

KIC 002297728

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})
002297728-01	OBS	No	1.338740	131.643185	31.9	3.333	9.2	9.8	1.46	6634	0.97	6013.19
002297728-02	OBS	No	1.338685	132.216335	25.5	3.688	9.2	8.4	1.46	6634	0.90	6013.52
002297728-03	OBS	No	110.175471	143.033181	358.2	2.886	8.6	7.9	1.46	6634	2.82	16.80
002297728-04	OBS	No	94.661689	162.017145	326.7	2.504	8.7	7.4	1.46	6634	5.09	20.57
002297728-05	OBS	No	90.422407	207.664905	313.1	3.533	8.2	7.3	1.46	6634	5.03	21.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002297728-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
002297728-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
002297728-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

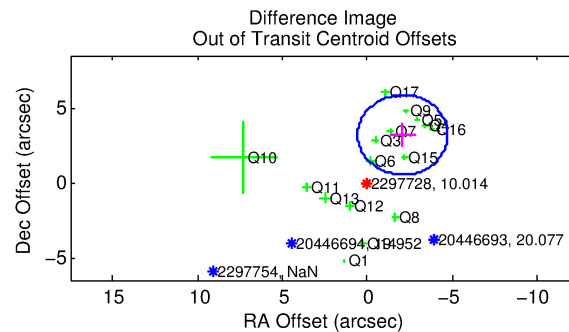
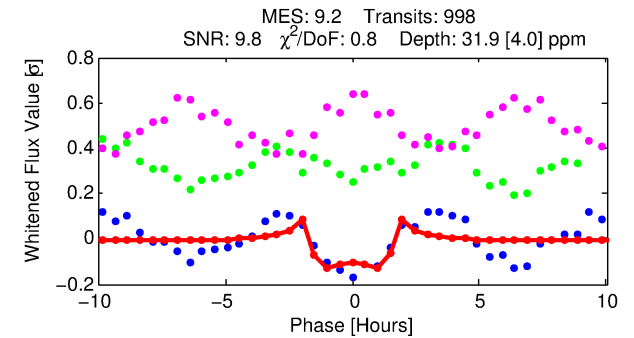
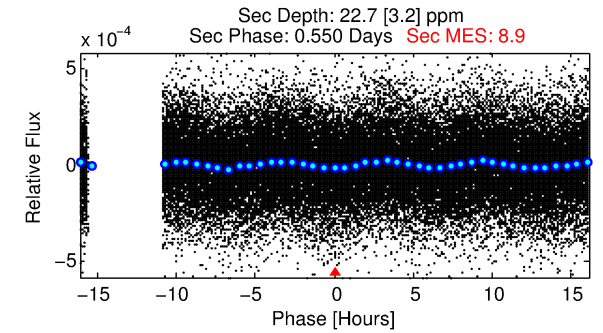
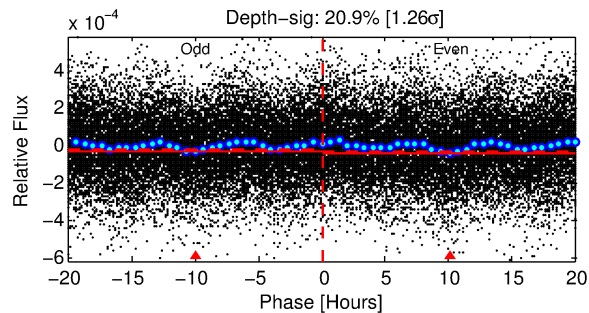
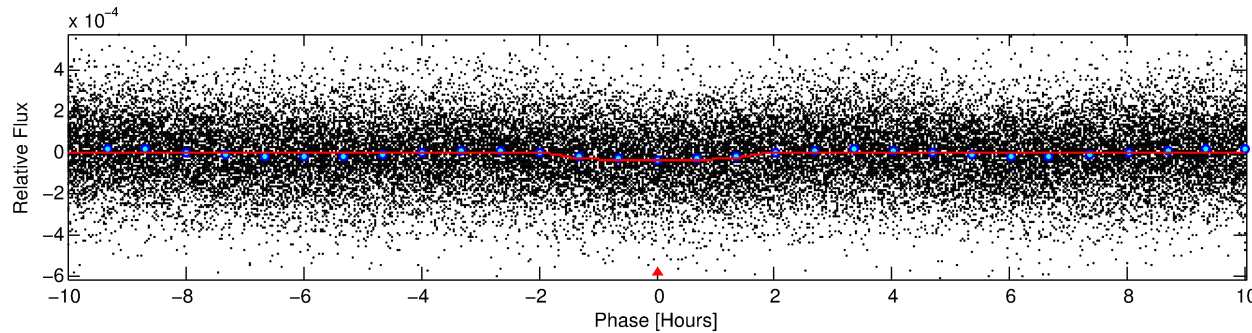
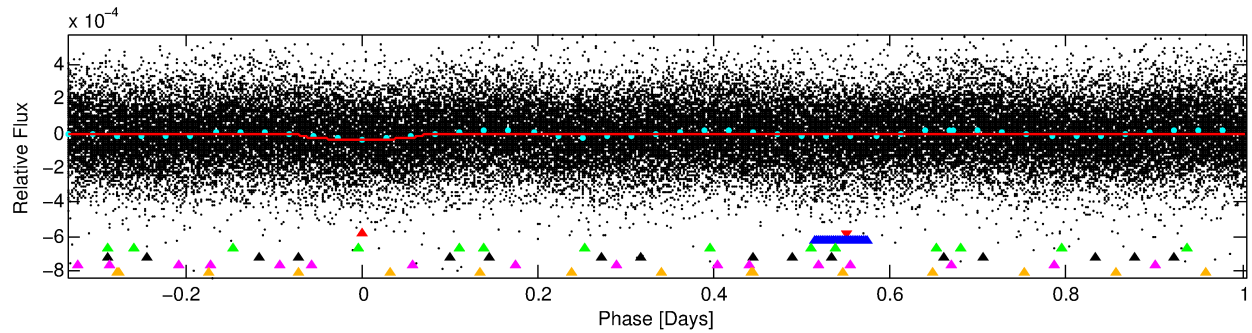
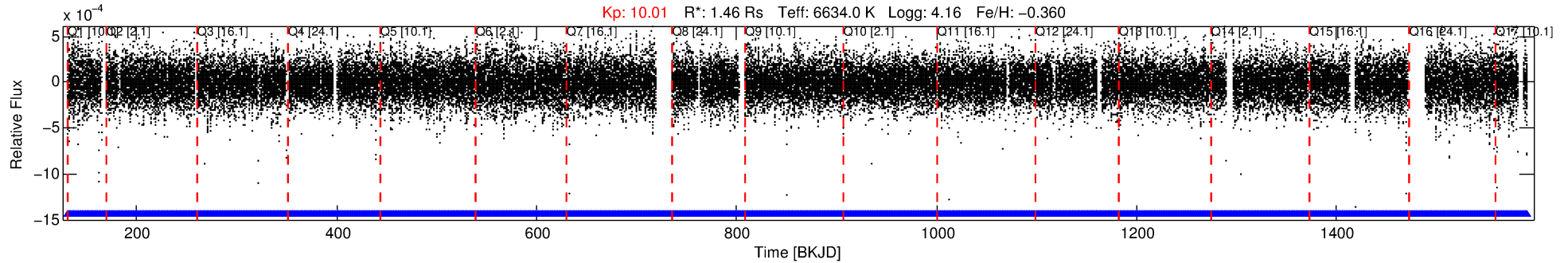
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002297728-01

No Significant Match Found

DV One-Page Summary

KIC: 2297728 Candidate: 1 of 6 Period: 1.339 d



DV Fit Results:

Period = 1.33874 [0.00001] d
Epoch = 131.6432 [0.0019] BKJD
 $R_p/R^* = 0.0061$ [0.0012]
 $a/R^* = 1.62$ [1.07]
 $b = 0.91$ [0.20]
 $S_{\text{eff}} = 6013.19$ [2311.21]
 $T_{\text{eq}} = 2245$ [216] K
 $R_p = 0.97$ [0.34] R_{e}
 $a = 0.0248$ [0.0062] AU
 $A_g = 8.16$ [4.48] [1.60 σ]
 $T_{\text{eff}} = 5868$ [618] K [5.53 σ]

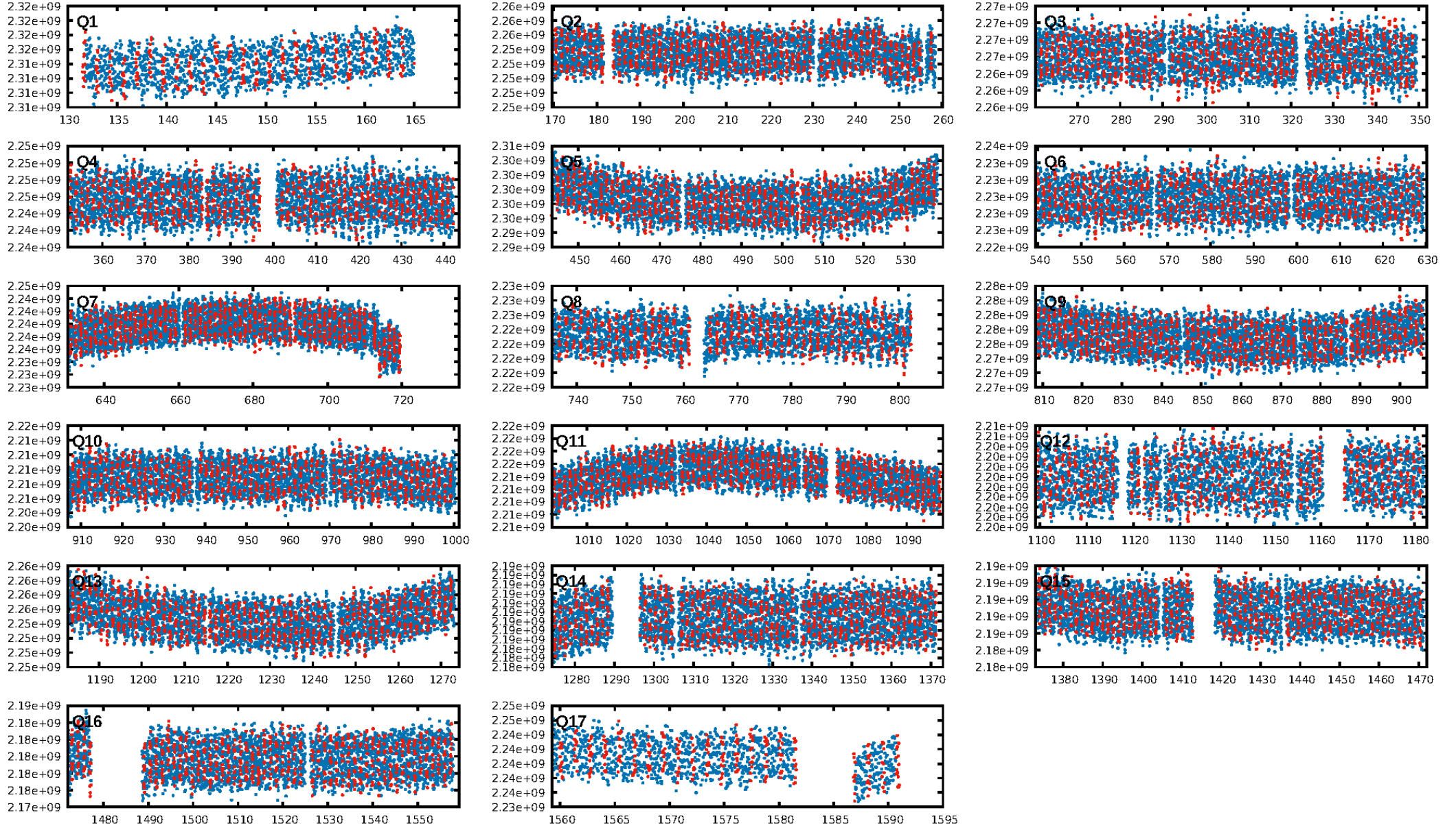
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 100.0% [440.15 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.15e-11
RollingBand-fgt: 1.00 [952/952]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 2.080 arcsec [3.51 σ]
OotOffset-rm: 3.814 arcsec [4.30 σ]
KicOffset-rm: 3.785 arcsec [4.22 σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.50 [8/16]
DiffImageOverlap-fno: 1.00 [17/17]

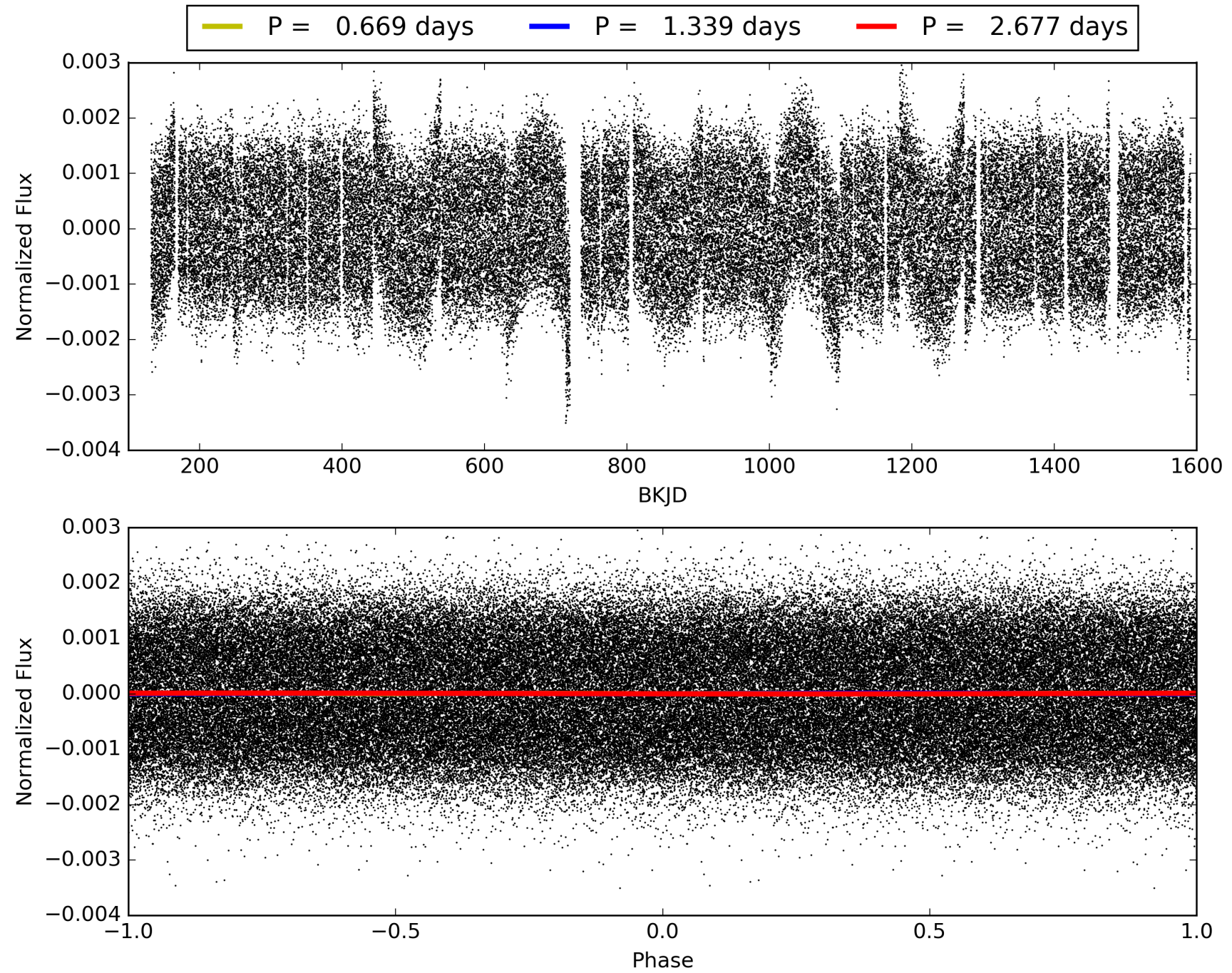
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 002297728-01, PDC Light Curves

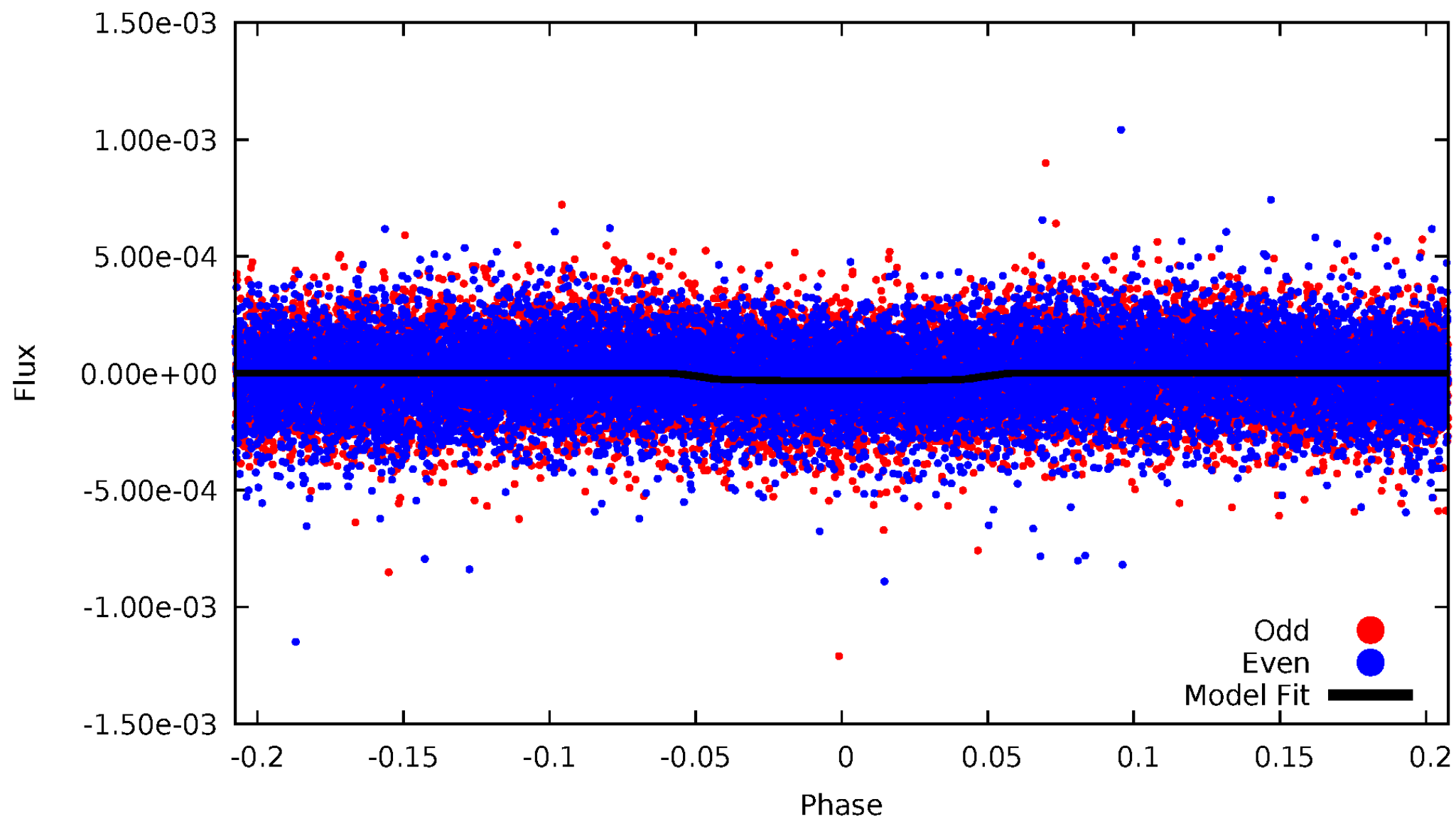


TCE 002297728-01



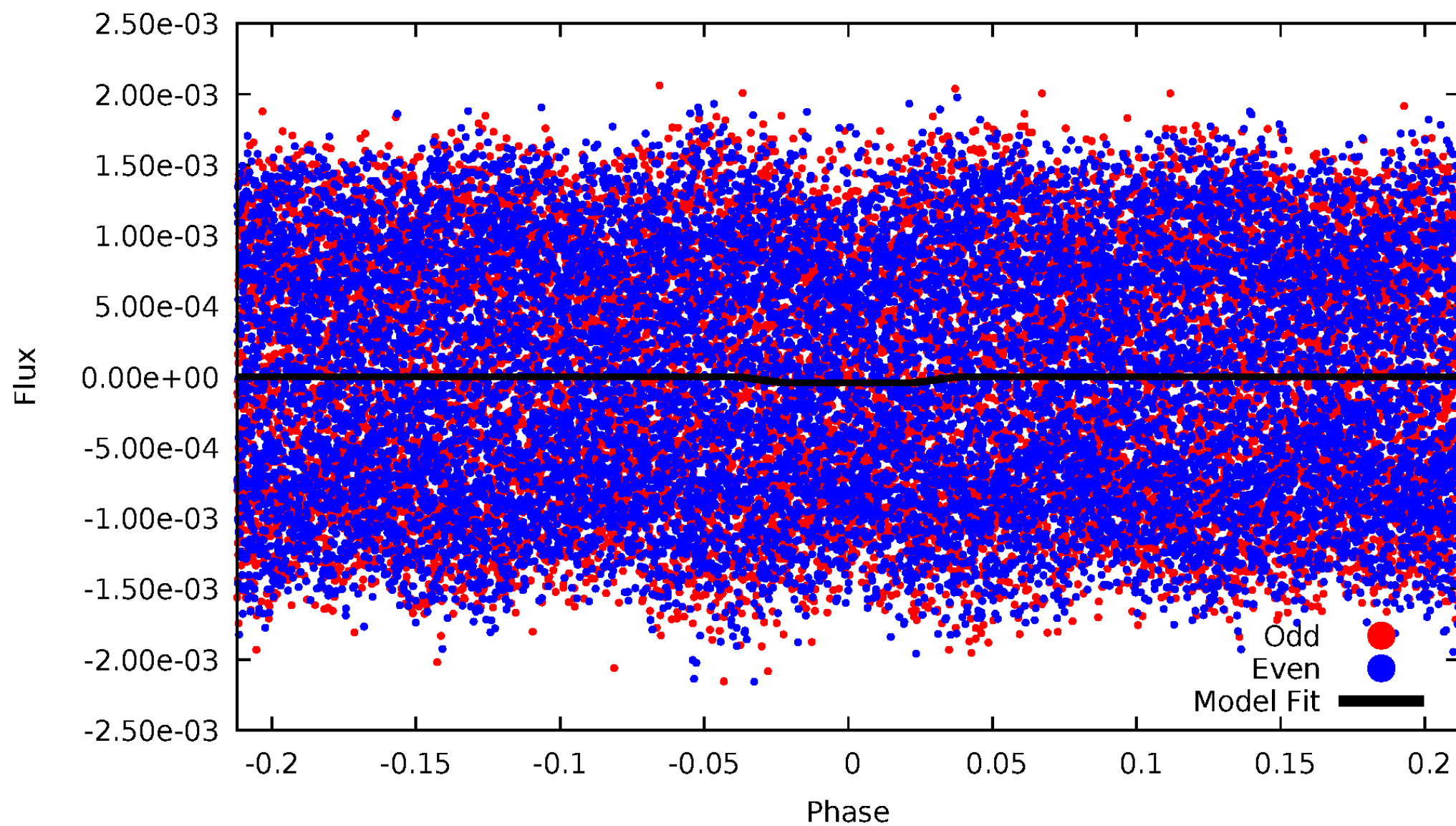
DV Odd/Even

TCE 002297728-01

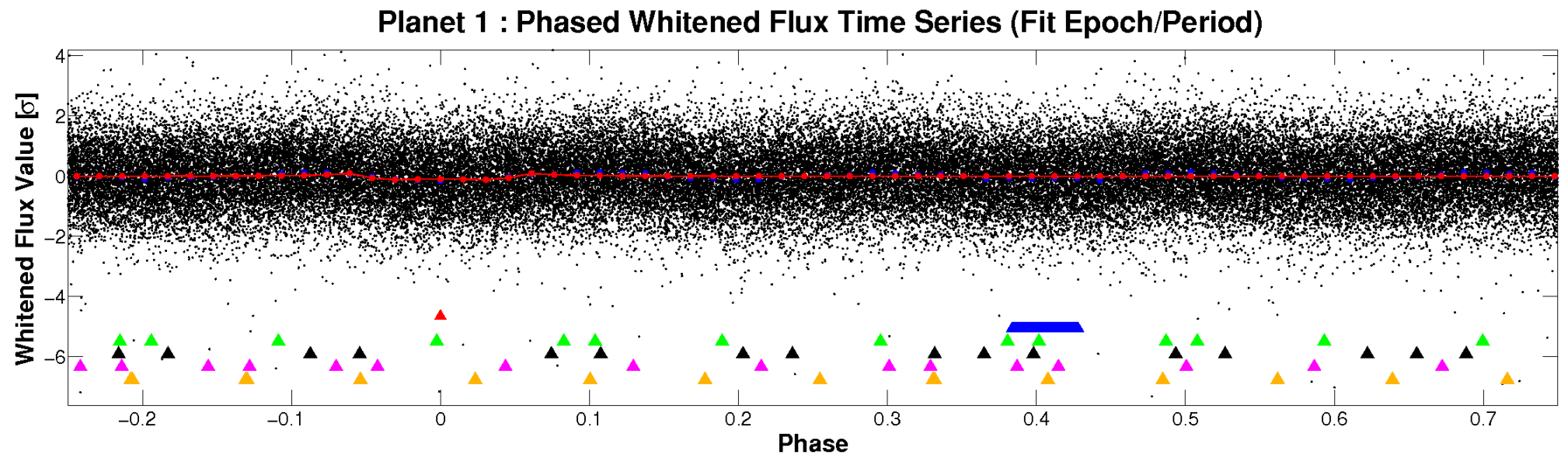
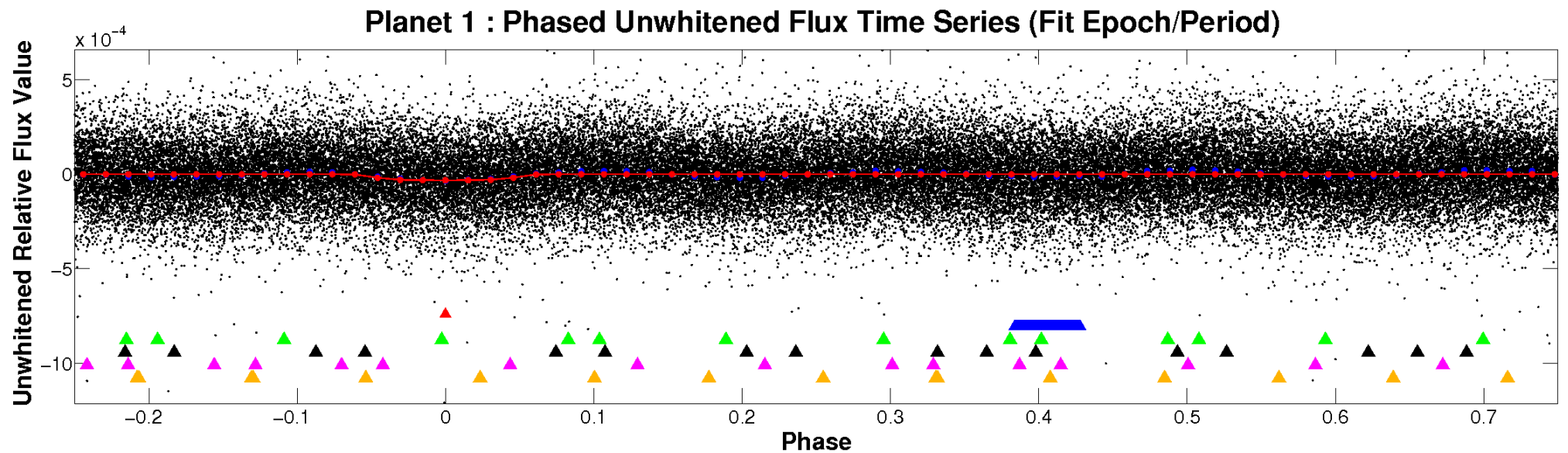


ALT Odd/Even

TCE 002297728-01

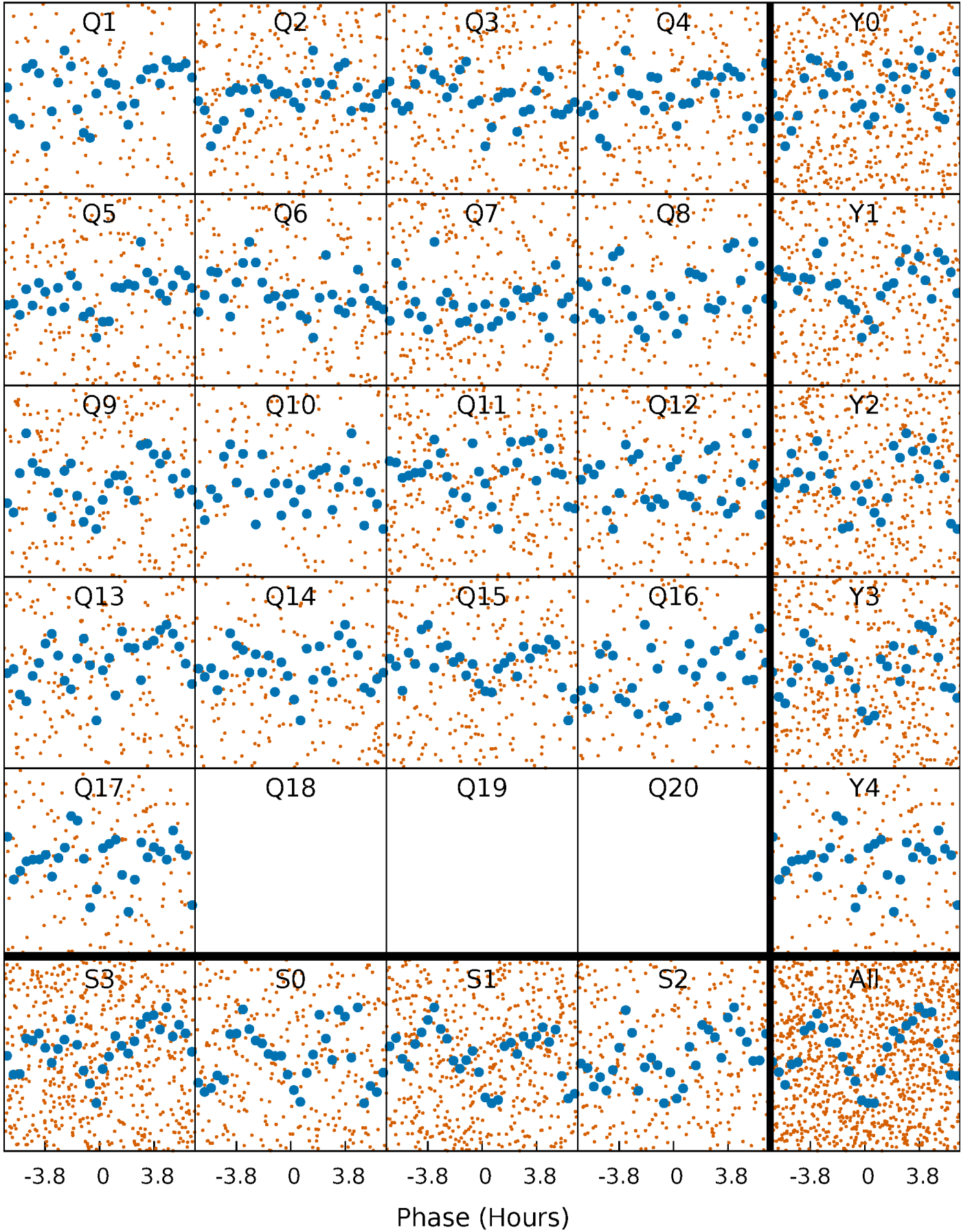


Non-Whitened Vs. Whitened Light Curve



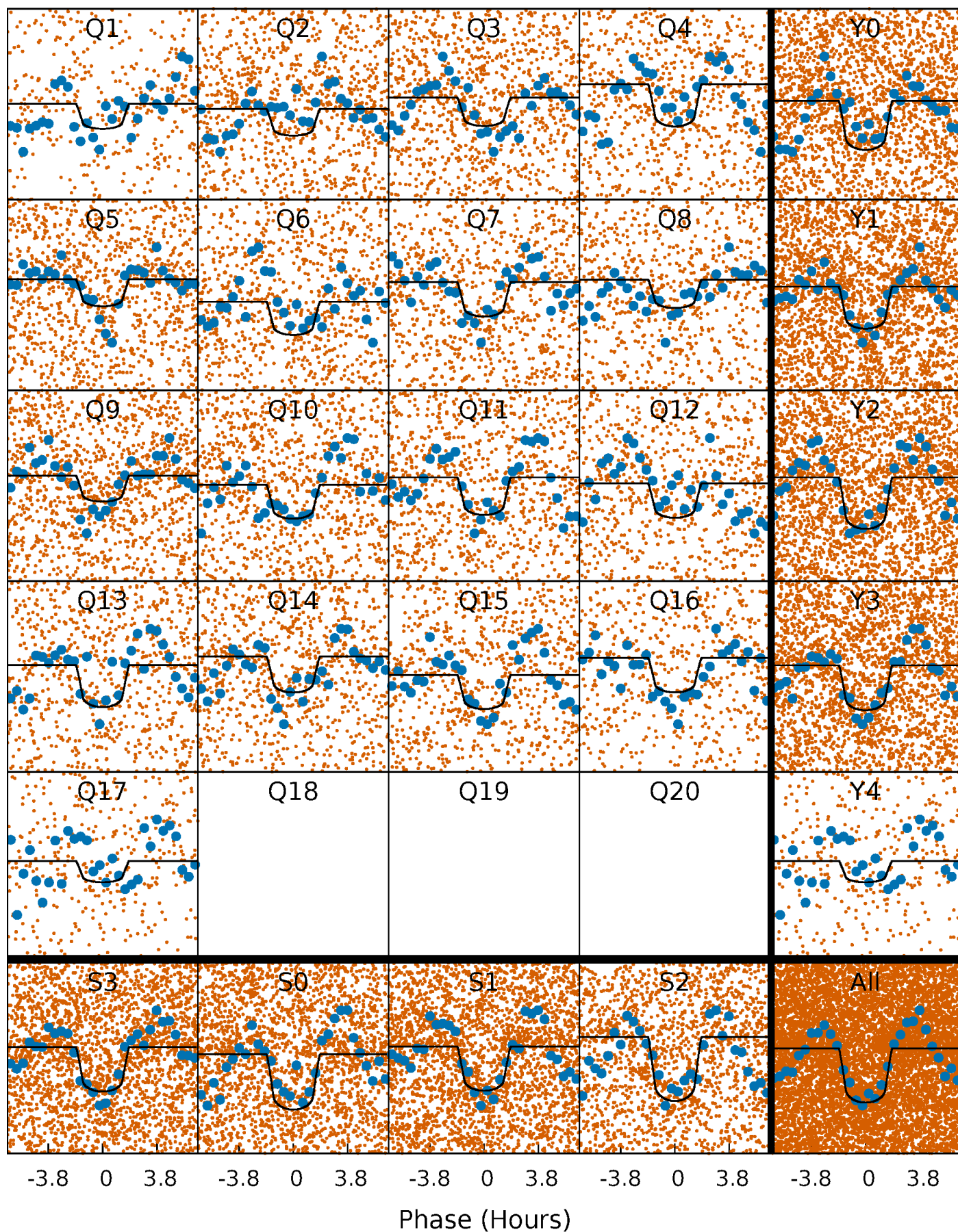
PDC Quarter-Phased Transit Curves

TCE 002297728-01 P= 1.338740 Days $T_0=131.643185$ (BKJD)



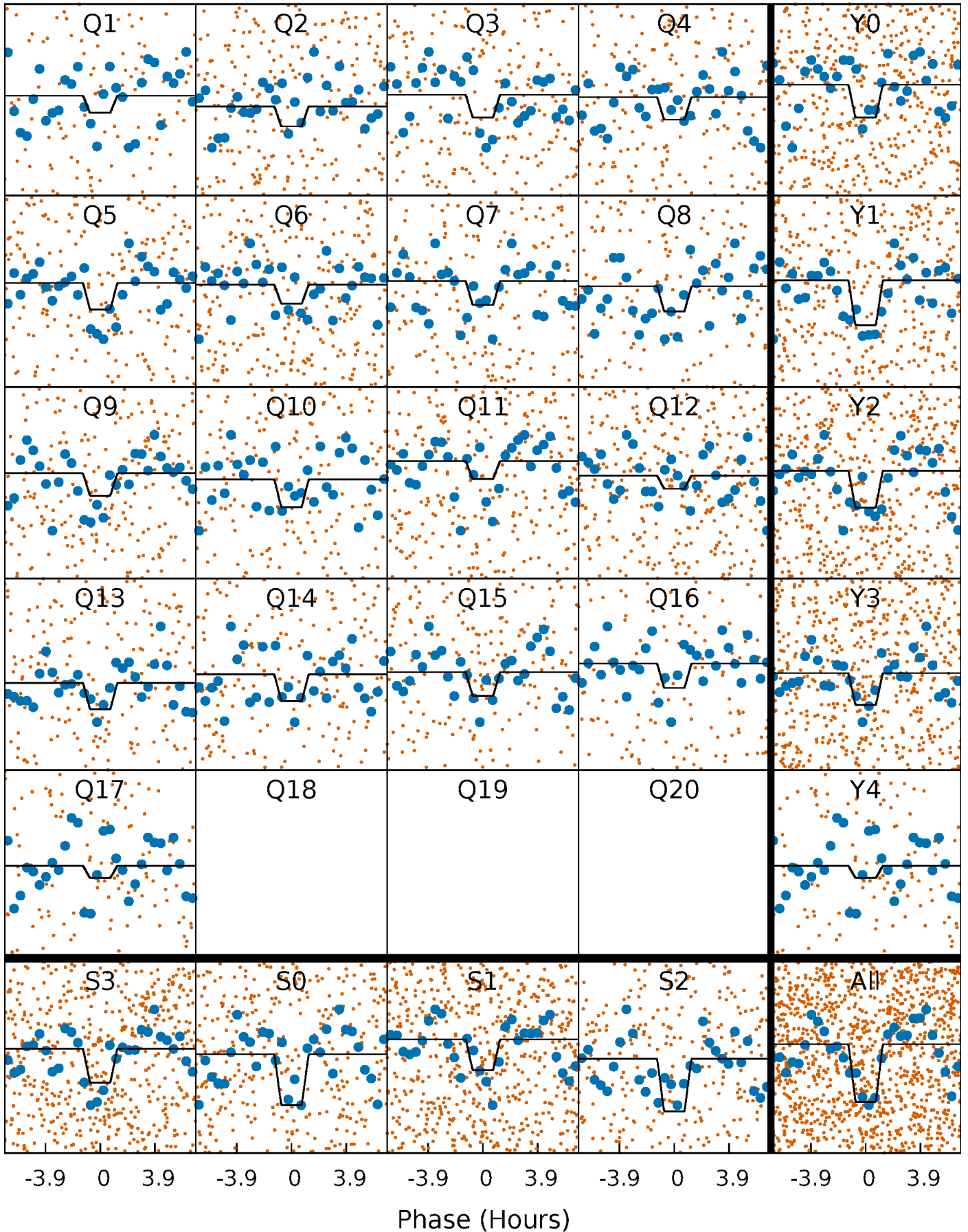
DV Quarter-Phased Transit Curves

TCE 002297728-01 P= 1.338740 Days $T_0=131.643185$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

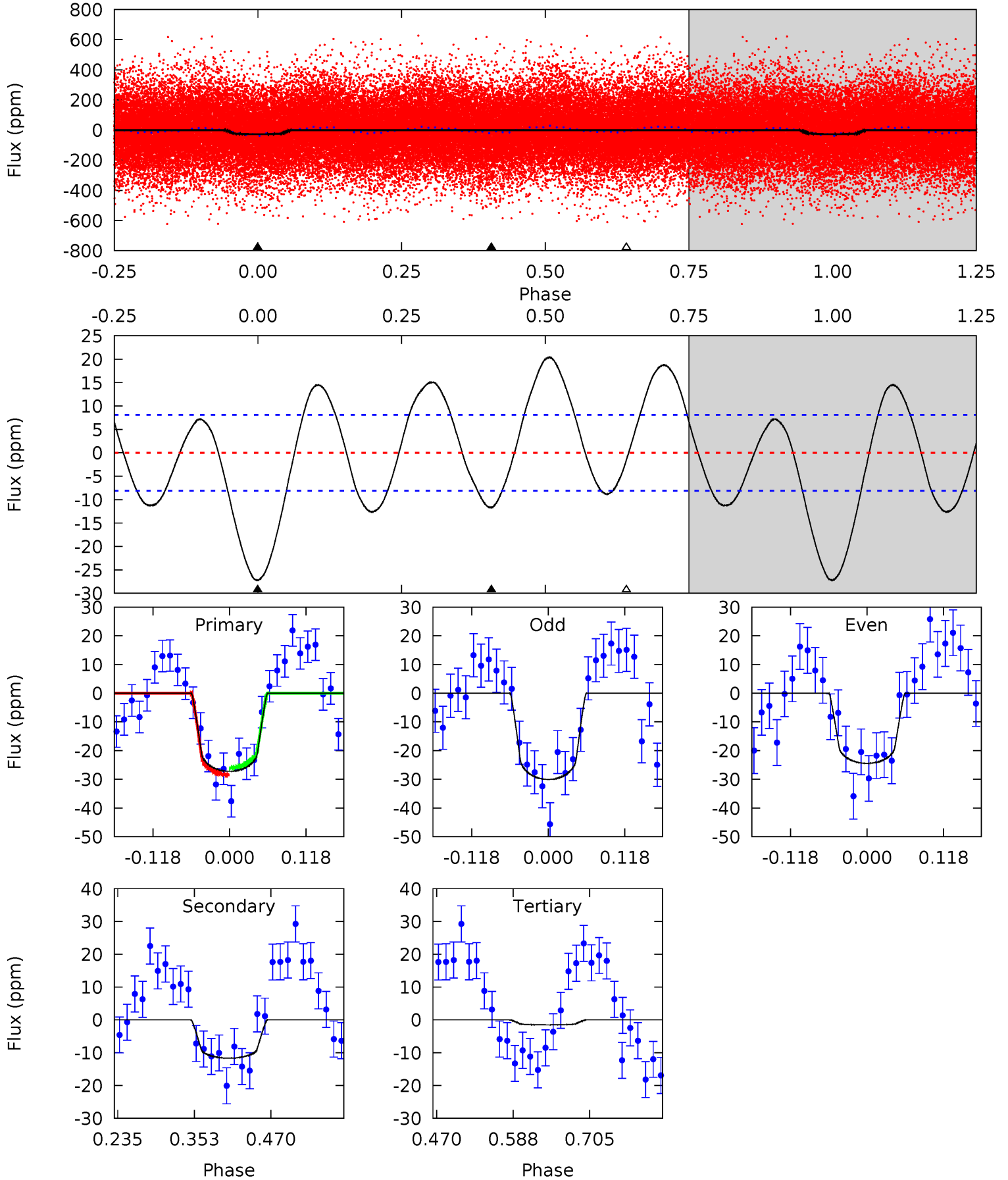
TCE 002297728-01 P= 1.338754 Days $T_0=131.638724$ (BKJD)



DV Model-Shift Uniqueness Test

002297728-01, P = 1.338740 Days, E = 130.304445 Days

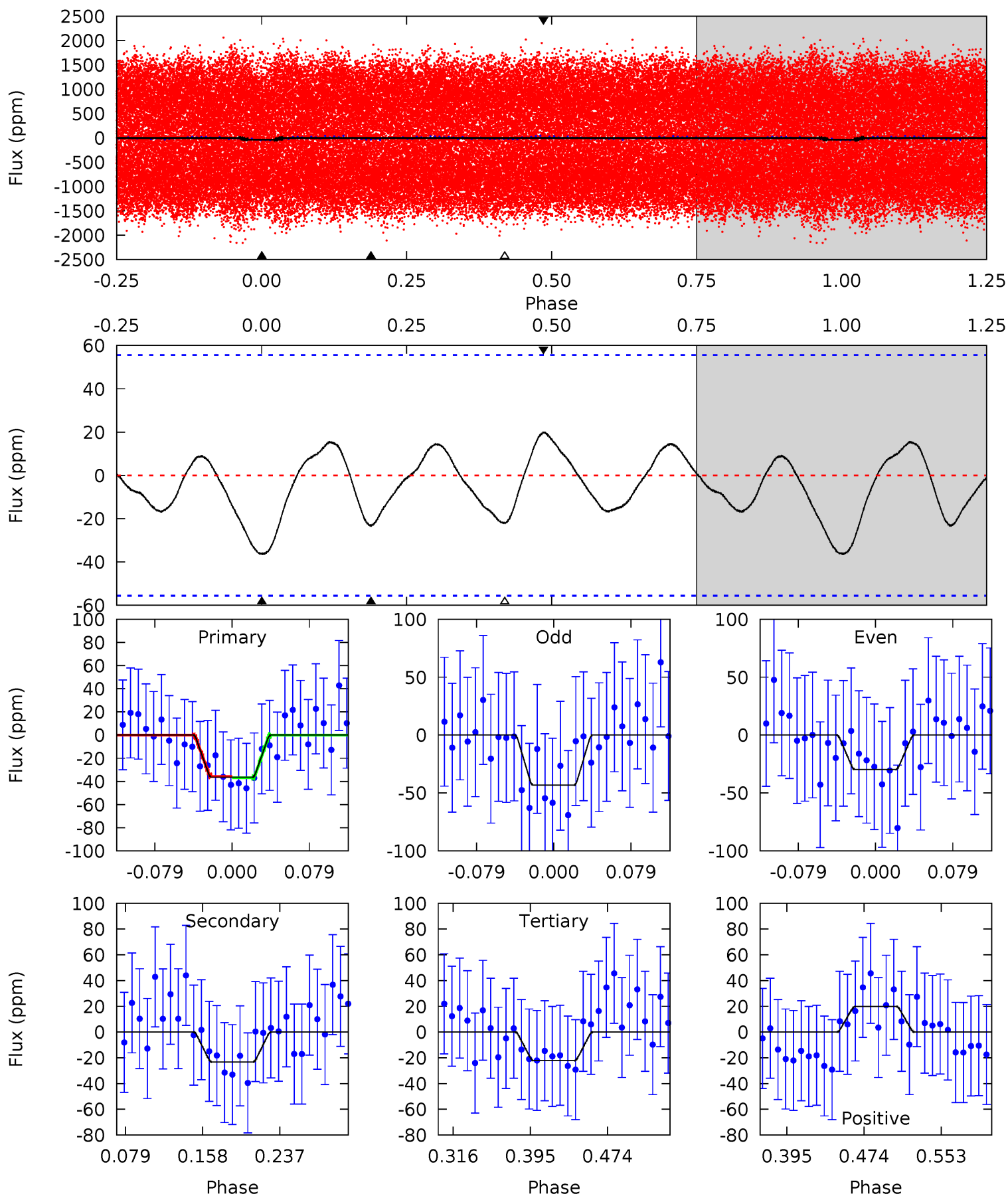
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	6.52	0.86	0	4.53	1.57	5.34	14.3	15.2	5.66	6.52	1.57	1.04	0.43	0.69



Alt Model-Shift Uniqueness Test

002297728-01, P = 1.338754 Days, E = 130.299970 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.02	1.94	1.84	1.65	4.61	1.76	0.94	1.18	1.37	0.10	0.29	0.56	1.19	0.35	0.05



Stellar Parameters For KIC 002297728

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6634^{+151}_{-184}	$4.164^{+0.204}_{-0.167}$	$-0.360^{+0.250}_{-0.300}$	$1.459^{+0.423}_{-0.346}$	$1.131^{+0.181}_{-0.131}$	$0.513^{+0.520}_{-0.242}$
	+2%/-3%	+5%/-4%	+69%/-83%	+29%/-24%	+16%/-12%	+101%/-47%
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 002297728-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-12 ± 2	$0.97^{+0.23}_{-0.23}$	3120^{+222}_{-223}	4949^{+591}_{-426}	$4.264^{+3.244}_{-1.630}$
Alt.	-23 ± 12	$1.01^{+0.23}_{-0.21}$	3112^{+220}_{-217}	5636^{+889}_{-971}	$7.354^{+6.241}_{-4.356}$

