

KIC 008703887

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})
008703887-01	OBS	0287.01	14.170974	133.095085	14002.4	3.805	924.5	864.1	1.72	8347	21.37	651.62
008703887-02	OBS	No	14.170939	132.140810	230.6	19.545	37.0	39.9	1.72	8347	3.21	651.62
008703887-03	OBS	No	2.834201	133.451073	68.4	4.899	14.7	15.9	1.72	8347	1.51	5571.23
008703887-04	OBS	No	0.833513	132.356399	40.8	4.786	12.6	12.7	1.72	8347	1.11	28486.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008703887-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_SATURATED
008703887-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
008703887-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_SATURATED
008703887-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED

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

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

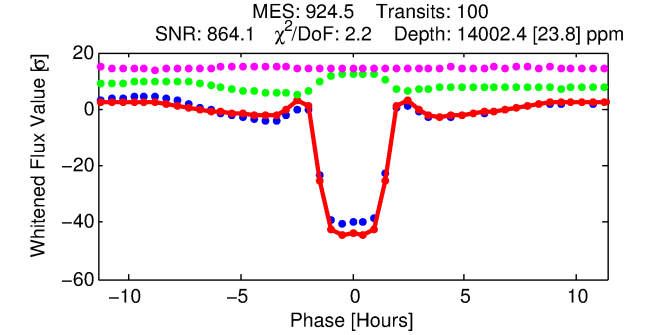
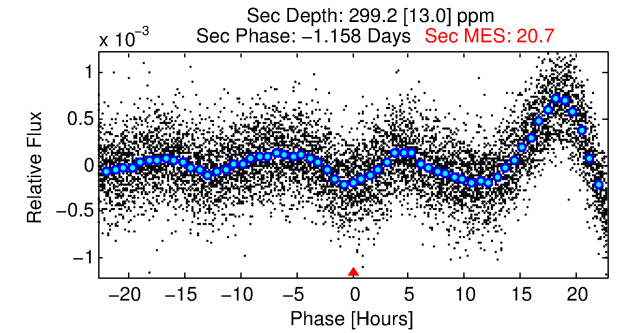
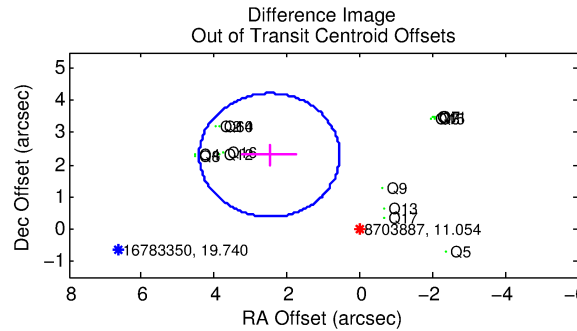
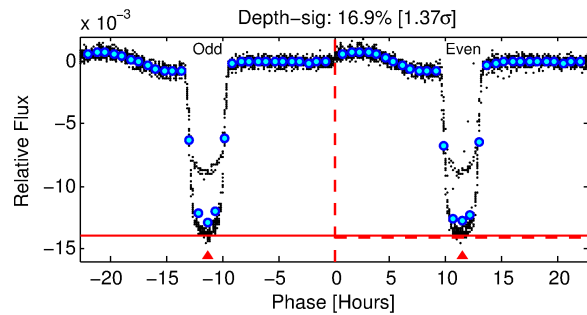
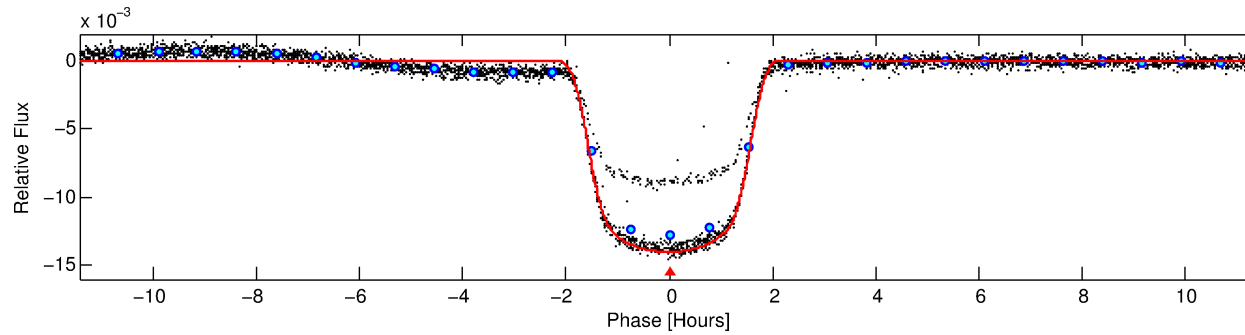
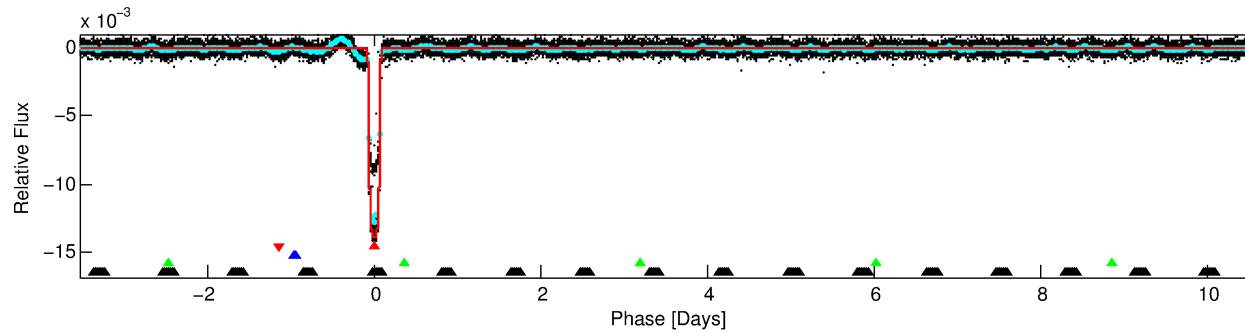
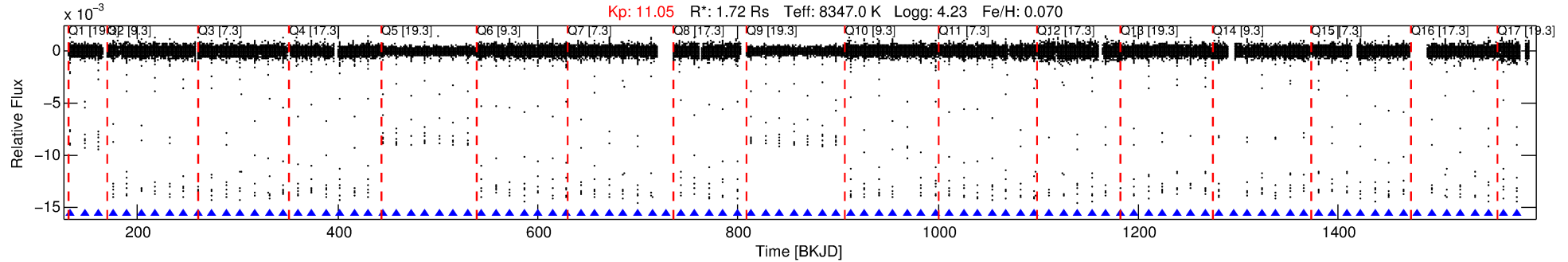
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008703887-01

No Significant Match Found

DV One-Page Summary

KIC: 8703887 Candidate: 1 of 4 Period: 14.171 d
KOI: K00287.01 Corr: 0.984



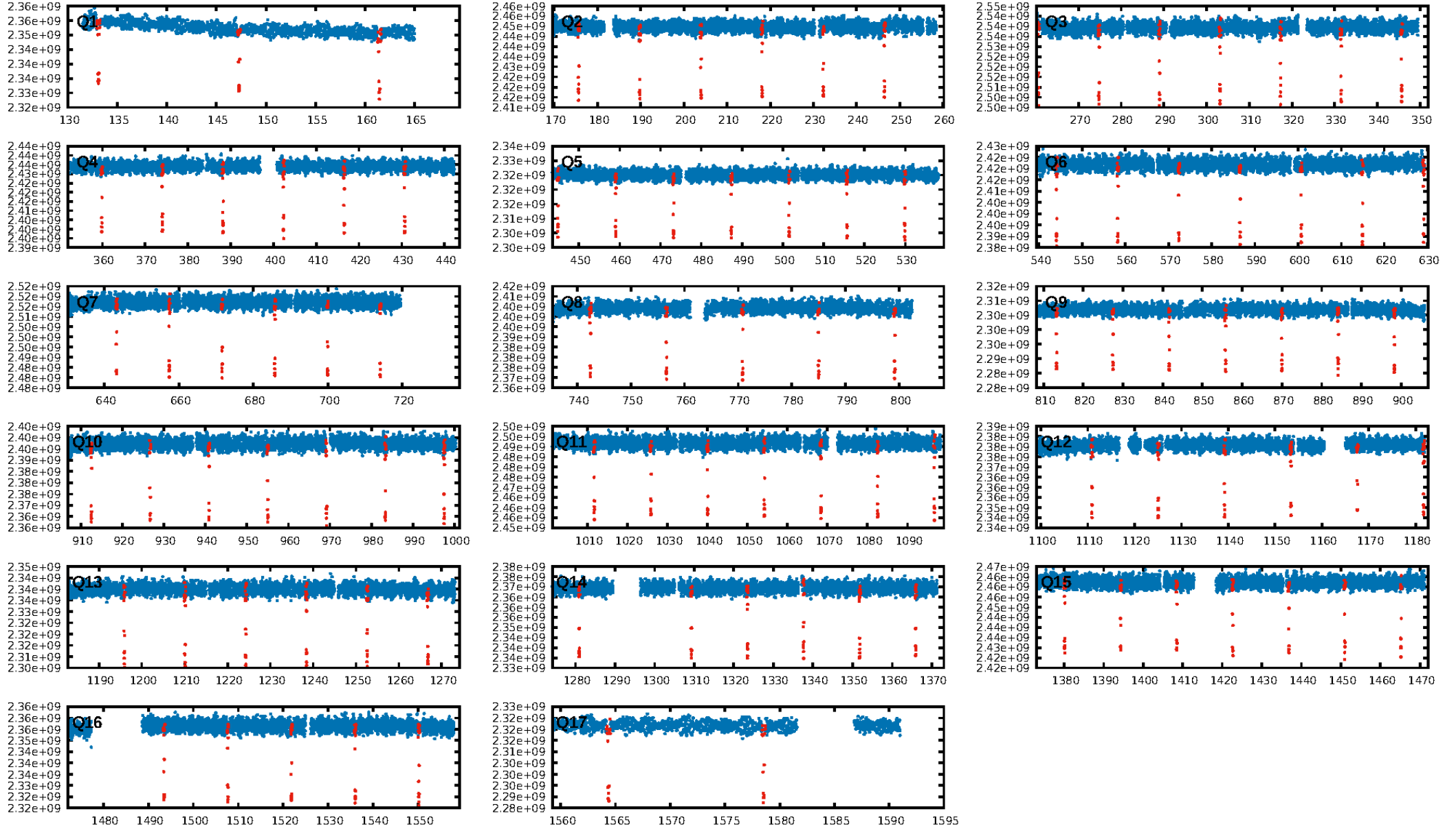
DV Fit Results:

Period = 14.17097 [0.00000] d
Epoch = 133.0951 [0.0001] BKJD
Rp/R* = 0.1142 [0.0003]
a/R* = 26.79 [0.30]
b = 0.60 [0.01]
Seff = 651.62 [268.68]
Teq = 1288 [133] K
Rp = 21.37 [6.63] Re
a = 0.1401 [0.0362] AU
Ag = 7.08 [2.66] [2.29 σ]
Teffp = 3249 [148] K [9.87 σ]

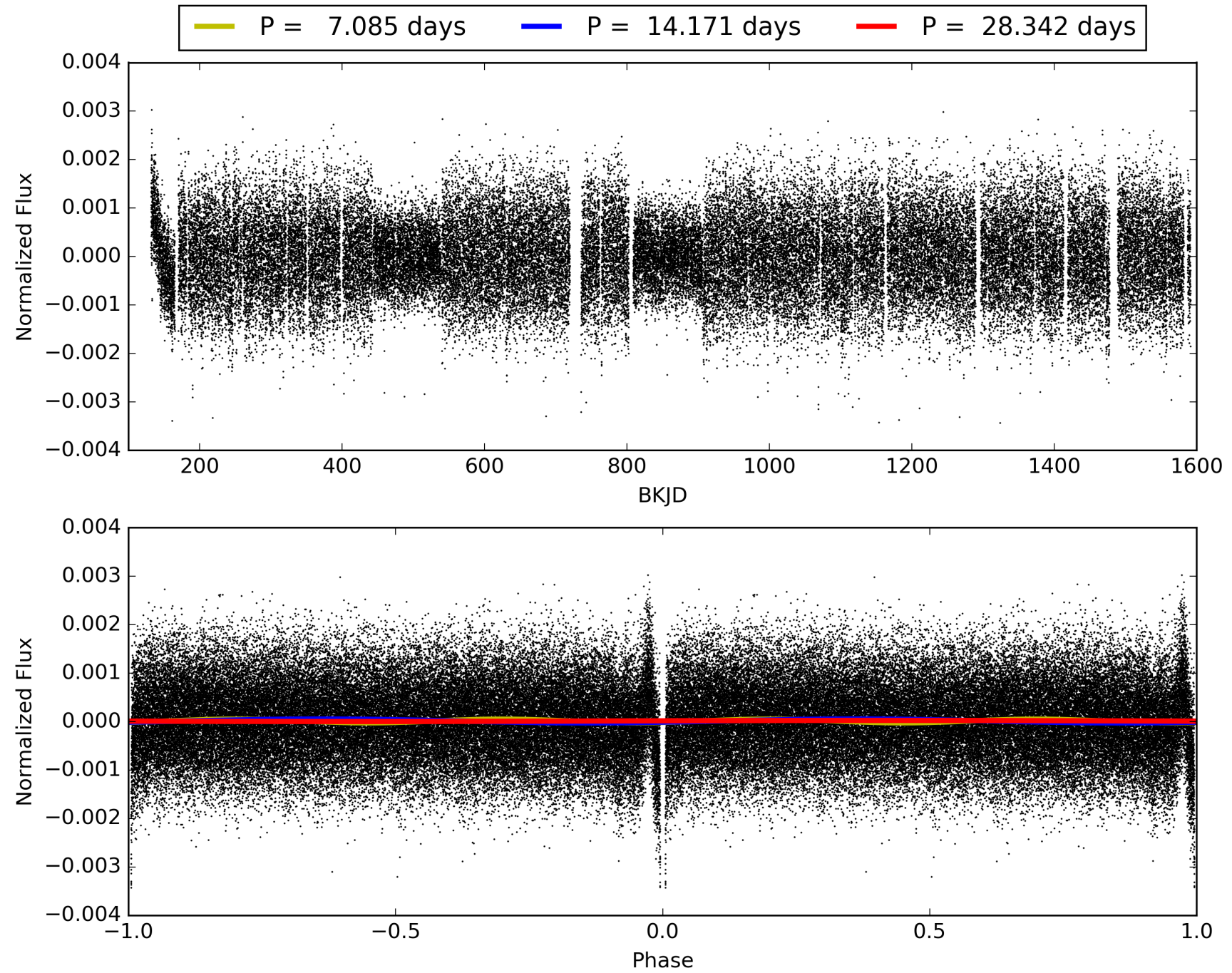
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 59.9%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [95/95]
GhostDiagnostic-chr: 1.973
Centroid-sig: 0.0%
Centroid-so: 0.531 arcsec [155.39 σ]
OotOffset-rm: 3.380 arcsec [5.26 σ]
KicOffset-rm: 4.212 arcsec [7.28 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.00 [0/16]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 008703887-01, PDC Light Curves

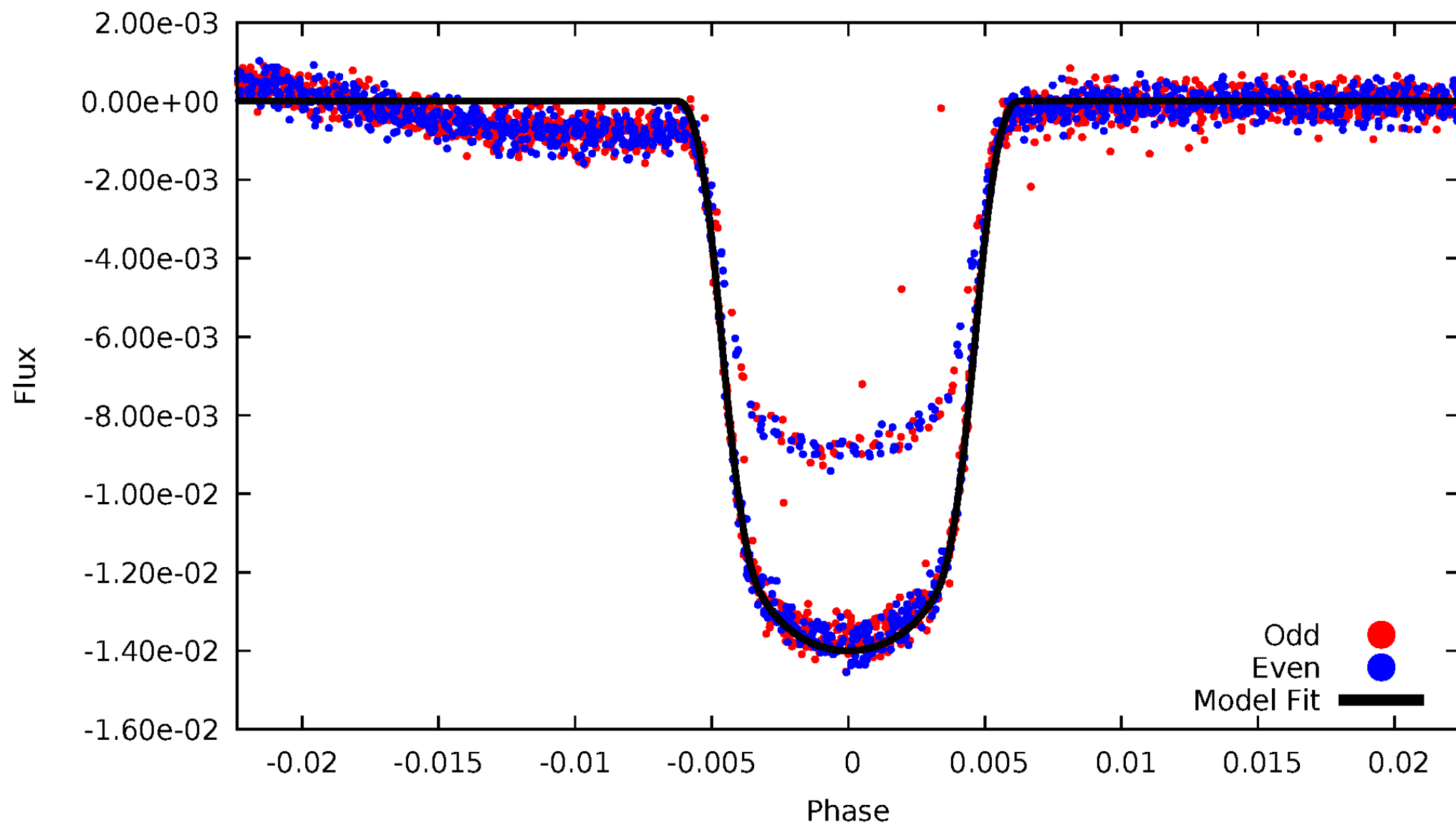


TCE 008703887-01



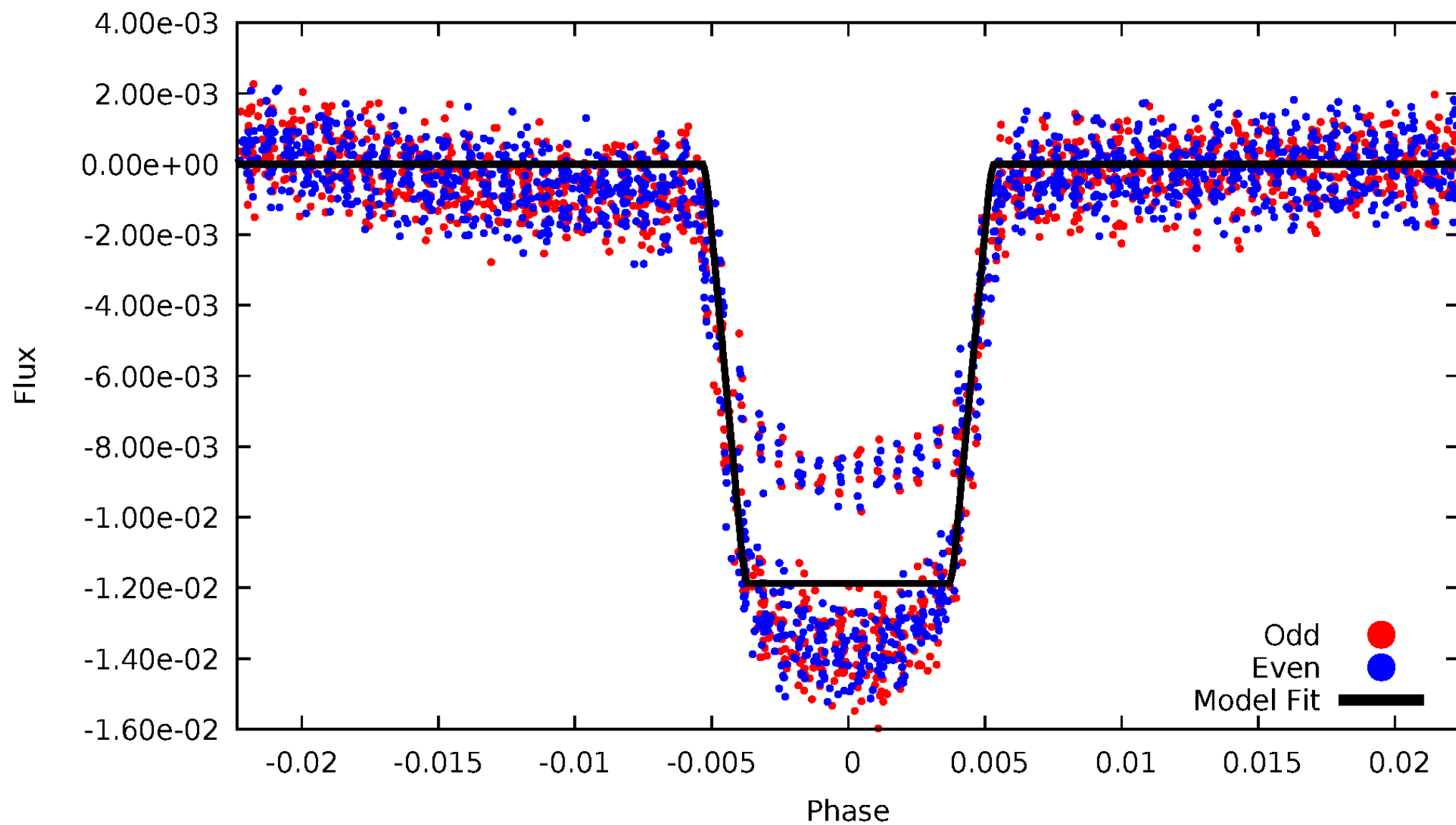
DV Odd/Even

TCE 008703887-01

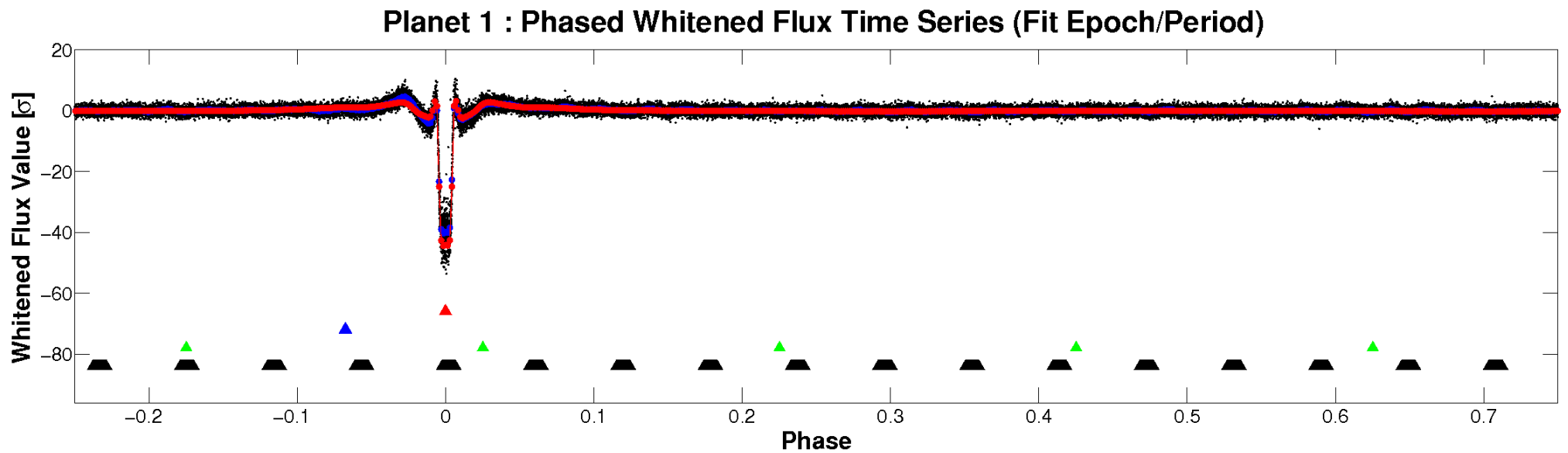
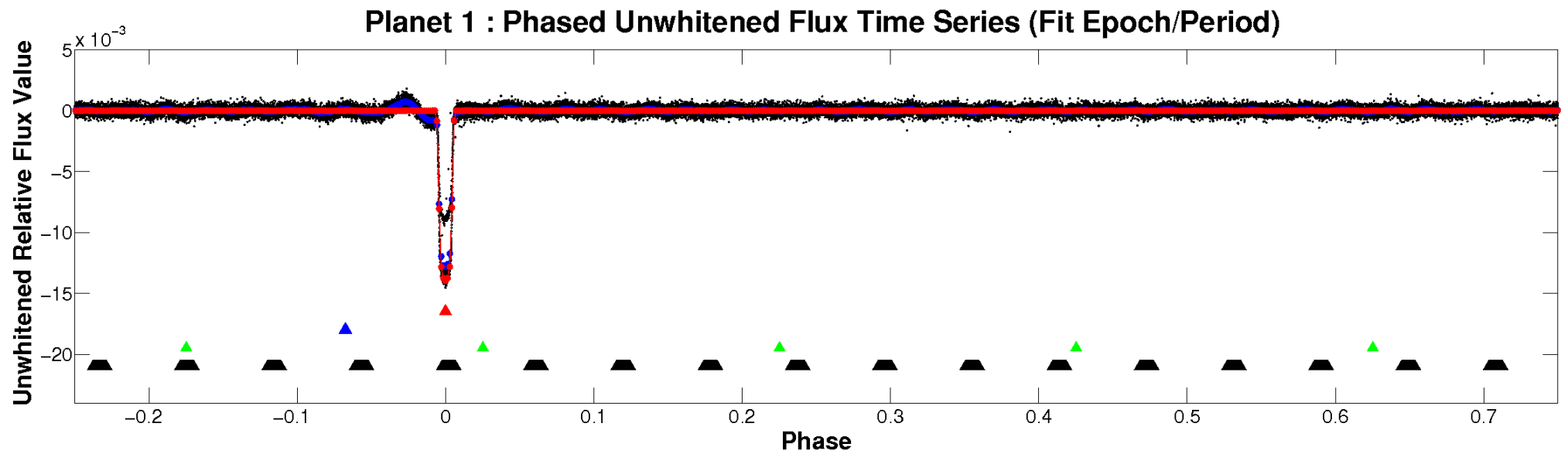


ALT Odd/Even

TCE 008703887-01

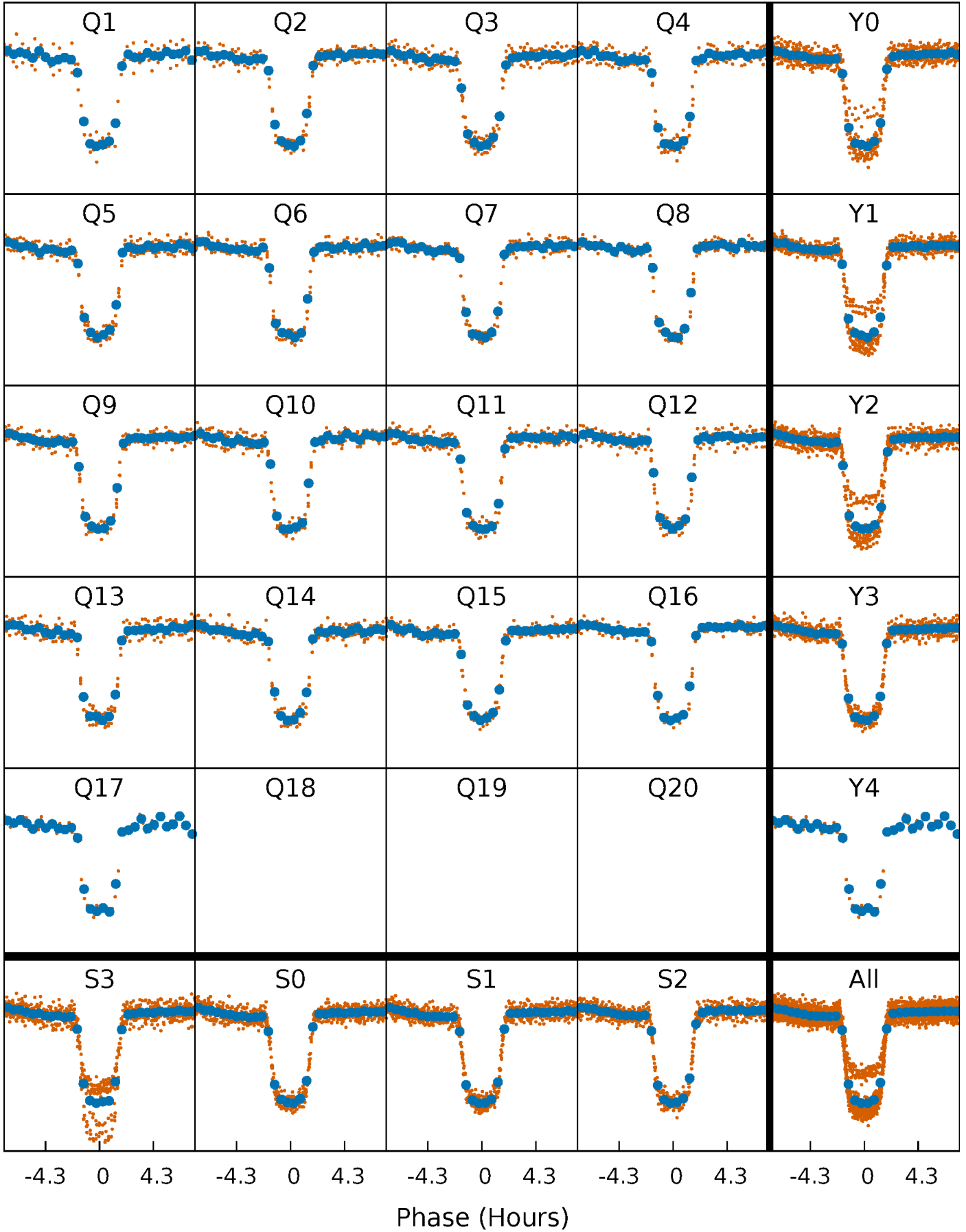


Non-Whitened Vs. Whitened Light Curve



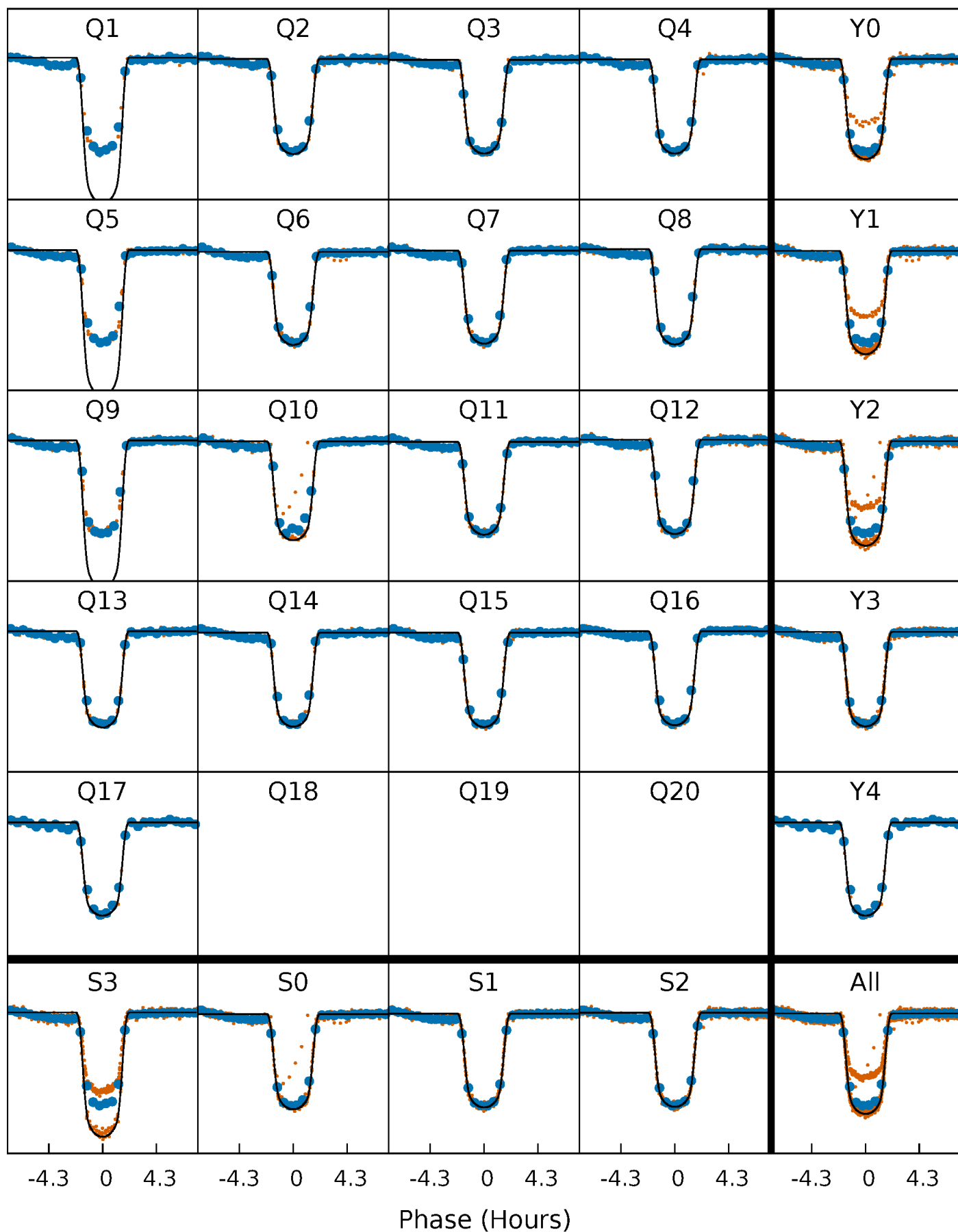
PDC Quarter-Phased Transit Curves

TCE 008703887-01 P= 14.170974 Days $T_0=133.095085$ (BKJD)



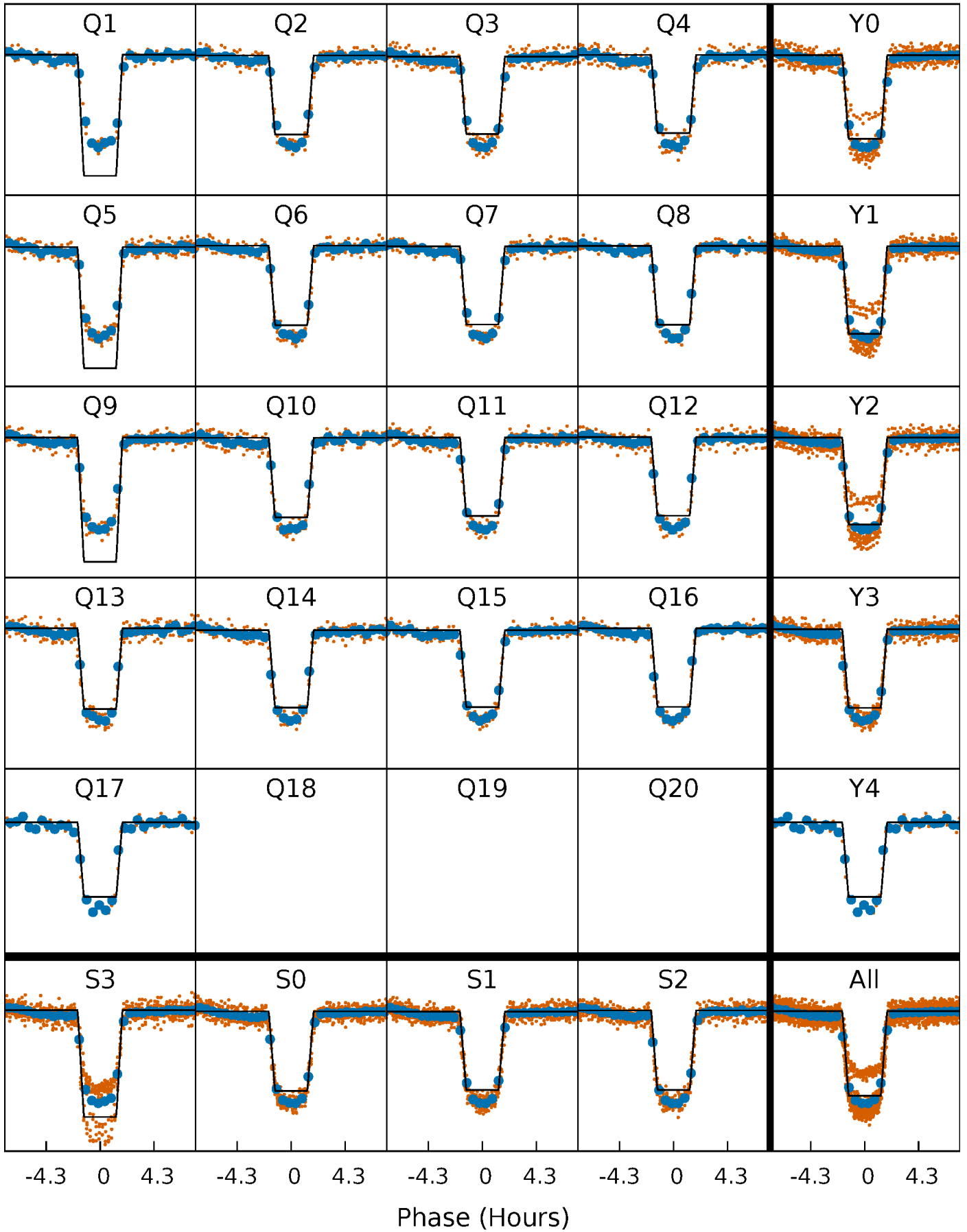
DV Quarter-Phased Transit Curves

TCE 008703887-01 P= 14.170974 Days $T_0=133.095085$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

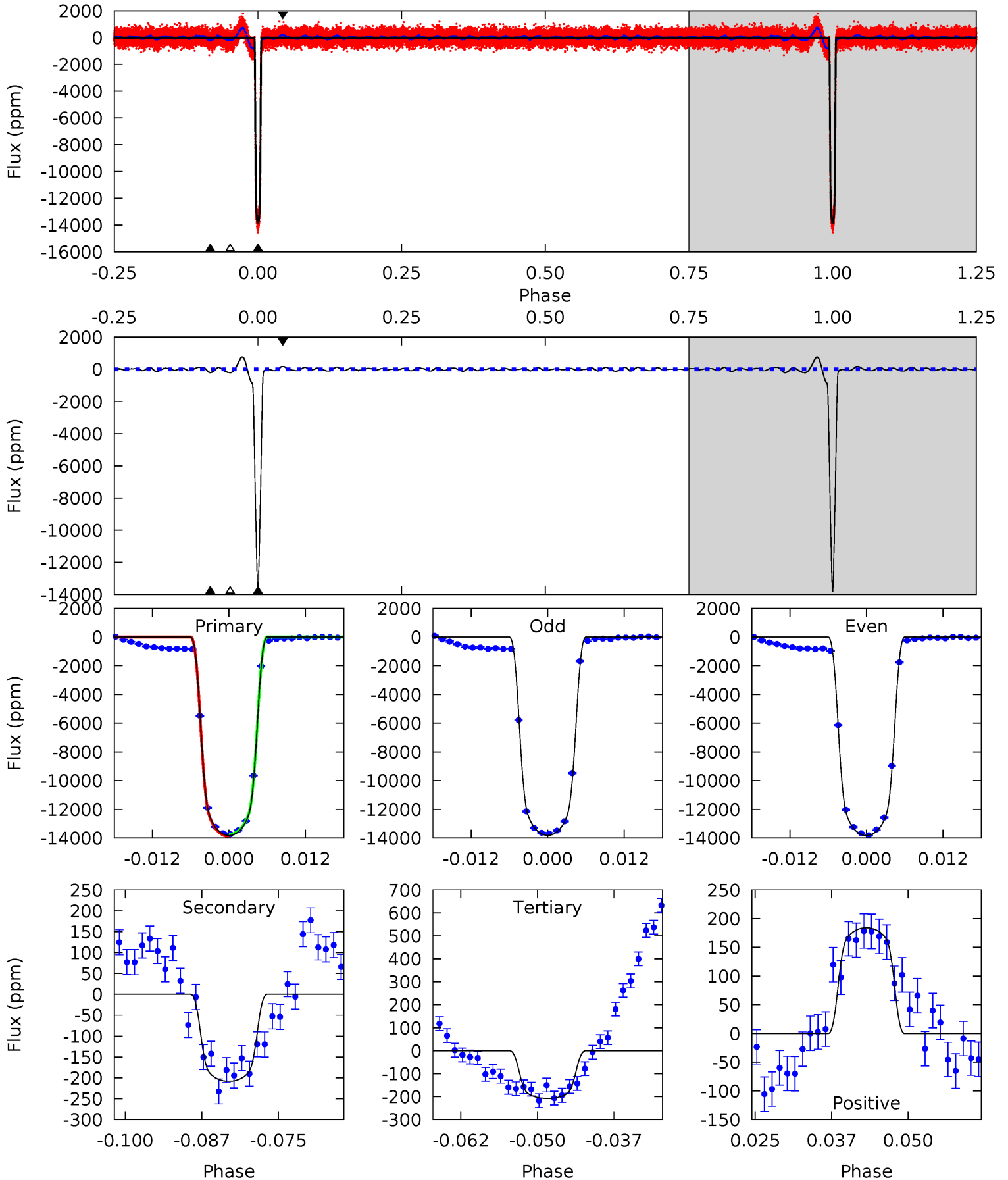
TCE 008703887-01 P= 14.171049 Days $T_0=133.091115$ (BKJD)



