

KIC 009048032

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})
009048032-01	OBS	No	16.521141	138.800595	10083.1	3.477	15.0	9.7	1.00	5780	10.28	62.02
009048032-02	OBS	No	1.638560	132.231165	7786.7	11.046	8.6	15.6	1.00	5780	16.07	1351.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009048032-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009048032-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

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.

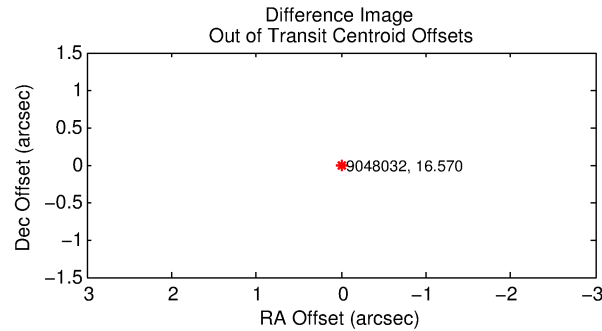
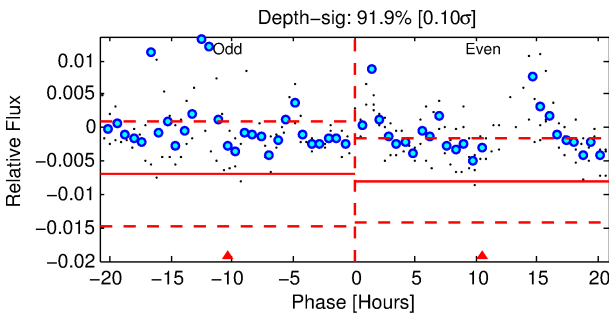
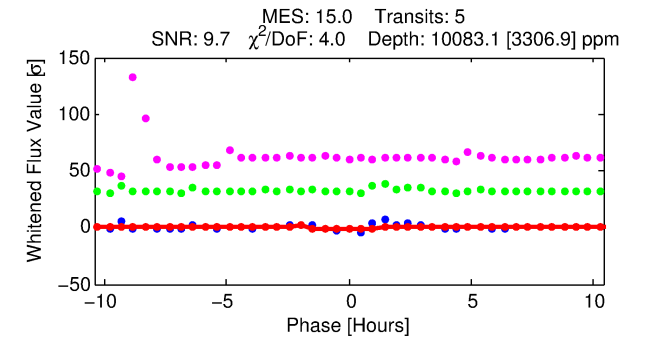
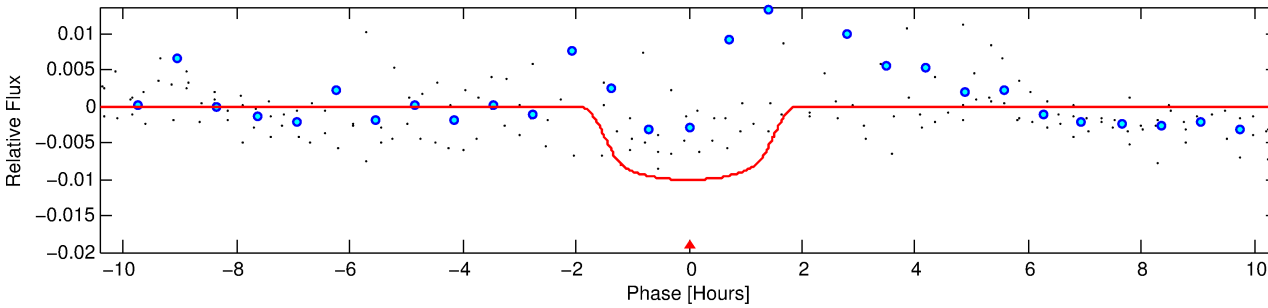
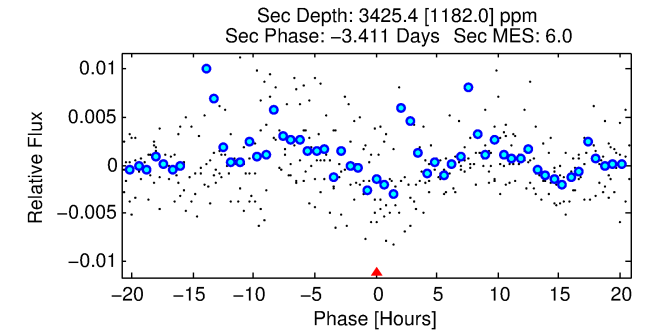
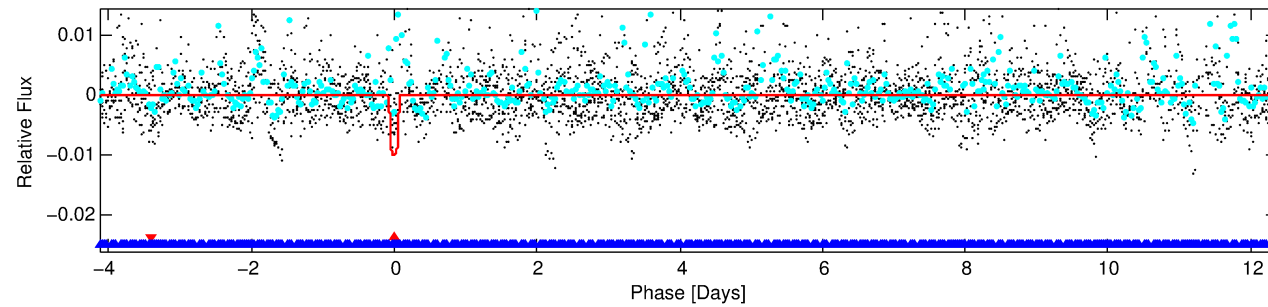
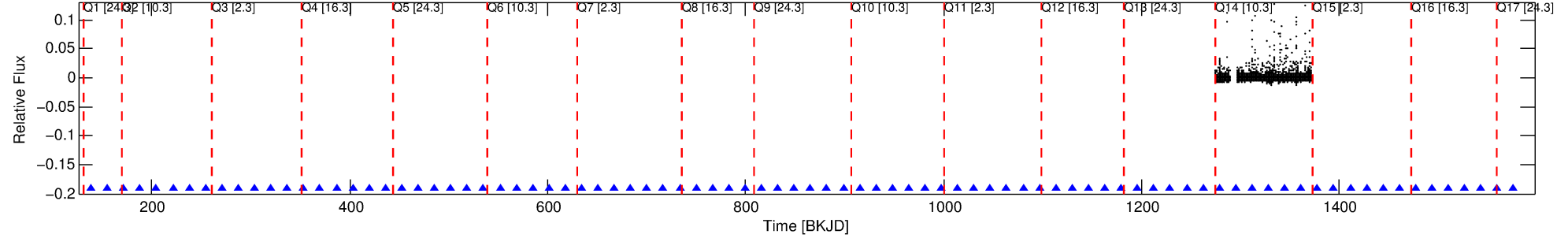
Ephemeris Match Information For 009048032-01

No Significant Match Found

DV One-Page Summary

KIC: 9048032 Candidate: 1 of 2 Period: 16.521 d

Kp: 16.57 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



DV Fit Results:

Period = 16.52114 [0.00144] d
Epoch = 138.8006 [0.0988] BKJD
Rp/R* = 0.0942 [0.0980]
a/R* = 35.33 [157.37]
b = 0.50 [6.72]
Seff = 62.02 [0.01]
Teq = 716 [0] K
Rp = 10.28 [10.70] Re
a = 0.1270 [0.0000] AU
Ag = 287.67 [607.03] [0.47σ]
Teff = 4556 [2404] K [1.60σ]

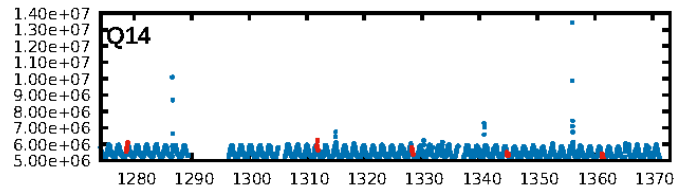
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.84σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.941
Centroid-sig: N/A
Centroid-so: 1.523 arcsec [5.30σ]
OotOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-rm: 3.856 arcsec [3.79σ]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/1]

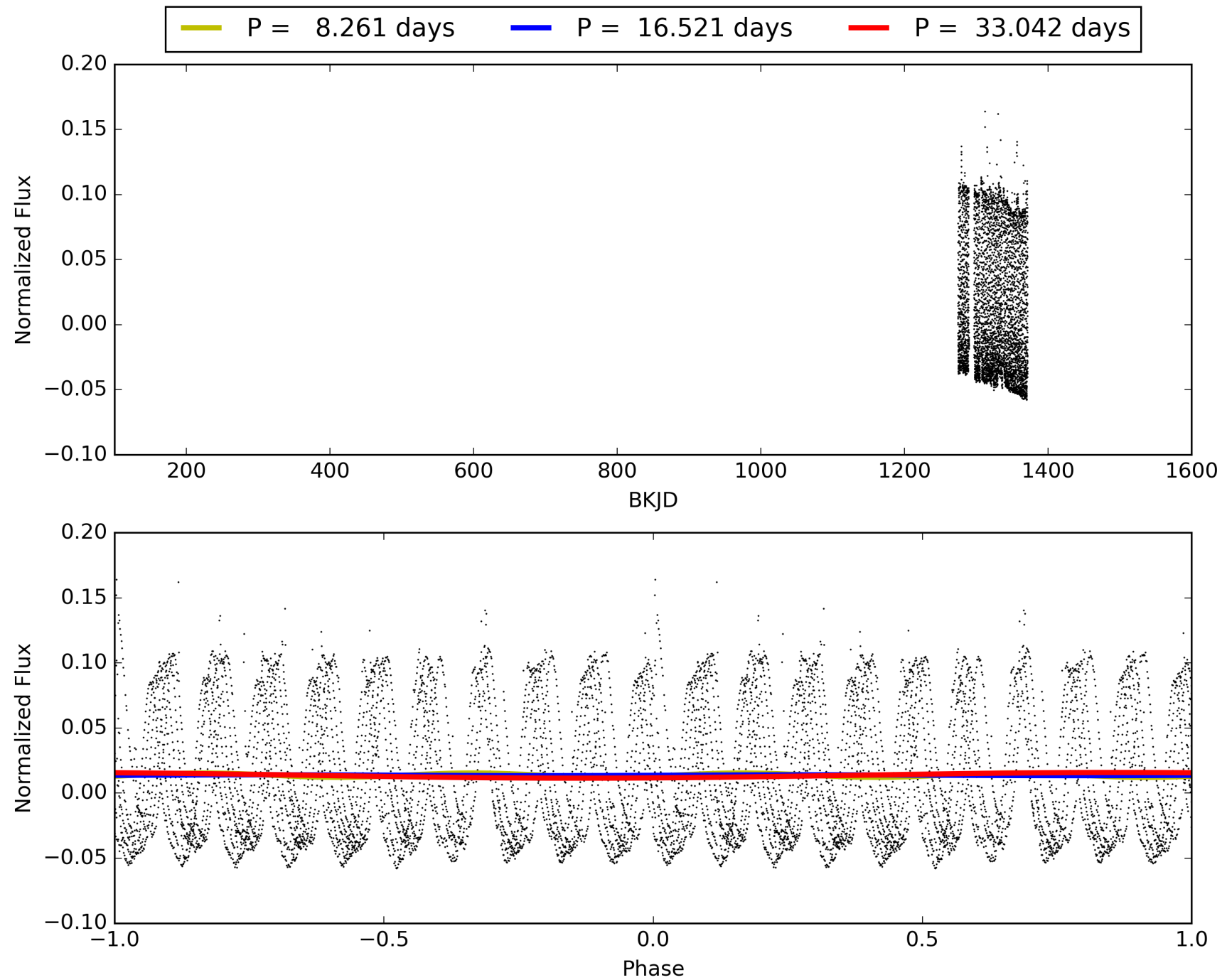
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:36:56 Z

