

KIC 009596093

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})
009596093-01	OBS	No	0.542873	132.008702	17.4	1.369	10.2	9.6	2.76	7643	1.32	87961.22
009596093-02	OBS	No	0.542872	131.811927	6.3	2.604	8.4	4.3	2.76	7643	0.71	87961.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009596093-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009596093-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

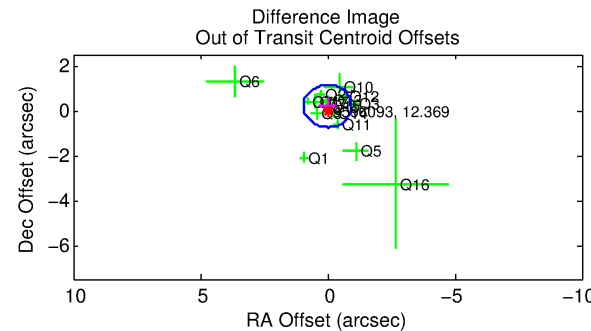
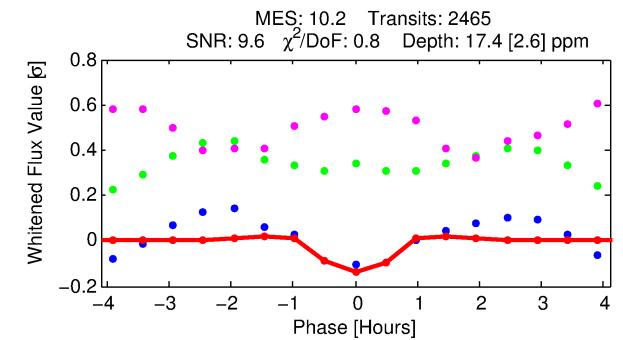
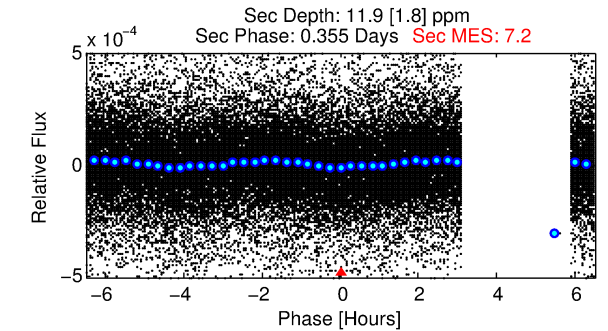
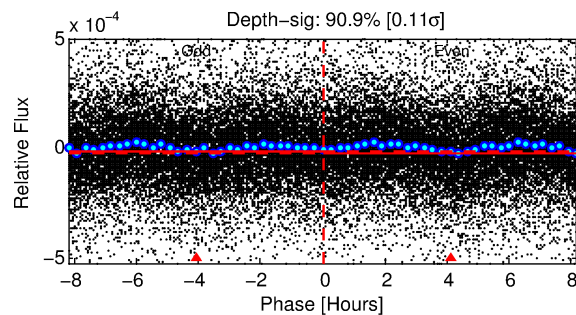
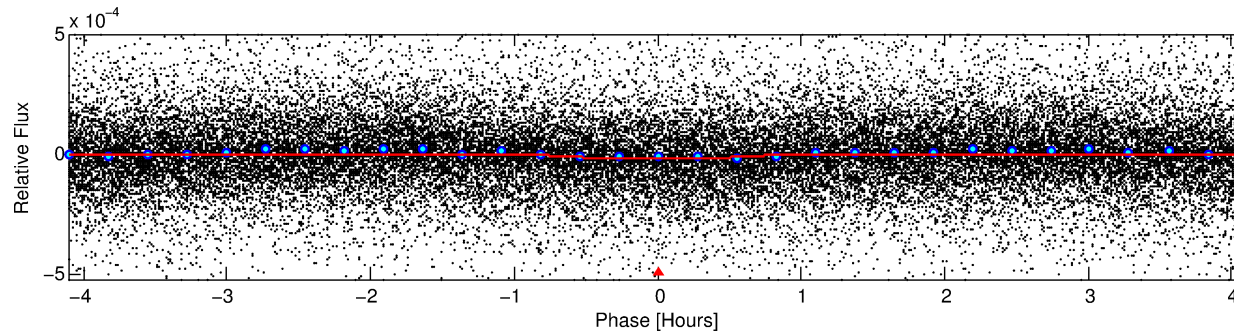
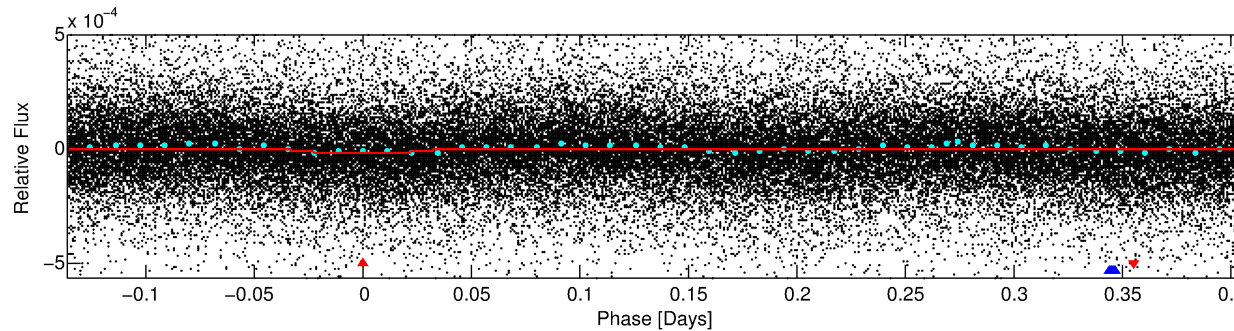
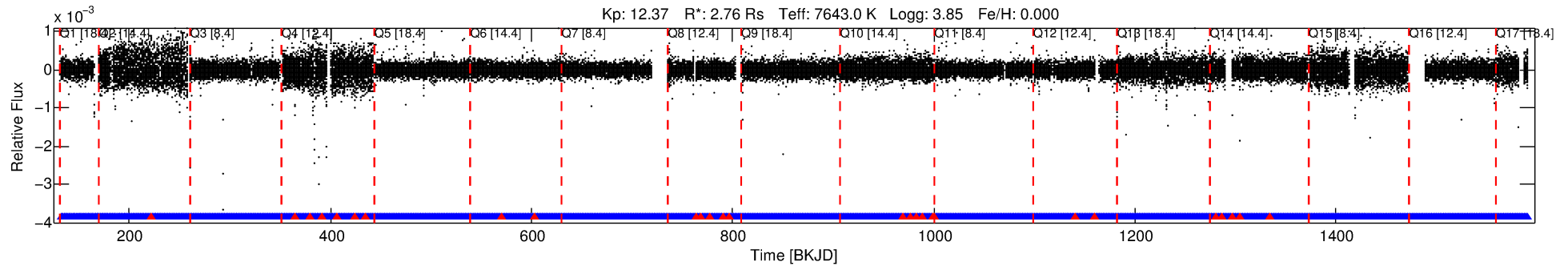
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009596093-01

No Significant Match Found

DV One-Page Summary

KIC: 9596093 Candidate: 1 of 2 Period: 0.543 d



DV Fit Results:

Period = 0.54287 [0.00001] d
Epoch = 132.0087 [0.0021] BKJD
Rp/R* = 0.0044 [0.0008]
a/R* = 1.74 [1.22]
b = 0.88 [0.28]
Seff = 87961.22 [26517.04]
Teq = 4391 [331] K
Rp = 1.32 [0.38] Re
a = 0.0163 [0.0032] AU
Ag = 1.00 [0.49] [-0.01 σ]
Teffp = 6781 [667] K [3.21 σ]

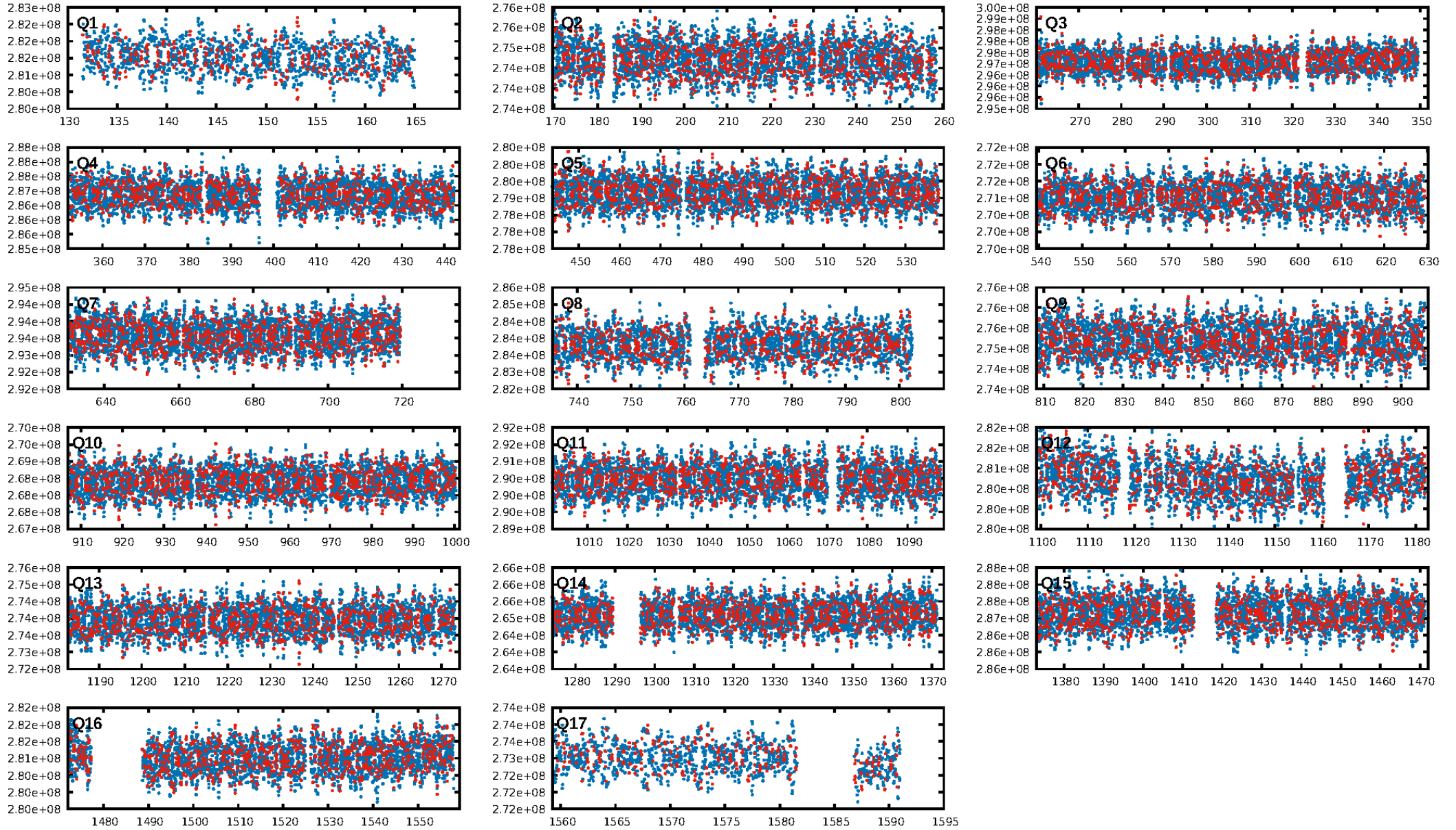
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.42e-26
RollingBand-fgt: 0.99 [2326/2354]
GhostDiagnostic-chr: -5.628
Centroid-sig: 2.2%
Centroid-so: 1.377 arcsec [1.71 σ]
OotOffset-rm: 0.193 arcsec [0.61 σ]
KicOffset-rm: 0.105 arcsec [0.41 σ]
OotOffset-st: 4/4/2/5 [15]
KicOffset-st: 4/4/2/5 [15]
DiffImageQuality-fgm: 0.67 [10/15]
DiffImageOverlap-fno: 0.00 [0/17]

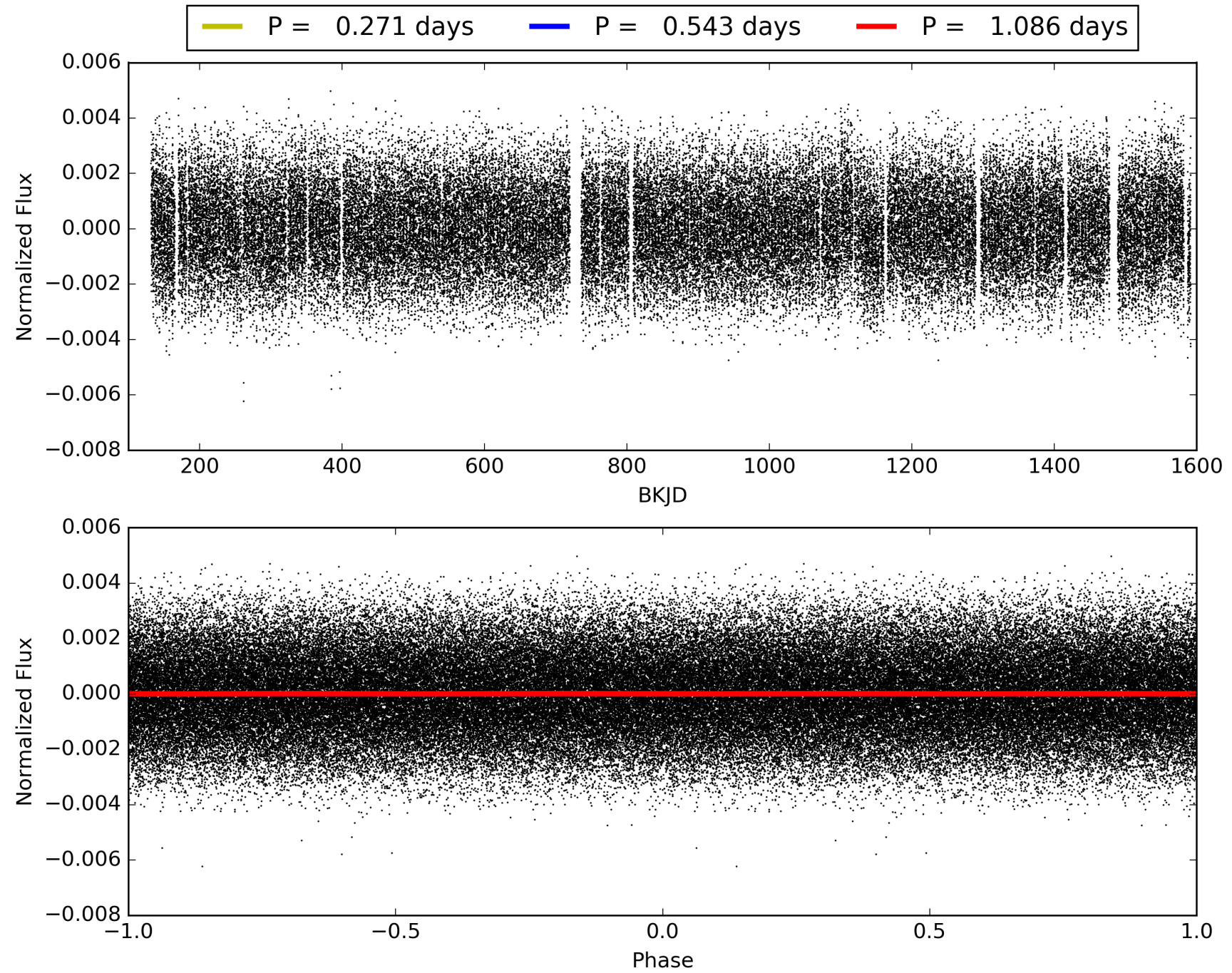
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:05:13 Z

