

KIC 004273689

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})
004273689-01	OBS	No	519.710687	525.429035	796.0	7.096	19.1	9.5	2.74	5173	15.39	3.46
004273689-02	OBS	No	226.266074	249.039449	592.4	2.441	18.2	9.3	2.74	5173	7.20	10.50
004273689-04	OBS	No	363.839895	281.503520	881.0	4.227	16.1	9.6	2.74	5173	16.25	5.57
004273689-05	OBS	No	609.236599	178.803787	533.4	5.429	15.4	7.1	2.74	5173	6.23	2.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004273689-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

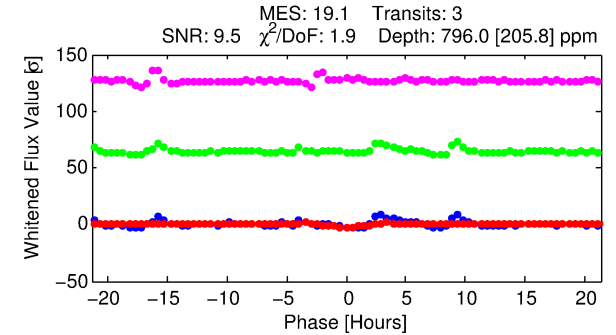
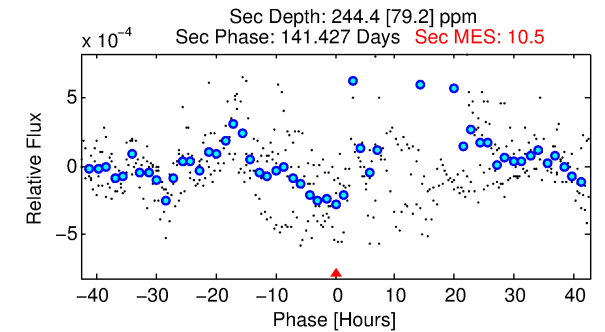
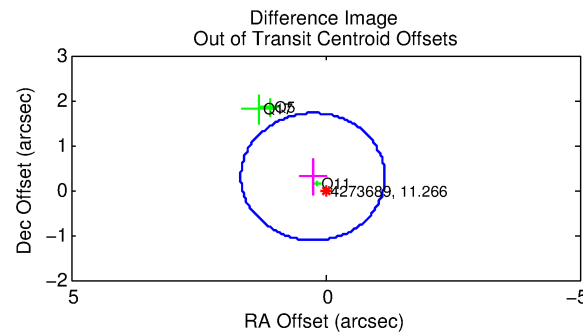
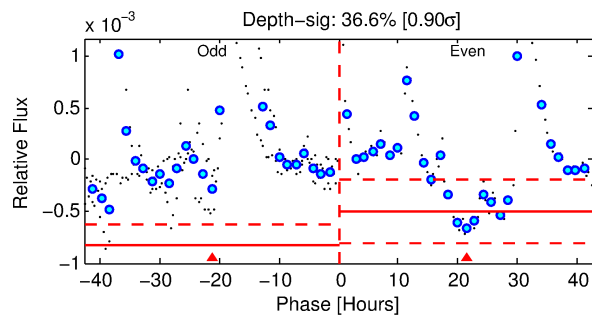
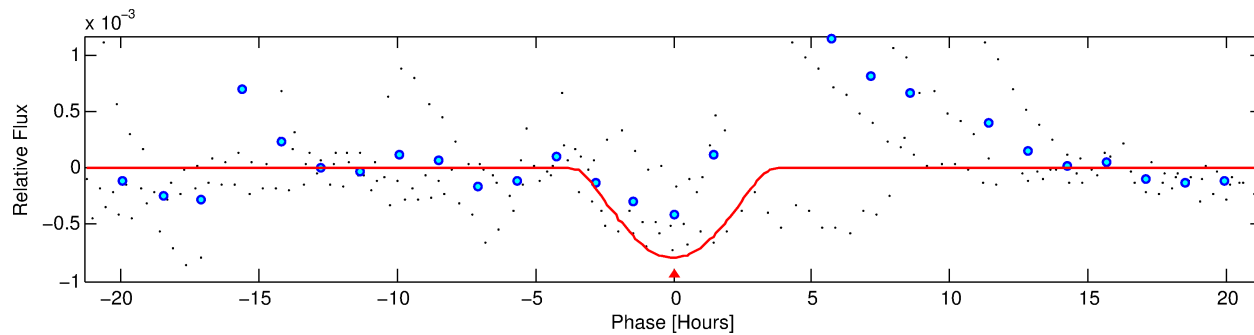
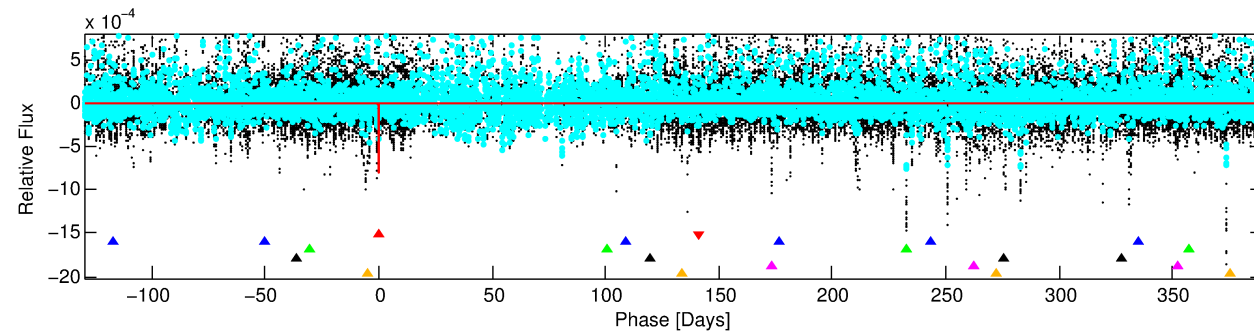
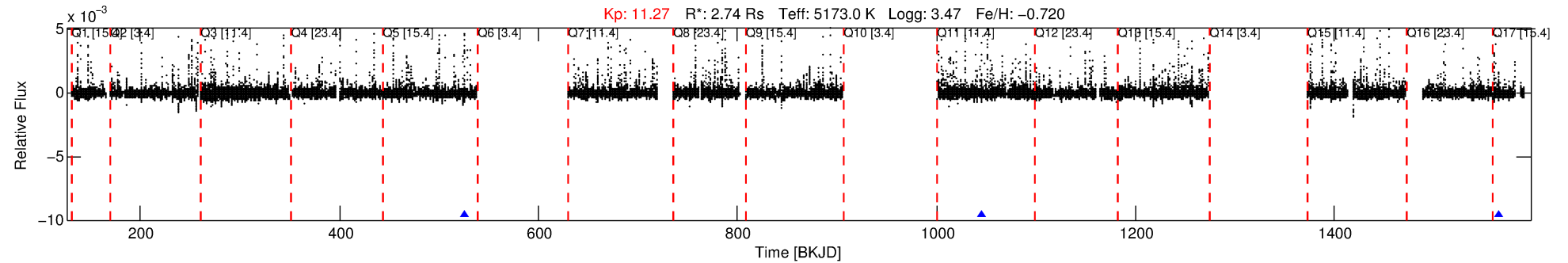
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004273689-01

No Significant Match Found

DV One-Page Summary

KIC: 4273689 Candidate: 1 of 6 Period: 519.711 d



DV Fit Results:

Period = 519.71069 [0.01345] d
Epoch = 525.4290 [0.0188] BKJD
Rp/R* = 0.0514 [0.1509]
a/R* = 182.14 [127.09]
b = 1.00 [0.21]
Seff = 3.46 [6.78]
Teq = 348 [170] K
Rp = 15.39 [46.77] Re
a = 1.1801 [1.2724] AU
Ag = 790.39 [4893.22] [0.16 σ]
Teffp = 2852 [4190] K [0.60 σ]

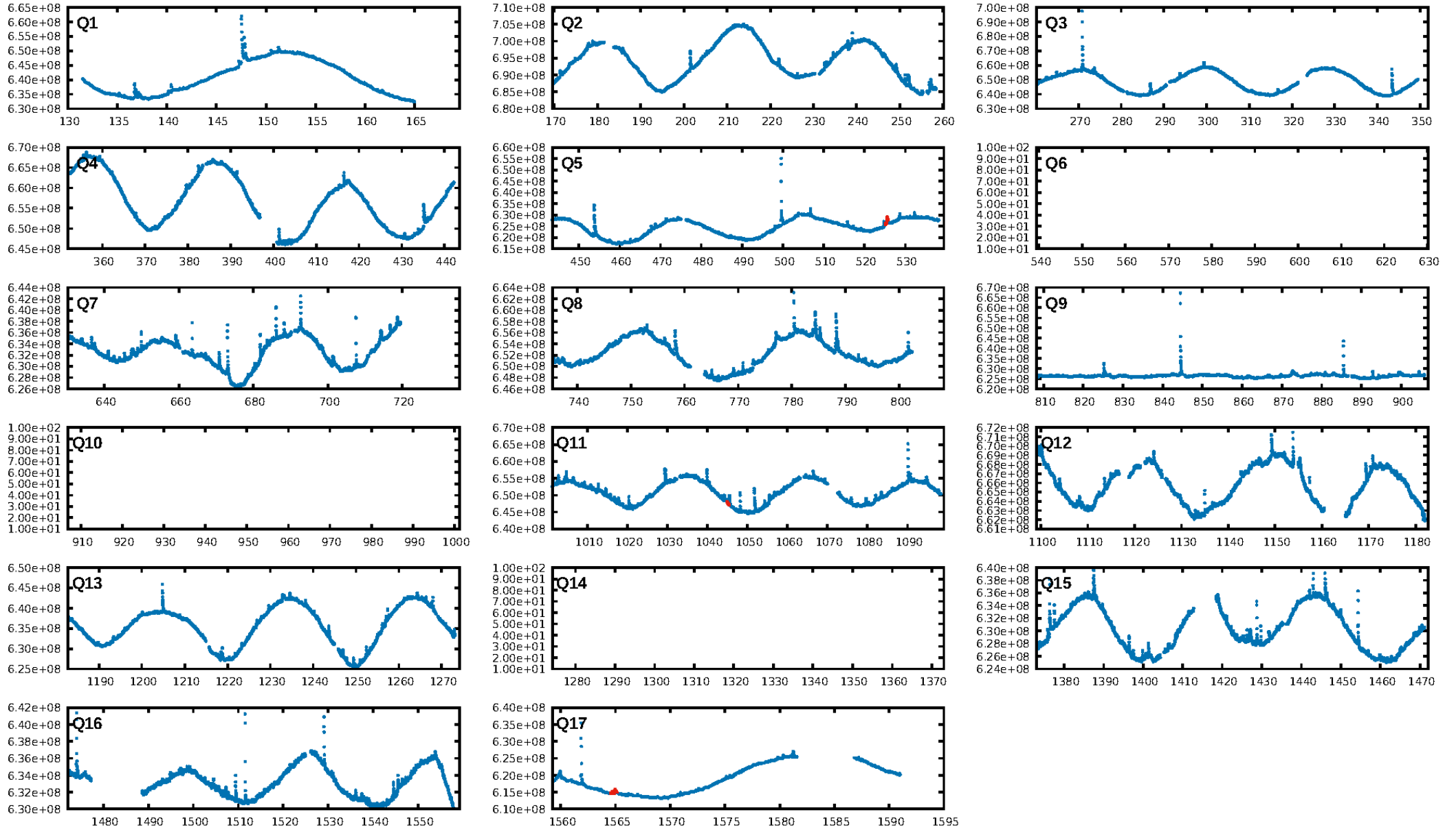
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [271.04 σ]
LongPeriod-sig: 100.0% [240.49 σ]
ModelChiSquare2-sig: 19.7%
ModelChiSquareGof-sig: 52.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.034
Centroid-sig: 2.9%
Centroid-so: 0.697 arcsec [1.85 σ]
OotOffset-rm: 0.386 arcsec [0.82 σ]
KicOffset-rm: 0.287 arcsec [0.47 σ]
OotOffset-st: 0/1/0/2 [3]
KicOffset-st: 0/1/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

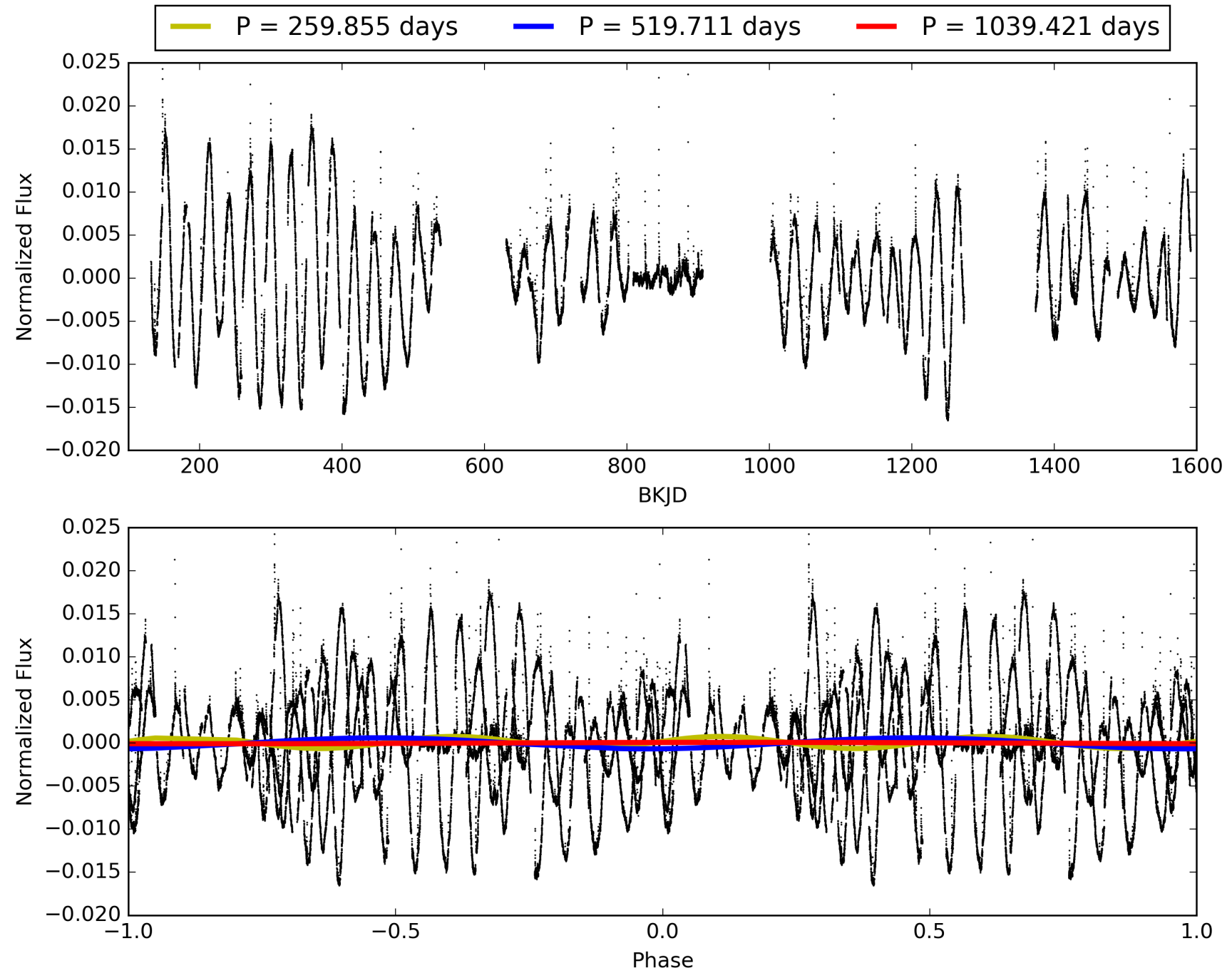
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:30:33 Z

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

TCE 004273689-01, PDC Light Curves

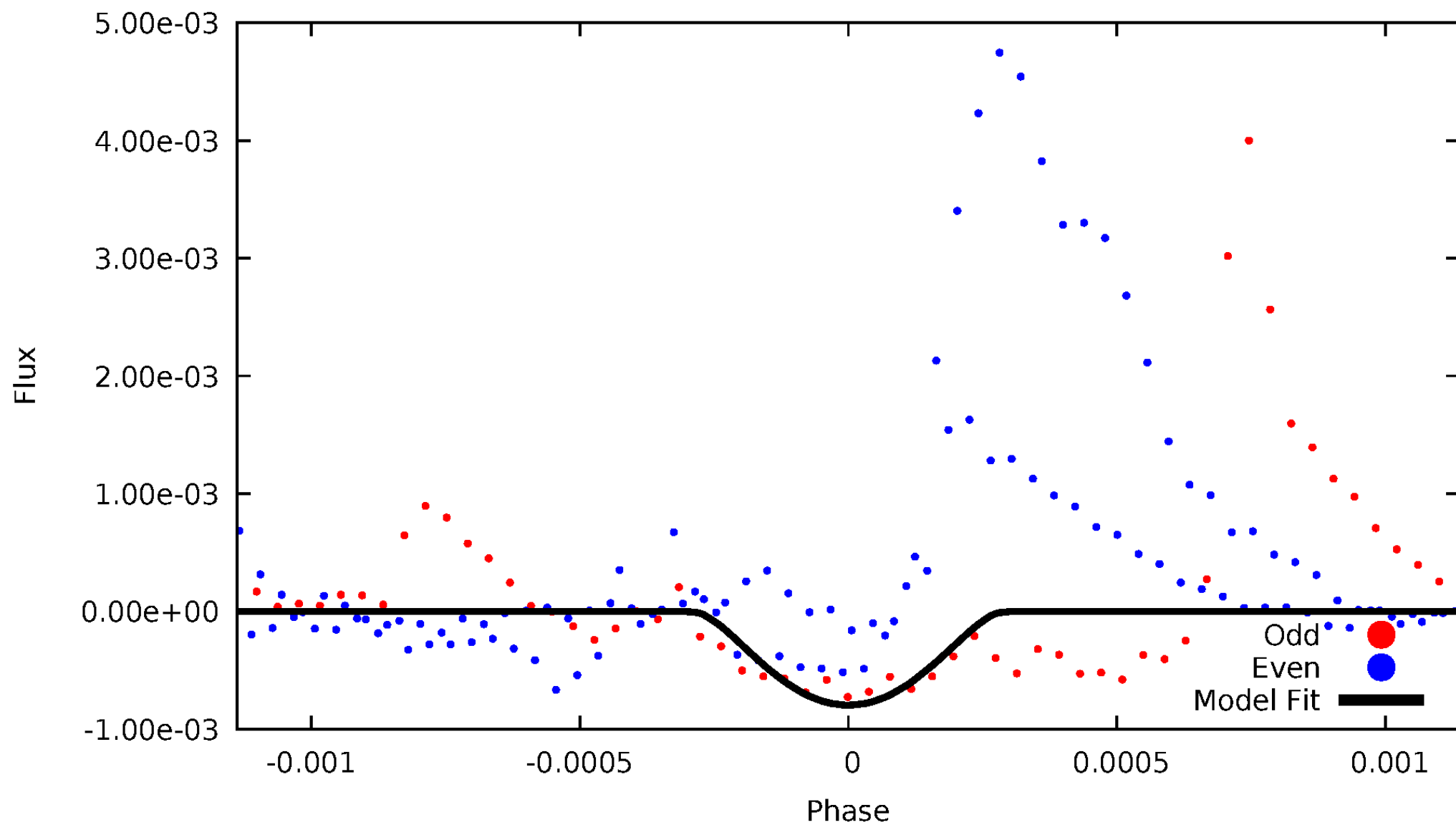


TCE 004273689-01



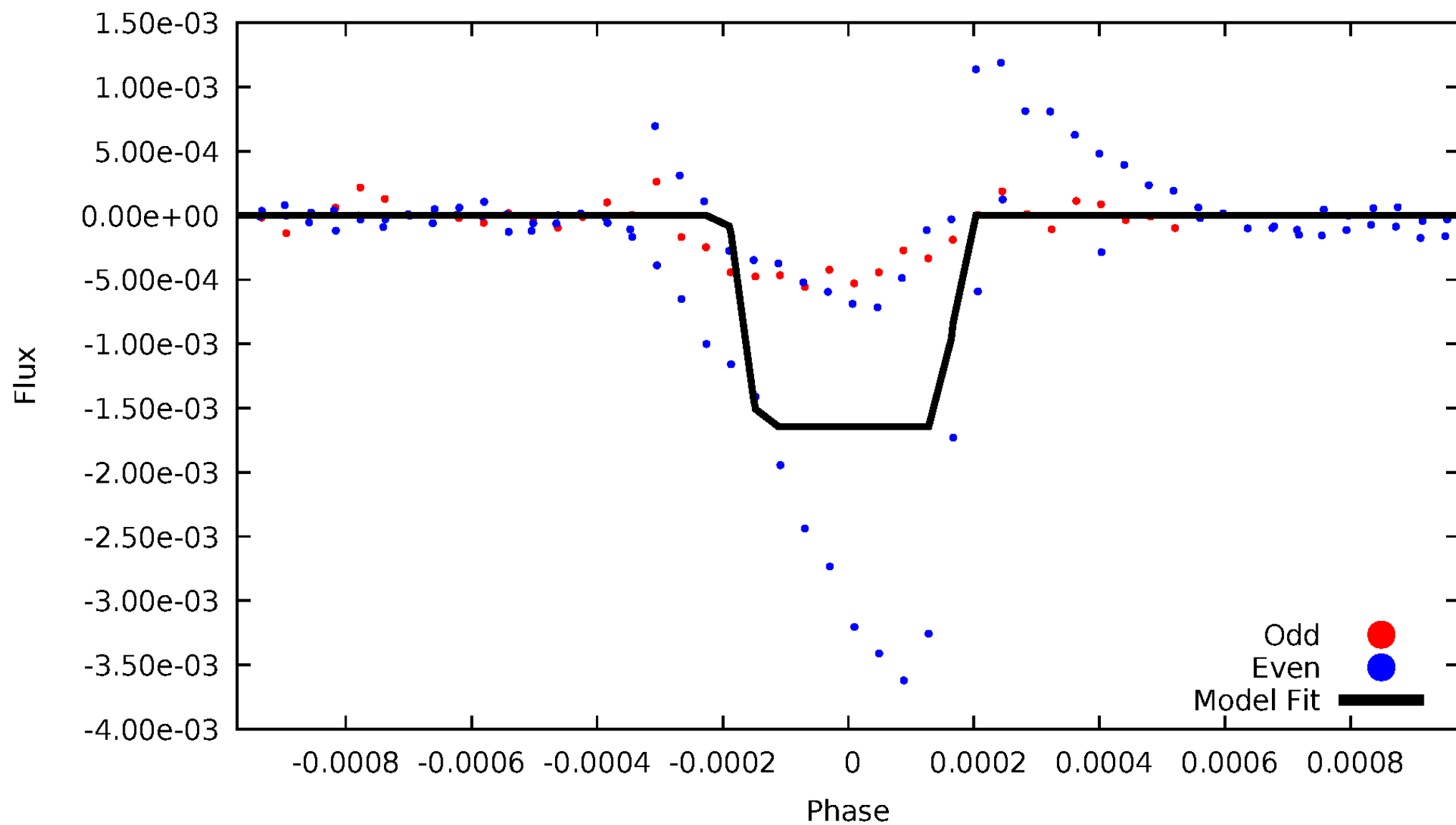
DV Odd/Even

TCE 004273689-01



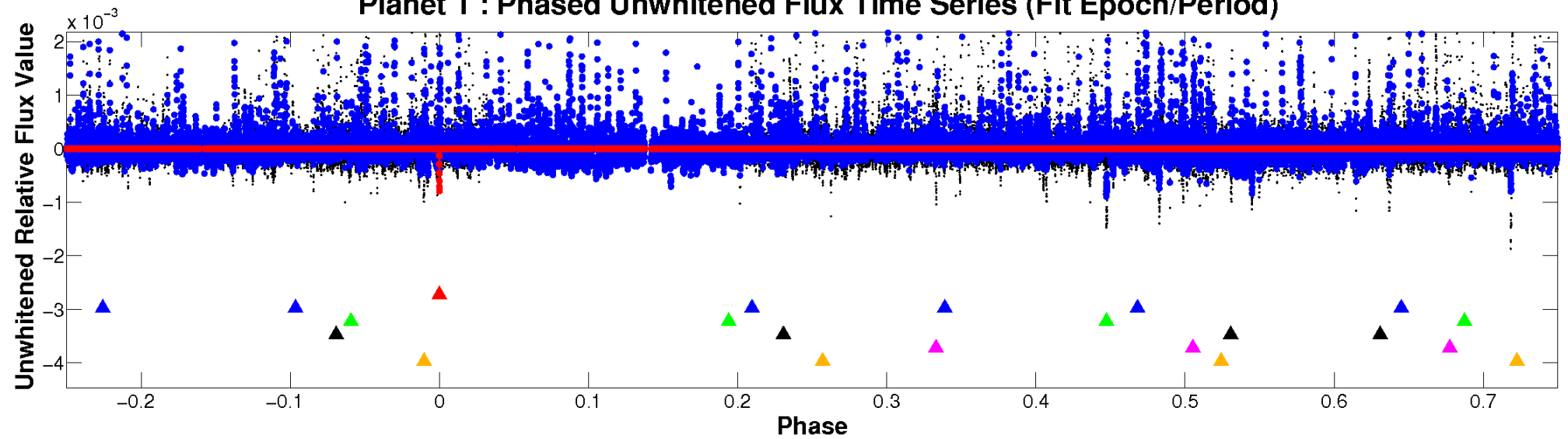
ALT Odd/Even

TCE 004273689-01

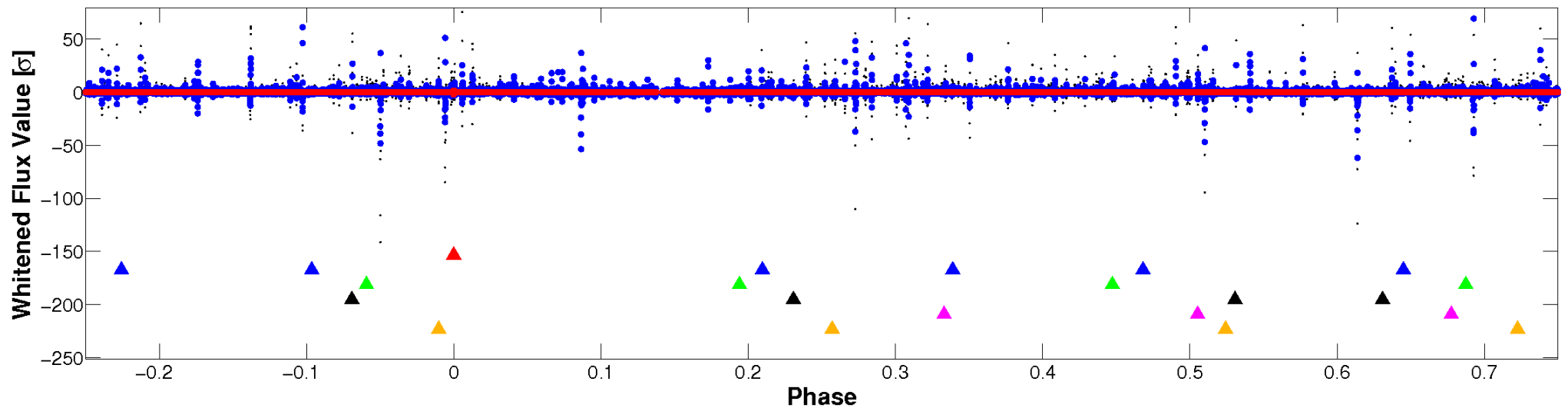


Non-Whitened Vs. Whitened Light Curve

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

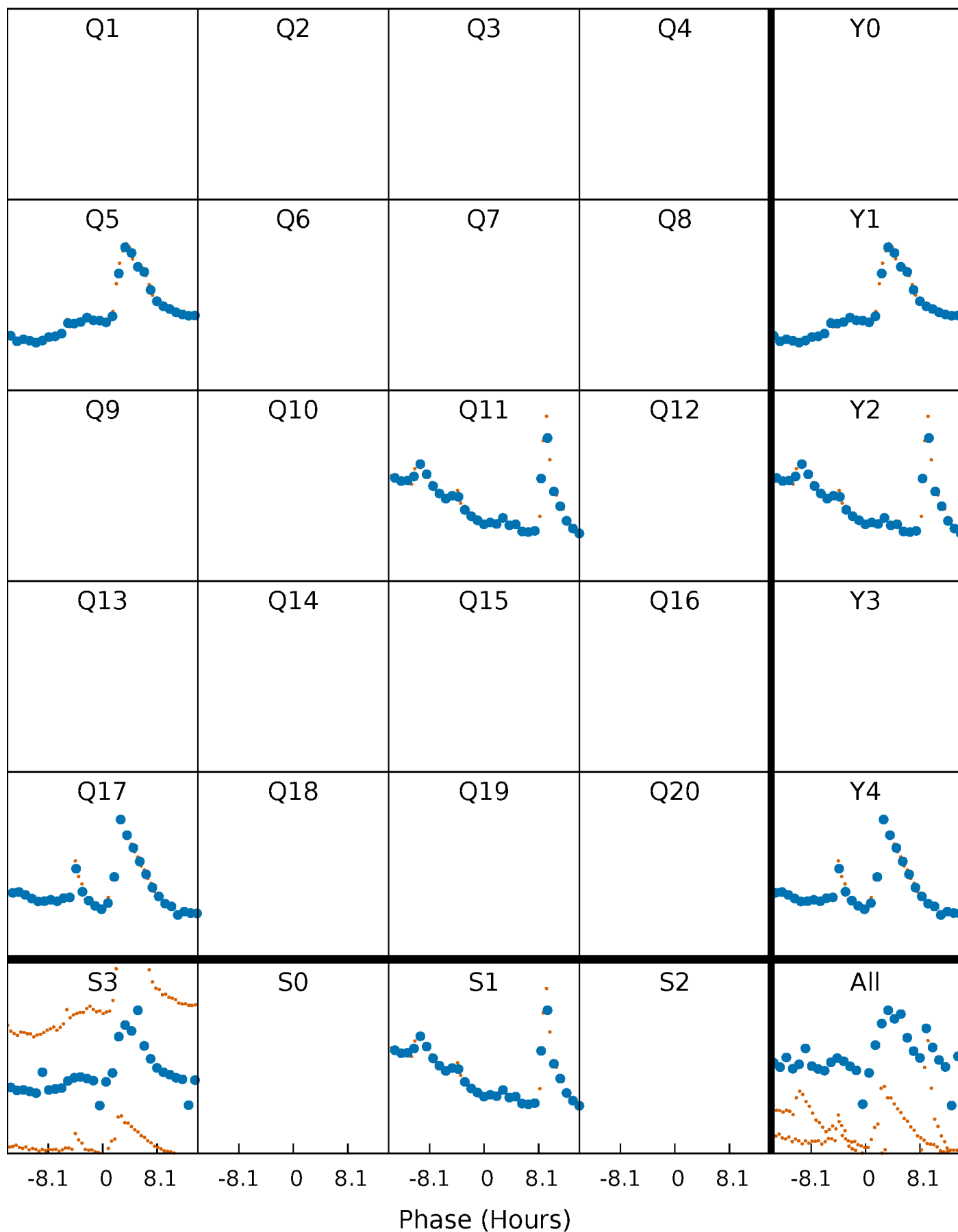


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



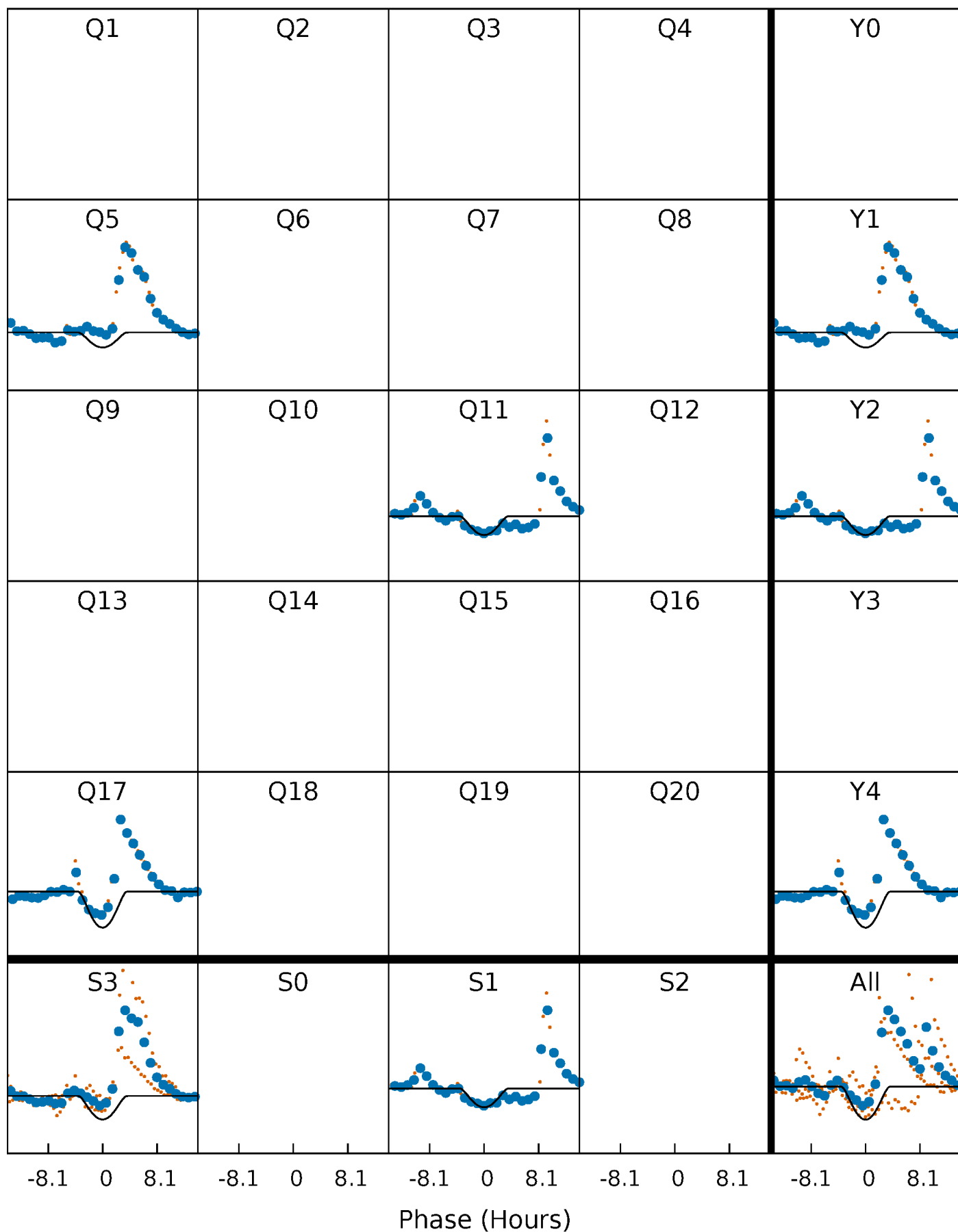
PDC Quarter-Phased Transit Curves

TCE 004273689-01 P=519.710687 Days $T_0=525.429035$ (BKJD)