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

TCE 009048032-01, PDC Light Curves

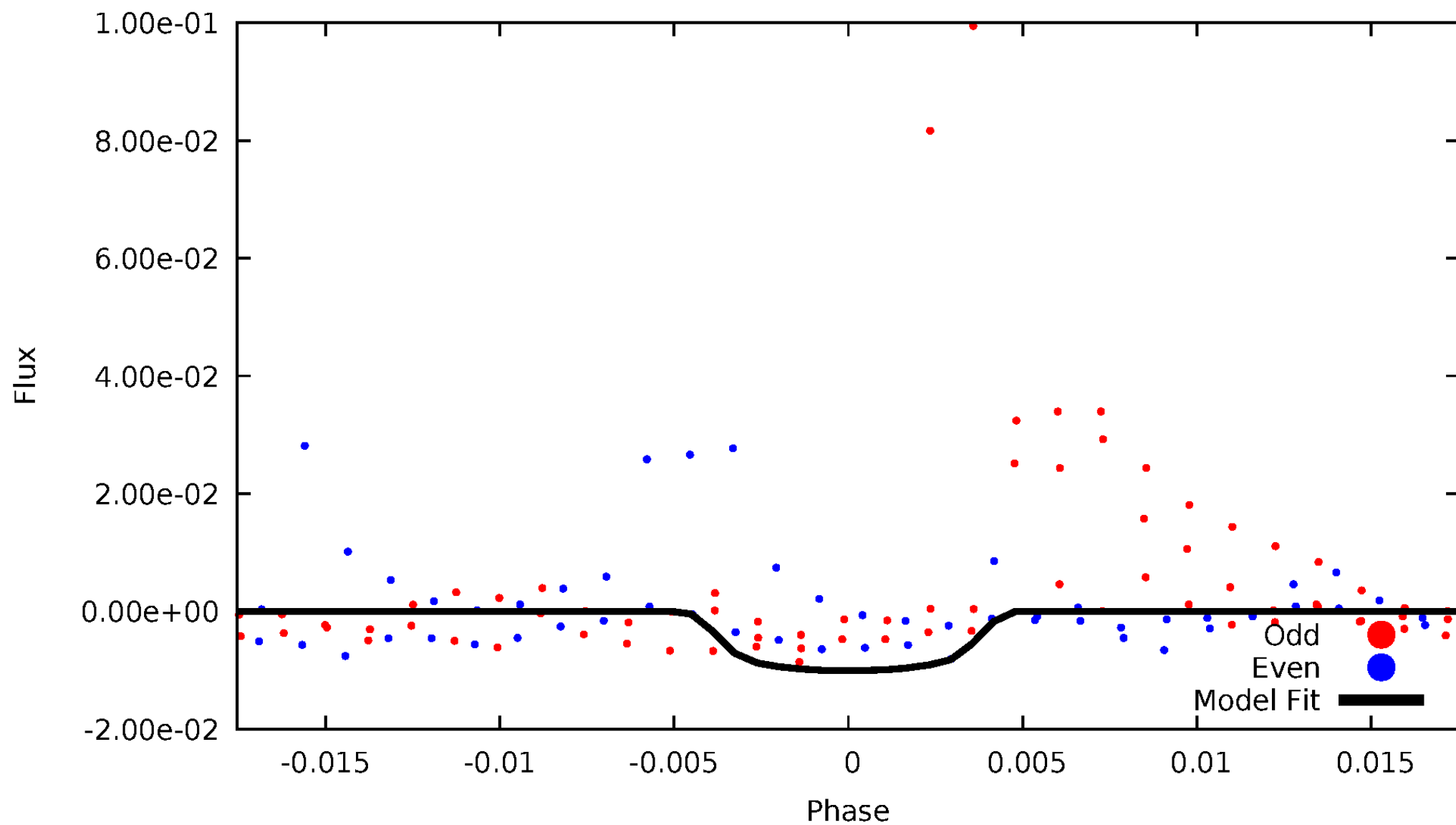


TCE 009048032-01



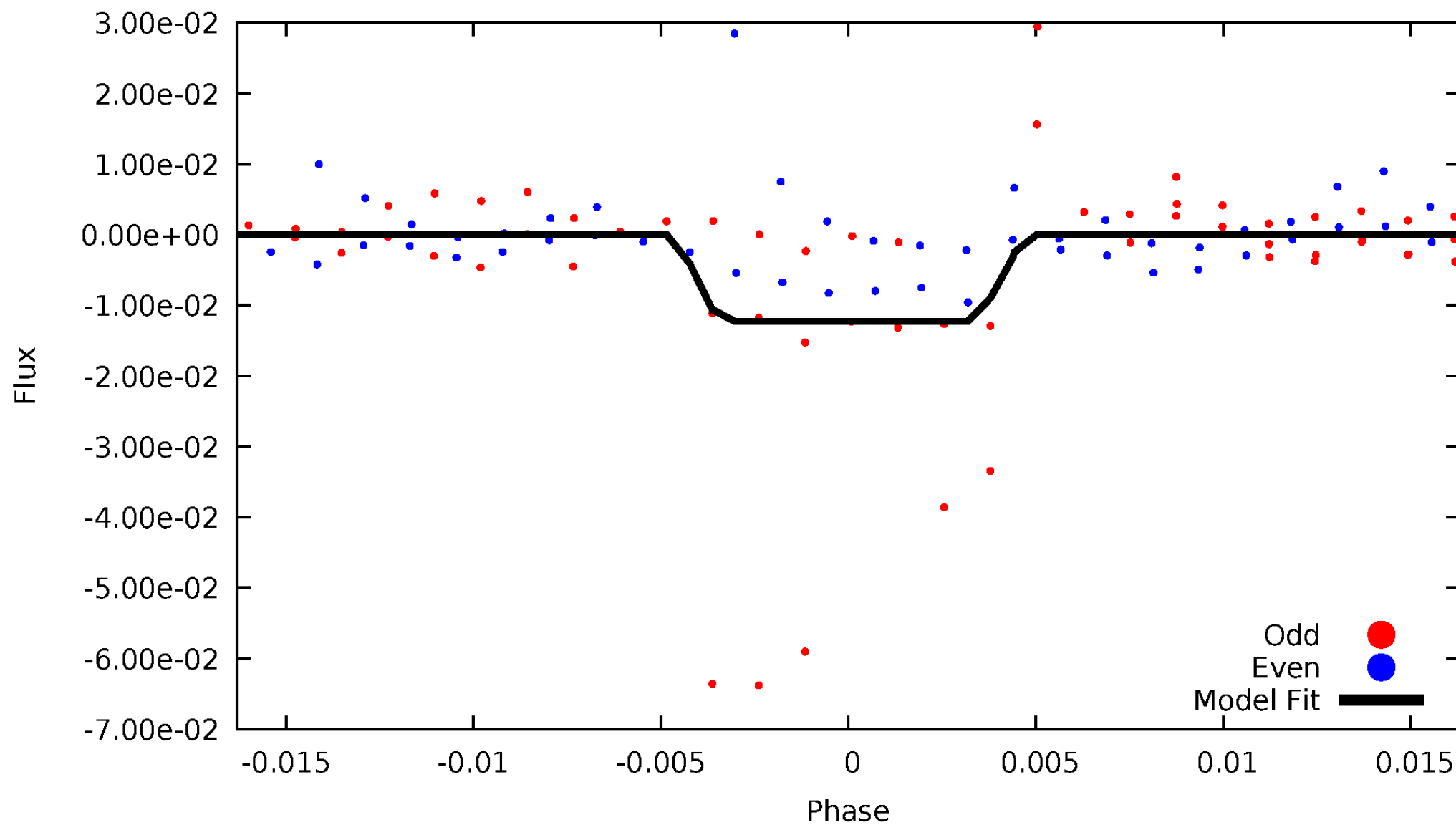
DV Odd/Even

TCE 009048032-01



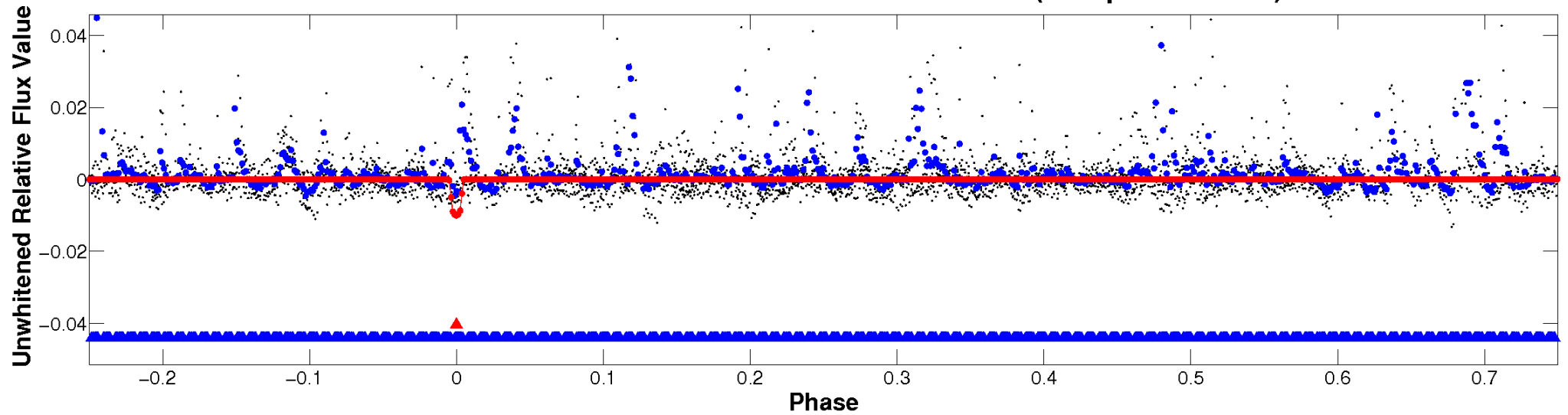
ALT Odd/Even

TCE 009048032-01

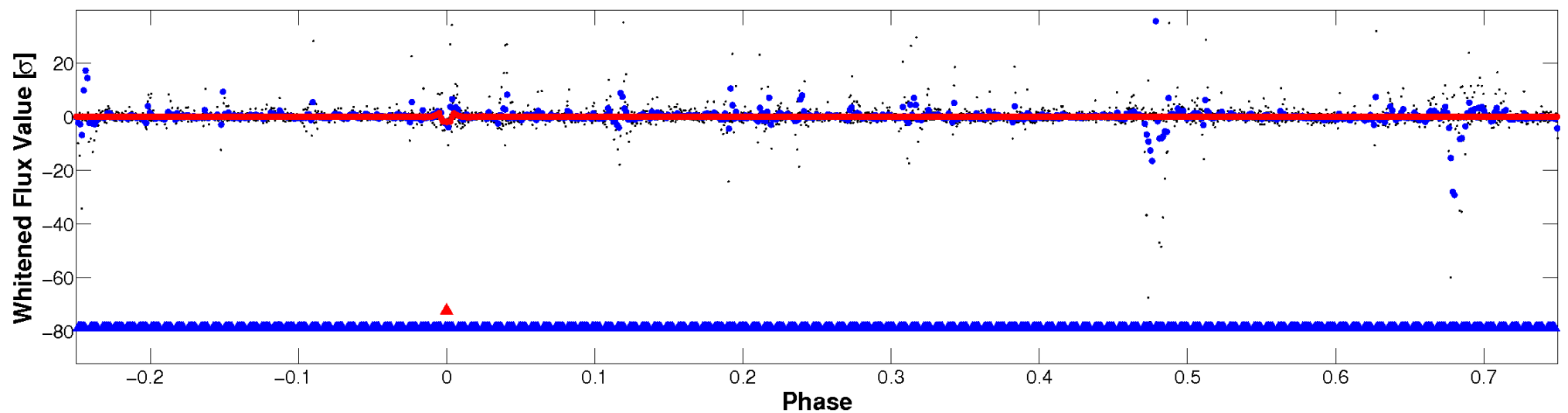


Non-Whitened Vs. Whitened Light Curve

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

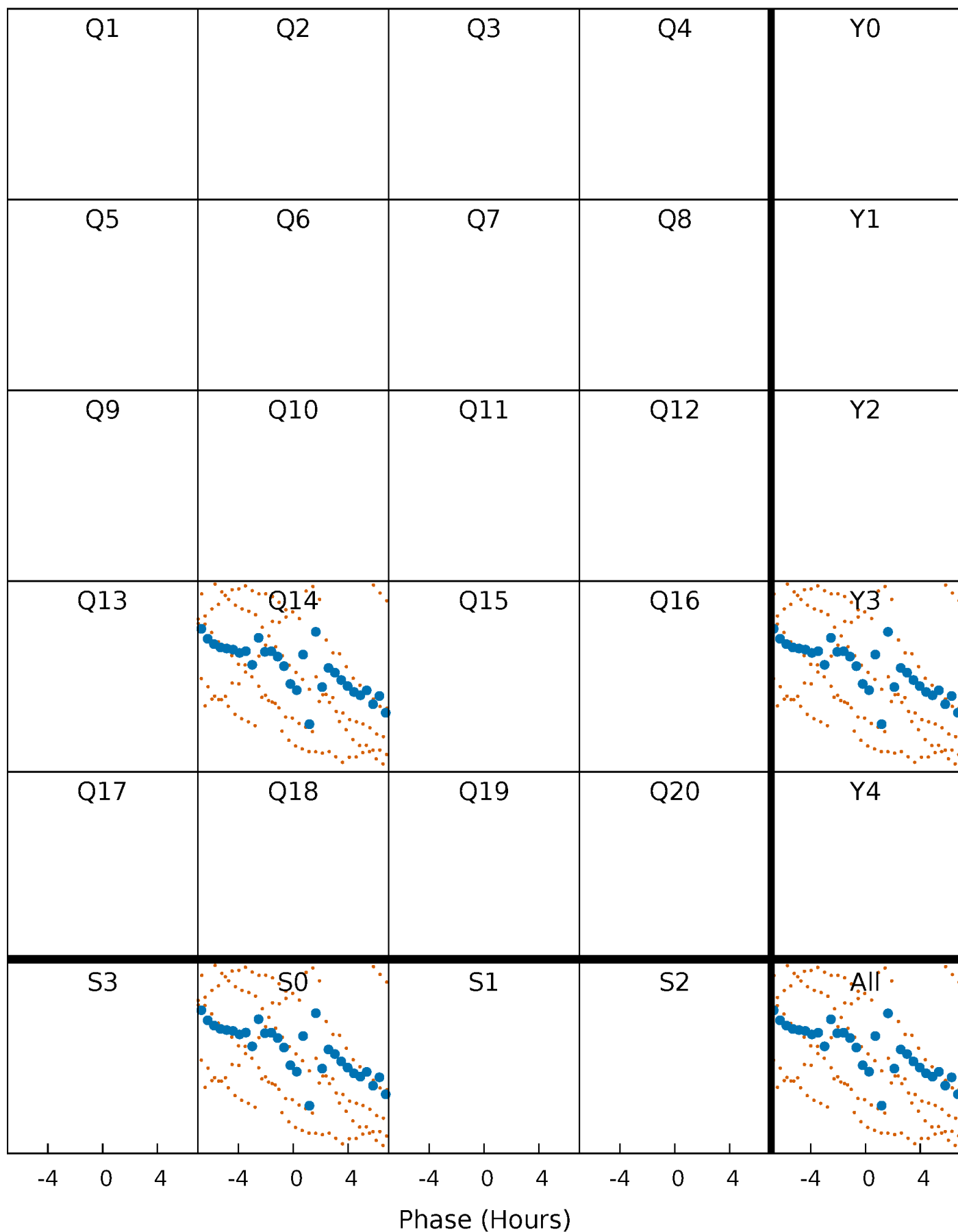


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



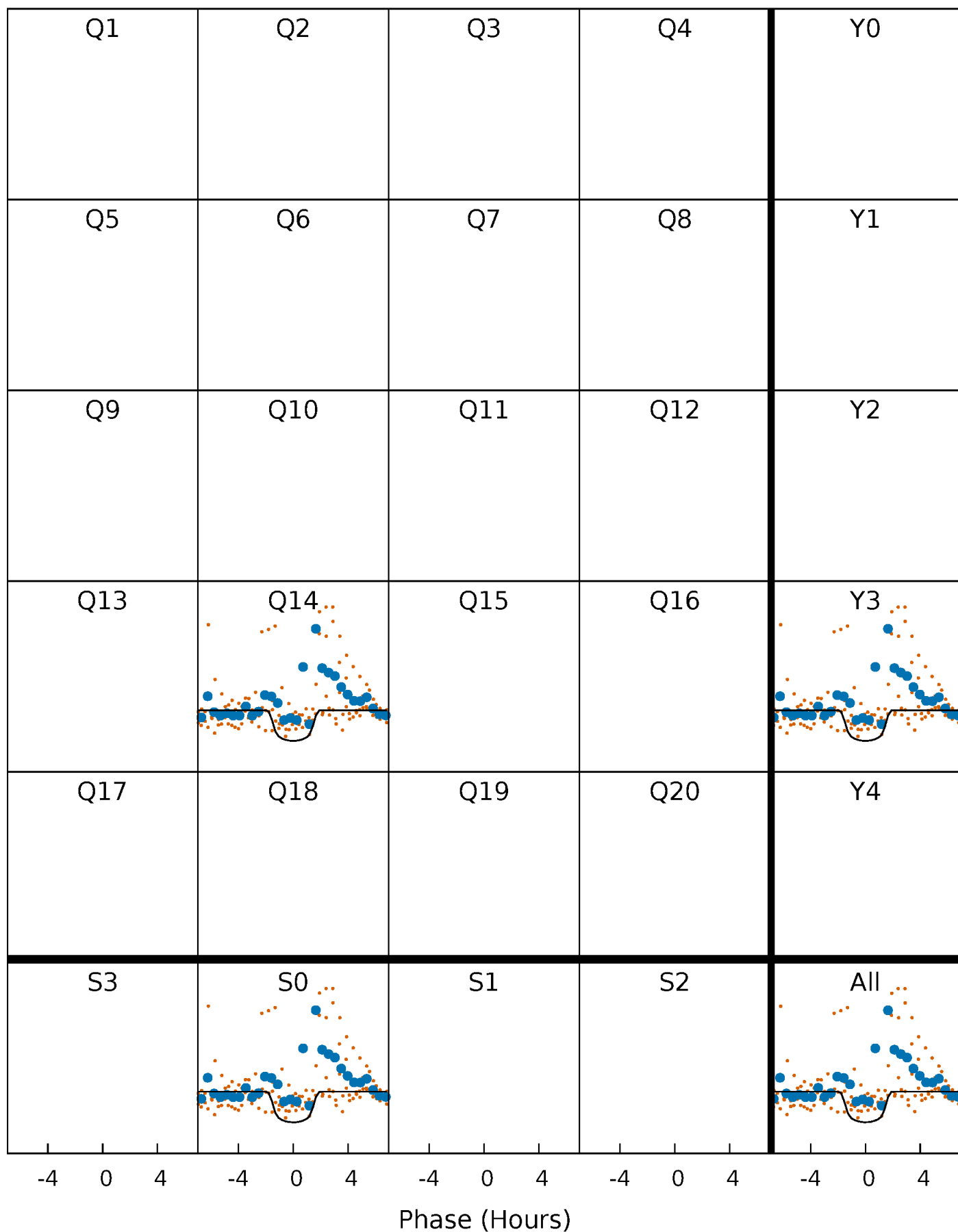
PDC Quarter-Phased Transit Curves

TCE 009048032-01 P= 16.521141 Days $T_0=138.800595$ (BKJD)



