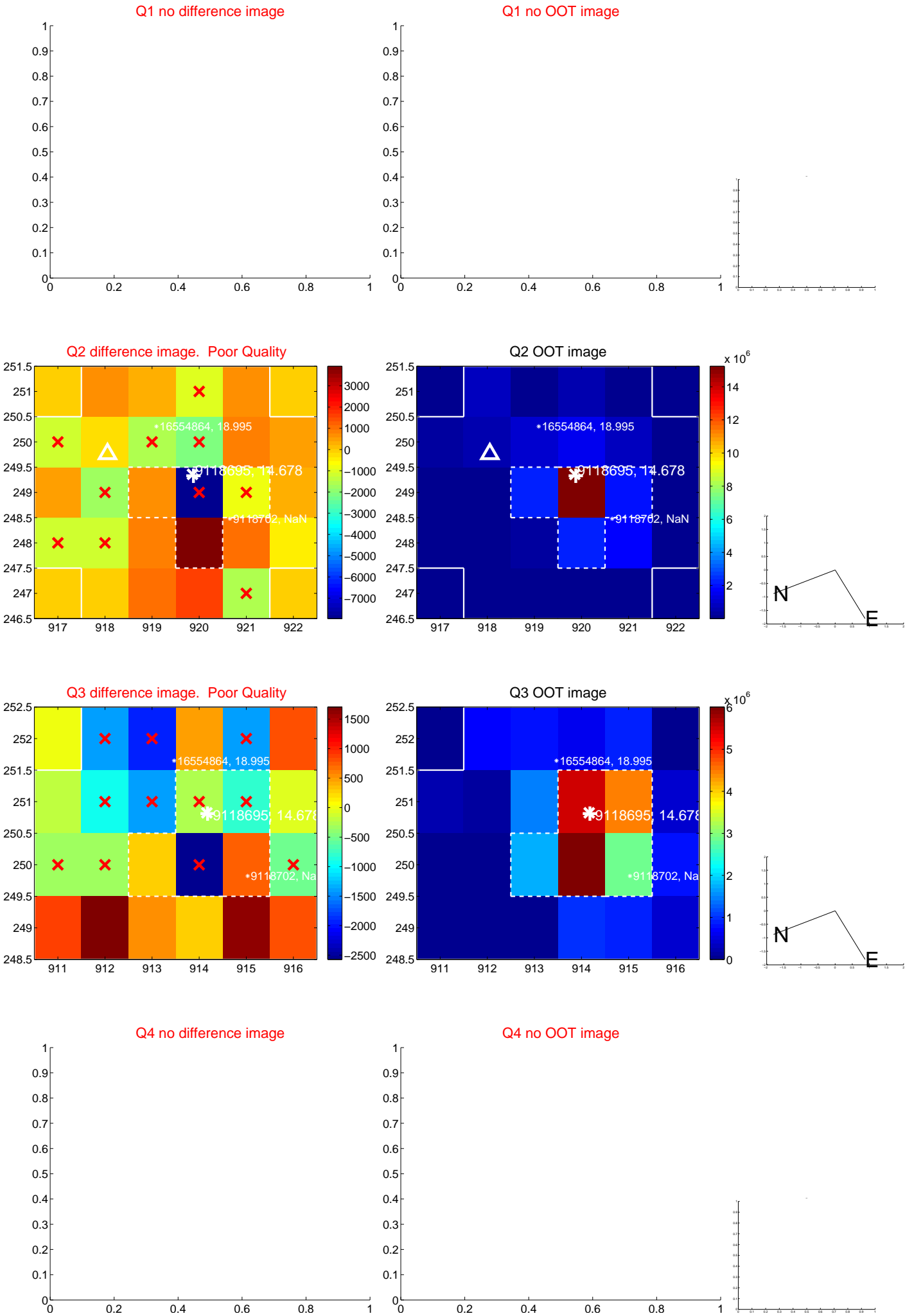
offset from photometric centroids



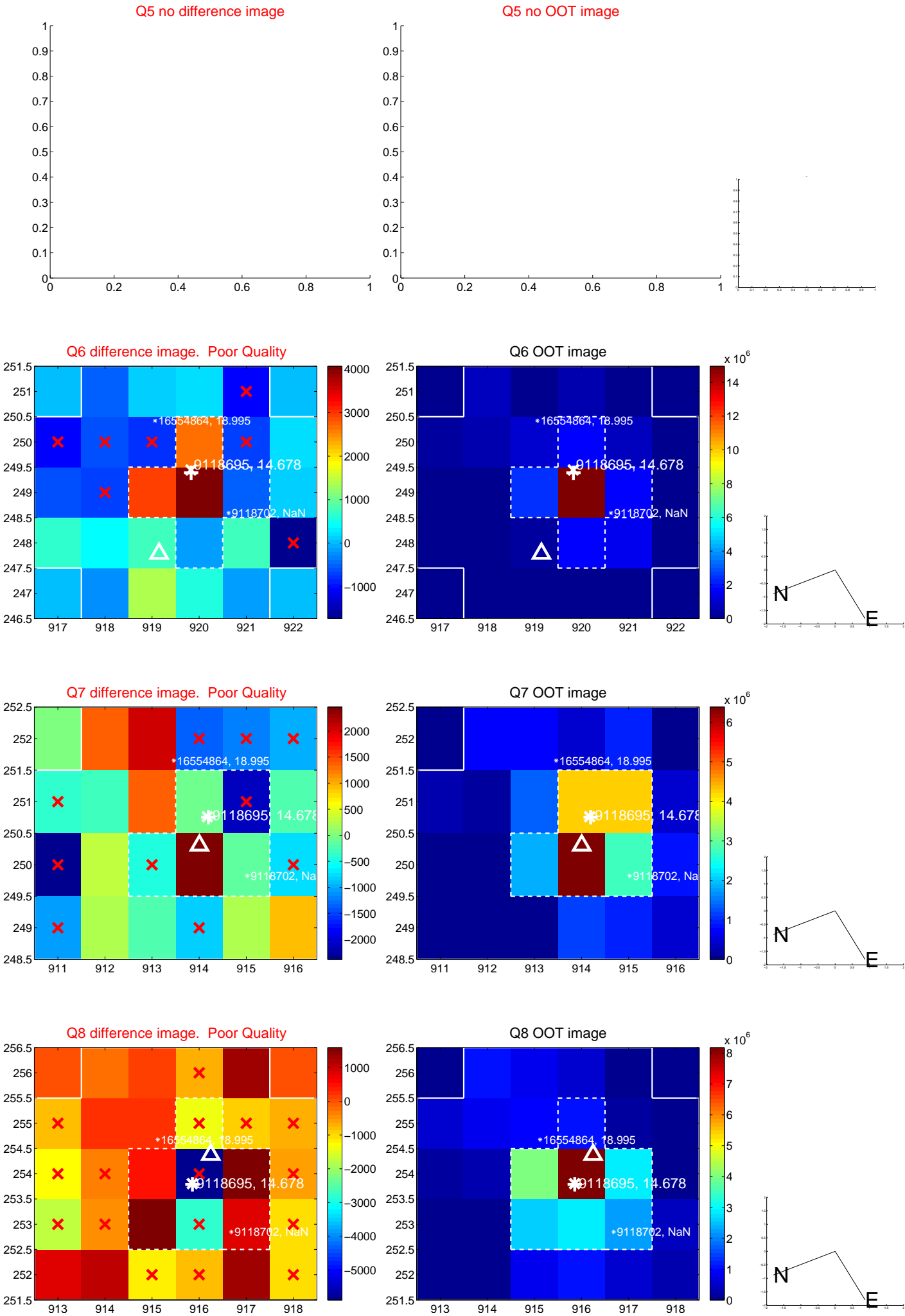
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



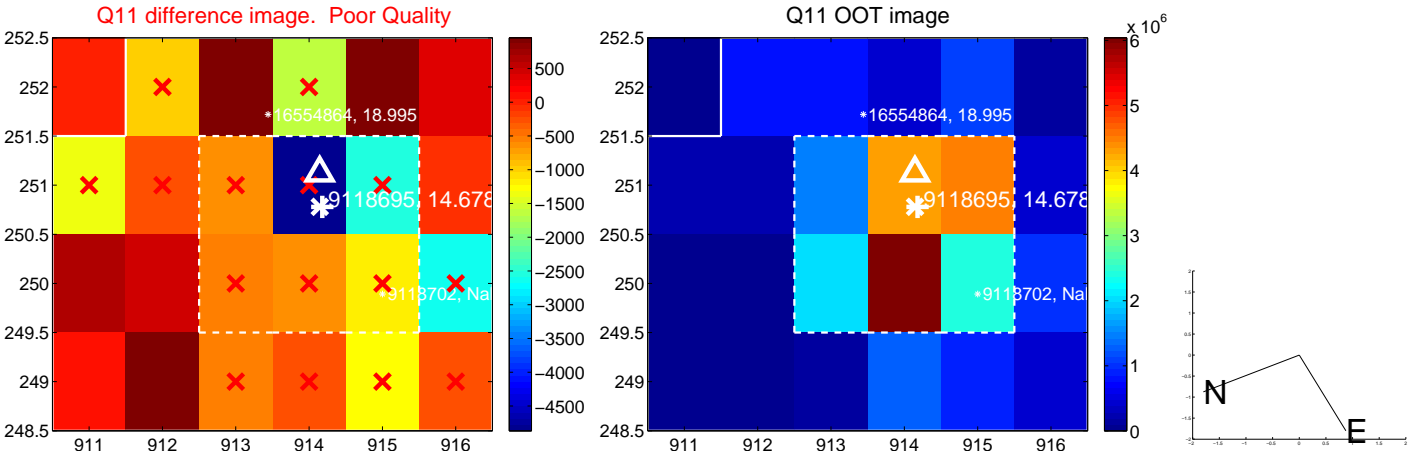
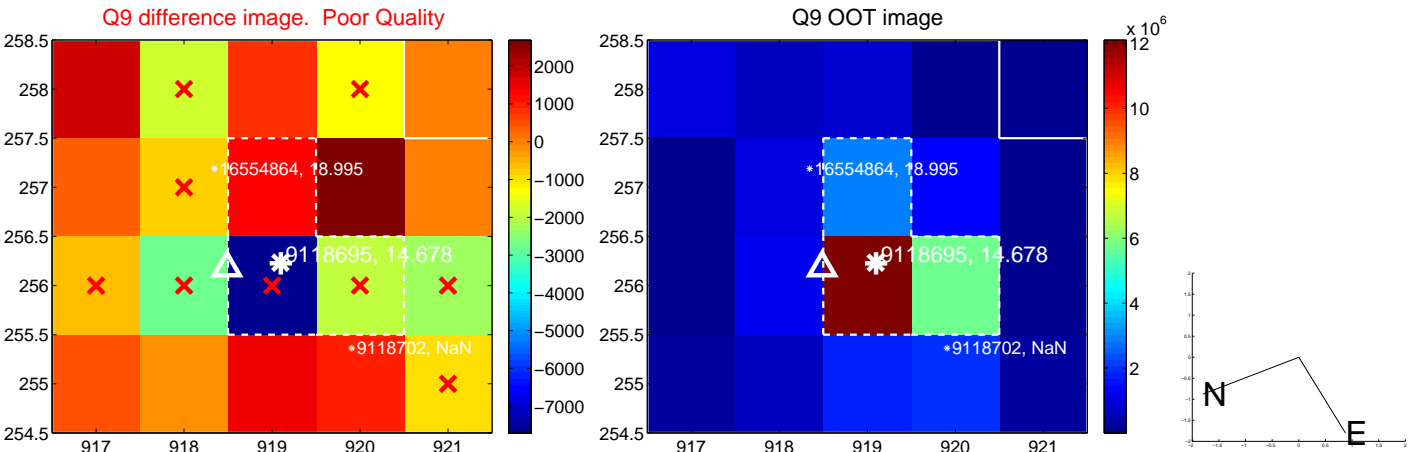
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



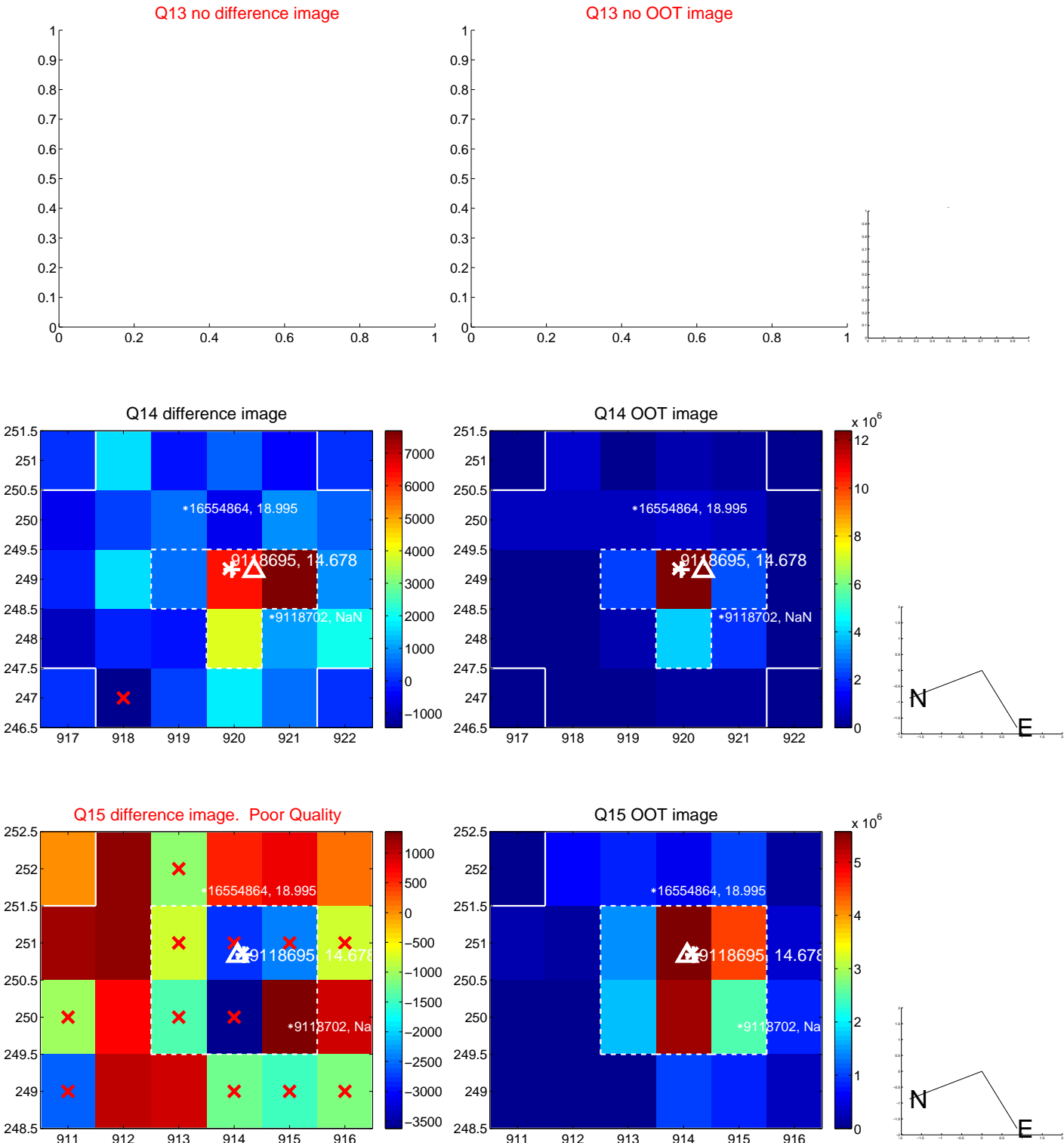
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



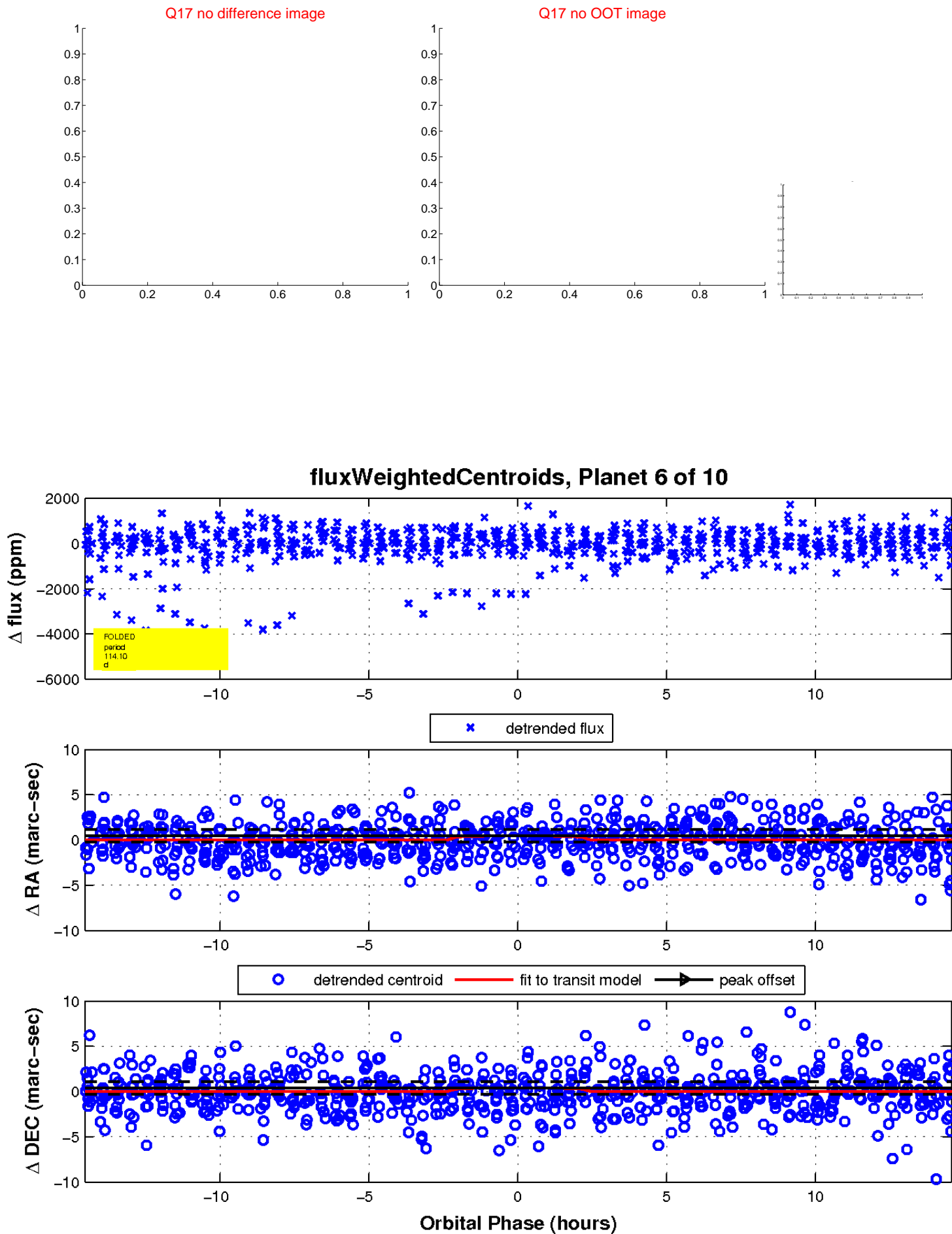
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

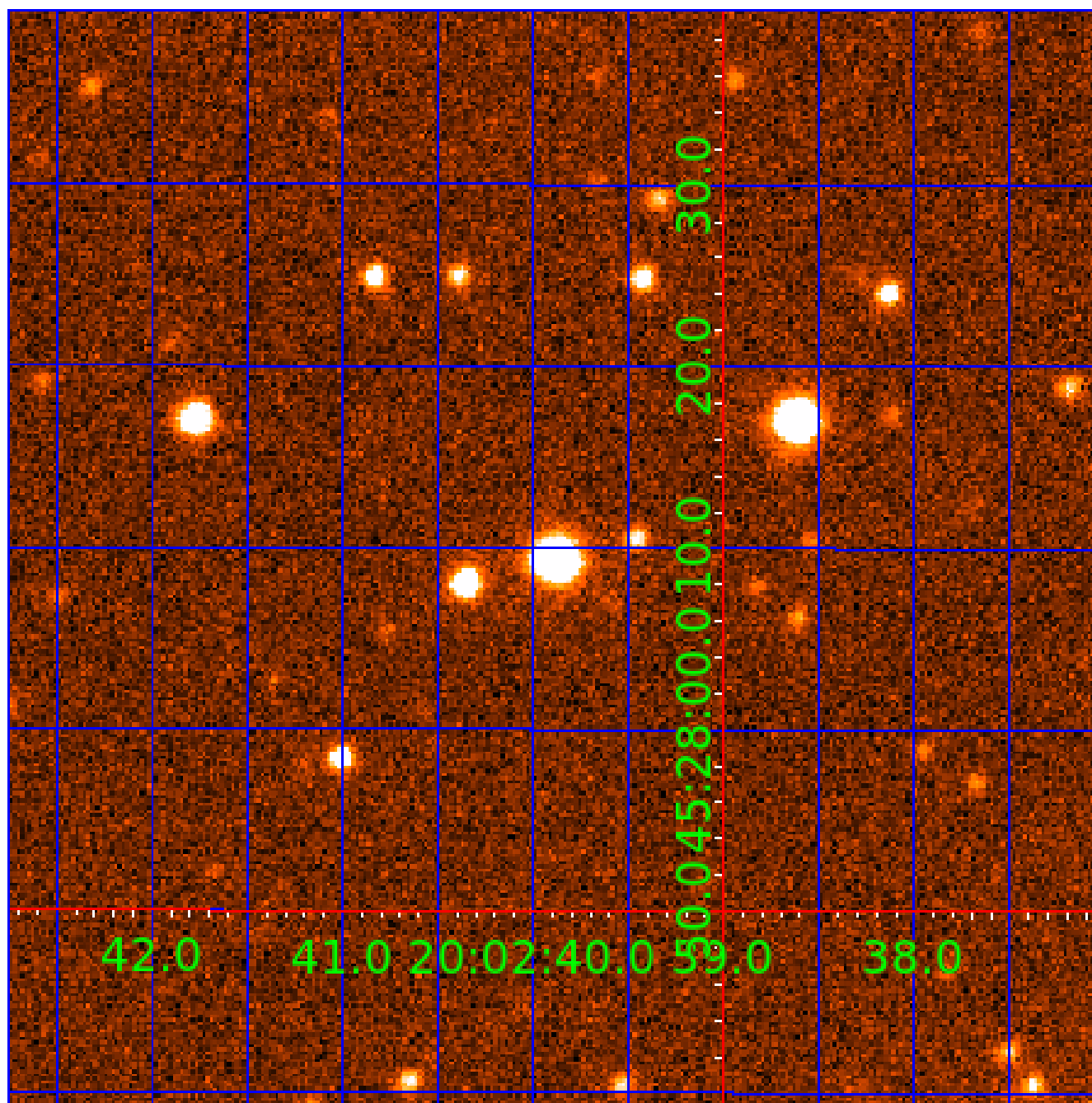


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 009118695

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118695-01	OBS	No	1.212130	131.991523	66.9	5.233	11.4	10.5	0.89	5491	0.73	1532.44
009118695-03	OBS	No	229.548298	188.269898	310.0	0.528	18.1	1.5	0.89	5491	1.98	1.41
009118695-04	OBS	No	229.550613	189.072332	1287.8	15.000	18.3	-1.0	0.89	5491	3.14	1.41
009118695-06	OBS	No	114.100566	214.813030	476.3	4.871	12.8	4.9	0.89	5491	2.18	3.58
009118695-07	OBS	No	179.141021	245.717566	749.1	12.000	12.2	-1.0	0.89	5491	2.40	1.96
009118695-08	OBS	No	194.864364	230.808037	803.2	12.542	15.1	5.6	0.89	5491	2.56	1.75
009118695-09	OBS	No	444.098224	158.648730	0.5	4.711	10.2	0.0	0.89	5491	0.07	0.58
009118695-10	OBS	No	183.107433	183.225305	3055.0	27.280	10.6	9.0	0.89	5491	4.85	1.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118695-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009118695-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009118695-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS
009118695-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS
009118695-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

**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 009118695-07

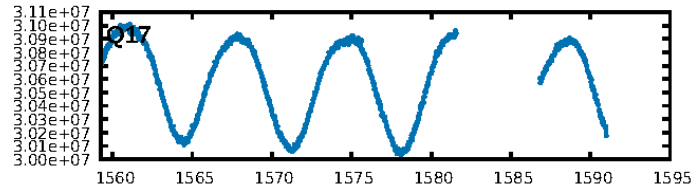
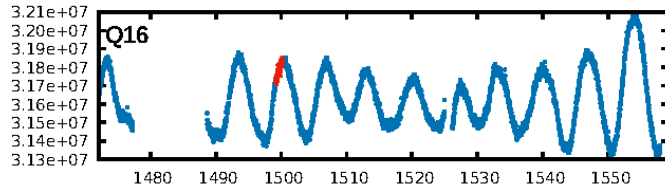
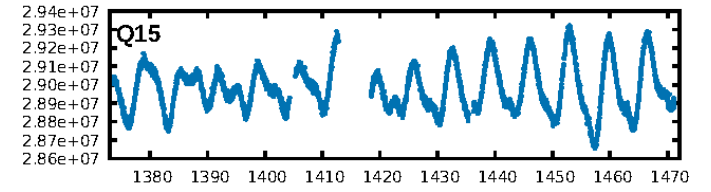
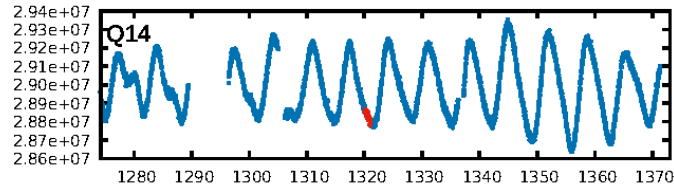
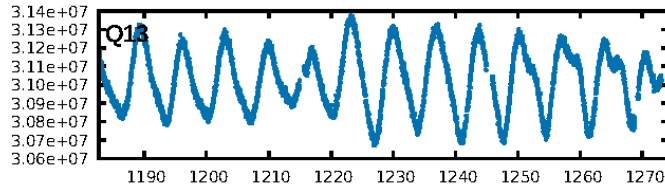
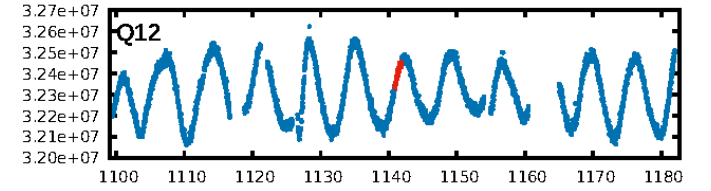
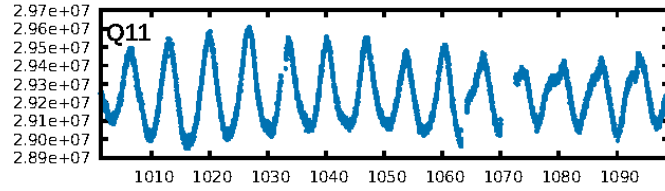
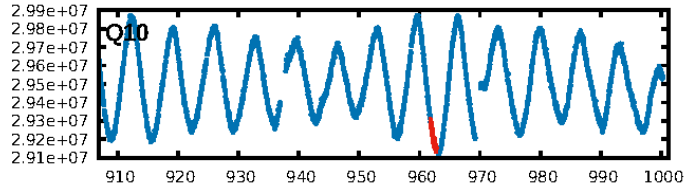
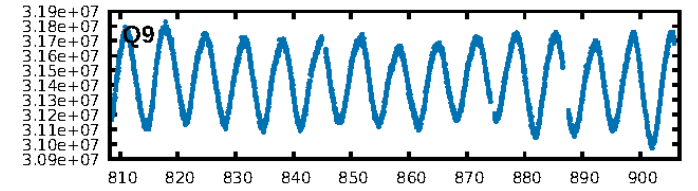
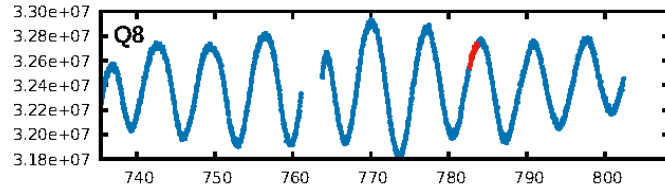
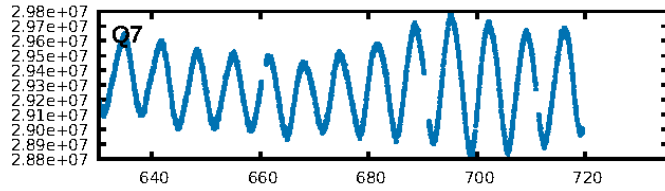
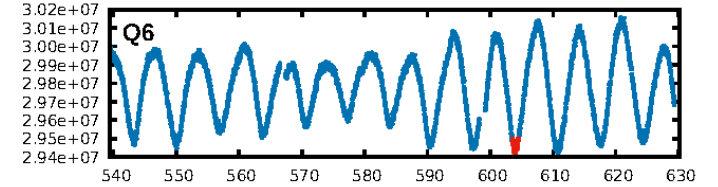
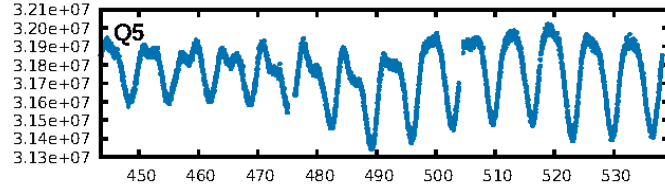
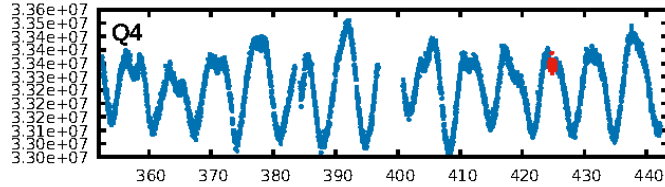
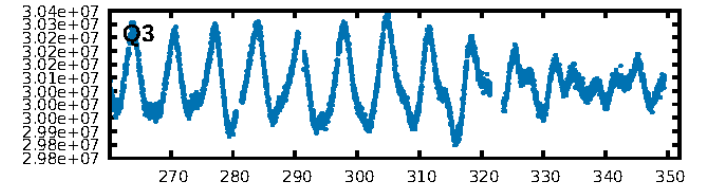
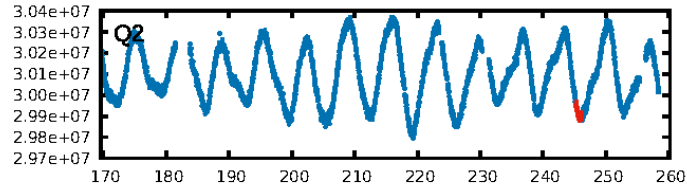
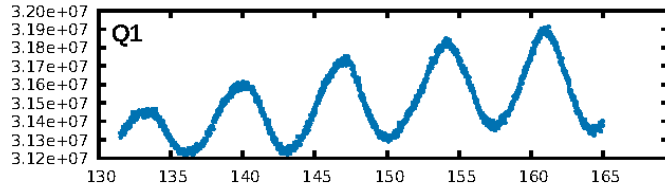
No Significant Match Found

