

KIC 009823602

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})
009823602-01	OBS	No	0.885894	131.586408	69.1	5.867	9.5	9.3	2.76	7721	2.42	47755.01
009823602-02	OBS	No	22.353765	140.678766	1152.6	1.921	13.7	11.3	2.76	7721	9.57	645.25
009823602-03	OBS	No	24.094820	145.278836	2976.3	0.816	13.0	11.1	2.76	7721	25.70	583.84
009823602-04	OBS	No	51.091659	133.754778	1345.0	2.556	12.6	10.8	2.76	7721	16.91	214.32
009823602-05	OBS	No	49.220329	163.840237	1758.1	3.949	11.8	14.0	2.76	7721	18.82	225.25
009823602-06	OBS	No	69.458100	147.367148	1790.7	2.486	11.6	11.2	2.76	7721	13.61	142.31
009823602-07	OBS	No	50.182079	152.371615	359.6	2.000	10.9	-1.0	2.76	7721	5.31	219.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823602-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009823602-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
009823602-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
009823602-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009823602-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

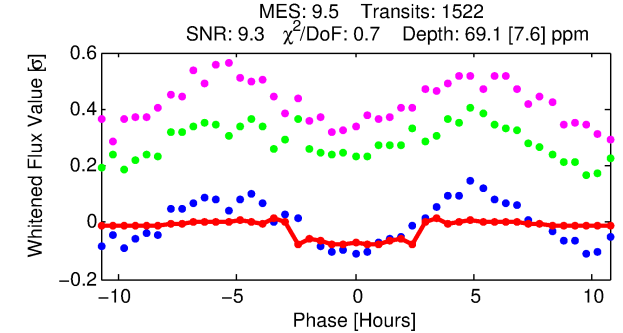
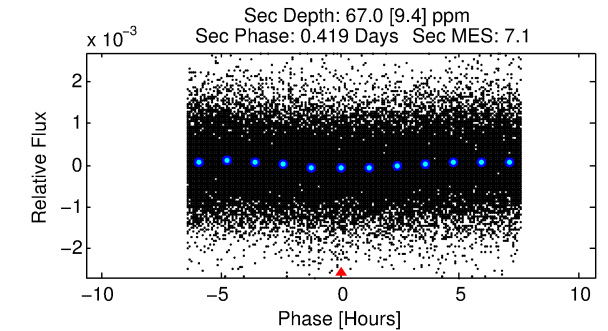
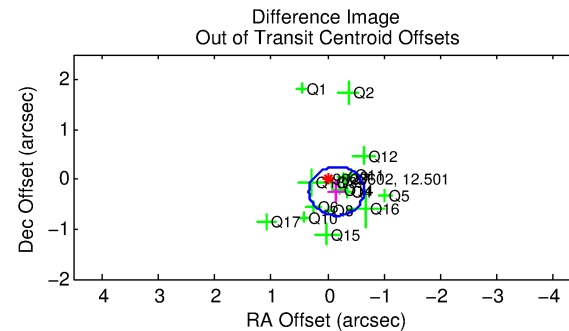
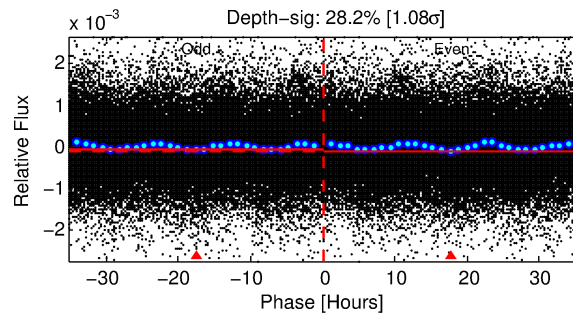
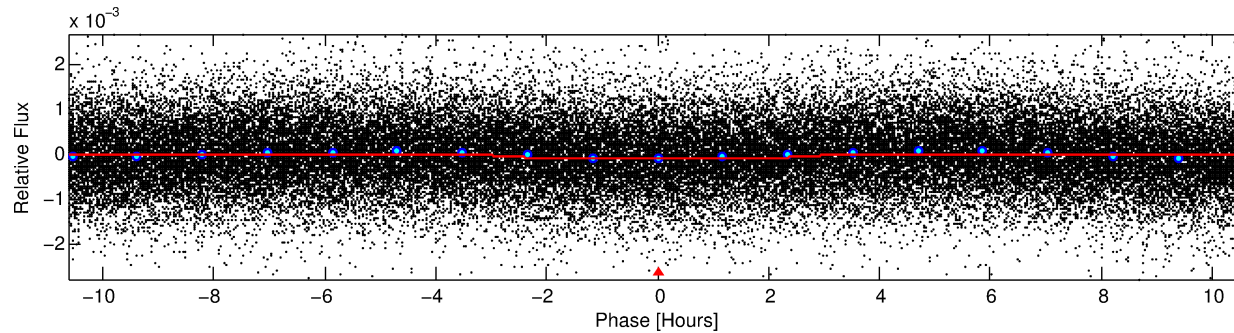
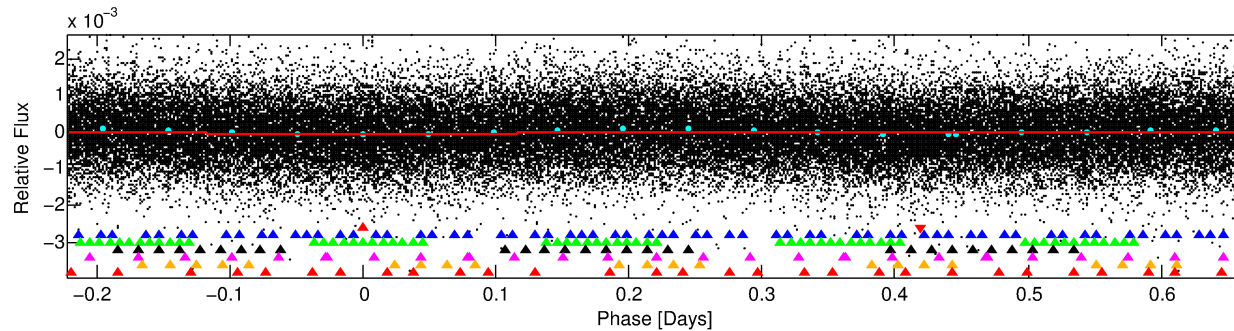
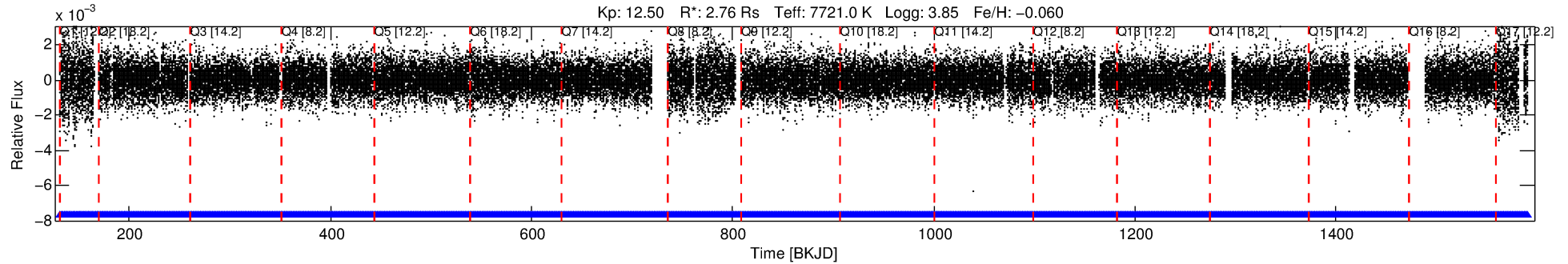
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823602-01

No Significant Match Found

DV One-Page Summary

KIC: 9823602 Candidate: 1 of 7 Period: 0.886 d



DV Fit Results:

Period = 0.88589 [0.00001] d
Epoch = 131.5864 [0.0024] BKJD
Rp/R* = 0.0080 [0.0034]
a/R* = 1.21 [0.98]
b = 0.62 [2.55]
Seff = 47755.01 [27347.48]
Teq = 3769 [540] K
Rp = 2.42 [1.38] Re
a = 0.0225 [0.0080] AU
Ag = 3.20 [3.23] [0.68 σ]
Teffp = 7795 [1682] K [2.28 σ]

