

KIC 008330102

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})
008330102-01	OBS	No	2.279616	131.628107	134.7	12.854	13.3	14.0	2.45	7912	2.90	12038.46
008330102-02	OBS	No	99.000506	173.318441	1214.2	8.379	12.3	9.8	2.45	7912	9.04	78.86
008330102-03	OBS	No	446.936040	376.353508	1003.3	23.237	12.7	8.8	2.45	7912	8.78	10.57
008330102-04	OBS	No	0.782990	132.133012	135.8	3.184	10.4	9.6	2.45	7912	3.32	50046.98

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008330102-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008330102-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
008330102-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008330102-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT

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

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

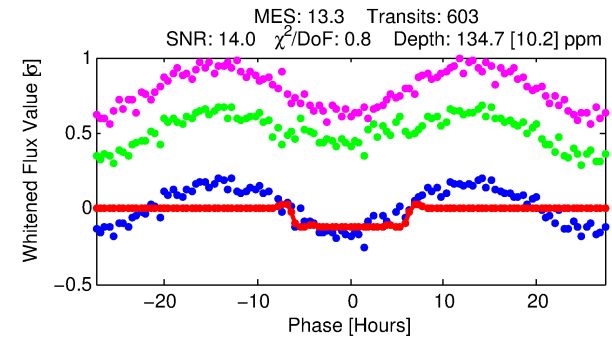
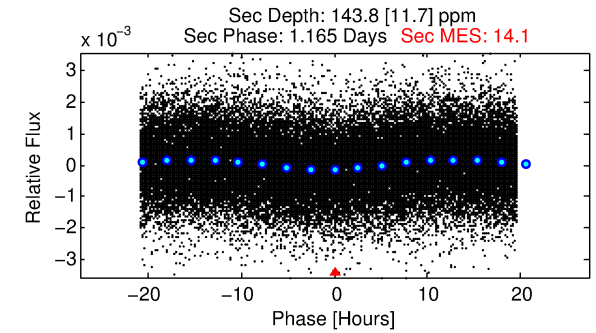
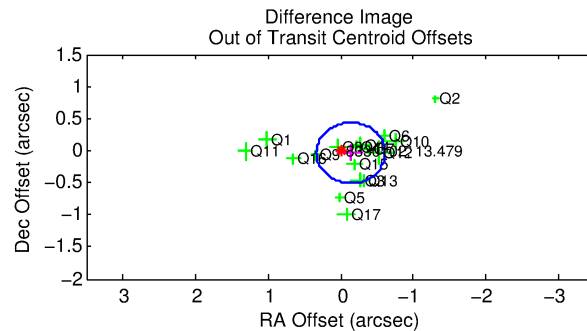
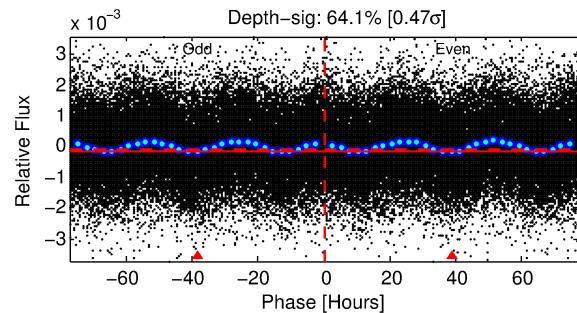
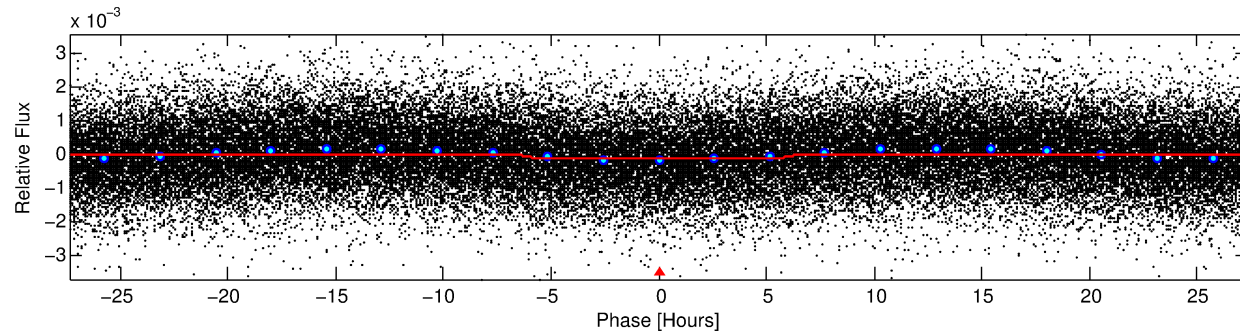
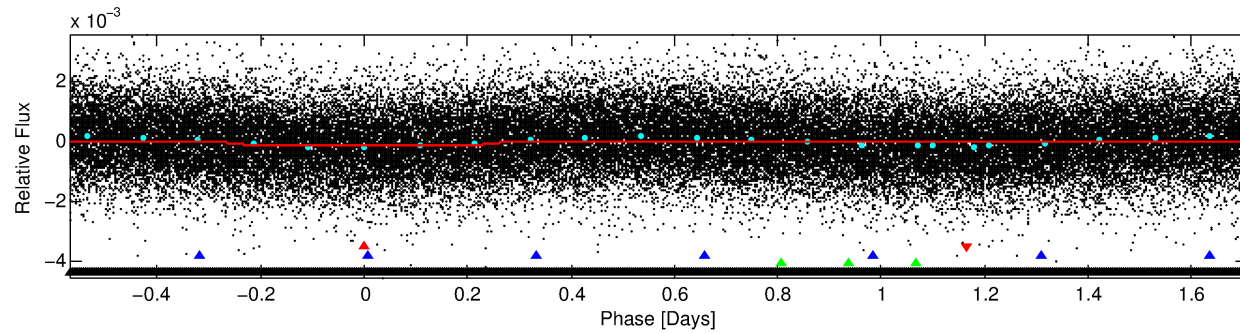
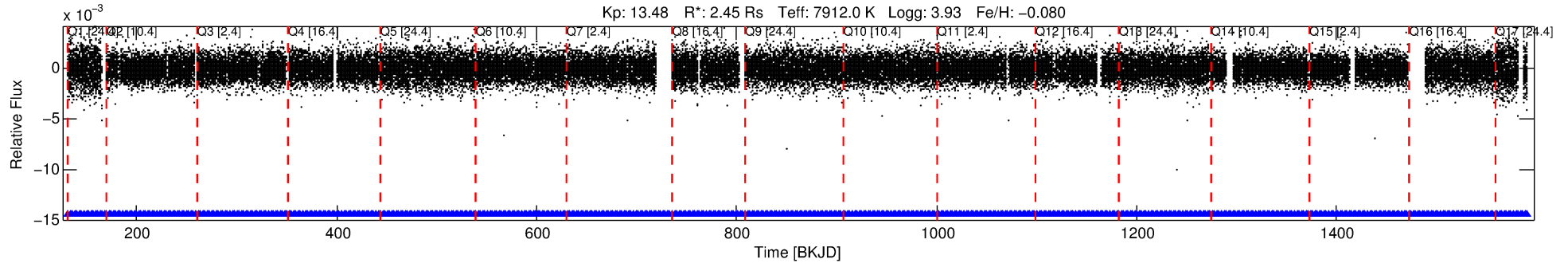
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008330102-01

No Significant Match Found

DV One-Page Summary

KIC: 8330102 Candidate: 1 of 4 Period: 2.280 d



DV Fit Results:

Period = 2.27962 [0.00002] d
Epoch = 131.6281 [0.0065] BKJD
Rp/R* = 0.0108 [0.0092]
a/R* = 1.48 [3.97]
b = 0.26 [18.18]
Seff = 12038.46 [5791.30]
Teq = 2671 [321] K
Rp = 2.90 [2.64] Re
a = 0.0419 [0.0125] AU
Ag = 16.55 [29.07] [0.53 σ]
Teffp = 8329 [3555] K [1.59 σ]

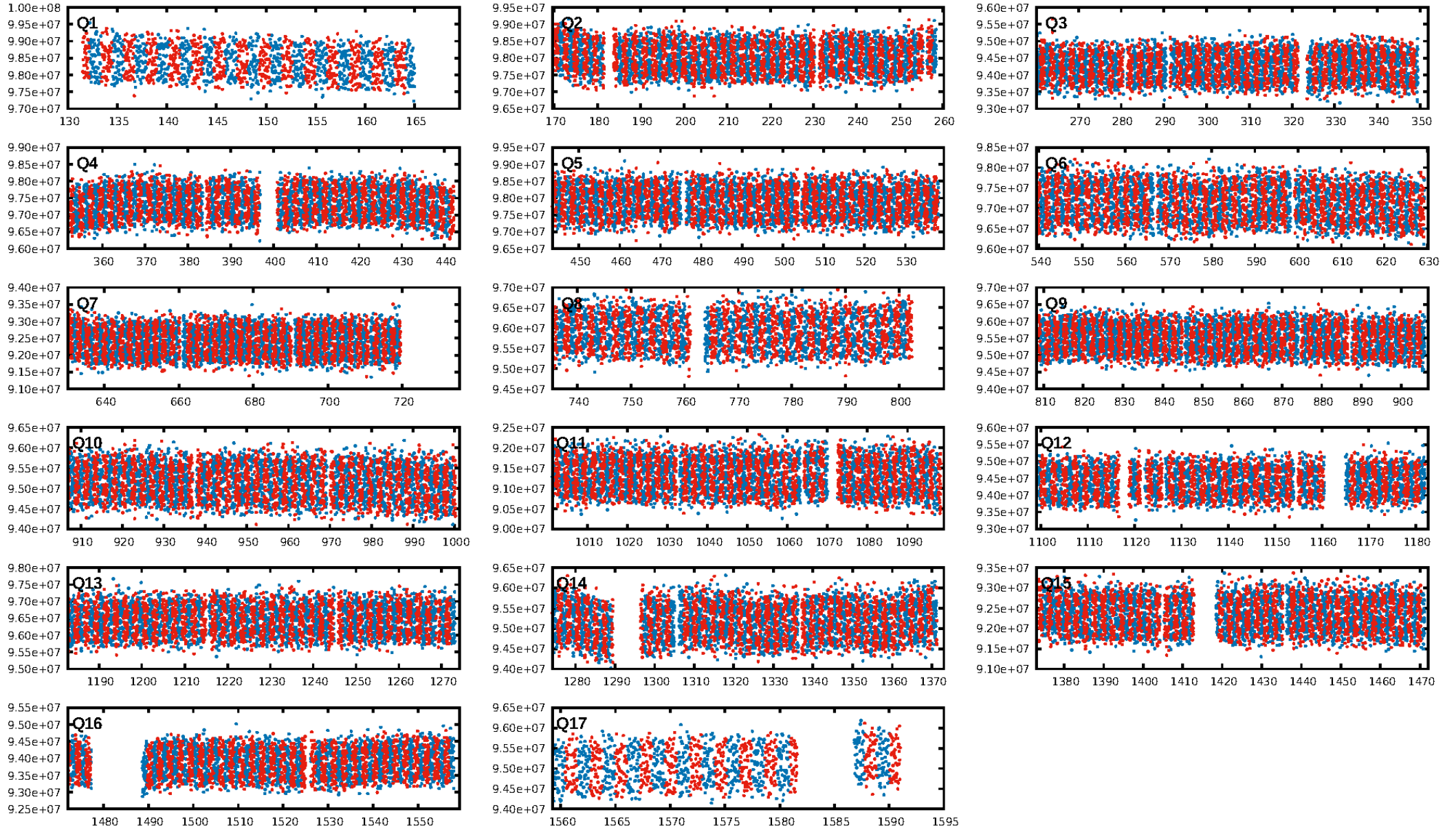
DV Diagnostic Results:

ShortPeriod-sig: 99.3% [2.71 σ]
LongPeriod-sig: 100.0% [151.28 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.94e-47
RollingBand-fgt: 1.00 [576/576]
GhostDiagnostic-chr: 2.563
Centroid-sig: 6.2%
Centroid-so: 0.578 arcsec [2.89 σ]
OotOffset-rm: 0.142 arcsec [0.90 σ]
KicOffset-rm: 0.217 arcsec [1.72 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

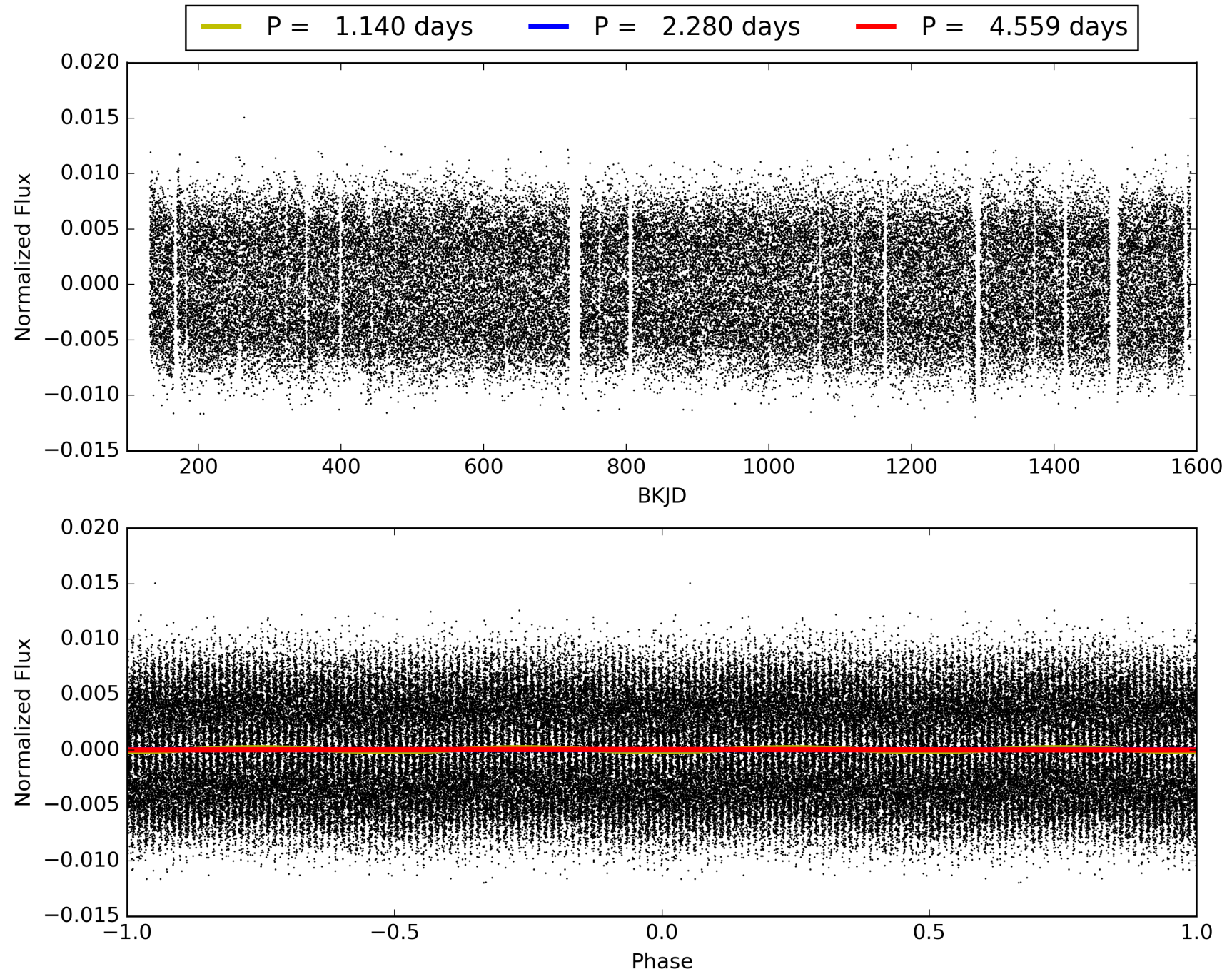
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:48:01 Z

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

TCE 008330102-01, PDC Light Curves

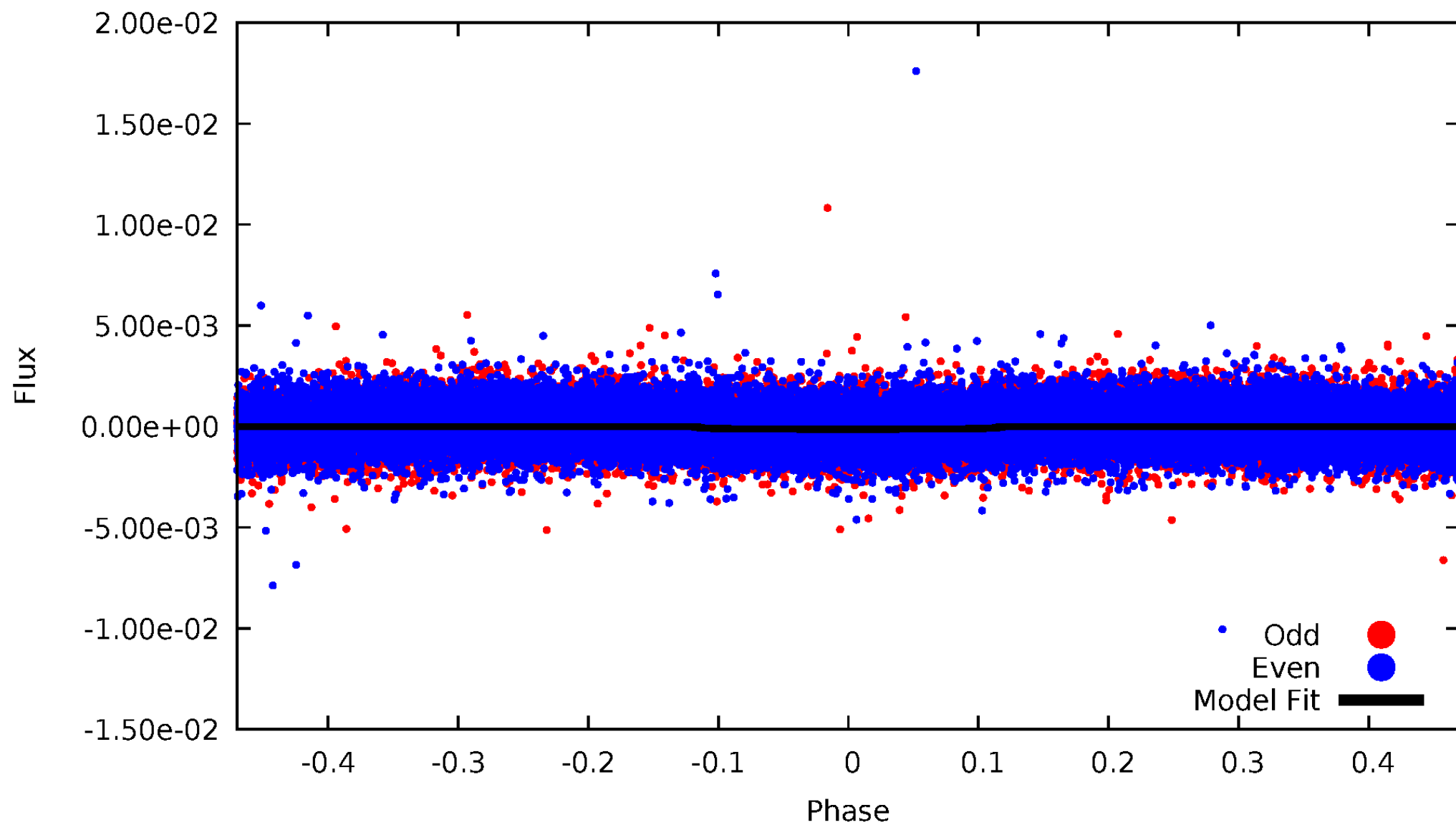


TCE 008330102-01



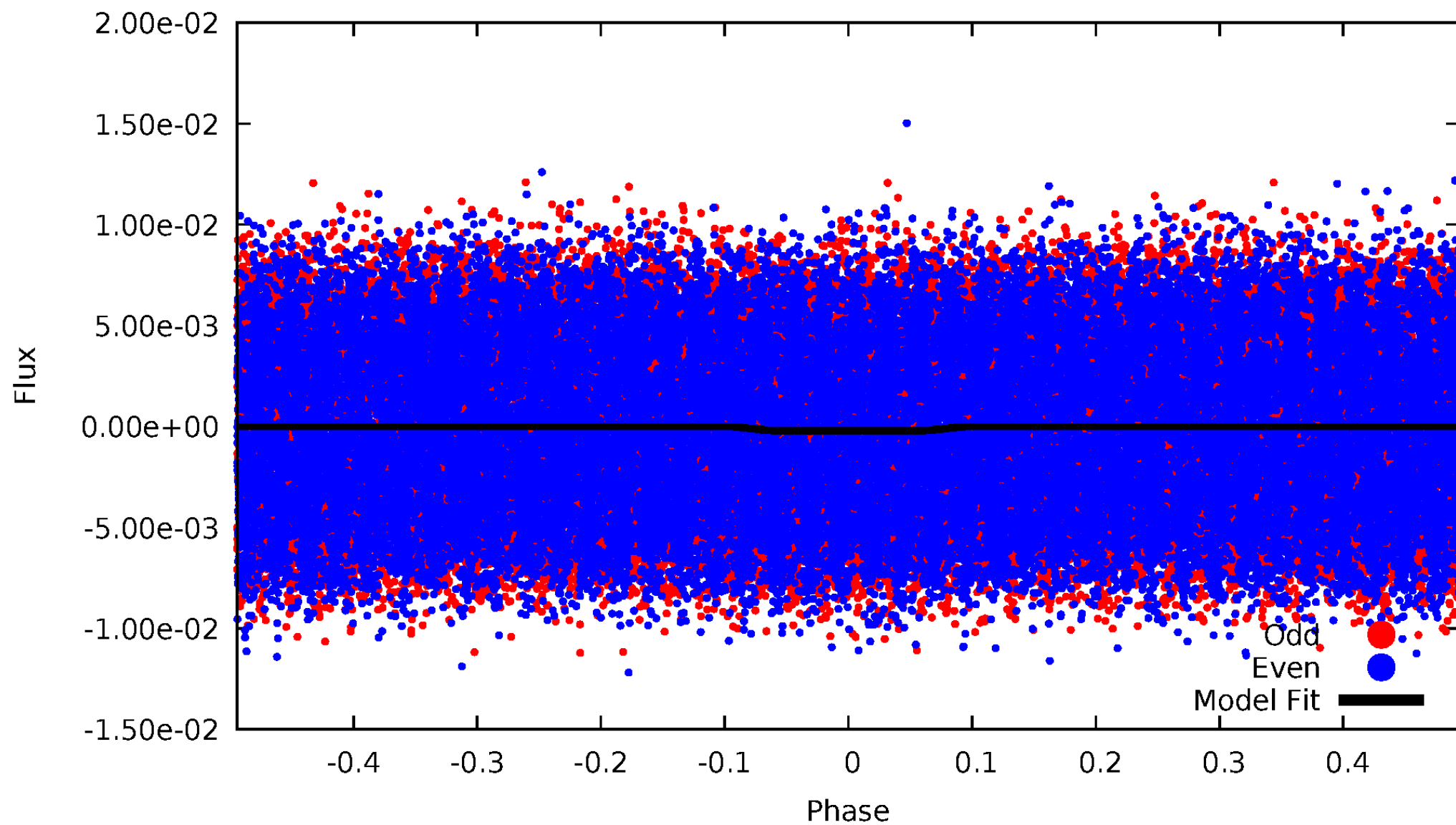
DV Odd/Even

TCE 008330102-01

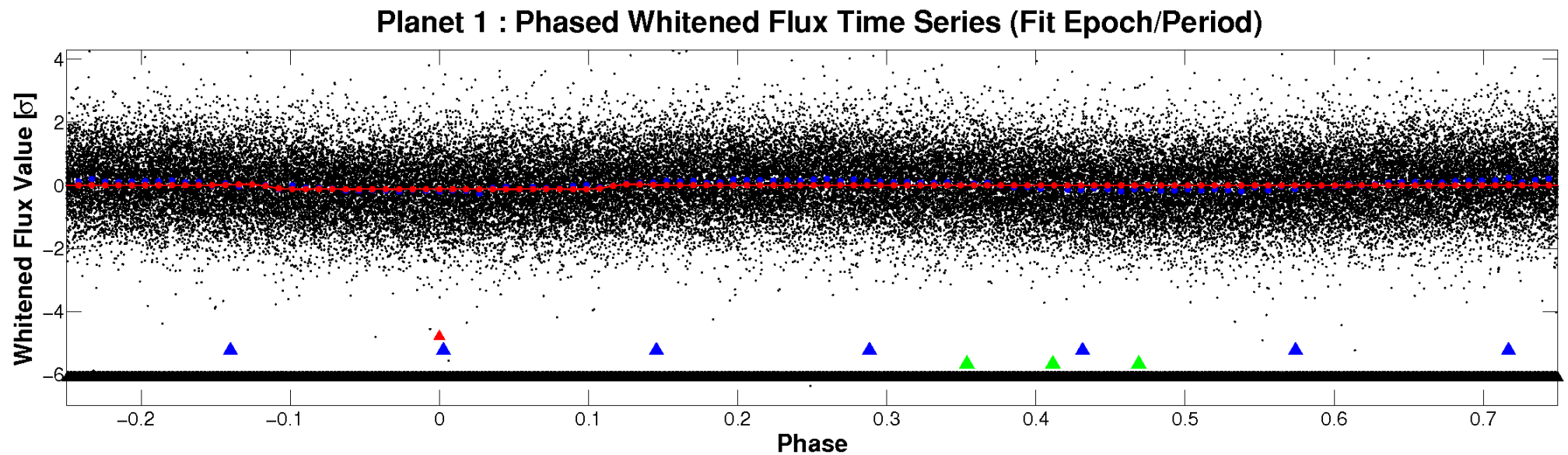
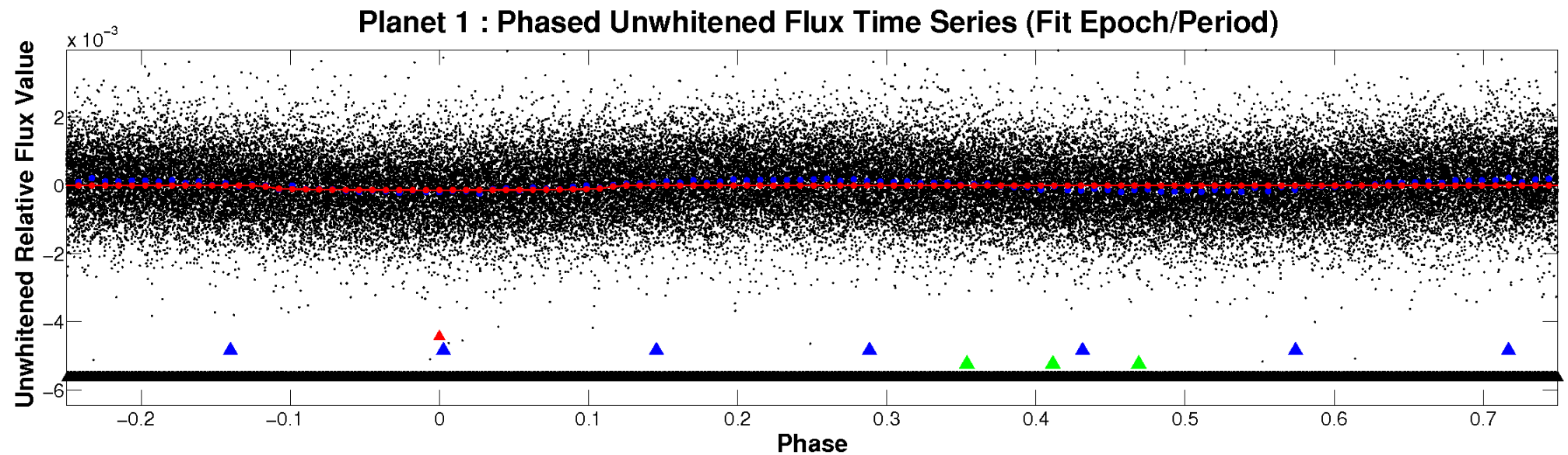


ALT Odd/Even

TCE 008330102-01

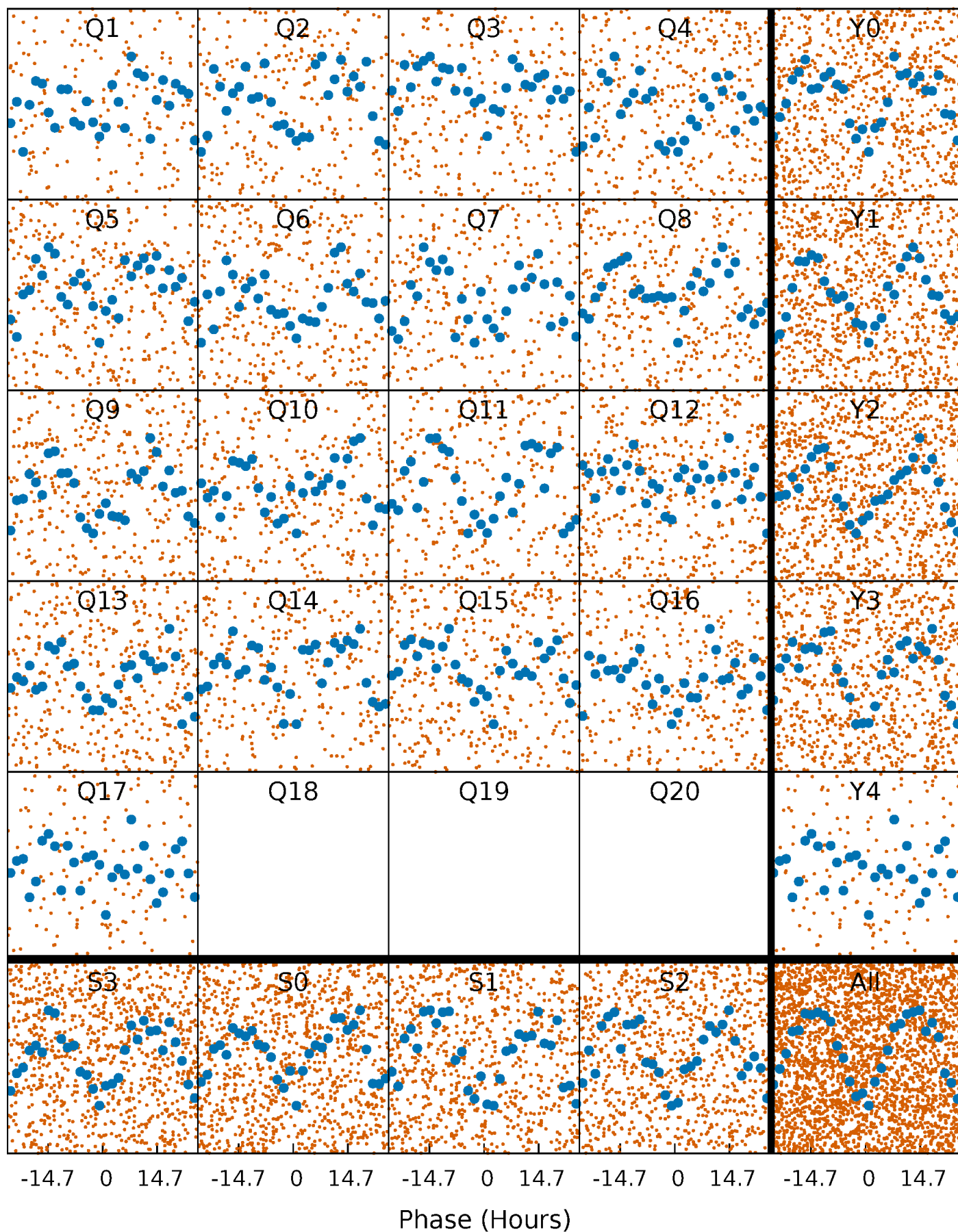


Non-Whitened Vs. Whitened Light Curve



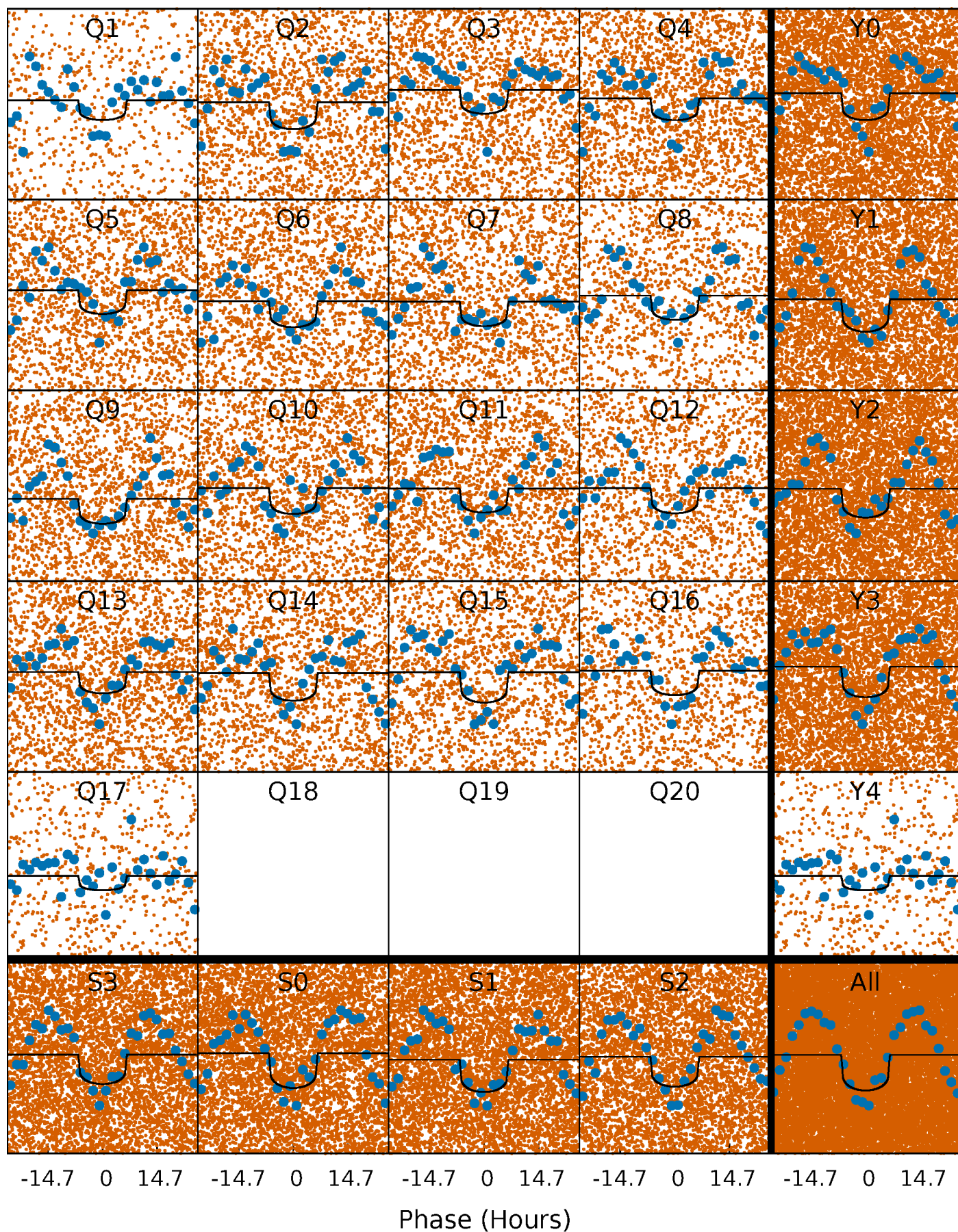
PDC Quarter-Phased Transit Curves

TCE 008330102-01 P= 2.279616 Days $T_0=131.628107$ (BKJD)



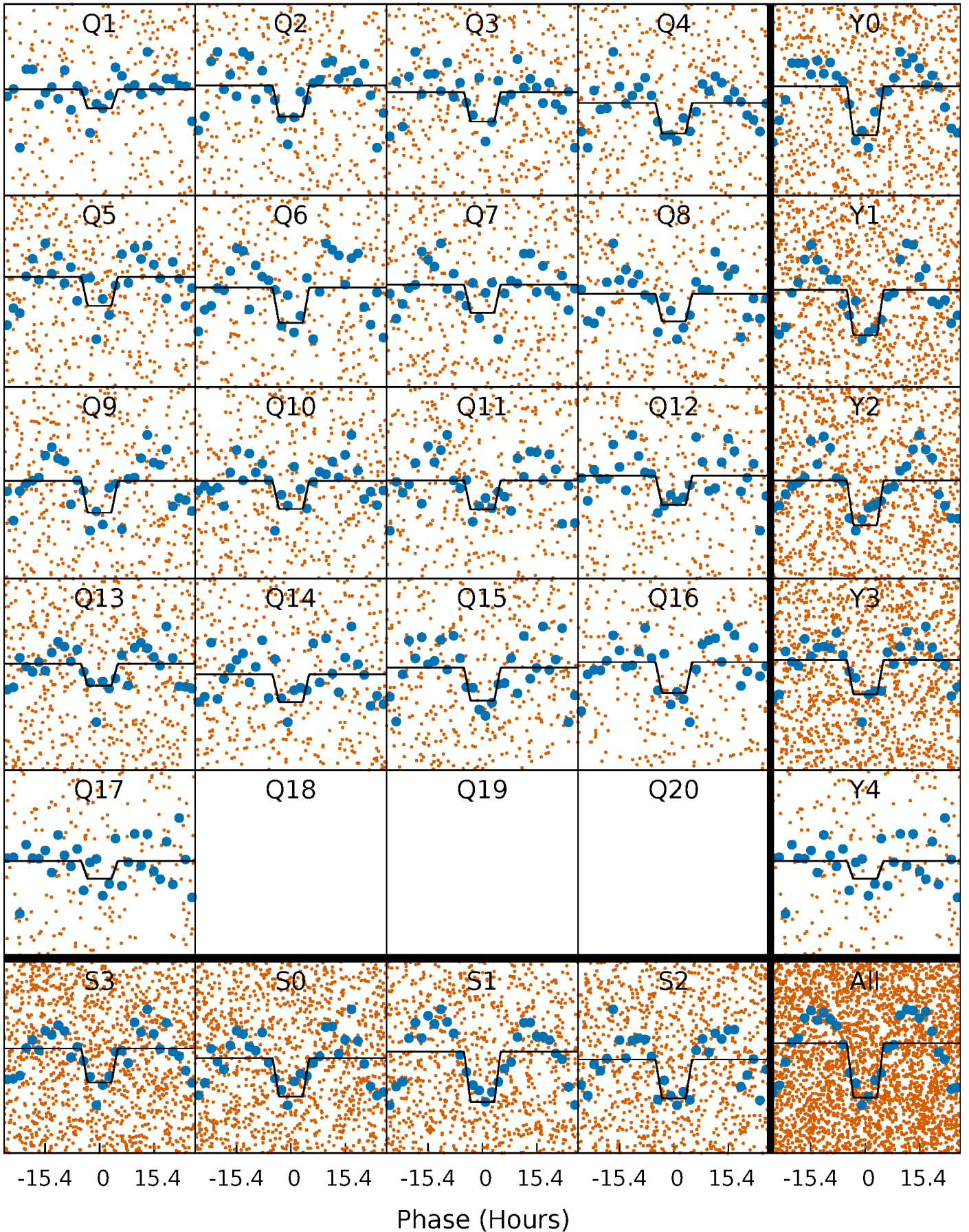
DV Quarter-Phased Transit Curves

TCE 008330102-01 P= 2.279616 Days $T_0=131.628107$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

