

KIC 005035972

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})
005035972-01	OBS	0406.01	49.266780	141.921245	8450.1	5.505	316.1	319.8	1.14	5988	15.76	19.83
005035972-02	OBS	No	49.266885	133.608726	1133.0	4.694	49.5	51.1	1.14	5988	4.30	19.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005035972-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005035972-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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

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

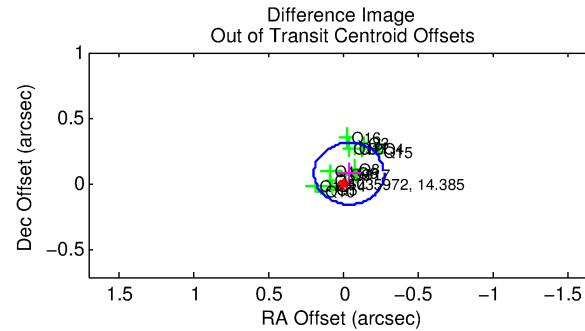
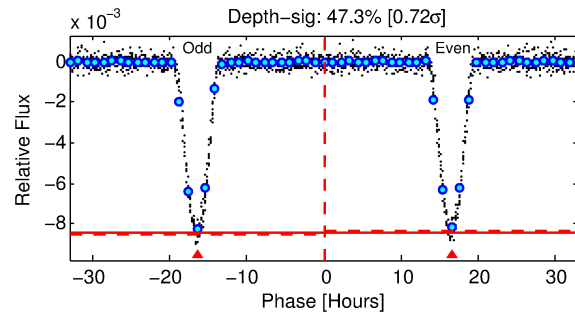
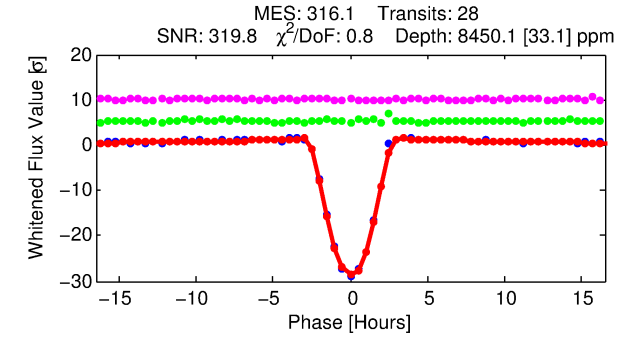
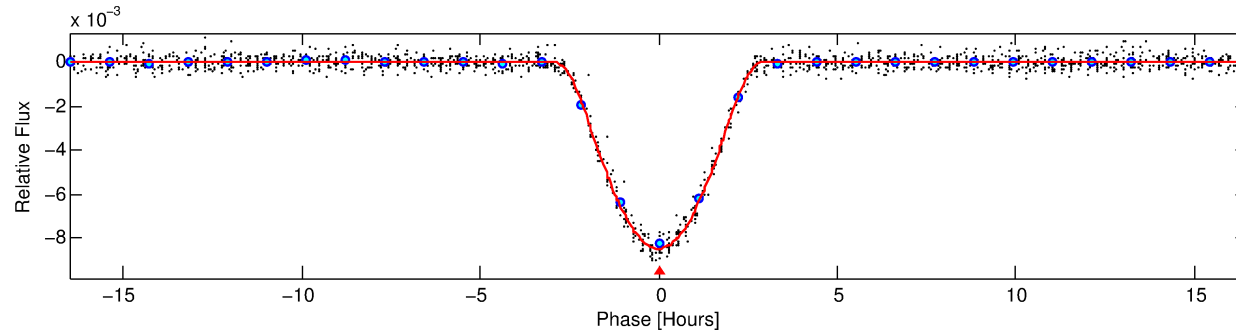
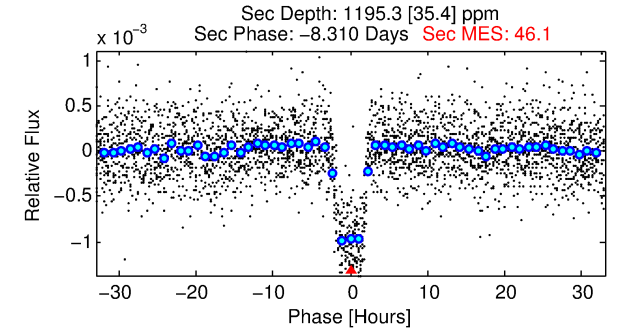
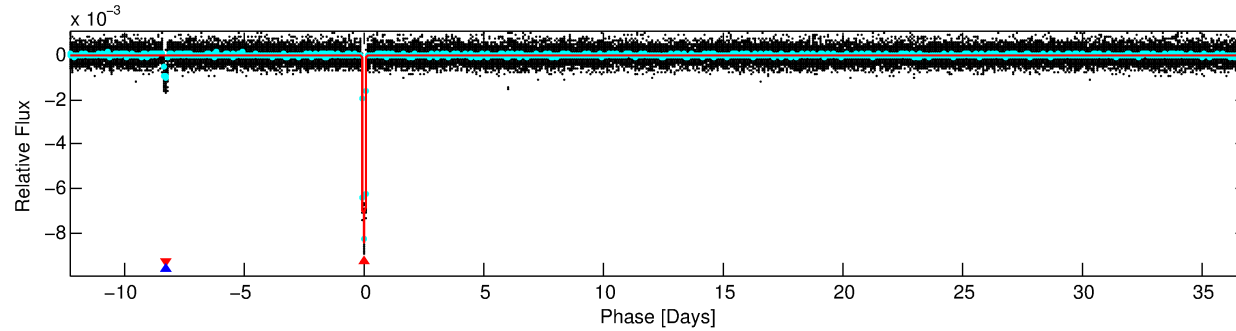
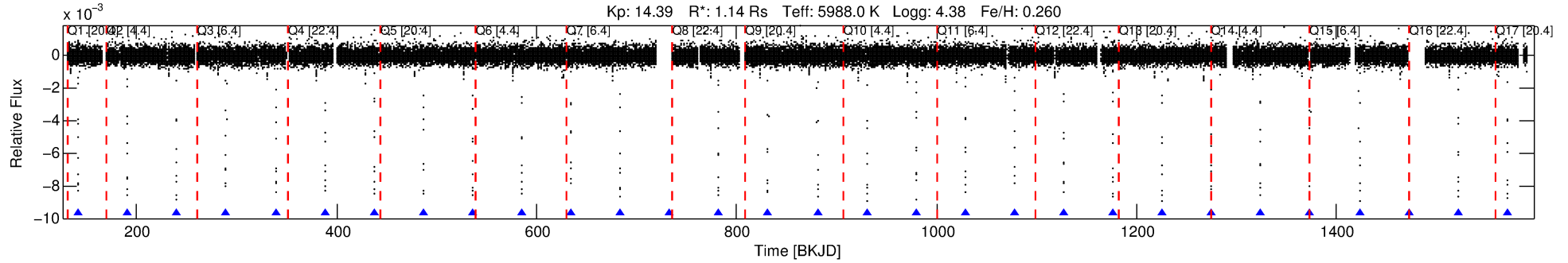
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005035972-01

No Significant Match Found

DV One-Page Summary

KIC: 5035972 Candidate: 1 of 2 Period: 49.267 d
KOI: K00406.01 Corr: 0.999



DV Fit Results:

Period = 49.26678 [0.00002] d
Epoch = 141.9212 [0.0004] BKJD
Rp/R* = 0.1263 [0.0091]
a/R* = 40.39 [0.73]
b = 0.96 [0.02]
Seff = 19.83 [8.12]
Teq = 538 [55] K
Rp = 15.76 [5.22] Re
a = 0.2755 [0.0733] AU
Ag = 201.02 [81.69] [2.45 σ]
Teffp = 3133 [167] K [14.75 σ]

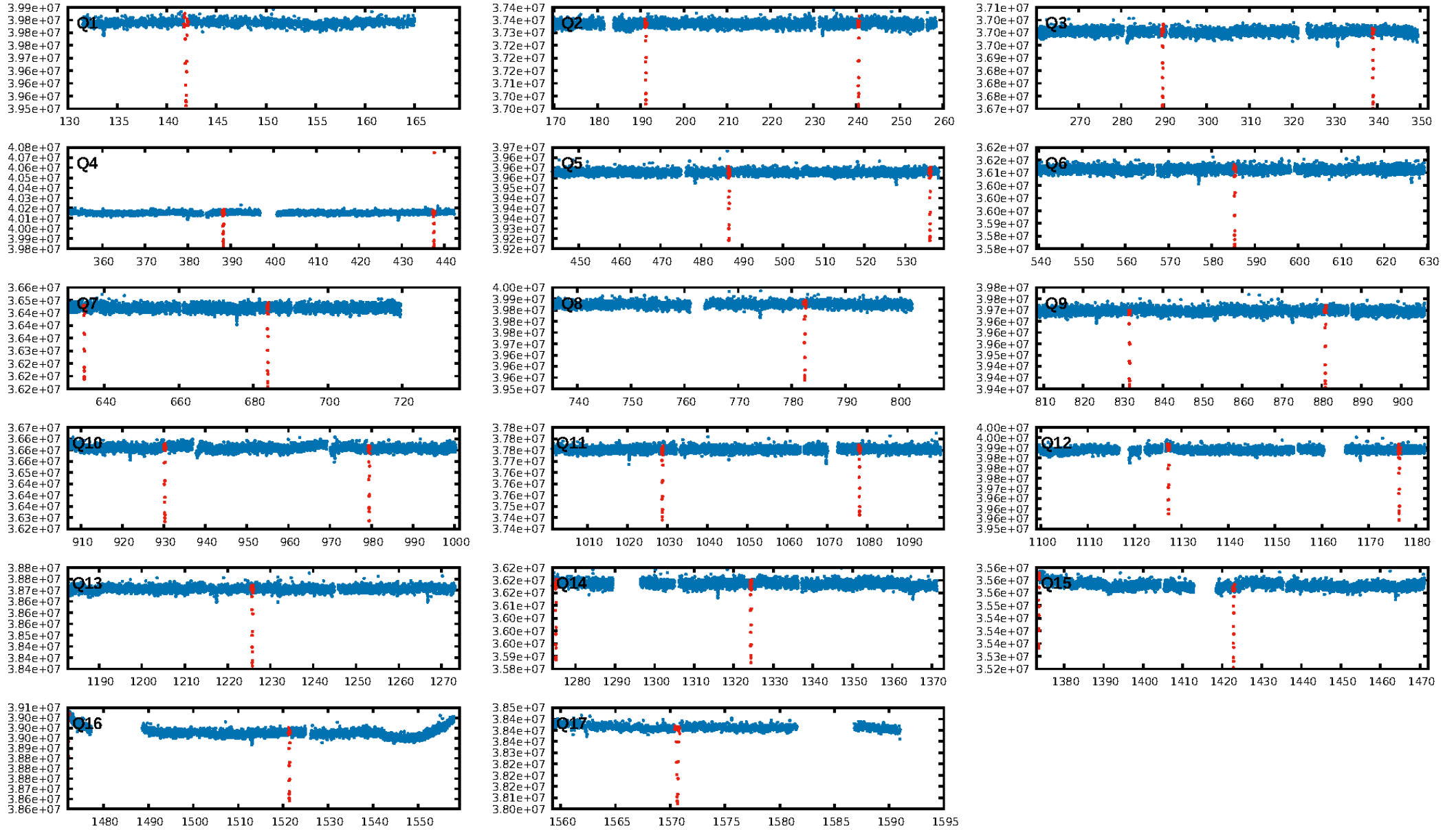
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [26/26]
GhostDiagnostic-chr: 5.329
Centroid-sig: 0.0%
Centroid-so: 0.463 arcsec [11.63 σ]
OotOffset-rm: 0.092 arcsec [1.19 σ]
KicOffset-rm: 0.097 arcsec [1.42 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

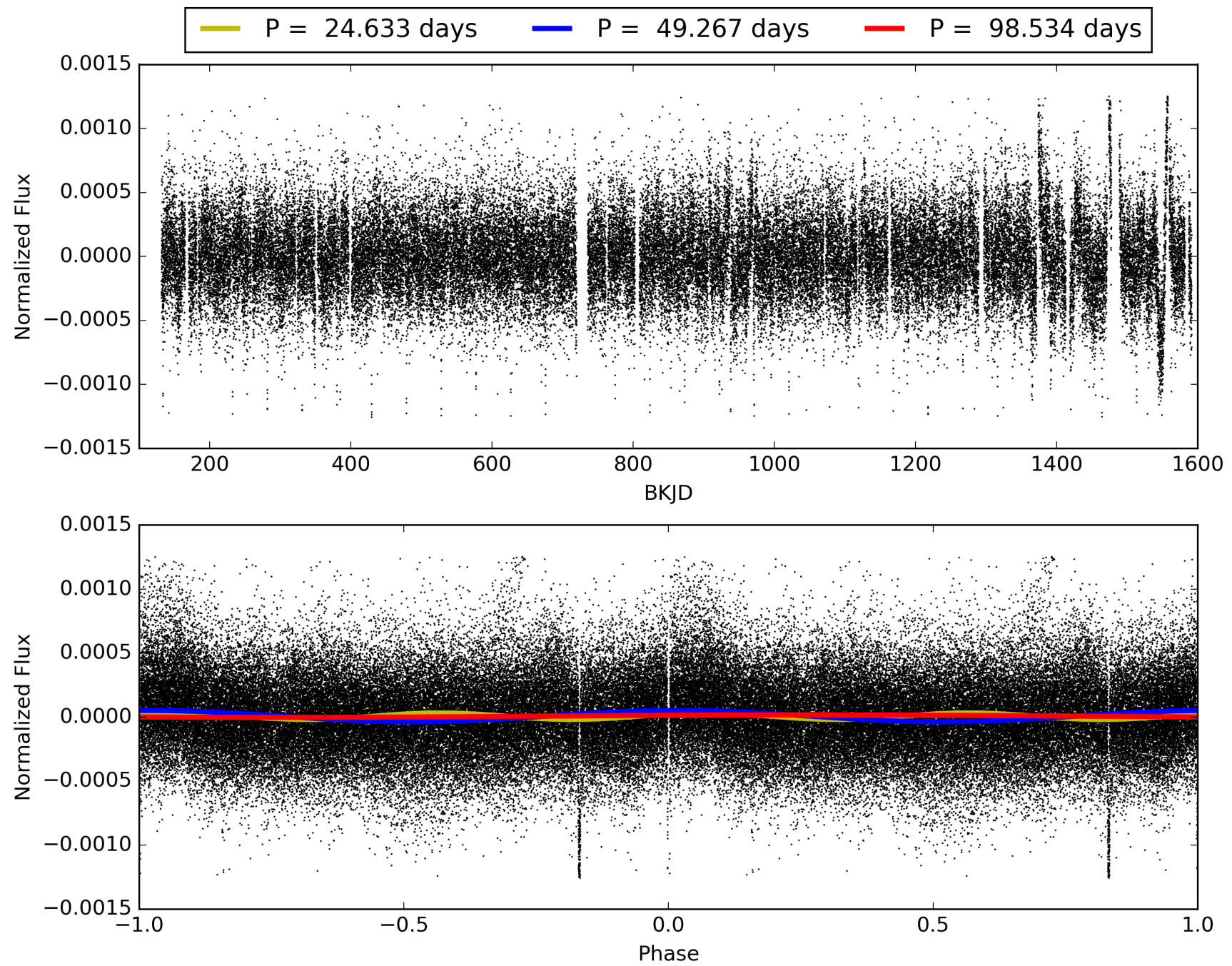
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:15:18 Z

