

KIC 009517393

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})
009517393-01	OBS	2076.02	219.321556	320.728206	3575.0	12.336	55.7	64.8	1.01	6063	6.04	2.27
009517393-02	OBS	2076.01	56.777074	181.097156	870.3	6.877	25.1	27.5	1.01	6063	3.21	13.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009517393-01	OBS	PC	1.00	0	0	0	0	CENT_FEW_DIFFS
009517393-02	OBS	PC	0.99	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.

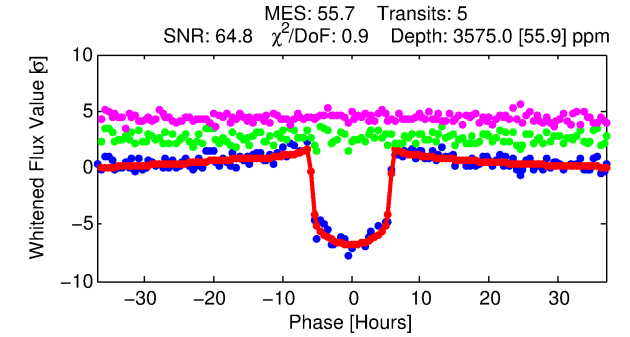
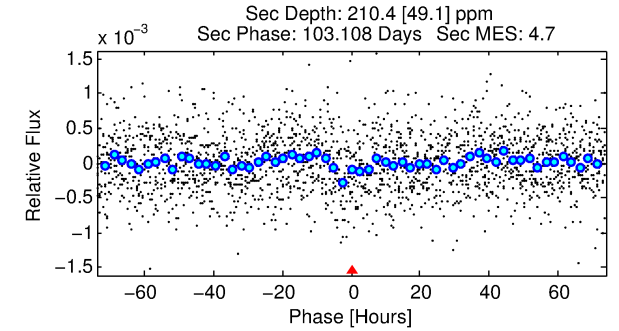
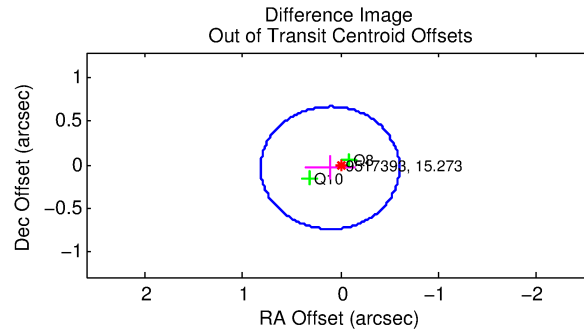
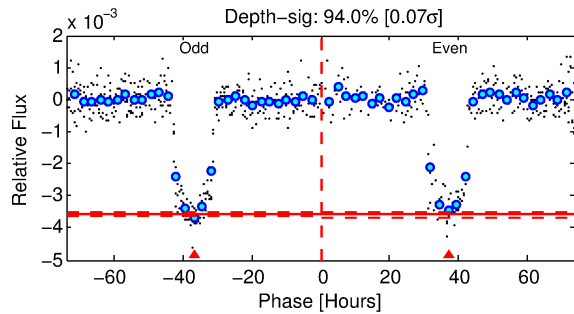
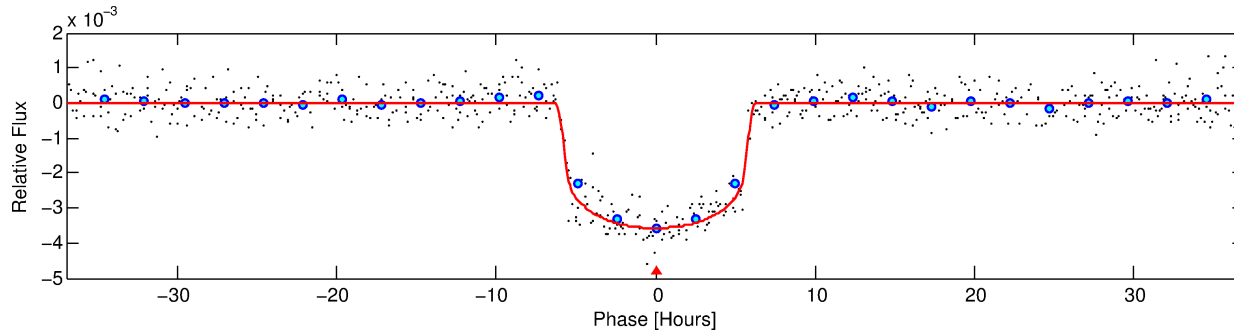
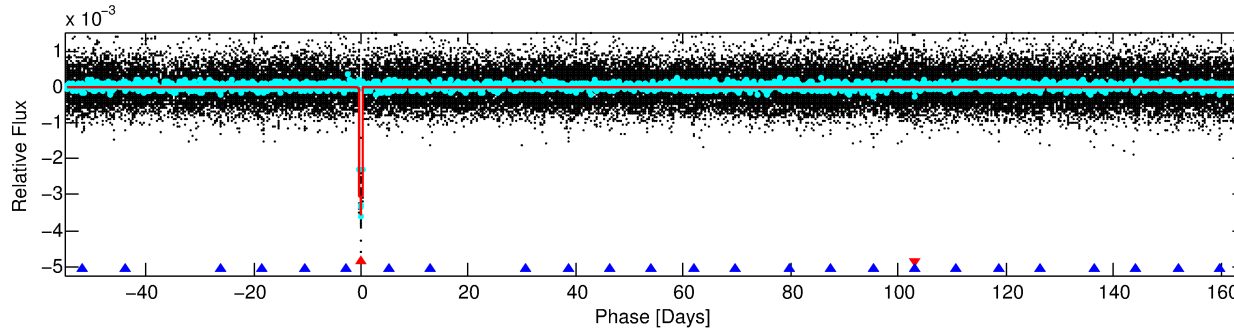
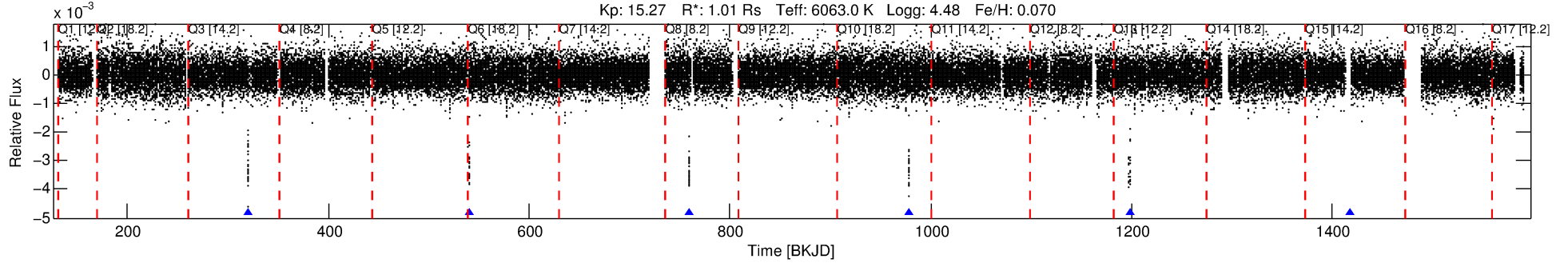
Ephemeris Match Information For 009517393-01

No Significant Match Found

DV One-Page Summary

KIC: 9517393 Candidate: 1 of 2 Period: 219.322 d

KOI: K02076.02 Corr: 0.999



DV Fit Results:

Period = 219.32156 [0.00094] d
Epoch = 320.7282 [0.0022] BKJD
Rp/R* = 0.0547 [0.0026]
a/R* = 140.86 [29.70]
b = 0.19 [1.07]
Seff = 2.27 [0.74]
Teq = 313 [25] K
Rp = 6.04 [1.53] Re
a = 0.7388 [0.1543] AU
Ag = 1729.43 [680.82] [2.54 σ]
Teffp = 3121 [217] K [12.84 σ]

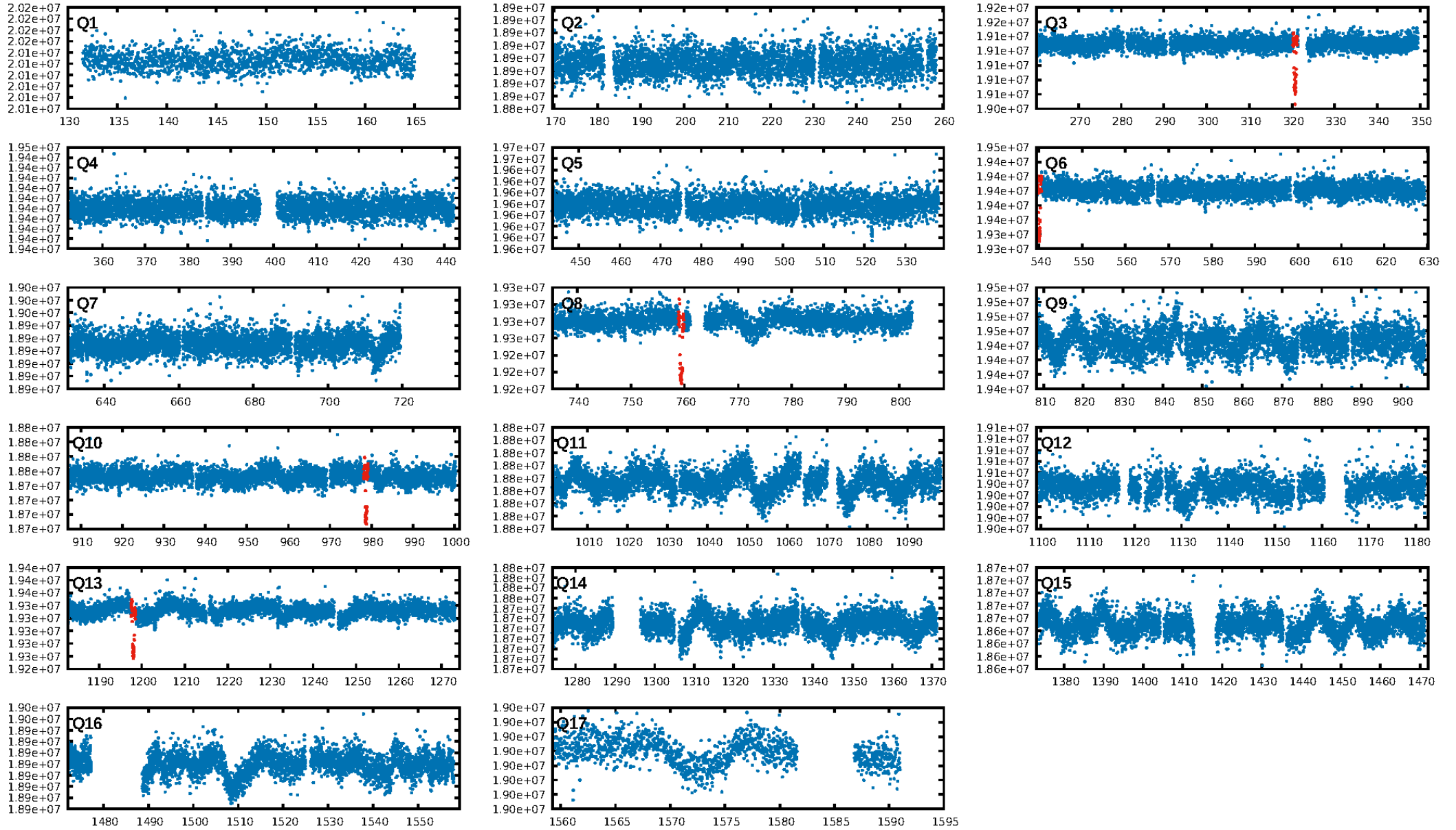
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [276.21 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 69.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.84e-275
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 5.911
Centroid-sig: 0.0%
Centroid-so: 0.105 arcsec [0.54 σ]
OotOffset-rm: 0.114 arcsec [0.48 σ]
KicOffset-rm: 0.144 arcsec [0.50 σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

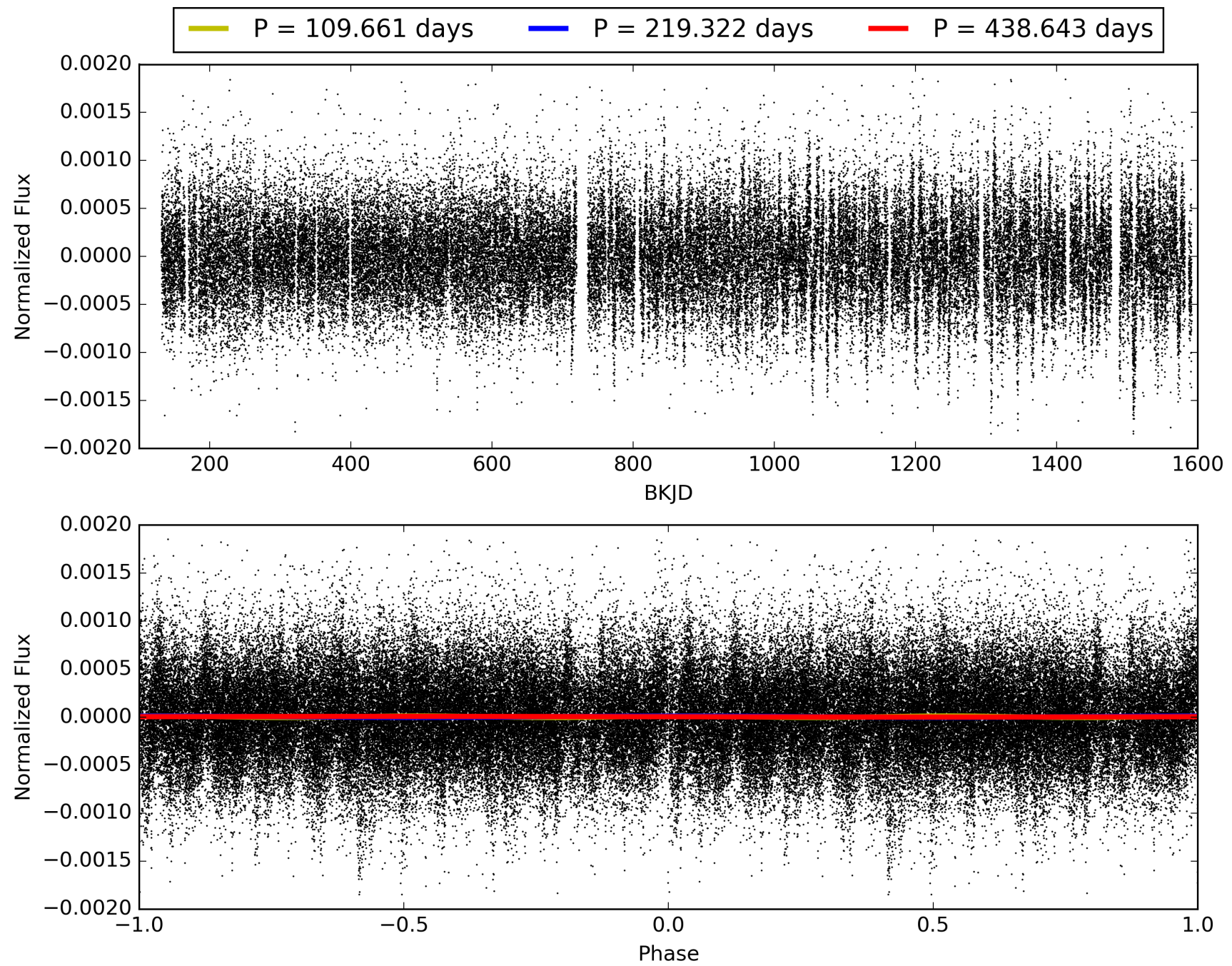
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 23:43:17 Z

