

KIC 009017693

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})
009017693-01	OBS	No	471.547104	578.976979	2219.5	4.182	15.2	7.2	0.26	3323	1.44	0.01
009017693-02	OBS	No	476.522678	423.830955	2141.3	9.049	11.3	7.7	0.26	3323	1.18	0.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009017693-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009017693-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_MEAS

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

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

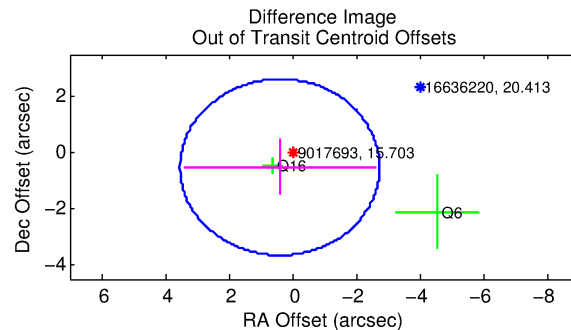
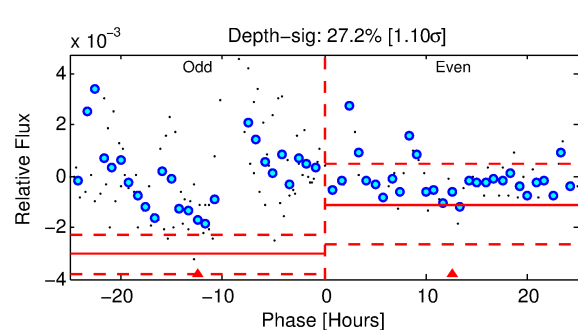
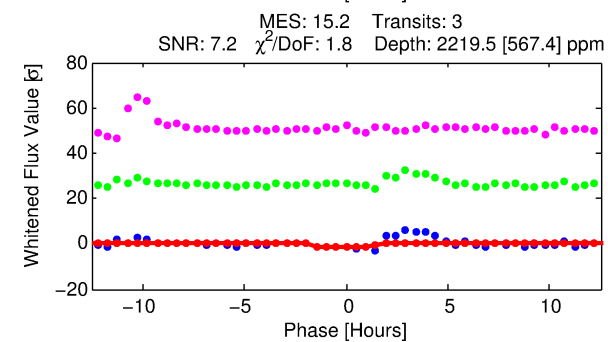
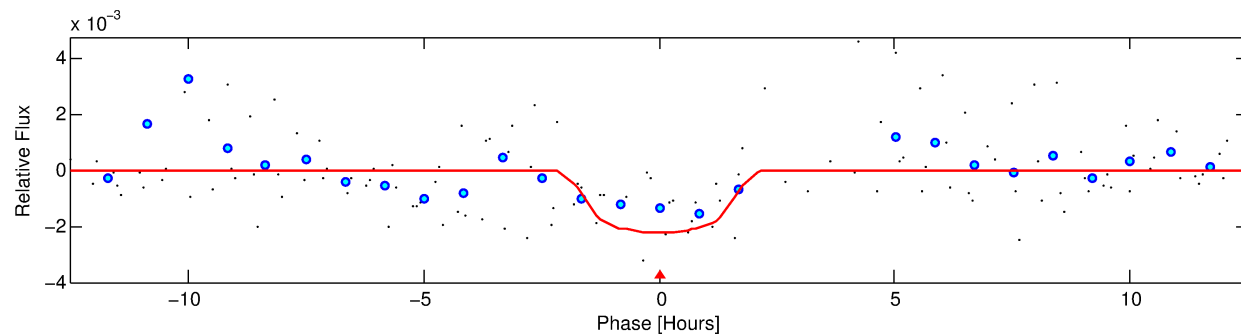
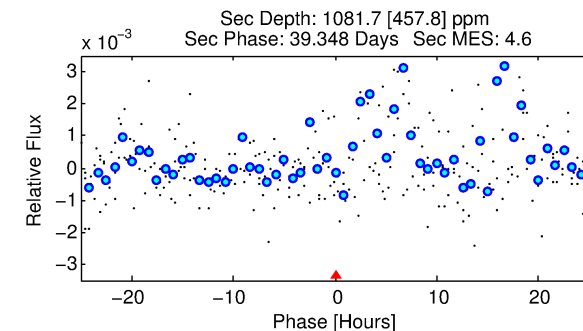
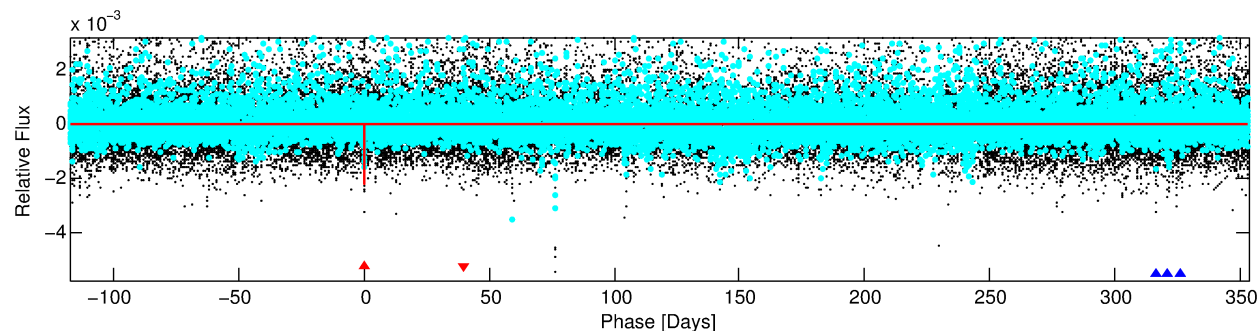
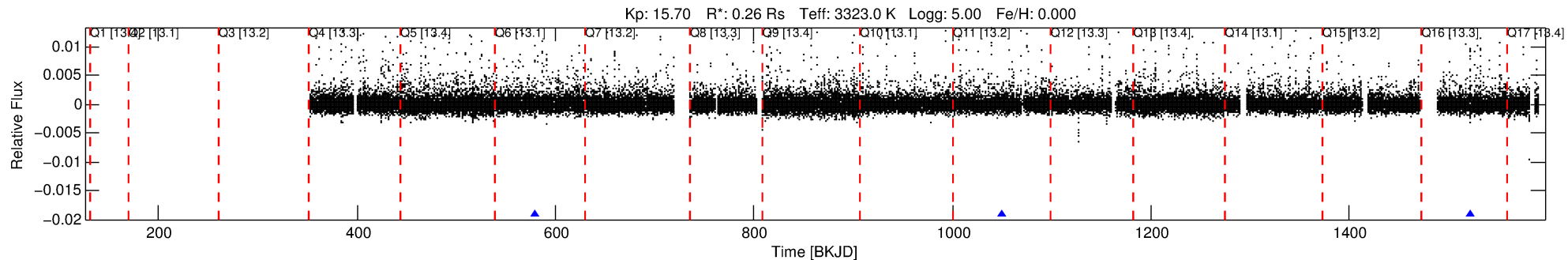
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009017693-01

No Significant Match Found

DV One-Page Summary

KIC: 9017693 Candidate: 1 of 2 Period: 471.547 d



DV Fit Results:

Period = 471.54710 [0.01031] d
Epoch = 578.9770 [0.0139] BKJD
Rp/R* = 0.0513 [0.0127]
a/R* = 477.89 [336.26]
b = 0.89 [0.17]
Seff = 0.01 [0.00]
Teq = 87 [3] K
Rp = 1.44 [0.41] Re
a = 0.7370 [0.0740] AU
Ag = 155103.77 [102731.75] [1.51σ]
Teff = 2661 [436] K [5.91σ]

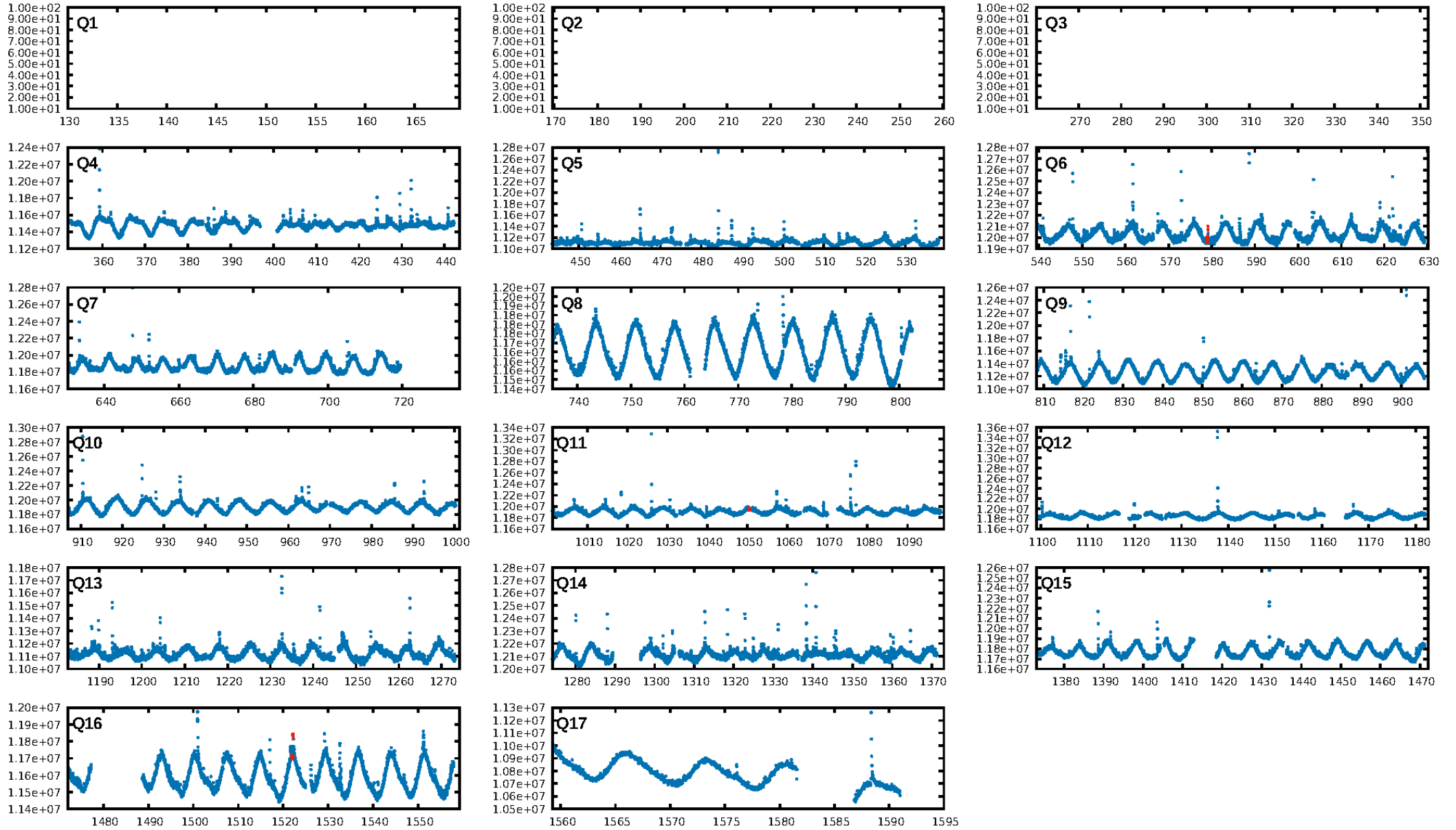
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [11.98σ]
ModelChiSquare2-sig: 2.7%
ModelChiSquareGof-sig: 86.9%
Bootstrap-pfa: 2.43e-20
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.421
Centroid-sig: 61.2%
Centroid-so: 0.933 arcsec [0.90σ]
OotOffset-rm: 0.653 arcsec [0.62σ]
KicOffset-rm: 0.568 arcsec [0.85σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

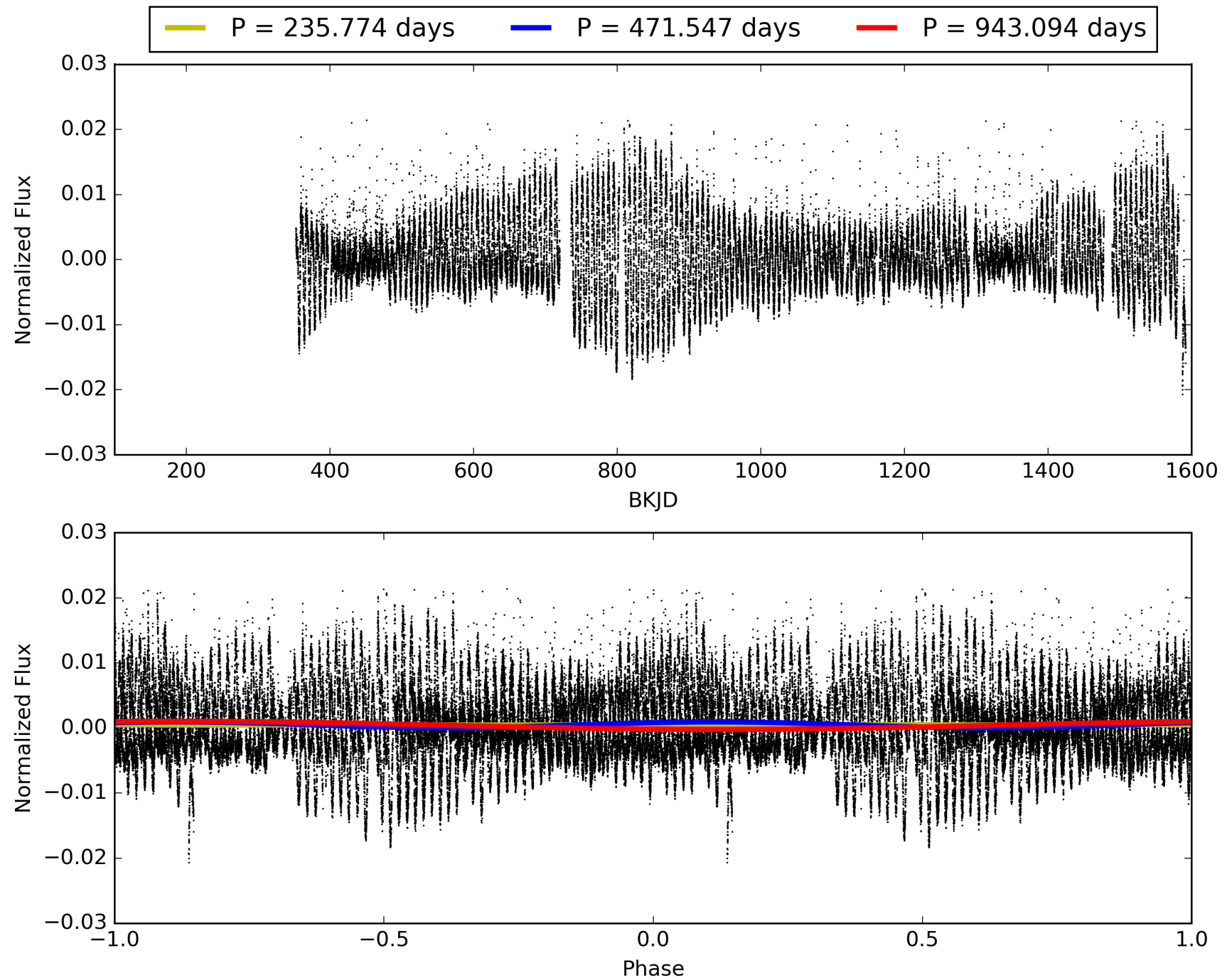
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:17:41 Z

