

KIC 009823519

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})
009823519-01	OBS	2793.01	4.496853	134.207921	1988.9	1.772	31.1	36.7	0.44	3698	2.00	19.37
009823519-02	OBS	2793.02	1.766793	133.082287	976.1	1.501	21.6	25.1	0.44	3698	1.65	67.31

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823519-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
009823519-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

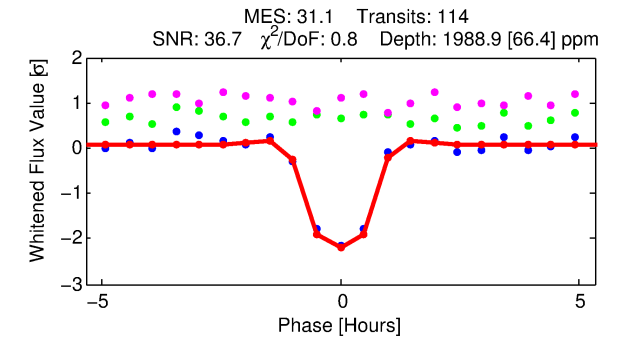
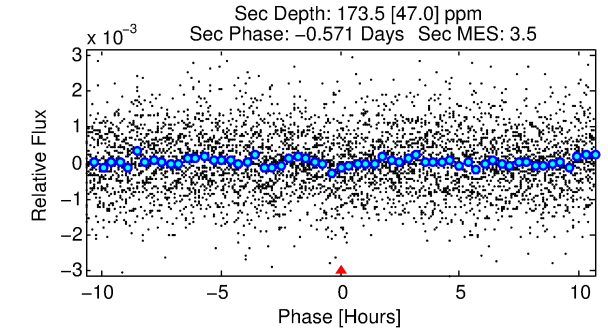
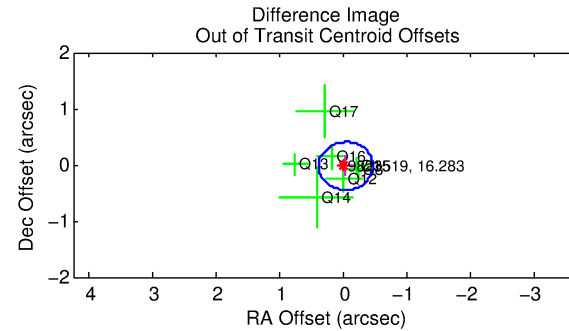
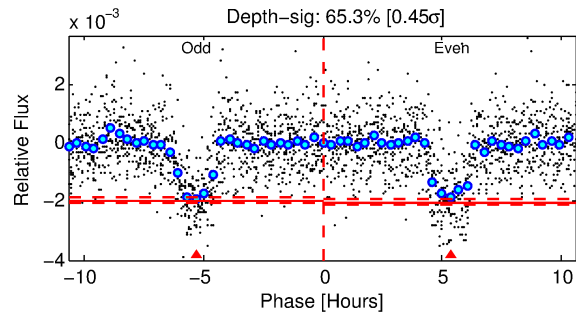
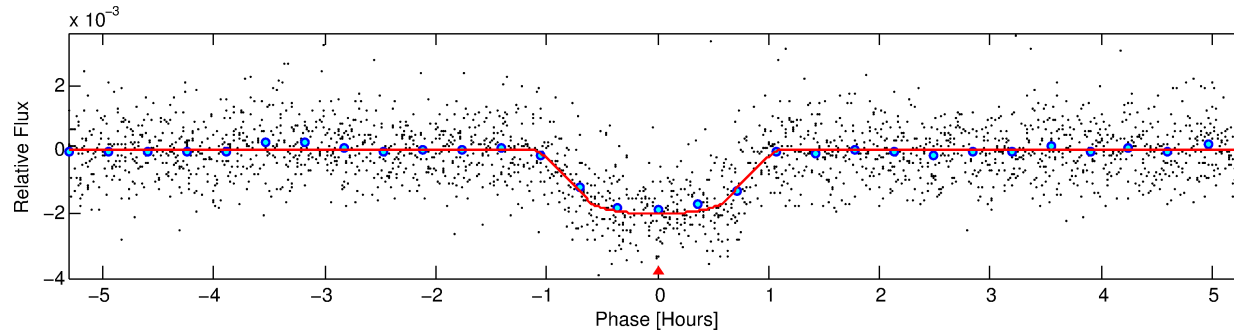
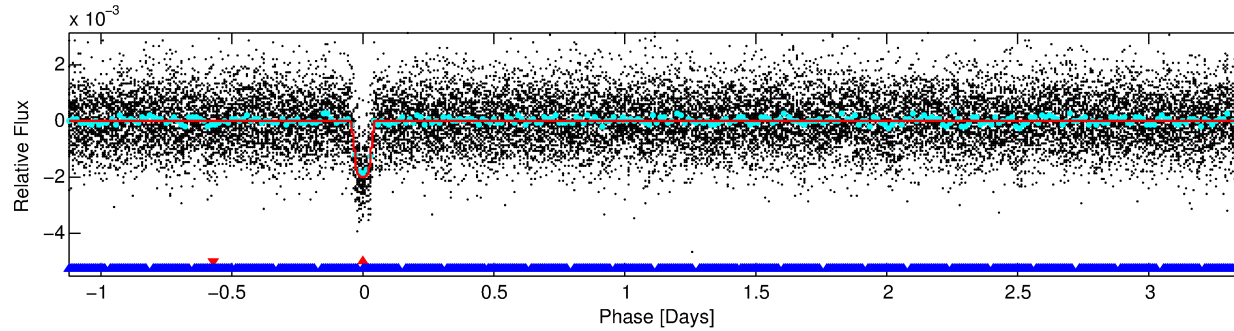
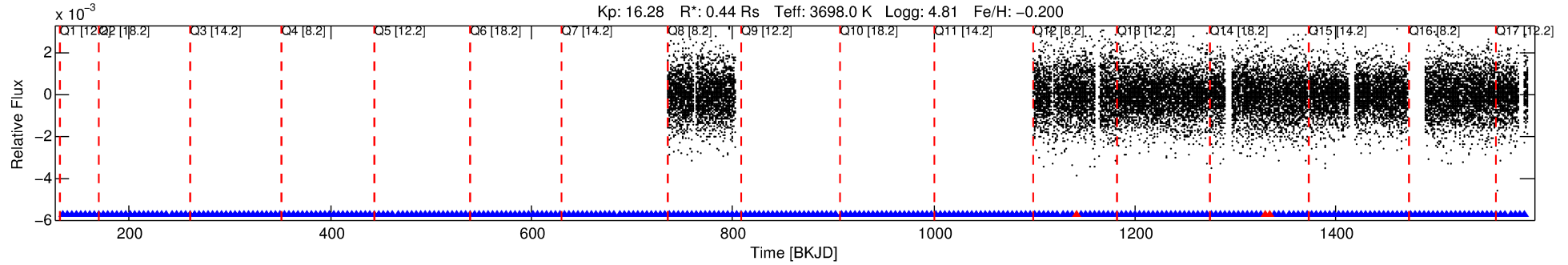
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823519-01

No Significant Match Found

DV One-Page Summary

KIC: 9823519 Candidate: 1 of 2 Period: 4.497 d
KOI: K02793.01 Corr: 0.991



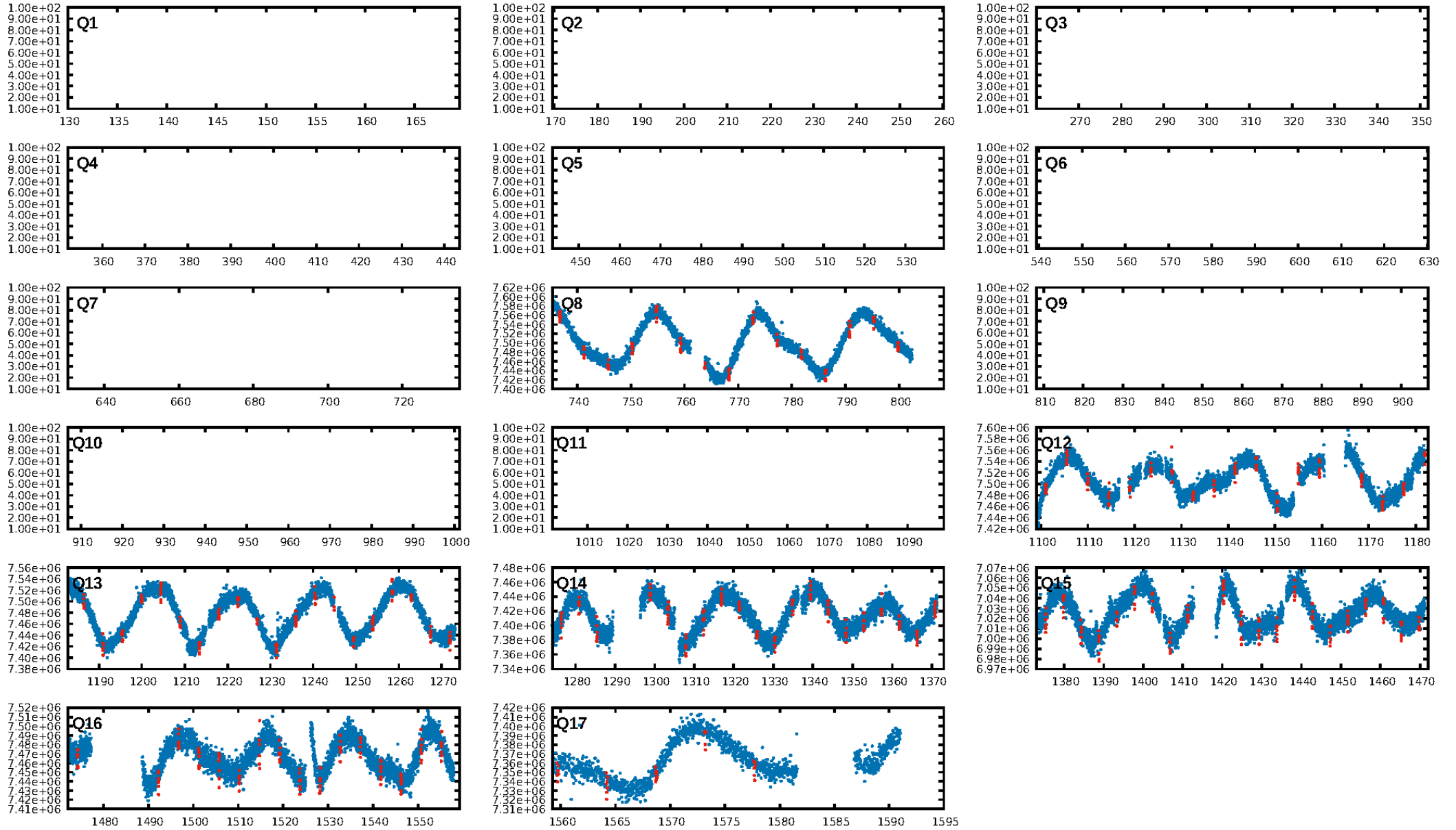
DV Fit Results:

Period = 4.49685 [0.00000] d
Epoch = 134.2079 [0.0009] BKJD
Rp/R* = 0.0413 [0.0184]
a/R* = 18.96 [39.59]
b = 0.36 [5.07]
Seff = 19.37 [2.72]
Teq = 535 [19] K
Rp = 2.00 [0.92] Re
a = 0.0413 [0.0037] AU
Ag = 40.64 [38.12] [1.04 σ]
Teffp = 2088 [488] K [3.18 σ]

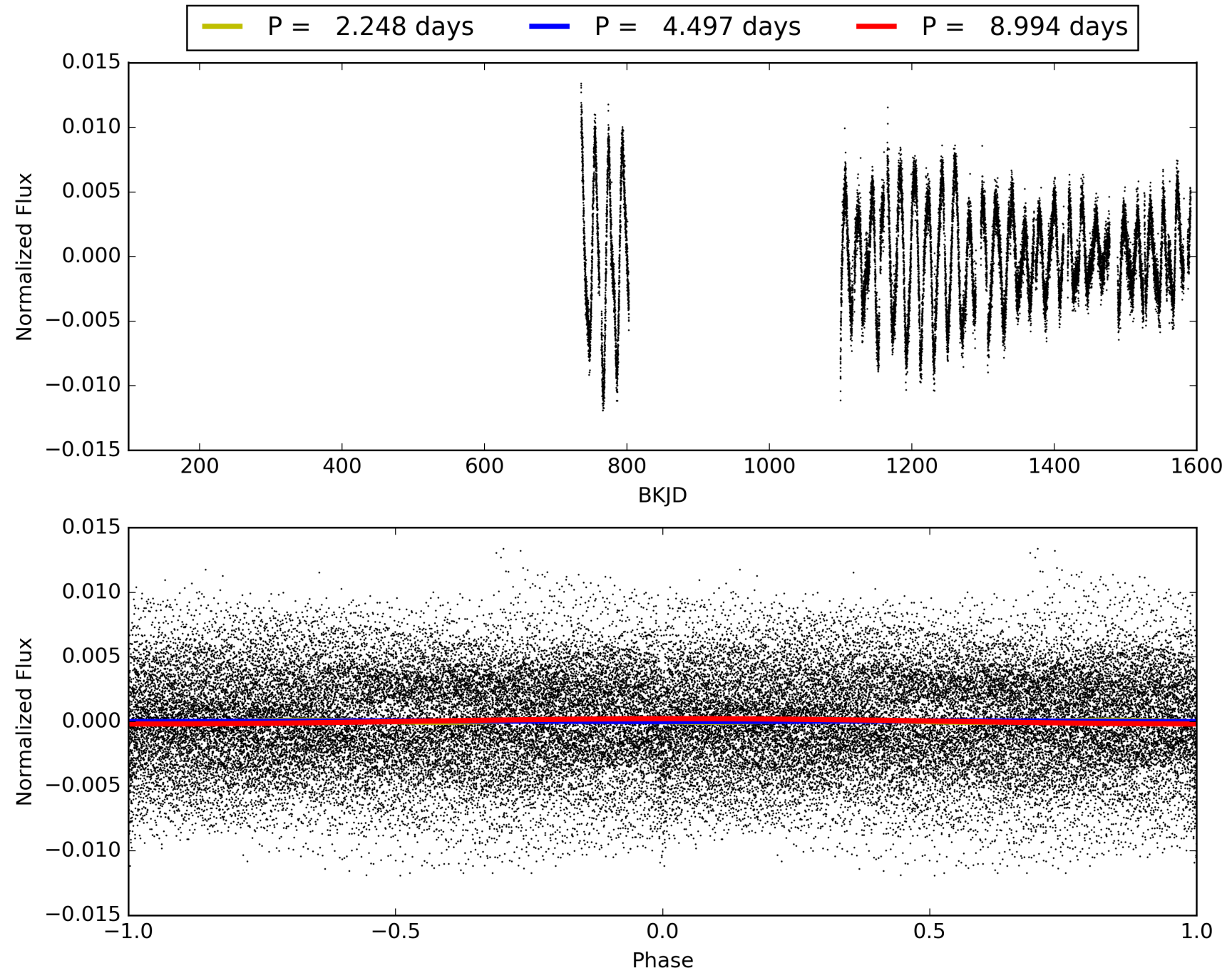
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.21 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.99e-203
RollingBand-fgt: 0.97 [106/109]
GhostDiagnostic-chr: 5.062
Centroid-sig: 5.1%
Centroid-so: 1.019 arcsec [2.54 σ]
OotOffset-rm: 0.043 arcsec [0.30 σ]
OotOffset-st: 1/1/3/2 [7]
KicOffset-rm: 0.391 arcsec [2.30 σ]
KicOffset-st: 1/1/3/2 [7]
DiffImageQuality-fgm: 1.00 [7/7]
DiffImageOverlap-fno: 1.00 [7/7]

