

KIC 007778980

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})
007778980-01	OBS	No	1.574221	132.062696	558.6	1.971	9.5	12.7	3.67	7700	10.18	37660.00
007778980-02	OBS	No	0.622945	131.676746	578.3	1.285	12.6	15.0	3.67	7700	10.35	129628.82
007778980-03	OBS	No	0.622942	132.047758	554.3	1.227	11.1	14.6	3.67	7700	9.31	129629.68
007778980-04	OBS	No	0.622940	131.932869	114.0	1.500	9.4	-1.0	3.67	7700	3.97	129630.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007778980-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007778980-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007778980-03	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
007778980-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

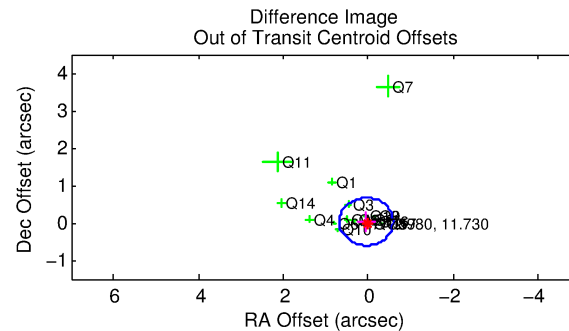
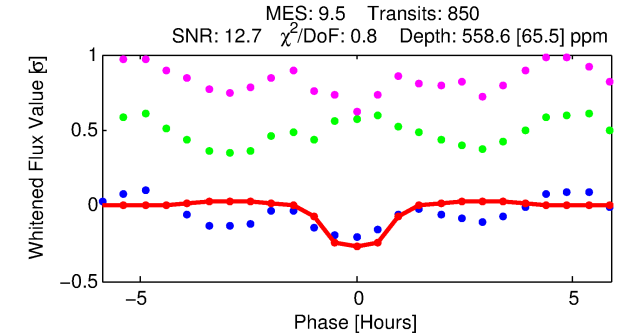
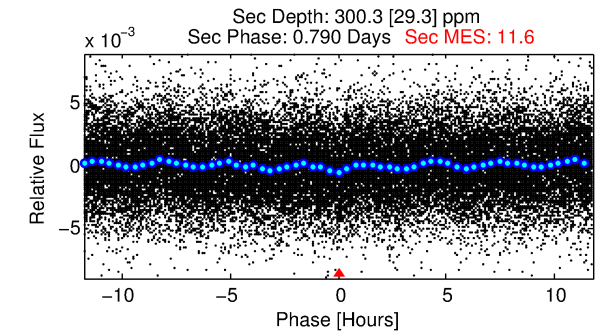
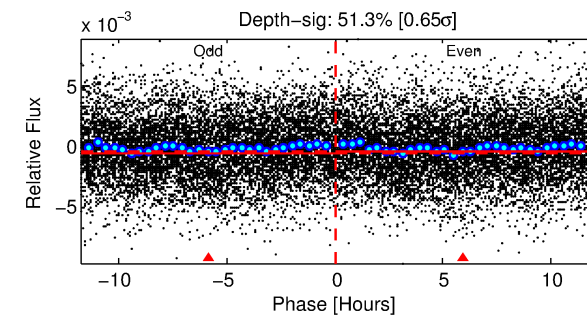
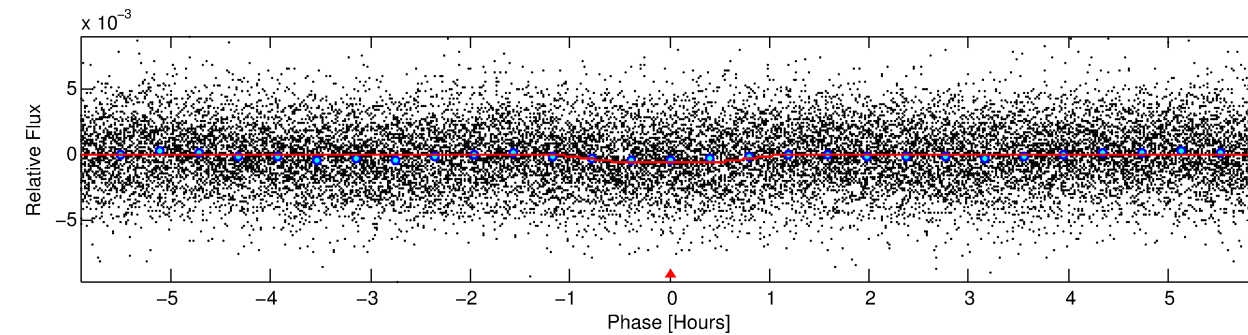
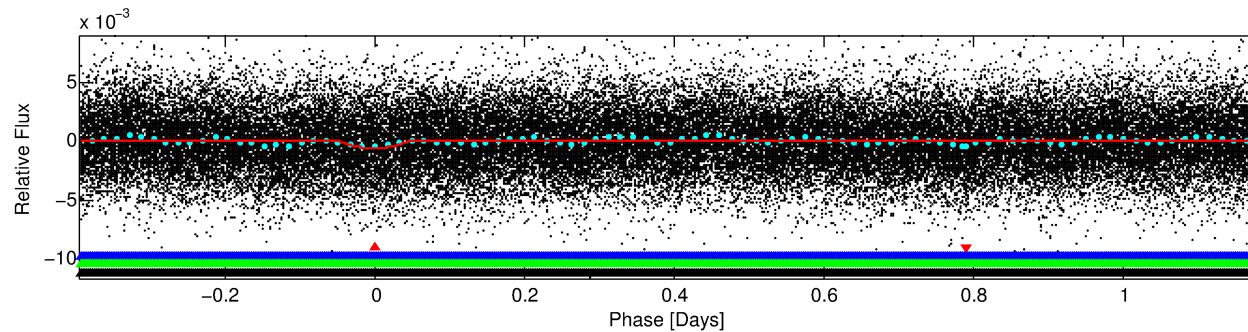
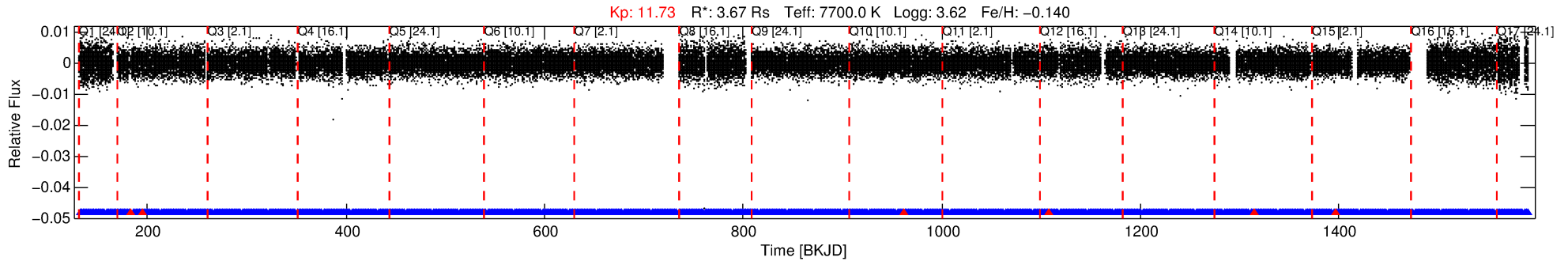
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007778980-01

No Significant Match Found

DV One-Page Summary

KIC: 7778980 Candidate: 1 of 4 Period: 1.574 d



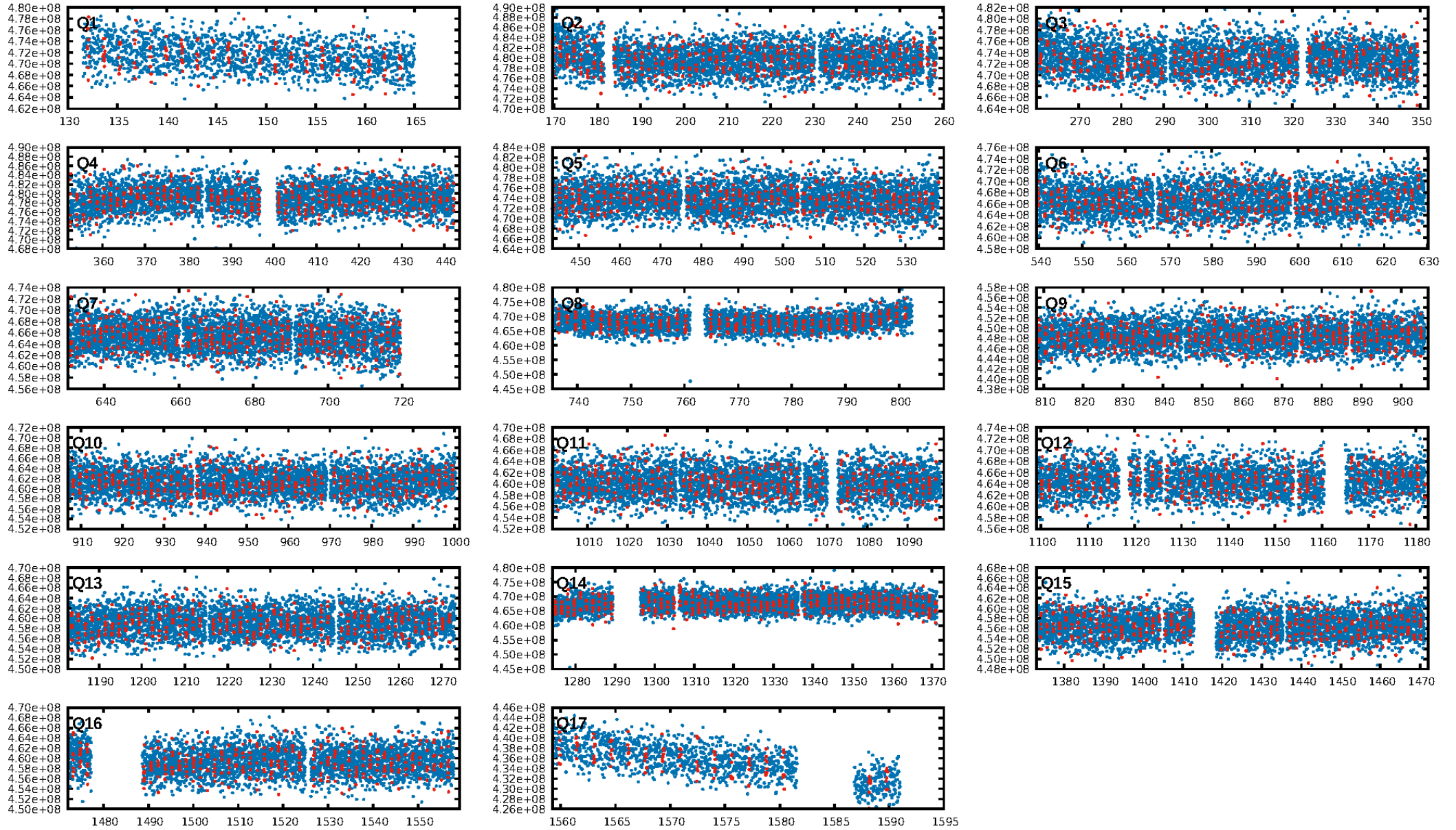
DV Fit Results:

Period = 1.57422 [0.00001] d
Epoch = 132.0627 [0.0026] BKJD
Rp/R* = 0.0254 [0.0080]
a/R* = 3.09 [4.99]
b = 0.90 [0.37]
Seff = 37660.00 [31329.89]
Teff = 3552 [739] K
Rp = 10.17 [6.05] Re
a = 0.0336 [0.0168] AU
Ag = 1.80 [1.86] [0.43 σ]
Teffp = 6359 [1053] K [2.18 σ]

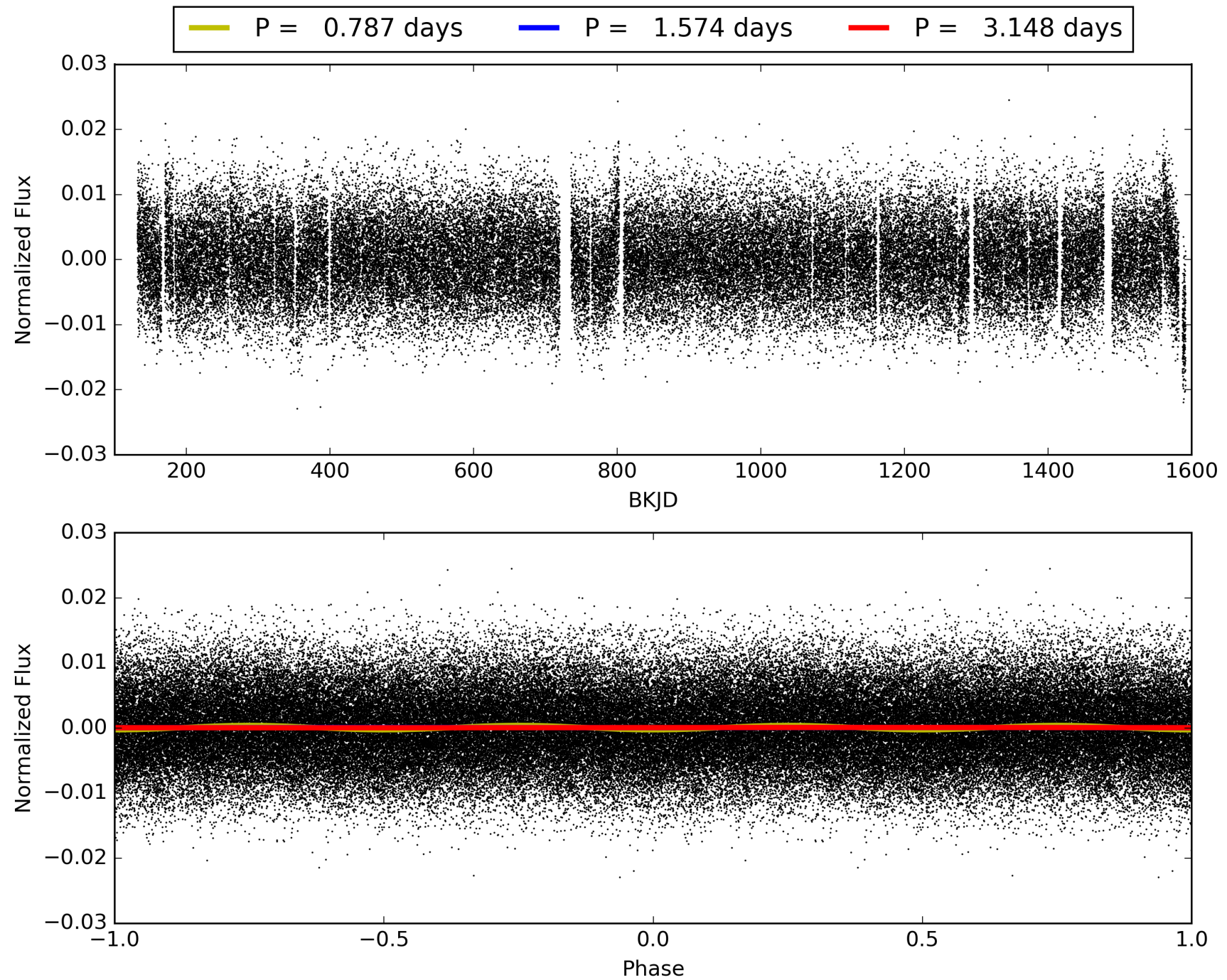
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.70 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [807/813]
GhostDiagnostic-chr: -0.3764
Centroid-sig: 98.2%
Centroid-so: 0.062 arcsec [2.05 σ]
OotOffset-rm: 0.053 arcsec [0.25 σ]
KicOffset-rm: 0.012 arcsec [0.06 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.65 [11/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 007778980-01, PDC Light Curves

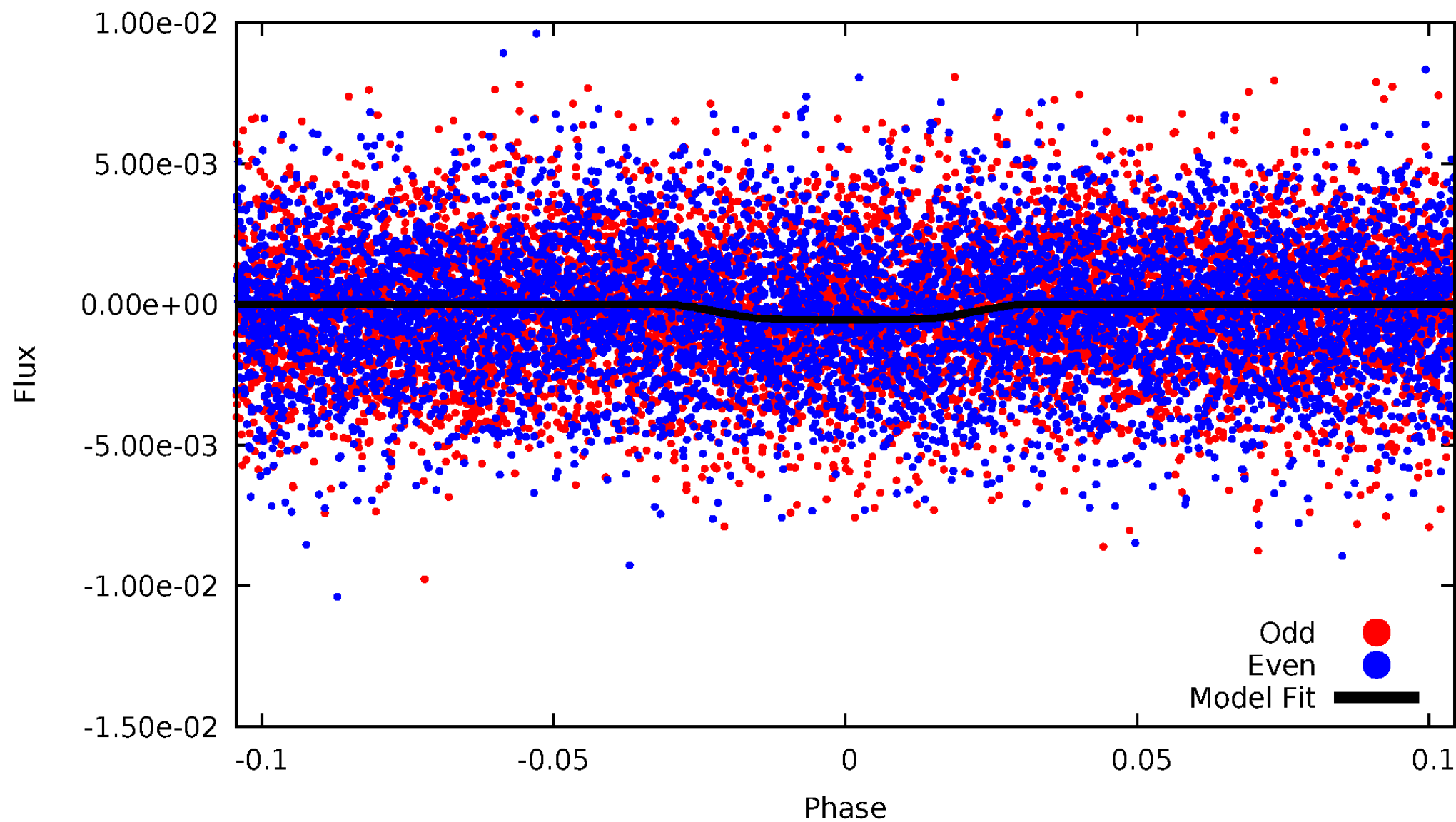


TCE 007778980-01



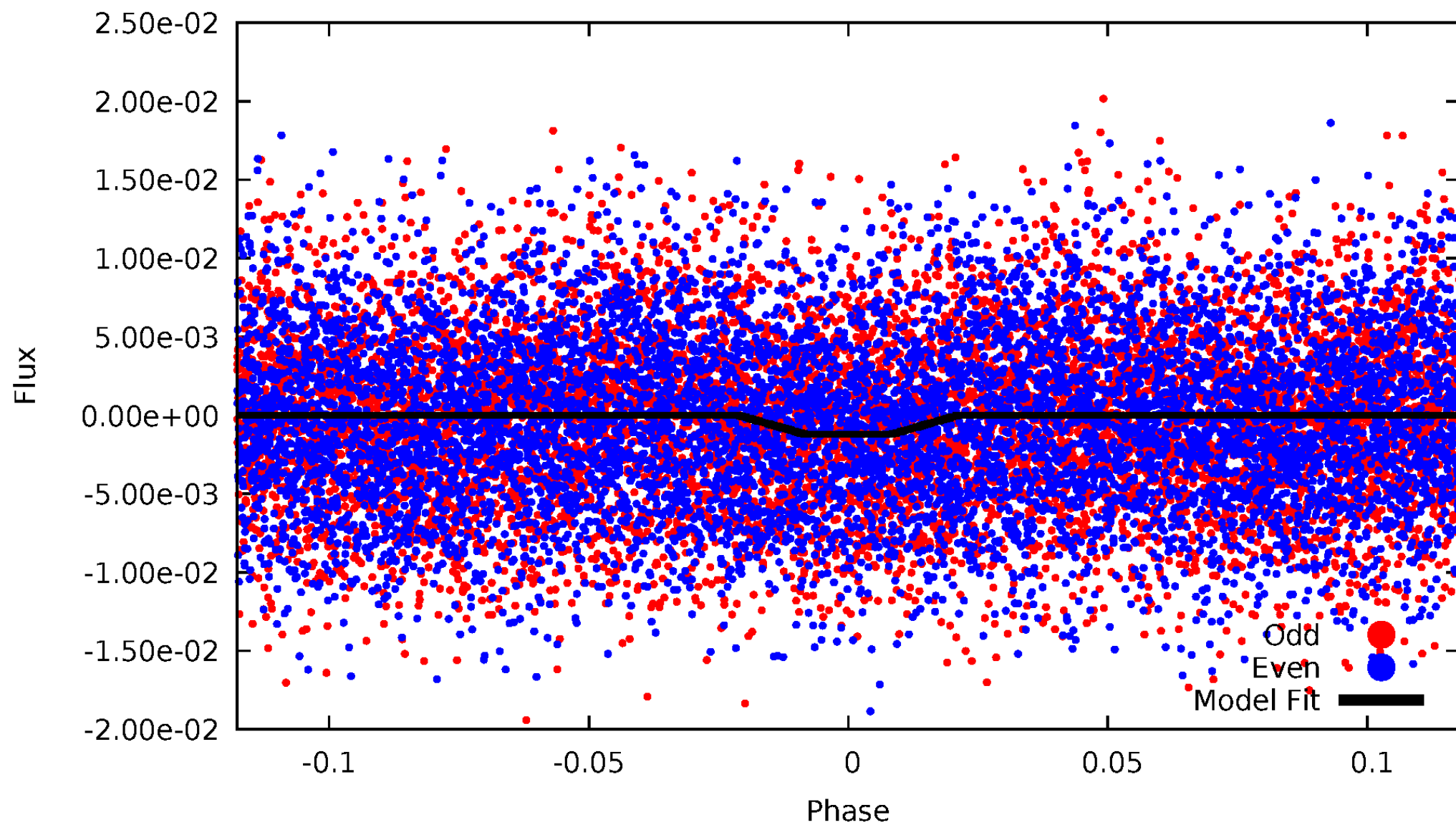
DV Odd/Even

TCE 007778980-01



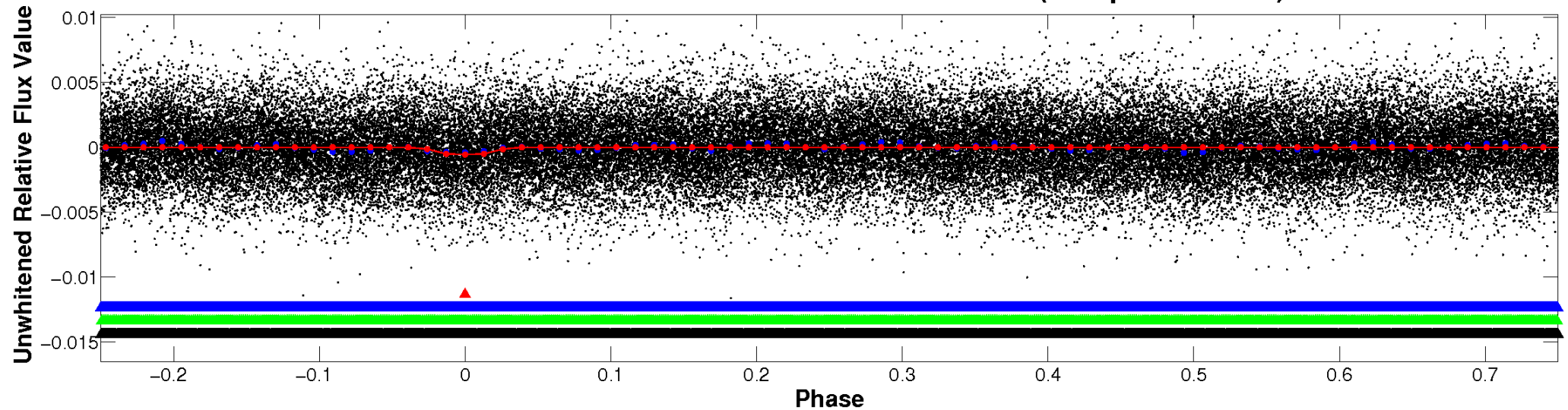
ALT Odd/Even

TCE 007778980-01

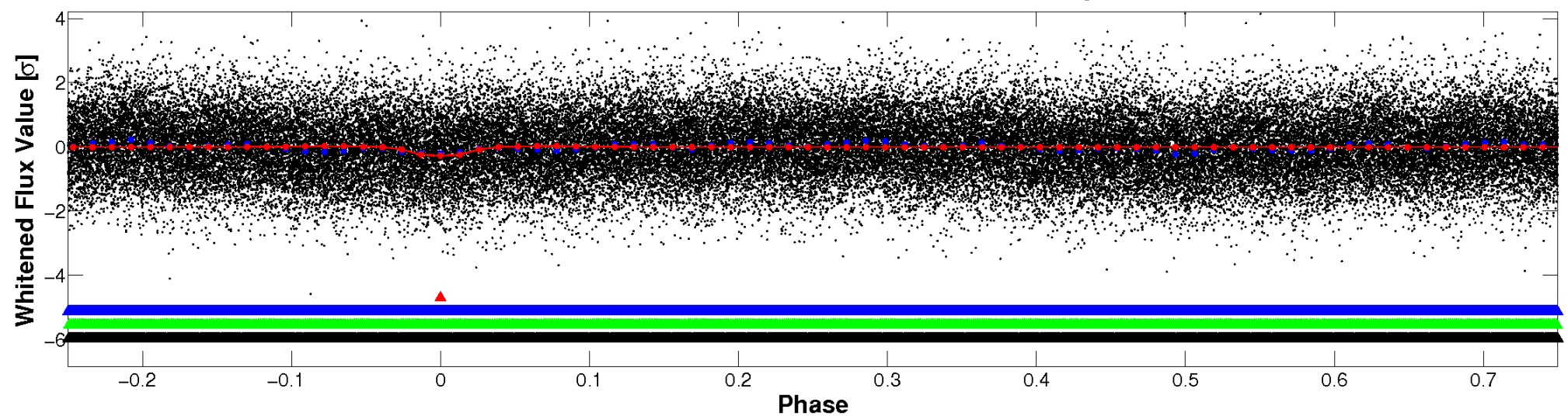


Non-Whitened Vs. Whitened Light Curve

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

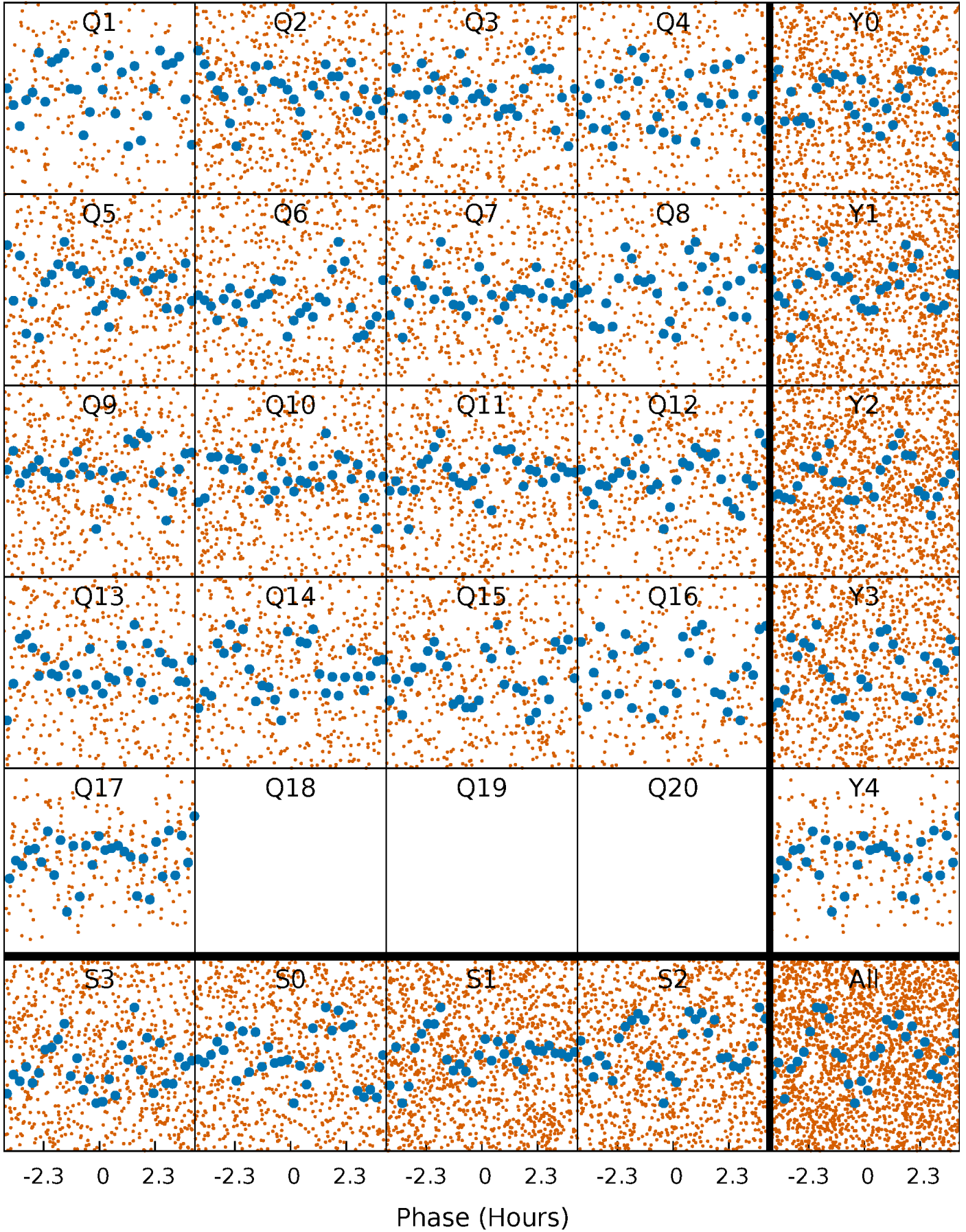


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



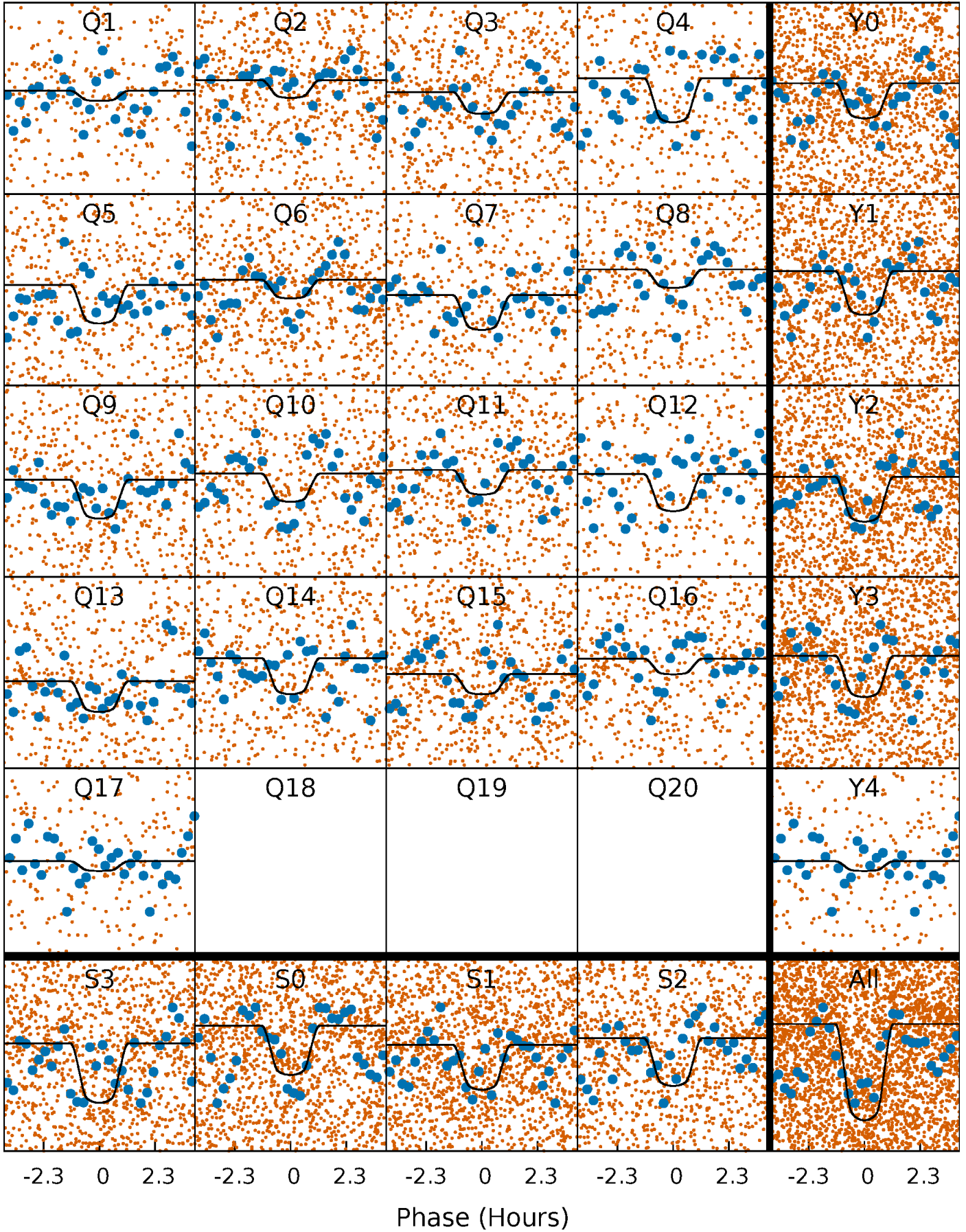
PDC Quarter-Phased Transit Curves

TCE 007778980-01 P= 1.574221 Days $T_0=132.062696$ (BKJD)



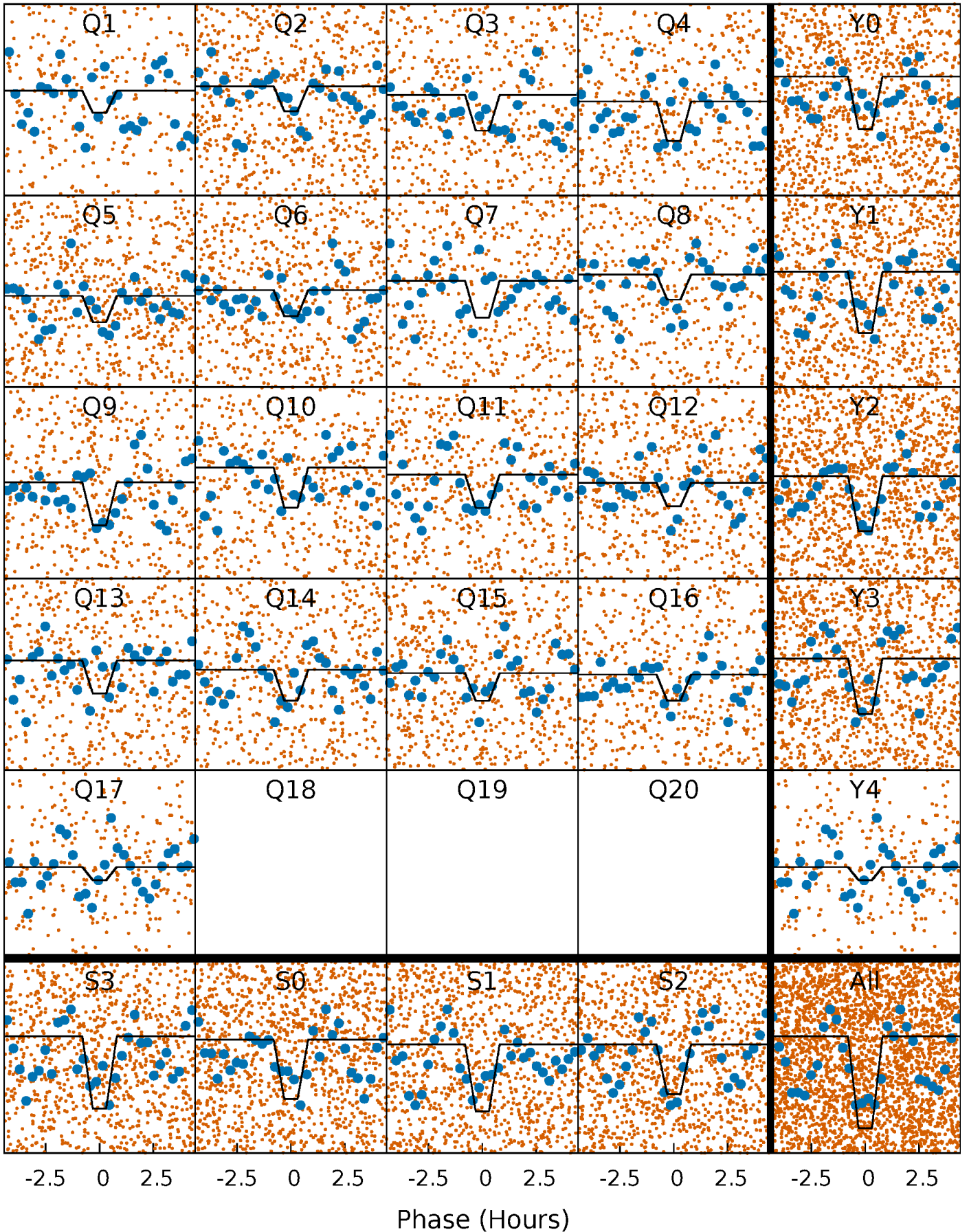
DV Quarter-Phased Transit Curves

TCE 007778980-01 P= 1.574221 Days $T_0=132.062696$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