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

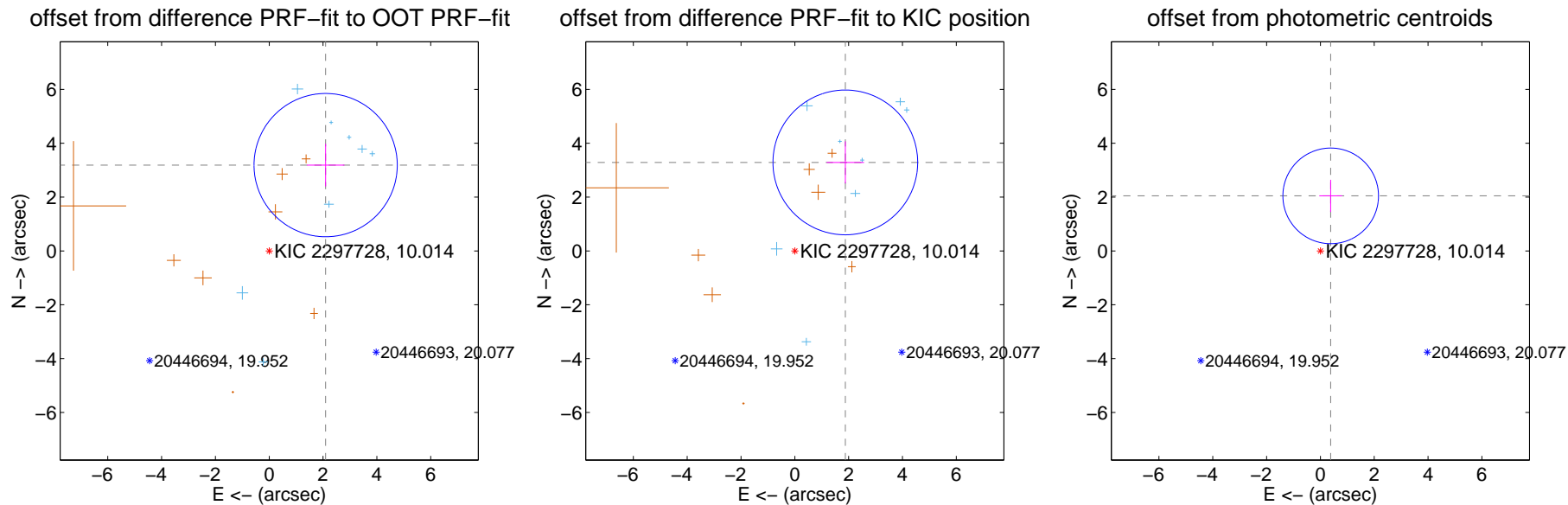
DV Centroid Data

Supplemental centroid analysis for 002297728-01. **Kepler magnitude: 10.01.** Transit SNR 9.80

There are 8 quarters with good PRF difference image offsets

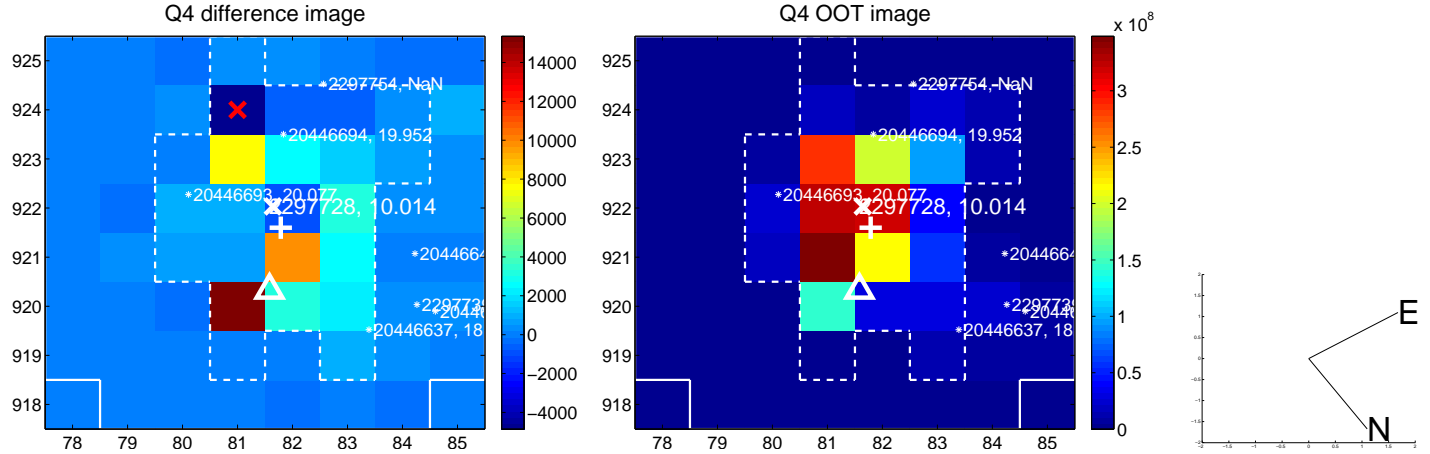
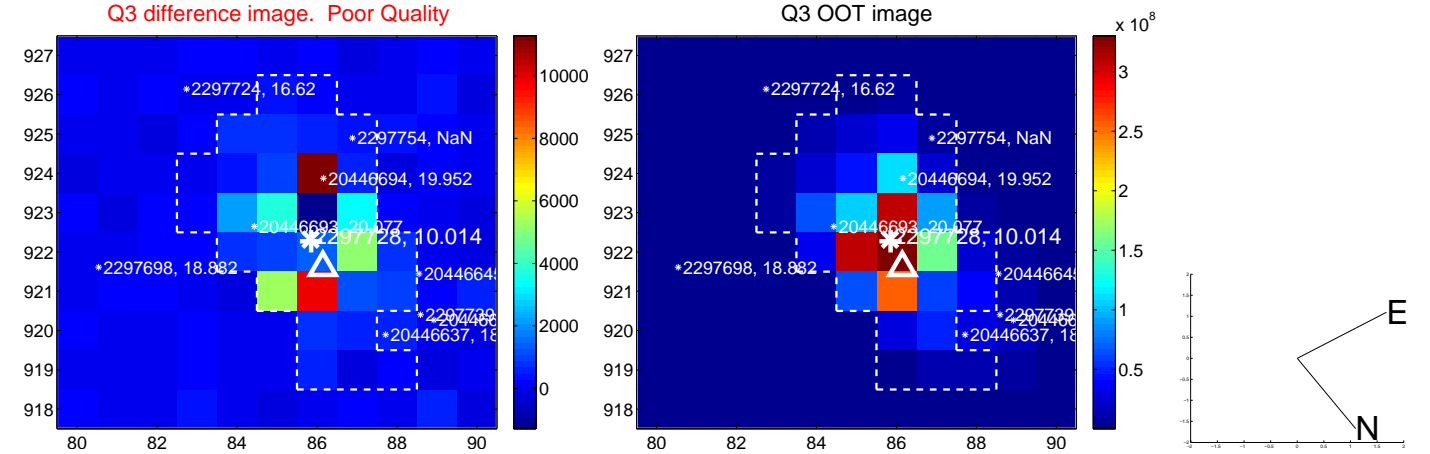
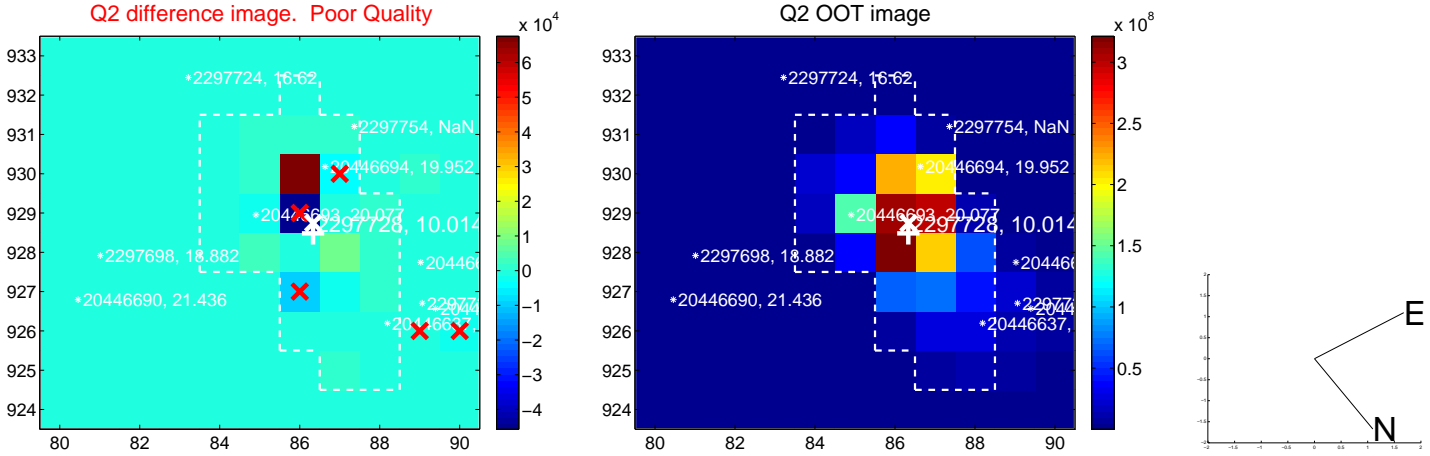
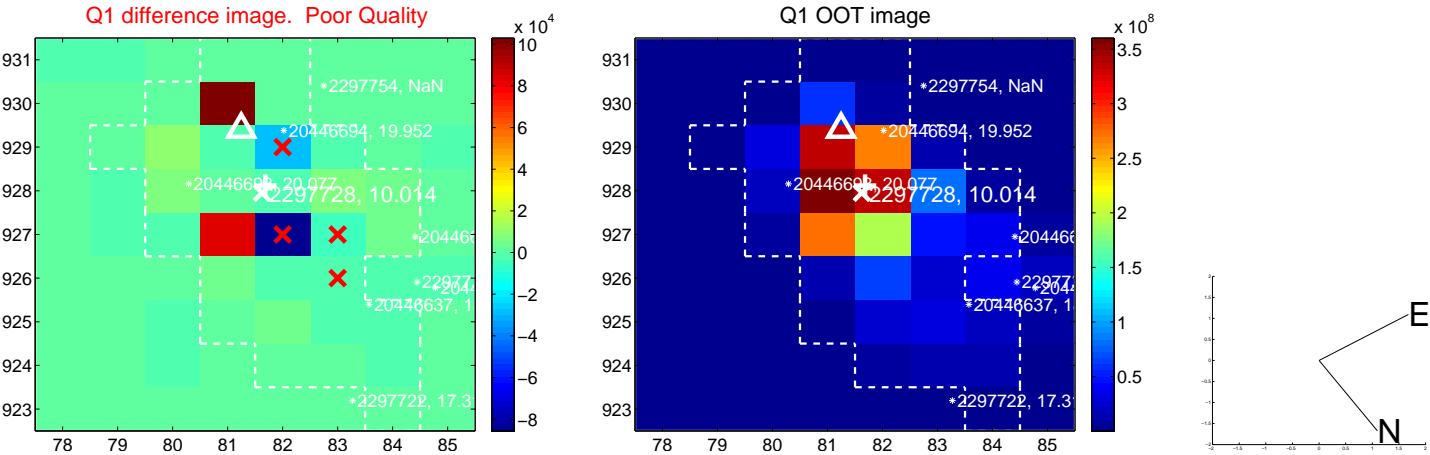
The direct PRF centroid is offset from the target star catalog position by about 0.86 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.814 ± 0.887	4.30	-2.096 ± 0.698	3.187 ± 0.790
PRF-fit source offset from KIC position	3.785 ± 0.896	4.22	-1.876 ± 0.695	3.287 ± 0.781
photometric centroid source offset	2.08 ± 0.59	3.51	-0.38 ± 0.42	2.04 ± 0.60

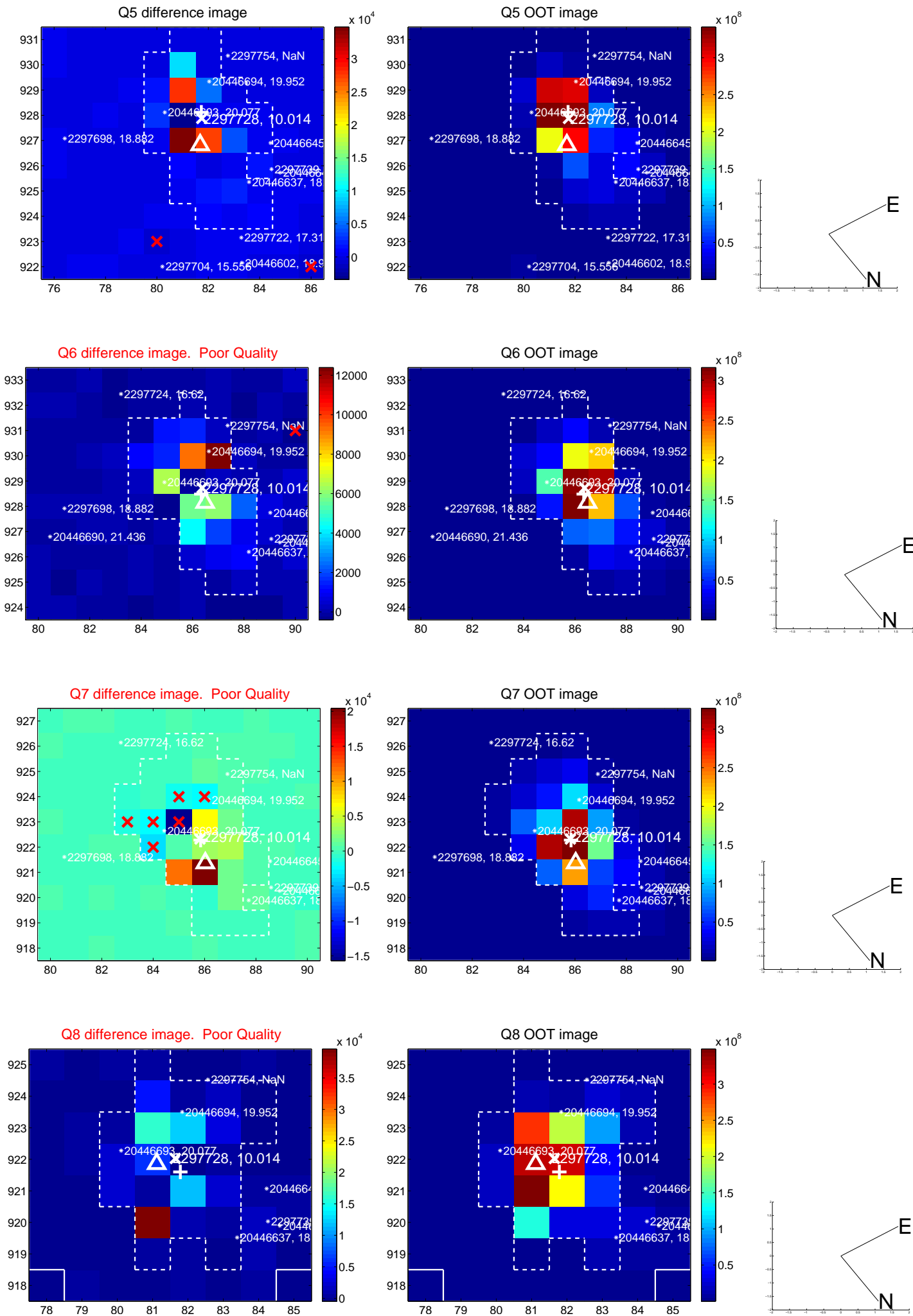


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

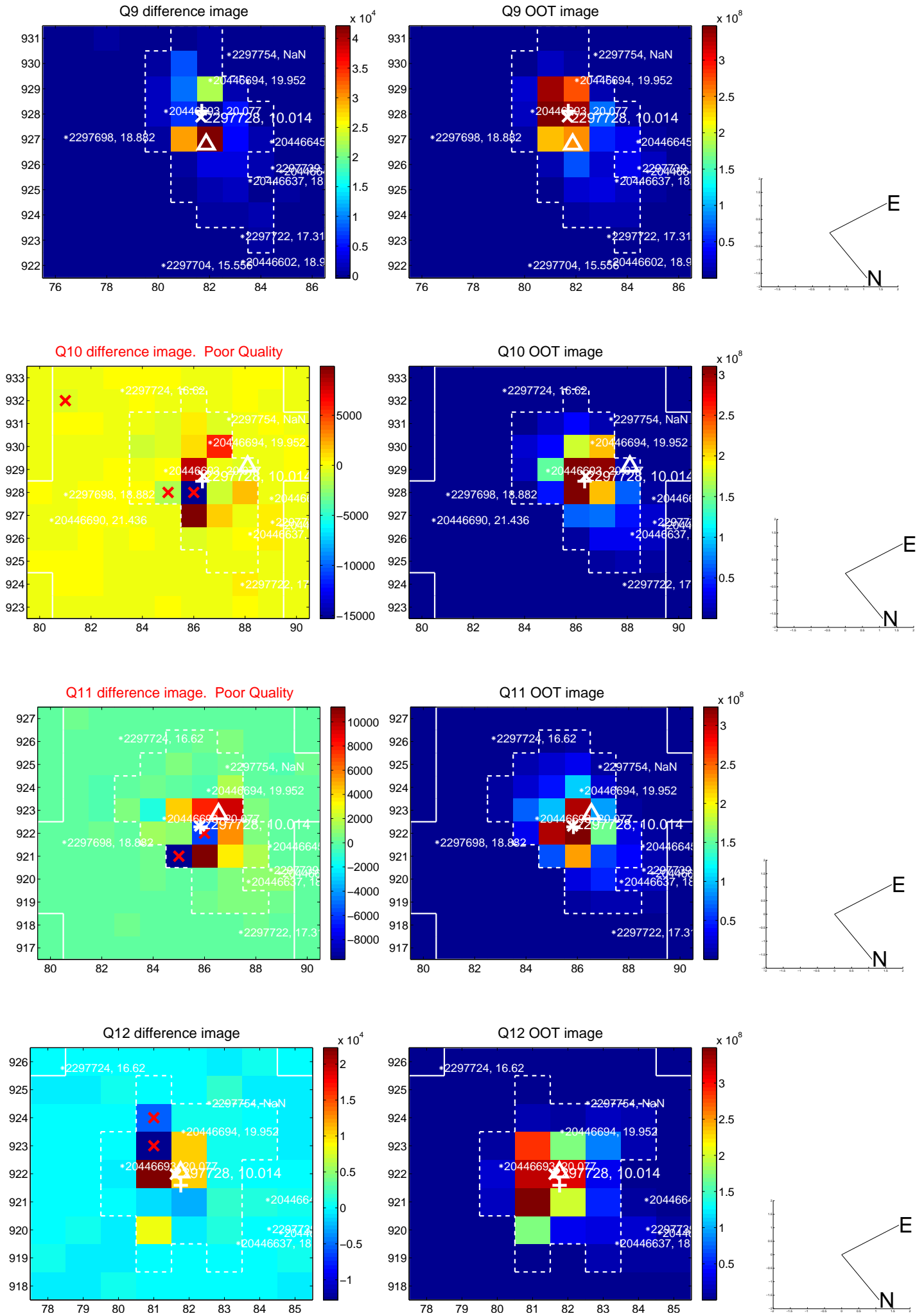
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



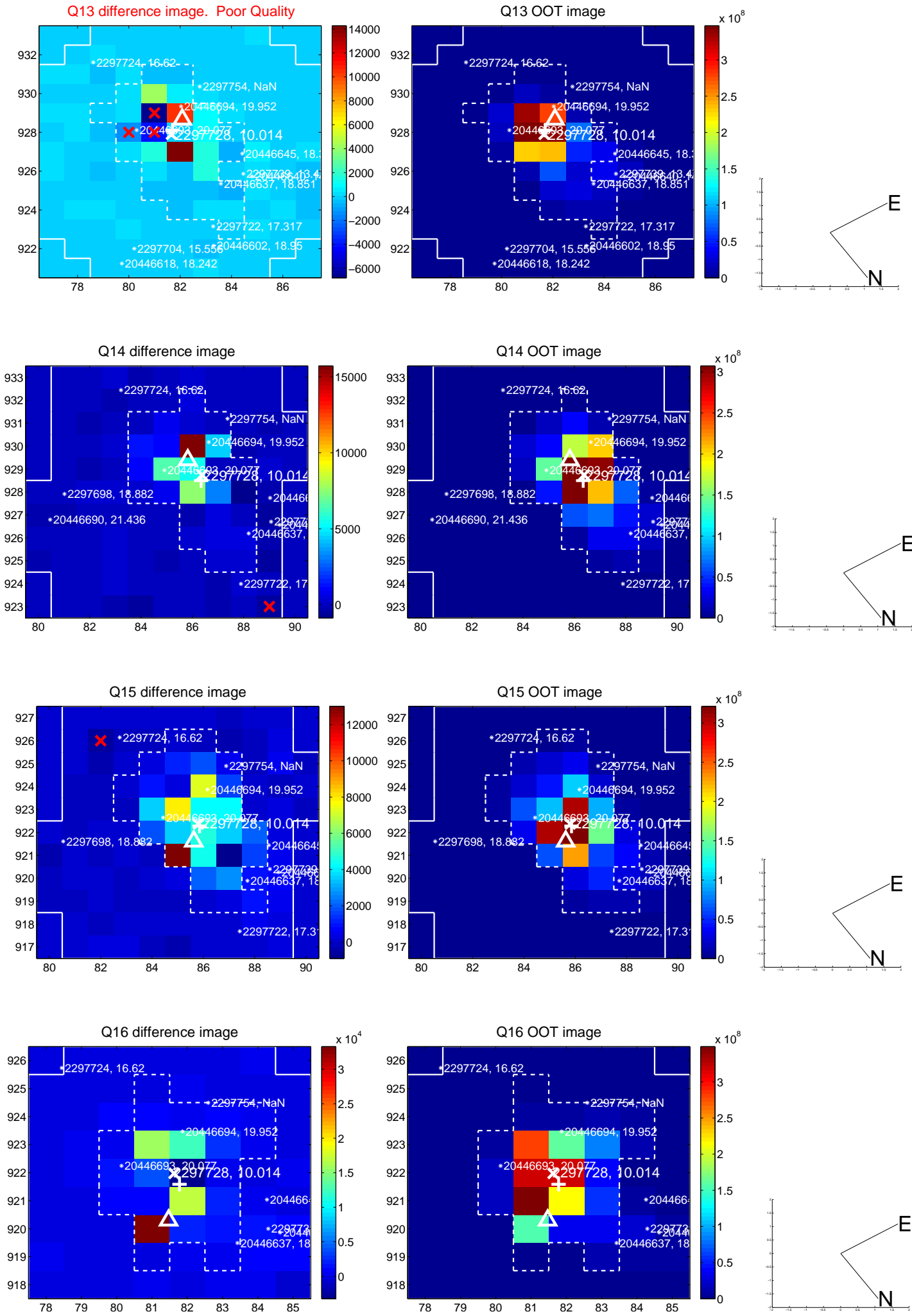
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



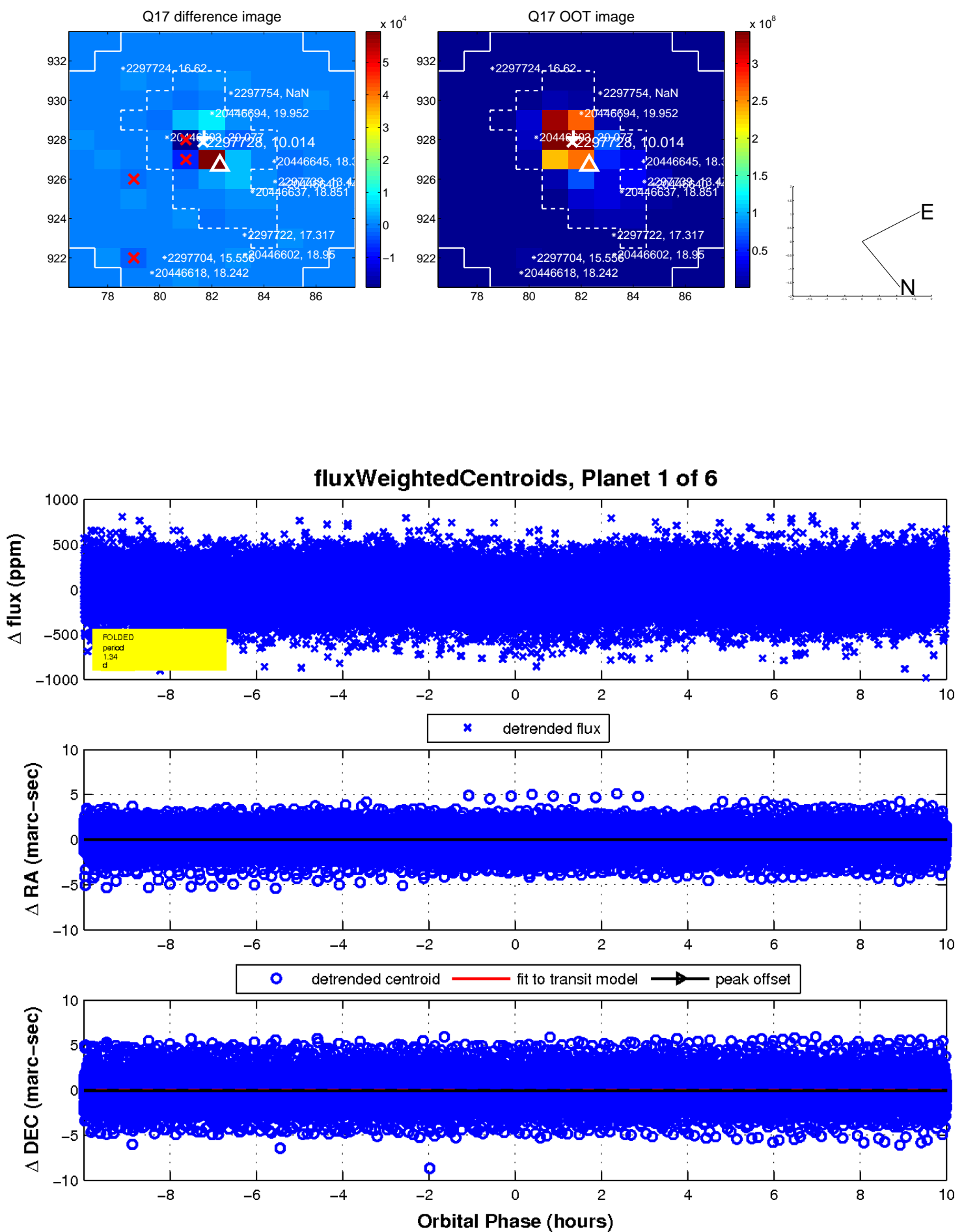
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



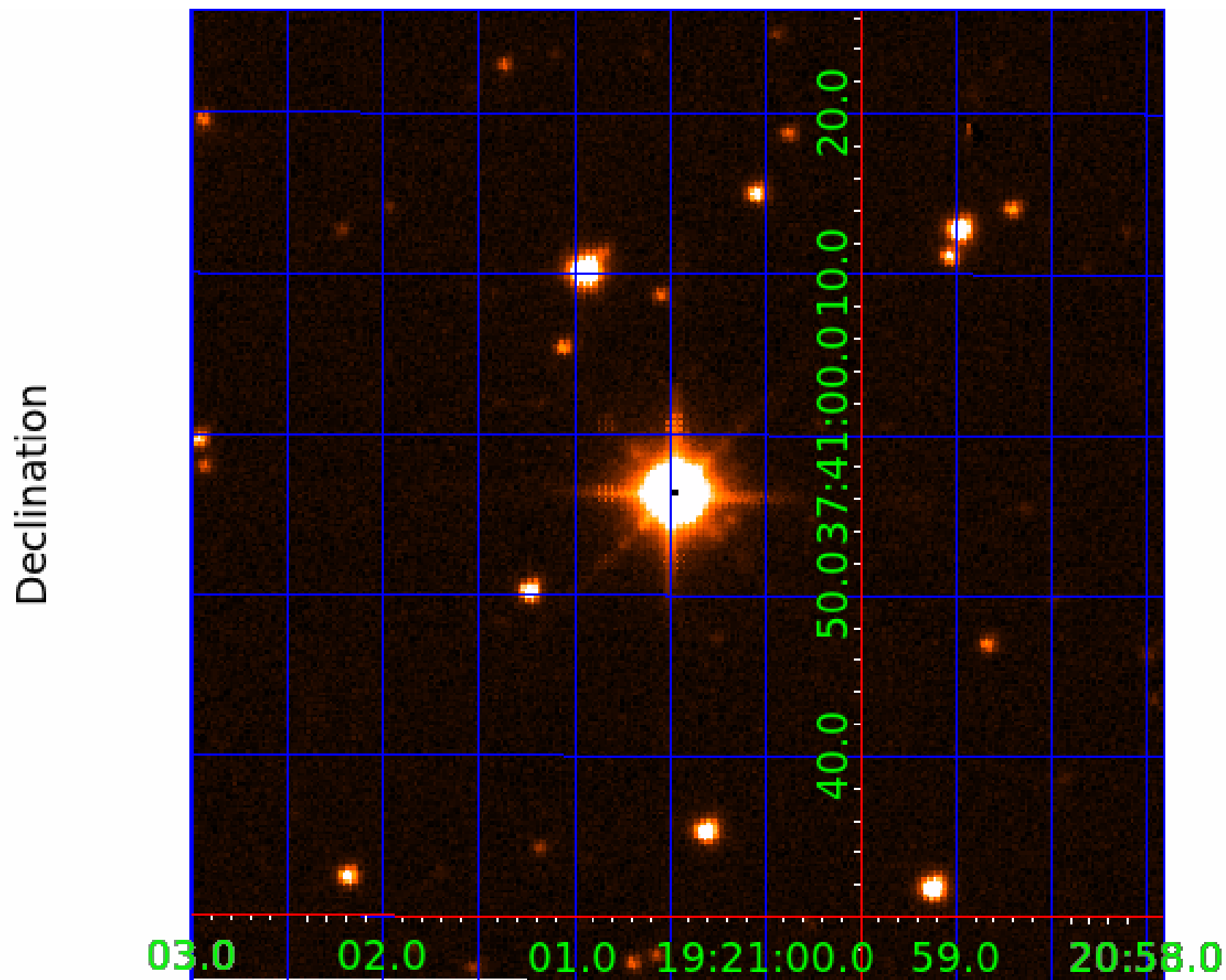
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002297728

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})
002297728-01	OBS	No	1.338740	131.643185	31.9	3.333	9.2	9.8	1.46	6634	0.97	6013.19
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002297728-04	OBS	No	94.661689	162.017145	326.7	2.504	8.7	7.4	1.46	6634	5.09	20.57
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002297728-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
002297728-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
002297728-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

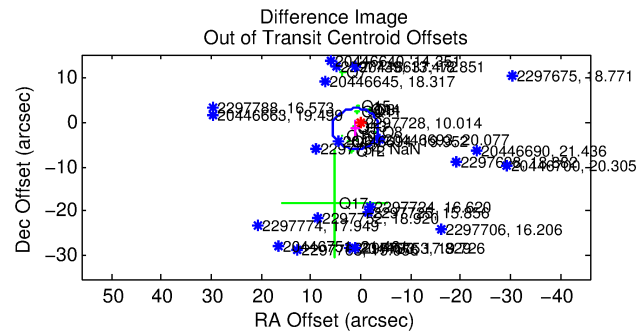
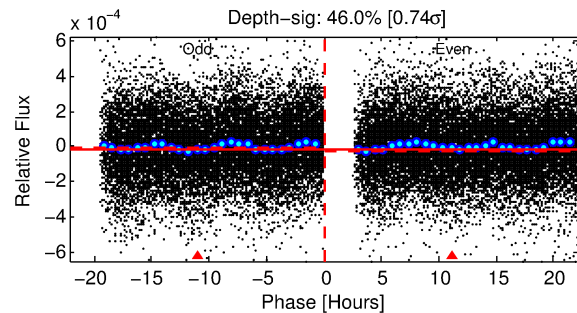
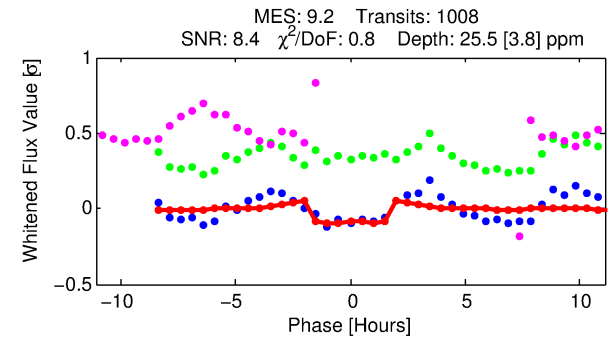
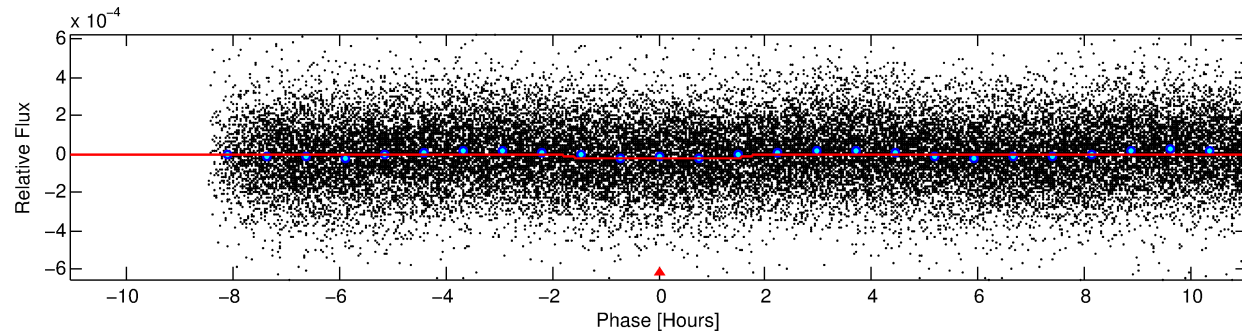
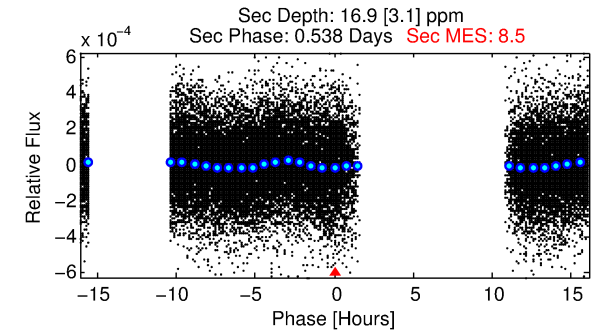
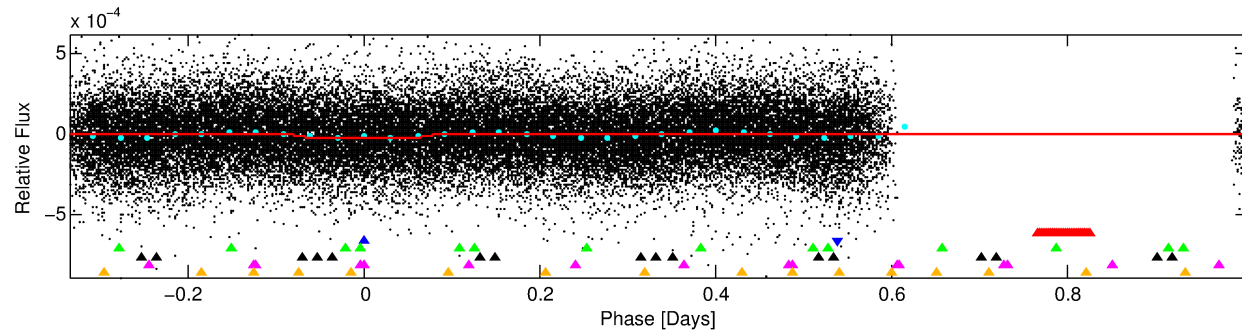
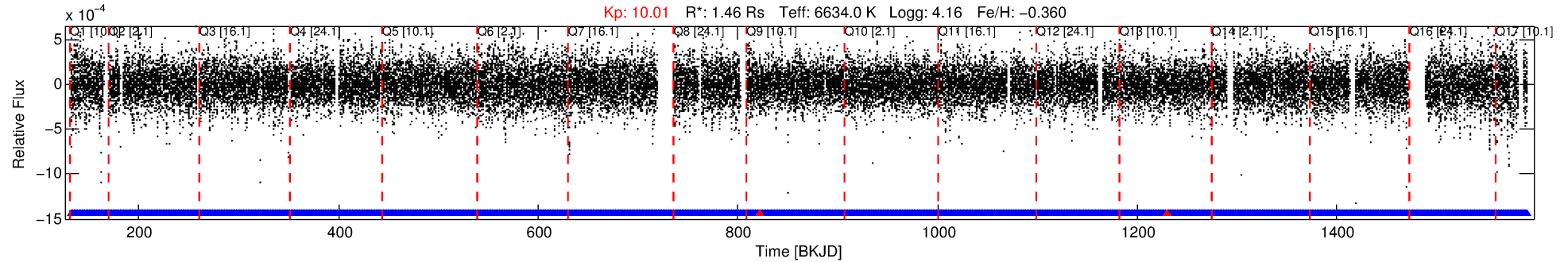
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002297728-02

No Significant Match Found

DV One-Page Summary

KIC: 2297728 Candidate: 2 of 6 Period: 1.339 d



DV Fit Results:

Period = 1.33868 [0.00001] d
Epoch = 132.2163 [0.0026] BKJD
Rp/R* = 0.0057 [0.0012]
a/R* = 1.35 [0.70]
b = 0.95 [0.13]
Seff = 6013.52 [2311.34]
Teq = 2245 [216] K
Rp = 0.90 [0.32] Re
a = 0.0248 [0.0062] AU
Ag = 7.03 [4.08] [1.48σ]
Teffp = 5653 [653] K [4.96σ]

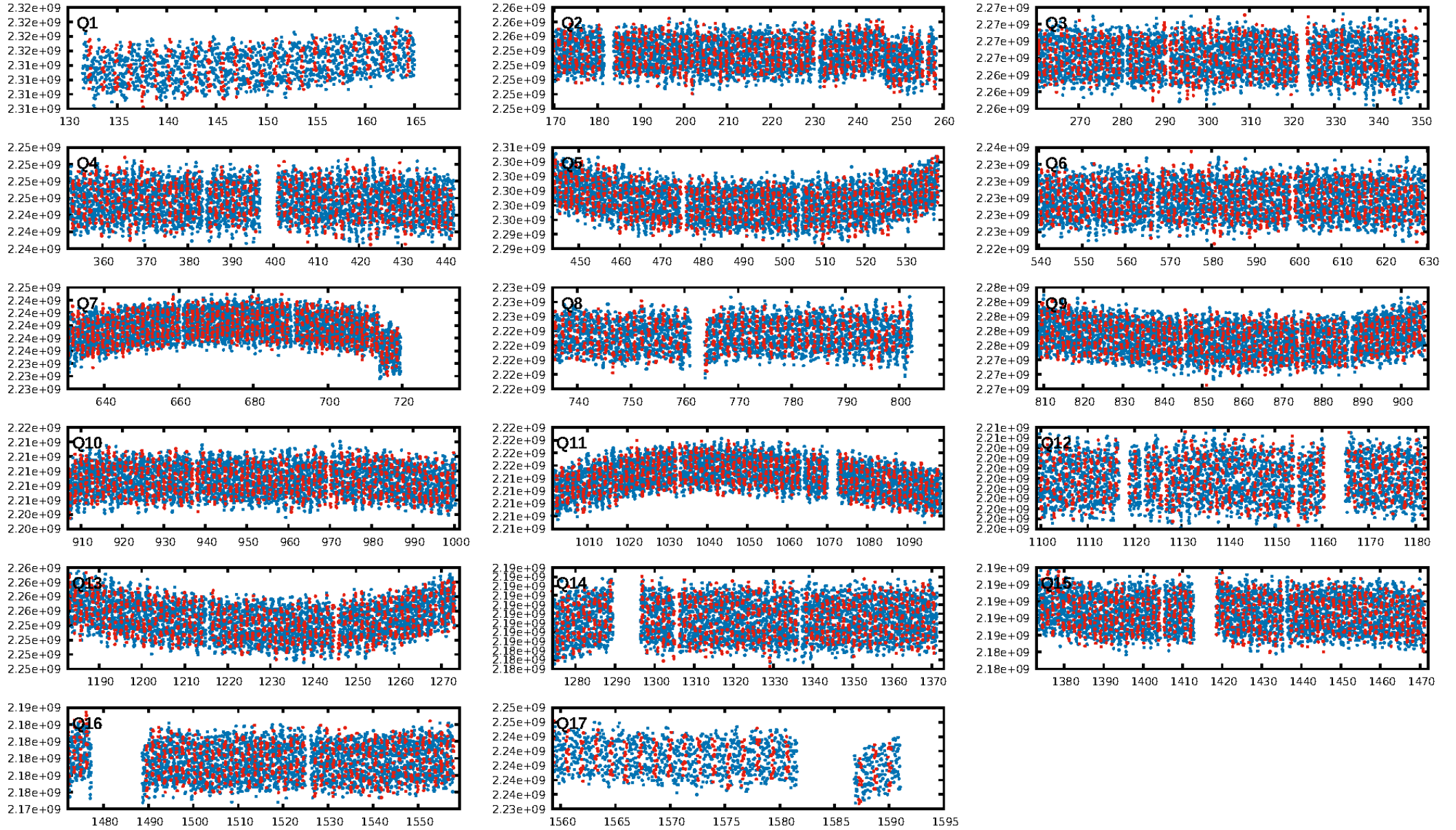
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.50e-11
RollingBand-fgt: 1.00 [961/963]
GhostDiagnostic-chr: N/A
Centroid-sig: 15.5%
Centroid-so: 1.400 arcsec [1.91σ]
OotOffset-rm: 1.750 arcsec [1.13σ]
OotOffset-st: 3/4/3/4 [14]
KicOffset-rm: 2.156 arcsec [1.47σ]
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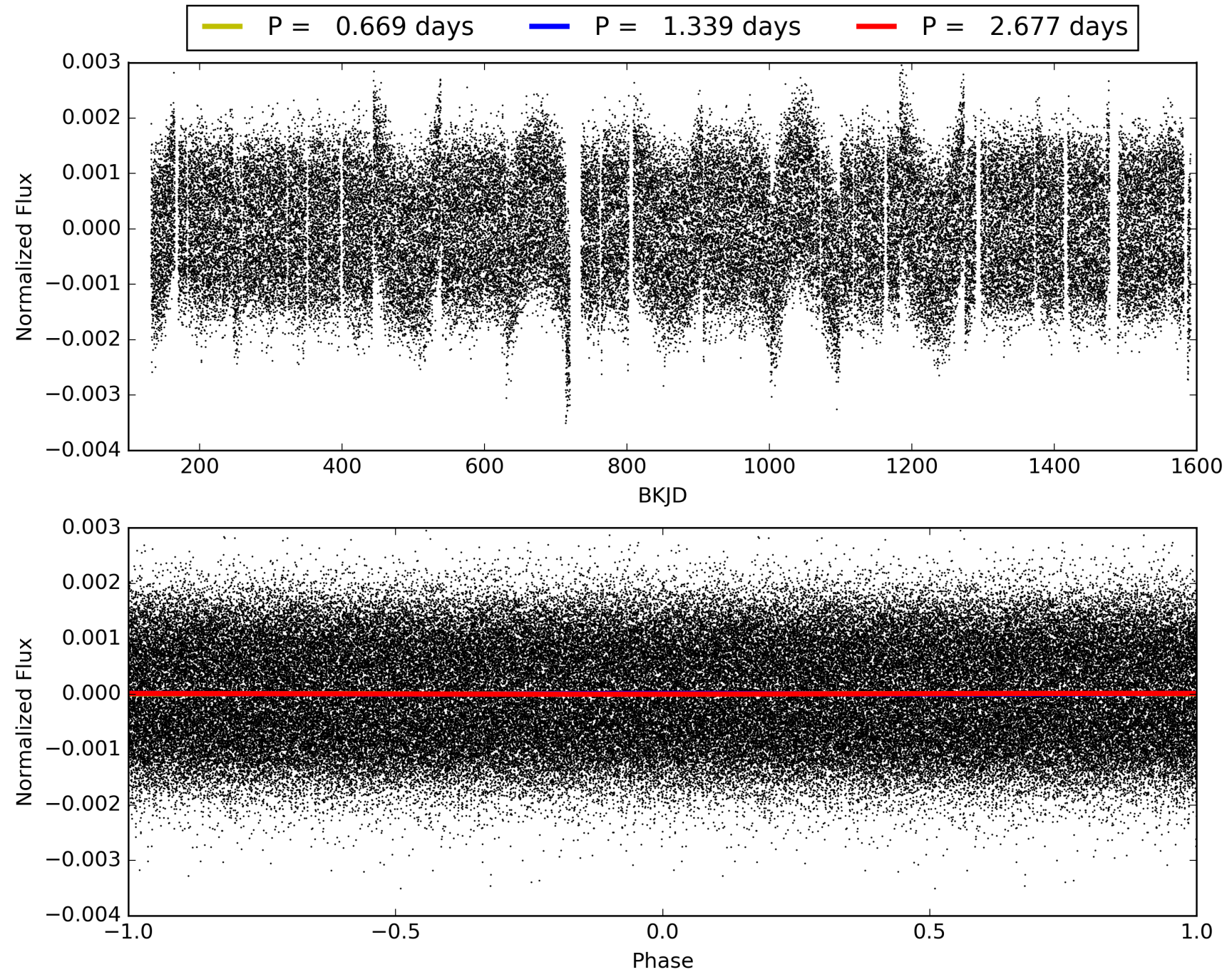
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:57:07 Z