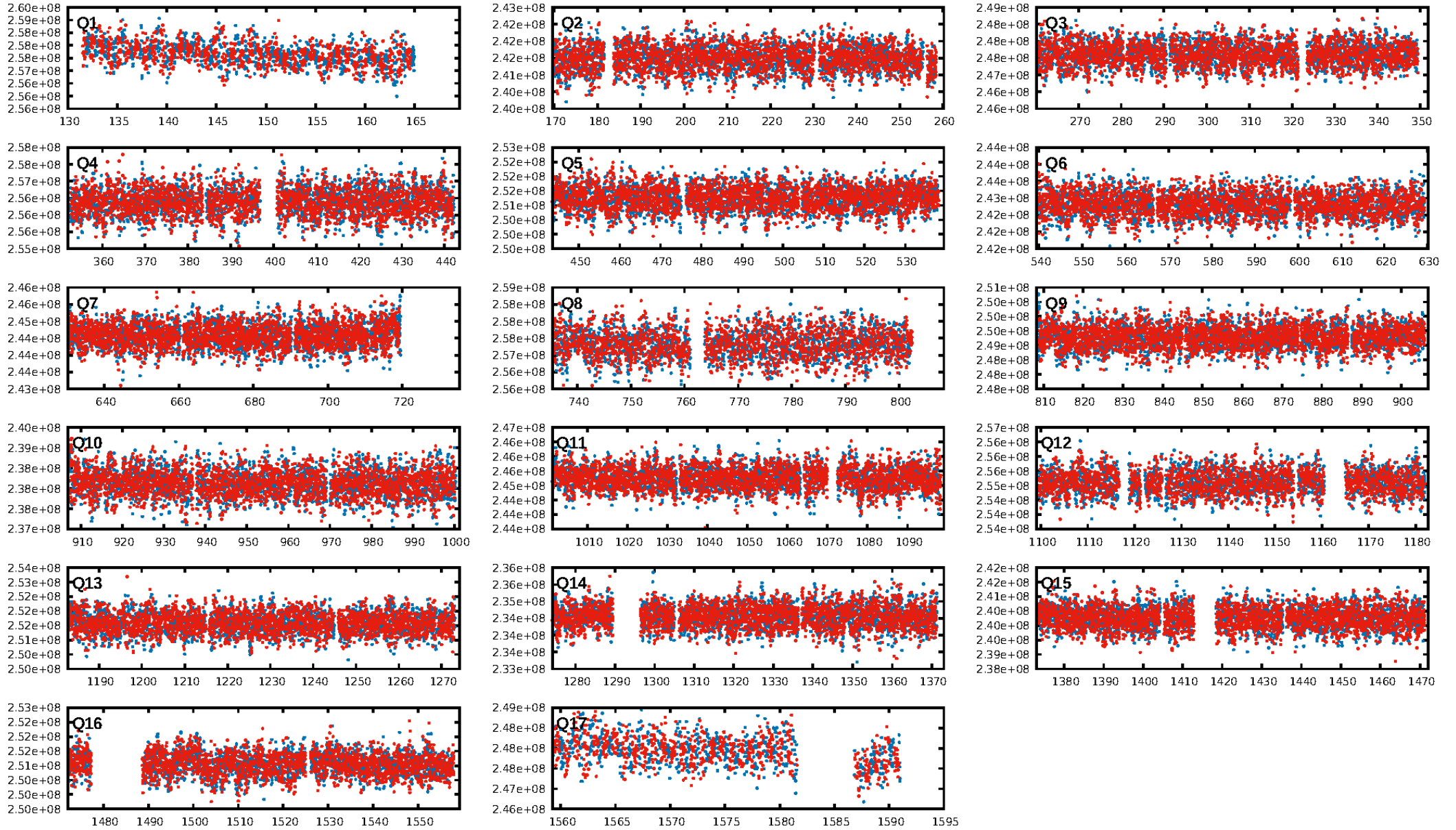
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [83.46 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1454/1454]
GhostDiagnostic-chr: 4.597
Centroid-sig: 0.8%
Centroid-so: 0.037 arcsec [0.24 σ]
OotOffset-rm: 0.287 arcsec [1.76 σ]
KicOffset-rm: 0.114 arcsec [0.55 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]

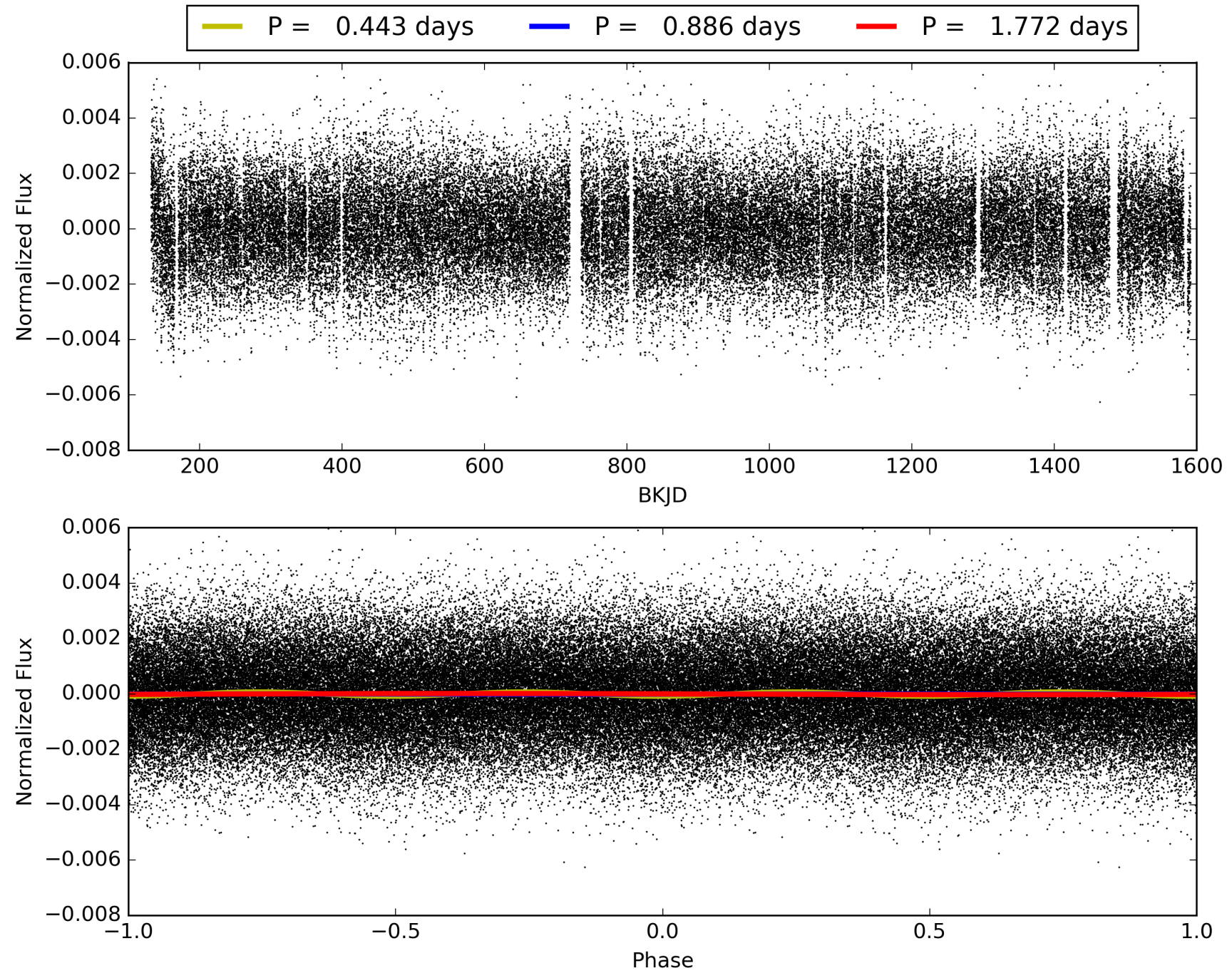
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:55:52 Z