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

TCE 005035972-01, PDC Light Curves

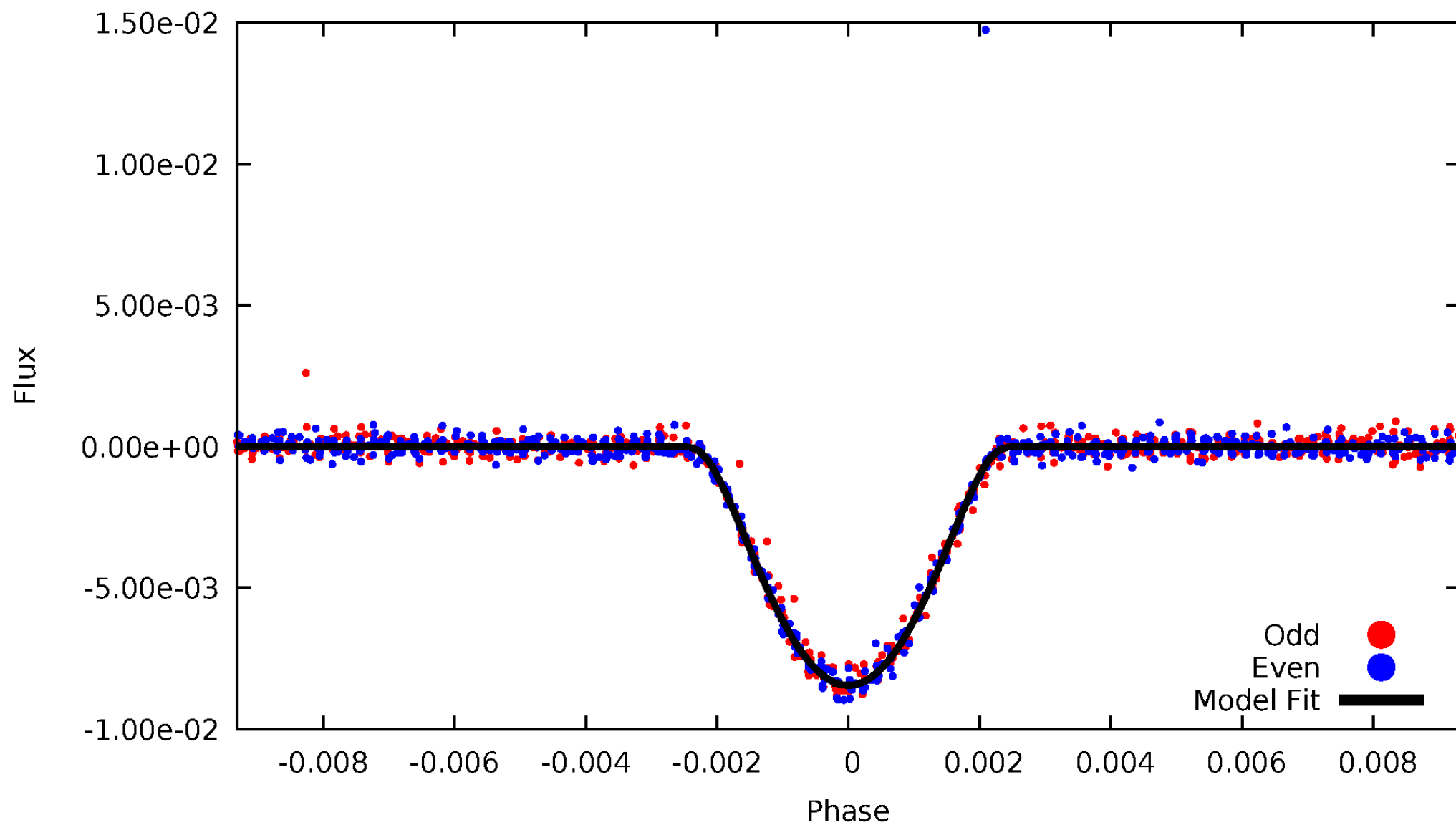


TCE 005035972-01



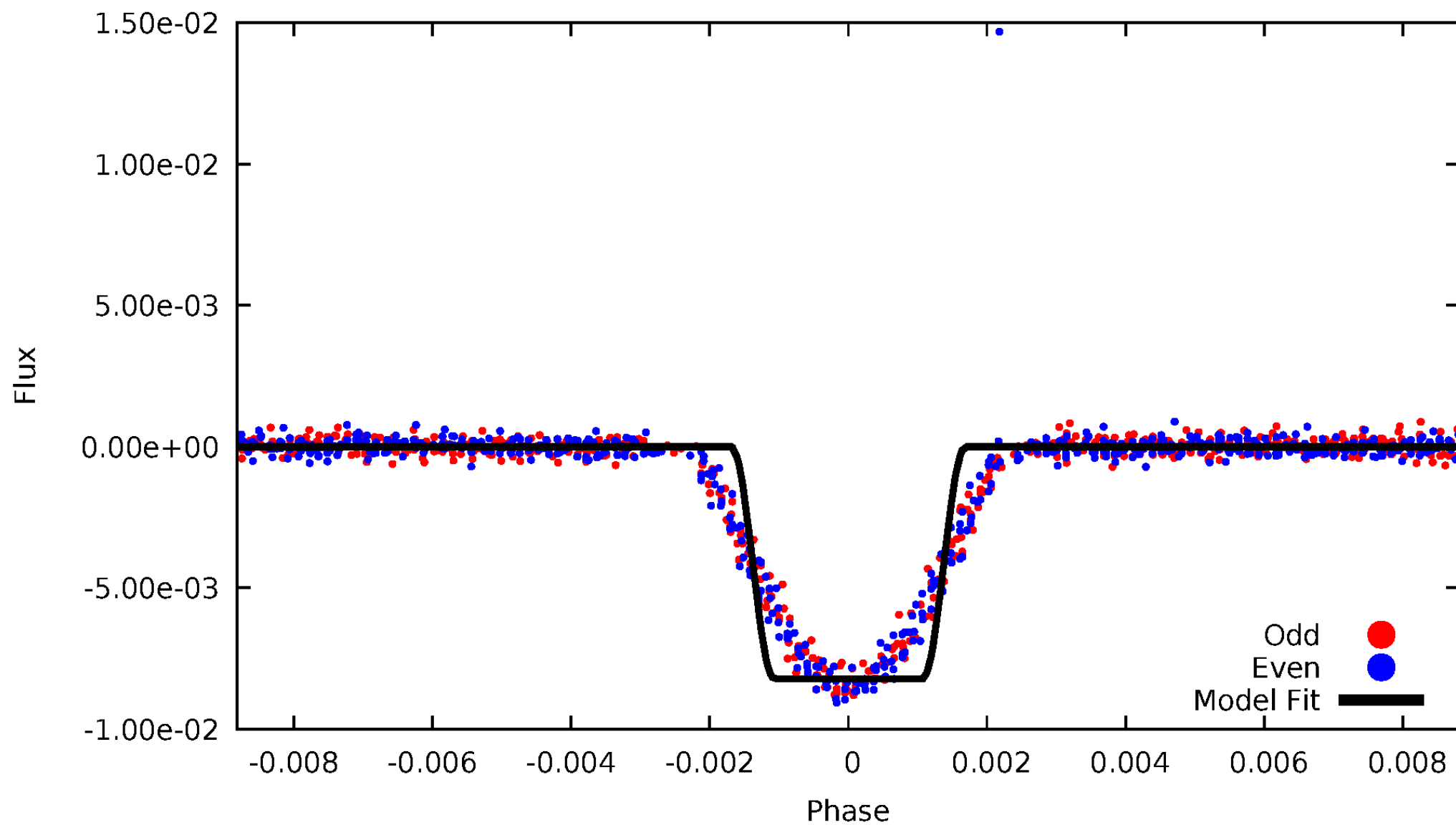
DV Odd/Even

TCE 005035972-01



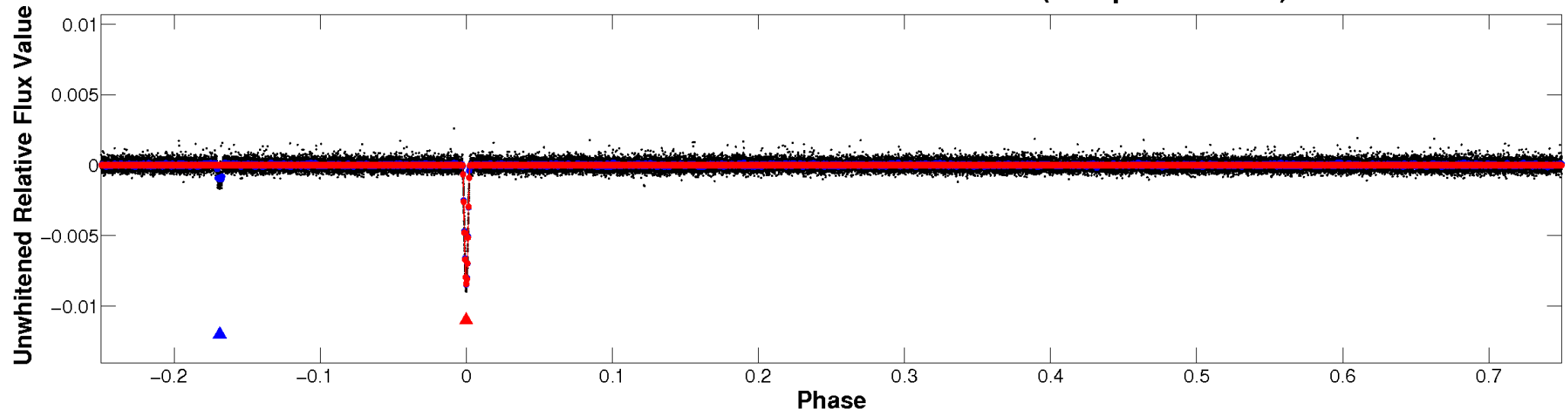
ALT Odd/Even

TCE 005035972-01

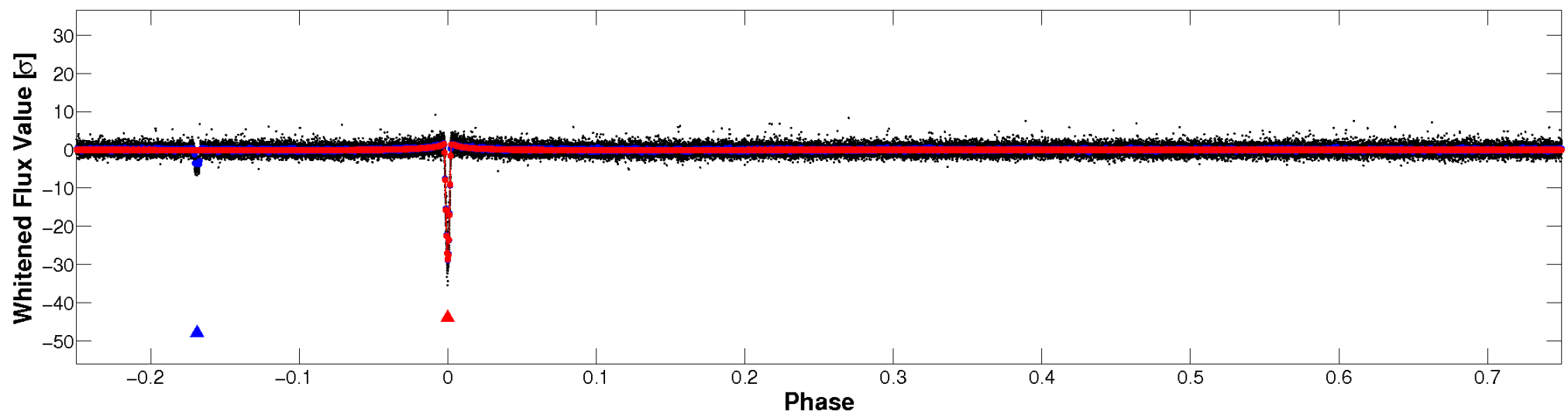


Non-Whitened Vs. Whitened Light Curve

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

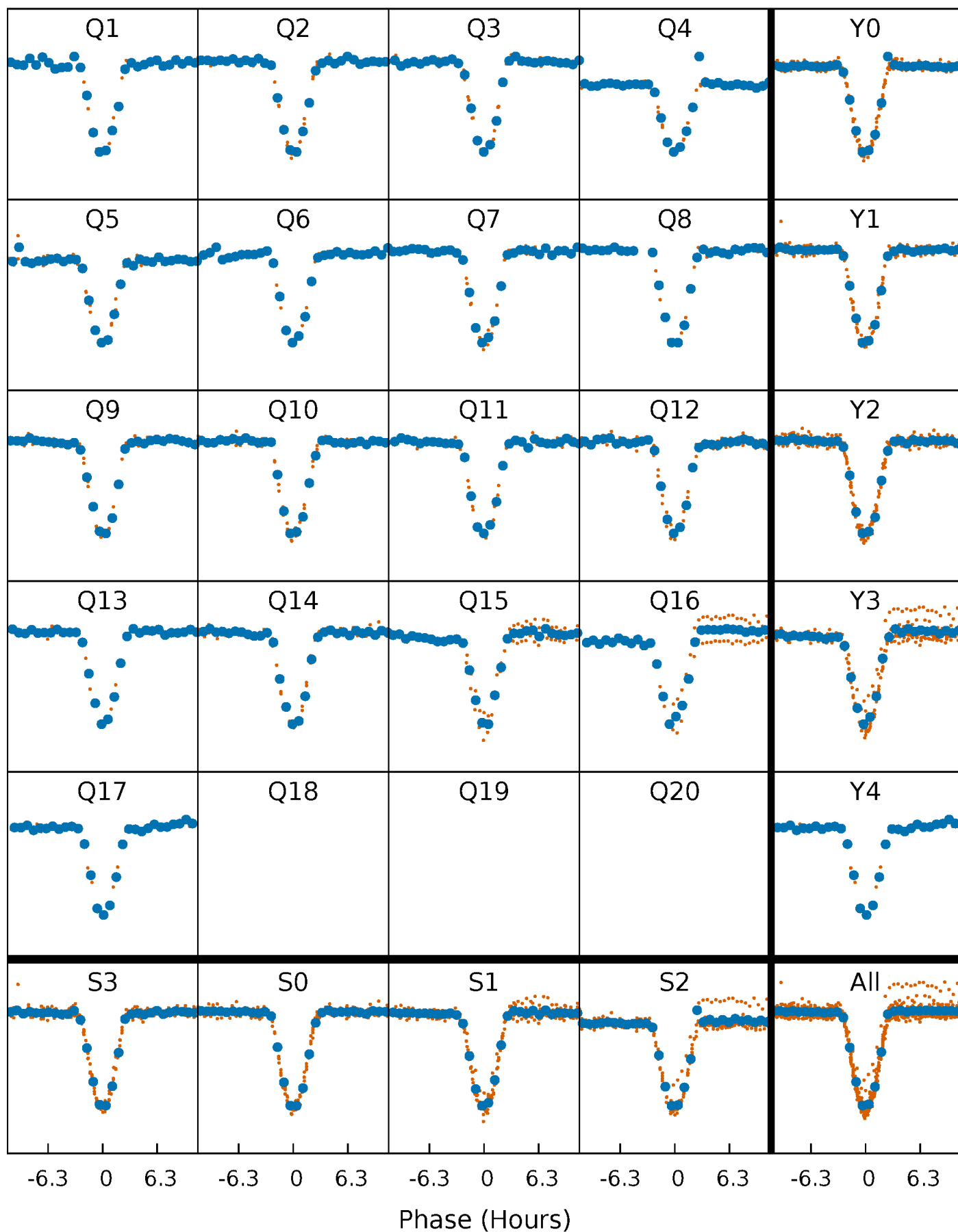


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



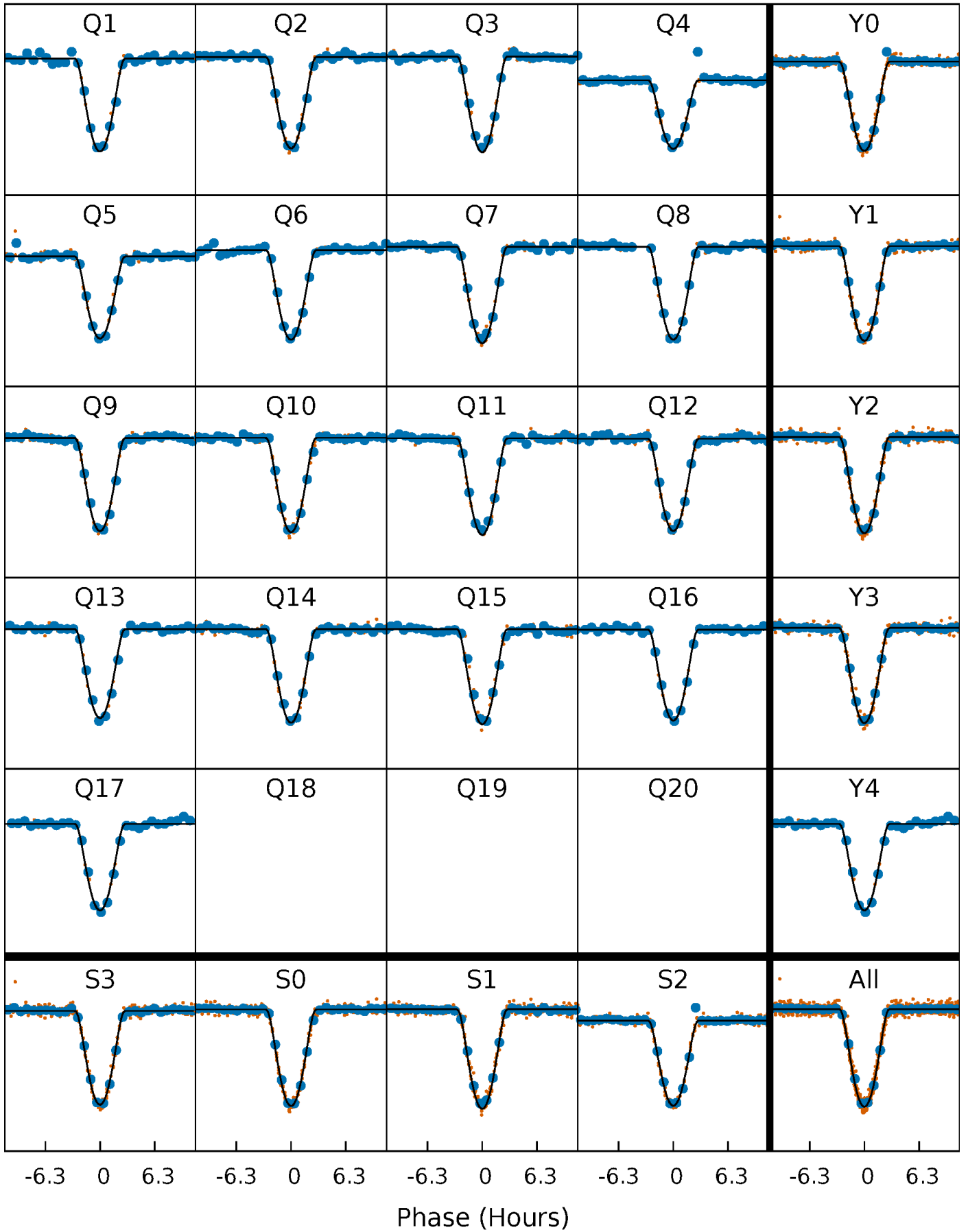
PDC Quarter-Phased Transit Curves

TCE 005035972-01 P= 49.266780 Days $T_0=141.921245$ (BKJD)



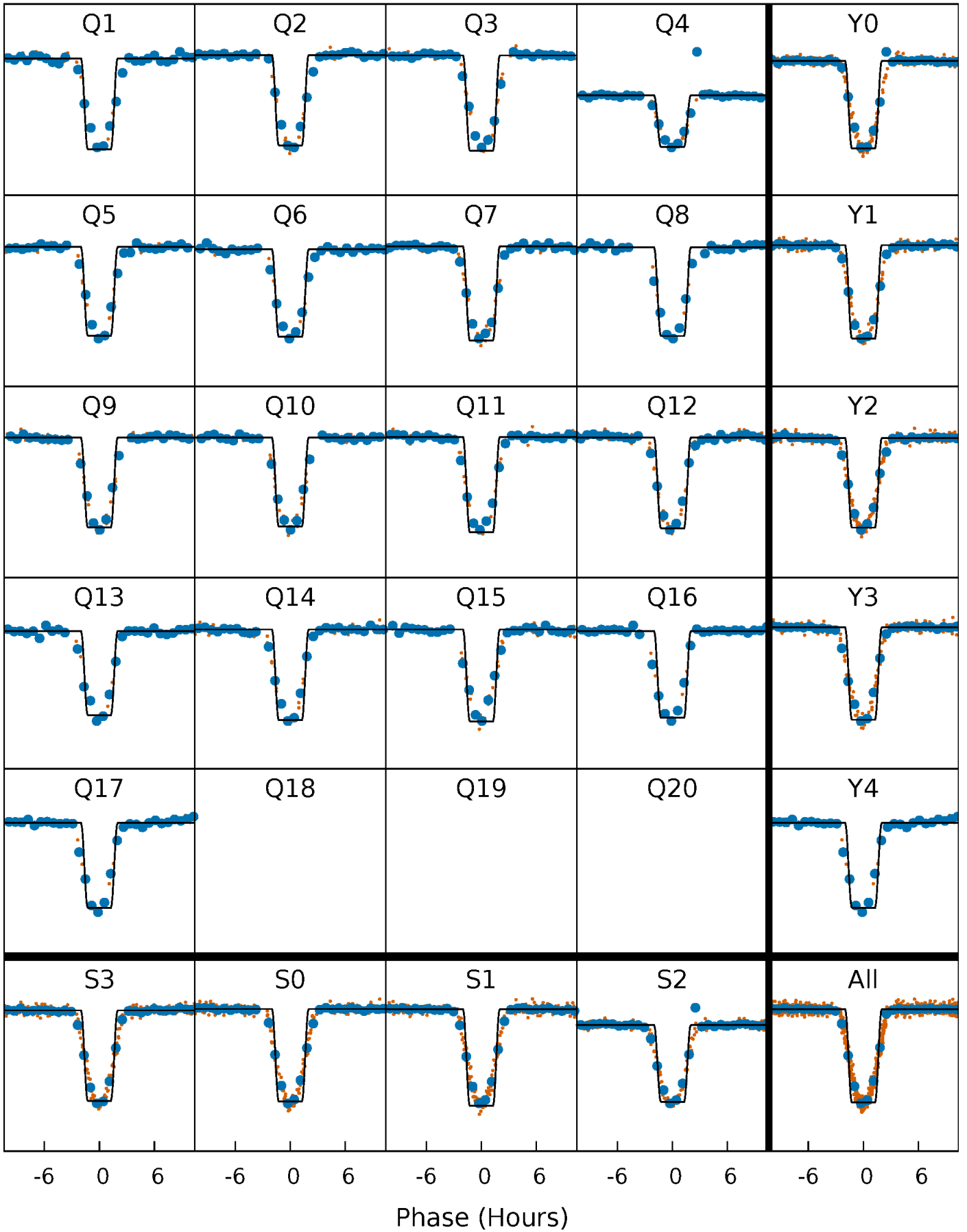
DV Quarter-Phased Transit Curves

TCE 005035972-01 P= 49.266780 Days $T_0=141.921245$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

