

KIC 008212002

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})
008212002-01	OBS	2593.01	14.796860	142.738158	54.7	5.794	13.2	13.9	1.31	6175	1.14	138.48
008212002-02	OBS	2593.02	9.553848	135.533078	29.3	5.362	8.1	9.1	1.31	6175	0.87	248.15

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008212002-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008212002-02	OBS	PC	0.50	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.

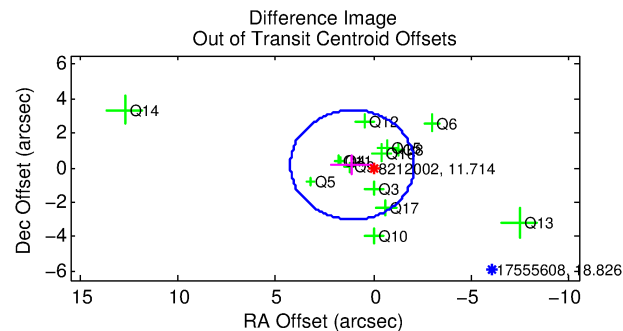
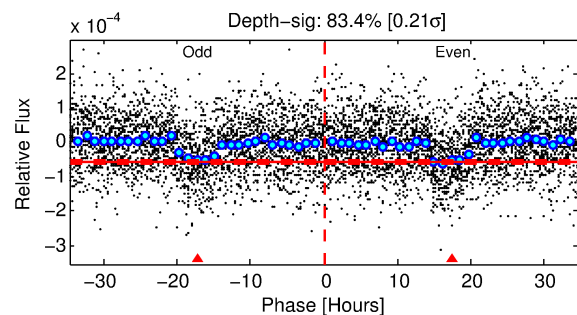
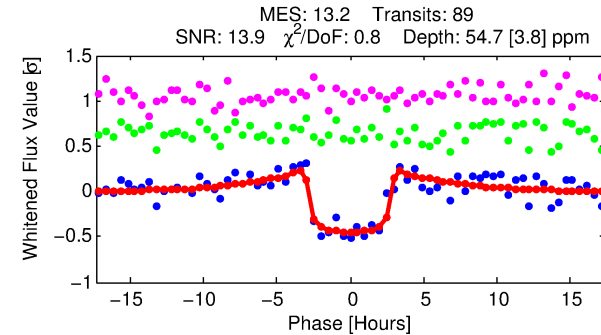
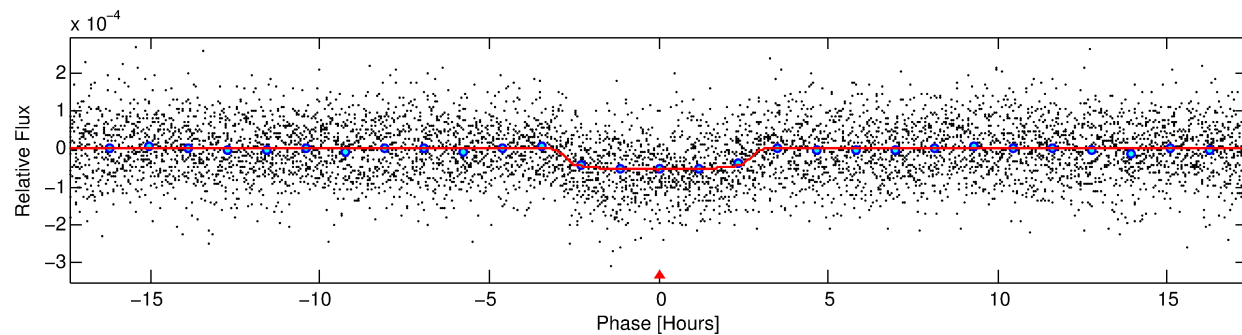
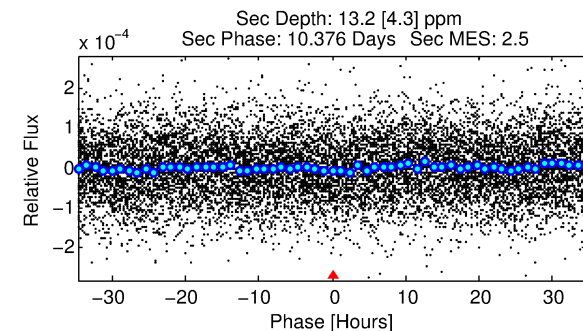
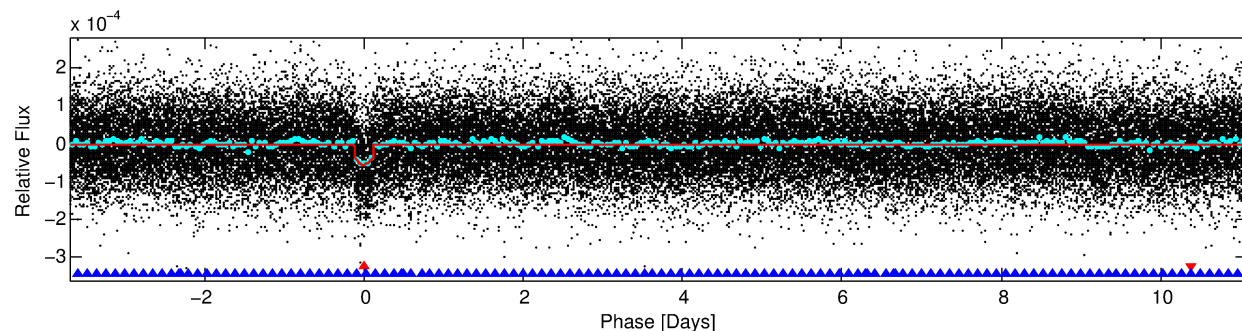
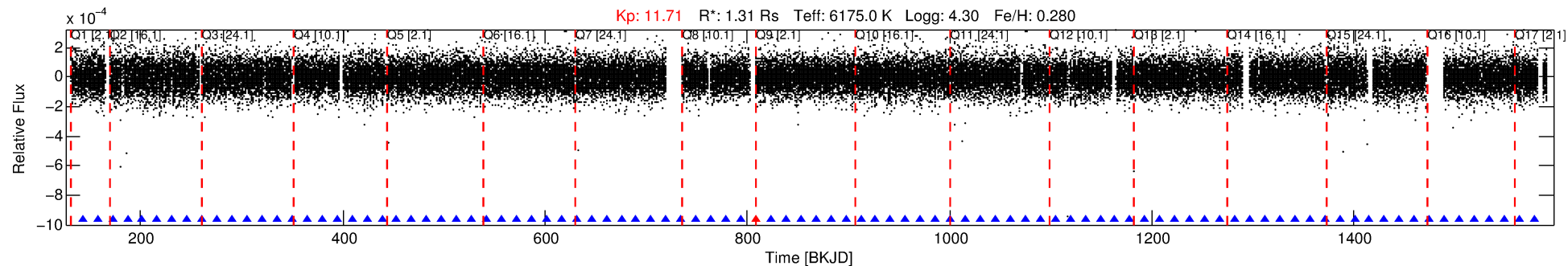
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008212002-01

No Significant Match Found

DV One-Page Summary

KIC: 8212002 Candidate: 1 of 2 Period: 14.797 d
KOI: K02593.01 Corr: 0.973



DV Fit Results:

Period = 14.79686 [0.00010] d
Epoch = 142.7382 [0.0056] BKJD
Rp/R* = 0.0080 [0.0017]
a/R* = 8.86 [9.14]
b = 0.90 [0.22]
Seff = 138.48 [30.22]
Teq = 875 [48] K
Rp = 1.14 [0.30] Re
a = 0.1268 [0.0177] AU
Ag = 89.86 [50.38] [1.76σ]
Teffp = 4164 [553] K [5.93σ]

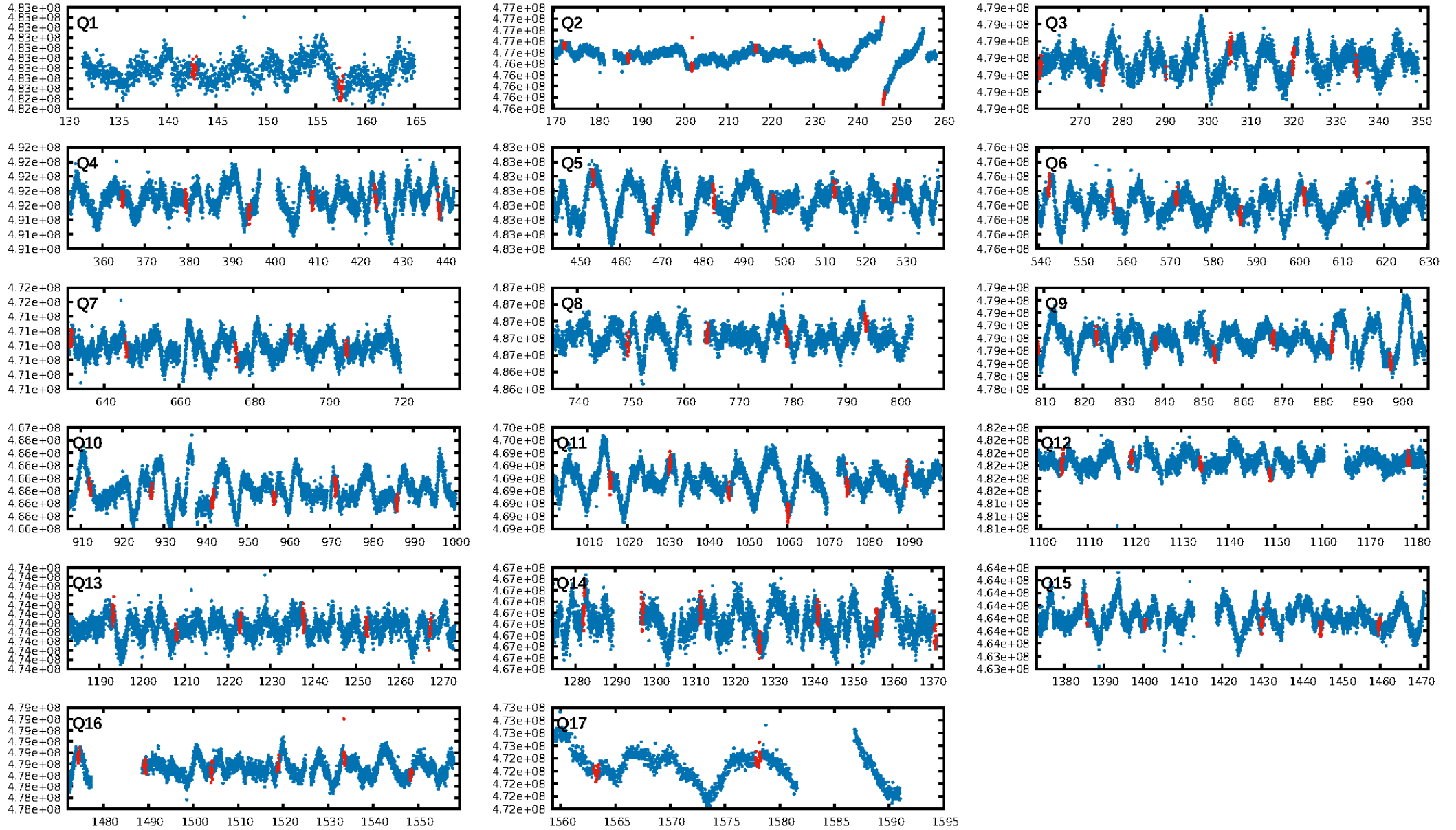
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.94σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 97.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.07e-38
RollingBand-fgt: 0.99 [84/85]
GhostDiagnostic-chr: 2.267
Centroid-sig: 12.9%
Centroid-so: 0.728 arcsec [0.97σ]
OotOffset-rm: 1.097 arcsec [1.04σ]
KicOffset-rm: 1.222 arcsec [1.11σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.64 [9/14]
DiffImageOverlap-fno: 1.00 [17/17]

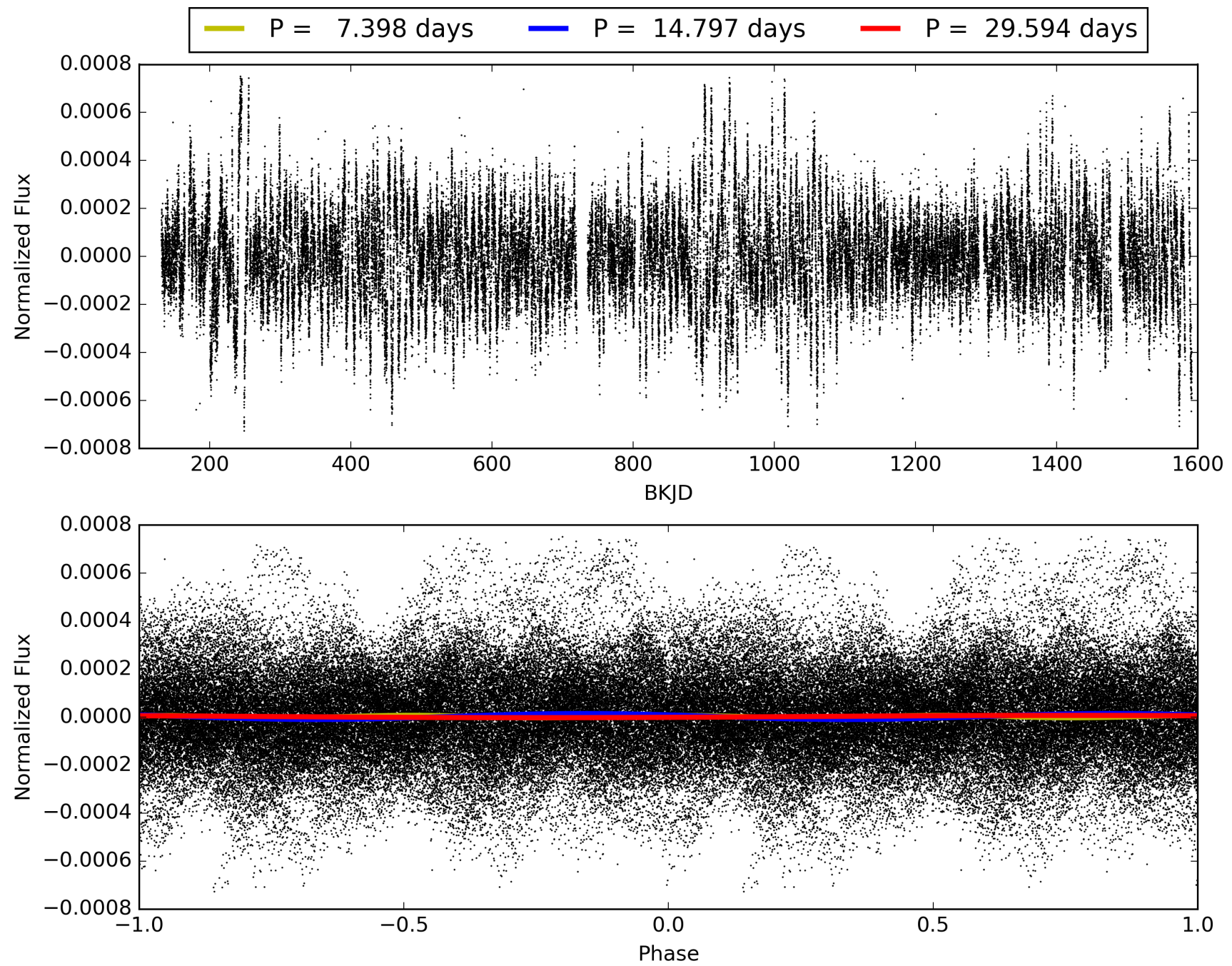
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:32:25 Z

