

KIC 004054968

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})
004054968-01	OBS	No	0.618547	131.893331	65.9	2.031	13.3	12.7	1.64	7332	1.55	24493.22
004054968-02	OBS	No	1.083784	132.466135	83.2	6.441	9.6	11.7	1.64	7332	1.74	11595.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004054968-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004054968-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT

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

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

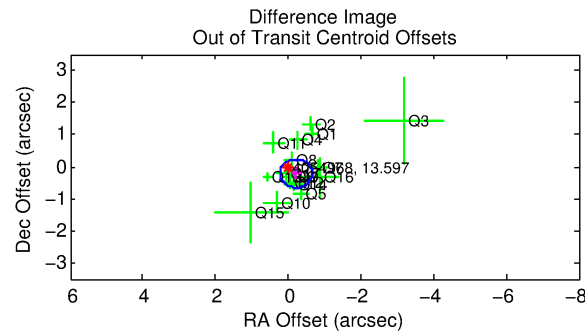
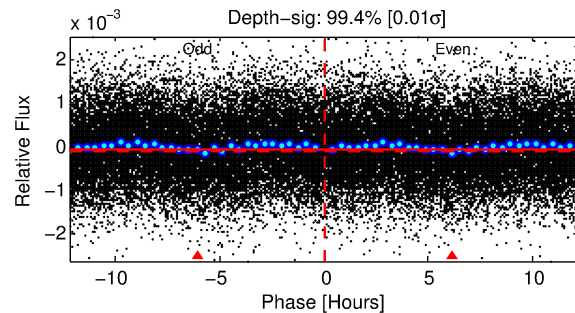
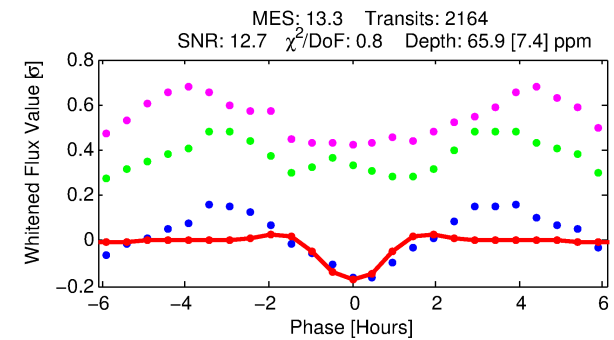
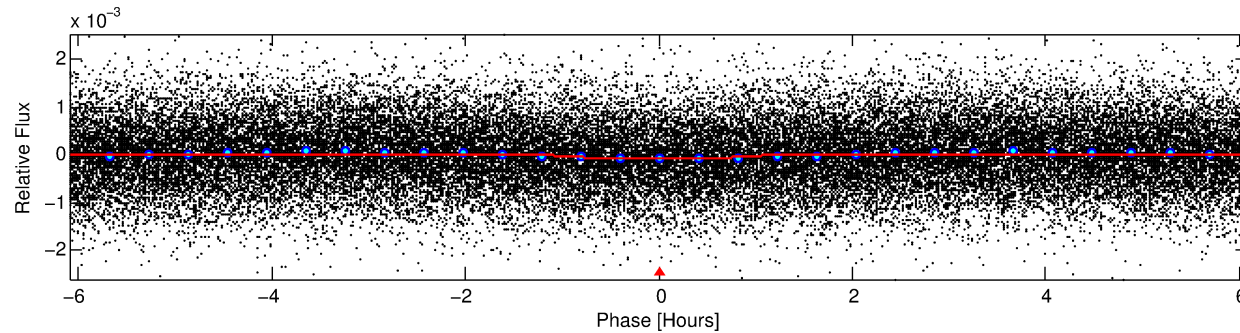
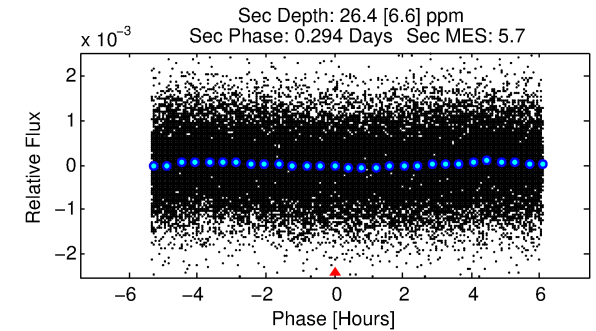
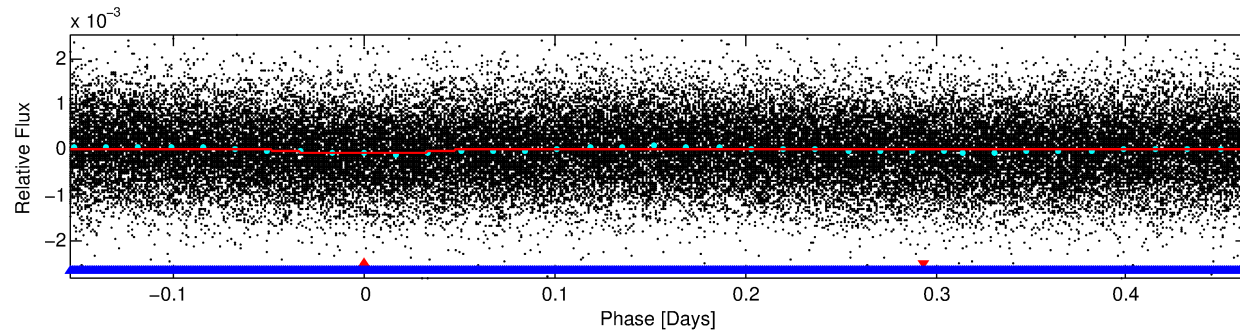
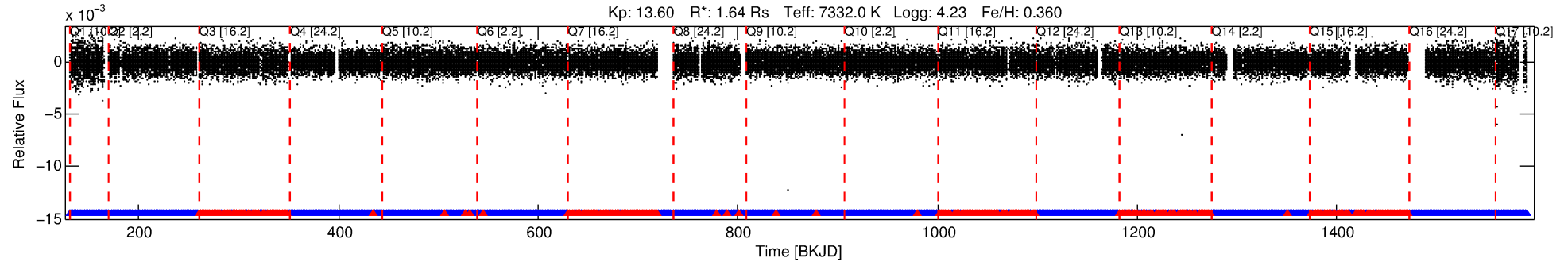
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004054968-01

No Significant Match Found

DV One-Page Summary

KIC: 4054968 Candidate: 1 of 2 Period: 0.619 d



DV Fit Results:

Period = 0.61855 [0.00001] d
Epoch = 131.8933 [0.0022] BKJD
Rp/R* = 0.0086 [0.0045]
a/R* = 1.42 [2.36]
b = 0.90 [0.71]
Seff = 24493.23 [11614.25]
Teff = 3190 [378] K
Rp = 1.55 [0.98] Re
a = 0.0169 [0.0050] AU
Ag = 1.73 [1.99] [0.37σ]
Teffp = 5657 [1548] K [1.55σ]

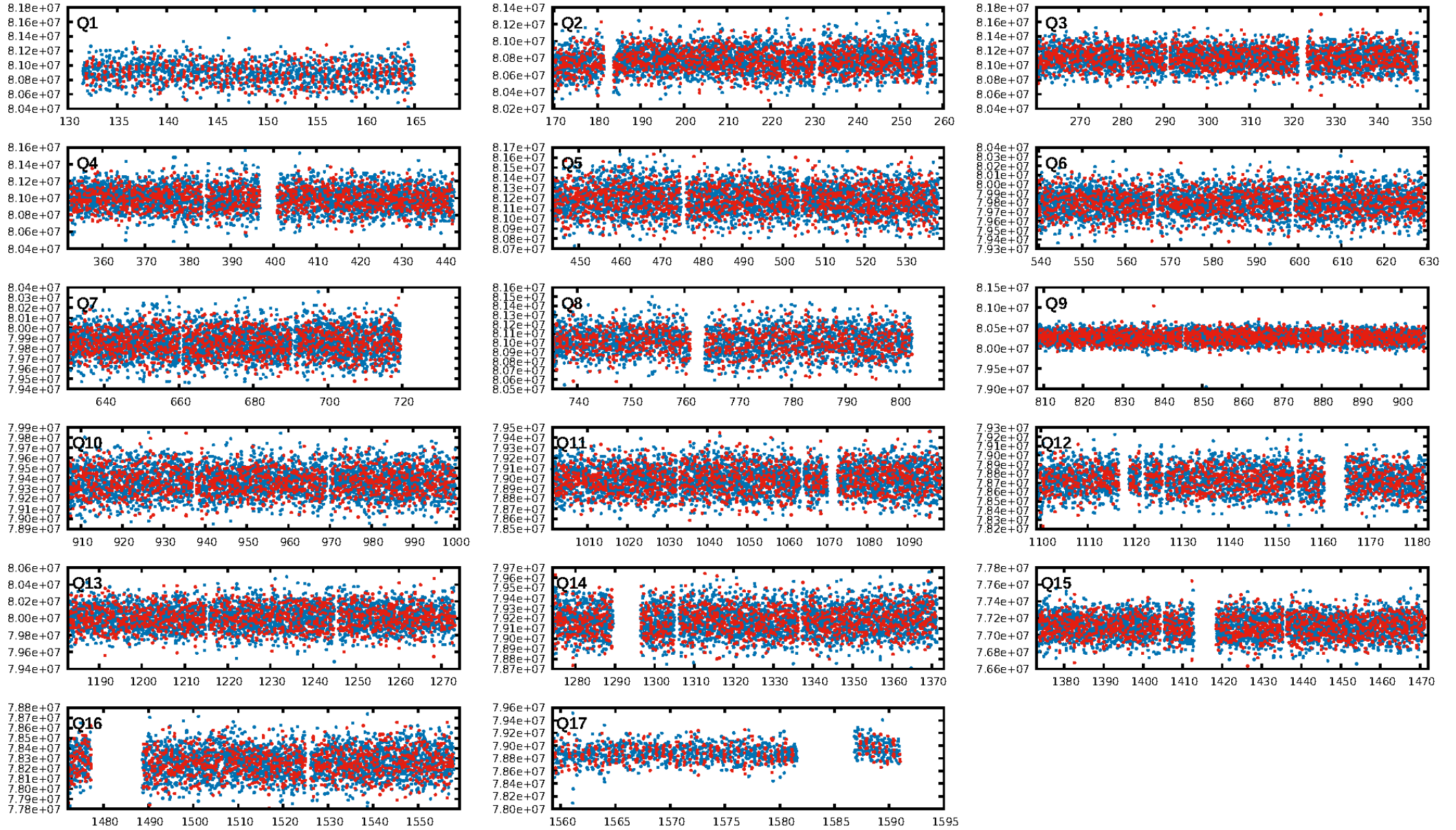
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 90.2% [1.65σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.52e-19
RollingBand-fgt: 0.80 [1660/2067]
GhostDiagnostic-chr: 1.843
Centroid-sig: N/A
Centroid-so: 0.533 arcsec [1.02σ]
OotOffset-rm: 0.302 arcsec [2.04σ]
KicOffset-rm: 0.428 arcsec [2.69σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

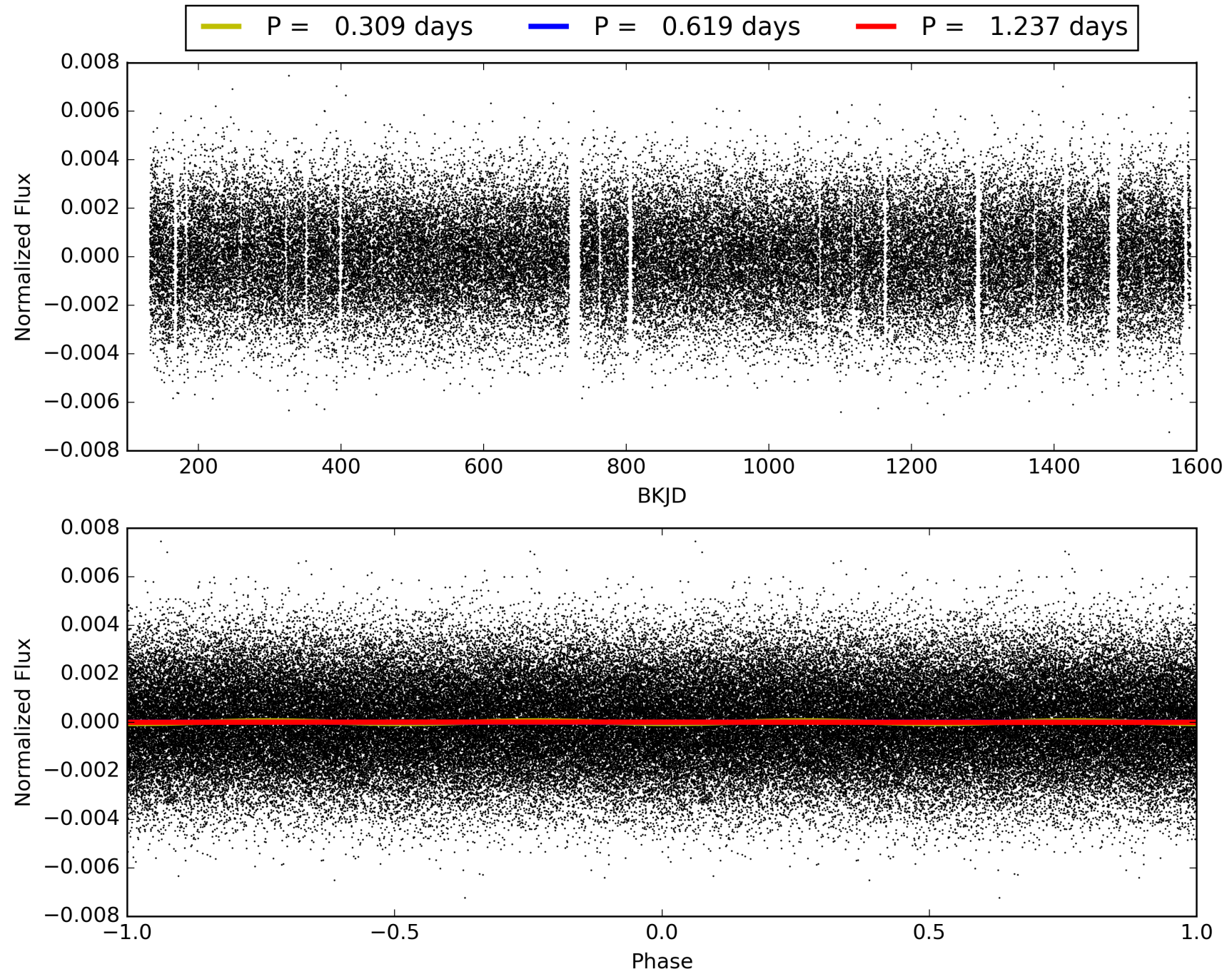
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:08:45 Z