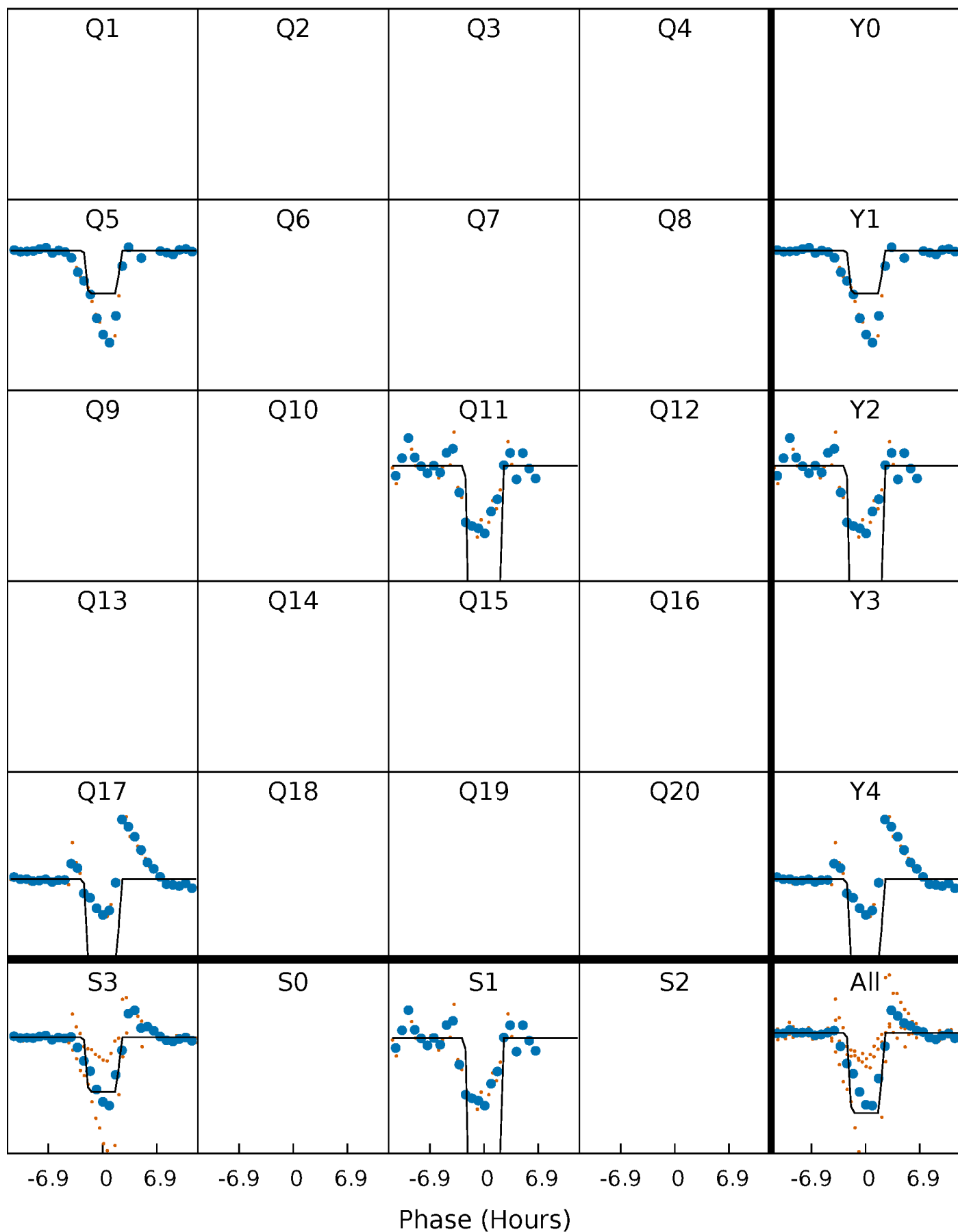
DV Quarter-Phased Transit Curves

TCE 004273689-01 P=519.710687 Days $T_0=525.429035$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

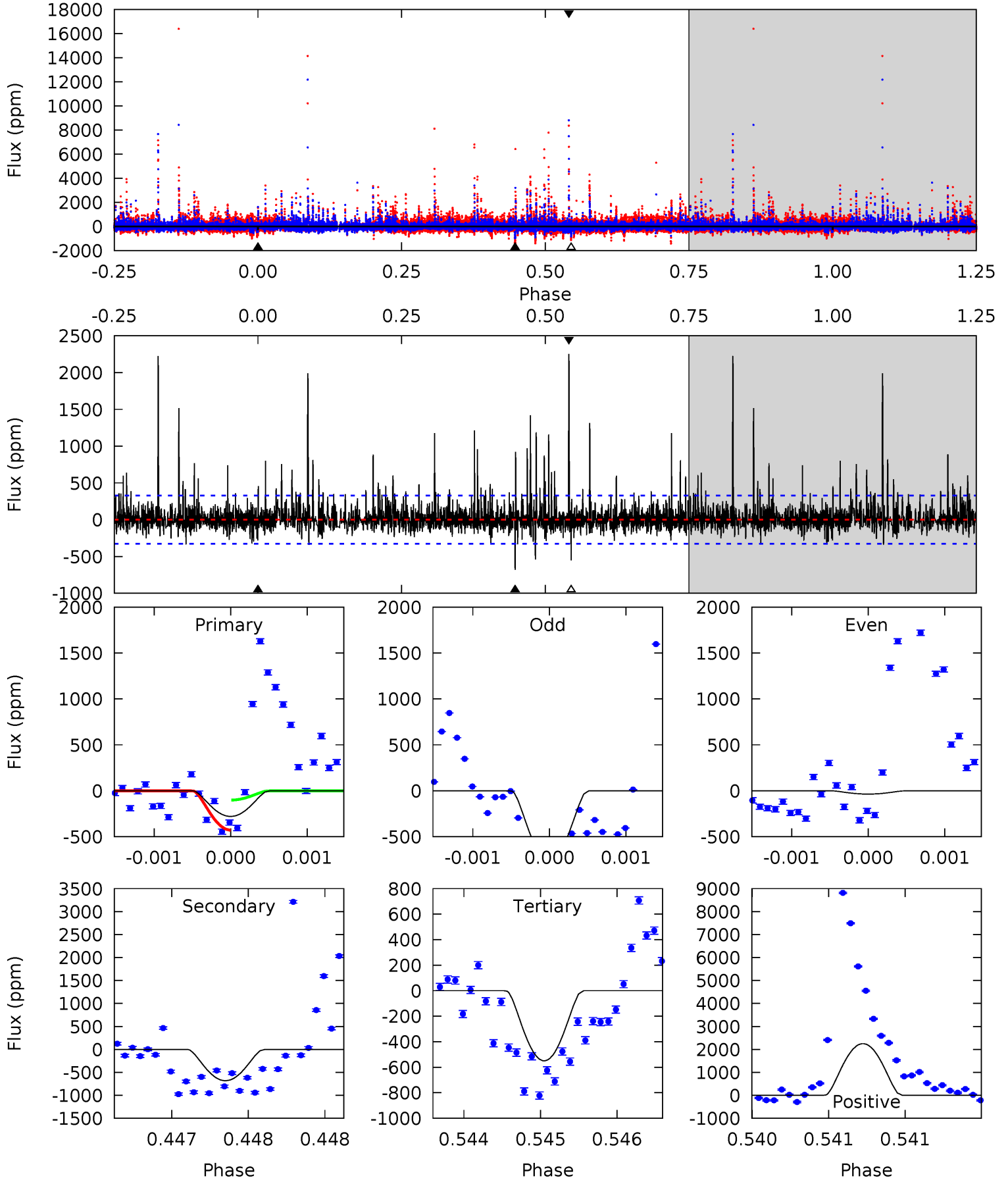
TCE 004273689-01 P=519.707165 Days $T_0=525.427242$ (BKJD)



DV Model-Shift Uniqueness Test

004273689-01, P = 519.710687 Days, E = 5.718348 Days

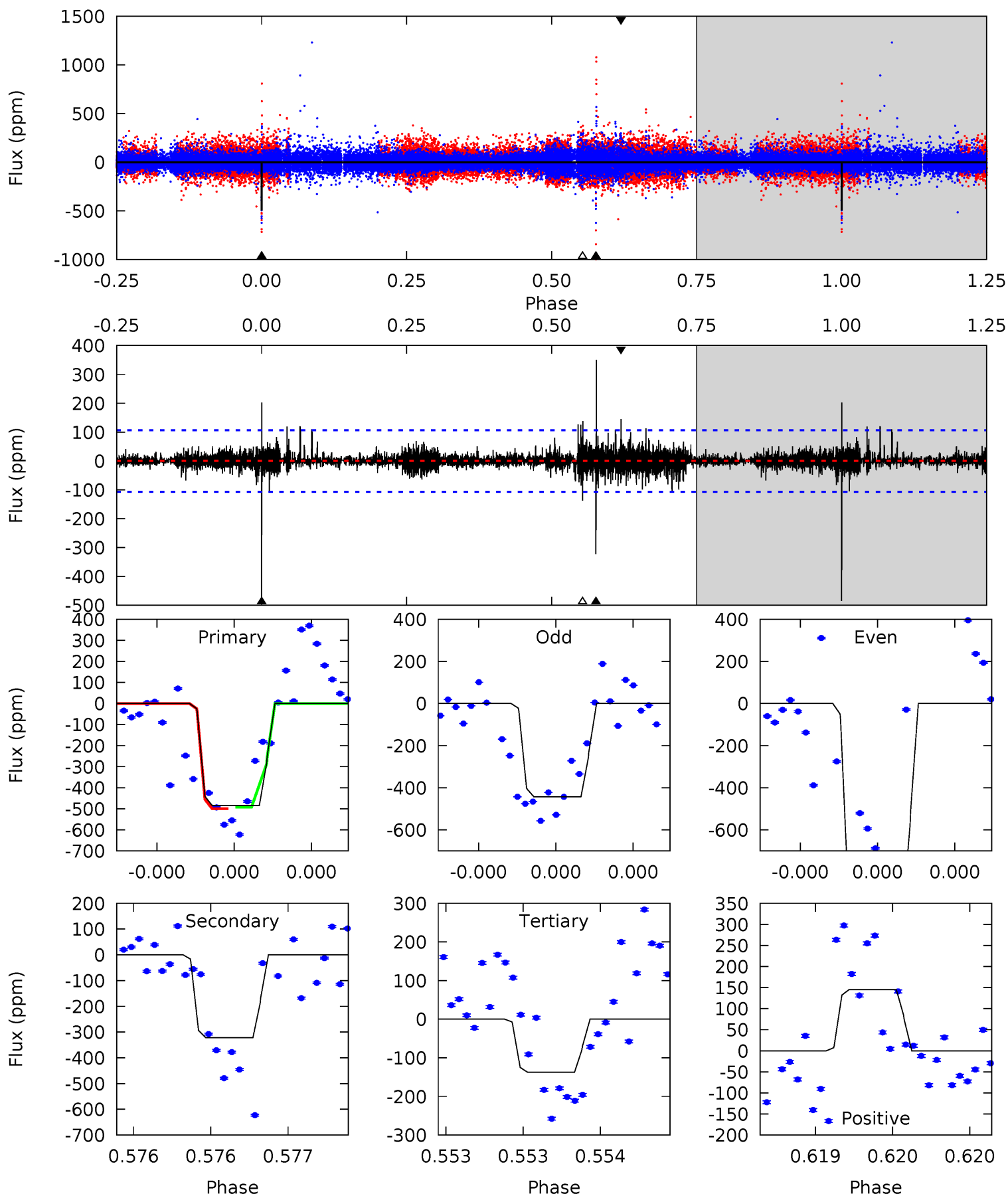
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.73	11.5	9.30	38.1	5.54	3.44	2.85	-4.57	-33.3	2.22	-26.5	3.63	0.79	0.77	2.73



Alt Model-Shift Uniqueness Test

004273689-01, P = 519.707165 Days, E = 5.720077 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.5	17.0	7.22	7.64	5.62	3.55	1.04	18.3	17.9	9.74	9.31	13.4	2.64	0.42	0



Stellar Parameters For KIC 004273689

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5173^{+106}_{-197}	$3.471^{+1.224}_{-0.306}$	$-0.720^{+0.250}_{-0.400}$	$2.742^{+1.451}_{-2.176}$	$0.811^{+0.203}_{-0.203}$	$0.055^{+4.654}_{-0.039}$
	+2%/-4%	+35%/-9%	+35%/-56%	+53%/-79%	+25%/-25%	+8396%/-69%
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 004273689-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-682 ± 59	$29.89^{+44.77}_{-20.25}$	469^{+75}_{-103}	3031^{+1217}_{-543}	561^{+5105}_{-461}
Alt.	-322 ± 19	$28.87^{+37.29}_{-21.20}$	471^{+71}_{-113}	2766^{+1181}_{-435}	307^{+4088}_{-252}

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 $A_{obs} \gg 1.0$

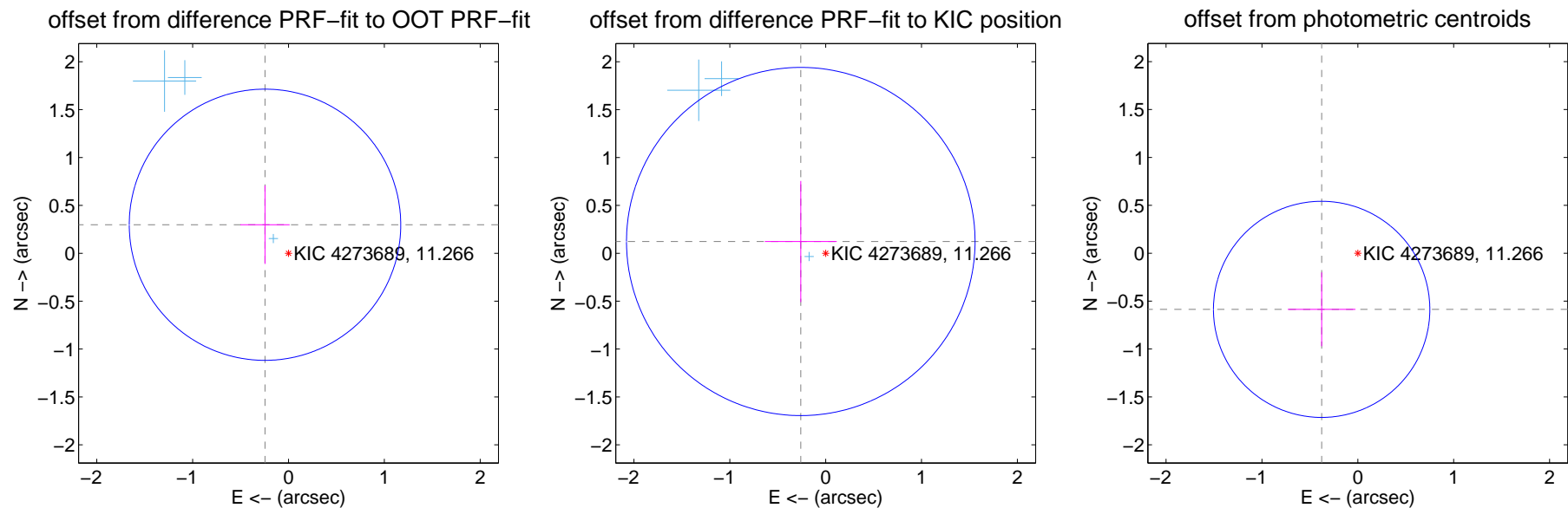
DV Centroid Data

Supplemental centroid analysis for 004273689-01. **Kepler magnitude: 11.27.** Transit SNR 9.45

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.386 ± 0.472	0.82	0.245 ± 0.257	0.298 ± 0.409
PRF-fit source offset from KIC position	0.287 ± 0.606	0.47	0.260 ± 0.375	0.123 ± 0.632
photometric centroid source offset	0.70 ± 0.38	1.85	0.38 ± 0.35	-0.59 ± 0.39

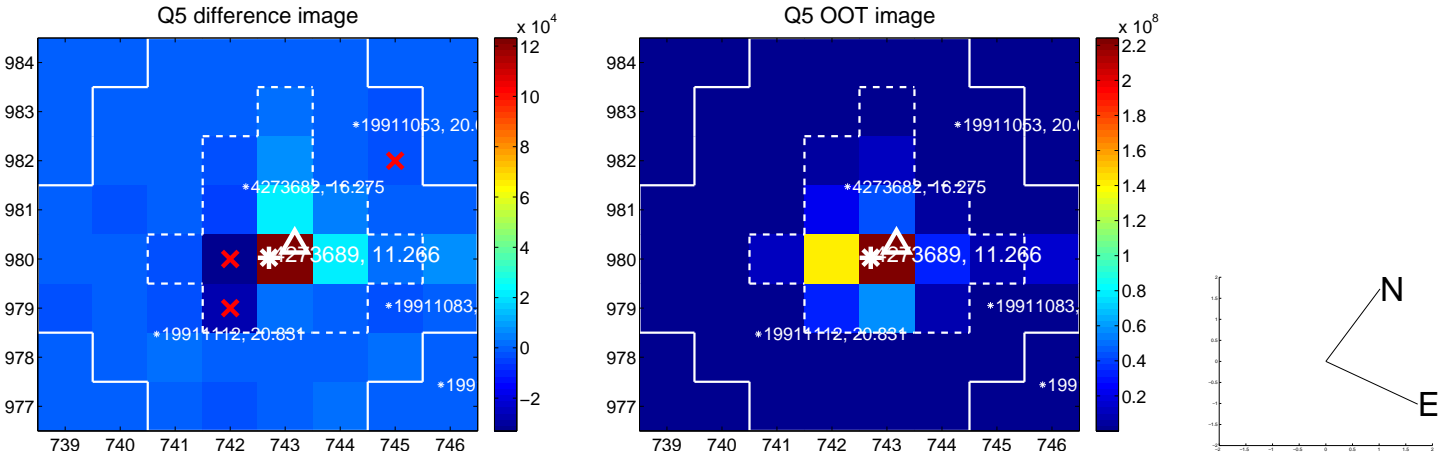


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

Q9 no difference image



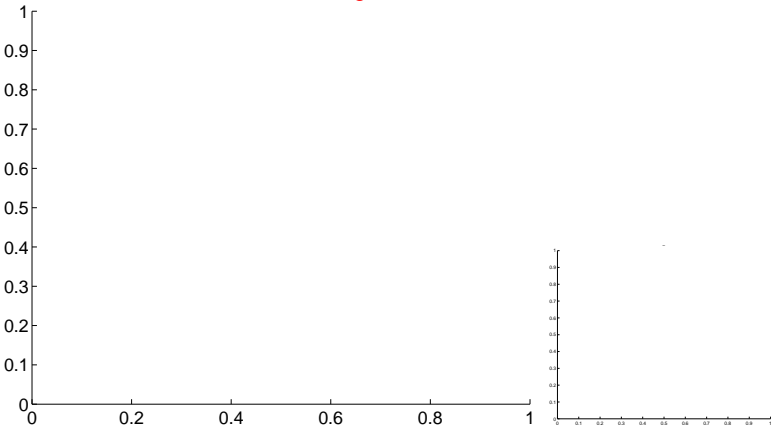
Q9 no OOT image



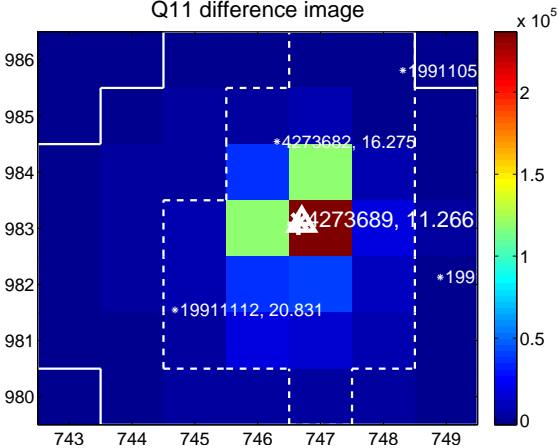
Q10 no difference image



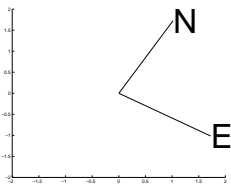
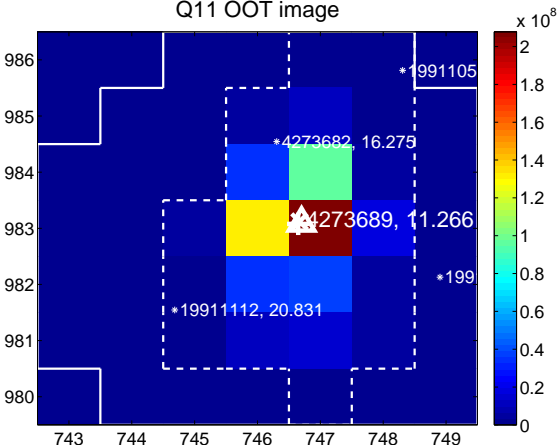
Q10 no OOT image



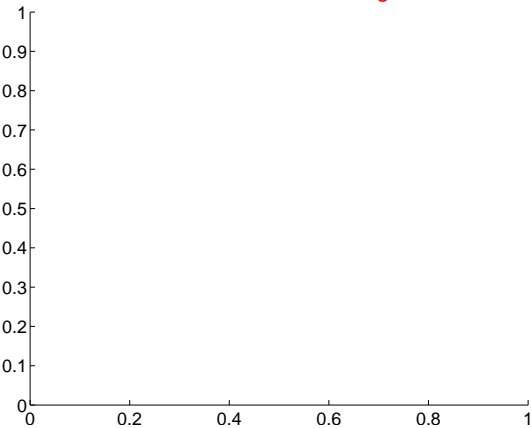
Q11 difference image



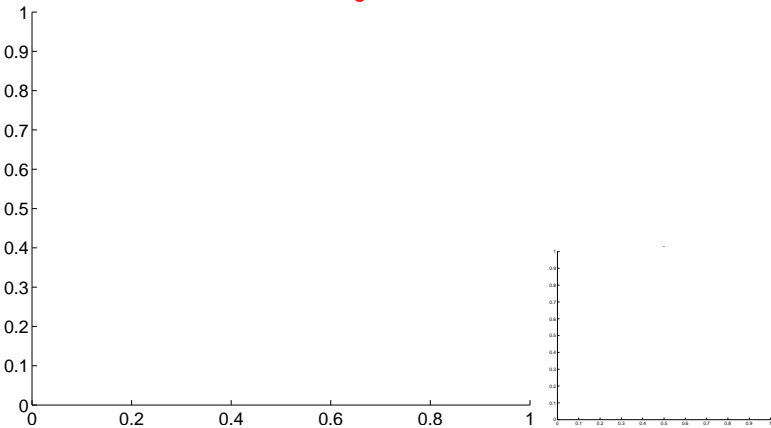
Q11 OOT image



Q12 no difference image



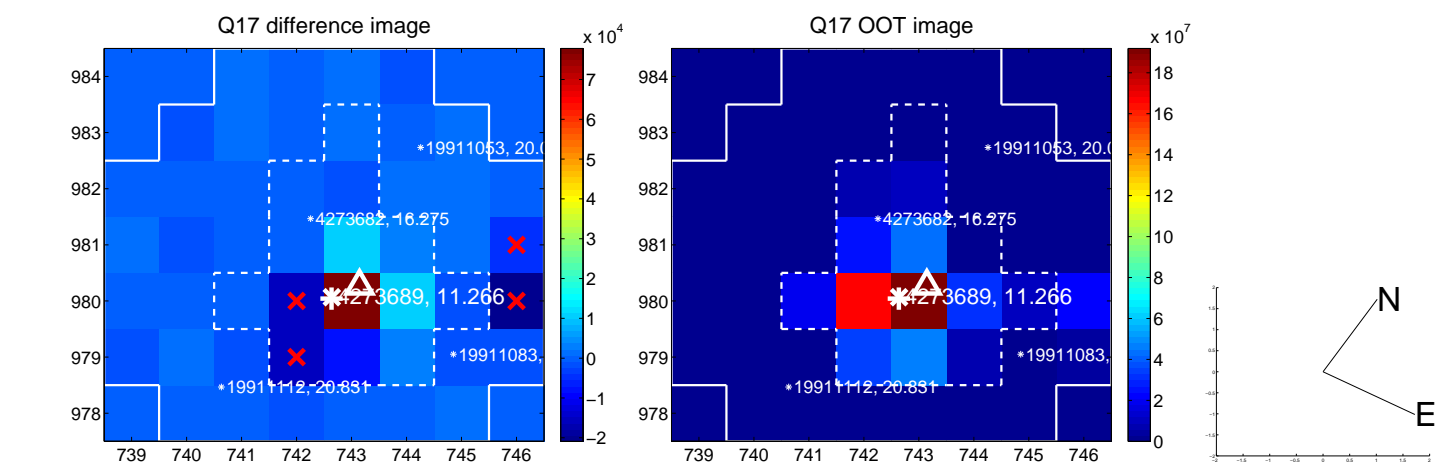
Q12 no OOT image



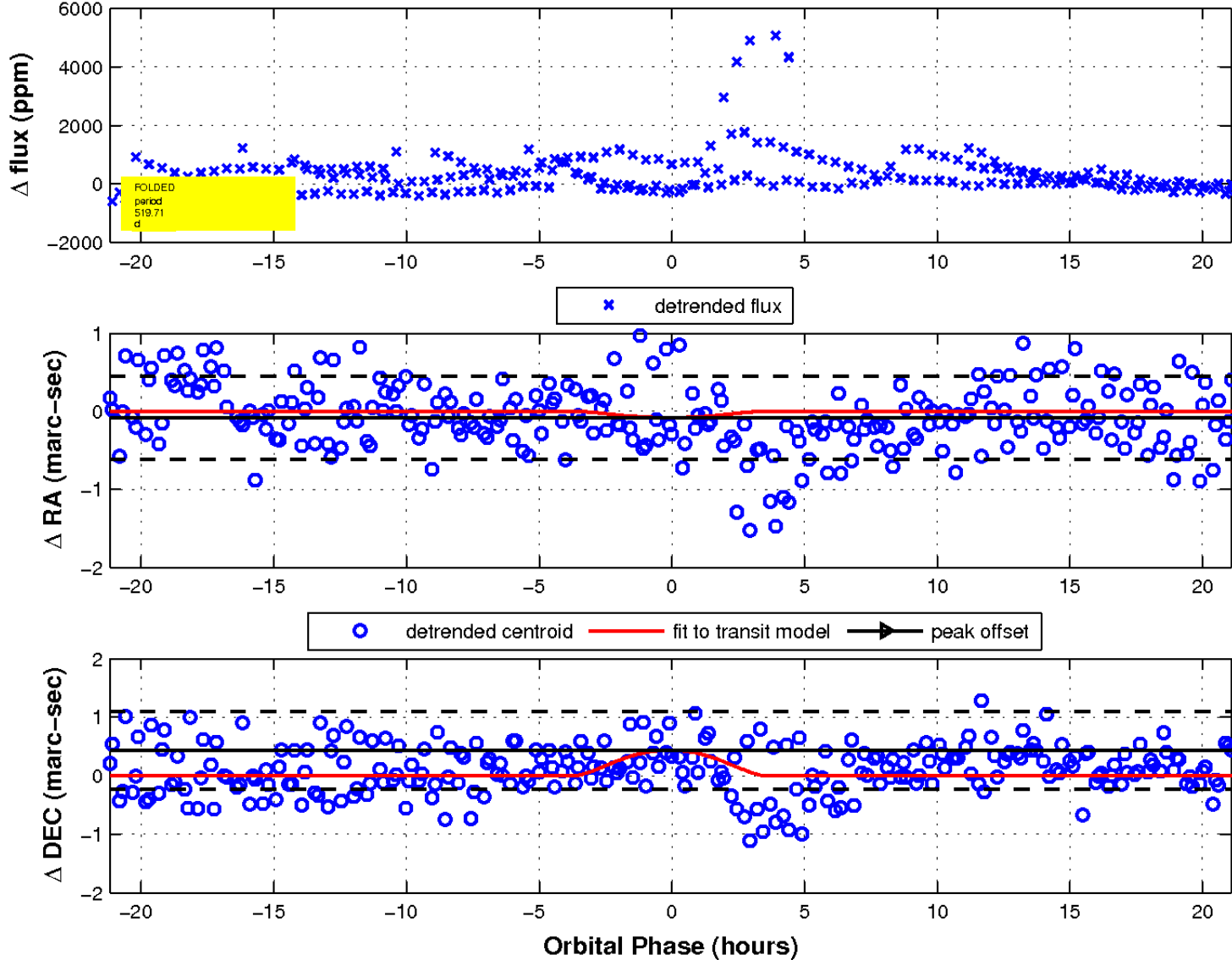
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

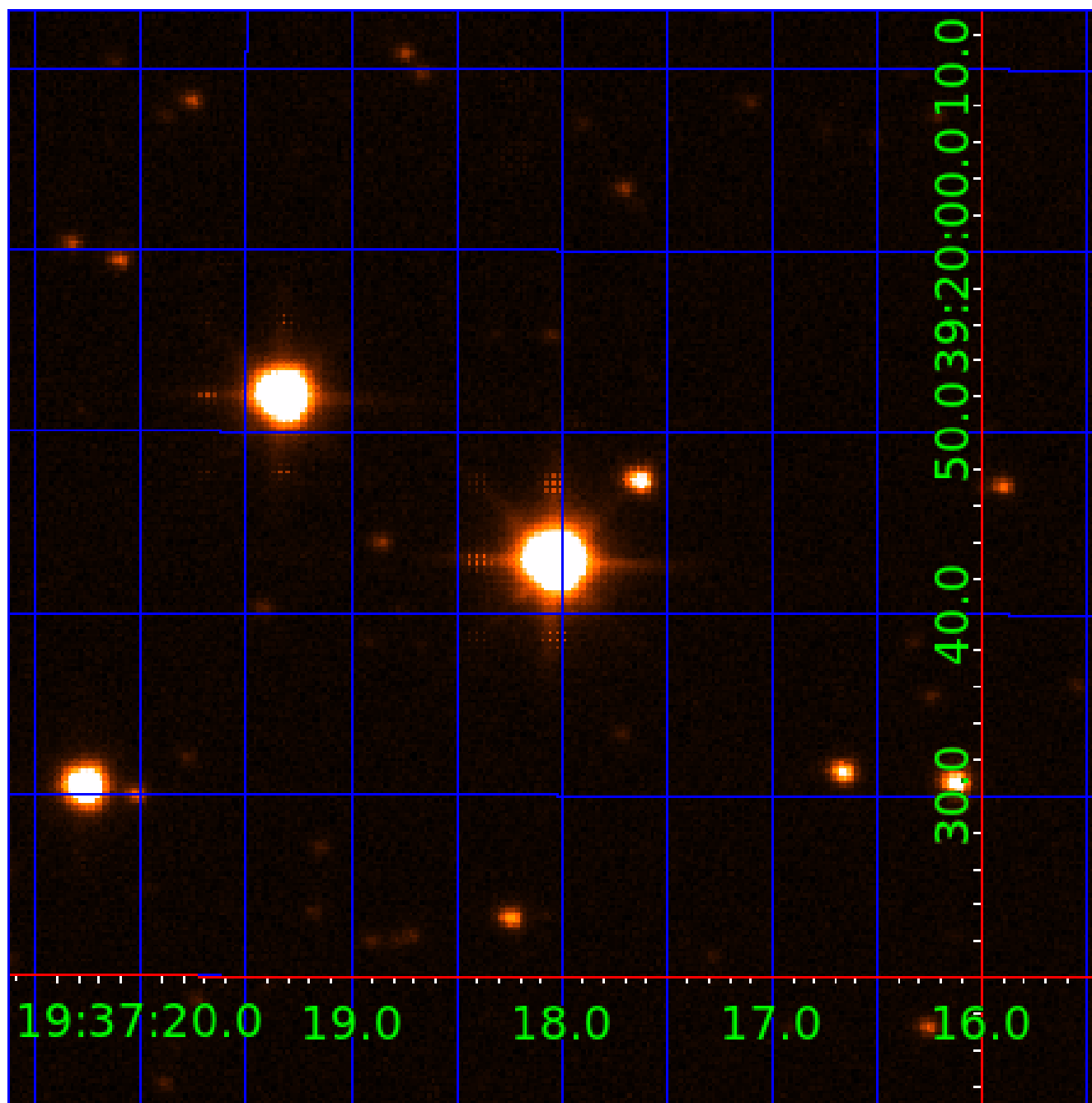


fluxWeightedCentroids, Planet 1 of 6



UKIRT Image

Declination



KIC 004273689

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})
004273689-01	OBS	No	519.710687	525.429035	796.0	7.096	19.1	9.5	2.74	5173	15.39	3.46
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004273689-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

