

KIC 004990977

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})
004990977-01	OBS	6123.01	2.649025	133.379670	51688.8	2.464	3582.0	3022.2	0.99	5838	31.57	851.81
004990977-02	OBS	No	2.649016	132.057822	15694.1	2.379	1133.6	858.8	0.99	5838	21.71	851.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004990977-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
004990977-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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 004990977-01

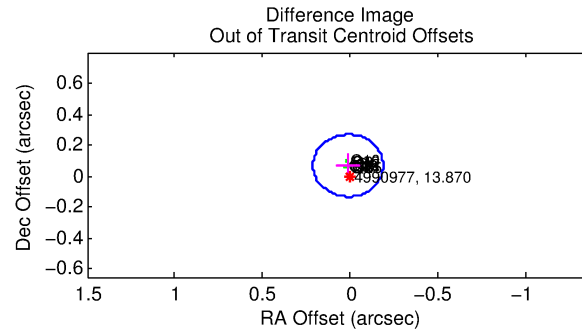
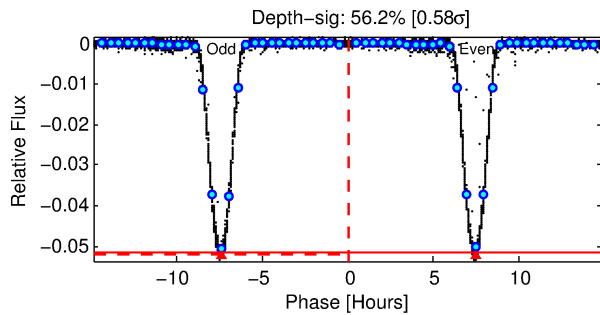
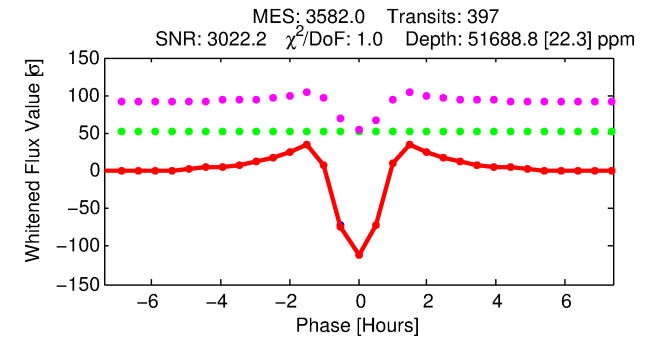
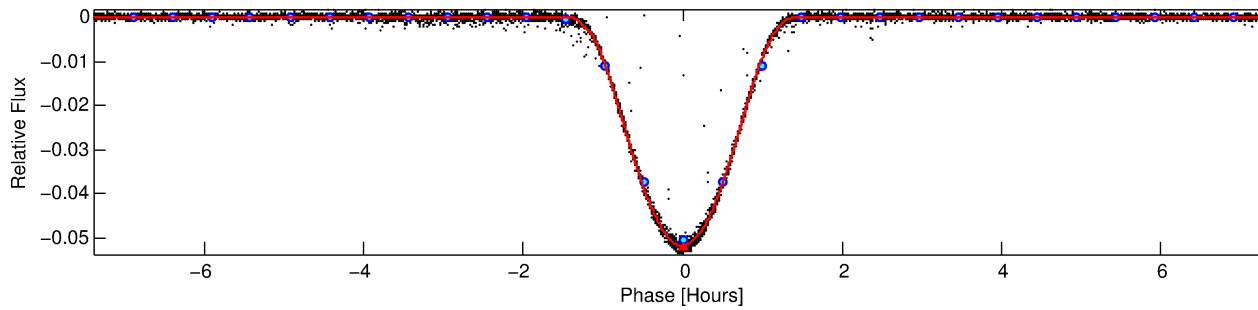
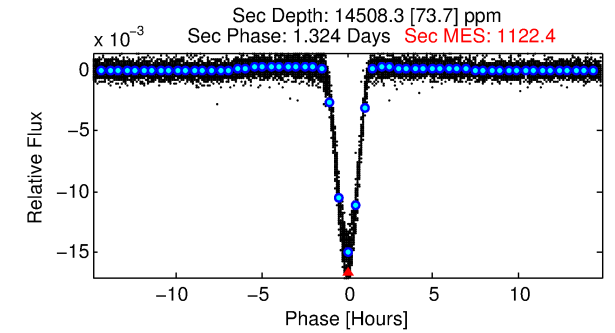
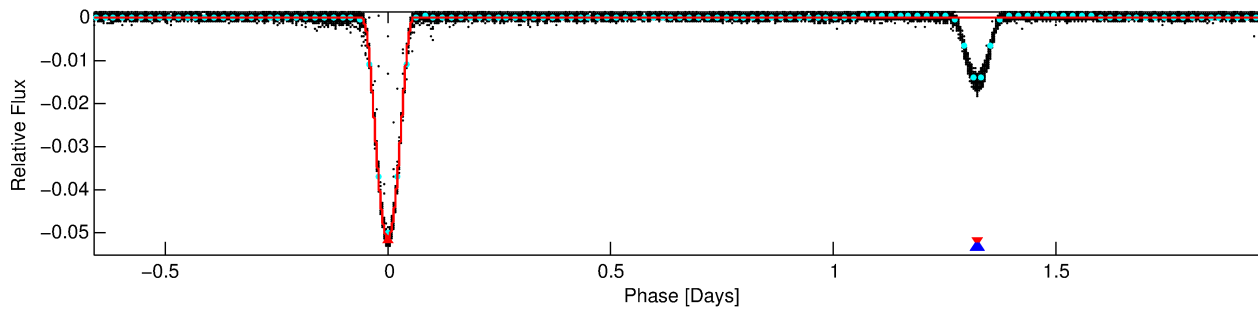
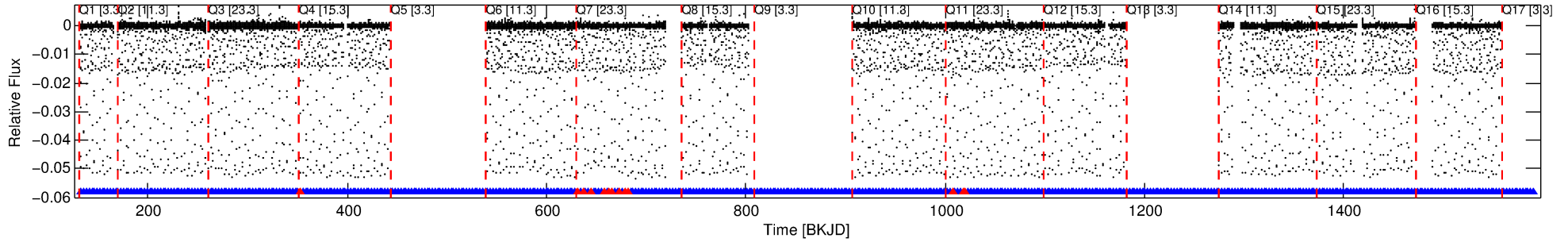
No Significant Match Found

DV One-Page Summary

KIC: 4990977 Candidate: 1 of 2 Period: 2.649 d

KOI: K06123.01 Corr: 0.998

Kp: 13.87 R*: 0.99 Rs Teff: 5838.0 K Logg: 4.34 Fe/H: -0.580



DV Fit Results:

Period = 2.64902 [0.00000] d
Epoch = 133.3797 [0.0000] BKJD
Rp/R* = 0.2928 [0.0031]
a/R* = 7.69 [0.01]
b = 0.90 [0.00]
Seff = 851.81 [329.30]
Teq = 1378 [133] K
Rp = 31.57 [9.30] Re
a = 0.0345 [0.0087] AU
Ag = 9.55 [3.55] [2.41σ]
Teffp = 3744 [104] K [14.01σ]

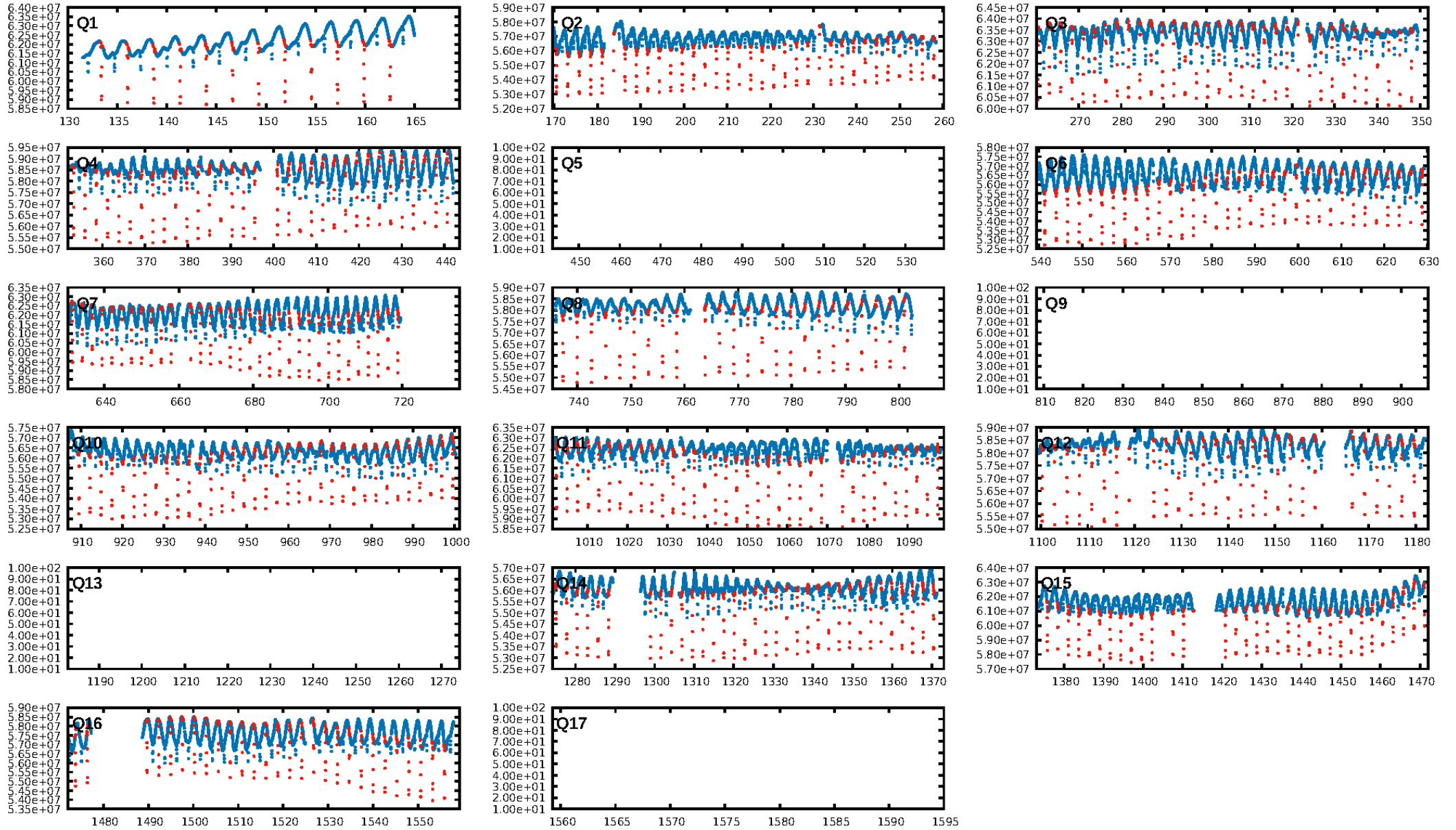
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.97 [372/385]
GhostDiagnostic-chr: 2.312
Centroid-sig: 0.0%
Centroid-so: 0.160 arcsec [70.79σ]
OotOffset-rm: 0.070 arcsec [1.05σ]
KicOffset-rm: 0.057 arcsec [0.84σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

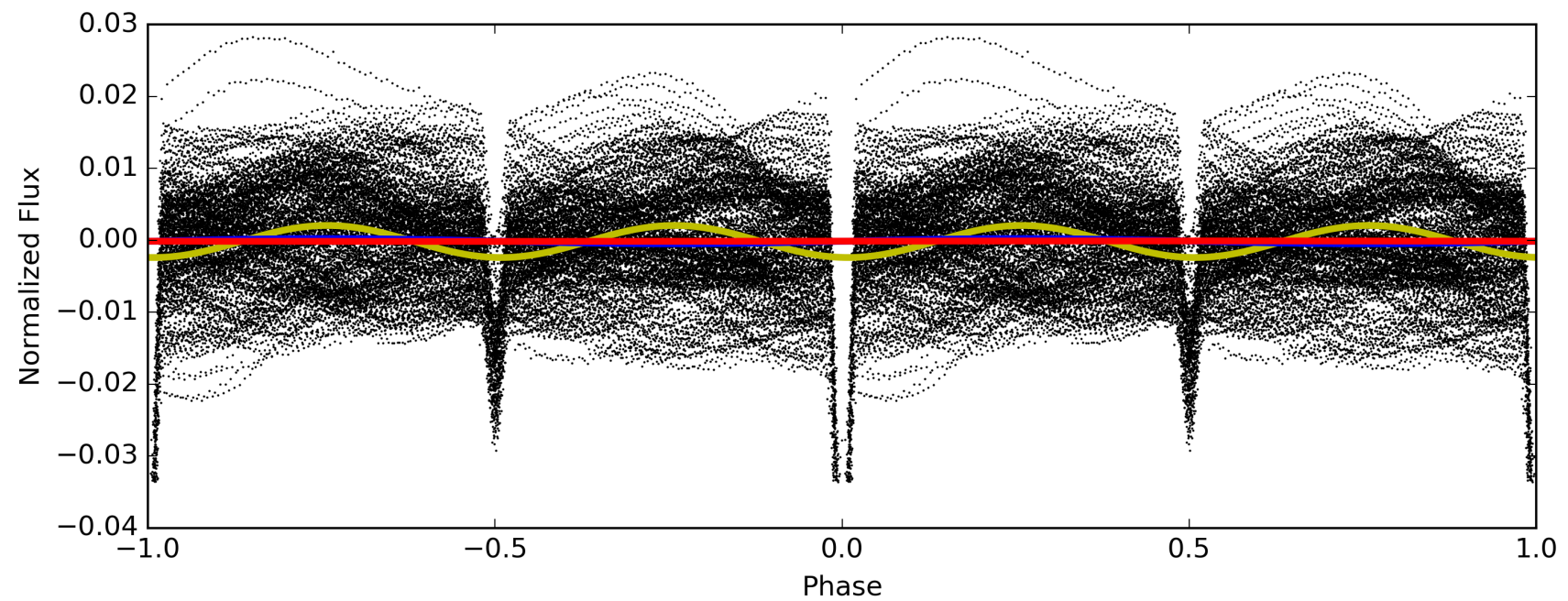
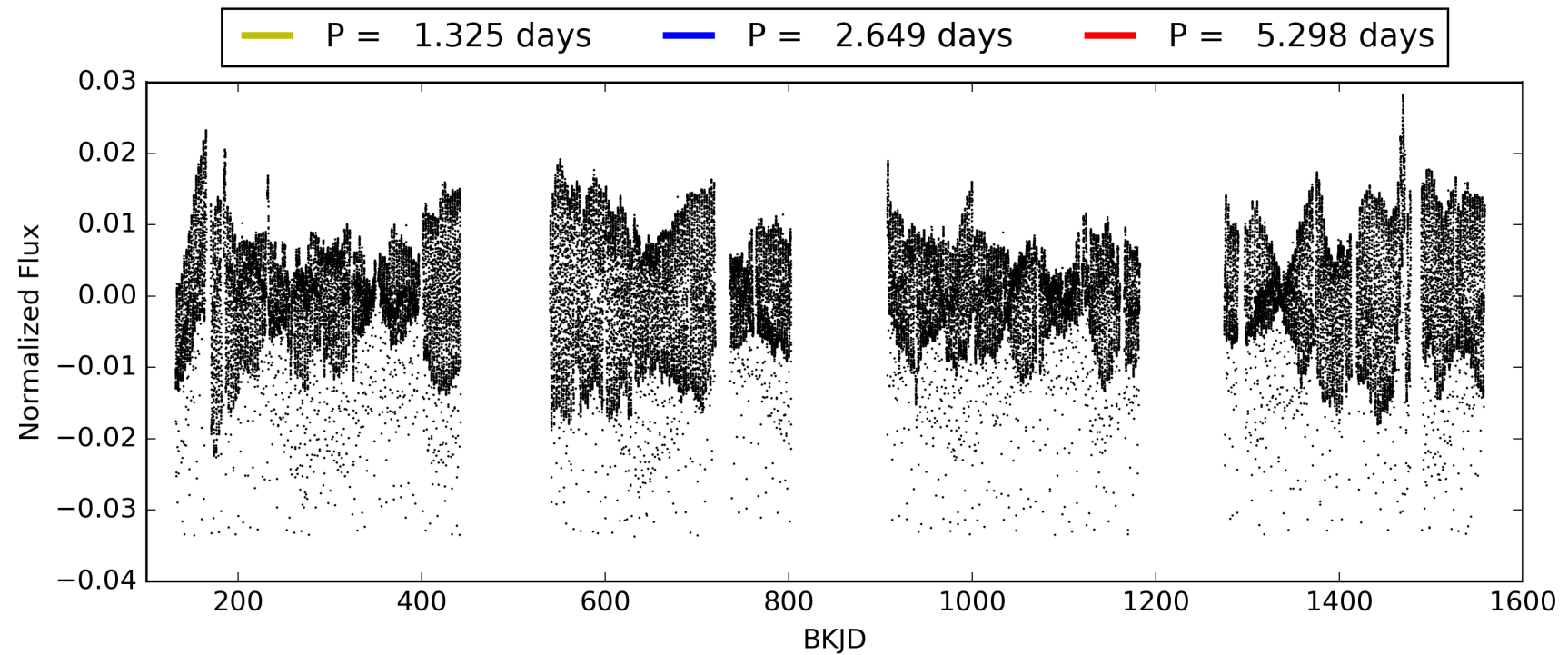
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:53:03 Z