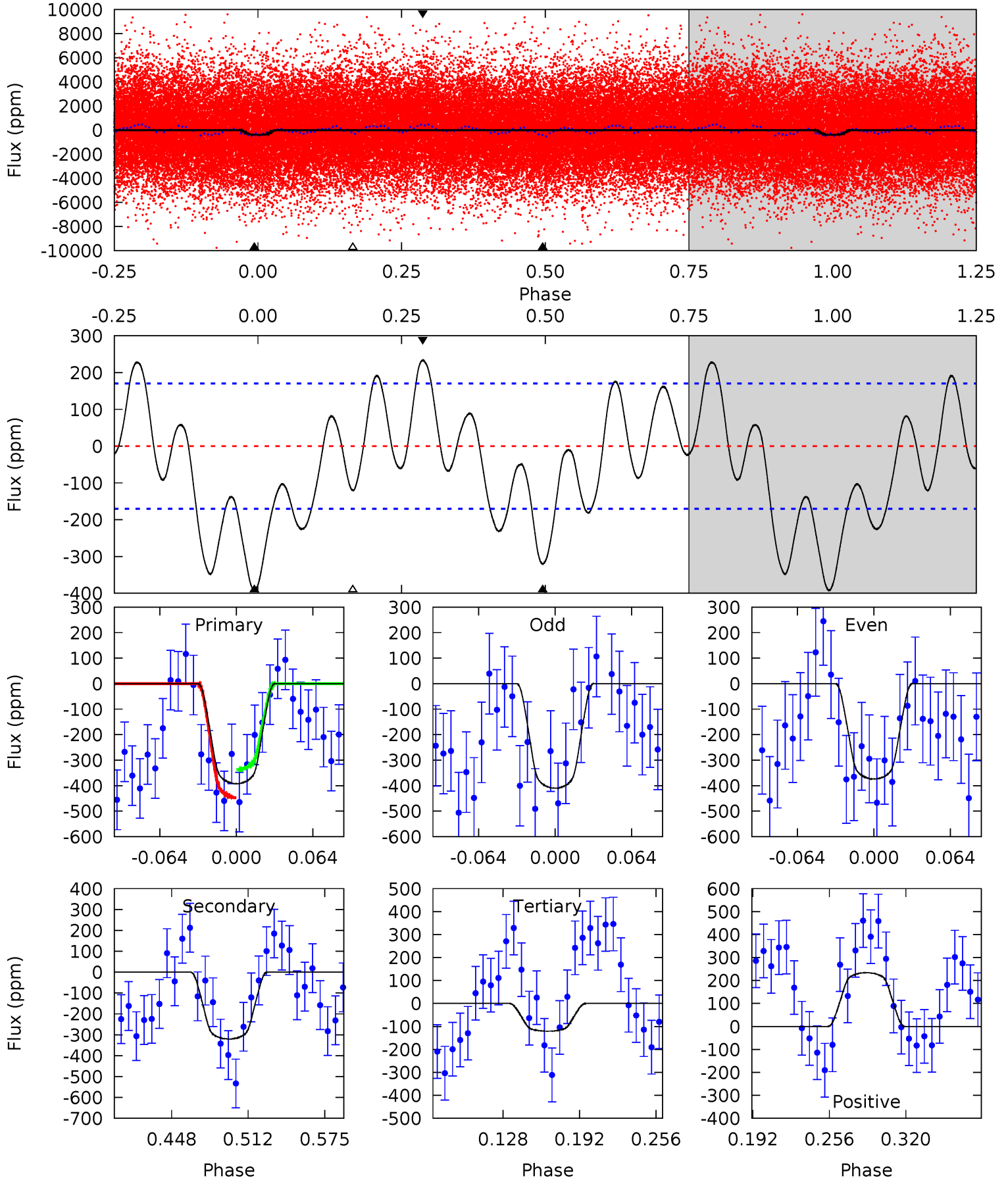
TCE 007778980-01 P= 1.574197 Days $T_0=132.065796$ (BKJD)



DV Model-Shift Uniqueness Test

007778980-01, P = 1.574221 Days, E = 130.488475 Days

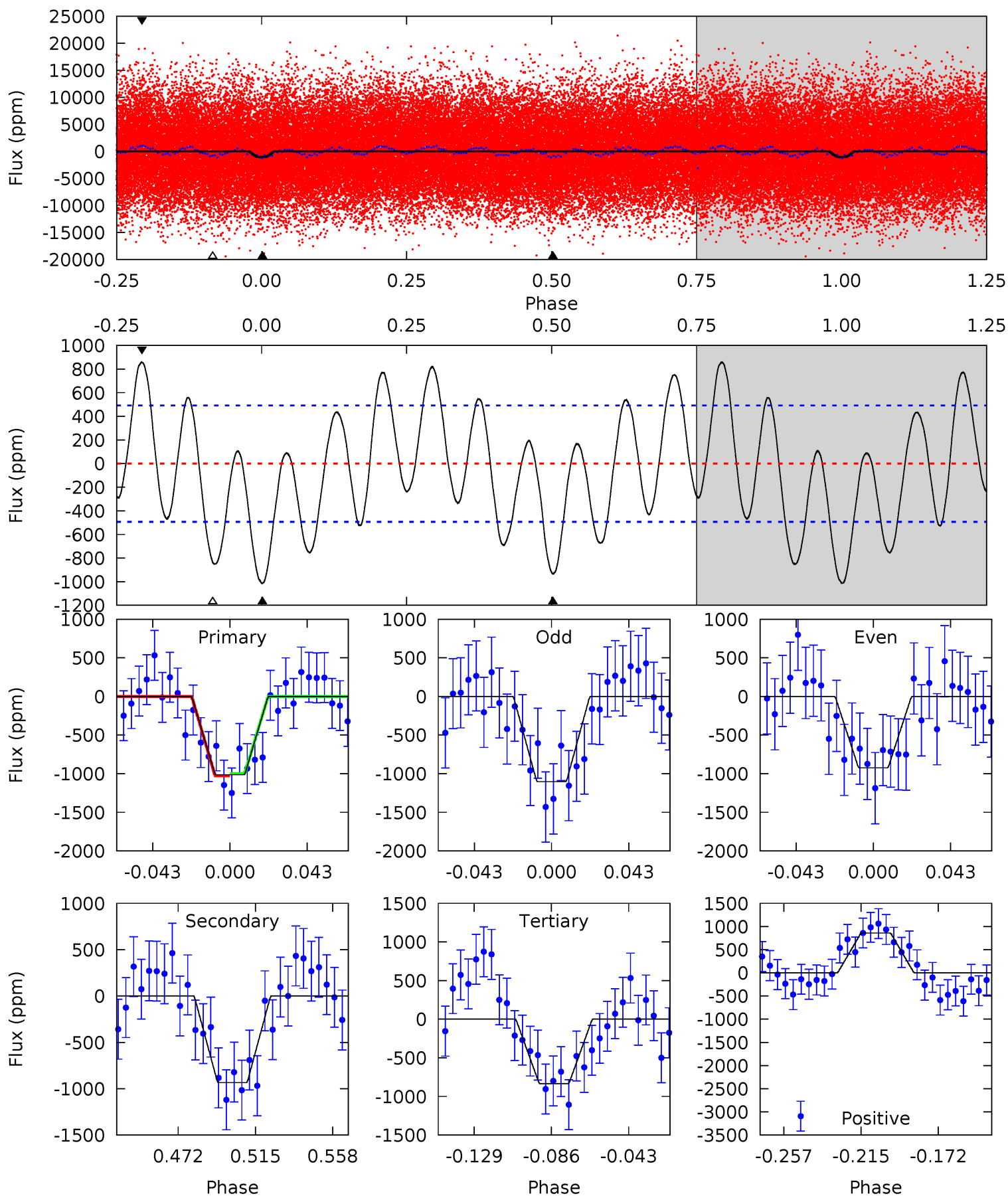
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	8.75	3.30	6.39	4.66	1.85	3.71	7.41	4.32	5.45	2.36	0.49	0.95	0.37	1.51



Alt Model-Shift Uniqueness Test

007778980-01, P = 1.574197 Days, E = 130.491599 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.75	8.98	8.03	8.26	4.74	2.02	4.25	1.72	1.49	0.94	0.72	0.86	0.89	0.46	0.14



Stellar Parameters For KIC 007778980

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7700^{+213}_{-320}	$3.617^{+0.484}_{-0.085}$	$-0.140^{+0.200}_{-0.300}$	$3.670^{+0.615}_{-1.846}$	$2.032^{+0.291}_{-0.499}$	$0.058^{+0.303}_{-0.016}$
	+3%/-4%	+13%/-2%	+143%/-214%	+17%/-50%	+14%/-25%	+524%/-27%
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 007778980-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-320 ± 37	$8.84^{+4.03}_{-3.15}$	4746^{+386}_{-576}	6052^{+1527}_{-904}	$2.456^{+3.425}_{-1.212}$
Alt.	-934 ± 104	$12.24^{+4.41}_{-3.92}$	4758^{+362}_{-639}	6967^{+1326}_{-897}	$3.818^{+4.194}_{-1.728}$

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

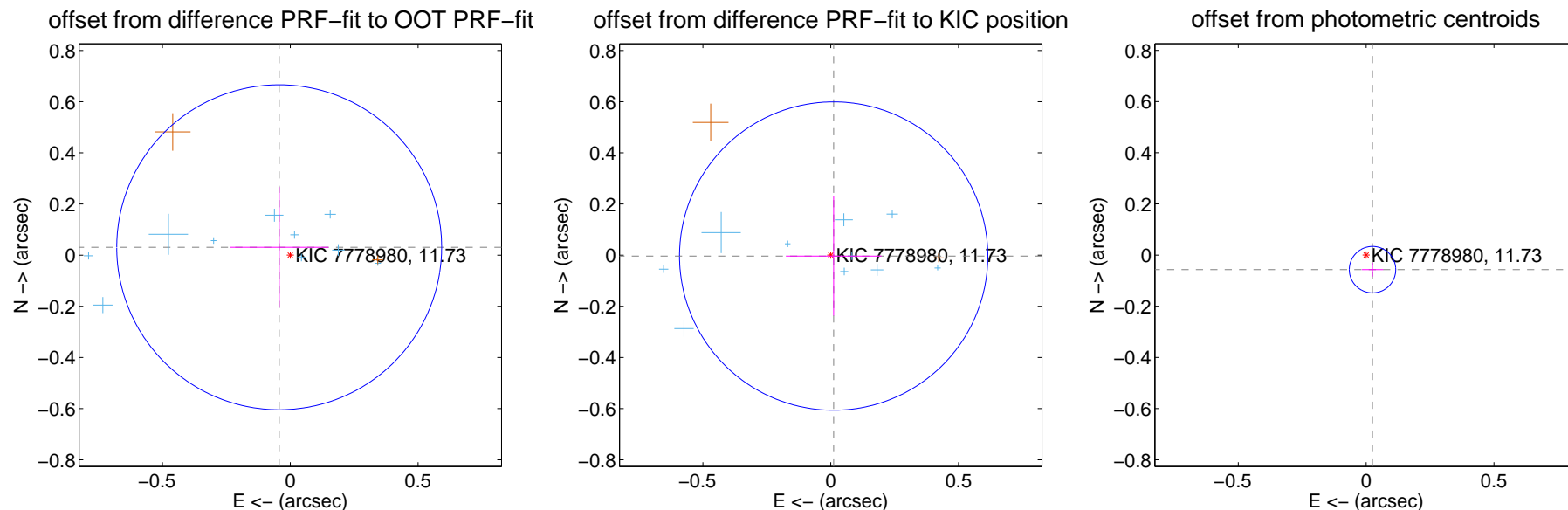
DV Centroid Data

Supplemental centroid analysis for 007778980-01. **Kepler magnitude: 11.73.** Transit SNR 12.69

There are 11 quarters with good PRF difference image offsets

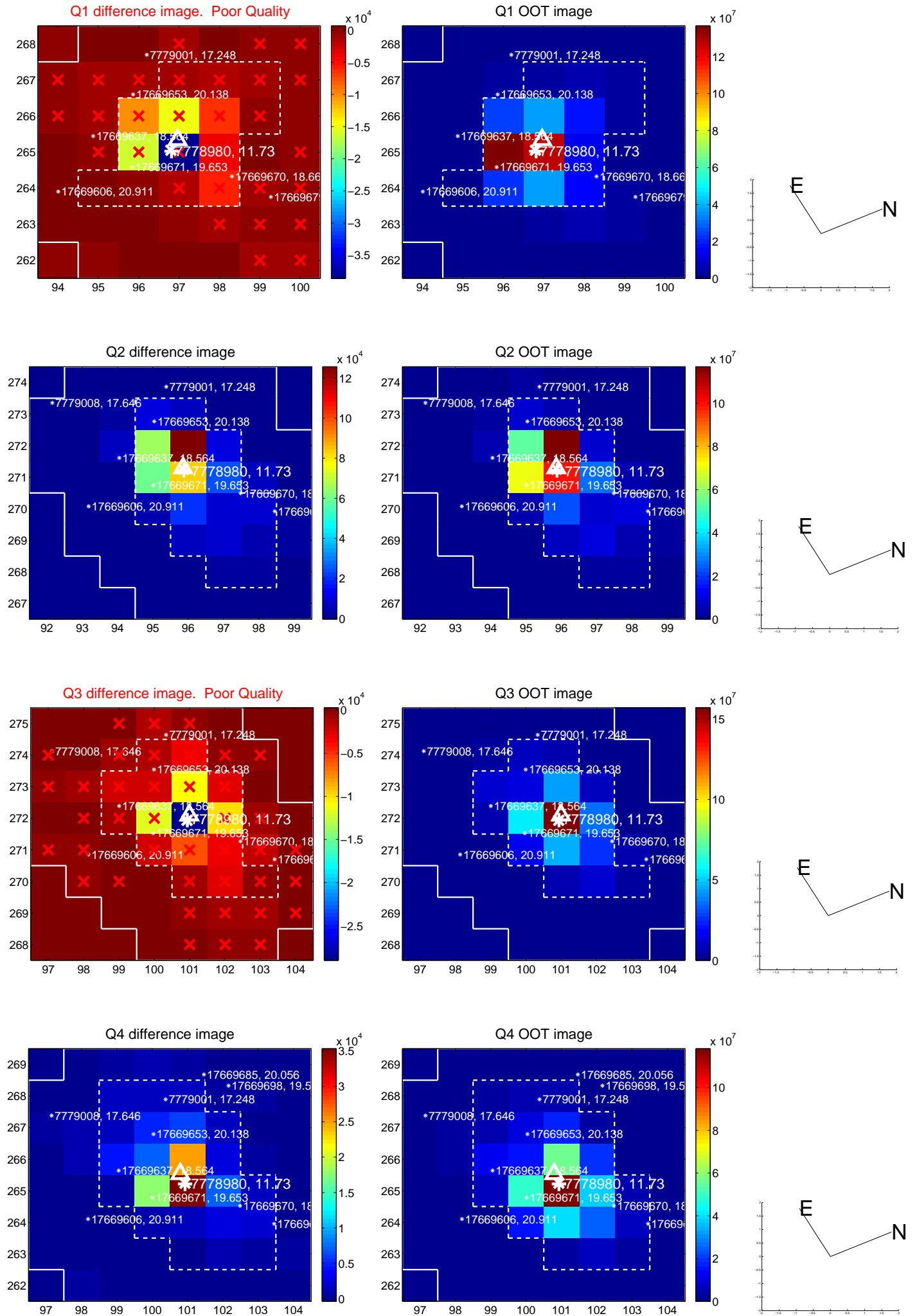
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.053 ± 0.212	0.25	0.043 ± 0.193	0.031 ± 0.236
PRF-fit source offset from KIC position	0.012 ± 0.201	0.06	-0.012 ± 0.187	-0.004 ± 0.233
photometric centroid source offset	0.06 ± 0.03	2.05	-0.02 ± 0.04	-0.06 ± 0.03

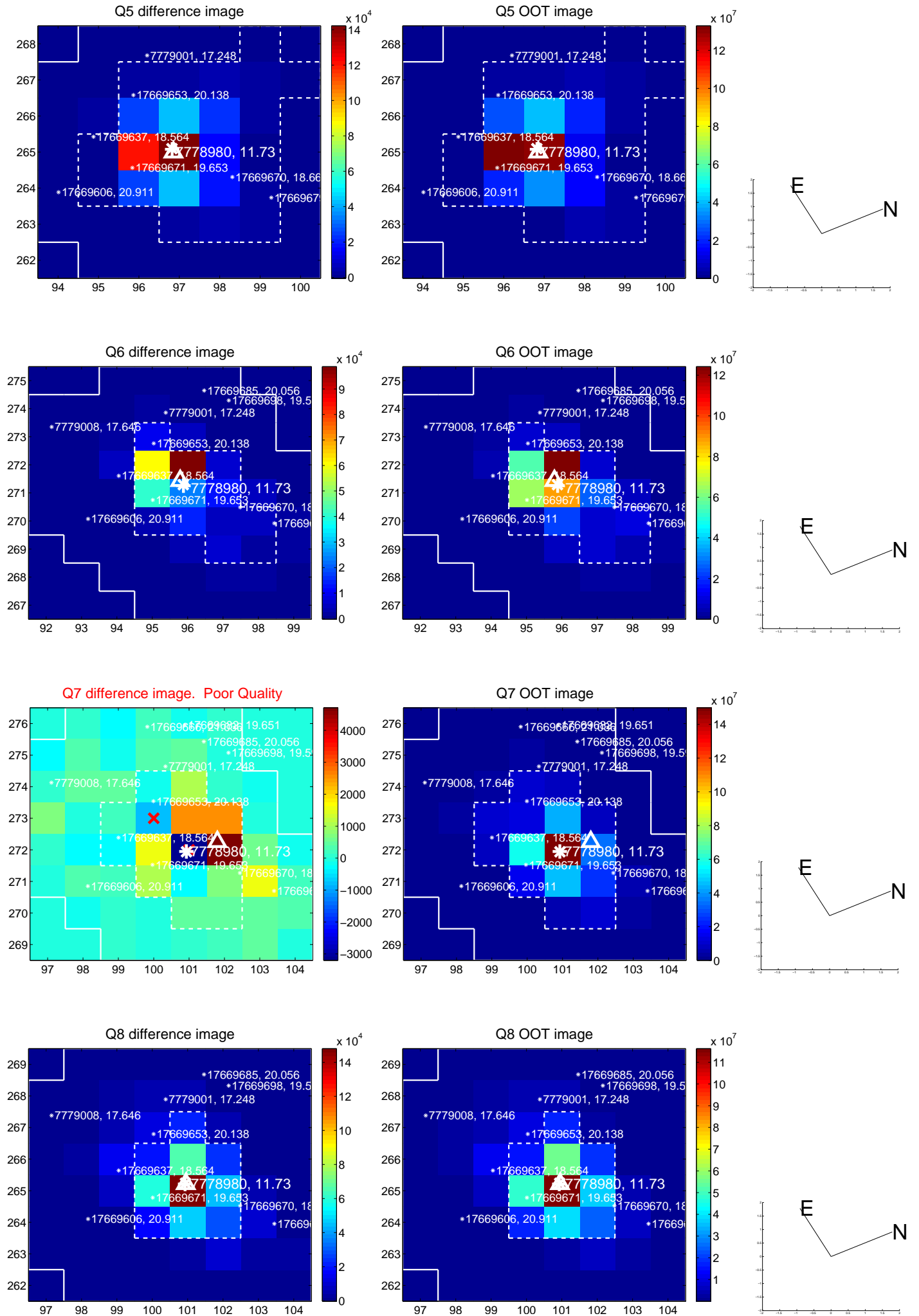


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

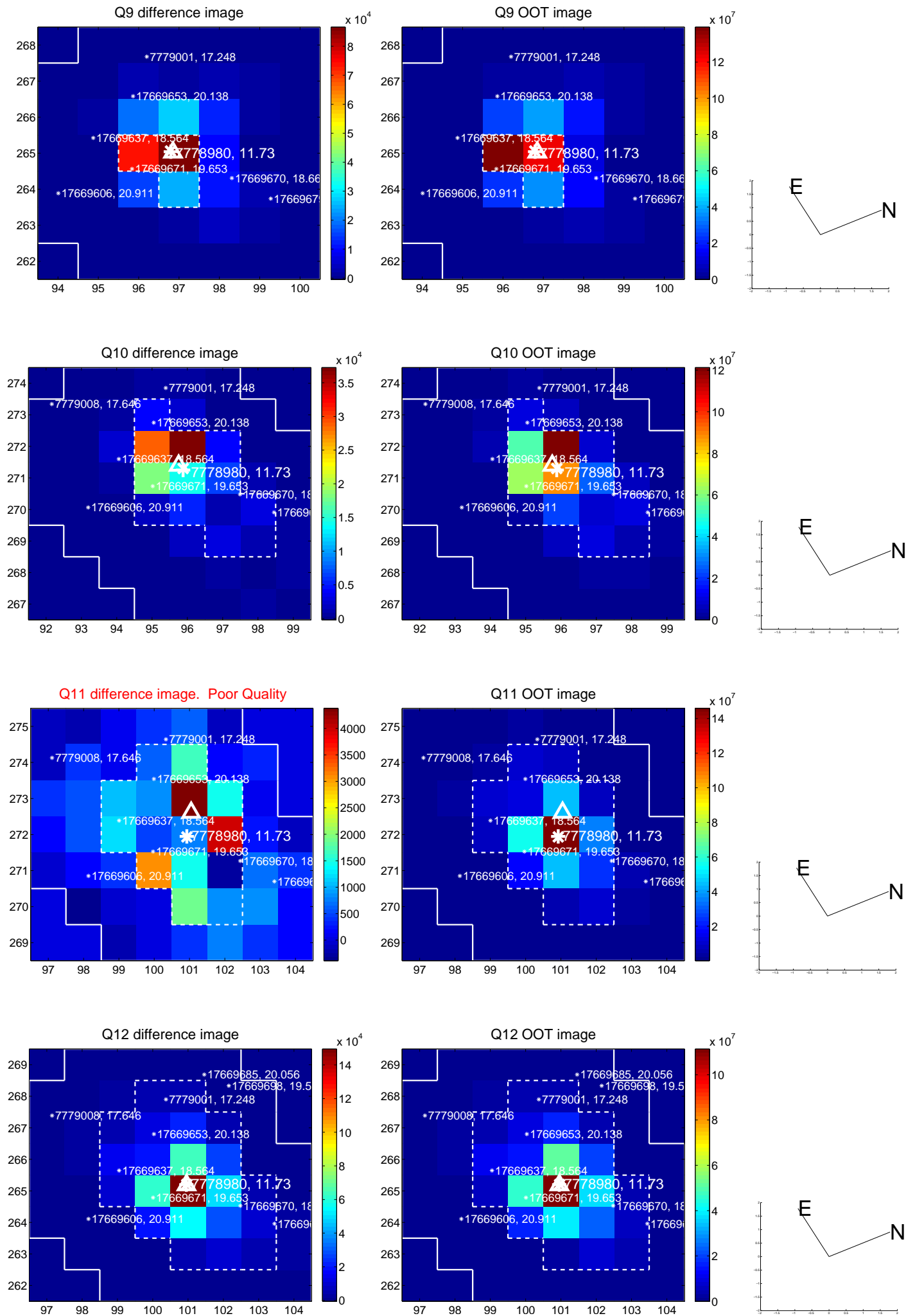
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



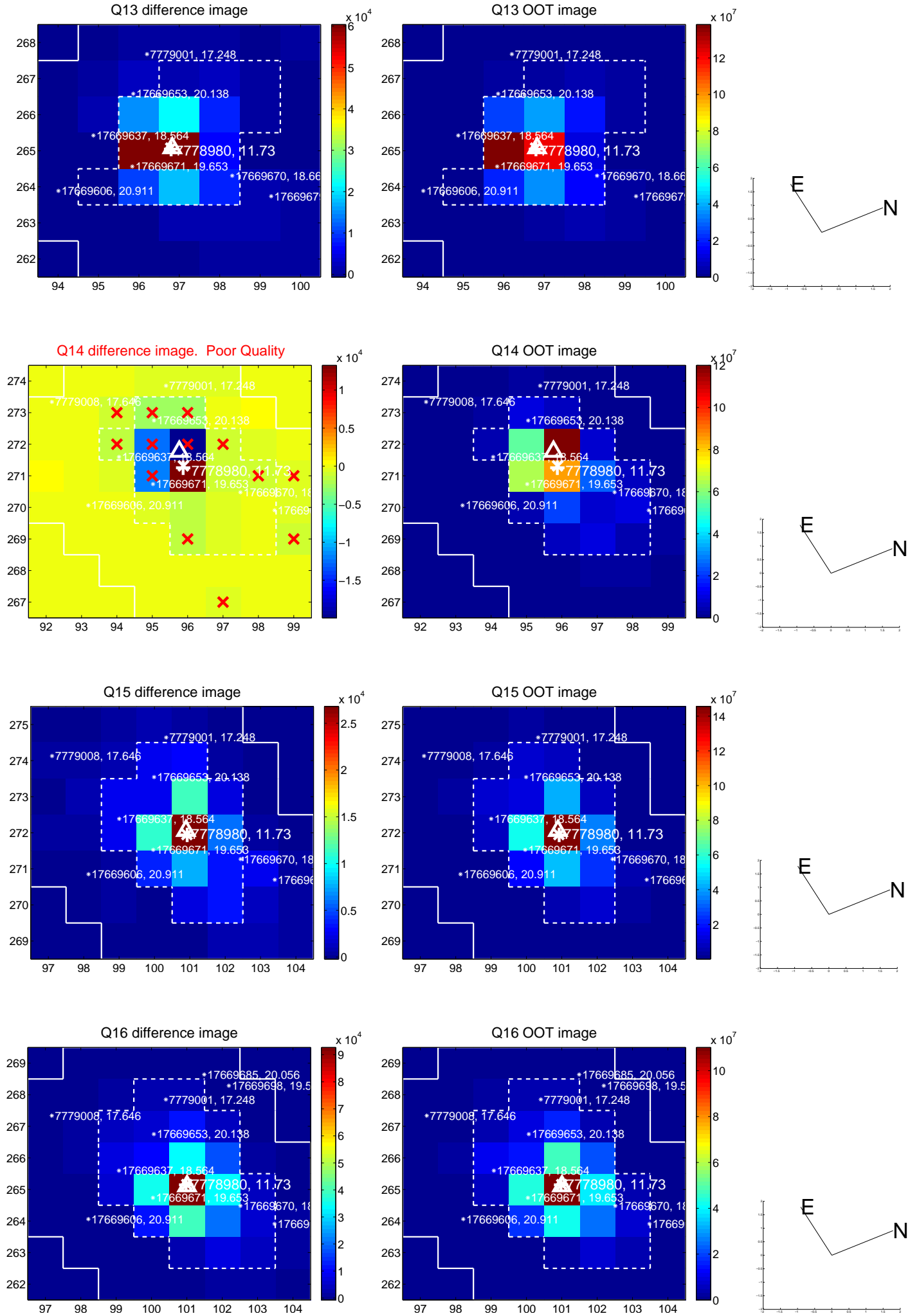
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



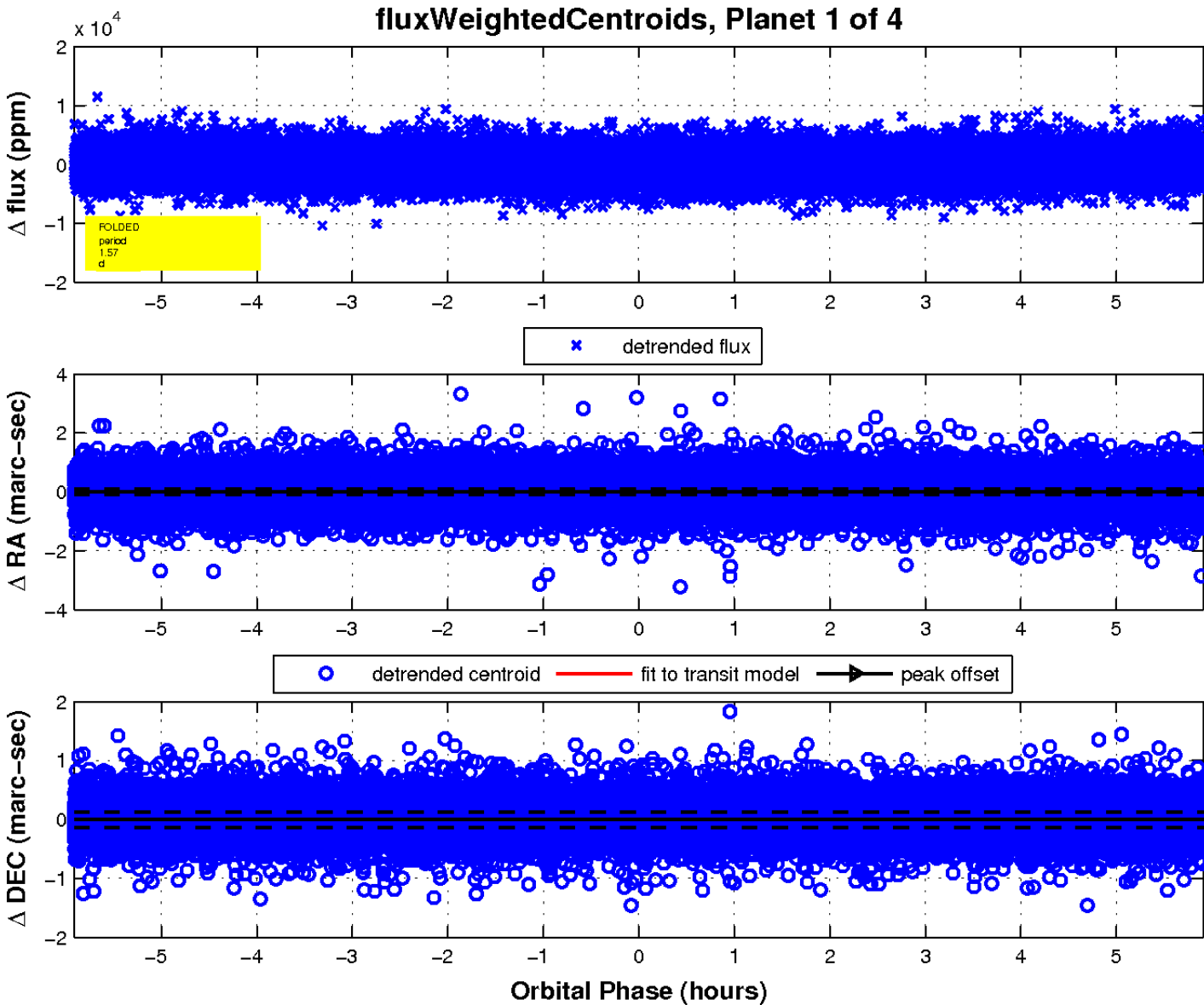
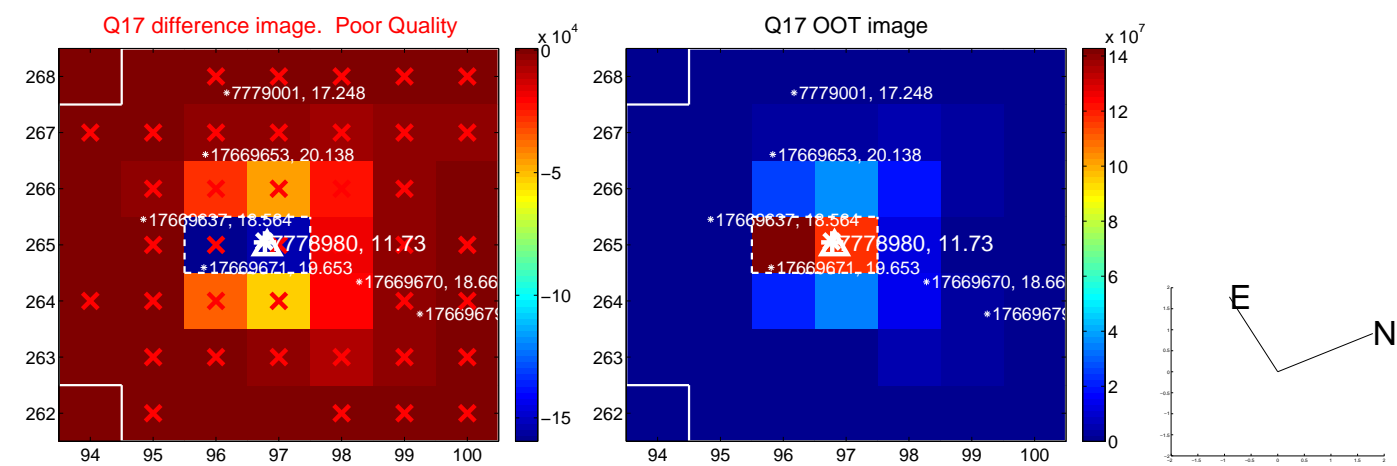
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



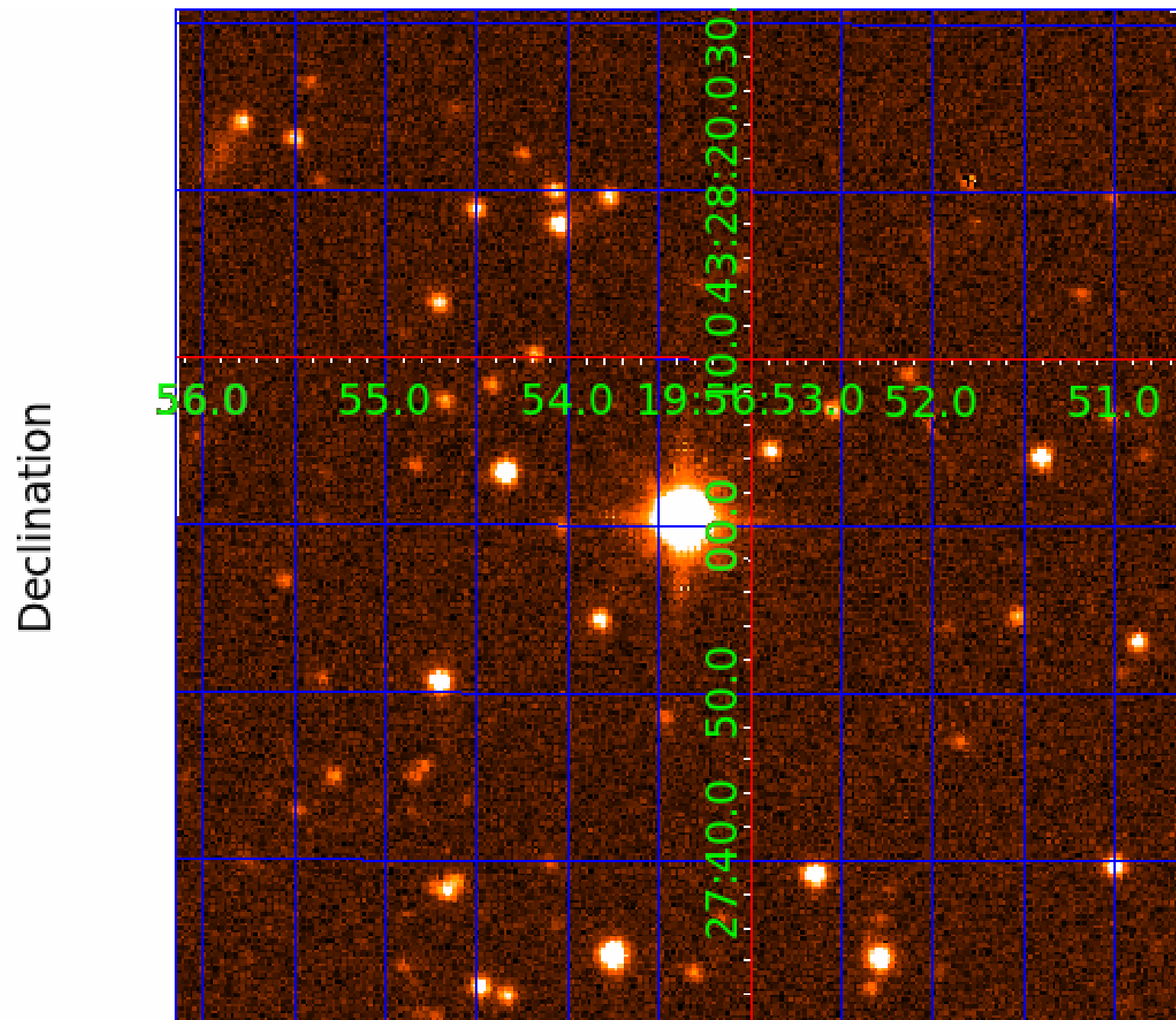
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 007778980