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

TCE 009596093-01, PDC Light Curves

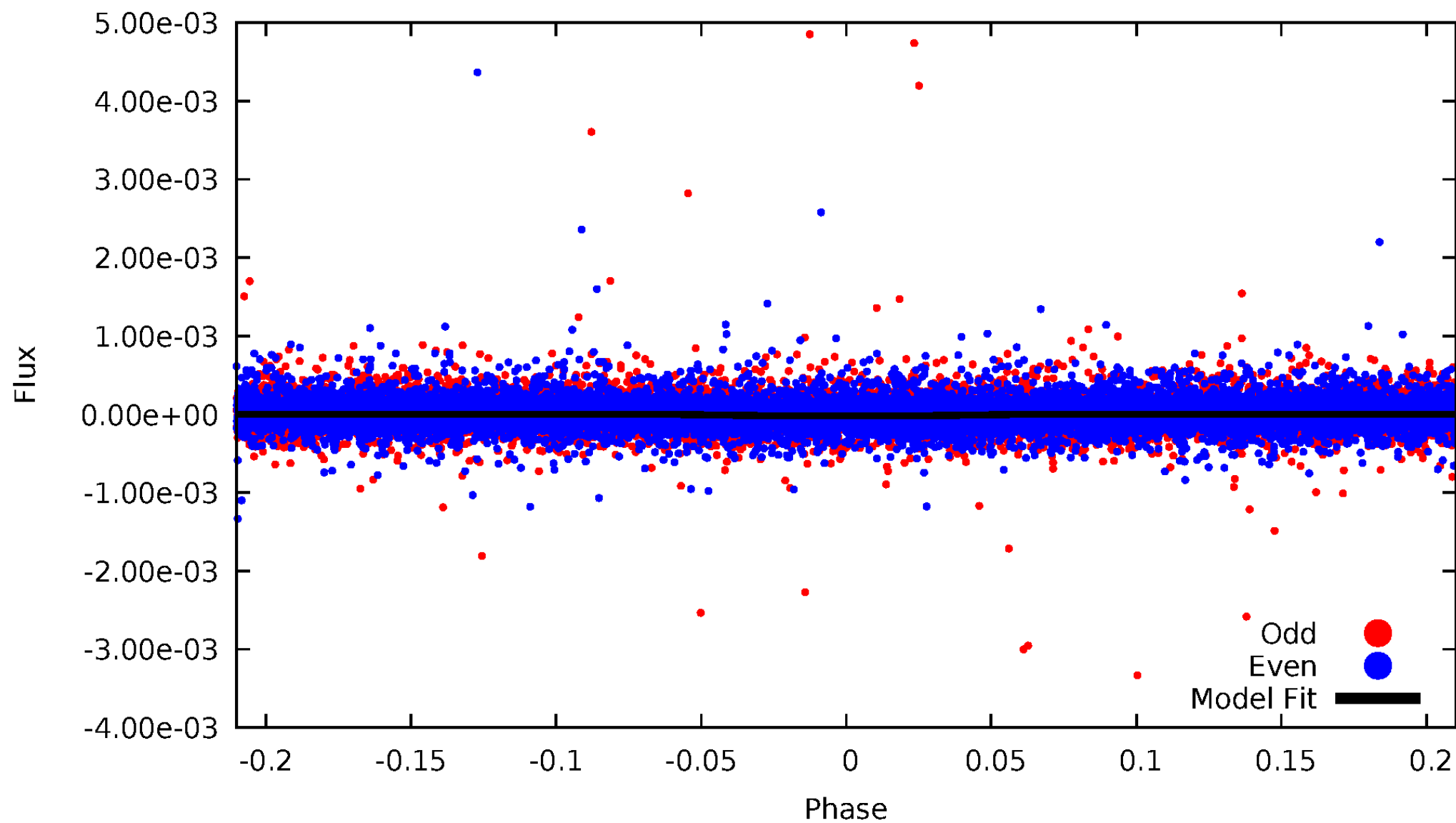


TCE 009596093-01



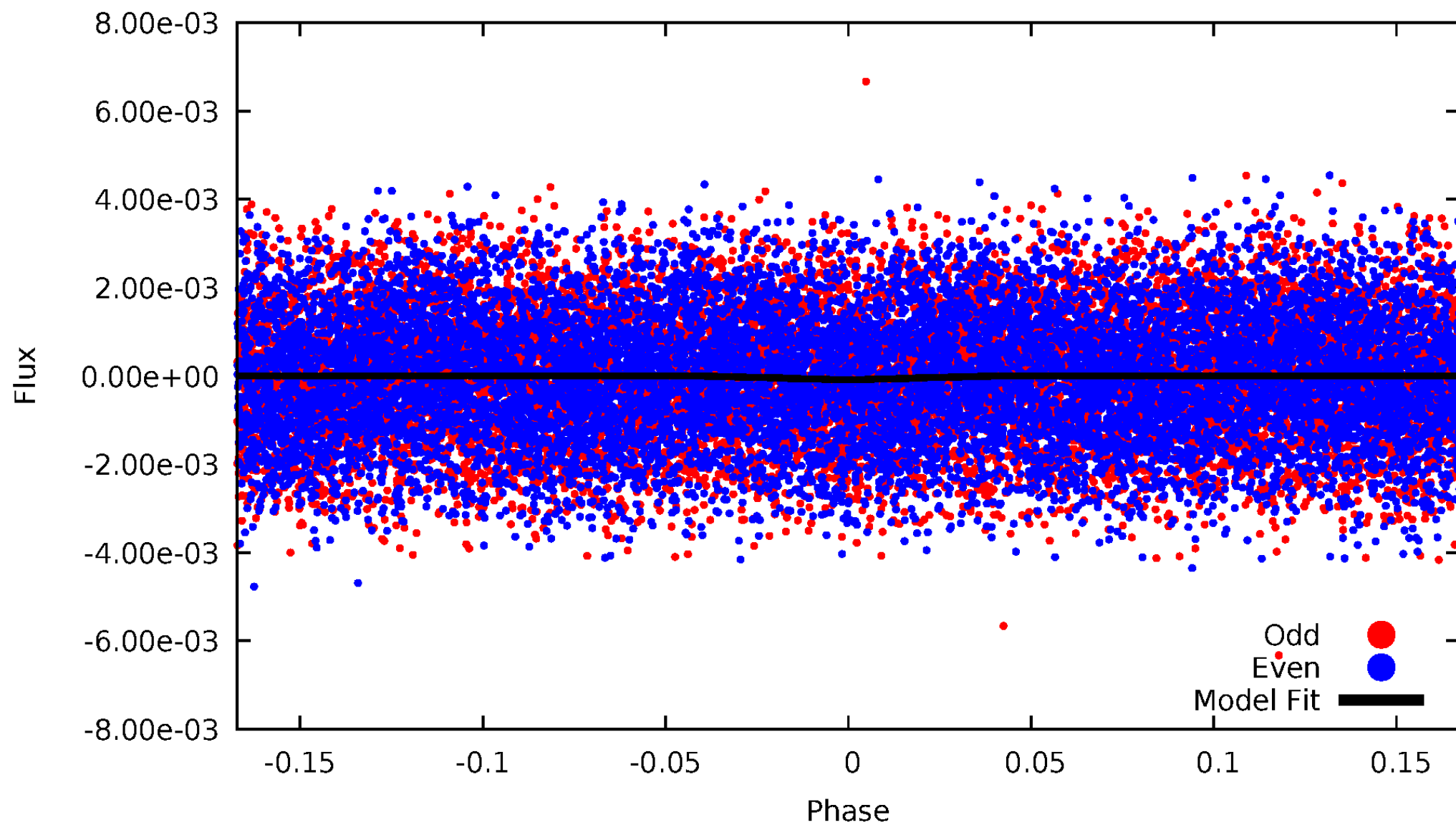
DV Odd/Even

TCE 009596093-01



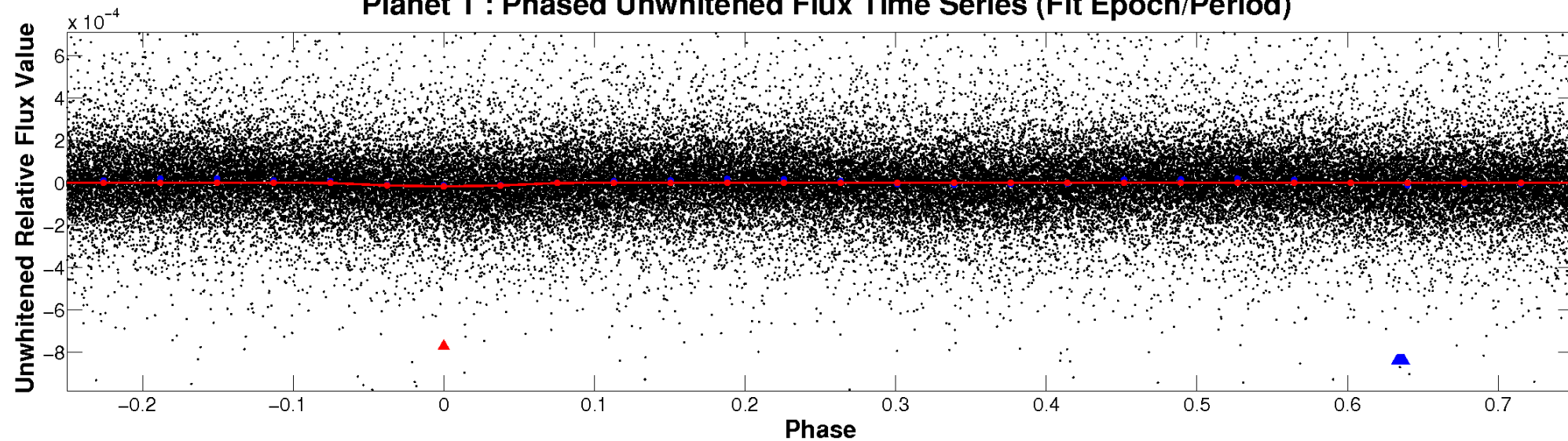
ALT Odd/Even

TCE 009596093-01

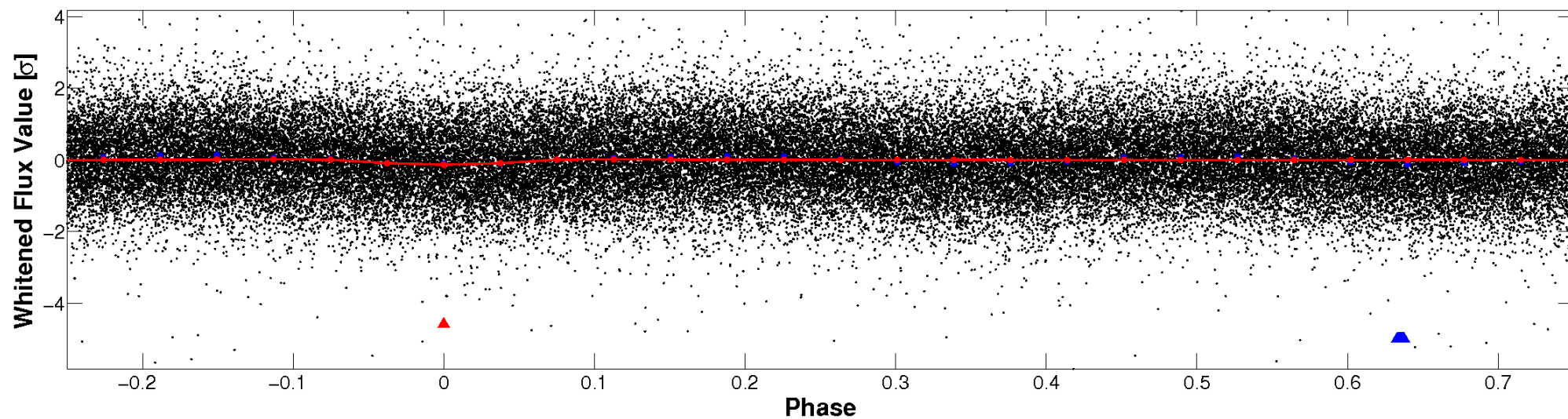


Non-Whitened Vs. Whitened Light Curve

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

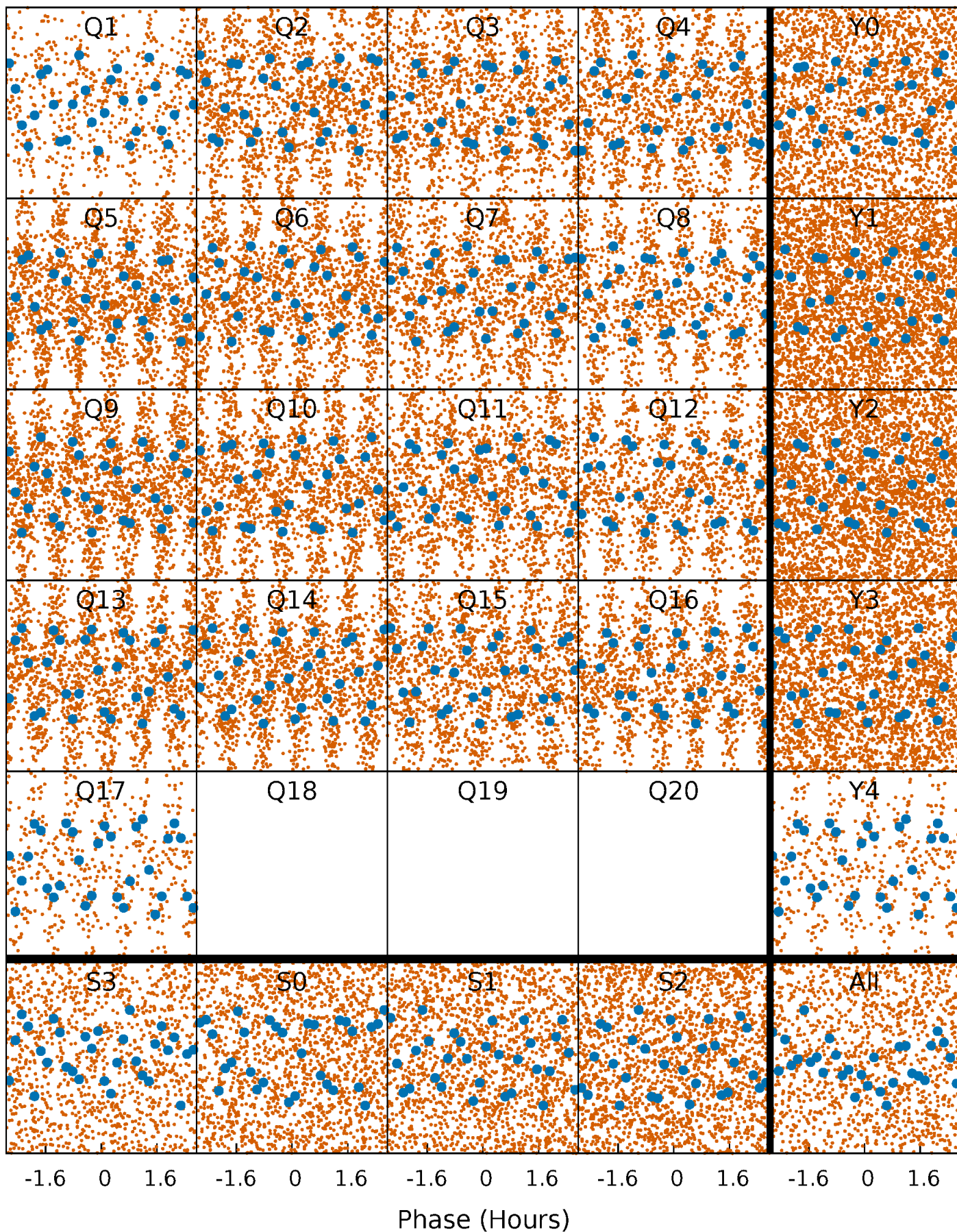


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



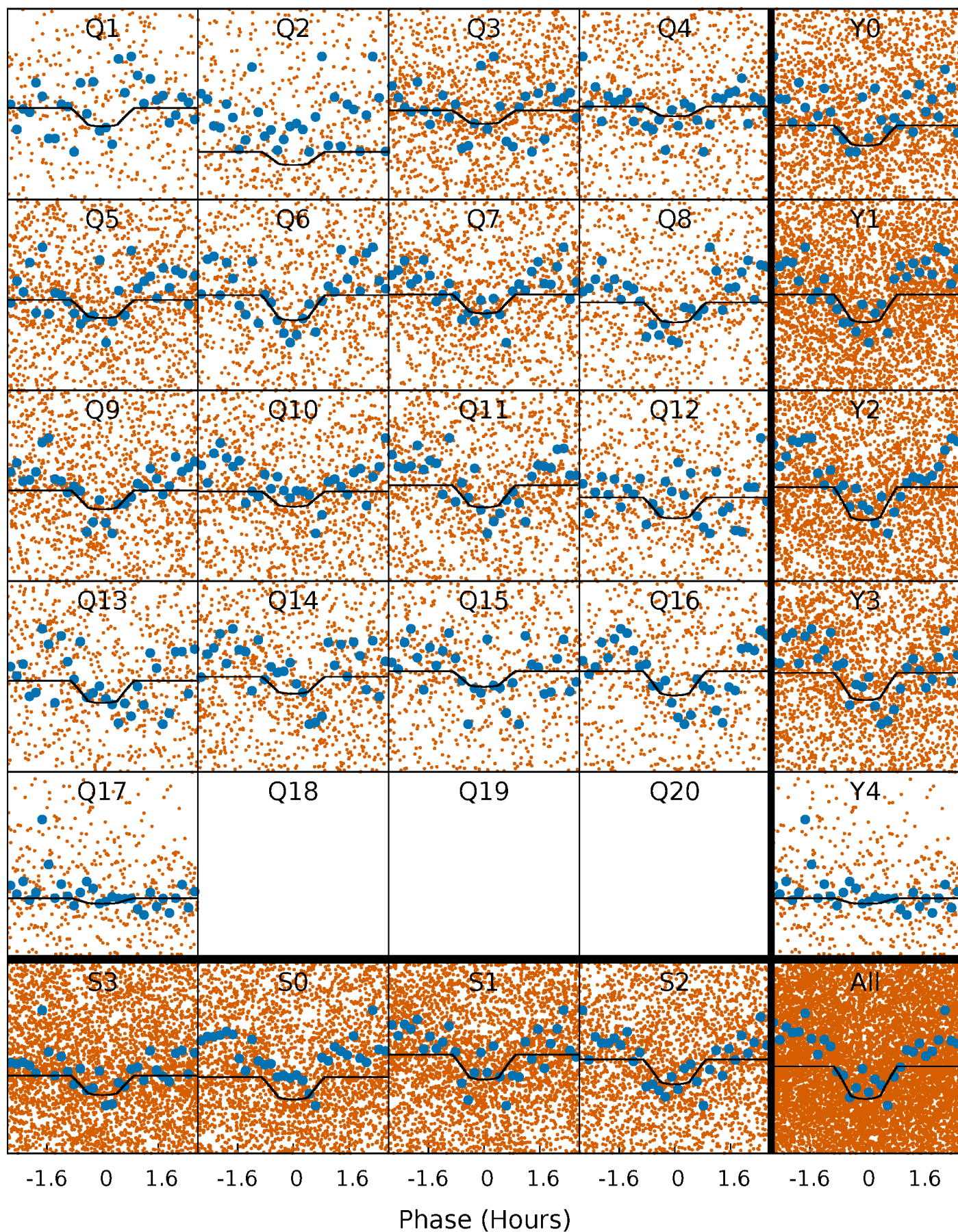
PDC Quarter-Phased Transit Curves

TCE 009596093-01 P= 0.542873 Days $T_0=132.008702$ (BKJD)