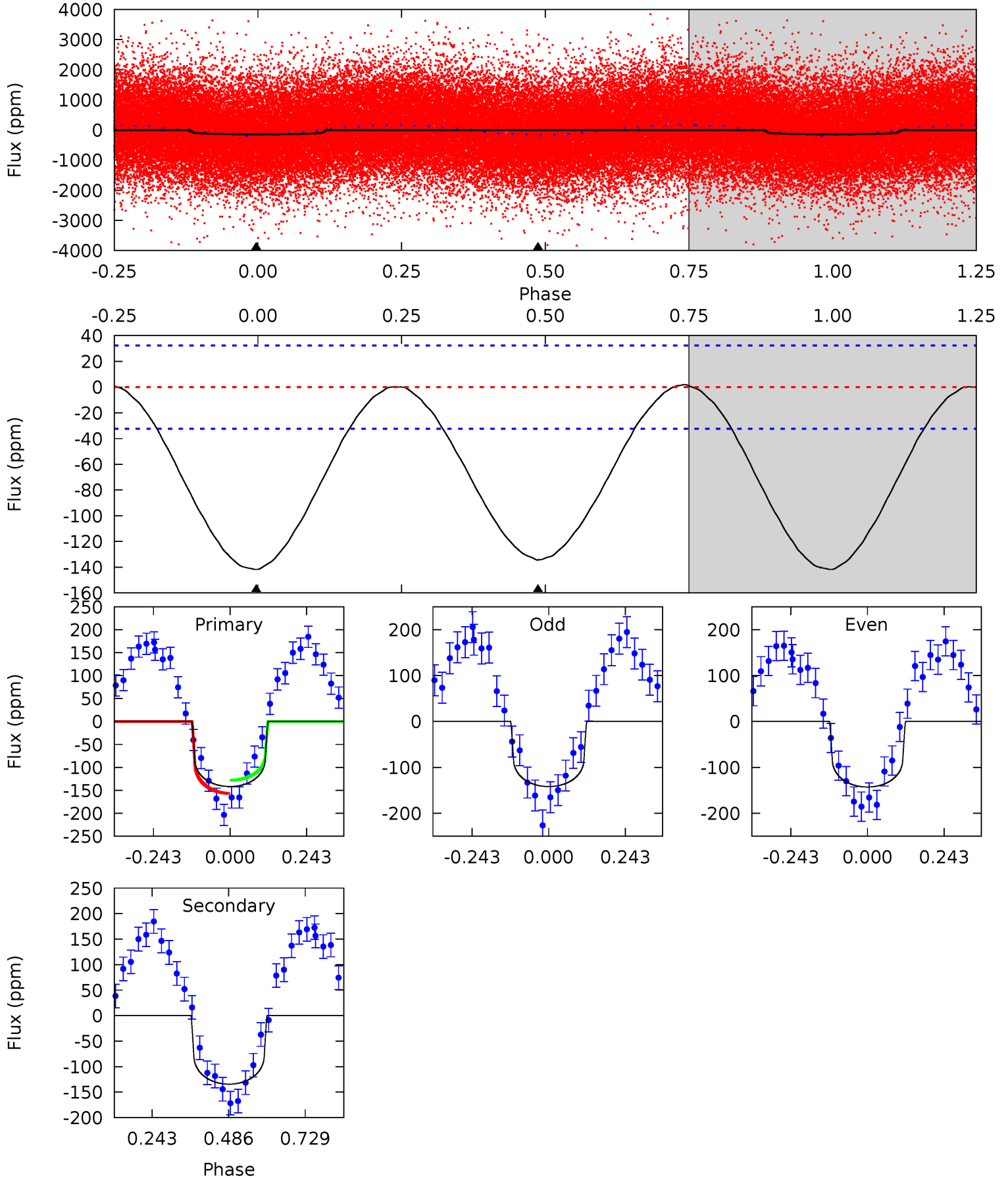
TCE 008330102-01 P= 2.279482 Days $T_0=131.646860$ (BKJD)



DV Model-Shift Uniqueness Test

008330102-01, P = 2.279616 Days, E = 129.348491 Days

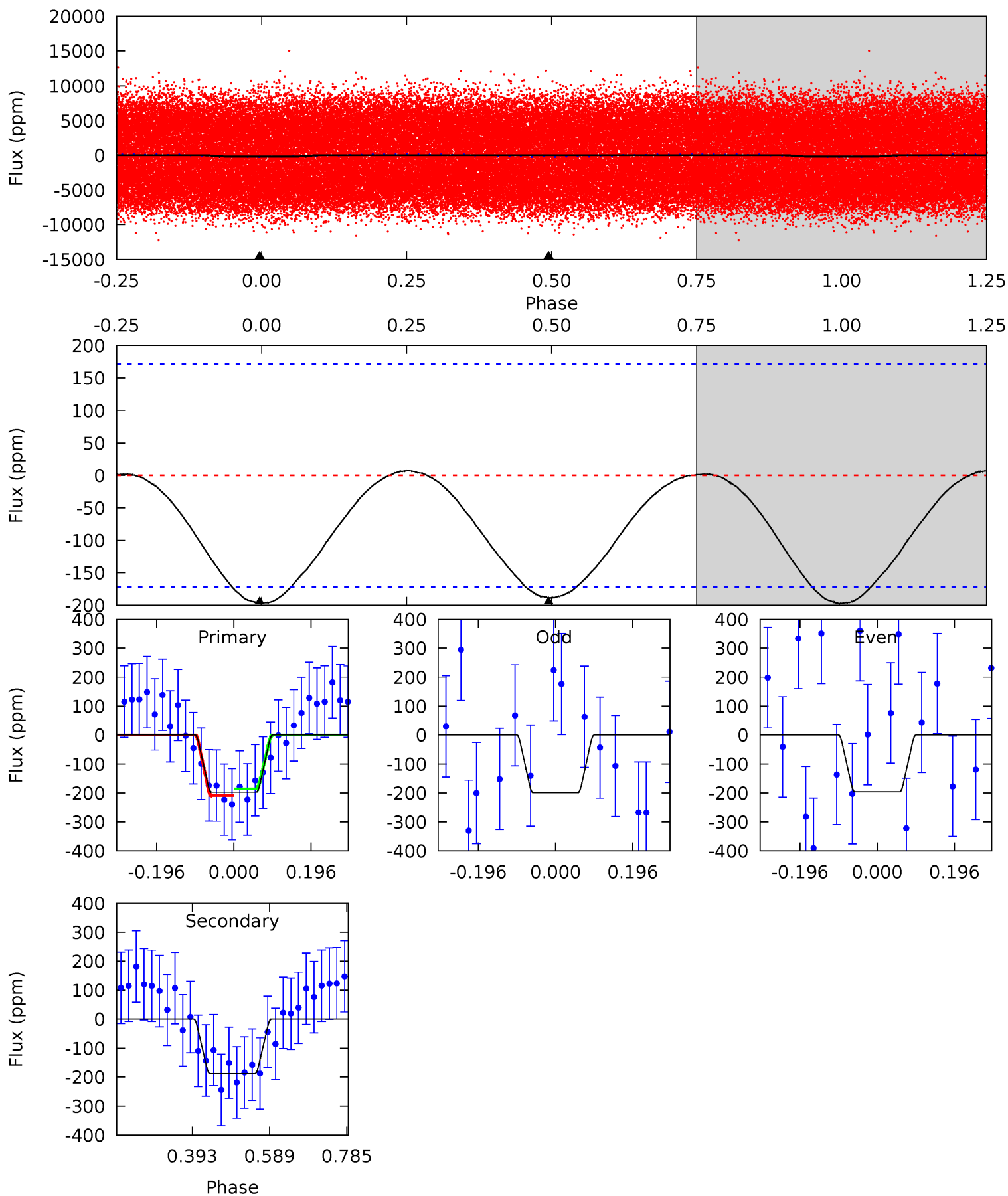
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.2	18.2	0	0	4.37	1.17	0.16	19.2	19.2	18.2	18.2	0.07	1.02	0.01	2.00



Alt Model-Shift Uniqueness Test

008330102-01, P = 2.279482 Days, E = 129.367378 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.07	4.85	0	0	4.42	1.29	0.16	5.07	5.07	4.85	4.85	0.04	1.03	0.04	0.30



Stellar Parameters For KIC 008330102

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7912^{+216}_{-340}	$3.934^{+0.253}_{-0.117}$	$-0.080^{+0.200}_{-0.350}$	$2.452^{+0.447}_{-0.831}$	$1.885^{+0.078}_{-0.416}$	$0.180^{+0.322}_{-0.065}$
	+3%/-4%	+6%/-3%	+250%/-438%	+18%/-34%	+4%/-22%	+179%/-36%
Source	KIC0	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 008330102-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-134 ± 7	$3.03^{+2.38}_{-1.75}$	3673^{+257}_{-305}	7603^{+6576}_{-1925}	14^{+59}_{-9}
Alt.	-188 ± 39	$3.83^{+2.33}_{-1.99}$	3681^{+244}_{-294}	7392^{+5296}_{-1730}	12^{+44}_{-7}

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

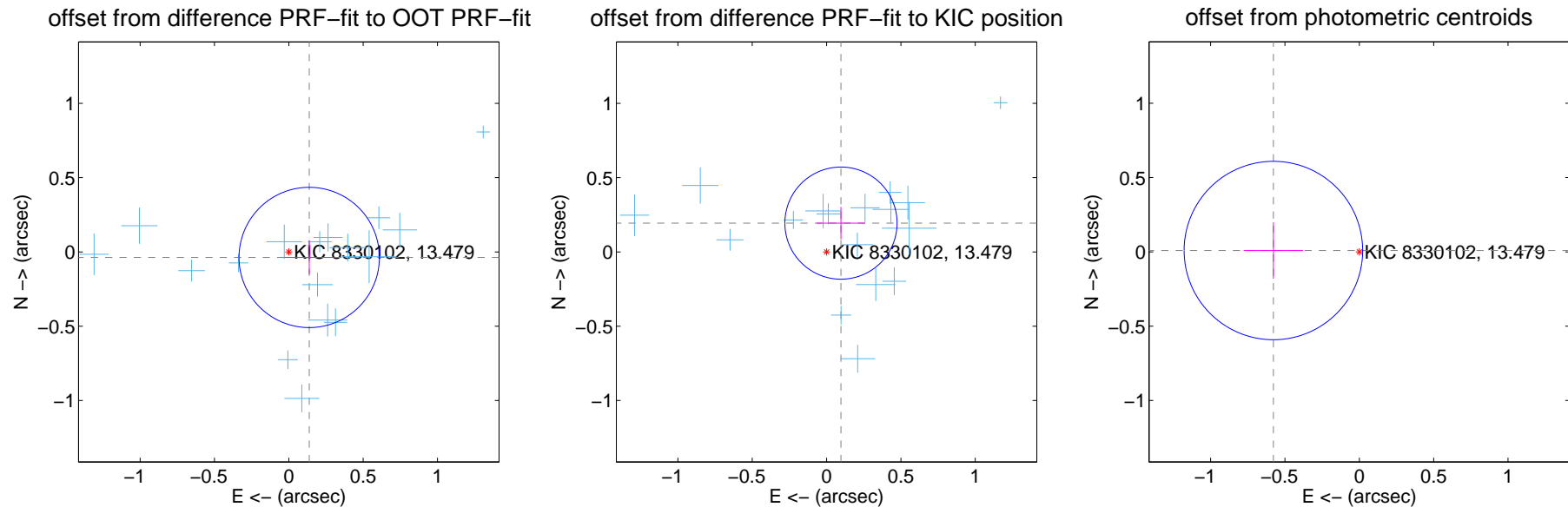
DV Centroid Data

Supplemental centroid analysis for 008330102-01. Kepler magnitude: 13.48. Transit SNR 13.99

There are 17 quarters with good PRF difference image offsets

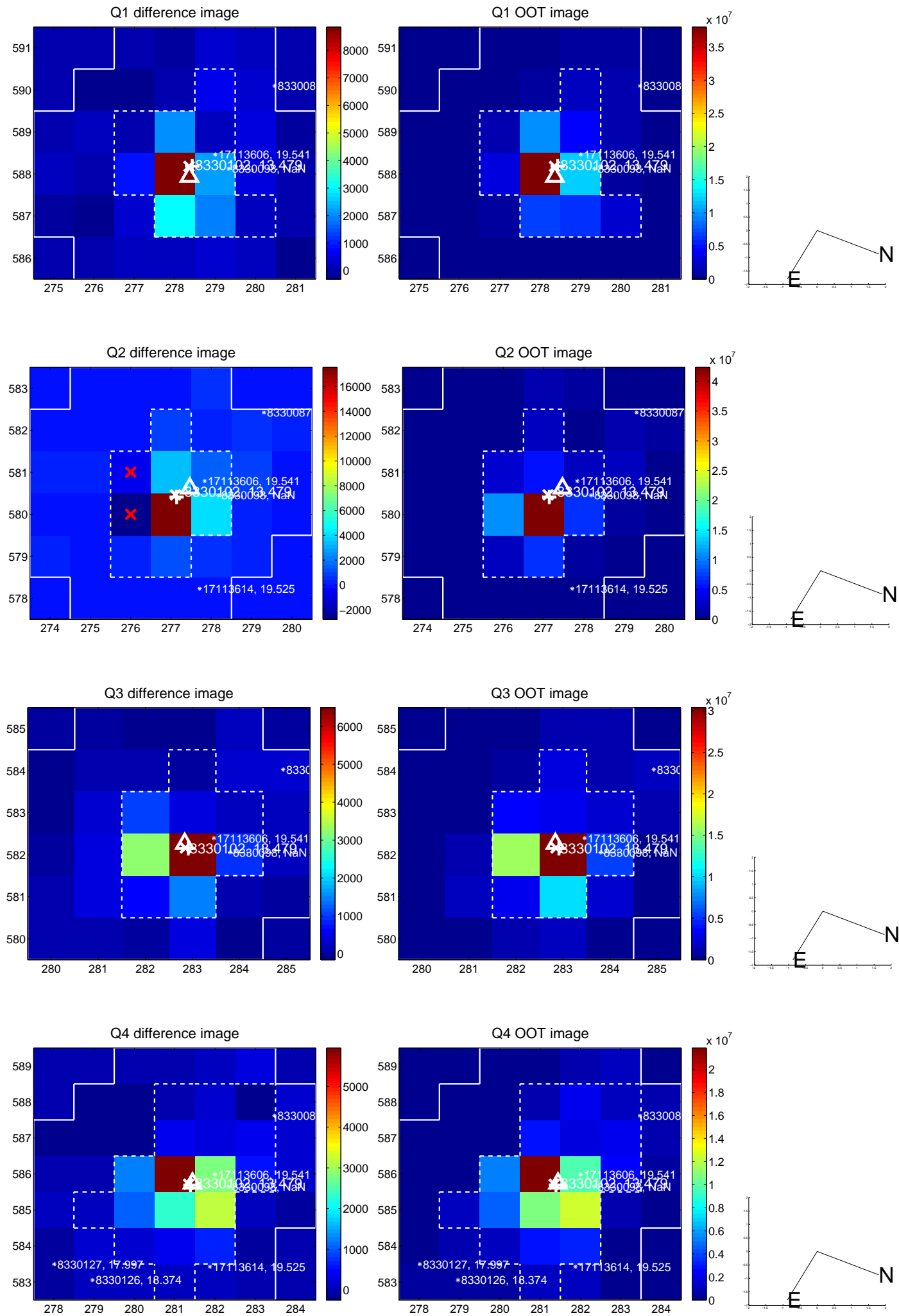
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.142 ± 0.157	0.90	-0.137 ± 0.167	-0.037 ± 0.113
PRF-fit source offset from KIC position	0.217 ± 0.126	1.72	-0.097 ± 0.163	0.194 ± 0.109
photometric centroid source offset	0.58 ± 0.20	2.89	0.58 ± 0.20	0.01 ± 0.19

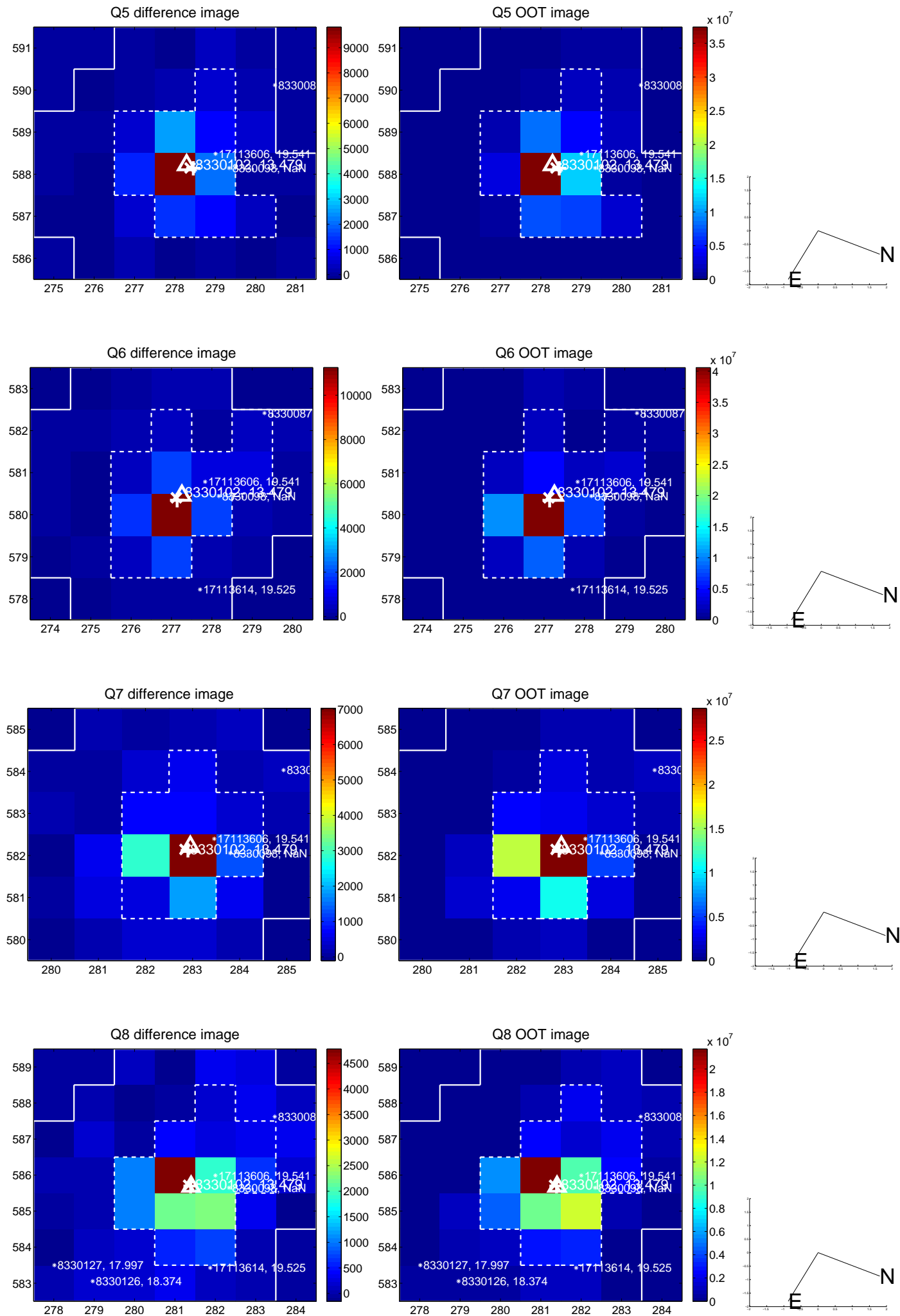


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

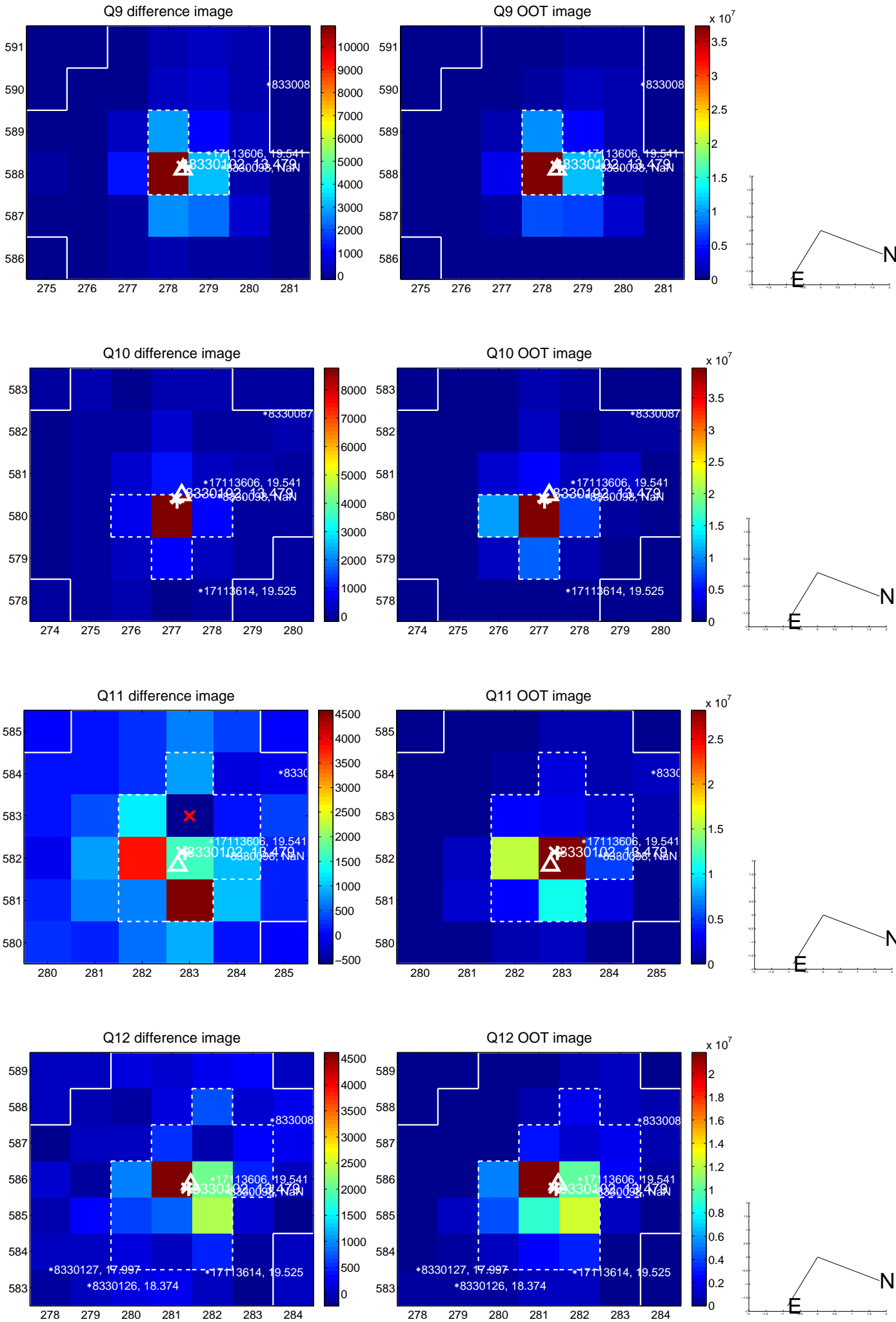
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



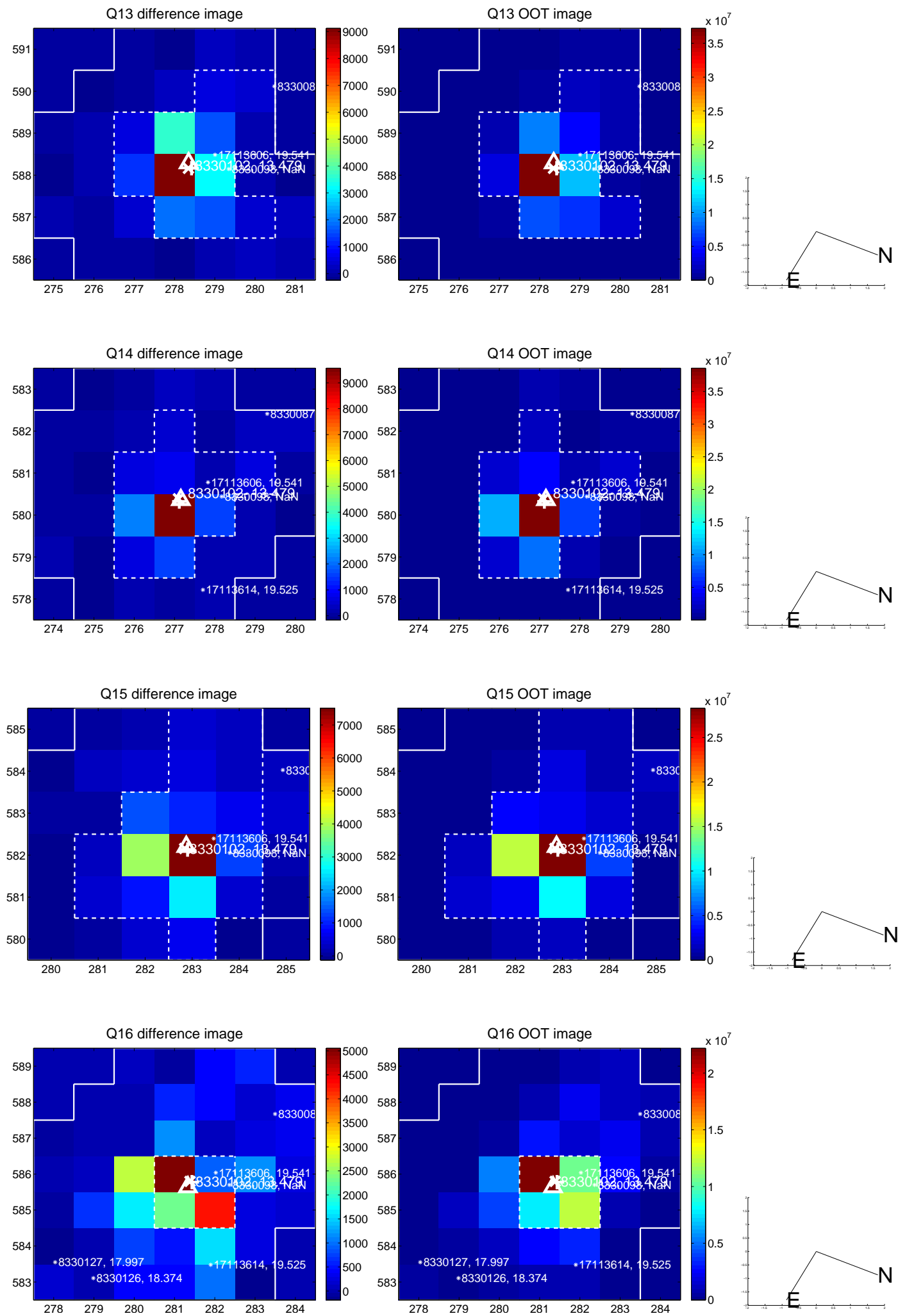
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



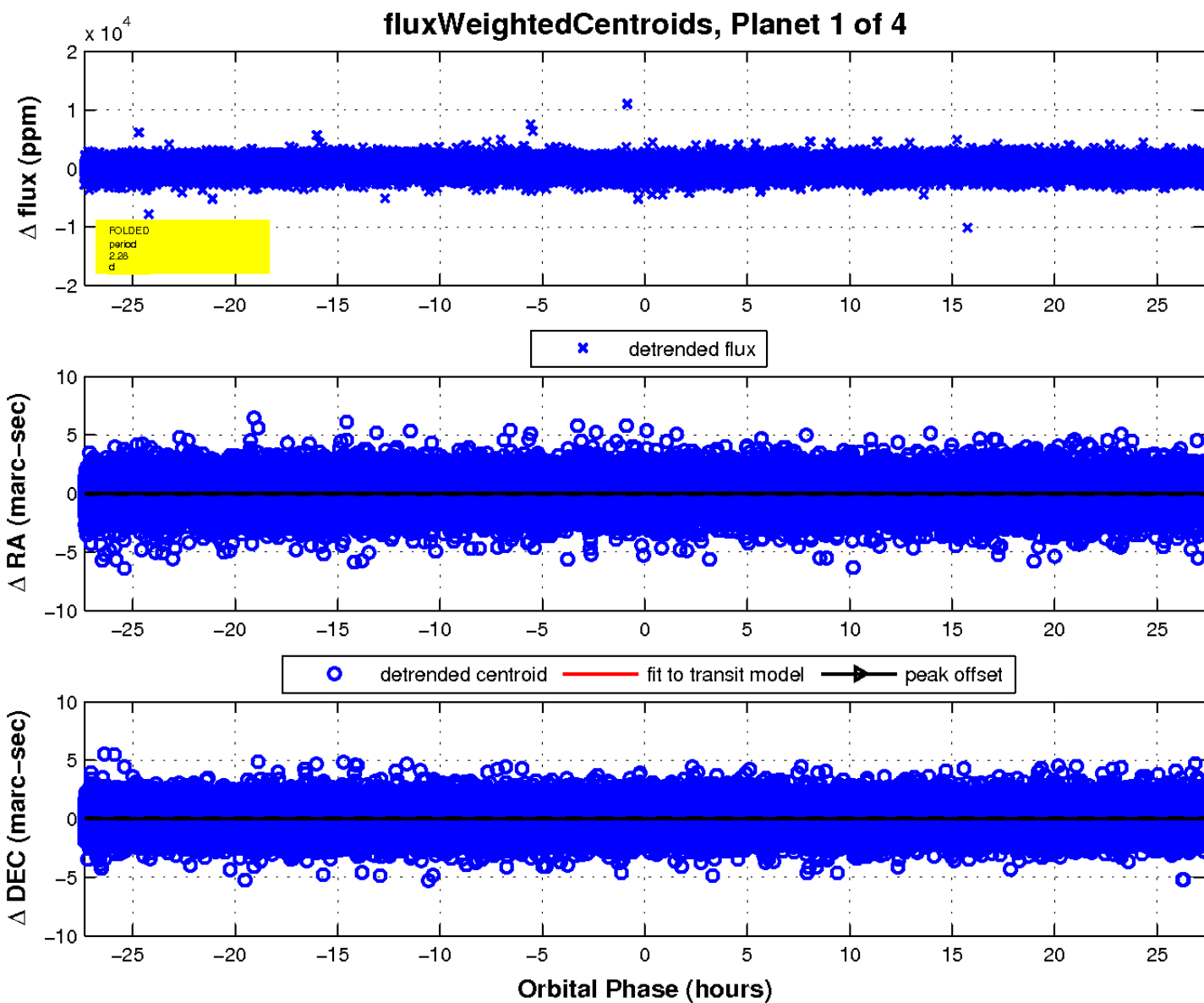
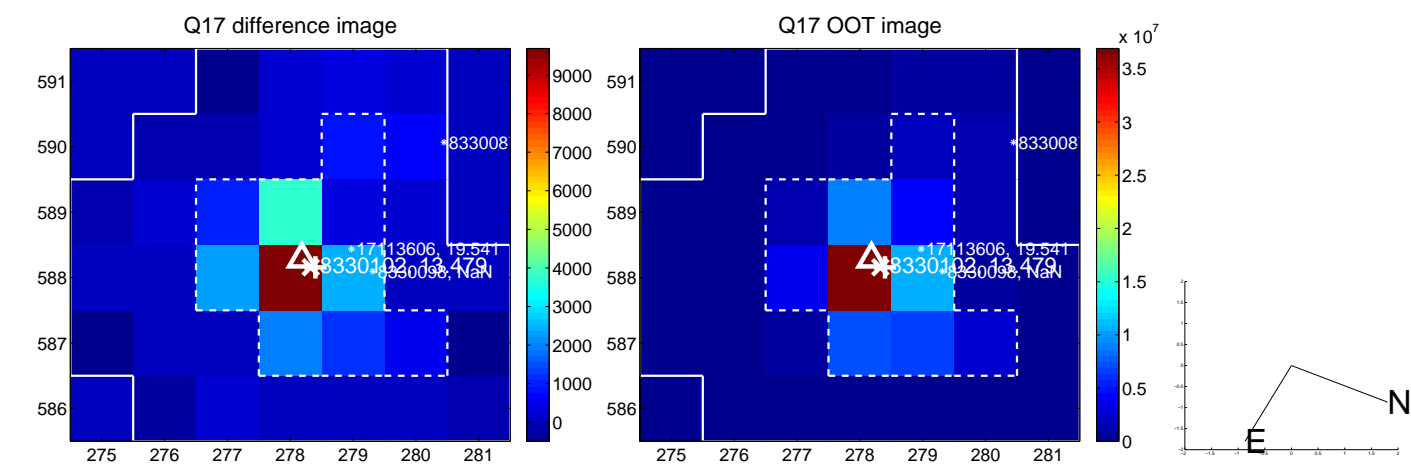
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

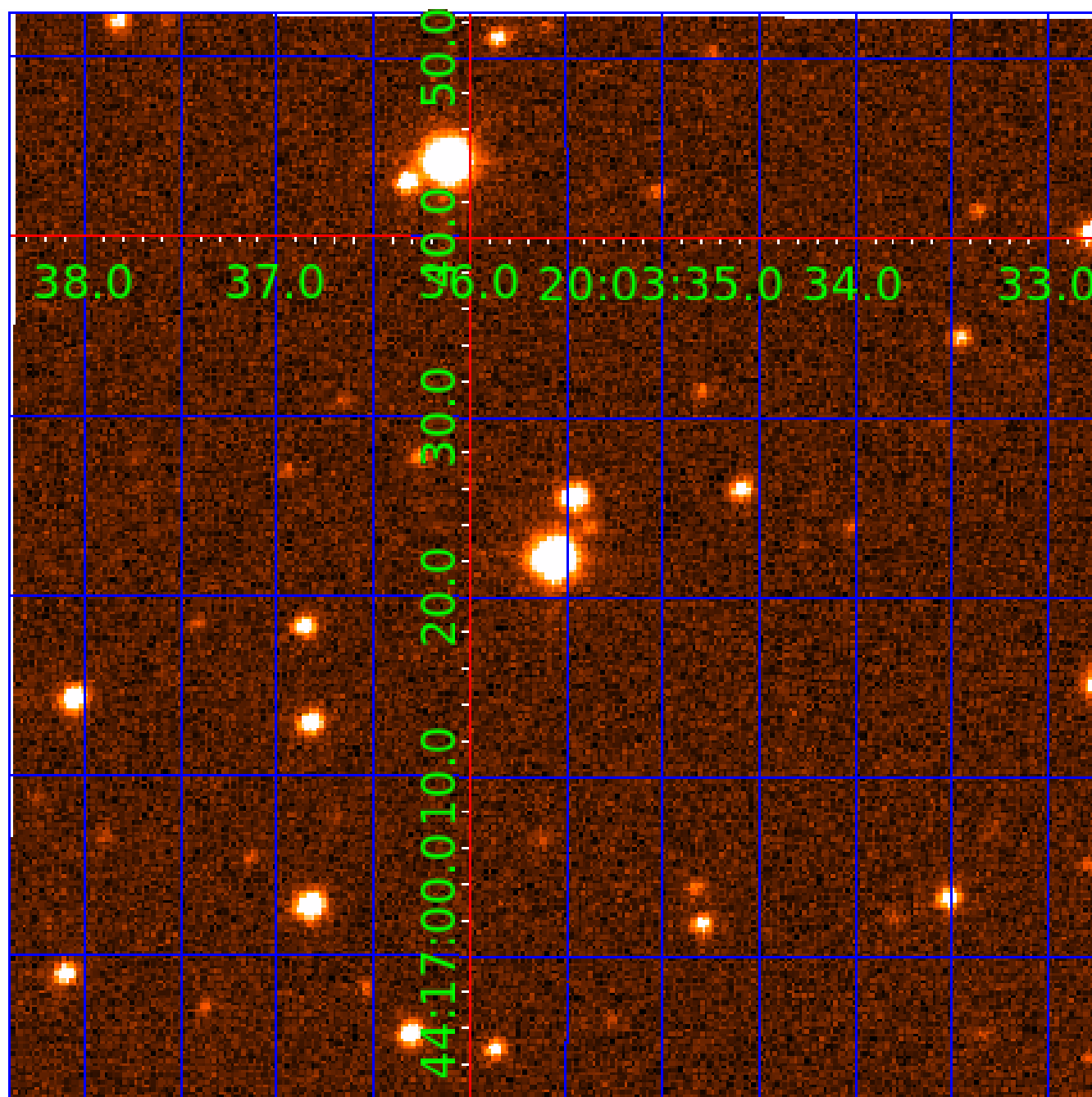


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008330102

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})
008330102-01	OBS	No	2.279616	131.628107	134.7	12.854	13.3	14.0	2.45	7912	2.90	12038.46
008330102-02	OBS	No	99.000506	173.318441	1214.2	8.379	12.3	9.8	2.45	7912	9.04	78.86
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008330102-04	OBS	No	0.782990	132.133012	135.8	3.184	10.4	9.6	2.45	7912	3.32	50046.98

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008330102-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008330102-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
008330102-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008330102-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT

