

KIC 006862603

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})
006862603-01	OBS	0866.01	2.861152	131.593897	867.2	1.602	47.6	54.3	1.02	6126	3.57	797.20
006862603-02	OBS	No	2.861144	133.027666	184.8	1.392	10.6	12.0	1.02	6126	1.42	797.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006862603-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
006862603-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET

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 006862603-01

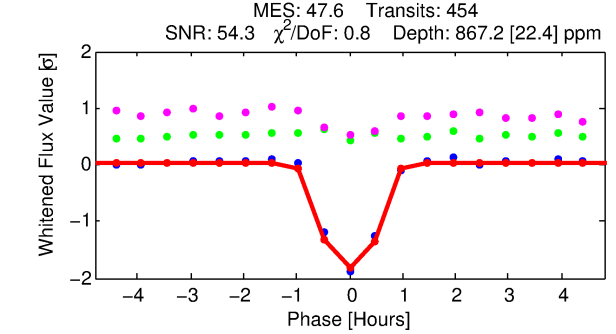
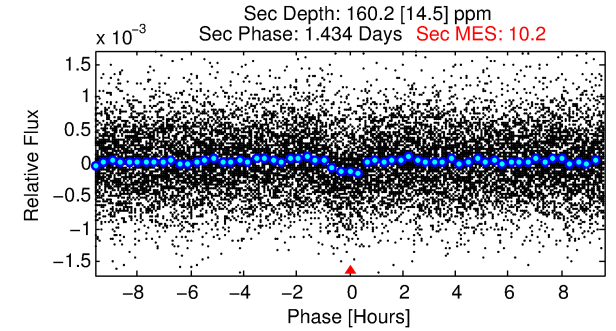
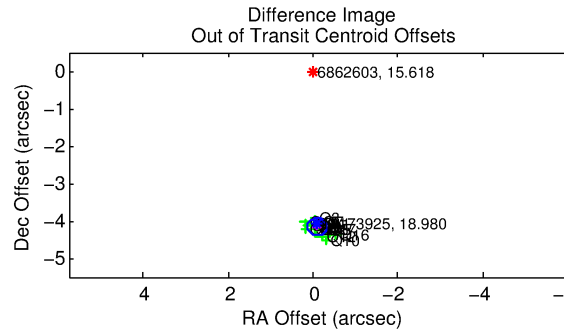
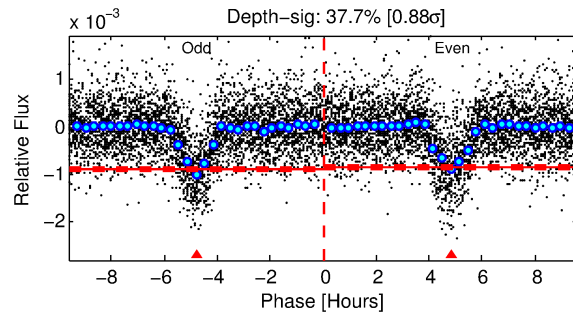
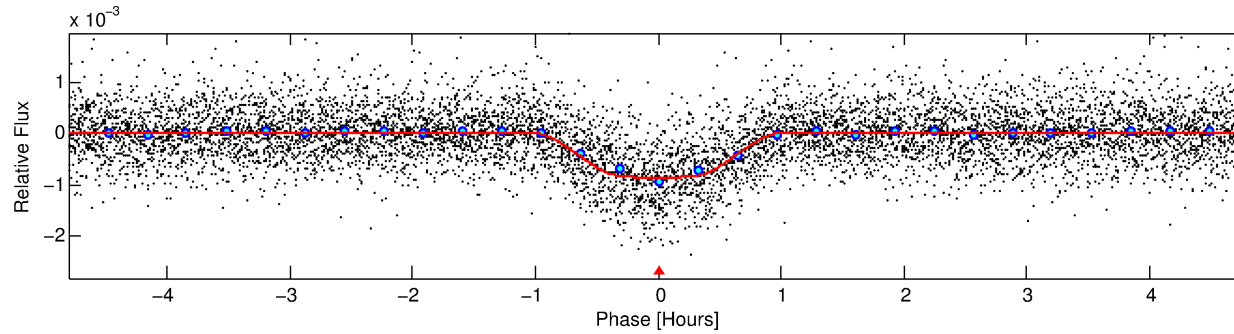
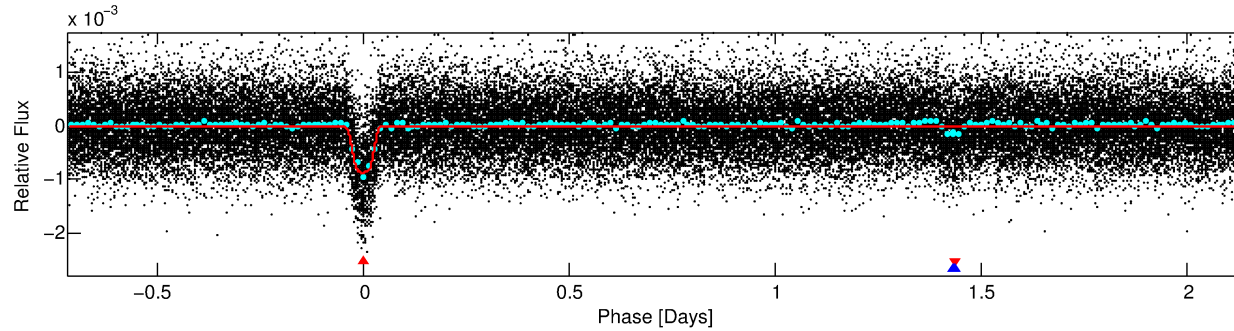
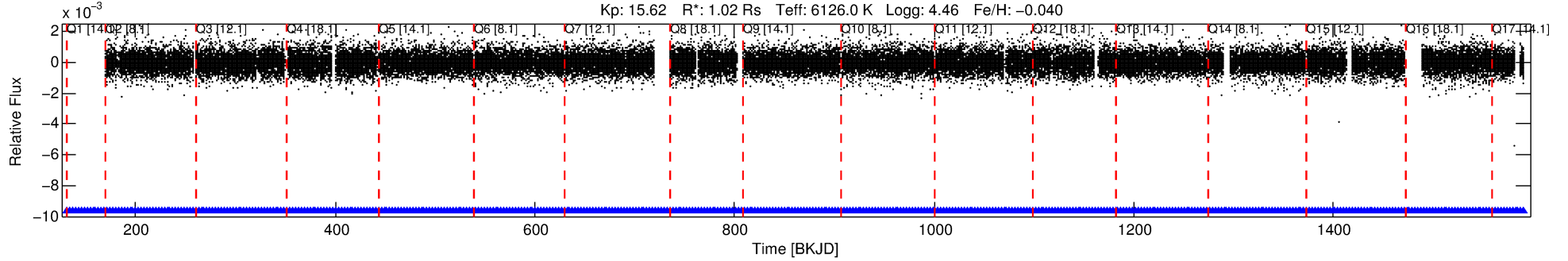
No Significant Match Found

DV One-Page Summary

KIC: 6862603 Candidate: 1 of 2 Period: 2.861 d

KOI: K00866.01 Corr: 0.982

Kp: 15.62 R*: 1.02 Rs Teff: 6126.0 K Logg: 4.46 Fe/H: -0.040



DV Fit Results:

Period = 2.86115 [0.00000] d
Epoch = 131.5939 [0.0005] BKJD
Rp/R* = 0.0320 [0.0021]
a/R* = 6.88 [2.14]
b = 0.90 [0.07]
Seff = 797.20 [325.03]
Teq = 1355 [138] K
Rp = 3.57 [1.16] Re
a = 0.0406 [0.0108] AU
Ag = 11.42 [4.74] [2.20σ]
Teffp = 3851 [205] K [10.11σ]

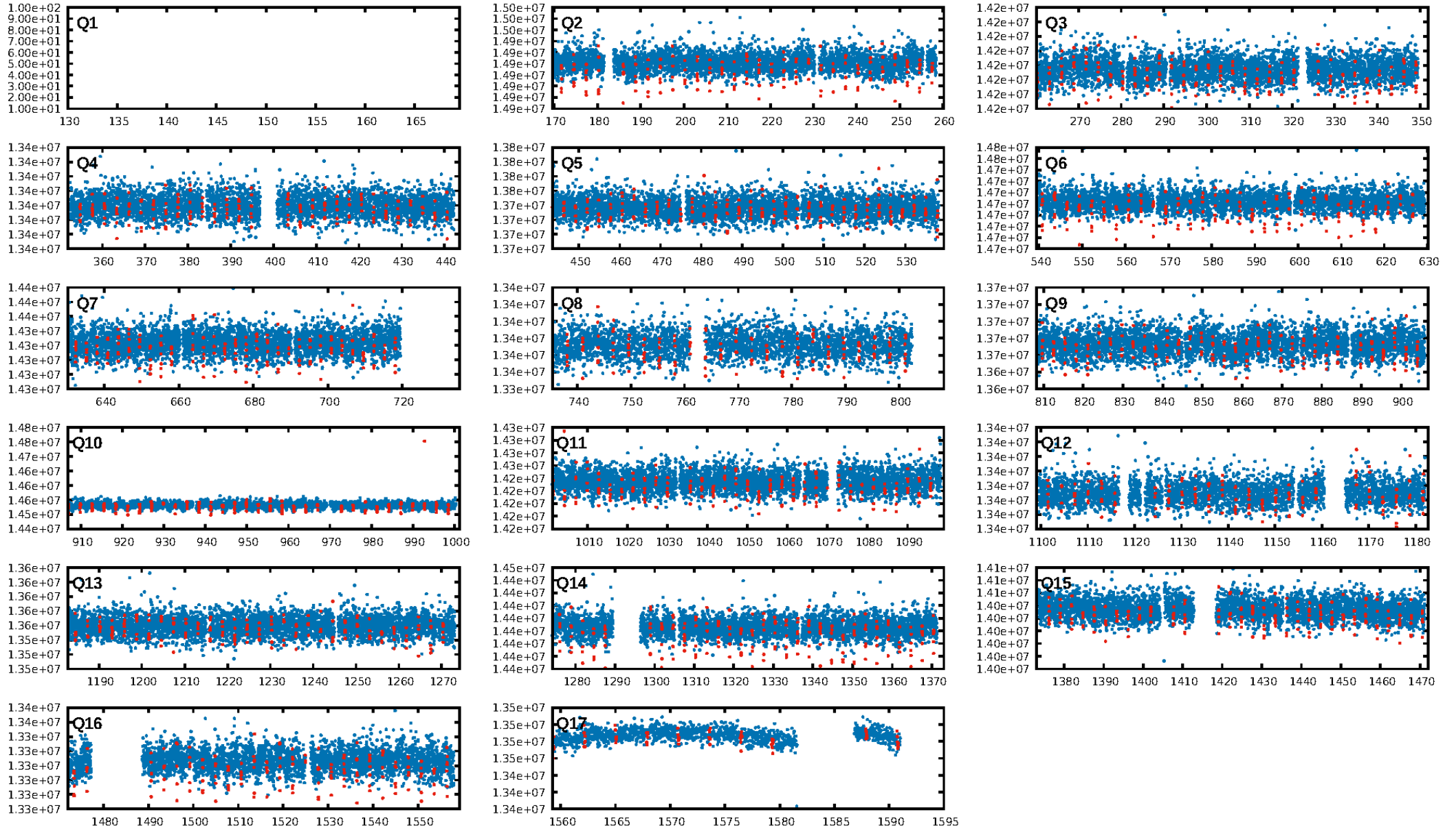
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [444/444]
GhostDiagnostic-chr: 0.512
Centroid-sig: 0.0%
Centroid-so: 7.298 arcsec [32.28σ]
OotOffset-rm: 4.162 arcsec [54.19σ]
KicOffset-rm: 4.135 arcsec [52.58σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

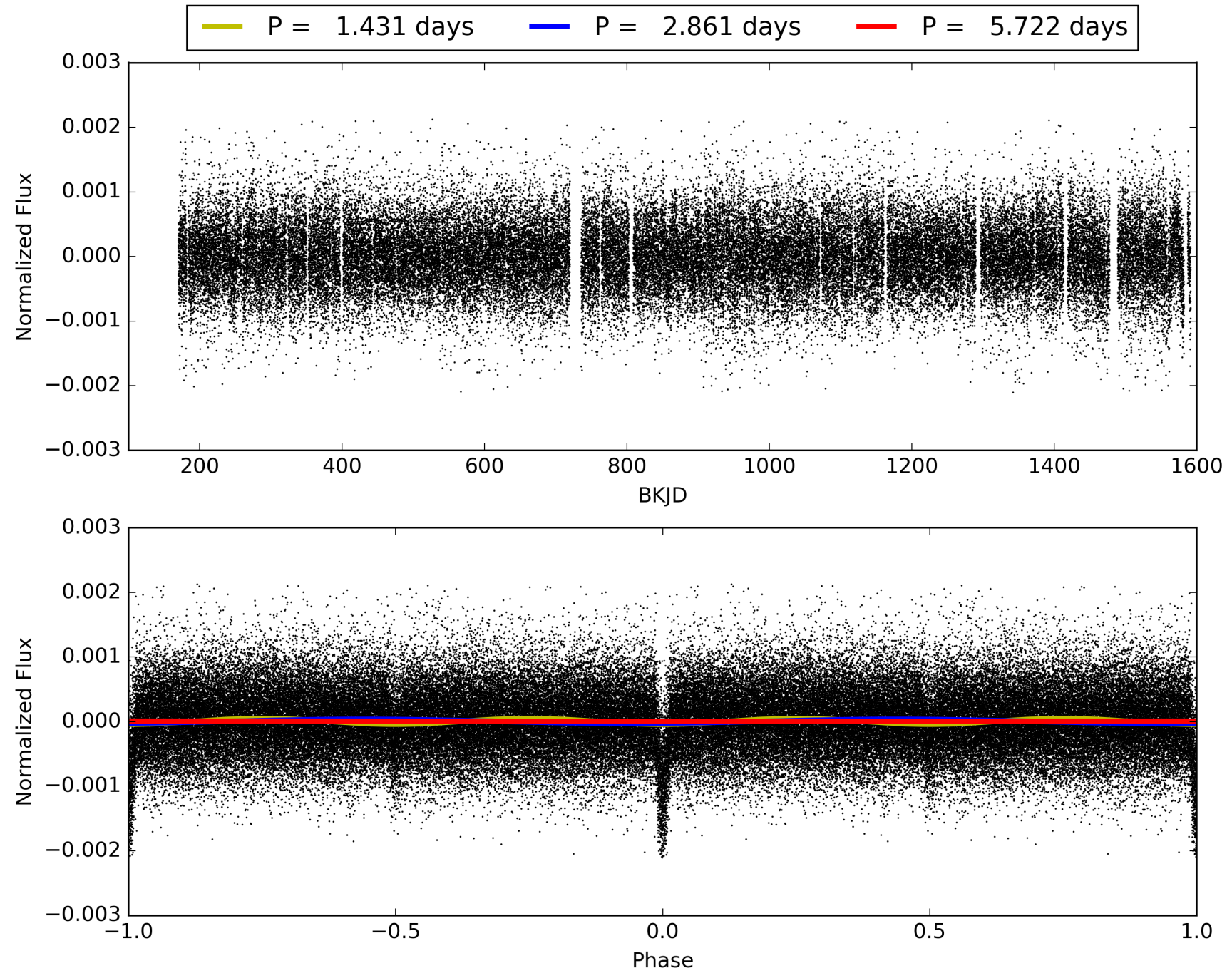
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 13:35:00 Z