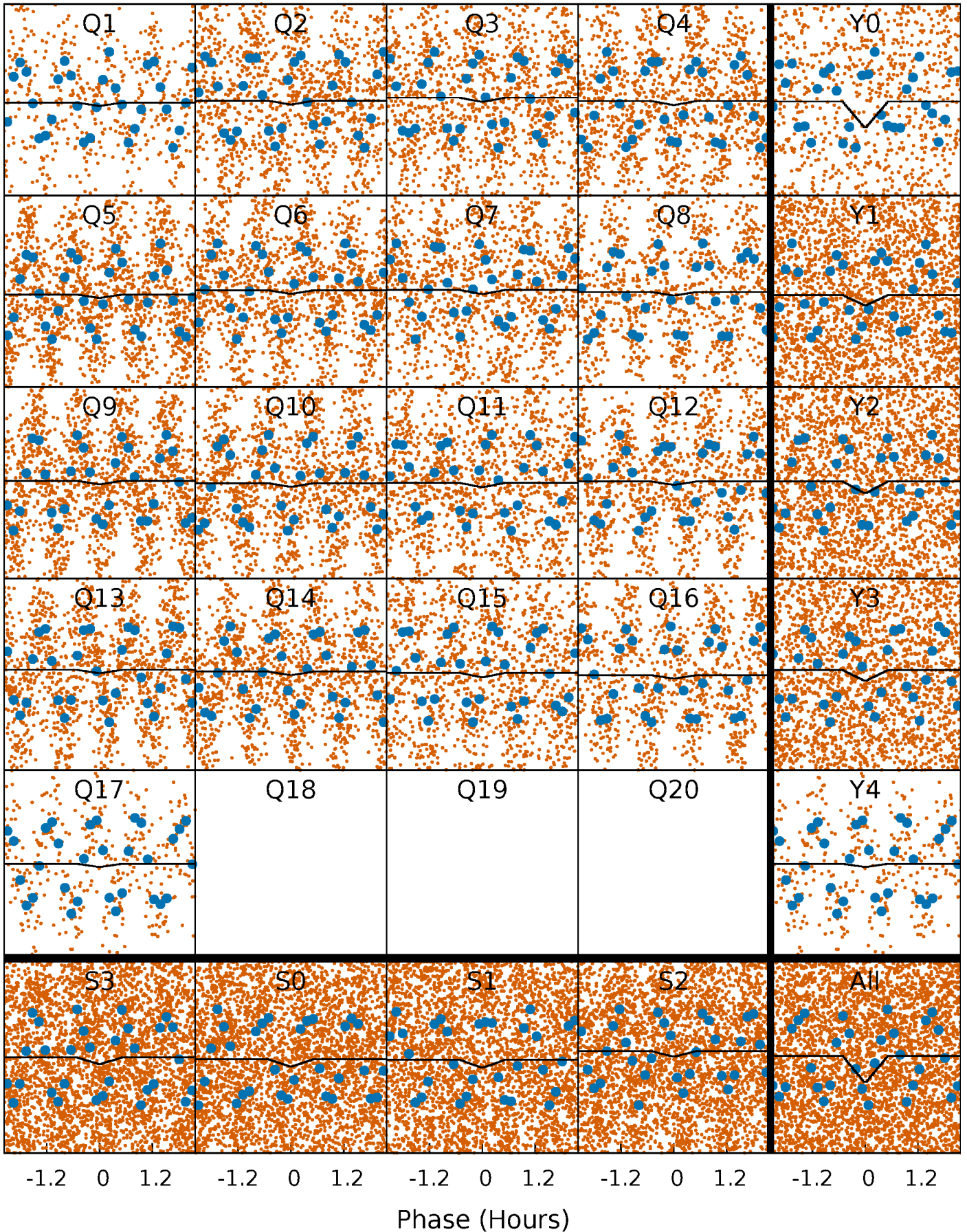
DV Quarter-Phased Transit Curves

TCE 009596093-01 P= 0.542873 Days $T_0=132.008702$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

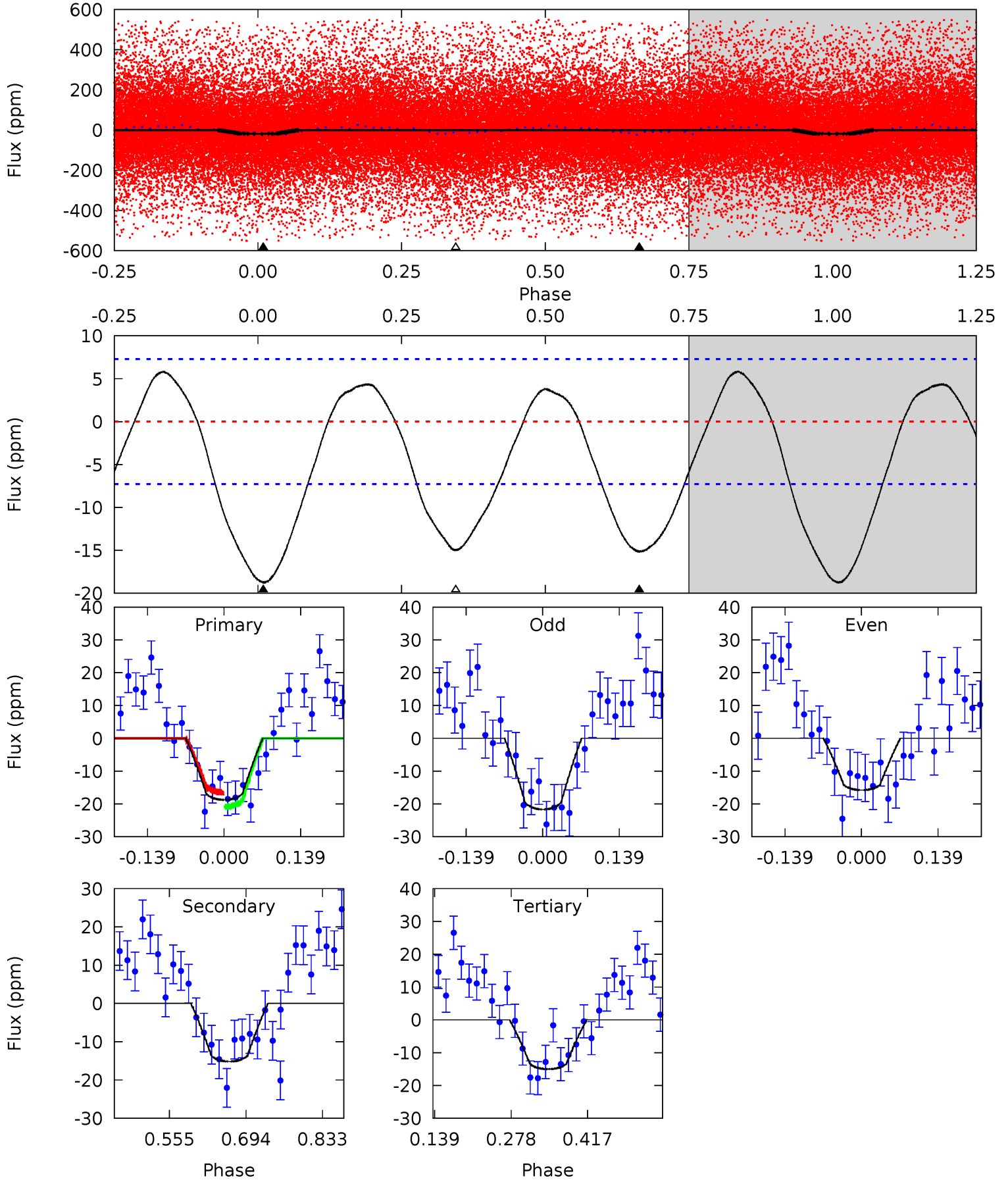
TCE 009596093-01 P= 0.542890 Days $T_0=132.015687$ (BKJD)



DV Model-Shift Uniqueness Test

009596093-01, P = 0.542873 Days, E = 131.465829 Days

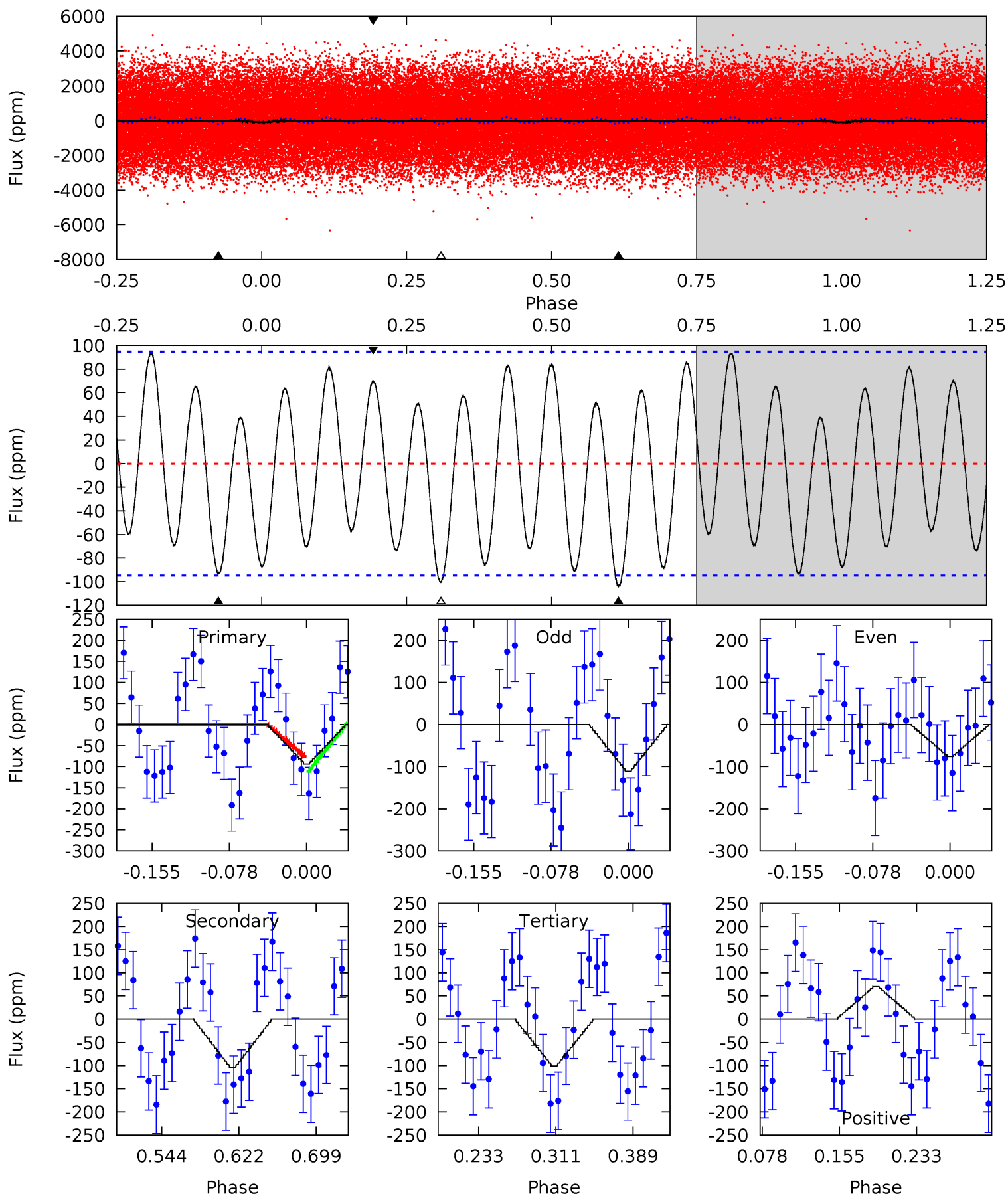
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	9.37	9.27	0	4.50	1.48	4.38	2.33	11.6	0.10	9.37	1.85	0.78	0.24	1.38



Alt Model-Shift Uniqueness Test

009596093-01, P = 0.542890 Days, E = 131.472797 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.56	5.09	4.92	3.43	4.62	1.76	2.64	-0.36	1.13	0.17	1.66	0.85	0.86	0.47	0.85



Stellar Parameters For KIC 009596093

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7643^{+76}_{-76}	$3.846^{+0.168}_{-0.072}$	$0.000^{+0.100}_{-0.150}$	$2.760^{+0.268}_{-0.625}$	$1.951^{+0.027}_{-0.230}$	$0.131^{+0.124}_{-0.030}$
	+1%/-1%	+4%/-2%	+inf%/-inf%	+10%/-23%	+1%/-12%	+95%/-23%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 009596093-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-15 ± 2	$1.29^{+0.25}_{-0.25}$	6114^{+215}_{-331}	6609^{+993}_{-724}	$1.303^{+0.747}_{-0.407}$
Alt.	-105 ± 21	$2.69^{+0.31}_{-0.35}$	6125^{+192}_{-334}	7776^{+749}_{-767}	$2.082^{+0.748}_{-0.608}$

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 $A_{obs} \gg 1.0$

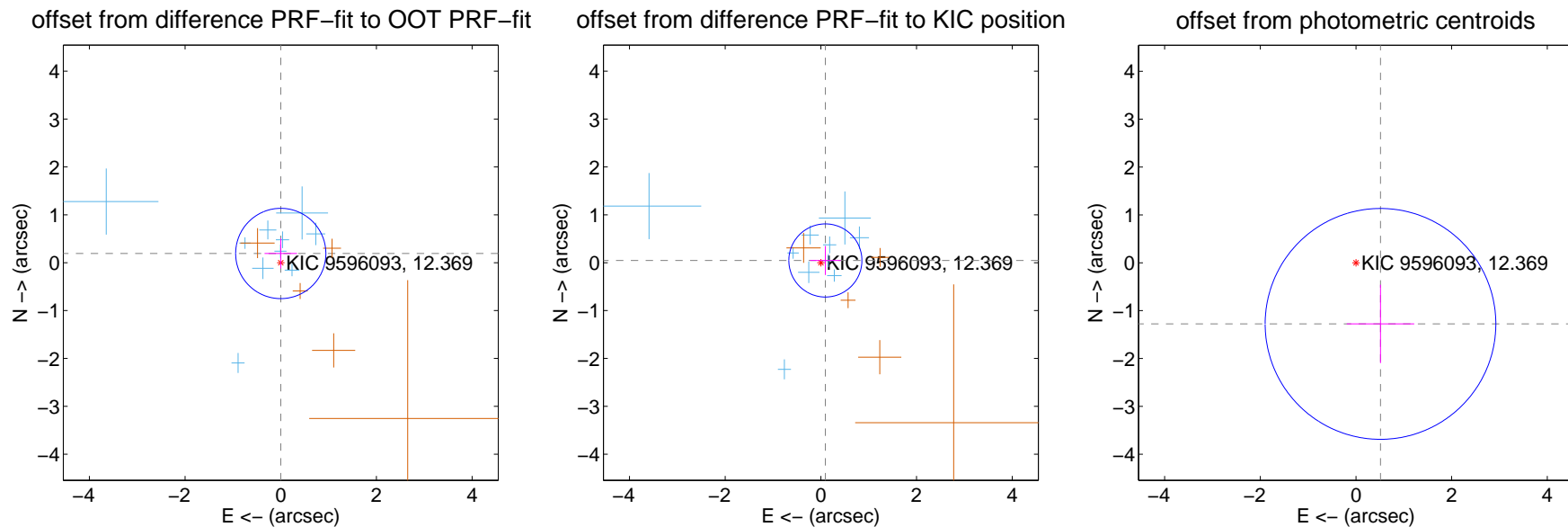
DV Centroid Data

Supplemental centroid analysis for 009596093-01. Kepler magnitude: 12.37. Transit SNR 9.60

There are 10 quarters with good PRF difference image offsets

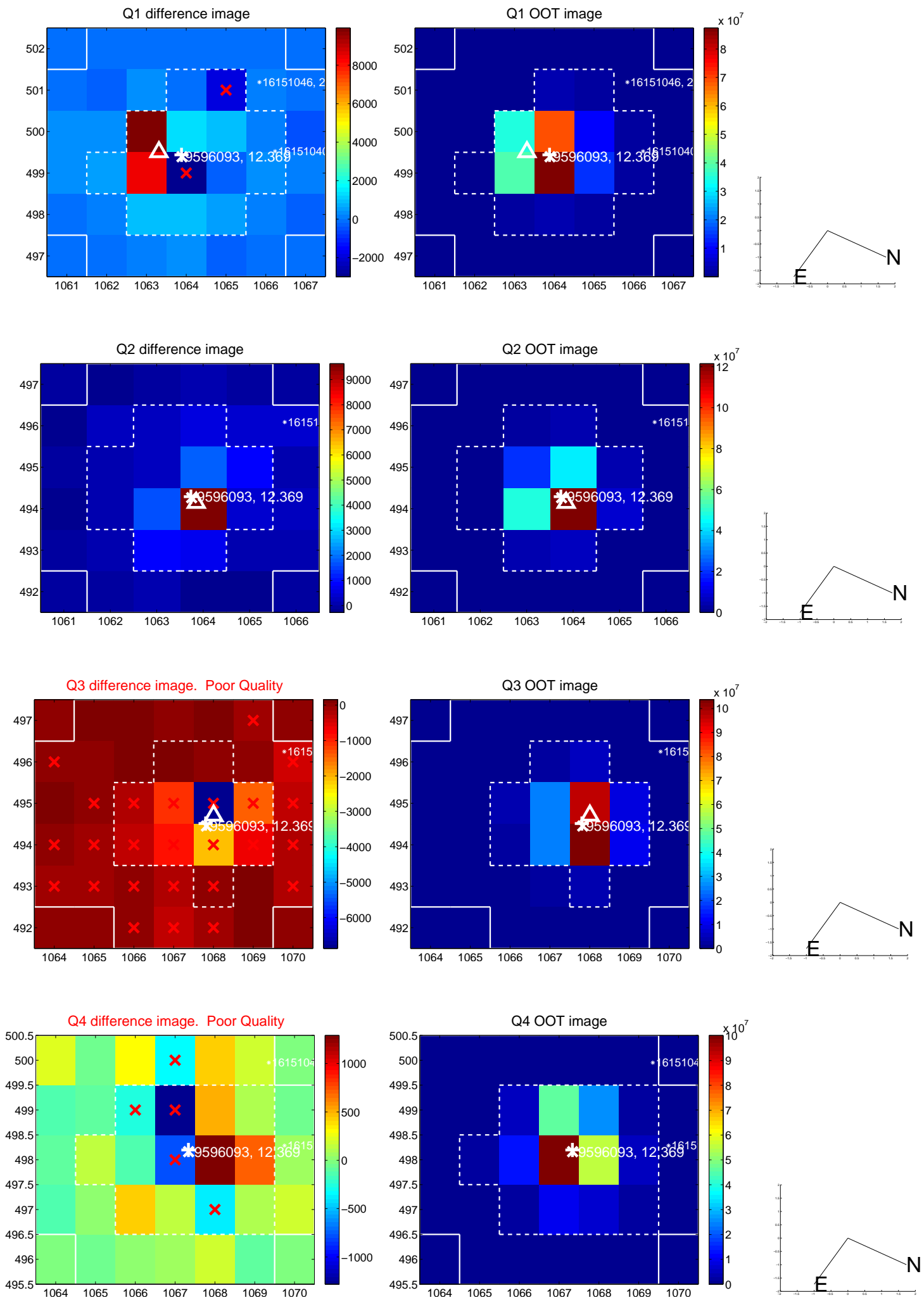
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.193 ± 0.314	0.61	-0.000 ± 0.340	0.193 ± 0.315
PRF-fit source offset from KIC position	0.105 ± 0.255	0.41	-0.094 ± 0.319	0.046 ± 0.303
photometric centroid source offset	1.38 ± 0.80	1.71	-0.51 ± 0.71	-1.28 ± 0.82