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

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

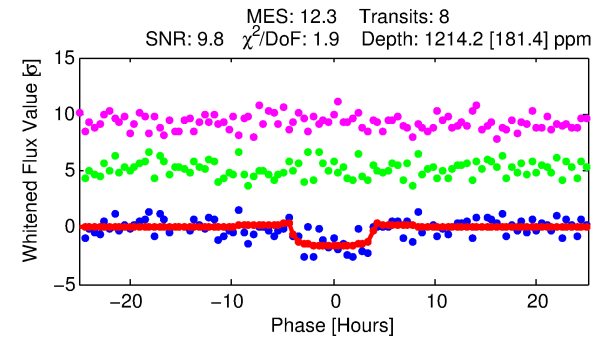
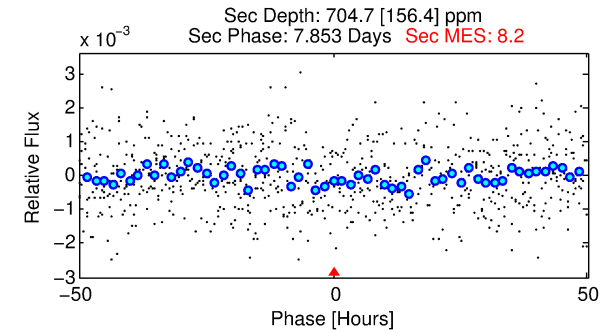
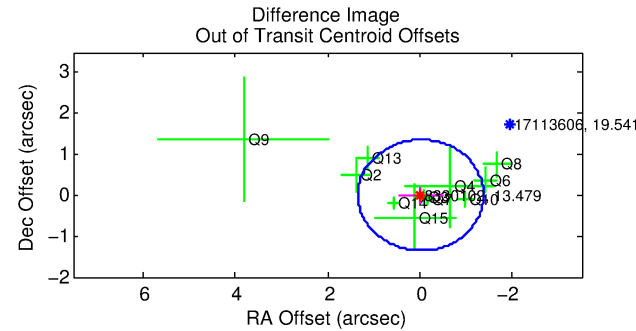
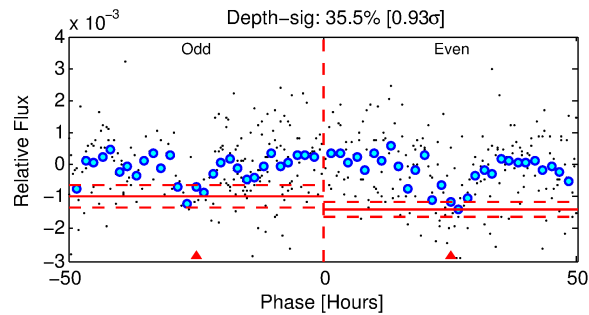
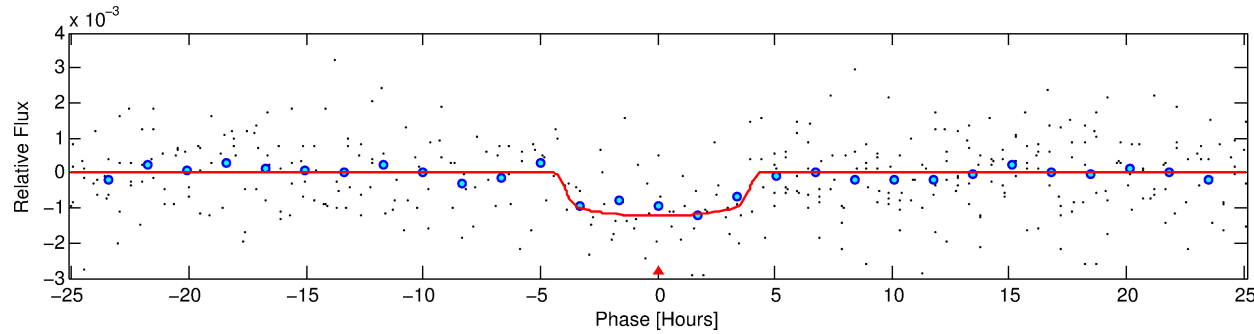
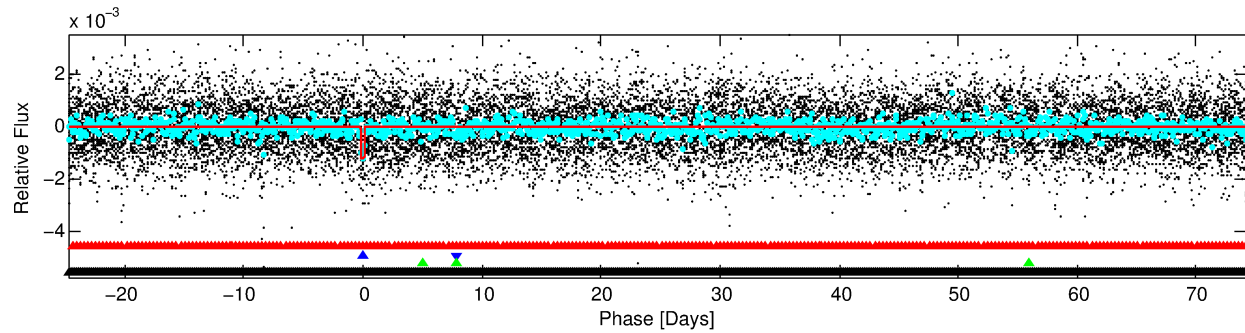
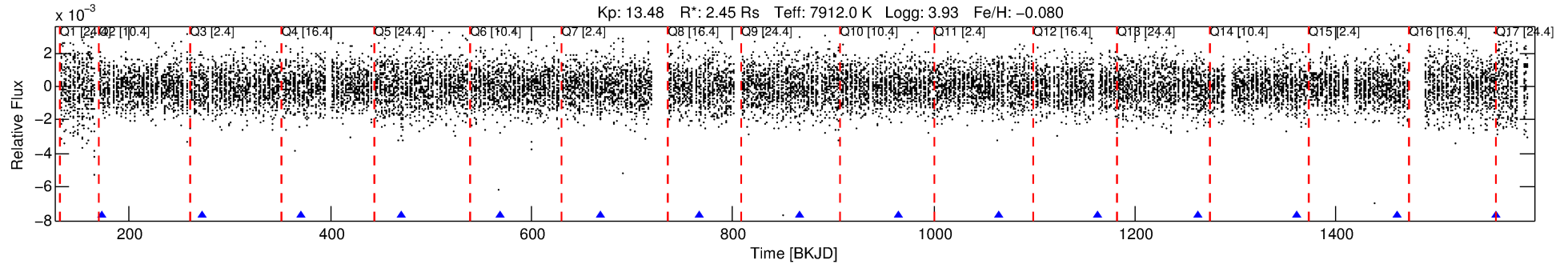
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008330102-02

No Significant Match Found

DV One-Page Summary

KIC: 8330102 Candidate: 2 of 4 Period: 99.001 d



DV Fit Results:

Period = 99.00051 [0.00197] d
Epoch = 173.3184 [0.0150] BKJD
Rp/R* = 0.0338 [0.0228]
a/R* = 73.44 [289.38]
b = 0.64 [3.68]
Seff = 78.86 [37.94]
Teq = 760 [91] K
Rp = 9.04 [6.84] Re
a = 0.5174 [0.1541] AU
Ag = 1270.36 [1832.44] [0.69 σ]
Teffp = 7014 [2422] K [2.58 σ]

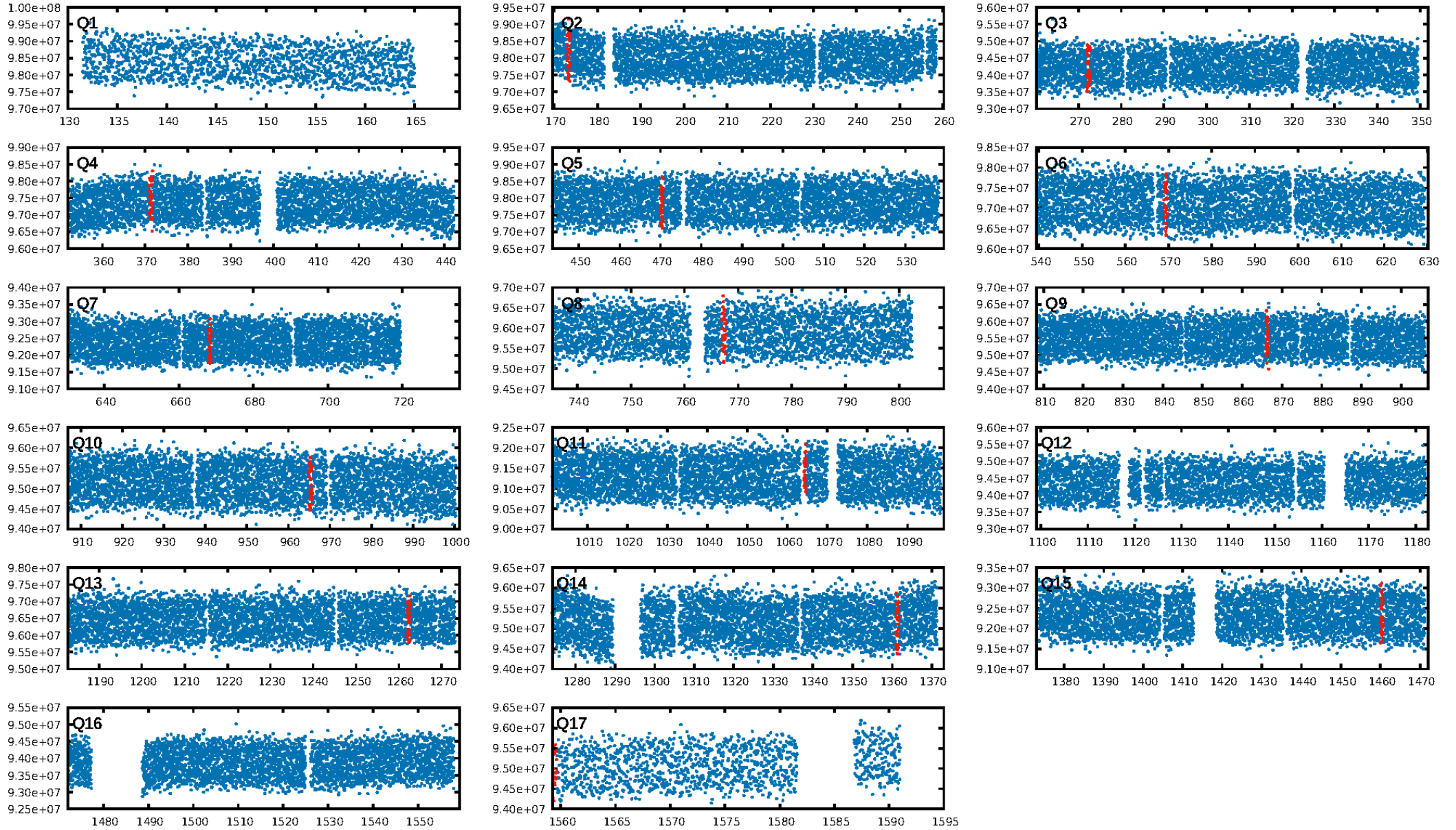
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [151.28 σ]
LongPeriod-sig: 100.0% [338.06 σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.47e-26
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 1.337
Centroid-sig: 34.2%
Centroid-so: 0.676 arcsec [3.74 σ]
OotOffset-rm: 0.015 arcsec [0.03 σ]
KicOffset-rm: 0.213 arcsec [1.04 σ]
OotOffset-st: 4/3/2/2 [11]
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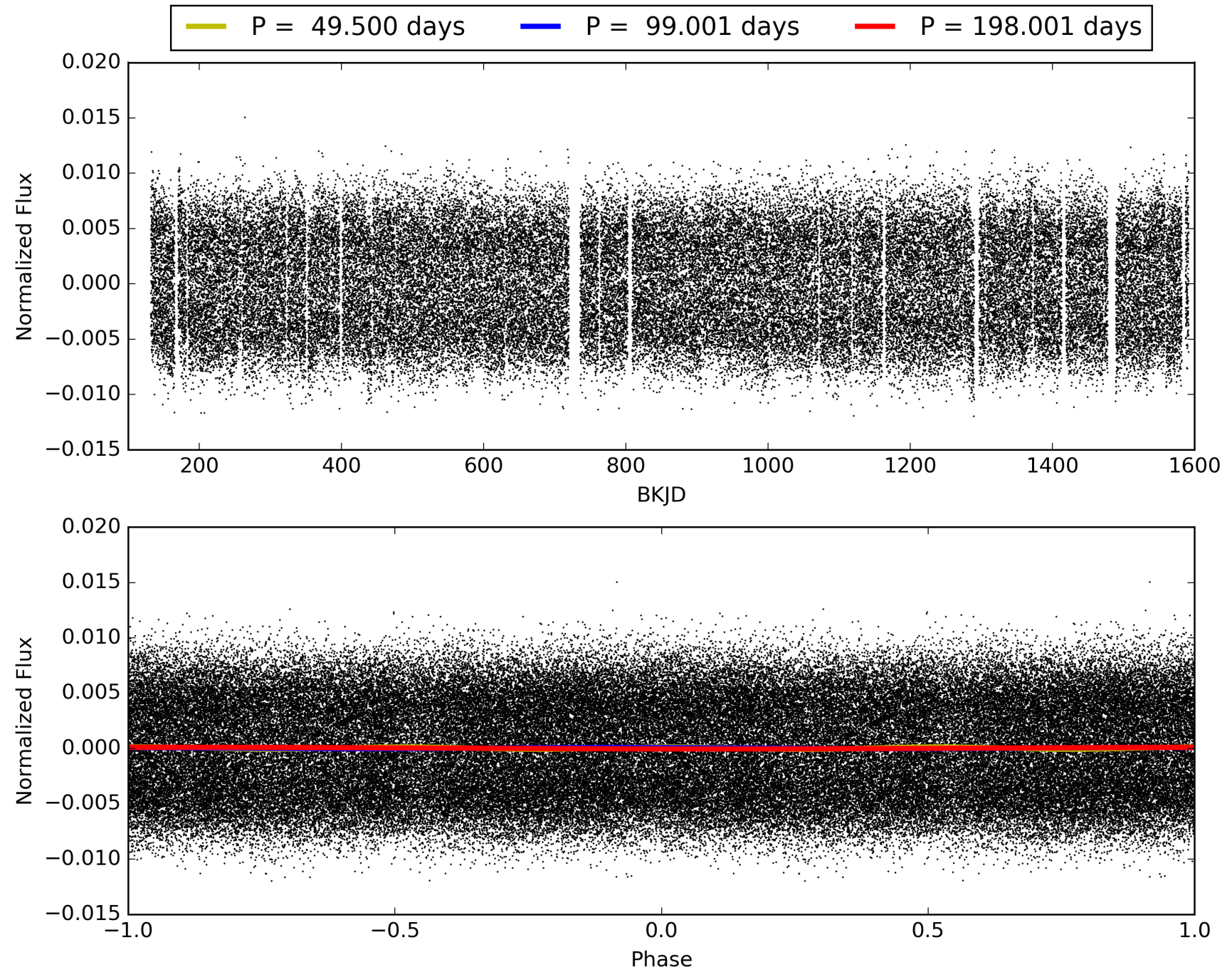
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:48:12 Z

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

TCE 008330102-02, PDC Light Curves

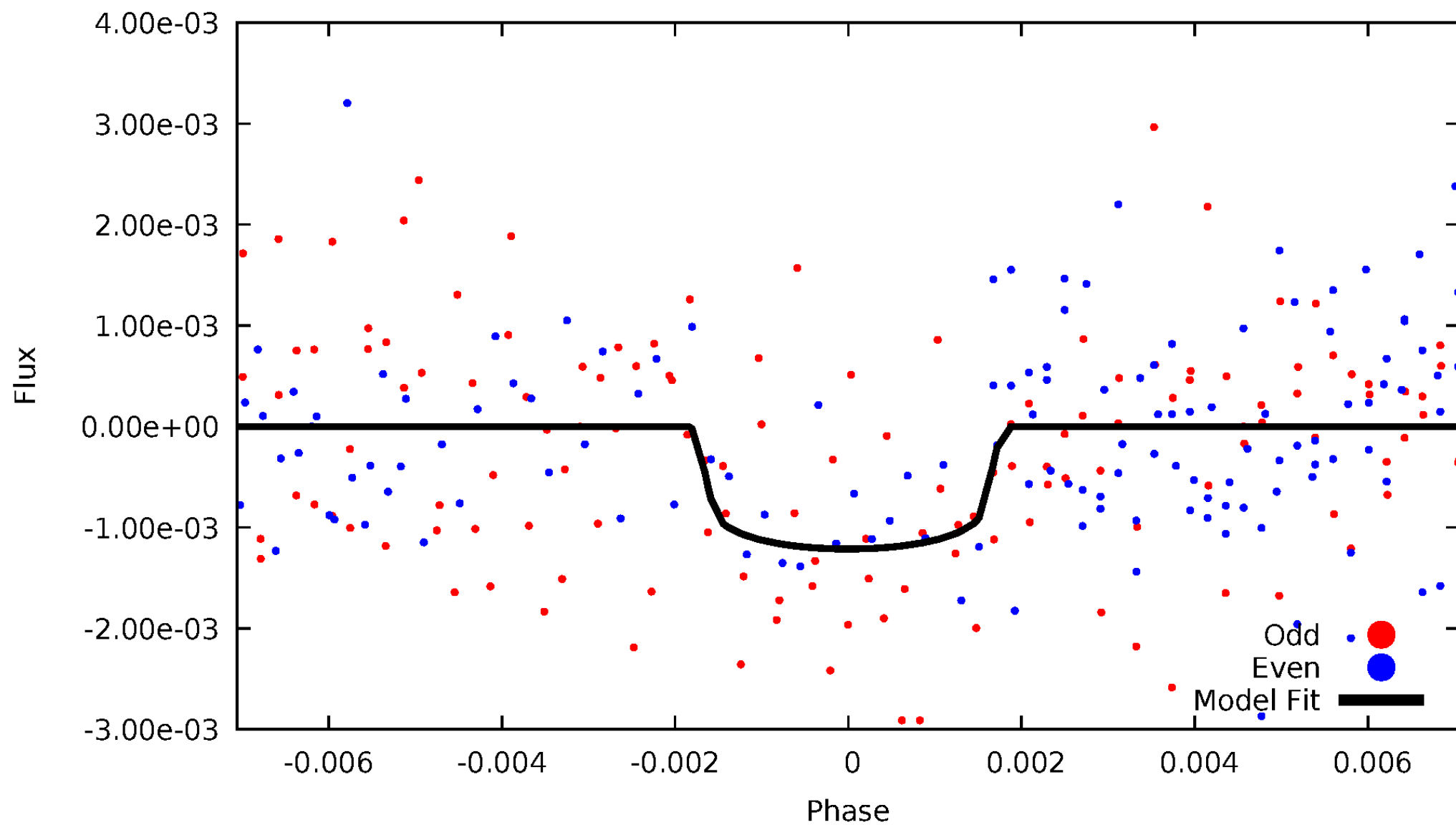


TCE 008330102-02



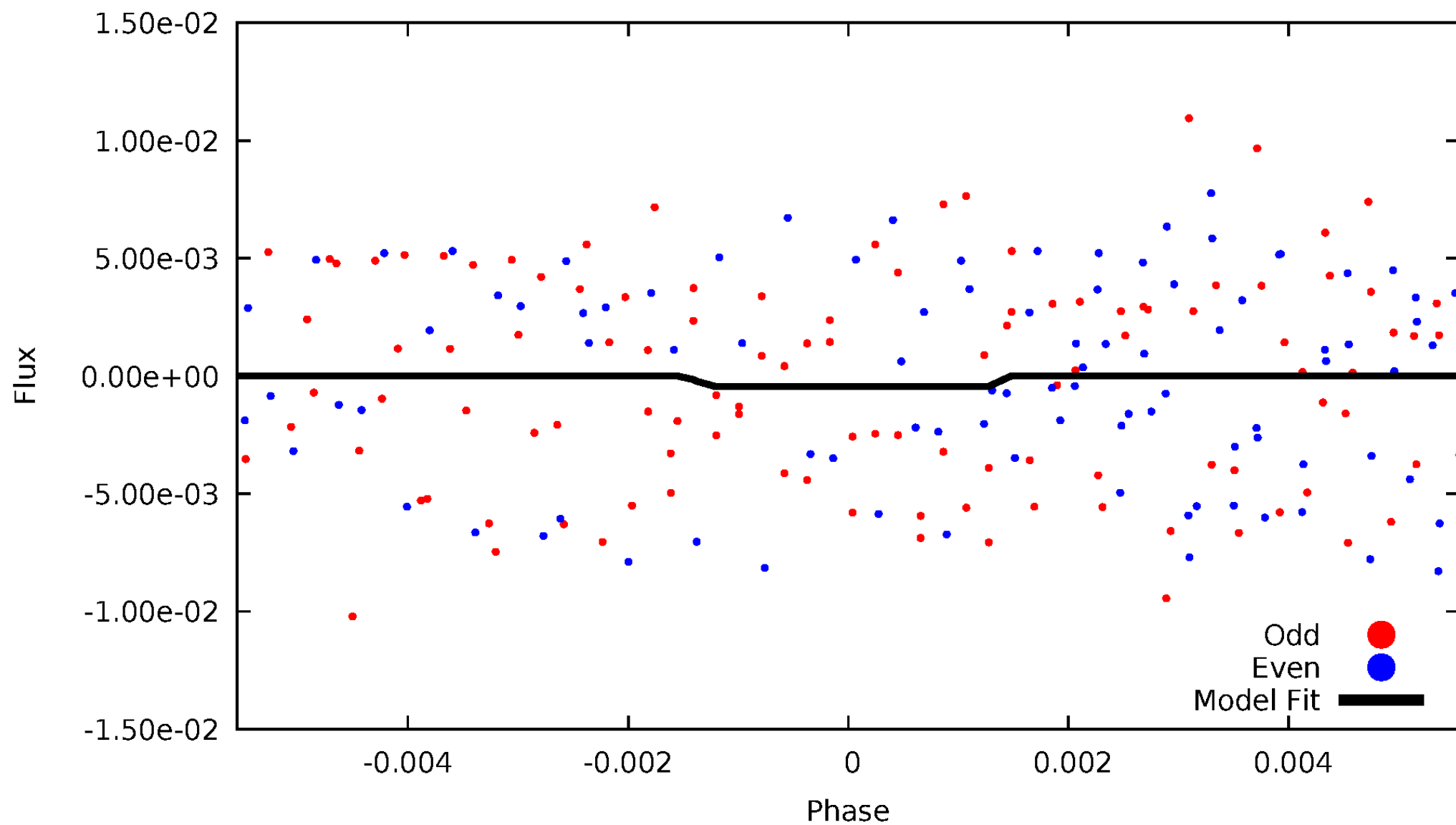
DV Odd/Even

TCE 008330102-02



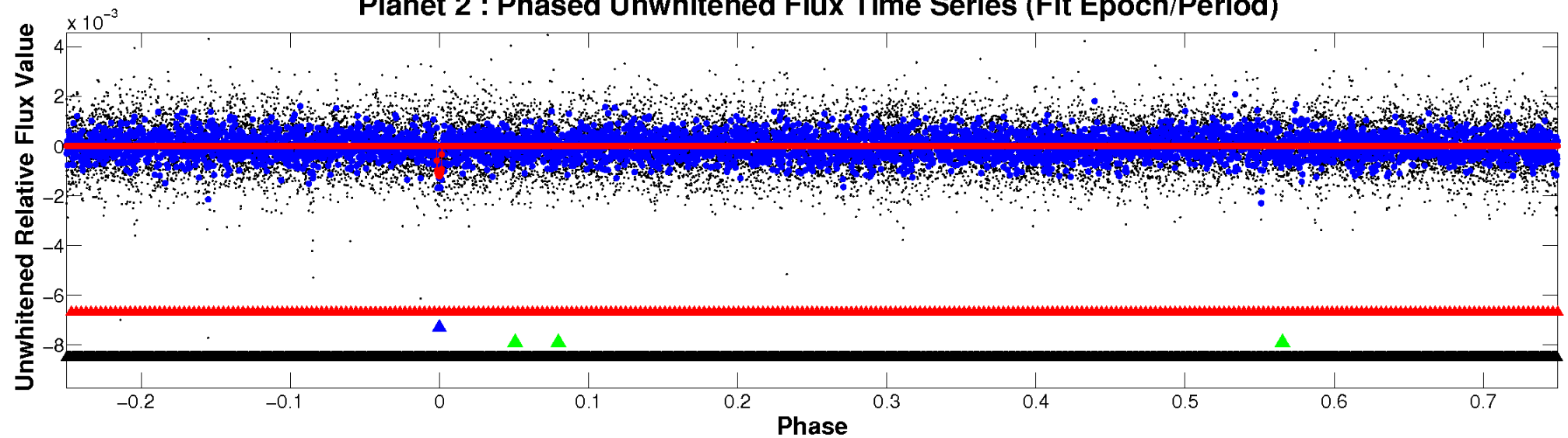
ALT Odd/Even

TCE 008330102-02

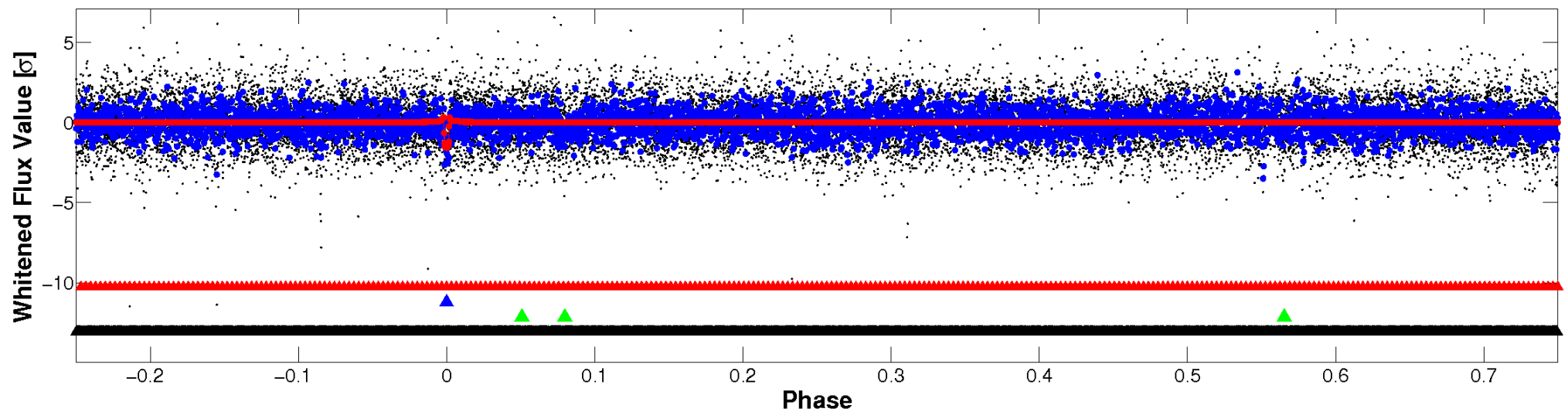


Non-Whitened Vs. Whitened Light Curve

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

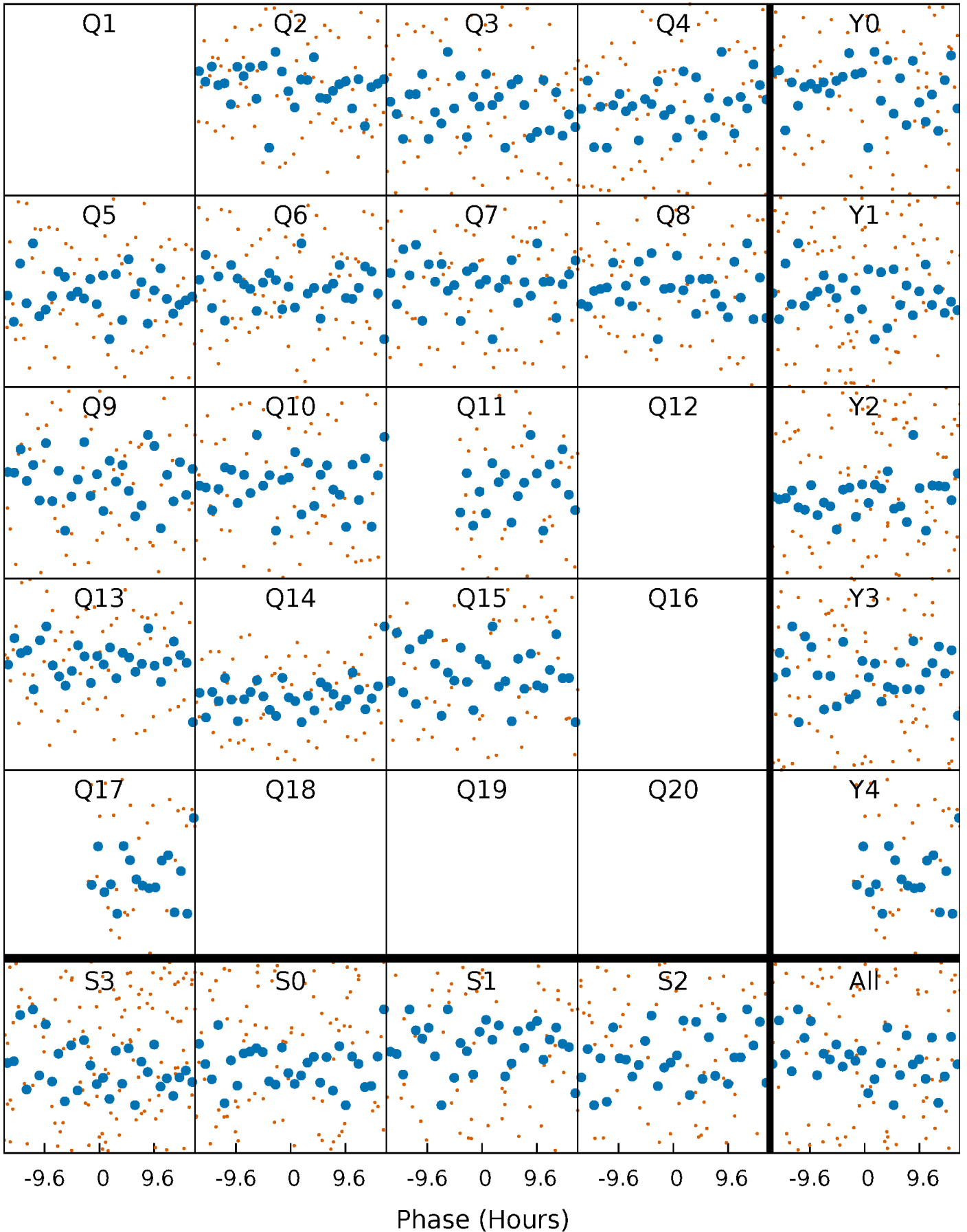


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



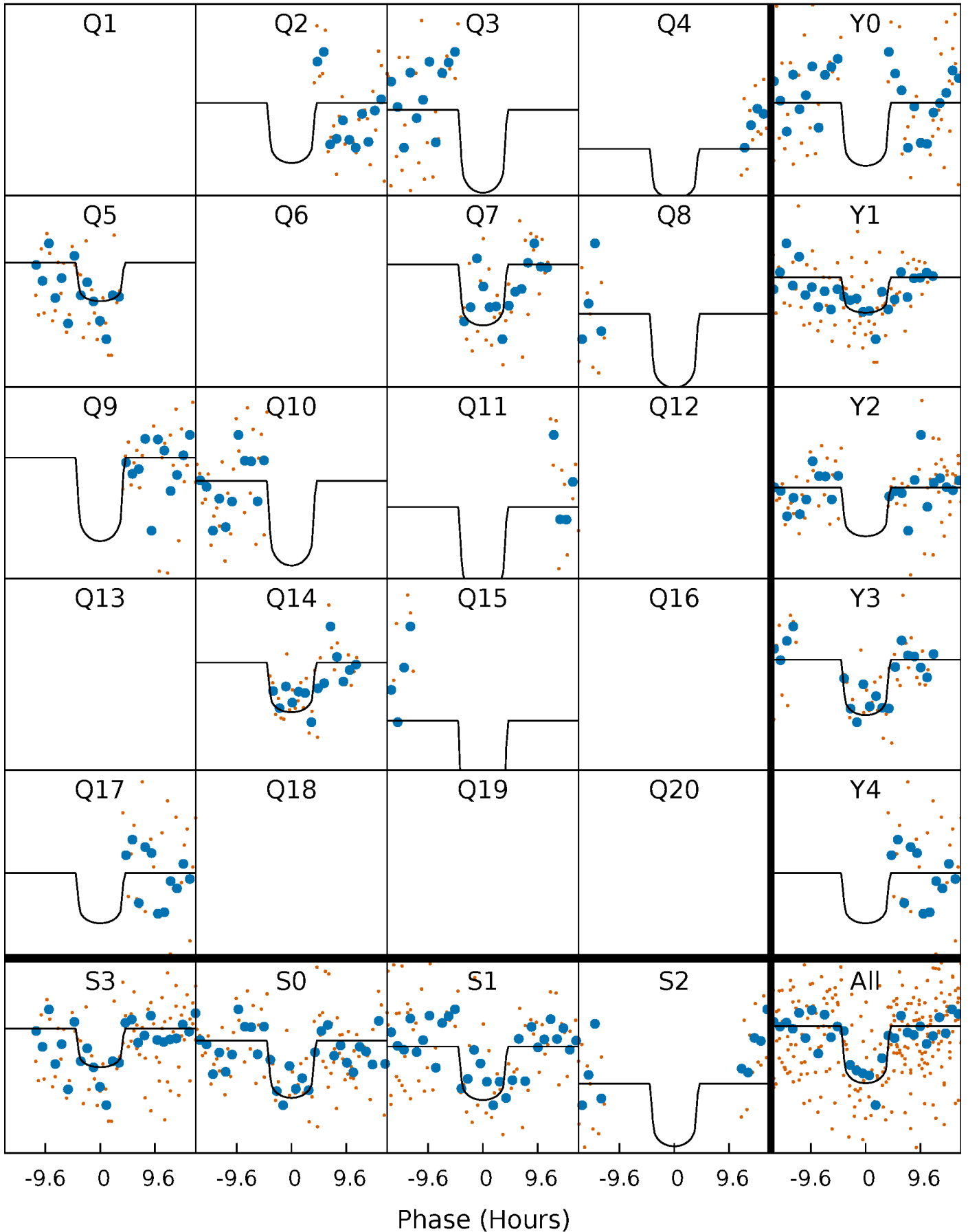
PDC Quarter-Phased Transit Curves

TCE 008330102-02 P= 99.000506 Days $T_0=173.318441$ (BKJD)



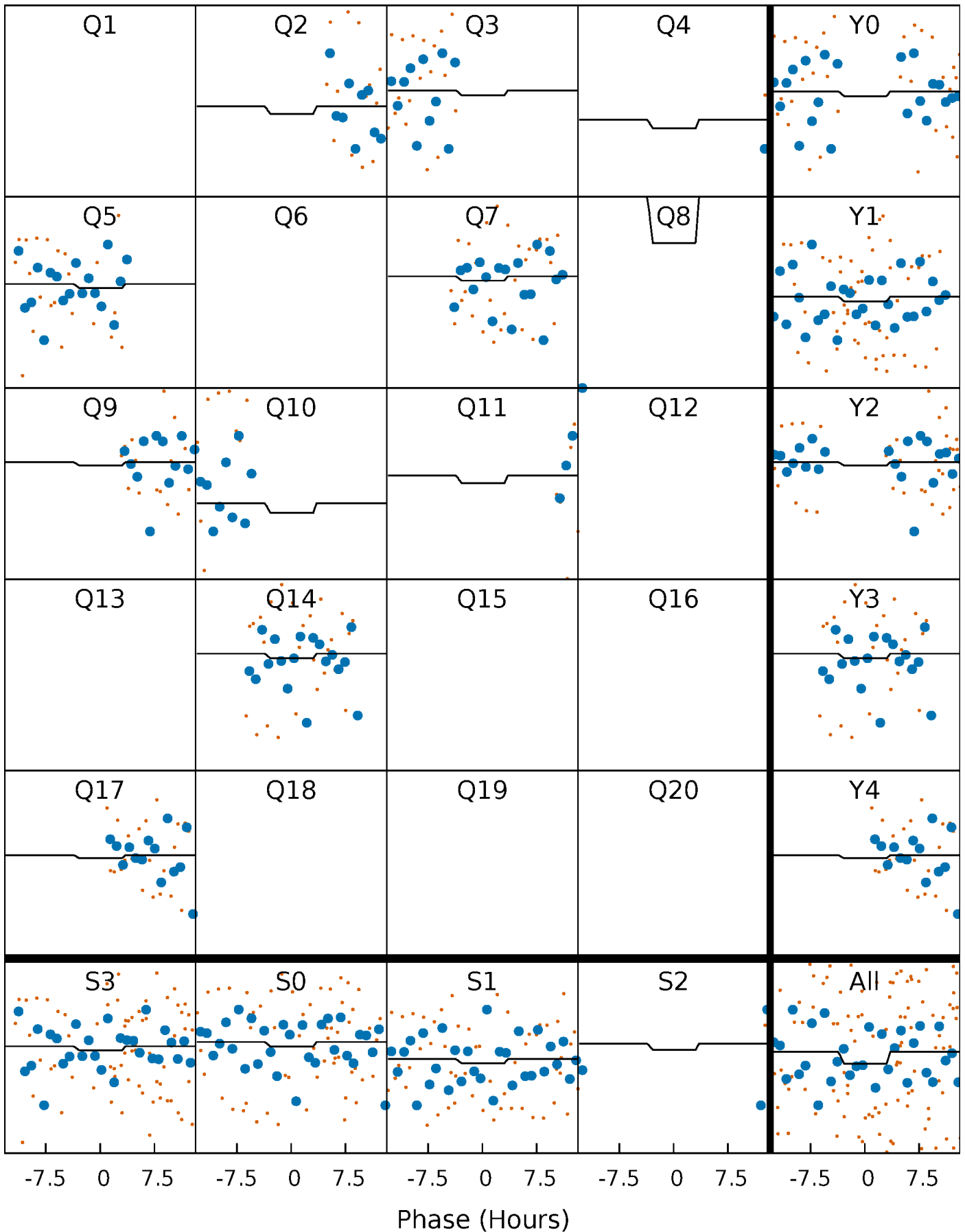
DV Quarter-Phased Transit Curves

TCE 008330102-02 $P = 99.000506$ Days $T_0 = 173.318441$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

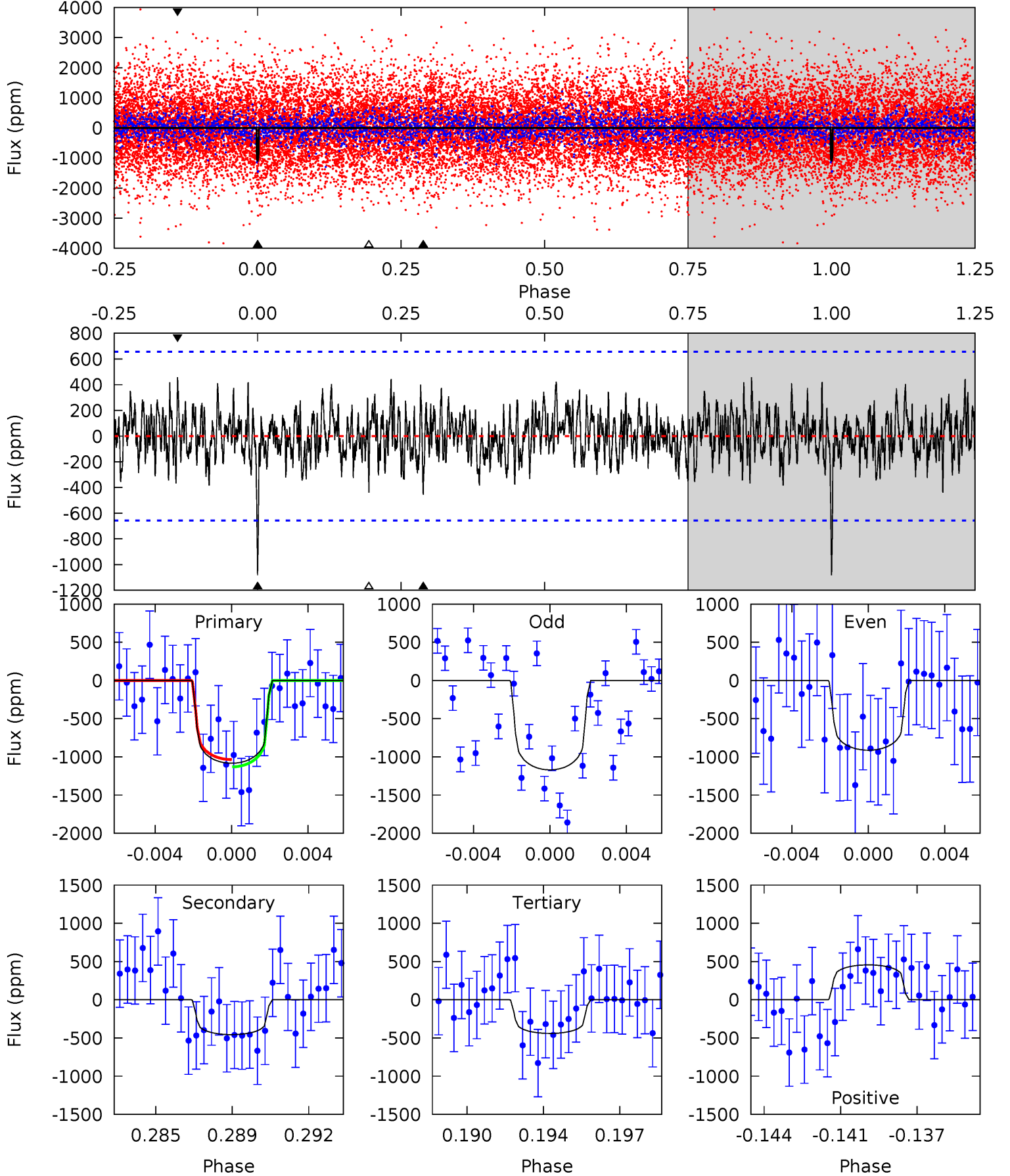
TCE 008330102-02 P= 99.012259 Days $T_0=173.279265$ (BKJD)