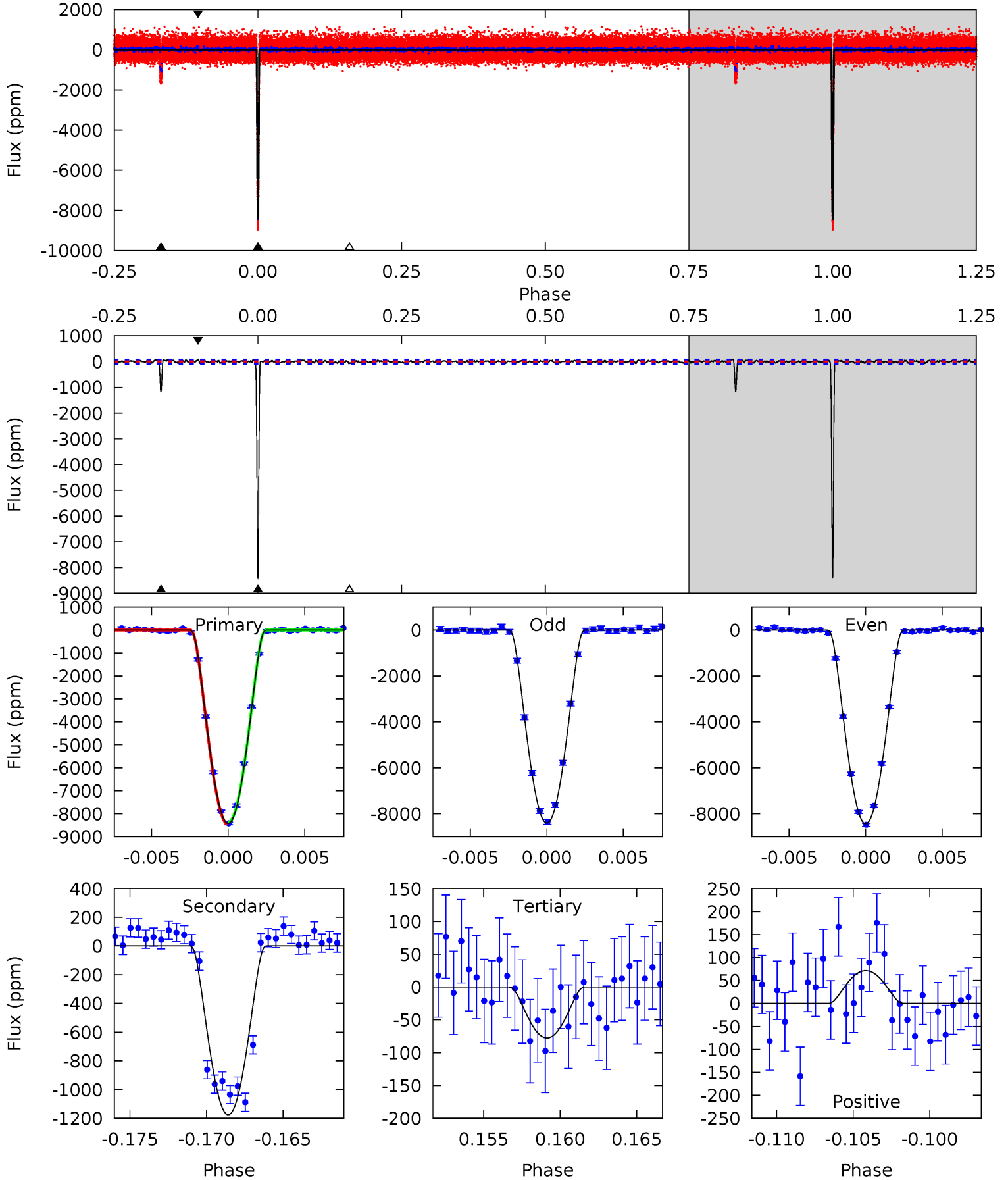
TCE 005035972-01 P= 49.267271 Days $T_0=141.913985$ (BKJD)



DV Model-Shift Uniqueness Test

005035972-01, P = 49.266780 Days, E = 92.654465 Days

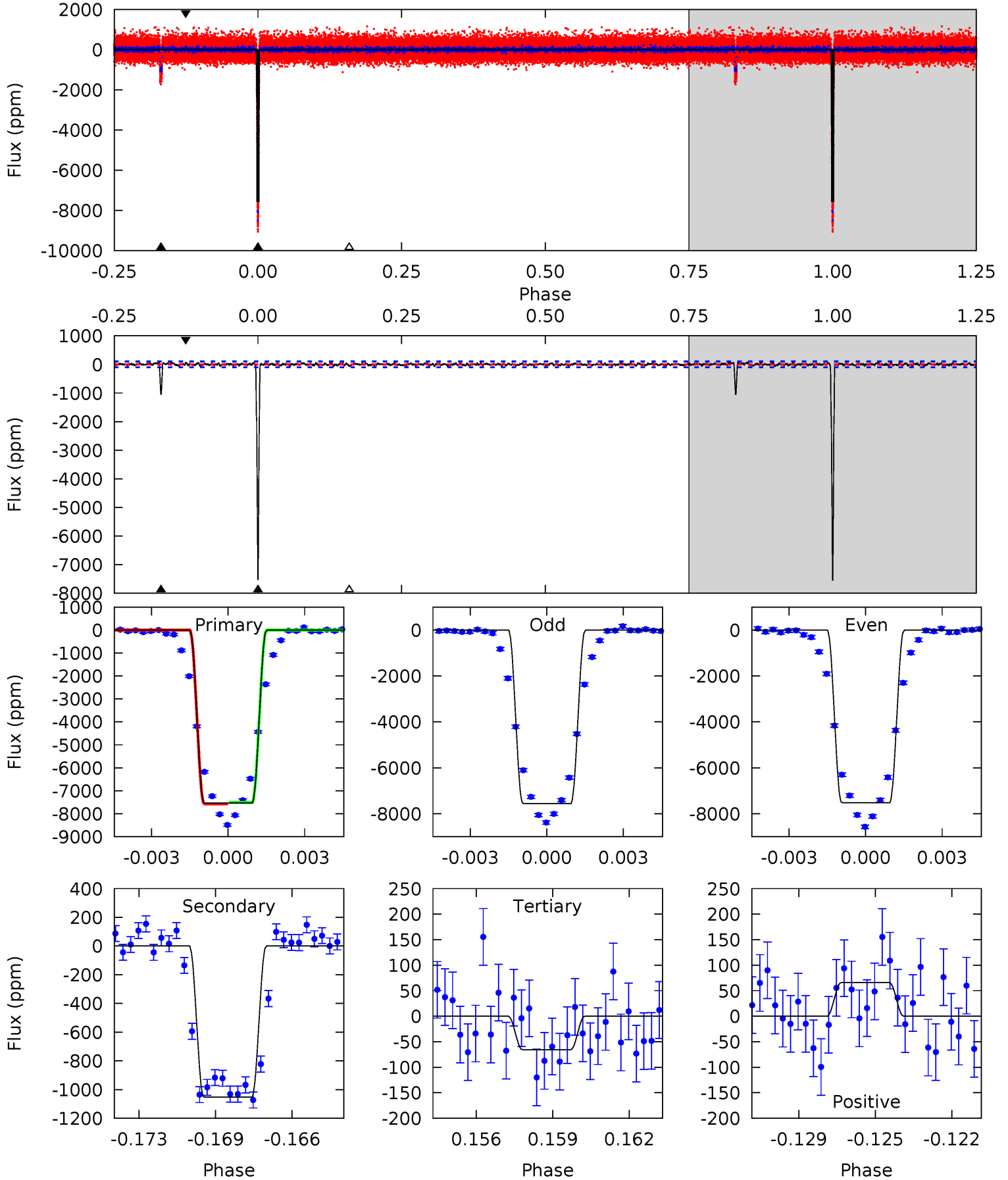
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
564.1	78.7	5.19	4.79	5.16	2.81	1.63	559.0	559.4	73.5	73.9	1.19	1.00	0.01	2.48



Alt Model-Shift Uniqueness Test

005035972-01, P = 49.267271 Days, E = 92.646714 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
392.3	54.8	3.42	3.44	5.23	2.93	1.20	388.9	388.9	51.4	51.4	1.06	0.99	0.01	1.85



Stellar Parameters For KIC 005035972

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5988^{+169}_{-232}	$4.382^{+0.087}_{-0.203}$	$0.260^{+0.150}_{-0.300}$	$1.143^{+0.370}_{-0.159}$	$1.152^{+0.138}_{-0.152}$	$1.086^{+0.420}_{-0.582}$
	+3%/-4%	+2%/-5%	+58%/-115%	+32%/-14%	+12%/-13%	+39%/-54%
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 005035972-01 / KOI 0406.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1176 ± 15	$16.04^{+2.73}_{-1.76}$	761^{+56}_{-42}	3569^{+122}_{-110}	185^{+45}_{-44}
Alt.	-1053 ± 19	$11.64^{+2.13}_{-1.59}$	761^{+57}_{-42}	3918^{+173}_{-162}	324^{+99}_{-87}

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 $A_{obs} \gg 1.0$

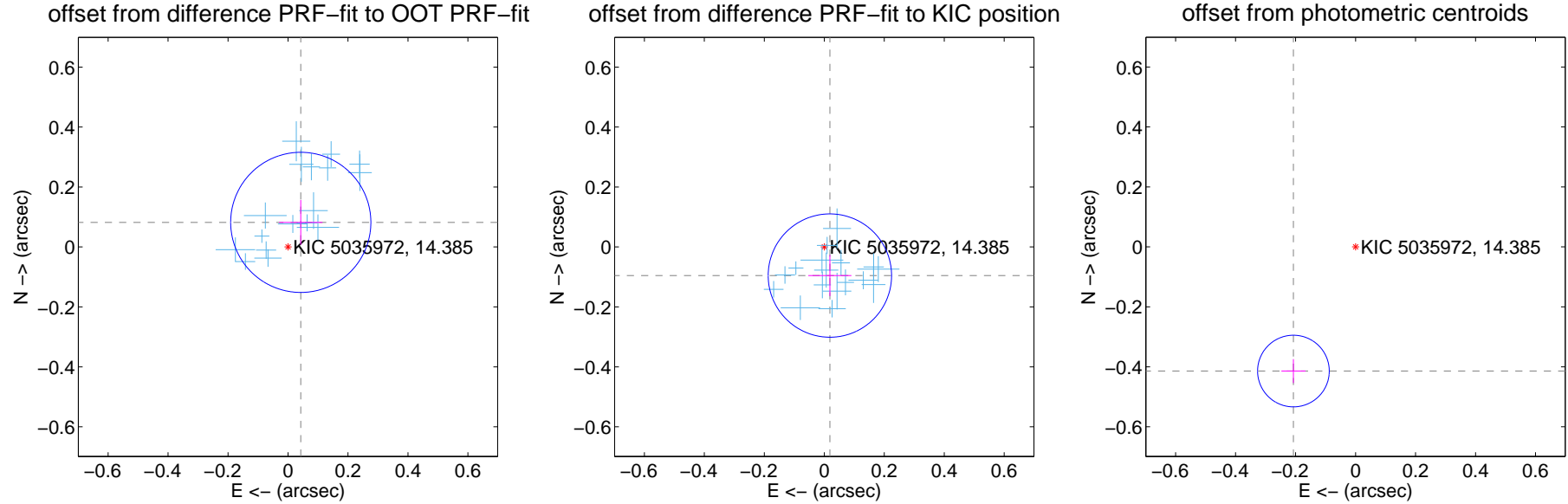
DV Centroid Data

Supplemental centroid analysis for 005035972-01. Kepler magnitude: 14.38. Transit SNR 319.78

There are 17 quarters with good PRF difference image offsets

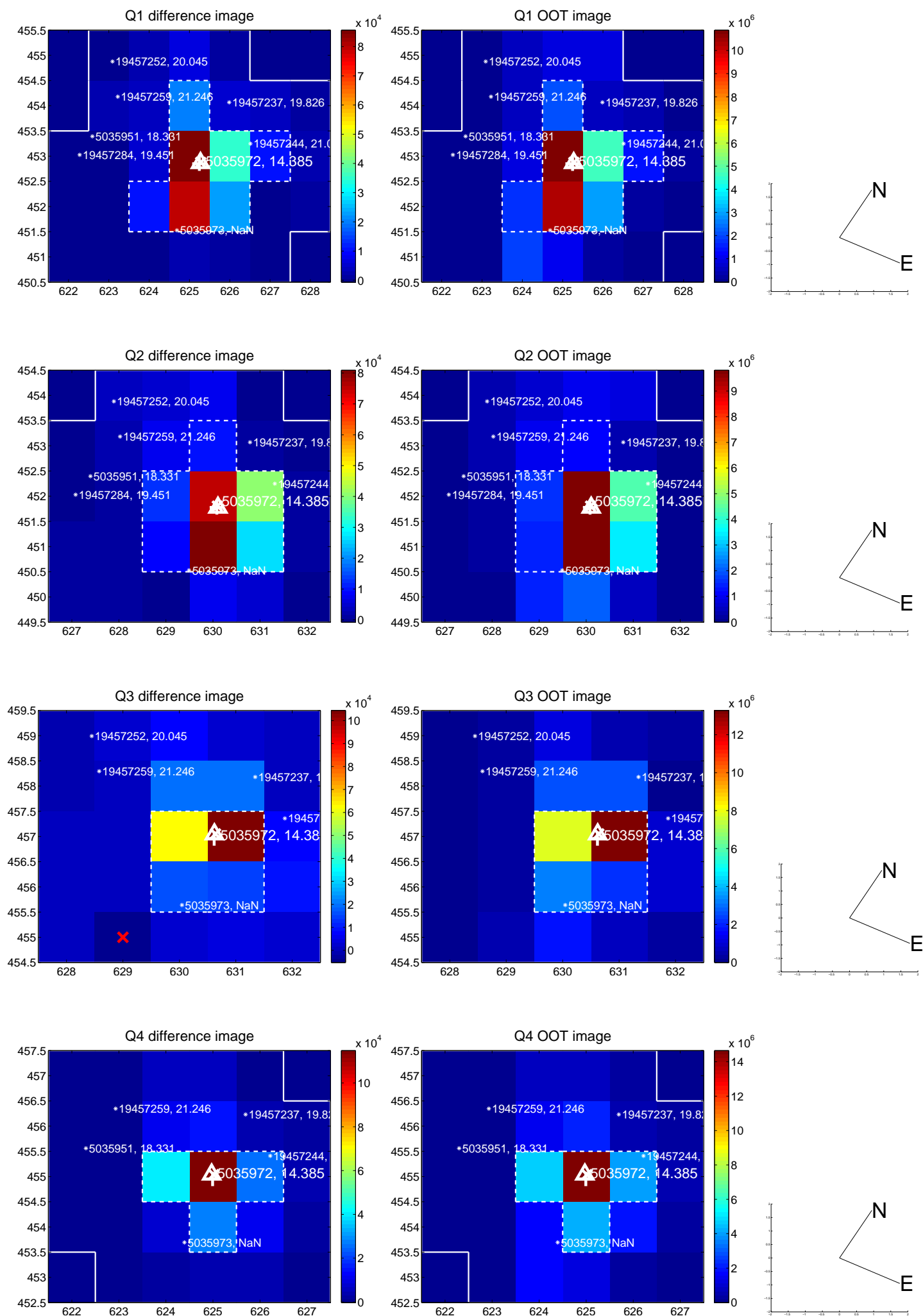
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.092 ± 0.078	1.19	-0.043 ± 0.073	0.082 ± 0.075
PRF-fit source offset from KIC position	0.097 ± 0.069	1.42	-0.019 ± 0.072	-0.095 ± 0.068
photometric centroid source offset	0.46 ± 0.04	11.63	0.21 ± 0.04	-0.41 ± 0.04