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

TCE 004054968-01, PDC Light Curves

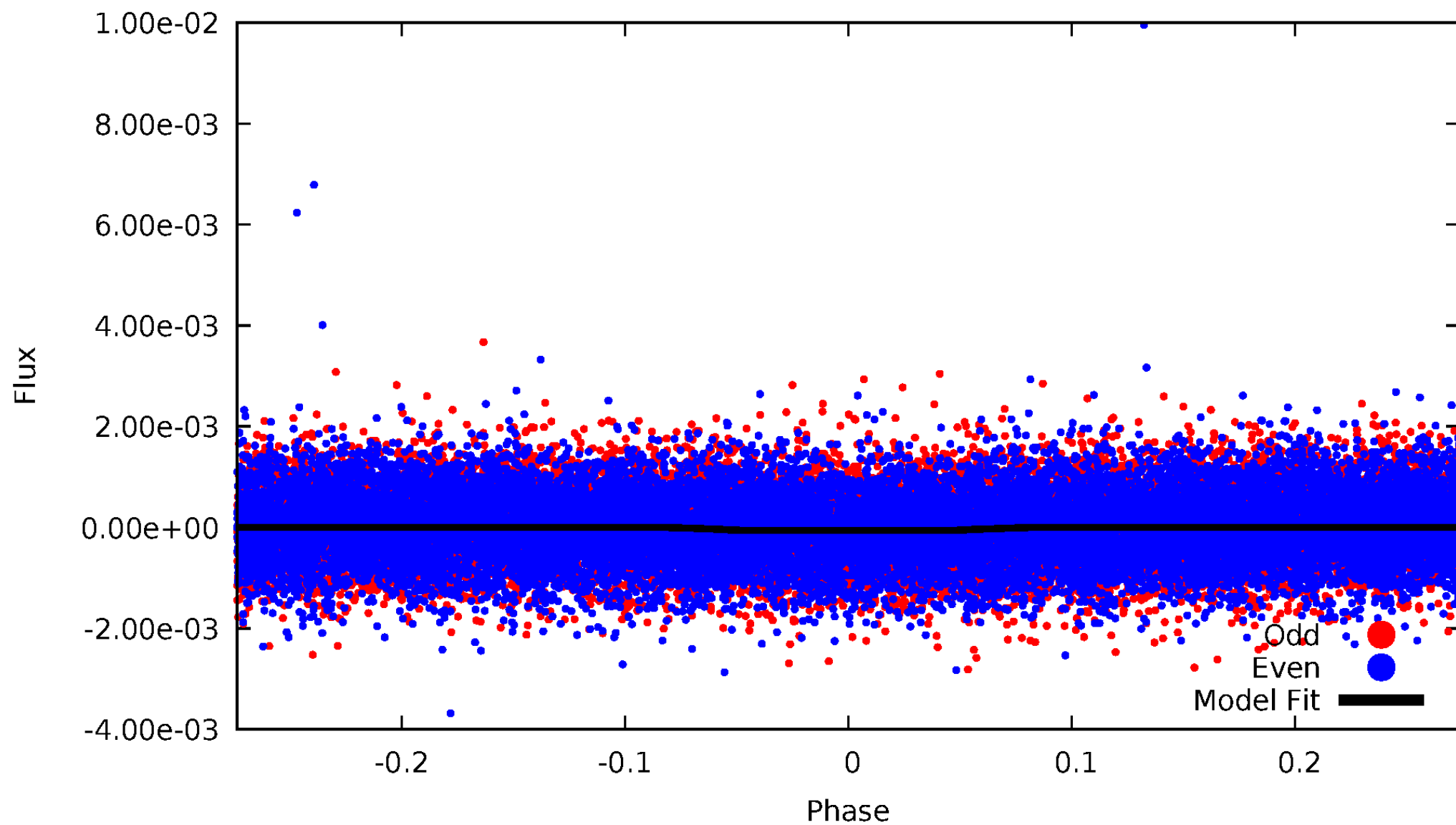


TCE 004054968-01



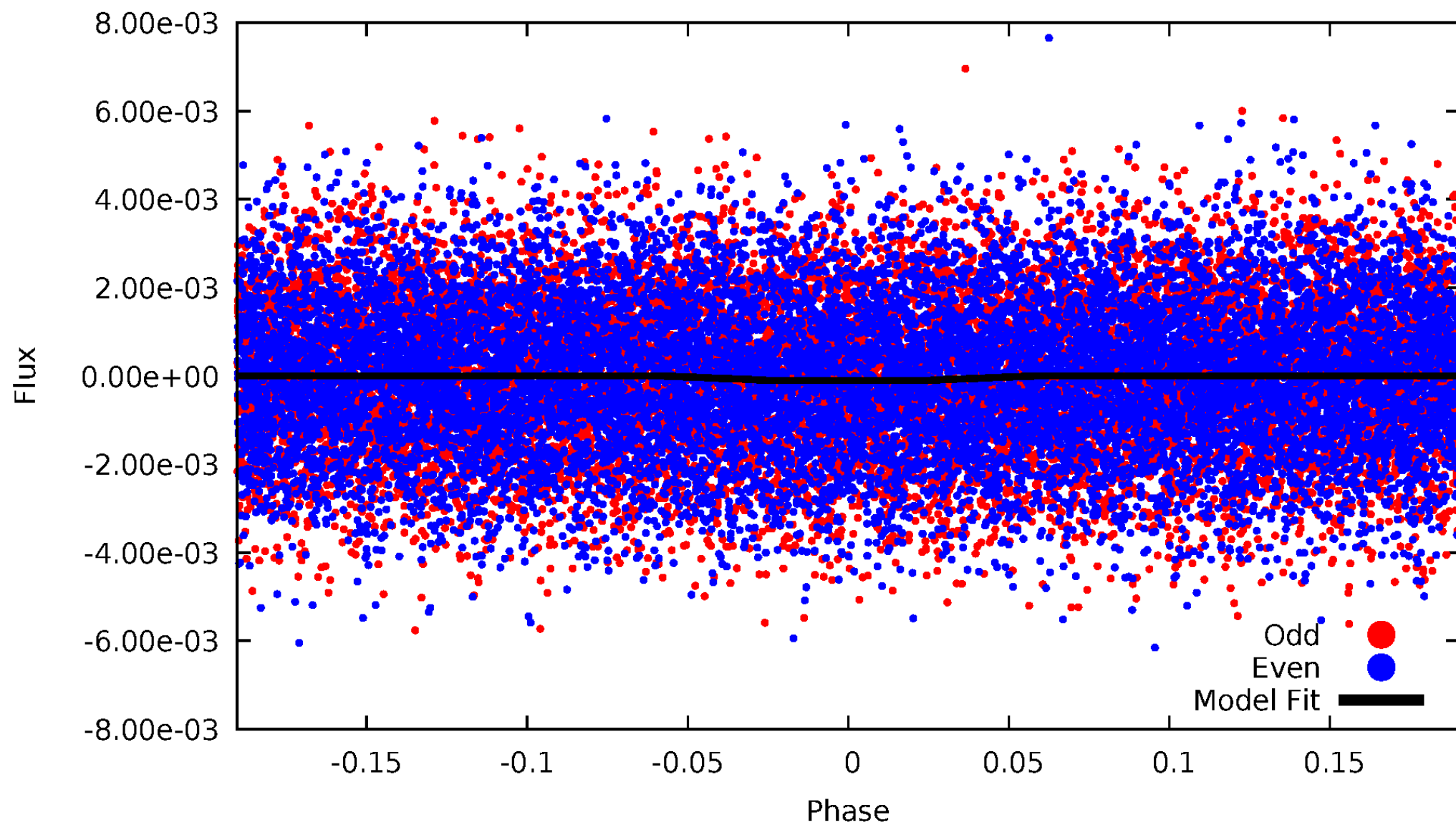
DV Odd/Even

TCE 004054968-01



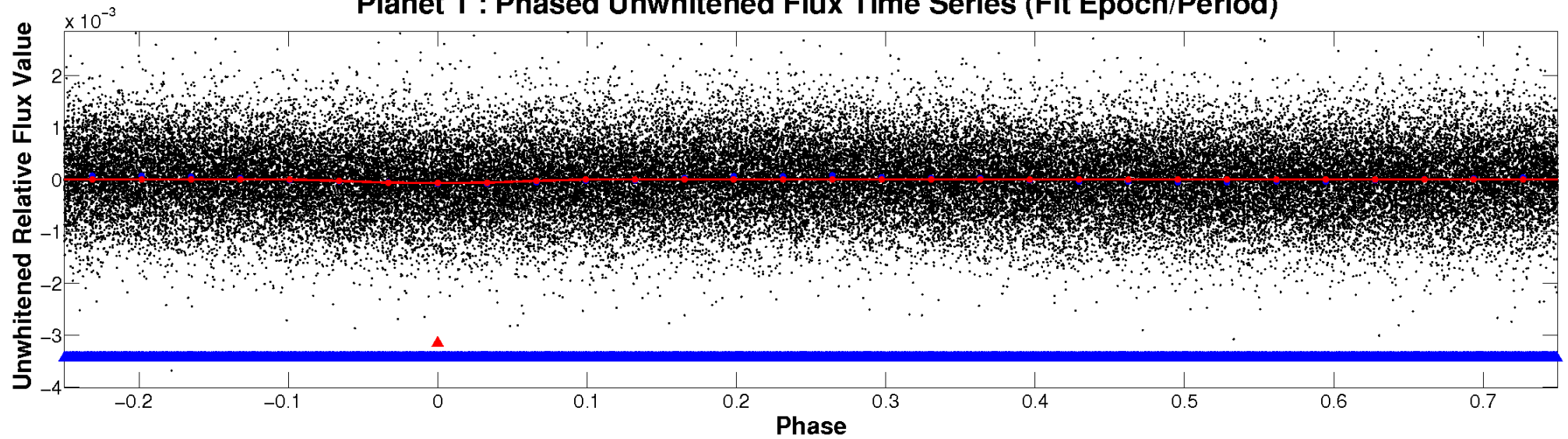
ALT Odd/Even

TCE 004054968-01

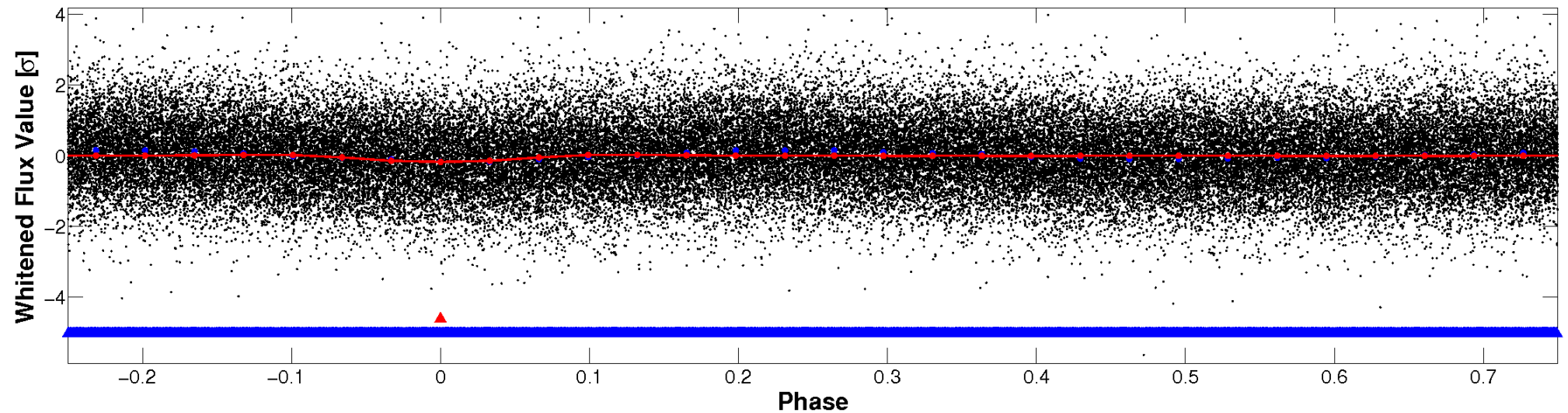


Non-Whitened Vs. Whitened Light Curve

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

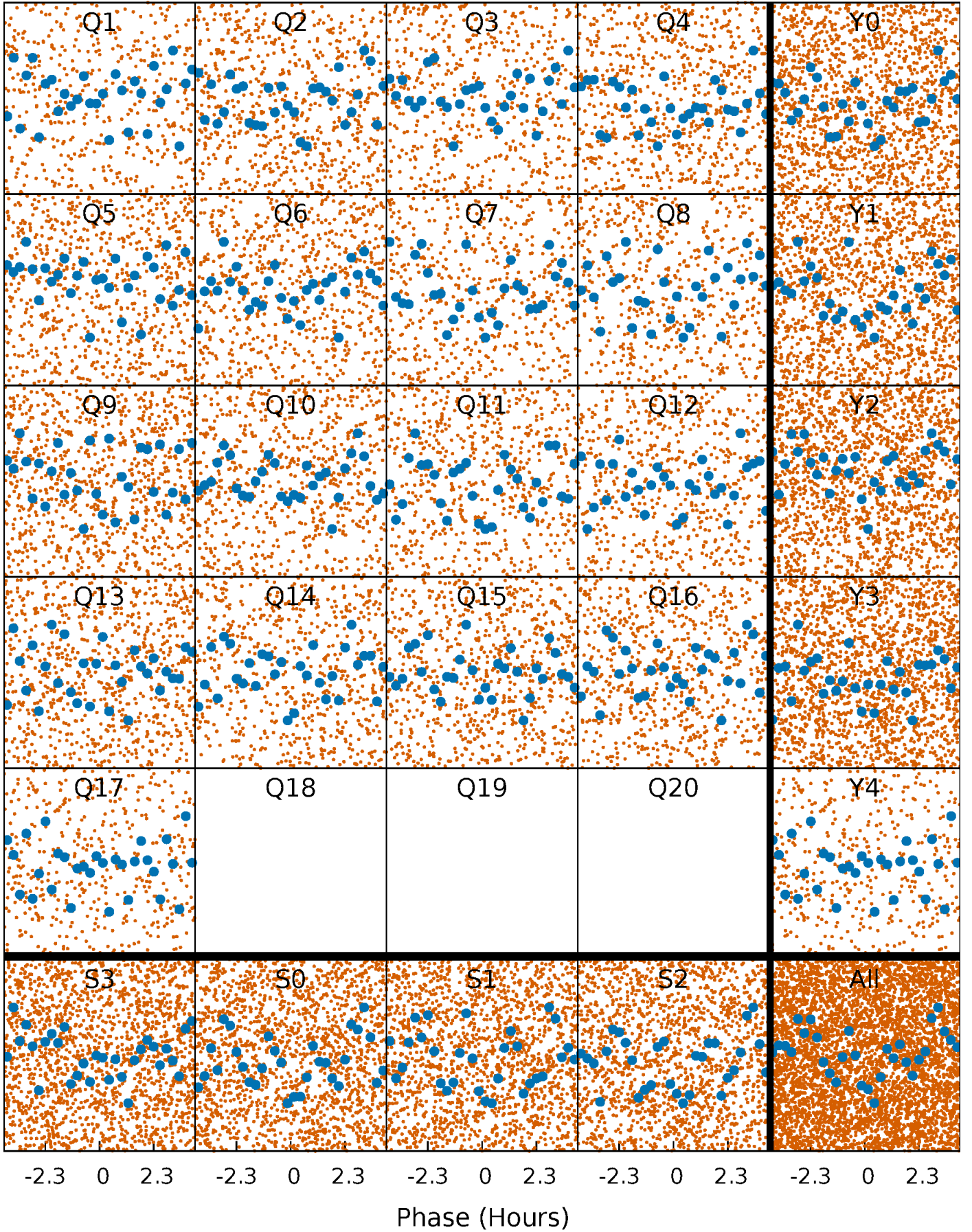


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



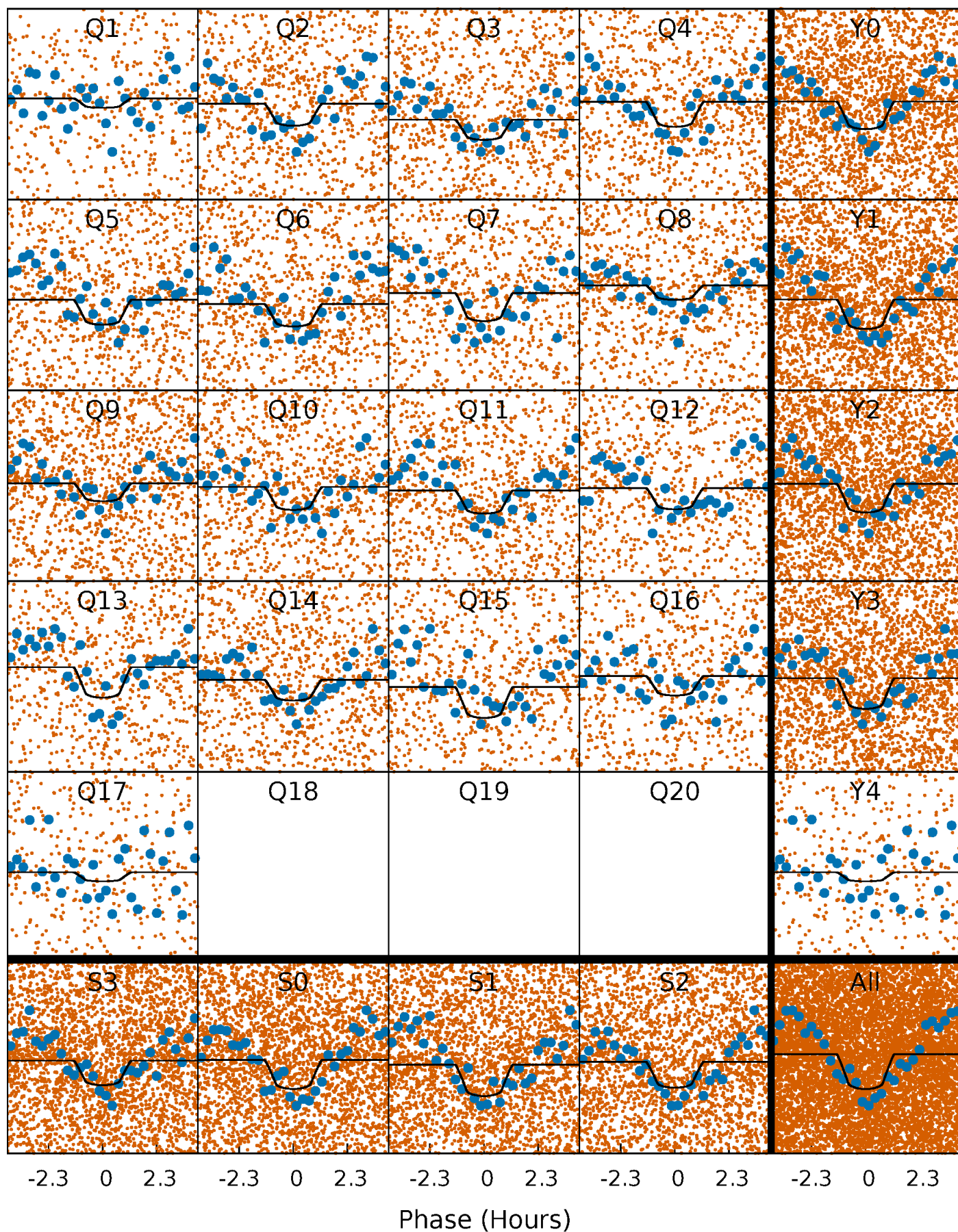
PDC Quarter-Phased Transit Curves

TCE 004054968-01 P= 0.618547 Days $T_0=131.893331$ (BKJD)



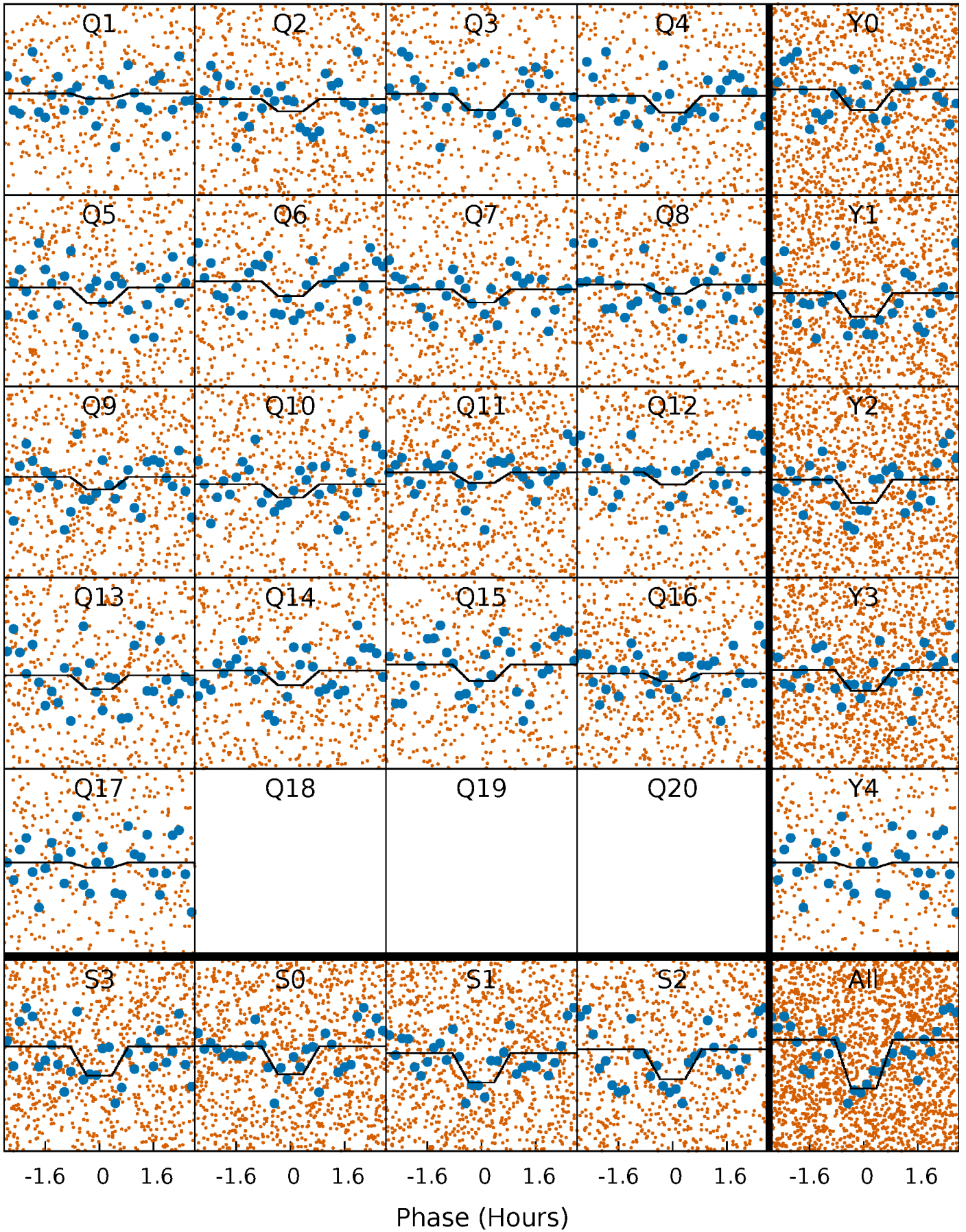
DV Quarter-Phased Transit Curves

TCE 004054968-01 P= 0.618547 Days $T_0=131.893331$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

