

KIC 010081899

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})
010081899-01	OBS	8196.01	522.572556	190.479158	919.6	17.744	9.8	8.1	0.32	3439	0.99	0.02
010081899-02	OBS	No	407.165893	434.474695	968.5	5.840	12.1	7.7	0.32	3439	1.04	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010081899-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010081899-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

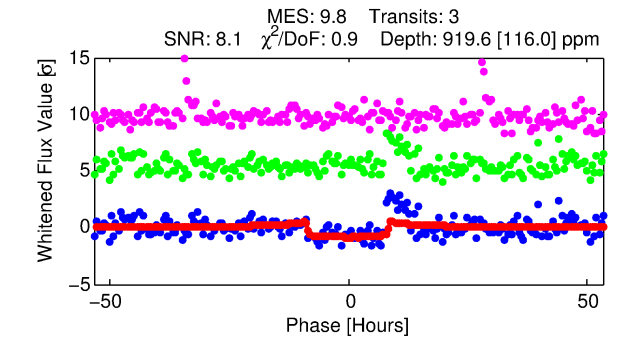
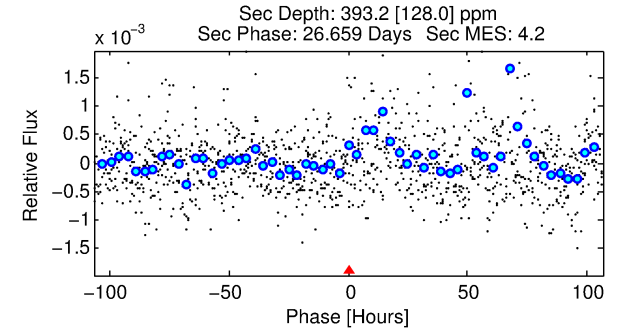
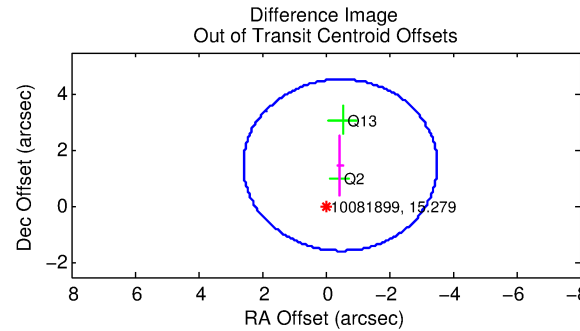
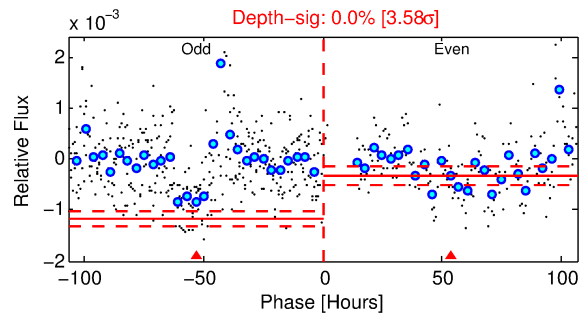
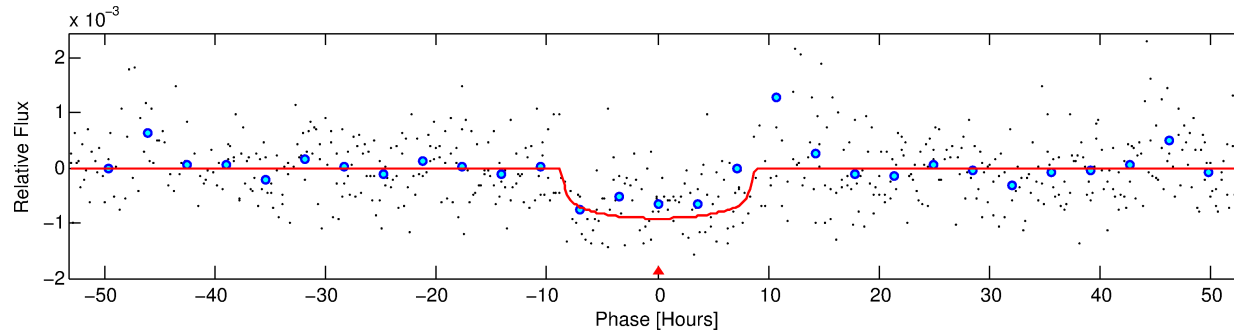
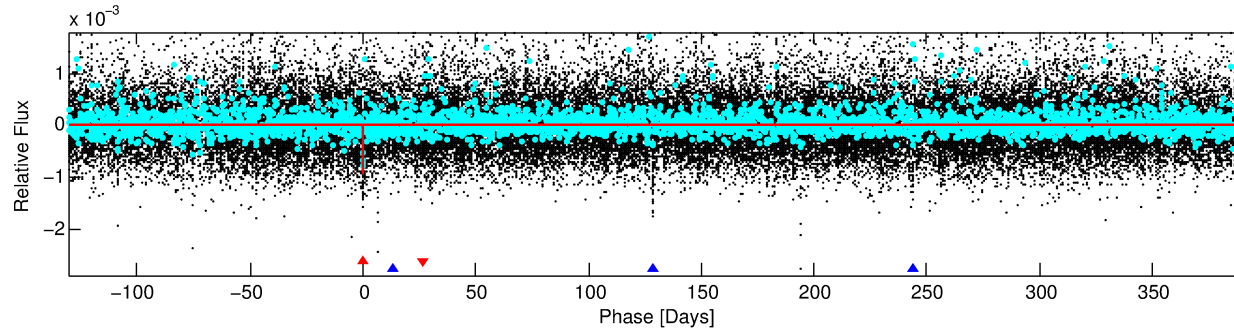
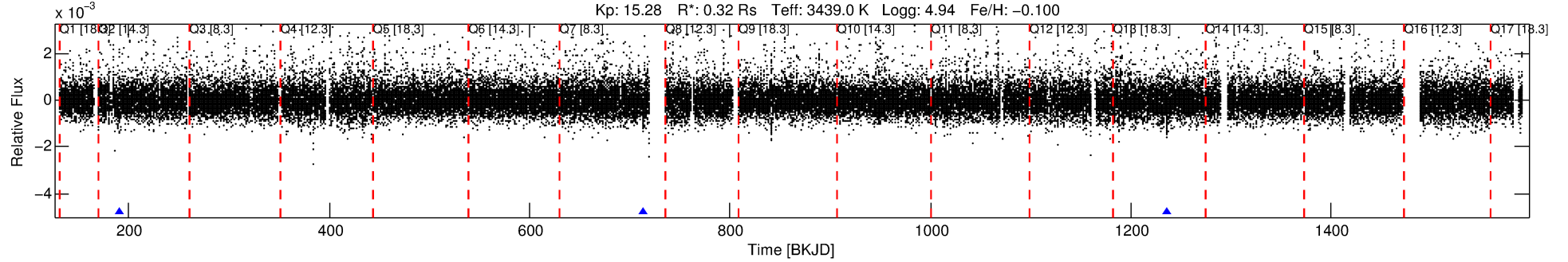
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010081899-01

No Significant Match Found

DV One-Page Summary

KIC: 10081899 Candidate: 1 of 2 Period: 522.573 d



DV Fit Results:

Period = 522.57256 [0.01587] d
Epoch = 190.4792 [0.0153] BKJD
Rp/R* = 0.0285 [0.0066]
a/R* = 197.16 [189.89]
b = 0.54 [1.27]
Seff = 0.02 [0.00]
Teq = 92 [3] K
Rp = 0.99 [0.26] Re
a = 0.8691 [0.0735] AU
Ag = 166932.64 [96270.18] [1.73 σ]
Teffp = 2868 [408] K [6.80 σ]

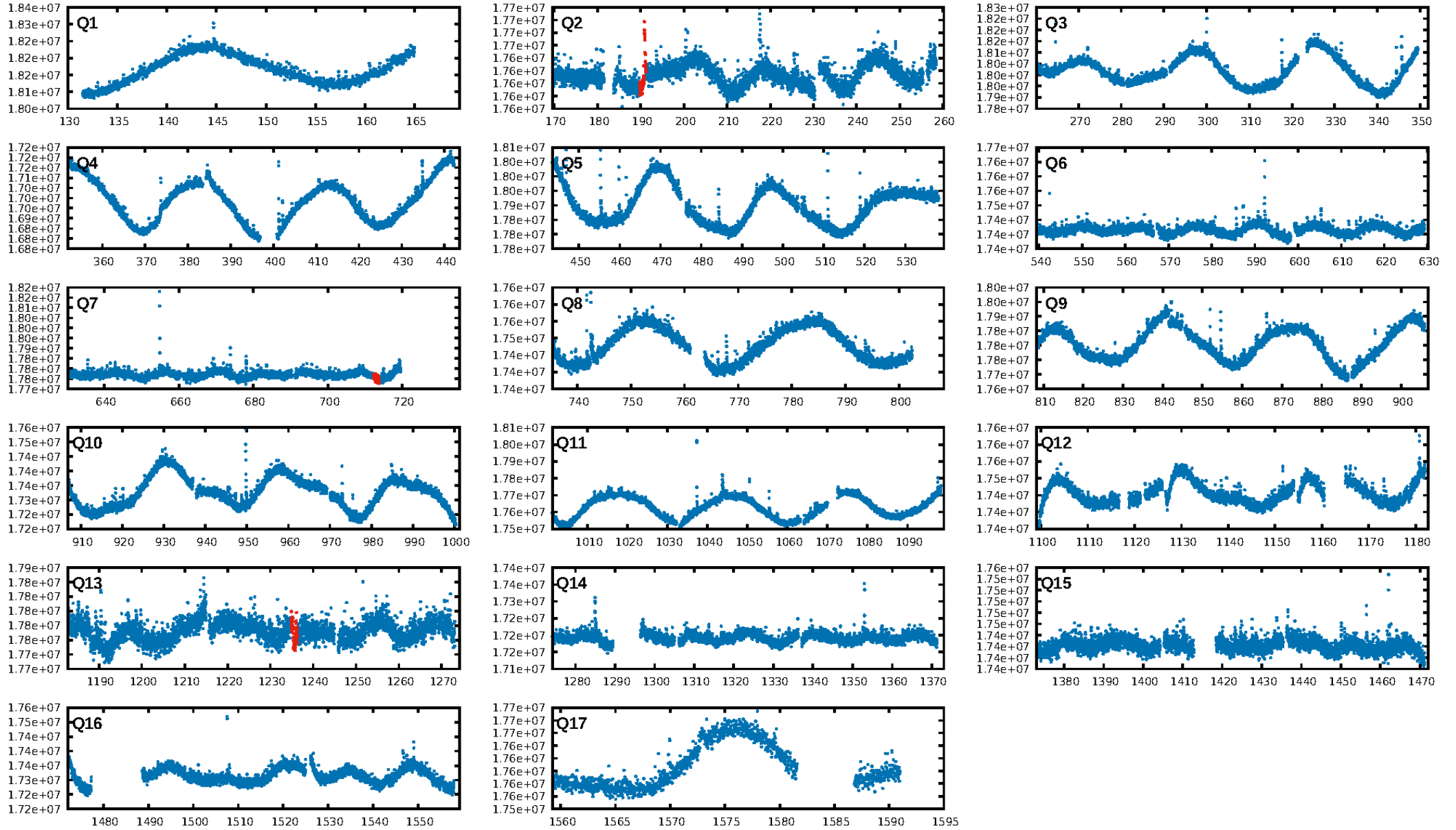
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [148.27 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.62e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.3918
Centroid-sig: 0.2%
Centroid-so: 0.808 arcsec [1.08 σ]
OotOffset-rm: 1.555 arcsec [1.53 σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 1.371 arcsec [1.69 σ]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

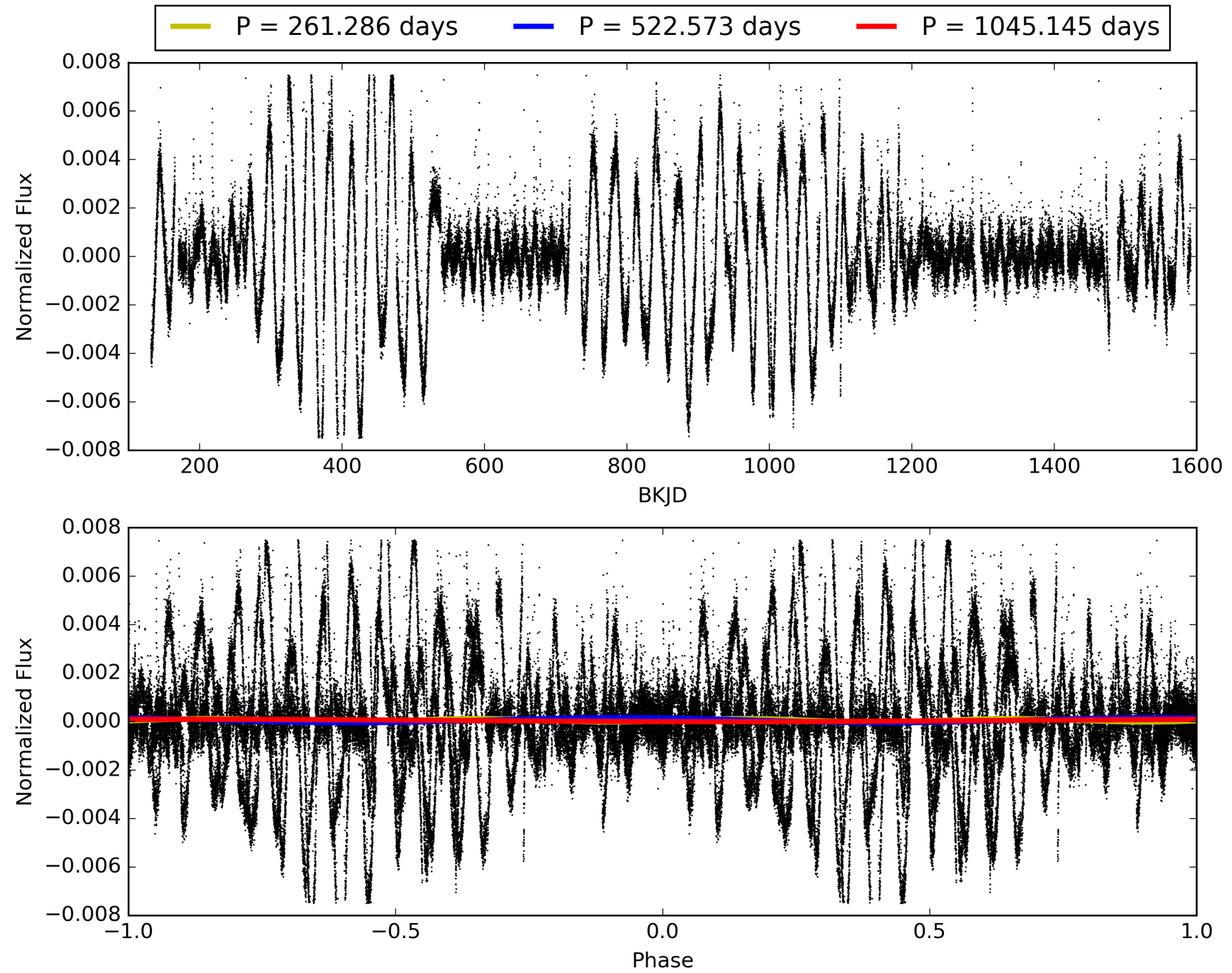
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:20:12 Z