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

TCE 008212002-01, PDC Light Curves

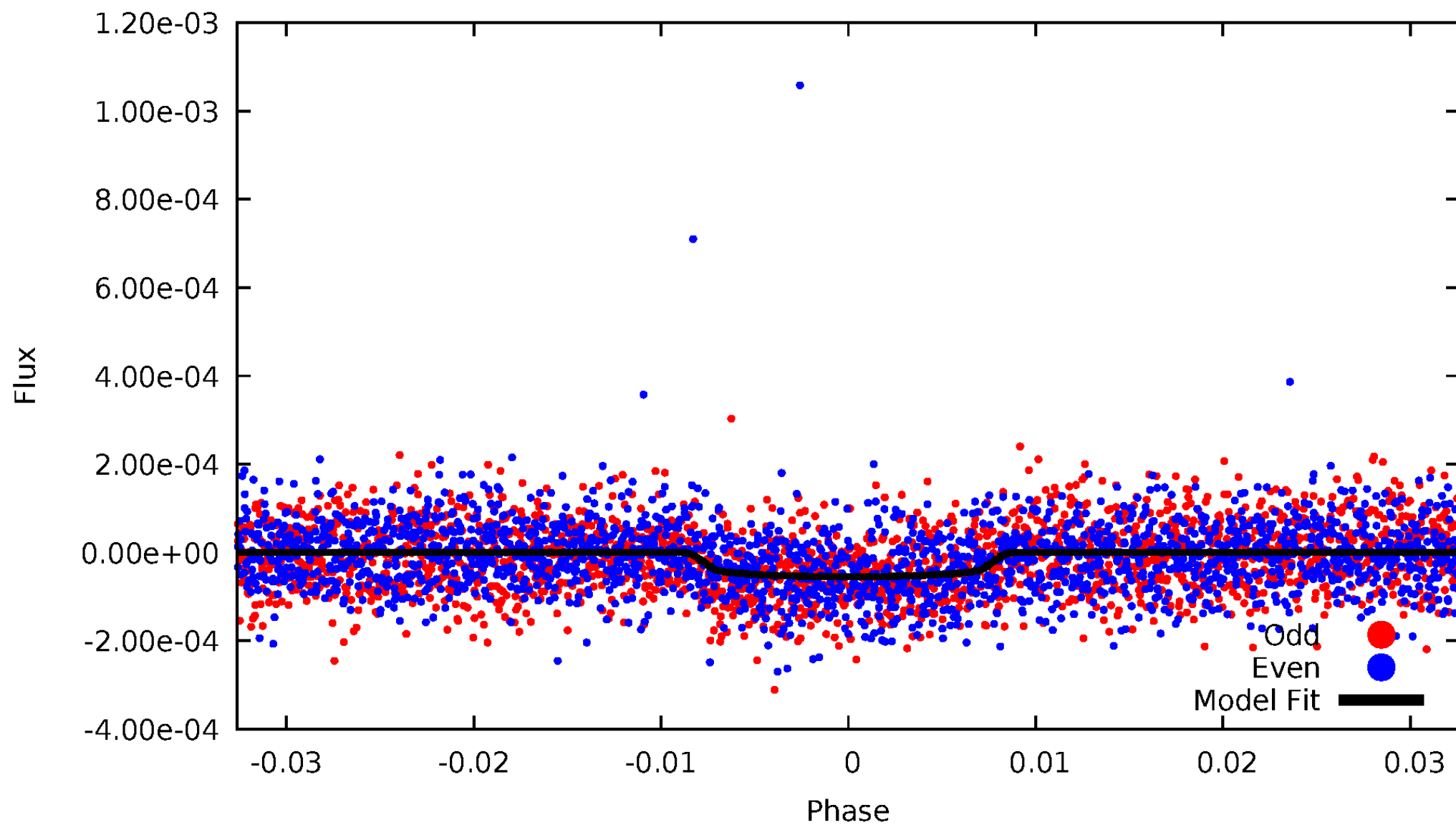


TCE 008212002-01



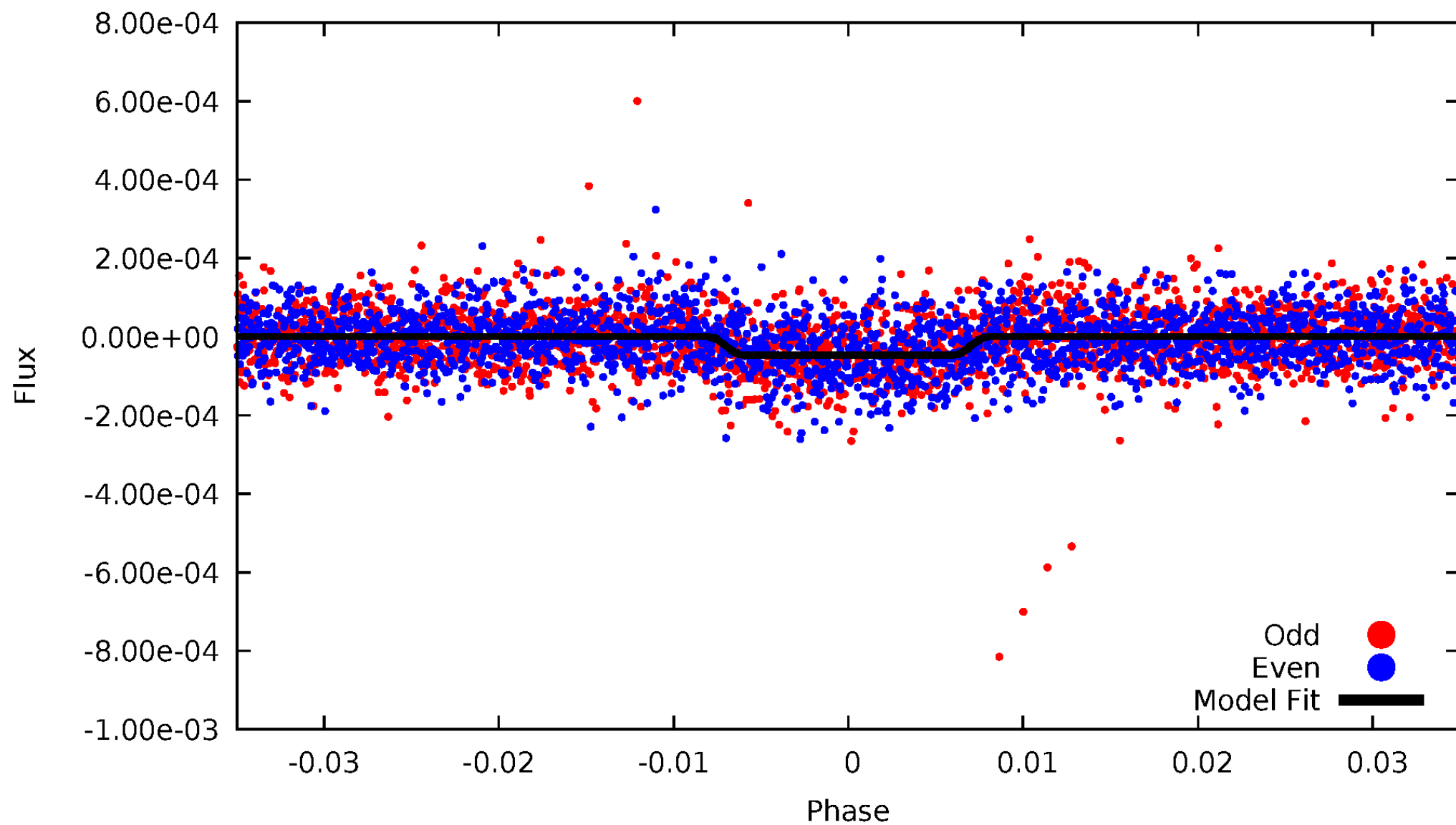
DV Odd/Even

TCE 008212002-01



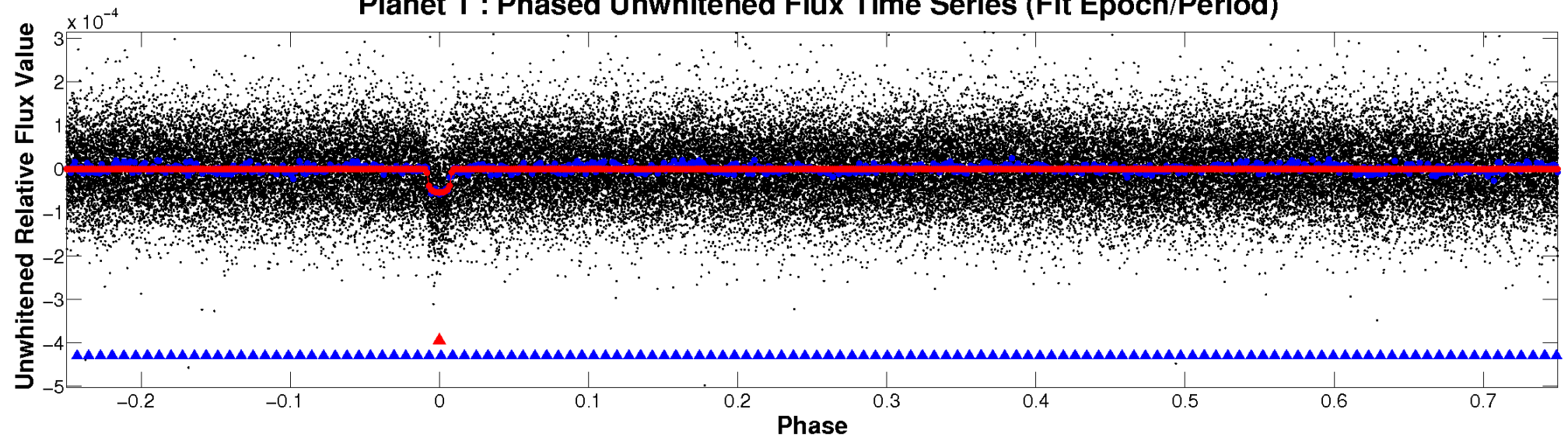
ALT Odd/Even

TCE 008212002-01

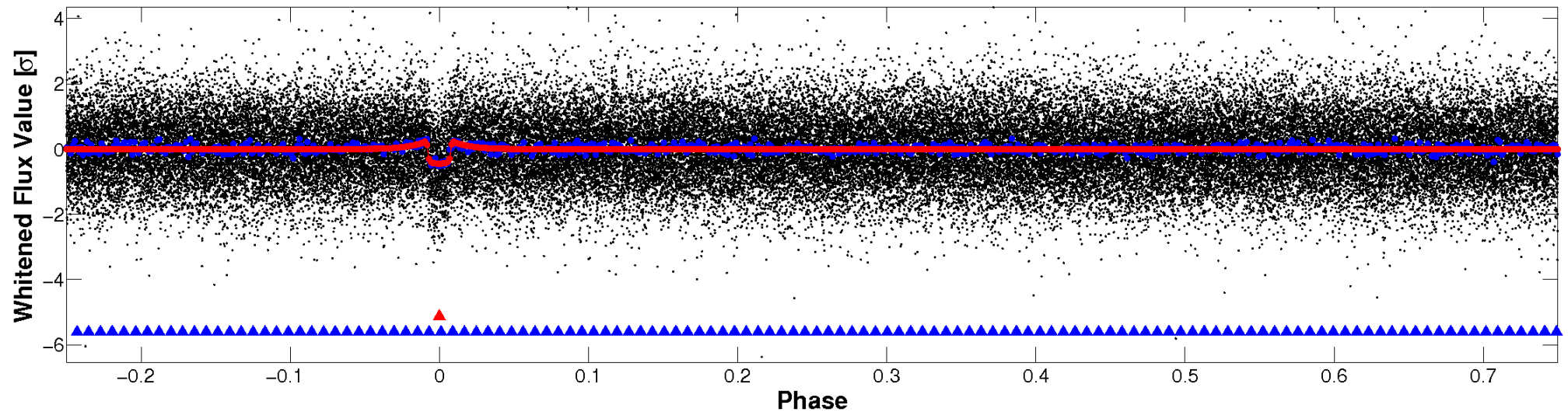


Non-Whitened Vs. Whitened Light Curve

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

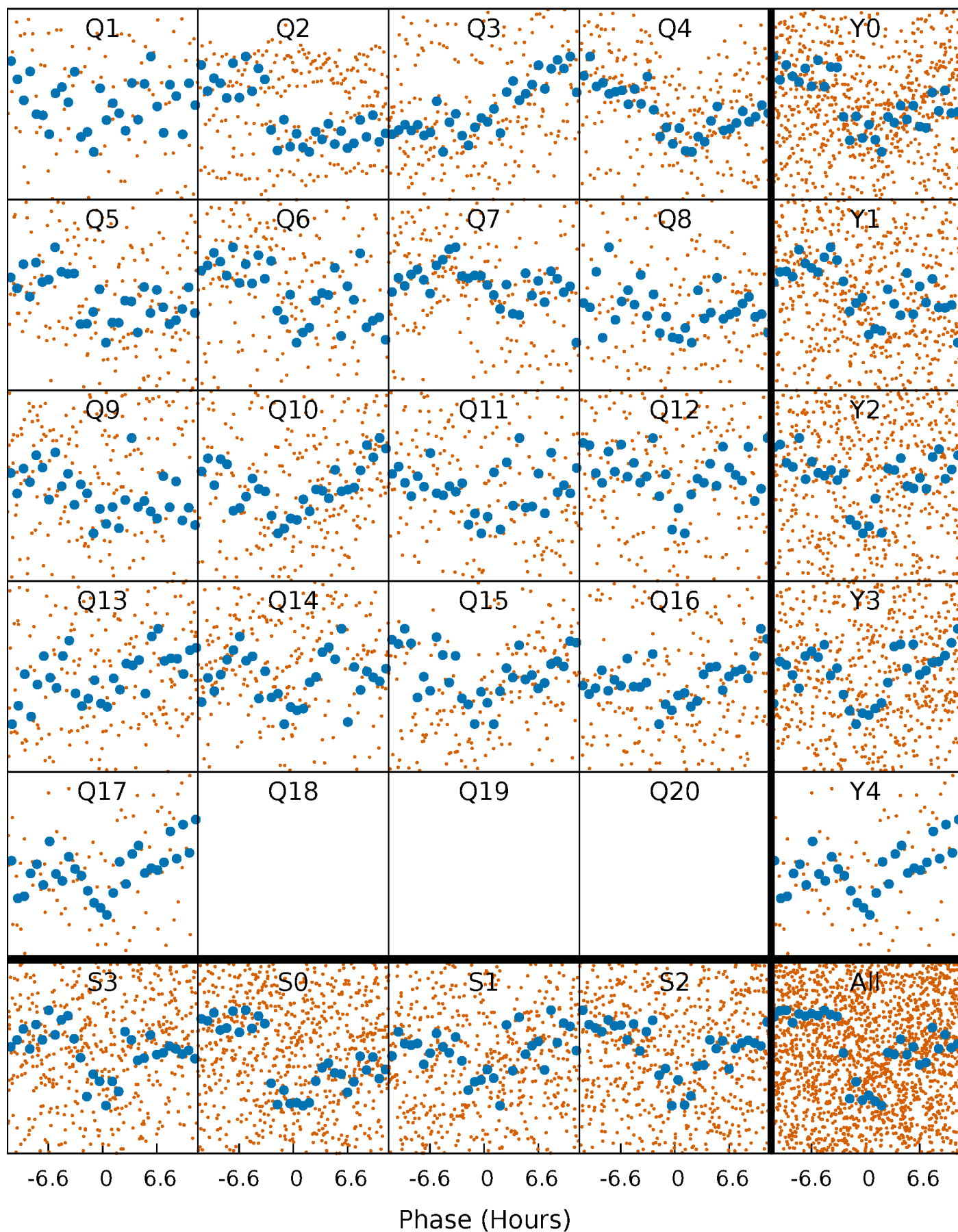


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



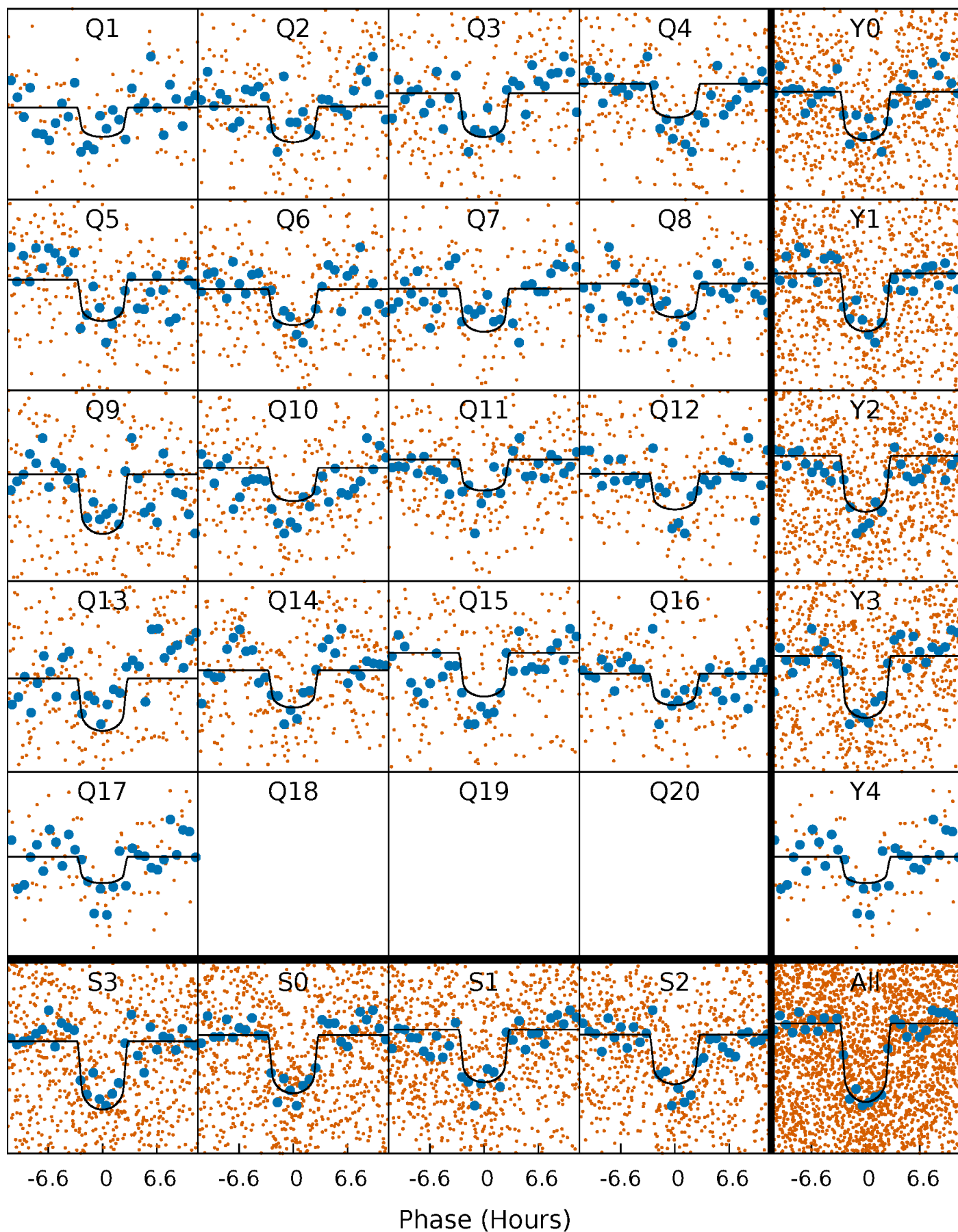
PDC Quarter-Phased Transit Curves

TCE 008212002-01 P= 14.796860 Days $T_0=142.738158$ (BKJD)