KIC: 9118695    Candidate: 7 of 10    Period: 179.141 d

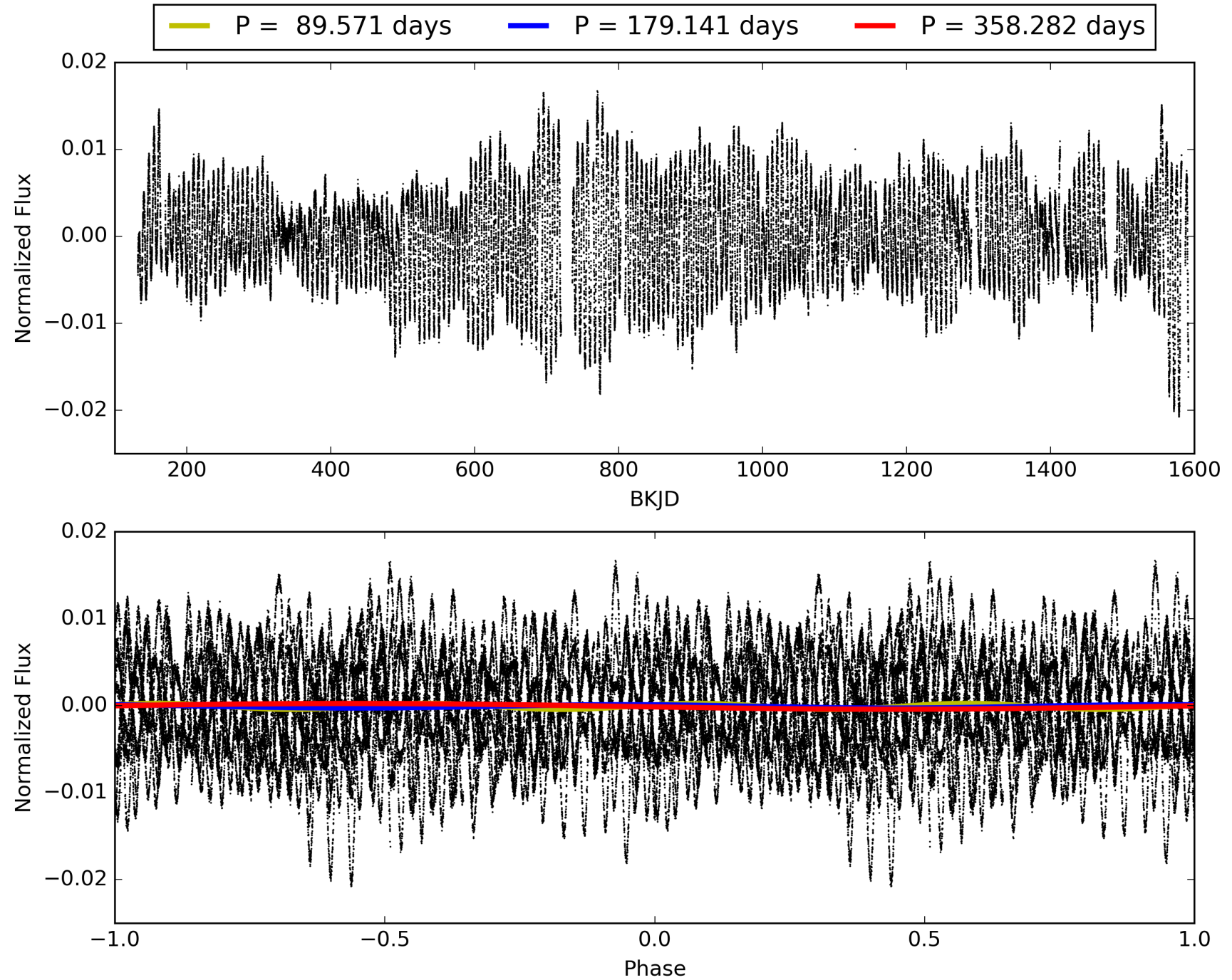




# TCE 009118695-07, PDC Light Curves

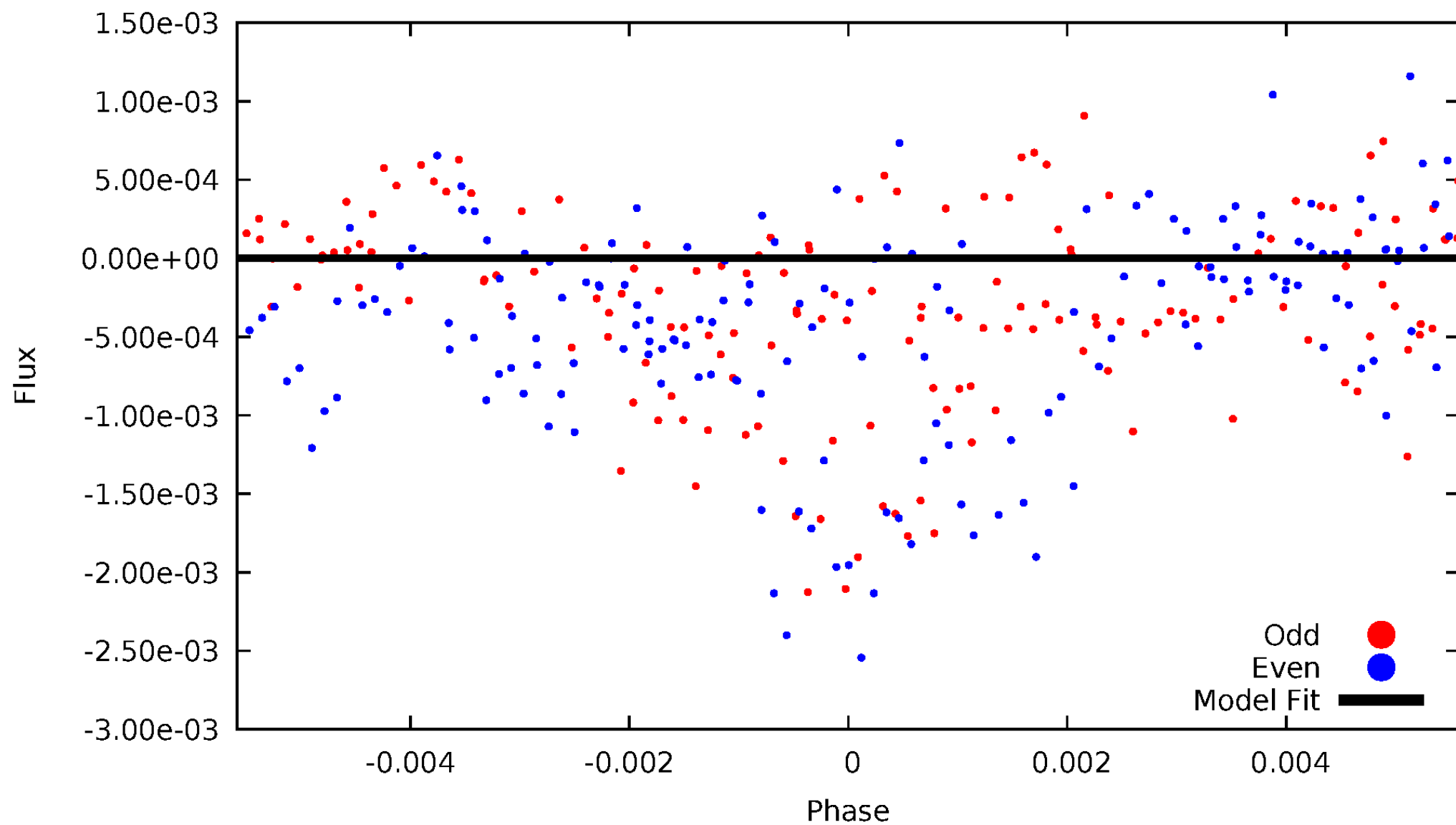


# TCE 009118695-07



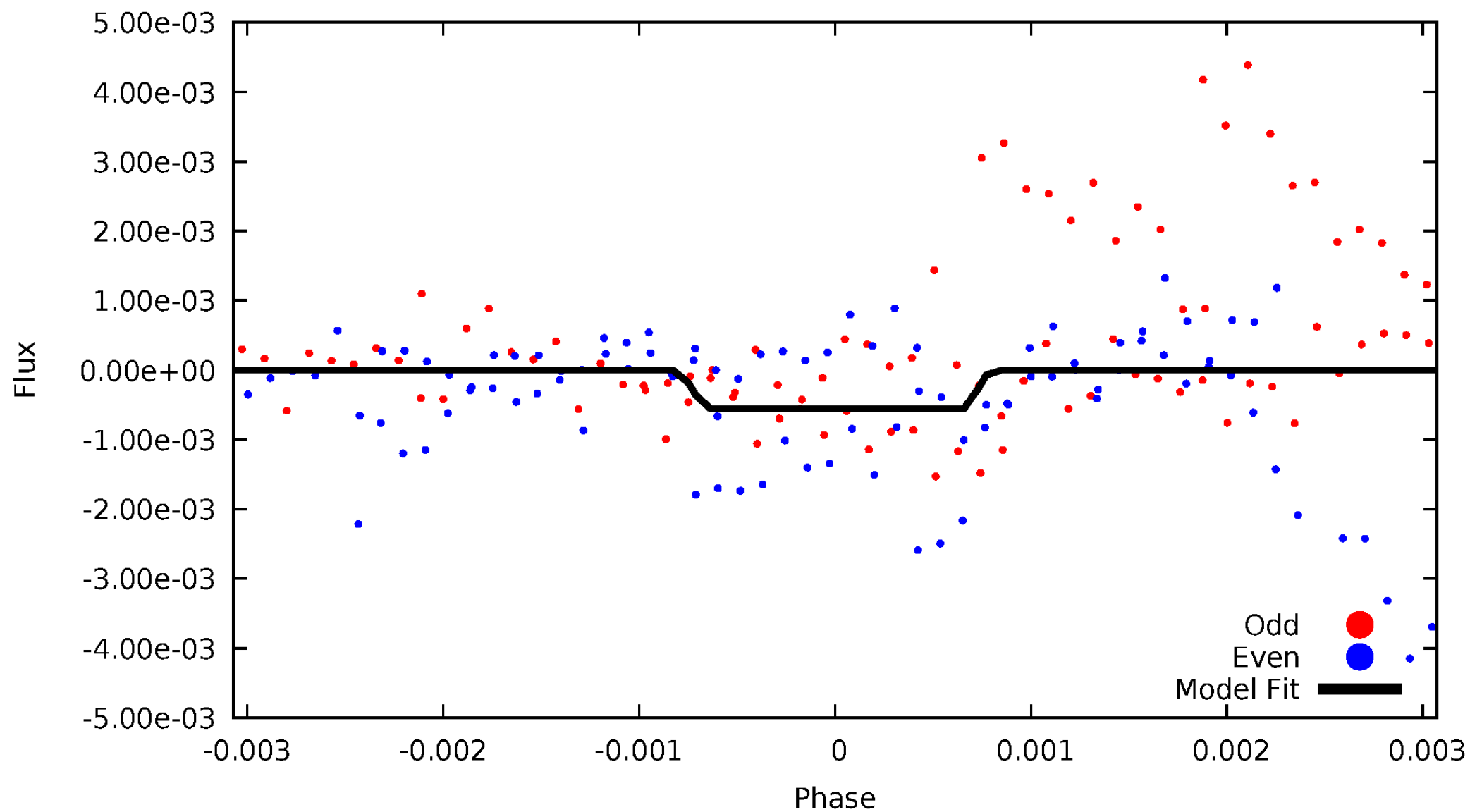
# DV Odd/Even

TCE 009118695-07

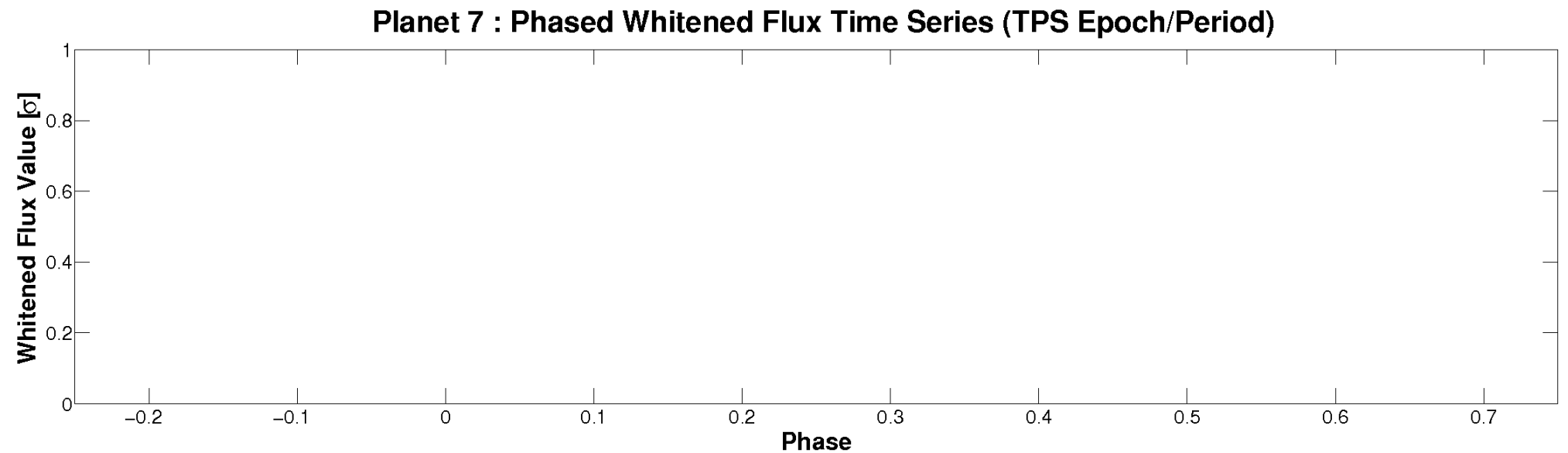
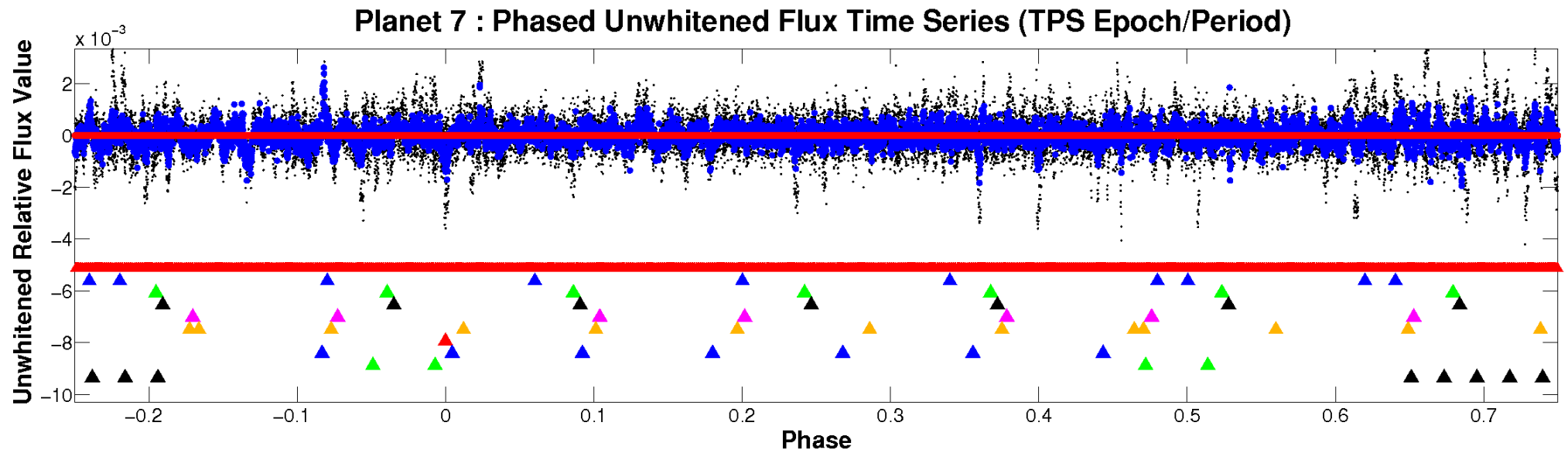


# ALT Odd/Even

TCE 009118695-07

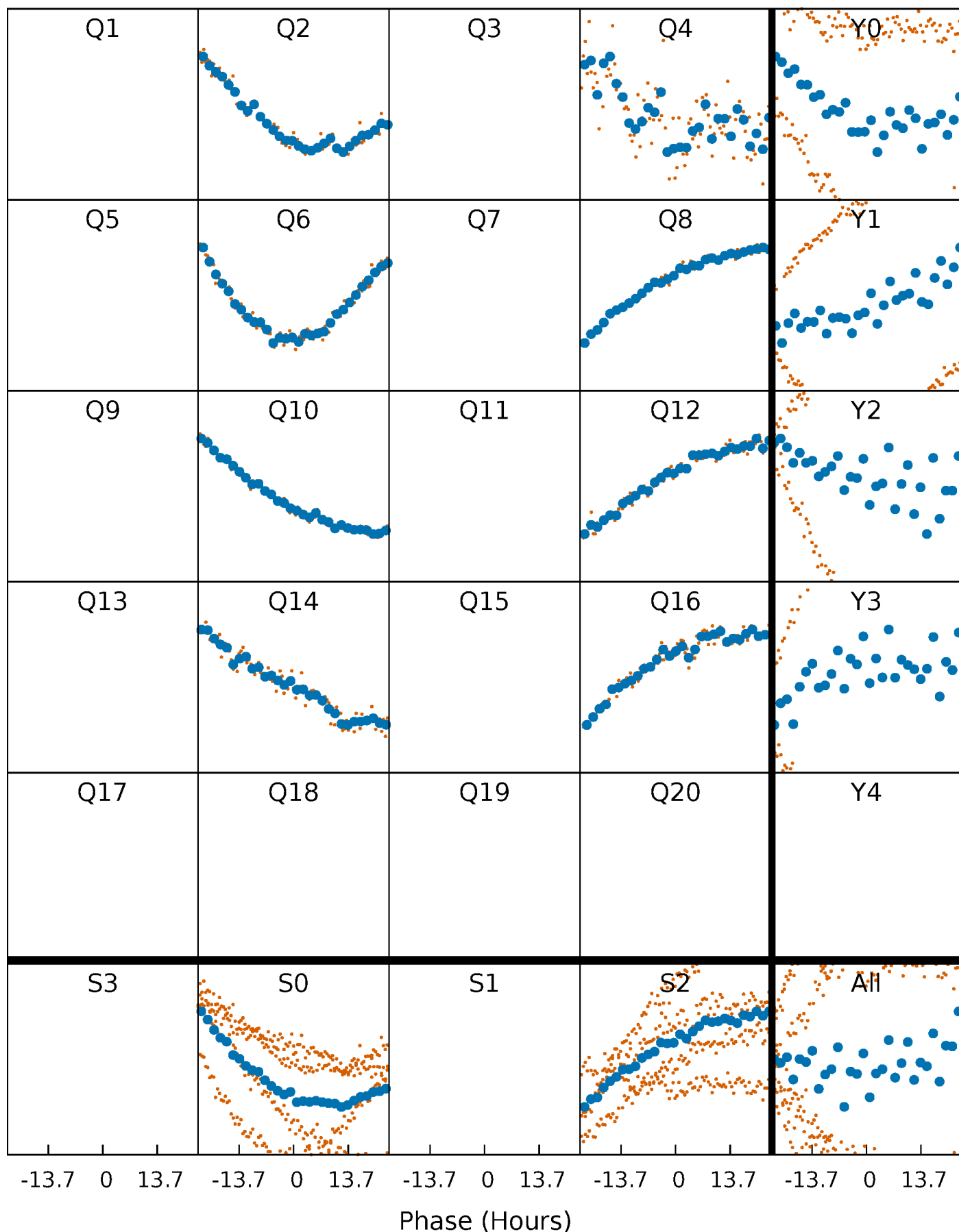


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 009118695-07 P=179.141020 Days  $T_0=245.717566$  (BKJD)



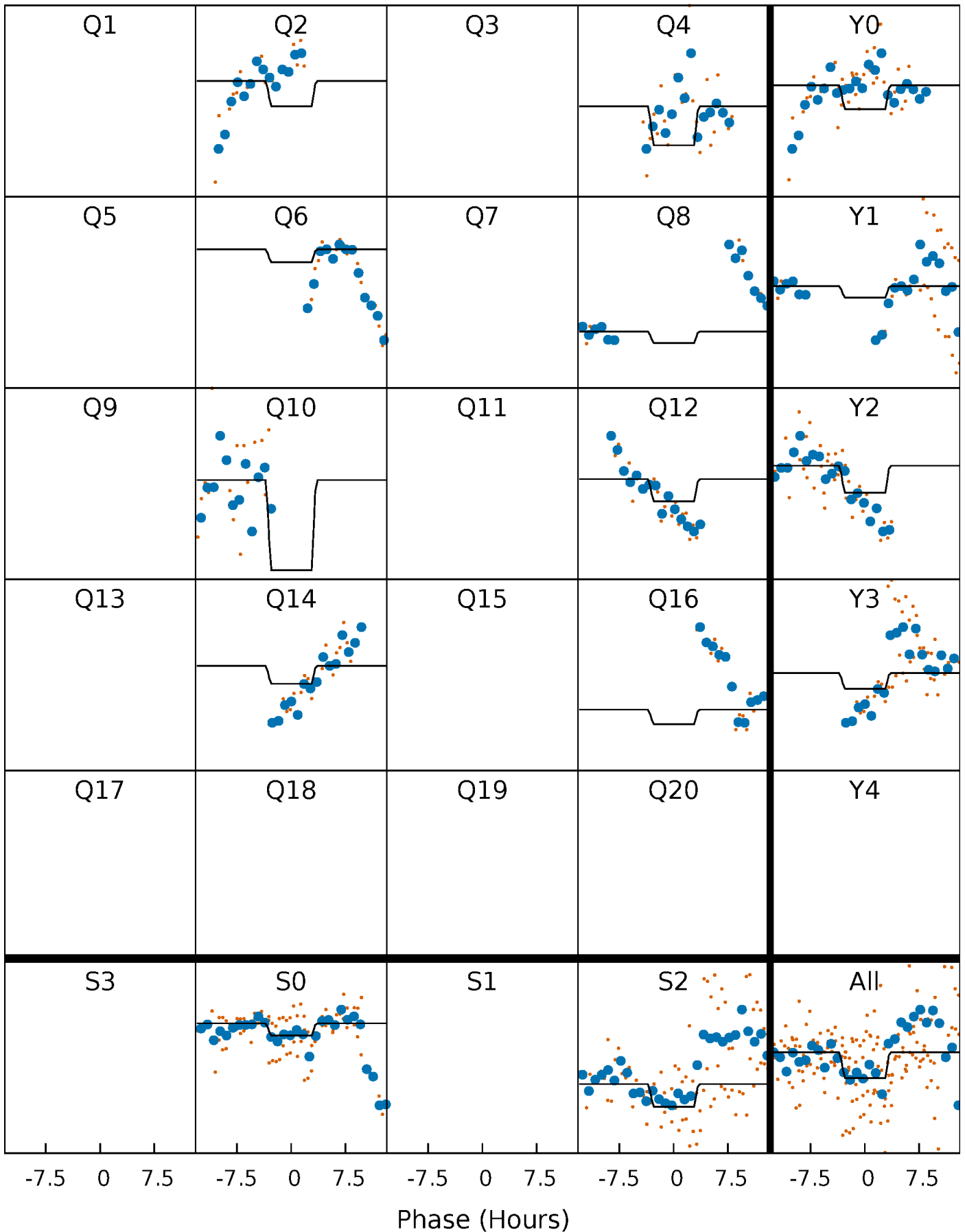
# DV Quarter-Phased Transit Curves

TCE 009118695-07 P=179.141020 Days  $T_0=245.717566$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009118695-07 P=179.141020 Days  $T_0=245.499663$  (BKJD)

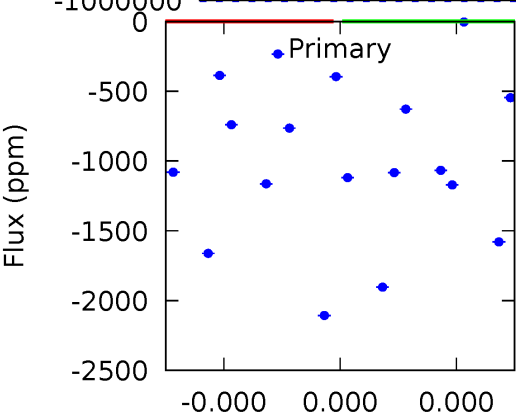
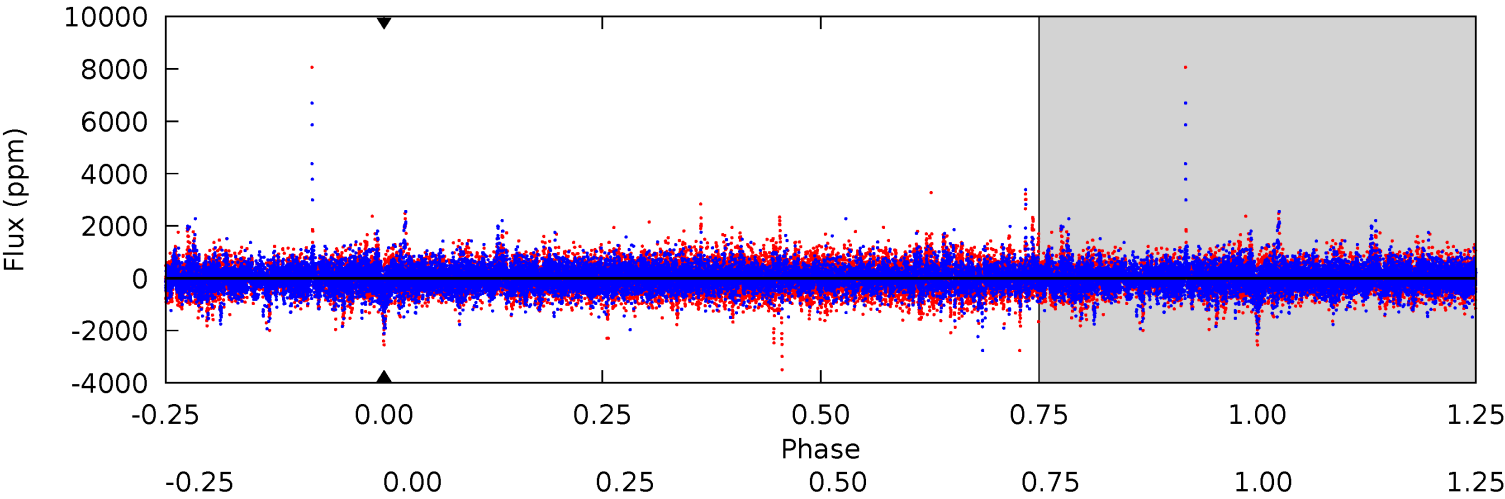




# DV Model-Shift Uniqueness Test

009118695-07, P = 179.141020 Days, E = 66.576546 Days

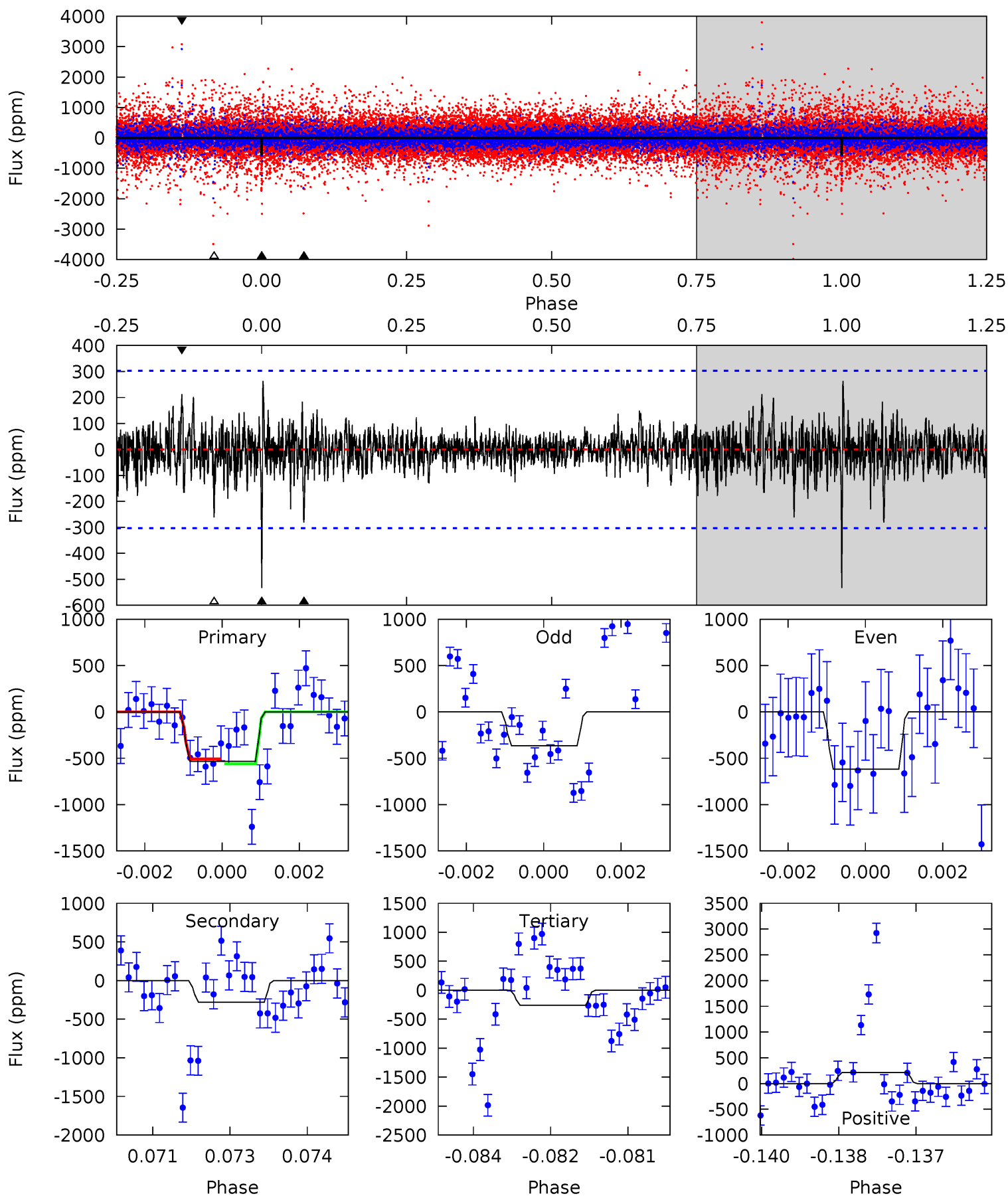
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009118695-07, P = 179.141020 Days, E = 66.358643 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
9.46	4.98	4.63	3.77	5.38	3.17	0.88	4.83	5.69	0.35	1.21	2.01	1.25	0.33	0.47



### Stellar Parameters For KIC 009118695

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5491^{+164}_{-164}$	$4.432^{+0.143}_{-0.266}$	$-0.300^{+0.350}_{-0.250}$	$0.887^{+0.275}_{-0.148}$	$0.776^{+0.126}_{-0.054}$	$1.566^{+0.974}_{-0.928}$
	+3%/-3%	+3%/-6%	+117%/-83%	+31%/-17%	+16%/-7%	+62%/-59%
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 009118695-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$8.38^{+7.71}_{-5.82}$	$428^{+41}_{-28}$	$-5091^{+21993}_{-11594}$	$-11343.927^{+509875.301}_{-430802.461}$
Alt.	$-281 \pm 56$	$7.83^{+8.63}_{-5.48}$	$426^{+40}_{-27}$	$3148^{+1569}_{-553}$	$815^{+8215}_{-632}$

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

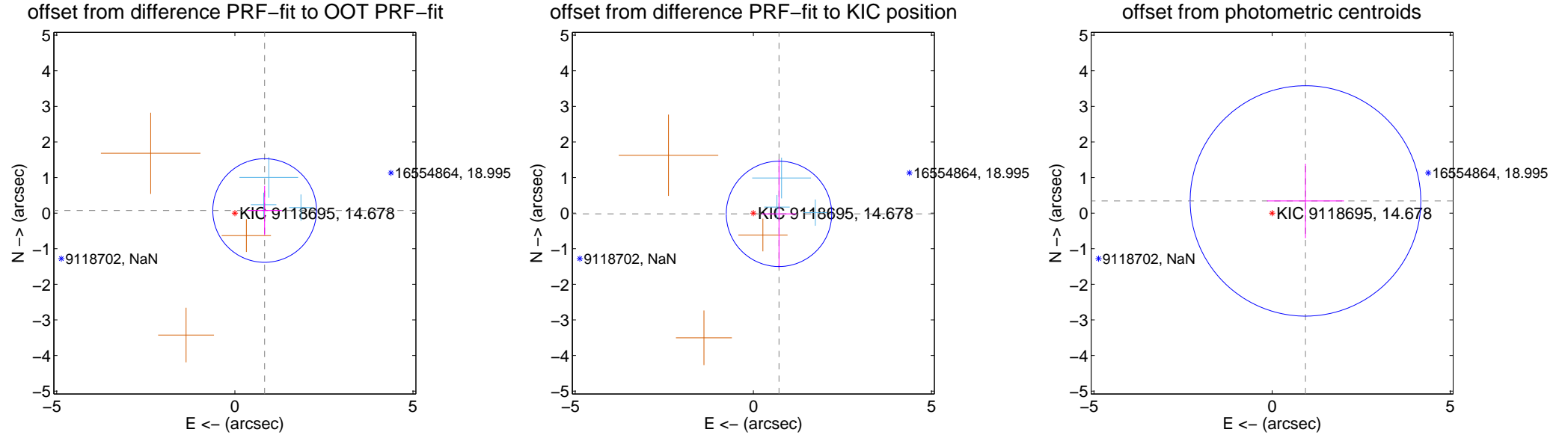
## DV Centroid Data

Supplemental centroid analysis for 009118695-07. Kepler magnitude: 14.68. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

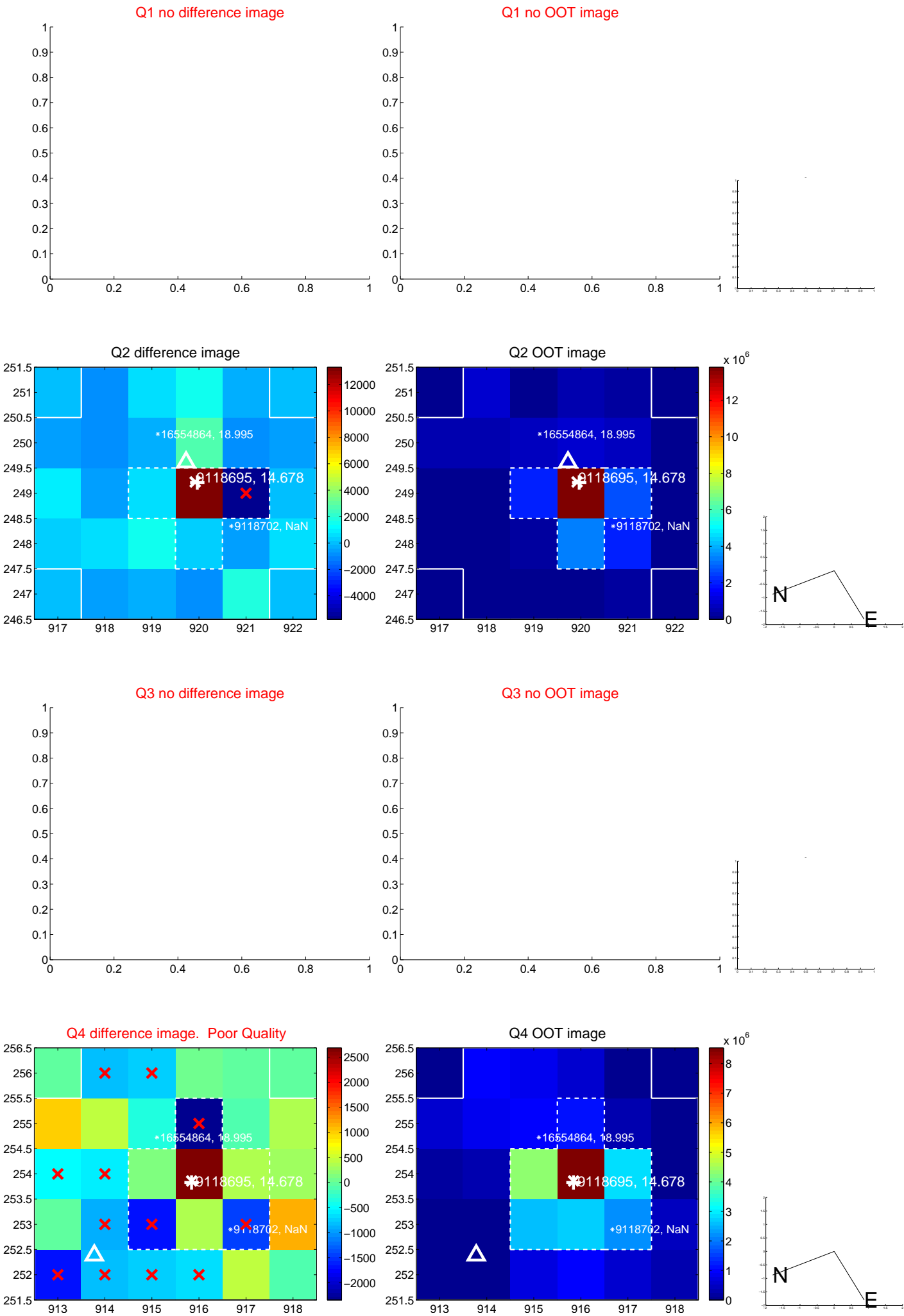
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.839 \pm 0.485$	1.73	$-0.836 \pm 0.483$	$0.073 \pm 0.692$
PRF-fit source offset from KIC position	$0.720 \pm 0.493$	1.46	$-0.719 \pm 0.483$	$-0.021 \pm 1.529$
photometric centroid source offset	$1.00 \pm 1.08$	0.92	$-0.94 \pm 1.08$	$0.34 \pm 1.05$

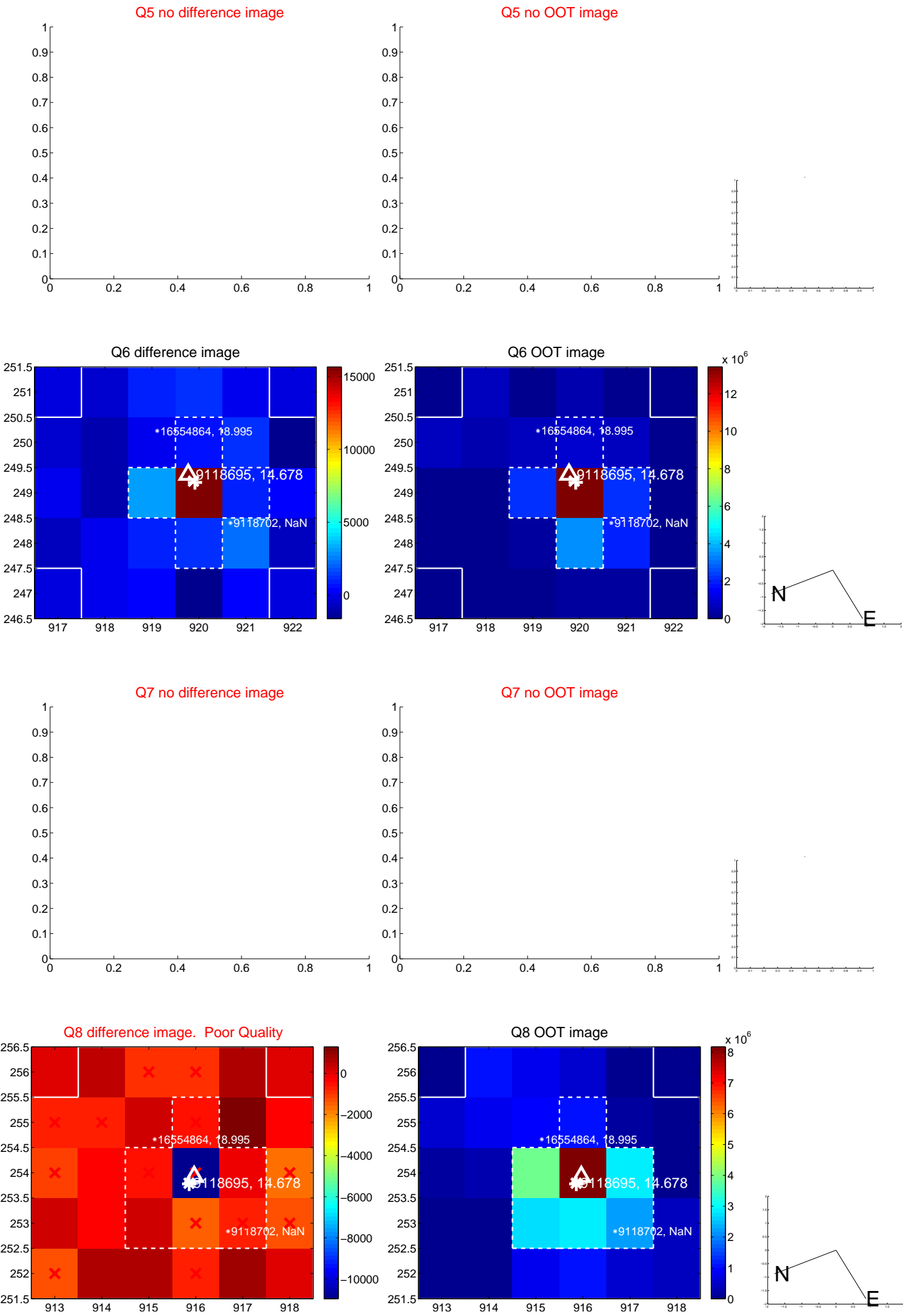


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

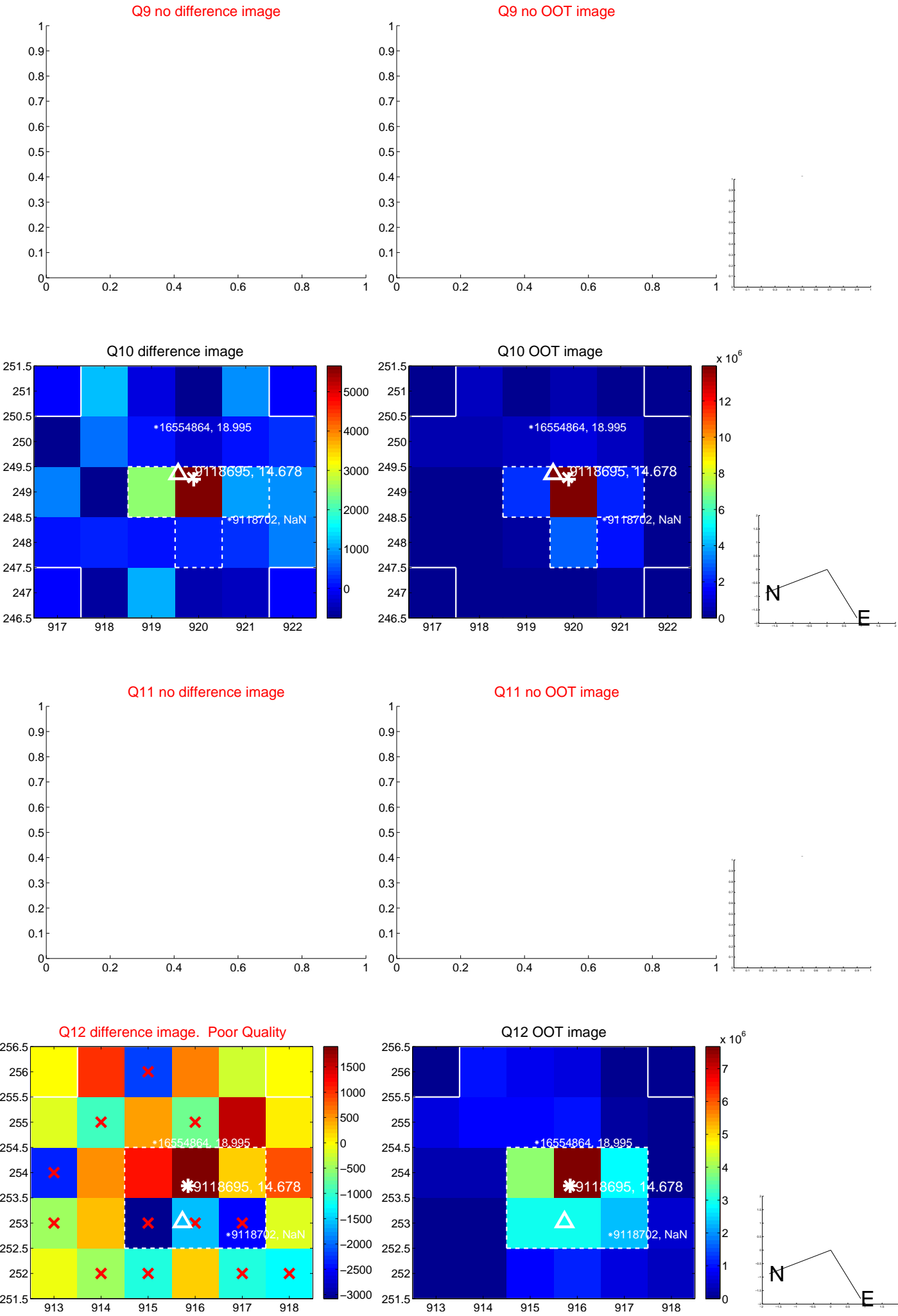
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