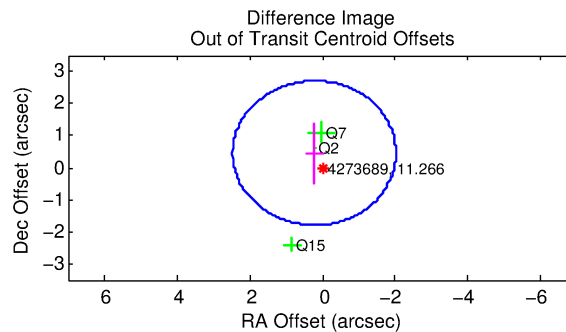
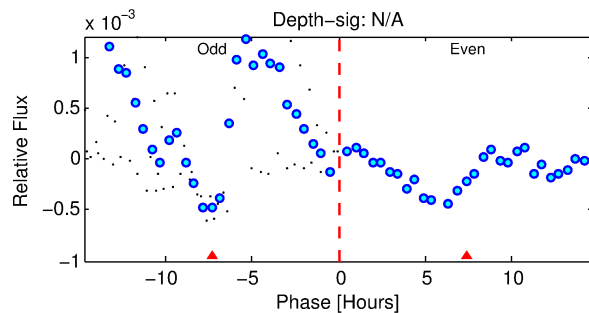
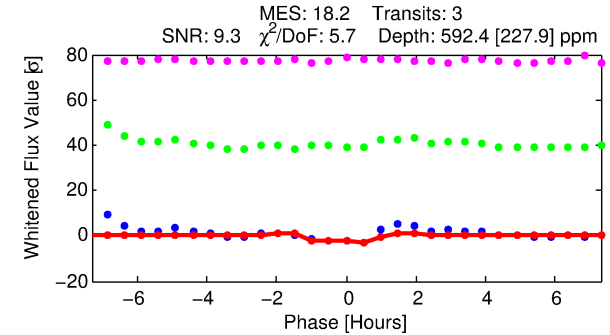
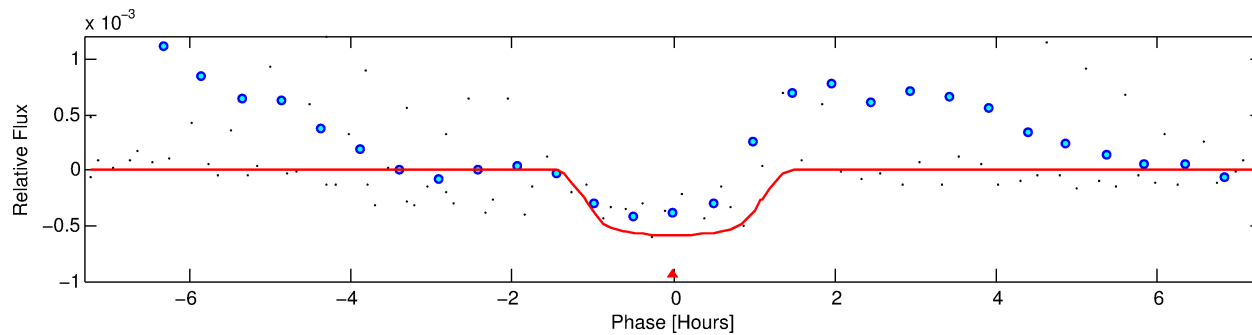
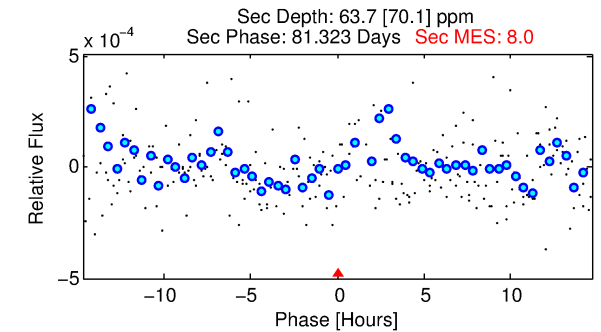
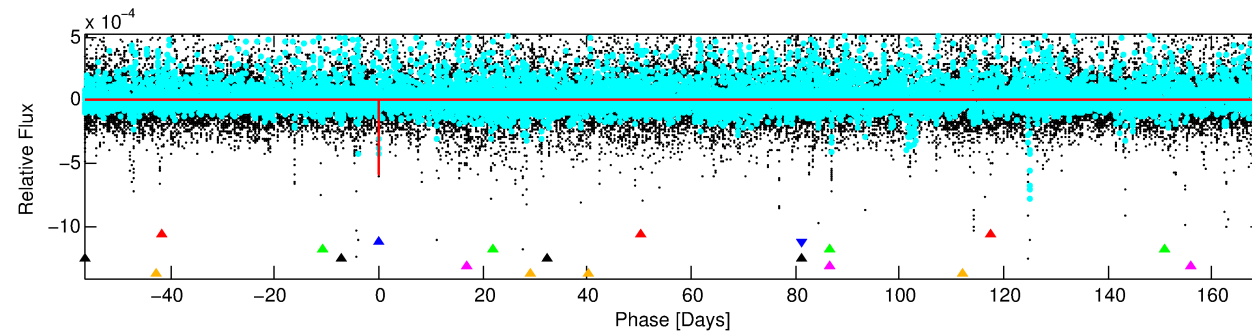
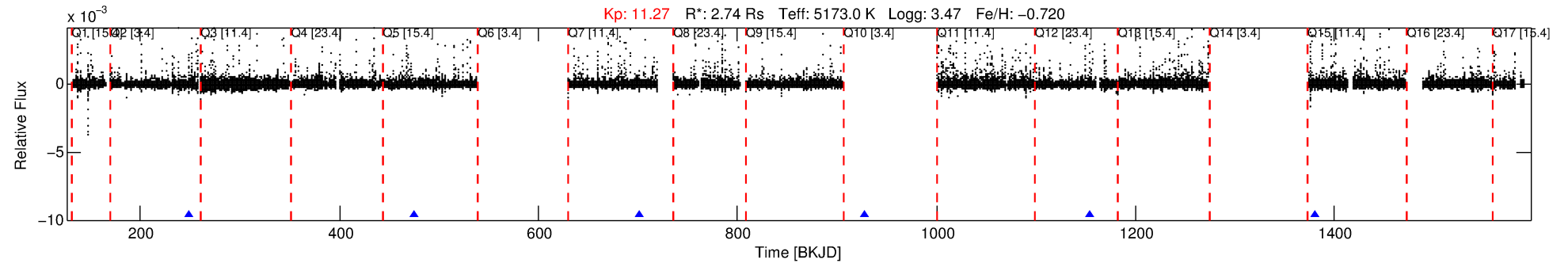
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004273689-02

No Significant Match Found

DV One-Page Summary

KIC: 4273689 Candidate: 2 of 6 Period: 226.266 d



DV Fit Results:

Period = 226.26607 [0.00415] d
Epoch = 249.0394 [0.0140] BKJD
Rp/R* = 0.0241 [0.1418]
a/R* = 510.20 [12417.42]
b = 0.73 [16.06]
Seff = 10.50 [20.55]
Teq = 459 [225] K
Rp = 7.20 [42.82] Re
a = 0.6779 [0.7309] AU
Ag = 310.70 [3727.99] [0.08σ]
Teffp = 2979 [8819] K [0.29σ]

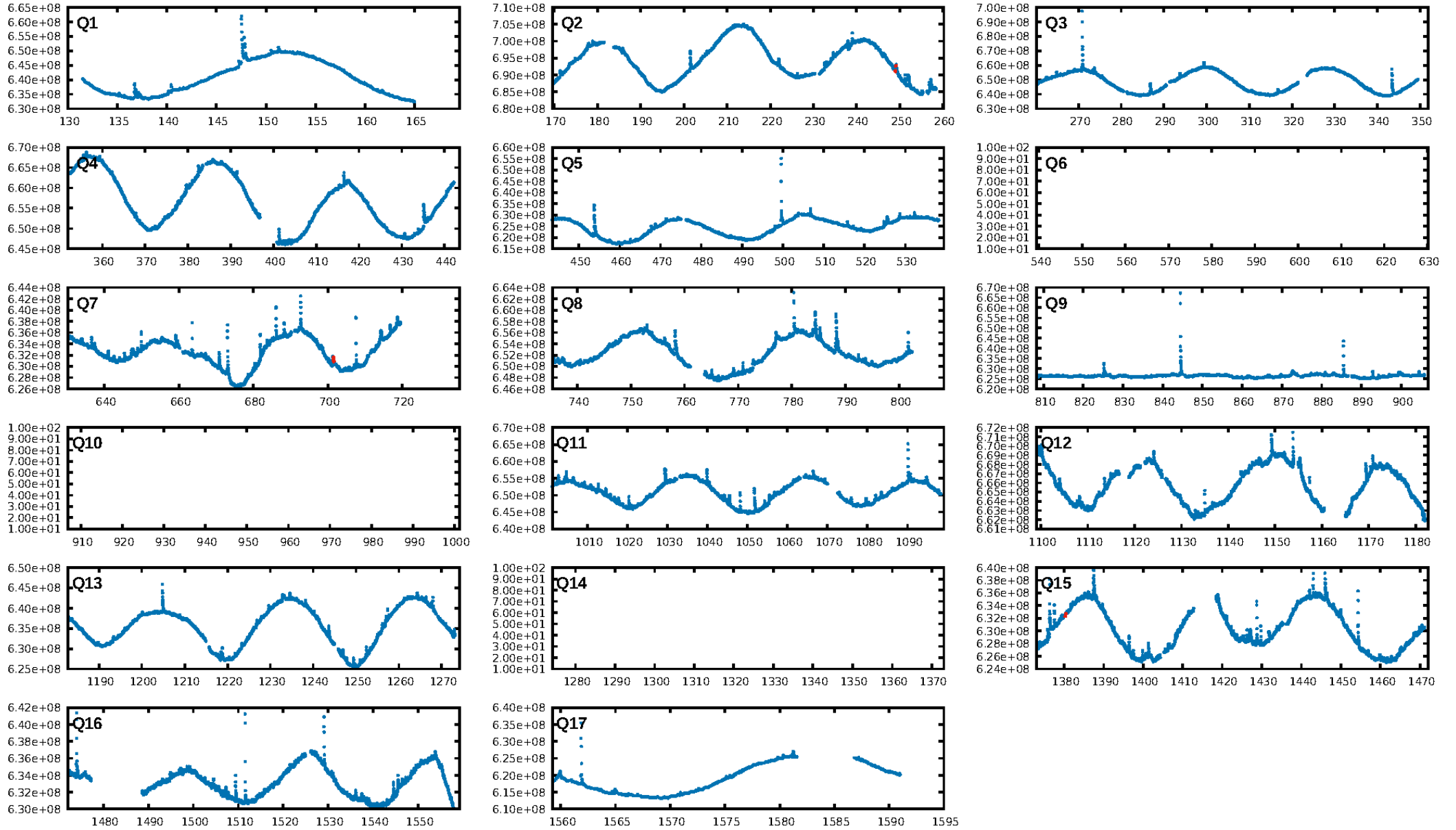
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [676.42σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -7.734
Centroid-sig: 97.8%
Centroid-so: 0.313 arcsec [0.72σ]
OotOffset-rm: 0.507 arcsec [0.68σ]
KicOffset-rm: 0.442 arcsec [1.10σ]
OotOffset-st: 1/2/0/0 [3]
KicOffset-st: 1/2/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

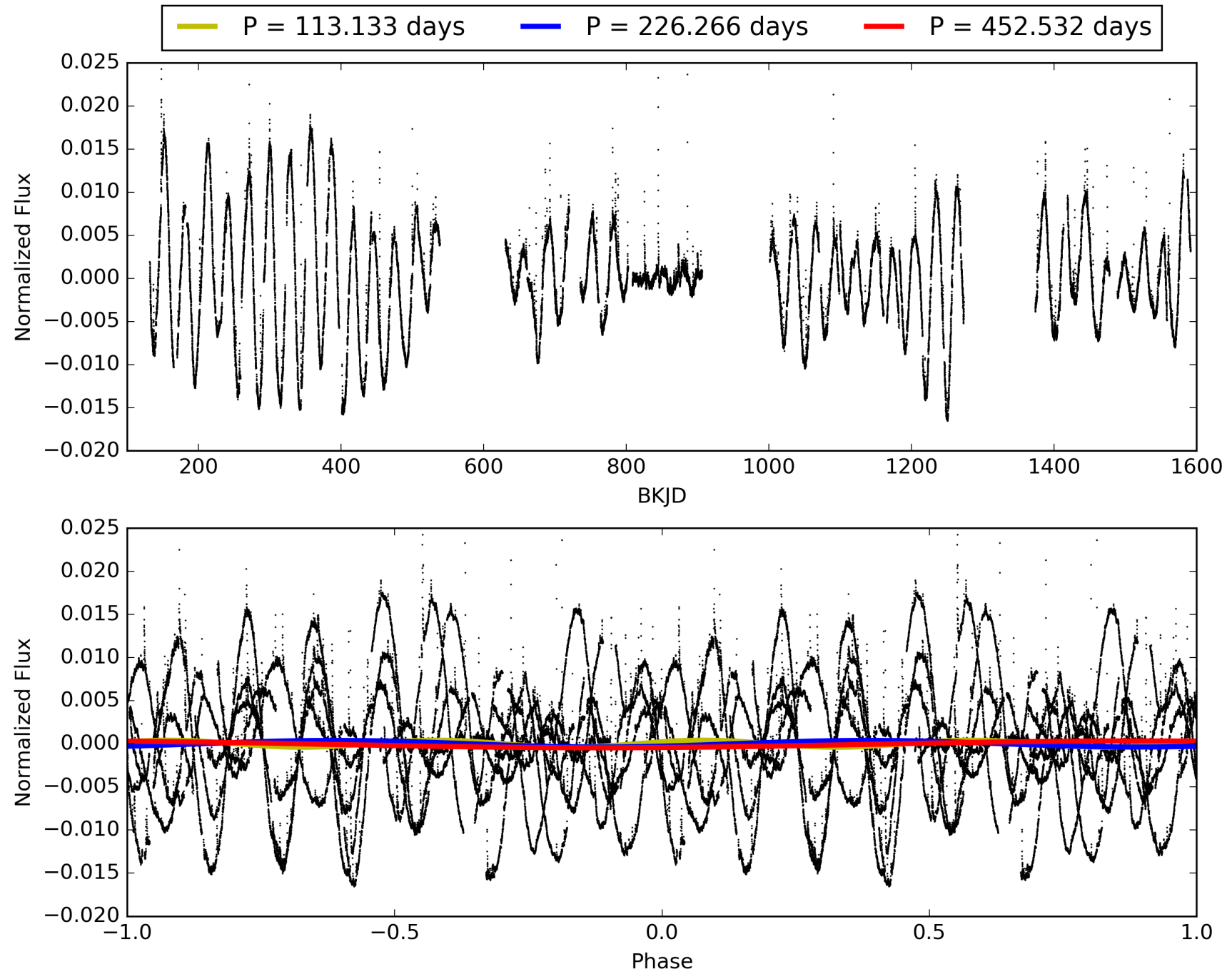
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:30:45 Z

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

TCE 004273689-02, PDC Light Curves

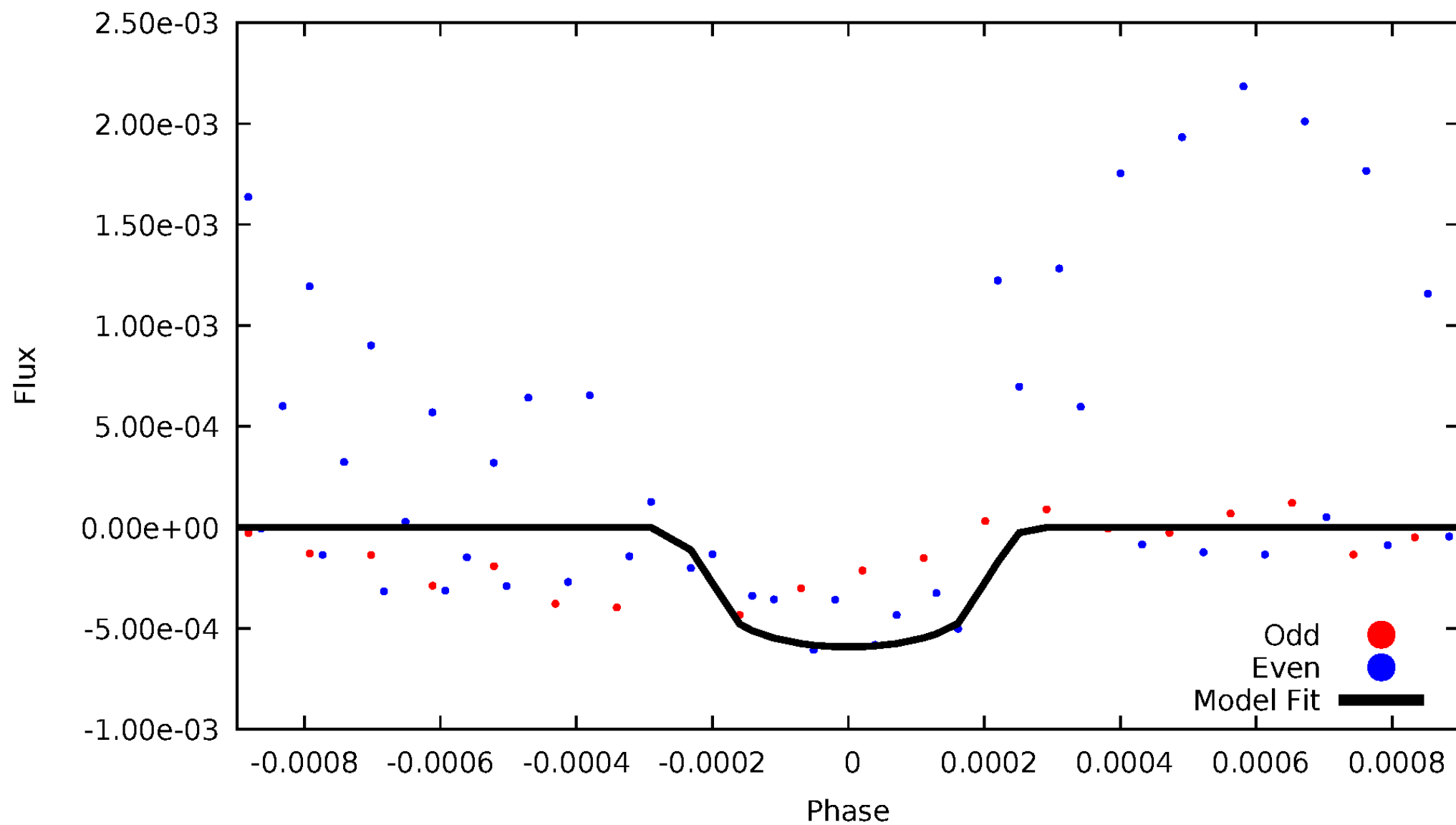


TCE 004273689-02



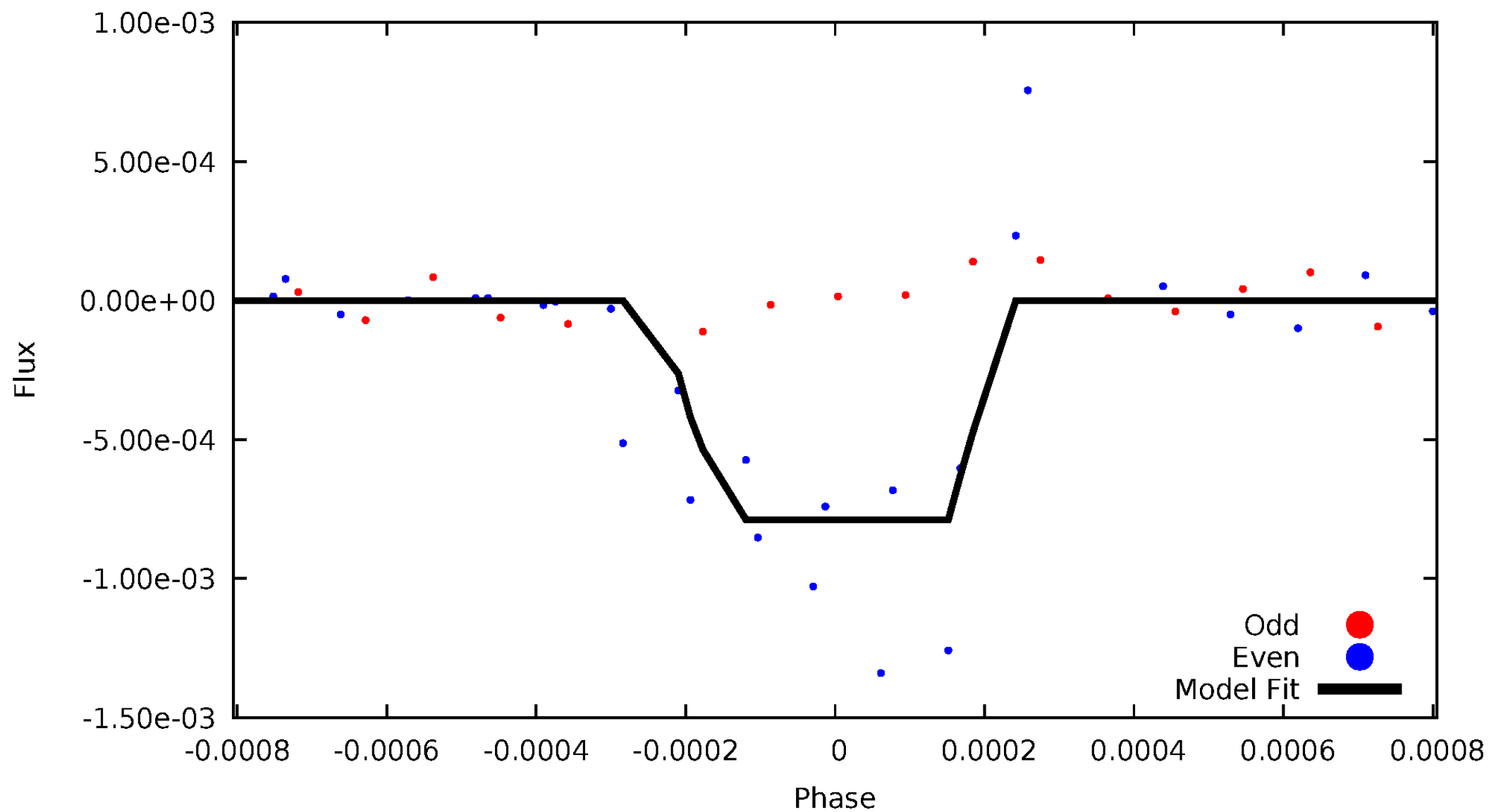
DV Odd/Even

TCE 004273689-02



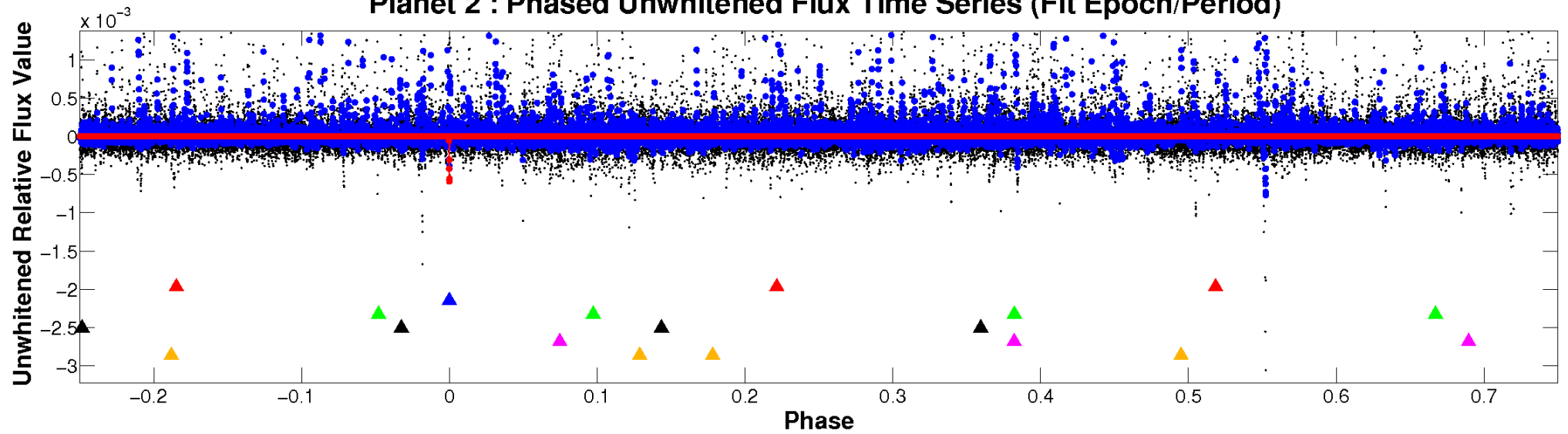
ALT Odd/Even

TCE 004273689-02

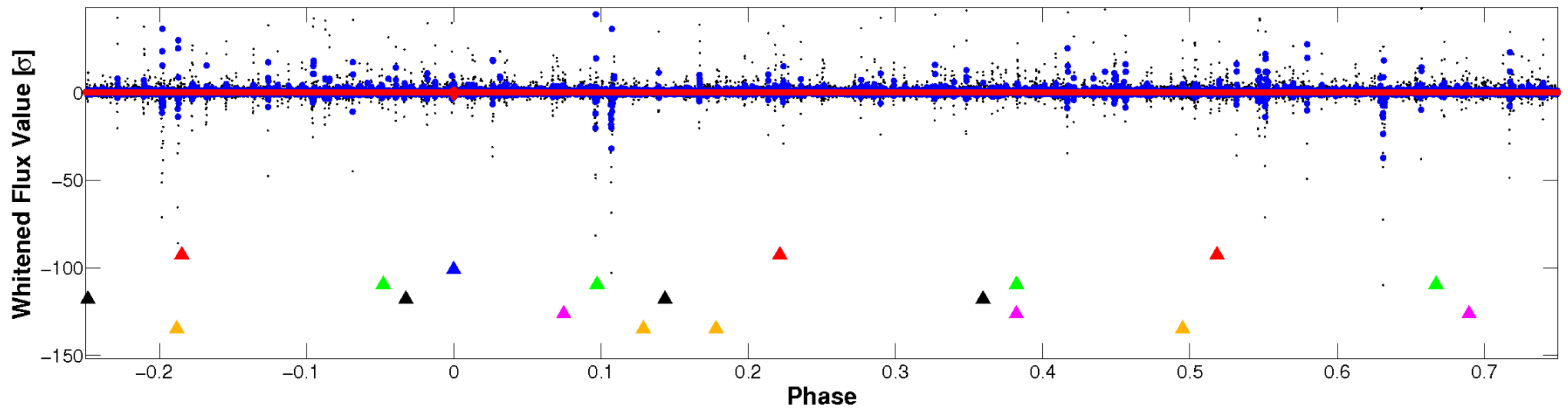


Non-Whitened Vs. Whitened Light Curve

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

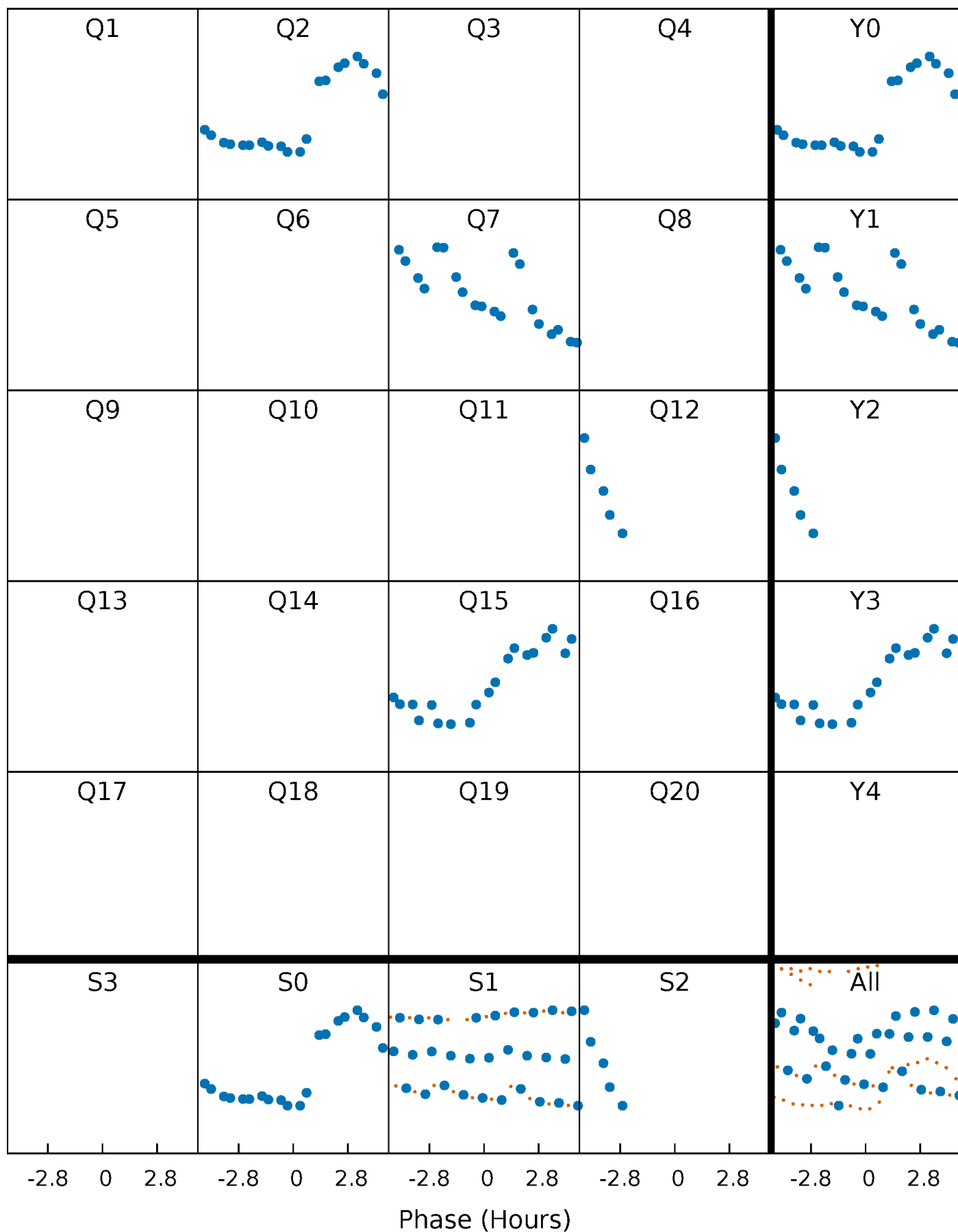


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



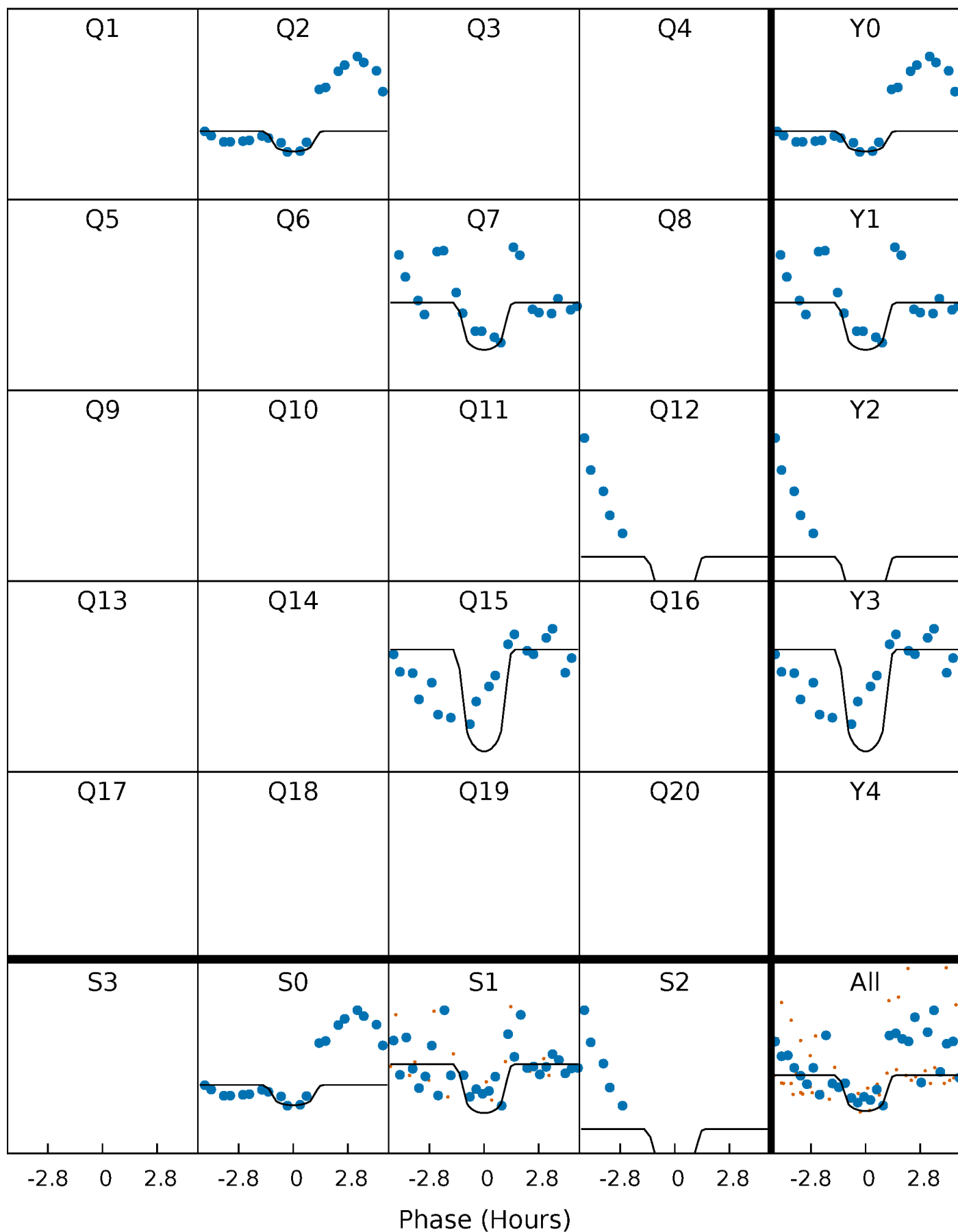
PDC Quarter-Phased Transit Curves

TCE 004273689-02 P=226.266074 Days $T_0=249.039449$ (BKJD)