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

TCE 006862603-01, PDC Light Curves

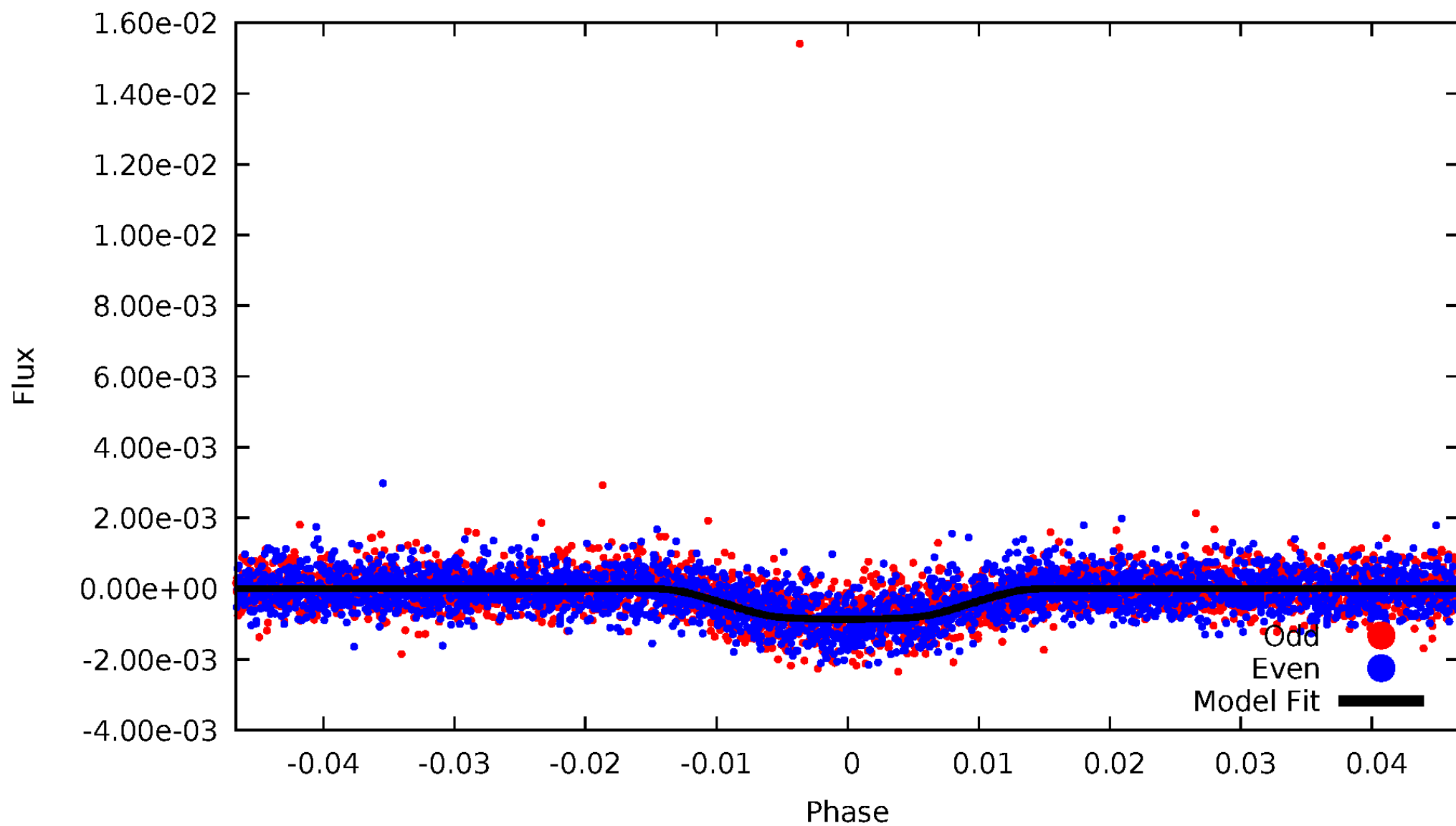


TCE 006862603-01



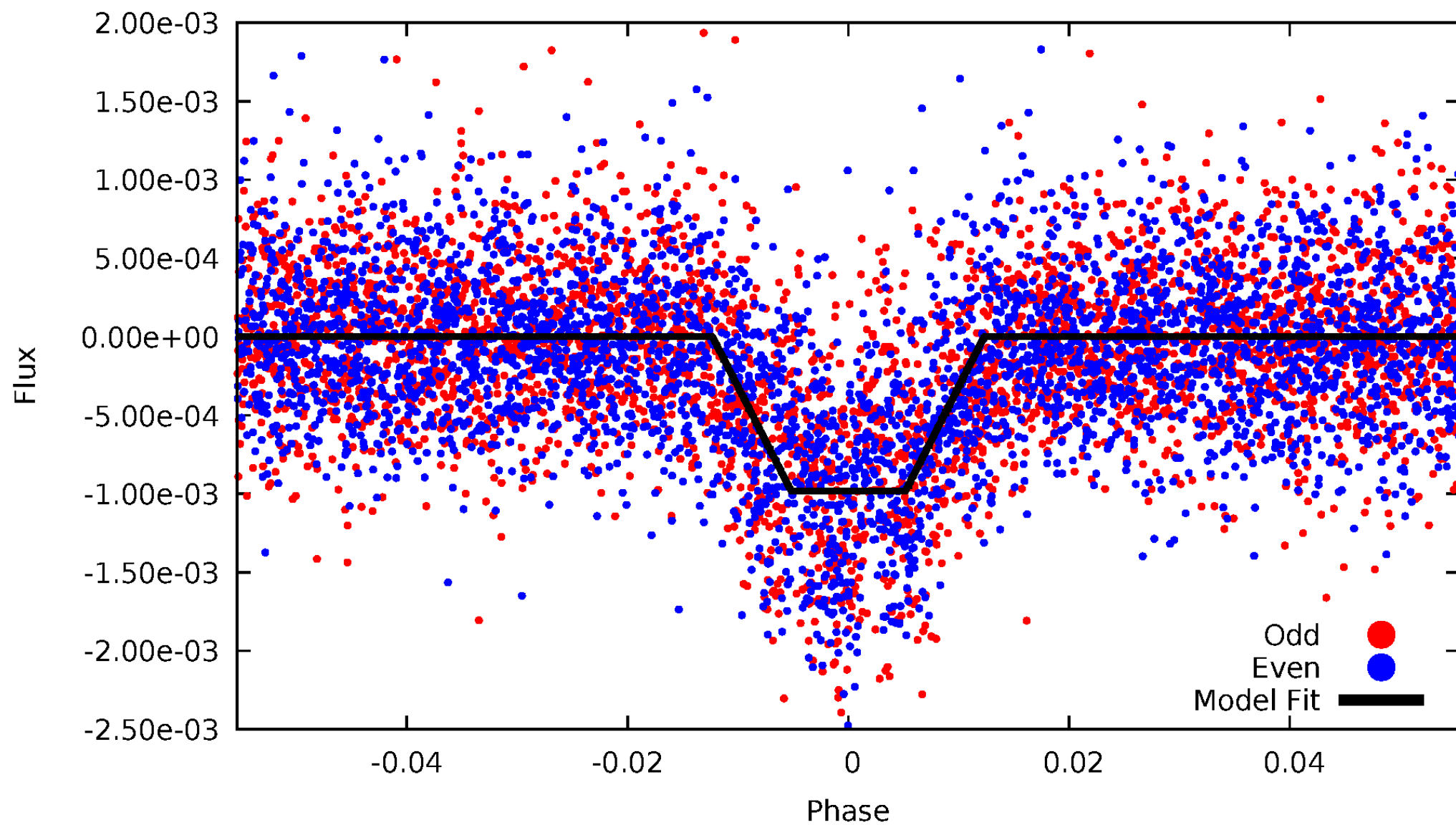
DV Odd/Even

TCE 006862603-01



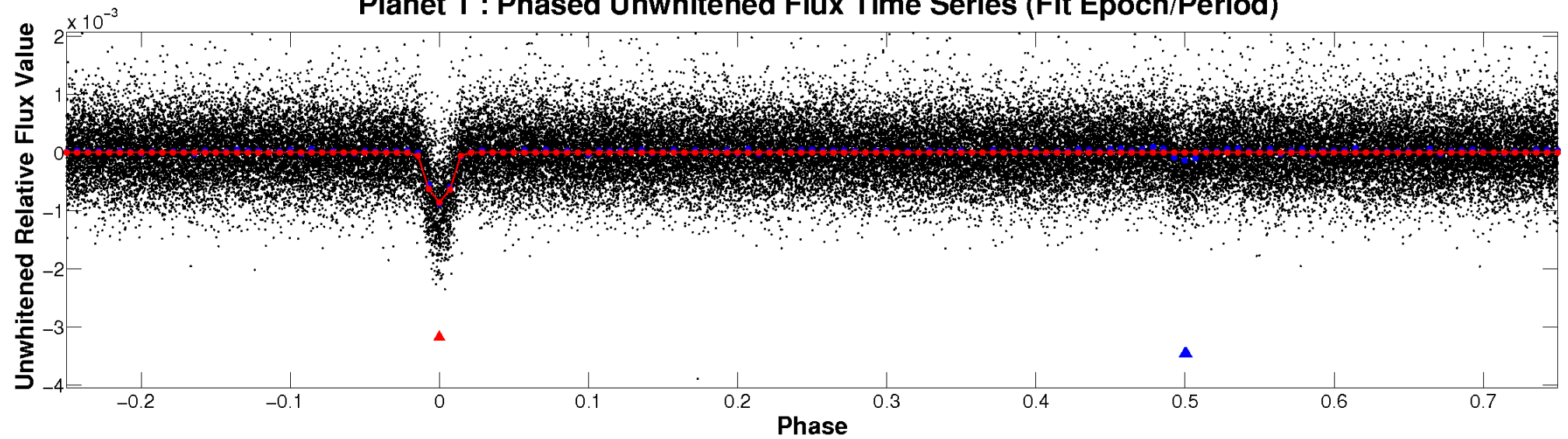
ALT Odd/Even

TCE 006862603-01

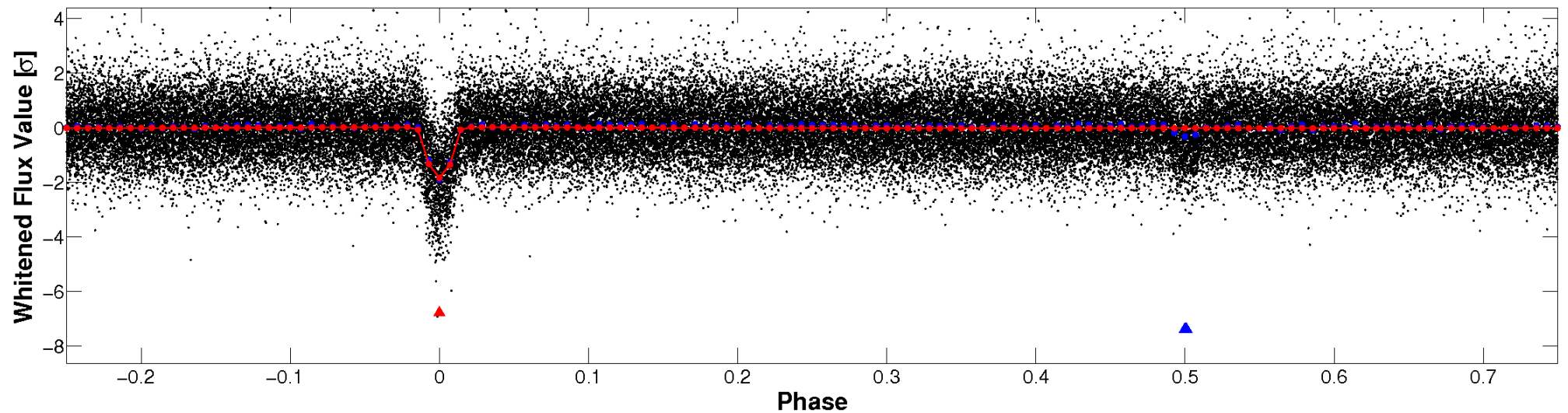


Non-Whitened Vs. Whitened Light Curve

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

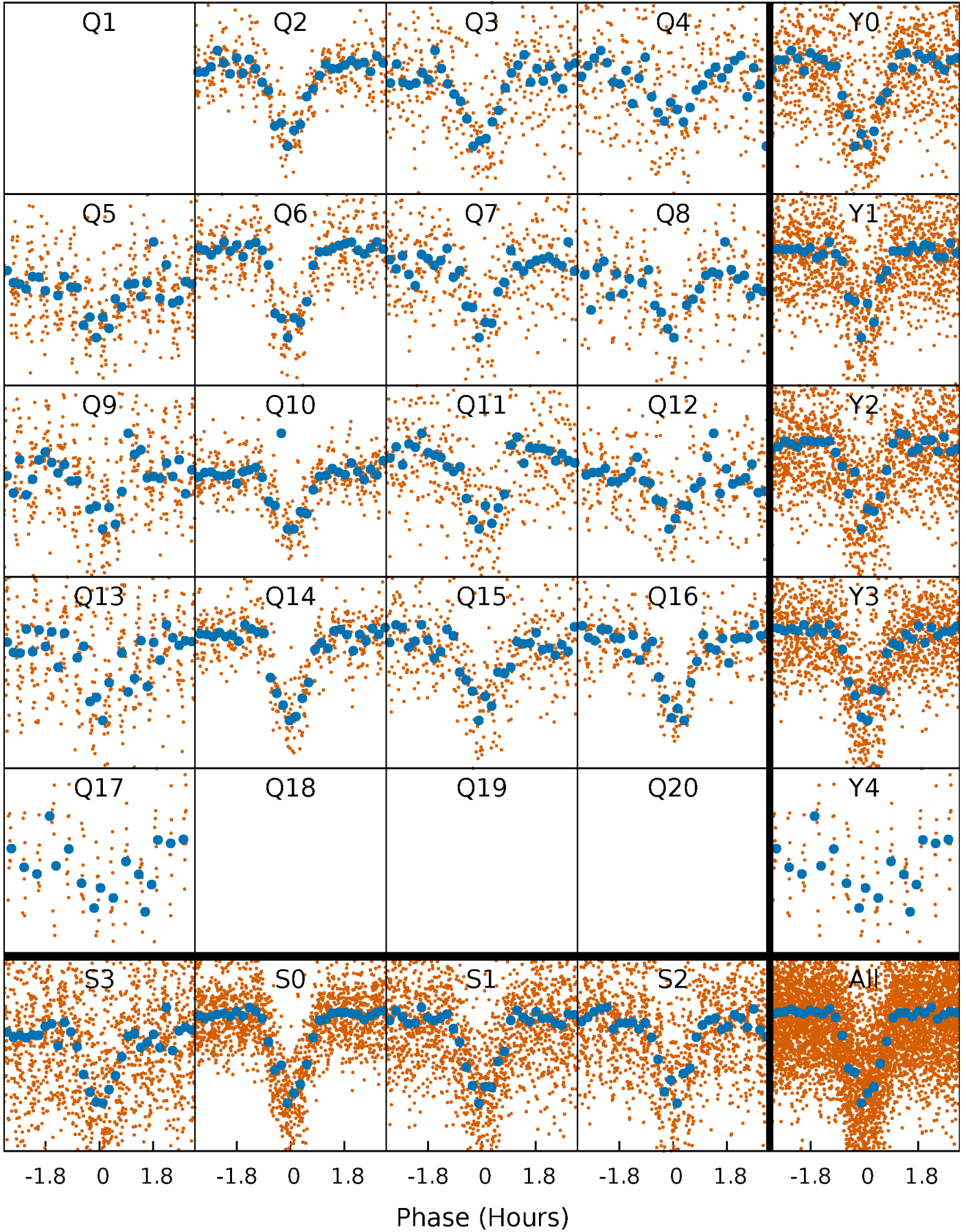


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



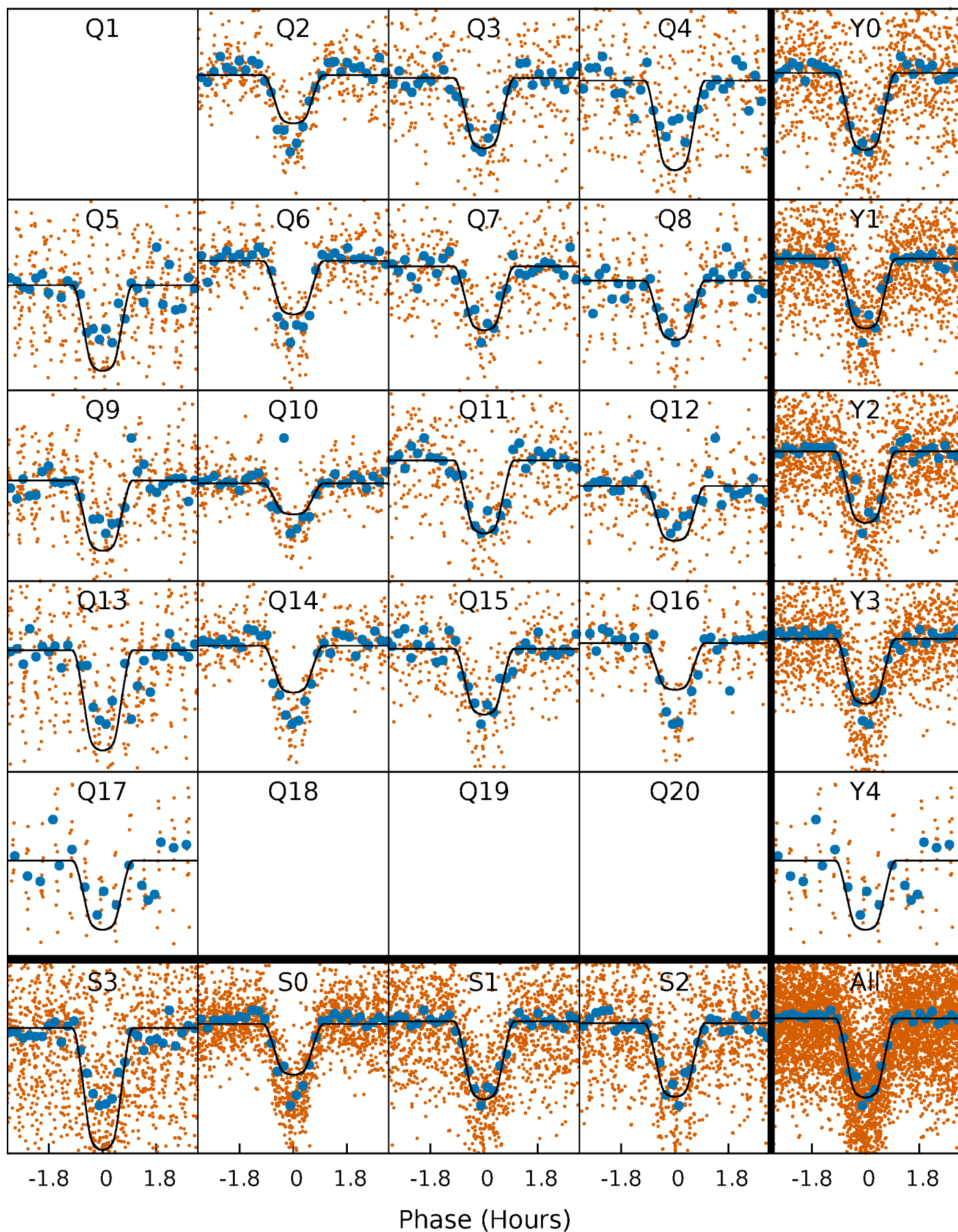
PDC Quarter-Phased Transit Curves

TCE 006862603-01 P= 2.861152 Days $T_0=131.593897$ (BKJD)



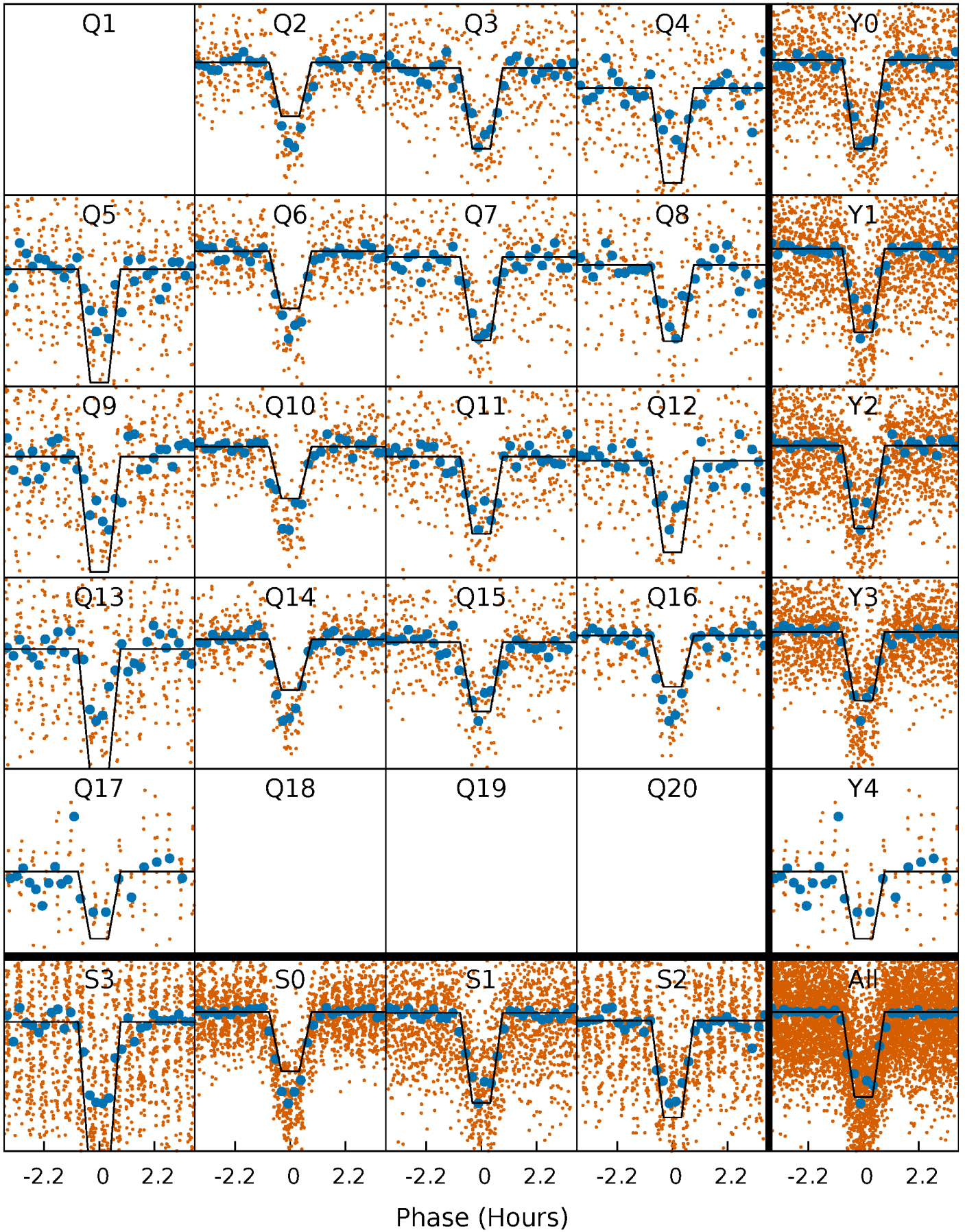
DV Quarter-Phased Transit Curves

TCE 006862603-01 P= 2.861152 Days $T_0=131.593897$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