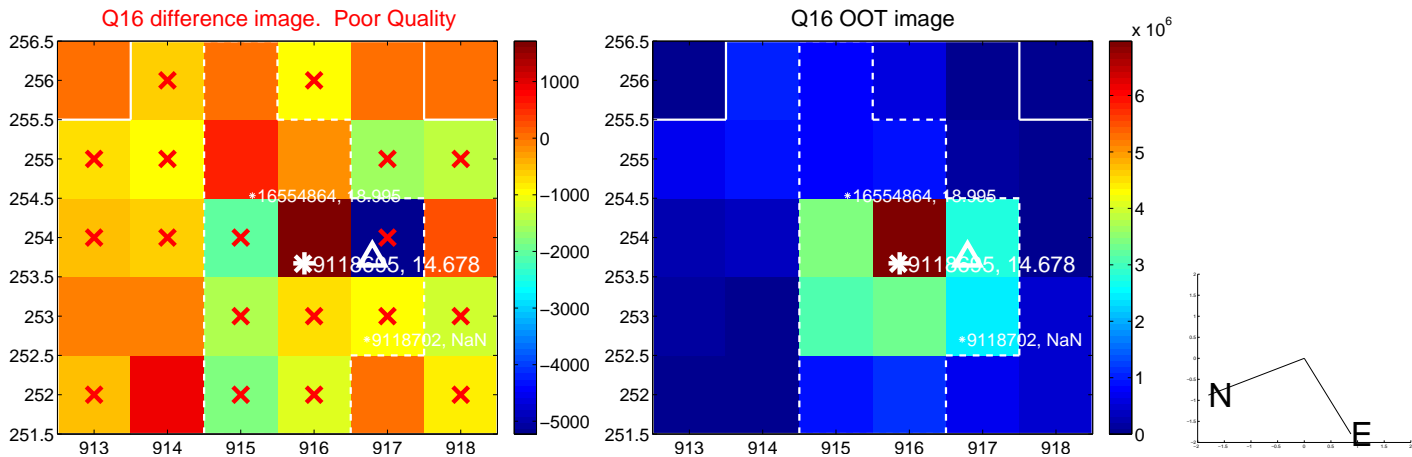
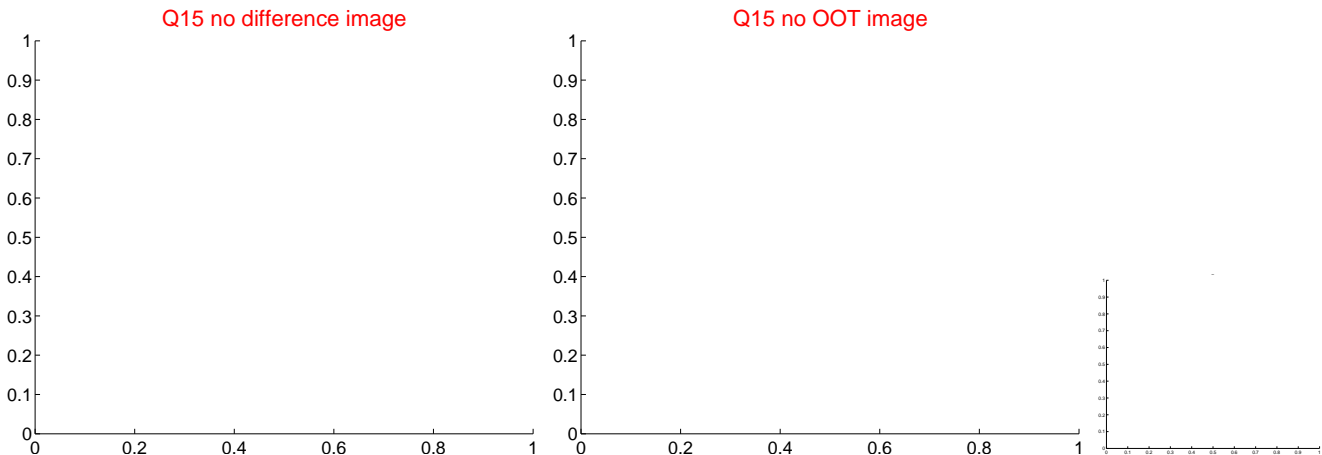
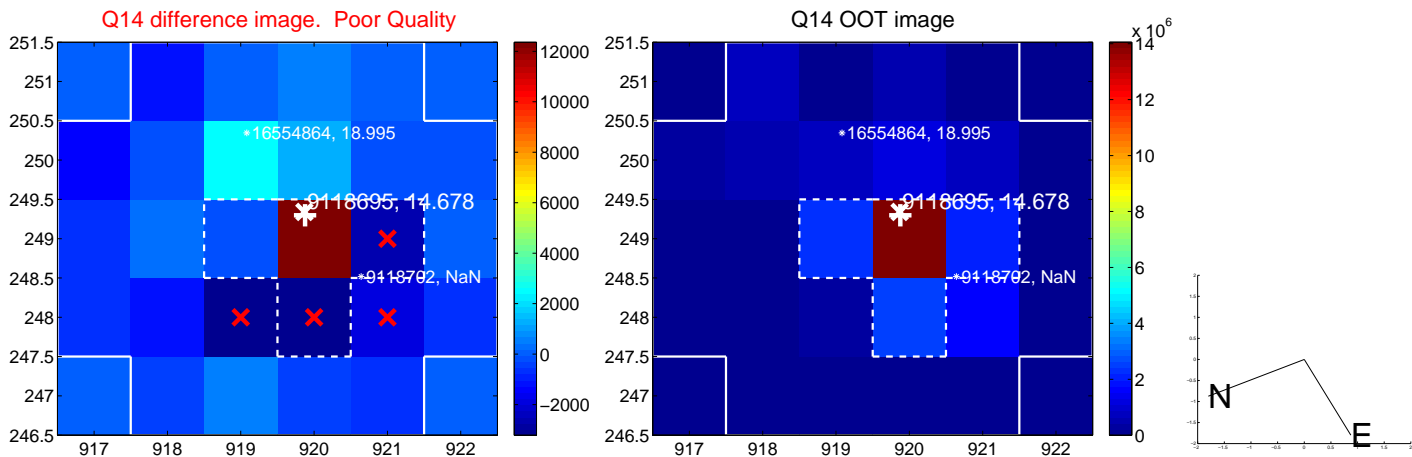
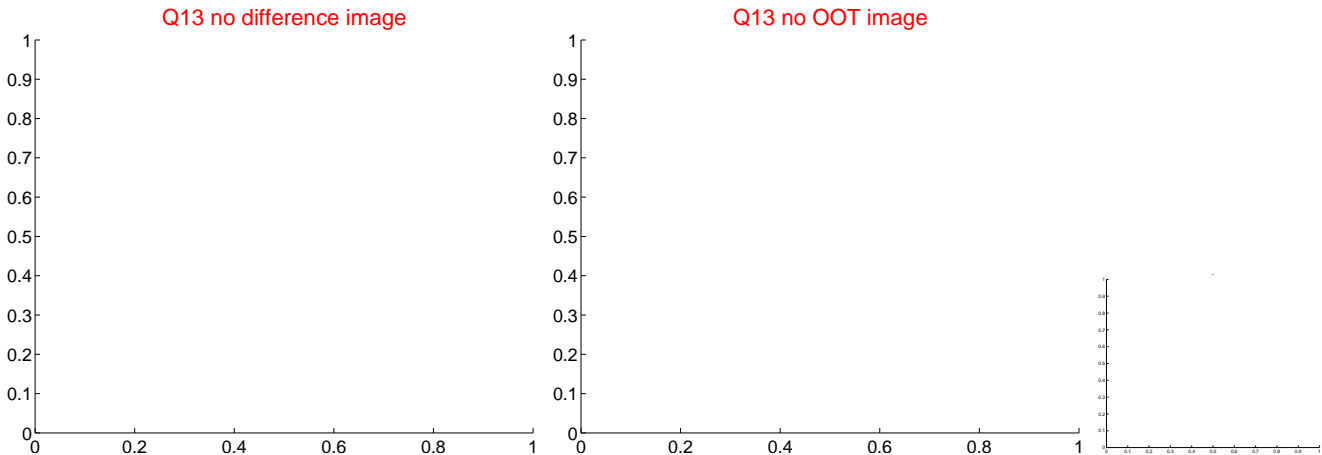
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

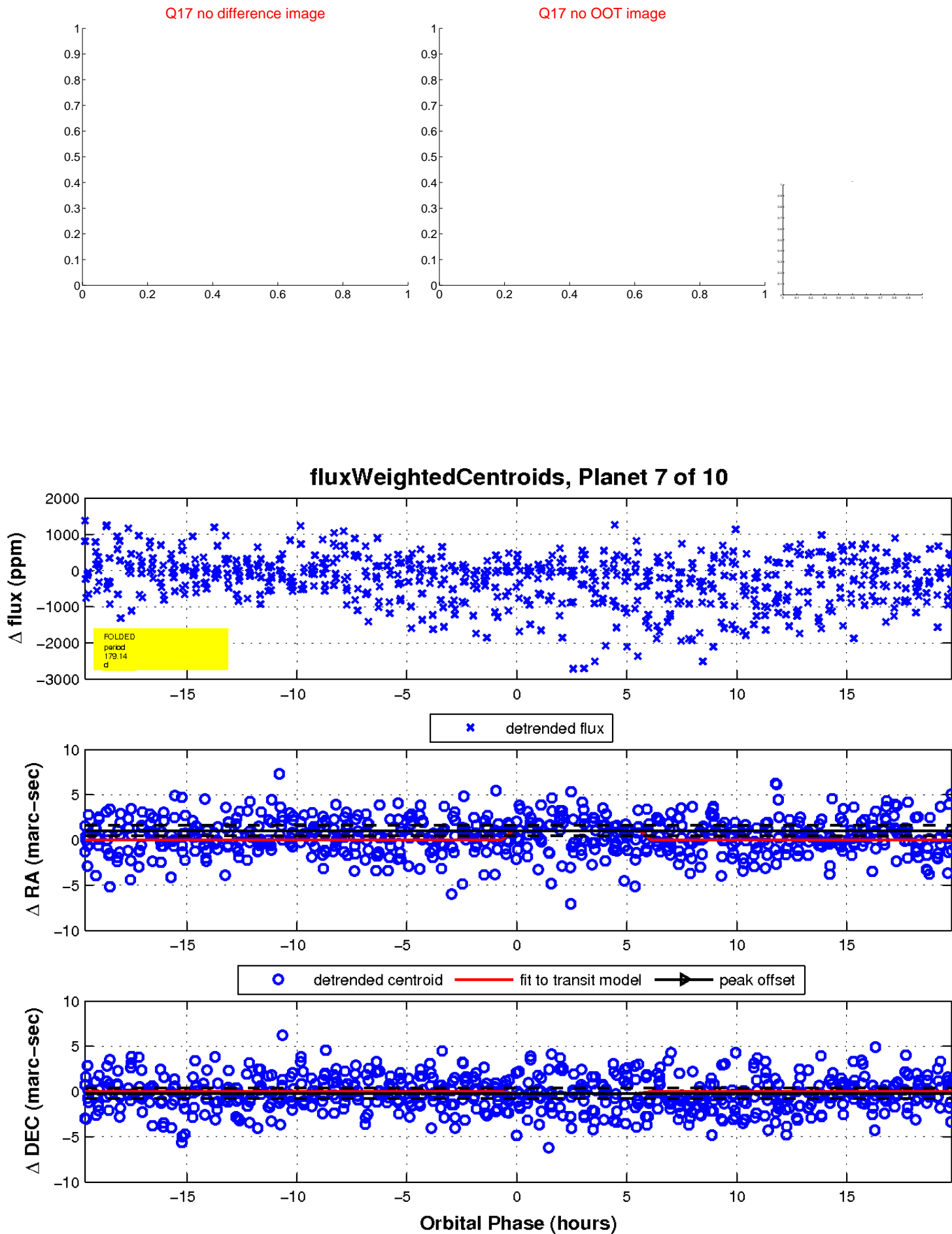


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



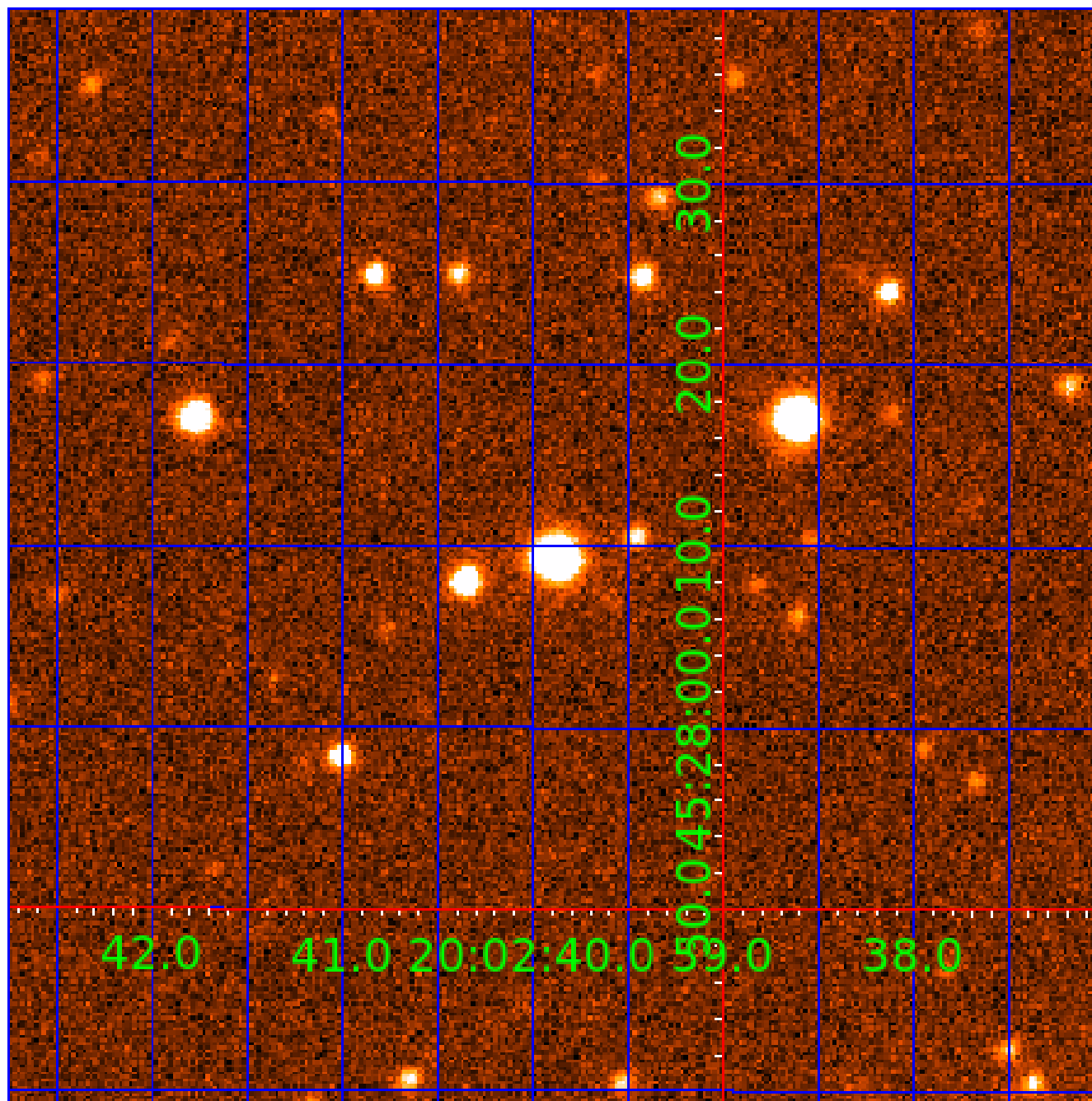


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



## KIC 009118695

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118695-01	OBS	No	1.212130	131.991523	66.9	5.233	11.4	10.5	0.89	5491	0.73	1532.44
009118695-03	OBS	No	229.548298	188.269898	310.0	0.528	18.1	1.5	0.89	5491	1.98	1.41
009118695-04	OBS	No	229.550613	189.072332	1287.8	15.000	18.3	-1.0	0.89	5491	3.14	1.41
009118695-06	OBS	No	114.100566	214.813030	476.3	4.871	12.8	4.9	0.89	5491	2.18	3.58
009118695-07	OBS	No	179.141021	245.717566	749.1	12.000	12.2	-1.0	0.89	5491	2.40	1.96
009118695-08	OBS	No	194.864364	230.808037	803.2	12.542	15.1	5.6	0.89	5491	2.56	1.75
009118695-09	OBS	No	444.098224	158.648730	0.5	4.711	10.2	0.0	0.89	5491	0.07	0.58
009118695-10	OBS	No	183.107433	183.225305	3055.0	27.280	10.6	9.0	0.89	5491	4.85	1.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118695-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009118695-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009118695-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS
009118695-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS
009118695-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

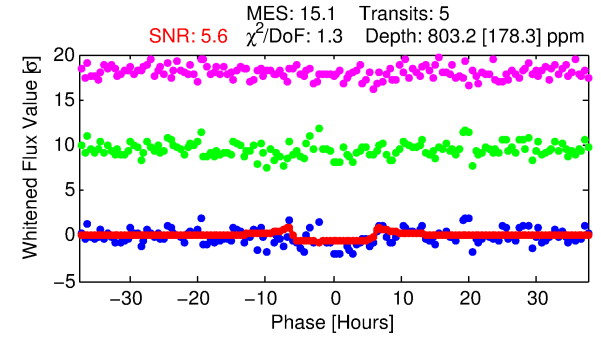
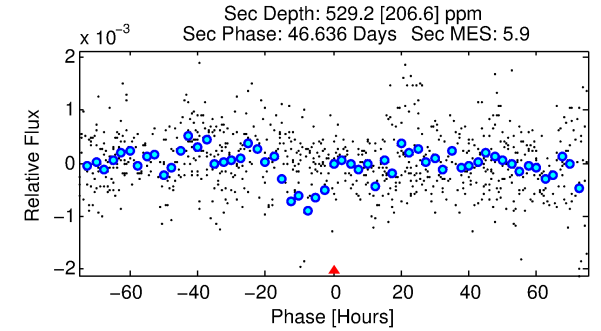
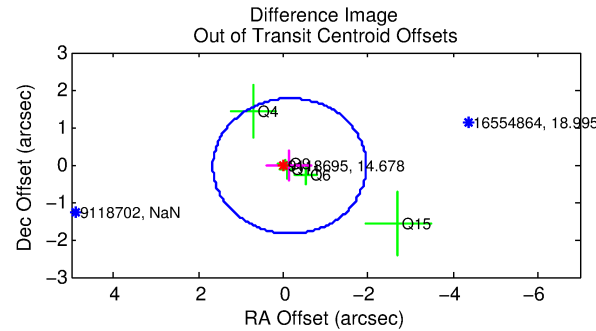
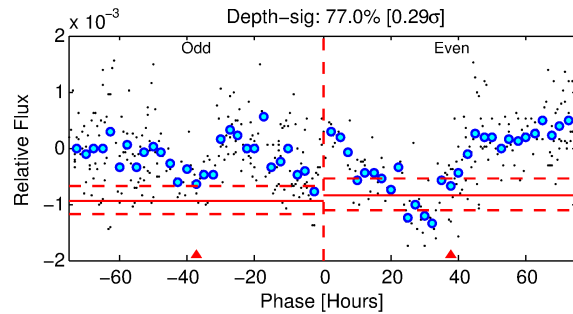
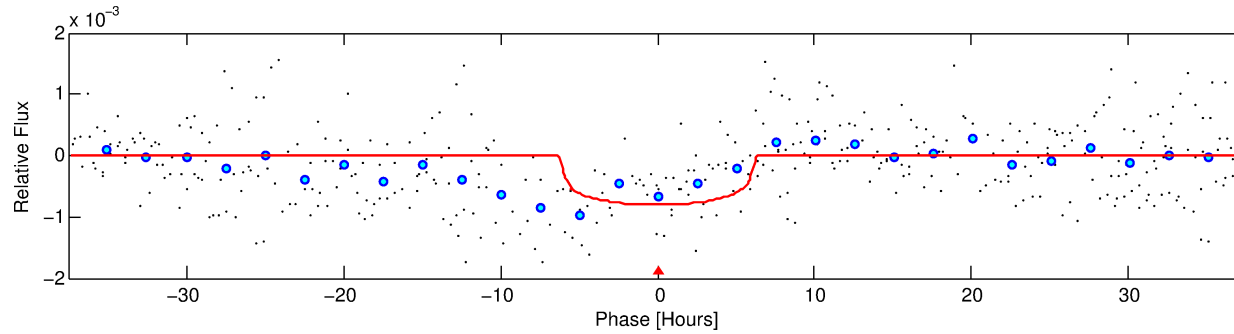
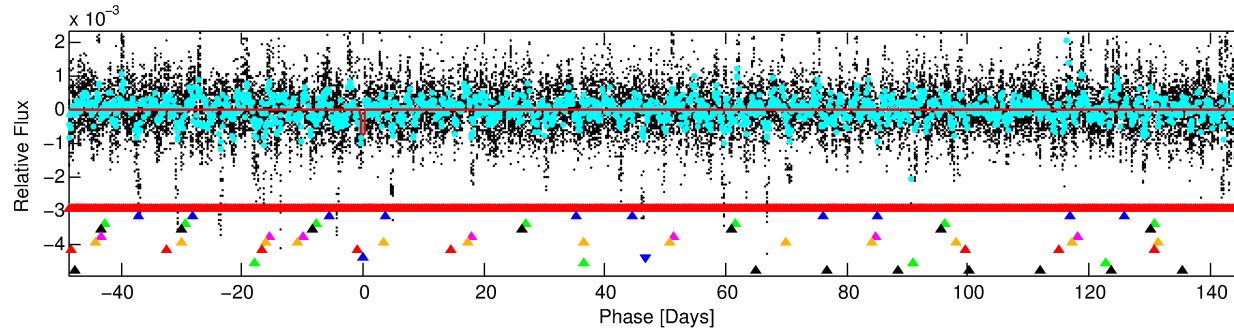
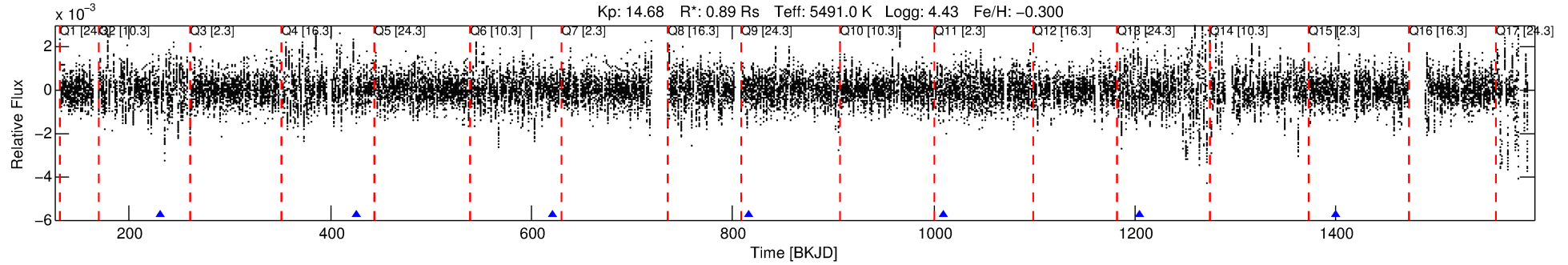
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009118695-08

No Significant Match Found

# DV One-Page Summary

KIC: 9118695 Candidate: 8 of 10 Period: 194.864 d



## DV Fit Results:

Period = 194.86436 [0.00673] d  
Epoch = 230.8080 [0.0278] BKJD  
Rp/R\* = 0.0265 [0.0174]  
a/R\* = 106.78 [284.98]  
b = 0.49 [4.10]  
Seff = 1.75 [0.83]  
Teq = 293 [35] K  
Rp = 2.56 [1.86] Re  
a = 0.6046 [0.1756] AU  
Ag = 16234.45 [23484.85] [0.69 $\sigma$ ]  
Teffp = 5121 [1763] K [2.74 $\sigma$ ]

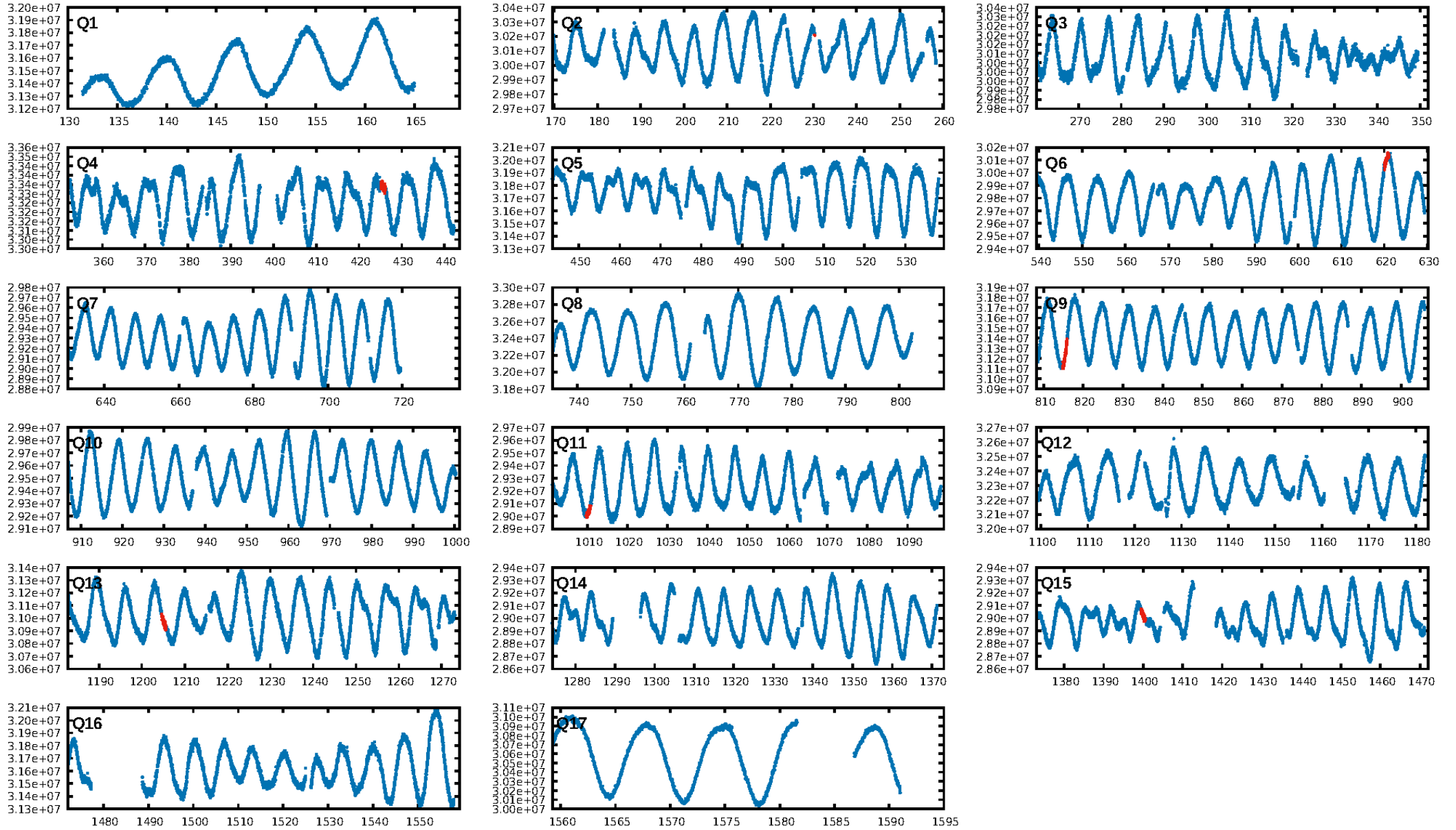
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.40 $\sigma$ ]  
LongPeriod-sig: 100.0% [56.76 $\sigma$ ]  
ModelChiSquare2-sig: 2.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.64e-21  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -0.901  
Centroid-sig: 91.0%  
Centroid-so: 0.936 arcsec [1.16 $\sigma$ ]  
OotOffset-rm: 0.160 arcsec [0.26 $\sigma$ ]  
OotOffset-st: 1/2/1/1 [5]  
KicOffset-rm: 0.139 arcsec [0.23 $\sigma$ ]  
KicOffset-st: 1/2/1/1 [5]  
DiffImageQuality-fgm: 0.40 [2/5]  
DiffImageOverlap-fno: 0.00 [0/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:45:34 Z

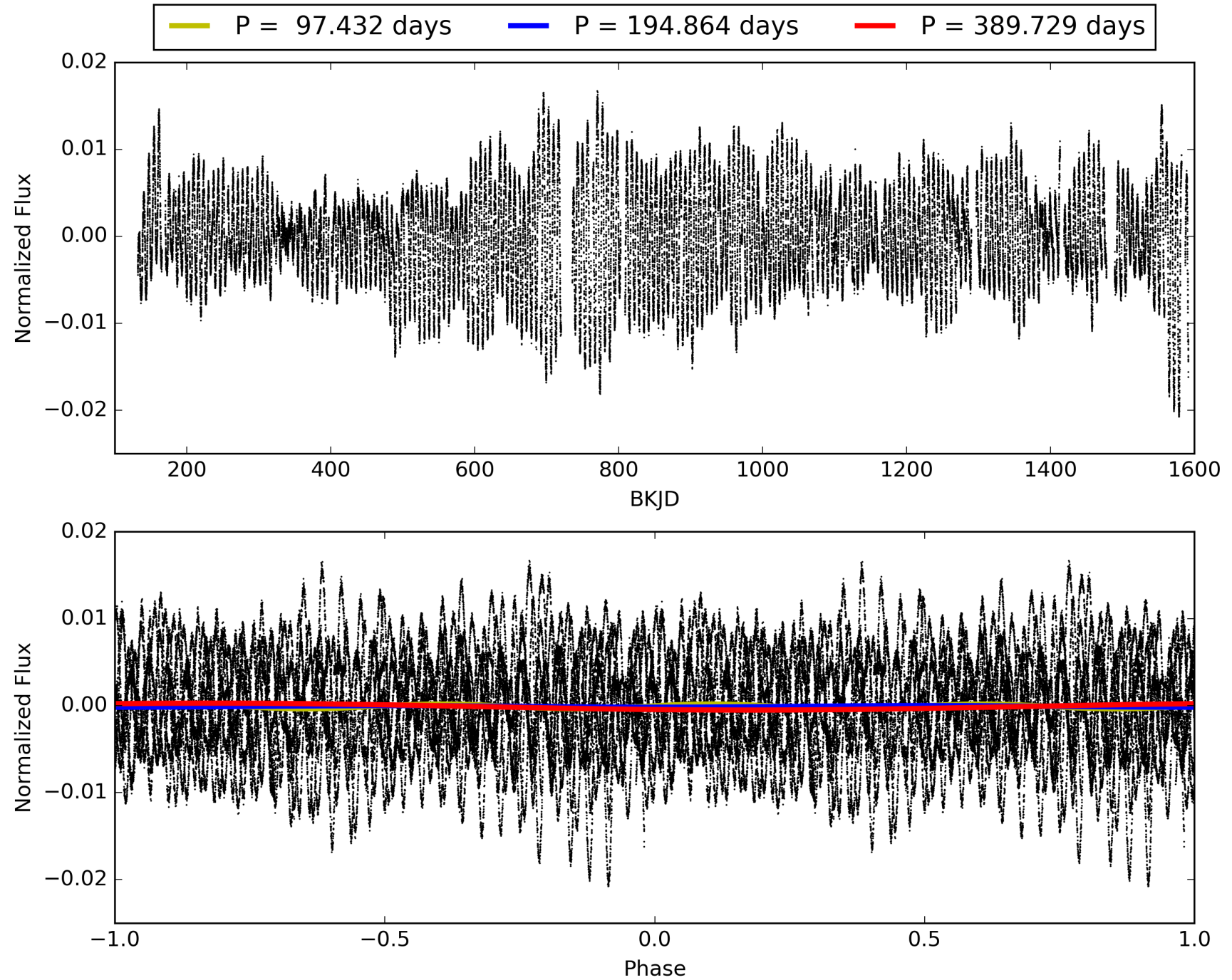
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009118695-08, PDC Light Curves