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

TCE 010081899-01, PDC Light Curves

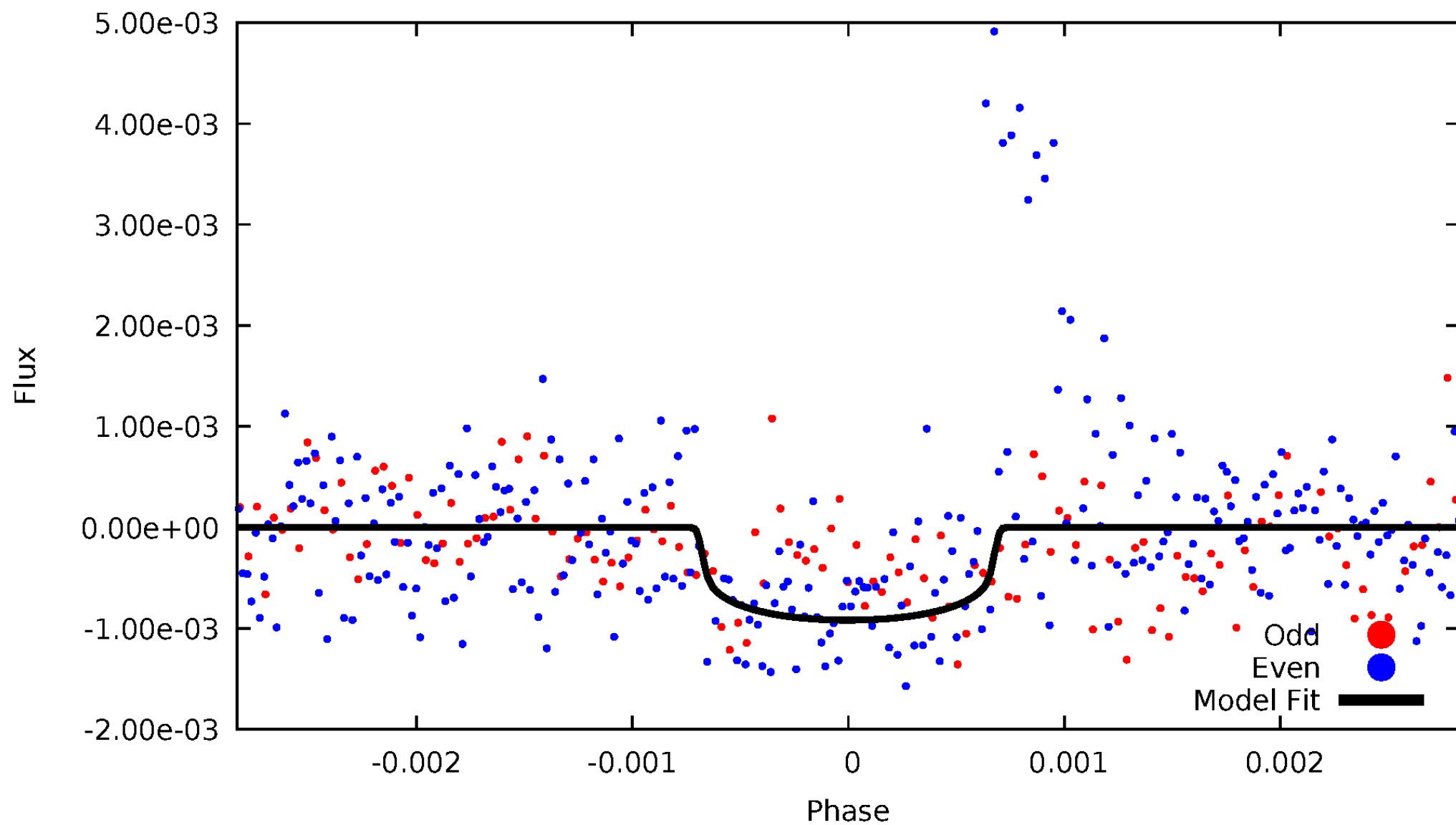


TCE 010081899-01



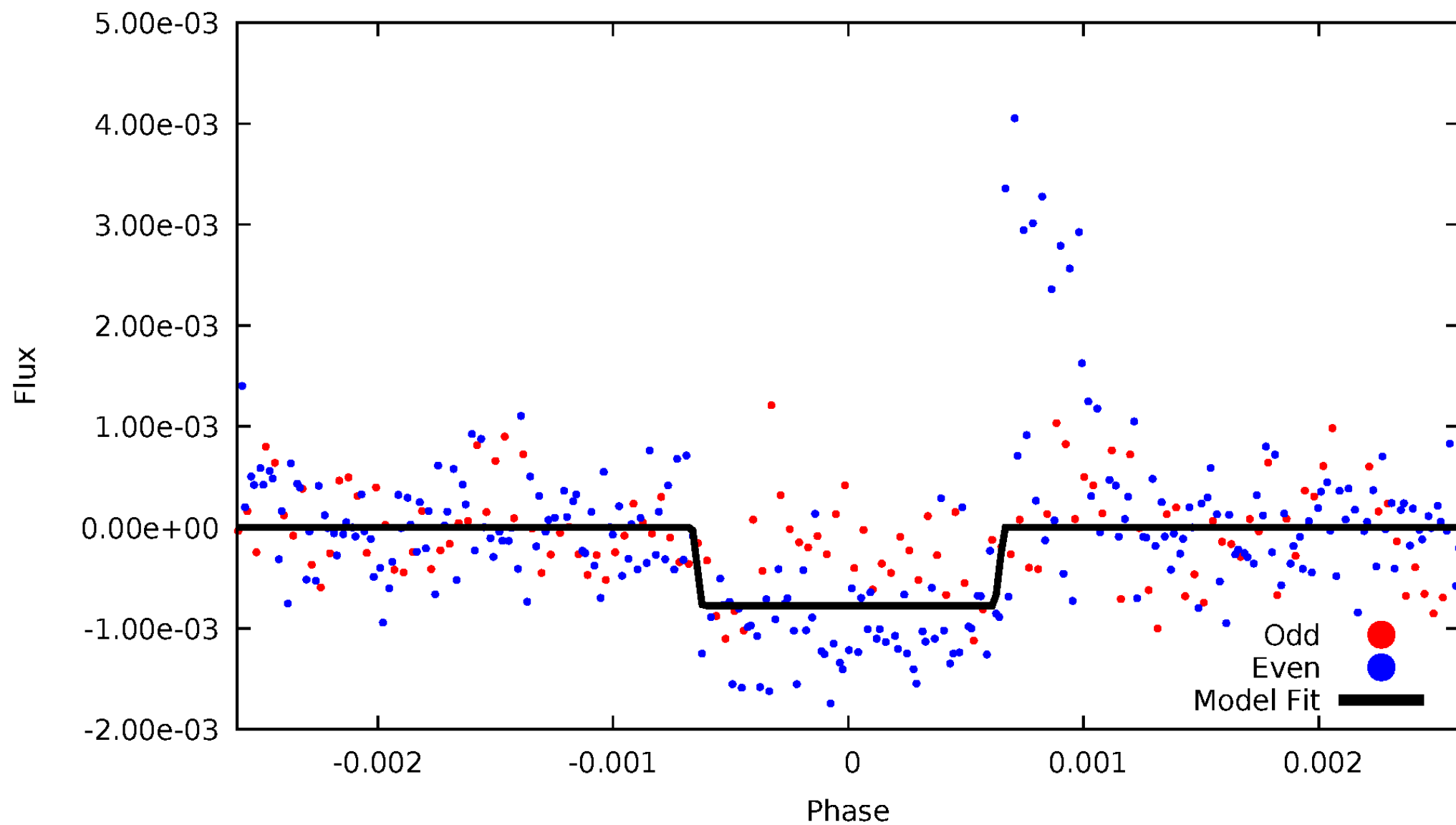
DV Odd/Even

TCE 010081899-01



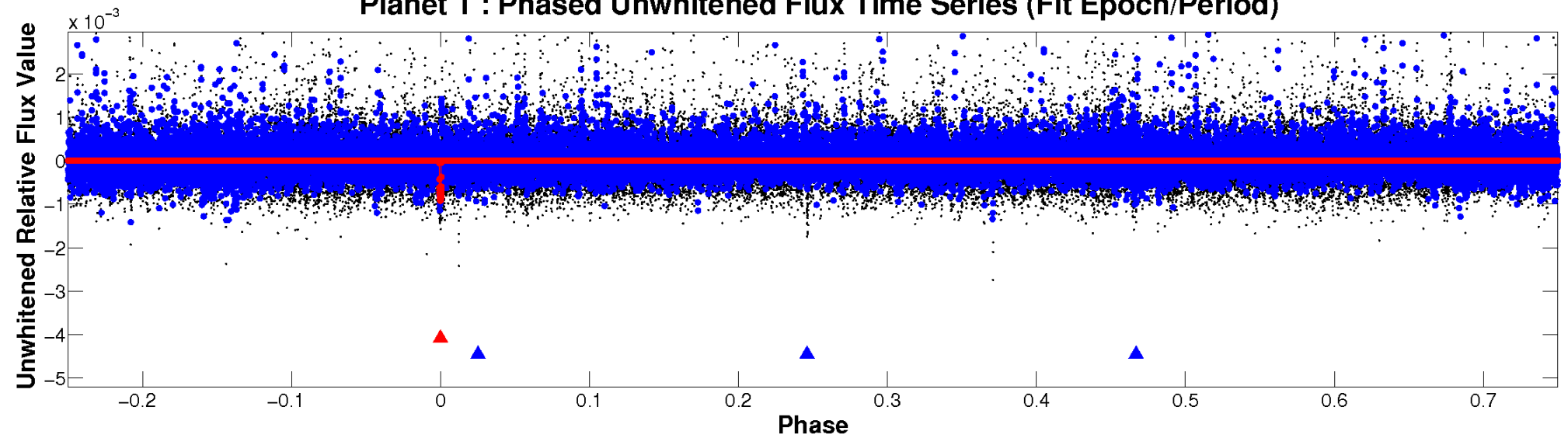
ALT Odd/Even

TCE 010081899-01

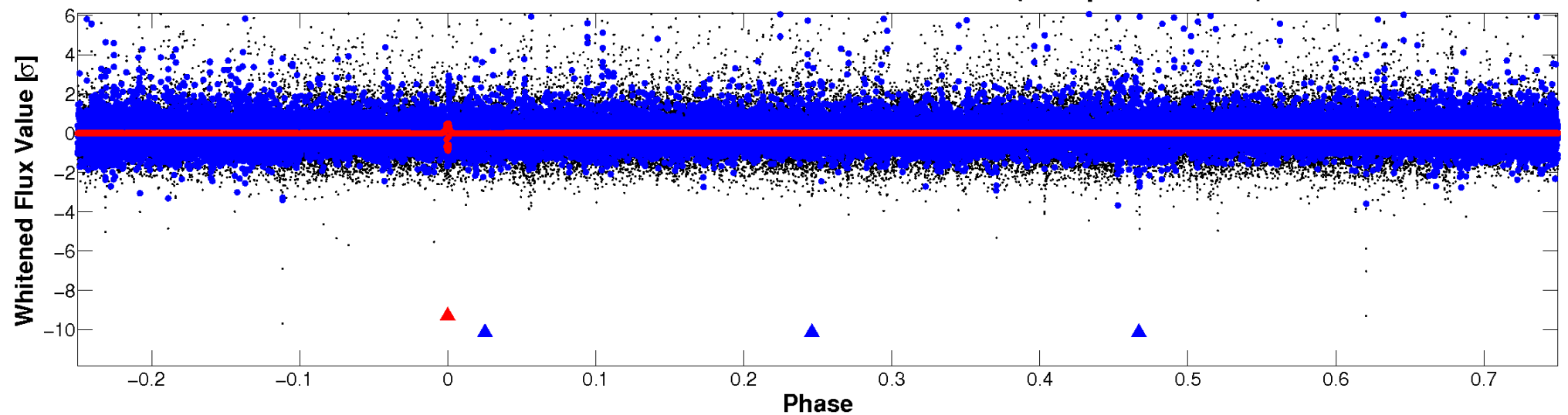


Non-Whitened Vs. Whitened Light Curve

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

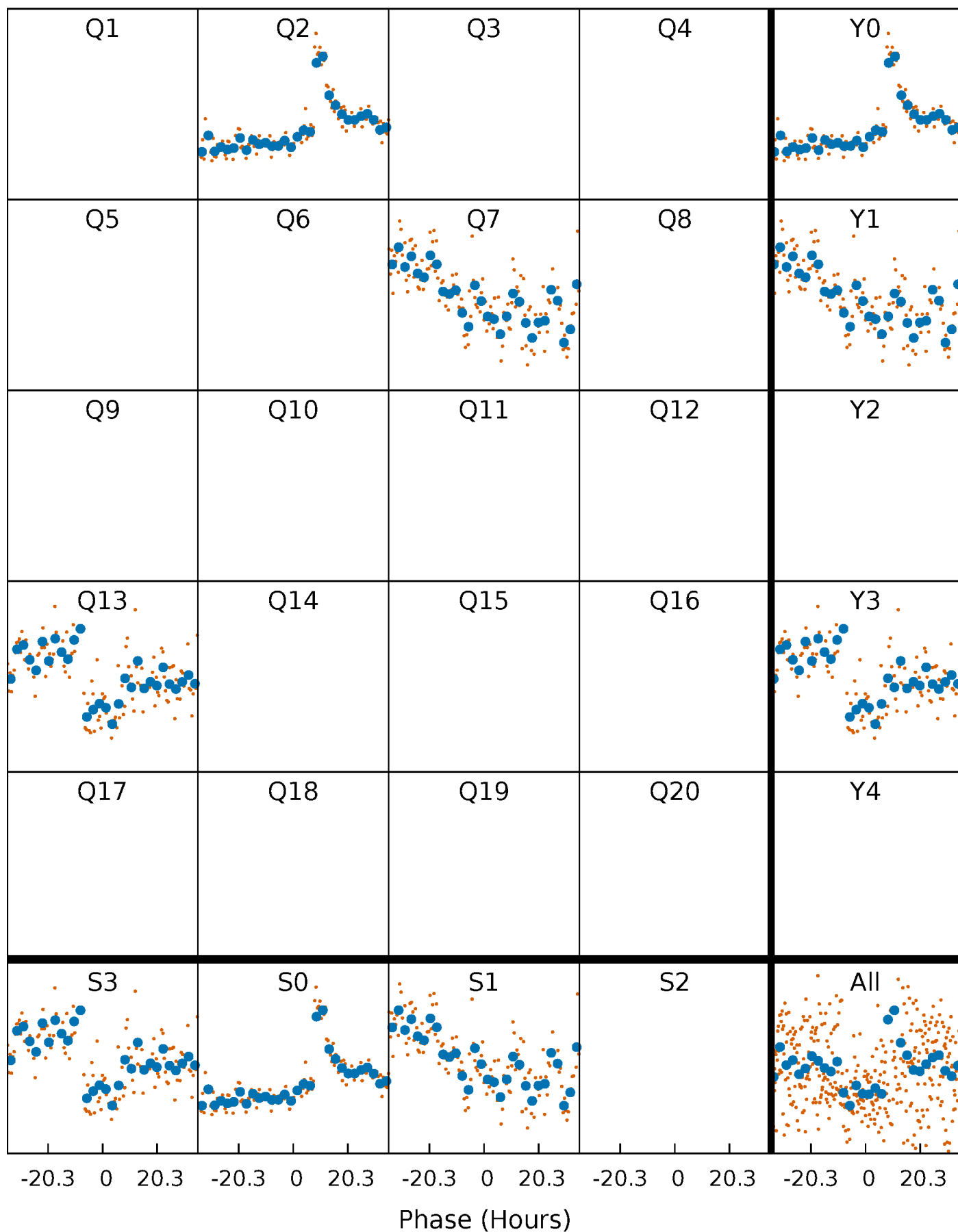


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 010081899-01 $P=522.572556$ Days $T_0=190.479158$ (BKJD)