TCE 009823519-01, PDC Light Curves

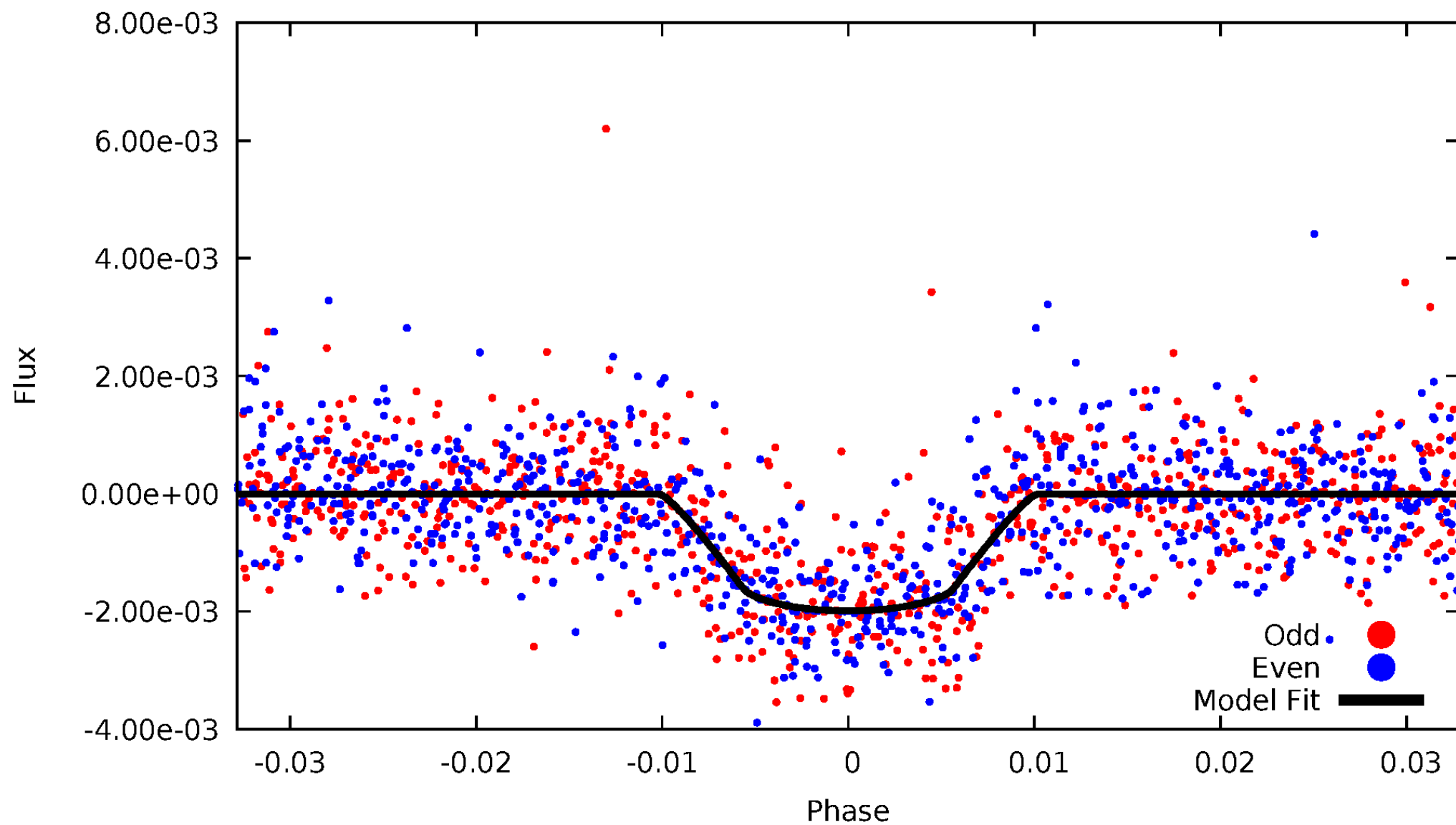


TCE 009823519-01



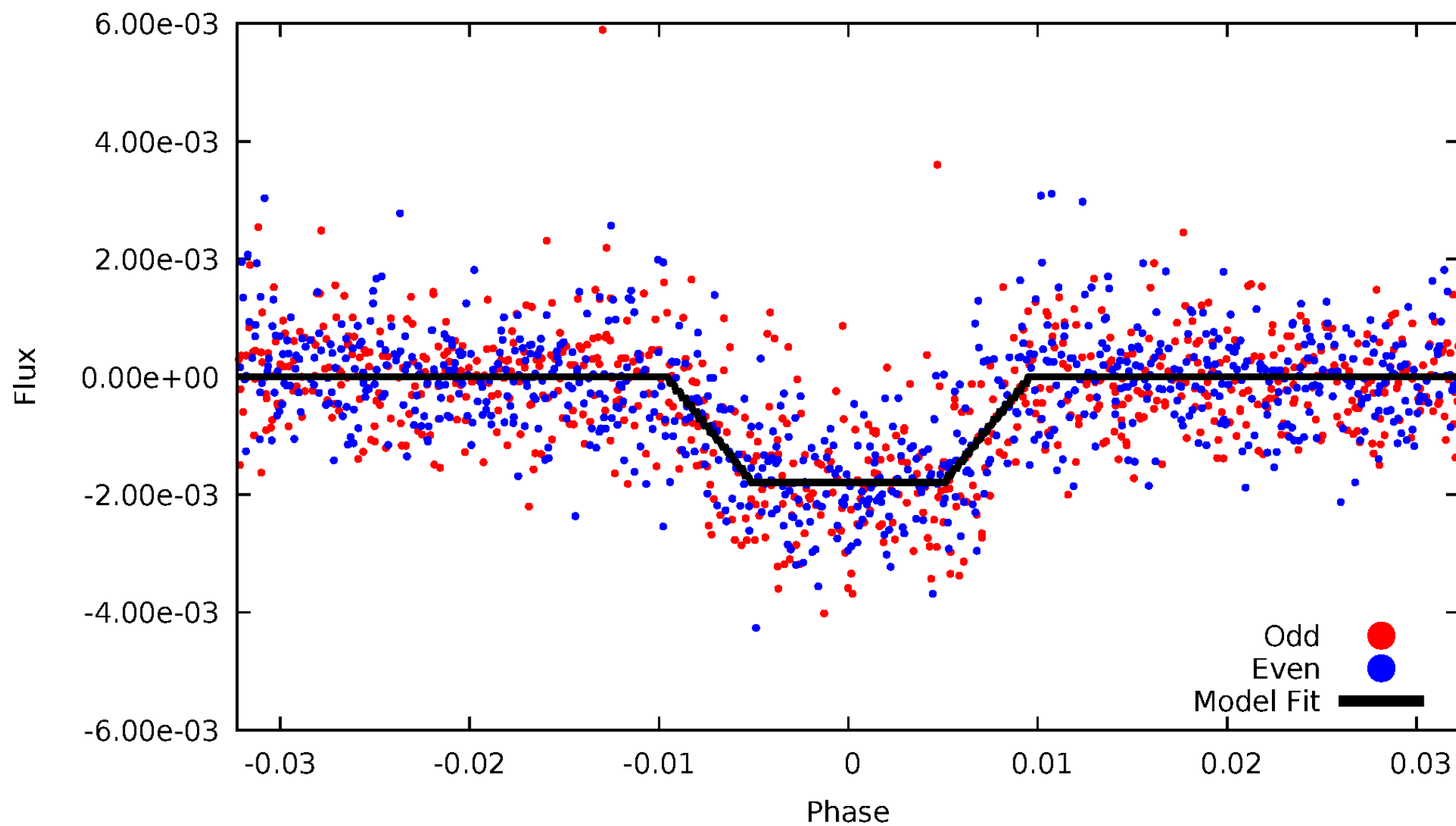
DV Odd/Even

TCE 009823519-01



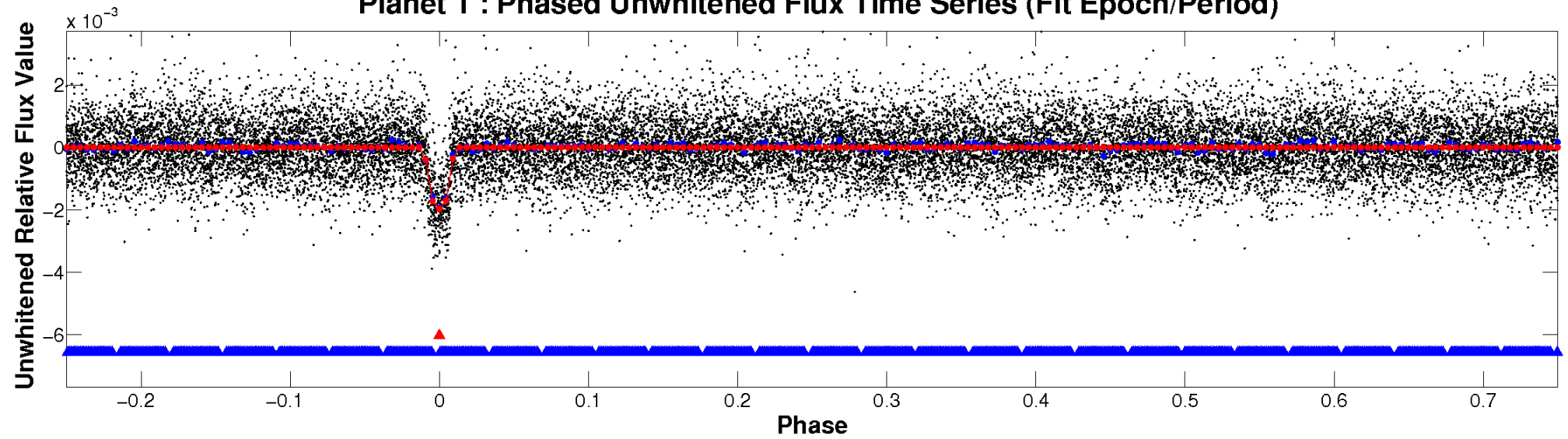
ALT Odd/Even

TCE 009823519-01

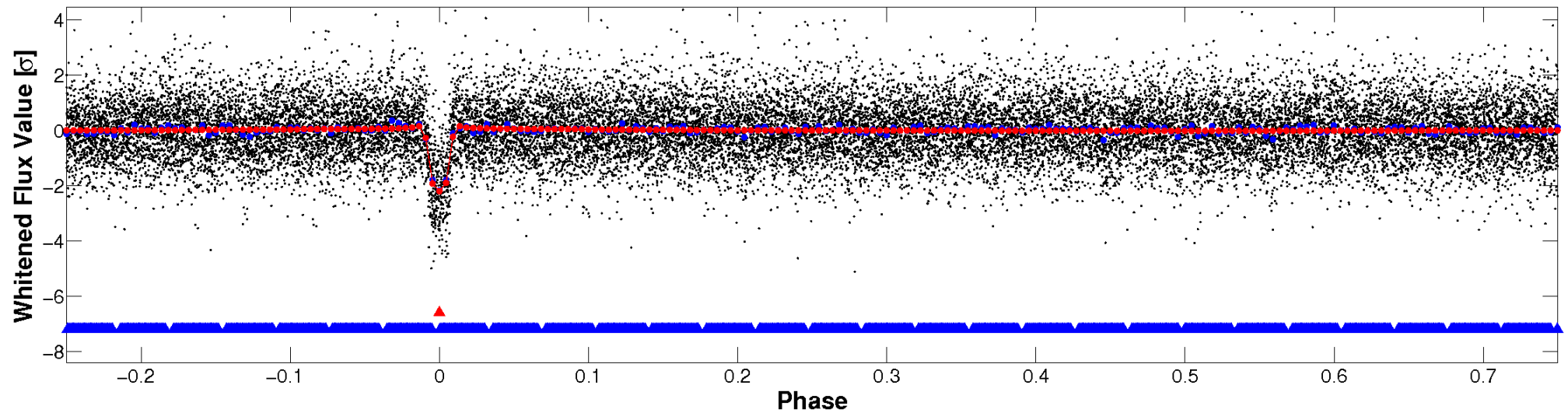


Non-Whitened Vs. Whitened Light Curve

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

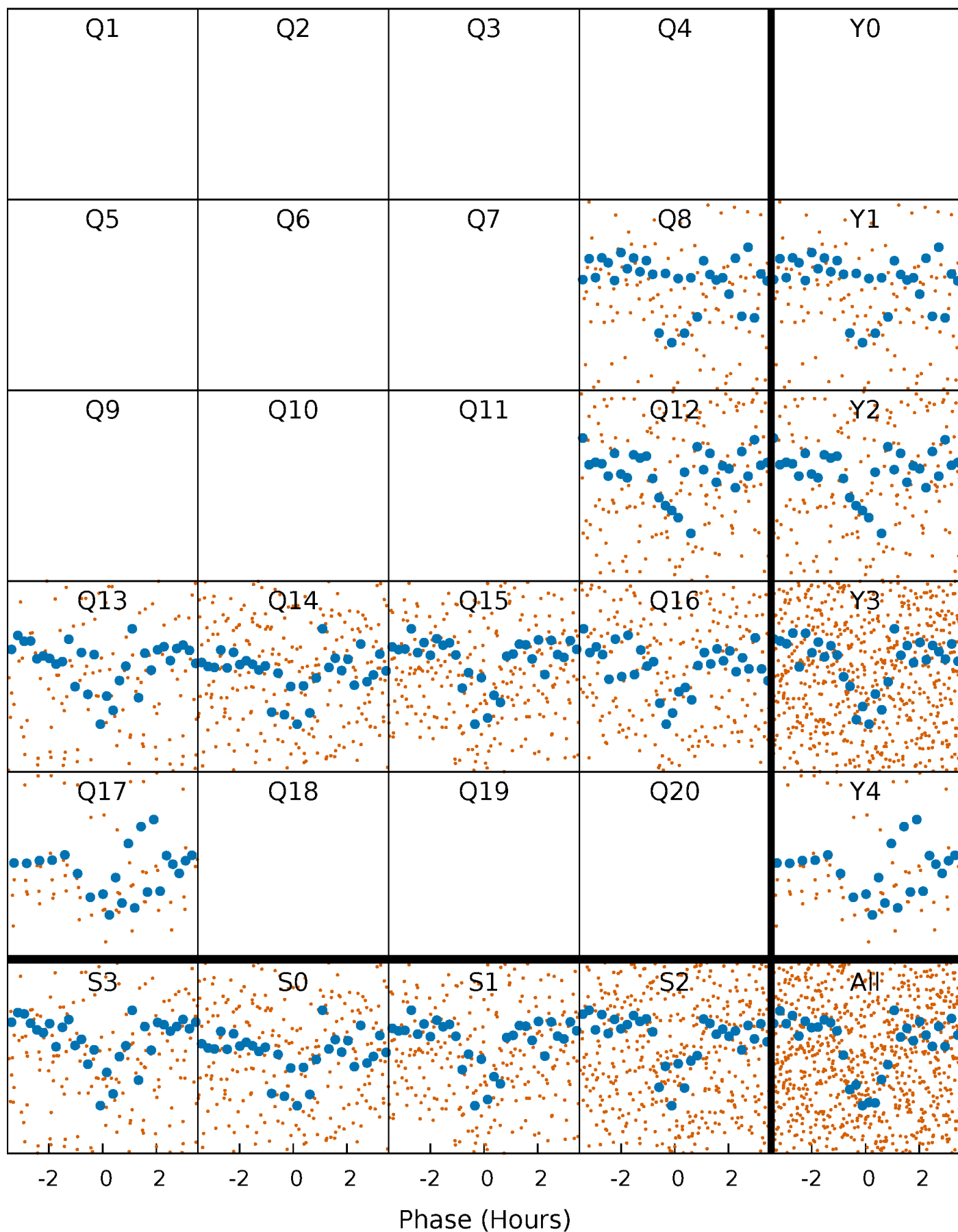


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



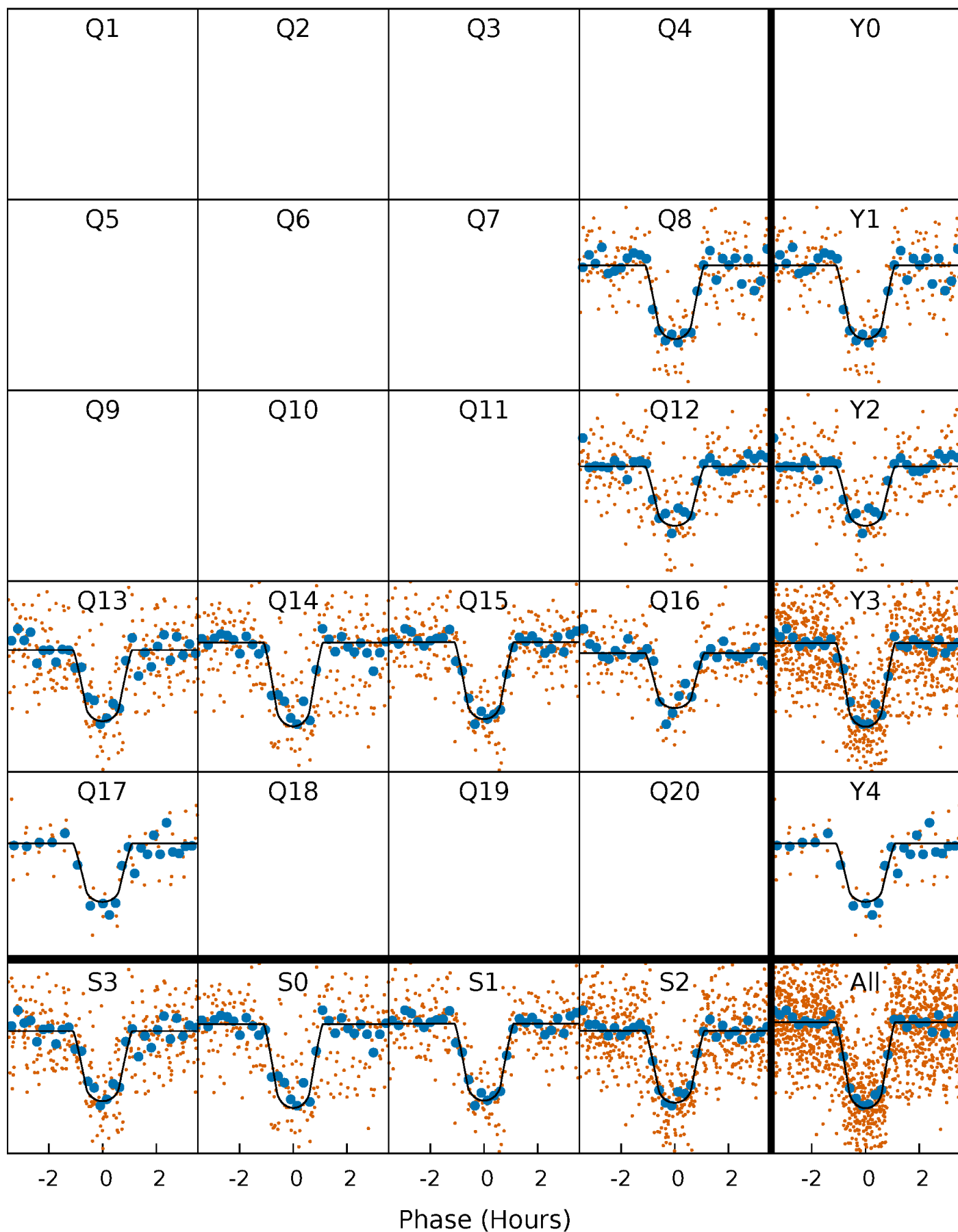
PDC Quarter-Phased Transit Curves

TCE 009823519-01 P= 4.496853 Days $T_0=134.207921$ (BKJD)