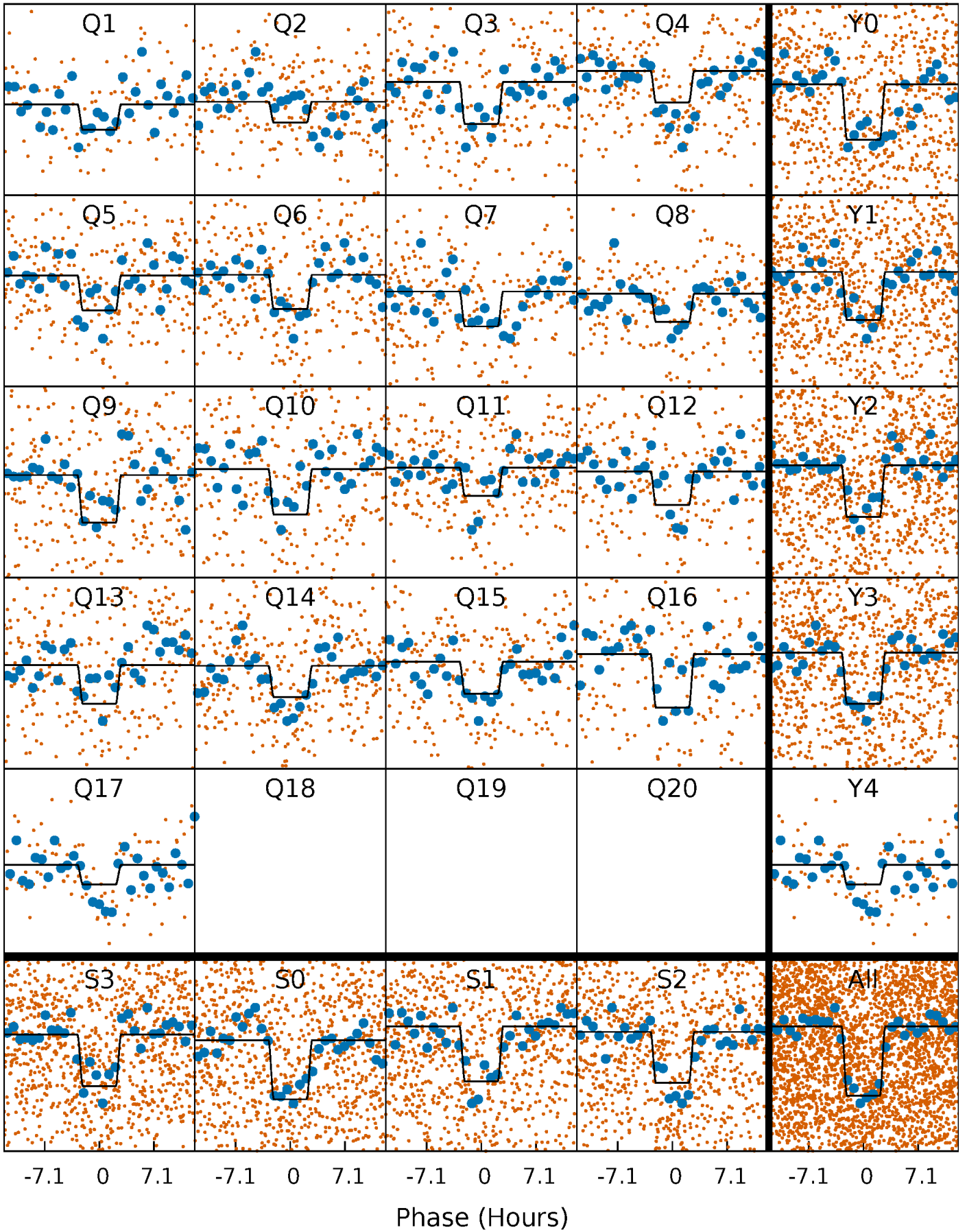
DV Quarter-Phased Transit Curves

TCE 008212002-01 P= 14.796860 Days $T_0=142.738158$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

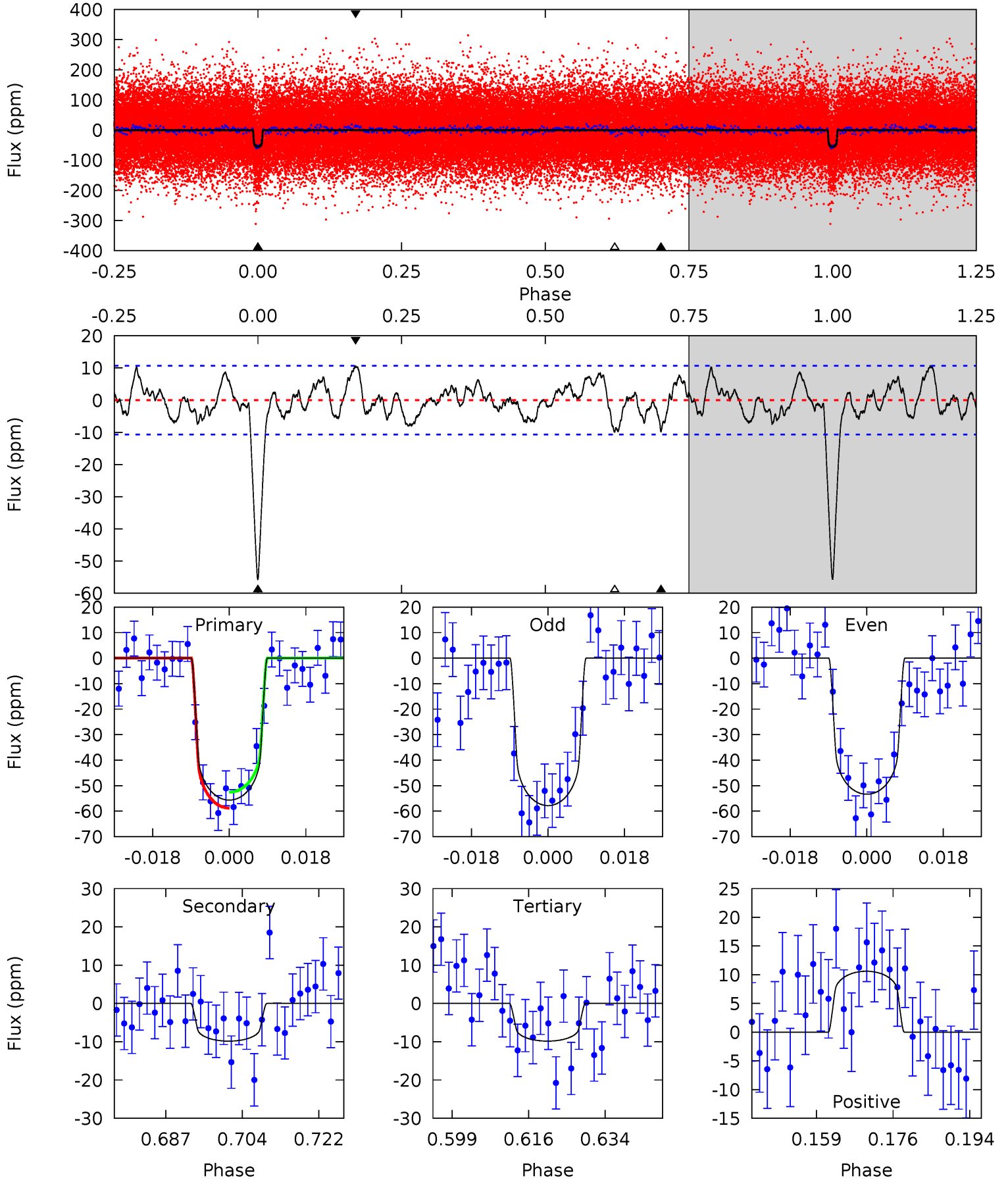
TCE 008212002-01 P= 14.796570 Days $T_0=142.748670$ (BKJD)



DV Model-Shift Uniqueness Test

008212002-01, $P = 14.796860$ Days, $E = 127.941298$ Days

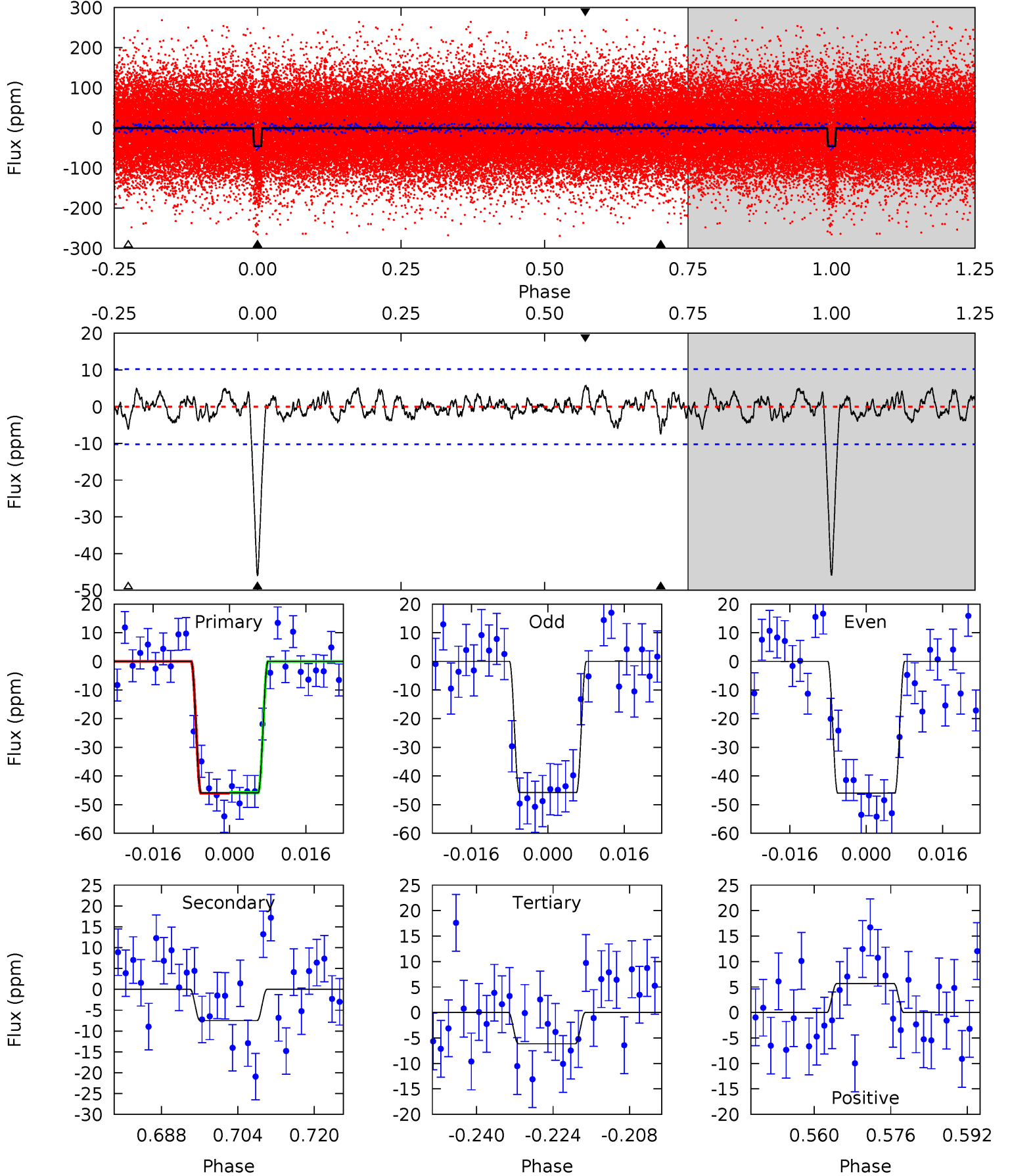
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.6	4.53	4.53	4.88	4.92	2.37	1.91	21.1	20.7	0.00	-0.35	1.02	0.91	0.16	1.44



Alt Model-Shift Uniqueness Test

008212002-01, $P = 14.796570$ Days, $E = 127.952100$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.1	3.61	2.96	2.74	4.94	2.41	1.04	19.2	19.4	0.65	0.87	0.05	0.95	0.11	0.07



Stellar Parameters For KIC 008212002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6175^{+110}_{-134}	$4.299^{+0.072}_{-0.108}$	$0.280^{+0.150}_{-0.150}$	$1.307^{+0.220}_{-0.135}$	$1.244^{+0.077}_{-0.094}$	$0.786^{+0.246}_{-0.263}$
	+2%/-2%	+2%/-3%	+54%/-54%	+17%/-10%	+6%/-8%	+31%/-33%
Source	SPE59	SPE59	SPE59	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008212002-01 / KOI 2593.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-10 ± 2	$1.15^{+0.29}_{-0.25}$	1227^{+54}_{-46}	4146^{+392}_{-325}	65^{+41}_{-25}
Alt.	-7 ± 2	$0.98^{+0.27}_{-0.27}$	1224^{+50}_{-47}	4165^{+543}_{-416}	69^{+60}_{-32}

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

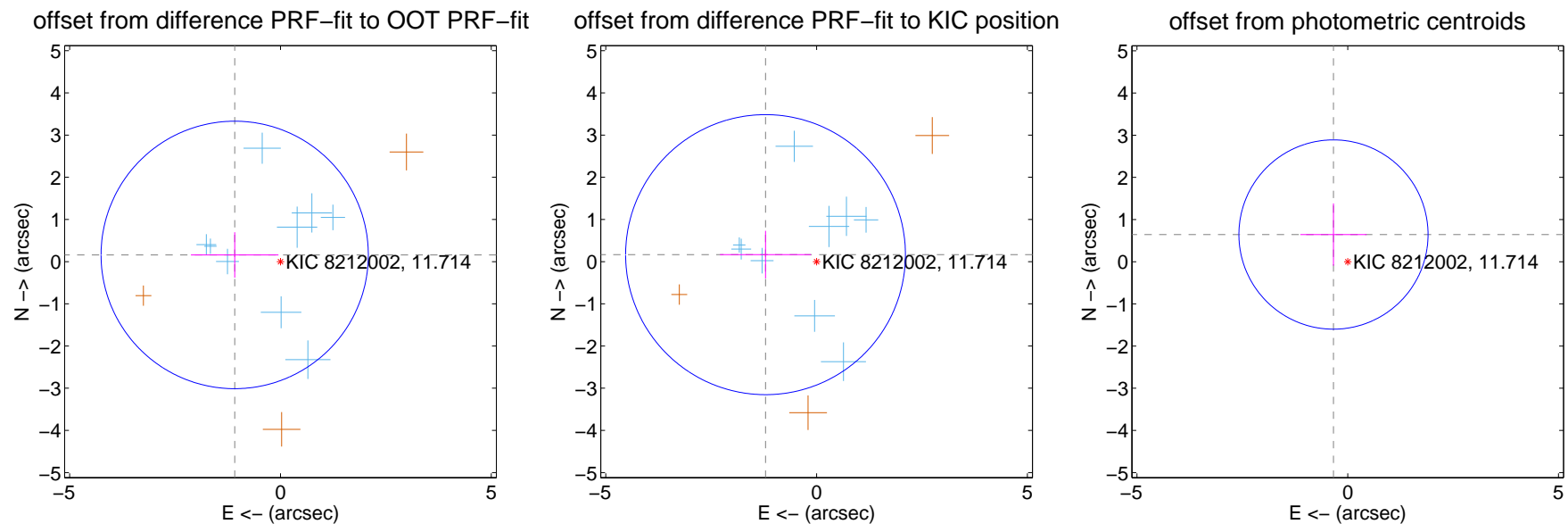
DV Centroid Data

Supplemental centroid analysis for 008212002-01. **Kepler magnitude: 11.71.** Transit SNR 13.86

There are 9 quarters with good PRF difference image offsets

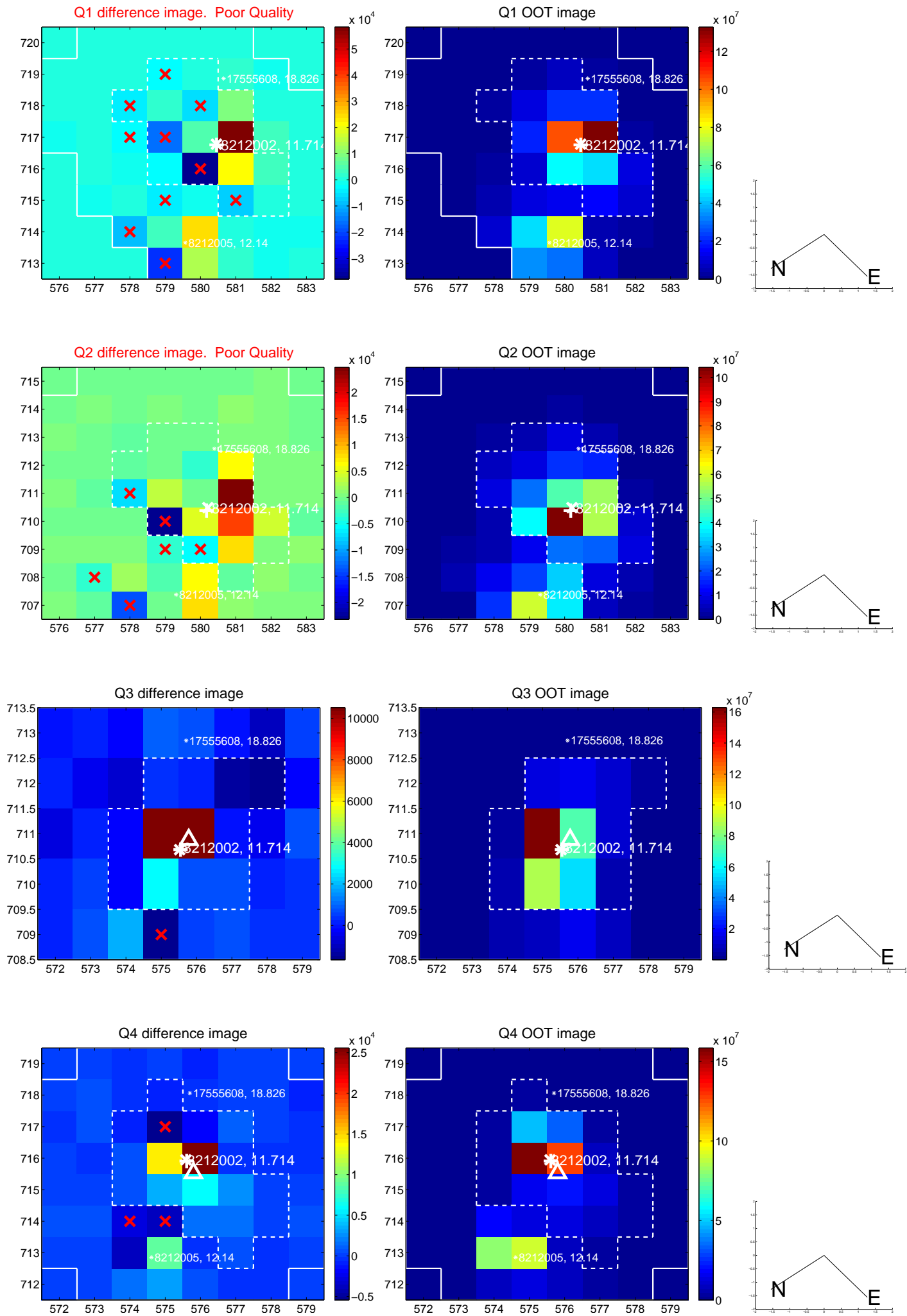
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.097 ± 1.057	1.04	1.086 ± 1.038	0.159 ± 0.537
PRF-fit source offset from KIC position	1.222 ± 1.106	1.11	1.211 ± 1.079	0.166 ± 0.565
photometric centroid source offset	0.73 ± 0.75	0.97	0.34 ± 0.79	0.64 ± 0.74