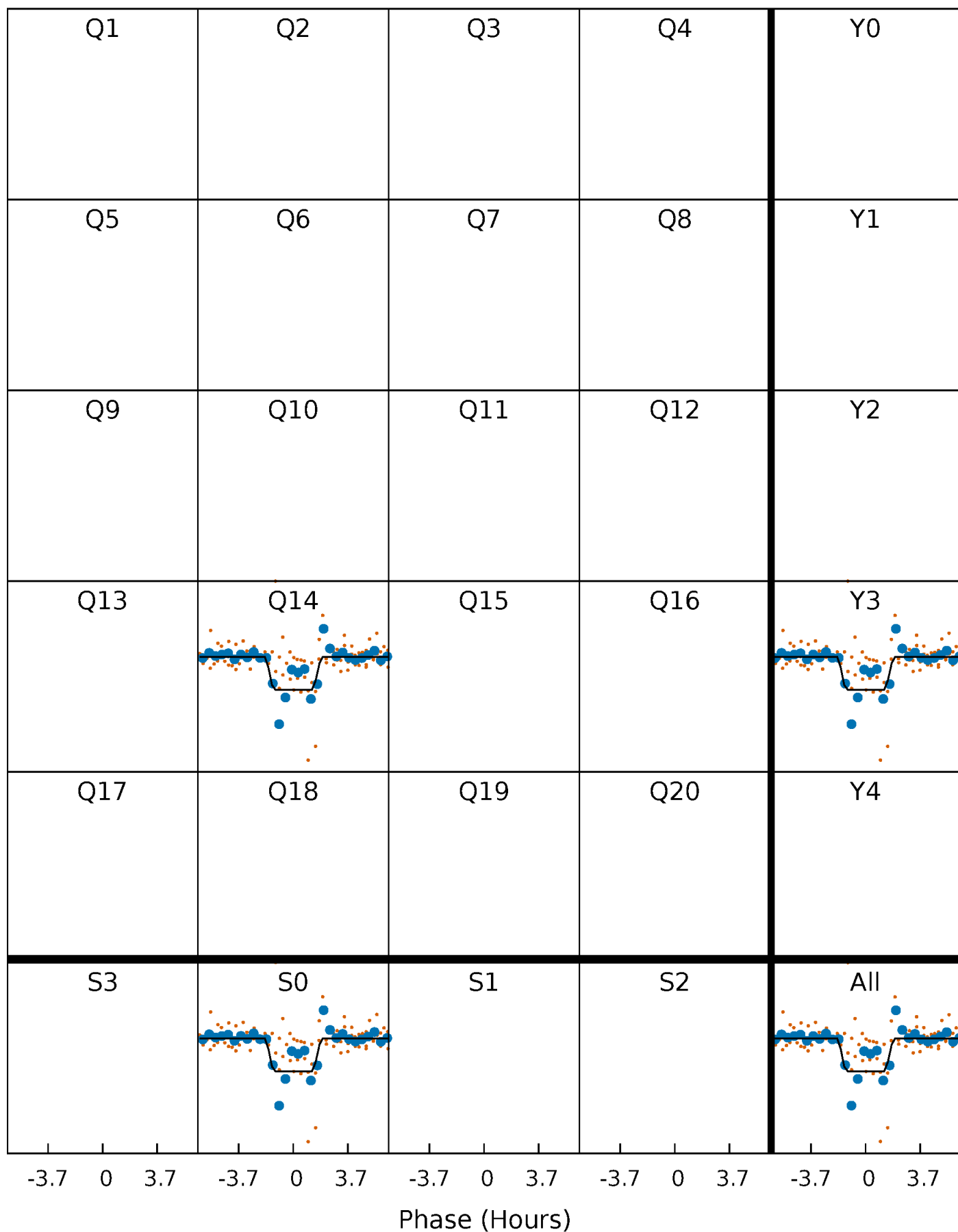
DV Quarter-Phased Transit Curves

TCE 009048032-01 P= 16.521141 Days $T_0=138.800595$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

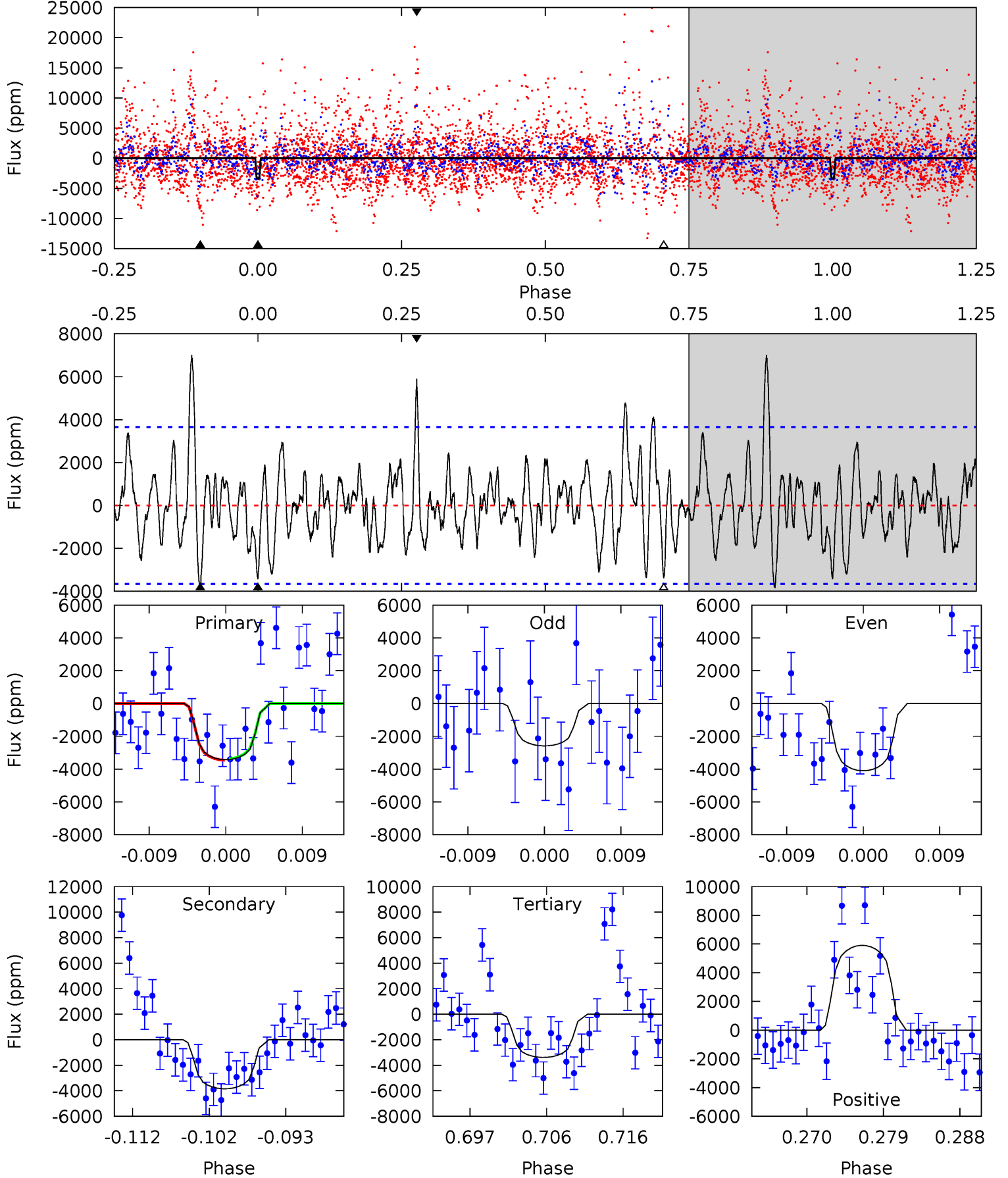
TCE 009048032-01 P= 16.520890 Days $T_0=138.814647$ (BKJD)



DV Model-Shift Uniqueness Test

009048032-01, P = 16.521141 Days, E = 138.800595 Days

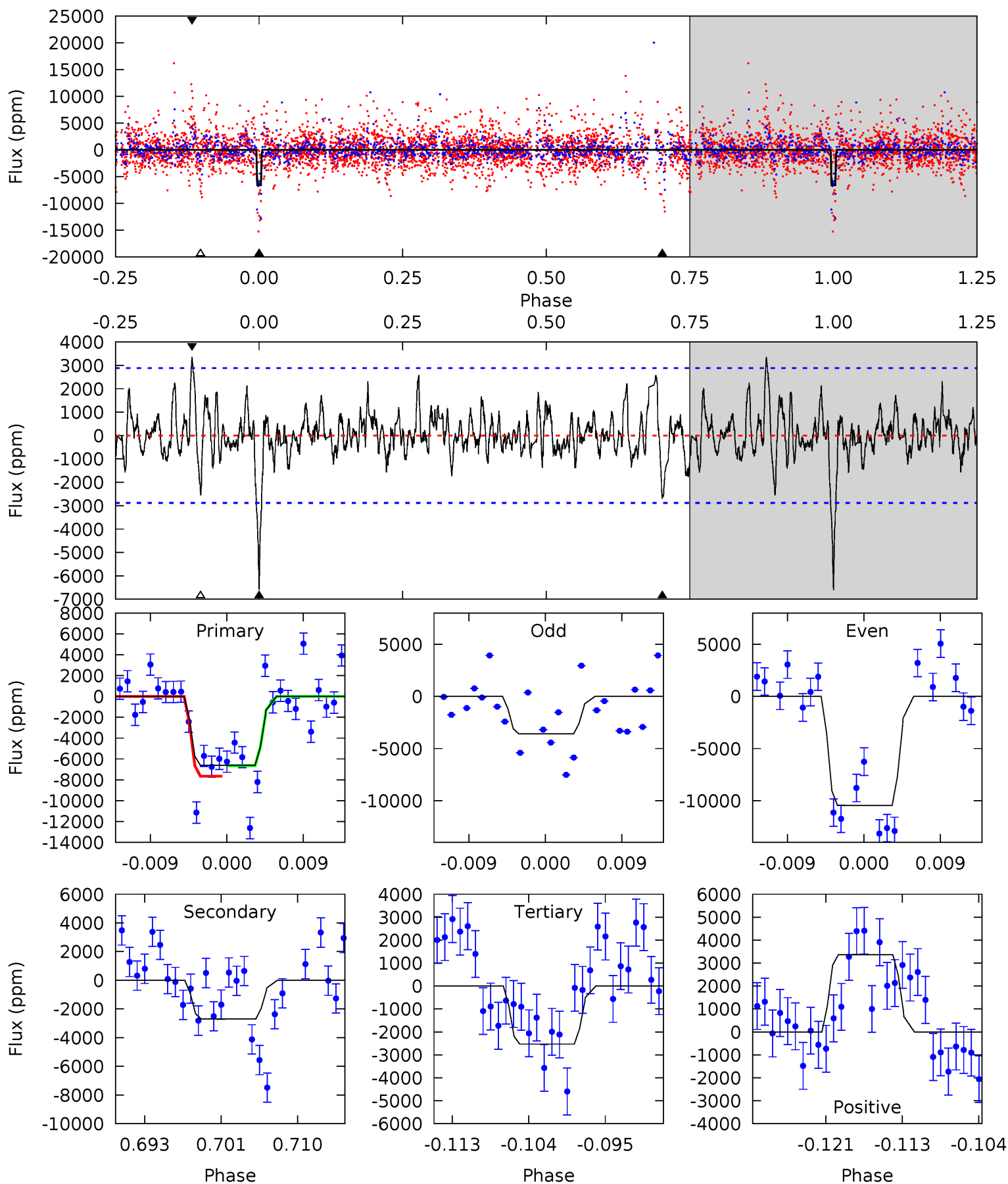
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.73	5.31	4.67	8.15	5.04	2.60	2.04	0.06	-3.42	0.63	-2.84	0.62	-0.99	0.65	0.06



Alt Model-Shift Uniqueness Test

009048032-01, P = 16.520890 Days, E = 138.814647 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	4.73	4.43	5.89	5.05	2.63	1.34	7.15	5.70	0.30	-1.16	5.67	1.97	0.34	0.83



Stellar Parameters For KIC 009048032

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 009048032-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3846 ± 725	$13.18^{+9.29}_{-8.22}$	1001^{+49}_{-46}	4379^{+2401}_{-803}	197^{+1225}_{-133}
Alt.	-2699 ± 571	$13.37^{+9.70}_{-7.50}$	1002^{+54}_{-49}	4042^{+1712}_{-723}	128^{+532}_{-88}