DV Model-Shift Uniqueness Test

008330102-02, P = 99.000506 Days, E = 74.317935 Days

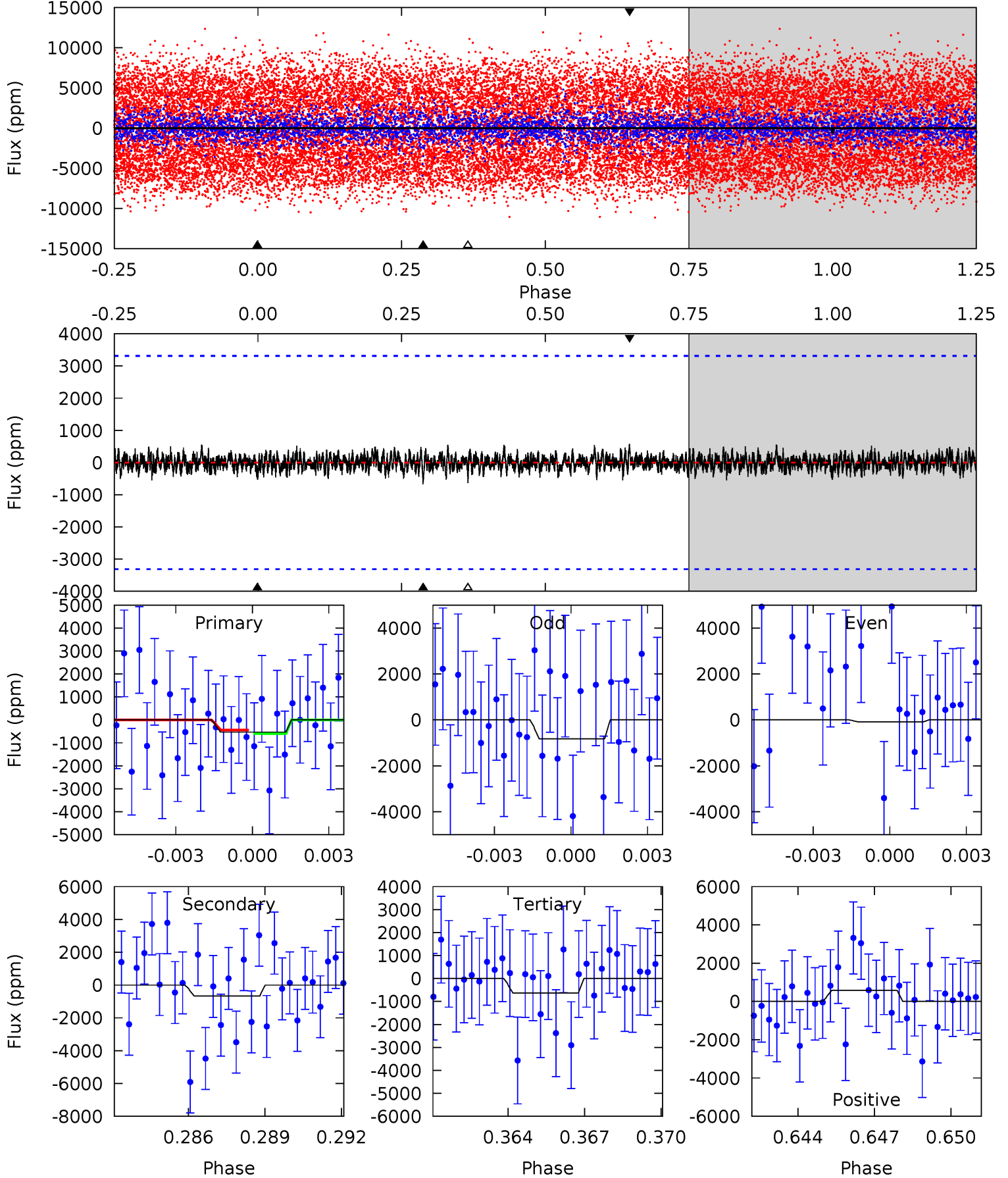
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.62	3.63	3.50	3.63	5.22	2.92	1.18	5.11	4.99	0.13	-0.00	0.98	1.14	0.30	0.38



Alt Model-Shift Uniqueness Test

008330102-02, P = 99.012259 Days, E = 74.267006 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.84	1.07	1.00	0.92	5.26	2.98	0.27	-0.16	-0.08	0.07	0.15	0.58	0.06	0.46	0.12



Stellar Parameters For KIC 008330102

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7912^{+216}_{-340}	$3.934^{+0.253}_{-0.117}$	$-0.080^{+0.200}_{-0.350}$	$2.452^{+0.447}_{-0.831}$	$1.885^{+0.078}_{-0.416}$	$0.180^{+0.322}_{-0.065}$
	+3%/-4%	+6%/-3%	+250%/-438%	+18%/-34%	+4%/-22%	+179%/-36%
Source	KIC0	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 008330102-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-456 ± 126	$9.44^{+5.57}_{-5.24}$	1045^{+70}_{-84}	5843^{+3477}_{-1111}	740^{+2794}_{-470}
Alt.	-675 ± 630	$6.70^{+5.30}_{-4.14}$	1046^{+73}_{-87}	7196^{+7793}_{-3953}	1666^{+11164}_{-1635}

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 $A_{obs} \gg 1.0$

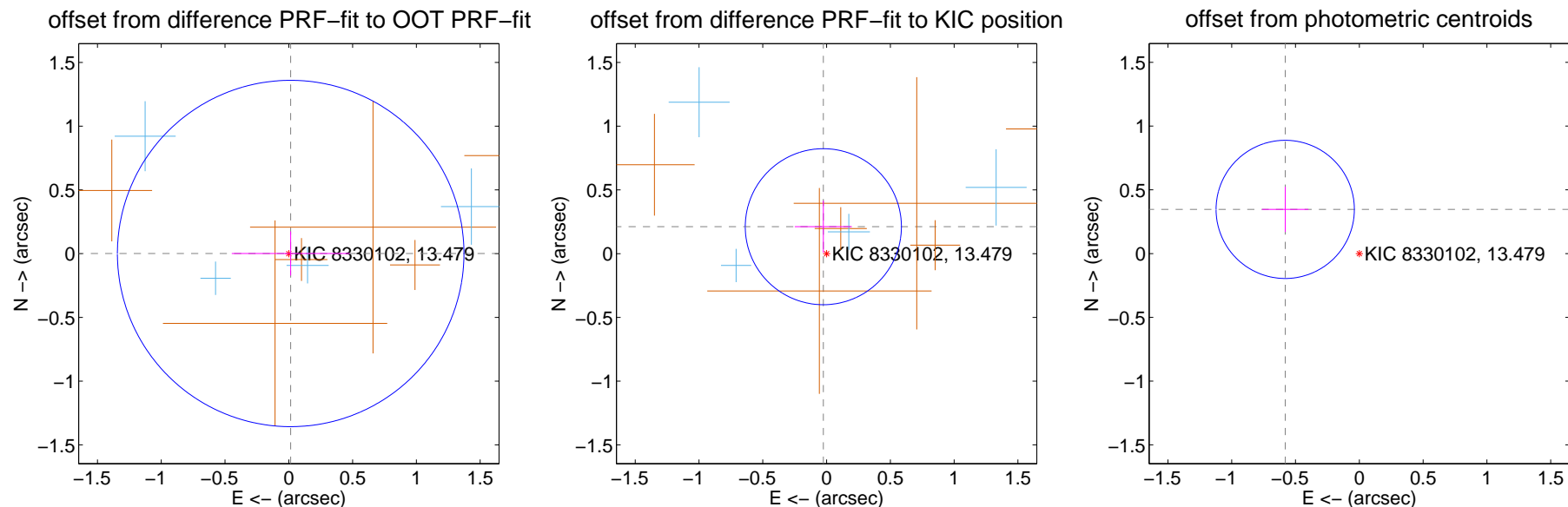
DV Centroid Data

Supplemental centroid analysis for 008330102-02. Kepler magnitude: 13.48. Transit SNR 9.85

There are 4 quarters with good PRF difference image offsets

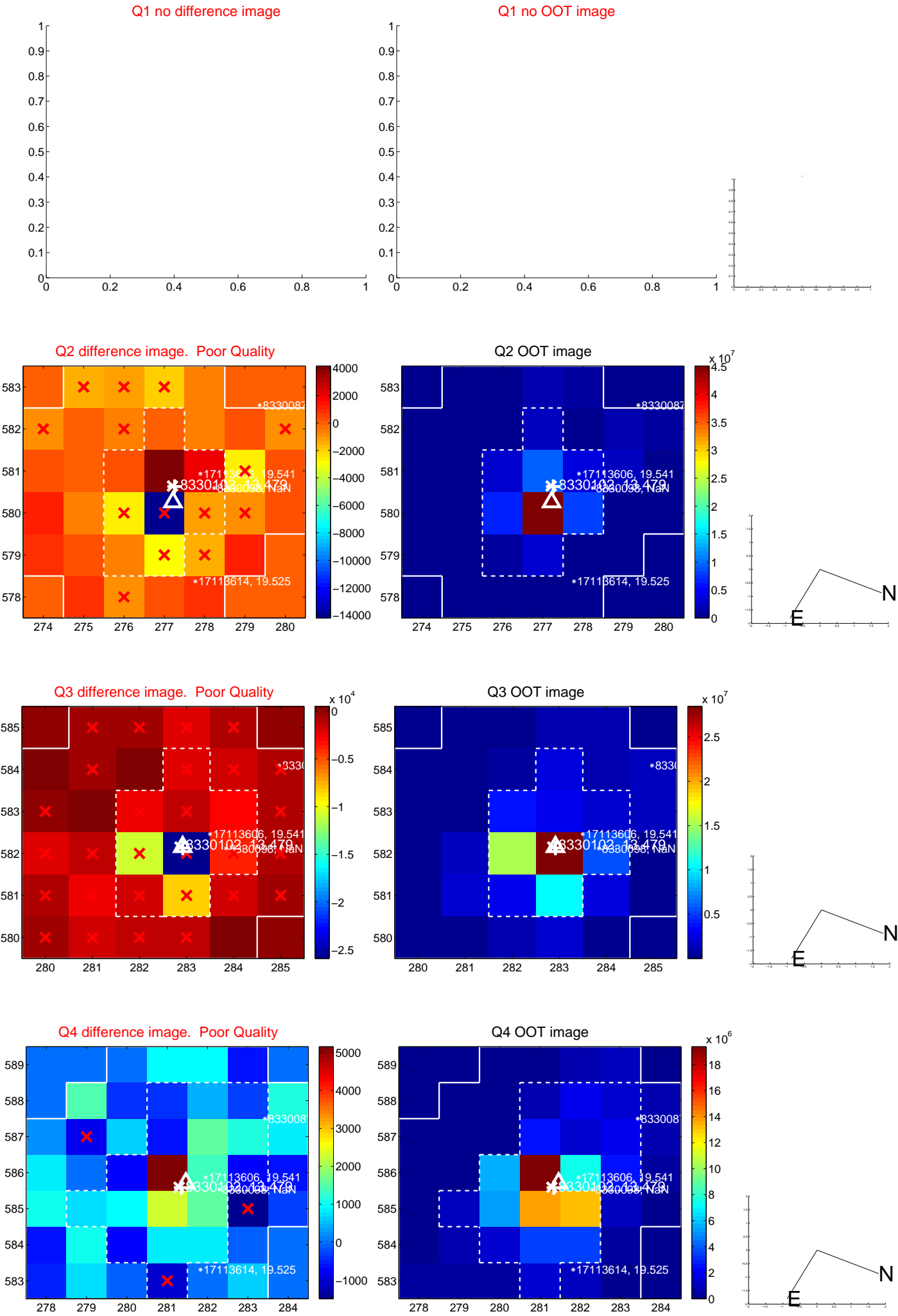
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.015 ± 0.453	0.03	-0.015 ± 0.462	0.001 ± 0.173
PRF-fit source offset from KIC position	0.213 ± 0.204	1.04	0.025 ± 0.224	0.211 ± 0.204
photometric centroid source offset	0.68 ± 0.18	3.74	0.58 ± 0.18	0.35 ± 0.18

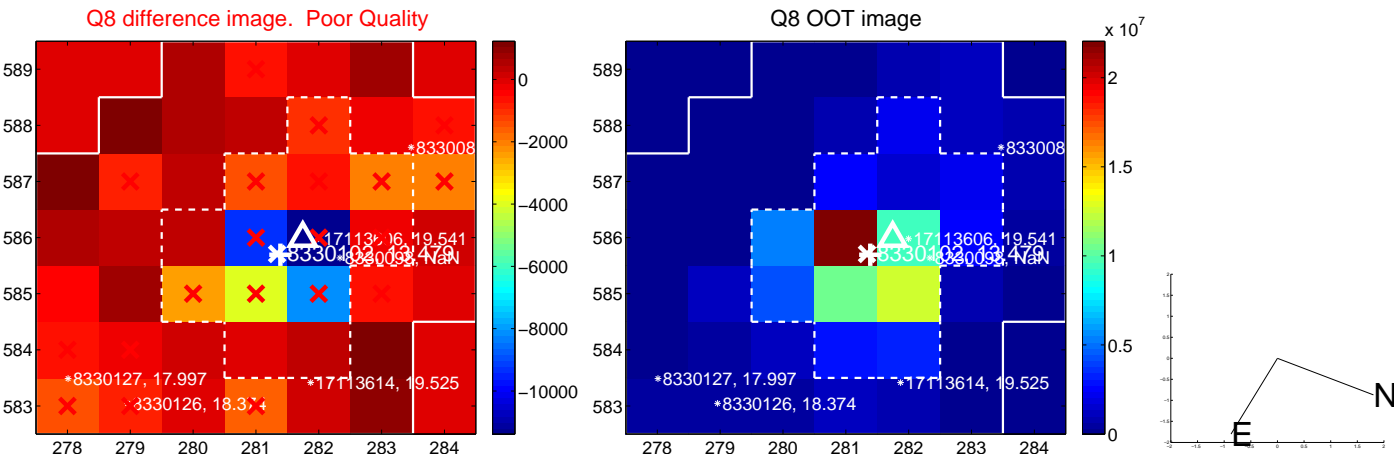
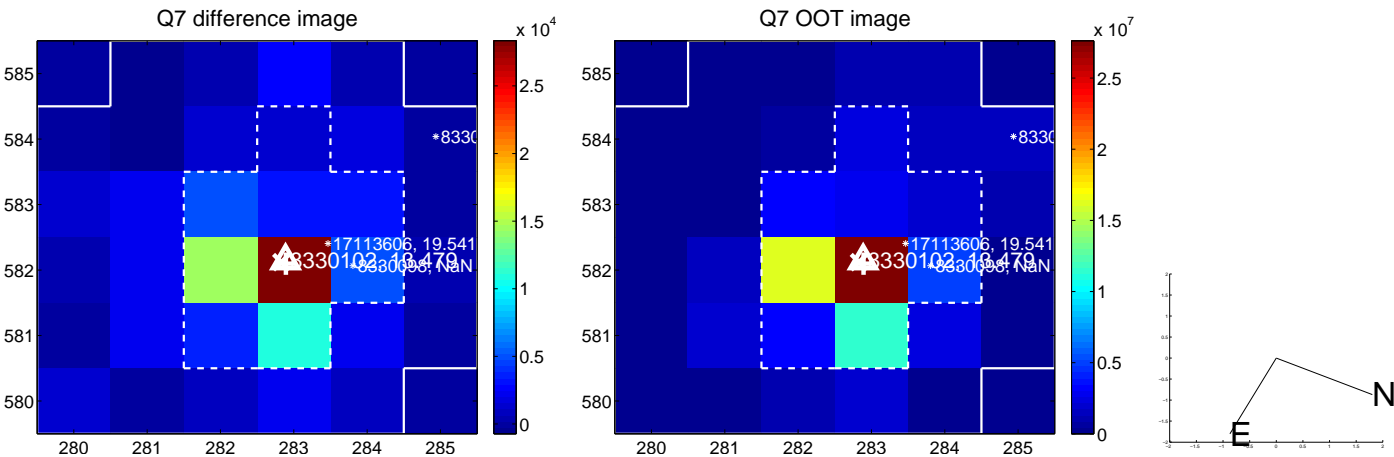
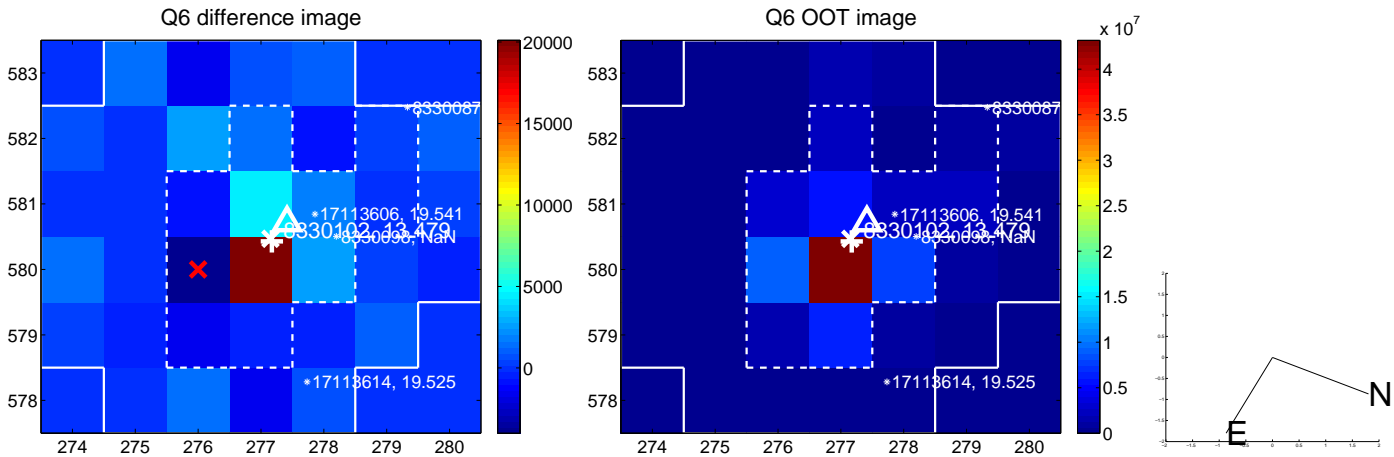
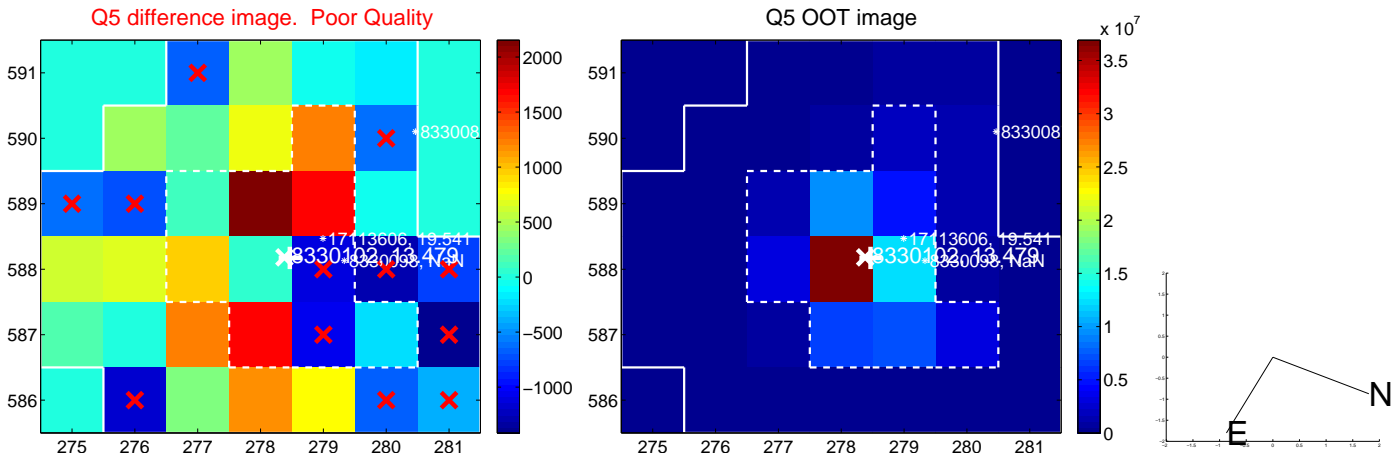


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

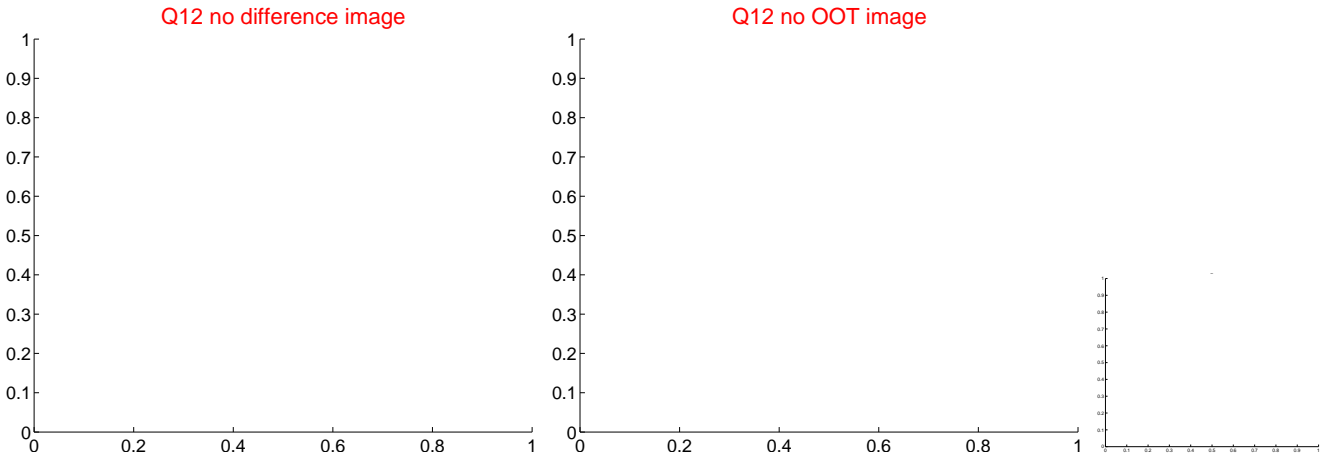
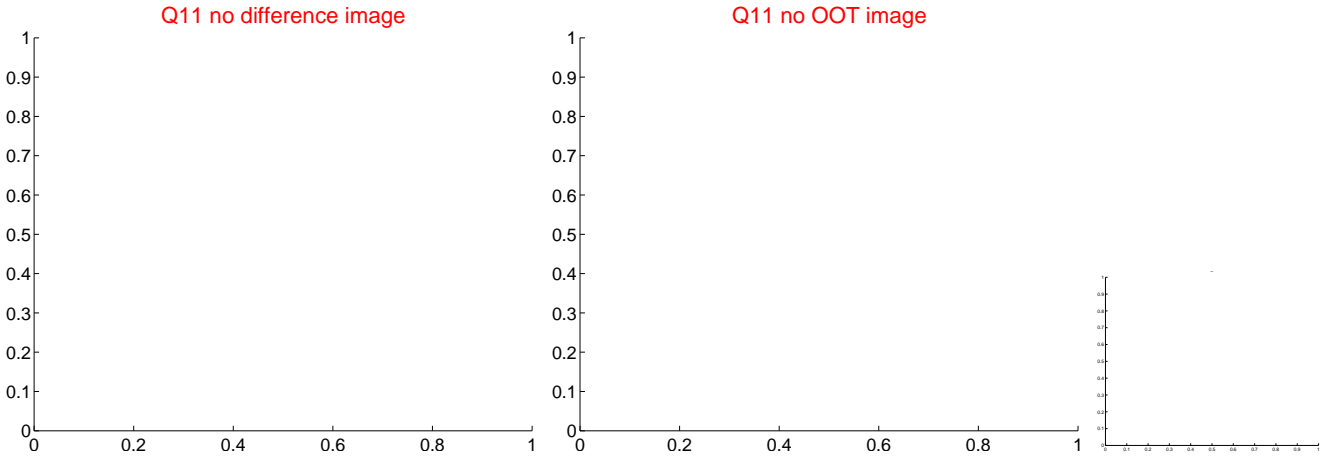
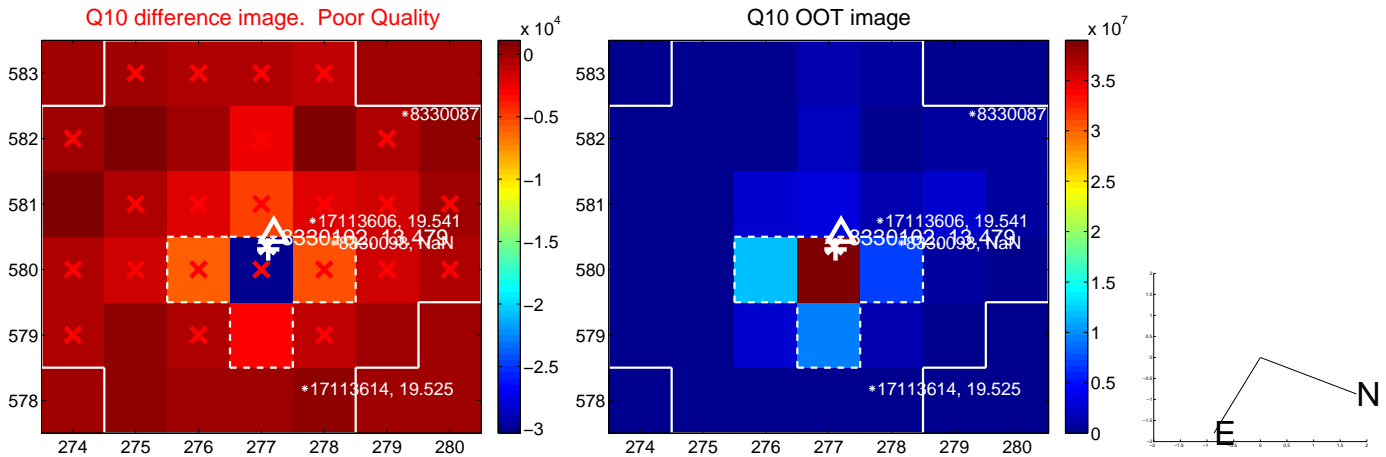
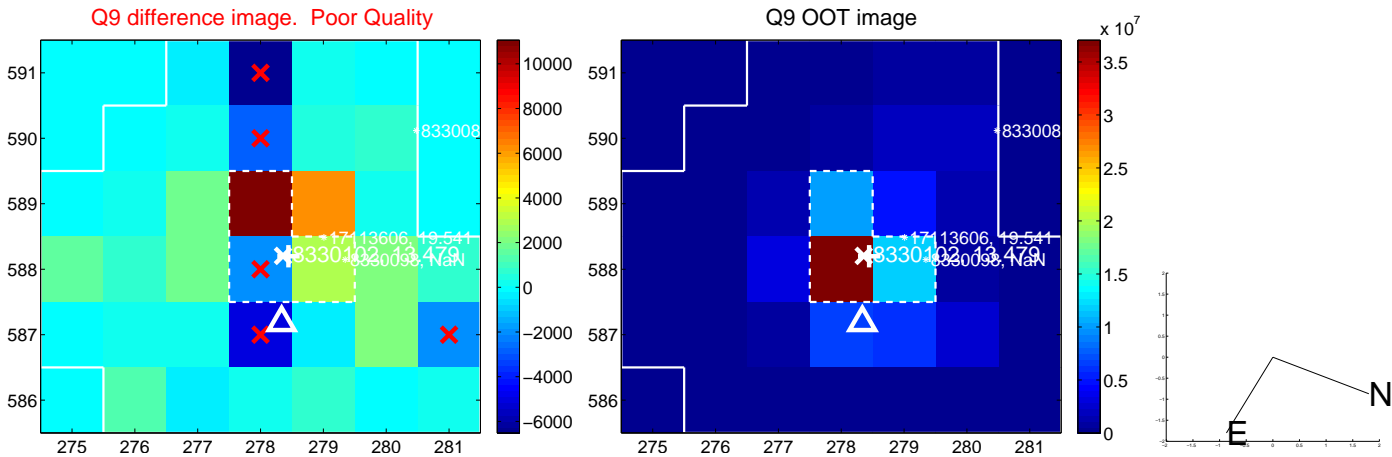
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



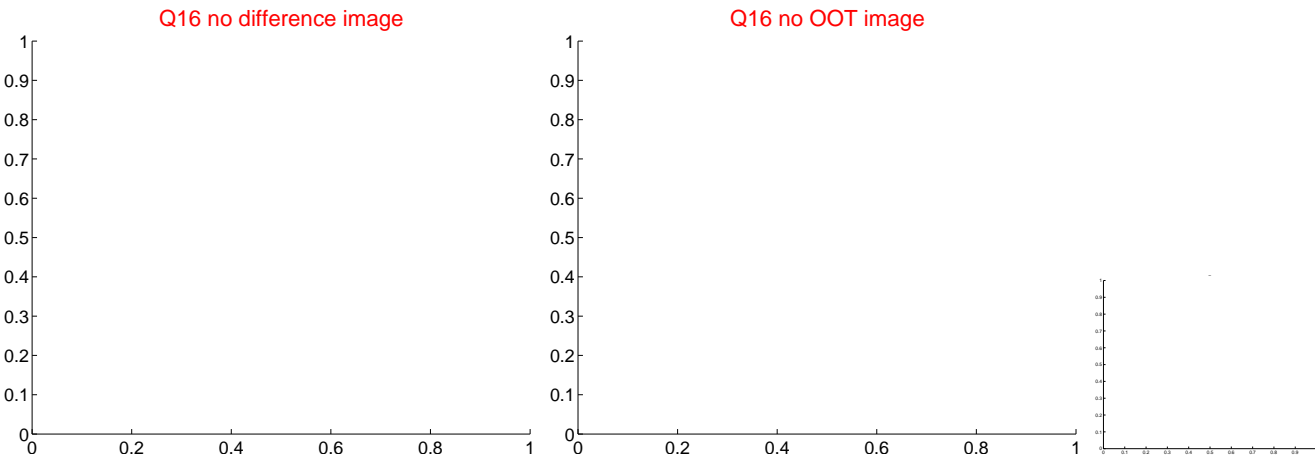
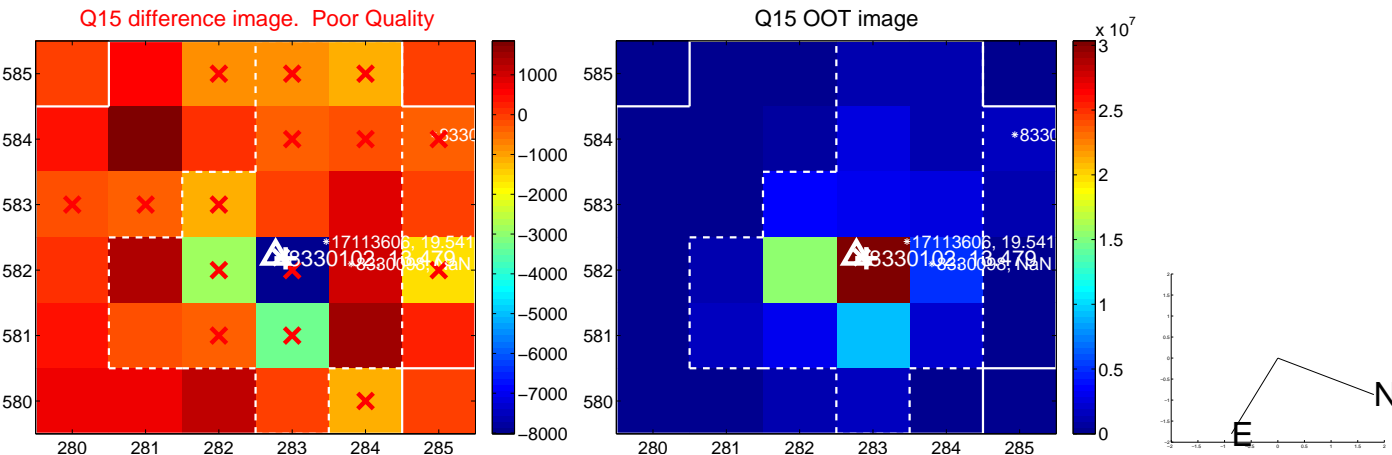
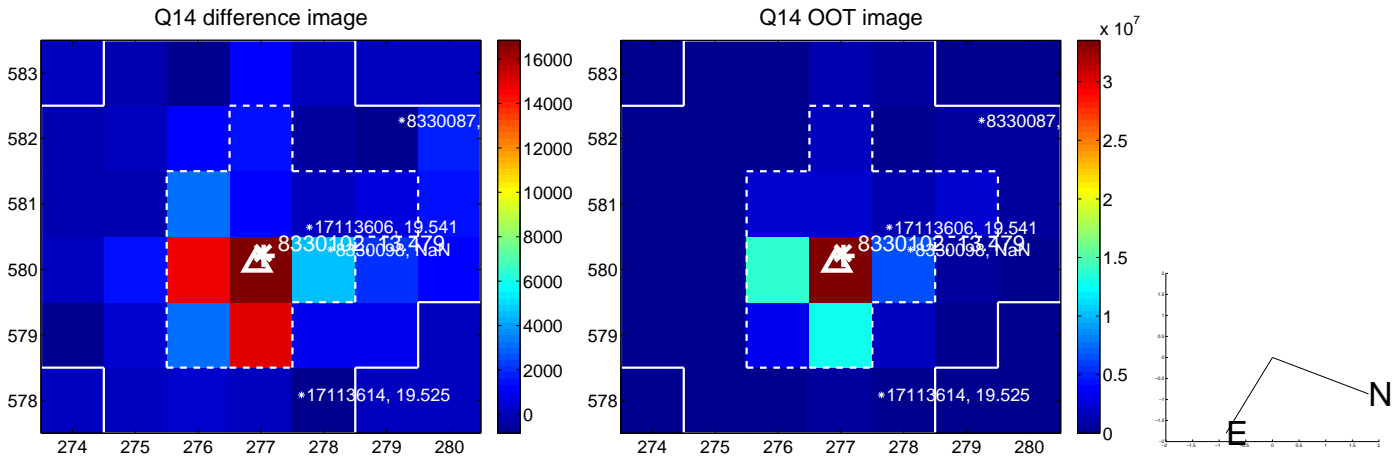
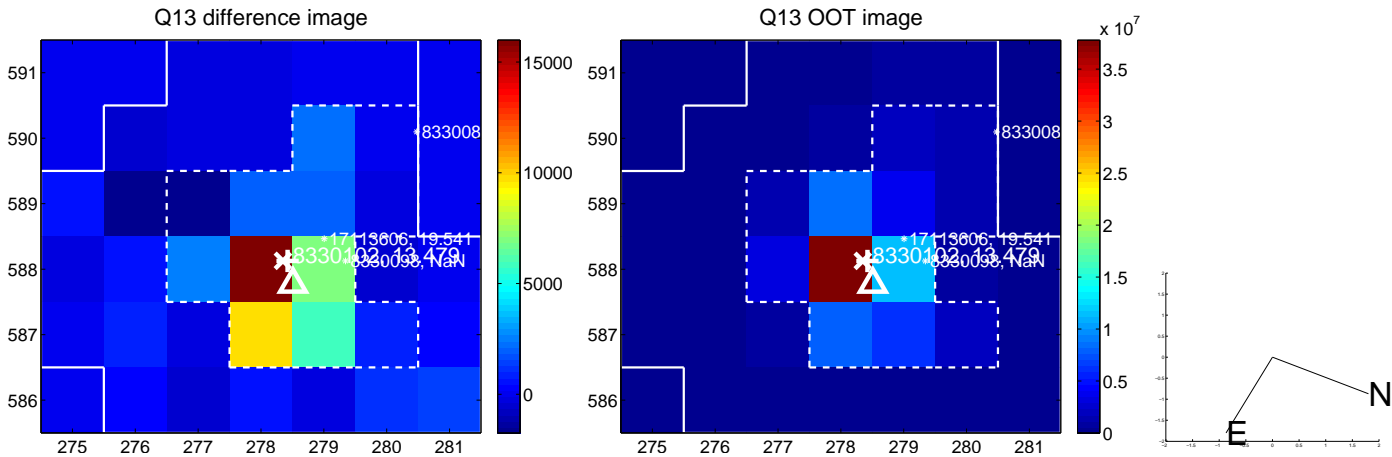
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



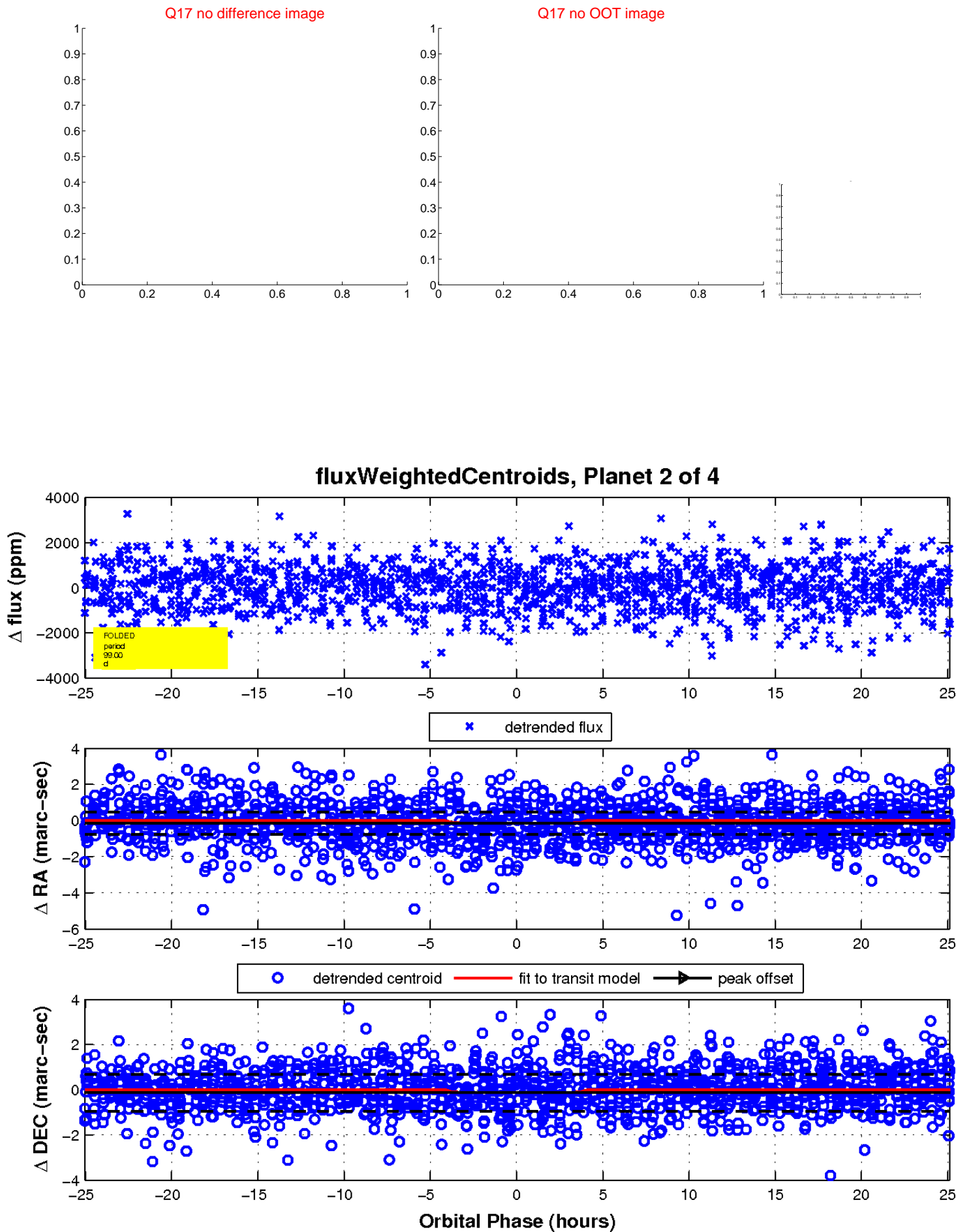
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