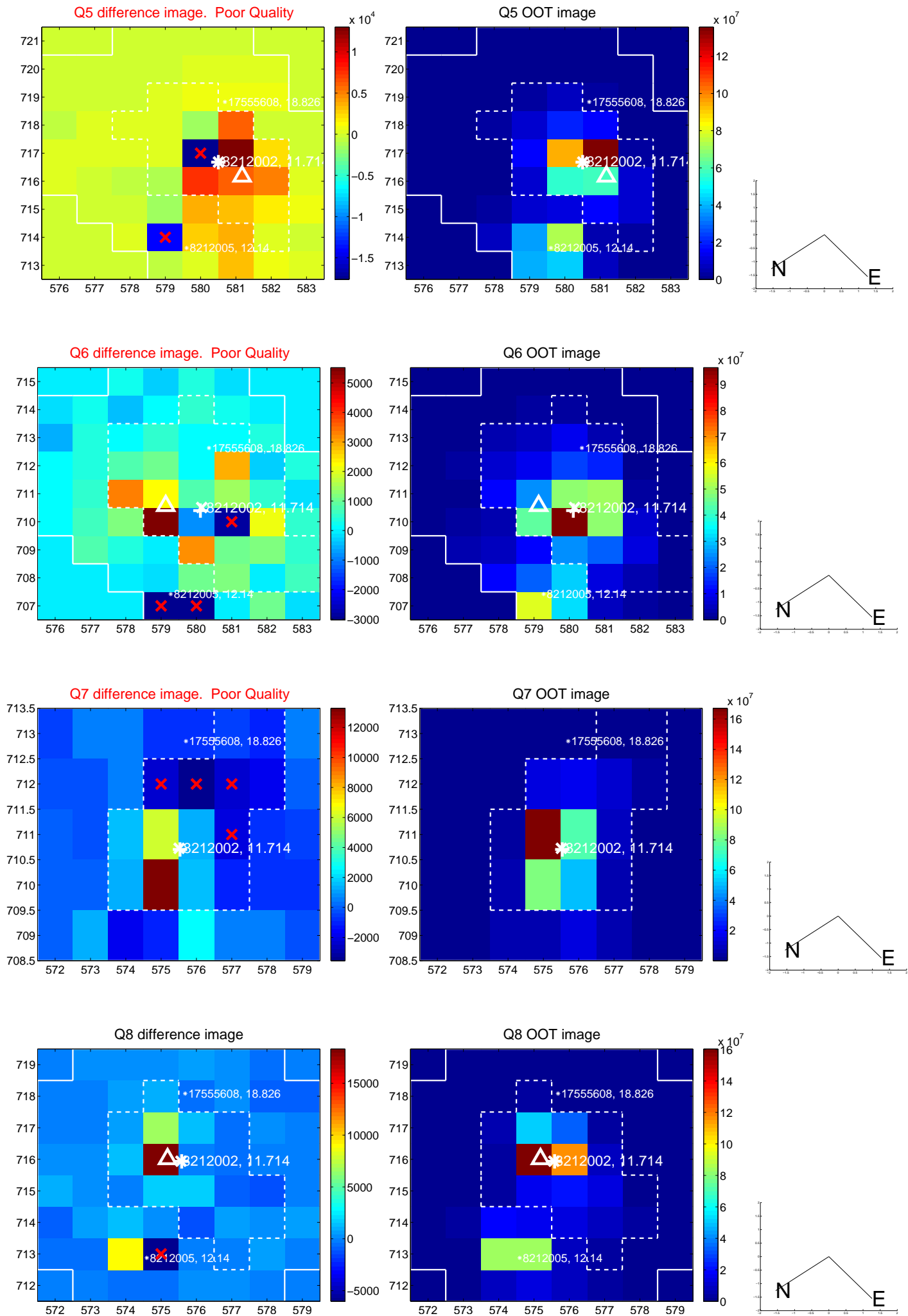


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

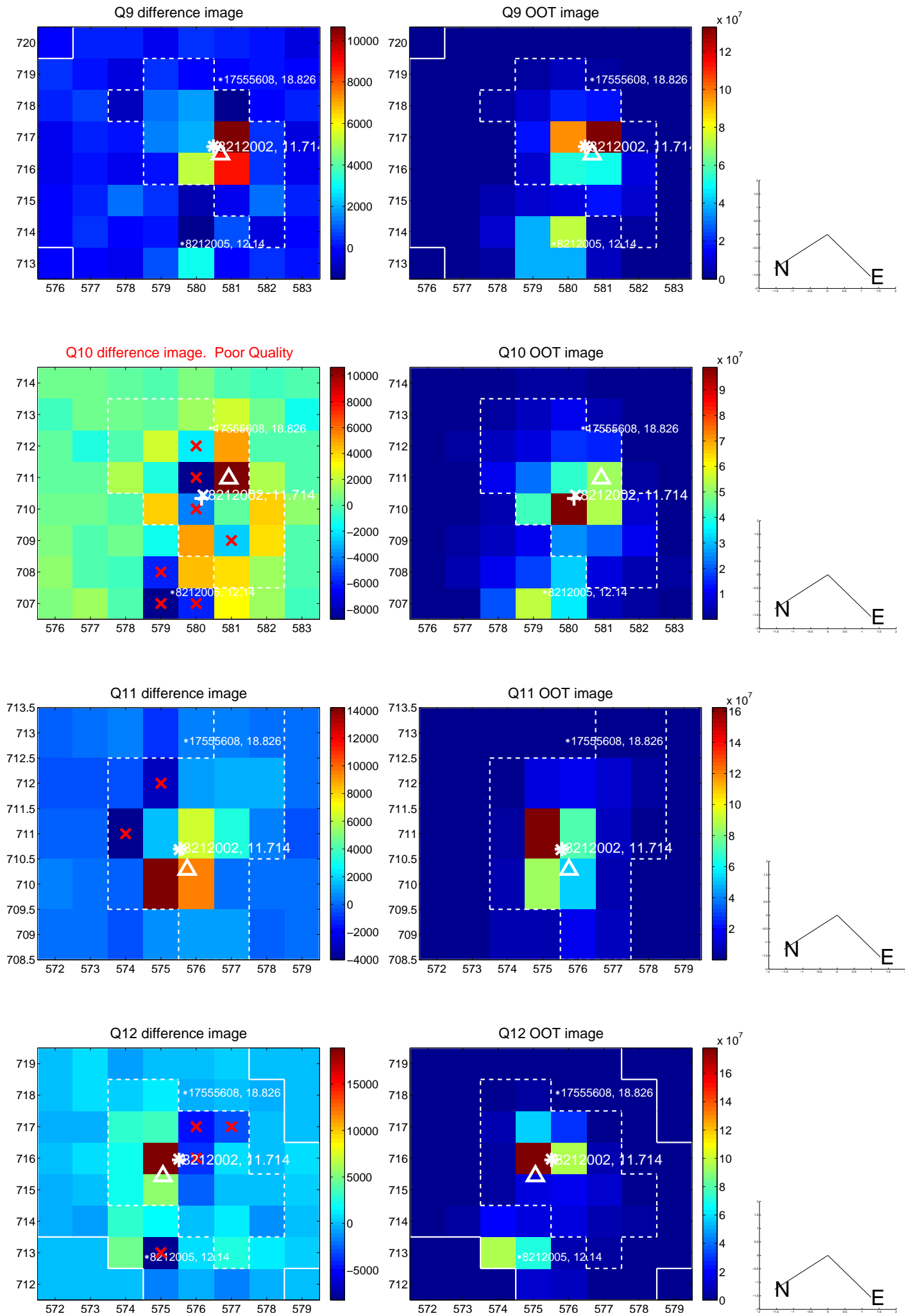
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



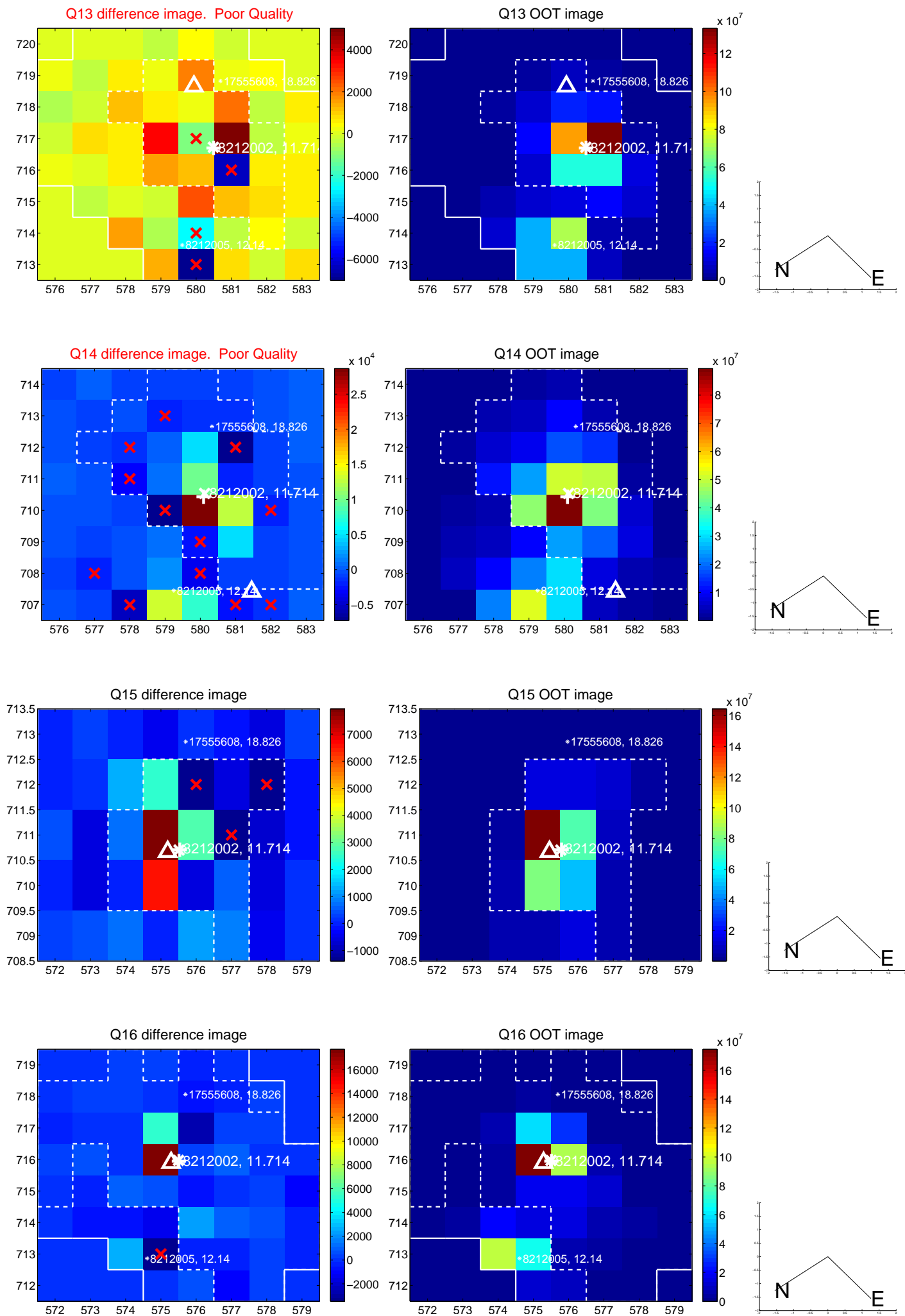
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



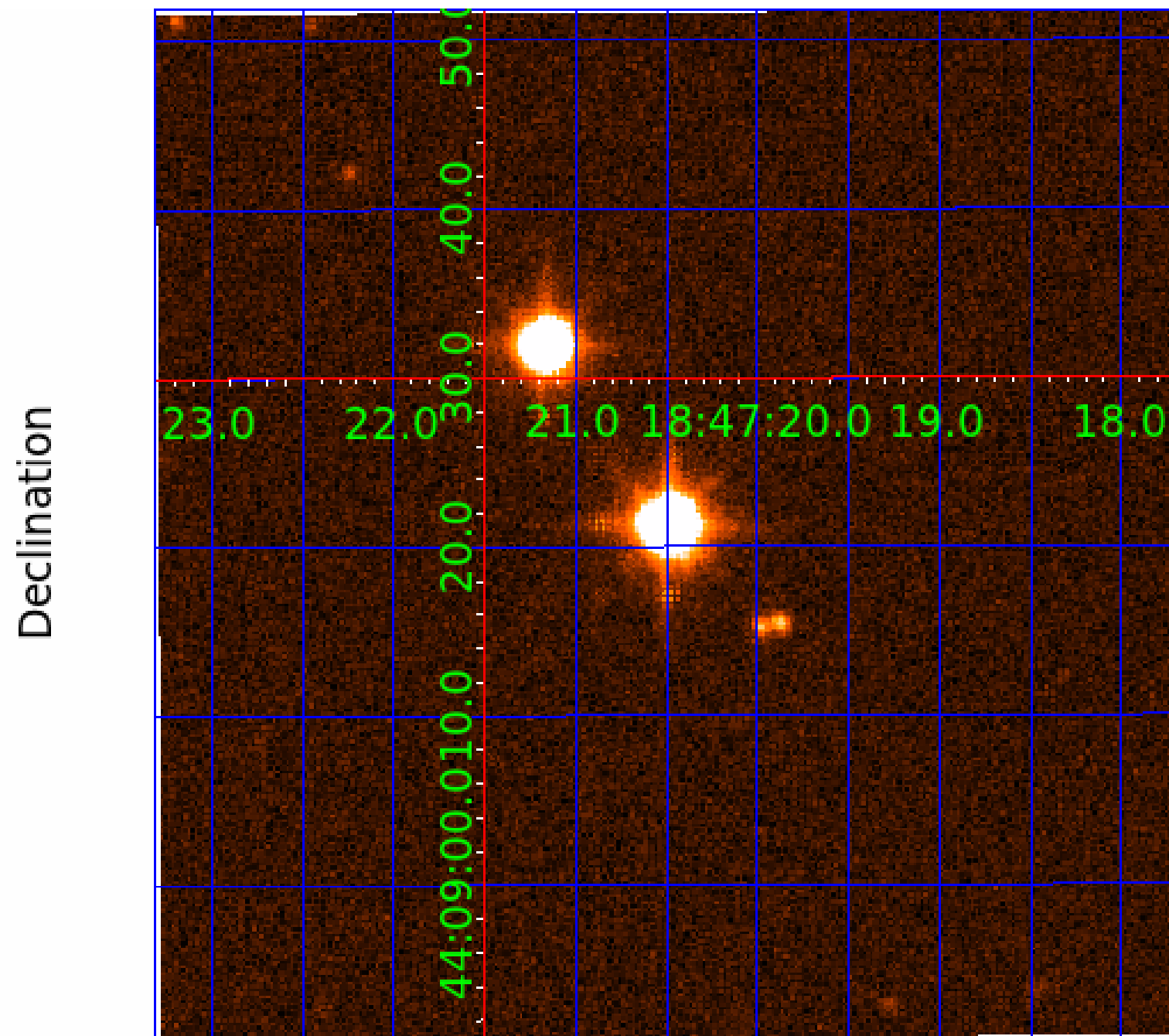
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008212002

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})
008212002-01	OBS	2593.01	14.796860	142.738158	54.7	5.794	13.2	13.9	1.31	6175	1.14	138.48
008212002-02	OBS	2593.02	9.553848	135.533078	29.3	5.362	8.1	9.1	1.31	6175	0.87	248.15

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008212002-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008212002-02	OBS	PC	0.50	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.