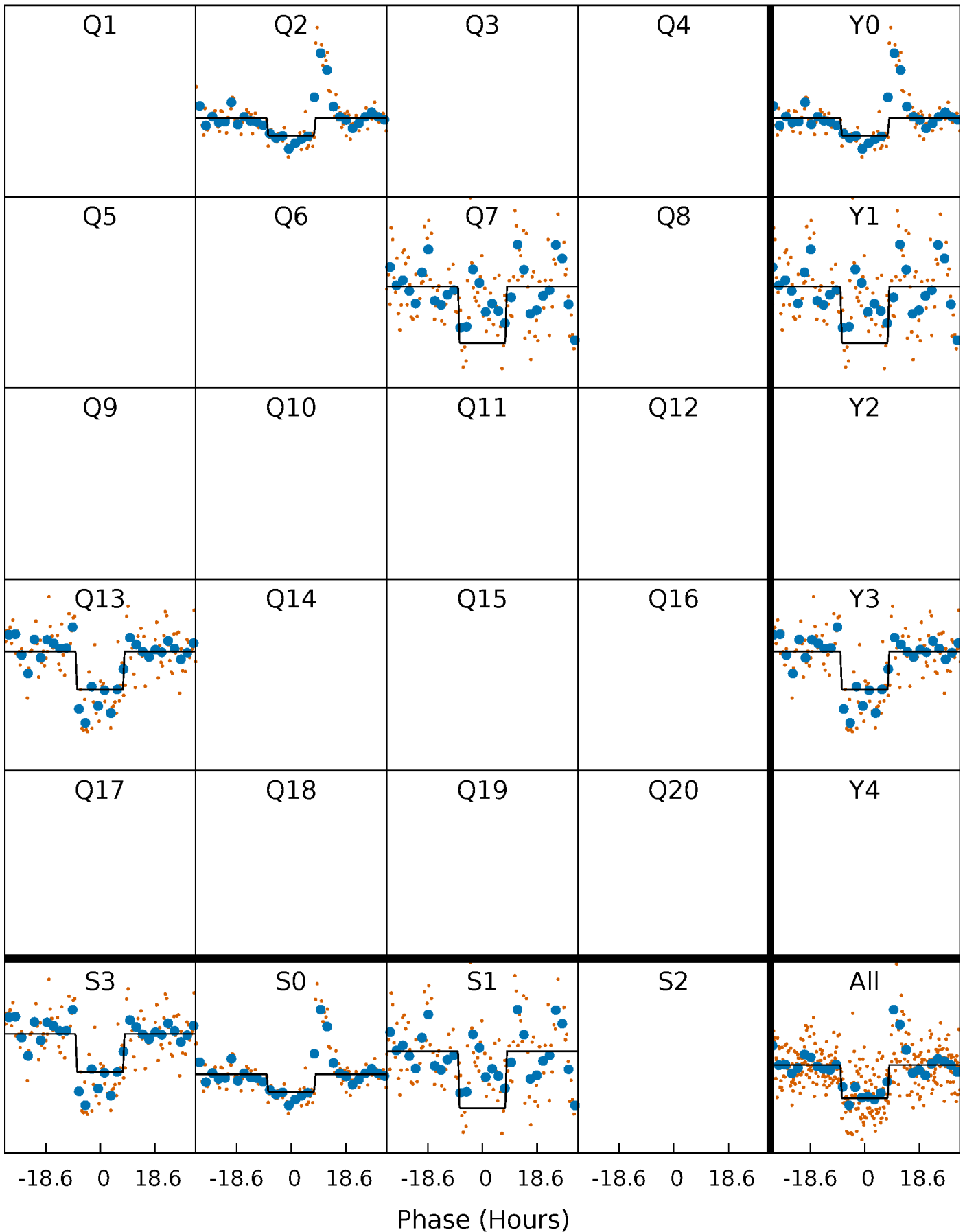
DV Quarter-Phased Transit Curves

TCE 010081899-01 $P=522.572556$ Days $T_0=190.479158$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

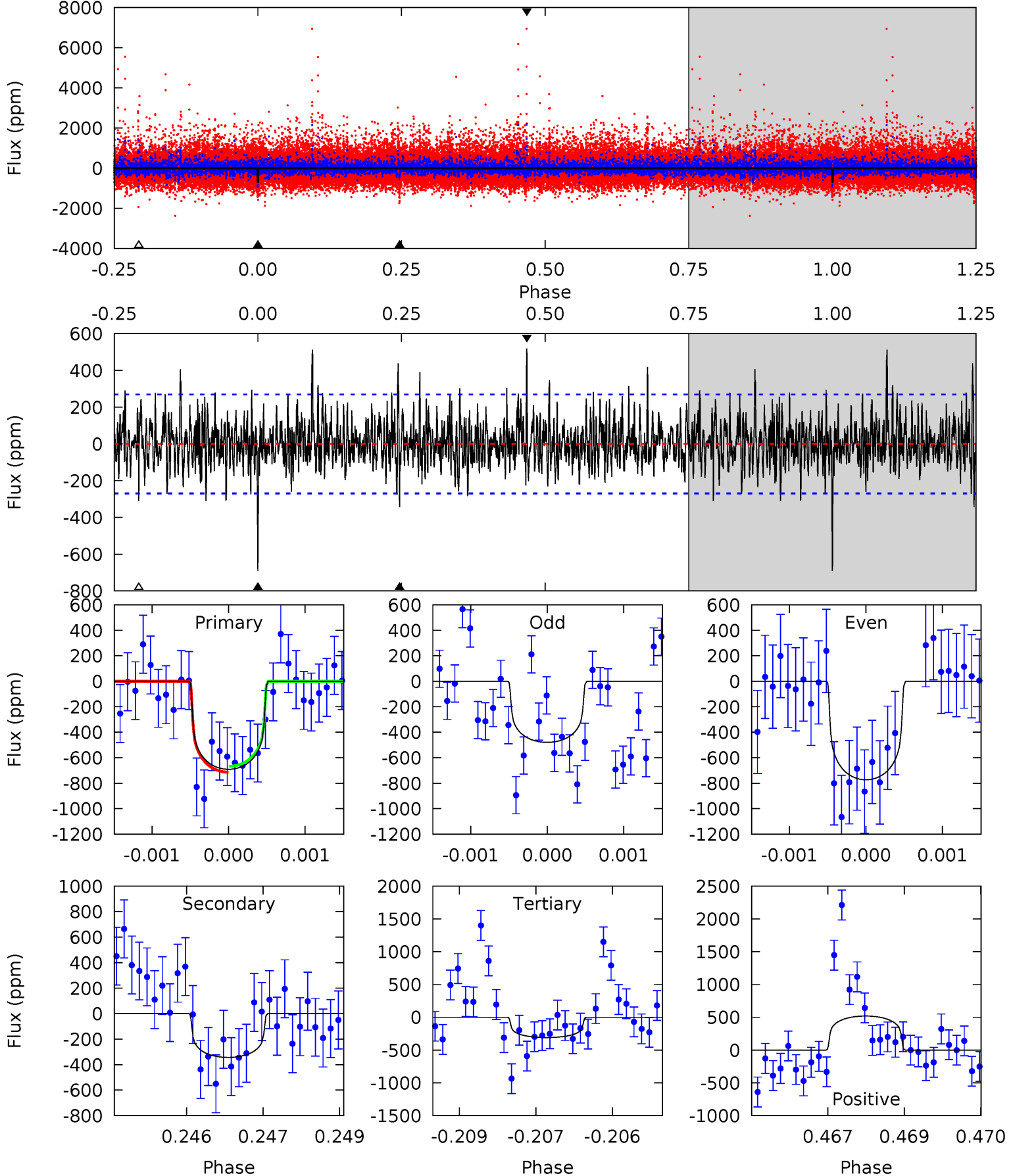
TCE 010081899-01 P=522.574675 Days $T_0=190.463153$ (BKJD)



DV Model-Shift Uniqueness Test

010081899-01, $P = 522.572556$ Days, $E = 190.479158$ Days

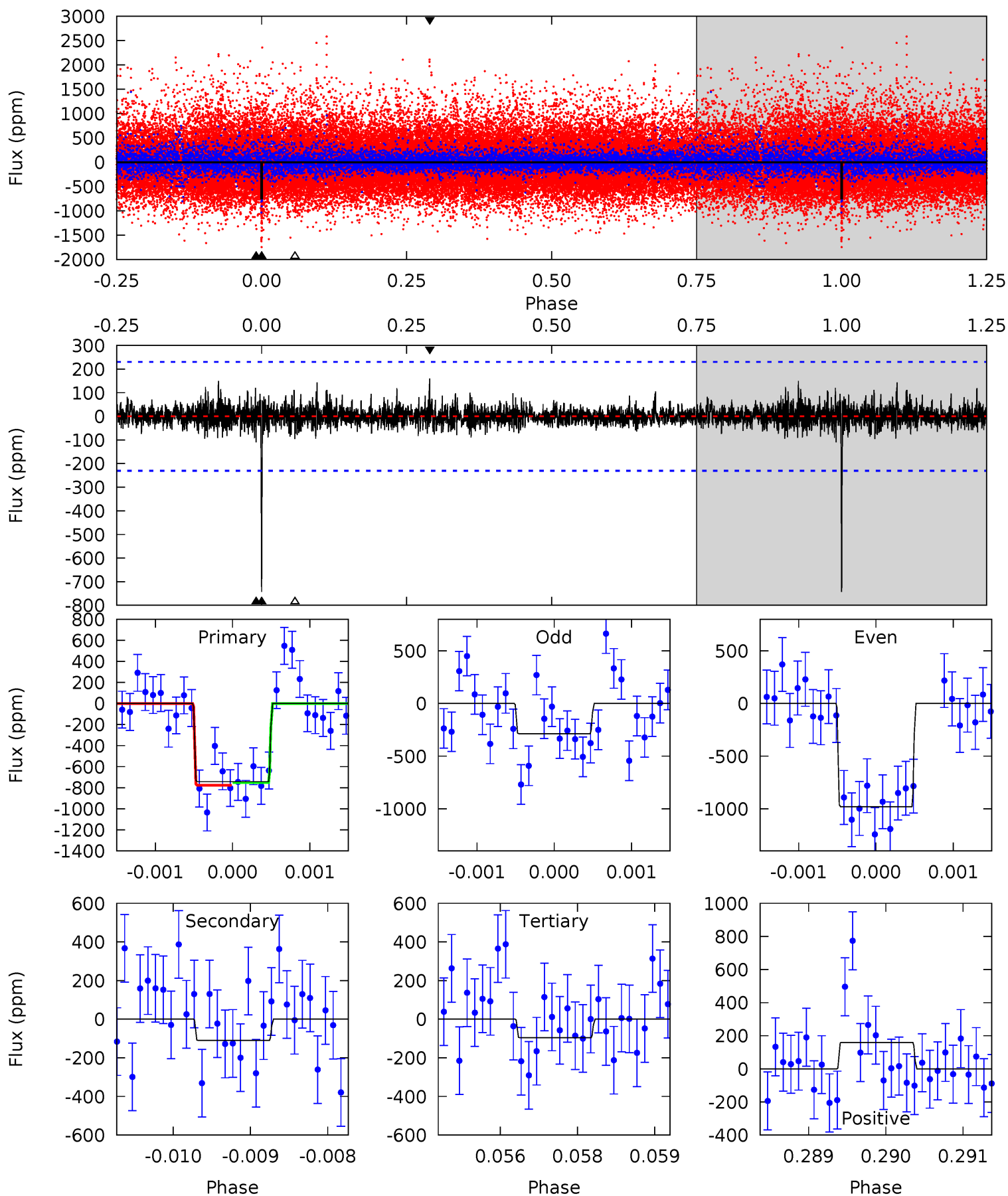
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	6.88	6.20	10.4	5.39	3.19	2.08	7.63	3.44	0.68	-3.51	2.44	1.35	0.43	0.47



Alt Model-Shift Uniqueness Test

010081899-01, $P = 522.574675$ Days, $E = 190.463153$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	2.57	2.24	3.74	5.40	3.21	0.65	15.1	13.6	0.33	-1.17	7.67	0.77	0.18	0.30



Stellar Parameters For KIC 010081899

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3439^{+41}_{-41}	$4.939^{+0.044}_{-0.036}$	$-0.100^{+0.100}_{-0.100}$	$0.318^{+0.030}_{-0.037}$	$0.320^{+0.038}_{-0.042}$	$14.060^{+3.385}_{-2.276}$
	+1%/-1%	+1%/-1%	+100%/-100%	+9%/-12%	+12%/-13%	+24%/-16%
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 010081899-01 / KOI 8196.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-344 ± 50	$1.00^{+0.25}_{-0.27}$	128^{+3}_{-3}	3019^{+267}_{-191}	$142684^{+114692}_{-51471}$
Alt.	-110 ± 43	$0.96^{+0.24}_{-0.23}$	128^{+3}_{-3}	2619^{+214}_{-196}	49947^{+41412}_{-23267}

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 $A_{\text{obs}} \gg 1.0$

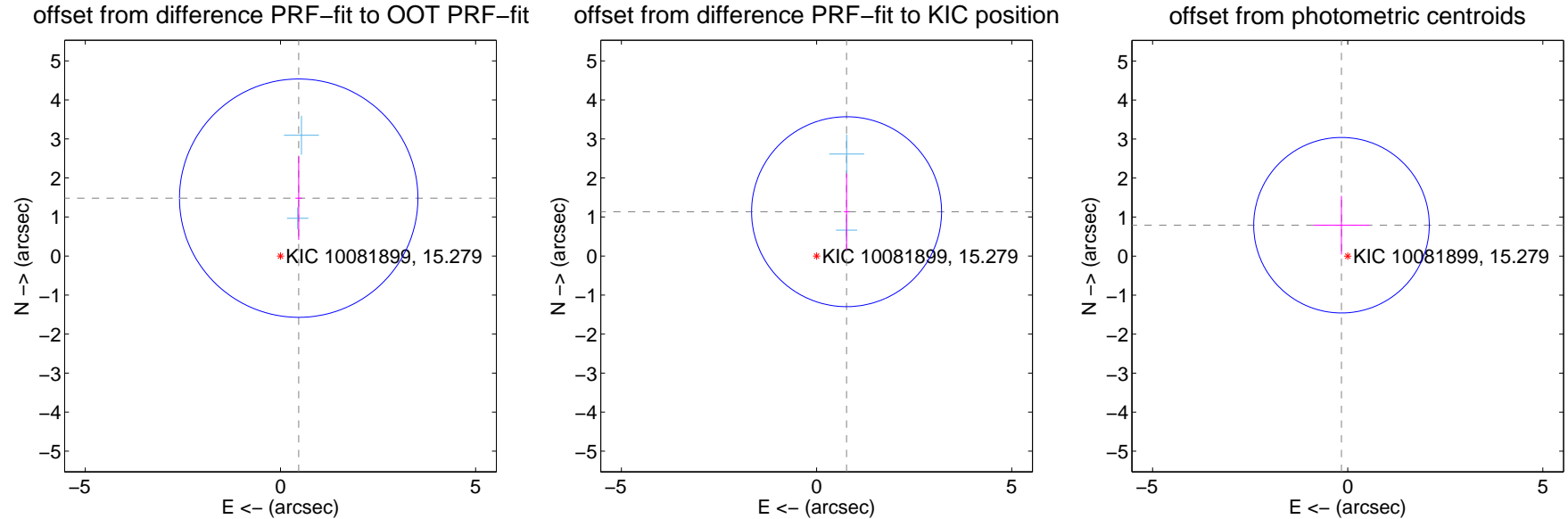
DV Centroid Data

Supplemental centroid analysis for 010081899-01. Kepler magnitude: 15.28. Transit SNR 8.14

There are 2 quarters with good PRF difference image offsets

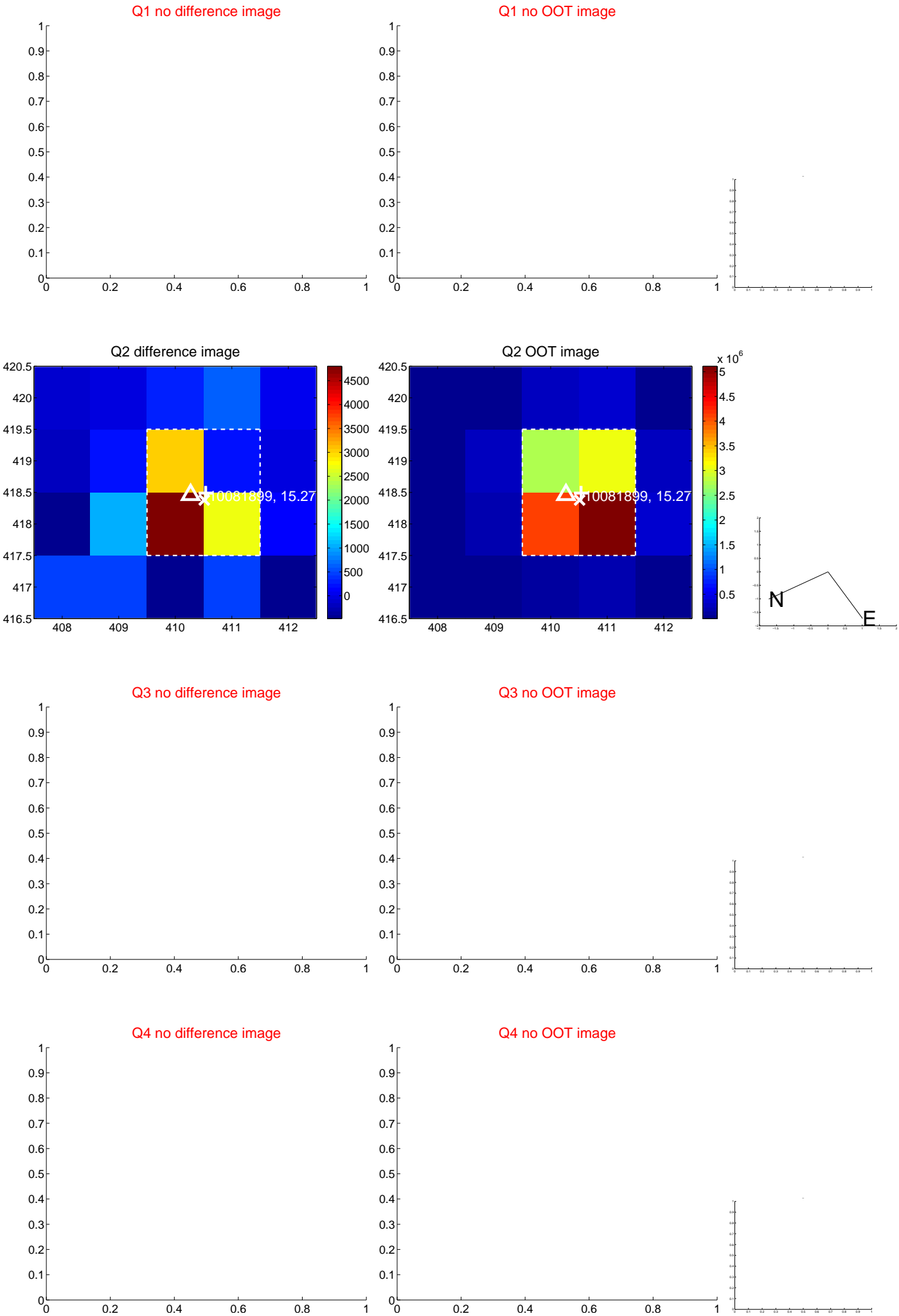
The direct PRF centroid is offset from the target star catalog position by about 0.53 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.555 ± 1.018	1.53	-0.467 ± 0.084	1.483 ± 1.067
PRF-fit source offset from KIC position	1.371 ± 0.811	1.69	-0.768 ± 0.067	1.136 ± 0.978
photometric centroid source offset	0.81 ± 0.75	1.08	0.16 ± 0.72	0.79 ± 0.75



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.