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

TCE 009517393-01, PDC Light Curves

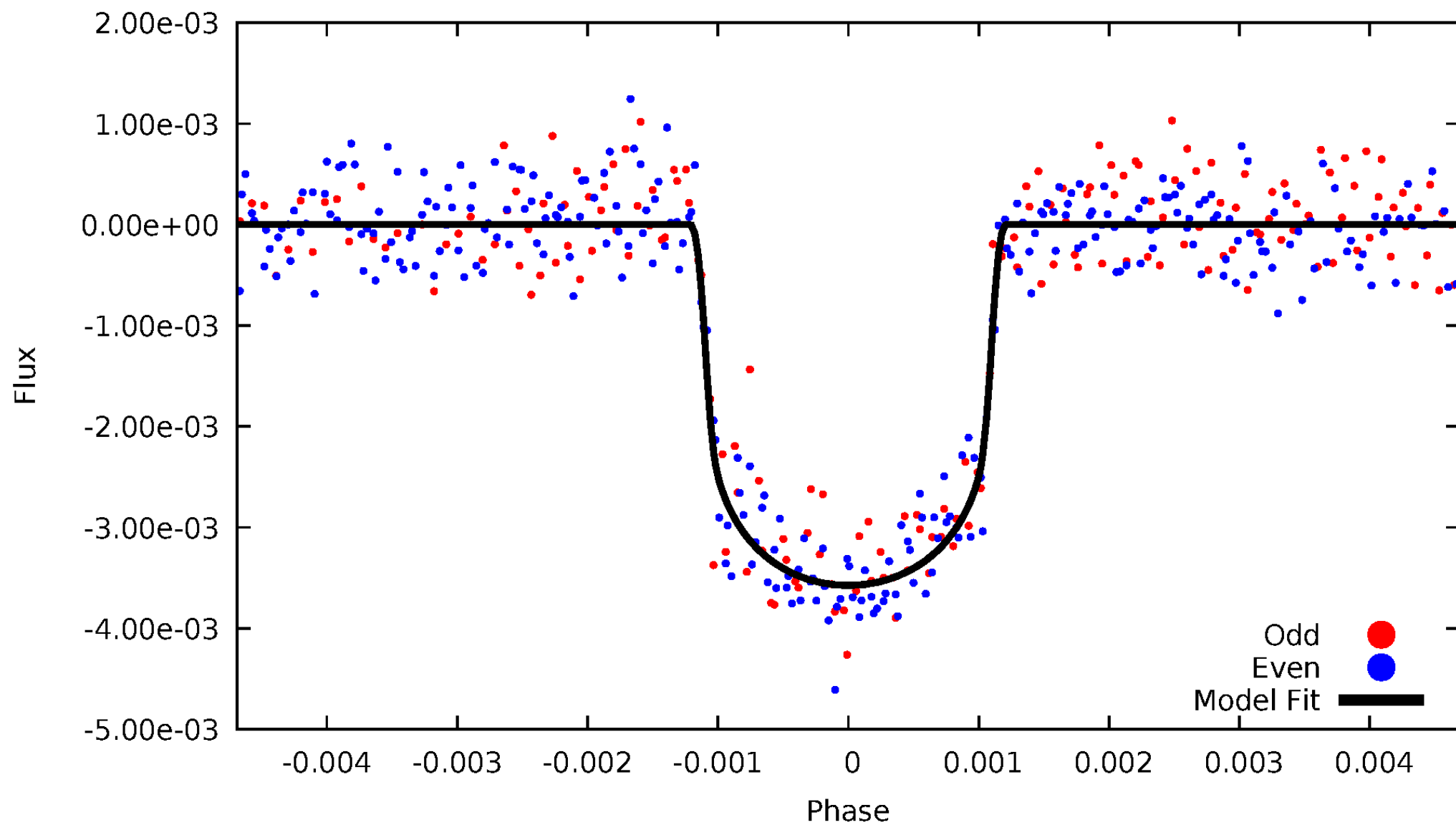


TCE 009517393-01



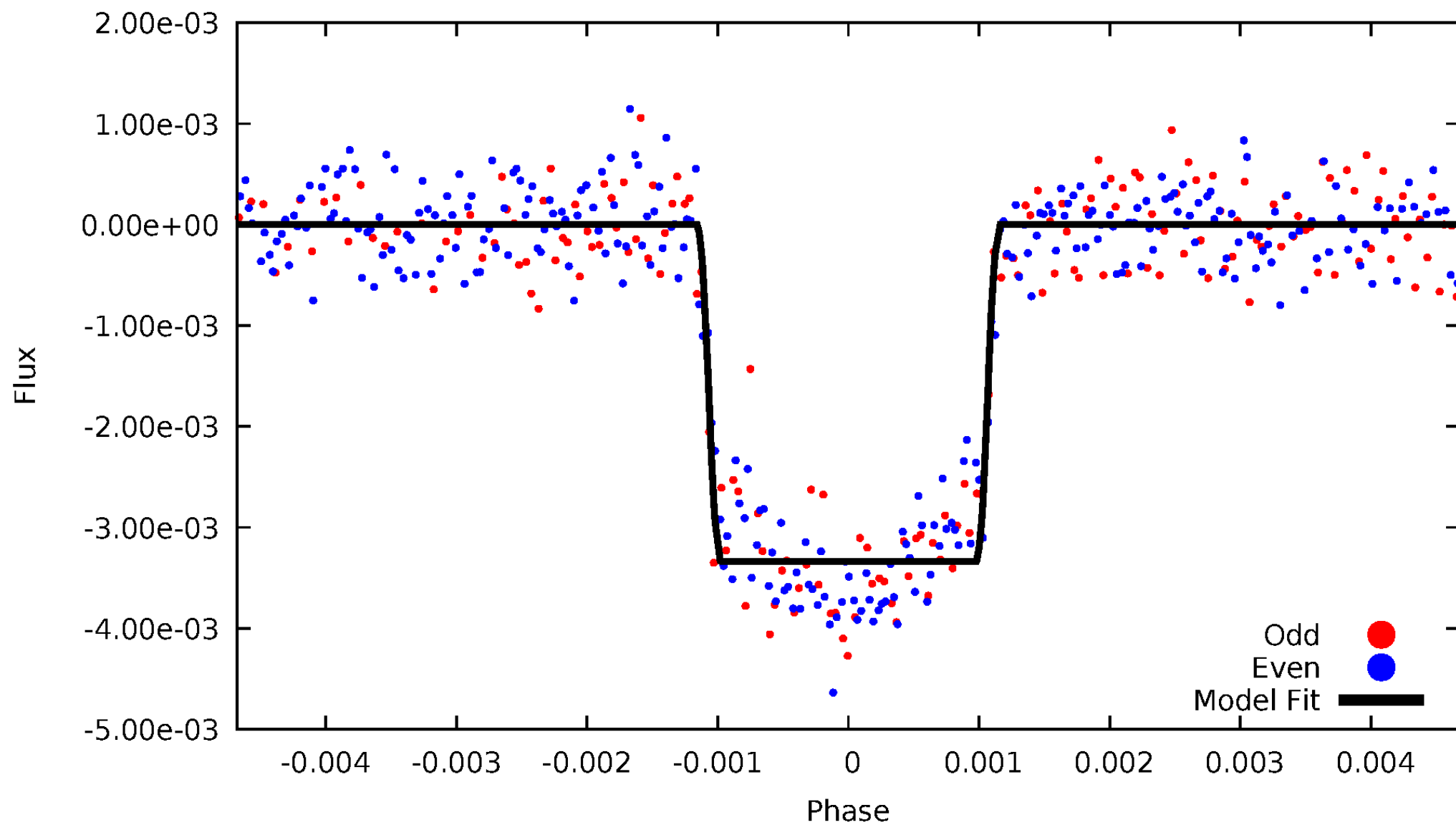
DV Odd/Even

TCE 009517393-01



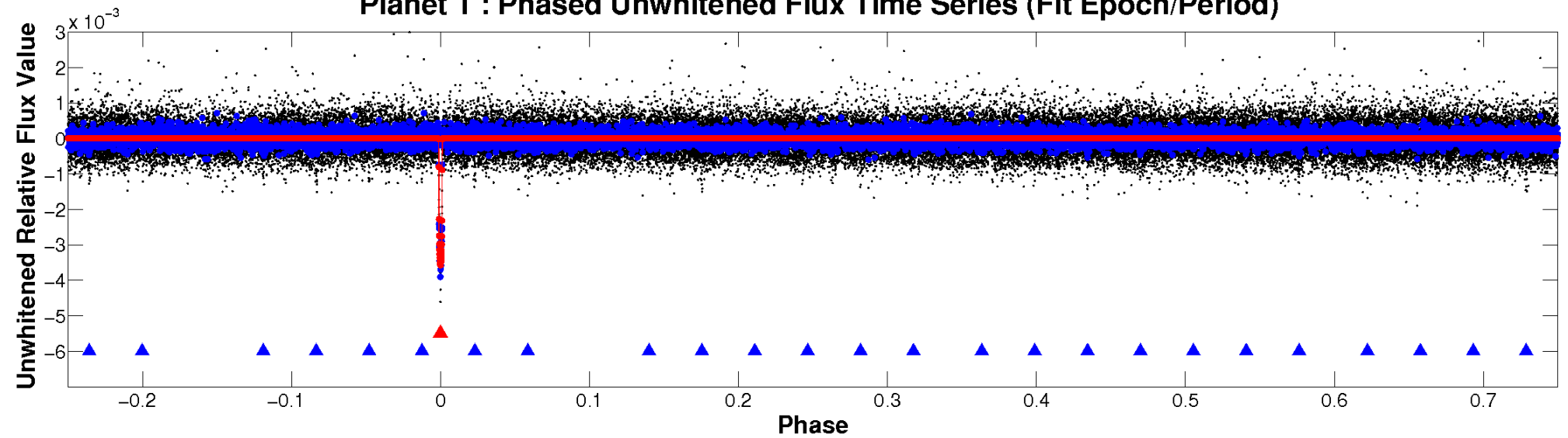
ALT Odd/Even

TCE 009517393-01

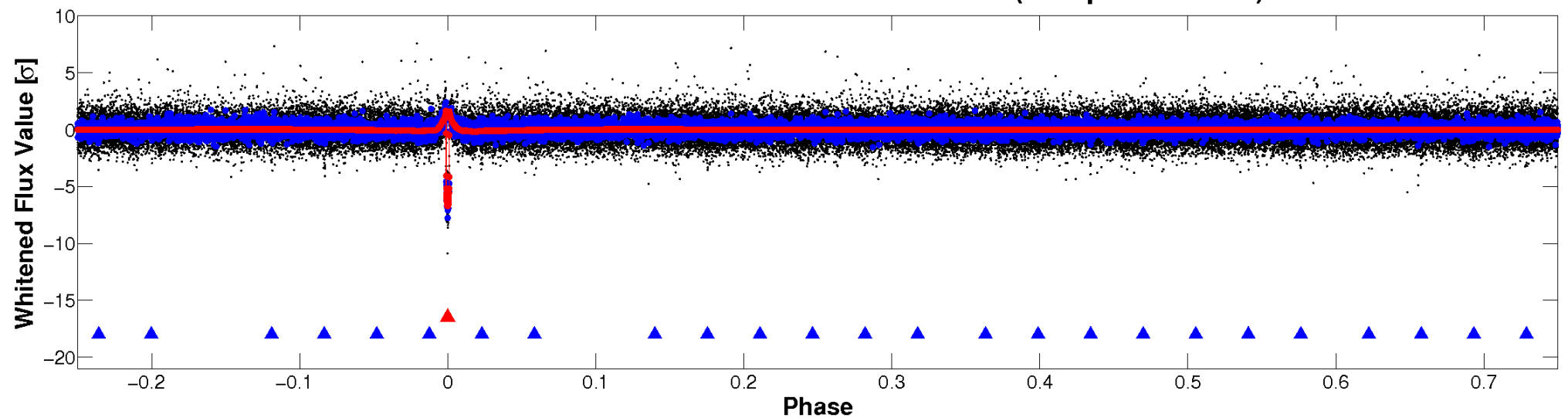


Non-Whitened Vs. Whitened Light Curve

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

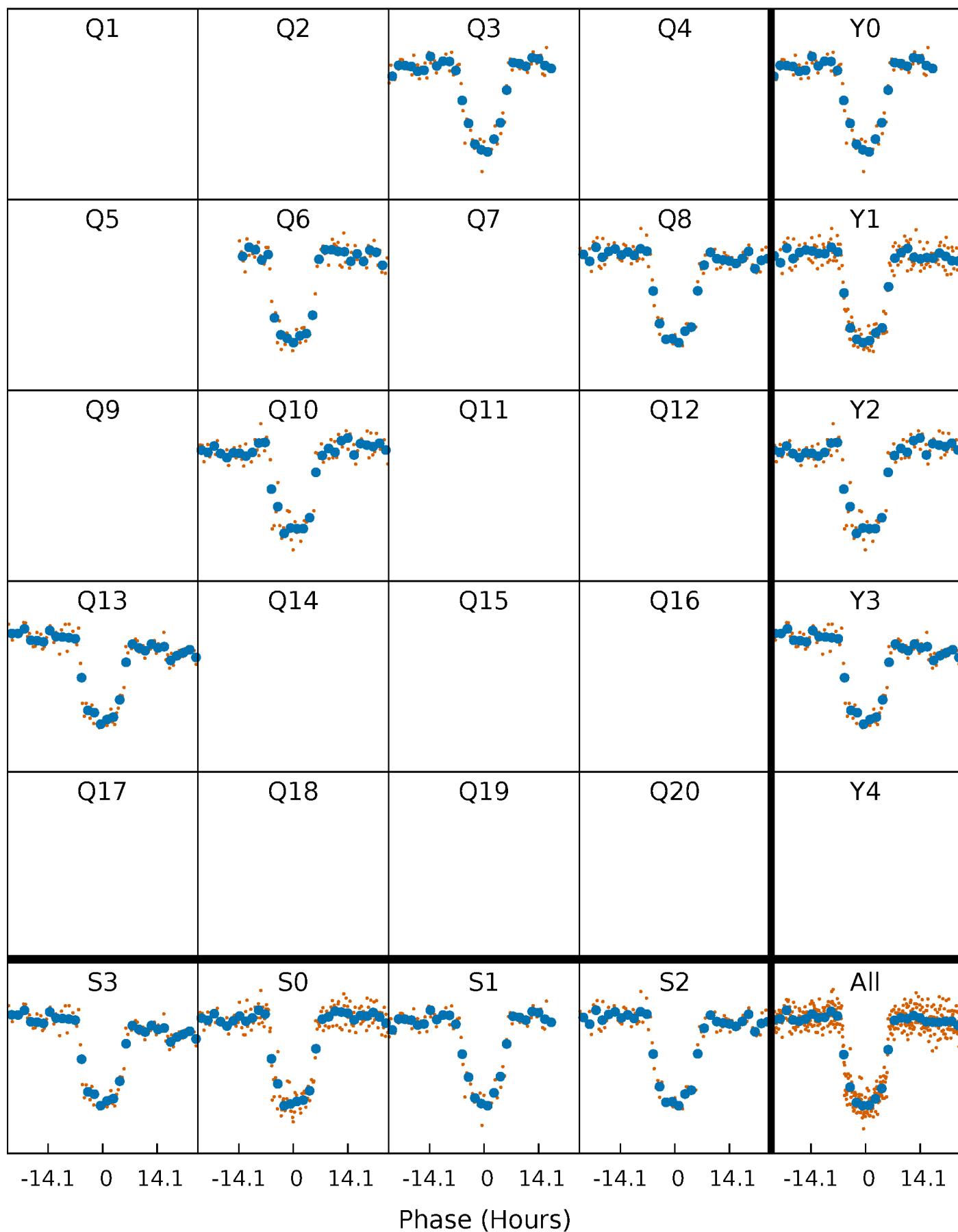


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



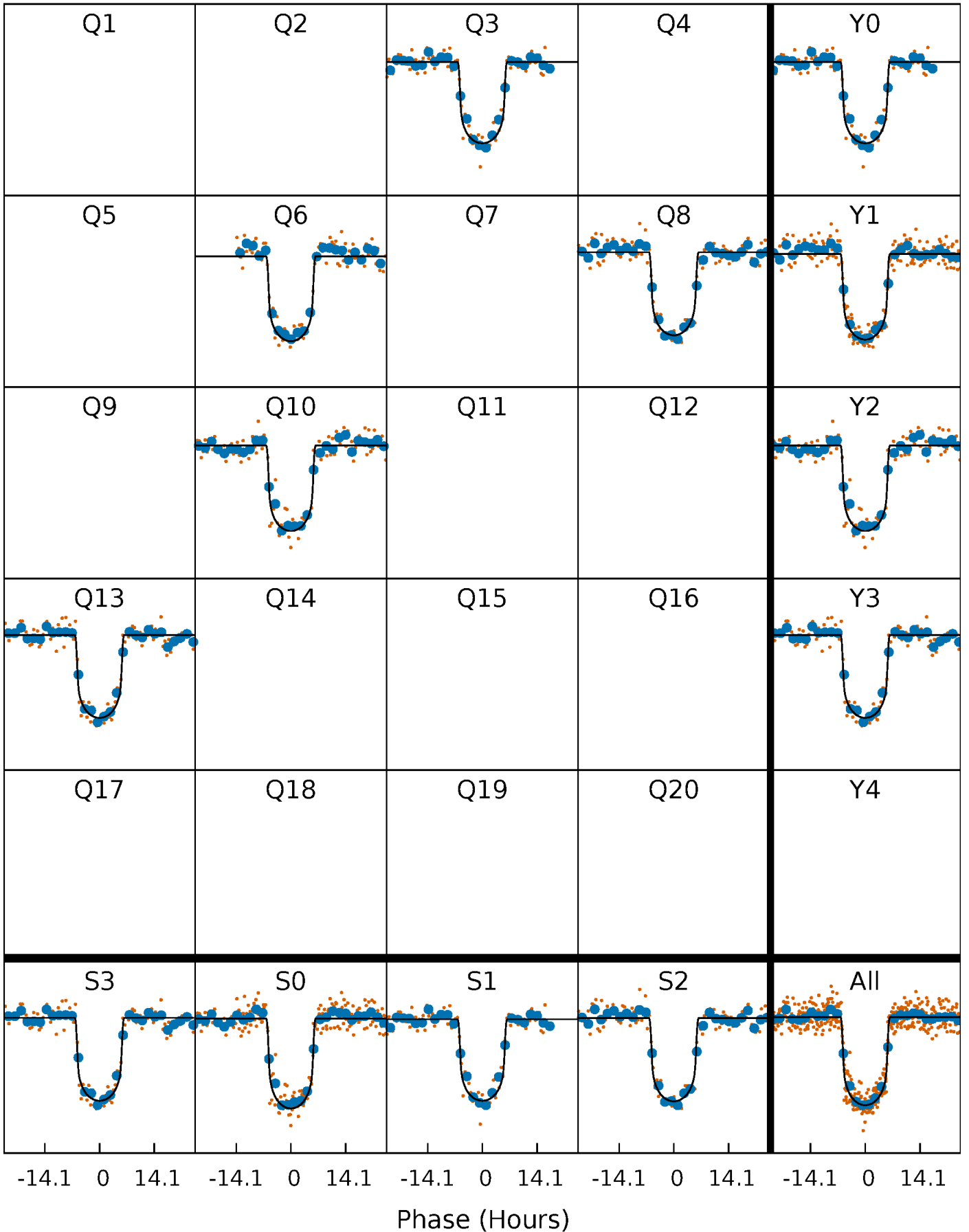
PDC Quarter-Phased Transit Curves

TCE 009517393-01 P=219.321556 Days $T_0=320.728206$ (BKJD)



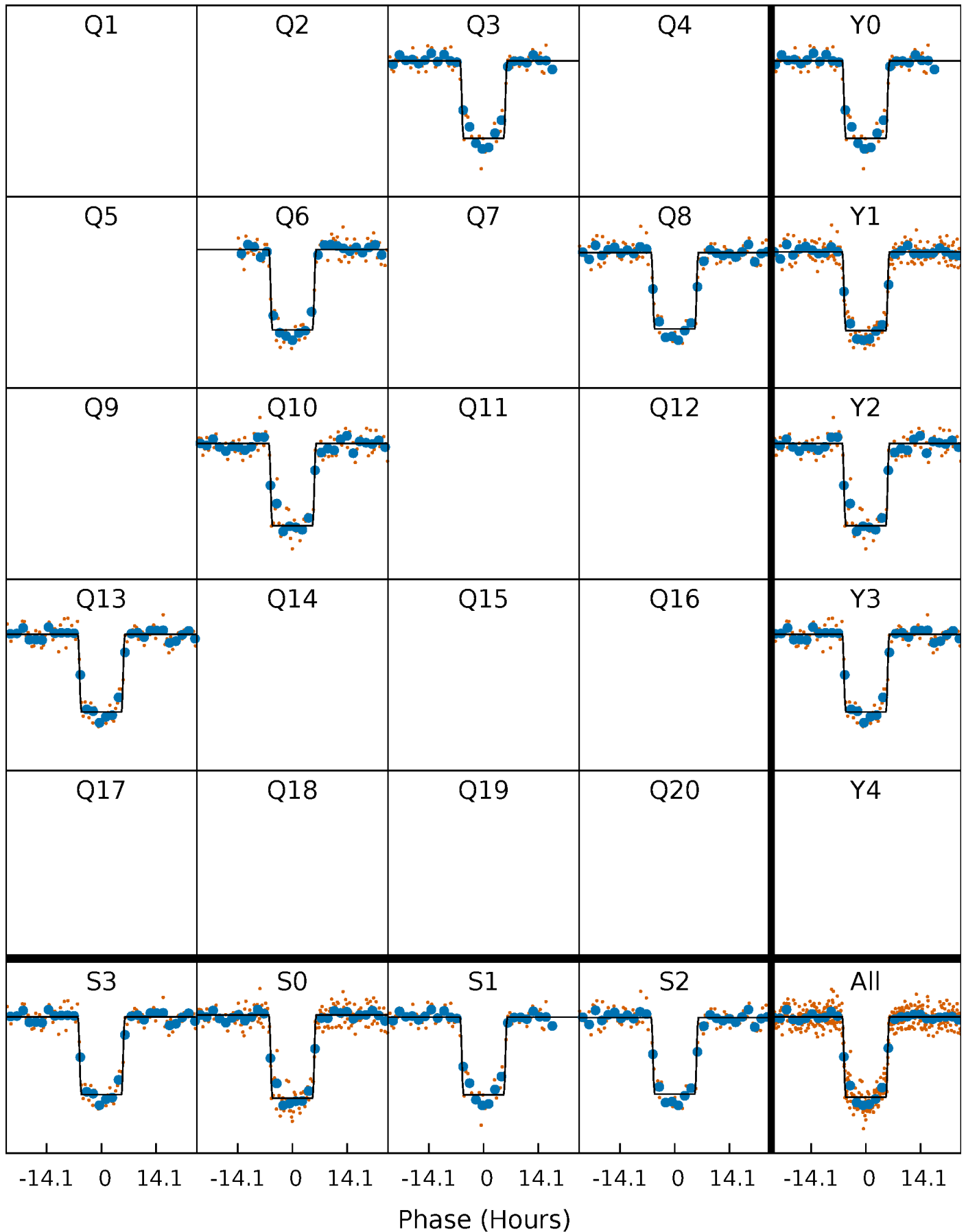
DV Quarter-Phased Transit Curves

TCE 009517393-01 P=219.321556 Days $T_0=320.728206$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