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

TCE 004990977-01, PDC Light Curves

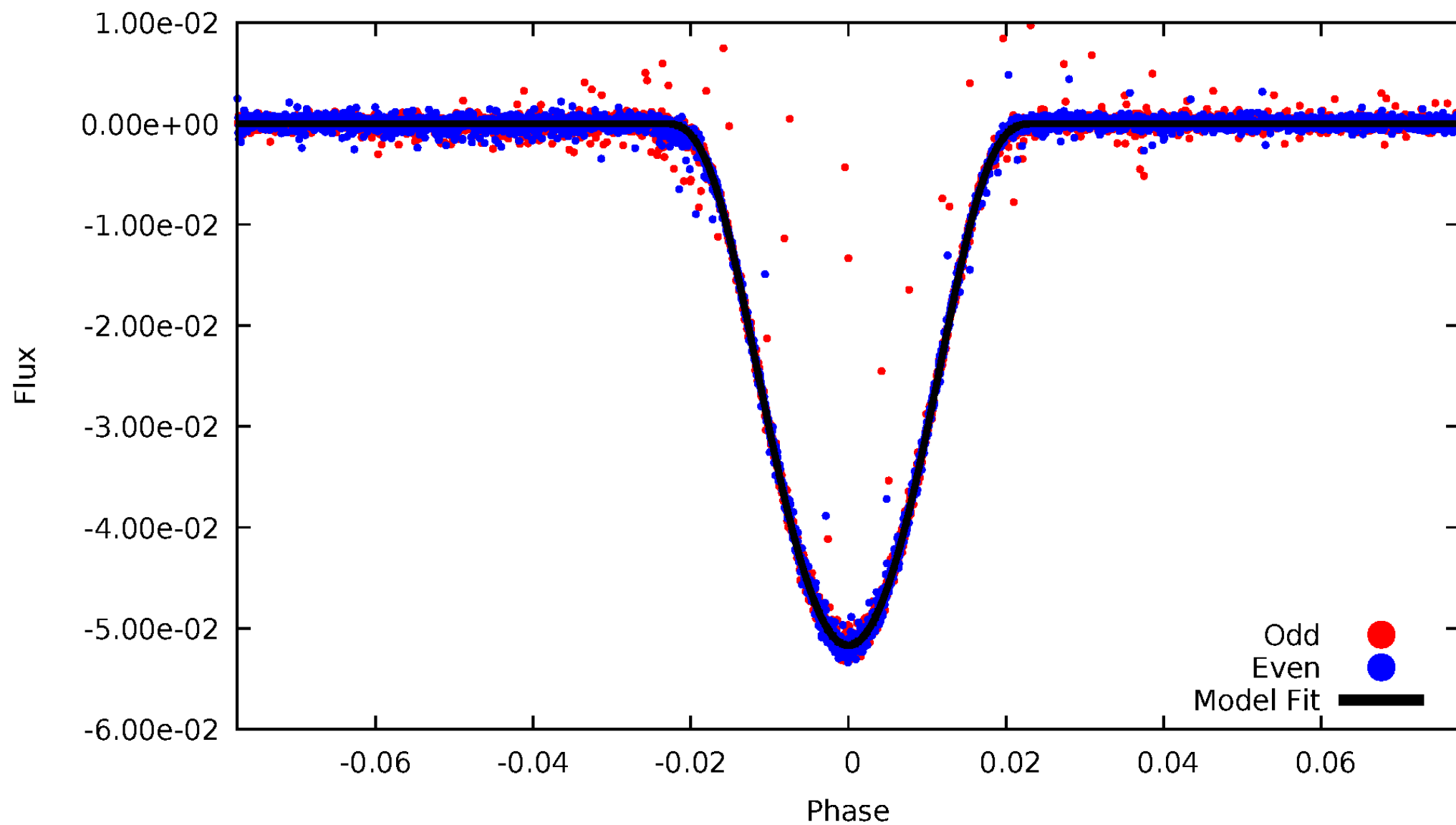


TCE 004990977-01



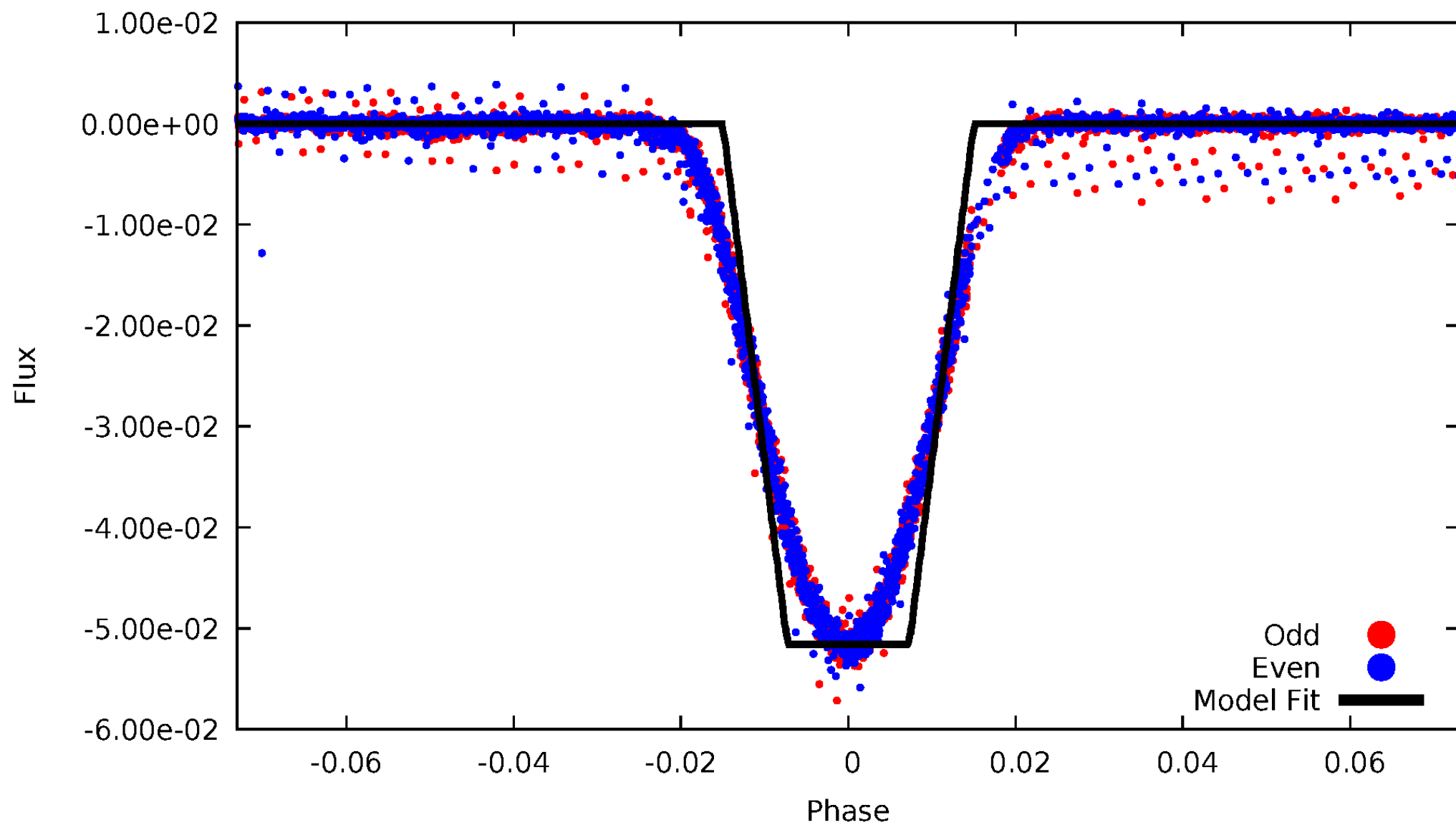
DV Odd/Even

TCE 004990977-01



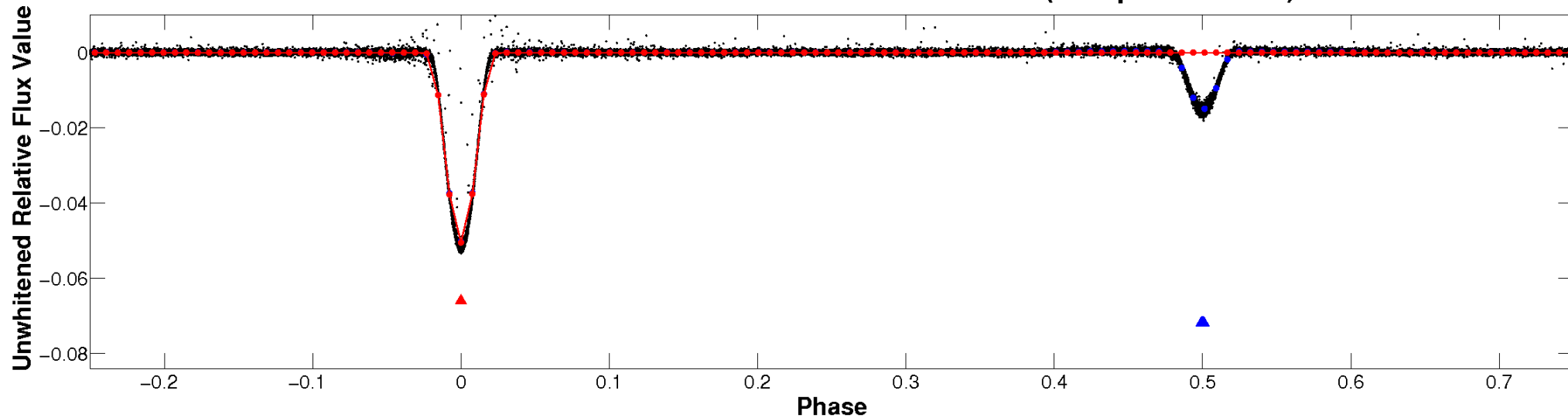
ALT Odd/Even

TCE 004990977-01

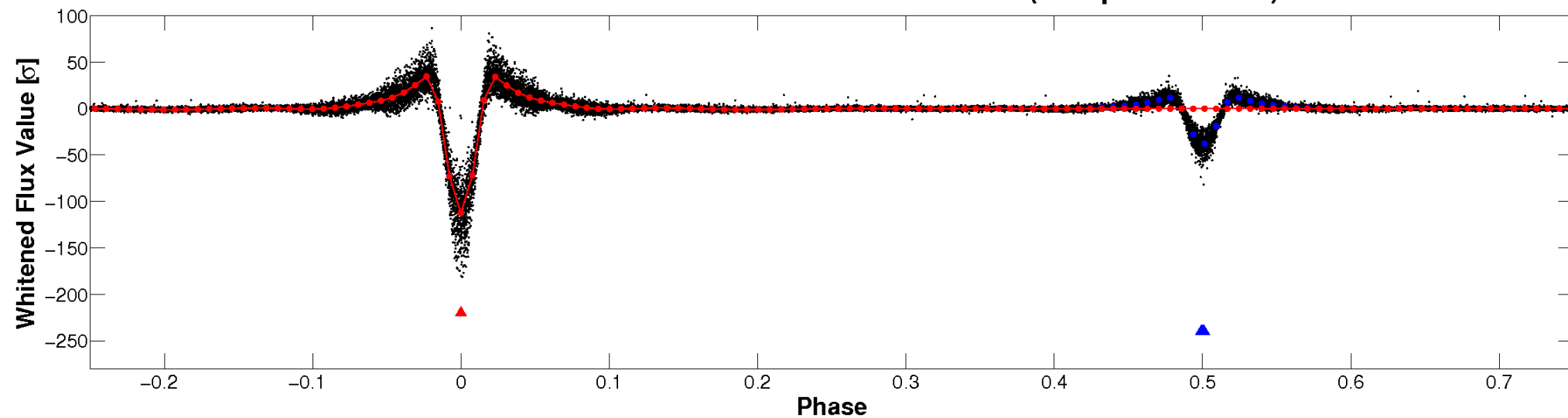


Non-Whitened Vs. Whitened Light Curve

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

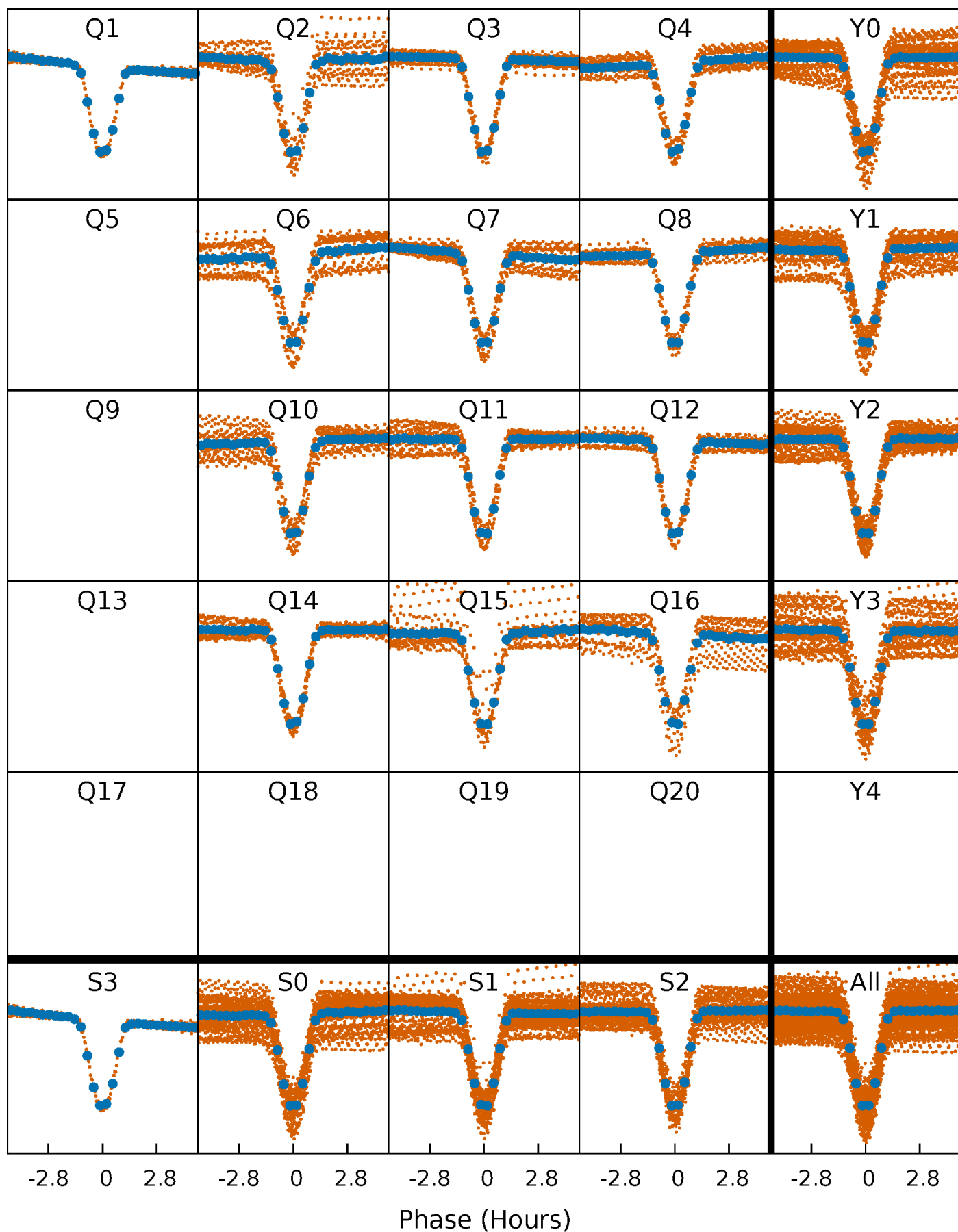


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



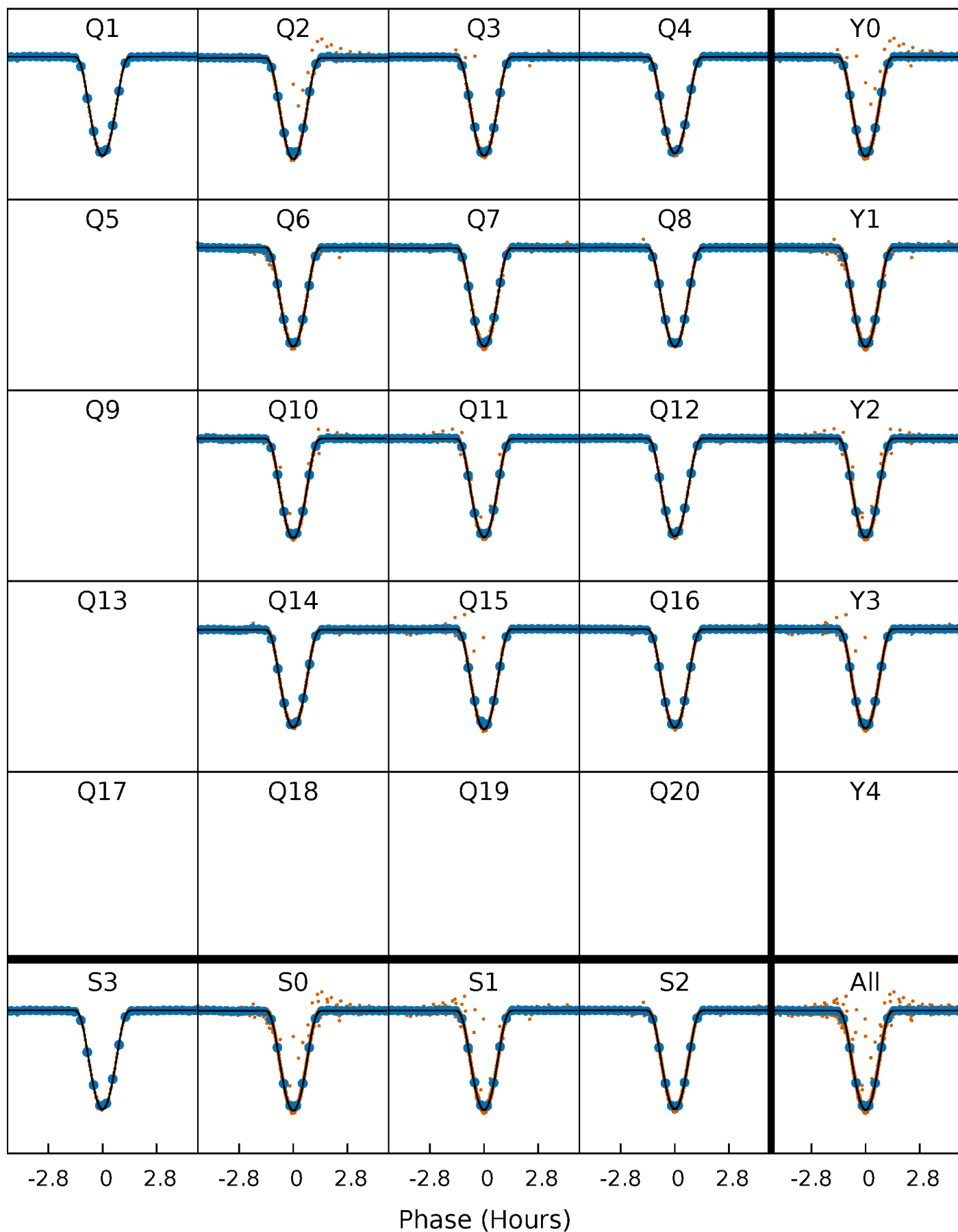
PDC Quarter-Phased Transit Curves

TCE 004990977-01 P= 2.649025 Days $T_0=133.379670$ (BKJD)