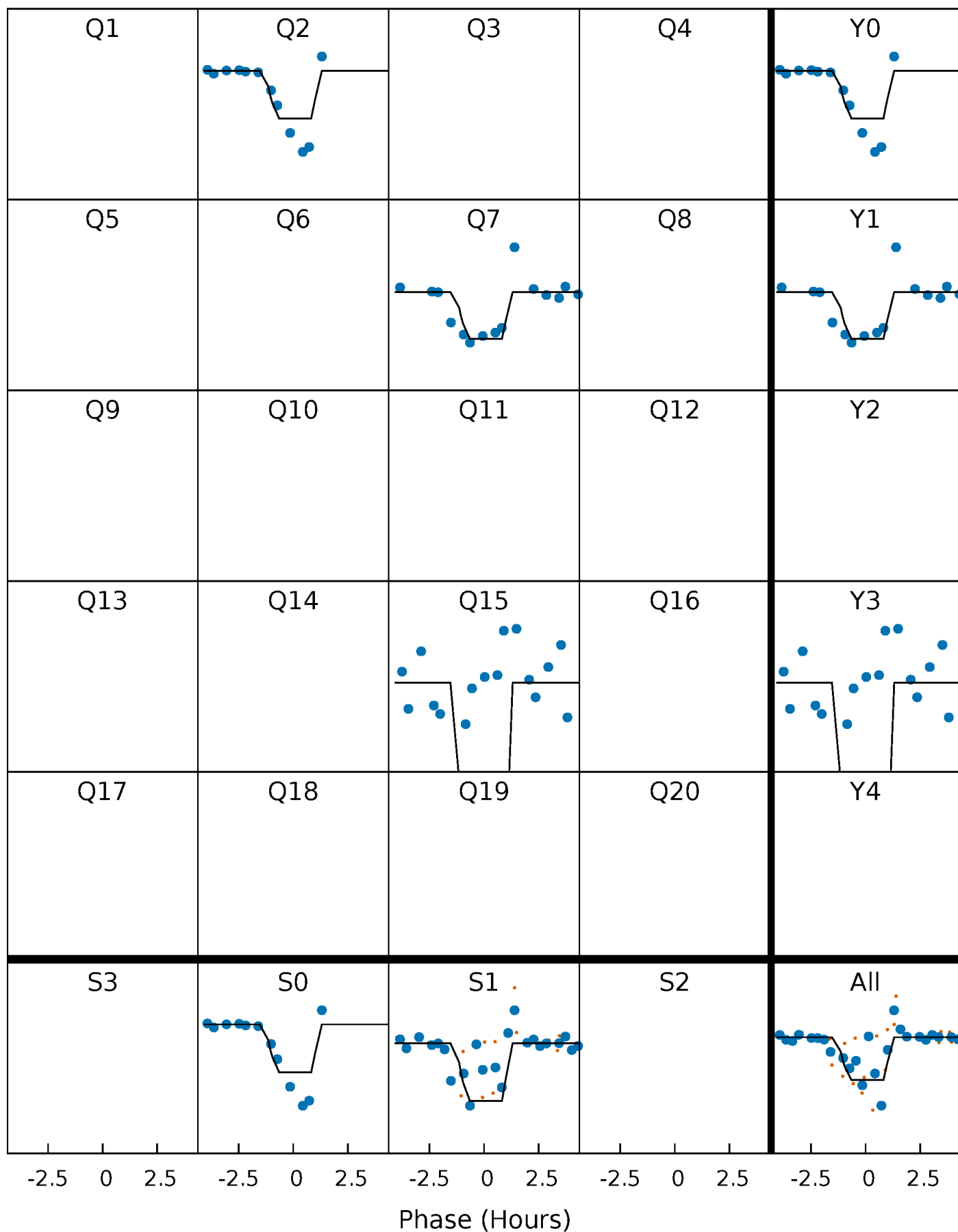
DV Quarter-Phased Transit Curves

TCE 004273689-02 P=226.266074 Days $T_0=249.039449$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

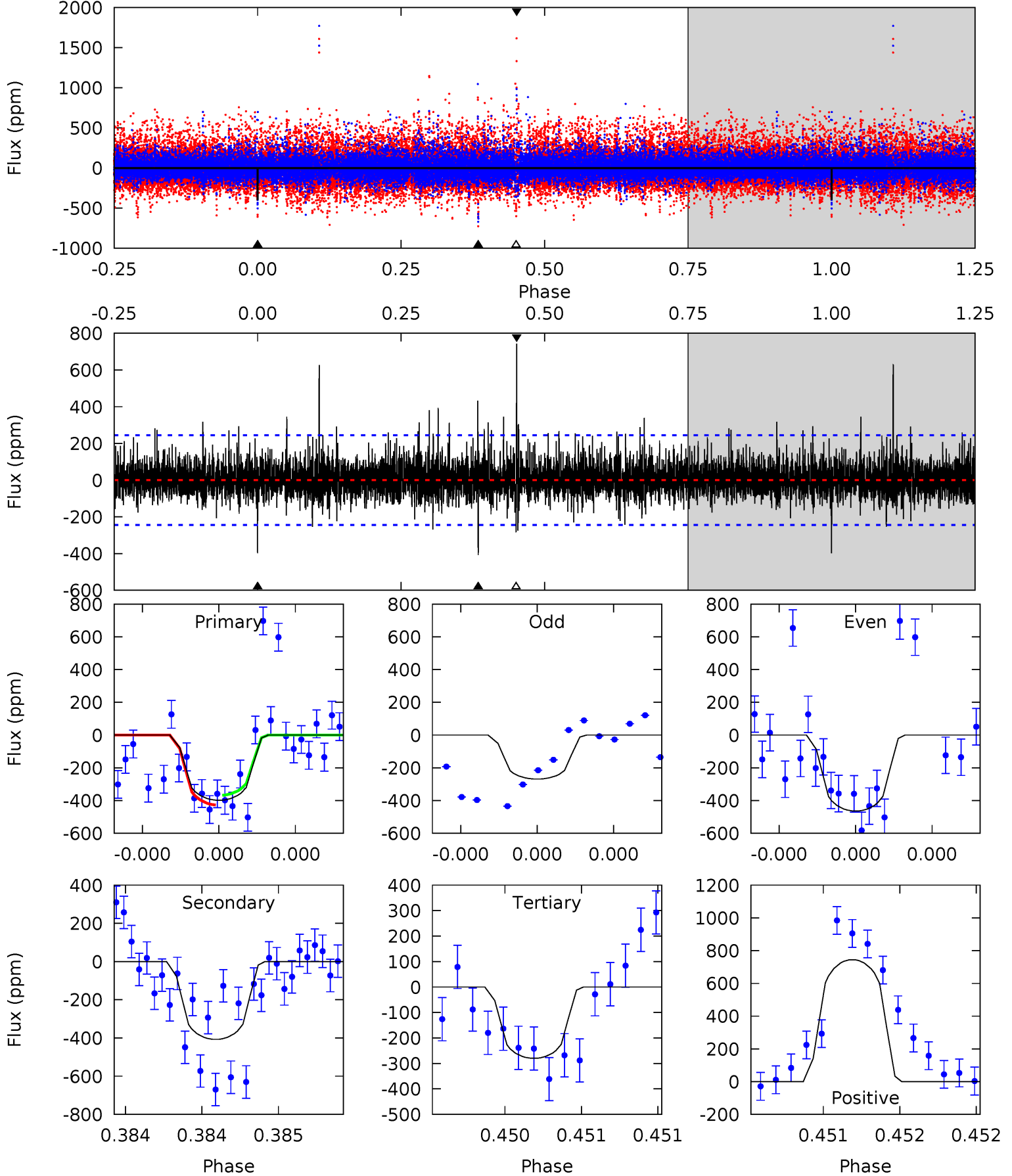
TCE 004273689-02 P=226.267816 Days $T_0=249.034520$ (BKJD)



DV Model-Shift Uniqueness Test

004273689-02, P = 226.266074 Days, E = 22.773375 Days

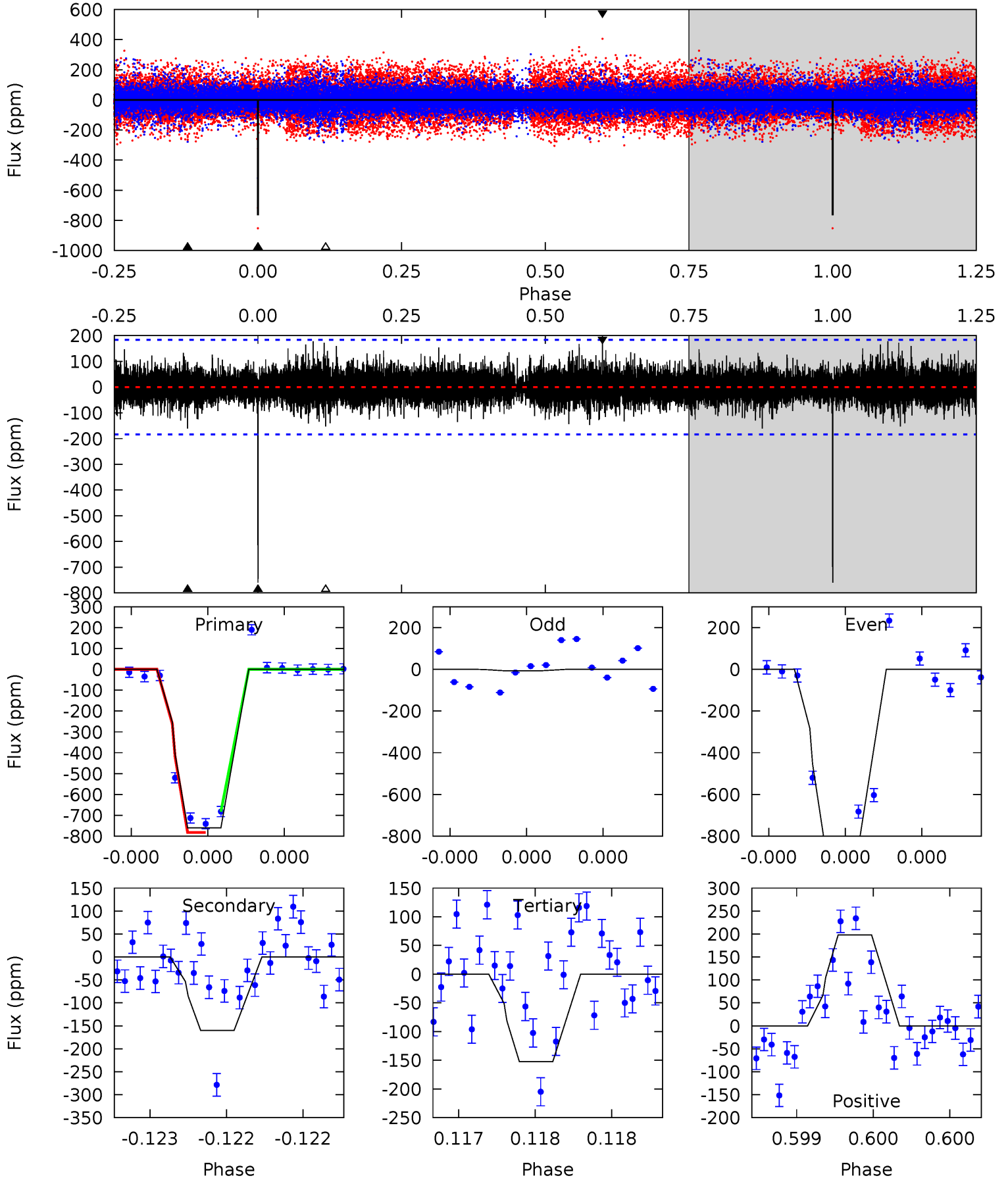
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.11	9.31	6.39	17.0	5.59	3.51	1.63	2.71	-7.91	2.92	-7.71	0.90	0.91	0.65	0.68



Alt Model-Shift Uniqueness Test

004273689-02, P = 226.267816 Days, E = 22.766704 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.1	4.87	4.64	6.03	5.59	3.51	1.09	18.5	17.1	0.23	-1.16	17.8	0.77	0.21	1.19



Stellar Parameters For KIC 004273689

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5173^{+106}_{-197}	$3.471^{+1.224}_{-0.306}$	$-0.720^{+0.250}_{-0.400}$	$2.742^{+1.451}_{-2.176}$	$0.811^{+0.203}_{-0.203}$	$0.055^{+4.654}_{-0.039}$
	+2%/-4%	+35%/-9%	+35%/-56%	+53%/-79%	+25%/-25%	+8396%/-69%
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 004273689-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-407 ± 44	$26.81^{+35.44}_{-18.98}$	622^{+94}_{-139}	2883^{+1181}_{-462}	137^{+1459}_{-109}
Alt.	-160 ± 33	$26.85^{+36.73}_{-19.73}$	622^{+90}_{-147}	2556^{+1031}_{-389}	56^{+775}_{-46}

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

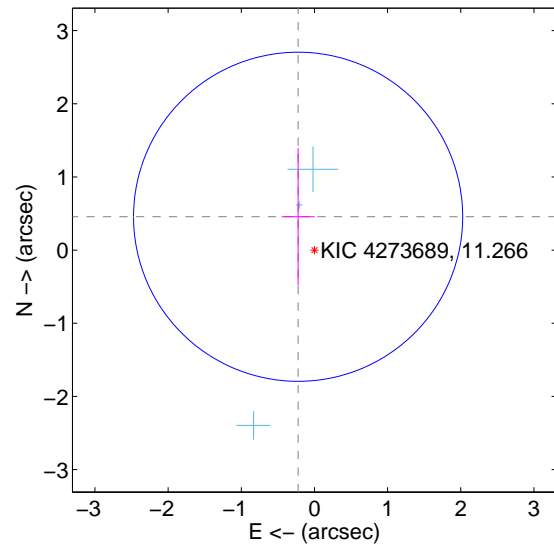
Supplemental centroid analysis for 004273689-02. **Kepler magnitude: 11.27.** Transit SNR 9.27

There are 3 quarters with good PRF difference image offsets

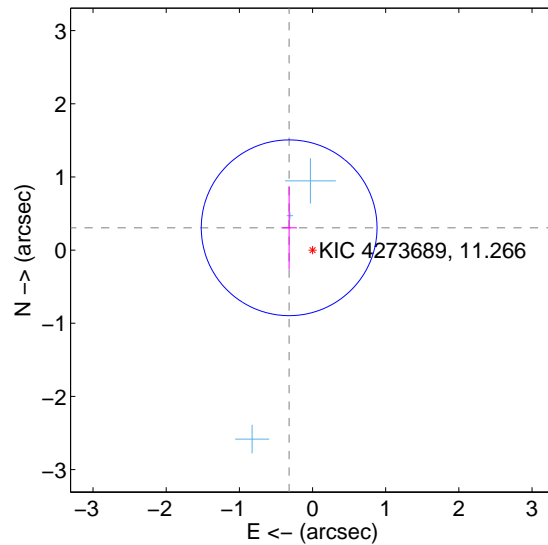
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.507 ± 0.750	0.68	0.223 ± 0.225	0.455 ± 0.939
PRF-fit source offset from KIC position	0.442 ± 0.400	1.10	0.319 ± 0.106	0.305 ± 0.569
photometric centroid source offset	0.31 ± 0.43	0.72	0.31 ± 0.43	0.01 ± 0.55

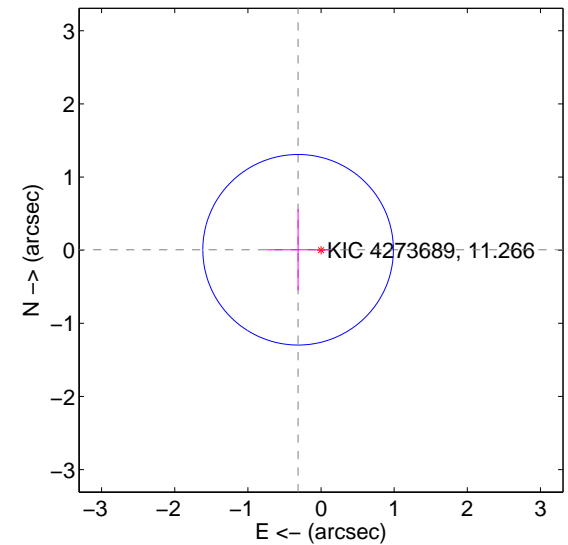
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

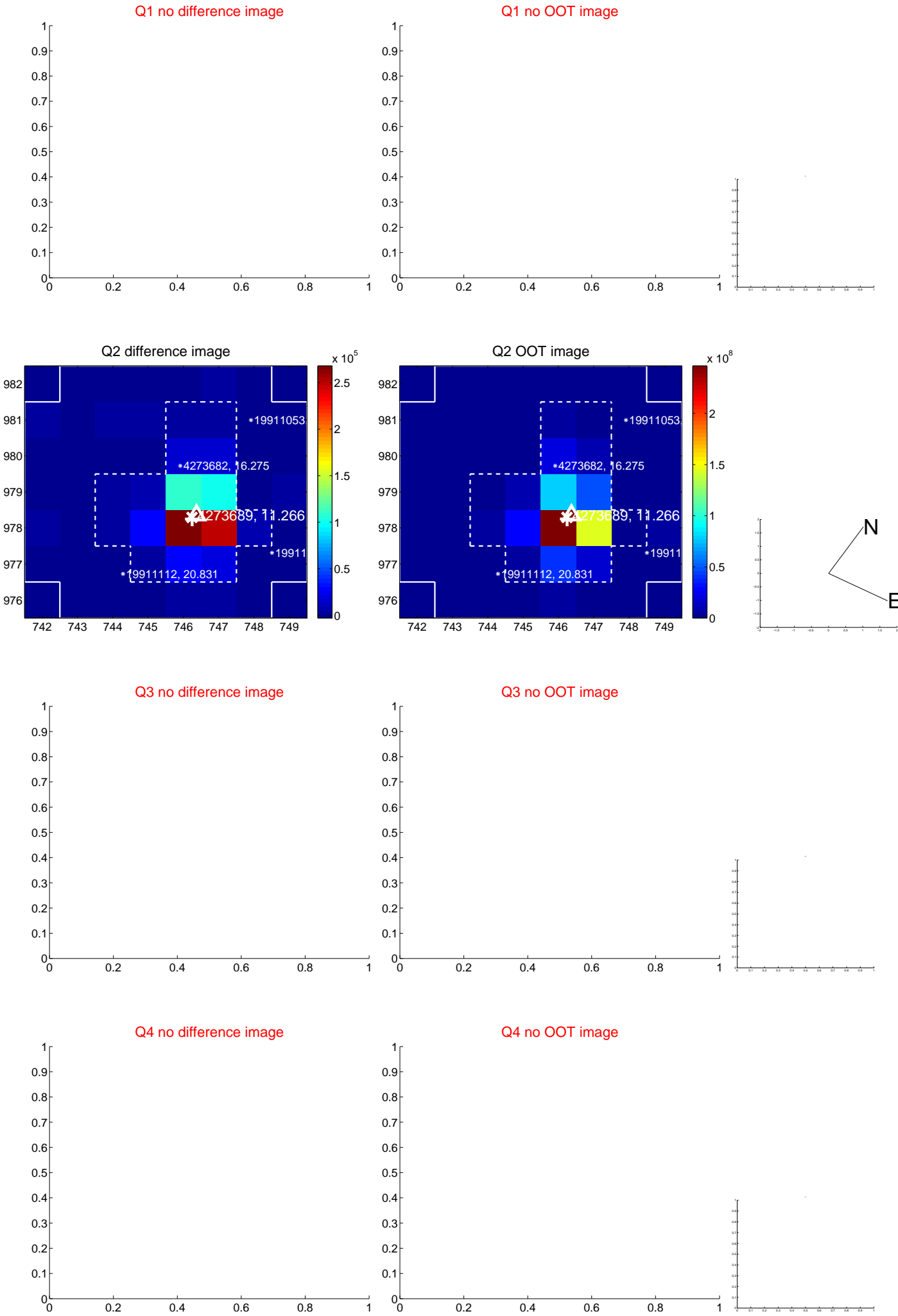


offset from photometric centroids



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.

Q5 no difference image



Q5 no OOT image



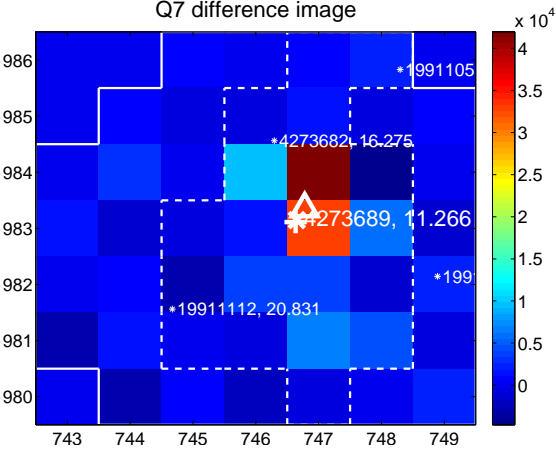
Q6 no difference image



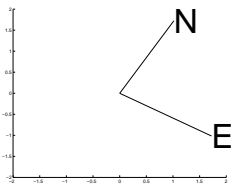
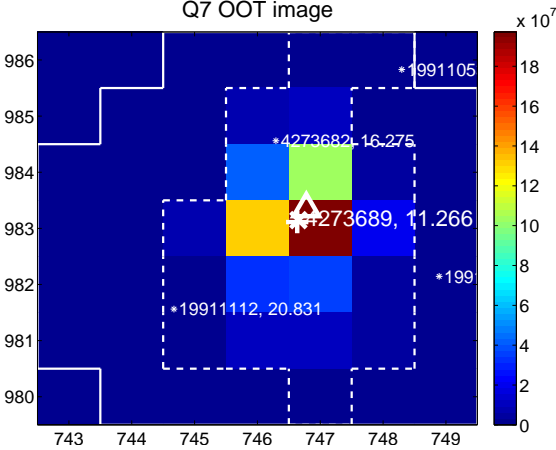
Q6 no OOT image



Q7 difference image



Q7 OOT image



Q8 no difference image



Q8 no OOT image

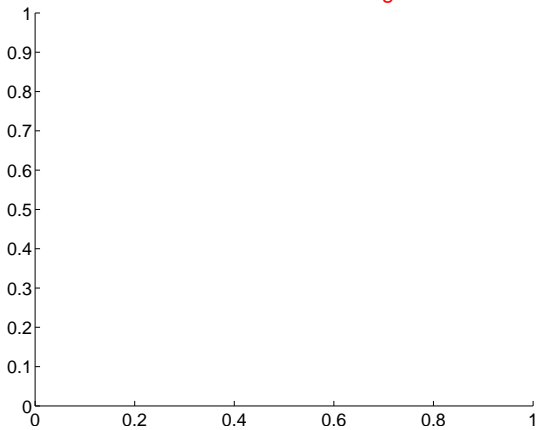


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

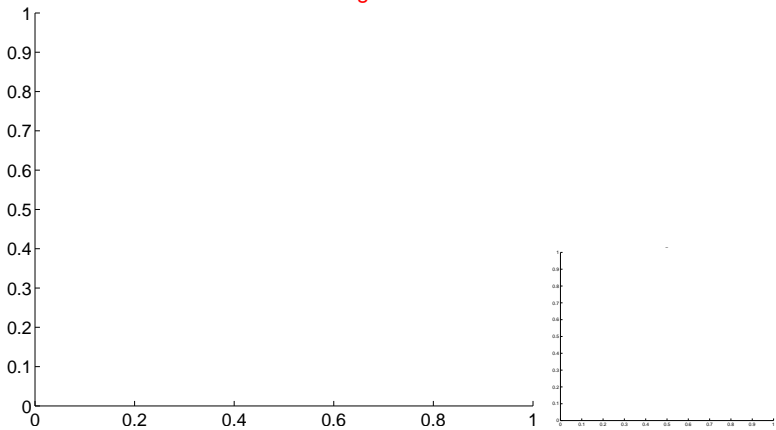


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

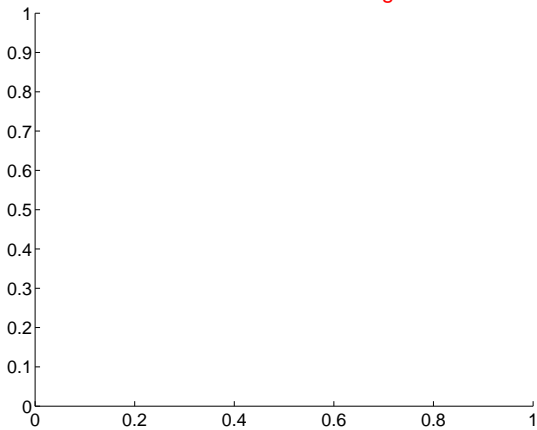
Q13 no difference image



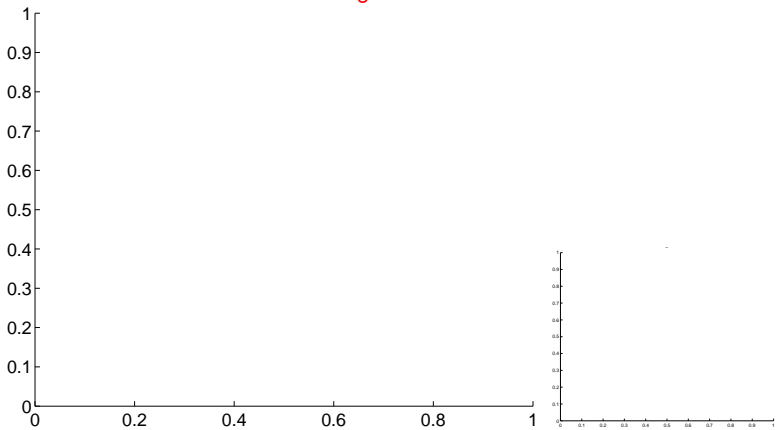
Q13 no OOT image



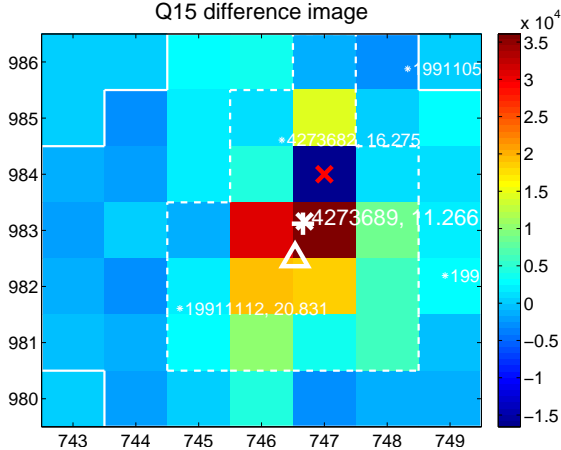
Q14 no difference image



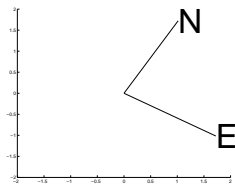
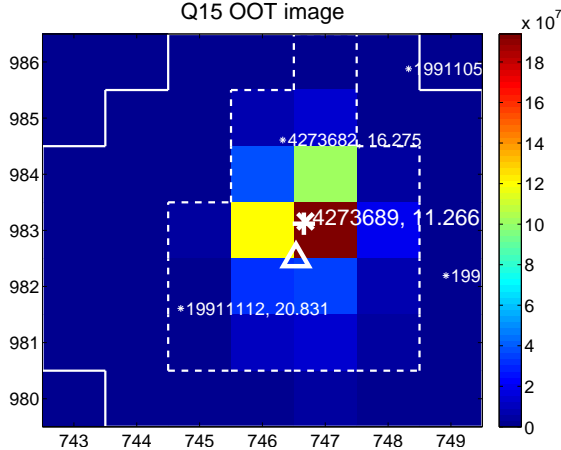
Q14 no OOT image



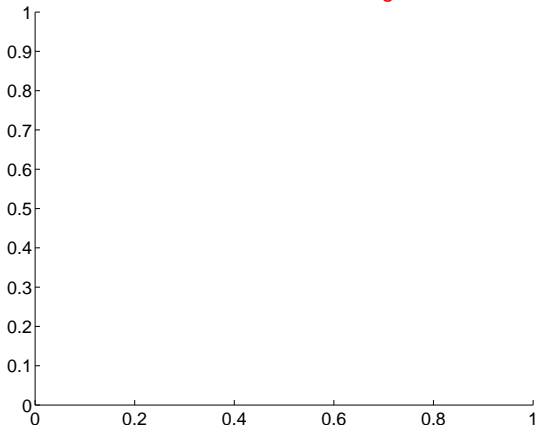
Q15 difference image



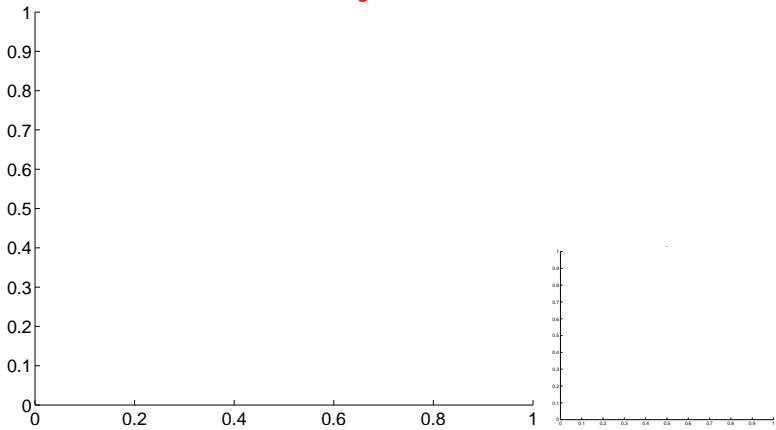
Q15 OOT image



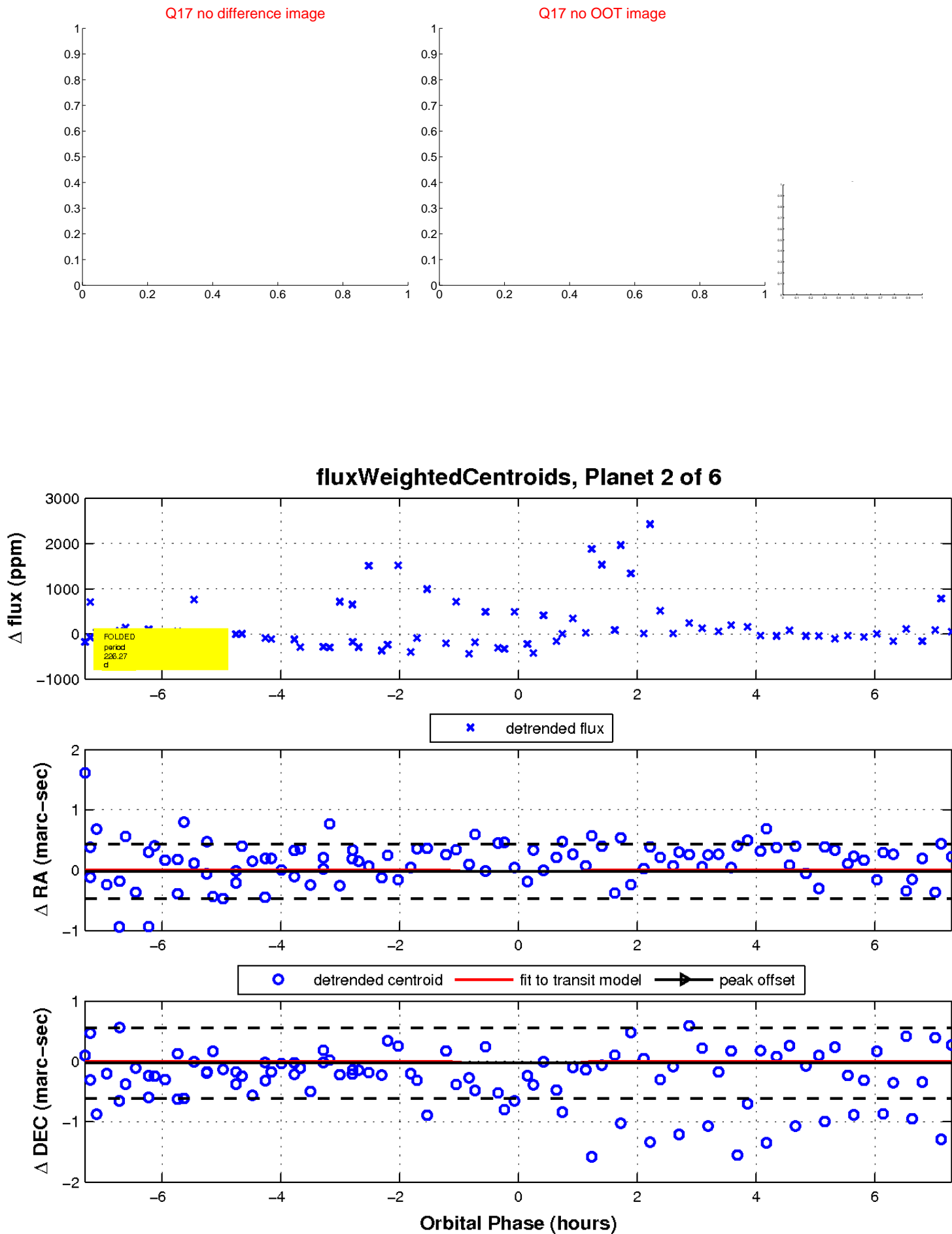
Q16 no difference image



Q16 no OOT image

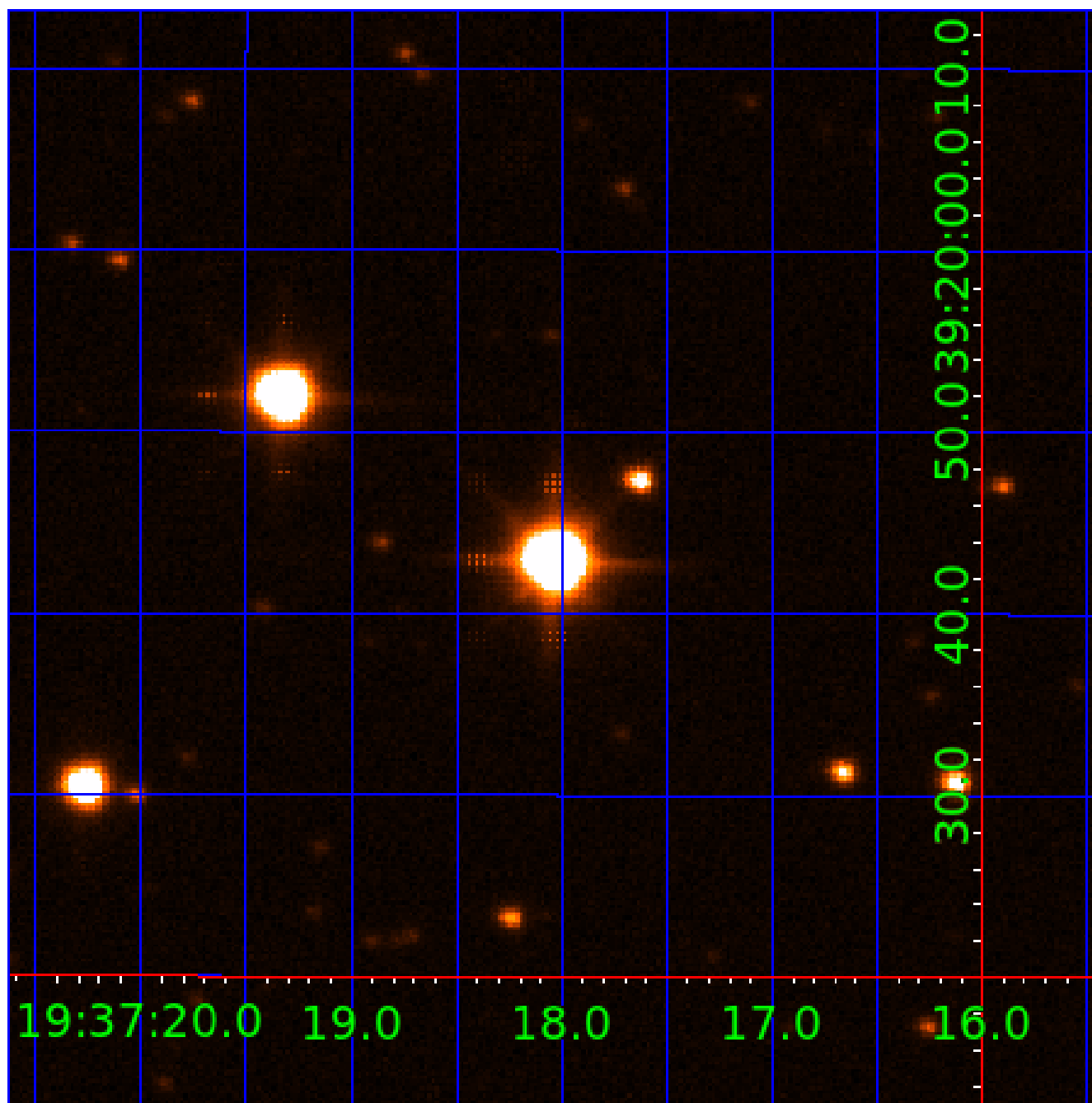


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004273689

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})
004273689-01	OBS	No	519.710687	525.429035	796.0	7.096	19.1	9.5	2.74	5173	15.39	3.46
004273689-02	OBS	No	226.266074	249.039449	592.4	2.441	18.2	9.3	2.74	5173	7.20	10.50
004273689-04	OBS	No	363.839895	281.503520	881.0	4.227	16.1	9.6	2.74	5173	16.25	5.57
004273689-05	OBS	No	609.236599	178.803787	533.4	5.429	15.4	7.1	2.74	5173	6.23	2.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004273689-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