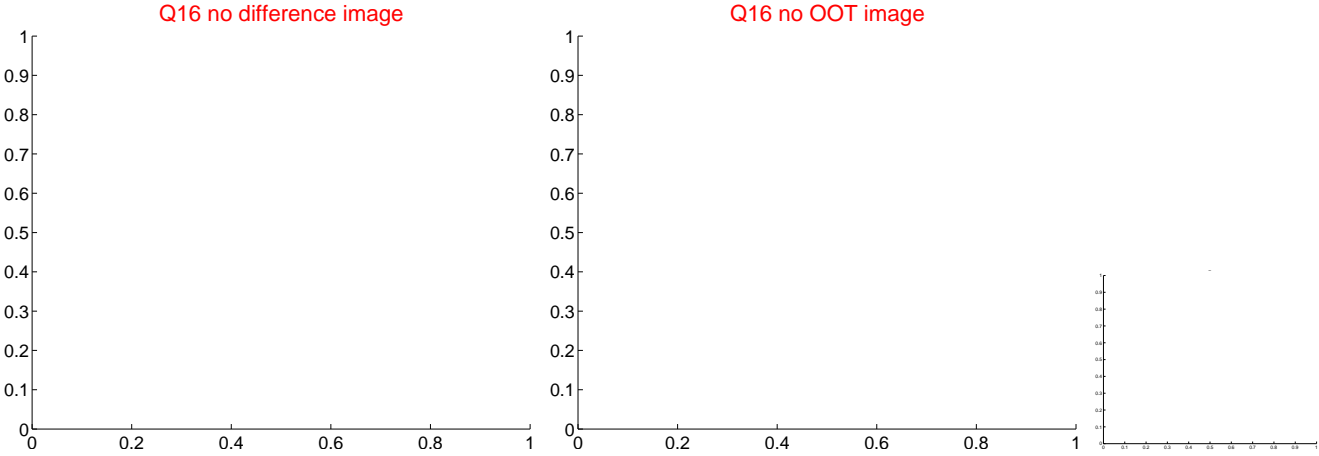
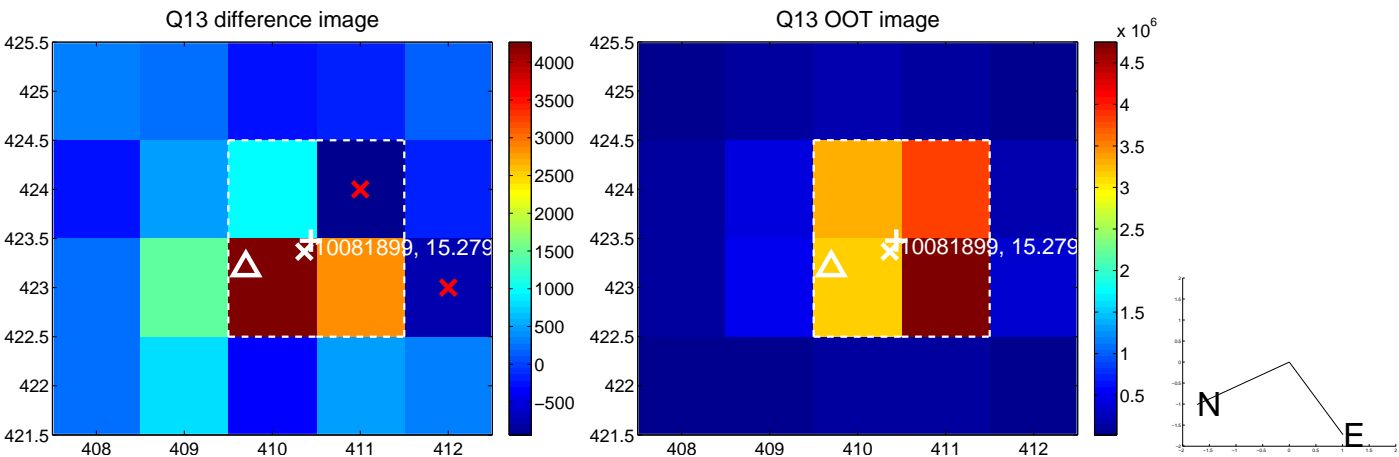
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



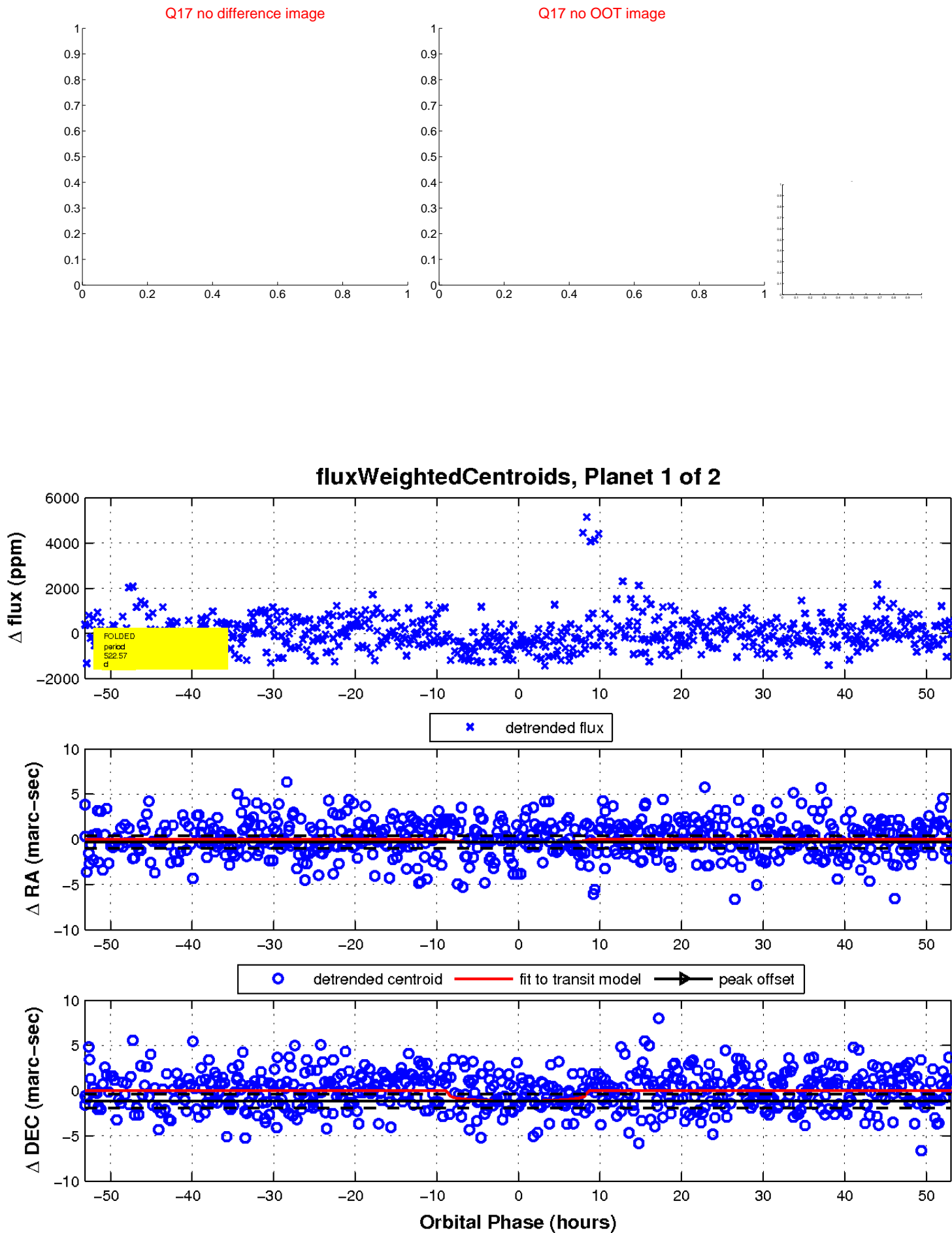
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

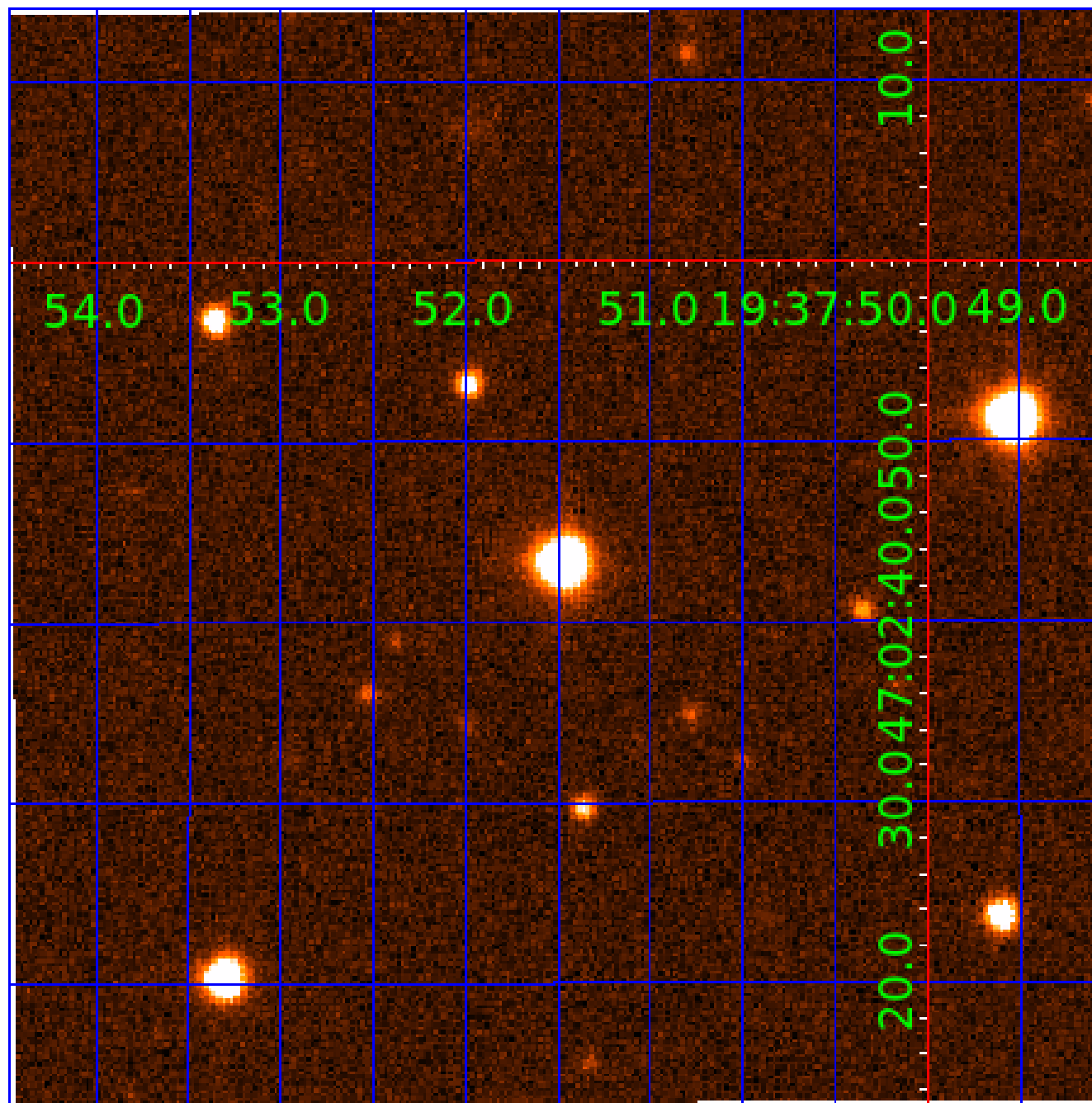


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010081899

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})
010081899-01	OBS	8196.01	522.572556	190.479158	919.6	17.744	9.8	8.1	0.32	3439	0.99	0.02
010081899-02	OBS	No	407.165893	434.474695	968.5	5.840	12.1	7.7	0.32	3439	1.04	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010081899-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010081899-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