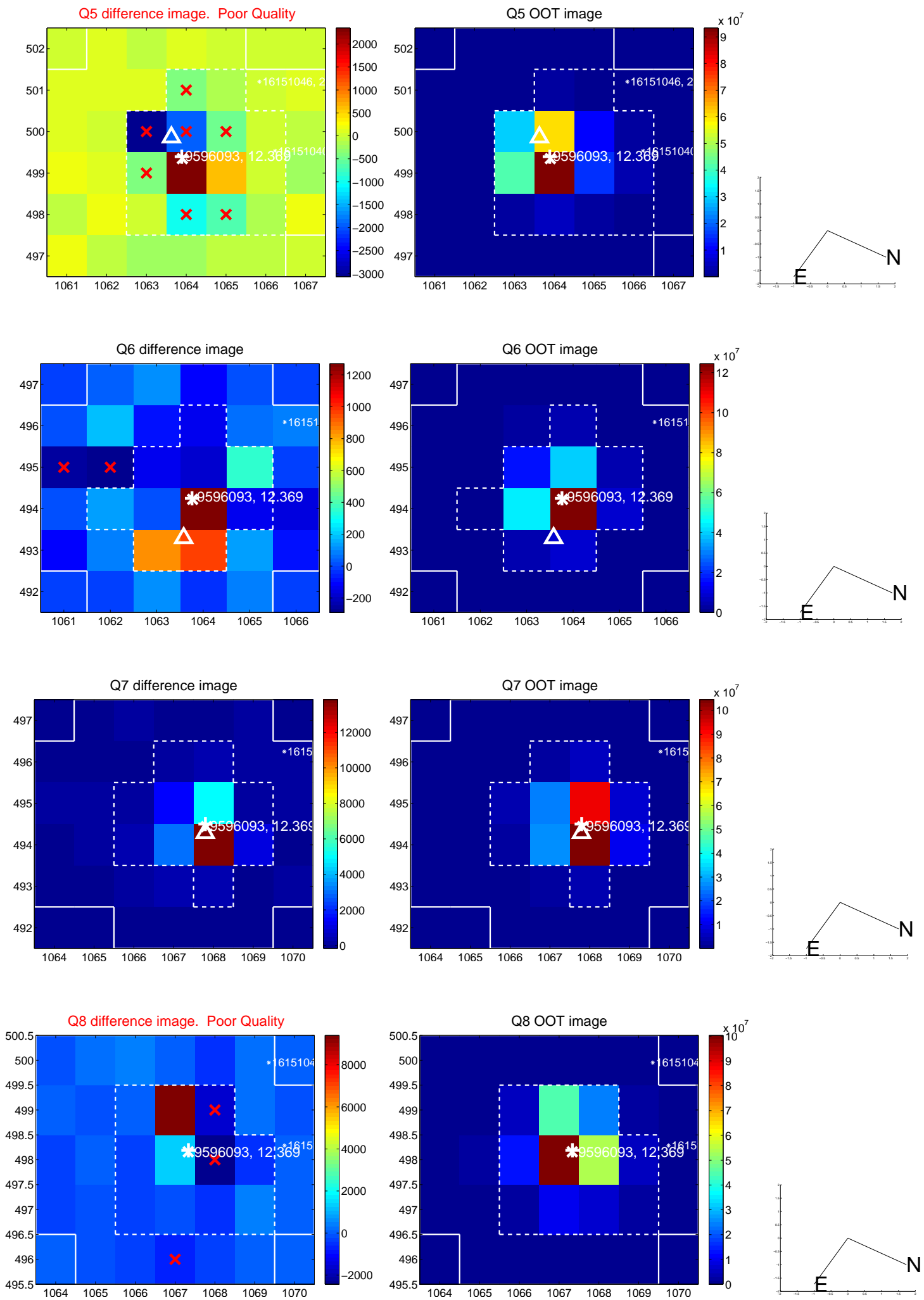


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

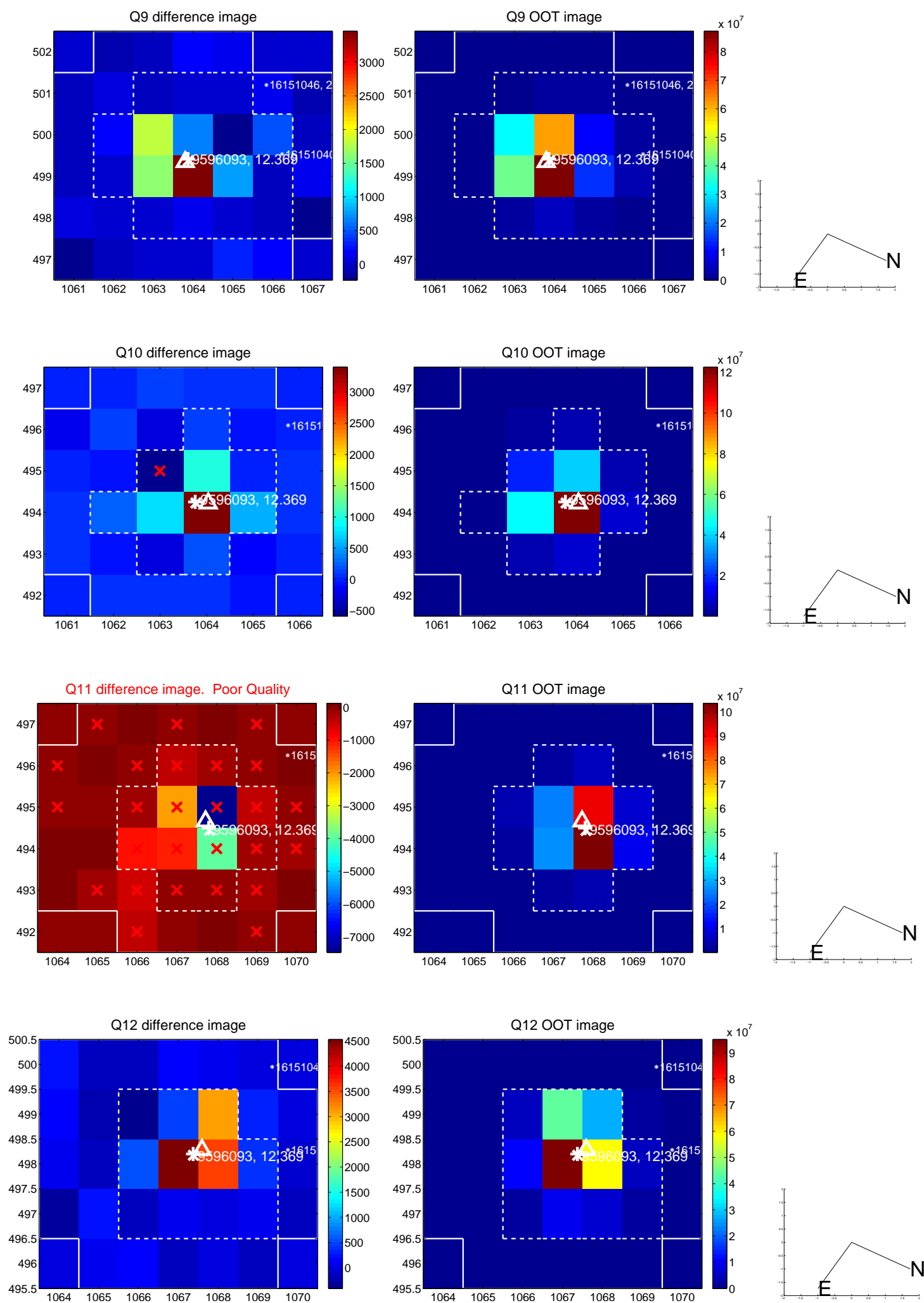
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



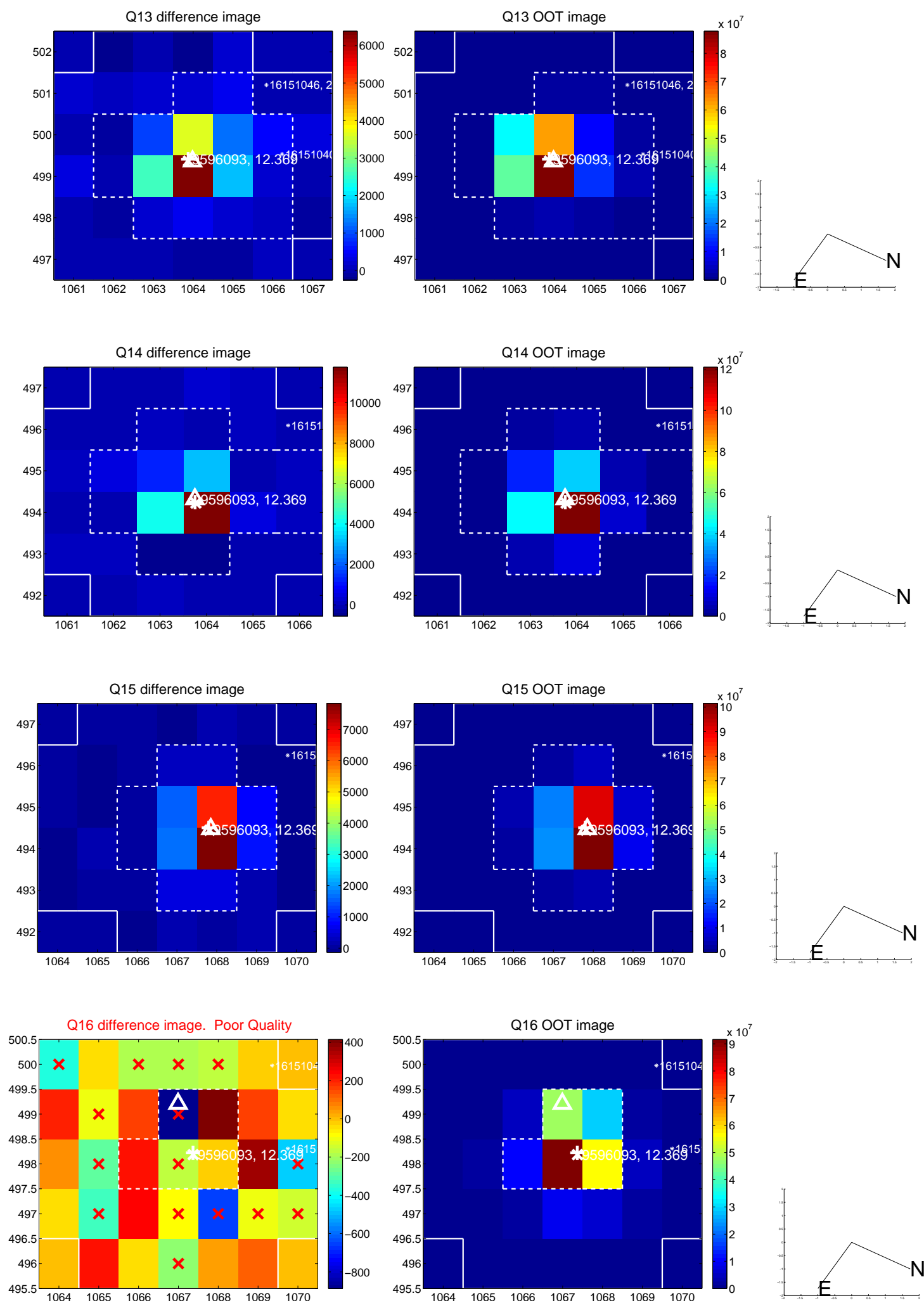
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

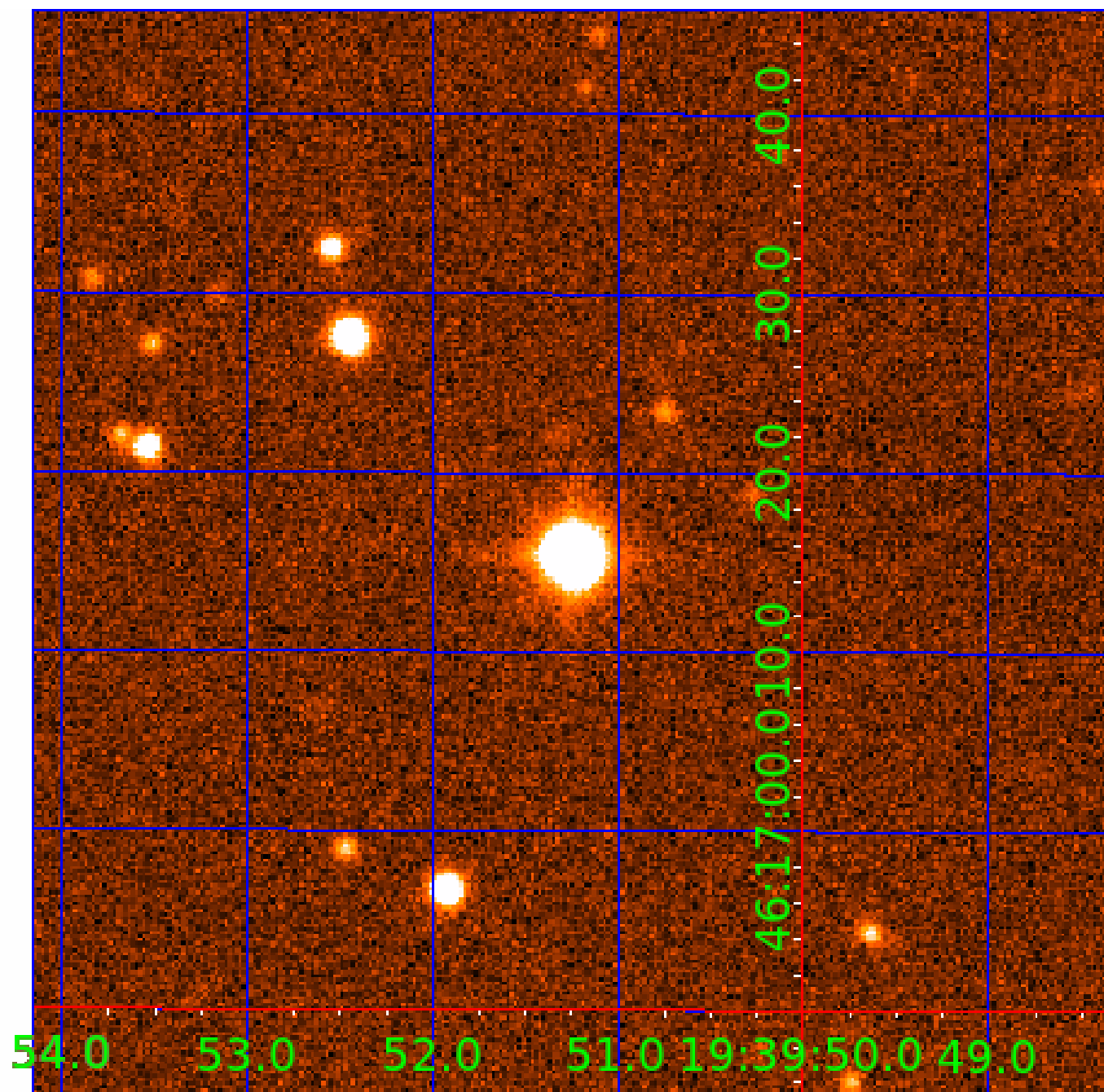


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009596093

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})
009596093-01	OBS	No	0.542873	132.008702	17.4	1.369	10.2	9.6	2.76	7643	1.32	87961.22
009596093-02	OBS	No	0.542872	131.811927	6.3	2.604	8.4	4.3	2.76	7643	0.71	87961.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009596093-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009596093-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