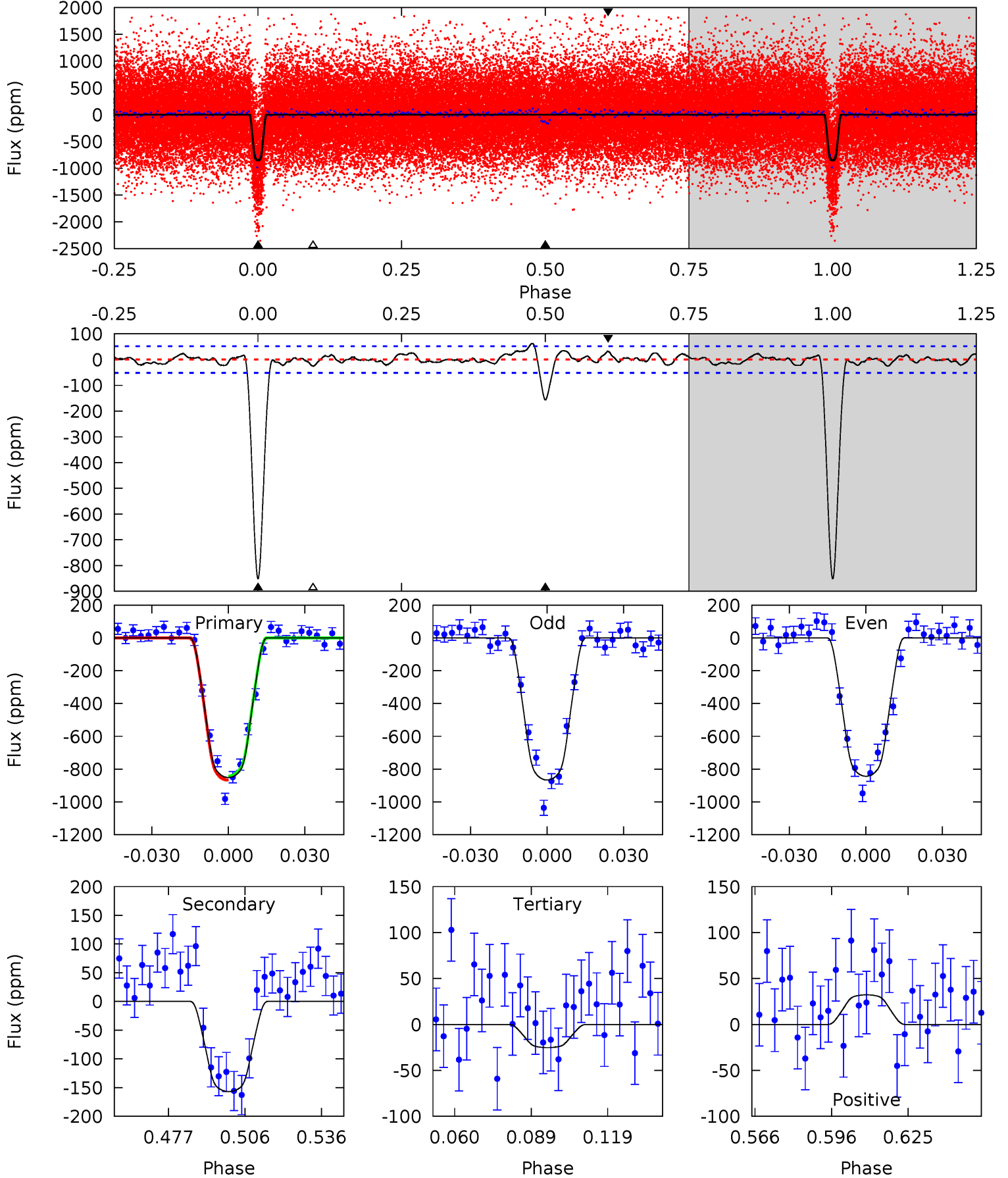
TCE 006862603-01 P= 2.861171 Days $T_0=131.588864$ (BKJD)



DV Model-Shift Uniqueness Test

006862603-01, P = 2.861152 Days, E = 131.593897 Days

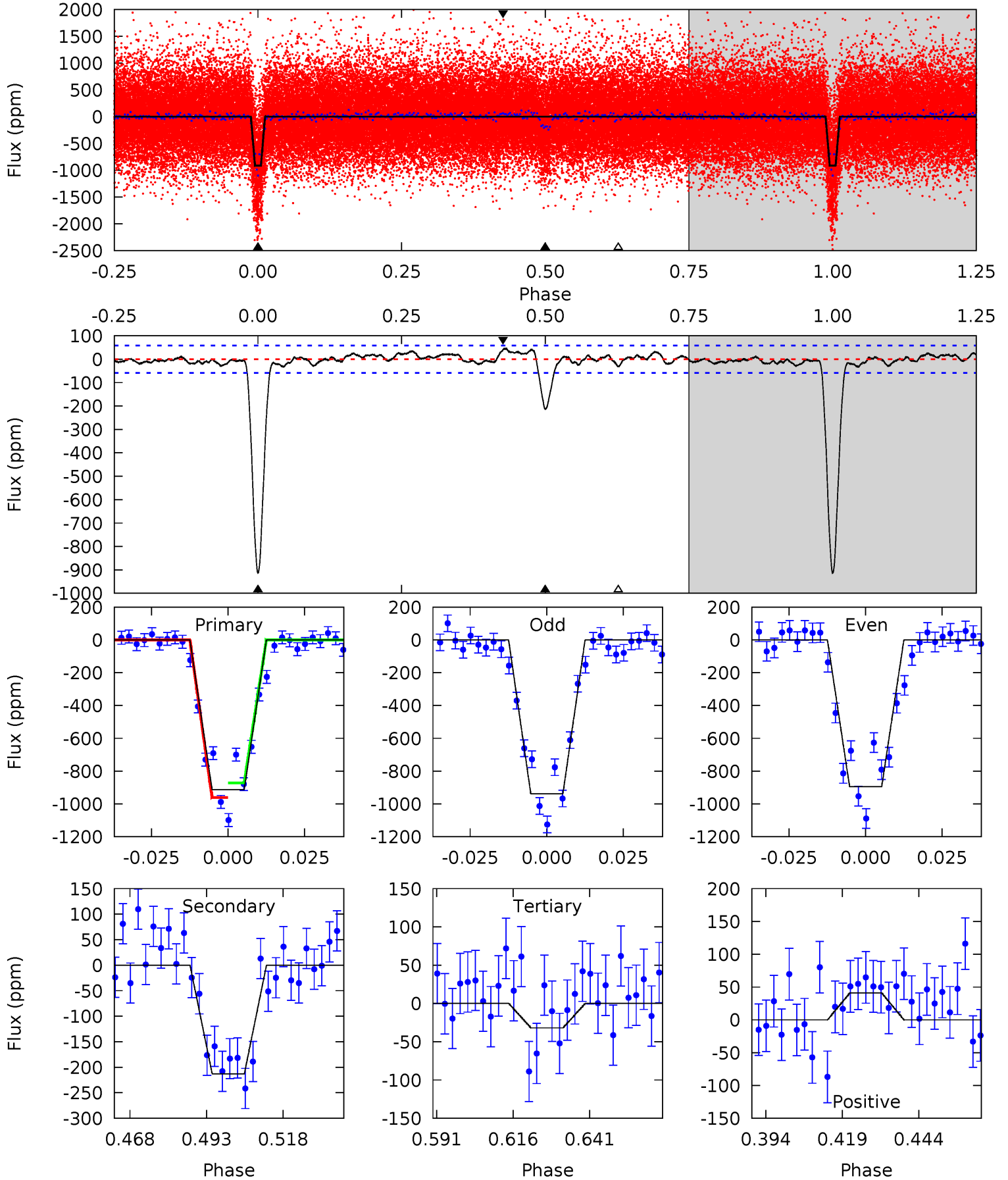
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
79.1	14.6	2.34	2.99	4.81	2.17	1.27	76.8	76.1	12.2	11.6	1.08	0.98	0.07	1.13



Alt Model-Shift Uniqueness Test

006862603-01, P = 2.861171 Days, E = 131.588864 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
75.5	17.6	2.64	3.38	4.85	2.25	1.30	72.9	72.1	15.0	14.2	1.79	1.04	0.05	3.63



Stellar Parameters For KIC 006862603

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6126^{+193}_{-214}	$4.458^{+0.052}_{-0.208}$	$-0.040^{+0.250}_{-0.300}$	$1.021^{+0.324}_{-0.108}$	$1.090^{+0.139}_{-0.153}$	$1.442^{+0.415}_{-0.767}$
	+3%/-3%	+1%/-5%	+625%/-750%	+32%/-11%	+13%/-14%	+29%/-53%
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 006862603-01 / KOI 0866.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-157 ± 11	$3.69^{+0.66}_{-0.38}$	1935^{+136}_{-105}	4082^{+151}_{-145}	10^{+2}_{-3}
Alt.	-213 ± 12	$3.64^{+0.62}_{-0.45}$	1938^{+138}_{-102}	4371^{+172}_{-156}	14^{+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 $A_{\text{obs}} \gg 1.0$

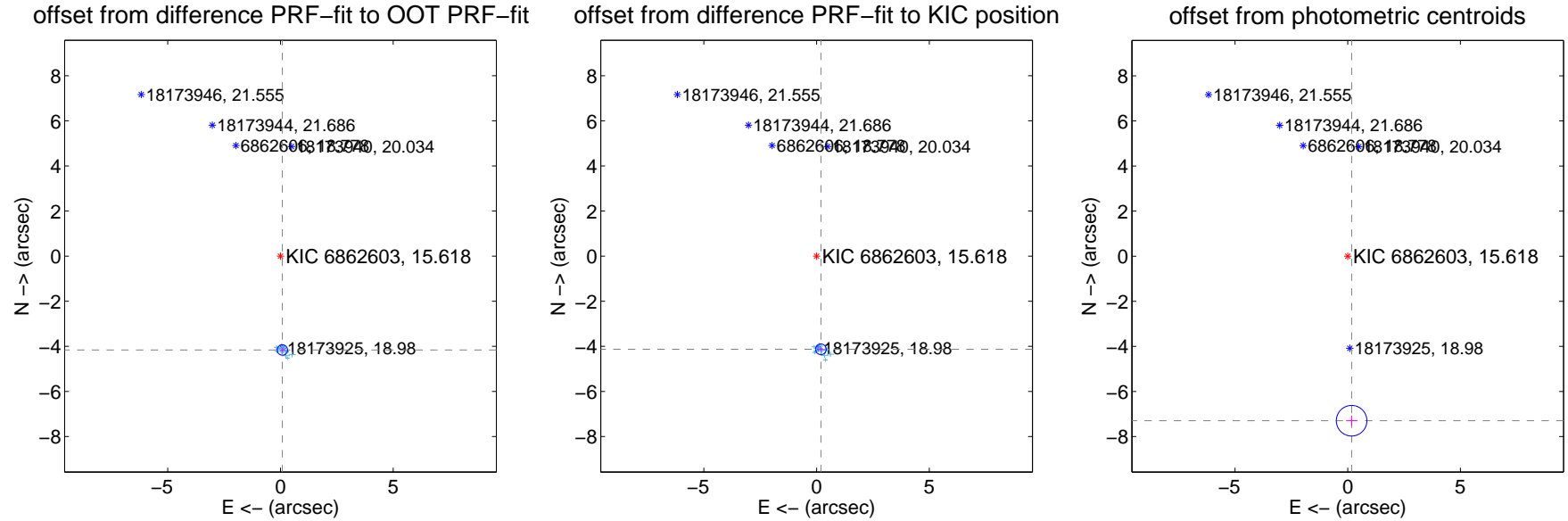
DV Centroid Data

Supplemental centroid analysis for 006862603-01. Kepler magnitude: 15.62. Transit SNR 54.34

There are 16 quarters with good PRF difference image offsets

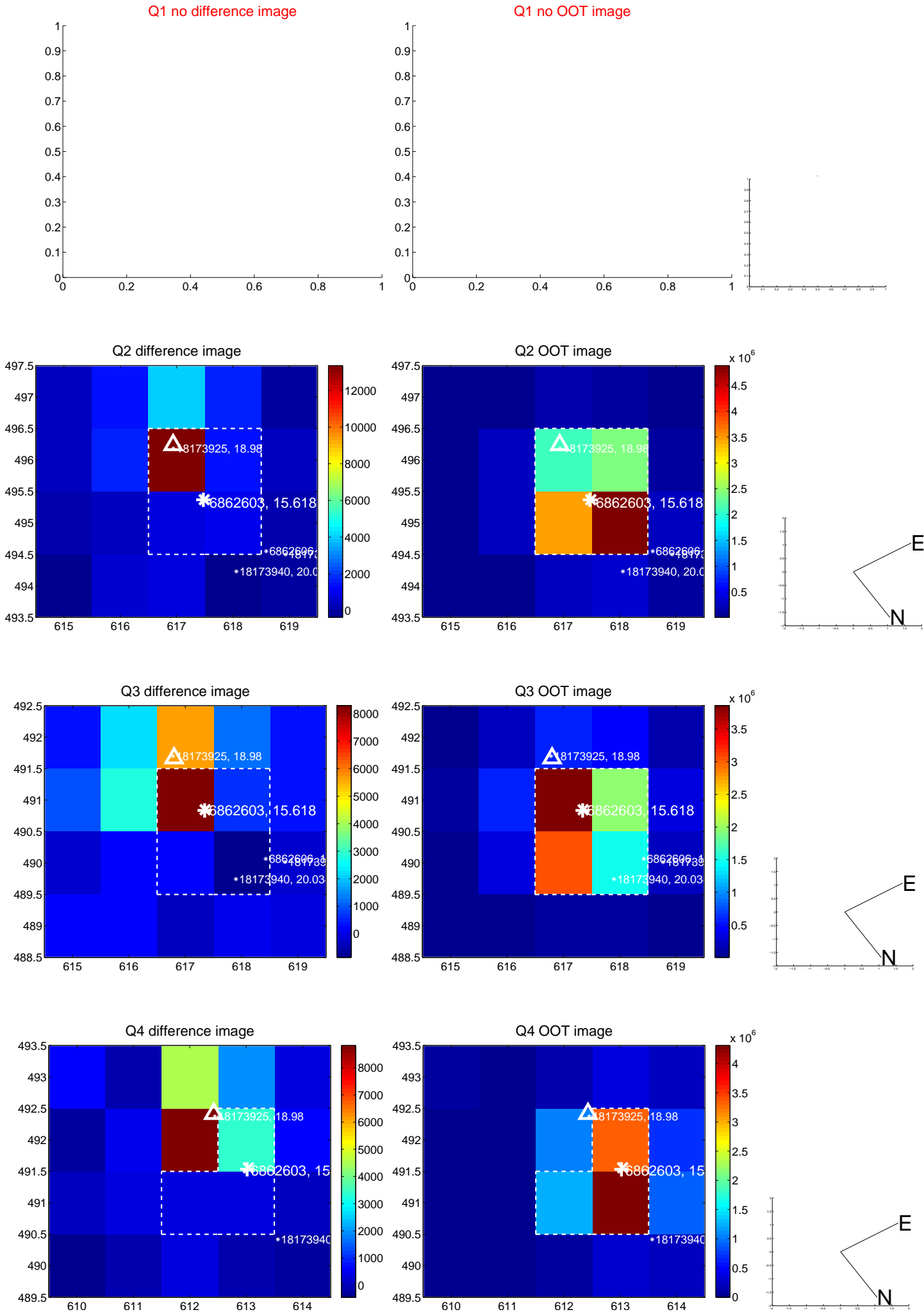
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.162 \pm 0.077	54.19	-0.084 \pm 0.080	-4.161 \pm 0.077
PRF-fit source offset from KIC position	4.135 \pm 0.079	52.58	-0.193 \pm 0.083	-4.131 \pm 0.078
photometric centroid source offset	7.30 \pm 0.23	32.28	-0.17 \pm 0.24	-7.30 \pm 0.23