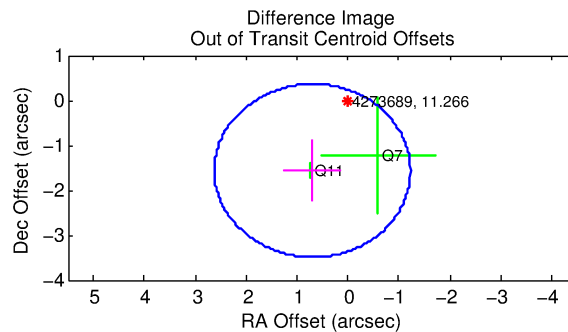
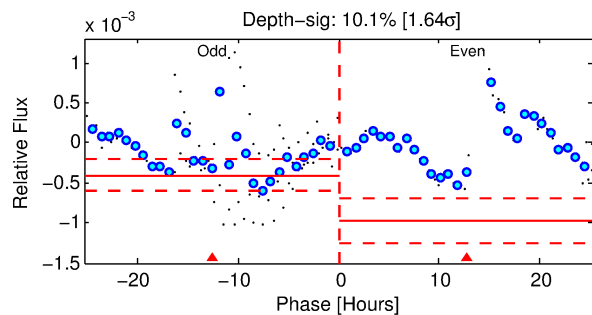
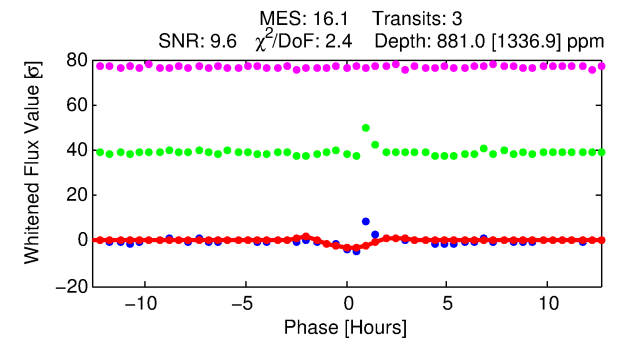
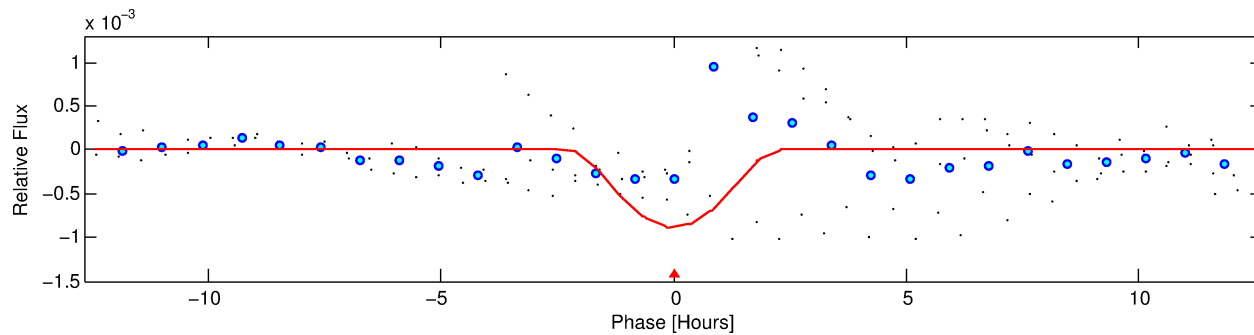
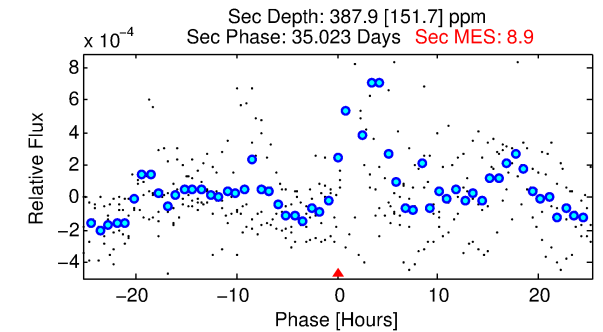
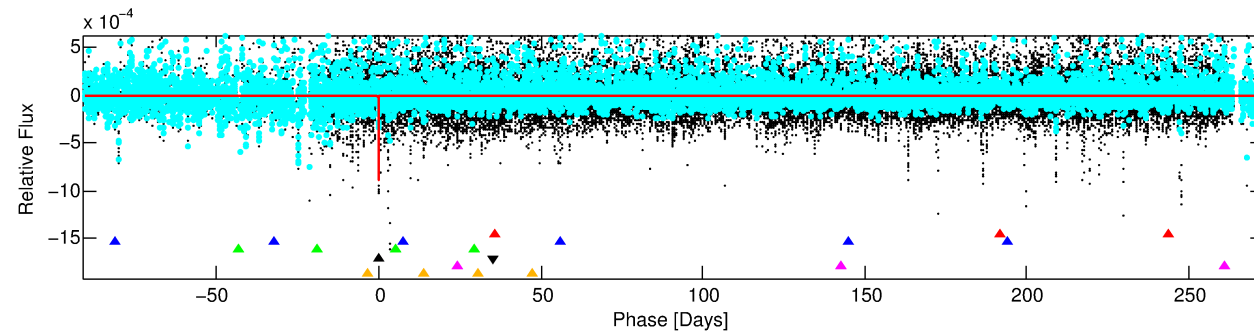
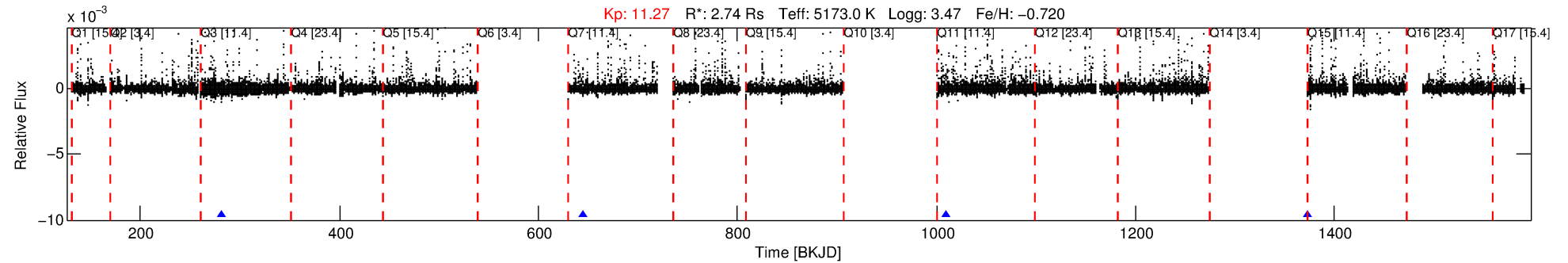
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004273689-04

No Significant Match Found

DV One-Page Summary

KIC: 4273689 Candidate: 4 of 6 Period: 363.840 d



DV Fit Results:

Period = 363.83990 [0.00888] d
Epoch = 281.5035 [0.0124] BKJD
Rp/R* = 0.0543 [0.1818]
a/R* = 219.61 [170.55]
b = 1.00 [0.20]
Seff = 5.57 [10.91]
Teff = 392 [192] K
Rp = 16.25 [55.91] Re
a = 0.9304 [1.0032] AU
Ag = 700.00 [4890.35] [0.14σ]
Teffp = 3116 [5226] K [0.52σ]

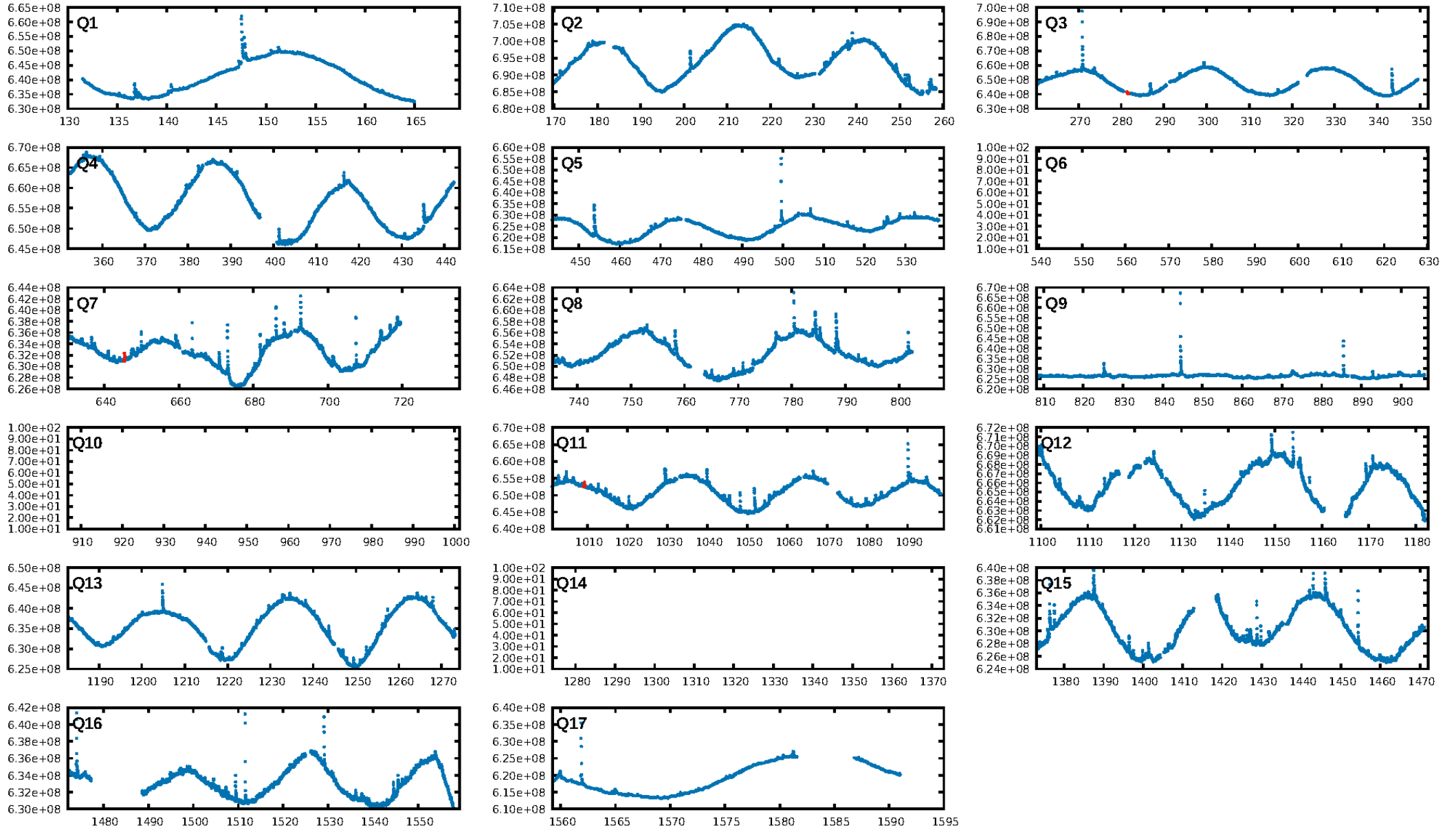
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [676.42σ]
LongPeriod-sig: 100.0% [78.68σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.121
Centroid-sig: 31.7%
Centroid-so: 0.473 arcsec [1.56σ]
OotOffset-rm: 1.716 arcsec [2.67σ]
KicOffset-rm: 1.882 arcsec [2.92σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-st: 0/2/0/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [2/2]

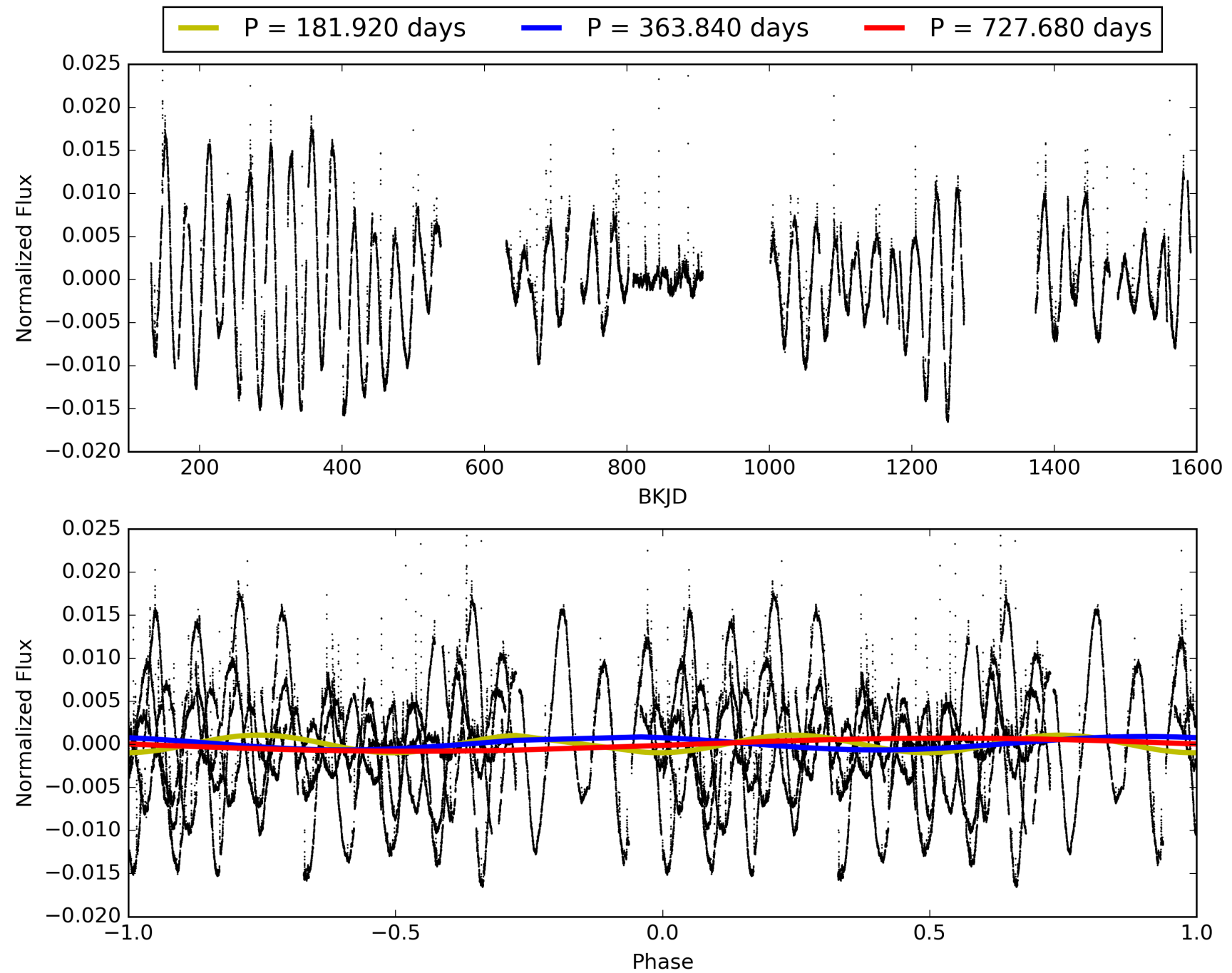
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:31:05 Z

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

TCE 004273689-04, PDC Light Curves

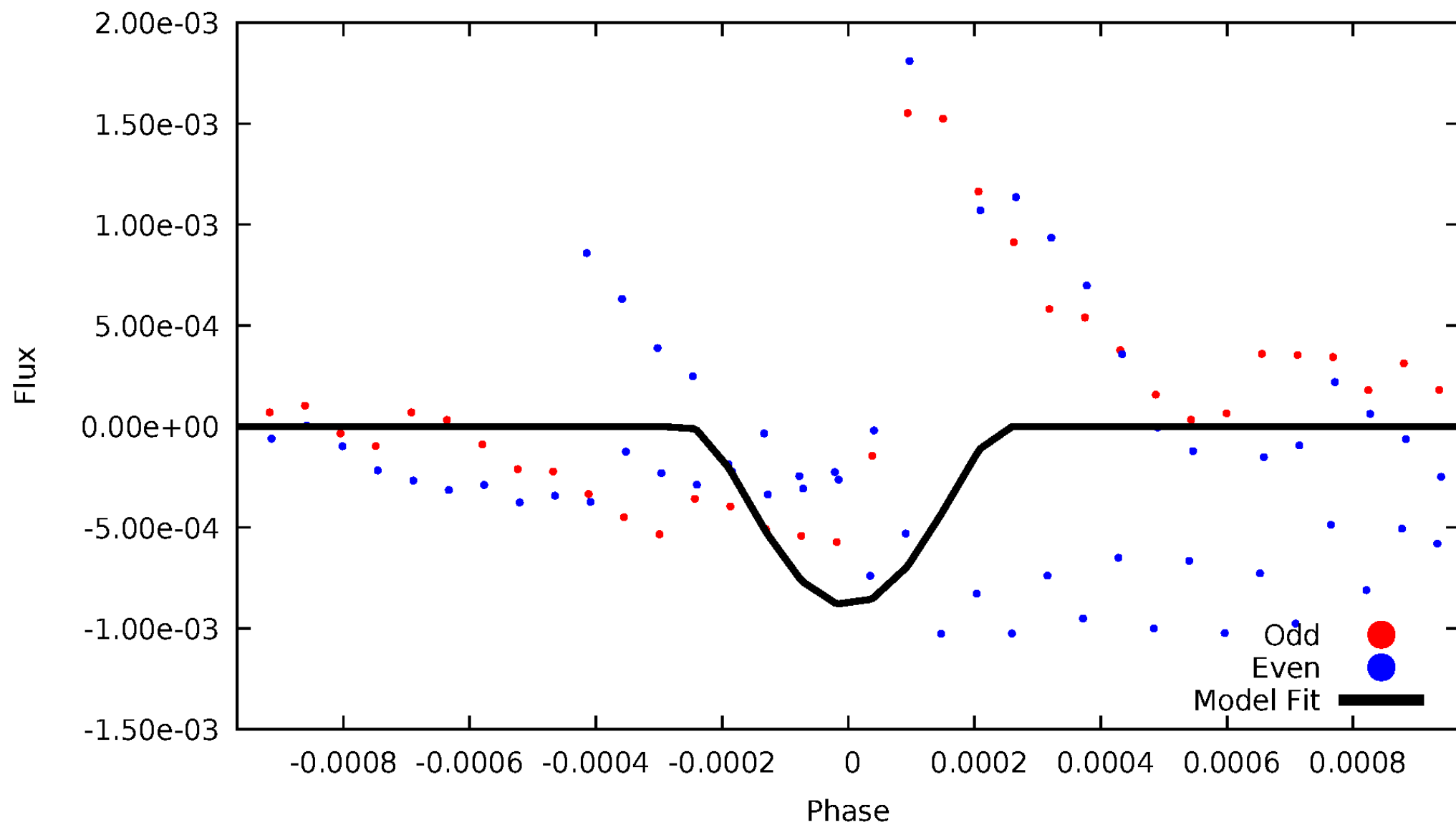


TCE 004273689-04



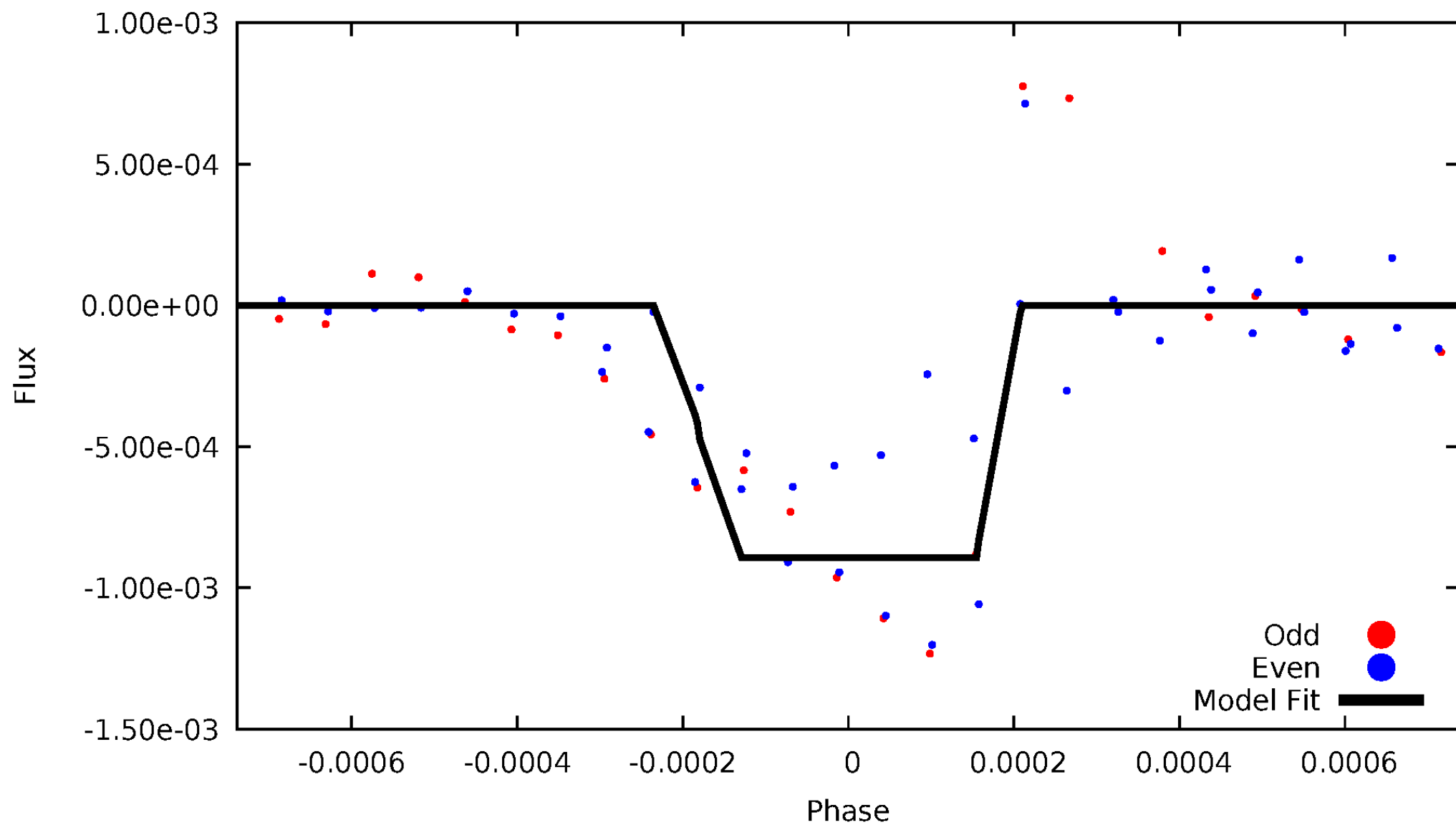
DV Odd/Even

TCE 004273689-04



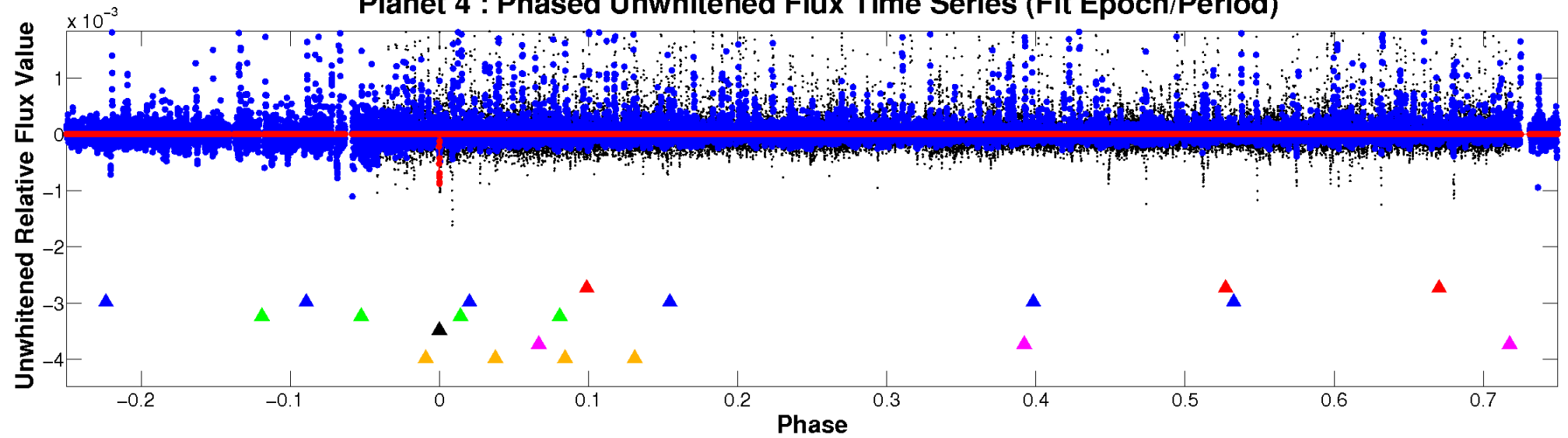
ALT Odd/Even

TCE 004273689-04

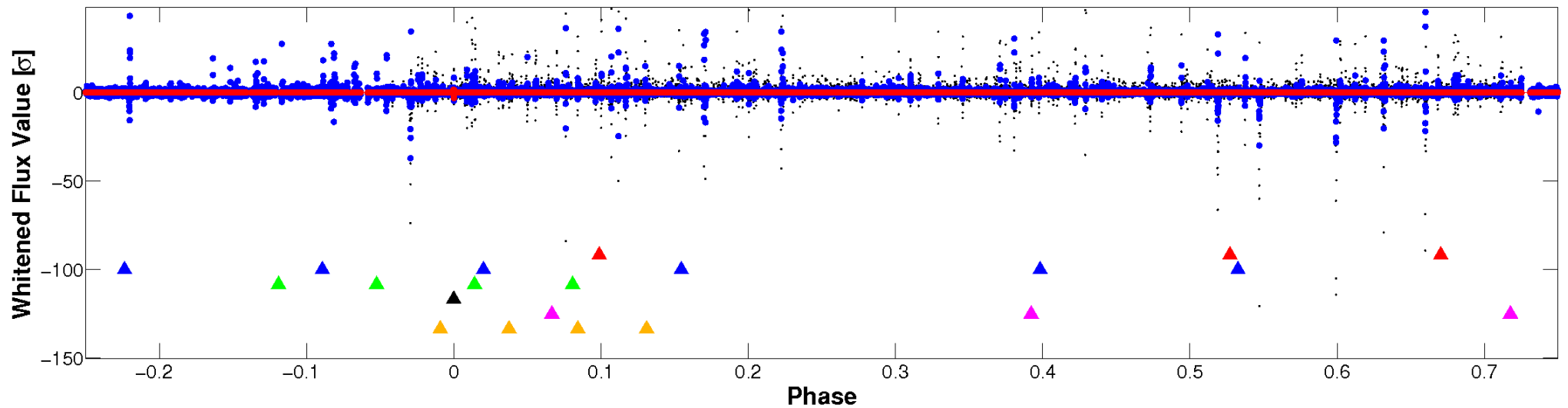


Non-Whitened Vs. Whitened Light Curve

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

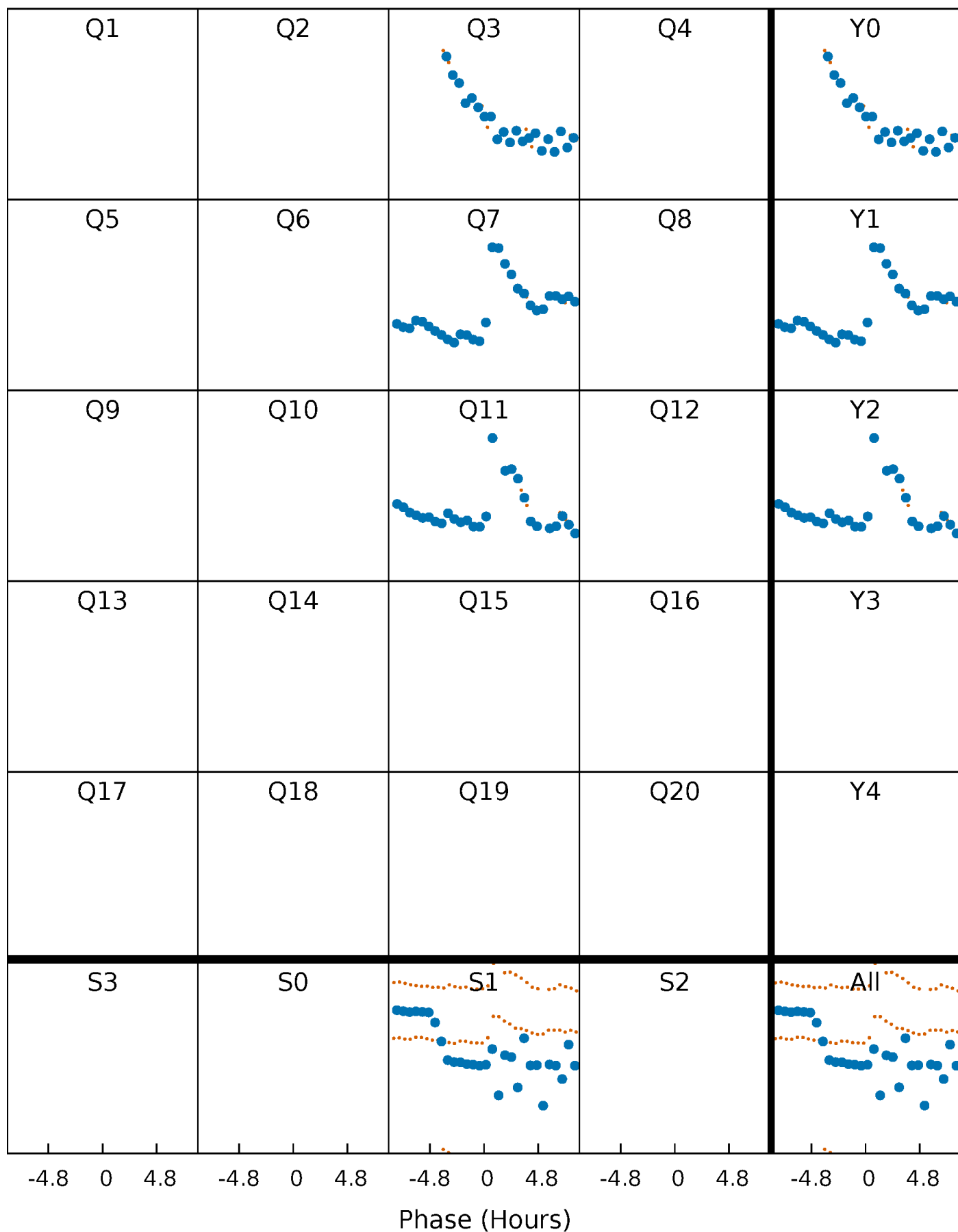


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



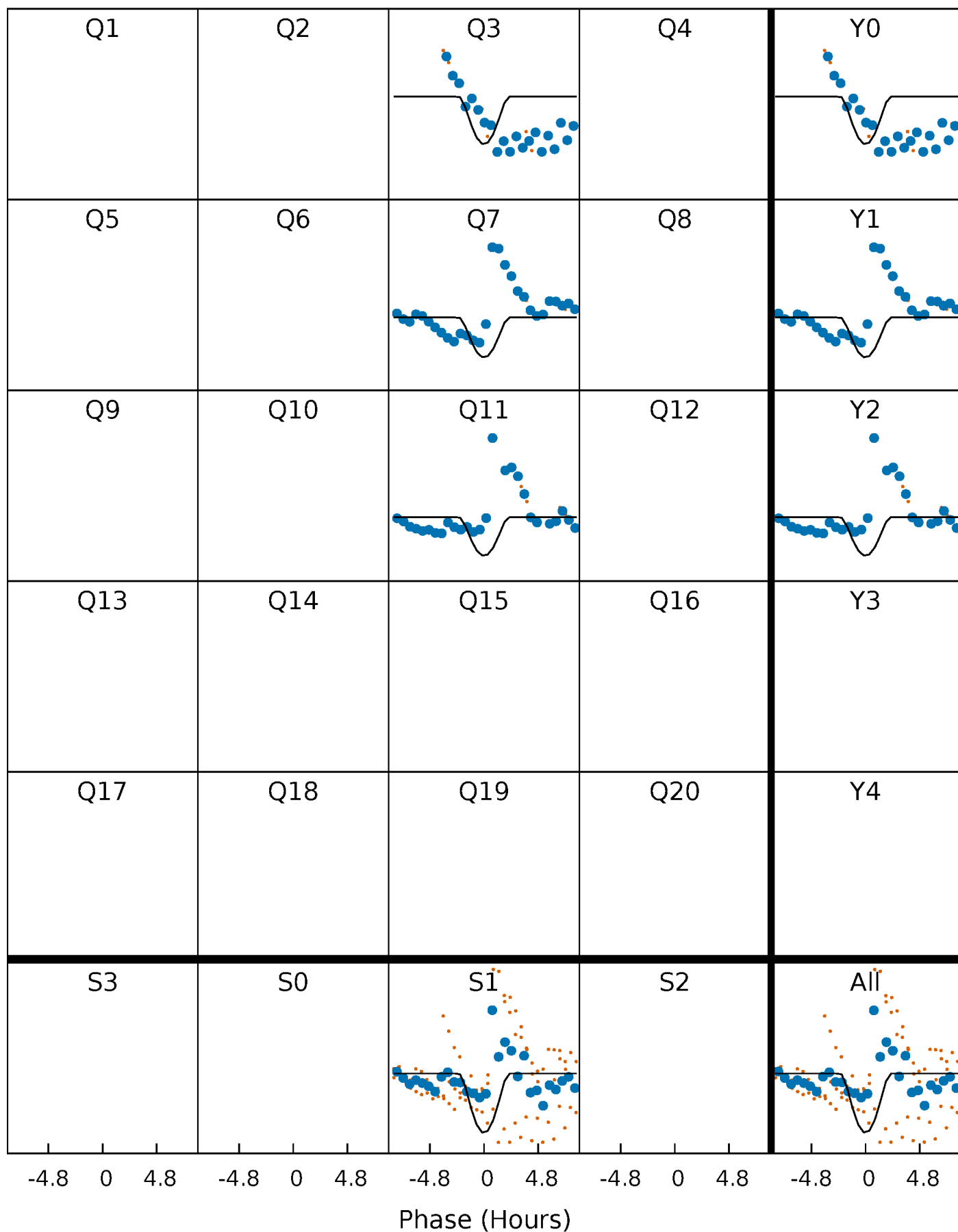
PDC Quarter-Phased Transit Curves

TCE 004273689-04 $P=363.839895$ Days $T_0=281.503520$ (BKJD)