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

TCE 009823602-01, PDC Light Curves

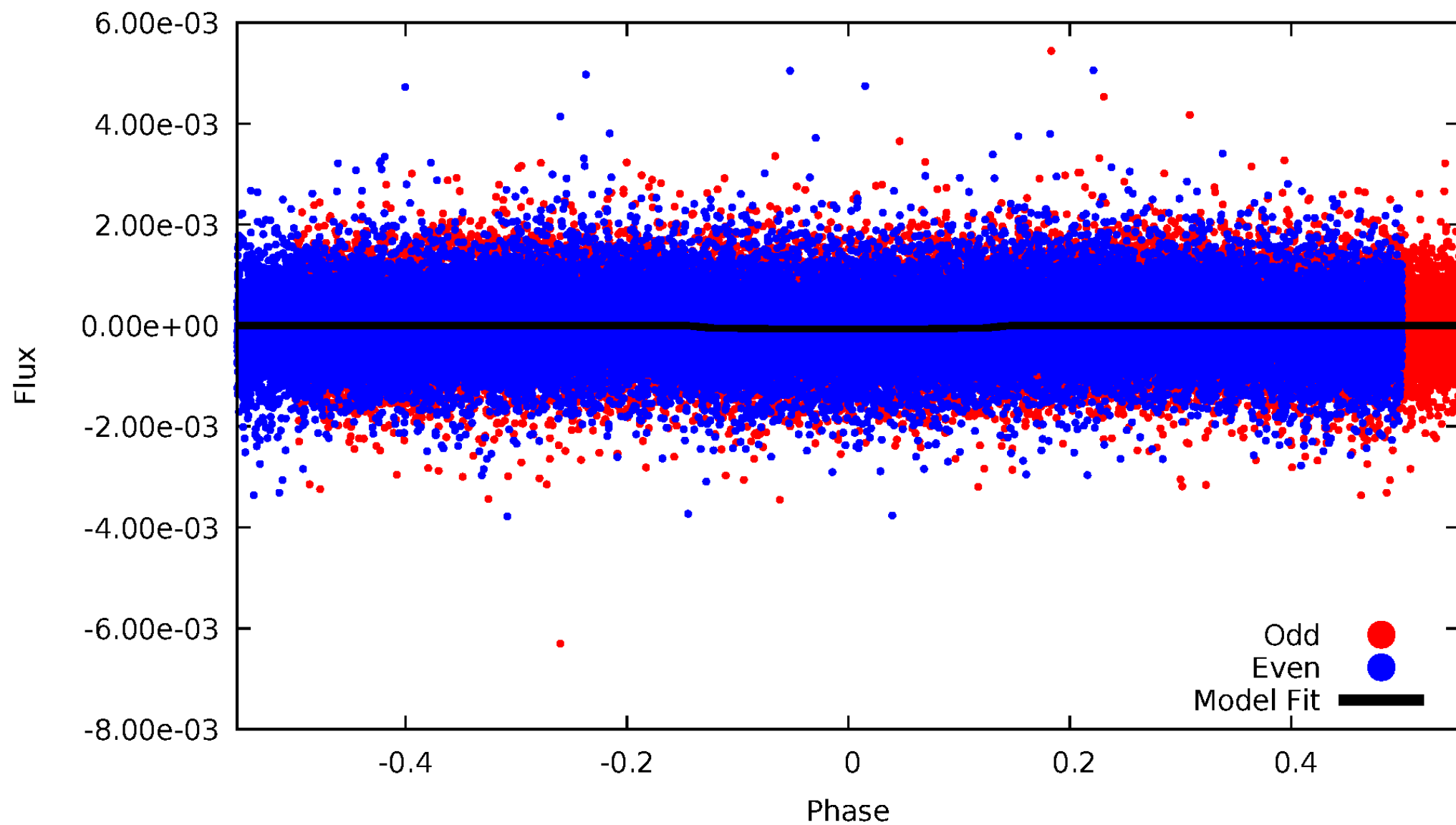


TCE 009823602-01



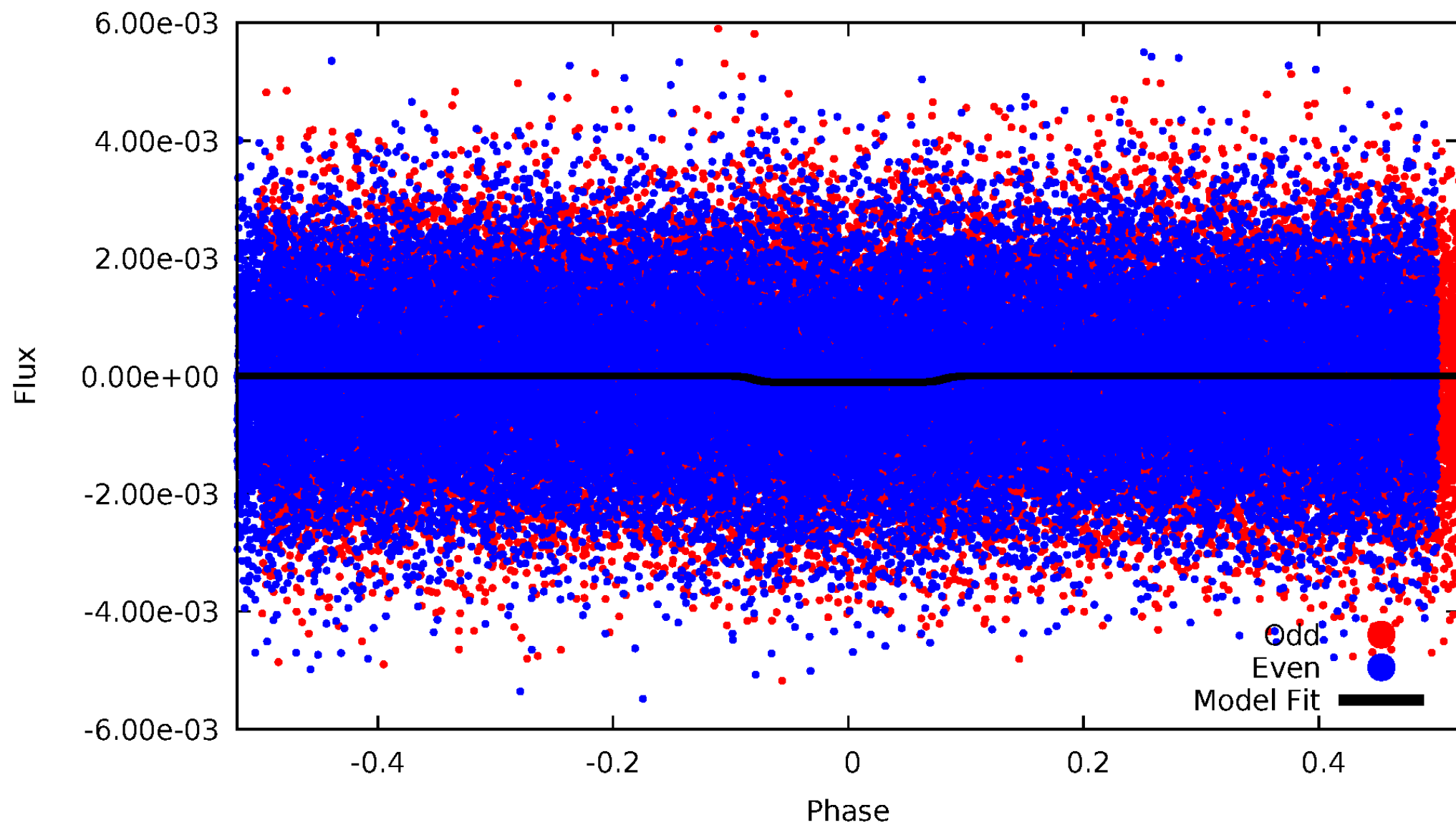
DV Odd/Even

TCE 009823602-01



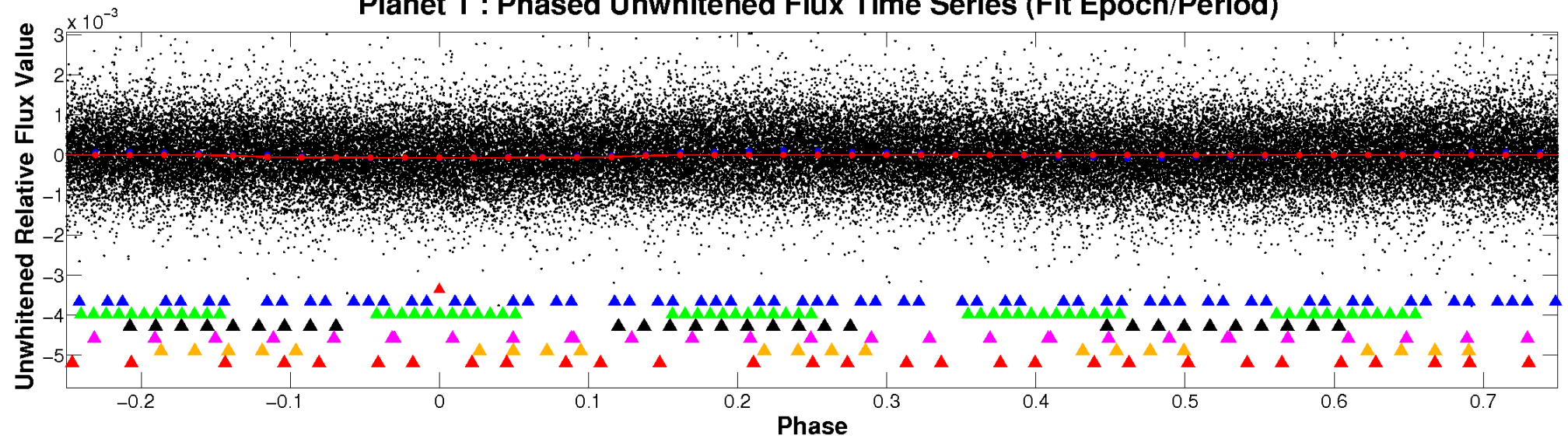
ALT Odd/Even

TCE 009823602-01

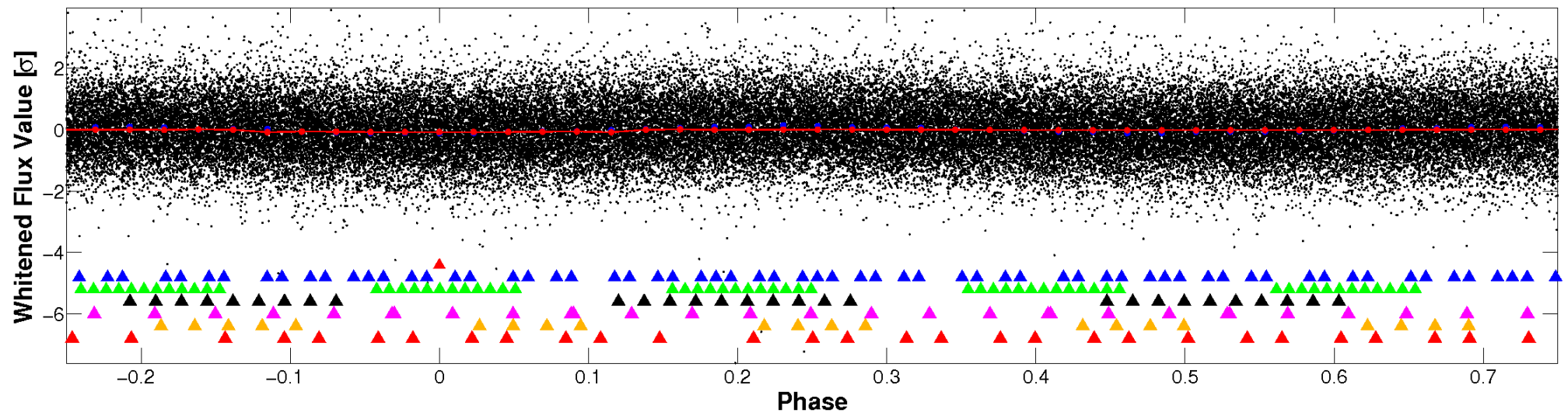