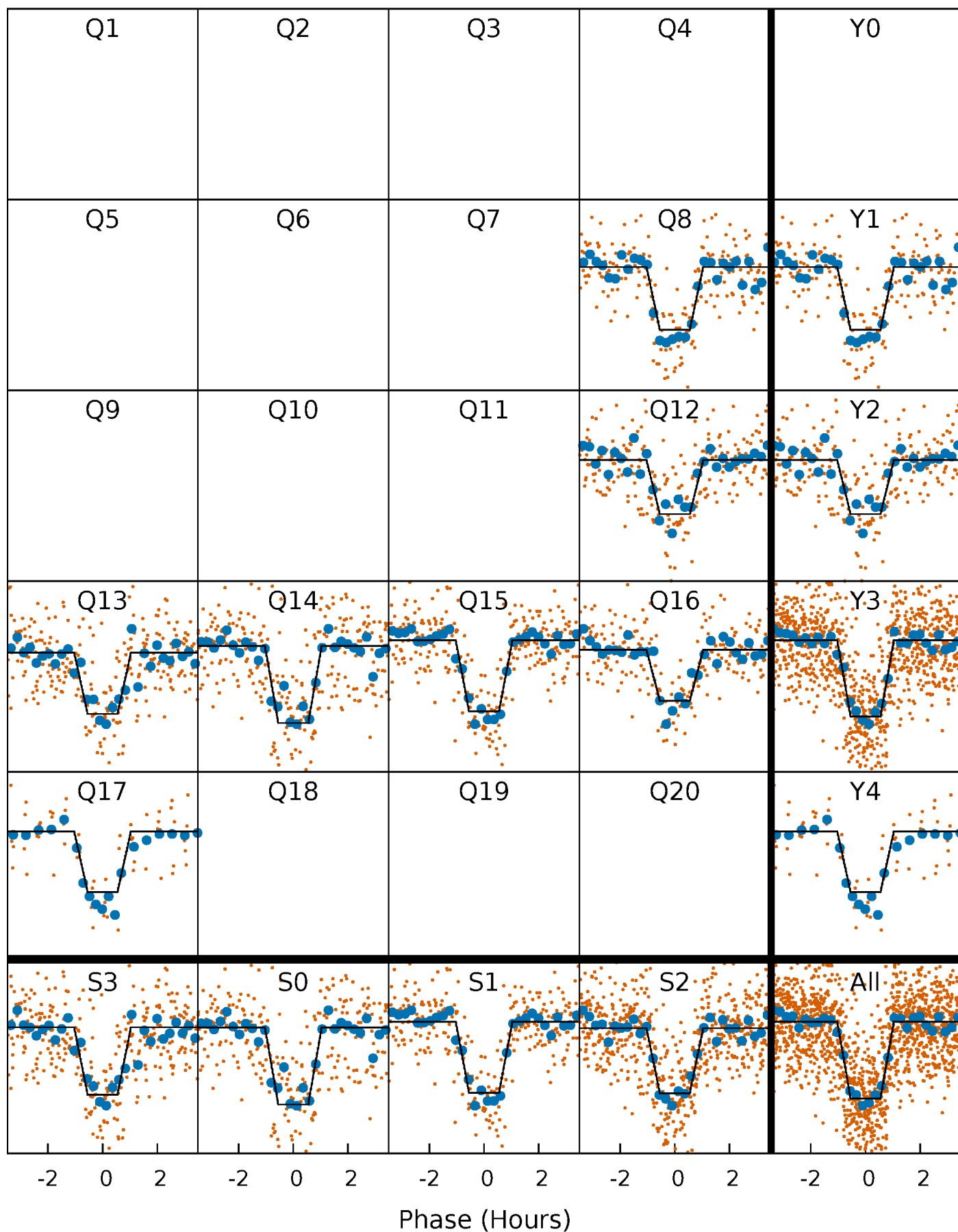
DV Quarter-Phased Transit Curves

TCE 009823519-01 P= 4.496853 Days $T_0=134.207921$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

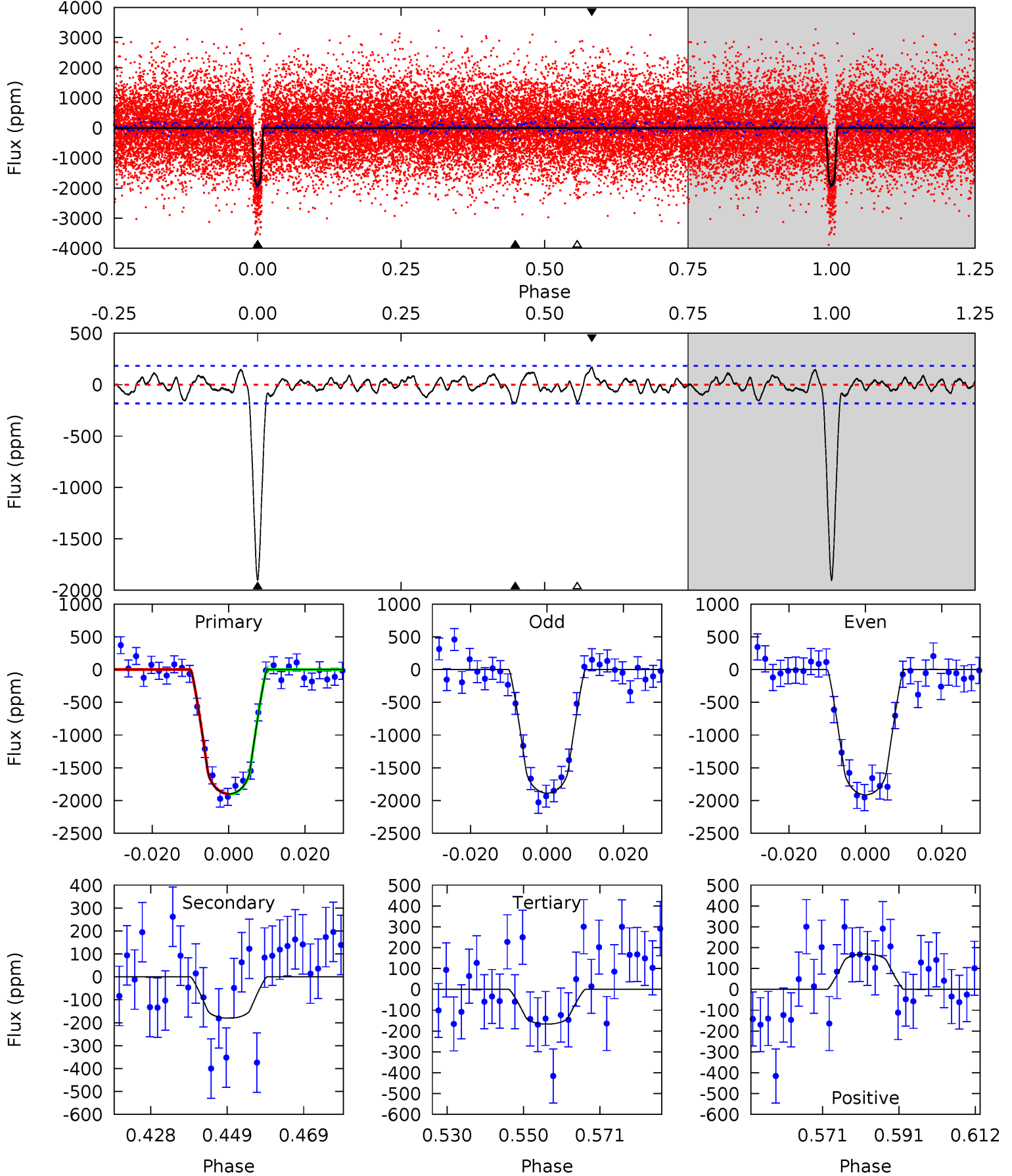
TCE 009823519-01 P= 4.496842 Days $T_0=134.210263$ (BKJD)



DV Model-Shift Uniqueness Test

009823519-01, P = 4.496853 Days, E = 134.207921 Days

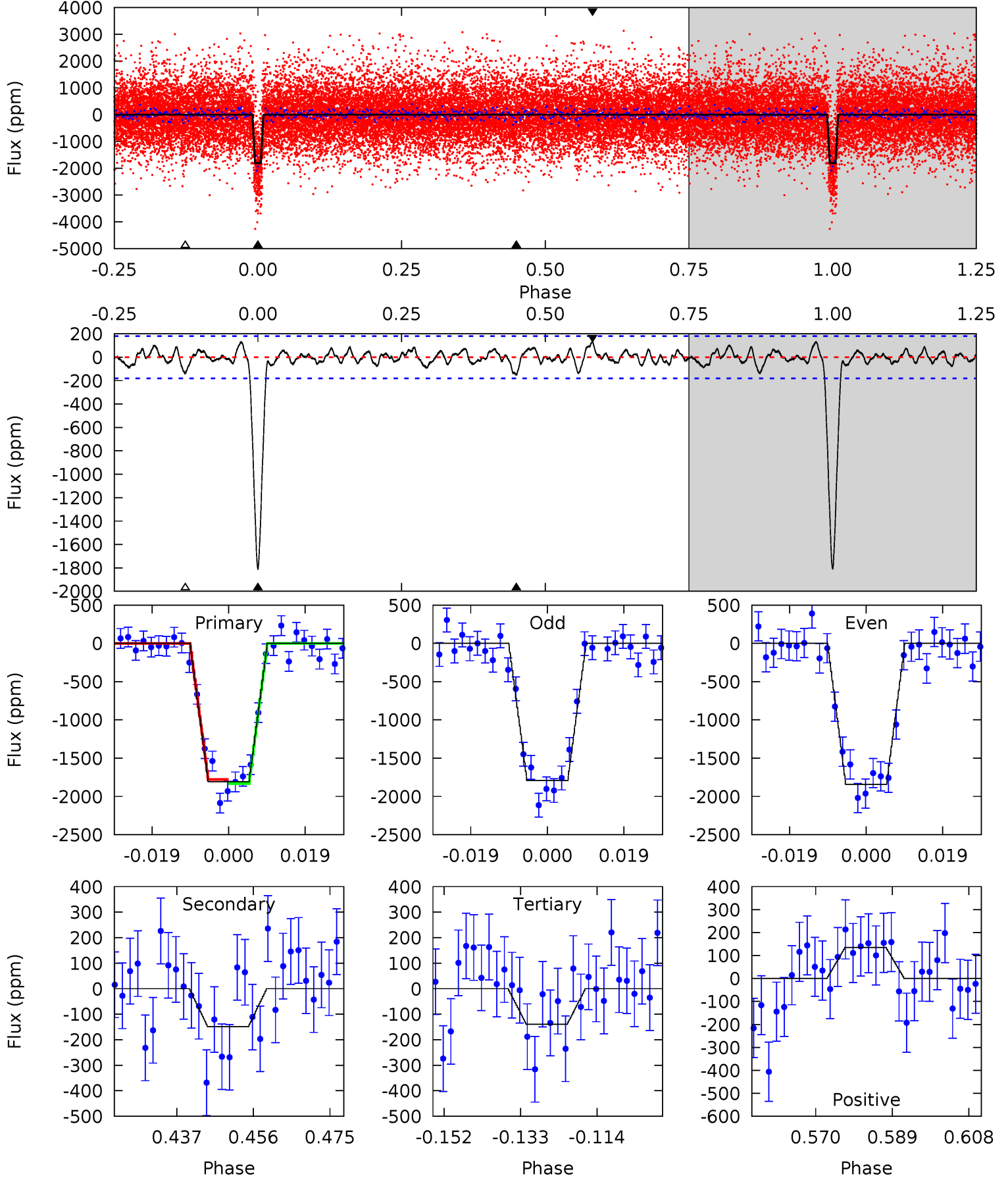
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.8	4.82	4.46	4.53	4.89	2.32	1.55	46.3	46.2	0.36	0.28	0.33	0.98	0.08	0.11



Alt Model-Shift Uniqueness Test

009823519-01, P = 4.496842 Days, E = 134.210263 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.2	4.05	3.80	3.69	4.90	2.35	1.25	45.4	45.5	0.24	0.36	0.69	0.99	0.07	0.75



Stellar Parameters For KIC 009823519

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3698^{+66}_{-73}	$4.810^{+0.055}_{-0.045}$	$-0.200^{+0.200}_{-0.200}$	$0.444^{+0.043}_{-0.053}$	$0.464^{+0.042}_{-0.055}$	$7.490^{+2.256}_{-1.343}$
	+2%/-2%	+1%/-1%	+100%/-100%	+10%/-12%	+9%/-12%	+30%/-18%
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 009823519-01 / KOI 2793.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-180 ± 37	$1.99^{+0.88}_{-0.90}$	747^{+20}_{-21}	2674^{+454}_{-256}	43^{+96}_{-23}
Alt.	-149 ± 37	$2.05^{+0.93}_{-0.87}$	746^{+21}_{-22}	2572^{+404}_{-228}	33^{+66}_{-17}

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 $A_{obs} \gg 1.0$

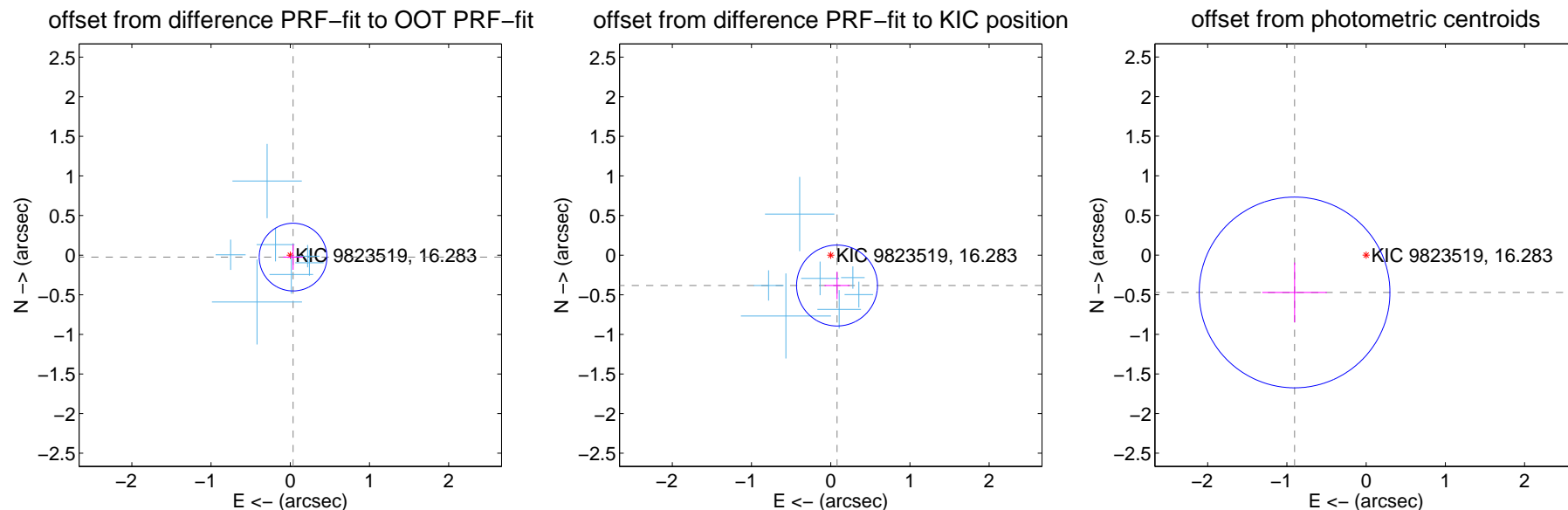
DV Centroid Data

Supplemental centroid analysis for 009823519-01. Kepler magnitude: 16.28. Transit SNR 36.70

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.043 ± 0.142	0.30	-0.035 ± 0.126	-0.024 ± 0.160
PRF-fit source offset from KIC position	0.391 ± 0.170	2.30	-0.080 ± 0.159	-0.383 ± 0.173
photometric centroid source offset	1.02 ± 0.40	2.54	0.90 ± 0.41	-0.47 ± 0.38