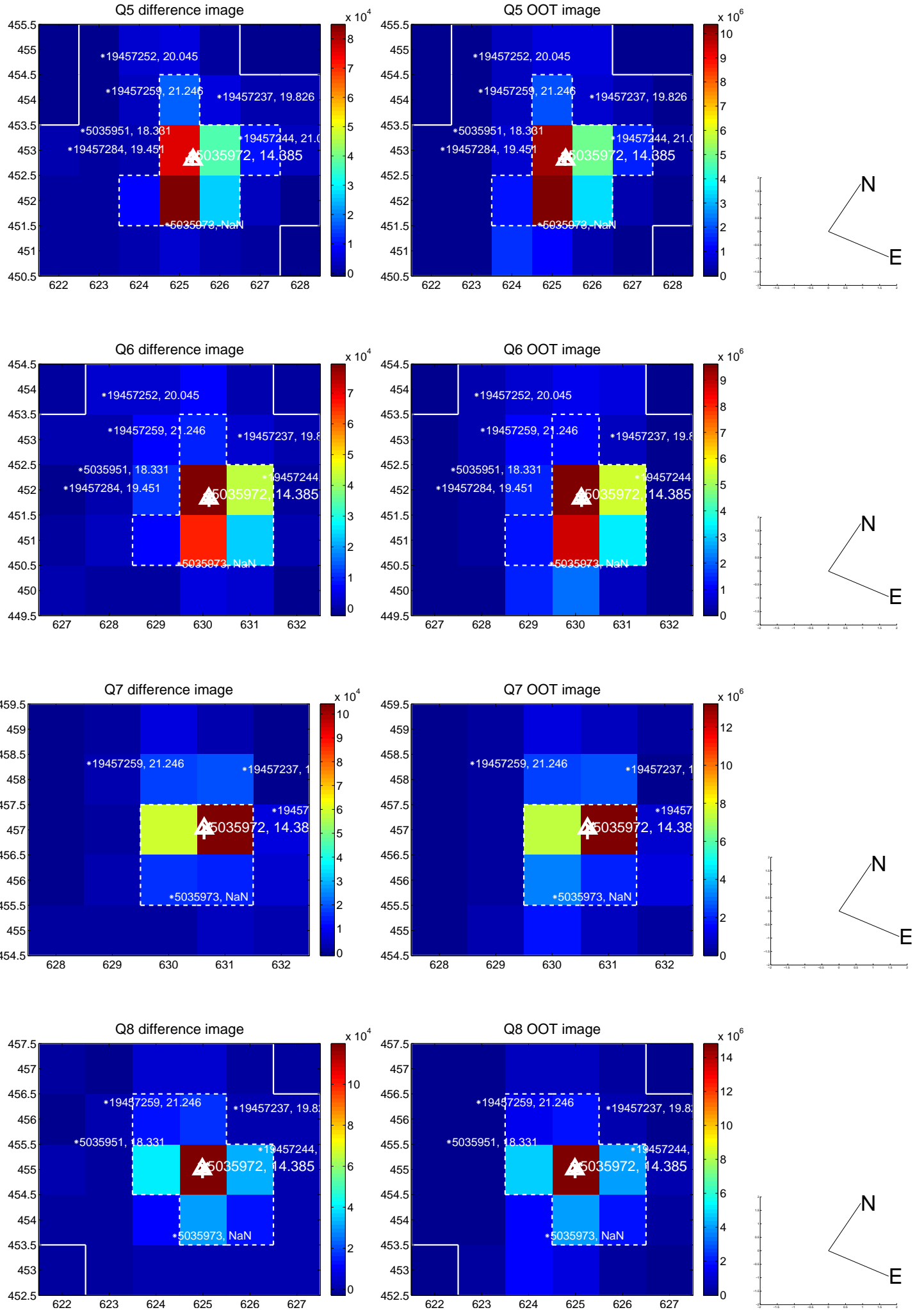


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

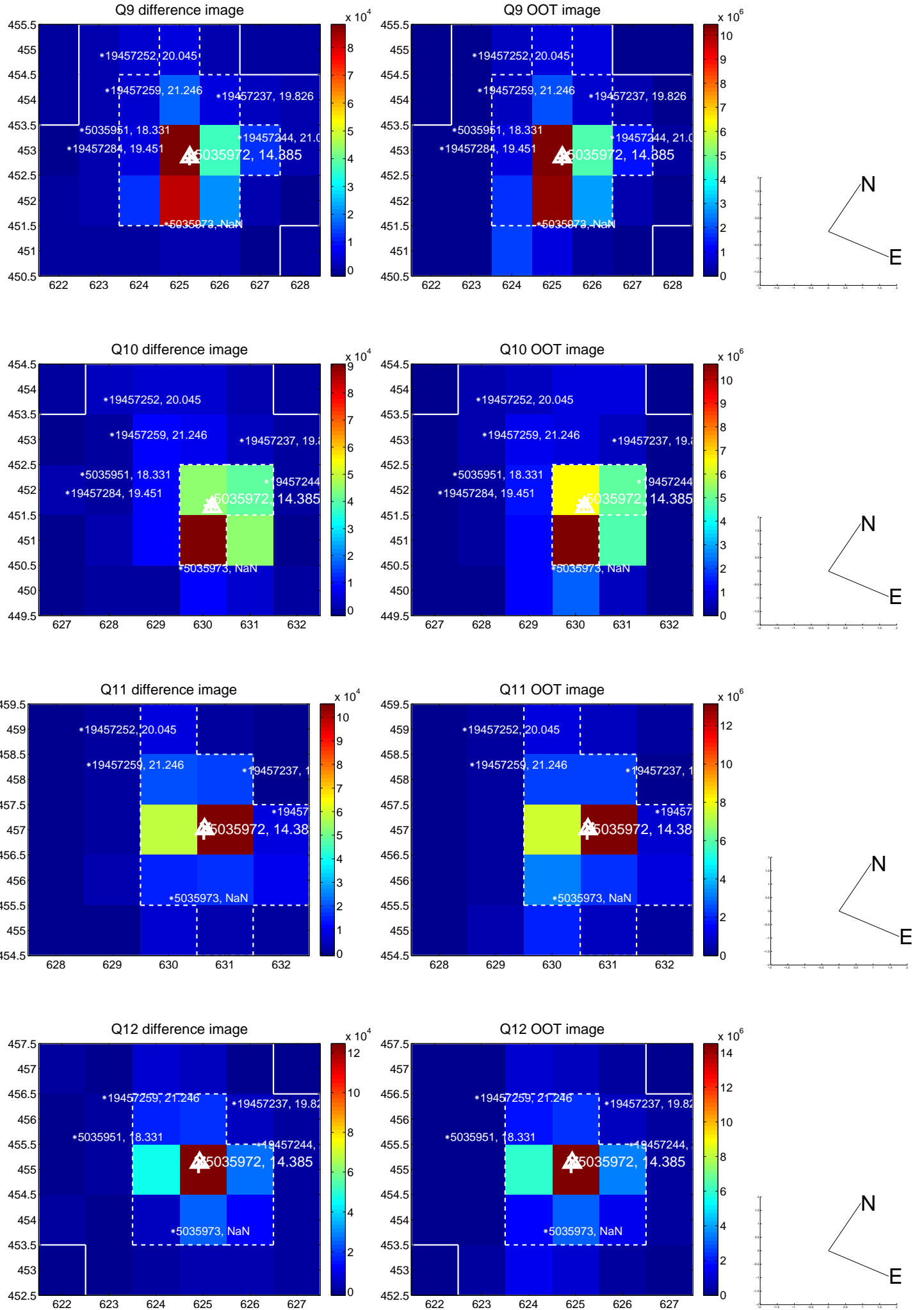
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



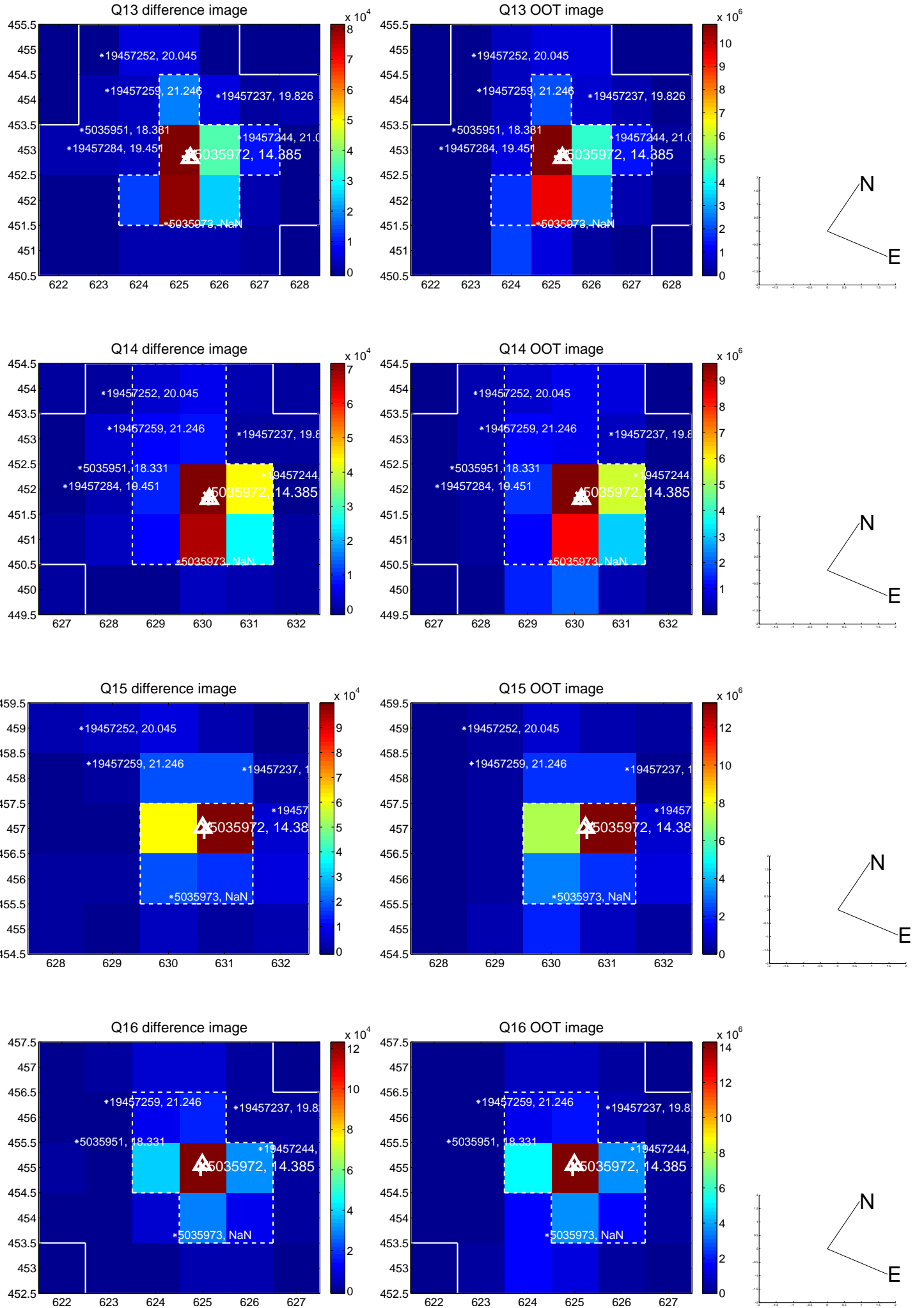
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



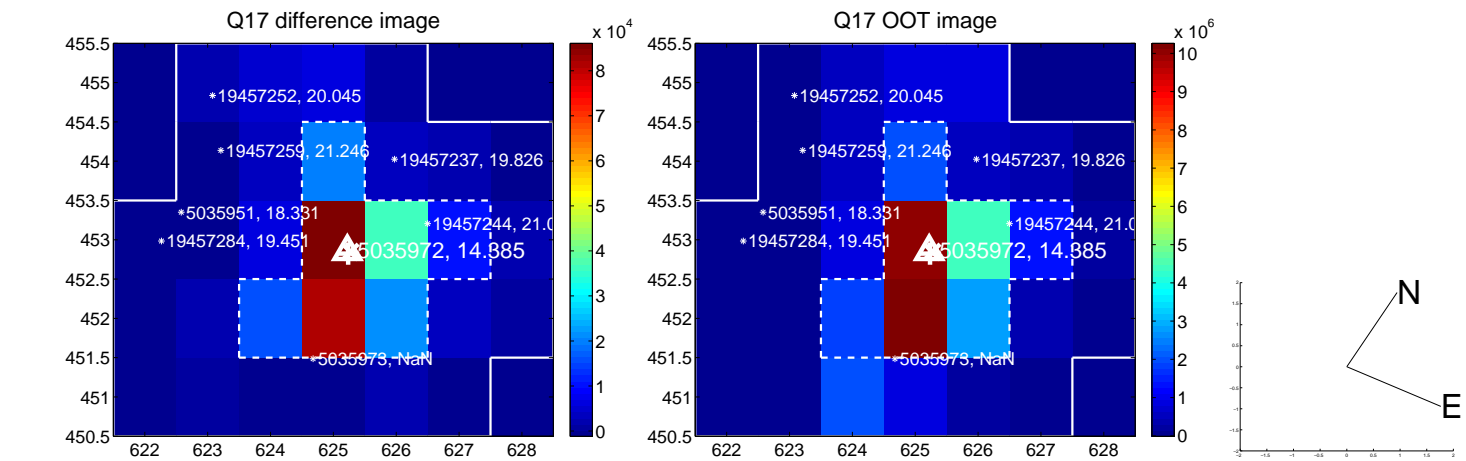
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



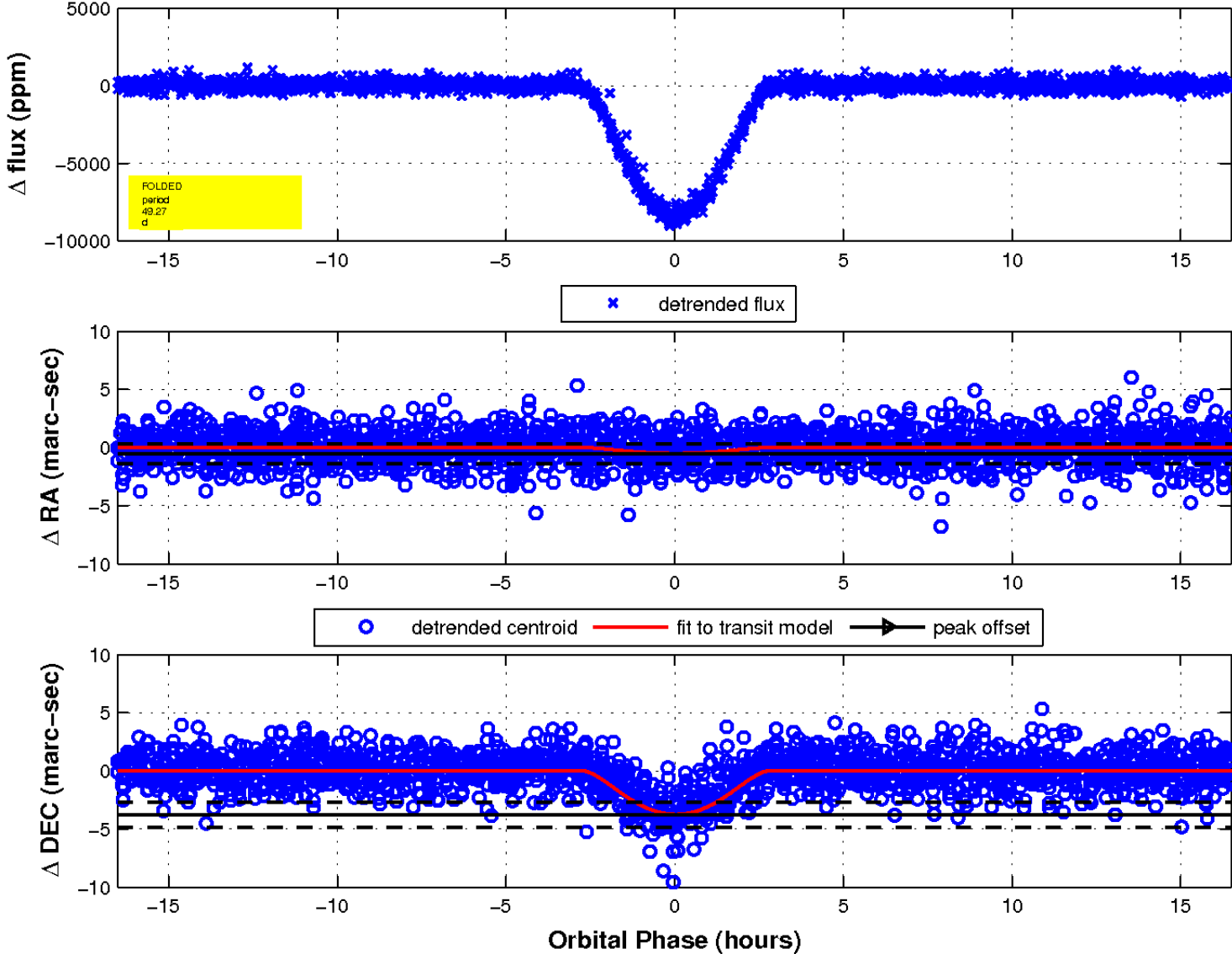
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

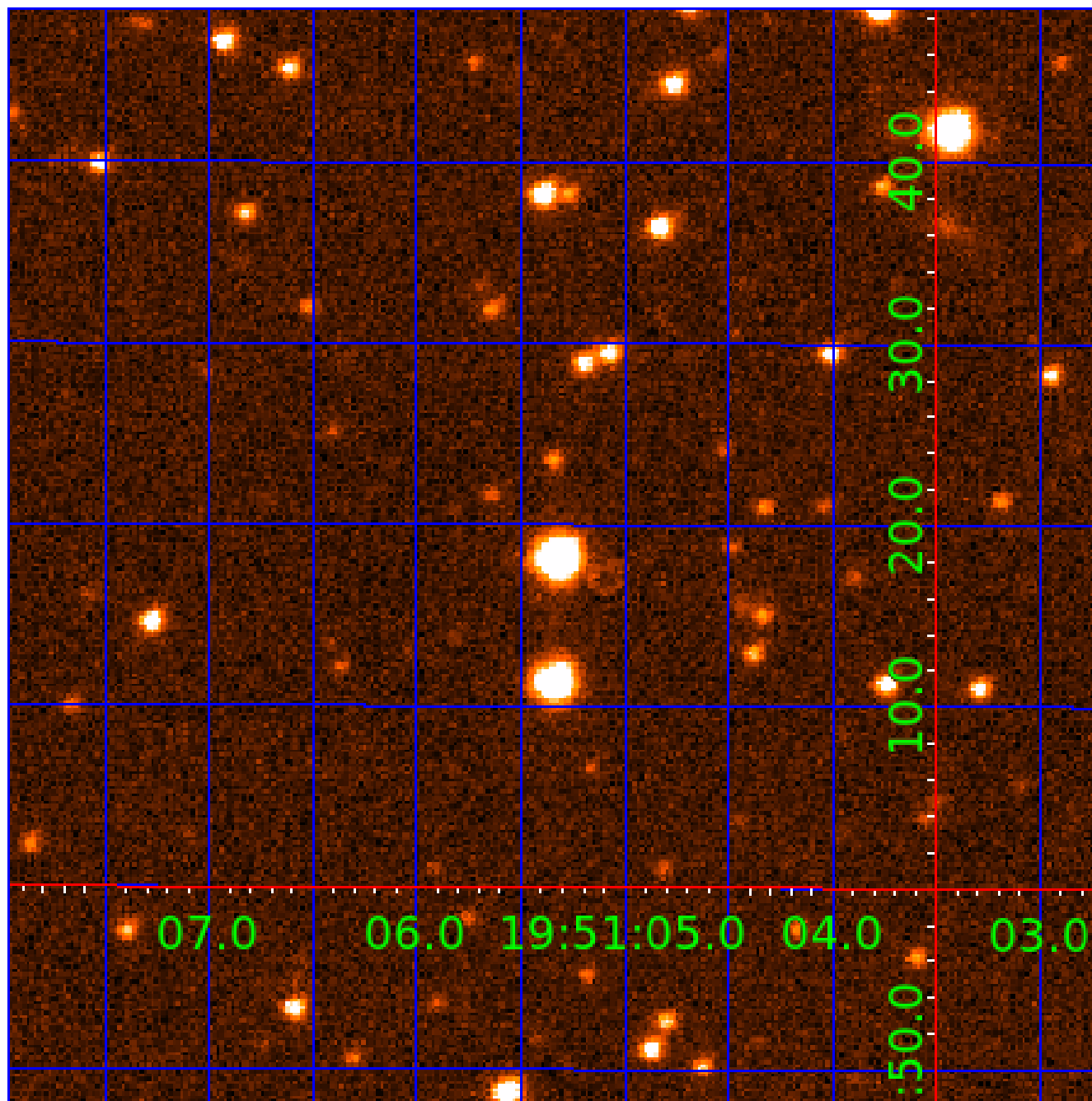


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005035972

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})
005035972-01	OBS	0406.01	49.266780	141.921245	8450.1	5.505	316.1	319.8	1.14	5988	15.76	19.83
005035972-02	OBS	No	49.266885	133.608726	1133.0	4.694	49.5	51.1	1.14	5988	4.30	19.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005035972-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005035972-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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 005035972-02