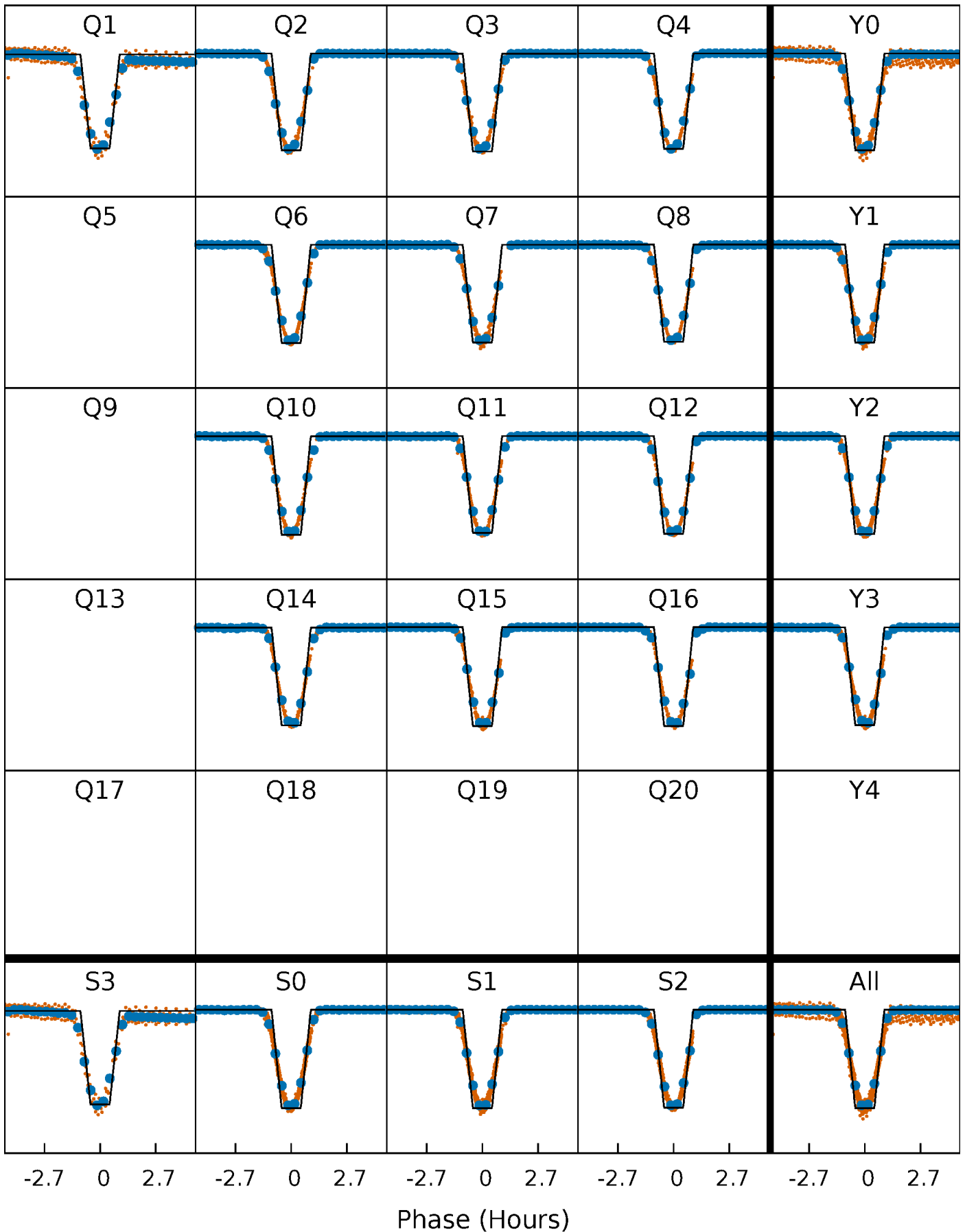
DV Quarter-Phased Transit Curves

TCE 004990977-01 P= 2.649025 Days $T_0=133.379670$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

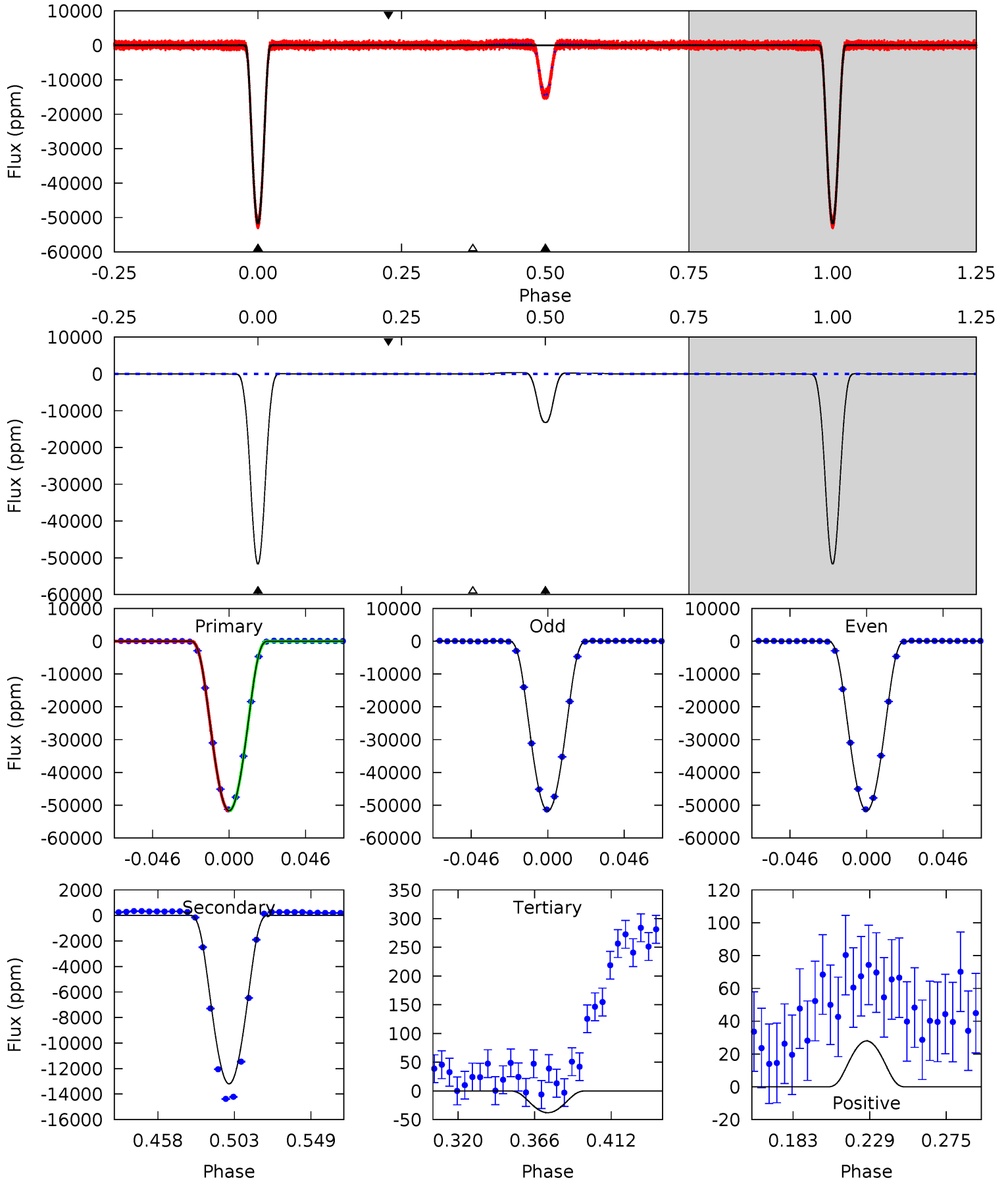
TCE 004990977-01 P= 2.649018 Days $T_0=133.381787$ (BKJD)



DV Model-Shift Uniqueness Test

004990977-01, P = 2.649025 Days, E = 130.730645 Days

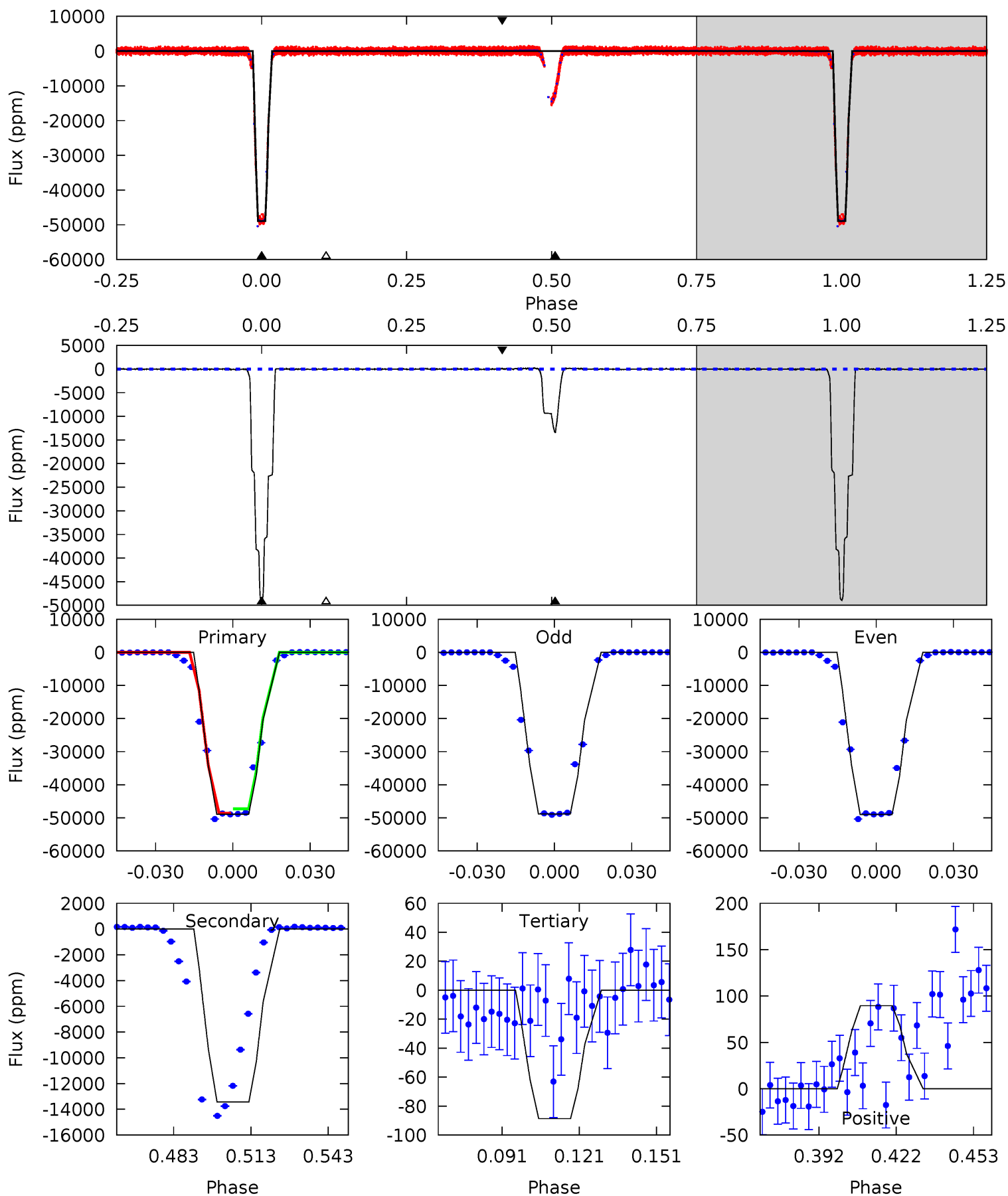
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6461	1650	4.74	3.49	4.73	2.00	10.9	6457	6458	1645	1646	2.42	0.99	0.01	0



Alt Model-Shift Uniqueness Test

004990977-01, P = 2.649018 Days, E = 130.732769 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2375	651.6	4.30	4.35	4.81	2.17	2.01	2371	2371	647.3	647.3	4.55	0.99	0.00	0



Stellar Parameters For KIC 004990977

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5838^{+159}_{-159}	$4.342^{+0.205}_{-0.205}$	$-0.580^{+0.300}_{-0.250}$	$0.988^{+0.291}_{-0.218}$	$0.781^{+0.110}_{-0.047}$	$1.142^{+1.208}_{-0.592}$
	+3%/-3%	+5%/-5%	+52%/-43%	+29%/-22%	+14%/-6%	+106%/-52%
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 004990977-01 / KOI 6123.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-13194±8	$31.89^{+4.99}_{-4.25}$	1933^{+146}_{-146}	3967^{+82}_{-77}	$8.791^{+2.768}_{-2.282}$
Alt.	-13427±21	$24.56^{+4.24}_{-2.95}$	1920^{+154}_{-130}	4373^{+103}_{-104}	15^{+4}_{-4}

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

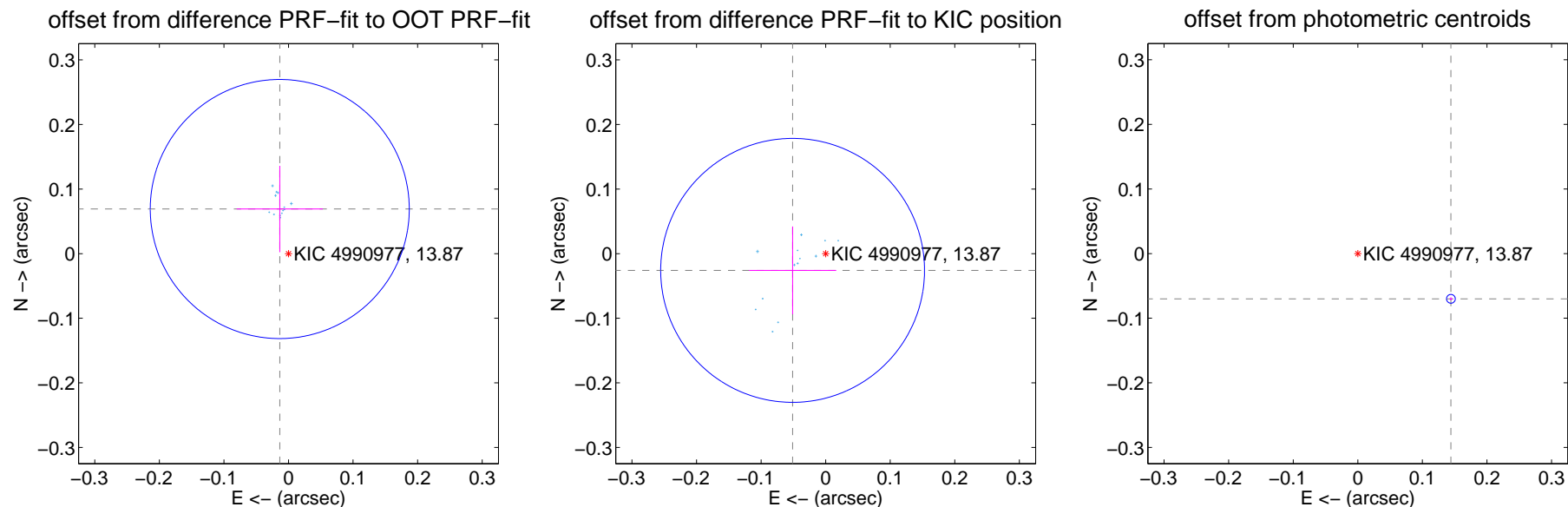
DV Centroid Data

Supplemental centroid analysis for 004990977-01. Kepler magnitude: 13.87. Transit SNR 3022.20

There are 13 quarters with good PRF difference image offsets

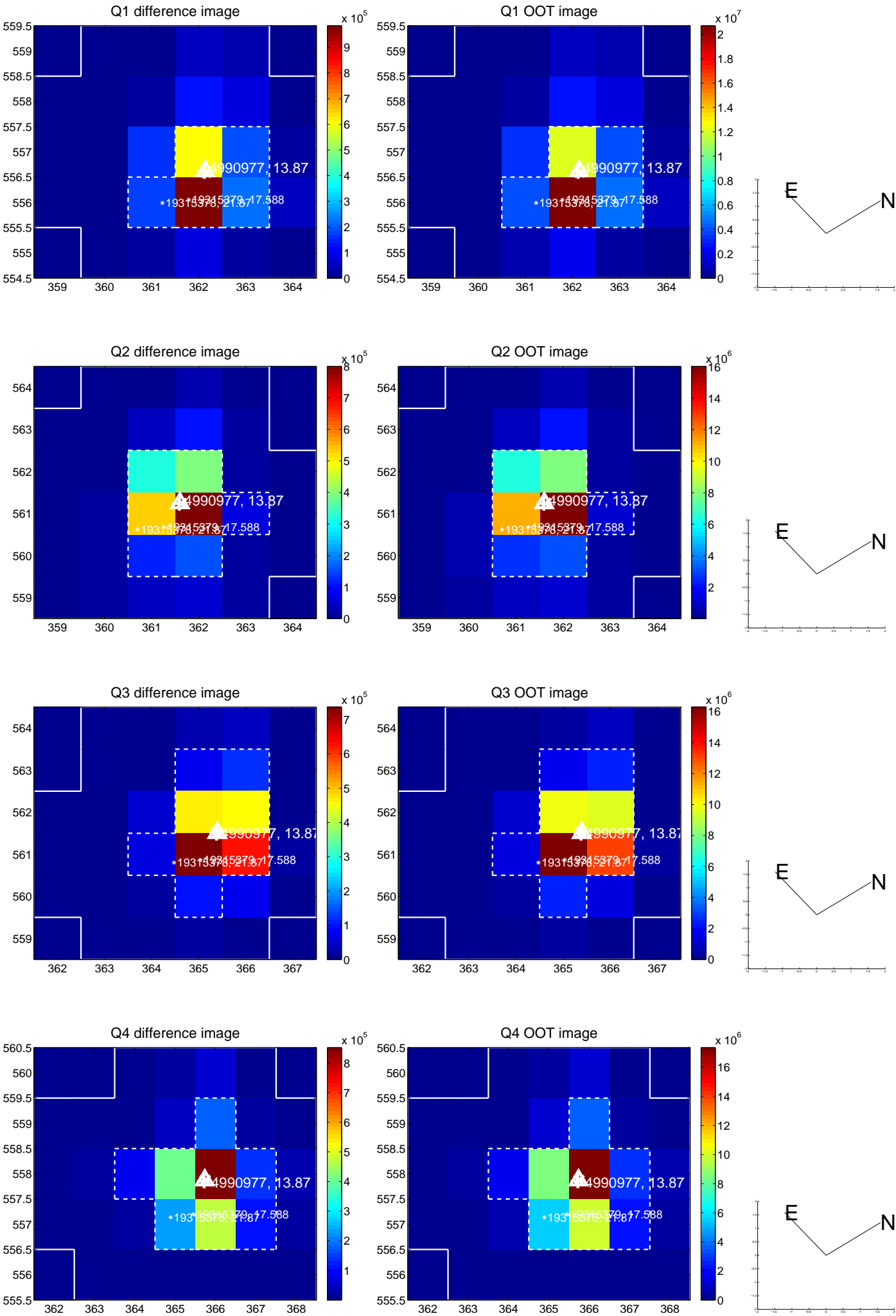
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.070 ± 0.067	1.05	0.014 ± 0.067	0.069 ± 0.067
PRF-fit source offset from KIC position	0.057 ± 0.068	0.84	0.051 ± 0.068	-0.026 ± 0.068
photometric centroid source offset	0.16 ± 0.00	70.79	-0.14 ± 0.00	-0.07 ± 0.00