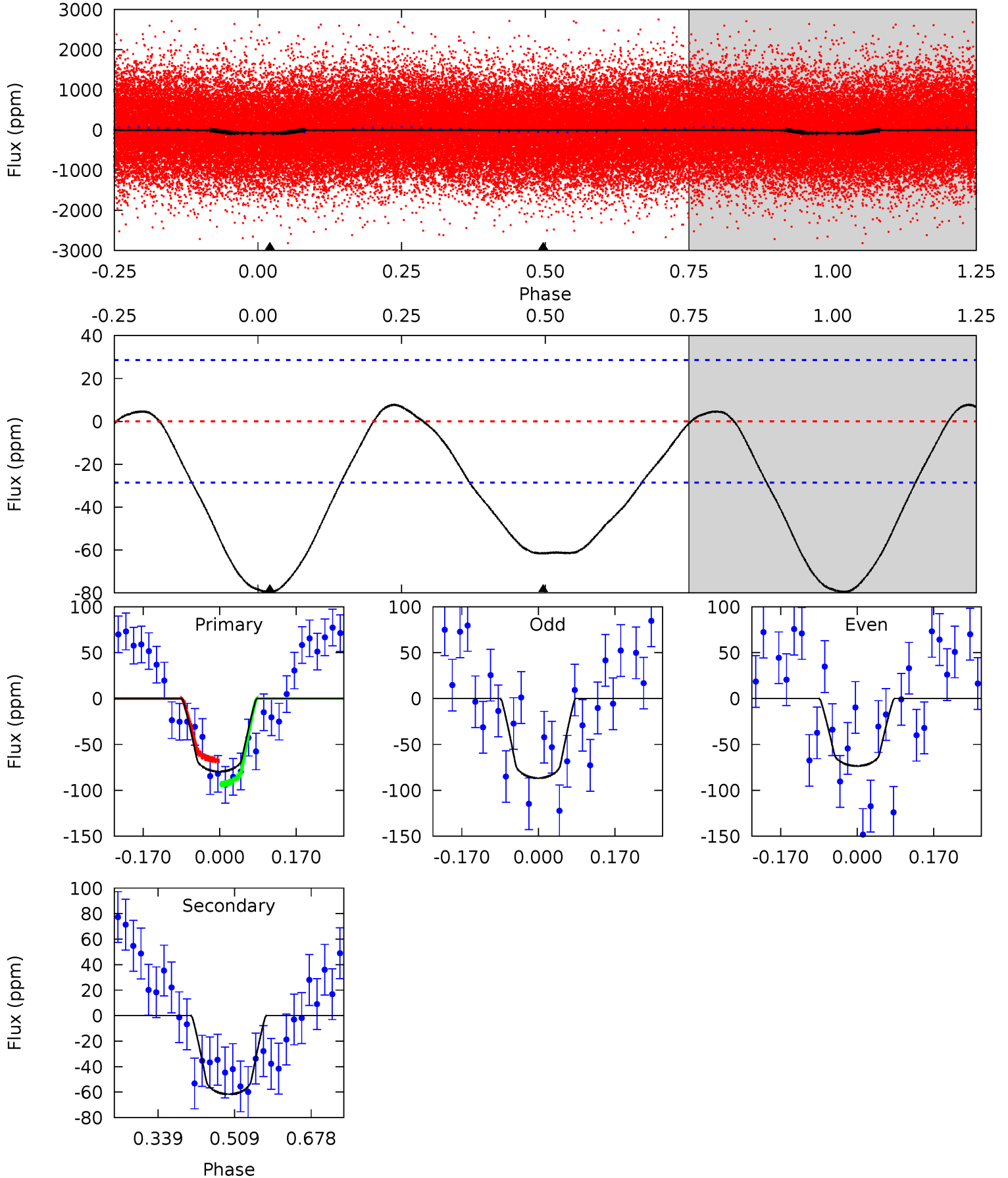
TCE 004054968-01 P= 0.618560 Days $T_0=131.889038$ (BKJD)



DV Model-Shift Uniqueness Test

004054968-01, P = 0.618547 Days, E = 131.274784 Days

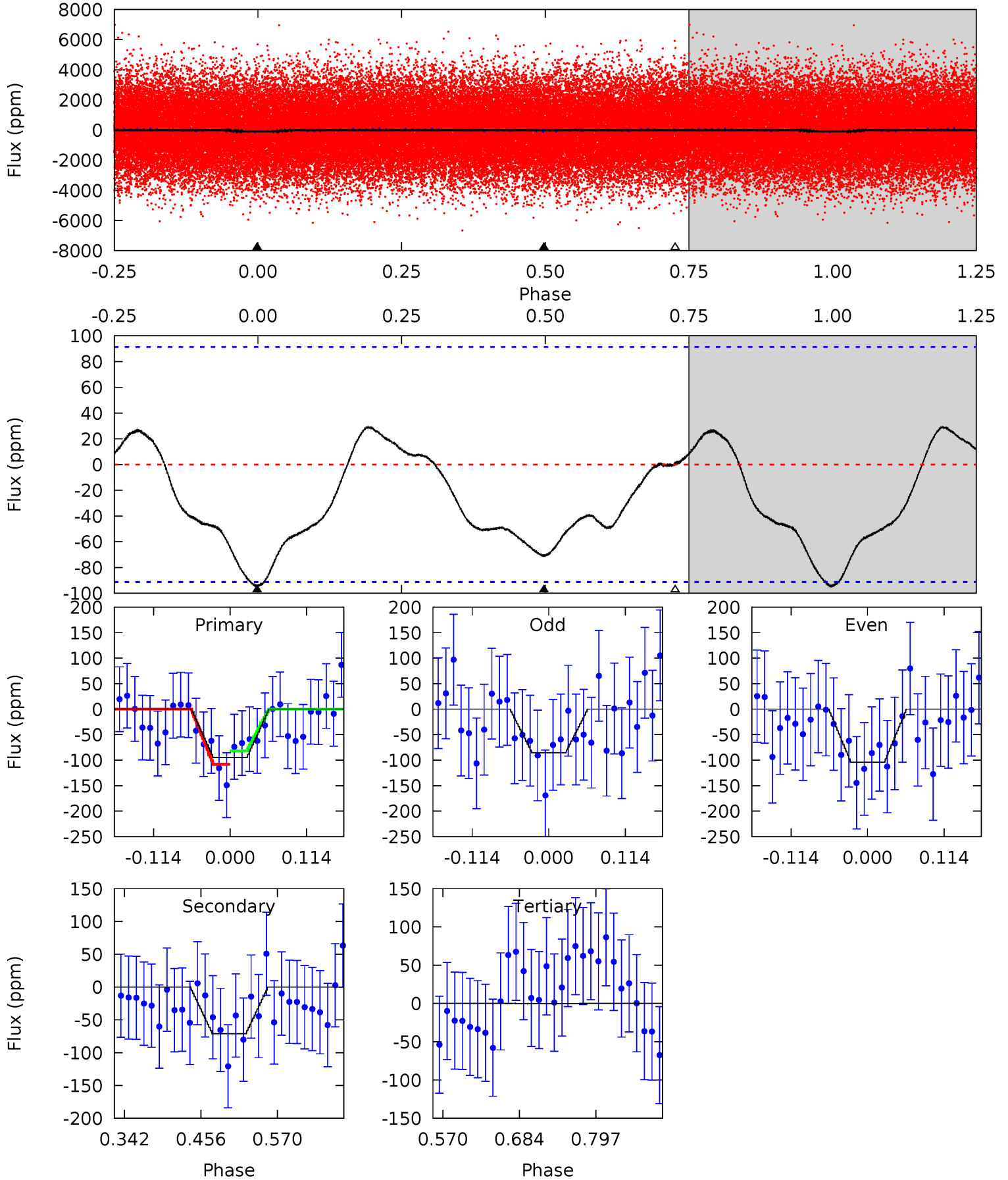
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	9.59	0	0	4.45	1.37	1.43	12.4	12.4	9.59	9.59	1.04	1.04	0.09	2.05



Alt Model-Shift Uniqueness Test

004054968-01, P = 0.618560 Days, E = 131.270478 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.72	3.54	0	0	4.54	1.58	1.13	4.72	4.72	3.54	3.54	0.47	0.95	0.24	0.66



Stellar Parameters For KIC 004054968

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7332^{+203}_{-407}	$4.232^{+0.056}_{-0.224}$	$0.360^{+0.050}_{-0.350}$	$1.643^{+0.590}_{-0.157}$	$1.680^{+0.211}_{-0.211}$	$0.534^{+0.126}_{-0.306}$
	+3%/-6%	+1%/-5%	+14%/-97%	+36%/-10%	+13%/-13%	+24%/-57%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004054968-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-62 ± 6	$1.67^{+0.86}_{-0.78}$	4502^{+349}_{-260}	6571^{+3286}_{-1325}	$3.386^{+8.433}_{-1.941}$
Alt.	-71 ± 20	$1.85^{+0.90}_{-0.82}$	4518^{+383}_{-276}	6475^{+3031}_{-1393}	$3.284^{+7.674}_{-1.975}$

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

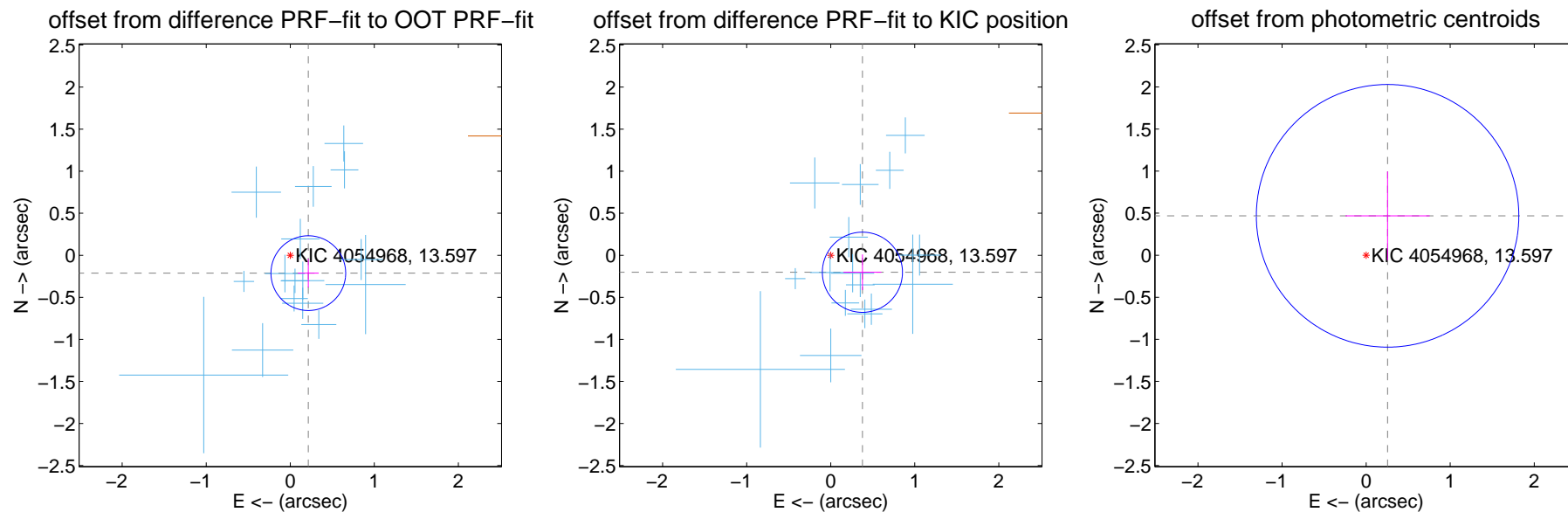
DV Centroid Data

Supplemental centroid analysis for 004054968-01. Kepler magnitude: 13.60. Transit SNR 12.70

There are 16 quarters with good PRF difference image offsets

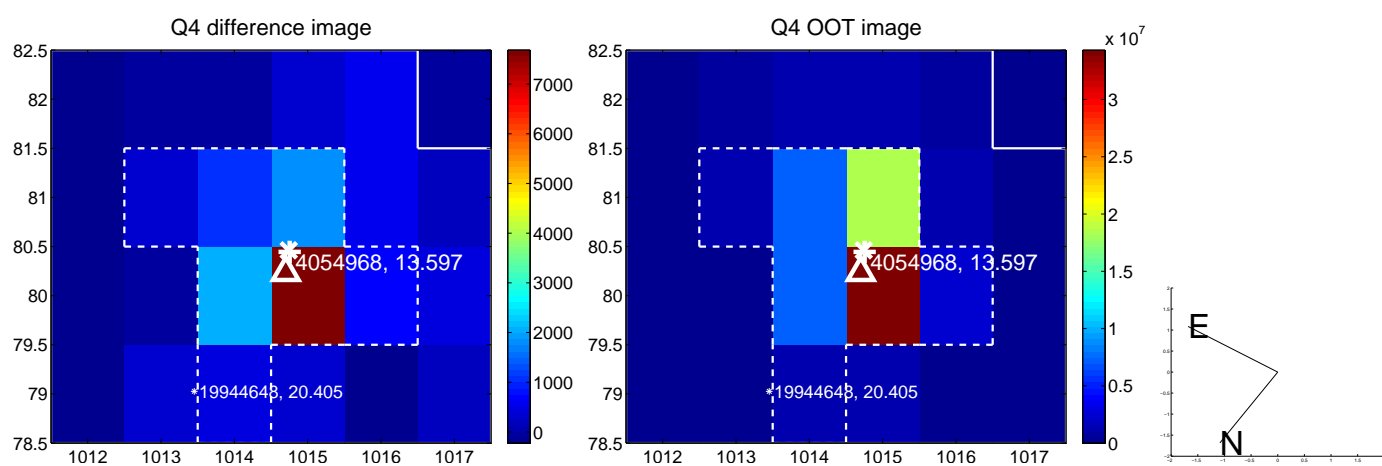
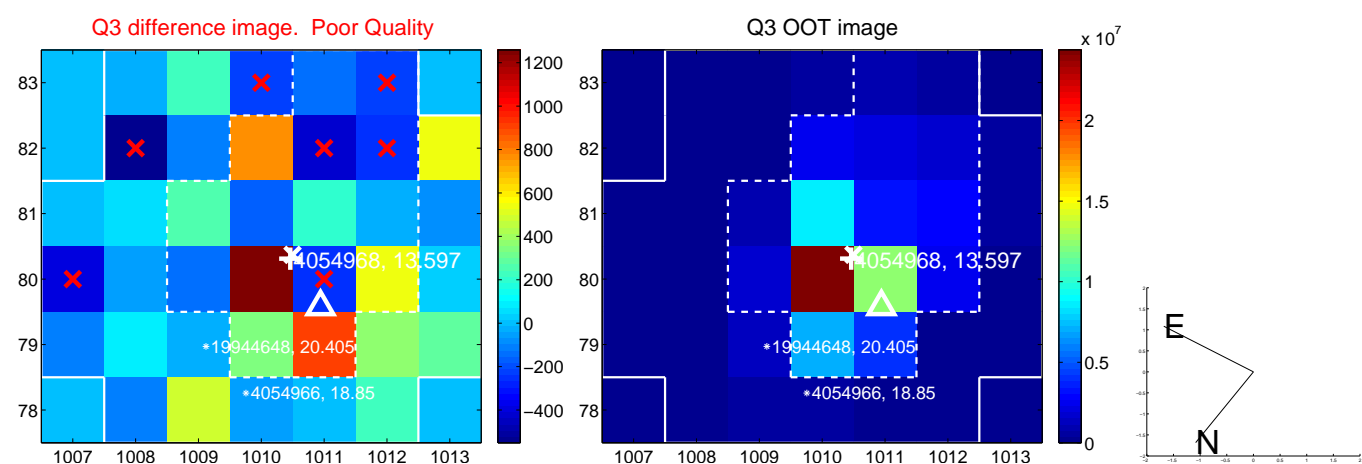
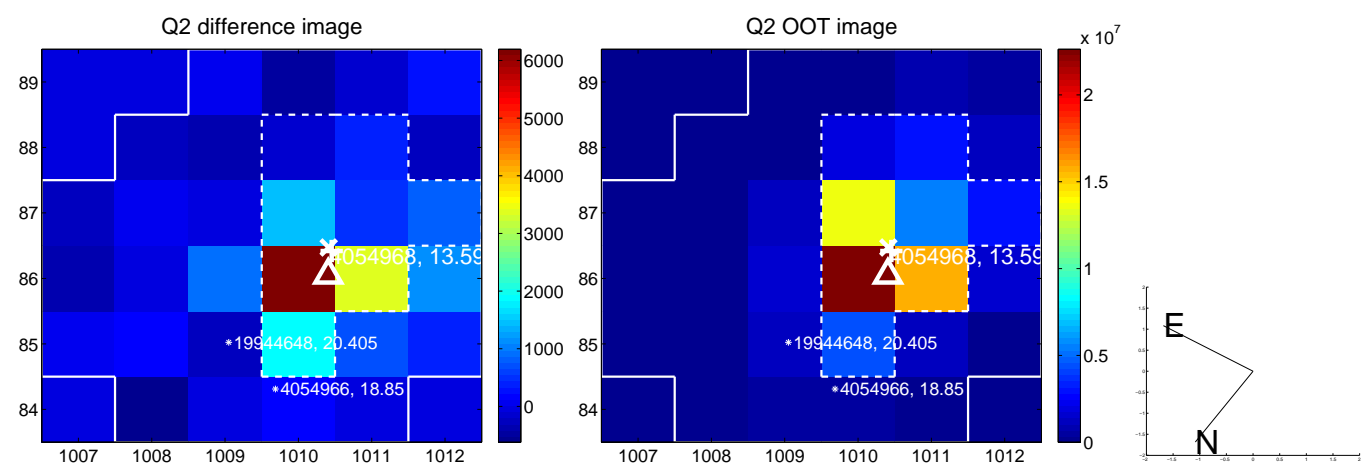
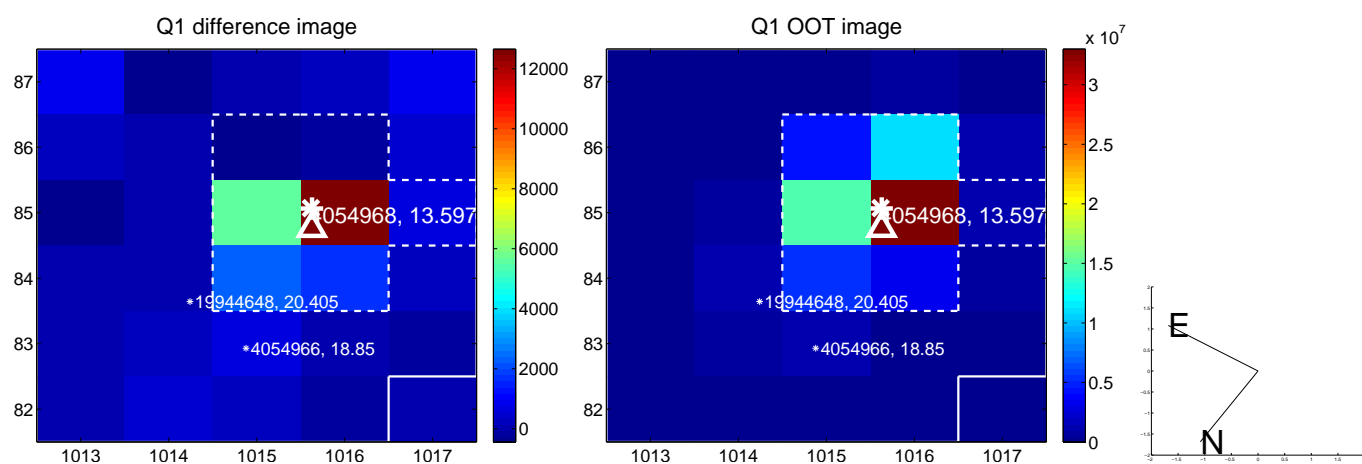
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.302 ± 0.148	2.04	-0.215 ± 0.124	-0.212 ± 0.170
PRF-fit source offset from KIC position	0.428 ± 0.159	2.69	-0.377 ± 0.225	-0.202 ± 0.212
photometric centroid source offset	0.53 ± 0.52	1.02	-0.26 ± 0.50	0.47 ± 0.53