Non-Whitened Vs. Whitened Light Curve

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

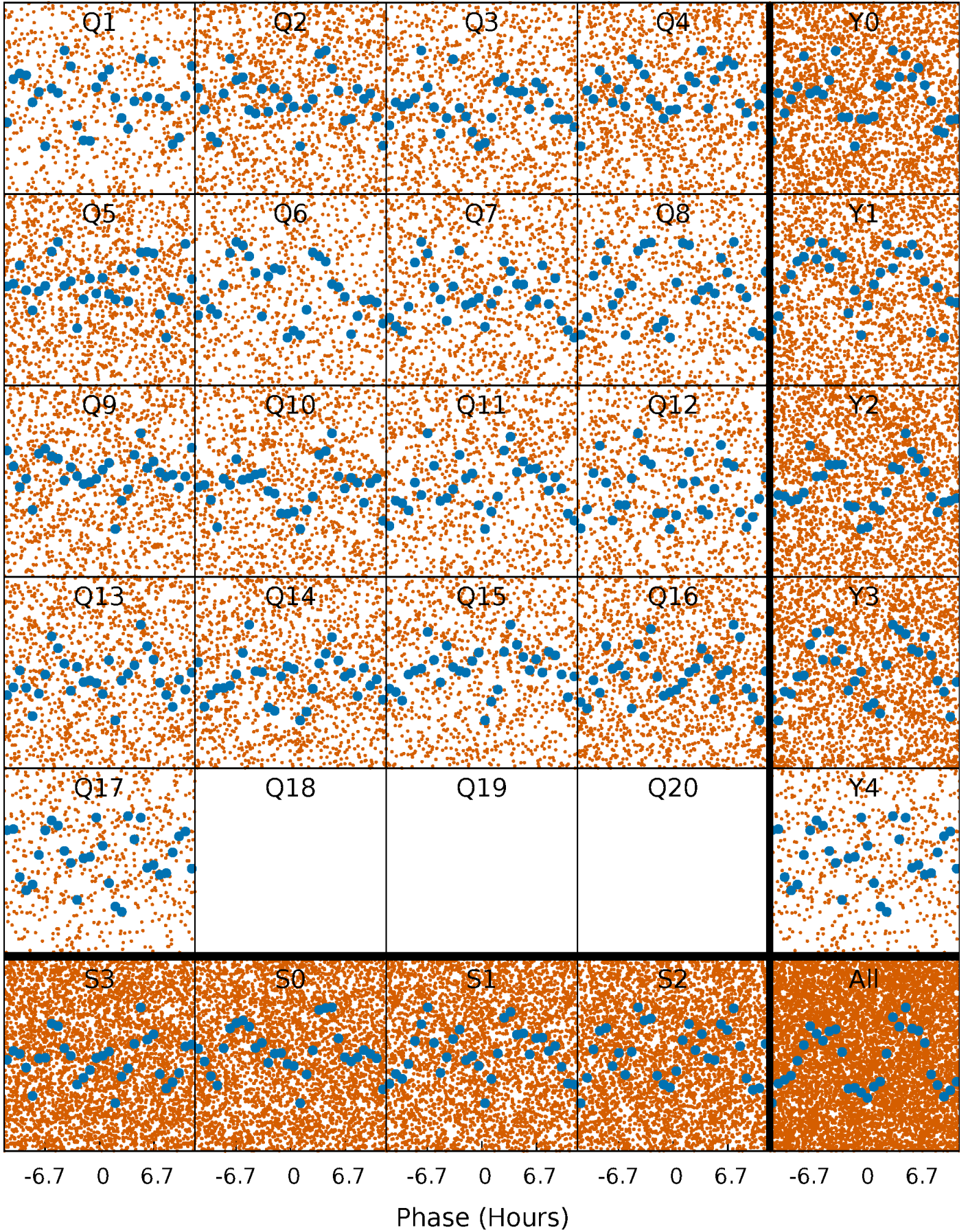


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



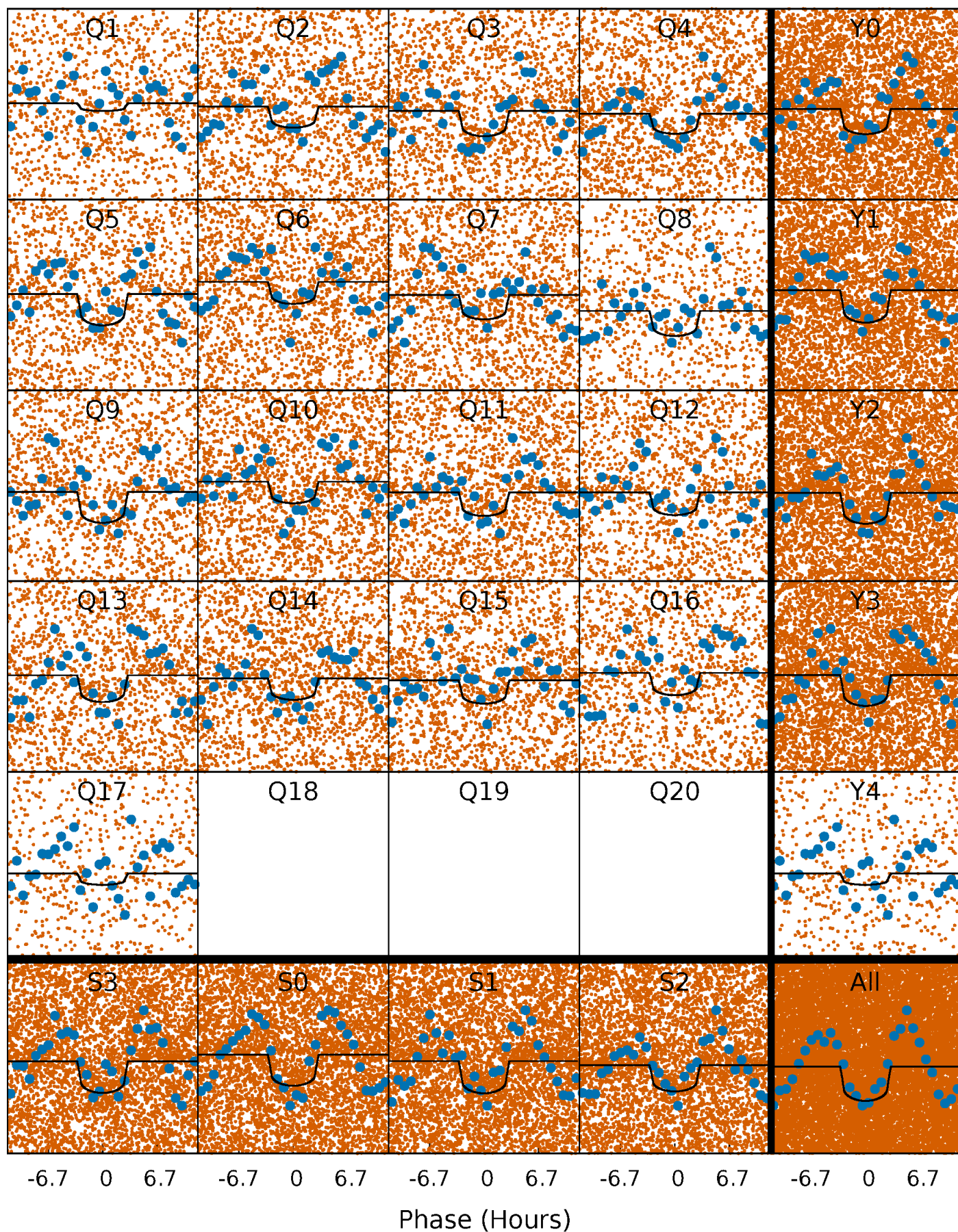
PDC Quarter-Phased Transit Curves

TCE 009823602-01 P= 0.885894 Days $T_0=131.586408$ (BKJD)