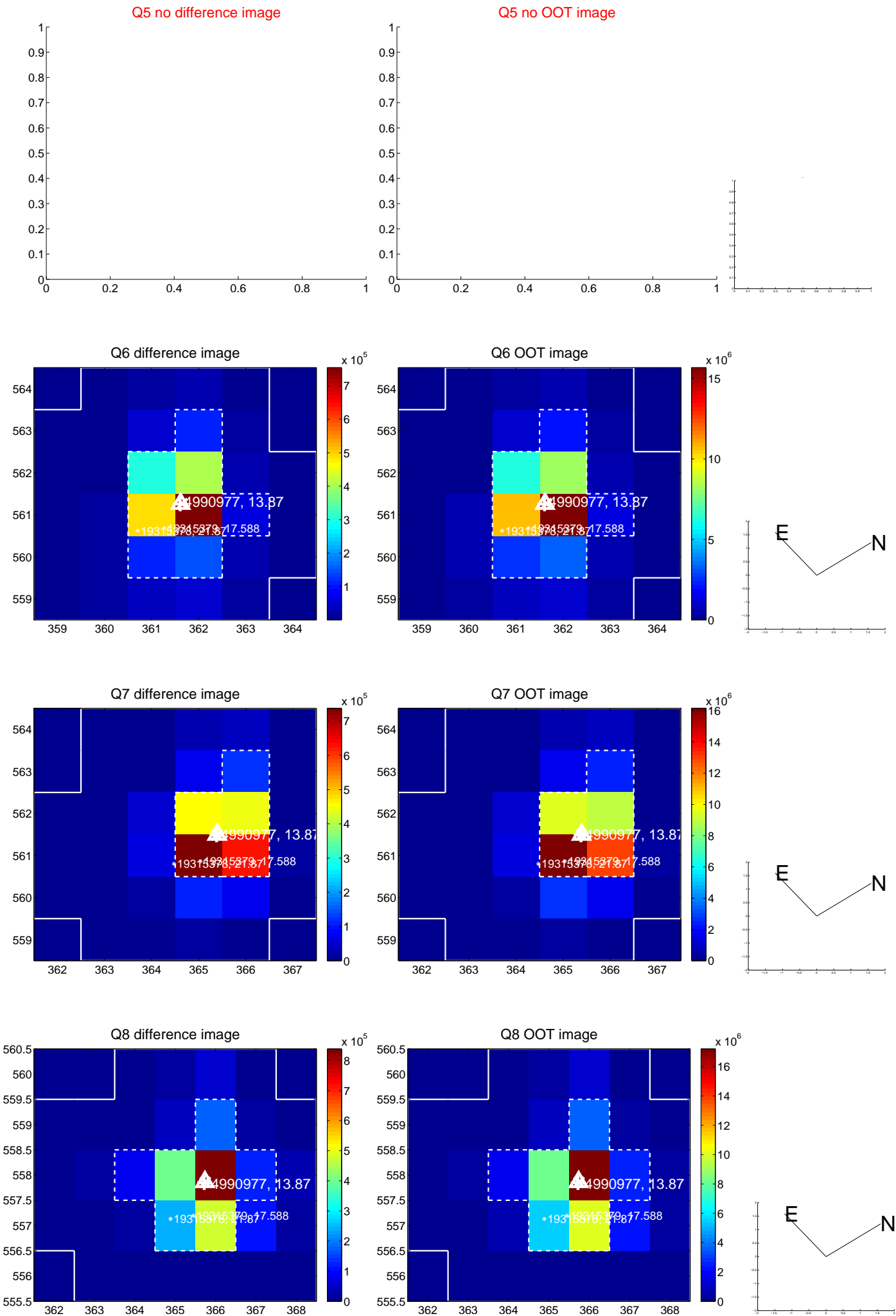


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

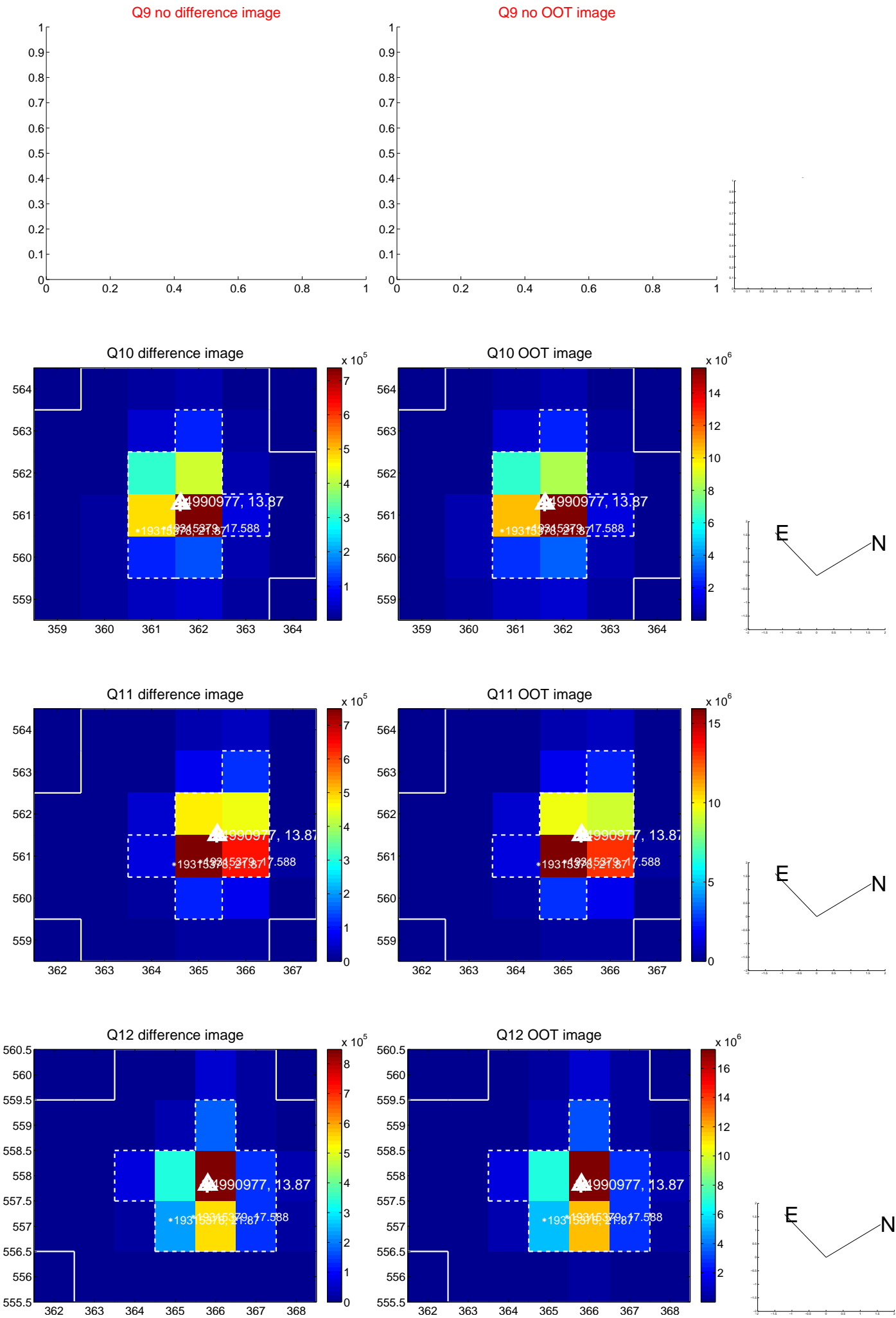
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



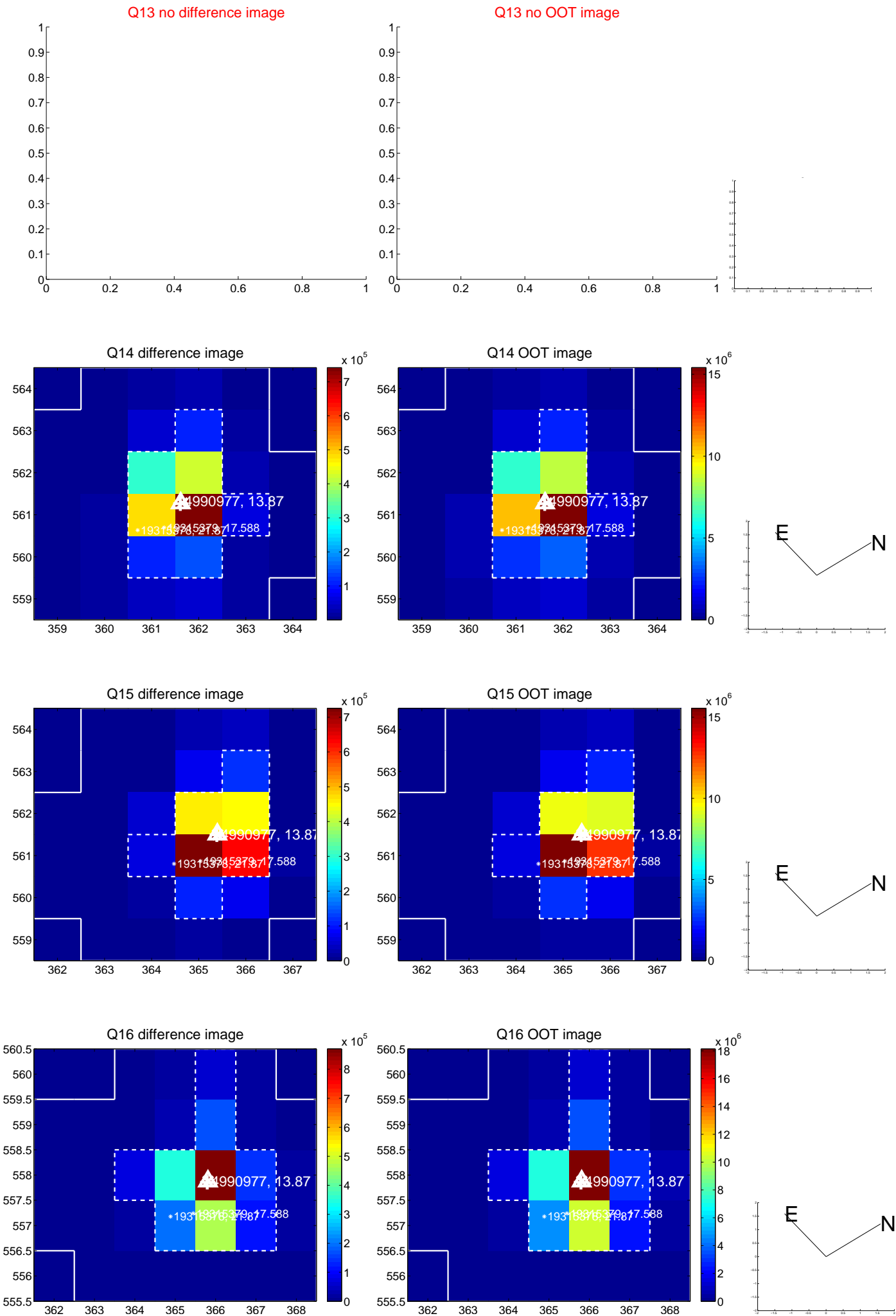
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



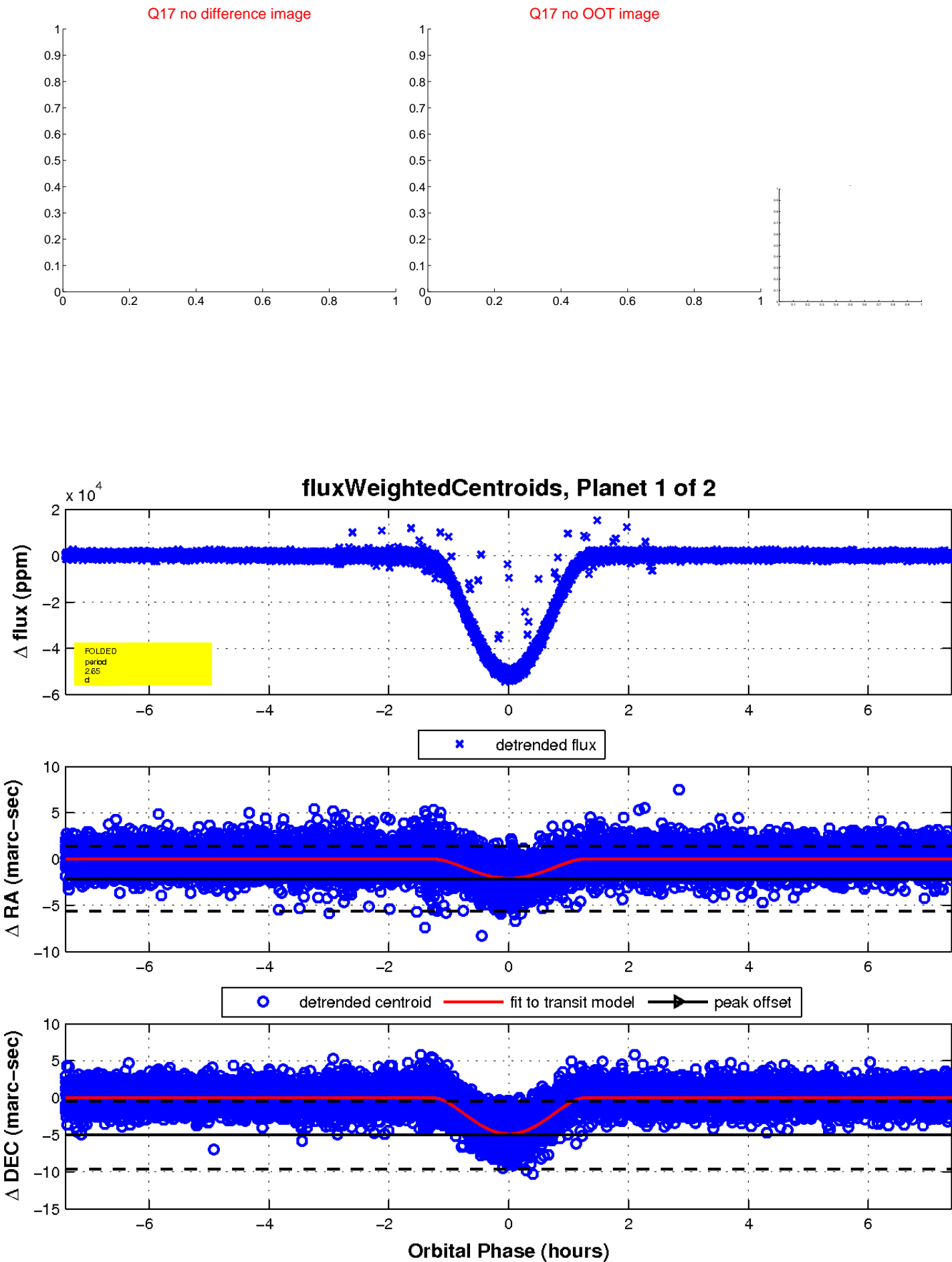
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