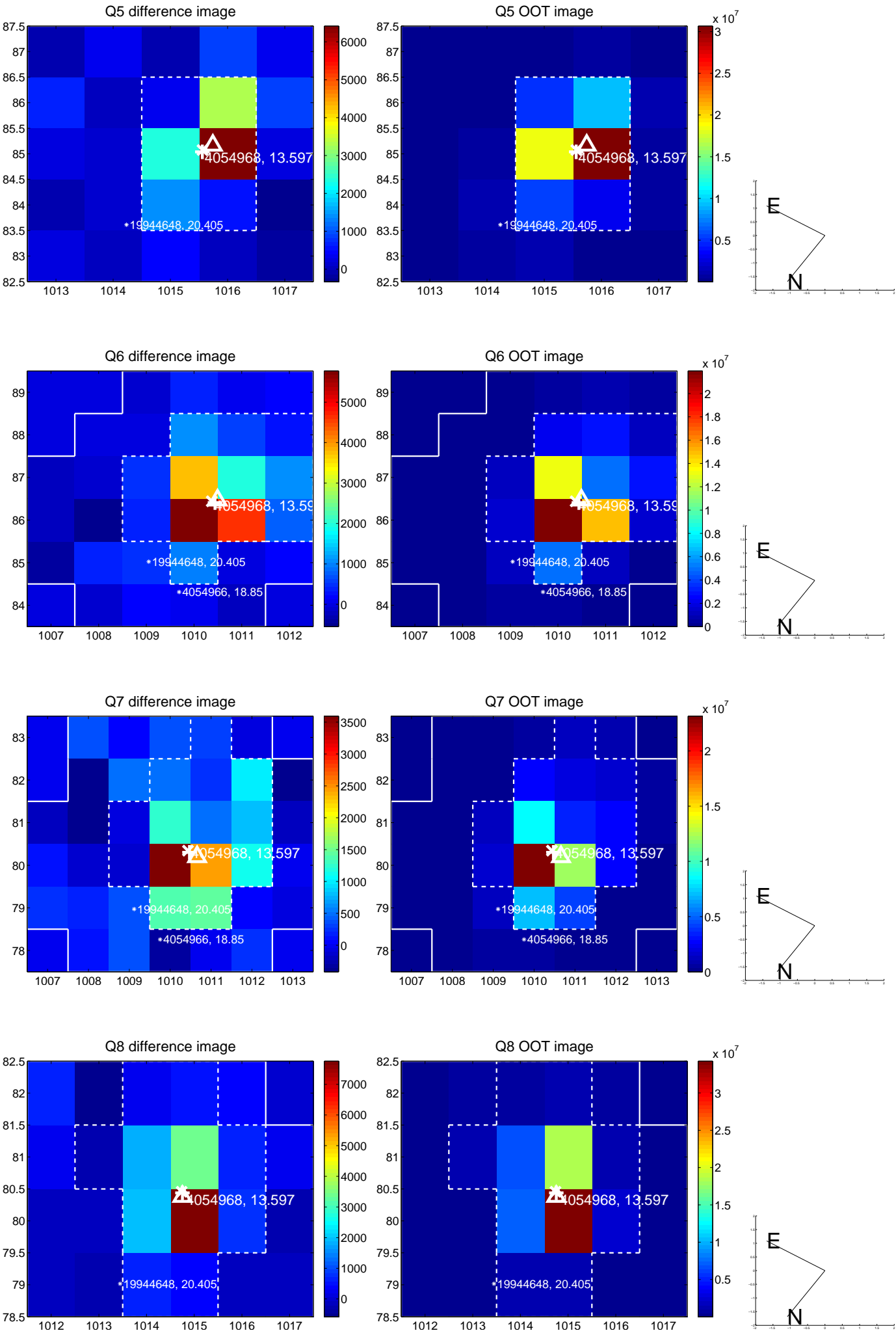


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

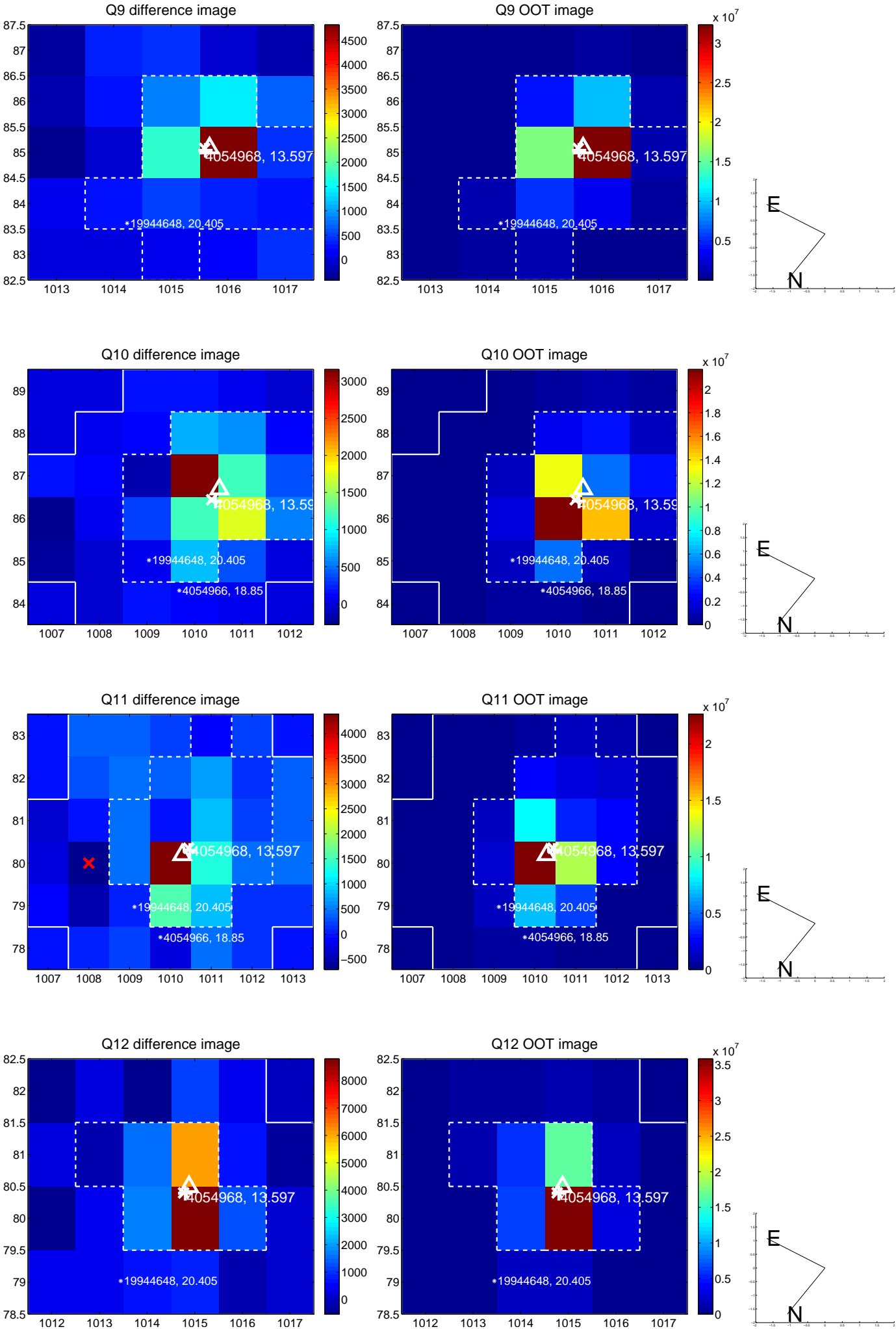
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



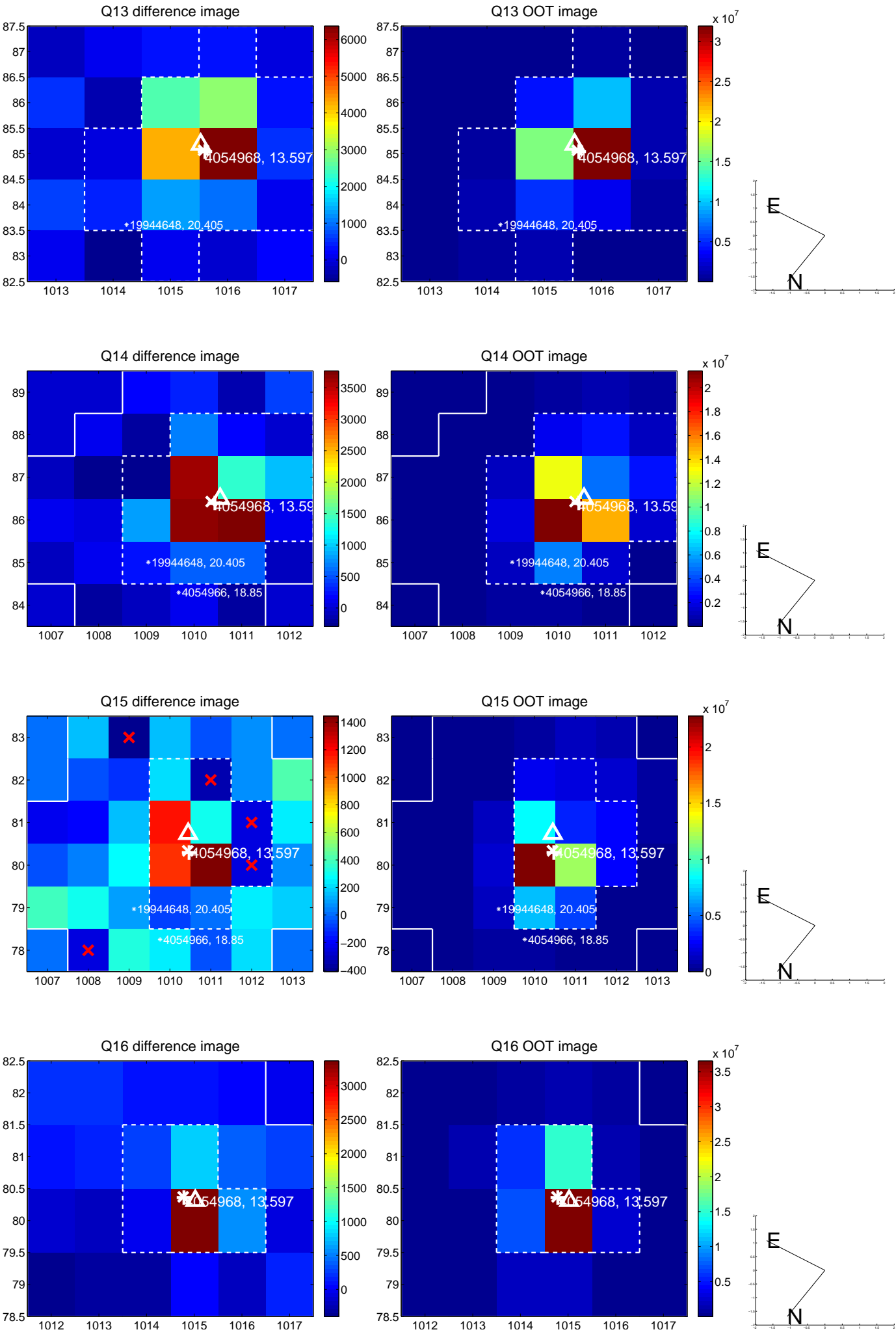
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



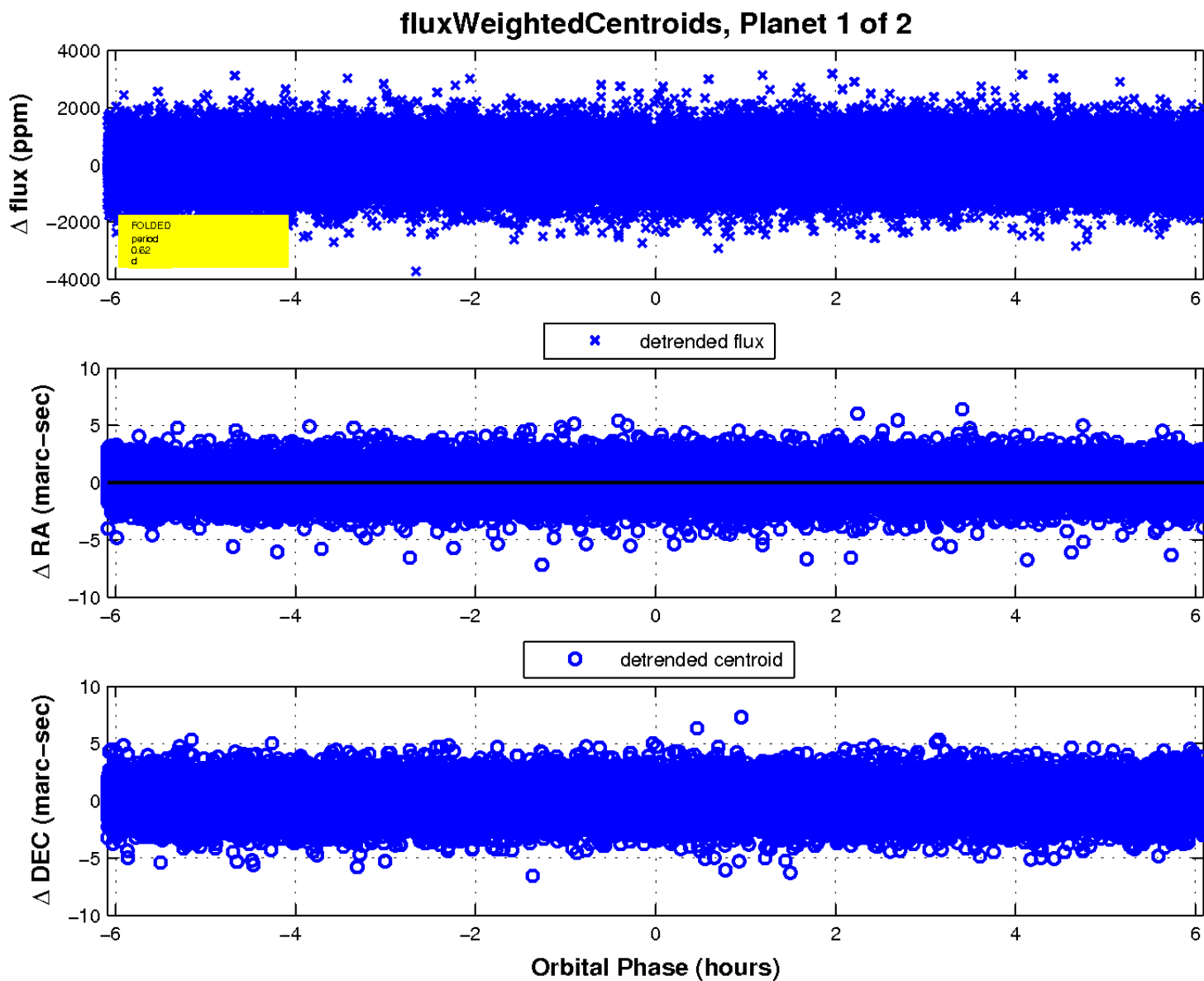
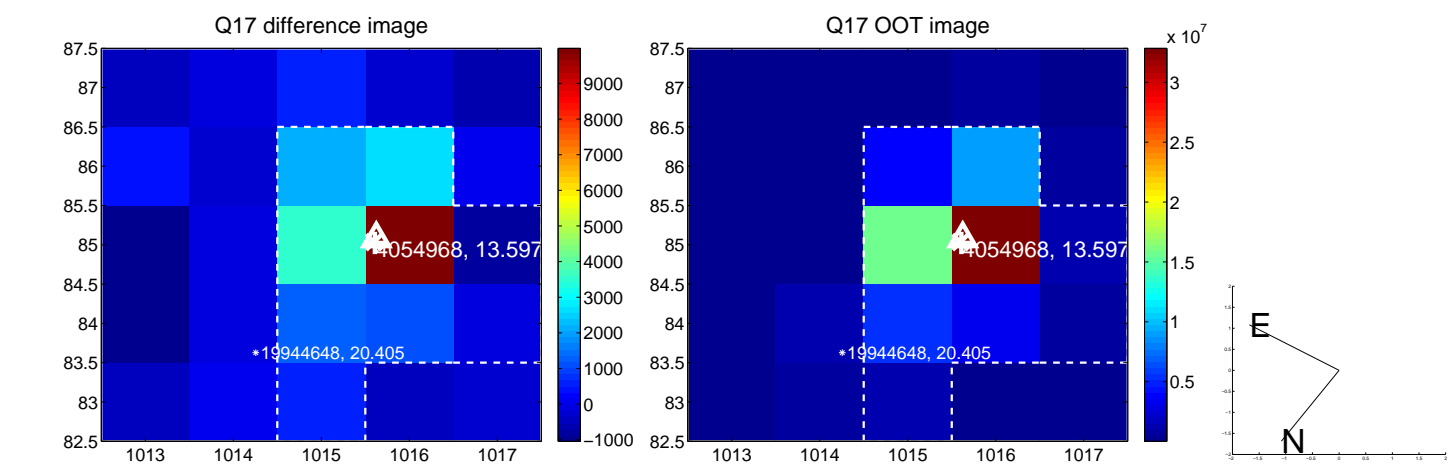
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