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})
007778980-01	OBS	No	1.574221	132.062696	558.6	1.971	9.5	12.7	3.67	7700	10.18	37660.00
007778980-02	OBS	No	0.622945	131.676746	578.3	1.285	12.6	15.0	3.67	7700	10.35	129628.82
007778980-03	OBS	No	0.622942	132.047758	554.3	1.227	11.1	14.6	3.67	7700	9.31	129629.68
007778980-04	OBS	No	0.622940	131.932869	114.0	1.500	9.4	-1.0	3.67	7700	3.97	129630.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007778980-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007778980-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007778980-03	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
007778980-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

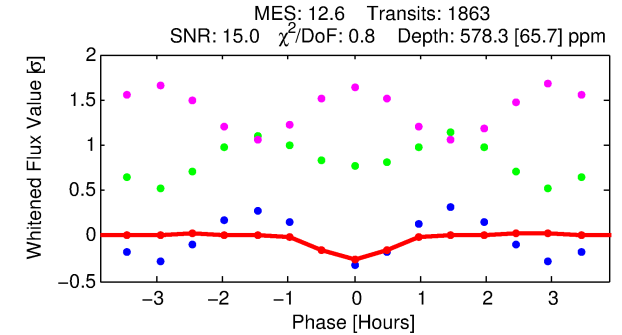
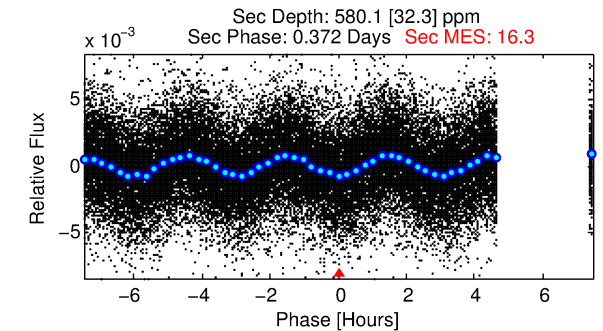
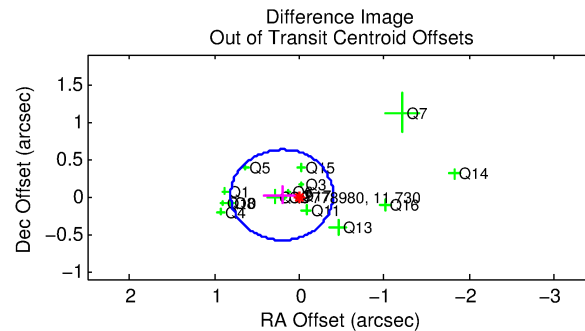
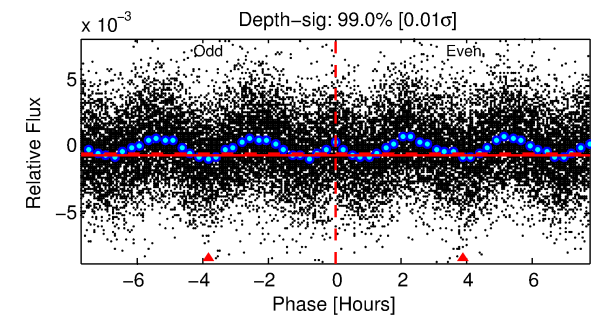
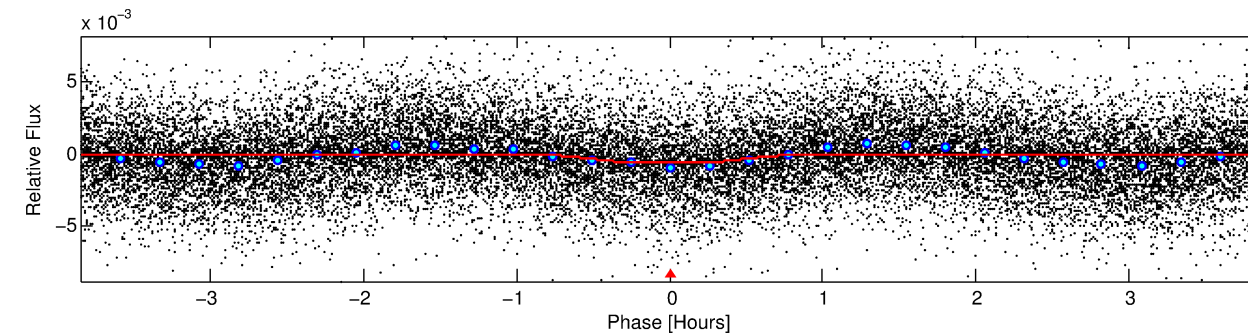
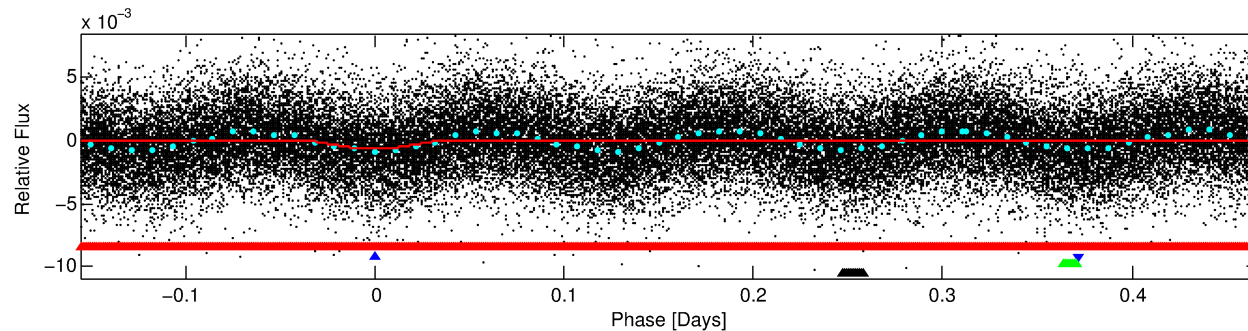
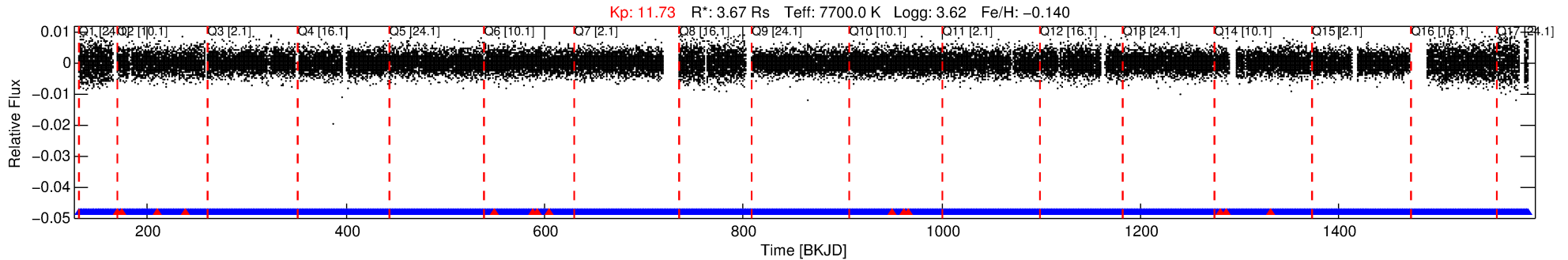
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007778980-02

No Significant Match Found

DV One-Page Summary

KIC: 7778980 Candidate: 2 of 4 Period: 0.623 d



DV Fit Results:

Period = 0.62295 [0.00001] d
Epoch = 131.6767 [0.0014] BKJD
Rp/R* = 0.0258 [0.0093]
a/R* = 2.05 [3.19]
b = 0.90 [0.44]
Seff = 129628.82 [107840.08]
Teff = 4838 [1006] K
Rp = 10.35 [6.39] Re
a = 0.0181 [0.0091] AU
Ag = 0.98 [1.06] [-0.02σ]
Teffp = 7434 [1372] K [1.53σ]

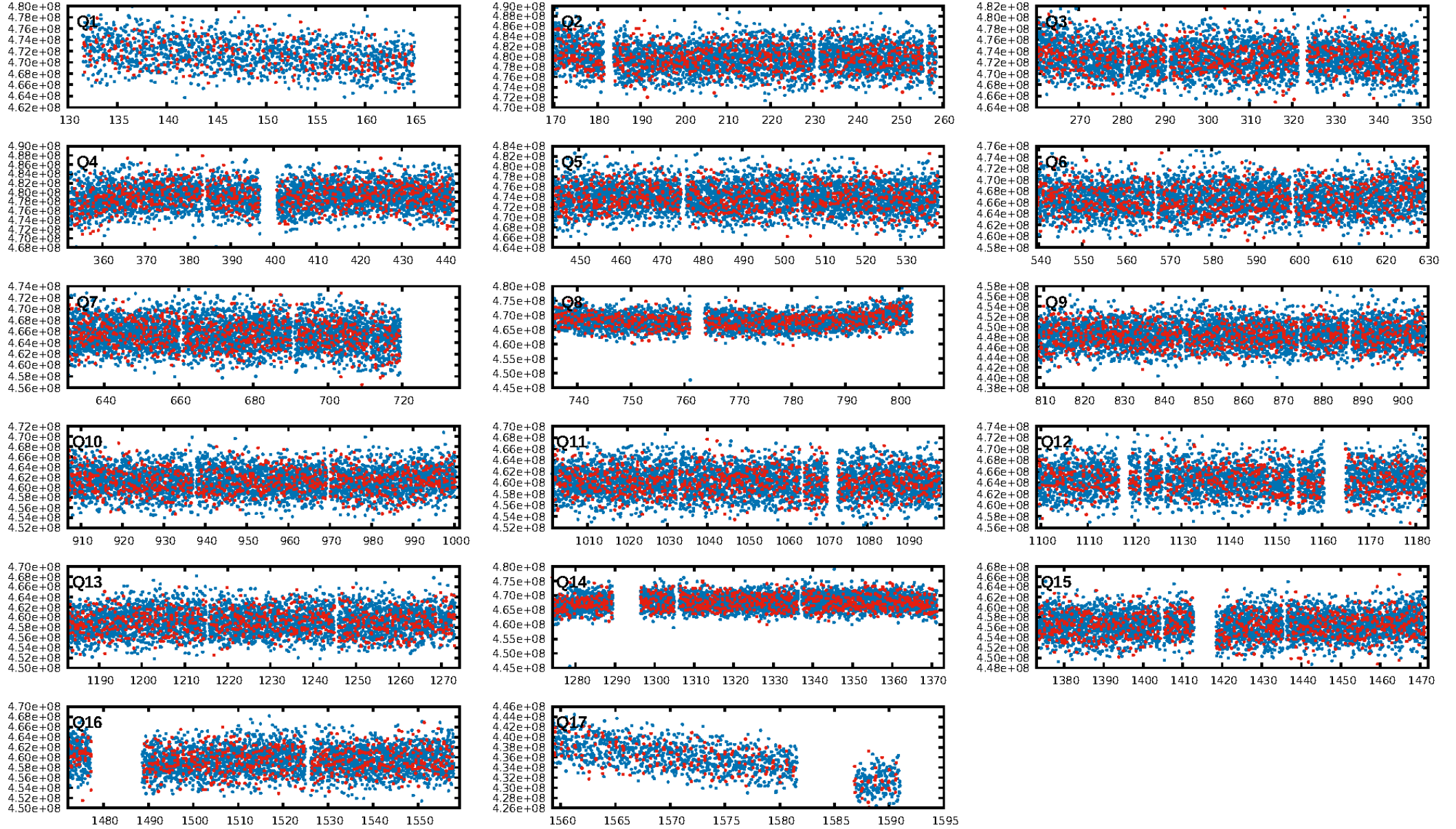
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [9.70σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1762/1776]
GhostDiagnostic-chr: 0.5753
Centroid-sig: 21.1%
Centroid-so: 0.043 arcsec [2.08σ]
OotOffset-rm: 0.204 arcsec [1.02σ]
KicOffset-rm: 0.120 arcsec [0.60σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 0.00 [0/17]

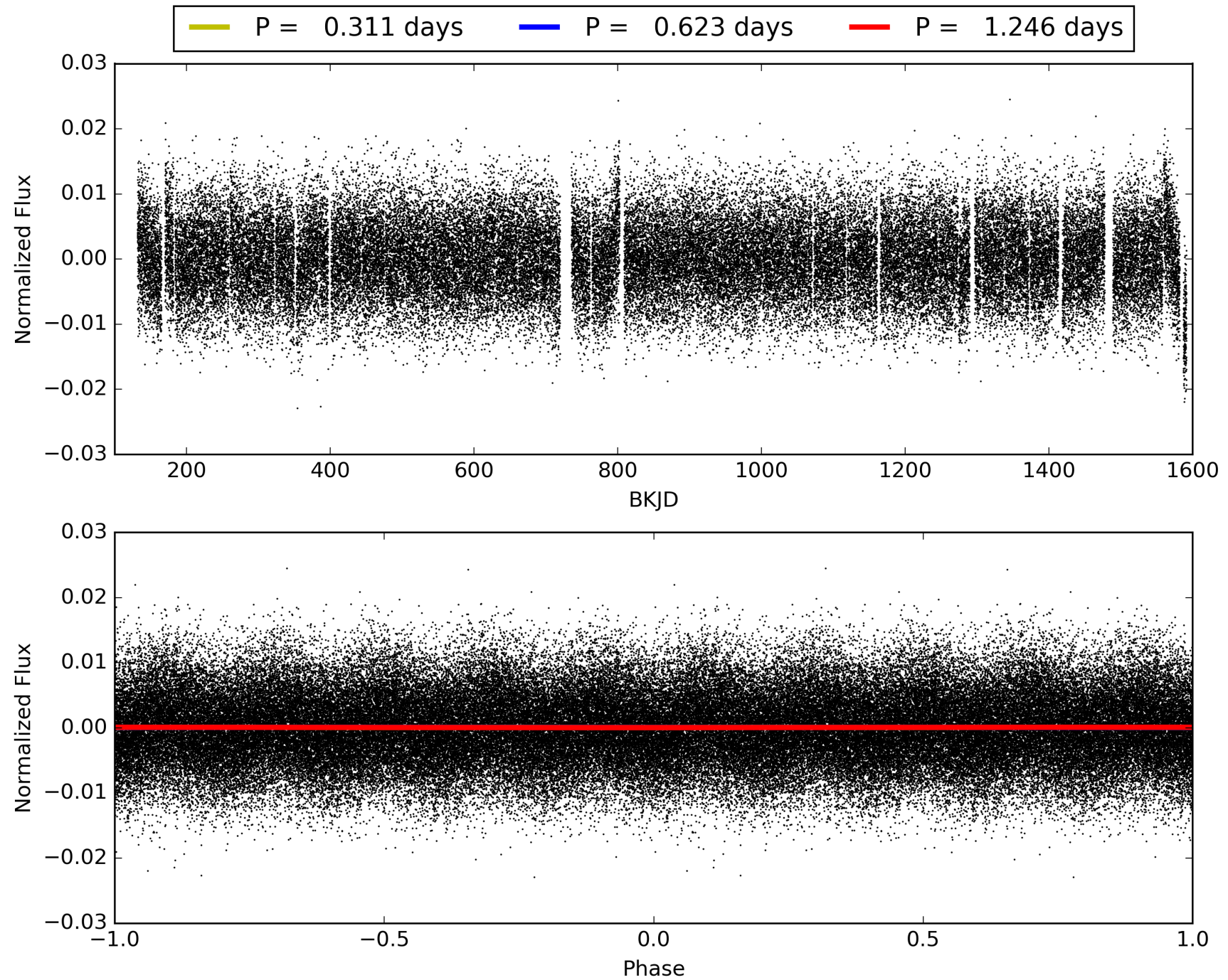
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:44:28 Z

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

TCE 007778980-02, PDC Light Curves

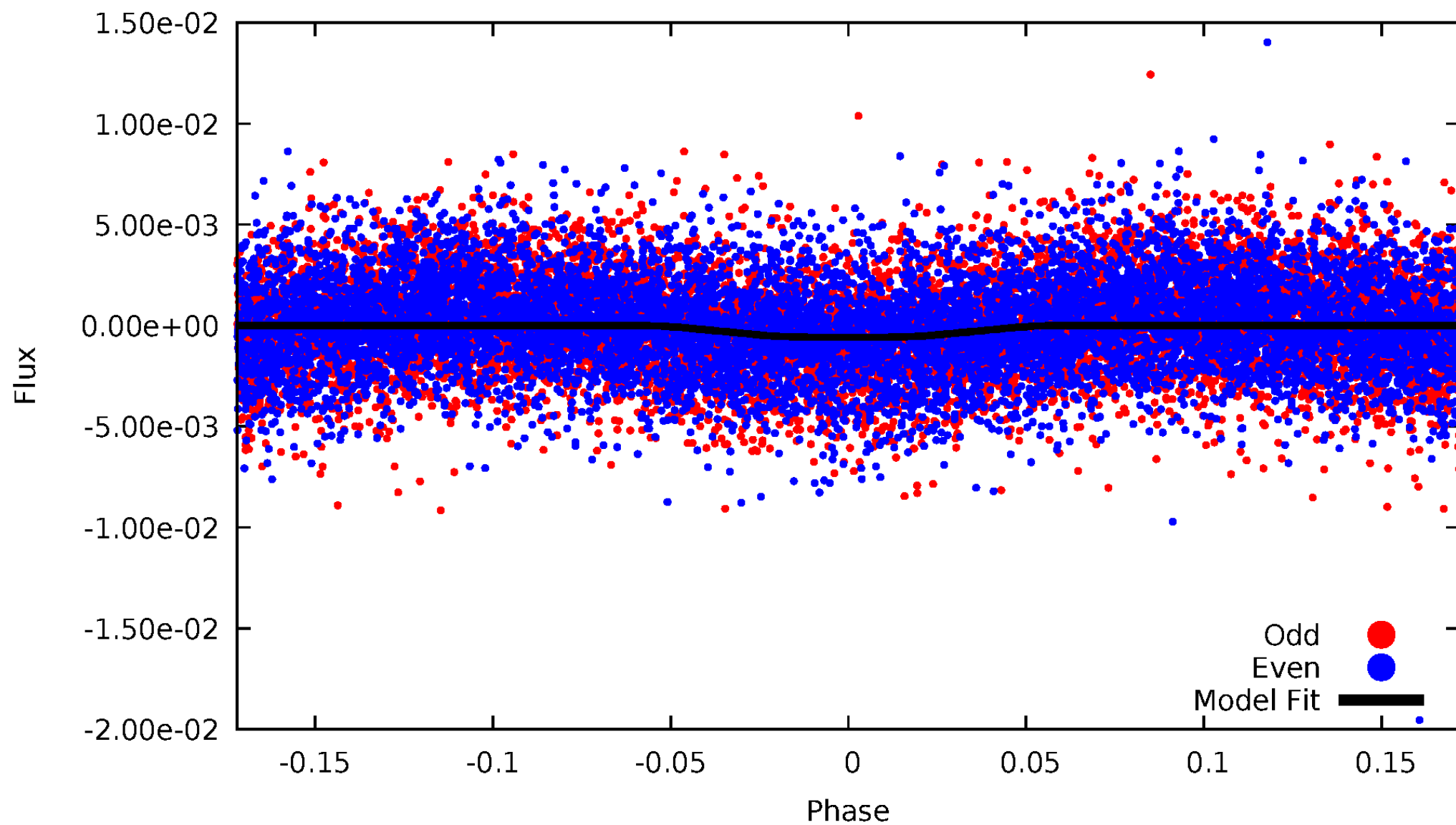


TCE 007778980-02



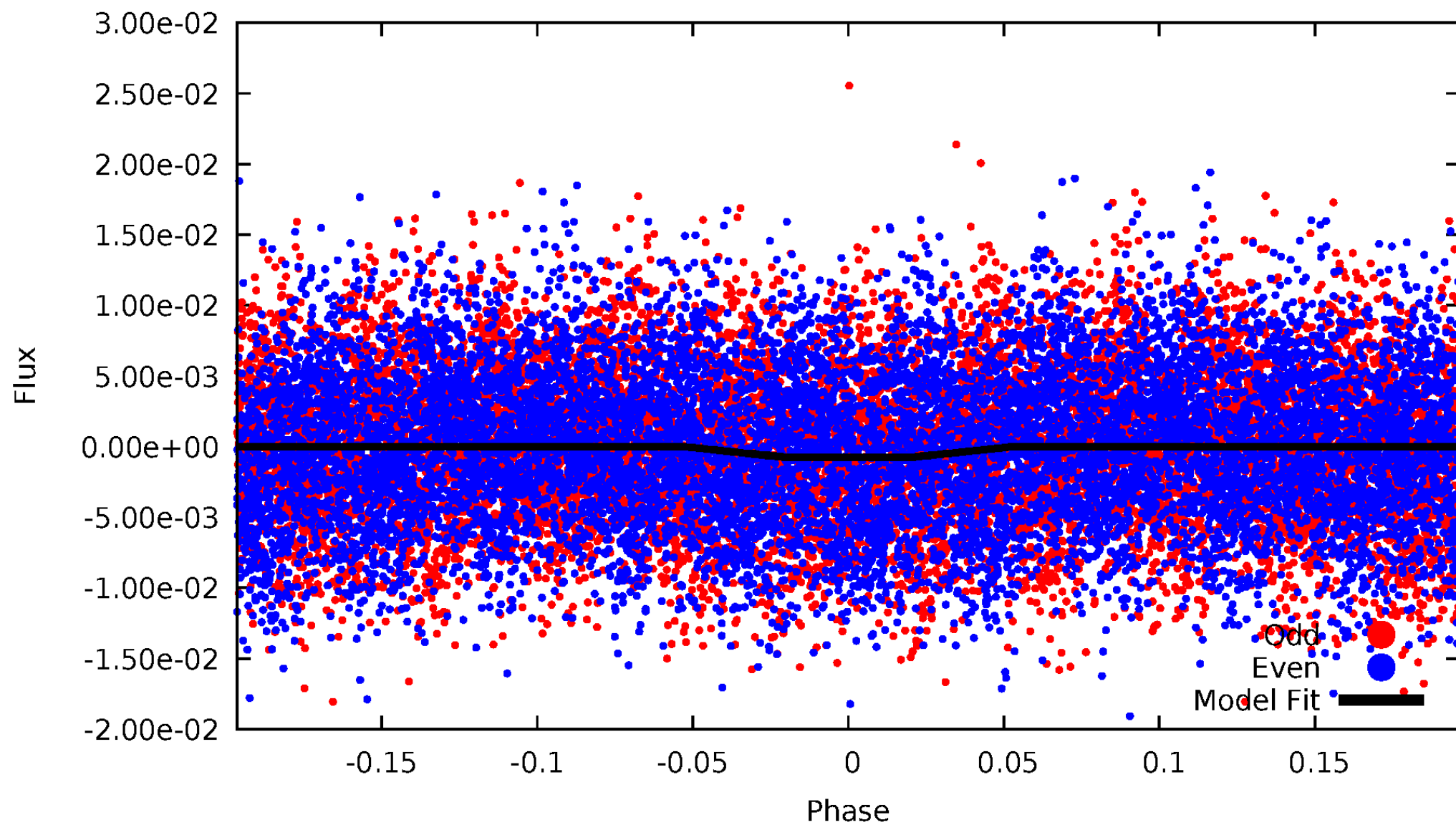
DV Odd/Even

TCE 007778980-02



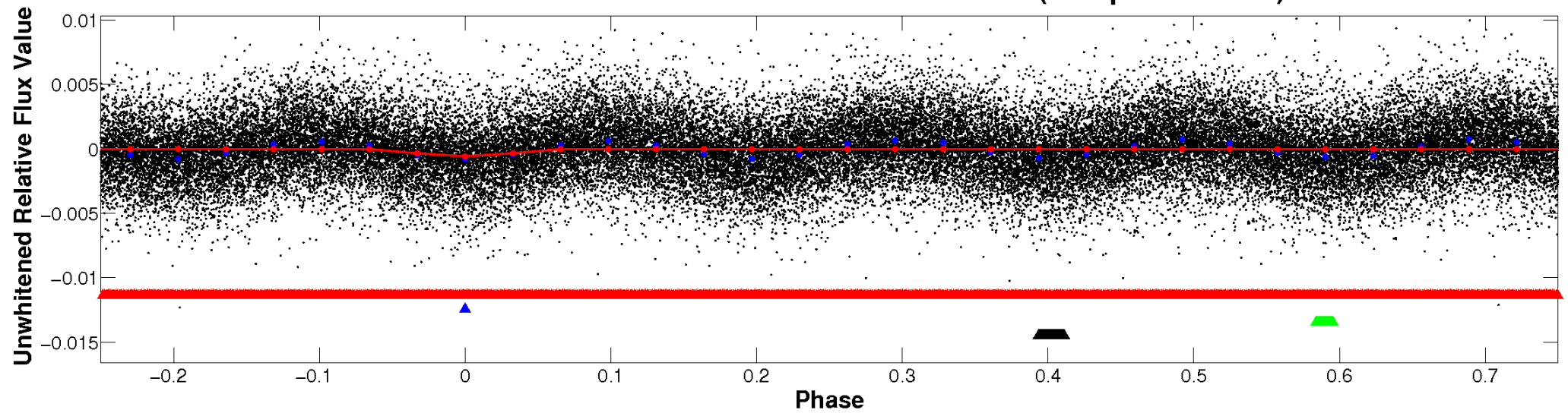
ALT Odd/Even

TCE 007778980-02

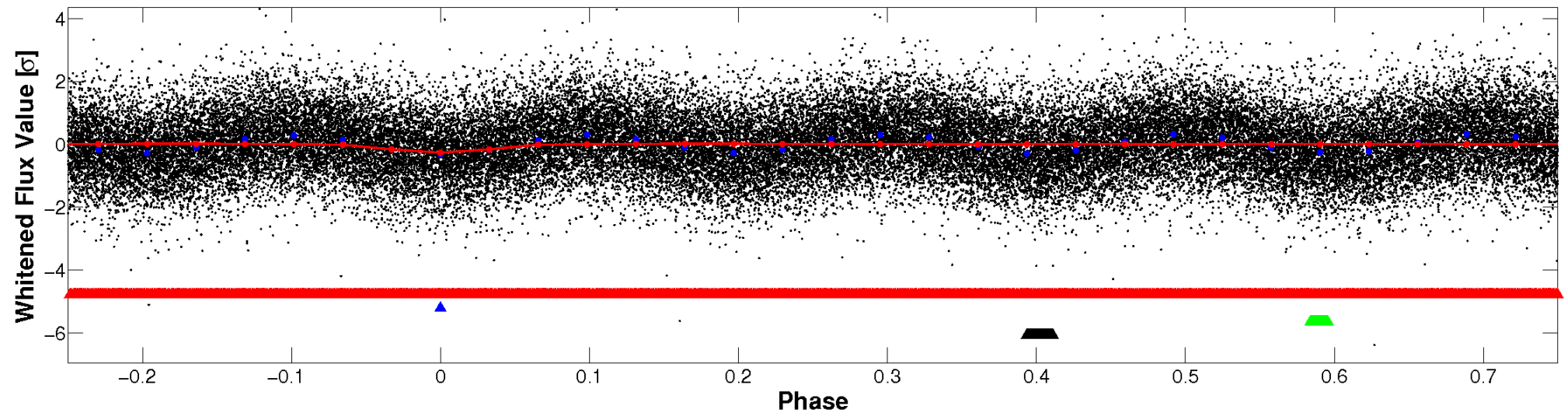


Non-Whitened Vs. Whitened Light Curve

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

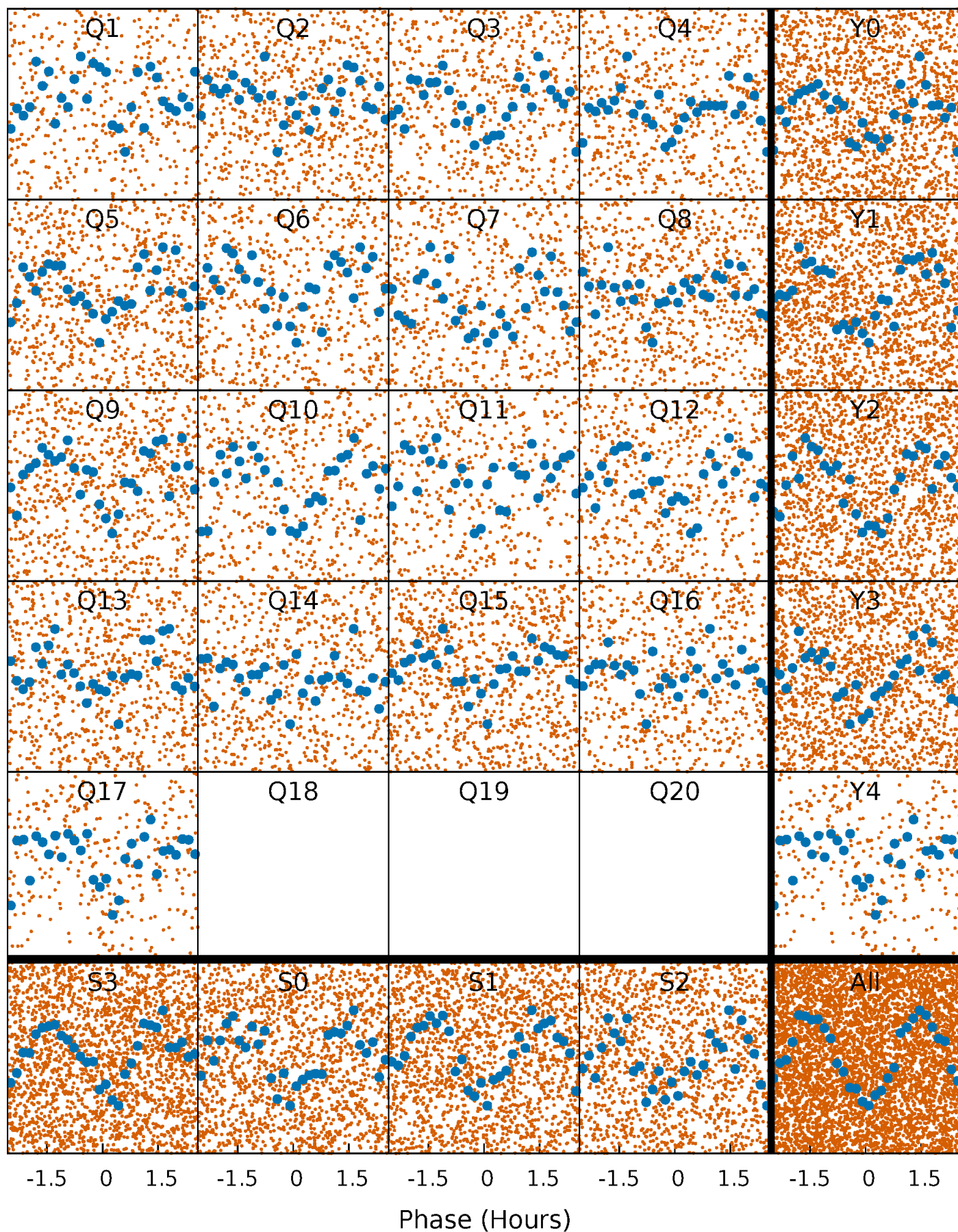


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



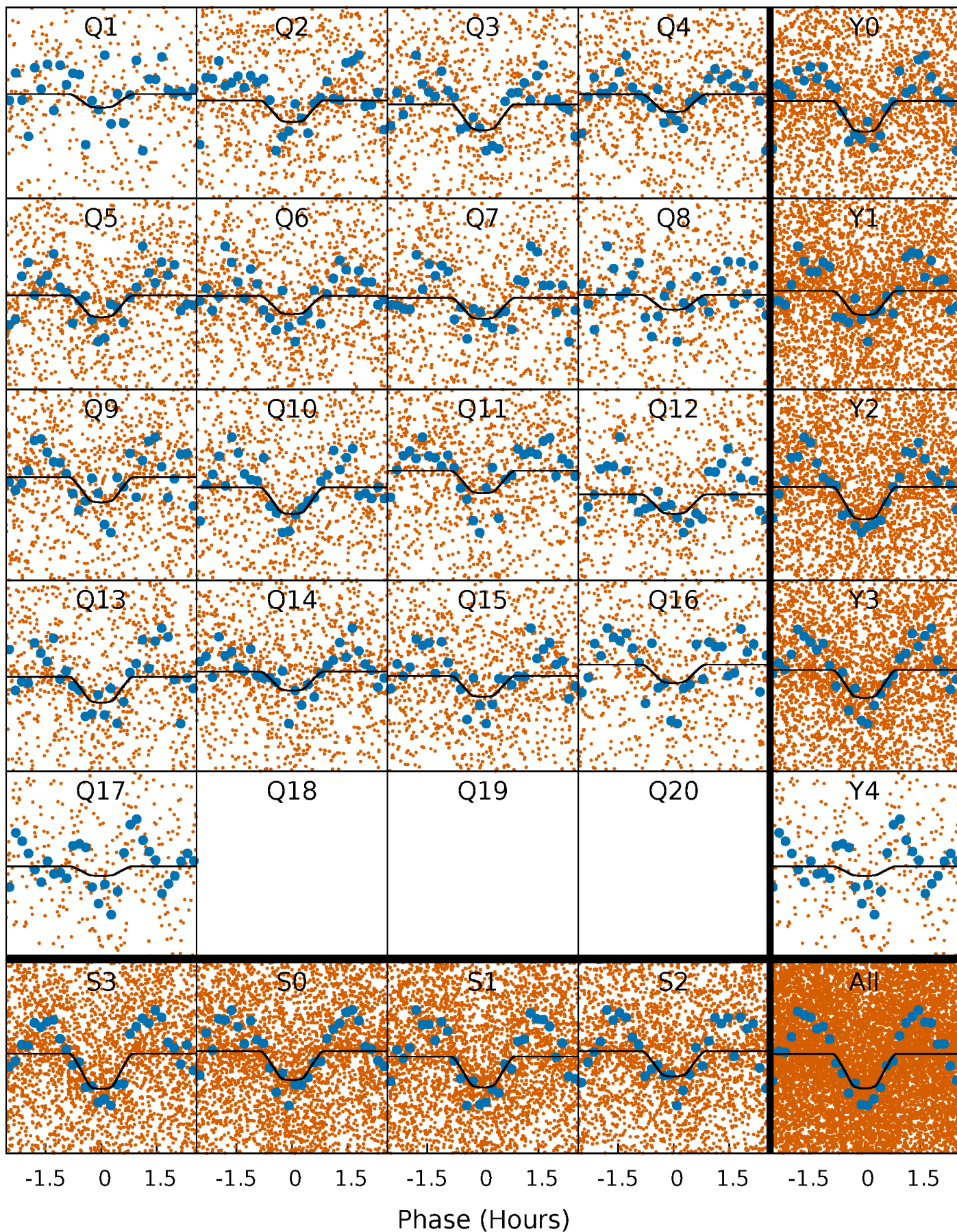
PDC Quarter-Phased Transit Curves

TCE 007778980-02 P= 0.622945 Days $T_0=131.676746$ (BKJD)



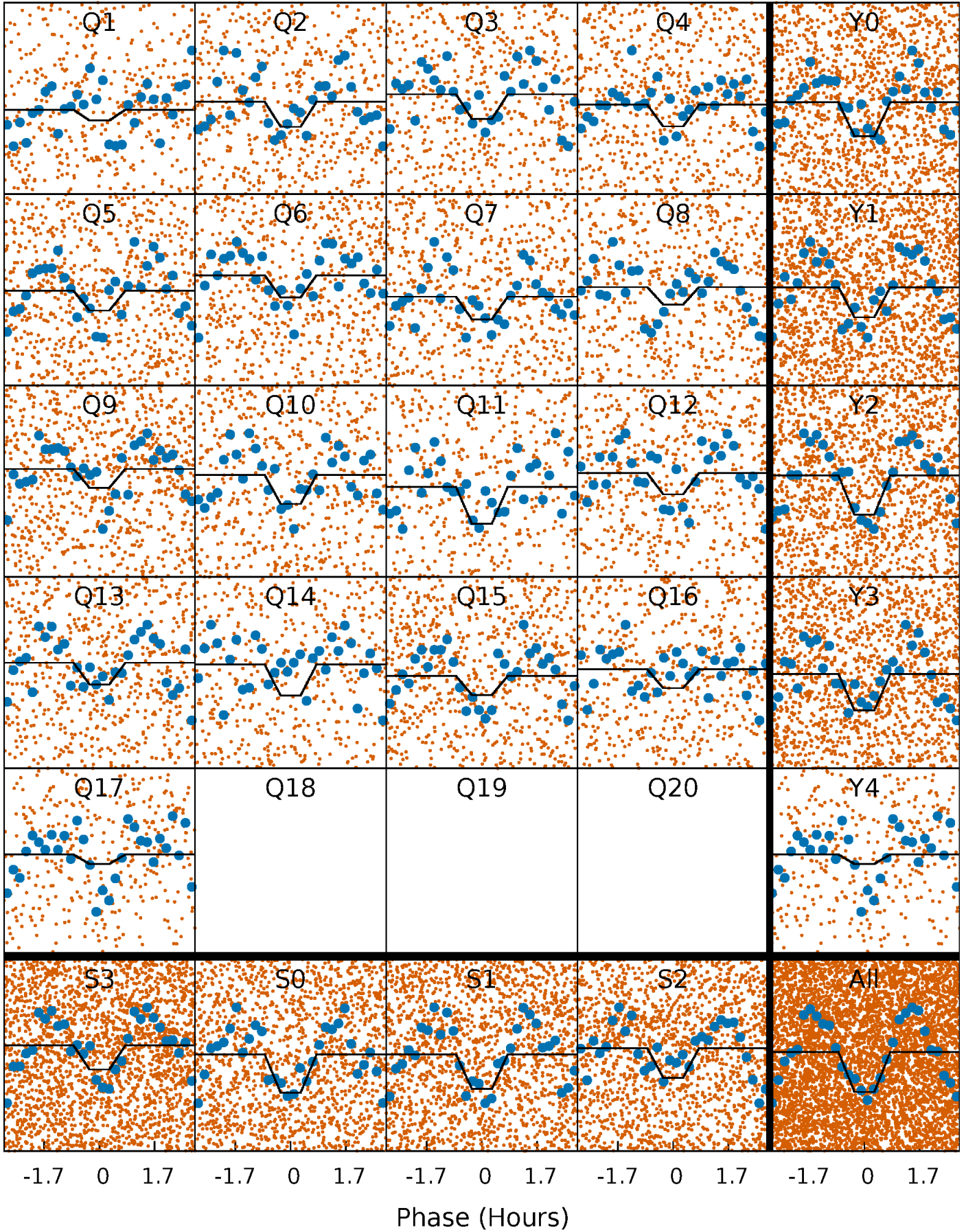
DV Quarter-Phased Transit Curves

TCE 007778980-02 P= 0.622945 Days $T_0=131.676746$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