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 $A_{obs} \gg 1.0$

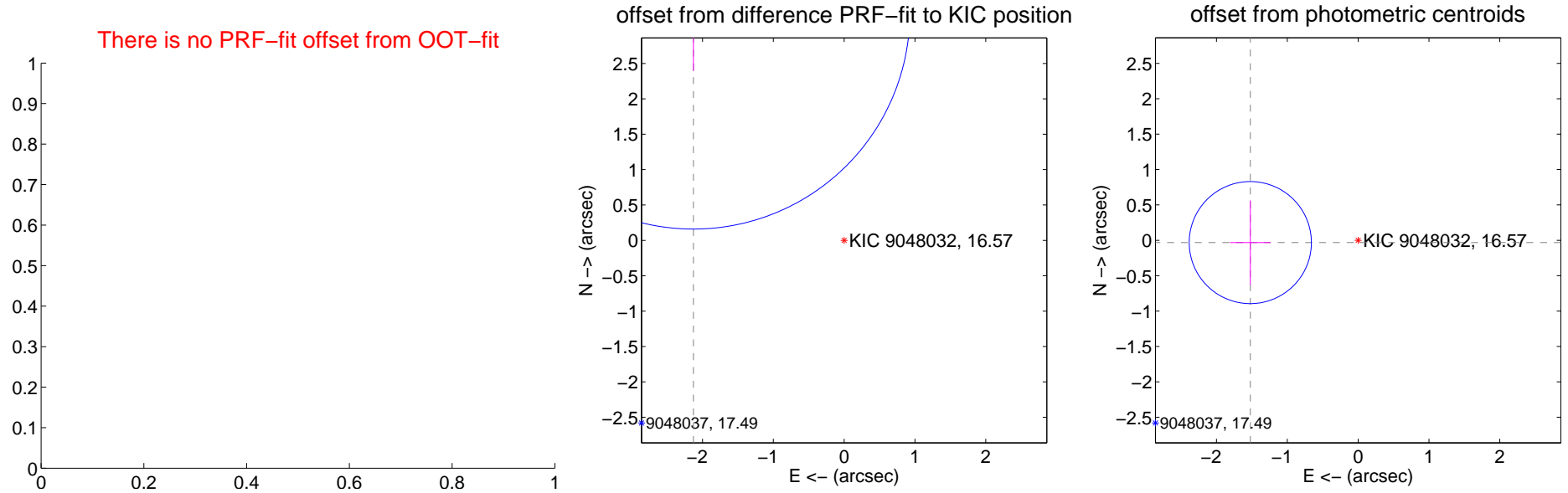
DV Centroid Data

Supplemental centroid analysis for 009048032-01. Kepler magnitude: 16.57. Transit SNR 9.66

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	3.856 ± 1.019	3.79	2.128 ± 1.361	3.216 ± 0.825
photometric centroid source offset	1.52 ± 0.29	5.30	1.52 ± 0.29	-0.03 ± 0.60



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.



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

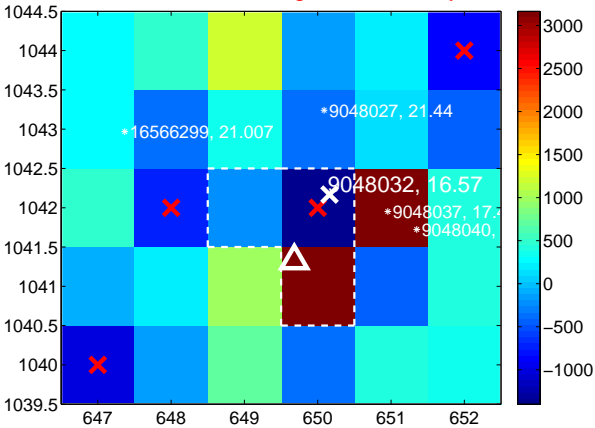
Q13 no difference image



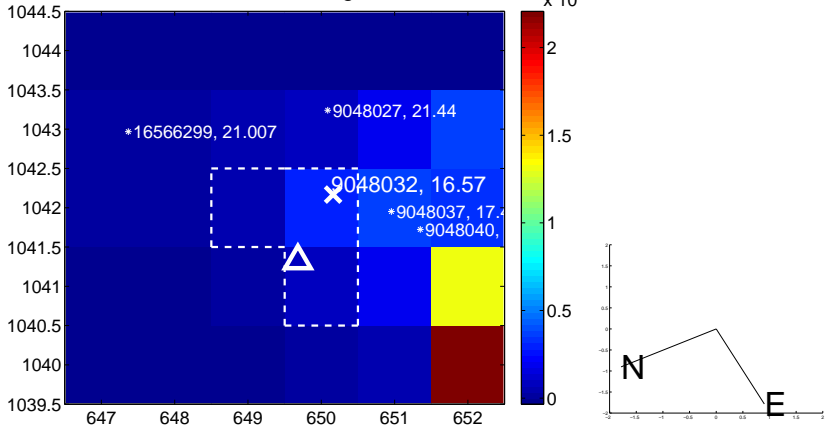
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



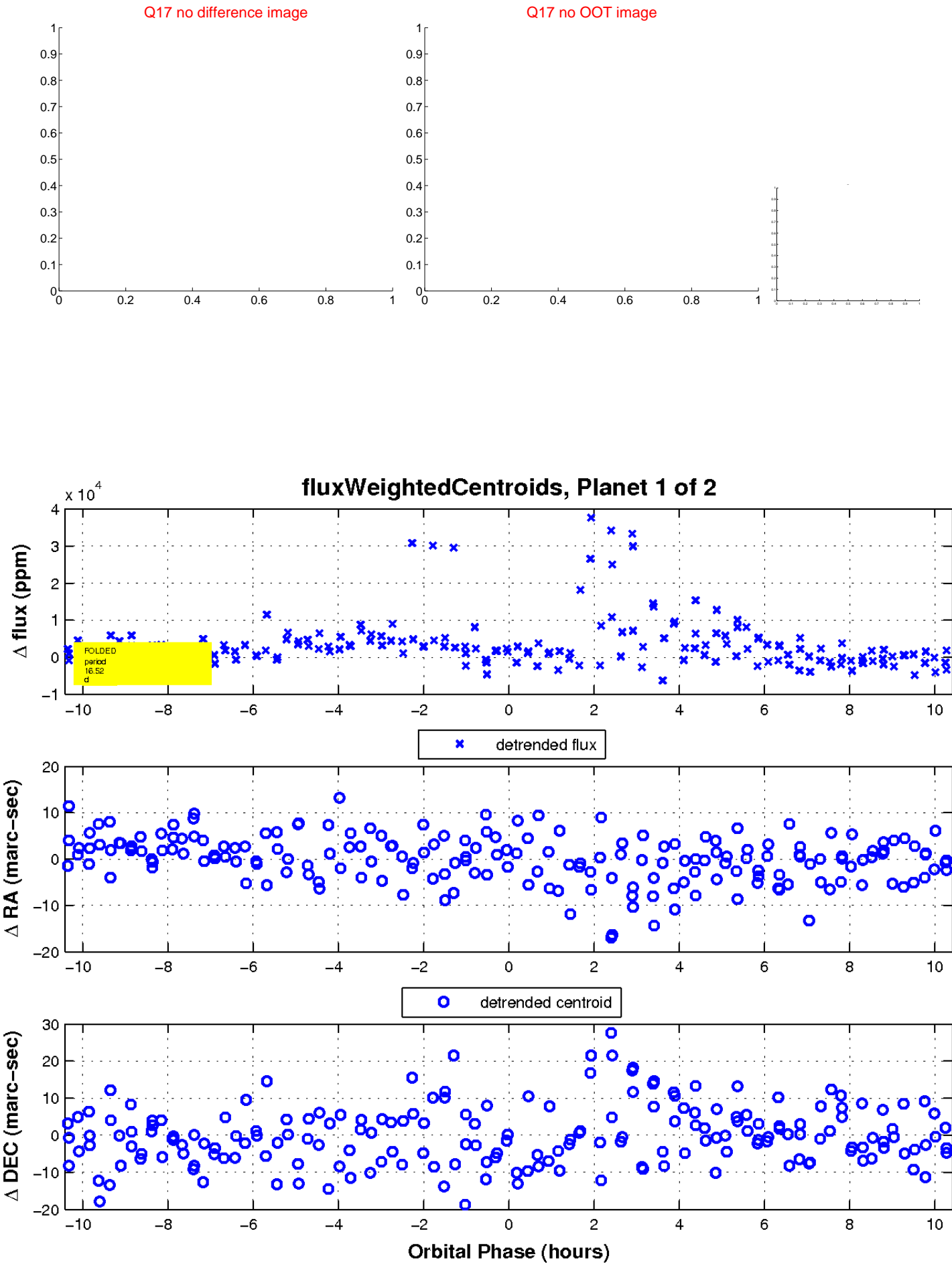
Q16 no difference image



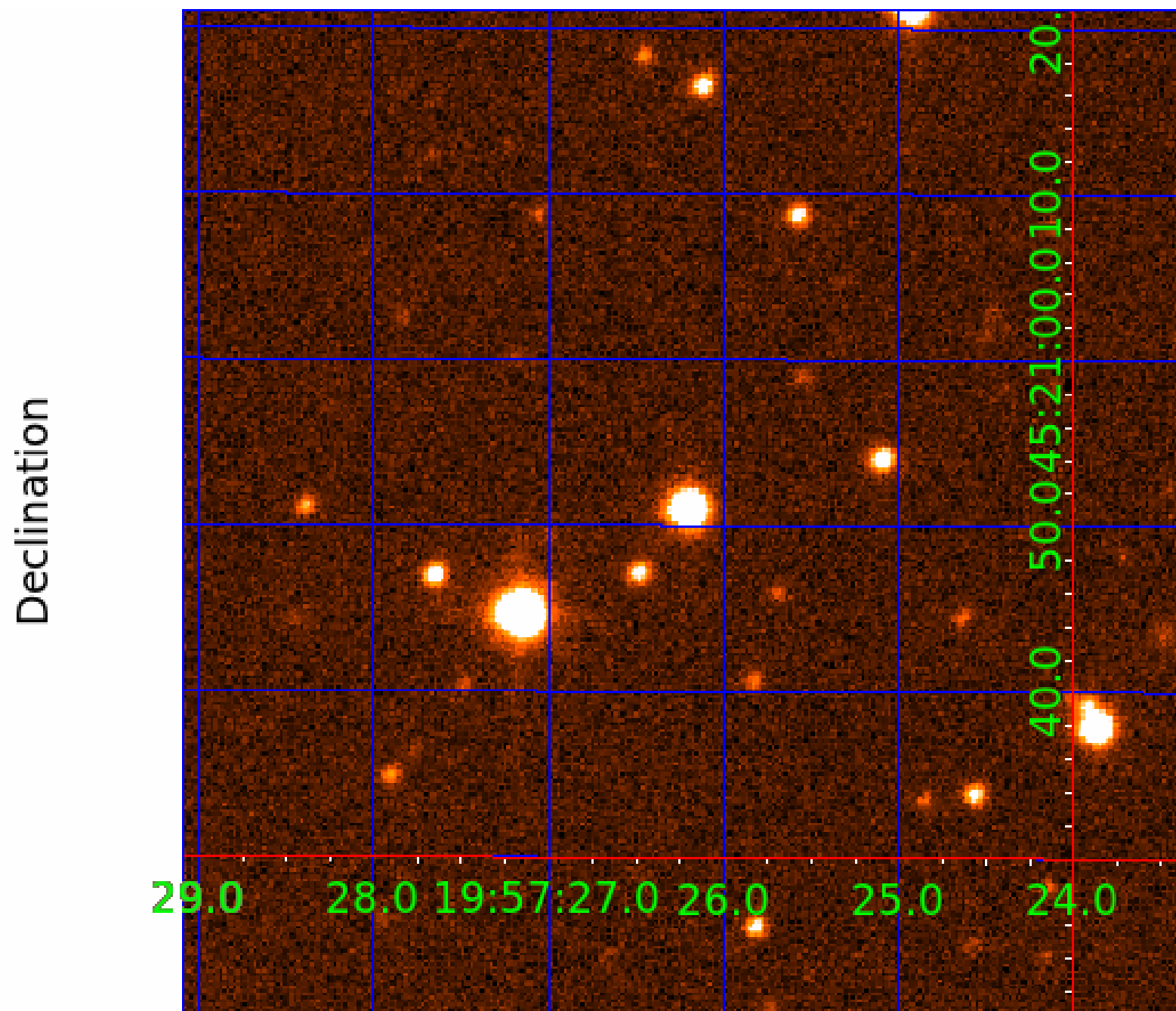
Q16 no OOT image



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



UKIRT Image



KIC 009048032

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})
009048032-01	OBS	No	16.521141	138.800595	10083.1	3.477	15.0	9.7	1.00	5780	10.28	62.02
009048032-02	OBS	No	1.638560	132.231165	7786.7	11.046	8.6	15.6	1.00	5780	16.07	1351.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009048032-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009048032-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

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.