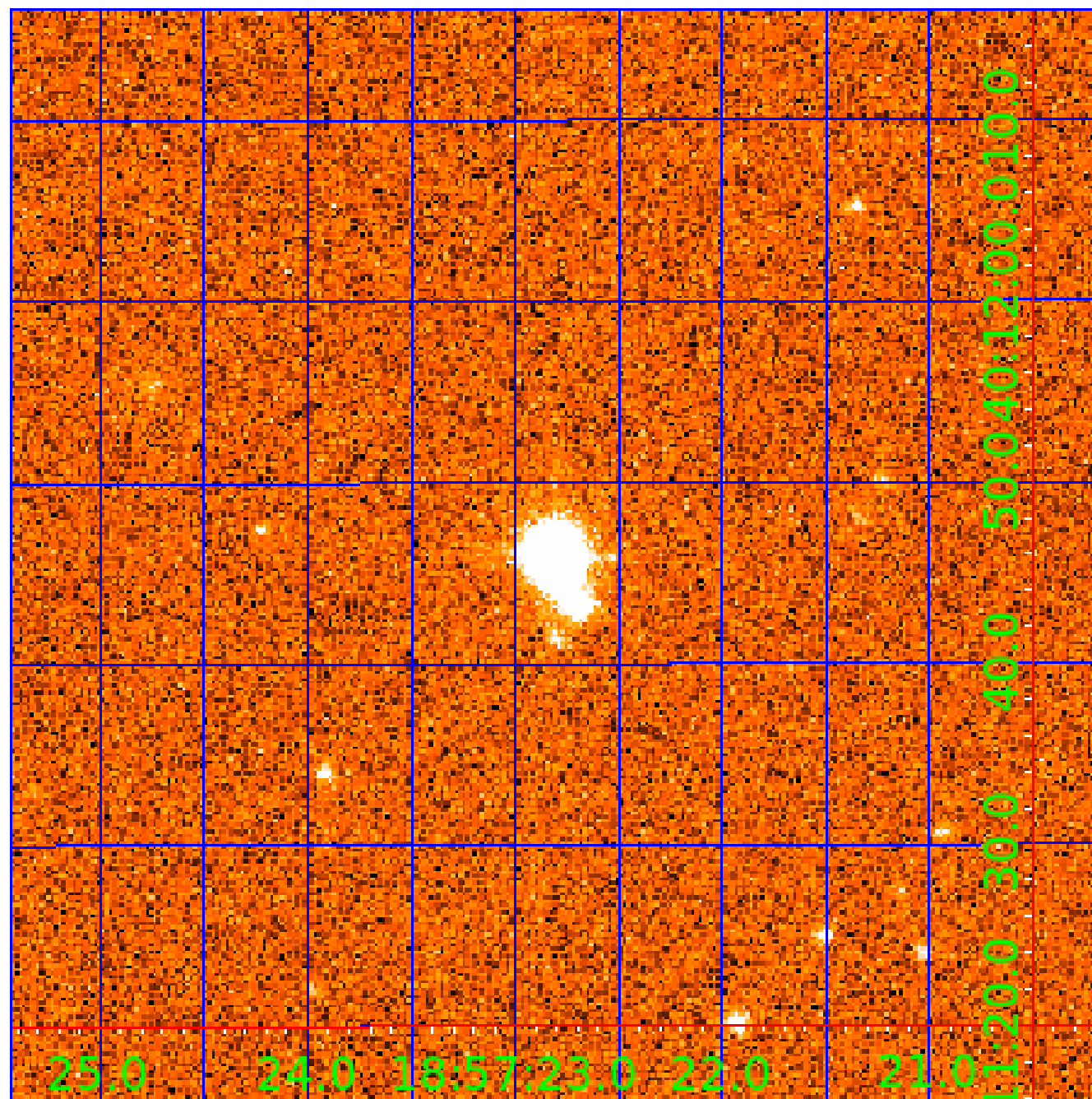


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004990977

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})
004990977-01	OBS	6123.01	2.649025	133.379670	51688.8	2.464	3582.0	3022.2	0.99	5838	31.57	851.81
004990977-02	OBS	No	2.649016	132.057822	15694.1	2.379	1133.6	858.8	0.99	5838	21.71	851.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004990977-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
004990977-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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

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

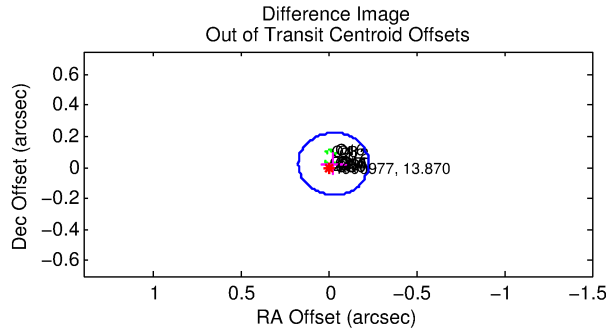
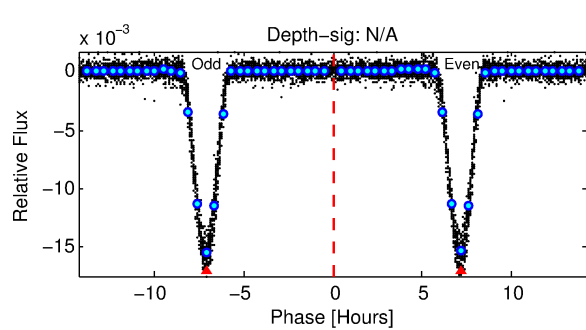
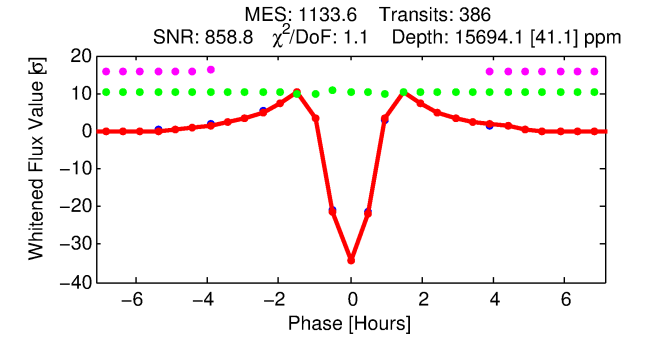
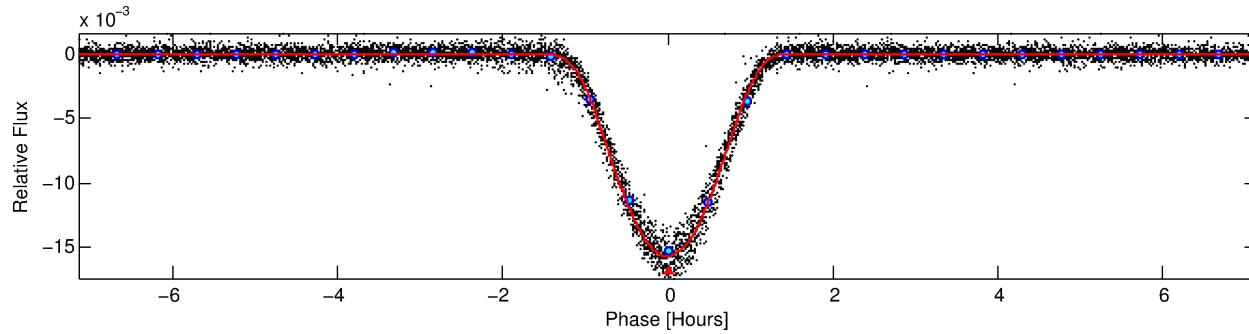
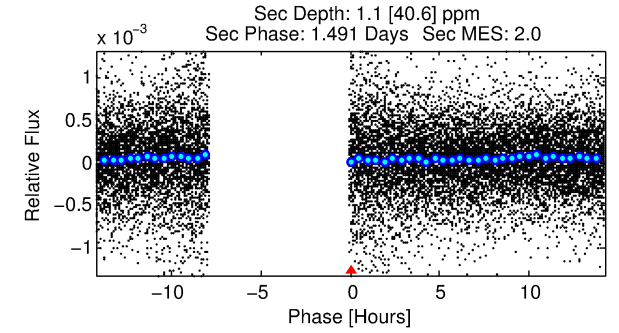
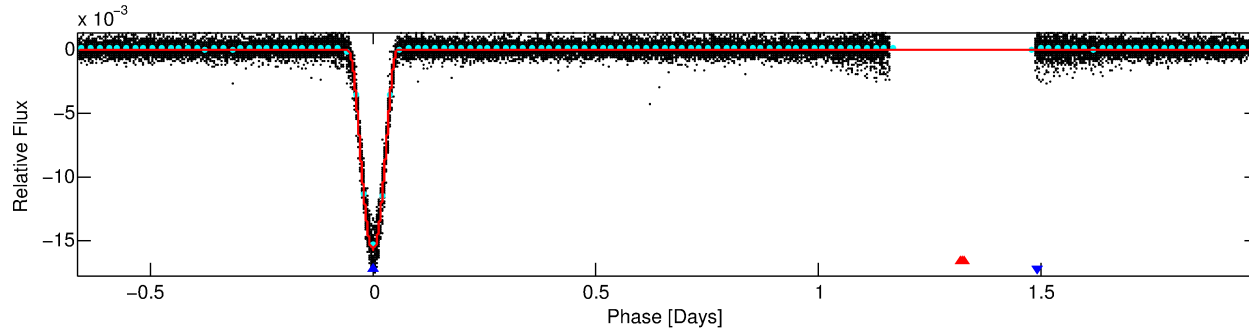
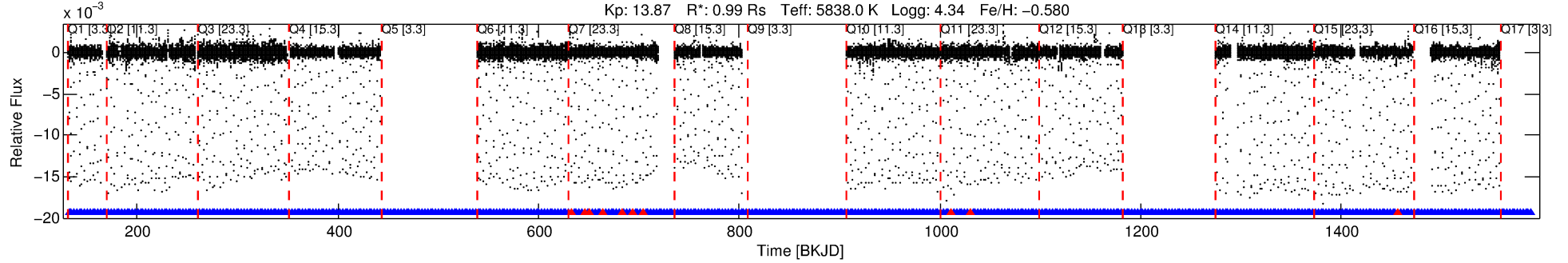
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004990977-02

No Significant Match Found

DV One-Page Summary

KIC: 4990977 Candidate: 2 of 2 Period: 2.649 d
KOI: K06123 Corr: No Ephemeris Match



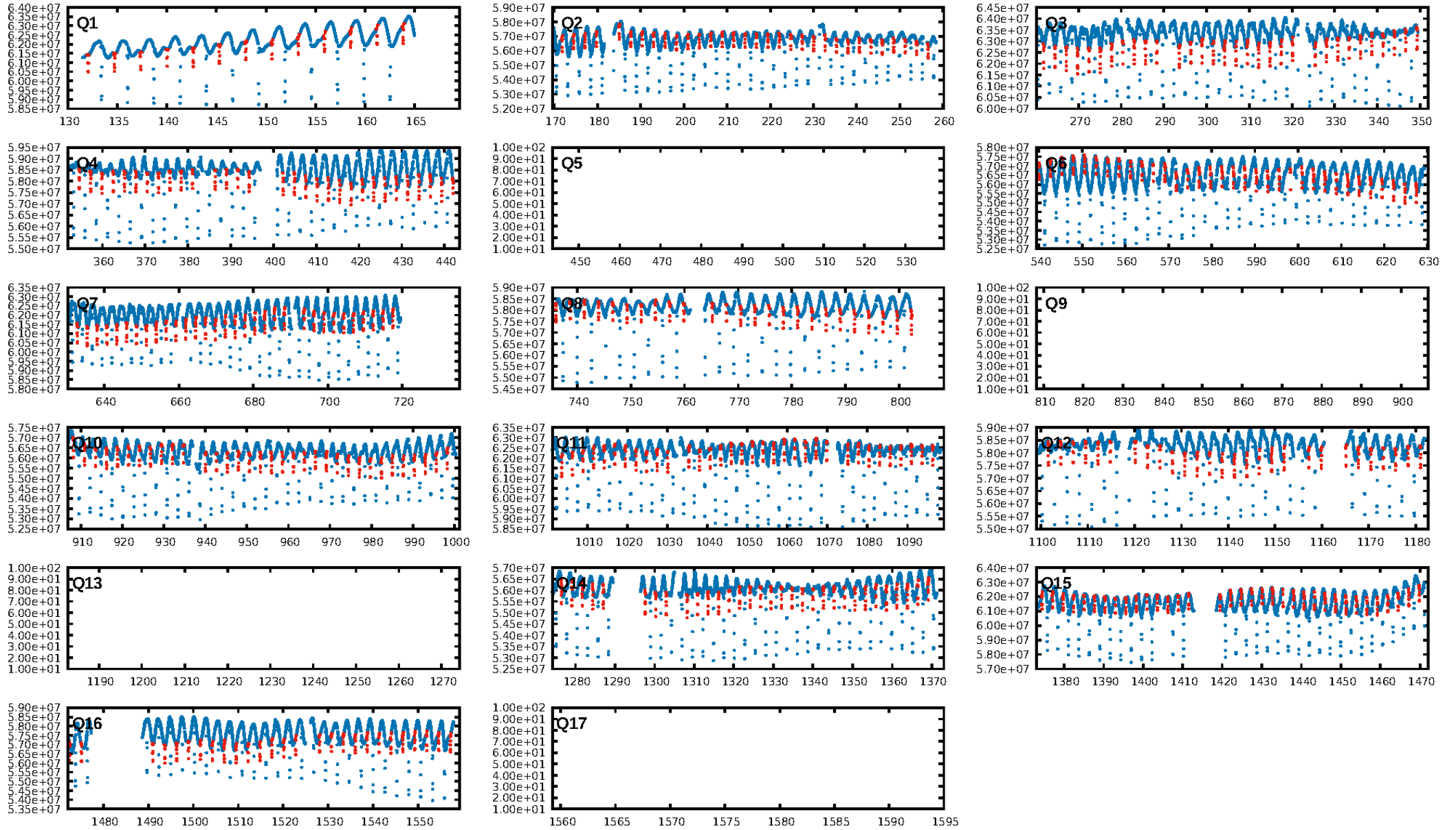
DV Fit Results:

Period = 2.64902 [0.00000] d
Epoch = 132.0578 [0.0000] BKJD
Rp/R* = 0.2013 [0.0128]
a/R* = 5.82 [0.04]
b = 1.00 [0.02]
Seff = 851.81 [329.30]
Teff = 1378 [133] K
Rp = 21.71 [6.54] Re
a = 0.0345 [0.0087] AU
Ag = 0.00 [0.06] [-17.64 σ]
Teffp = 423 [3858] K [-0.25 σ]

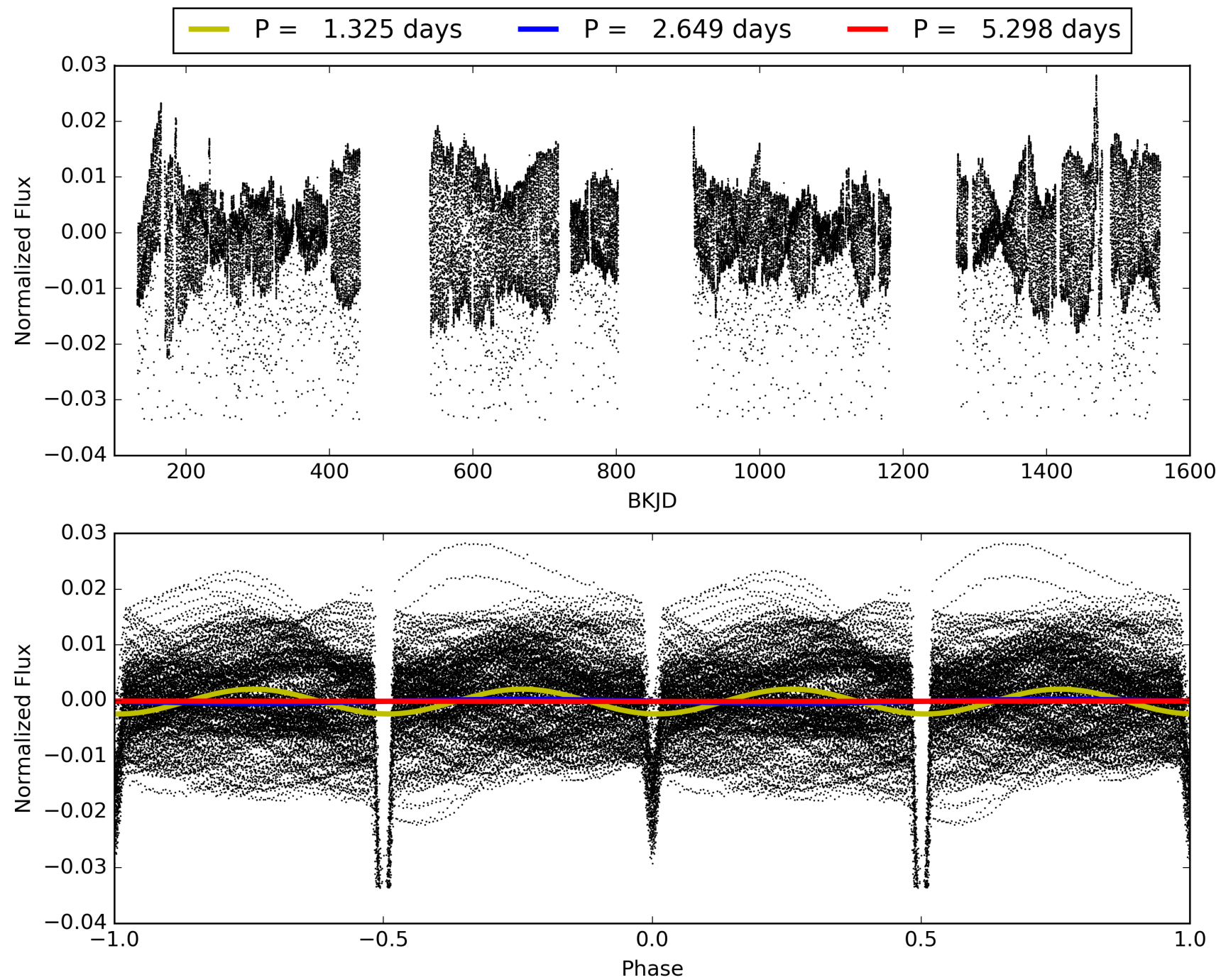
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.97 [363/373]
GhostDiagnostic-chr: 1.993
Centroid-sig: 0.1%
Centroid-so: 0.226 arcsec [29.59 σ]
OotOffset-rm: 0.035 arcsec [0.53 σ]
KicOffset-rm: 0.063 arcsec [0.91 σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