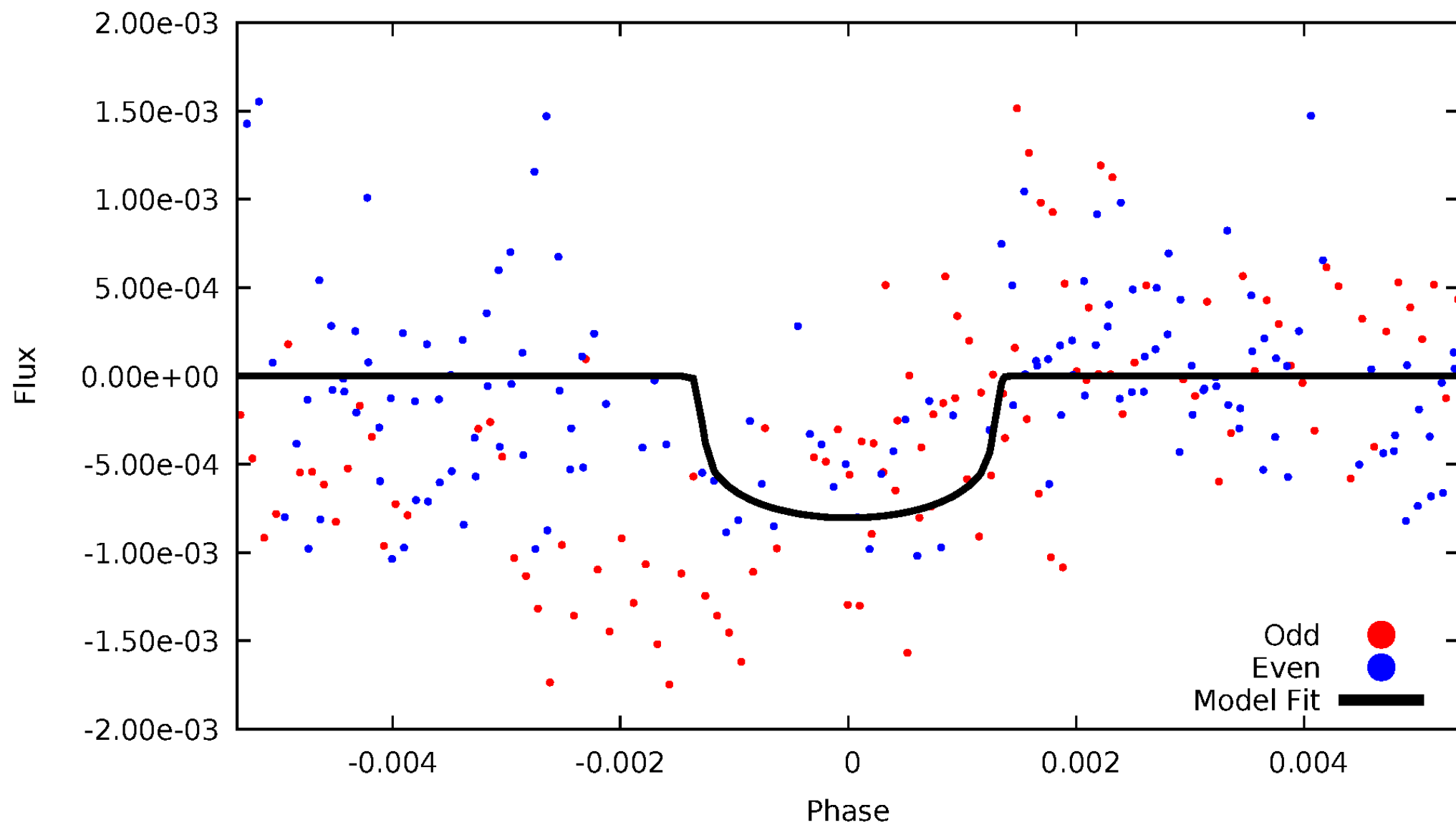


# TCE 009118695-08



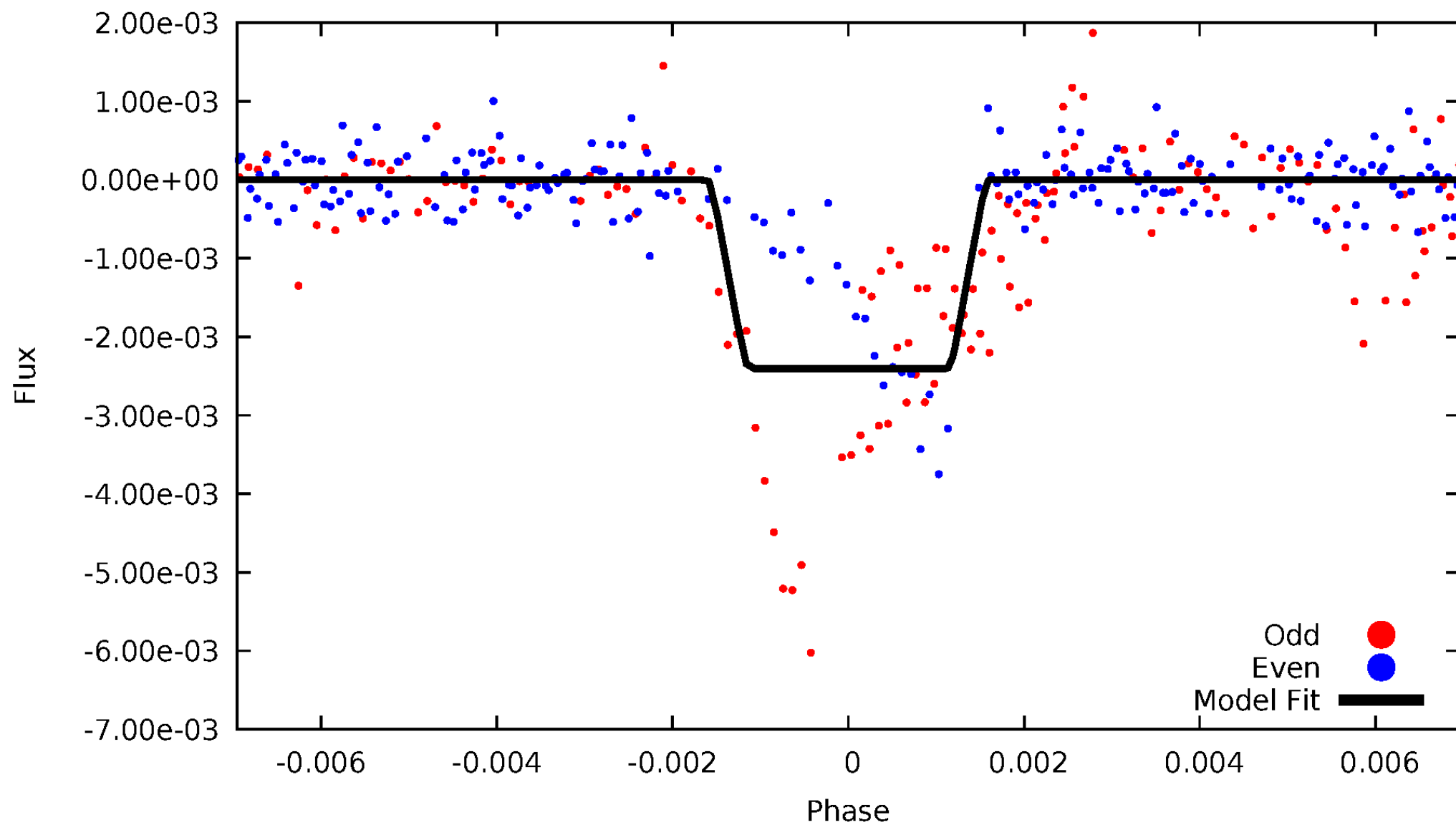
# DV Odd/Even

TCE 009118695-08



# ALT Odd/Even

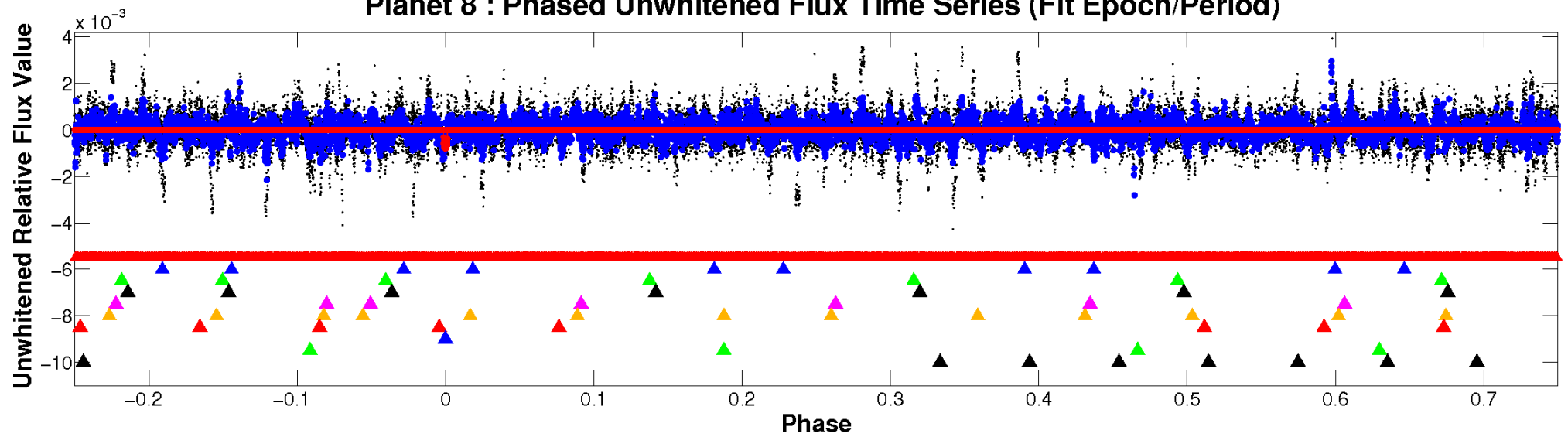
TCE 009118695-08



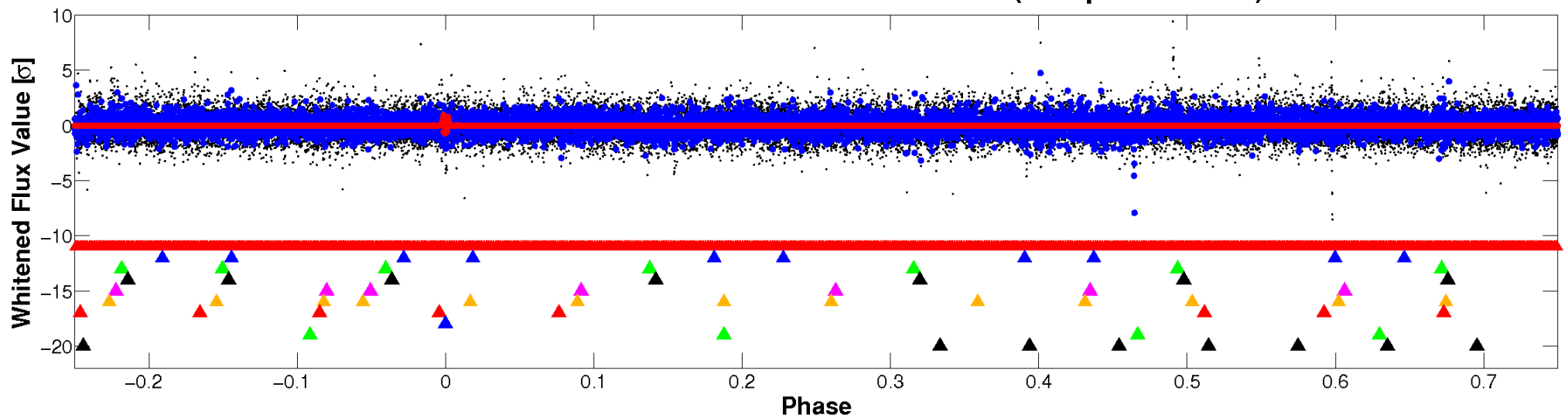


# Non-Whitened Vs. Whitened Light Curve

## Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

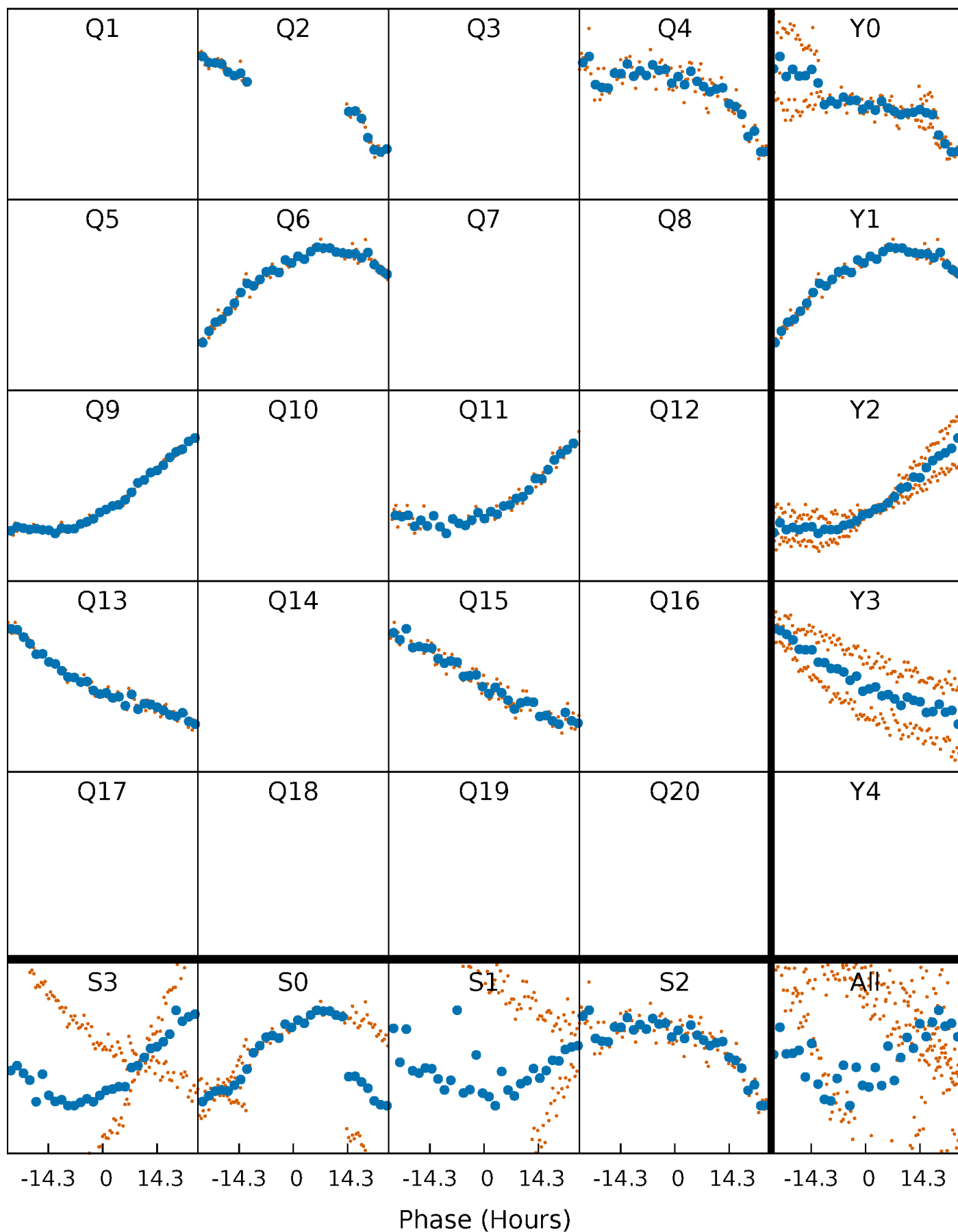


## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



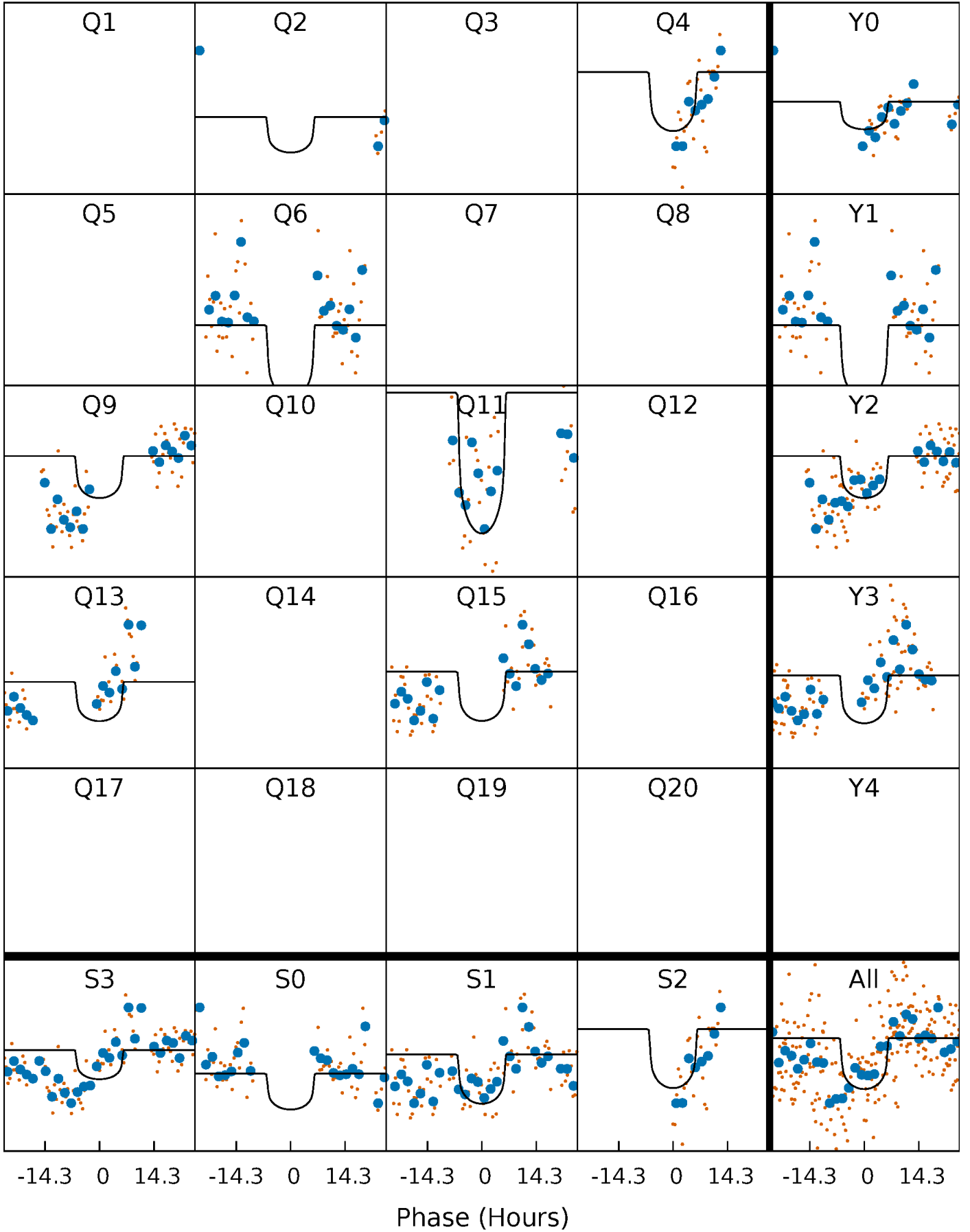
# PDC Quarter-Phased Transit Curves

TCE 009118695-08     $P=194.864364$  Days     $T_0=230.808037$  (BKJD)



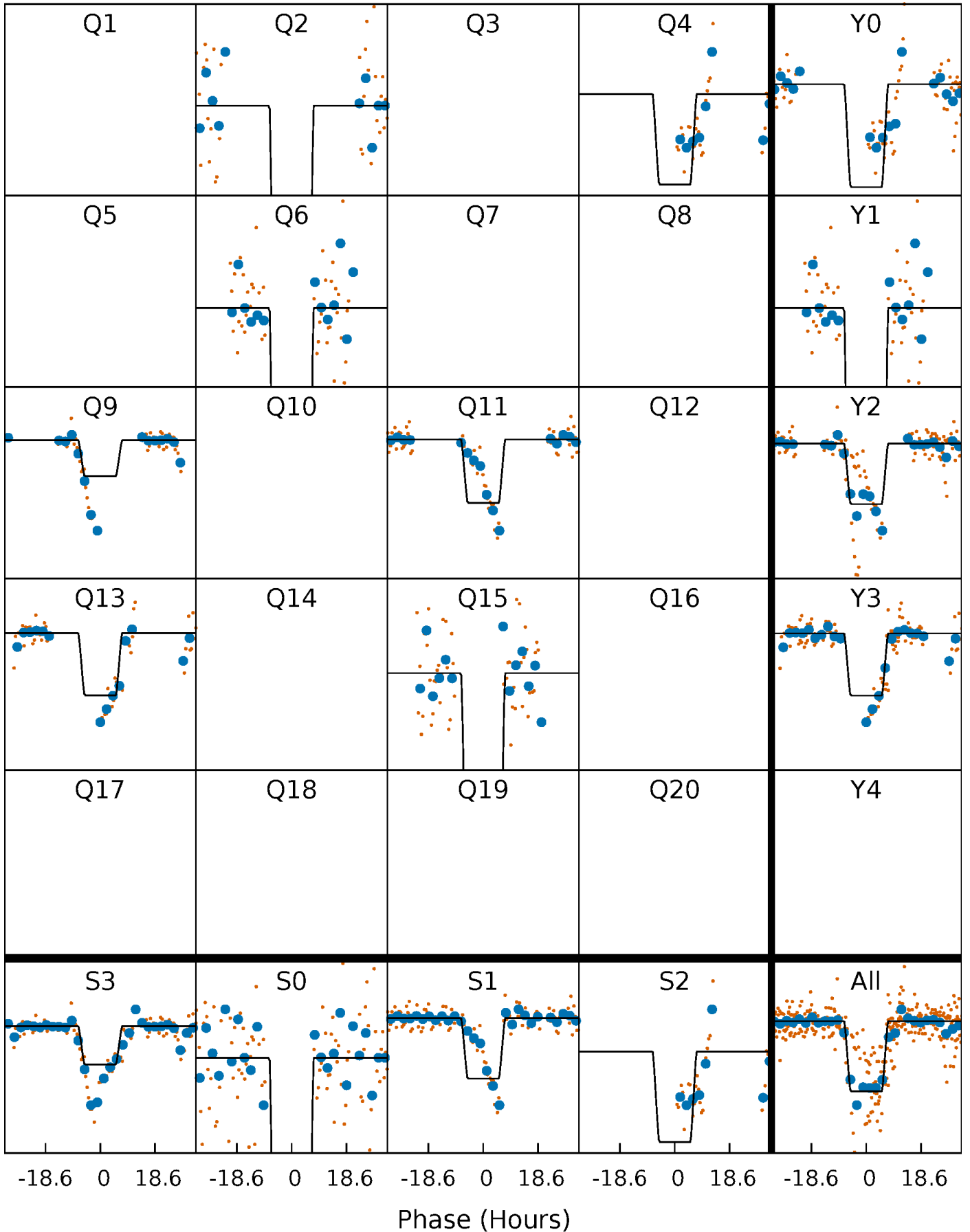
# DV Quarter-Phased Transit Curves

TCE 009118695-08     $P=194.864364$  Days     $T_0=230.808037$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

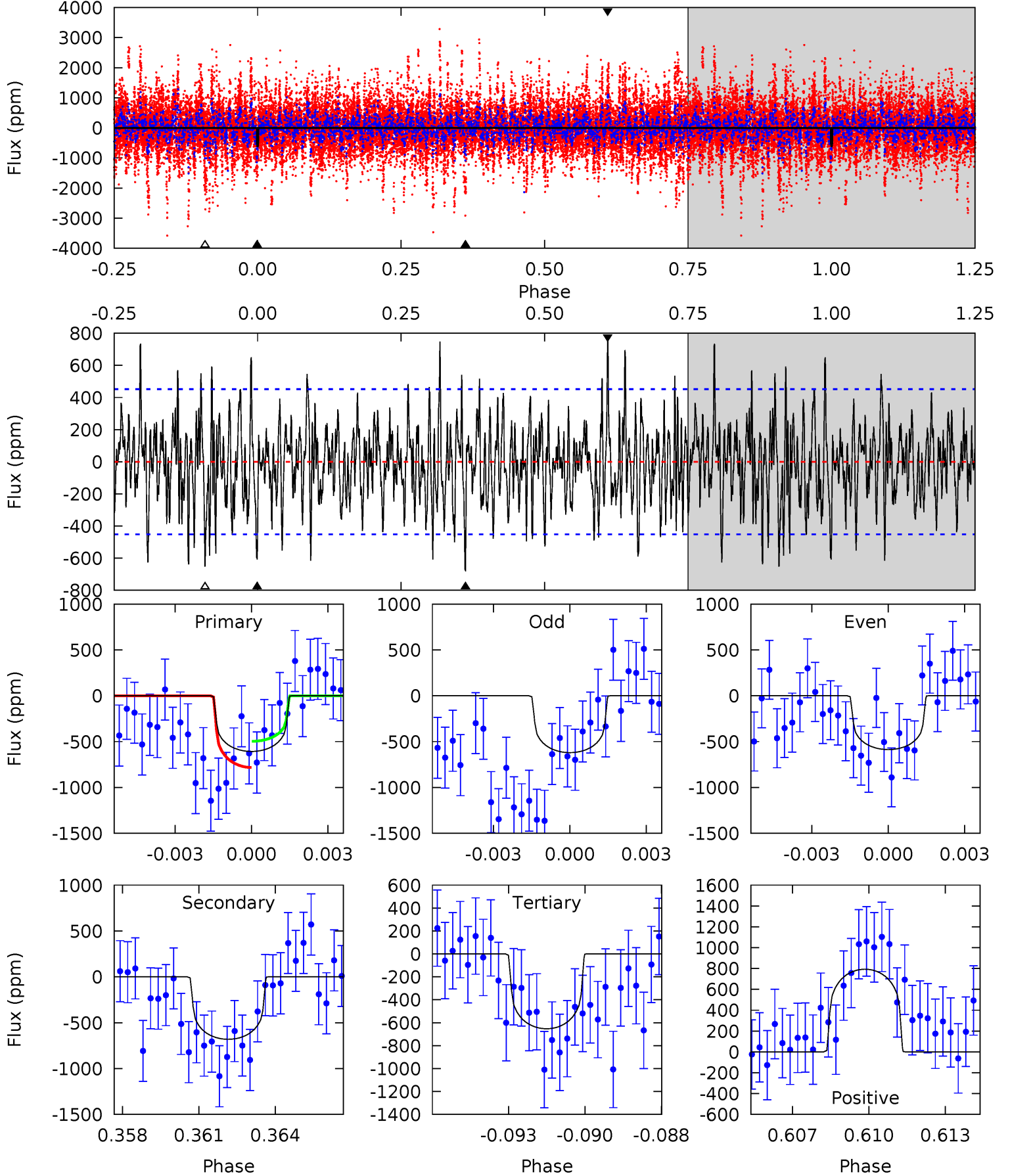
TCE 009118695-08 P=194.861239 Days  $T_0=230.778663$  (BKJD)



# DV Model-Shift Uniqueness Test

009118695-08, P = 194.864364 Days, E = 35.943673 Days

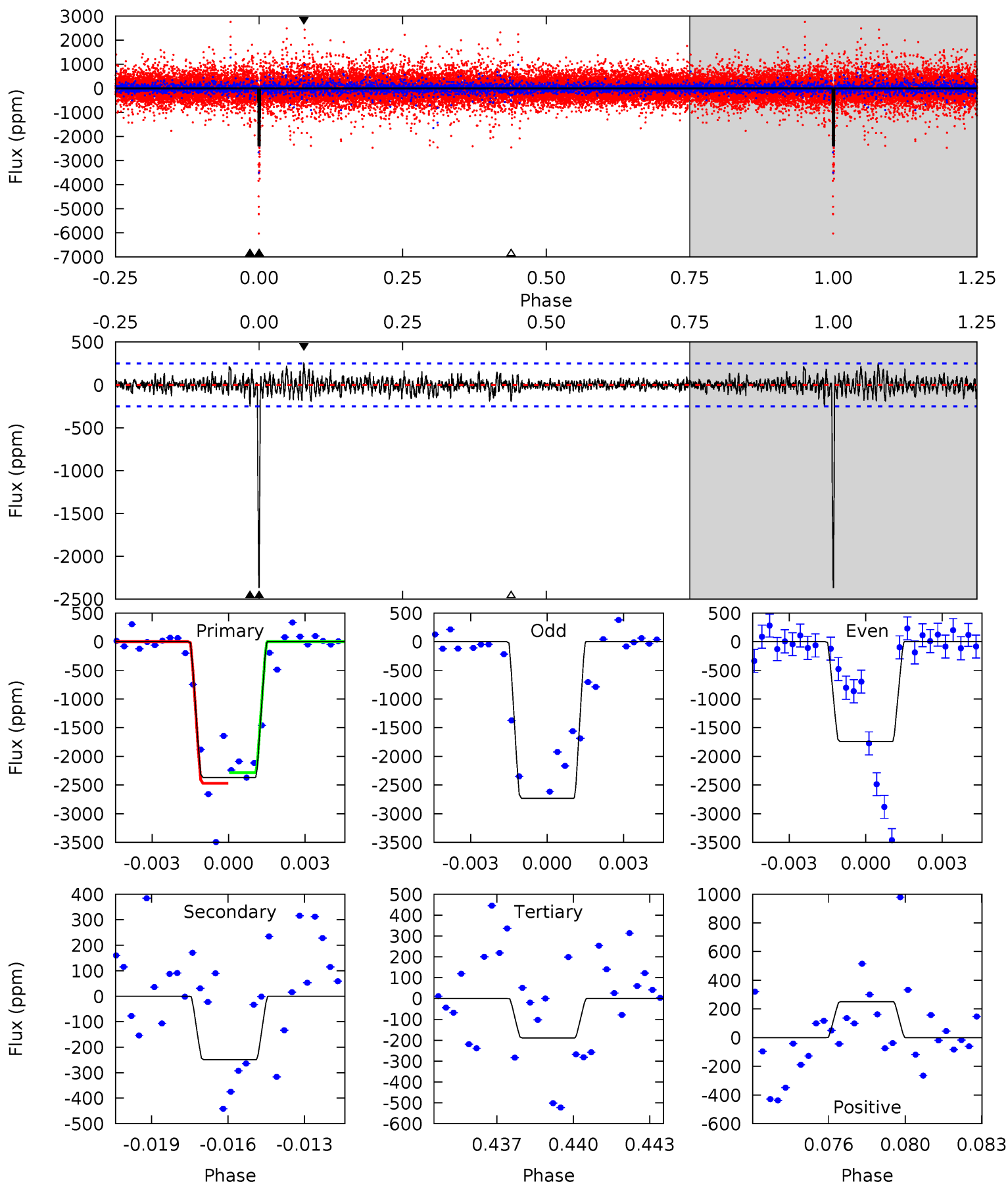
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.09	7.94	7.62	9.25	5.27	3.00	2.57	-0.53	-2.16	0.33	-1.31	0.18	1.16	0.54	1.63



# Alt Model-Shift Uniqueness Test

009118695-08, P = 194.861239 Days, E = 35.917424 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
49.5	5.21	3.95	5.25	5.24	2.95	1.11	45.5	44.2	1.26	-0.04	9.19	1.21	0.10	1.90



### Stellar Parameters For KIC 009118695

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5491^{+164}_{-164}$	$4.432^{+0.143}_{-0.266}$	$-0.300^{+0.350}_{-0.250}$	$0.887^{+0.275}_{-0.148}$	$0.776^{+0.126}_{-0.054}$	$1.566^{+0.974}_{-0.928}$
	+3%/-3%	+3%/-6%	+117%/-83%	+31%/-17%	+16%/-7%	+62%/-59%
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 009118695-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-681 \pm 86$	$2.83^{+1.83}_{-1.58}$	$416^{+35}_{-28}$	$5309^{+2732}_{-969}$	$17087^{+71756}_{-10838}$
Alt.	$-249 \pm 48$	$4.91^{+1.99}_{-1.77}$	$415^{+37}_{-27}$	$3576^{+579}_{-373}$	$2134^{+2996}_{-1115}$

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

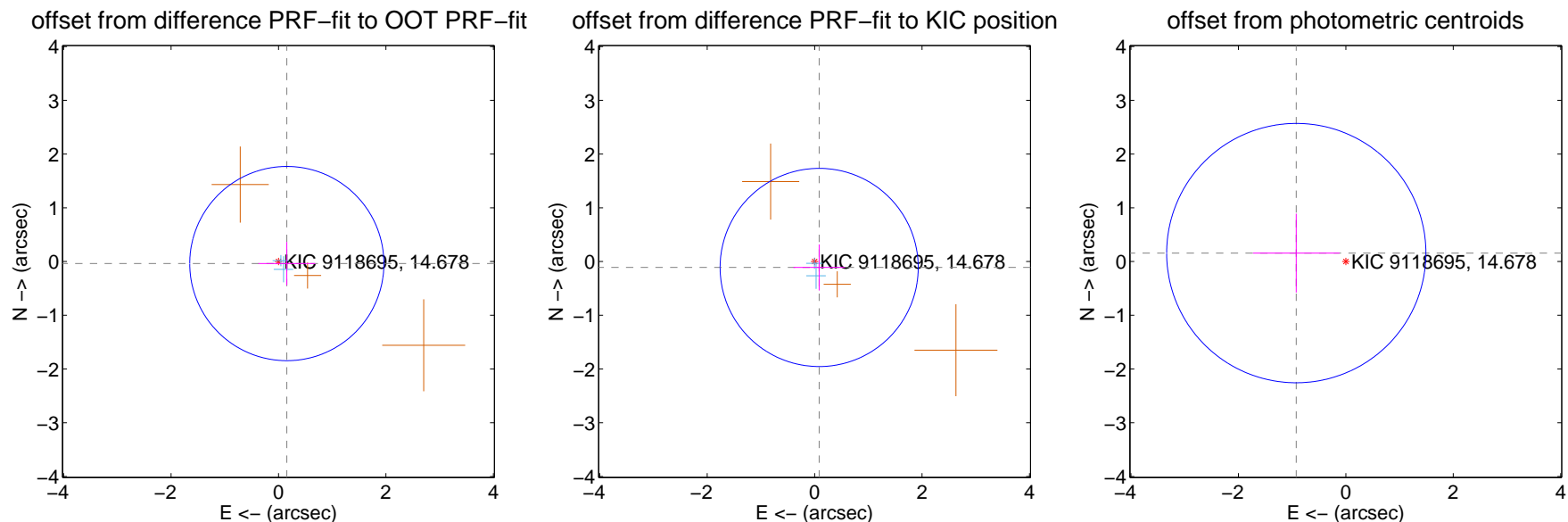
## DV Centroid Data

Supplemental centroid analysis for 009118695-08. Kepler magnitude: 14.68. Transit SNR 5.58

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

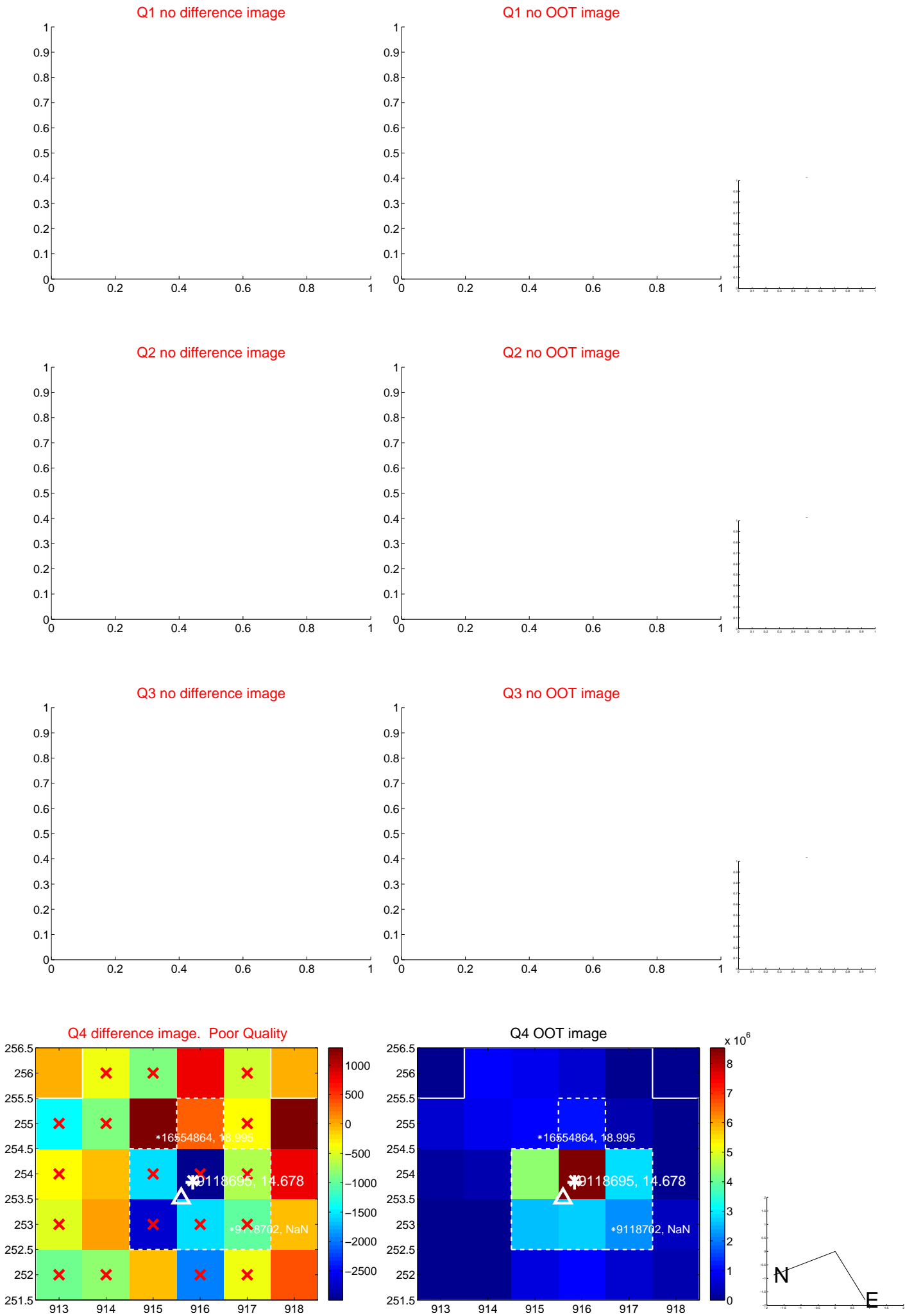
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.160 \pm 0.602$	0.26	$-0.155 \pm 0.528$	$-0.038 \pm 0.402$
PRF-fit source offset from KIC position	$0.139 \pm 0.615$	0.23	$-0.085 \pm 0.479$	$-0.110 \pm 0.429$
photometric centroid source offset	$0.94 \pm 0.80$	1.16	$0.92 \pm 0.81$	$0.16 \pm 0.73$



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.

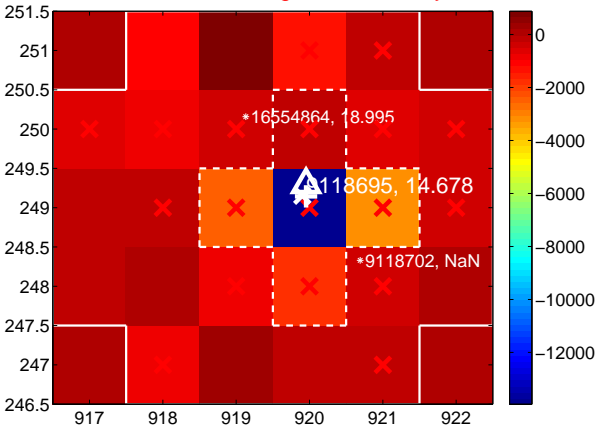
Q5 no difference image



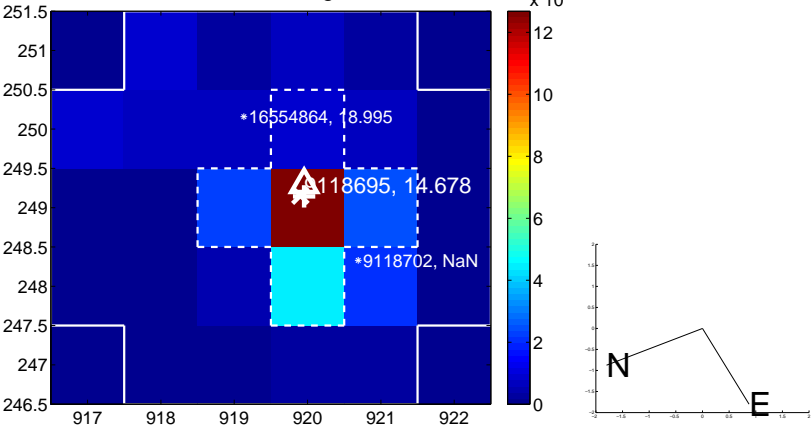
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



Q7 no difference image



Q7 no OOT image



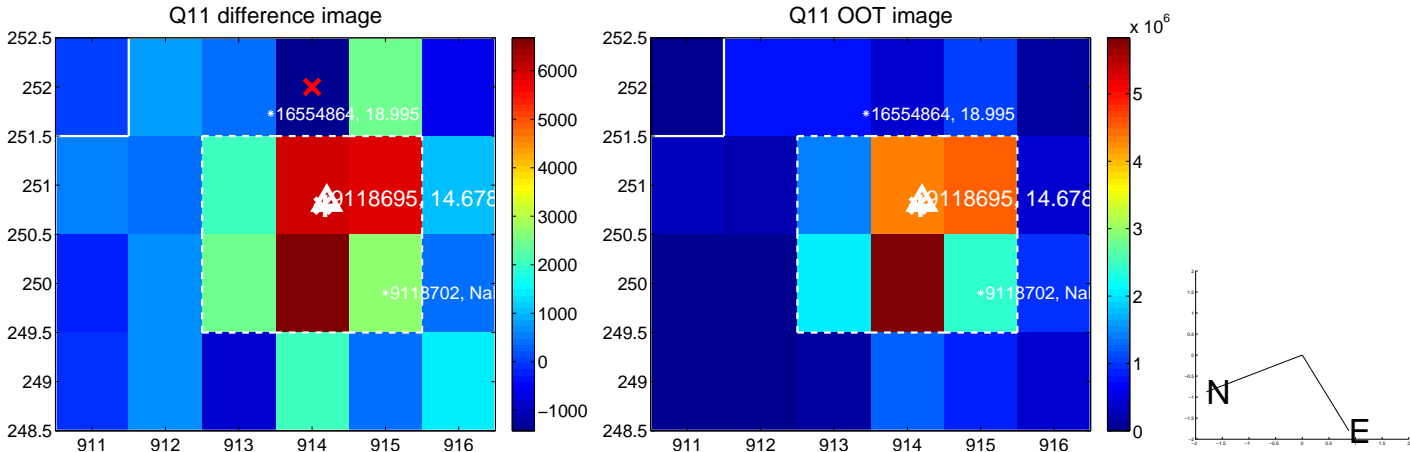
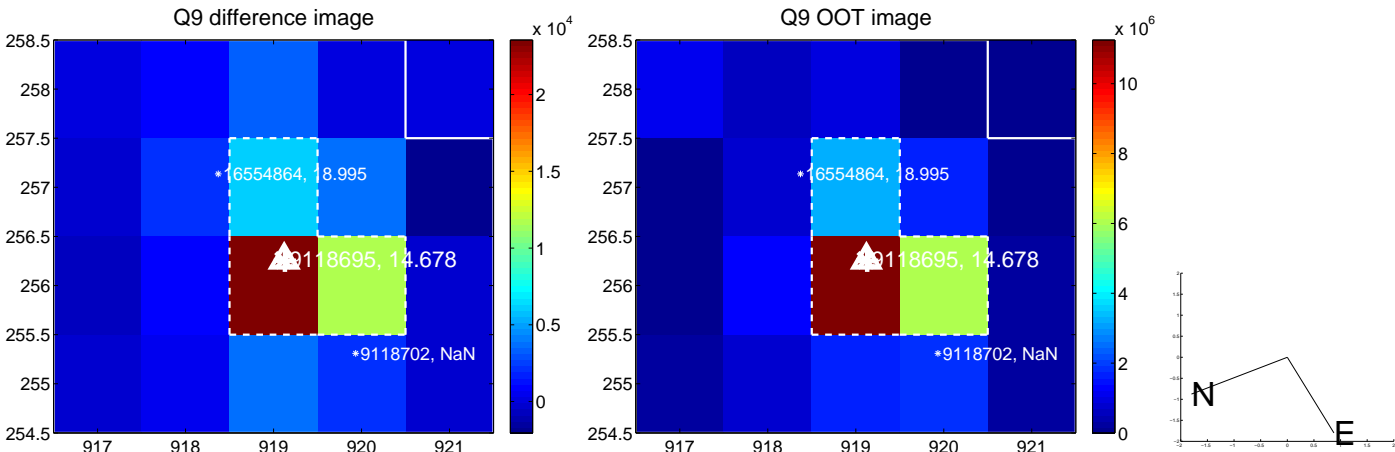
Q8 no difference image



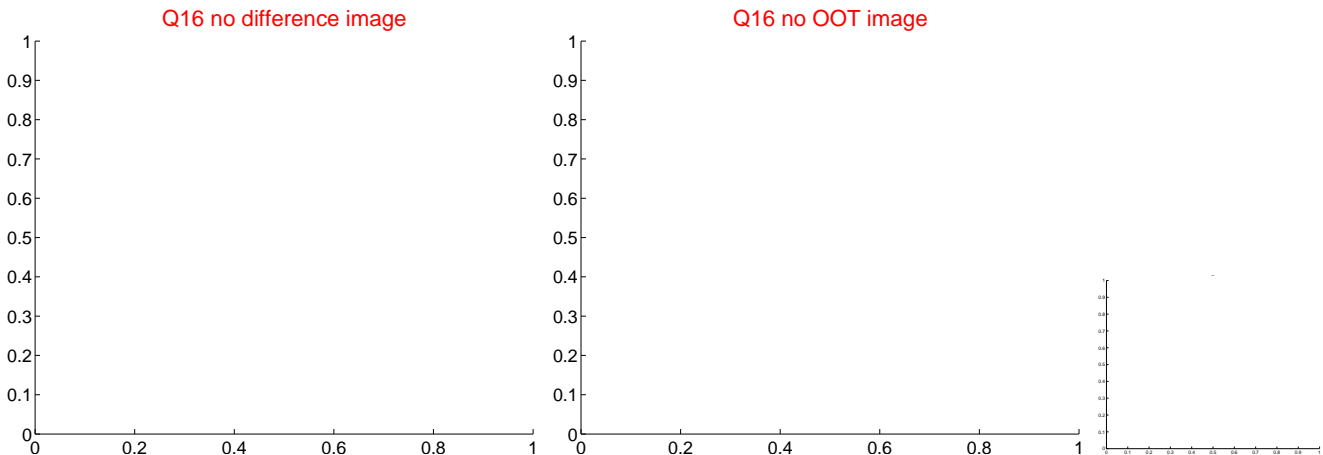
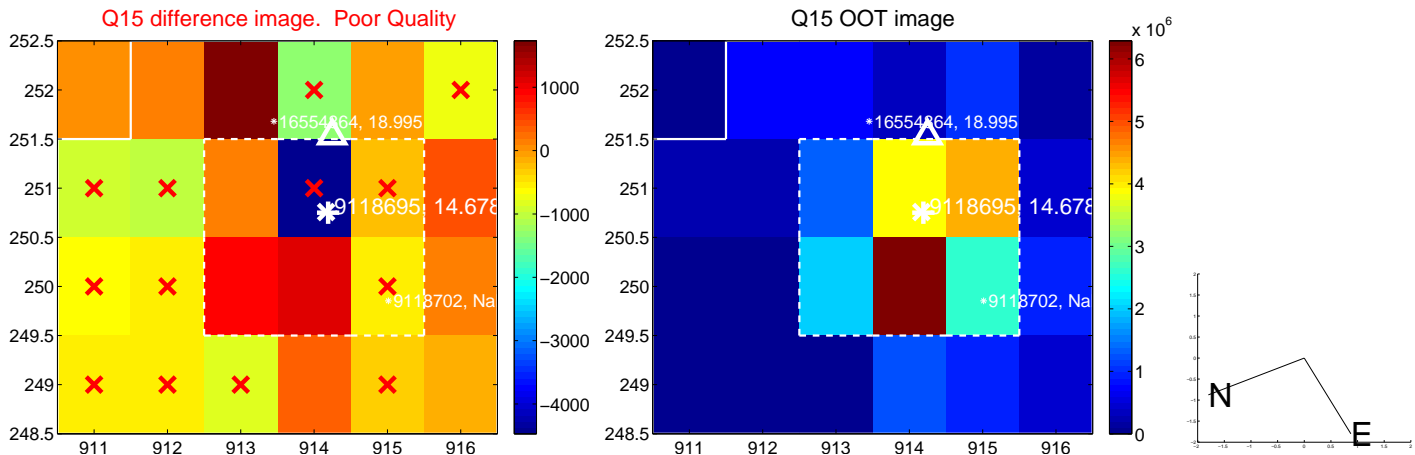
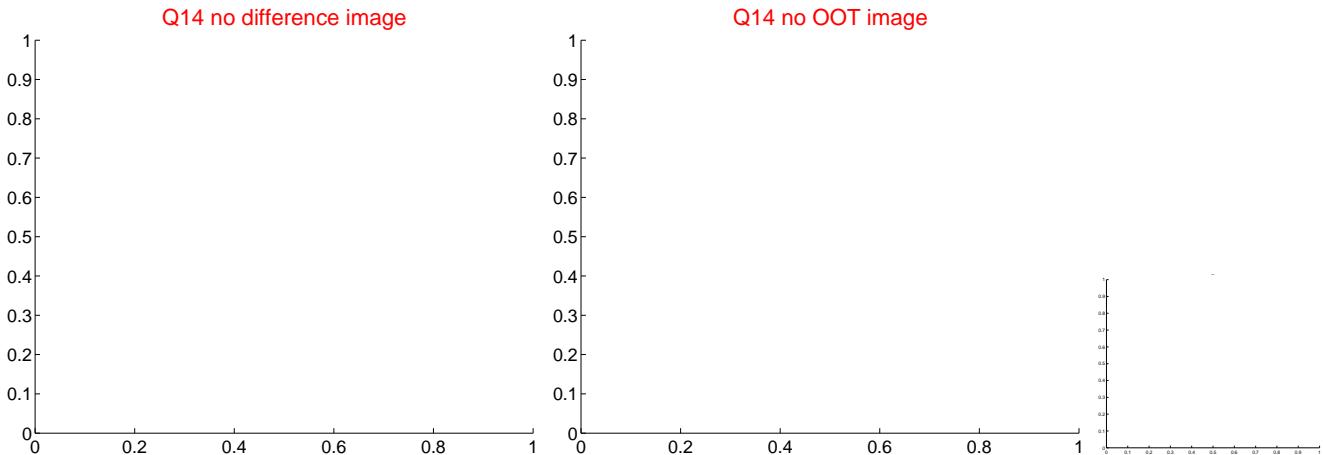
Q8 no OOT image