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

TCE 009017693-01, PDC Light Curves

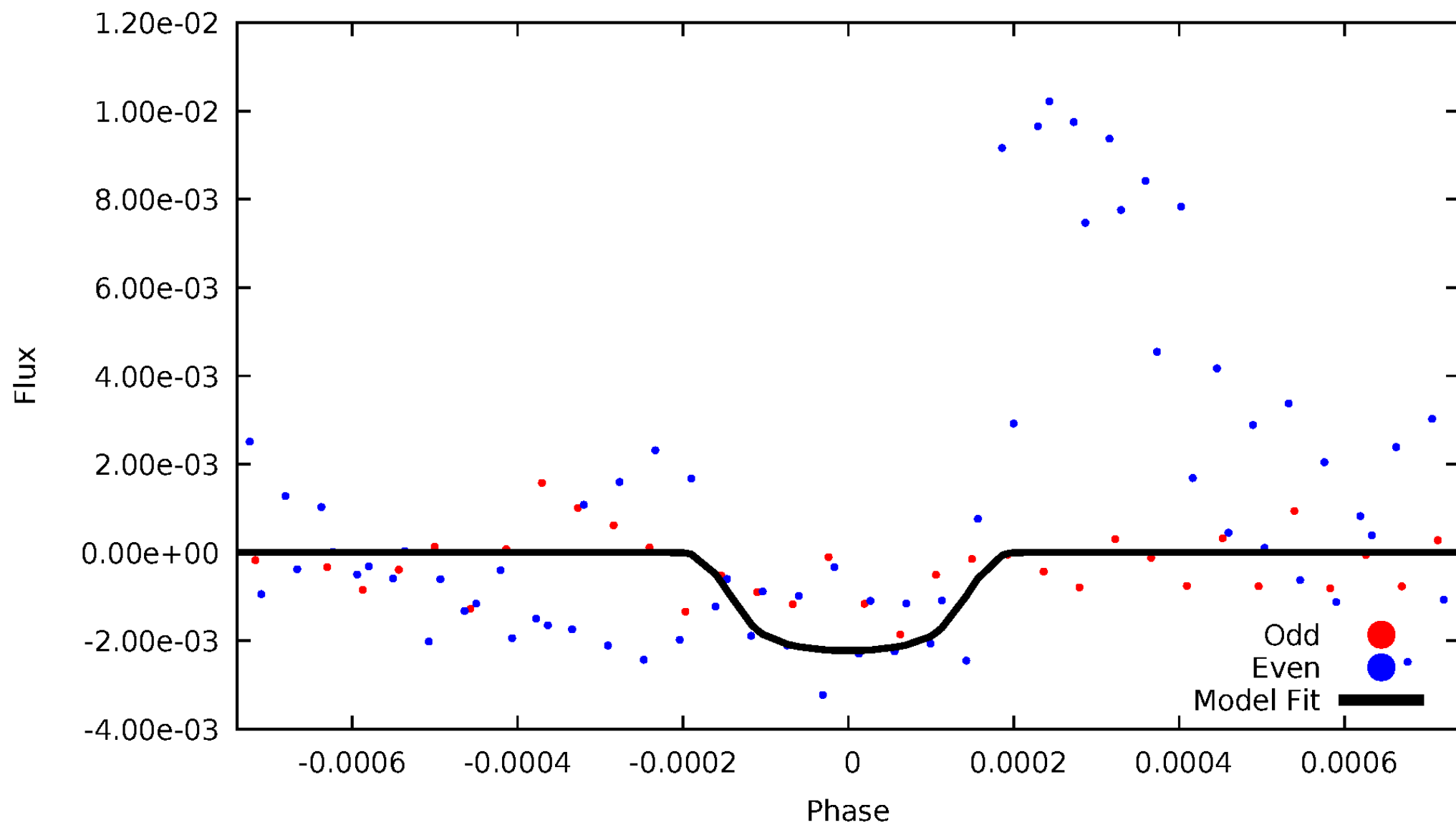


TCE 009017693-01



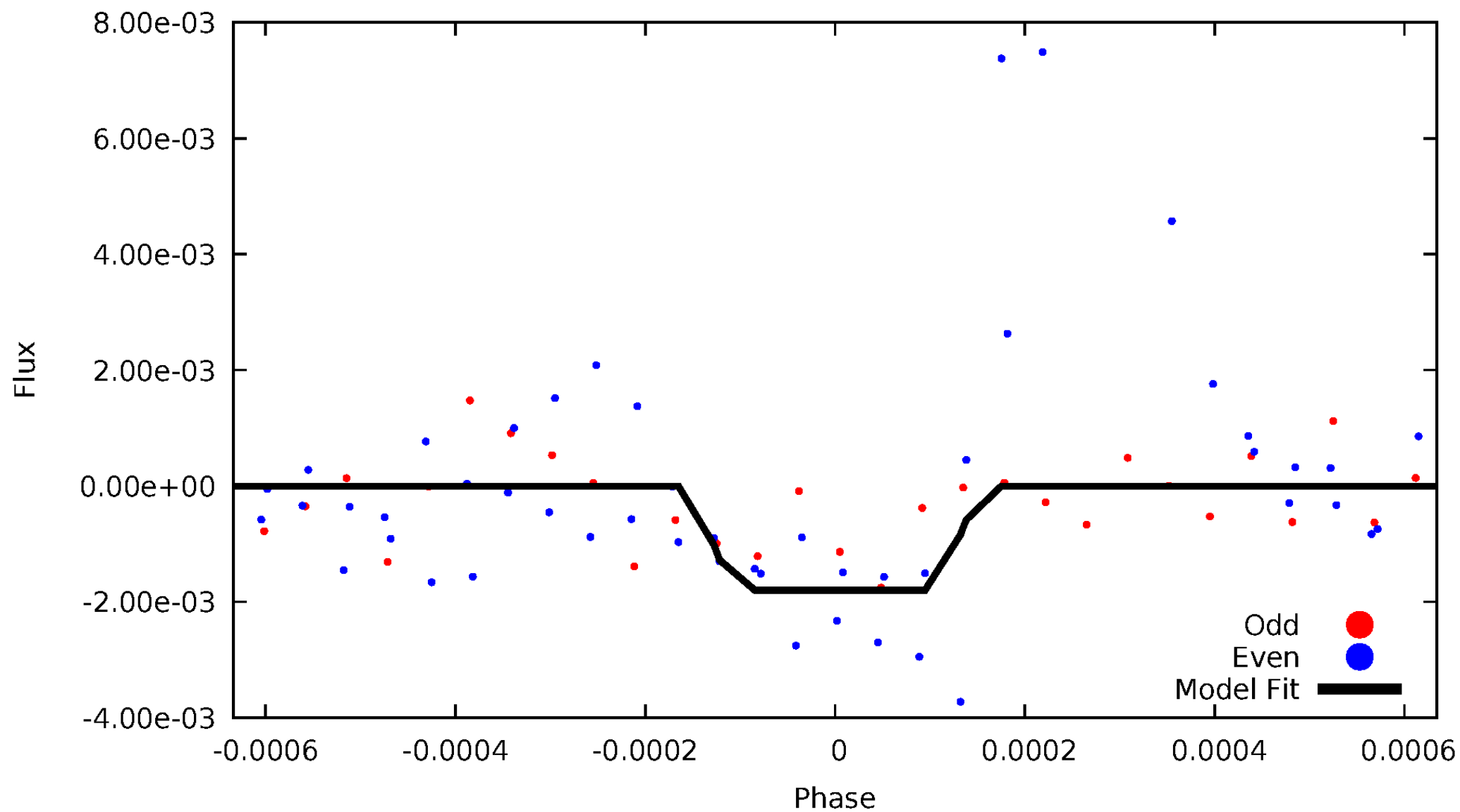
DV Odd/Even

TCE 009017693-01



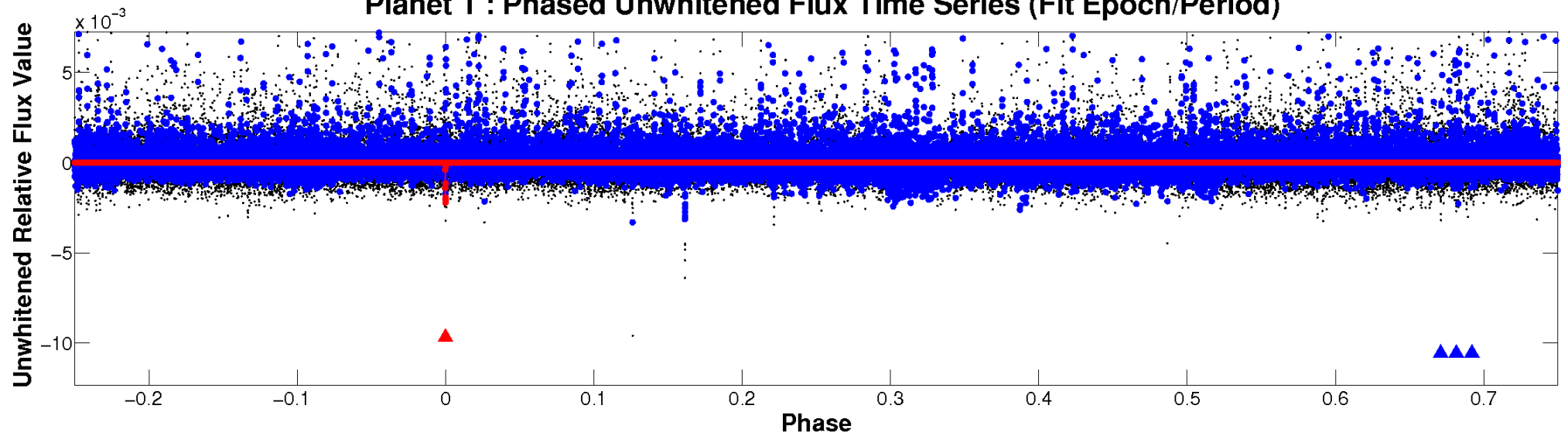
ALT Odd/Even

TCE 009017693-01

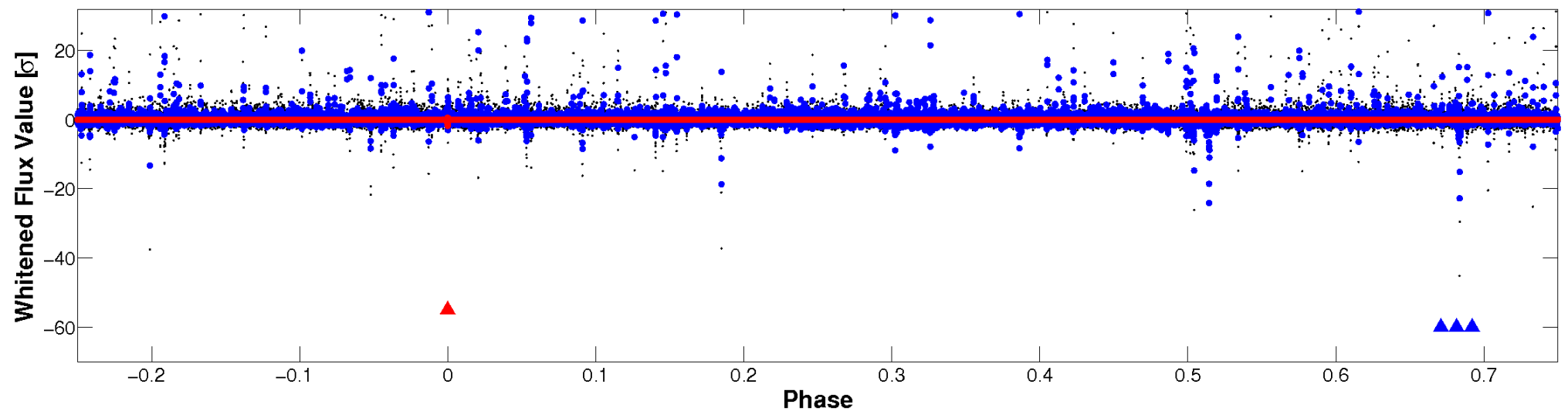


Non-Whitened Vs. Whitened Light Curve

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

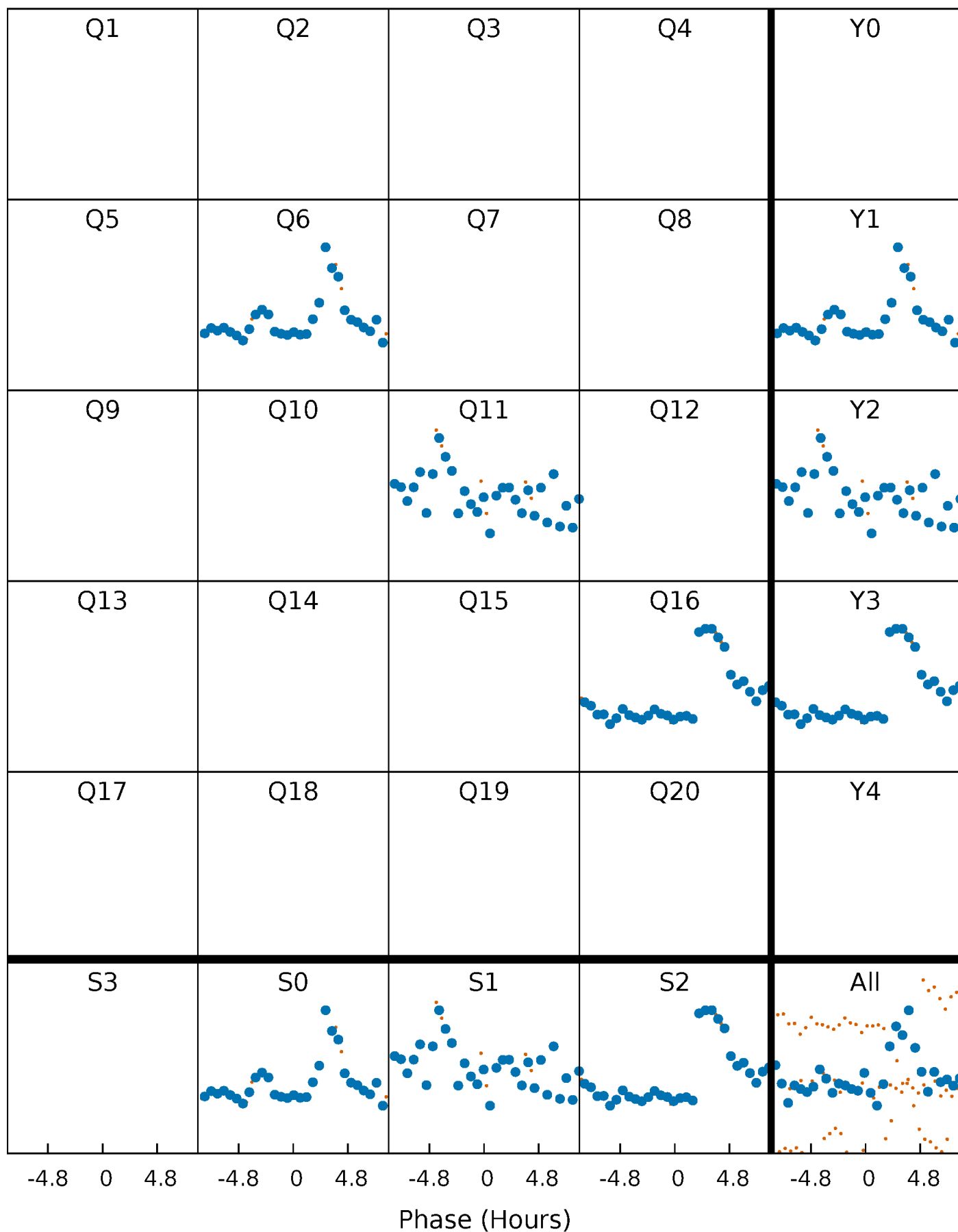


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



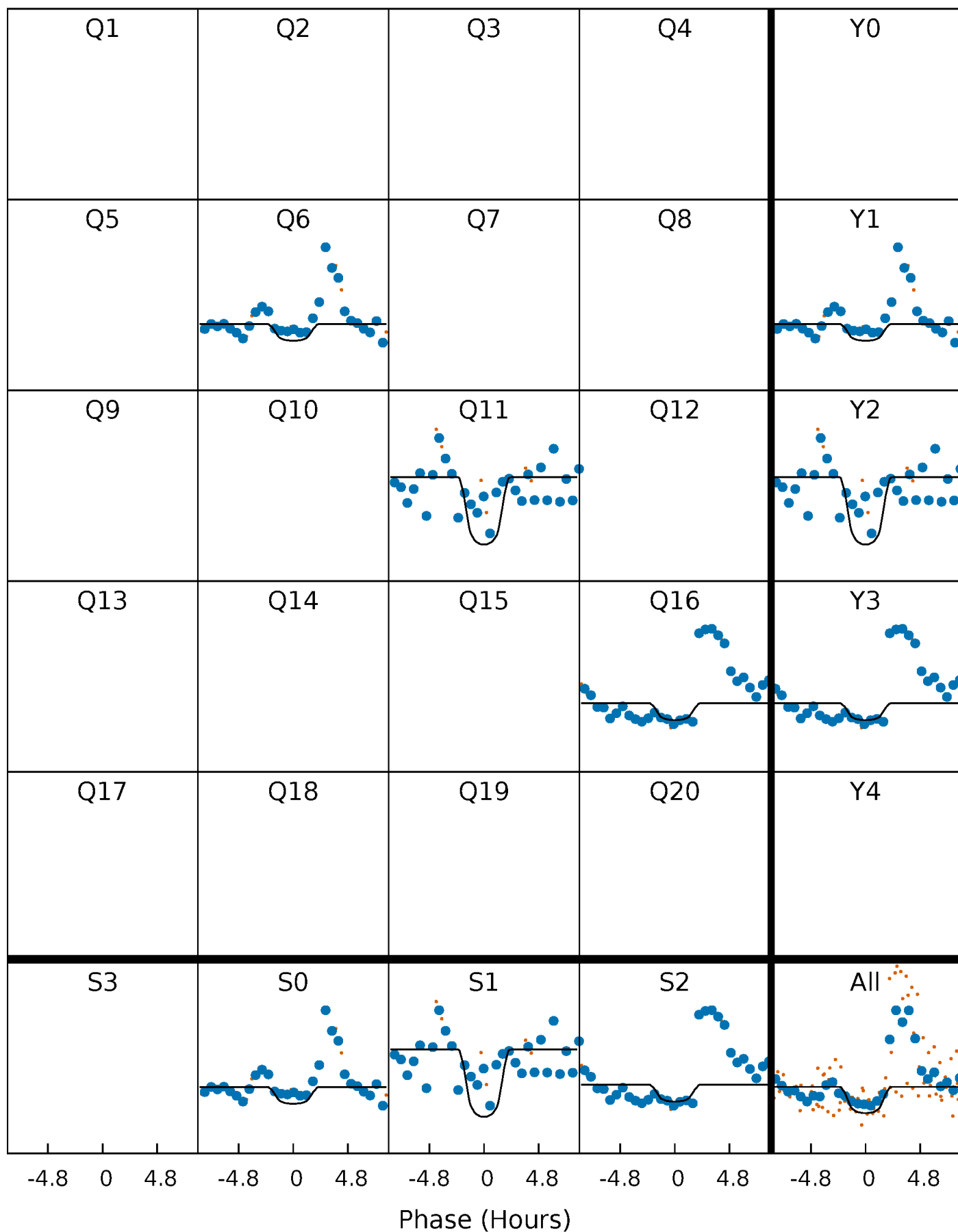
PDC Quarter-Phased Transit Curves

TCE 009017693-01 P=471.547104 Days $T_0=578.976979$ (BKJD)