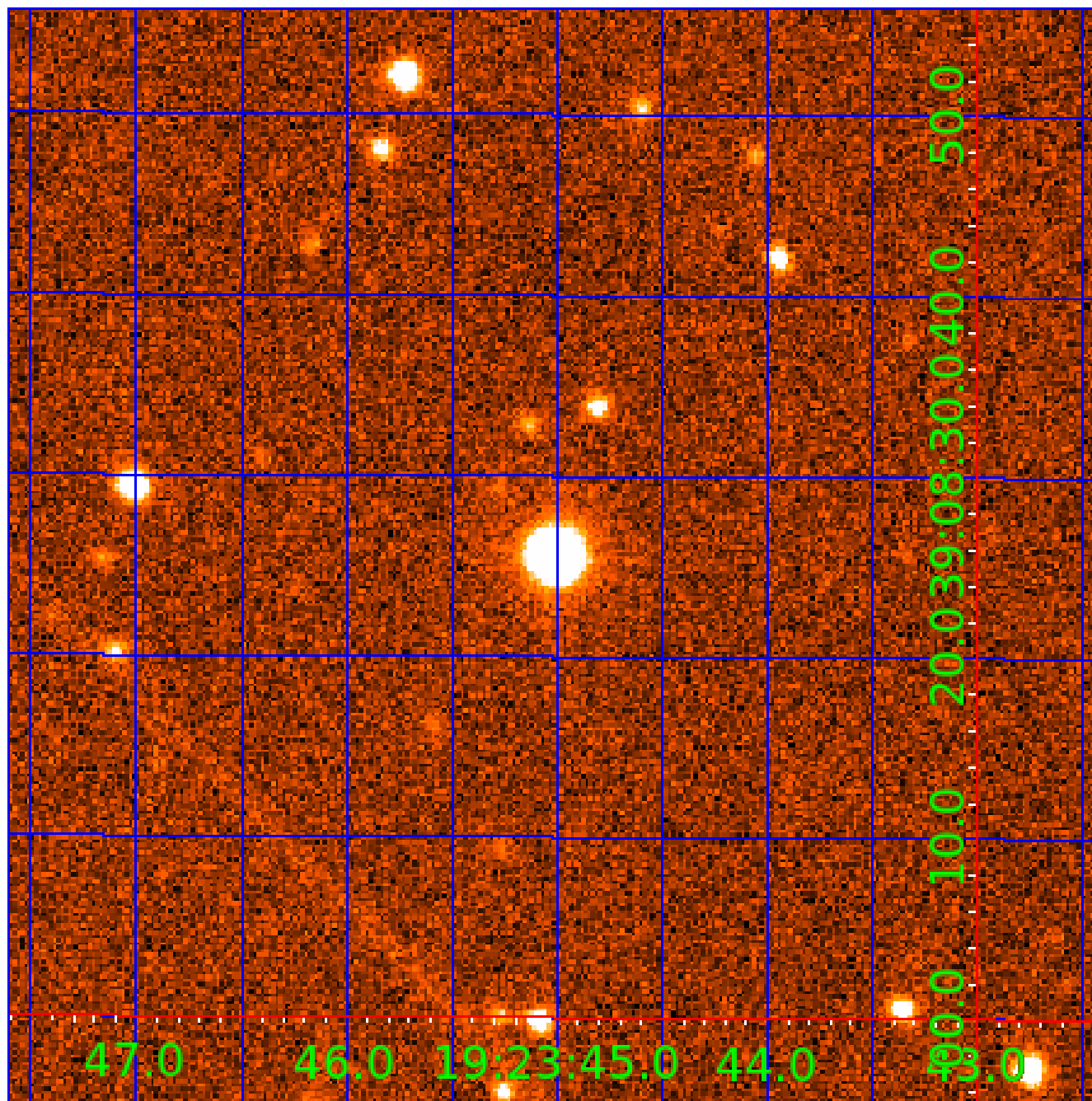


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004054968

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})
004054968-01	OBS	No	0.618547	131.893331	65.9	2.031	13.3	12.7	1.64	7332	1.55	24493.22
004054968-02	OBS	No	1.083784	132.466135	83.2	6.441	9.6	11.7	1.64	7332	1.74	11595.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004054968-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
004054968-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT

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

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

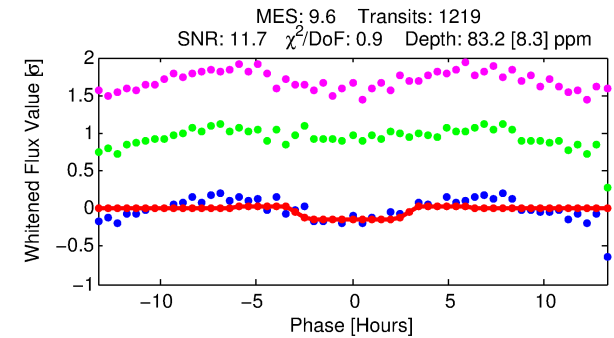
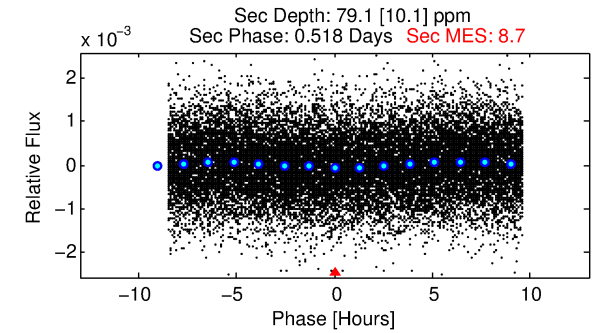
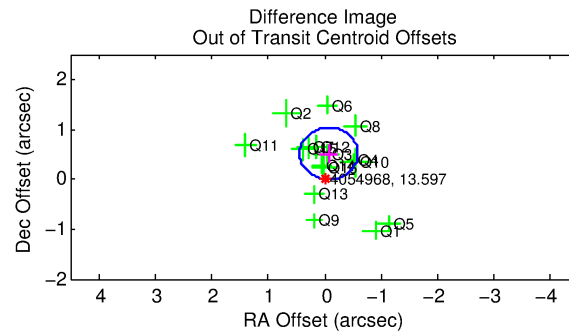
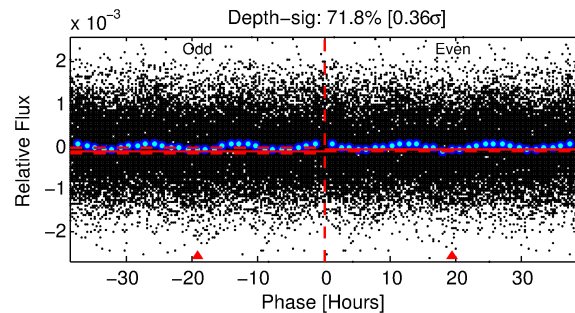
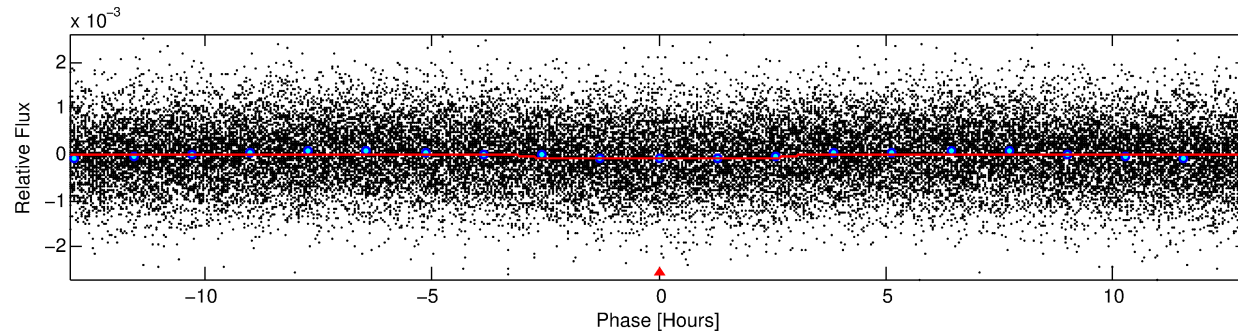
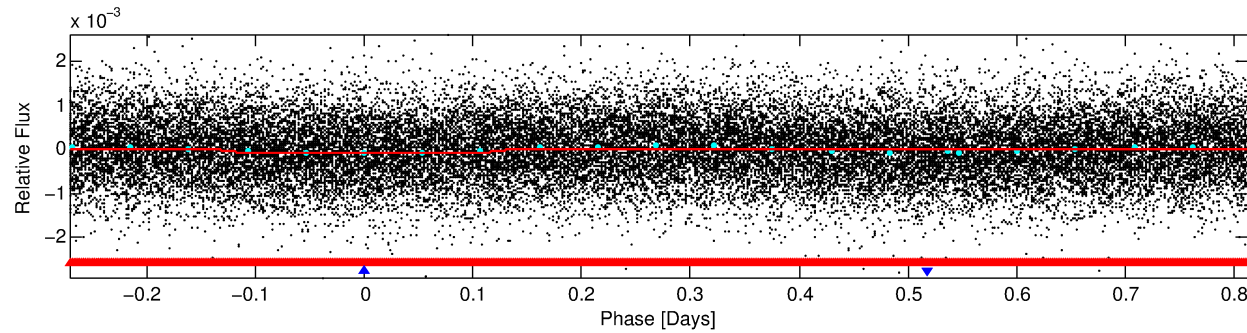
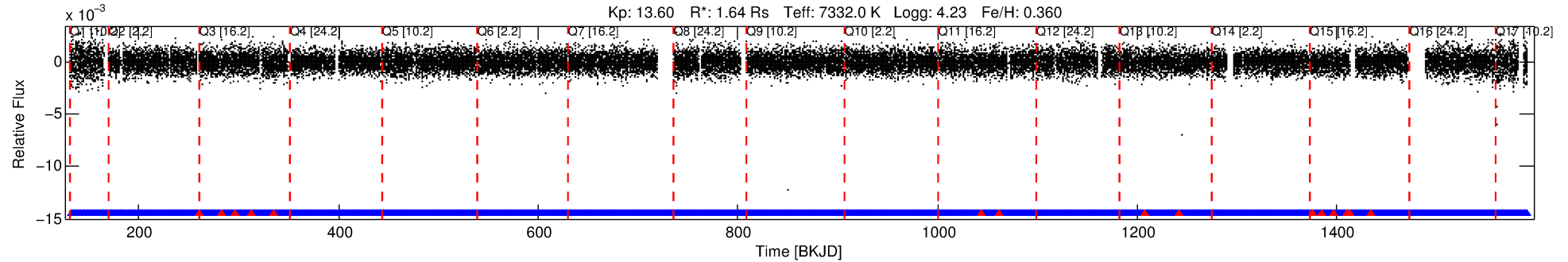
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004054968-02

No Significant Match Found

DV One-Page Summary

KIC: 4054968 Candidate: 2 of 2 Period: 1.084 d



DV Fit Results:

Period = 1.08378 [0.00001] d
Epoch = 132.4661 [0.0054] BKJD
Rp/R* = 0.0097 [0.0029]
a/R* = 1.11 [0.40]
b = 0.90 [0.40]
Seff = 11595.39 [5498.33]
Teq = 2646 [314] K
Rp = 1.74 [0.81] Re
a = 0.0246 [0.0072] AU
Ag = 8.69 [6.48] [1.19 σ]
Teffp = 7025 [1152] K [3.67 σ]

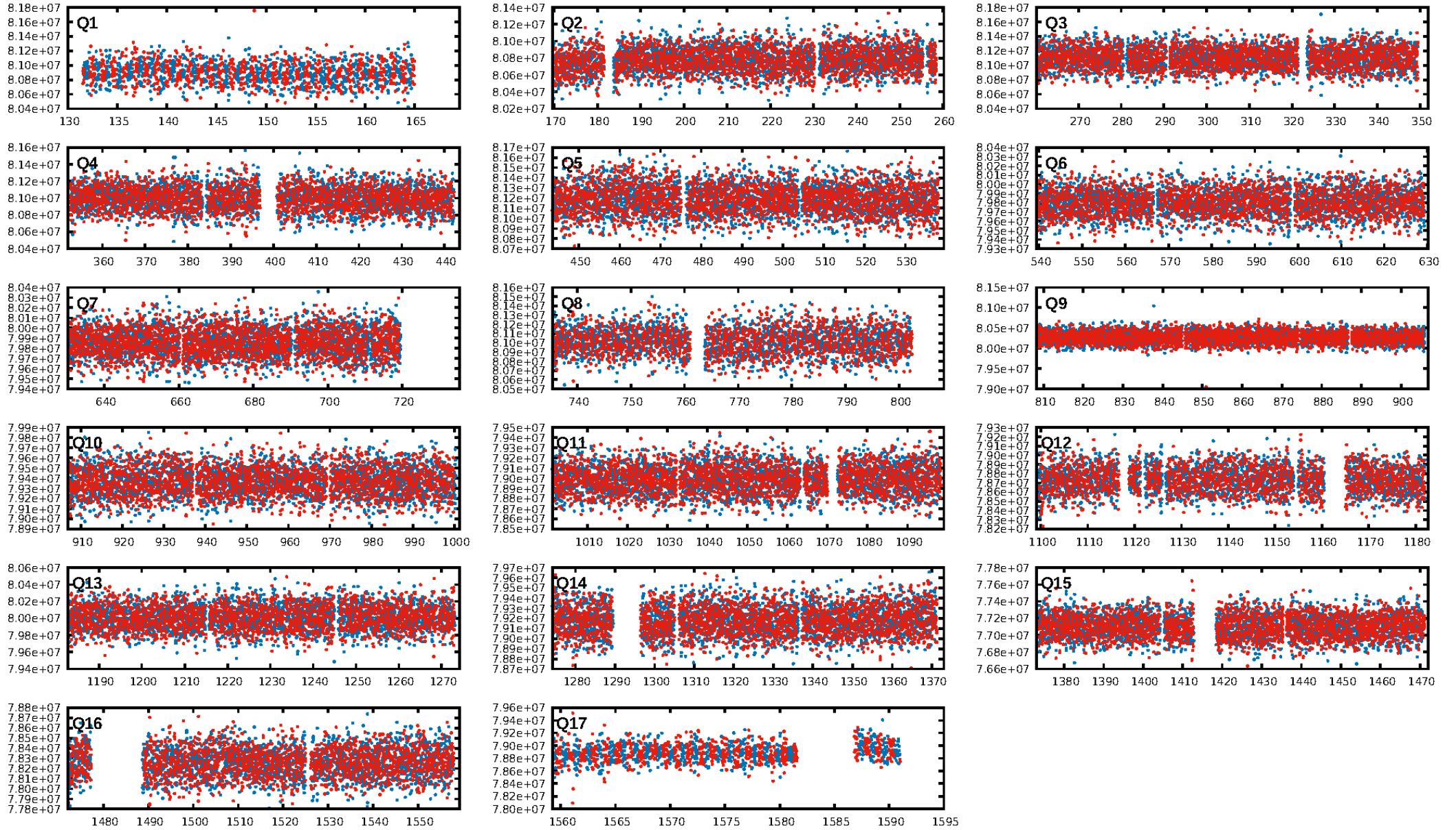
DV Diagnostic Results:

ShortPeriod-sig: 90.2% [1.65 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.01e-07
RollingBand-fgt: 0.99 [1147/1164]
GhostDiagnostic-chr: 3.544
Centroid-sig: N/A
Centroid-so: 1.105 arcsec [3.35 σ]
OotOffset-rm: 0.515 arcsec [2.99 σ]
KicOffset-rm: 0.348 arcsec [1.77 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.00 [0/17]

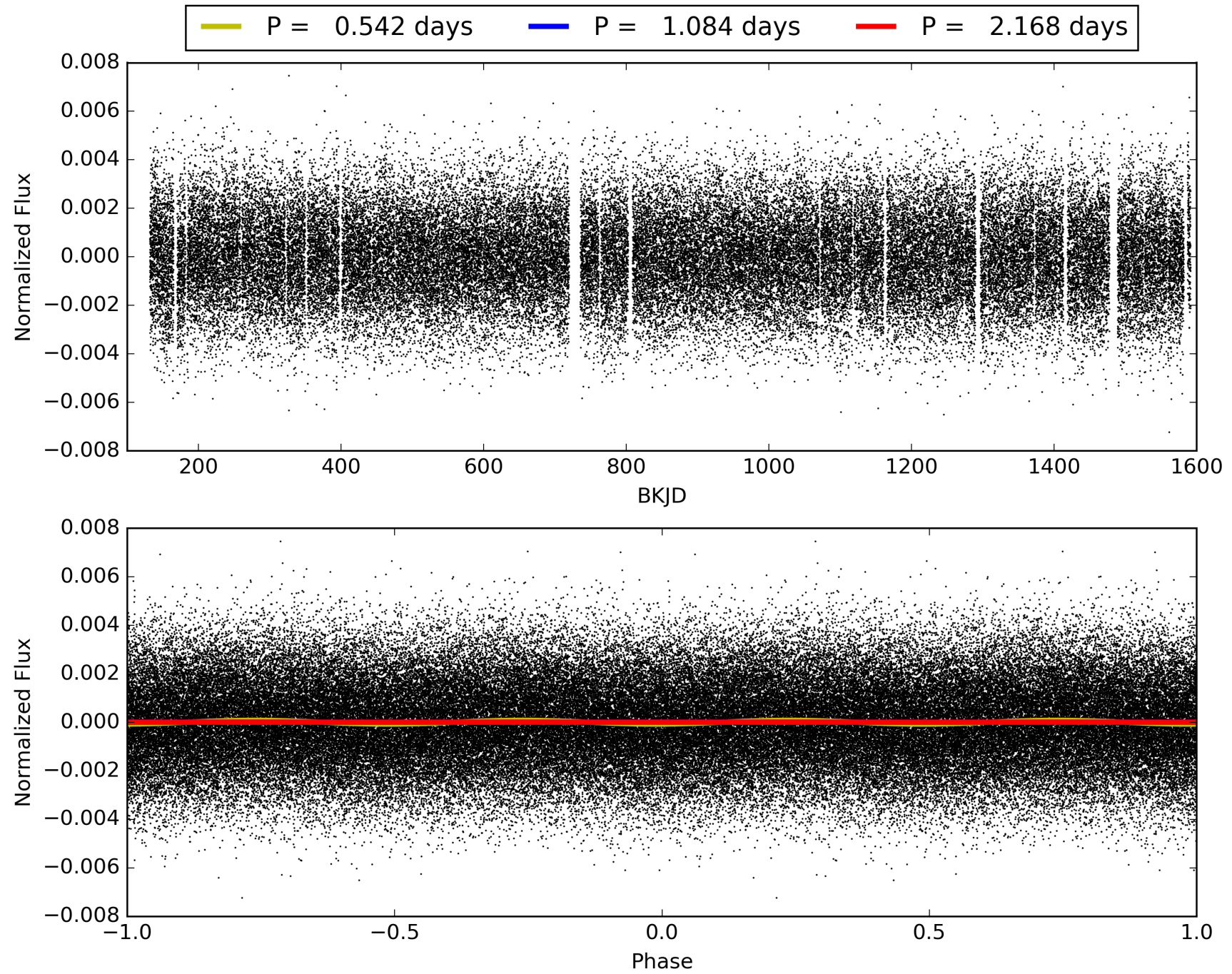
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:08:58 Z