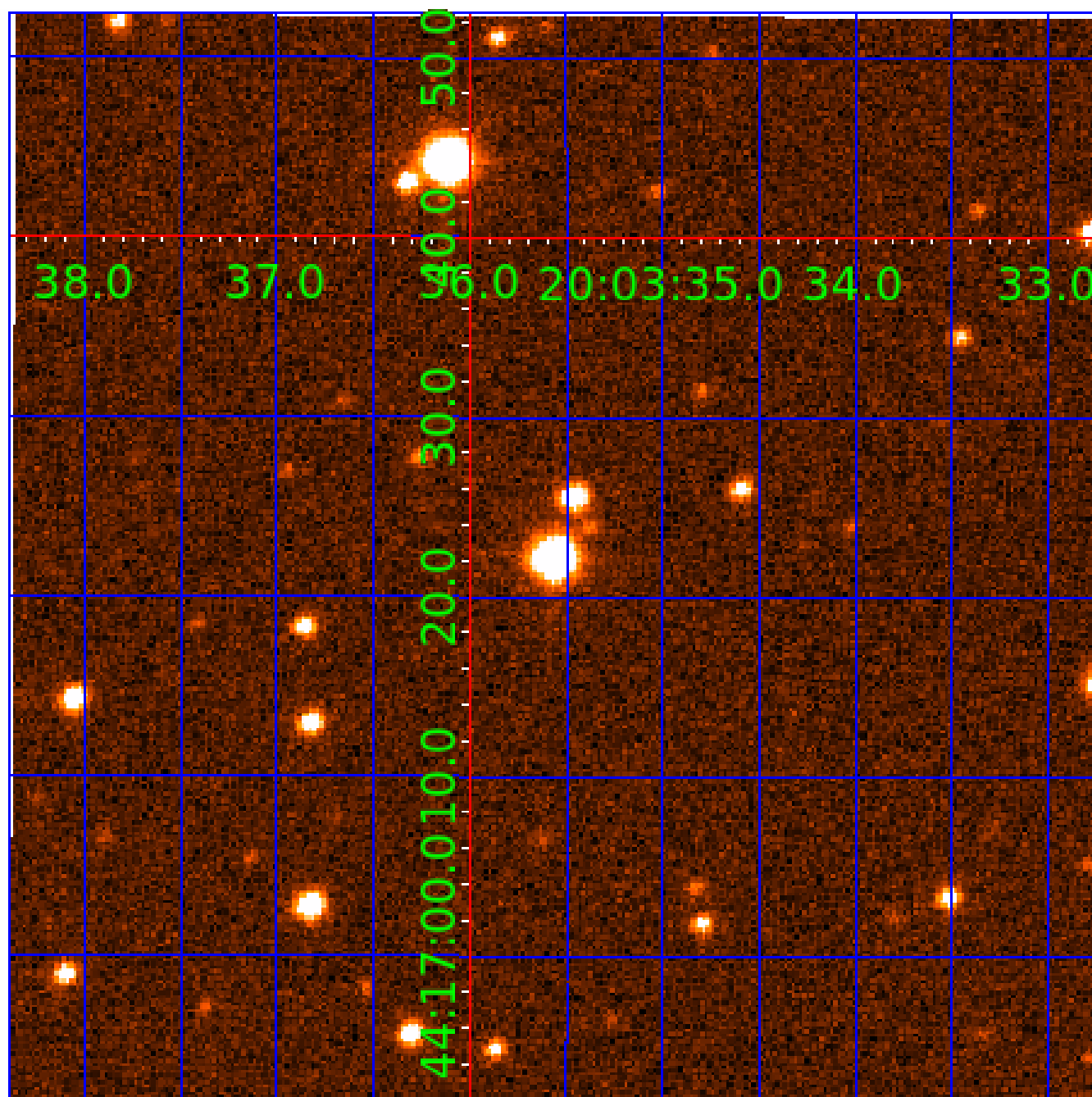


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008330102

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})
008330102-01	OBS	No	2.279616	131.628107	134.7	12.854	13.3	14.0	2.45	7912	2.90	12038.46
008330102-02	OBS	No	99.000506	173.318441	1214.2	8.379	12.3	9.8	2.45	7912	9.04	78.86
008330102-03	OBS	No	446.936040	376.353508	1003.3	23.237	12.7	8.8	2.45	7912	8.78	10.57
008330102-04	OBS	No	0.782990	132.133012	135.8	3.184	10.4	9.6	2.45	7912	3.32	50046.98

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008330102-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008330102-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
008330102-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008330102-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT

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

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

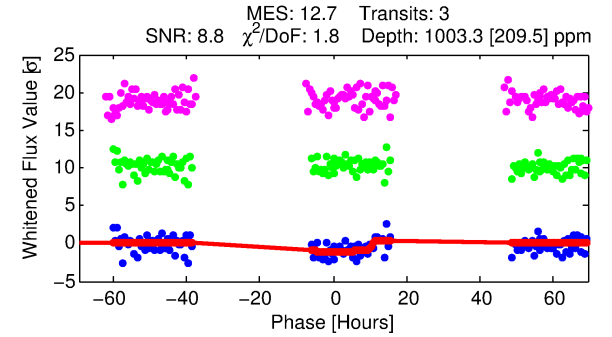
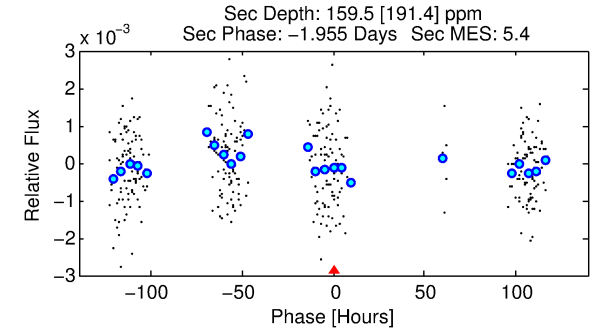
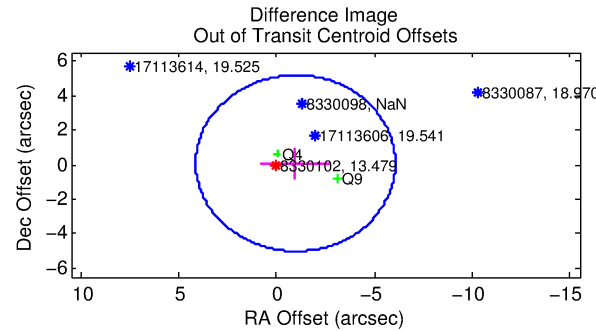
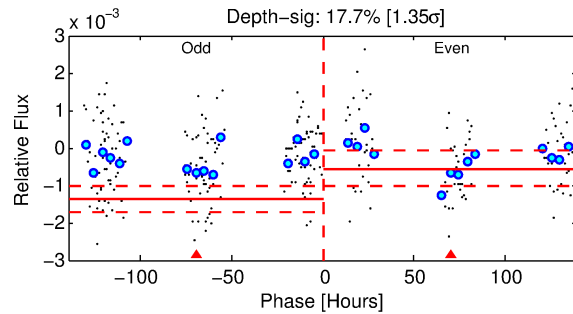
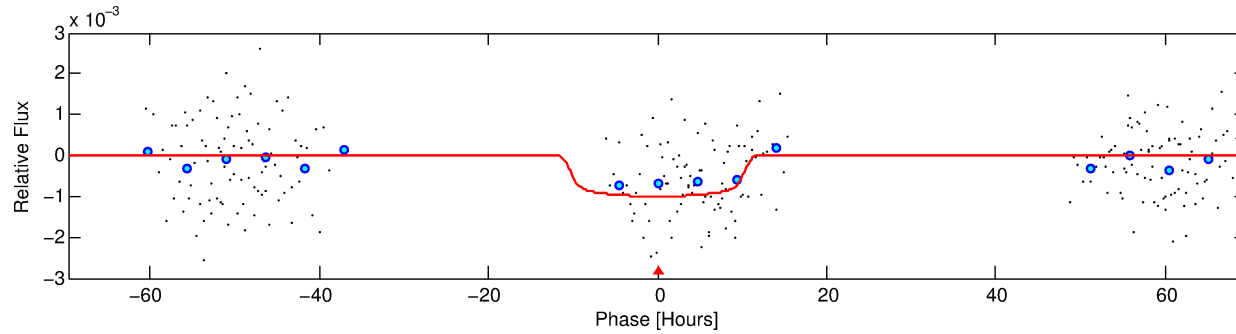
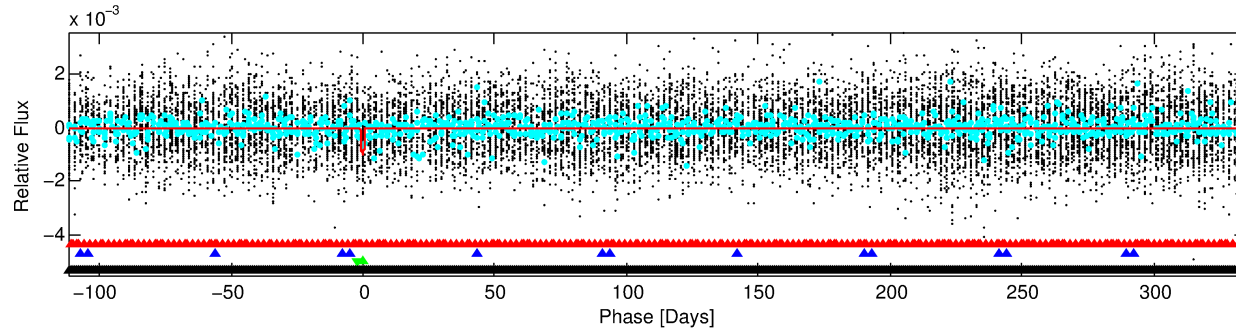
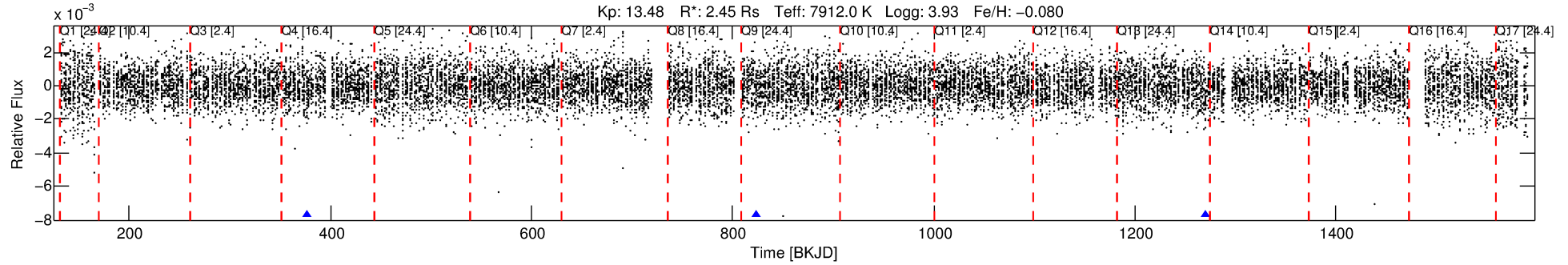
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008330102-03

No Significant Match Found

DV One-Page Summary

KIC: 8330102 Candidate: 3 of 4 Period: 446.936 d



DV Fit Results:

Period = 446.93604 [0.07038] d
Epoch = 376.3535 [0.2688] BKJD
Rp/R* = 0.0328 [0.0056]
a/R* = 84.86 [82.42]
b = 0.86 [0.24]
Seff = 10.57 [5.08]
Teq = 460 [55] K
Rp = 8.78 [3.33] Re
a = 1.4132 [0.4210] AU
Ag = 2273.47 [3013.53] [0.75 σ]
Teff = 4909 [1545] K [2.88 σ]

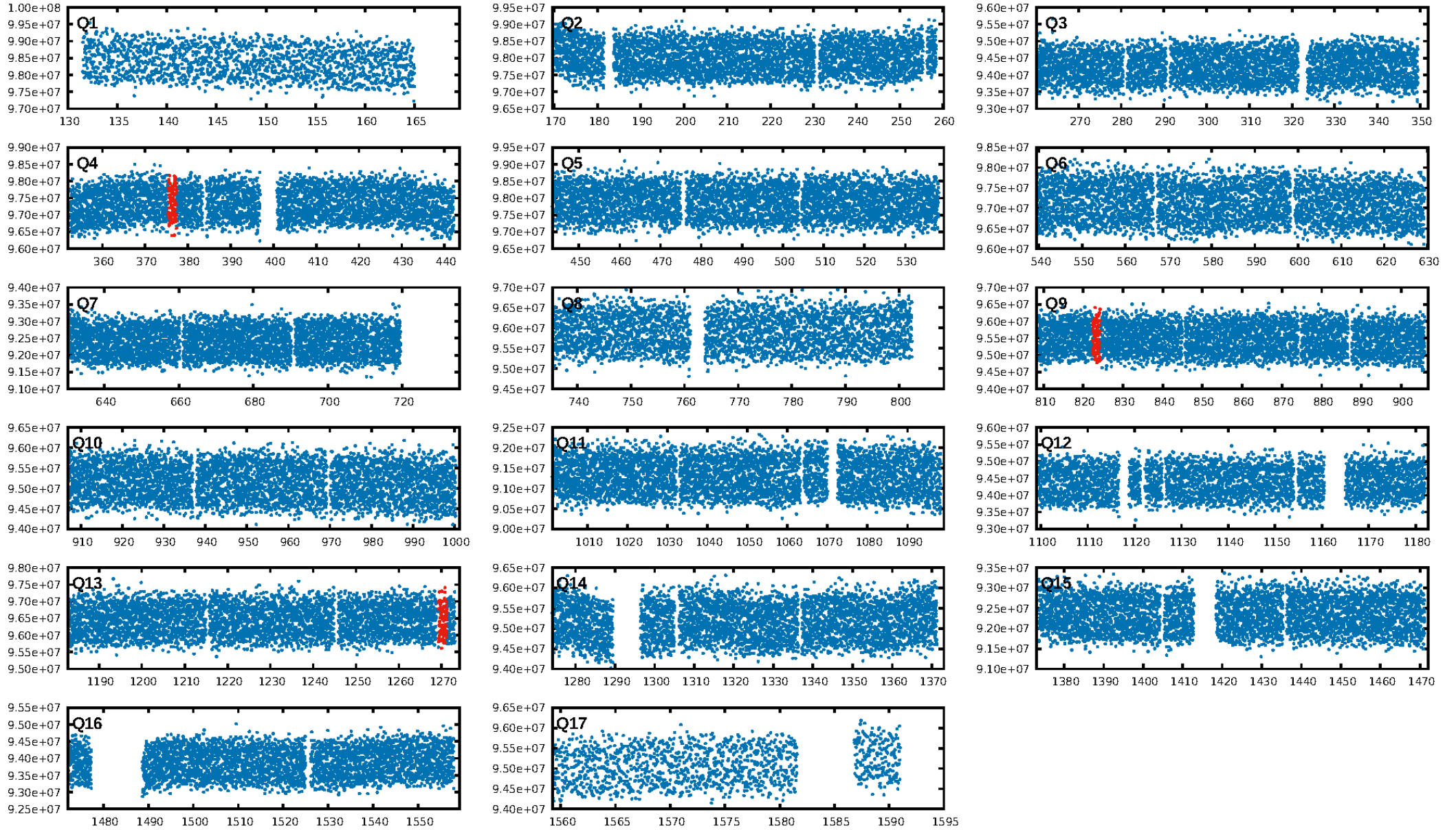
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [338.06 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 3.42e-45
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.223
Centroid-sig: 6.0%
Centroid-so: 0.525 arcsec [1.57 σ]
OotOffset-rm: 0.974 arcsec [0.57 σ]
KicOffset-rm: 1.078 arcsec [0.66 σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/2]

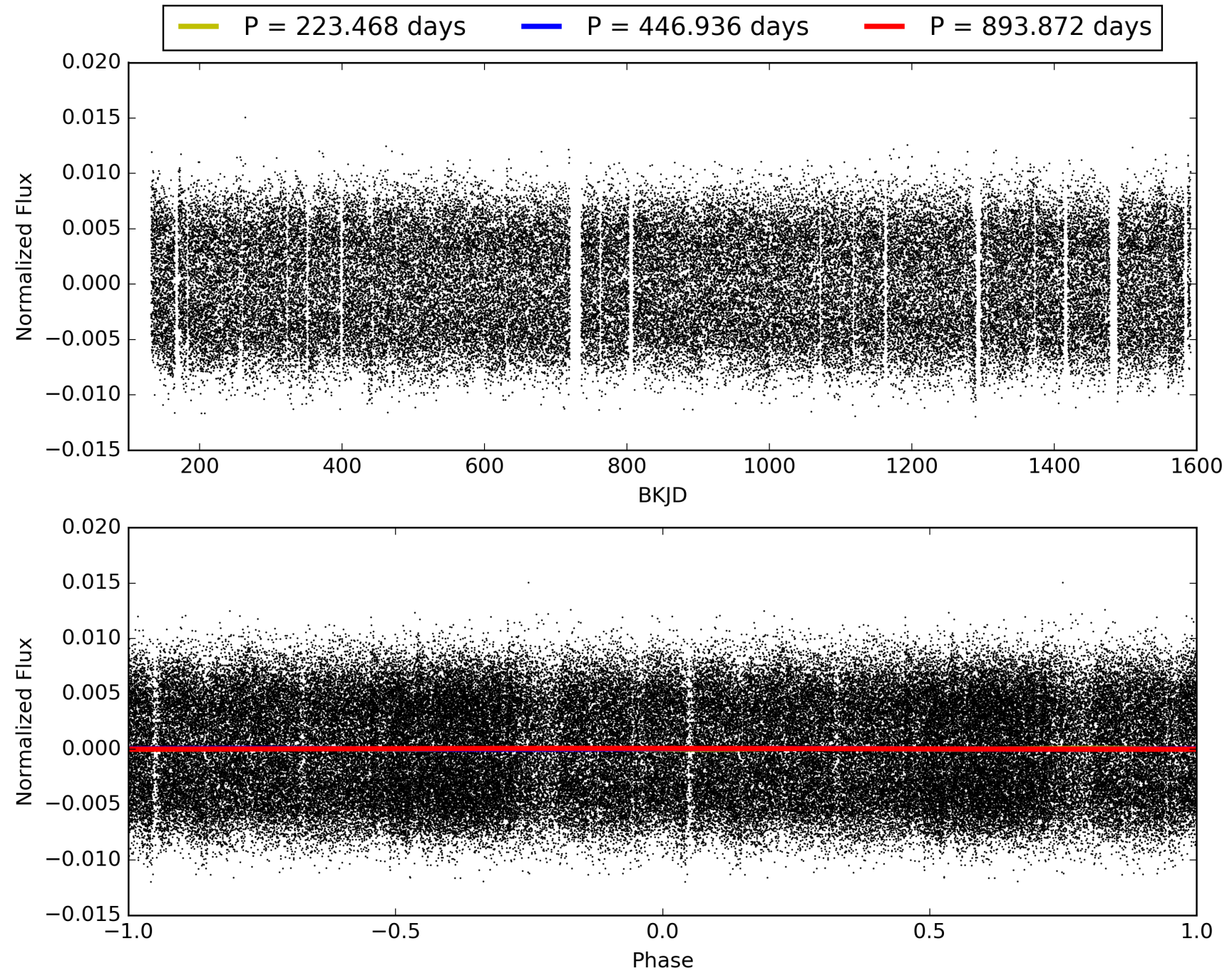
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:48:17 Z

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

TCE 008330102-03, PDC Light Curves

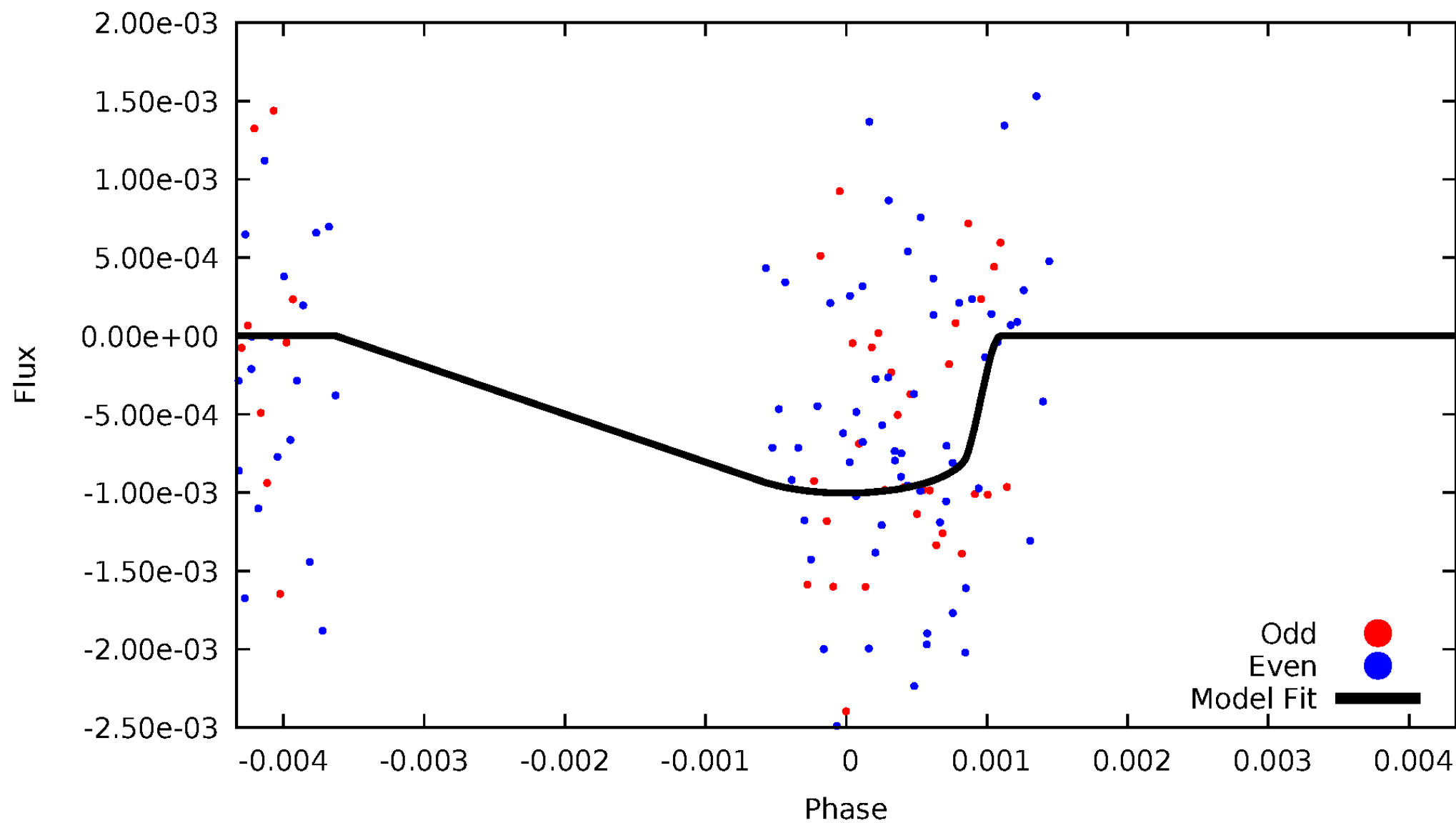


TCE 008330102-03



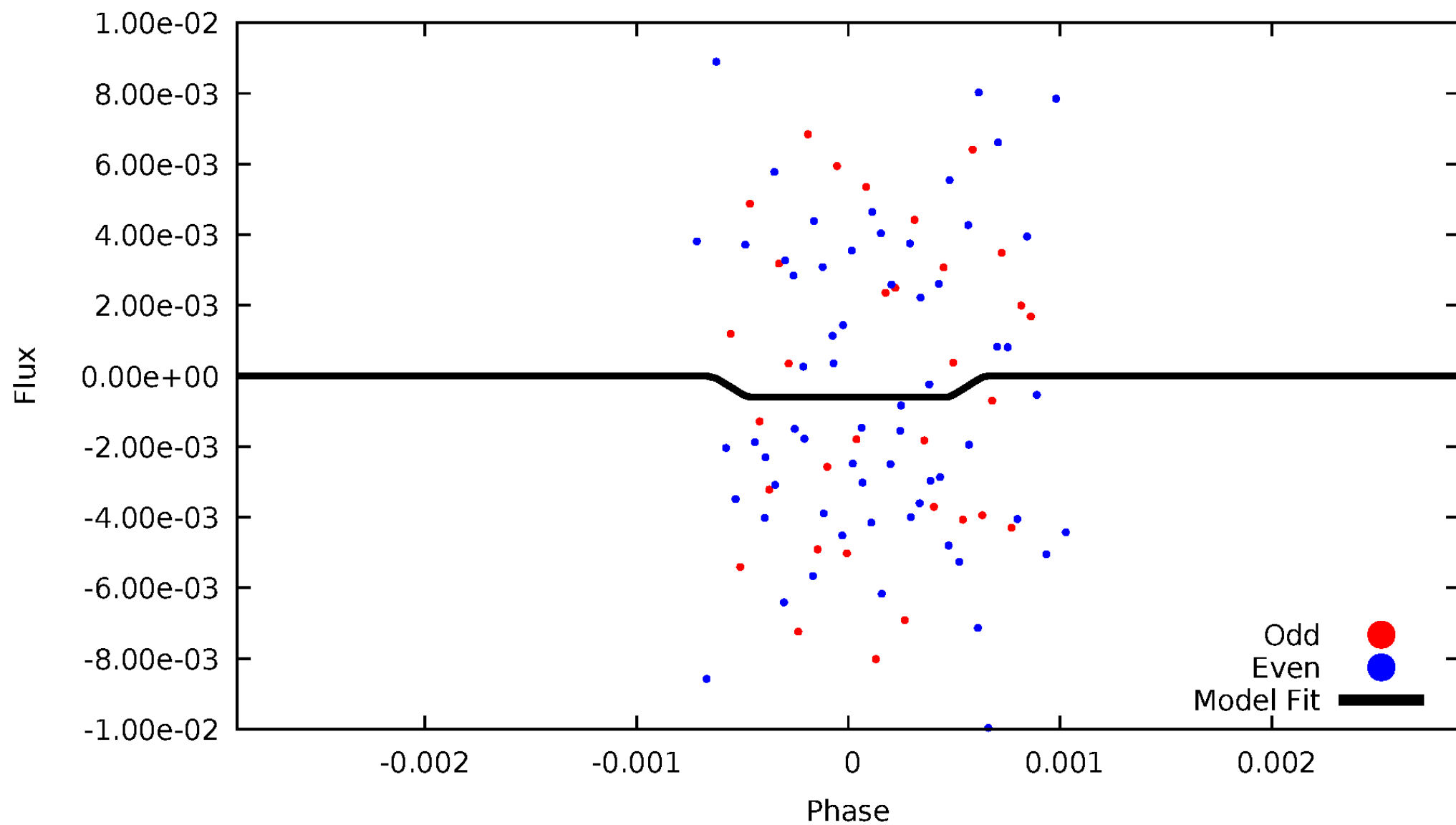
DV Odd/Even

TCE 008330102-03



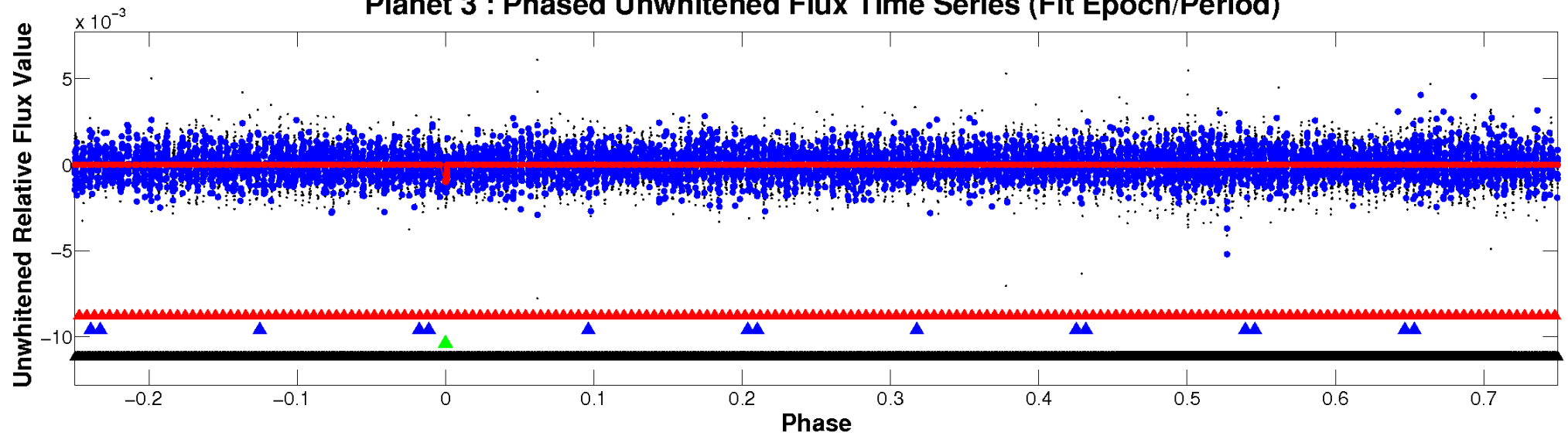
ALT Odd/Even

TCE 008330102-03

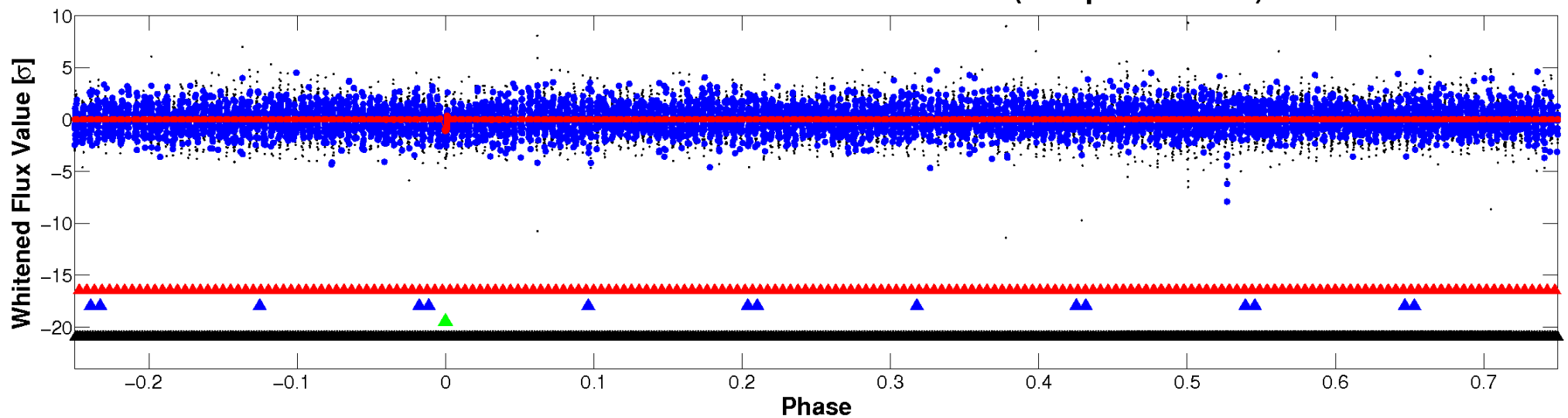


Non-Whitened Vs. Whitened Light Curve

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

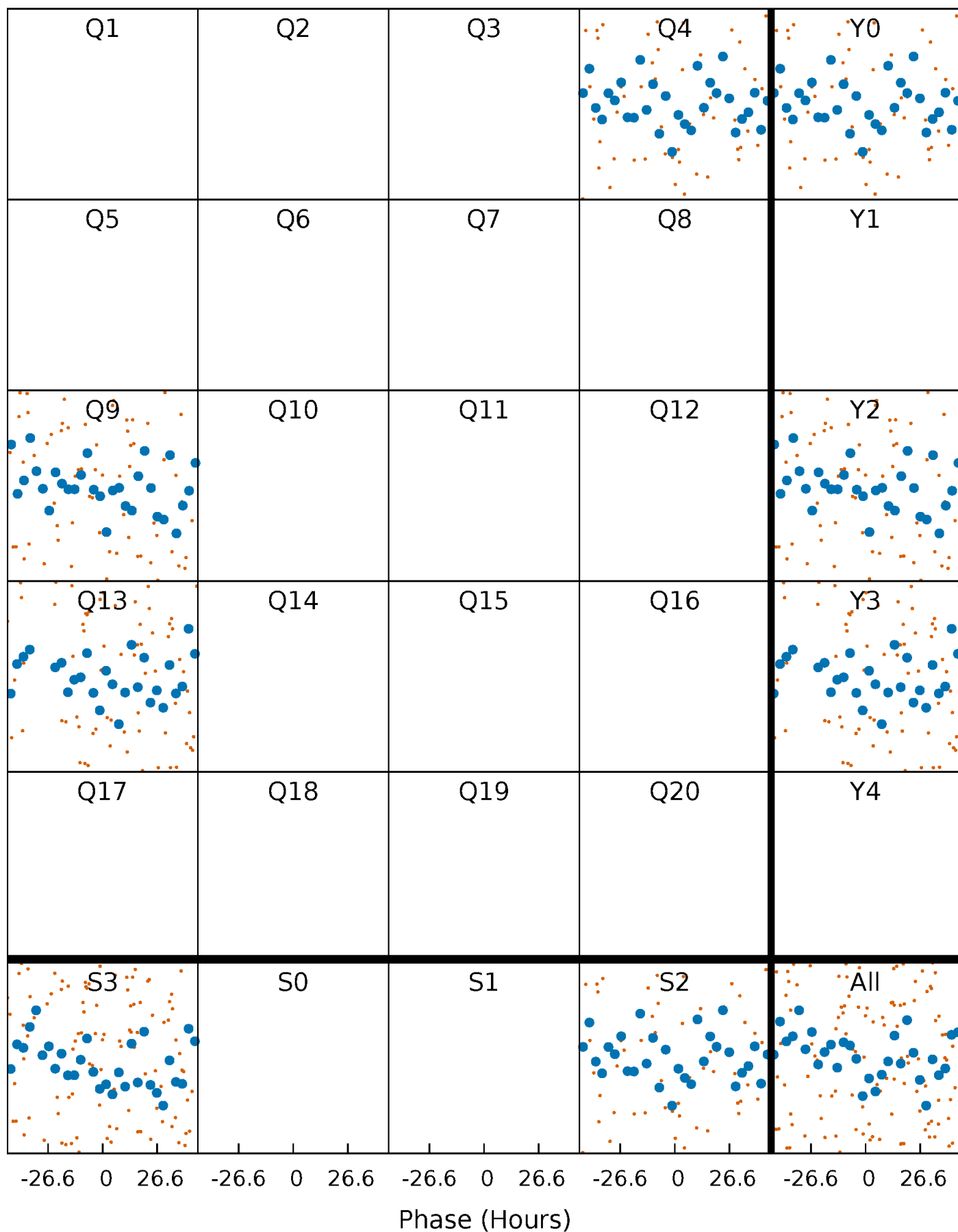


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



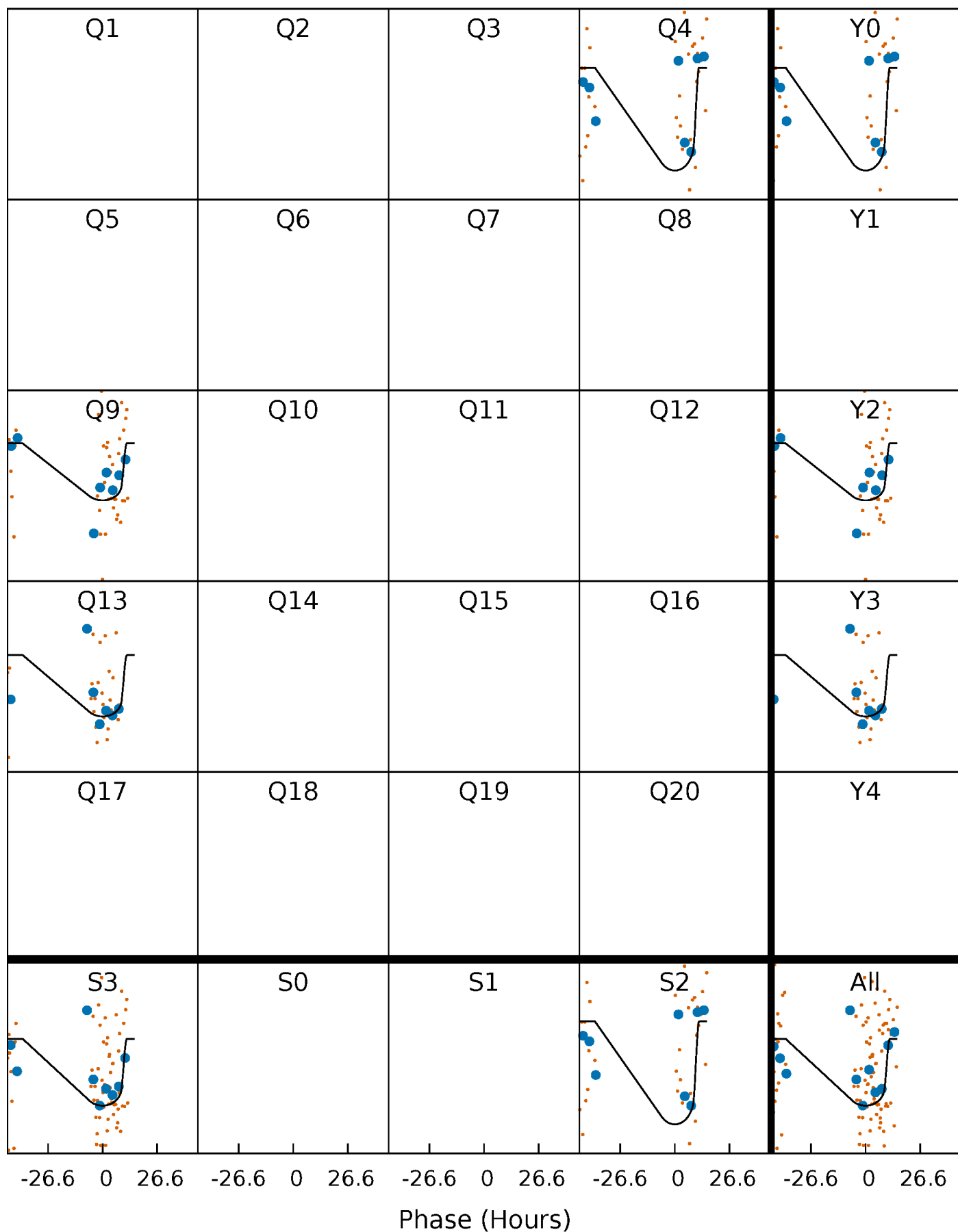
PDC Quarter-Phased Transit Curves

TCE 008330102-03 $P=446.936040$ Days $T_0=376.353508$ (BKJD)