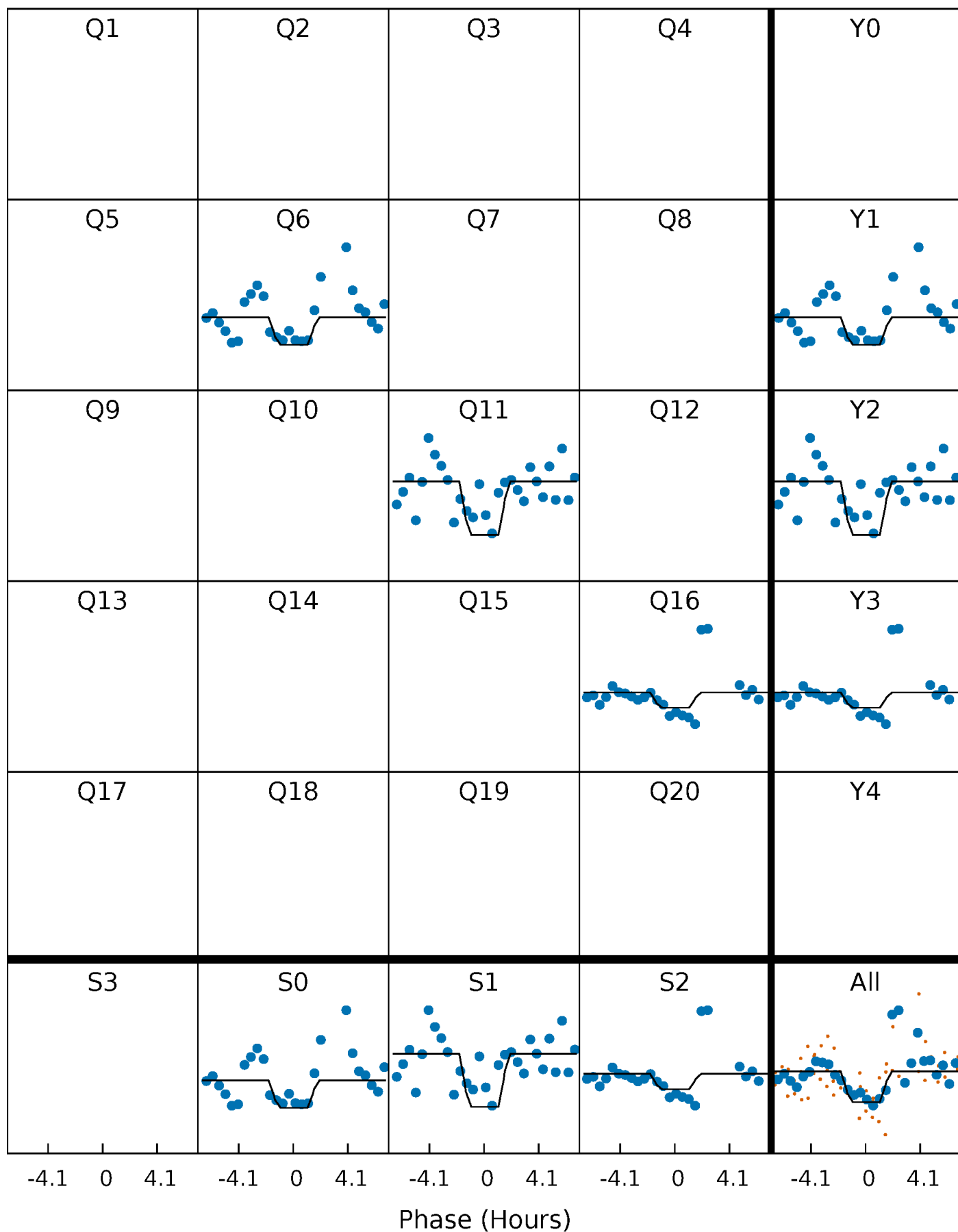
DV Quarter-Phased Transit Curves

TCE 009017693-01 P=471.547104 Days $T_0=578.976979$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

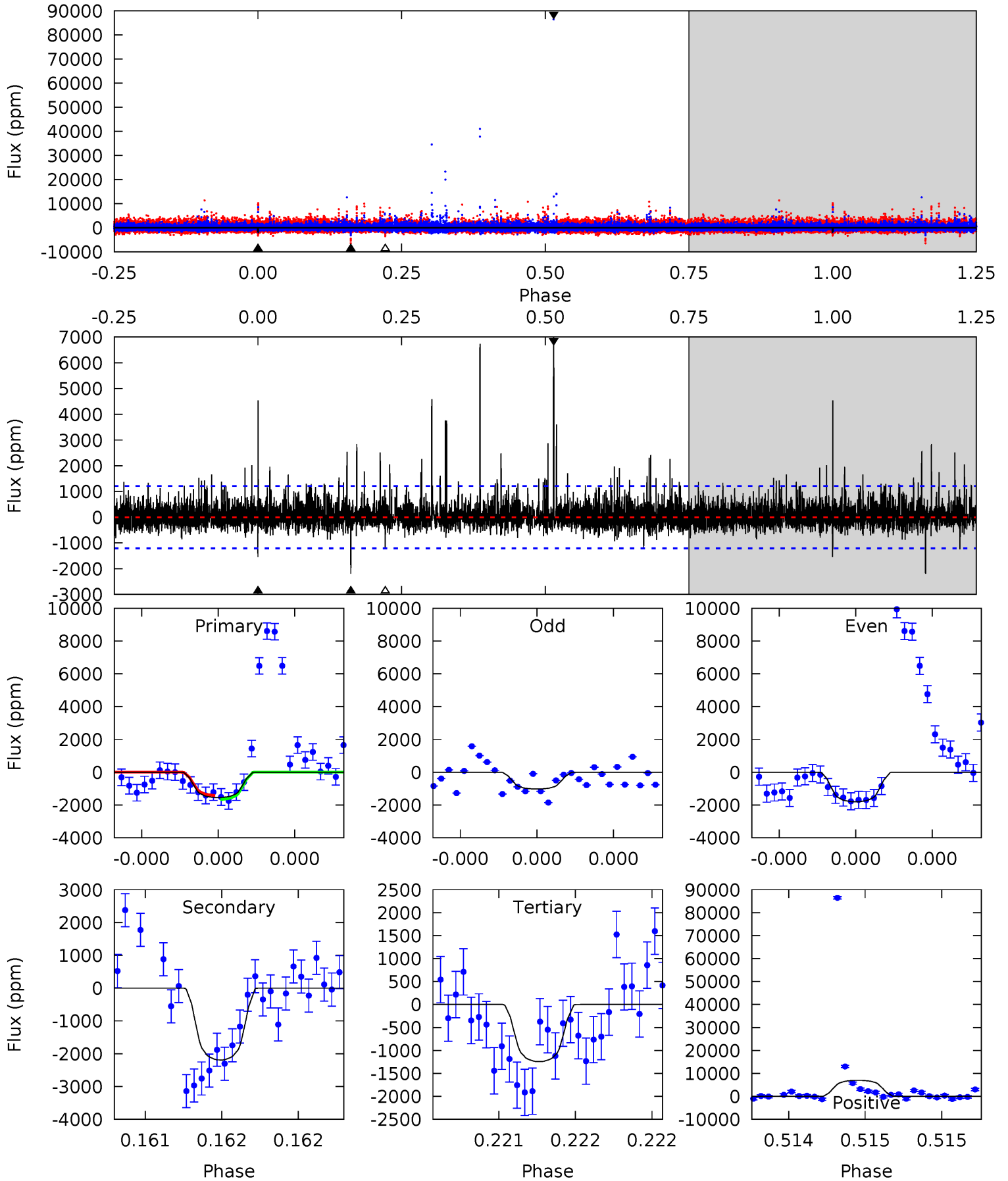
TCE 009017693-01 P=471.545264 Days $T_0=578.985600$ (BKJD)



DV Model-Shift Uniqueness Test

009017693-01, P = 471.547104 Days, E = 107.429875 Days

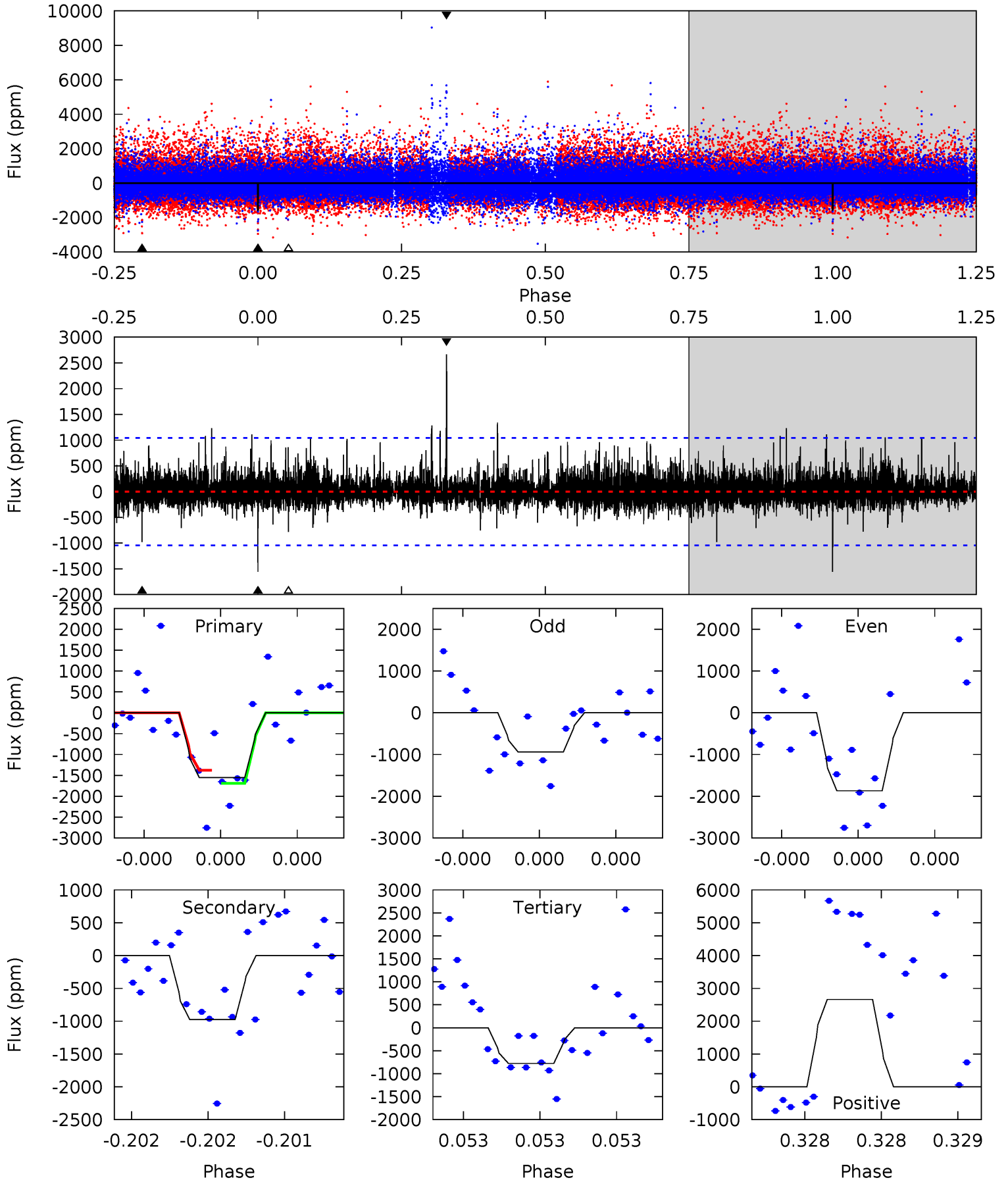
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.15	10.1	5.75	32.3	5.60	3.52	1.97	1.40	-25.1	4.38	-22.1	0.96	1.49	0.76	0.58



Alt Model-Shift Uniqueness Test

009017693-01, P = 471.545264 Days, E = 107.440336 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.43	5.30	4.22	14.4	5.66	3.61	1.11	4.22	-6.00	1.08	-9.13	2.18	1.19	0.63	0.85



Stellar Parameters For KIC 009017693

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3323^{+45}_{-35}	$4.995^{+0.040}_{-0.040}$	$0.000^{+0.100}_{-0.100}$	$0.258^{+0.037}_{-0.028}$	$0.240^{+0.048}_{-0.028}$	$19.670^{+4.801}_{-3.858}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+14%/-11%	+20%/-12%	+24%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 009017693-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2192 ± 216	$1.48^{+0.34}_{-0.36}$	121^{+3}_{-3}	3220^{+300}_{-191}	$304484^{+232254}_{-106271}$
Alt.	-977 ± 184	$1.21^{+0.36}_{-0.39}$	121^{+3}_{-3}	3033^{+374}_{-238}	$199761^{+233113}_{-88603}$

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

DV Centroid Data

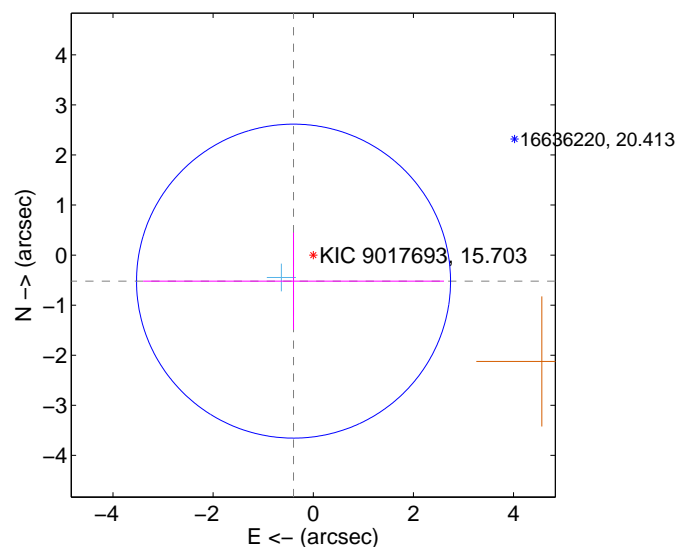
Supplemental centroid analysis for 009017693-01. Kepler magnitude: 15.70. Transit SNR 7.24

There are 1 quarters with good PRF difference image offsets

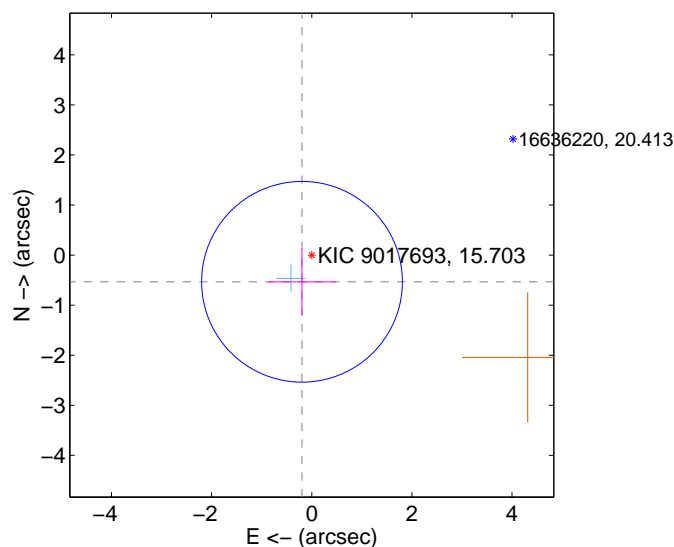
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.653 ± 1.045	0.62	0.394 ± 3.005	-0.520 ± 0.970
PRF-fit source offset from KIC position	0.568 ± 0.668	0.85	0.195 ± 0.674	-0.533 ± 0.667
photometric centroid source offset	0.93 ± 1.03	0.90	-0.78 ± 1.06	0.52 ± 0.97