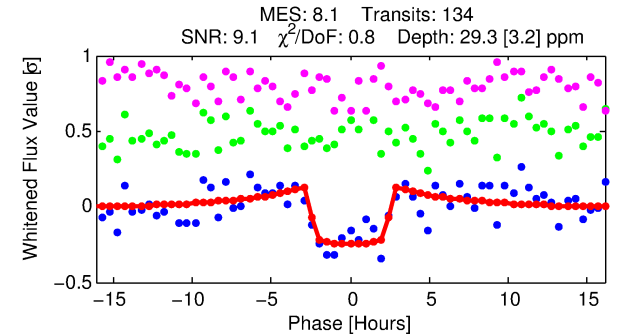
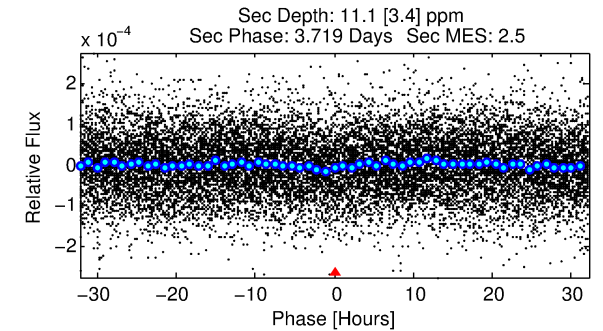
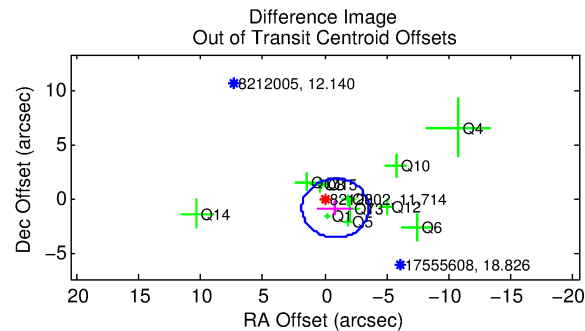
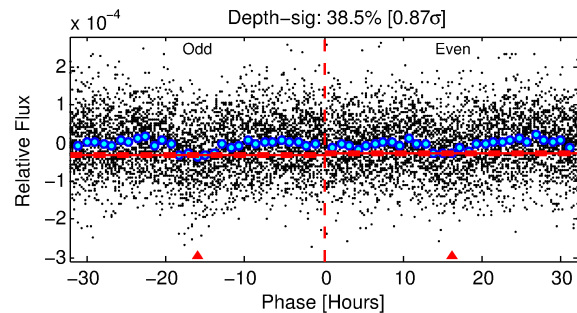
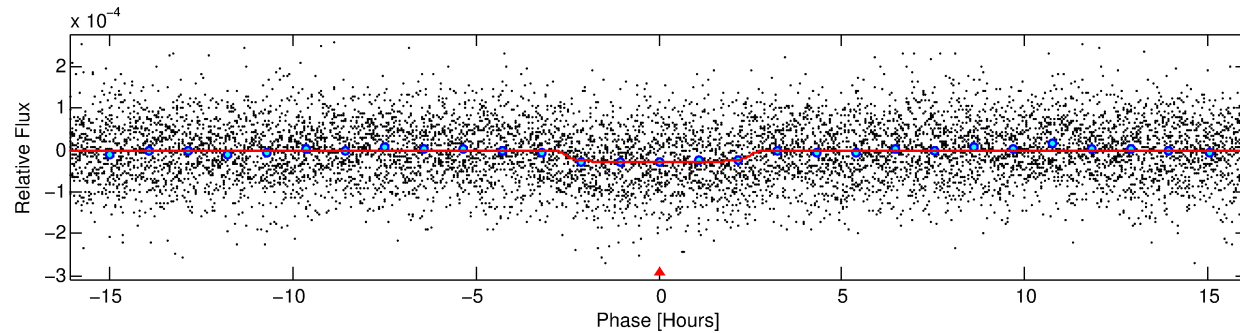
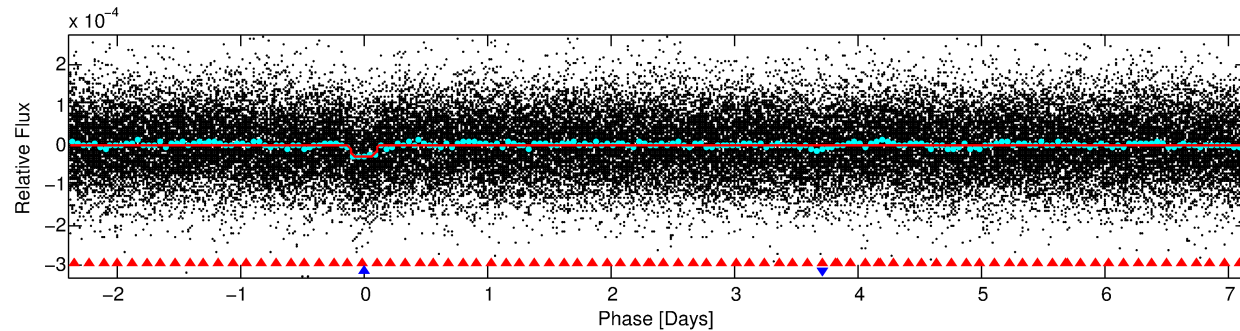
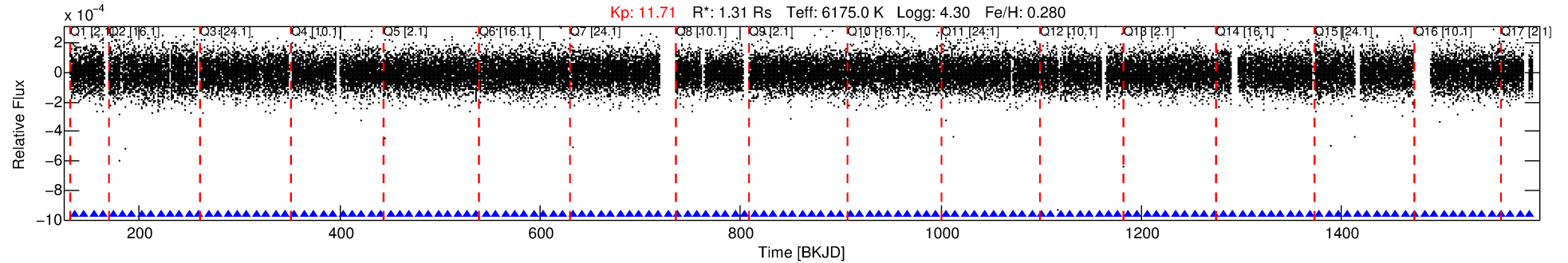
Ephemeris Match Information For 008212002-02

No Significant Match Found

DV One-Page Summary

KIC: 8212002 Candidate: 2 of 2 Period: 9.554 d

KOI: K02593 Corr: No Ephemeris Match



DV Fit Results:

Period = 9.55385 [0.00009] d
Epoch = 135.5331 [0.0076] BKJD
Rp/R* = 0.0061 [0.0015]
a/R* = 5.05 [6.26]
b = 0.94 [0.17]
Seff = 248.15 [54.15]
Teq = 1012 [55] K
Rp = 0.87 [0.26] Re
a = 0.0947 [0.0132] AU
Ag = 71.87 [43.95] [1.61 σ]
Teffp = 4556 [666] K [5.31 σ]

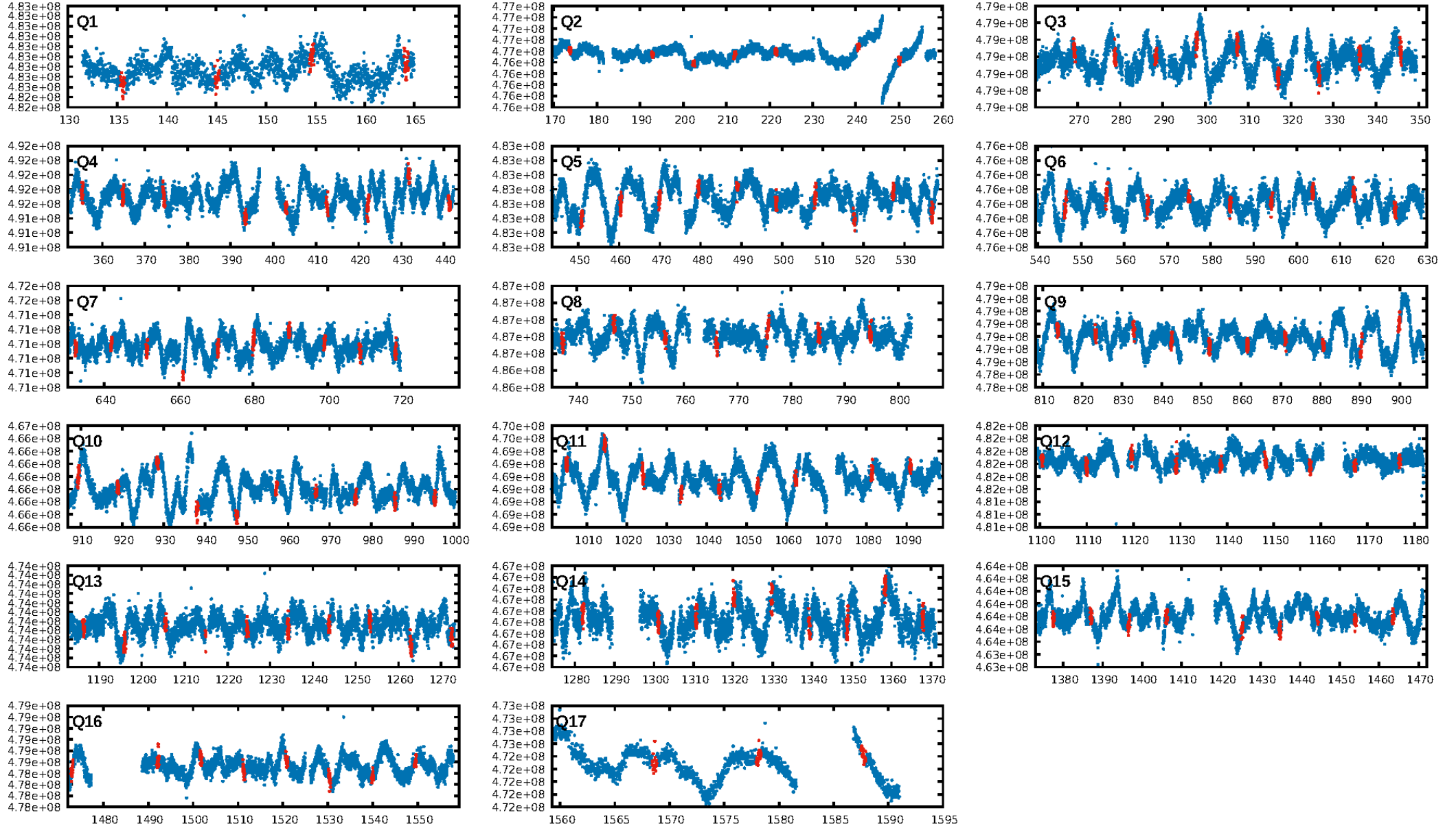
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [15.94 σ]
ModelChiSquare2-sig: 98.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.51e-15
RollingBand-fgt: 1.00 [128/128]
GhostDiagnostic-chr: -7.921
Centroid-sig: 0.1%
Centroid-so: 0.832 arcsec [0.75 σ]
OotOffset-rm: 1.164 arcsec [1.30 σ]
KicOffset-rm: 1.095 arcsec [1.33 σ]
OotOffset-st: 3/3/3/4 [13]
KicOffset-st: 3/3/3/4 [13]
DiffImageQuality-fgm: 0.31 [4/13]
DiffImageOverlap-fno: 1.00 [17/17]

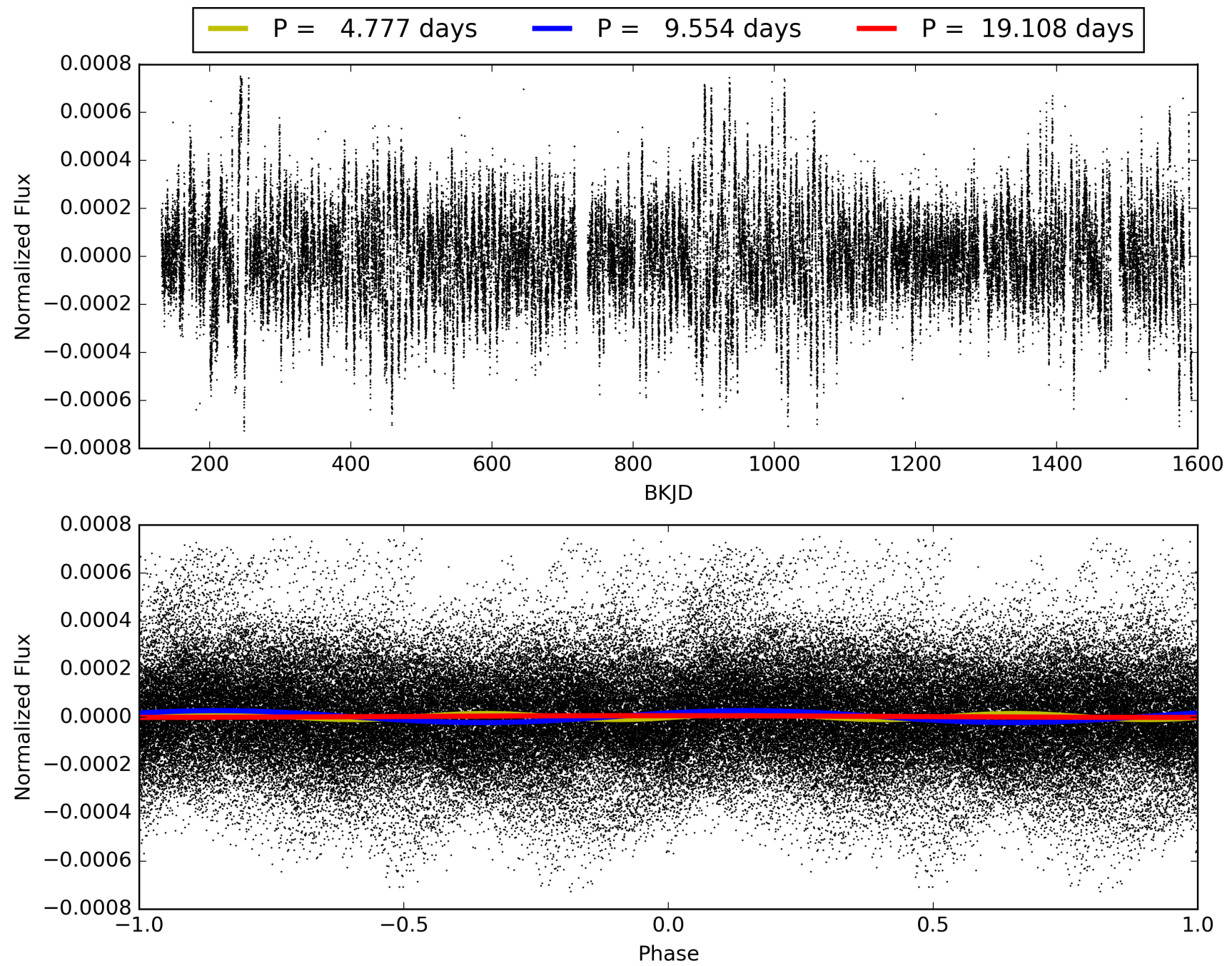
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:32:32 Z