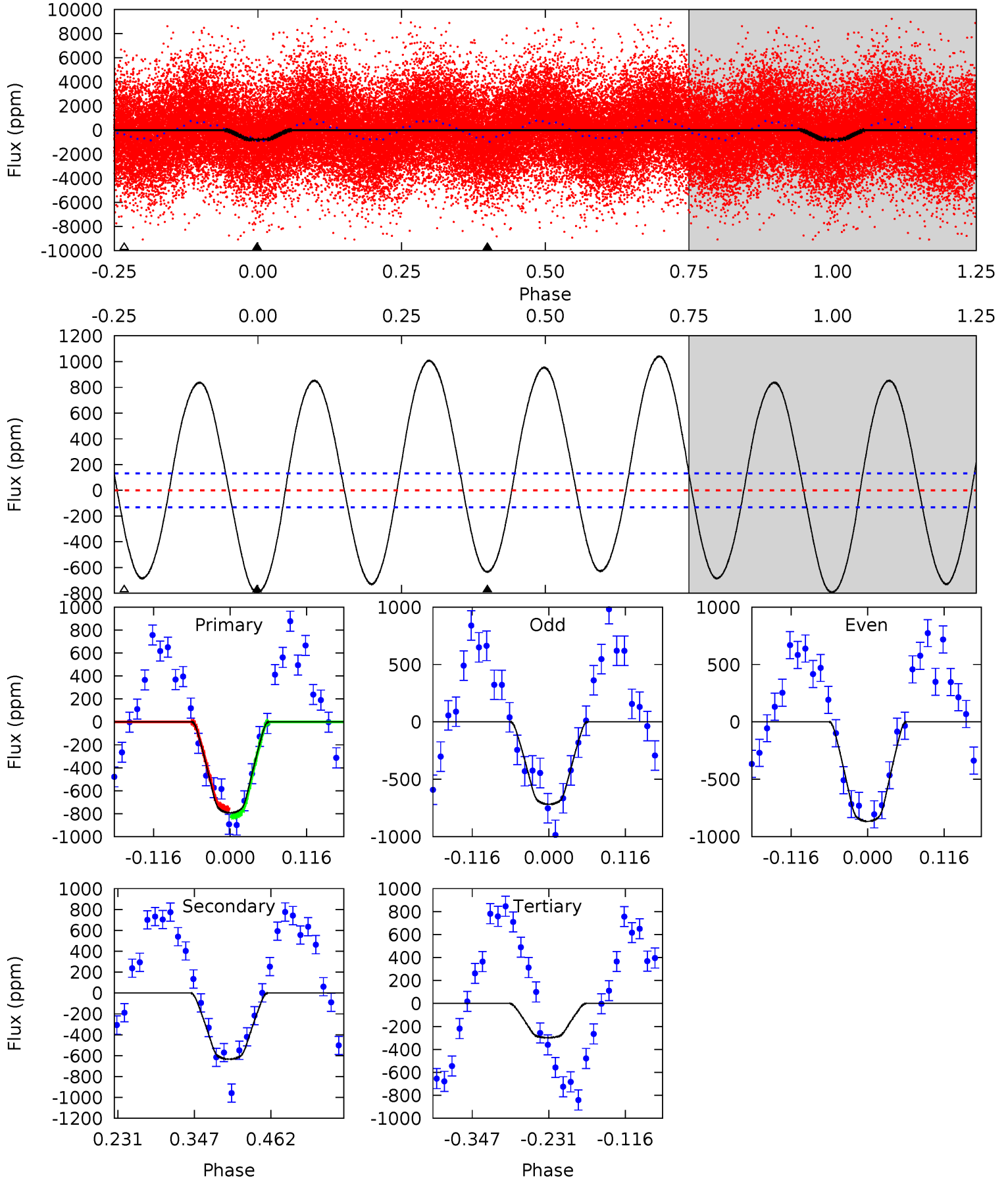
TCE 007778980-02 P= 0.622946 Days $T_0=131.677184$ (BKJD)



DV Model-Shift Uniqueness Test

007778980-02, P = 0.622945 Days, E = 131.053801 Days

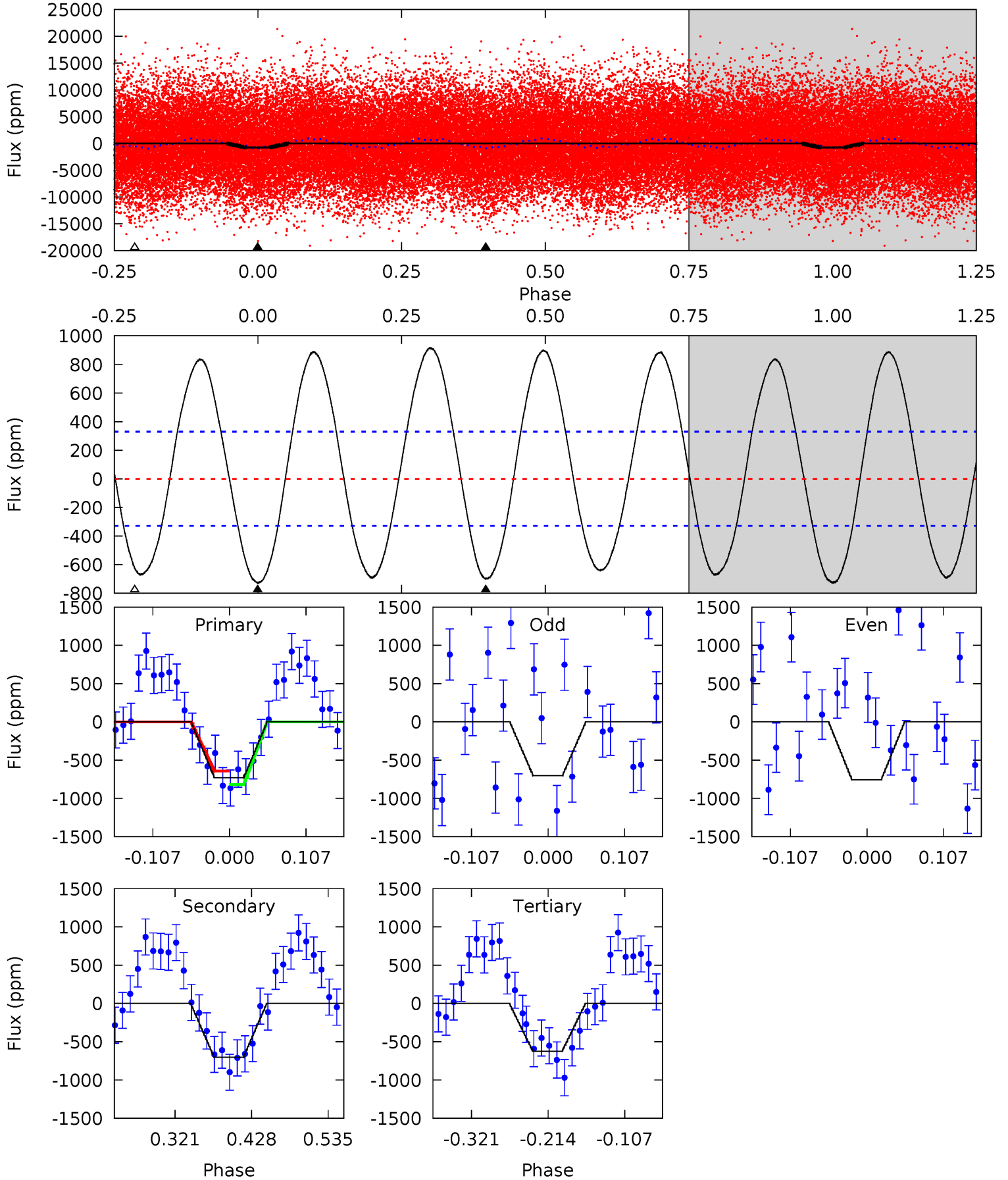
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.2	21.8	10.3	0	4.53	1.57	18.9	17.0	27.2	11.5	21.8	2.57	1.06	0.57	1.19



Alt Model-Shift Uniqueness Test

007778980-02, P = 0.622946 Days, E = 131.054238 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	9.70	8.62	0	4.55	1.61	7.28	1.45	10.1	1.09	9.70	0.37	0.96	0.56	1.22



Stellar Parameters For KIC 007778980

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7700^{+213}_{-320}	$3.617^{+0.484}_{-0.085}$	$-0.140^{+0.200}_{-0.300}$	$3.670^{+0.615}_{-1.846}$	$2.032^{+0.291}_{-0.499}$	$0.058^{+0.303}_{-0.016}$
	+3%/-4%	+13%/-2%	+143%/-214%	+17%/-50%	+14%/-25%	+524%/-27%
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 007778980-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-634 ± 29	$9.18^{+4.12}_{-4.09}$	6516^{+468}_{-905}	7010^{+3109}_{-1521}	$1.382^{+2.808}_{-0.723}$
Alt.	-703 ± 72	$9.70^{+4.19}_{-3.74}$	6517^{+458}_{-821}	6937^{+2375}_{-1406}	$1.316^{+2.124}_{-0.655}$

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

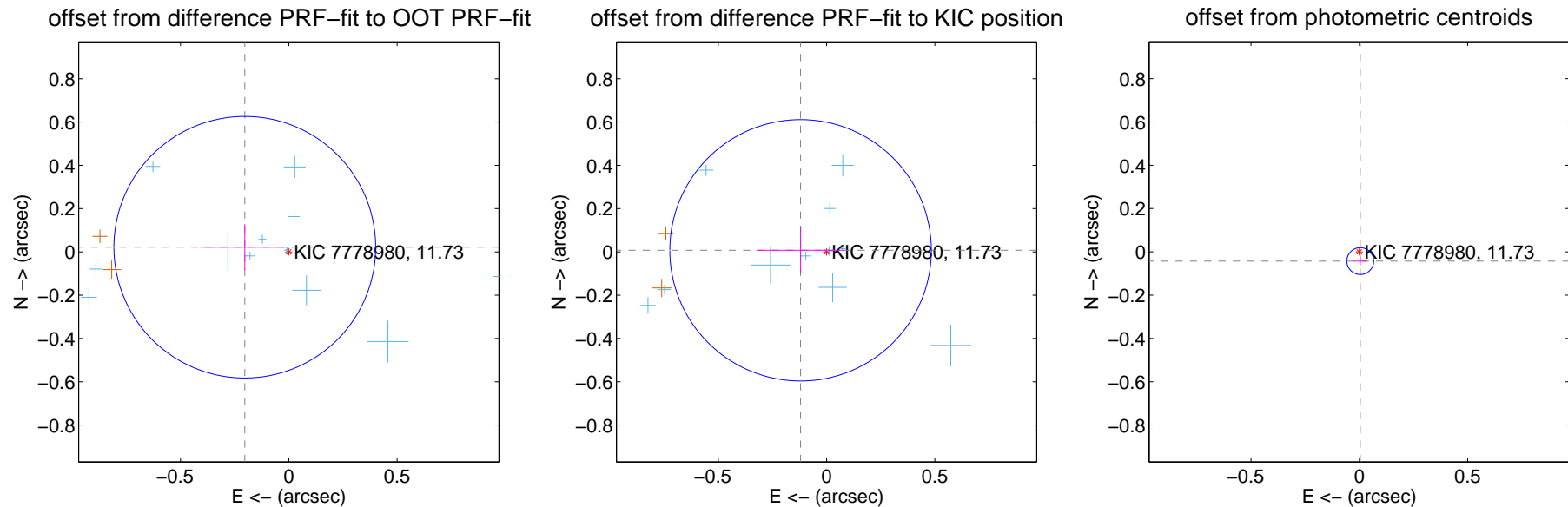
DV Centroid Data

Supplemental centroid analysis for 007778980-02. **Kepler magnitude: 11.73.** Transit SNR 14.99

There are 14 quarters with good PRF difference image offsets

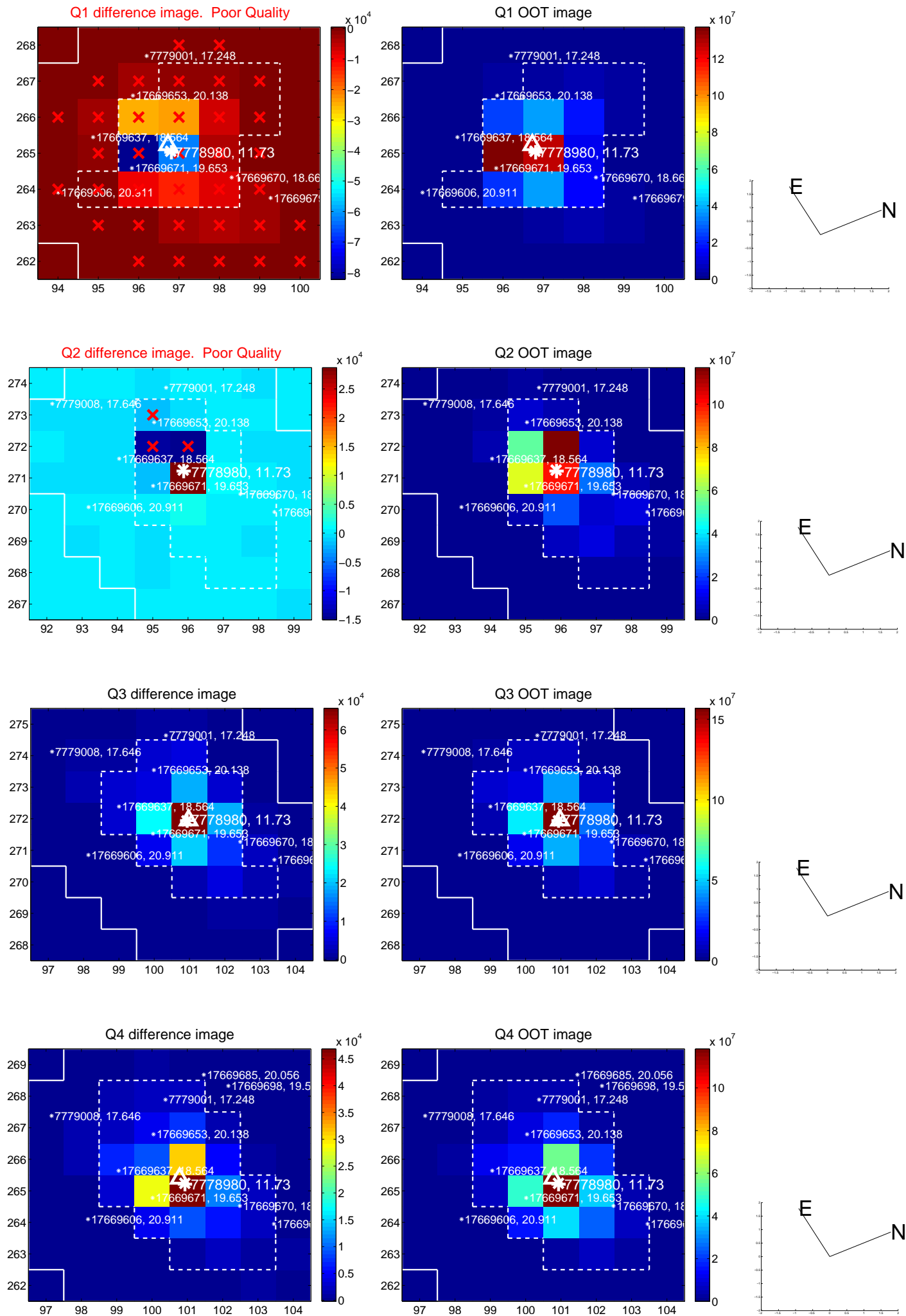
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.204 ± 0.201	1.02	0.203 ± 0.205	0.022 ± 0.106
PRF-fit source offset from KIC position	0.120 ± 0.201	0.60	0.120 ± 0.203	0.007 ± 0.106
photometric centroid source offset	0.04 ± 0.02	2.08	-0.00 ± 0.03	-0.04 ± 0.02

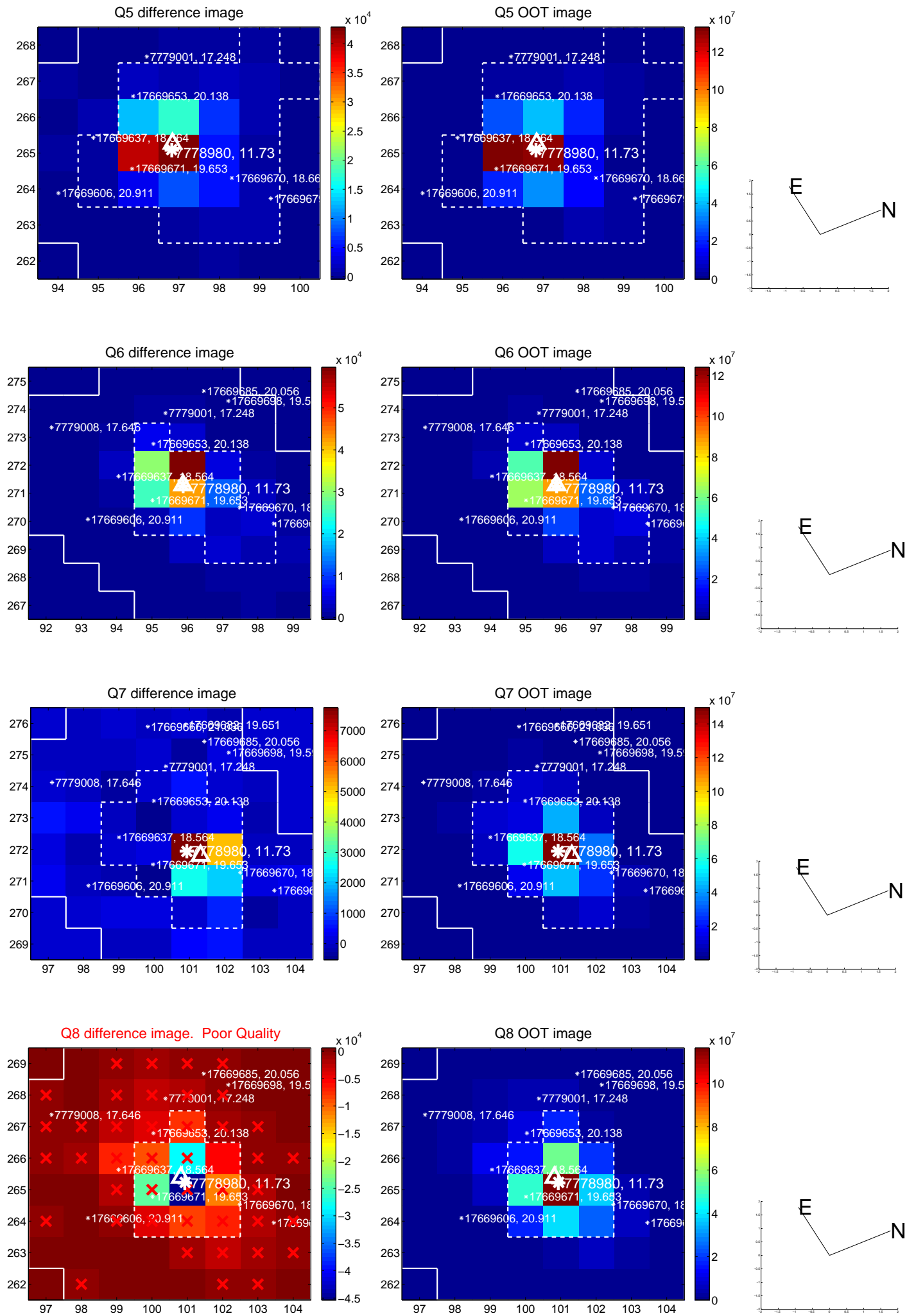


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

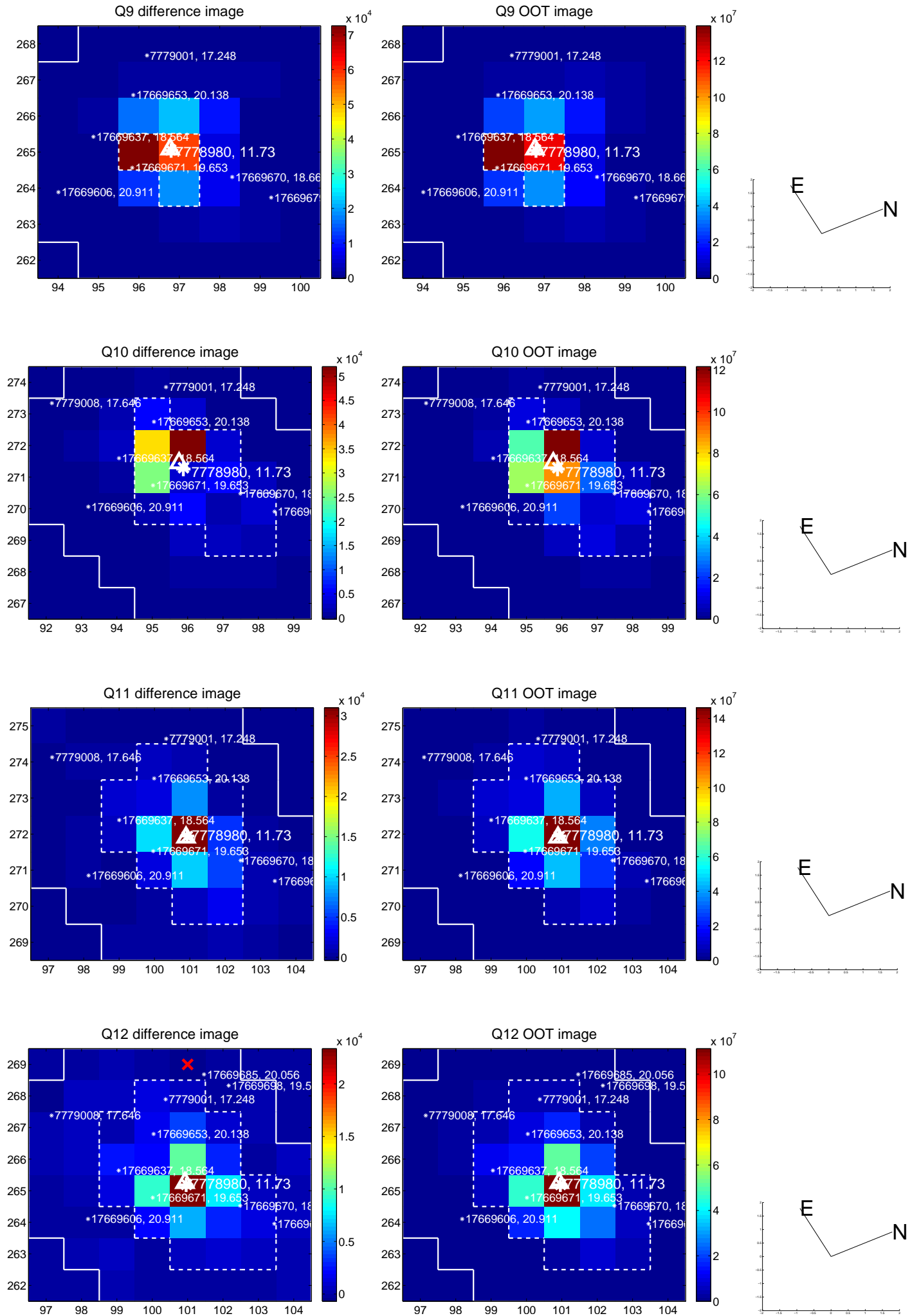
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



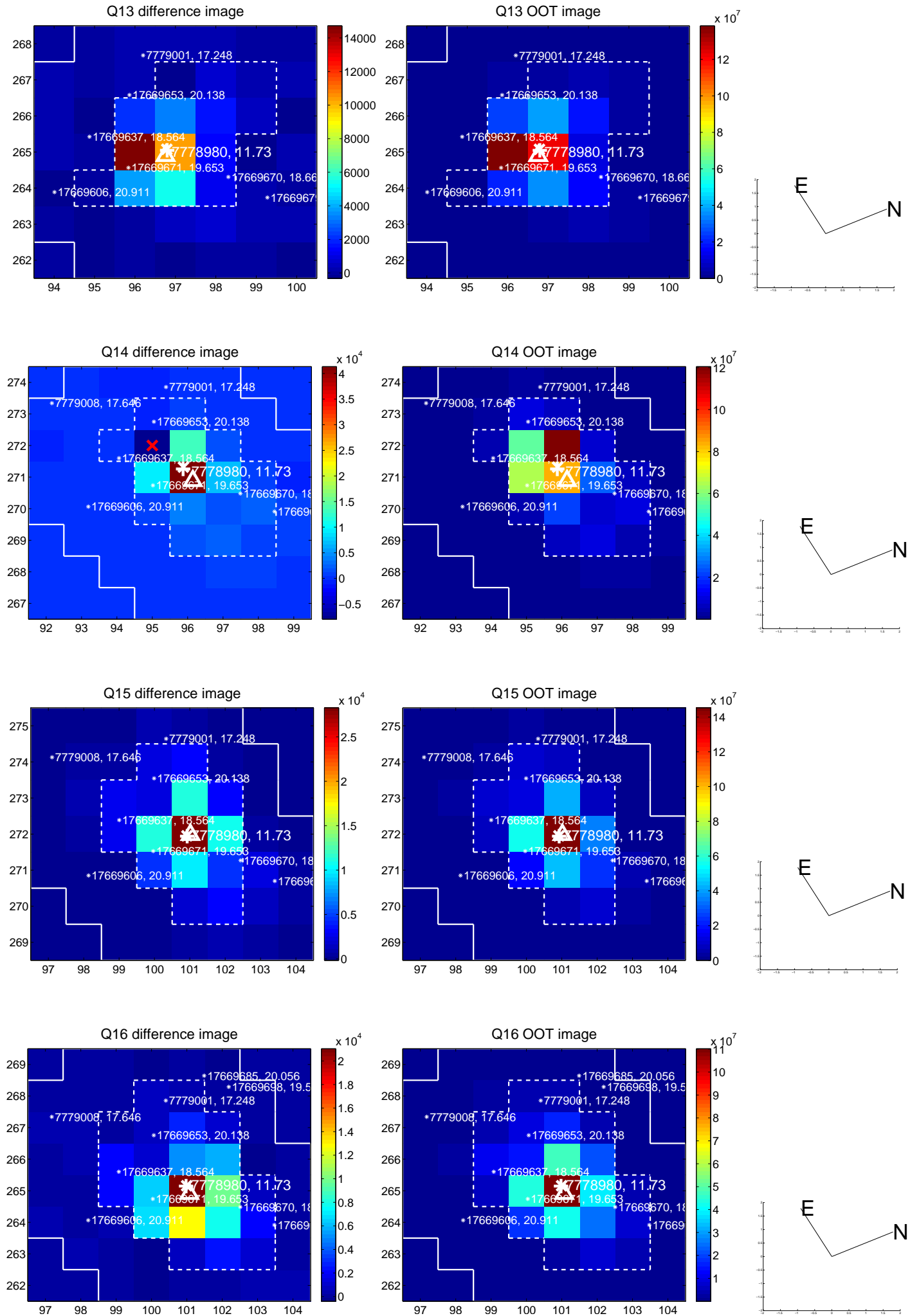
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



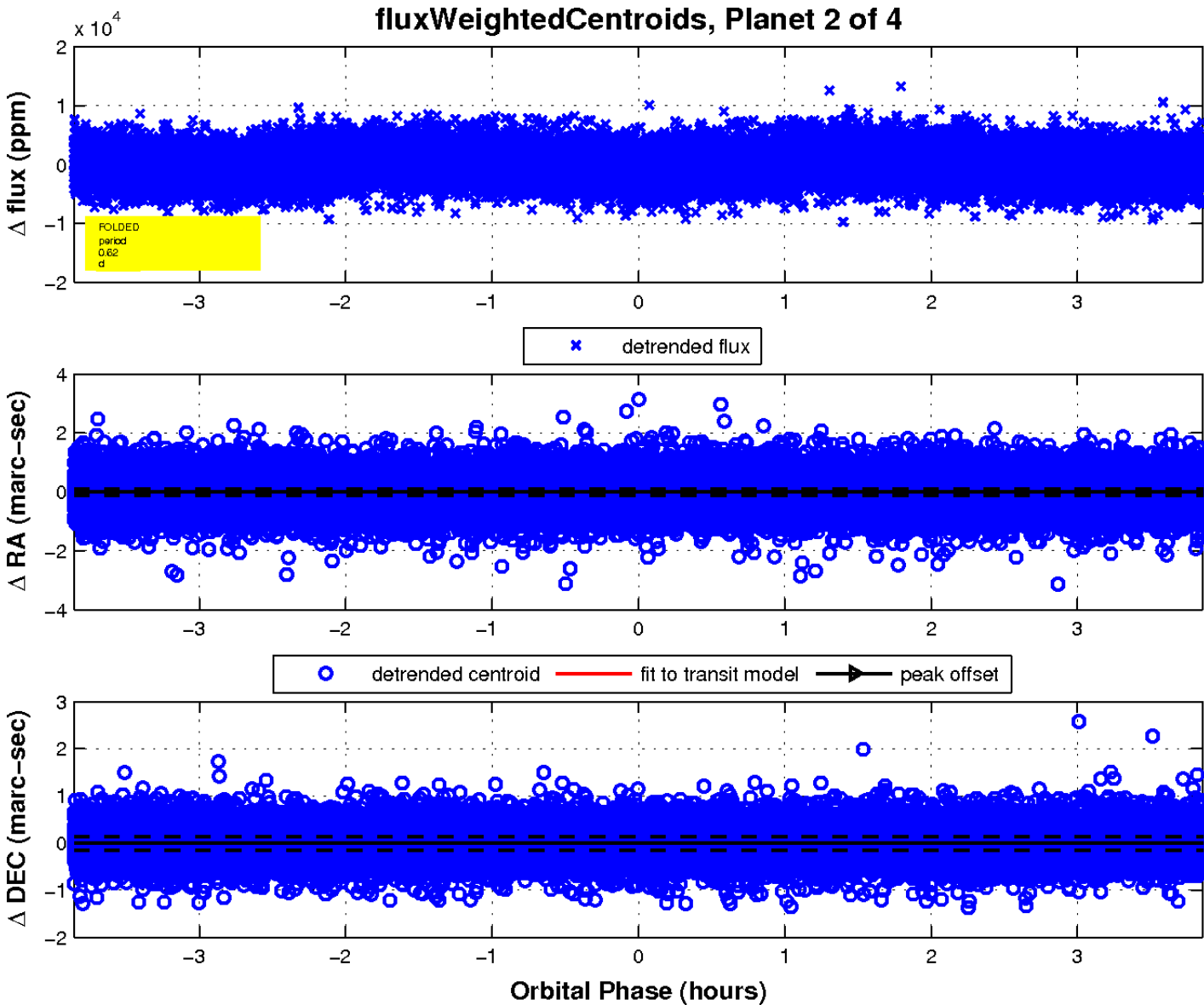
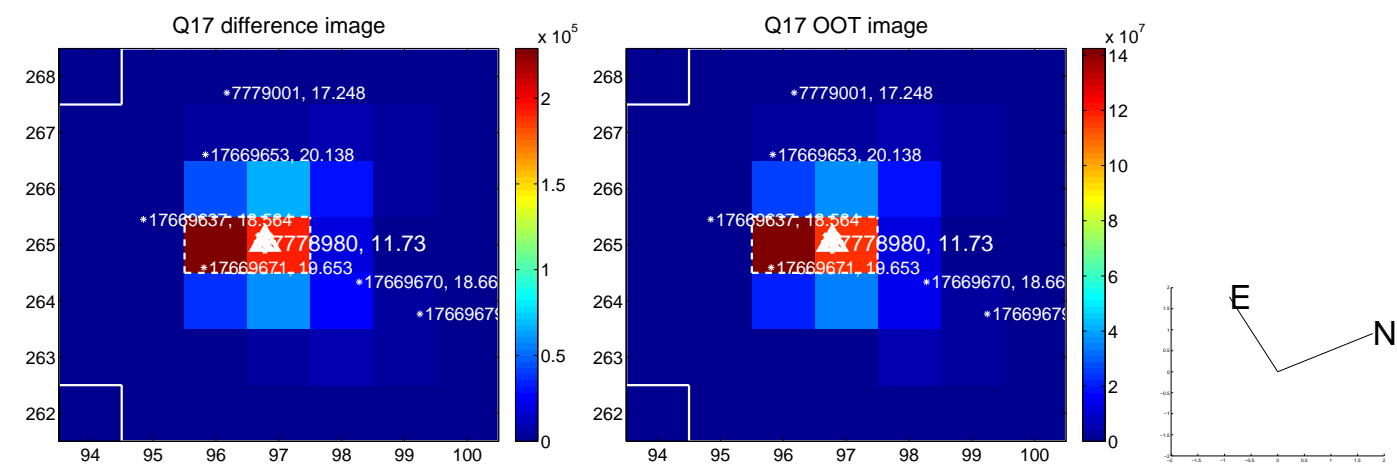
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

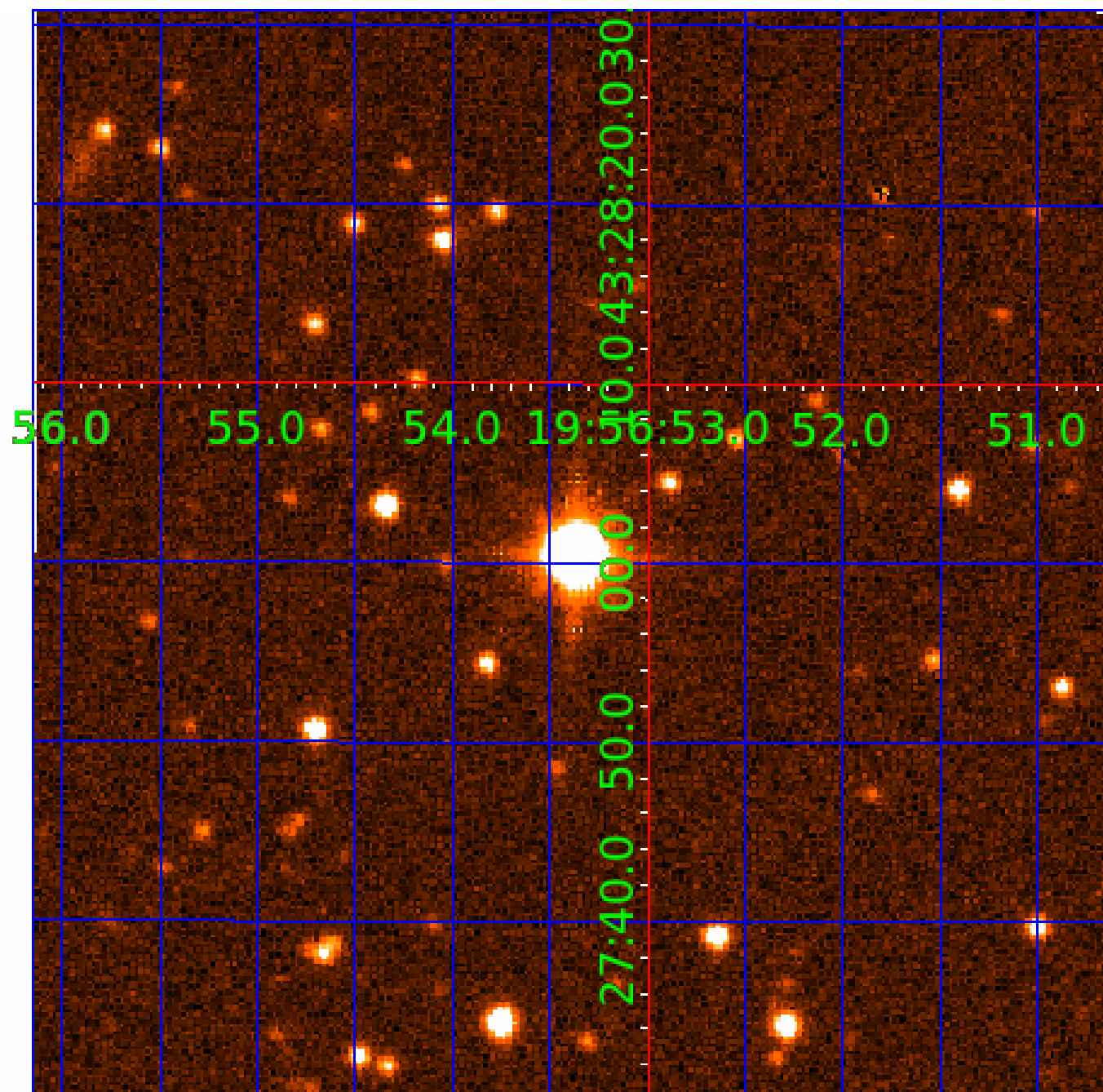


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007778980

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})
007778980-01	OBS	No	1.574221	132.062696	558.6	1.971	9.5	12.7	3.67	7700	10.18	37660.00
007778980-02	OBS	No	0.622945	131.676746	578.3	1.285	12.6	15.0	3.67	7700	10.35	129628.82
007778980-03	OBS	No	0.622942	132.047758	554.3	1.227	11.1	14.6	3.67	7700	9.31	129629.68
007778980-04	OBS	No	0.622940	131.932869	114.0	1.500	9.4	-1.0	3.67	7700	3.97	129630.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007778980-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007778980-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007778980-03	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
007778980-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