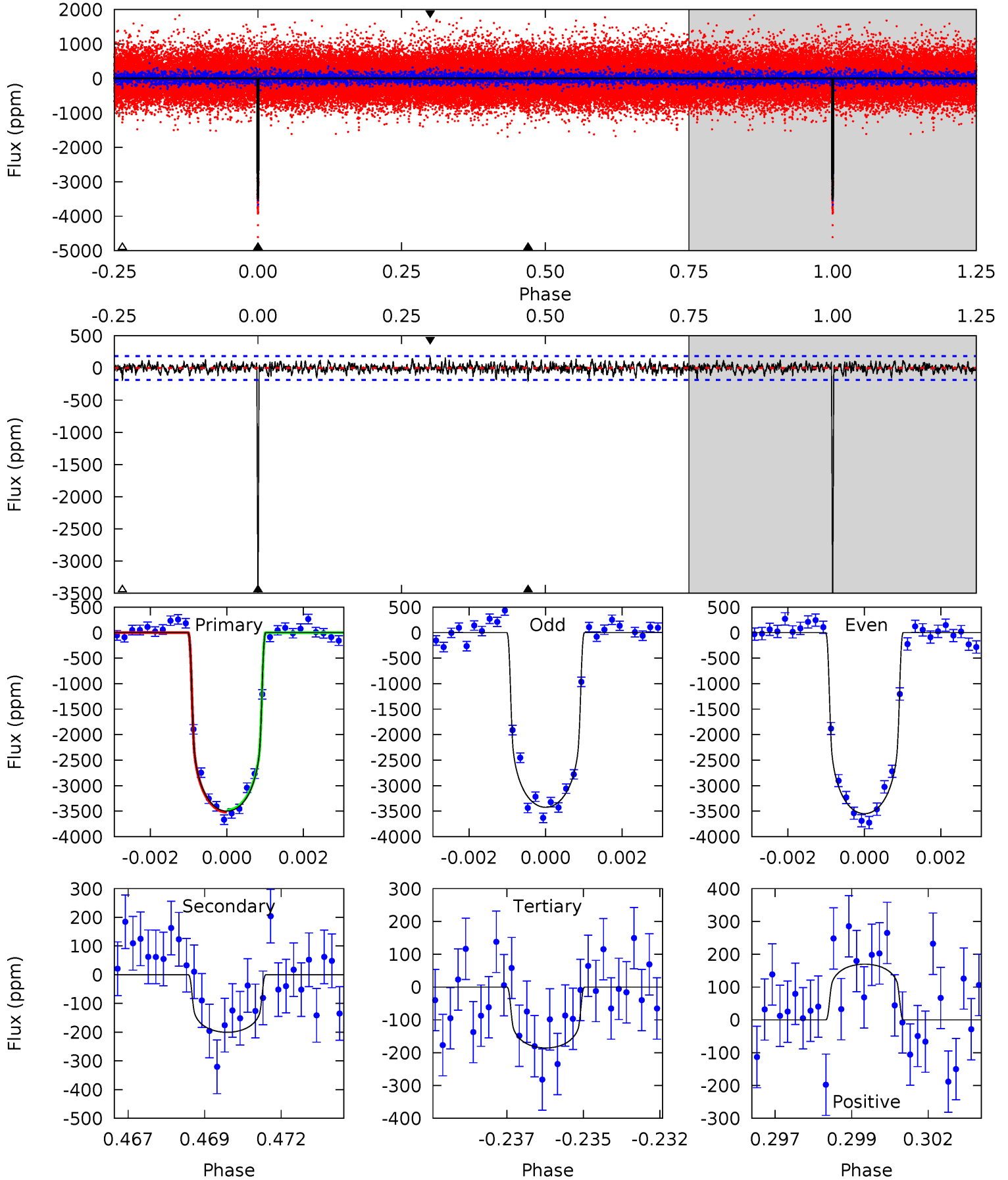
TCE 009517393-01 P=219.320211 Days $T_0=320.731293$ (BKJD)



DV Model-Shift Uniqueness Test

009517393-01, P = 219.321556 Days, E = 101.406650 Days

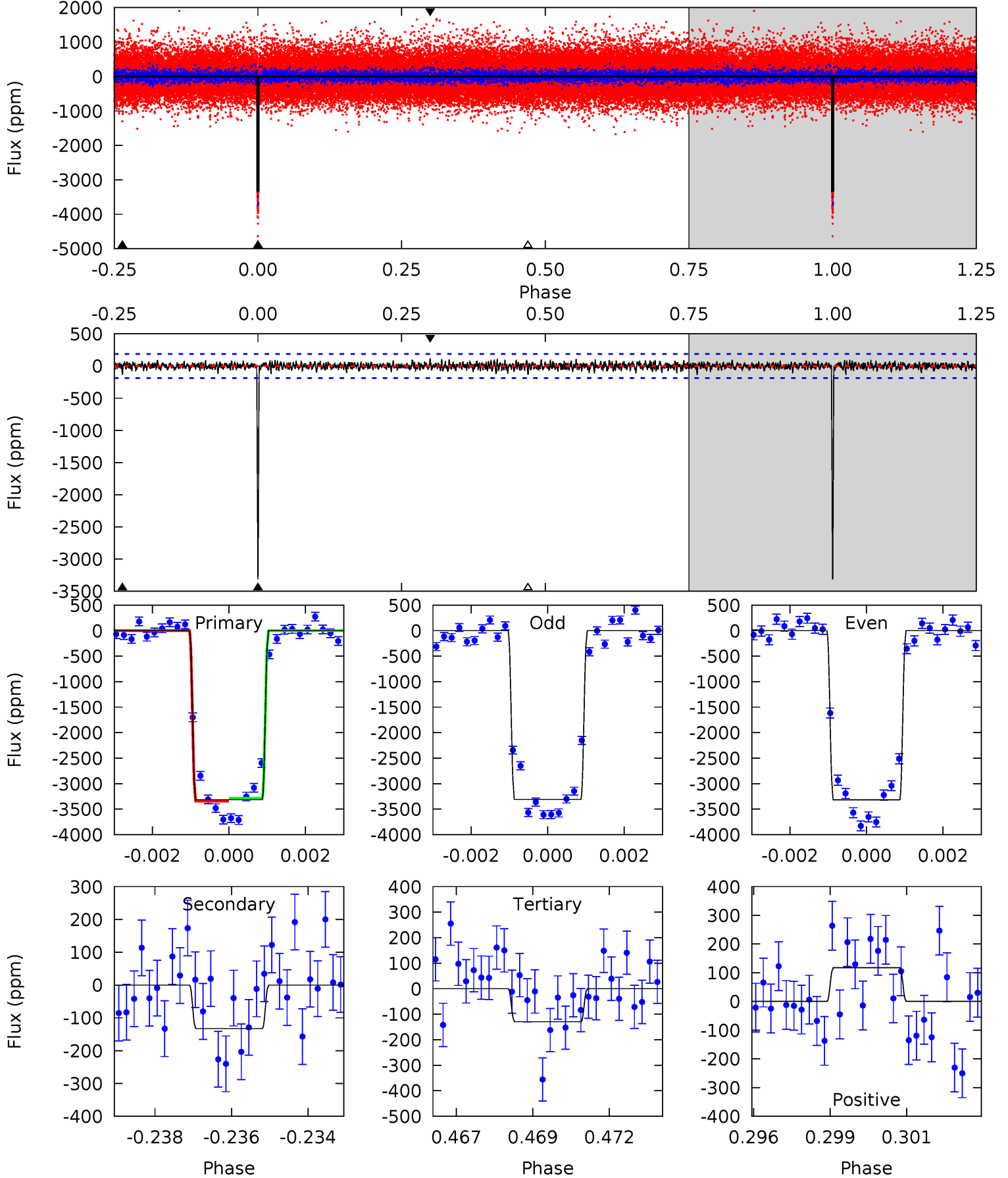
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
100.6	5.76	5.34	4.88	5.29	3.04	1.38	95.3	95.7	0.43	0.88	1.77	1.01	0.05	0.57



Alt Model-Shift Uniqueness Test

009517393-01, P = 219.320211 Days, E = 101.411082 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
94.0	3.76	3.67	3.34	5.31	3.06	0.94	90.4	90.7	0.09	0.42	0.13	1.00	0.03	0.78



Stellar Parameters For KIC 009517393

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6063^{+181}_{-181}	$4.476^{+0.055}_{-0.165}$	$0.070^{+0.200}_{-0.350}$	$1.012^{+0.252}_{-0.108}$	$1.117^{+0.120}_{-0.160}$	$1.519^{+0.421}_{-0.657}$
	+3%/-3%	+1%/-4%	+286%/-500%	+25%/-11%	+11%/-14%	+28%/-43%
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 009517393-01 / KOI 2076.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-200 ± 35	$6.19^{+0.79}_{-0.55}$	444^{+26}_{-20}	3545^{+137}_{-139}	1516^{+425}_{-415}
Alt.	-133 ± 35	$6.46^{+0.85}_{-0.55}$	444^{+26}_{-18}	3276^{+138}_{-161}	899^{+318}_{-270}

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 $A_{obs} \gg 1.0$

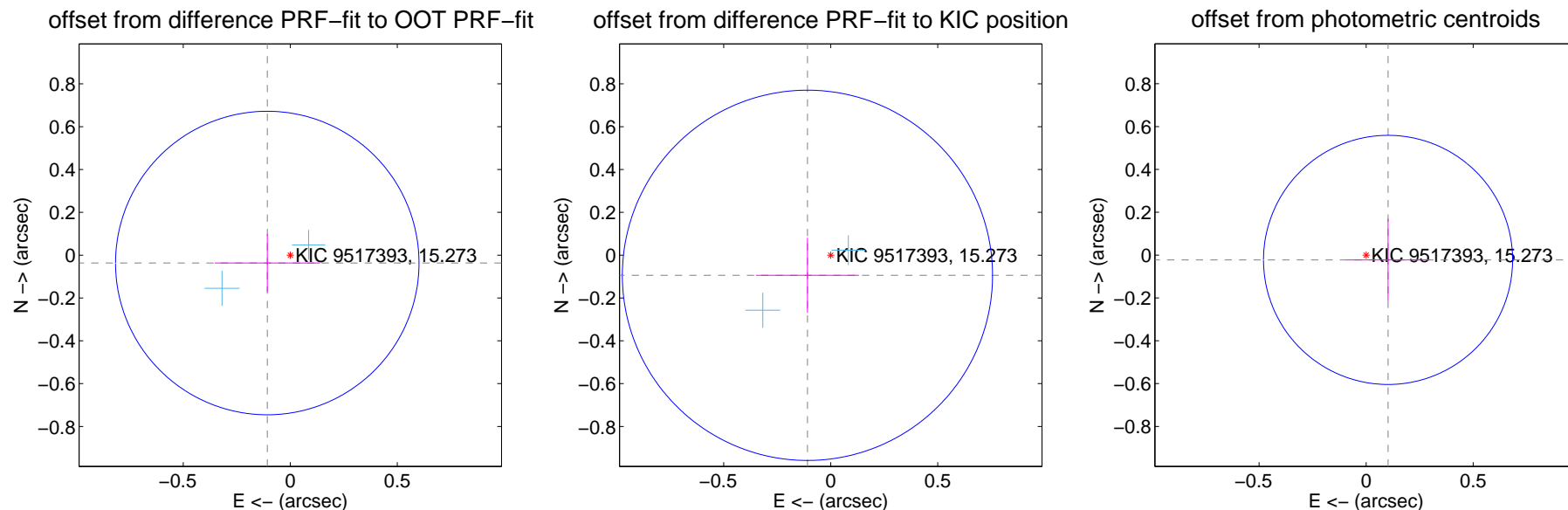
DV Centroid Data

Supplemental centroid analysis for 009517393-01. Kepler magnitude: 15.27. Transit SNR 64.78

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.114 ± 0.236	0.48	0.107 ± 0.245	-0.037 ± 0.135
PRF-fit source offset from KIC position	0.144 ± 0.288	0.50	0.109 ± 0.240	-0.094 ± 0.175
photometric centroid source offset	0.10 ± 0.19	0.54	-0.10 ± 0.19	-0.02 ± 0.19