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

TCE 008212002-02, PDC Light Curves

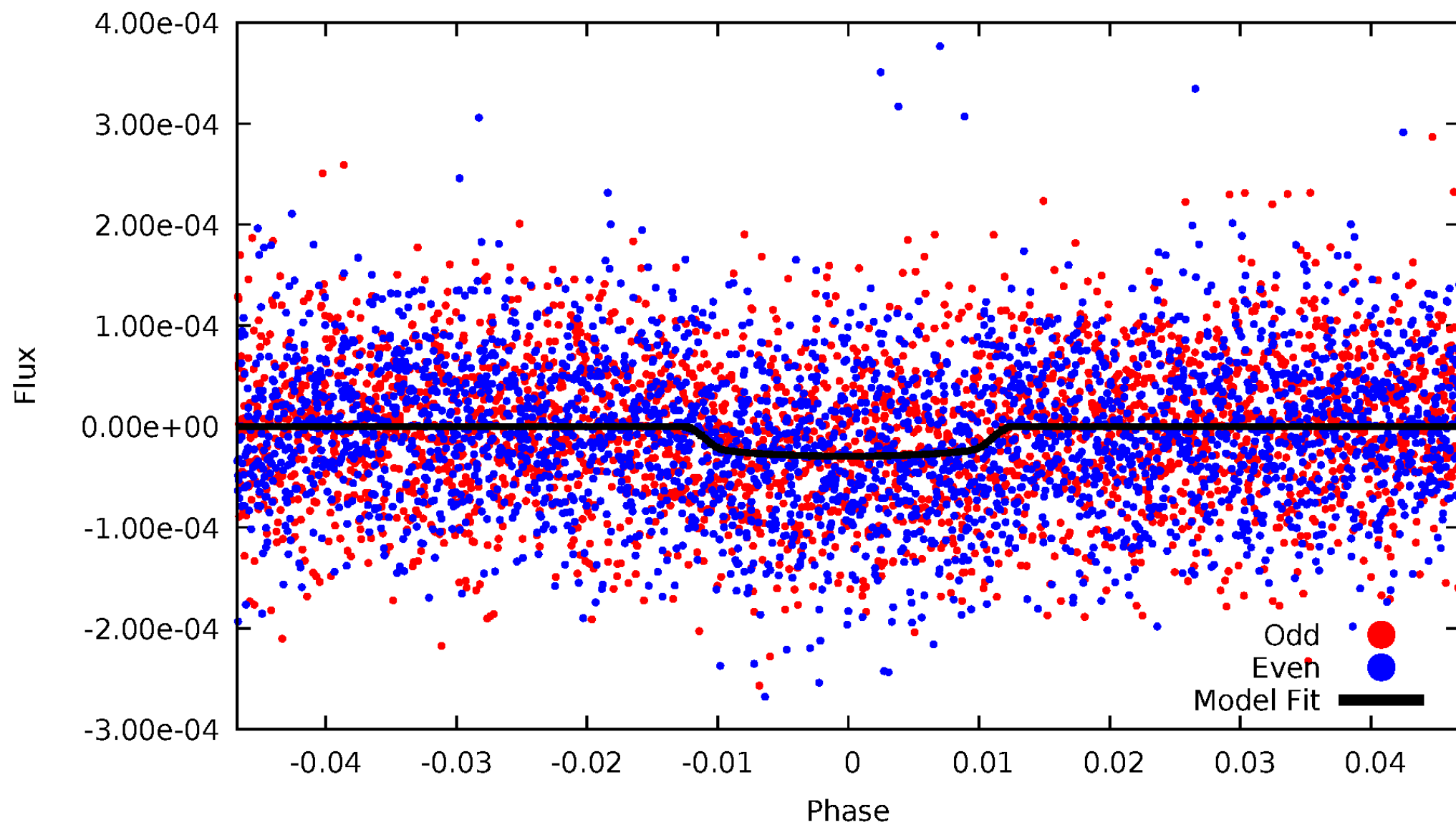


TCE 008212002-02



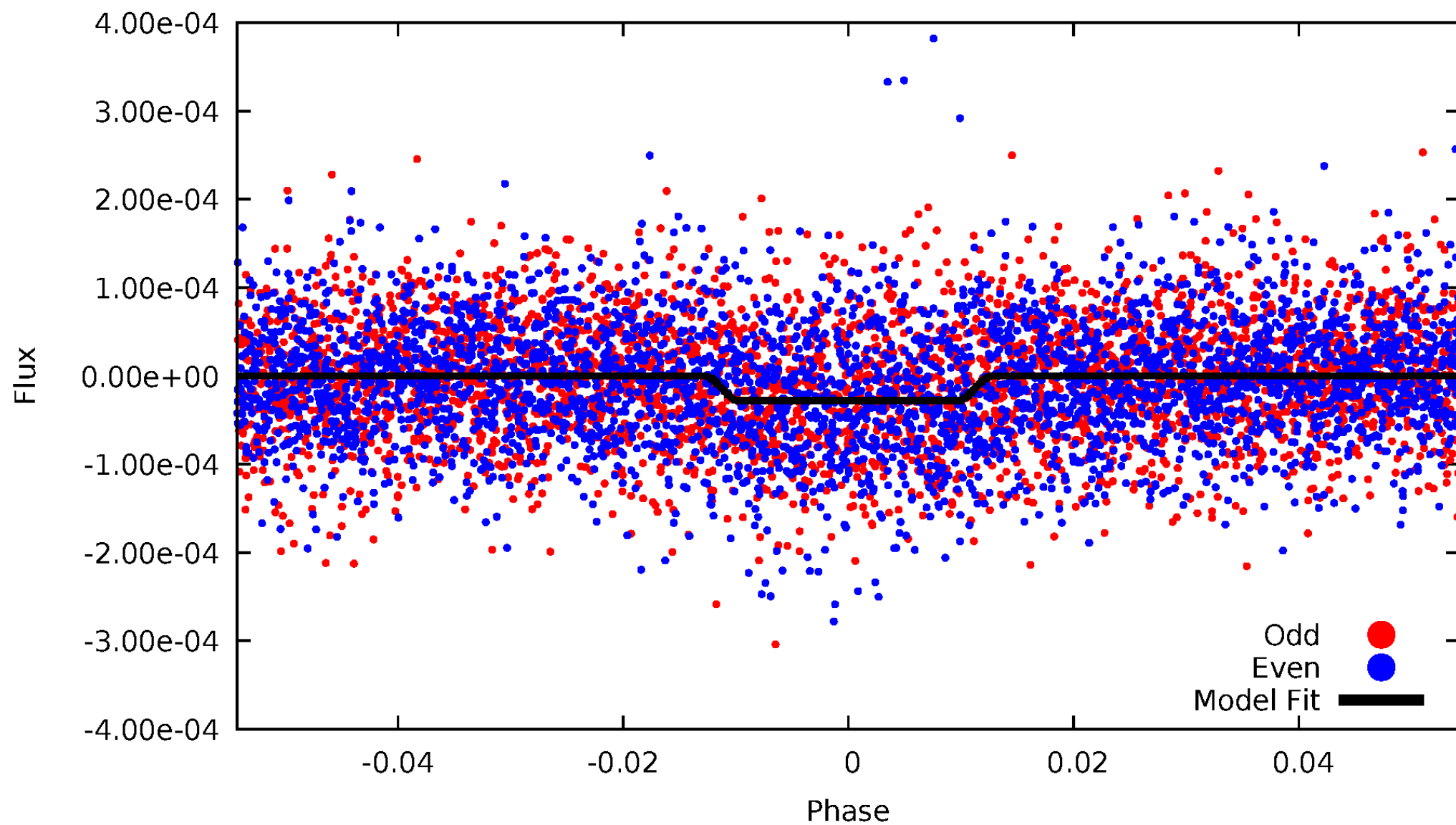
DV Odd/Even

TCE 008212002-02



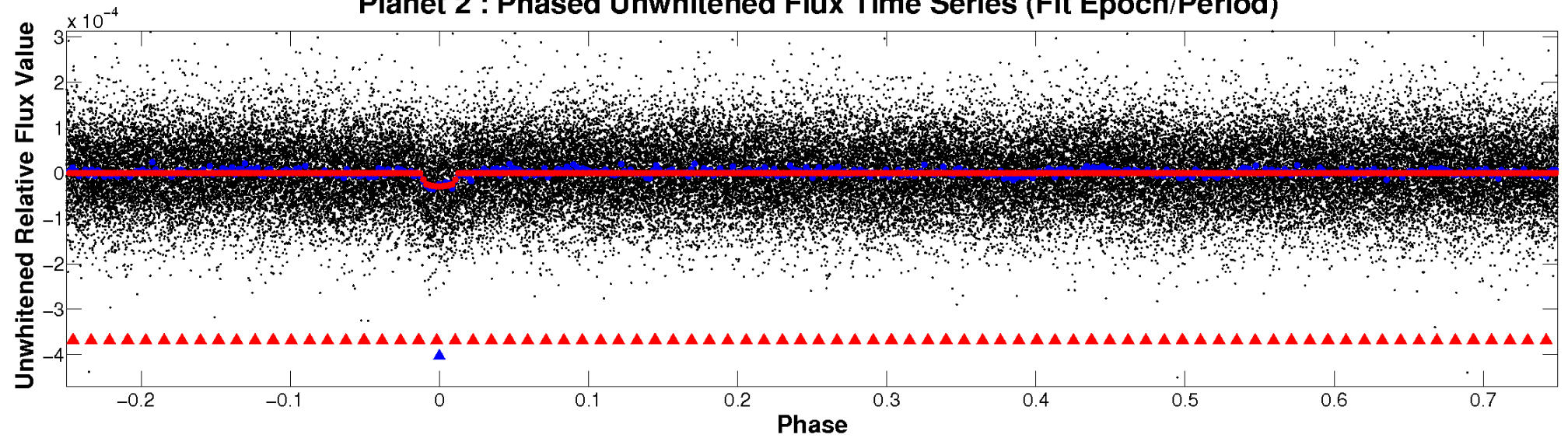
ALT Odd/Even

TCE 008212002-02

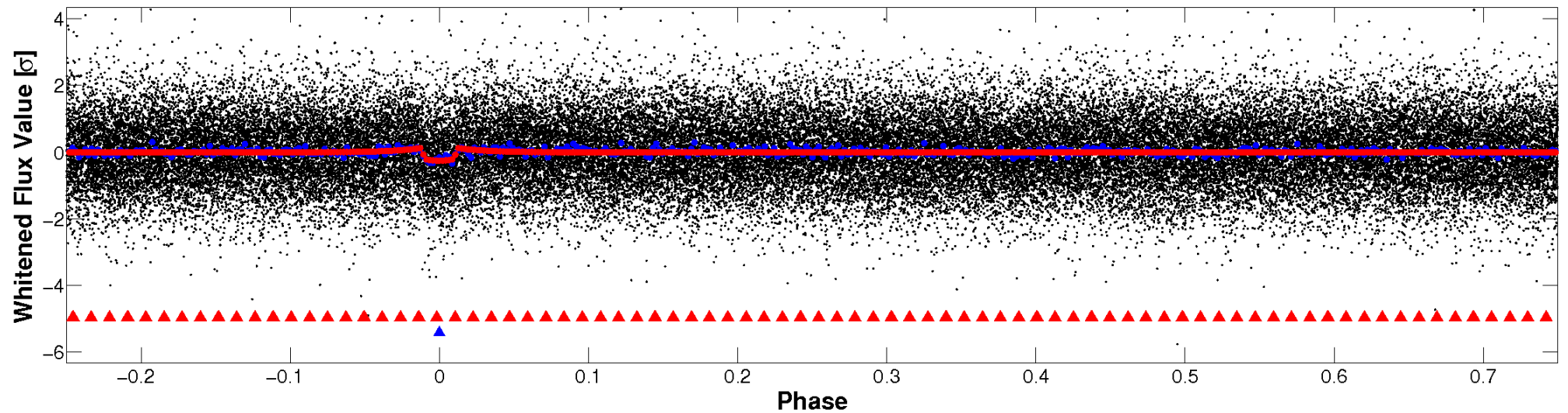


Non-Whitened Vs. Whitened Light Curve

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

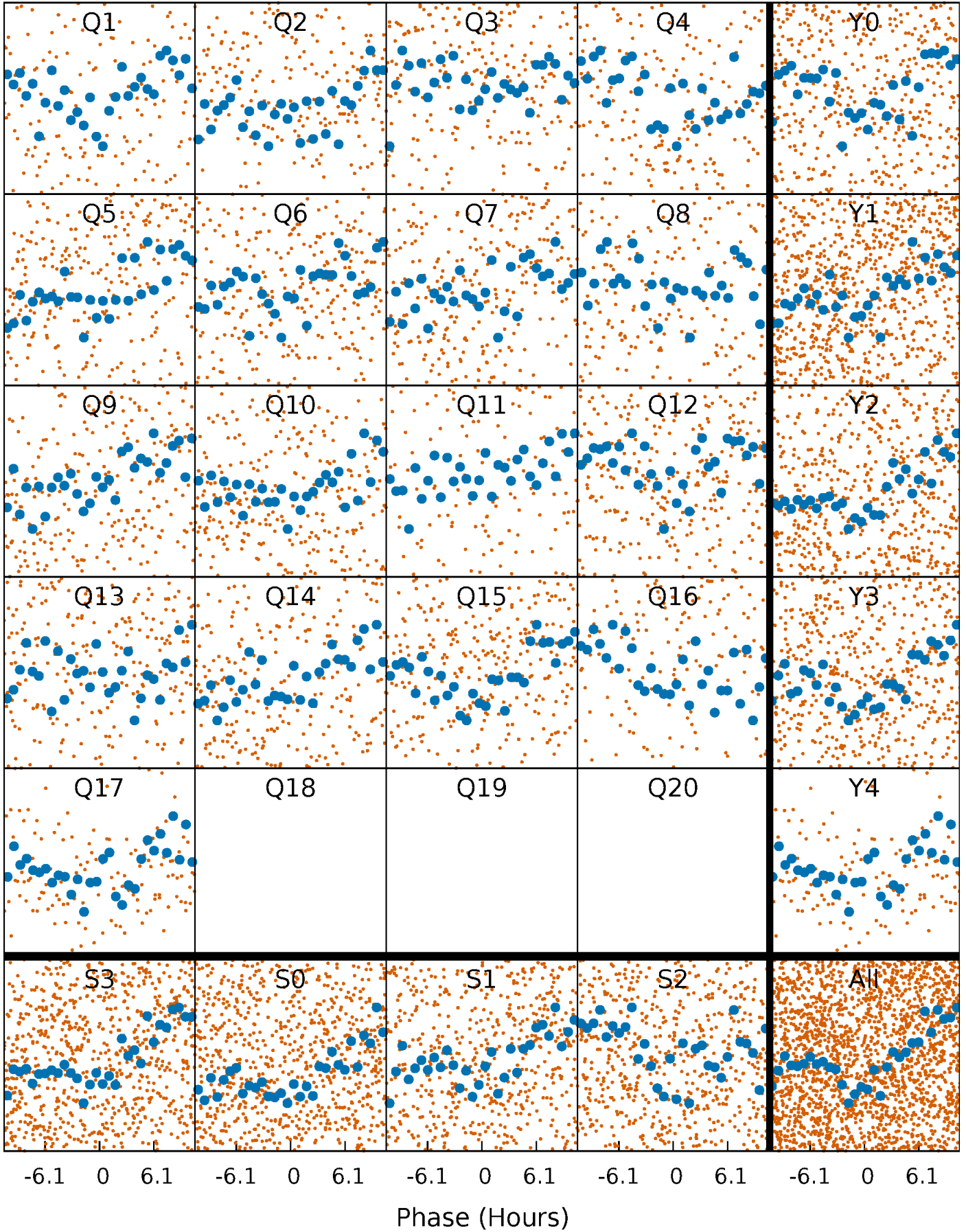


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



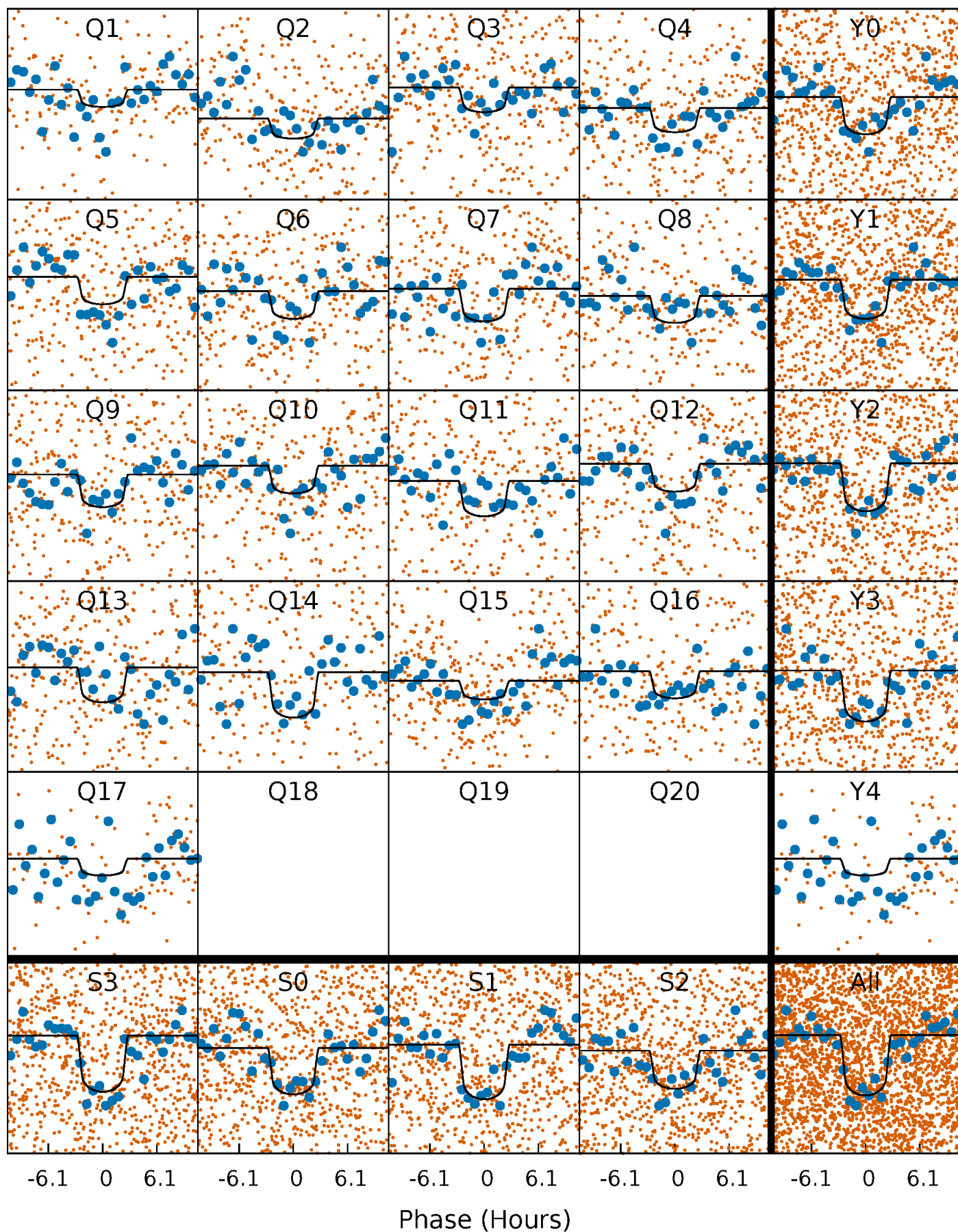
PDC Quarter-Phased Transit Curves

TCE 008212002-02 P= 9.553848 Days $T_0=135.533078$ (BKJD)