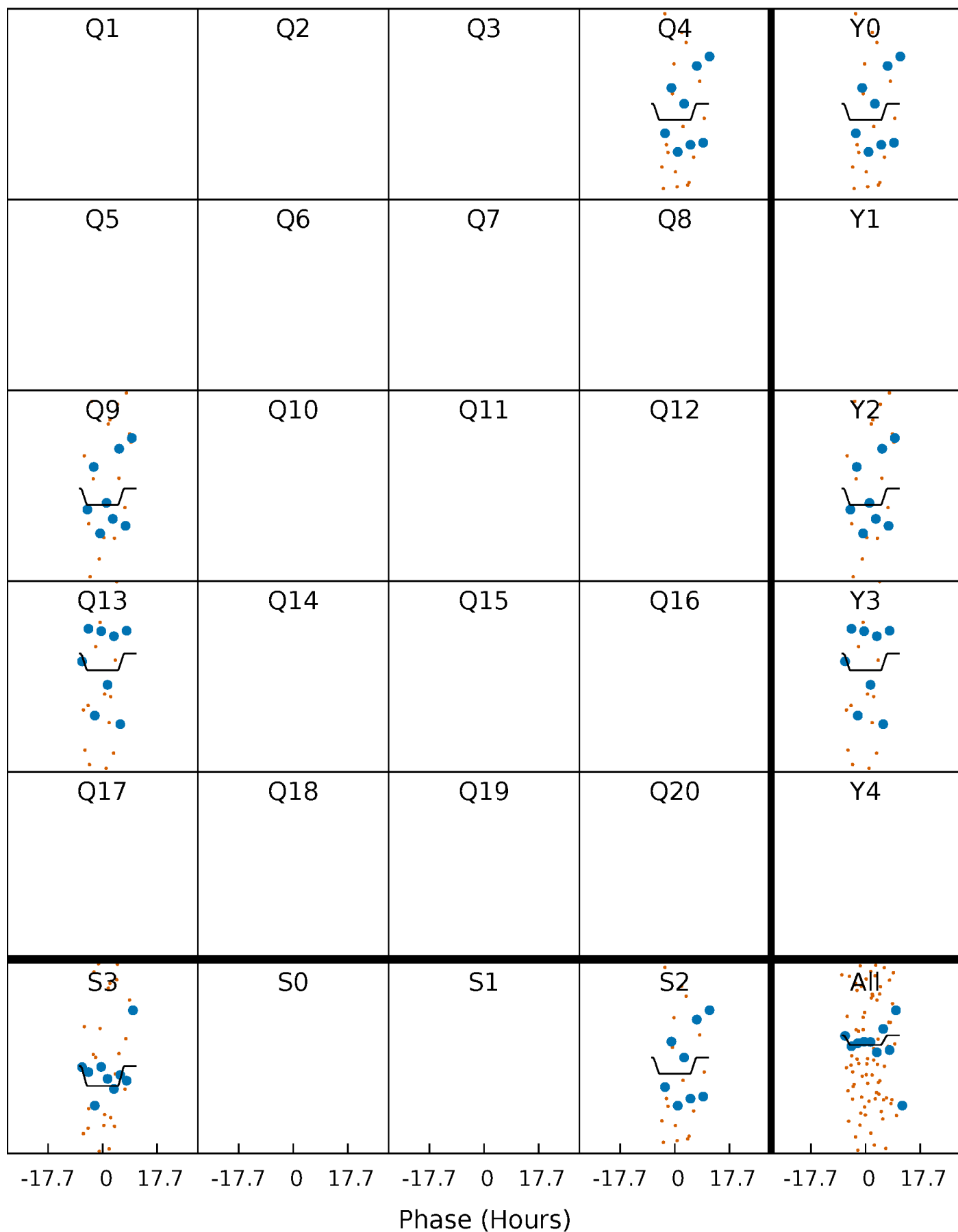
DV Quarter-Phased Transit Curves

TCE 008330102-03 $P=446.936040$ Days $T_0=376.353508$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

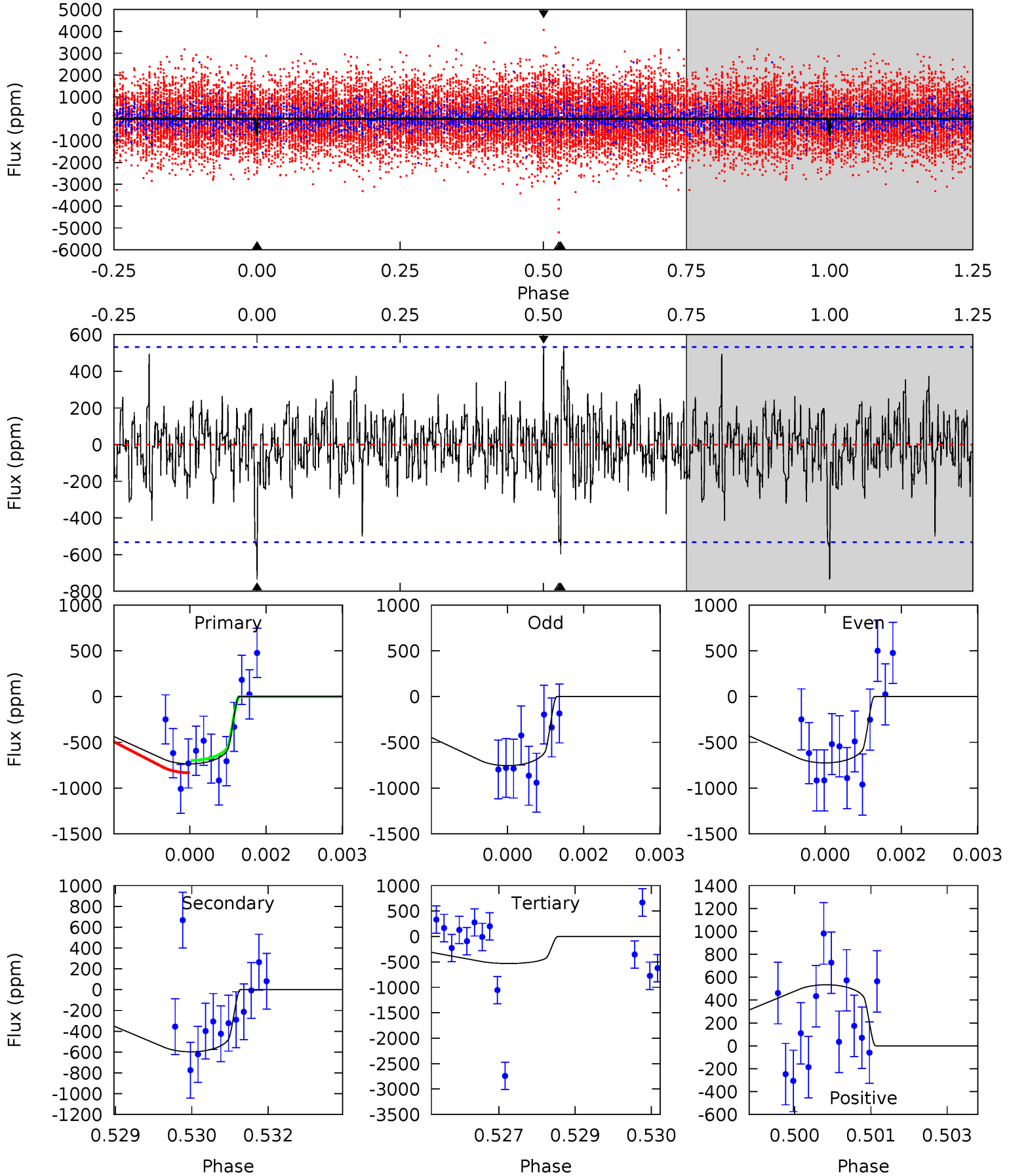
TCE 008330102-03 P=446.875146 Days $T_0=376.539927$ (BKJD)



DV Model-Shift Uniqueness Test

008330102-03, P = 446.936040 Days, E = 376.353508 Days

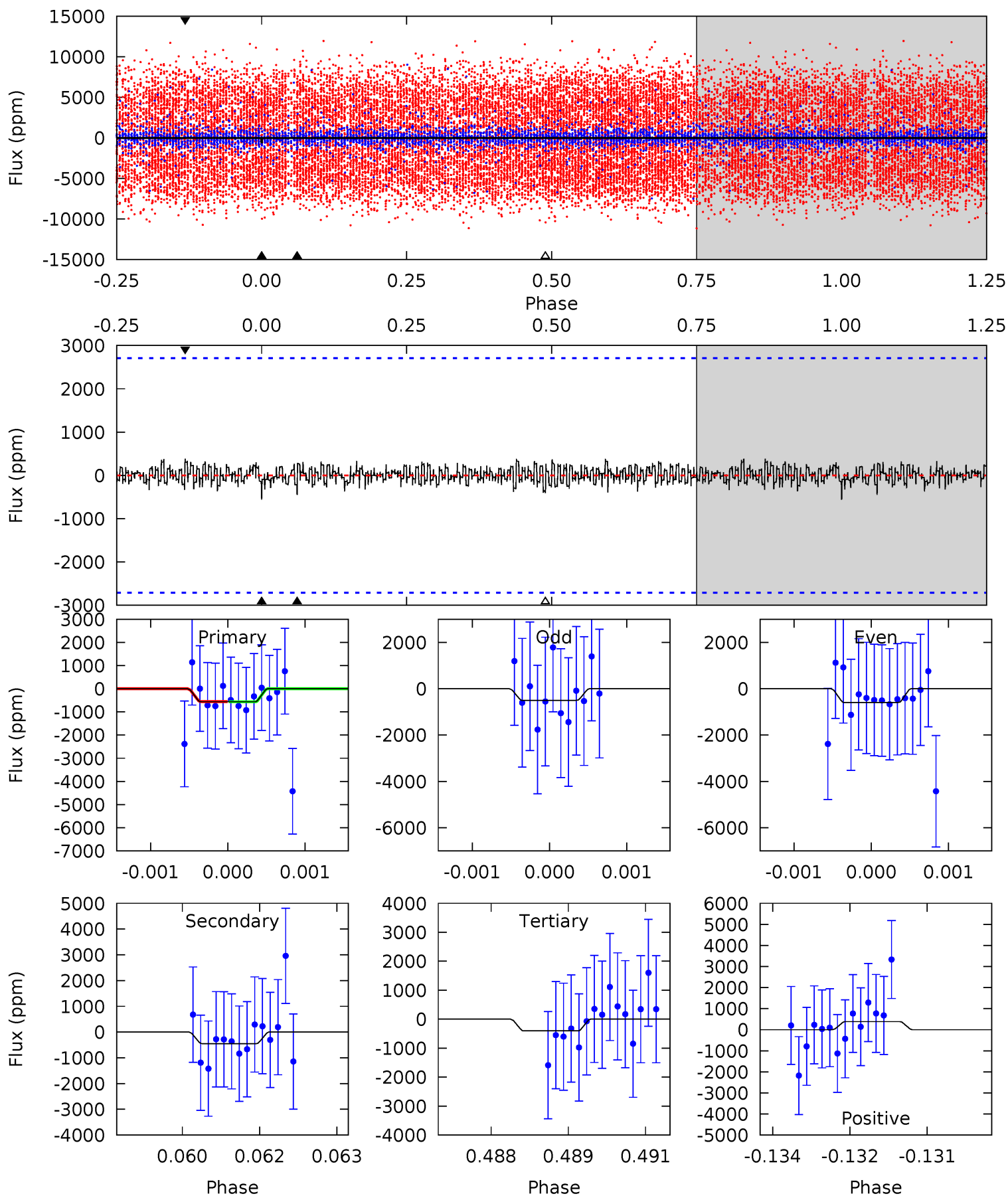
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.40	6.01	5.35	5.37	5.36	3.14	1.32	2.05	2.03	0.66	0.64	0.15	0.93	0.42	0.56



Alt Model-Shift Uniqueness Test

008330102-03, P = 446.875146 Days, E = 376.539927 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.12	0.90	0.81	0.77	5.41	3.22	0.27	0.31	0.35	0.09	0.13	0.09	1.10	0.41	0.01



Stellar Parameters For KIC 008330102

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7912^{+216}_{-340}	$3.934^{+0.253}_{-0.117}$	$-0.080^{+0.200}_{-0.350}$	$2.452^{+0.447}_{-0.831}$	$1.885^{+0.078}_{-0.416}$	$0.180^{+0.322}_{-0.065}$
	+3%/-4%	+6%/-3%	+250%/-438%	+18%/-34%	+4%/-22%	+179%/-36%
Source	KIC0	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 008330102-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-597 ± 99	$8.36^{+2.04}_{-1.83}$	632^{+44}_{-51}	6627^{+762}_{-624}	8973^{+5826}_{-3198}
Alt.	-450 ± 501	$6.17^{+1.72}_{-1.68}$	631^{+46}_{-57}	7061^{+2561}_{-11926}	11110^{+19447}_{-13508}

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

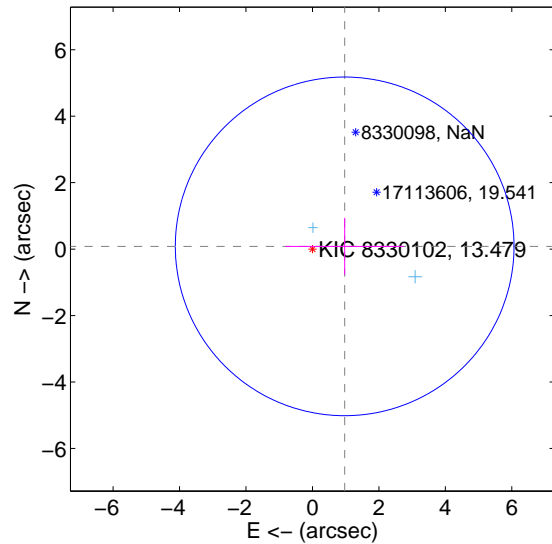
Supplemental centroid analysis for 008330102-03. Kepler magnitude: 13.48. Transit SNR 8.77

There are 2 quarters with good PRF difference image offsets

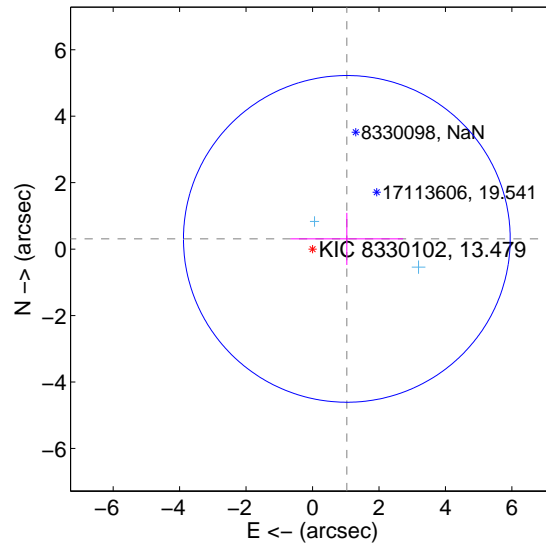
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.974 ± 1.699	0.57	-0.970 ± 1.778	0.082 ± 0.856
PRF-fit source offset from KIC position	1.078 ± 1.639	0.66	-1.033 ± 1.694	0.308 ± 0.784
photometric centroid source offset	0.53 ± 0.34	1.57	0.44 ± 0.30	-0.28 ± 0.40

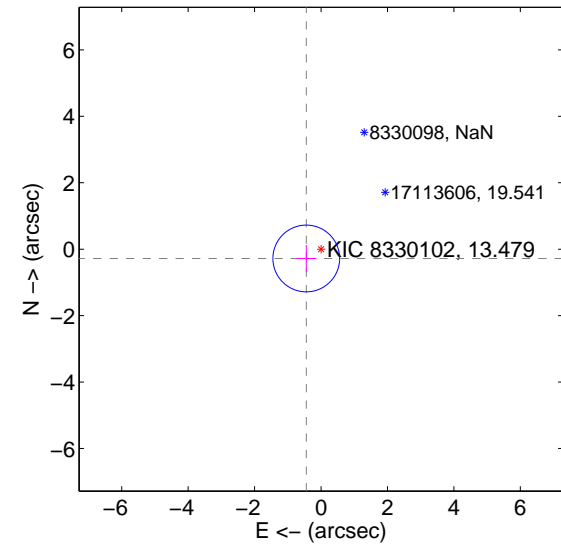
offset from difference PRF-fit to OOT PRF-fit



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.

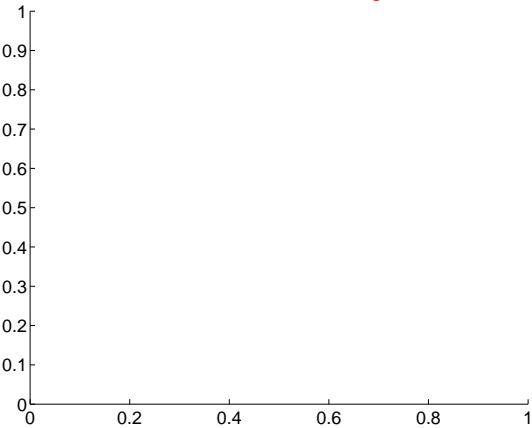
Q1 no difference image



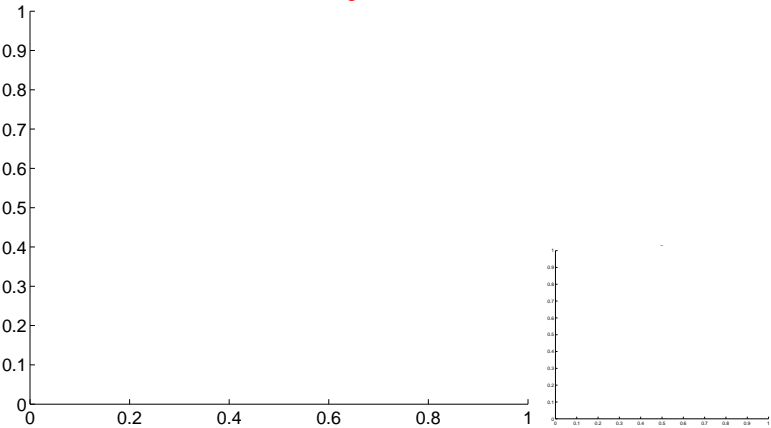
Q1 no OOT image



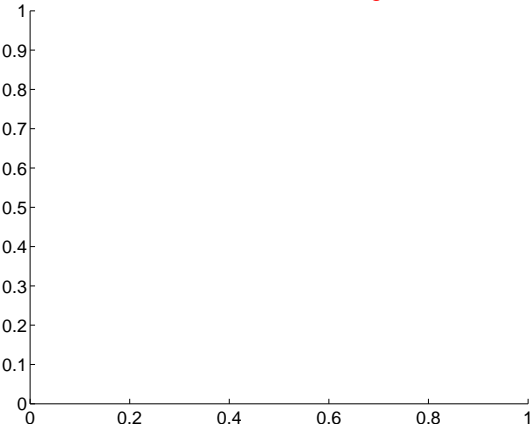
Q2 no difference image



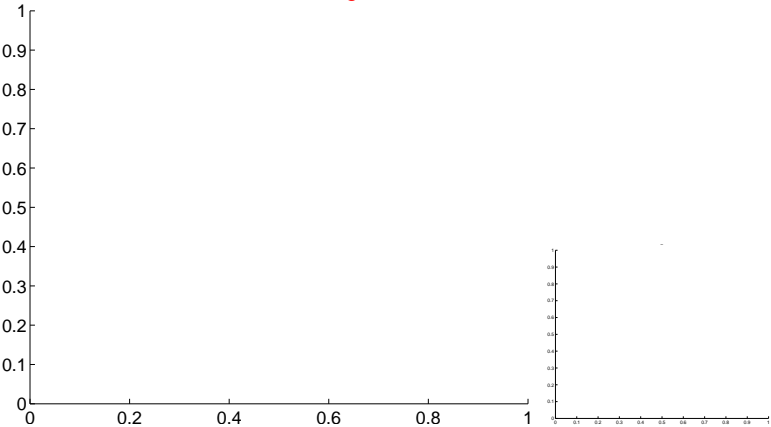
Q2 no OOT image



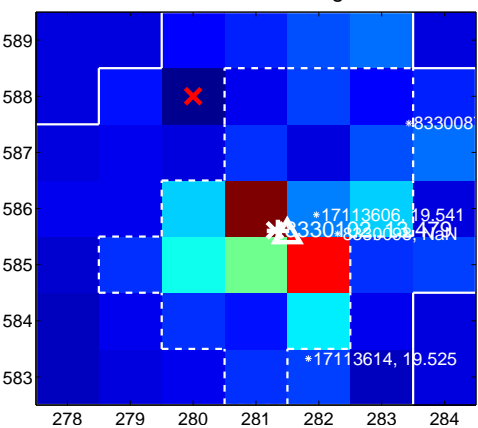
Q3 no difference image



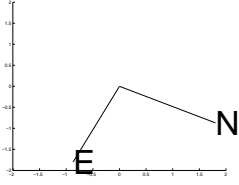
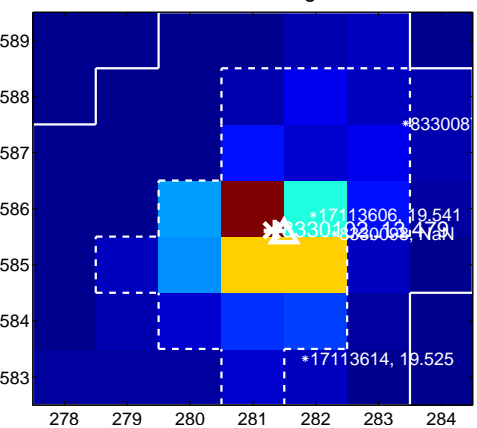
Q3 no OOT image



Q4 difference image



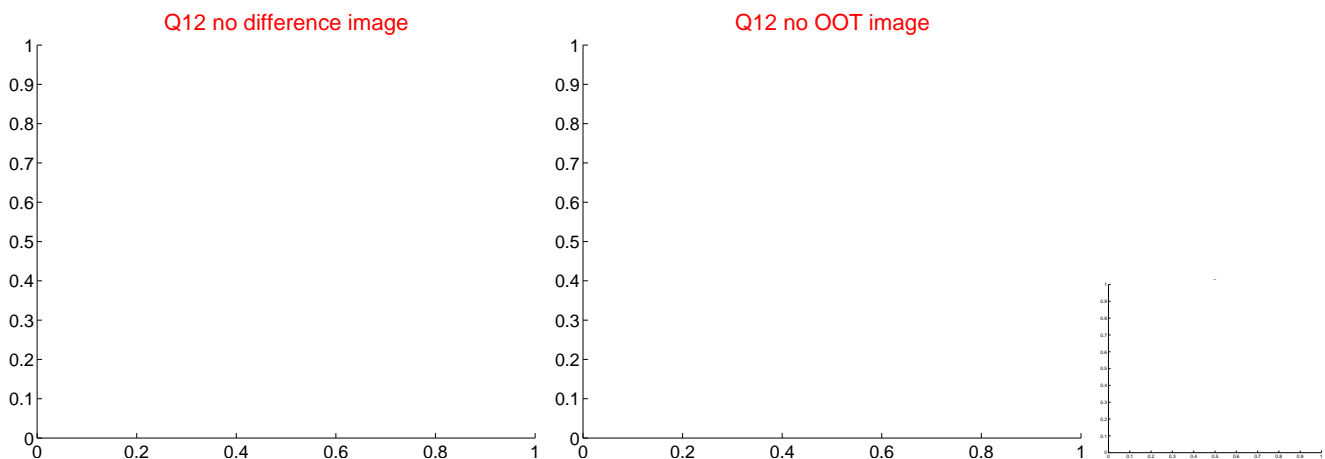
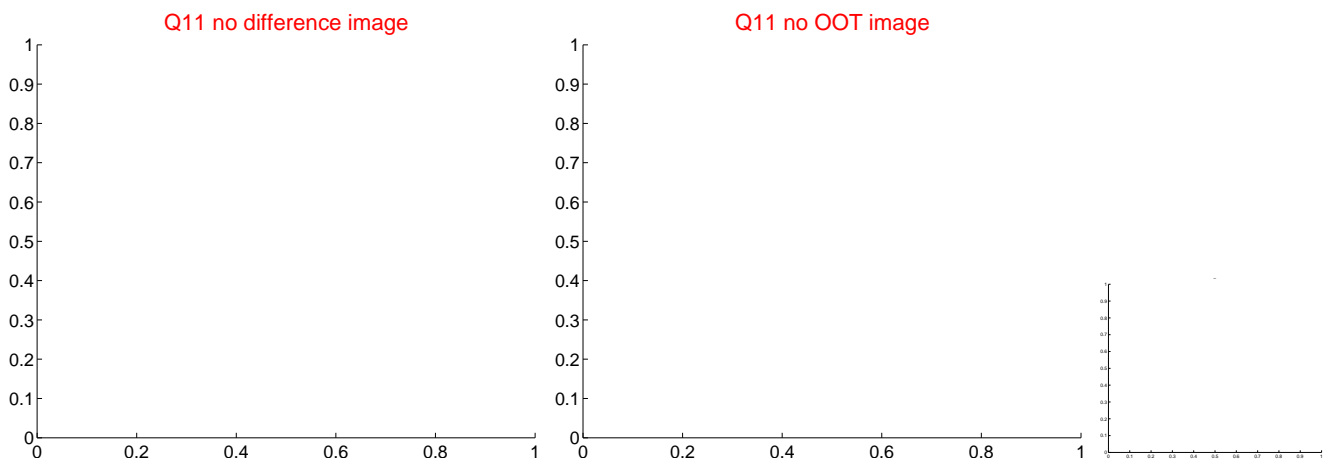
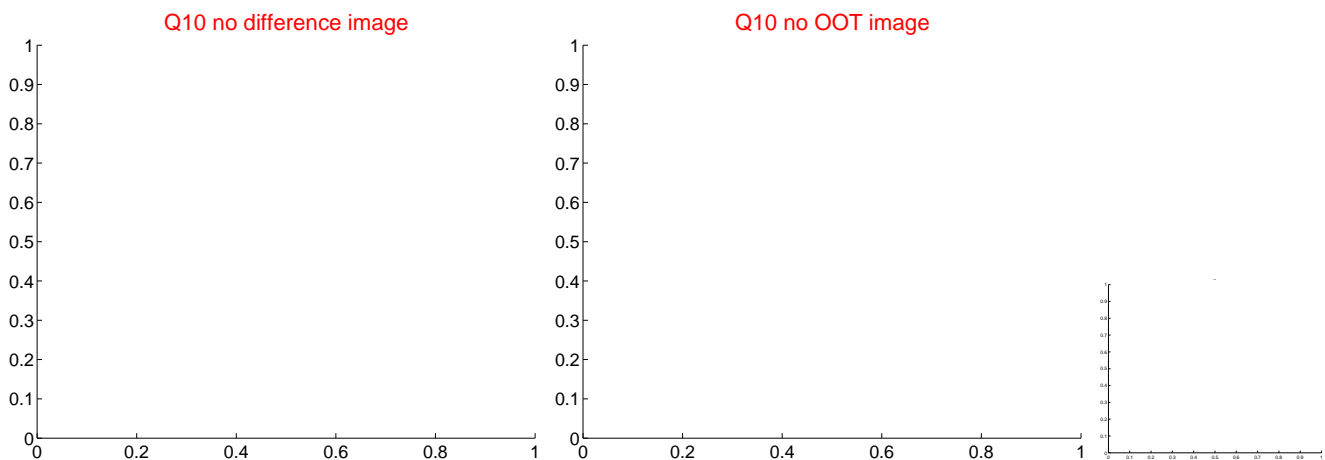
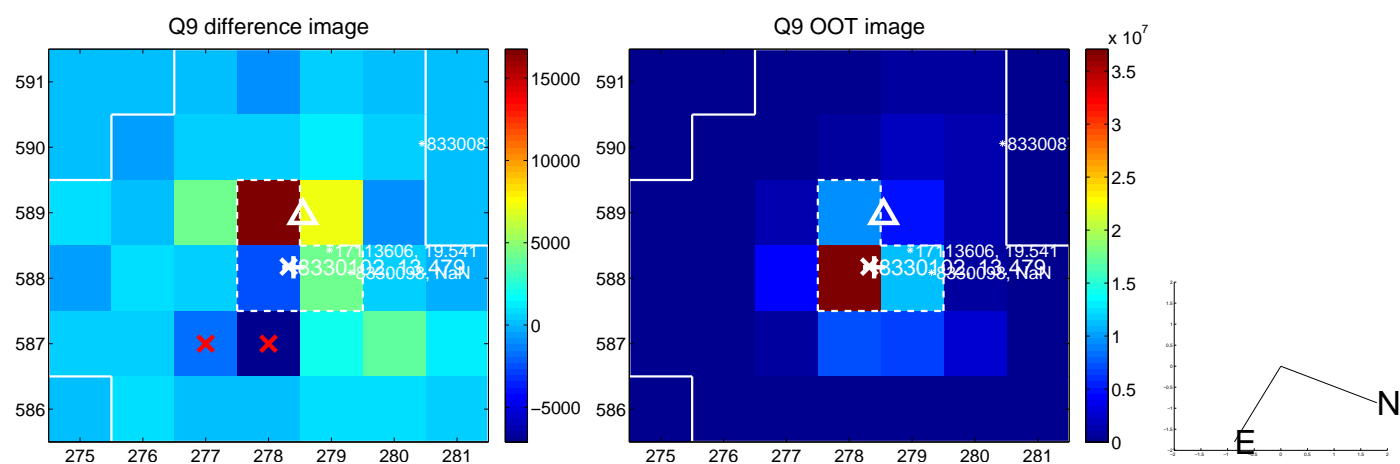
Q4 OOT image



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



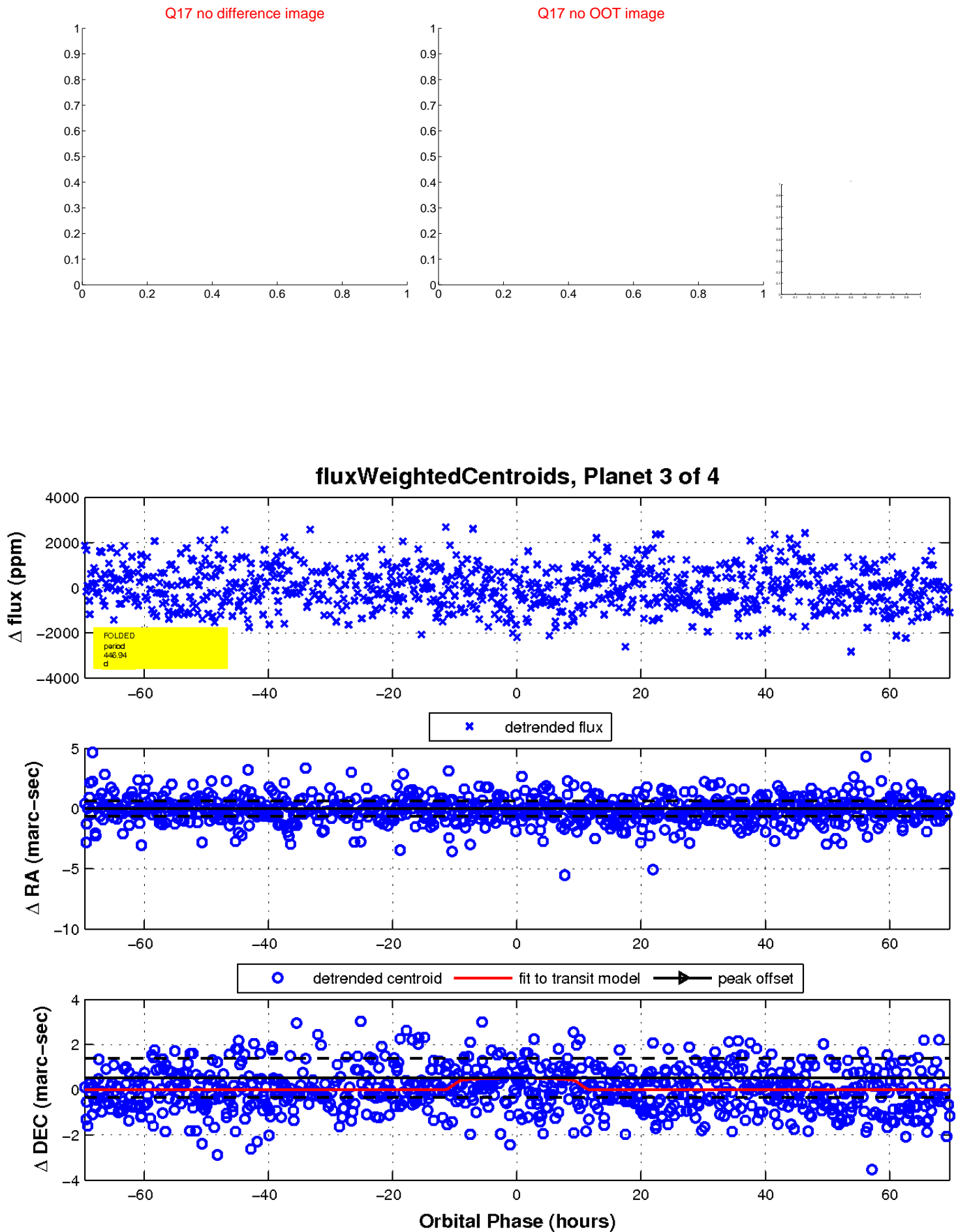
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

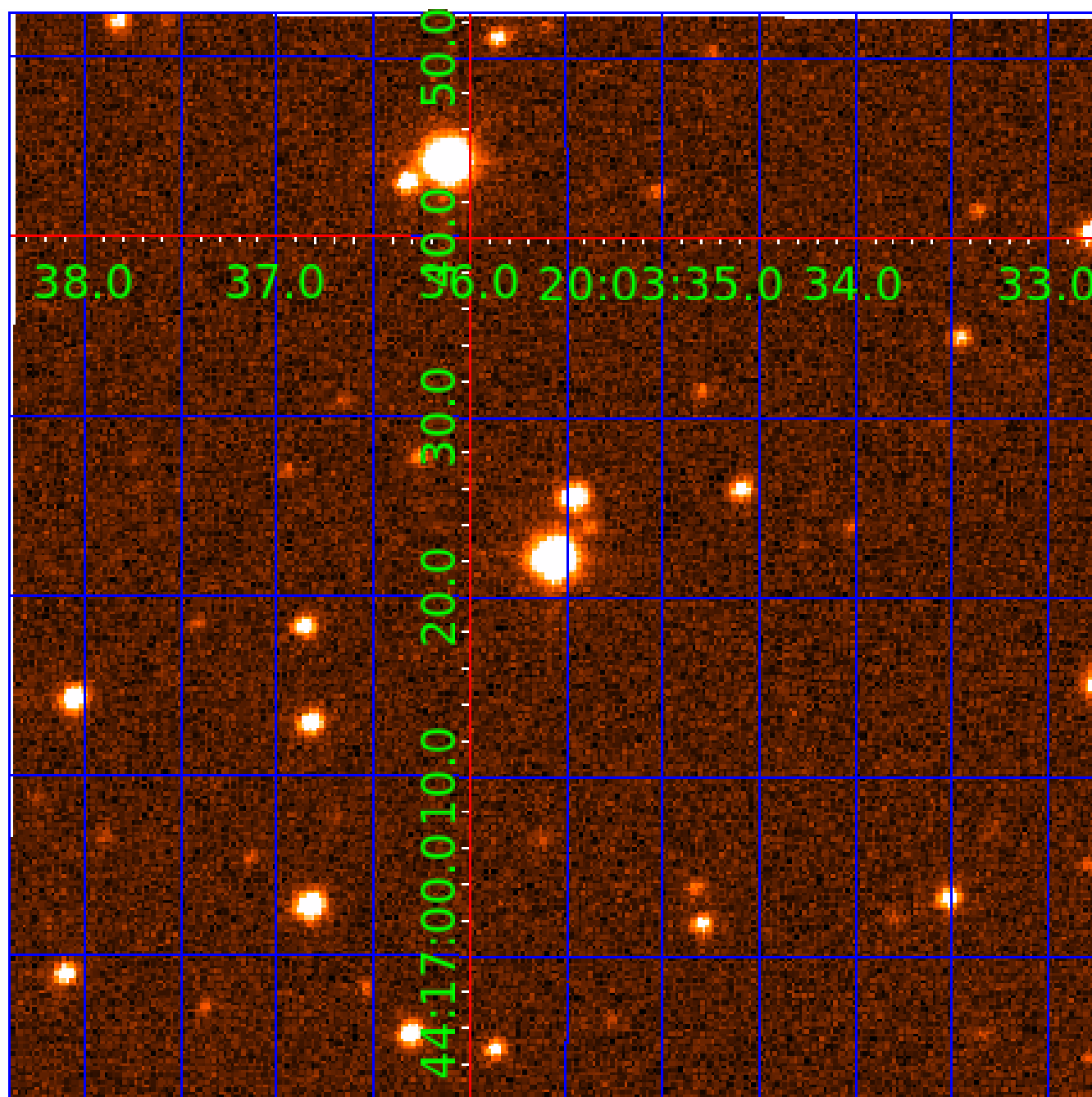


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008330102

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})
008330102-01	OBS	No	2.279616	131.628107	134.7	12.854	13.3	14.0	2.45	7912	2.90	12038.46
008330102-02	OBS	No	99.000506	173.318441	1214.2	8.379	12.3	9.8	2.45	7912	9.04	78.86
008330102-03	OBS	No	446.936040	376.353508	1003.3	23.237	12.7	8.8	2.45	7912	8.78	10.57
008330102-04	OBS	No	0.782990	132.133012	135.8	3.184	10.4	9.6	2.45	7912	3.32	50046.98

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008330102-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008330102-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
008330102-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008330102-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT