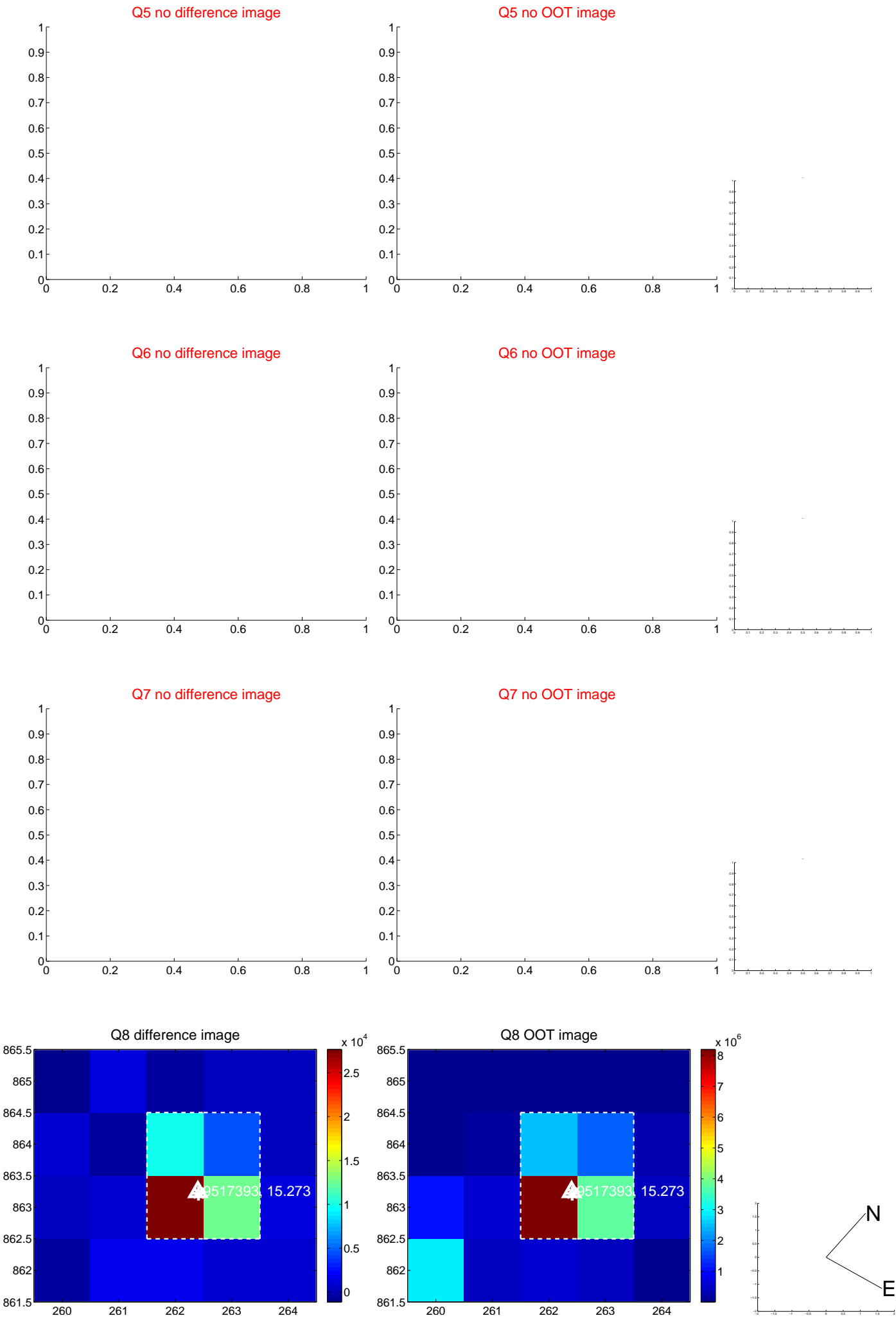


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

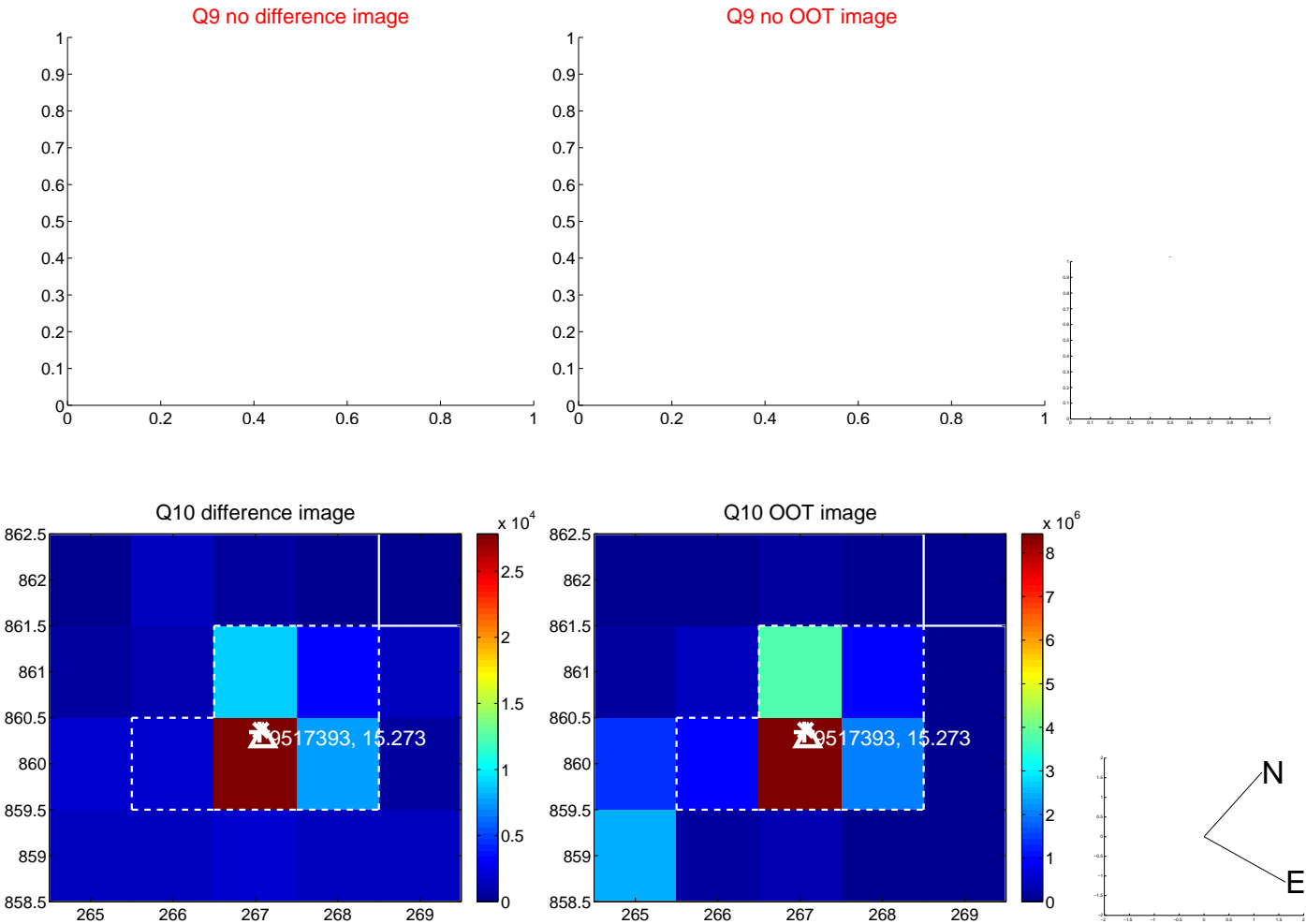
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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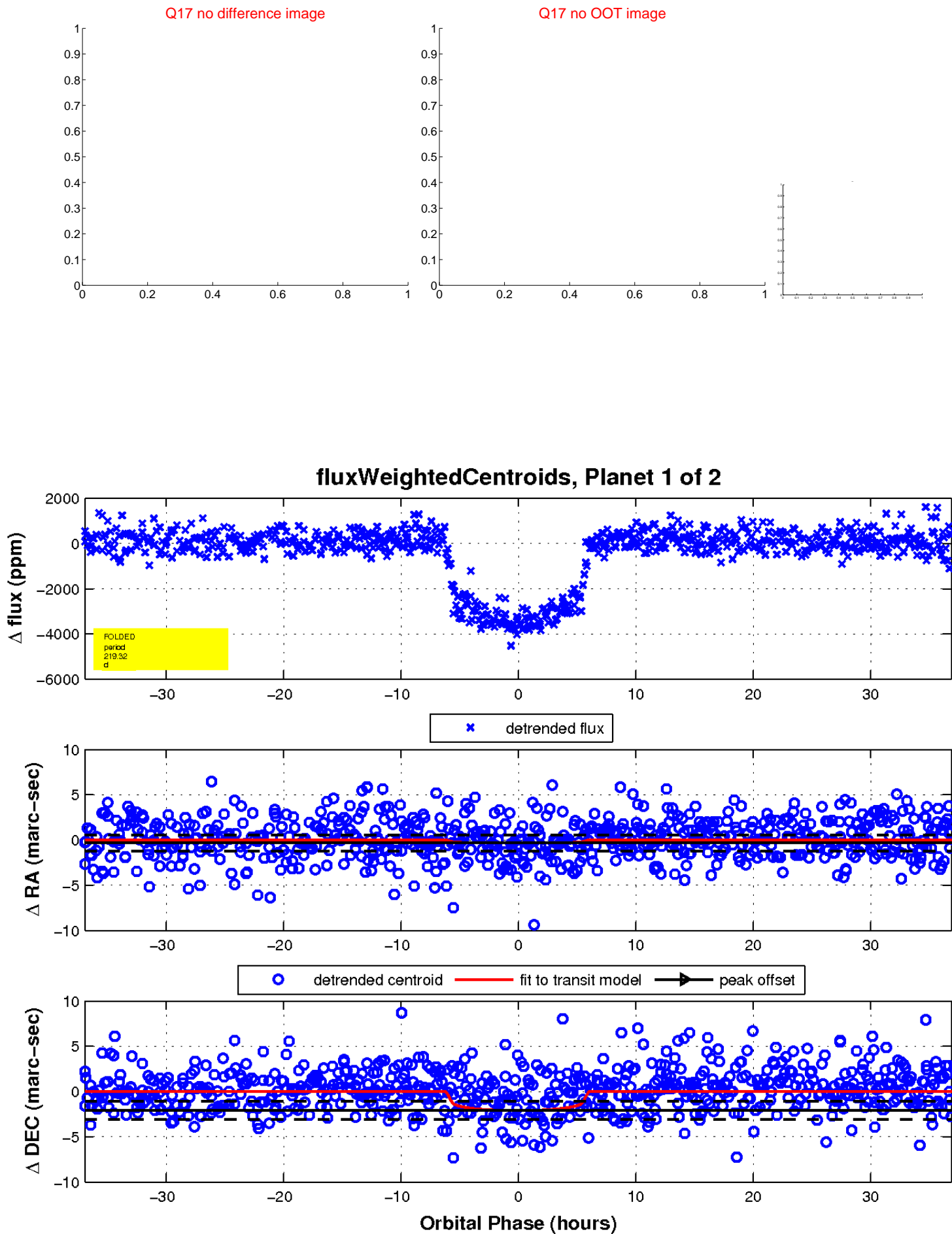
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

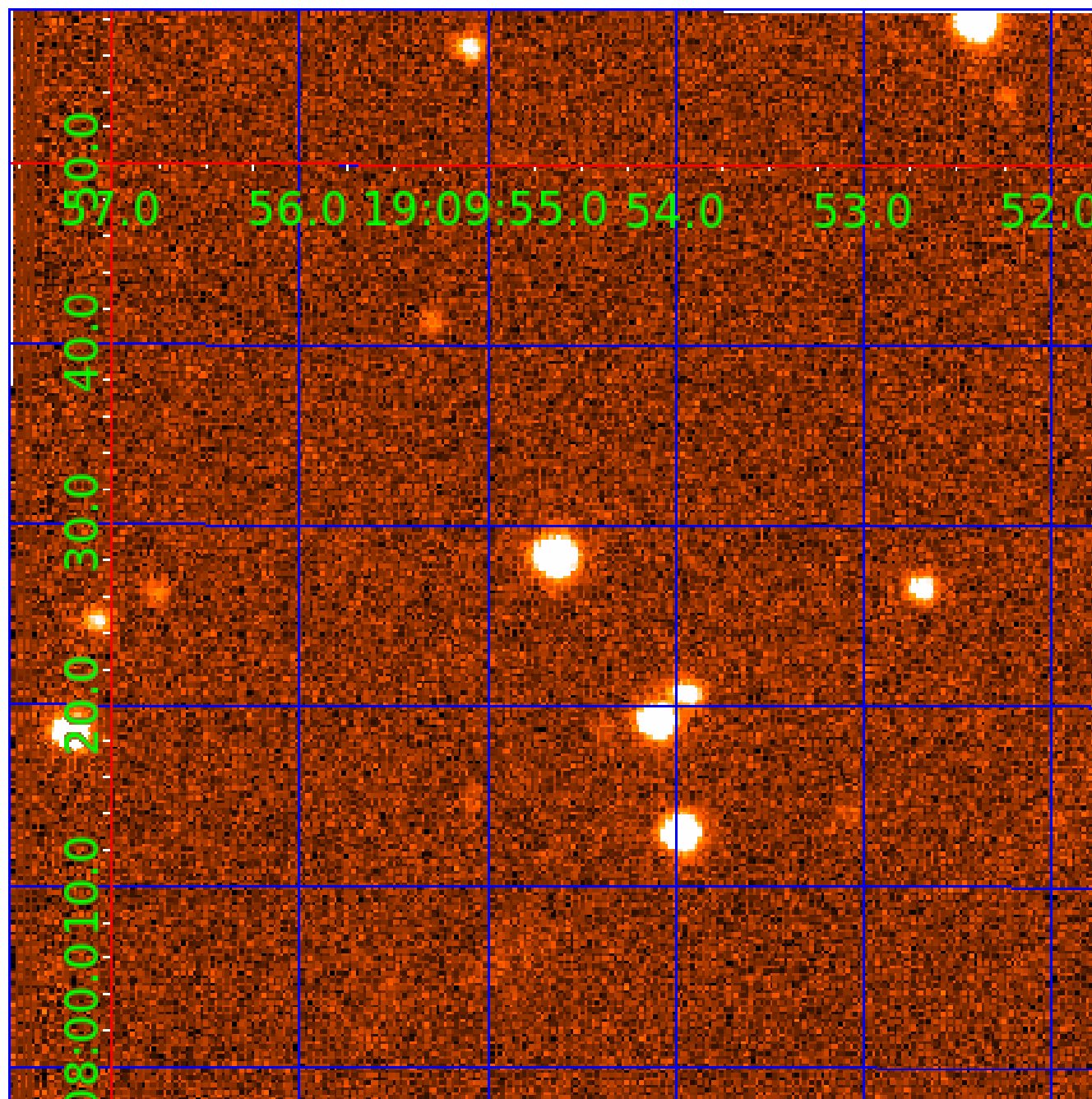


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009517393

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})
009517393-01	OBS	2076.02	219.321556	320.728206	3575.0	12.336	55.7	64.8	1.01	6063	6.04	2.27
009517393-02	OBS	2076.01	56.777074	181.097156	870.3	6.877	25.1	27.5	1.01	6063	3.21	13.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009517393-01	OBS	PC	1.00	0	0	0	0	CENT_FEW_DIFFS
009517393-02	OBS	PC	0.99	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.

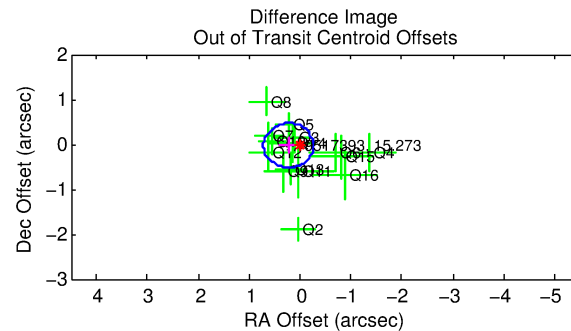
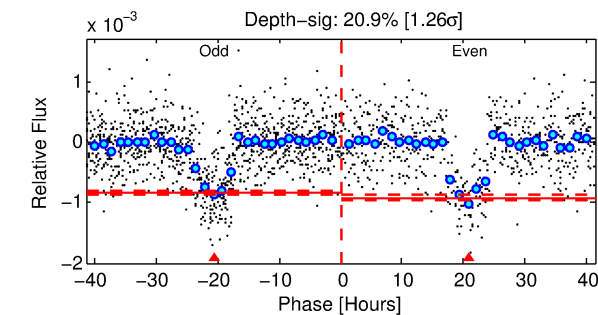
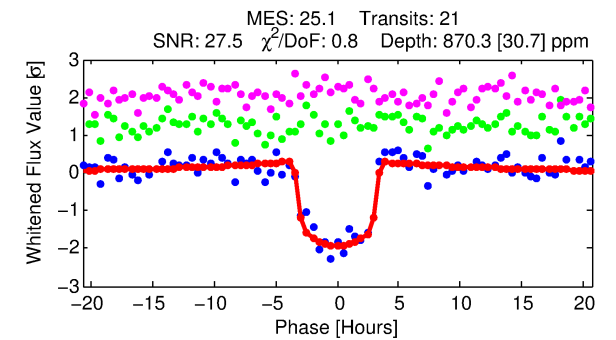
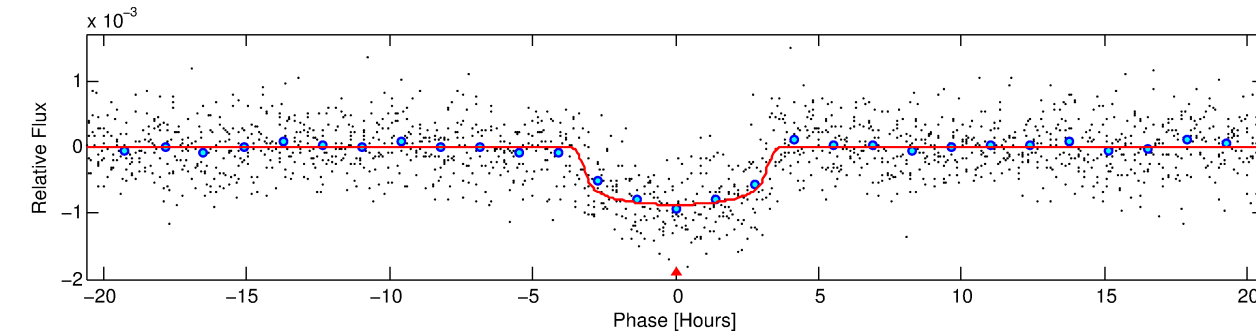
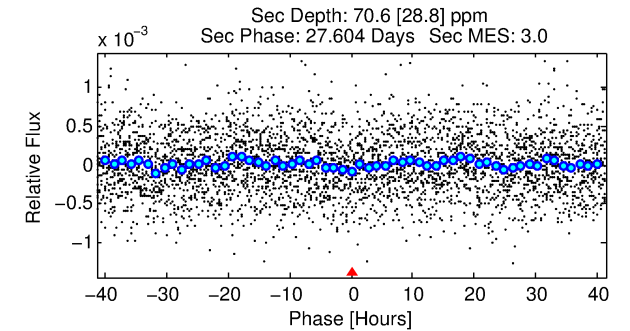
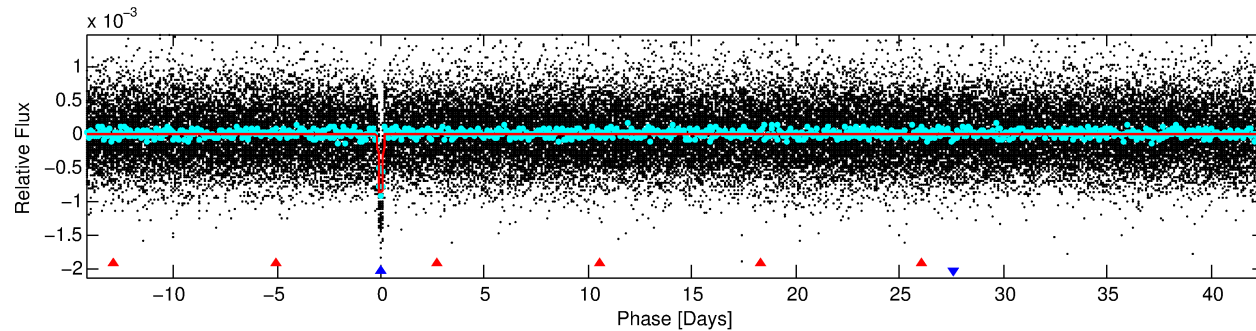
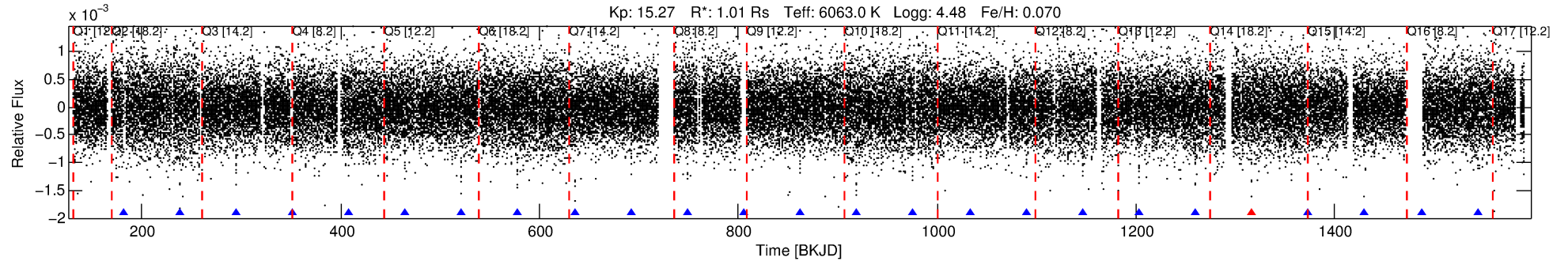
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009517393-02