DV Model-Shift Uniqueness Test

008703887-01, P = 14.170974 Days, E = 118.924111 Days

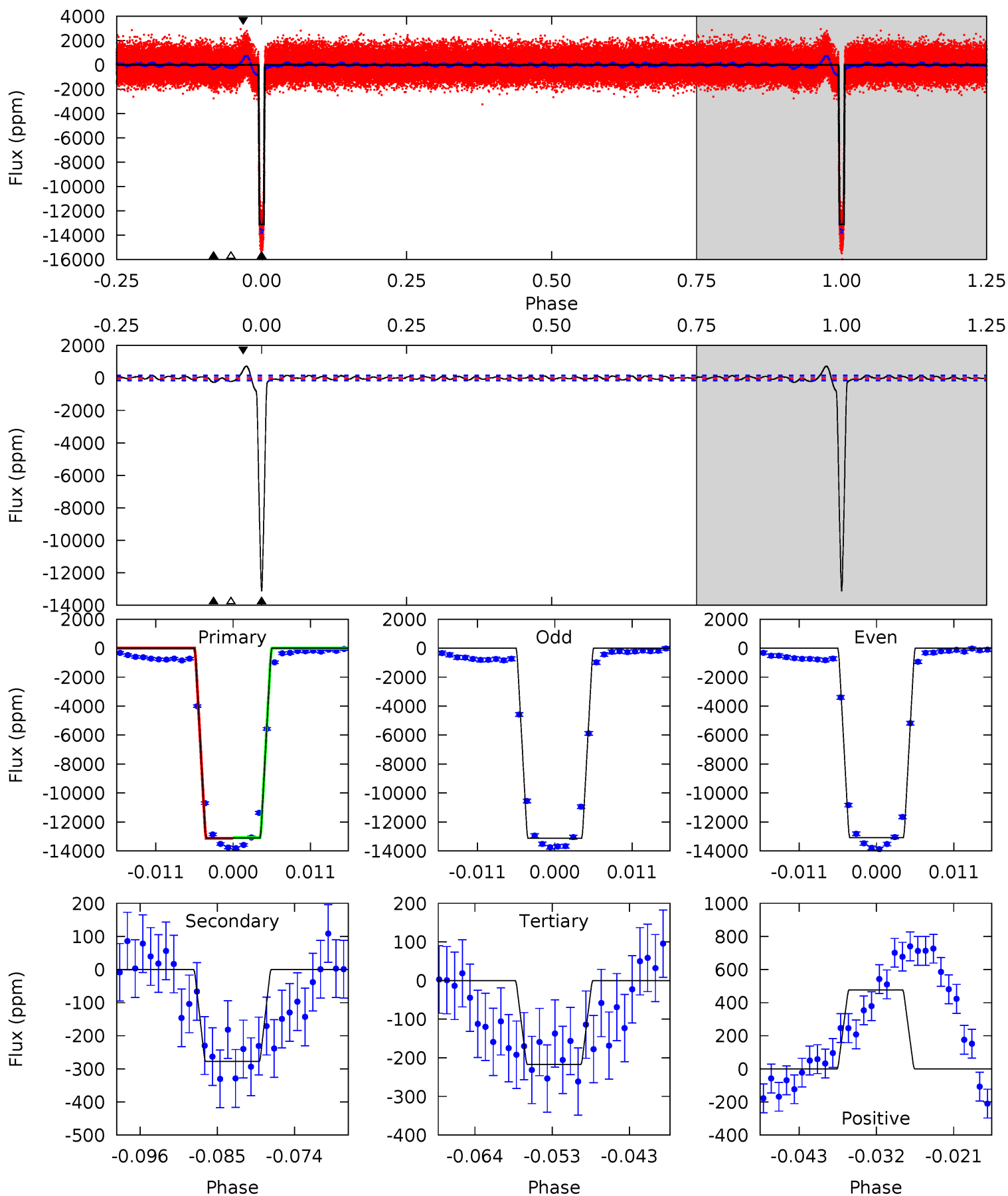
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1307	19.7	19.7	17.4	4.98	2.50	10.4	1287	1289	0.03	2.29	0.44	0.94	0.05	5.42



Alt Model-Shift Uniqueness Test

008703887-01, $P = 14.171049$ Days, $E = 118.920066$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
431.7	9.15	7.14	15.7	5.01	2.55	3.61	424.5	415.9	2.00	-6.57	0.80	0.94	0.05	0.96



Stellar Parameters For KIC 008703887

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8347^{+226}_{-368}	$4.231^{+0.067}_{-0.202}$	$0.070^{+0.250}_{-0.500}$	$1.715^{+0.532}_{-0.228}$	$1.826^{+0.304}_{-0.304}$	$0.510^{+0.185}_{-0.265}$
	+3%/-4%	+2%/-5%	+357%/-714%	+31%/-13%	+17%/-17%	+36%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008703887-01 / KOI 0287.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-208 ± 11	$21.62^{+3.61}_{-1.84}$	1825^{+121}_{-97}	3351^{+55}_{-73}	$4.617^{+0.815}_{-1.001}$
Alt.	-278 ± 30	$20.76^{+3.83}_{-1.75}$	1824^{+137}_{-91}	3564^{+89}_{-99}	$6.637^{+1.429}_{-1.666}$

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 $A_{obs} \gg 1.0$

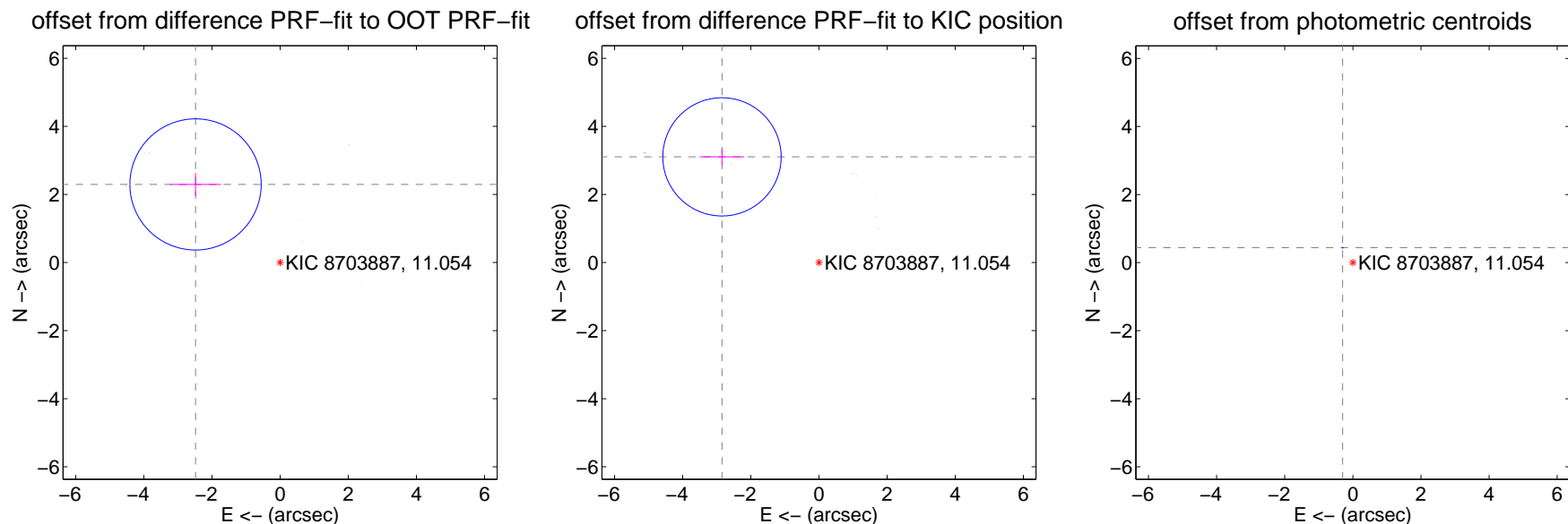
DV Centroid Data

Supplemental centroid analysis for 008703887-01. **Kepler magnitude: 11.05.** Transit SNR 864.13

There are 0 quarters with good PRF difference image offsets

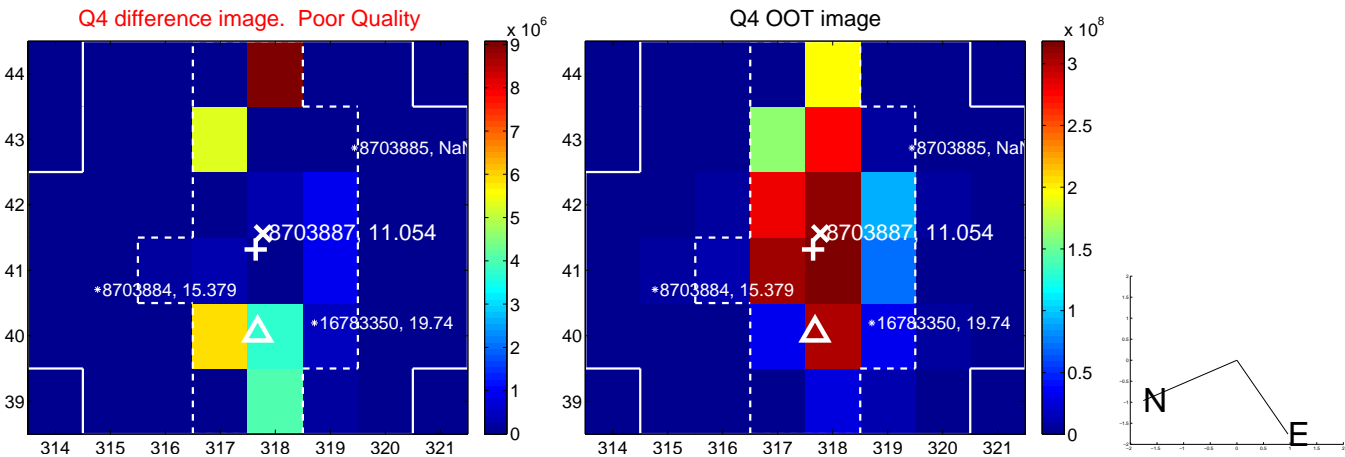
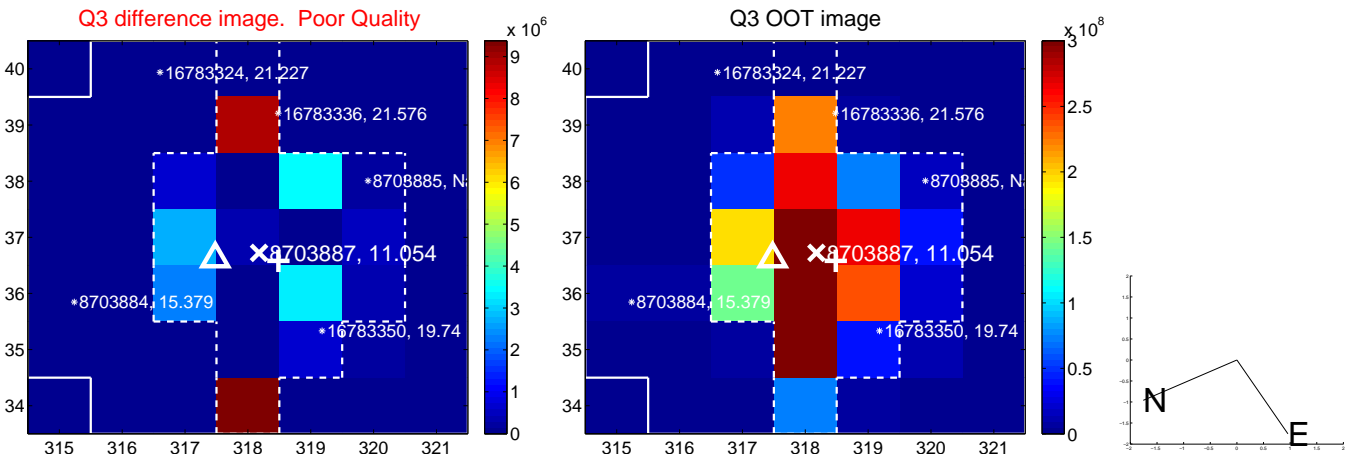
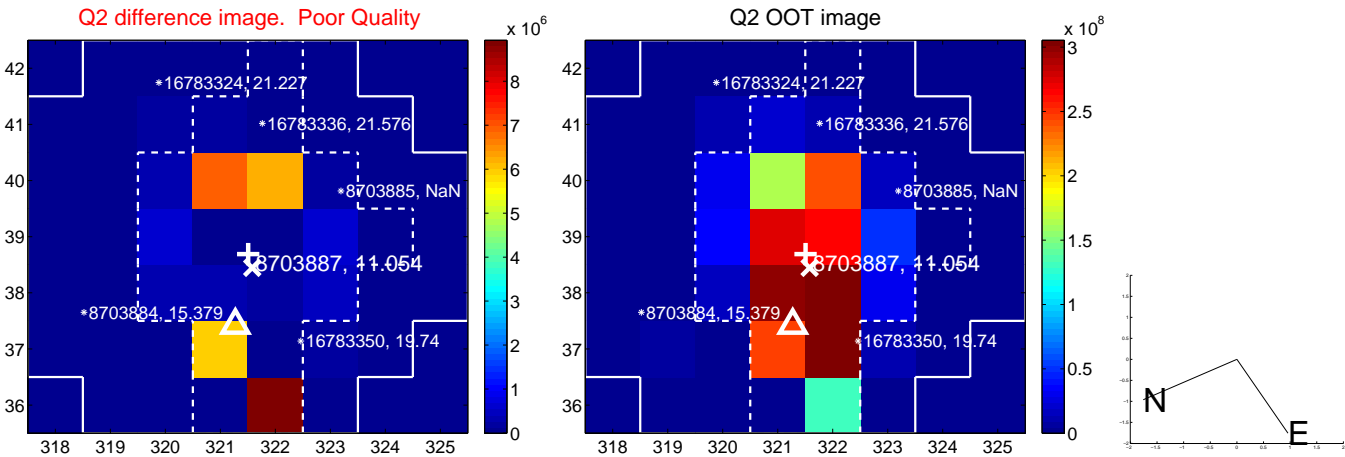
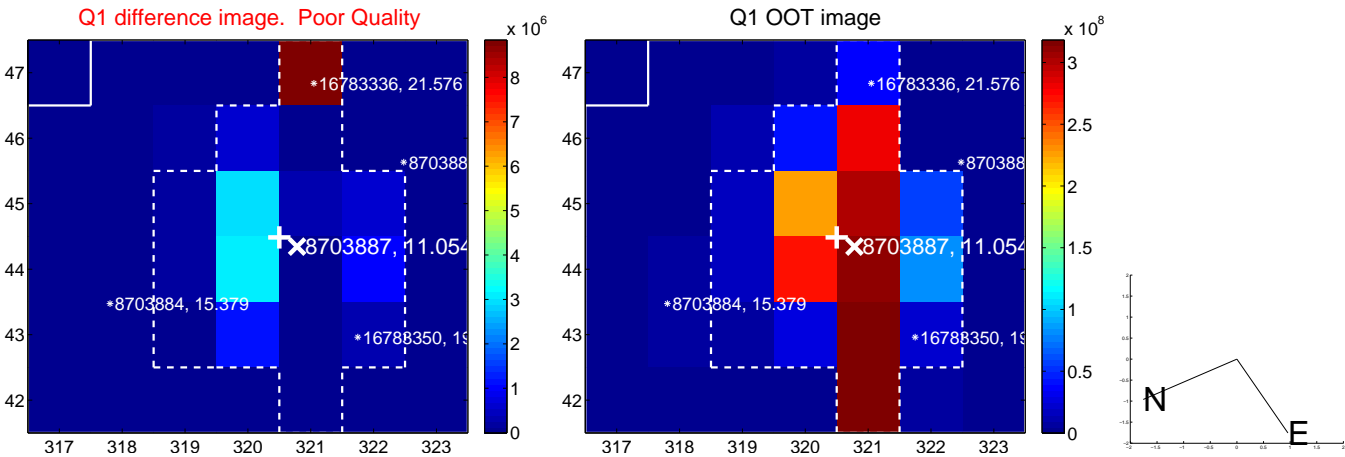
The direct PRF centroid is offset from the target star catalog position by about 1.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.380 ± 0.642	5.26	2.482 ± 0.748	2.294 ± 0.338
PRF-fit source offset from KIC position	4.212 ± 0.579	7.28	2.847 ± 0.654	3.104 ± 0.226
photometric centroid source offset	0.53 ± 0.00	155.39	0.30 ± 0.00	0.44 ± 0.00

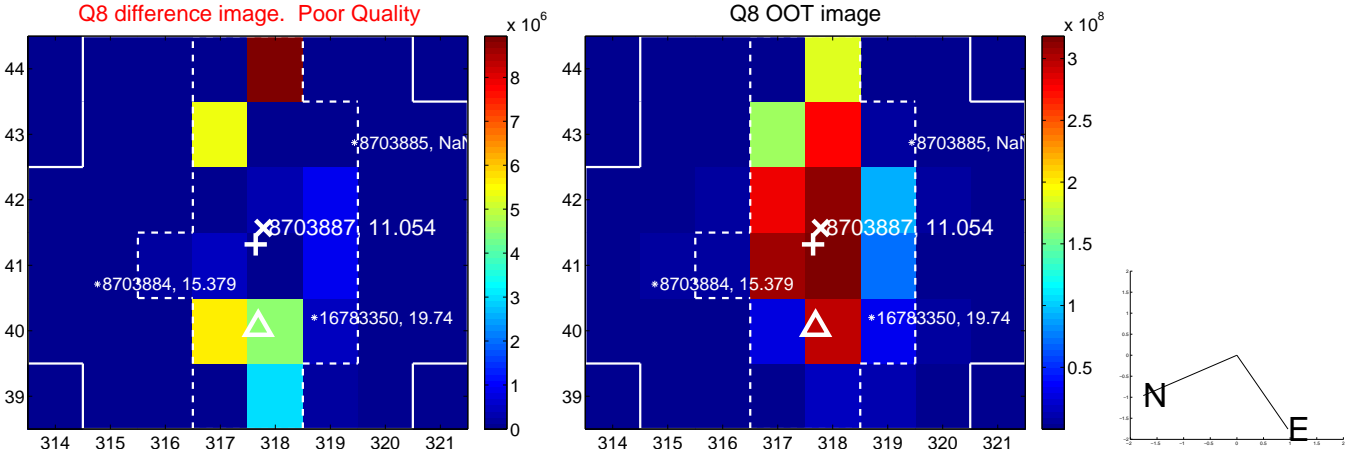
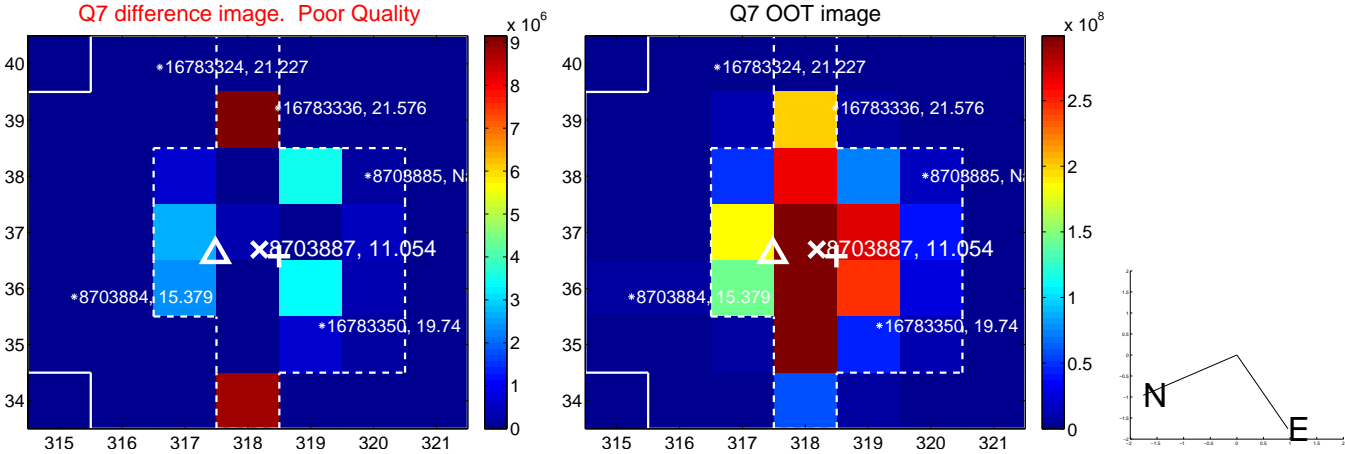
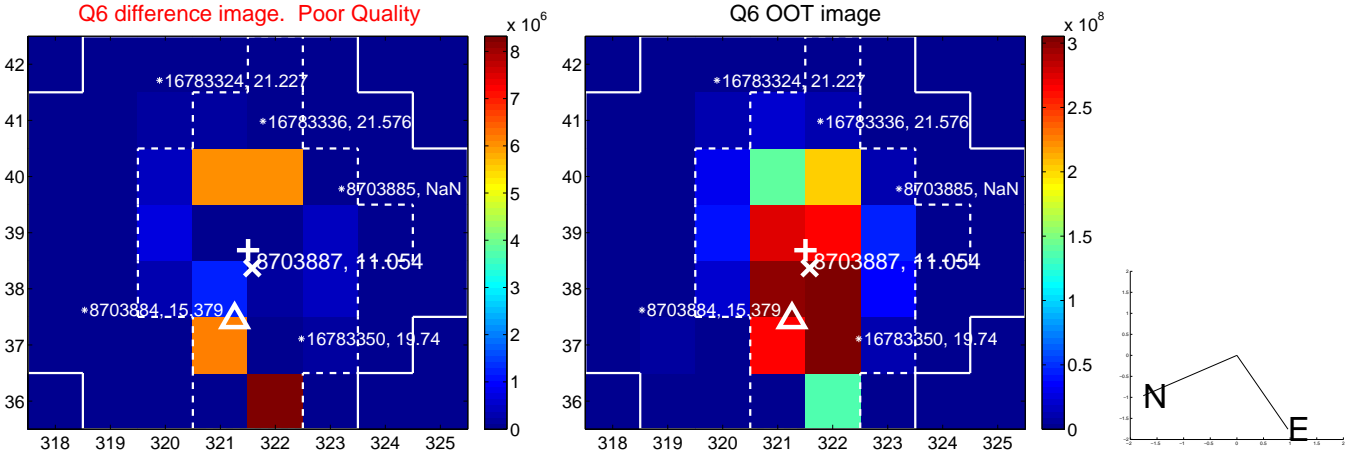
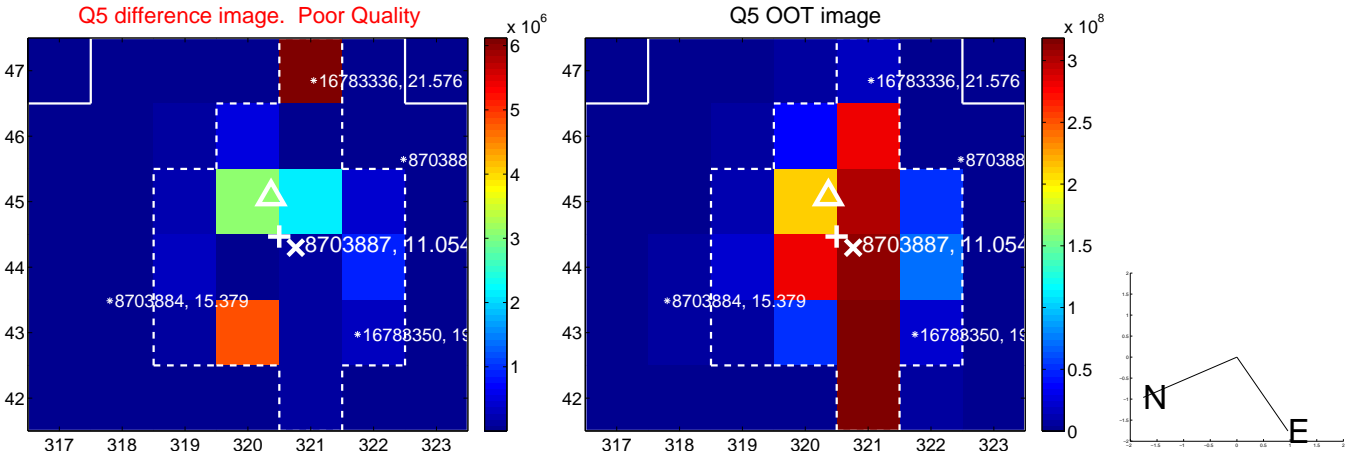


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

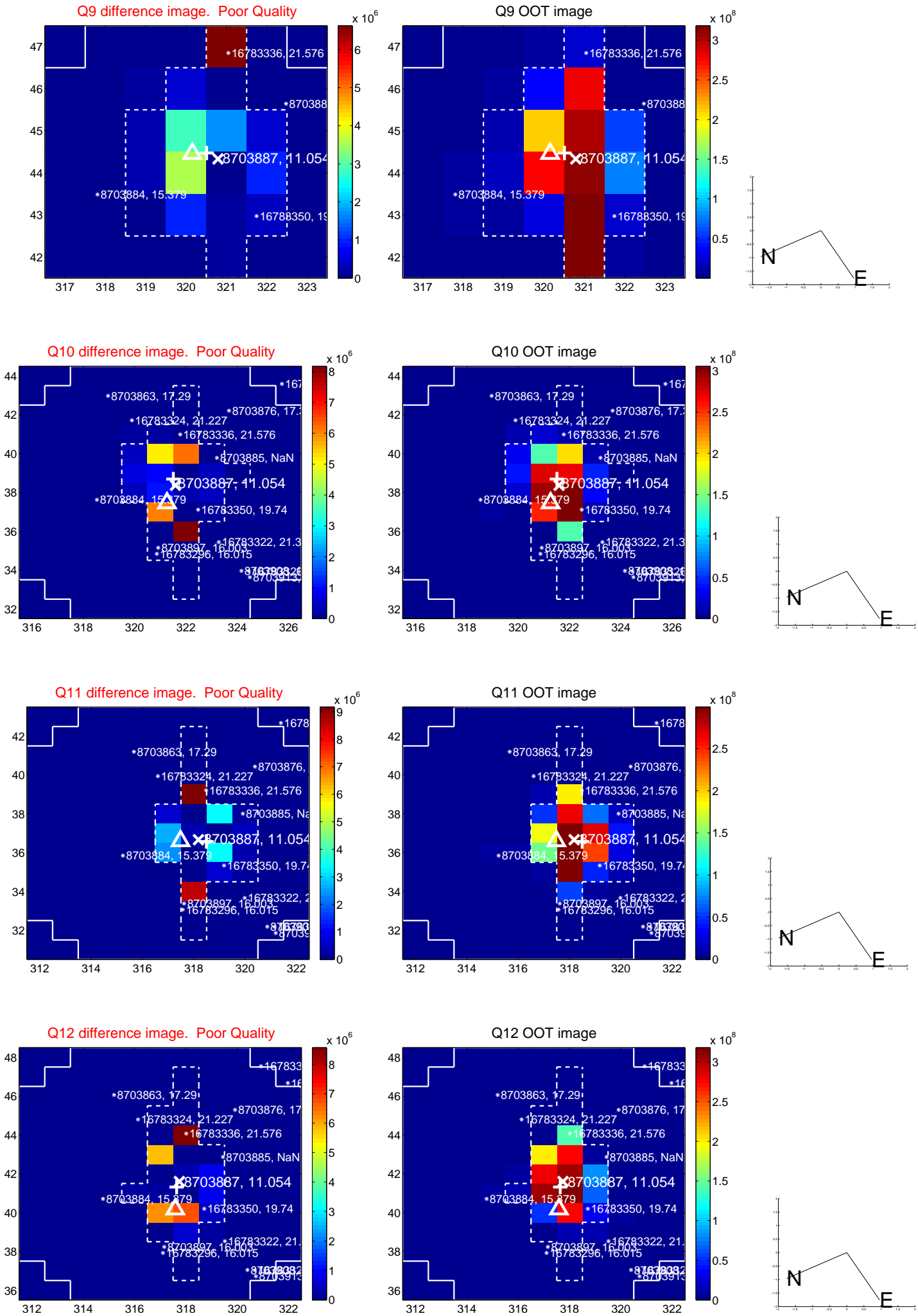
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



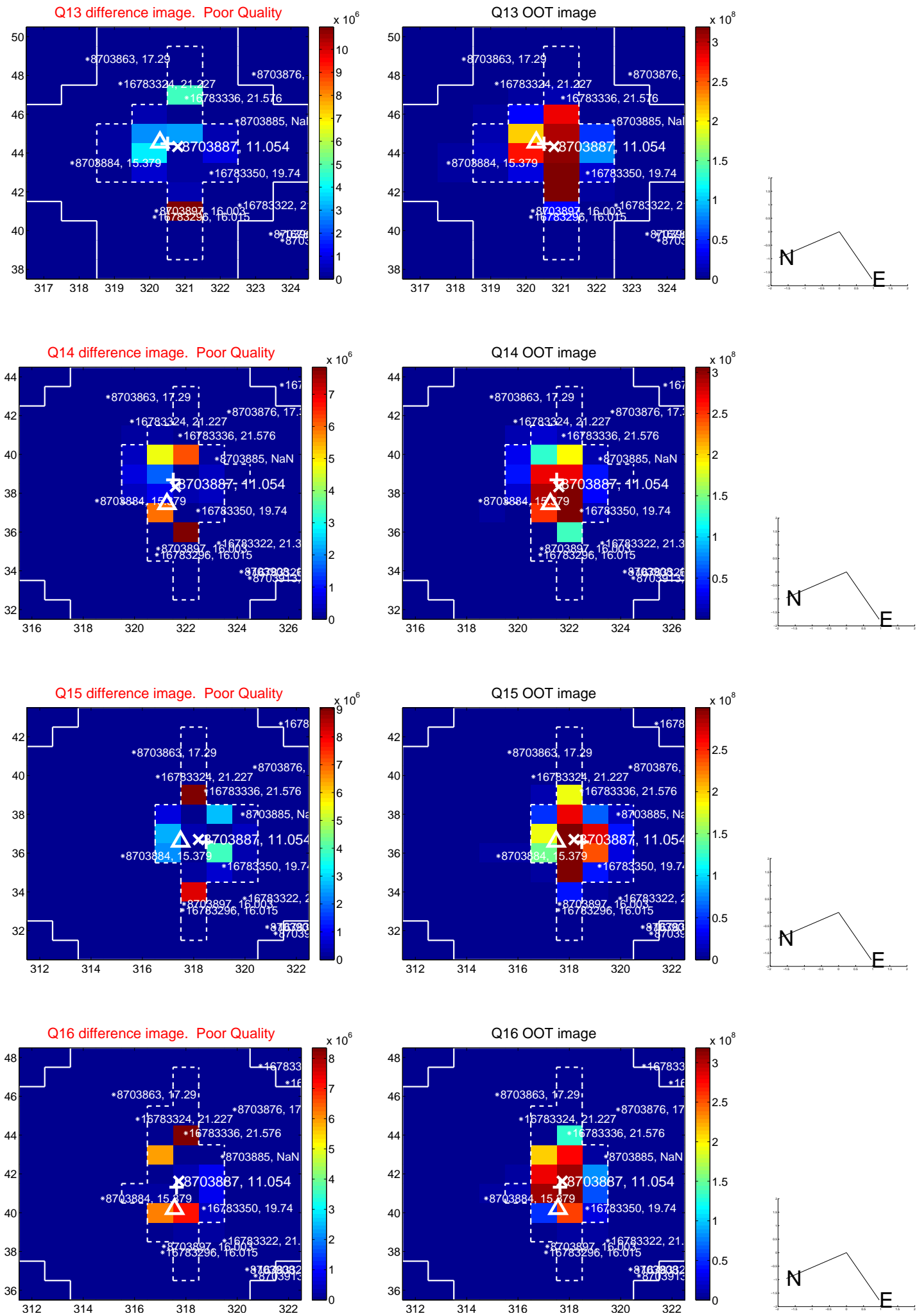
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



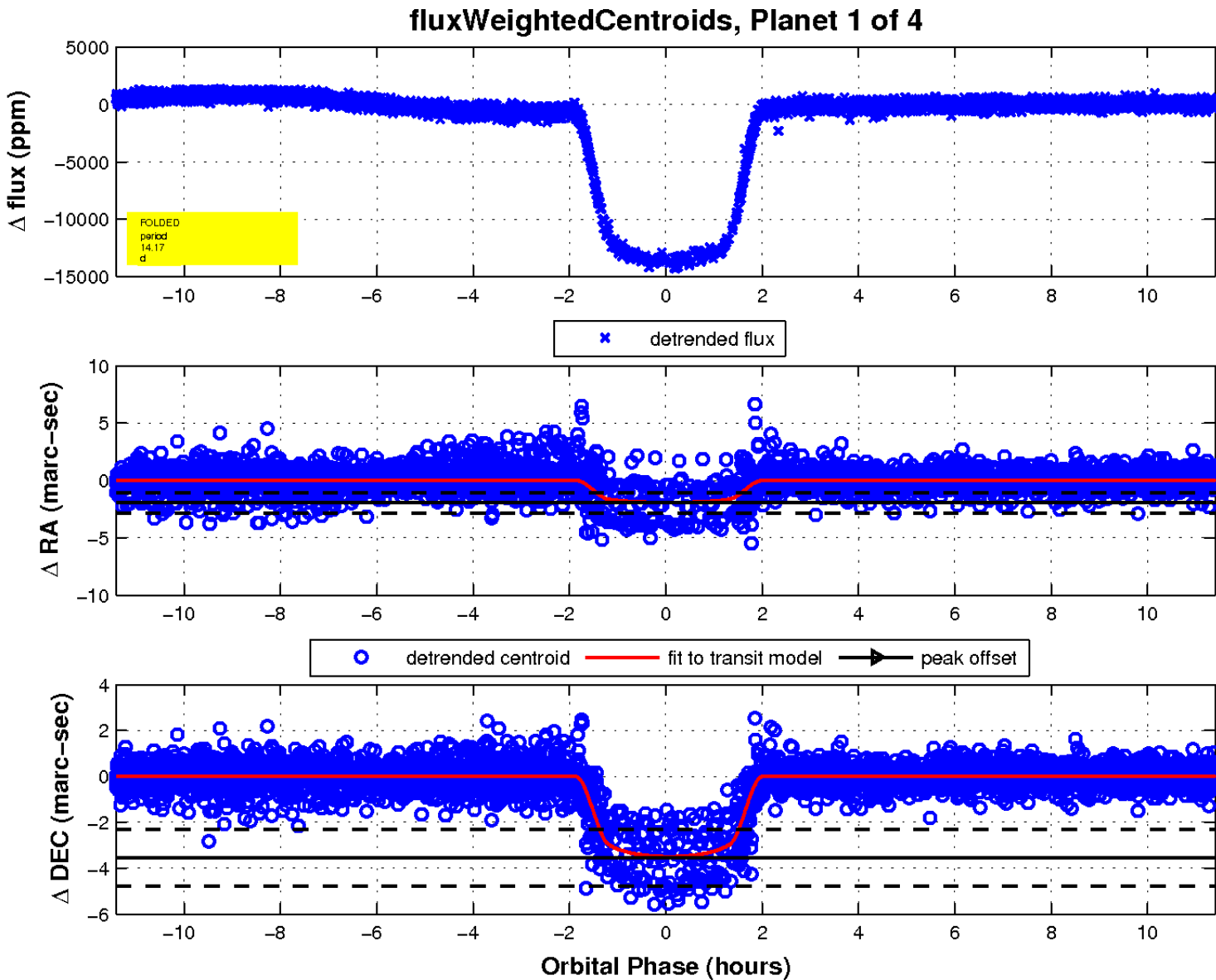
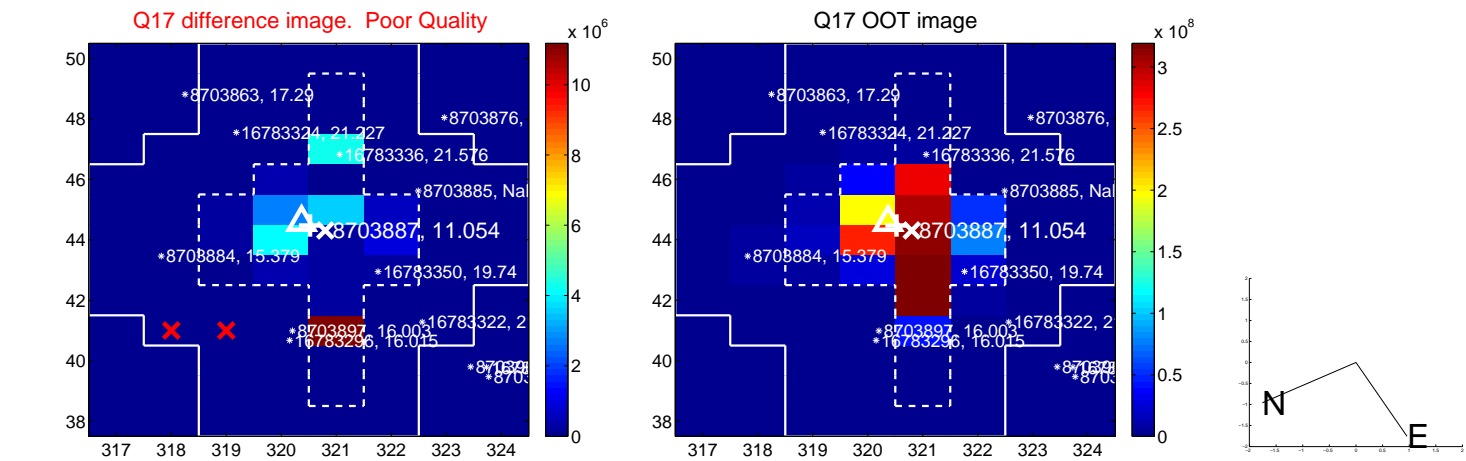
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

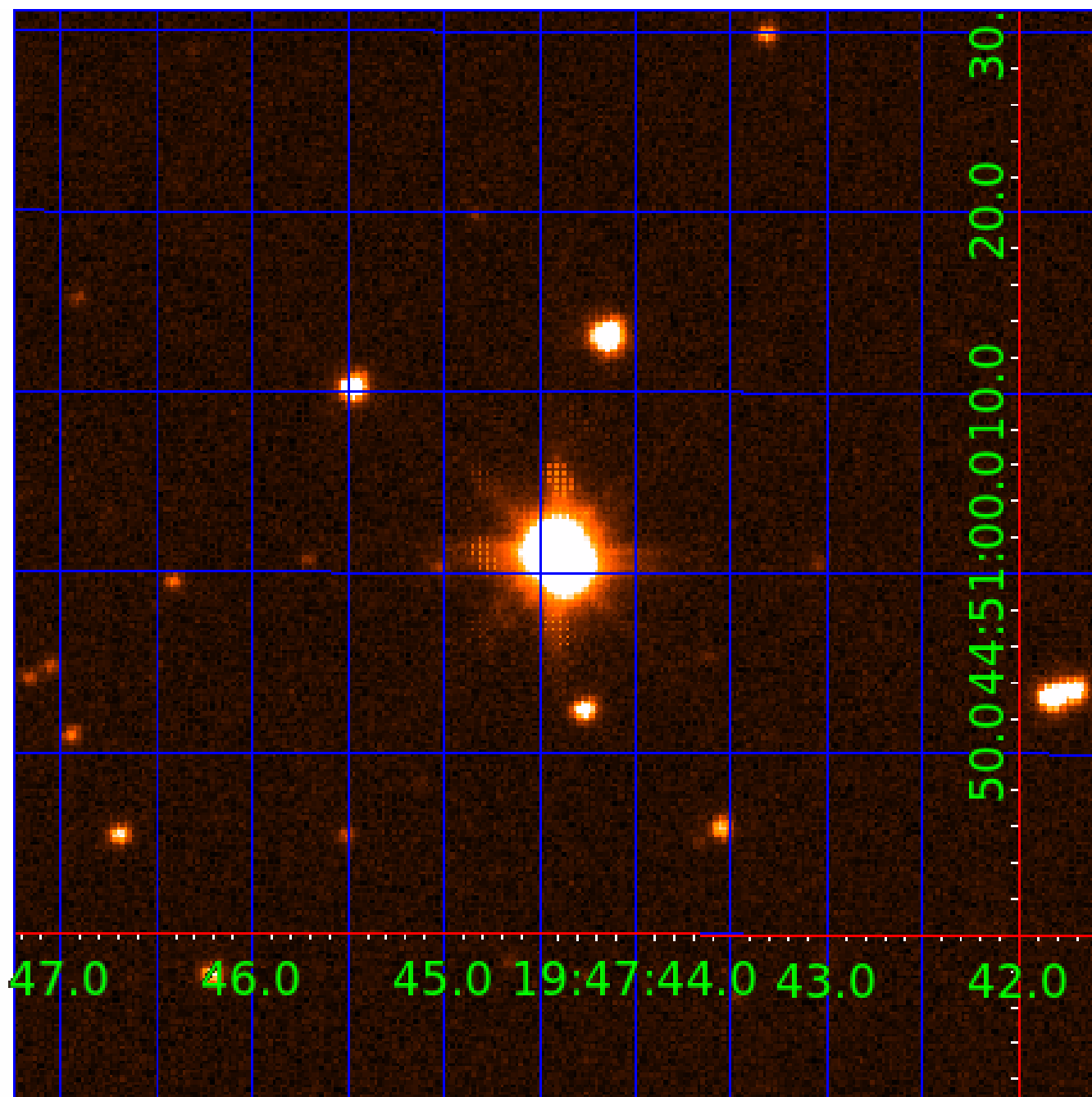


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008703887

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})
008703887-01	OBS	0287.01	14.170974	133.095085	14002.4	3.805	924.5	864.1	1.72	8347	21.37	651.62
008703887-02	OBS	No	14.170939	132.140810	230.6	19.545	37.0	39.9	1.72	8347	3.21	651.62
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008703887-04	OBS	No	0.833513	132.356399	40.8	4.786	12.6	12.7	1.72	8347	1.11	28486.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008703887-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_SATURATED
008703887-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
008703887-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_SATURATED
008703887-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED

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

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

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

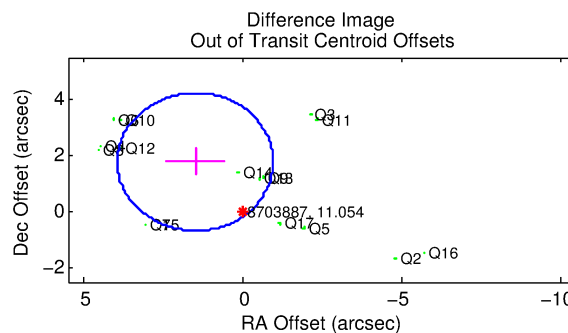
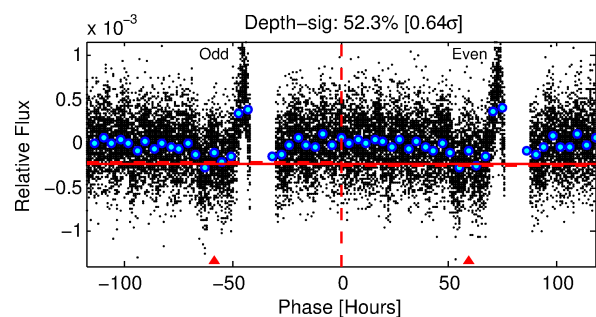
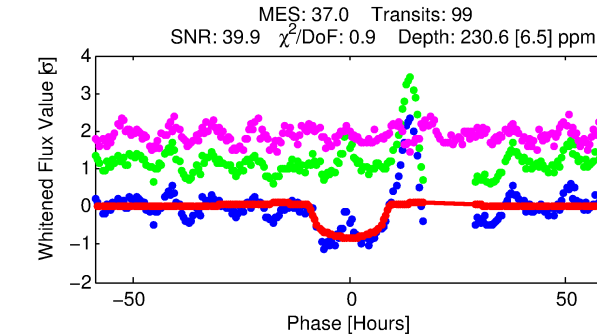
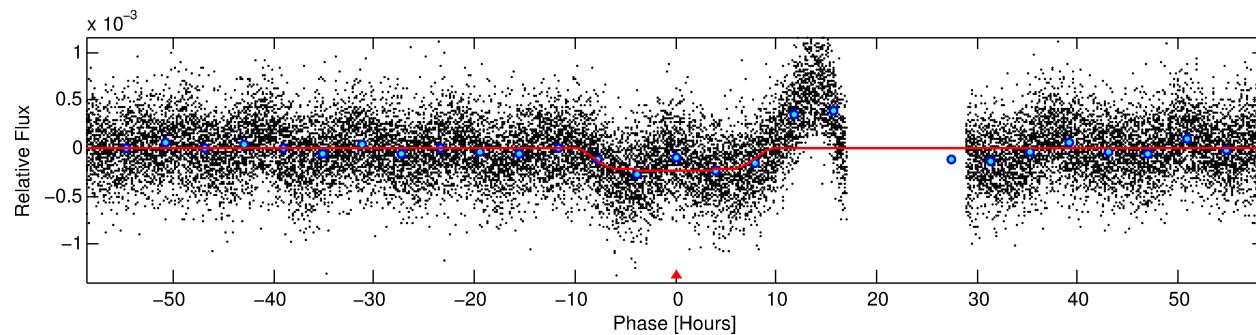
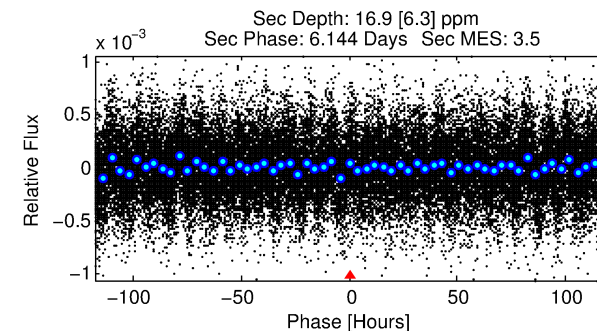
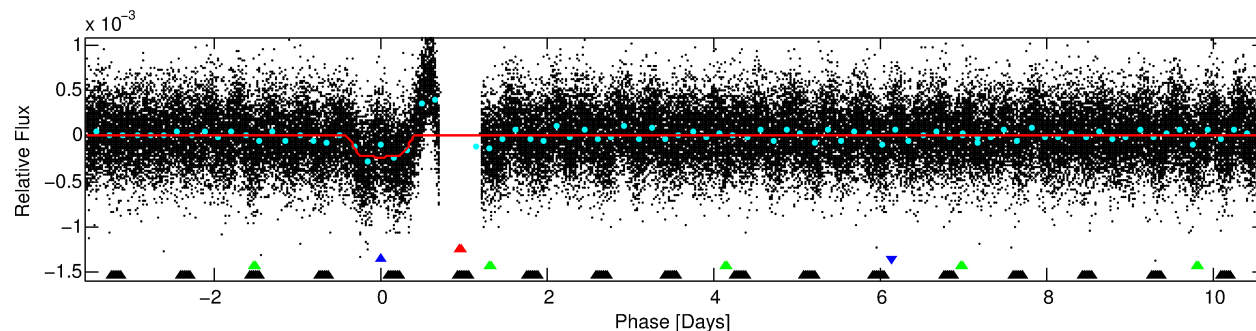
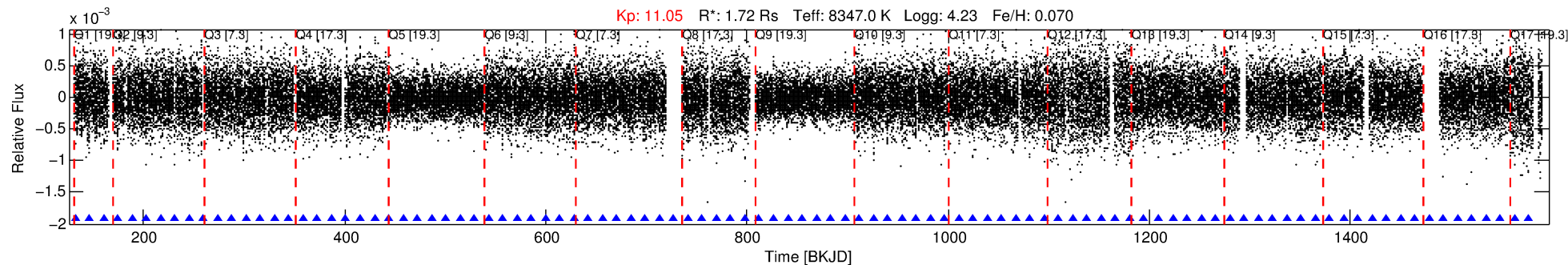
Ephemeris Match Information For 008703887-02

No Significant Match Found

DV One-Page Summary

KIC: 8703887 Candidate: 2 of 4 Period: 14.171 d
KOI: K00287 Corr: No Ephemeris Match

Kp: 11.05 R*: 1.72 Rs Teff: 8347.0 K Logg: 4.23 Fe/H: 0.070



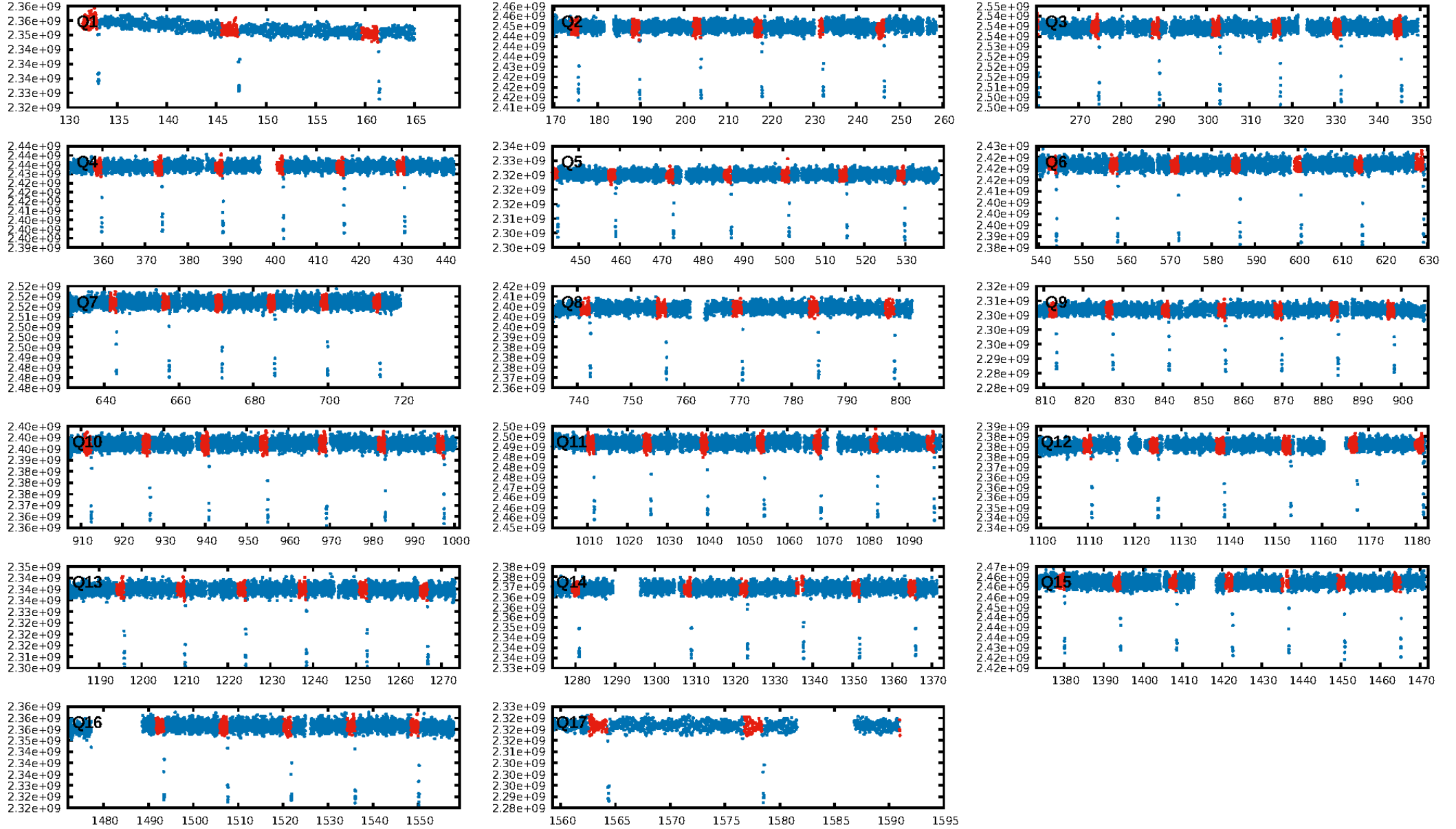
DV Fit Results:

Period = 14.17094 [0.00019] d
Epoch = 132.1408 [0.0108] BKJD
Rp/R* = 0.0171 [0.0003]
a/R* = 2.13 [0.13]
b = 0.96 [0.01]
Seff = 651.62 [268.68]
Teff = 1288 [133] K
Rp = 3.21 [1.00] Re
a = 0.1401 [0.0362] AU
Ag = 17.77 [9.41] [1.78σ]
Teffp = 4089 [425] K [6.29σ]

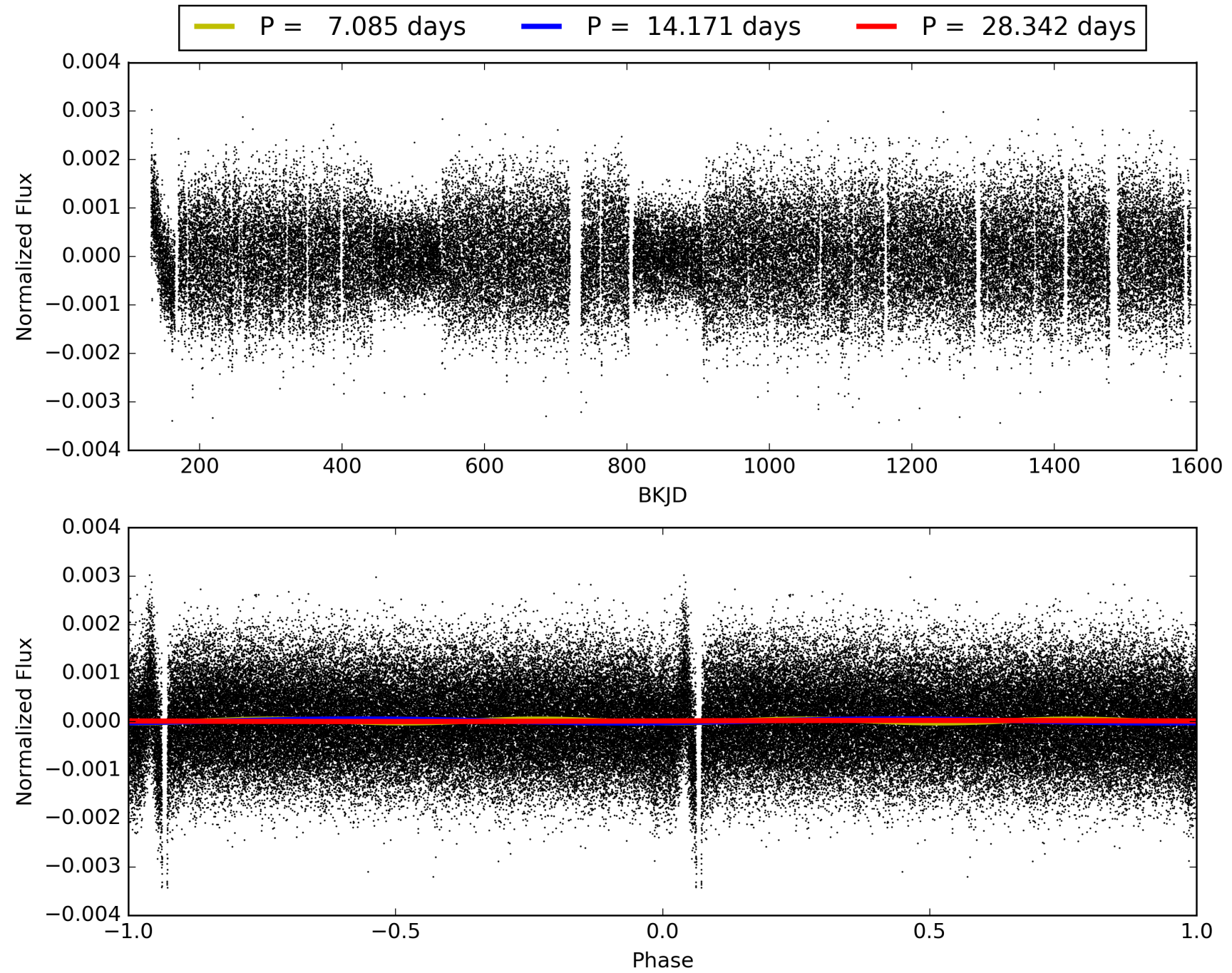
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.50σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 1.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [94/94]
GhostDiagnostic-chr: 2.056
Centroid-sig: 0.0%
Centroid-so: 0.883 arcsec [4.84σ]
OotOffset-rm: 2.324 arcsec [2.84σ]
KicOffset-rm: 2.964 arcsec [3.90σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.00 [0/16]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 008703887-02, PDC Light Curves

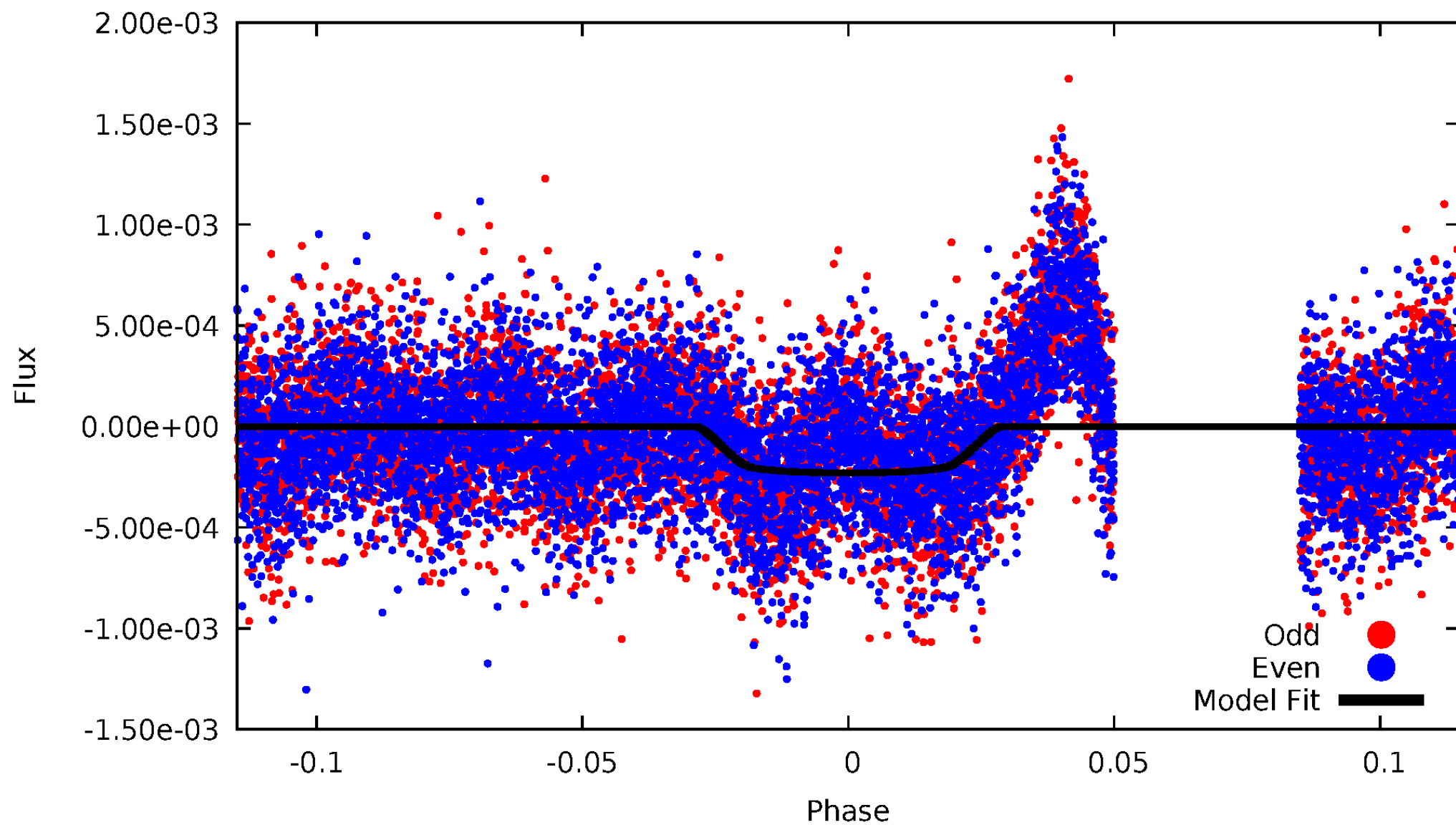


TCE 008703887-02



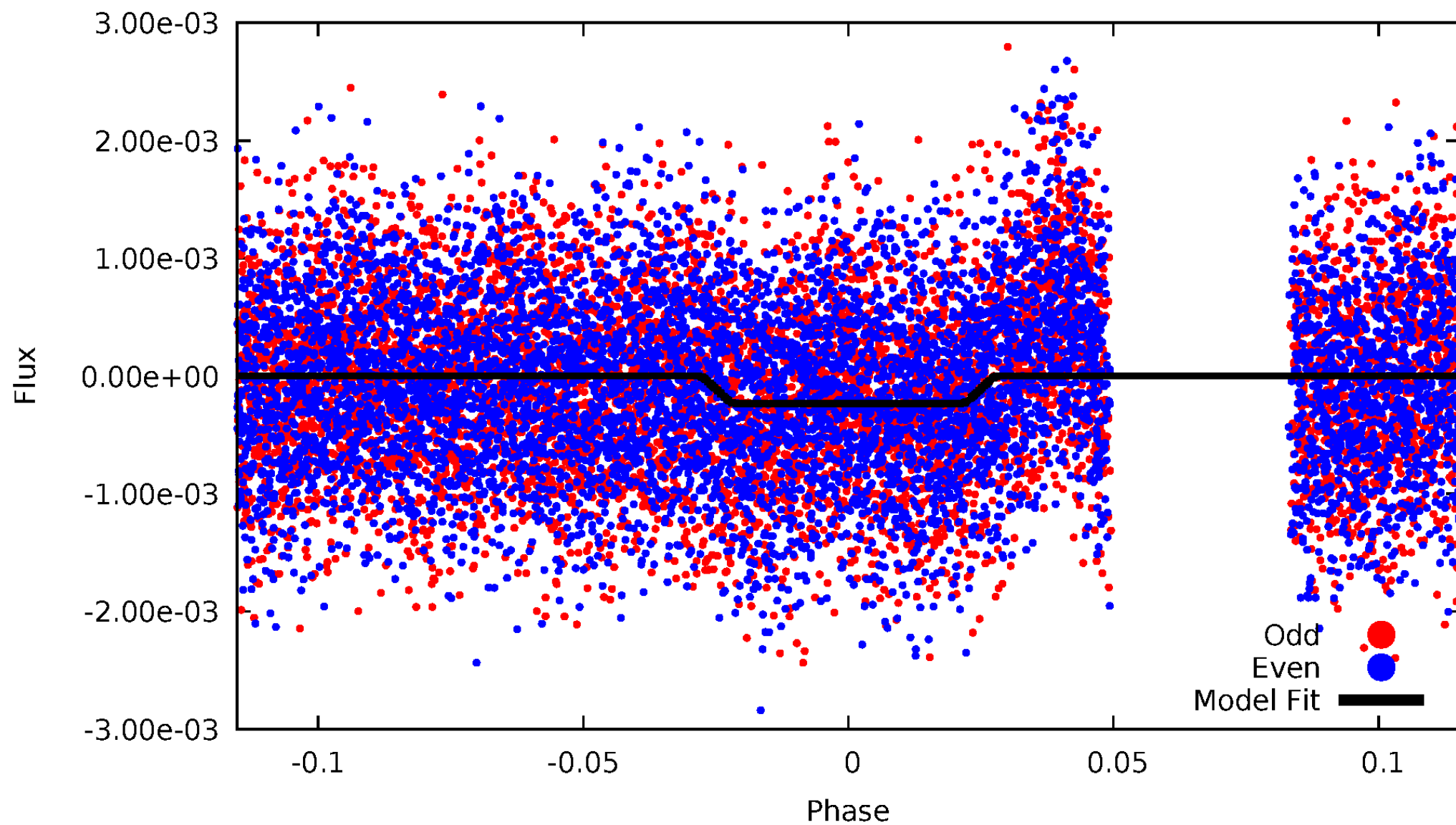
DV Odd/Even

TCE 008703887-02



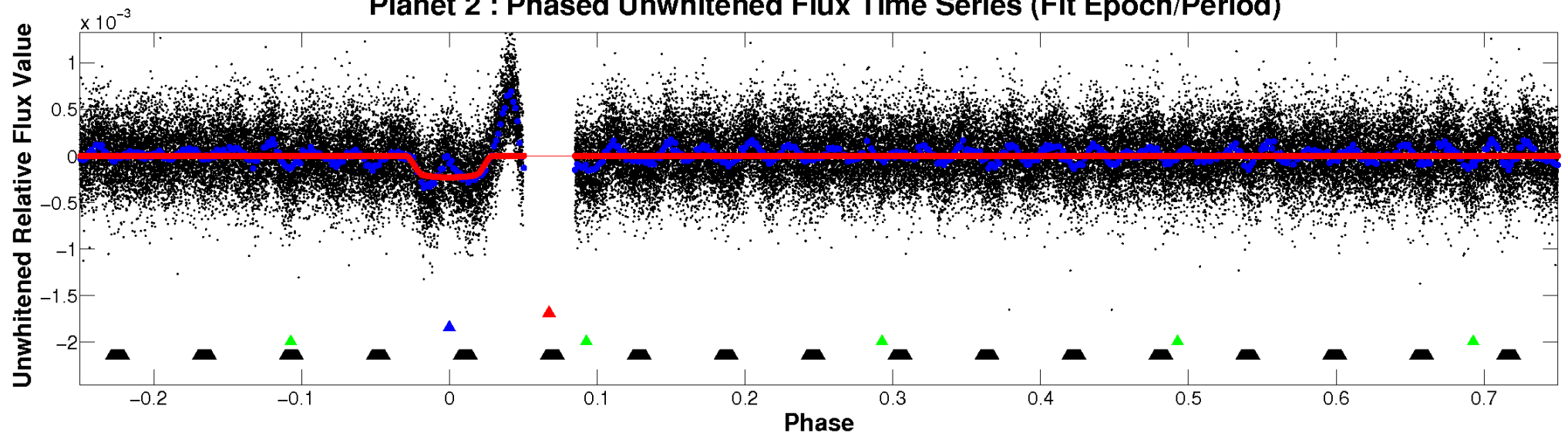
ALT Odd/Even

TCE 008703887-02

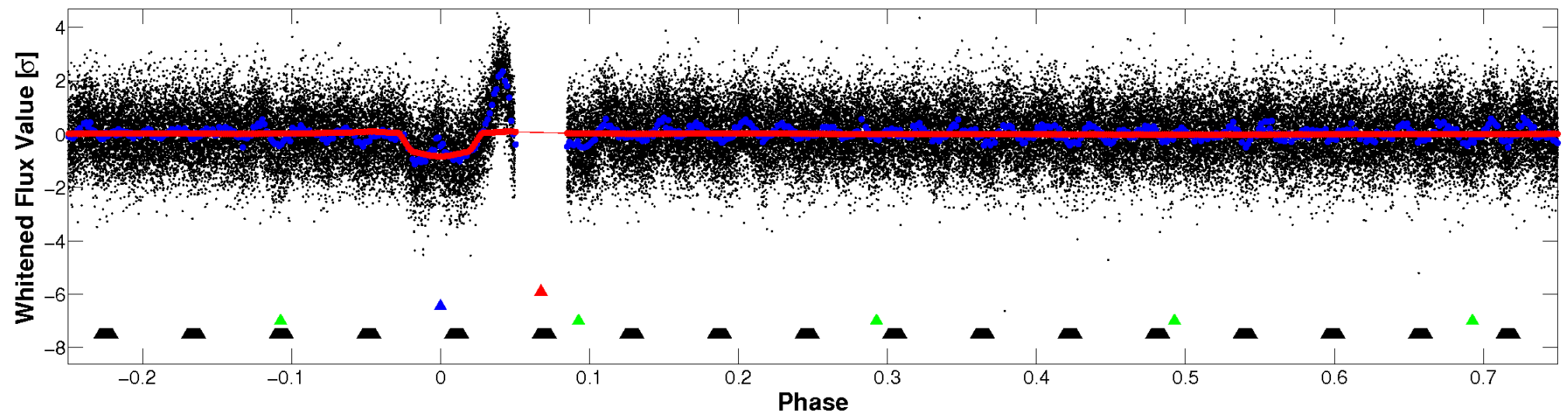


Non-Whitened Vs. Whitened Light Curve

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

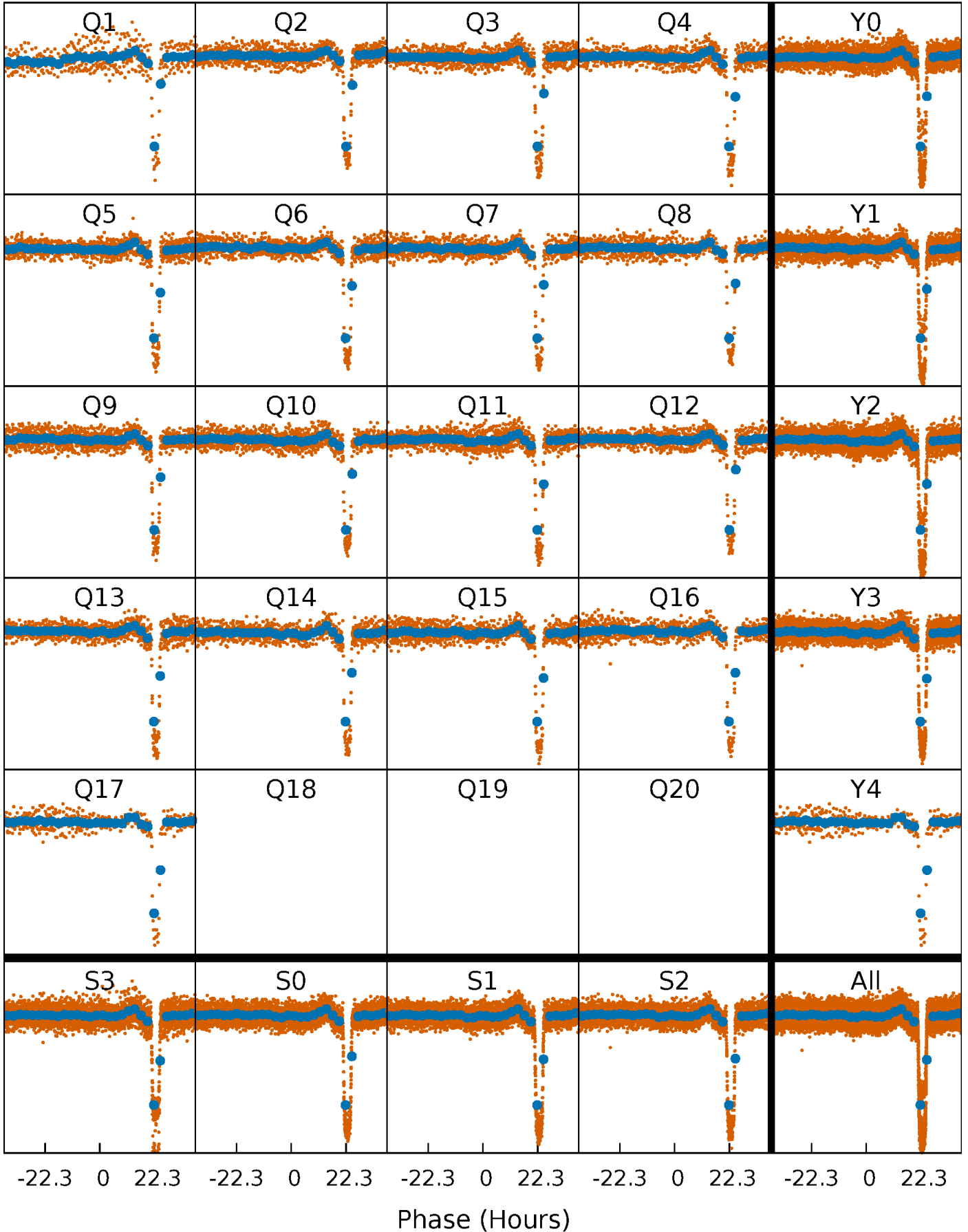


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



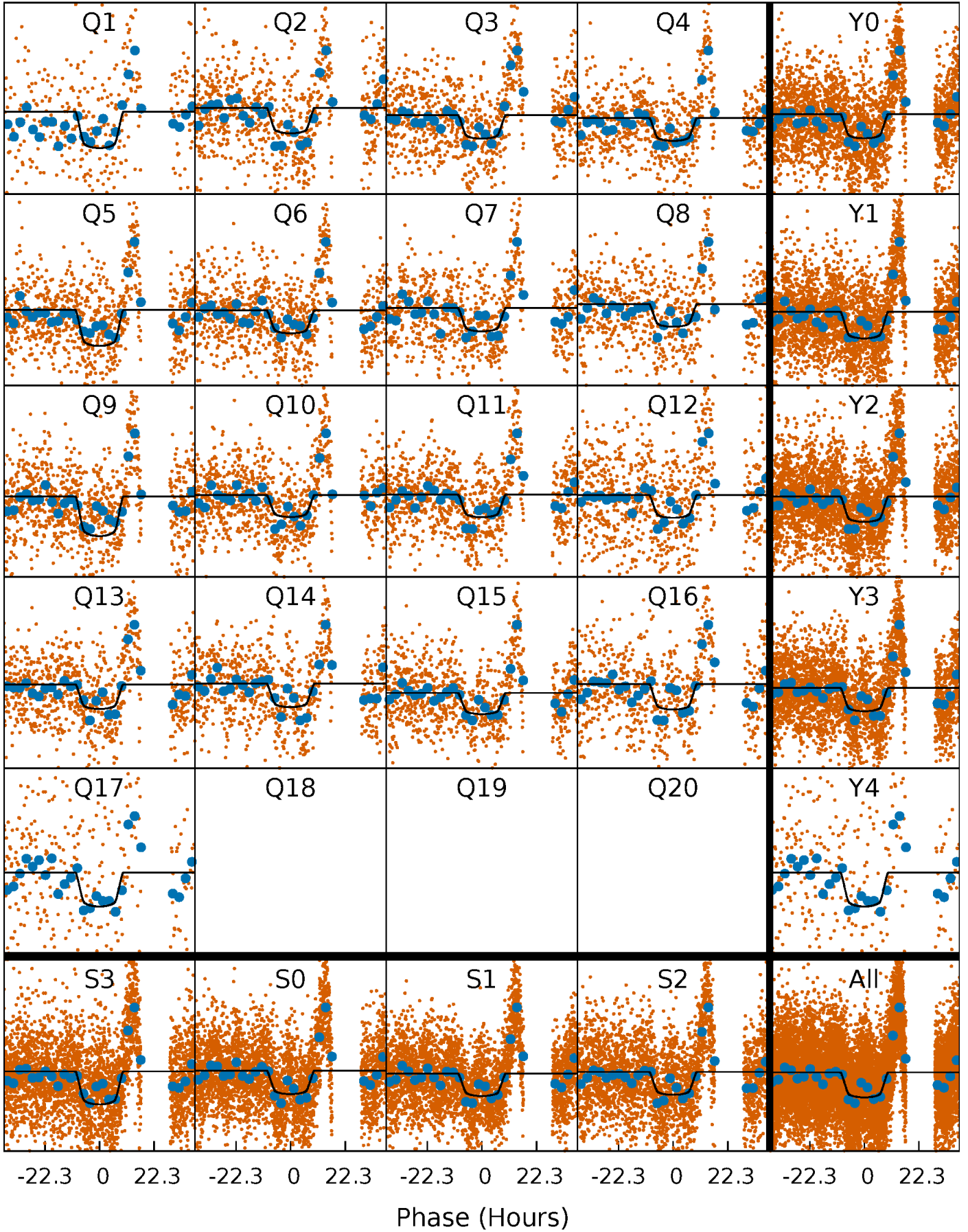
PDC Quarter-Phased Transit Curves

TCE 008703887-02 $P = 14.170939$ Days $T_0 = 132.140810$ (BKJD)



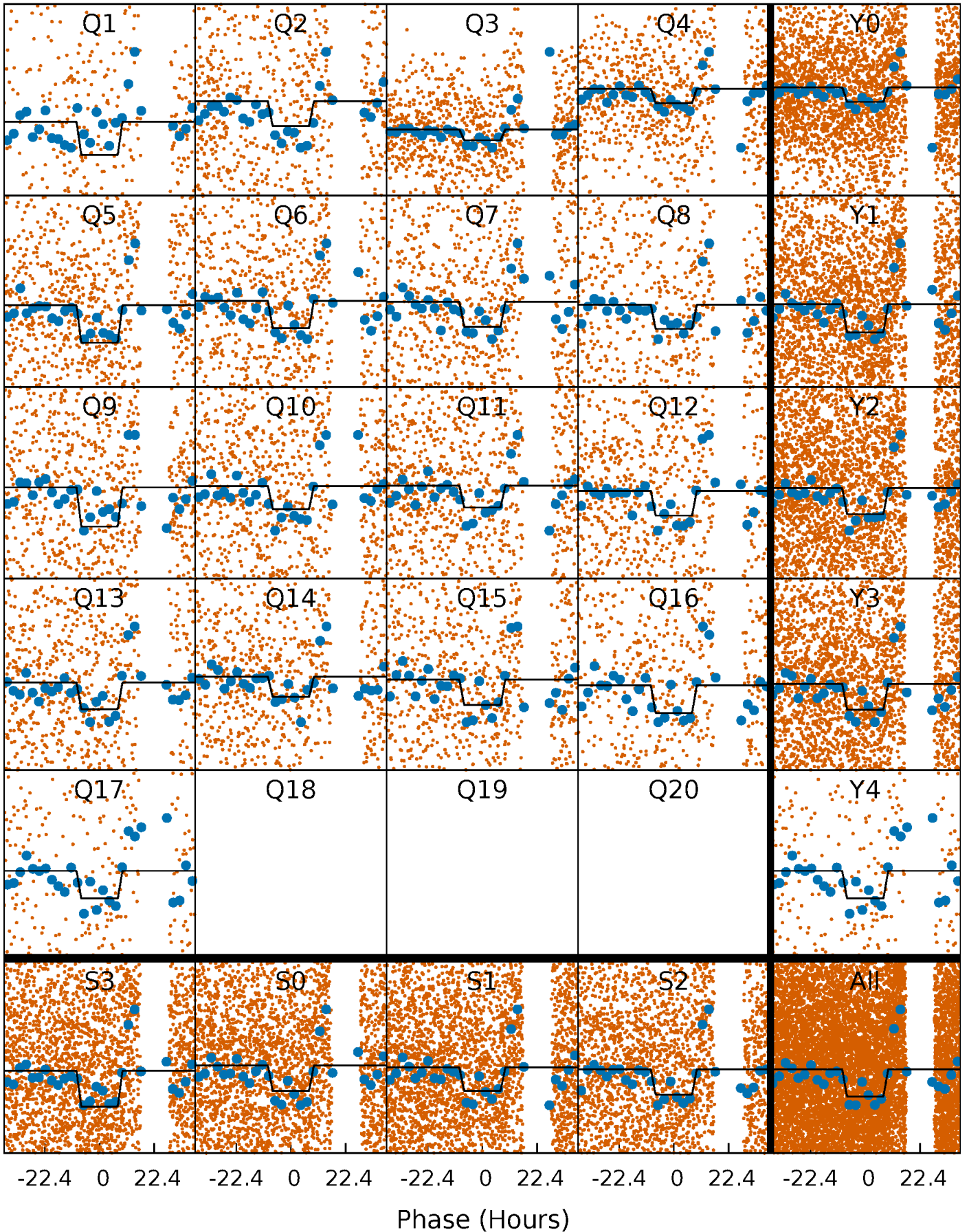
DV Quarter-Phased Transit Curves

TCE 008703887-02 $P = 14.170939$ Days $T_0 = 132.140810$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

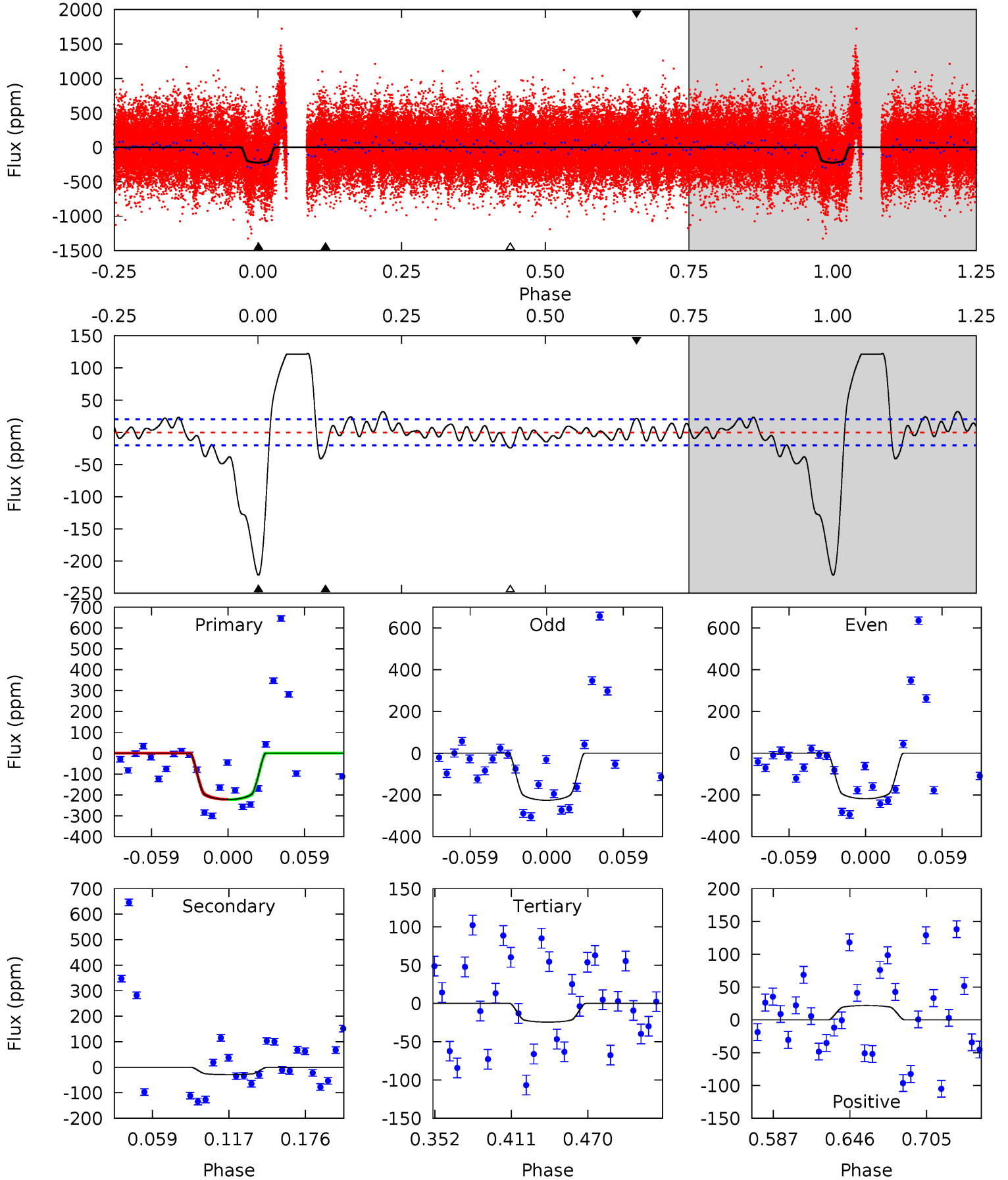
TCE 008703887-02 P= 14.171263 Days $T_0=132.140468$ (BKJD)