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

TCE 002297728-02, PDC Light Curves

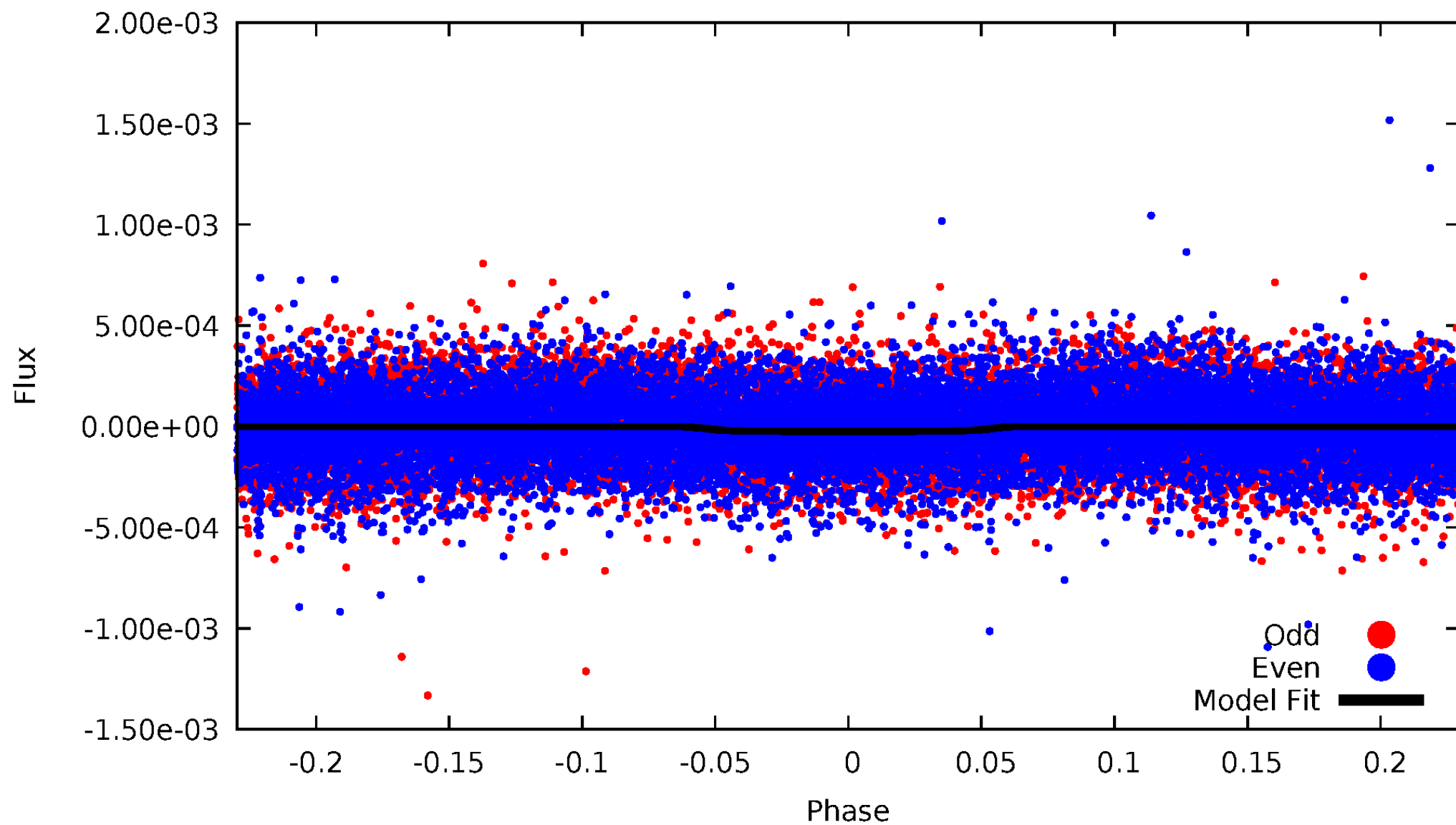


TCE 002297728-02



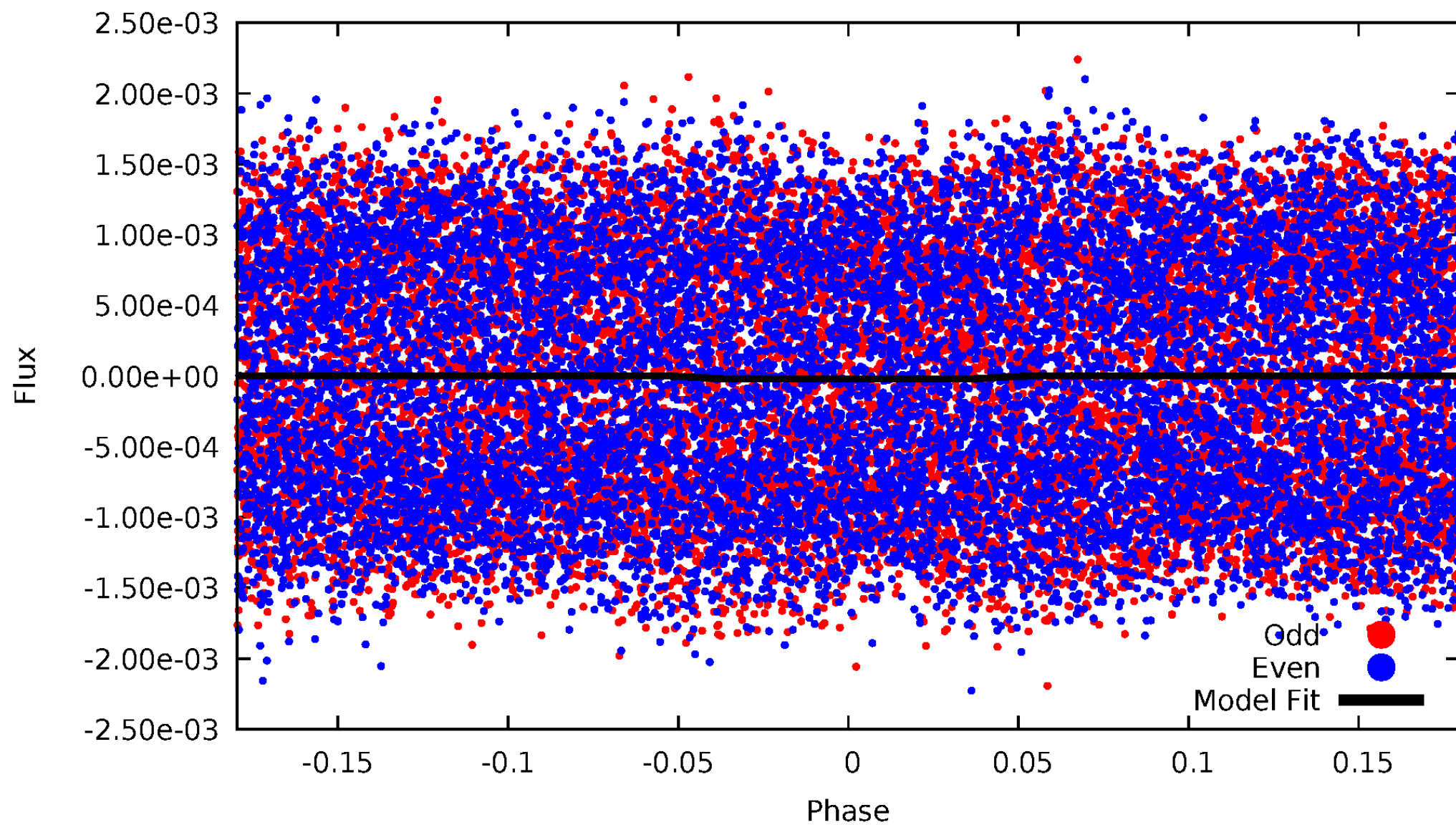
DV Odd/Even

TCE 002297728-02



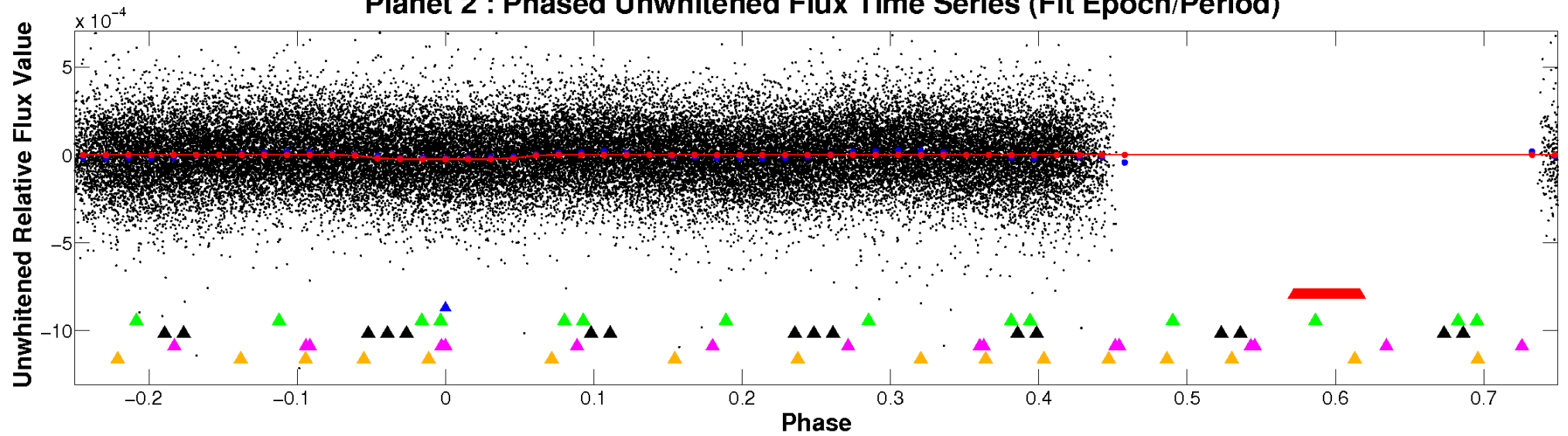
ALT Odd/Even

TCE 002297728-02

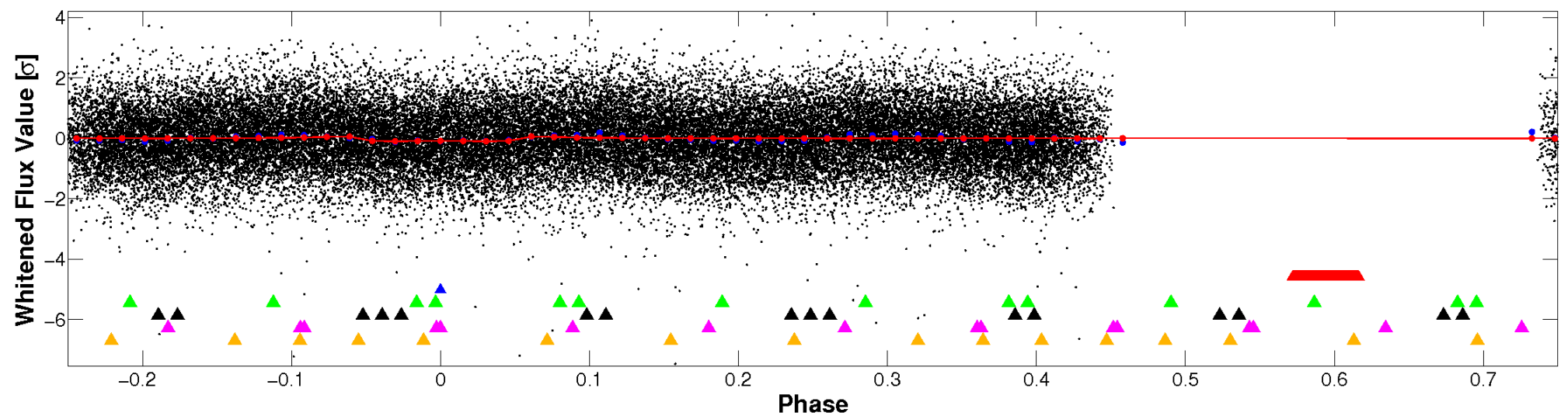


Non-Whitened Vs. Whitened Light Curve

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

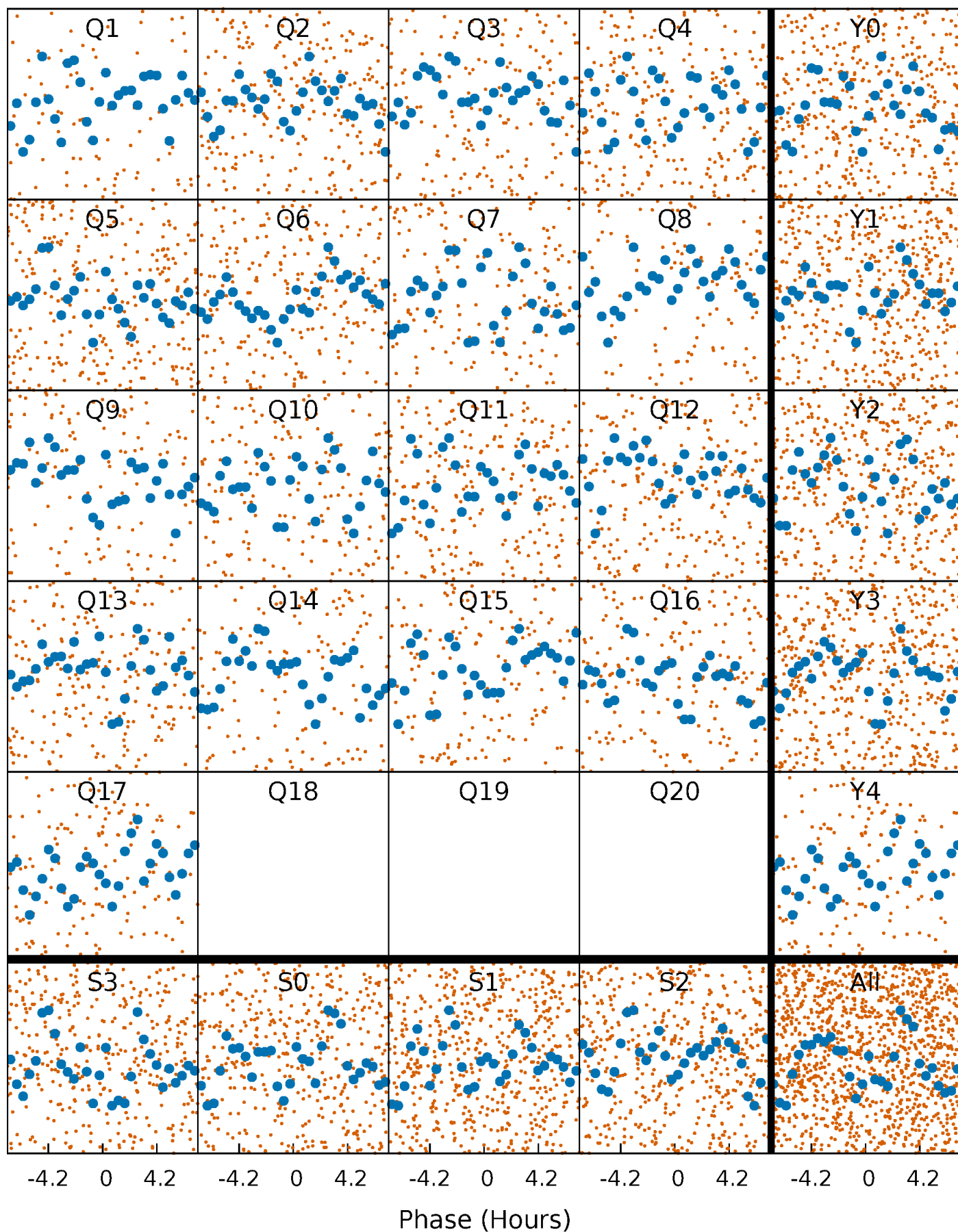


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



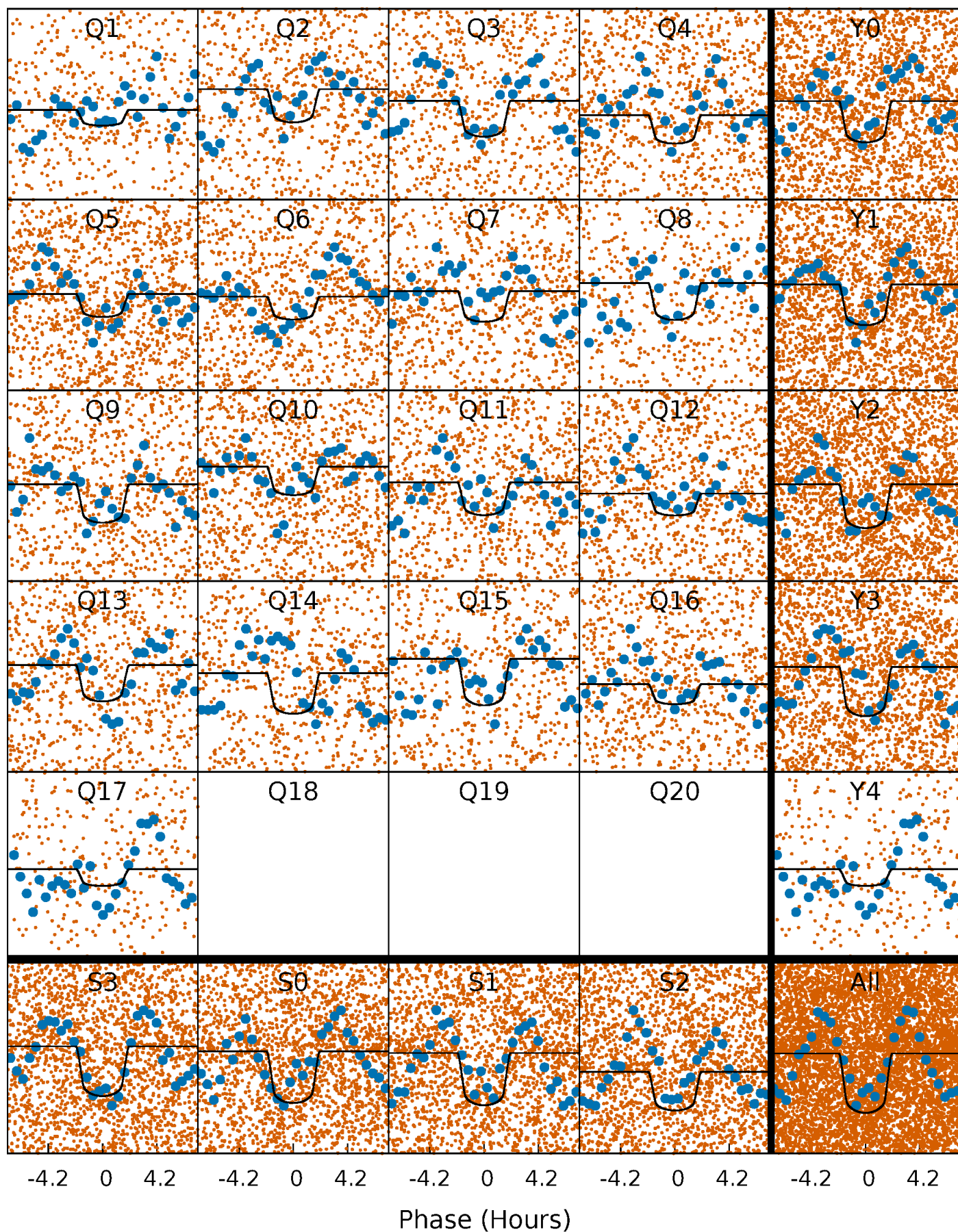
PDC Quarter-Phased Transit Curves

TCE 002297728-02 P= 1.338685 Days $T_0=132.216335$ (BKJD)



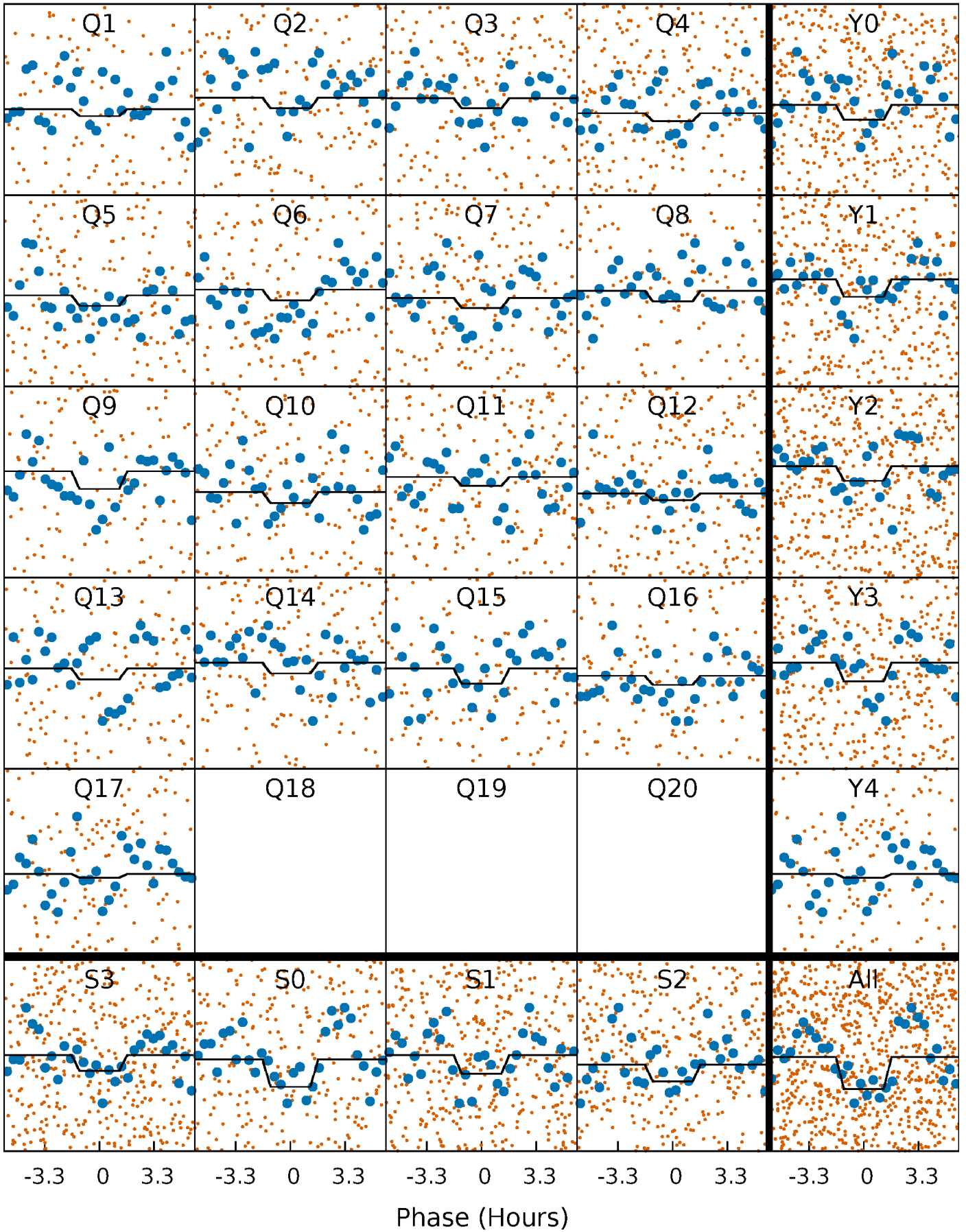
DV Quarter-Phased Transit Curves

TCE 002297728-02 P= 1.338685 Days $T_0=132.216335$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

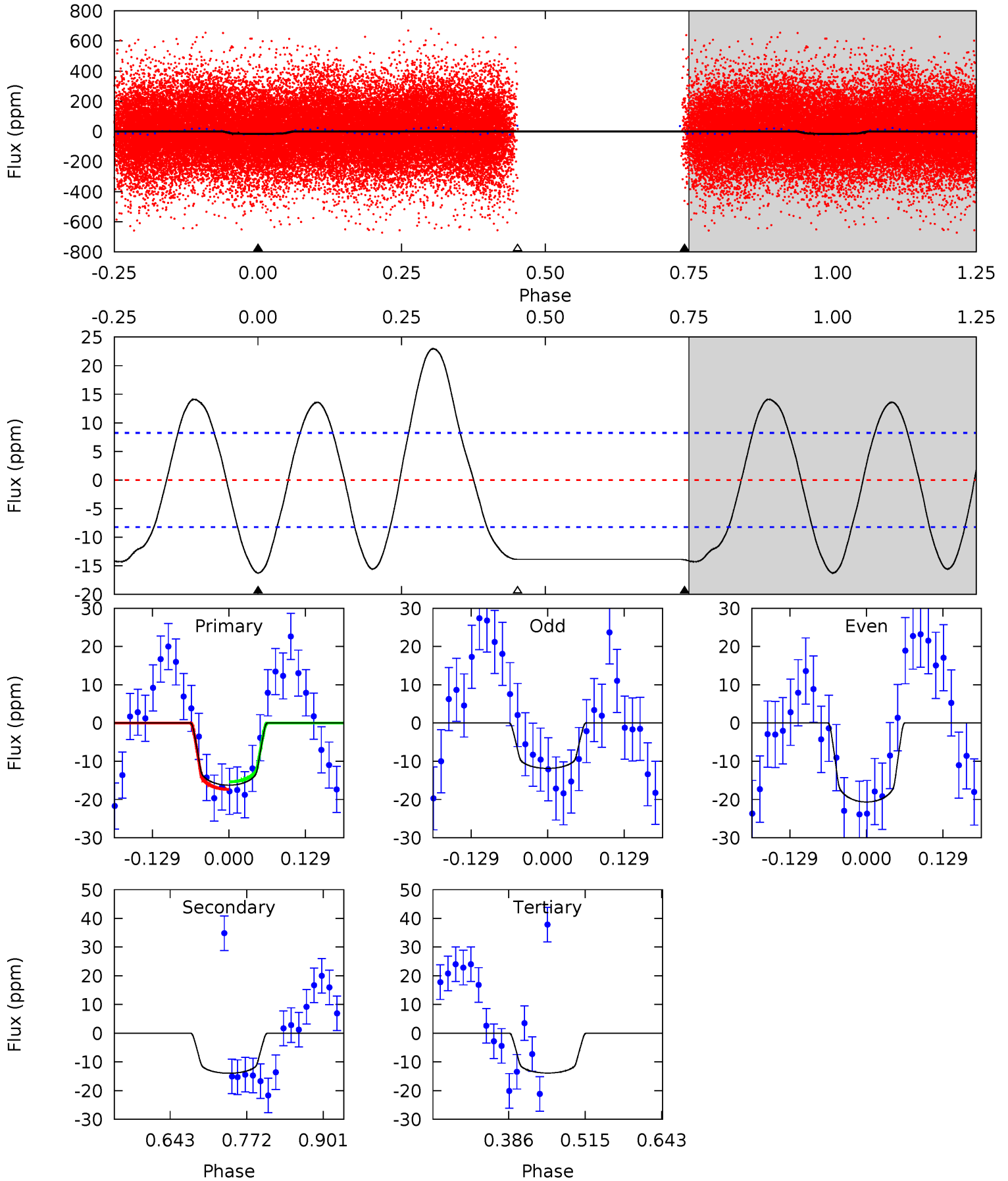
TCE 002297728-02 P= 1.338716 Days $T_0=132.198843$ (BKJD)



DV Model-Shift Uniqueness Test

002297728-02, P = 1.338685 Days, E = 130.877650 Days

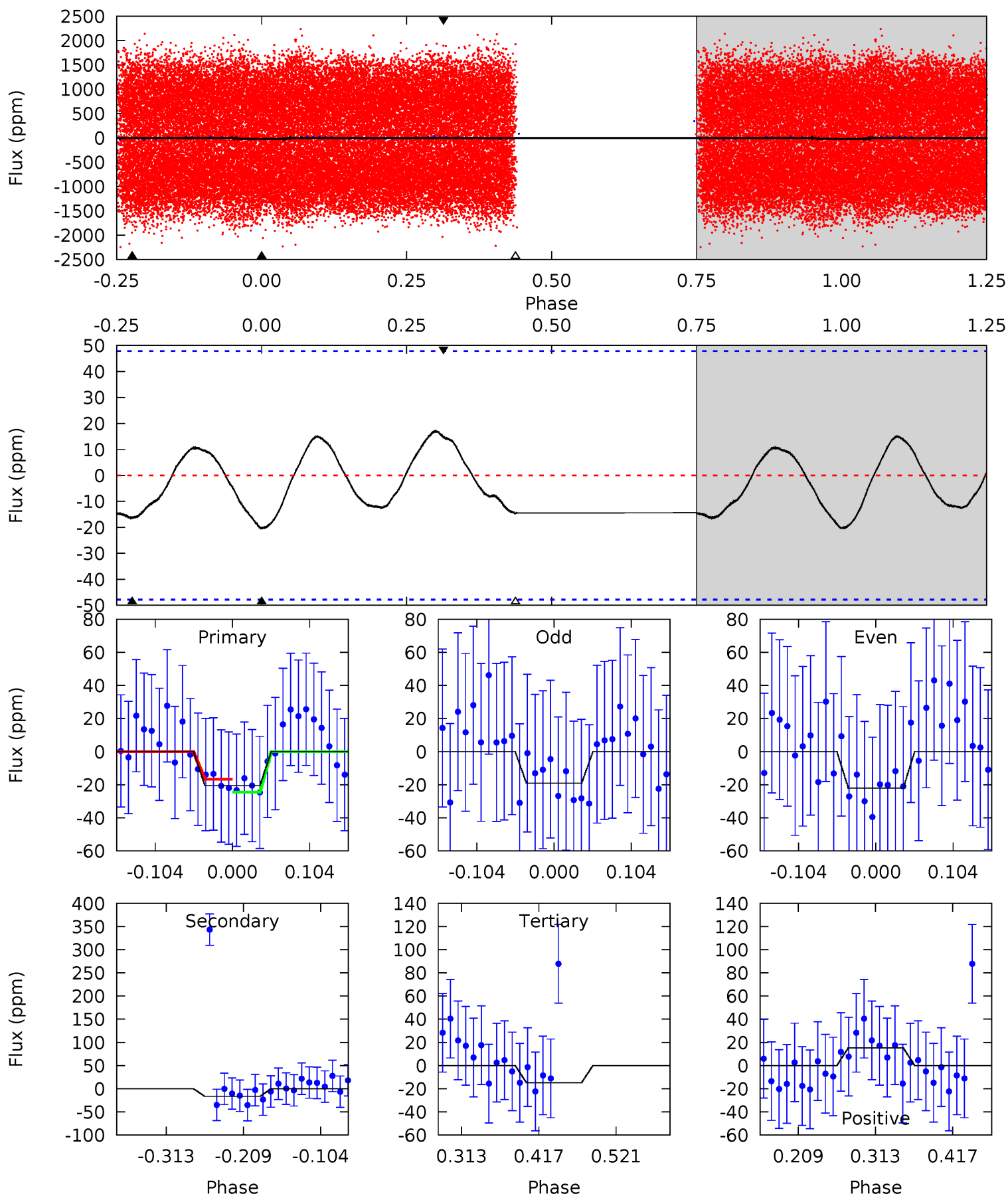
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.91	7.64	7.61	0	4.51	1.52	6.80	1.30	8.91	0.04	7.64	2.43	1.03	0.59	0.56



Alt Model-Shift Uniqueness Test

002297728-02, P = 1.338716 Days, E = 130.860127 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.96	1.59	1.41	1.45	4.56	1.62	0.95	0.55	0.51	0.19	0.15	0.14	1.51	0.46	0.37



Stellar Parameters For KIC 002297728

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6634^{+151}_{-184}	$4.164^{+0.204}_{-0.167}$	$-0.360^{+0.250}_{-0.300}$	$1.459^{+0.423}_{-0.346}$	$1.131^{+0.181}_{-0.131}$	$0.513^{+0.520}_{-0.242}$
	+2%/-3%	+5%/-4%	+69%/-83%	+29%/-24%	+16%/-12%	+101%/-47%
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 002297728-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-14 ± 2	$0.89^{+0.24}_{-0.21}$	3116^{+224}_{-200}	5335^{+639}_{-482}	$5.886^{+4.563}_{-2.263}$
Alt.	-17 ± 10	$0.69^{+0.22}_{-0.20}$	3134^{+225}_{-229}	6323^{+1571}_{-1548}	11^{+14}_{-8}

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 $A_{obs} \gg 1.0$

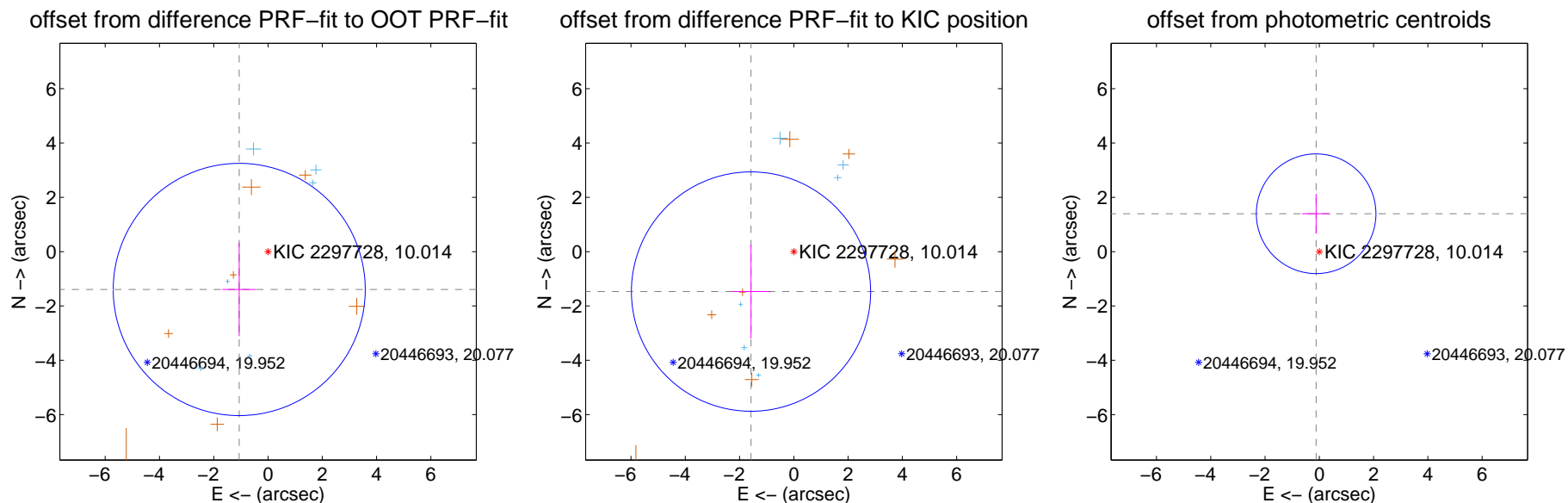
DV Centroid Data

Supplemental centroid analysis for 002297728-02. **Kepler magnitude: 10.01.** Transit SNR 8.36

There are 6 quarters with good PRF difference image offsets

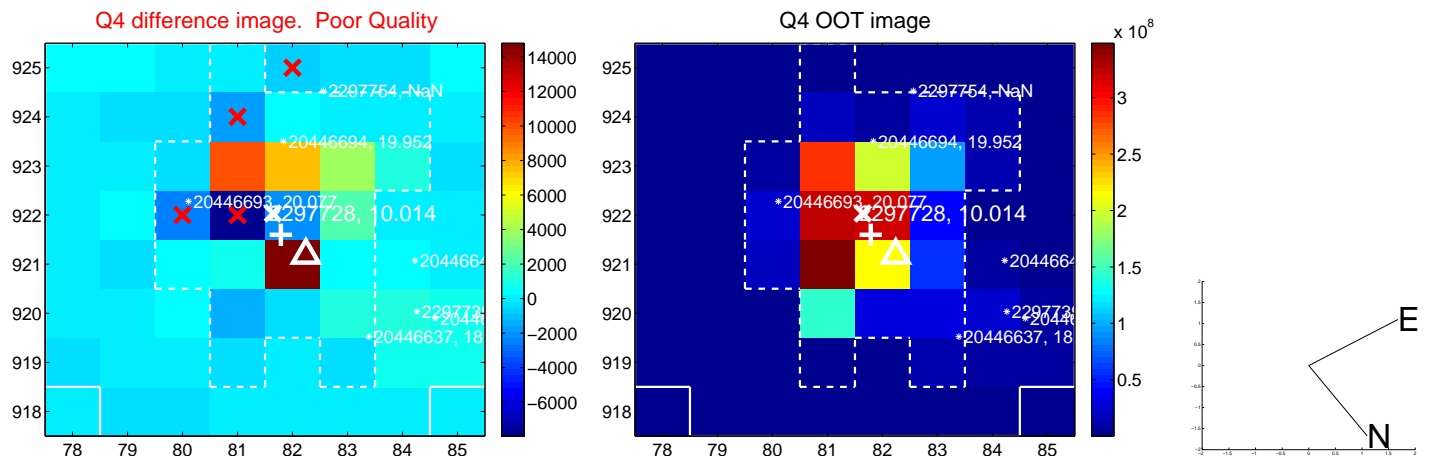
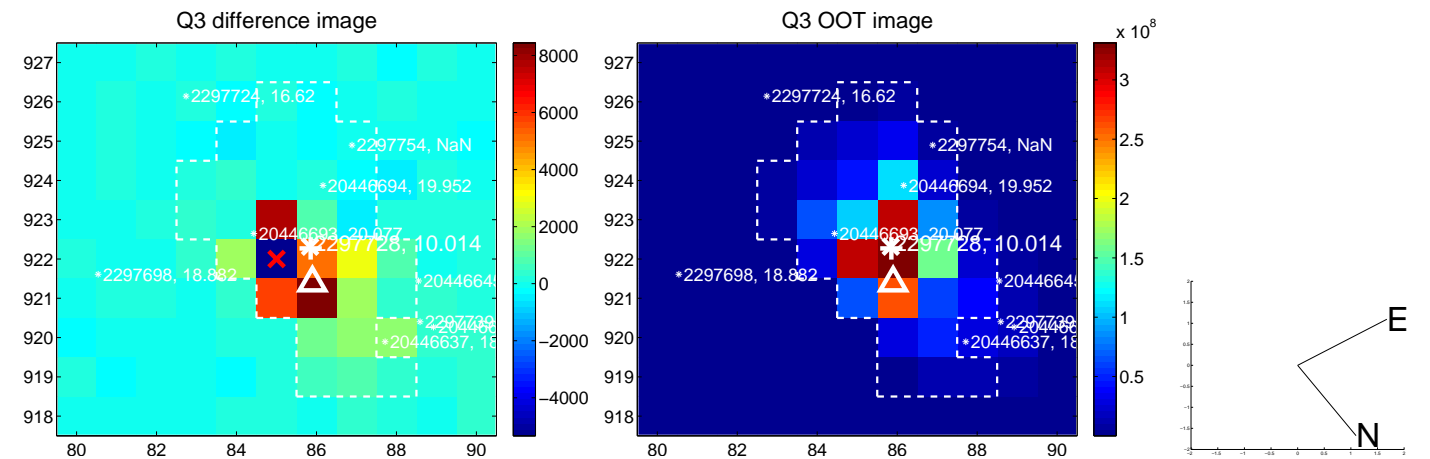
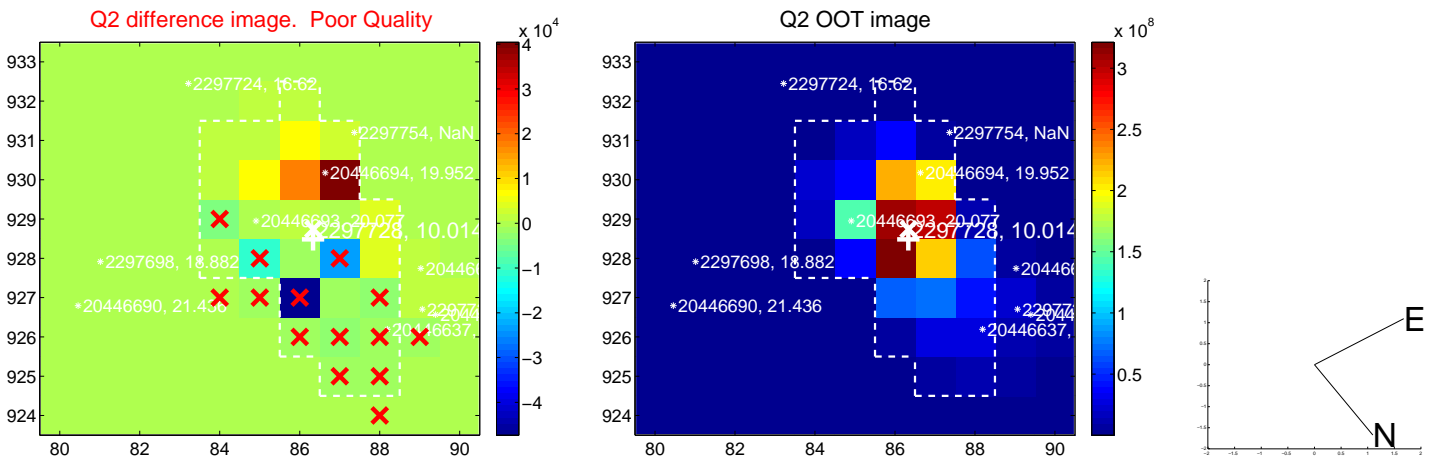
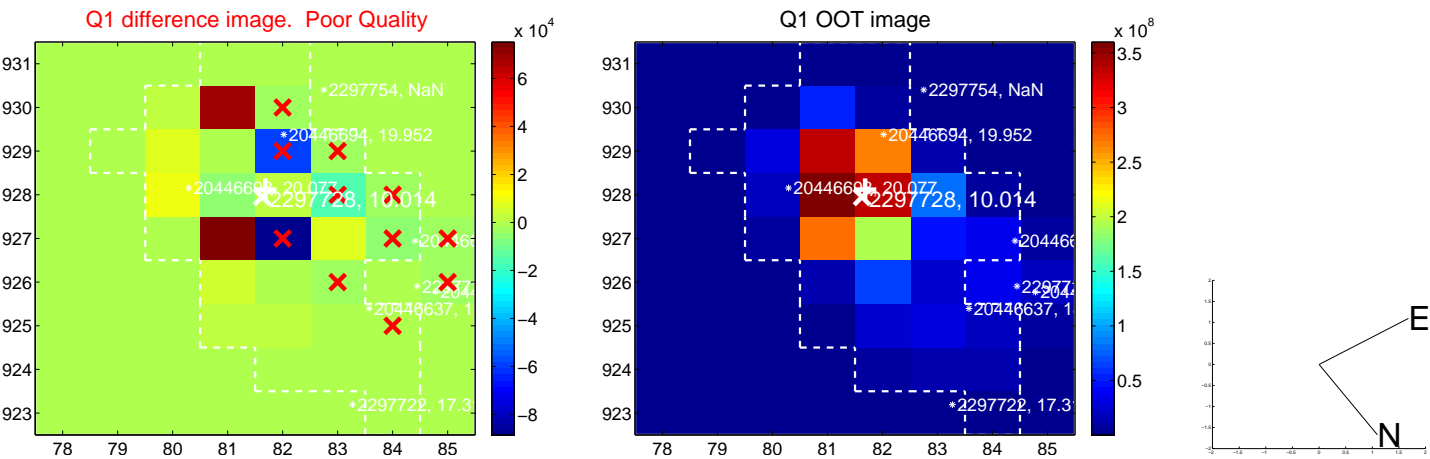
The direct PRF centroid is offset from the target star catalog position by about 0.86 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.750 ± 1.548	1.13	1.061 ± 0.622	-1.392 ± 1.723
PRF-fit source offset from KIC position	2.156 ± 1.469	1.47	1.577 ± 0.714	-1.470 ± 1.724
photometric centroid source offset	1.40 ± 0.73	1.91	0.12 ± 0.52	1.40 ± 0.74

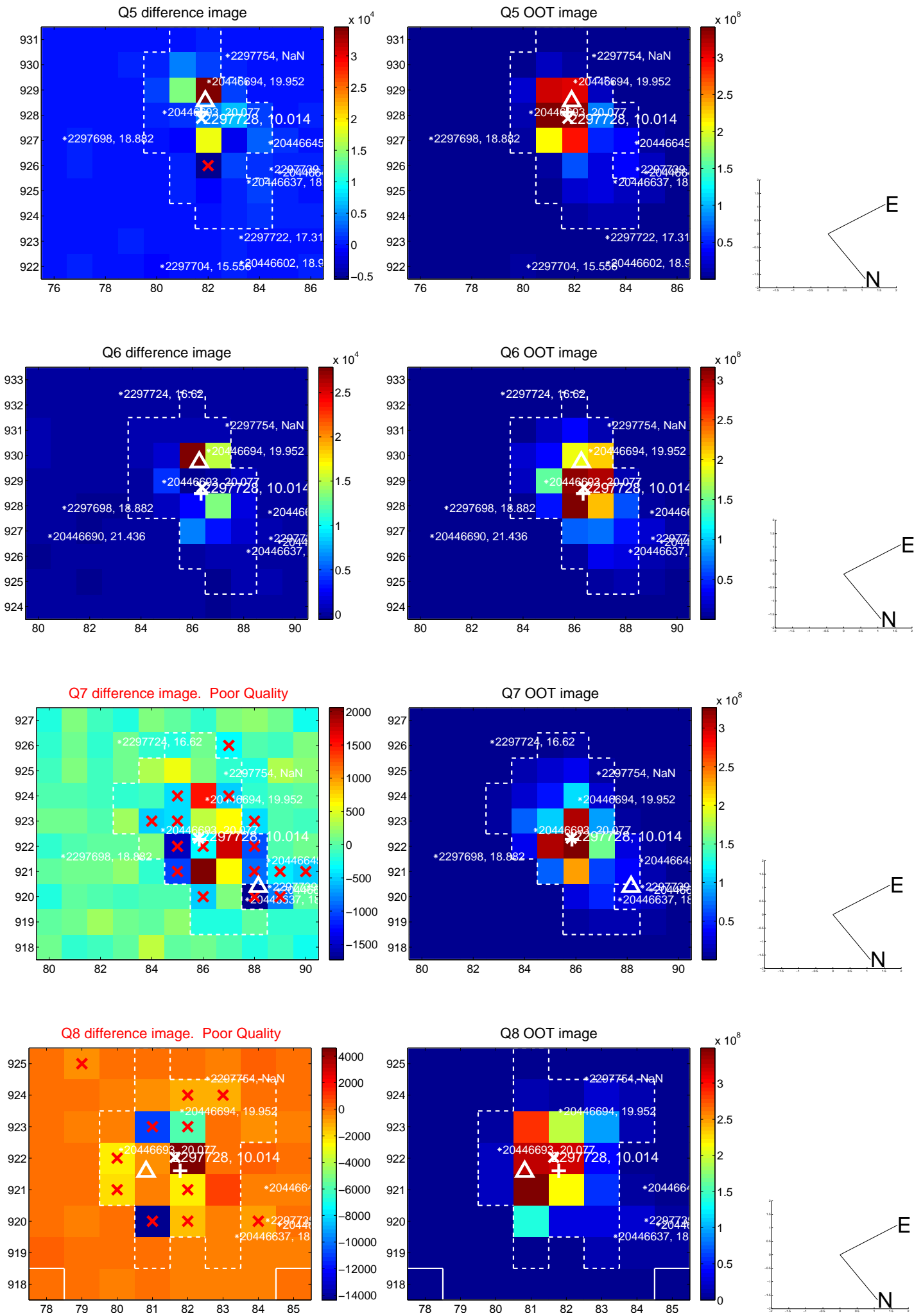


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

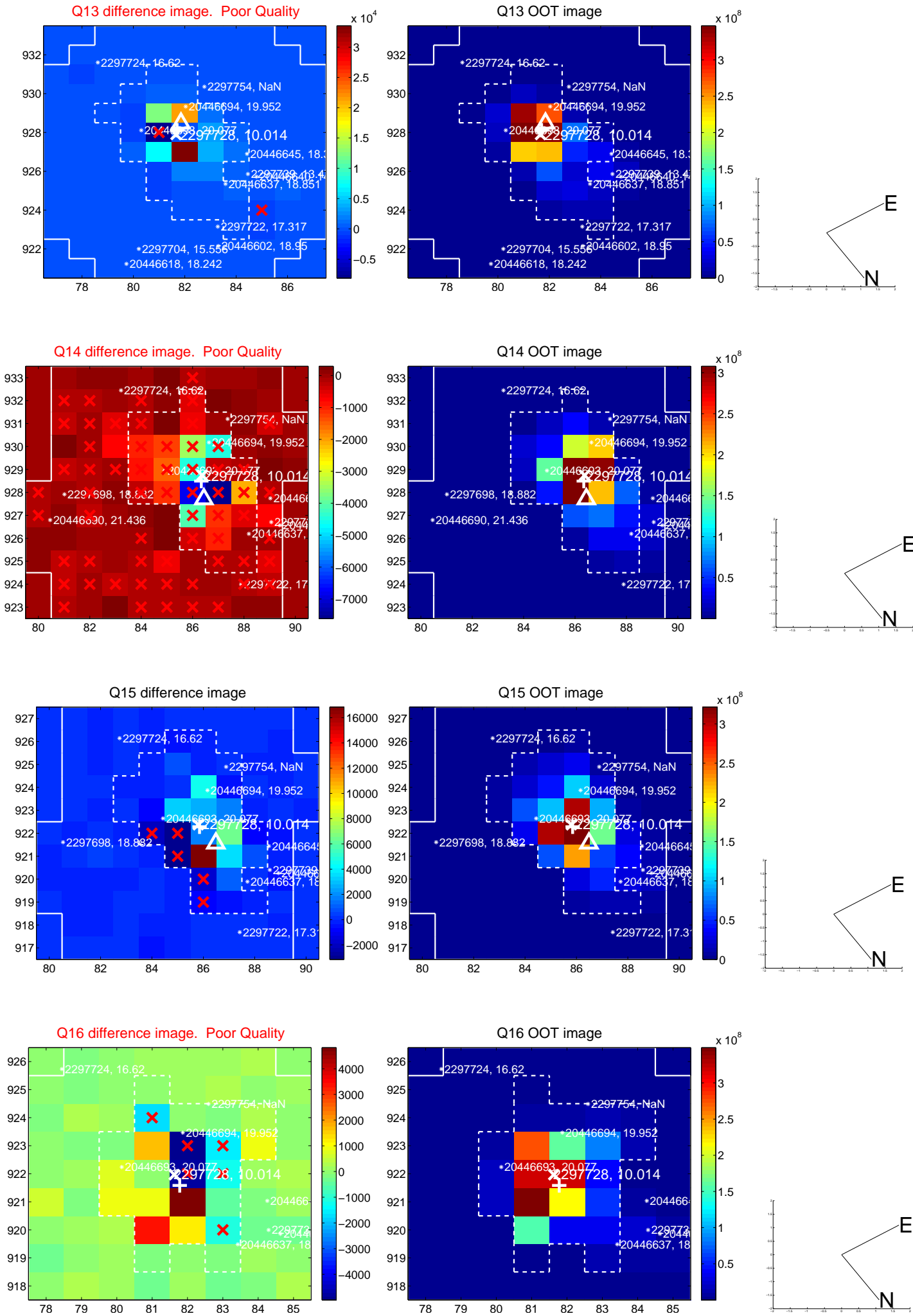
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



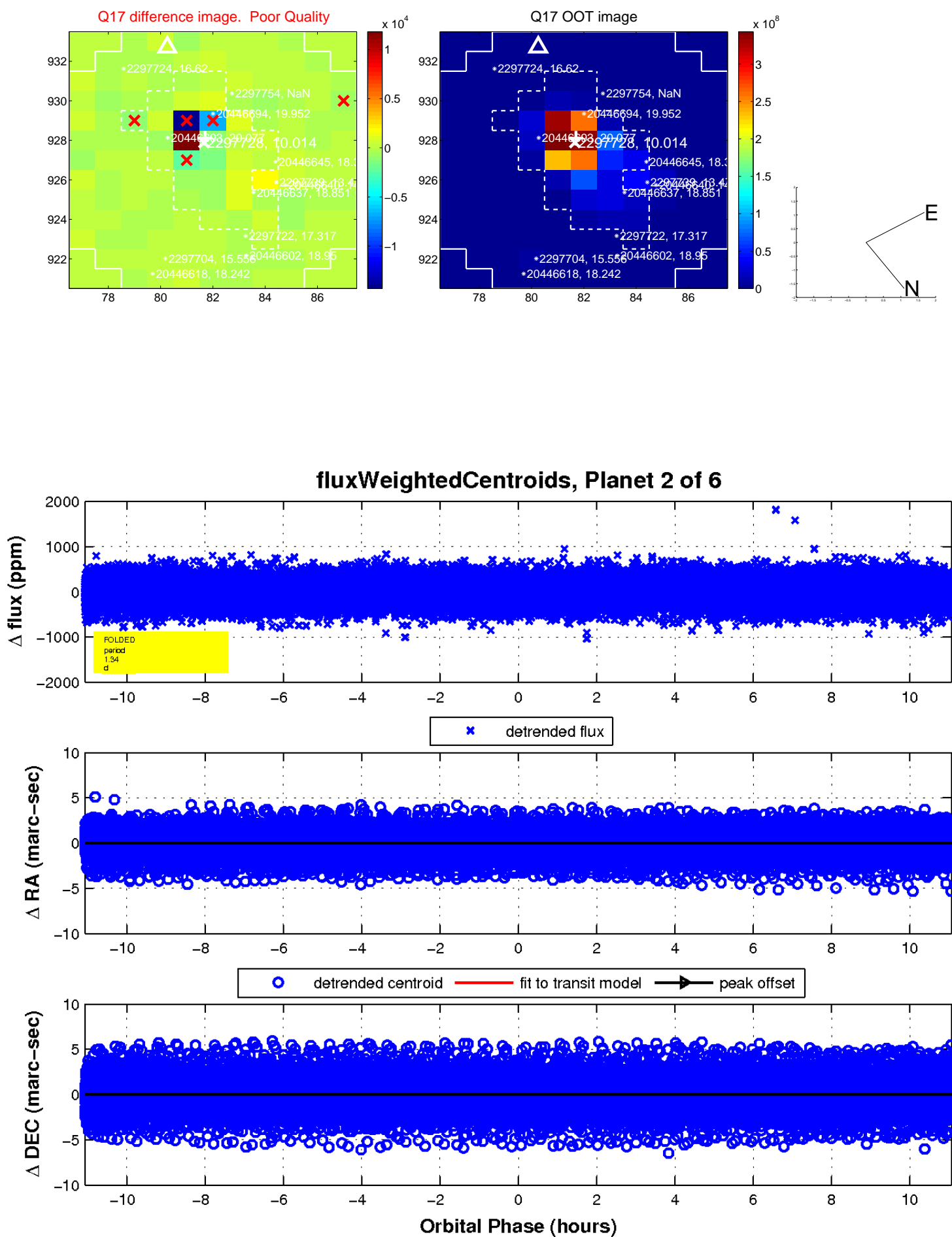
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