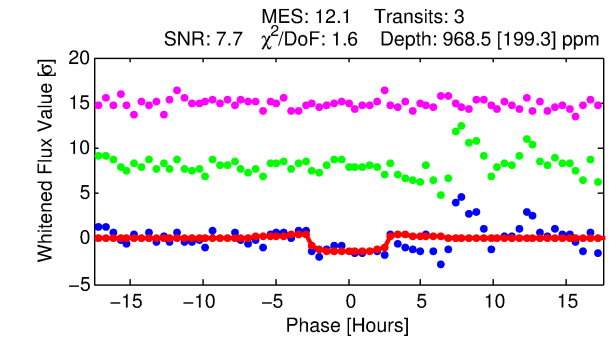
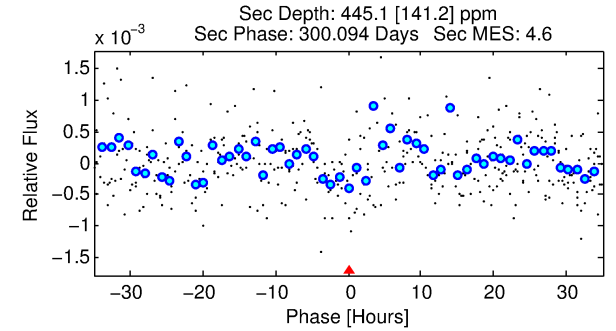
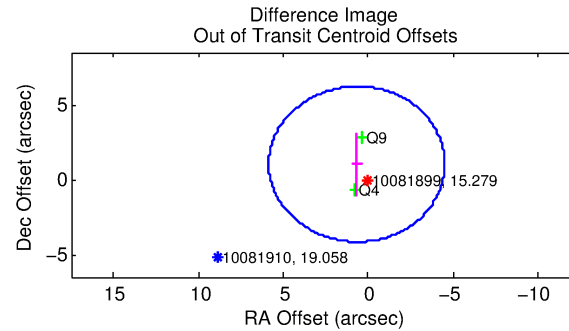
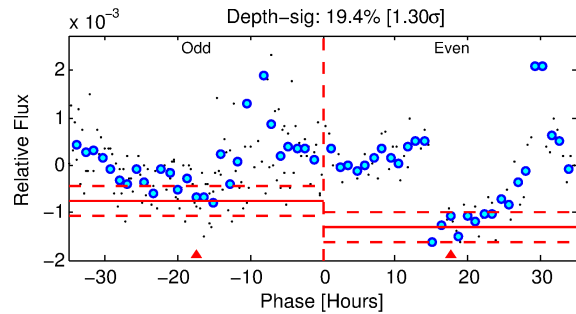
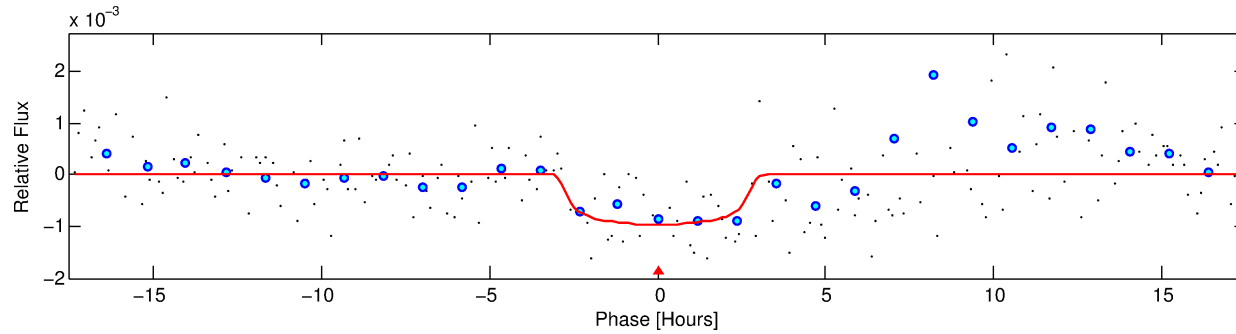
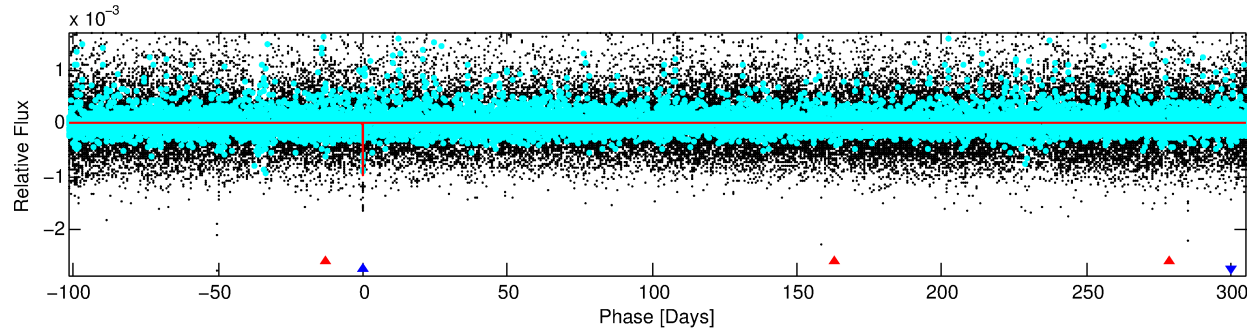
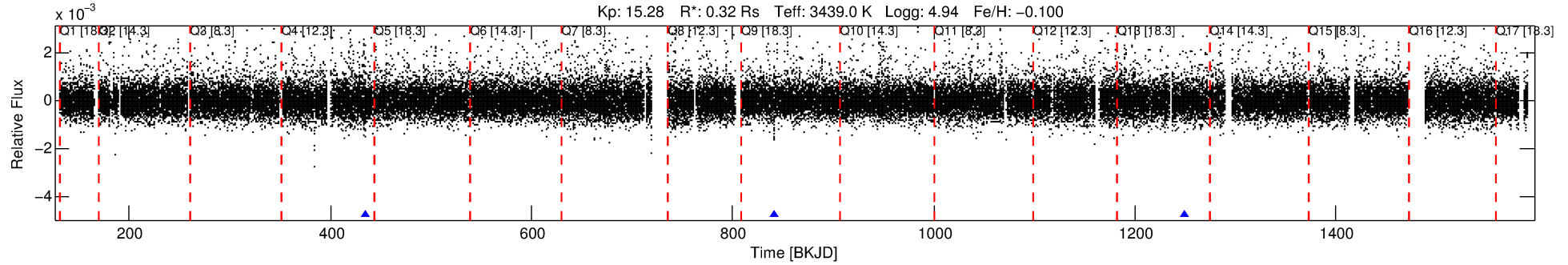
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010081899-02

No Significant Match Found

DV One-Page Summary

KIC: 10081899 Candidate: 2 of 2 Period: 407.166 d



DV Fit Results:

Period = 407.16589 [0.01229] d
Epoch = 434.4747 [0.0181] BKJD
Rp/R* = 0.0301 [0.0264]
a/R* = 417.20 [1564.30]
b = 0.67 [3.11]
Seff = 0.02 [0.00]
Teq = 100 [3] K
Rp = 1.04 [0.92] Re
a = 0.7359 [0.0623] AU
Ag = 121517.90 [216834.11] [0.56 σ]
Teffp = 2879 [1283] K [2.17 σ]

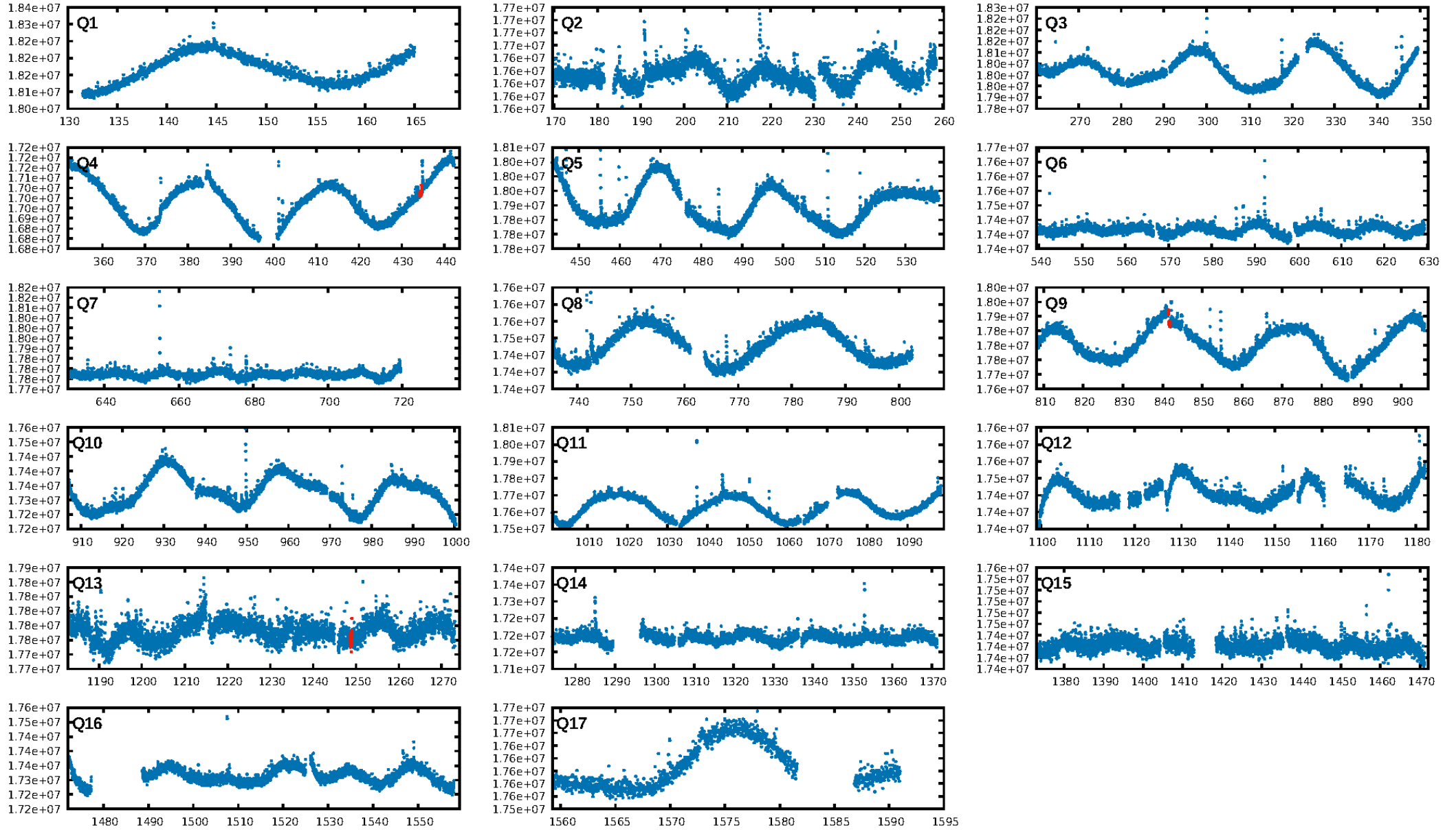
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [148.27 σ]
ModelChiSquare2-sig: 6.4%
ModelChiSquareGof-sig: 78.0%
Bootstrap-pfa: 9.24e-16
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.02212
Centroid-sig: 77.1%
Centroid-so: 1.004 arcsec [0.77 σ]
OotOffset-rm: 1.220 arcsec [0.71 σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 0.781 arcsec [0.46 σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

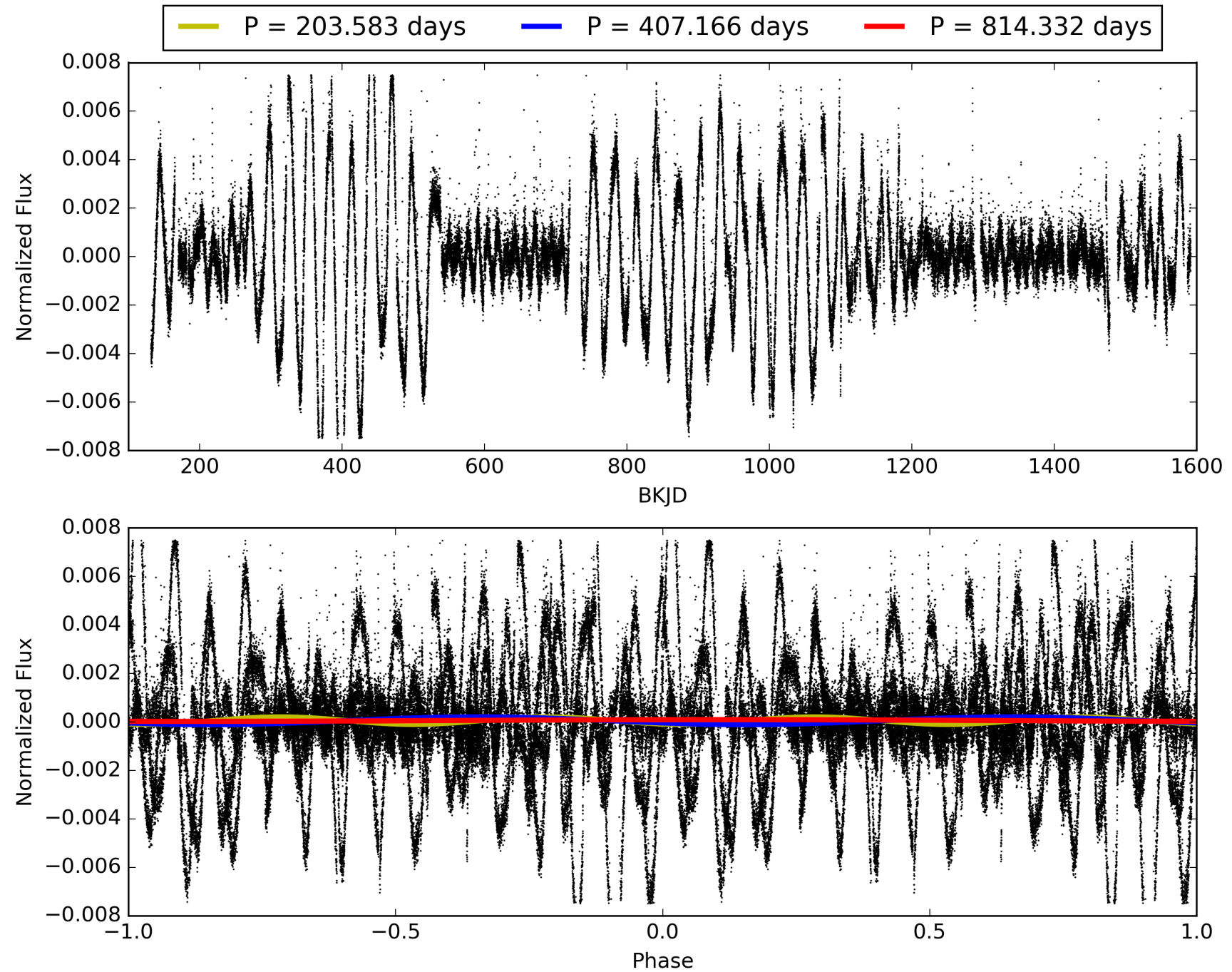
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:20:25 Z