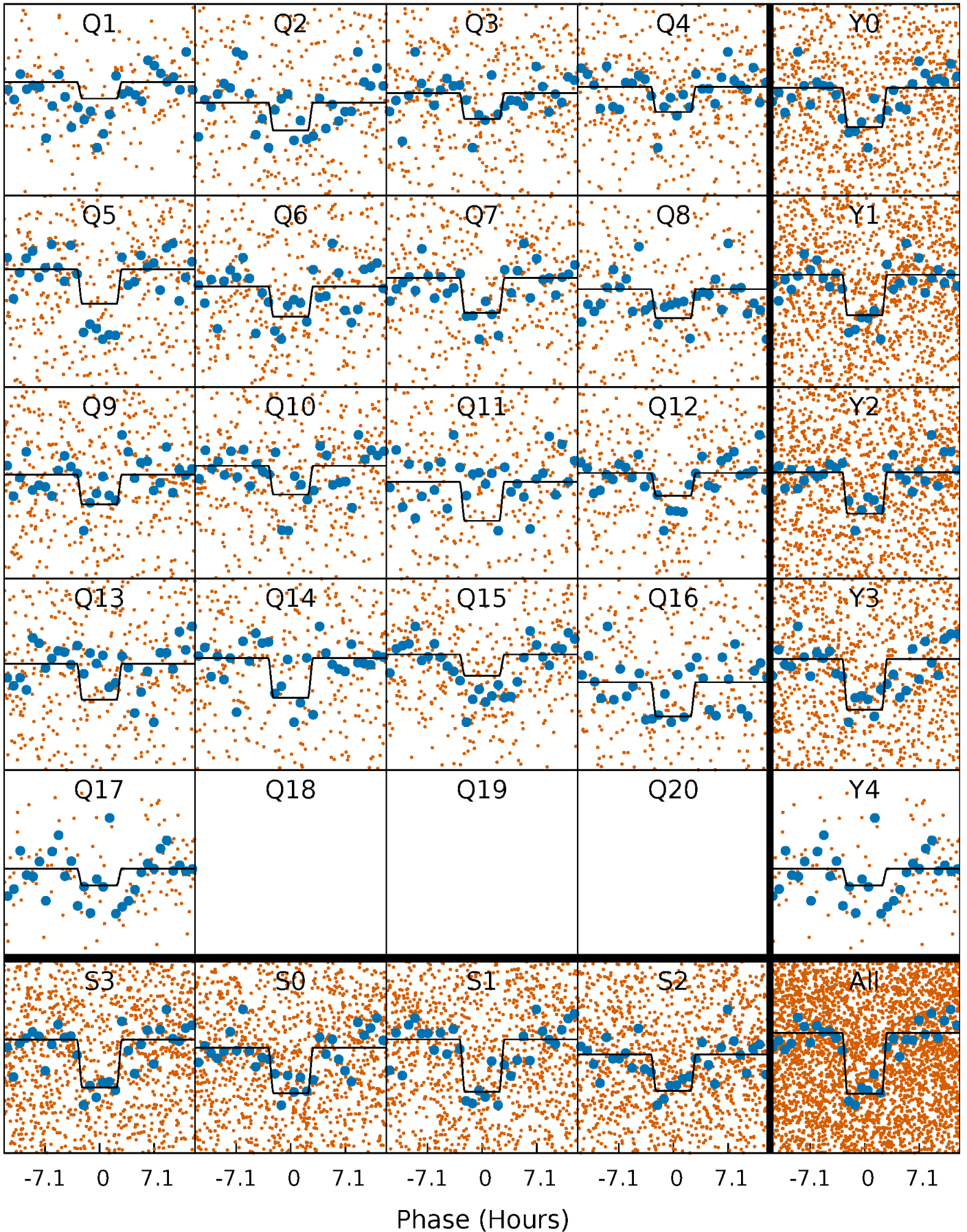
DV Quarter-Phased Transit Curves

TCE 008212002-02 P= 9.553848 Days $T_0=135.533078$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

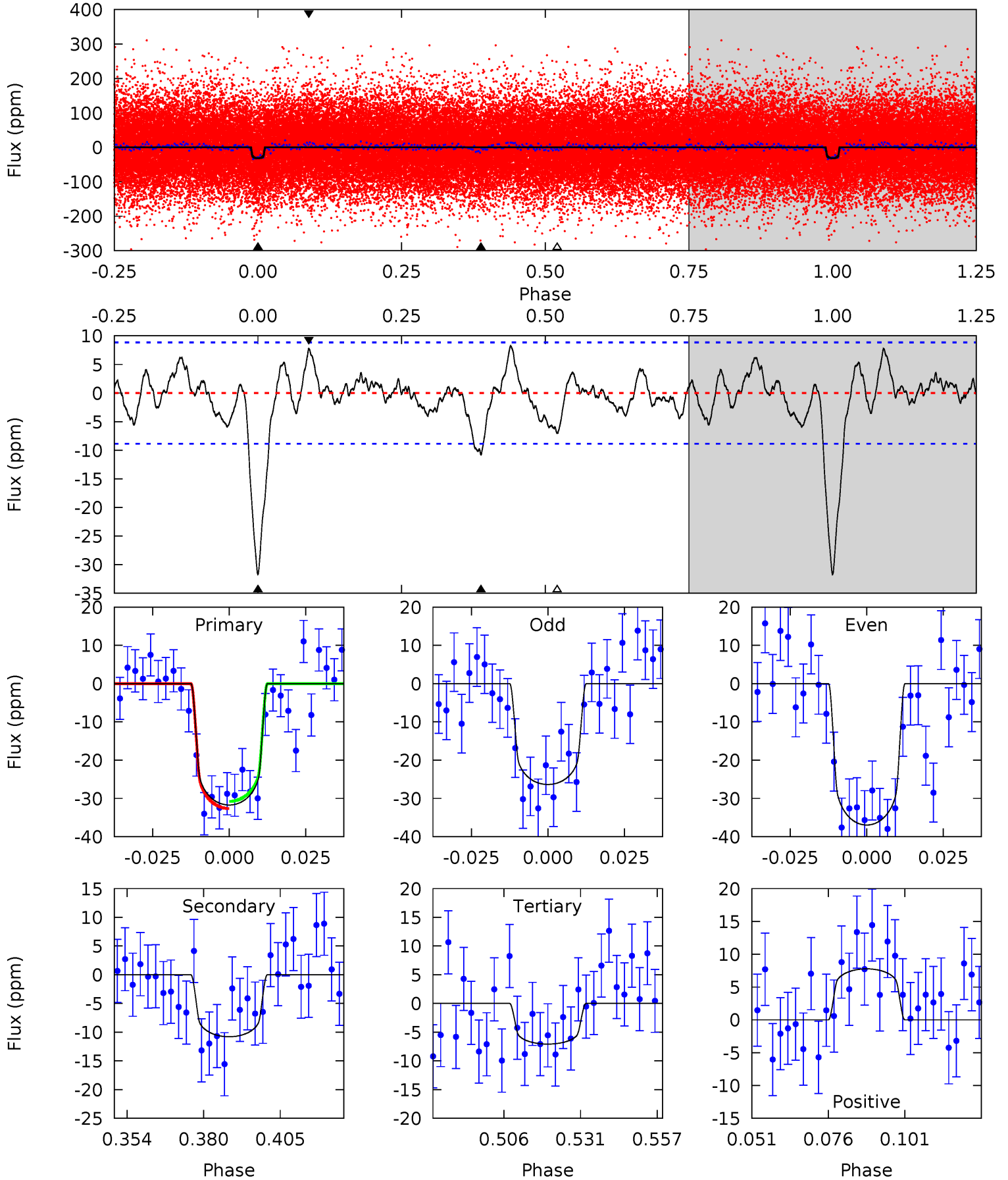
TCE 008212002-02 P= 9.553728 Days $T_0=135.540456$ (BKJD)



DV Model-Shift Uniqueness Test

008212002-02, P = 9.553848 Days, E = 125.979230 Days

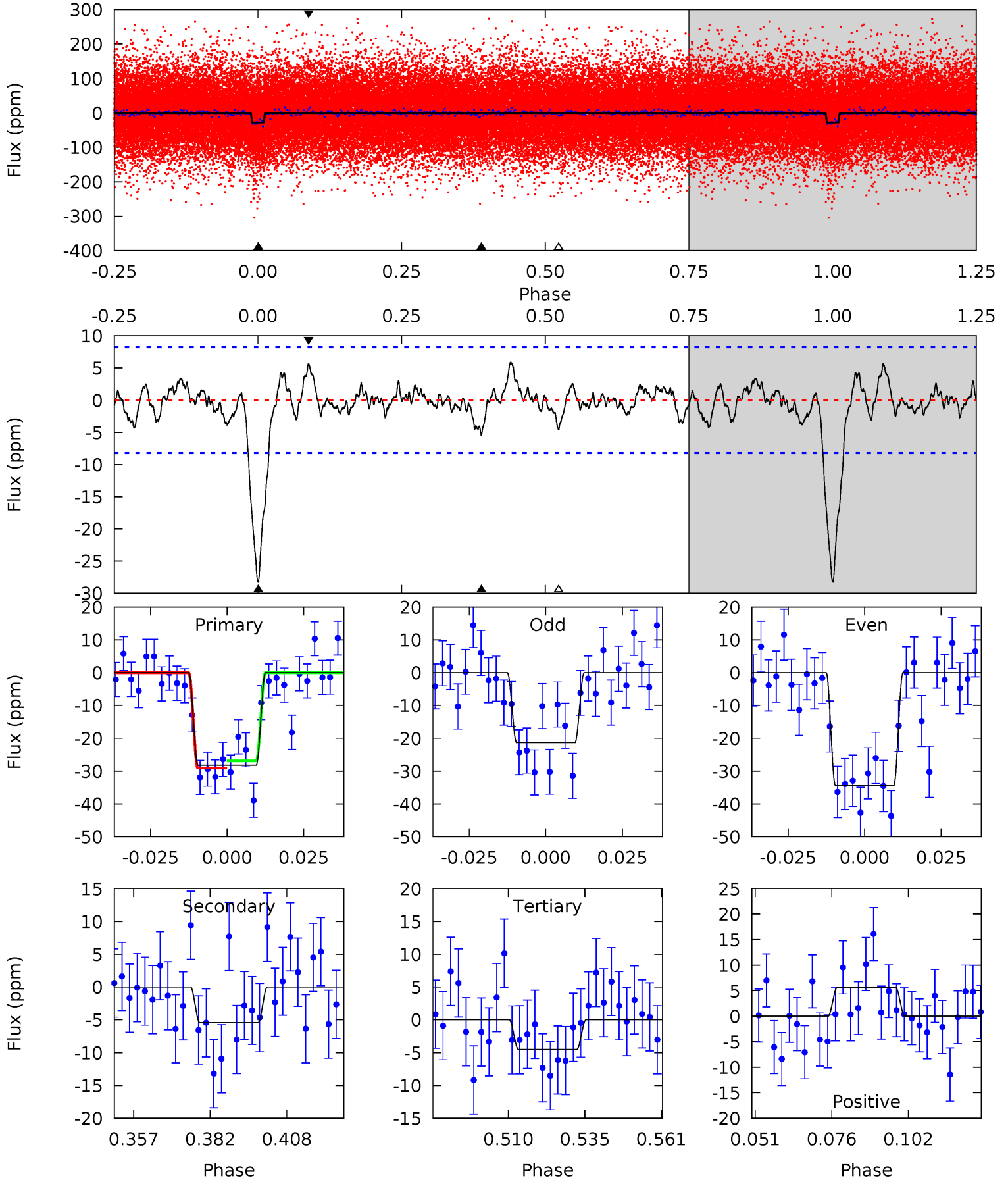
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	5.90	3.87	4.25	4.85	2.24	1.55	13.5	13.1	2.03	1.65	2.90	1.06	0.21	0.52



Alt Model-Shift Uniqueness Test

008212002-02, P = 9.553728 Days, E = 125.986728 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	3.21	2.66	3.34	4.84	2.23	1.05	14.0	13.3	0.55	-0.13	3.87	1.10	0.17	0.65



Stellar Parameters For KIC 008212002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6175^{+110}_{-134}	$4.299^{+0.072}_{-0.108}$	$0.280^{+0.150}_{-0.150}$	$1.307^{+0.220}_{-0.135}$	$1.244^{+0.077}_{-0.094}$	$0.786^{+0.246}_{-0.263}$
	+2%/-2%	+2%/-3%	+54%/-54%	+17%/-10%	+6%/-8%	+31%/-33%
Source	SPE59	SPE59	SPE59	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008212002-02 / KOI 2593.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-11 ± 2	$0.88^{+0.23}_{-0.22}$	1420^{+59}_{-48}	4674^{+599}_{-410}	69^{+53}_{-27}
Alt.	-5 ± 2	$0.76^{+0.24}_{-0.23}$	1418^{+63}_{-52}	4302^{+748}_{-463}	46^{+54}_{-22}

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

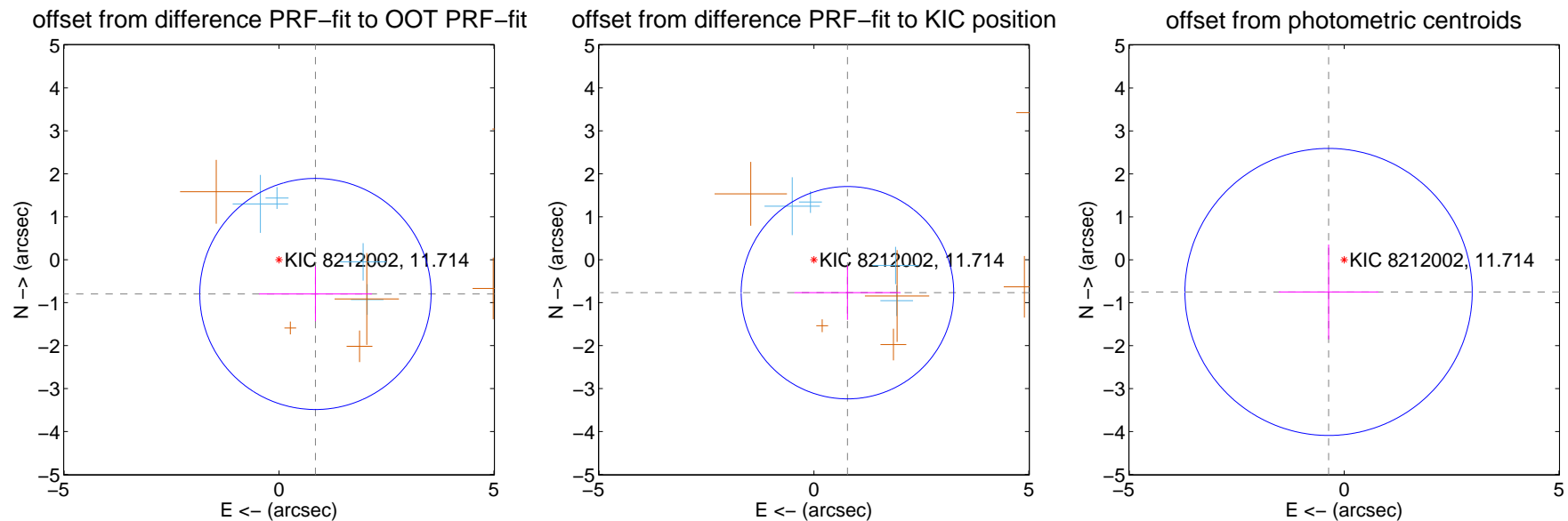
DV Centroid Data

Supplemental centroid analysis for 008212002-02. **Kepler magnitude: 11.71.** Transit SNR 9.10

There are 4 quarters with good PRF difference image offsets

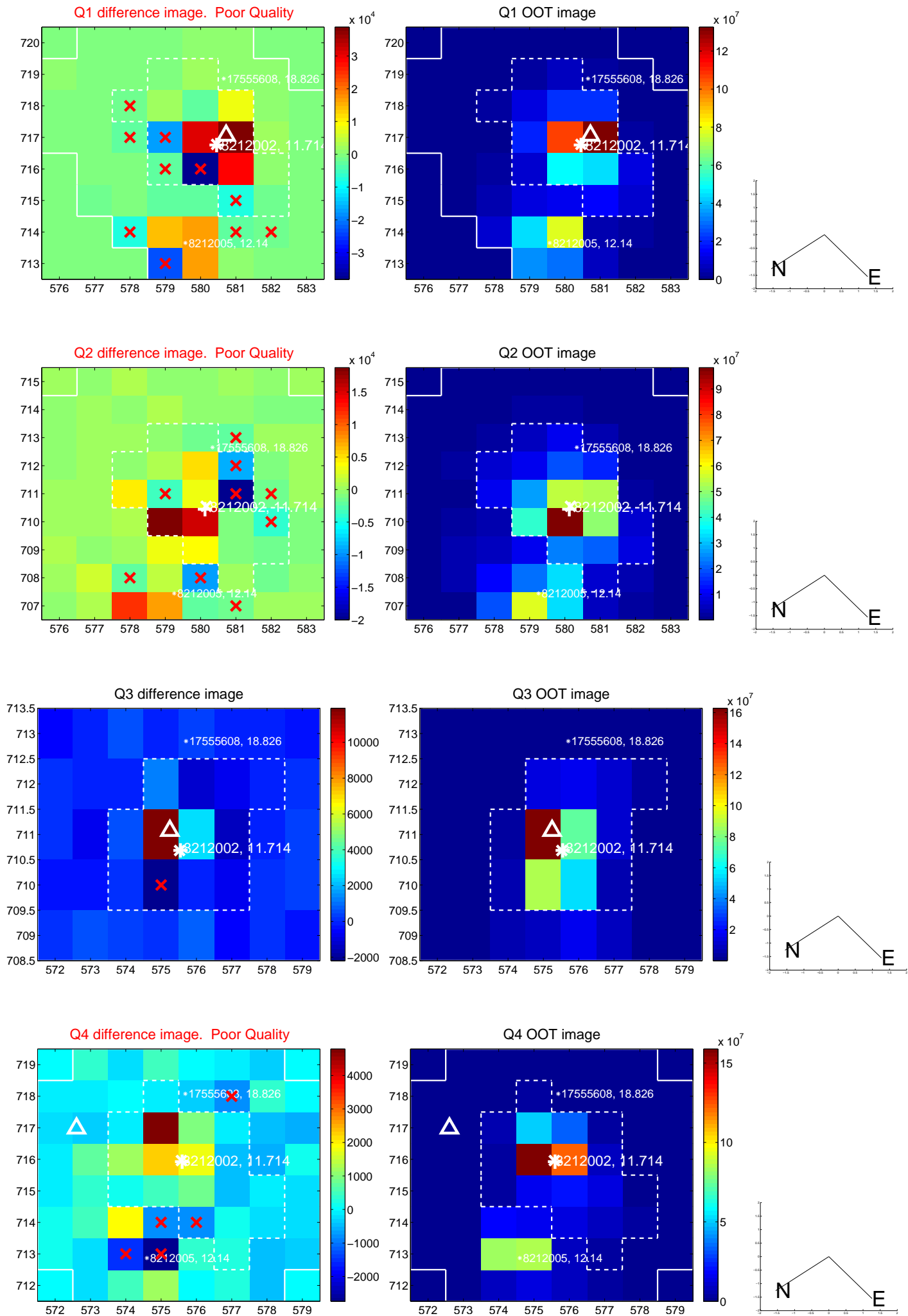
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.164 ± 0.897	1.30	-0.848 ± 1.313	-0.798 ± 0.636
PRF-fit source offset from KIC position	1.095 ± 0.824	1.33	-0.781 ± 1.235	-0.768 ± 0.631
photometric centroid source offset	0.83 ± 1.11	0.75	0.36 ± 1.16	-0.75 ± 1.10