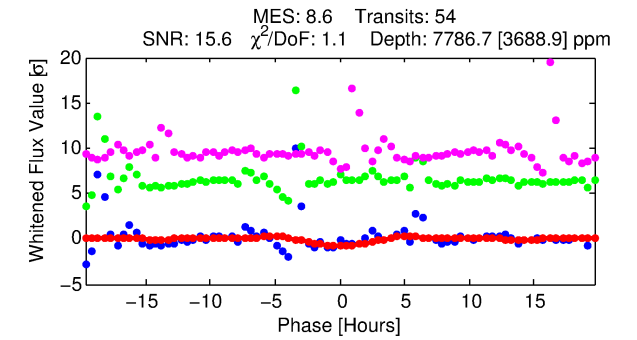
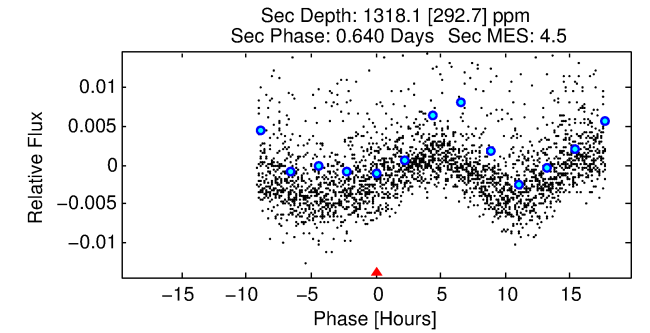
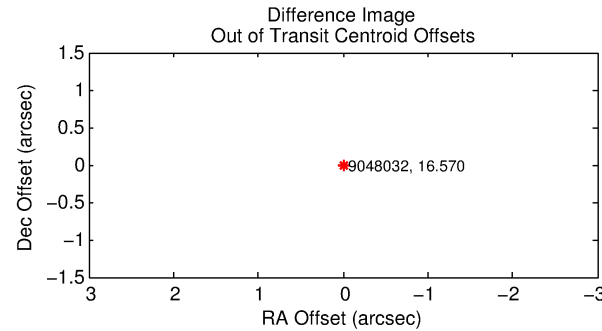
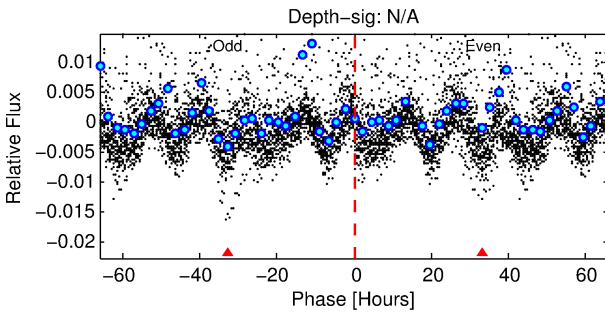
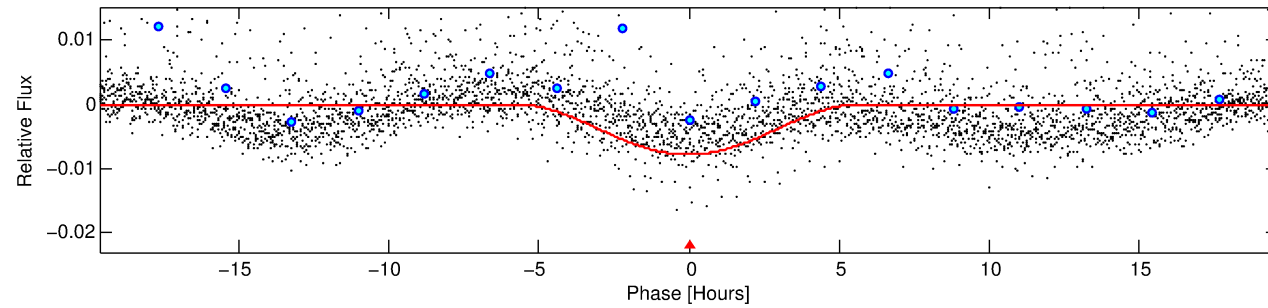
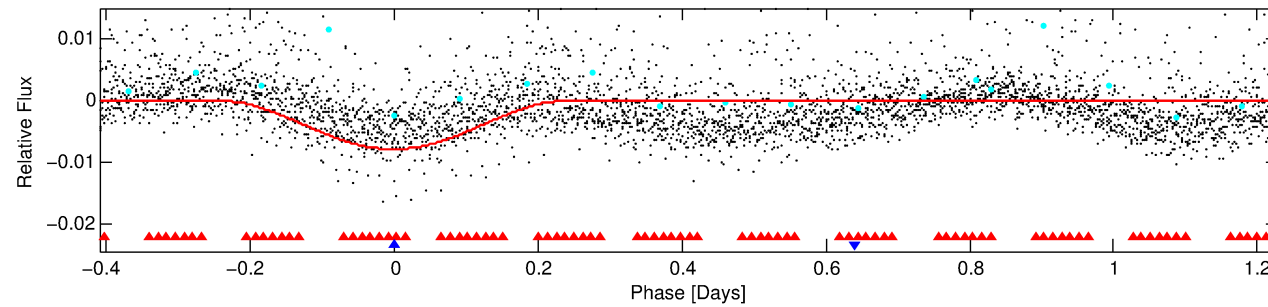
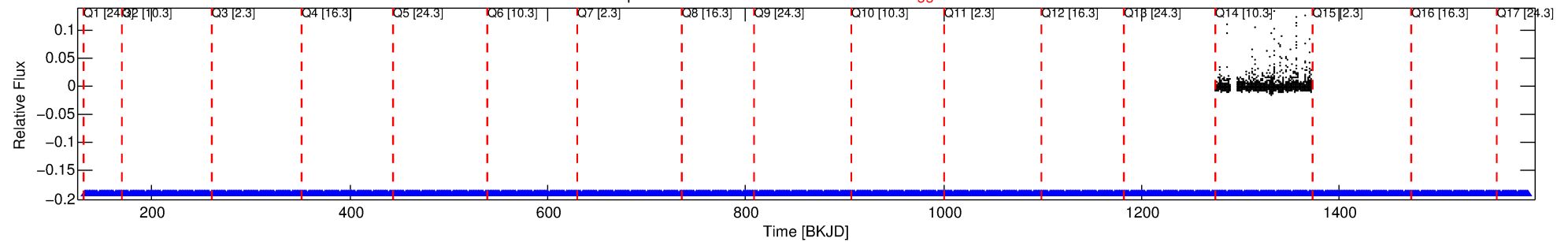
Ephemeris Match Information For 009048032-02

No Significant Match Found

DV One-Page Summary

KIC: 9048032 Candidate: 2 of 2 Period: 1.639 d

Kp: 16.57 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



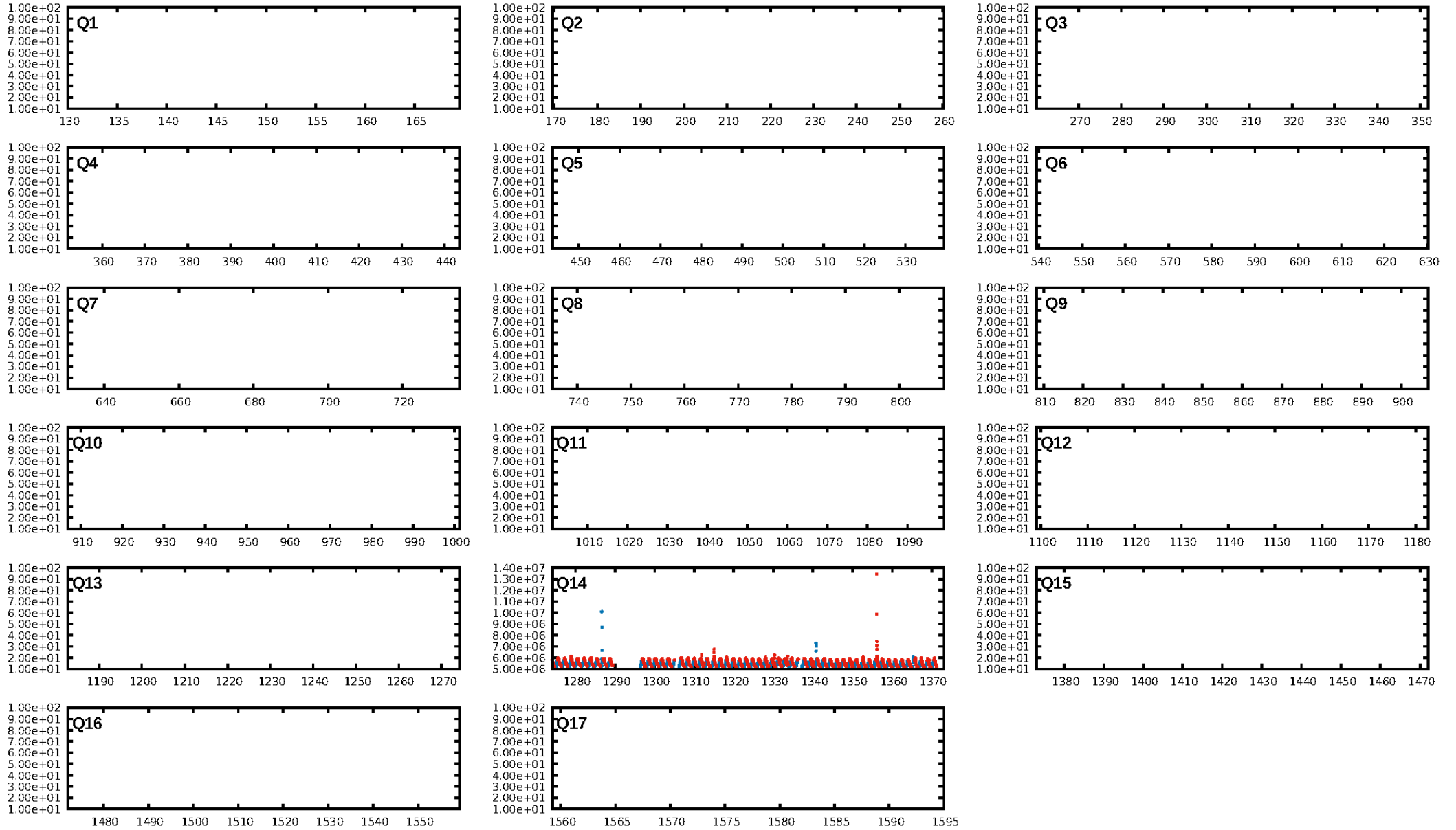
DV Fit Results:

Period = 1.63856 [0.00003] d
Epoch = 132.2312 [0.0200] BKJD
Rp/R* = 0.1472 [0.2084]
a/R* = 1.24 [0.14]
b = 1.00 [0.34]
Seff = 1351.00 [0.04]
Teff = 1546 [0] K
Rp = 16.07 [22.75] Re
a = 0.0272 [0.0000] AU
Ag = 2.08 [5.90] [0.18σ]
Teffp = 2870 [2038] K [0.65σ]

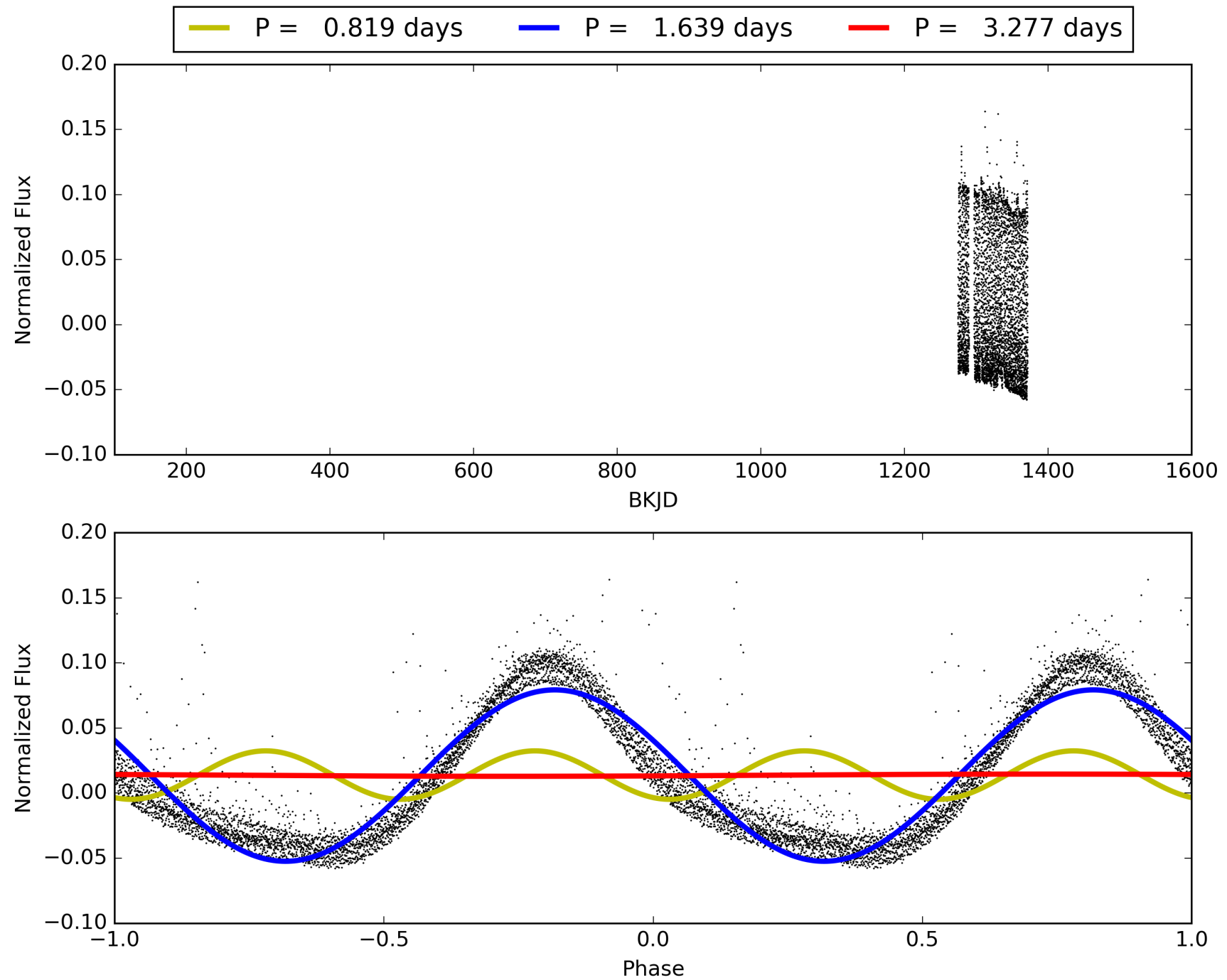
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [30.84σ]
ModelChiSquare2-sig: 2.5%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [54/54]
GhostDiagnostic-chr: 1.329
Centroid-sig: N/A
Centroid-so: 1.149 arcsec [8.61σ]
OotOffset-rm: N/A
KicOffset-rm: 0.409 arcsec [6.01σ]
OotOffset-st: 0/0/0 [0]
KicOffset-st: 1/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [1/1]