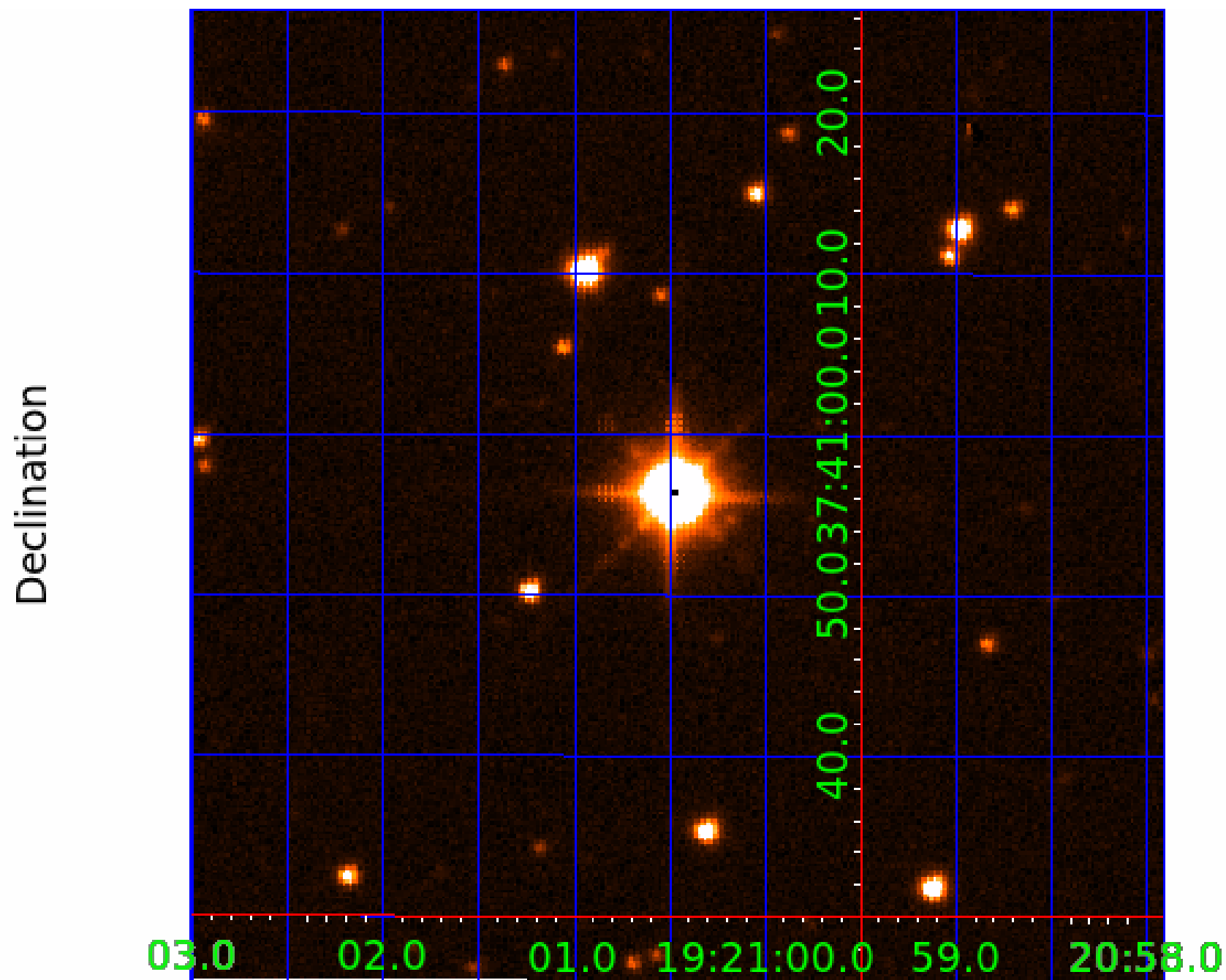
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002297728

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})
002297728-01	OBS	No	1.338740	131.643185	31.9	3.333	9.2	9.8	1.46	6634	0.97	6013.19
002297728-02	OBS	No	1.338685	132.216335	25.5	3.688	9.2	8.4	1.46	6634	0.90	6013.52
002297728-03	OBS	No	110.175471	143.033181	358.2	2.886	8.6	7.9	1.46	6634	2.82	16.80
002297728-04	OBS	No	94.661689	162.017145	326.7	2.504	8.7	7.4	1.46	6634	5.09	20.57
002297728-05	OBS	No	90.422407	207.664905	313.1	3.533	8.2	7.3	1.46	6634	5.03	21.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002297728-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
002297728-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
002297728-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

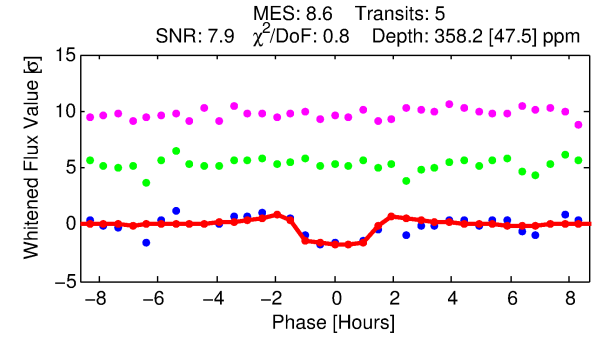
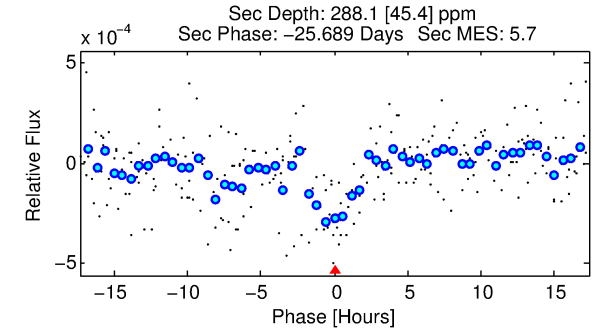
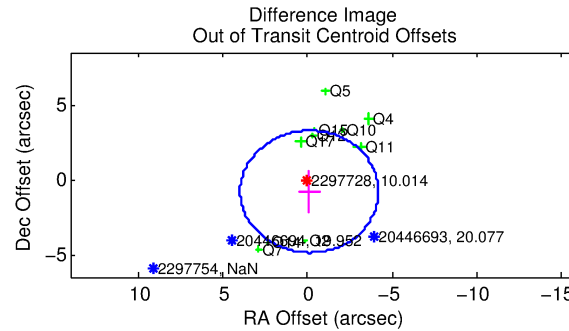
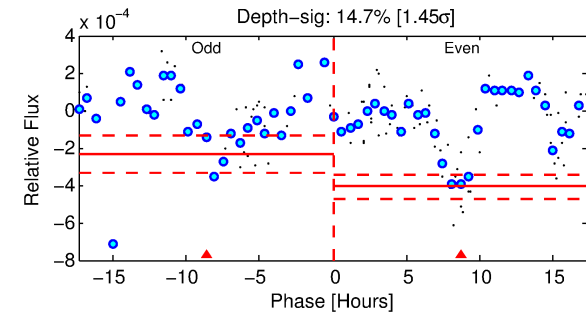
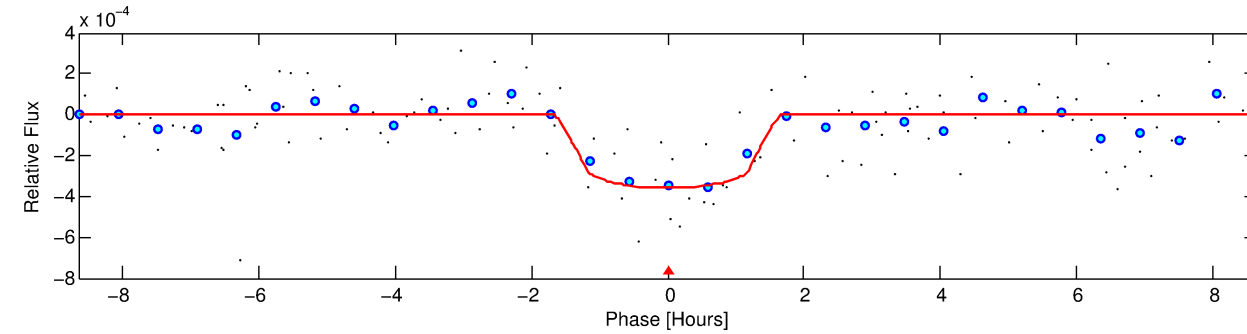
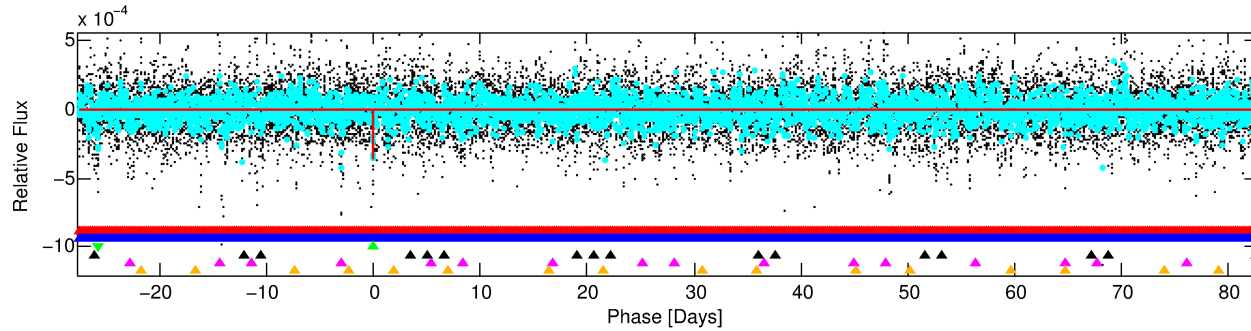
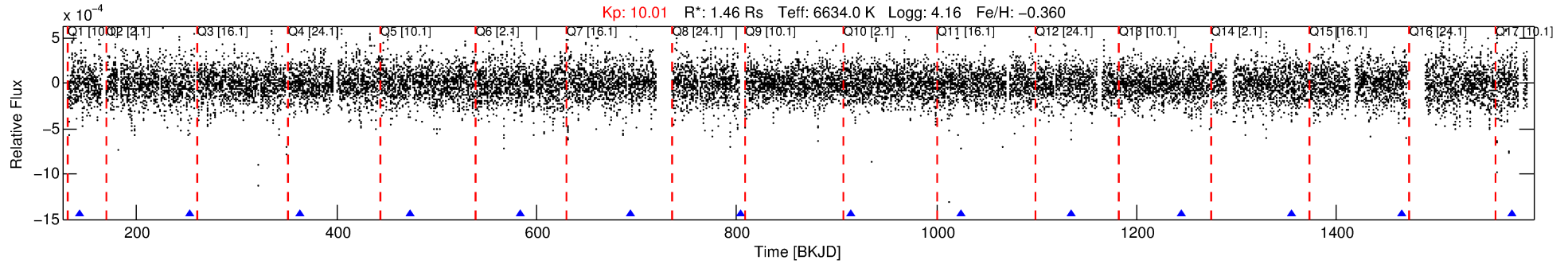
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002297728-03

No Significant Match Found

DV One-Page Summary

KIC: 2297728 Candidate: 3 of 6 Period: 110.175 d



DV Fit Results:

Period = 110.17547 [0.00109] d
Epoch = 143.0332 [0.0074] BKJD
 $R_p/R^* = 0.0177$ [0.0176]
 $a/R^* = 278.72$ [1498.35]
 $b = 0.35$ [13.58]
 $\text{Seff} = 16.80$ [6.46]
 $T_{\text{eq}} = 516$ [50] K
 $R_p = 2.82$ [2.91] R_e
 $a = 0.4689$ [0.1166] AU
 $A_g = 4391.59$ [8894.31] [0.49 σ]
 $T_{\text{eff}} = 6497$ [3240] K [1.85 σ]

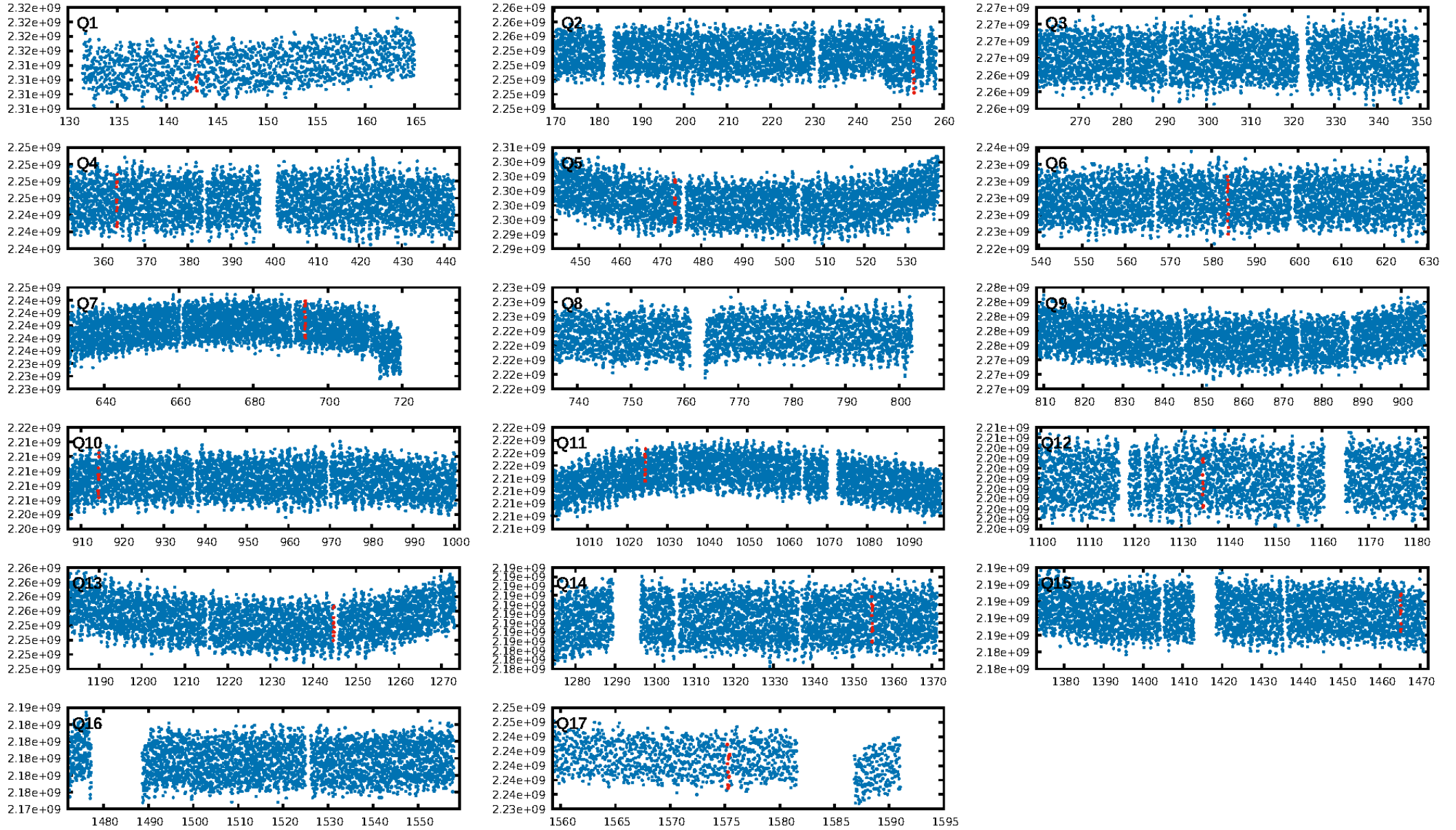
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.41 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 21.1%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 7.99e-11
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: N/A
Centroid-sig: 15.5%
Centroid-so: 1.074 arcsec [2.26 σ]
OotOffset-rm: 0.807 arcsec [0.59 σ]
KicOffset-rm: 0.327 arcsec [0.44 σ]
OotOffset-st: 3/3/2/2 [10]
KicOffset-st: 3/3/2/2 [10]
DiffImageQuality-fgm: 0.20 [2/10]
DiffImageOverlap-fno: 0.00 [0/12]

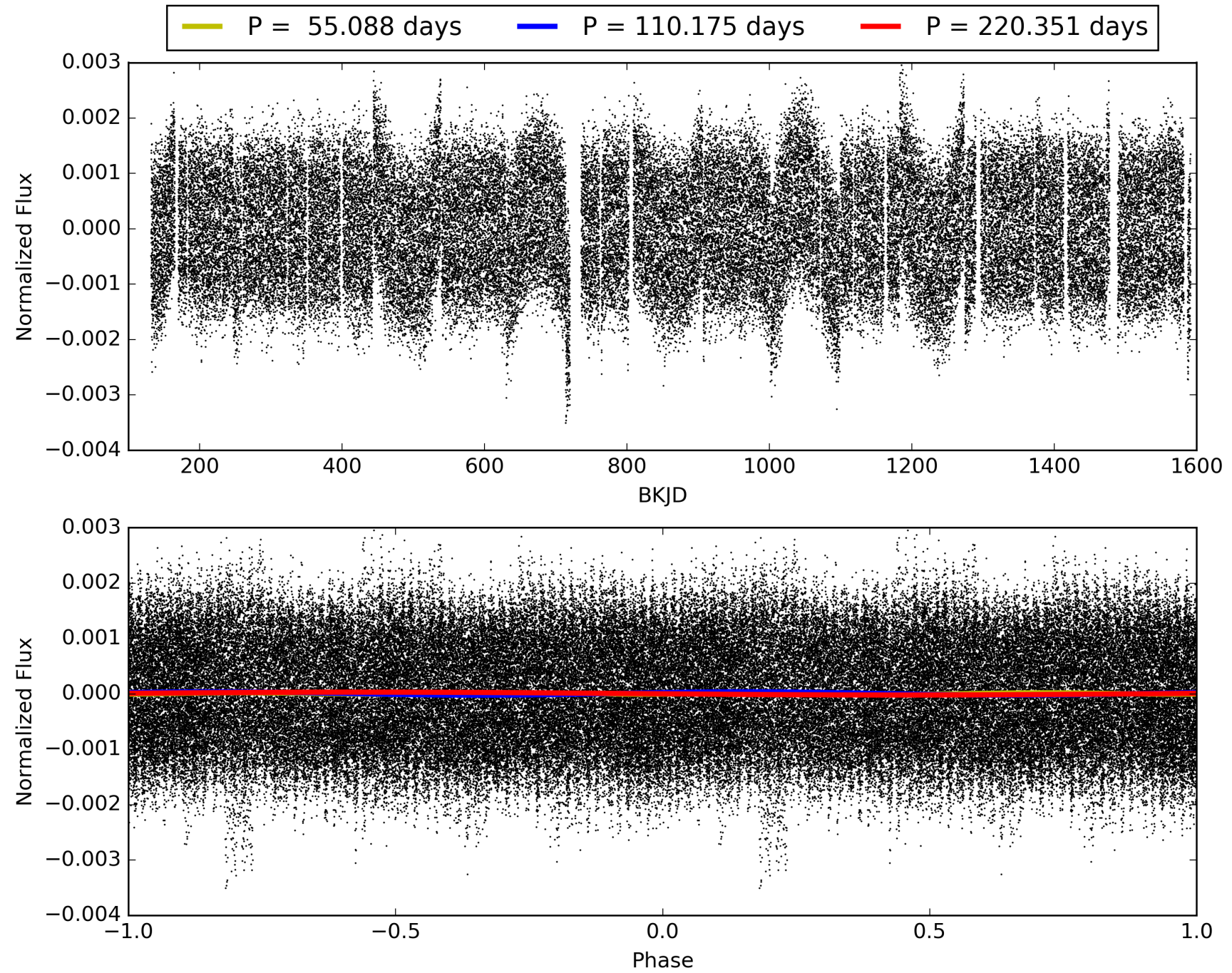
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:57:15 Z

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

TCE 002297728-03, PDC Light Curves

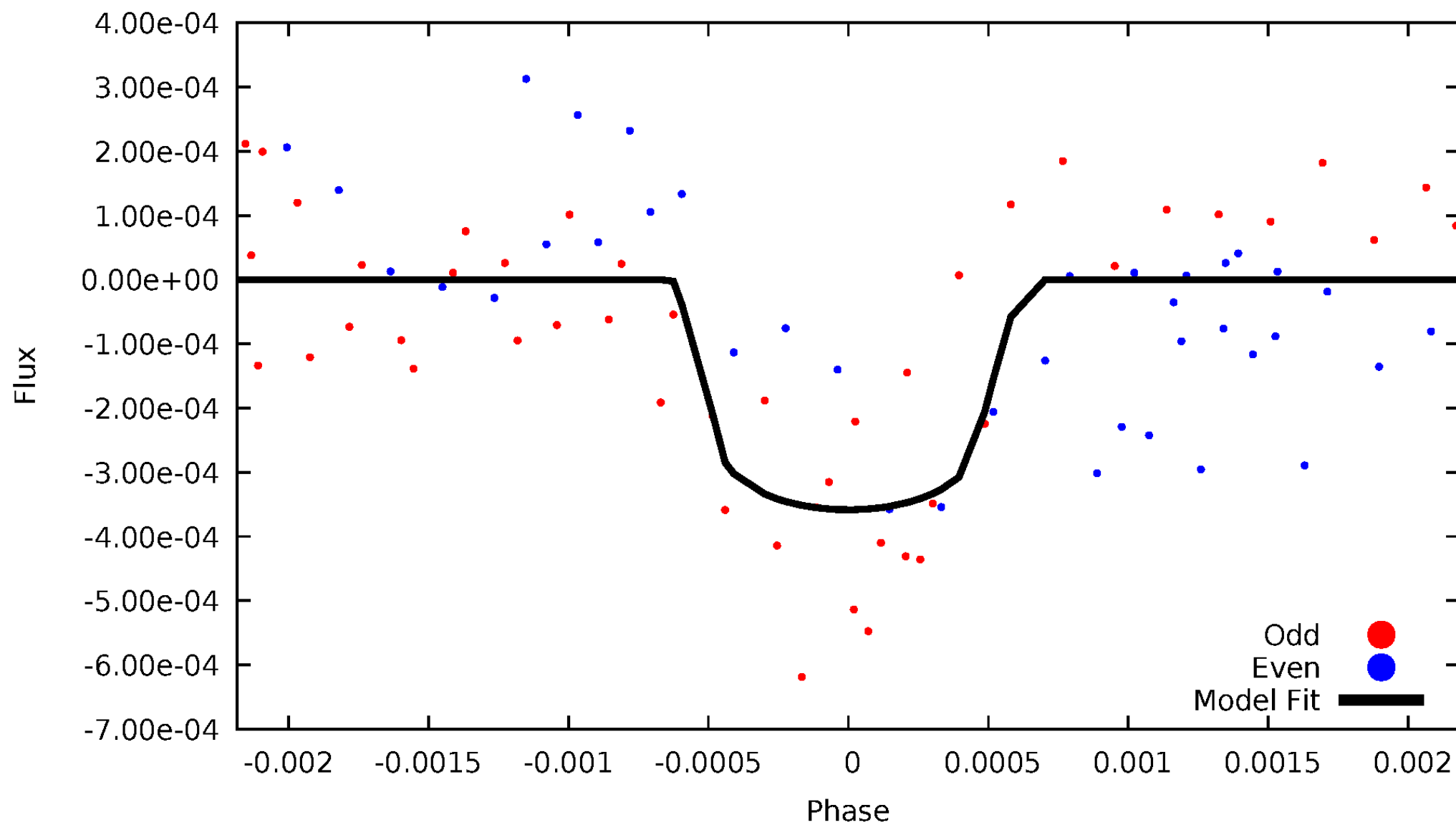


TCE 002297728-03



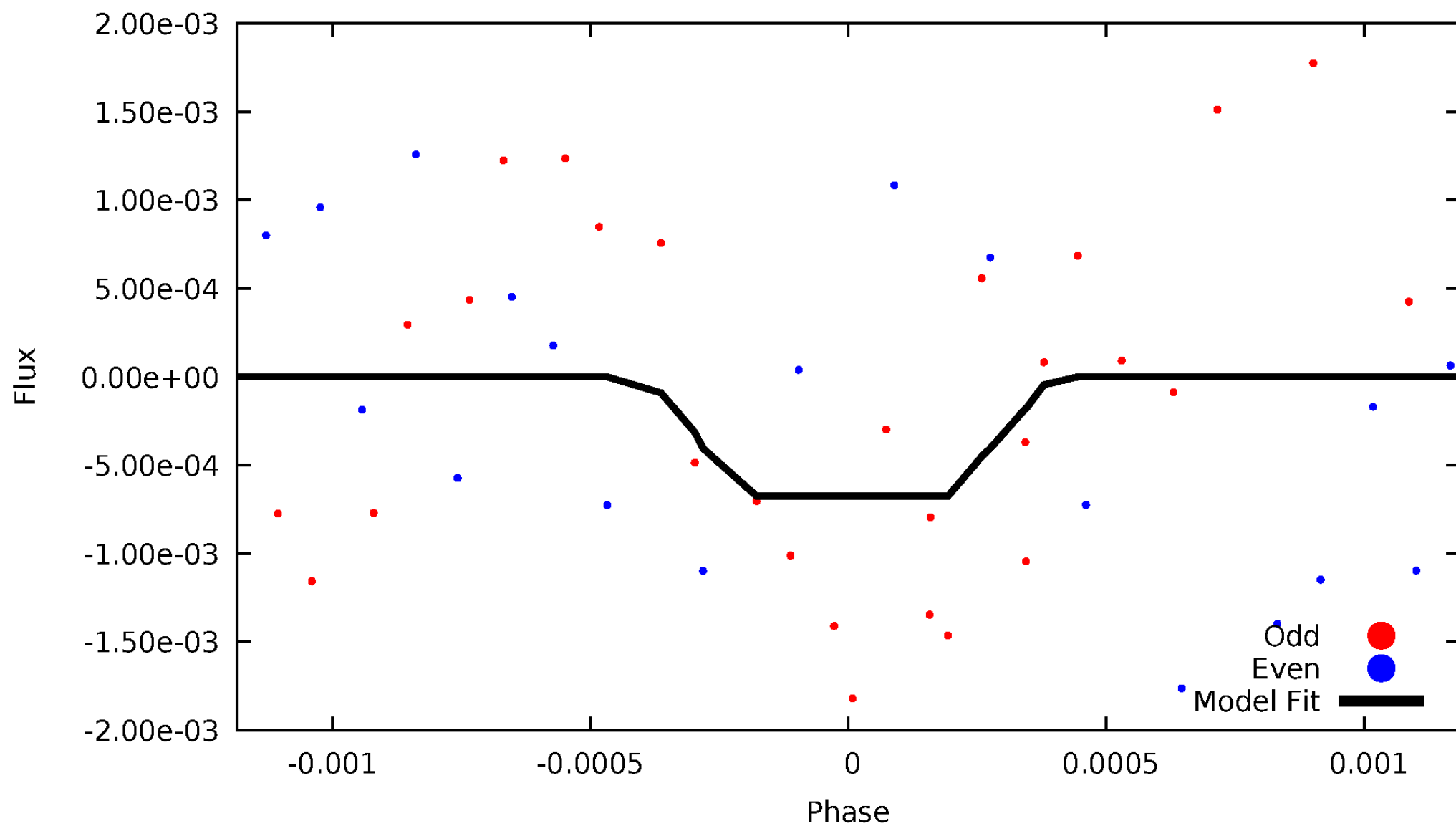
DV Odd/Even

TCE 002297728-03



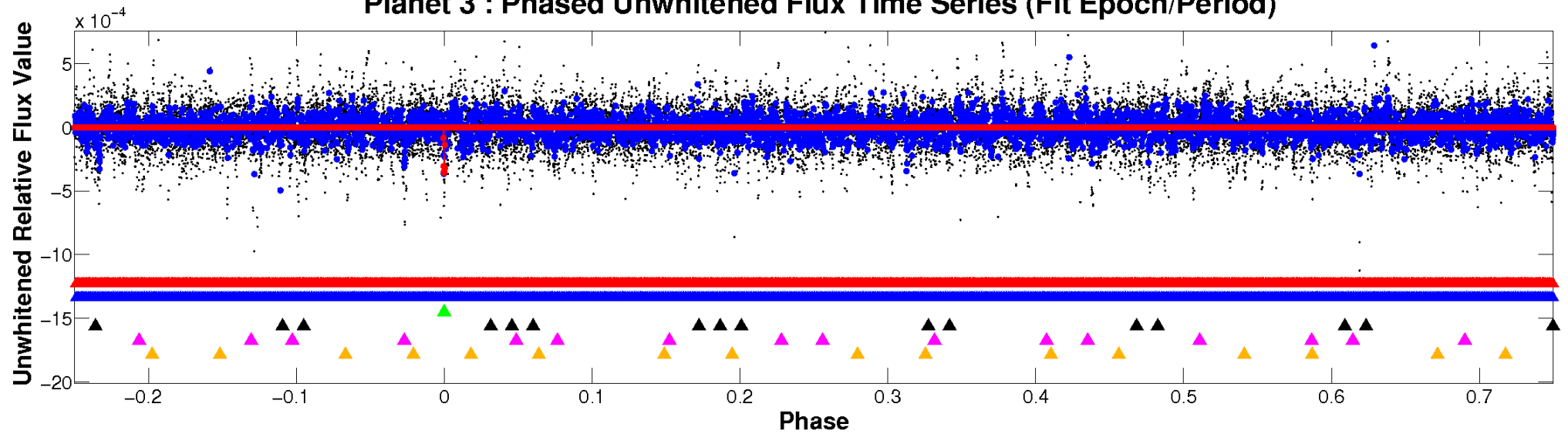
ALT Odd/Even

TCE 002297728-03

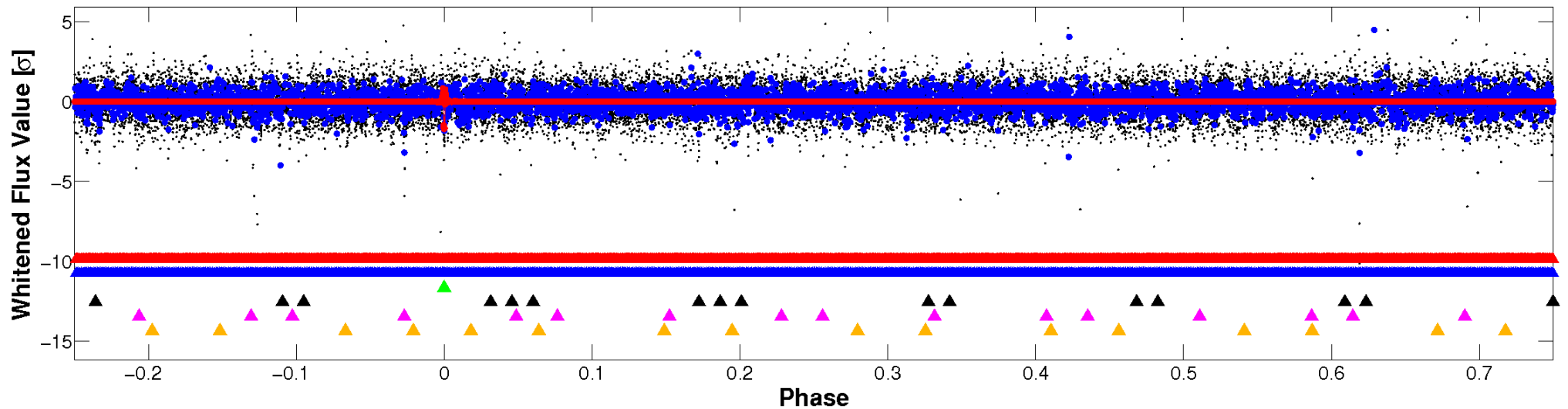


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

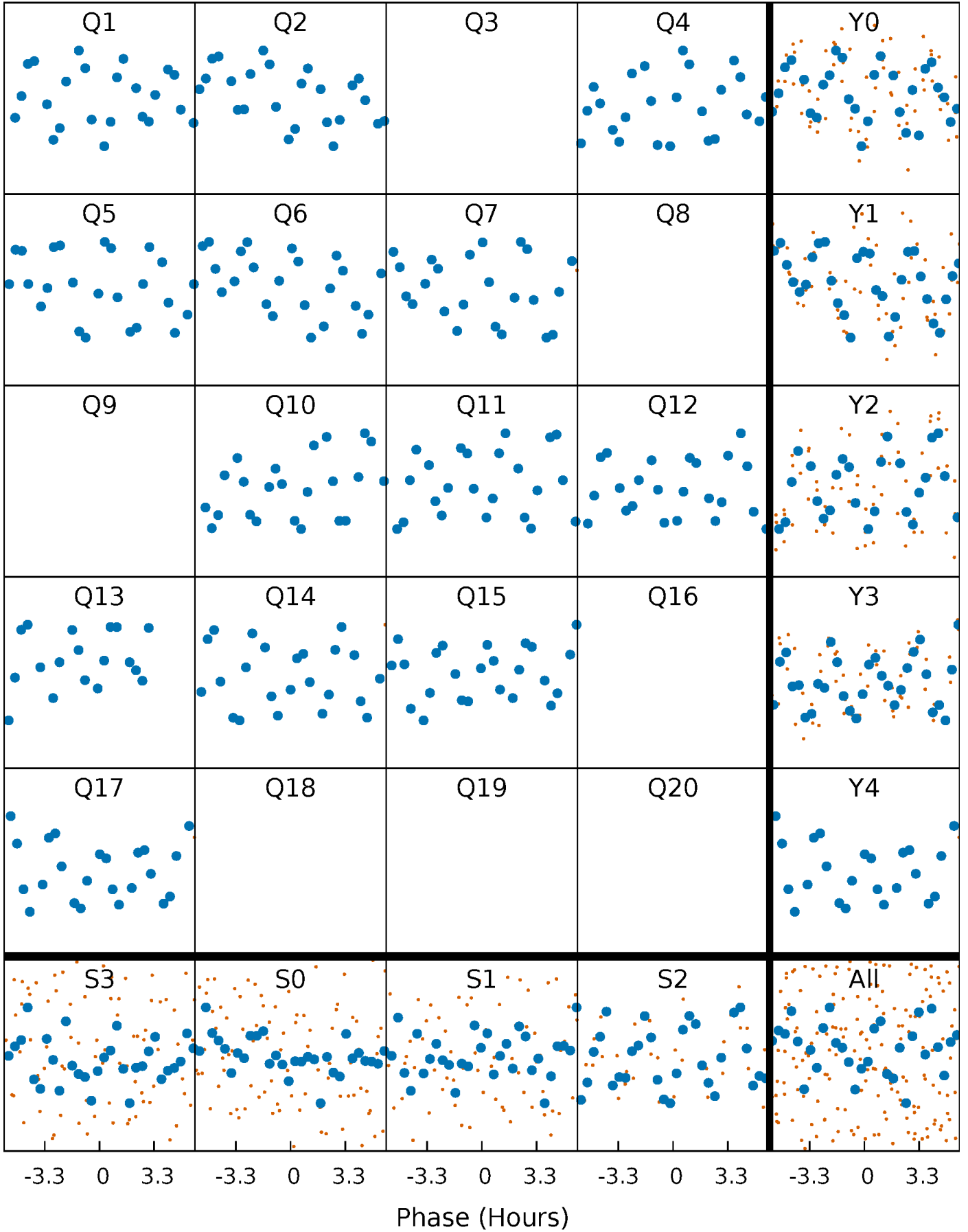


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



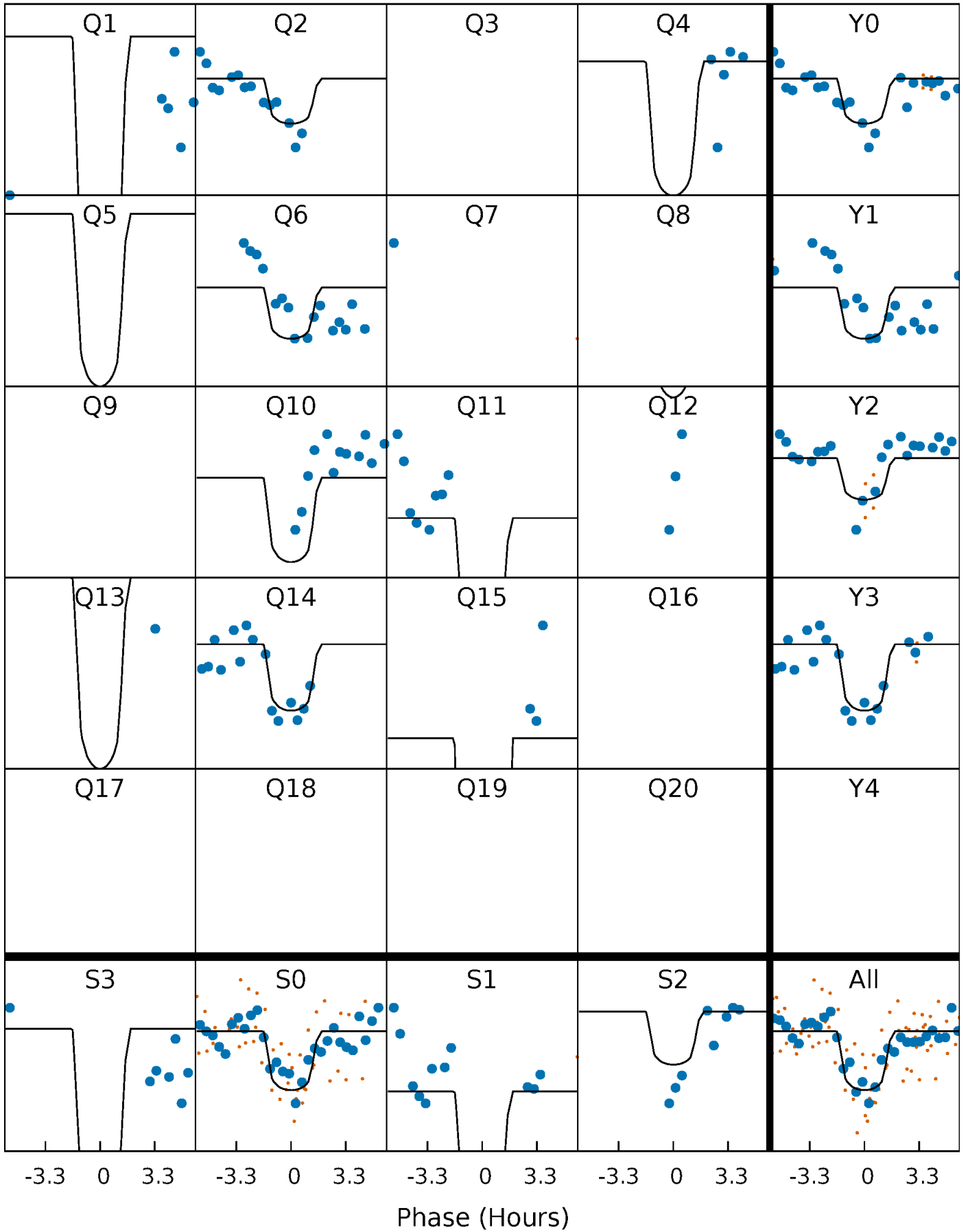
PDC Quarter-Phased Transit Curves

TCE 002297728-03 P=110.175471 Days $T_0=143.033181$ (BKJD)



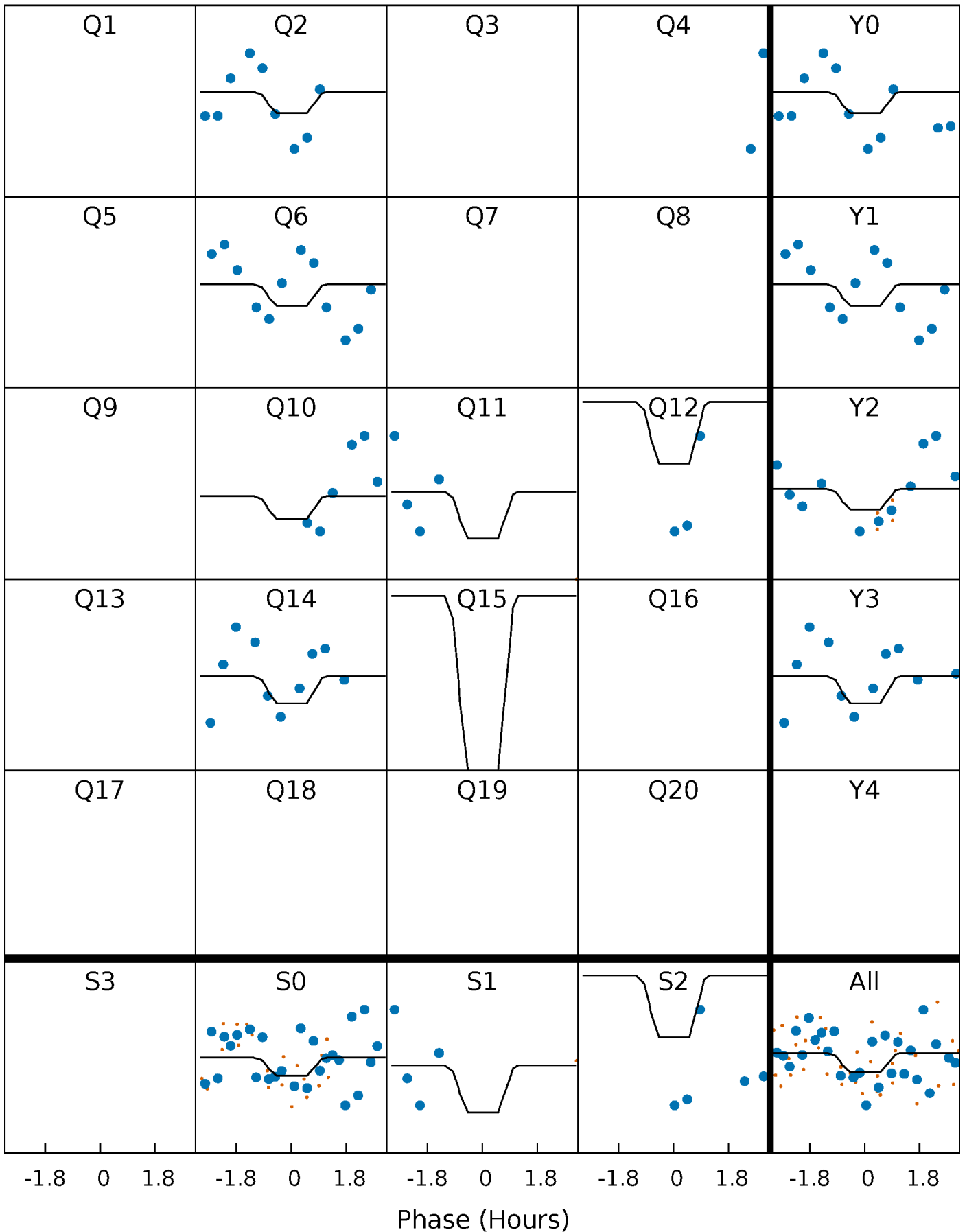
DV Quarter-Phased Transit Curves

TCE 002297728-03 P=110.175471 Days $T_0=143.033181$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

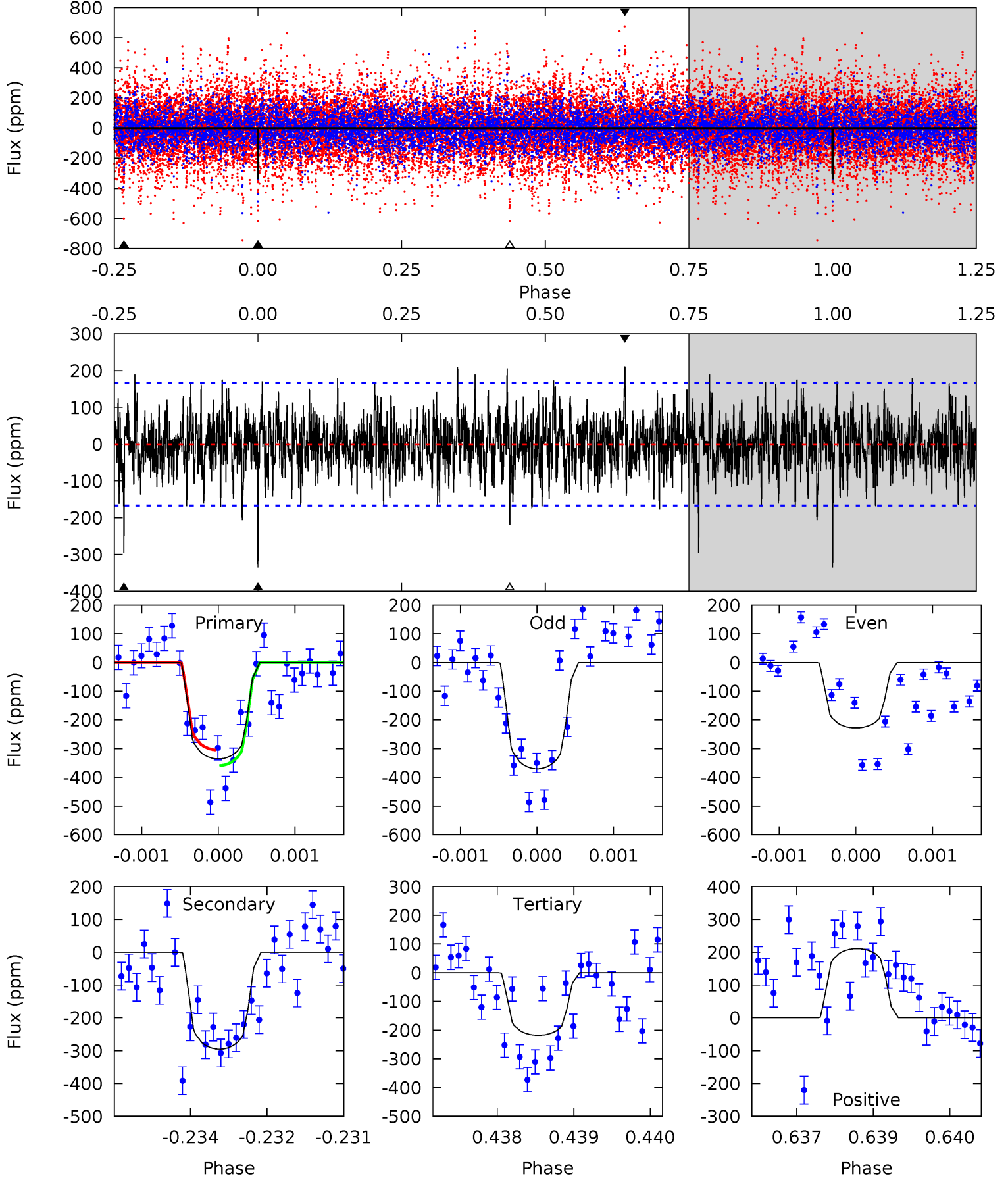
TCE 002297728-03 P=110.175242 Days $T_0=143.019996$ (BKJD)