DV Model-Shift Uniqueness Test

008703887-02, P = 14.170939 Days, E = 117.969871 Days

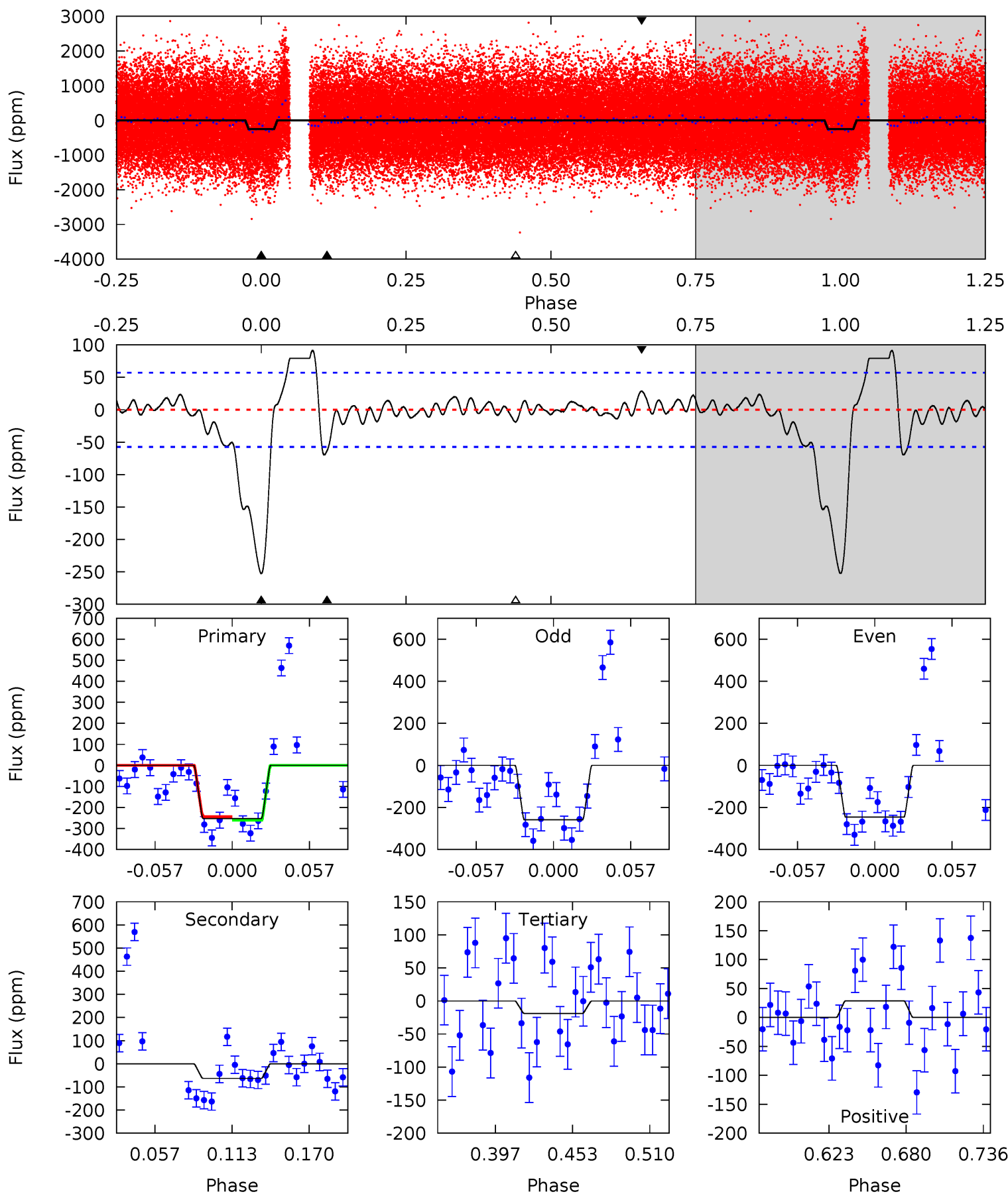
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.9	6.62	5.59	5.00	4.68	1.89	2.97	45.3	45.9	1.03	1.62	0.84	1.14	0.36	0.18



Alt Model-Shift Uniqueness Test

008703887-02, P = 14.171263 Days, E = 117.969205 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.7	5.19	1.54	2.36	4.68	1.91	1.10	19.1	18.3	3.64	2.82	0.52	0.87	0.27	0.70



Stellar Parameters For KIC 008703887

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8347^{+226}_{-368}	$4.231^{+0.067}_{-0.202}$	$0.070^{+0.250}_{-0.500}$	$1.715^{+0.532}_{-0.228}$	$1.826^{+0.304}_{-0.304}$	$0.510^{+0.185}_{-0.265}$
	+3%/-4%	+2%/-5%	+357%/-714%	+31%/-13%	+17%/-17%	+36%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008703887-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-29 ± 4	$3.28^{+0.57}_{-0.30}$	1837^{+120}_{-110}	4640^{+179}_{-173}	28^{+7}_{-7}
Alt.	-63 ± 12	$2.94^{+0.51}_{-0.27}$	1826^{+137}_{-100}	5764^{+313}_{-333}	74^{+25}_{-20}

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 $A_{obs} \gg 1.0$

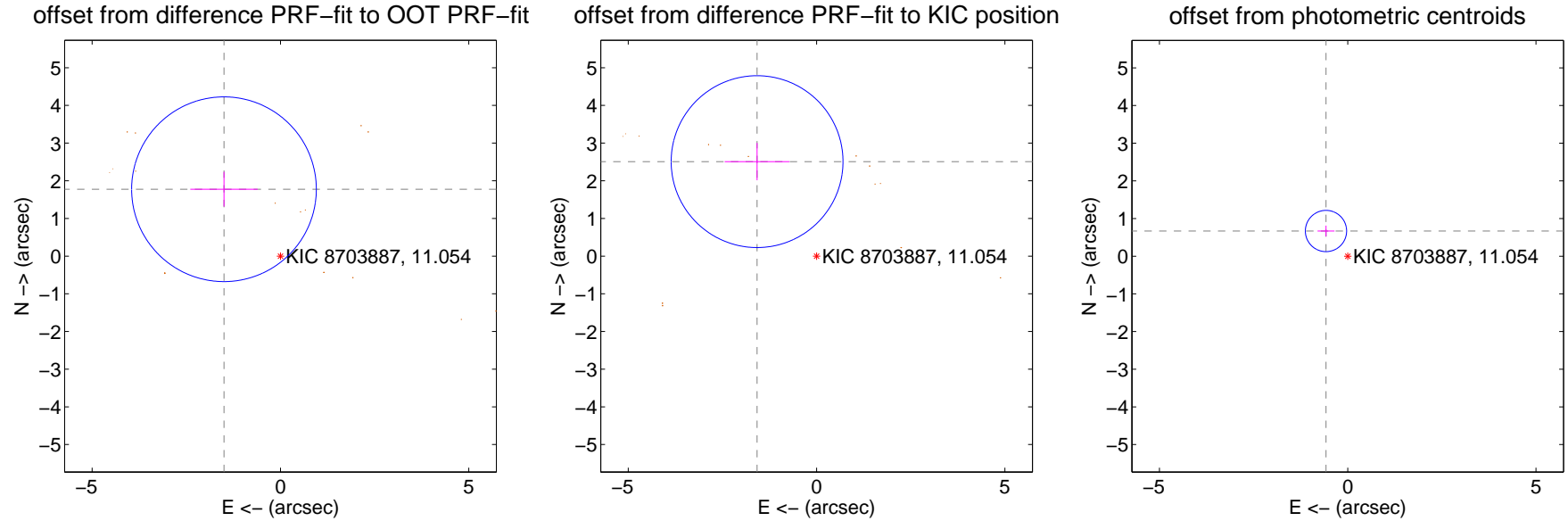
DV Centroid Data

Supplemental centroid analysis for 008703887-02. **Kepler magnitude: 11.05.** Transit SNR 39.93

There are 0 quarters with good PRF difference image offsets

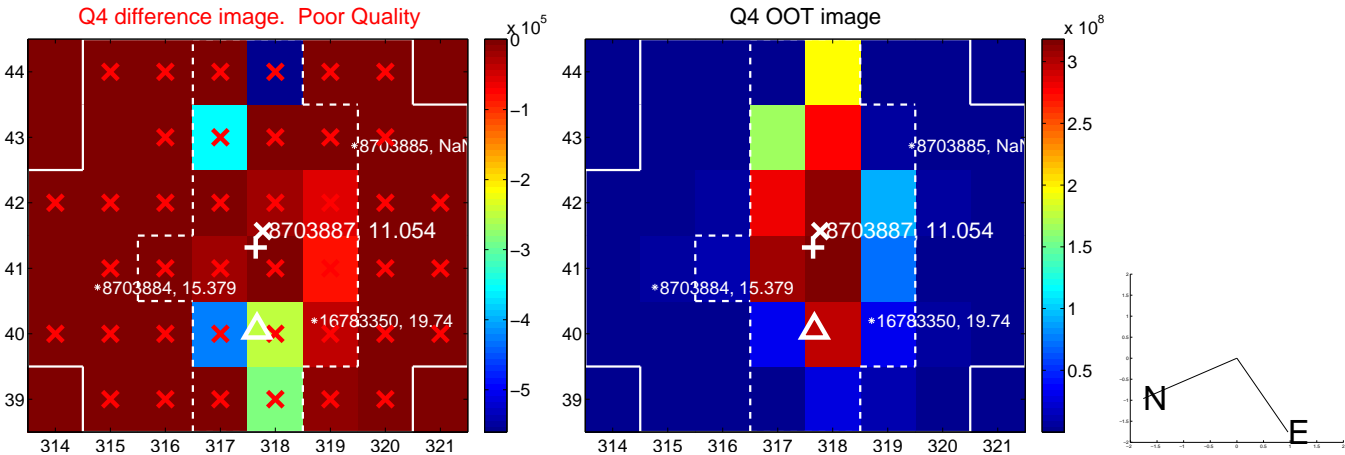
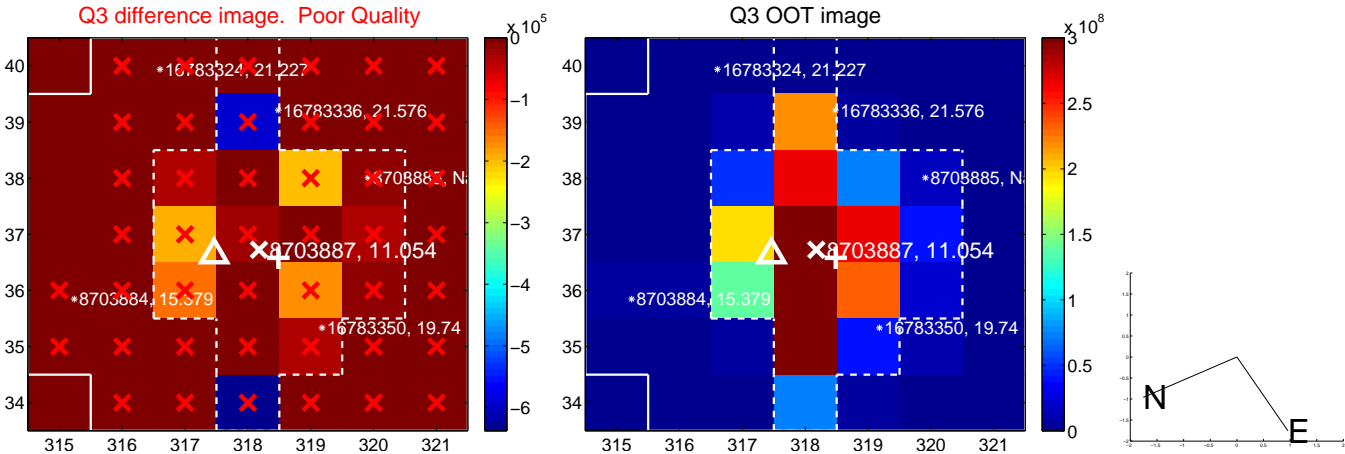
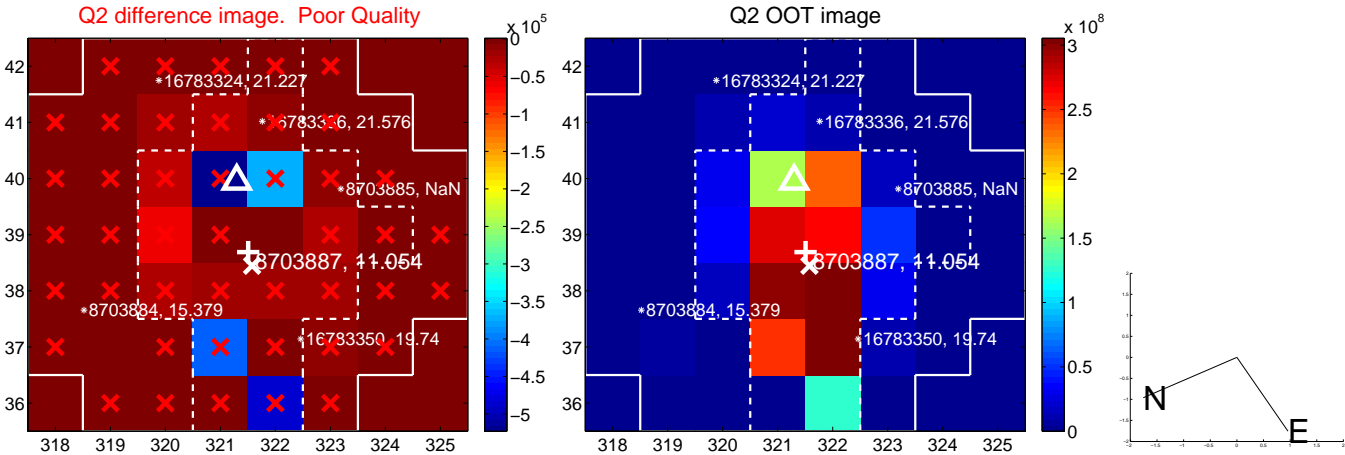
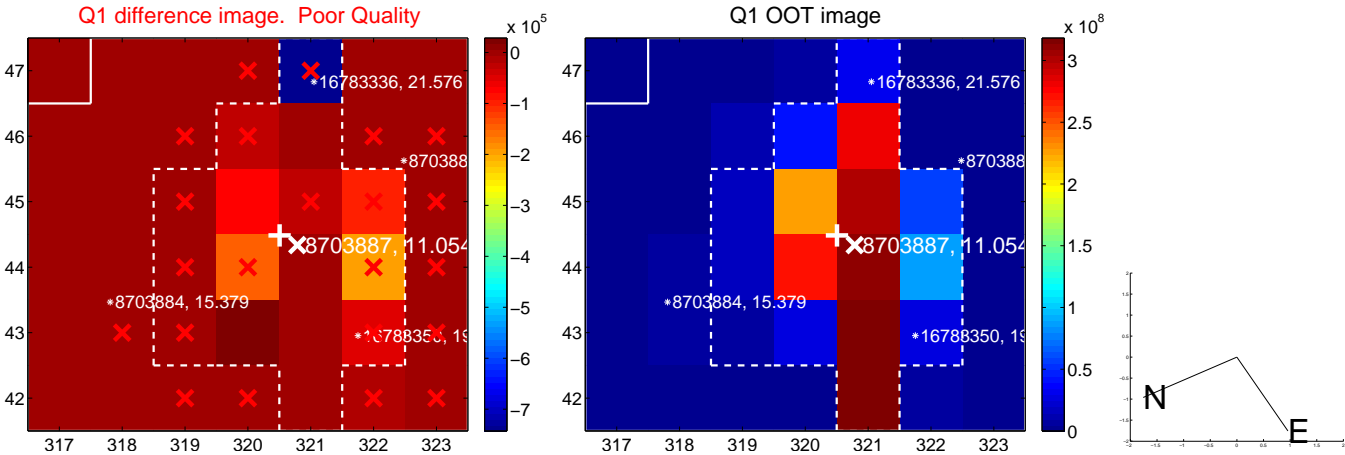
The direct PRF centroid is offset from the target star catalog position by about 1.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.324 ± 0.817	2.84	1.499 ± 0.893	1.775 ± 0.460
PRF-fit source offset from KIC position	2.964 ± 0.760	3.90	1.579 ± 0.860	2.508 ± 0.494
photometric centroid source offset	0.88 ± 0.18	4.84	0.58 ± 0.22	0.67 ± 0.14

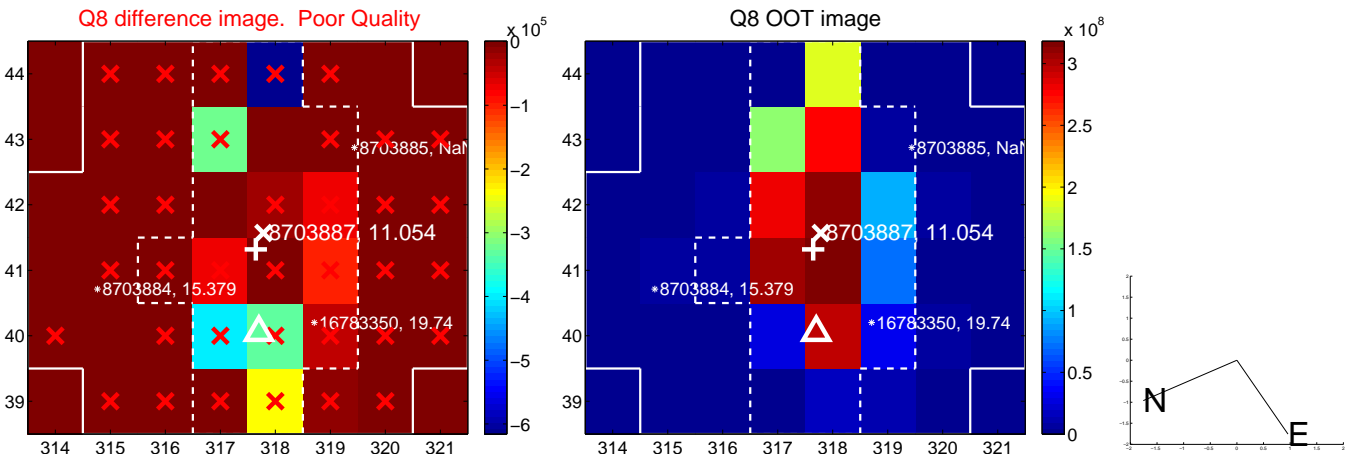
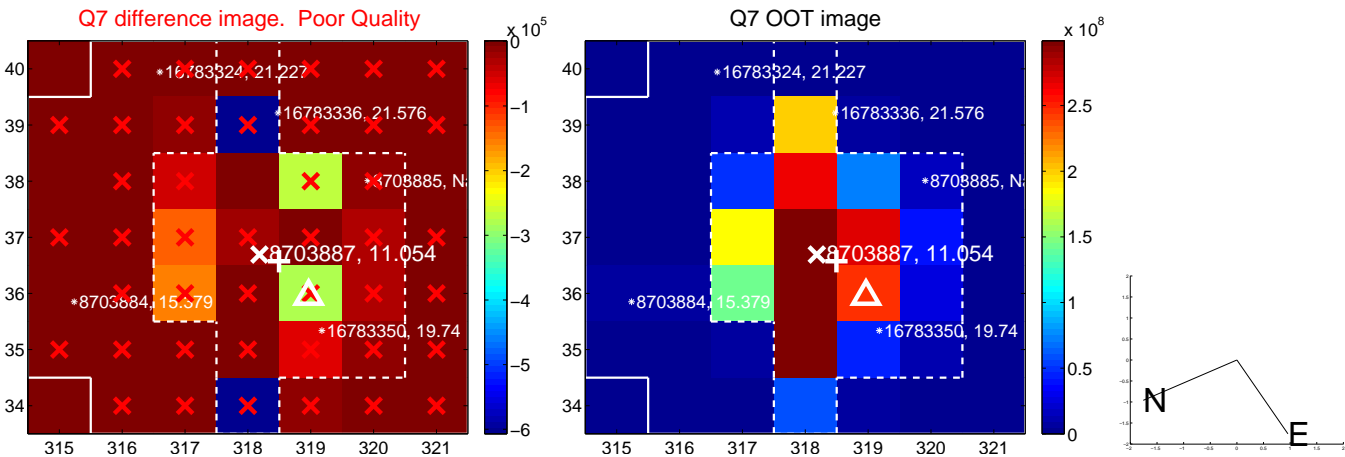
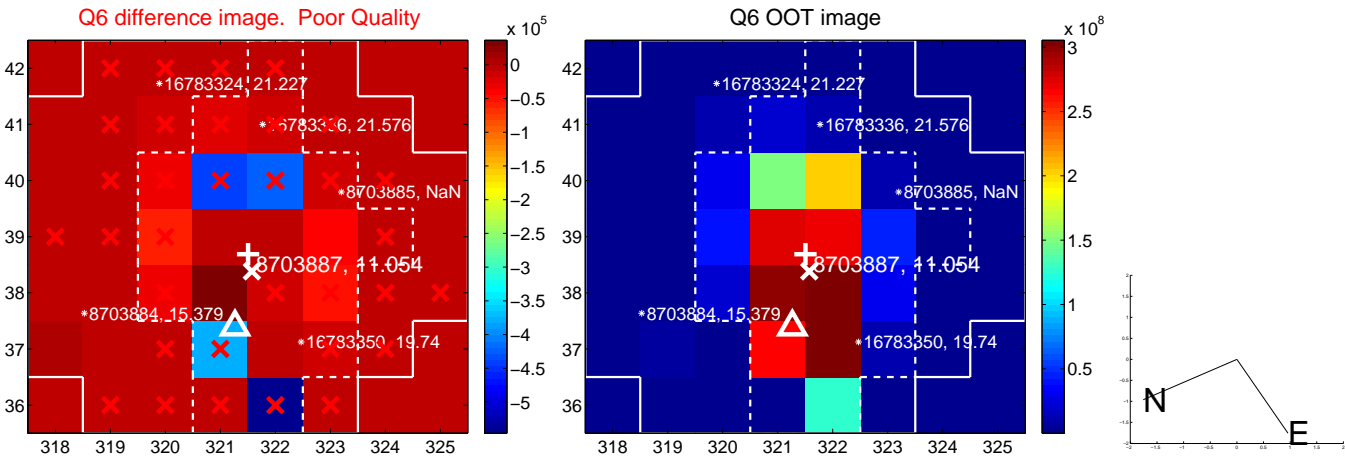
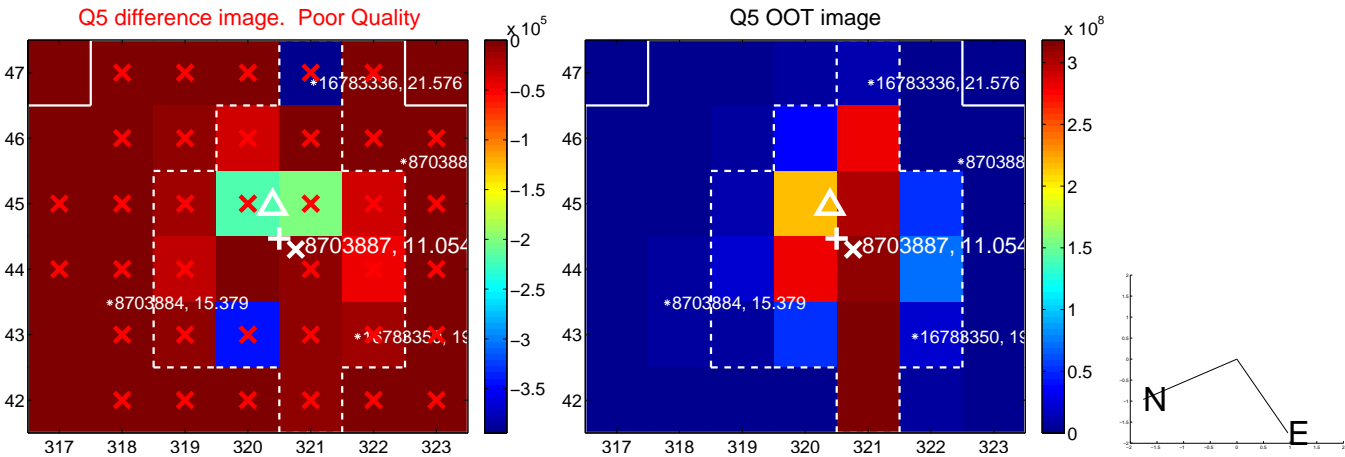


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

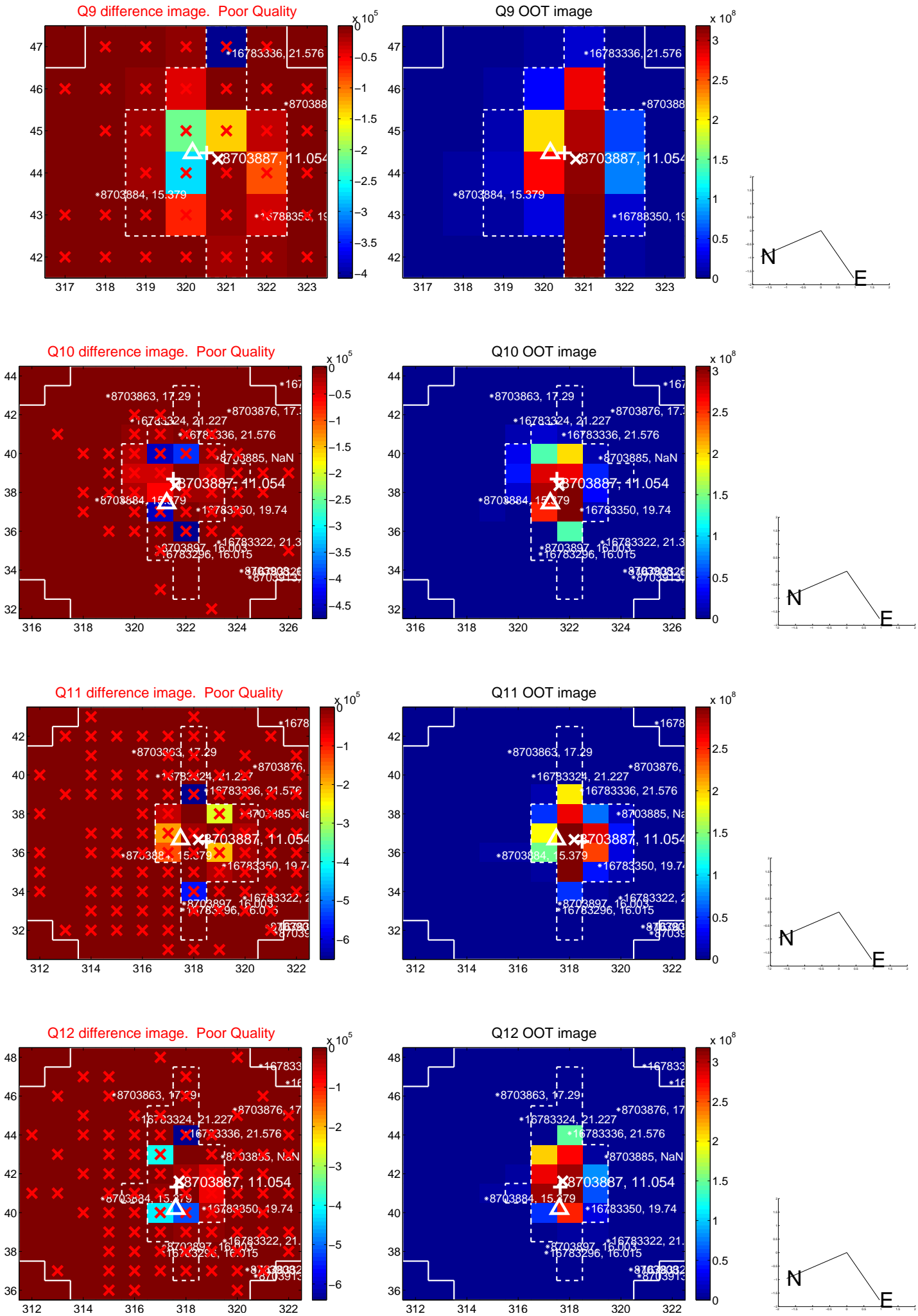
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



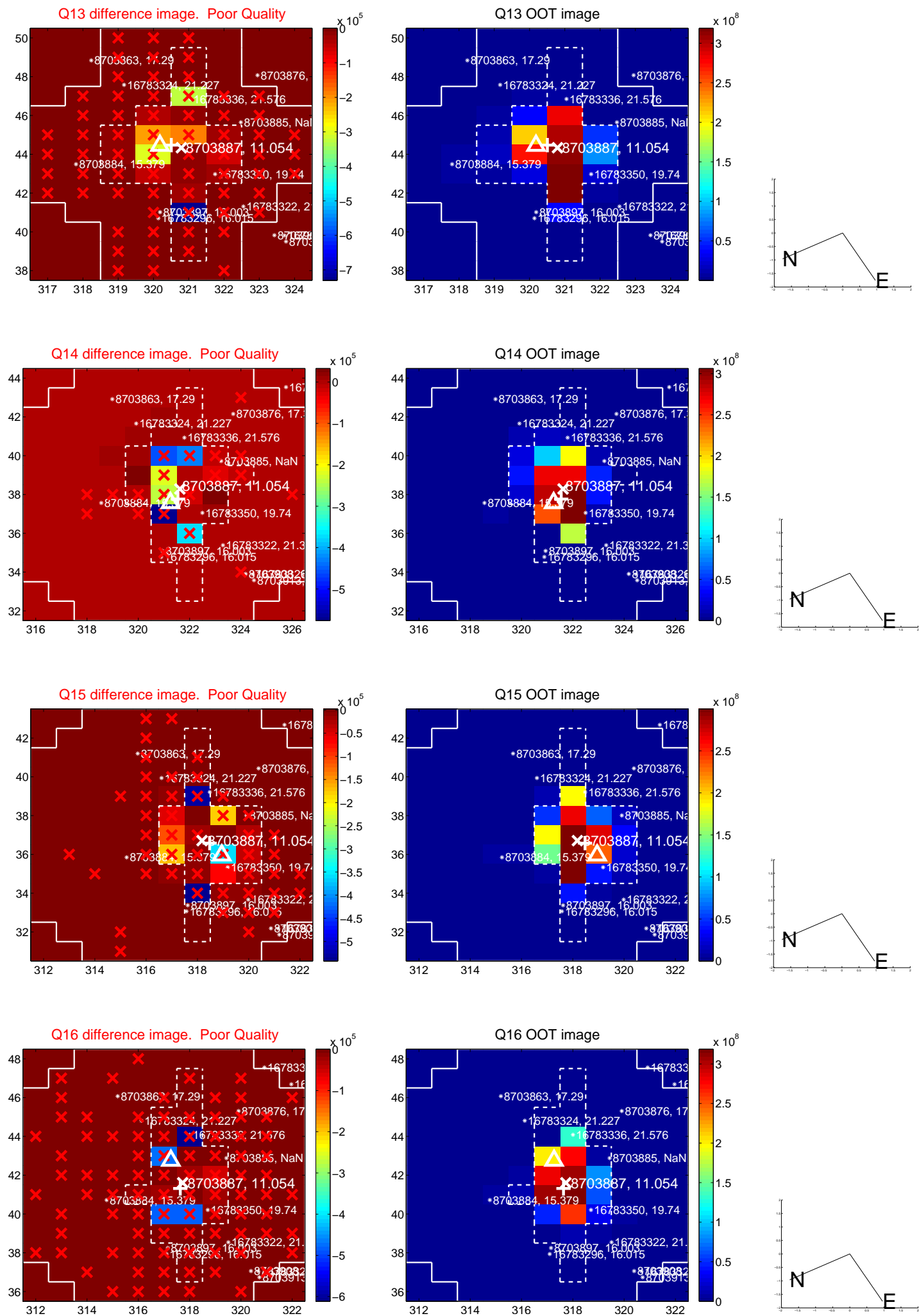
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



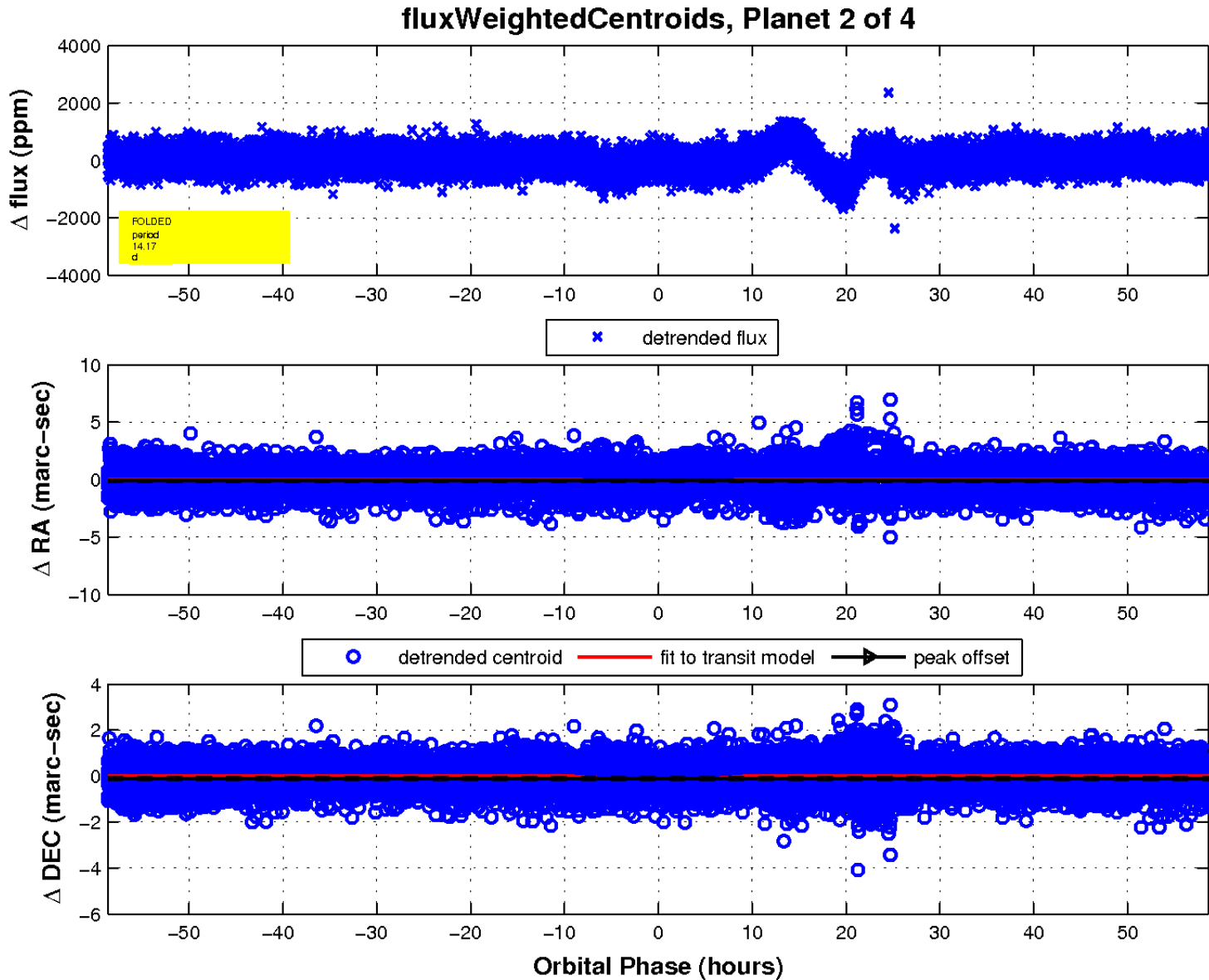
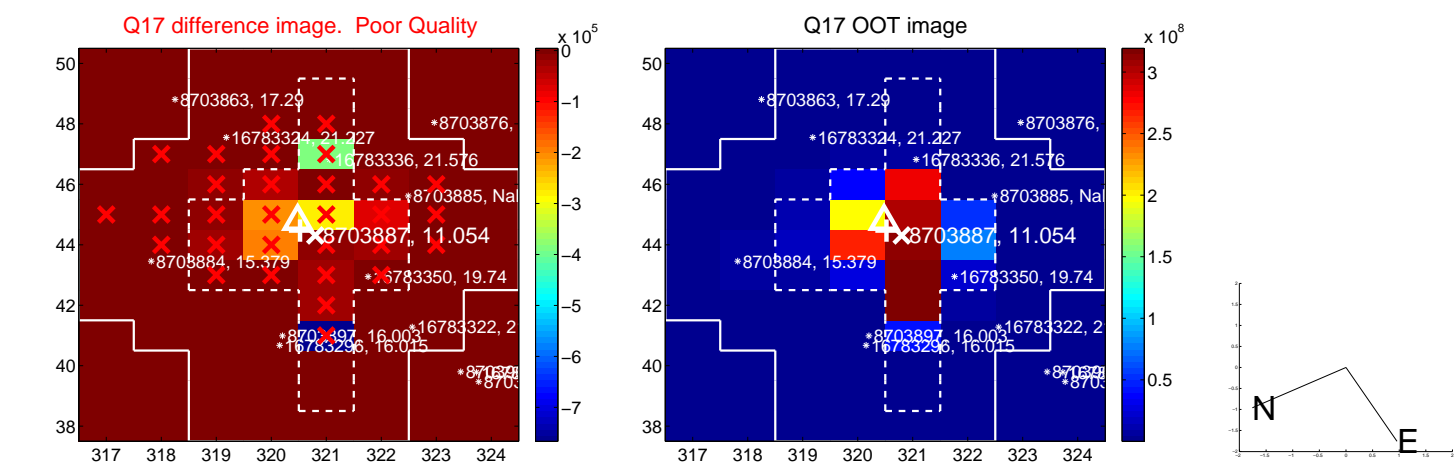
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

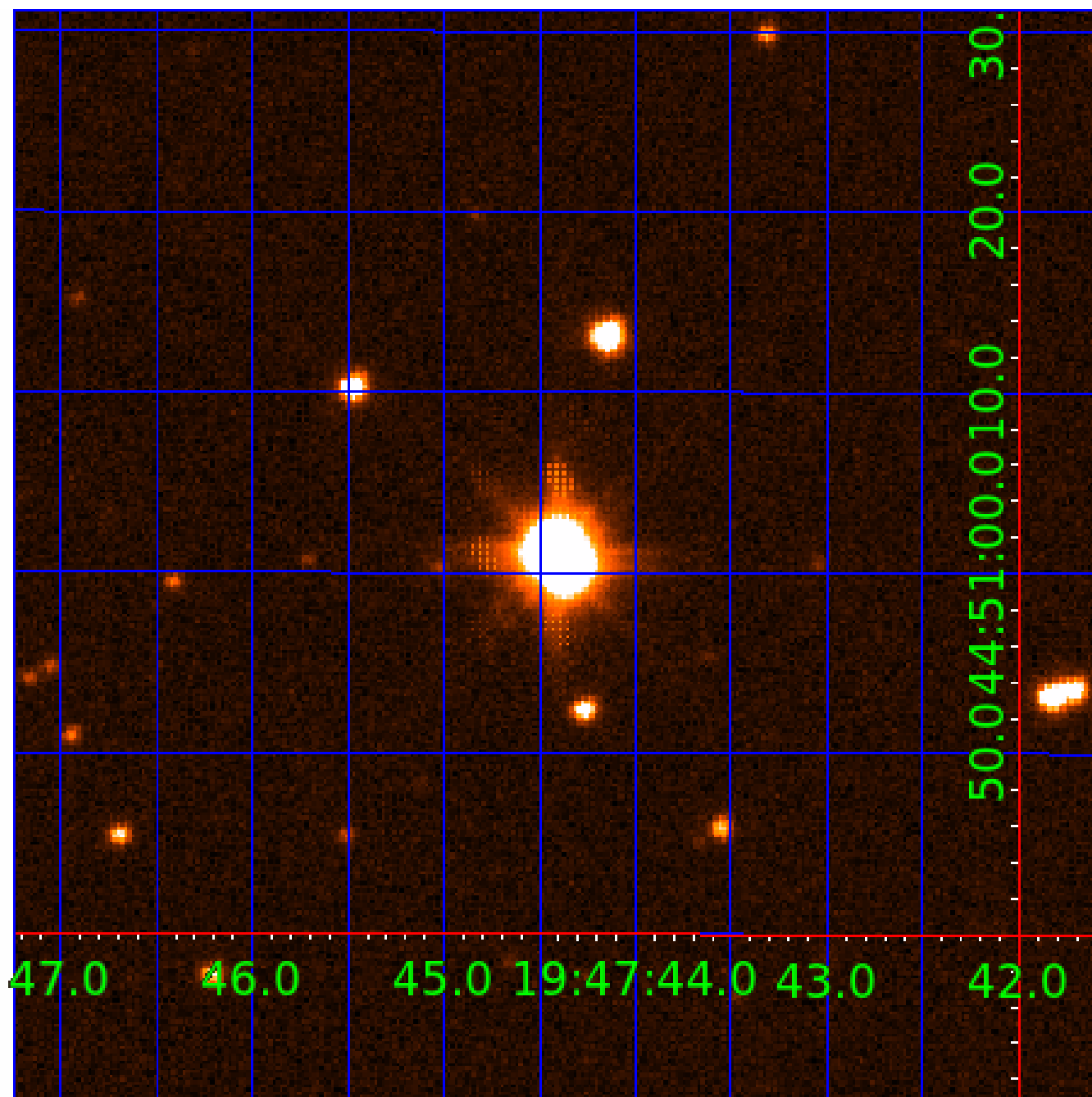


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008703887

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})
008703887-01	OBS	0287.01	14.170974	133.095085	14002.4	3.805	924.5	864.1	1.72	8347	21.37	651.62
008703887-02	OBS	No	14.170939	132.140810	230.6	19.545	37.0	39.9	1.72	8347	3.21	651.62
008703887-03	OBS	No	2.834201	133.451073	68.4	4.899	14.7	15.9	1.72	8347	1.51	5571.23
008703887-04	OBS	No	0.833513	132.356399	40.8	4.786	12.6	12.7	1.72	8347	1.11	28486.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008703887-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_SATURATED
008703887-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
008703887-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_SATURATED
008703887-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 008703887-03