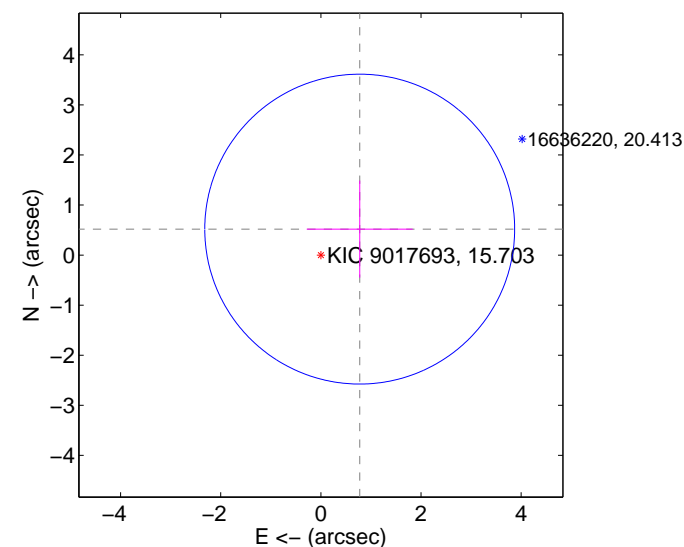
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

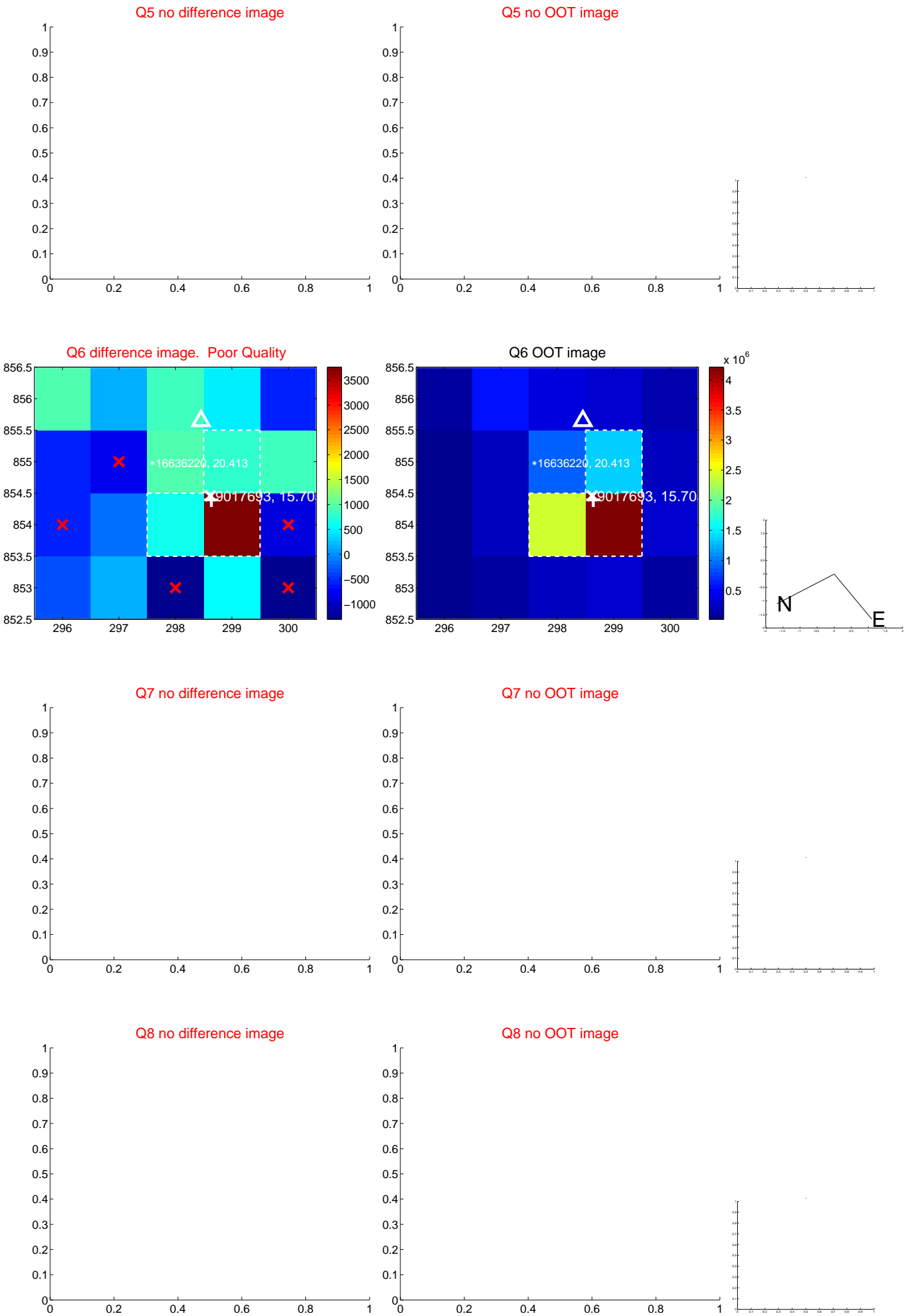


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

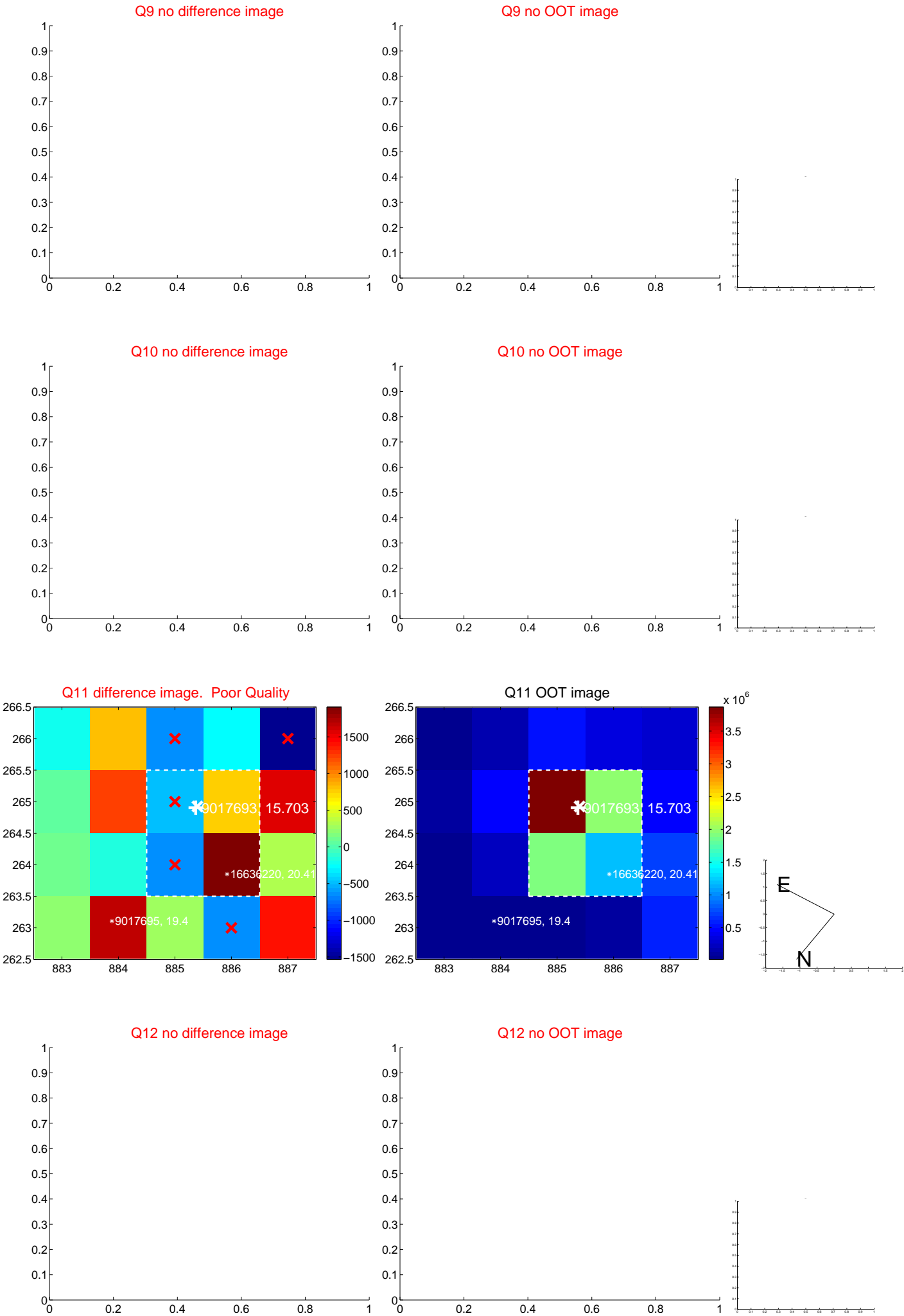
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



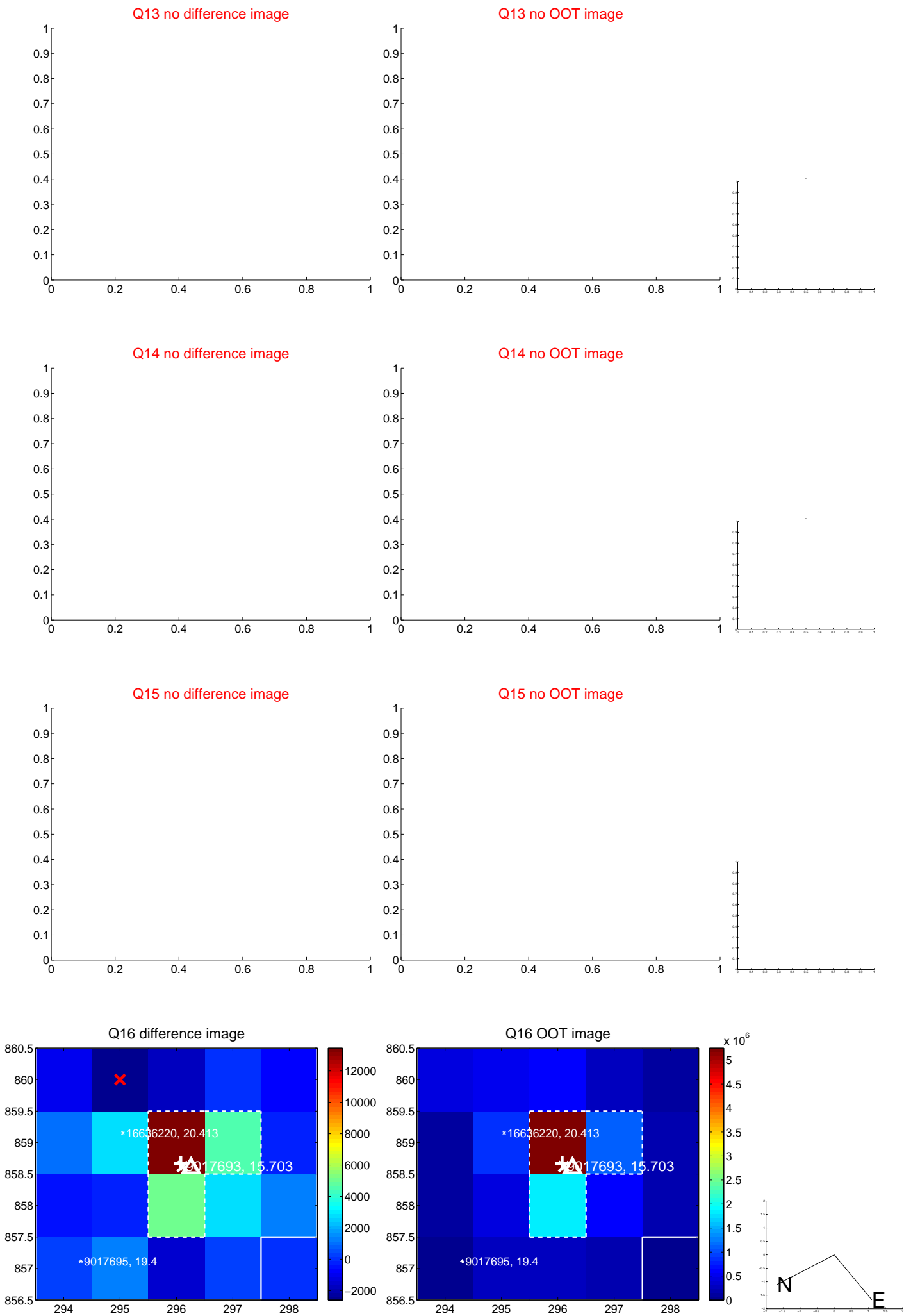
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



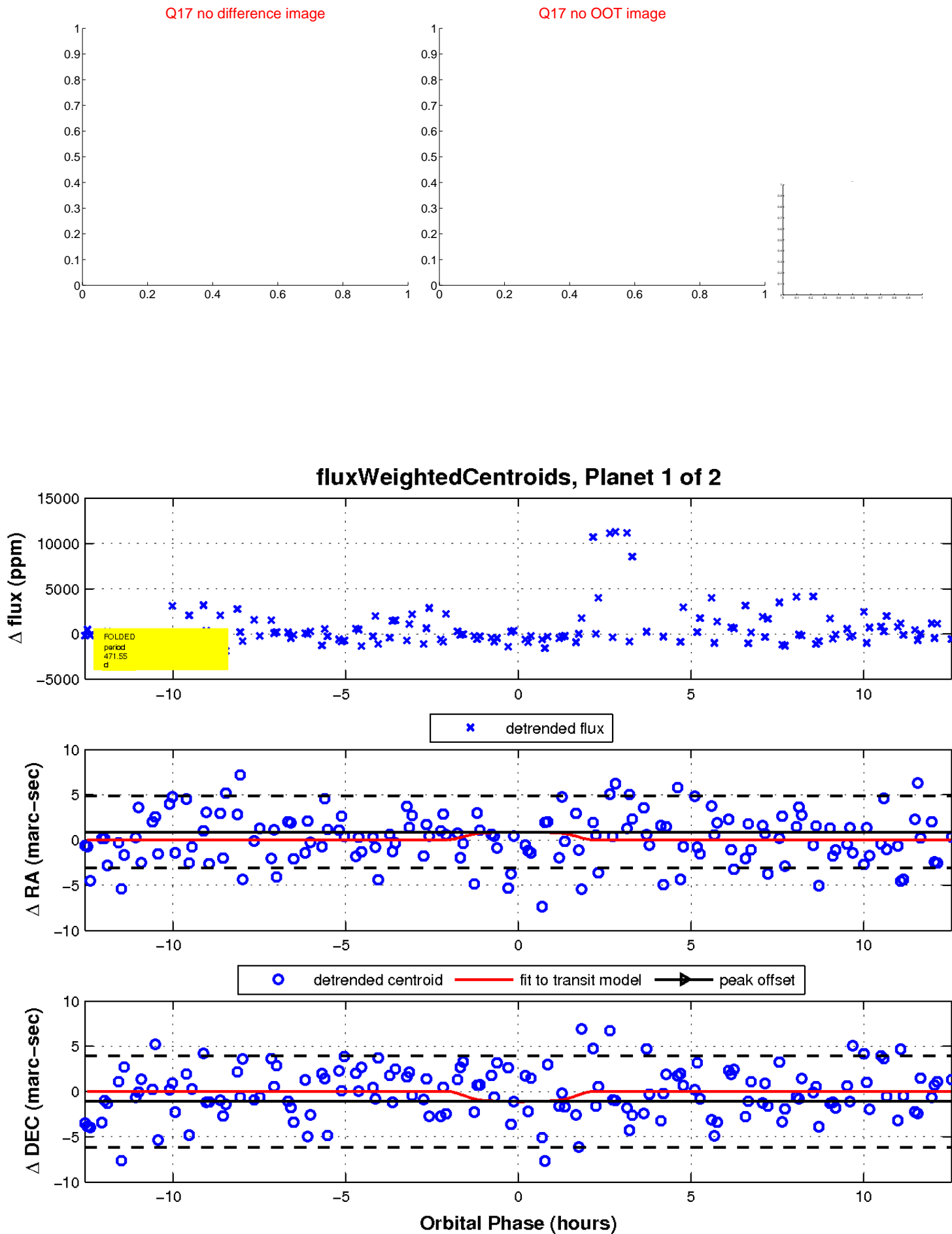
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