DV Model-Shift Uniqueness Test

002297728-03, P = 110.175471 Days, E = 32.857710 Days

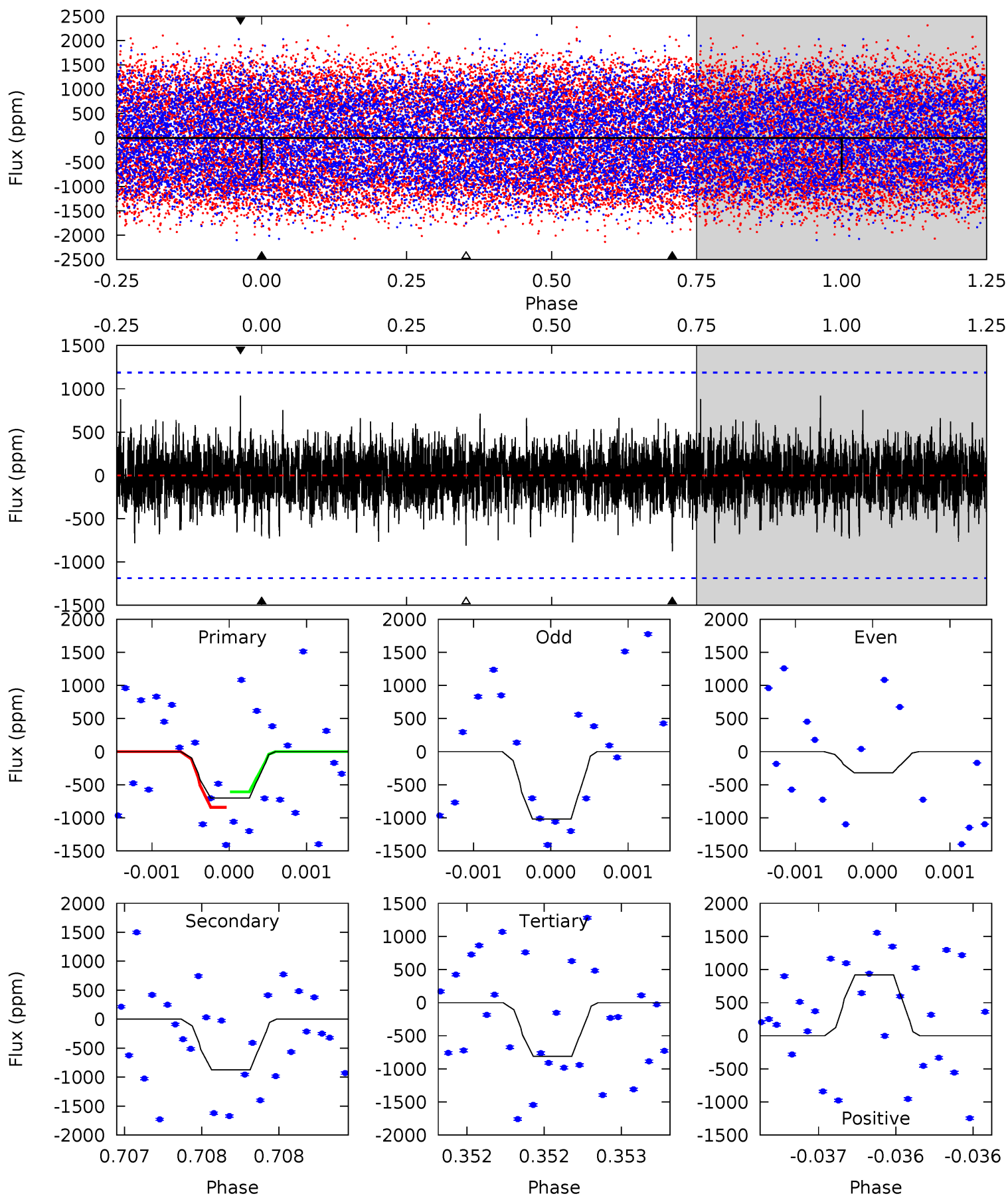
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	9.56	7.05	6.83	5.40	3.22	1.98	3.81	4.03	2.50	2.73	1.99	0.85	0.39	0.87



Alt Model-Shift Uniqueness Test

002297728-03, P = 110.175242 Days, E = 32.844754 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.26	4.06	3.76	4.27	5.50	3.37	1.08	-0.50	-1.01	0.30	-0.21	1.40	0.76	0.51	0.52



Stellar Parameters For KIC 002297728

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6634^{+151}_{-184}	$4.164^{+0.204}_{-0.167}$	$-0.360^{+0.250}_{-0.300}$	$1.459^{+0.423}_{-0.346}$	$1.131^{+0.181}_{-0.131}$	$0.513^{+0.520}_{-0.242}$
	+2%/-3%	+5%/-4%	+69%/-83%	+29%/-24%	+16%/-12%	+101%/-47%
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 002297728-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-295 ± 31	$3.20^{+2.74}_{-2.00}$	717^{+56}_{-51}	6025^{+4931}_{-1329}	3473^{+21547}_{-2458}
Alt.	-875 ± 216	$4.62^{+2.72}_{-2.76}$	717^{+54}_{-51}	6717^{+4778}_{-1435}	4993^{+24359}_{-3159}

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

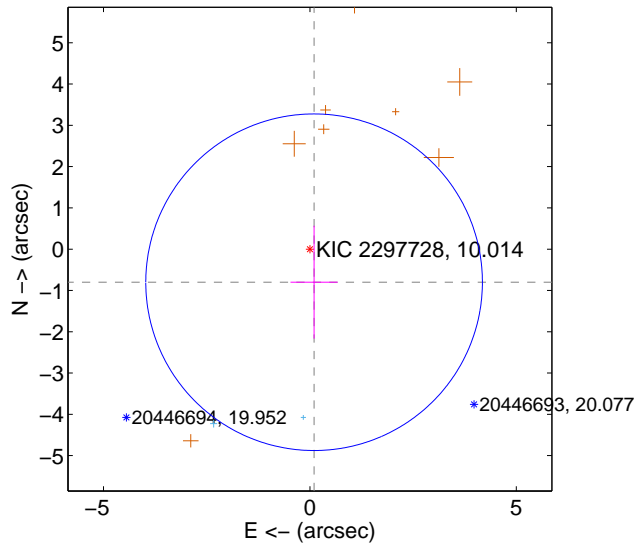
Supplemental centroid analysis for 002297728-03. **Kepler magnitude: 10.01.** Transit SNR 7.87

There are 2 quarters with good PRF difference image offsets

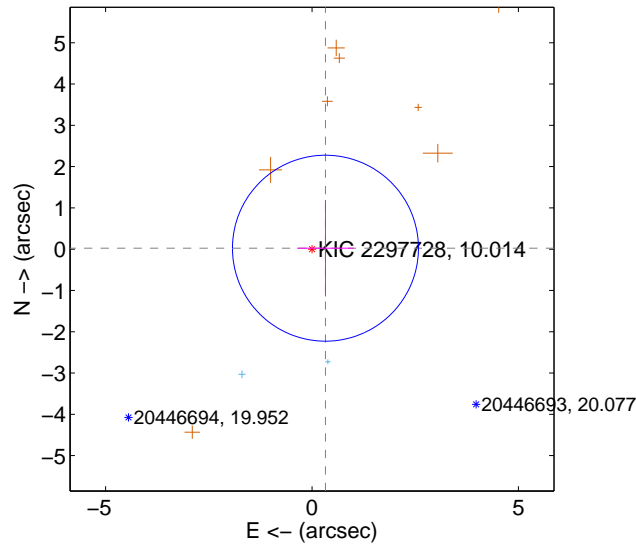
The direct PRF centroid is offset from the target star catalog position by about 0.89 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.807 ± 1.359	0.59	-0.101 ± 0.571	-0.801 ± 1.368
PRF-fit source offset from KIC position	0.327 ± 0.751	0.44	-0.326 ± 0.687	0.023 ± 1.169
photometric centroid source offset	1.07 ± 0.47	2.26	0.23 ± 0.33	1.05 ± 0.48

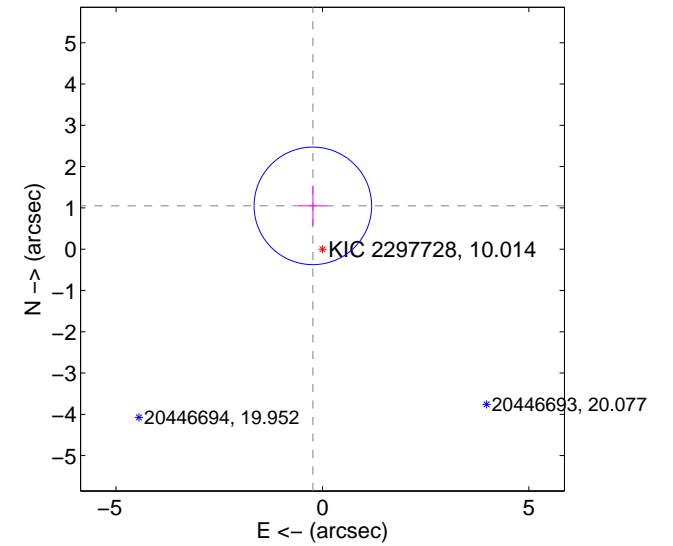
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

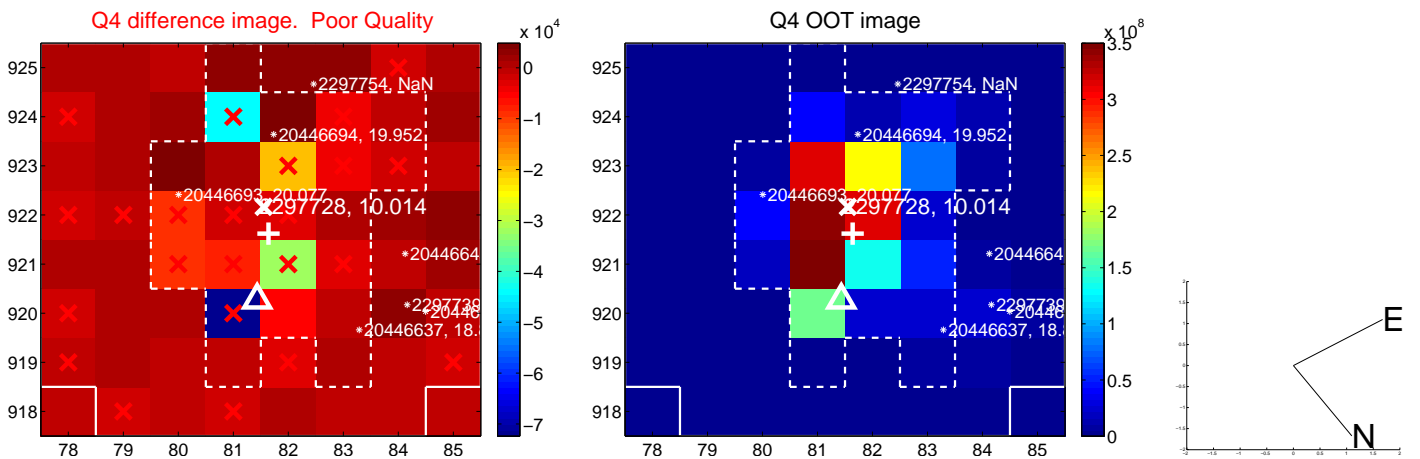
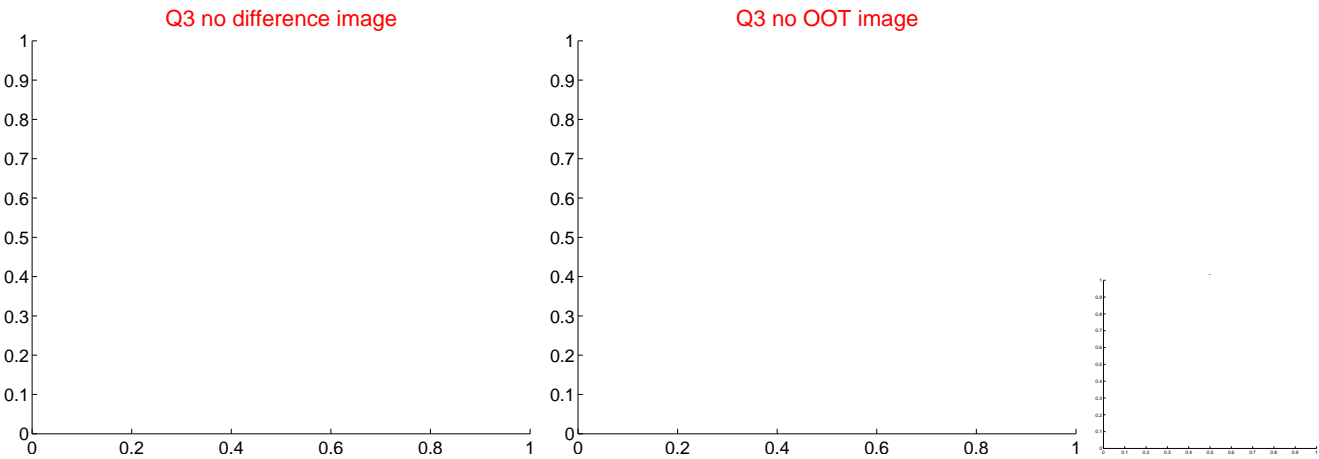
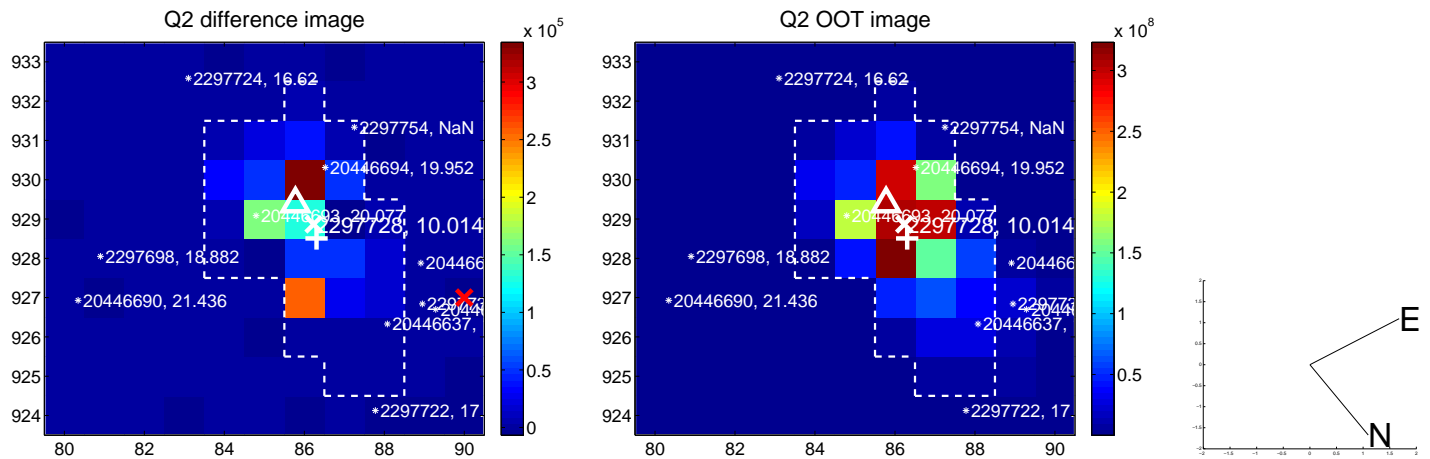
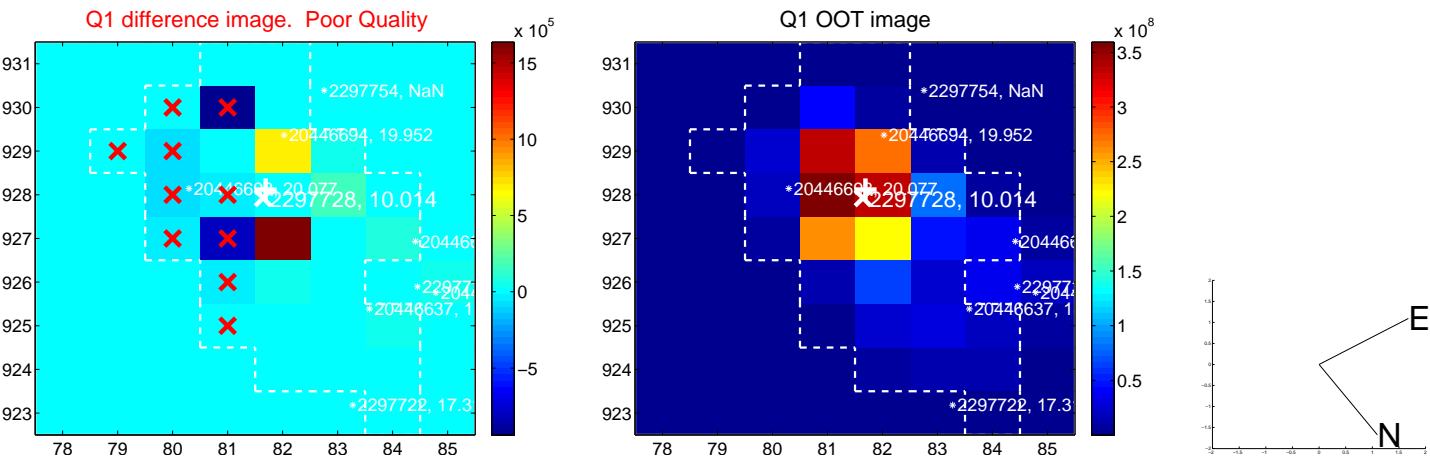


offset from photometric centroids

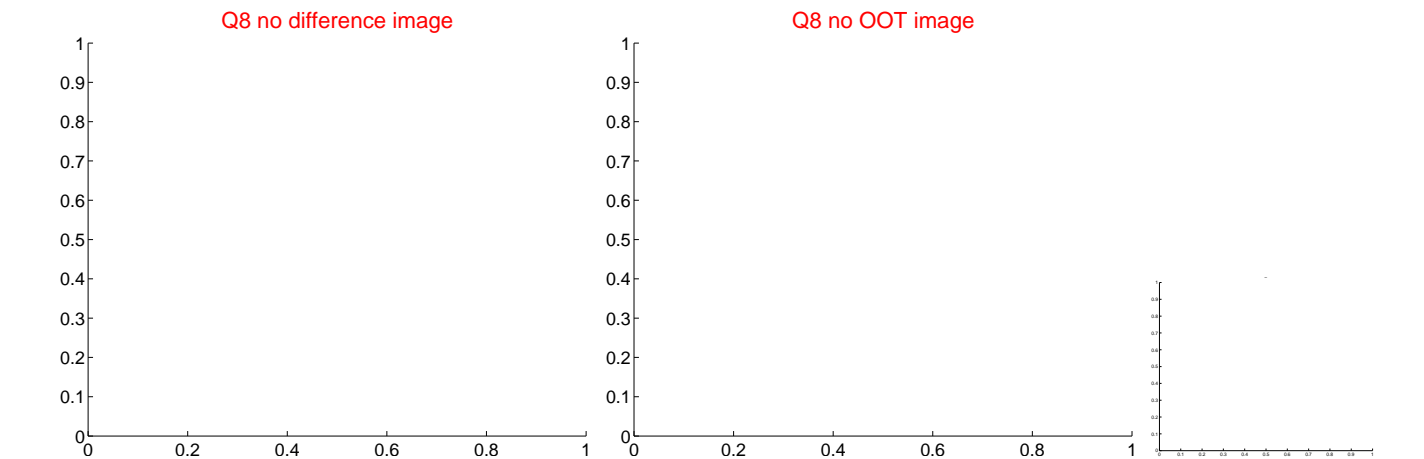
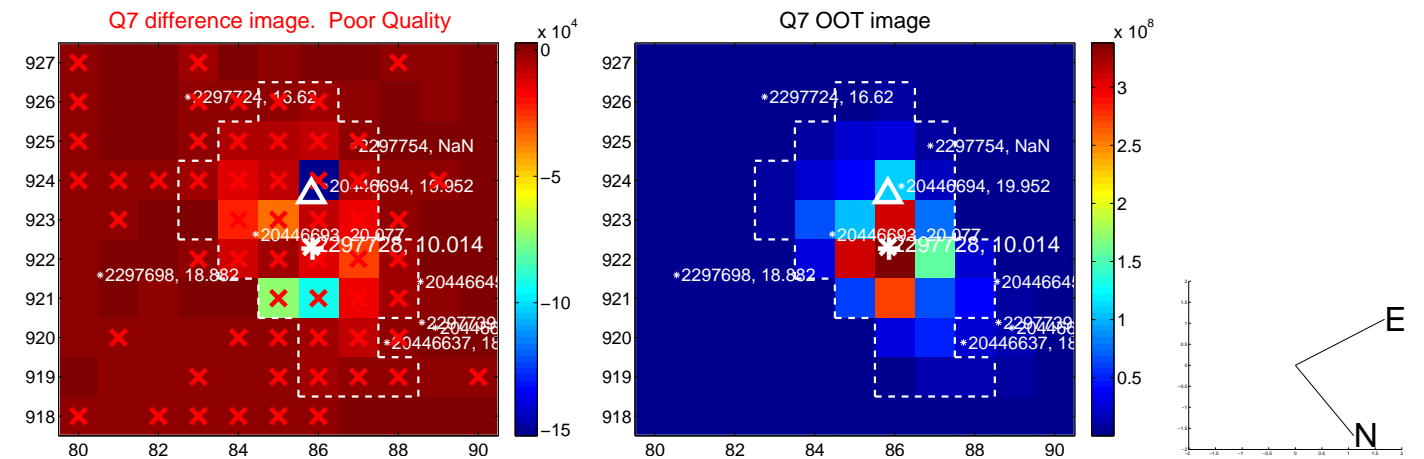
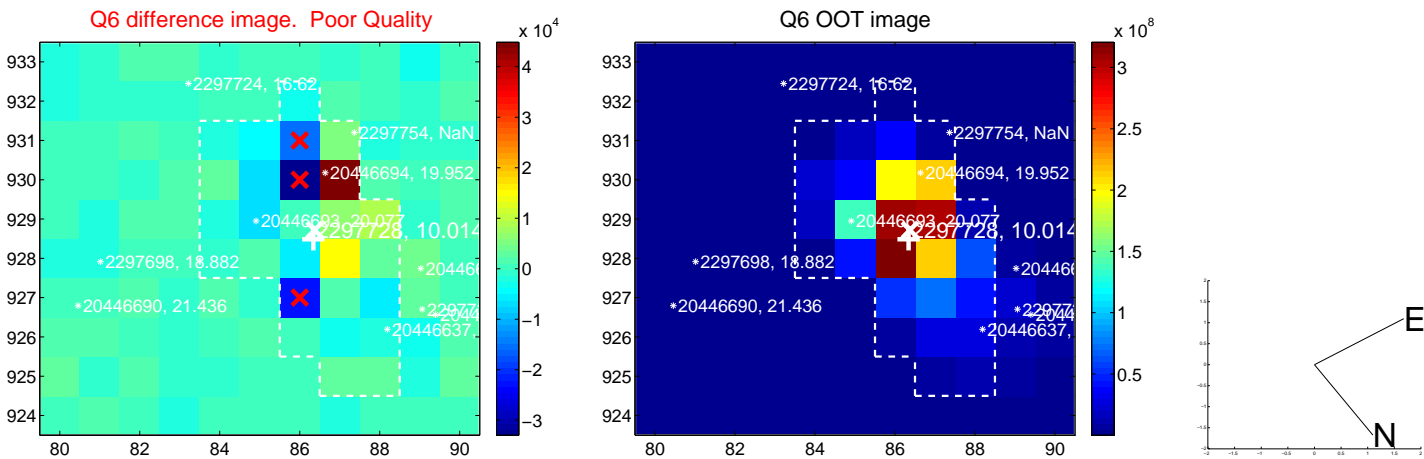
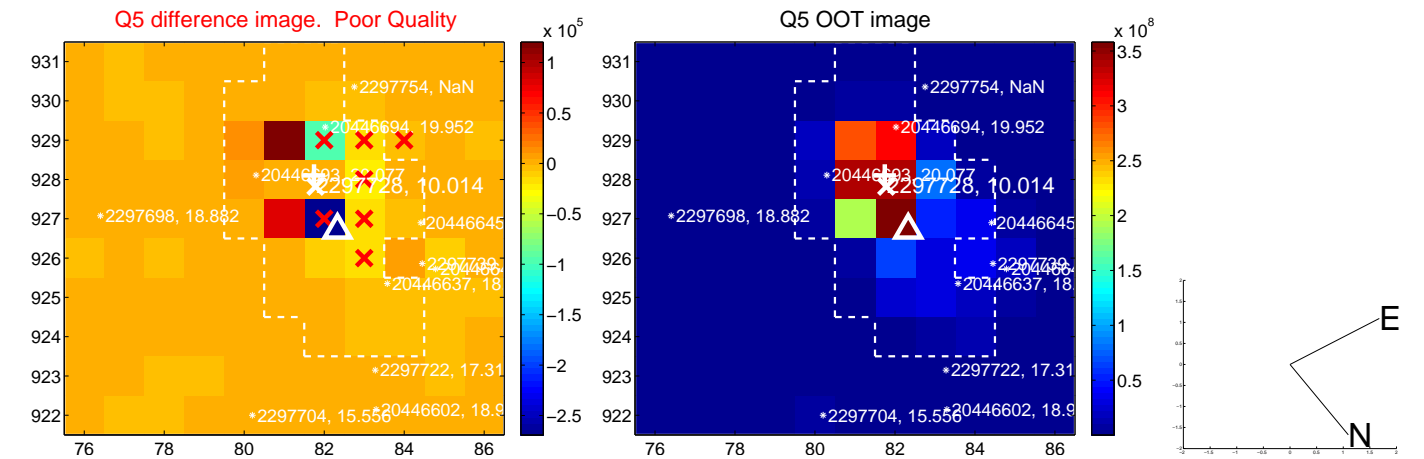


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

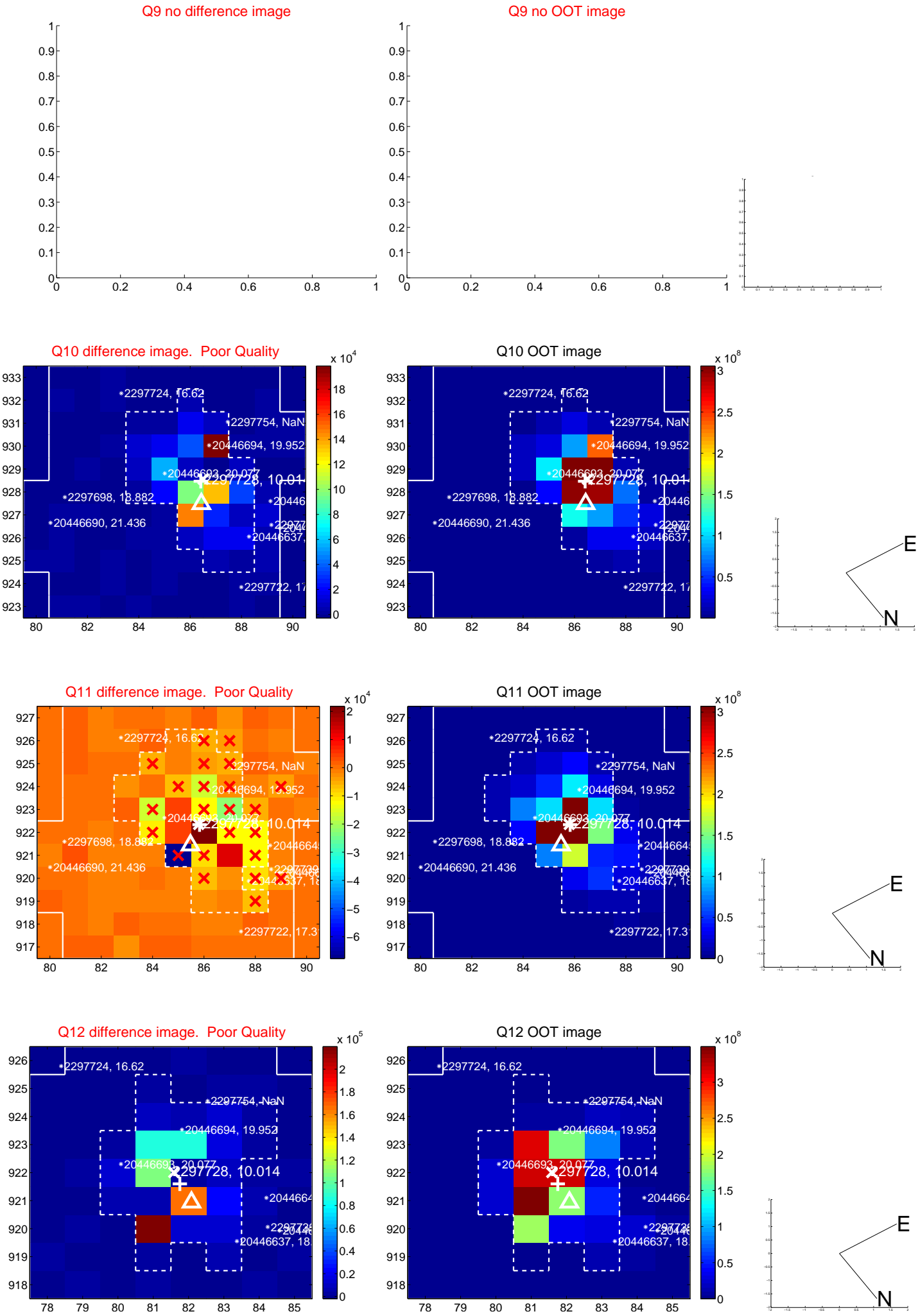
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



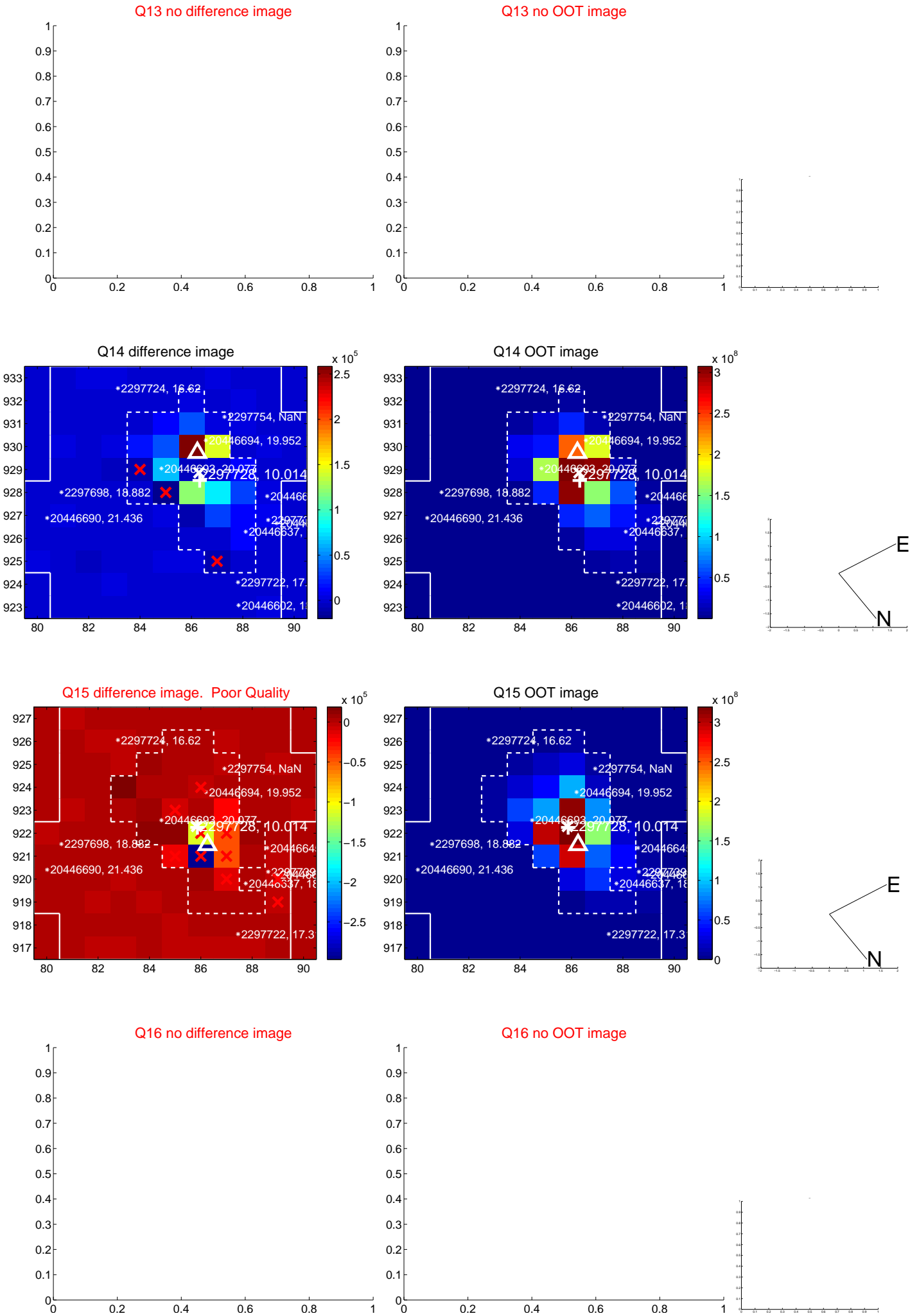
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



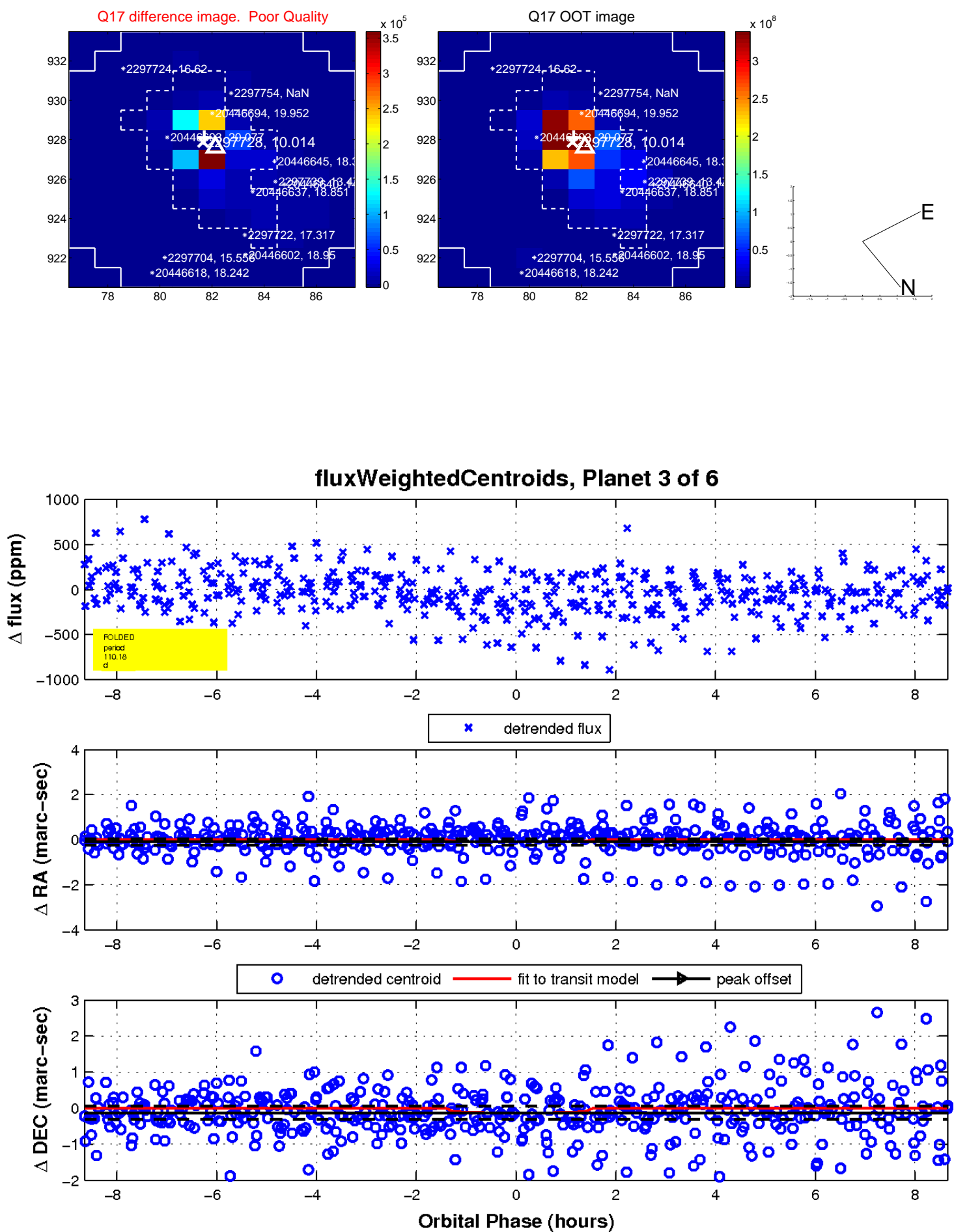
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



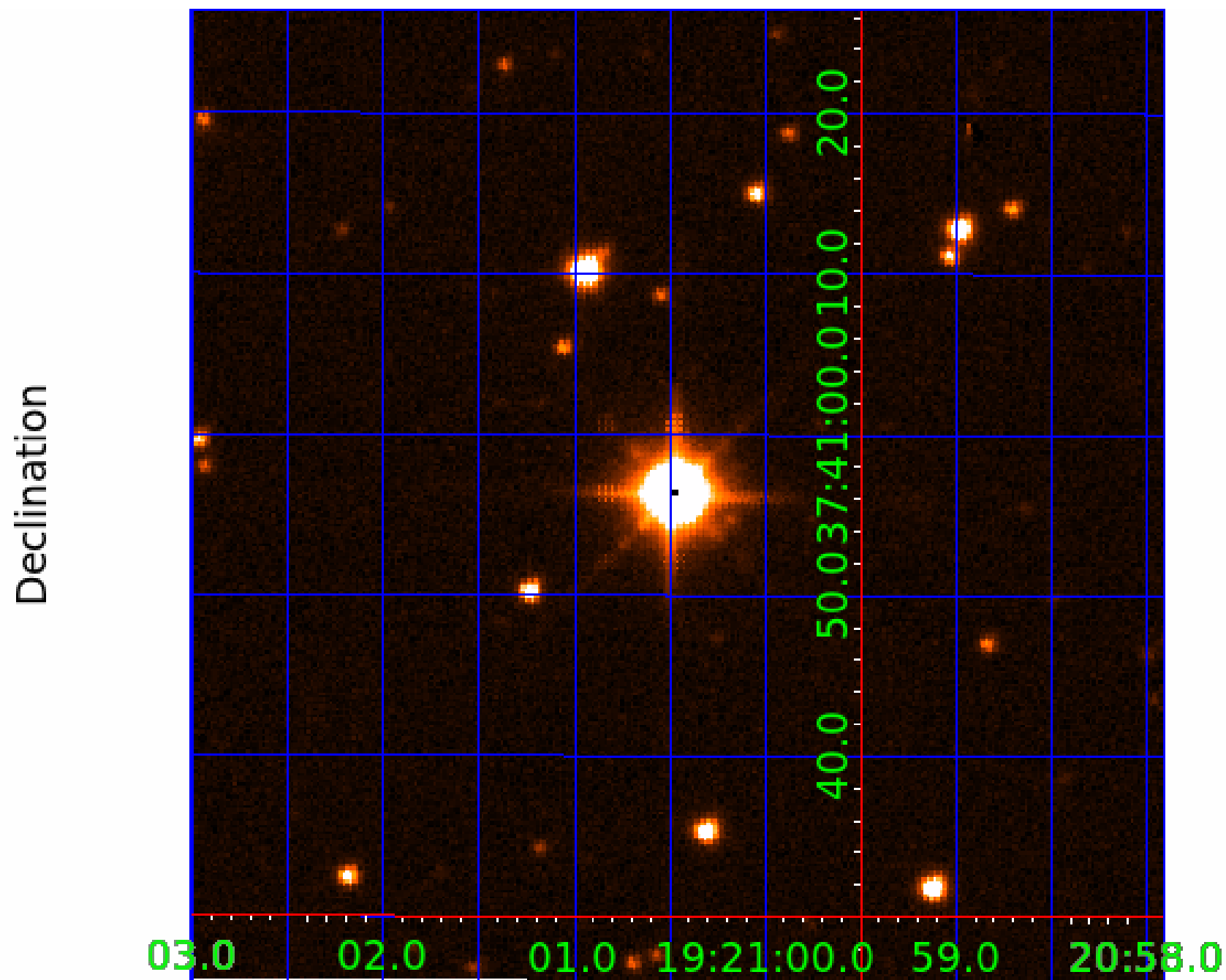
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002297728

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})
002297728-01	OBS	No	1.338740	131.643185	31.9	3.333	9.2	9.8	1.46	6634	0.97	6013.19
002297728-02	OBS	No	1.338685	132.216335	25.5	3.688	9.2	8.4	1.46	6634	0.90	6013.52
002297728-03	OBS	No	110.175471	143.033181	358.2	2.886	8.6	7.9	1.46	6634	2.82	16.80
002297728-04	OBS	No	94.661689	162.017145	326.7	2.504	8.7	7.4	1.46	6634	5.09	20.57
002297728-05	OBS	No	90.422407	207.664905	313.1	3.533	8.2	7.3	1.46	6634	5.03	21.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002297728-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
002297728-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
002297728-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

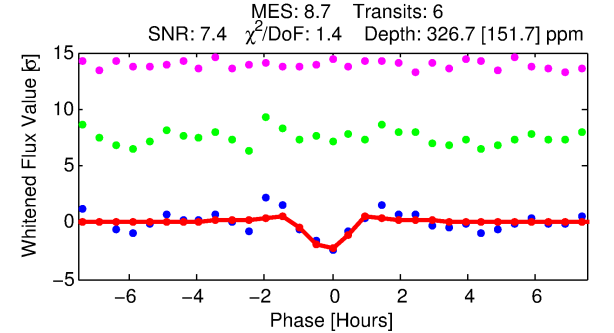
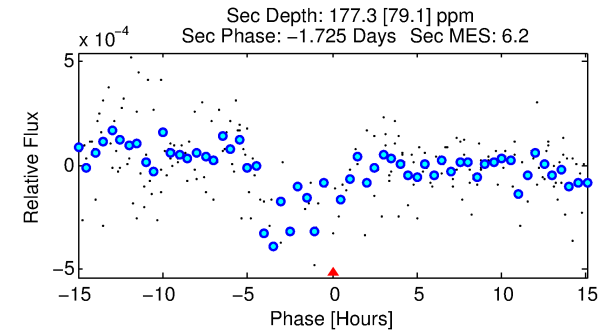
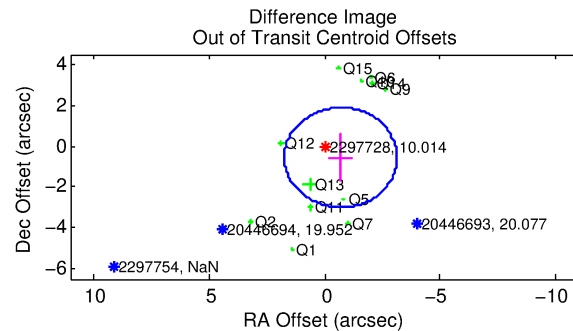
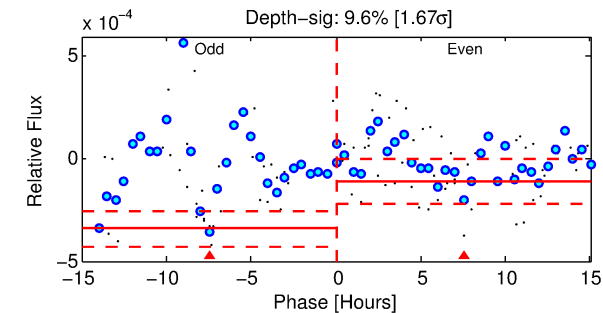
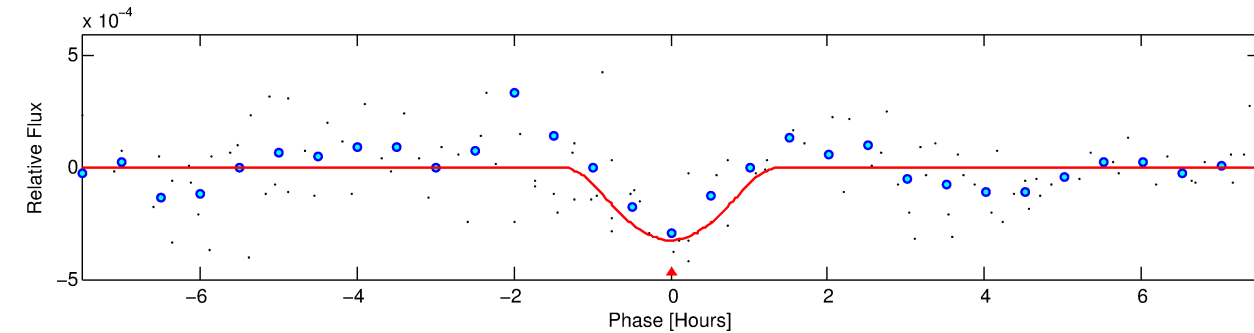
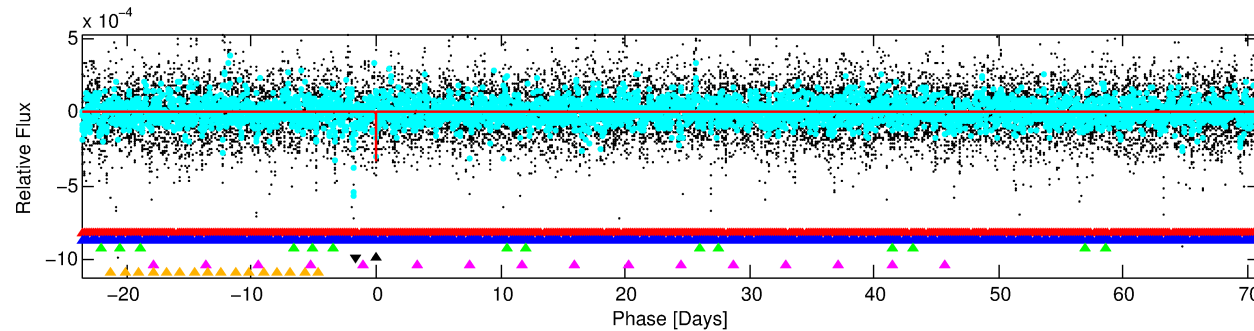
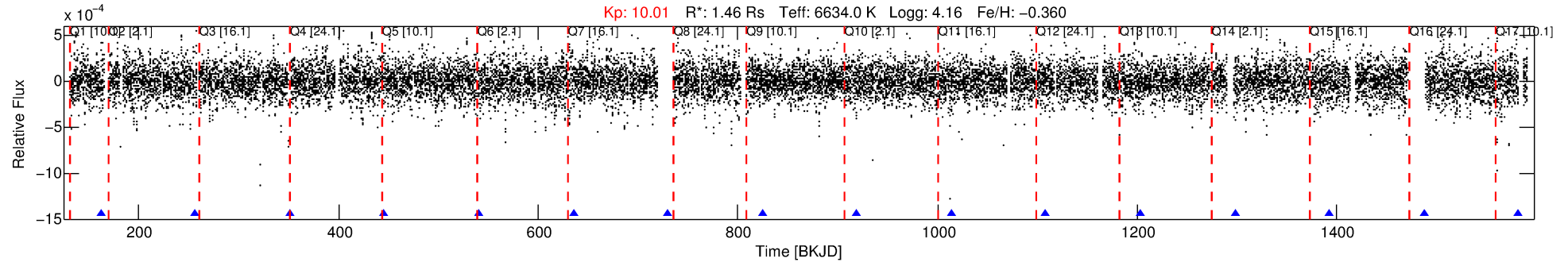
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002297728-04

No Significant Match Found

DV One-Page Summary

KIC: 2297728 Candidate: 4 of 6 Period: 94.662 d



DV Fit Results:

Period = 94.66169 [0.00112] d
Epoch = 162.0171 [0.0089] BKJD
 $R_p/R^* = 0.0320$ [0.1800]
 $a/R^* = 74.30$ [115.42]
 $b = 1.00$ [0.27]
 $S_{\text{eff}} = 20.57$ [7.90]
 $T_{\text{eq}} = 543$ [52] K
 $R_p = 5.09$ [28.70] R_e
 $a = 0.4238$ [0.1054] AU
 $A_g = 676.03$ [7623.20] [0.09 σ]
 $T_{\text{eff}} = 4281$ [12063] K [0.31 σ]