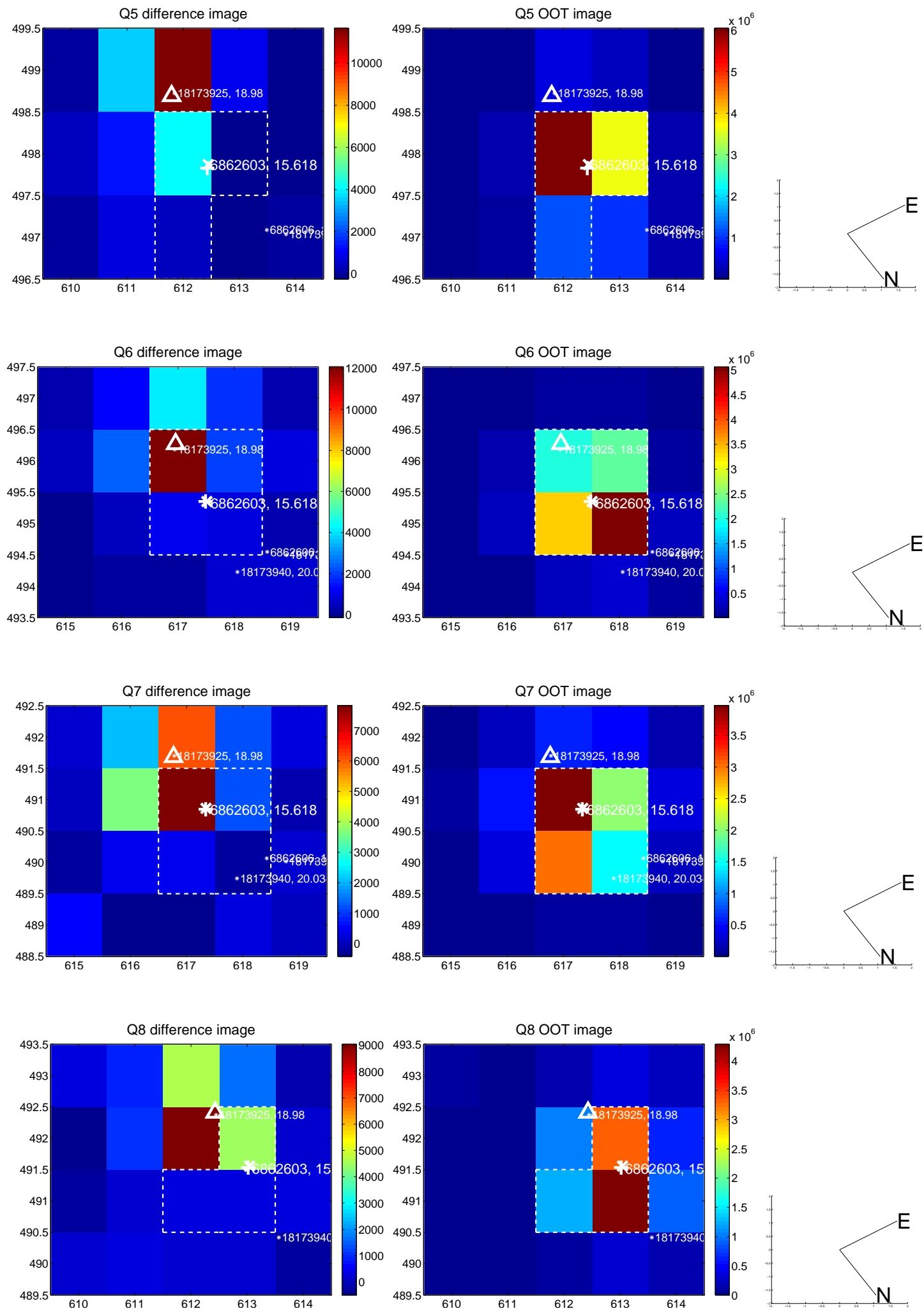


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

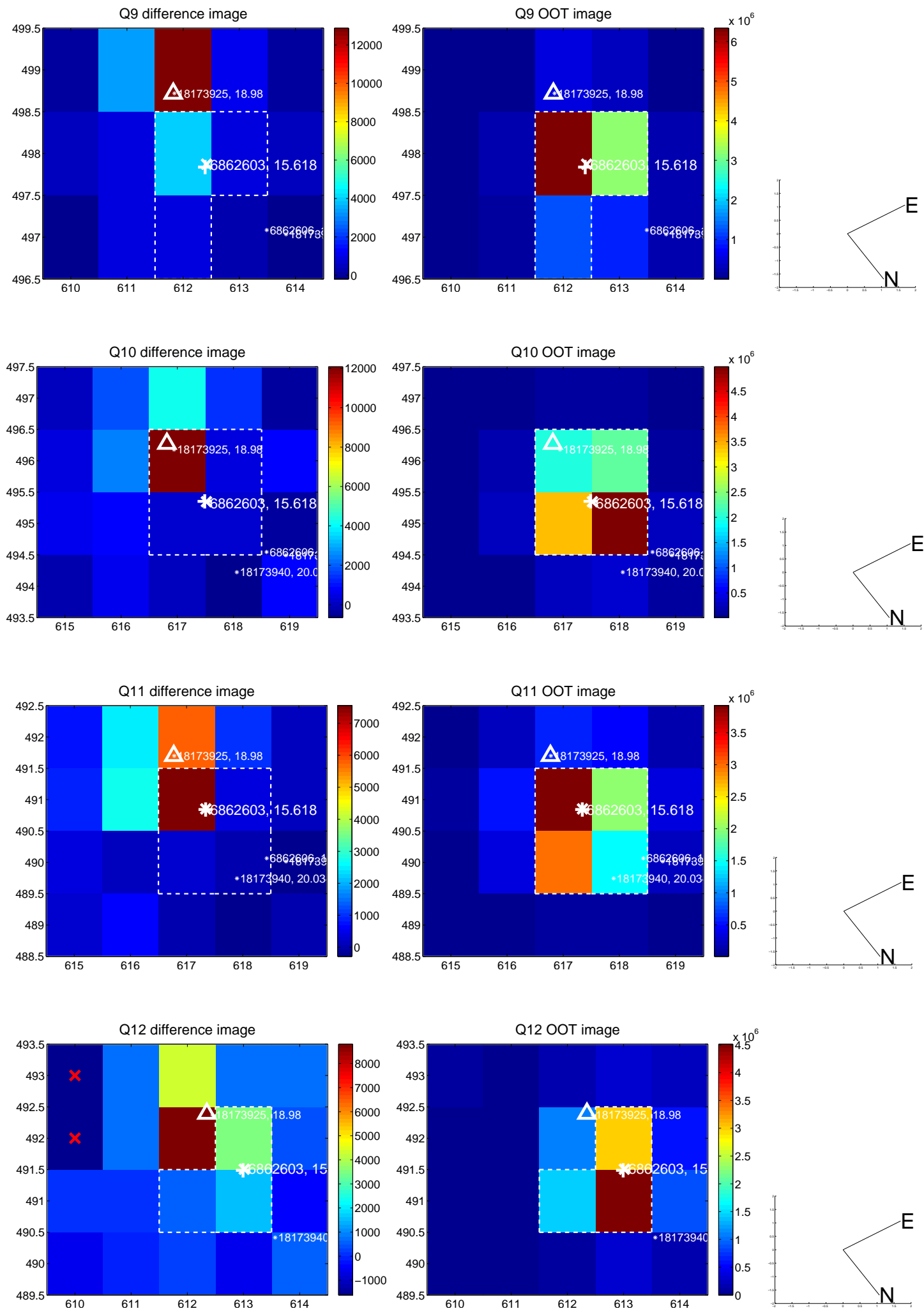
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



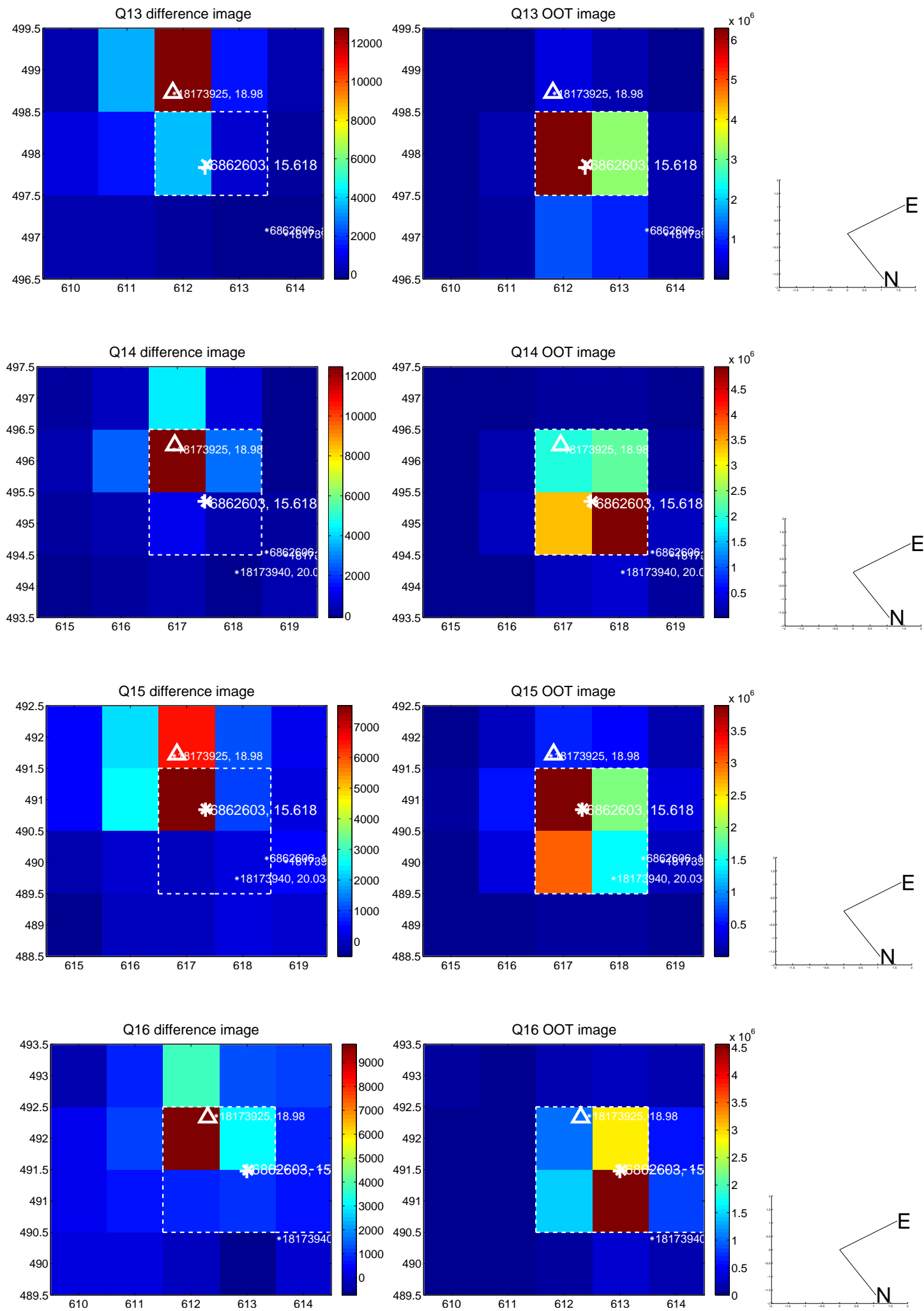
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



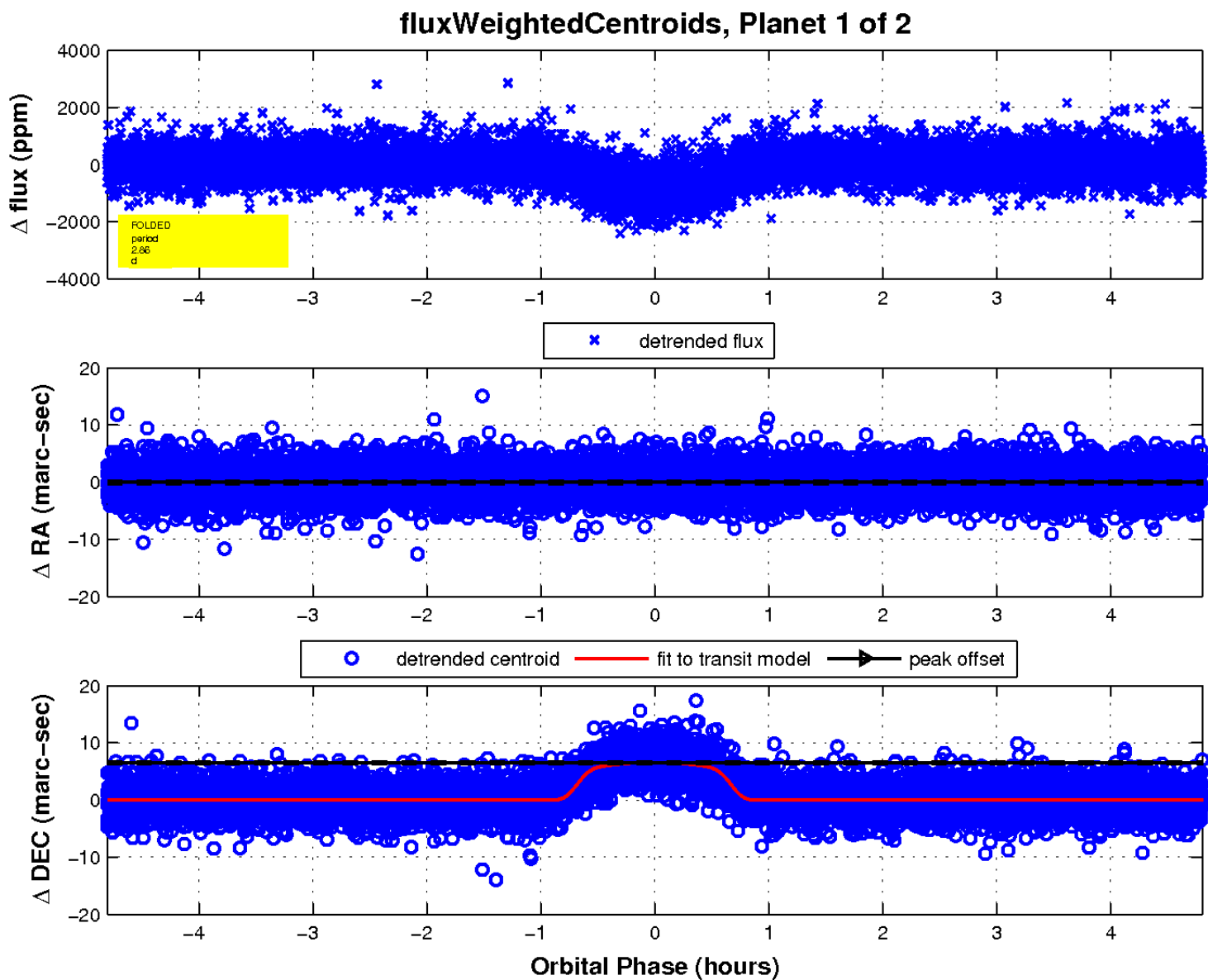
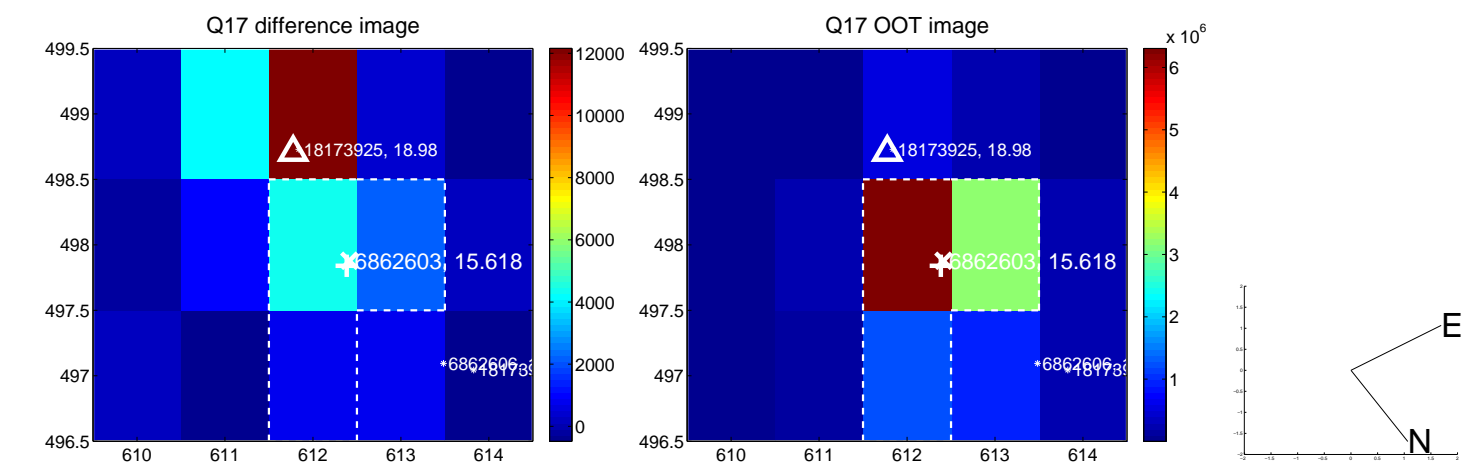
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

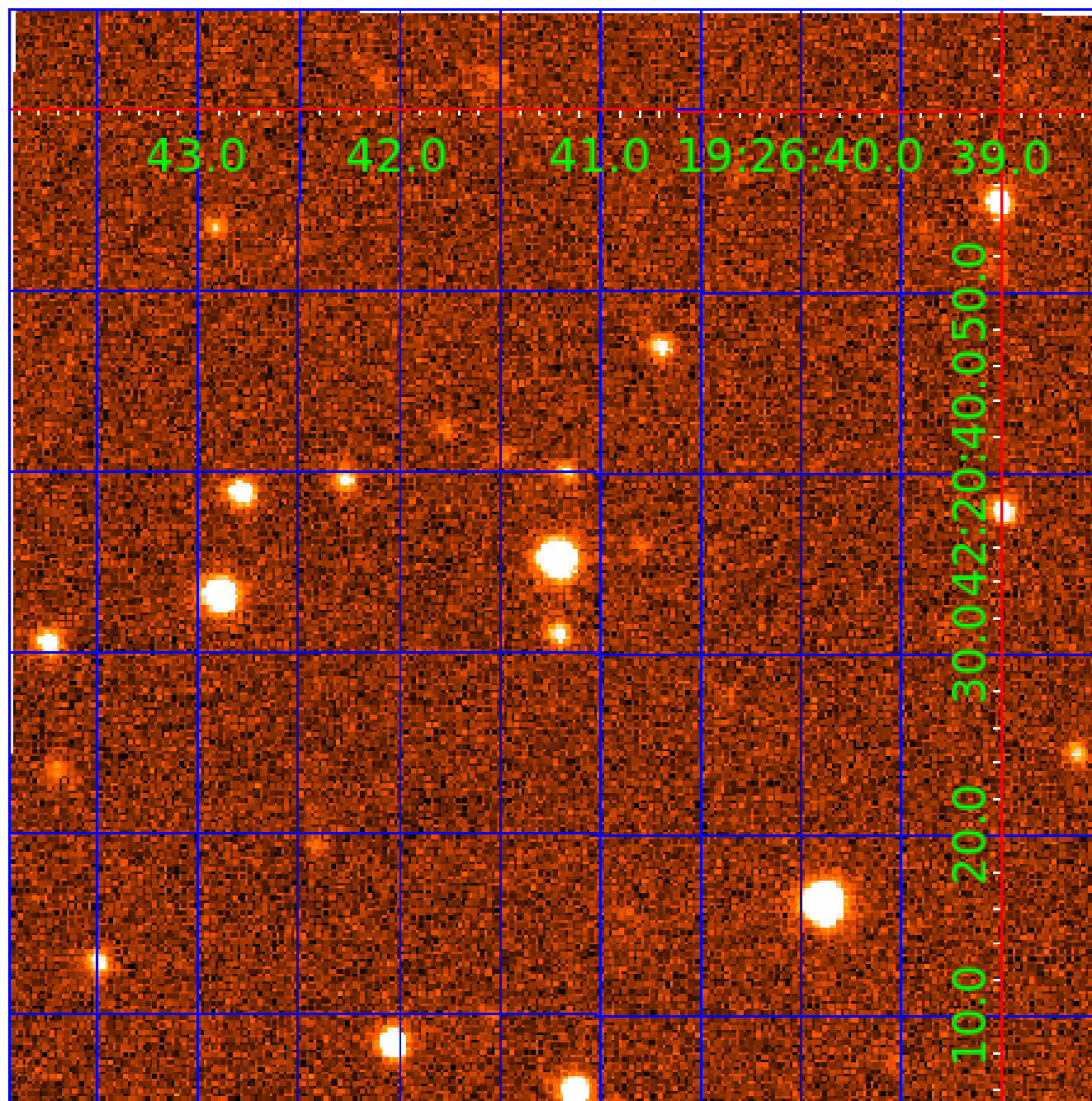


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006862603

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})
006862603-01	OBS	0866.01	2.861152	131.593897	867.2	1.602	47.6	54.3	1.02	6126	3.57	797.20
006862603-02	OBS	No	2.861144	133.027666	184.8	1.392	10.6	12.0	1.02	6126	1.42	797.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006862603-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
006862603-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET

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.