TCE 009048032-02, PDC Light Curves

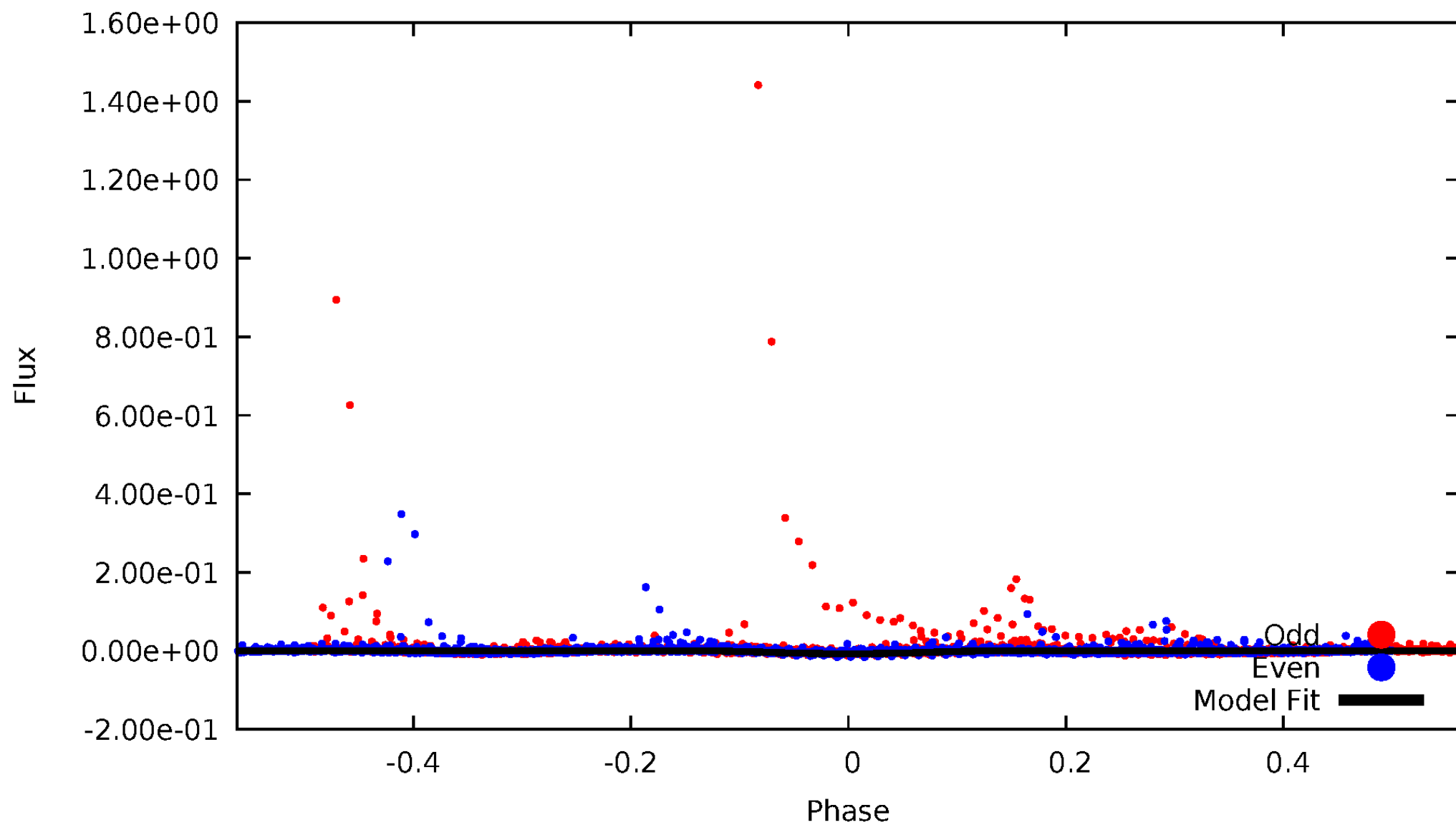


TCE 009048032-02



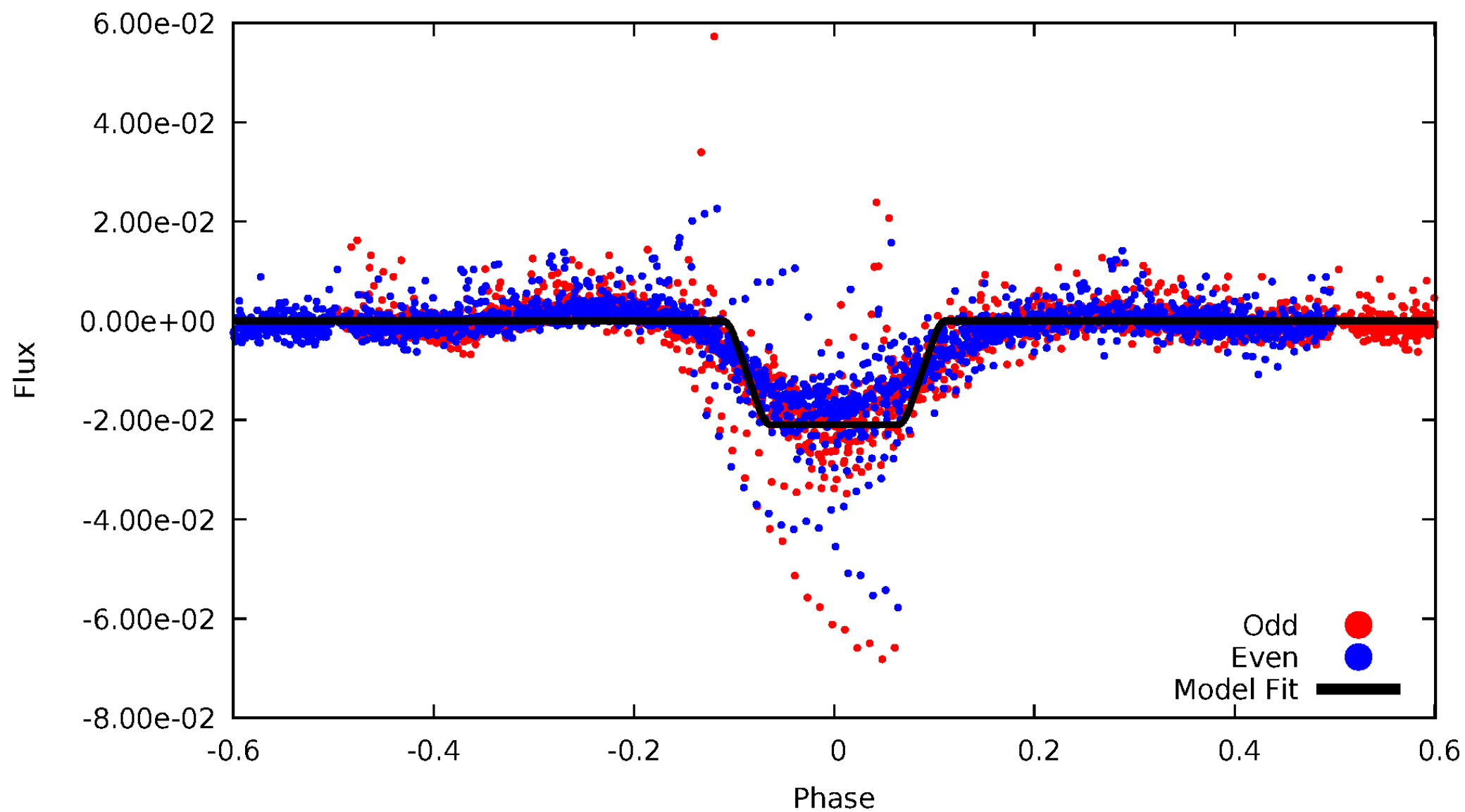
DV Odd/Even

TCE 009048032-02



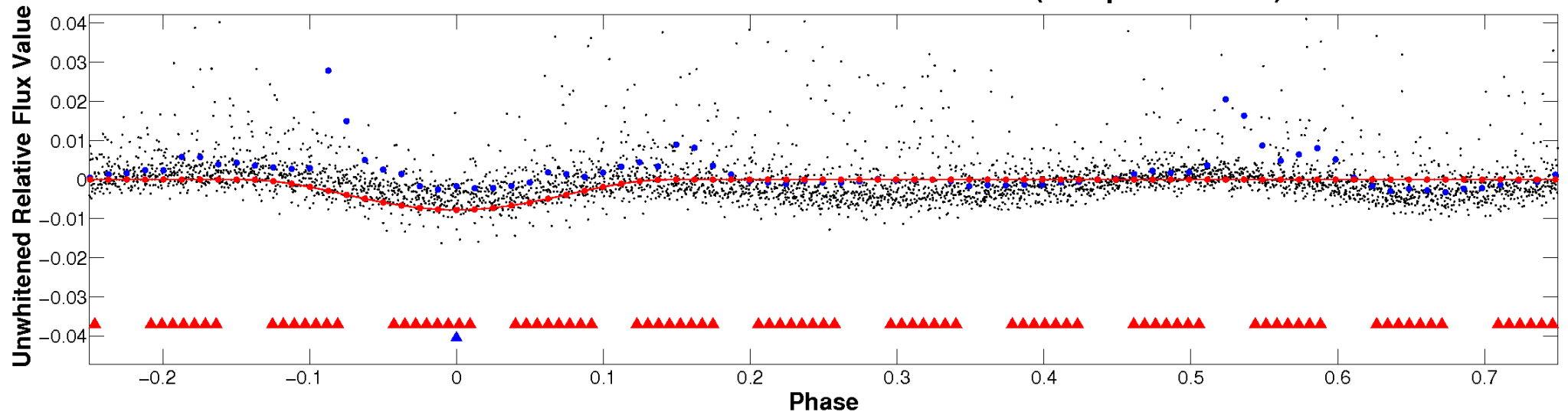
ALT Odd/Even

TCE 009048032-02

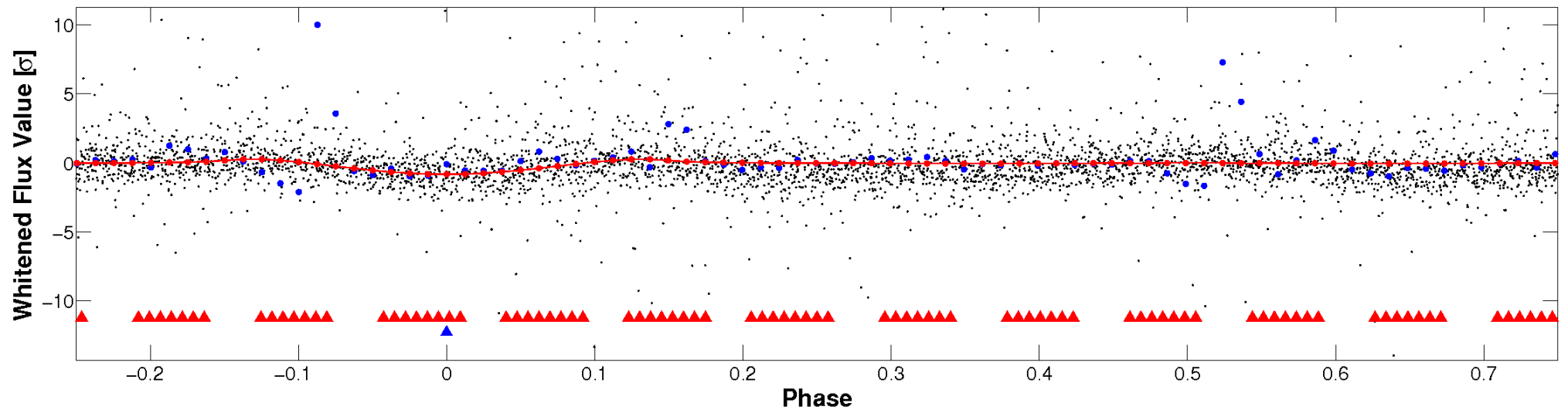


Non-Whitened Vs. Whitened Light Curve

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

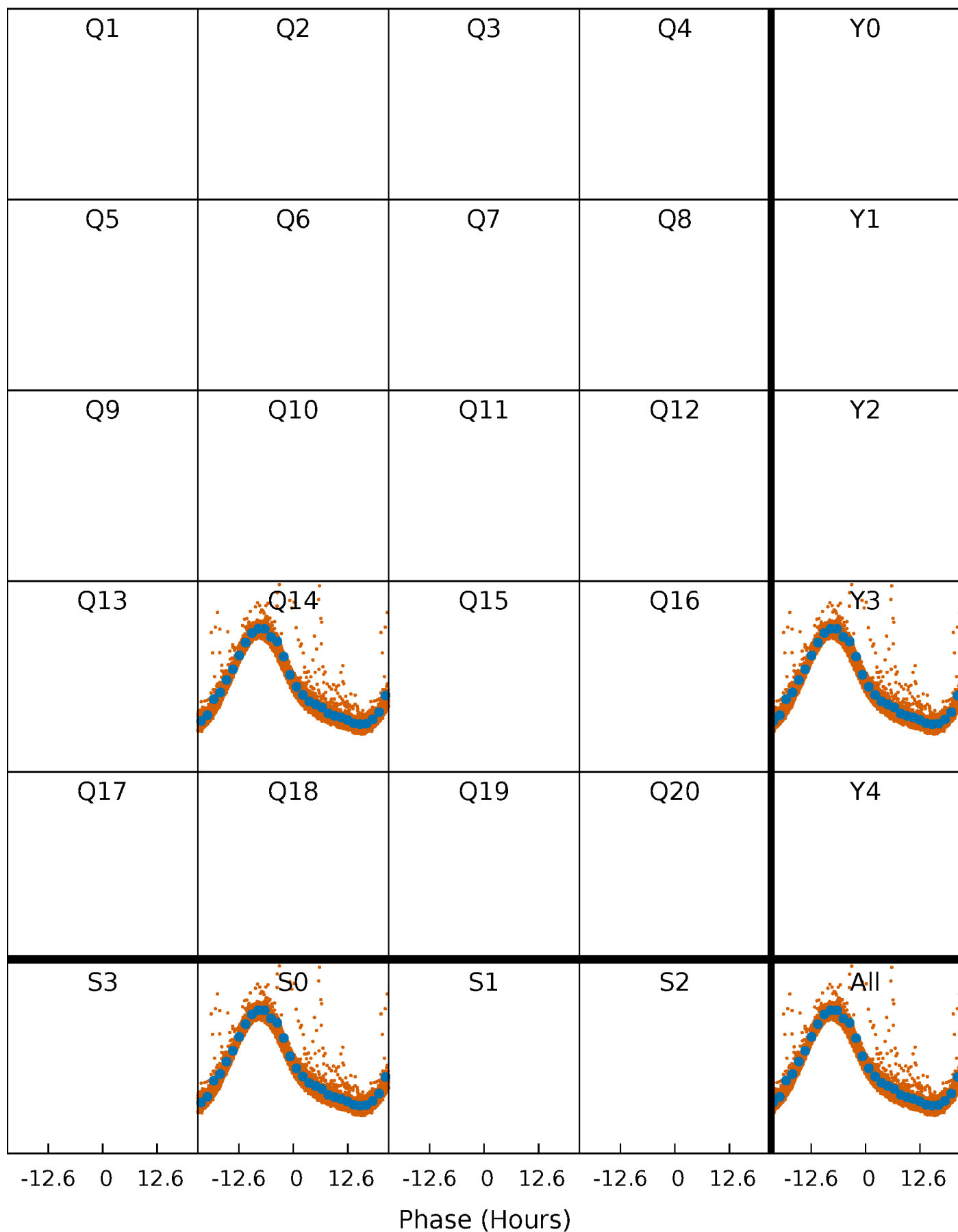


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



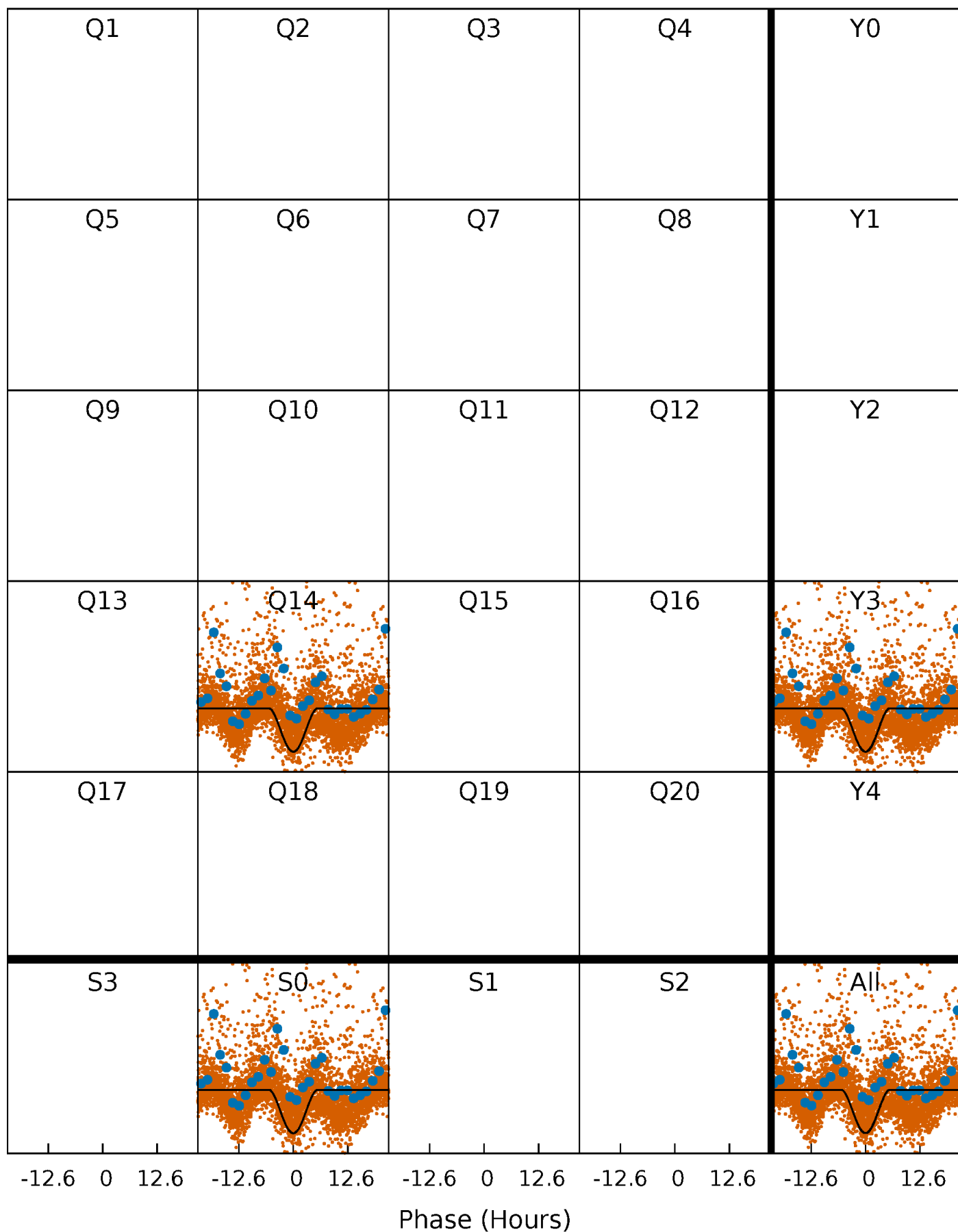
PDC Quarter-Phased Transit Curves

TCE 009048032-02 $P = 1.638560$ Days $T_0 = 132.231165$ (BKJD)



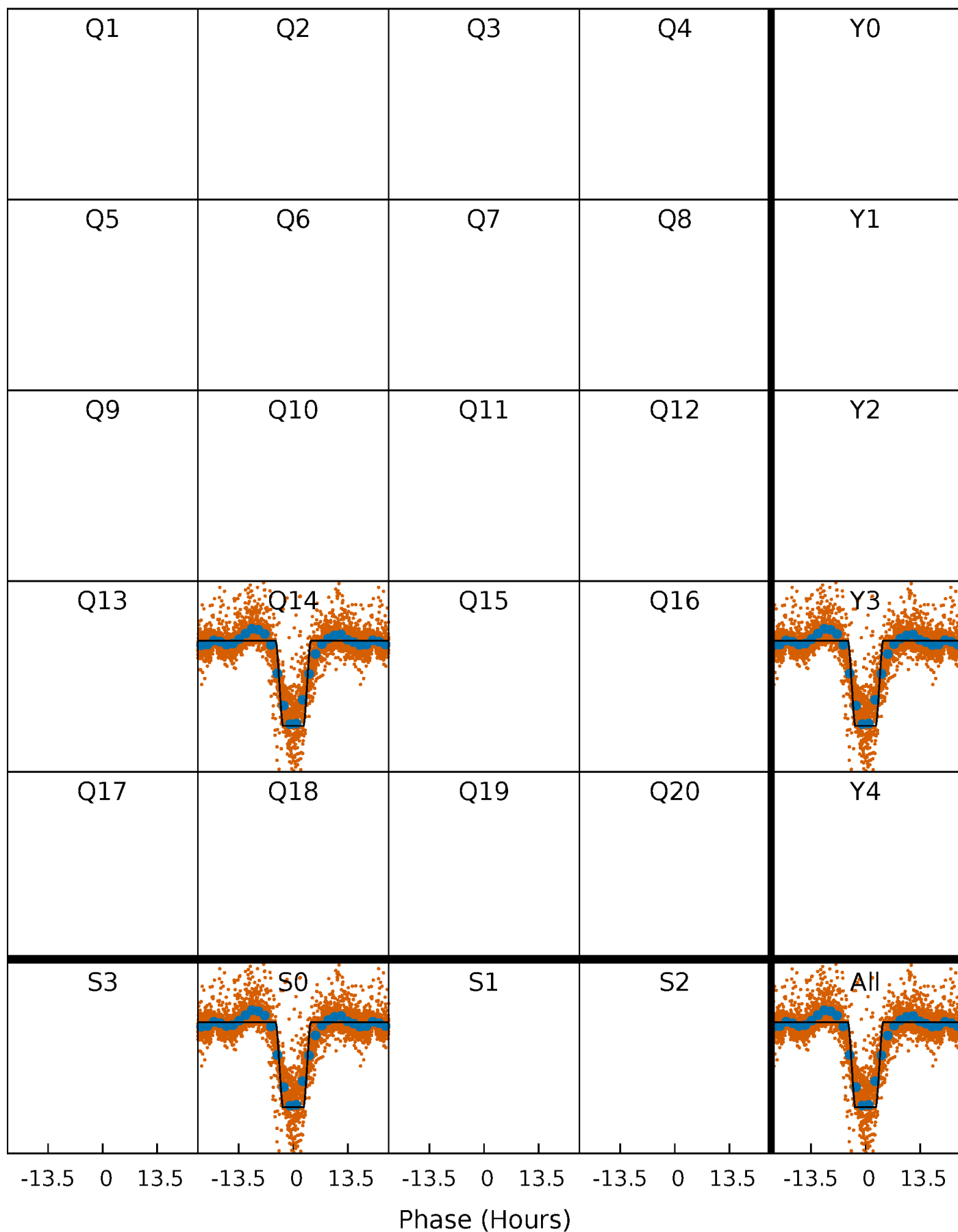
DV Quarter-Phased Transit Curves

TCE 009048032-02 P= 1.638560 Days $T_0=132.231165$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

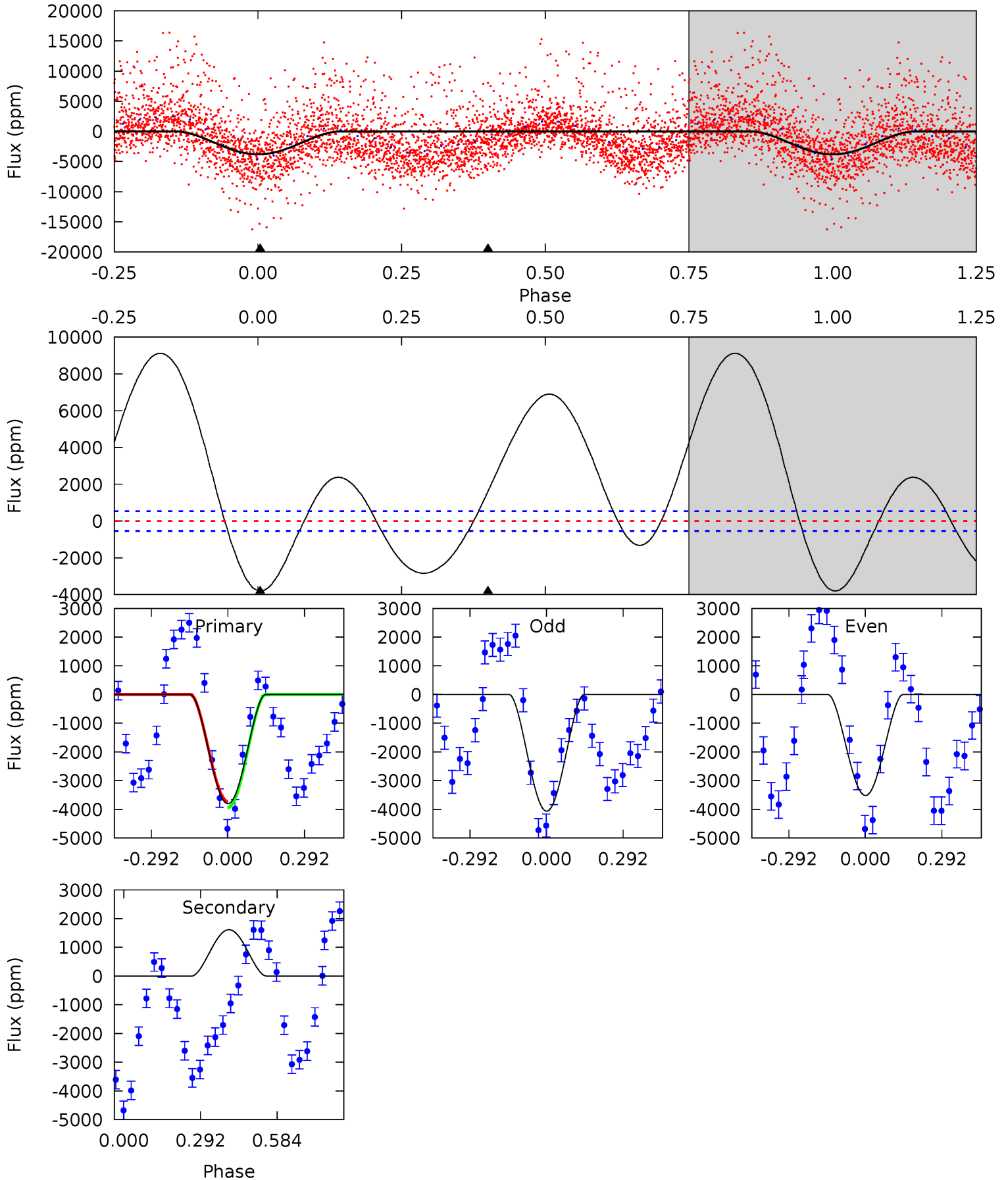