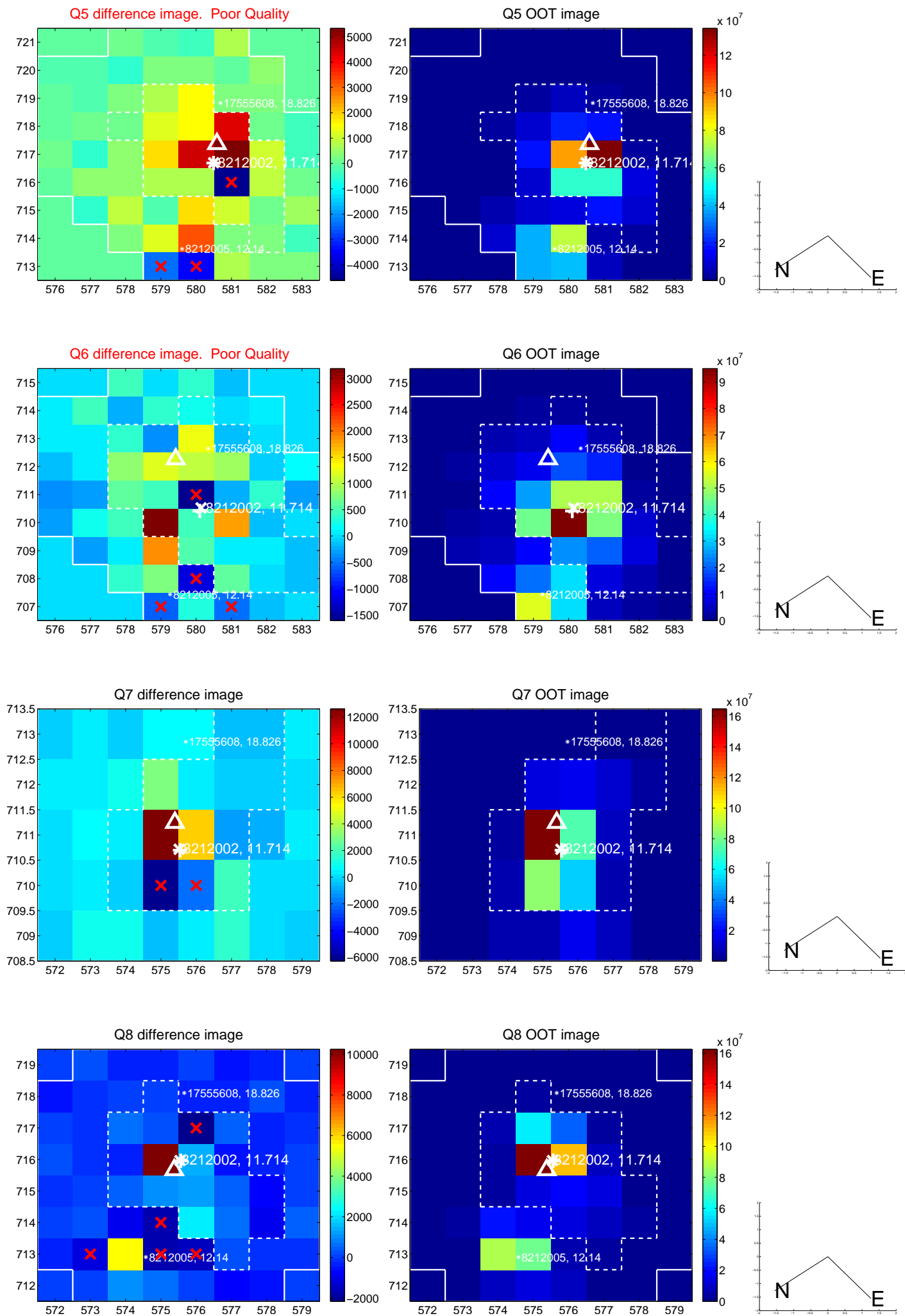


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

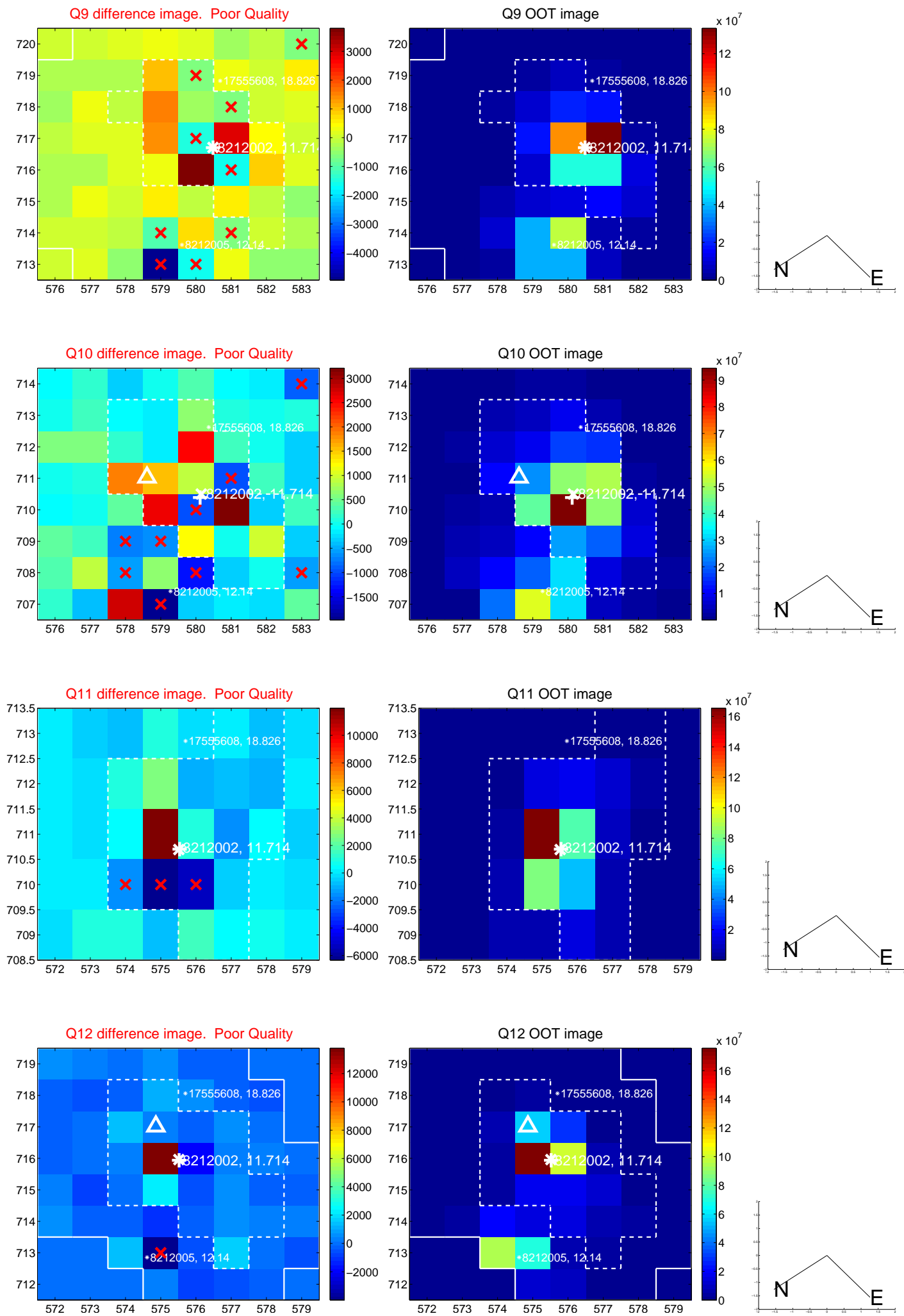
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



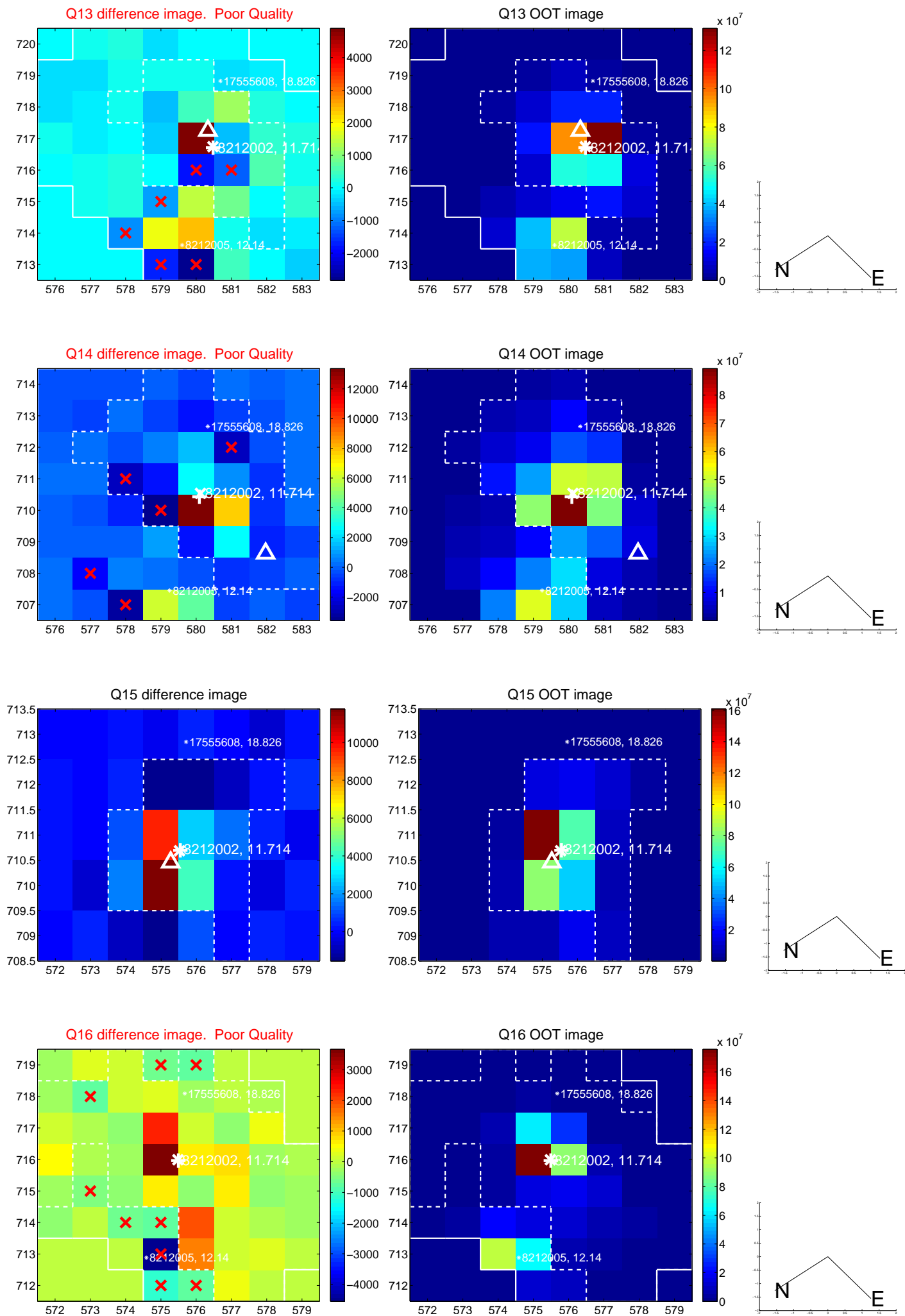
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



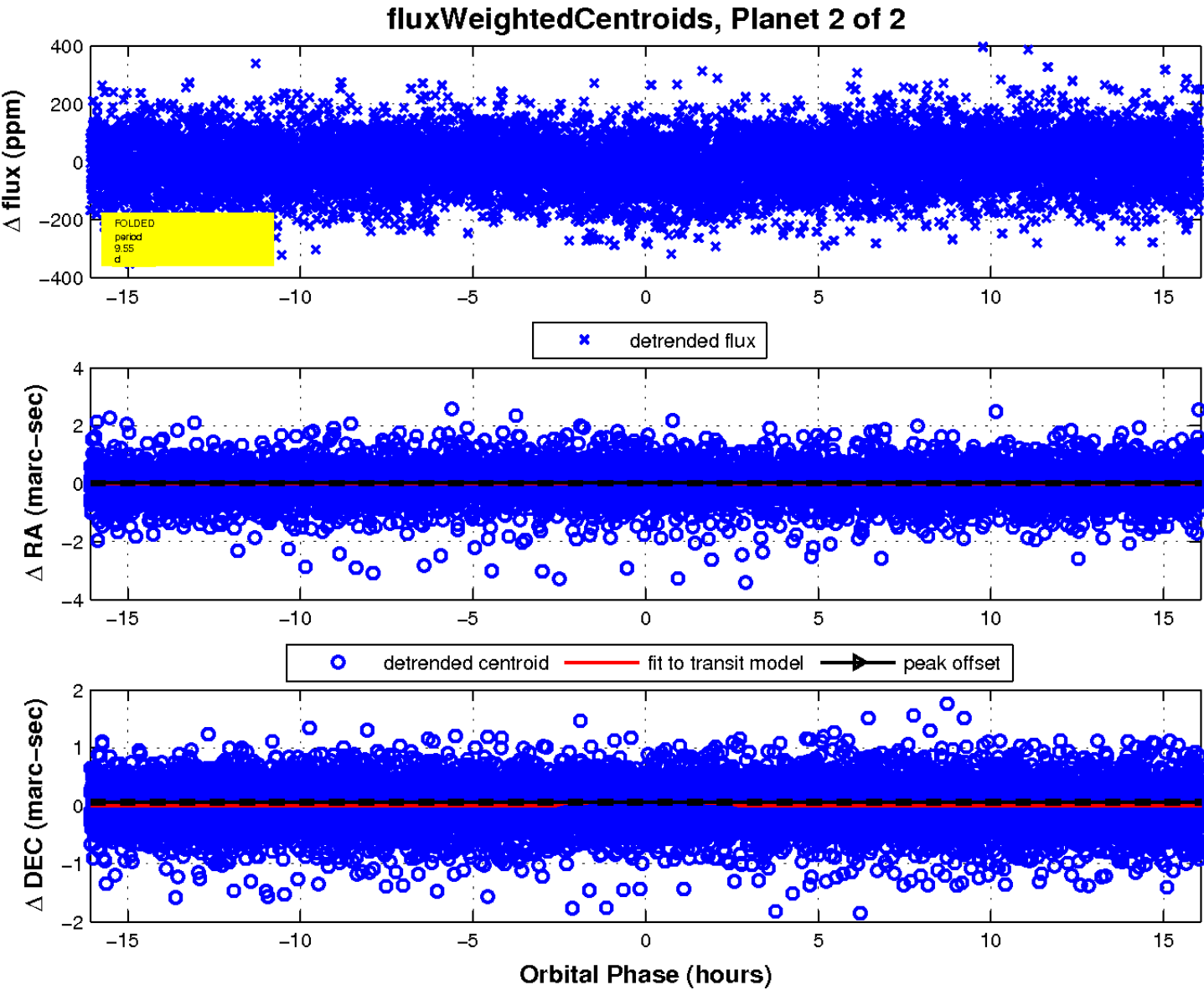
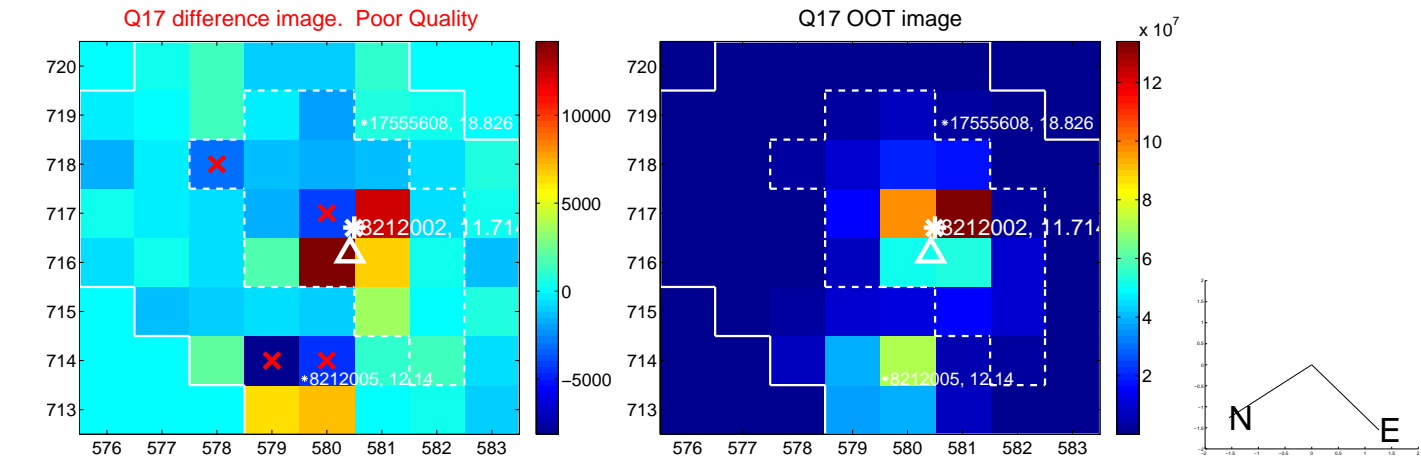
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