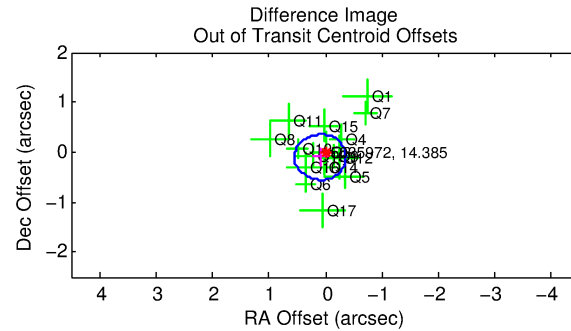
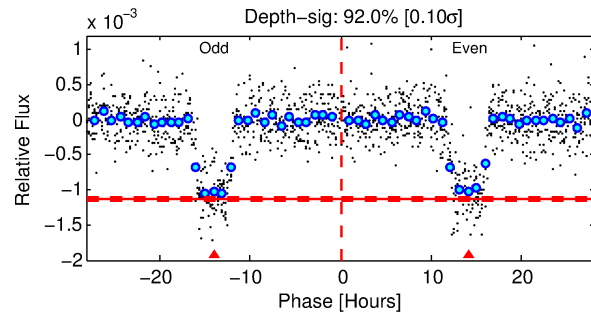
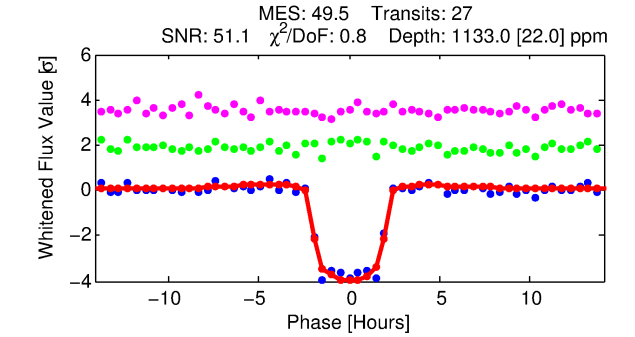
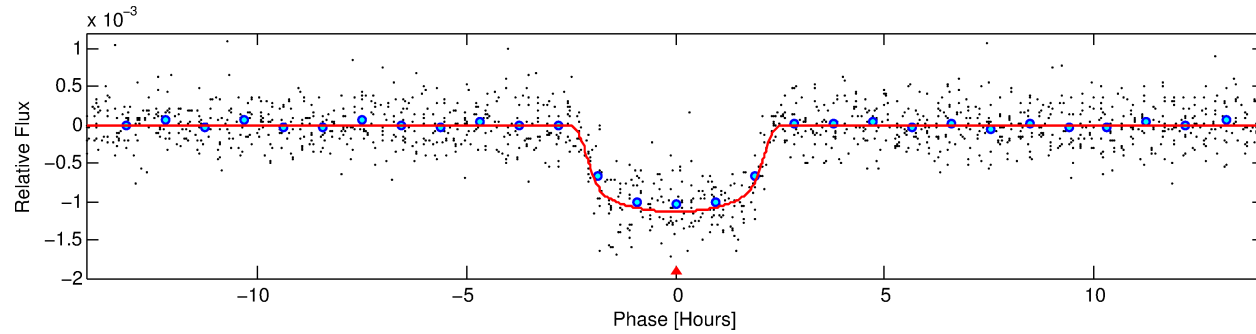
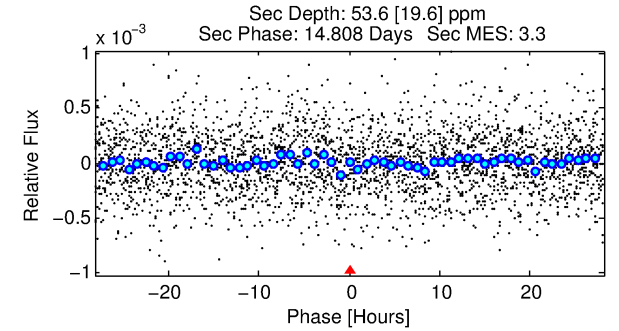
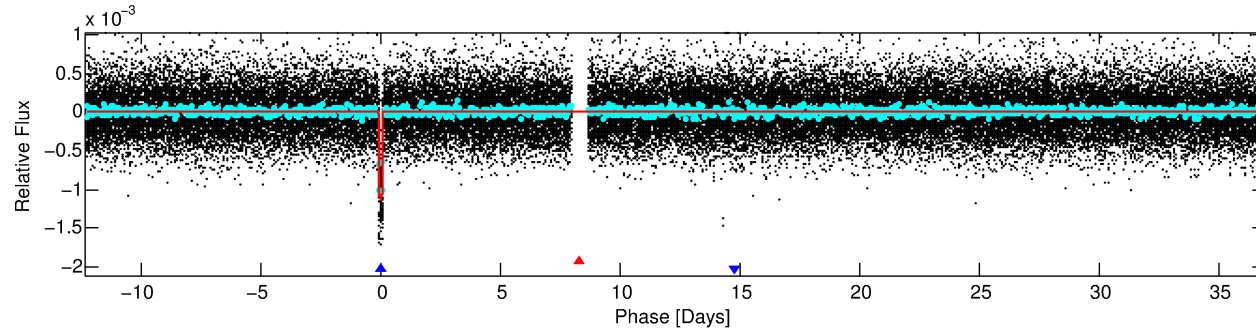
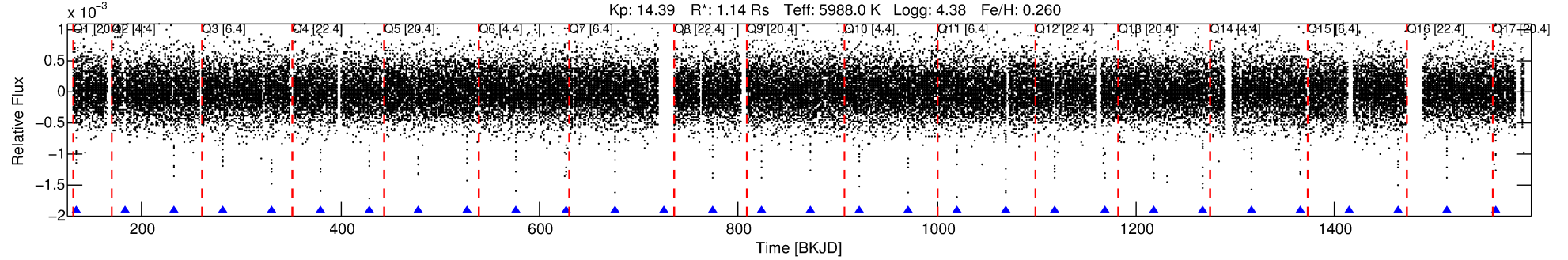
No Significant Match Found

DV One-Page Summary

KIC: 5035972 Candidate: 2 of 2 Period: 49.267 d

KOI: K00406 Corr: No Ephemeris Match

Kp: 14.39 R*: 1.14 Rs Teff: 5988.0 K Logg: 4.38 Fe/H: 0.260



DV Fit Results:

Period = 49.26689 [0.00011] d
Epoch = 133.6087 [0.0020] BKJD
Rp/R* = 0.0345 [0.0020]
a/R* = 51.27 [13.44]
b = 0.81 [0.11]
Seff = 19.83 [8.12]
Teq = 538 [55] K
Rp = 4.30 [1.41] Re
a = 0.2755 [0.0733] AU
Ag = 121.15 [65.35] [1.84σ]
Teffp = 2760 [286] K [7.64σ]

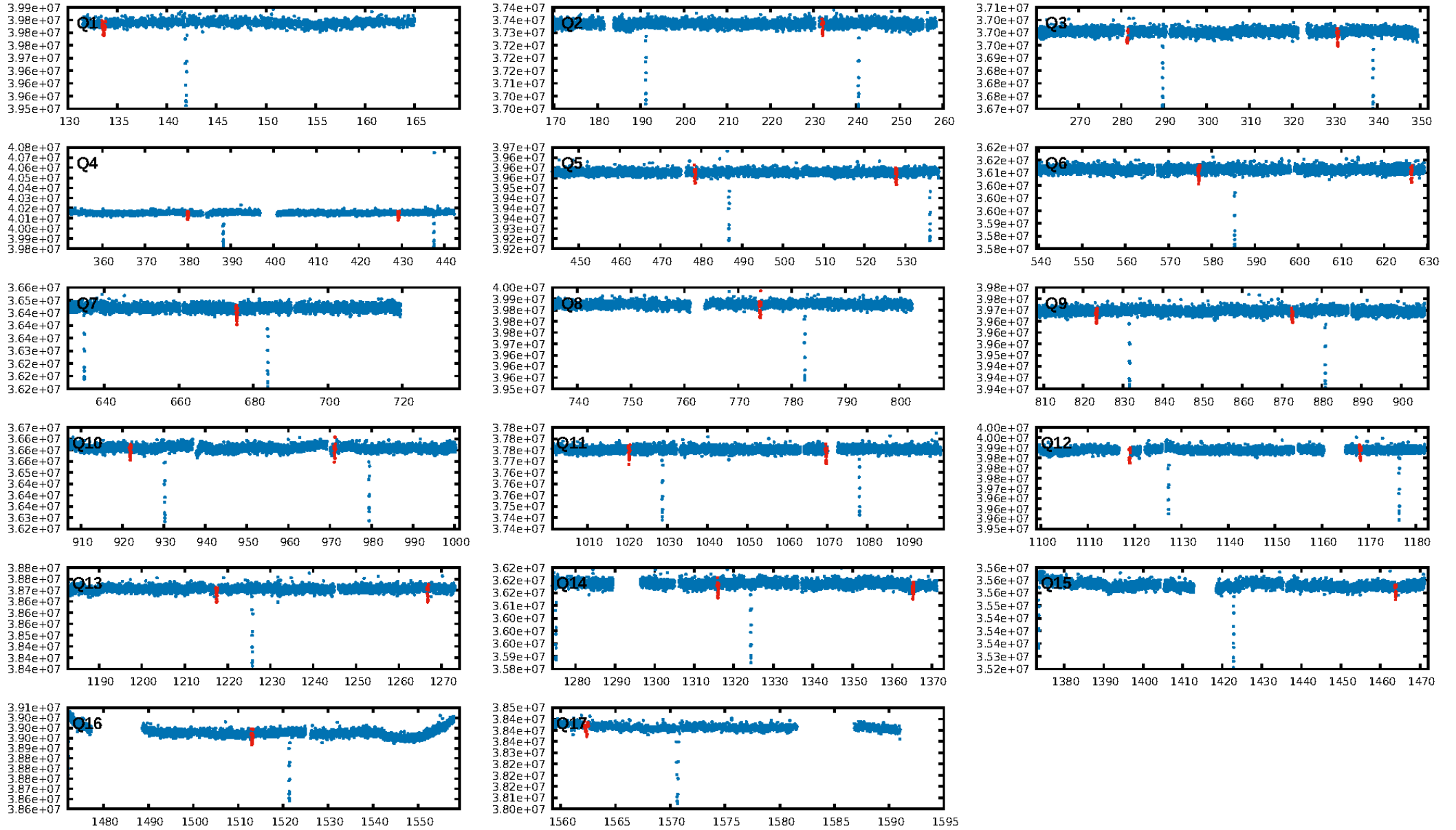
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 87.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [25/25]
GhostDiagnostic-chr: 8.443
Centroid-sig: 0.0%
Centroid-so: 0.340 arcsec [1.31σ]
OotOffset-rm: 0.134 arcsec [0.88σ]
KicOffset-rm: 0.308 arcsec [2.05σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

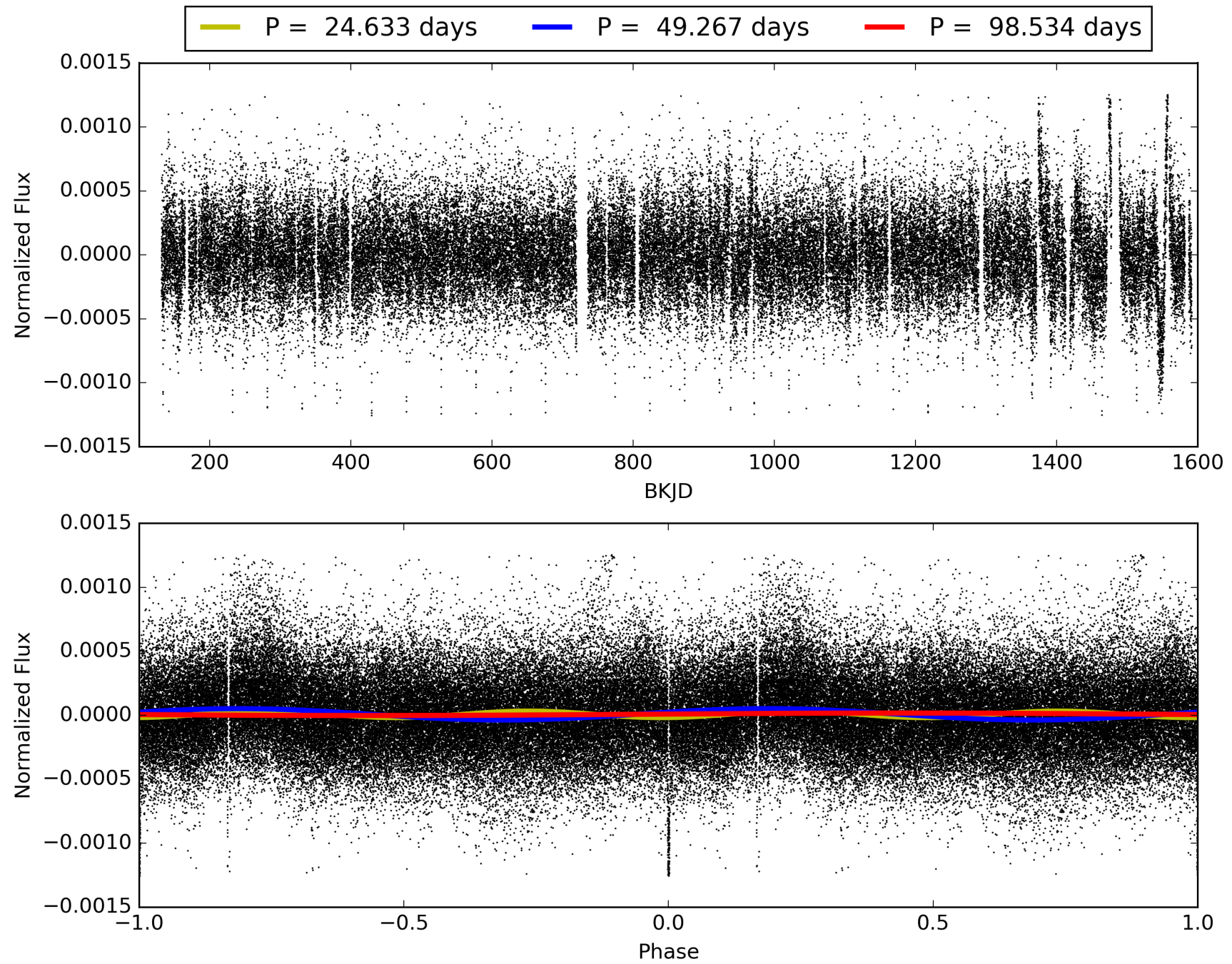
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:15:26 Z