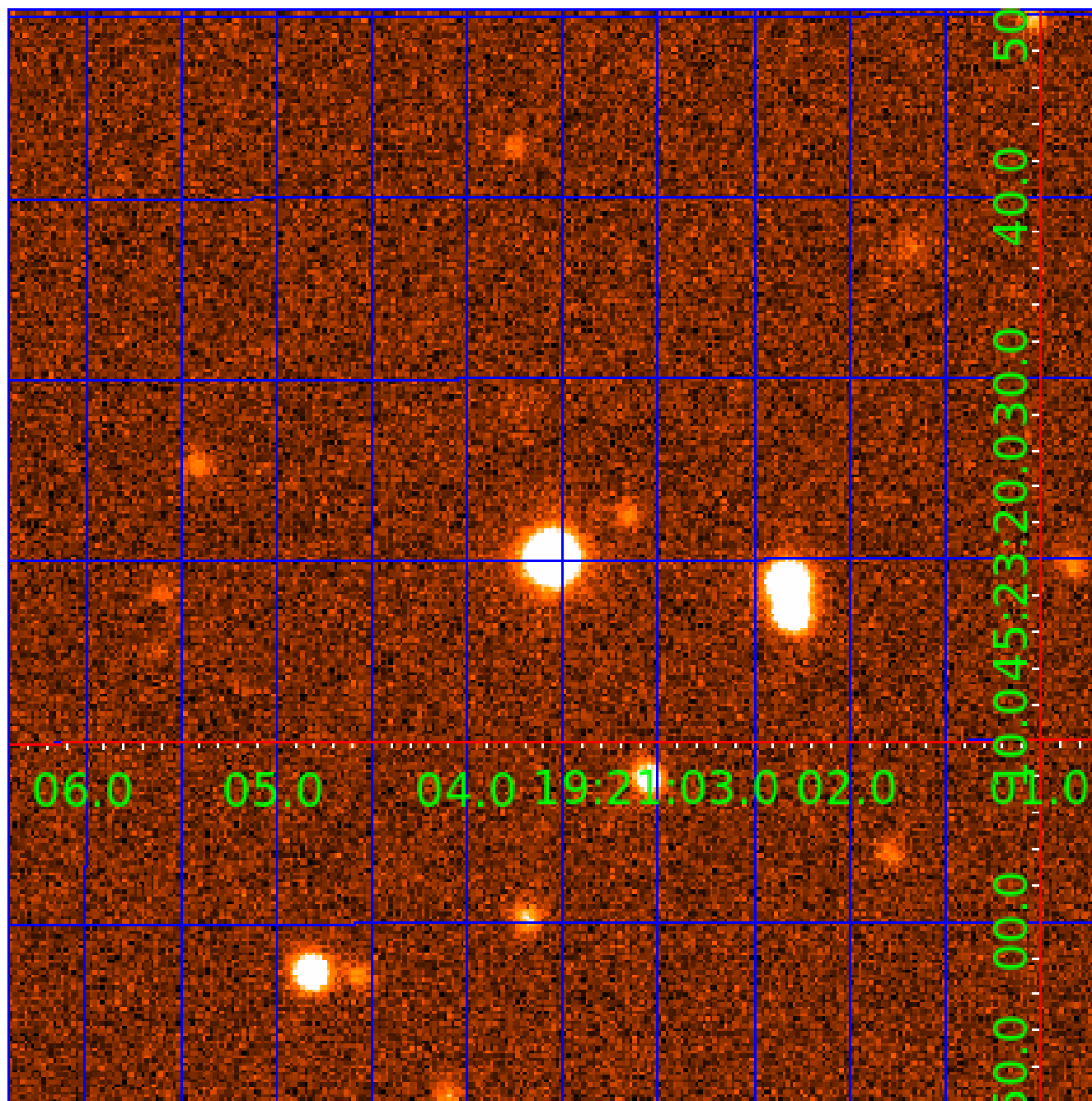


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009017693

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})
009017693-01	OBS	No	471.547104	578.976979	2219.5	4.182	15.2	7.2	0.26	3323	1.44	0.01
009017693-02	OBS	No	476.522678	423.830955	2141.3	9.049	11.3	7.7	0.26	3323	1.18	0.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009017693-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009017693-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_MEAS

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

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

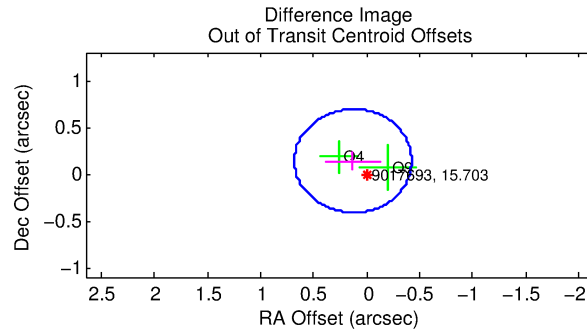
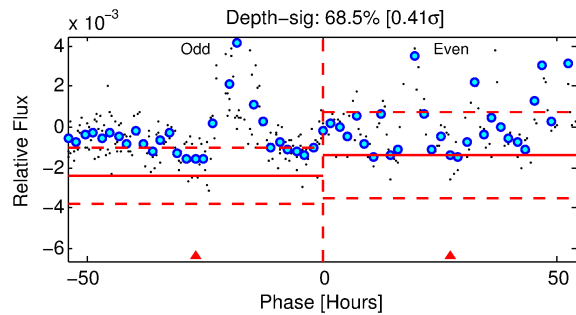
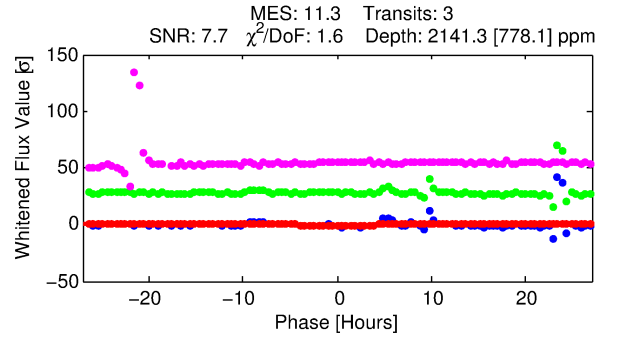
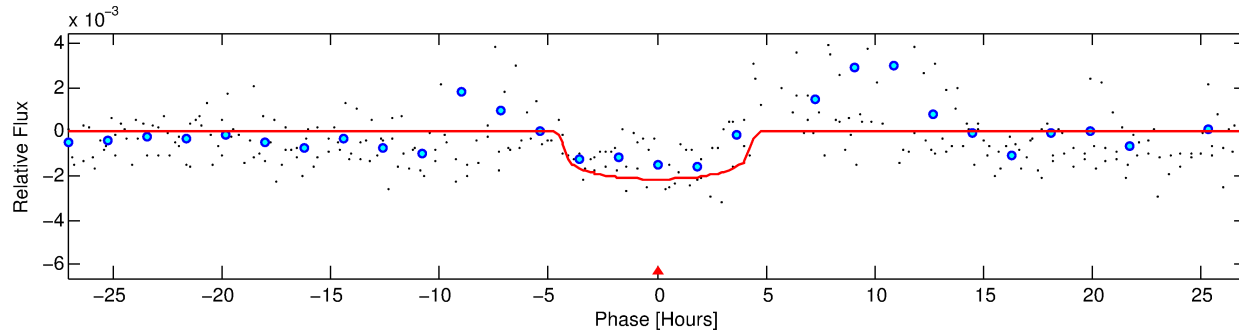
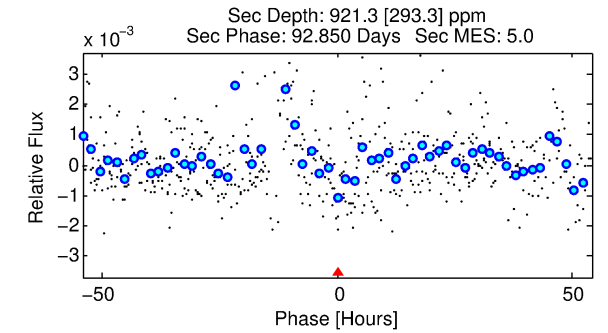
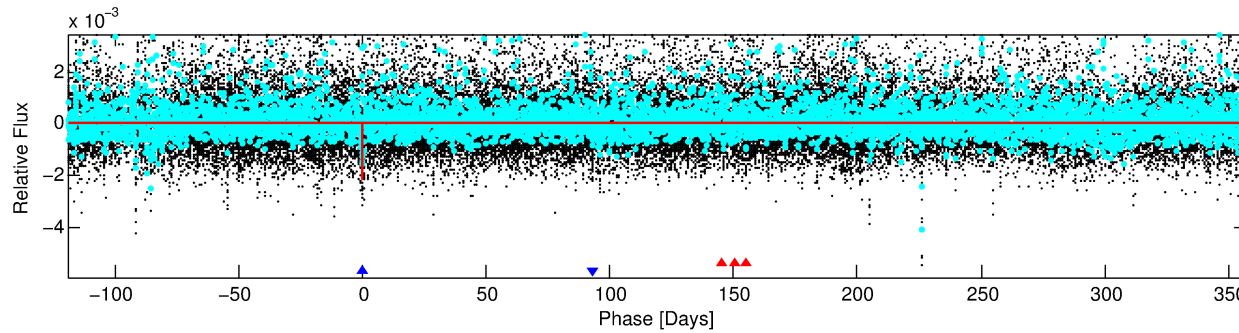
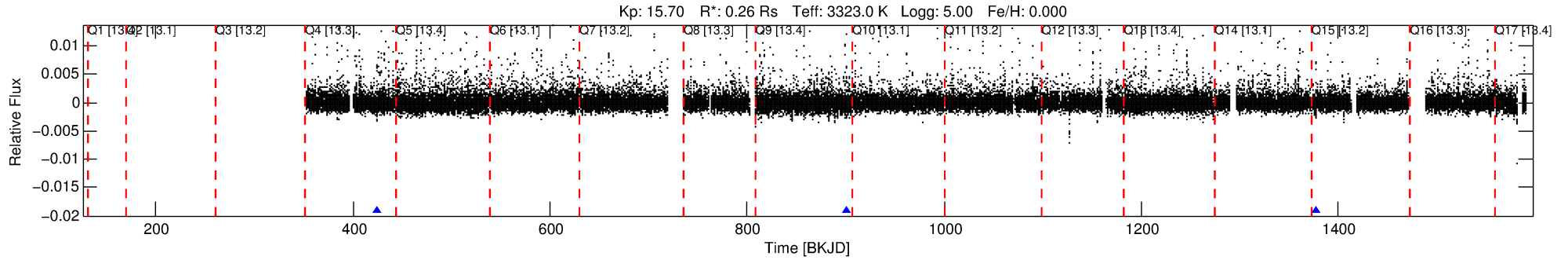
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009017693-02

No Significant Match Found

DV One-Page Summary

KIC: 9017693 Candidate: 2 of 2 Period: 476.523 d



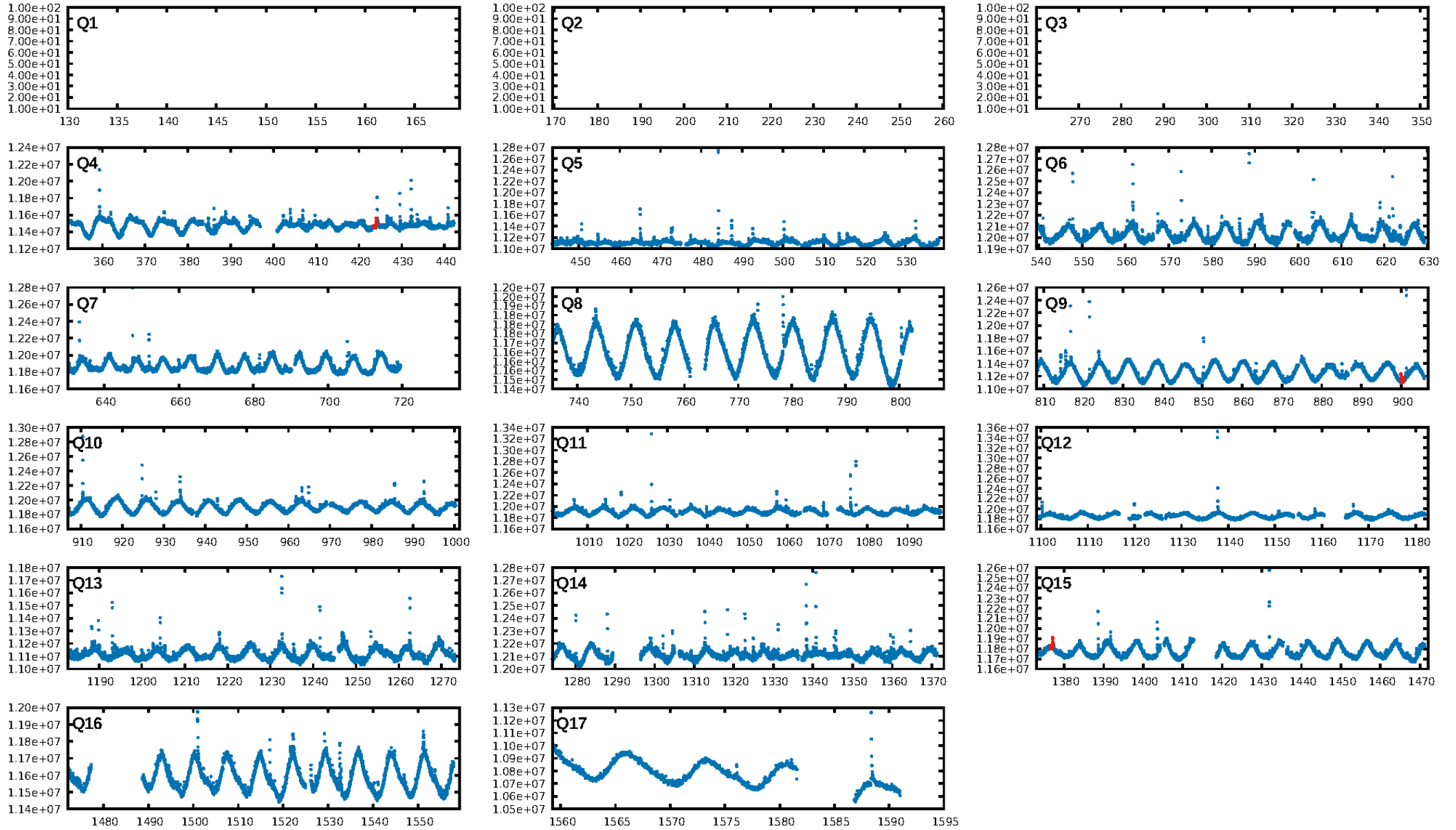
DV Fit Results:

Period = 476.52268 [0.01950] d
Epoch = 423.8310 [0.0260] BKJD
Rp/R* = 0.0419 [0.0544]
a/R* = 415.90 [2270.35]
b = 0.13 [41.80]
Seff = 0.01 [0.00]
Teq = 86 [3] K
Rp = 1.18 [1.54] Re
a = 0.7422 [0.0745] AU
Ag = 200658.29 [525769.77] [0.38σ]
Teff = 2828 [1851] K [1.48σ]

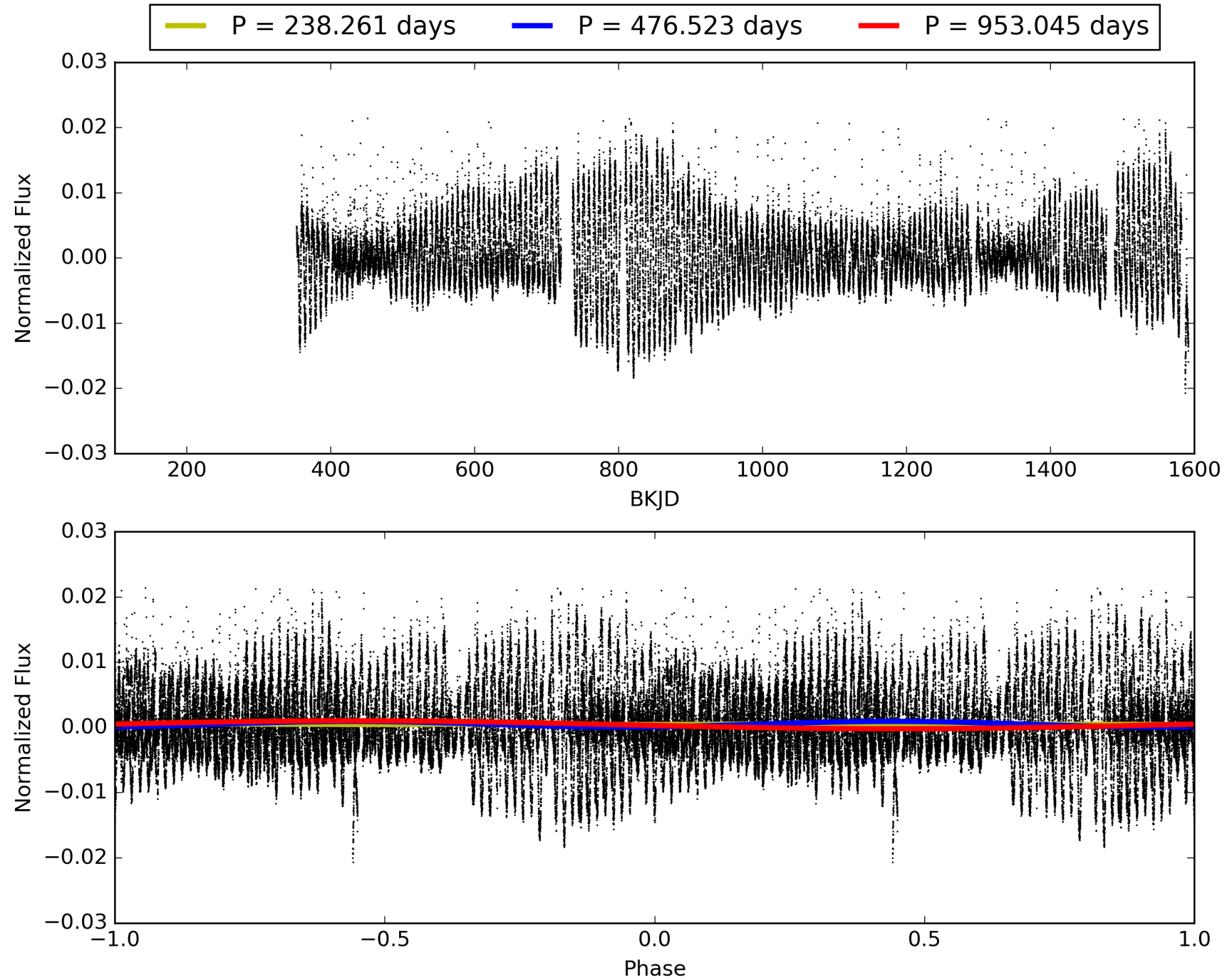
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.98σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 46.2%
ModelChiSquareGof-sig: 95.4%
Bootstrap-pfa: 2.23e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6086
Centroid-sig: 3.9%
Centroid-so: 1.055 arcsec [1.46σ]
OotOffset-rm: 0.190 arcsec [1.03σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 0.062 arcsec [0.37σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009017693-02, PDC Light Curves