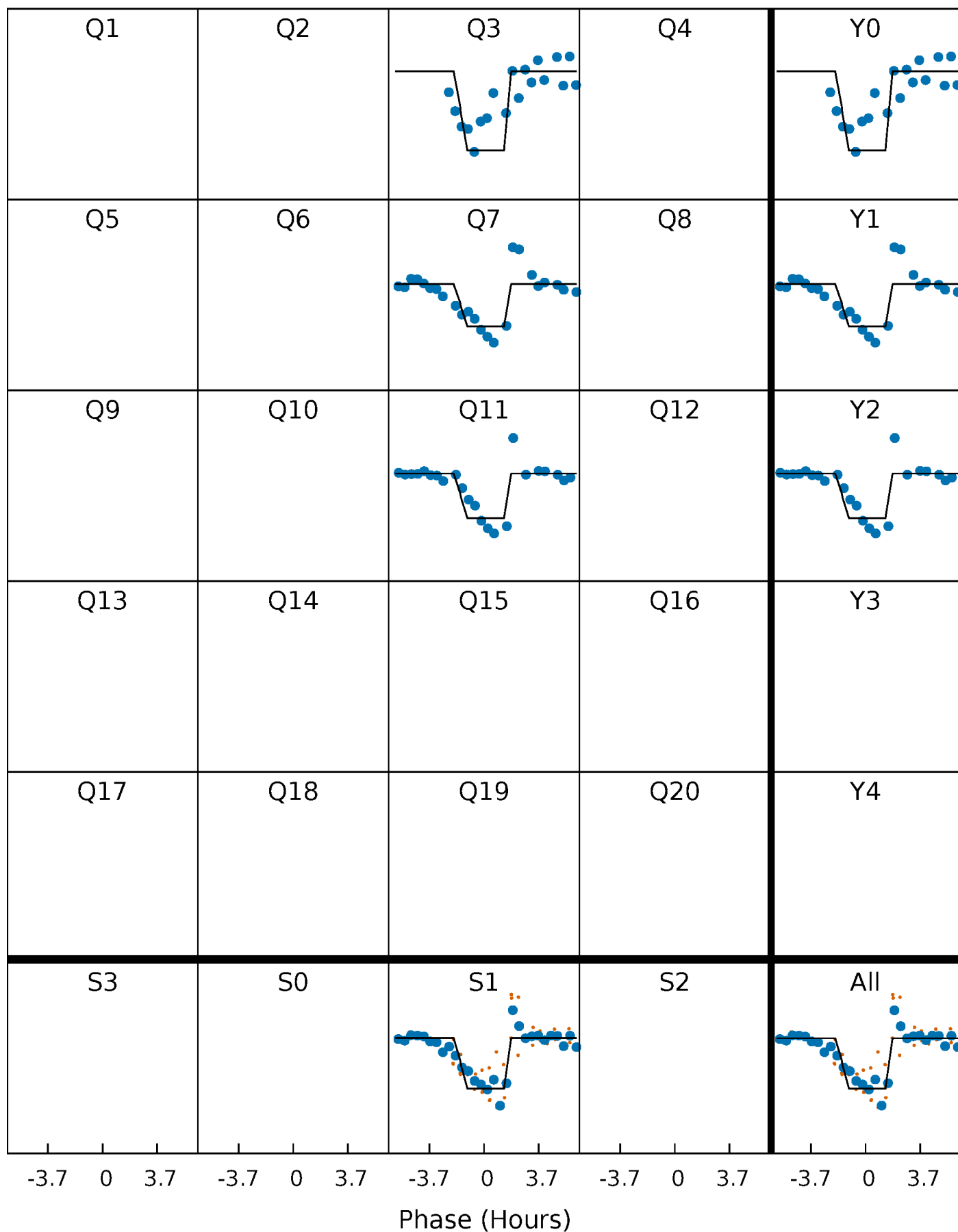
DV Quarter-Phased Transit Curves

TCE 004273689-04 $P=363.839895$ Days $T_0=281.503520$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

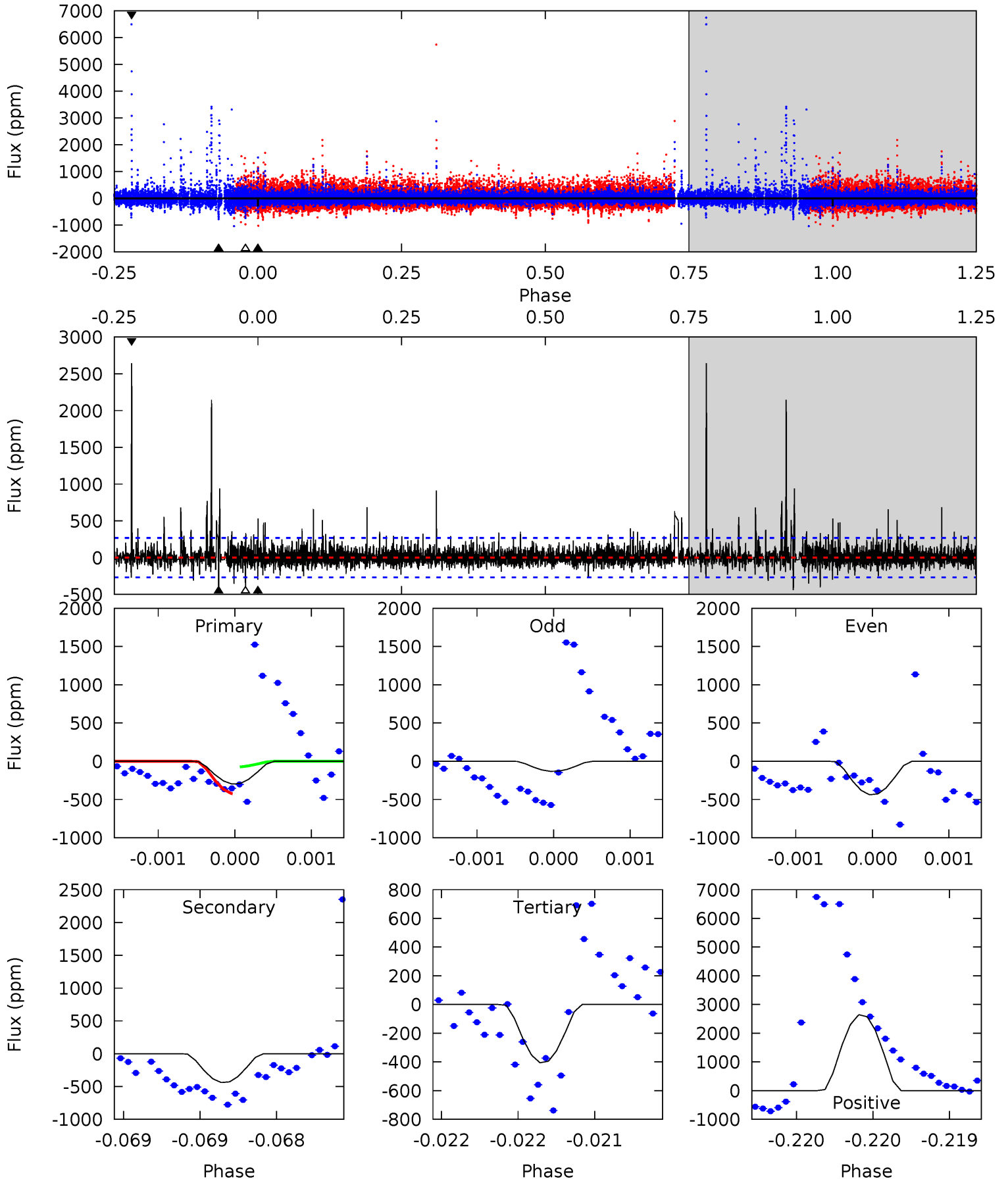
TCE 004273689-04 P=363.839913 Days $T_0=281.460975$ (BKJD)



DV Model-Shift Uniqueness Test

004273689-04, P = 363.839895 Days, E = 281.503520 Days

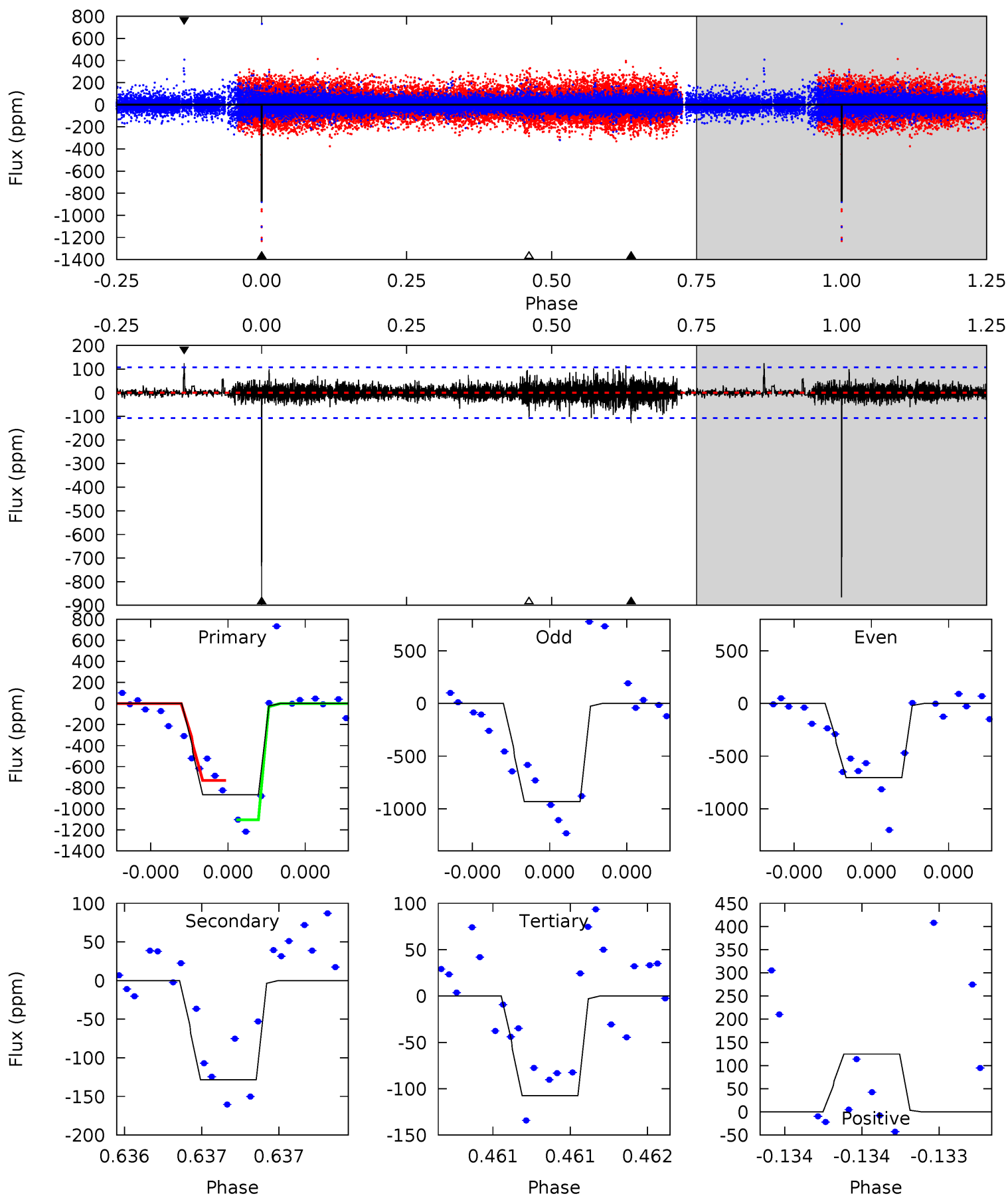
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.17	9.13	8.43	54.9	5.57	3.48	2.05	-2.25	-48.7	0.71	-45.8	1.69	-0.64	0.86	3.58



Alt Model-Shift Uniqueness Test

004273689-04, P = 363.839913 Days, E = 281.460975 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.2	6.70	5.62	6.52	5.62	3.54	1.03	39.6	38.7	1.09	0.18	5.65	0.90	0.13	8.91



Stellar Parameters For KIC 004273689

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5173^{+106}_{-197}	$3.471^{+1.224}_{-0.306}$	$-0.720^{+0.250}_{-0.400}$	$2.742^{+1.451}_{-2.176}$	$0.811^{+0.203}_{-0.203}$	$0.055^{+4.654}_{-0.039}$
	+2%/-4%	+35%/-9%	+35%/-56%	+53%/-79%	+25%/-25%	+8396%/-69%
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 004273689-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-440 ± 48	$35.66^{+38.98}_{-24.49}$	521^{+85}_{-124}	2701^{+1062}_{-413}	157^{+1495}_{-117}
Alt.	-128 ± 19	$32.40^{+41.56}_{-23.90}$	531^{+79}_{-122}	2369^{+944}_{-337}	58^{+797}_{-47}

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

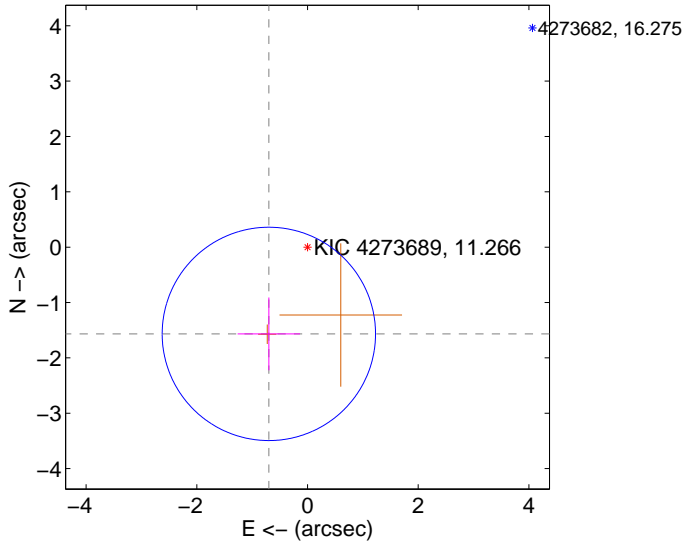
Supplemental centroid analysis for 004273689-04. **Kepler magnitude: 11.27.** Transit SNR 9.61

There are 0 quarters with good PRF difference image offsets

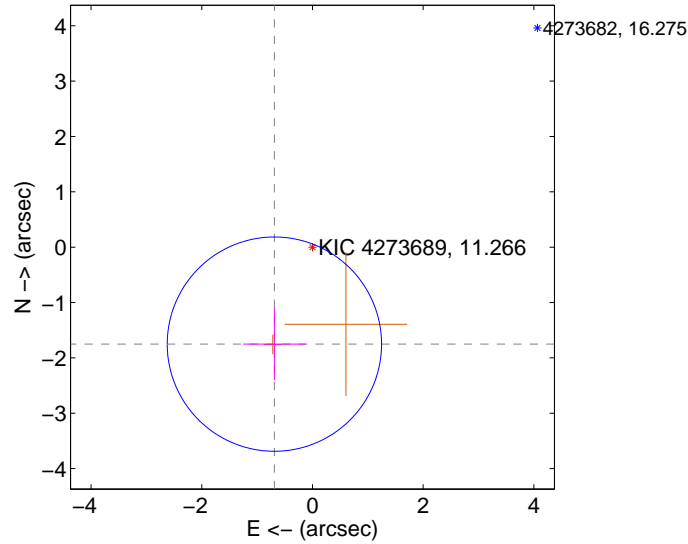
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.716 ± 0.642	2.67	0.698 ± 0.564	-1.567 ± 0.657
PRF-fit source offset from KIC position	1.882 ± 0.645	2.92	0.688 ± 0.564	-1.752 ± 0.657
photometric centroid source offset	0.47 ± 0.30	1.56	0.42 ± 0.29	-0.21 ± 0.35

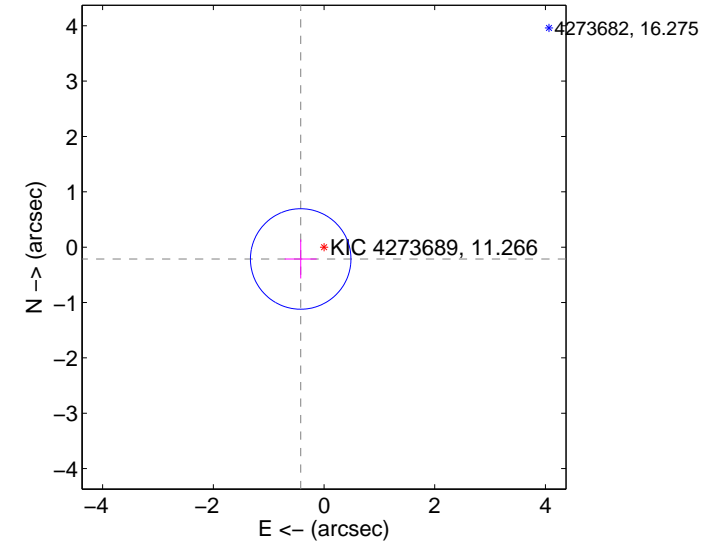
offset from difference PRF-fit to OOT PRF-fit



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.

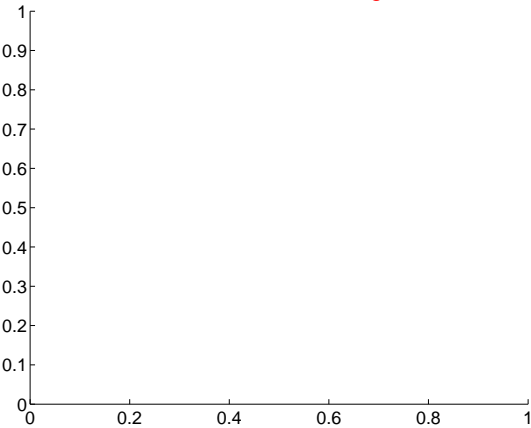
Q5 no difference image



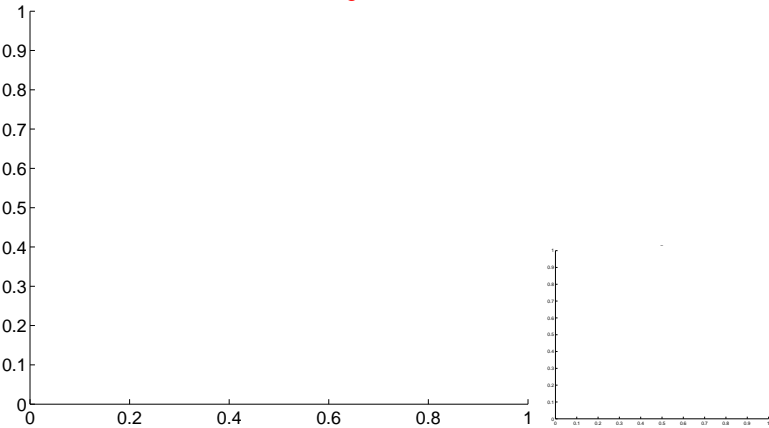
Q5 no OOT image



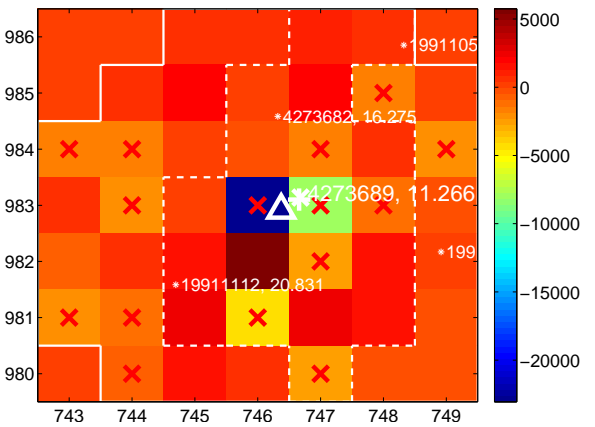
Q6 no difference image



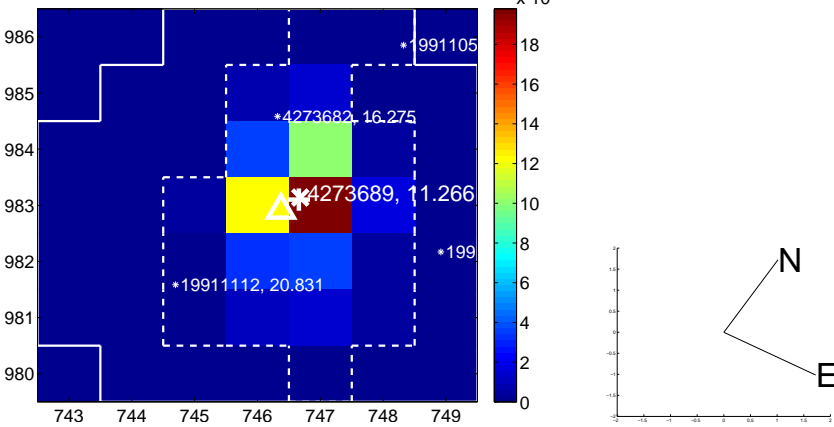
Q6 no OOT image



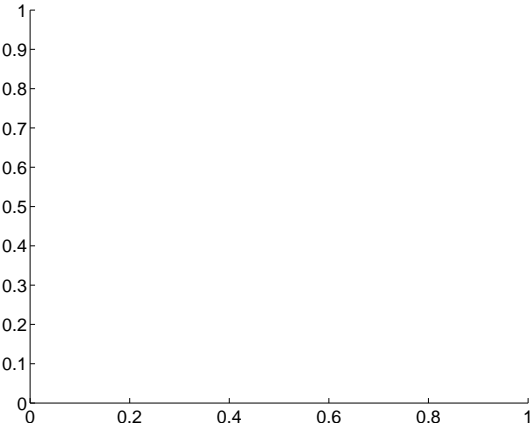
Q7 difference image. Poor Quality



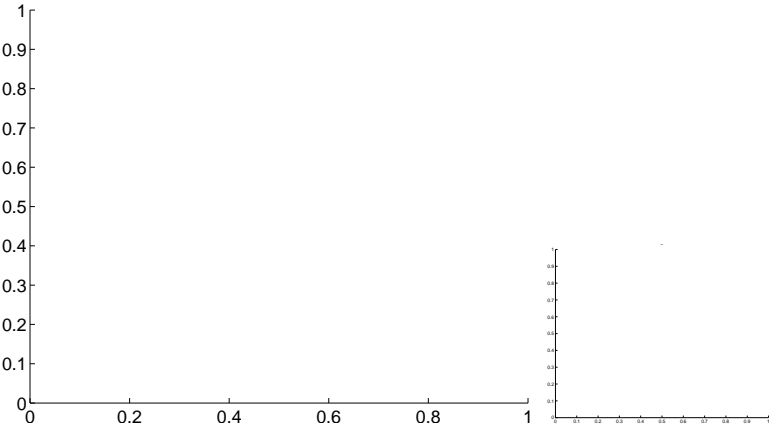
Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



Q9 no OOT image



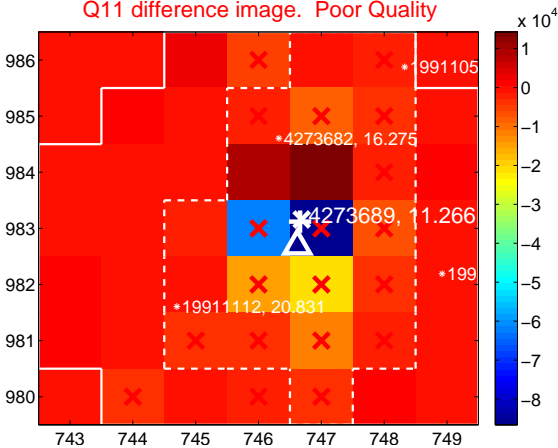
Q10 no difference image



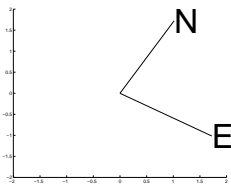
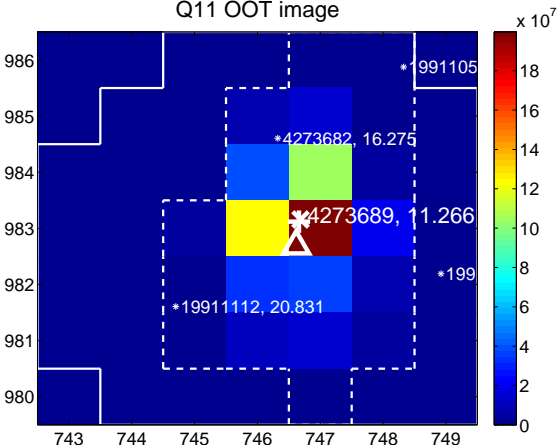
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



Q12 no difference image



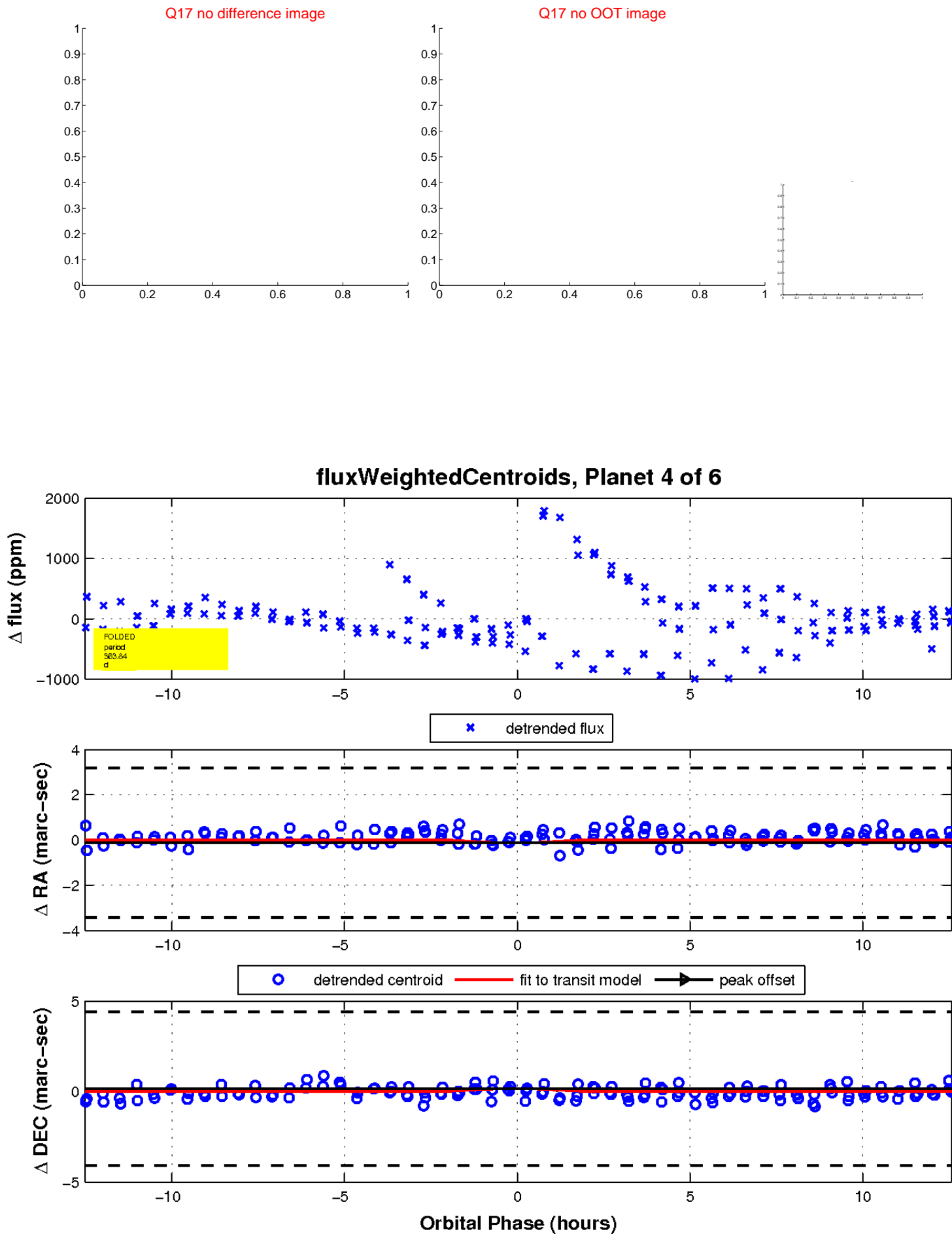
Q12 no OOT image



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

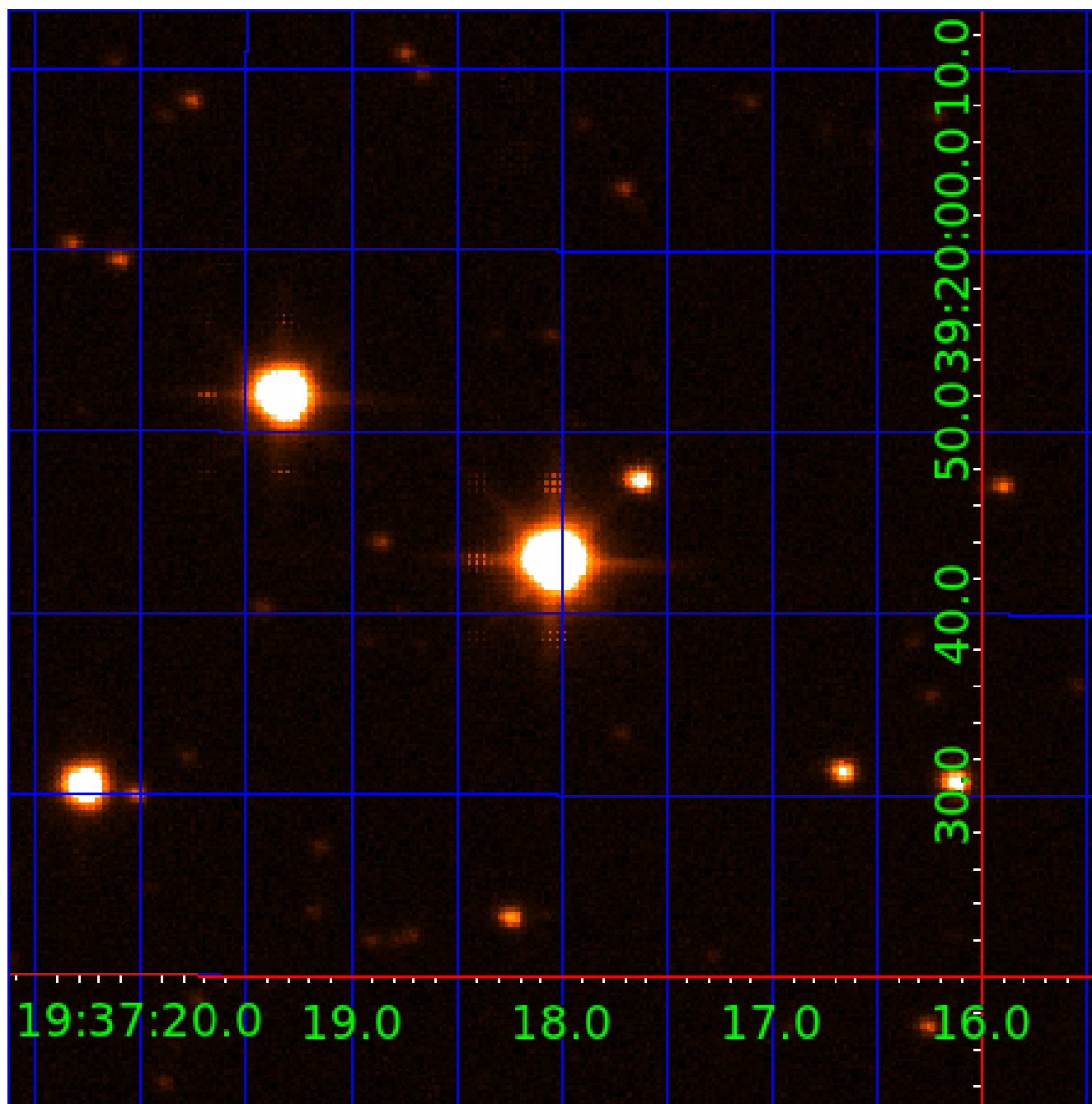


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004273689

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})
004273689-01	OBS	No	519.710687	525.429035	796.0	7.096	19.1	9.5	2.74	5173	15.39	3.46
004273689-02	OBS	No	226.266074	249.039449	592.4	2.441	18.2	9.3	2.74	5173	7.20	10.50
004273689-04	OBS	No	363.839895	281.503520	881.0	4.227	16.1	9.6	2.74	5173	16.25	5.57
004273689-05	OBS	No	609.236599	178.803787	533.4	5.429	15.4	7.1	2.74	5173	6.23	2.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004273689-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
004273689-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