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

TCE 004054968-02, PDC Light Curves

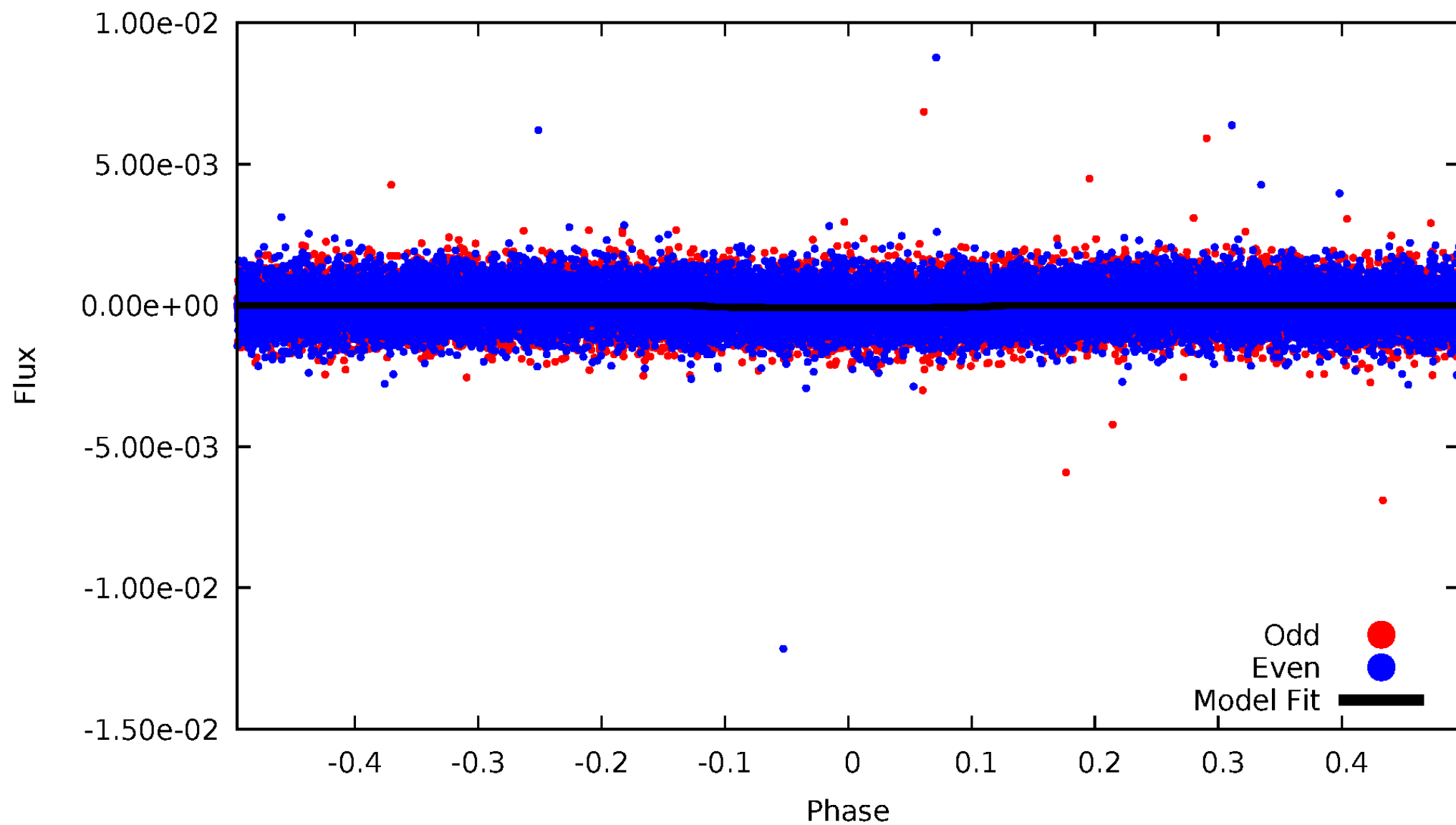


TCE 004054968-02



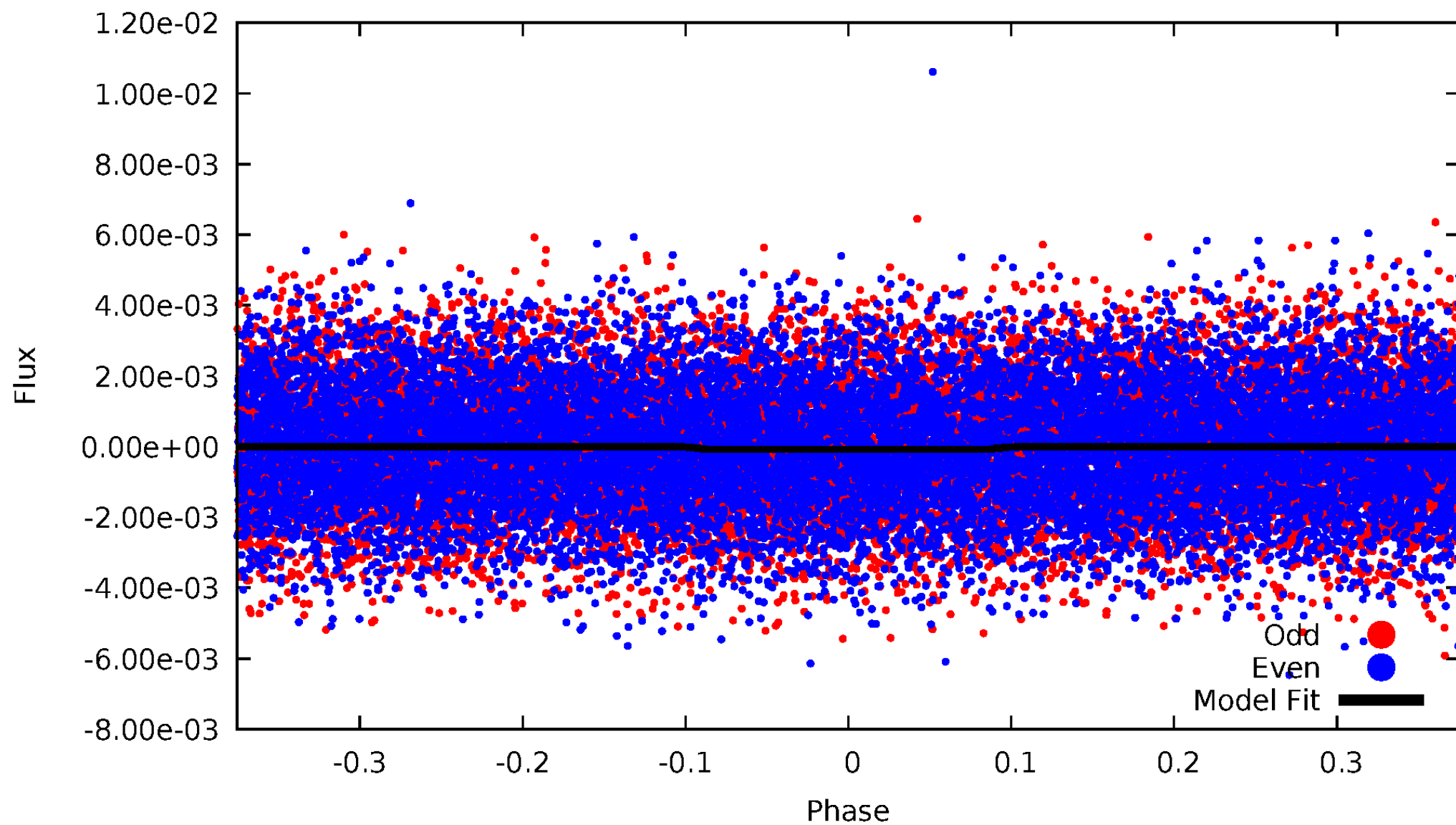
DV Odd/Even

TCE 004054968-02



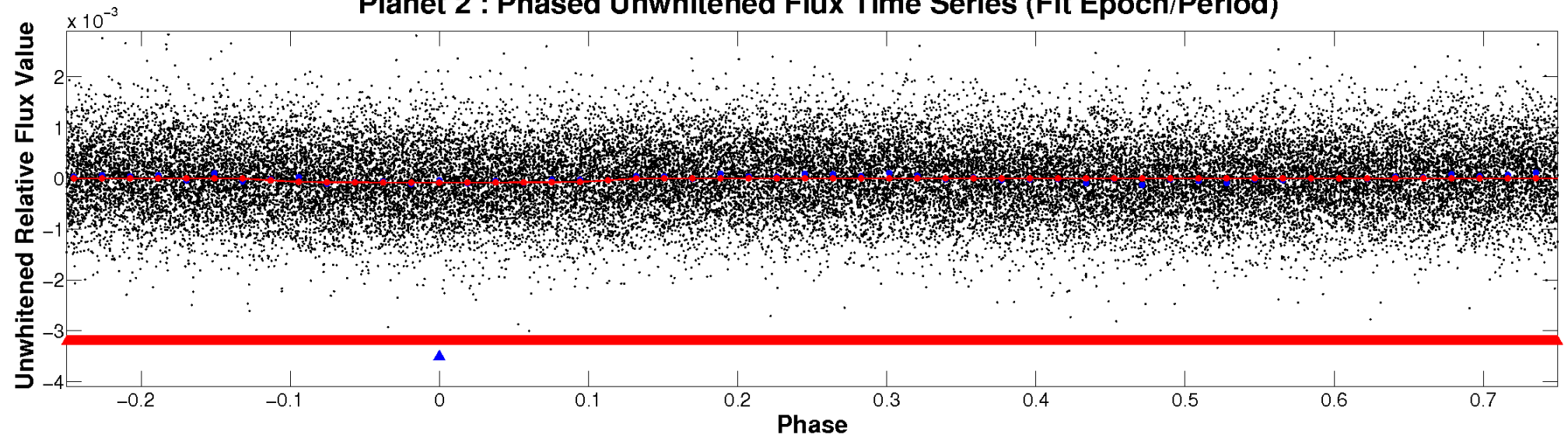
ALT Odd/Even

TCE 004054968-02

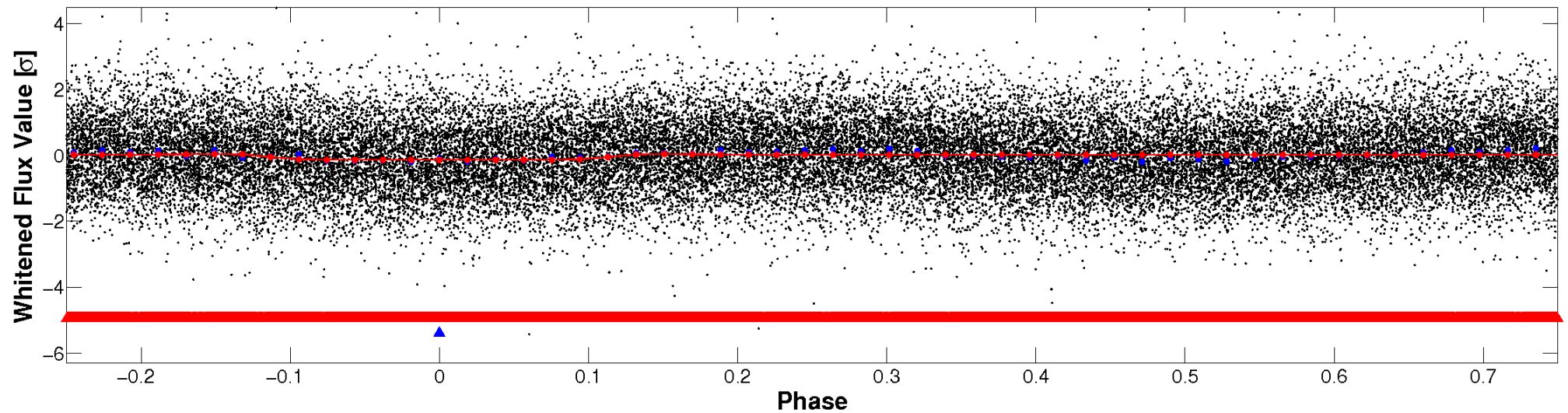


Non-Whitened Vs. Whitened Light Curve

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

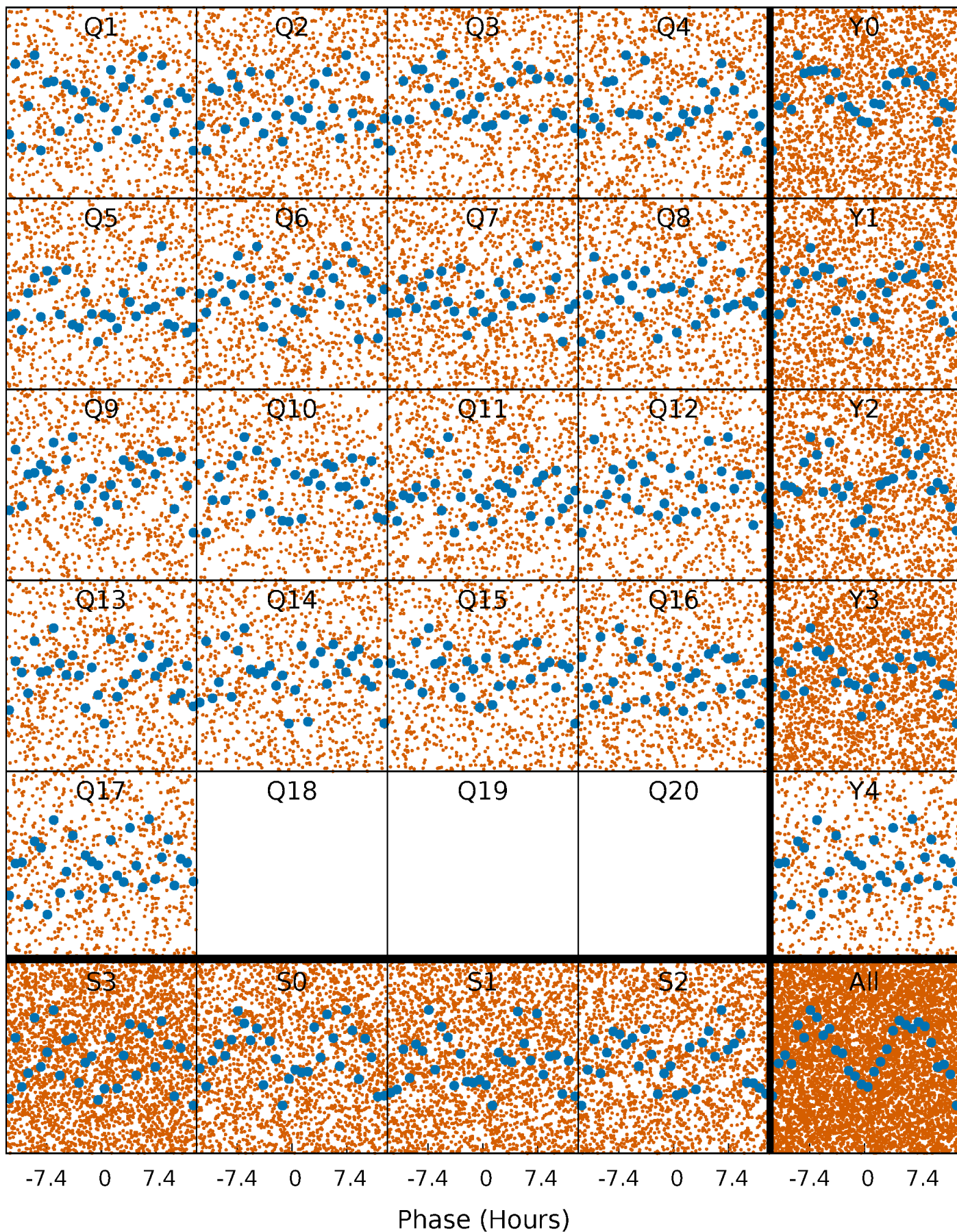


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



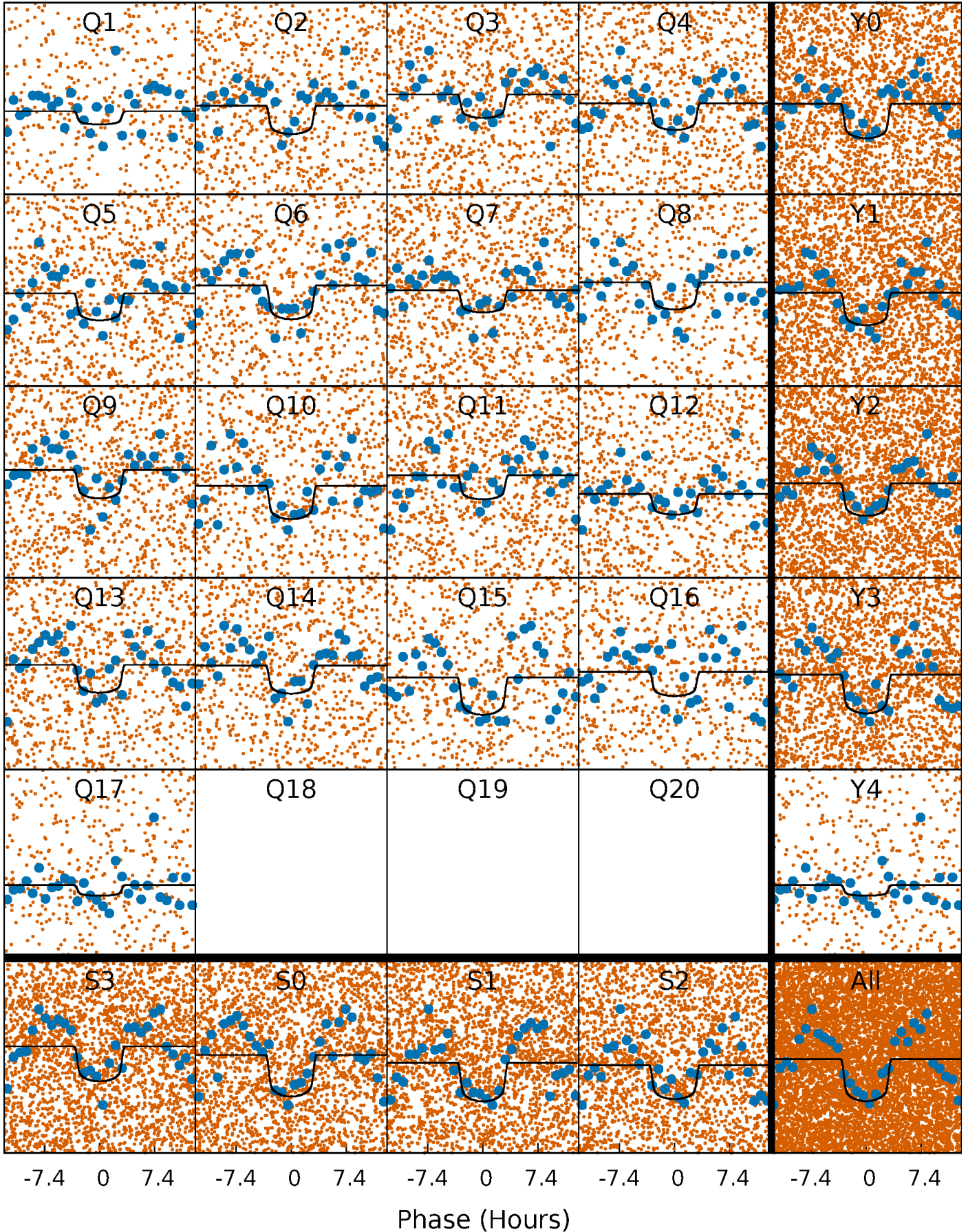
PDC Quarter-Phased Transit Curves

TCE 004054968-02 P= 1.083784 Days $T_0=132.466135$ (BKJD)