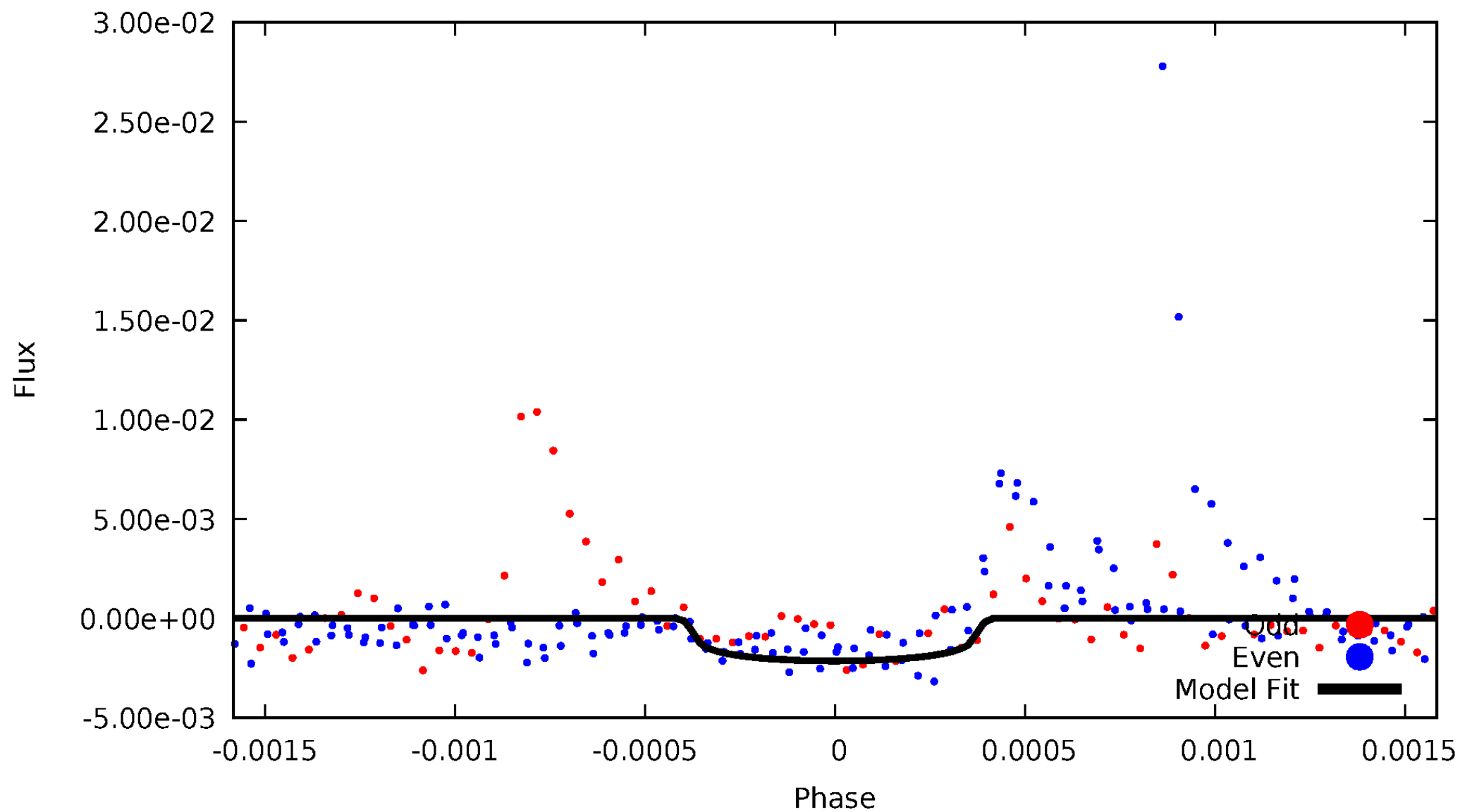


TCE 009017693-02



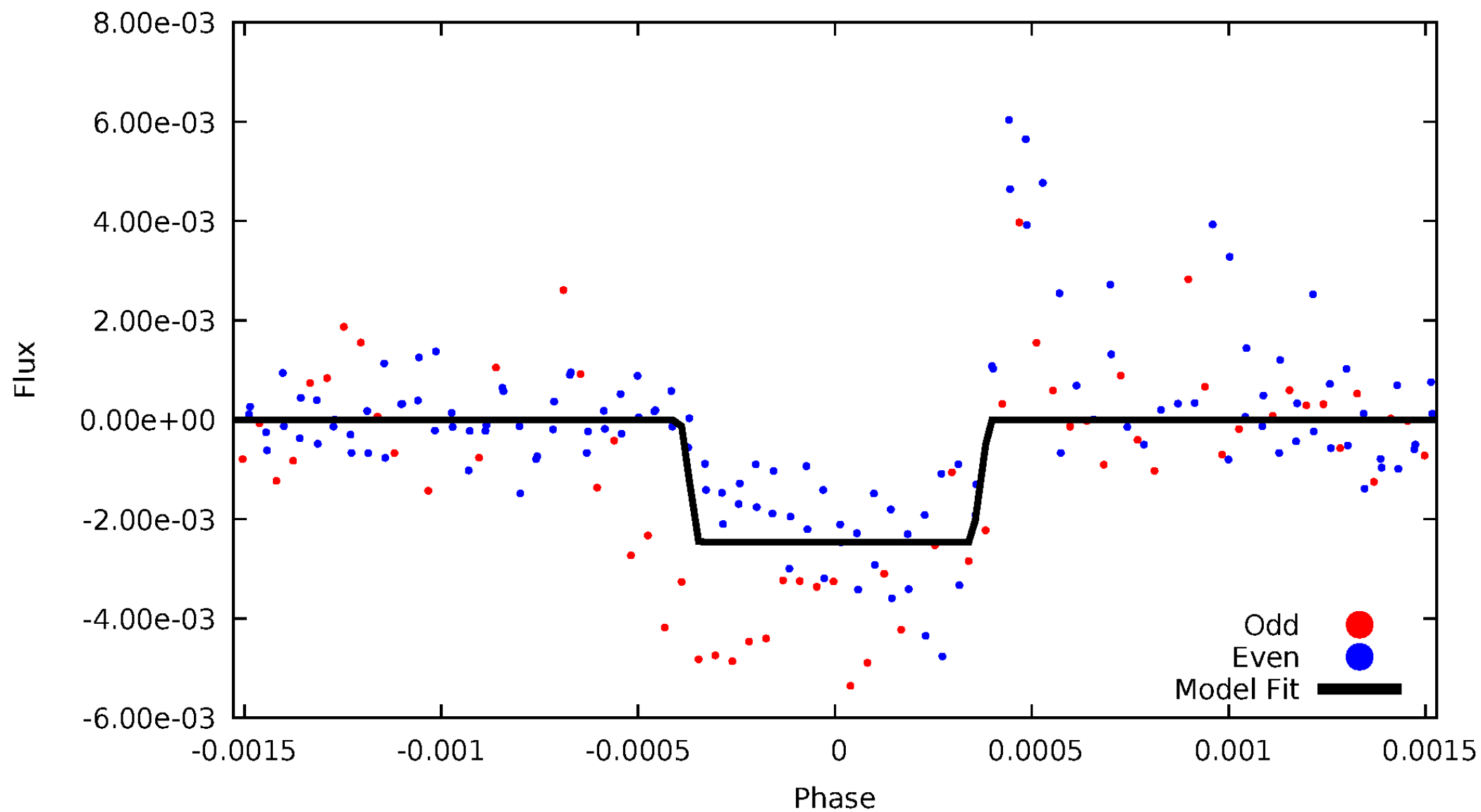
DV Odd/Even

TCE 009017693-02



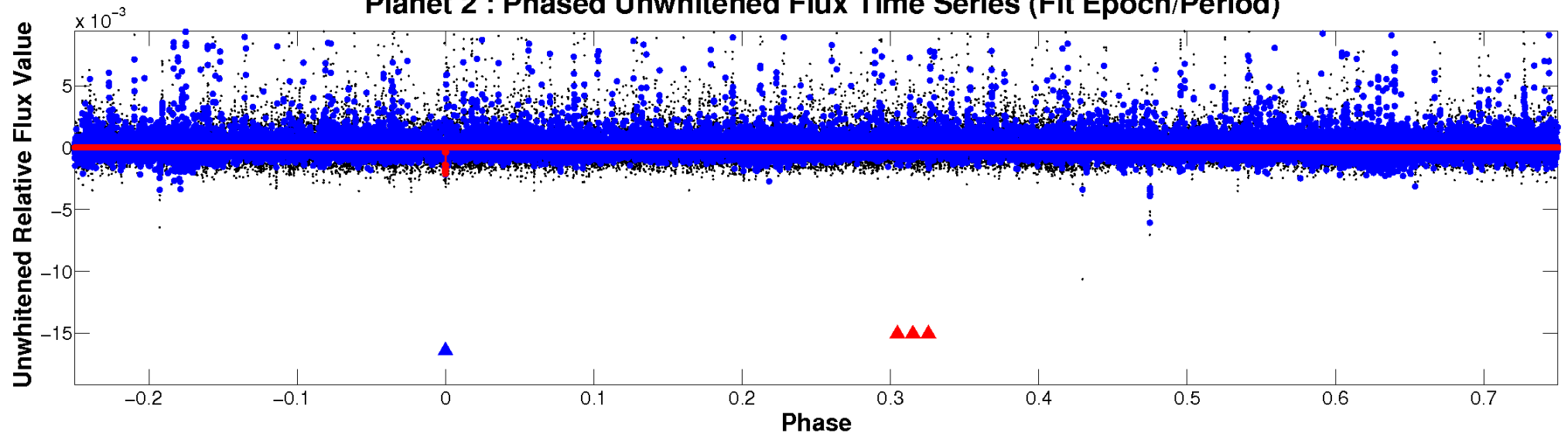
ALT Odd/Even

TCE 009017693-02

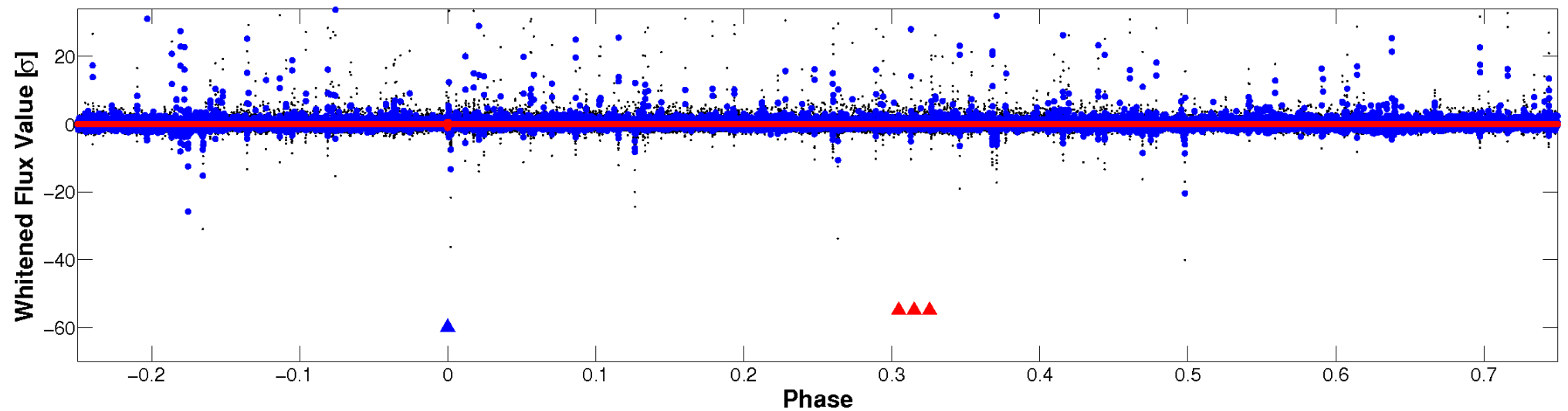


Non-Whitened Vs. Whitened Light Curve

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

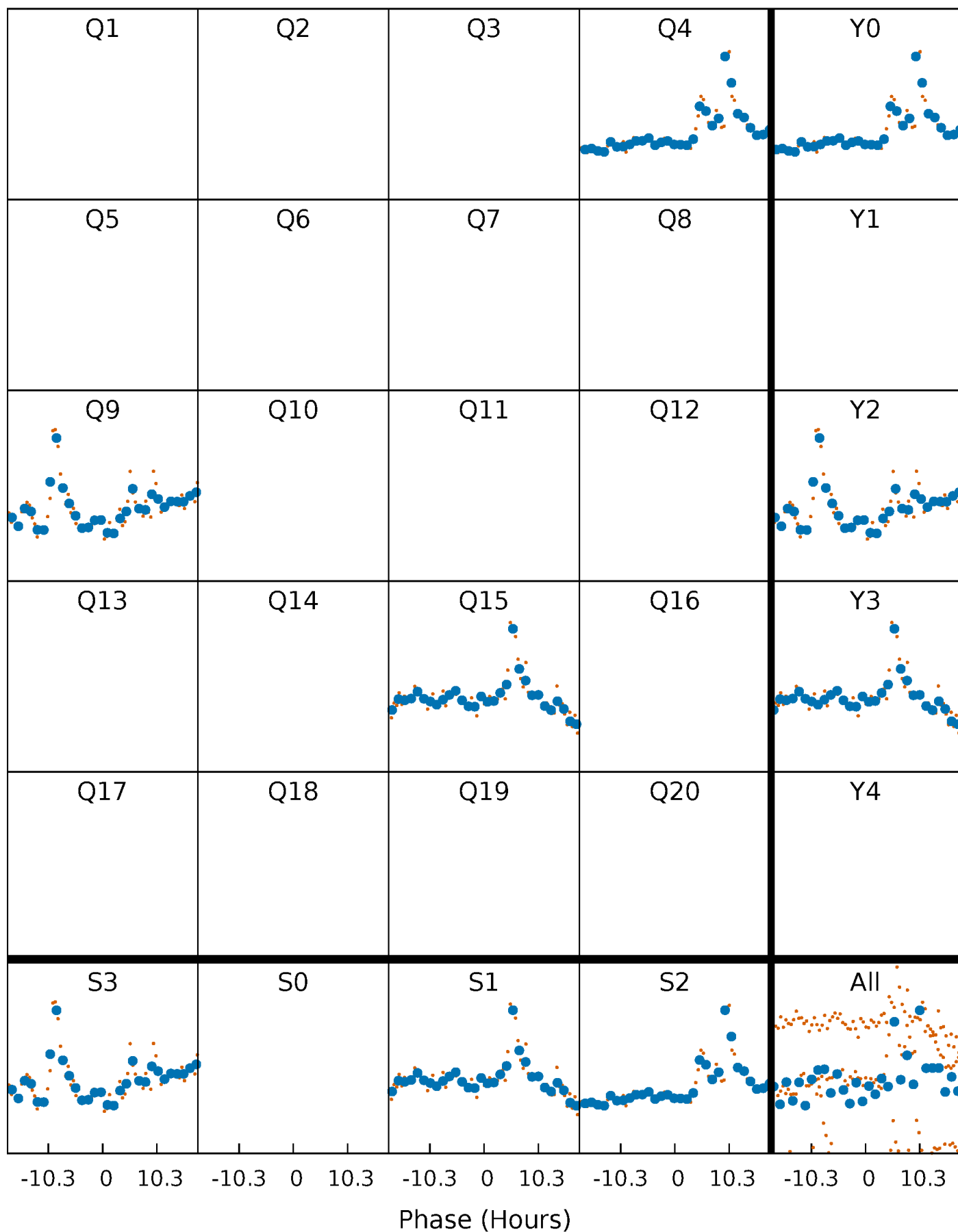


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



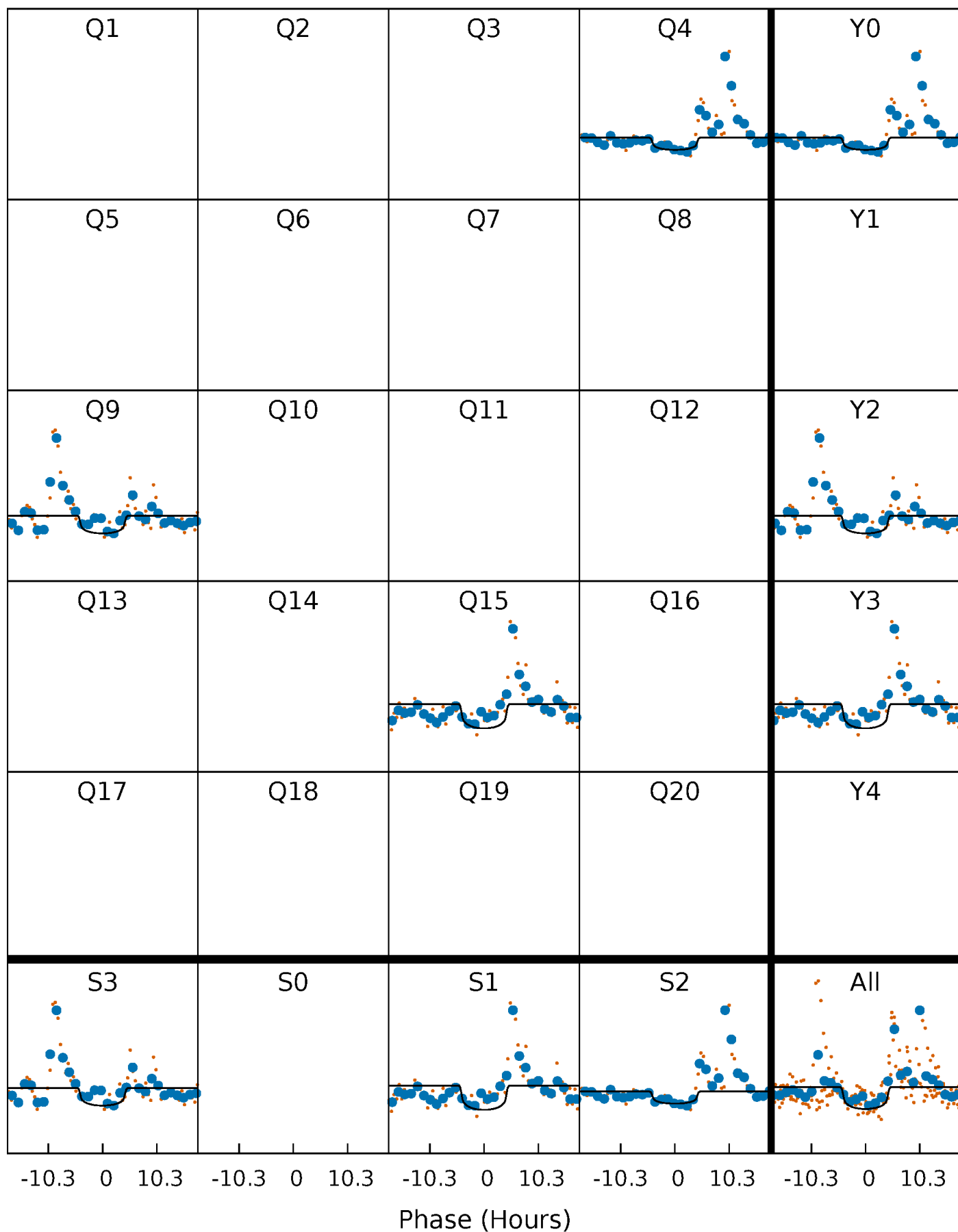
PDC Quarter-Phased Transit Curves

TCE 009017693-02 $P=476.522678$ Days $T_0=423.830955$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 009017693-02 $P=476.522678$ Days $T_0=423.830955$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

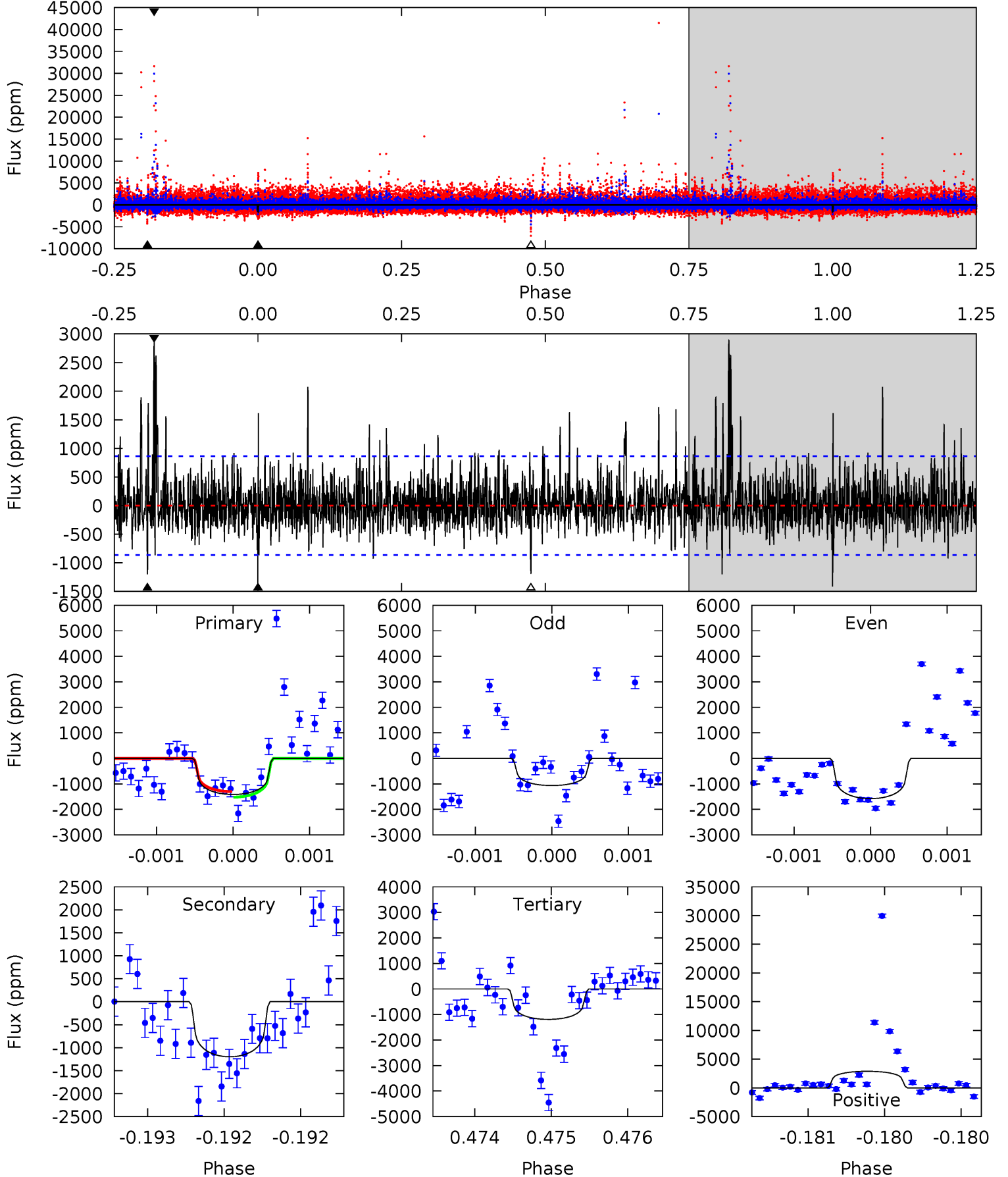
TCE 009017693-02 P=476.524242 Days $T_0=423.825250$ (BKJD)



DV Model-Shift Uniqueness Test

009017693-02, P = 476.522678 Days, E = 423.830955 Days

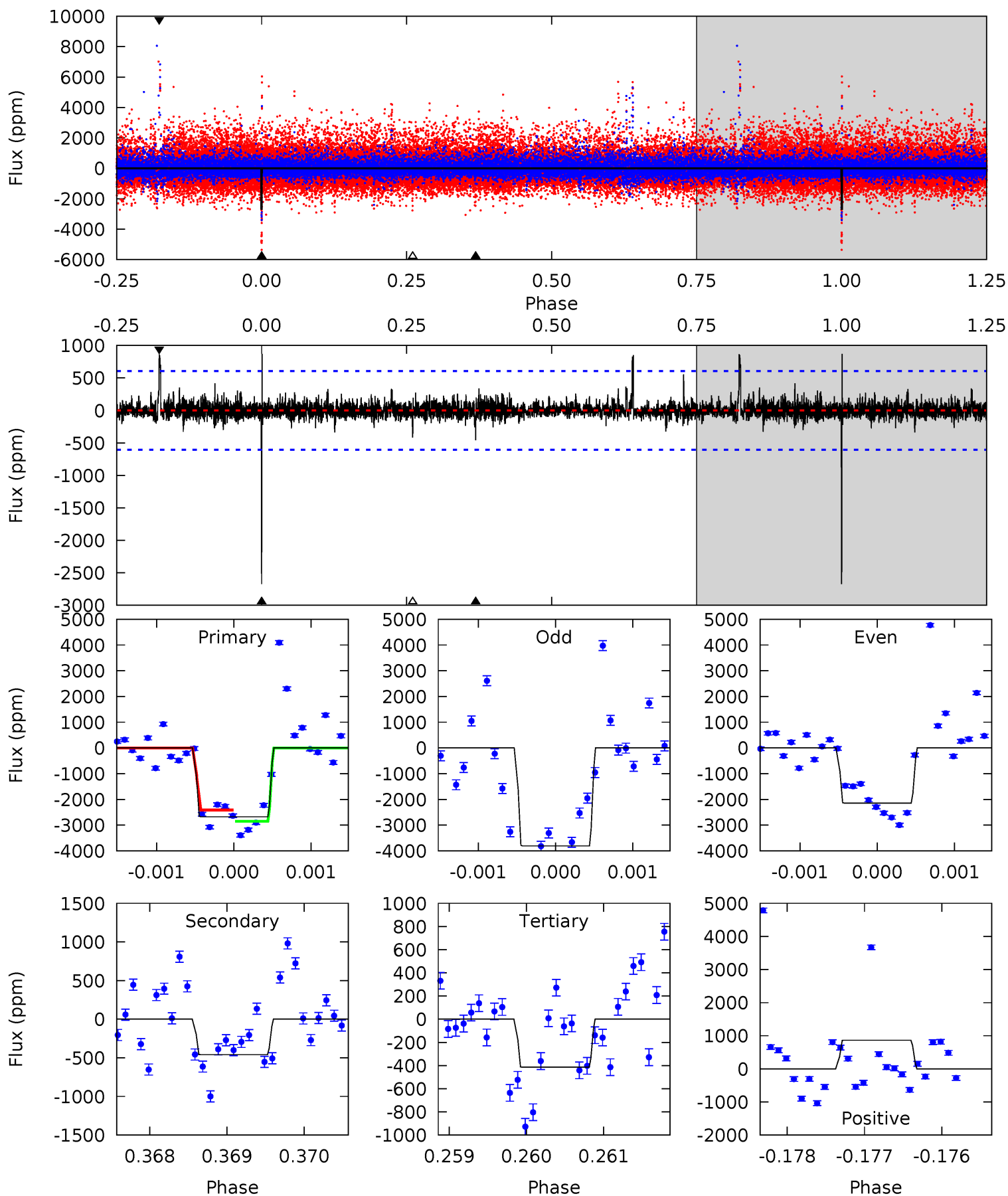
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.01	7.63	7.59	18.4	5.49	3.36	2.17	1.41	-9.40	0.04	-10.8	0.86	1.21	0.67	0.68