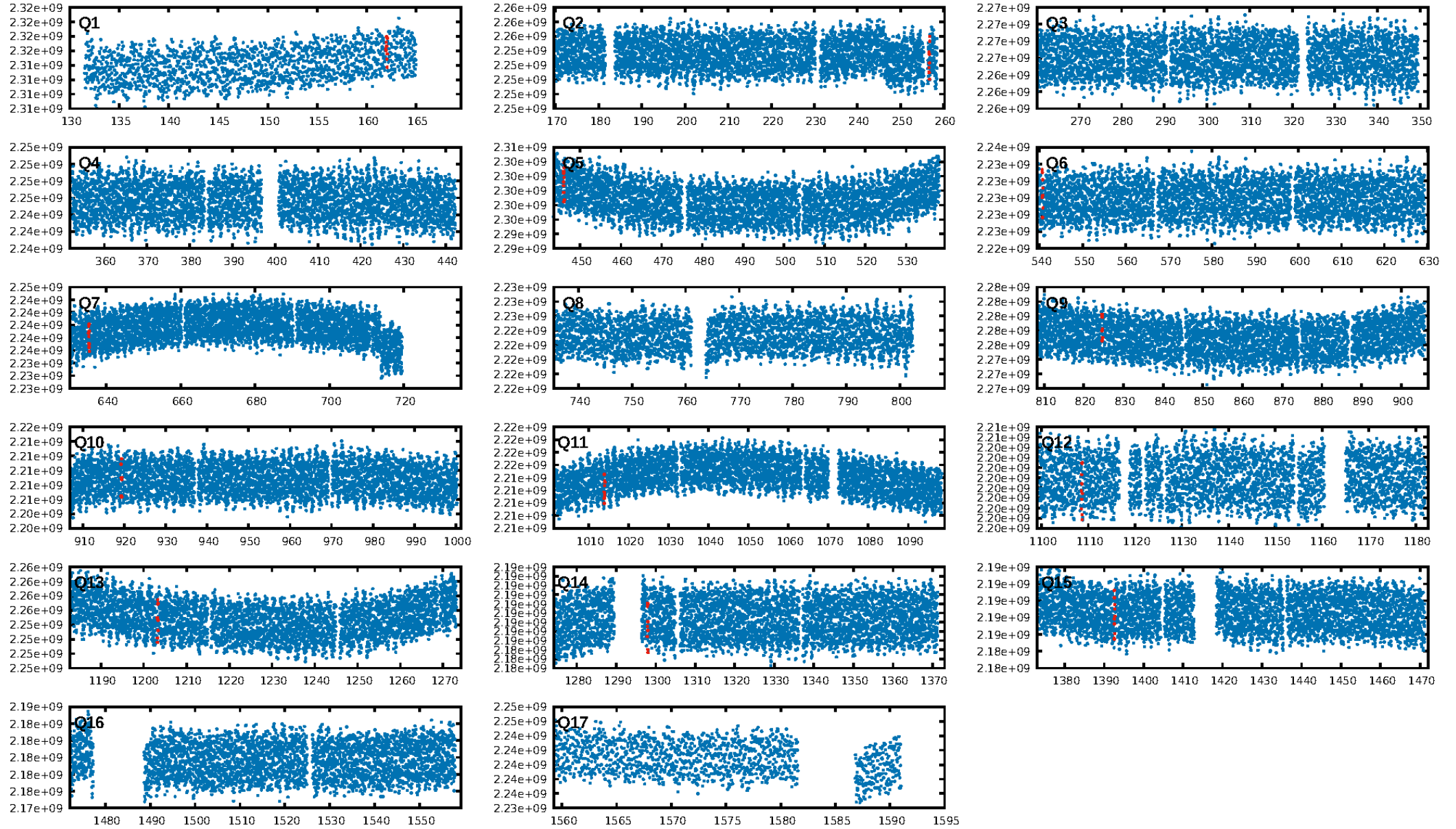
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.50 σ]
LongPeriod-sig: 48.3% [0.65 σ]
ModelChiSquare2-sig: 30.4%
ModelChiSquareGof-sig: 88.0%
Bootstrap-pfa: 1.30e-11
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 1.451 arcsec [1.85 σ]
OotOffset-rm: 0.886 arcsec [1.09 σ]
KicOffset-rm: 0.894 arcsec [0.93 σ]
OotOffset-st: 4/3/1/4 [12]
KicOffset-st: 4/3/1/4 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 0.00 [0/12]

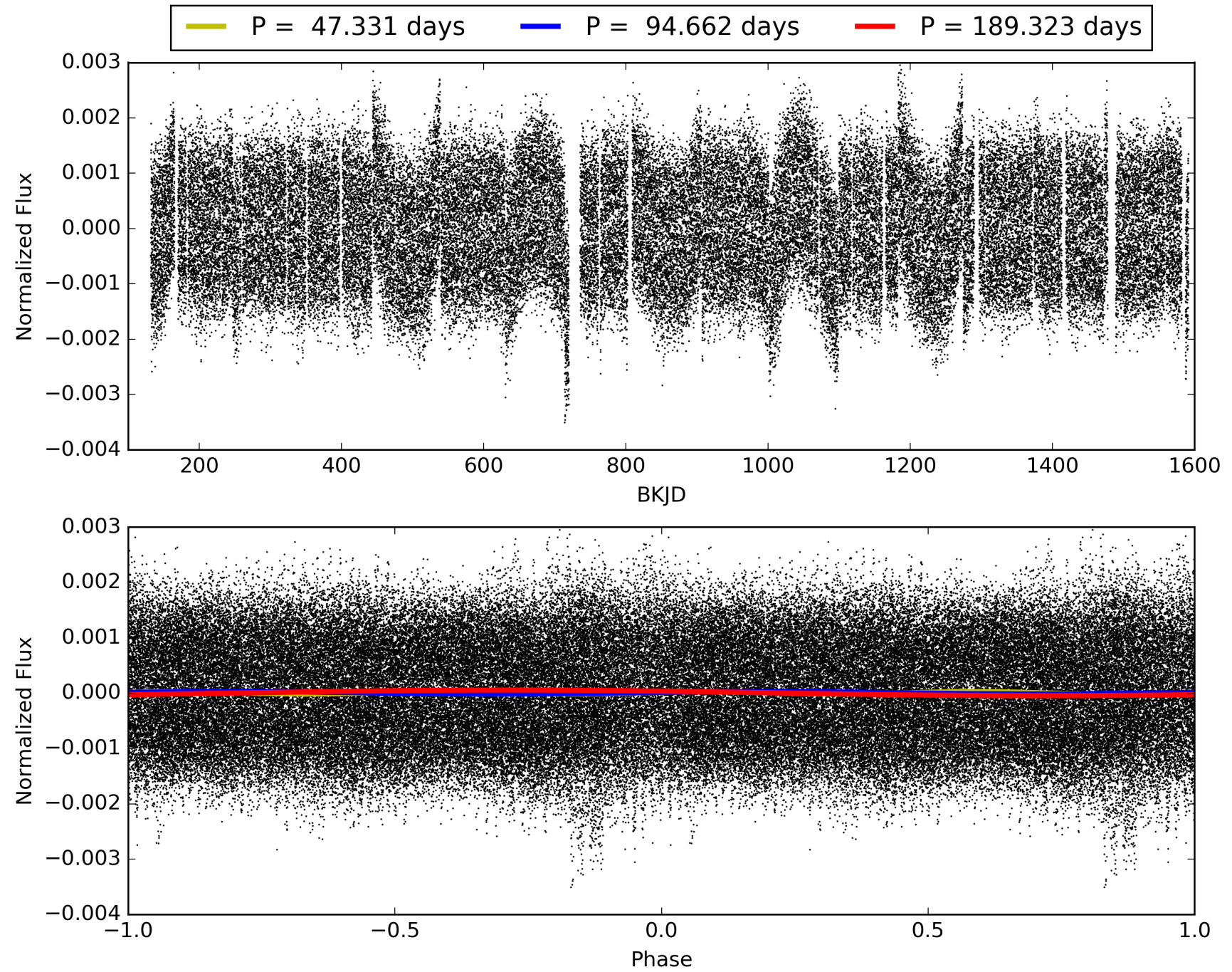
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 002297728-04, PDC Light Curves

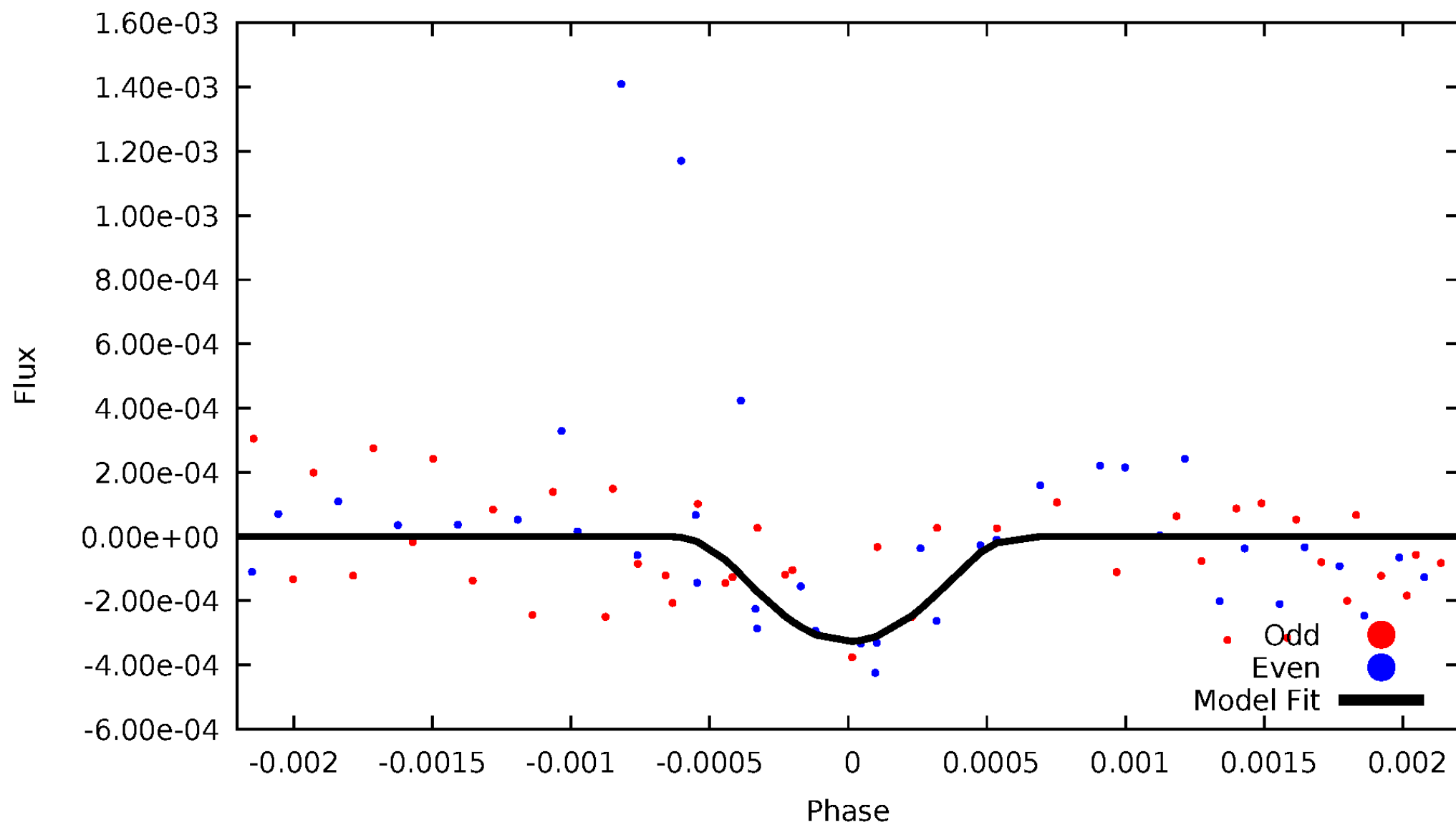


TCE 002297728-04



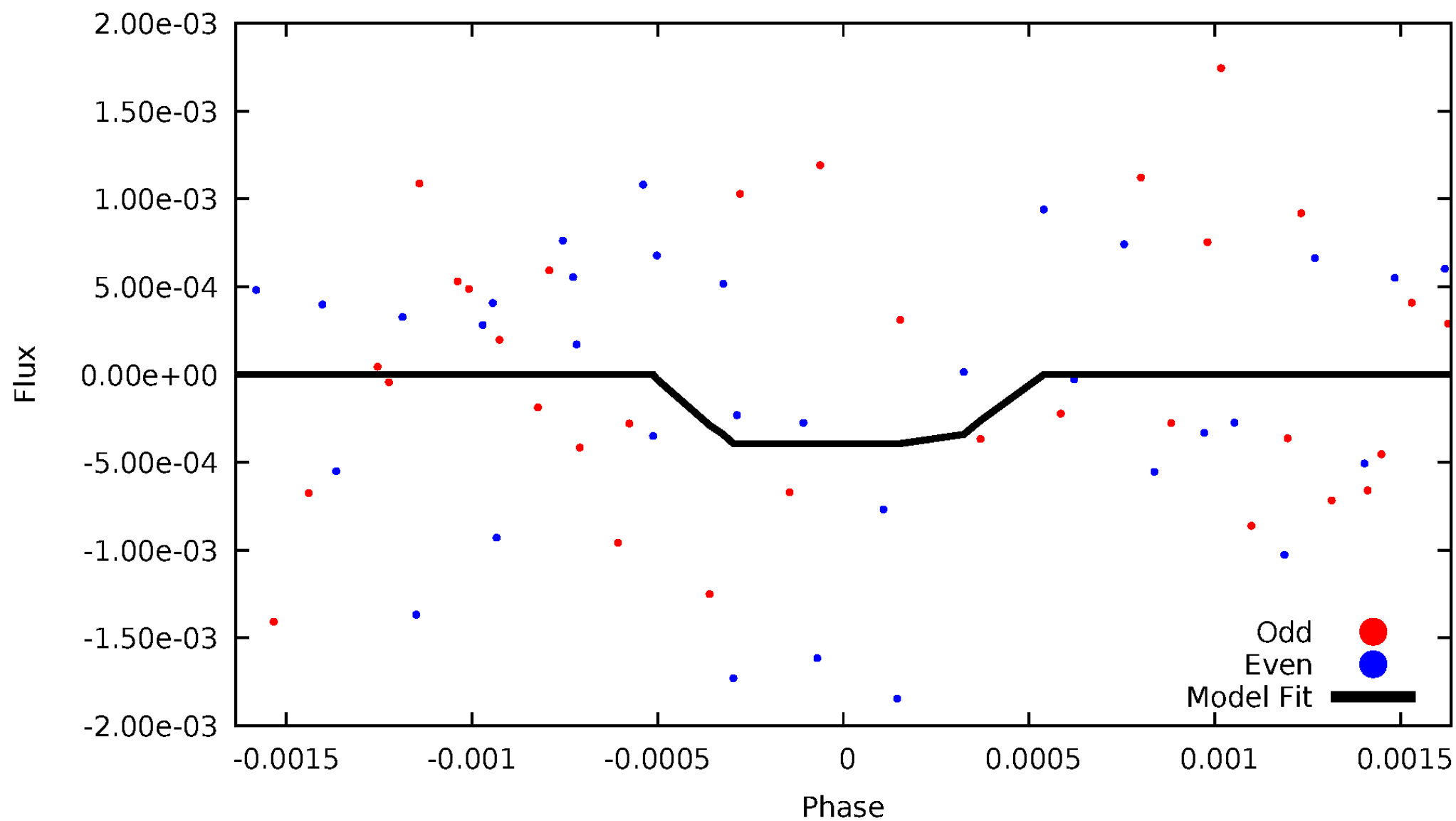
DV Odd/Even

TCE 002297728-04



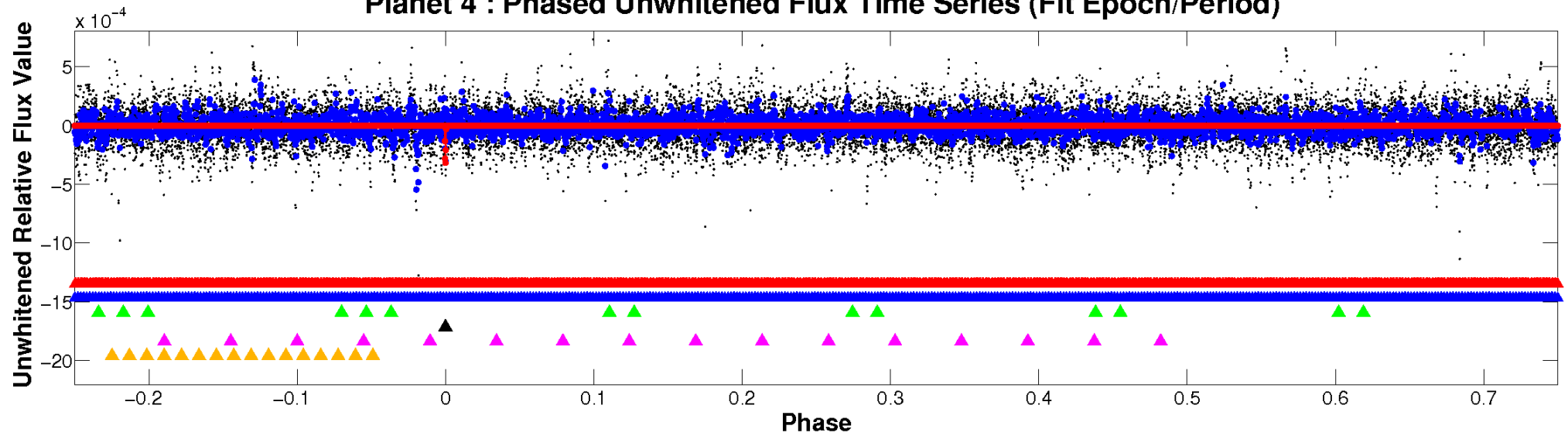
ALT Odd/Even

TCE 002297728-04

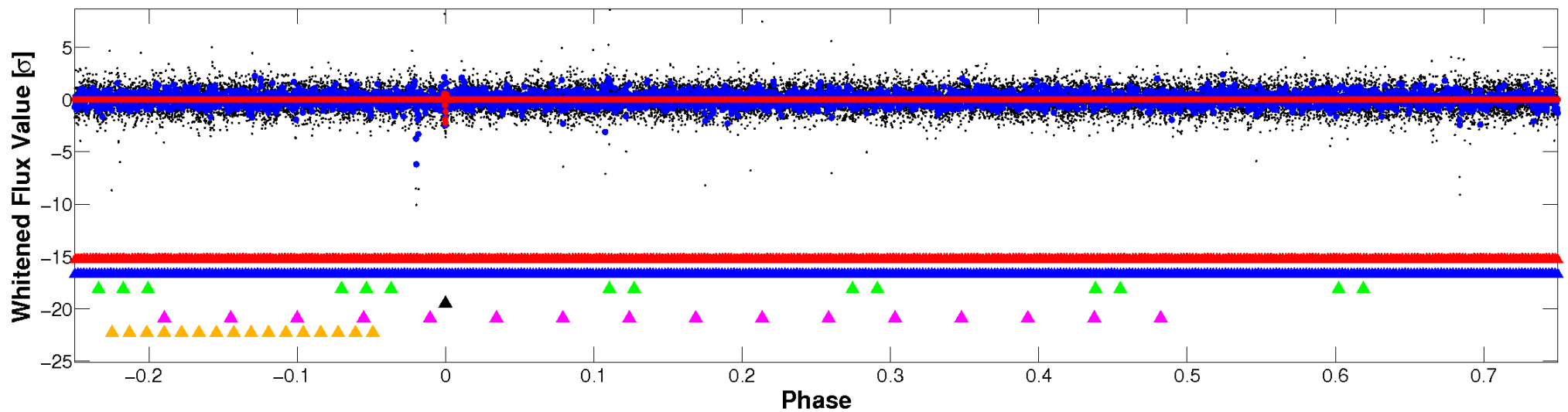


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

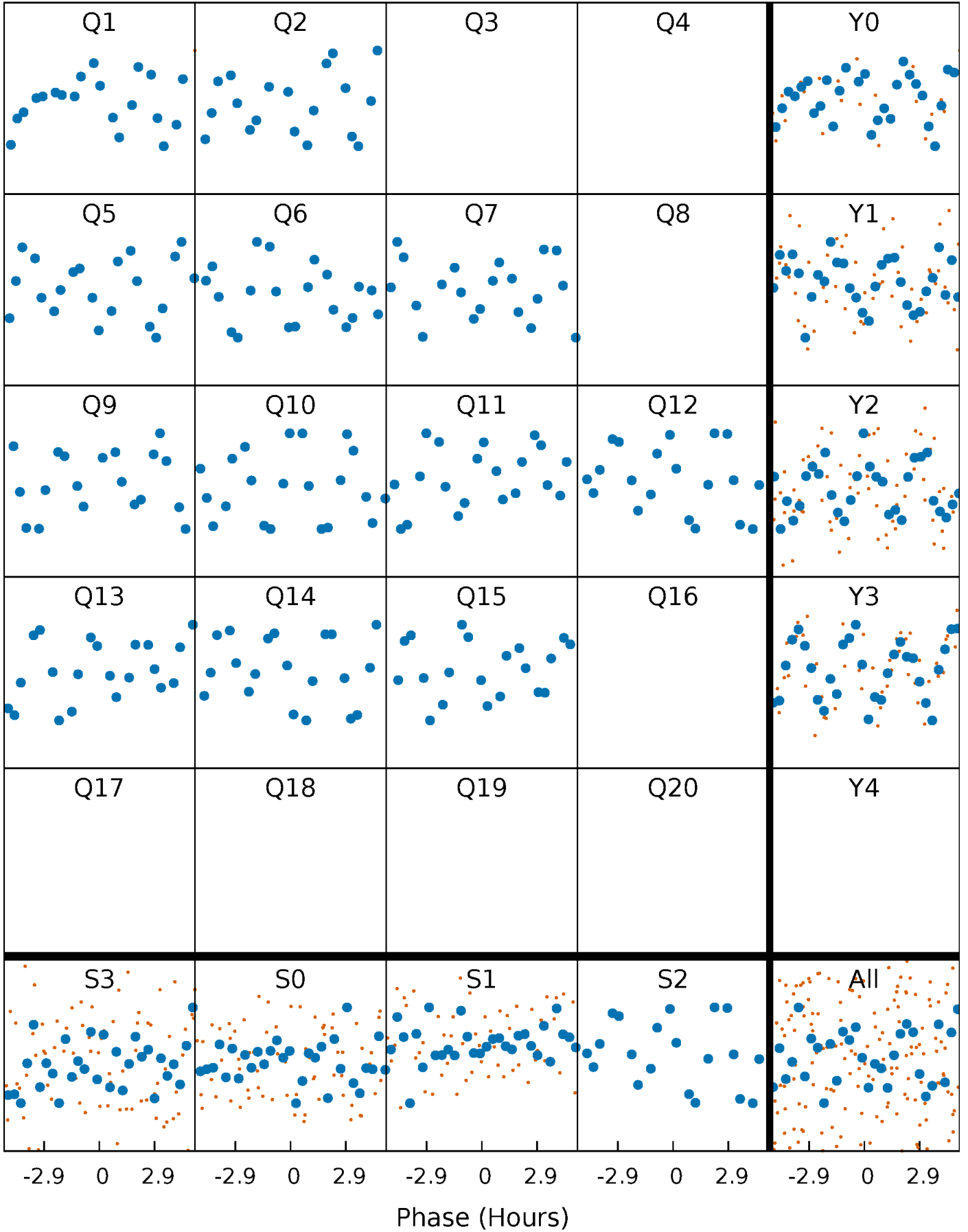


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



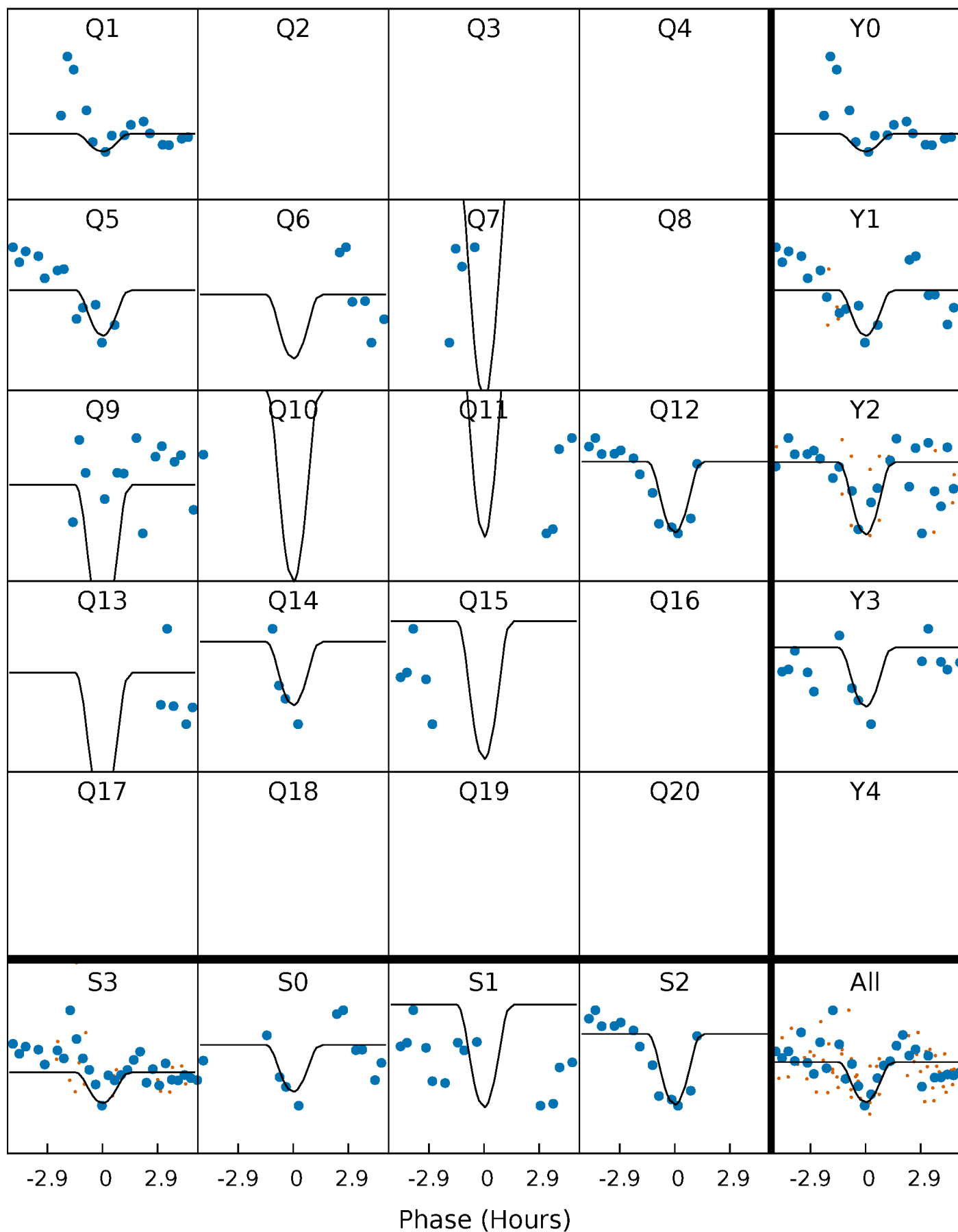
PDC Quarter-Phased Transit Curves

TCE 002297728-04 P= 94.661689 Days $T_0=162.017145$ (BKJD)



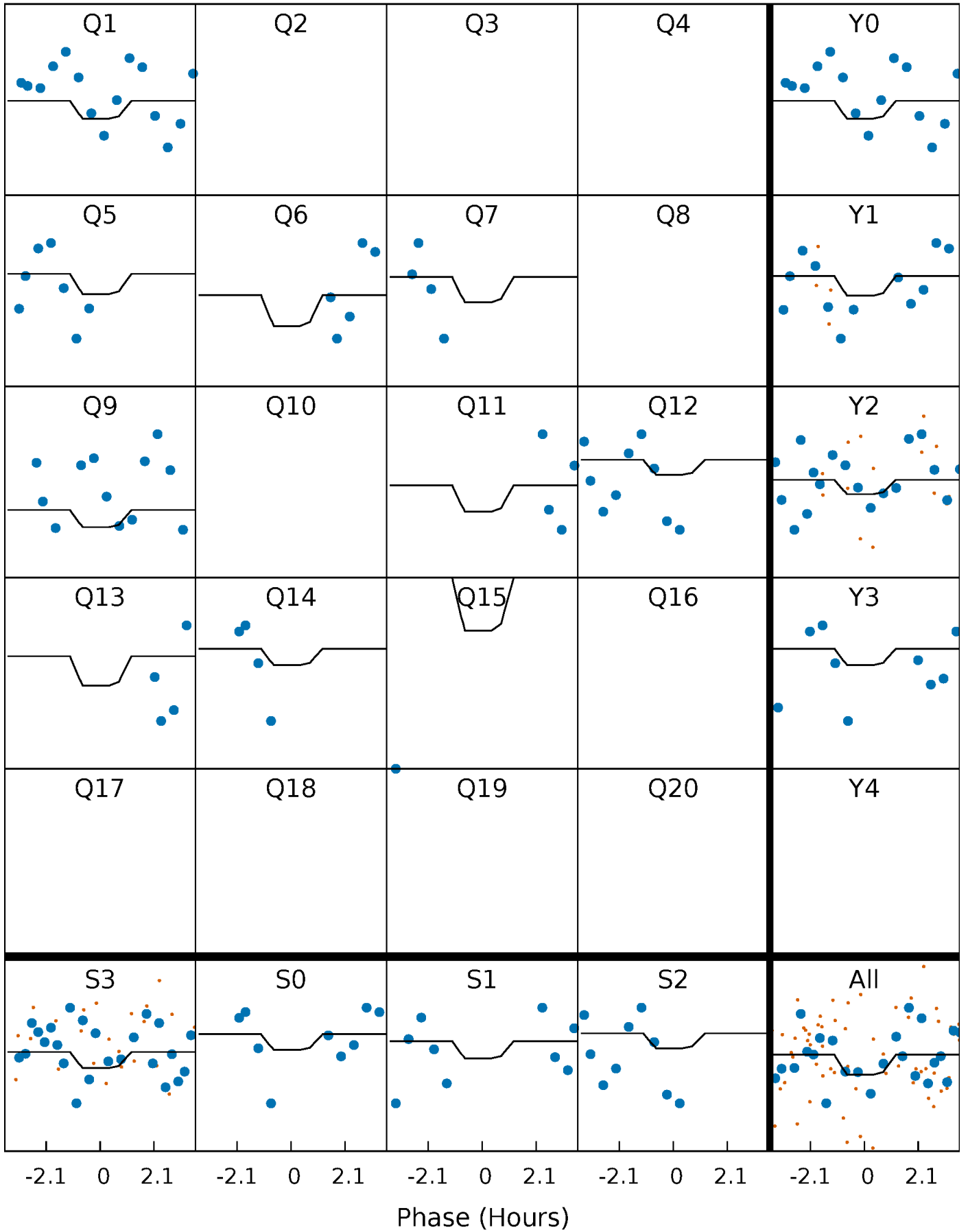
DV Quarter-Phased Transit Curves

TCE 002297728-04 P= 94.661689 Days $T_0=162.017145$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

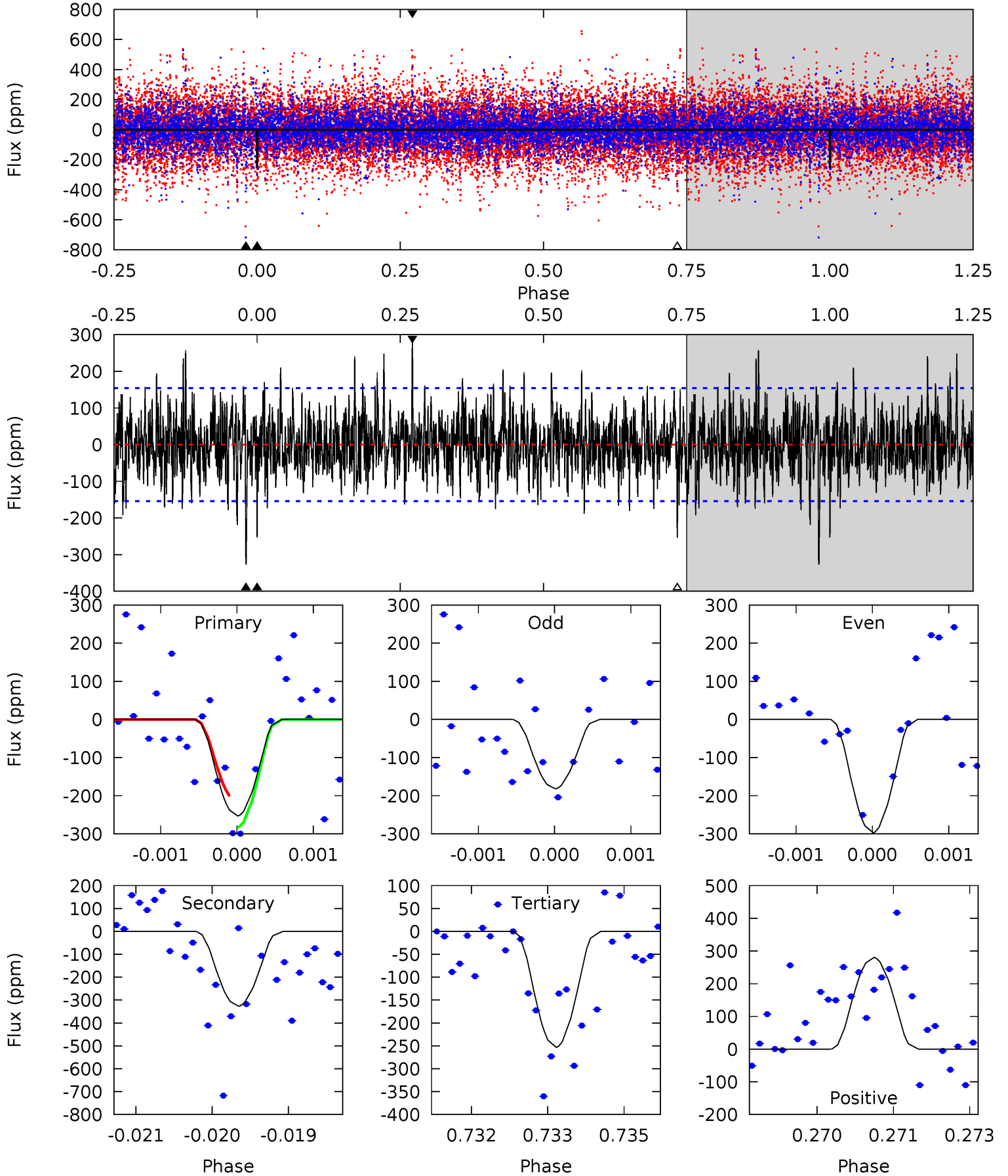
TCE 002297728-04 P= 94.661886 Days $T_0=162.051989$ (BKJD)



DV Model-Shift Uniqueness Test

002297728-04, P = 94.661689 Days, E = 67.355456 Days

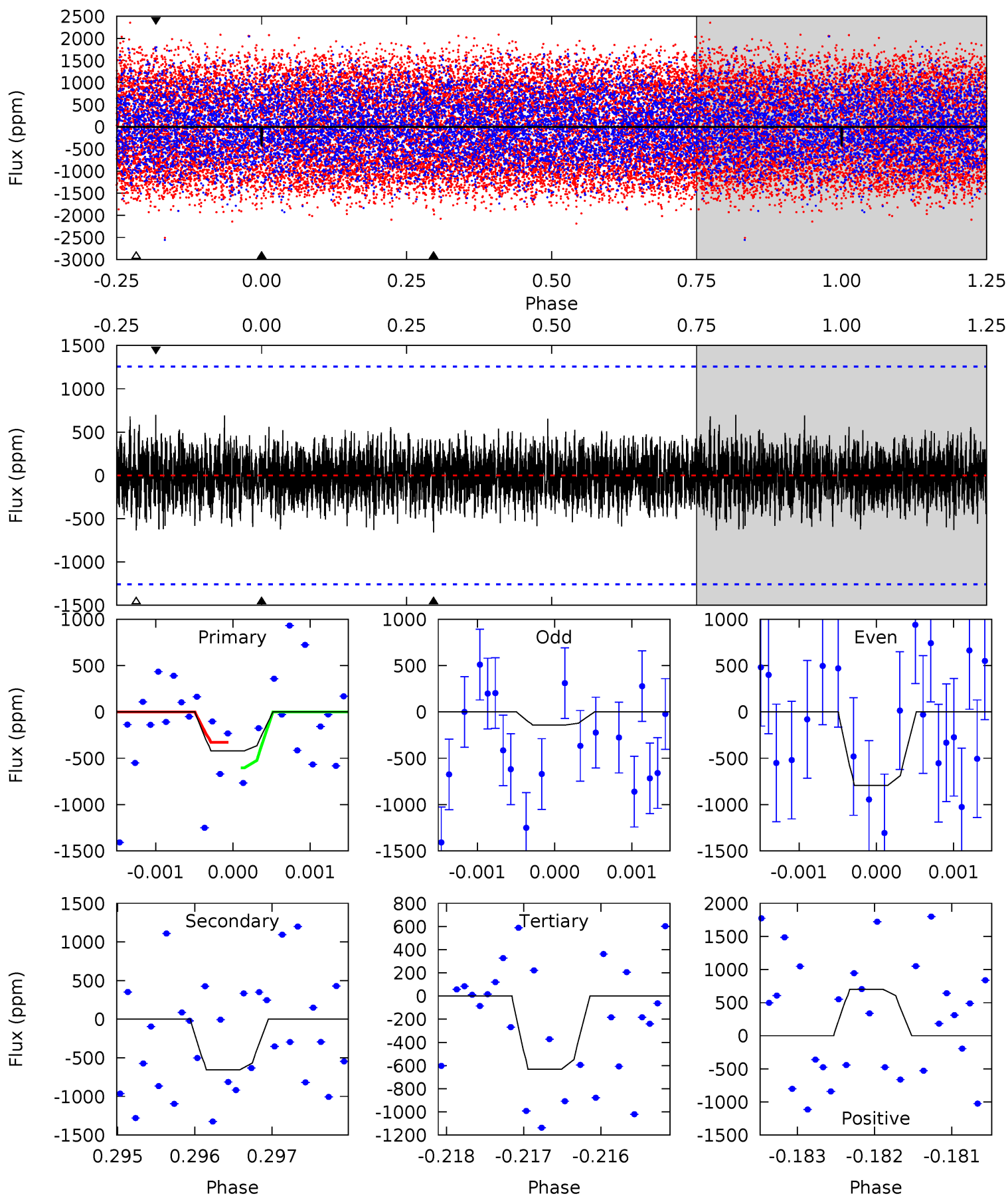
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.92	11.5	8.93	9.88	5.42	3.25	2.31	-0.01	-0.96	2.59	1.64	1.98	0.94	0.46	1.43



Alt Model-Shift Uniqueness Test

002297728-04, P = 94.661886 Days, E = 67.390103 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.82	2.84	2.74	3.03	5.44	3.28	0.87	-0.92	-1.21	0.10	-0.19	1.44	0.73	0.52	0.57



Stellar Parameters For KIC 002297728

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6634^{+151}_{-184}	$4.164^{+0.204}_{-0.167}$	$-0.360^{+0.250}_{-0.300}$	$1.459^{+0.423}_{-0.346}$	$1.131^{+0.181}_{-0.131}$	$0.513^{+0.520}_{-0.242}$
	+2%/-3%	+5%/-4%	+69%/-83%	+29%/-24%	+16%/-12%	+101%/-47%
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 002297728-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-327 ± 28	$21.53^{+24.10}_{-14.62}$	754^{+57}_{-53}	3061^{+1380}_{-555}	71^{+614}_{-56}
Alt.	-656 ± 231	$21.15^{+21.11}_{-14.34}$	754^{+55}_{-50}	3377^{+1779}_{-643}	141^{+1169}_{-108}

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 $A_{obs} \gg 1.0$

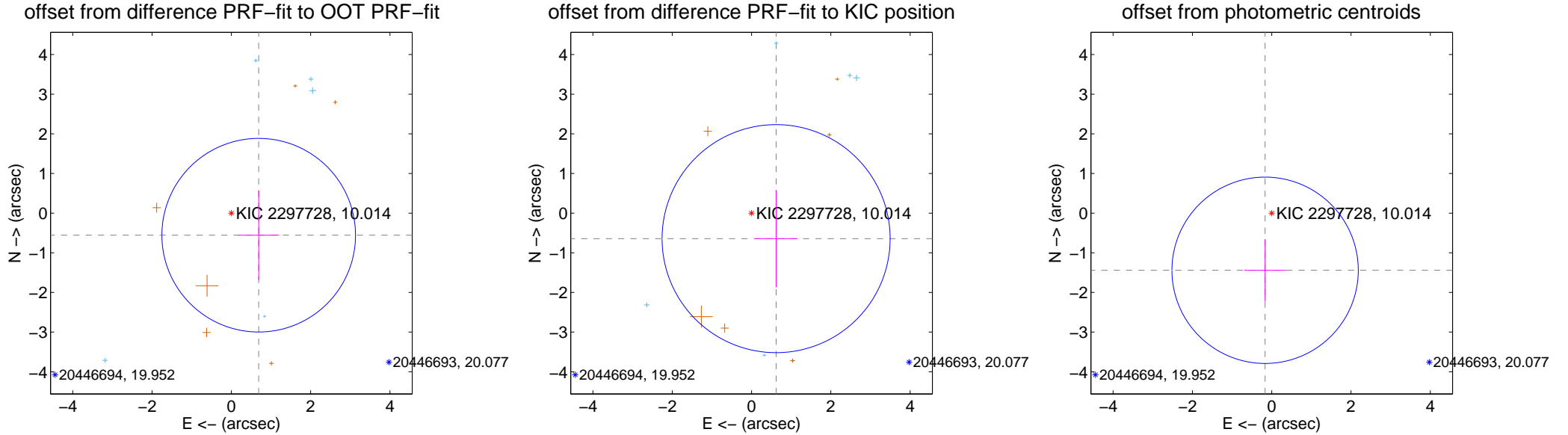
DV Centroid Data

Supplemental centroid analysis for 002297728-04. **Kepler magnitude: 10.01.** Transit SNR 7.44

There are 5 quarters with good PRF difference image offsets

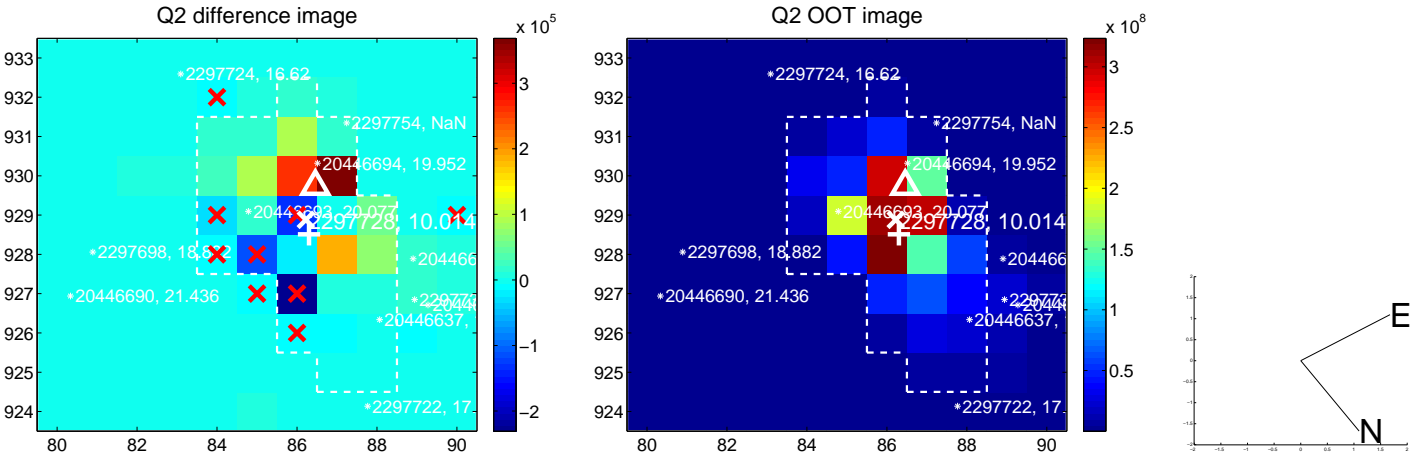
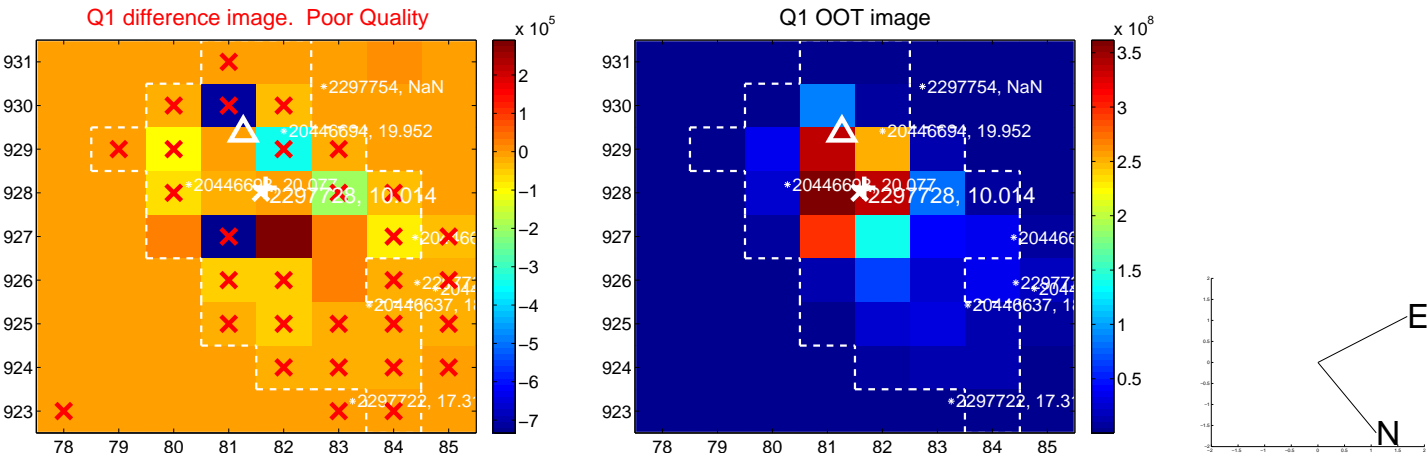
The direct PRF centroid is offset from the target star catalog position by about 0.44 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.886 ± 0.814	1.09	-0.690 ± 0.515	-0.556 ± 1.128
PRF-fit source offset from KIC position	0.894 ± 0.959	0.93	-0.620 ± 0.539	-0.643 ± 1.226
photometric centroid source offset	1.45 ± 0.78	1.85	0.17 ± 0.53	-1.44 ± 0.79