TCE 004990977-02, PDC Light Curves

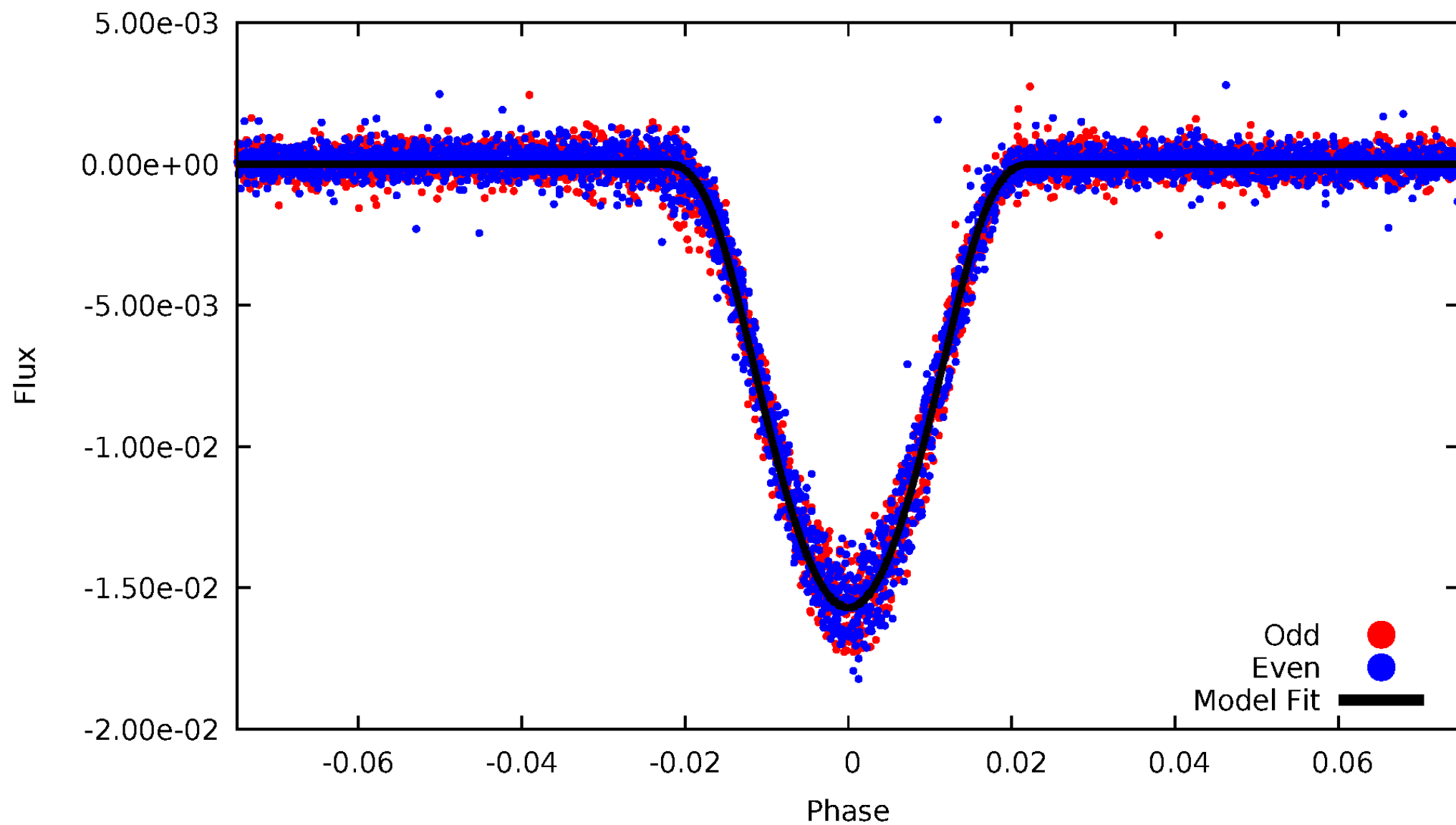


TCE 004990977-02



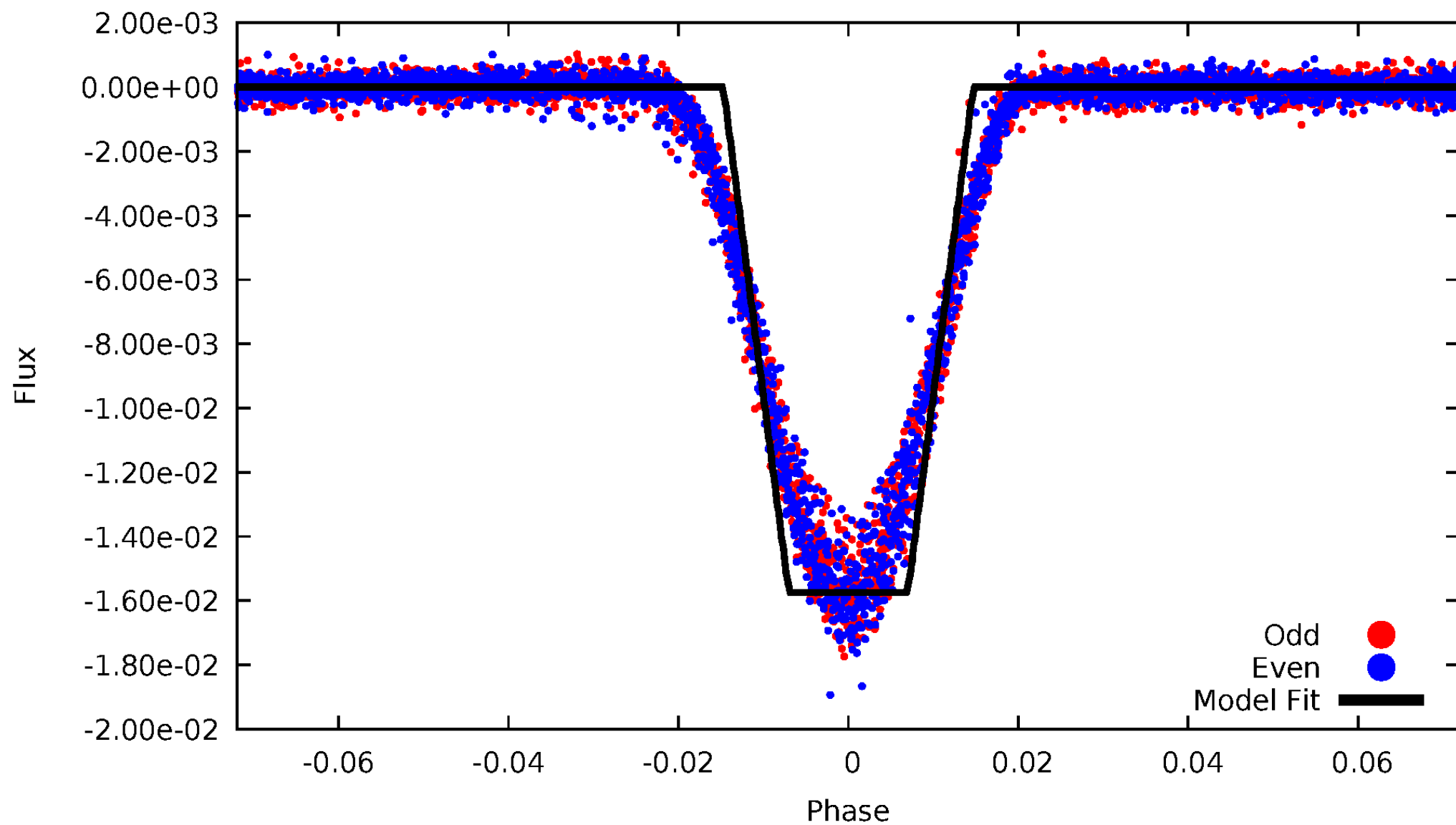
DV Odd/Even

TCE 004990977-02



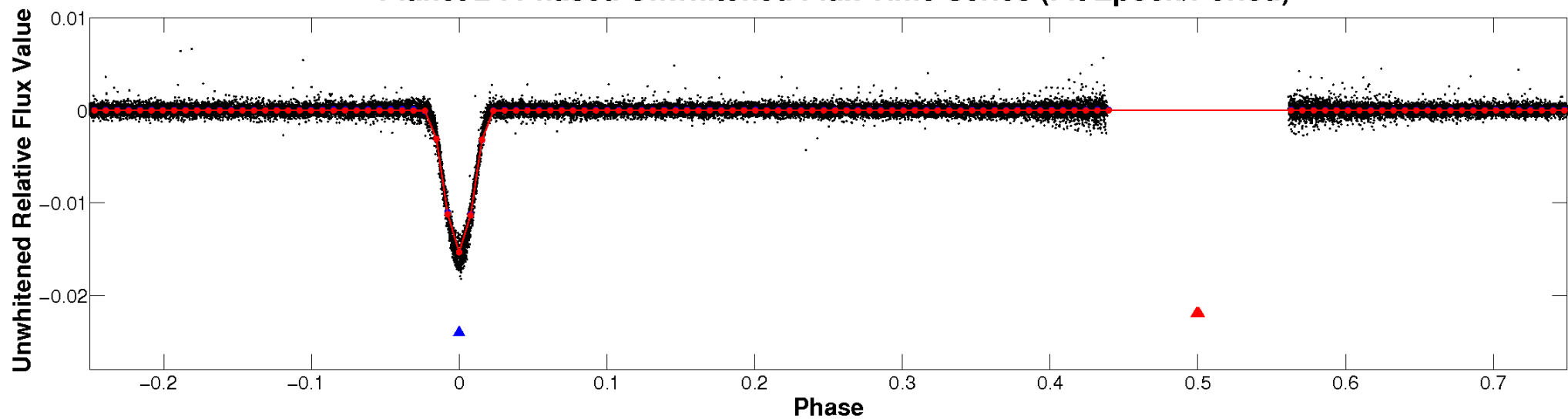
ALT Odd/Even

TCE 004990977-02

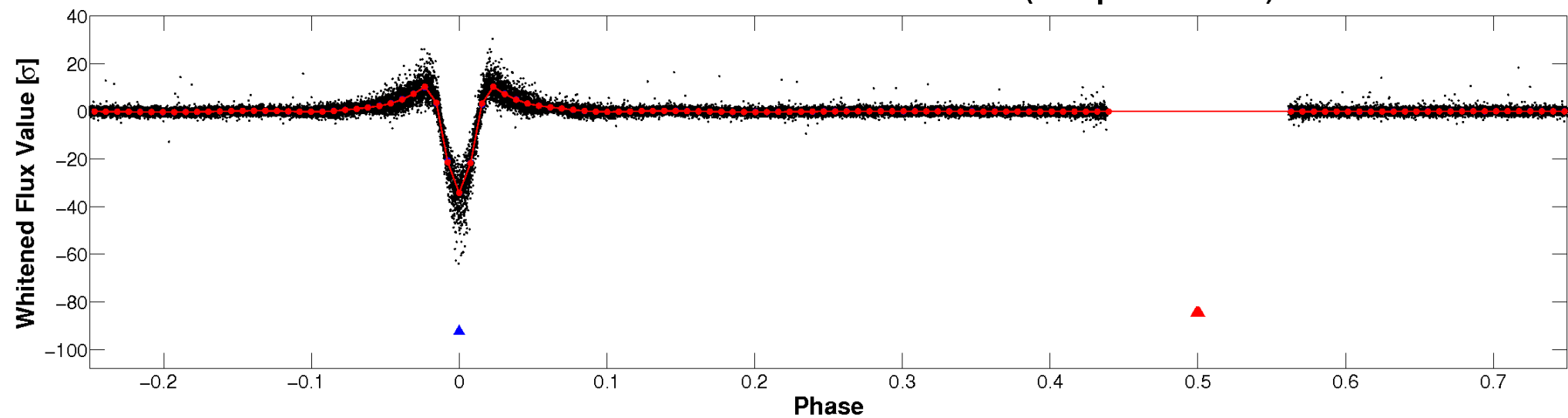


Non-Whitened Vs. Whitened Light Curve

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

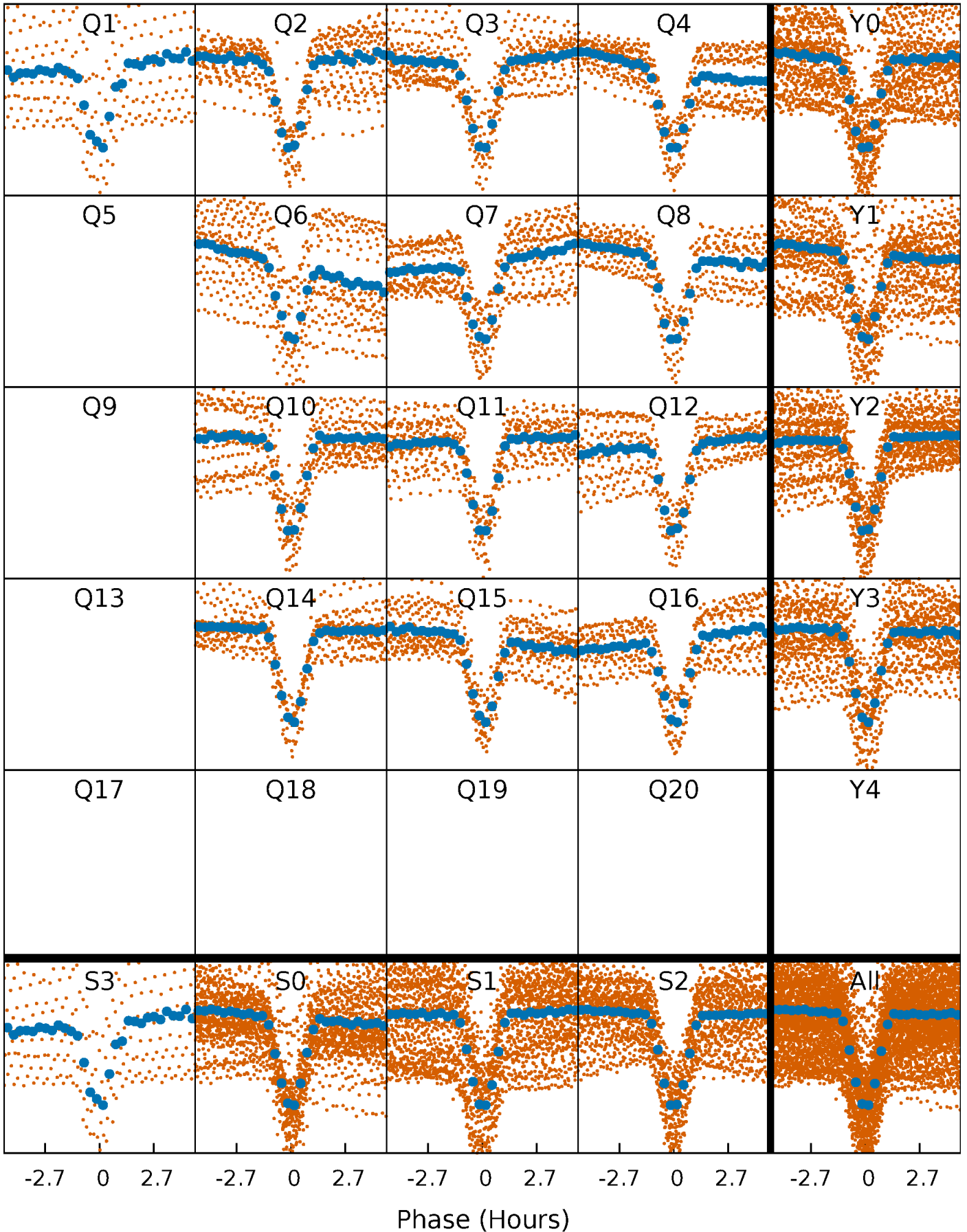


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



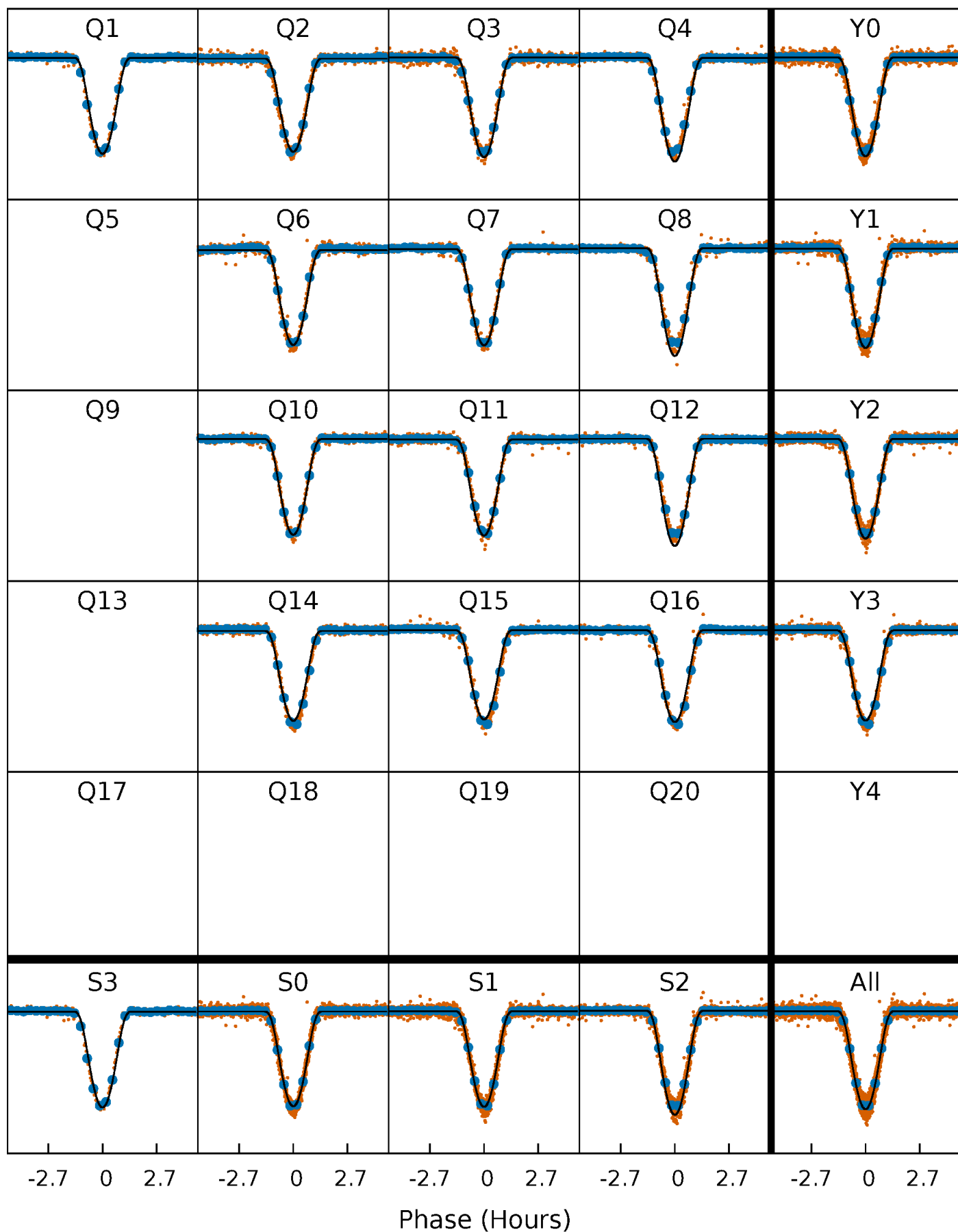
PDC Quarter-Phased Transit Curves

TCE 004990977-02 P= 2.649016 Days $T_0=132.057822$ (BKJD)