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

TCE 005035972-02, PDC Light Curves

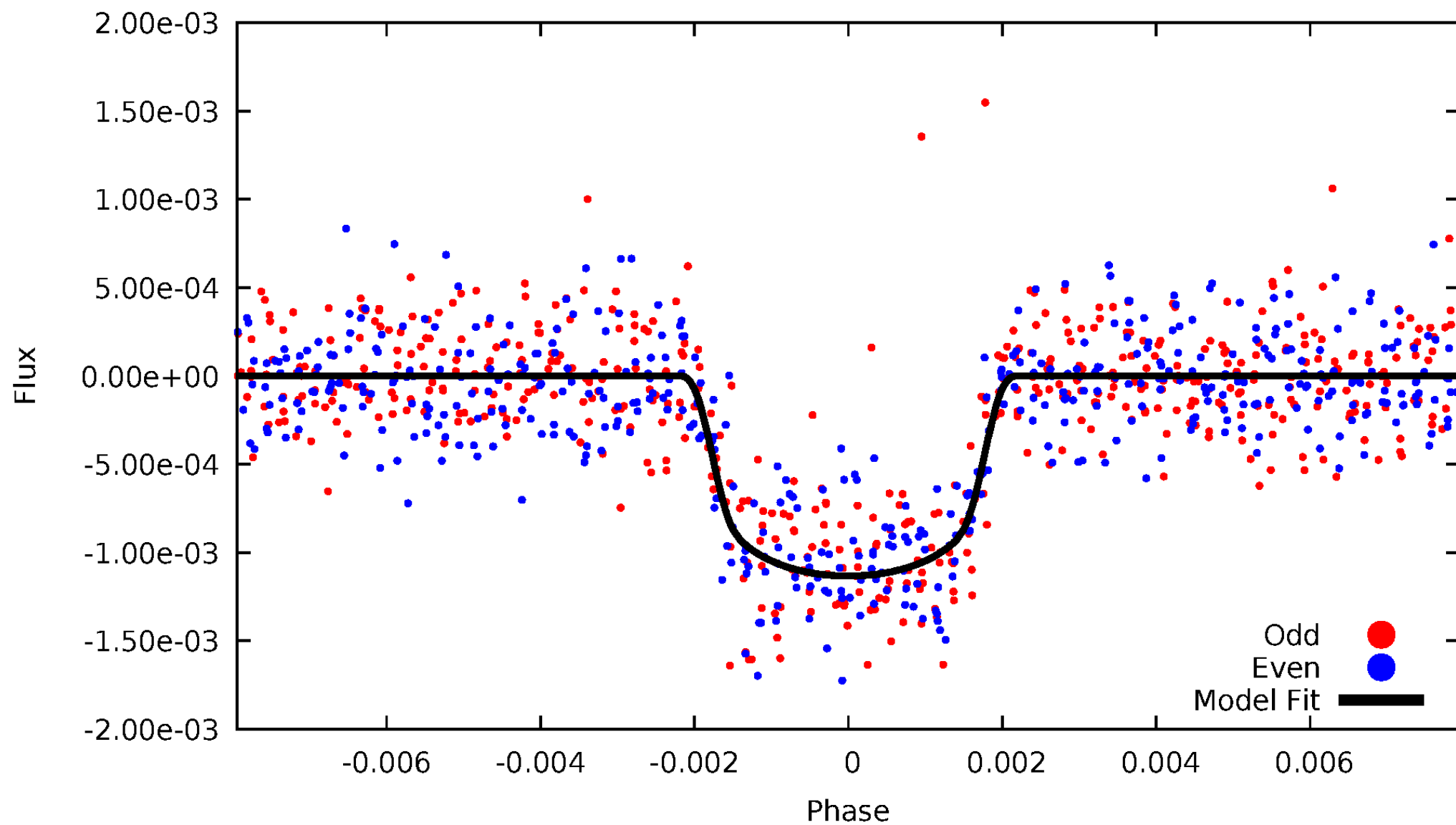


TCE 005035972-02



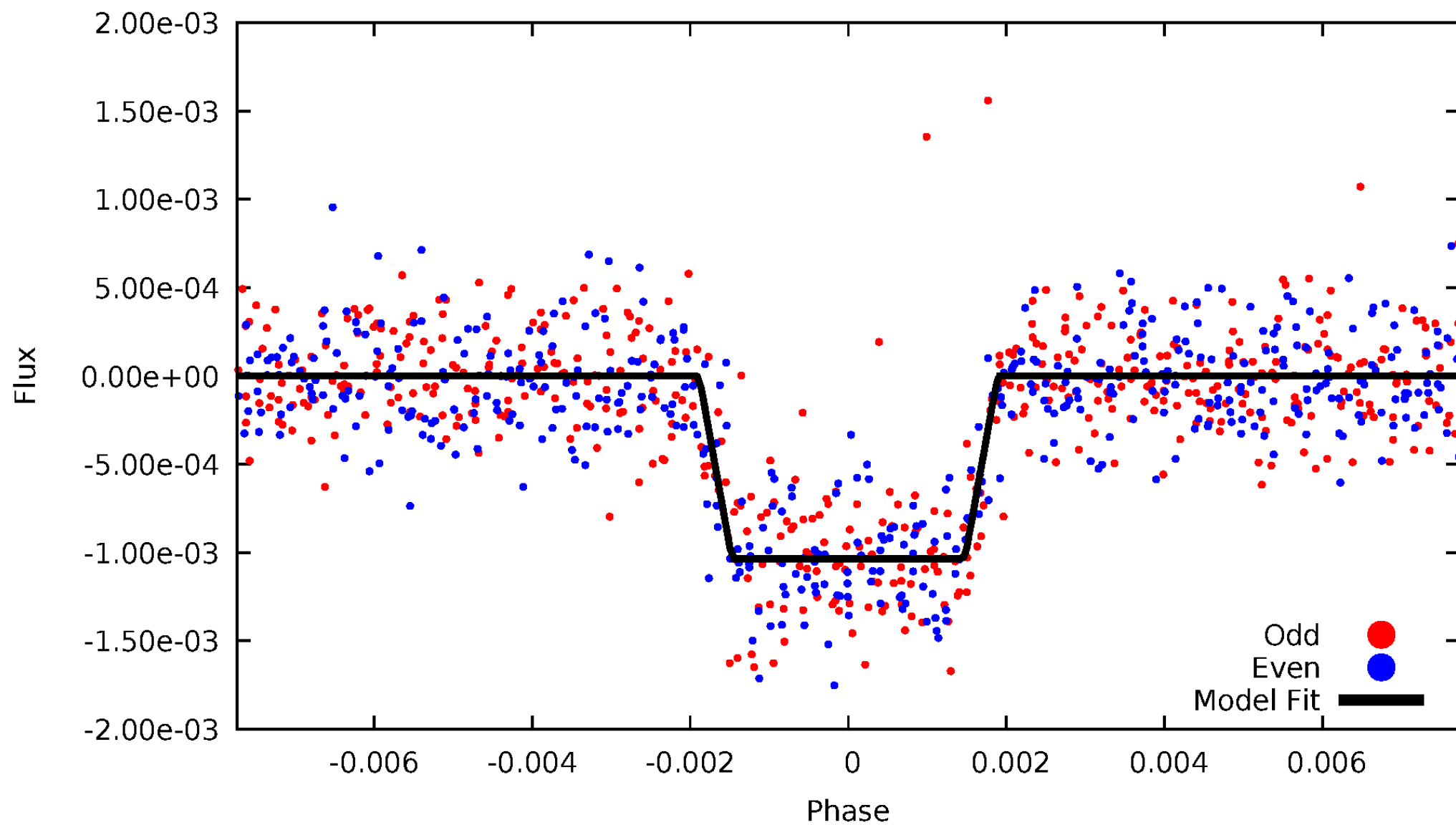
DV Odd/Even

TCE 005035972-02



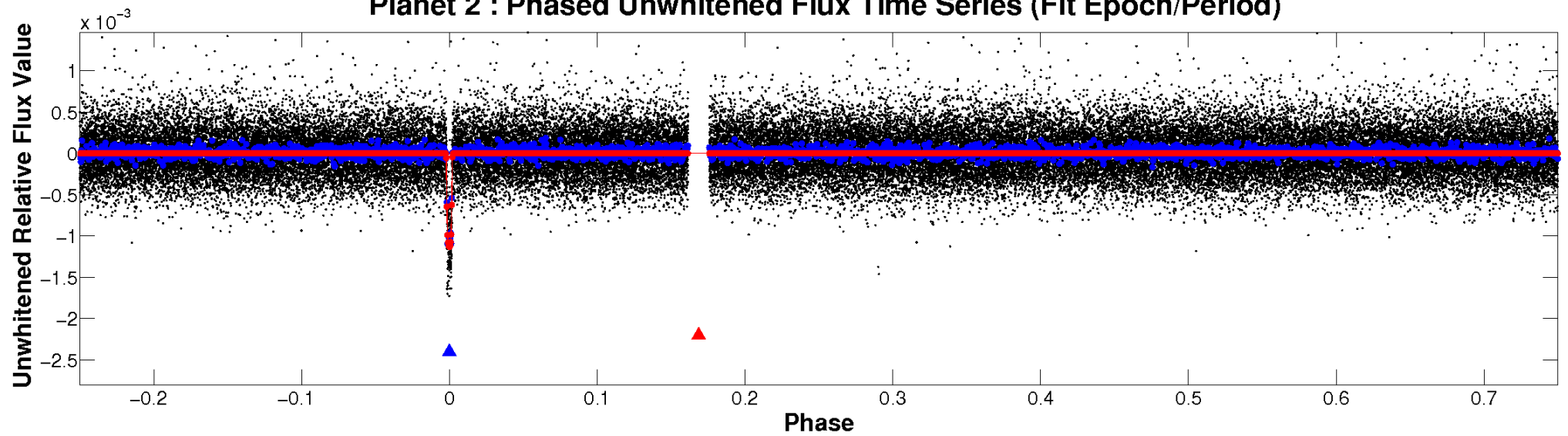
ALT Odd/Even

TCE 005035972-02

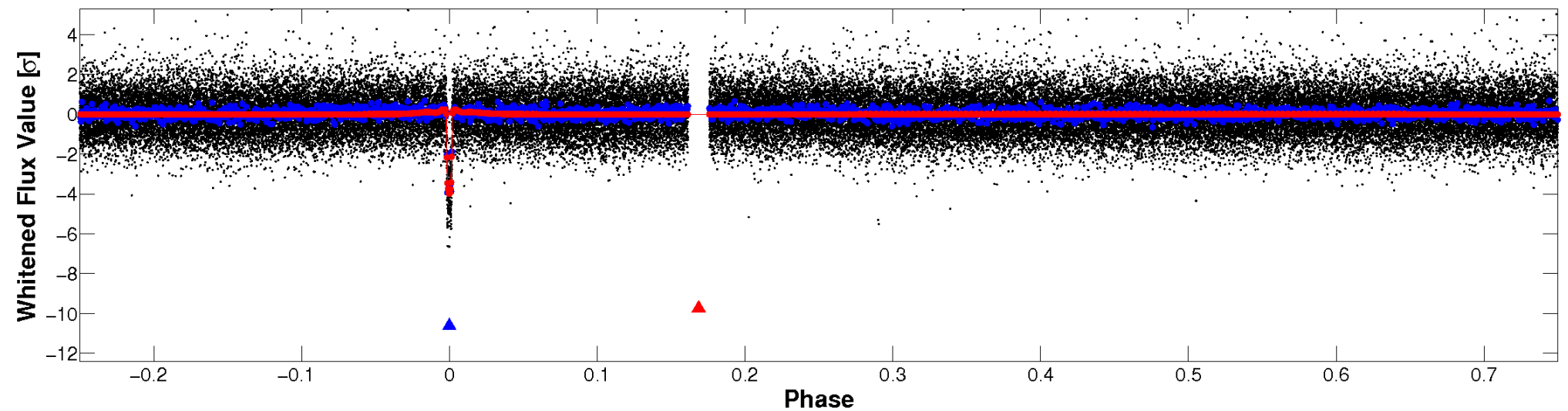


Non-Whitened Vs. Whitened Light Curve

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

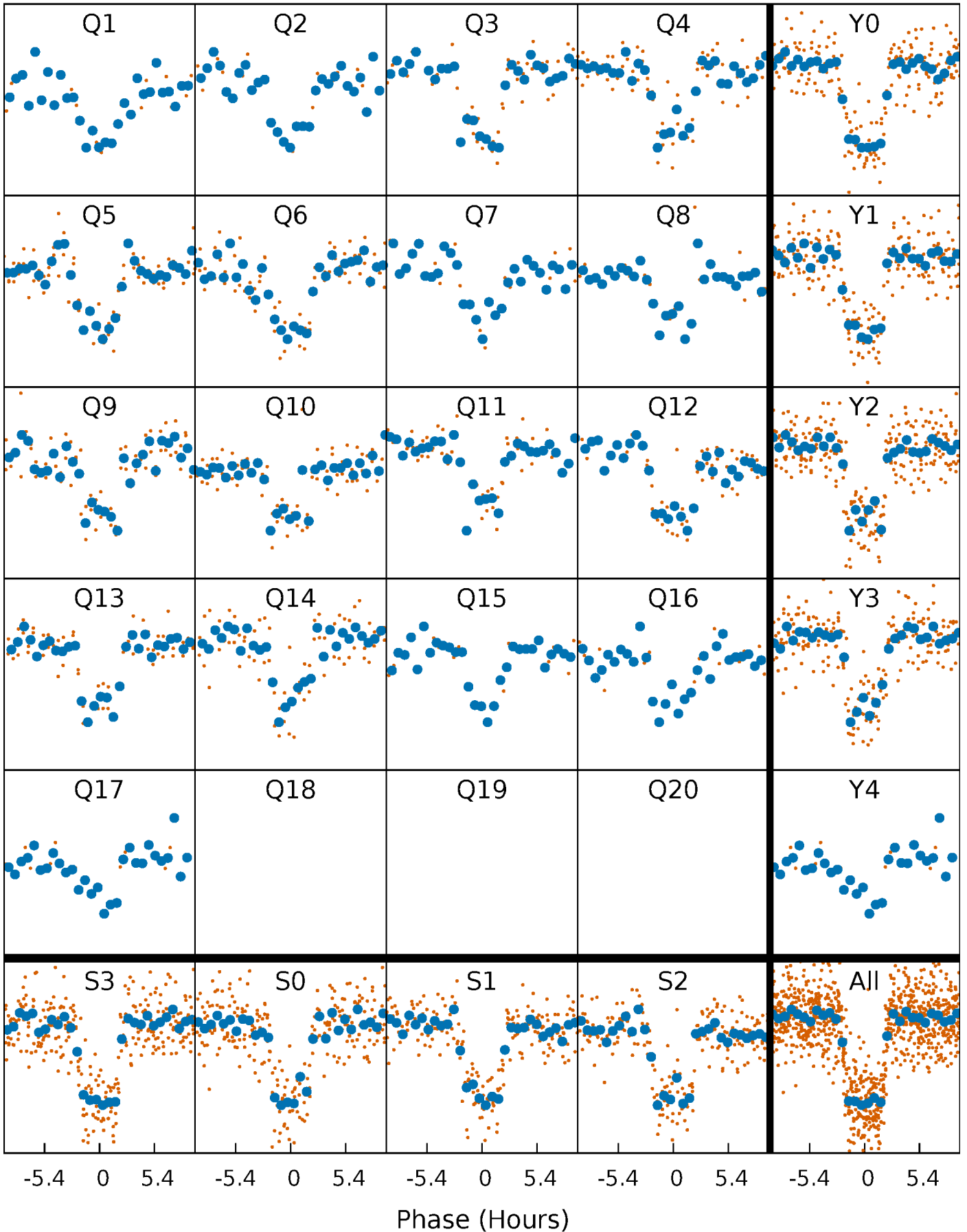


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



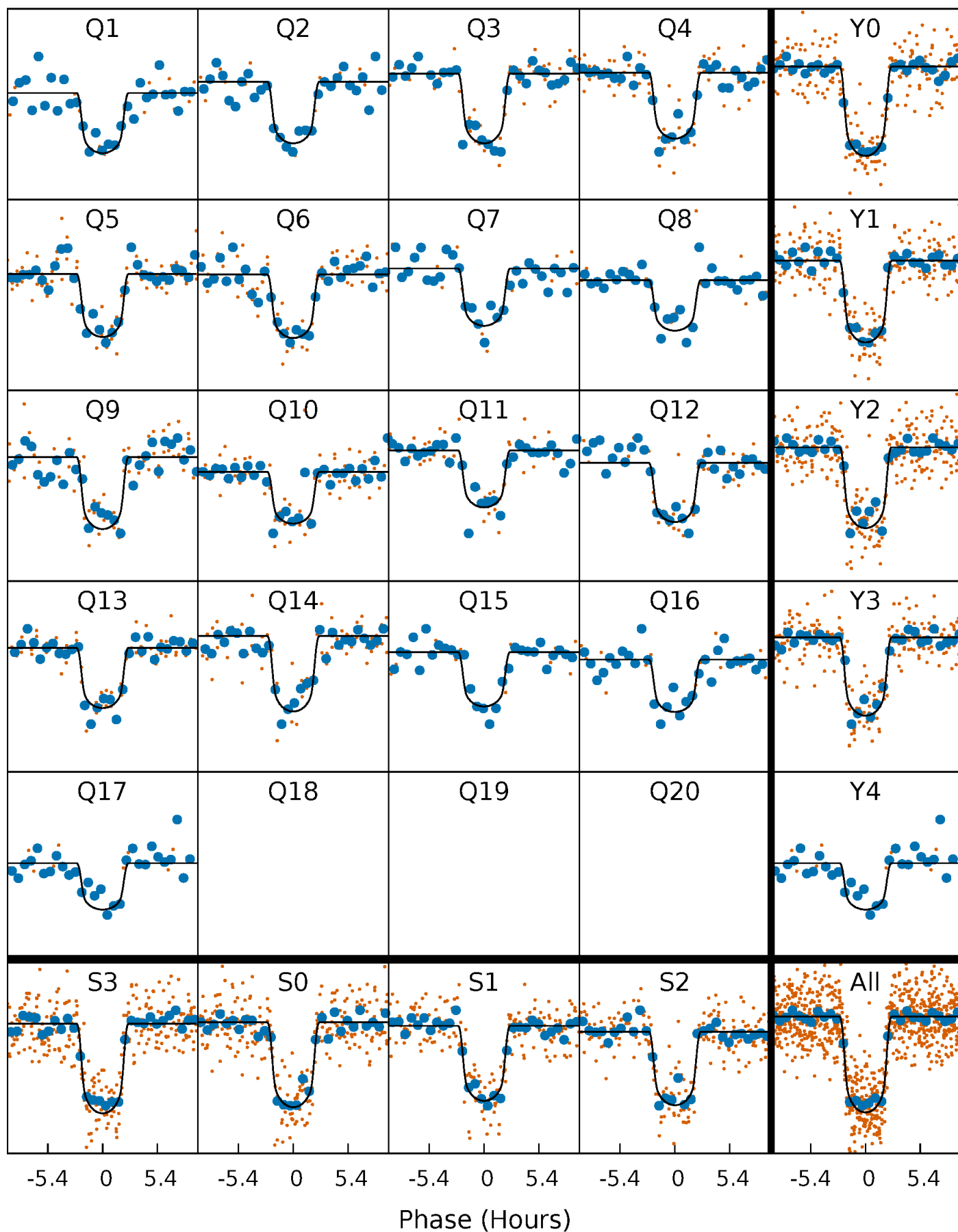
PDC Quarter-Phased Transit Curves

TCE 005035972-02 P= 49.266885 Days $T_0=133.608726$ (BKJD)



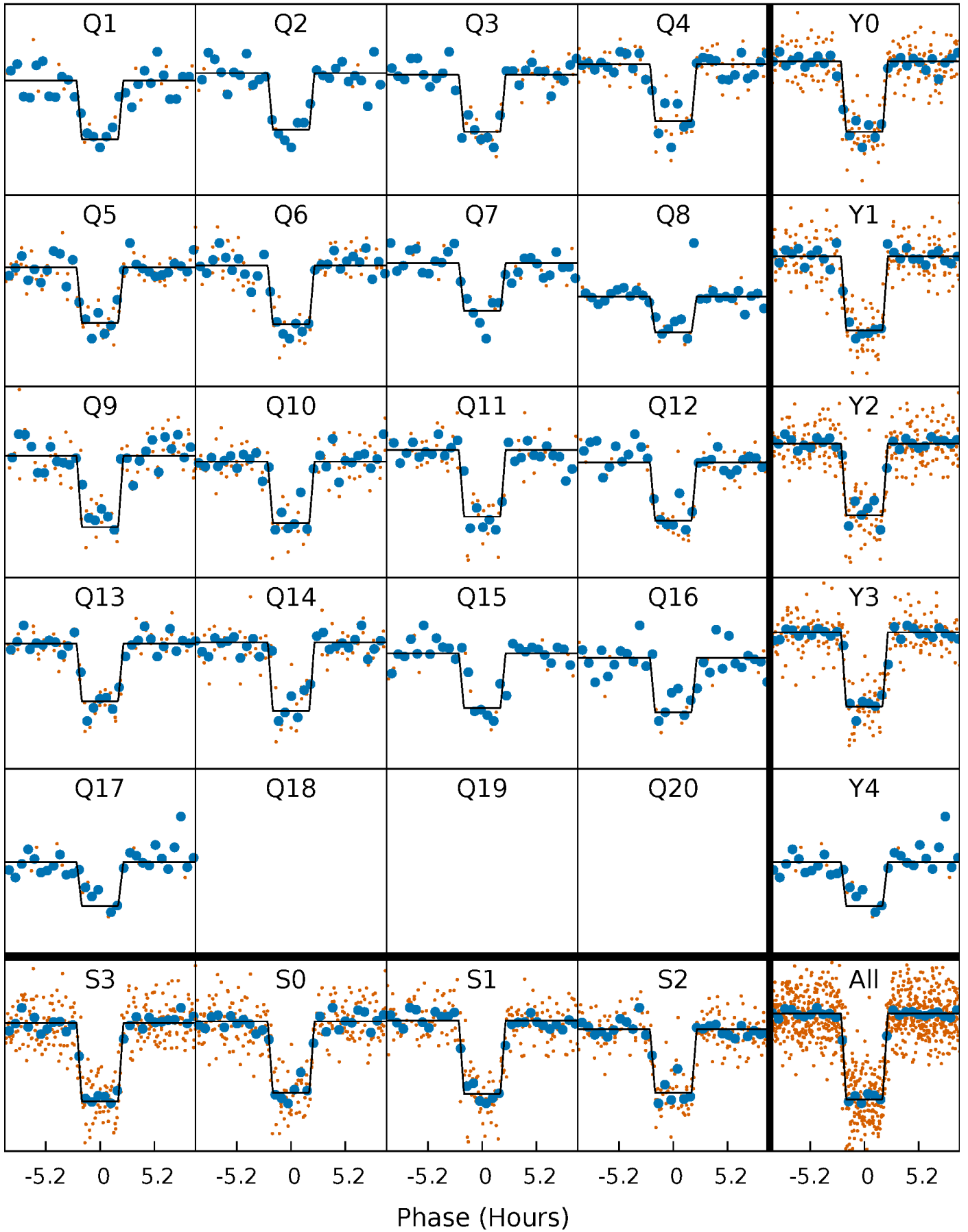
DV Quarter-Phased Transit Curves

TCE 005035972-02 P= 49.266885 Days $T_0=133.608726$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