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

TCE 010081899-02, PDC Light Curves

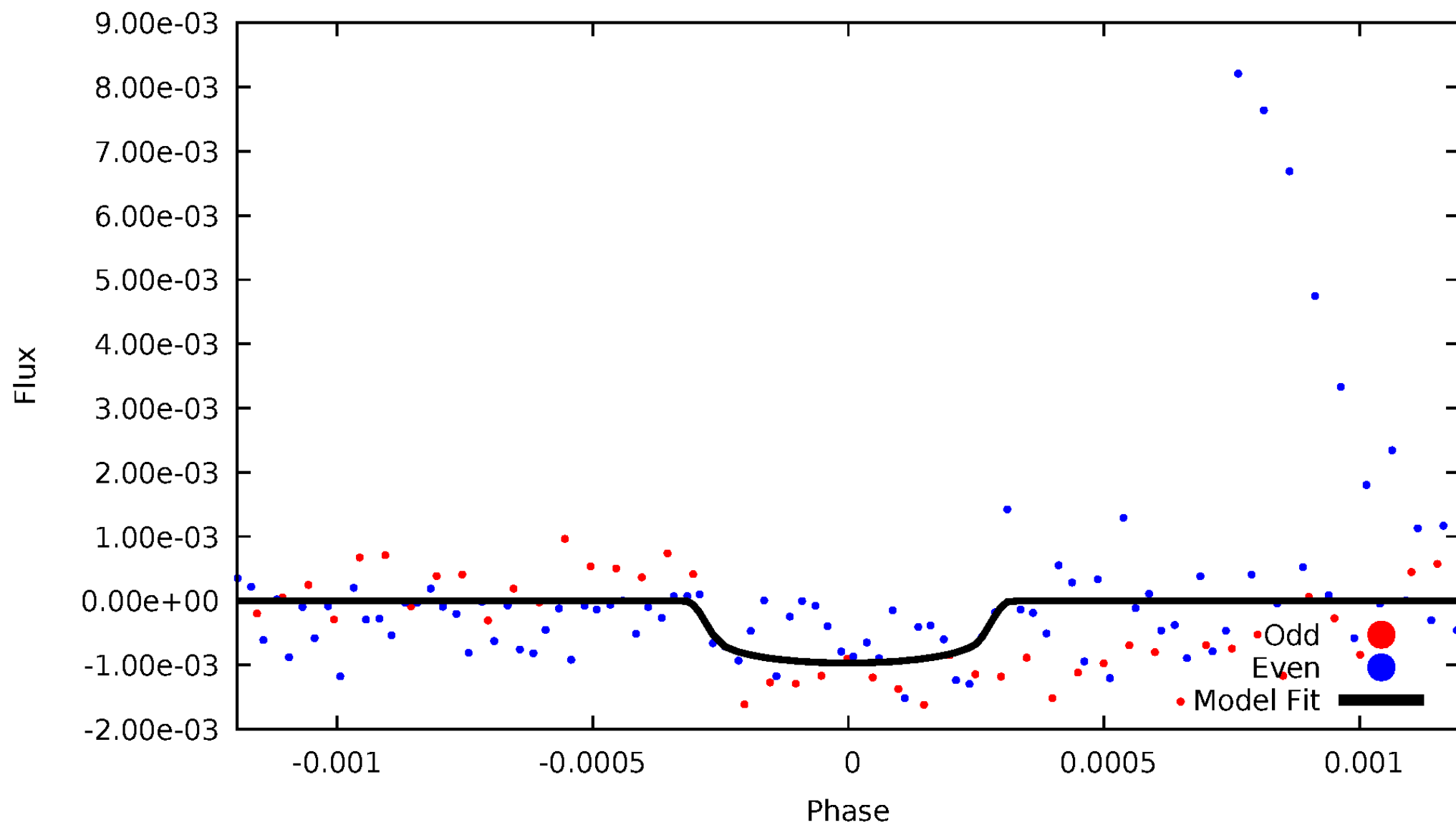


TCE 010081899-02



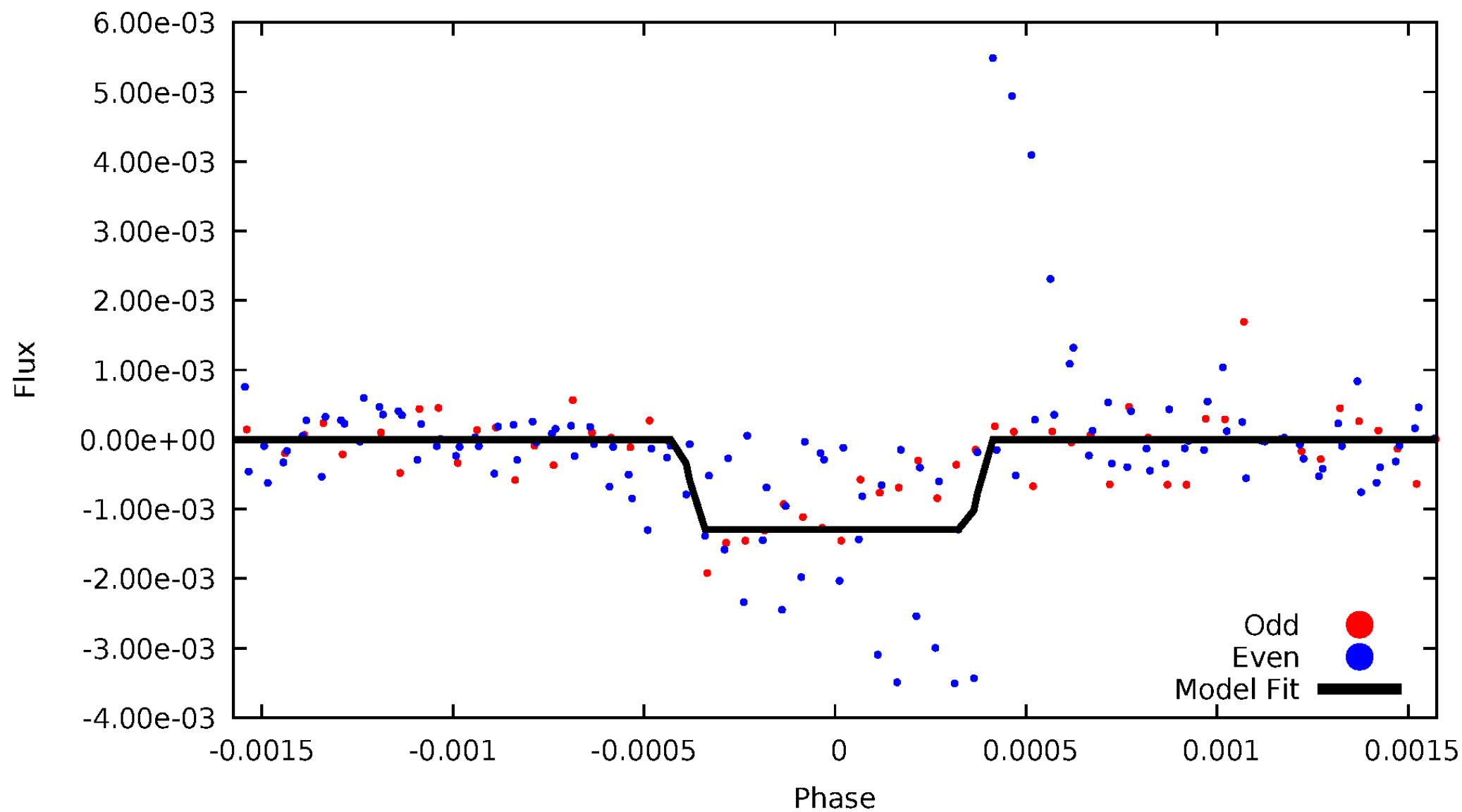
DV Odd/Even

TCE 010081899-02



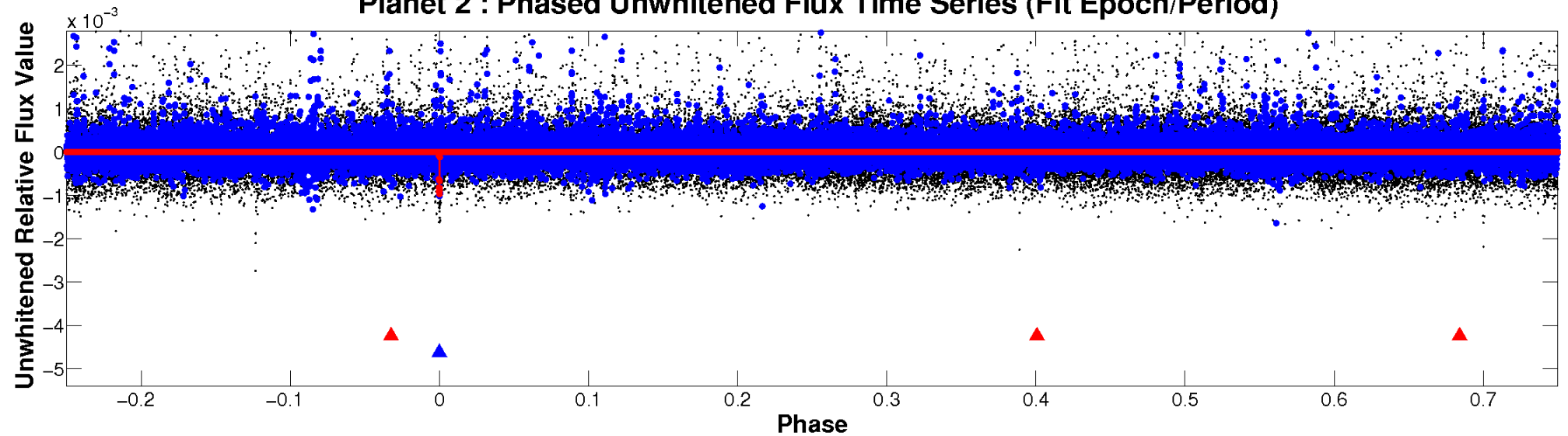
ALT Odd/Even

TCE 010081899-02

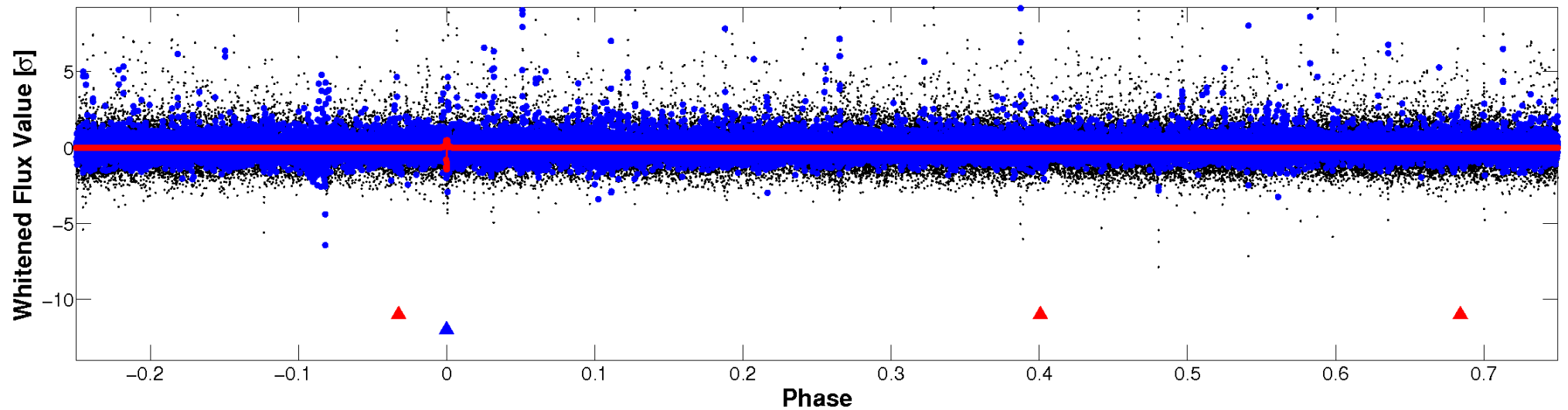


Non-Whitened Vs. Whitened Light Curve

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

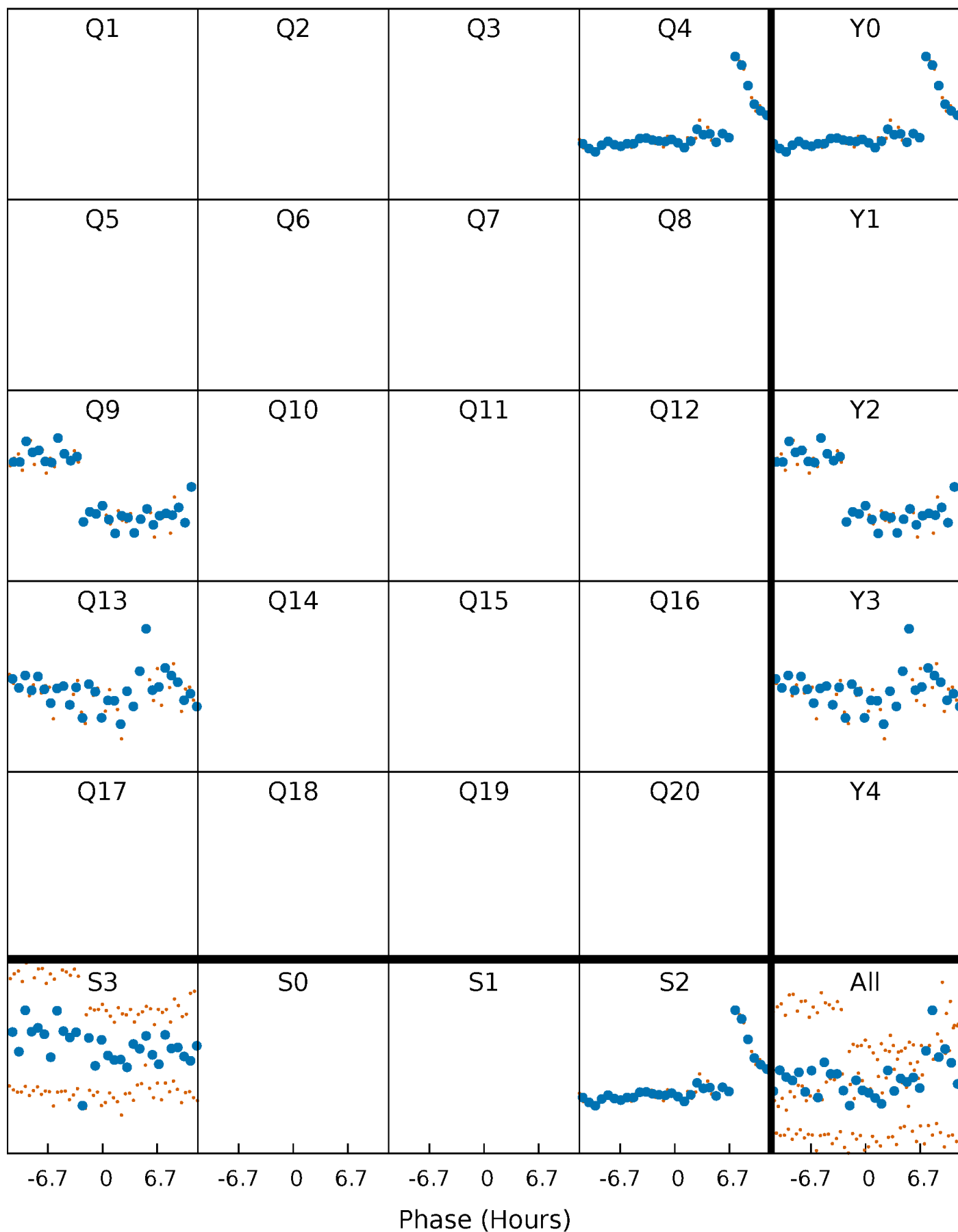


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



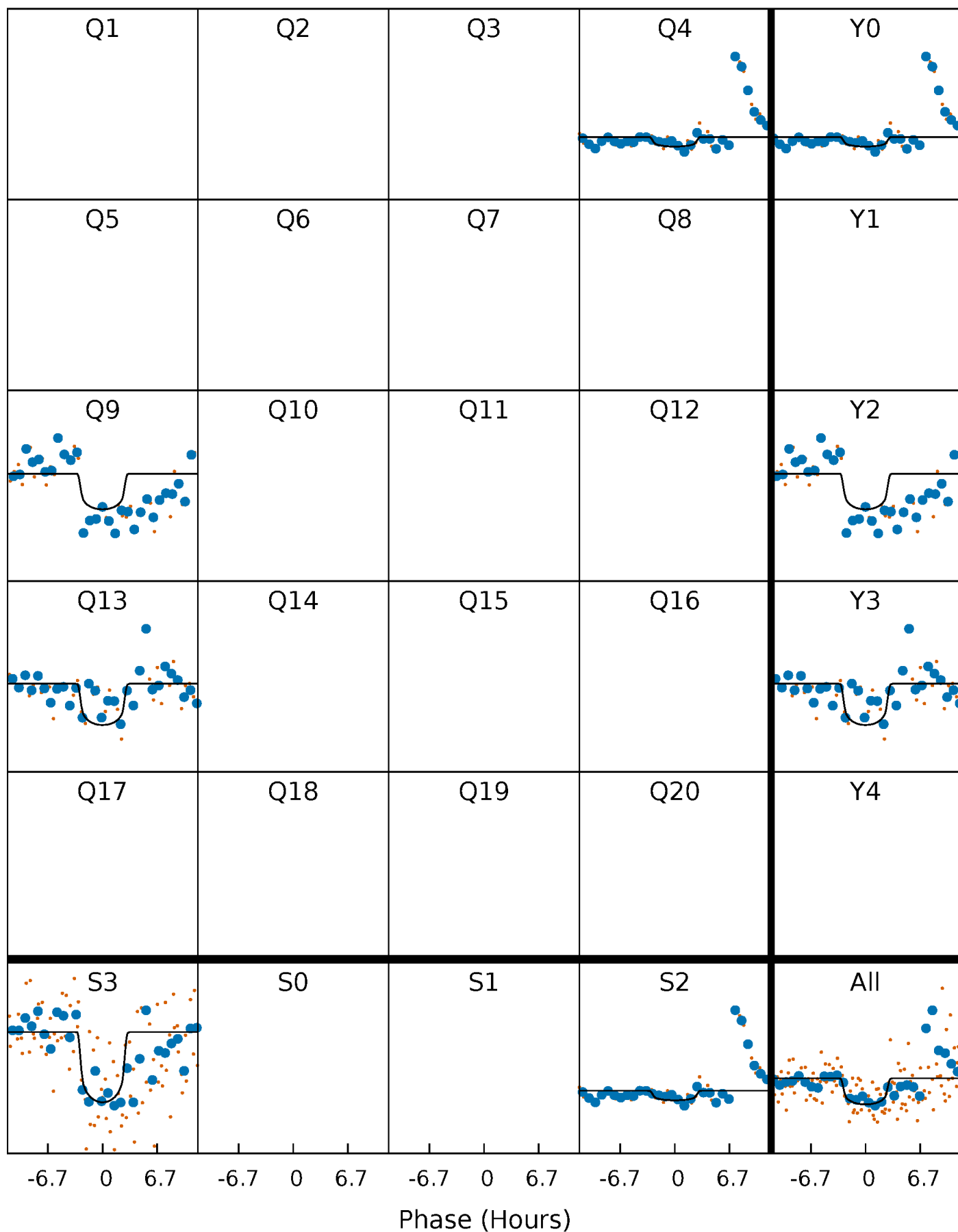
PDC Quarter-Phased Transit Curves

TCE 010081899-02 $P=407.165893$ Days $T_0=434.474695$ (BKJD)