No Significant Match Found

DV One-Page Summary

KIC: 9517393 Candidate: 2 of 2 Period: 56.777 d
KOI: K02076.01 Corr: 0.975



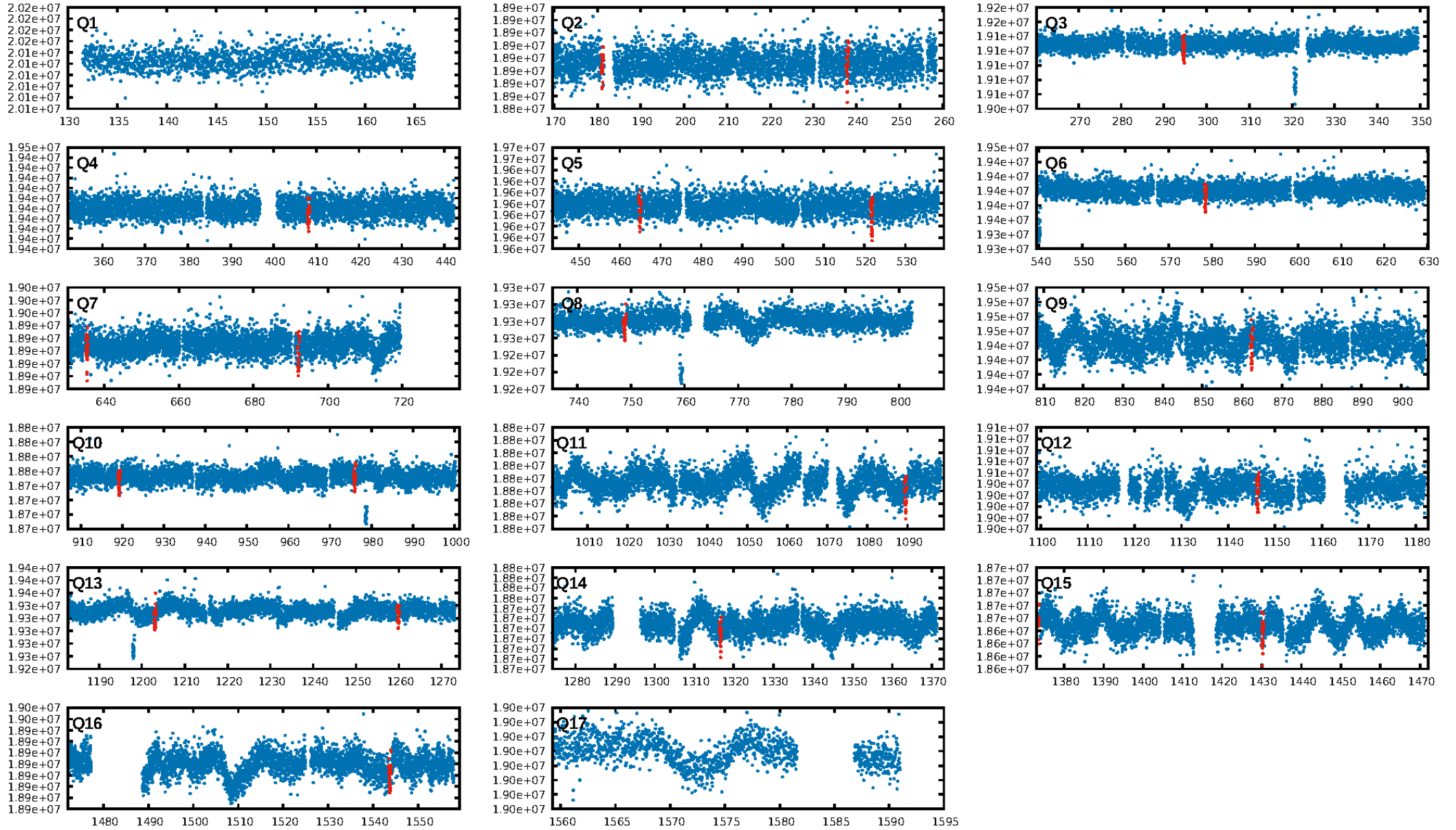
DV Fit Results:

Period = 56.77707 [0.00030] d
Epoch = 181.0972 [0.0042] BKJD
Rp/R* = 0.0291 [0.0046]
a/R* = 46.37 [34.28]
b = 0.72 [0.50]
Seff = 13.77 [4.48]
Teq = 491 [40] K
Rp = 3.21 [0.95] Re
a = 0.3001 [0.0627] AU
Ag = 339.54 [203.14] [1.67σ]
Teffp = 3260 [432] K [6.39σ]

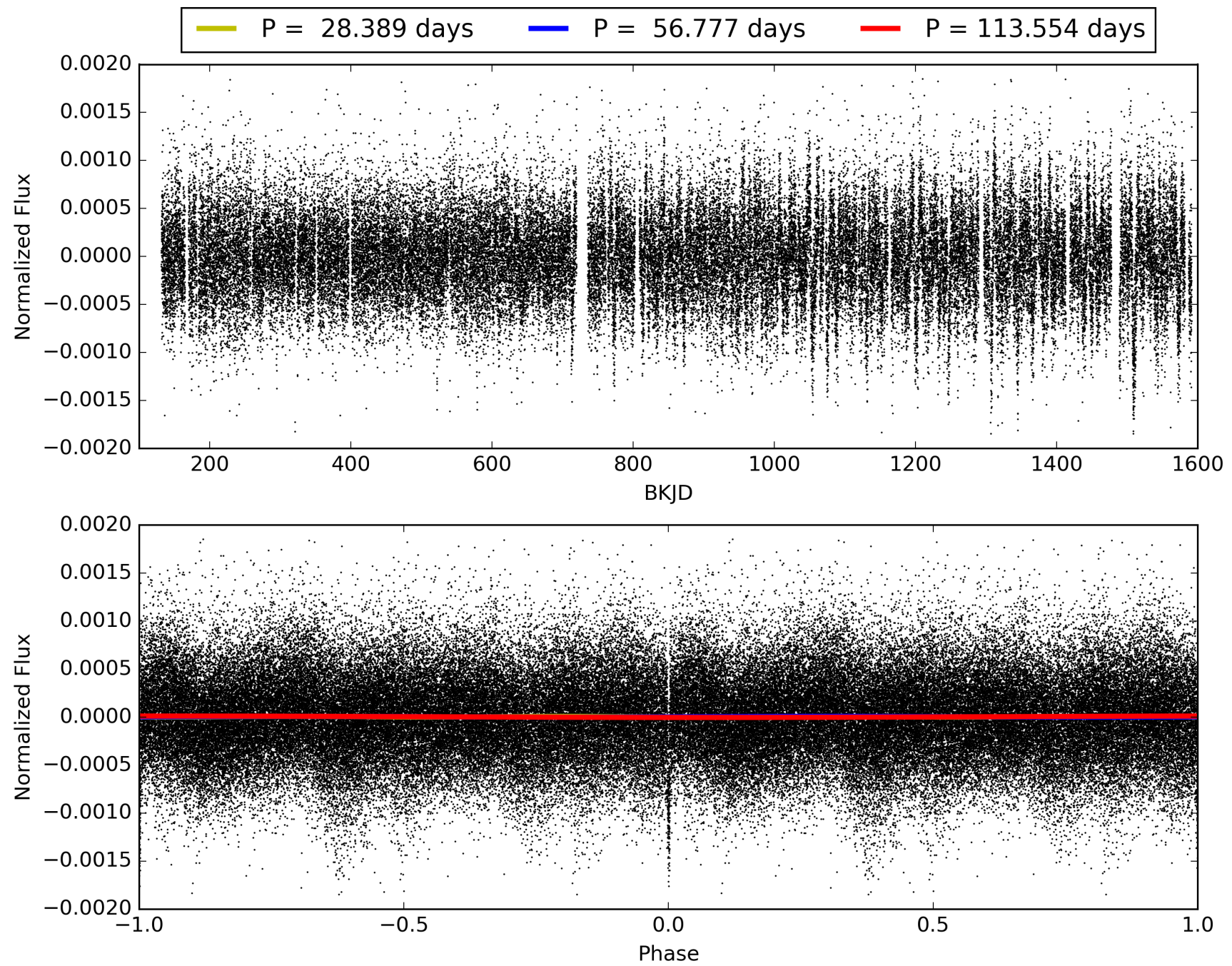
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [276.21σ]
ModelChiSquare2-sig: 77.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.92e-119
RollingBand-fgt: 0.95 [20/21]
GhostDiagnostic-chr: 14
Centroid-sig: 0.0%
Centroid-so: 0.874 arcsec [1.65σ]
OotOffset-rm: 0.228 arcsec [1.39σ]
KicOffset-rm: 0.253 arcsec [1.55σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 1.00 [15/15]