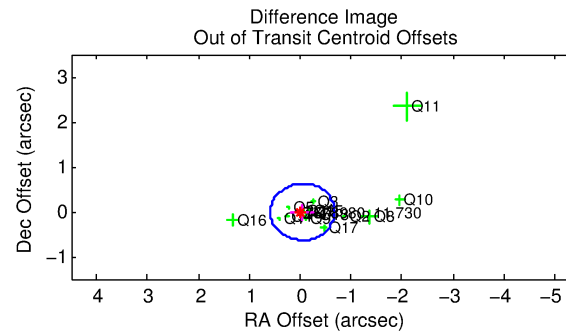
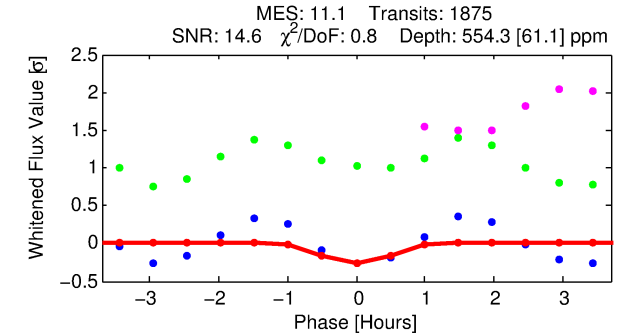
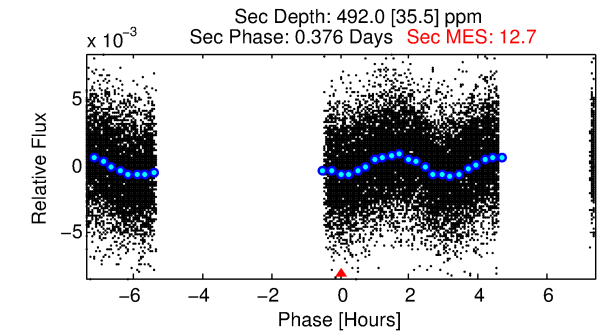
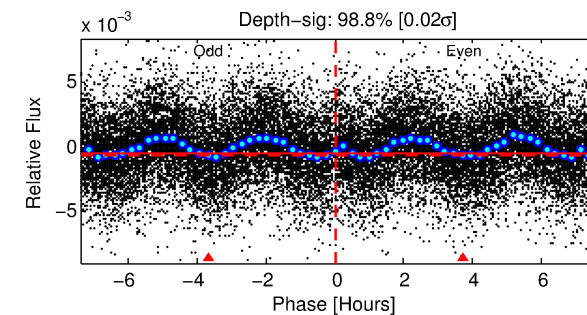
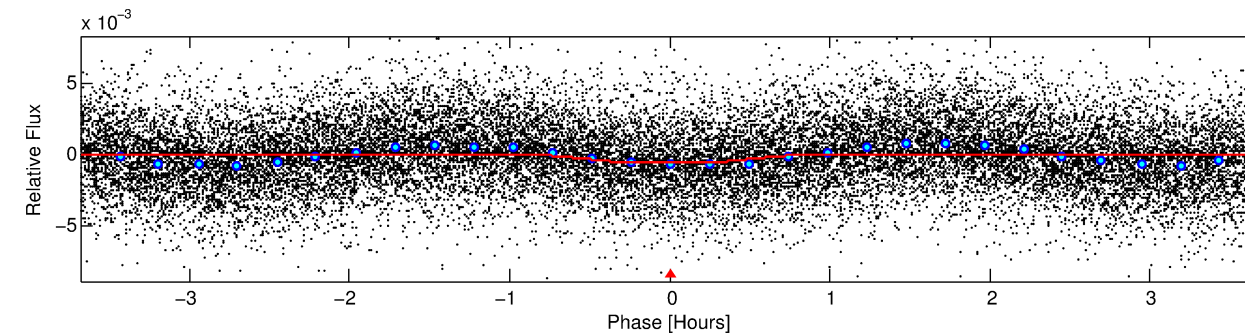
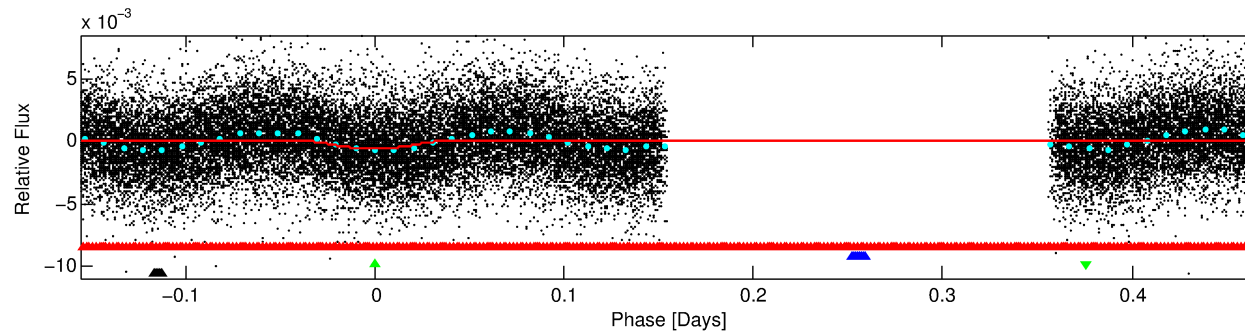
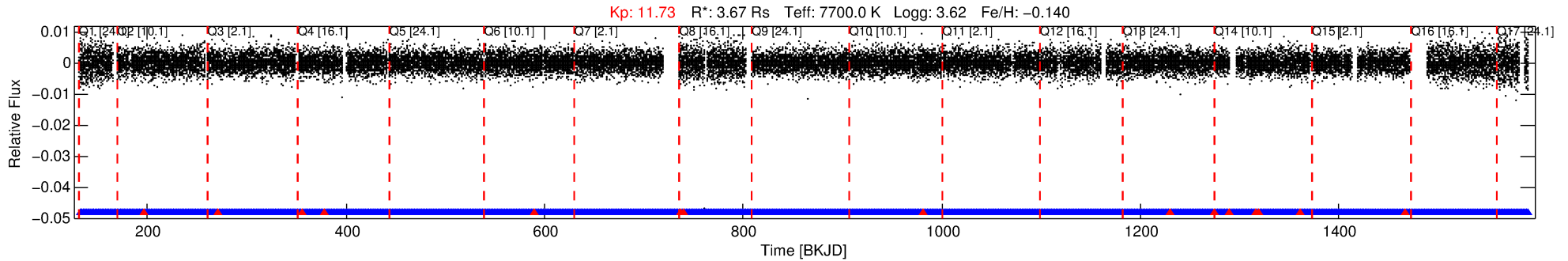
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007778980-03

No Significant Match Found

DV One-Page Summary

KIC: 7778980 Candidate: 3 of 4 Period: 0.623 d



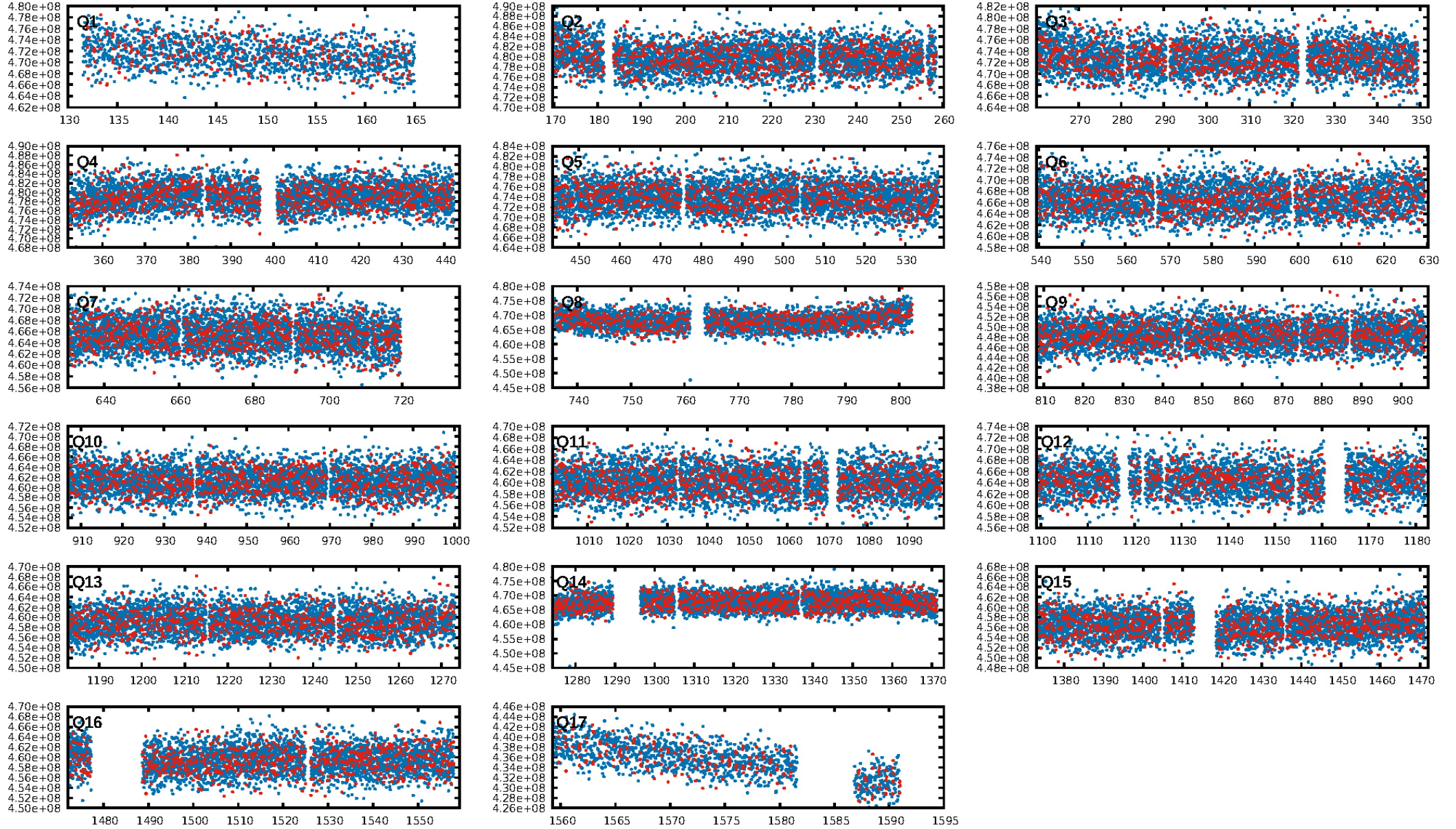
DV Fit Results:

Period = 0.62294 [0.00001] d
Epoch = 132.0478 [0.0015] BKJD
Rp/R* = 0.0232 [0.0122]
a/R* = 3.00 [7.76]
b = 0.70 [2.13]
Seff = 129629.68 [107840.79]
Teff = 4838 [1006] K
Rp = 9.31 [6.77] Re
a = 0.0181 [0.0091] AU
Ag = 1.02 [1.36] [0.02σ]
Teffp = 7523 [2005] K [1.20σ]

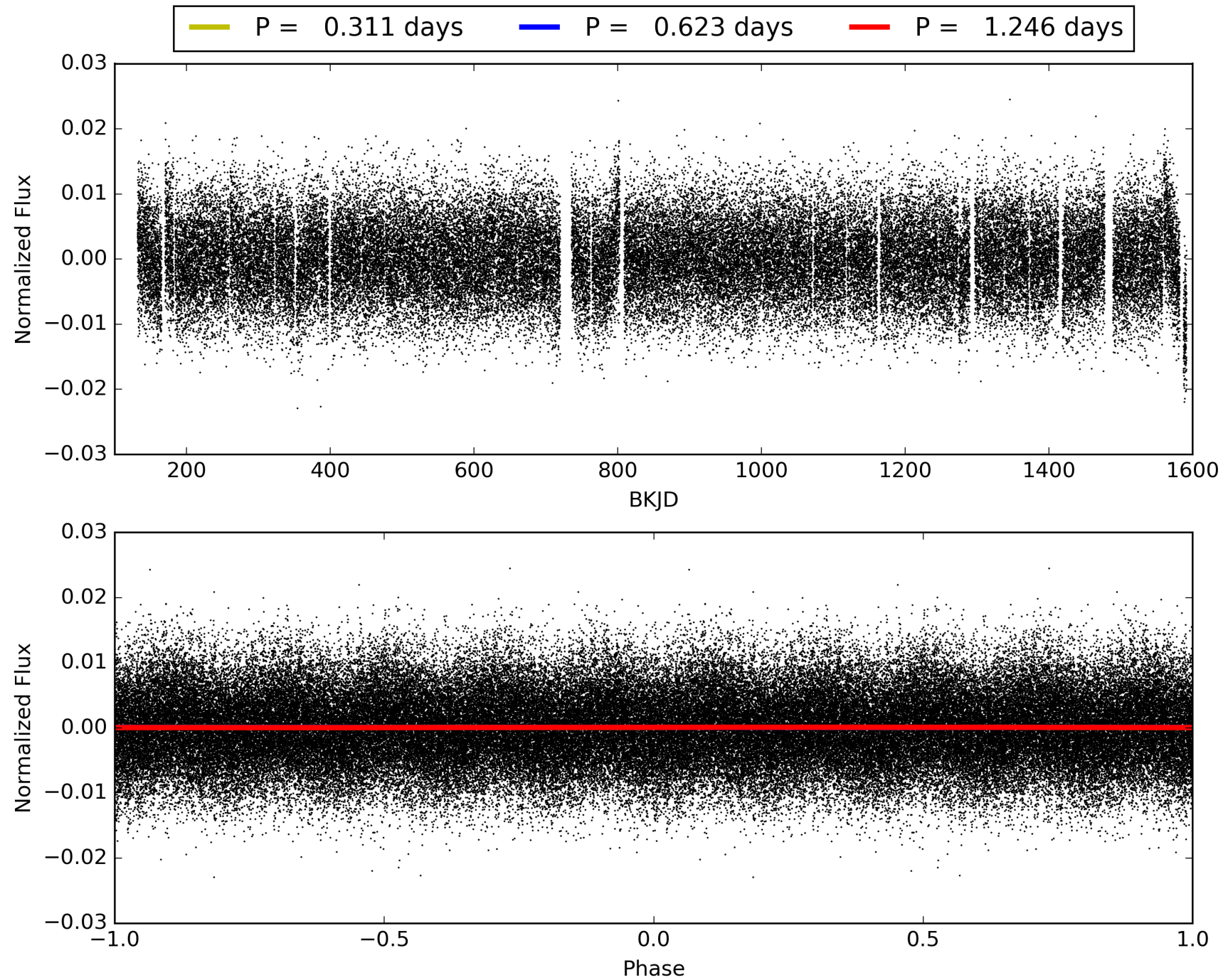
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1776/1791]
GhostDiagnostic-chr: -766.6
Centroid-sig: 0.9%
Centroid-so: 0.027 arcsec [1.16σ]
OotOffset-rm: 0.045 arcsec [0.22σ]
KicOffset-rm: 0.106 arcsec [0.57σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.62 [10/16]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 007778980-03, PDC Light Curves

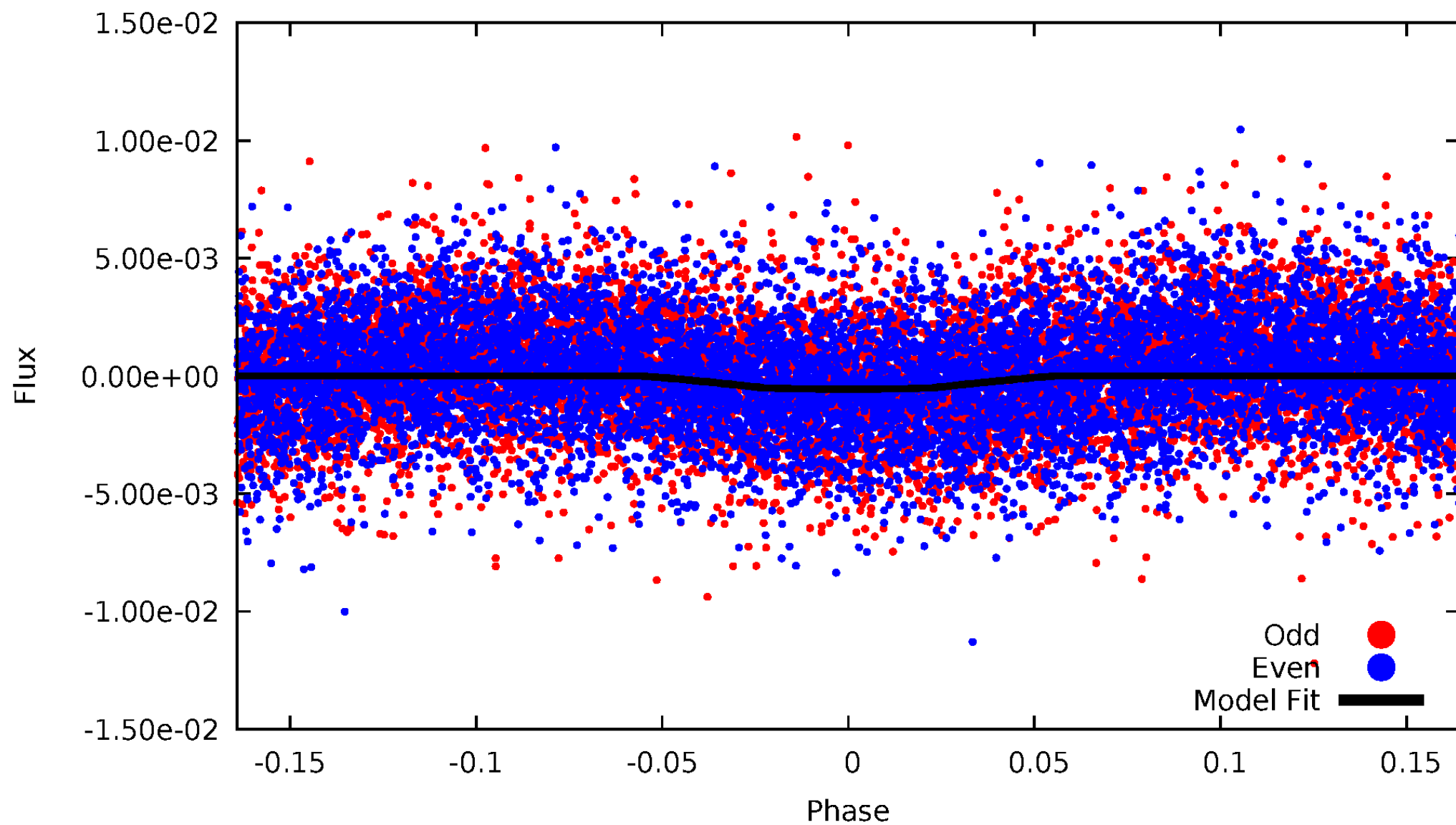


TCE 007778980-03



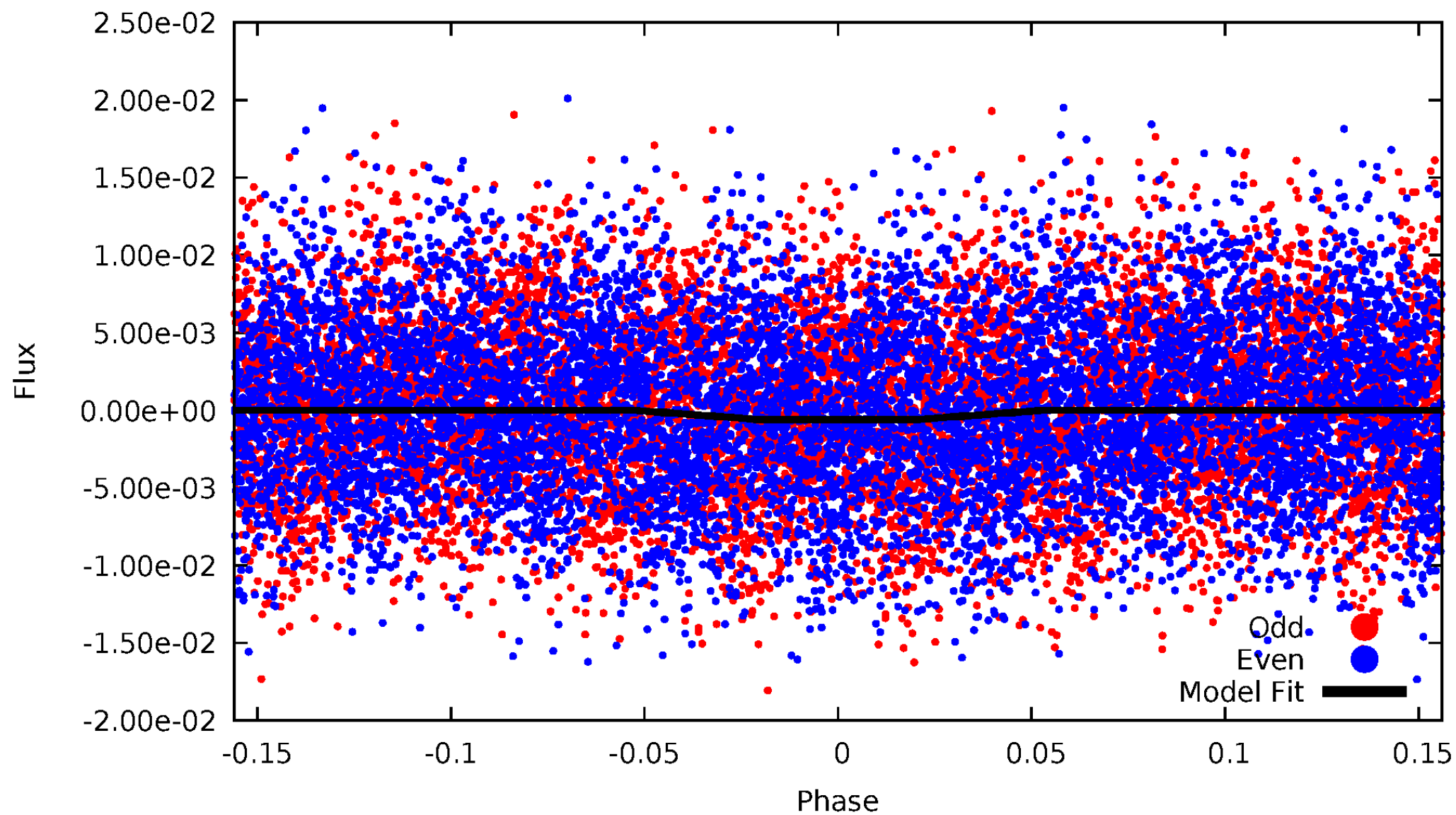
DV Odd/Even

TCE 007778980-03



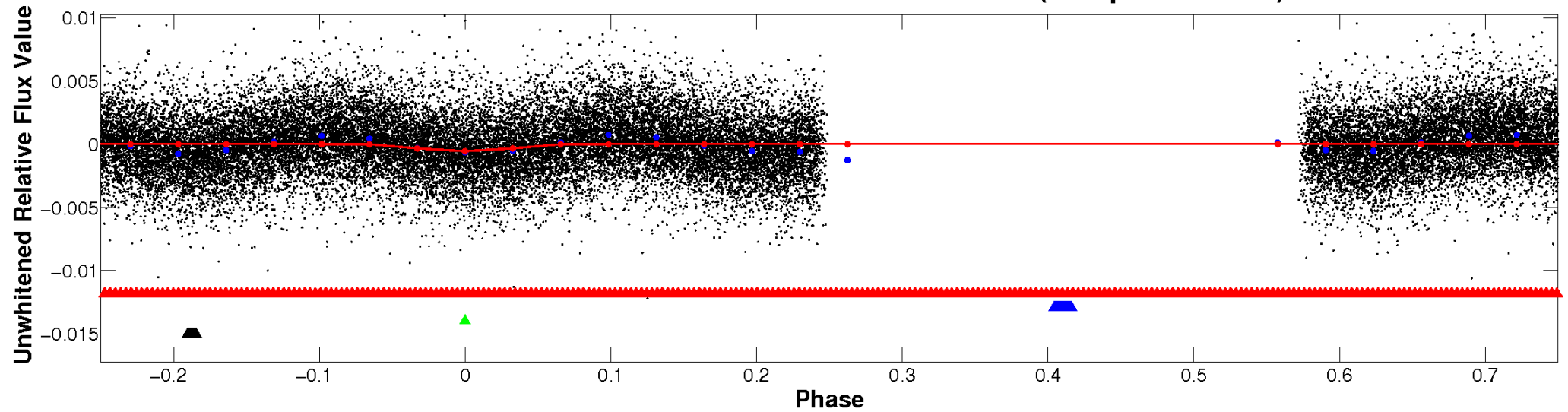
ALT Odd/Even

TCE 007778980-03

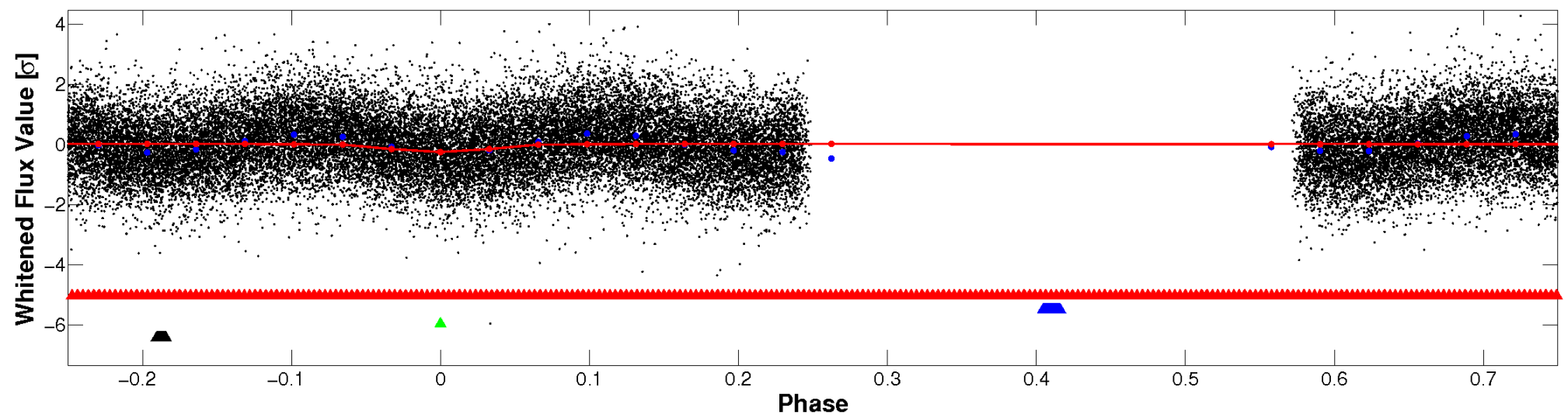


Non-Whitened Vs. Whitened Light Curve

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

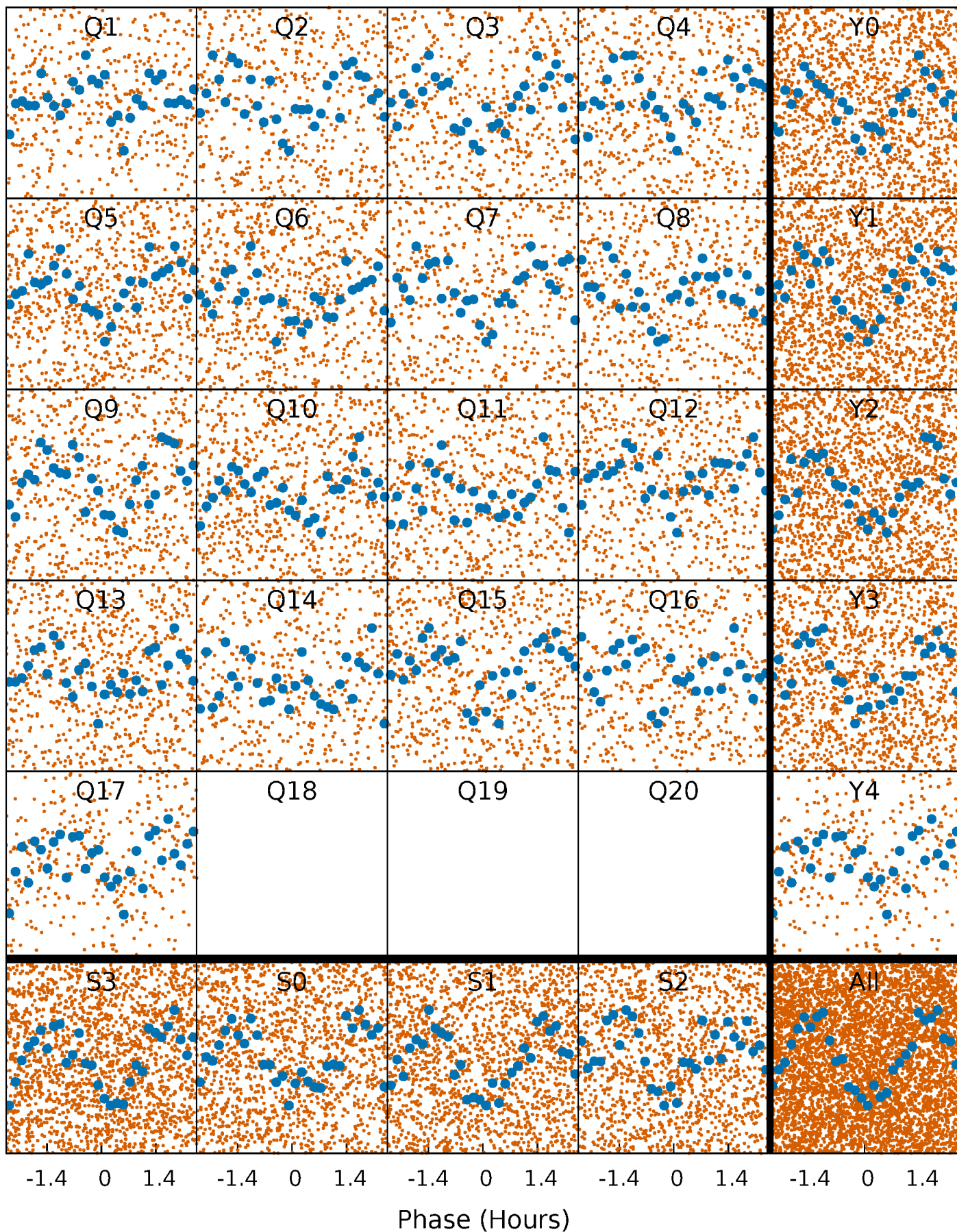


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



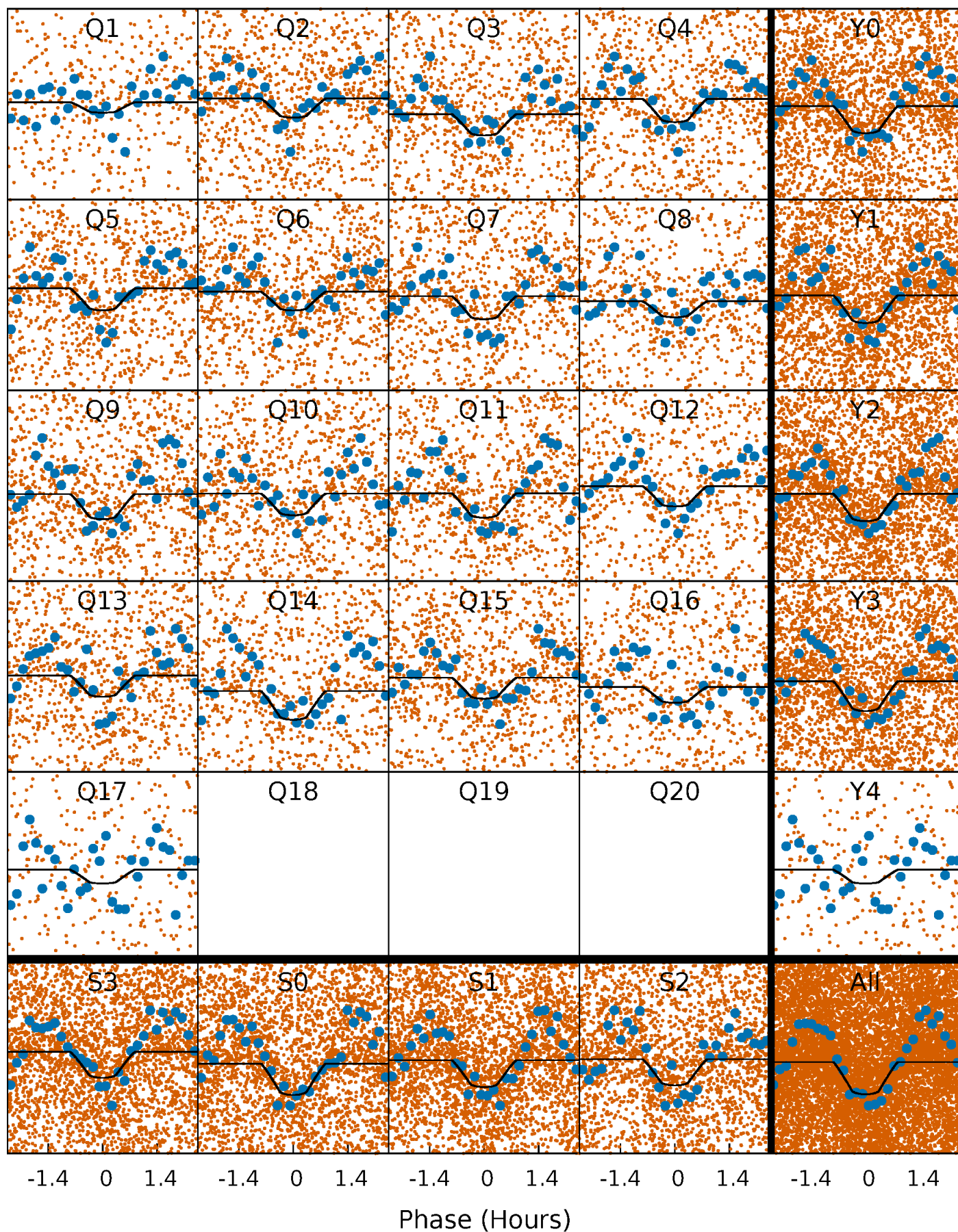
PDC Quarter-Phased Transit Curves

TCE 007778980-03 P= 0.622942 Days $T_0=132.047758$ (BKJD)



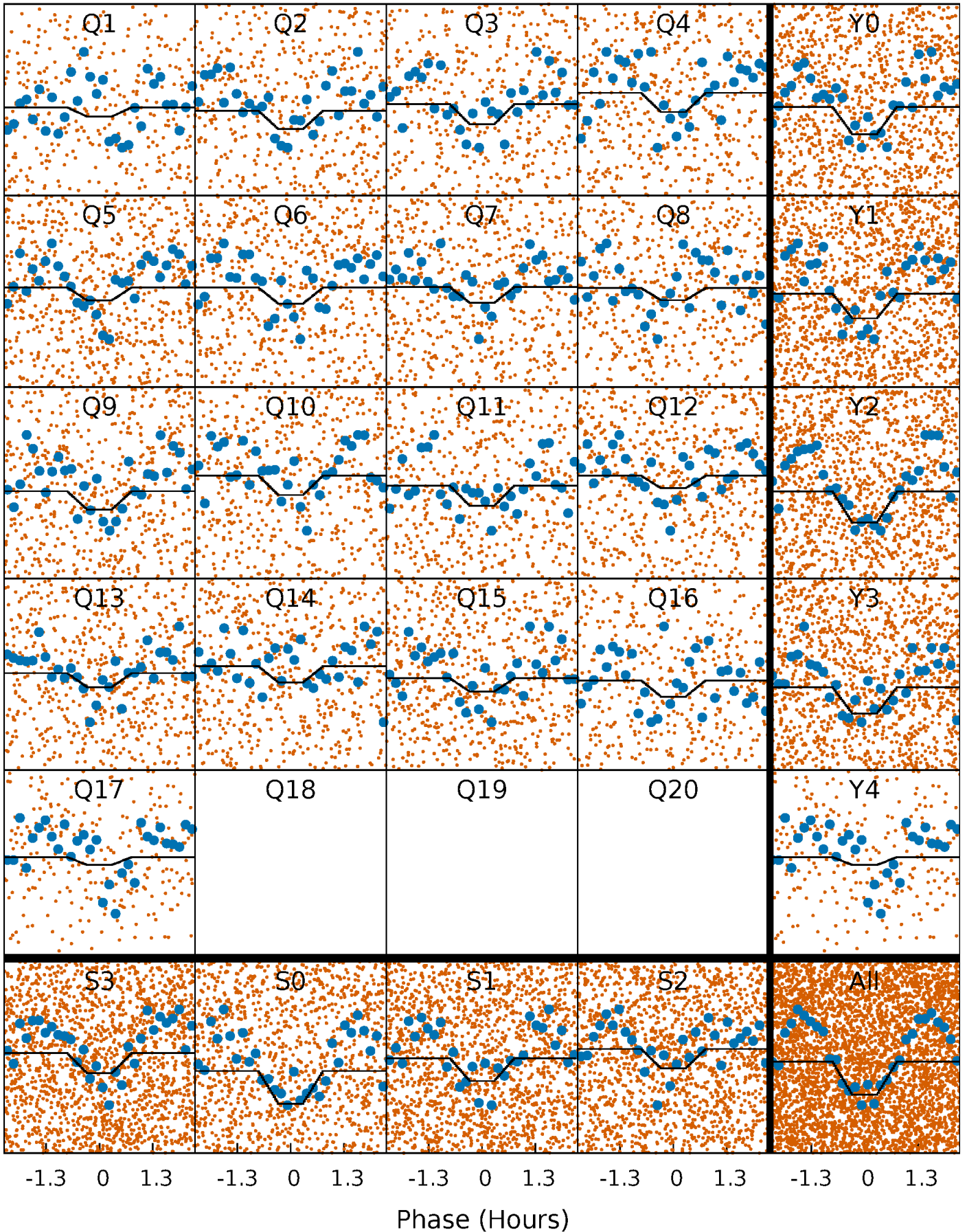
DV Quarter-Phased Transit Curves

TCE 007778980-03 P= 0.622942 Days $T_0=132.047758$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