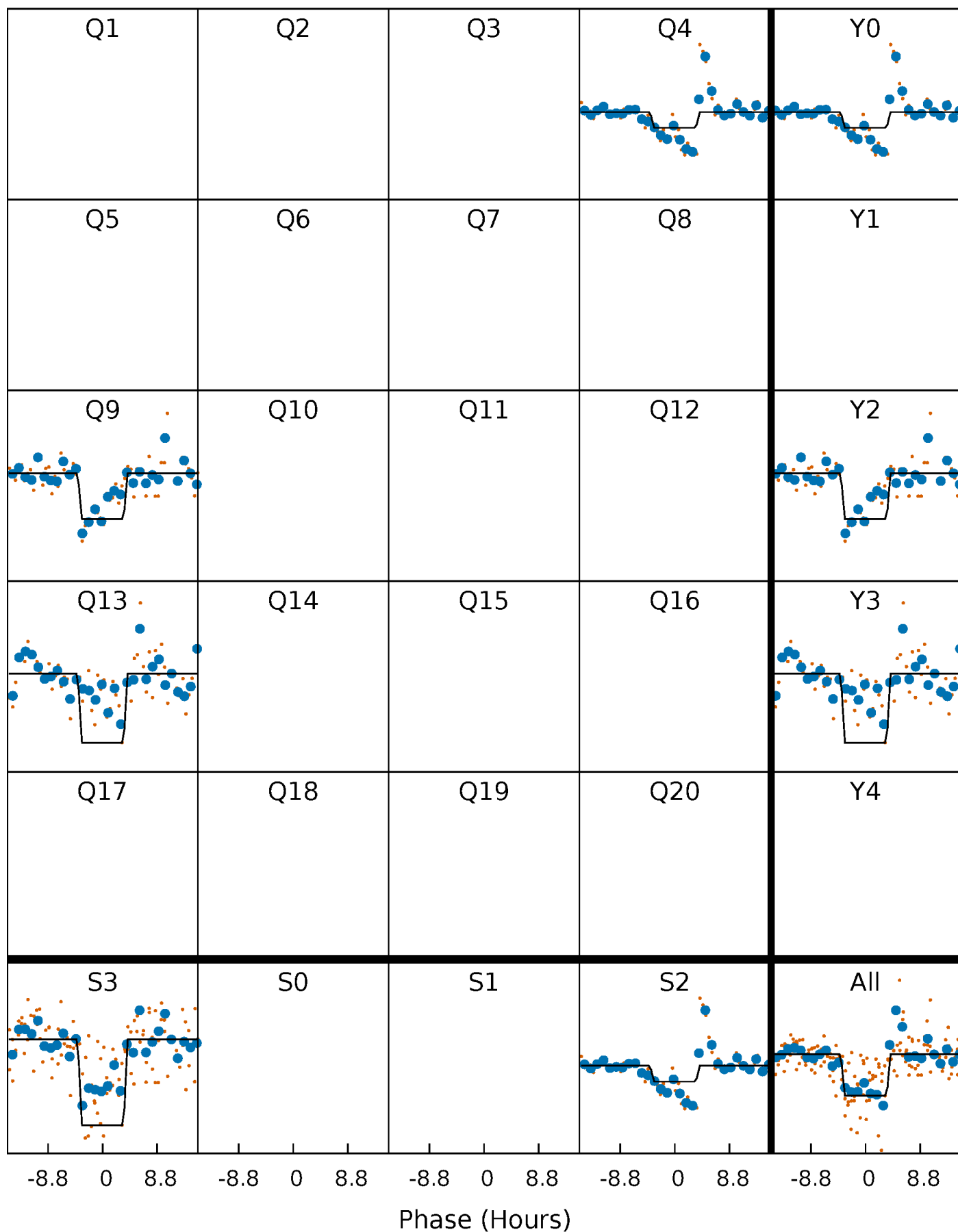
DV Quarter-Phased Transit Curves

TCE 010081899-02 $P=407.165893$ Days $T_0=434.474695$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

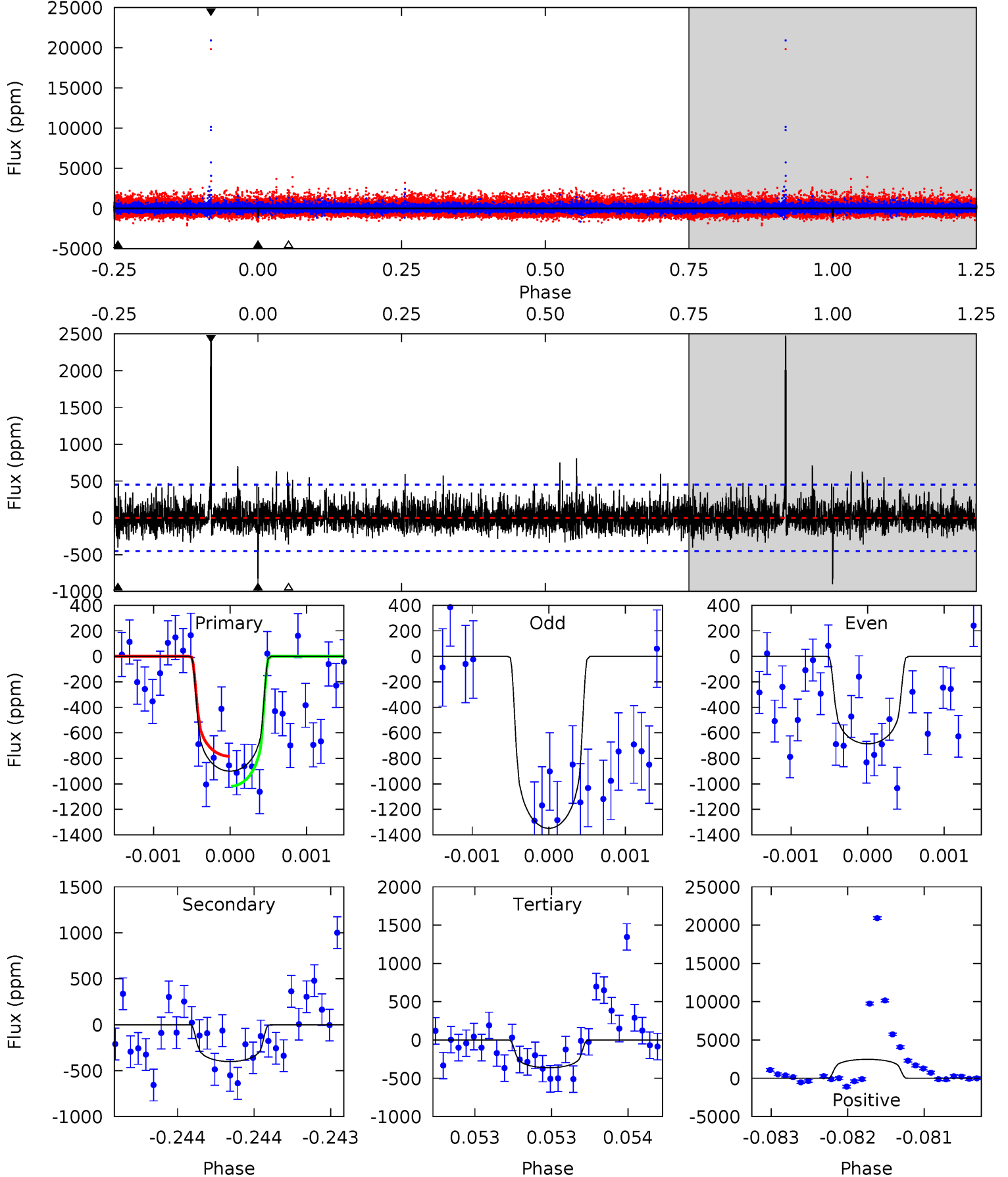
TCE 010081899-02 $P=407.077382$ Days $T_0=434.616863$ (BKJD)



DV Model-Shift Uniqueness Test

010081899-02, $P = 407.165893$ Days, $E = 27.308802$ Days

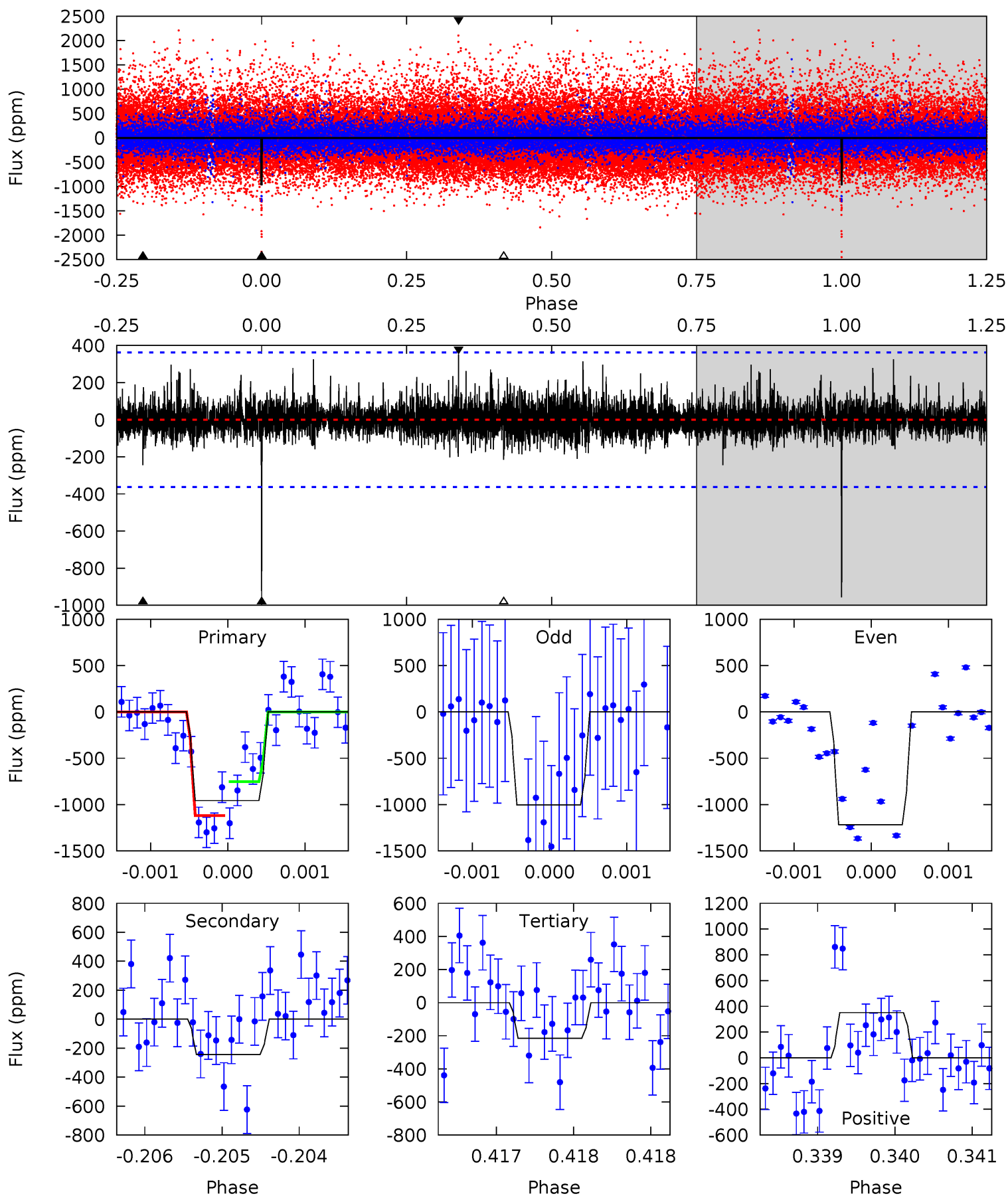
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	4.92	4.44	30.4	5.53	3.42	1.62	6.60	-19.3	0.48	-25.5	3.59	1.11	0.73	1.45



Alt Model-Shift Uniqueness Test

010081899-02, P = 407.077382 Days, E = 27.539481 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	3.69	3.26	5.31	5.49	3.35	0.94	11.2	9.17	0.43	-1.62	1.58	1.24	0.27	2.76



Stellar Parameters For KIC 010081899

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3439^{+41}_{-41}	$4.939^{+0.044}_{-0.036}$	$-0.100^{+0.100}_{-0.100}$	$0.318^{+0.030}_{-0.037}$	$0.320^{+0.038}_{-0.042}$	$14.060^{+3.385}_{-2.276}$
	+1%/-1%	+1%/-1%	+100%/-100%	+9%/-12%	+12%/-13%	+24%/-16%
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 010081899-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-401 ± 82	$1.25^{+0.78}_{-0.76}$	139^{+3}_{-3}	2909^{+967}_{-376}	$79290^{+418472}_{-51406}$
Alt.	-244 ± 66	$1.35^{+0.84}_{-0.76}$	139^{+3}_{-3}	2651^{+709}_{-308}	$39628^{+171188}_{-25097}$

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 $A_{obs} \gg 1.0$

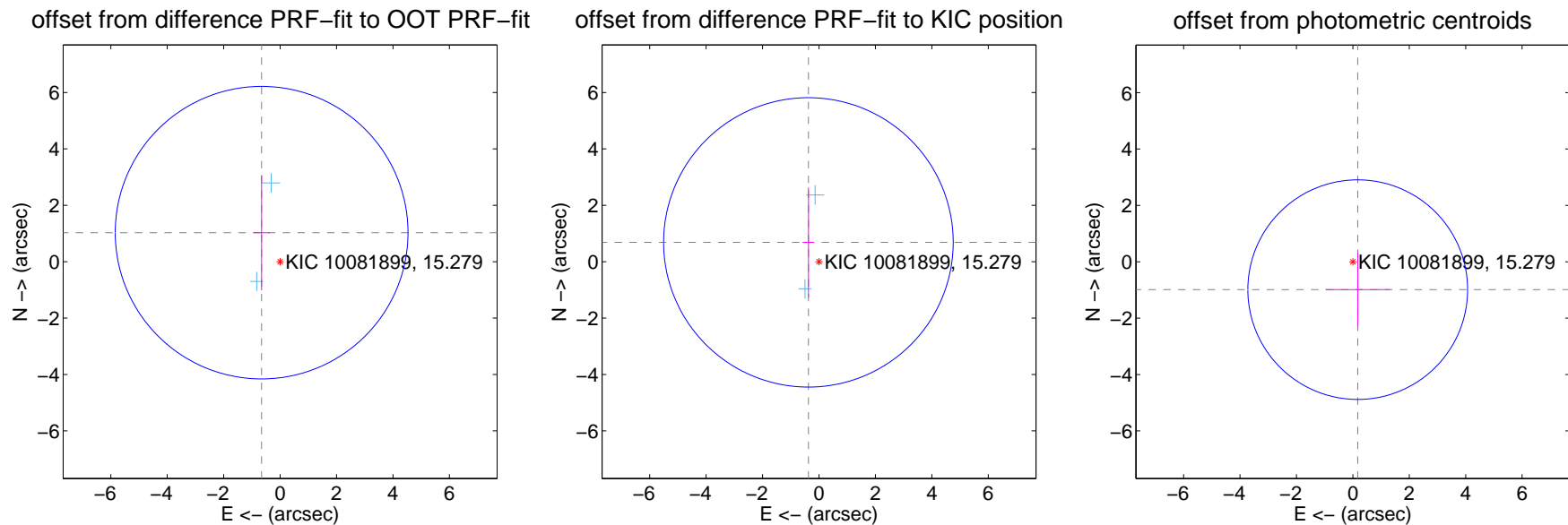
DV Centroid Data

Supplemental centroid analysis for 010081899-02. Kepler magnitude: 15.28. Transit SNR 7.67