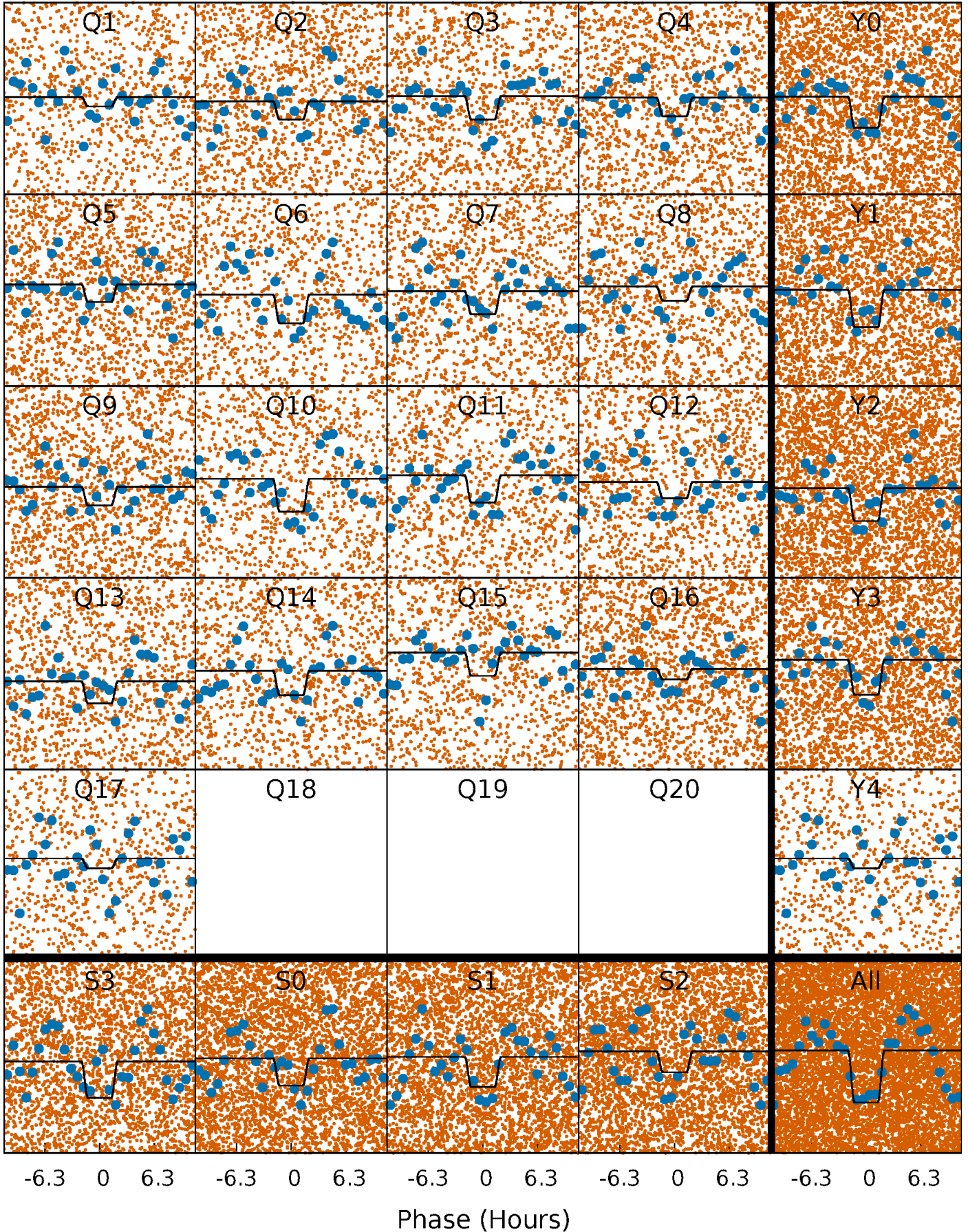
DV Quarter-Phased Transit Curves

TCE 009823602-01 P= 0.885894 Days $T_0=131.586408$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

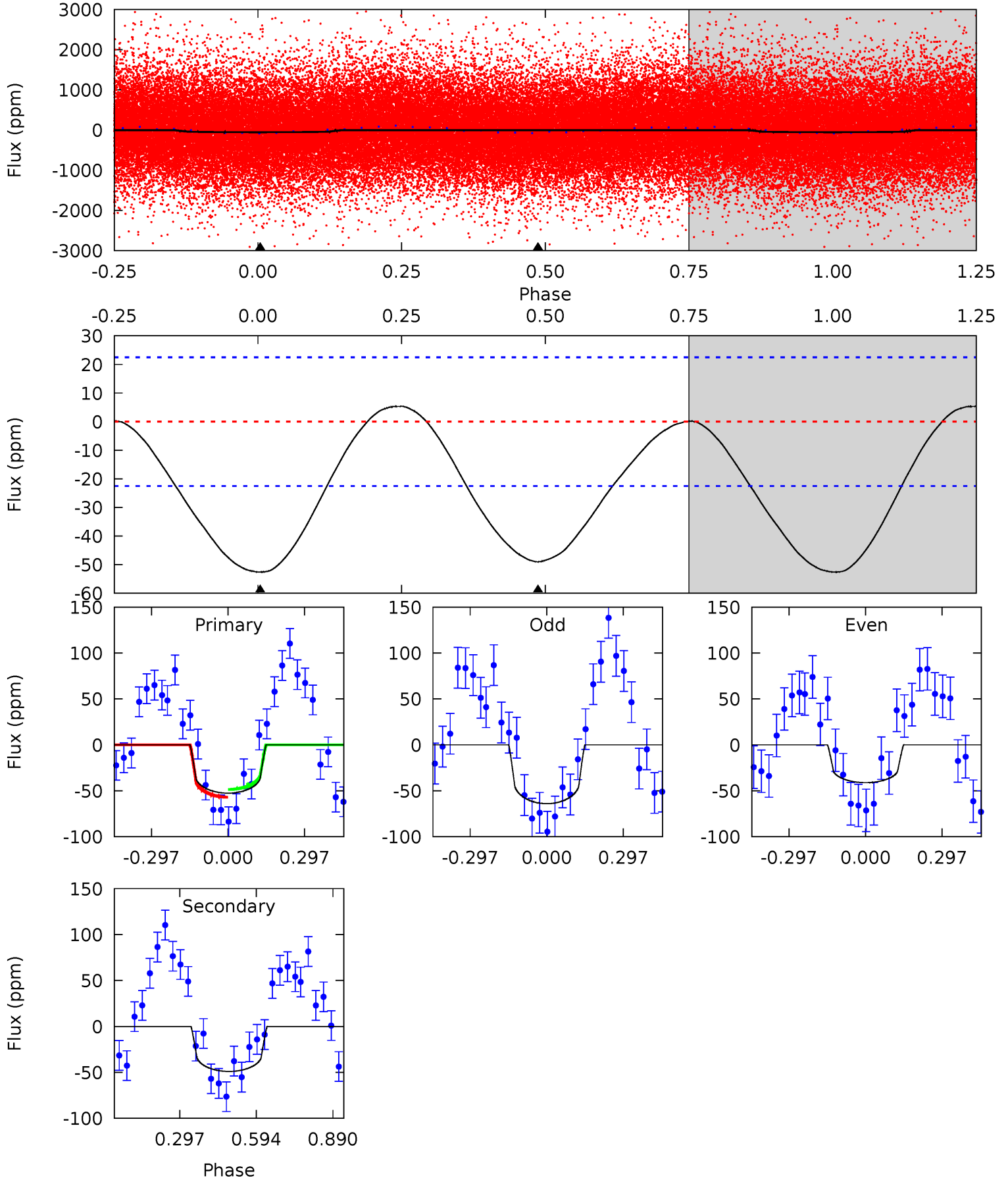
TCE 009823602-01 P= 0.885929 Days $T_0=131.559437$ (BKJD)



DV Model-Shift Uniqueness Test

009823602-01, P = 0.885894 Days, E = 130.700514 Days

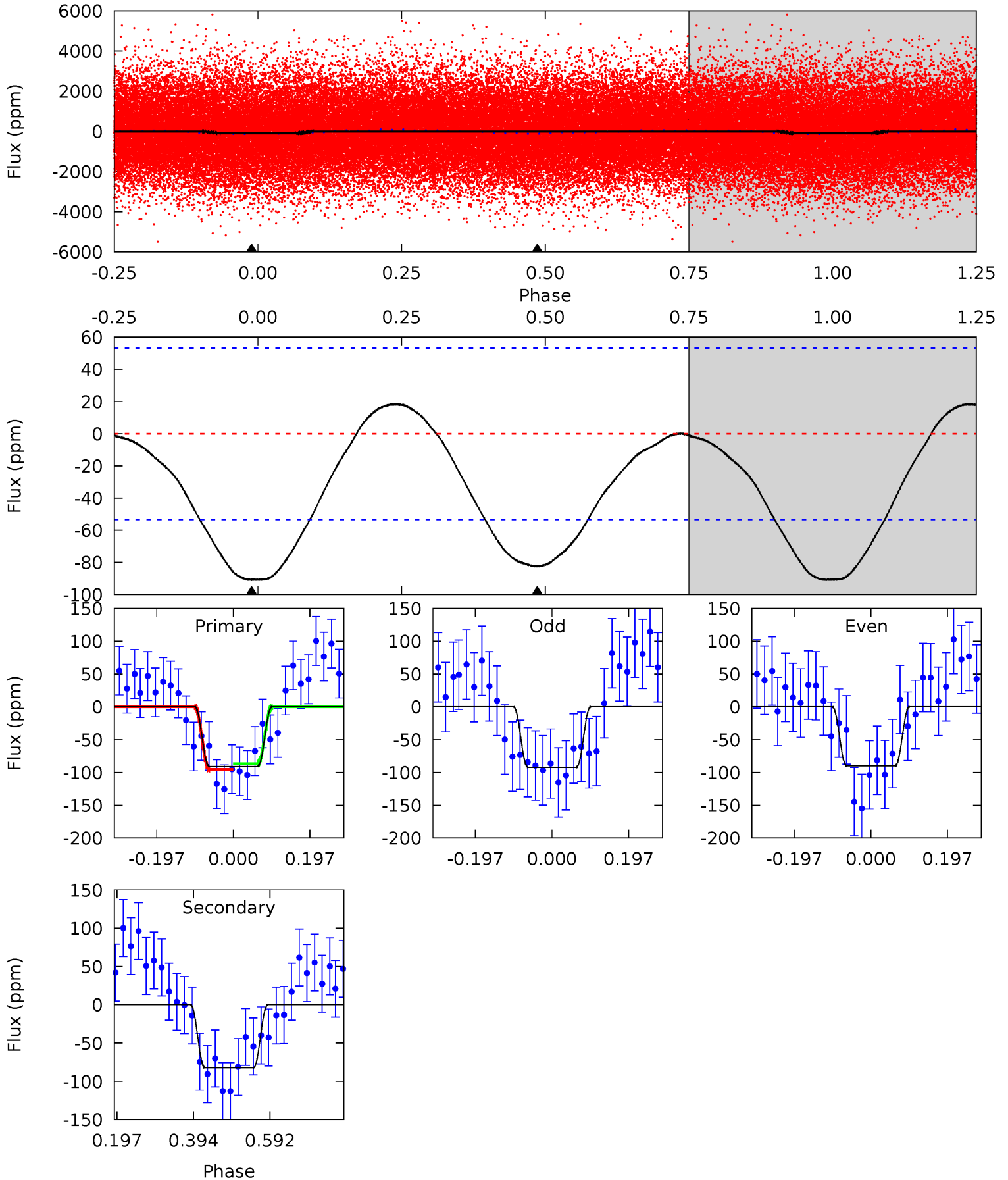
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	9.43	0	0	4.33	1.04	0.55	10.1	10.1	9.43	9.43	2.18	0.93	0.09	0.82