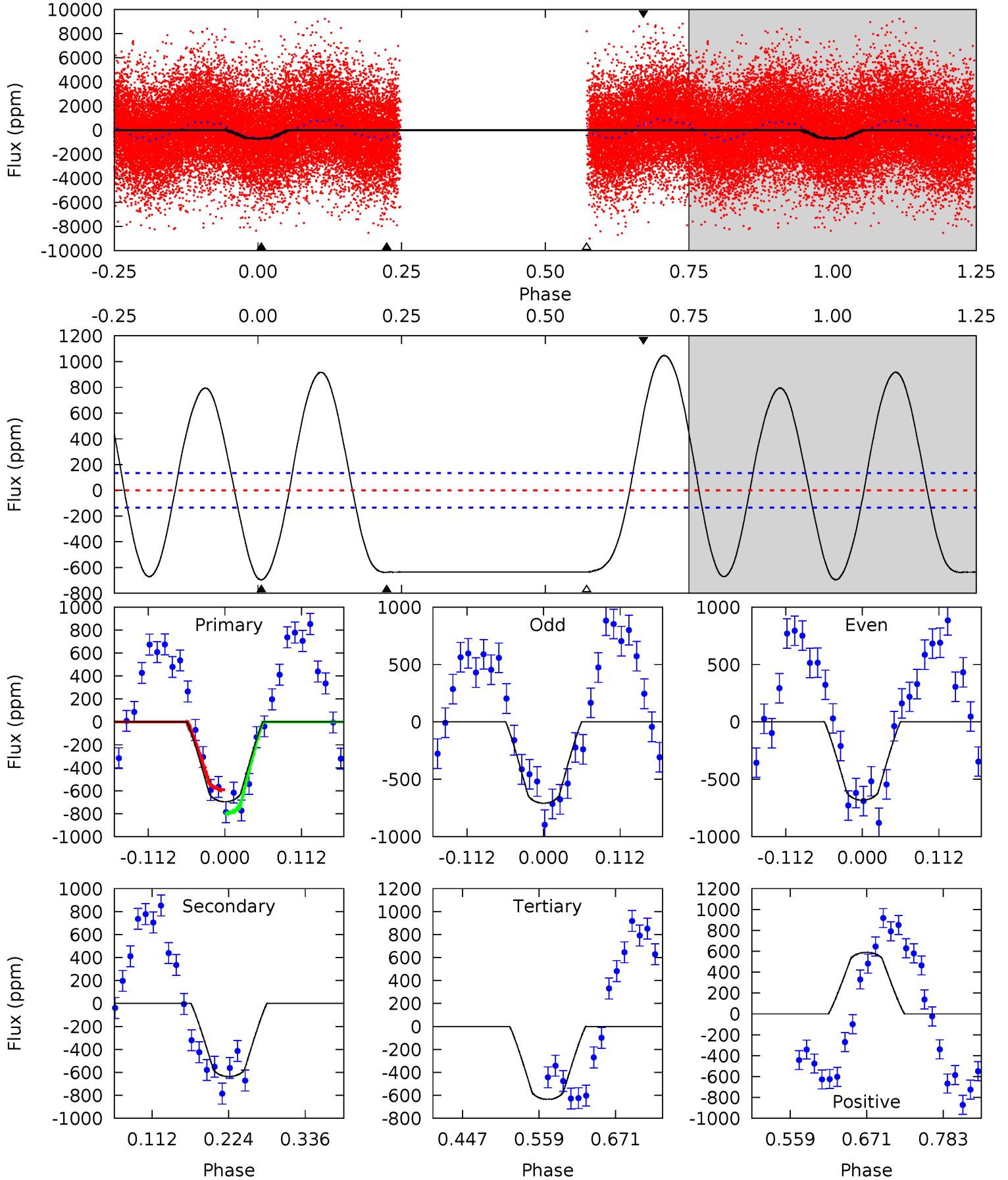
TCE 007778980-03 P= 0.622946 Days $T_0=132.048154$ (BKJD)



DV Model-Shift Uniqueness Test

007778980-03, P = 0.622942 Days, E = 131.424816 Days

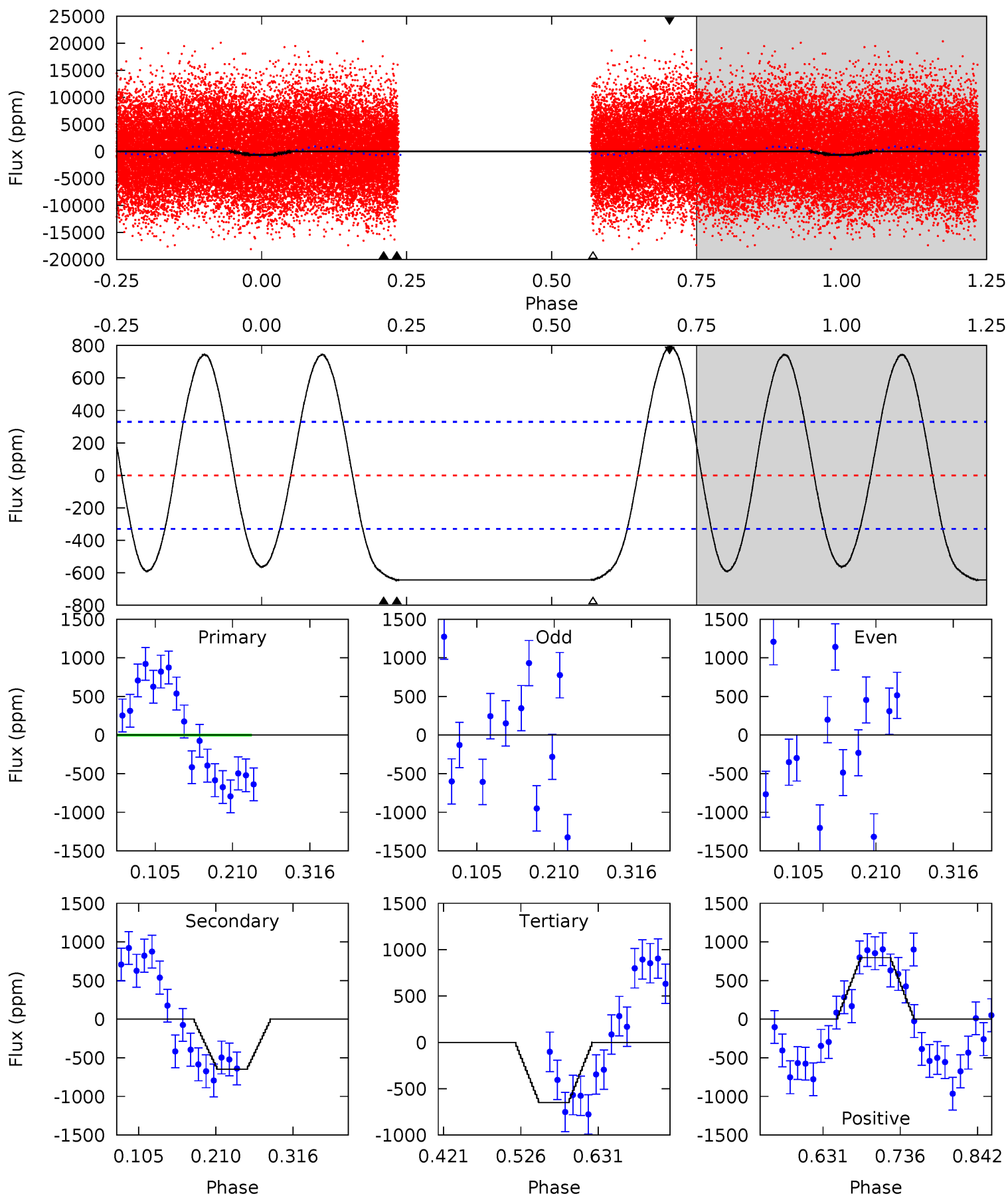
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.6	21.6	21.6	20.0	4.54	1.59	19.9	2.05	3.62	0.07	1.65	0.45	0.97	0.60	3.58



Alt Model-Shift Uniqueness Test

007778980-03, P = 0.622946 Days, E = 131.425208 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.43	8.96	8.94	11.0	4.55	1.62	6.73	-0.51	-2.57	0.02	-2.04	0.14	1.01	0.55	0.25



Stellar Parameters For KIC 007778980

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7700^{+213}_{-320}	$3.617^{+0.484}_{-0.085}$	$-0.140^{+0.200}_{-0.300}$	$3.670^{+0.615}_{-1.846}$	$2.032^{+0.291}_{-0.499}$	$0.058^{+0.303}_{-0.016}$
	+3%/-4%	+13%/-2%	+143%/-214%	+17%/-50%	+14%/-25%	+524%/-27%
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 007778980-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-637 ± 29	$8.23^{+4.97}_{-4.40}$	6491^{+484}_{-826}	7573^{+5303}_{-2050}	$1.717^{+6.322}_{-1.028}$
Alt.	-649 ± 72	$9.15^{+4.99}_{-4.52}$	6557^{+434}_{-759}	7219^{+4090}_{-2012}	$1.420^{+3.872}_{-0.846}$

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

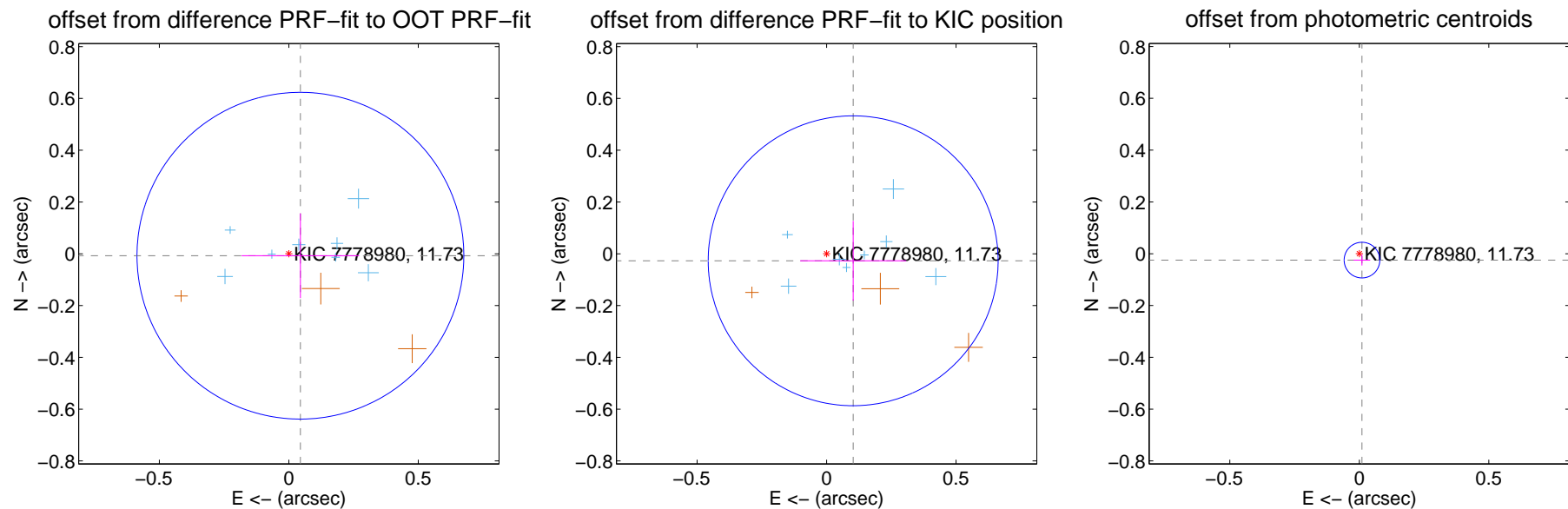
DV Centroid Data

Supplemental centroid analysis for 007778980-03. **Kepler magnitude: 11.73.** Transit SNR 14.56

There are 10 quarters with good PRF difference image offsets

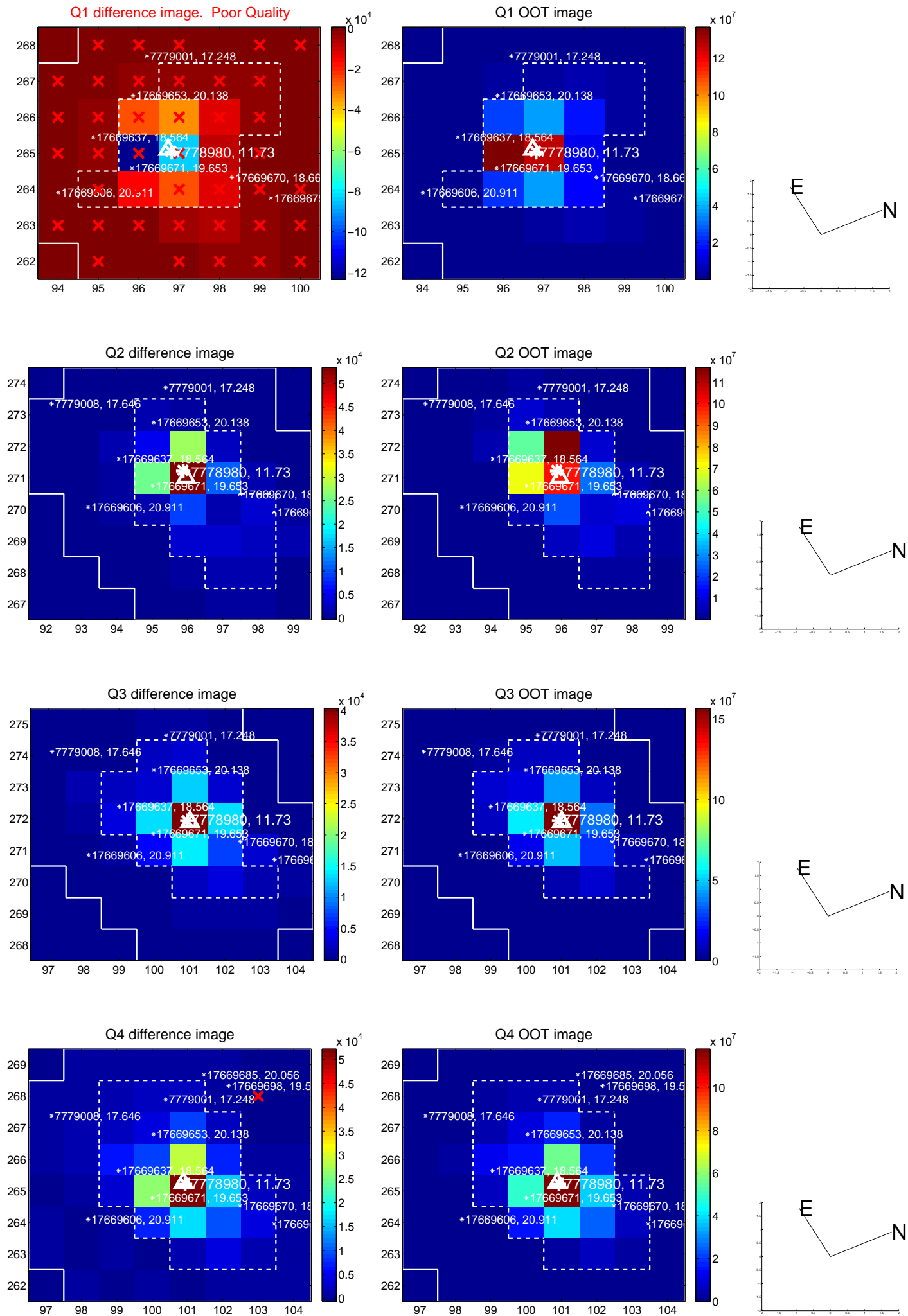
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.045 ± 0.210	0.22	-0.045 ± 0.227	-0.007 ± 0.164
PRF-fit source offset from KIC position	0.106 ± 0.187	0.57	-0.103 ± 0.205	-0.027 ± 0.154
photometric centroid source offset	0.03 ± 0.02	1.16	-0.01 ± 0.03	-0.02 ± 0.02

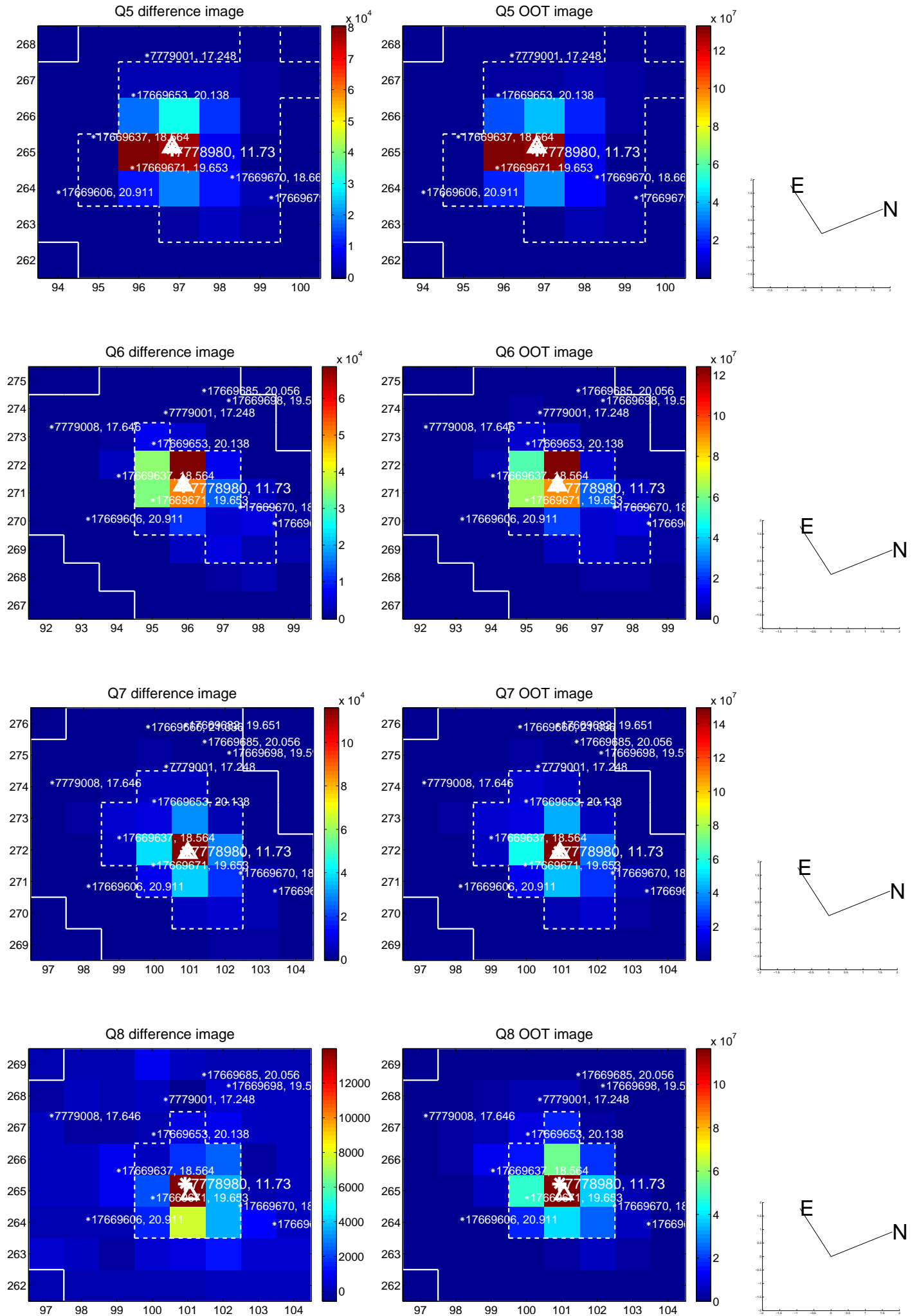


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

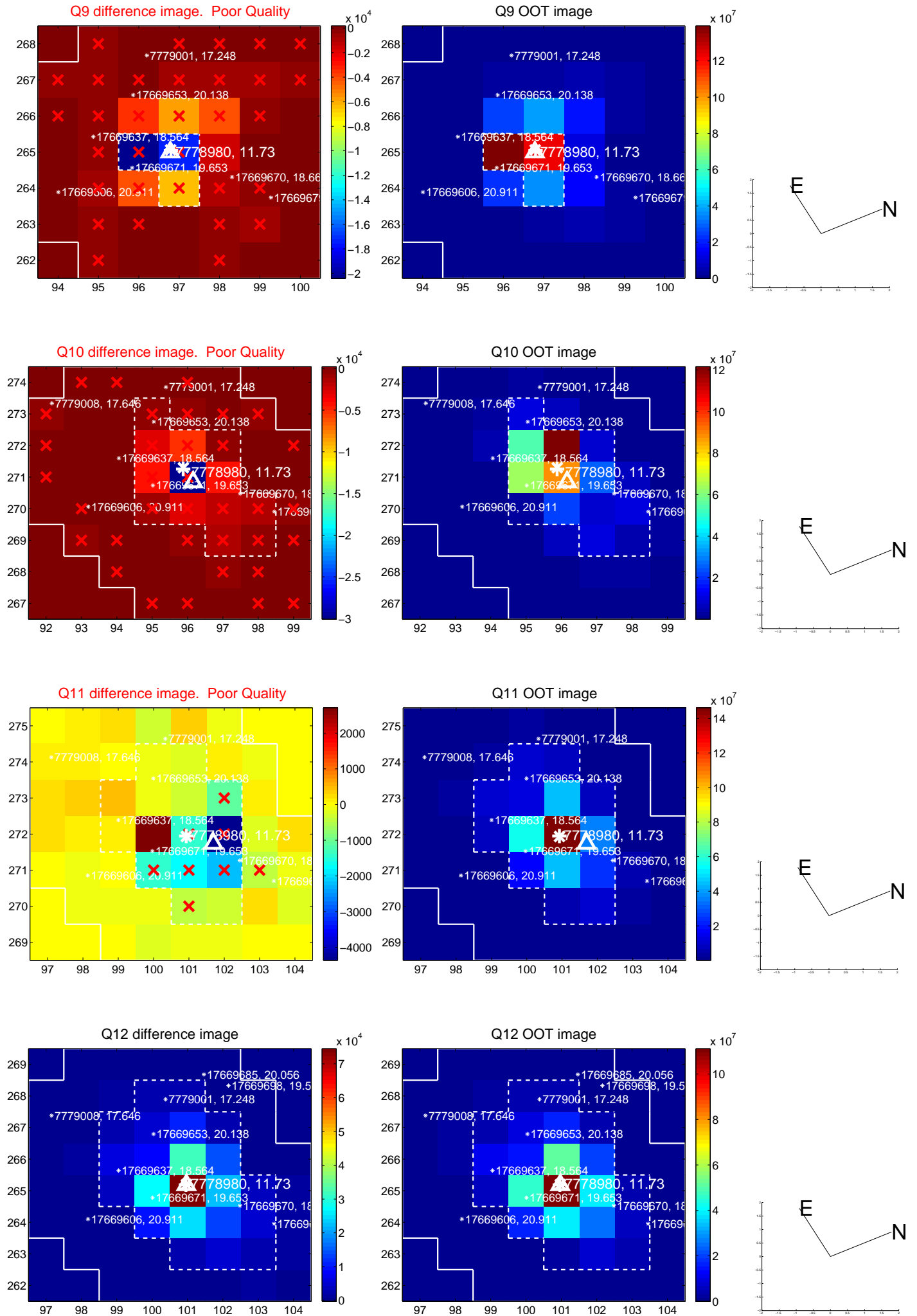
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



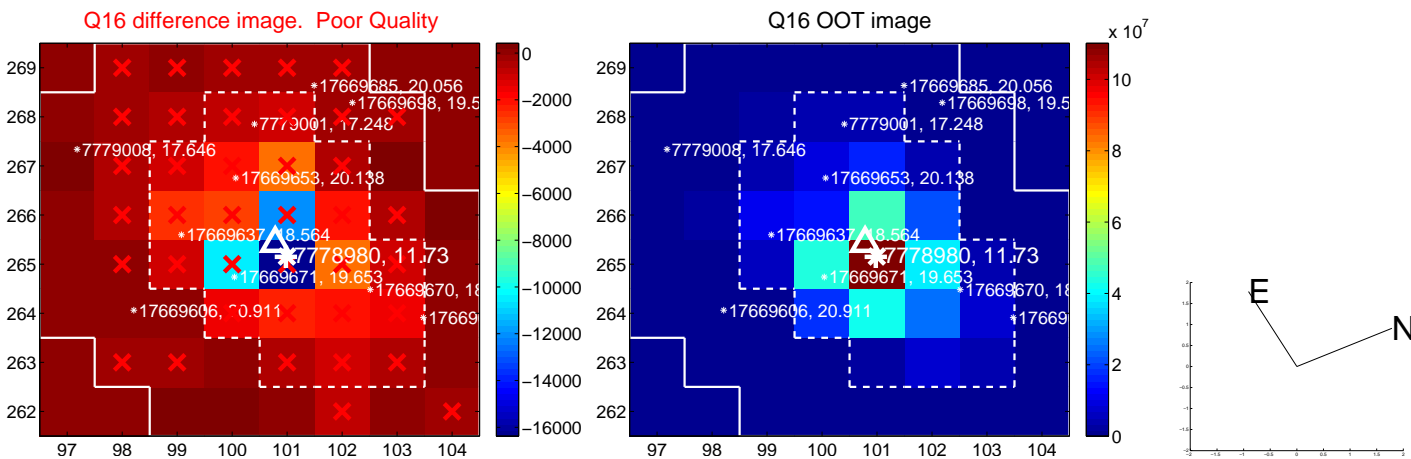
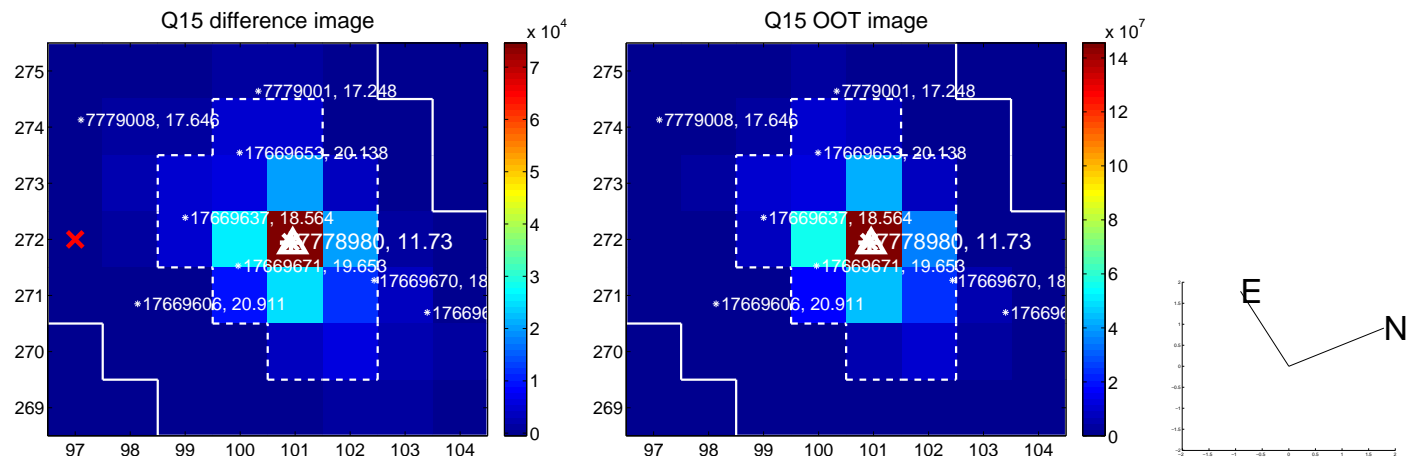
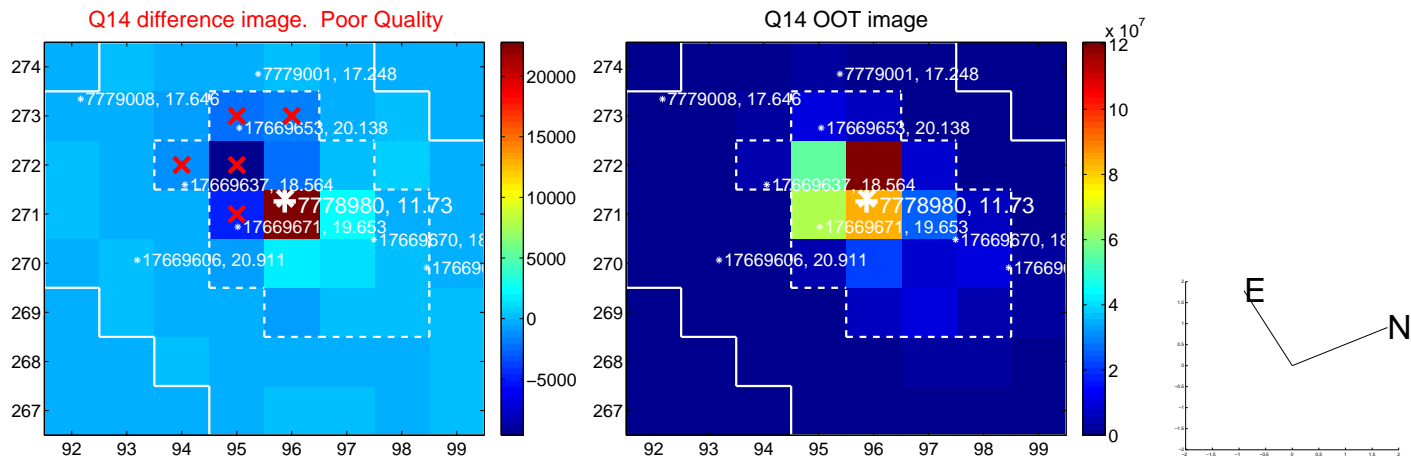
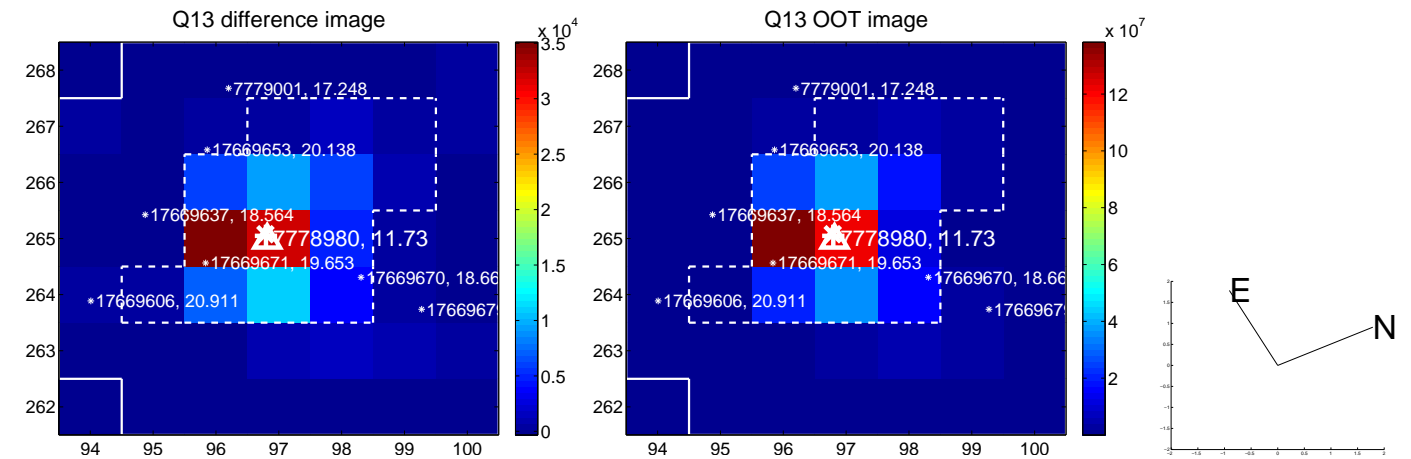
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



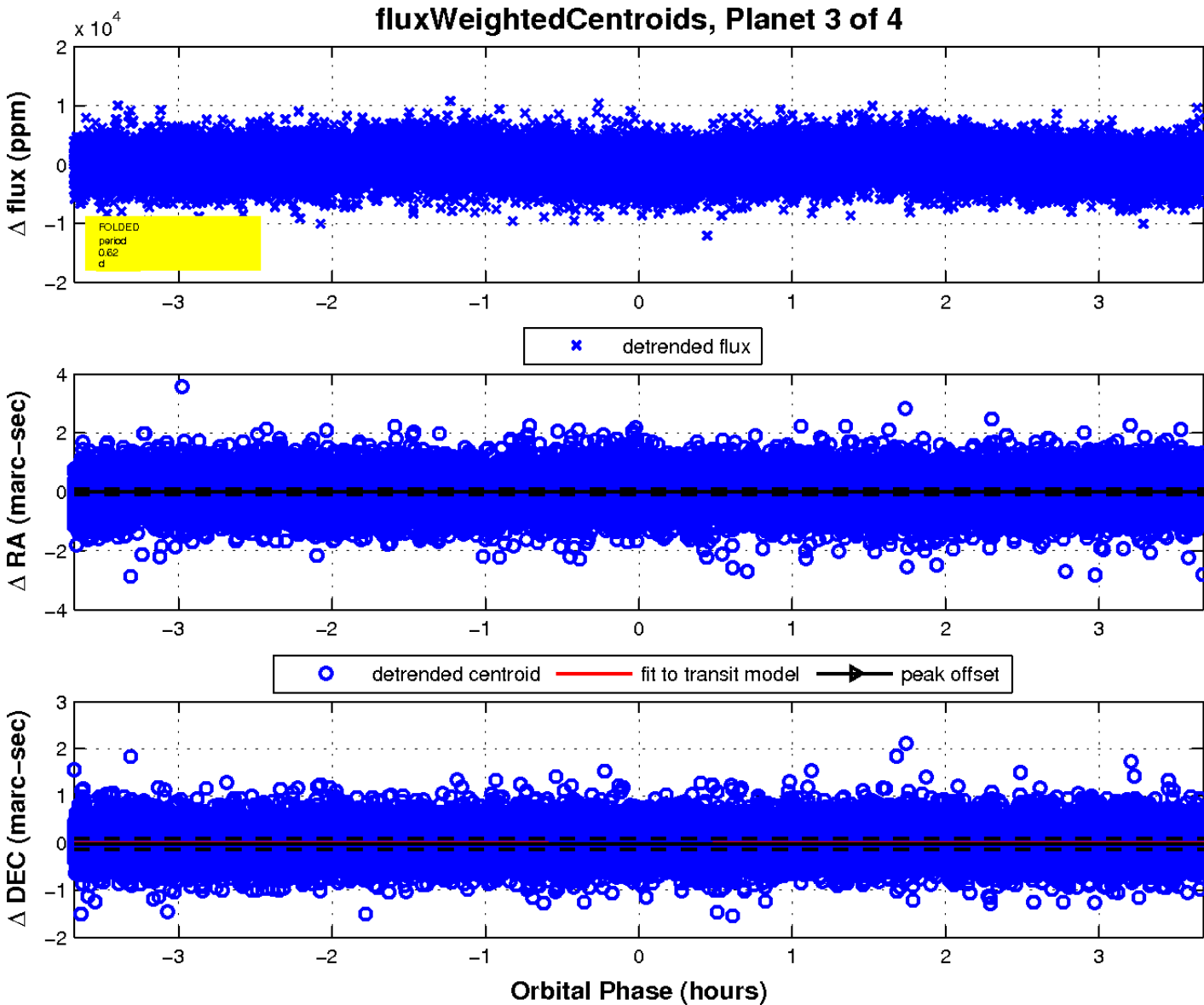
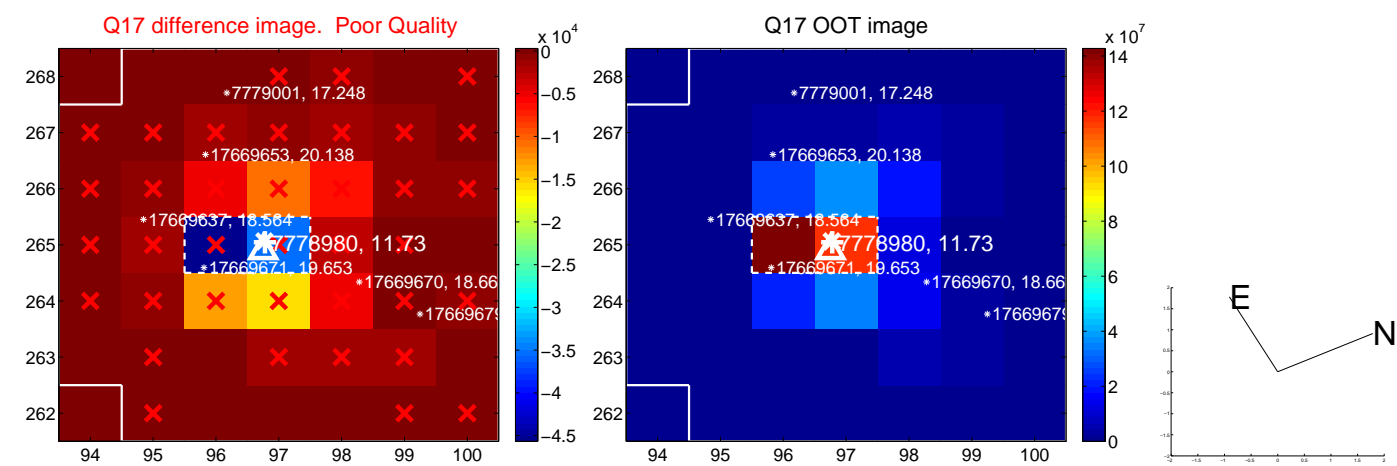
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