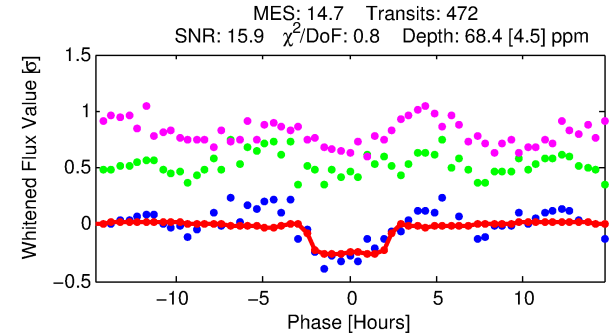
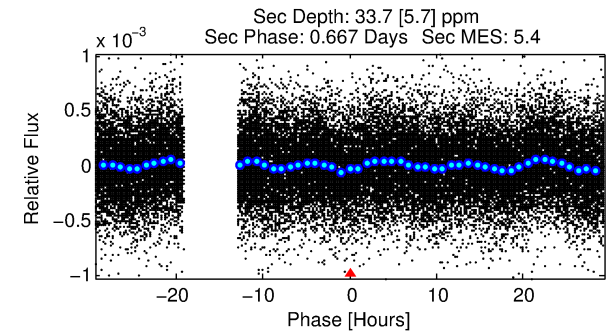
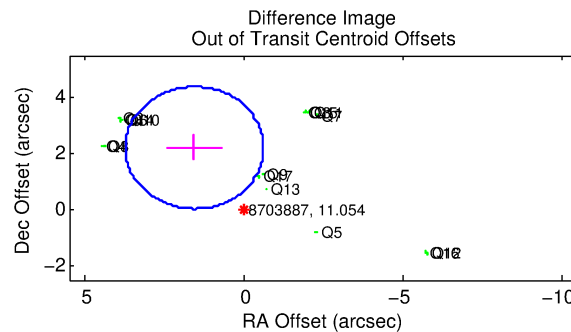
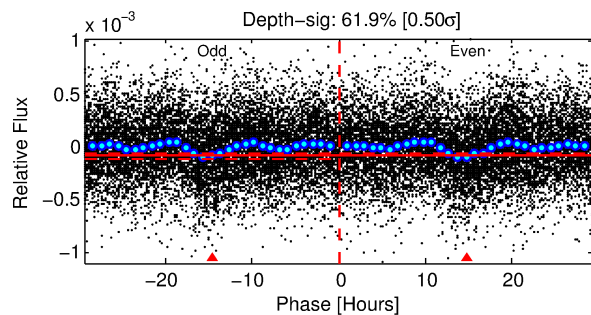
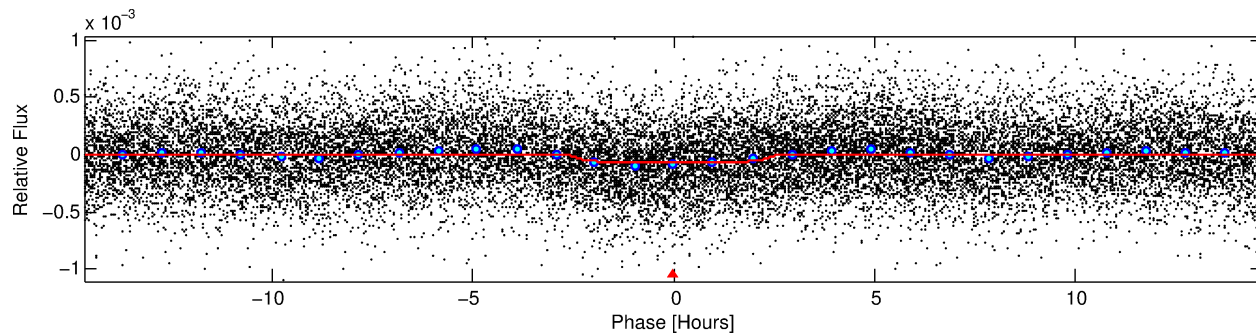
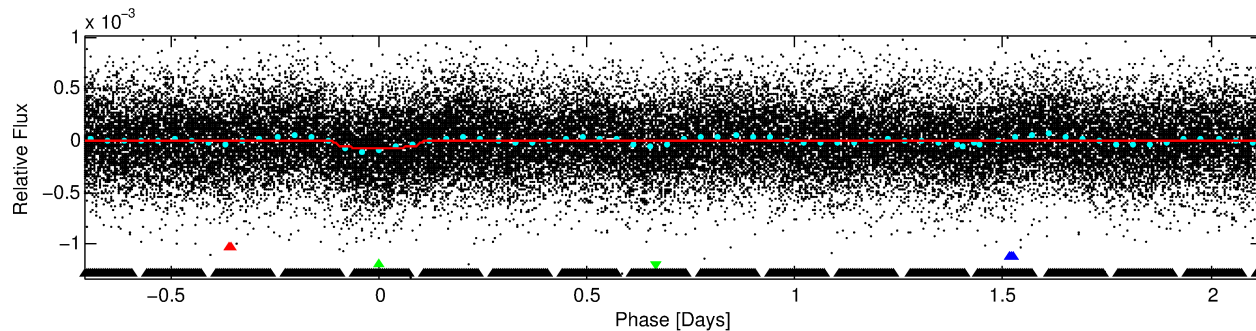
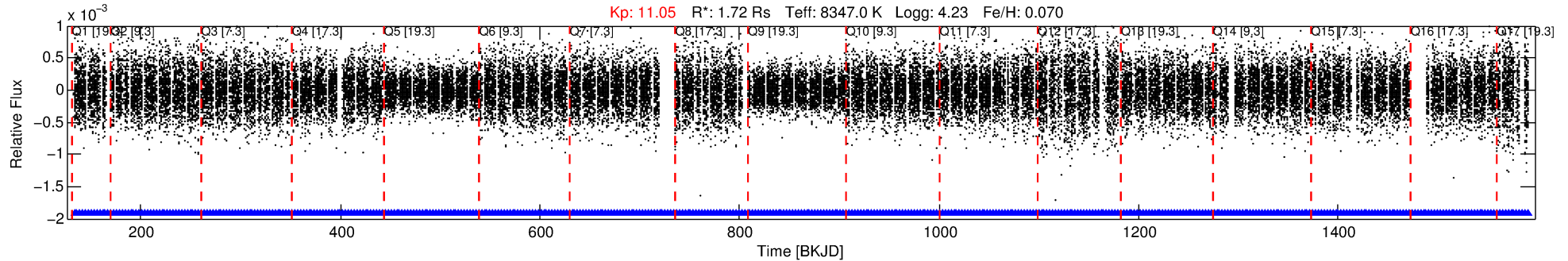
No Significant Match Found

DV One-Page Summary

KIC: 8703887 Candidate: 3 of 4 Period: 2.834 d

KOI: K00287 Corr: No Ephemeris Match

Kp: 11.05 R*: 1.72 Rs Teff: 8347.0 K Logg: 4.23 Fe/H: 0.070



DV Fit Results:

Period = 2.83420 [0.00002] d
Epoch = 133.4511 [0.0042] BKJD
Rp/R* = 0.0081 [0.0027]
a/R* = 3.46 [6.53]
b = 0.66 [1.77]
Seff = 5571.23 [2297.20]
Teq = 2203 [227] K
Rp = 1.51 [0.69] Re
a = 0.0479 [0.0124] AU
Ag = 18.71 [14.82] [1.19σ]
Teffp = 7084 [1277] K [3.76σ]

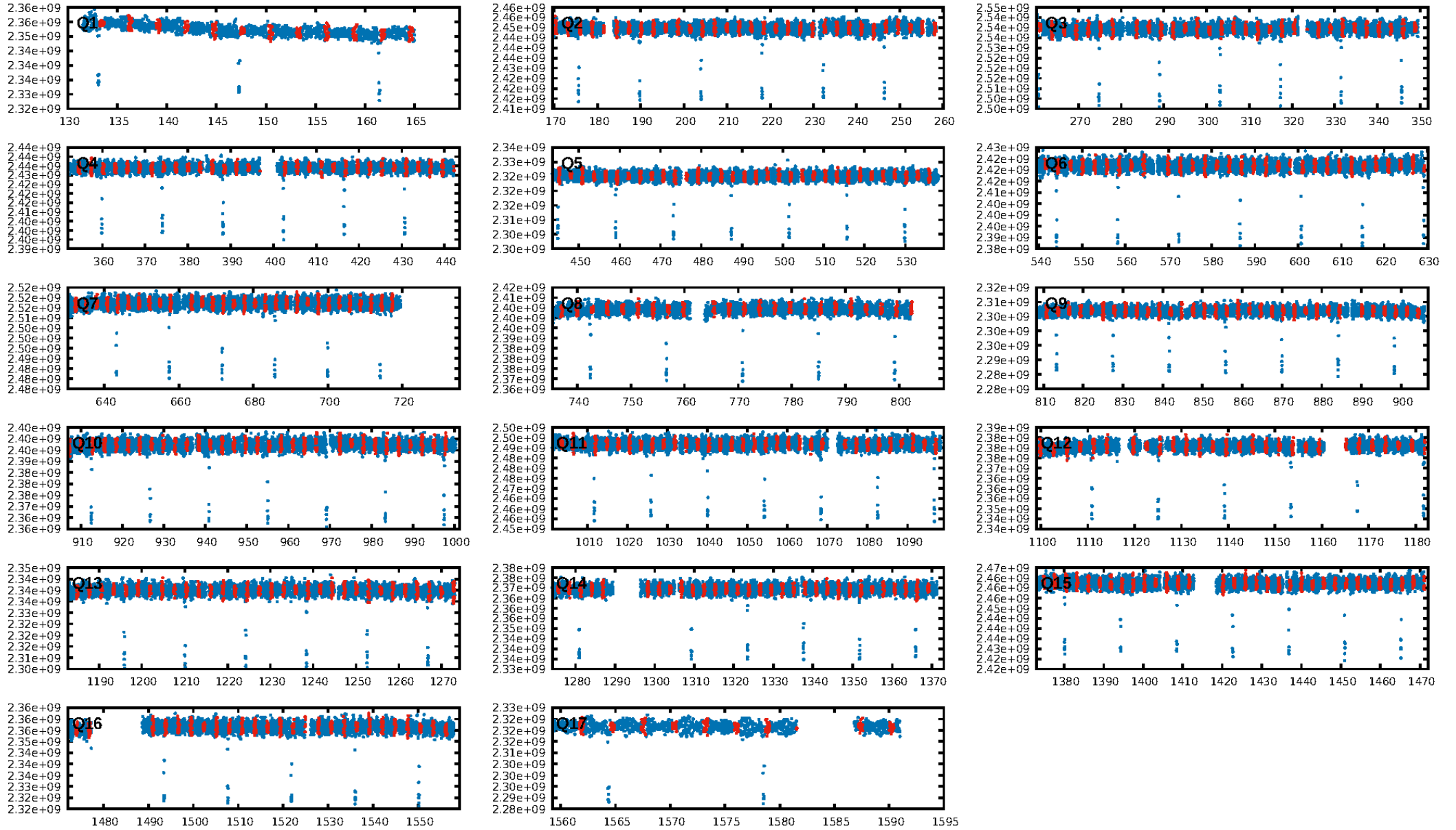
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.01σ]
LongPeriod-sig: 100.0% [13.50σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.26e-25
RollingBand-fgt: 1.00 [451/451]
GhostDiagnostic-chr: 0.6469
Centroid-sig: 0.0%
Centroid-so: 0.768 arcsec [2.96σ]
OotOffset-rm: 2.703 arcsec [3.73σ]
KicOffset-rm: 3.069 arcsec [11.33σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.00 [0/16]
DiffImageOverlap-fno: 0.00 [0/17]

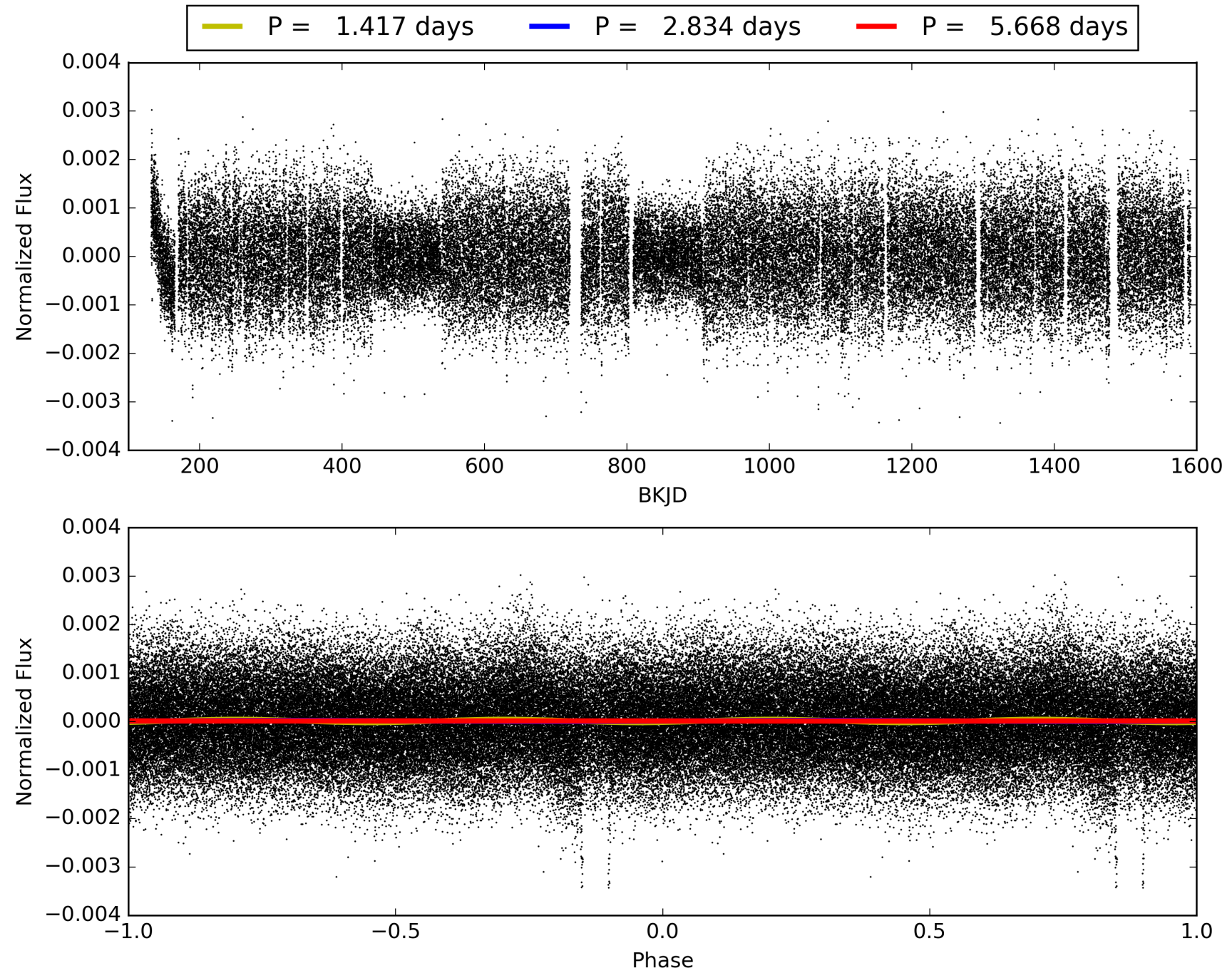
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:24:00 Z

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

TCE 008703887-03, PDC Light Curves

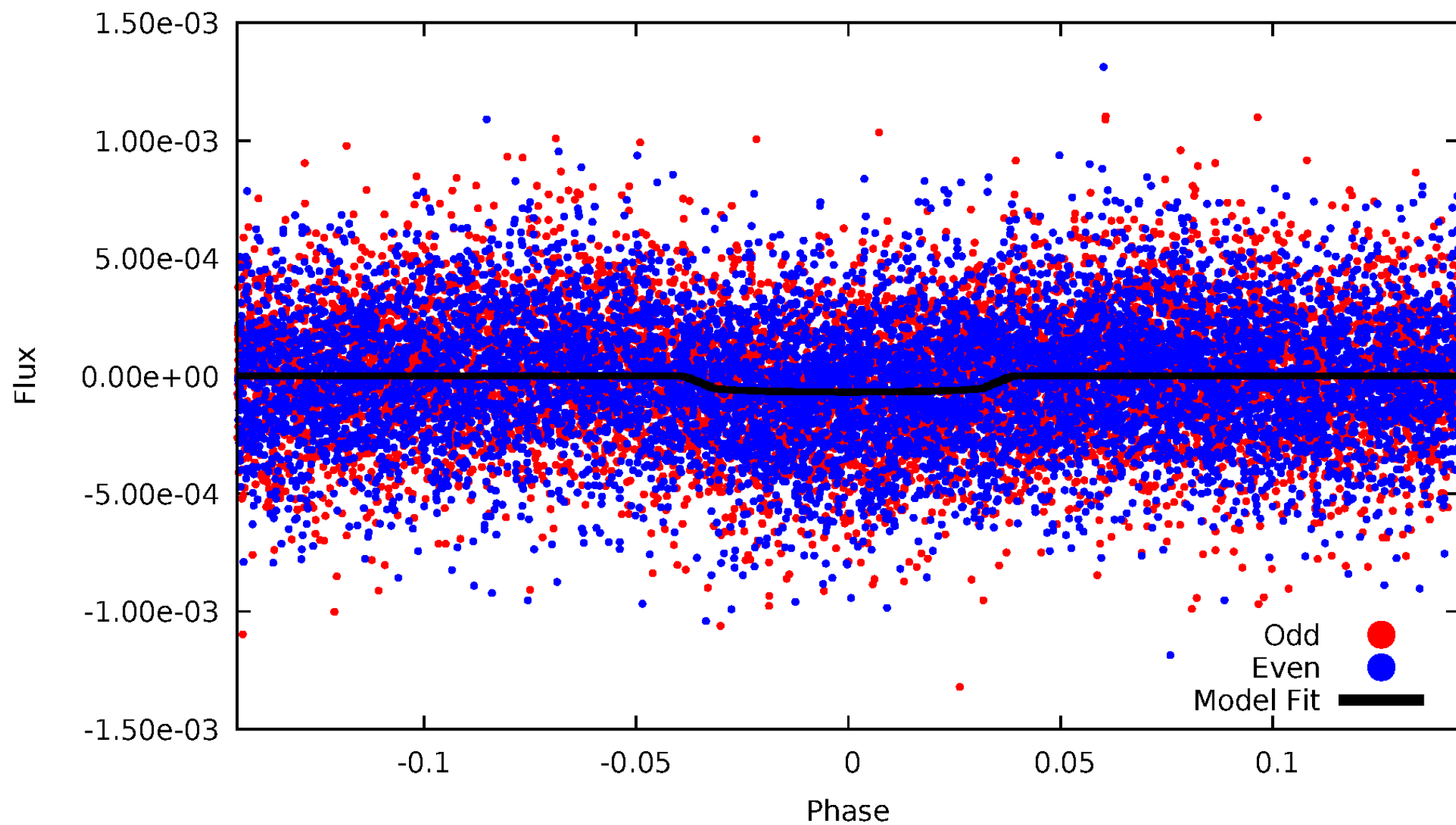


TCE 008703887-03



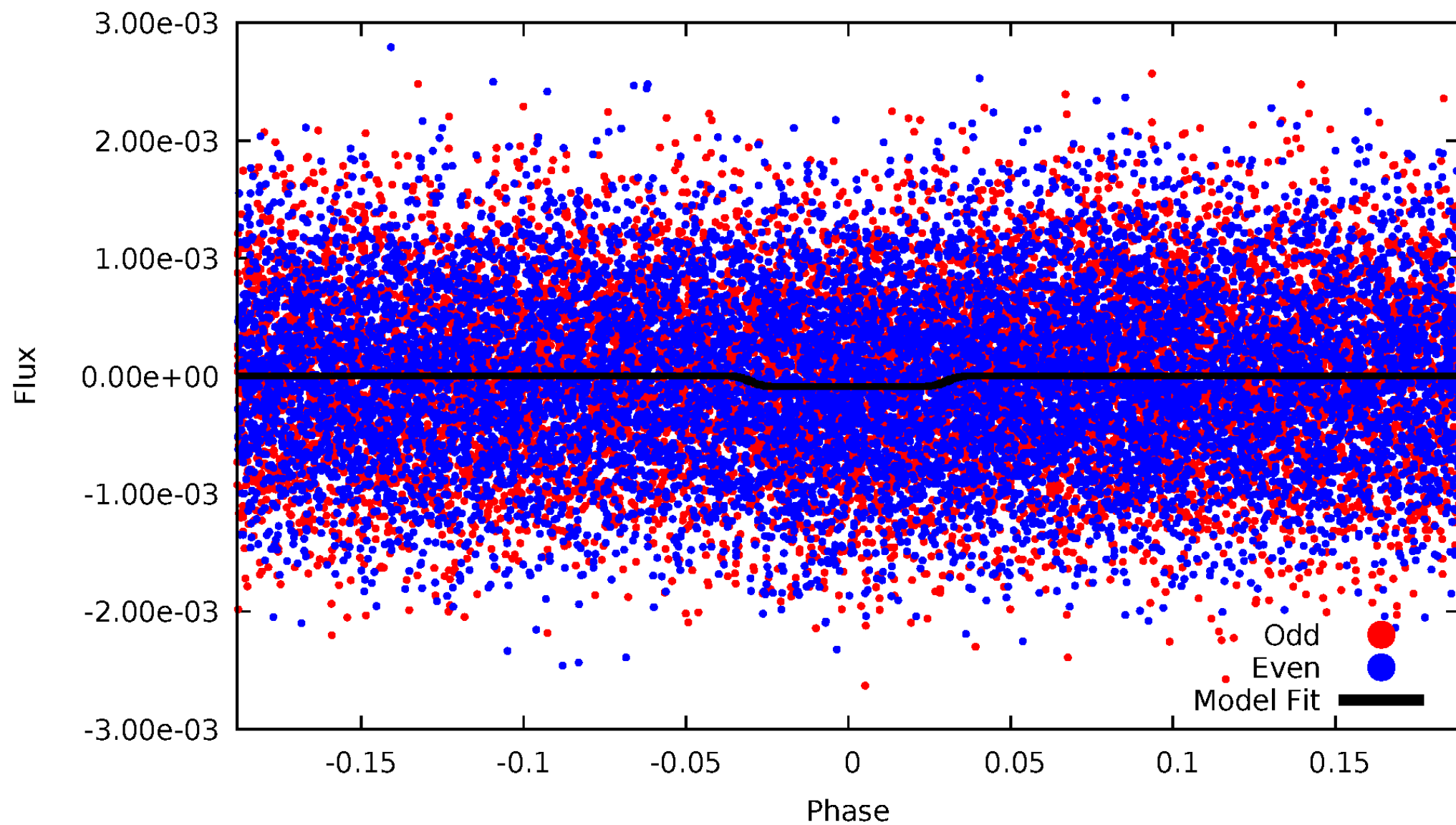
DV Odd/Even

TCE 008703887-03



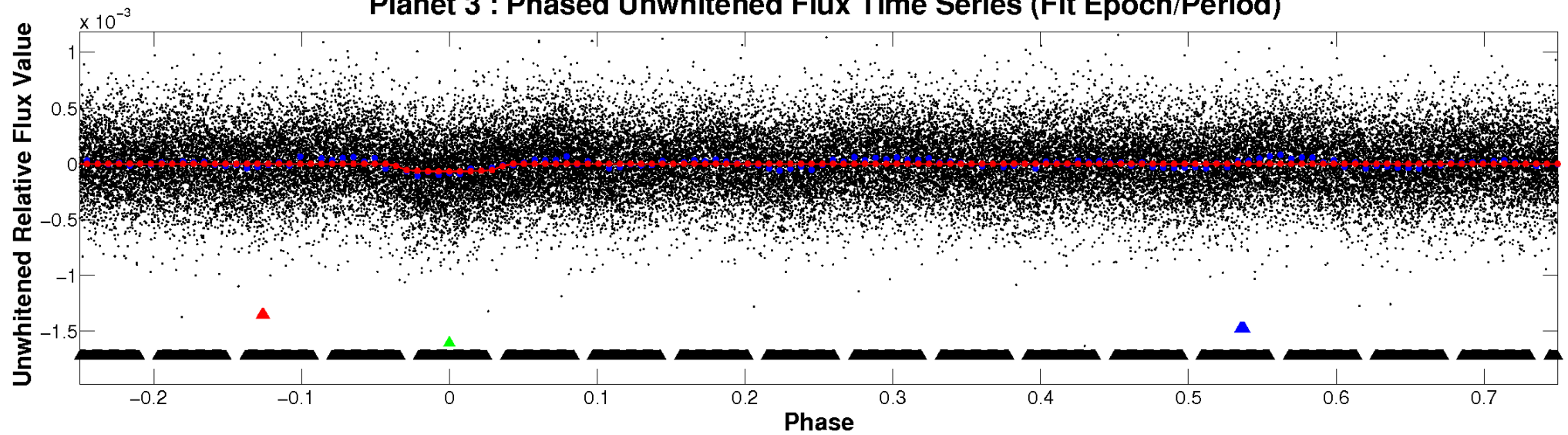
ALT Odd/Even

TCE 008703887-03

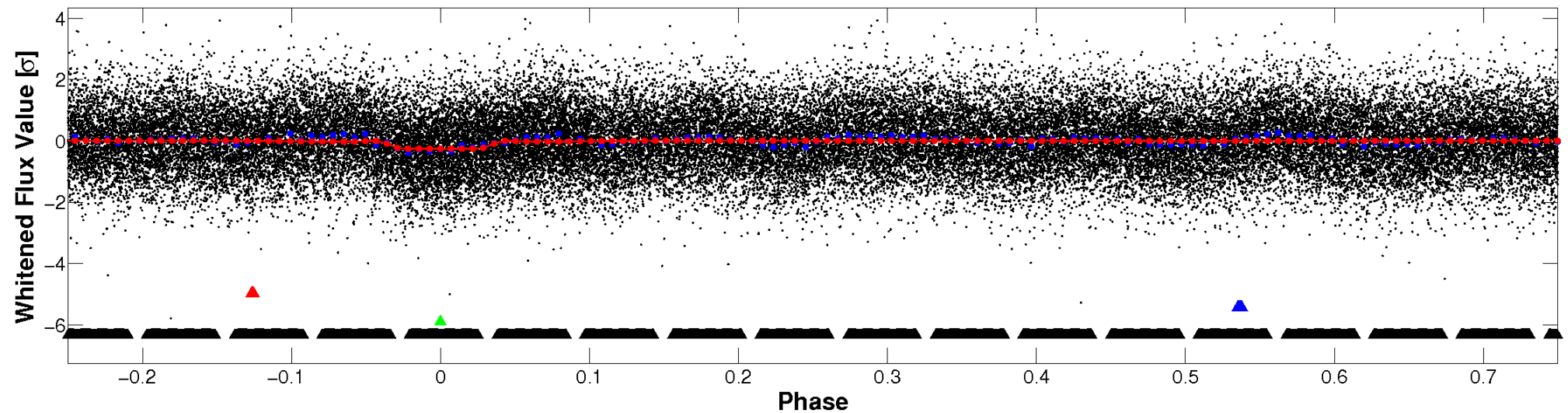


Non-Whitened Vs. Whitened Light Curve

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

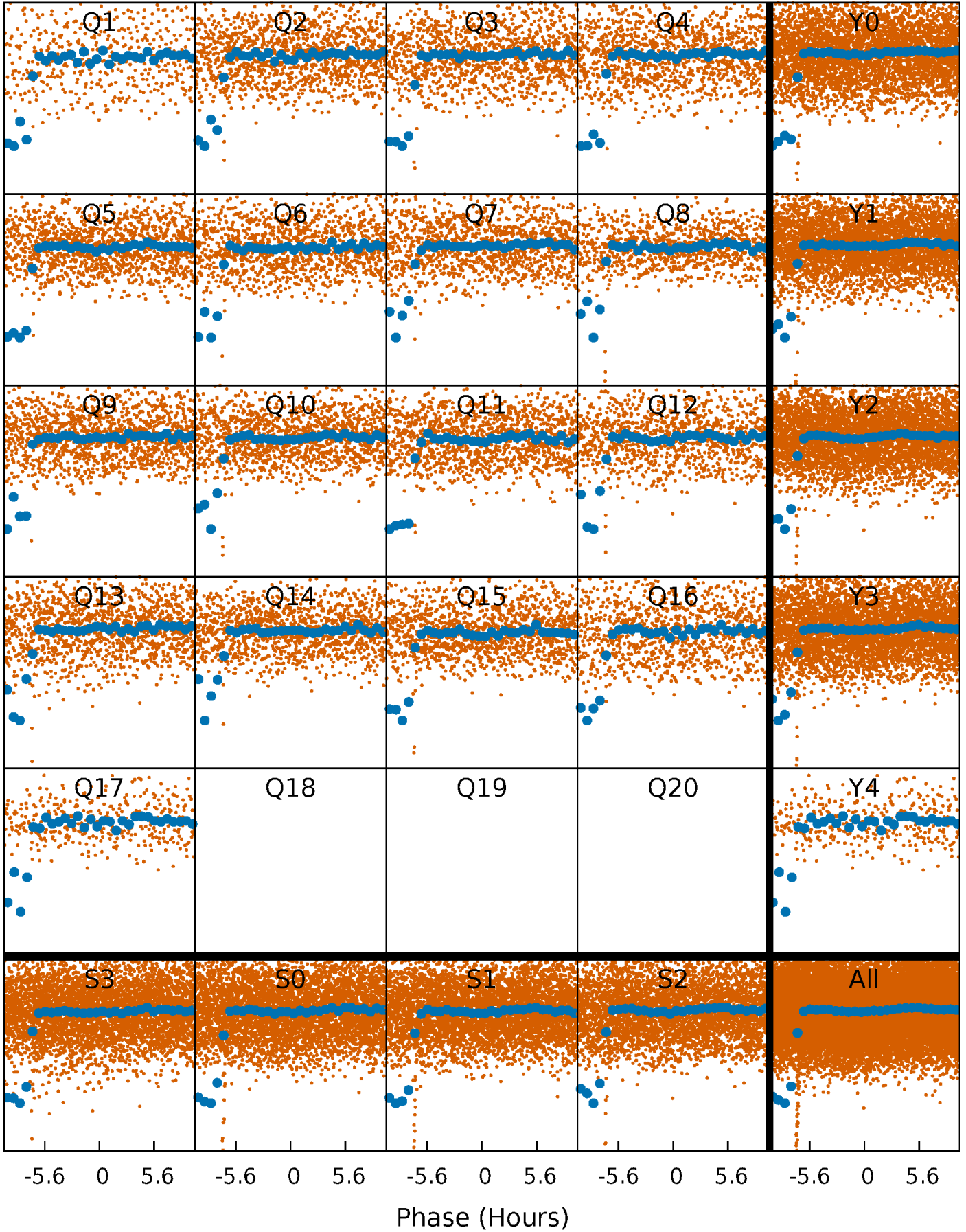


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



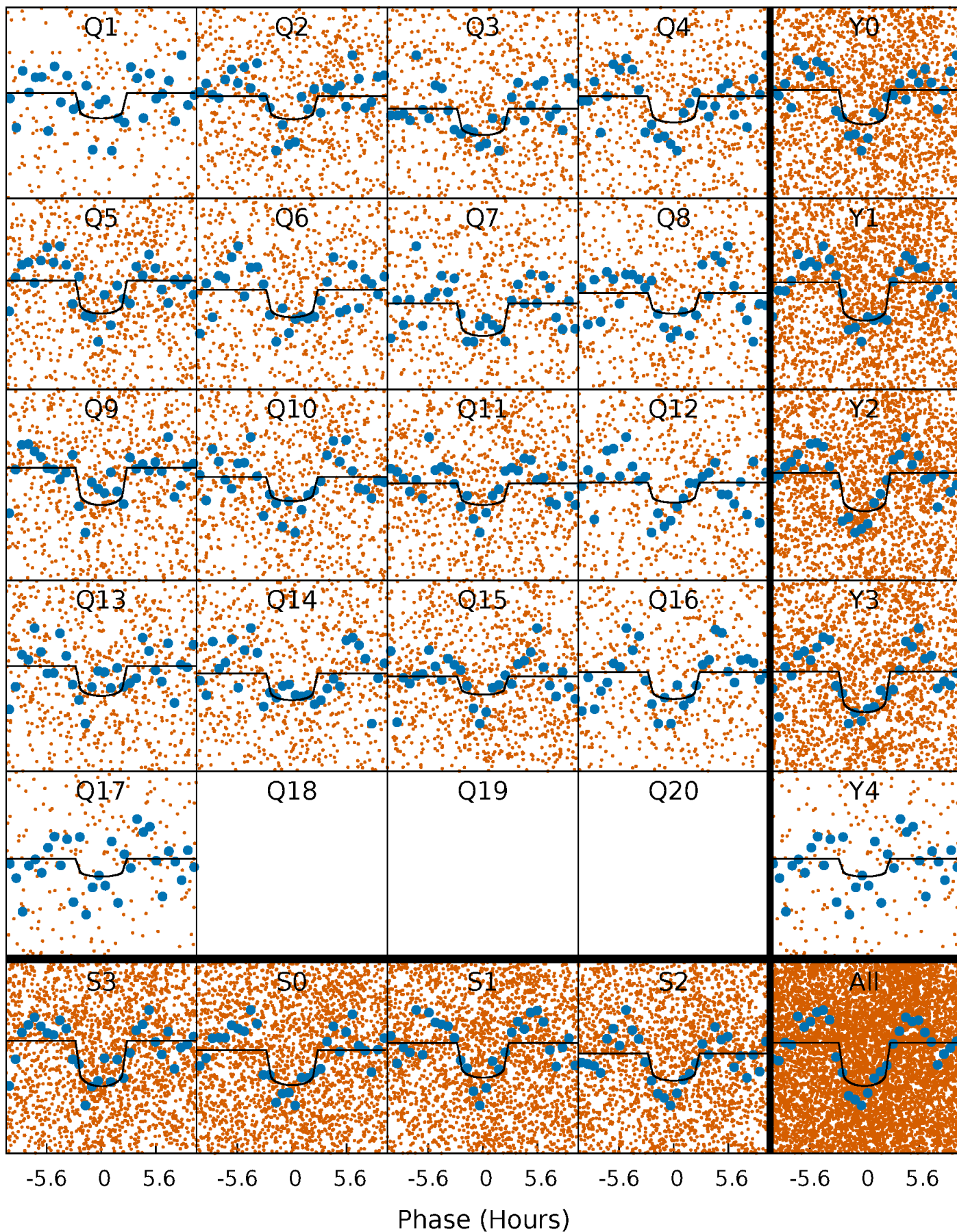
PDC Quarter-Phased Transit Curves

TCE 008703887-03 P= 2.834201 Days $T_0=133.451073$ (BKJD)



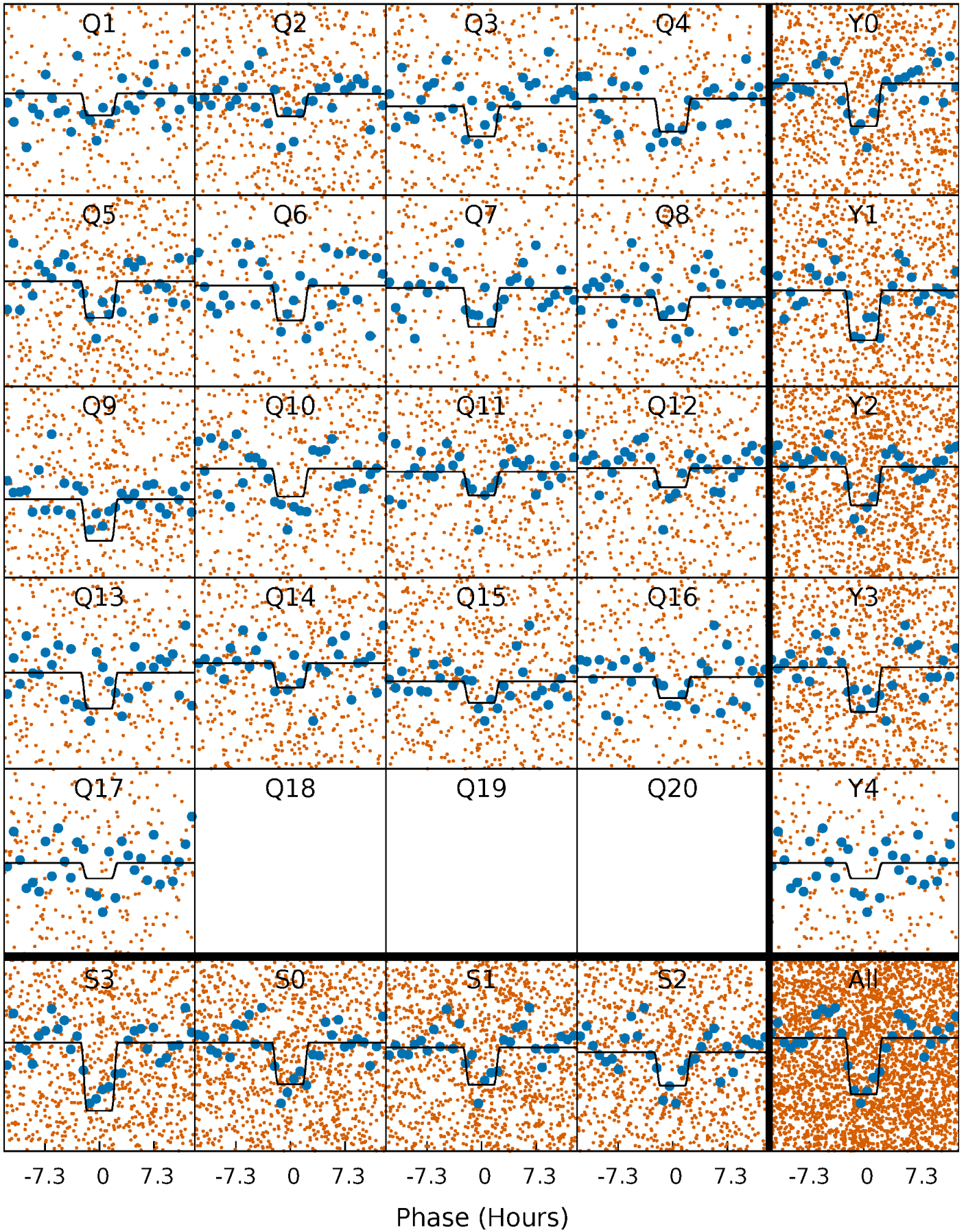
DV Quarter-Phased Transit Curves

TCE 008703887-03 P= 2.834201 Days $T_0=133.451073$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

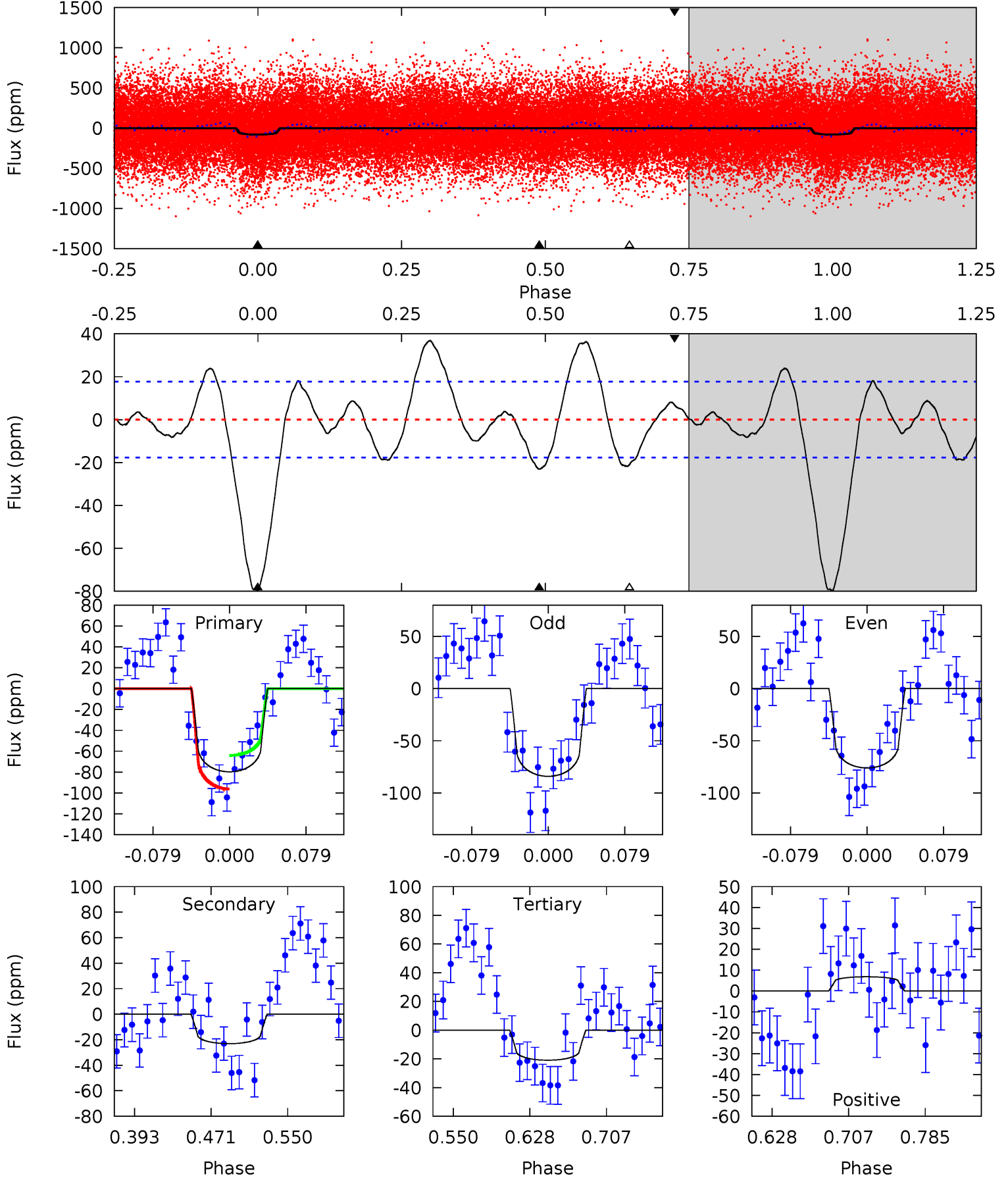
TCE 008703887-03 P= 2.834162 Days $T_0=133.447315$ (BKJD)