TCE 009517393-02, PDC Light Curves

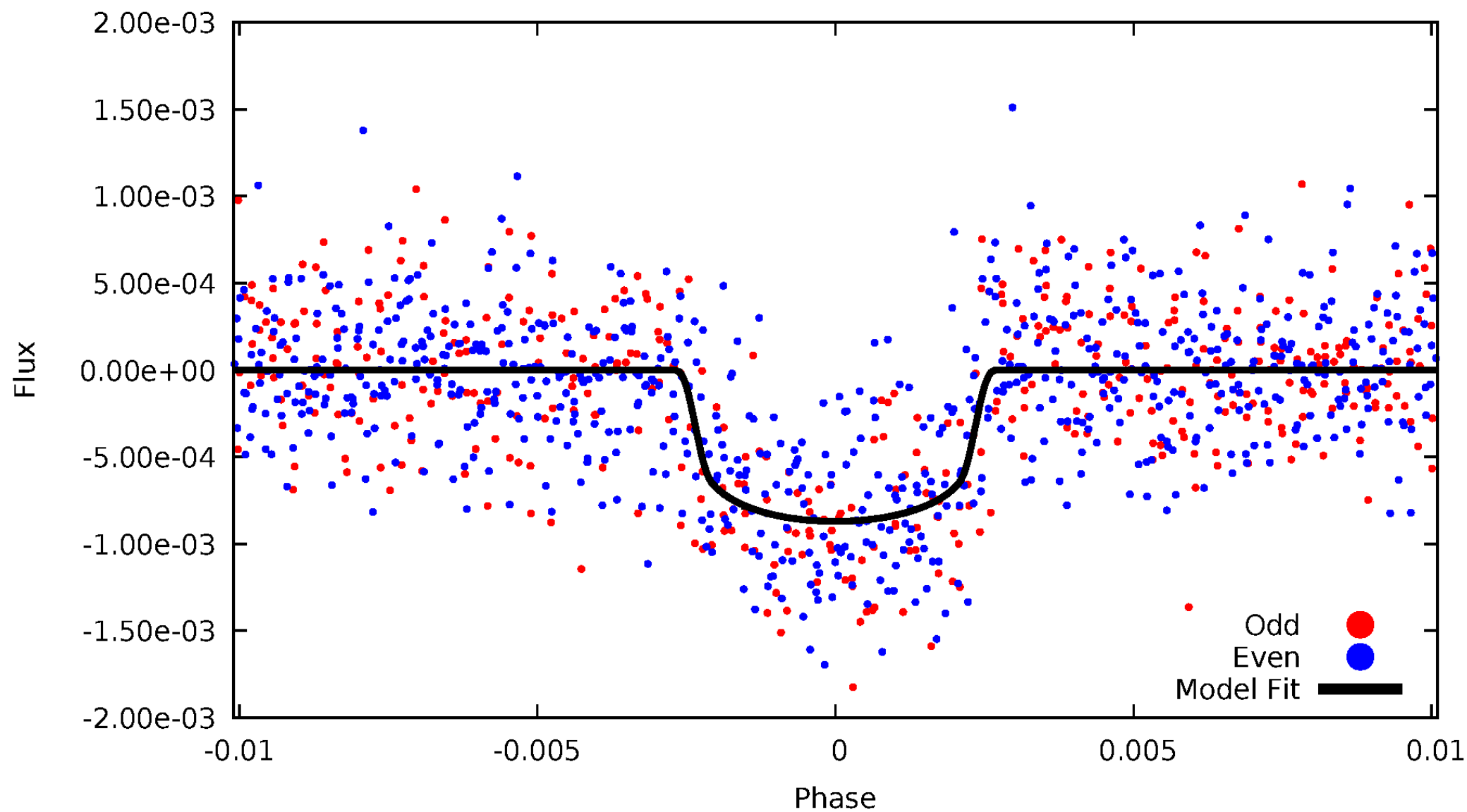


TCE 009517393-02



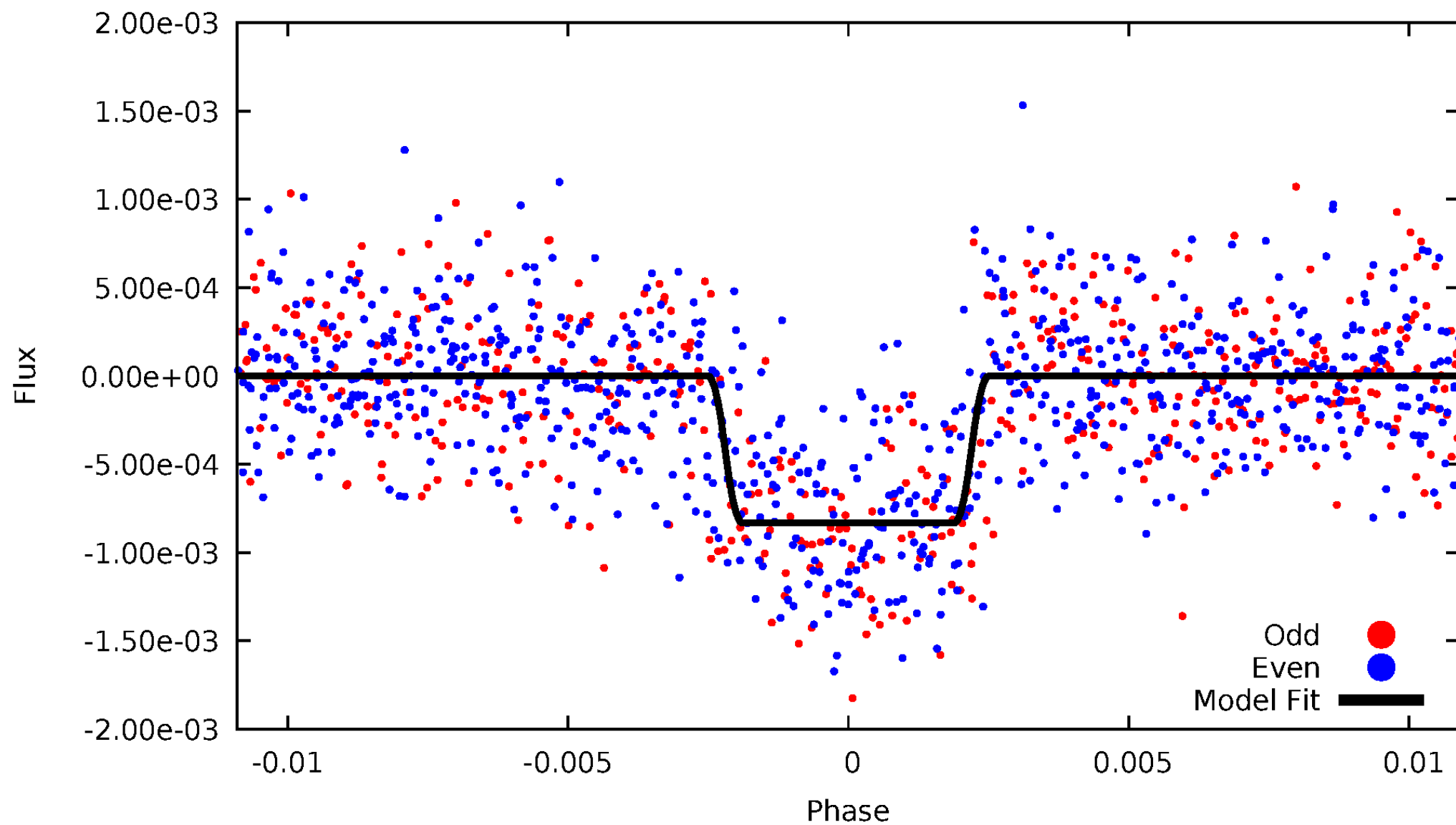
DV Odd/Even

TCE 009517393-02



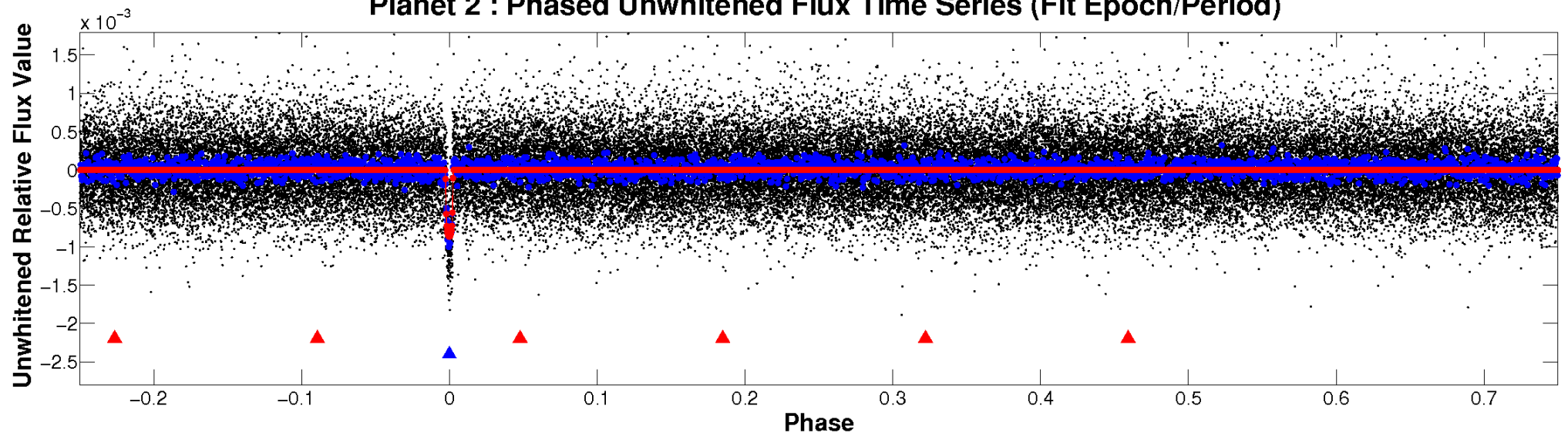
ALT Odd/Even

TCE 009517393-02

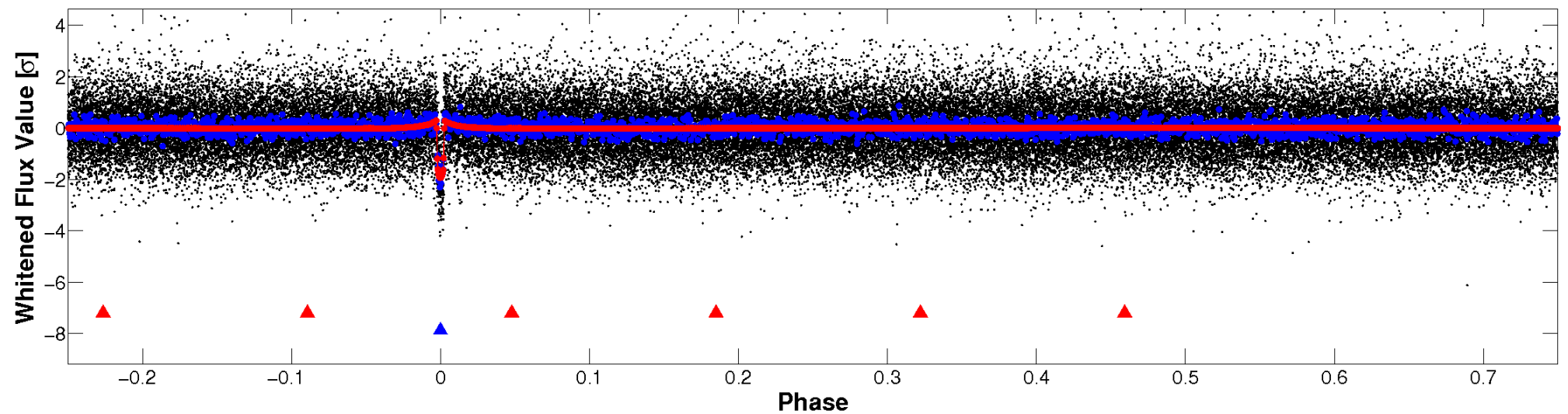


Non-Whitened Vs. Whitened Light Curve

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

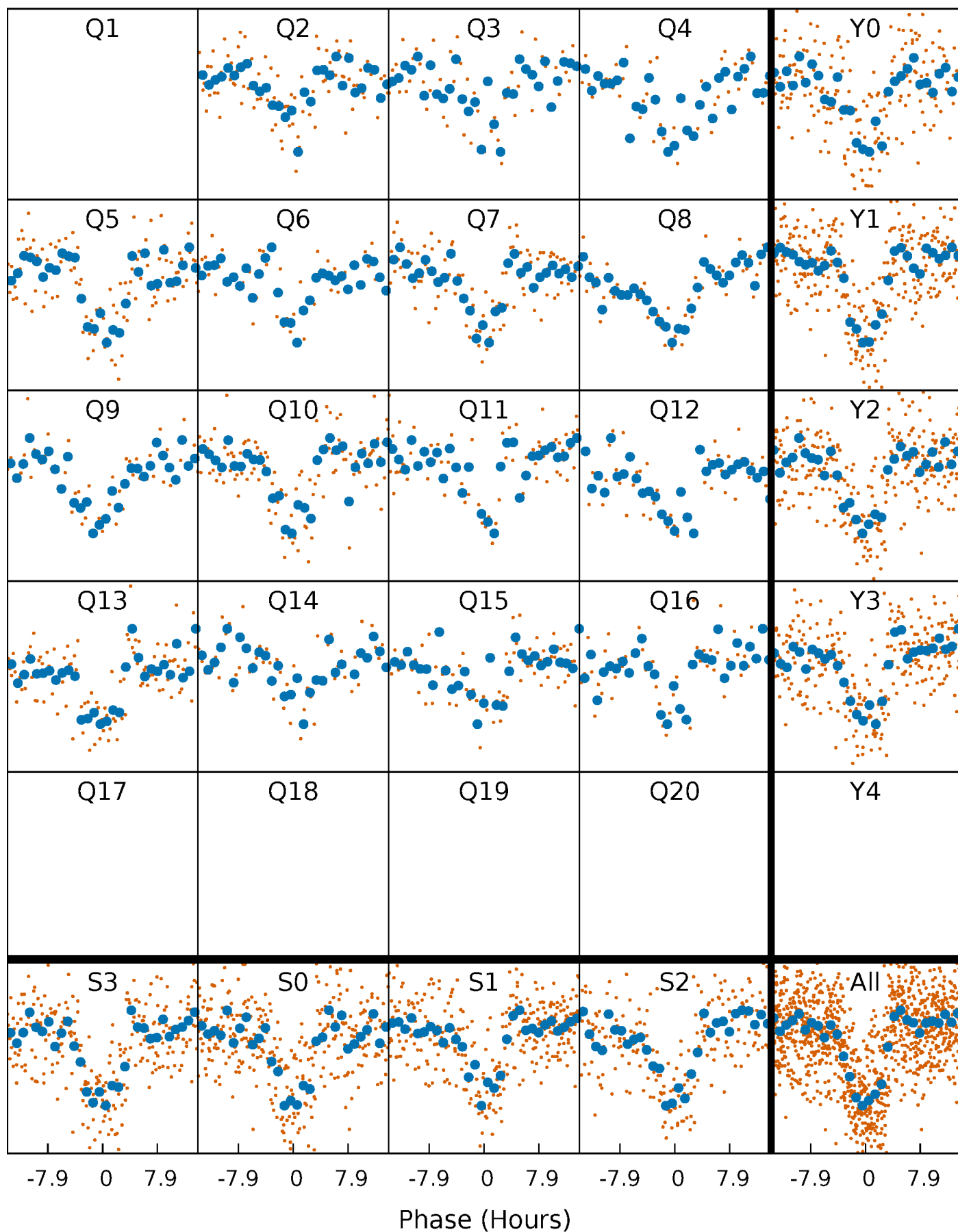


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



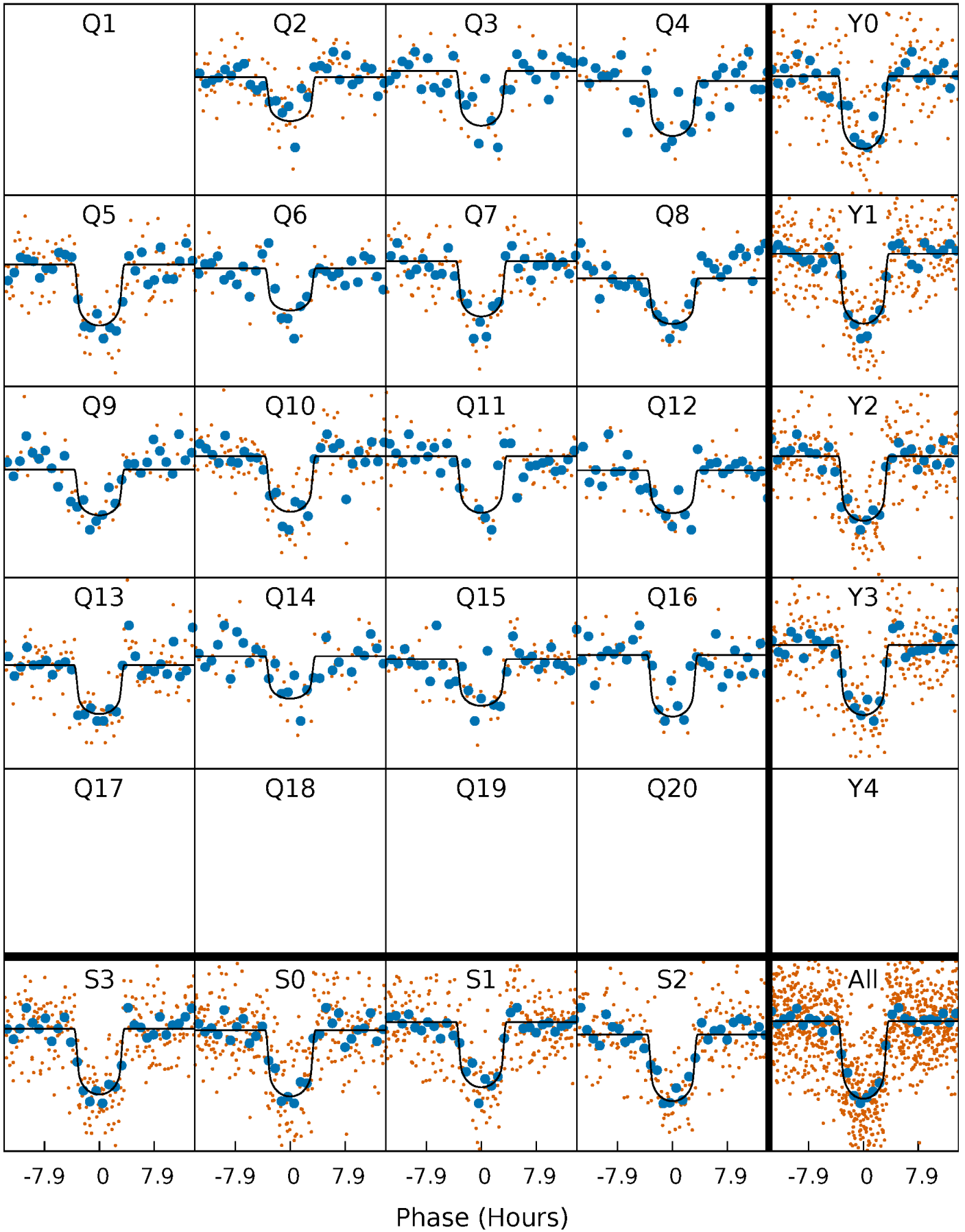
PDC Quarter-Phased Transit Curves

TCE 009517393-02 P= 56.777074 Days $T_0=181.097156$ (BKJD)



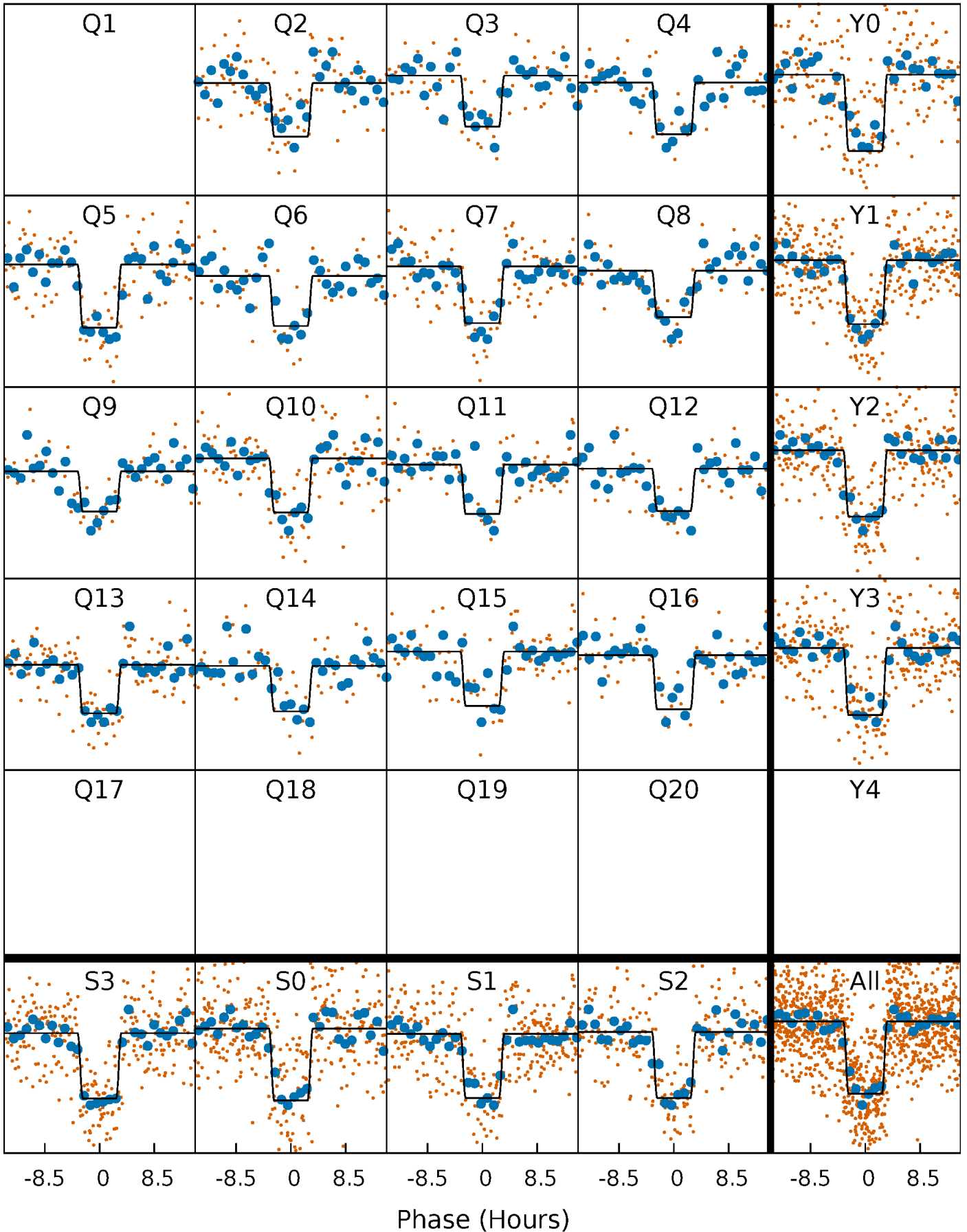
DV Quarter-Phased Transit Curves

TCE 009517393-02 P= 56.777074 Days $T_0=181.097156$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

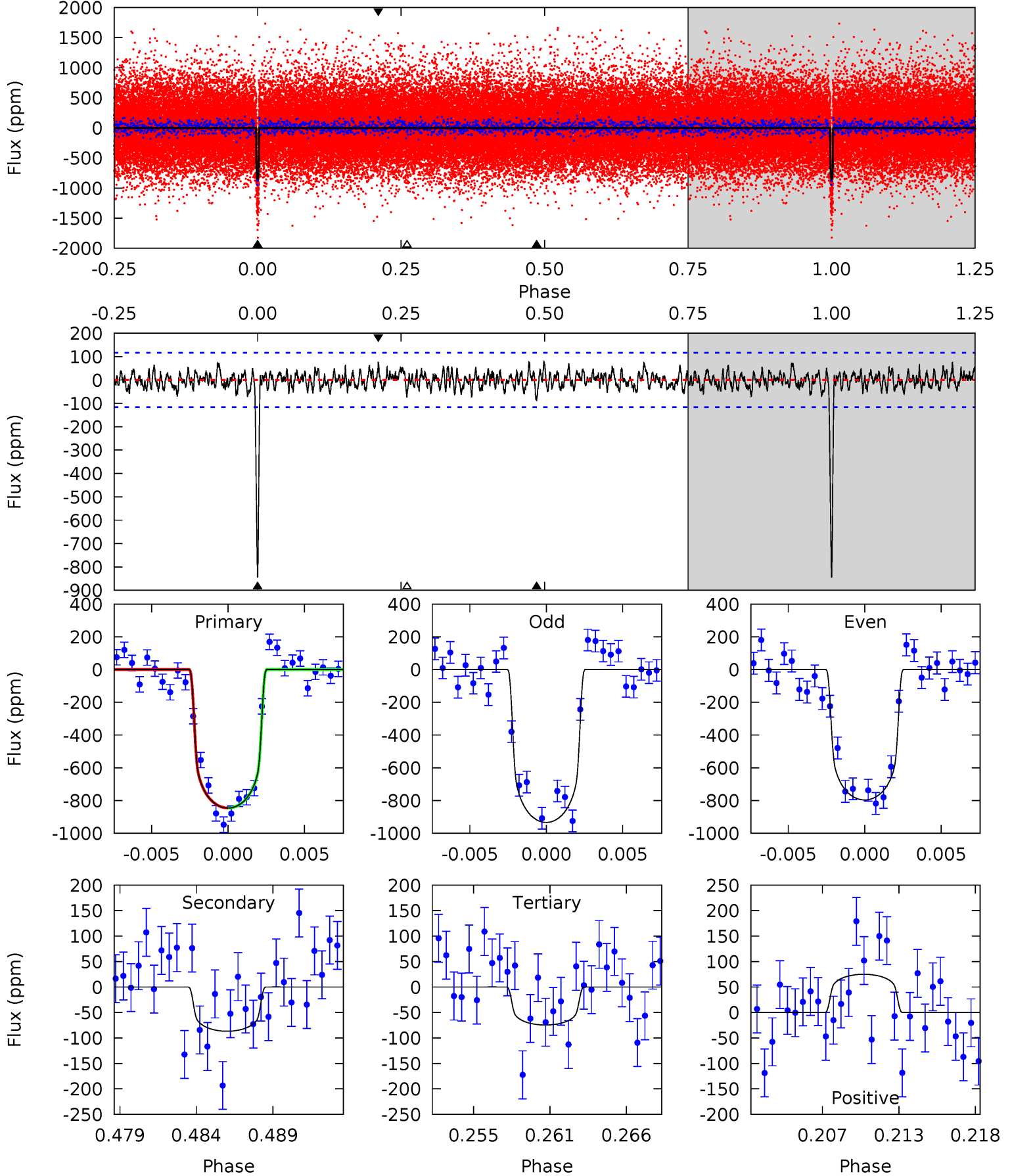
TCE 009517393-02 P= 56.775870 Days $T_0=181.110963$ (BKJD)



DV Model-Shift Uniqueness Test

009517393-02, $P = 56.777074$ Days, $E = 124.320082$ Days

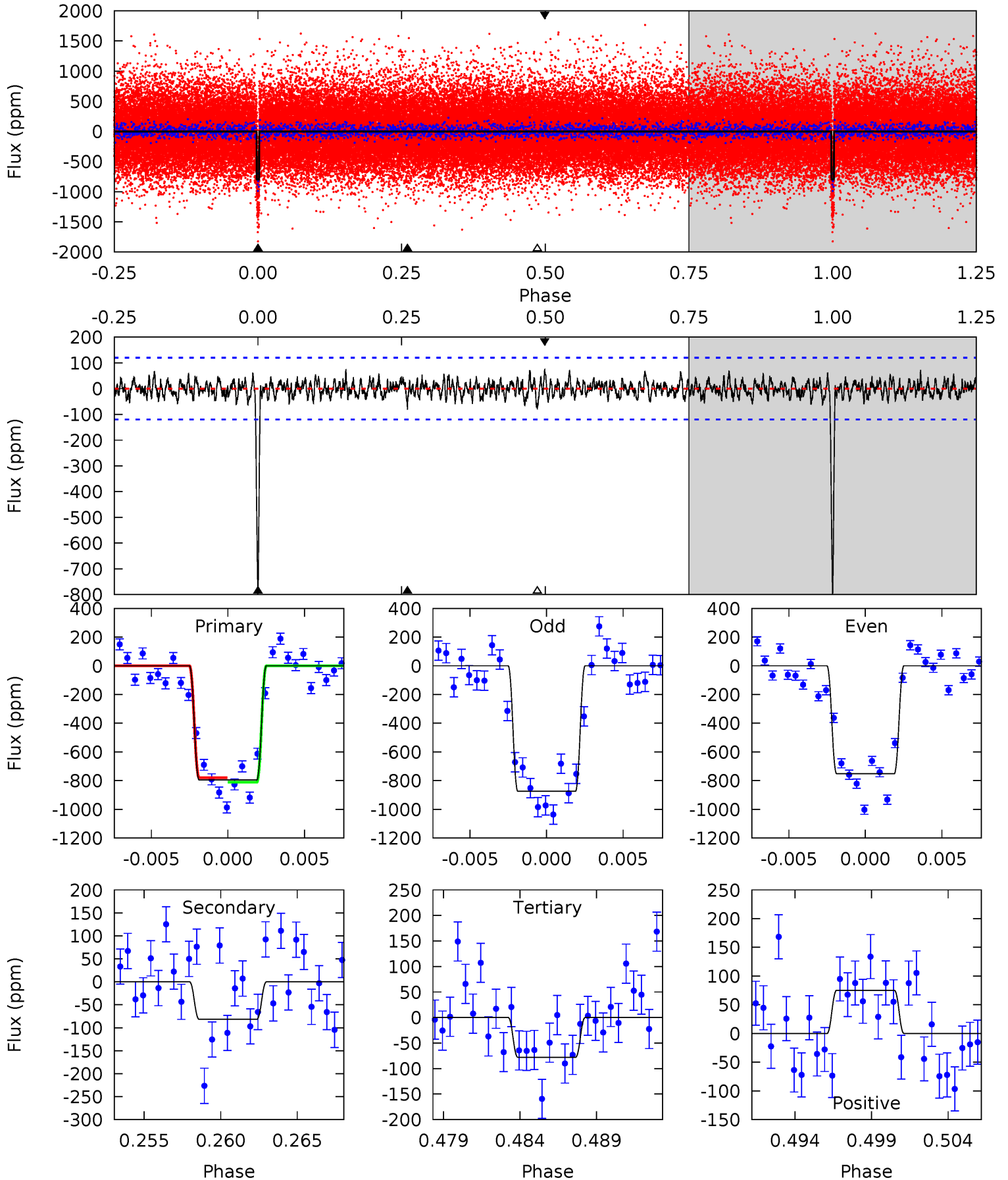
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.4	3.84	3.30	3.32	5.15	2.79	1.20	34.1	34.1	0.54	0.52	2.93	0.98	0.09	0.01