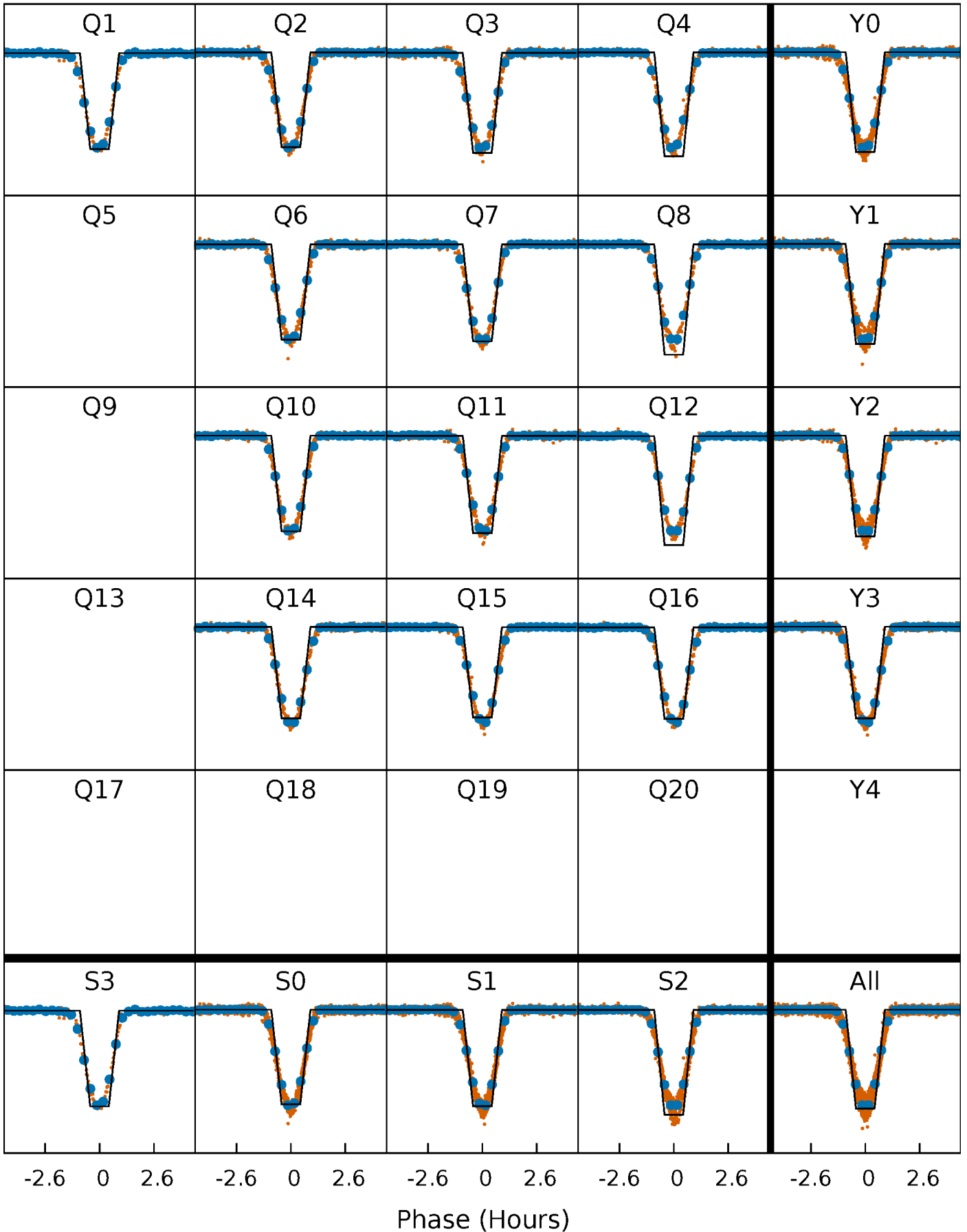
DV Quarter-Phased Transit Curves

TCE 004990977-02 P= 2.649016 Days $T_0=132.057822$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

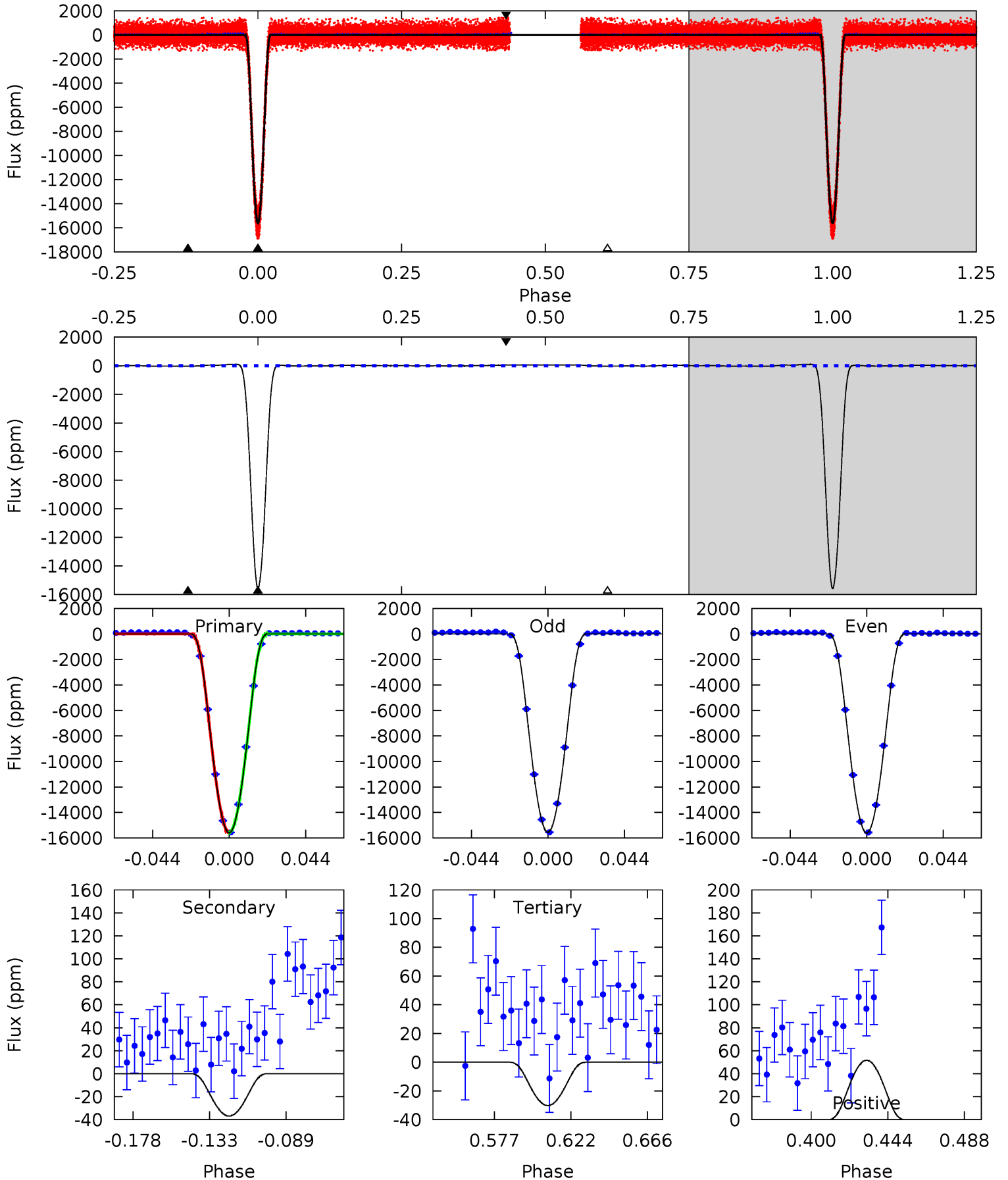
TCE 004990977-02 P= 2.649018 Days $T_0=132.057446$ (BKJD)



DV Model-Shift Uniqueness Test

004990977-02, P = 2.649016 Days, E = 129.408806 Days

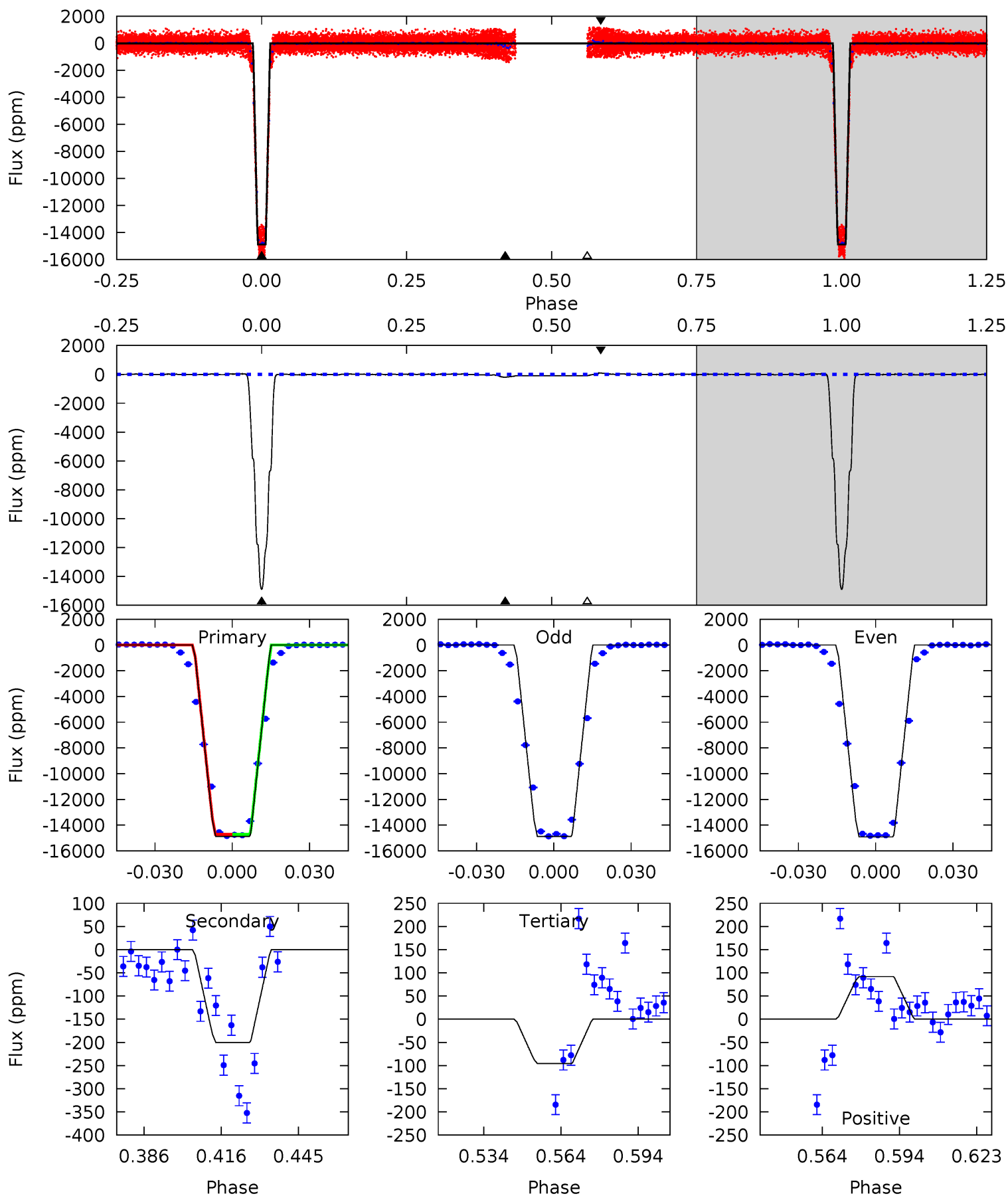
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1860	4.40	3.60	6.16	4.73	2.01	2.71	1856	1854	0.80	-1.76	3.77	0.99	0.01	0.26



Alt Model-Shift Uniqueness Test

004990977-02, P = 2.649018 Days, E = 129.408428 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1381	18.5	8.88	8.53	4.81	2.17	1.69	1372	1372	9.67	10.0	1.39	1.00	0.01	0



Stellar Parameters For KIC 004990977

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5838^{+159}_{-159}	$4.342^{+0.205}_{-0.205}$	$-0.580^{+0.300}_{-0.250}$	$0.988^{+0.291}_{-0.218}$	$0.781^{+0.110}_{-0.047}$	$1.142^{+1.208}_{-0.592}$
	+3%/-3%	+5%/-5%	+52%/-43%	+29%/-22%	+14%/-6%	+106%/-52%
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 004990977-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-37 ± 8	$21.65^{+3.97}_{-3.21}$	1919^{+153}_{-132}	-2388^{+100}_{-111}	$0.052^{+0.025}_{-0.017}$
Alt.	-200 ± 11	$13.71^{+2.69}_{-2.42}$	1932^{+158}_{-145}	2537^{+143}_{-157}	$0.700^{+0.324}_{-0.203}$

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

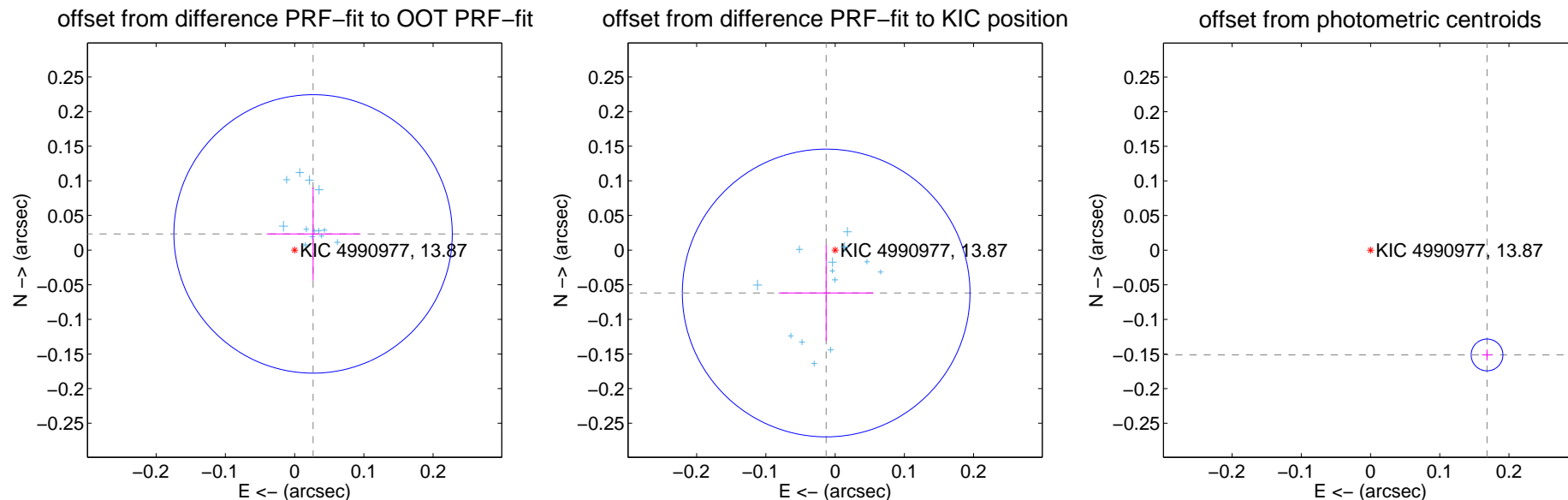
DV Centroid Data

Supplemental centroid analysis for 004990977-02. Kepler magnitude: 13.87. Transit SNR 858.82

There are 13 quarters with good PRF difference image offsets

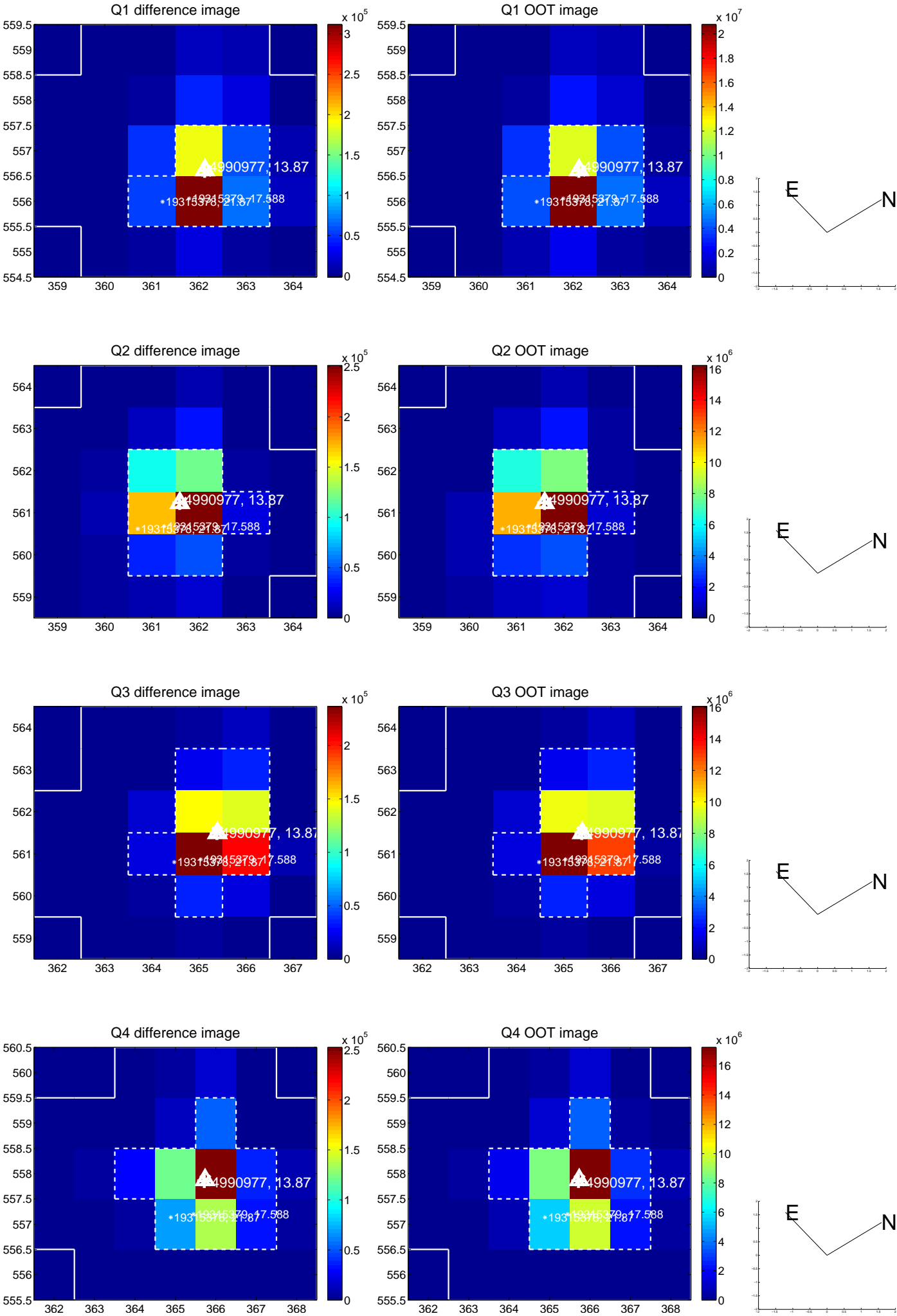
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.035 ± 0.067	0.53	-0.027 ± 0.067	0.023 ± 0.067
PRF-fit source offset from KIC position	0.063 ± 0.069	0.91	0.013 ± 0.068	-0.062 ± 0.069
photometric centroid source offset	0.23 ± 0.01	29.59	-0.17 ± 0.01	-0.15 ± 0.01