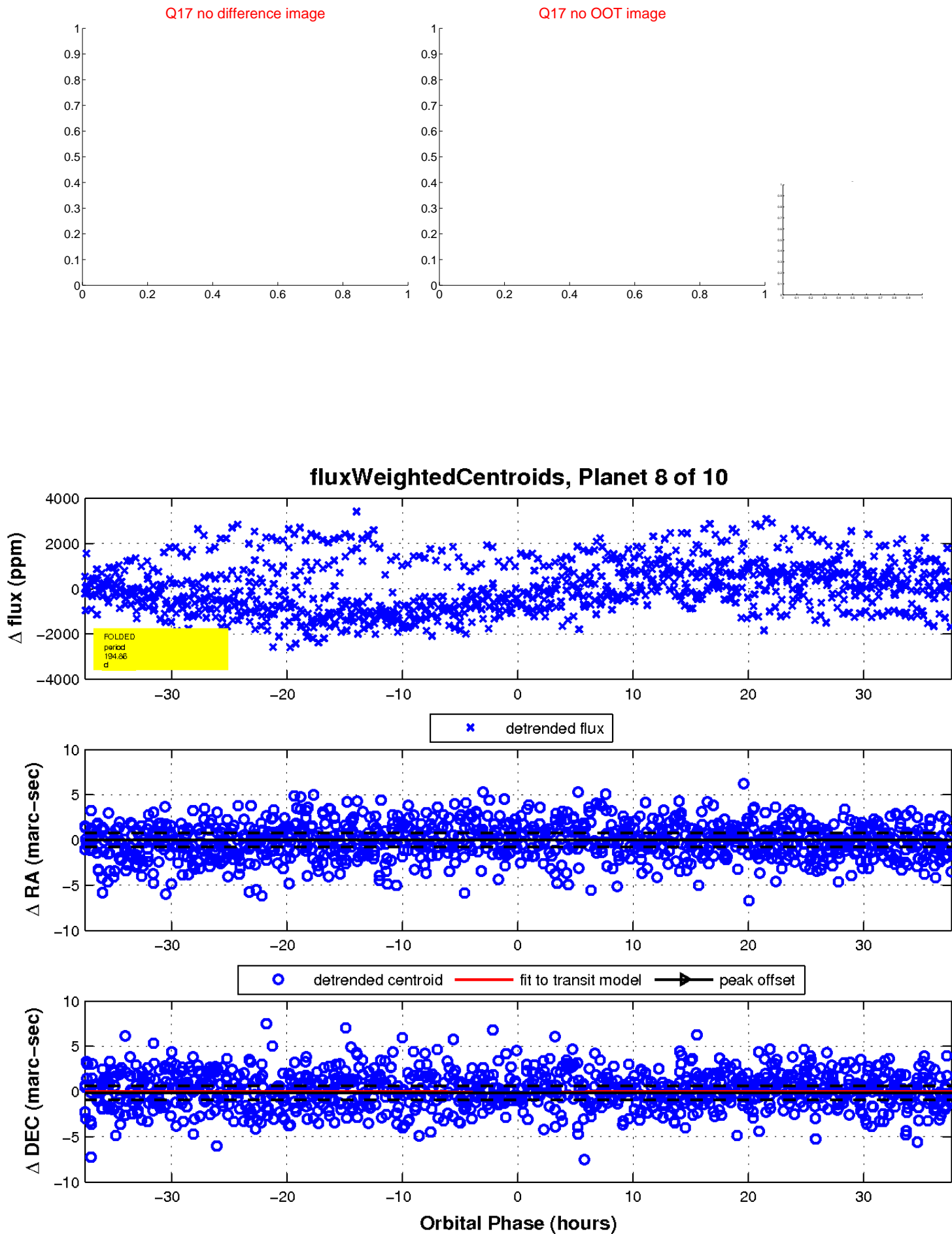
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

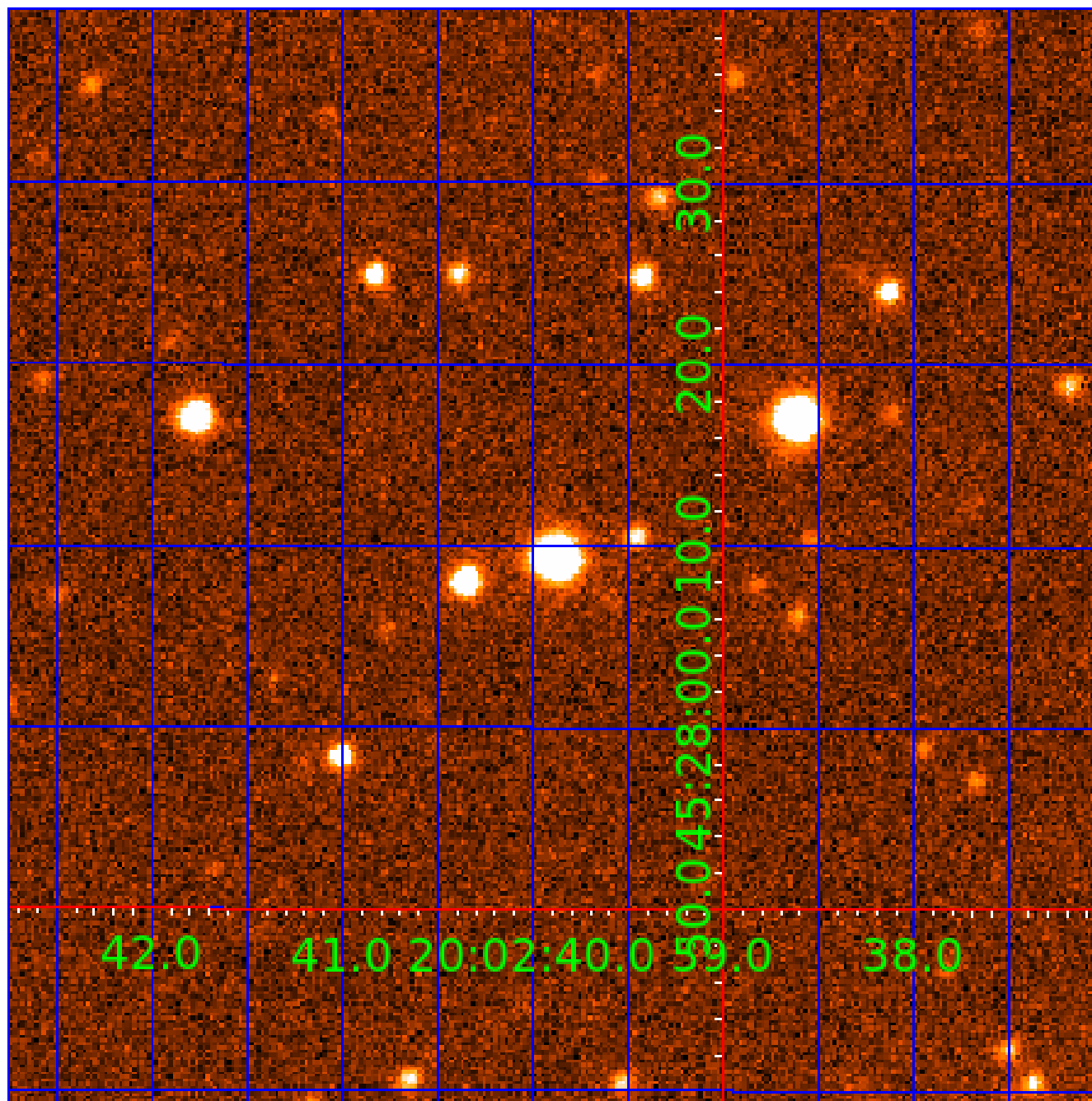


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



## KIC 009118695

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118695-01	OBS	No	1.212130	131.991523	66.9	5.233	11.4	10.5	0.89	5491	0.73	1532.44
009118695-03	OBS	No	229.548298	188.269898	310.0	0.528	18.1	1.5	0.89	5491	1.98	1.41
009118695-04	OBS	No	229.550613	189.072332	1287.8	15.000	18.3	-1.0	0.89	5491	3.14	1.41
009118695-06	OBS	No	114.100566	214.813030	476.3	4.871	12.8	4.9	0.89	5491	2.18	3.58
009118695-07	OBS	No	179.141021	245.717566	749.1	12.000	12.2	-1.0	0.89	5491	2.40	1.96
009118695-08	OBS	No	194.864364	230.808037	803.2	12.542	15.1	5.6	0.89	5491	2.56	1.75
009118695-09	OBS	No	444.098224	158.648730	0.5	4.711	10.2	0.0	0.89	5491	0.07	0.58
009118695-10	OBS	No	183.107433	183.225305	3055.0	27.280	10.6	9.0	0.89	5491	4.85	1.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118695-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009118695-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009118695-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS
009118695-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS
009118695-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

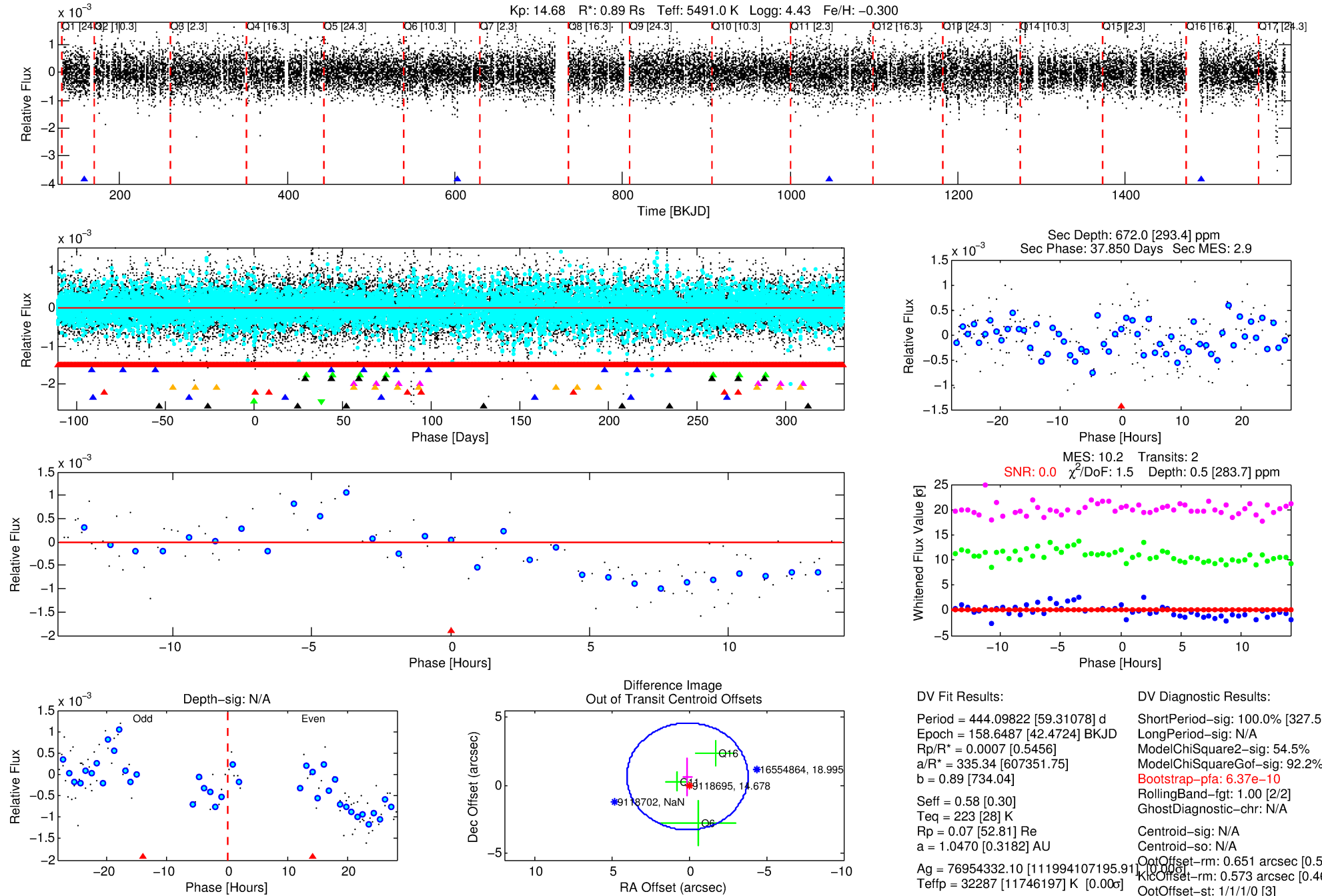
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009118695-09

No Significant Match Found

# DV One-Page Summary

KIC: 9118695 Candidate: 9 of 10 Period: 444.098 d



## DV Fit Results:

Period = 444.09822 [59.31078] d  
Epoch = 158.6487 [42.4724] BKJD  
Rp/R\* = 0.0007 [0.5456]  
a/R\* = 335.34 [607351.75]  
b = 0.89 [734.04]  
Seff = 0.58 [0.30]  
Teq = 223 [28] K  
Rp = 0.07 [52.81] Re  
a = 1.0470 [0.3182] AU  
Ag = 76954332.10 [111994107195.91] [0.008]  
Teff = 32287 [11746197] K [0.008]

## DV Diagnostic Results:

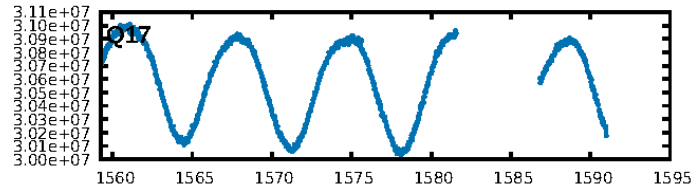
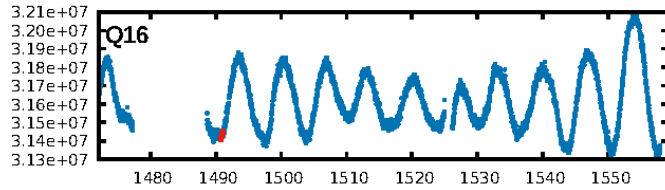
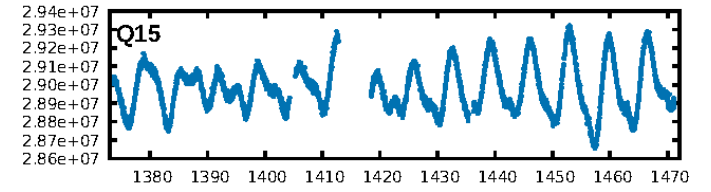
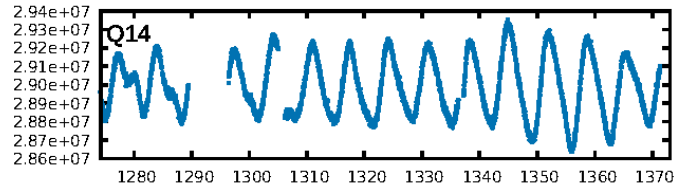
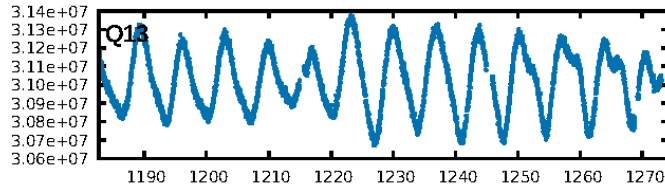
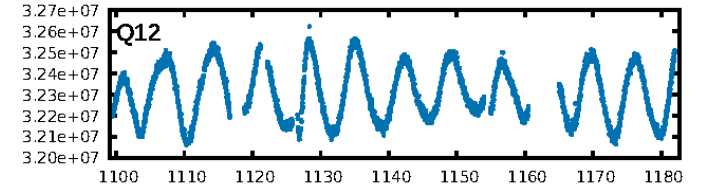
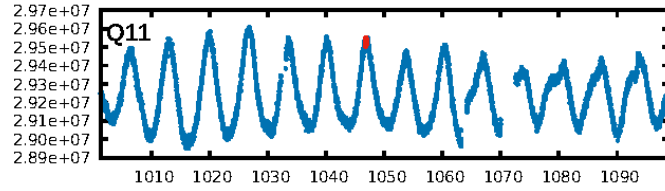
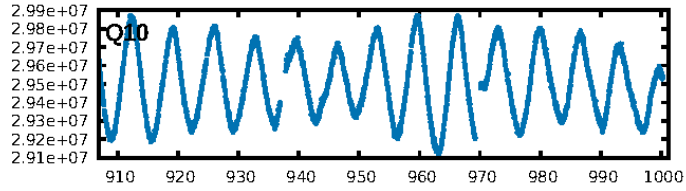
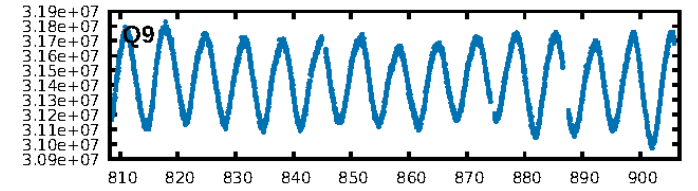
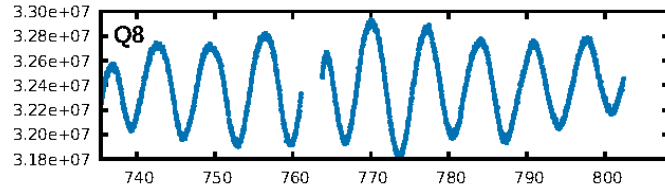
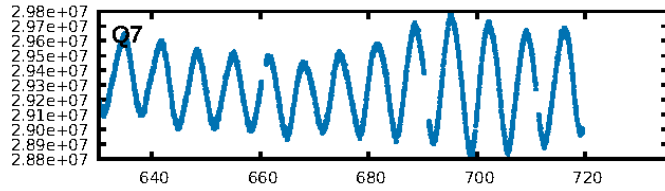
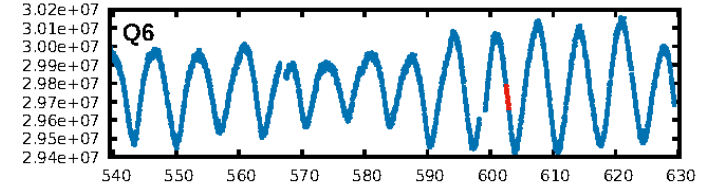
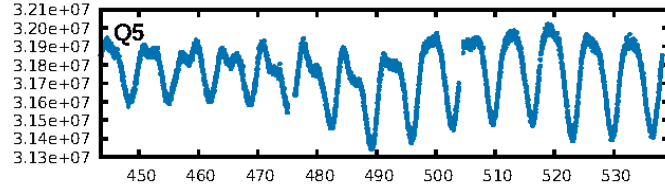
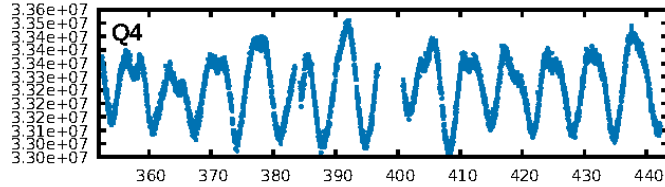
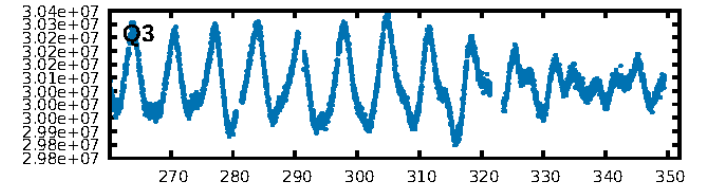
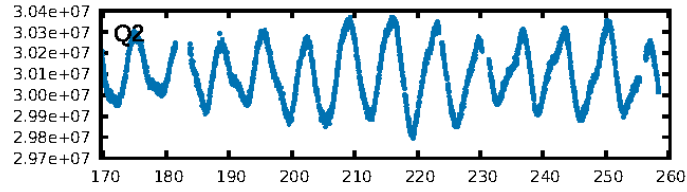
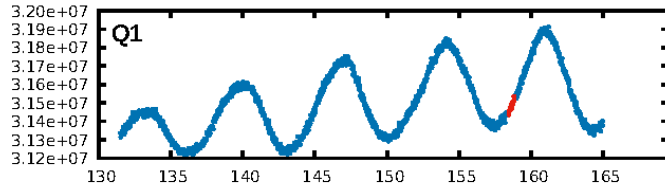
ShortPeriod-sig: 100.0% [327.50]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 54.5%  
ModelChiSquareGof-sig: 92.2%  
**Bootstrap-pfa: 6.37e-10**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.651 arcsec [0.50]  
KicOffset-rm: 0.573 arcsec [0.46]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 0.00 [0/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:45:42 Z

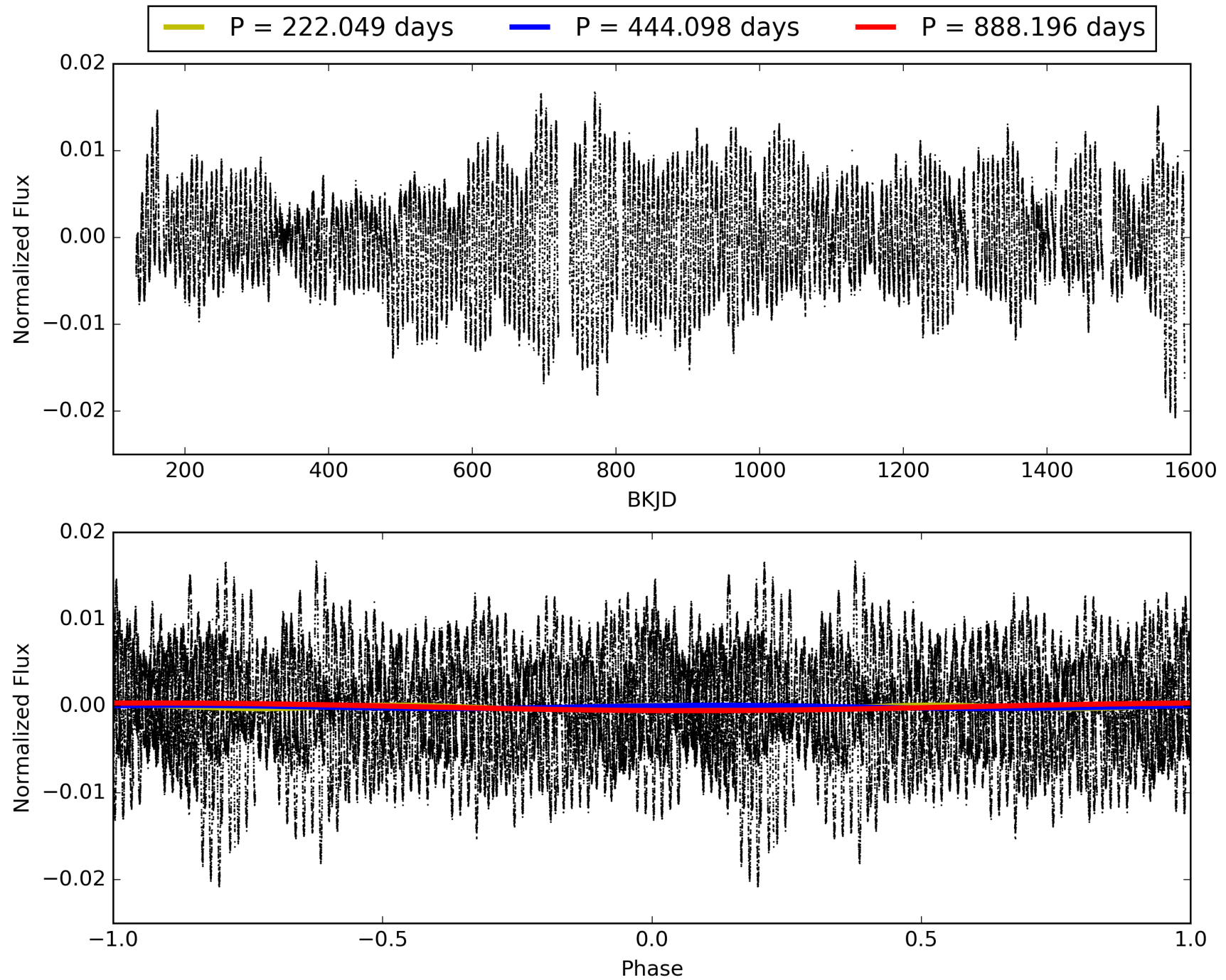
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 009118695-09, PDC Light Curves

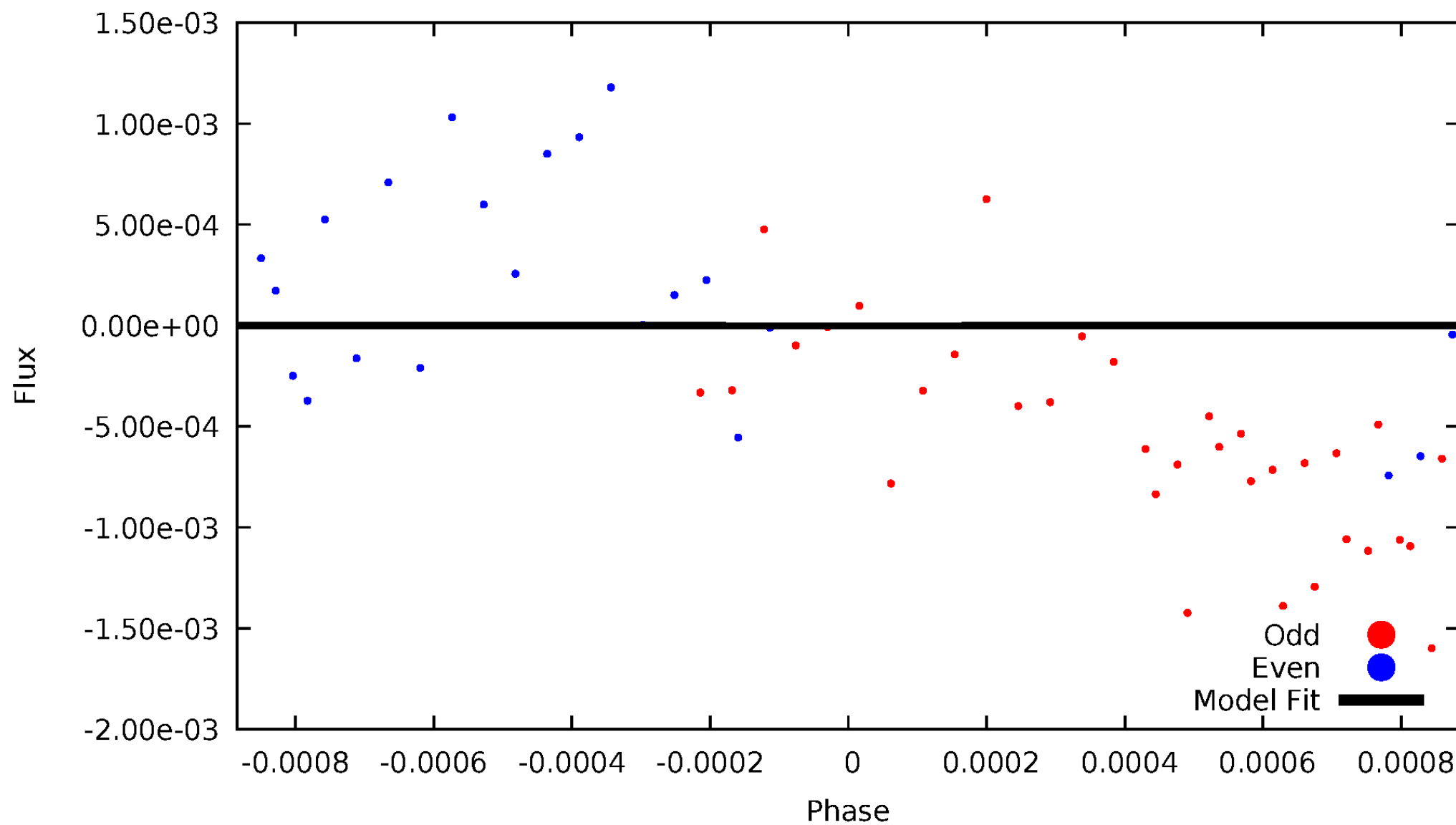


# TCE 009118695-09



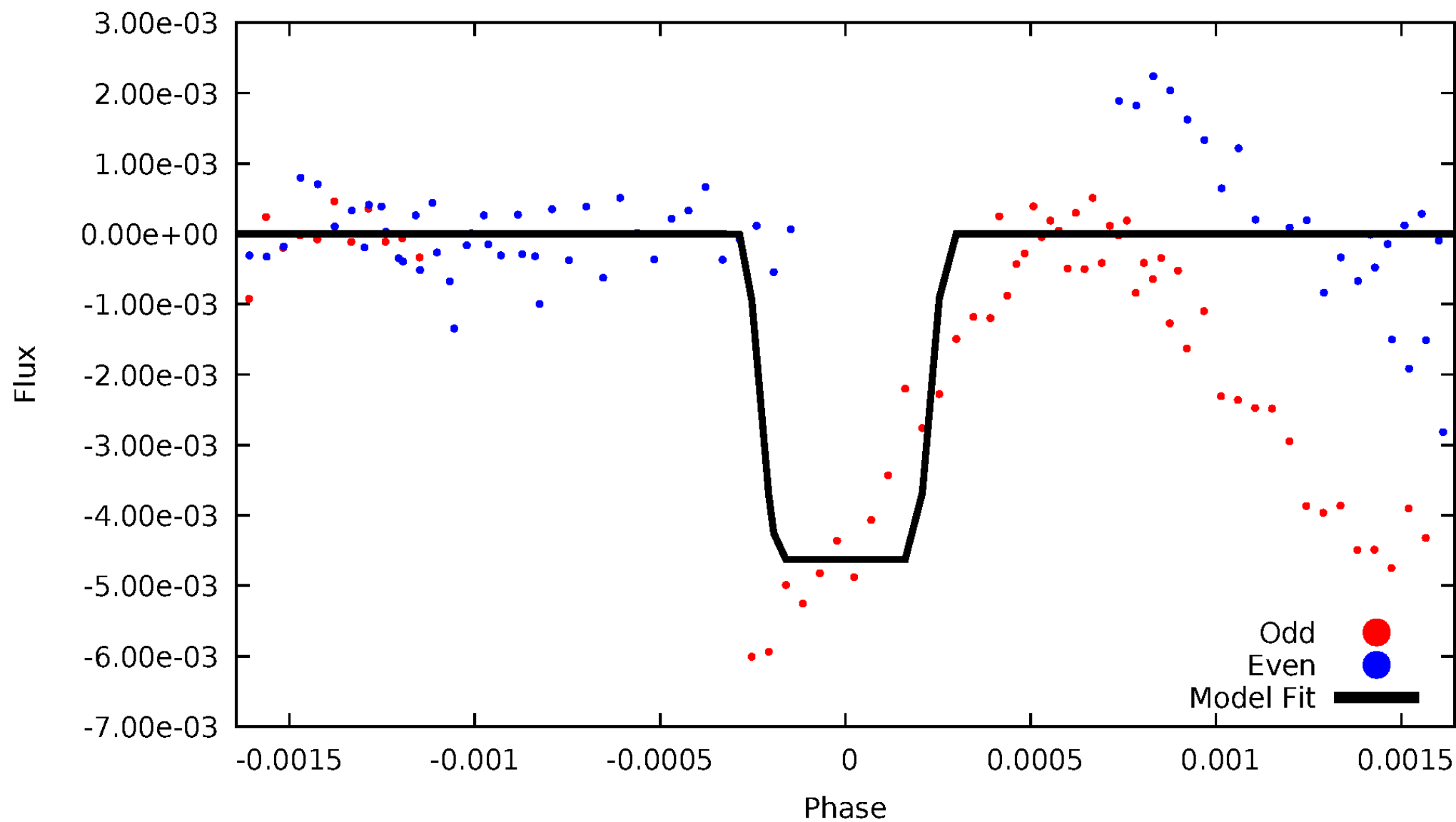
# DV Odd/Even

TCE 009118695-09



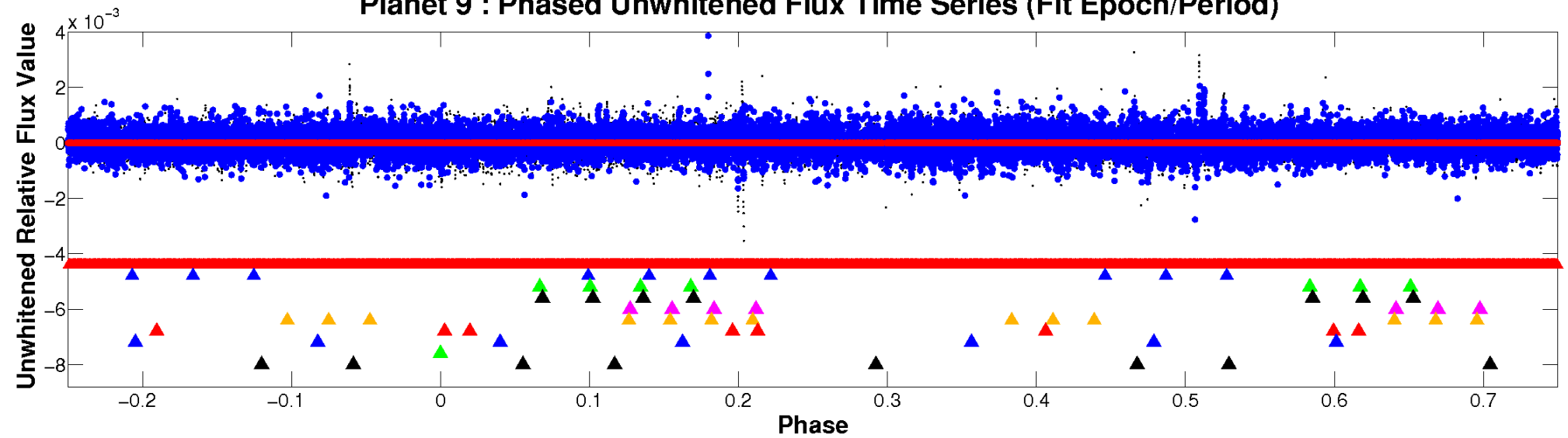
# ALT Odd/Even

TCE 009118695-09

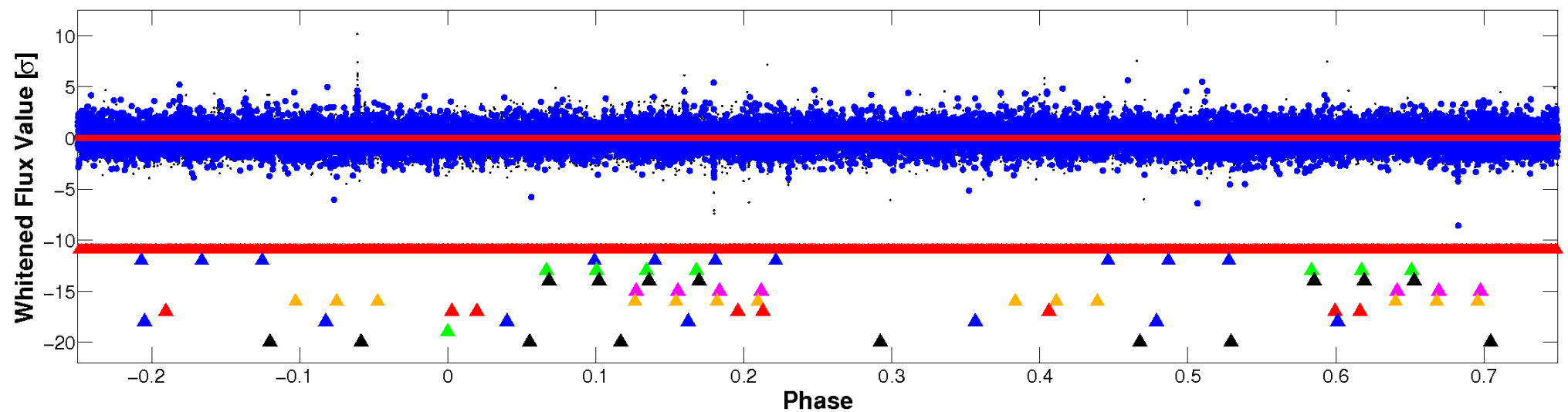


# Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

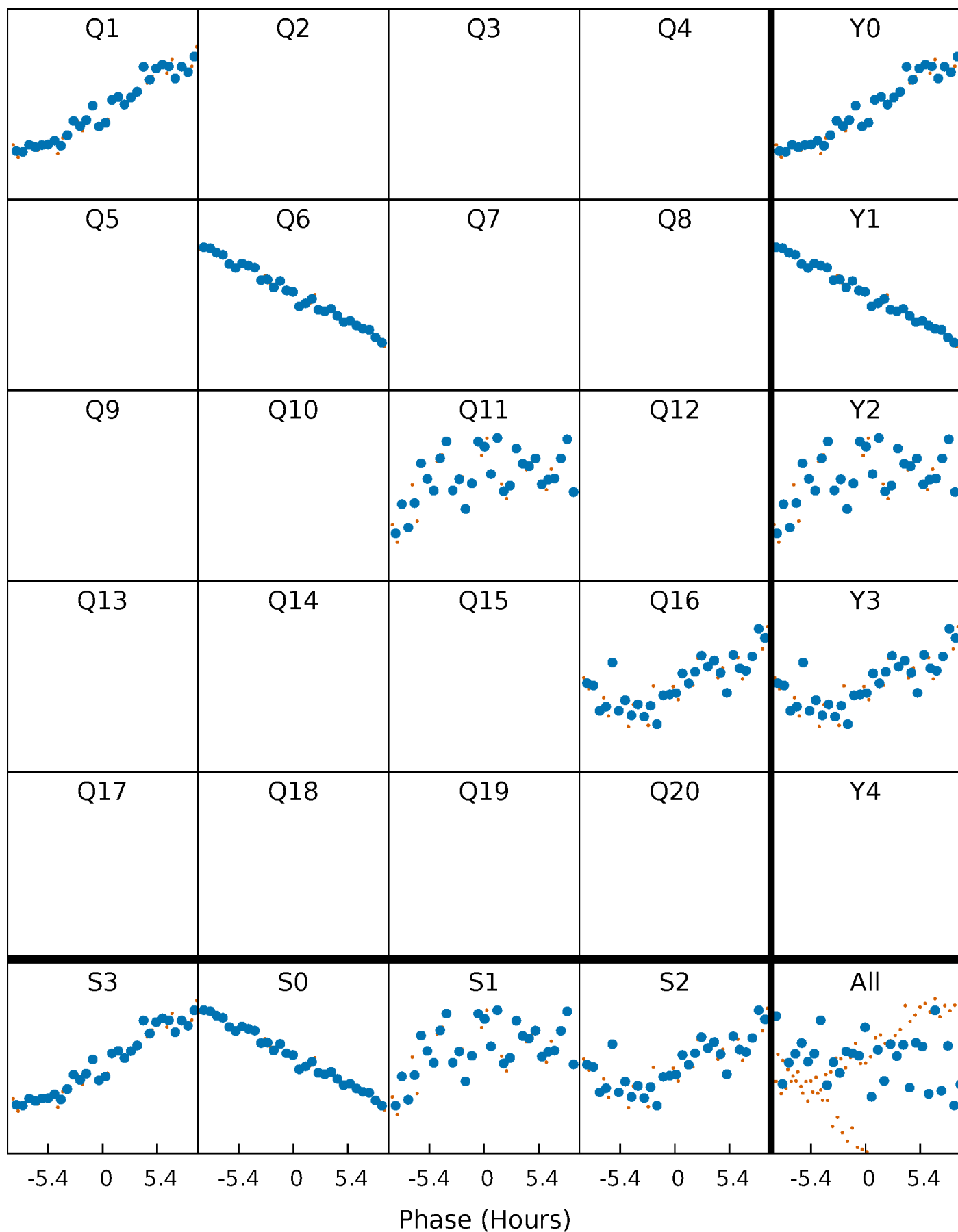


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



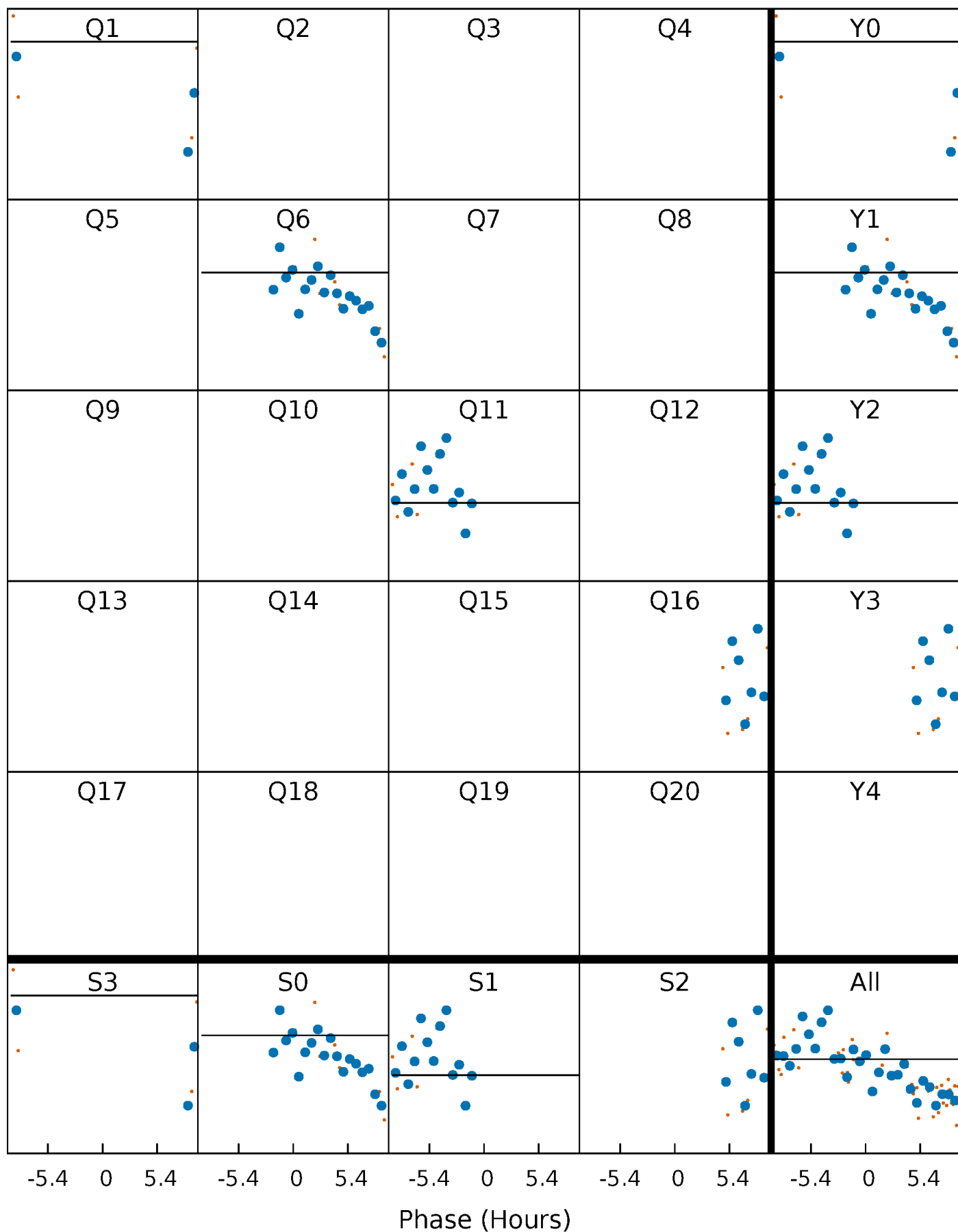
# PDC Quarter-Phased Transit Curves

TCE 009118695-09 P=444.098224 Days  $T_0=158.648730$  (BKJD)