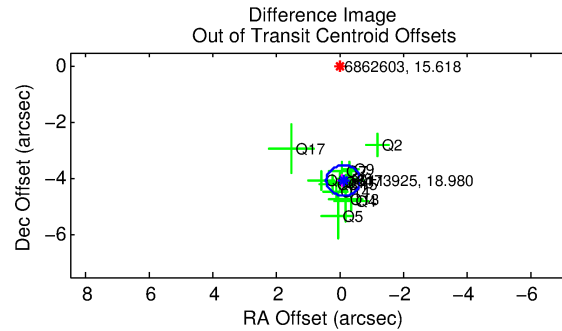
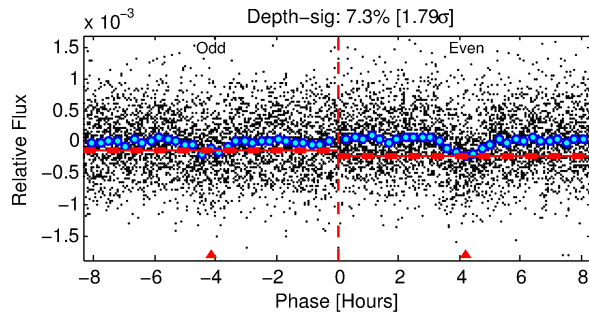
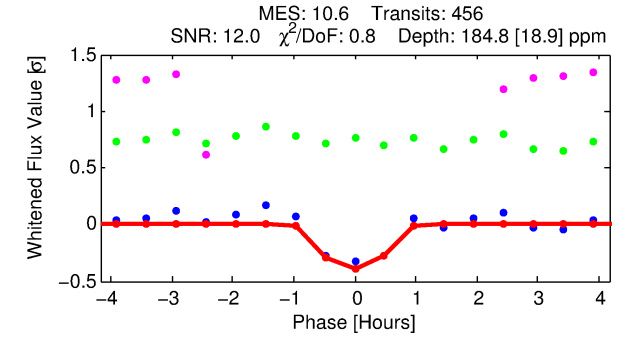
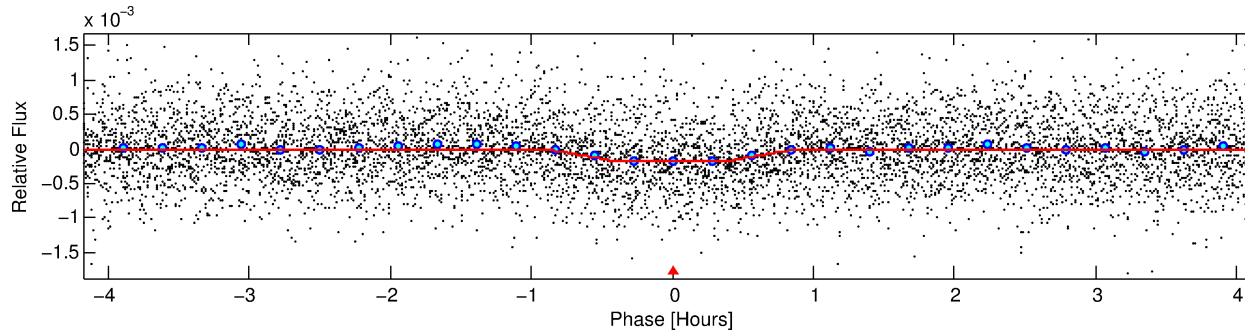
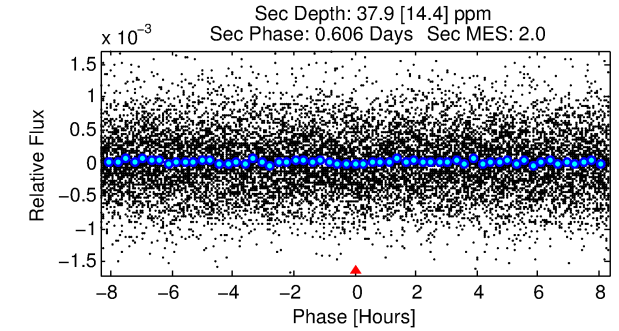
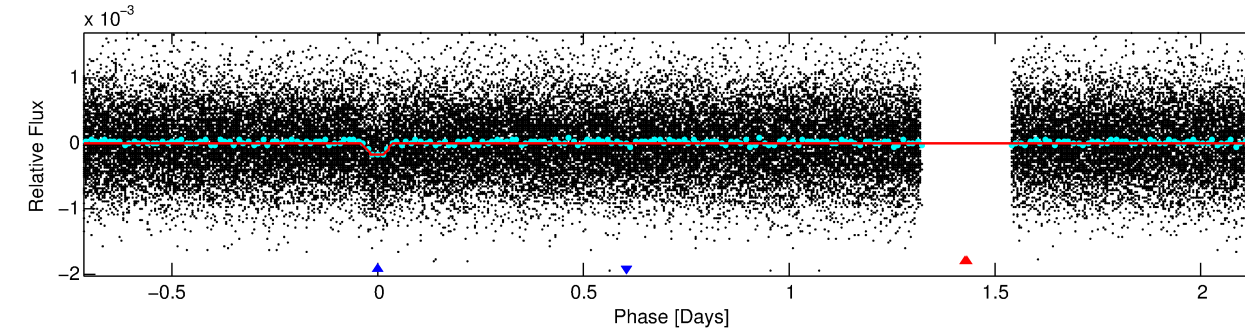
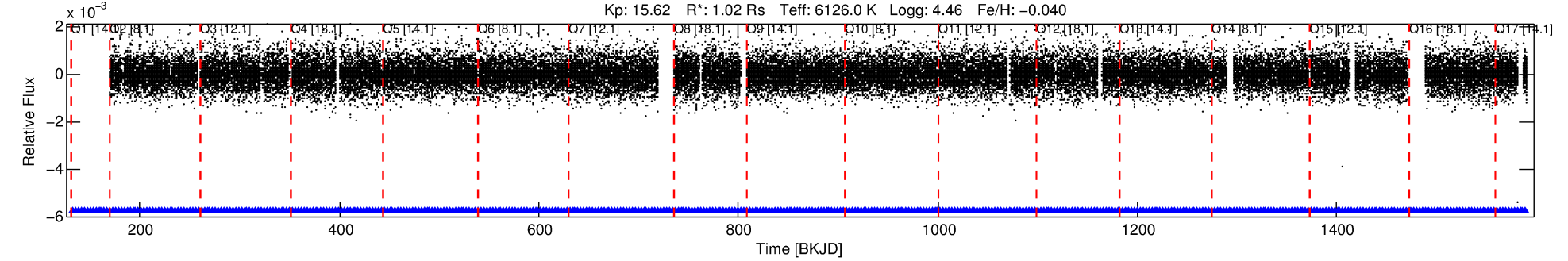
Ephemeris Match Information For 006862603-02

No Significant Match Found

DV One-Page Summary

KIC: 6862603 Candidate: 2 of 2 Period: 2.861 d
KOI: K00866 Corr: No Ephemeris Match

Kp: 15.62 R*: 1.02 Rs Teff: 6126.0 K Logg: 4.46 Fe/H: -0.040



DV Fit Results:

Period = 2.86114 [0.00001] d
Epoch = 133.0277 [0.0022] BKJD
Rp/R* = 0.0127 [0.0094]
a/R* = 14.59 [51.87]
b = 0.41 [7.42]
Seff = 797.20 [325.03]
Teq = 1355 [138] K
Rp = 1.42 [1.14] Re
a = 0.0406 [0.0108] AU
Ag = 17.15 [26.89] [0.60σ]
Teffp = 4263 [1627] K [1.78σ]

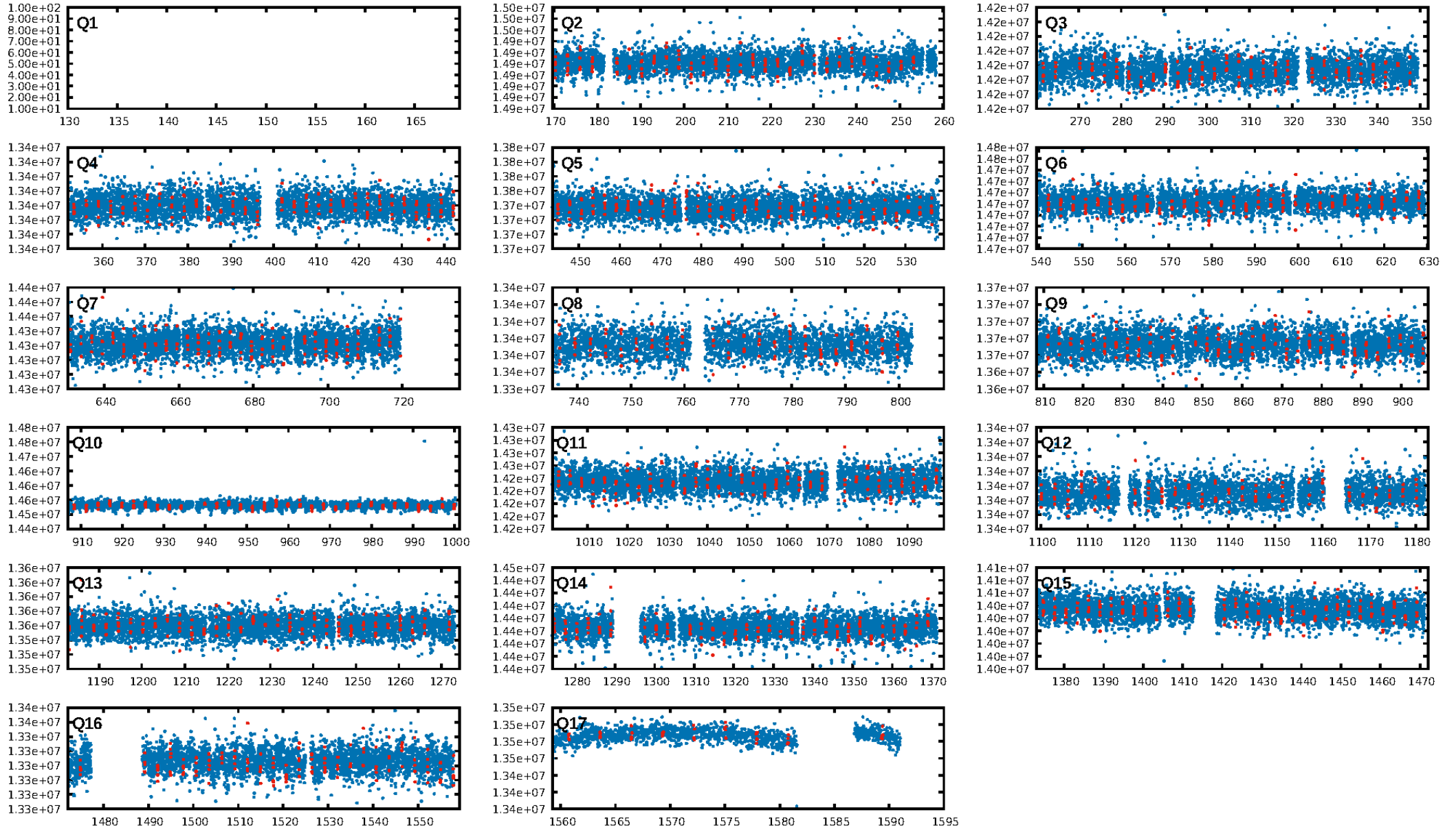
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.03e-25
RollingBand-fgt: 1.00 [447/447]
GhostDiagnostic-chr: 0.3693
Centroid-sig: 0.0%
Centroid-so: 7.037 arcsec [6.51σ]
OotOffset-rm: 4.067 arcsec [22.85σ]
KicOffset-rm: 4.066 arcsec [22.07σ]
OotOffset-st: 4/4/2/4 [14]
KicOffset-st: 4/4/2/4 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [16/16]

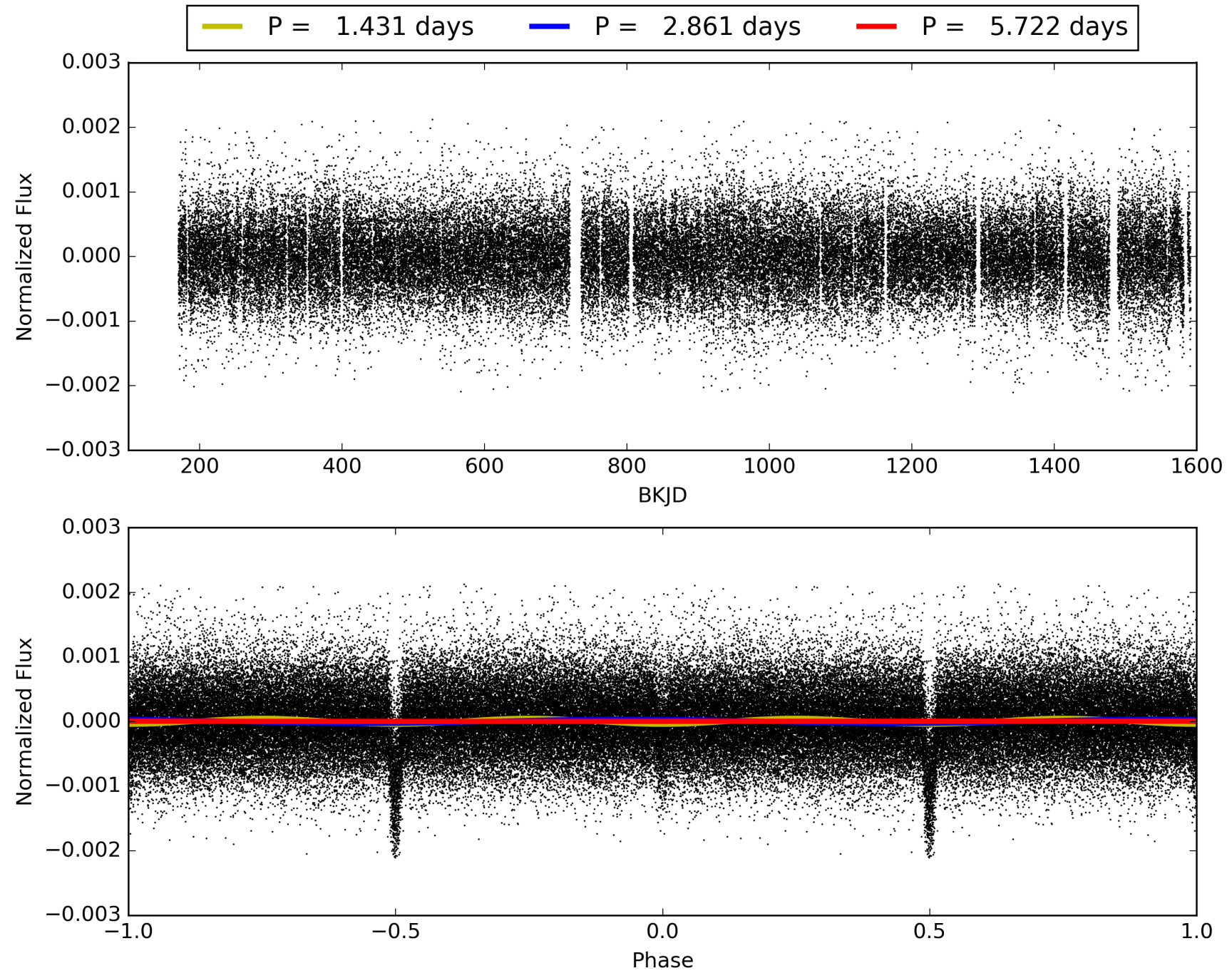
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 13:35:10 Z