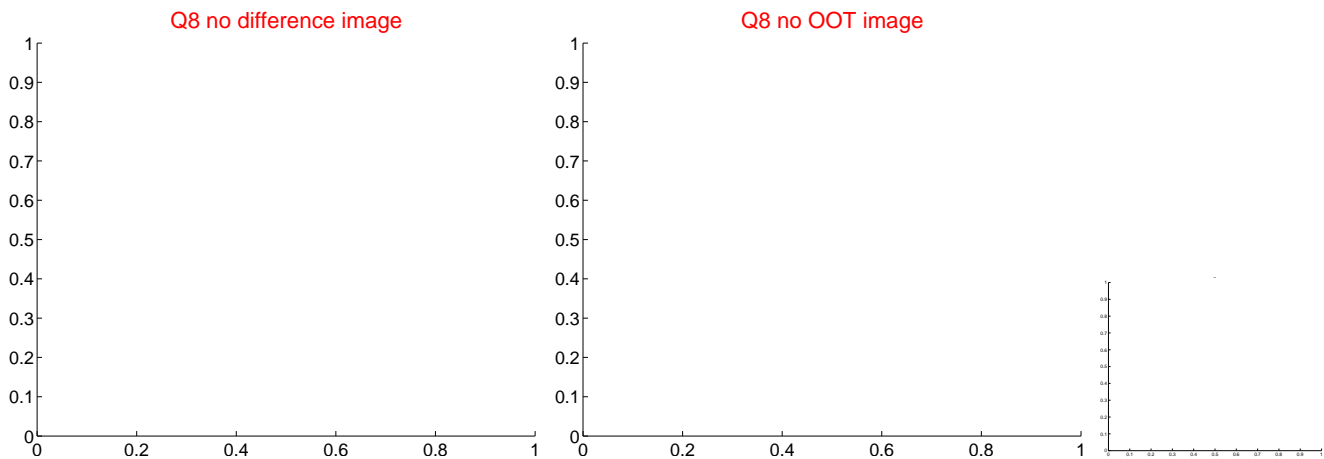
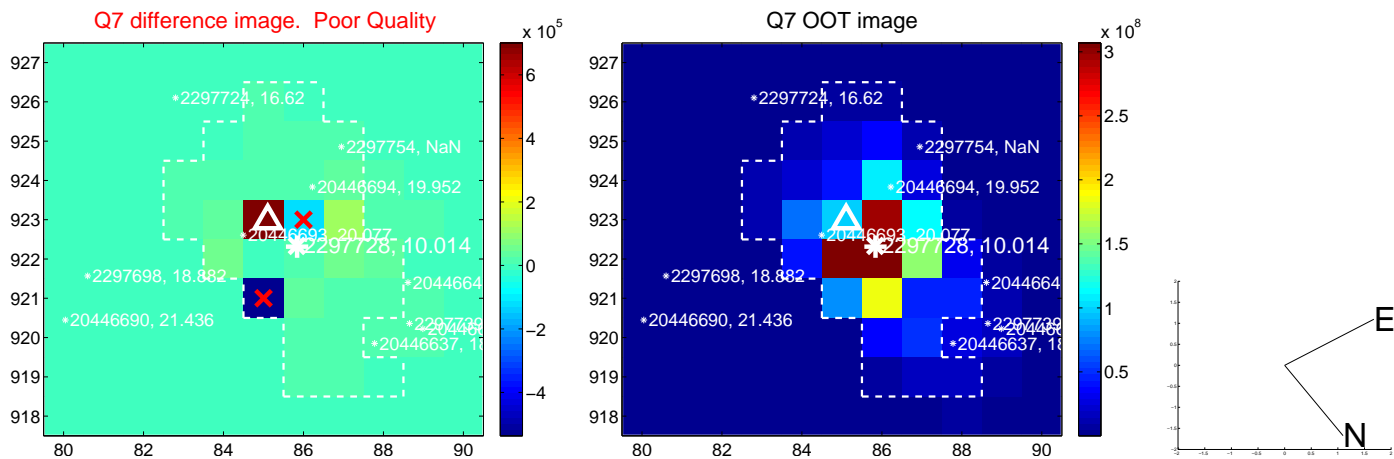
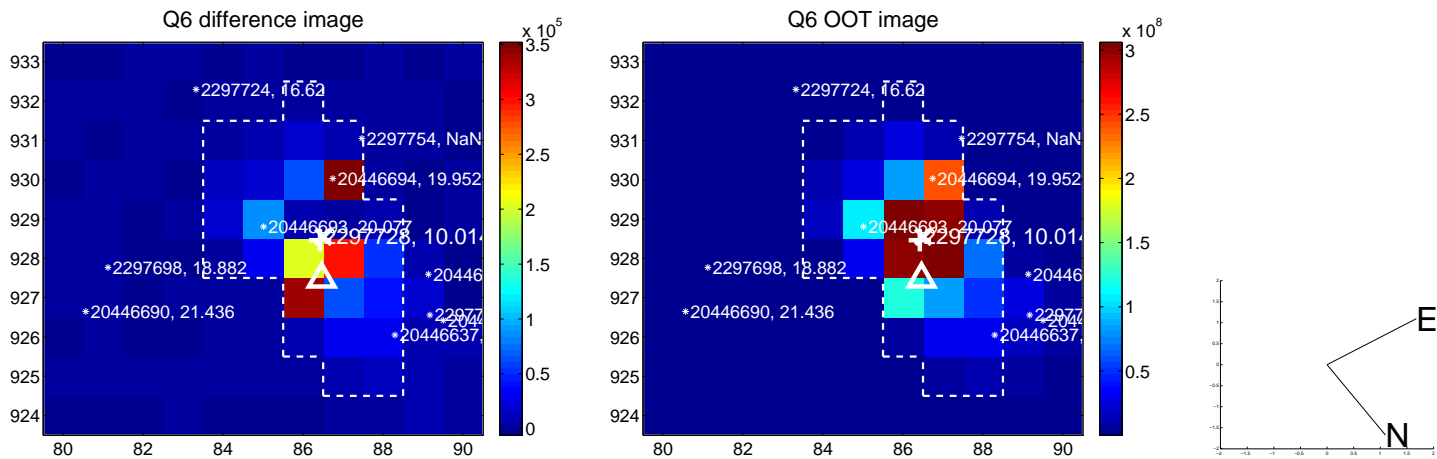
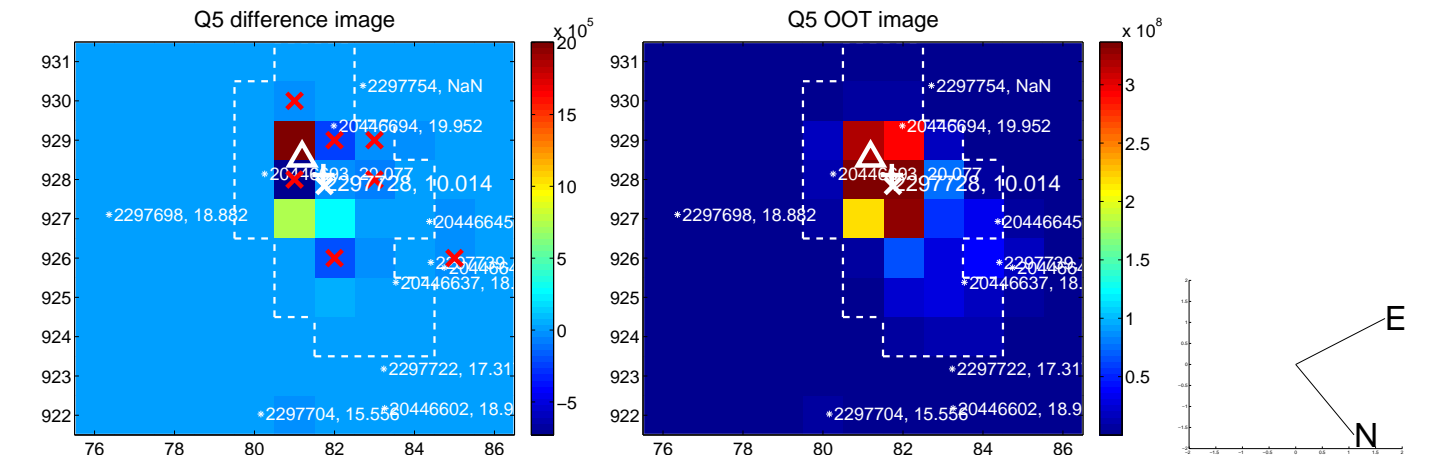


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

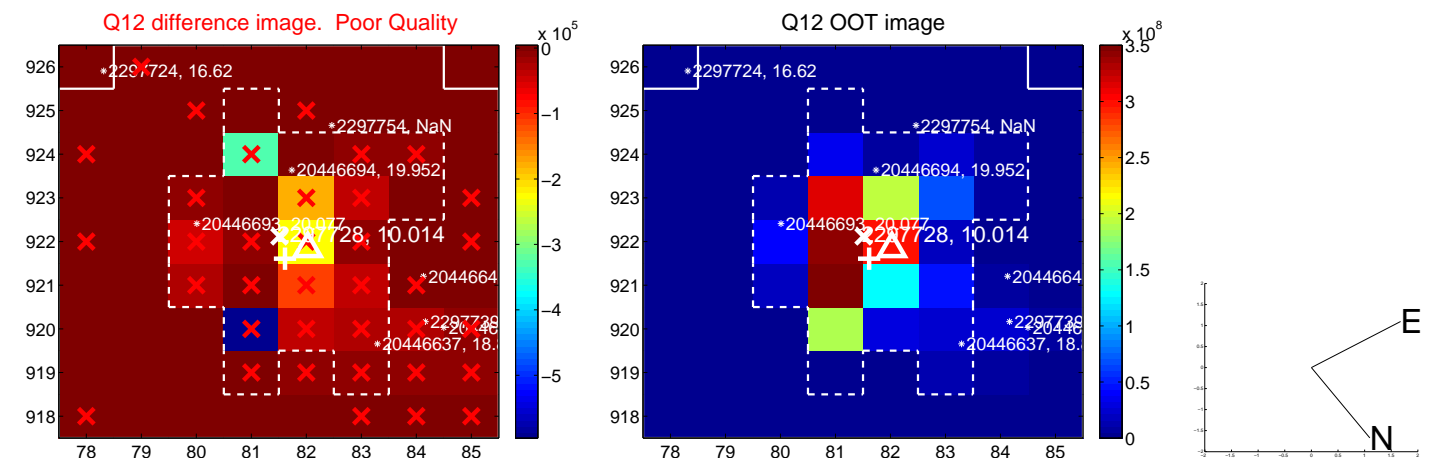
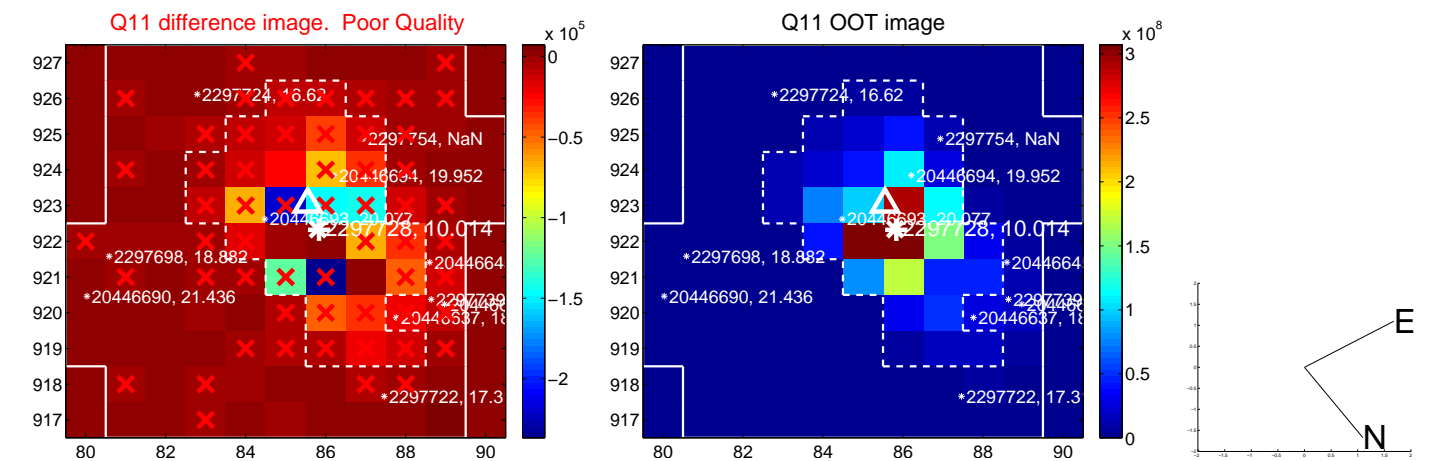
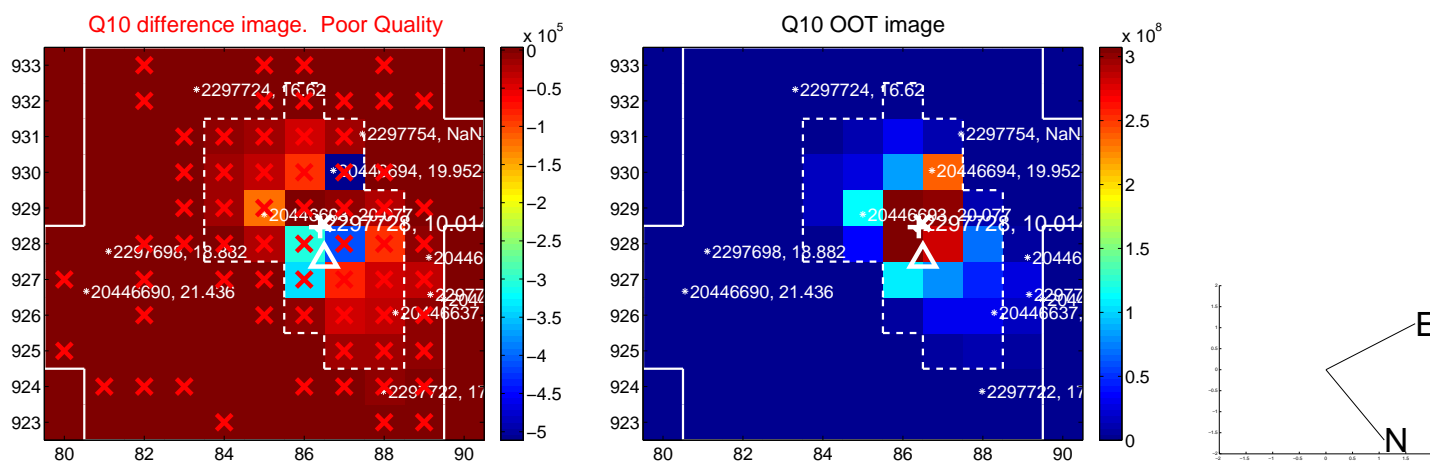
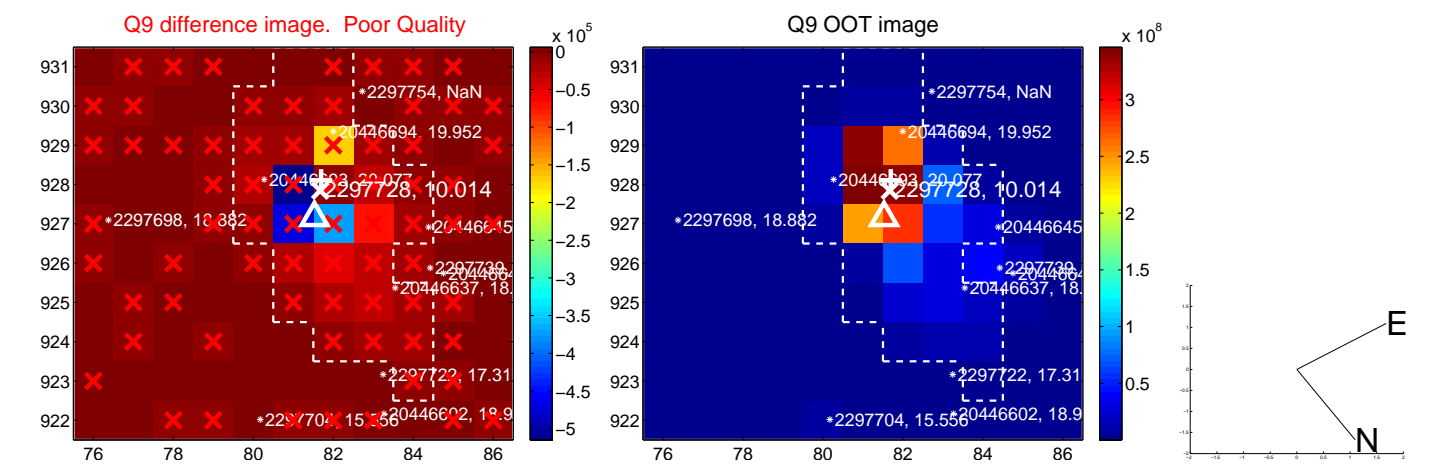
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



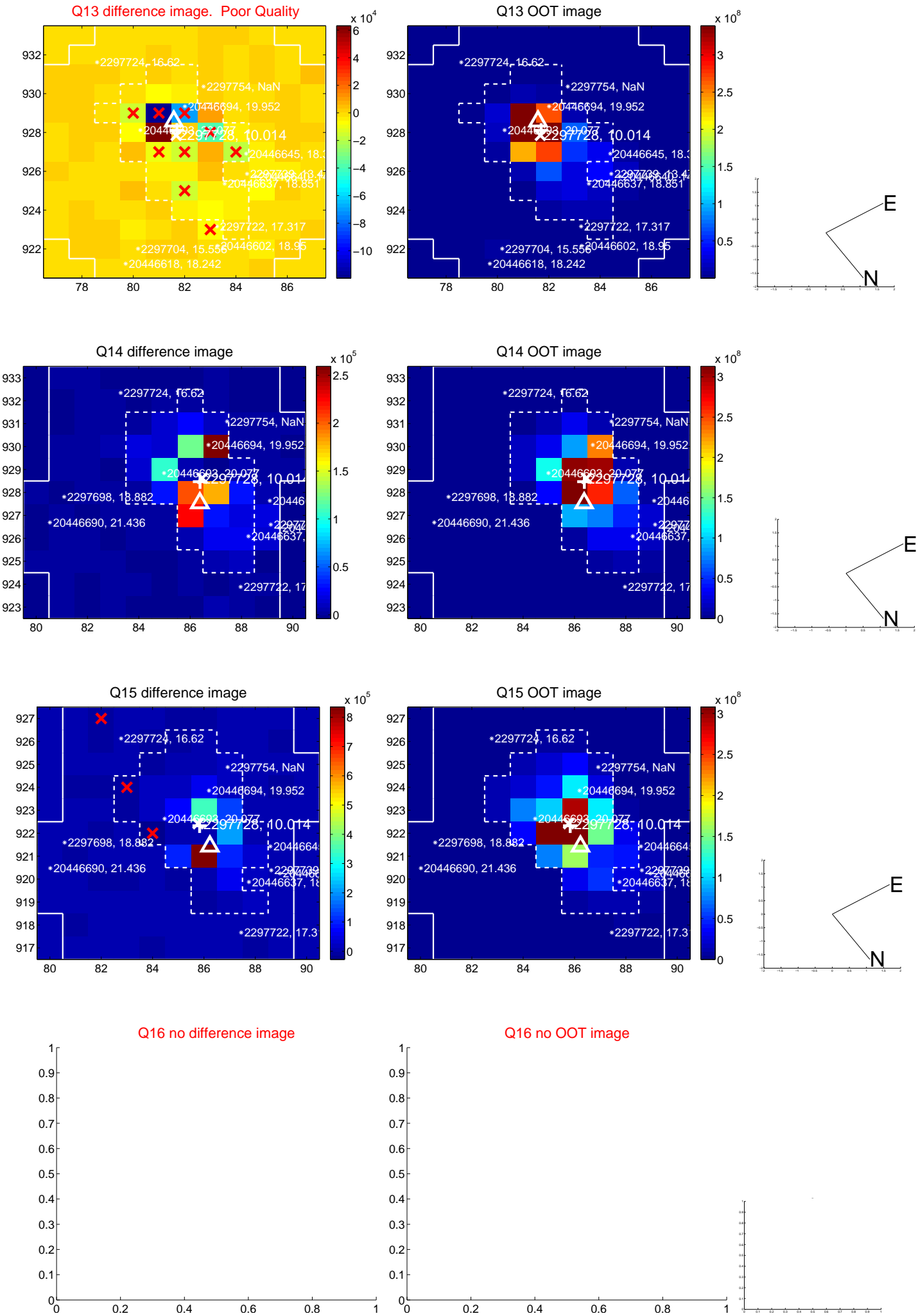
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



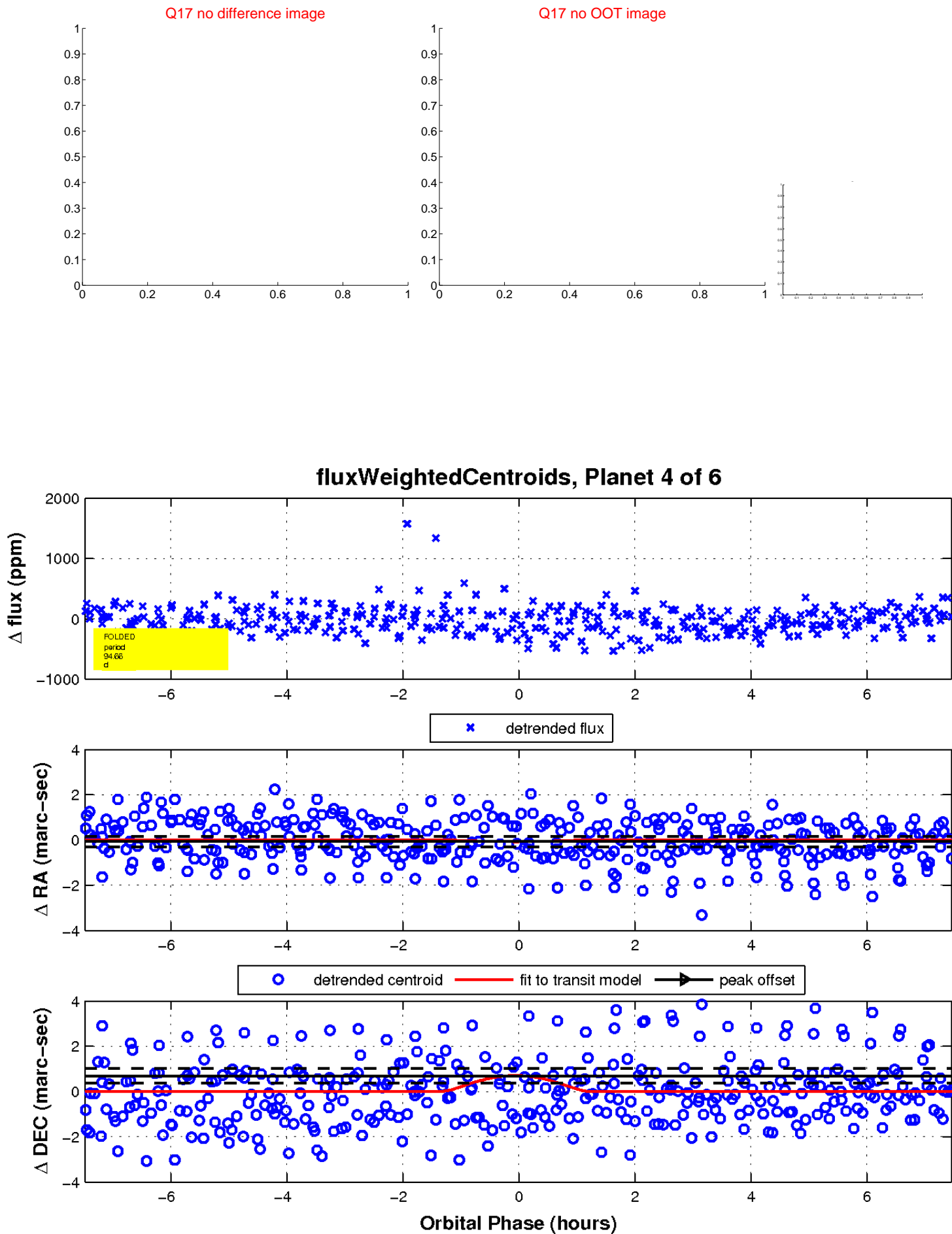
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



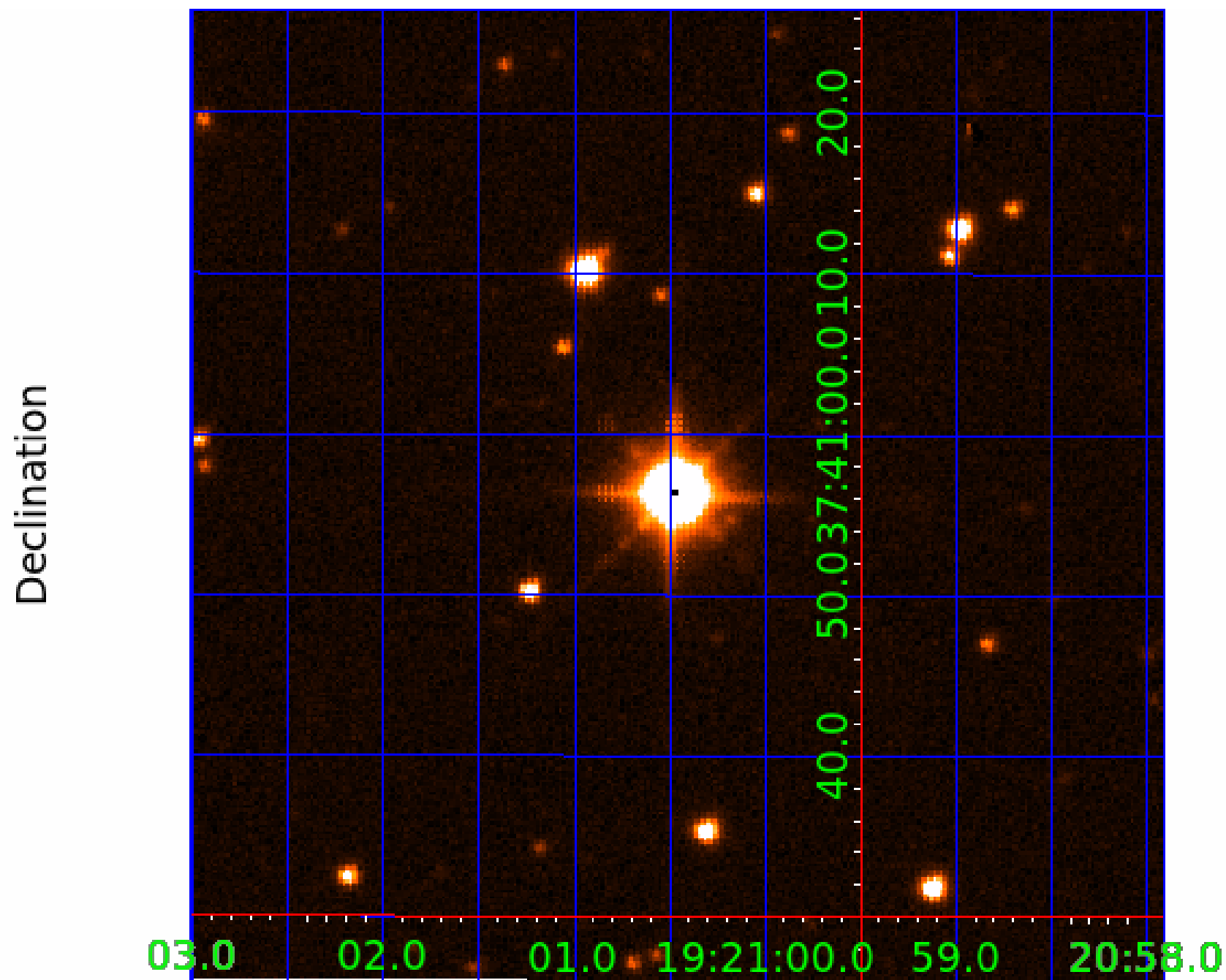
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 002297728

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})
002297728-01	OBS	No	1.338740	131.643185	31.9	3.333	9.2	9.8	1.46	6634	0.97	6013.19
002297728-02	OBS	No	1.338685	132.216335	25.5	3.688	9.2	8.4	1.46	6634	0.90	6013.52
002297728-03	OBS	No	110.175471	143.033181	358.2	2.886	8.6	7.9	1.46	6634	2.82	16.80
002297728-04	OBS	No	94.661689	162.017145	326.7	2.504	8.7	7.4	1.46	6634	5.09	20.57
002297728-05	OBS	No	90.422407	207.664905	313.1	3.533	8.2	7.3	1.46	6634	5.03	21.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002297728-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
002297728-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
002297728-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002297728-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

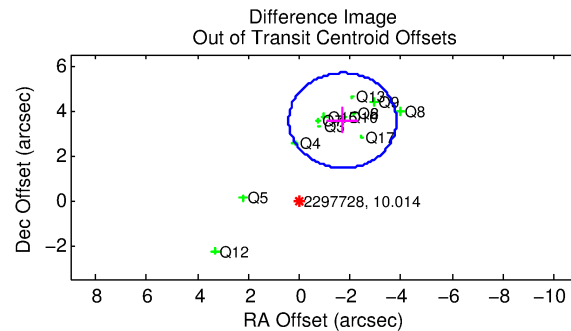
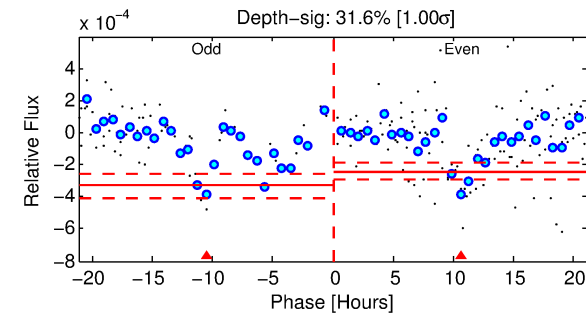
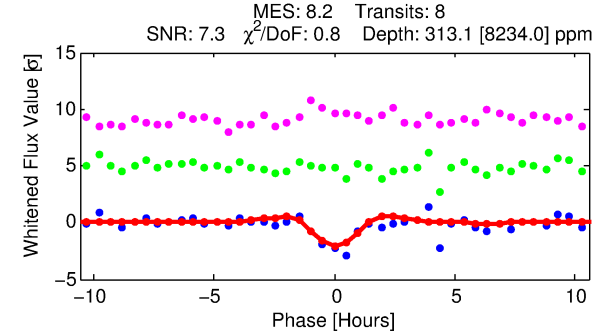
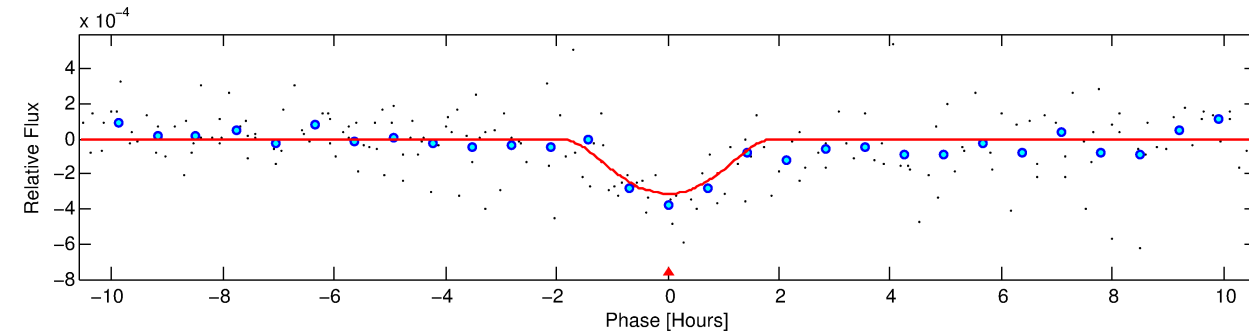
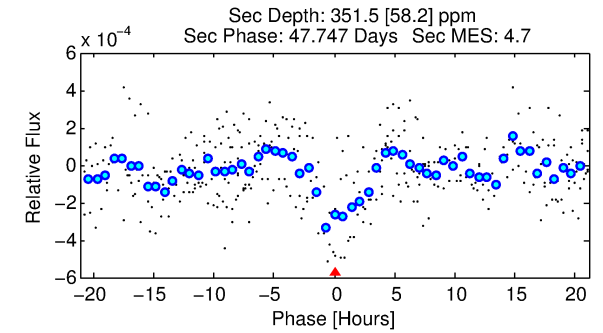
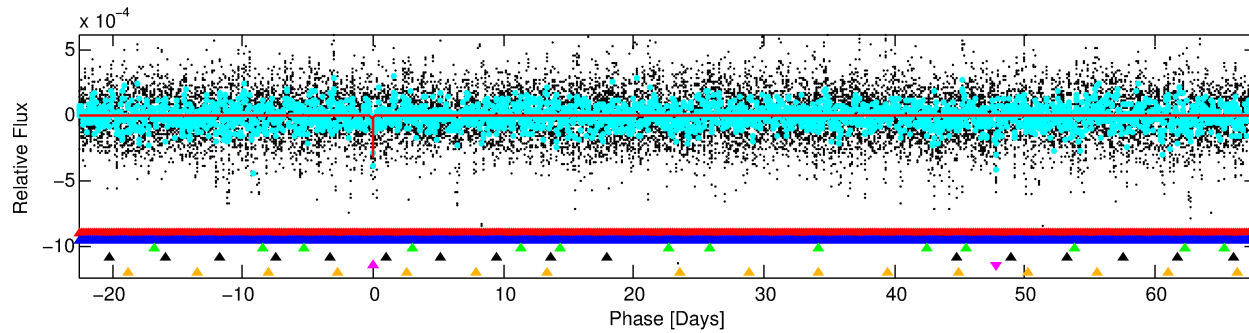
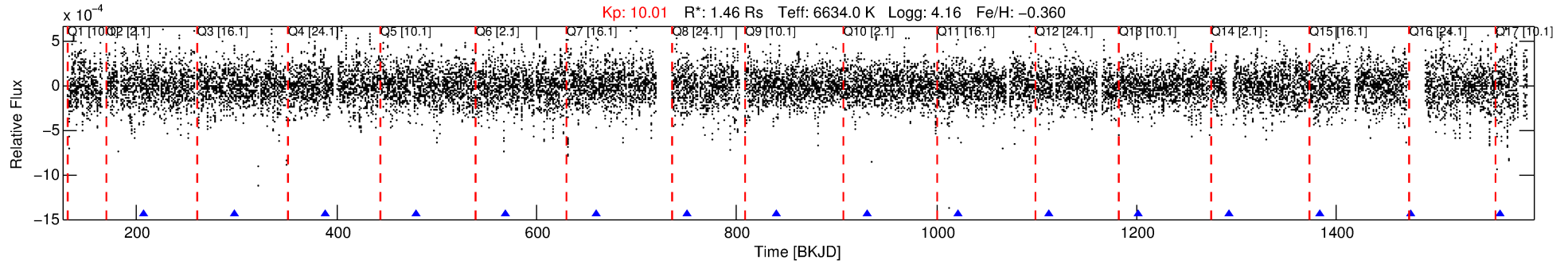
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002297728-05

No Significant Match Found

DV One-Page Summary

KIC: 2297728 Candidate: 5 of 6 Period: 90.422 d



DV Fit Results:

Period = 90.42241 [0.00113] d
Epoch = 207.6649 [0.0100] BKJD
Rp/R* = 0.0316 [0.1260]
a/R* = 49.53 [52.29]
b = 1.00 [0.75]
Seff = 21.86 [8.40]
Teq = 551 [53] K
Rp = 5.03 [20.12] Re
a = 0.4111 [0.1023] AU
Ag = 1292.76 [10332.69] [0.13σ]
Teffp = 5112 [10204] K [0.45σ]

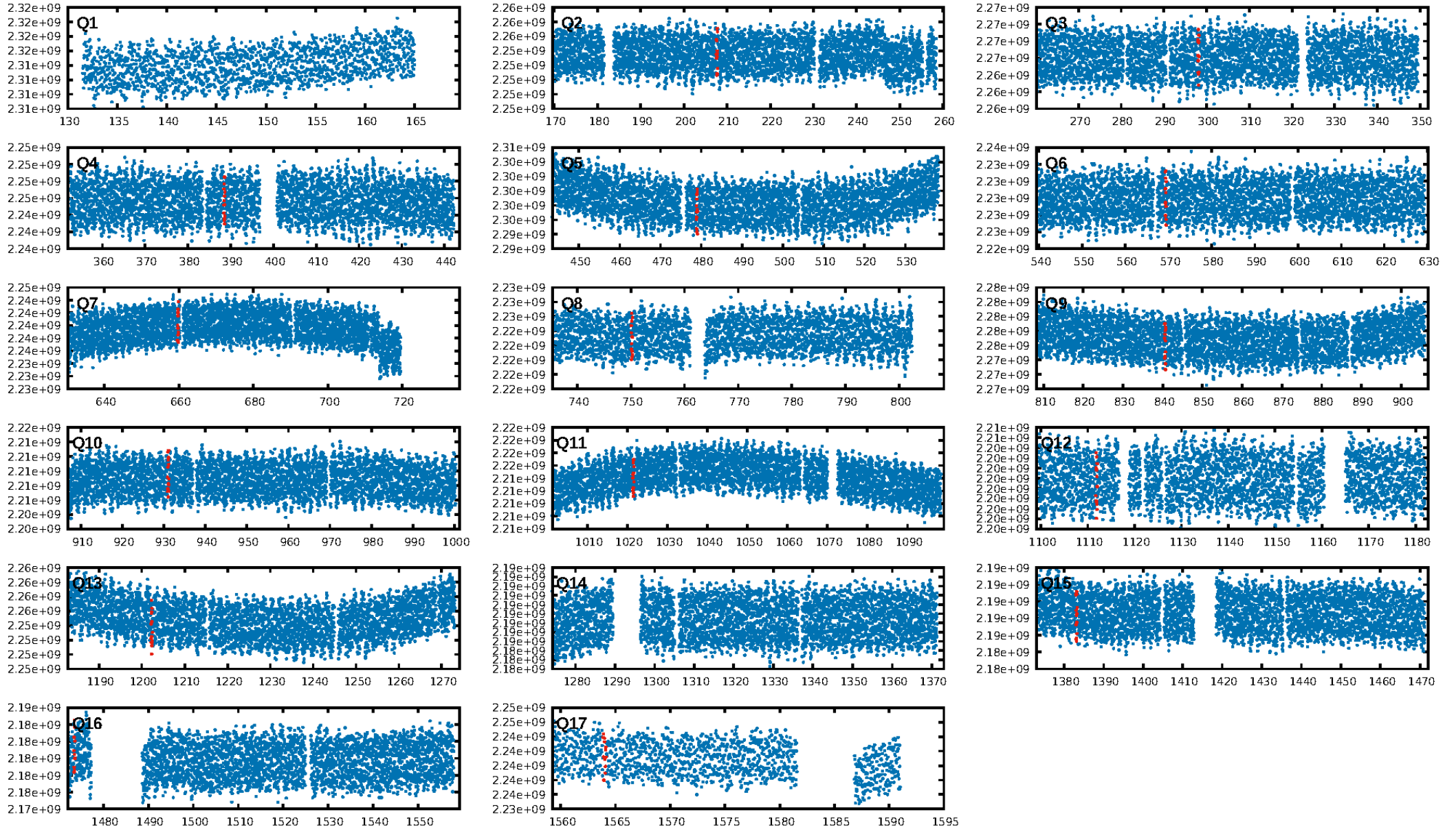
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [440.15σ]
LongPeriod-sig: 100.0% [23.50σ]
ModelChiSquare2-sig: 78.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.18e-10
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: N/A
Centroid-sig: 8.2%
Centroid-so: 1.293 arcsec [2.27σ]
OotOffset-rm: 3.944 arcsec [5.59σ]
KicOffset-rm: 4.269 arcsec [5.86σ]
OotOffset-st: 3/3/3/4 [13]
KicOffset-st: 3/3/3/4 [13]
DiffImageQuality-fgm: 0.23 [3/13]
DiffImageOverlap-fno: 0.00 [0/13]

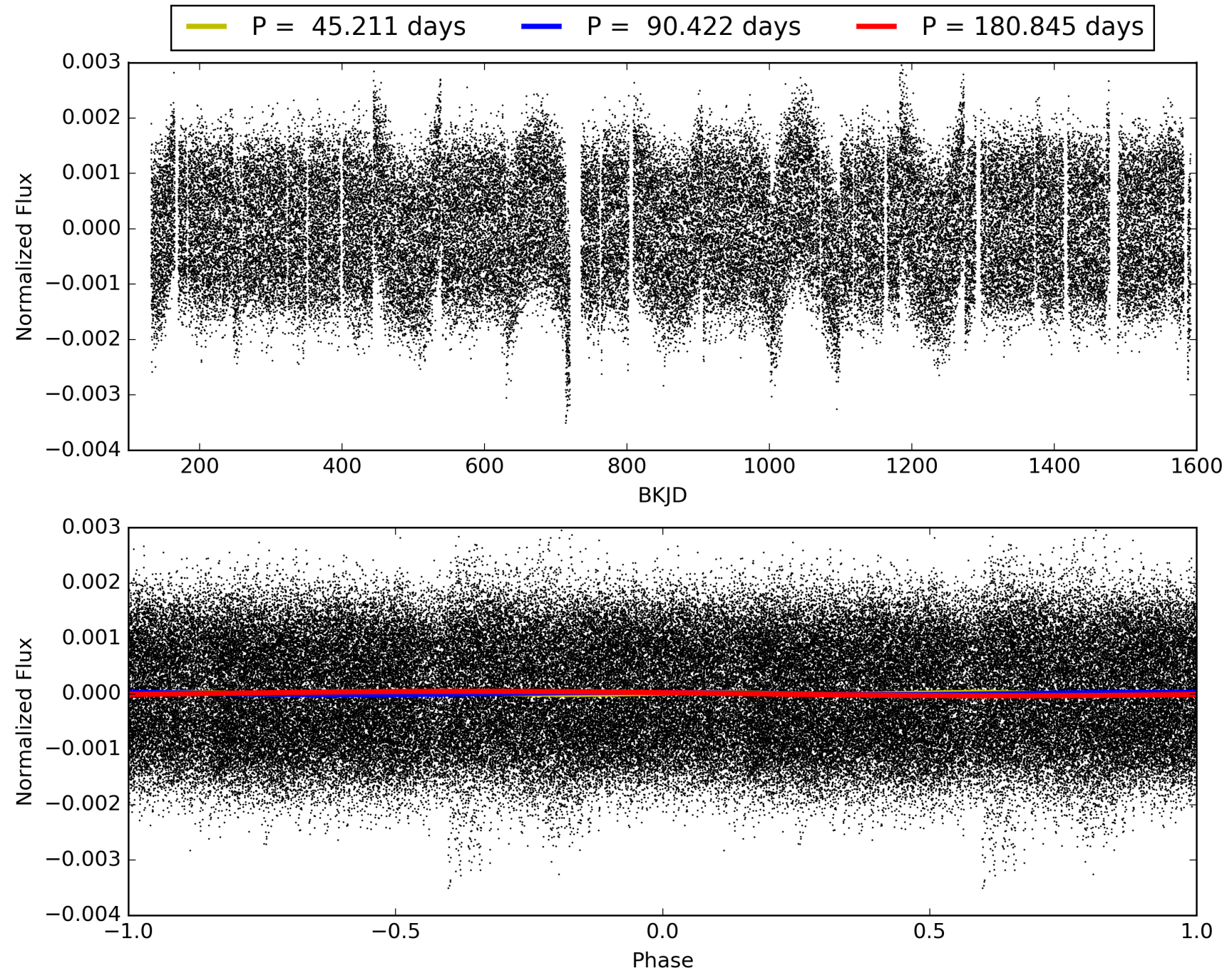
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:57:25 Z