TCE 009048032-02 P= 1.638268 Days $T_0=132.489986$ (BKJD)



DV Model-Shift Uniqueness Test

009048032-02, P = 1.638560 Days, E = 132.231165 Days

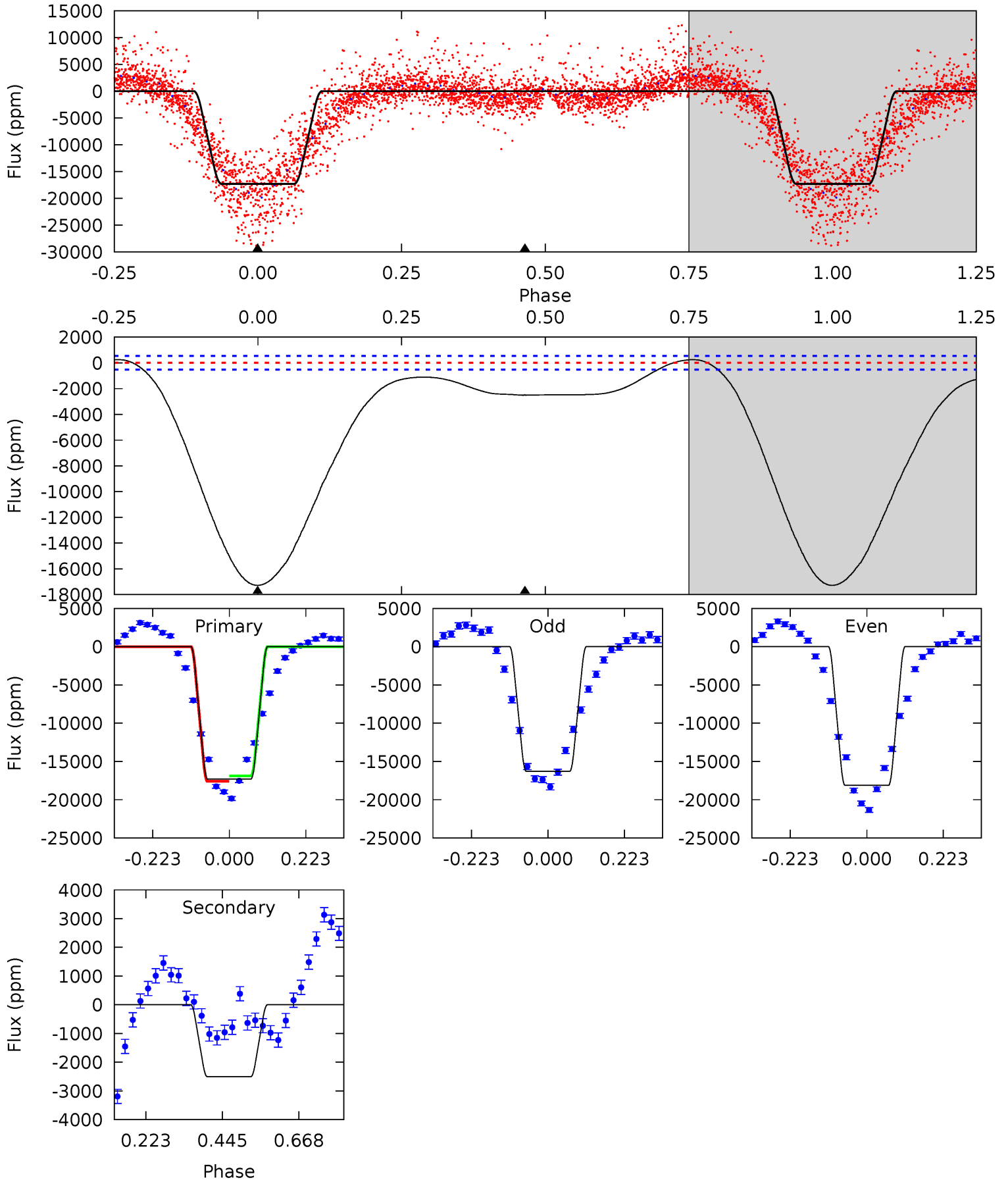
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.7	-13.0	0	0	4.33	1.05	14.2	30.7	30.7	-13.0	-13.0	2.08	-0.71	0.71	0.91



Alt Model-Shift Uniqueness Test

009048032-02, P = 1.638268 Days, E = 132.489986 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
142.4	20.6	0	0	4.39	1.22	5.30	142.4	142.4	20.6	20.6	8.96	1.10	0.01	0



Stellar Parameters For KIC 009048032

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 009048032-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	1614 ± 124	$24.18^{+19.99}_{-16.16}$	2163^{+102}_{-99}	-3198^{+349}_{-1253}	$-1.114^{+0.792}_{-9.076}$
Alt.	-2506 ± 121	$22.44^{+19.41}_{-14.61}$	2170^{+102}_{-104}	3308^{+1625}_{-733}	$2.045^{+16.031}_{-1.469}$