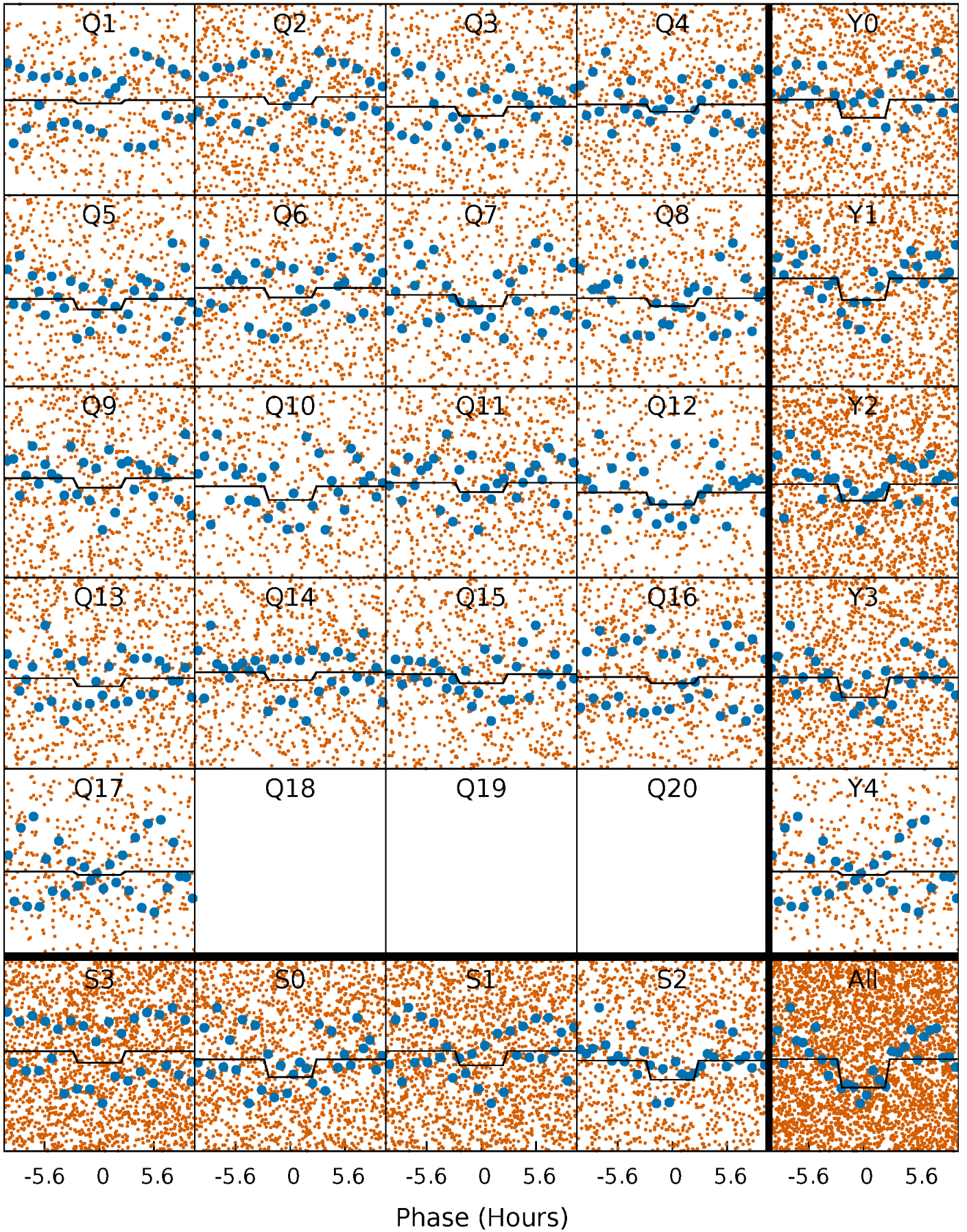
DV Quarter-Phased Transit Curves

TCE 004054968-02 P= 1.083784 Days $T_0=132.466135$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

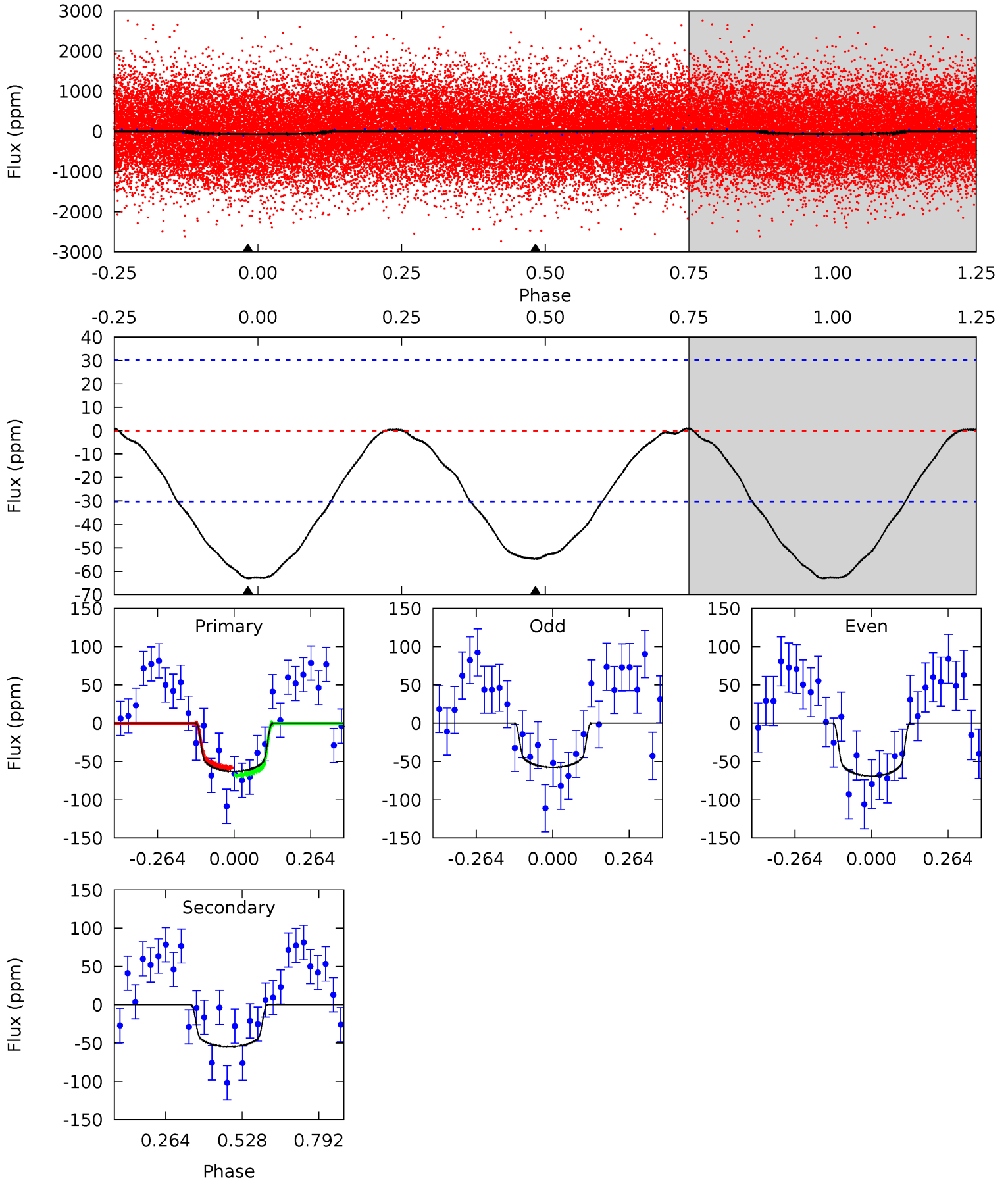
TCE 004054968-02 P= 1.083775 Days $T_0=132.487463$ (BKJD)



DV Model-Shift Uniqueness Test

004054968-02, P = 1.083784 Days, E = 131.382351 Days

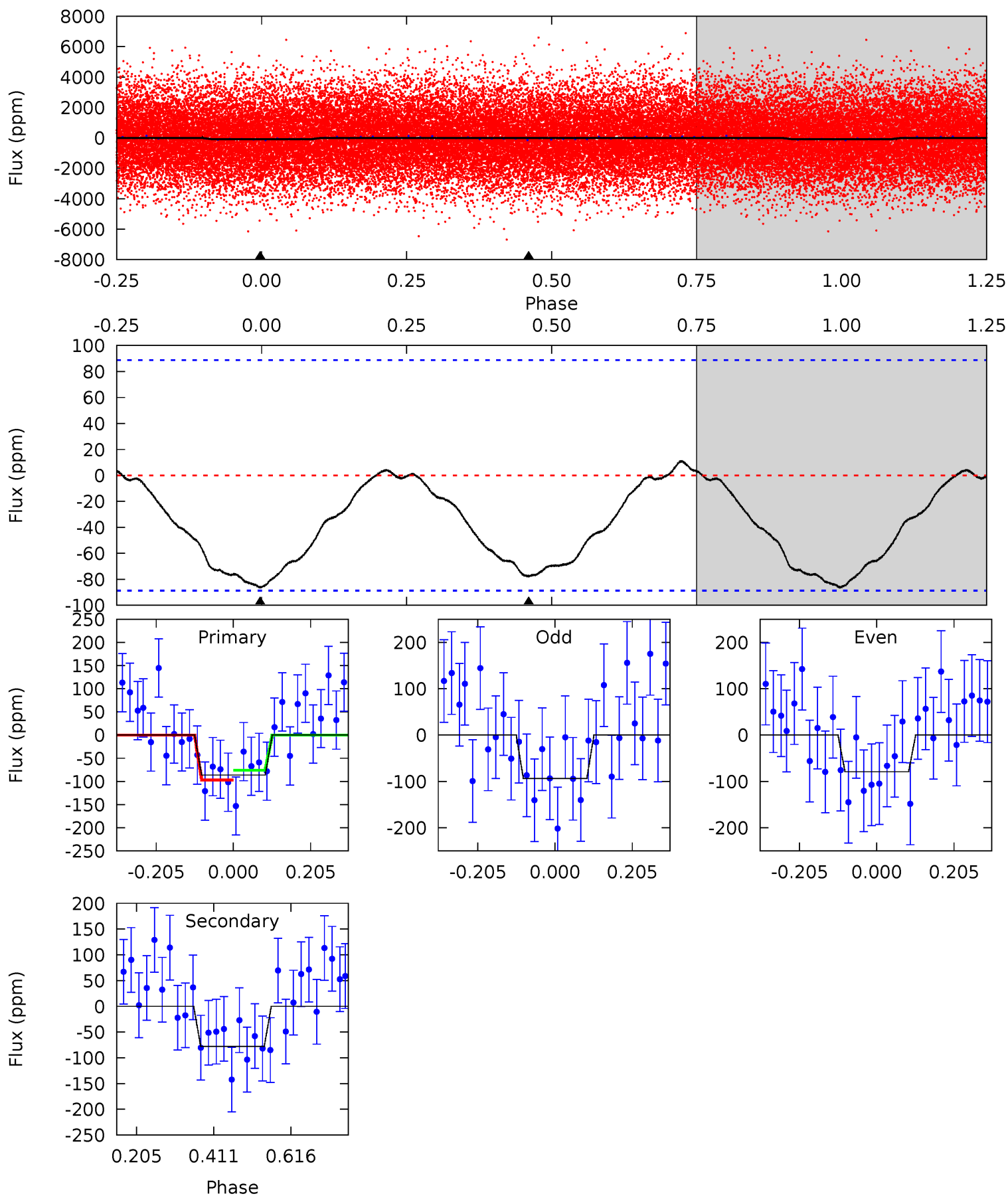
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.06	7.87	0	0	4.36	1.12	0.11	9.06	9.06	7.87	7.87	0.80	-18.0	0.02	0.70



Alt Model-Shift Uniqueness Test

004054968-02, P = 1.083775 Days, E = 131.403688 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.29	3.87	0	0	4.41	1.27	0.20	4.29	4.29	3.87	3.87	0.36	0.92	0.11	0.53



Stellar Parameters For KIC 004054968

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7332^{+203}_{-407}	$4.232^{+0.056}_{-0.224}$	$0.360^{+0.050}_{-0.350}$	$1.643^{+0.590}_{-0.157}$	$1.680^{+0.211}_{-0.211}$	$0.534^{+0.126}_{-0.306}$
	+3%/-6%	+1%/-5%	+14%/-97%	+36%/-10%	+13%/-13%	+24%/-57%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004054968-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-55 ± 7	$1.86^{+0.60}_{-0.55}$	3769^{+296}_{-223}	6103^{+1328}_{-747}	$5.063^{+5.407}_{-2.073}$
Alt.	-78 ± 20	$1.72^{+0.61}_{-0.56}$	3765^{+299}_{-212}	7040^{+2058}_{-1153}	$8.396^{+10.751}_{-4.203}$

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

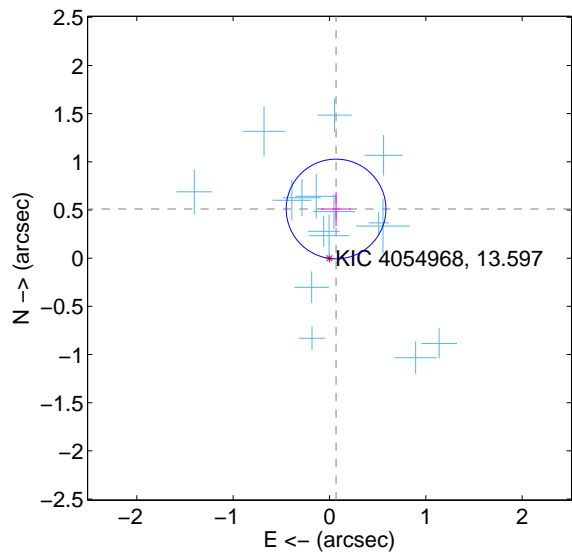
Supplemental centroid analysis for 004054968-02. Kepler magnitude: 13.60. Transit SNR 11.74

There are 16 quarters with good PRF difference image offsets

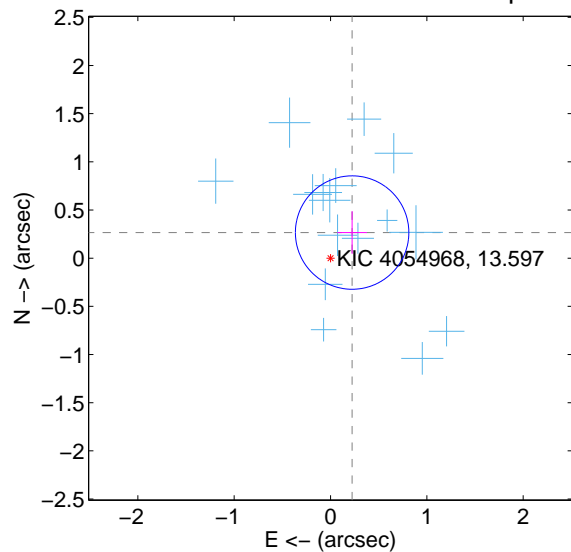
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.515 ± 0.172	2.99	-0.068 ± 0.156	0.511 ± 0.179
PRF-fit source offset from KIC position	0.348 ± 0.196	1.77	-0.224 ± 0.154	0.266 ± 0.222
photometric centroid source offset	1.10 ± 0.33	3.35	-0.66 ± 0.32	0.88 ± 0.34

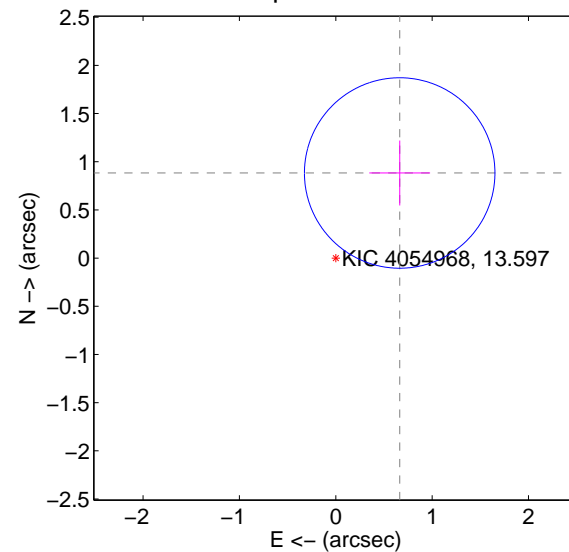
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