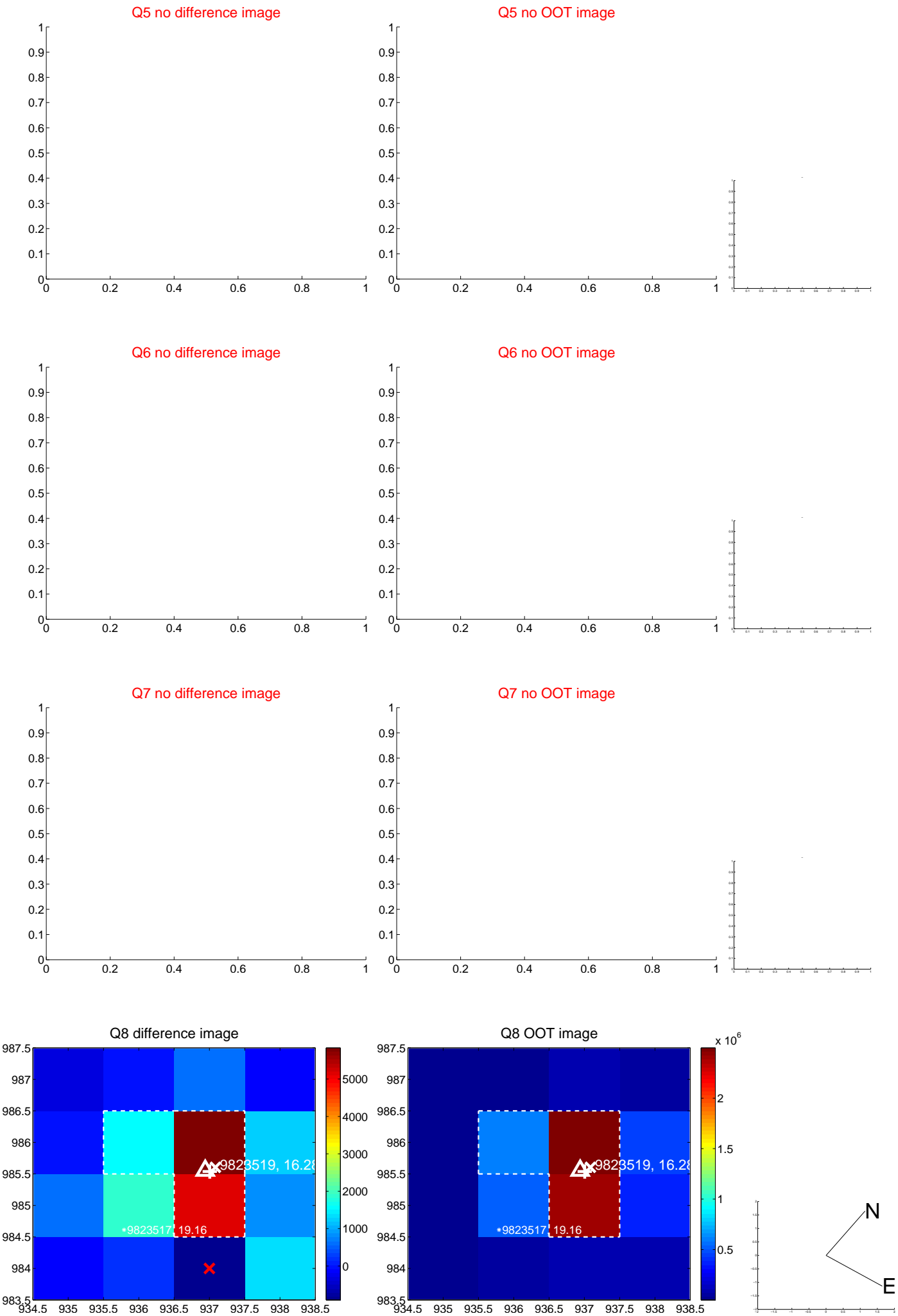


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

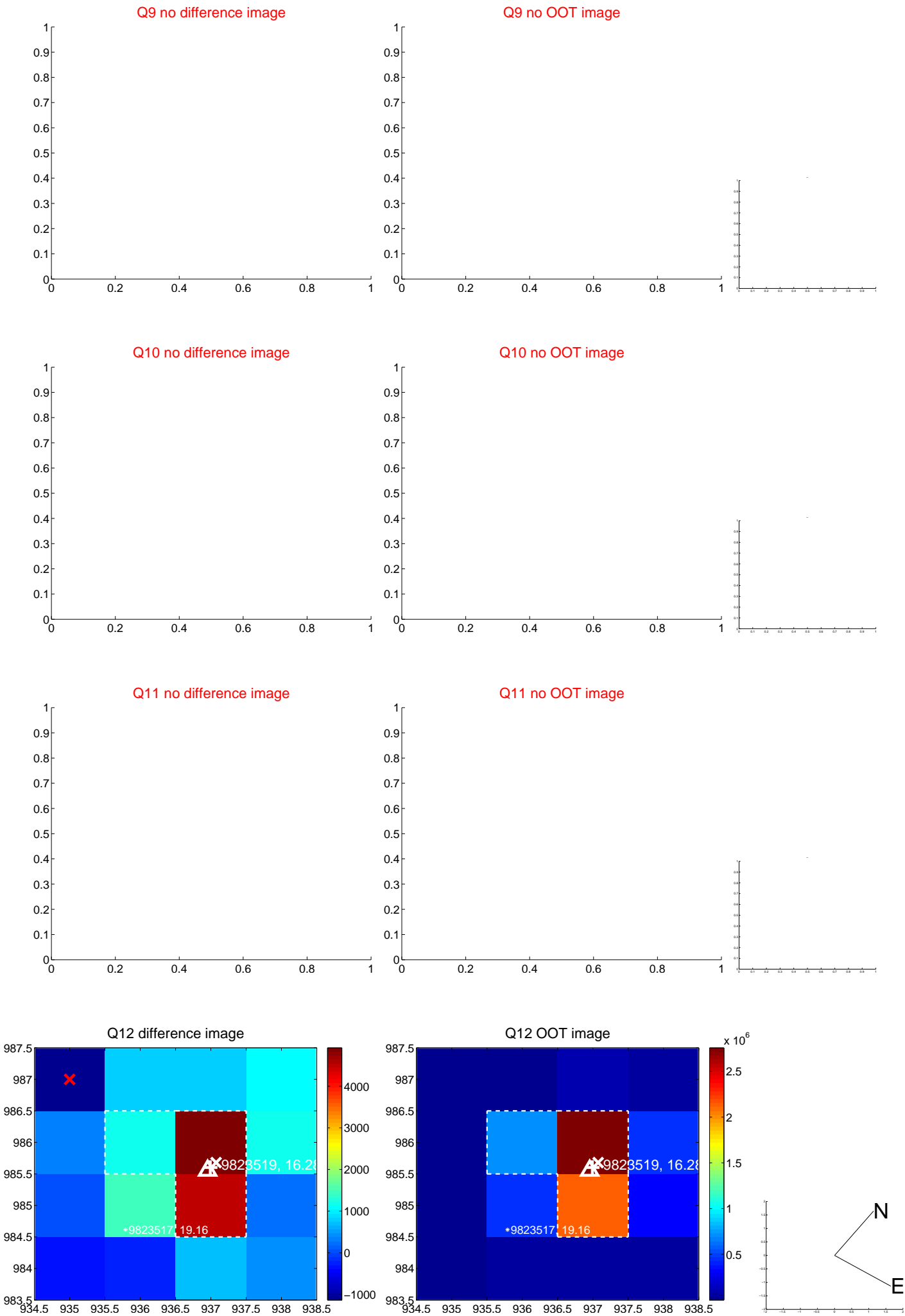
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



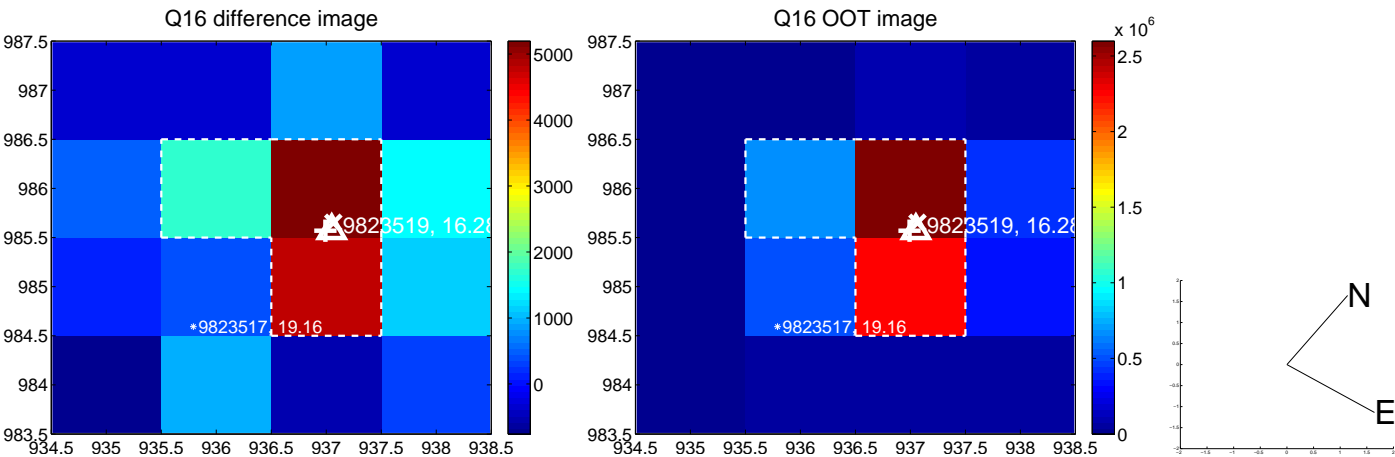
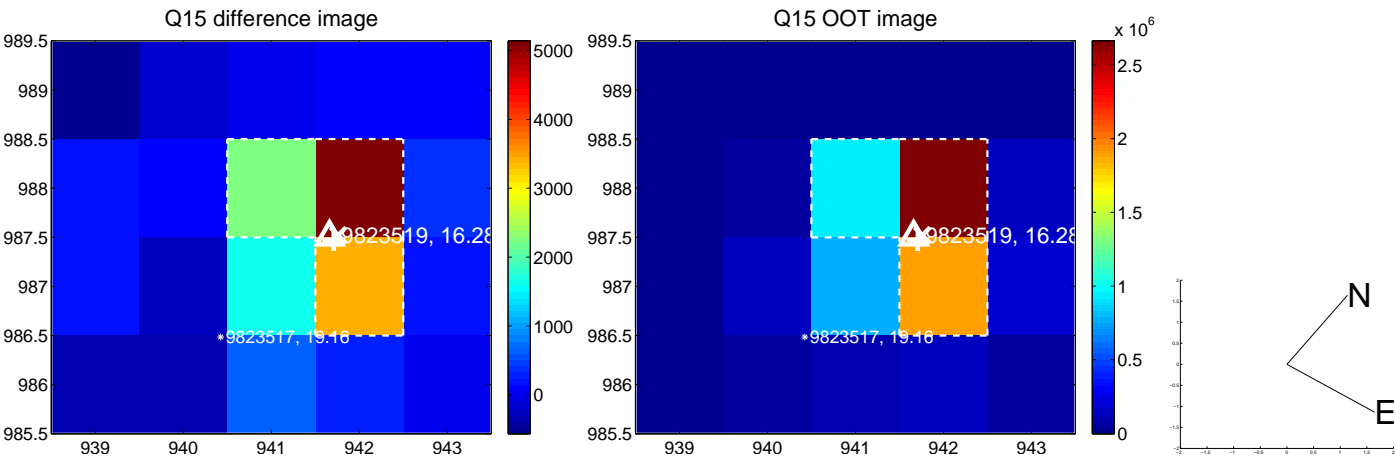
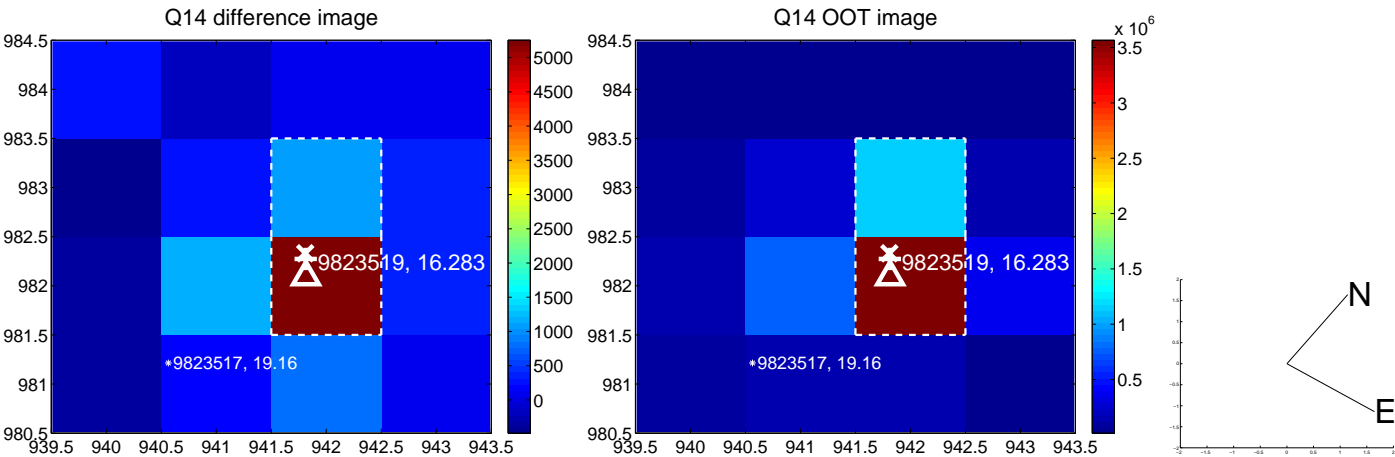
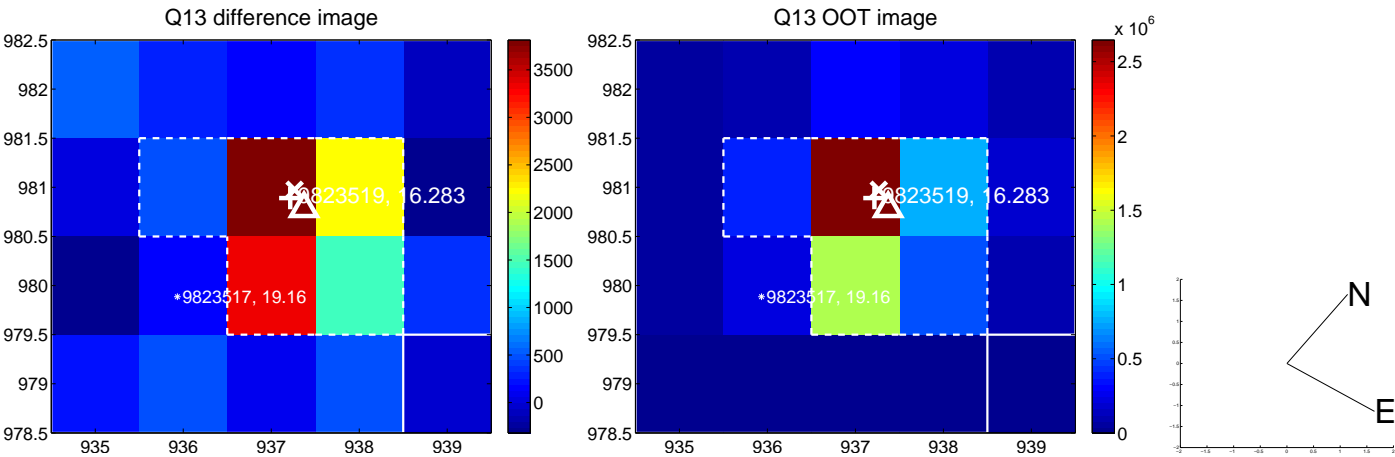
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

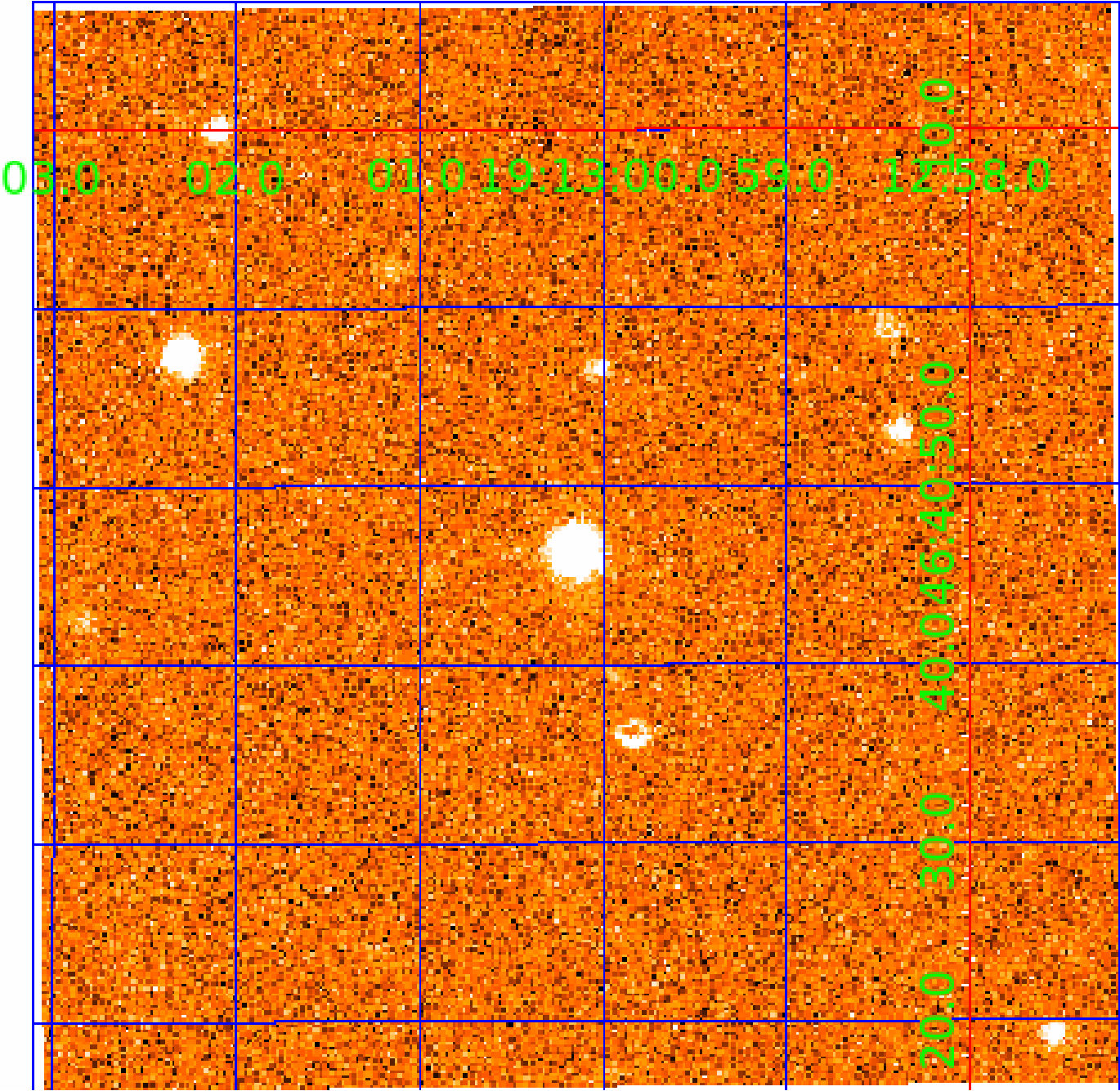


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009823519

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})
009823519-01	OBS	2793.01	4.496853	134.207921	1988.9	1.772	31.1	36.7	0.44	3698	2.00	19.37
009823519-02	OBS	2793.02	1.766793	133.082287	976.1	1.501	21.6	25.1	0.44	3698	1.65	67.31

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823519-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
009823519-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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.