DV Model-Shift Uniqueness Test

008703887-03, P = 2.834201 Days, E = 130.616872 Days

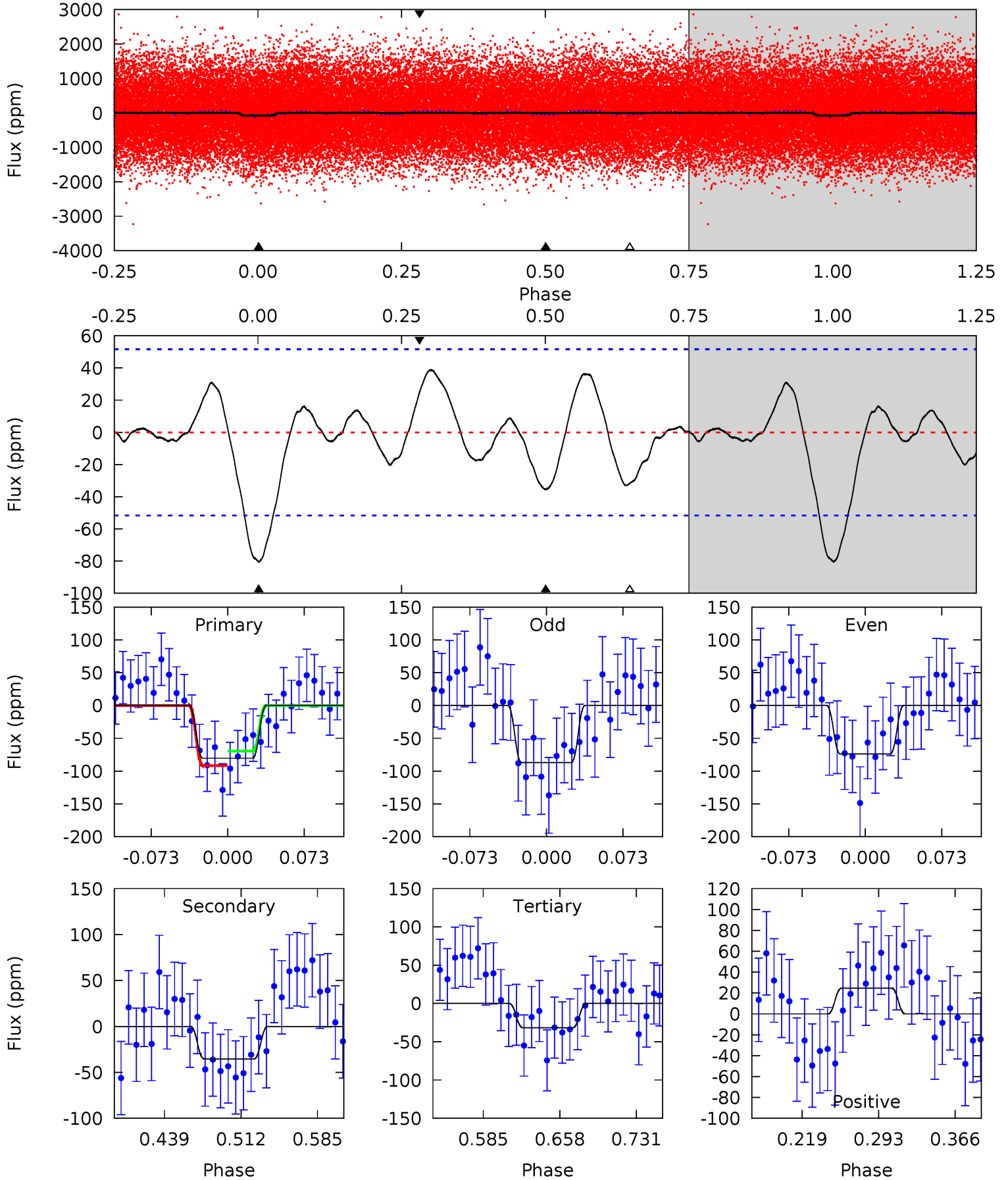
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.8	6.02	5.46	1.78	4.62	1.76	3.62	15.3	19.0	0.56	4.24	1.05	1.04	0.32	4.19



Alt Model-Shift Uniqueness Test

008703887-03, P = 2.834162 Days, E = 130.613153 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.20	3.17	2.84	2.22	4.63	1.79	1.42	4.36	4.98	0.33	0.96	0.58	1.07	0.33	0.99



Stellar Parameters For KIC 008703887

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8347^{+226}_{-368}	$4.231^{+0.067}_{-0.202}$	$0.070^{+0.250}_{-0.500}$	$1.715^{+0.532}_{-0.228}$	$1.826^{+0.304}_{-0.304}$	$0.510^{+0.185}_{-0.265}$
	+3%/-4%	+2%/-5%	+357%/-714%	+31%/-13%	+17%/-17%	+36%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008703887-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-23 ± 4	$1.57^{+0.55}_{-0.56}$	3114^{+218}_{-179}	6134^{+1766}_{-837}	11^{+17}_{-5}
Alt.	-35 ± 11	$1.78^{+0.63}_{-0.57}$	3144^{+222}_{-185}	6407^{+1631}_{-959}	13^{+16}_{-6}

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 $A_{obs} \gg 1.0$

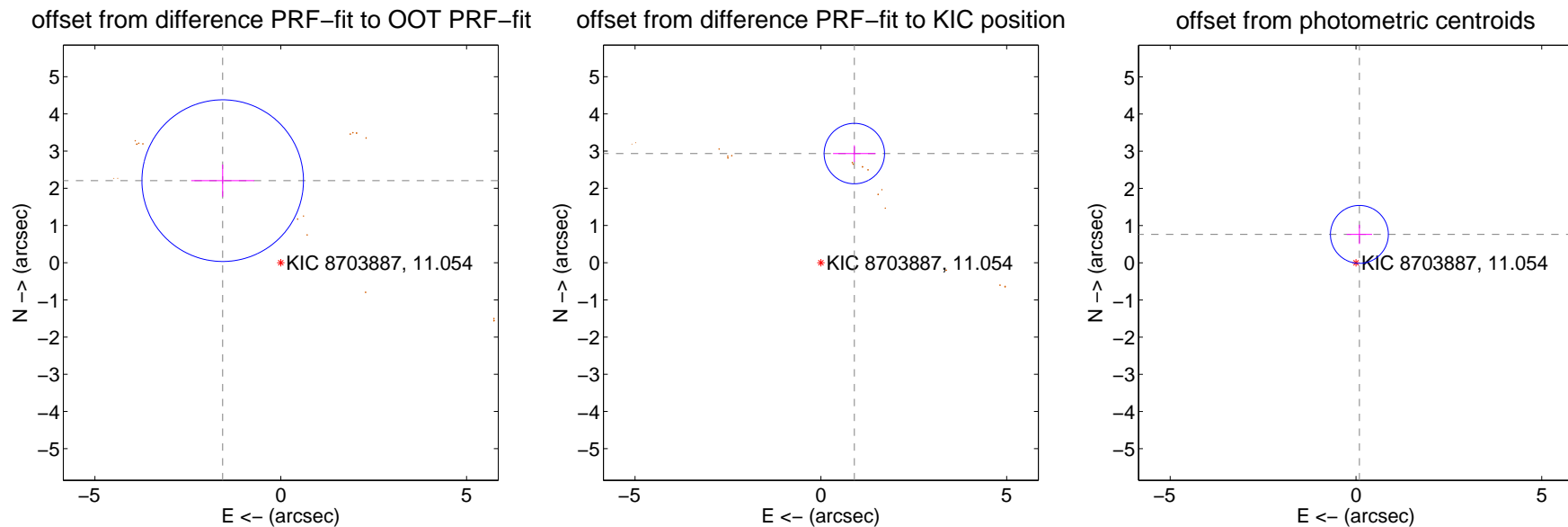
DV Centroid Data

Supplemental centroid analysis for 008703887-03. **Kepler magnitude: 11.05.** Transit SNR 15.90

There are 0 quarters with good PRF difference image offsets

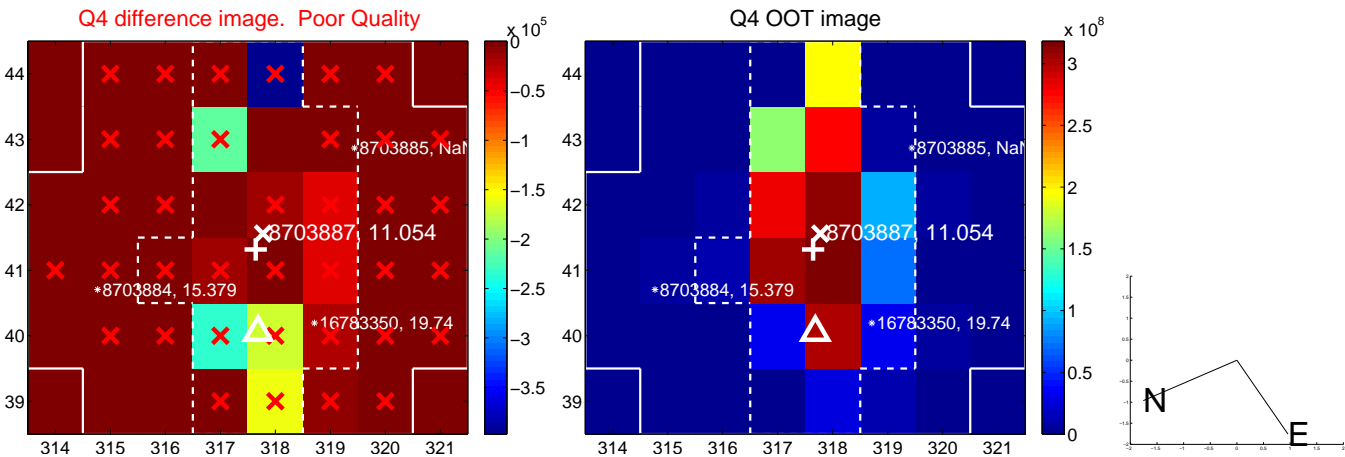
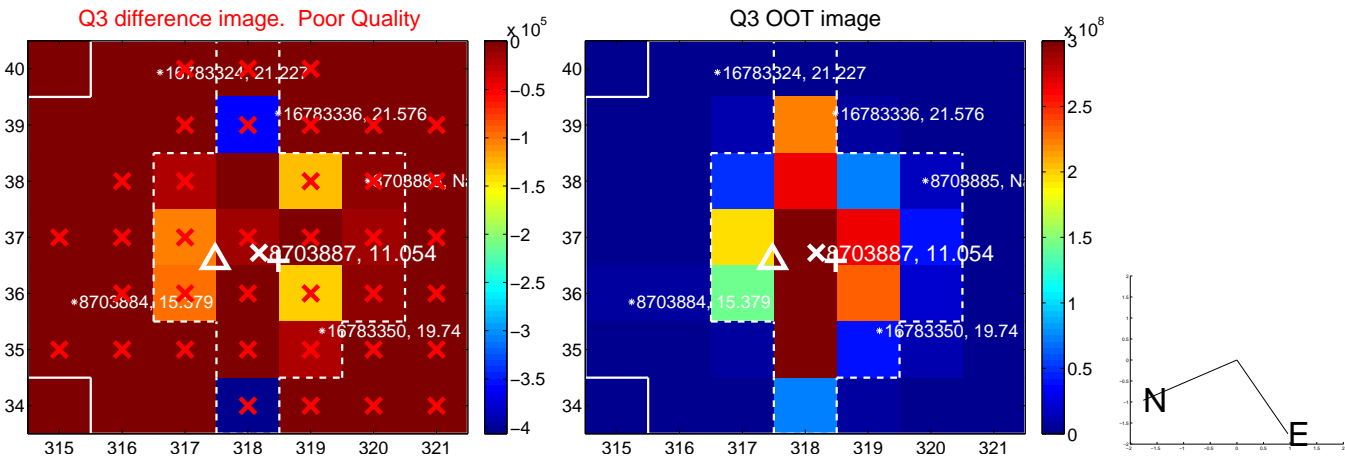
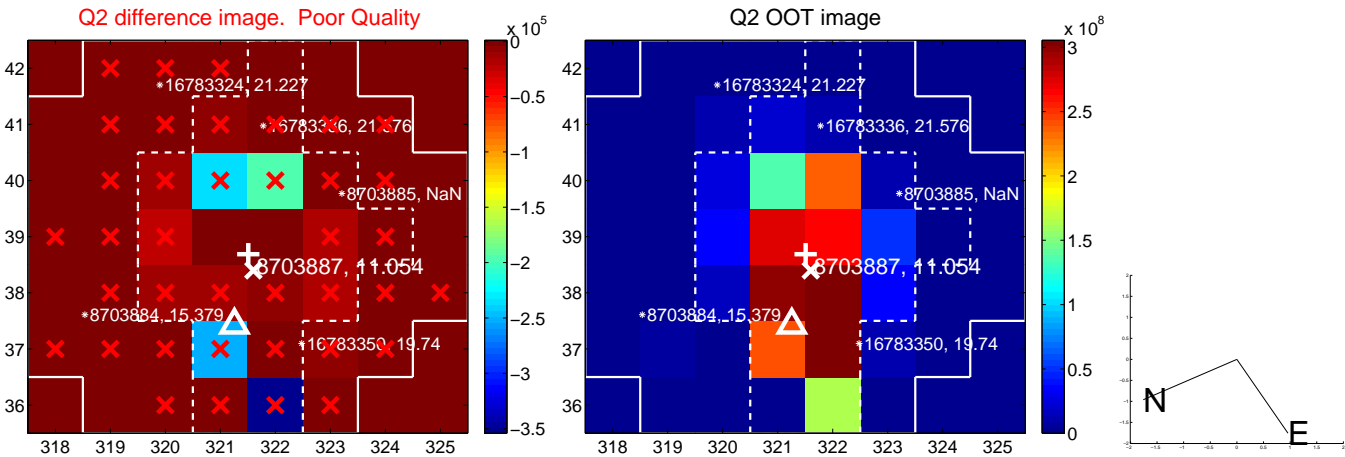
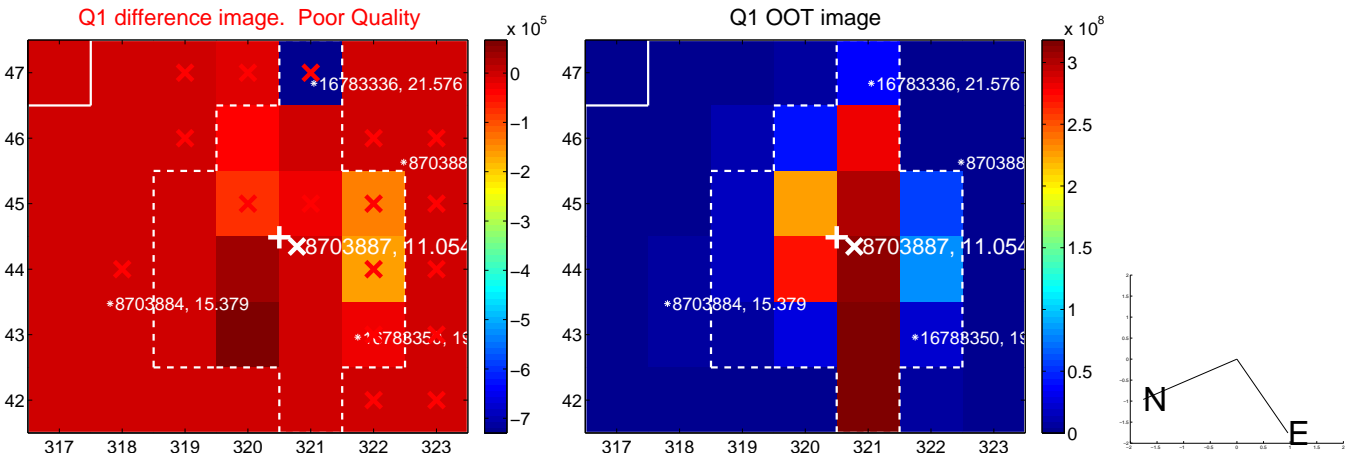
The direct PRF centroid is offset from the target star catalog position by about 1.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.703 ± 0.724	3.73	1.562 ± 0.849	2.206 ± 0.431
PRF-fit source offset from KIC position	3.069 ± 0.271	11.33	-0.901 ± 0.572	2.934 ± 0.222
photometric centroid source offset	0.77 ± 0.26	2.96	-0.09 ± 0.34	0.76 ± 0.26

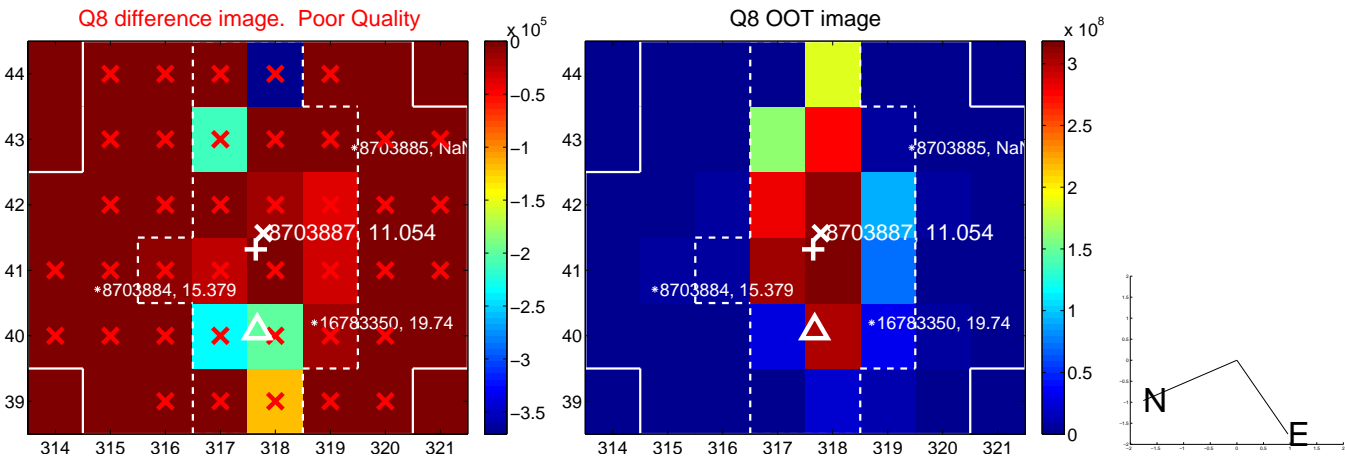
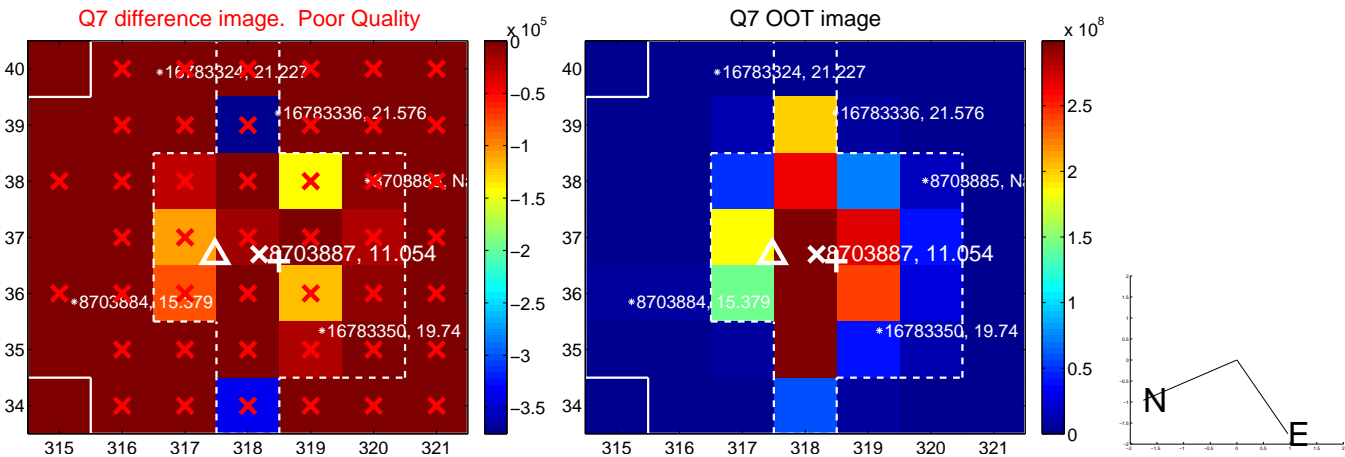
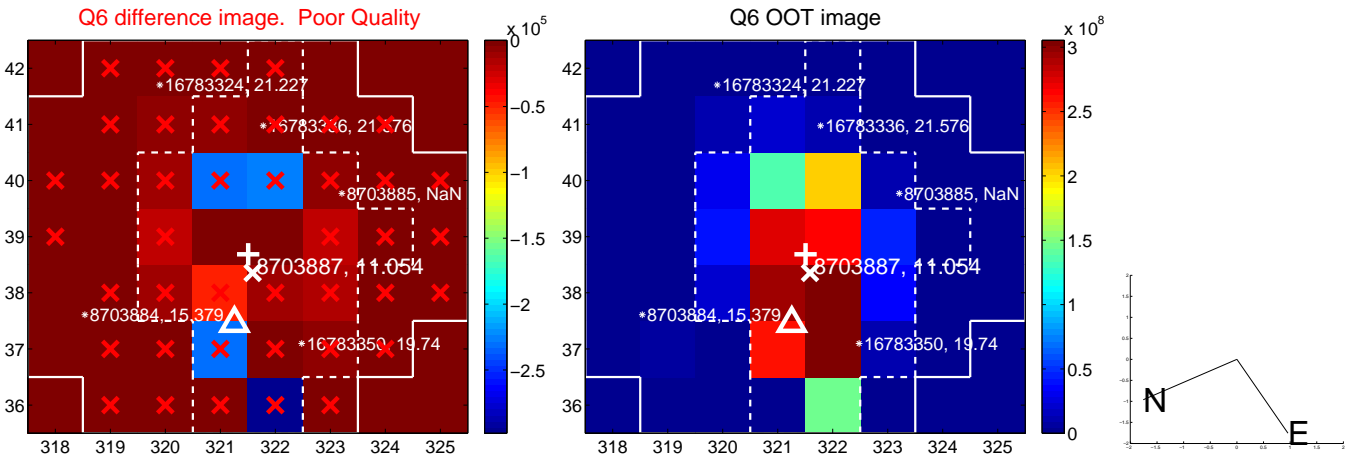
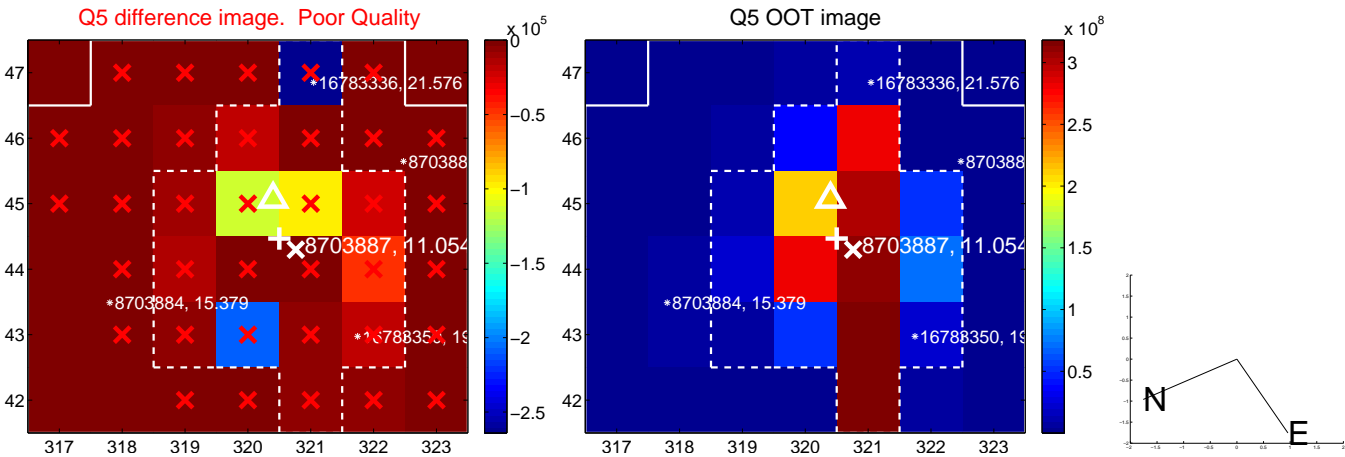


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

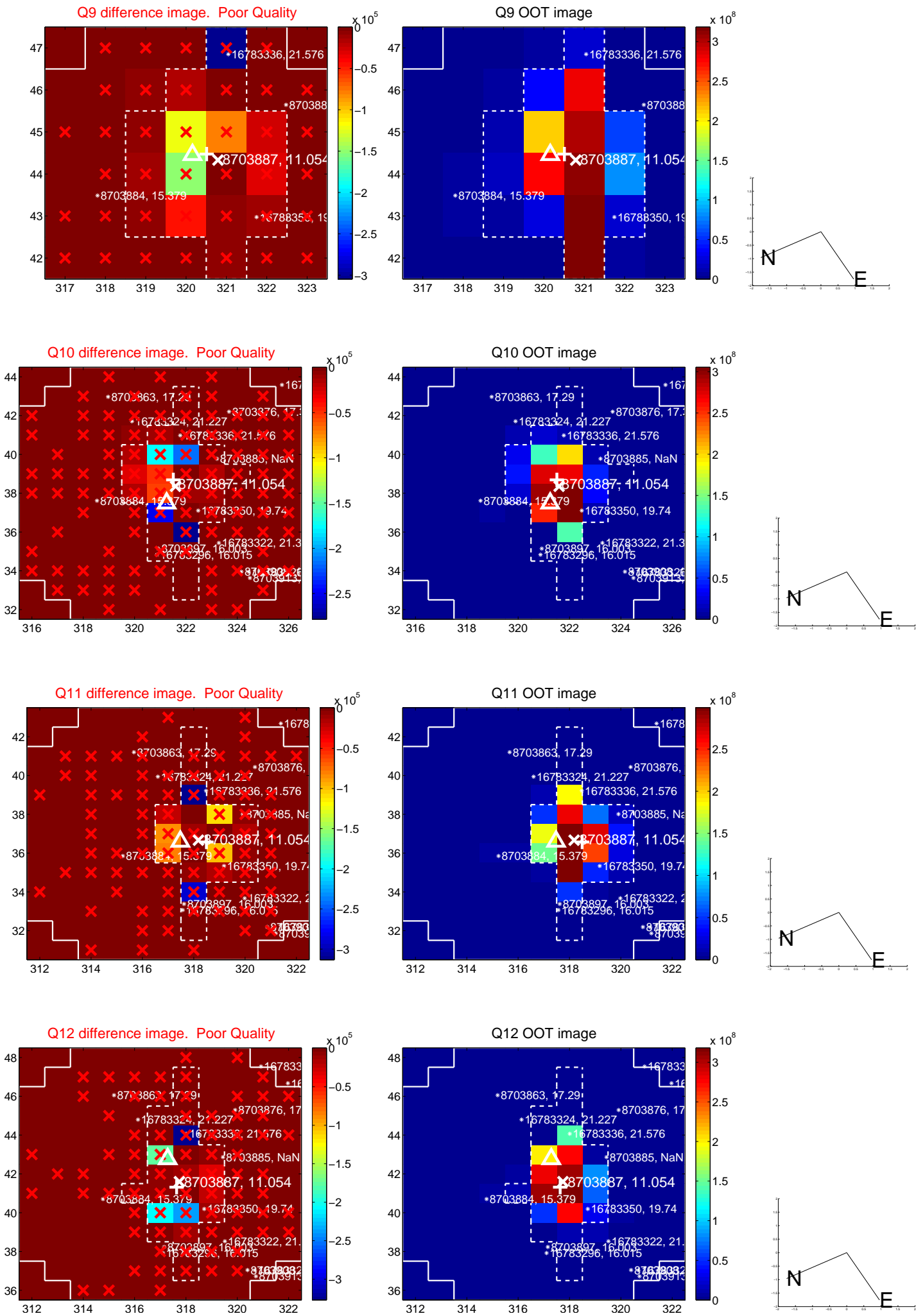
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



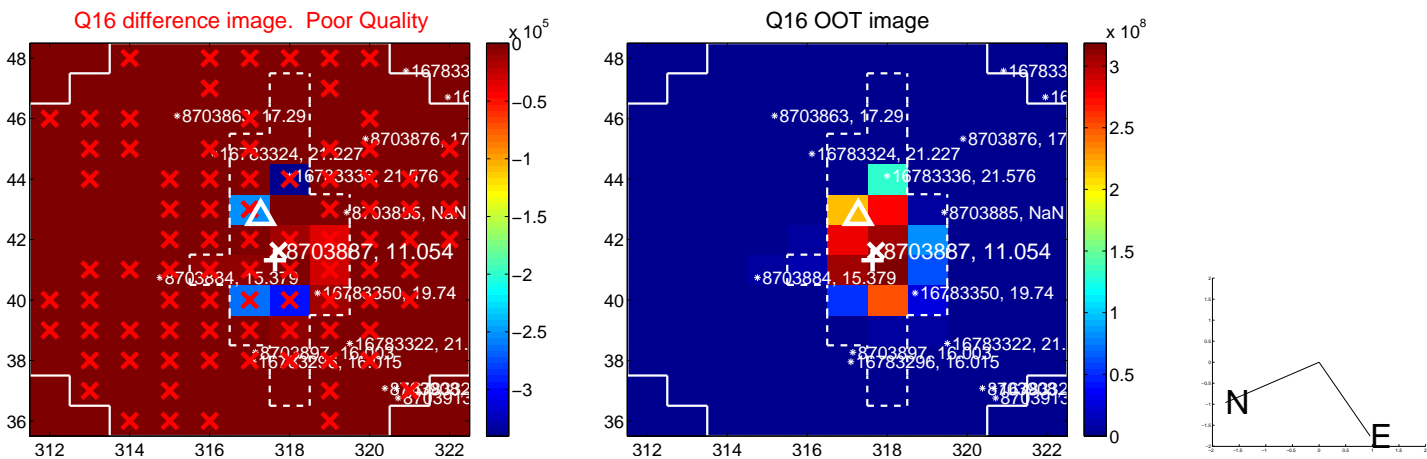
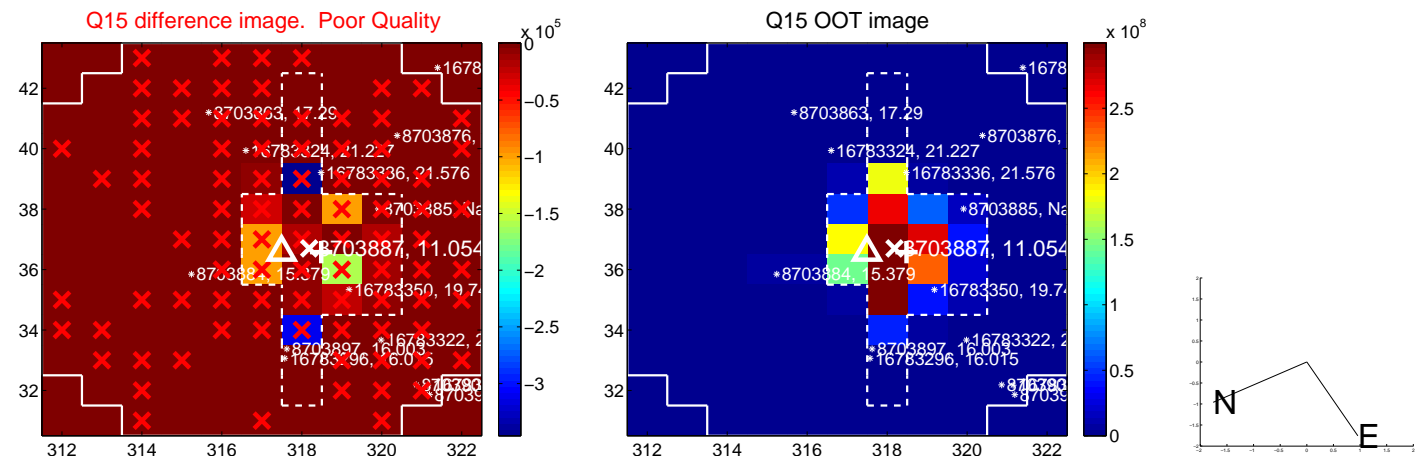
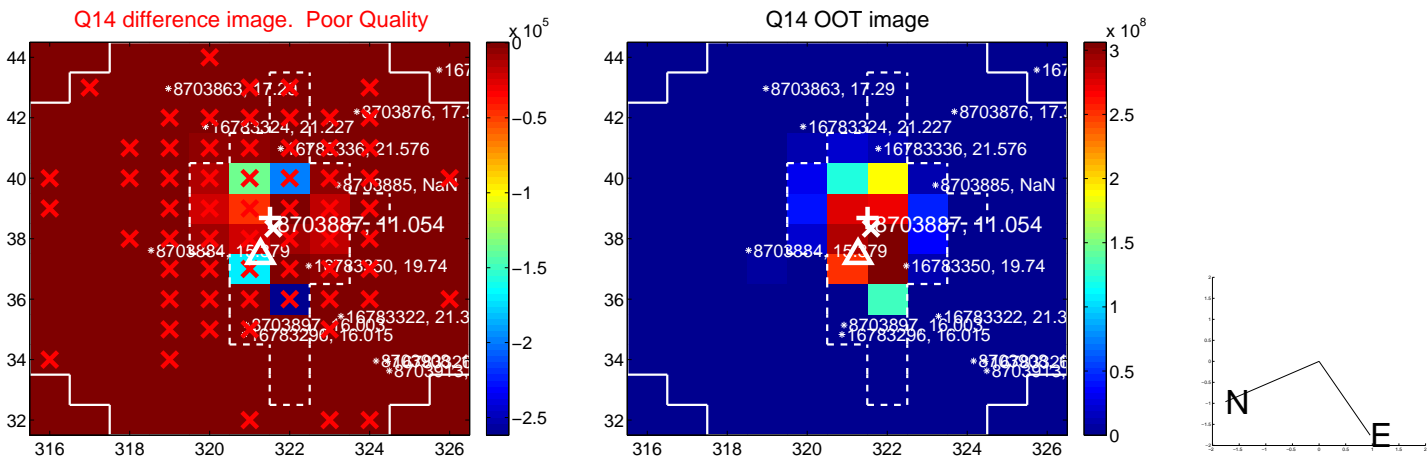
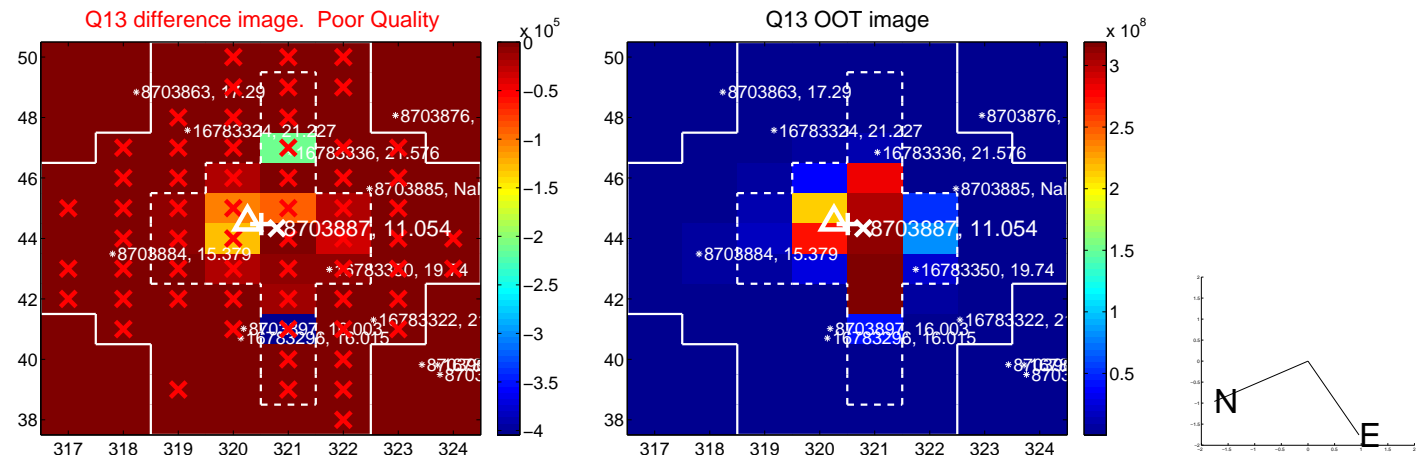
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



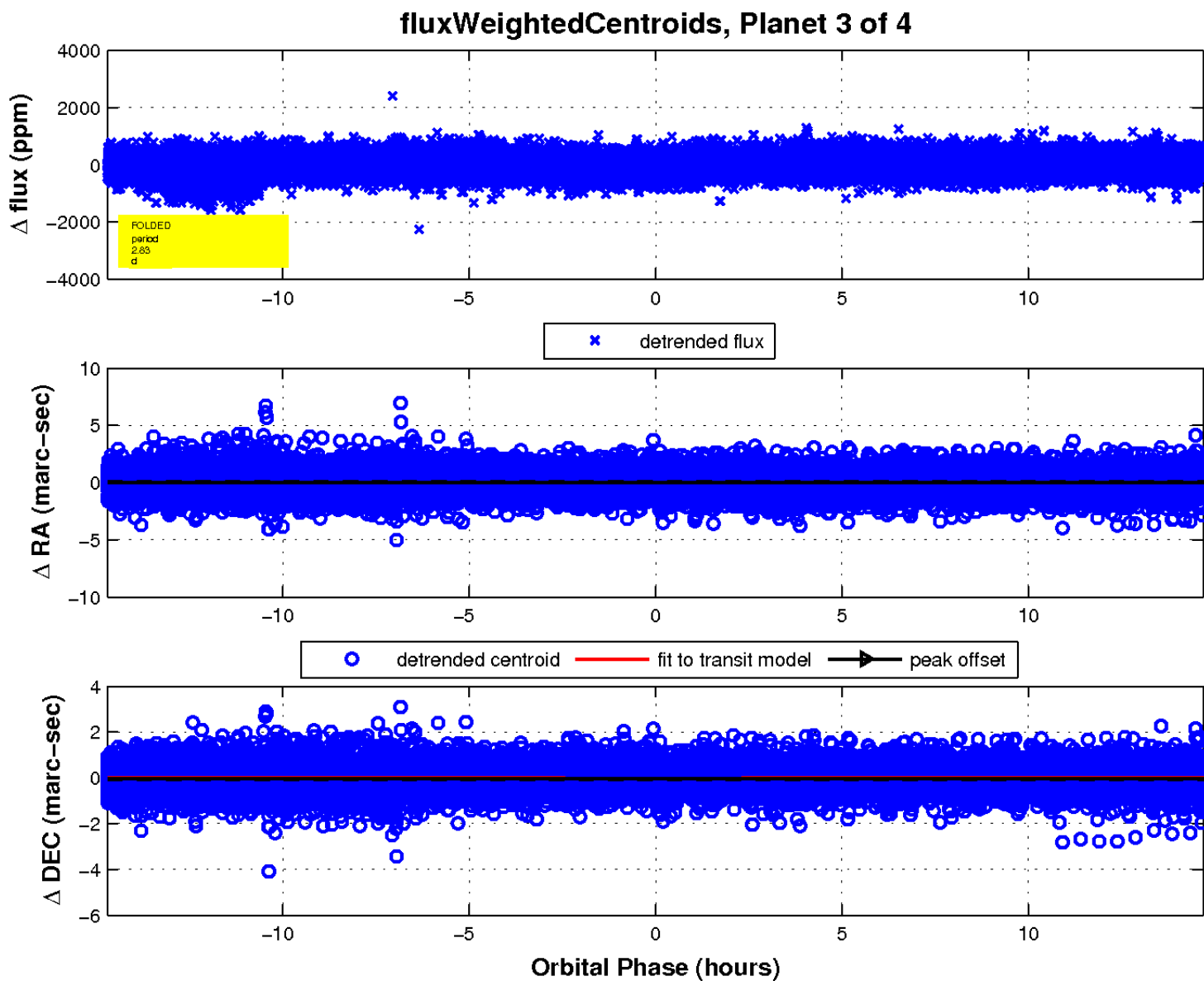
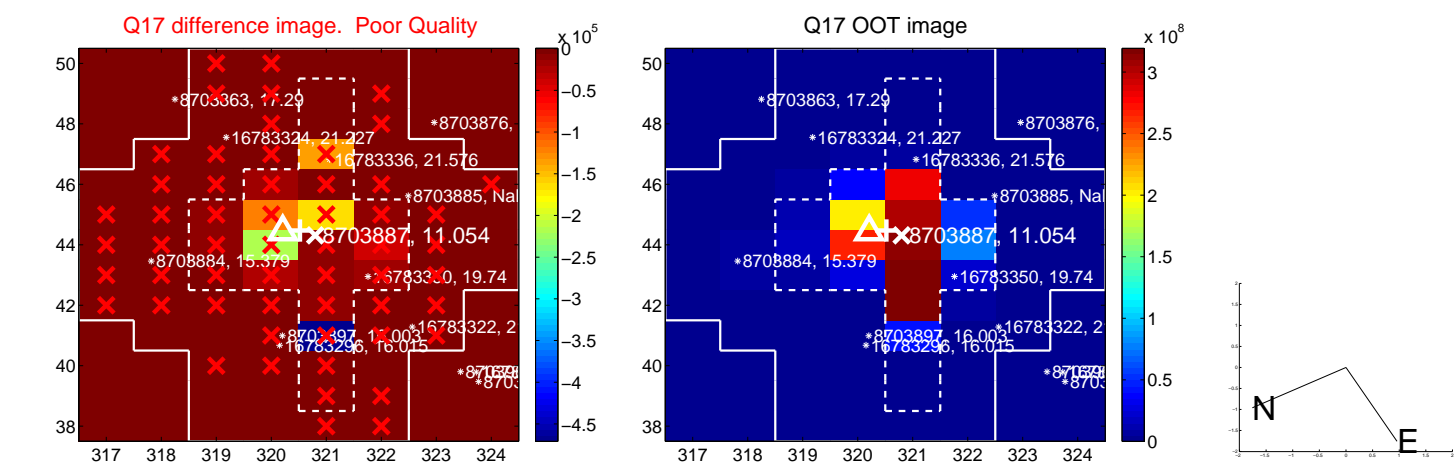
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