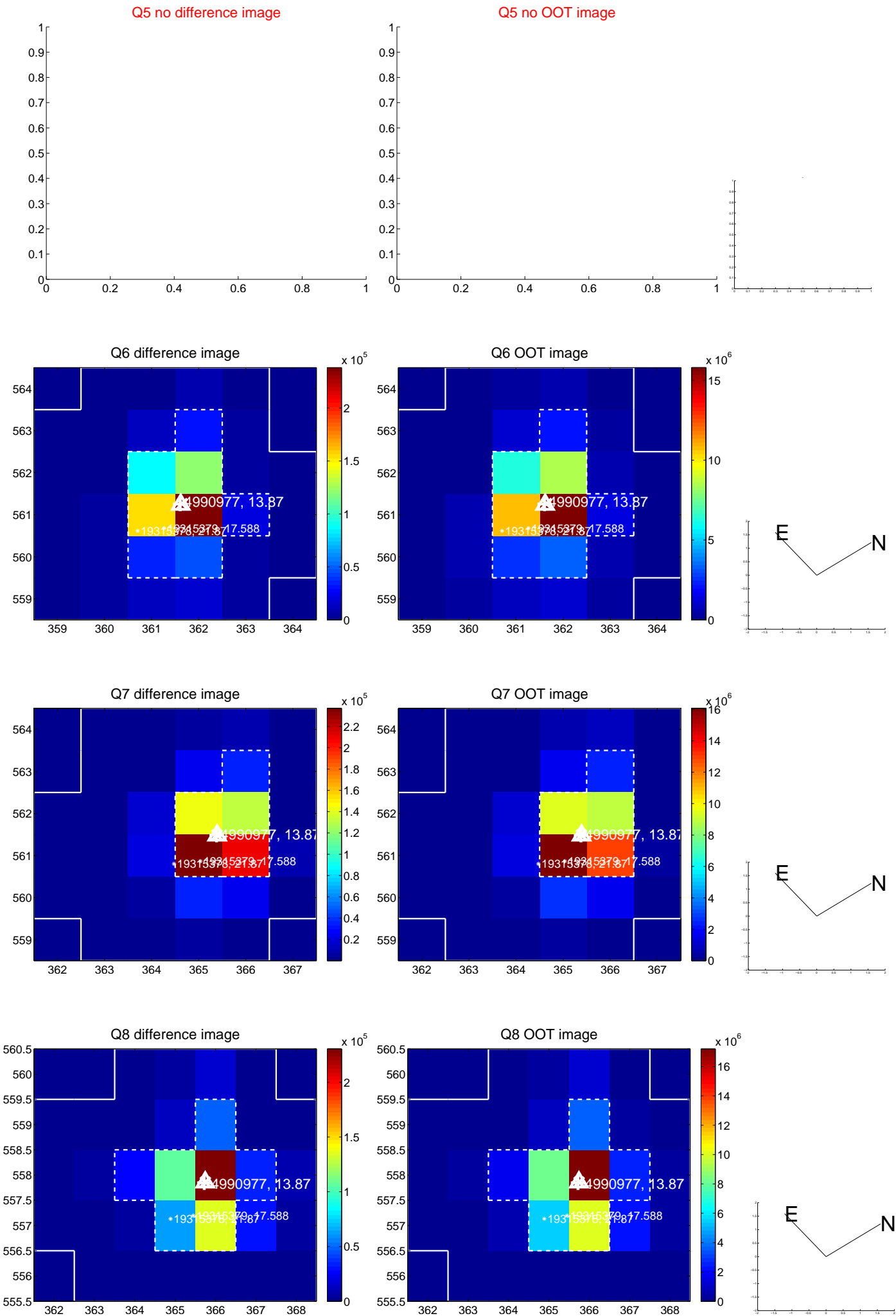


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

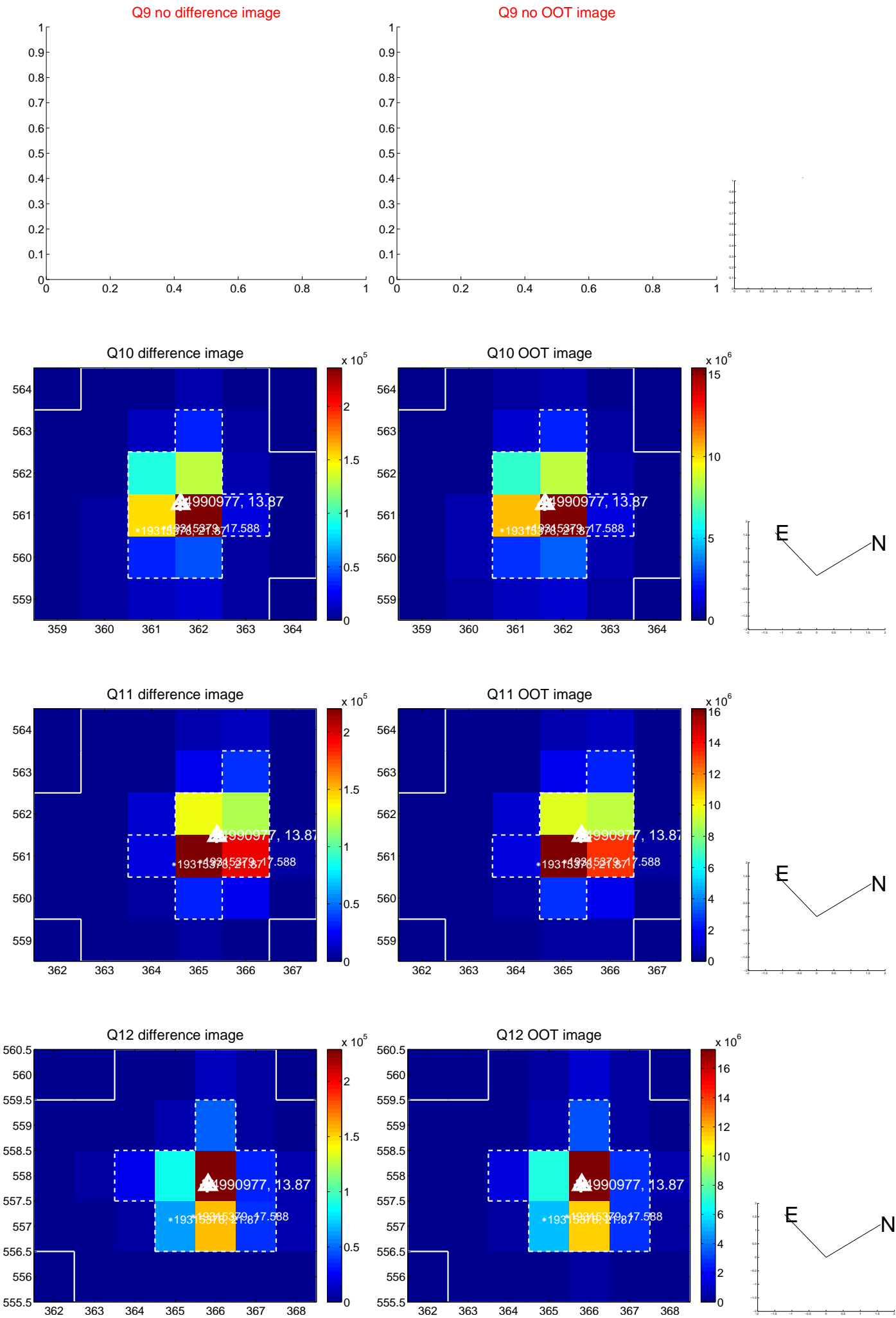
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



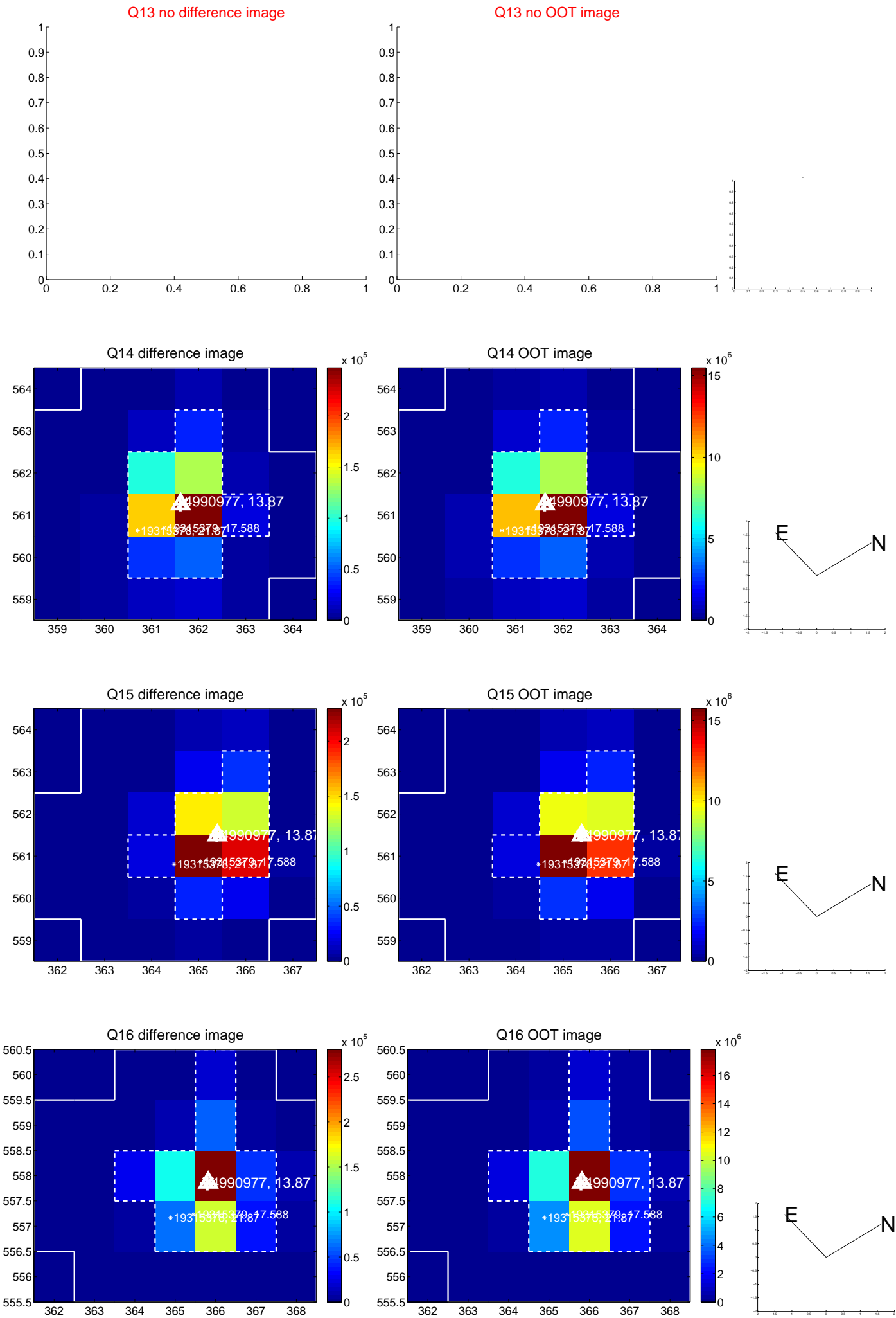
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



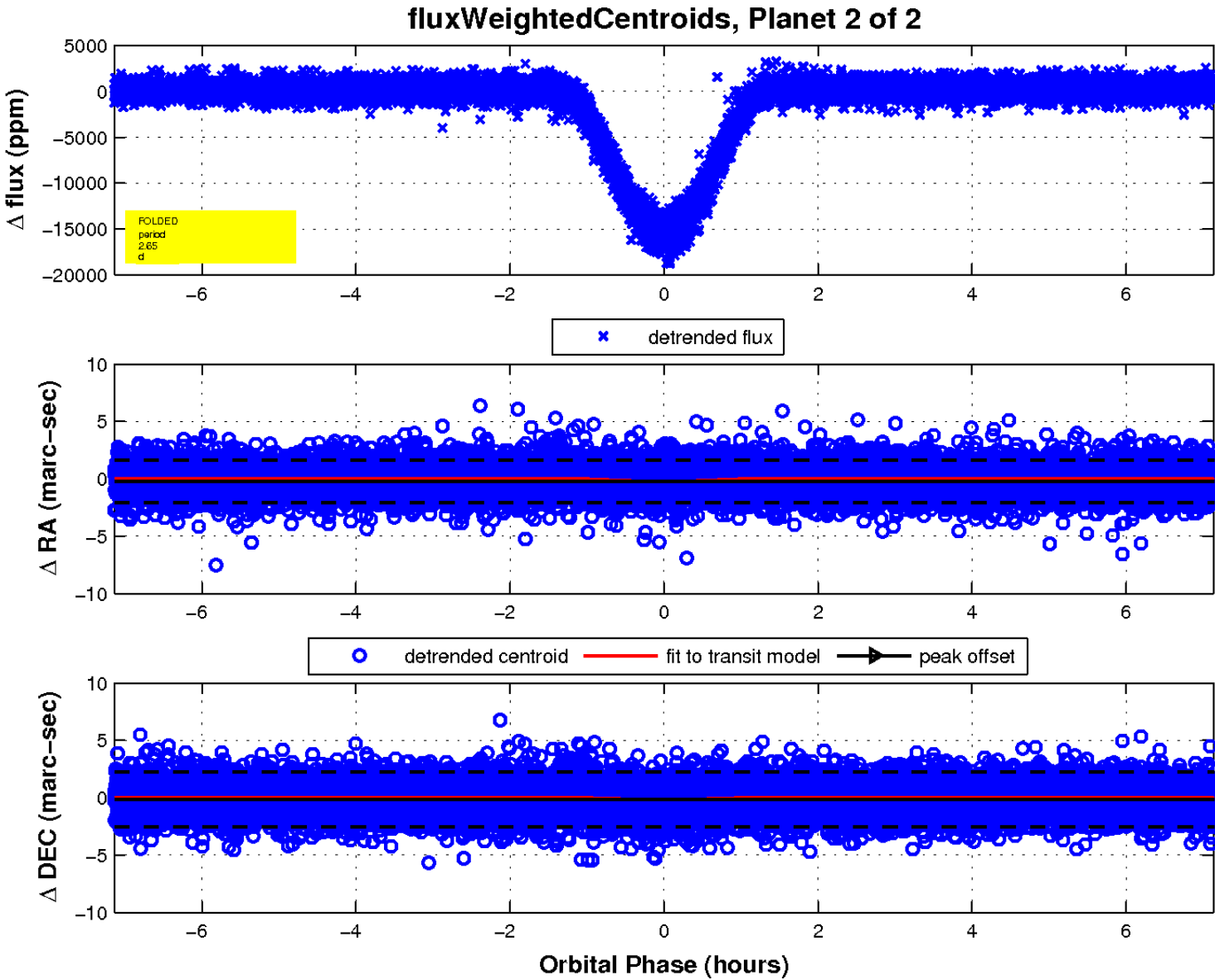
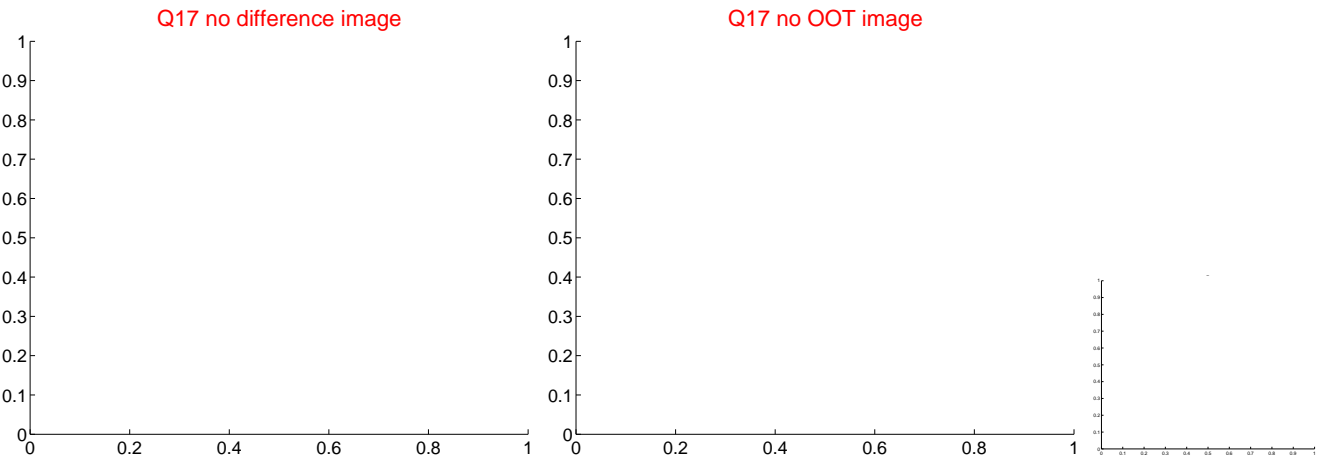
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