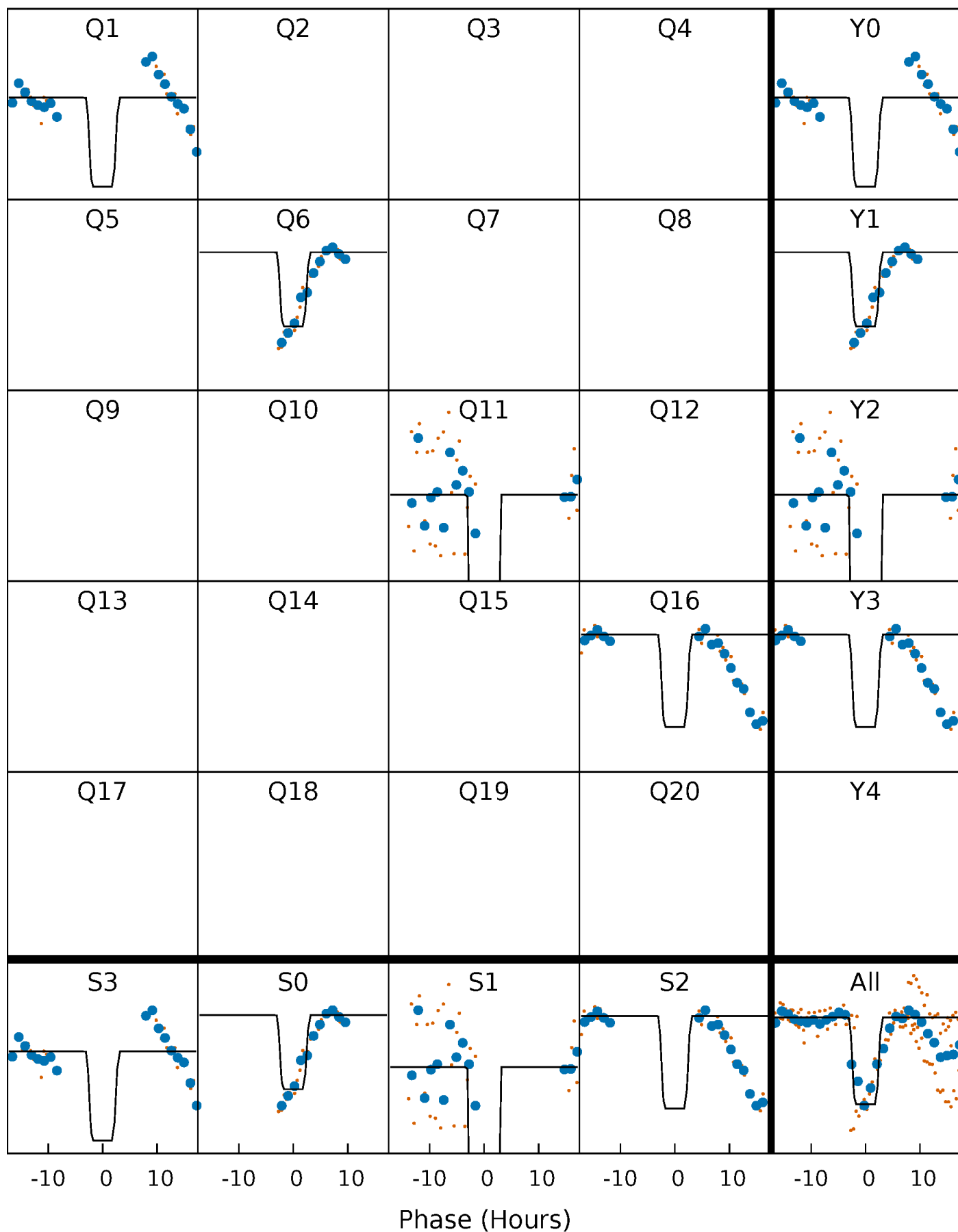
# DV Quarter-Phased Transit Curves

TCE 009118695-09     $P=444.098224$  Days     $T_0=158.648730$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009118695-09 P=444.096182 Days  $T_0=158.667936$  (BKJD)

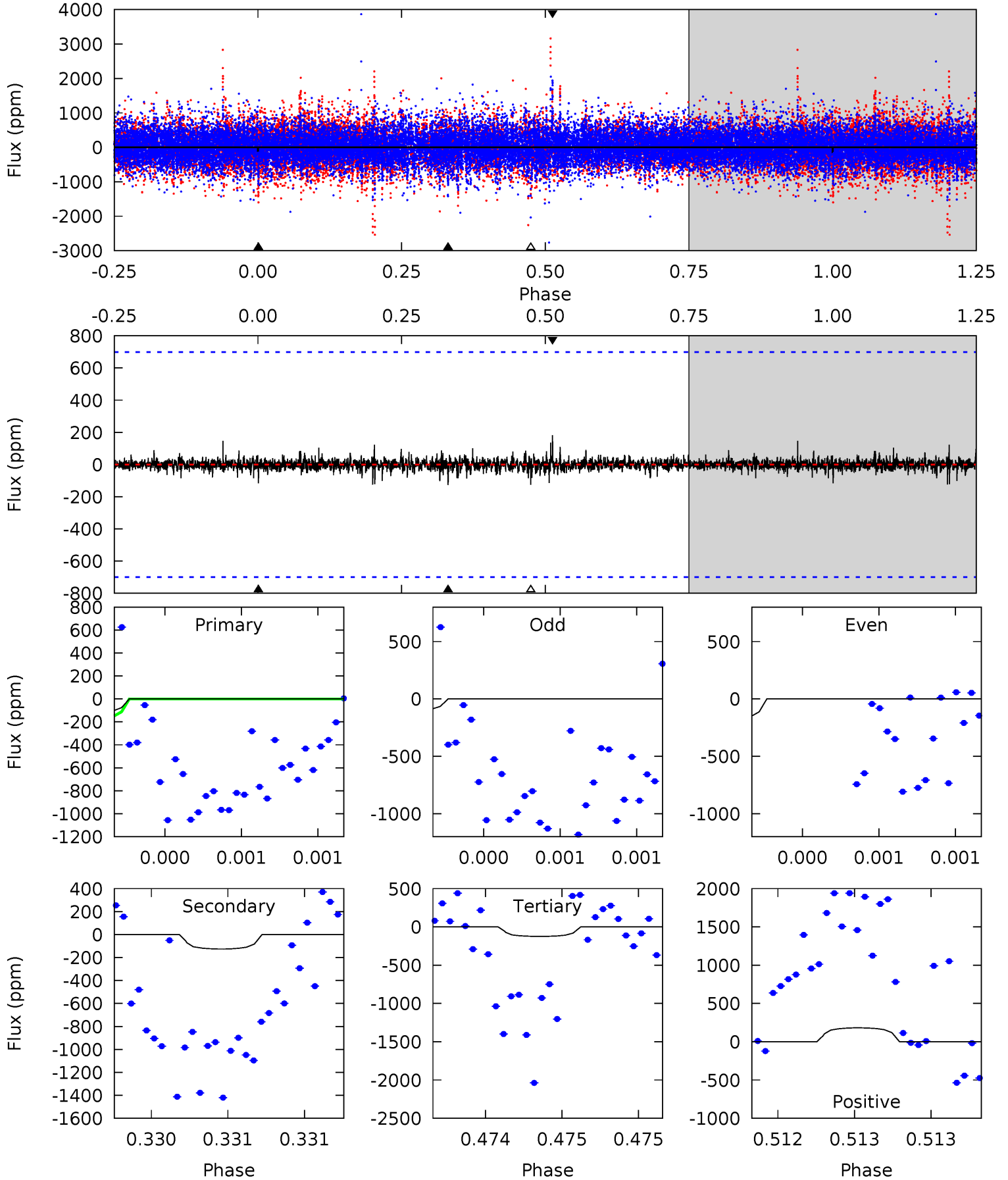




# DV Model-Shift Uniqueness Test

009118695-09, P = 444.098224 Days, E = 158.648730 Days

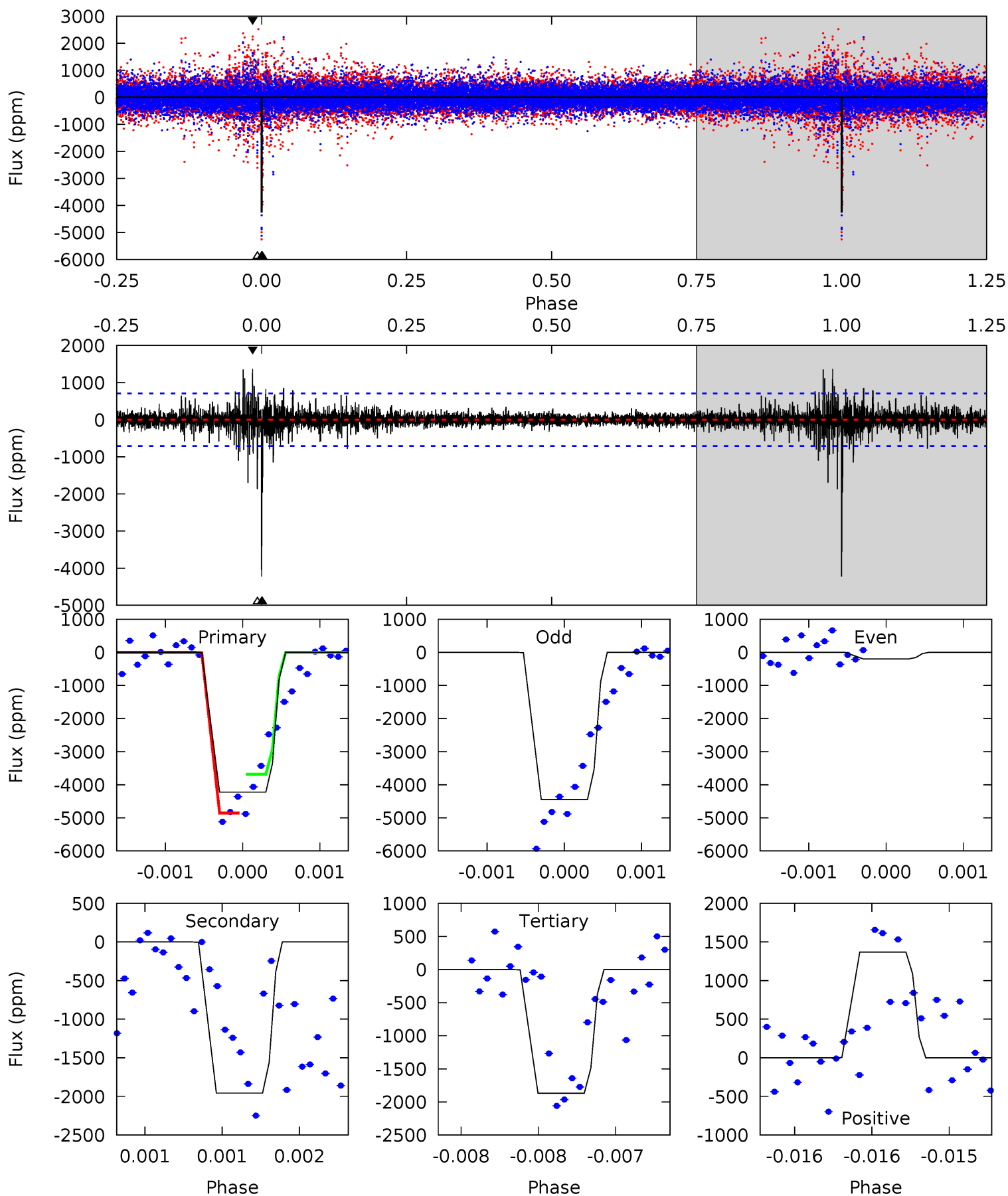
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.93	1.01	1.00	1.45	5.59	3.50	0.19	-0.07	-0.52	0.01	-0.45	0.25	1.00	0.59	0.37



# Alt Model-Shift Uniqueness Test

009118695-09, P = 444.096182 Days, E = 158.667936 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
33.2	15.4	14.7	10.7	5.56	3.46	1.13	18.5	22.5	0.68	4.63	17.0	1.00	0.24	4.56



### Stellar Parameters For KIC 009118695

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5491^{+164}_{-164}$	$4.432^{+0.143}_{-0.266}$	$-0.300^{+0.350}_{-0.250}$	$0.887^{+0.275}_{-0.148}$	$0.776^{+0.126}_{-0.054}$	$1.566^{+0.974}_{-0.928}$
	+3%/-3%	+3%/-6%	+117%/-83%	+31%/-17%	+16%/-7%	+62%/-59%
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 009118695-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-126 \pm 125$	$37.54^{+42.18}_{-27.01}$	$318^{+34}_{-28}$	$1883^{+650}_{-3328}$	$35^{+544}_{-37}$
Alt.	$-1956 \pm 127$	$37.94^{+40.08}_{-25.95}$	$317^{+32}_{-25}$	$2687^{+1040}_{-442}$	$801^{+7810}_{-617}$

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

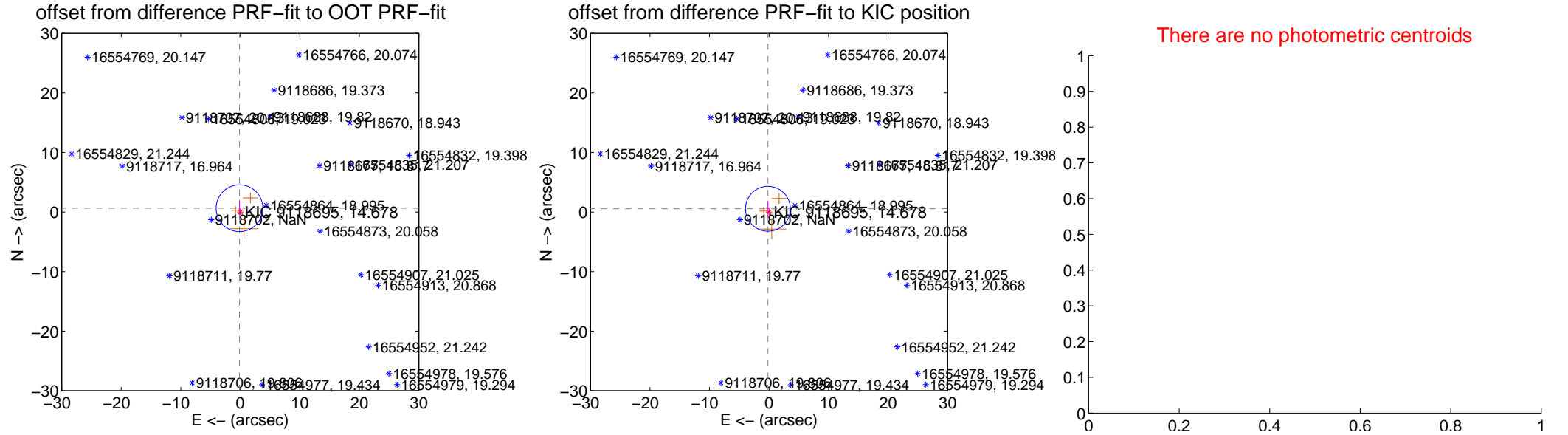
## DV Centroid Data

Supplemental centroid analysis for 009118695-09. Kepler magnitude: 14.68. Transit SNR 0.00

There are 0 quarters with good PRF difference image offsets

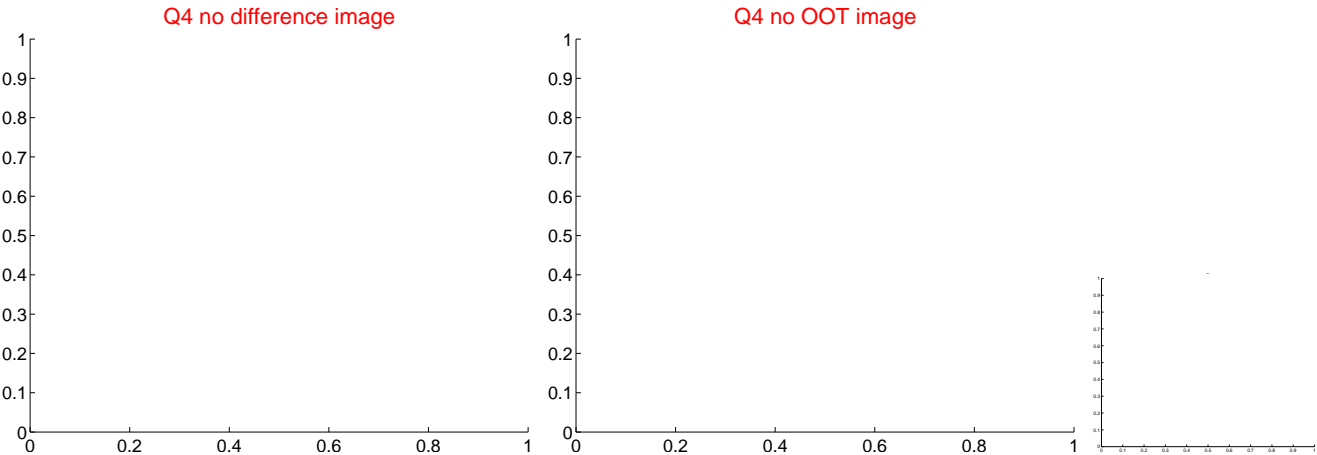
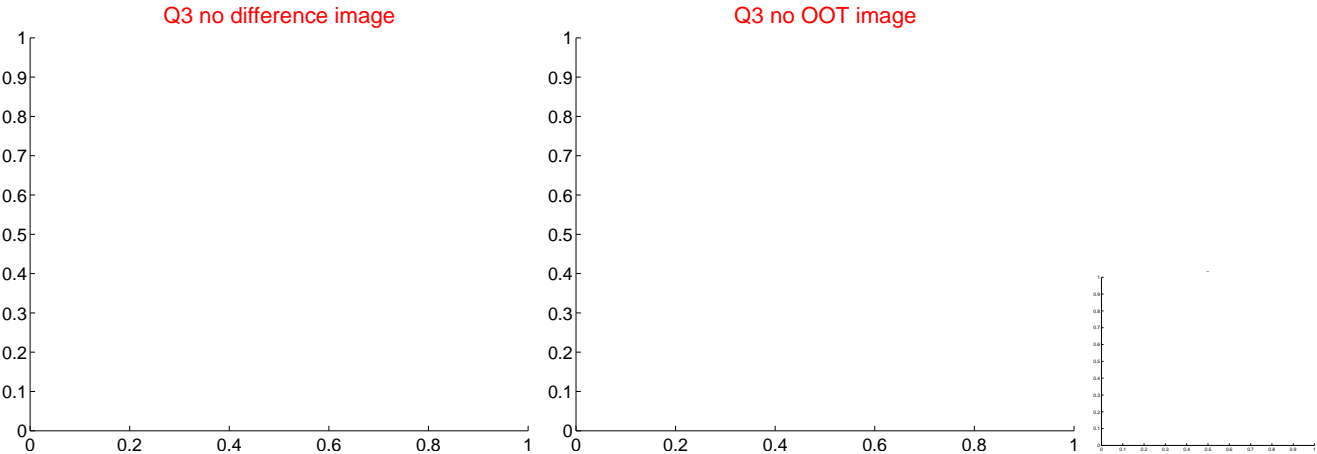
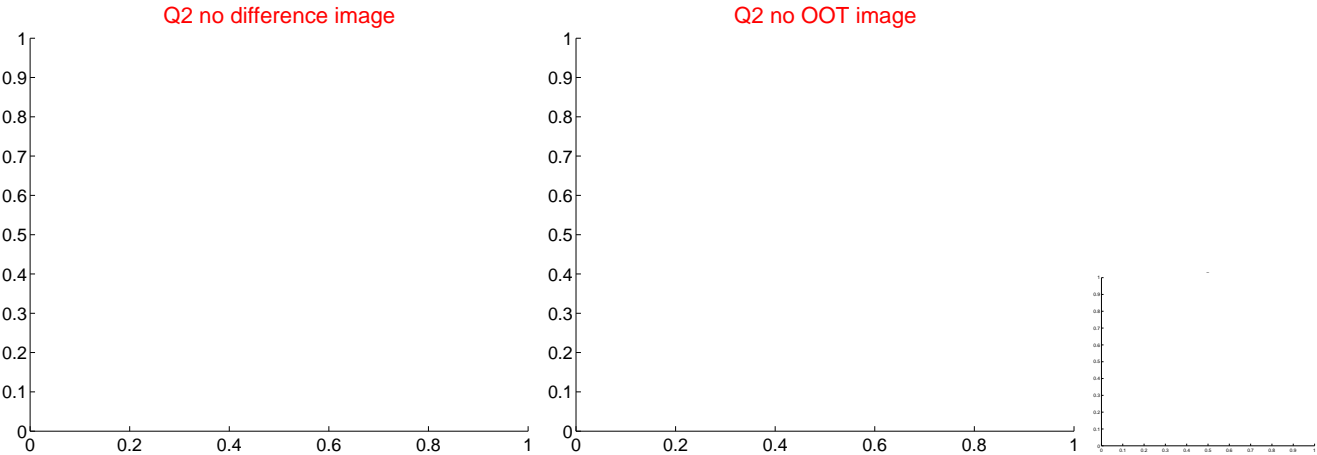
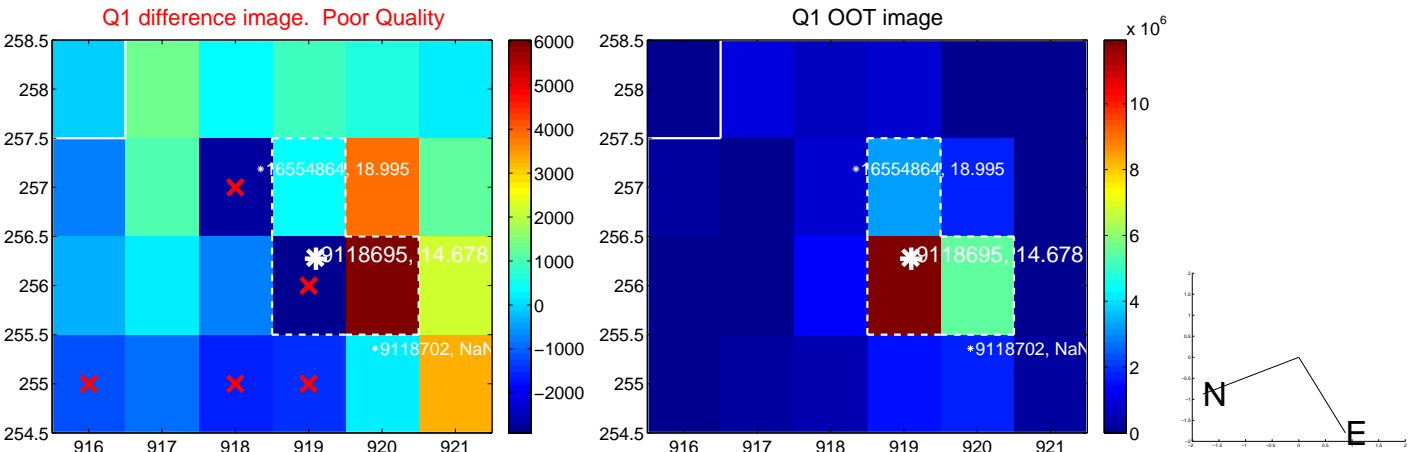
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.651 \pm 1.309$	0.50	$0.130 \pm 0.280$	$0.638 \pm 1.372$
PRF-fit source offset from KIC position	$0.573 \pm 1.256$	0.46	$0.182 \pm 0.314$	$0.544 \pm 1.363$
photometric centroid source offset	—	—	—	—

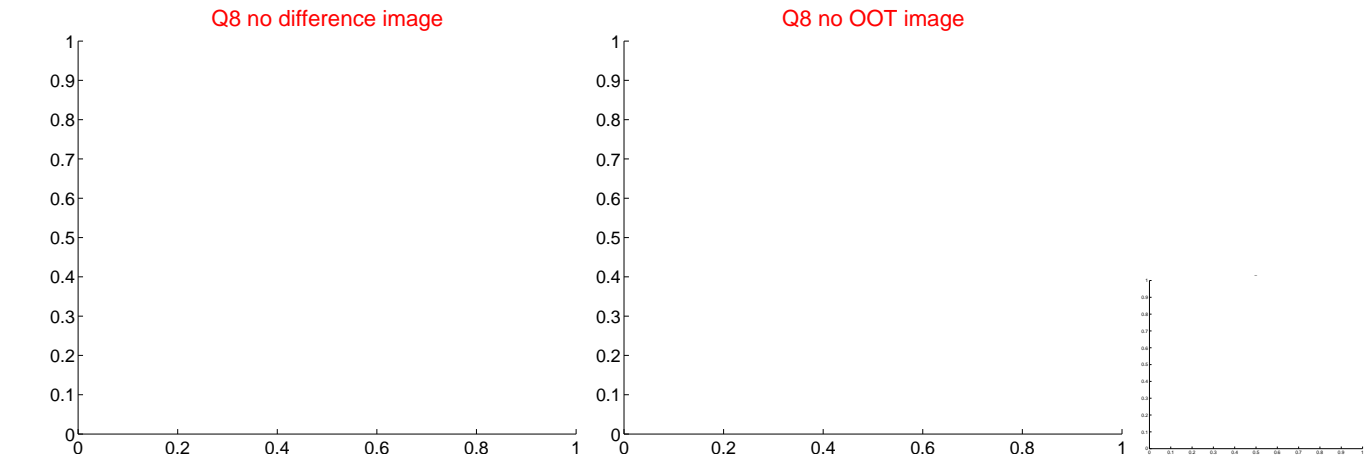
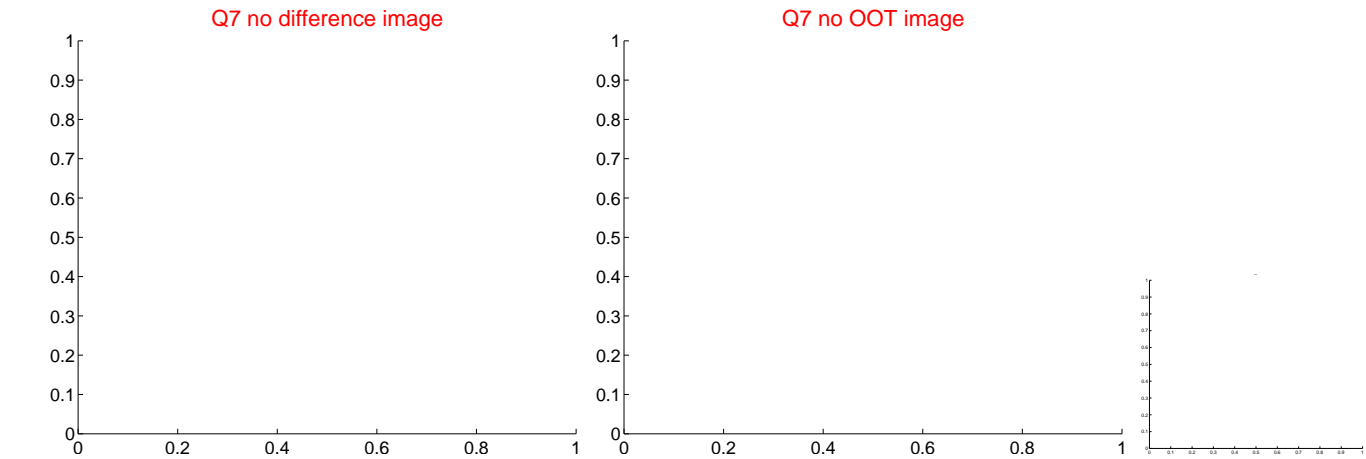
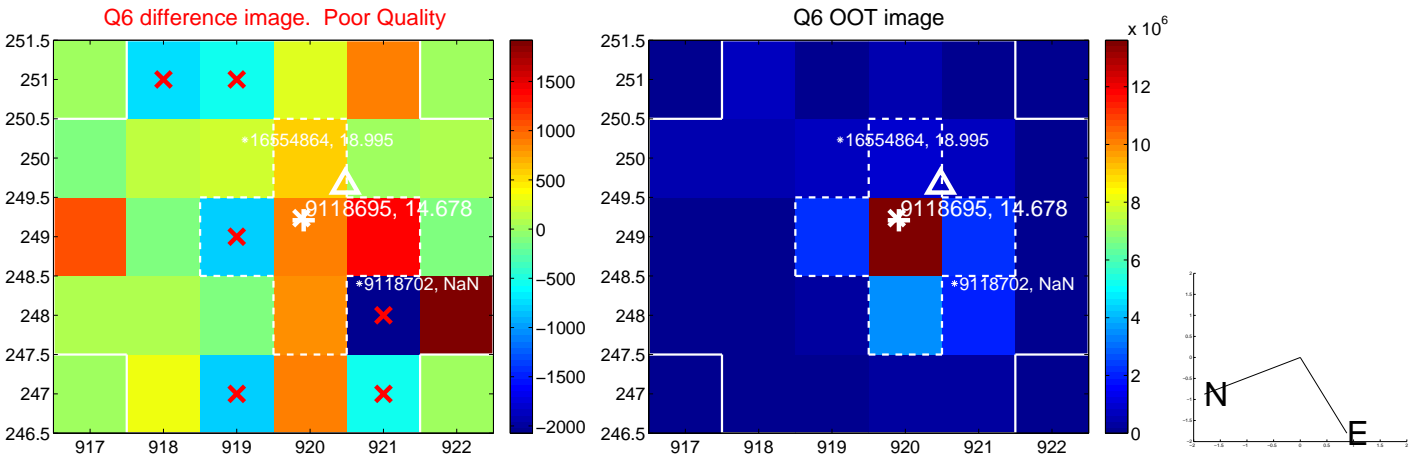
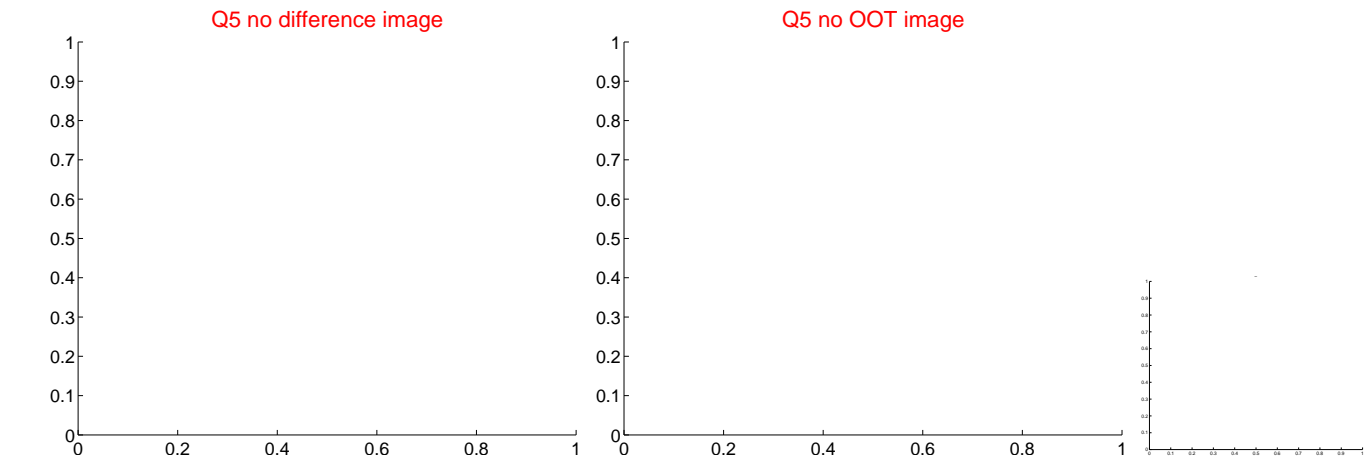


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

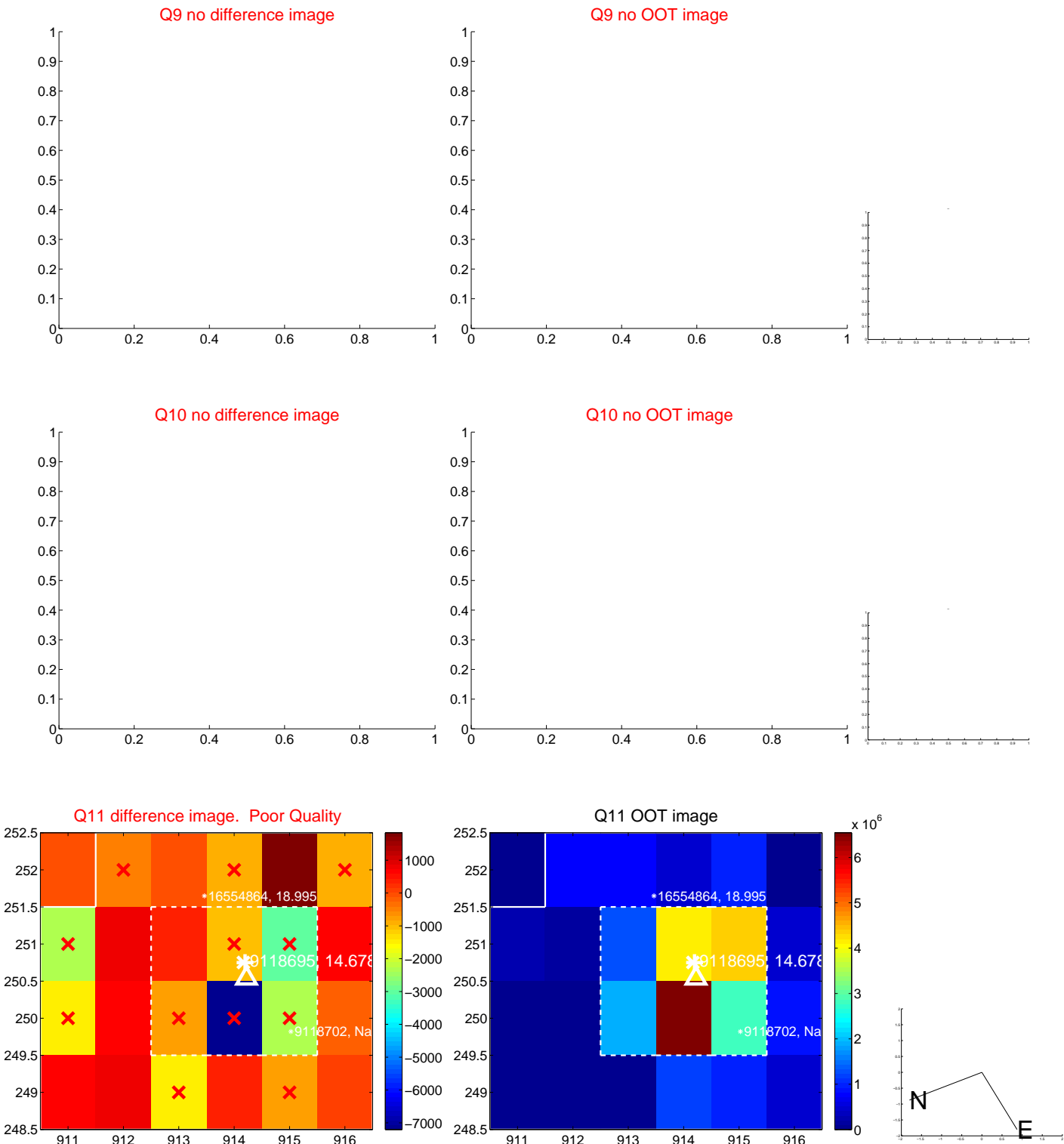
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



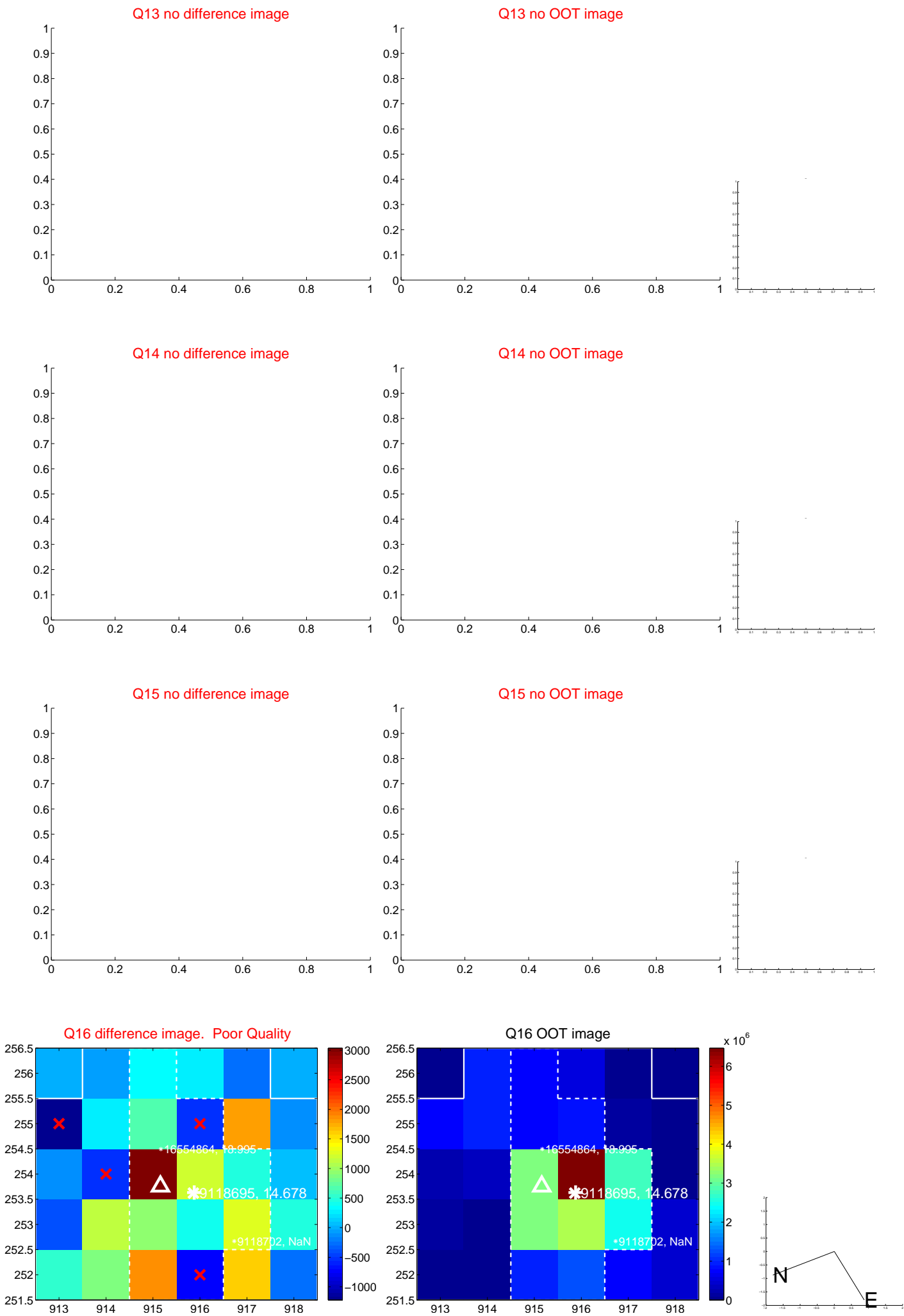
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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.