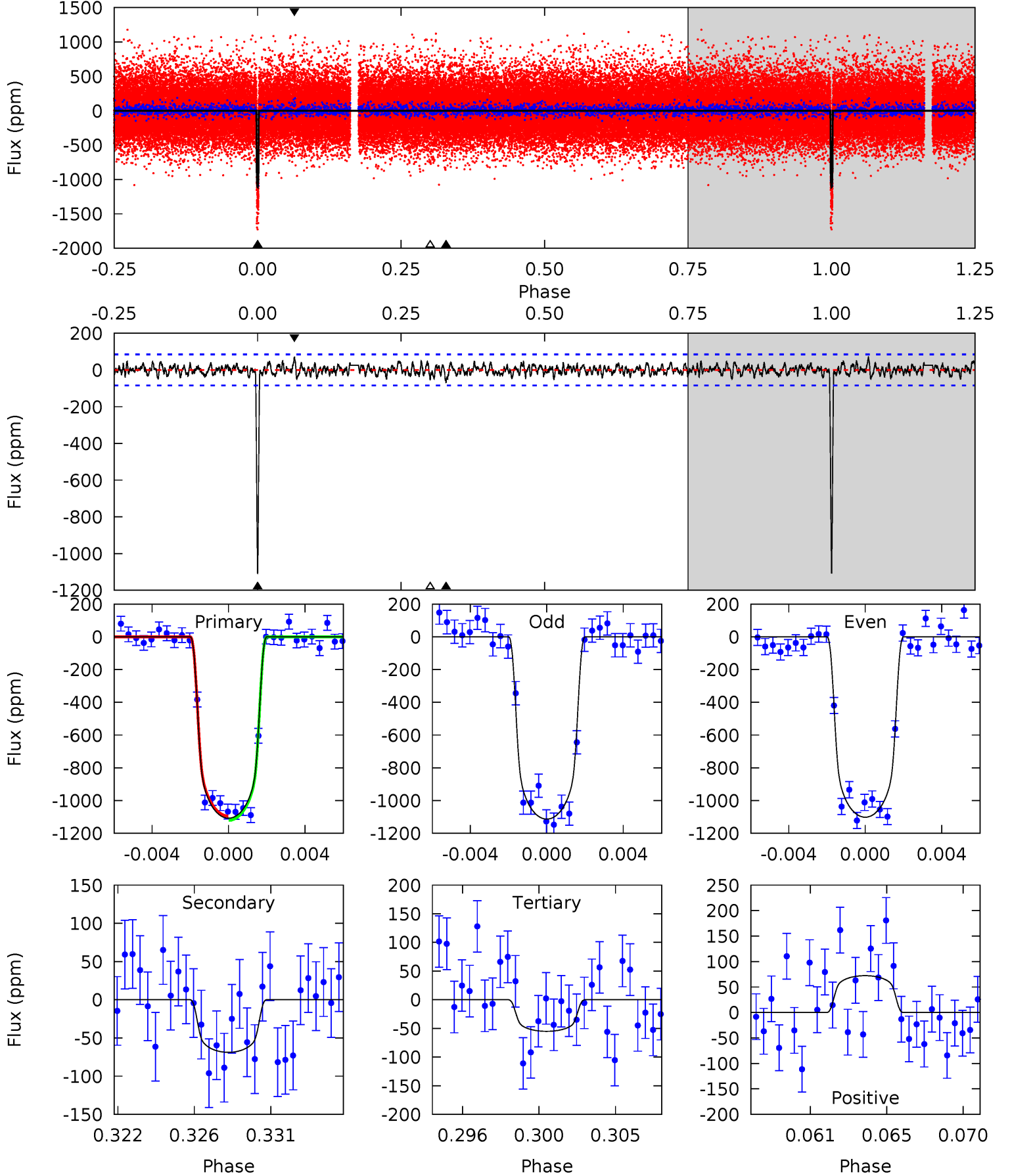
TCE 005035972-02 P= 49.266269 Days $T_0=133.617337$ (BKJD)



DV Model-Shift Uniqueness Test

005035972-02, P = 49.266885 Days, E = 84.341841 Days

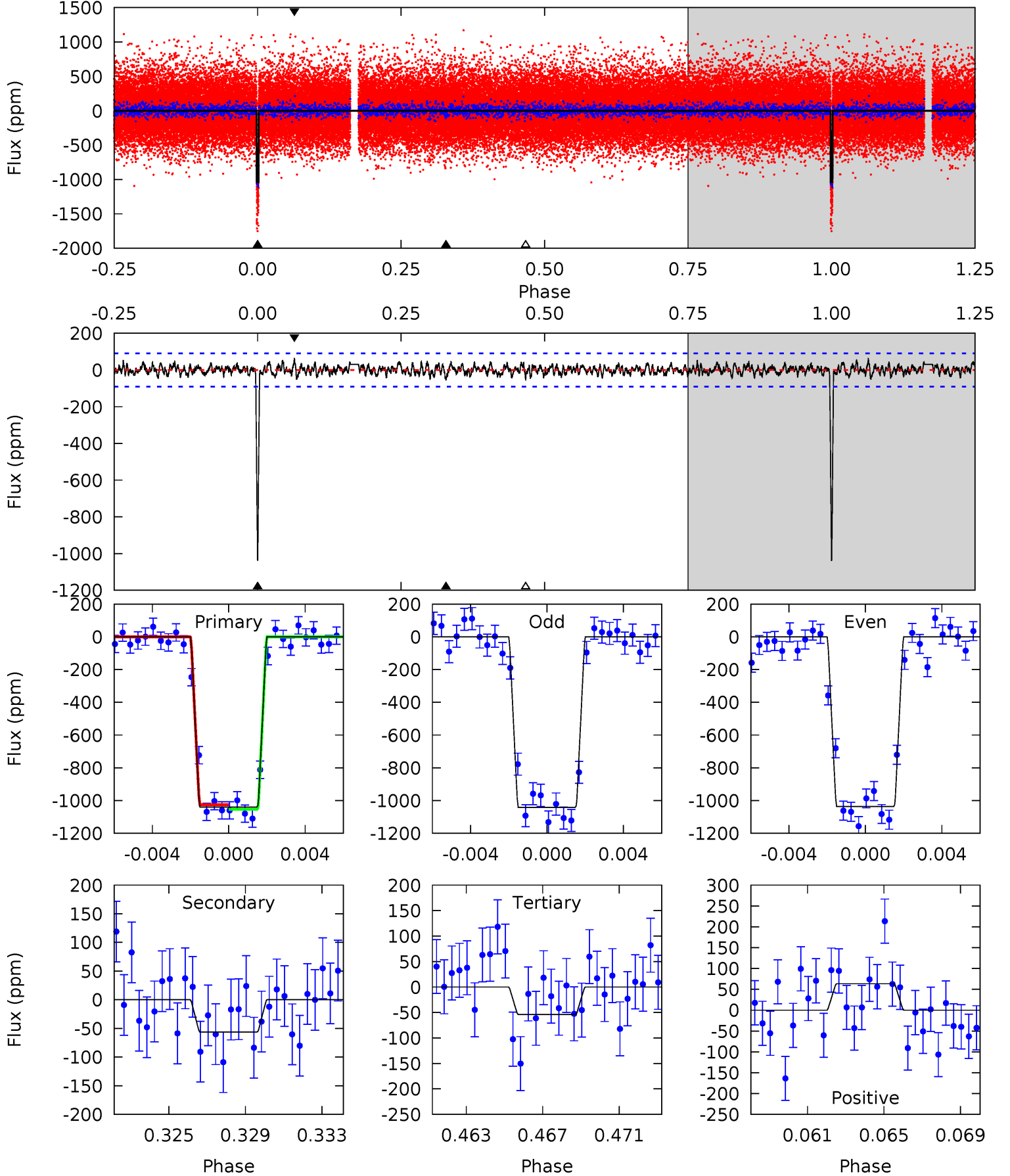
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
67.9	4.22	3.37	4.43	5.18	2.85	1.19	64.5	63.4	0.84	-0.22	0.35	0.98	0.06	0.81



Alt Model-Shift Uniqueness Test

005035972-02, P = 49.266269 Days, E = 84.351068 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.7	3.22	3.09	3.65	5.21	2.89	1.05	56.6	56.1	0.13	-0.43	0.14	1.00	0.06	0.82



Stellar Parameters For KIC 005035972

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5988^{+169}_{-232}	$4.382^{+0.087}_{-0.203}$	$0.260^{+0.150}_{-0.300}$	$1.143^{+0.370}_{-0.159}$	$1.152^{+0.138}_{-0.152}$	$1.086^{+0.420}_{-0.582}$
	+3%/-4%	+2%/-5%	+58%/-115%	+32%/-14%	+12%/-13%	+39%/-54%
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 005035972-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-69 ± 16	$4.42^{+0.77}_{-0.51}$	762^{+60}_{-41}	3424^{+151}_{-170}	140^{+57}_{-47}
Alt.	-56 ± 17	$4.14^{+0.70}_{-0.48}$	763^{+59}_{-45}	3406^{+160}_{-221}	132^{+56}_{-50}

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 $A_{obs} \gg 1.0$

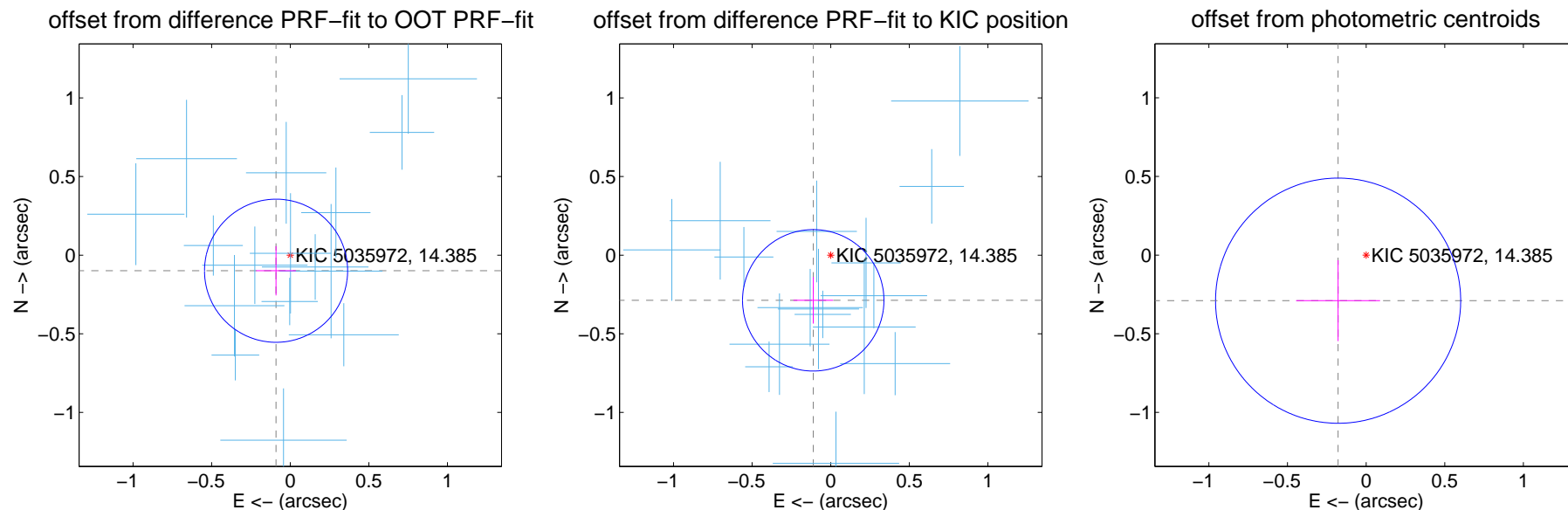
DV Centroid Data

Supplemental centroid analysis for 005035972-02. Kepler magnitude: 14.38. Transit SNR 51.14

There are 16 quarters with good PRF difference image offsets

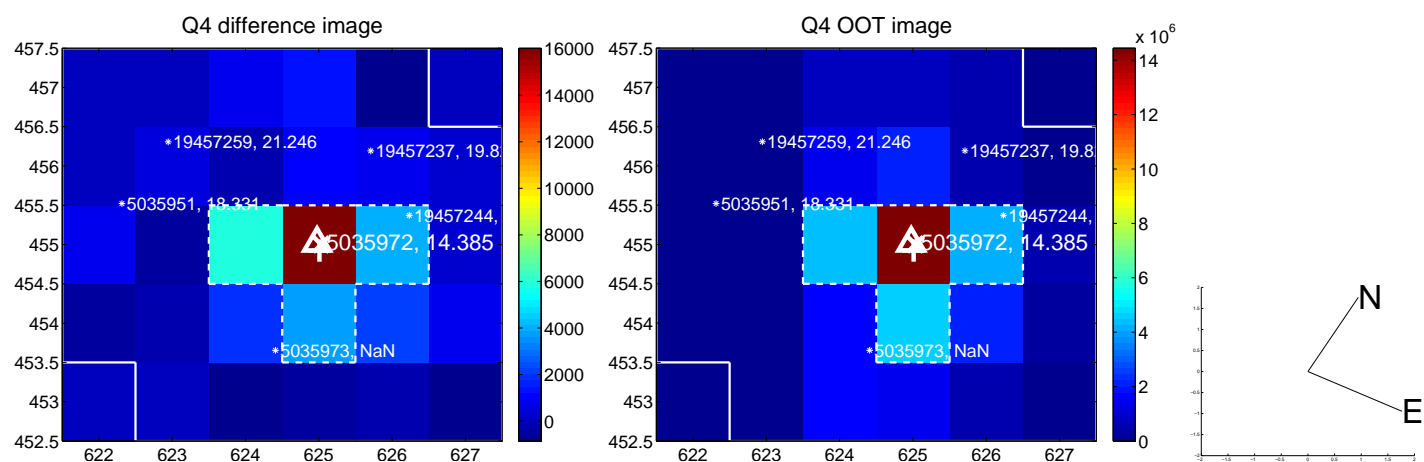
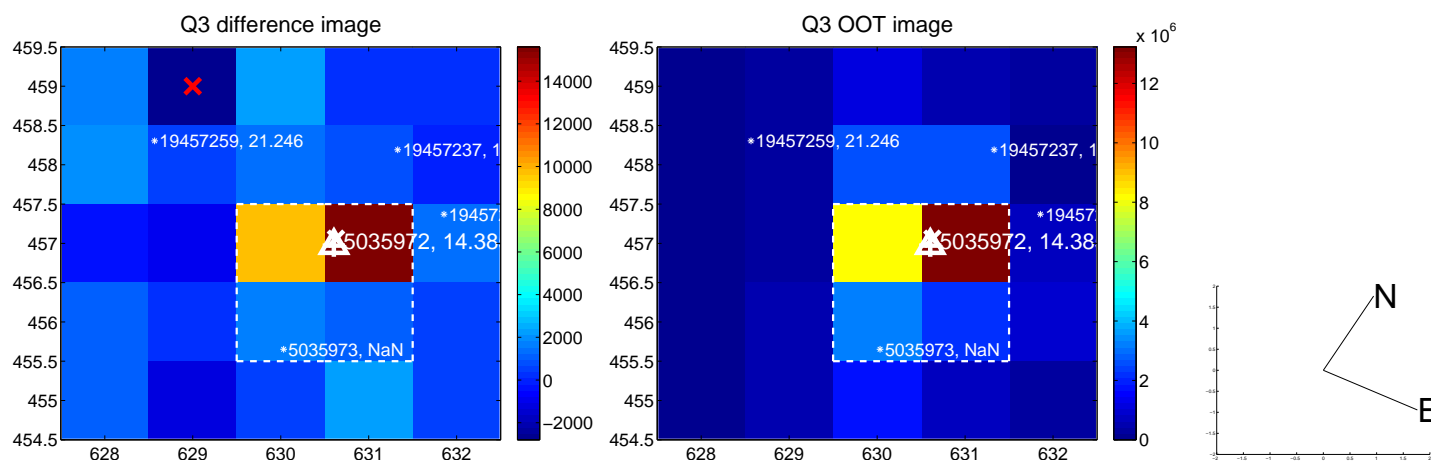
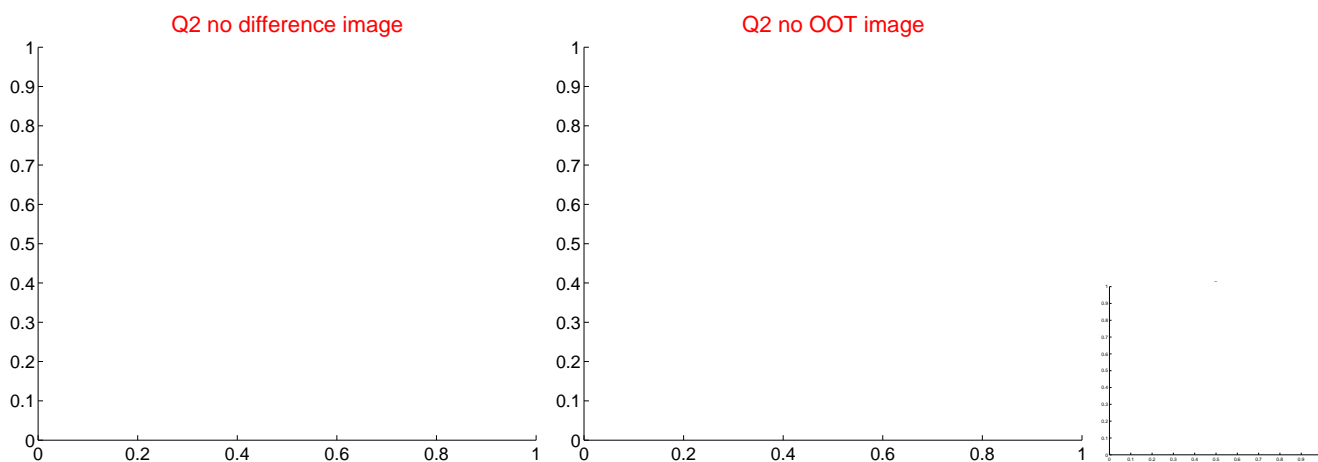
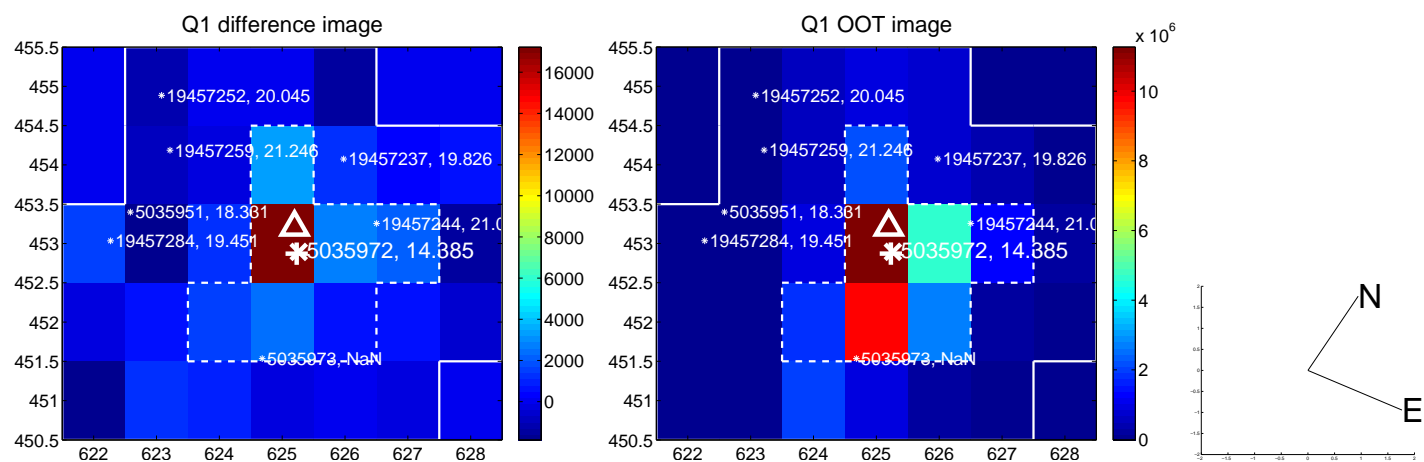
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.134 ± 0.152	0.88	0.090 ± 0.127	-0.099 ± 0.157
PRF-fit source offset from KIC position	0.308 ± 0.150	2.05	0.111 ± 0.126	-0.287 ± 0.148
photometric centroid source offset	0.34 ± 0.26	1.31	0.18 ± 0.27	-0.29 ± 0.26