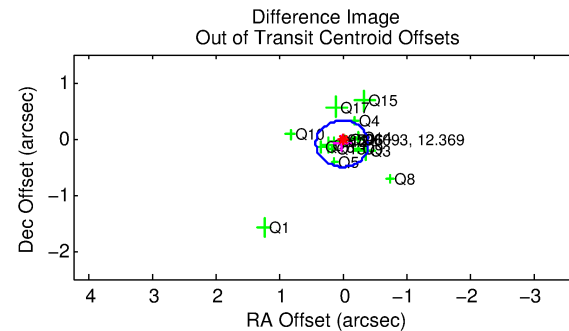
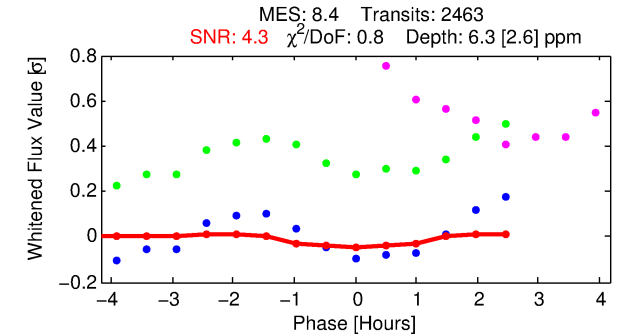
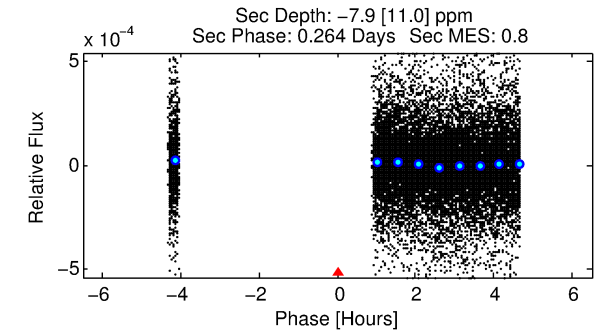
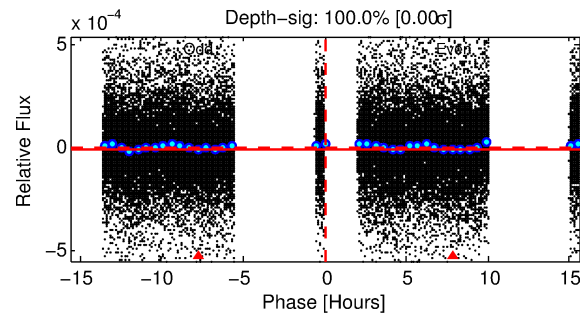
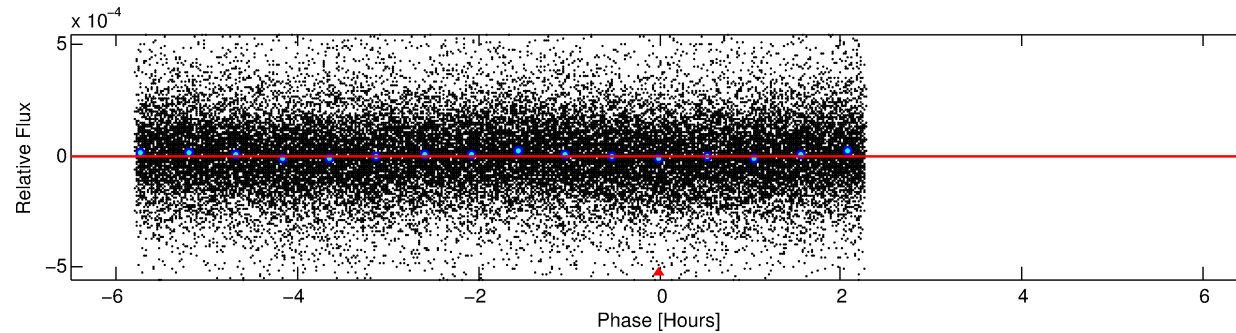
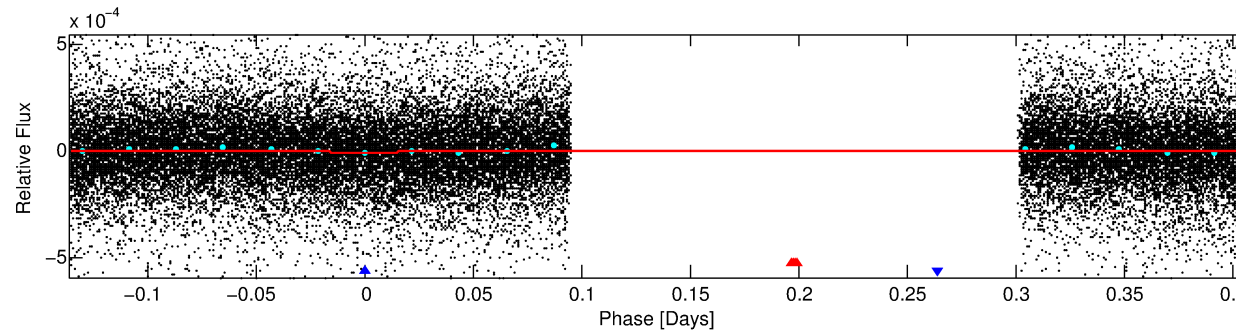
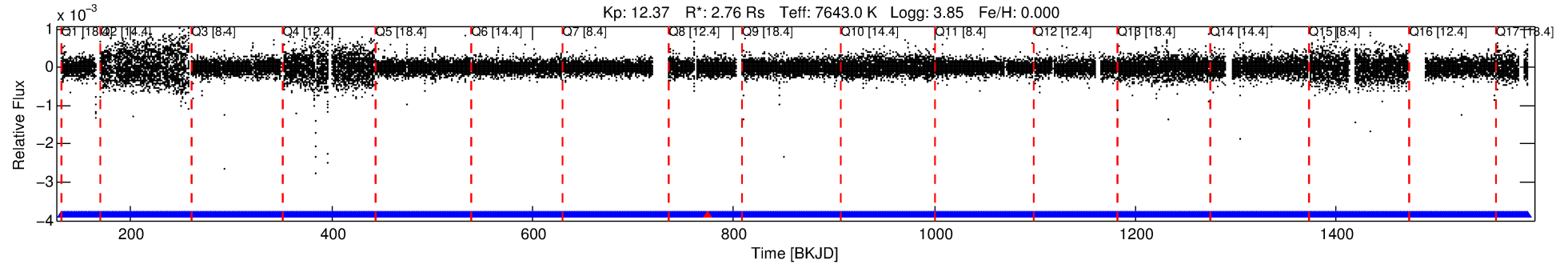
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009596093-02

No Significant Match Found

DV One-Page Summary

KIC: 9596093 Candidate: 2 of 2 Period: 0.543 d



DV Fit Results:

Period = 0.54287 [0.00004] d
Epoch = 131.8119 [0.0070] BKJD
Rp/R* = 0.0024 [0.0023]
a/R* = 1.66 [5.90]
b = 0.30 [17.09]
Seff = 87961.42 [26517.10]
Teq = 4391 [331] K
Rp = 0.71 [0.70] Re
a = 0.0163 [0.0032] AU
Ag = N/A
Teffp = N/A

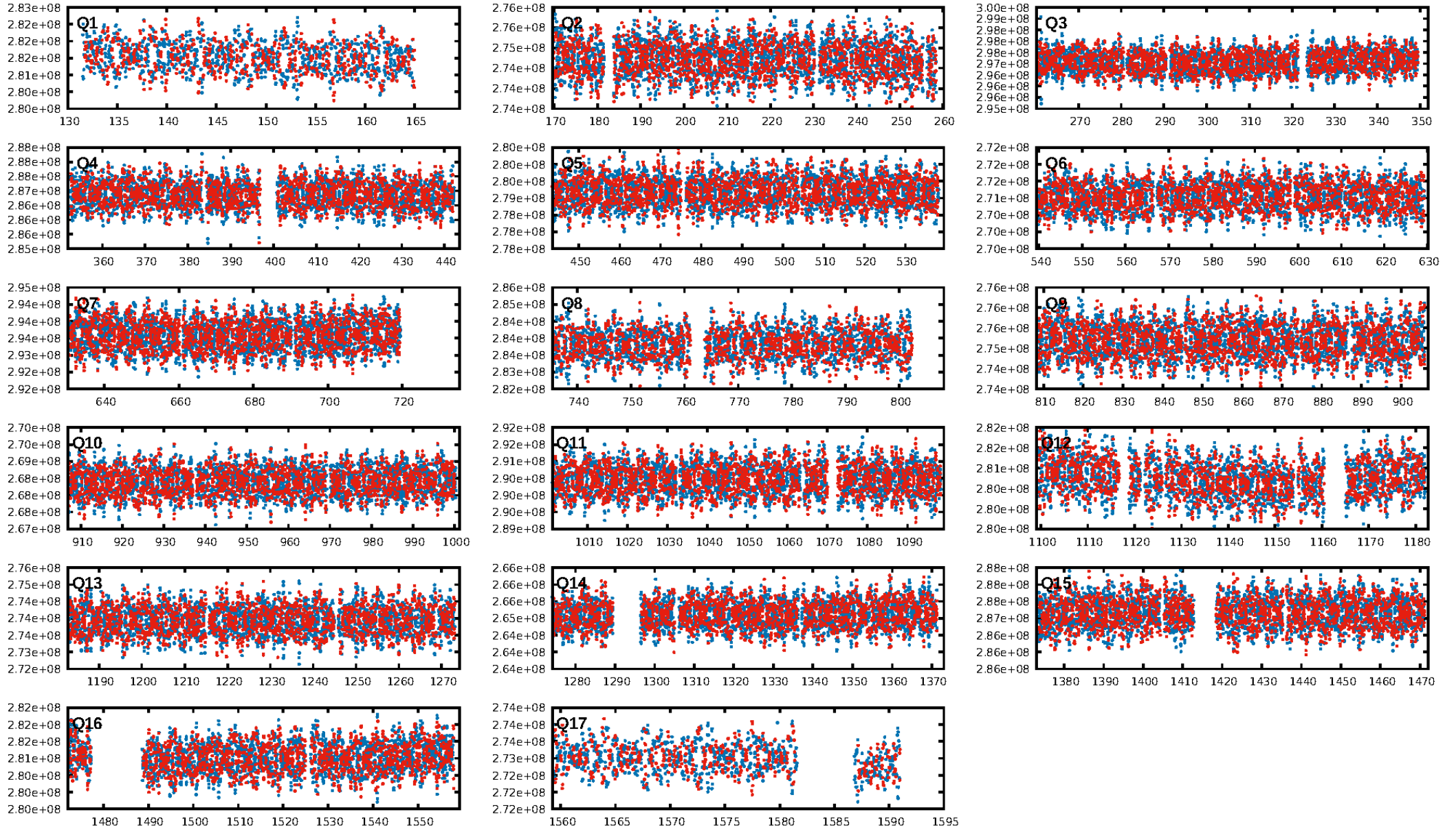
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.20e-22
RollingBand-fgt: 1.00 [2351/2352]
GhostDiagnostic-chr: 1.47
Centroid-sig: 95.8%
Centroid-so: 0.461 arcsec [0.30σ]
OotOffset-rm: 0.092 arcsec [0.67σ]
KicOffset-rm: 0.204 arcsec [1.58σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 0.44 [7/16]
DiffImageOverlap-fno: 0.00 [0/17]

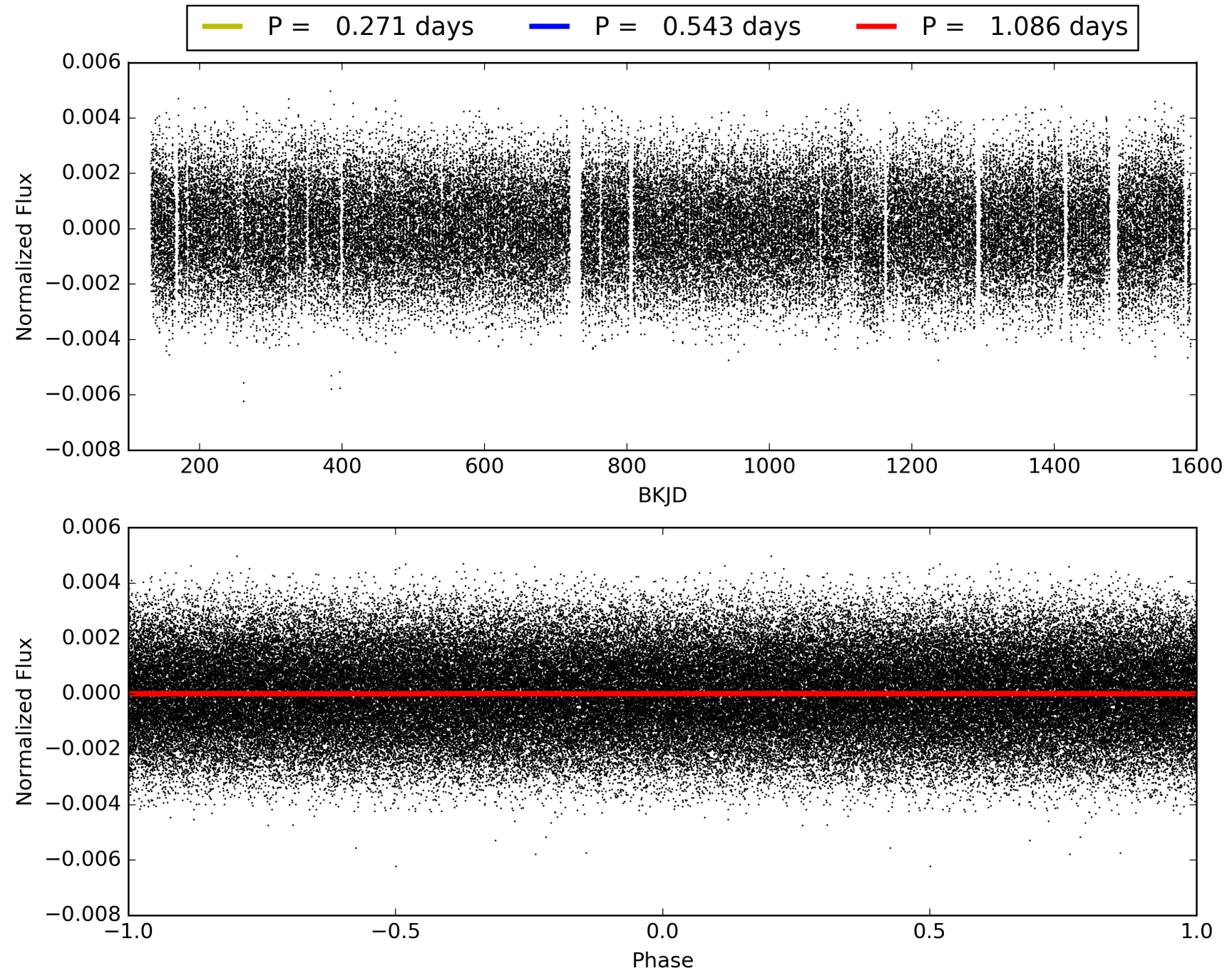
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:05:29 Z