There are 2 quarters with good PRF difference image offsets

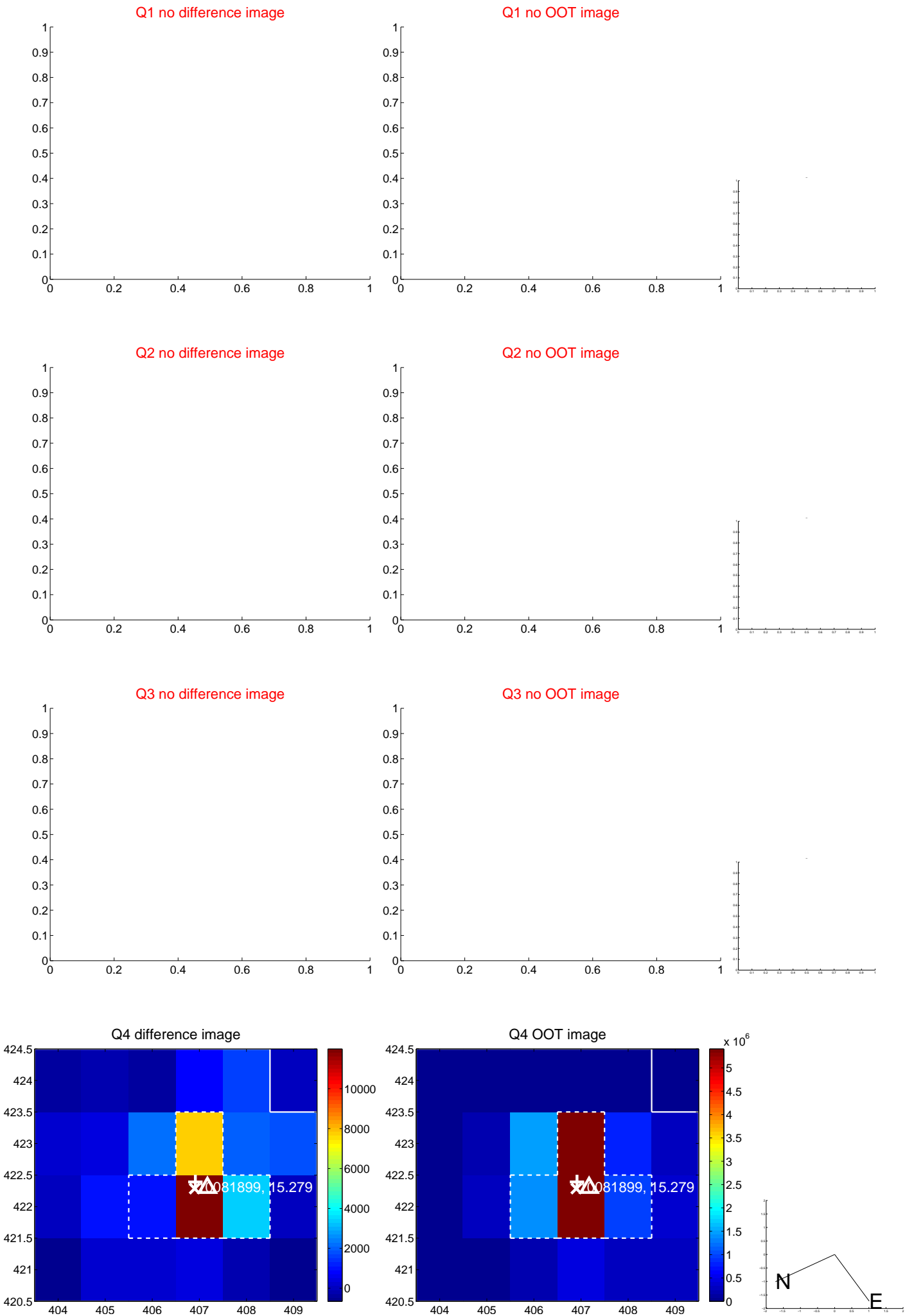
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.220 ± 1.729	0.71	0.655 ± 0.291	1.030 ± 2.041
PRF-fit source offset from KIC position	0.781 ± 1.711	0.46	0.375 ± 0.211	0.685 ± 1.946
photometric centroid source offset	1.00 ± 1.30	0.77	-0.17 ± 1.14	-0.99 ± 1.30



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.

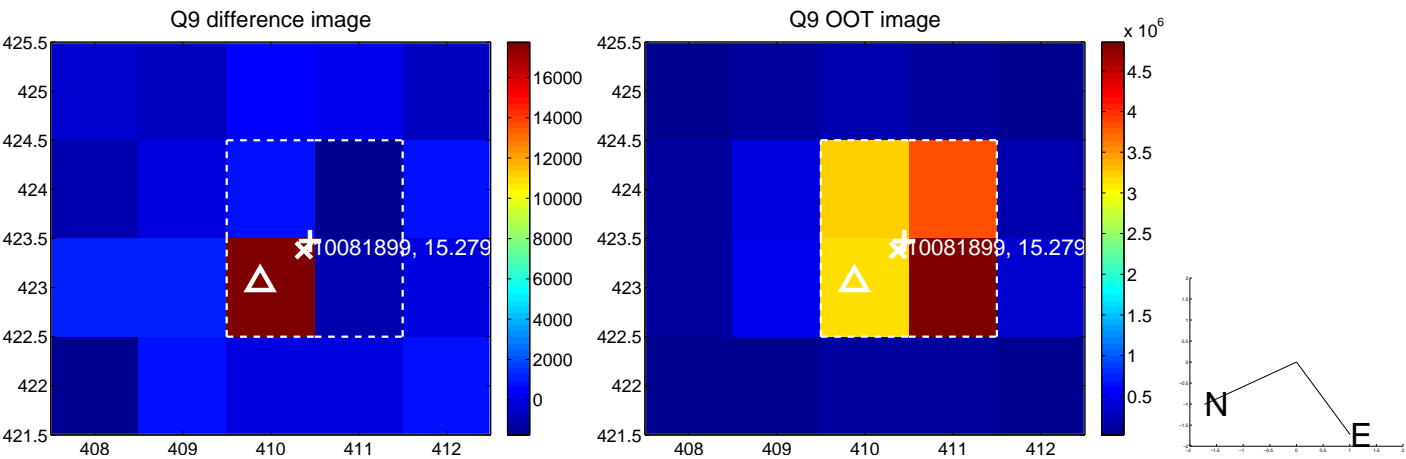
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



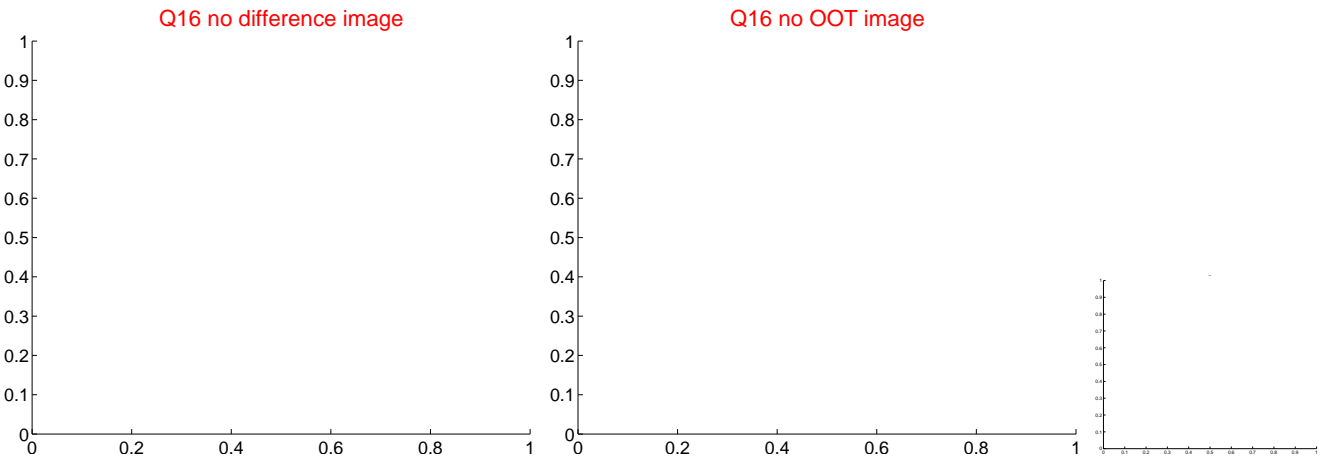
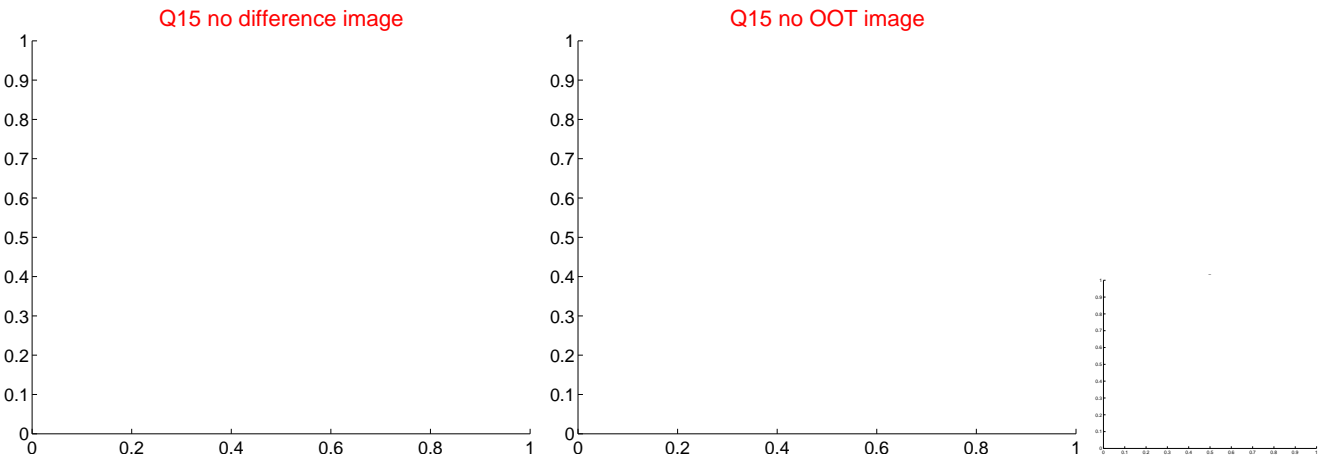
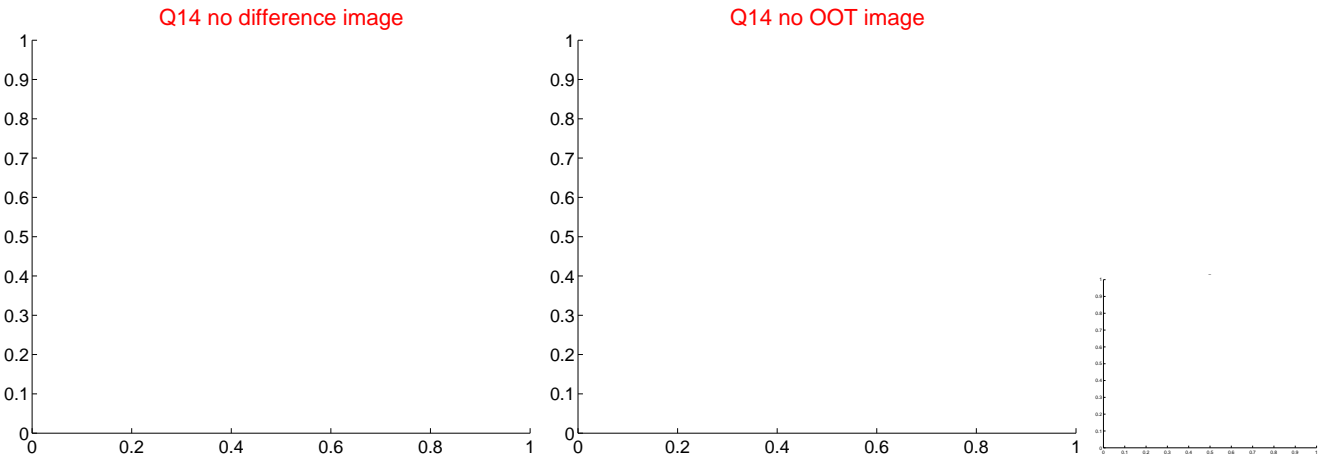
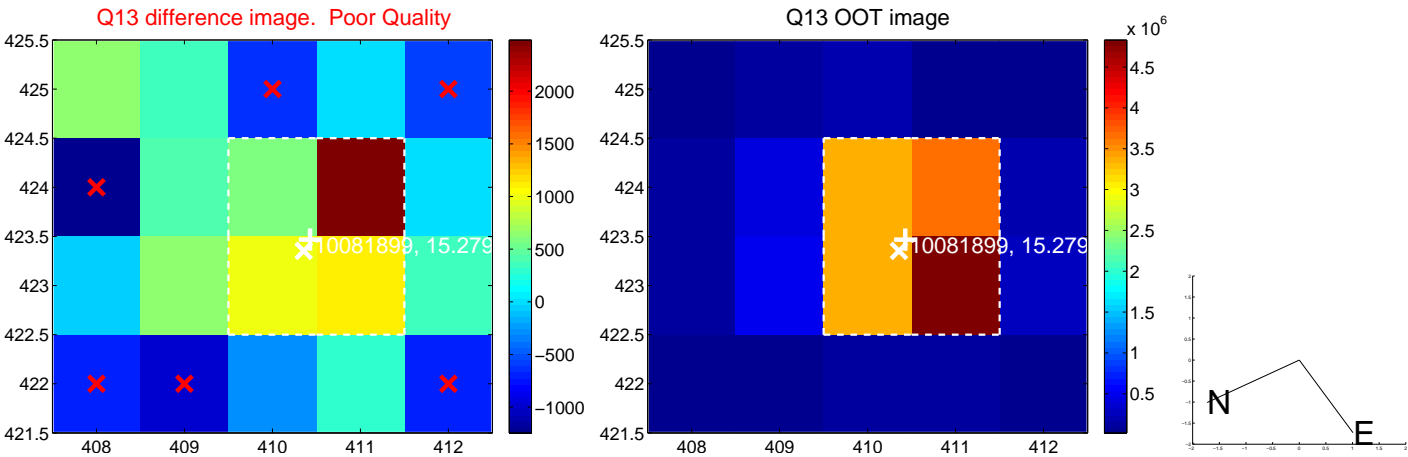
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



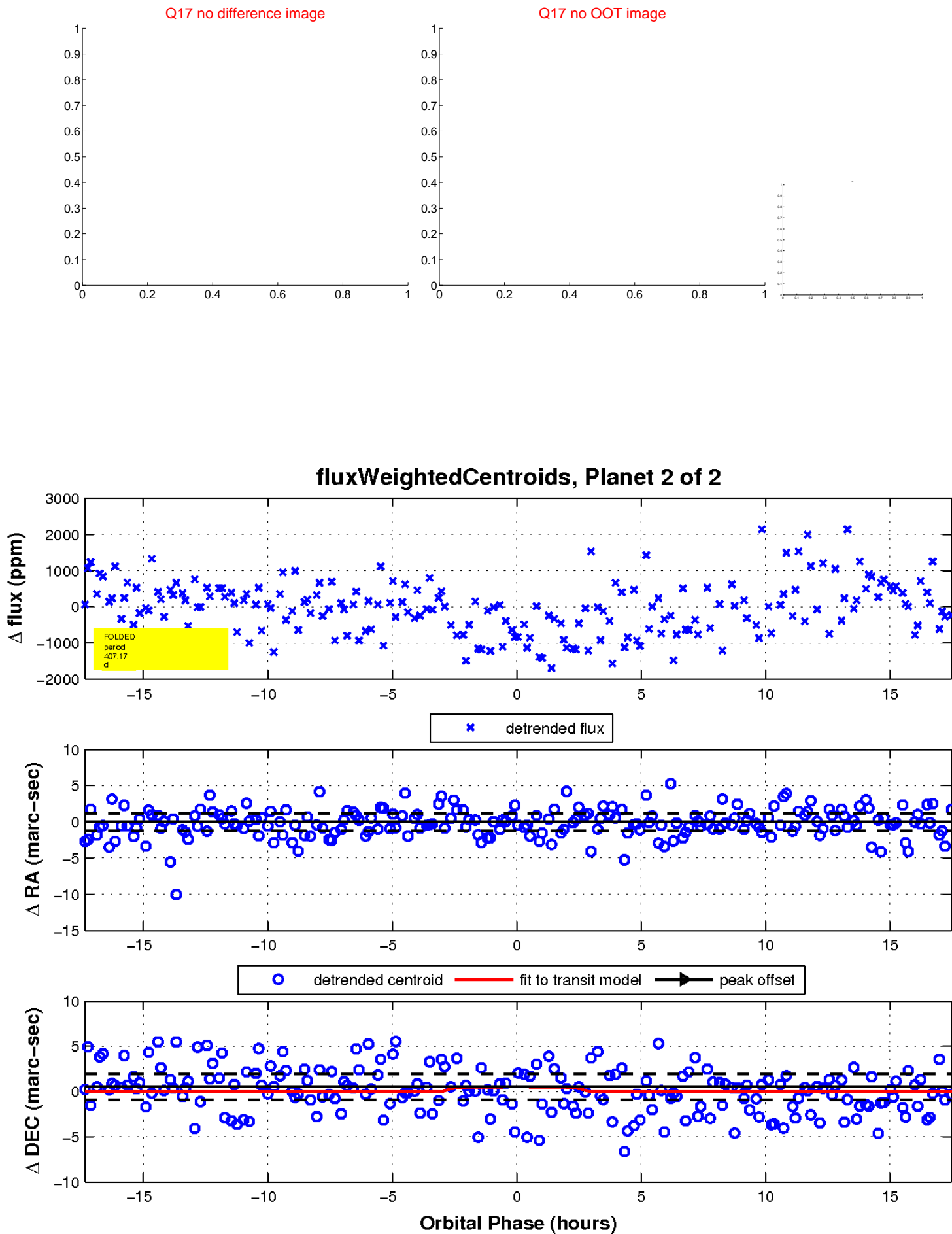
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: 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