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

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

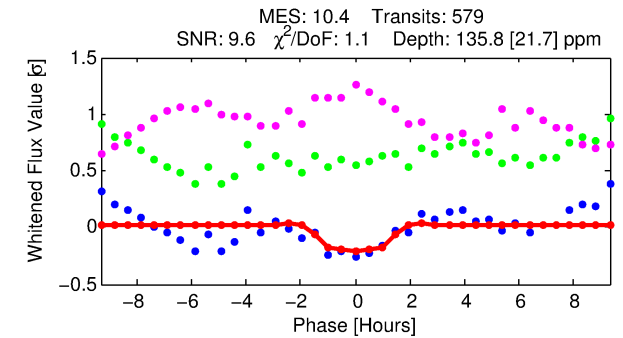
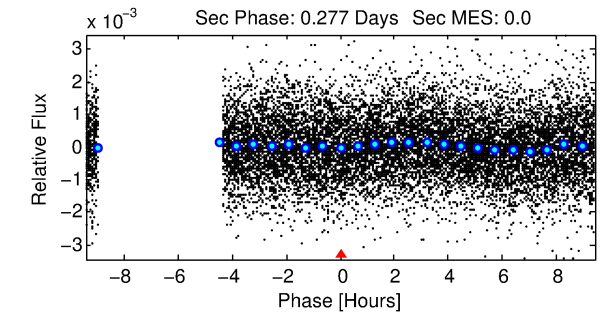
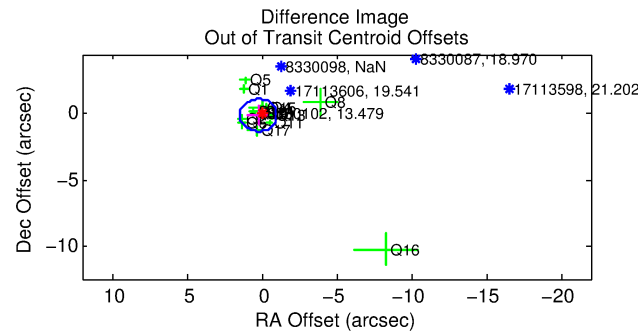
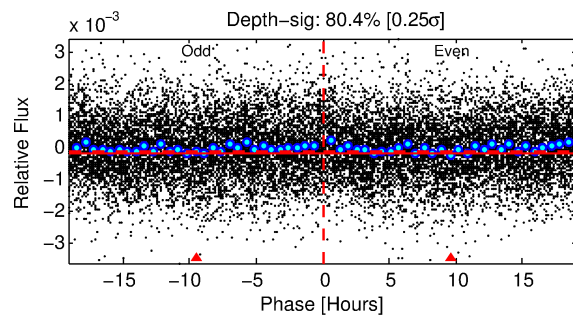
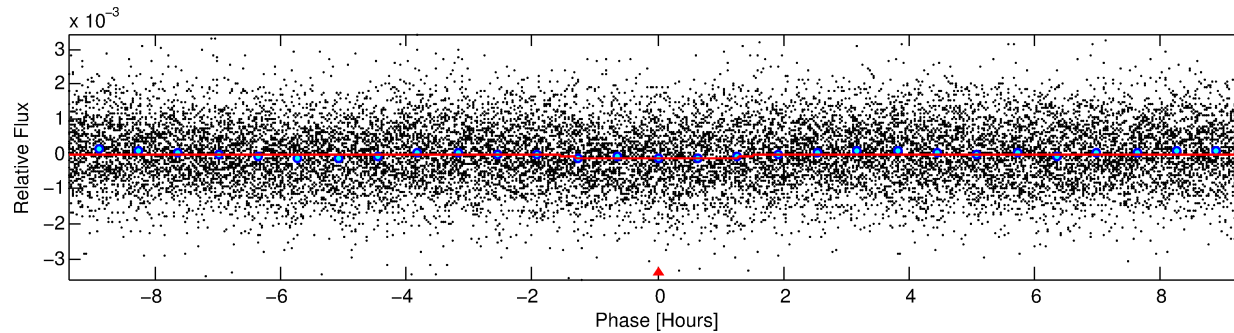
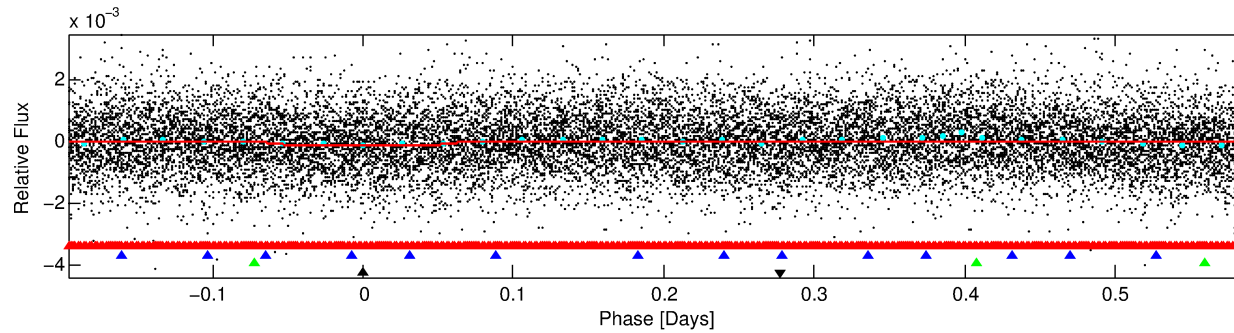
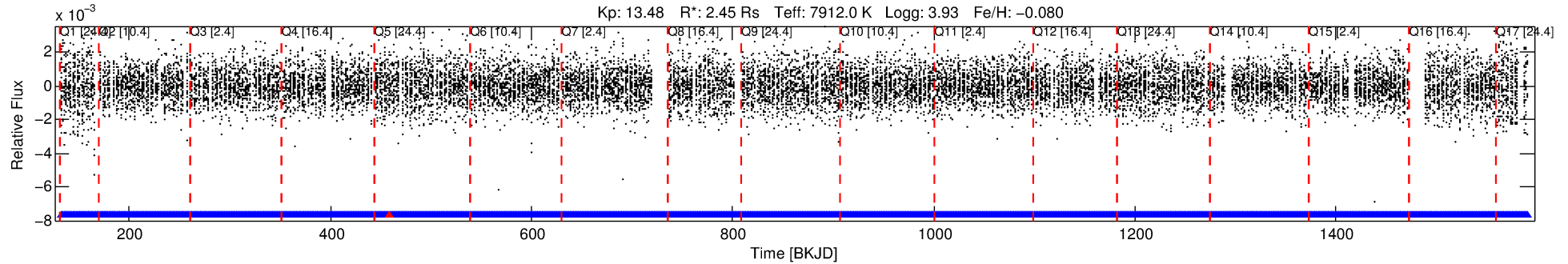
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008330102-04

No Significant Match Found

DV One-Page Summary

KIC: 8330102 Candidate: 4 of 4 Period: 0.783 d



DV Fit Results:

Period = 0.78299 [0.00001] d
Epoch = 132.1330 [0.0047] BKJD
Rp/R* = 0.0124 [0.0080]
a/R* = 1.28 [2.02]
b = 0.90 [0.86]
Seff = 50046.98 [24075.94]
Teq = 3814 [459] K
Rp = 3.32 [2.42] Re
a = 0.0205 [0.0061] AU
Ag = N/A
Teffp = N/A

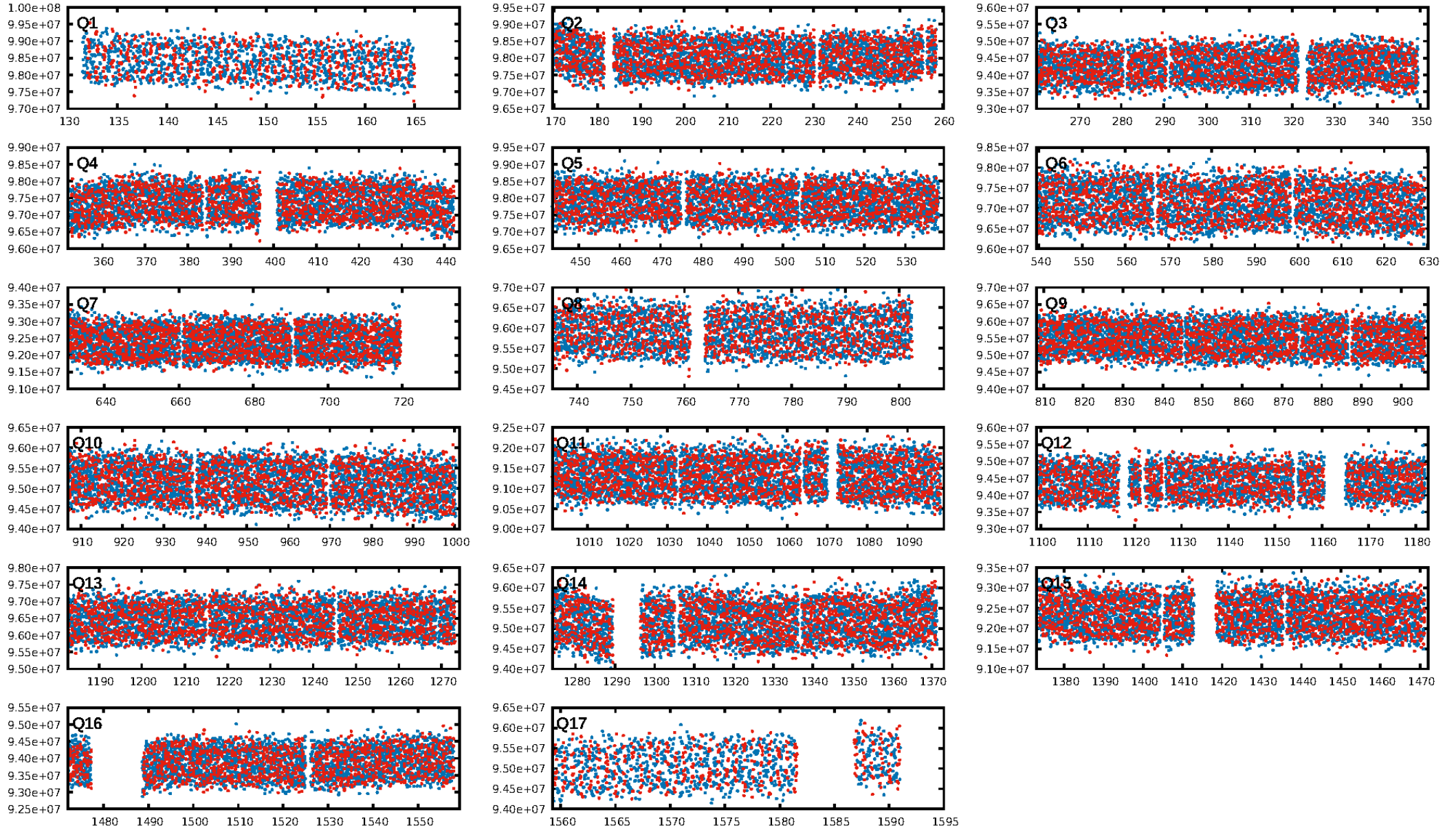
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.3% [2.71 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.31e-28
RollingBand-fgt: 1.00 [552/553]
GhostDiagnostic-chr: -1.734
Centroid-sig: 2.6%
Centroid-so: 0.777 arcsec [3.66 σ]
OotOffset-rm: 0.246 arcsec [0.60 σ]
KicOffset-rm: 0.262 arcsec [0.30 σ]
OotOffset-st: 4/2/4/5 [15]
KicOffset-st: 4/2/4/5 [15]
DiffImageQuality-fgm: 0.60 [9/15]
DiffImageOverlap-fno: 1.00 [17/17]

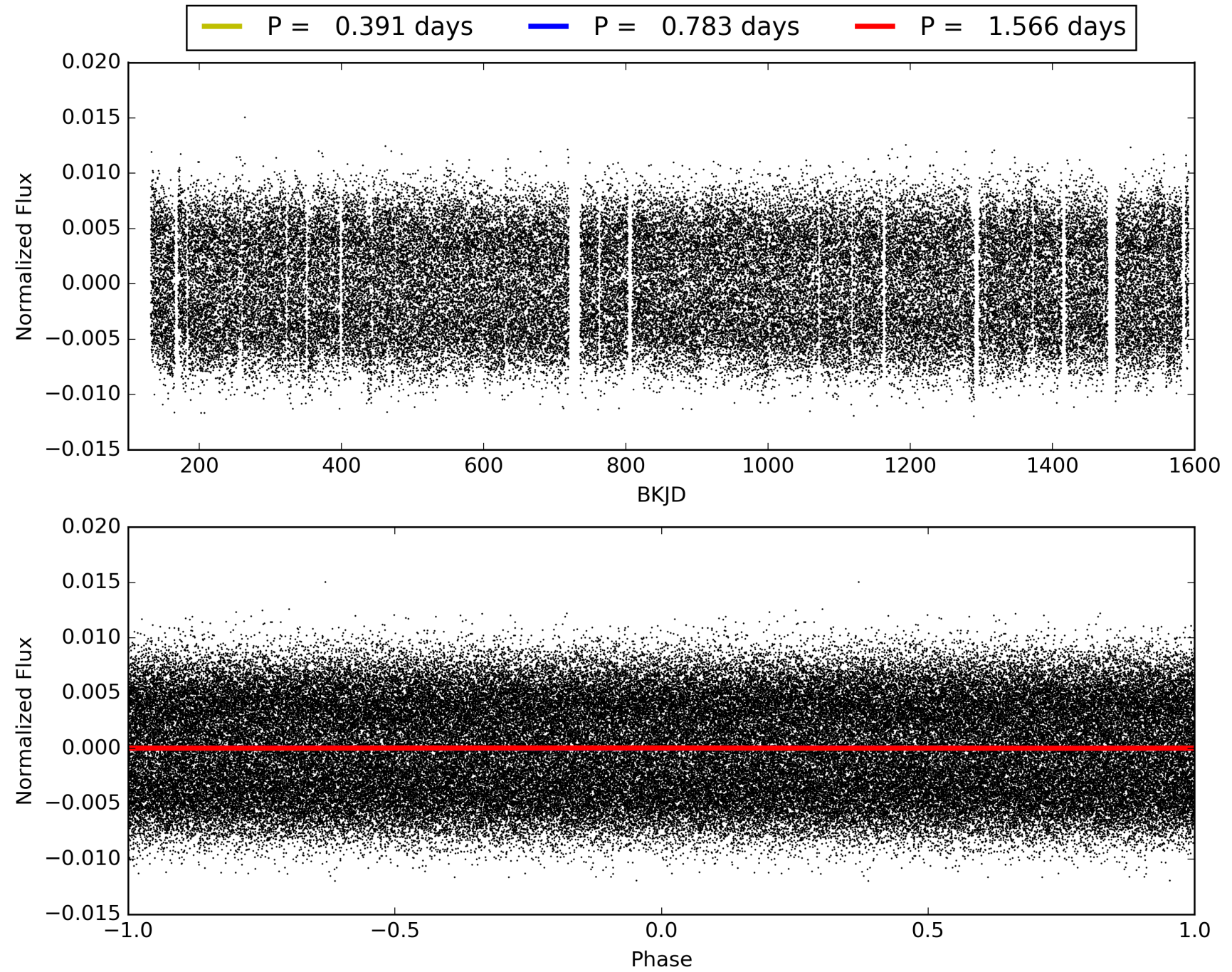
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:48:23 Z

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

TCE 008330102-04, PDC Light Curves

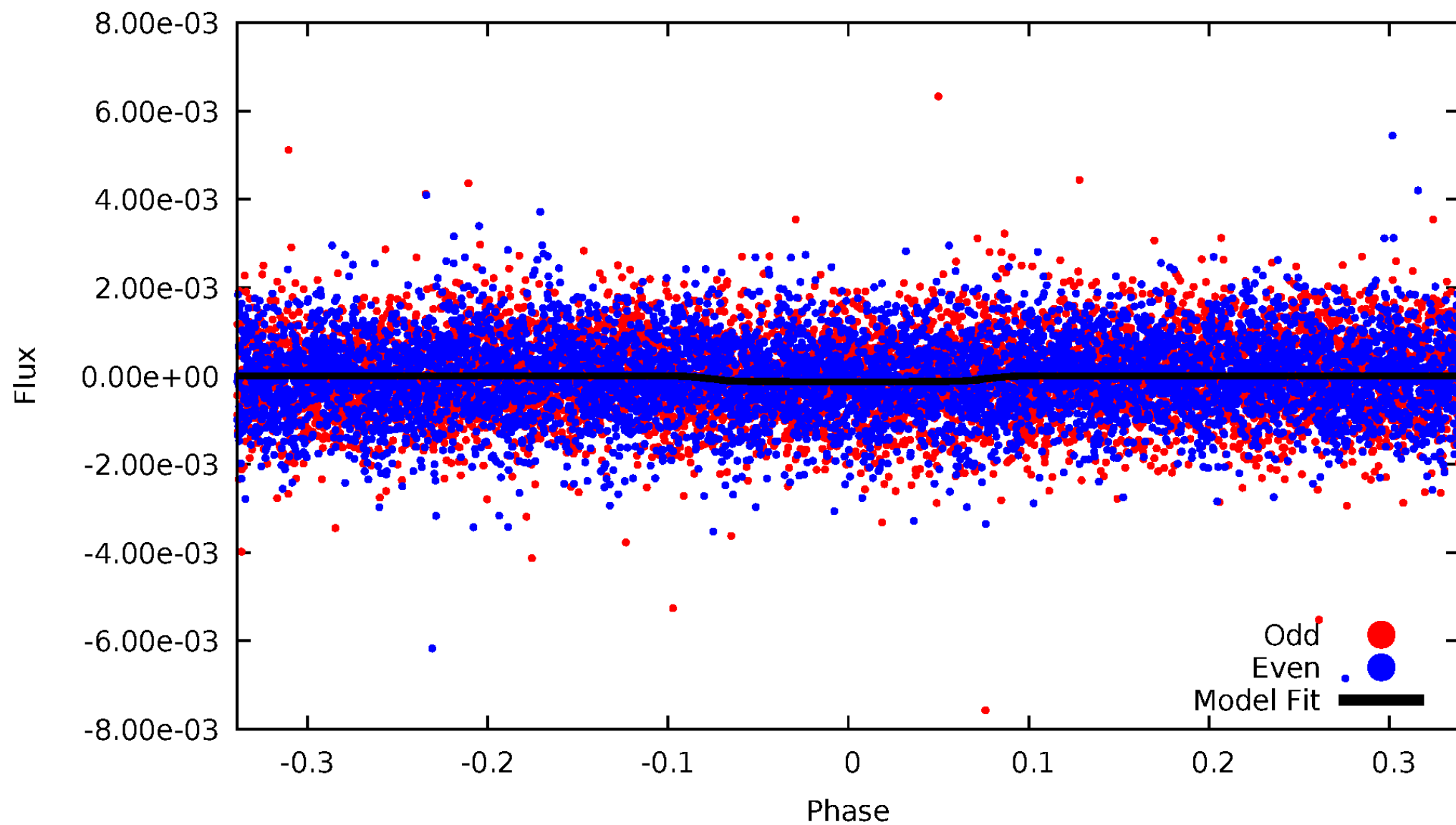


TCE 008330102-04



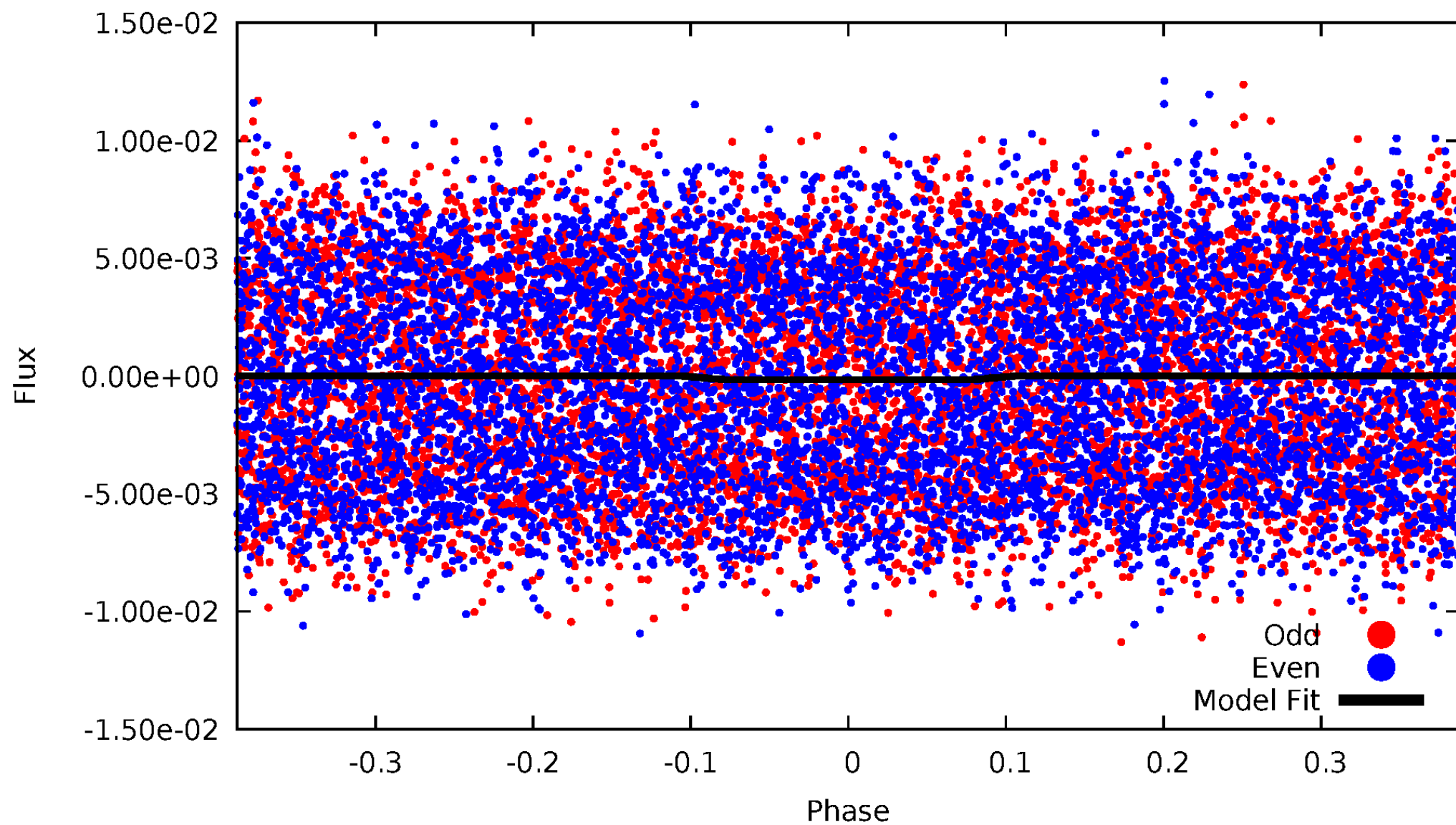
DV Odd/Even

TCE 008330102-04



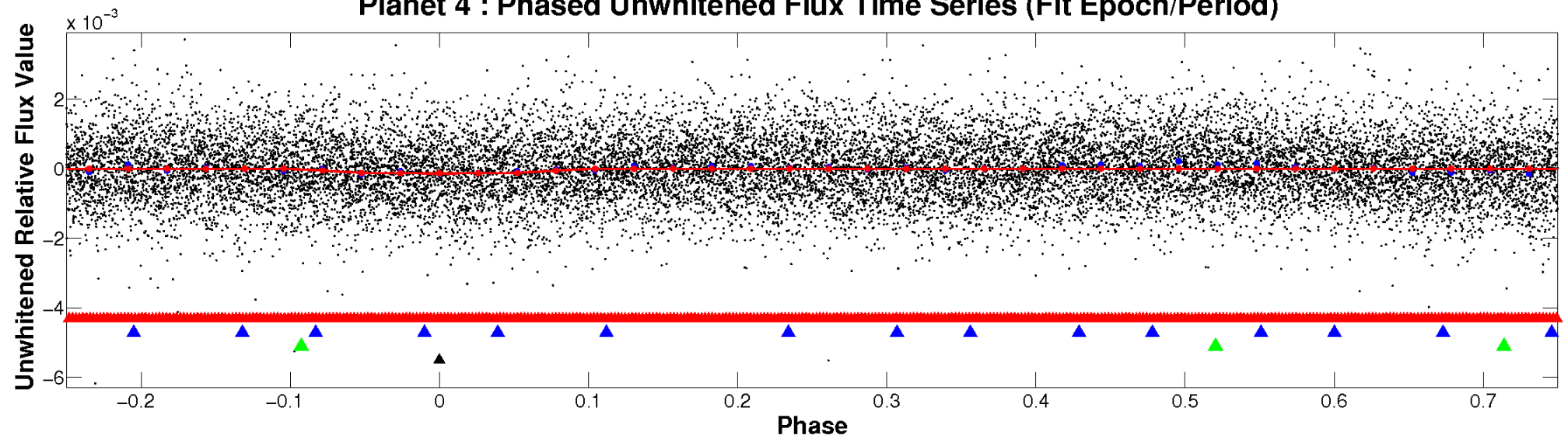
ALT Odd/Even

TCE 008330102-04

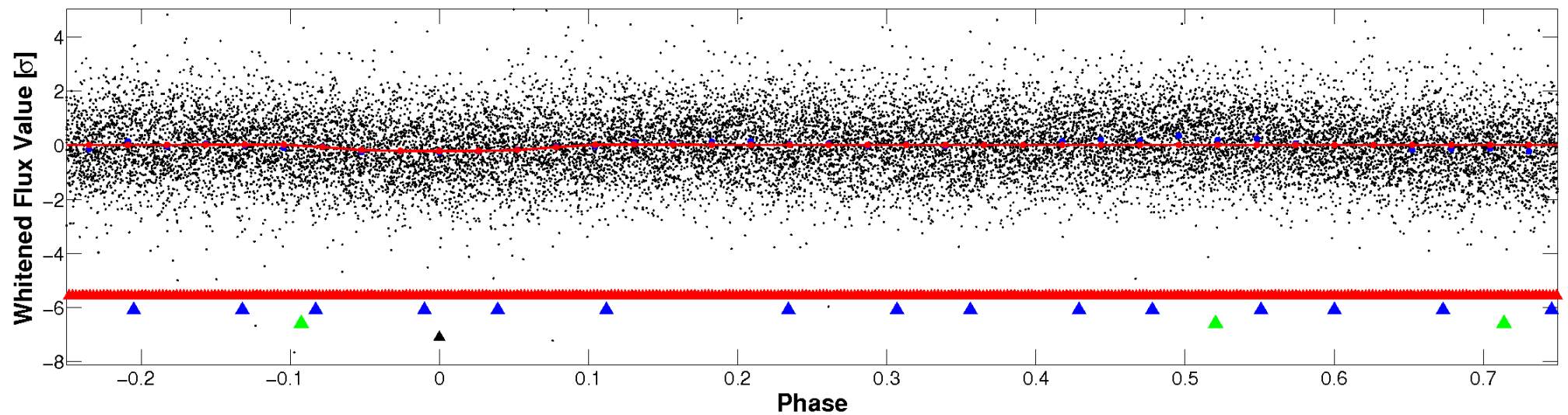


Non-Whitened Vs. Whitened Light Curve

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

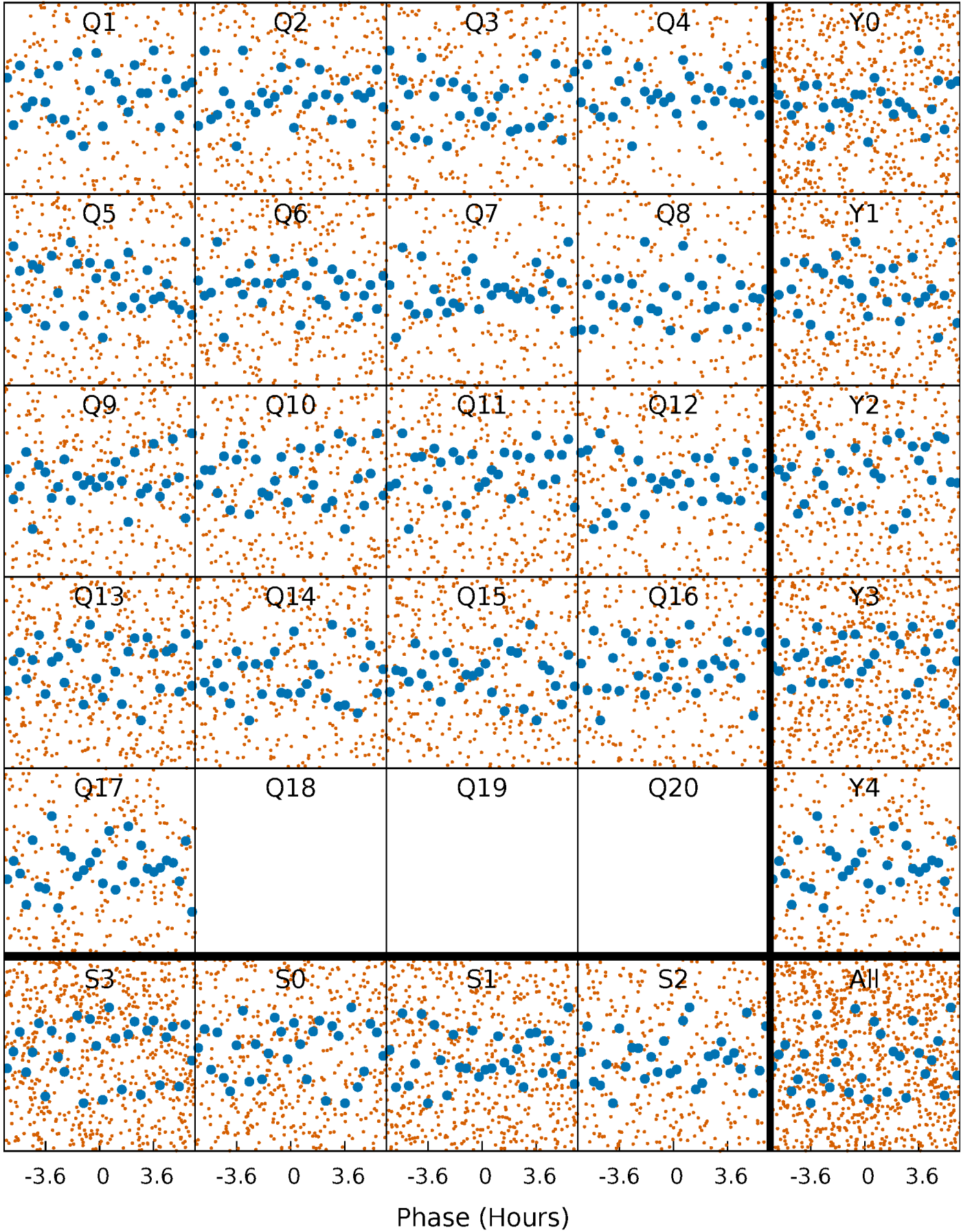


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



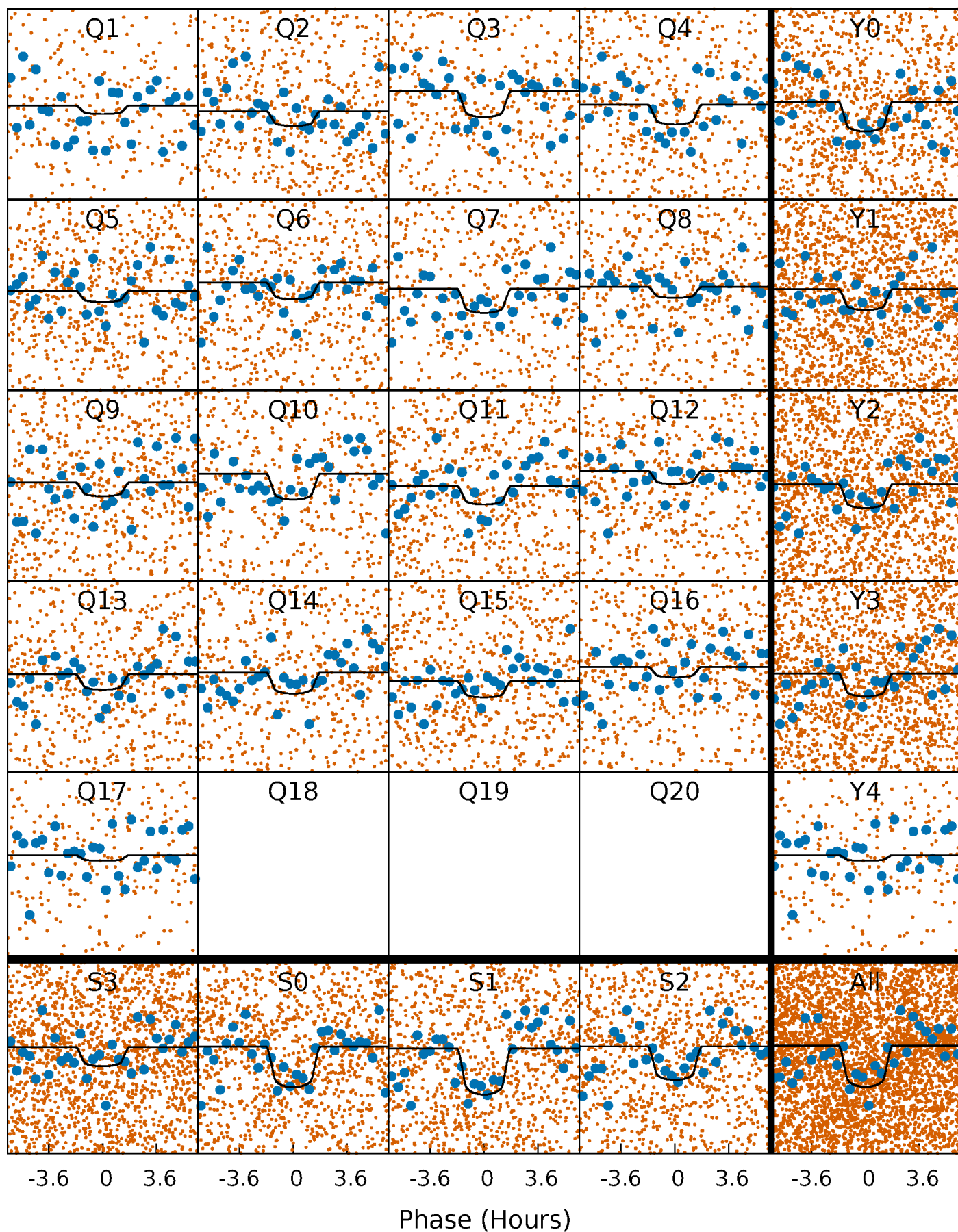
PDC Quarter-Phased Transit Curves

TCE 008330102-04 P= 0.782990 Days $T_0=132.133012$ (BKJD)



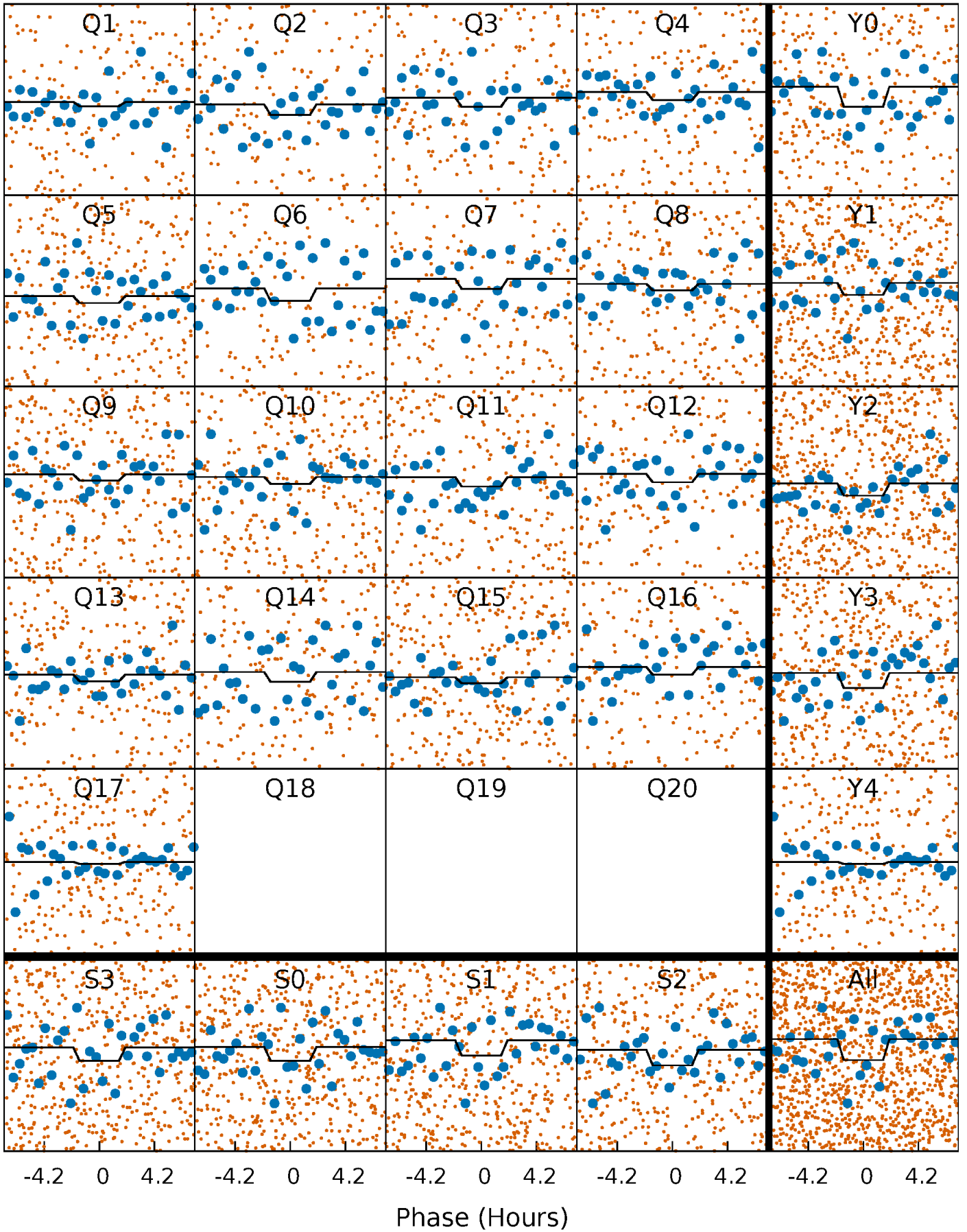
DV Quarter-Phased Transit Curves

TCE 008330102-04 P= 0.782990 Days $T_0=132.133012$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

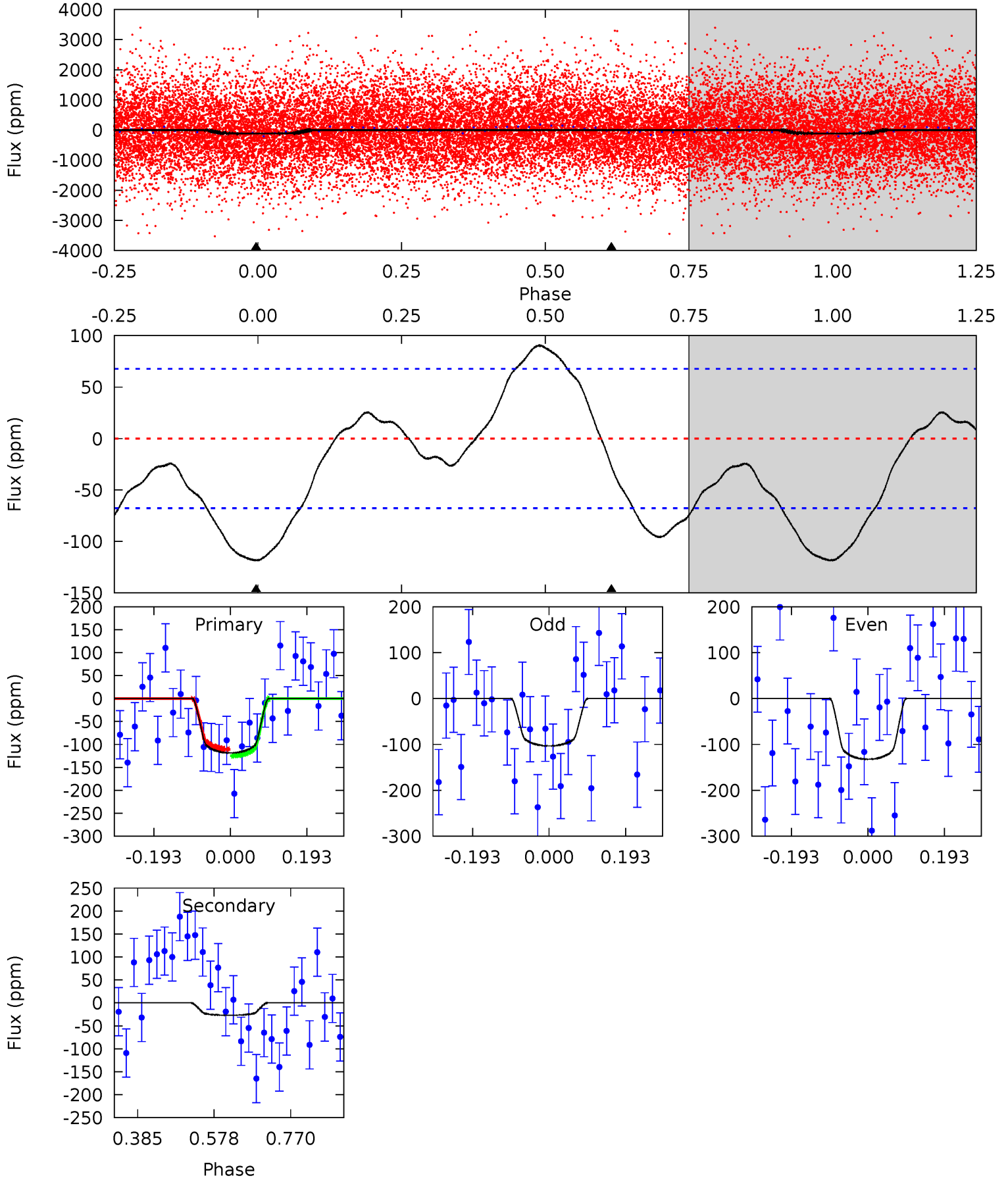
TCE 008330102-04 P= 0.782991 Days $T_0=132.133069$ (BKJD)