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

TCE 009596093-02, PDC Light Curves

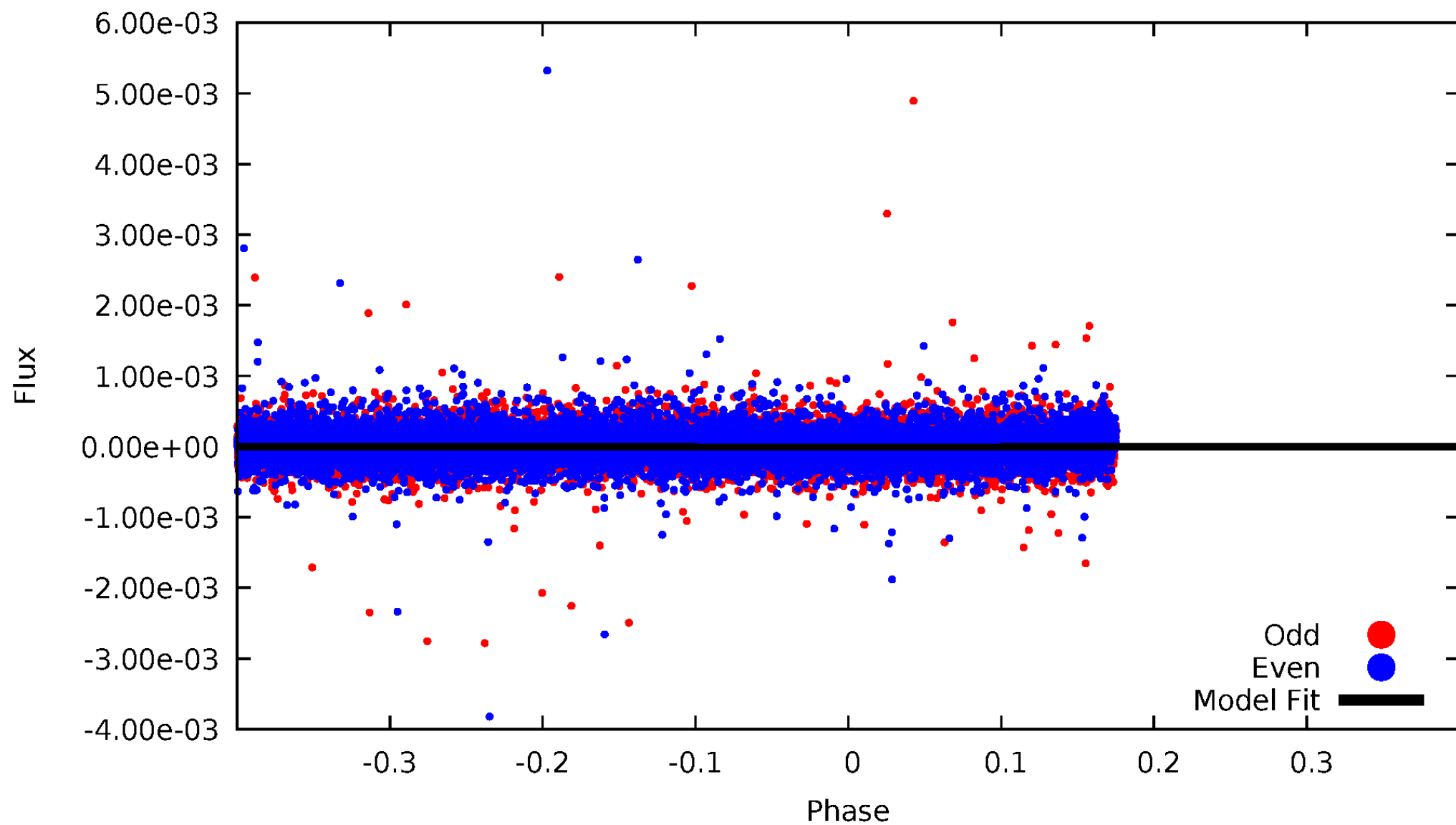


TCE 009596093-02



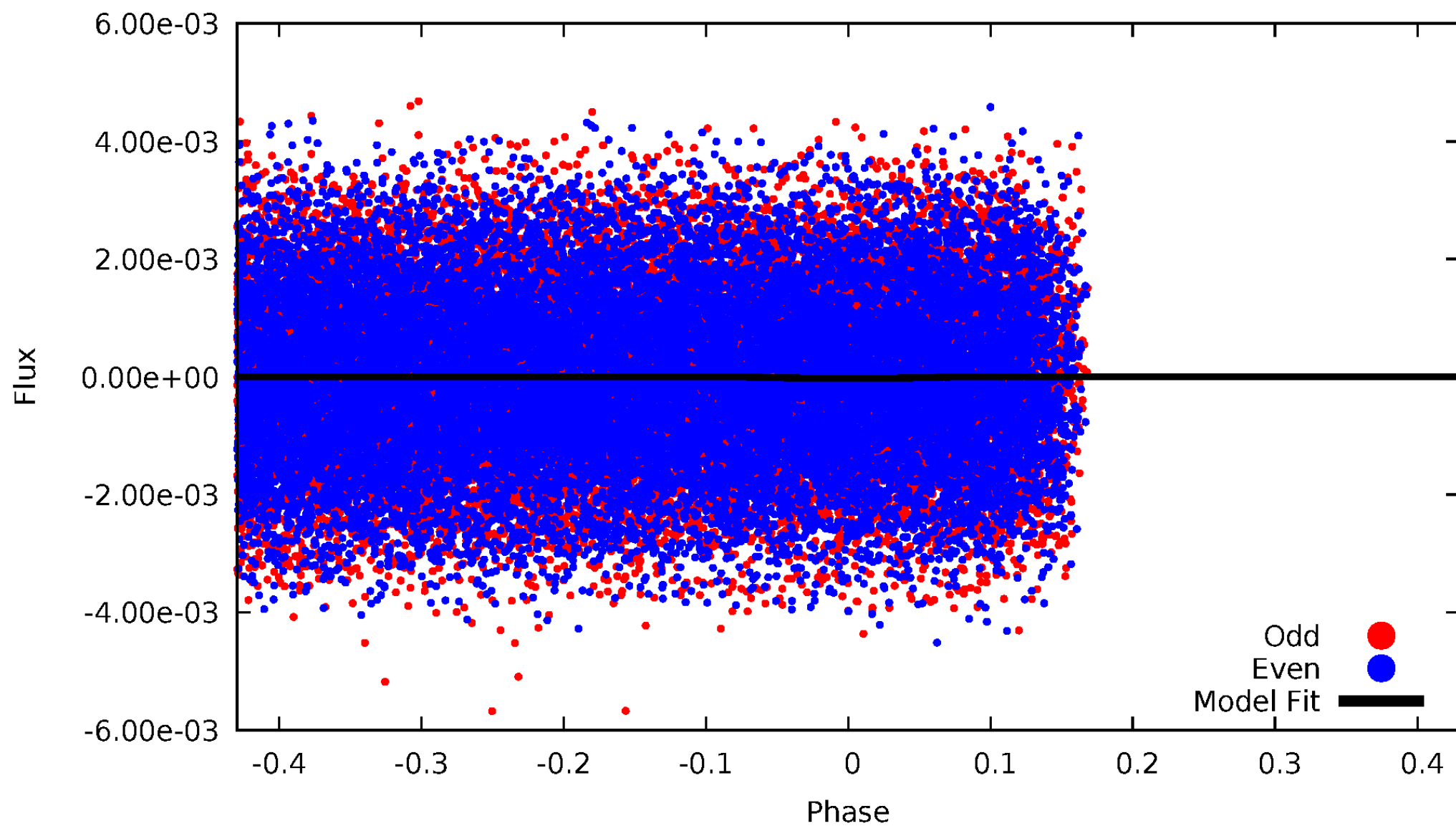
DV Odd/Even

TCE 009596093-02



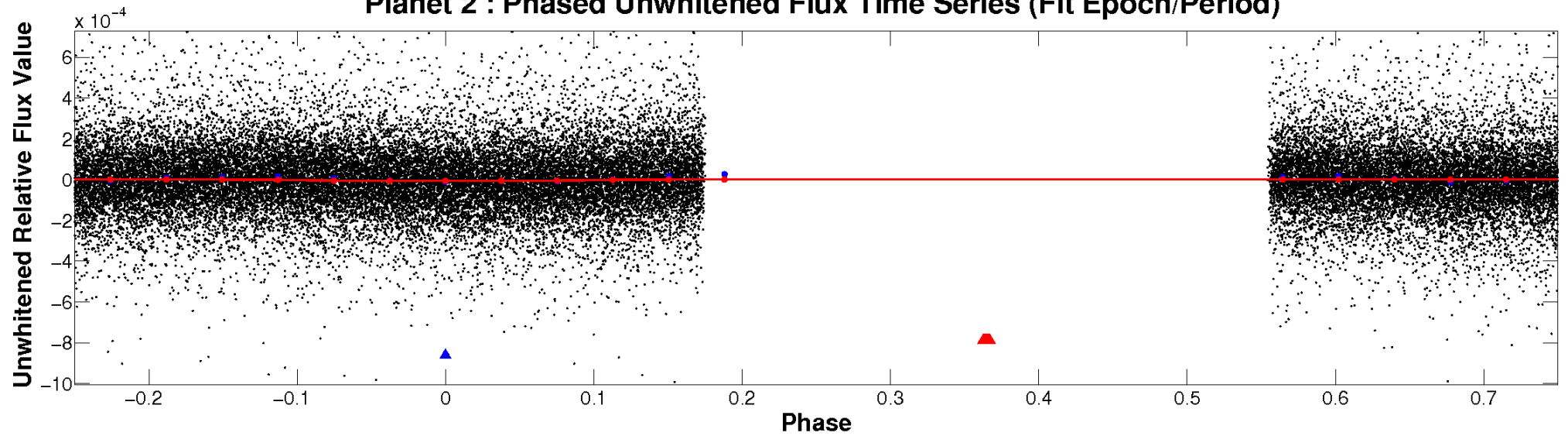
ALT Odd/Even

TCE 009596093-02

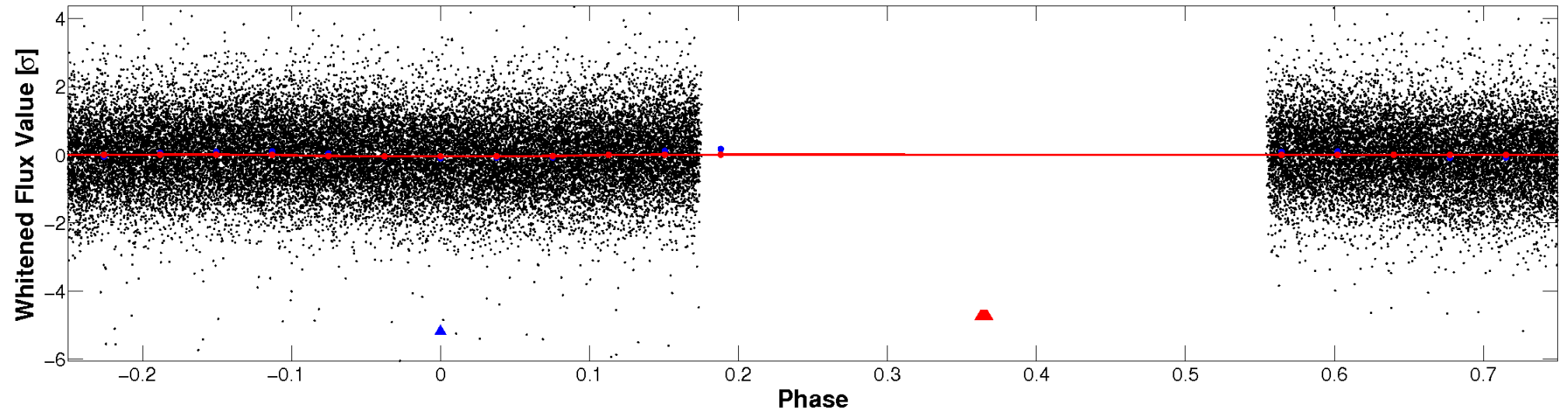


Non-Whitened Vs. Whitened Light Curve

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

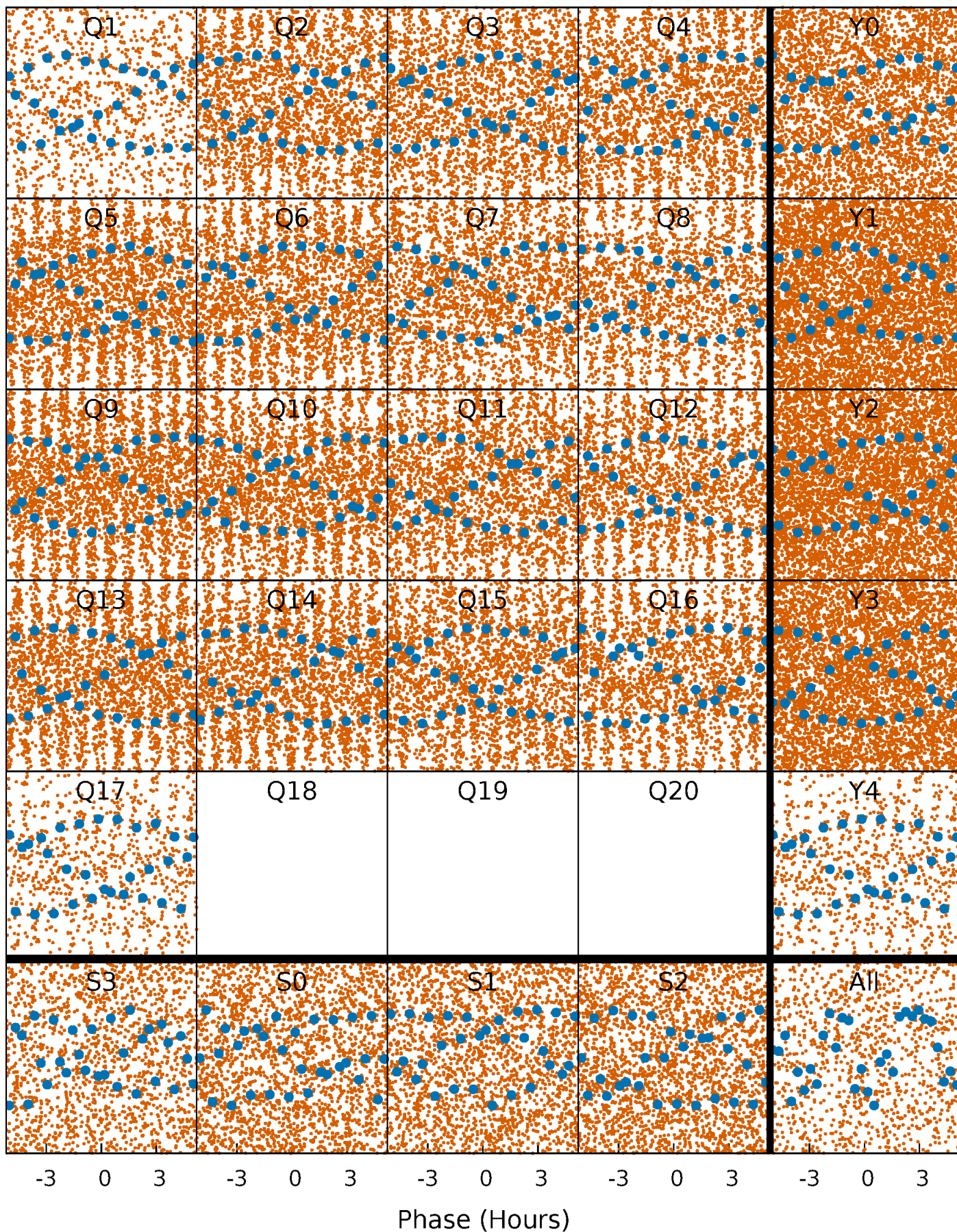


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



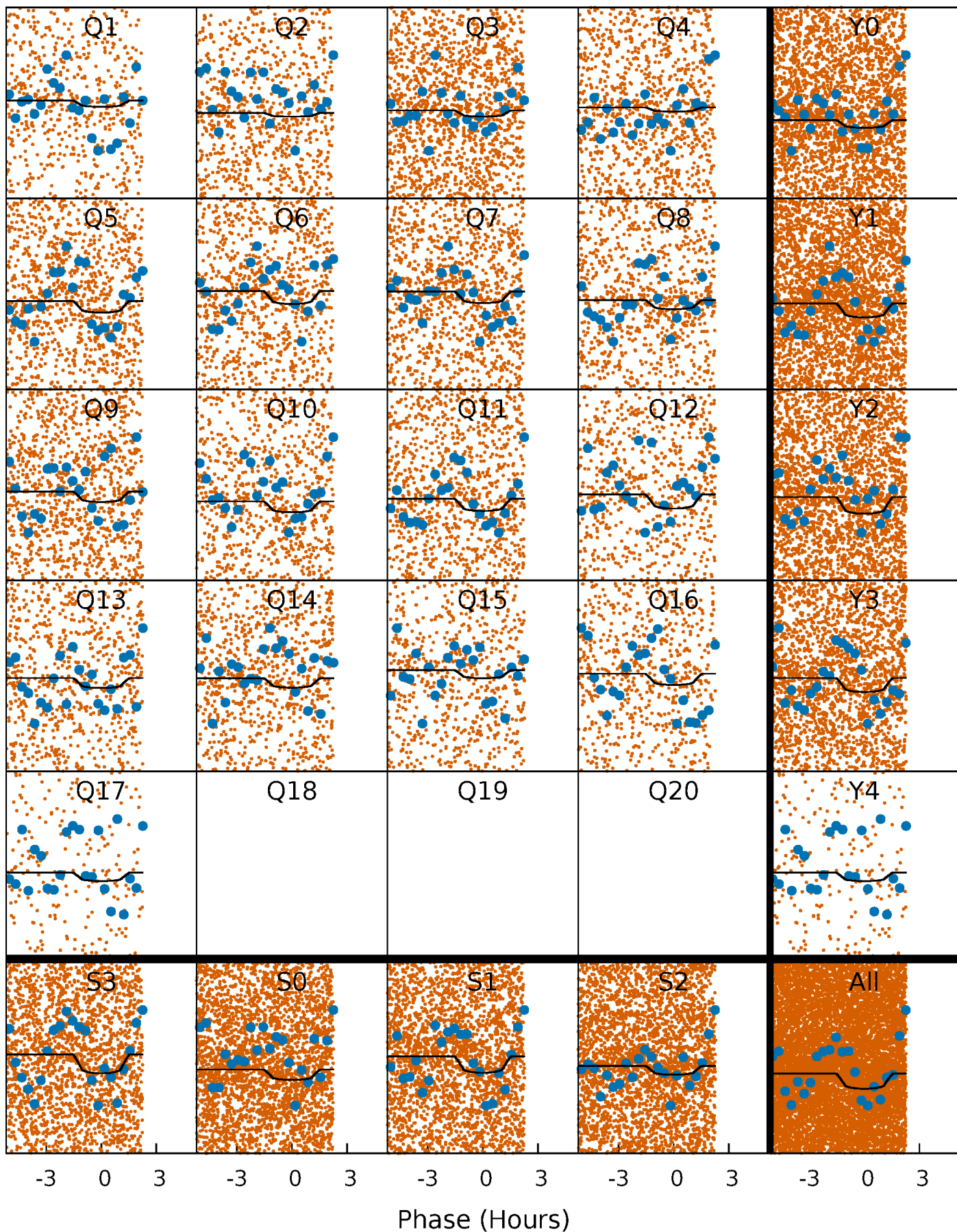
PDC Quarter-Phased Transit Curves

TCE 009596093-02 P= 0.542872 Days $T_0=131.811927$ (BKJD)