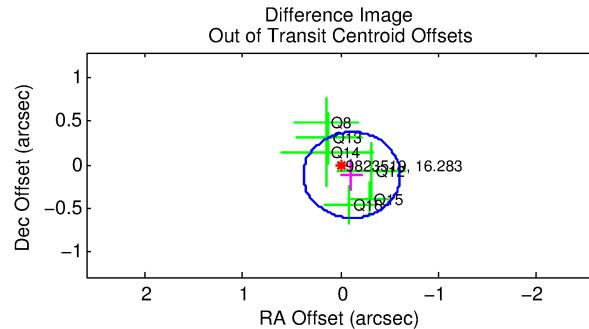
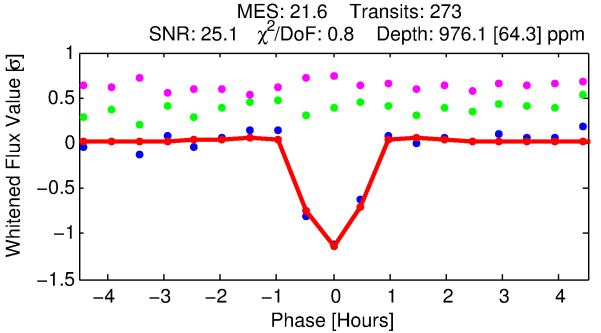
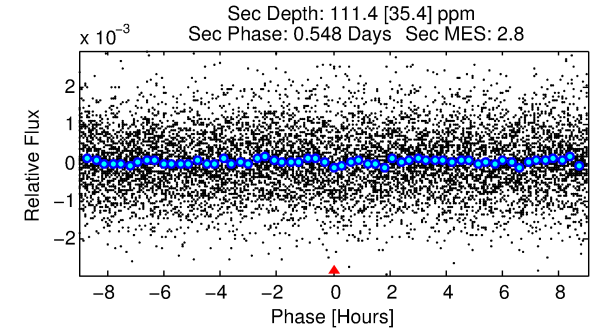
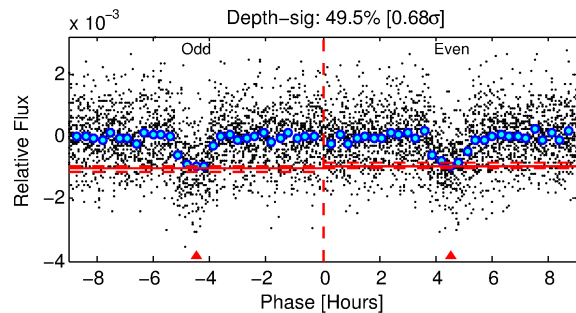
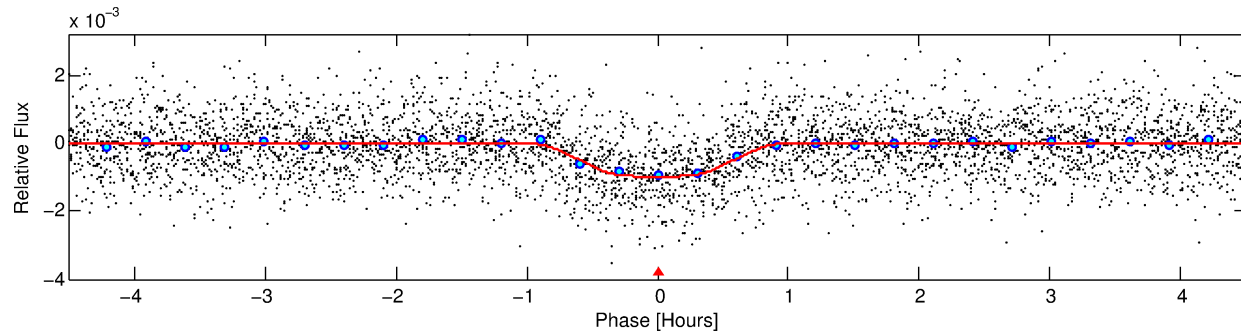
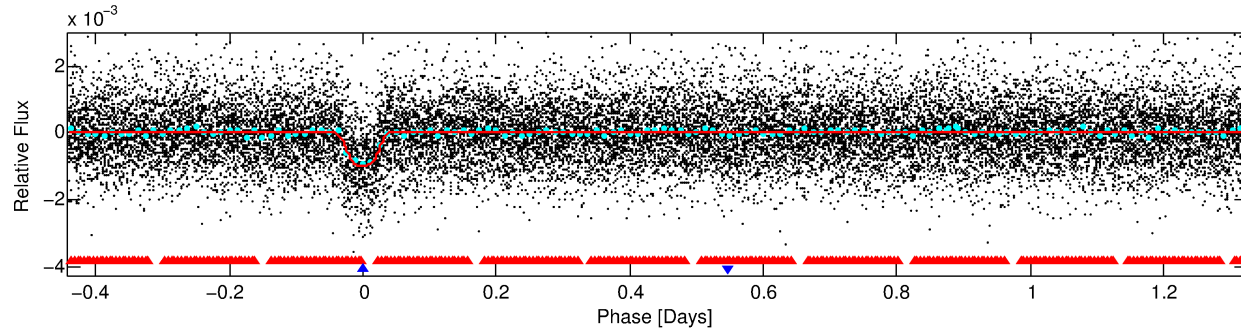
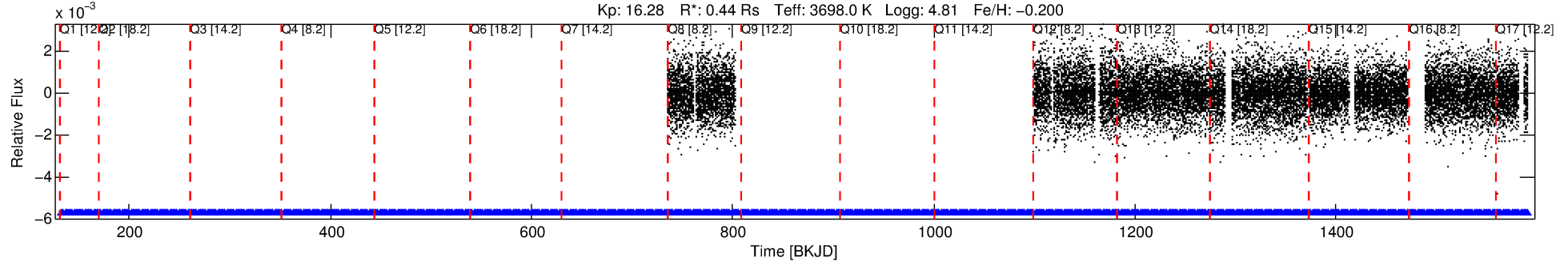
Ephemeris Match Information For 009823519-02

No Significant Match Found

DV One-Page Summary

KIC: 9823519 Candidate: 2 of 2 Period: 1.767 d
KOI: K02793.02 Corr: 0.944

Kp: 16.28 R*: 0.44 Rs Teff: 3698.0 K Logg: 4.81 Fe/H: -0.200



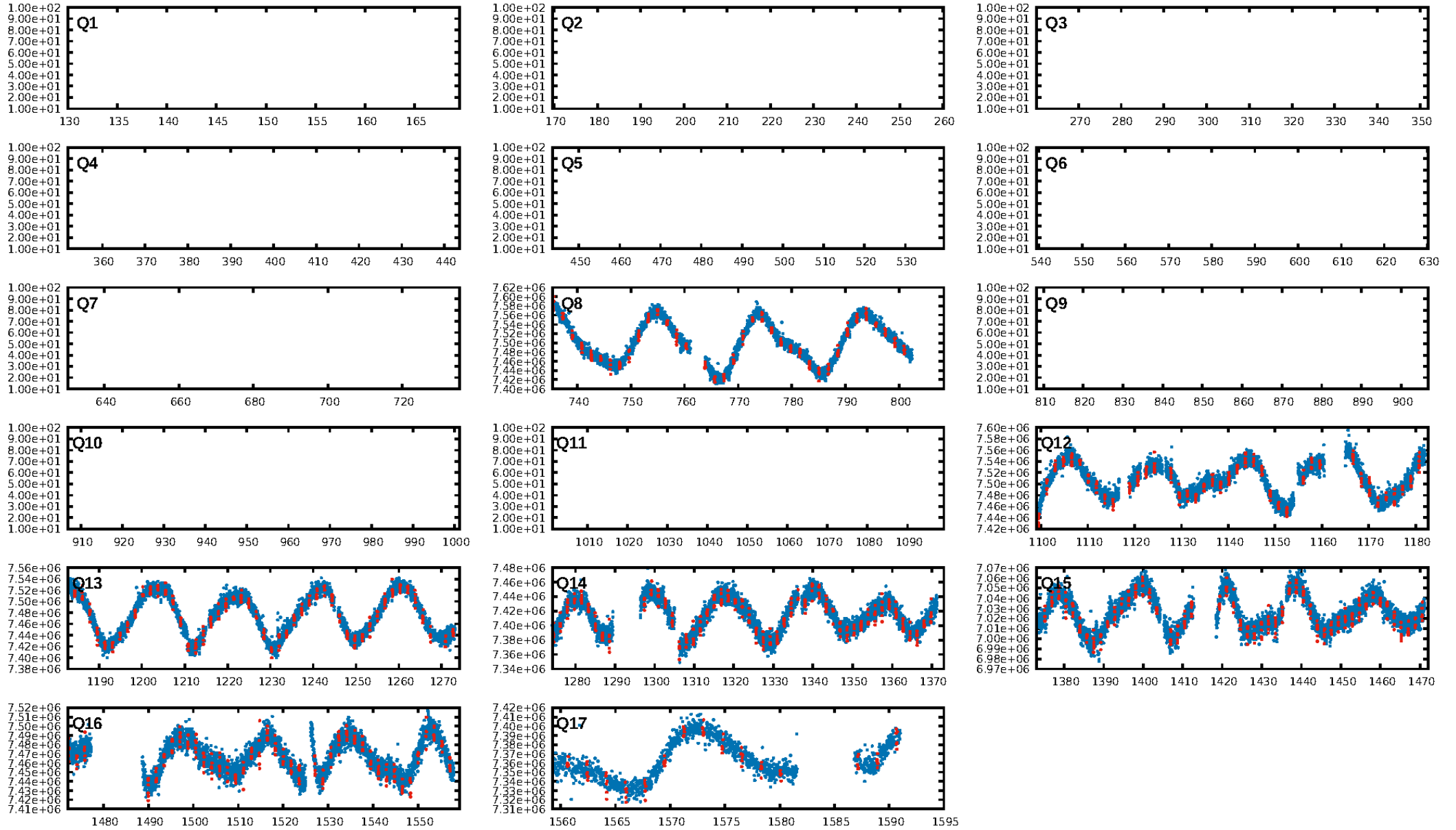
DV Fit Results:

Period = 1.76679 [0.00000] d
Epoch = 133.0823 [0.0008] BKJD
Rp/R* = 0.0340 [0.0052]
a/R* = 4.67 [2.90]
b = 0.90 [0.14]
Seff = 67.31 [9.45]
Teq = 730 [26] K
Rp = 1.65 [0.32] Re
a = 0.0222 [0.0020] AU
Ag = 11.06 [5.04] [2.00σ]
Teff = 2059 [230] K [5.73σ]

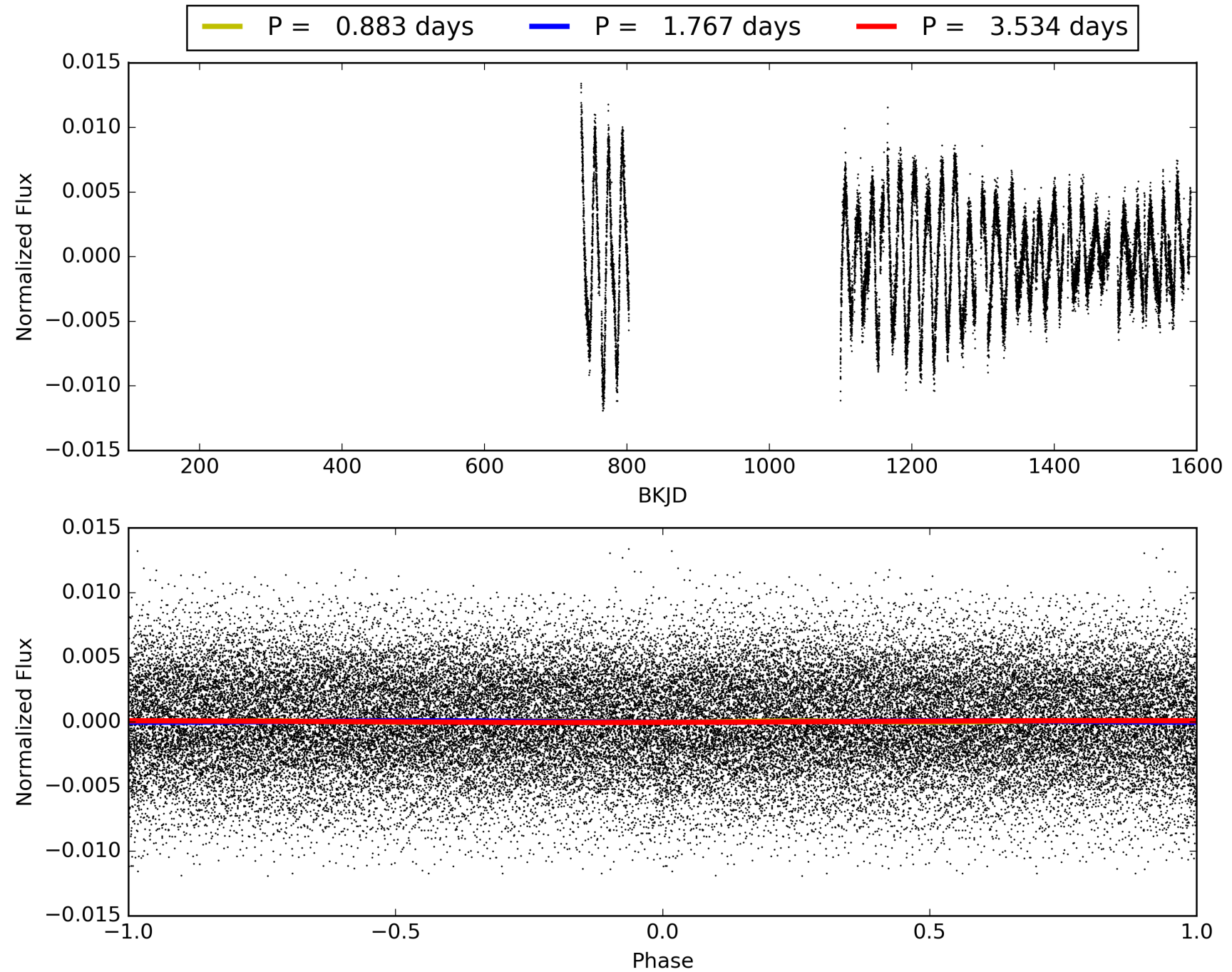
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [28.21σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.01e-100
RollingBand-fgt: 1.00 [259/259]
GhostDiagnostic-chr: 3.509
Centroid-sig: 2.7%
Centroid-so: 1.351 arcsec [2.32σ]
OotOffset-rm: 0.166 arcsec [1.00σ]
KicOffset-rm: 0.497 arcsec [2.60σ]
OotOffset-st: 1/1/3/1 [6]
KicOffset-st: 1/1/3/1 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [7/7]