Alt Model-Shift Uniqueness Test

009823602-01, P = 0.885929 Days, E = 130.673508 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.54	6.84	0	0	4.42	1.29	0.78	7.54	7.54	6.84	6.84	0.09	0.91	0.17	0.37



Stellar Parameters For KIC 009823602

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7721^{+214}_{-322}	$3.845^{+0.315}_{-0.105}$	$-0.060^{+0.200}_{-0.350}$	$2.760^{+0.457}_{-1.066}$	$1.943^{+0.110}_{-0.467}$	$0.130^{+0.302}_{-0.043}$
	+3%/-4%	+8%/-3%	+333%/-583%	+17%/-39%	+6%/-24%	+232%/-33%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009823602-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-49 ± 5	$2.25^{+1.01}_{-0.97}$	5157^{+335}_{-507}	6800^{+3231}_{-1253}	$2.569^{+5.560}_{-1.327}$
Alt.	-82 ± 12	$2.76^{+1.19}_{-1.03}$	5140^{+360}_{-464}	6994^{+2325}_{-1236}	$2.828^{+4.335}_{-1.410}$

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

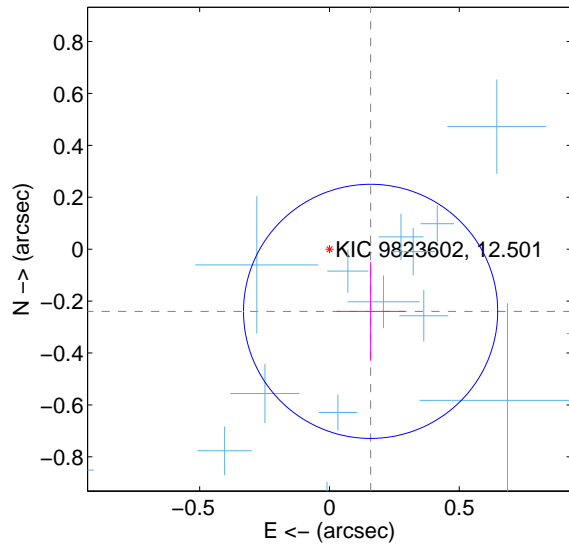
Supplemental centroid analysis for 009823602-01. Kepler magnitude: 12.50. Transit SNR 9.32

There are 17 quarters with good PRF difference image offsets

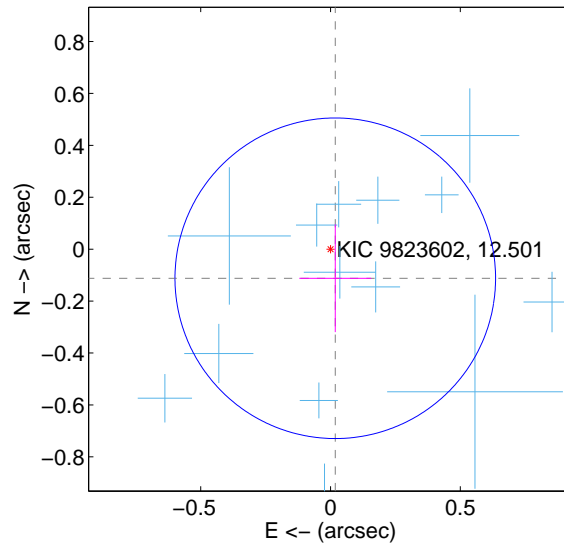
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.287 ± 0.163	1.76	-0.158 ± 0.132	-0.240 ± 0.190
PRF-fit source offset from KIC position	0.114 ± 0.206	0.55	-0.018 ± 0.138	-0.112 ± 0.208
photometric centroid source offset	0.04 ± 0.15	0.24	-0.02 ± 0.15	-0.03 ± 0.15

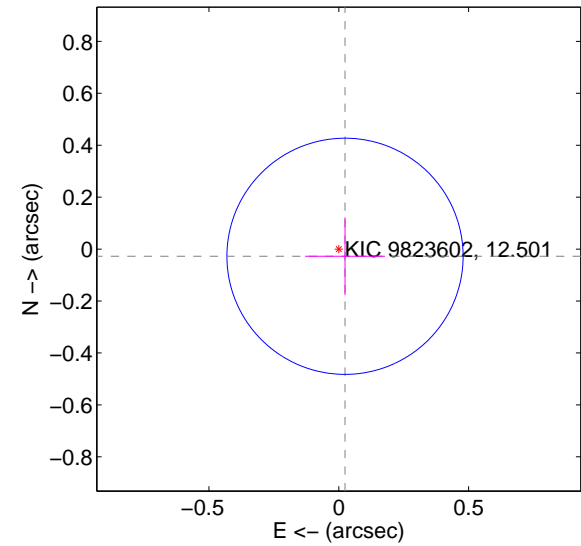
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