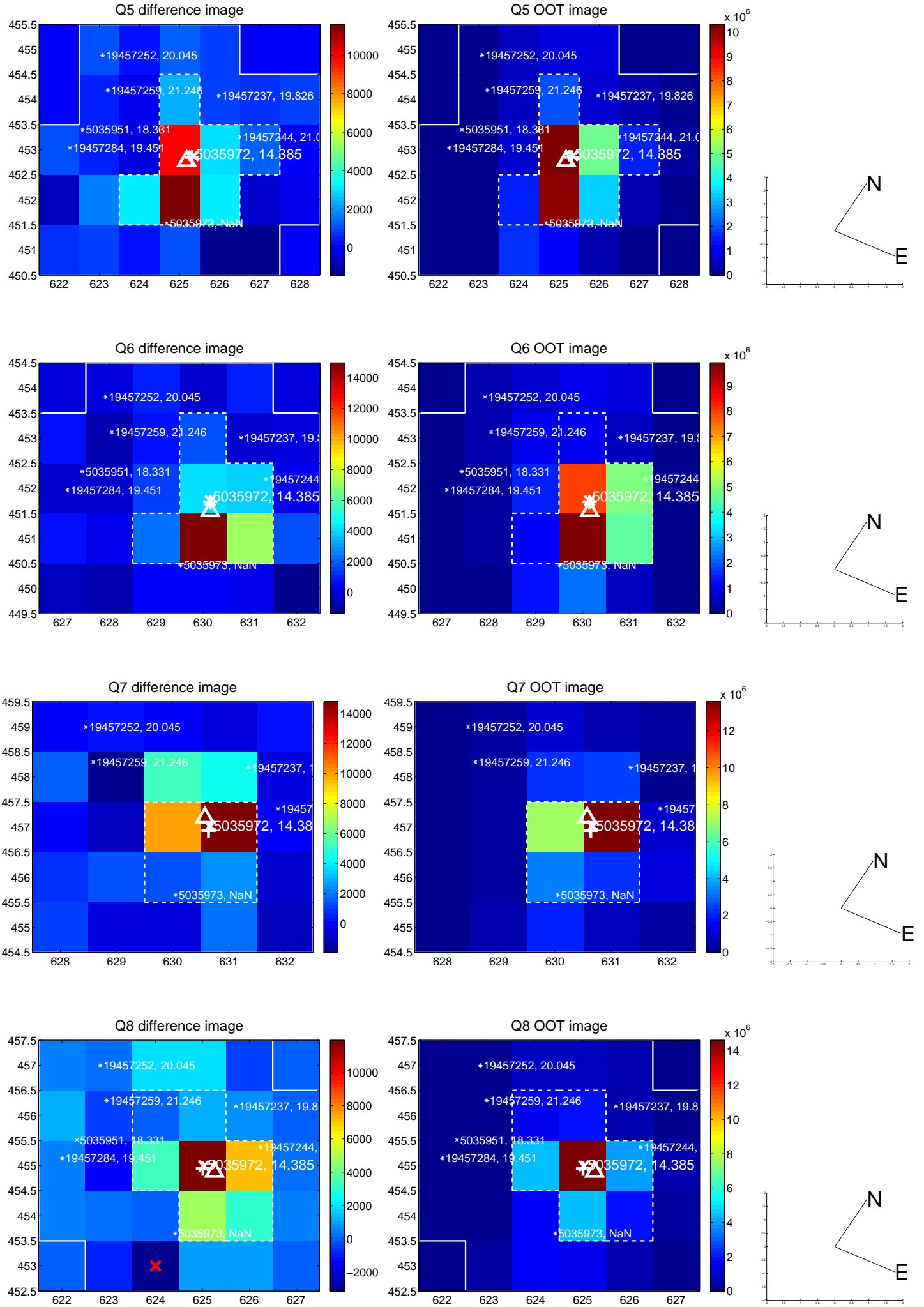


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

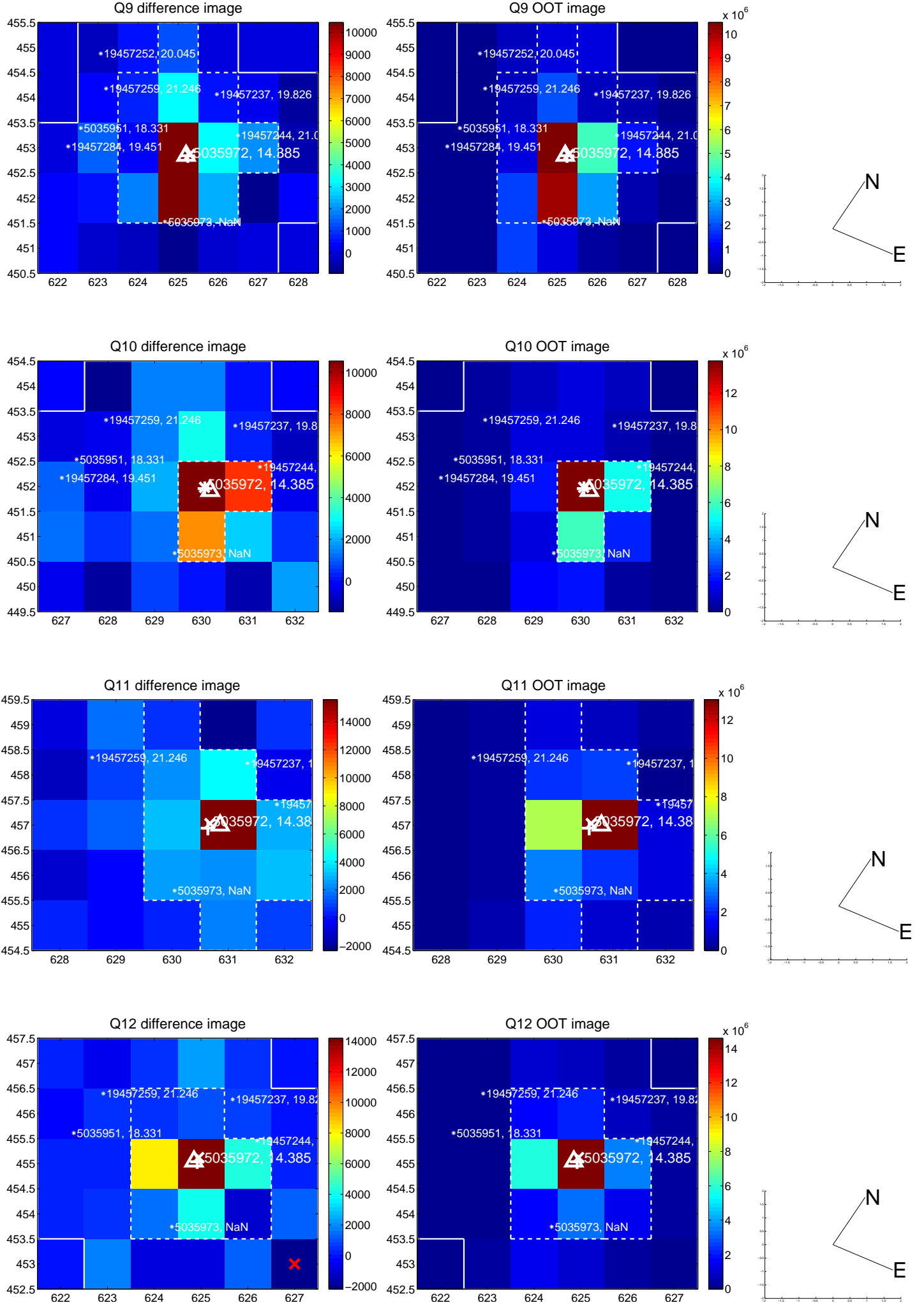
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



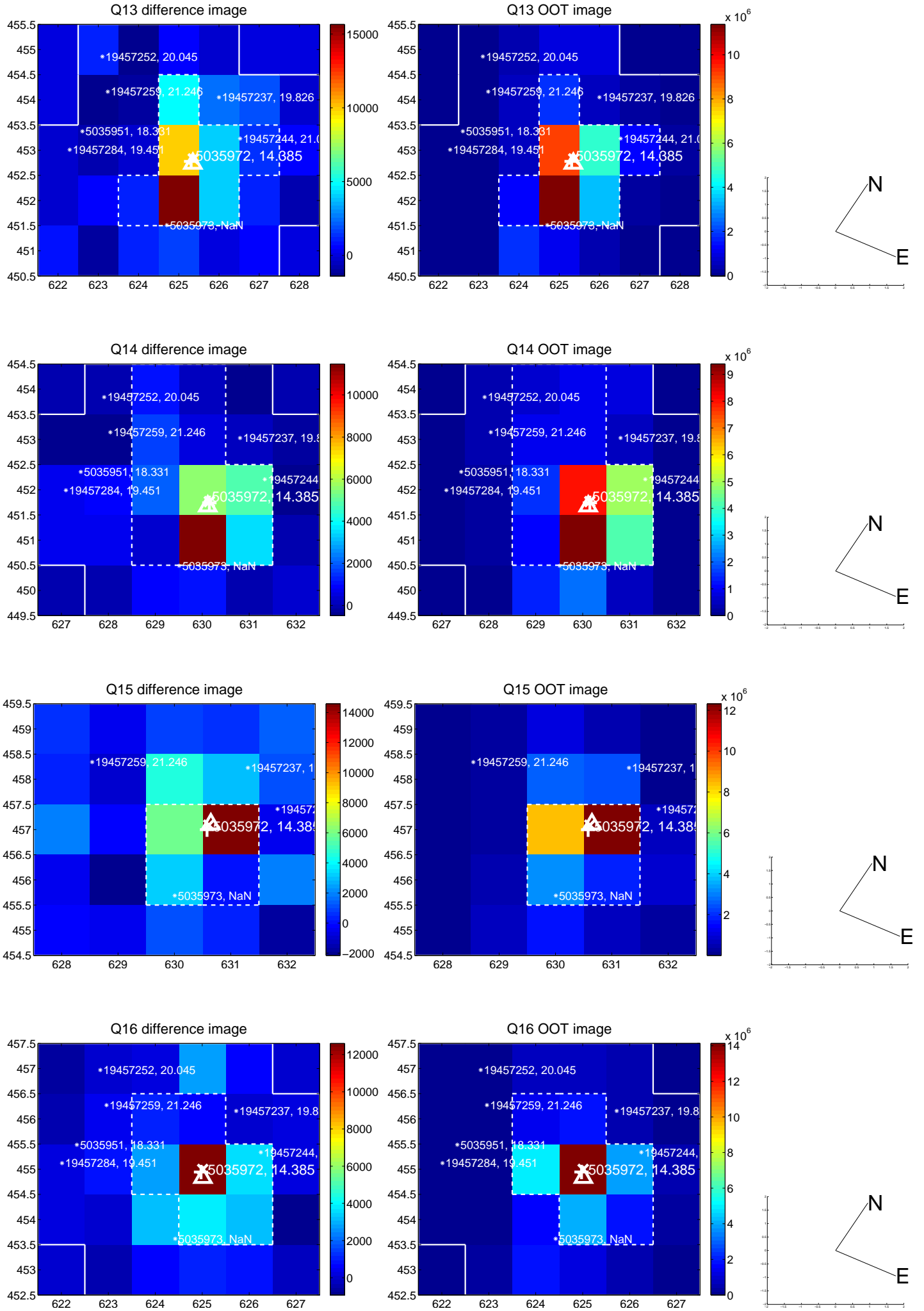
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



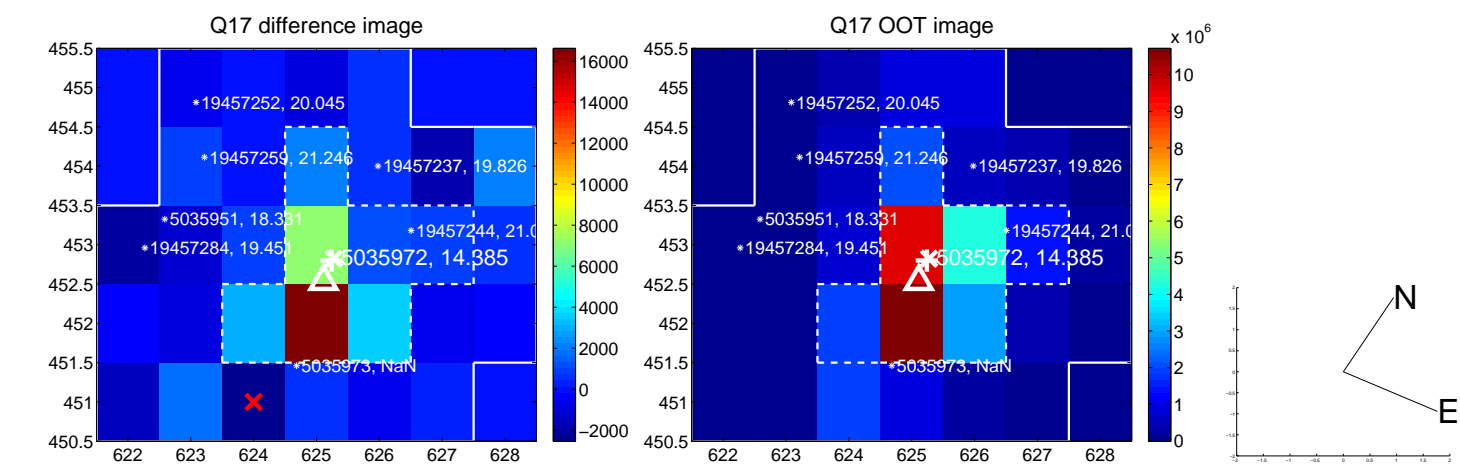
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



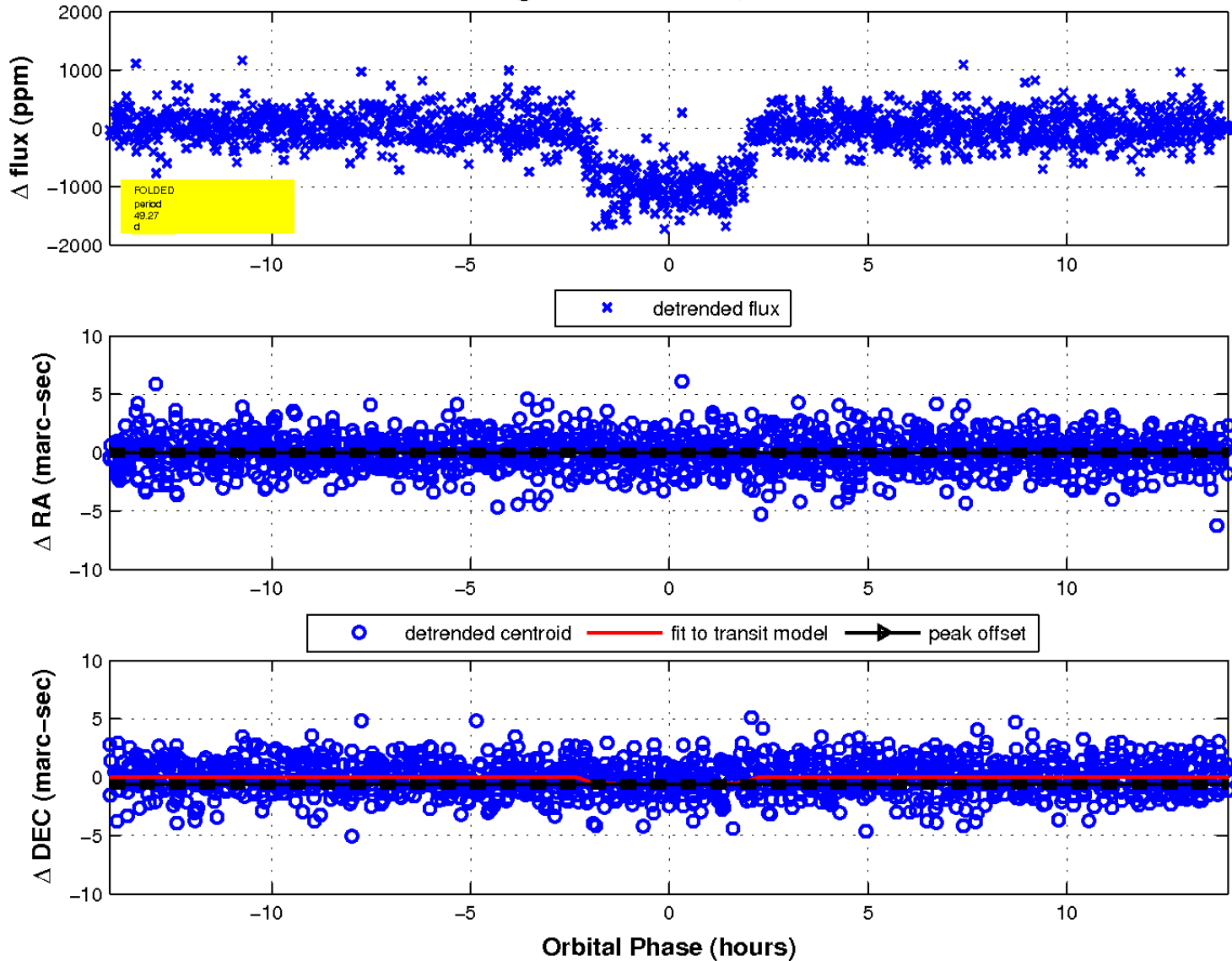
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