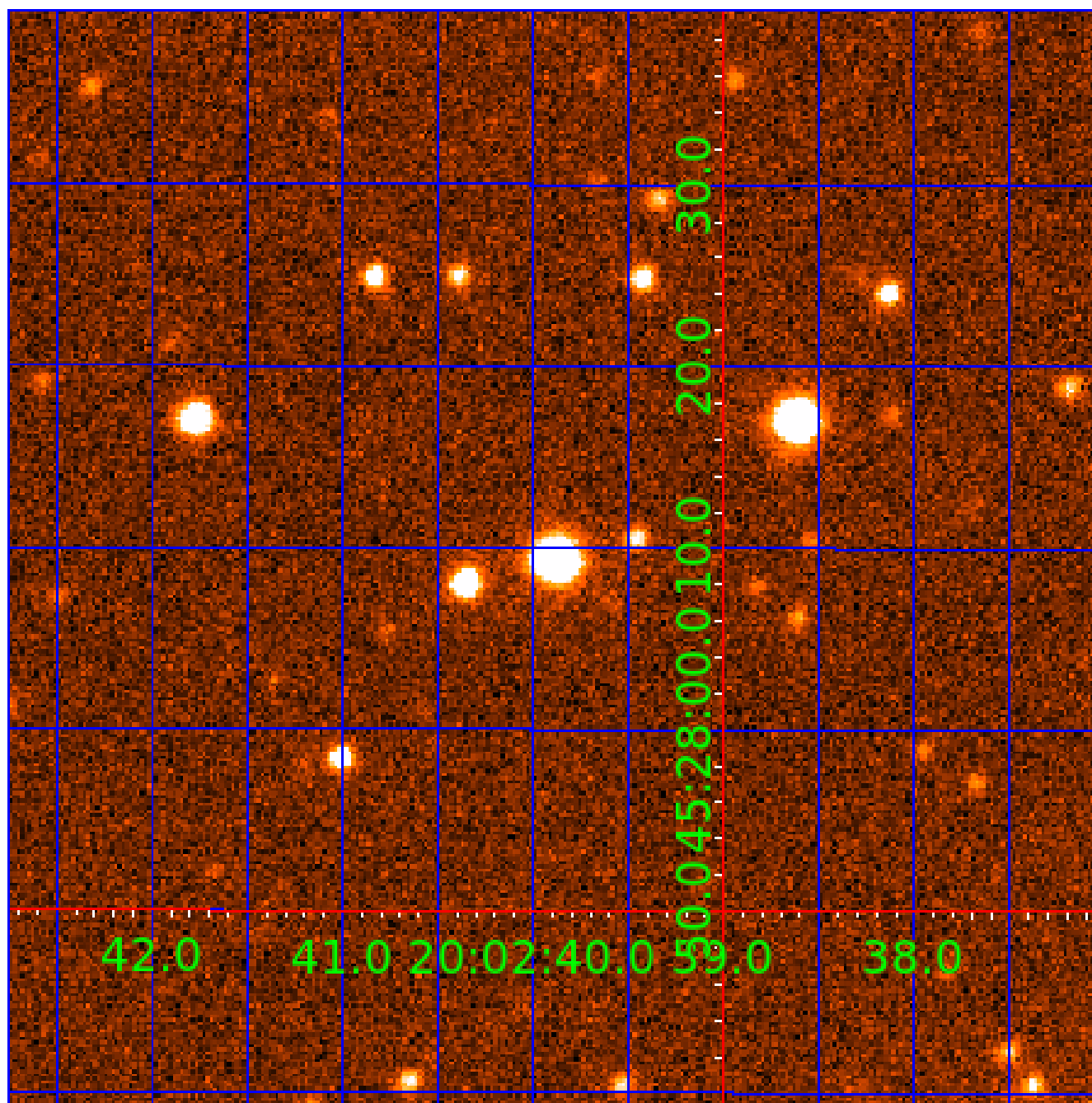
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



## KIC 009118695

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118695-01	OBS	No	1.212130	131.991523	66.9	5.233	11.4	10.5	0.89	5491	0.73	1532.44
009118695-03	OBS	No	229.548298	188.269898	310.0	0.528	18.1	1.5	0.89	5491	1.98	1.41
009118695-04	OBS	No	229.550613	189.072332	1287.8	15.000	18.3	-1.0	0.89	5491	3.14	1.41
009118695-06	OBS	No	114.100566	214.813030	476.3	4.871	12.8	4.9	0.89	5491	2.18	3.58
009118695-07	OBS	No	179.141021	245.717566	749.1	12.000	12.2	-1.0	0.89	5491	2.40	1.96
009118695-08	OBS	No	194.864364	230.808037	803.2	12.542	15.1	5.6	0.89	5491	2.56	1.75
009118695-09	OBS	No	444.098224	158.648730	0.5	4.711	10.2	0.0	0.89	5491	0.07	0.58
009118695-10	OBS	No	183.107433	183.225305	3055.0	27.280	10.6	9.0	0.89	5491	4.85	1.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118695-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009118695-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
009118695-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS
009118695-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
009118695-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— CENT_FEW_DIFFS
009118695-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

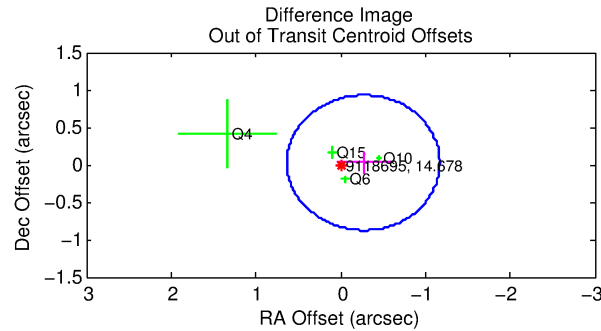
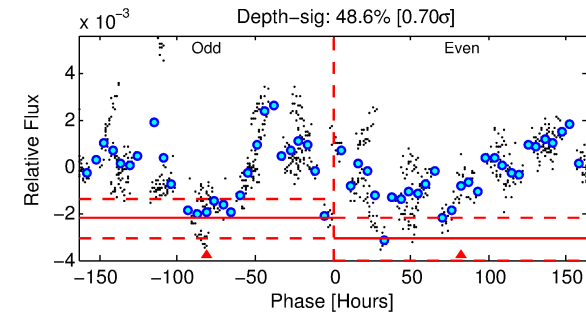
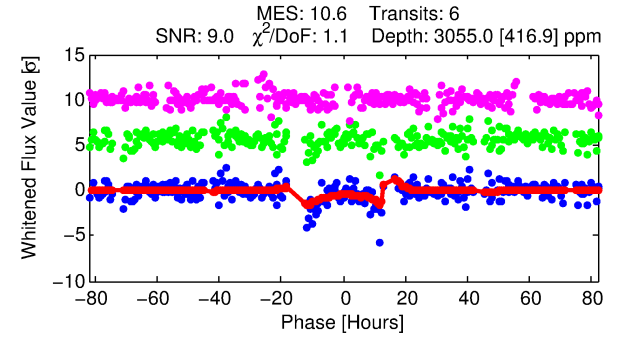
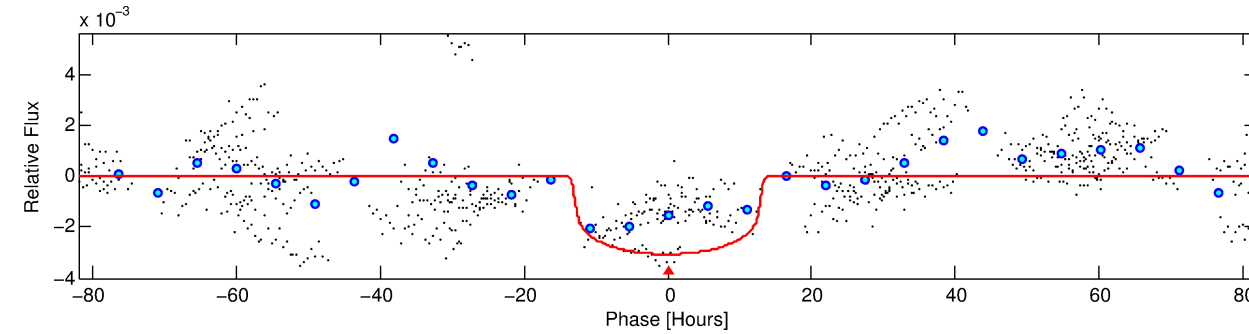
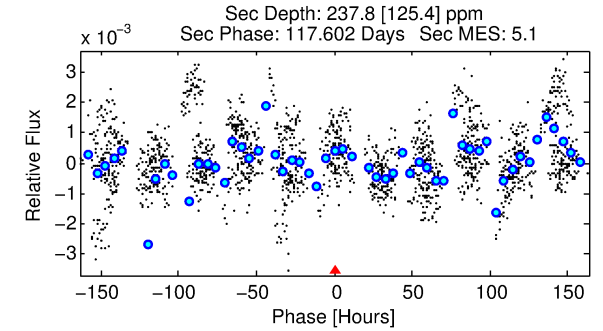
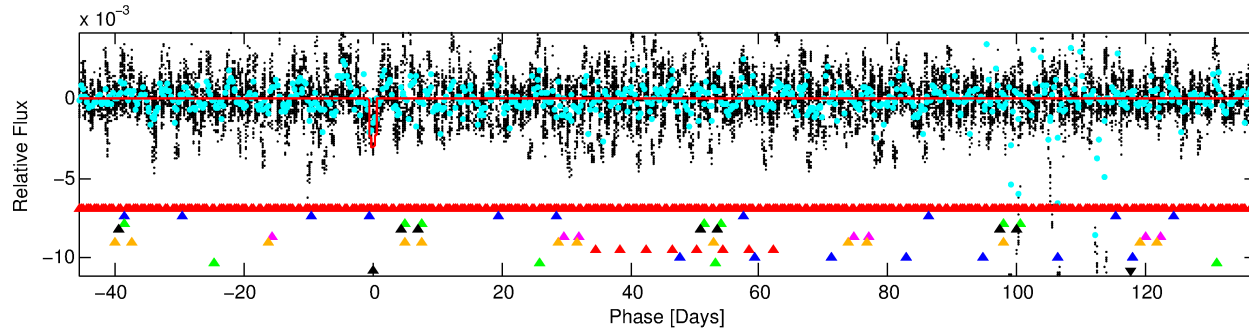
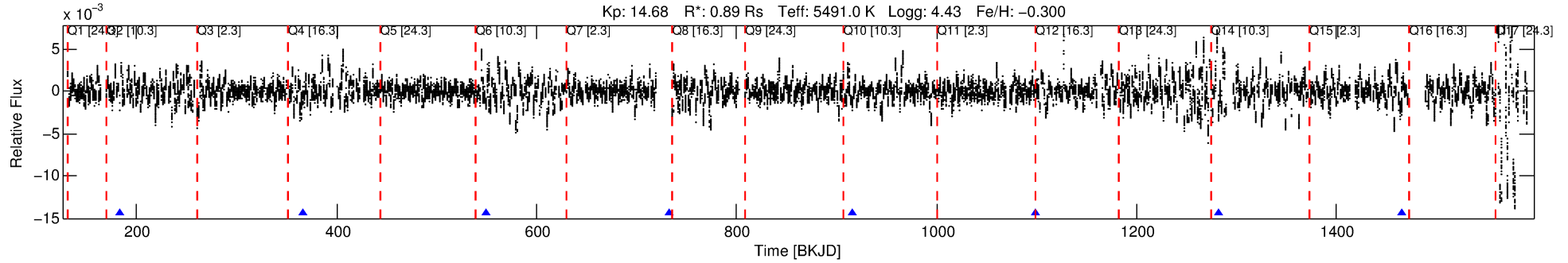
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009118695-10

No Significant Match Found

# DV One-Page Summary

KIC: 9118695 Candidate: 10 of 10 Period: 183.107 d



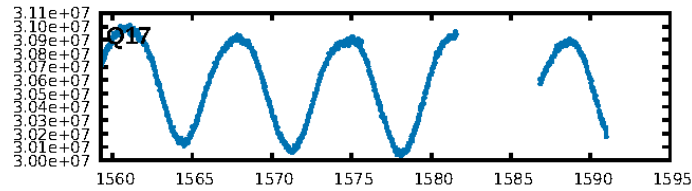
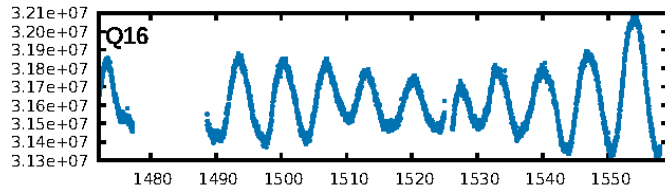
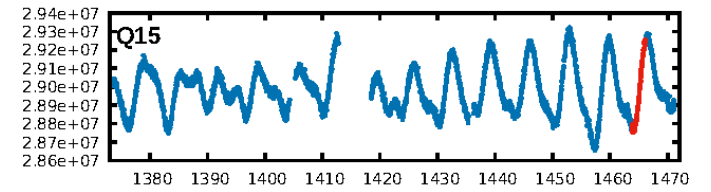
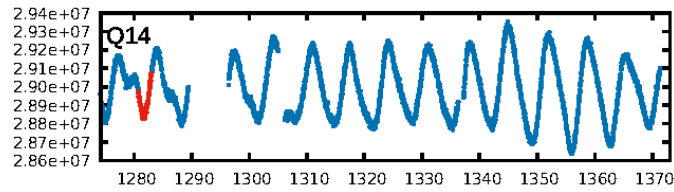
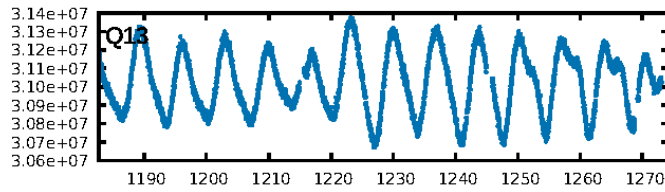
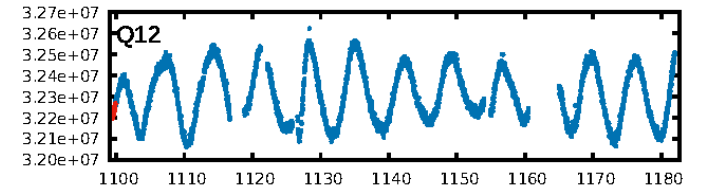
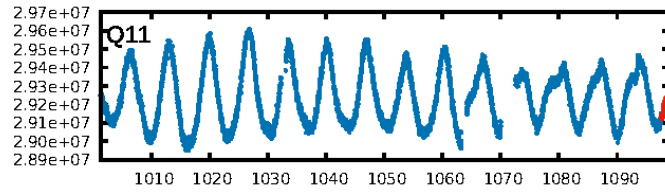
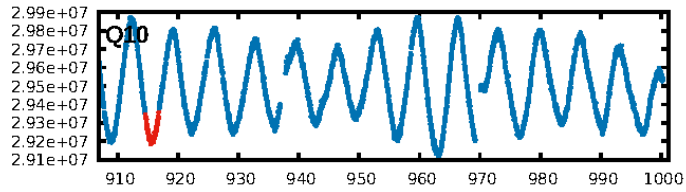
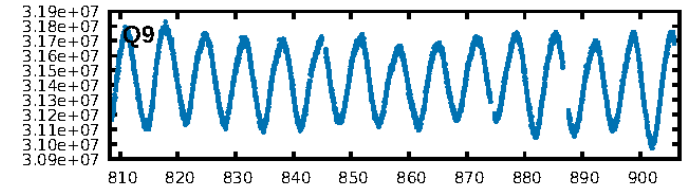
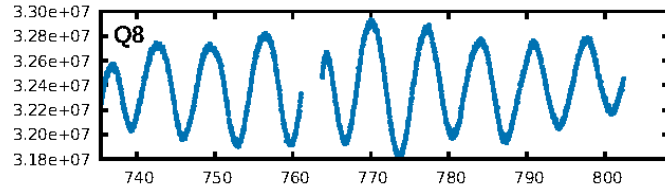
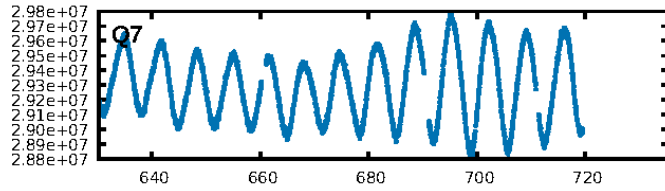
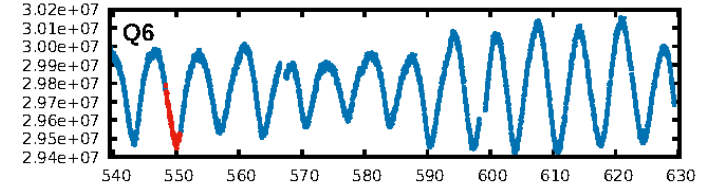
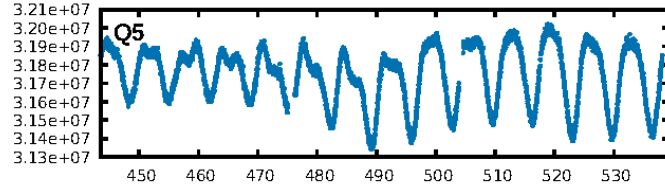
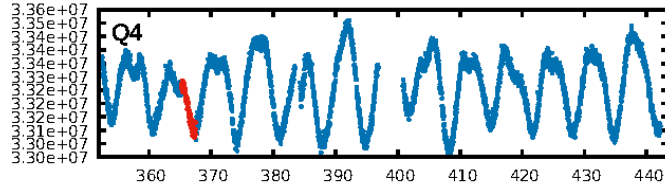
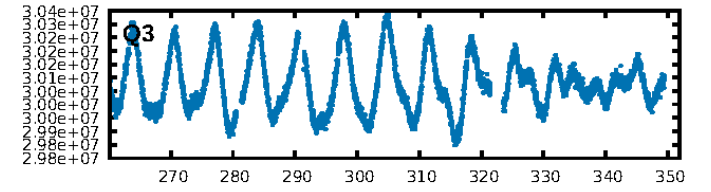
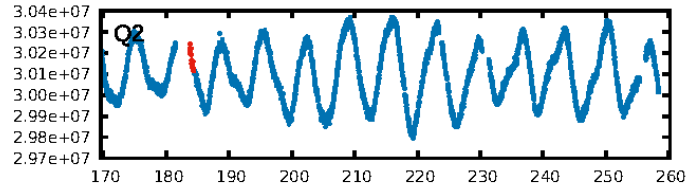
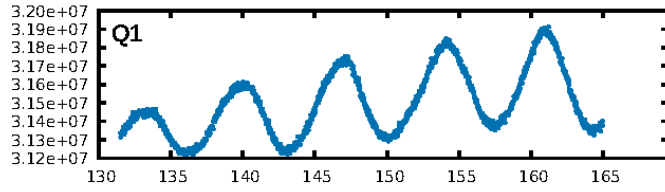
## DV Fit Results:

Period = 183.10743 [0.00888] d  
Epoch = 183.2253 [0.0323] BKJD  
Rp/R\* = 0.0501 [0.0083]  
a/R\* = 52.94 [31.63]  
b = 0.19 [2.94]  
Seff = 1.90 [0.90]  
Teq = 300 [35] K  
Rp = 4.85 [1.70] Re  
a = 0.5800 [0.1685] AU  
Ag = 1868.31 [1442.68] [1.29 $\sigma$ ]  
Teffp = 3045 [482] K [5.68 $\sigma$ ]

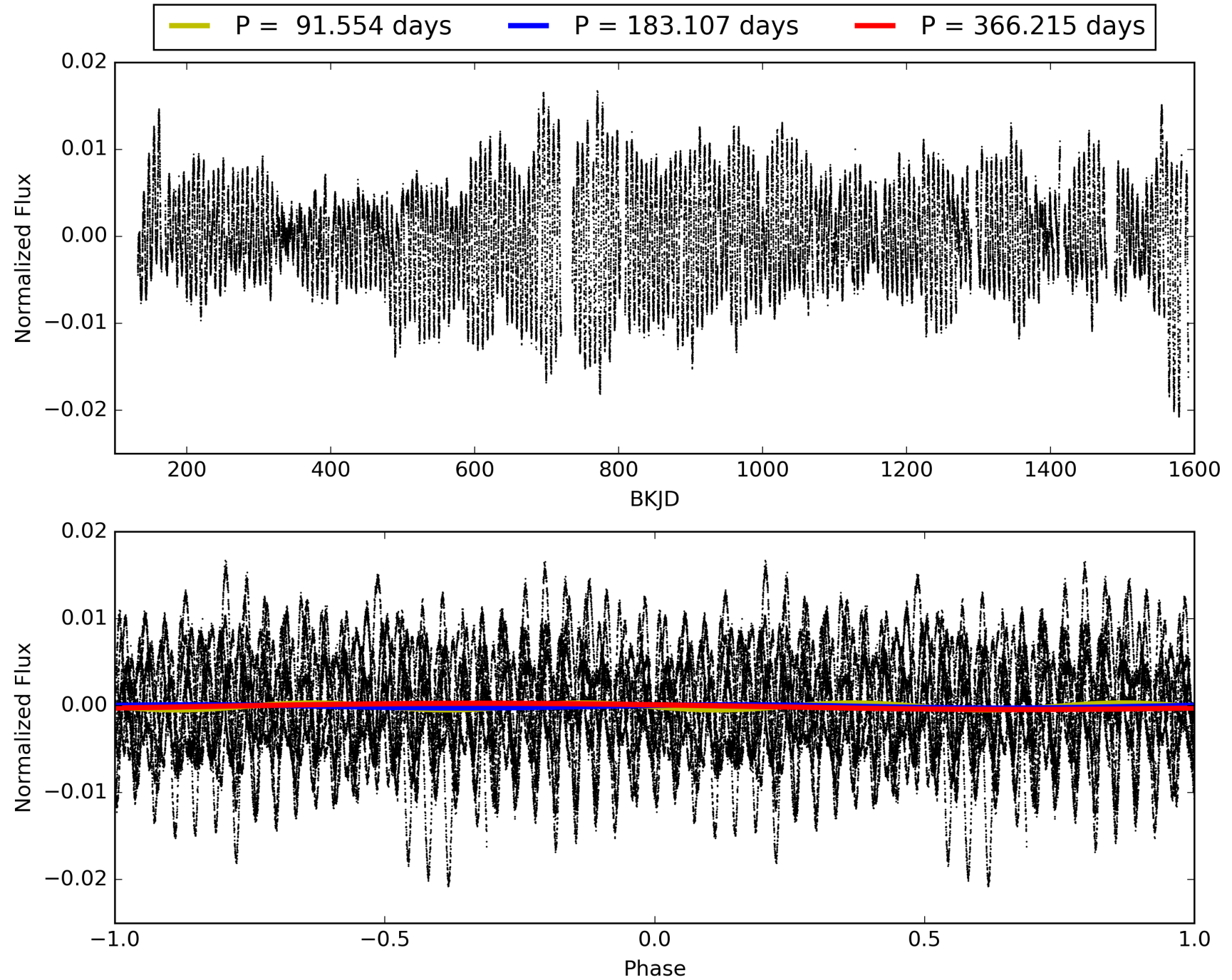
## DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.19 $\sigma$ ]  
LongPeriod-sig: 100.0% [9.40 $\sigma$ ]  
ModelChiSquare2-sig: 19.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.07e-14  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -2.209  
Centroid-sig: 90.0%  
Centroid-so: 0.862 arcsec [4.46 $\sigma$ ]  
OotOffset-rm: 0.270 arcsec [0.90 $\sigma$ ]  
KicOffset-rm: 0.135 arcsec [0.66 $\sigma$ ]  
OotOffset-st: 2/1/1/0 [4]  
KicOffset-st: 2/1/1/0 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 0.00 [0/4]

# TCE 009118695-10, PDC Light Curves

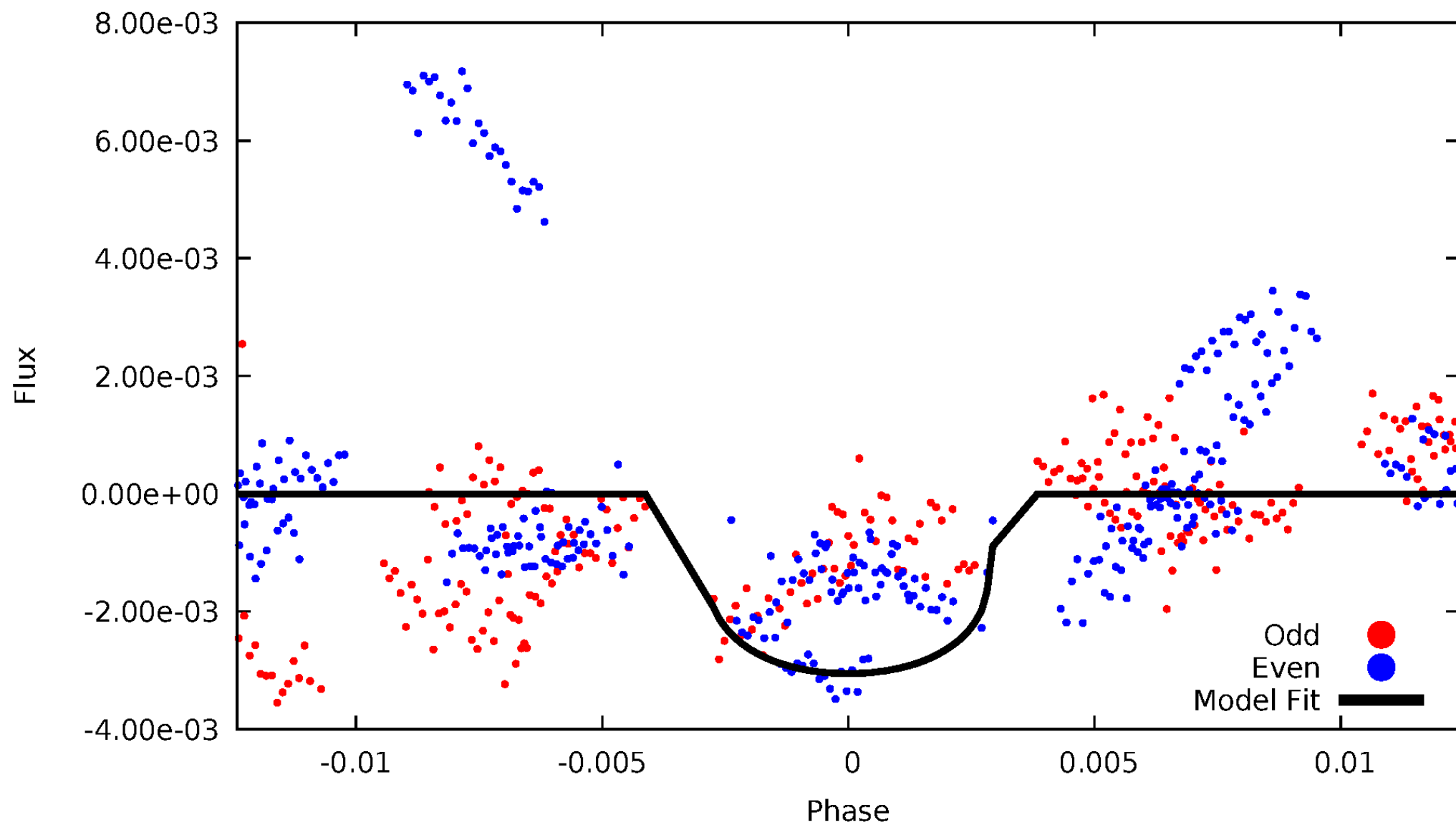


# TCE 009118695-10



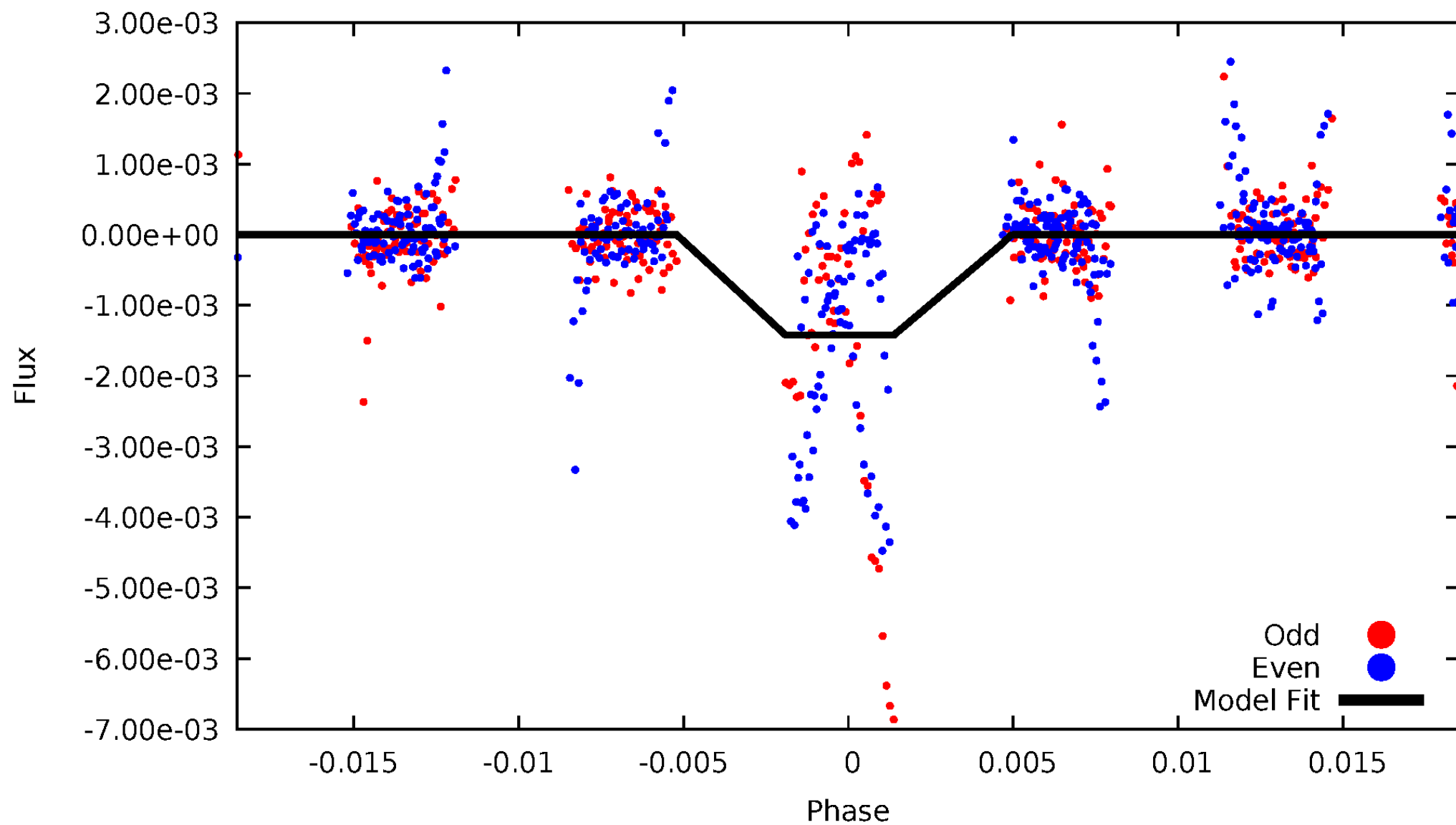
# DV Odd/Even

TCE 009118695-10



# ALT Odd/Even

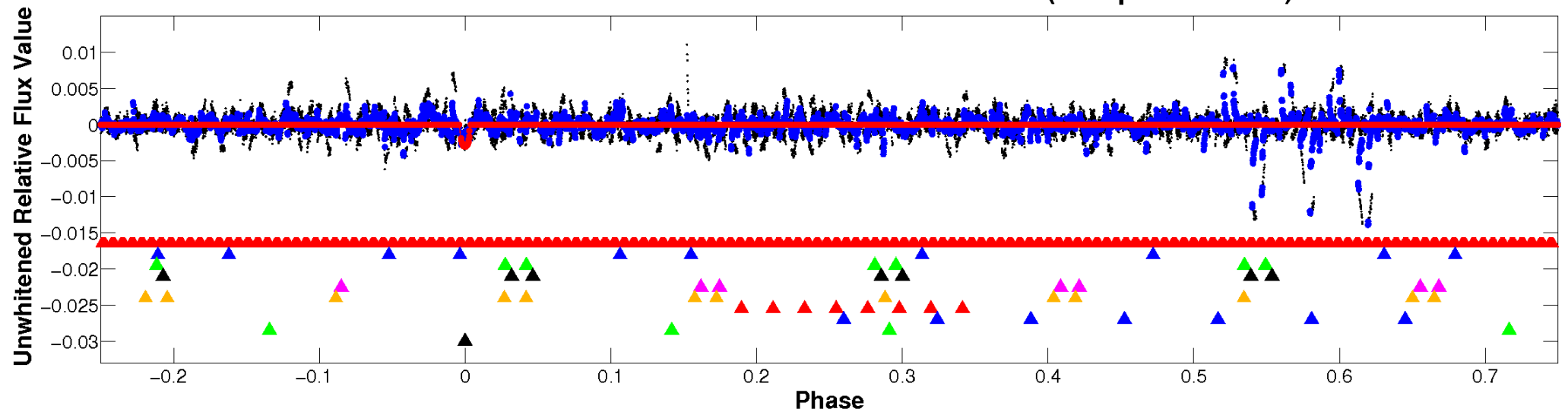
TCE 009118695-10



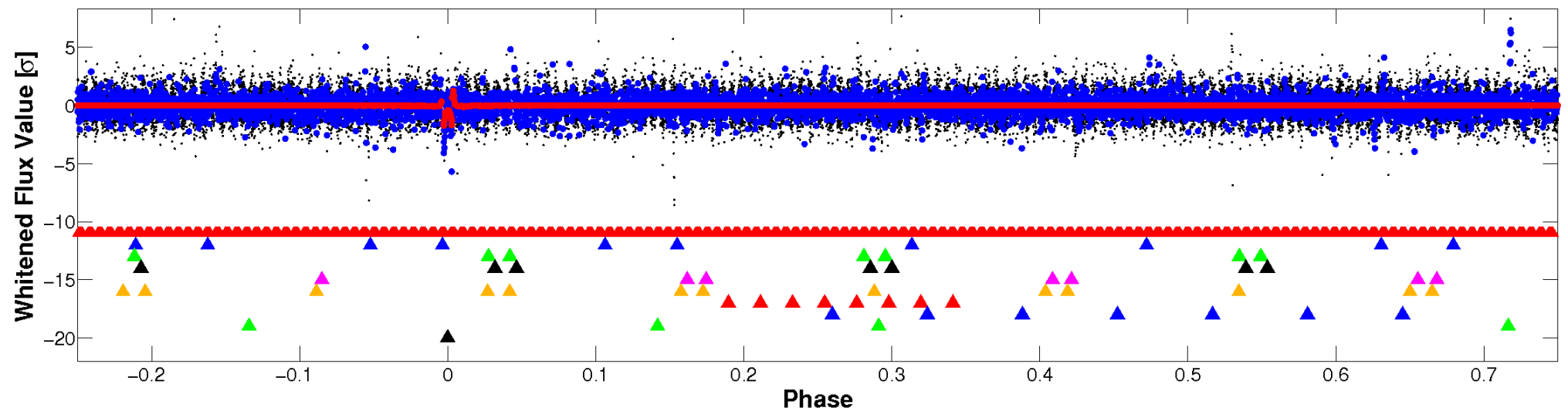


# Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

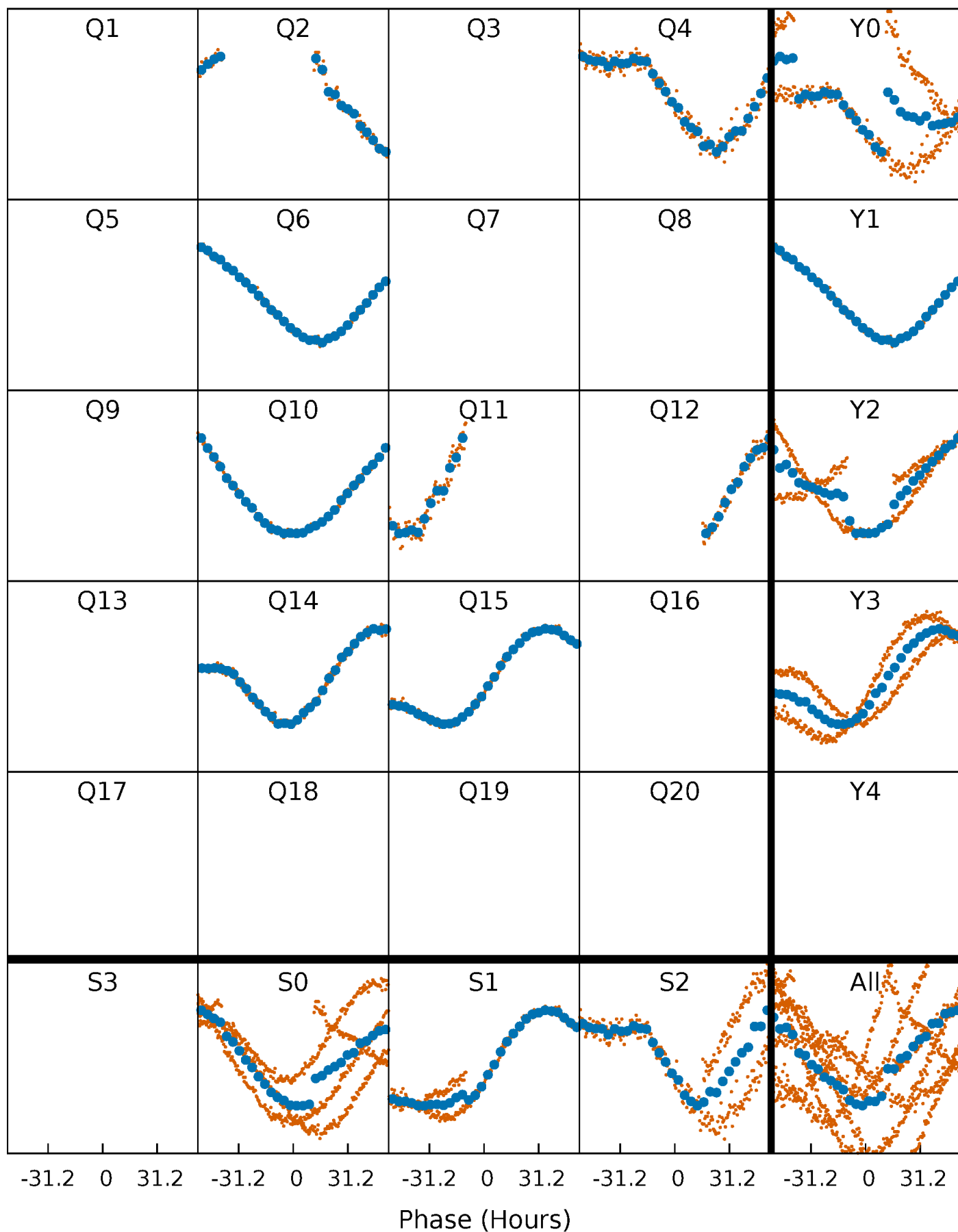


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



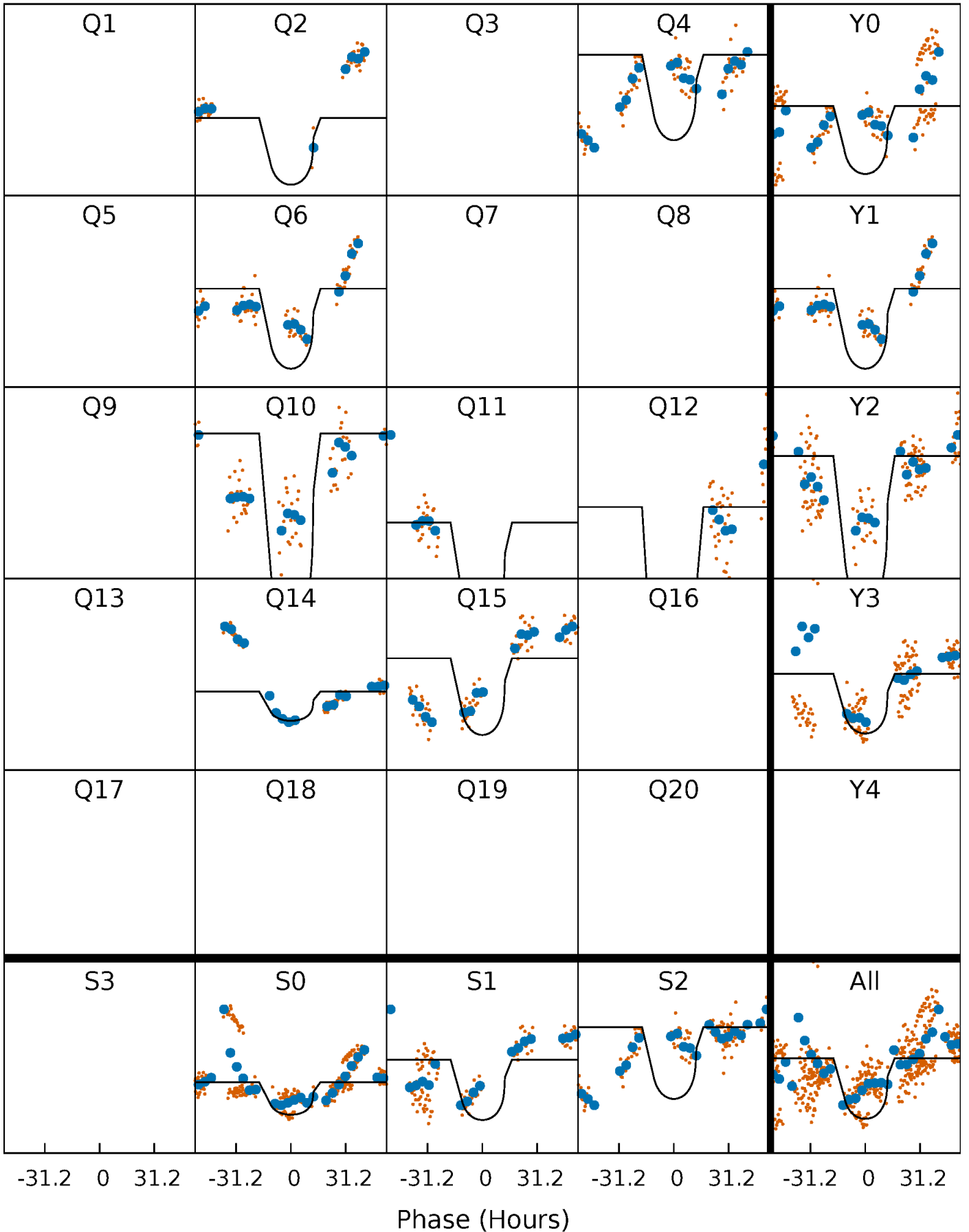
# PDC Quarter-Phased Transit Curves

TCE 009118695-10 P=183.107433 Days  $T_0=183.225305$  (BKJD)