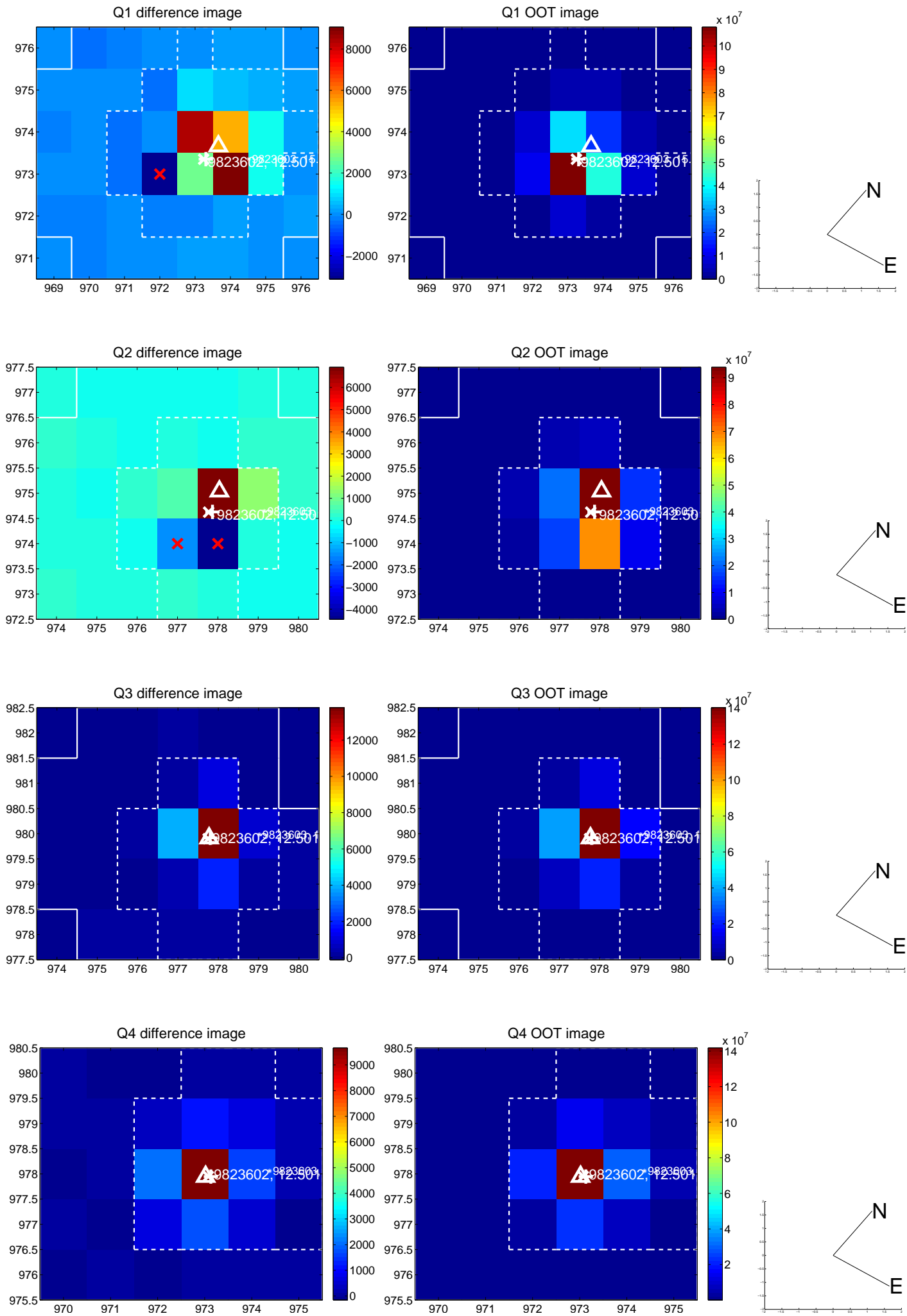


offset from photometric centroids

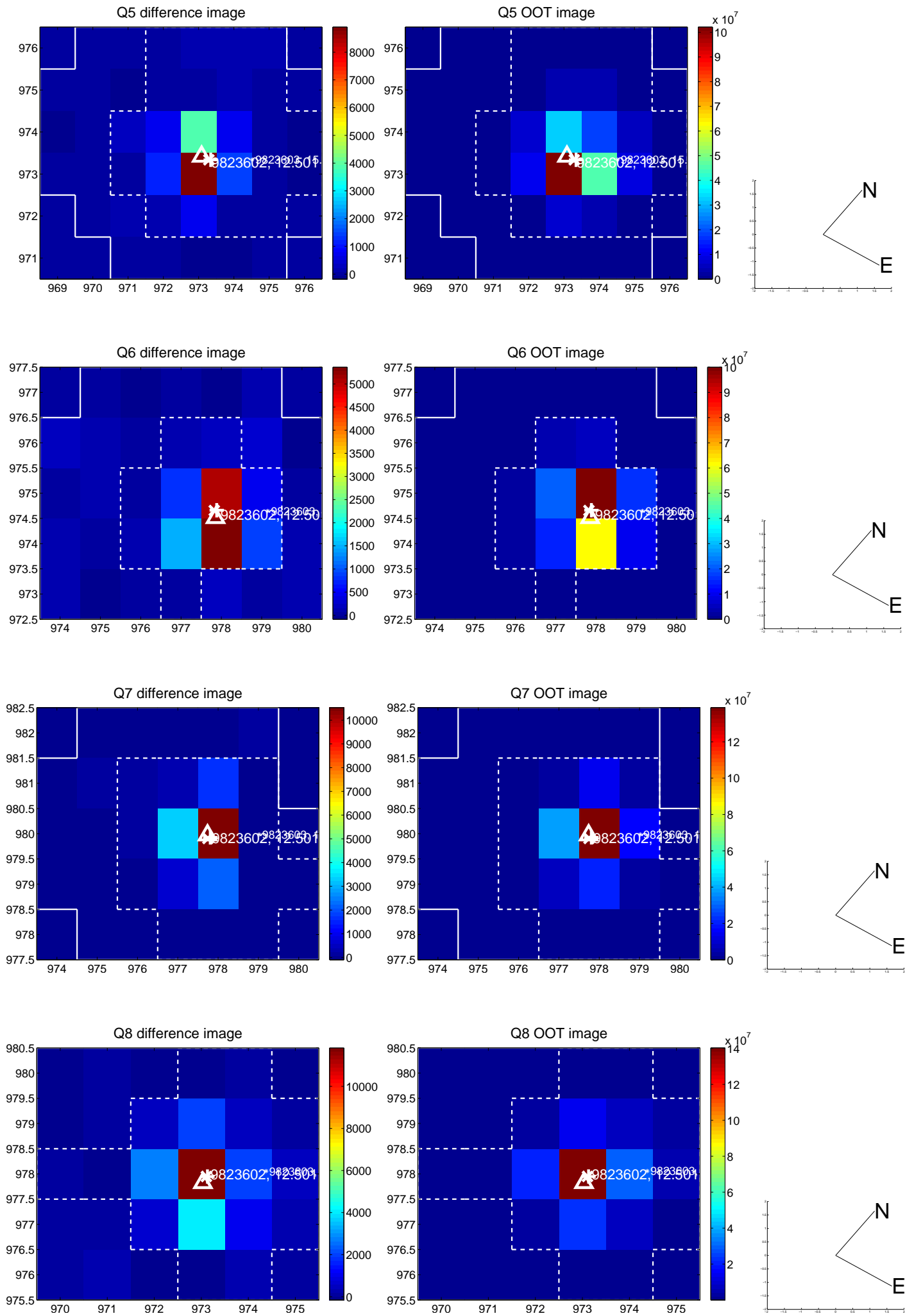


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

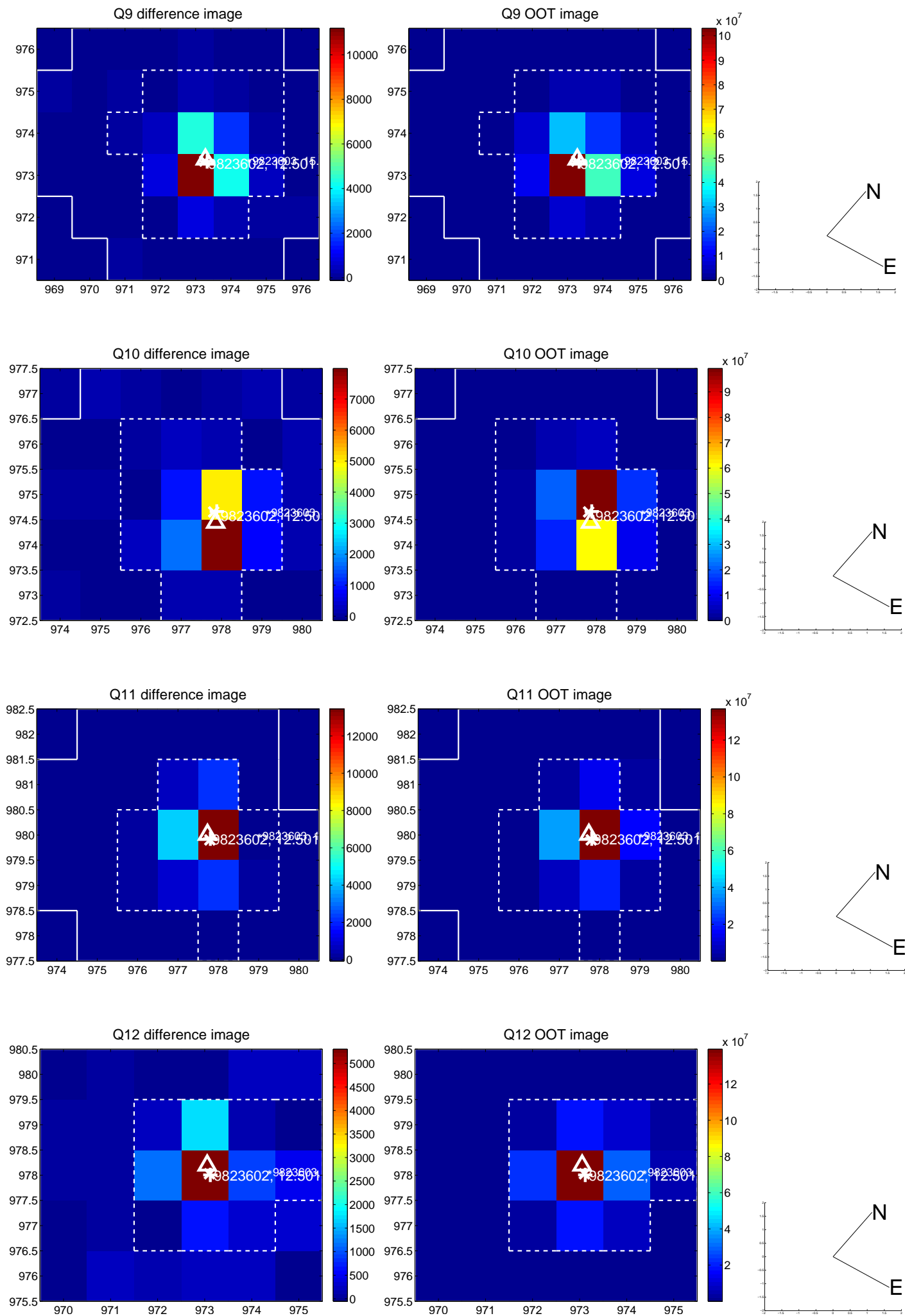
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



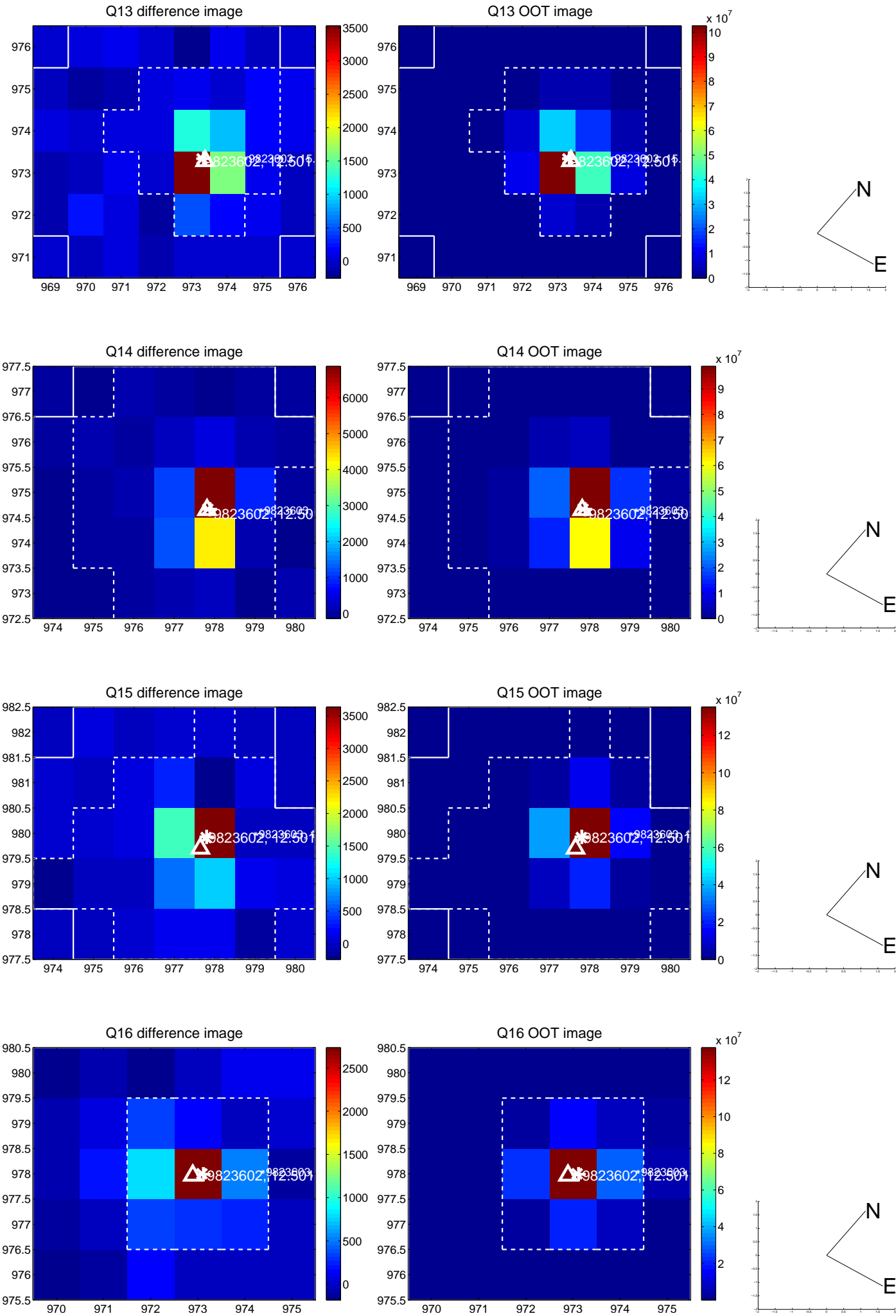
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