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

TCE 006862603-02, PDC Light Curves

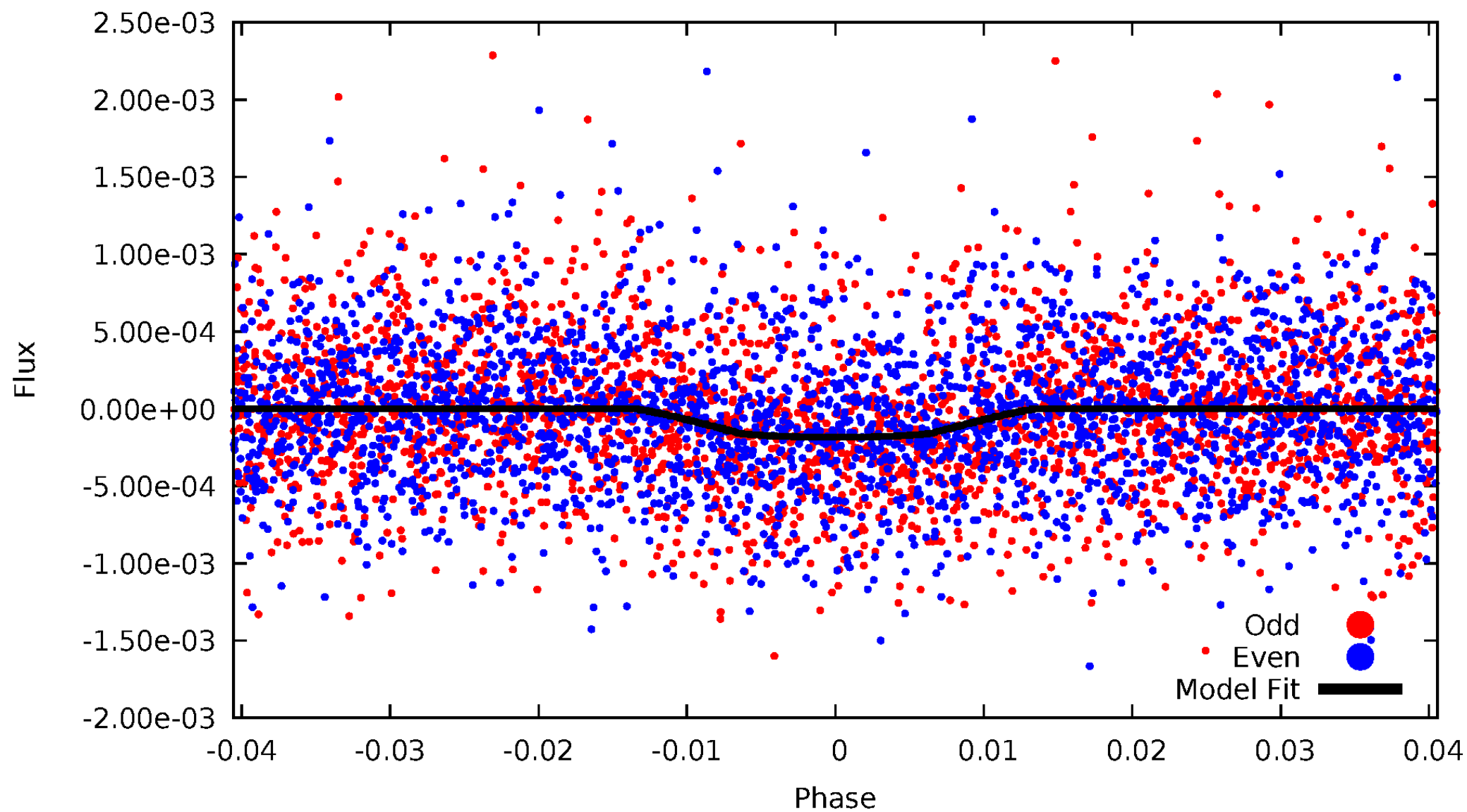


TCE 006862603-02



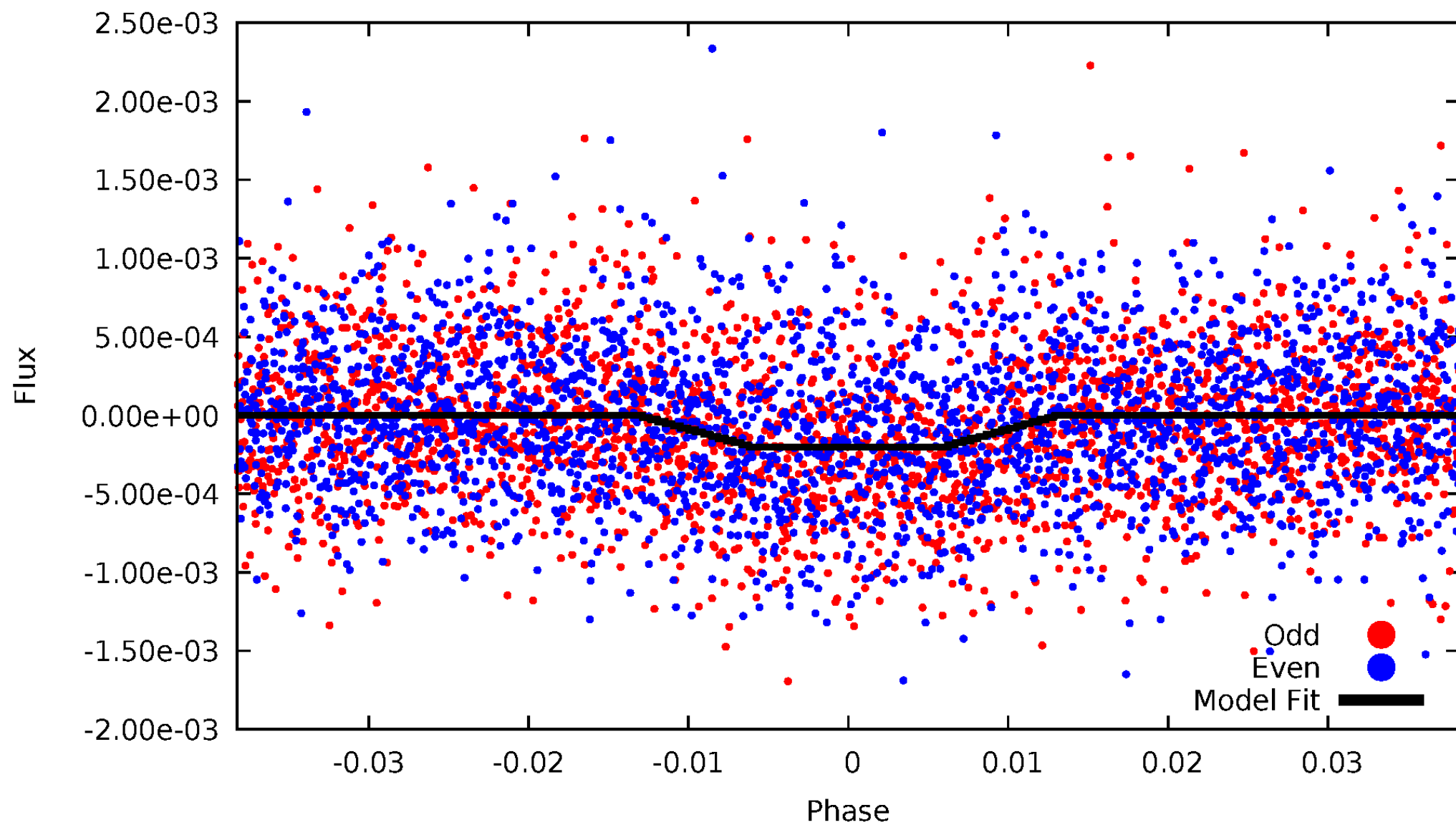
DV Odd/Even

TCE 006862603-02



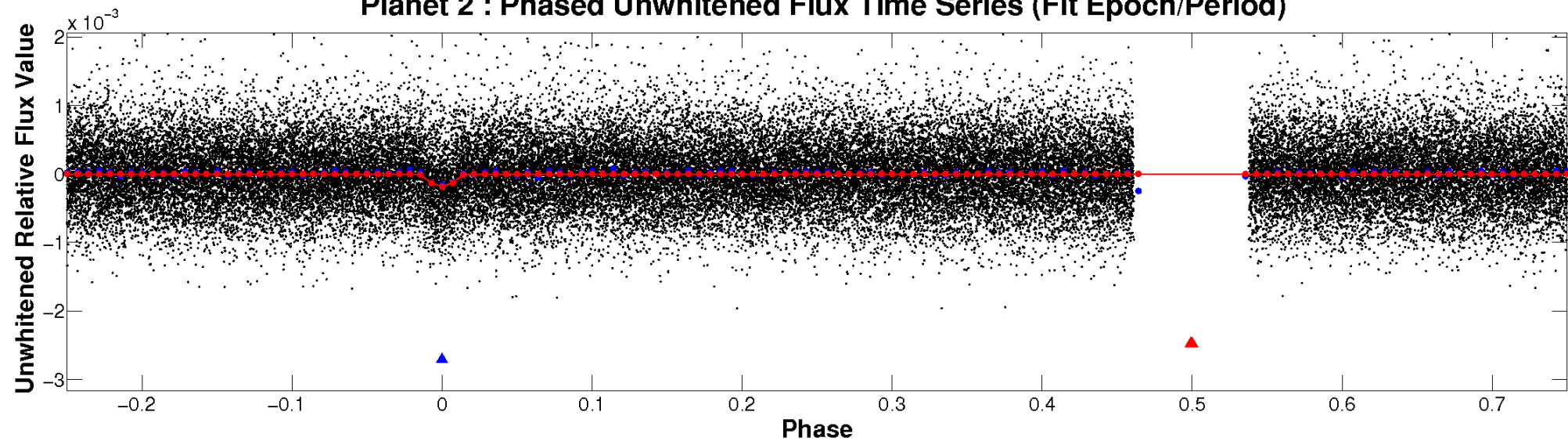
ALT Odd/Even

TCE 006862603-02

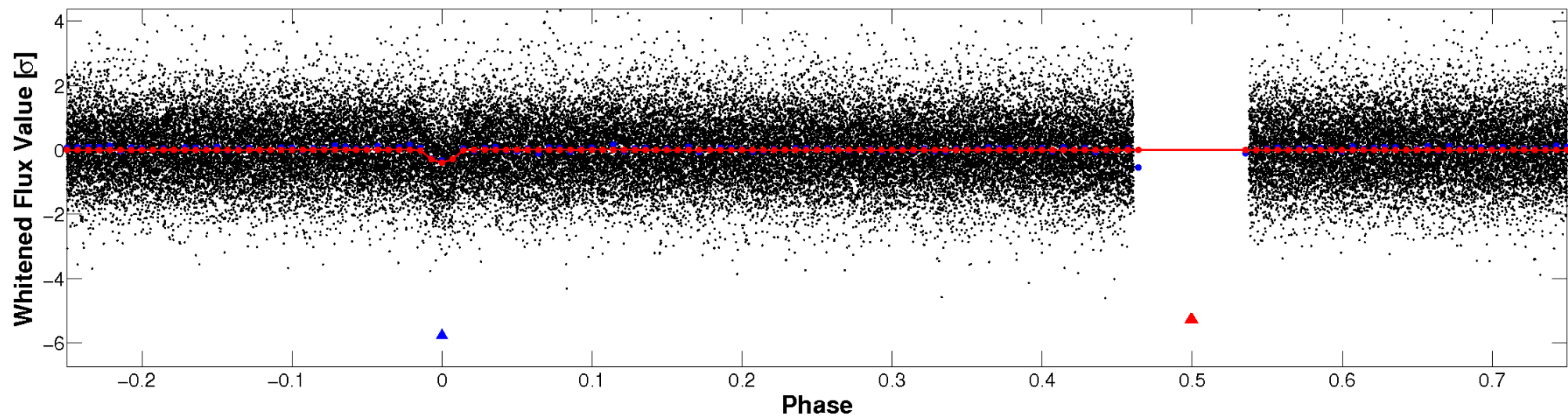


Non-Whitened Vs. Whitened Light Curve

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

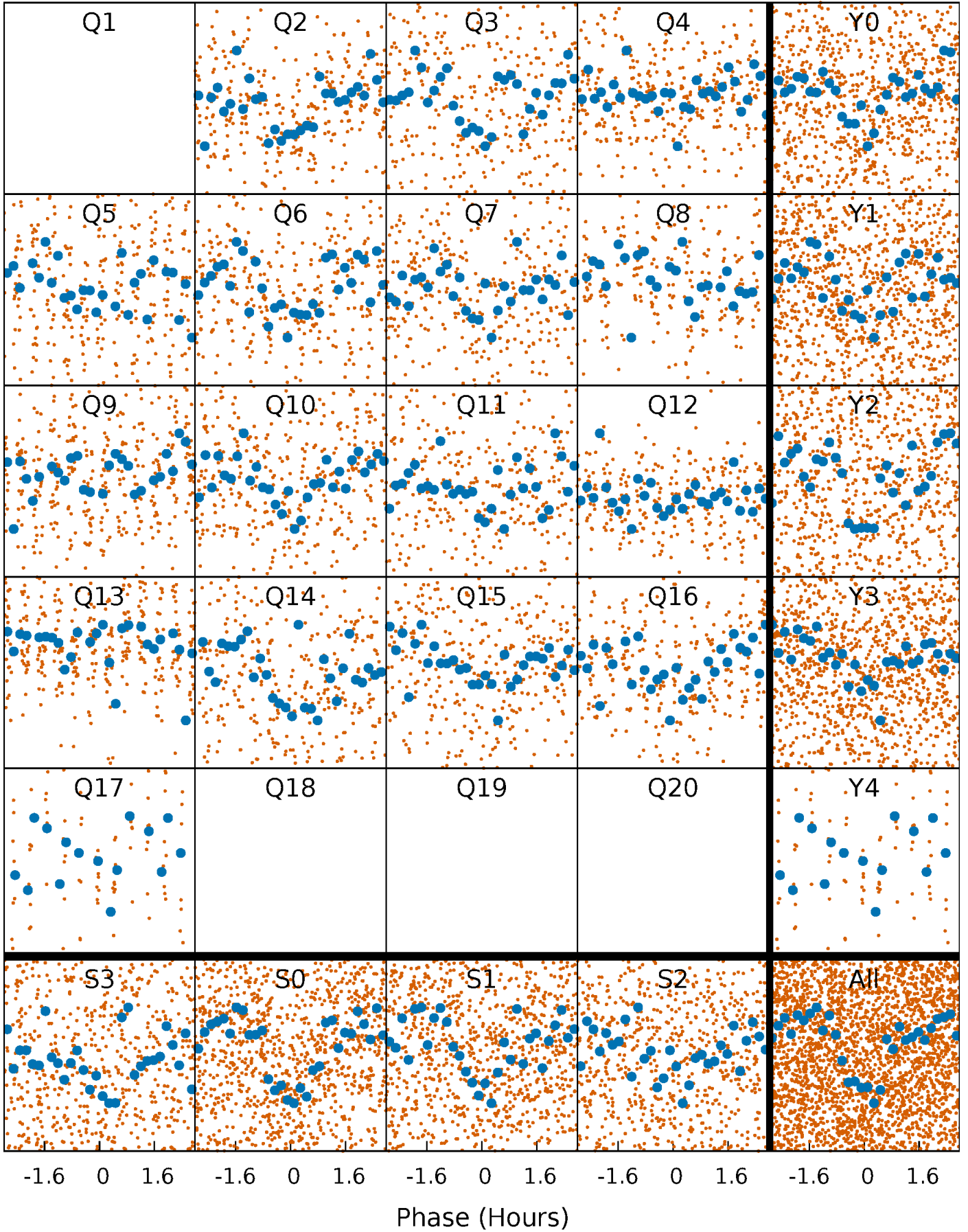


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



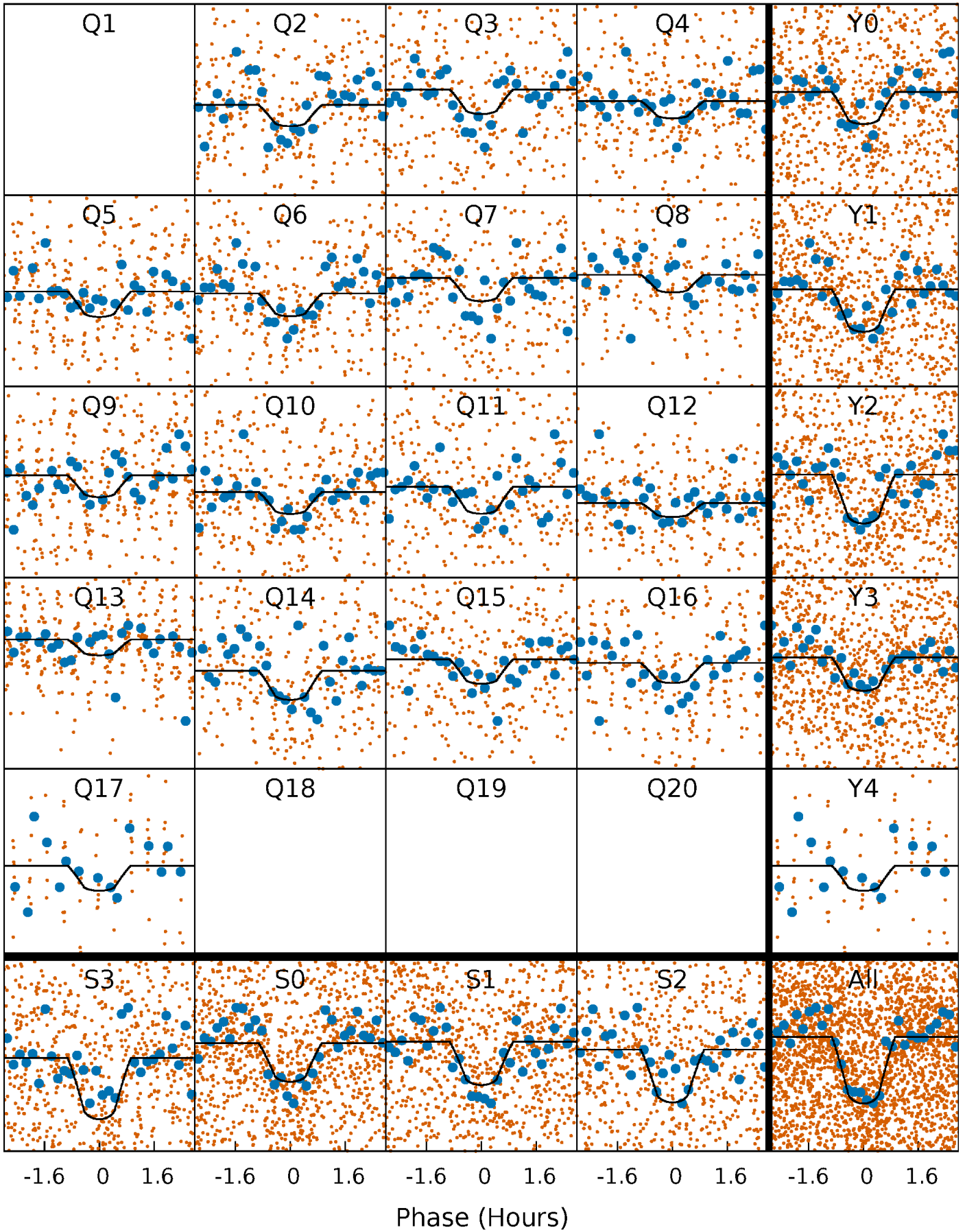
PDC Quarter-Phased Transit Curves

TCE 006862603-02 P= 2.861145 Days $T_0=133.027667$ (BKJD)



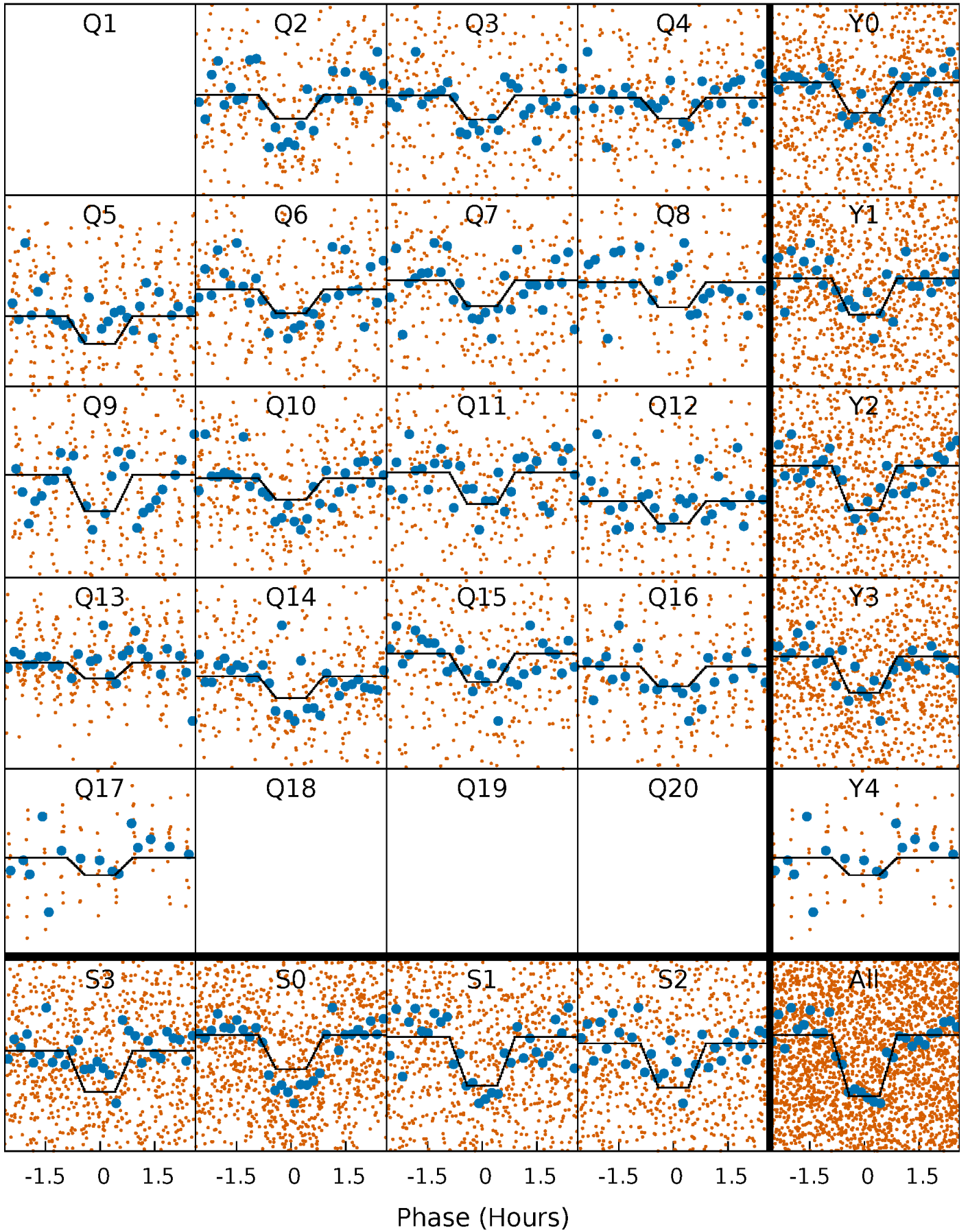
DV Quarter-Phased Transit Curves

TCE 006862603-02 P= 2.861145 Days $T_0=133.027667$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