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 $A_{obs} \gg 1.0$

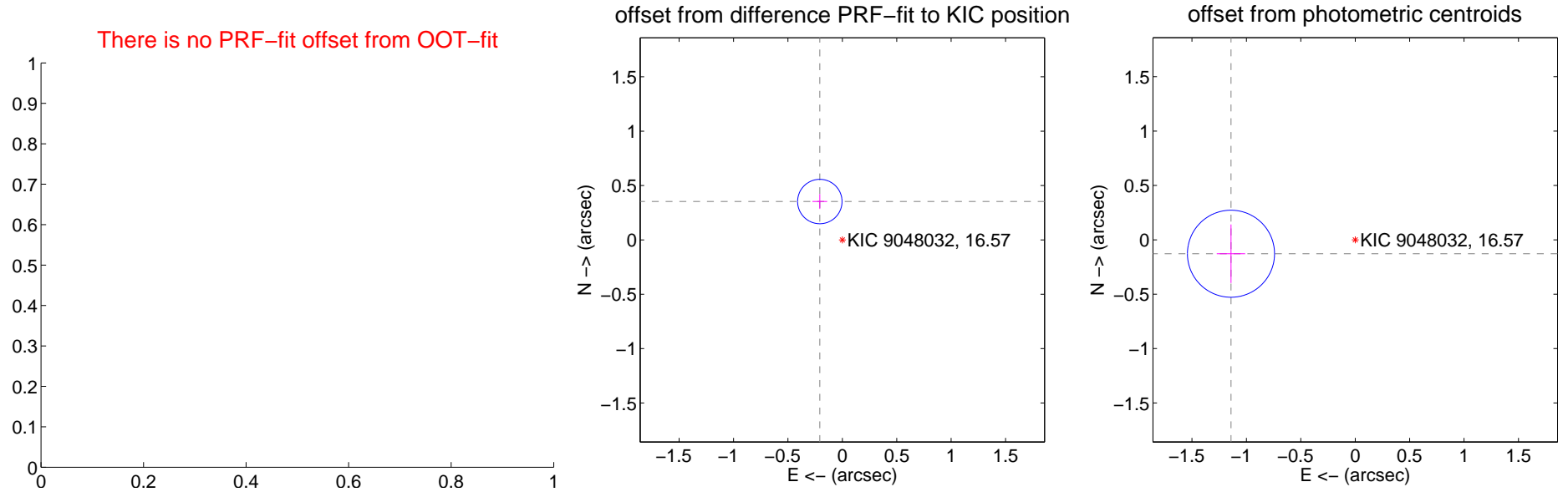
DV Centroid Data

Supplemental centroid analysis for 009048032-02. Kepler magnitude: 16.57. Transit SNR 15.62

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	0.409 ± 0.068	6.01	0.207 ± 0.068	0.353 ± 0.068
photometric centroid source offset	1.15 ± 0.13	8.61	1.14 ± 0.13	-0.13 ± 0.27



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.



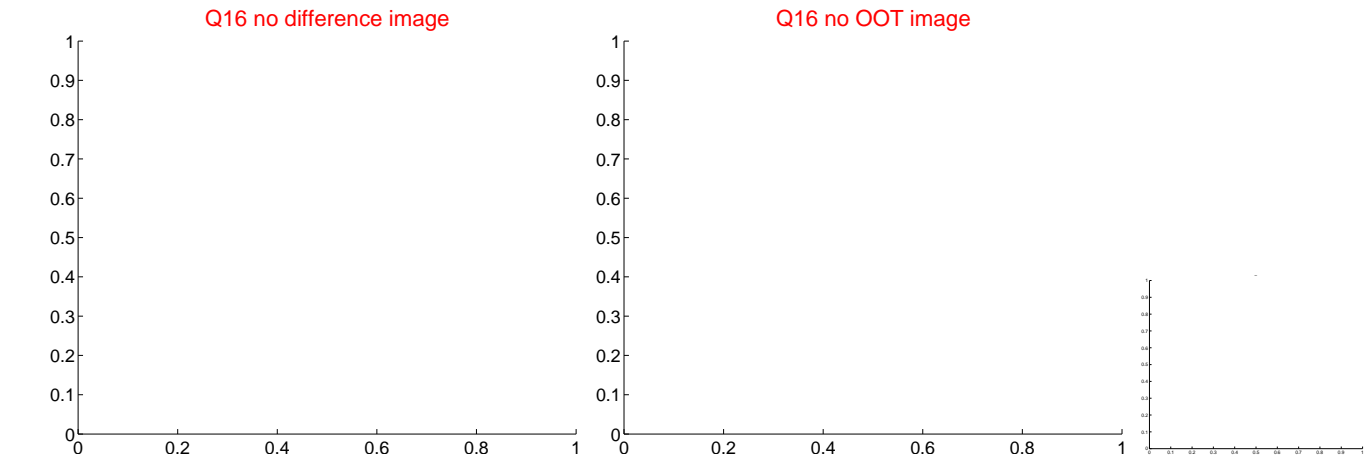
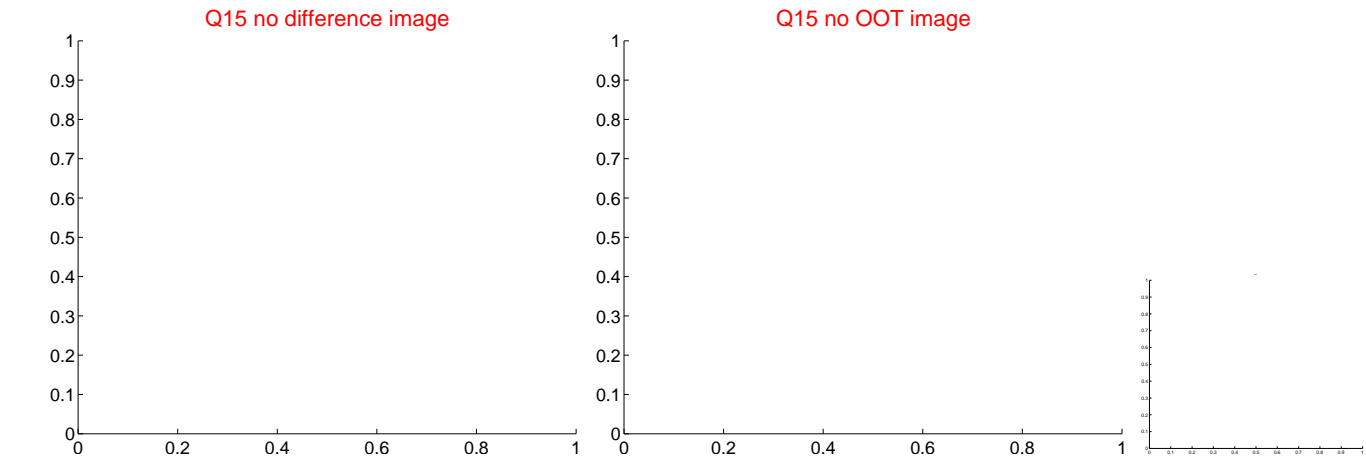
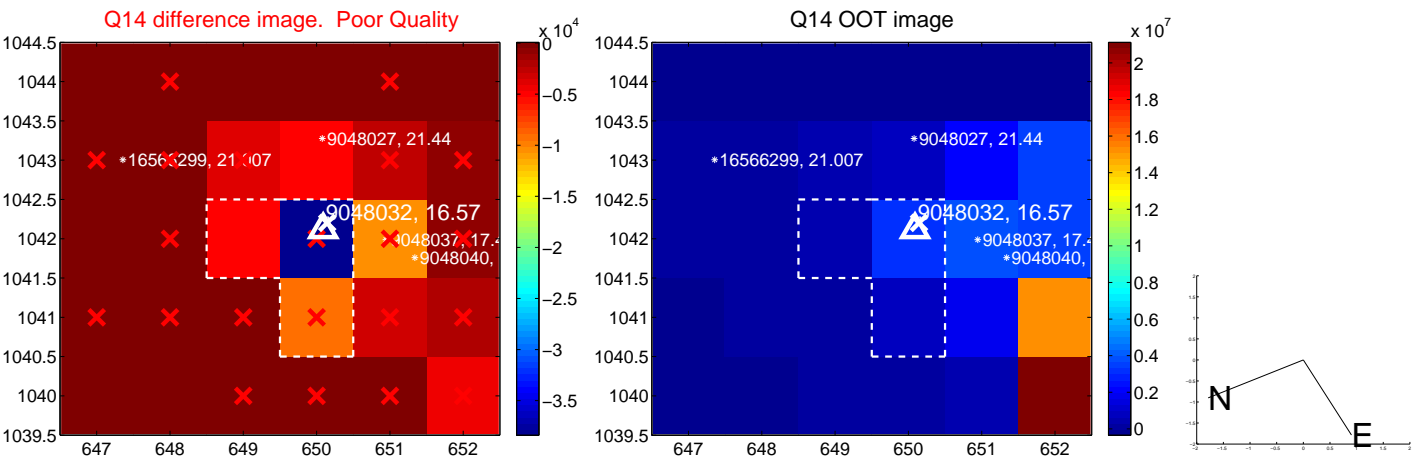
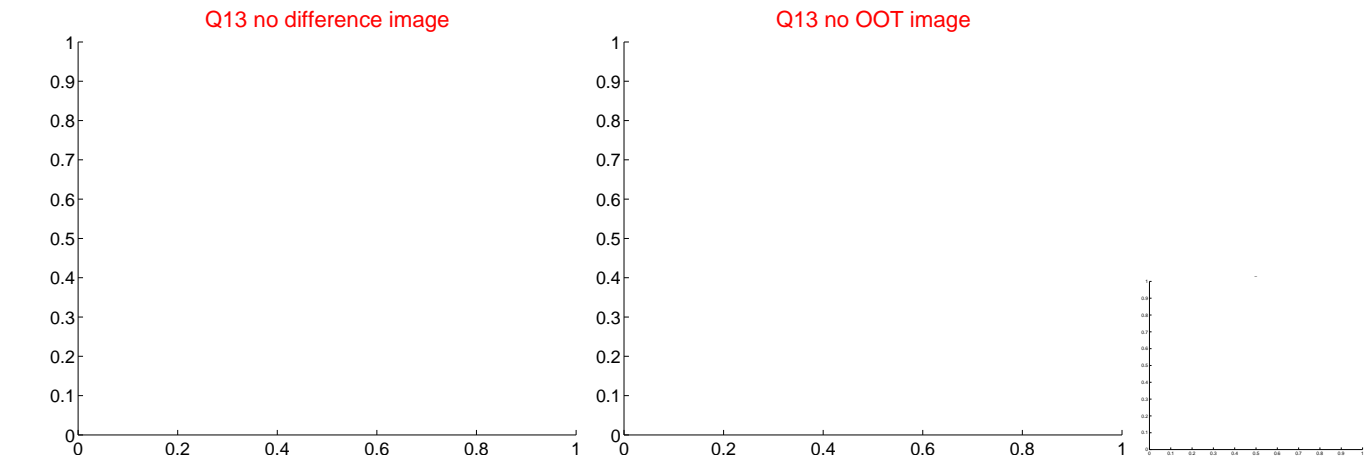
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



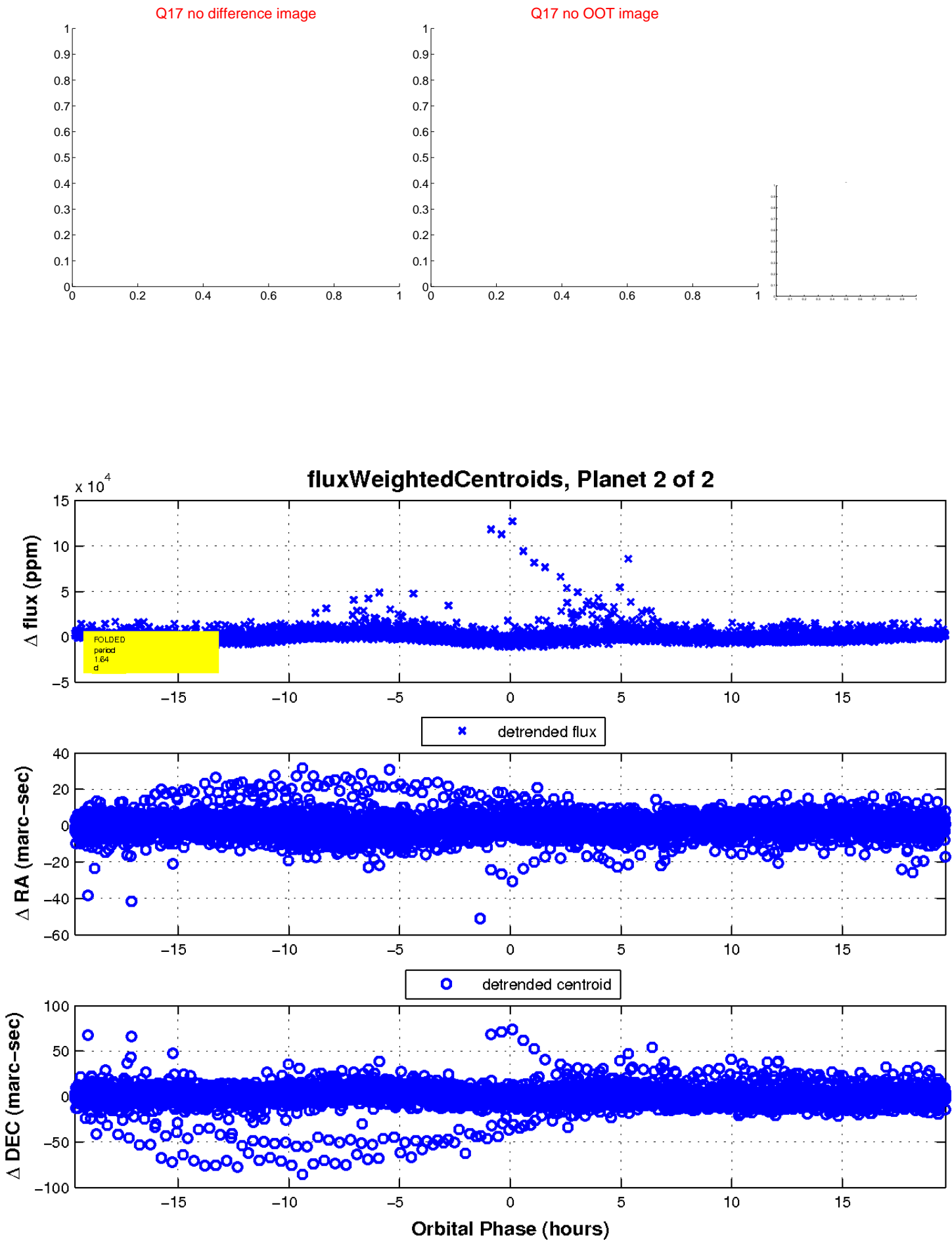
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



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