TCE 009823519-02, PDC Light Curves

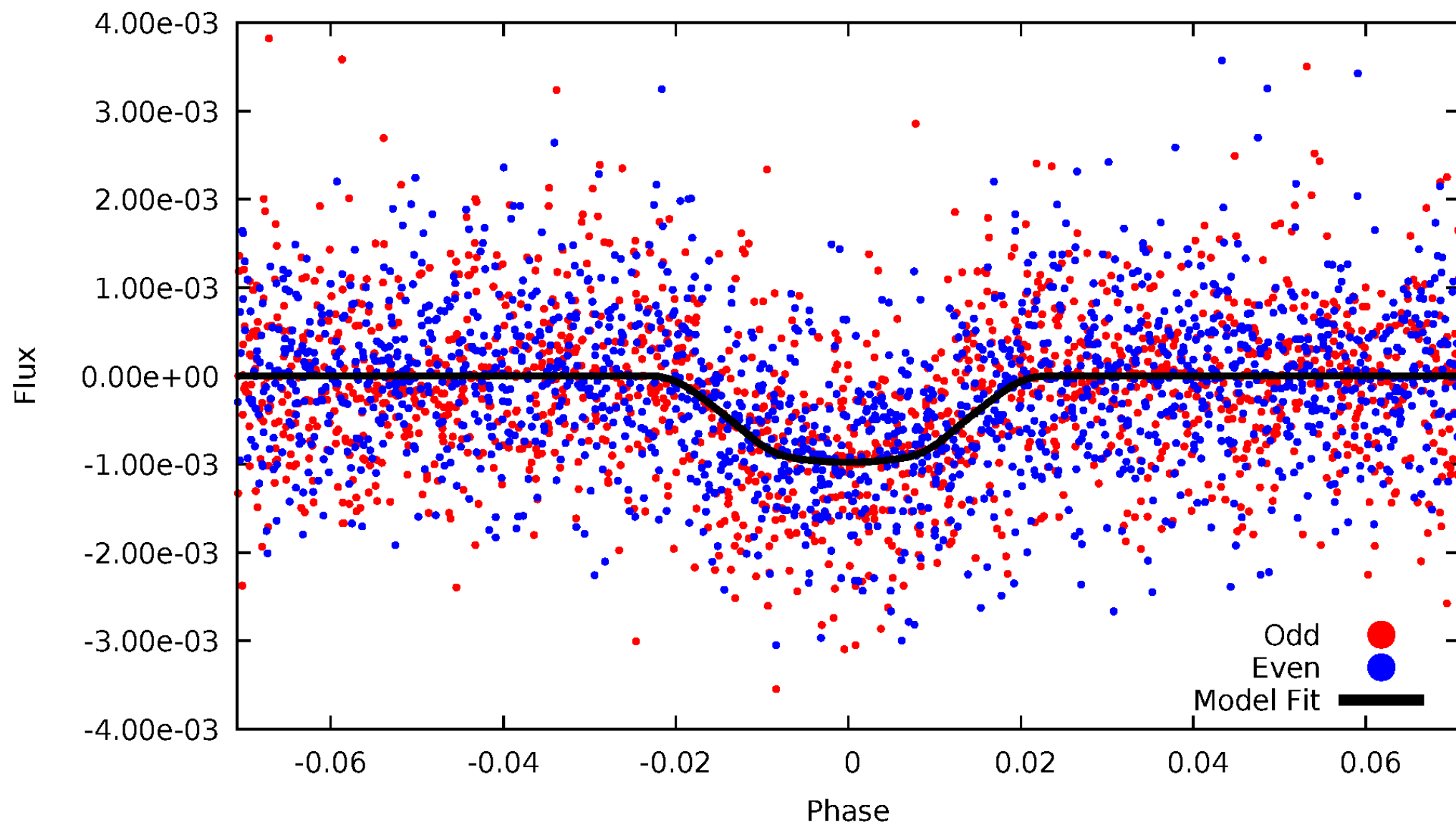


TCE 009823519-02



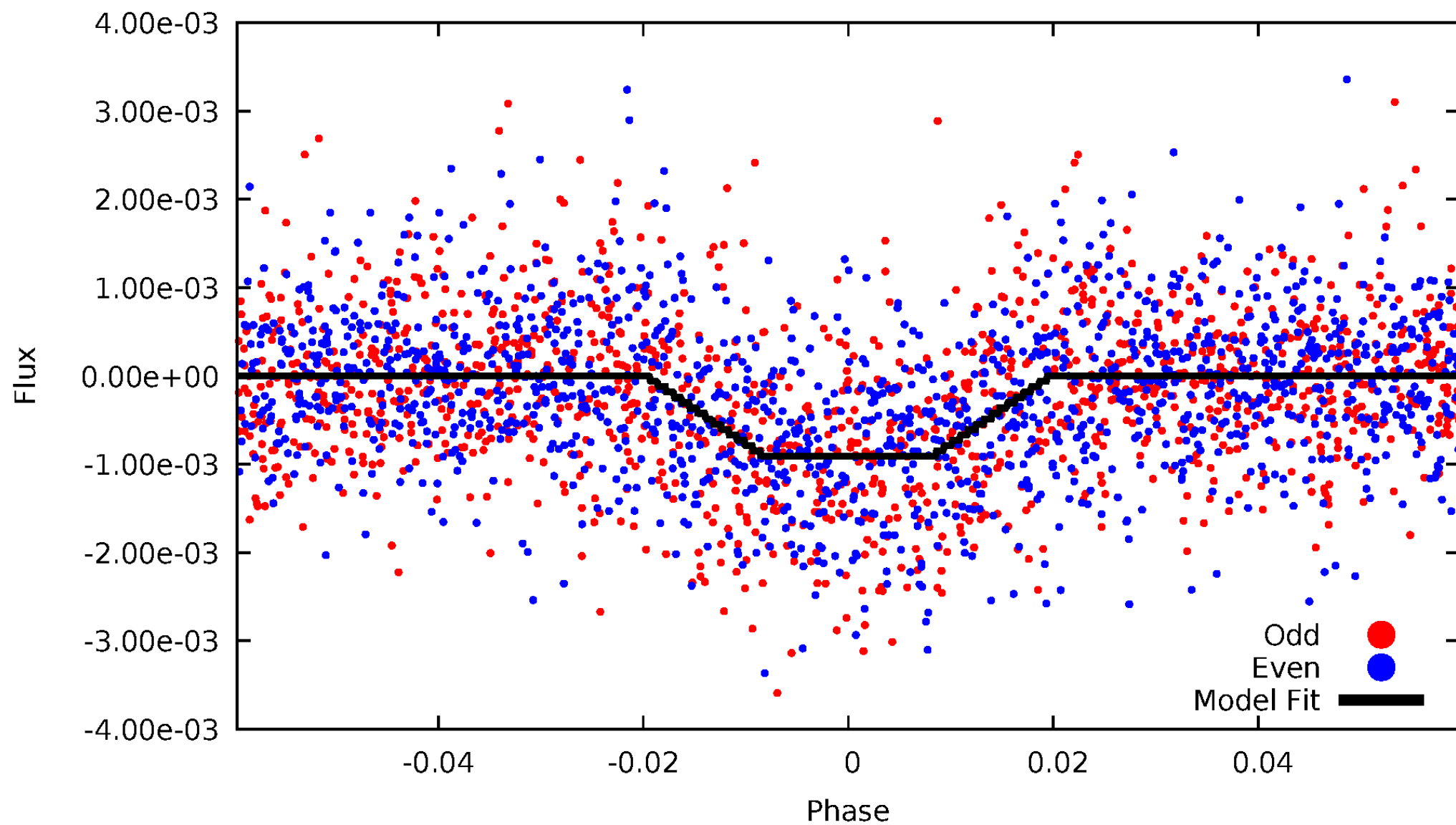
DV Odd/Even

TCE 009823519-02



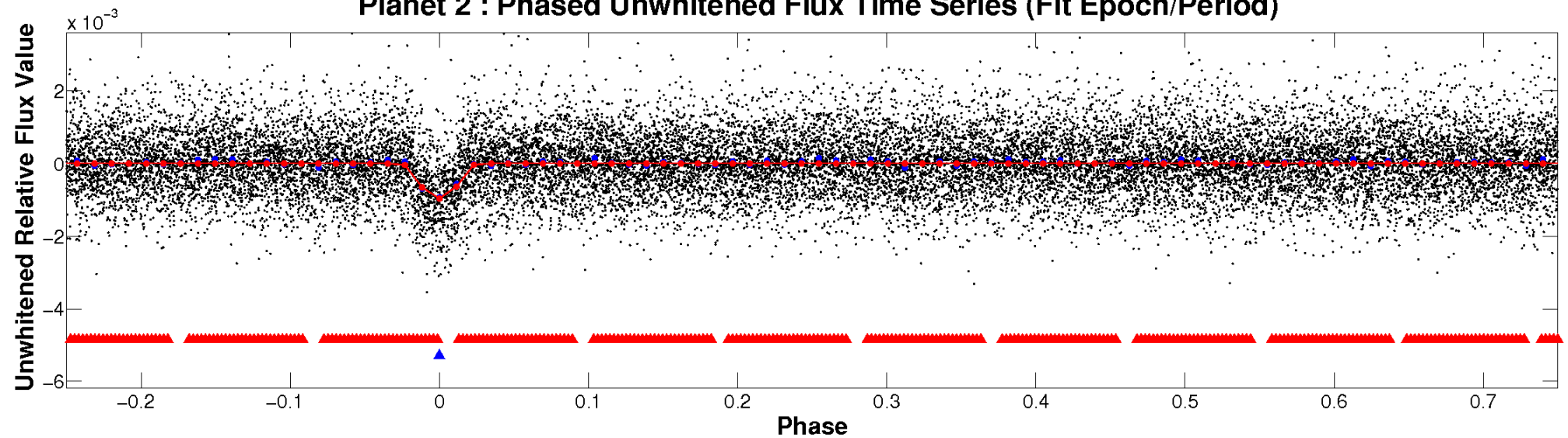
ALT Odd/Even

TCE 009823519-02

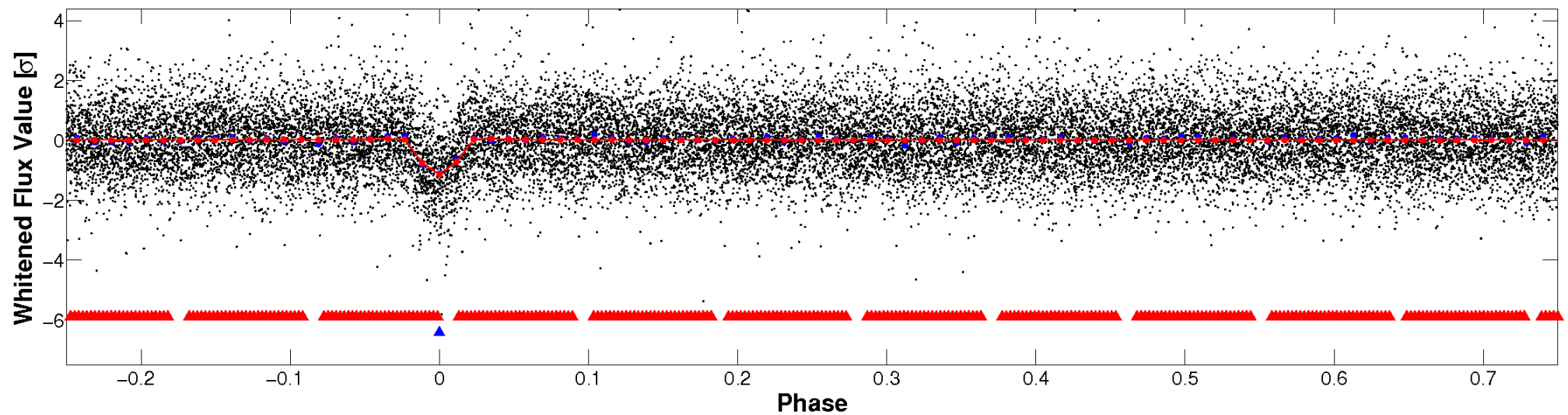


Non-Whitened Vs. Whitened Light Curve

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

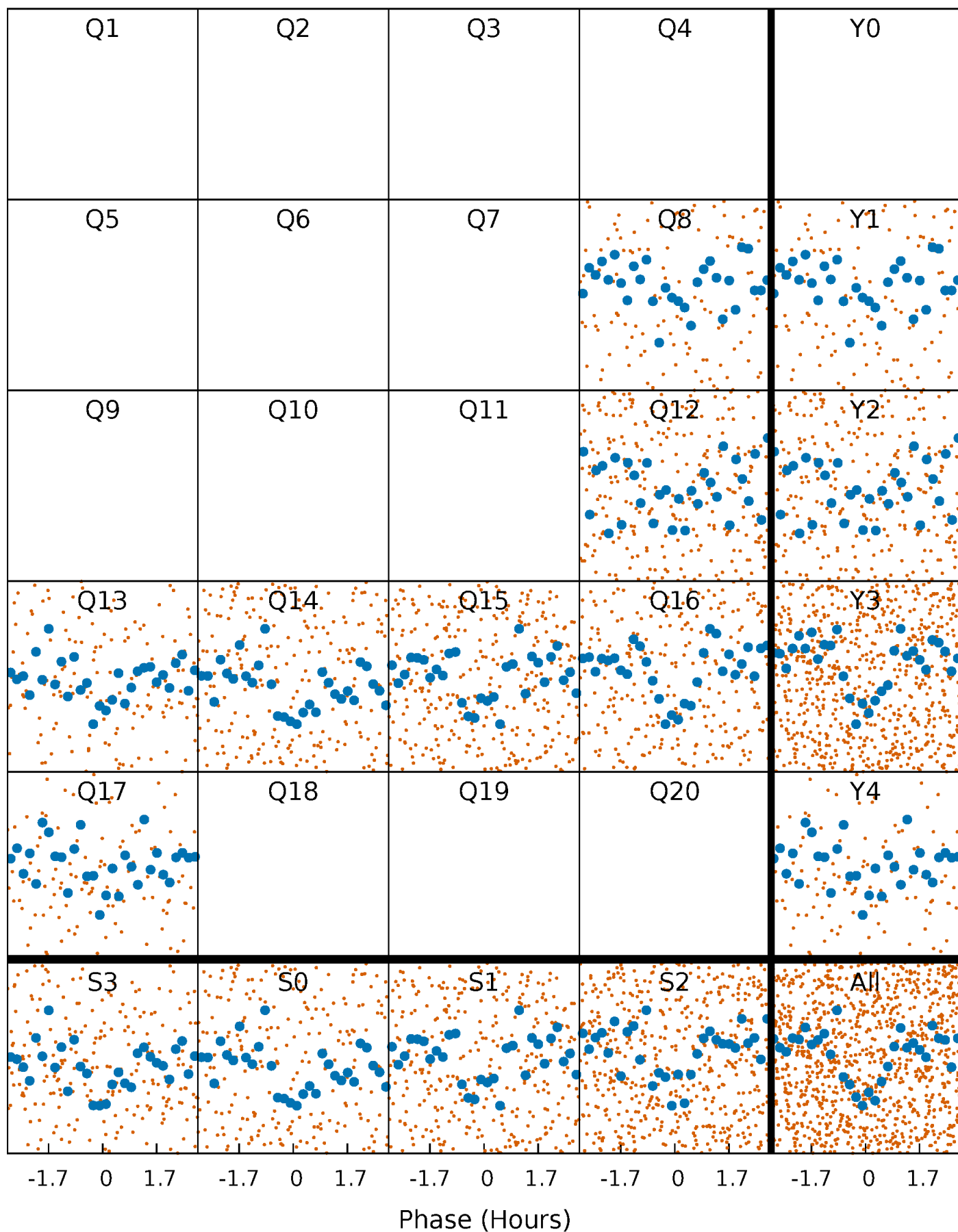


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



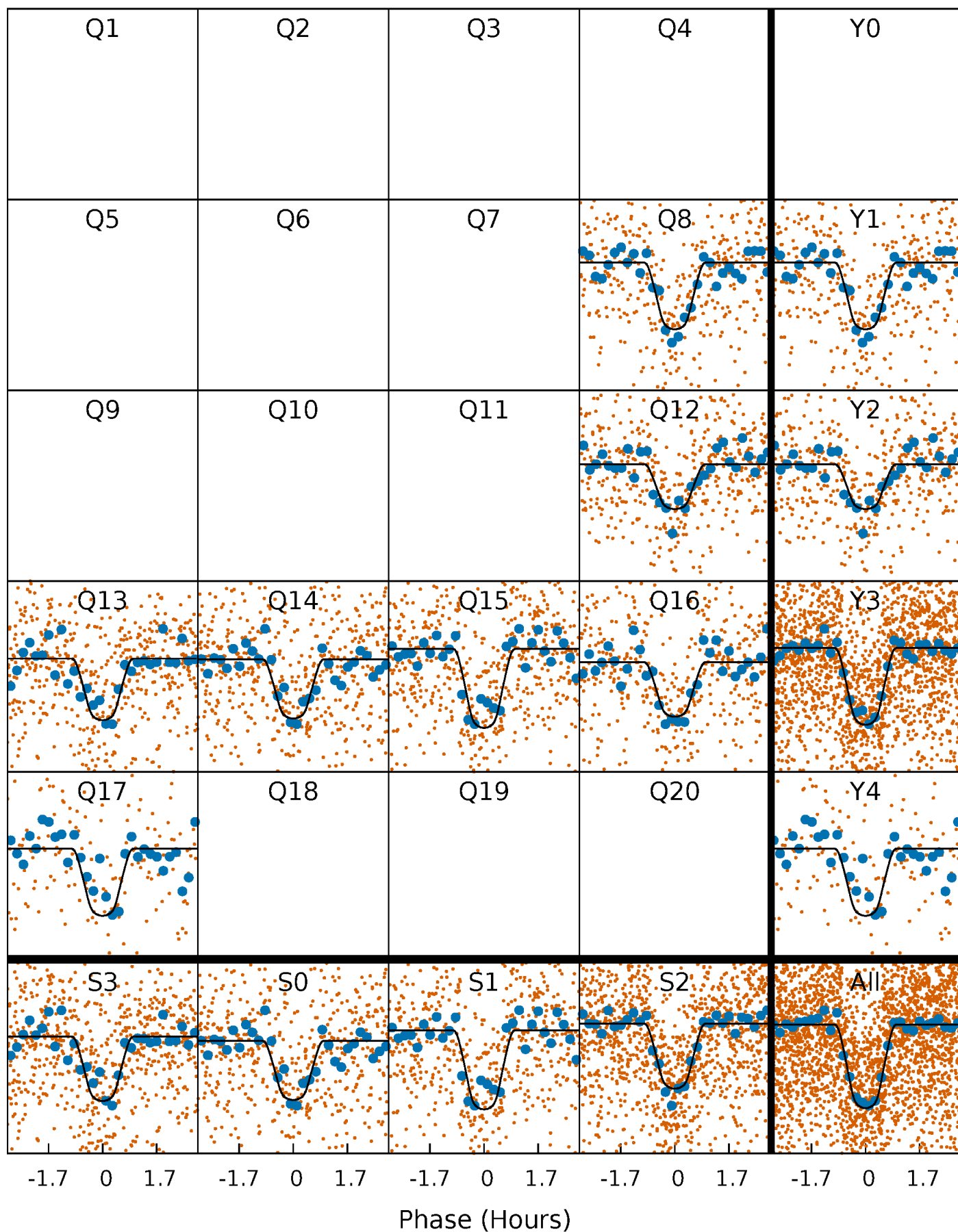
PDC Quarter-Phased Transit Curves

TCE 009823519-02 P= 1.766793 Days $T_0=133.082287$ (BKJD)