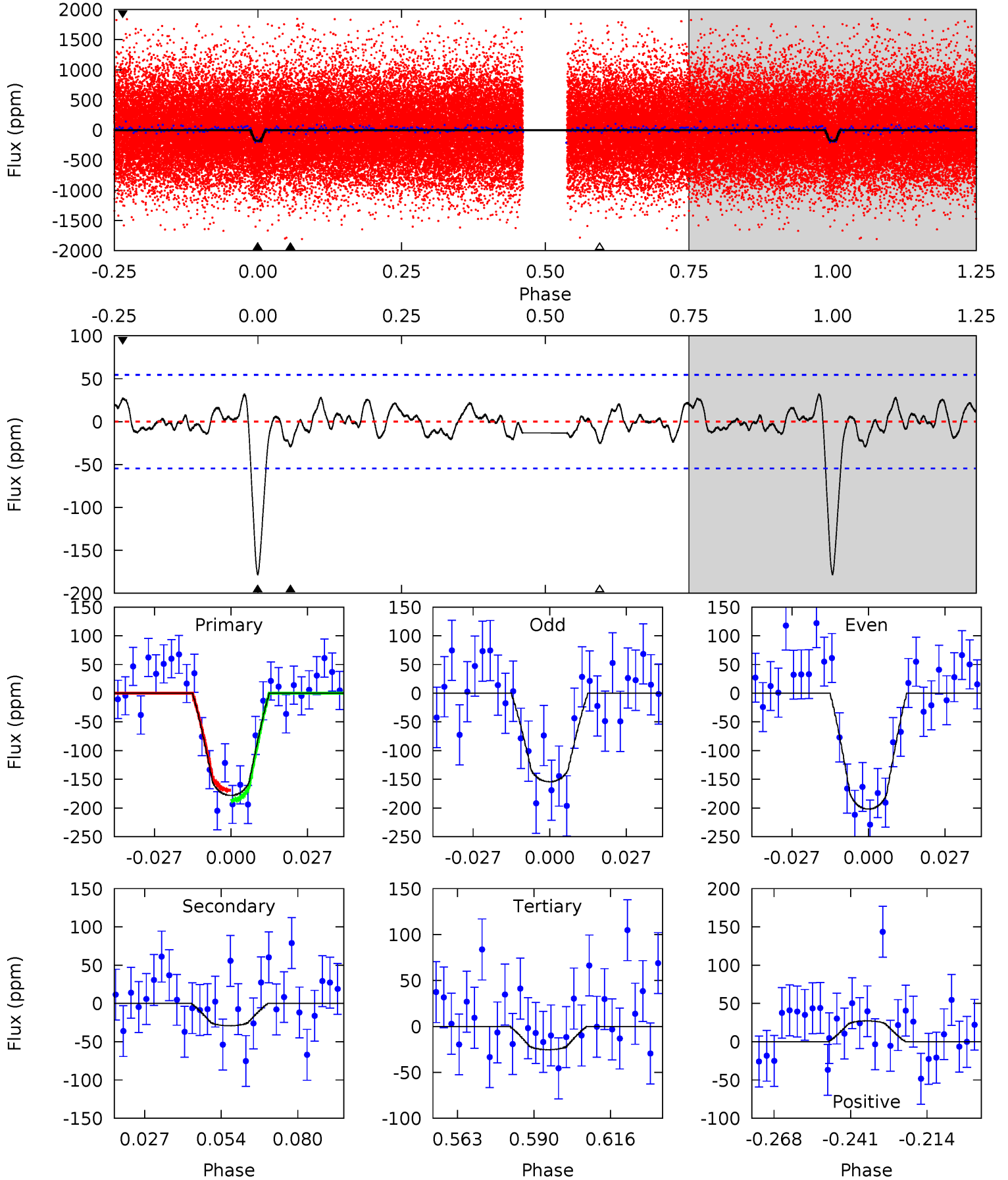
TCE 006862603-02 P= 2.861147 Days $T_0=133.026300$ (BKJD)



DV Model-Shift Uniqueness Test

006862603-02, P = 2.861145 Days, E = 133.027667 Days

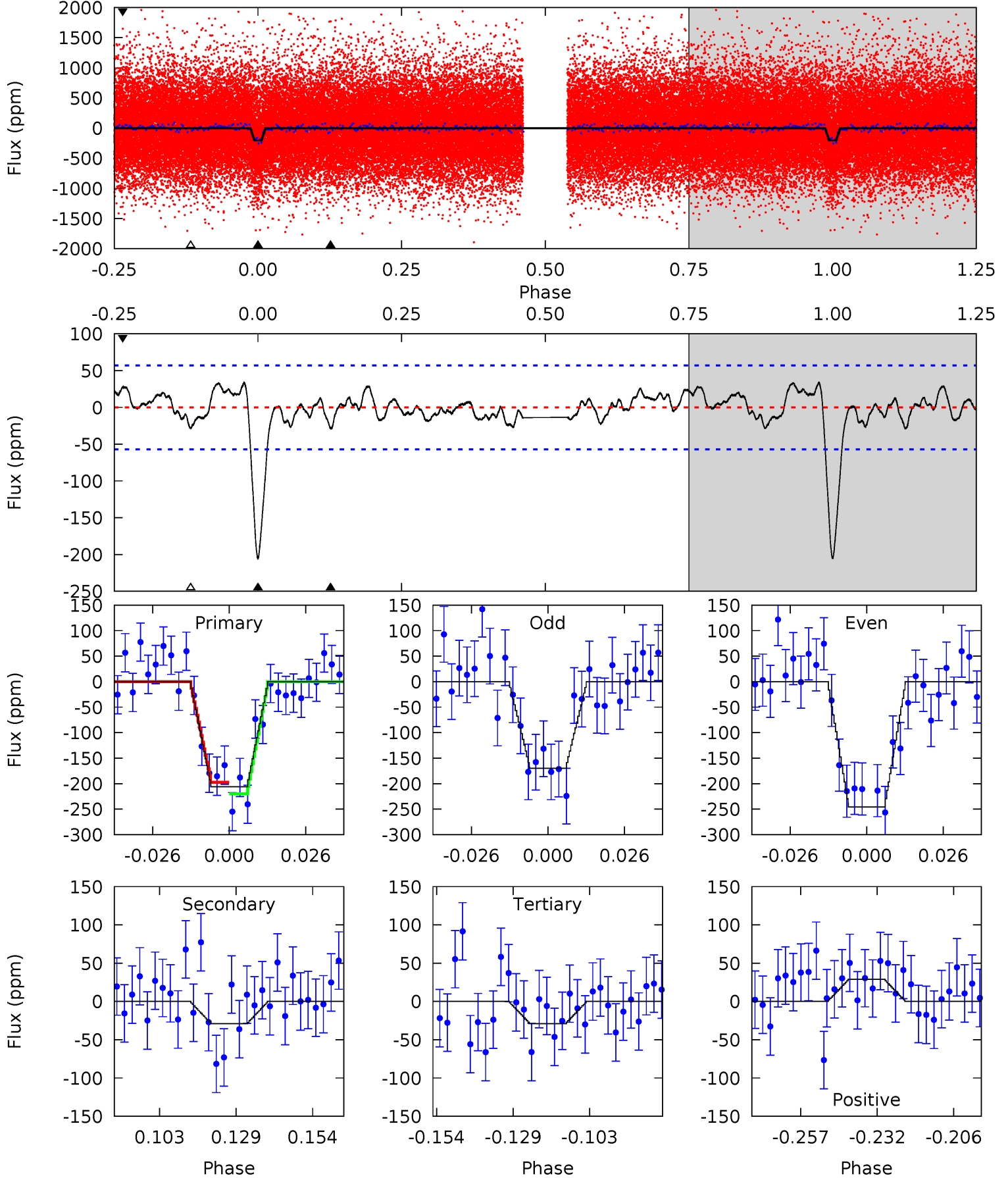
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	2.58	2.24	2.41	4.83	2.21	1.01	13.5	13.4	0.34	0.17	2.11	0.88	0.15	0.79



Alt Model-Shift Uniqueness Test

006862603-02, P = 2.861147 Days, E = 133.026300 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.5	2.48	2.46	2.45	4.84	2.23	1.18	15.0	15.1	0.02	0.03	3.23	0.94	0.14	0.97



Stellar Parameters For KIC 006862603

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6126^{+193}_{-214}	$4.458^{+0.052}_{-0.208}$	$-0.040^{+0.250}_{-0.300}$	$1.021^{+0.324}_{-0.108}$	$1.090^{+0.139}_{-0.153}$	$1.442^{+0.415}_{-0.767}$
	+3%/-3%	+1%/-5%	+625%/-750%	+32%/-11%	+13%/-14%	+29%/-53%
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 006862603-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-29 ± 11	$1.64^{+1.06}_{-0.98}$	1944^{+131}_{-102}	4053^{+1936}_{-696}	$9.175^{+49.596}_{-6.020}$
Alt.	-29 ± 12	$1.76^{+1.08}_{-0.94}$	1937^{+140}_{-100}	3924^{+1550}_{-683}	$7.651^{+31.408}_{-5.012}$

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 $A_{obs} \gg 1.0$

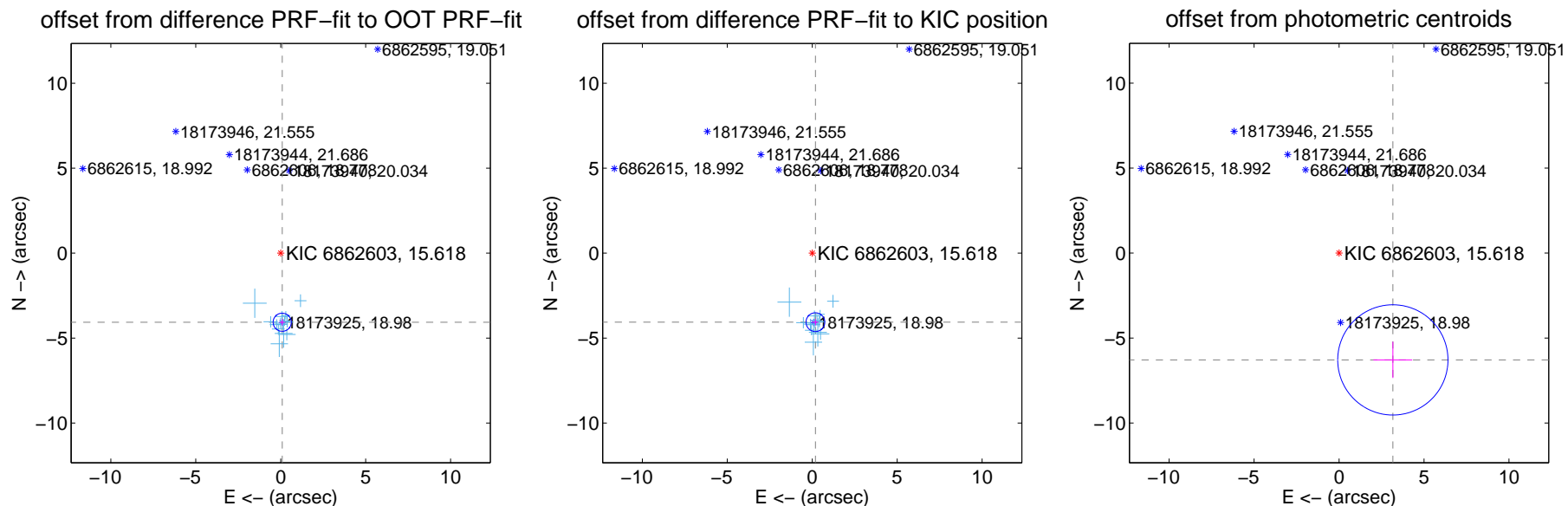
DV Centroid Data

Supplemental centroid analysis for 006862603-02. Kepler magnitude: 15.62. Transit SNR 12.00

There are 14 quarters with good PRF difference image offsets

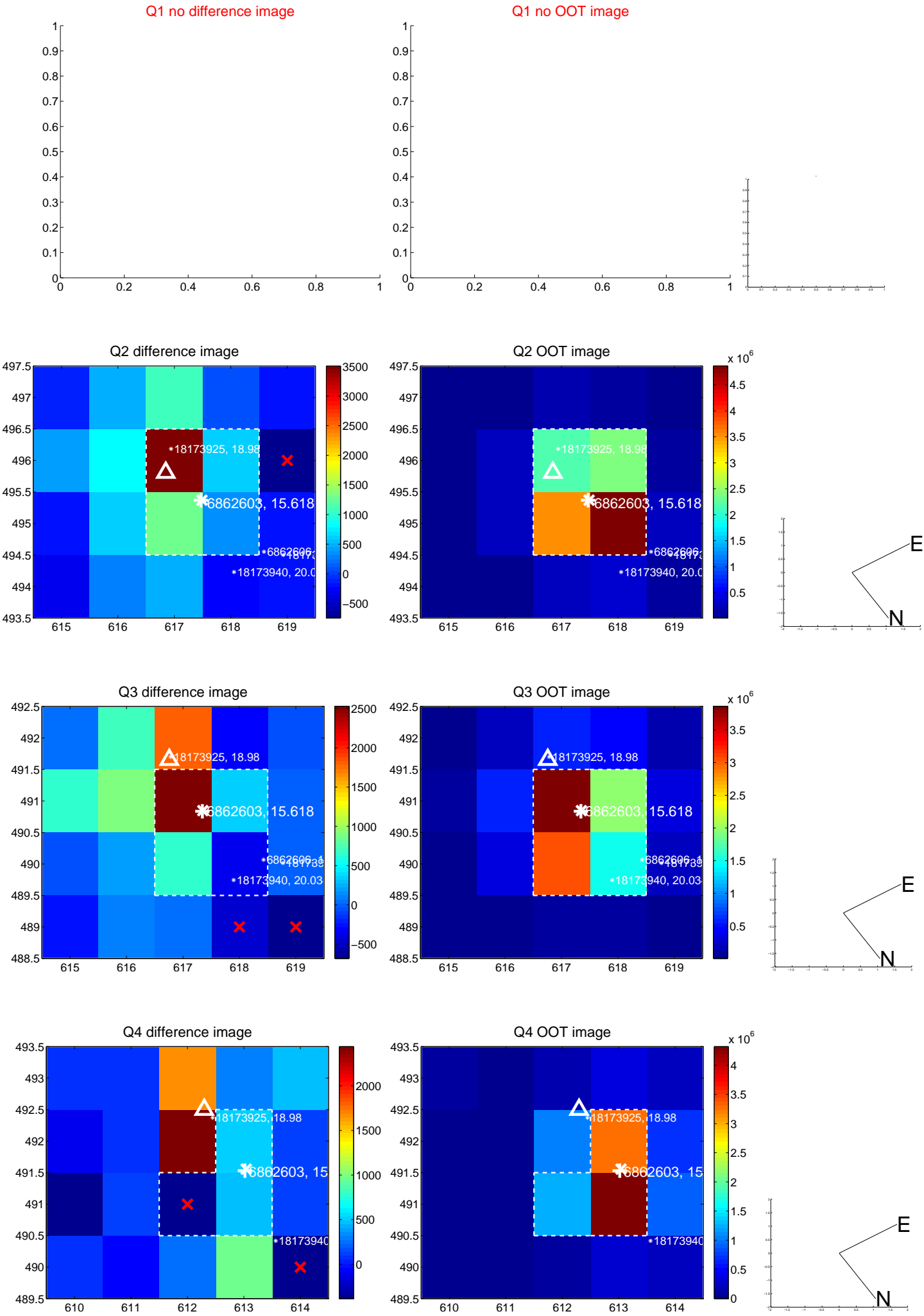
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.067 ± 0.178	22.85	-0.088 ± 0.155	-4.066 ± 0.178
PRF-fit source offset from KIC position	4.066 ± 0.184	22.07	-0.188 ± 0.167	-4.061 ± 0.184
photometric centroid source offset	7.04 ± 1.08	6.51	-3.17 ± 1.14	-6.29 ± 1.07