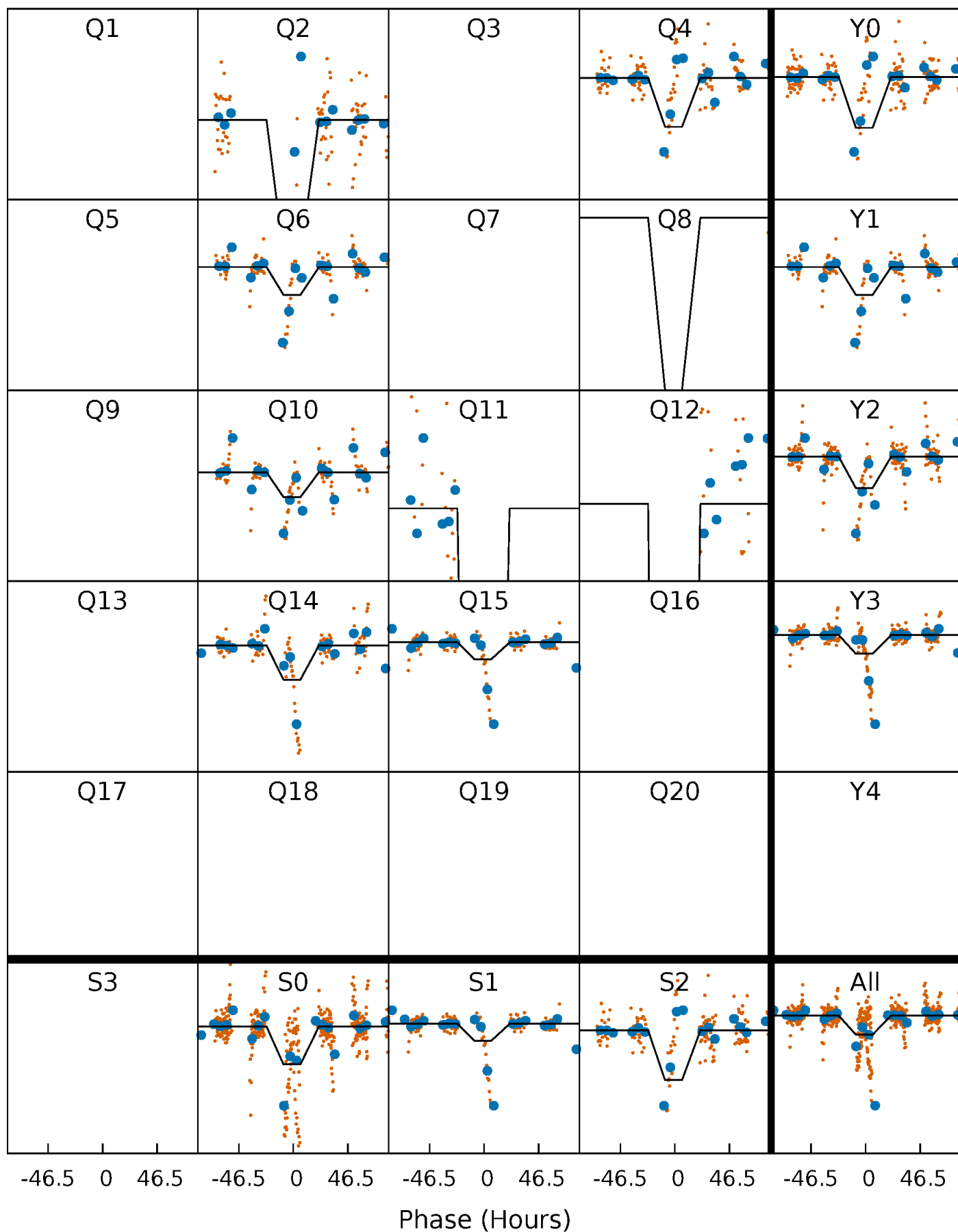
# DV Quarter-Phased Transit Curves

TCE 009118695-10 P=183.107433 Days  $T_0=183.225305$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

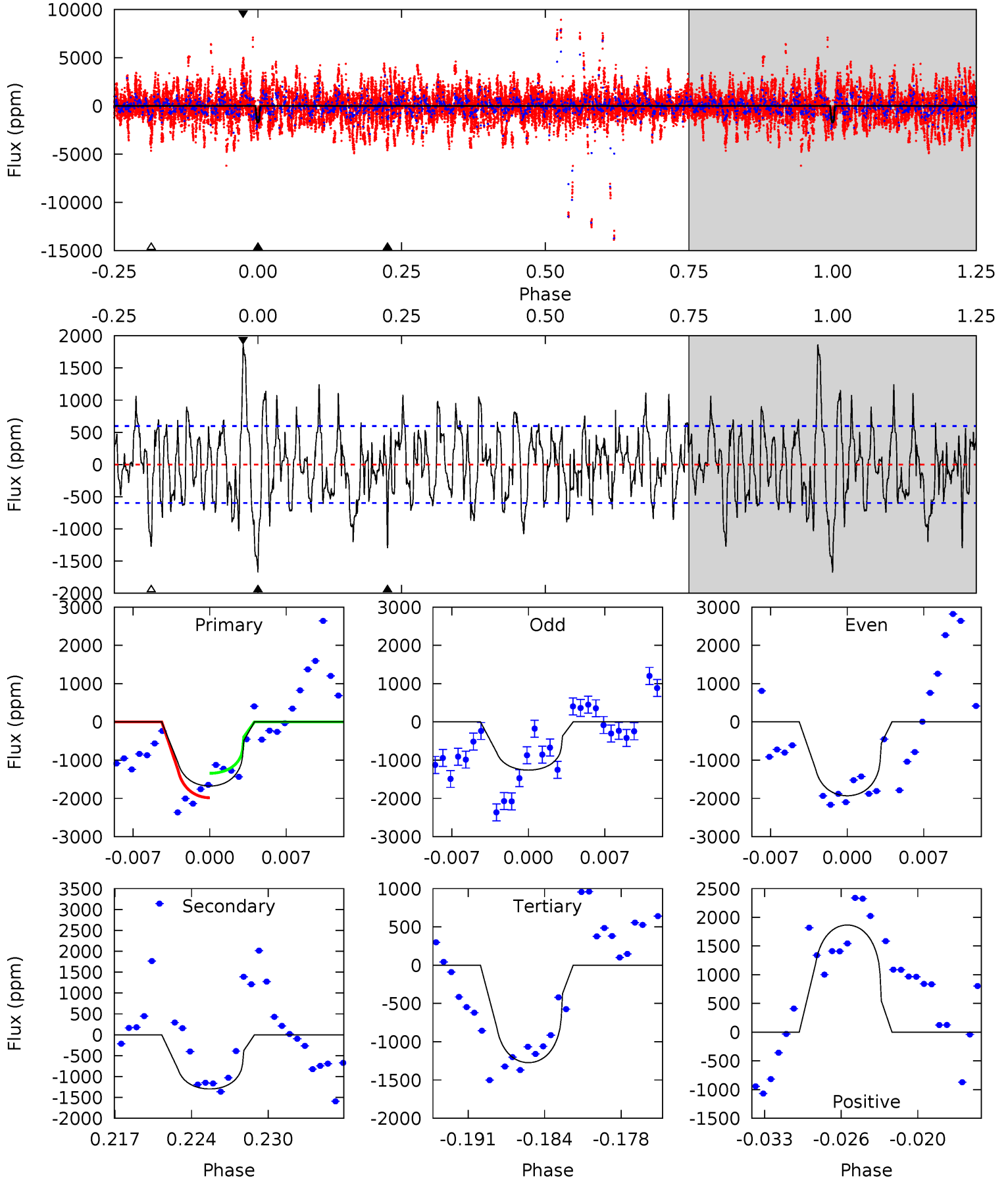
TCE 009118695-10 P=183.019281 Days  $T_0=183.599839$  (BKJD)



# DV Model-Shift Uniqueness Test

009118695-10, P = 183.107433 Days, E = 0.117872 Days

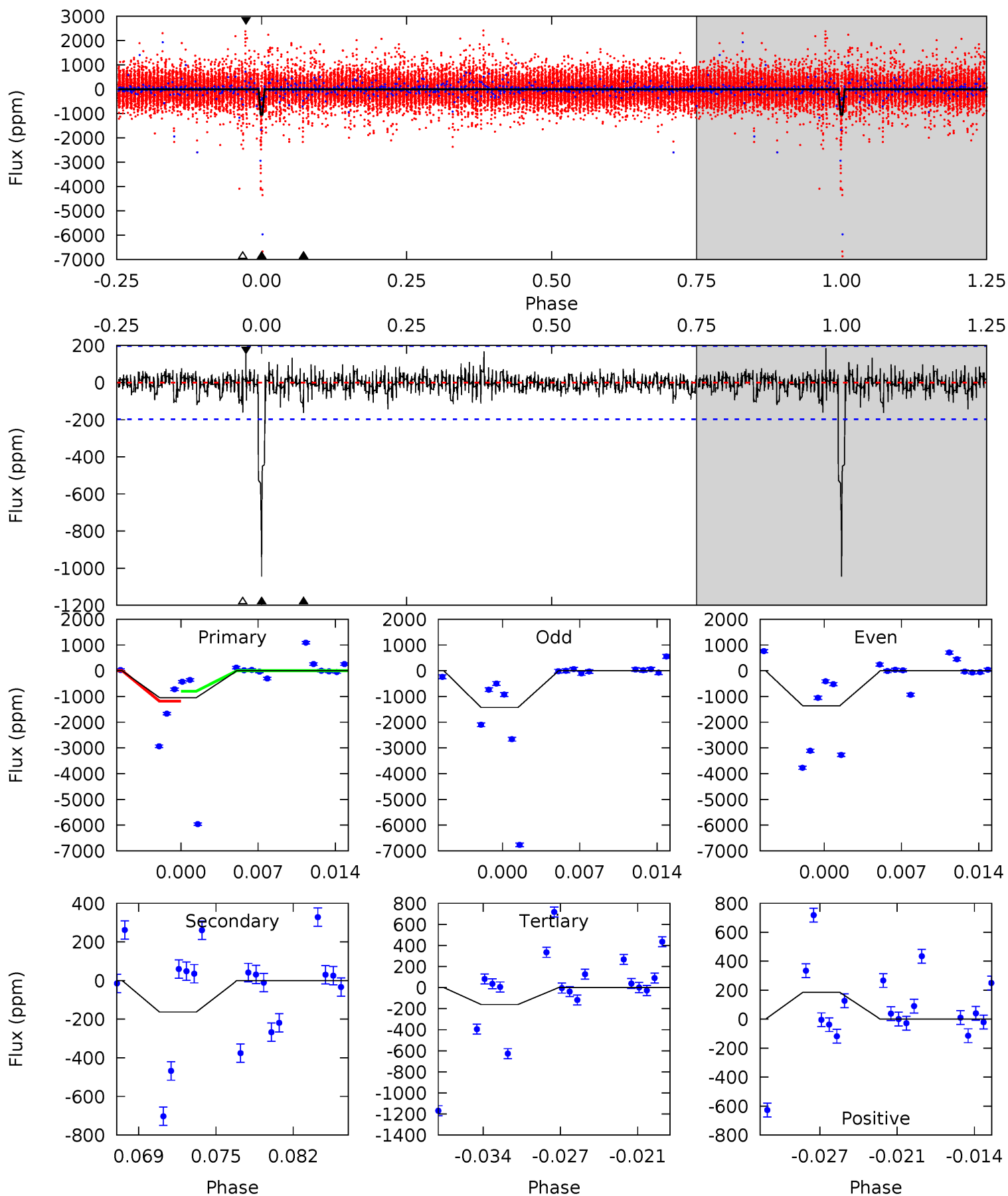
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	11.1	10.9	16.0	5.11	2.72	4.20	3.45	-1.61	0.21	-4.86	2.81	1.08	0.53	2.74



# Alt Model-Shift Uniqueness Test

009118695-10, P = 183.019281 Days, E = 0.580558 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
27.0	4.20	4.15	4.79	5.10	2.70	0.92	22.8	22.2	0.05	-0.59	0.87	0.87	0.15	5.00



### Stellar Parameters For KIC 009118695

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5491^{+164}_{-164}$	$4.432^{+0.143}_{-0.266}$	$-0.300^{+0.350}_{-0.250}$	$0.887^{+0.275}_{-0.148}$	$0.776^{+0.126}_{-0.054}$	$1.566^{+0.974}_{-0.928}$
	+3%/-3%	+3%/-6%	+117%/-83%	+31%/-17%	+16%/-7%	+62%/-59%
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 009118695-10 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1298 \pm 117$	$4.98^{+1.30}_{-1.01}$	$423^{+35}_{-26}$	$4779^{+416}_{-334}$	$9991^{+5438}_{-3826}$
Alt.	$-163 \pm 39$	$3.83^{+0.97}_{-0.97}$	$424^{+36}_{-24}$	$3623^{+349}_{-277}$	$2059^{+1918}_{-850}$

$T_{\text{max}}$  = 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

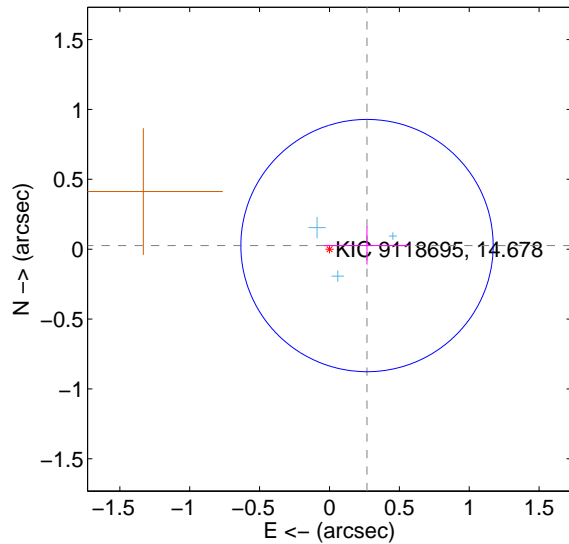
Supplemental centroid analysis for 009118695-10. Kepler magnitude: 14.68. Transit SNR 9.02

There are 3 quarters with good PRF difference image offsets

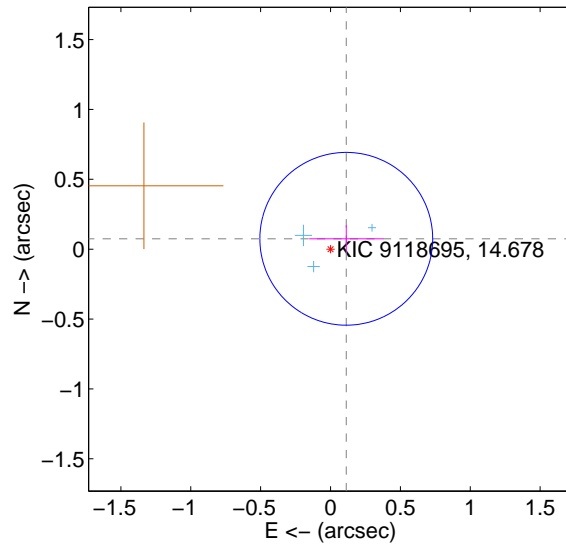
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.270 \pm 0.301$	0.90	$-0.269 \pm 0.310$	$0.026 \pm 0.136$
PRF-fit source offset from KIC position	$0.135 \pm 0.206$	0.66	$-0.113 \pm 0.265$	$0.074 \pm 0.097$
photometric centroid source offset	$0.86 \pm 0.19$	4.46	$0.86 \pm 0.19$	$0.01 \pm 0.16$

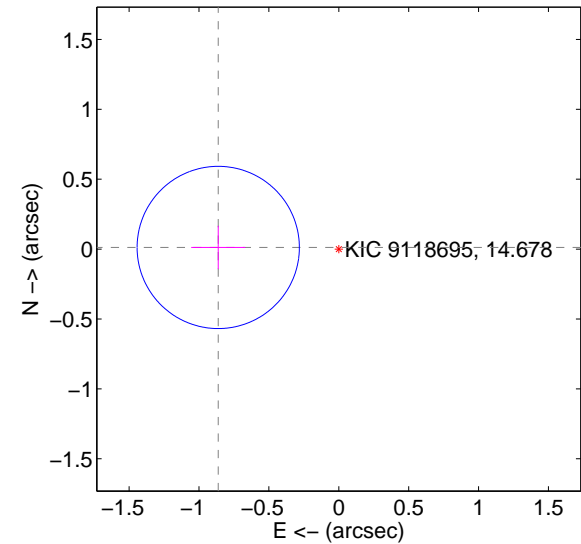
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



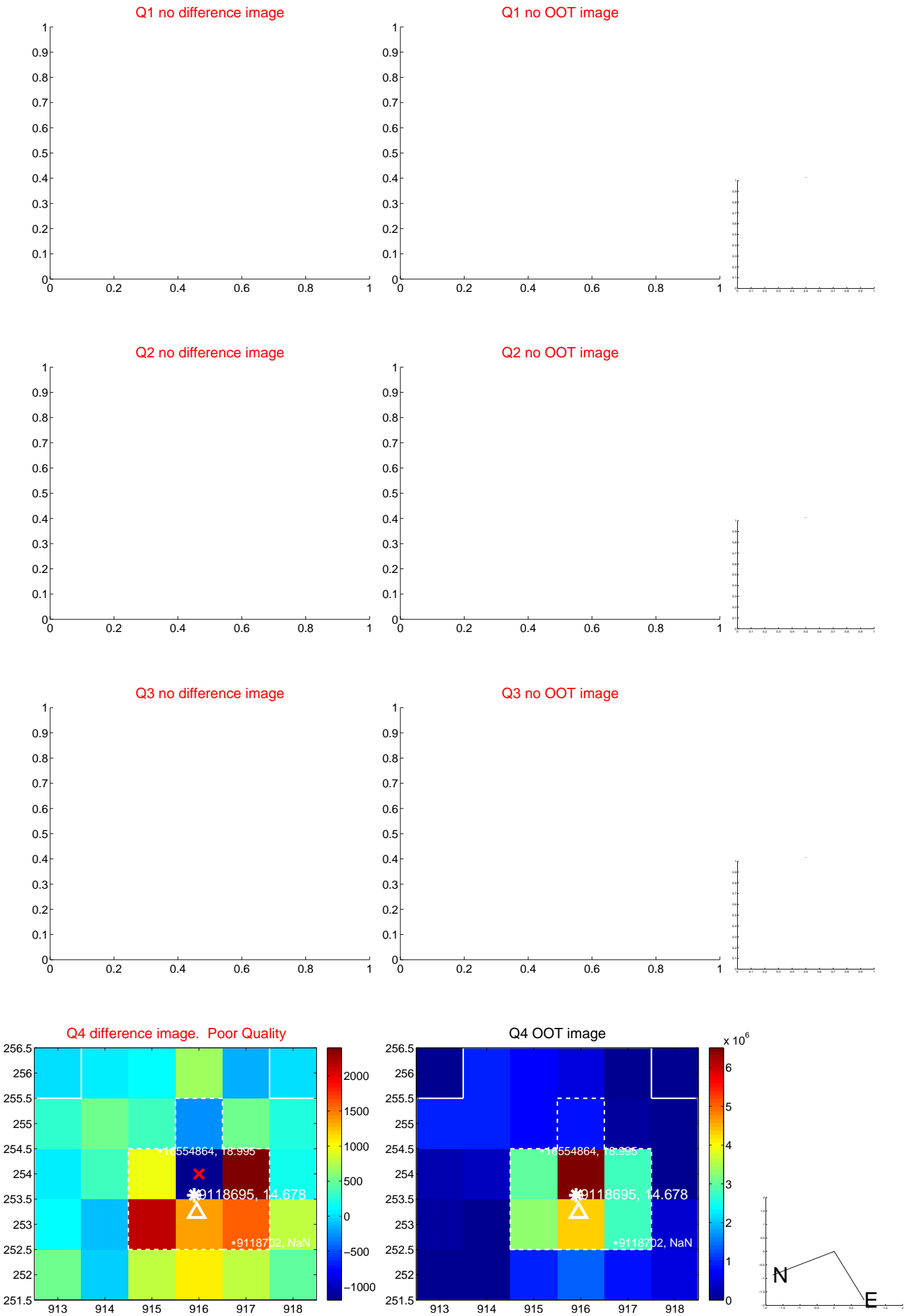
offset from photometric centroids



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.

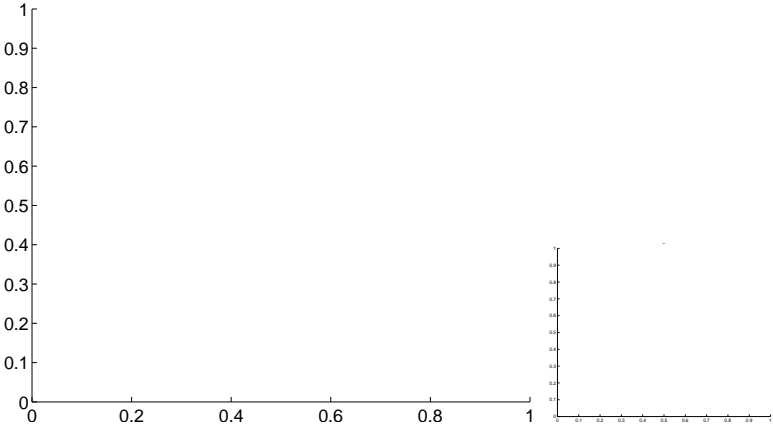


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

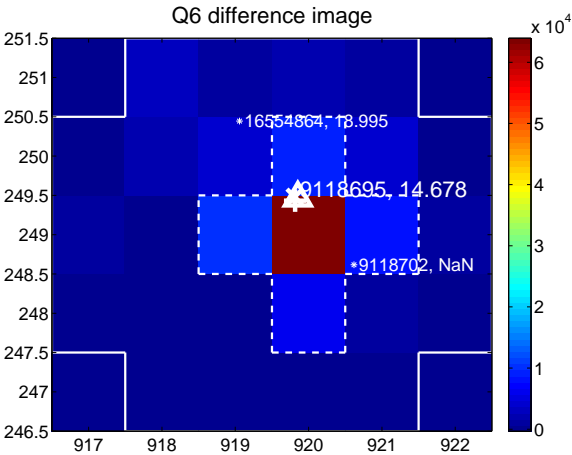
Q5 no difference image



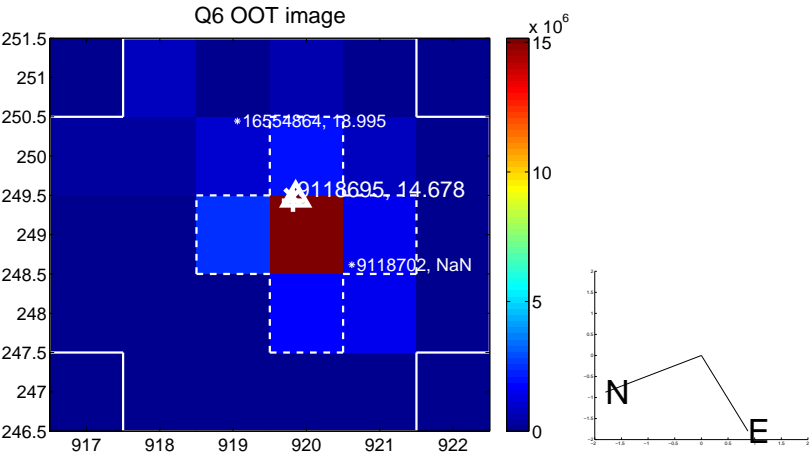
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



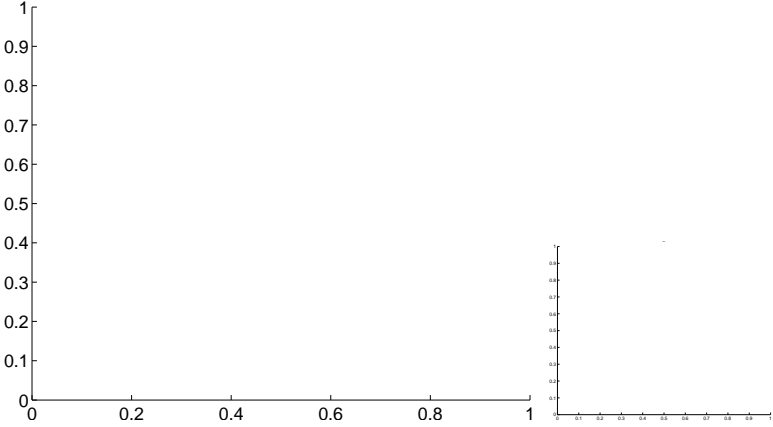
Q7 no OOT image



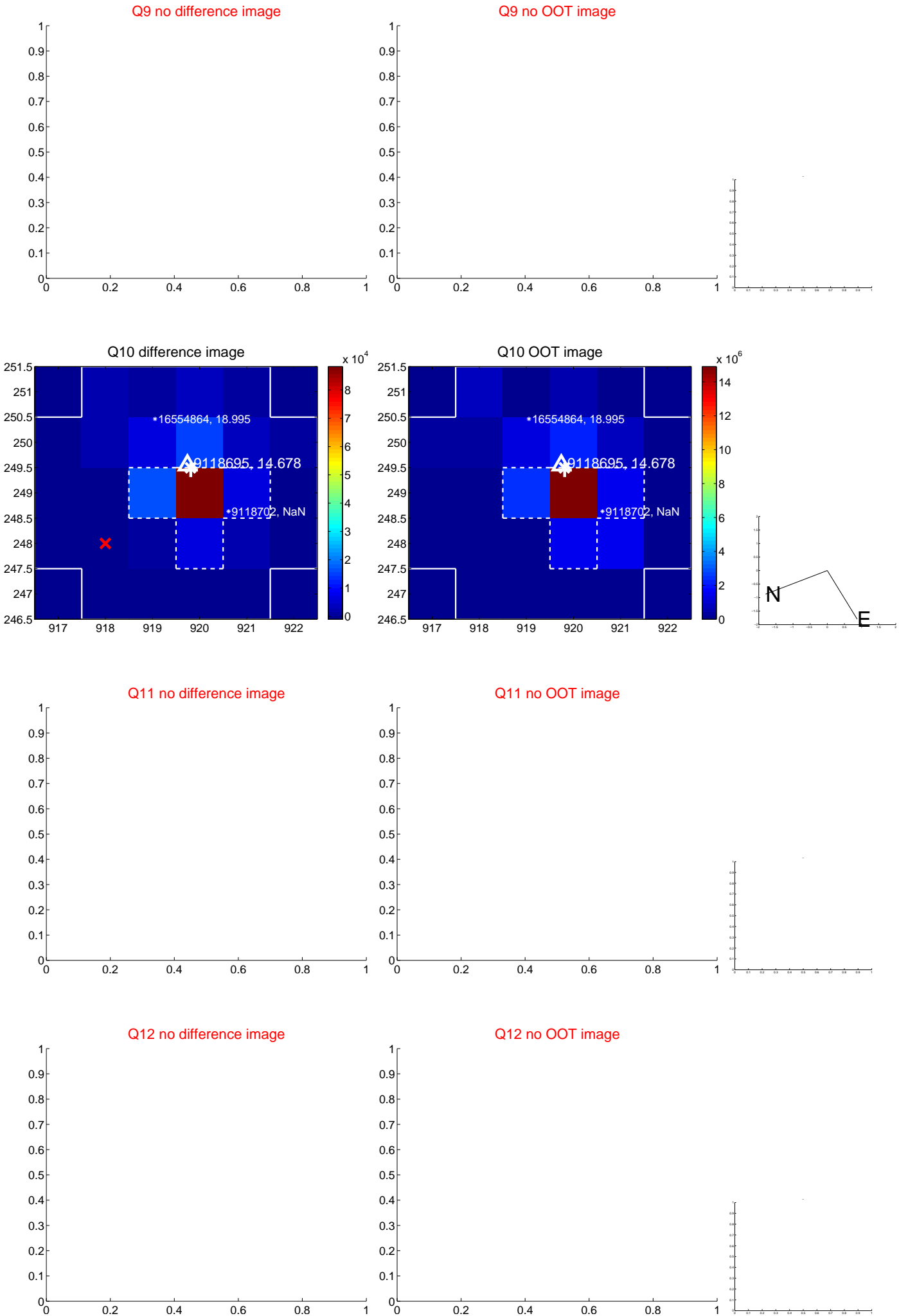
Q8 no difference image



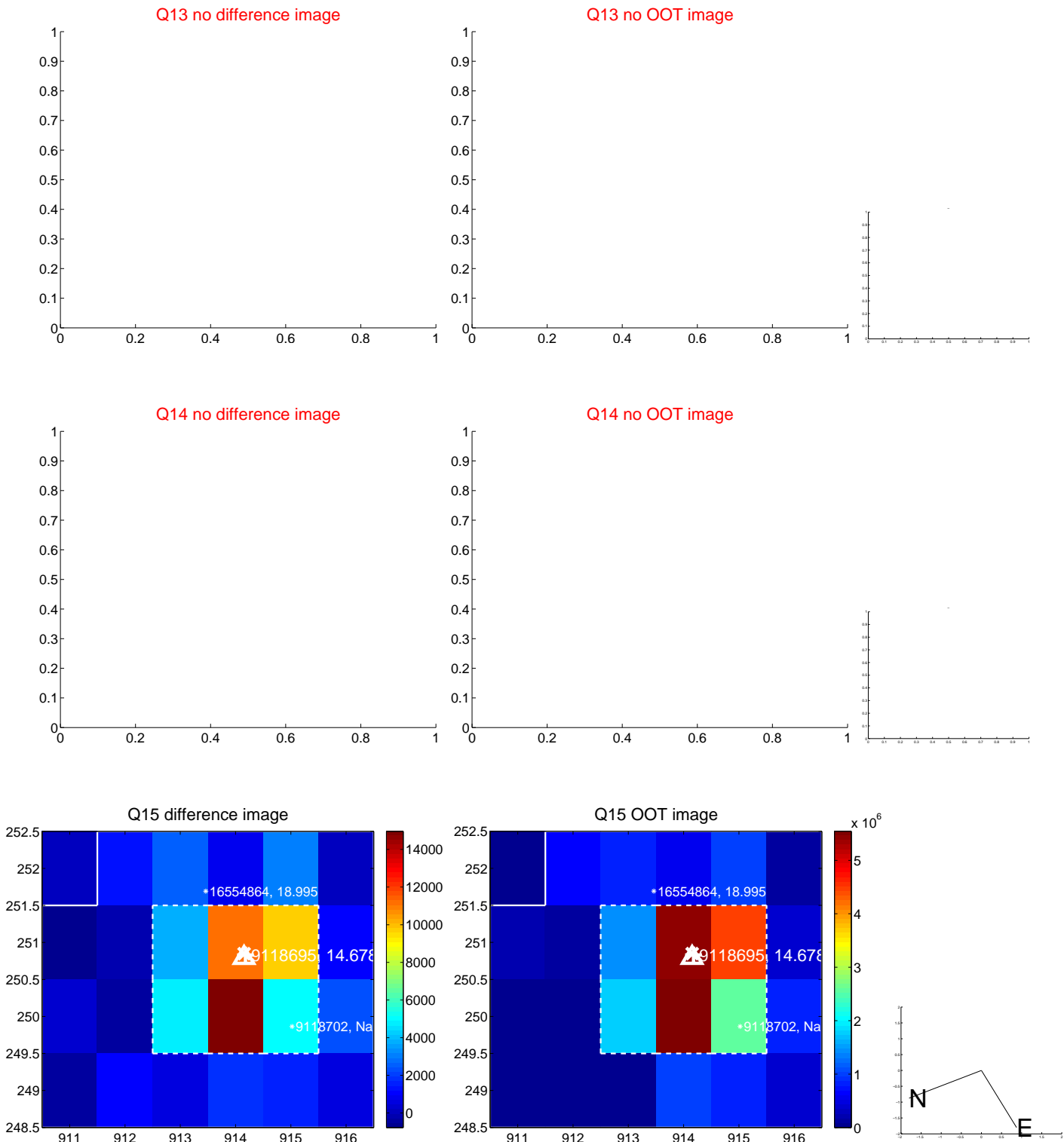
Q8 no OOT image



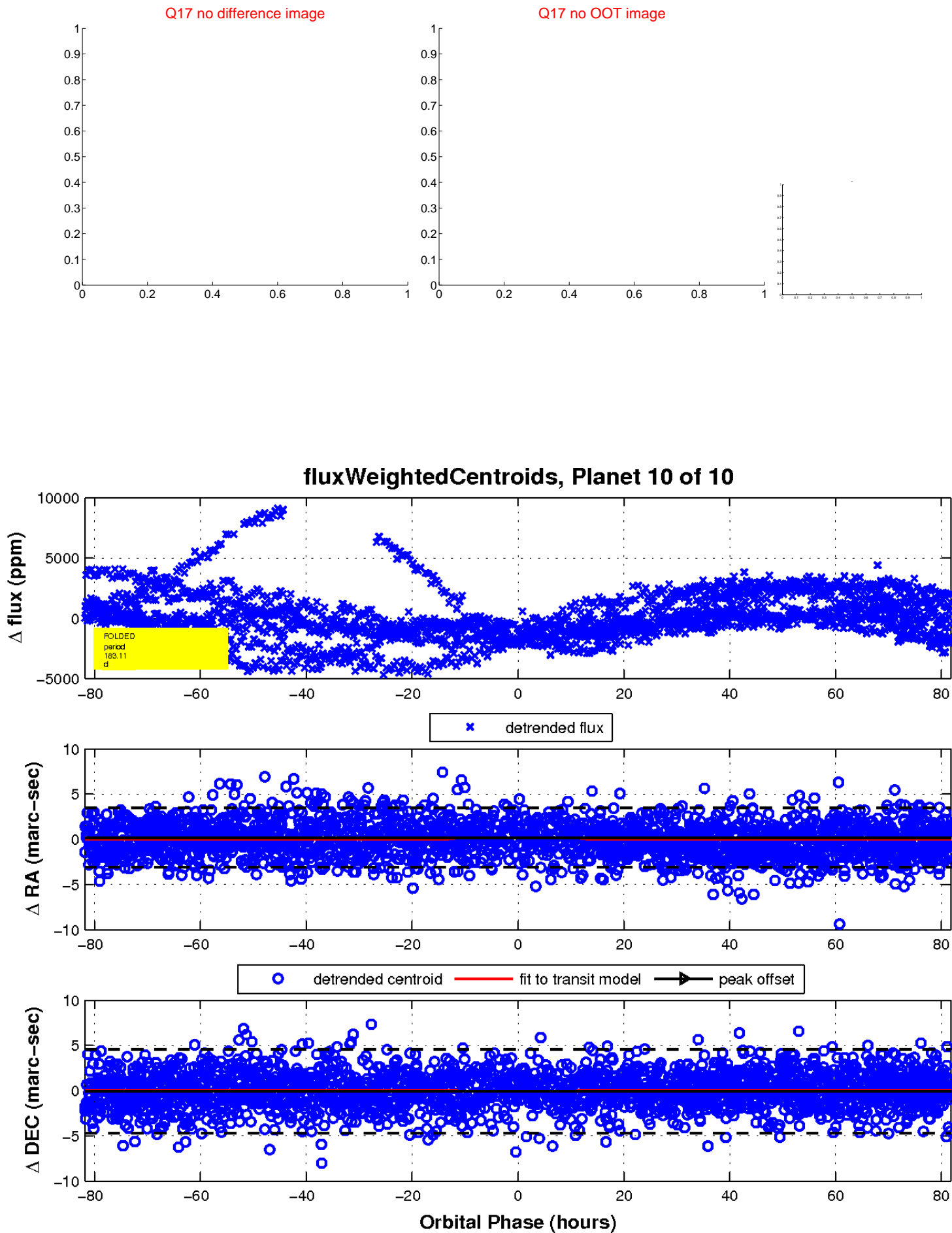
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