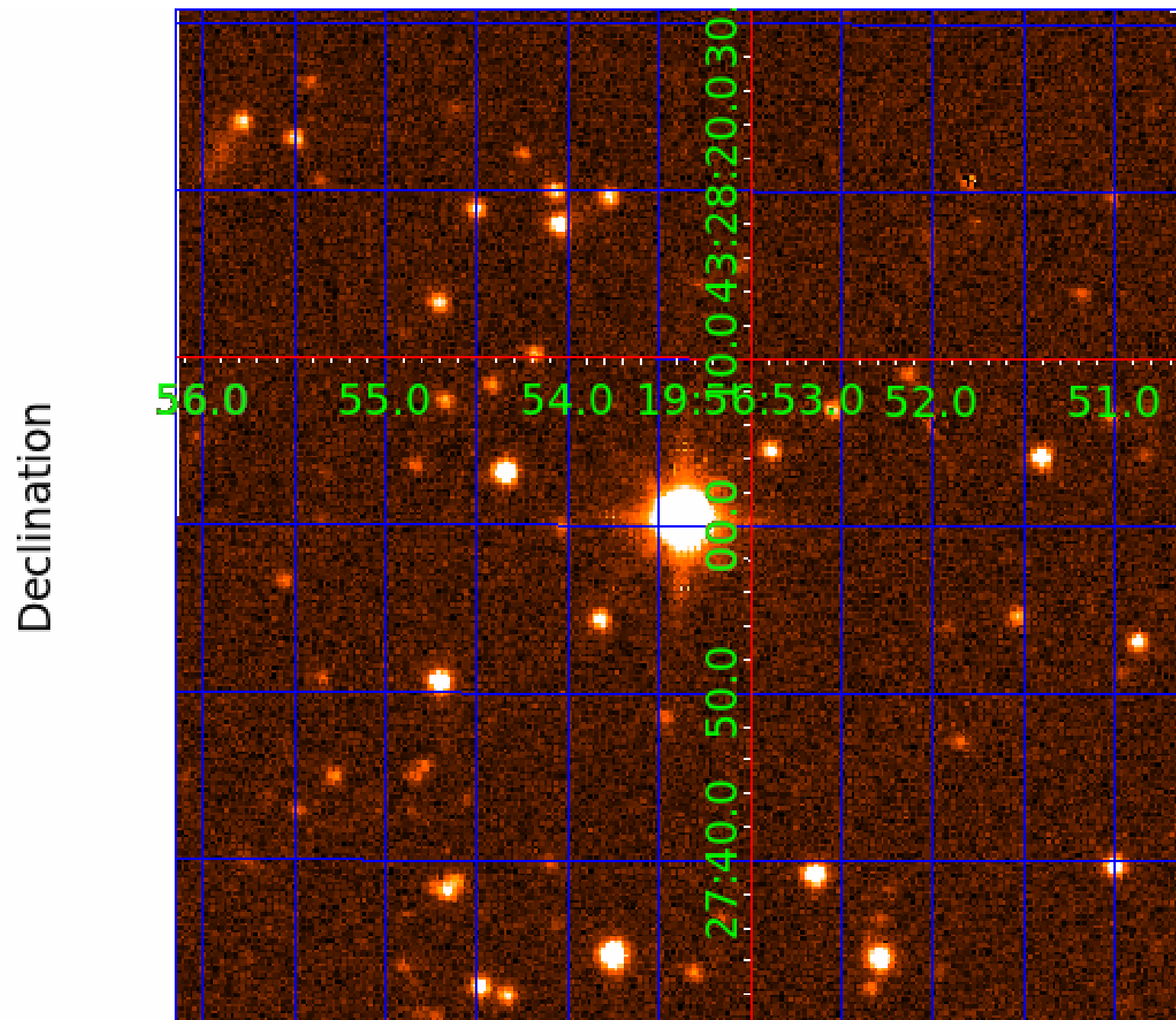
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 007778980

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})
007778980-01	OBS	No	1.574221	132.062696	558.6	1.971	9.5	12.7	3.67	7700	10.18	37660.00
007778980-02	OBS	No	0.622945	131.676746	578.3	1.285	12.6	15.0	3.67	7700	10.35	129628.82
007778980-03	OBS	No	0.622942	132.047758	554.3	1.227	11.1	14.6	3.67	7700	9.31	129629.68
007778980-04	OBS	No	0.622940	131.932869	114.0	1.500	9.4	-1.0	3.67	7700	3.97	129630.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007778980-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007778980-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007778980-03	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
007778980-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

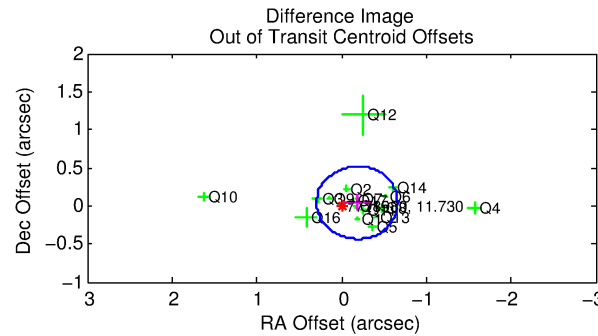
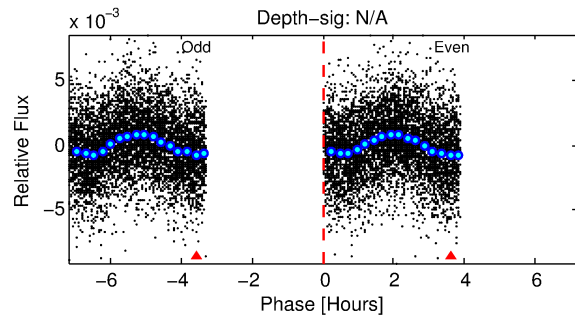
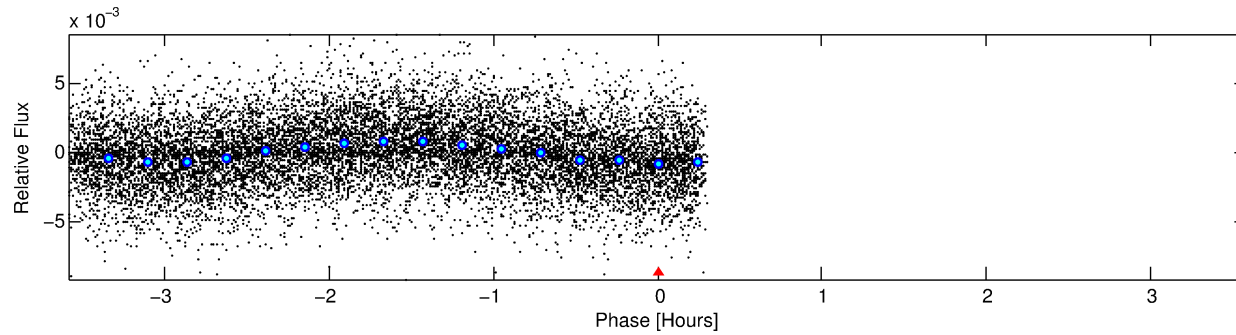
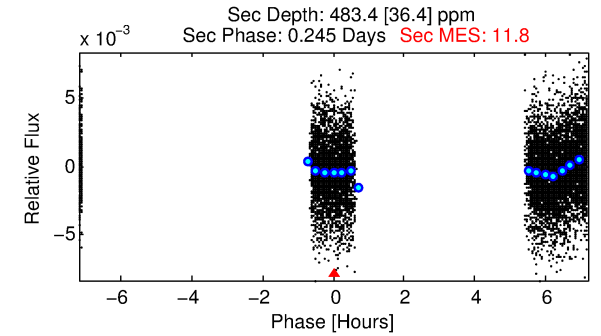
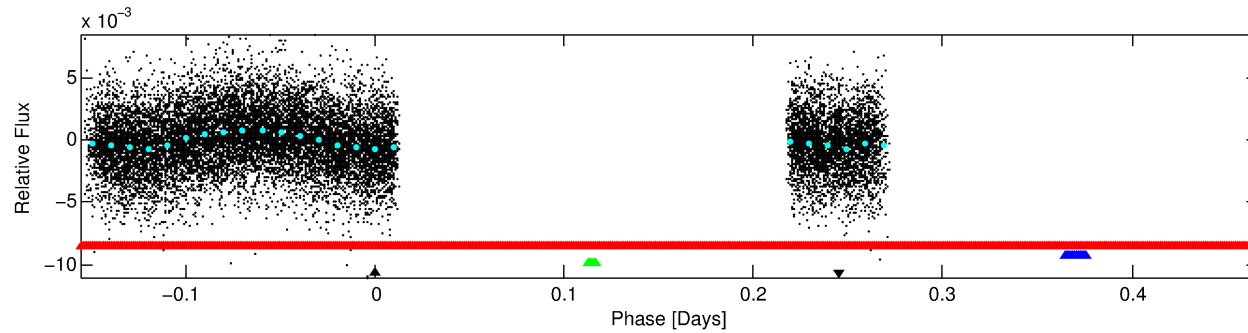
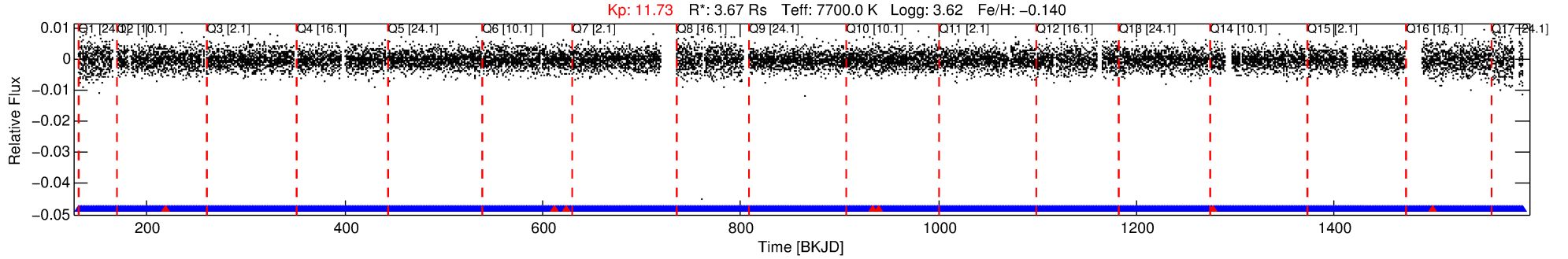
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007778980-04

No Significant Match Found

DV One-Page Summary

KIC: 7778980 Candidate: 4 of 4 Period: 0.623 d



TPS TCE Results:

Period = 0.62294 d
Epoch = 131.9329 BKJD

DV fit results are unavailable

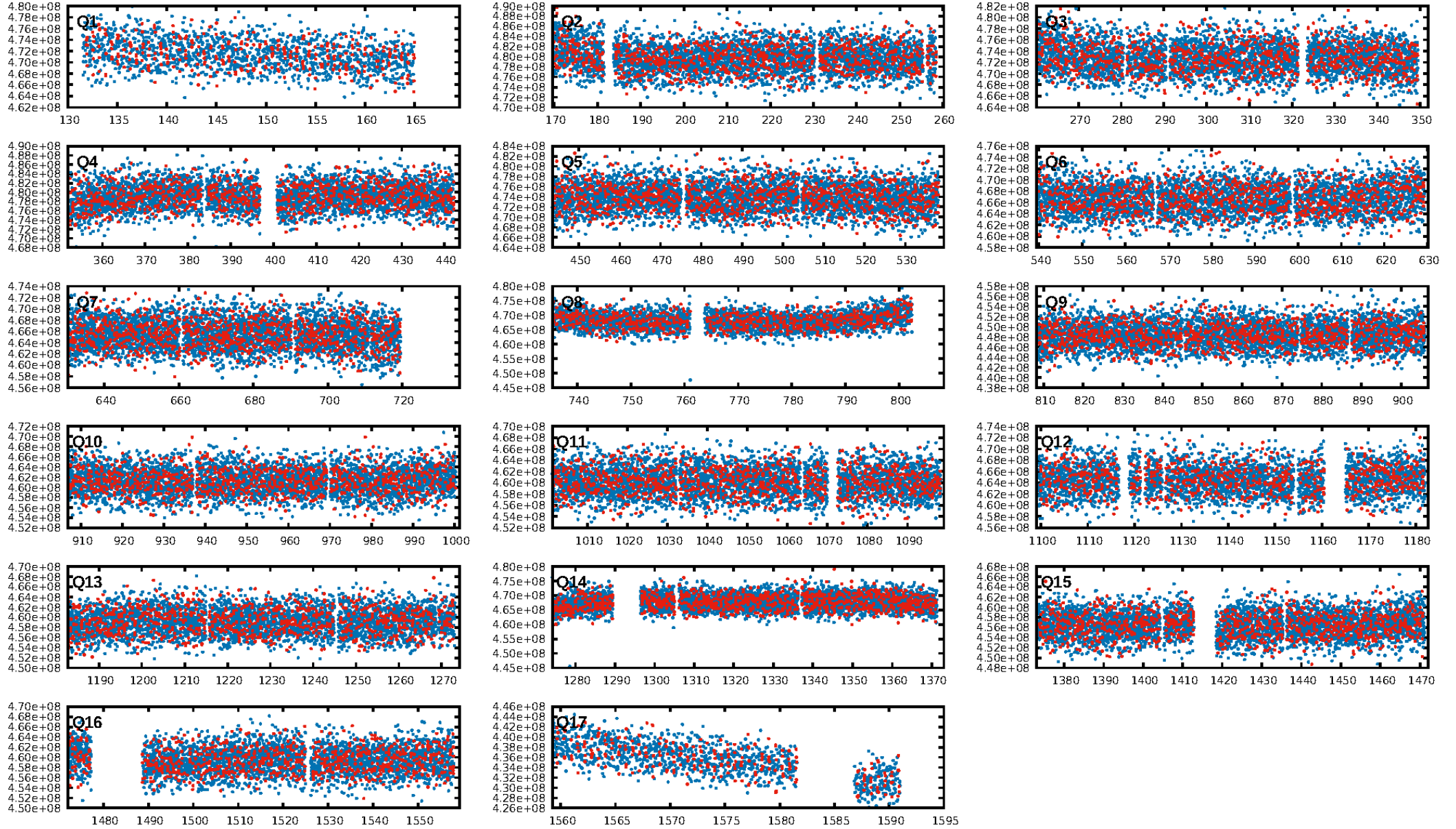
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1729/1736]
GhostDiagnostic-chr: 2.296
Centroid-sig: 3.3%
Centroid-so: 0.101 arcsec [4.13σ]
OotOffset-rm: 0.189 arcsec [1.18σ]
KicOffset-rm: 0.228 arcsec [1.47σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.65 [11/17]
DiffImageOverlap-fno: 0.00 [0/17]

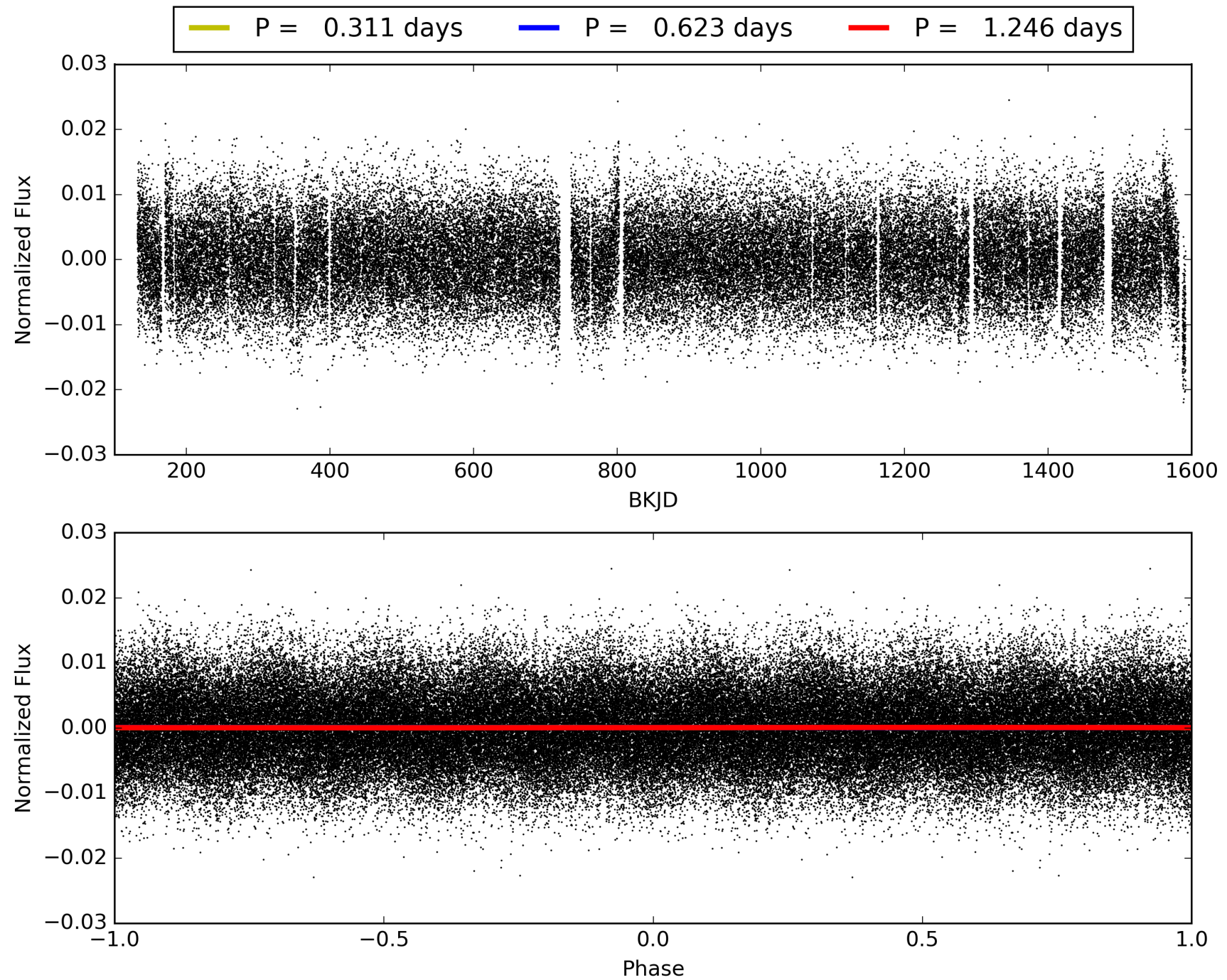
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:44:46 Z

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

TCE 007778980-04, PDC Light Curves

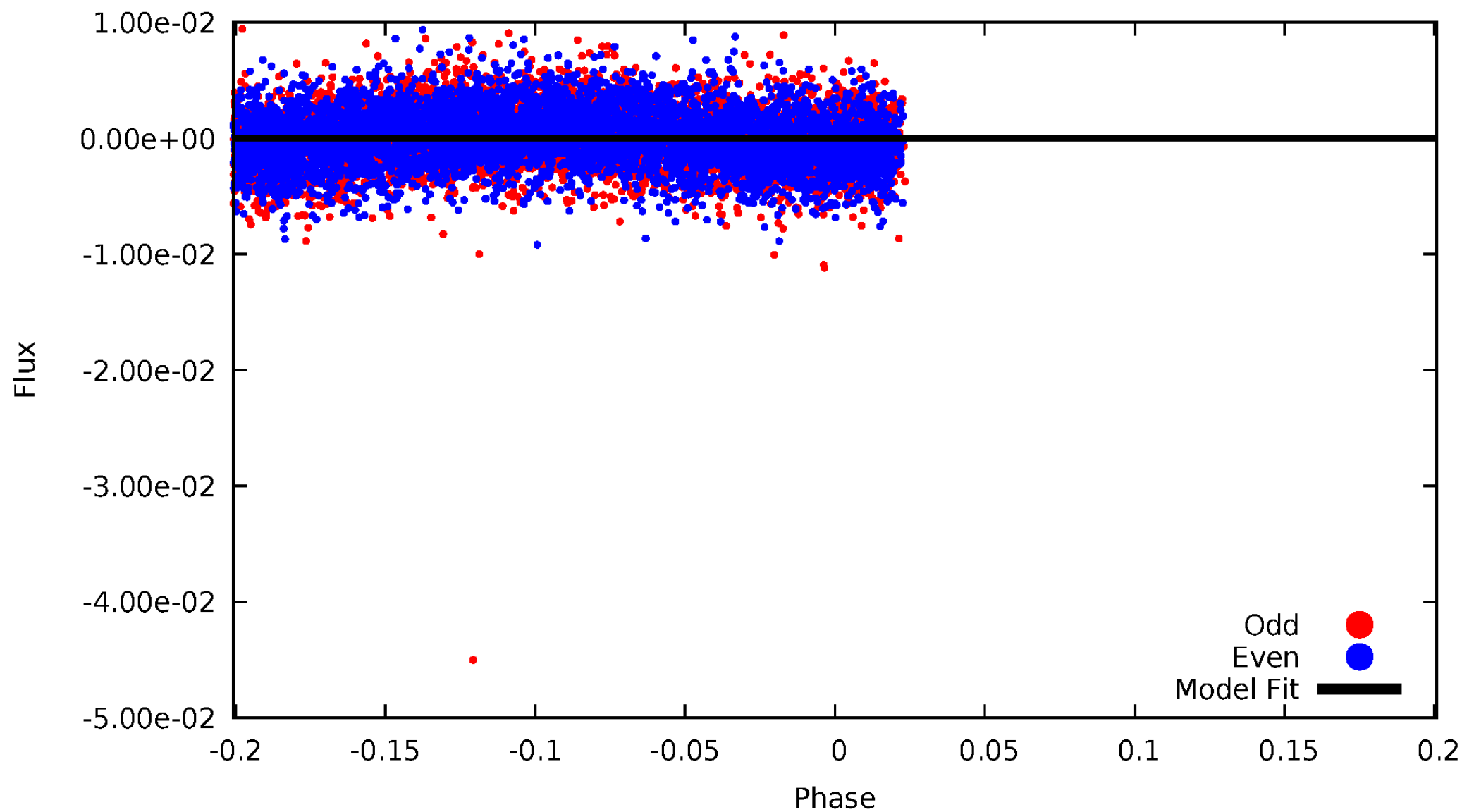


TCE 007778980-04



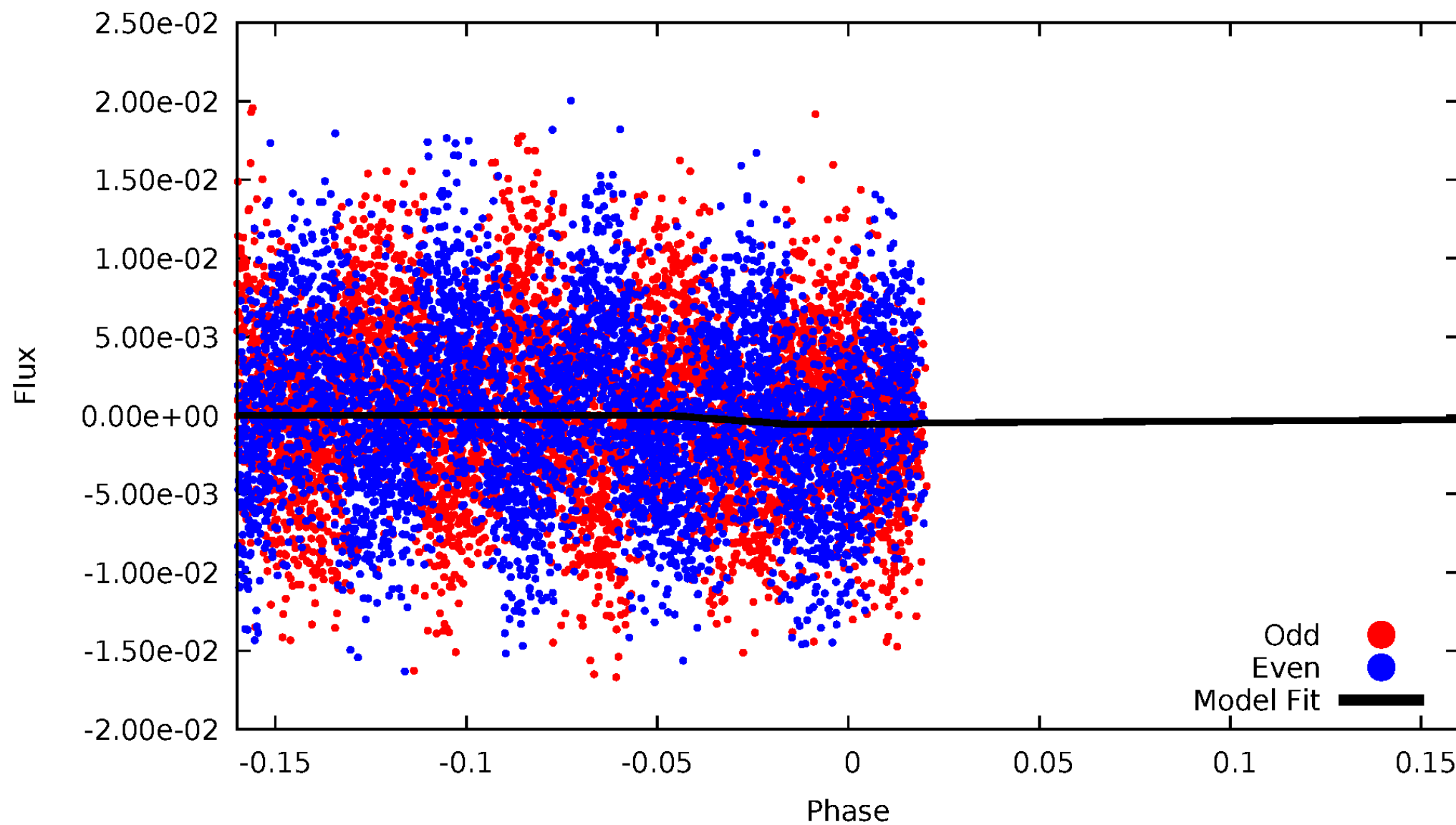
DV Odd/Even

TCE 007778980-04



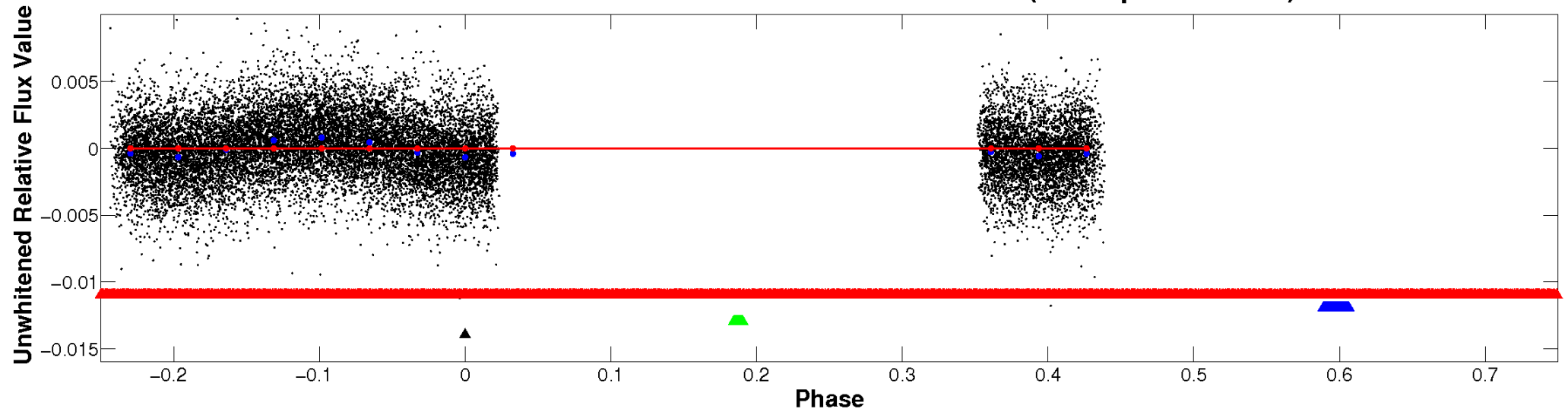
ALT Odd/Even

TCE 007778980-04

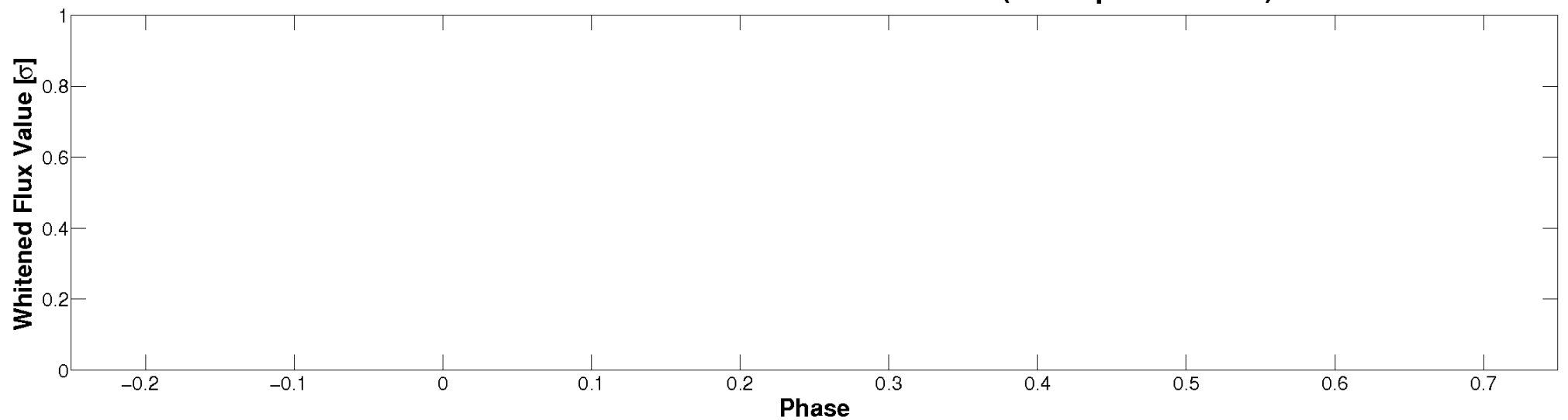


Non-Whitened Vs. Whitened Light Curve

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

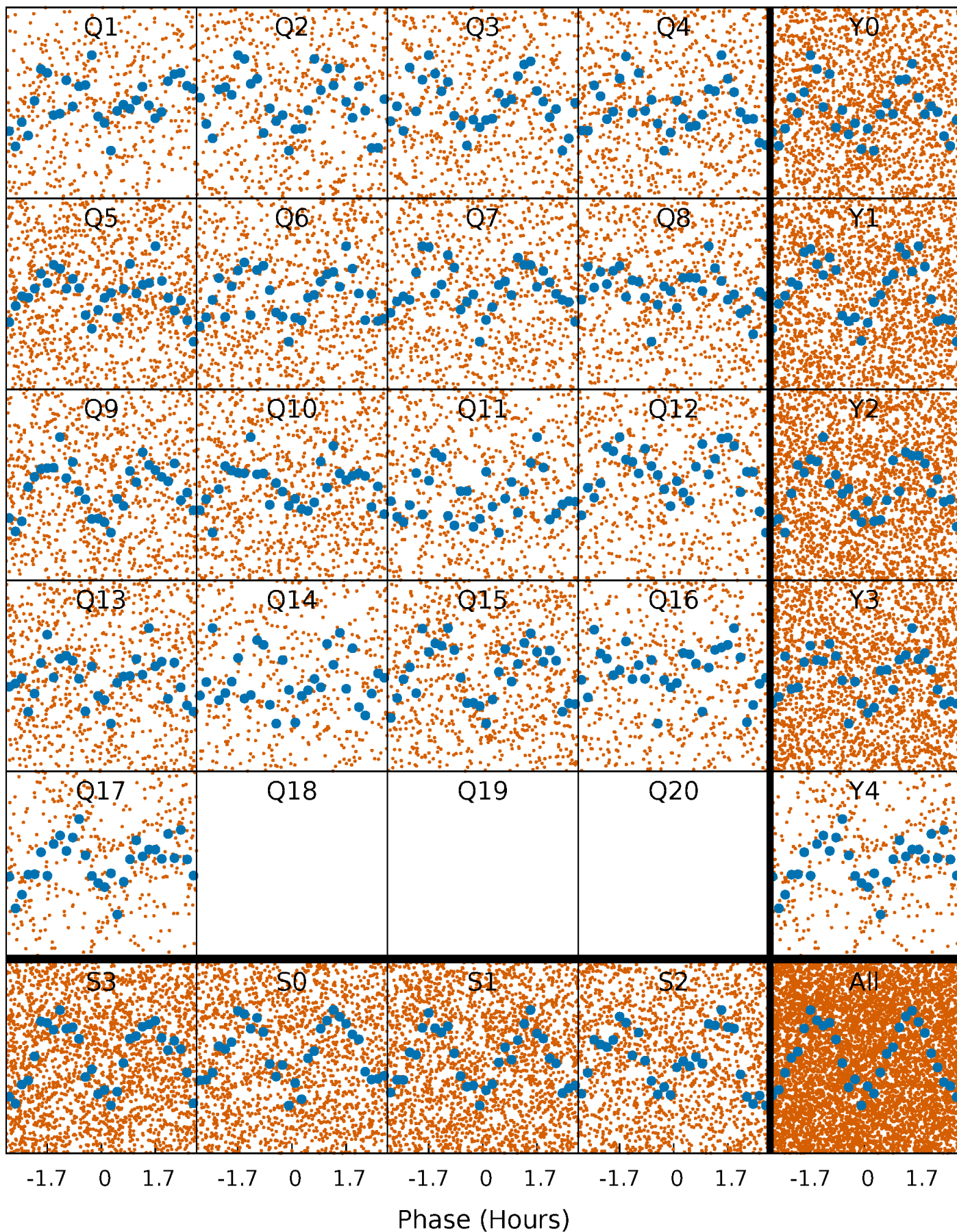


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



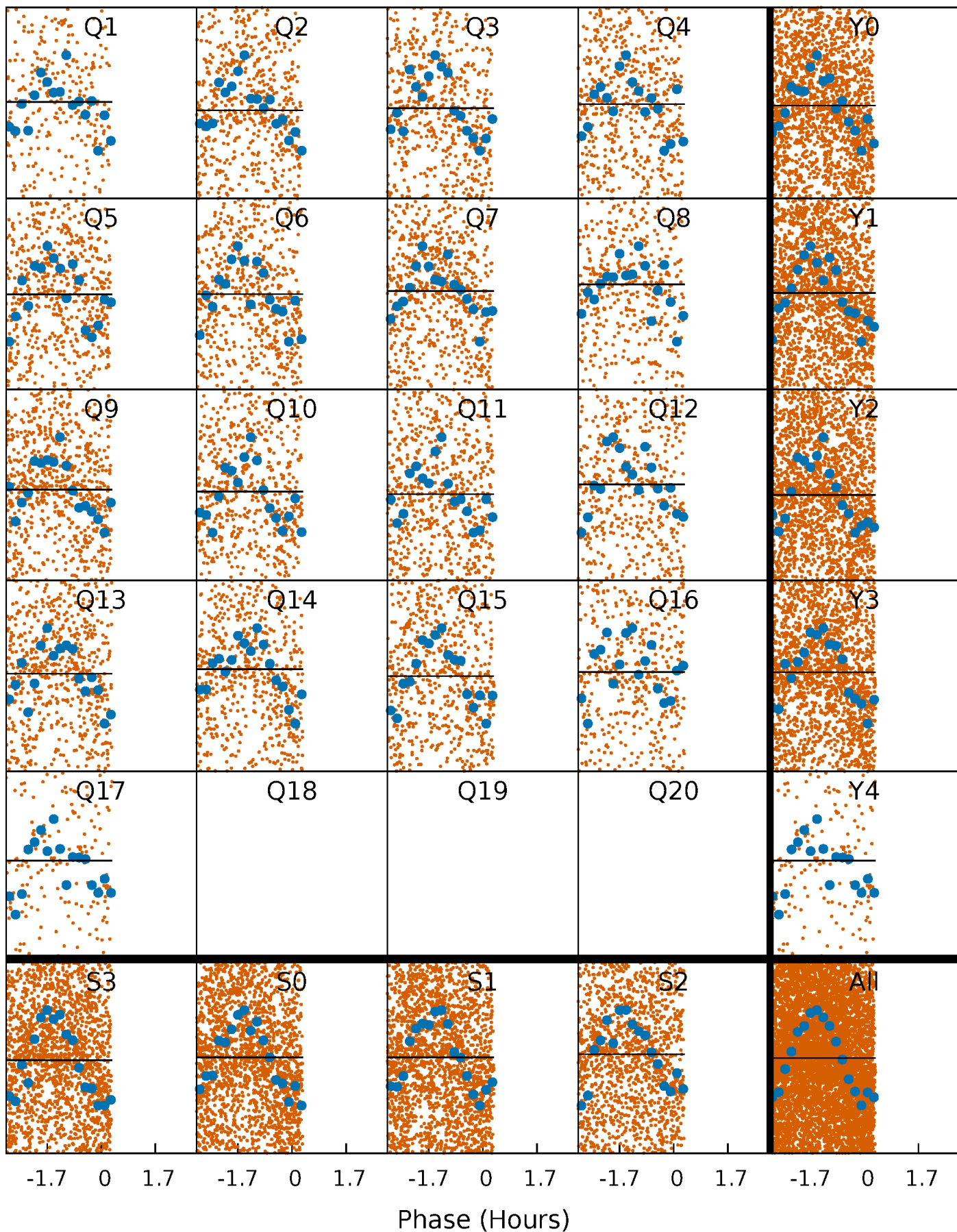
PDC Quarter-Phased Transit Curves

TCE 007778980-04 P= 0.622940 Days $T_0=131.932869$ (BKJD)