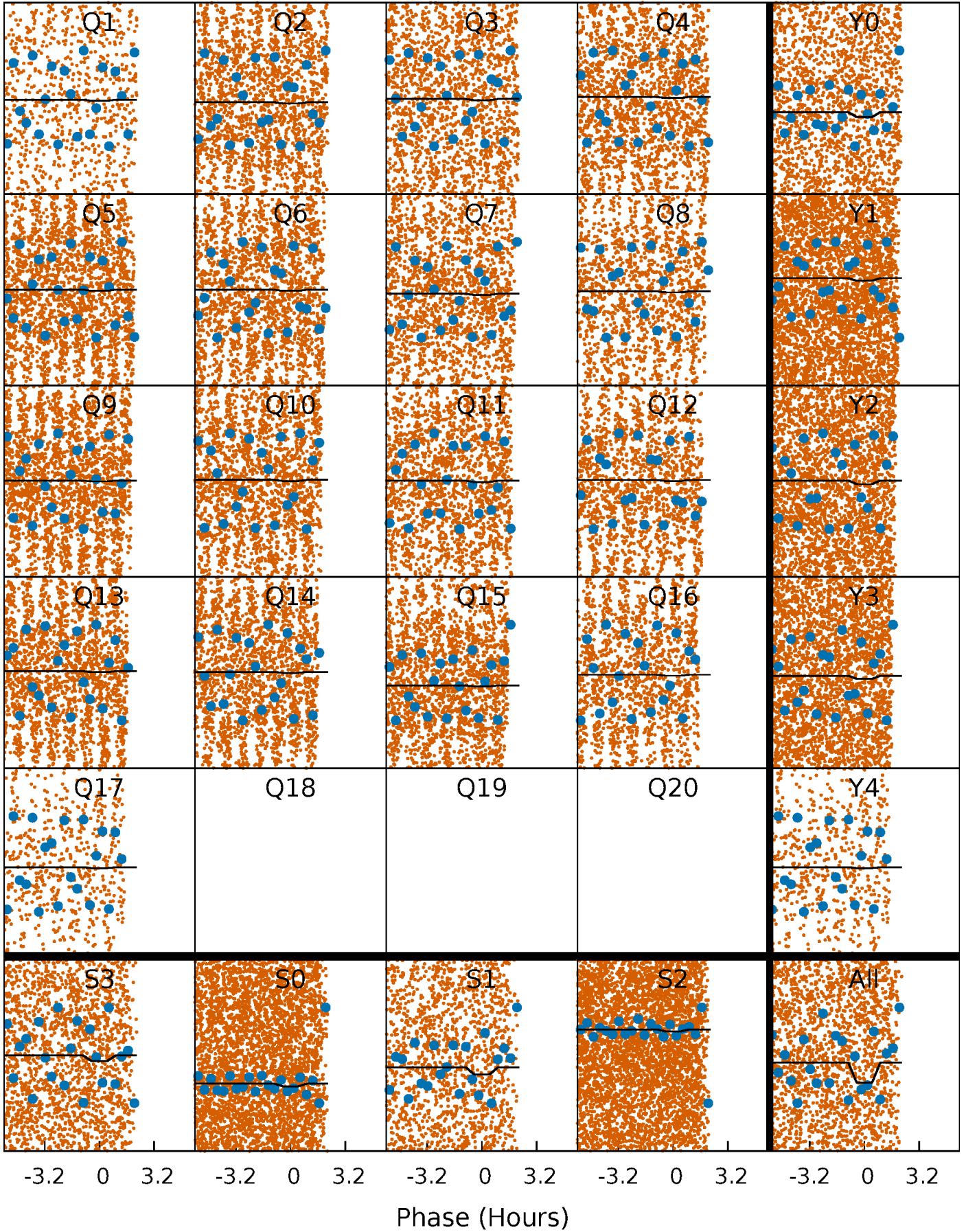
DV Quarter-Phased Transit Curves

TCE 009596093-02 P= 0.542872 Days $T_0=131.811927$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

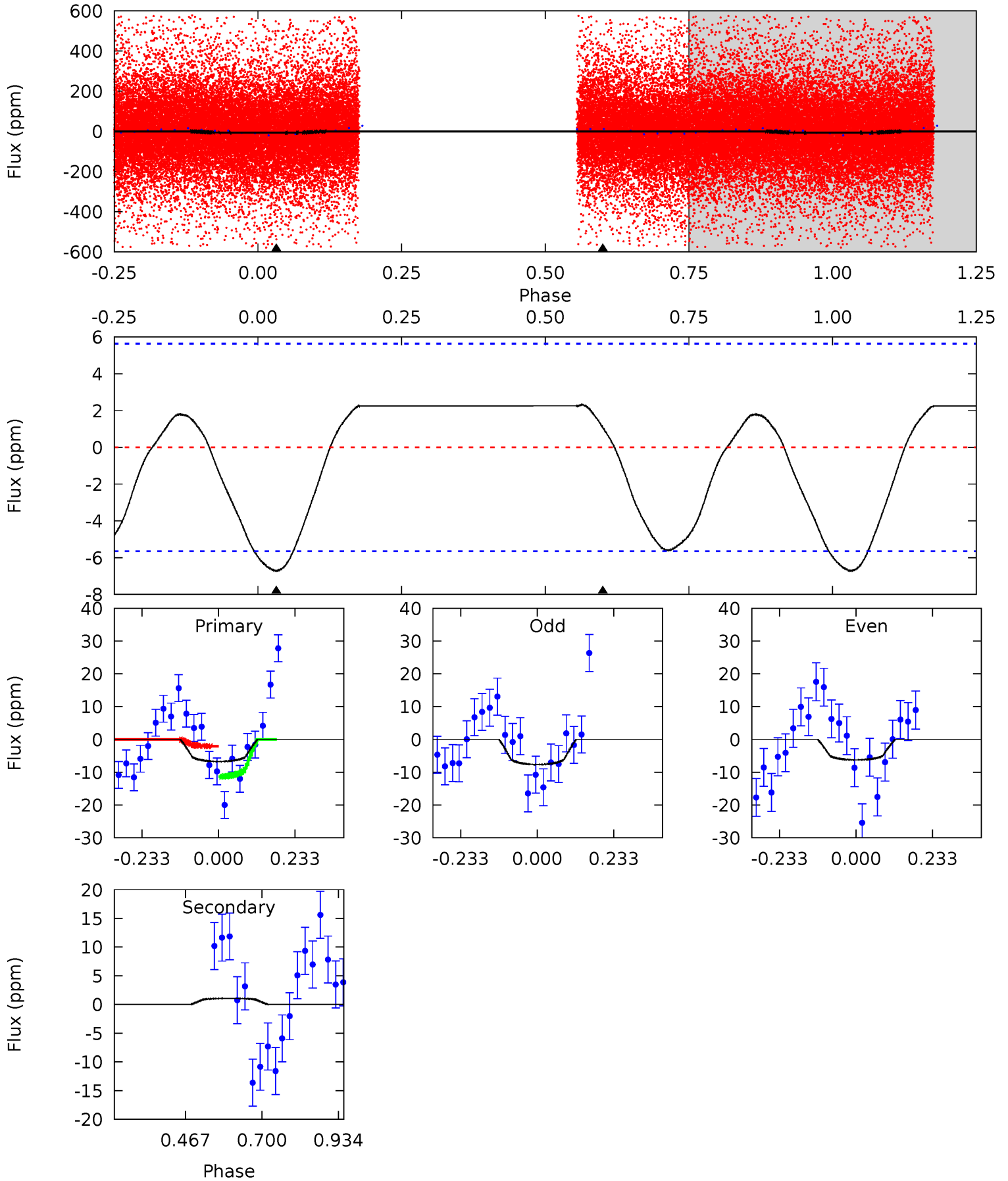
TCE 009596093-02 P= 0.542885 Days $T_0=131.812849$ (BKJD)



DV Model-Shift Uniqueness Test

009596093-02, P = 0.542872 Days, E = 131.269055 Days

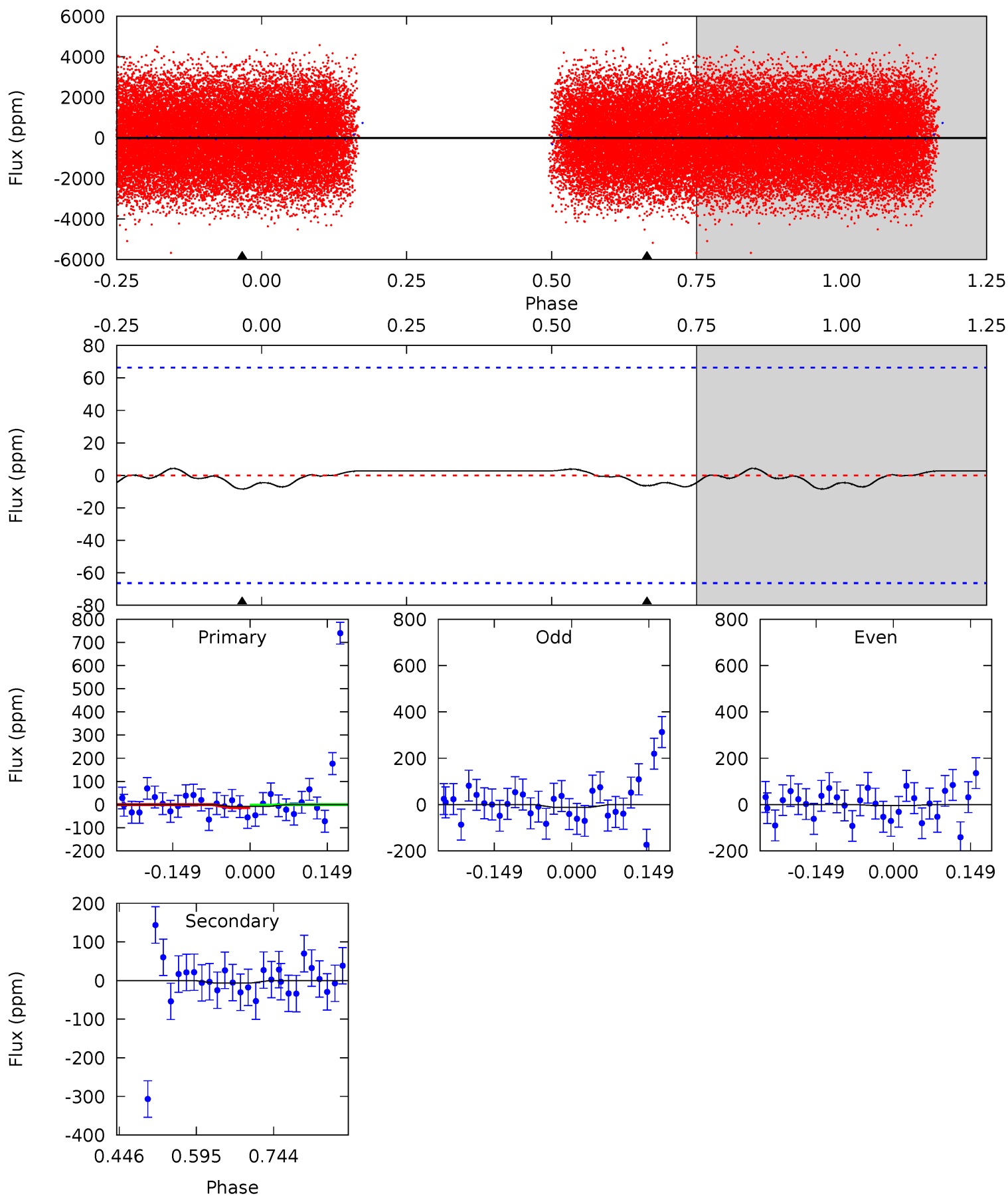
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.23	-0.83	0	0	4.38	1.19	0.76	5.23	5.23	-0.83	-0.83	0.55	1.10	0.26	3.59



Alt Model-Shift Uniqueness Test

009596093-02, P = 0.542885 Days, E = 131.269964 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.57	0.43	0	0	4.48	1.44	0.10	0.57	0.57	0.43	0.43	0.26	0.89	0.34	0.38



Stellar Parameters For KIC 009596093

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7643^{+76}_{-76}	$3.846^{+0.168}_{-0.072}$	$0.000^{+0.100}_{-0.150}$	$2.760^{+0.268}_{-0.625}$	$1.951^{+0.027}_{-0.230}$	$0.131^{+0.124}_{-0.030}$
	+1%/-1%	+4%/-2%	+inf%/-inf%	+10%/-23%	+1%/-12%	+95%/-23%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 009596093-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	1 ± 1	$0.78^{+0.61}_{-0.49}$	6100^{+209}_{-350}	-5515^{+732}_{-2524}	$-0.180^{+0.207}_{-1.576}$
Alt.	-6 ± 15	$1.33^{+0.70}_{-0.63}$	6096^{+222}_{-327}	4024^{+4397}_{-10811}	$0.412^{+2.306}_{-1.264}$

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 $A_{obs} \gg 1.0$

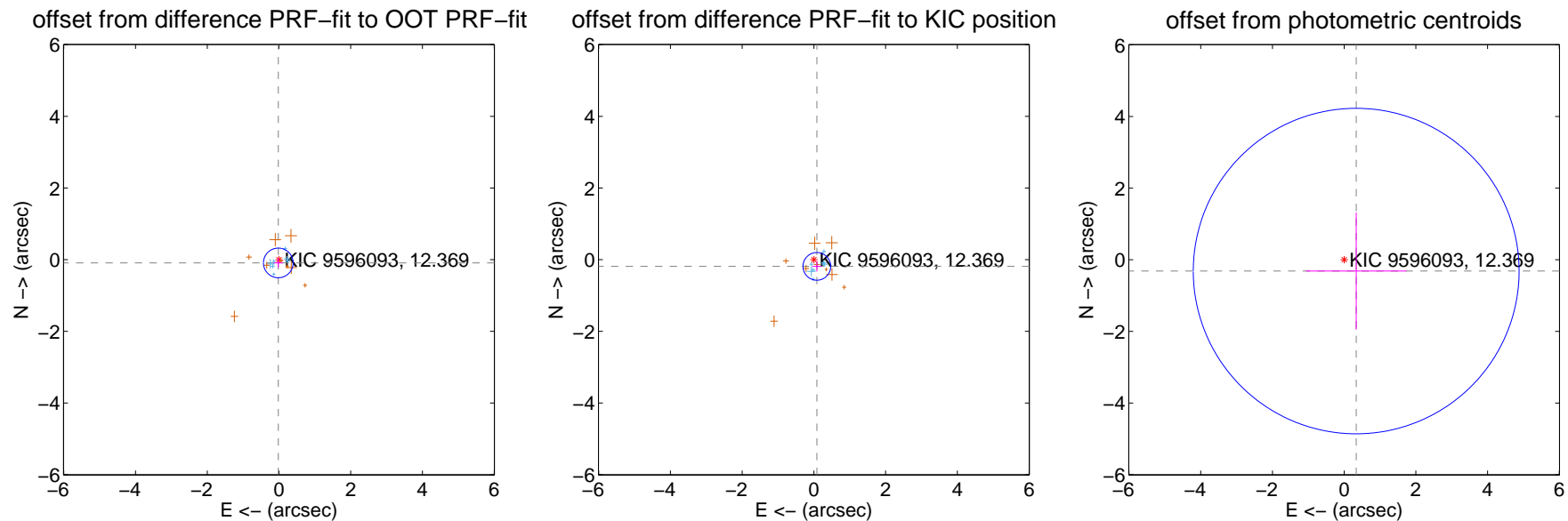
DV Centroid Data

Supplemental centroid analysis for 009596093-02. Kepler magnitude: 12.37. Transit SNR 4.29

There are 7 quarters with good PRF difference image offsets

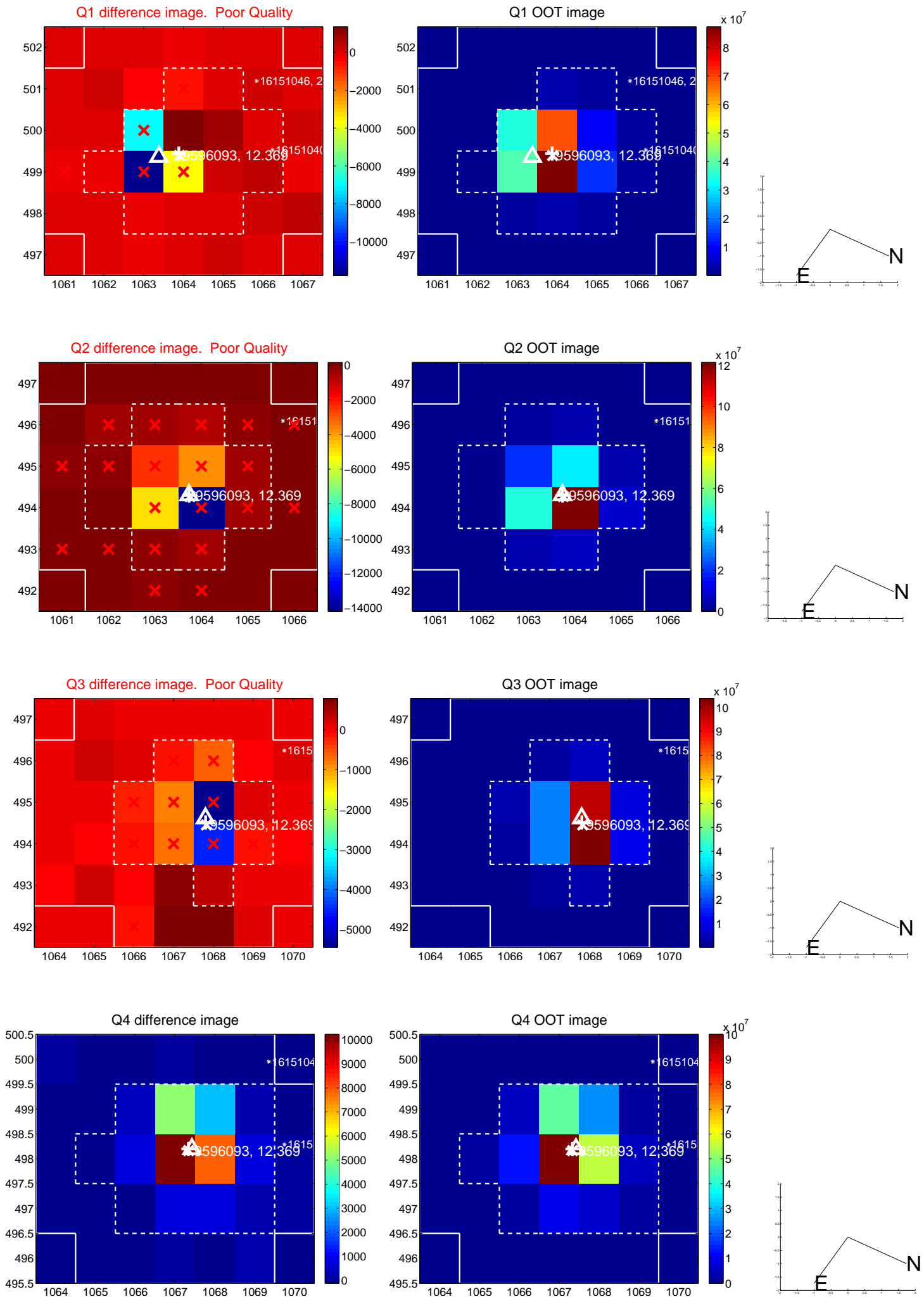
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.092 ± 0.138	0.67	0.019 ± 0.126	-0.090 ± 0.131
PRF-fit source offset from KIC position	0.204 ± 0.129	1.58	-0.083 ± 0.128	-0.186 ± 0.146
photometric centroid source offset	0.46 ± 1.51	0.30	-0.34 ± 1.40	-0.32 ± 1.63