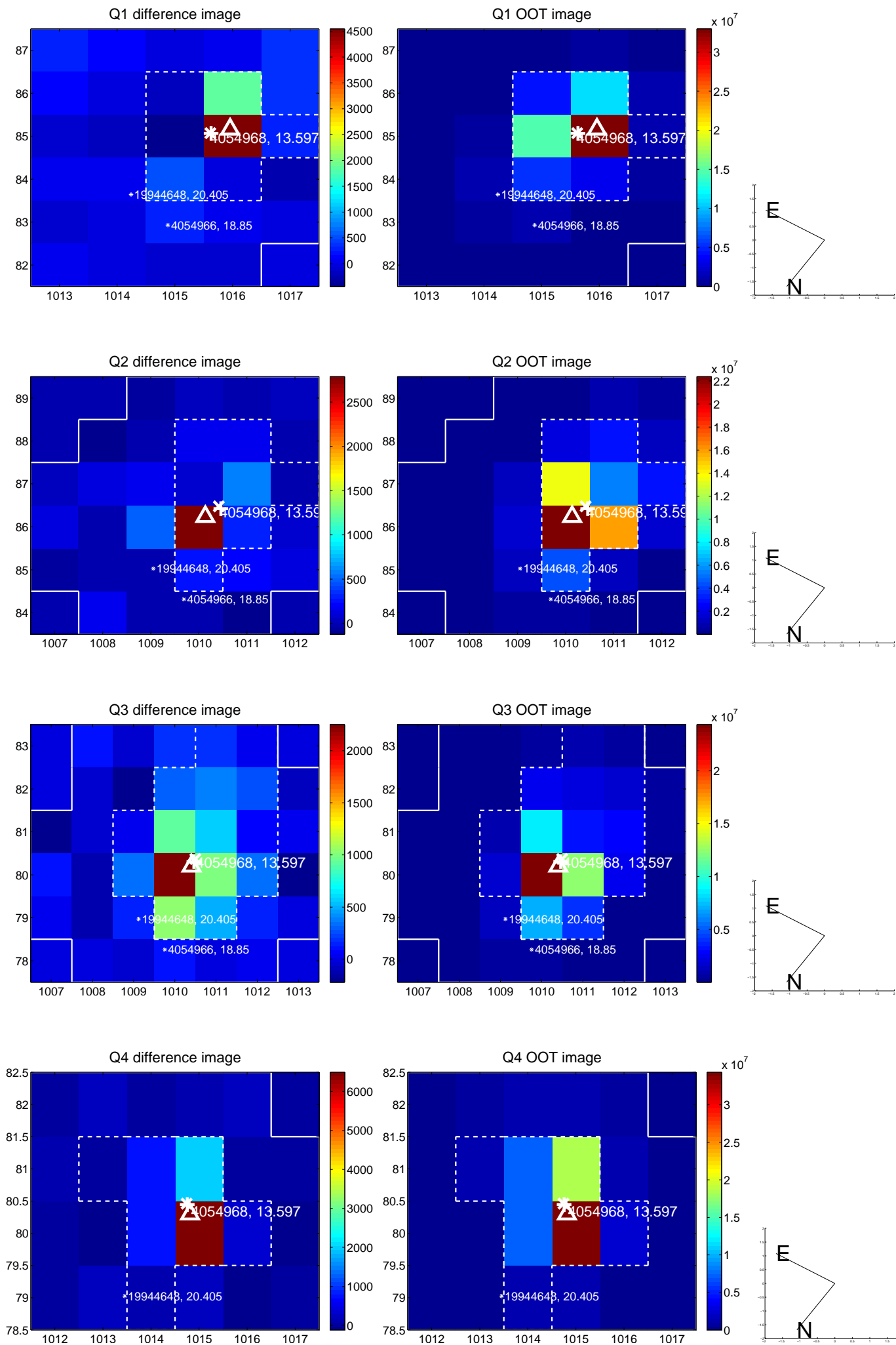


offset from photometric centroids

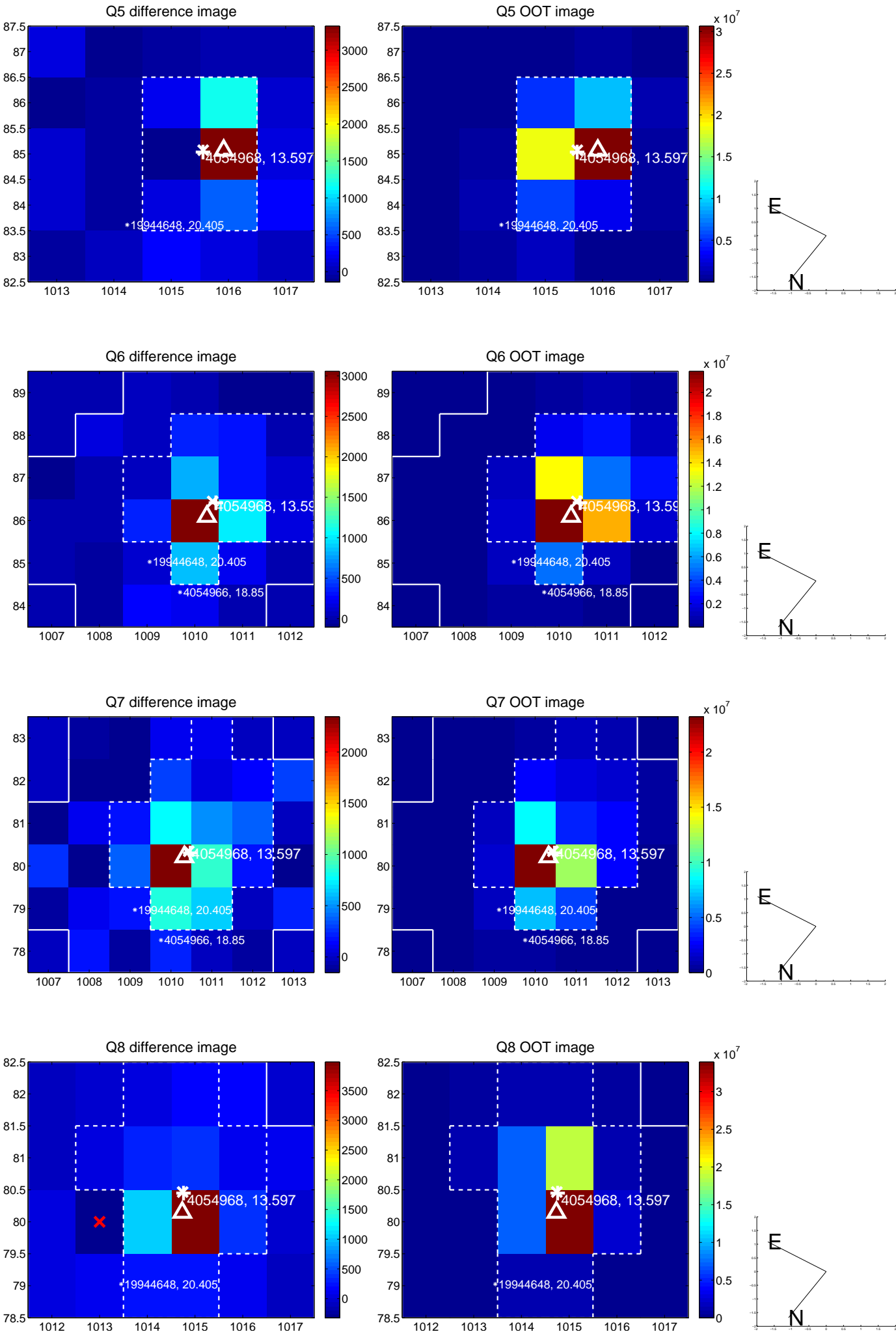


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

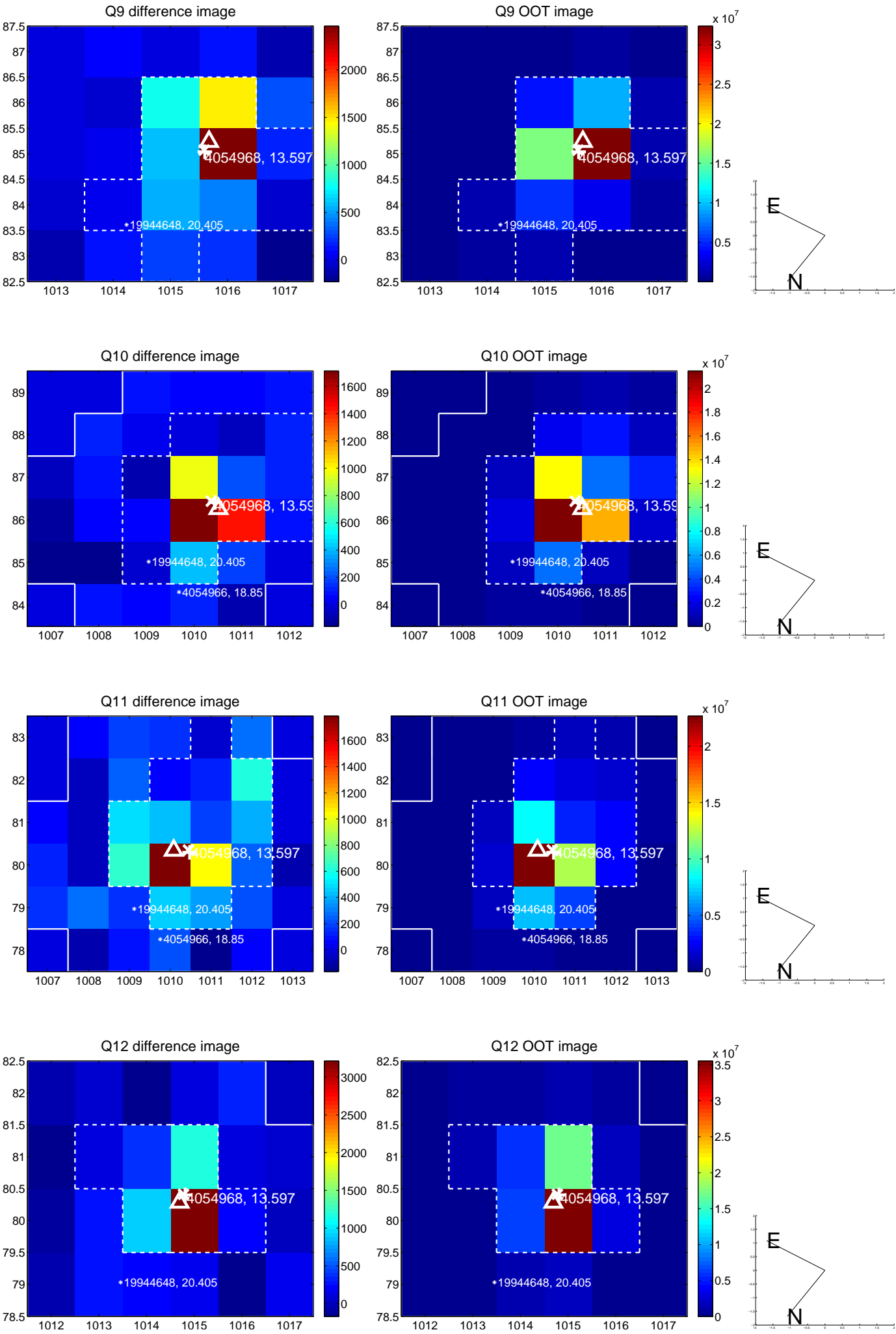
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



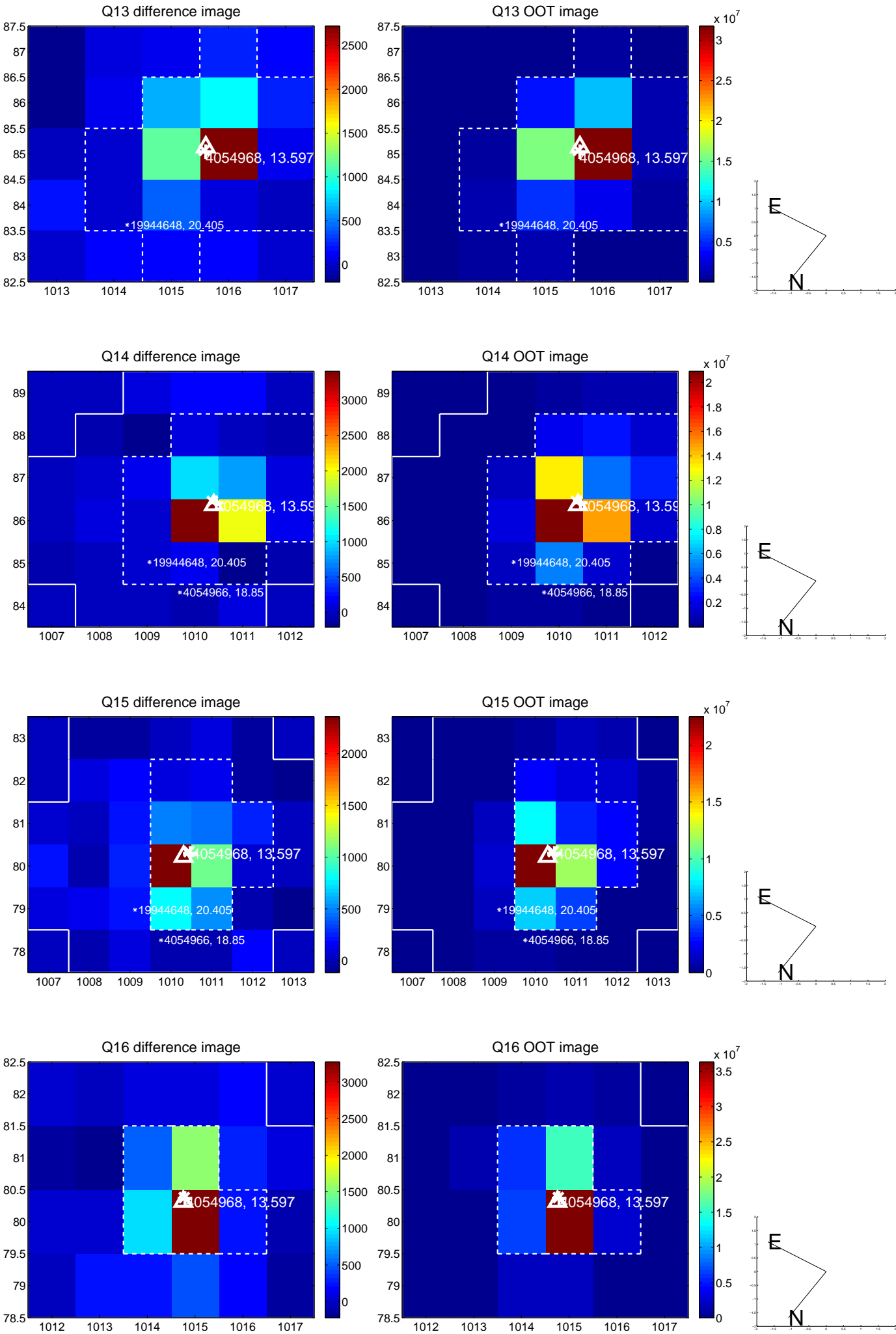
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



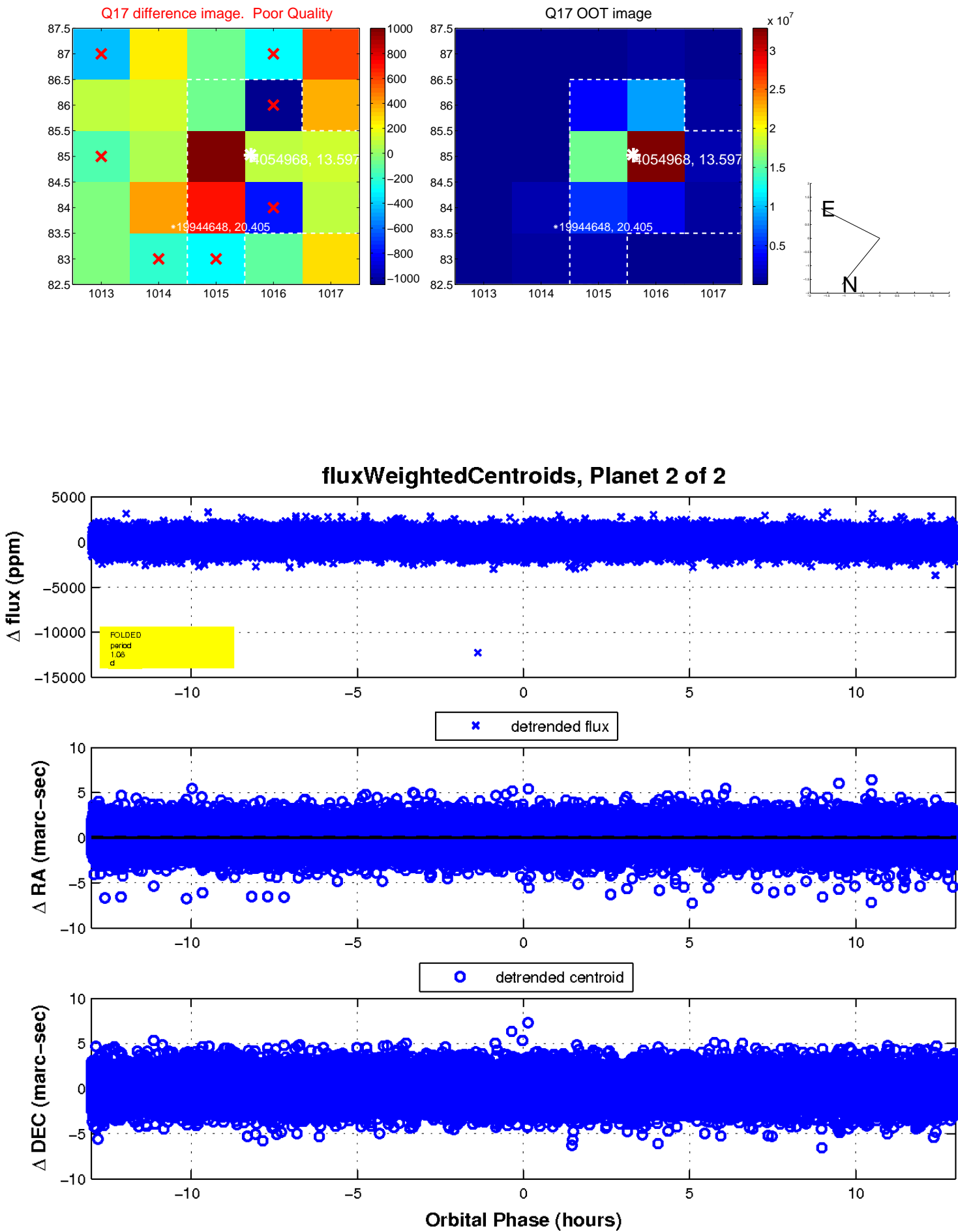
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