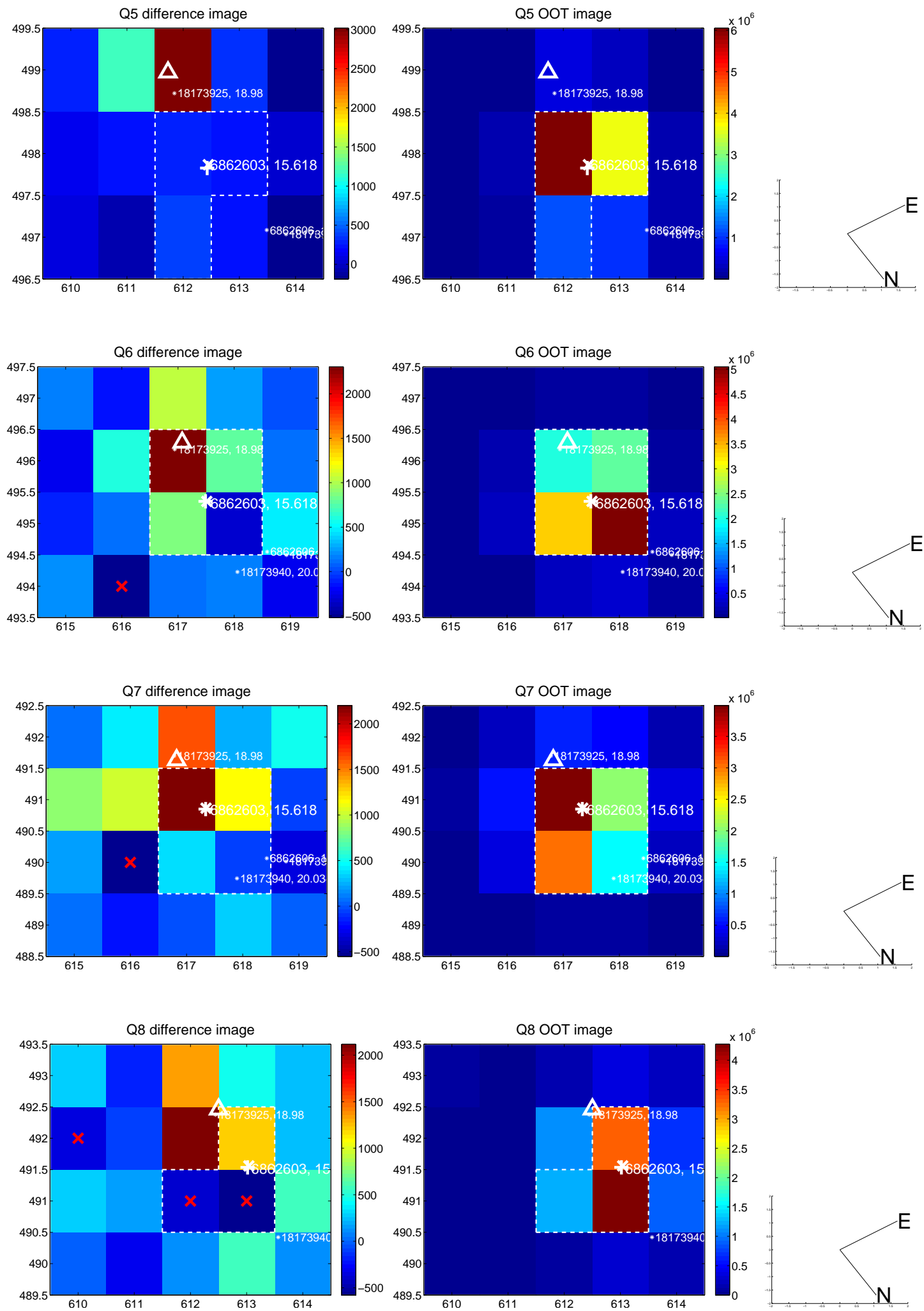


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

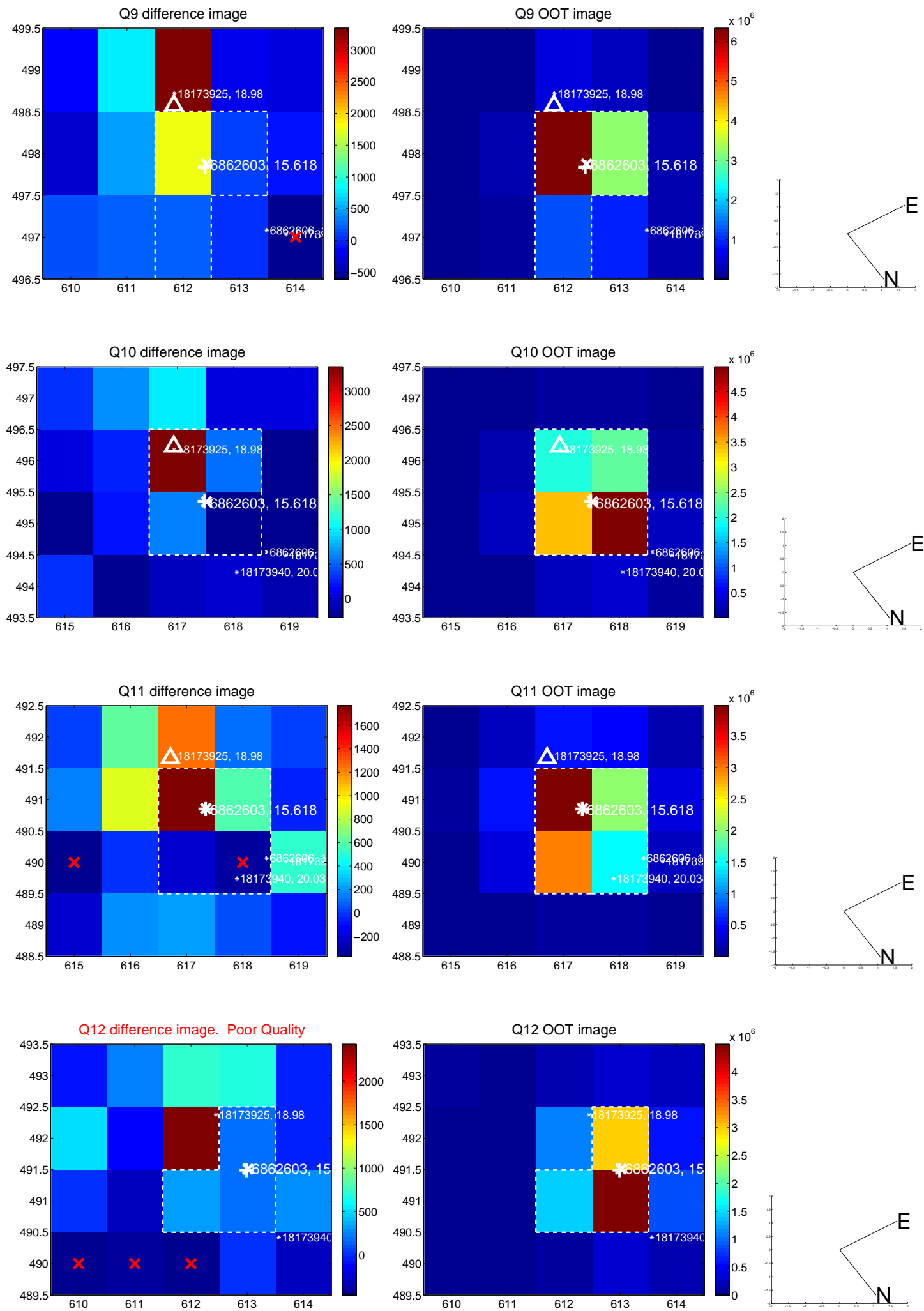
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



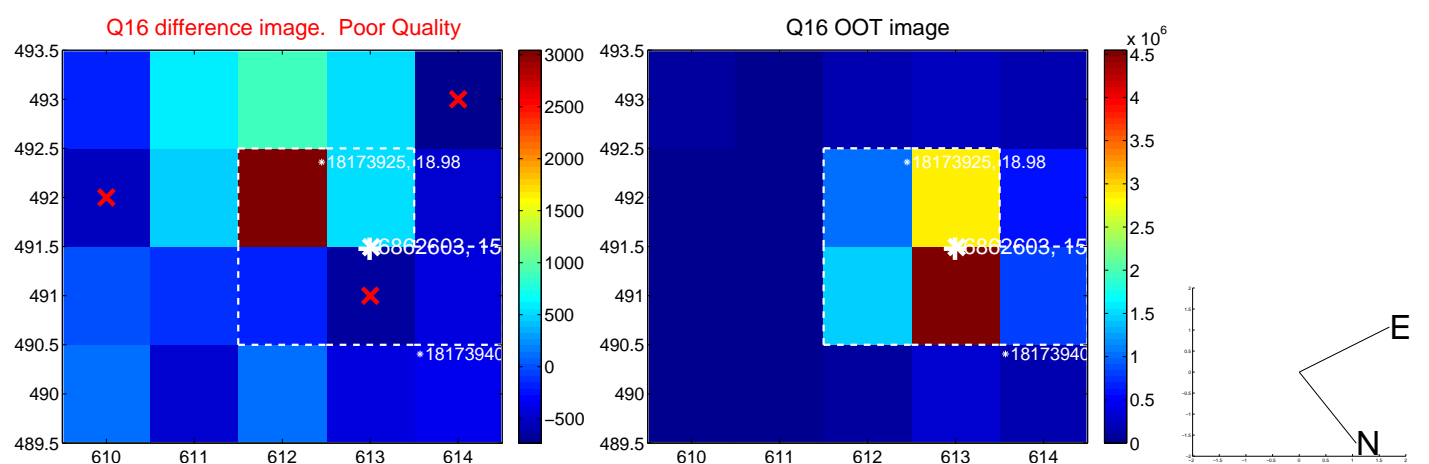
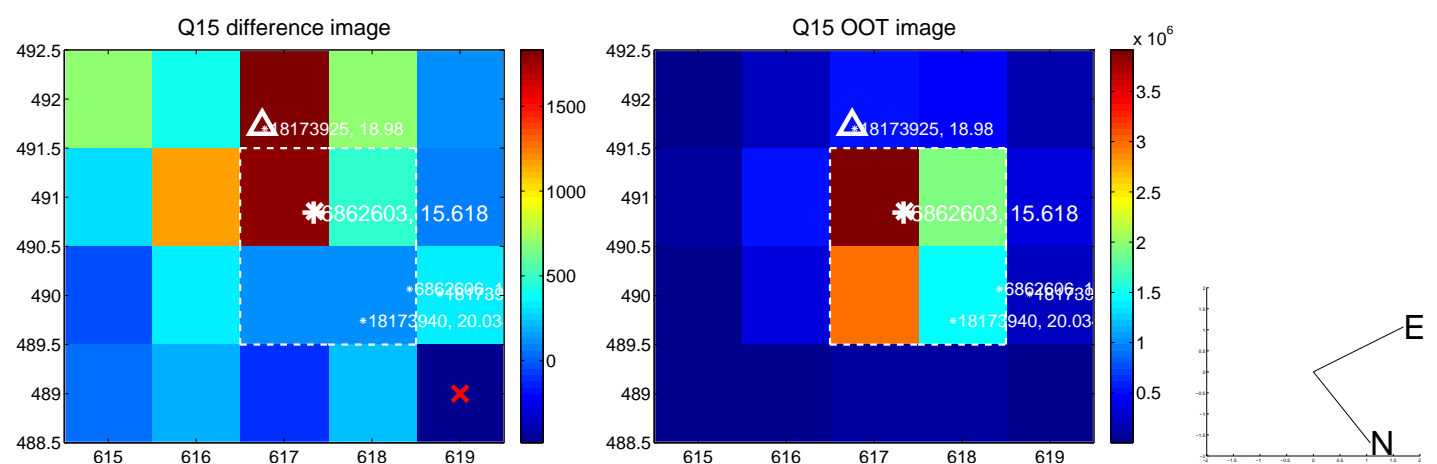
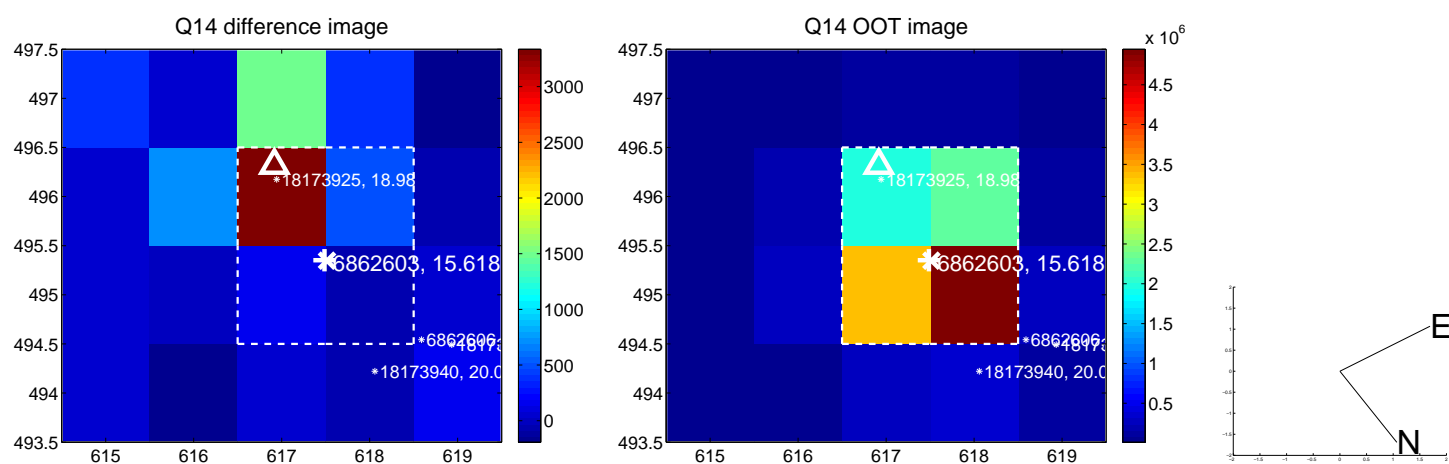
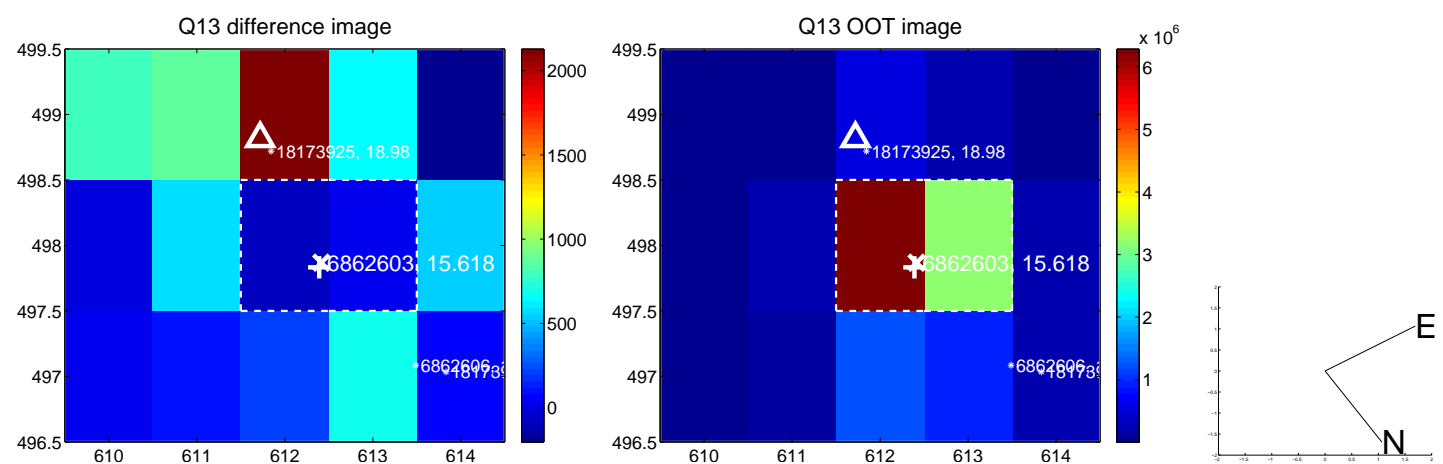
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



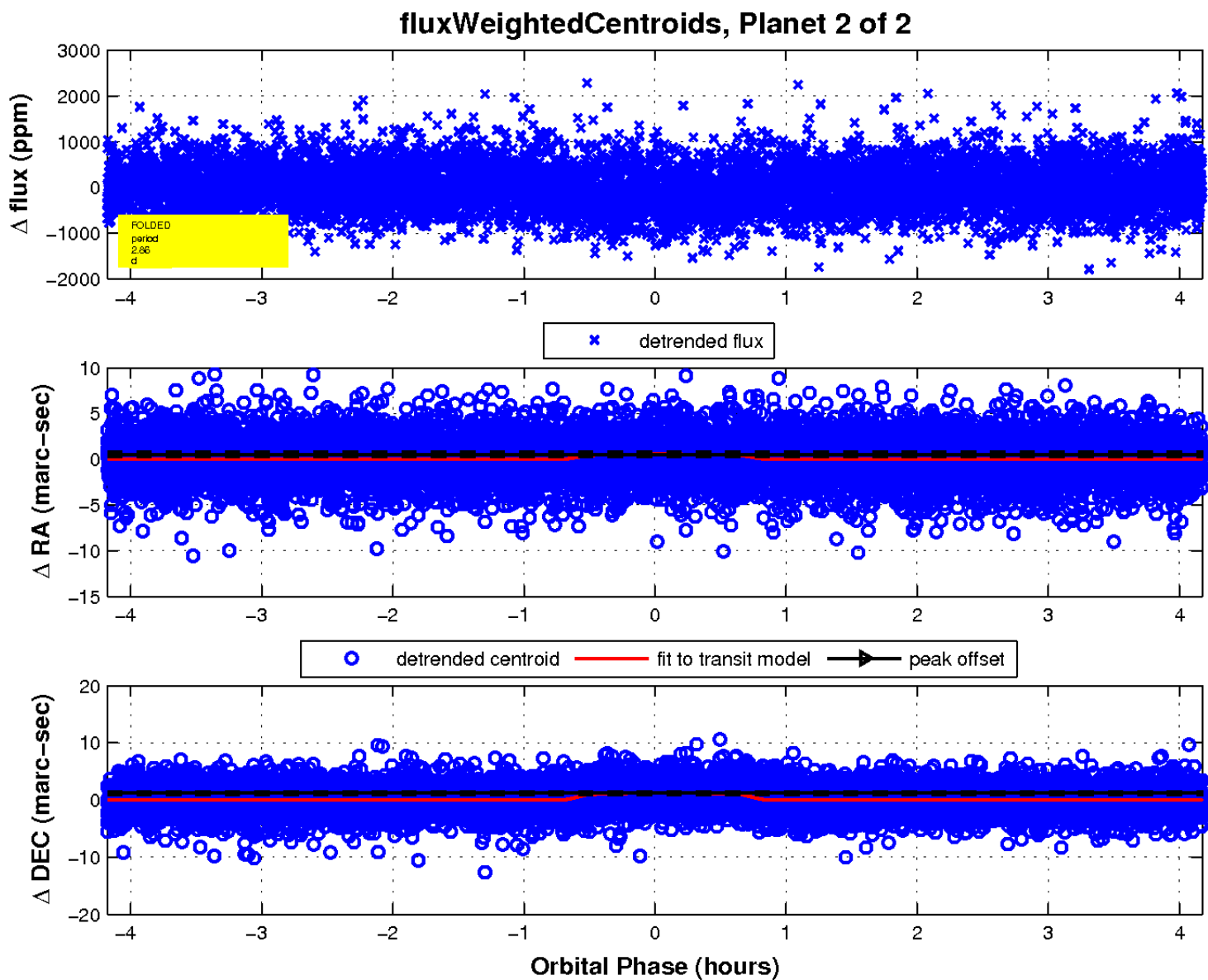
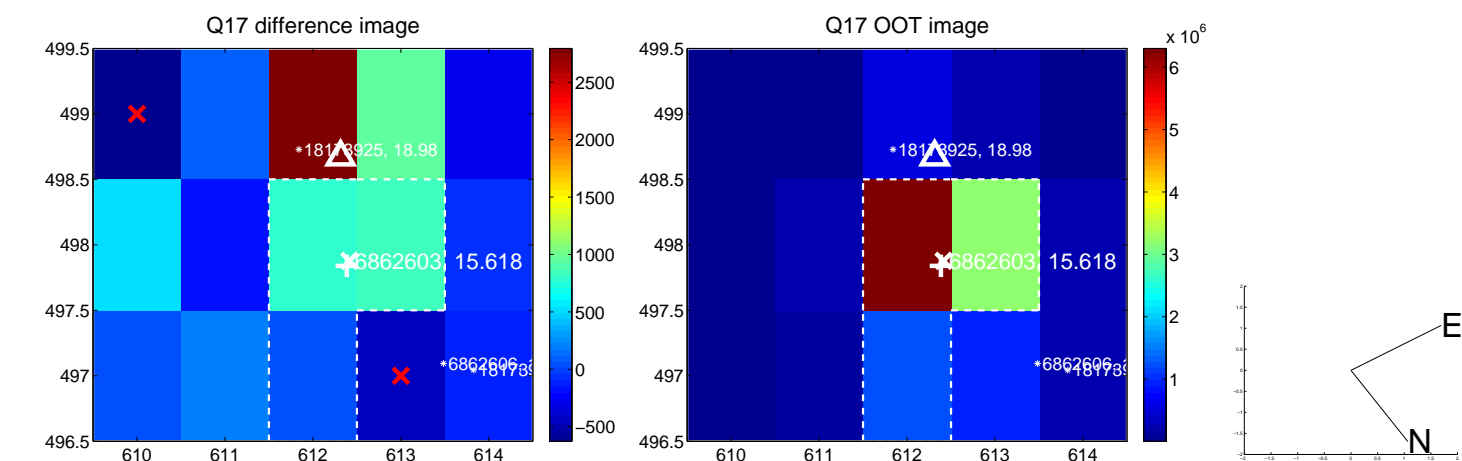
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