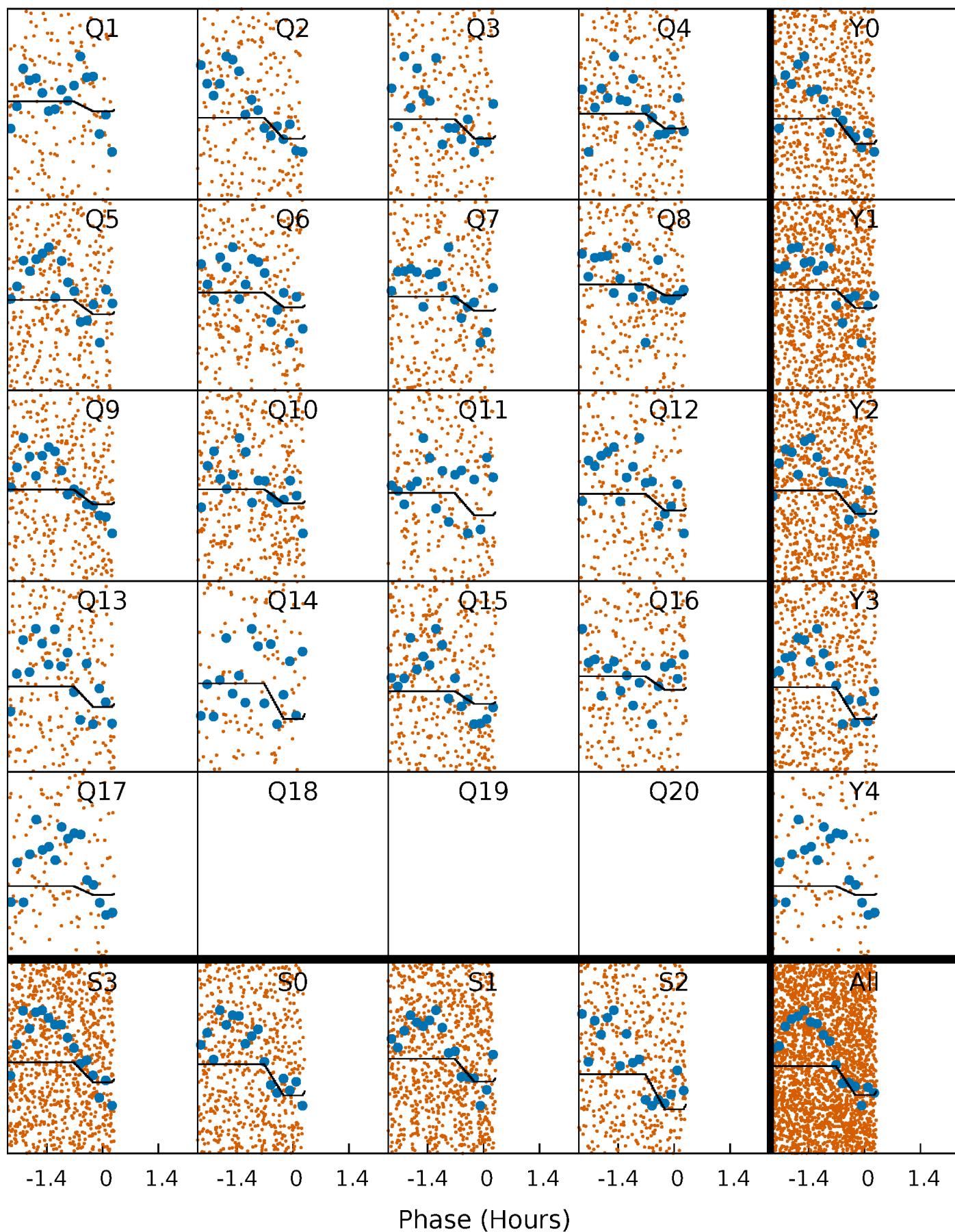
DV Quarter-Phased Transit Curves

TCE 007778980-04 P= 0.622940 Days $T_0=131.932869$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

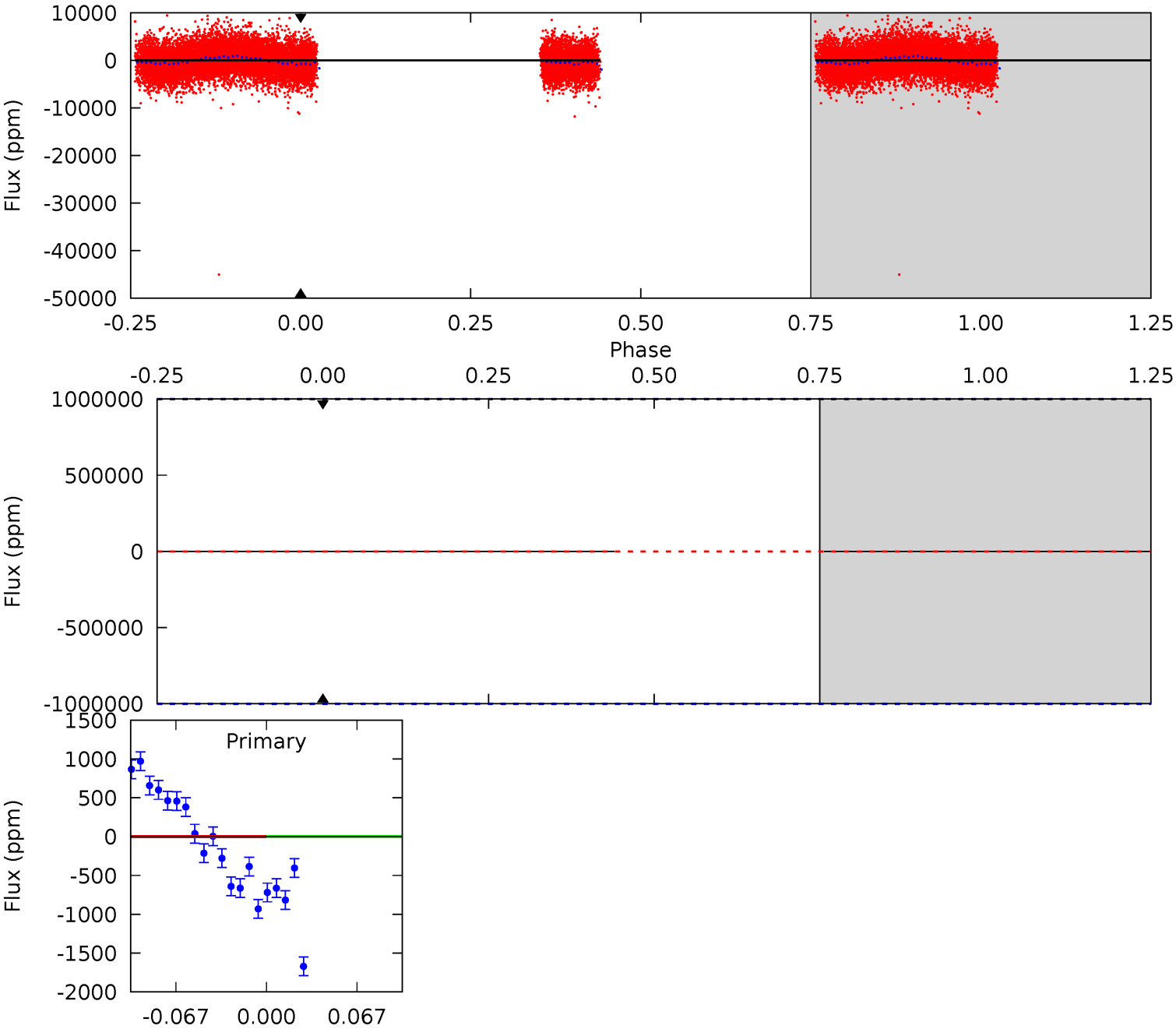
TCE 007778980-04 P= 0.622940 Days $T_0=131.934612$ (BKJD)



DV Model-Shift Uniqueness Test

007778980-04, P = 0.622940 Days, E = 131.309929 Days

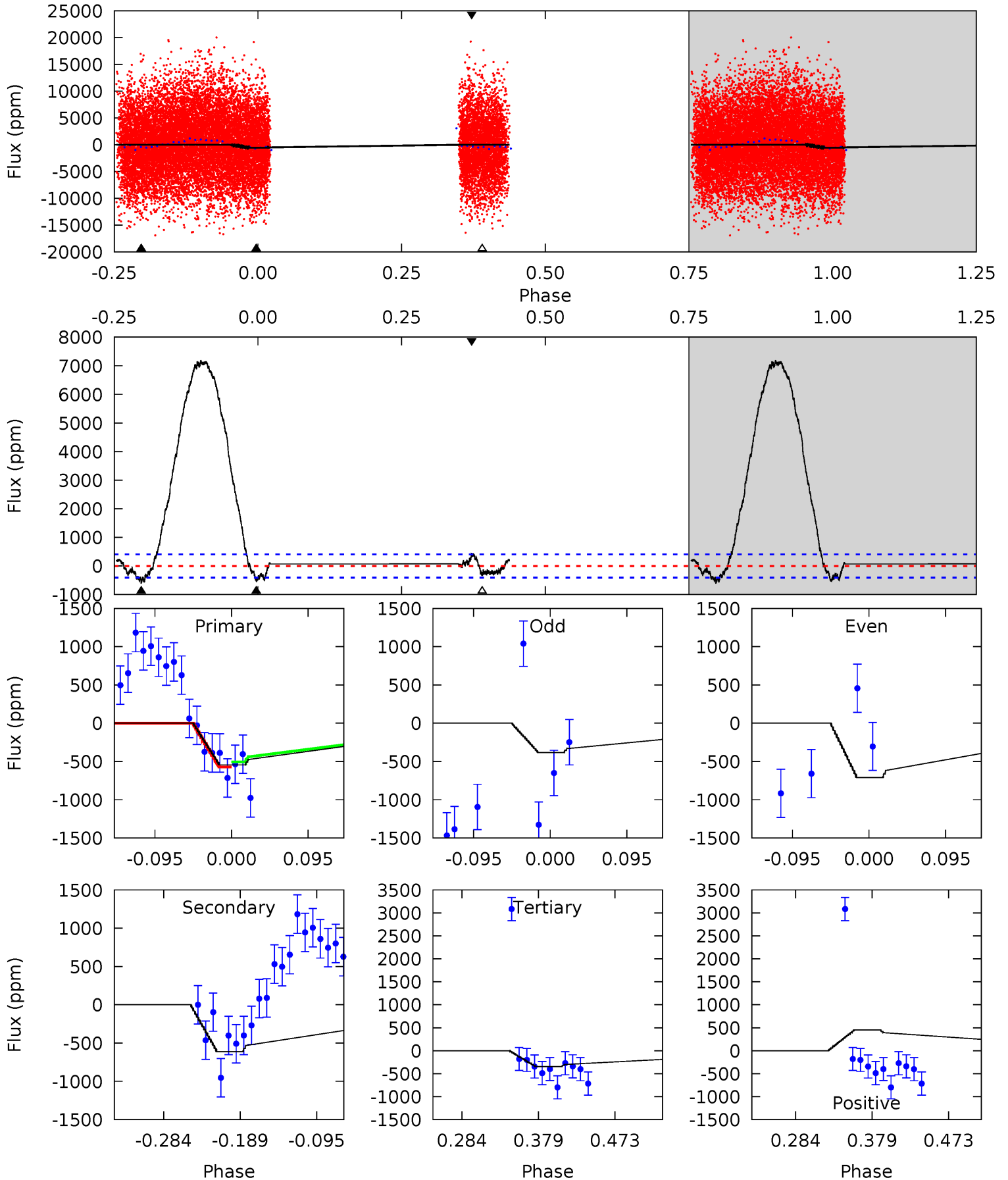
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

007778980-04, P = 0.622940 Days, E = 131.311672 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.12	6.87	3.88	5.07	4.58	1.67	26.2	2.24	1.05	2.99	1.79	1.82	1.21	0.92	0.35



Stellar Parameters For KIC 007778980

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7700^{+213}_{-320}	$3.617^{+0.484}_{-0.085}$	$-0.140^{+0.200}_{-0.300}$	$3.670^{+0.615}_{-1.846}$	$2.032^{+0.291}_{-0.499}$	$0.058^{+0.303}_{-0.016}$
	+3%/-4%	+13%/-2%	+143%/-214%	+17%/-50%	+14%/-25%	+524%/-27%
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 007778980-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$25.37^{+30.29}_{-17.87}$	6489^{+537}_{-759}	-4988^{+54563}_{-33840}	$0.071^{+56.234}_{-41.163}$
Alt.	-612 ± 89	$27.19^{+32.40}_{-20.27}$	6540^{+453}_{-861}	-4365^{+12101}_{-948}	$0.151^{+1.986}_{-0.121}$

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

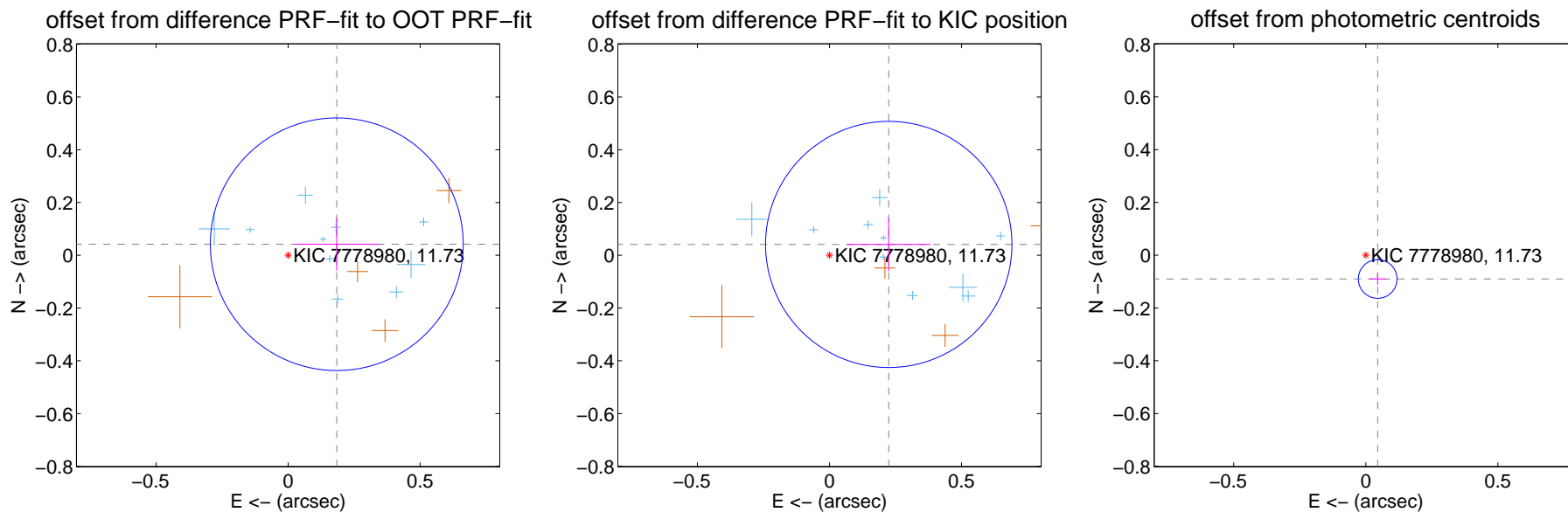
DV Centroid Data

Supplemental centroid analysis for 007778980-04. **Kepler magnitude: 11.73**. Transit SNR -1.00

There are 11 quarters with good PRF difference image offsets

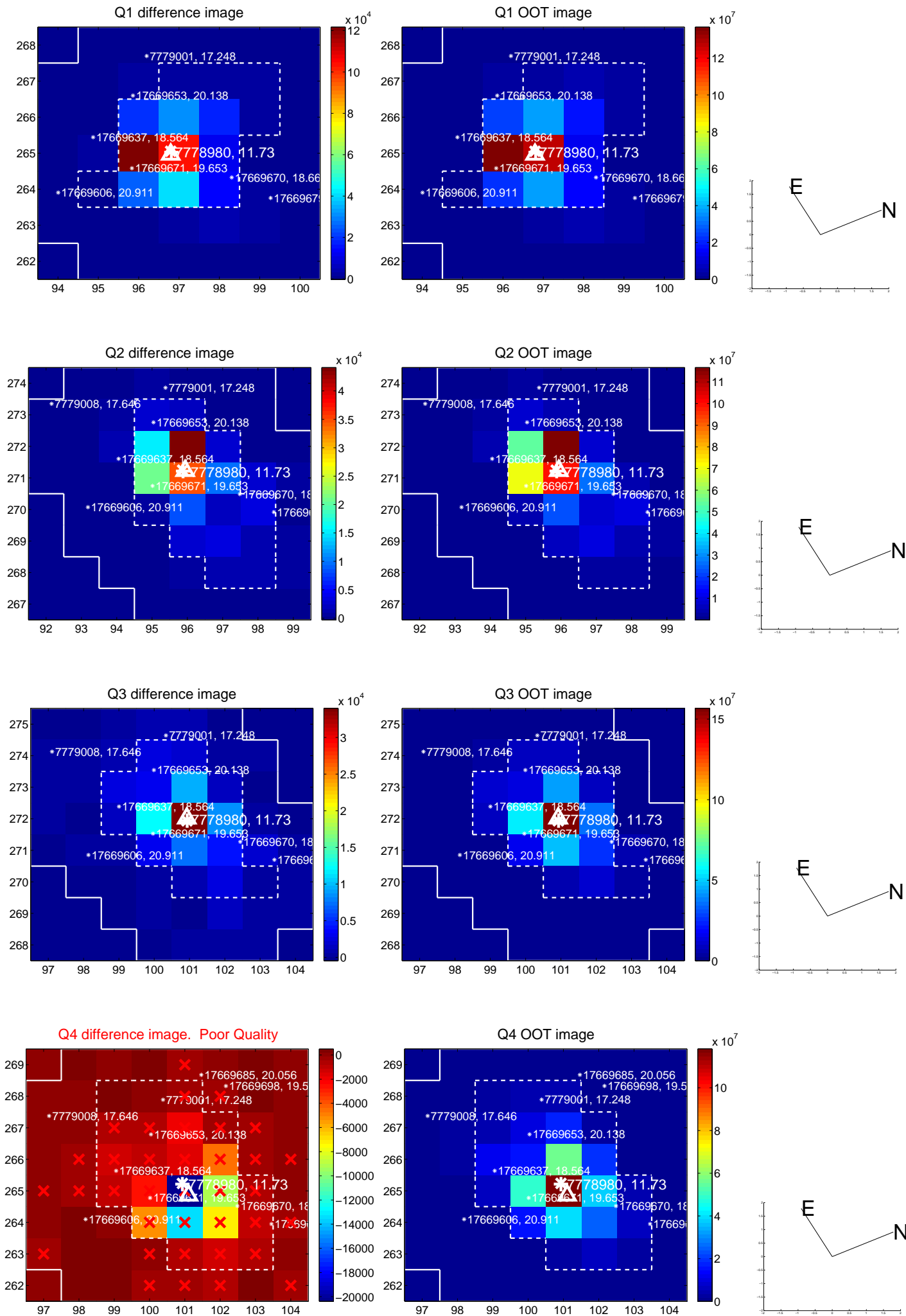
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.189 ± 0.160	1.18	-0.184 ± 0.163	0.042 ± 0.101
PRF-fit source offset from KIC position	0.228 ± 0.156	1.47	-0.224 ± 0.158	0.041 ± 0.101
photometric centroid source offset	0.10 ± 0.02	4.13	-0.05 ± 0.03	-0.09 ± 0.02

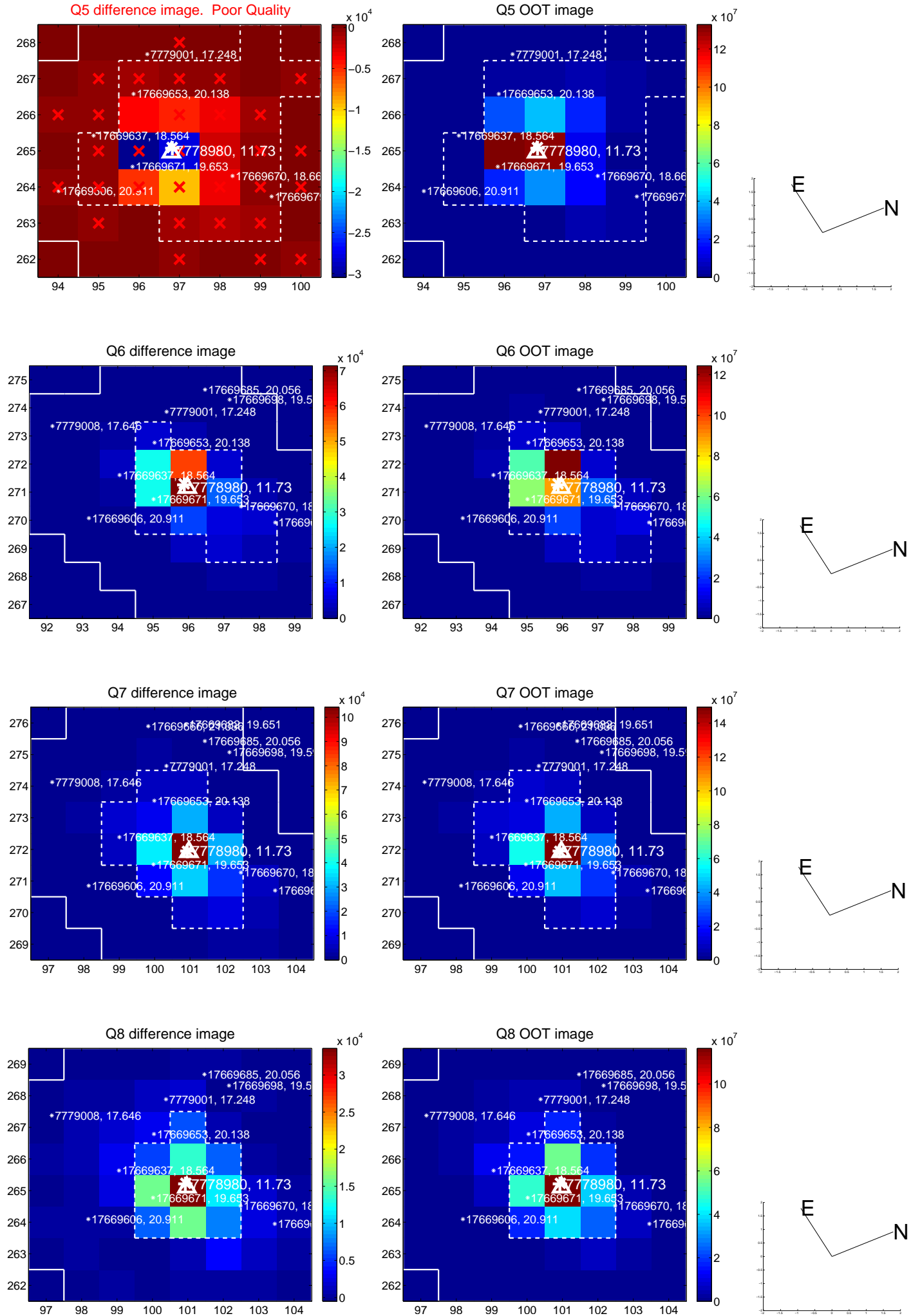


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

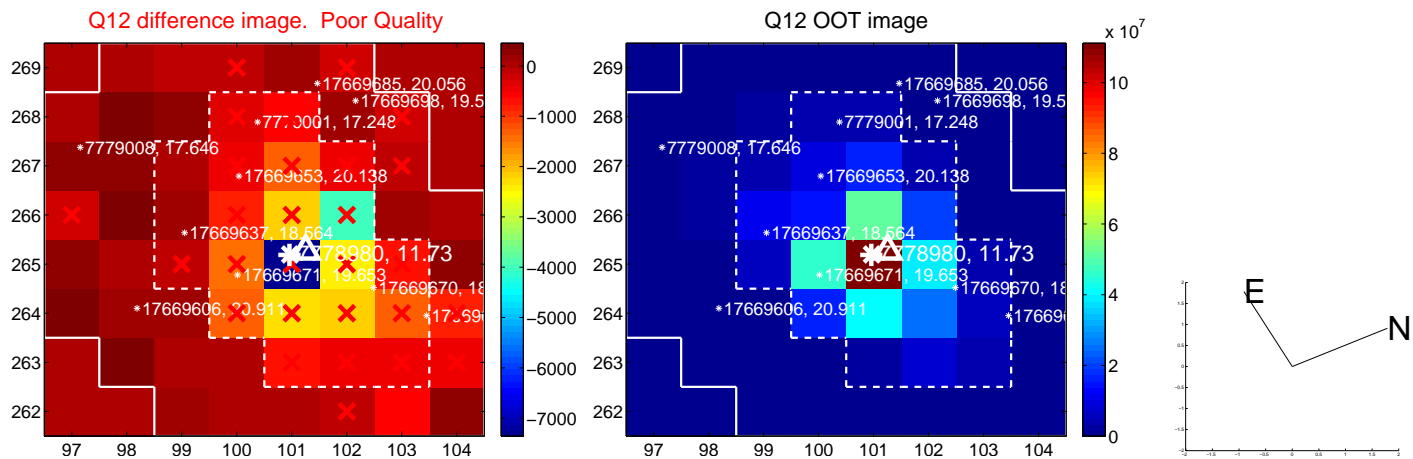
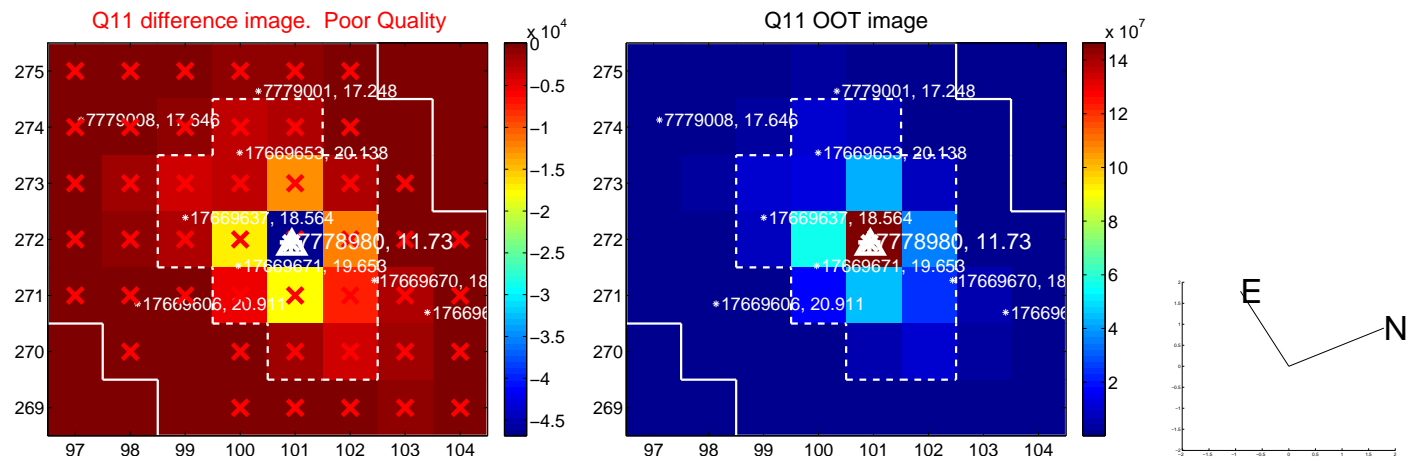
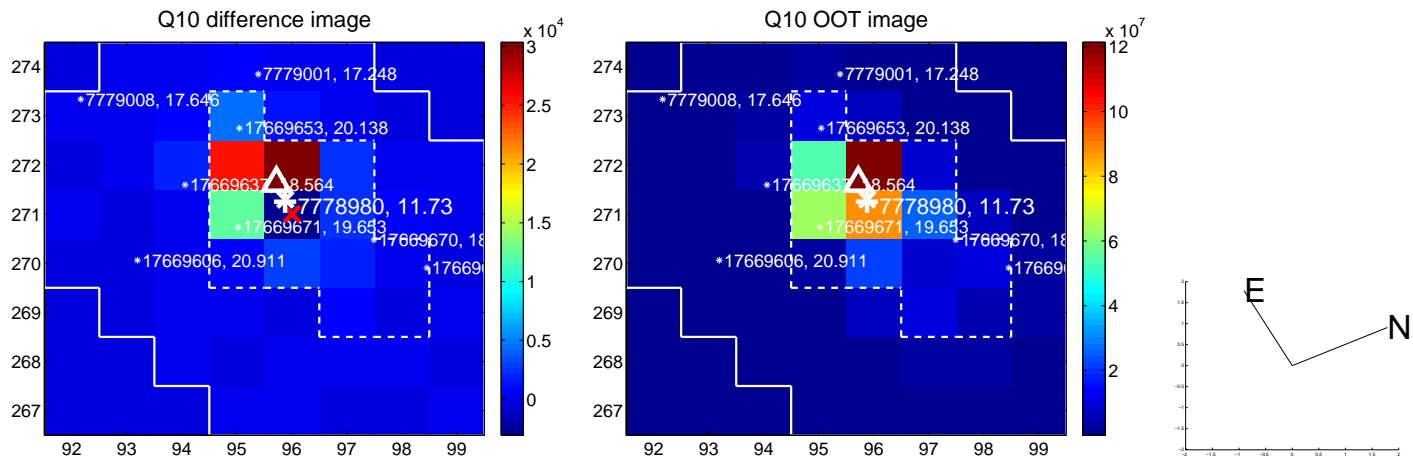
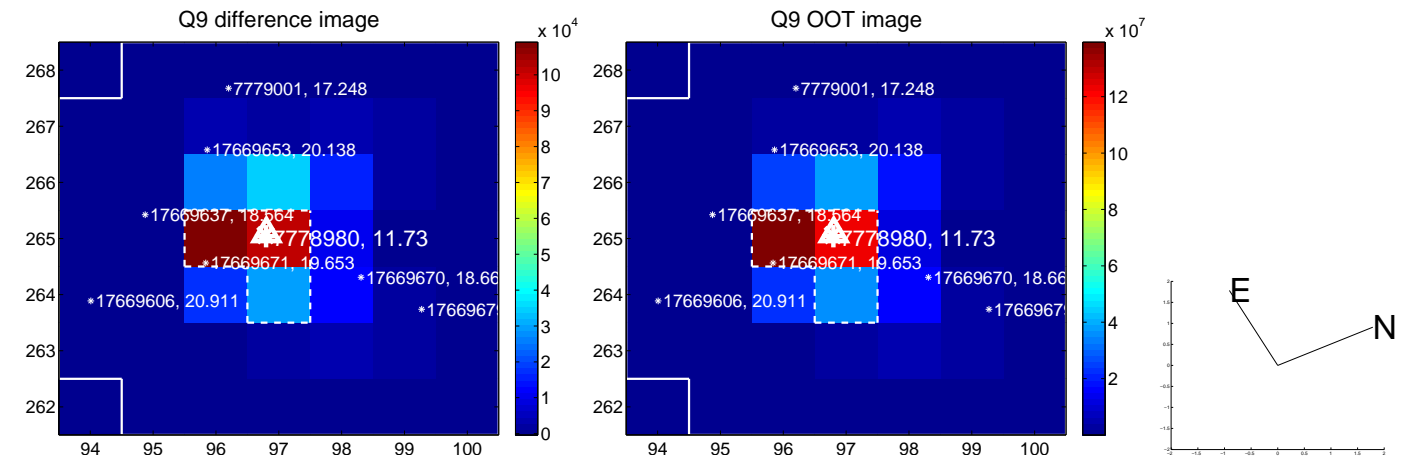
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



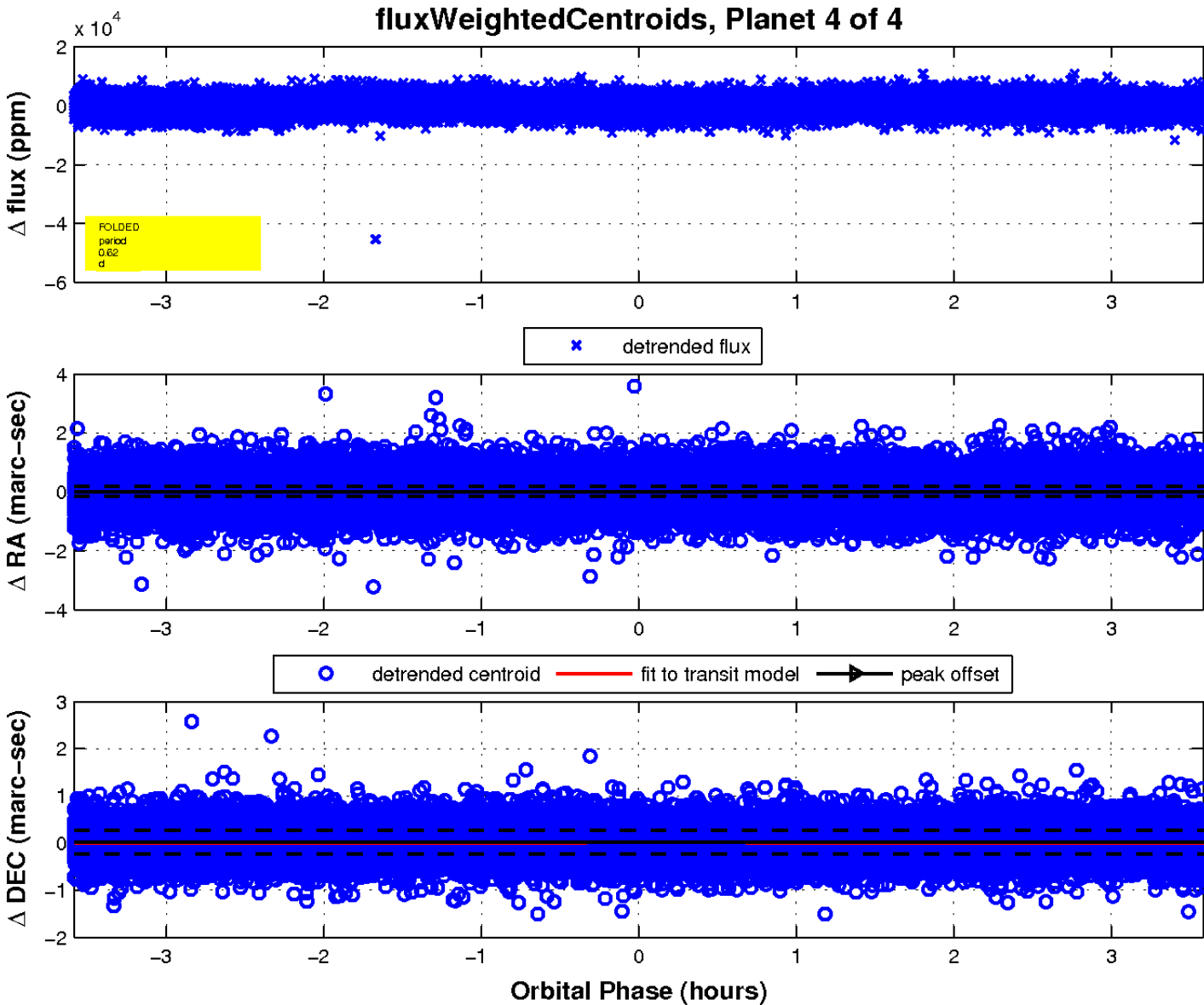
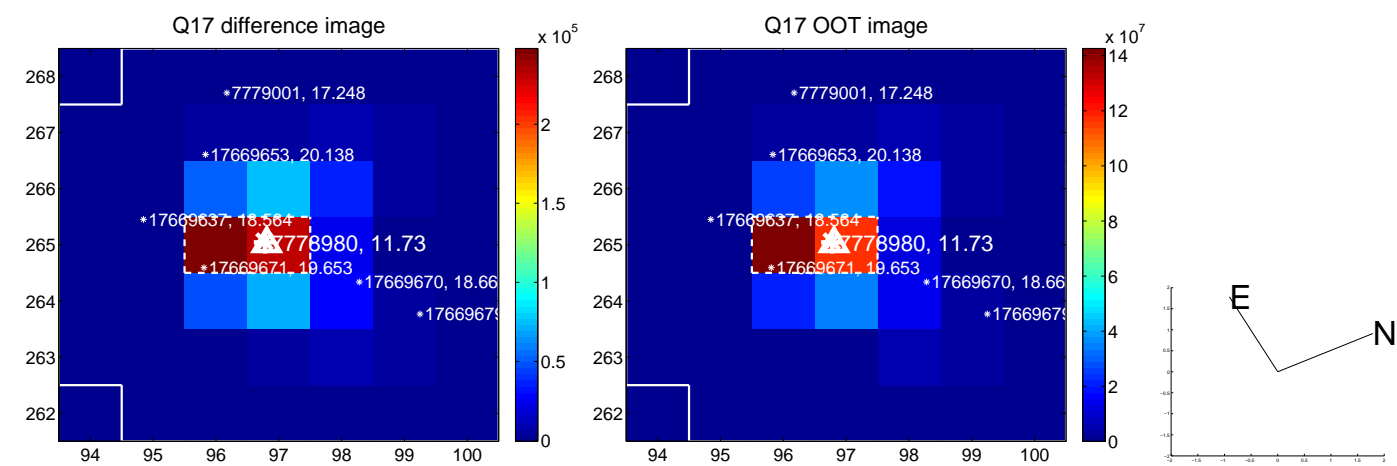
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