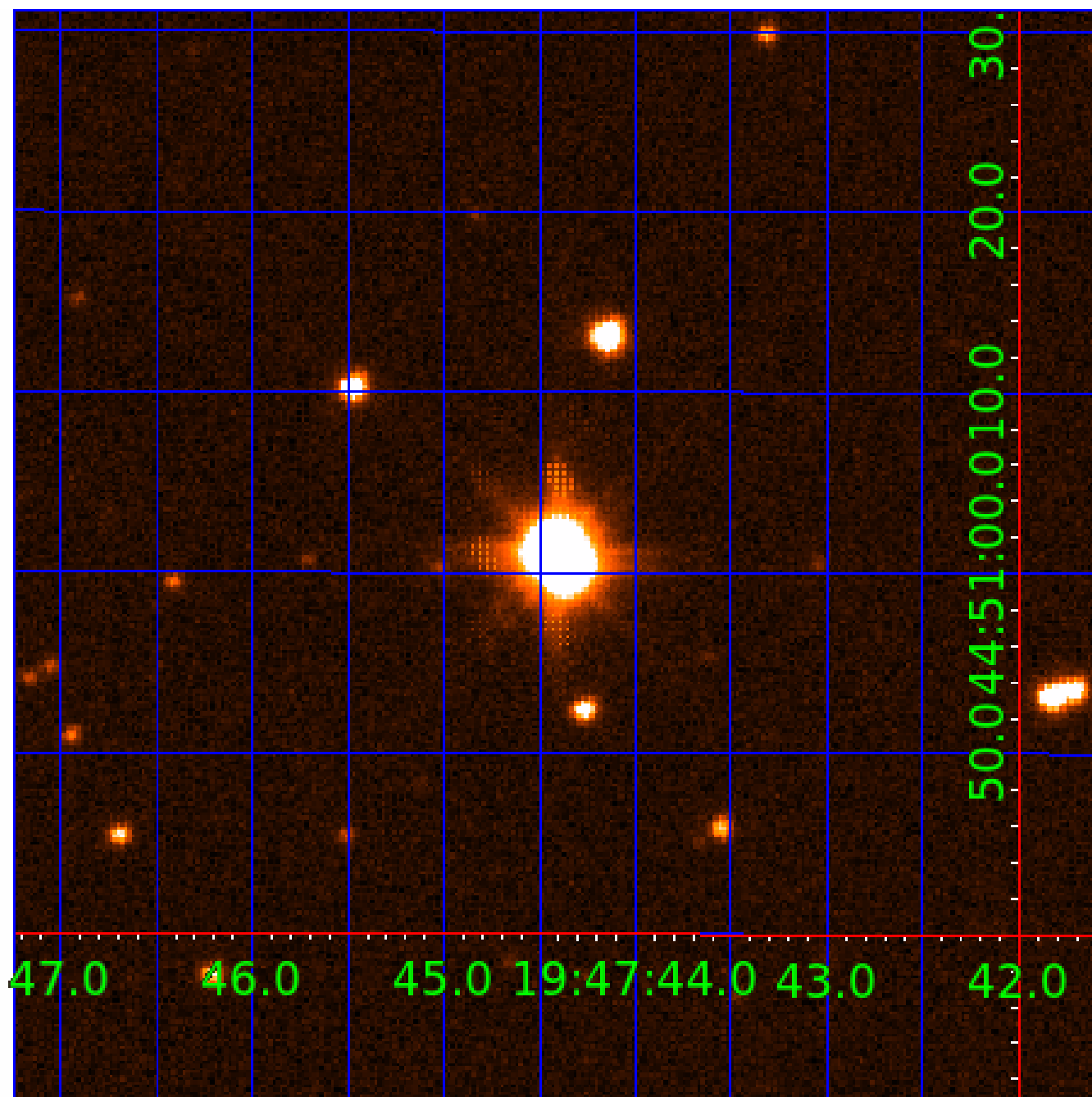


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008703887

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})
008703887-01	OBS	0287.01	14.170974	133.095085	14002.4	3.805	924.5	864.1	1.72	8347	21.37	651.62
008703887-02	OBS	No	14.170939	132.140810	230.6	19.545	37.0	39.9	1.72	8347	3.21	651.62
008703887-03	OBS	No	2.834201	133.451073	68.4	4.899	14.7	15.9	1.72	8347	1.51	5571.23
008703887-04	OBS	No	0.833513	132.356399	40.8	4.786	12.6	12.7	1.72	8347	1.11	28486.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008703887-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE—CENT_SATURATED
008703887-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
008703887-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—CENT_SATURATED
008703887-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED

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

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

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

Ephemeris Match Information For 008703887-04

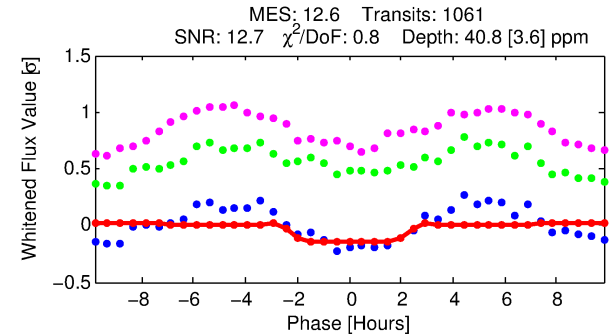
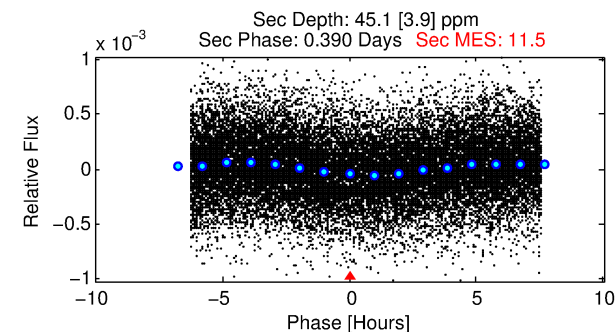
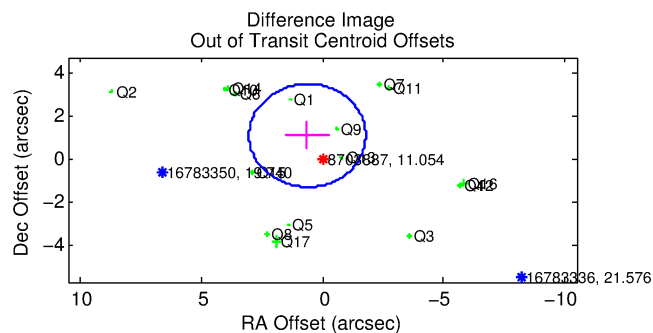
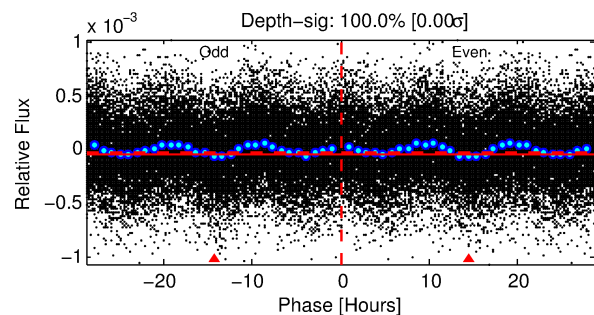
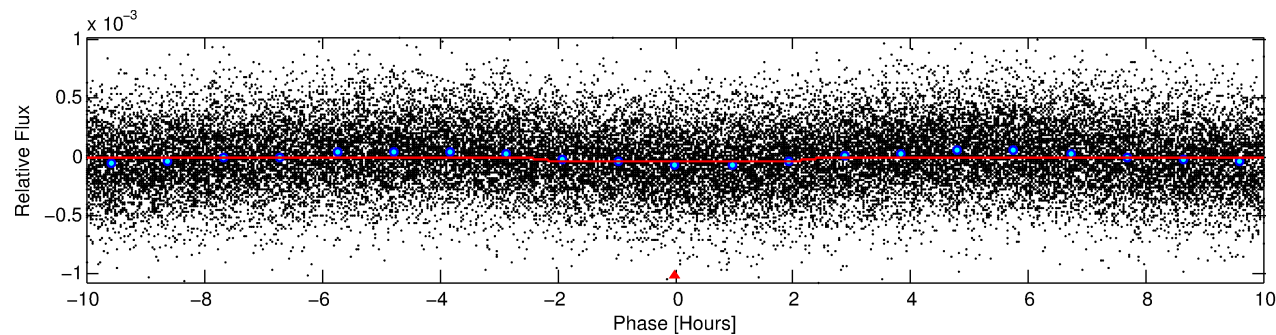
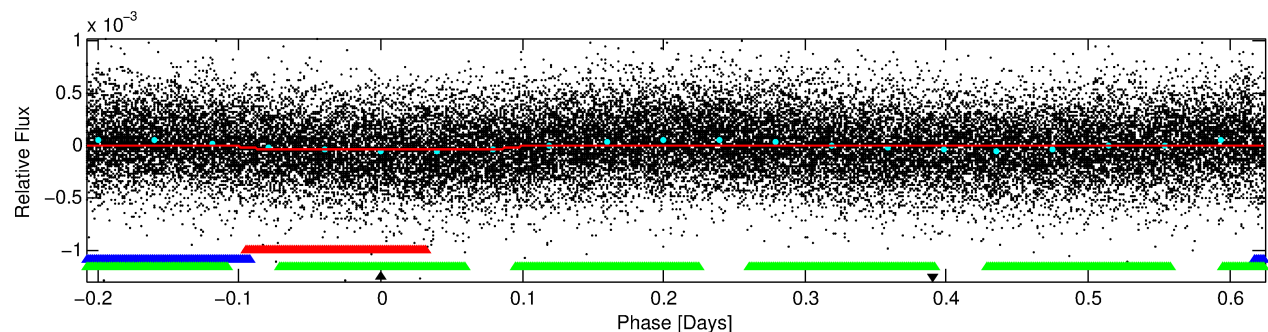
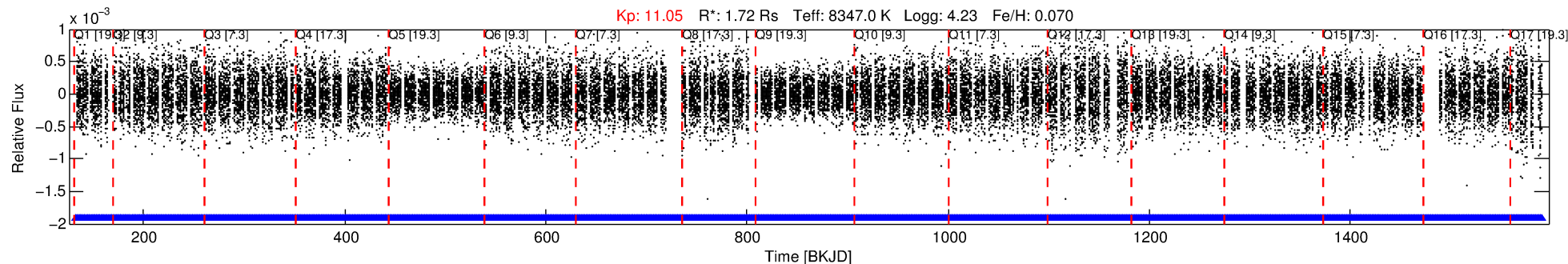
No Significant Match Found

DV One-Page Summary

KIC: 8703887 Candidate: 4 of 4 Period: 0.834 d

KOI: K00287 Corr: No Ephemeris Match

Kp: 11.05 R*: 1.72 Rs Teff: 8347.0 K Logg: 4.23 Fe/H: 0.070



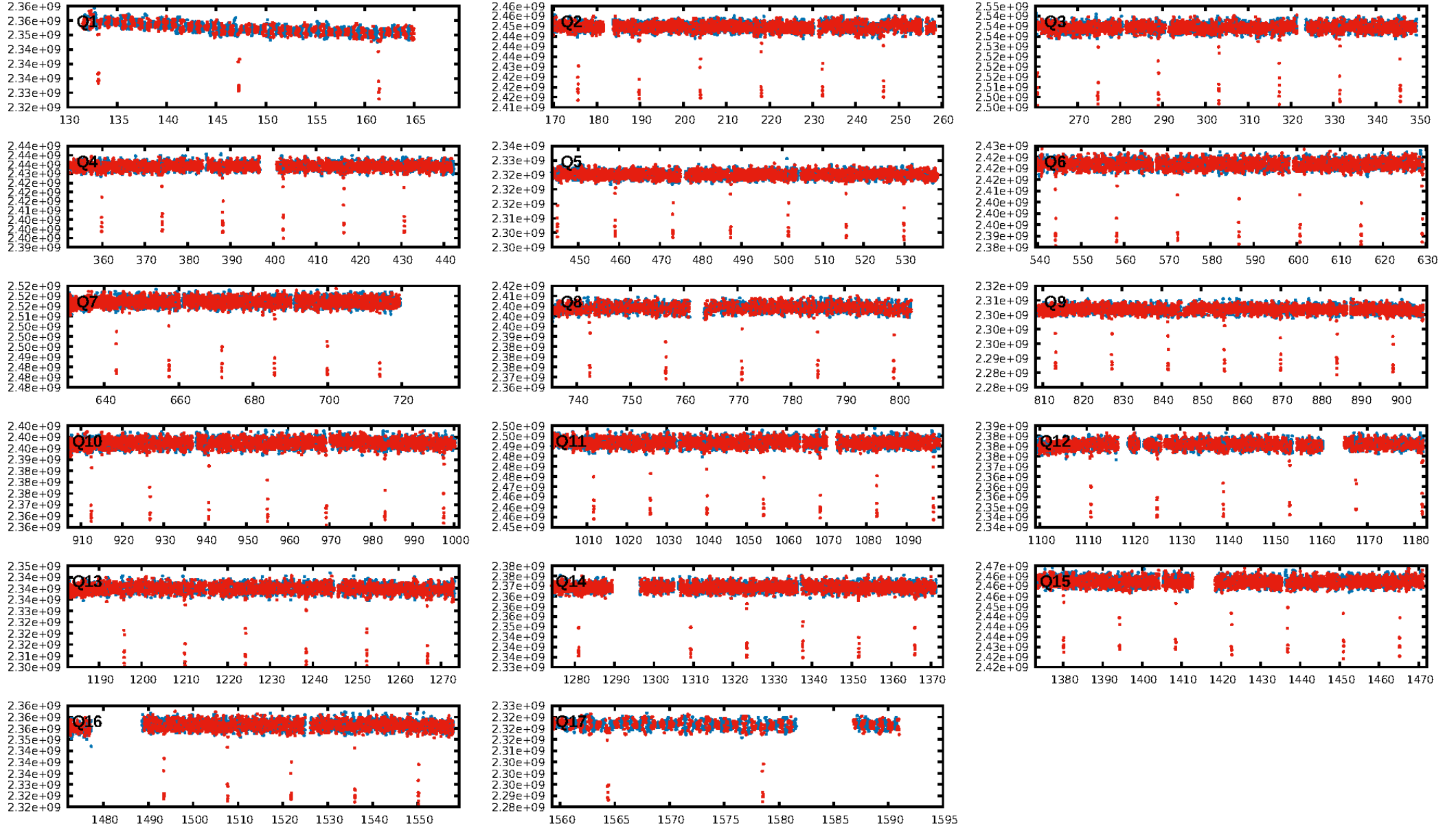
DV Fit Results:

Period = 0.83351 [0.00001] d
Epoch = 132.3564 [0.0039] BKJD
Rp/R* = 0.0059 [0.0058]
a/R* = 1.47 [4.61]
b = 0.10 [58.31]
Seff = 28486.69 [11745.97]
Teff = 3313 [341] K
Rp = 1.11 [1.13] Re
a = 0.0212 [0.0055] AU
Ag = 9.01 [17.84] [0.45σ]
Teffp = 8873 [4335] K [1.28σ]

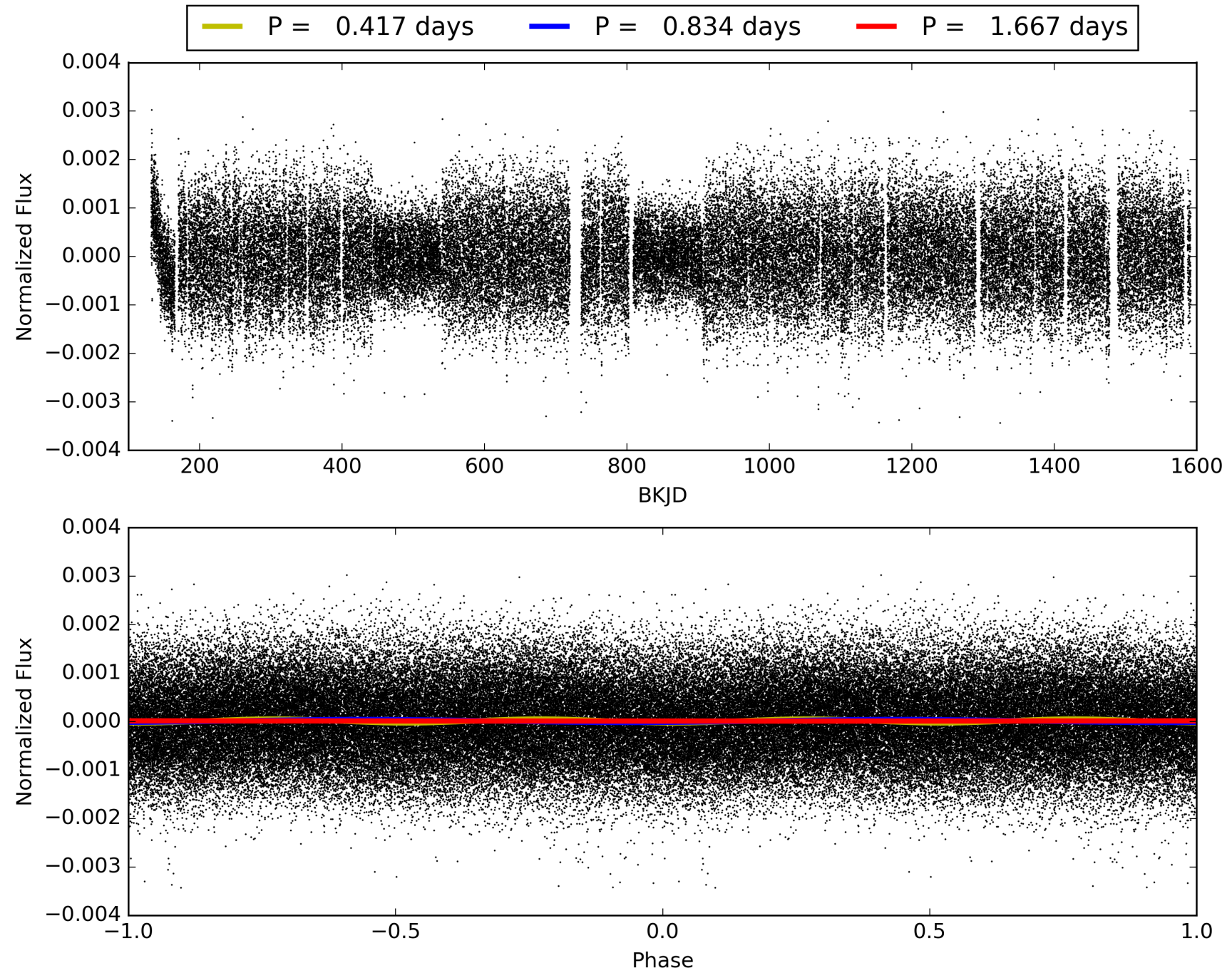
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [7.01σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.88e-17
RollingBand-fgt: 1.00 [1012/1012]
GhostDiagnostic-chr: 0.9726
Centroid-sig: 0.7%
Centroid-so: 0.546 arcsec [2.27σ]
OotOffset-rm: 1.263 arcsec [1.57σ]
KicOffset-rm: 0.644 arcsec [1.10σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.06 [1/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008703887-04, PDC Light Curves

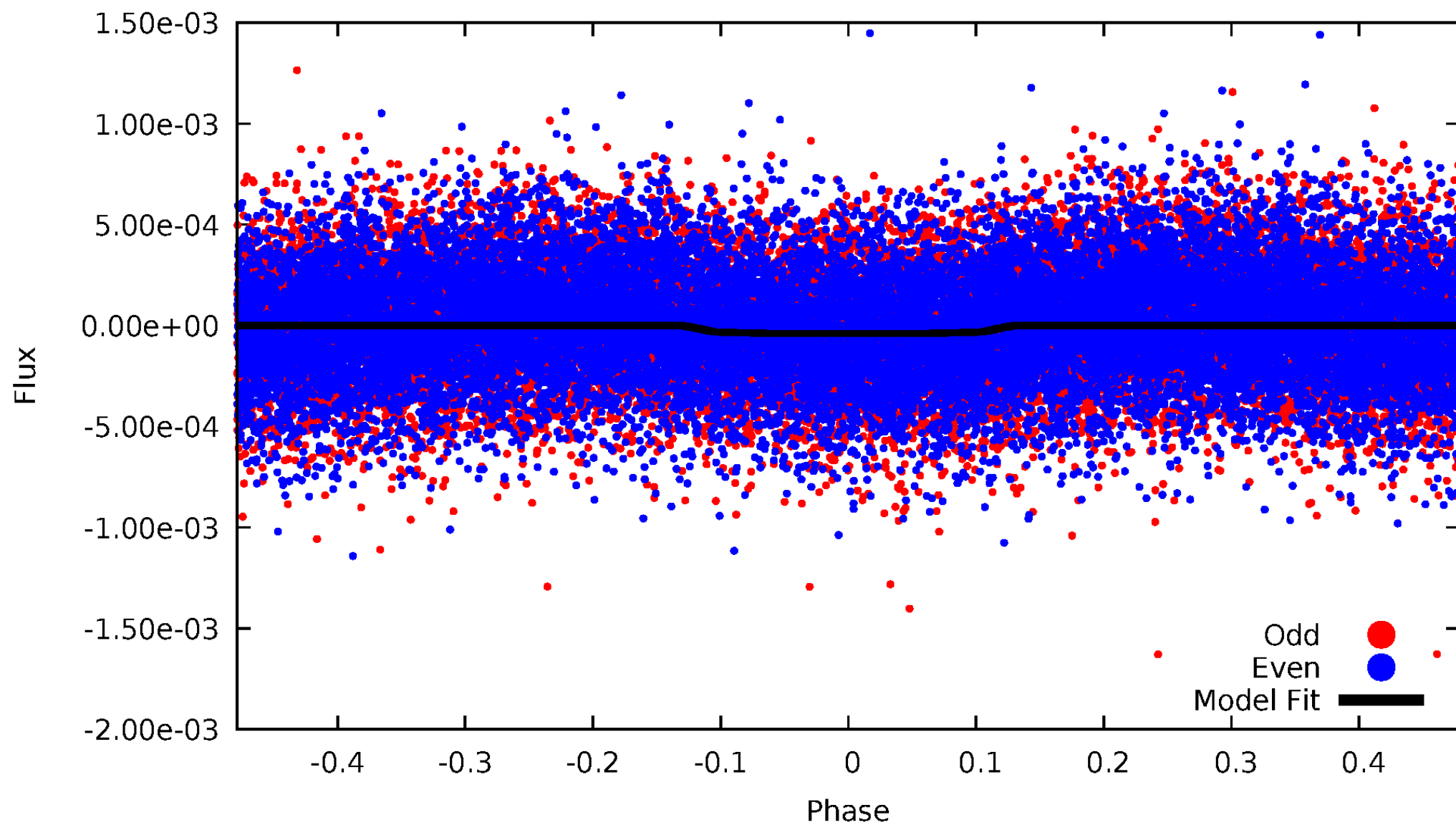


TCE 008703887-04



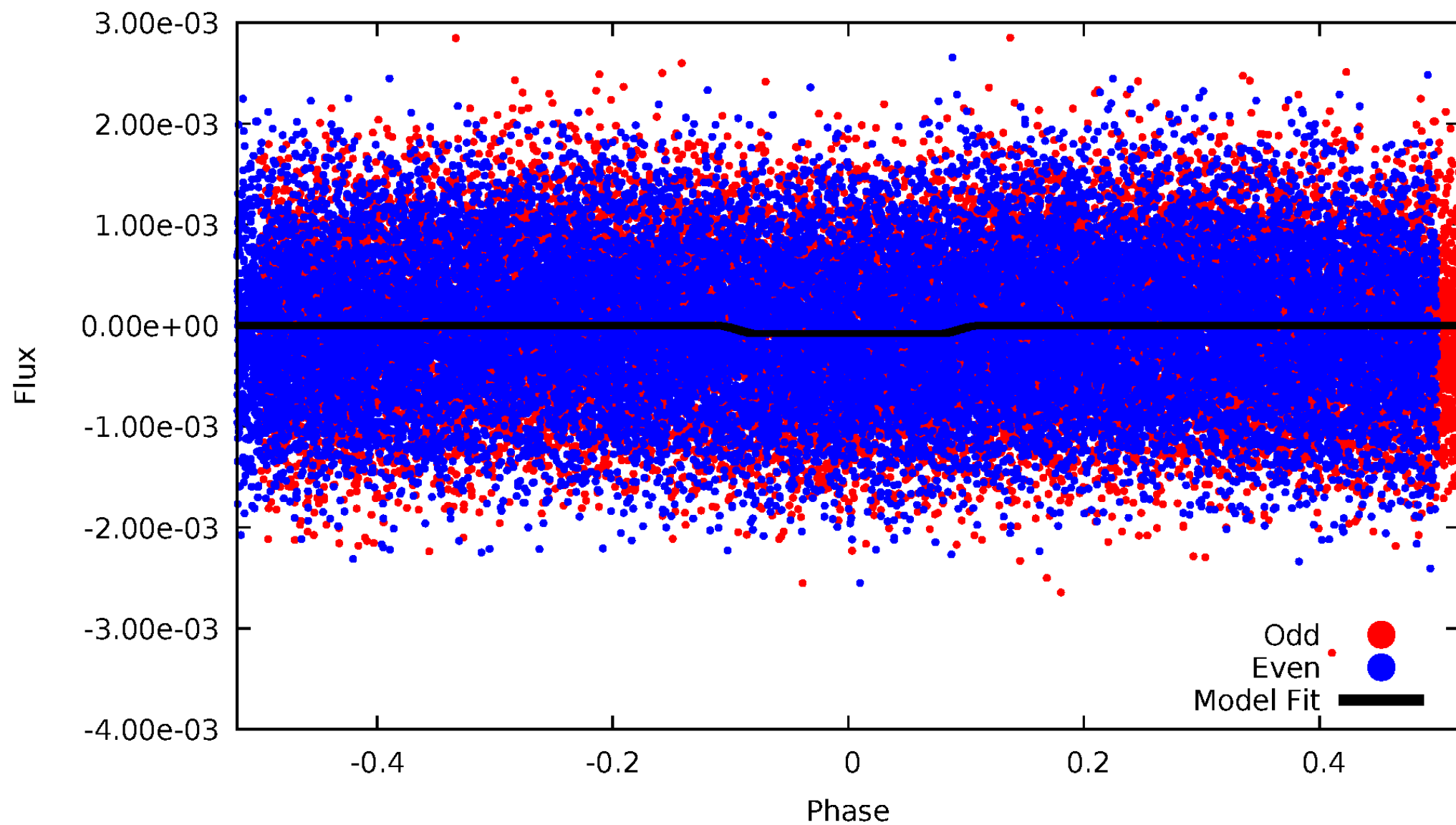
DV Odd/Even

TCE 008703887-04



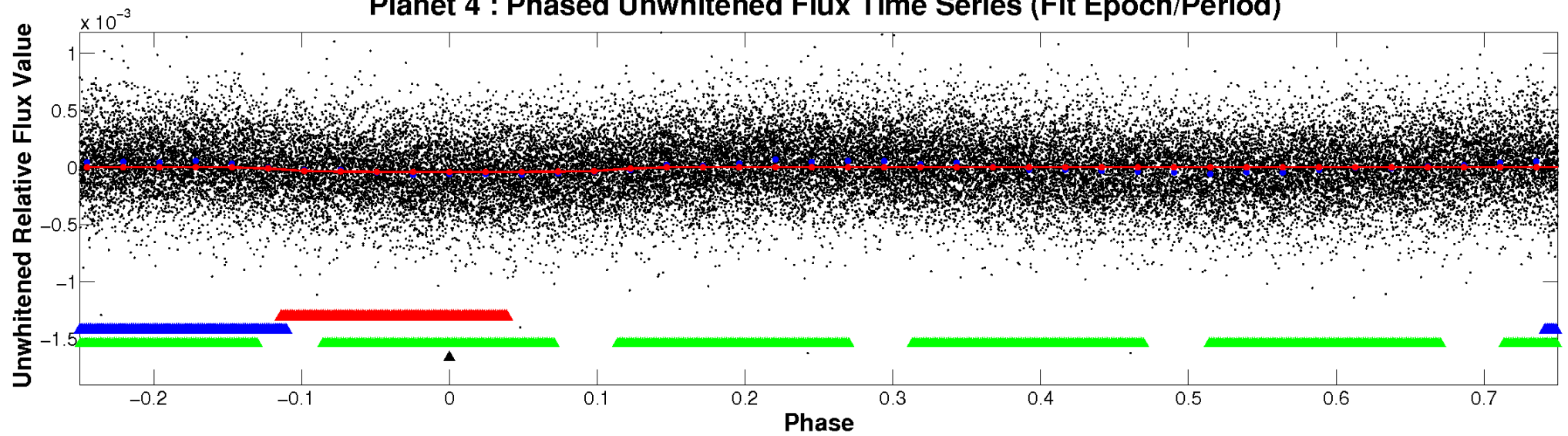
ALT Odd/Even

TCE 008703887-04

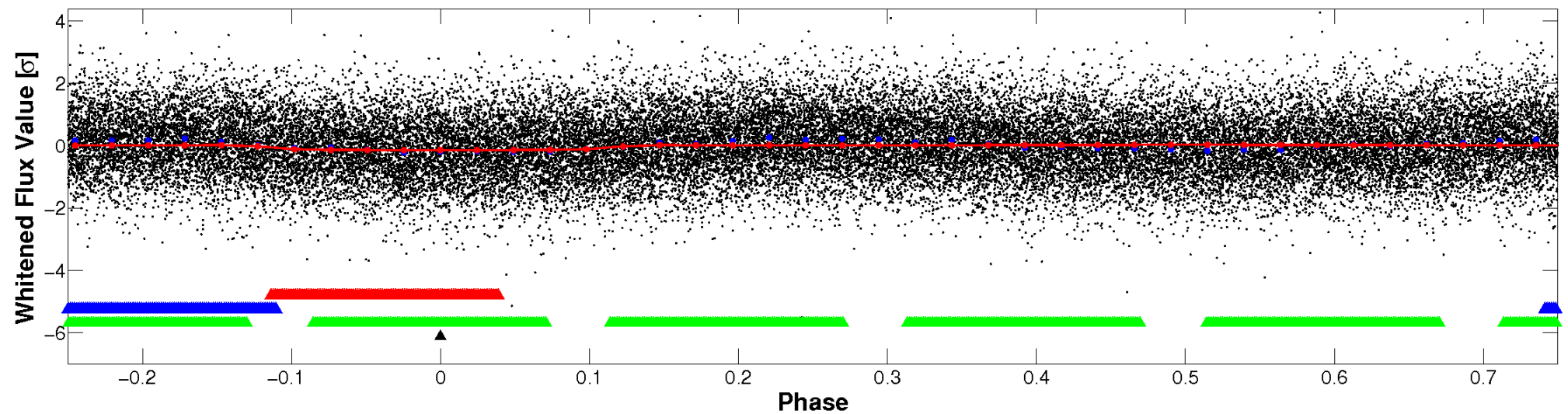


Non-Whitened Vs. Whitened Light Curve

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

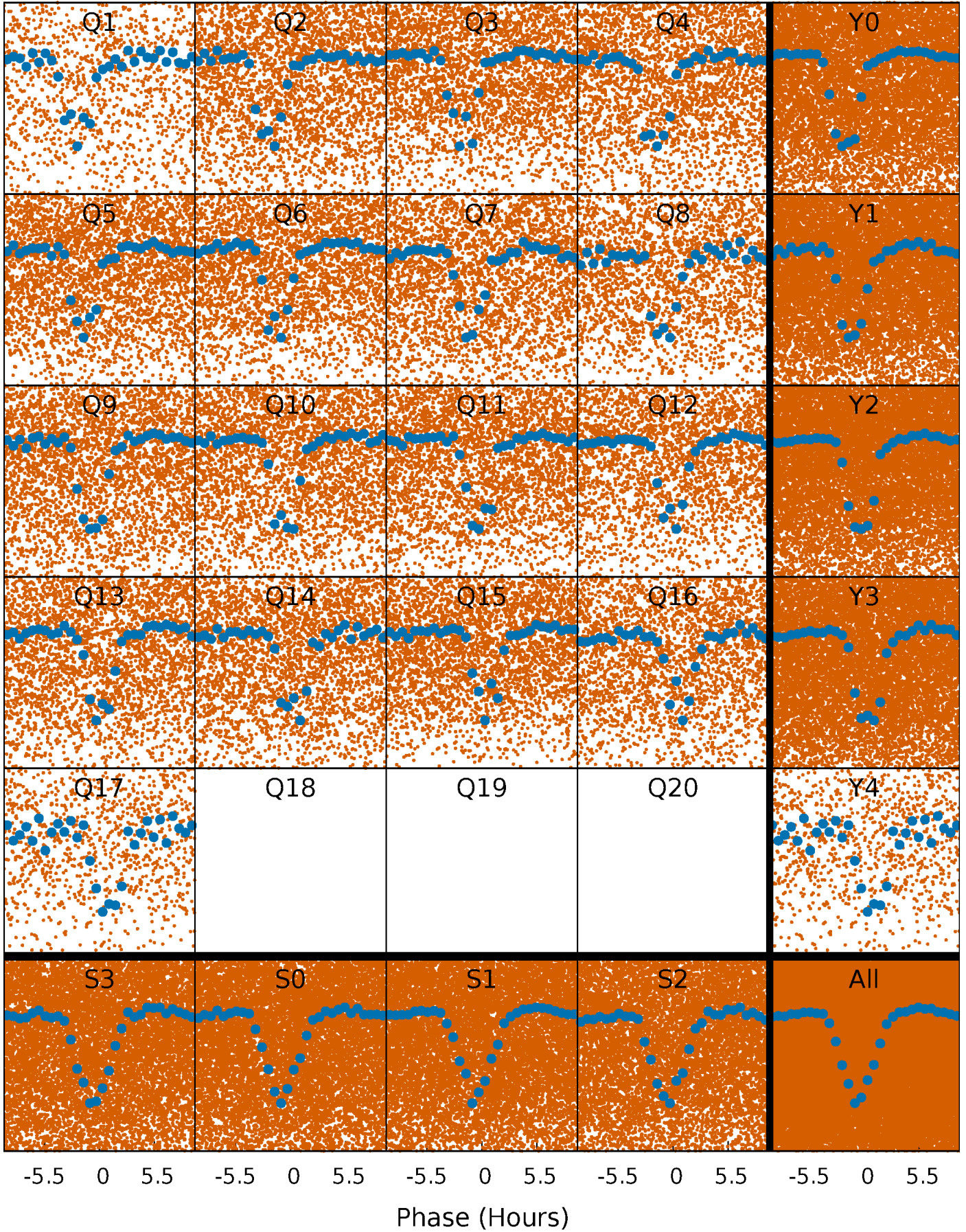


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



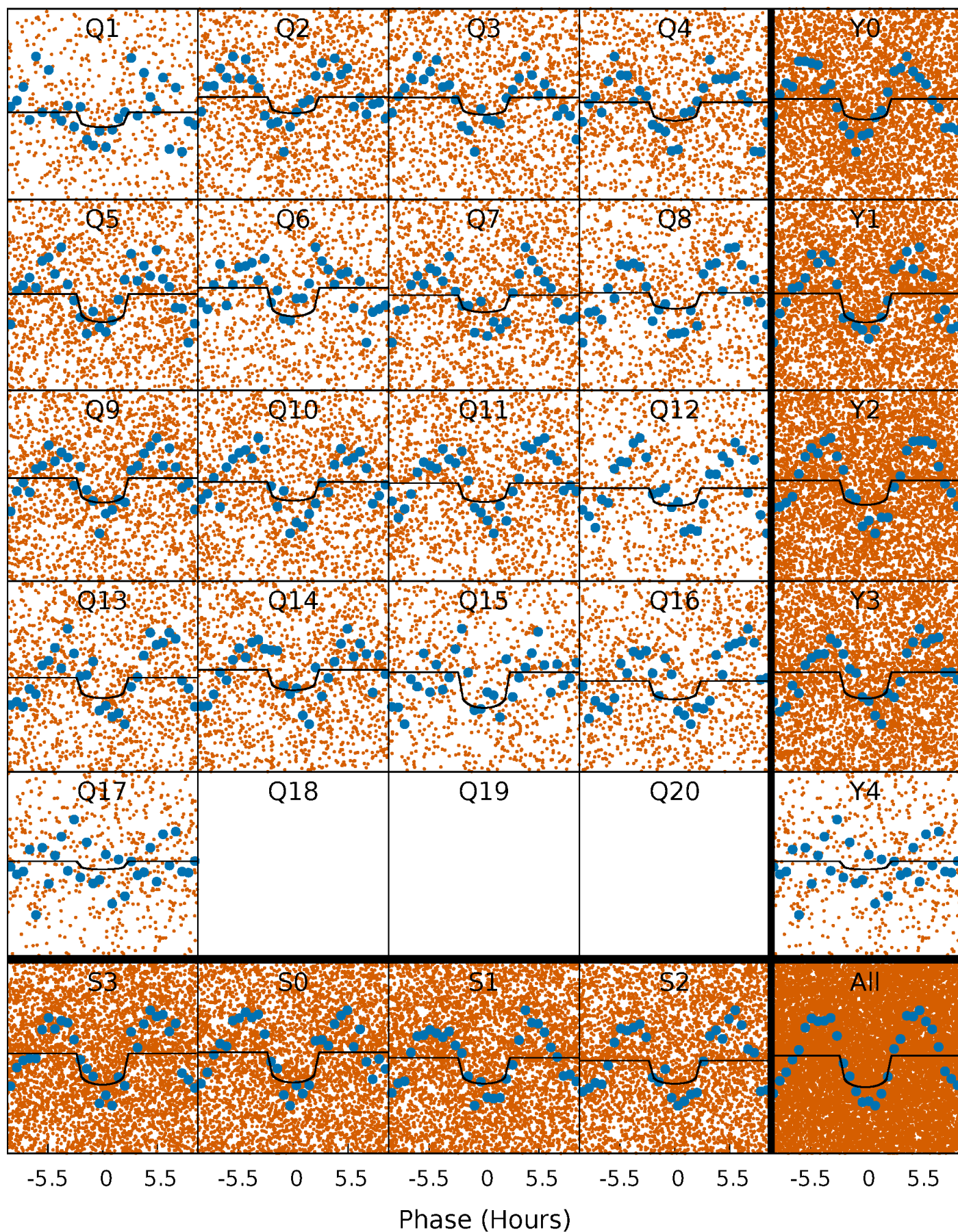
PDC Quarter-Phased Transit Curves

TCE 008703887-04 P= 0.833513 Days $T_0=132.356399$ (BKJD)



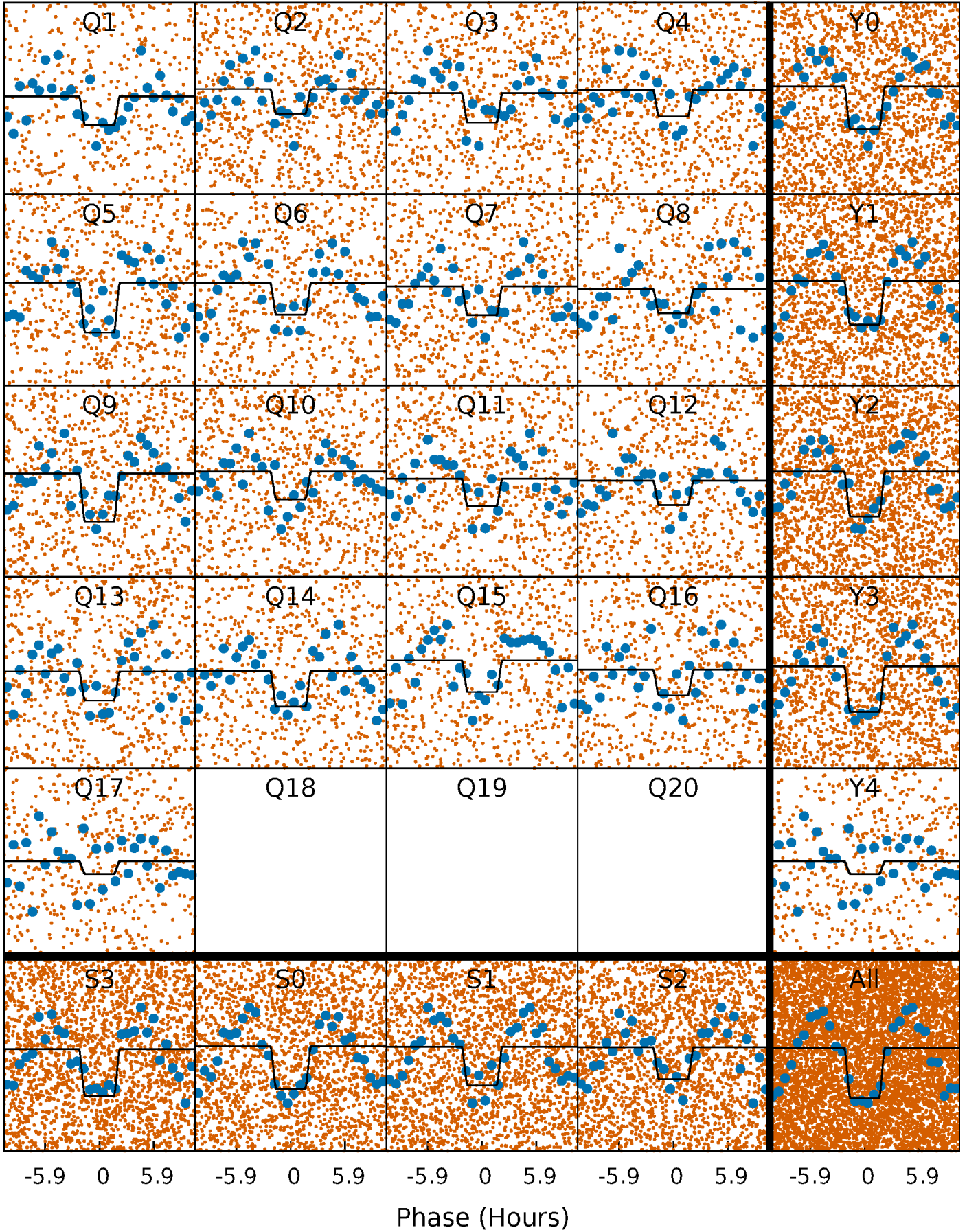
DV Quarter-Phased Transit Curves

TCE 008703887-04 P= 0.833513 Days $T_0=132.356399$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