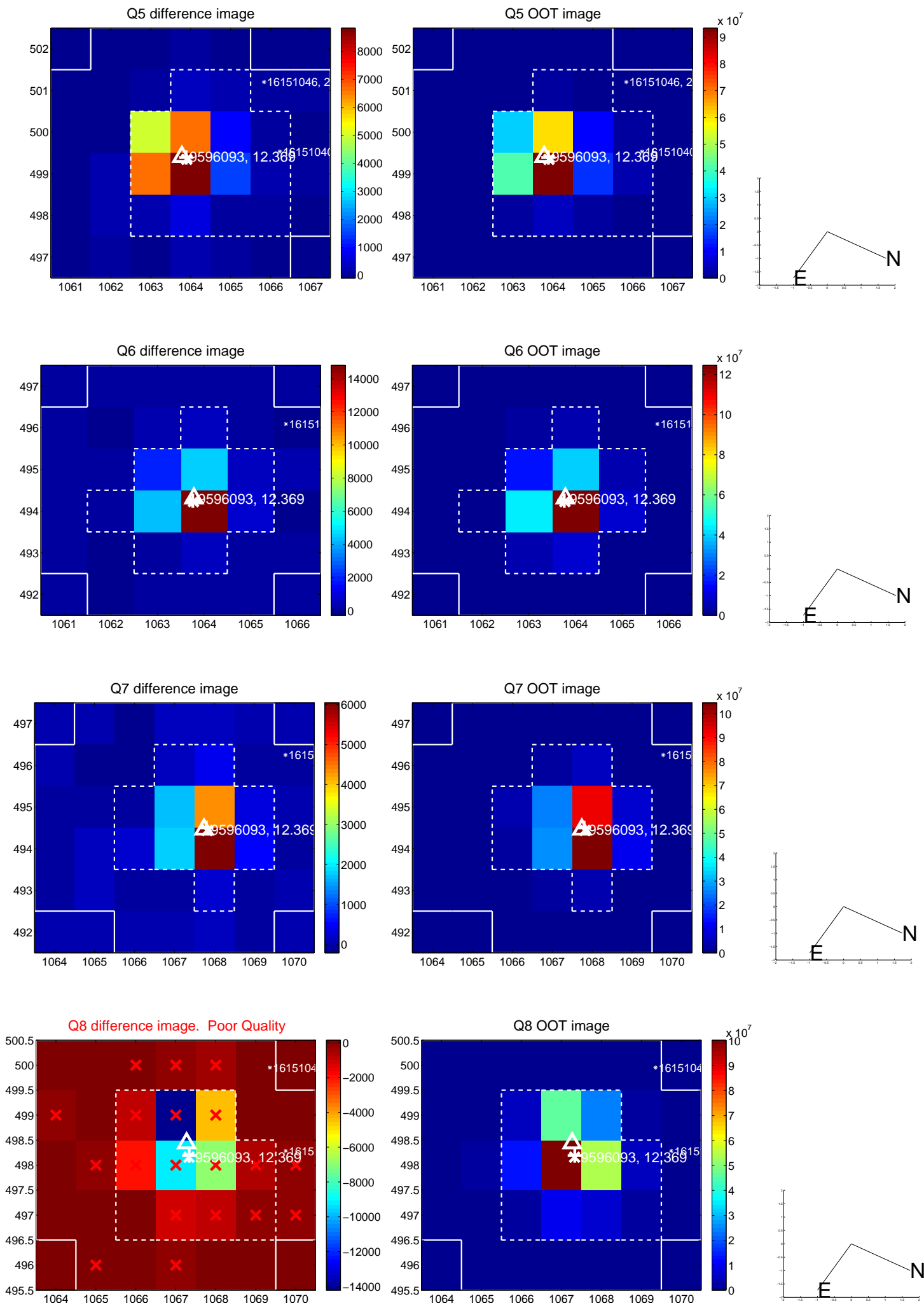


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

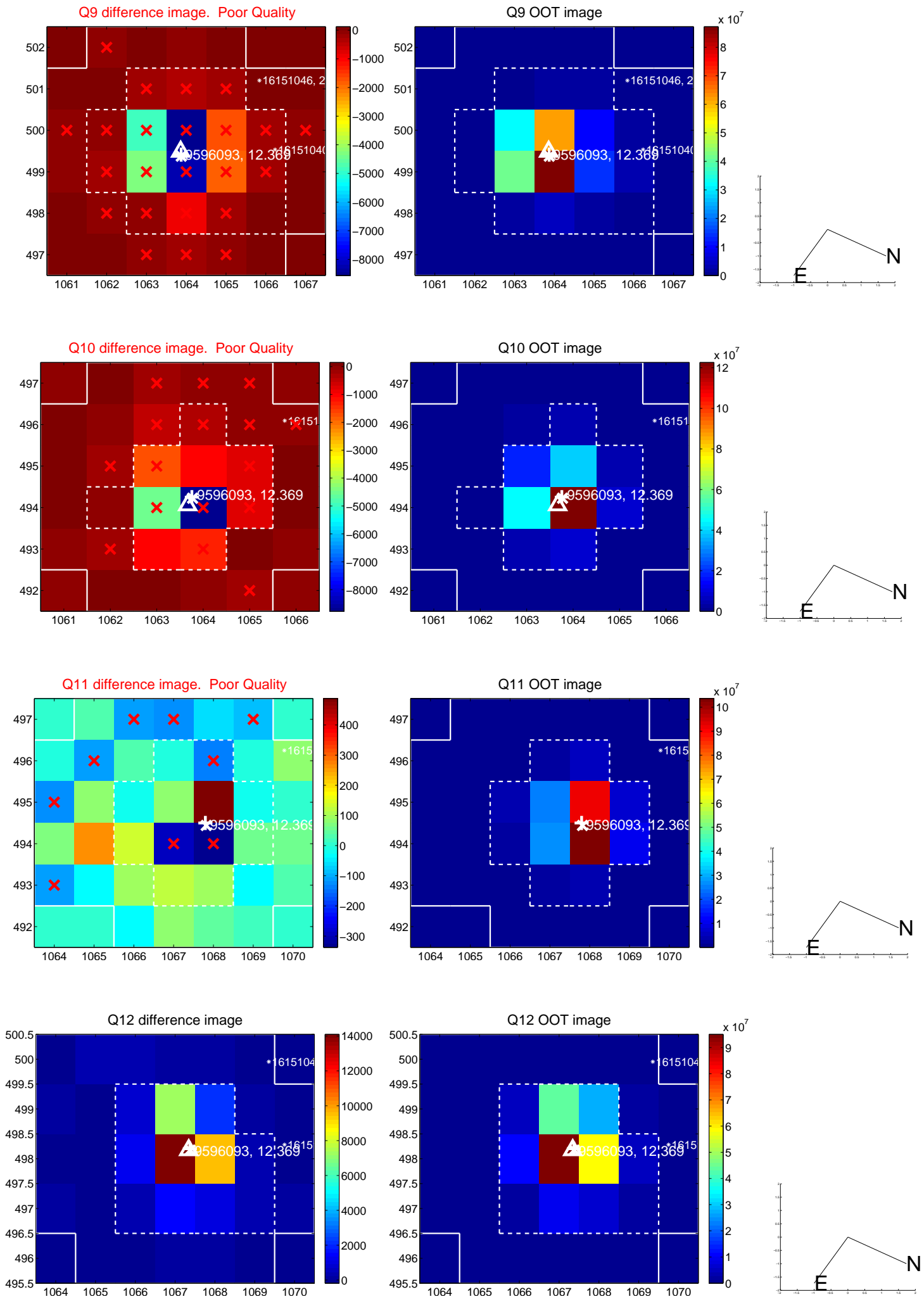
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



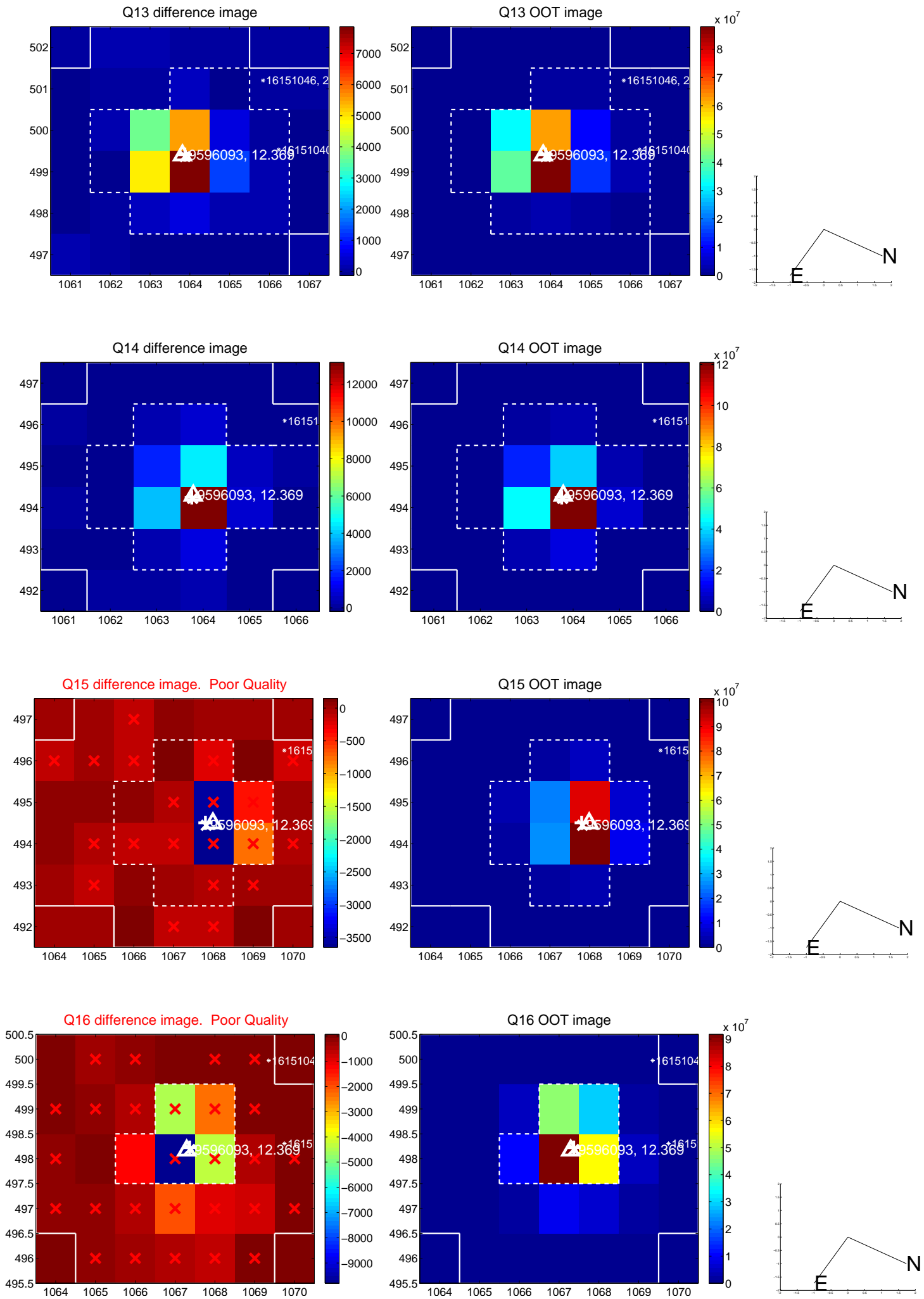
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



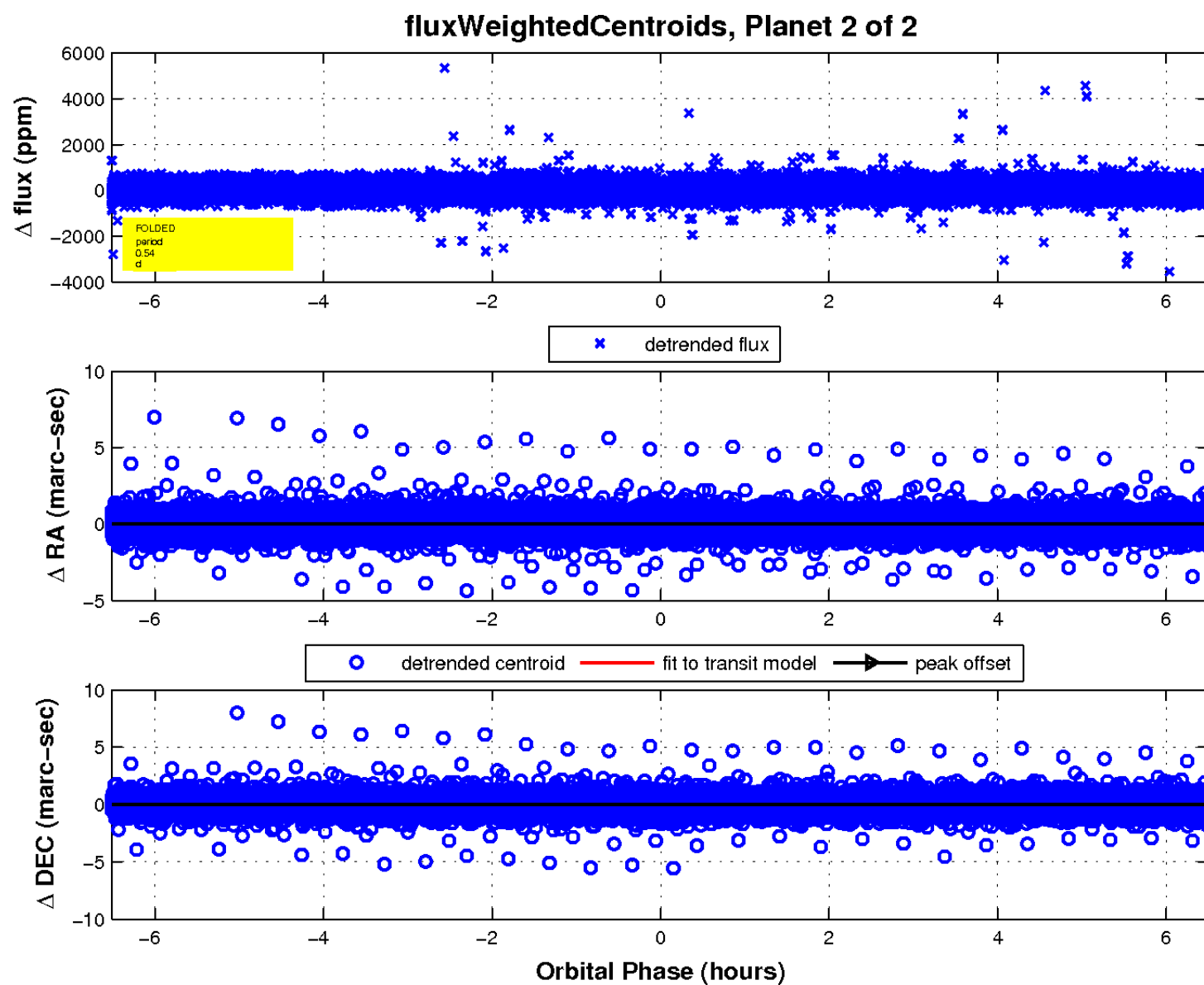
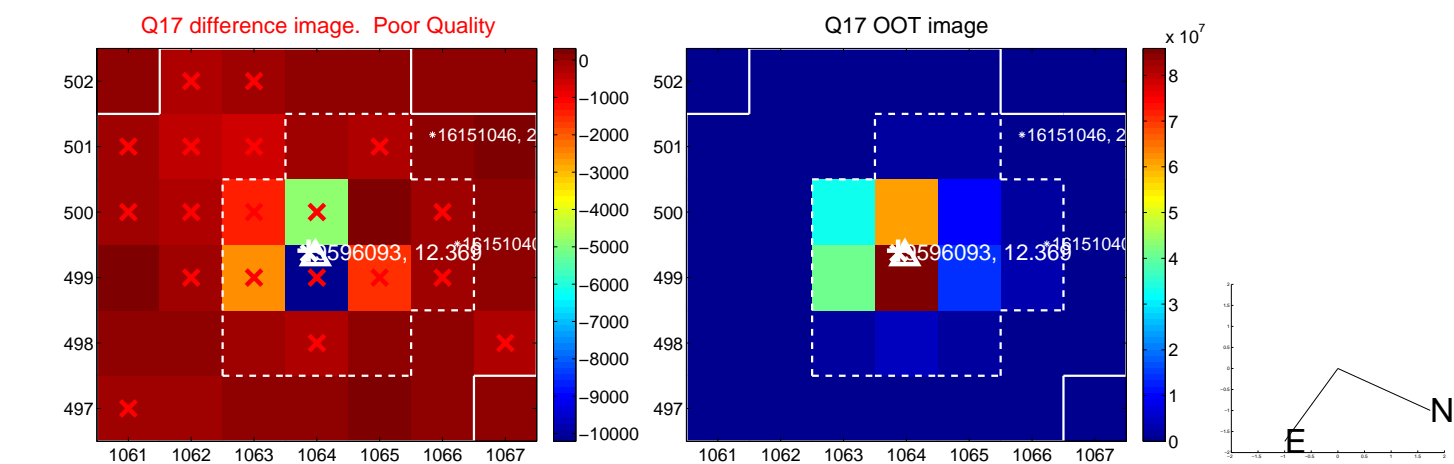
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