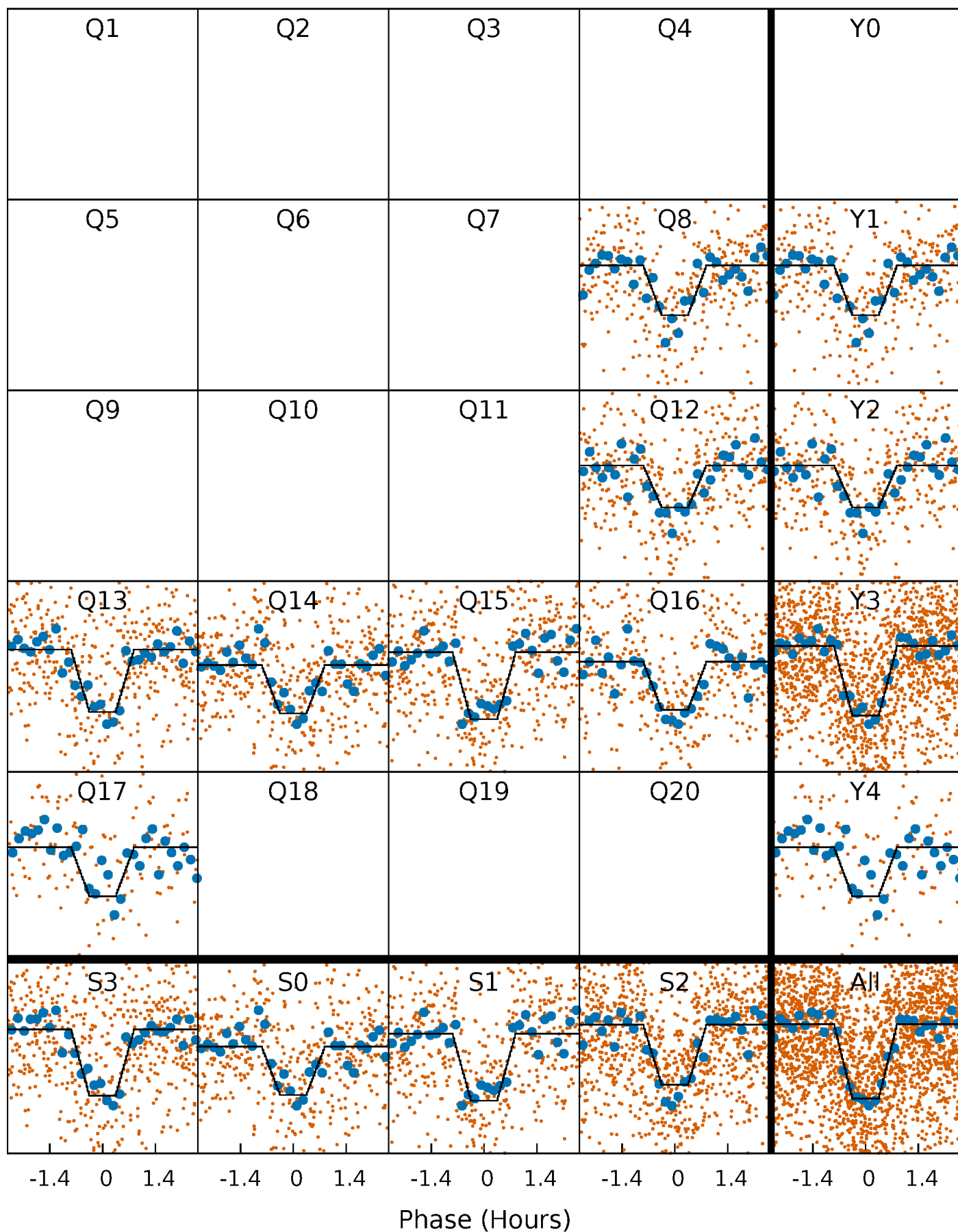
DV Quarter-Phased Transit Curves

TCE 009823519-02 P= 1.766793 Days $T_0=133.082287$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

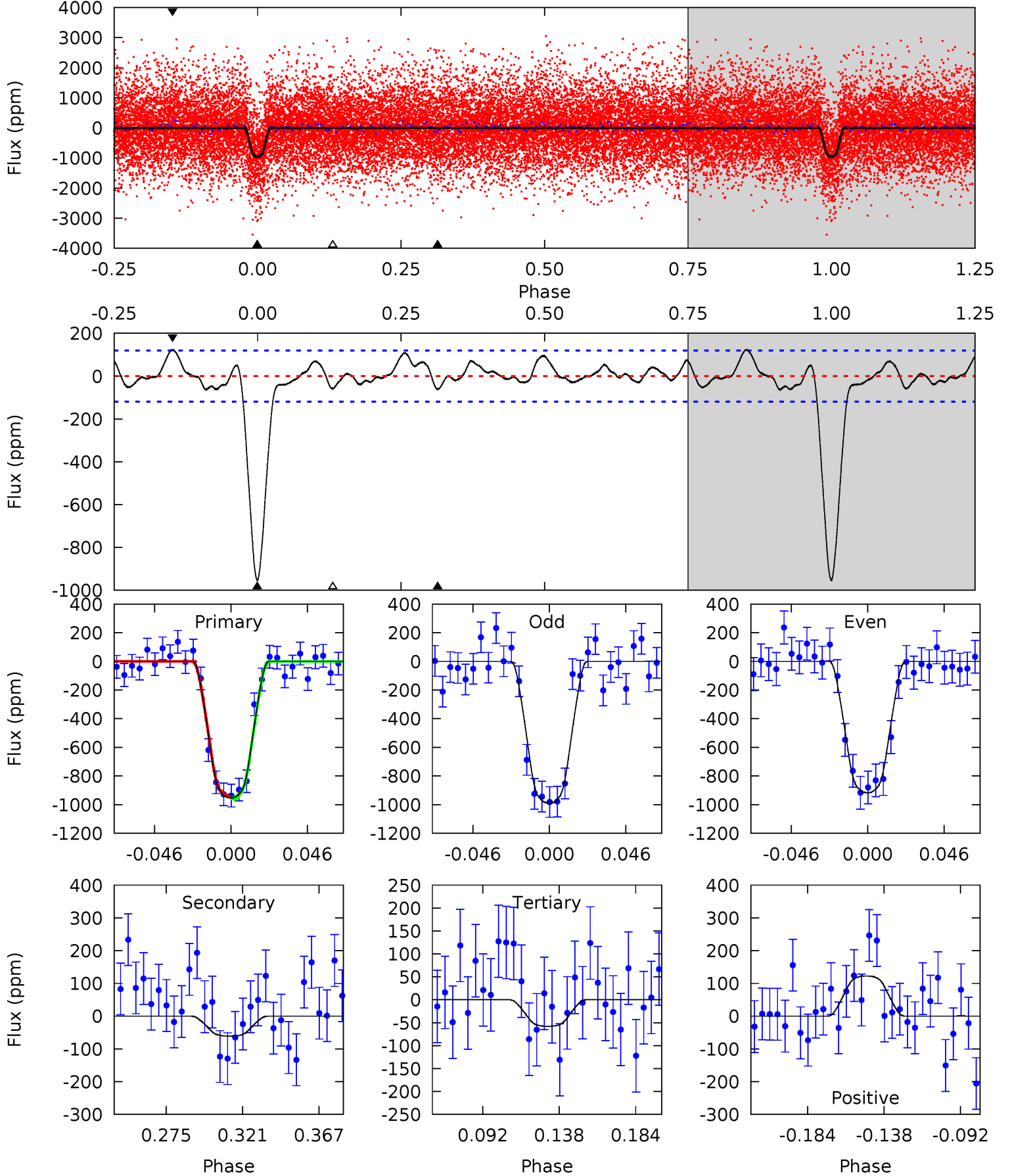
TCE 009823519-02 P= 1.766781 Days $T_0=133.088460$ (BKJD)



DV Model-Shift Uniqueness Test

009823519-02, P = 1.766793 Days, E = 133.082287 Days

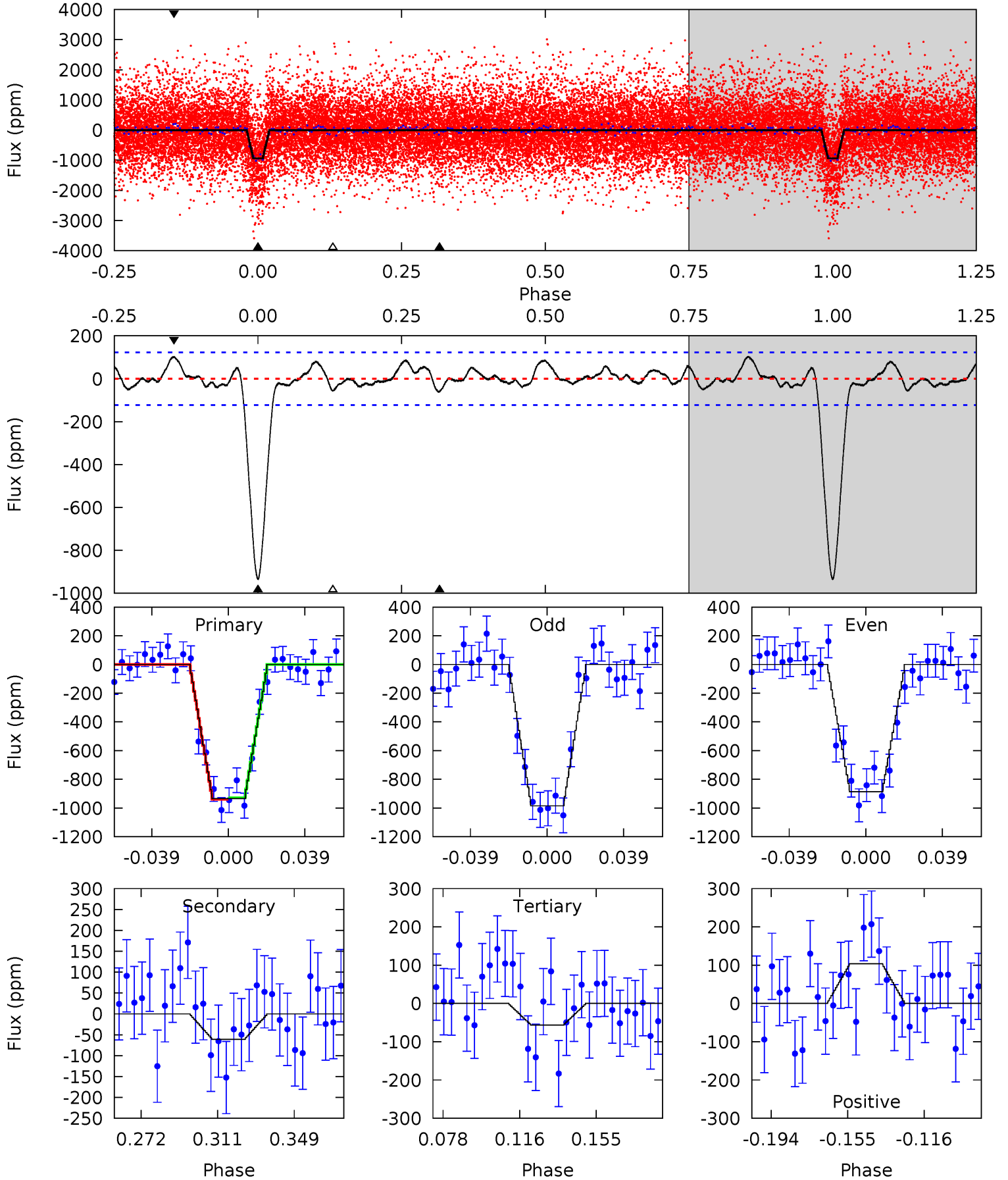
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.8	2.42	2.30	4.86	4.73	2.00	1.59	35.5	32.9	0.13	-2.44	1.45	0.98	0.11	0.28



Alt Model-Shift Uniqueness Test

009823519-02, P = 1.766781 Days, E = 133.088460 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.2	2.36	2.19	4.01	4.76	2.07	1.30	34.1	32.2	0.18	-1.65	1.90	1.04	0.10	0.19



Stellar Parameters For KIC 009823519

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3698^{+66}_{-73}	$4.810^{+0.055}_{-0.045}$	$-0.200^{+0.200}_{-0.200}$	$0.444^{+0.043}_{-0.053}$	$0.464^{+0.042}_{-0.055}$	$7.490^{+2.256}_{-1.343}$
	+2%/-2%	+1%/-1%	+100%/-100%	+10%/-12%	+9%/-12%	+30%/-18%
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 009823519-02 / KOI 2793.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-61 ± 25	$1.66^{+0.28}_{-0.27}$	1018^{+29}_{-28}	2419^{+159}_{-150}	$5.887^{+3.695}_{-2.362}$
Alt.	-61 ± 26	$1.45^{+0.27}_{-0.26}$	1019^{+29}_{-30}	2508^{+175}_{-199}	$7.804^{+5.204}_{-3.665}$

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 $A_{obs} \gg 1.0$

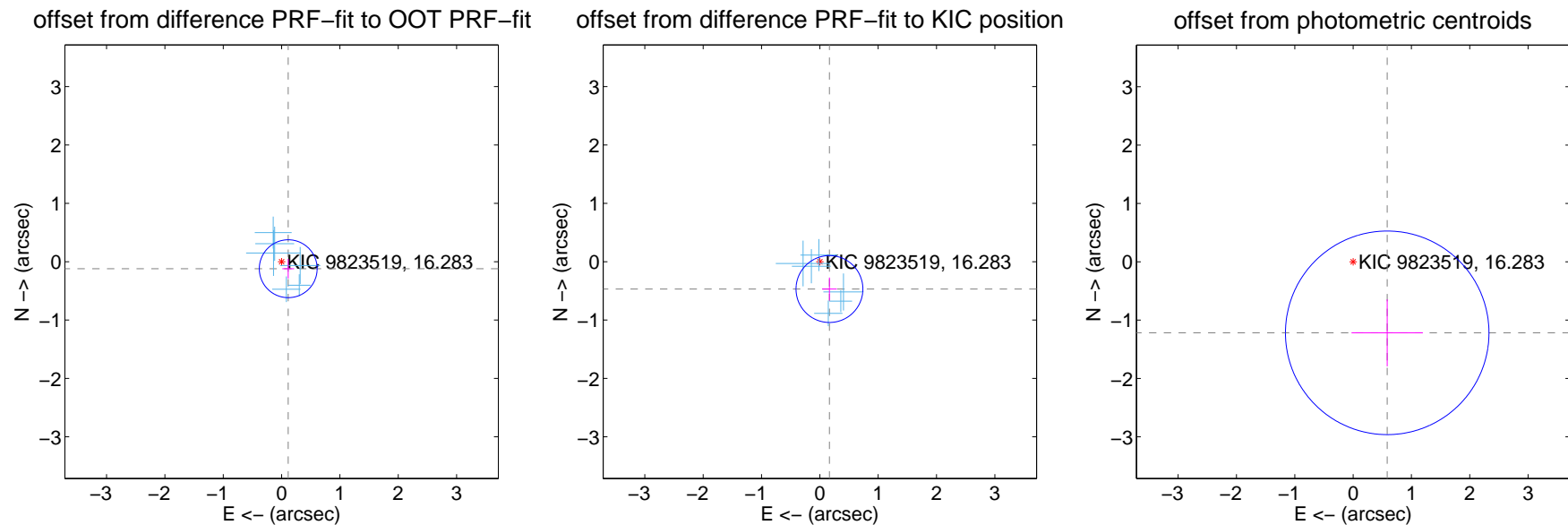
DV Centroid Data

Supplemental centroid analysis for 009823519-02. Kepler magnitude: 16.28. Transit SNR 25.05

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.166 ± 0.165	1.00	-0.114 ± 0.101	-0.120 ± 0.167
PRF-fit source offset from KIC position	0.497 ± 0.191	2.60	-0.165 ± 0.127	-0.468 ± 0.198
photometric centroid source offset	1.35 ± 0.58	2.32	-0.58 ± 0.61	-1.22 ± 0.57