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

TCE 002297728-05, PDC Light Curves

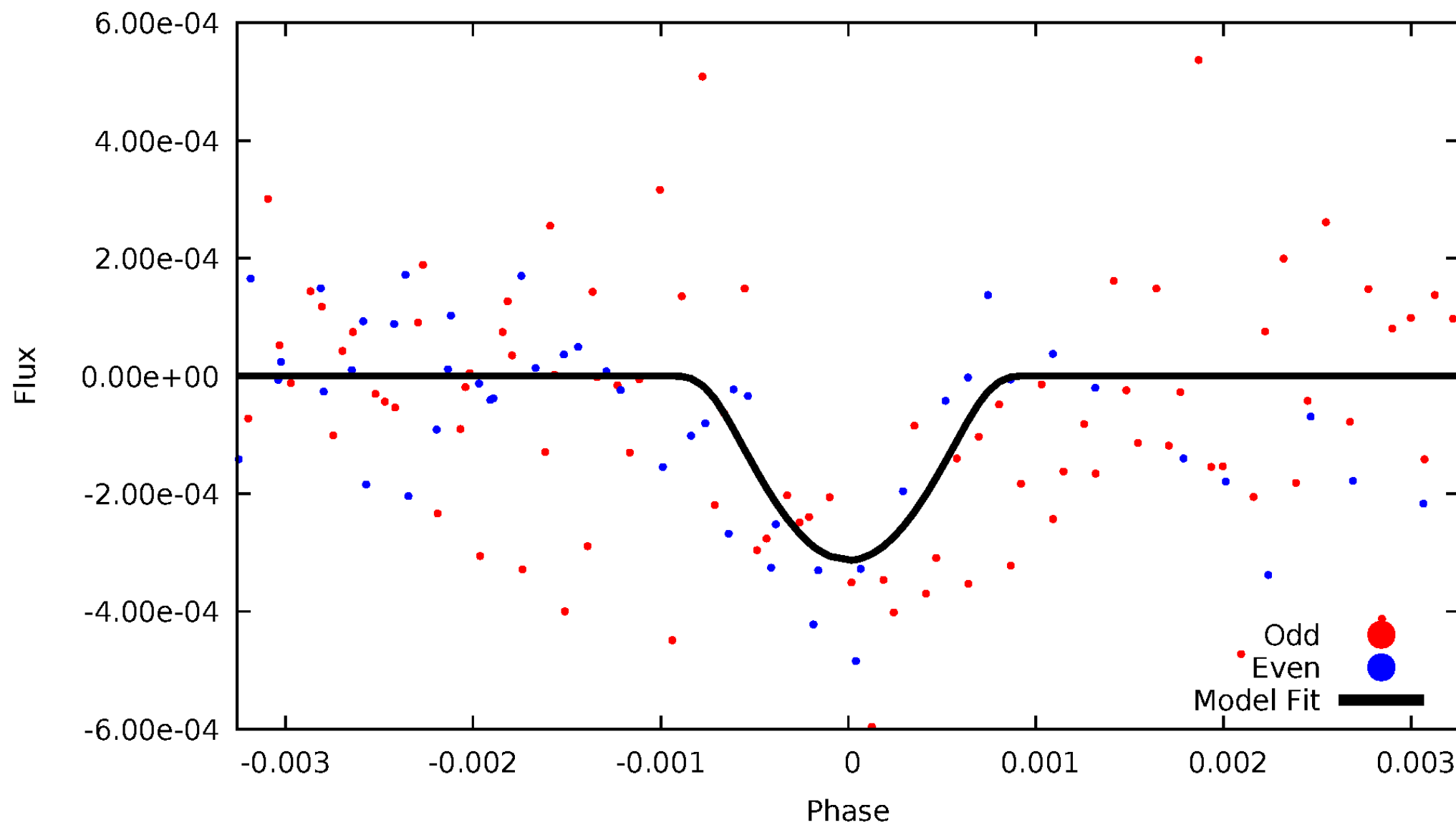


TCE 002297728-05



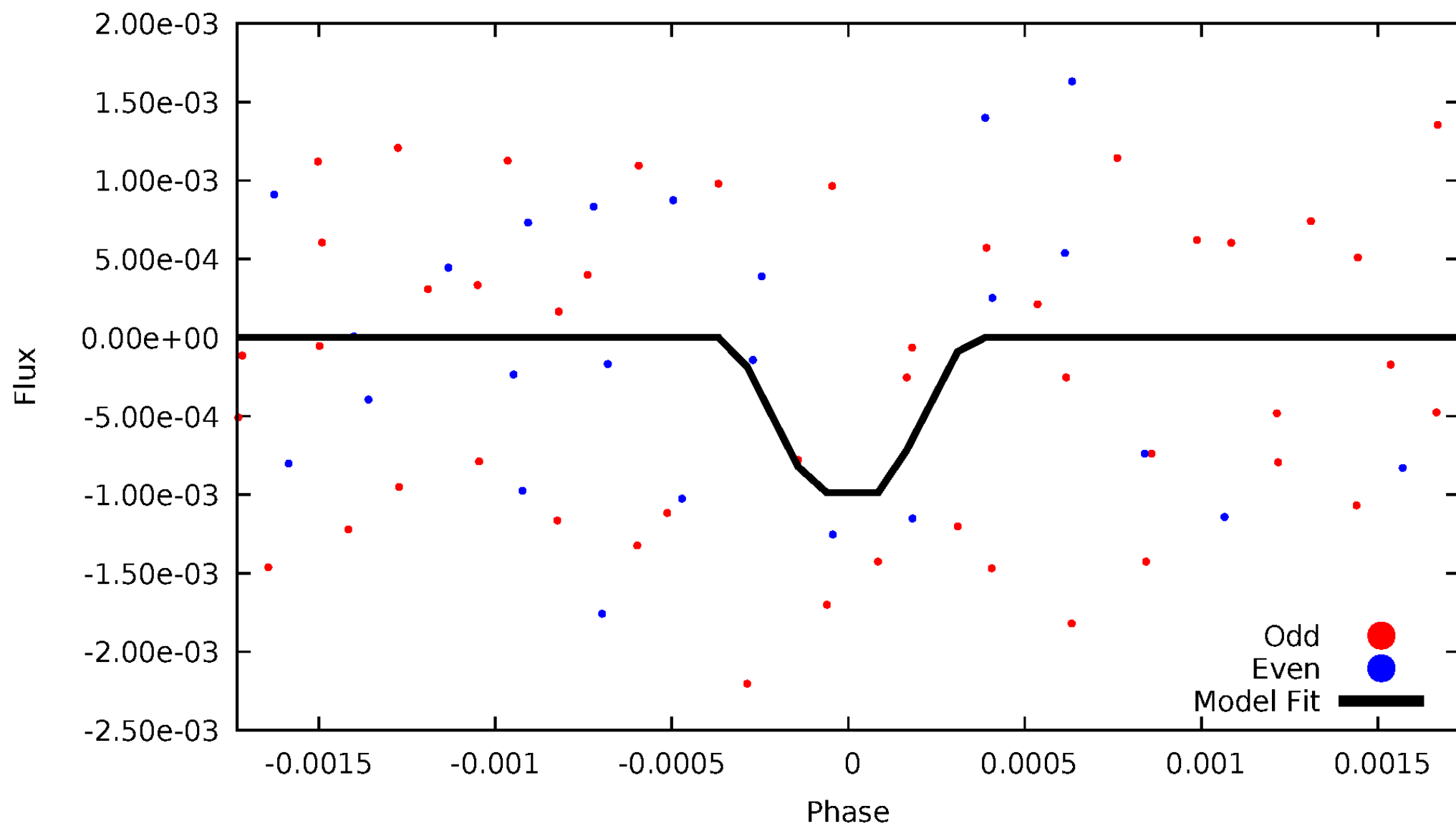
DV Odd/Even

TCE 002297728-05



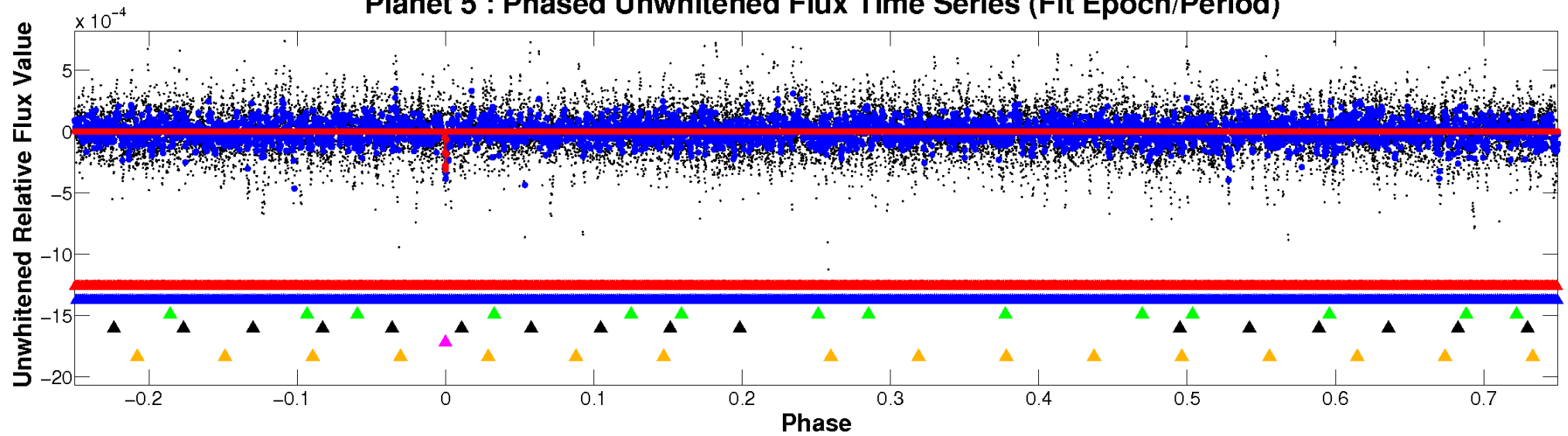
ALT Odd/Even

TCE 002297728-05

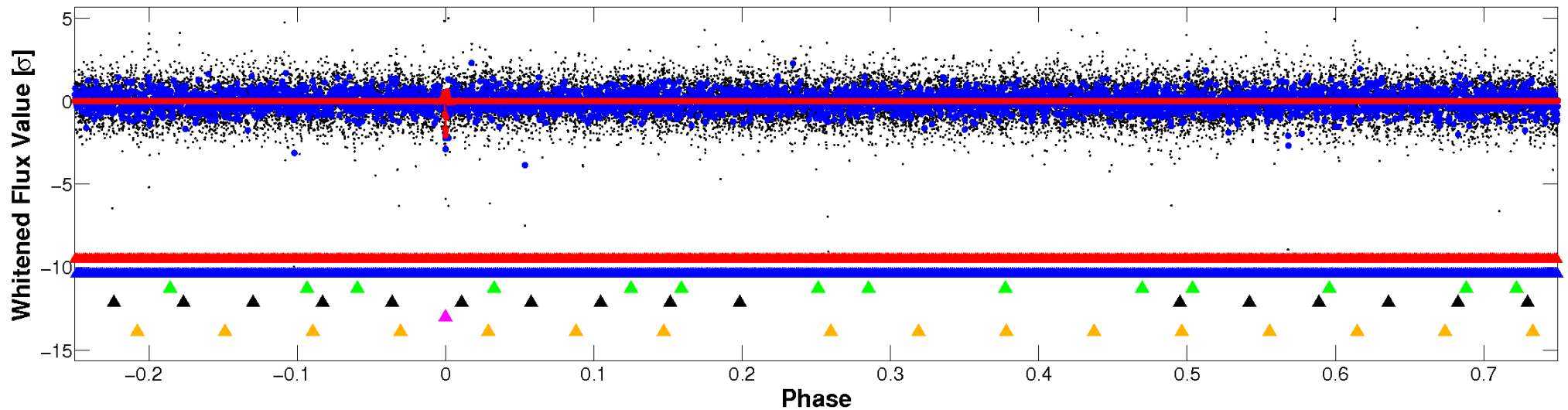


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

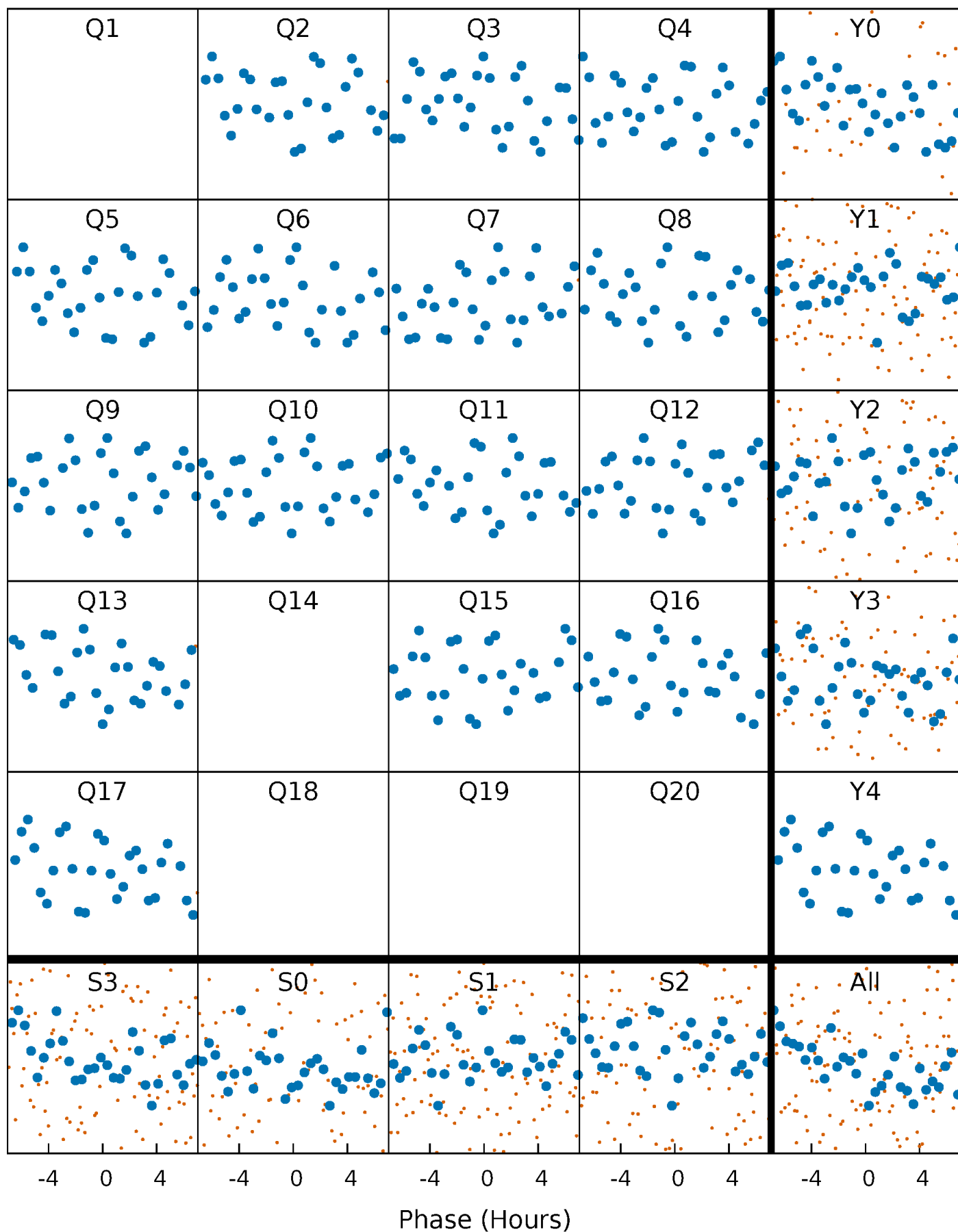


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



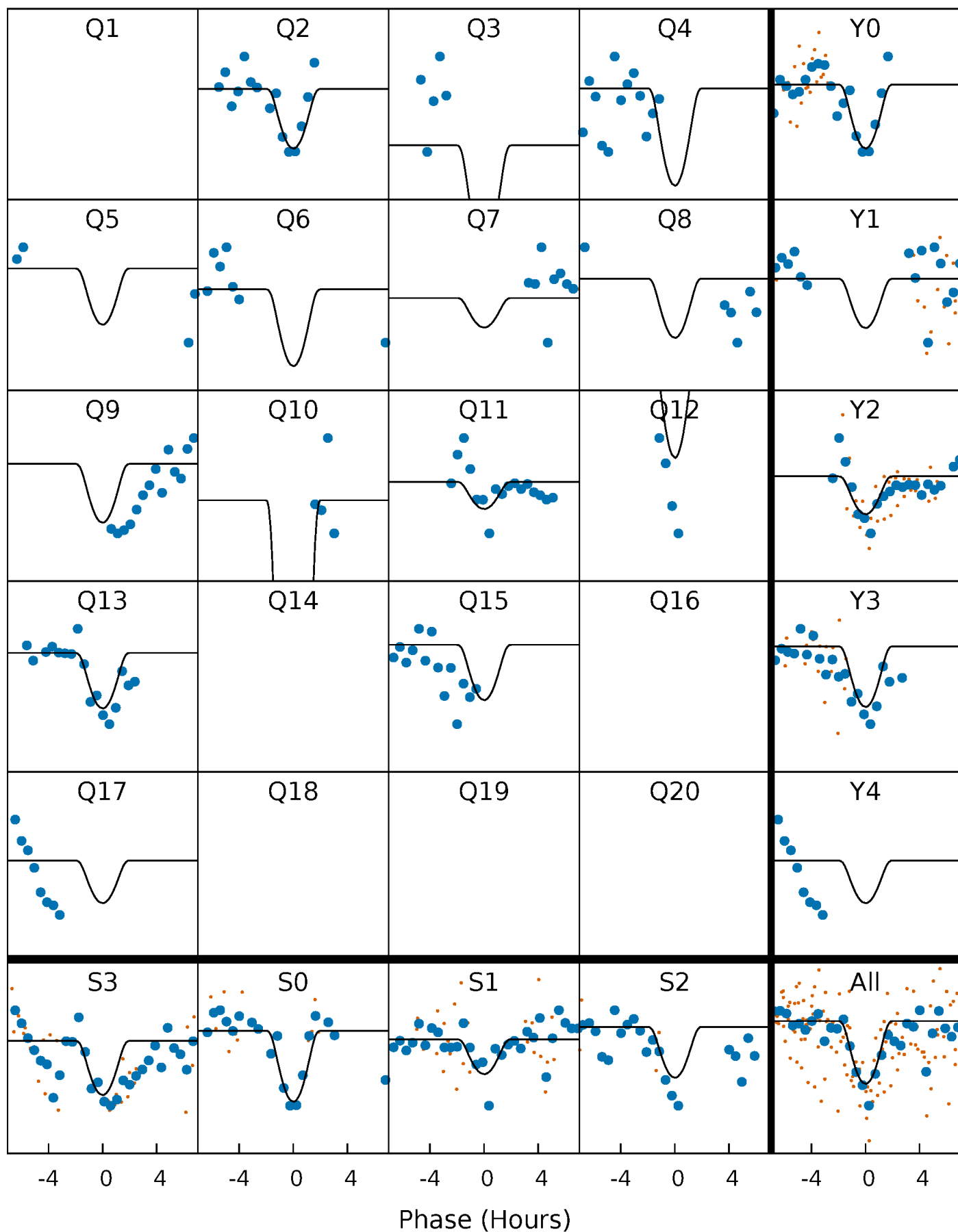
PDC Quarter-Phased Transit Curves

TCE 002297728-05 P= 90.422407 Days $T_0=207.664905$ (BKJD)



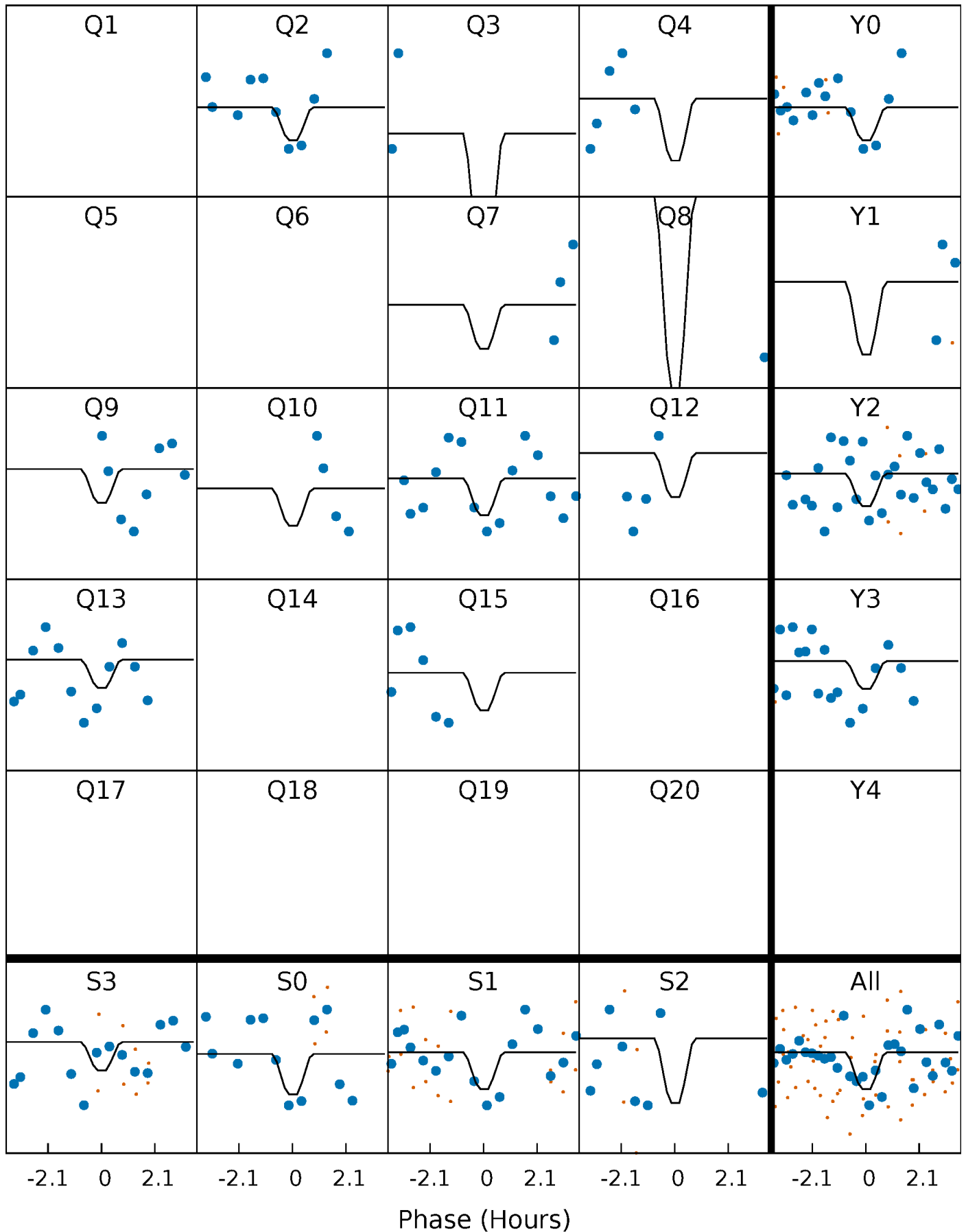
DV Quarter-Phased Transit Curves

TCE 002297728-05 P= 90.422407 Days $T_0=207.664905$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

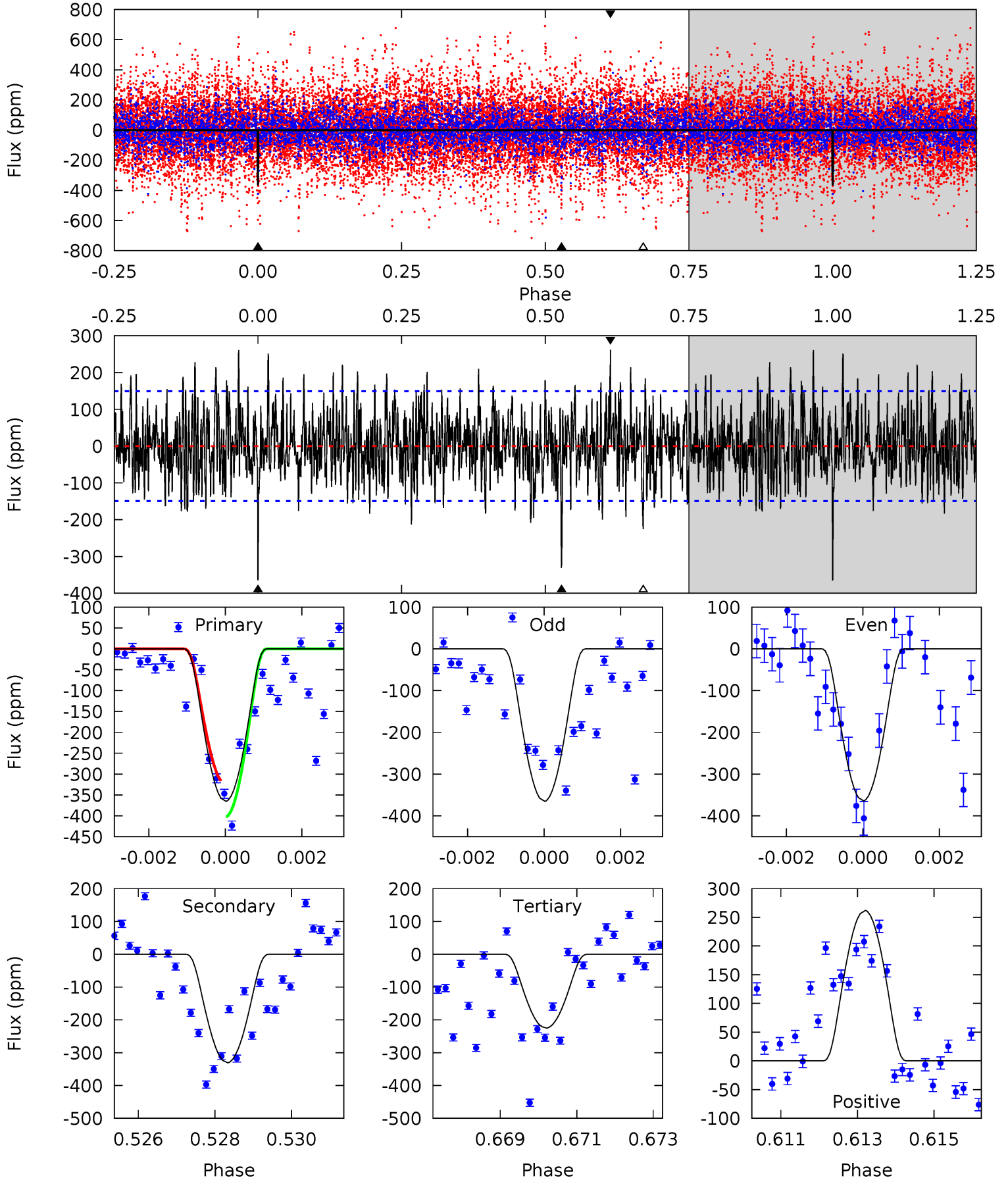
TCE 002297728-05 $P = 90.423994$ Days $T_0 = 207.674858$ (BKJD)



DV Model-Shift Uniqueness Test

002297728-05, P = 90.422407 Days, E = 117.242498 Days

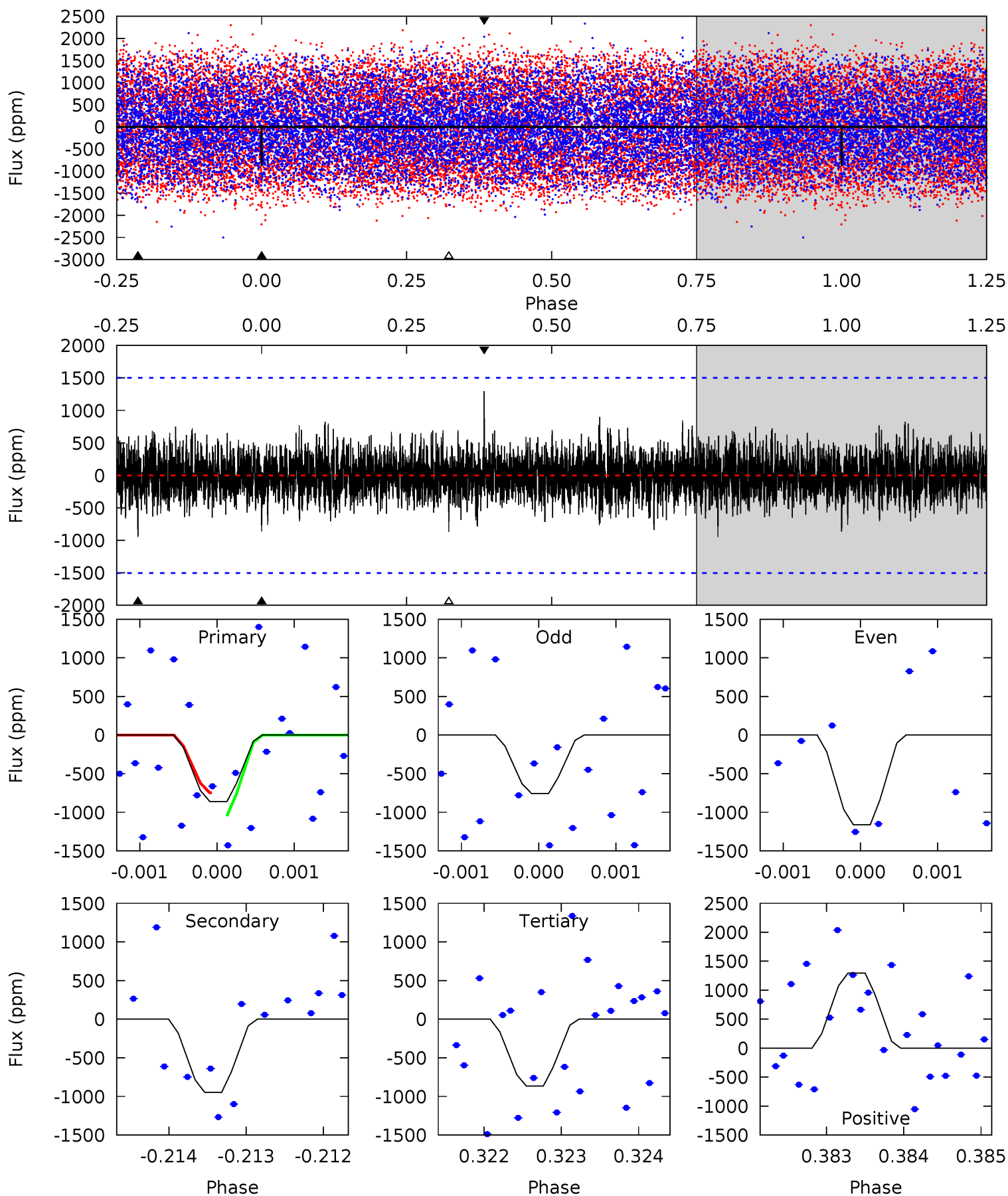
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	11.9	8.07	9.40	5.36	3.14	2.67	5.04	3.71	3.79	2.47	0.02	0.90	0.42	1.55



Alt Model-Shift Uniqueness Test

002297728-05, P = 90.423994 Days, E = 117.250864 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.17	3.48	3.18	4.77	5.53	3.41	0.85	-0.01	-1.60	0.30	-1.29	0.68	0.66	0.58	0.55



Stellar Parameters For KIC 002297728

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6634^{+151}_{-184}	$4.164^{+0.204}_{-0.167}$	$-0.360^{+0.250}_{-0.300}$	$1.459^{+0.423}_{-0.346}$	$1.131^{+0.181}_{-0.131}$	$0.513^{+0.520}_{-0.242}$
	+2%/-3%	+5%/-4%	+69%/-83%	+29%/-24%	+16%/-12%	+101%/-47%
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 002297728-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-331 ± 28	$15.83^{+18.54}_{-11.16}$	764^{+57}_{-56}	3332^{+1865}_{-643}	121^{+1299}_{-95}
Alt.	-947 ± 272	$14.96^{+16.88}_{-10.42}$	765^{+57}_{-53}	4015^{+2746}_{-846}	388^{+3847}_{-301}

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 $A_{obs} \gg 1.0$

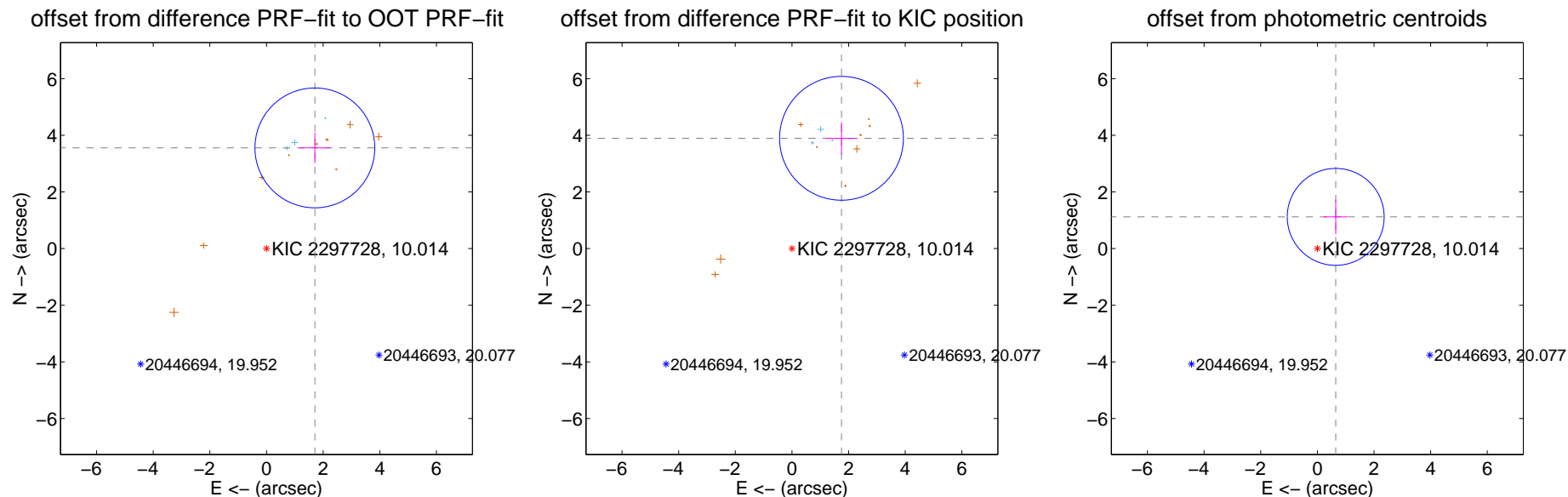
DV Centroid Data

Supplemental centroid analysis for 002297728-05. **Kepler magnitude: 10.01.** Transit SNR 7.25

There are 3 quarters with good PRF difference image offsets

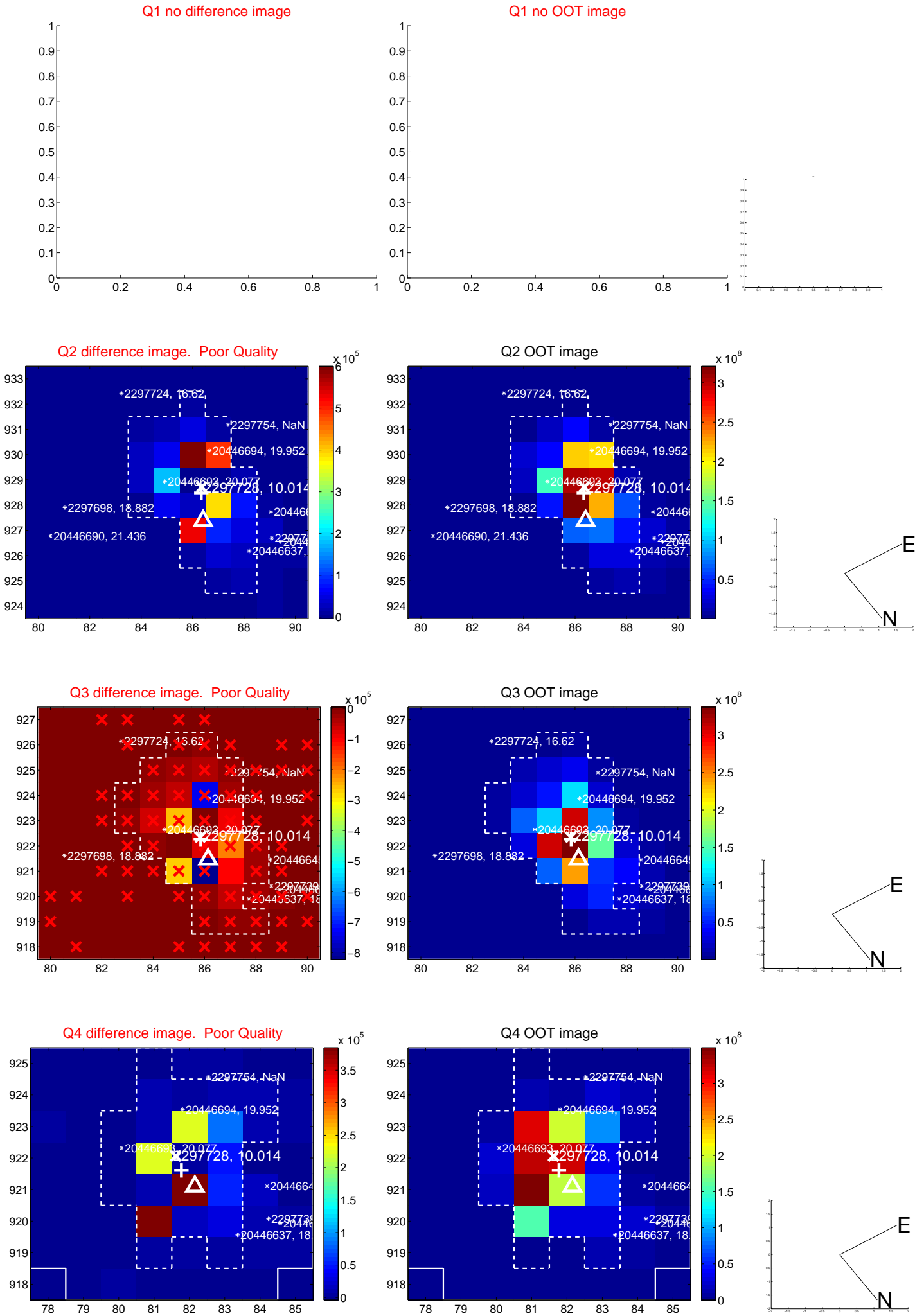
The direct PRF centroid is offset from the target star catalog position by about 0.82 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.944 ± 0.705	5.59	-1.708 ± 0.561	3.556 ± 0.533
PRF-fit source offset from KIC position	4.269 ± 0.729	5.86	-1.750 ± 0.547	3.894 ± 0.571
photometric centroid source offset	1.29 ± 0.57	2.27	-0.65 ± 0.42	1.12 ± 0.61

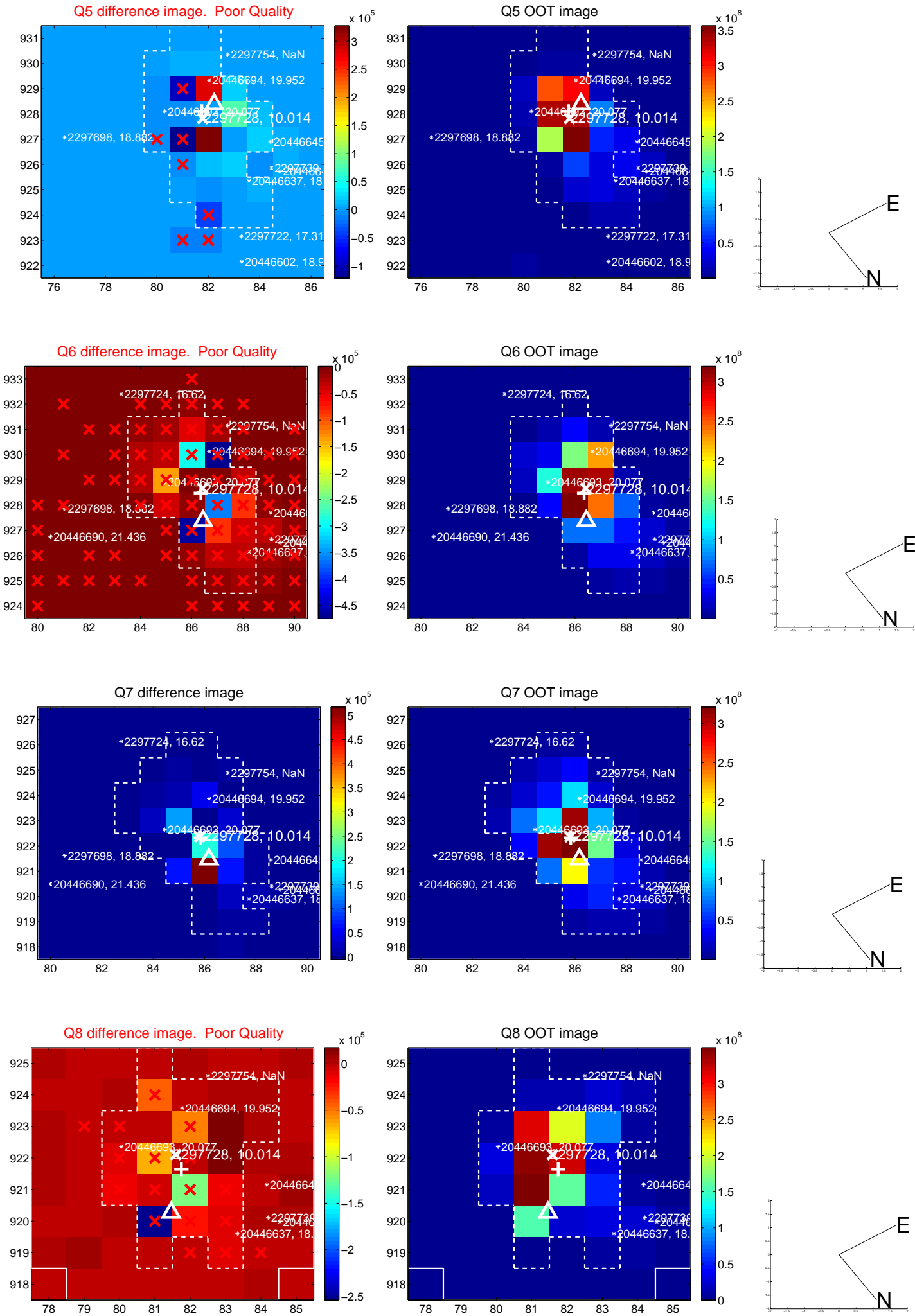


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

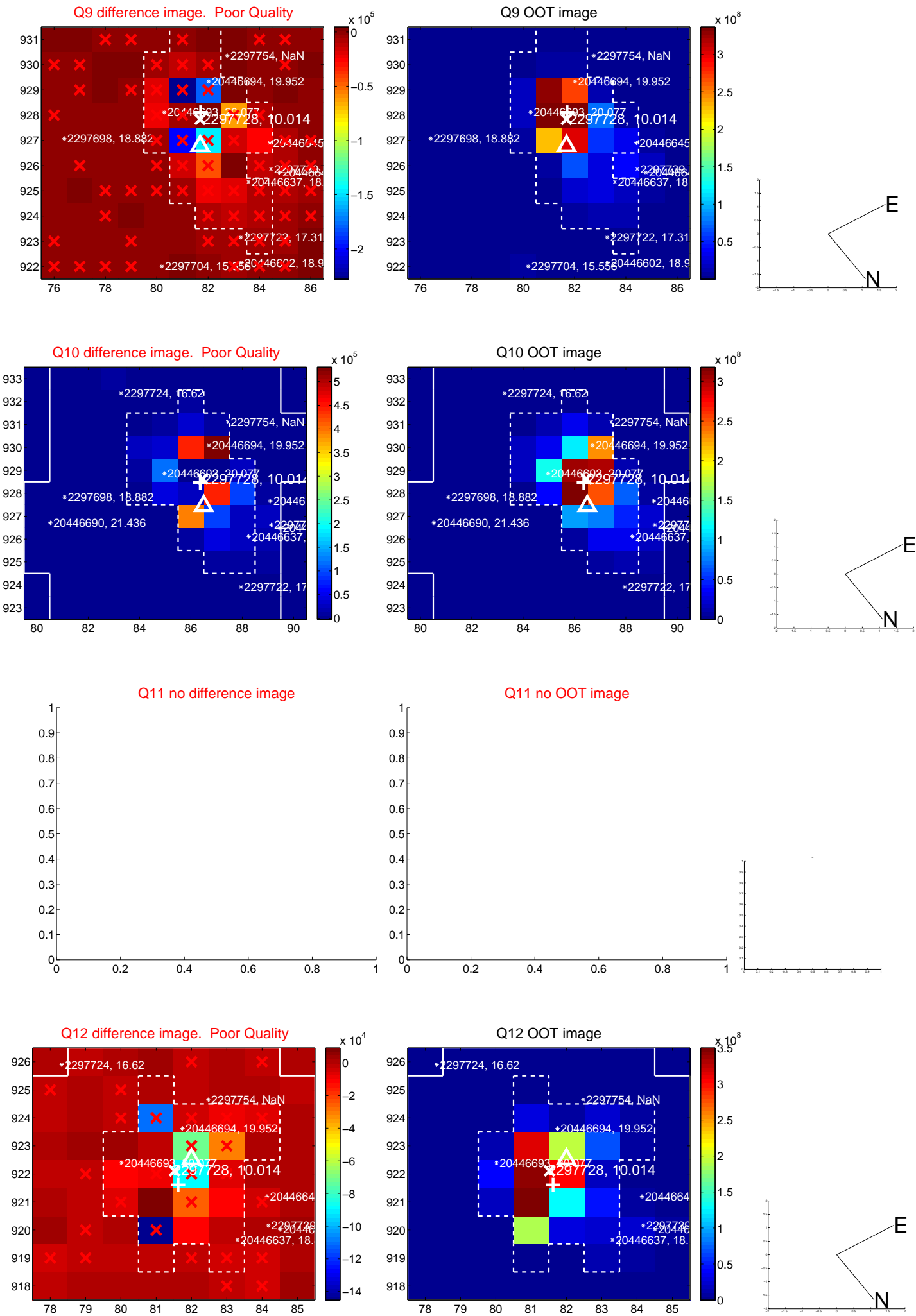
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



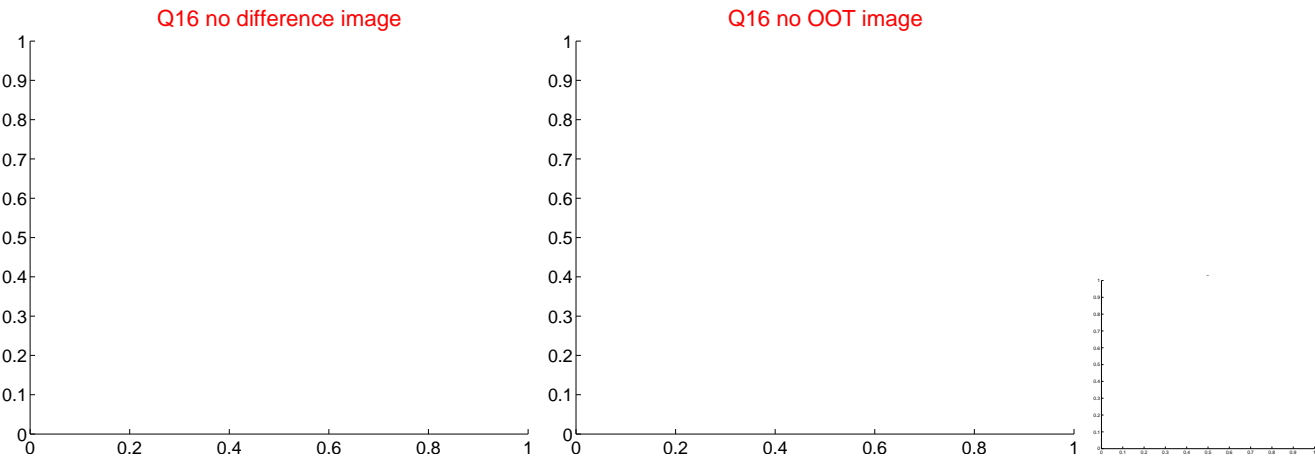
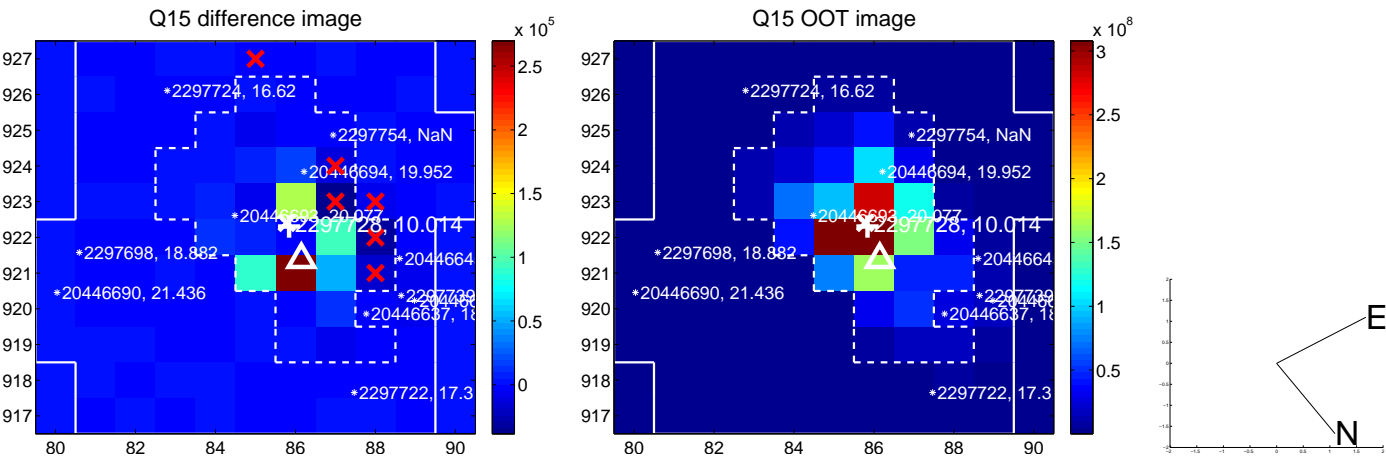
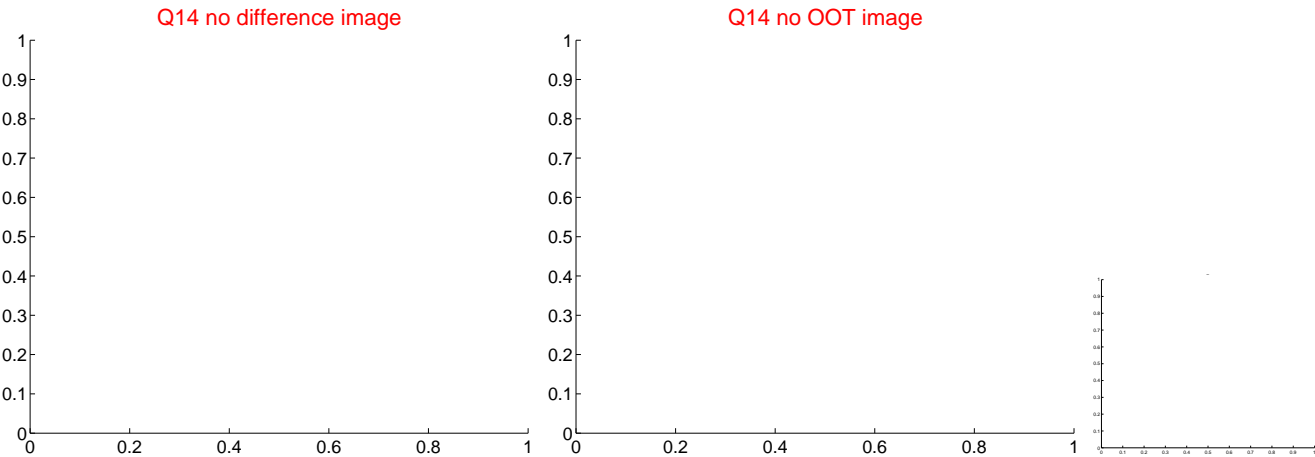
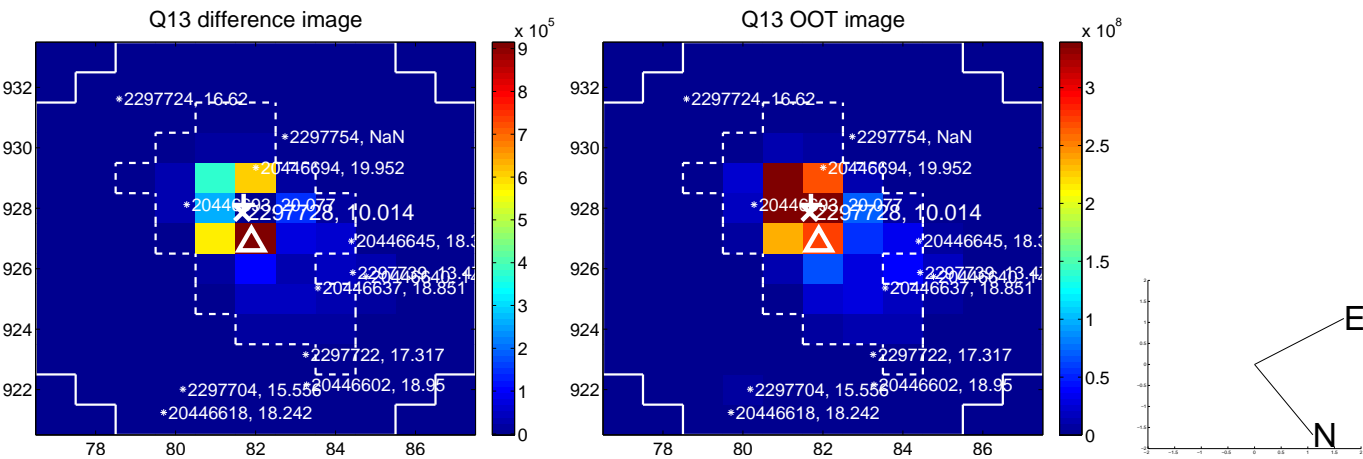
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



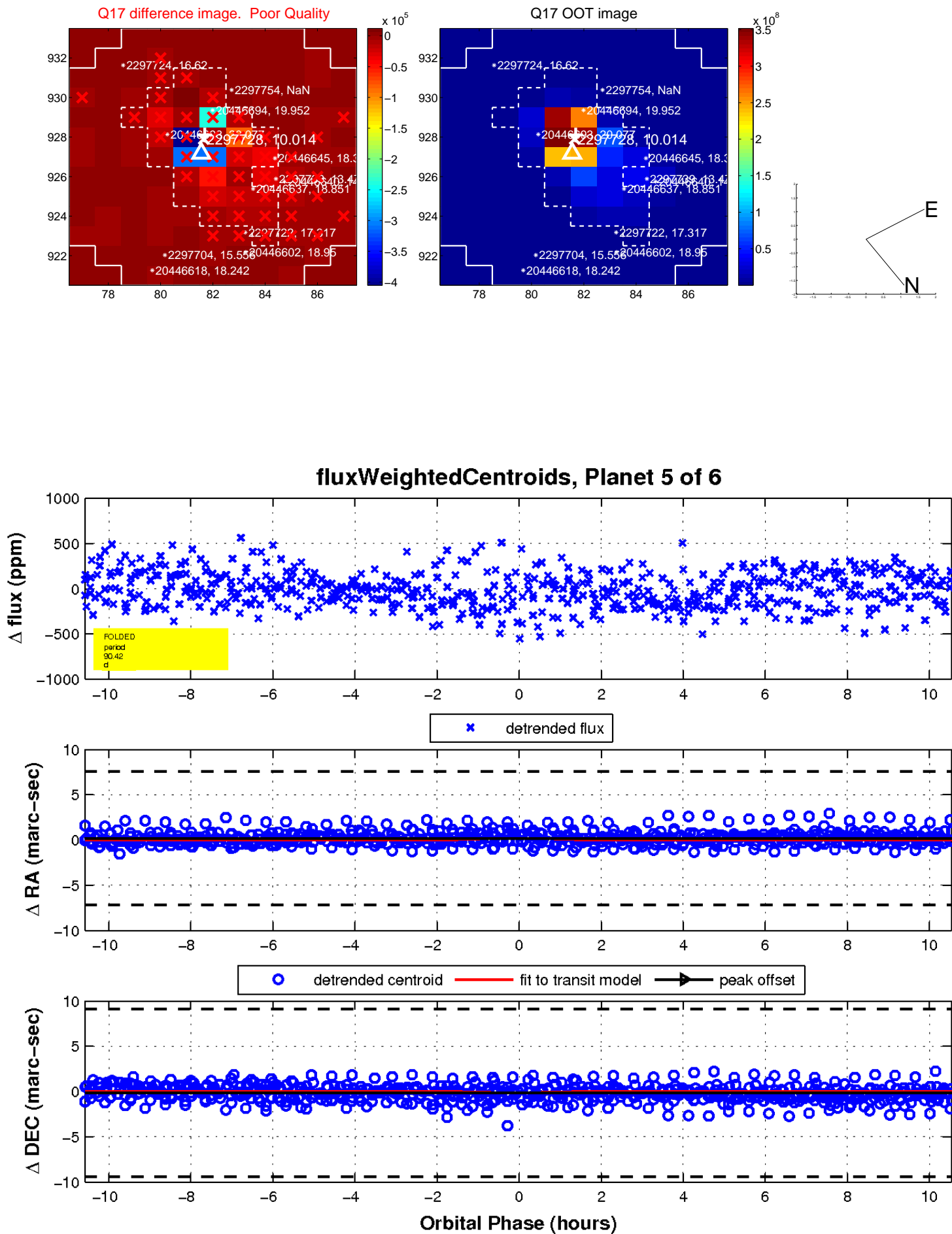
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