Alt Model-Shift Uniqueness Test

009517393-02, P = 56.775870 Days, E = 124.335093 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.2	3.51	3.35	3.23	5.16	2.81	1.04	30.9	31.0	0.16	0.28	2.53	0.96	0.09	0.67



Stellar Parameters For KIC 009517393

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6063^{+181}_{-181}	$4.476^{+0.055}_{-0.165}$	$0.070^{+0.200}_{-0.350}$	$1.012^{+0.252}_{-0.108}$	$1.117^{+0.120}_{-0.160}$	$1.519^{+0.421}_{-0.657}$
	+3%/-3%	+1%/-4%	+286%/-500%	+25%/-11%	+11%/-14%	+28%/-43%
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 009517393-02 / KOI 2076.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-87 ± 23	$3.29^{+0.65}_{-0.58}$	697^{+42}_{-31}	3812^{+288}_{-257}	382^{+208}_{-136}
Alt.	-82 ± 23	$3.21^{+0.71}_{-0.56}$	698^{+43}_{-31}	3791^{+332}_{-269}	373^{+218}_{-149}

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 $A_{obs} \gg 1.0$

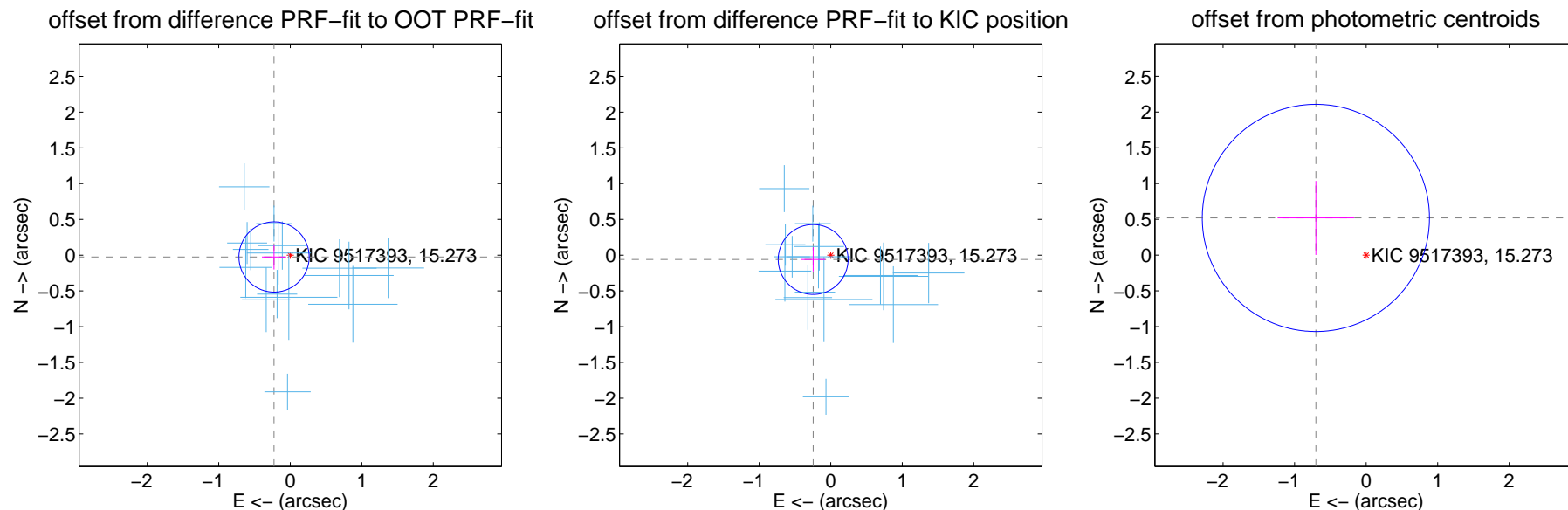
DV Centroid Data

Supplemental centroid analysis for 009517393-02. Kepler magnitude: 15.27. Transit SNR 27.53

There are 15 quarters with good PRF difference image offsets

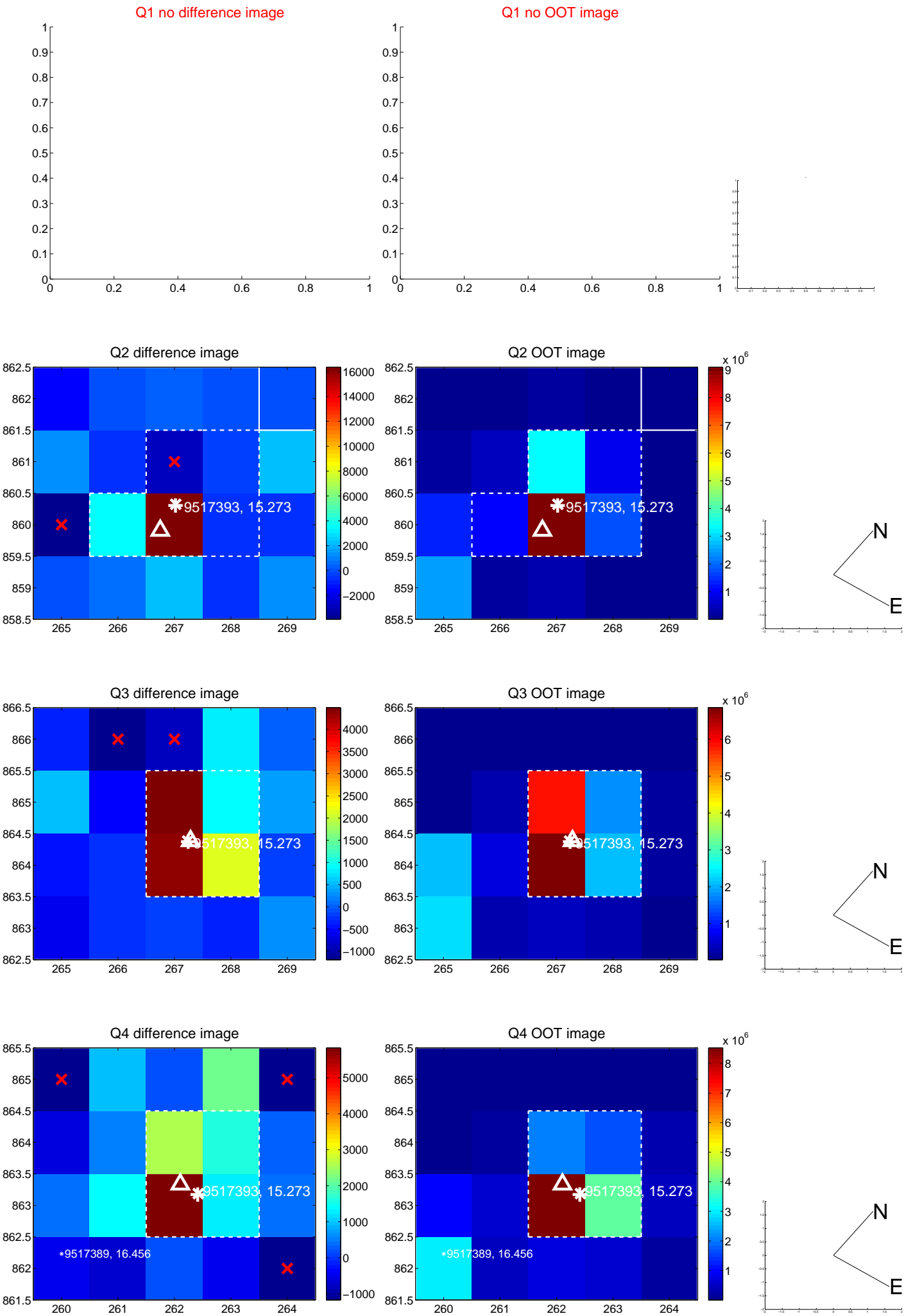
The direct PRF centroid is offset from the target star catalog position by about 0.00 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.228 ± 0.164	1.39	0.227 ± 0.169	-0.025 ± 0.175
PRF-fit source offset from KIC position	0.253 ± 0.163	1.55	0.246 ± 0.170	-0.061 ± 0.168
photometric centroid source offset	0.87 ± 0.53	1.65	0.70 ± 0.54	0.52 ± 0.52

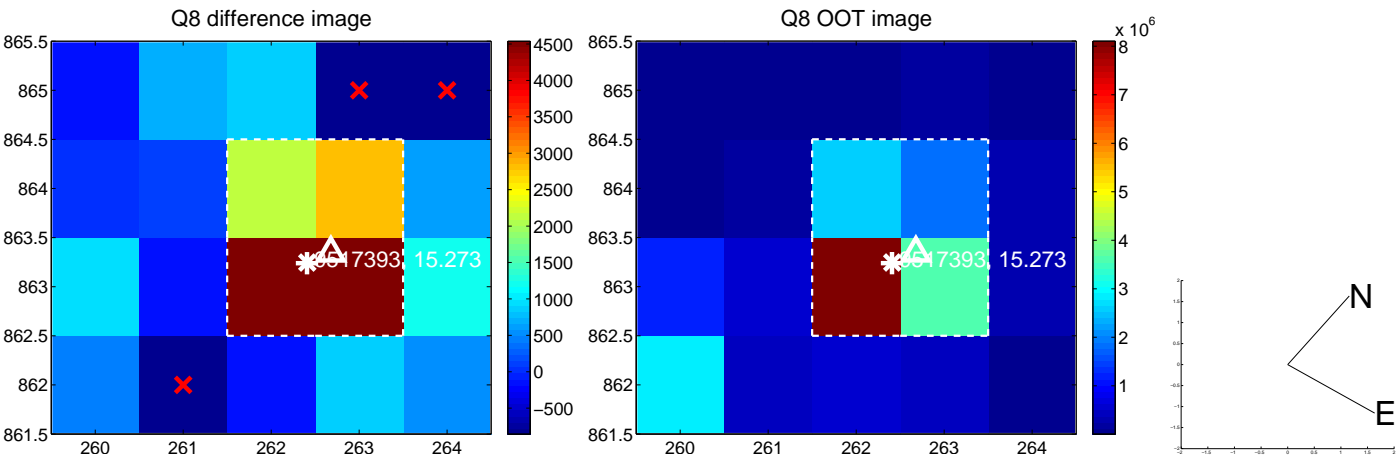
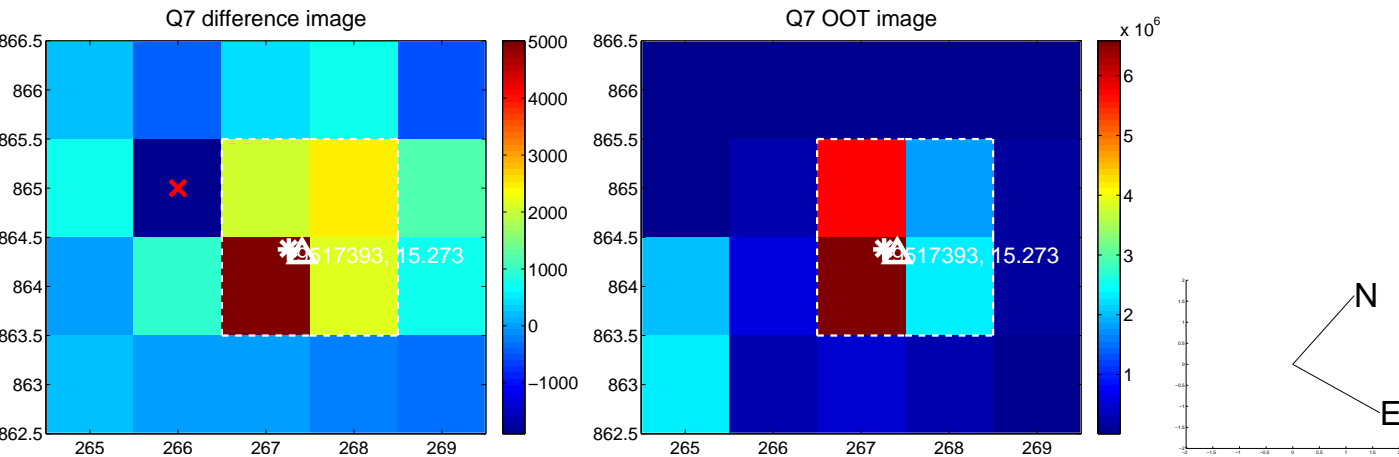
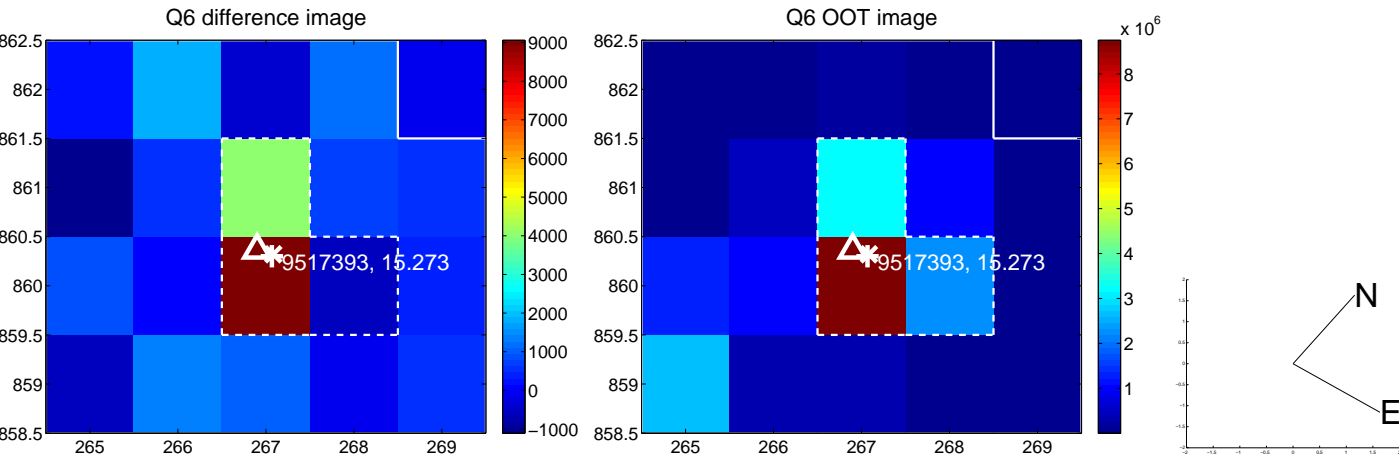
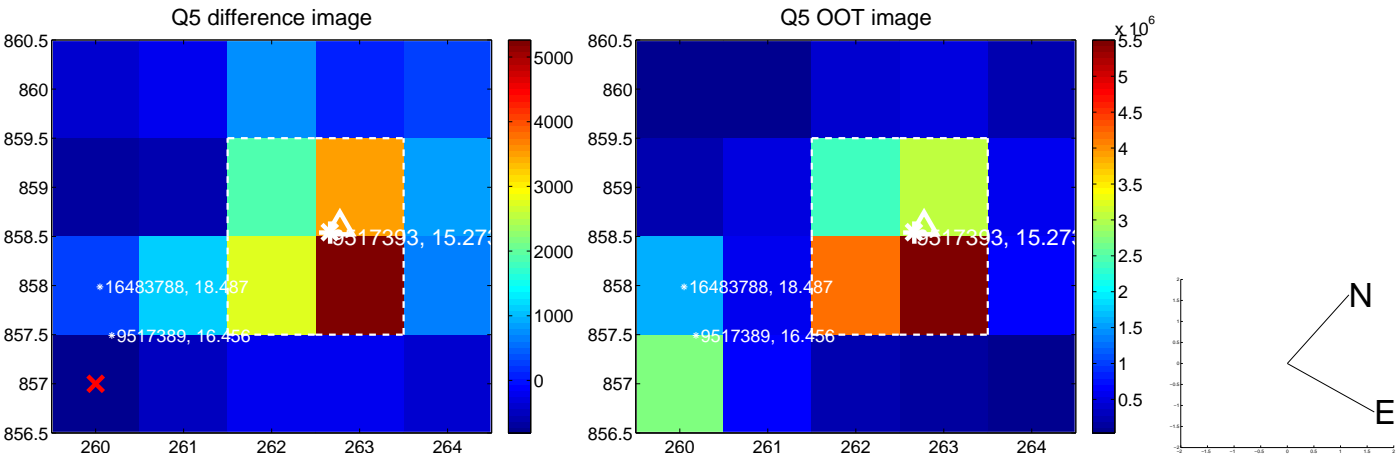