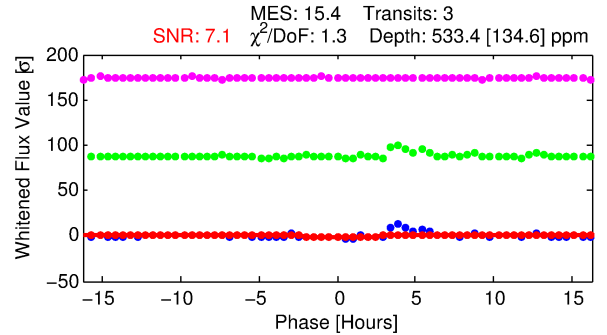
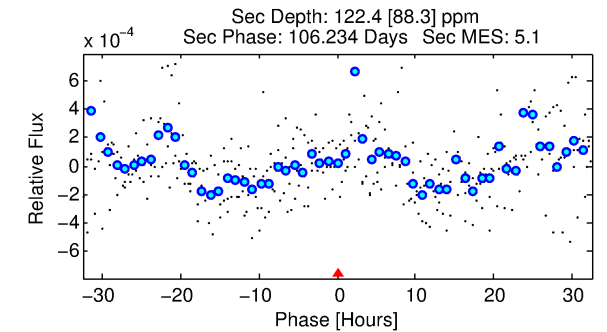
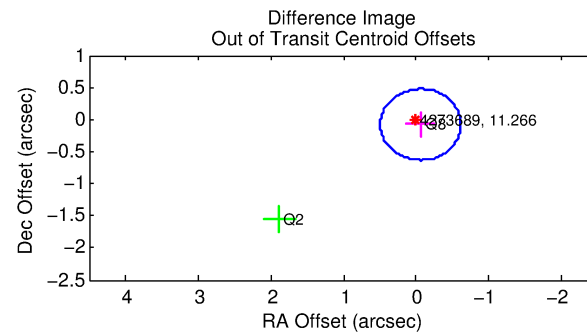
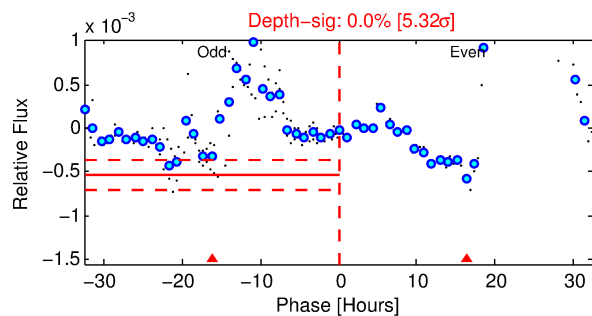
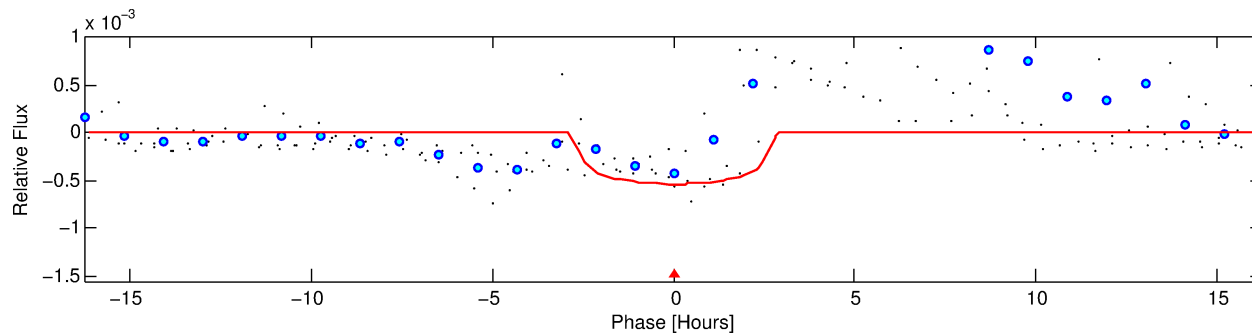
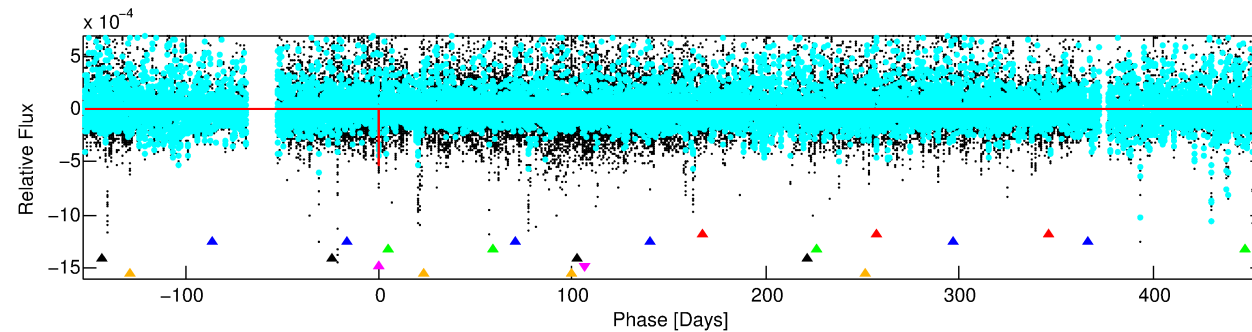
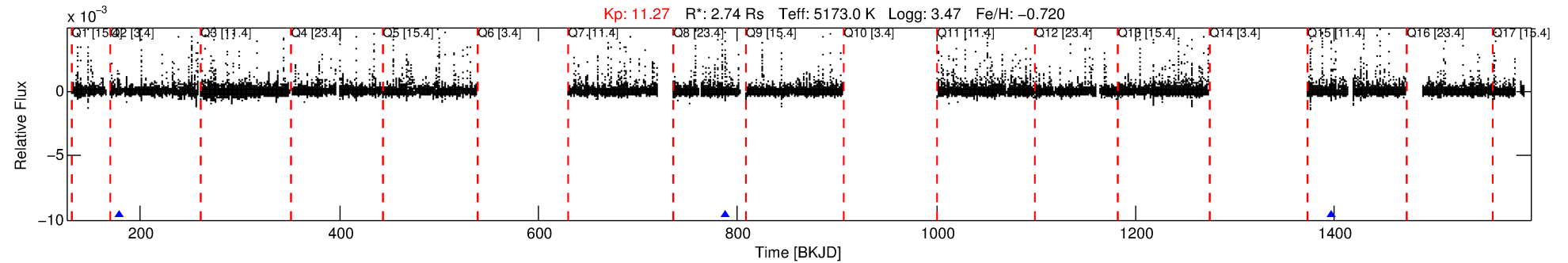
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004273689-05

No Significant Match Found

DV One-Page Summary

KIC: 4273689 Candidate: 5 of 6 Period: 609.237 d



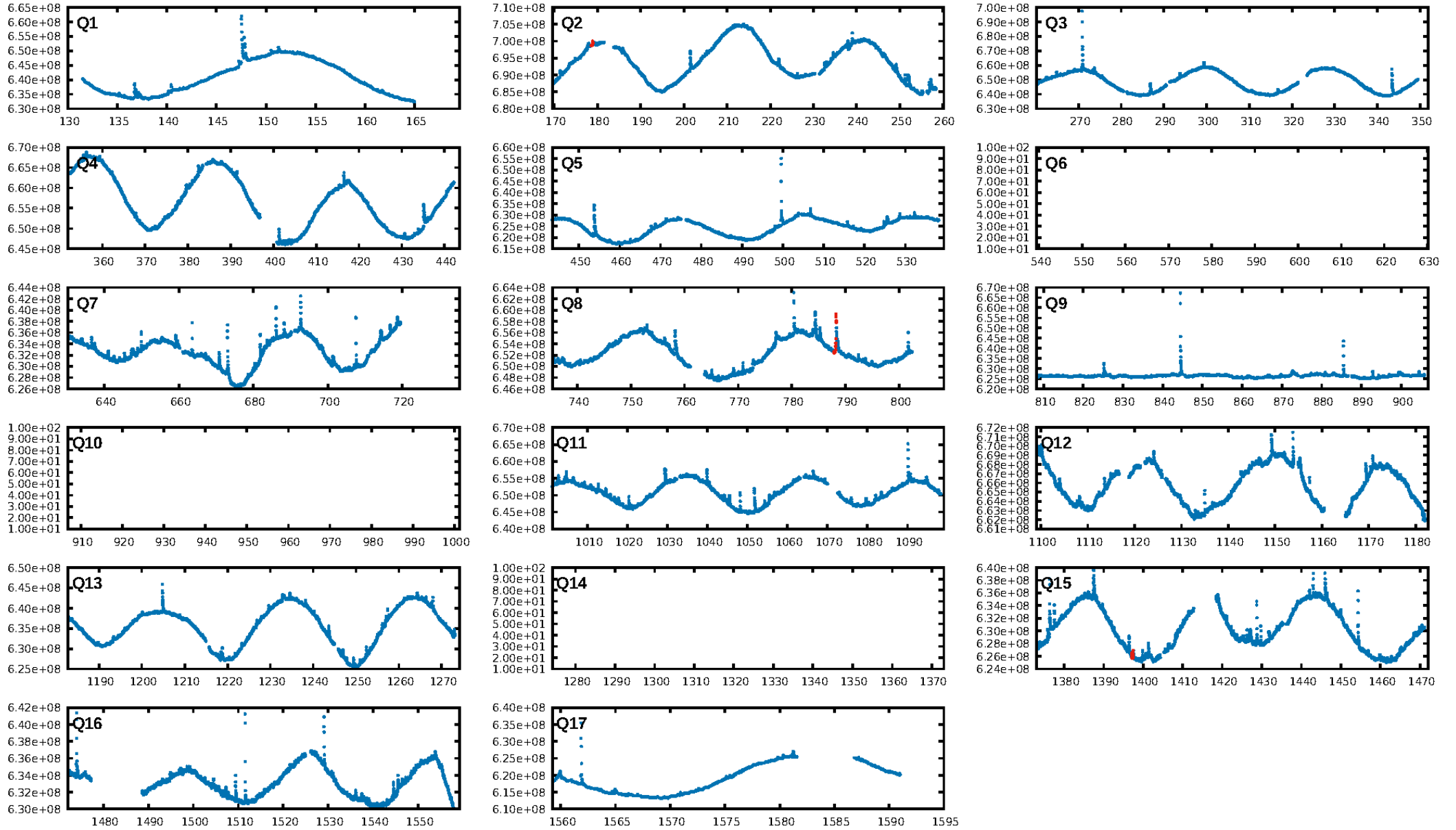
DV Fit Results:

Period = 609.23660 [0.00452] d
Epoch = 178.8038 [0.0063] BKJD
Rp/R* = 0.0208 [0.0451]
a/R* = 875.20 [7844.18]
b = 0.00 [18235.35]
Seff = 2.80 [5.49]
Teq = 330 [161] K
Rp = 6.23 [14.36] Re
a = 1.3120 [1.4146] AU
Ag = 2989.53 [14369.24] [0.21σ]
Teffp = 3772 [4144] K [0.83σ]

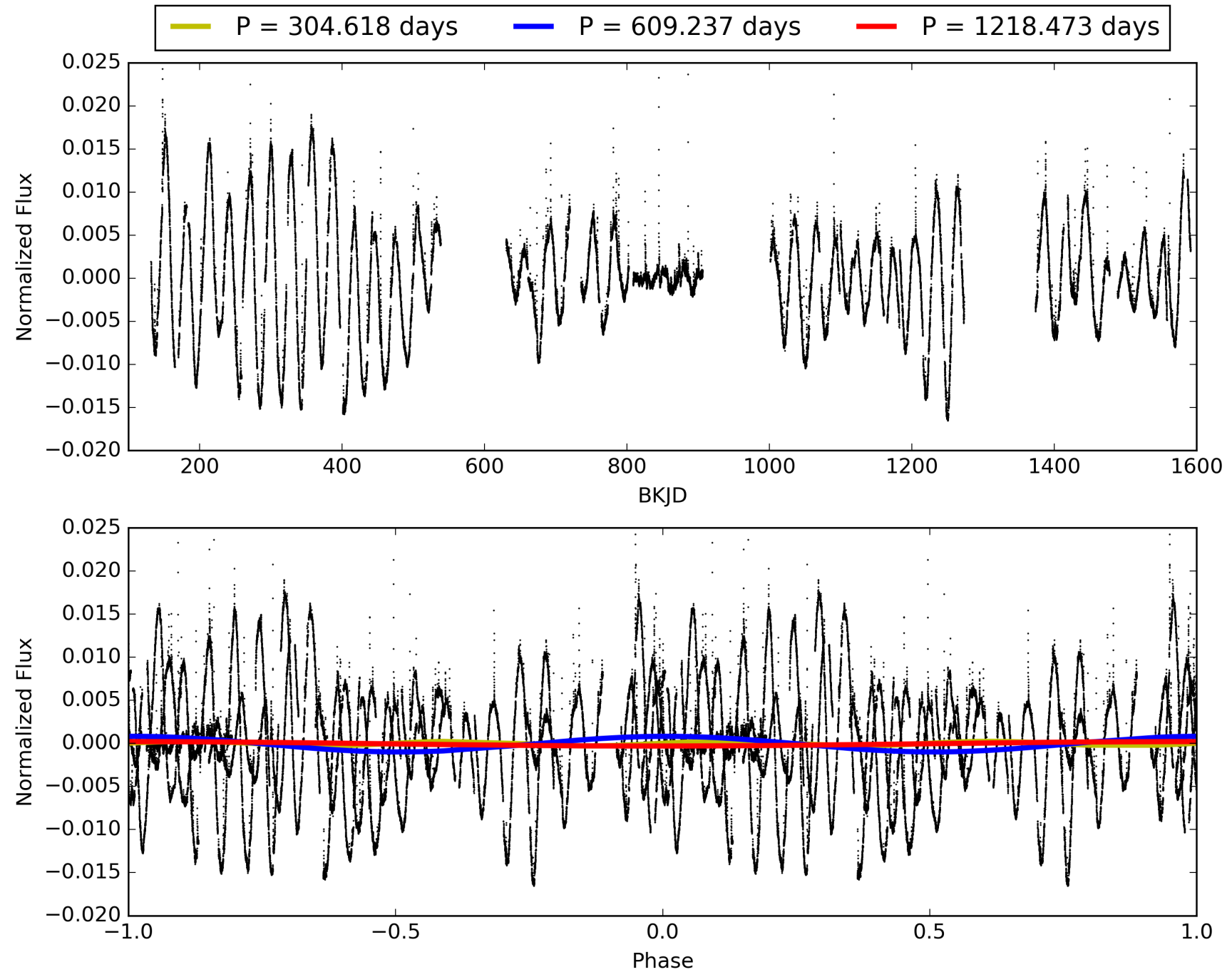
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [240.49σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 35.3%
ModelChiSquareGof-sig: 93.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.232
Centroid-sig: 0.1%
Centroid-so: 1.081 arcsec [2.74σ]
OotOffset-rm: 0.100 arcsec [0.54σ]
KicOffset-rm: 0.190 arcsec [0.33σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 004273689-05, PDC Light Curves

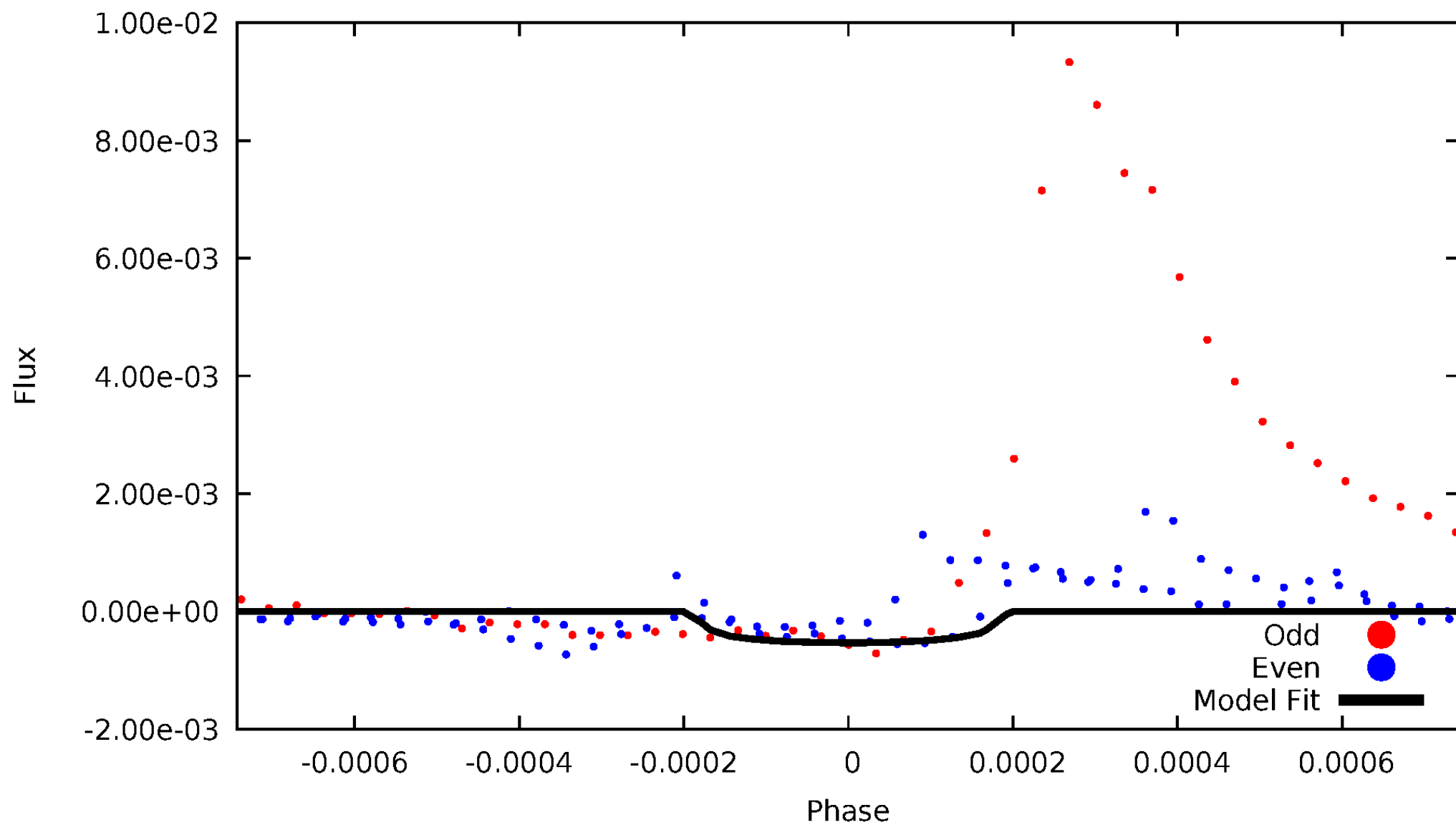


TCE 004273689-05



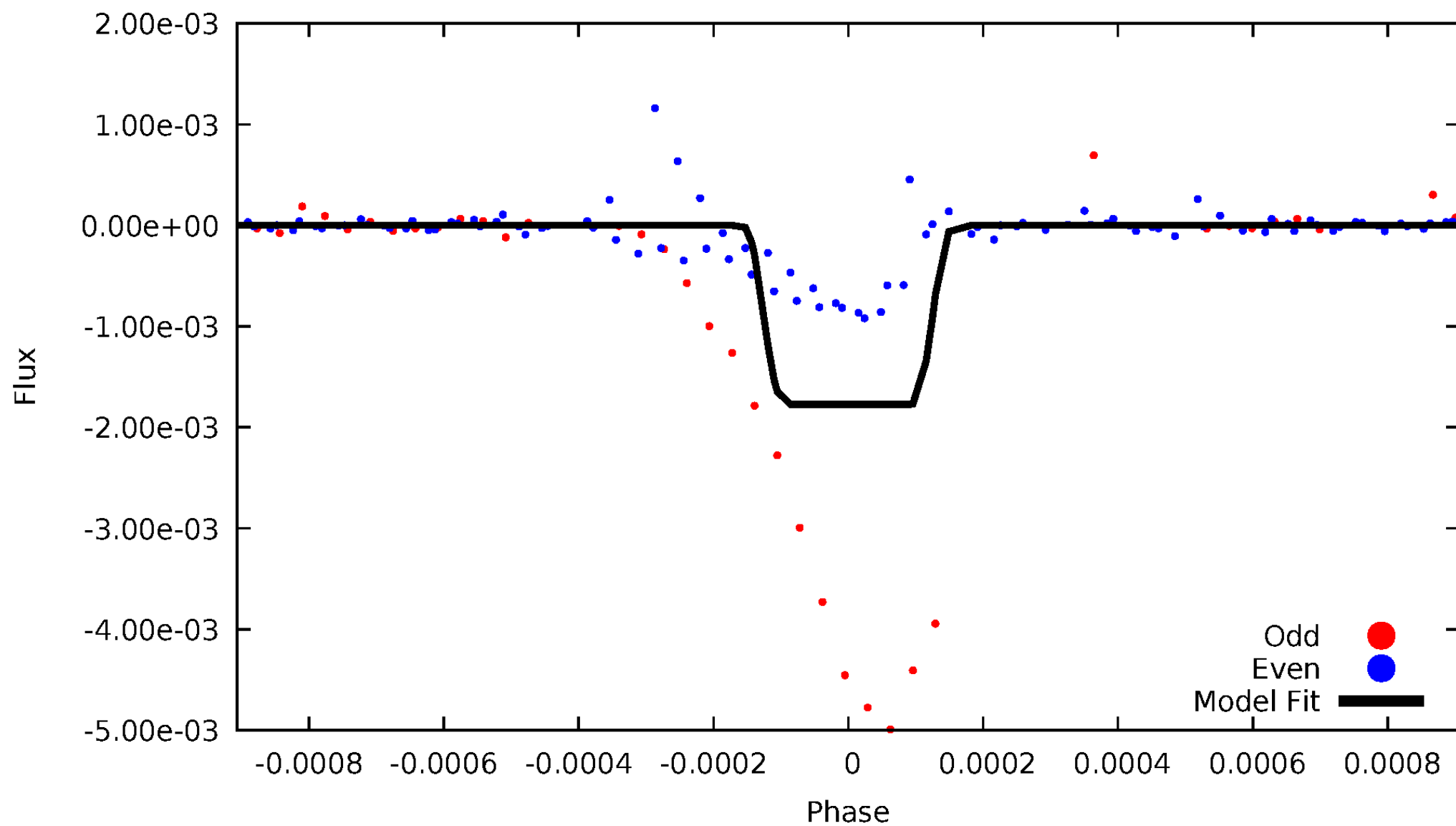
DV Odd/Even

TCE 004273689-05



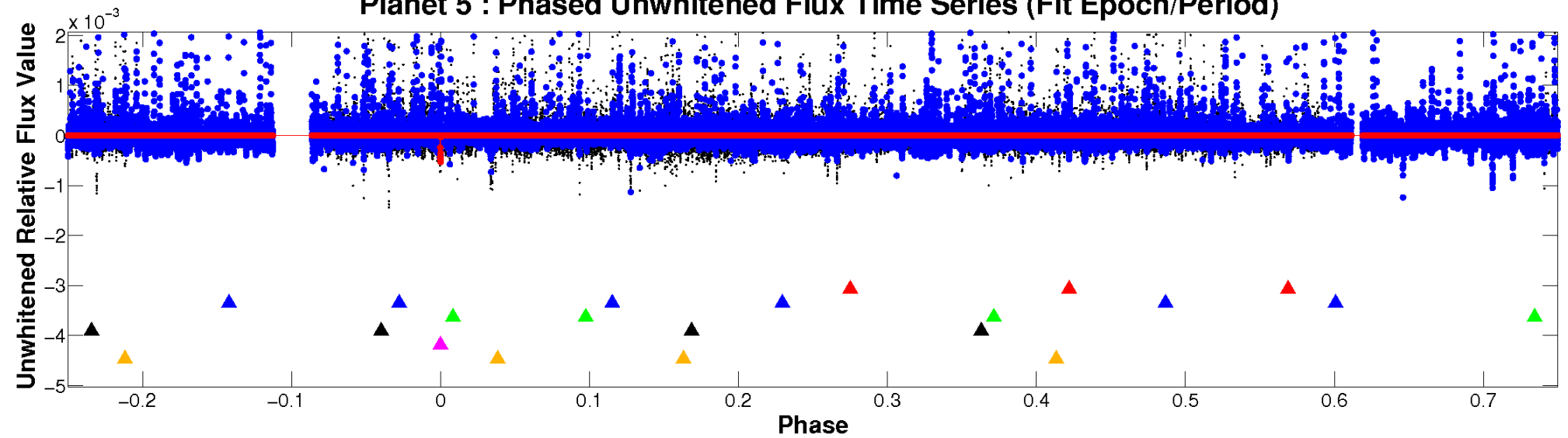
ALT Odd/Even

TCE 004273689-05

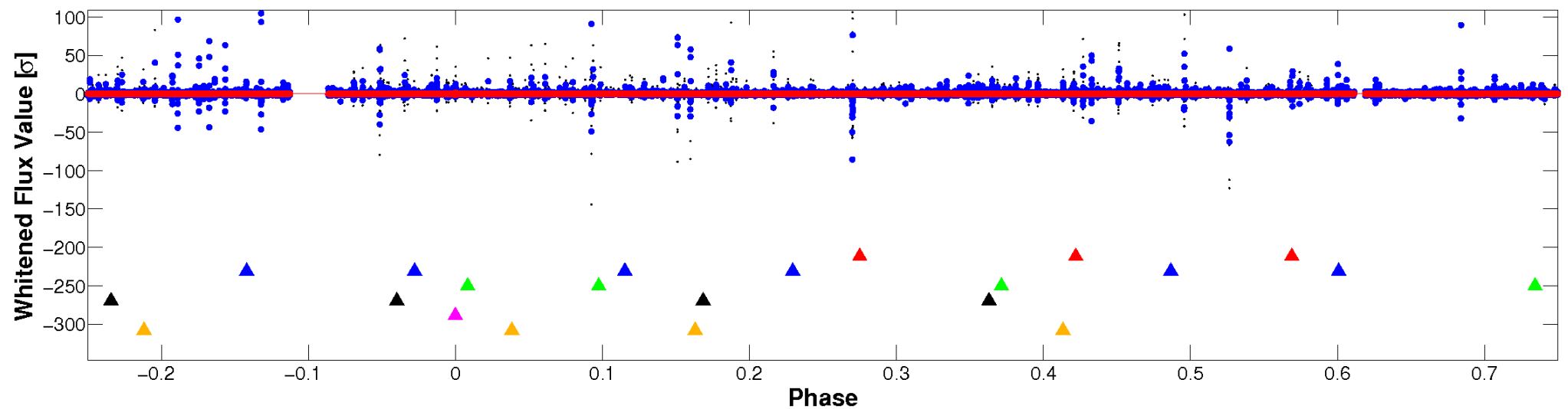


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

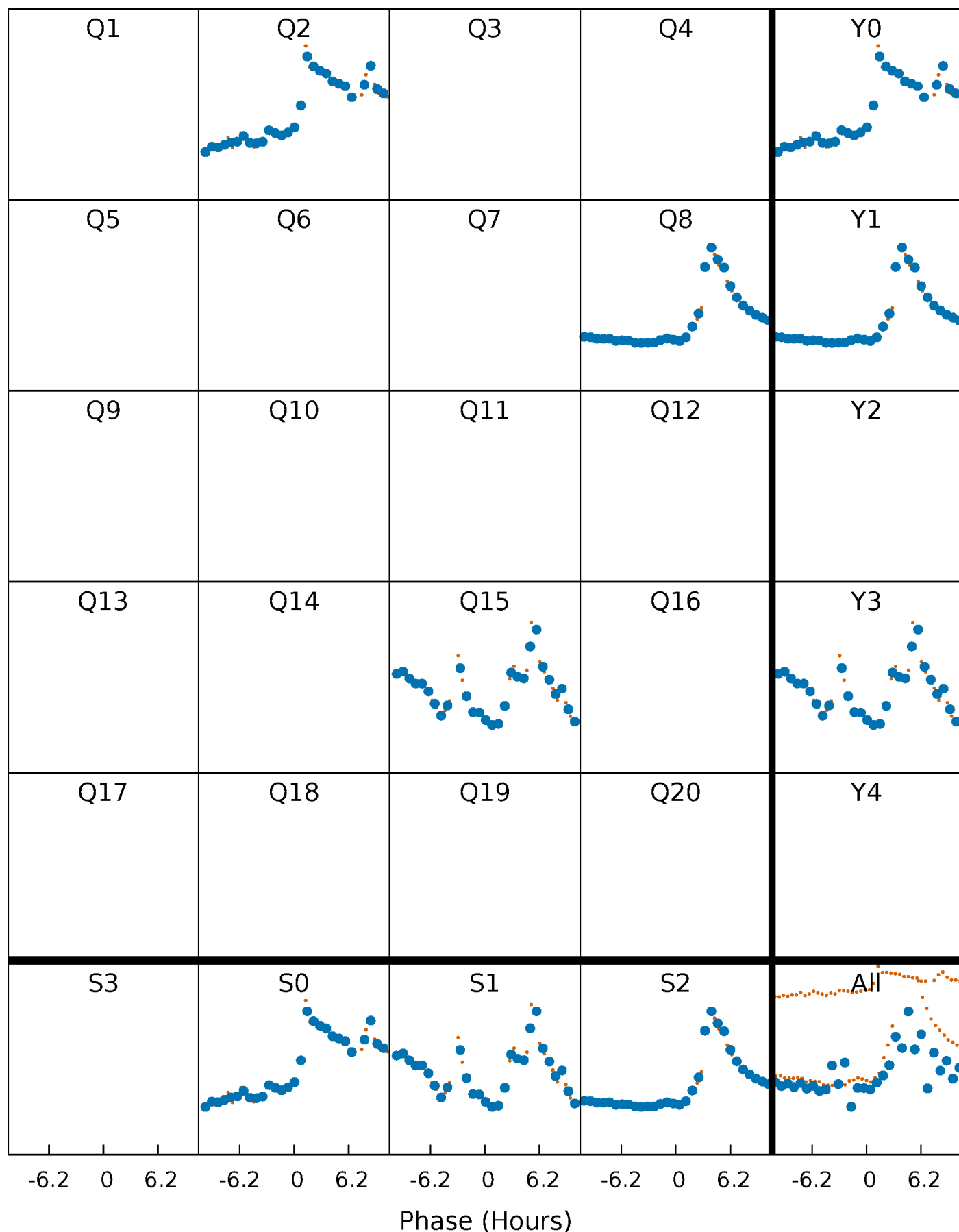


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



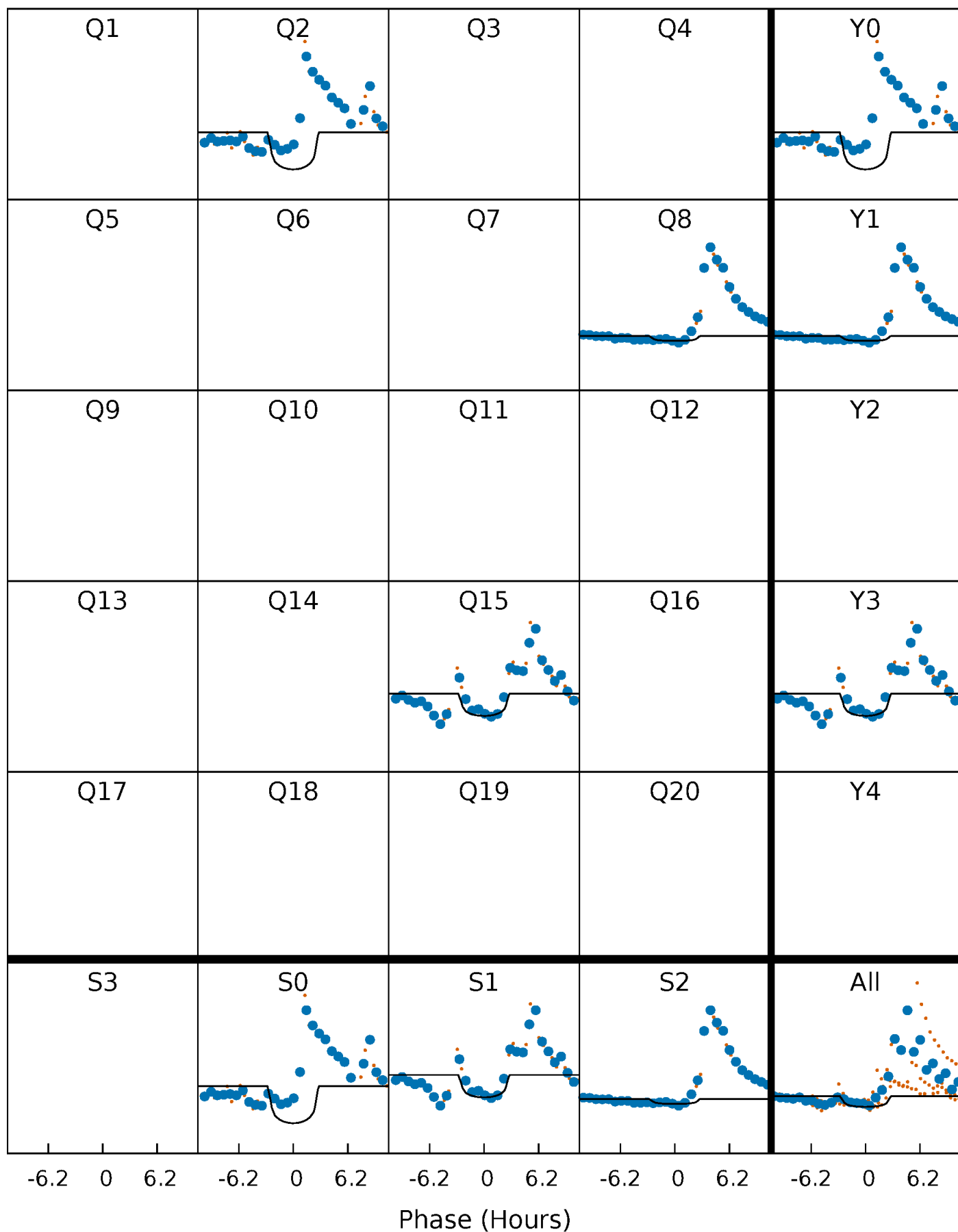
PDC Quarter-Phased Transit Curves

TCE 004273689-05 $P=609.236599$ Days $T_0=178.803787$ (BKJD)