Alt Model-Shift Uniqueness Test

009017693-02, P = 476.524242 Days, E = 423.825250 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.3	4.17	3.76	7.85	5.50	3.36	0.78	20.5	16.4	0.41	-3.68	6.74	1.03	0.25	1.96



Stellar Parameters For KIC 009017693

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3323^{+45}_{-35}	$4.995^{+0.040}_{-0.040}$	$0.000^{+0.100}_{-0.100}$	$0.258^{+0.037}_{-0.028}$	$0.240^{+0.048}_{-0.028}$	$19.670^{+4.801}_{-3.858}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+14%/-11%	+20%/-12%	+24%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 009017693-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1198 ± 157	$1.71^{+1.25}_{-1.14}$	121^{+3}_{-3}	2839^{+1102}_{-379}	$126114^{+974353}_{-85410}$
Alt.	-459 ± 110	$1.67^{+1.49}_{-1.11}$	121^{+3}_{-3}	2517^{+884}_{-345}	$49389^{+372223}_{-35450}$

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

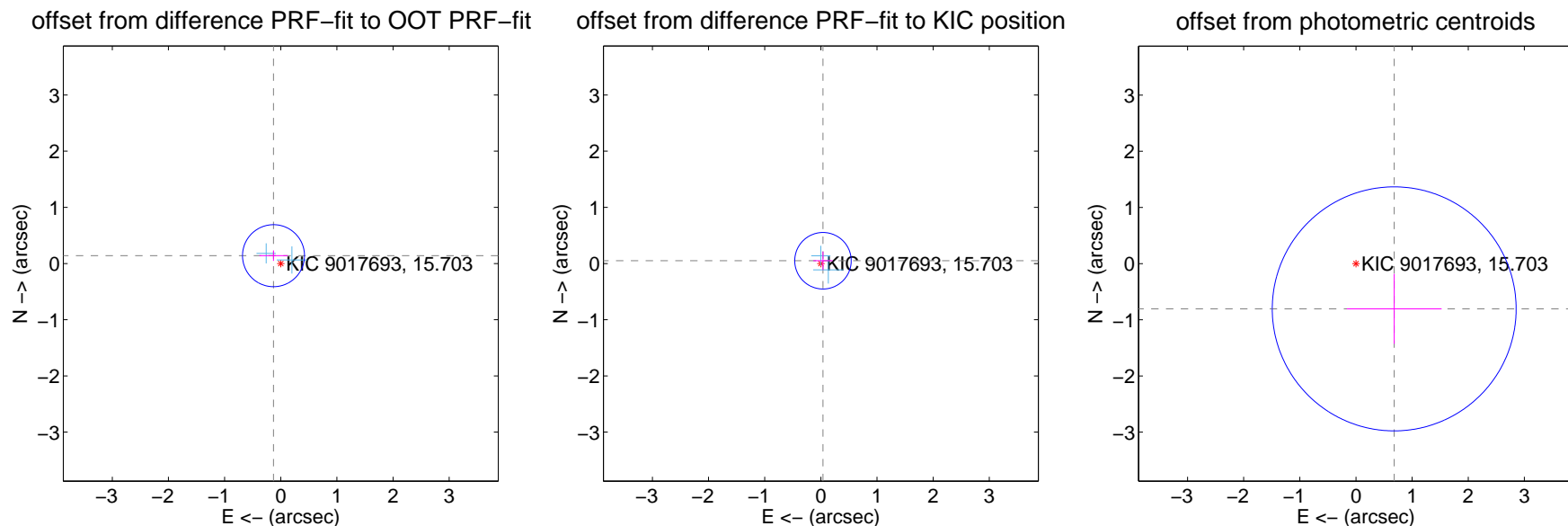
DV Centroid Data

Supplemental centroid analysis for 009017693-02. Kepler magnitude: 15.70. Transit SNR 7.72