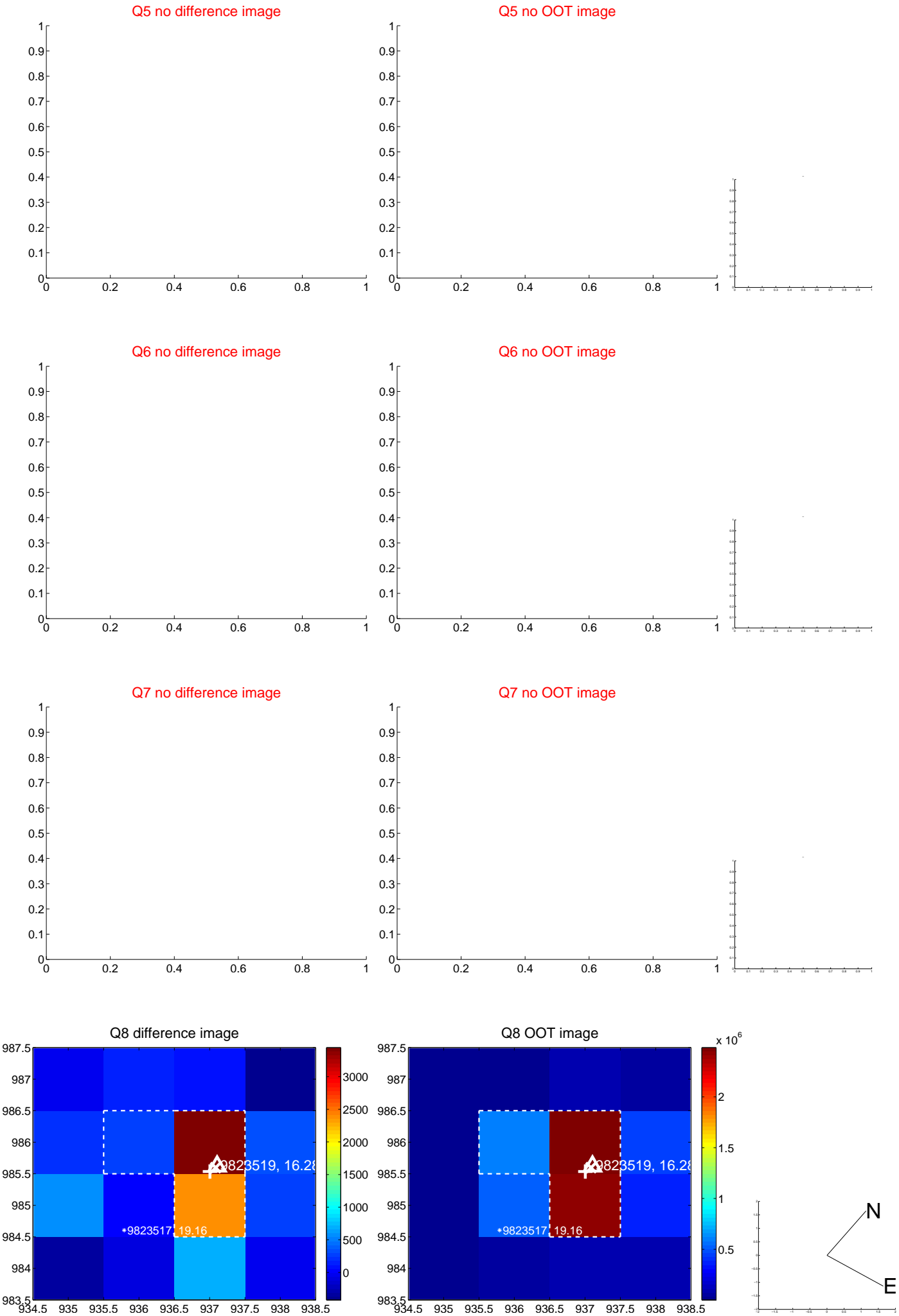


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

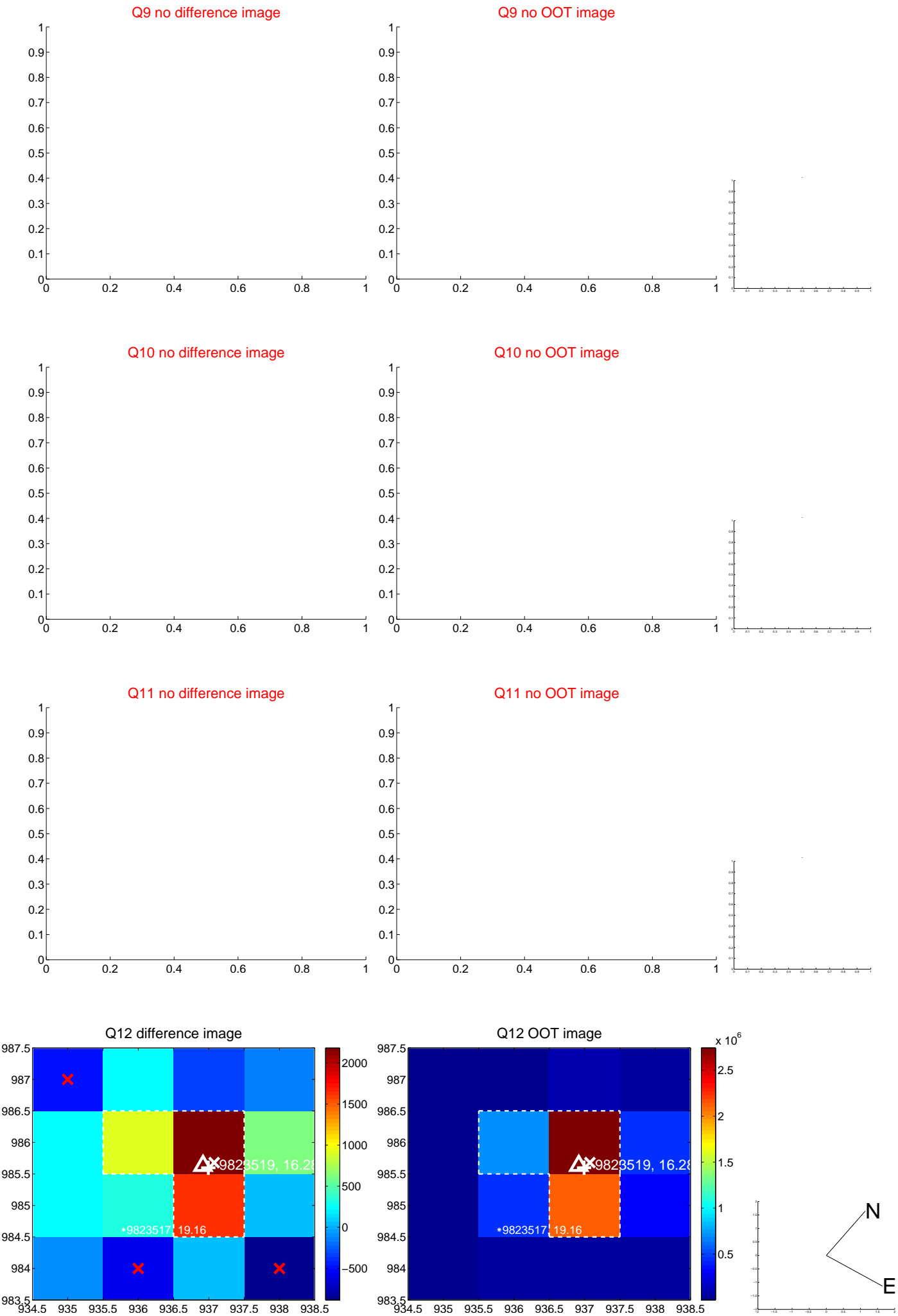
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



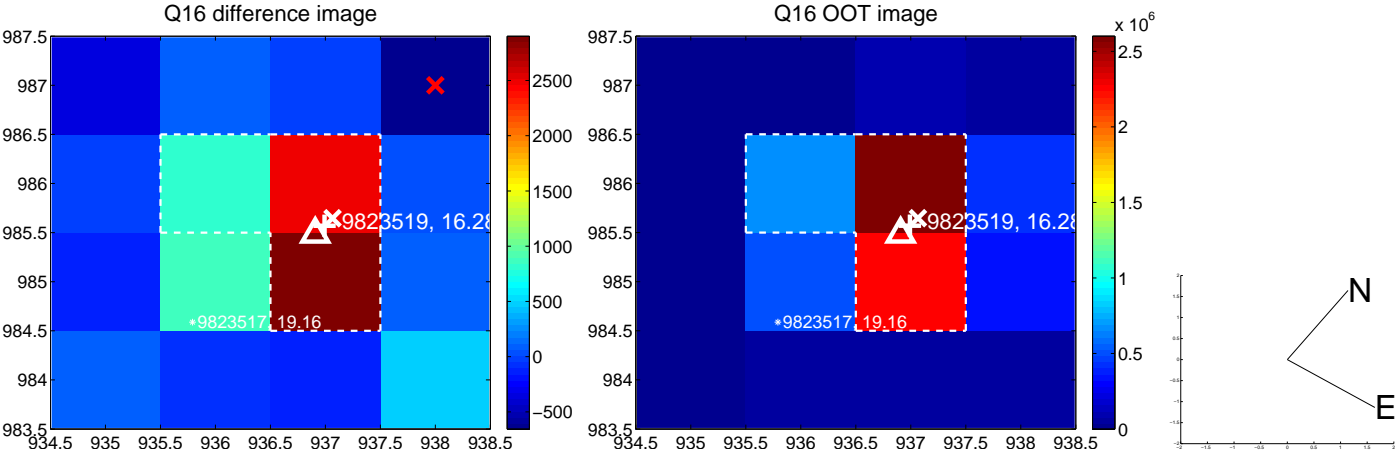
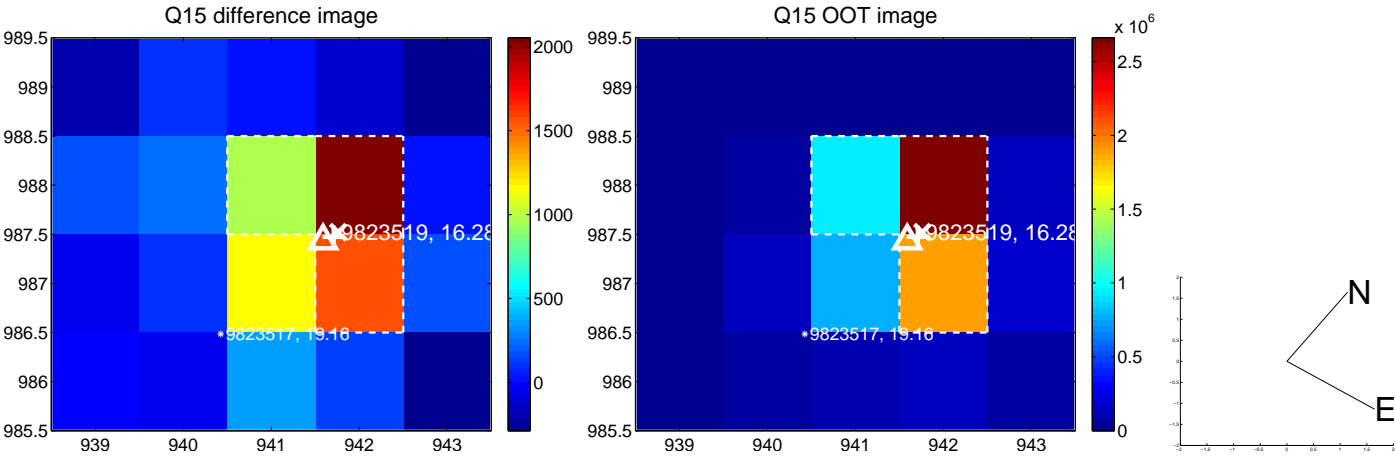
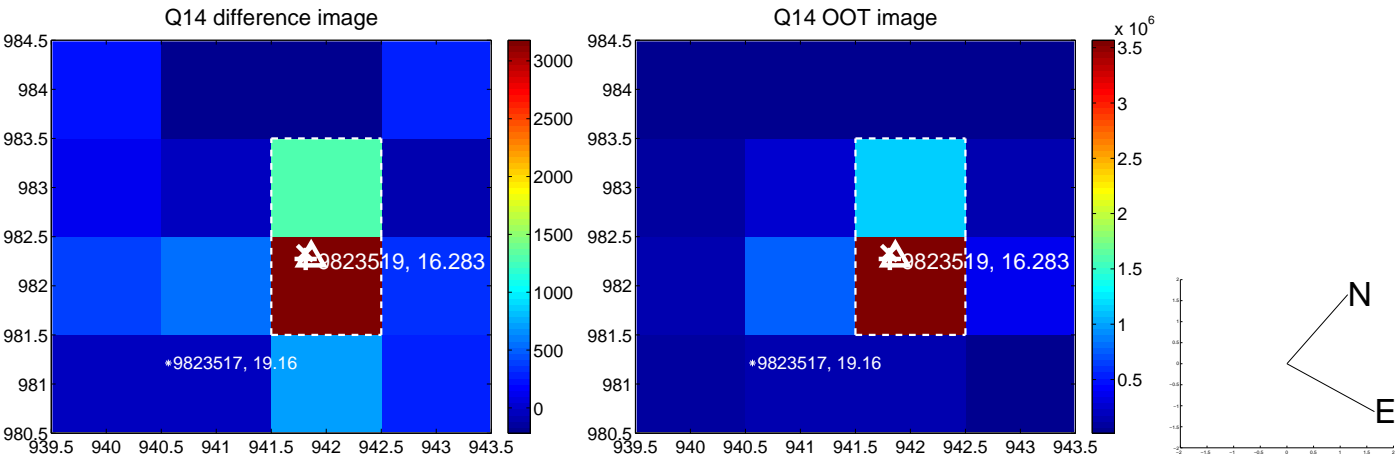
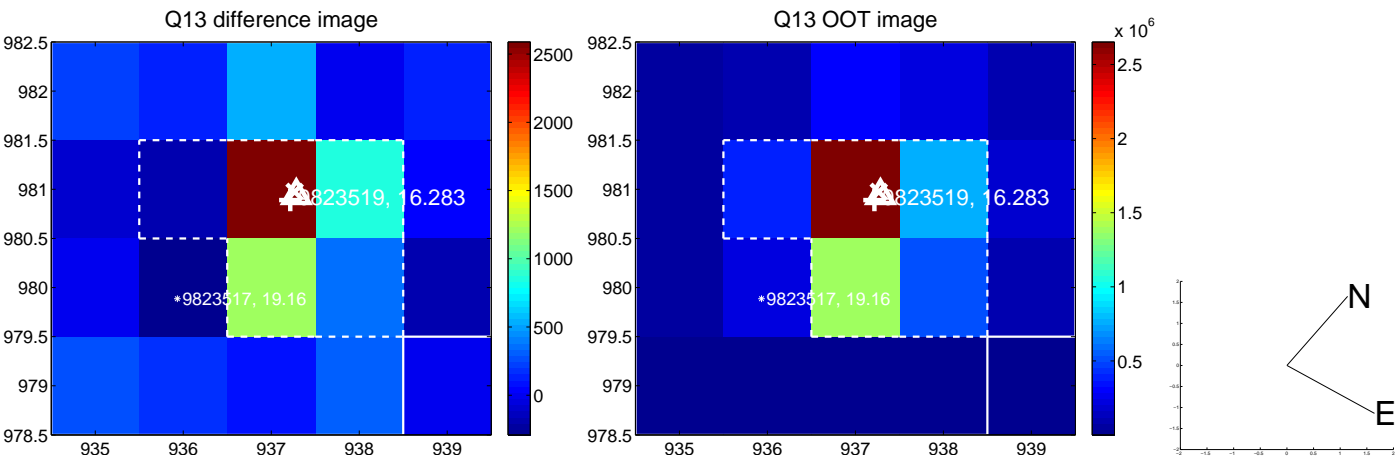
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



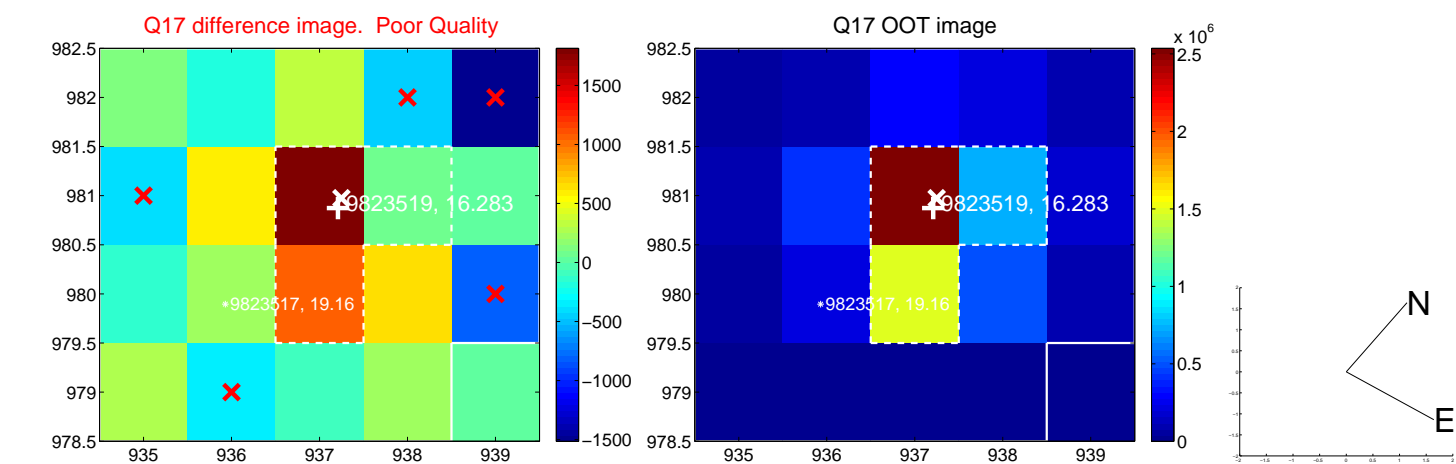
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



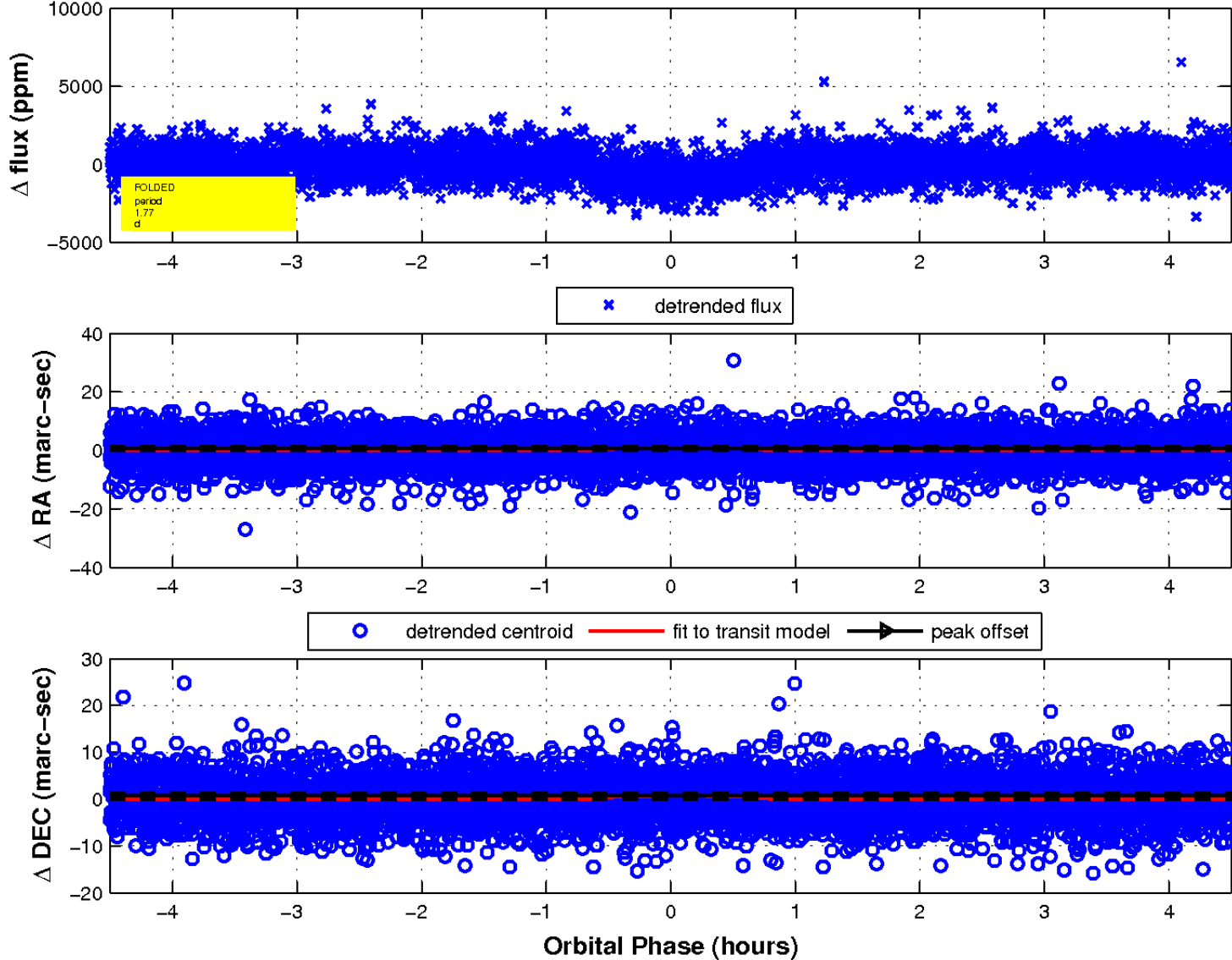
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