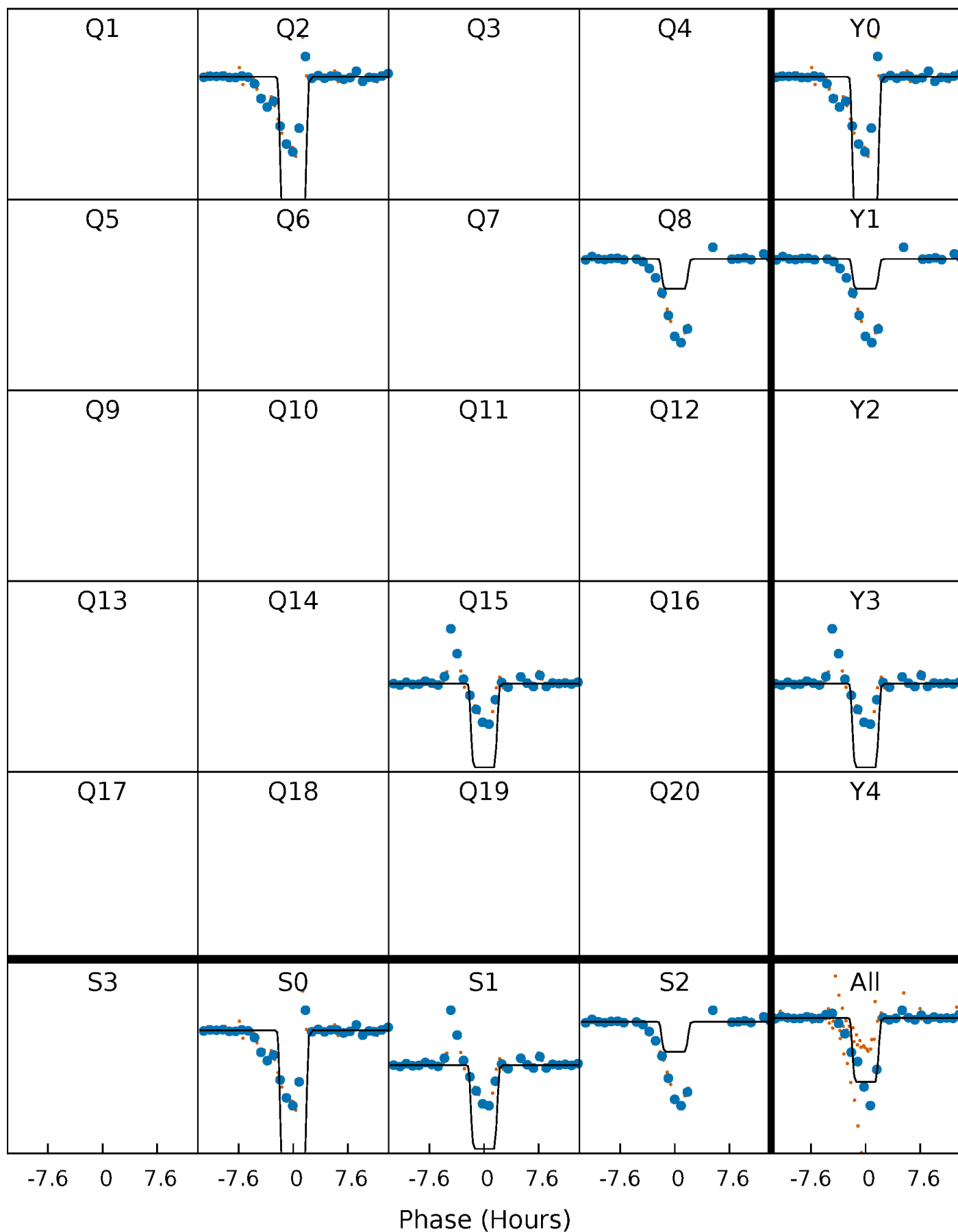
DV Quarter-Phased Transit Curves

TCE 004273689-05 $P=609.236599$ Days $T_0=178.803787$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

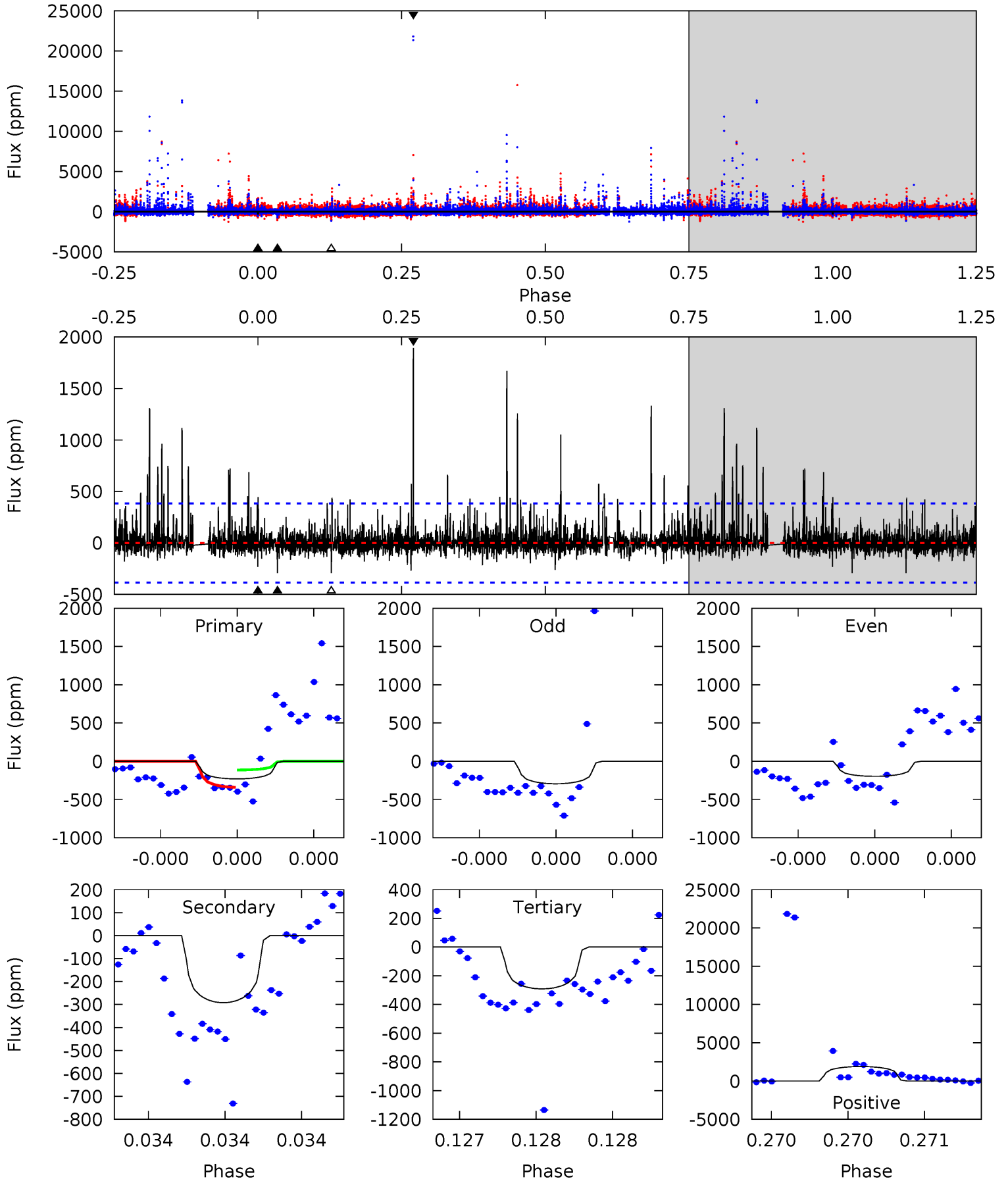
TCE 004273689-05 $P=609.260647$ Days $T_0=178.803292$ (BKJD)



DV Model-Shift Uniqueness Test

004273689-05, P = 609.236599 Days, E = 178.803787 Days

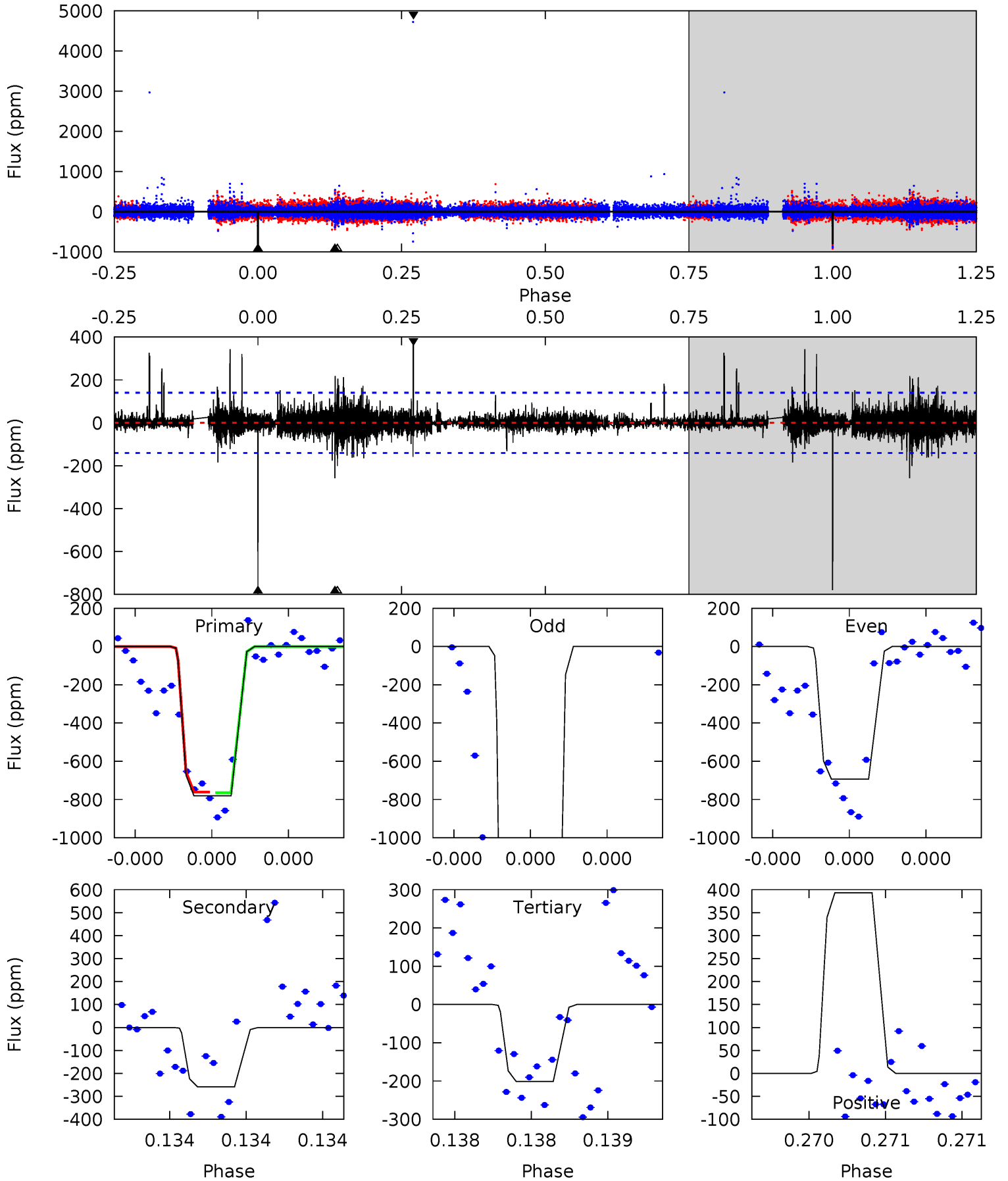
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.38	4.28	4.26	27.7	5.63	3.56	1.82	-0.89	-24.3	0.01	-23.4	0.34	0.59	0.87	1.63



Alt Model-Shift Uniqueness Test

004273689-05, P = 609.260647 Days, E = 178.803292 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.4	10.4	8.08	15.8	5.65	3.59	1.12	23.3	15.5	2.30	-5.43	71.1	2.84	0.34	0



Stellar Parameters For KIC 004273689

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5173^{+106}_{-197}	$3.471^{+1.224}_{-0.306}$	$-0.720^{+0.250}_{-0.400}$	$2.742^{+1.451}_{-2.176}$	$0.811^{+0.203}_{-0.203}$	$0.055^{+4.654}_{-0.039}$
	+2%/-4%	+35%/-9%	+35%/-56%	+53%/-79%	+25%/-25%	+8396%/-69%
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 004273689-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-292 ± 68	$10.07^{+12.91}_{-7.31}$	448^{+70}_{-104}	3685^{+2295}_{-652}	2555^{+32449}_{-2030}
Alt.	-258 ± 25	$12.79^{+14.06}_{-8.67}$	443^{+69}_{-101}	3371^{+1597}_{-555}	1518^{+12427}_{-1182}

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 $A_{obs} \gg 1.0$

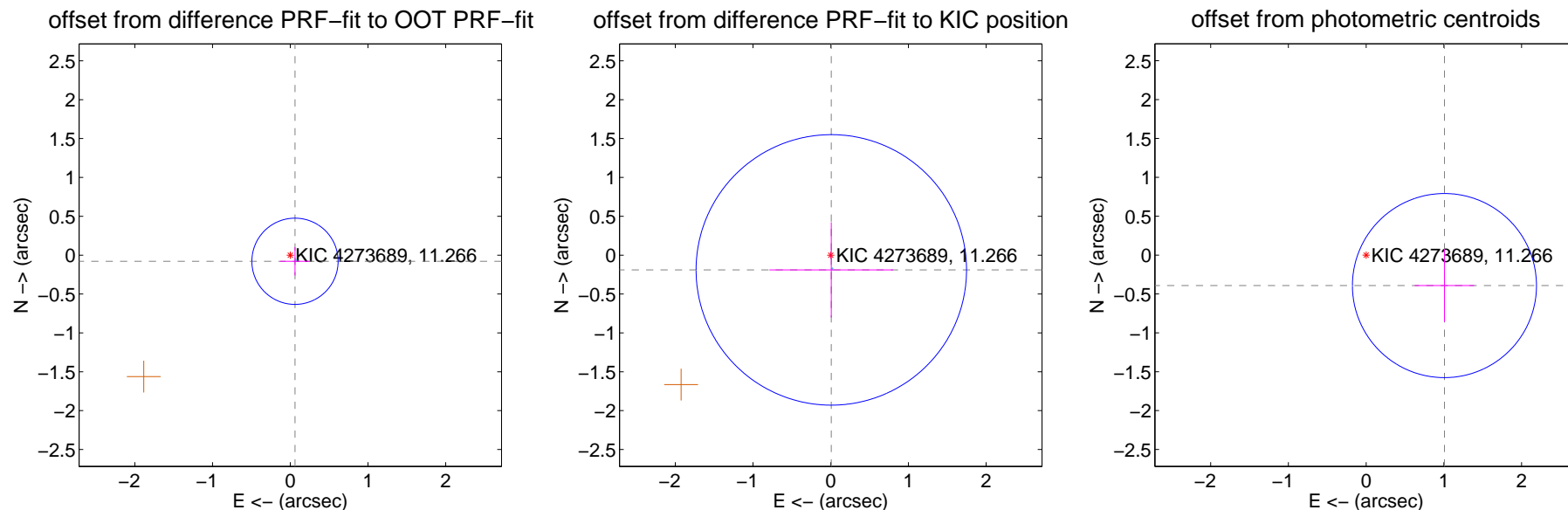
DV Centroid Data

Supplemental centroid analysis for 004273689-05. **Kepler magnitude: 11.27.** Transit SNR 7.07

There are 1 quarters with good PRF difference image offsets

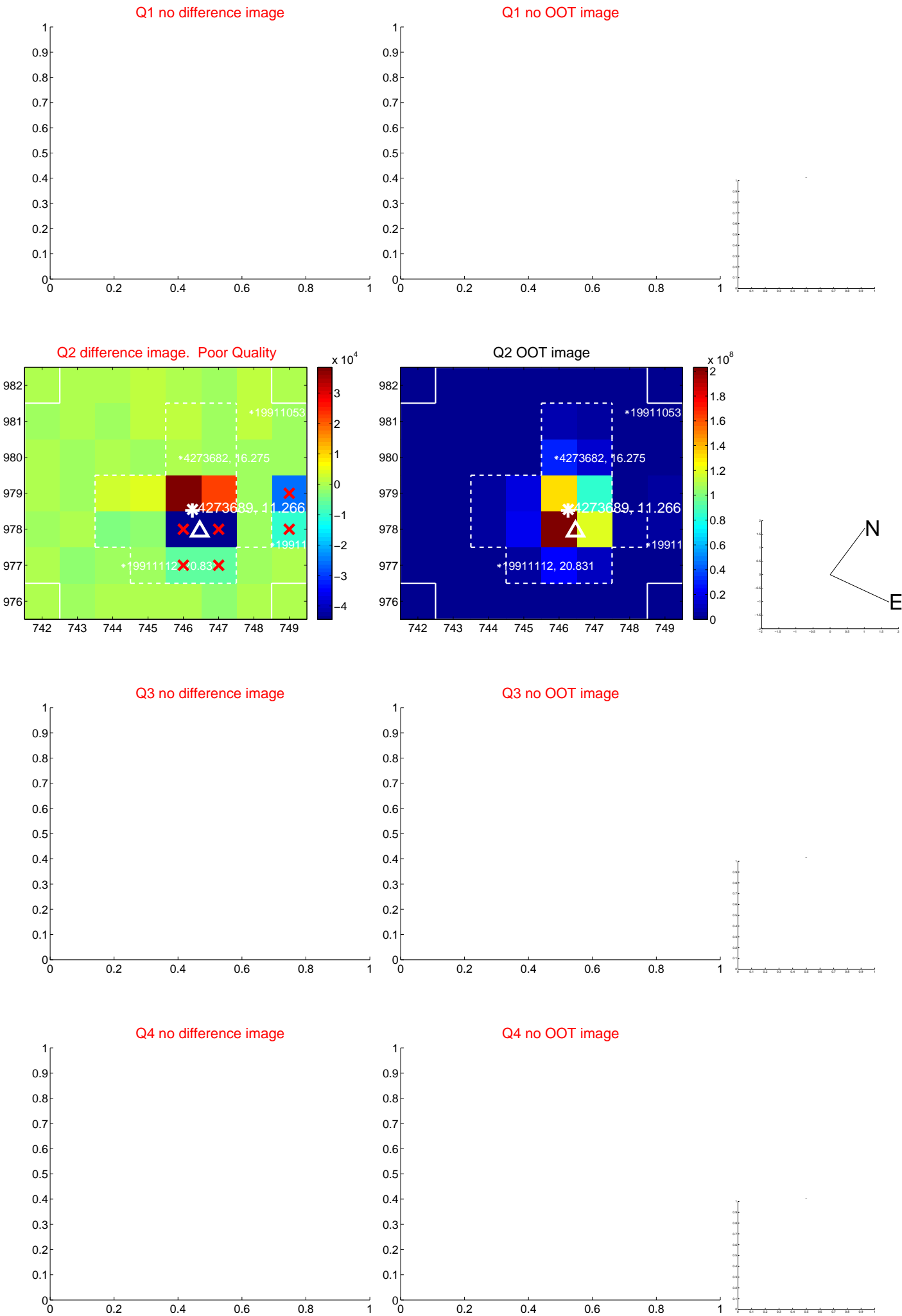
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.100 ± 0.185	0.54	-0.061 ± 0.190	-0.079 ± 0.181
PRF-fit source offset from KIC position	0.190 ± 0.580	0.33	-0.008 ± 0.797	-0.190 ± 0.612
photometric centroid source offset	1.08 ± 0.39	2.74	-1.01 ± 0.38	-0.39 ± 0.47

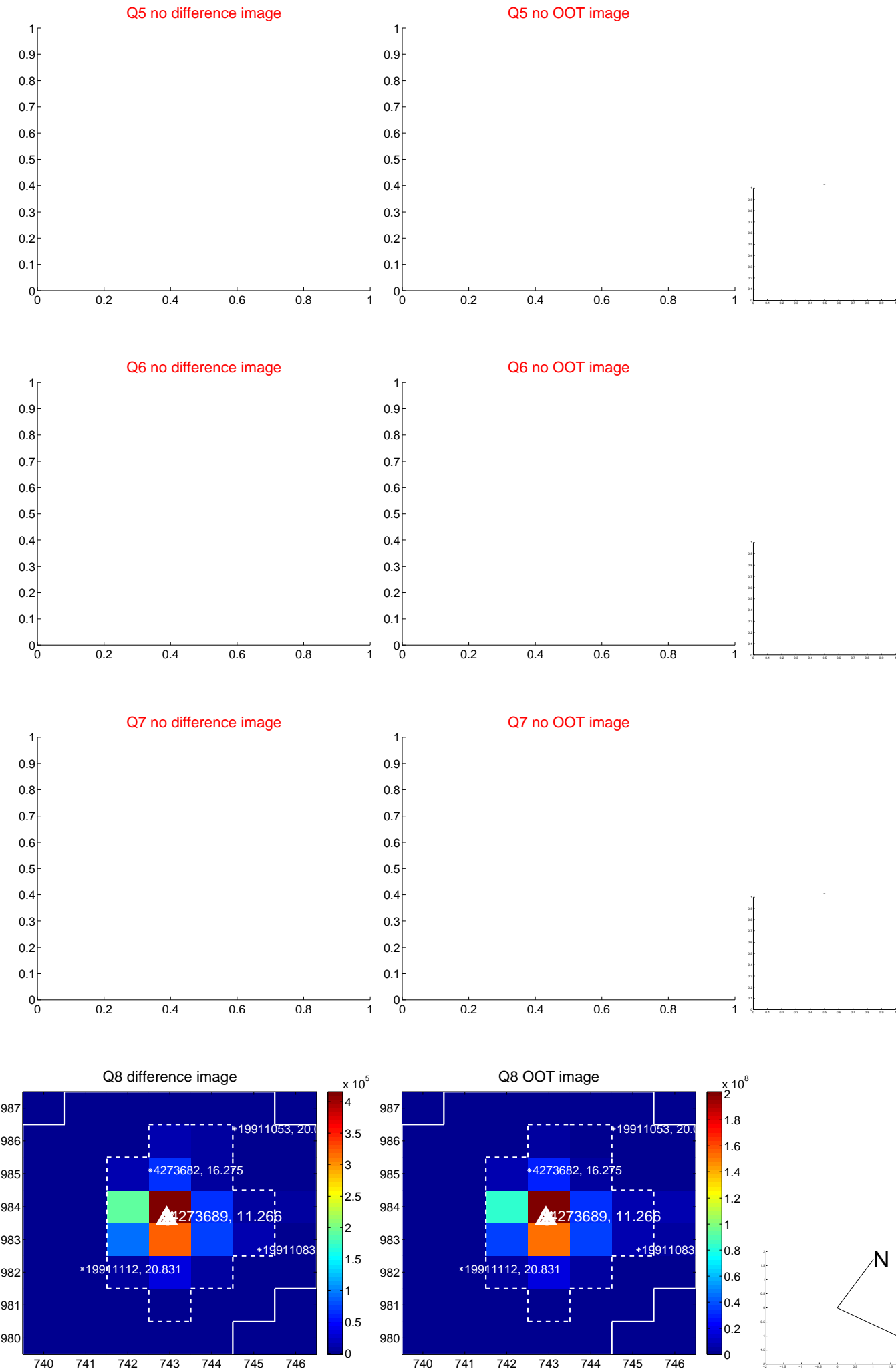


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

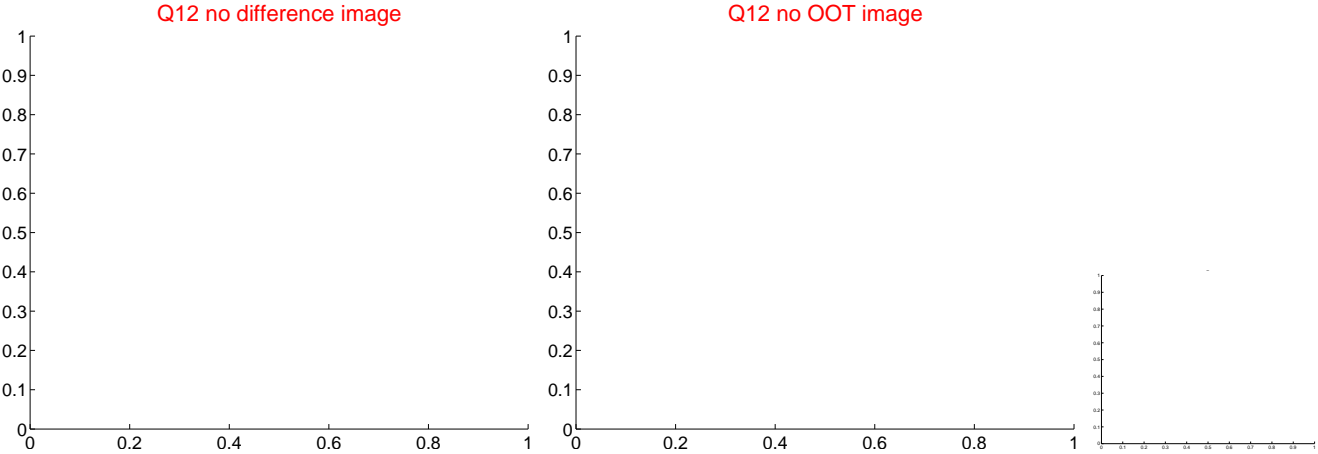
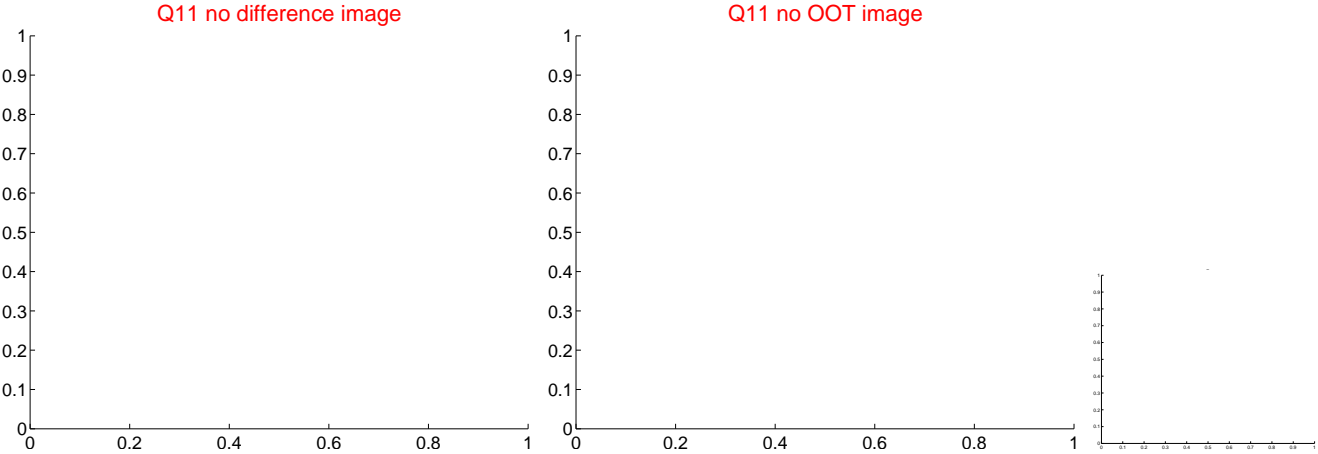
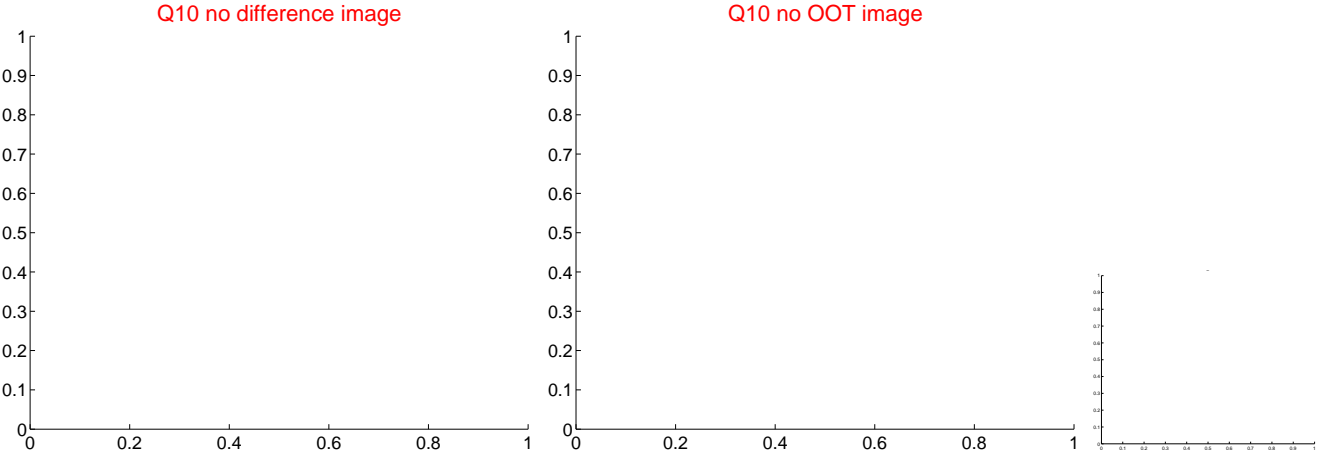
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



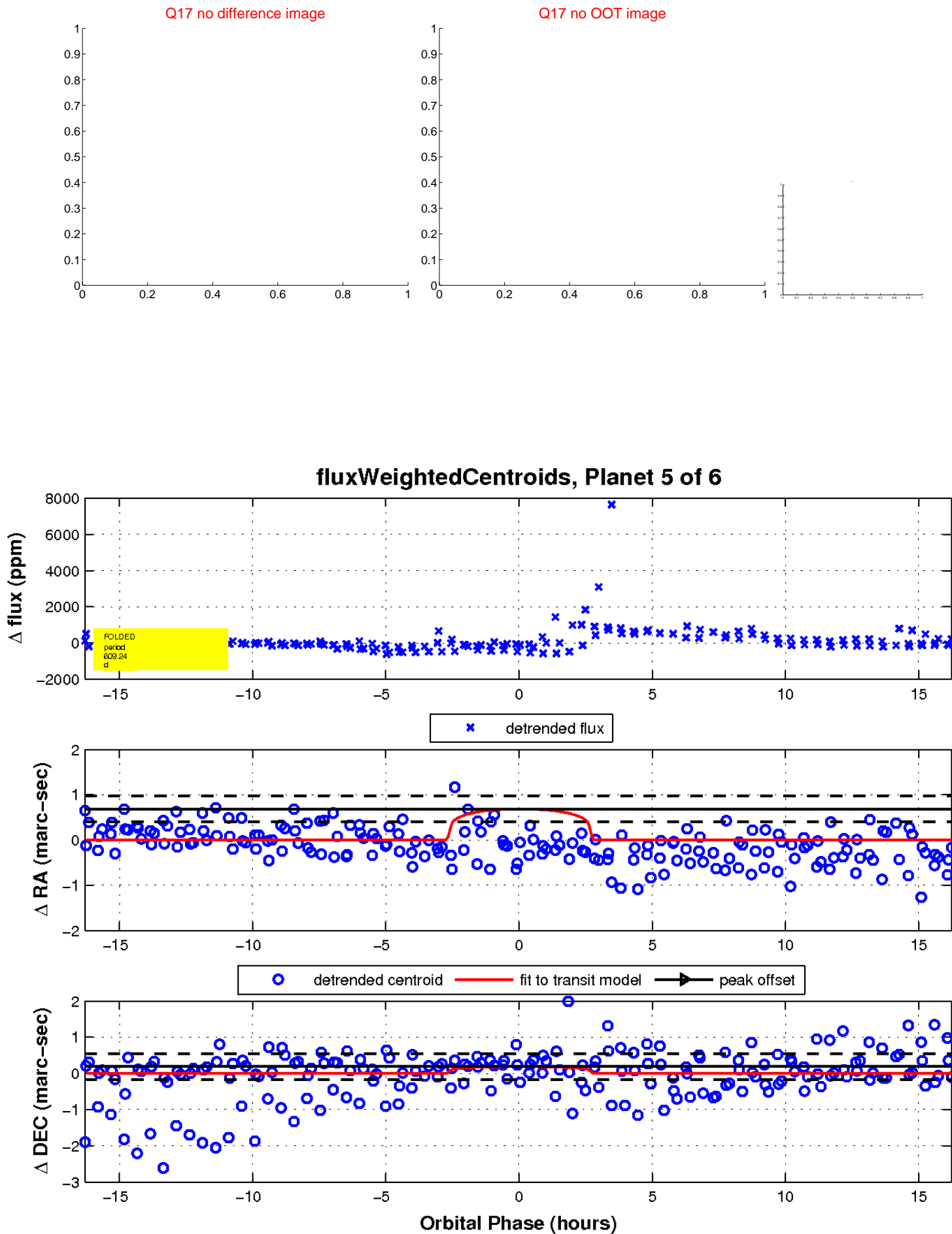
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