DV Model-Shift Uniqueness Test

008330102-04, P = 0.782990 Days, E = 132.133012 Days

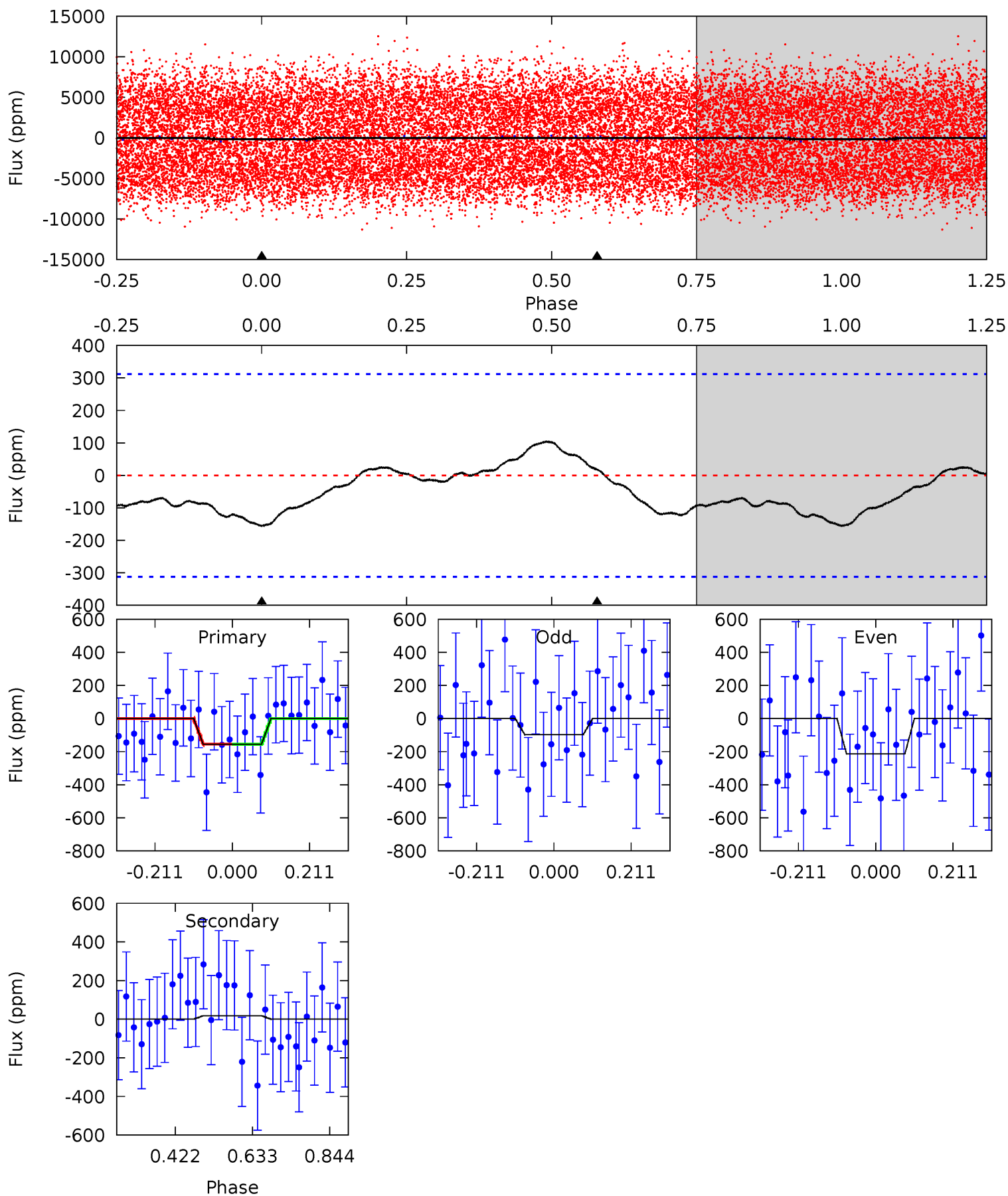
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.74	1.77	0	0	4.43	1.30	1.15	7.74	7.74	1.77	1.77	0.95	0.90	0.43	0.44



Alt Model-Shift Uniqueness Test

008330102-04, P = 0.782991 Days, E = 132.133069 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.20	-0.25	0	0	4.41	1.25	0.18	2.20	2.20	-0.25	-0.25	0.82	0.75	0.40	0.00



Stellar Parameters For KIC 008330102

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7912^{+216}_{-340}	$3.934^{+0.253}_{-0.117}$	$-0.080^{+0.200}_{-0.350}$	$2.452^{+0.447}_{-0.831}$	$1.885^{+0.078}_{-0.416}$	$0.180^{+0.322}_{-0.065}$
	+3%/-4%	+6%/-3%	+250%/-438%	+18%/-34%	+4%/-22%	+179%/-36%
Source	KIC0	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 008330102-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-27 ± 15	$3.25^{+1.87}_{-1.83}$	5233^{+362}_{-439}	4161^{+2734}_{-8068}	$0.539^{+2.305}_{-0.388}$
Alt.	18 ± 71	$3.23^{+2.11}_{-1.85}$	5240^{+375}_{-423}	-5098^{+10565}_{-3155}	$-0.313^{+1.414}_{-3.453}$

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

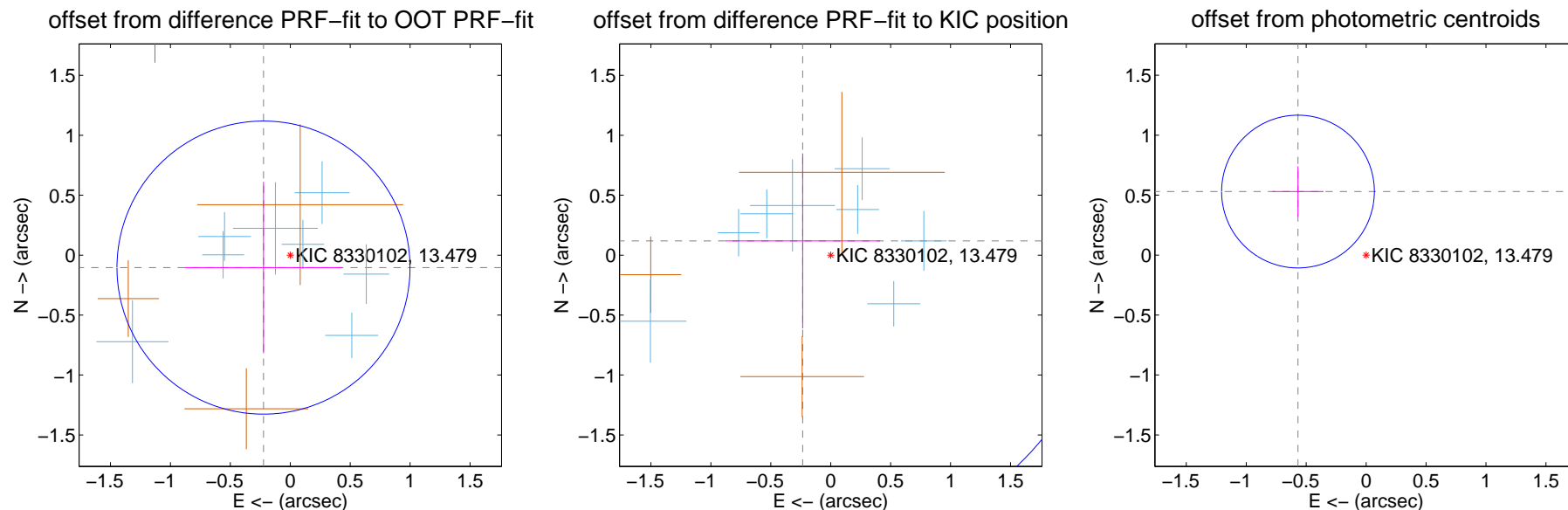
DV Centroid Data

Supplemental centroid analysis for 008330102-04. Kepler magnitude: 13.48. Transit SNR 9.58

There are 9 quarters with good PRF difference image offsets

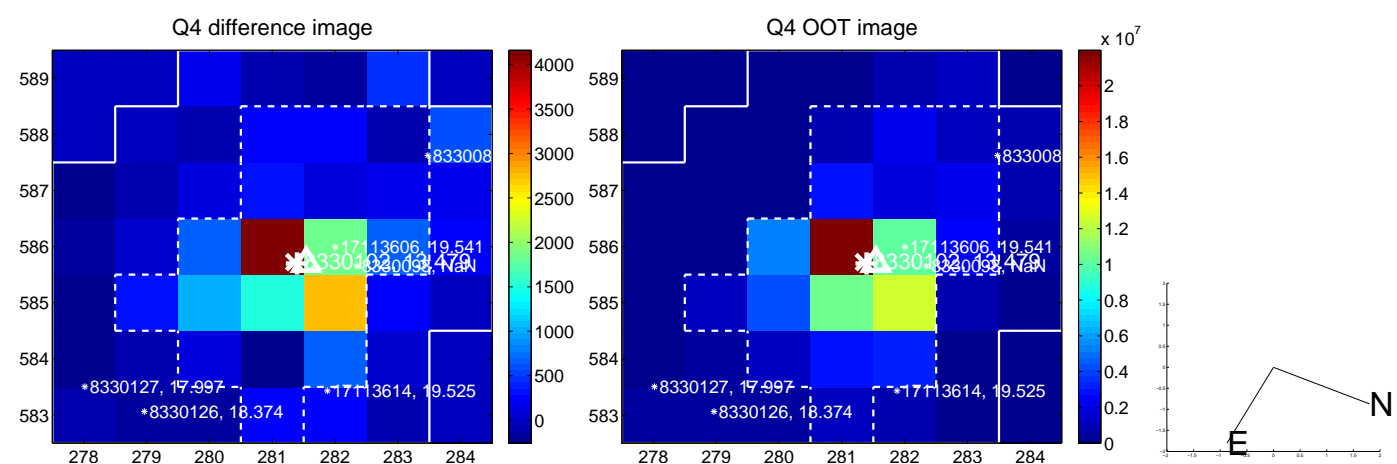
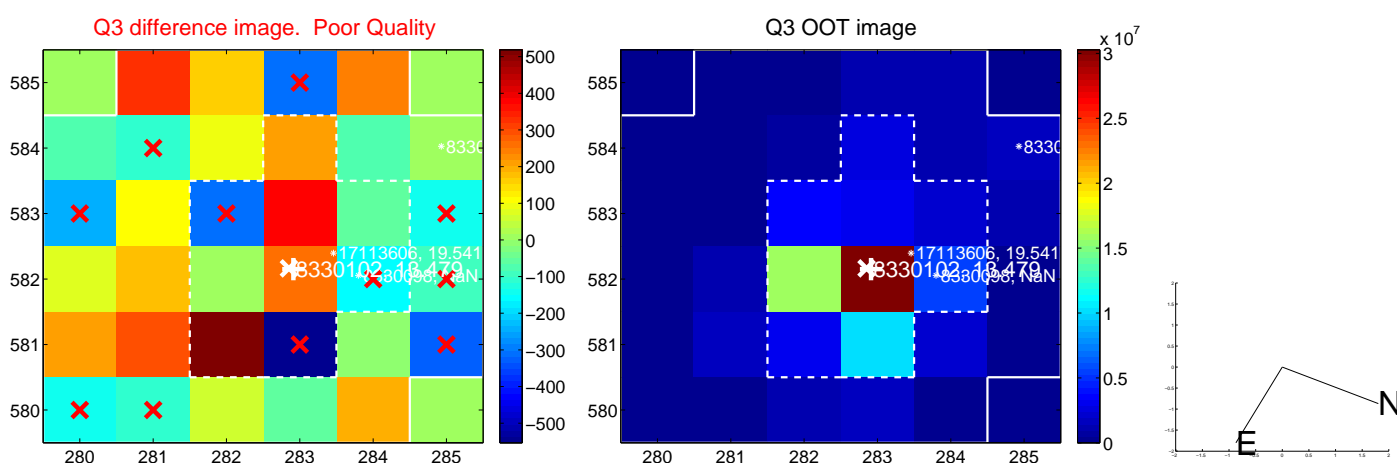
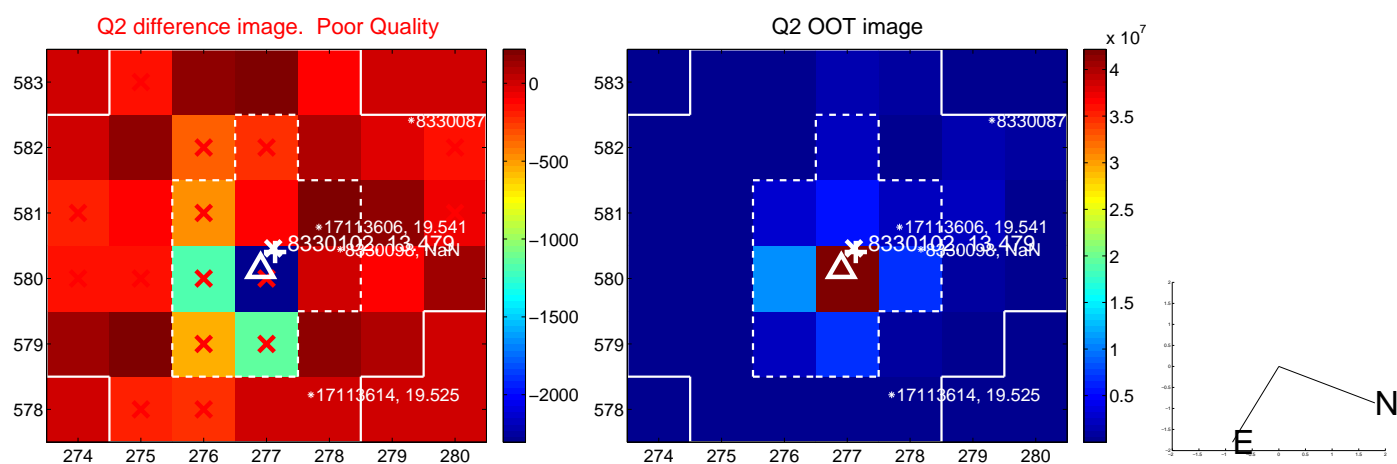
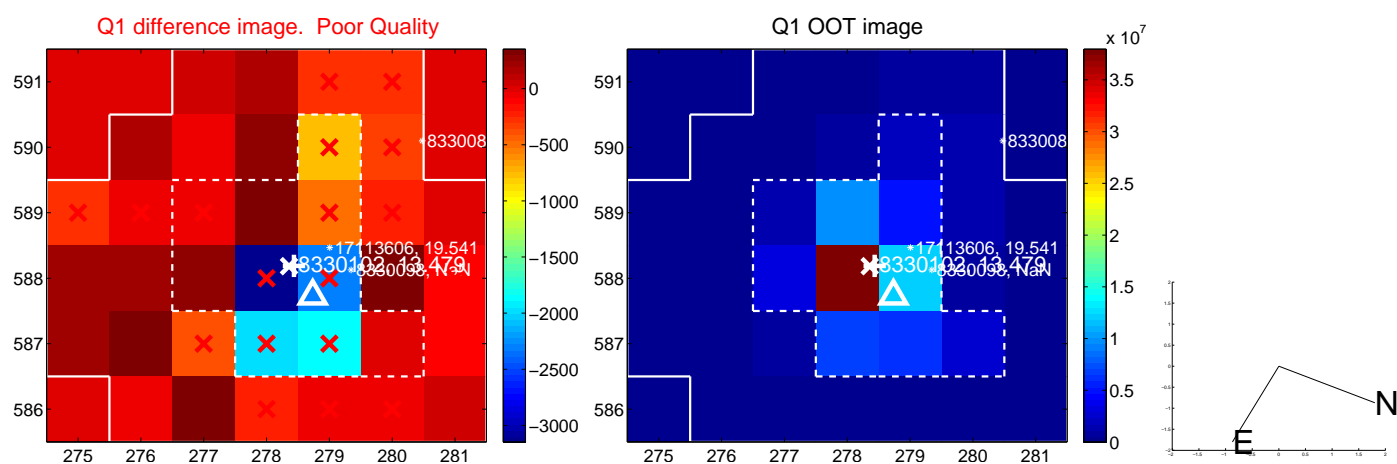
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.246 ± 0.408	0.60	0.223 ± 0.657	-0.104 ± 0.715
PRF-fit source offset from KIC position	0.262 ± 0.865	0.30	0.234 ± 0.645	0.119 ± 0.730
photometric centroid source offset	0.78 ± 0.21	3.66	0.57 ± 0.21	0.53 ± 0.21

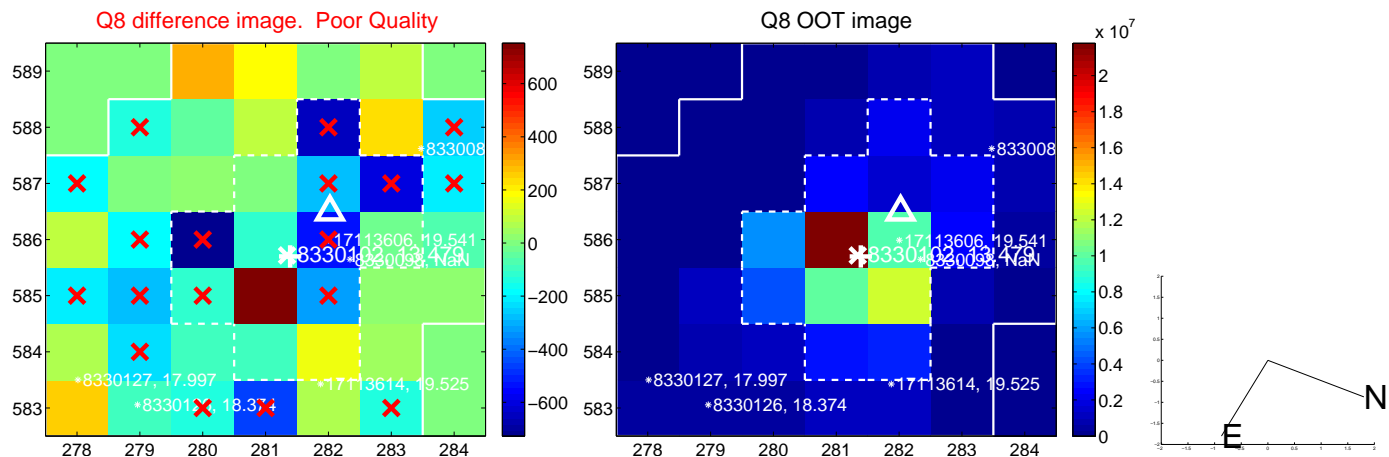
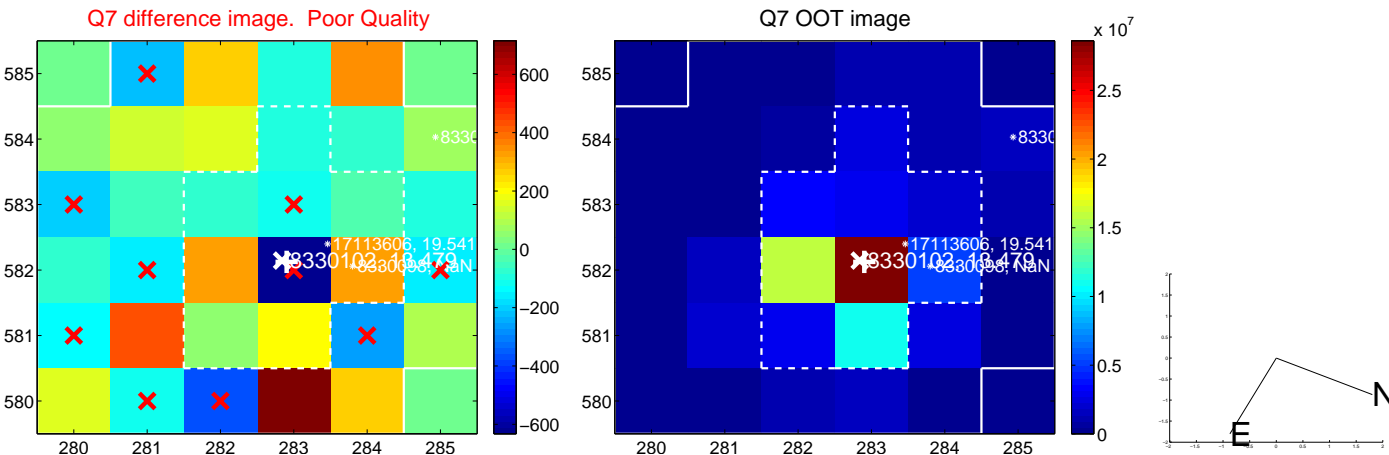
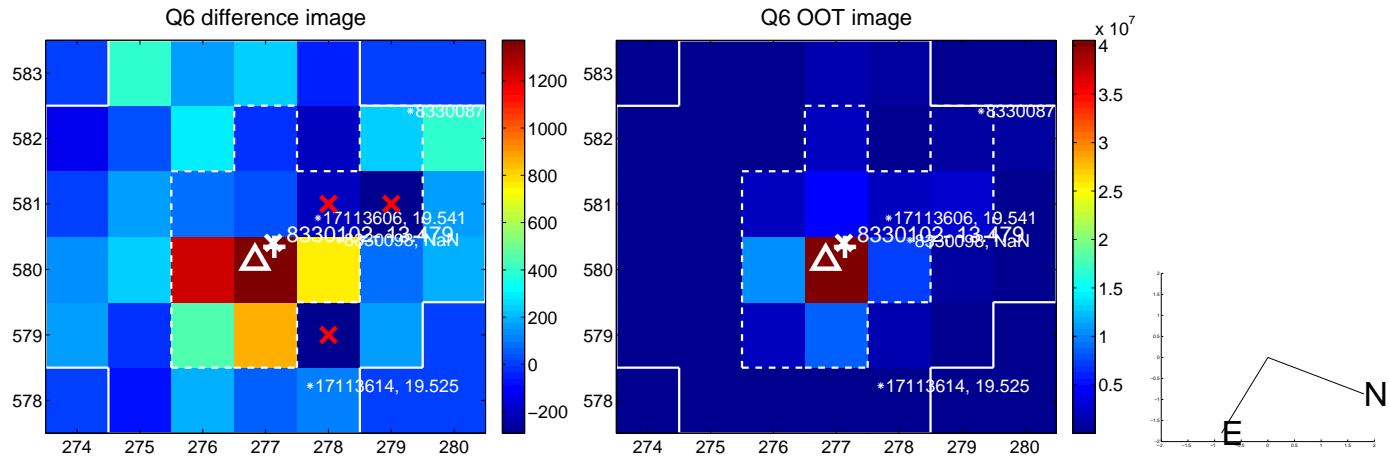
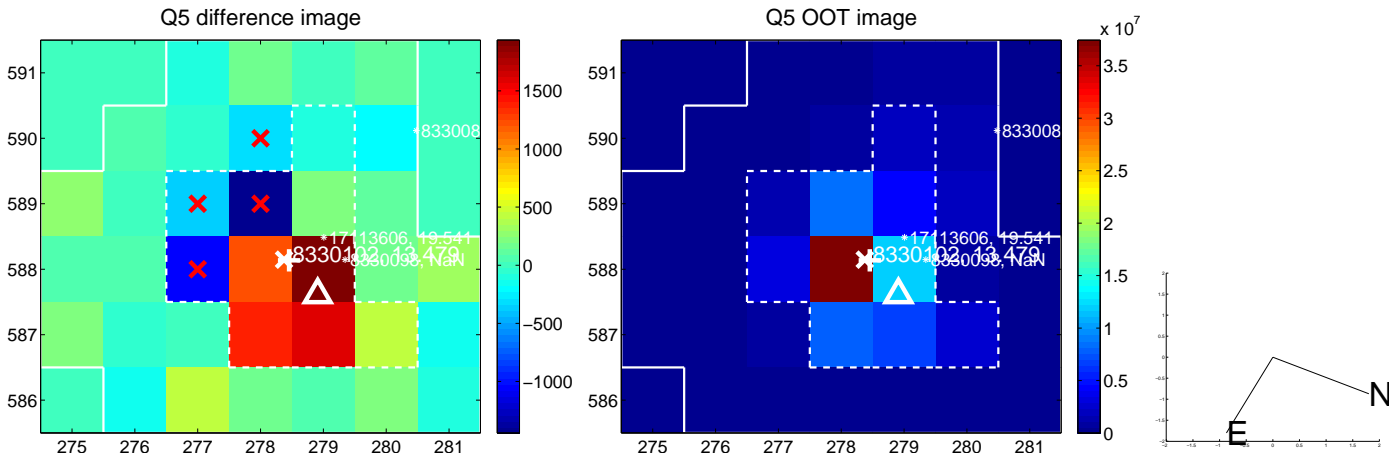


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

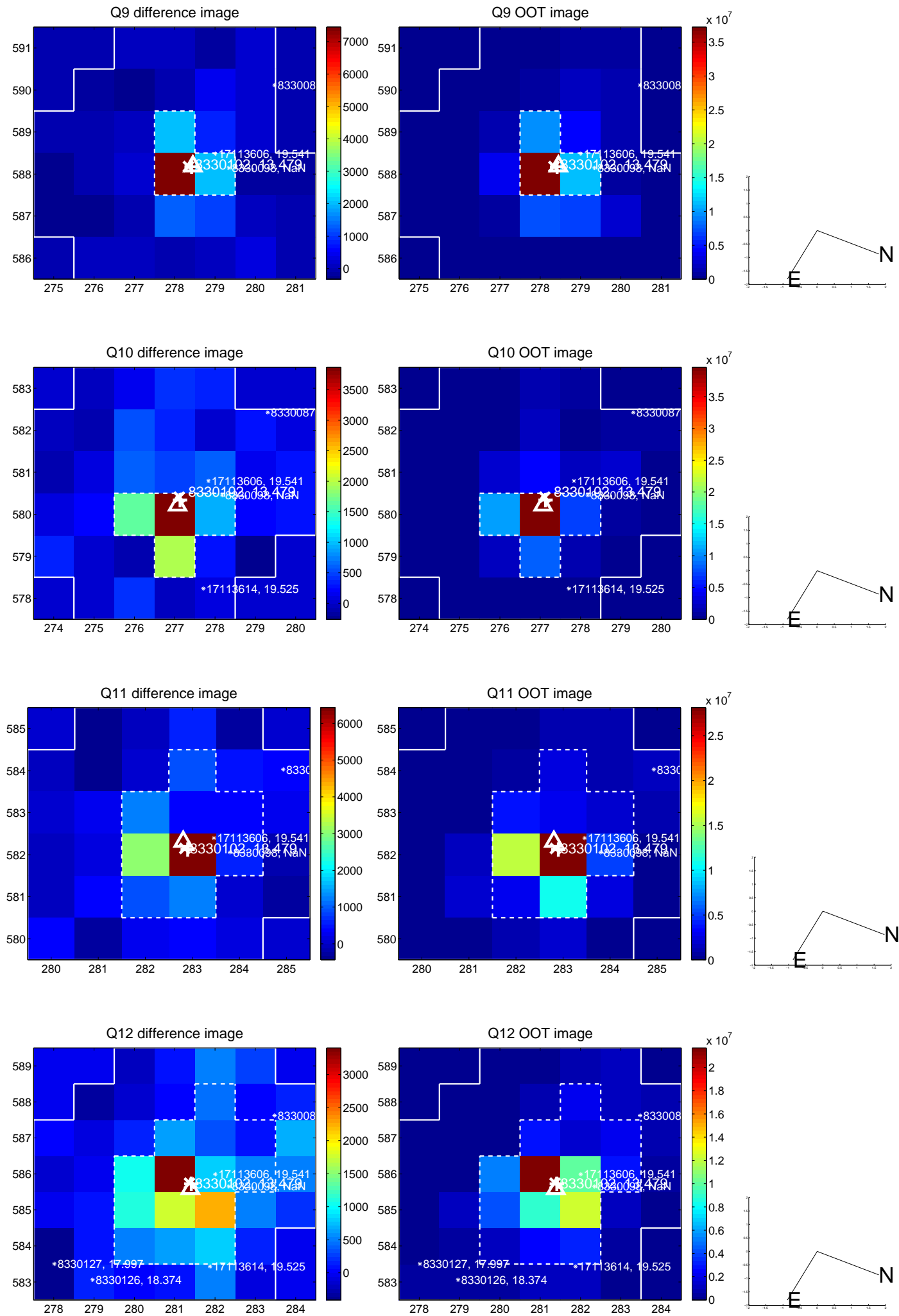
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



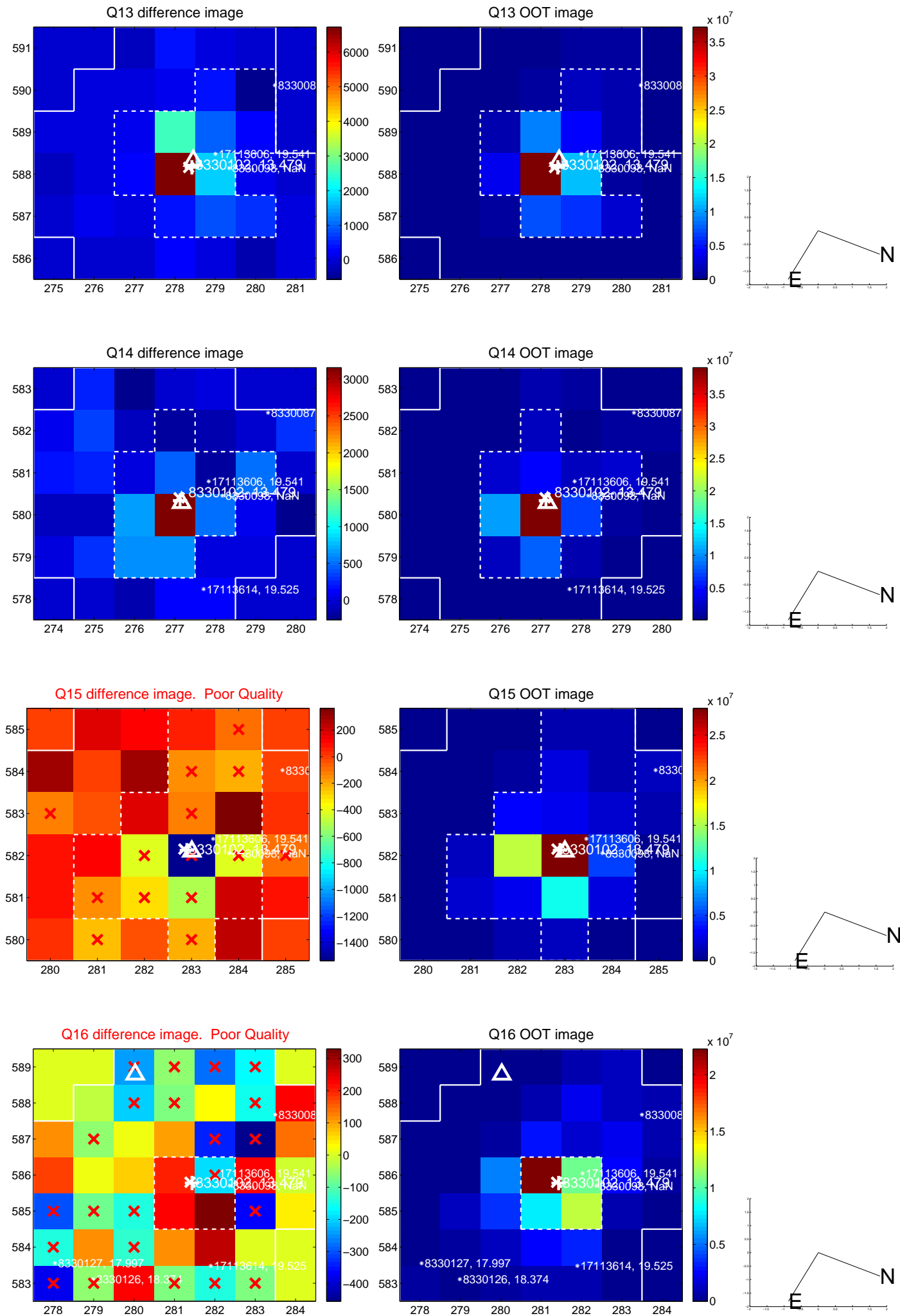
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



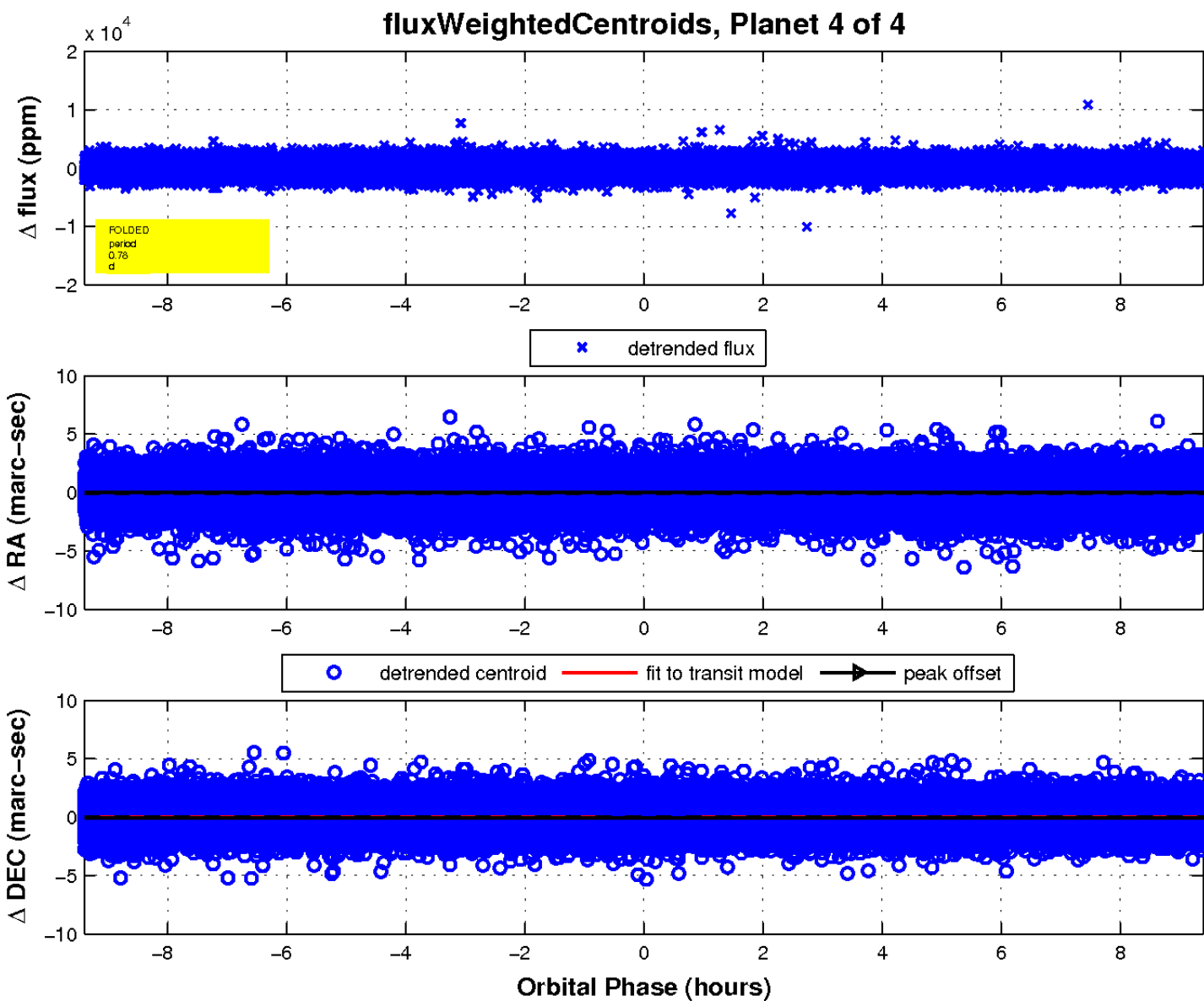
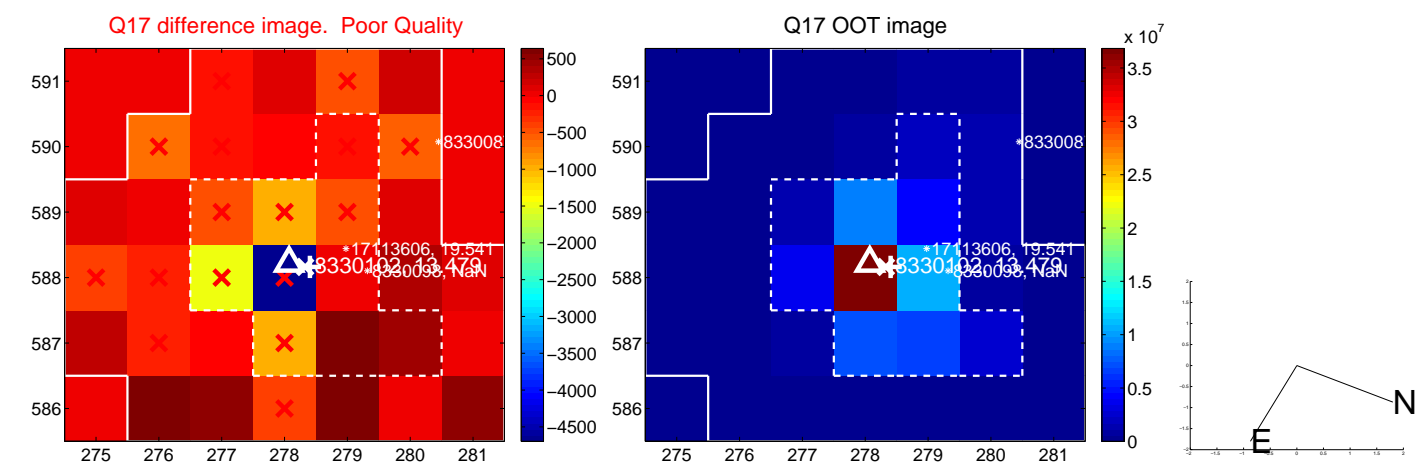
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