There are 2 quarters with good PRF difference image offsets

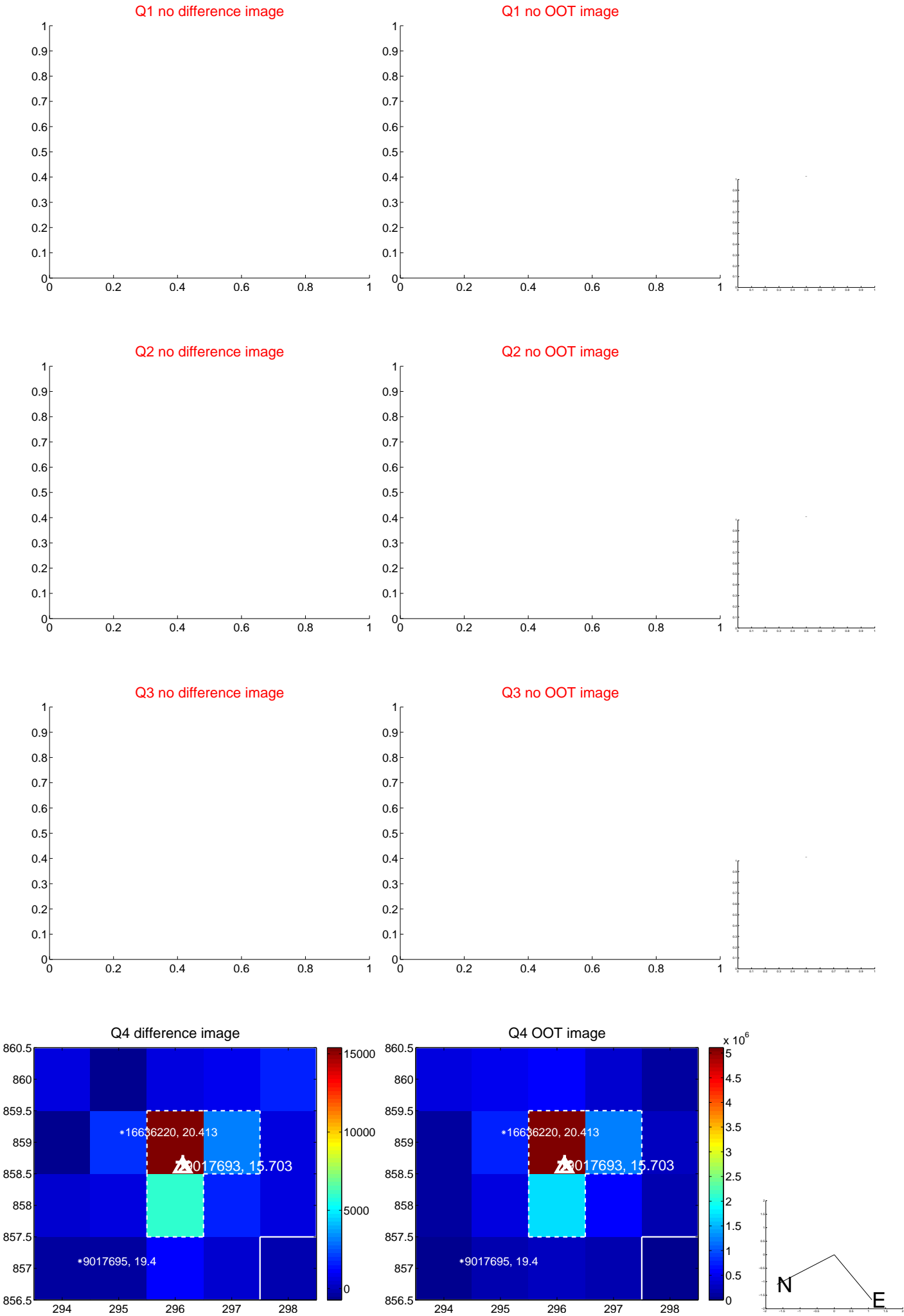
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.190 ± 0.184	1.03	0.129 ± 0.252	0.140 ± 0.094
PRF-fit source offset from KIC position	0.062 ± 0.168	0.37	-0.038 ± 0.173	0.050 ± 0.165
photometric centroid source offset	1.06 ± 0.72	1.46	-0.68 ± 0.84	-0.81 ± 0.62



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- σ uncertainty. Blue circle: three- σ . 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.

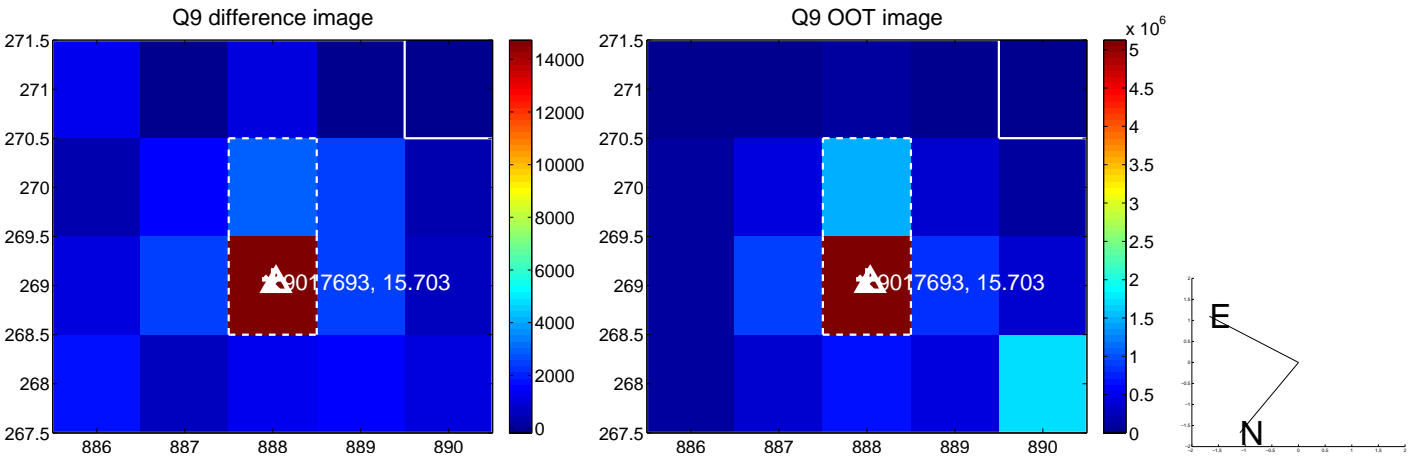
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



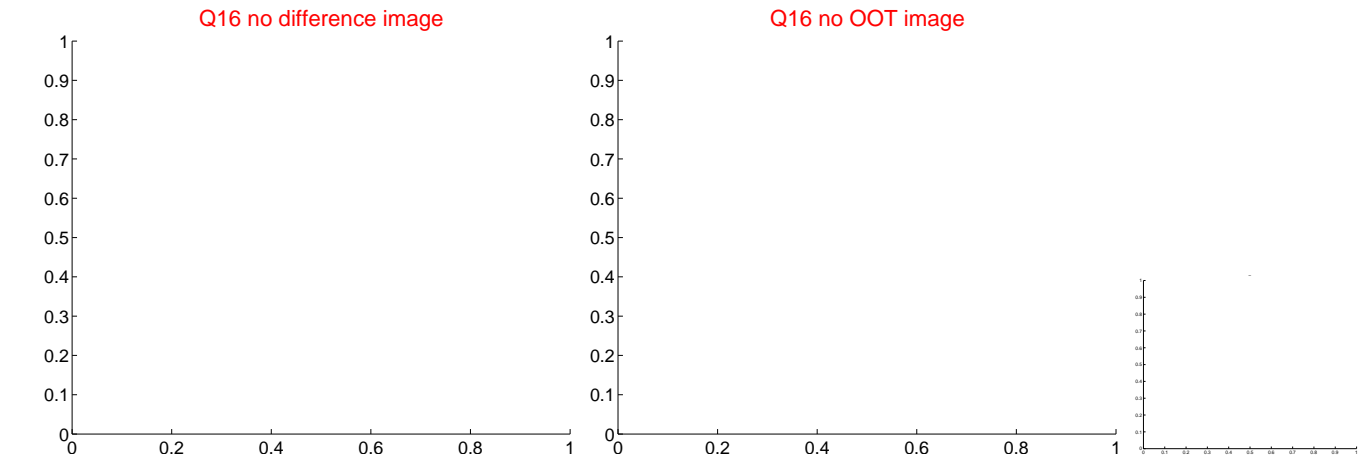
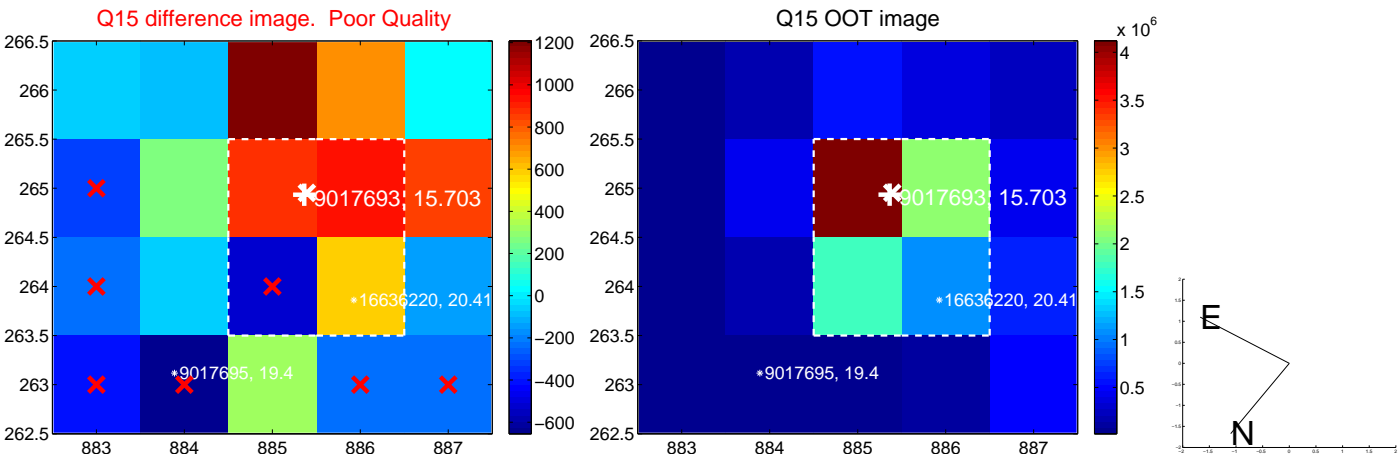
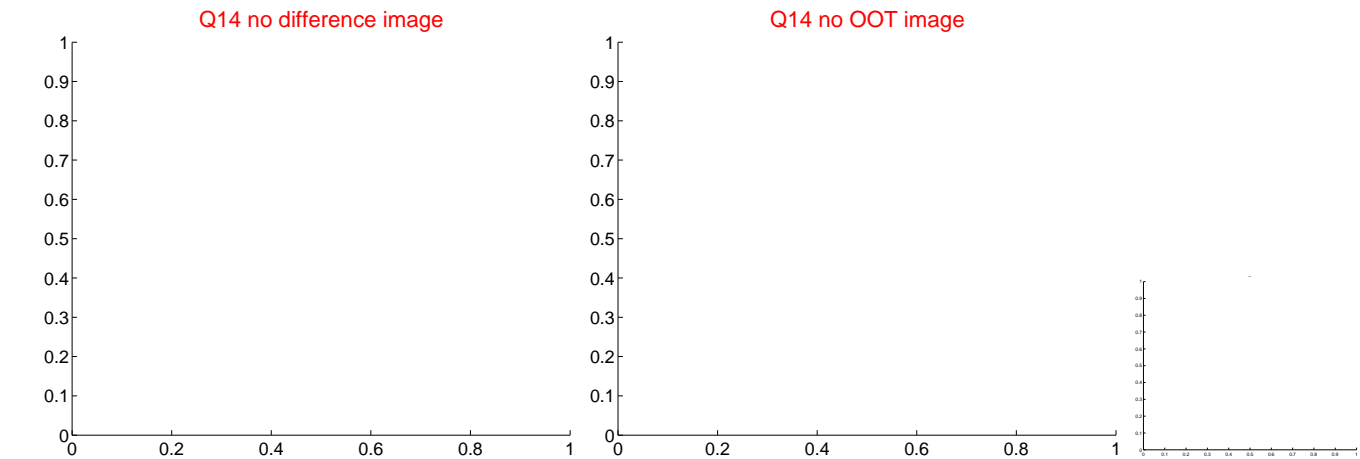
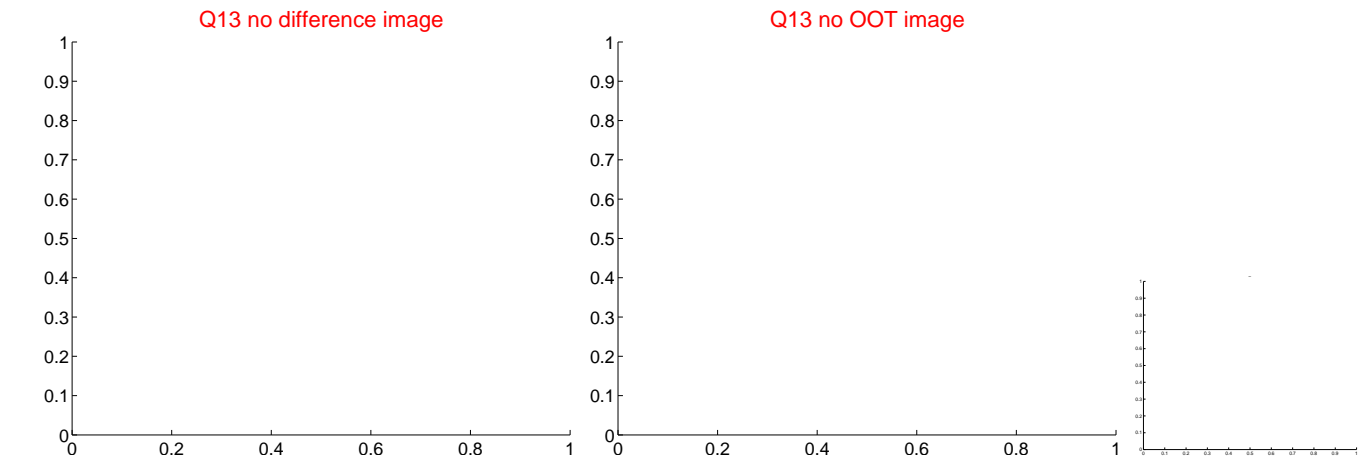
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



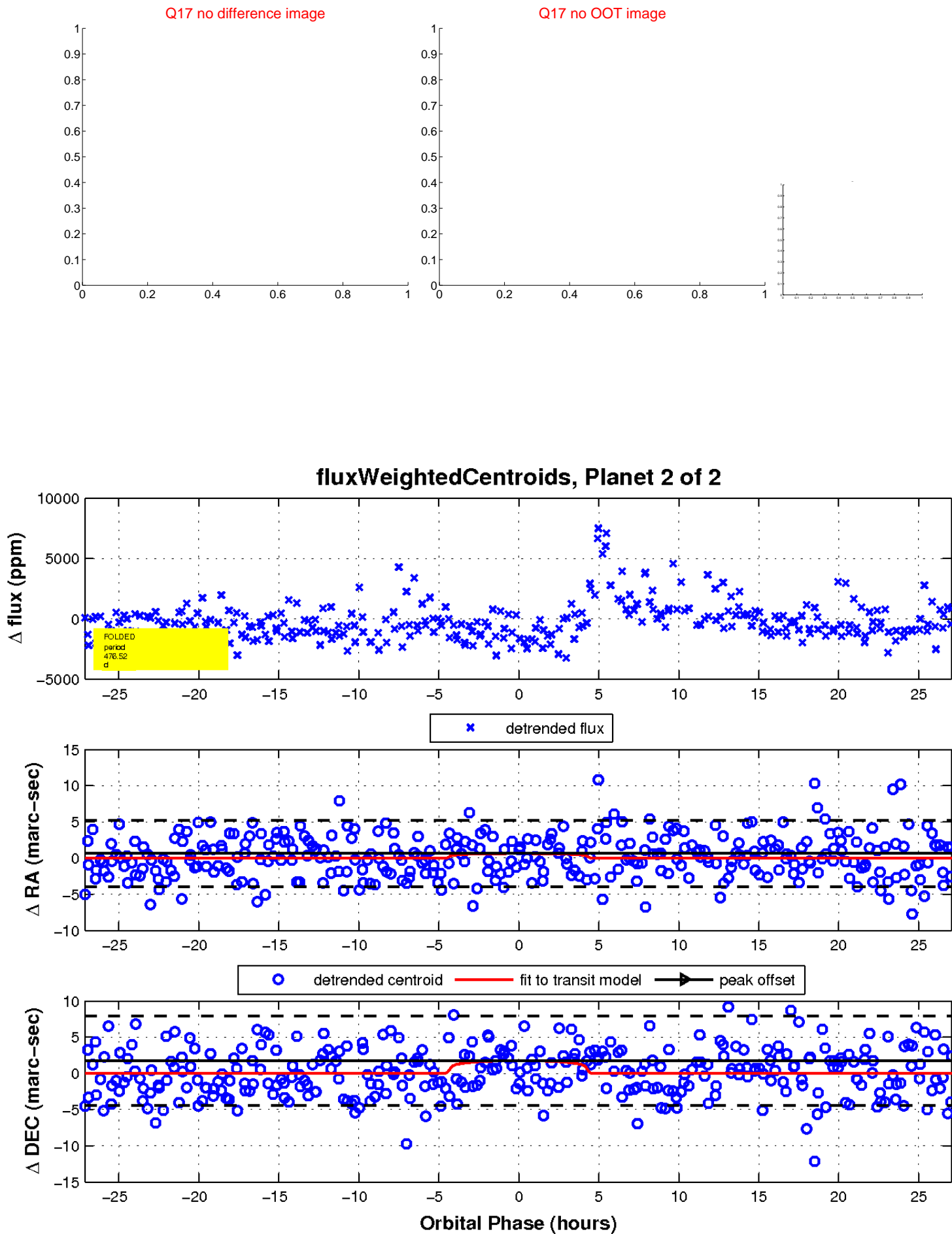
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