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

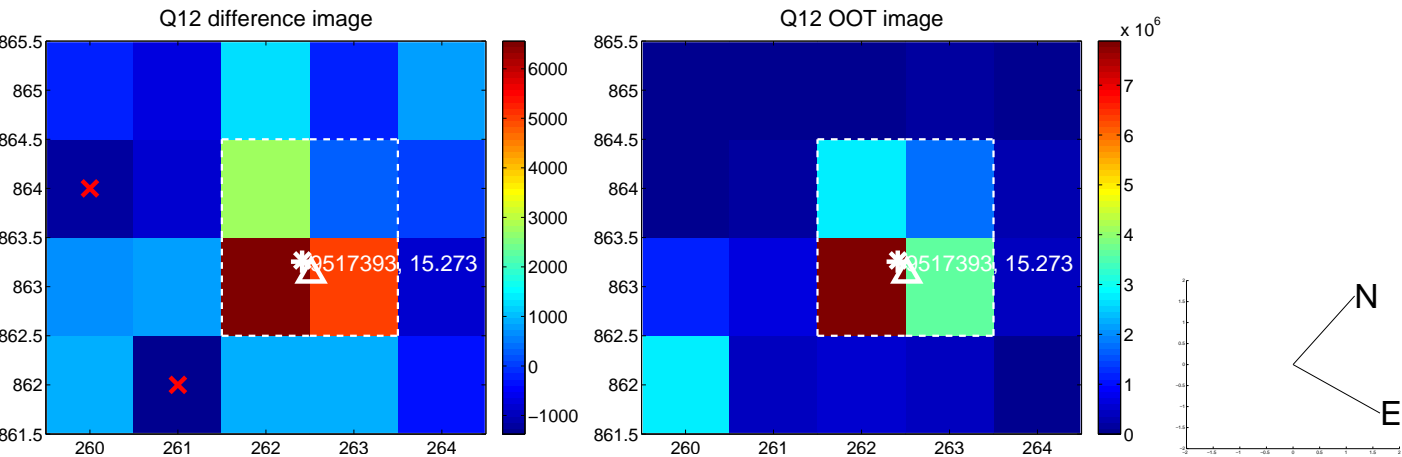
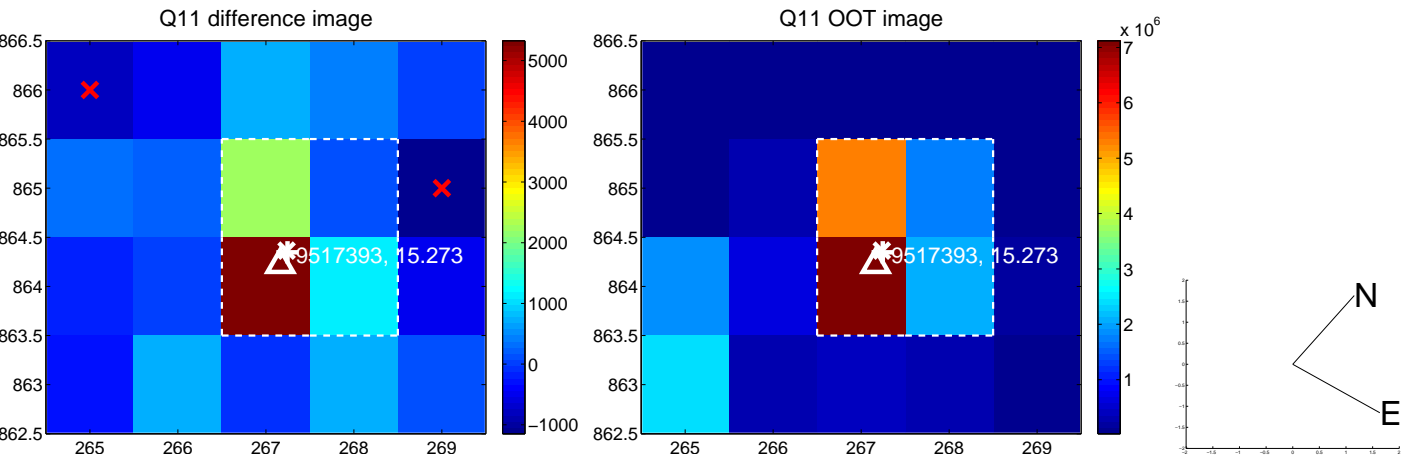
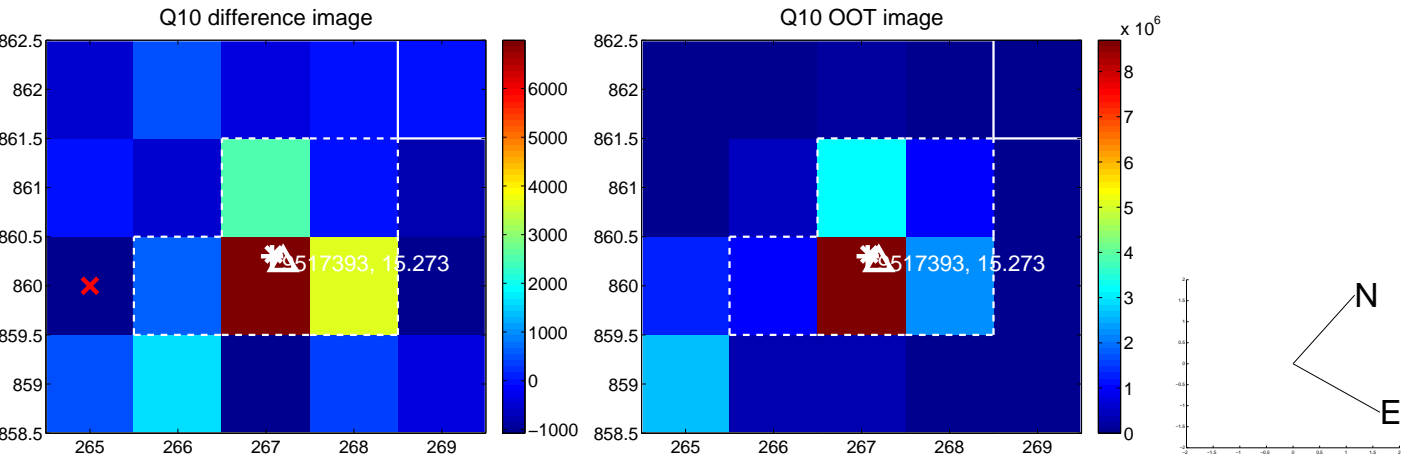
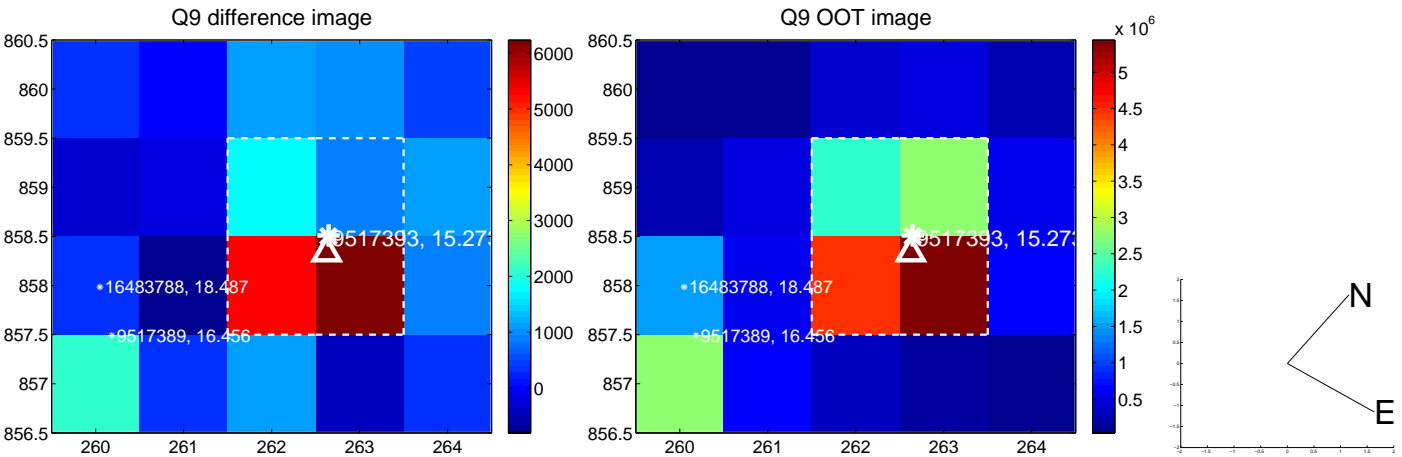
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



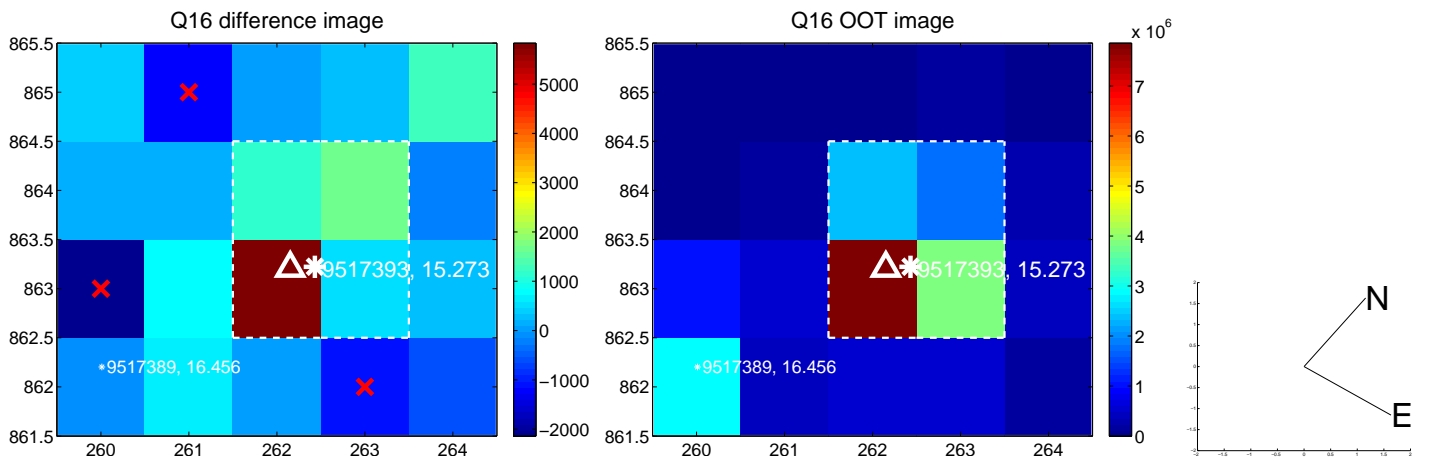
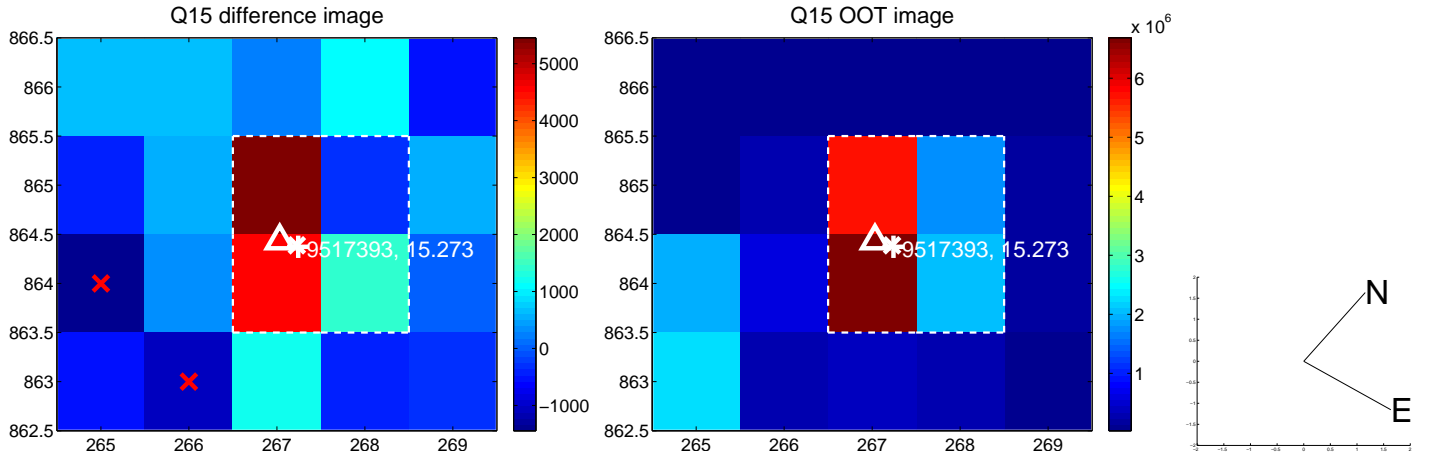
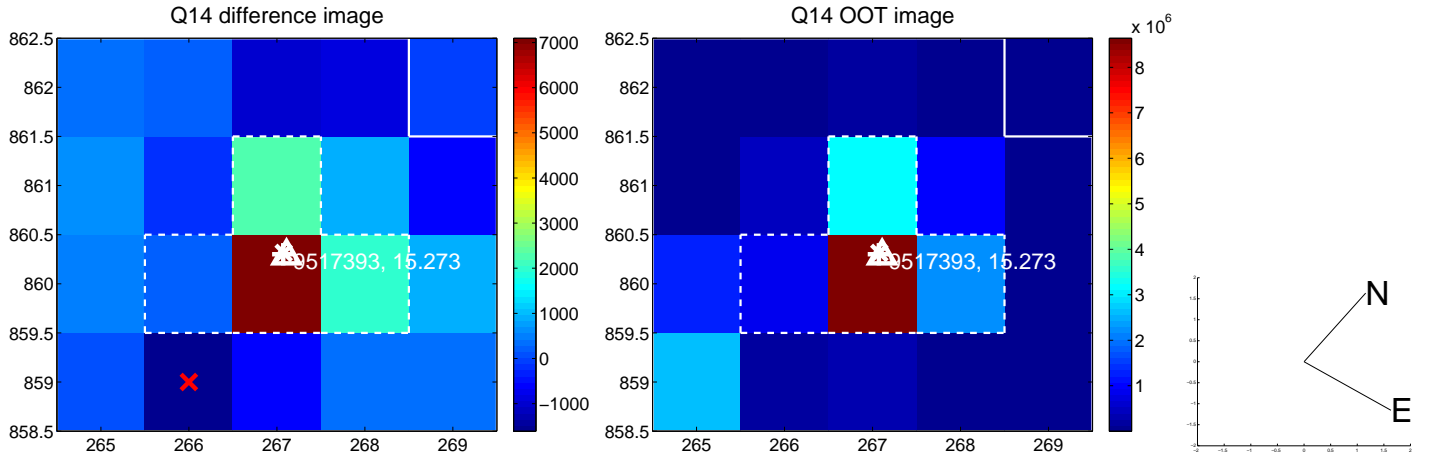
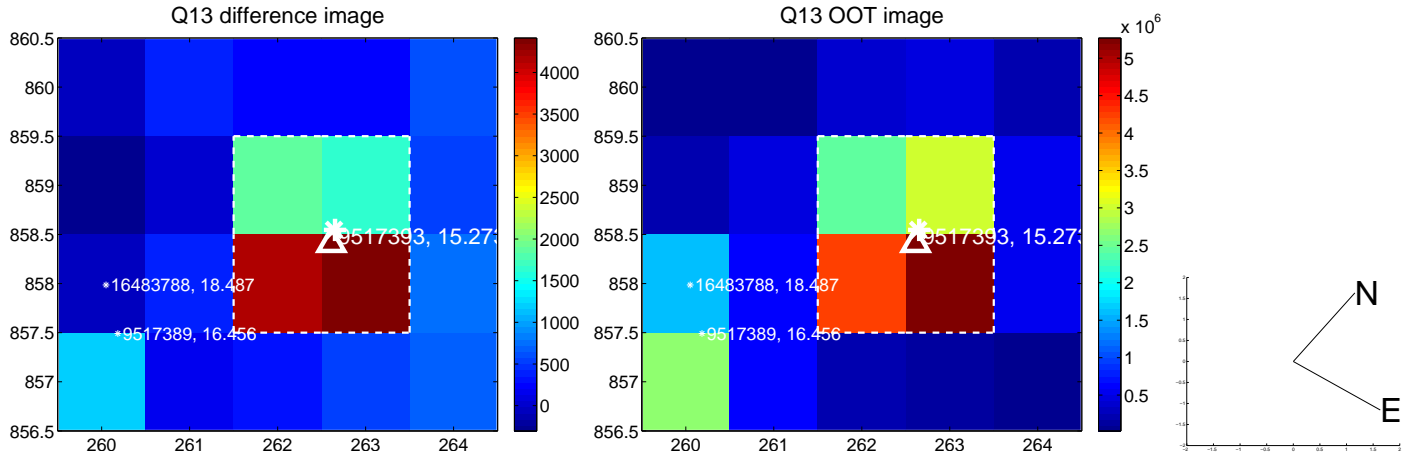
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



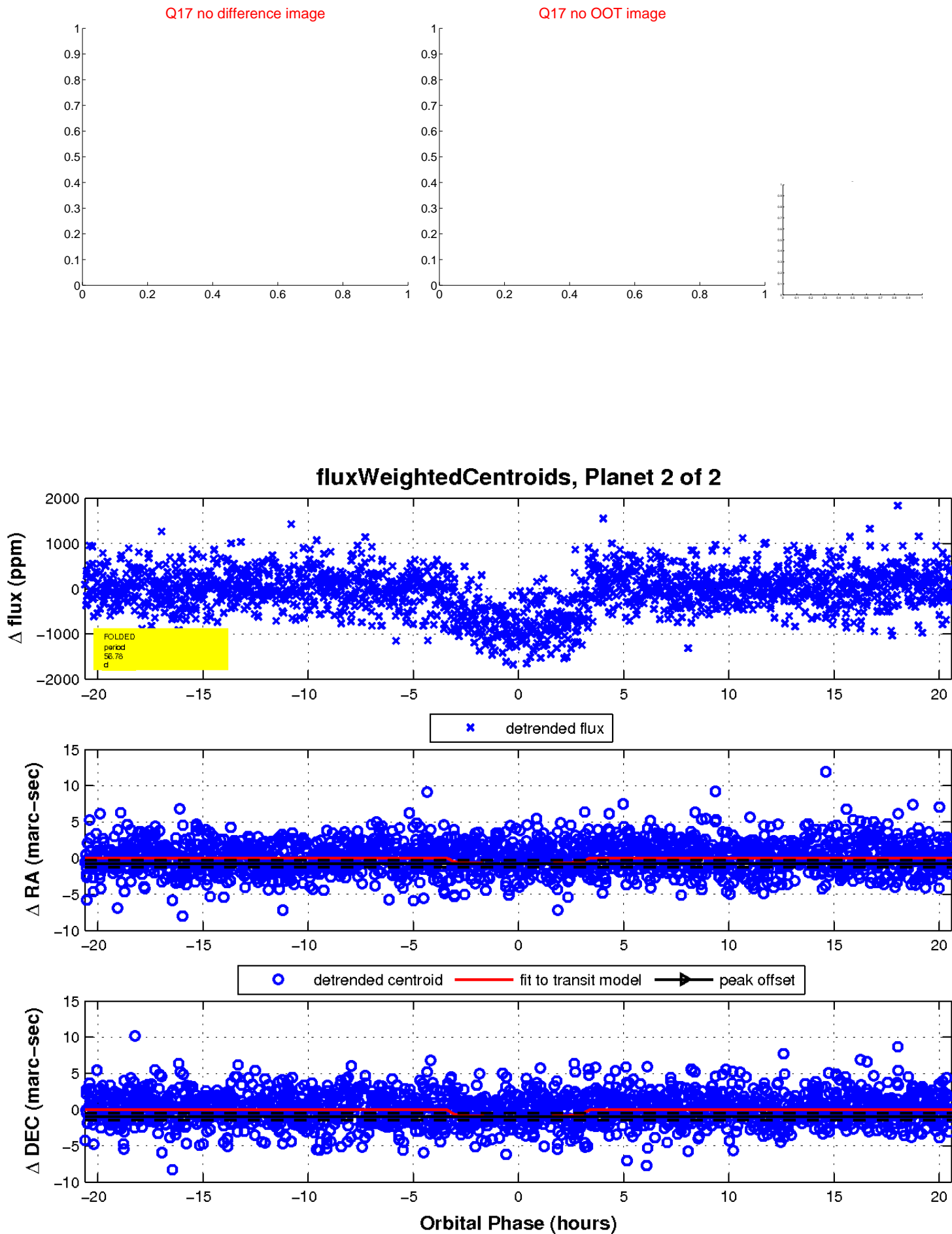
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