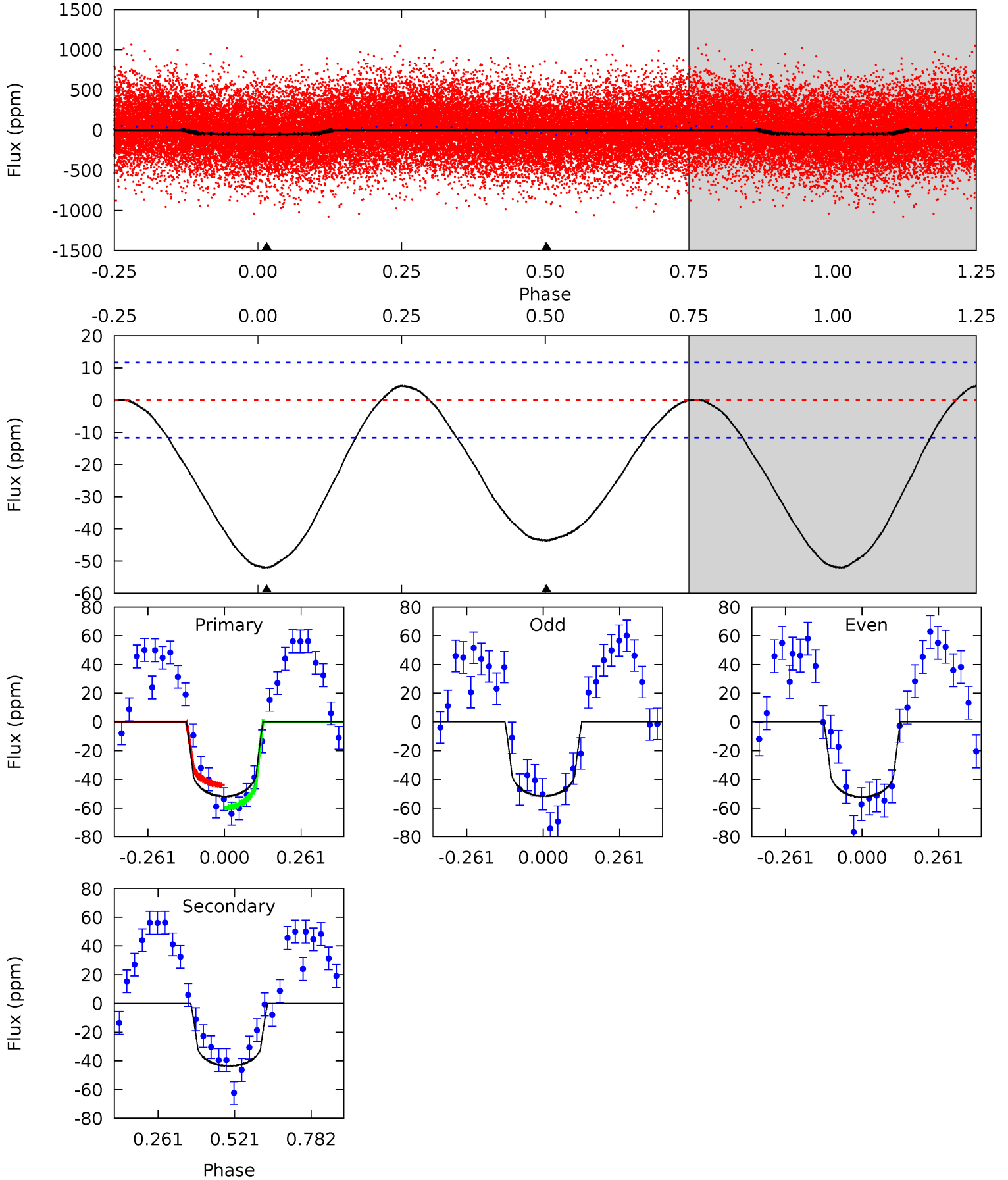
TCE 008703887-04 P= 0.833592 Days $T_0=132.305244$ (BKJD)



DV Model-Shift Uniqueness Test

008703887-04, P = 0.833513 Days, E = 132.356399 Days

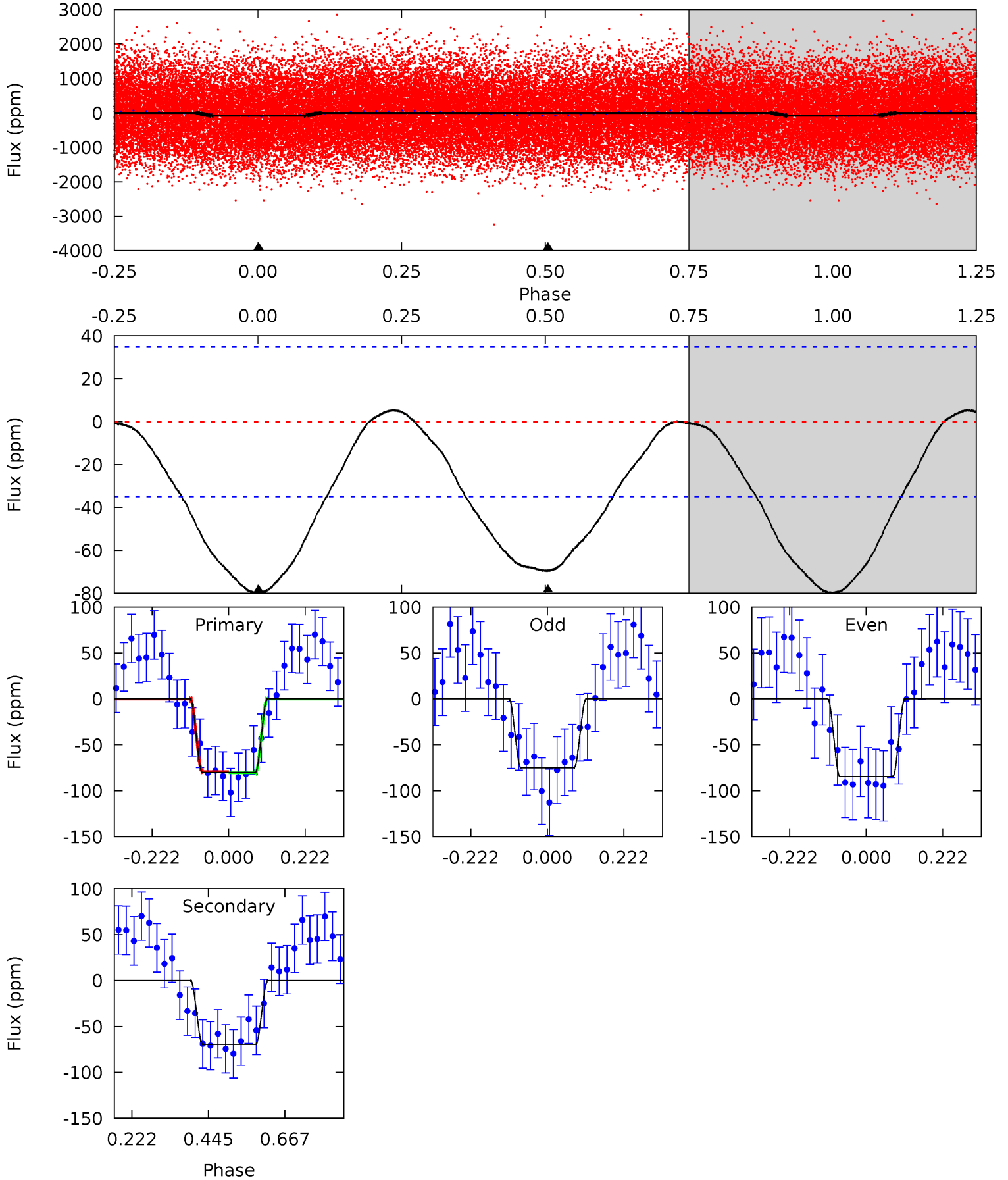
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.4	16.2	0	0	4.36	1.12	0.85	19.4	19.4	16.2	16.2	0.13	1.01	0.08	3.00



Alt Model-Shift Uniqueness Test

008703887-04, P = 0.833592 Days, E = 132.305244 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	8.77	0	0	4.39	1.22	0.34	10.1	10.1	8.77	8.77	0.58	1.06	0.06	0.08



Stellar Parameters For KIC 008703887

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8347^{+226}_{-368}	$4.231^{+0.067}_{-0.202}$	$0.070^{+0.250}_{-0.500}$	$1.715^{+0.532}_{-0.228}$	$1.826^{+0.304}_{-0.304}$	$0.510^{+0.185}_{-0.265}$
	+3%/-4%	+2%/-5%	+357%/-714%	+31%/-13%	+17%/-17%	+36%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008703887-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-44 ± 3	$1.42^{+1.11}_{-0.88}$	4715^{+334}_{-272}	7756^{+8379}_{-2243}	$5.139^{+30.689}_{-3.463}$
Alt.	-70 ± 8	$1.85^{+1.12}_{-1.02}$	4708^{+319}_{-279}	7534^{+6204}_{-1901}	$4.847^{+19.736}_{-2.947}$

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

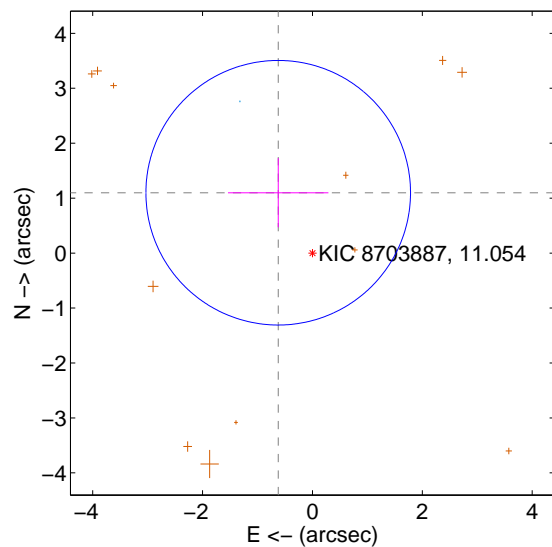
Supplemental centroid analysis for 008703887-04. **Kepler magnitude: 11.05.** Transit SNR 12.75

There are 1 quarters with good PRF difference image offsets

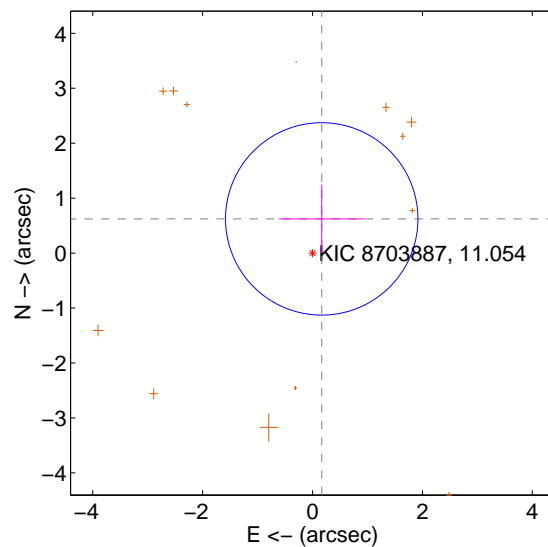
The direct PRF centroid is offset from the target star catalog position by about 1.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.263 ± 0.803	1.57	0.623 ± 0.914	1.098 ± 0.629
PRF-fit source offset from KIC position	0.644 ± 0.584	1.10	-0.168 ± 0.780	0.622 ± 0.627
photometric centroid source offset	0.55 ± 0.24	2.27	-0.15 ± 0.31	0.52 ± 0.23

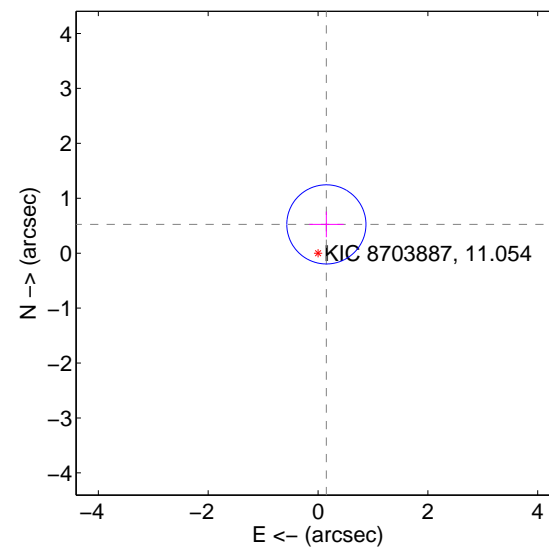
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

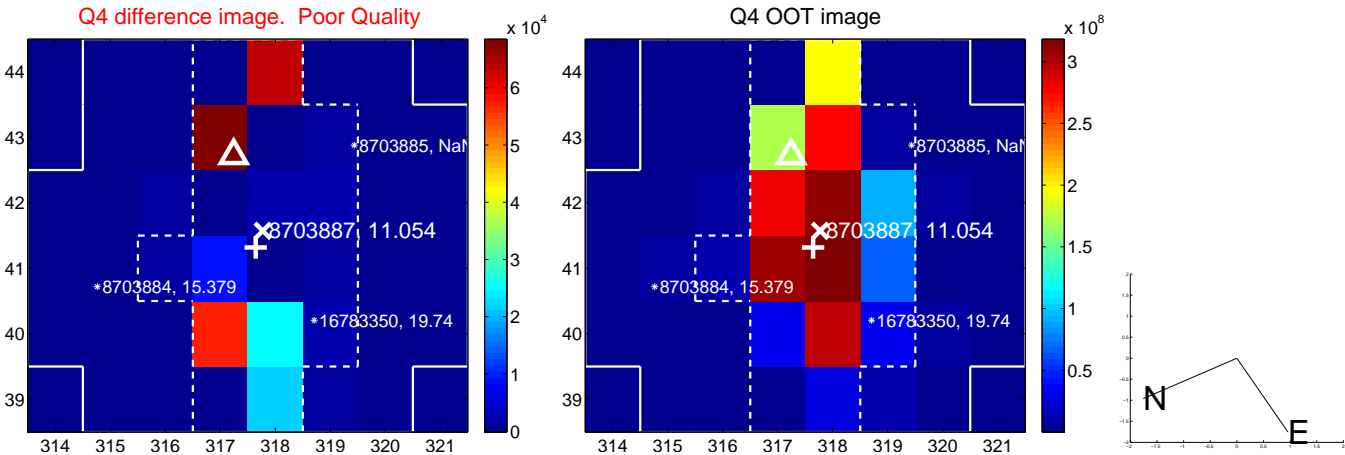
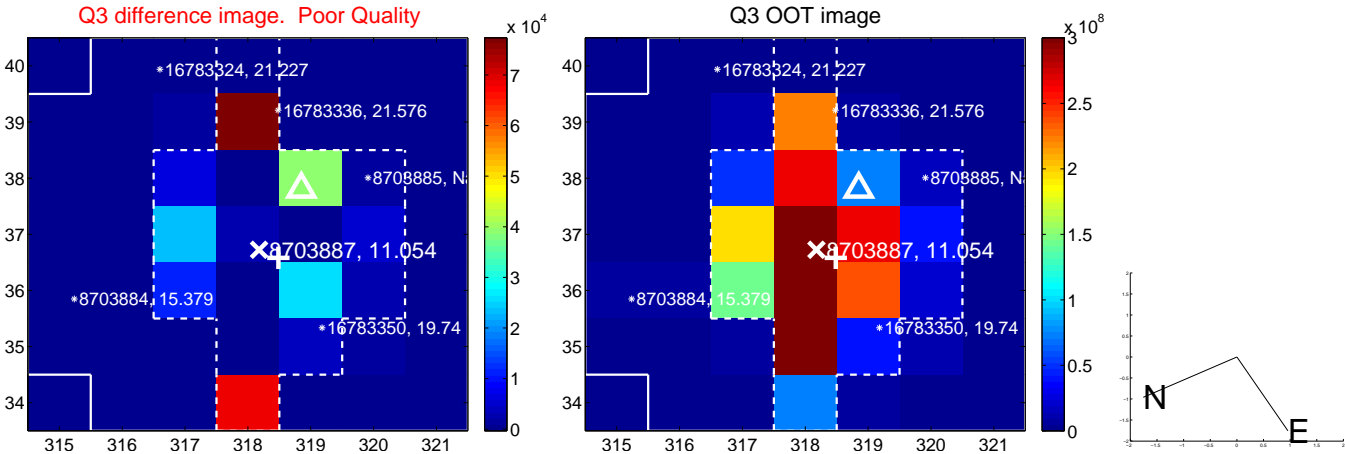
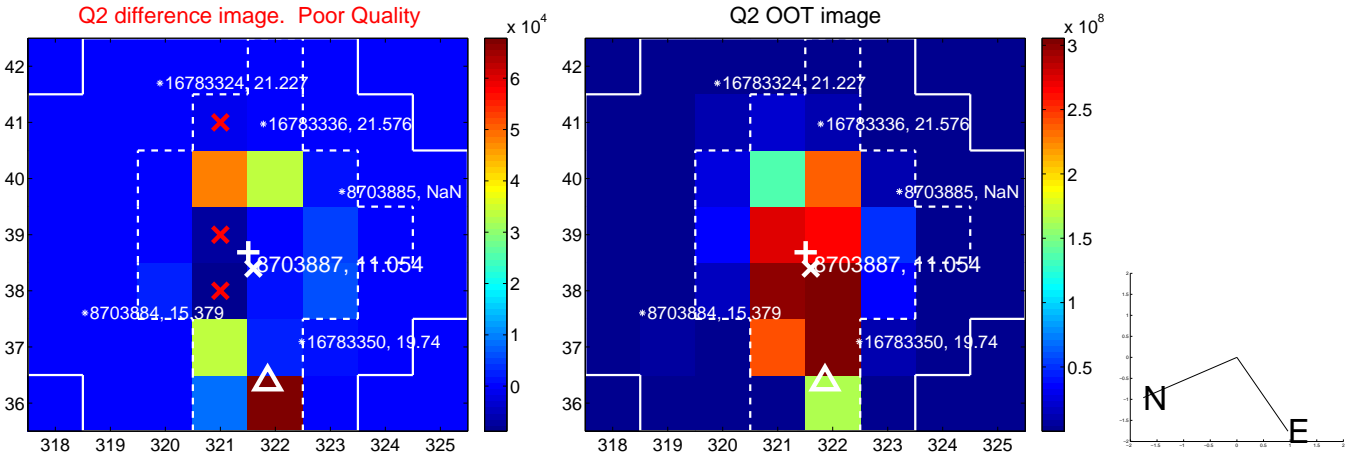
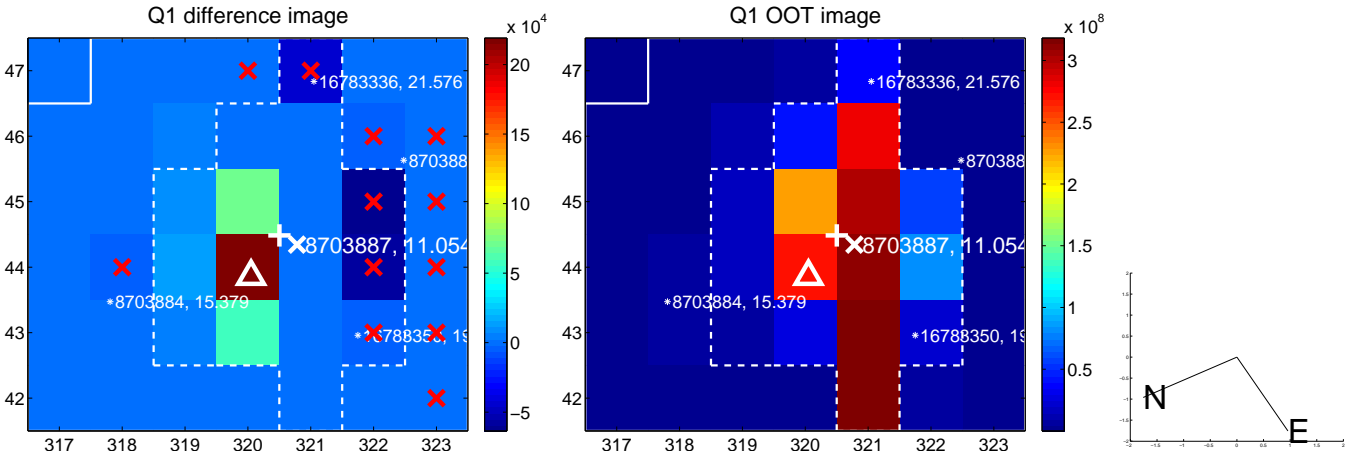


offset from photometric centroids

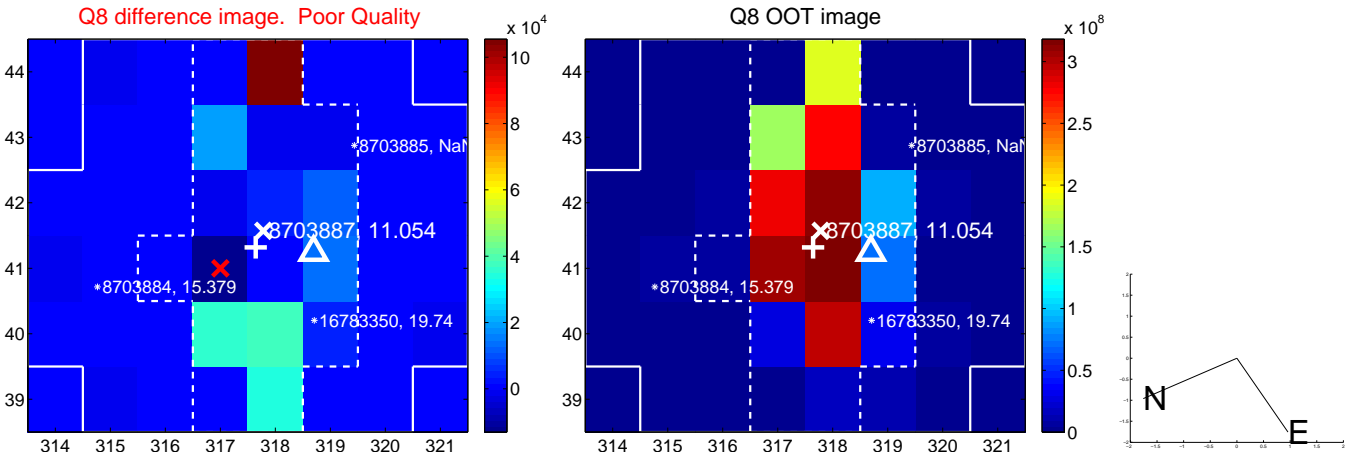
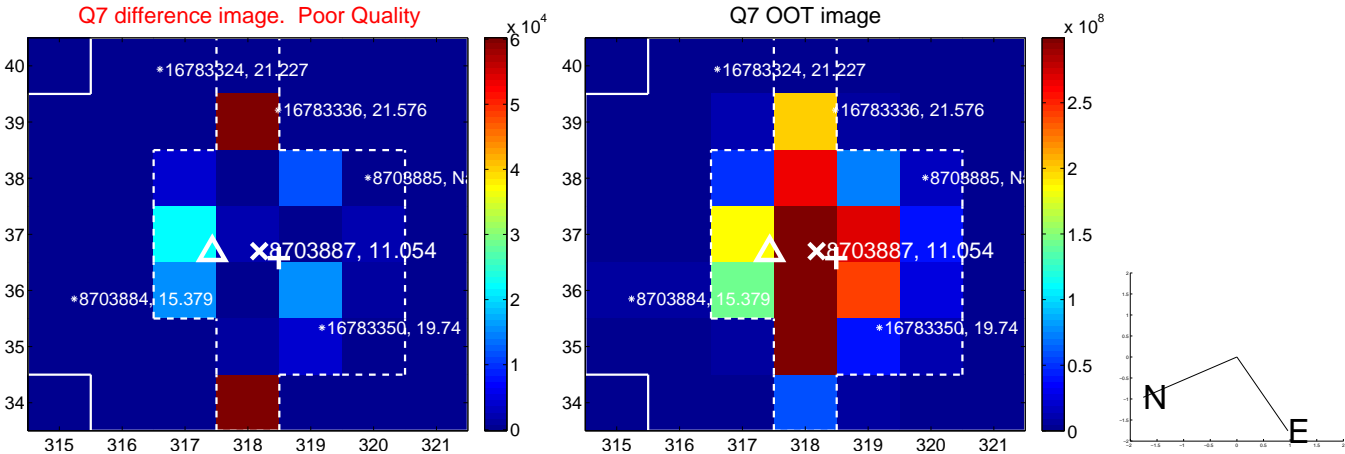
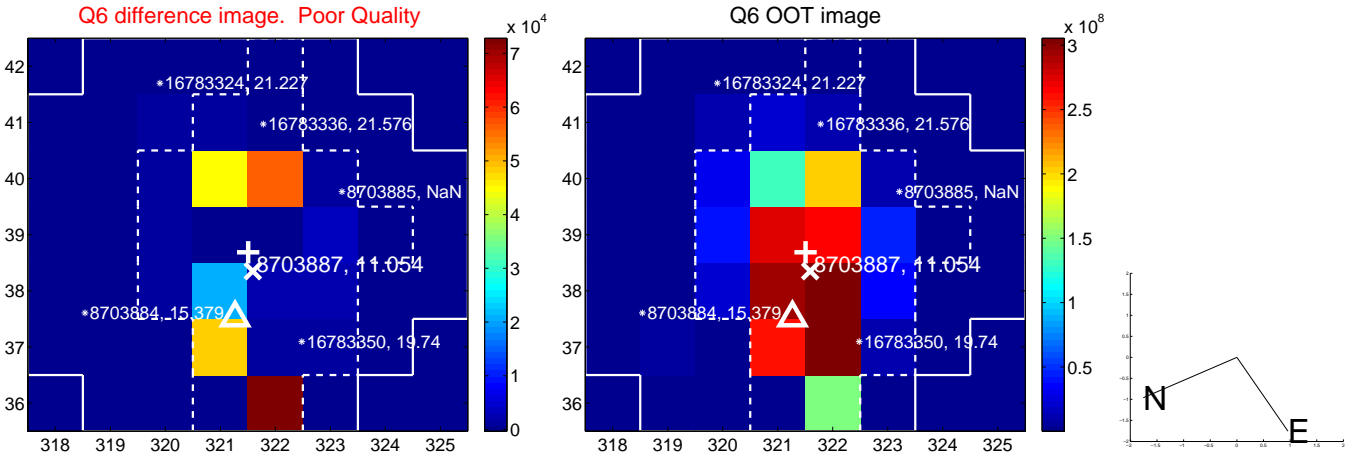
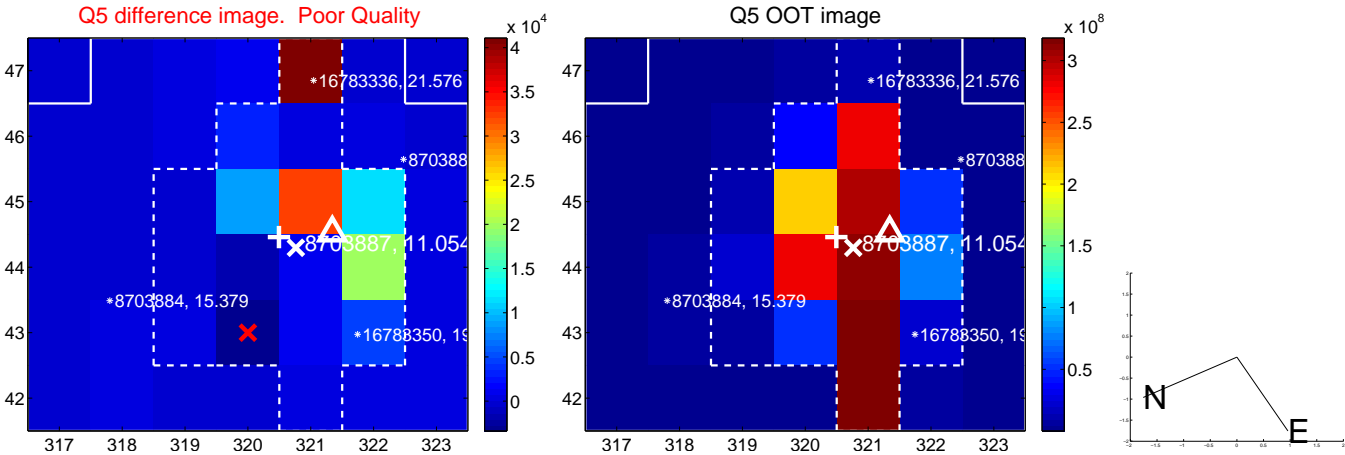


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

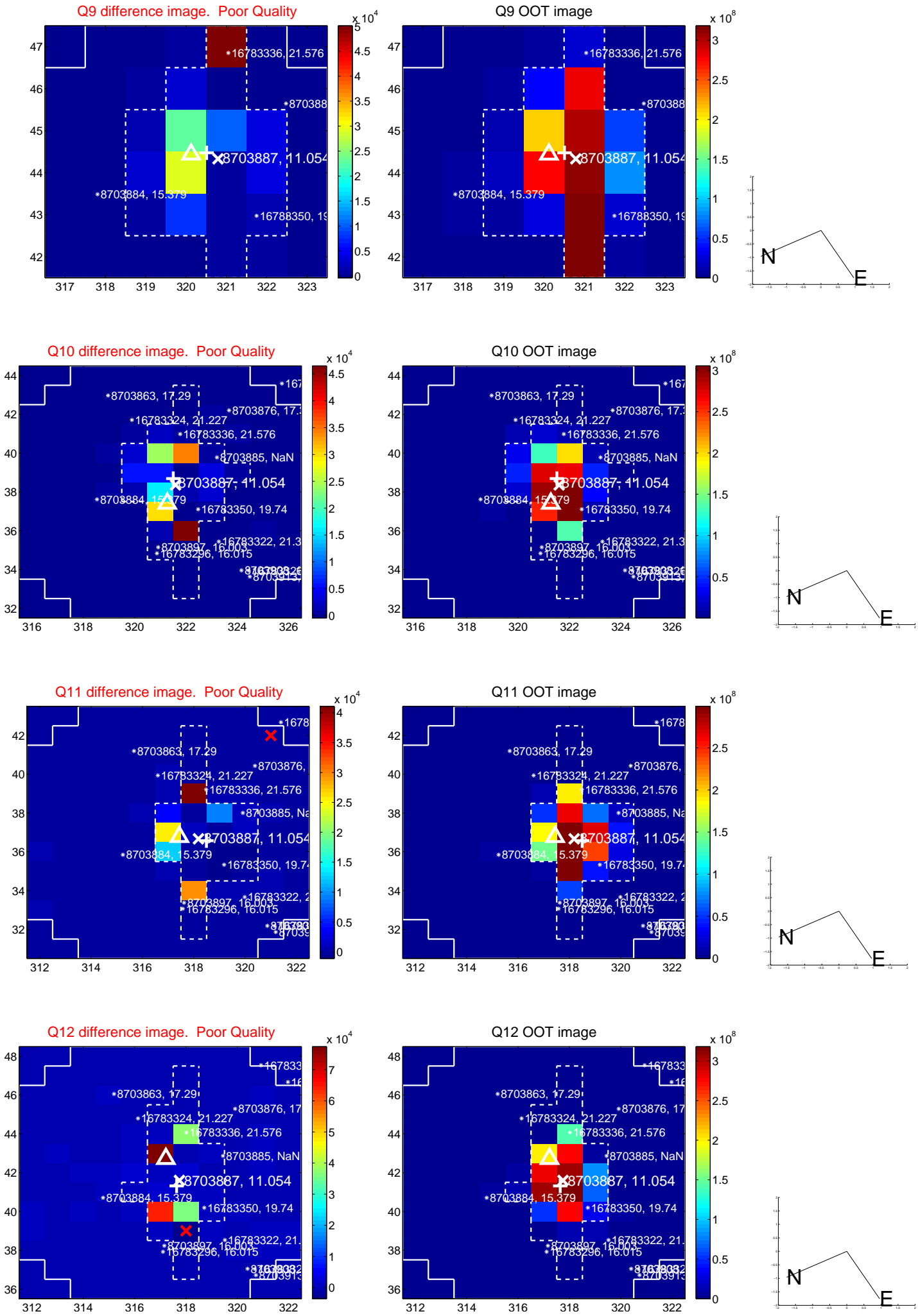
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



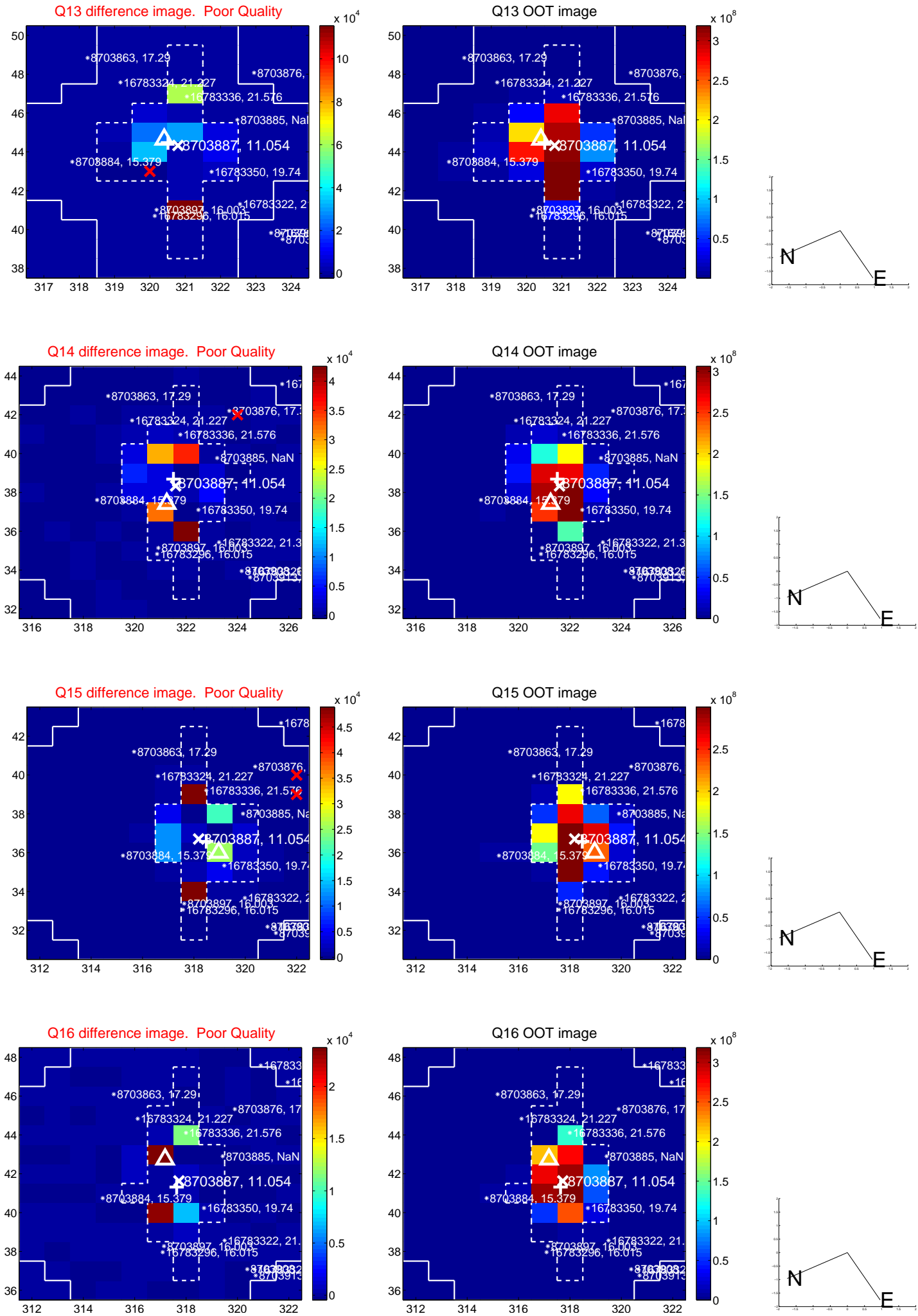
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



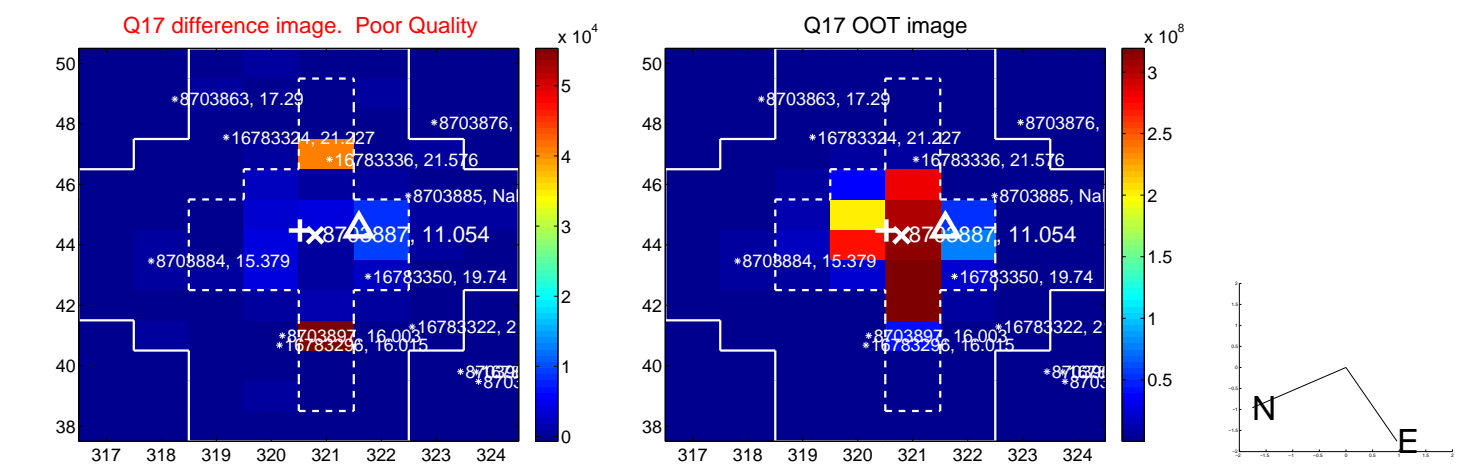
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



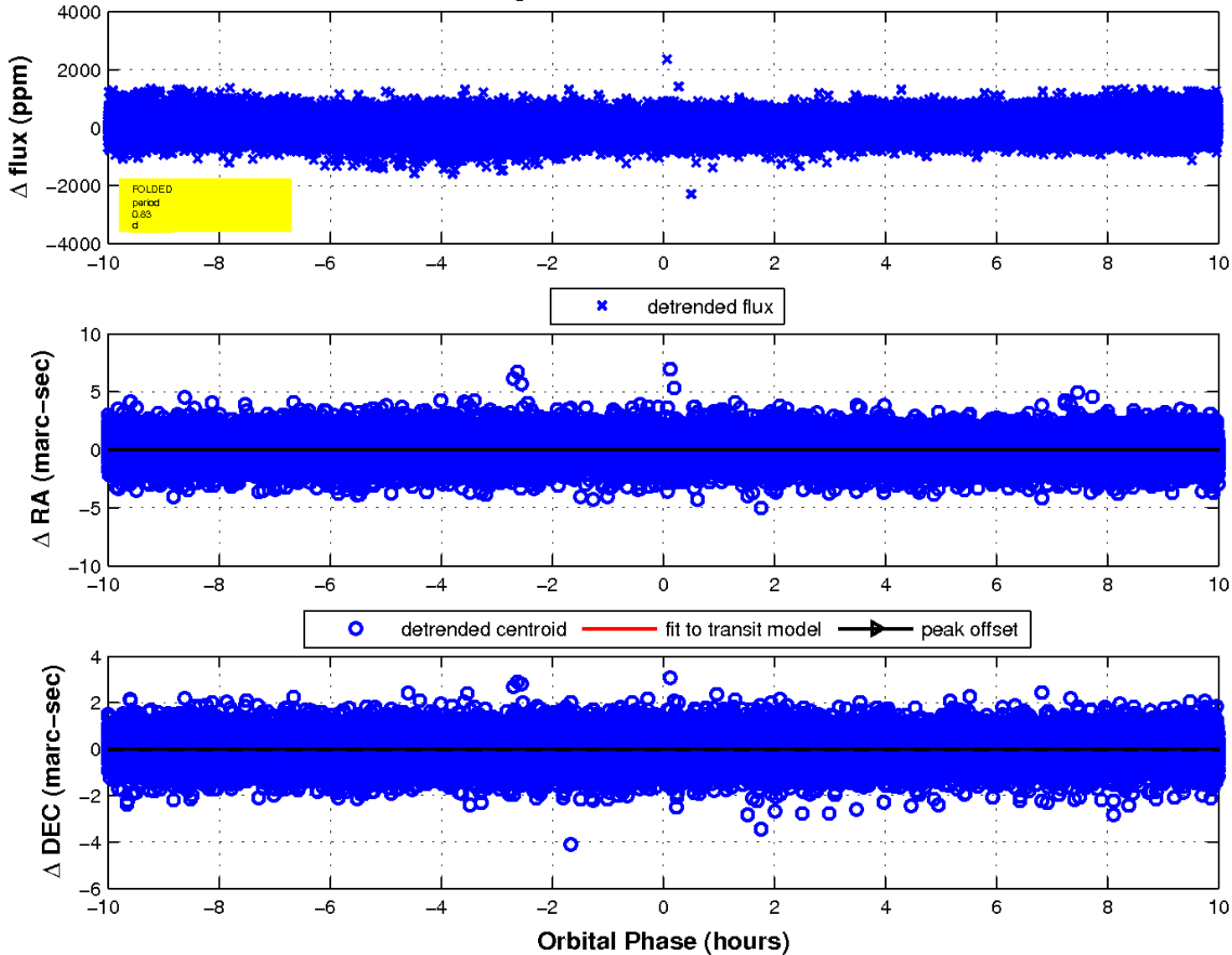
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