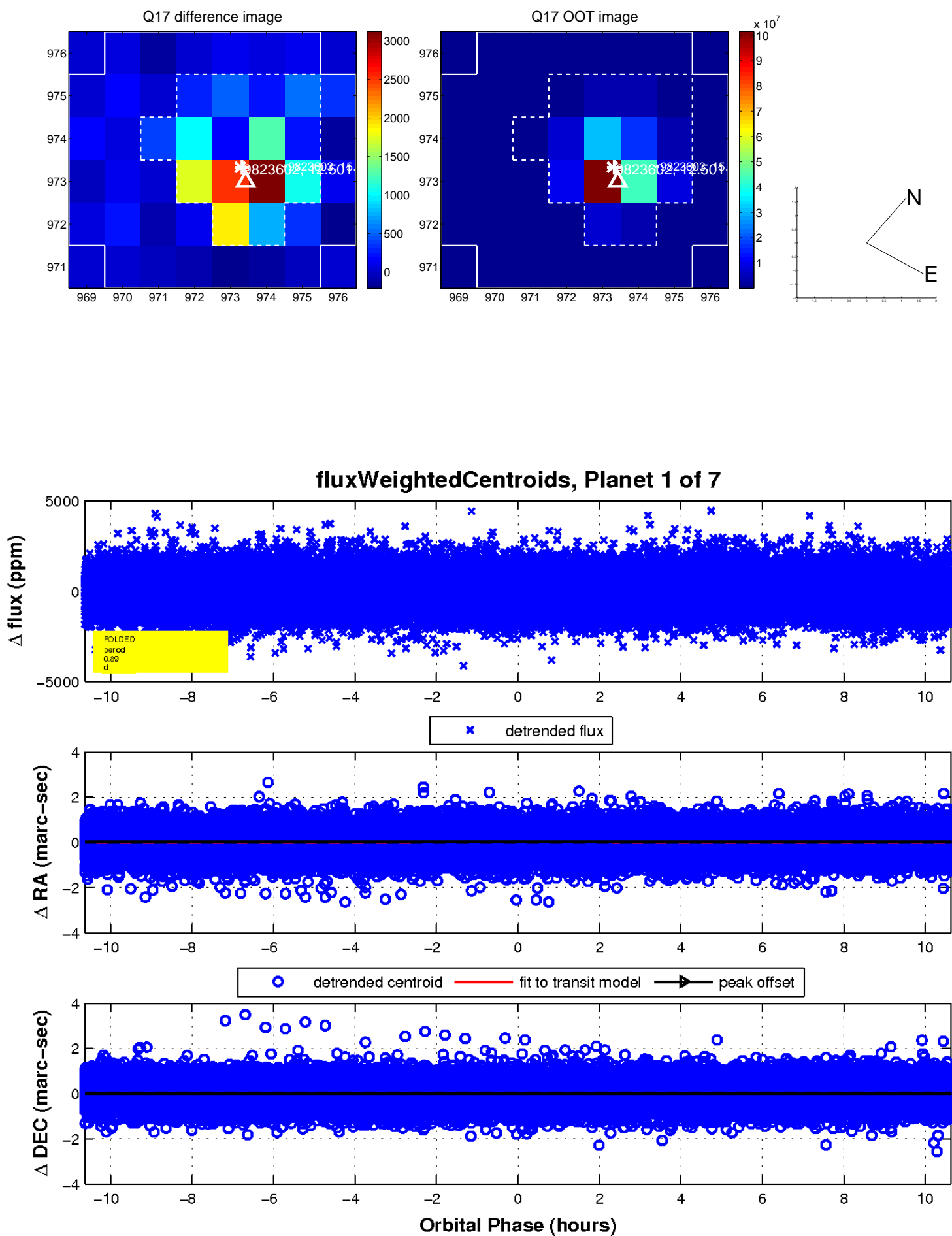
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

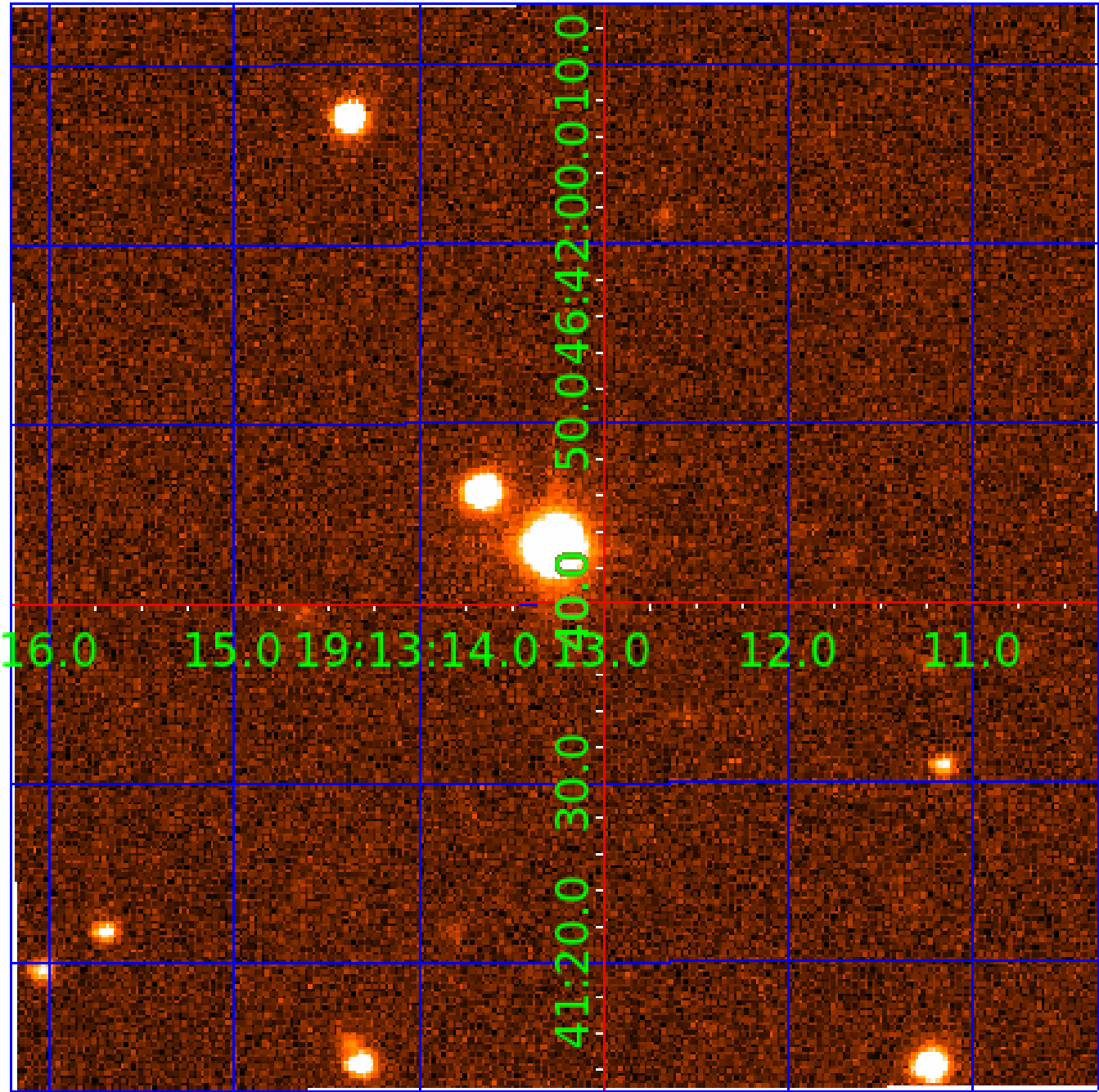


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009823602

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})
009823602-01	OBS	No	0.885894	131.586408	69.1	5.867	9.5	9.3	2.76	7721	2.42	47755.01
009823602-02	OBS	No	22.353765	140.678766	1152.6	1.921	13.7	11.3	2.76	7721	9.57	645.25
009823602-03	OBS	No	24.094820	145.278836	2976.3	0.816	13.0	11.1	2.76	7721	25.70	583.84
009823602-04	OBS	No	51.091659	133.754778	1345.0	2.556	12.6	10.8	2.76	7721	16.91	214.32
009823602-05	OBS	No	49.220329	163.840237	1758.1	3.949	11.8	14.0	2.76	7721	18.82	225.25
009823602-06	OBS	No	69.458100	147.367148	1790.7	2.486	11.6	11.2	2.76	7721	13.61	142.31
009823602-07	OBS	No	50.182079	152.371615	359.6	2.000	10.9	-1.0	2.76	7721	5.31	219.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823602-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009823602-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
009823602-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
009823602-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009823602-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

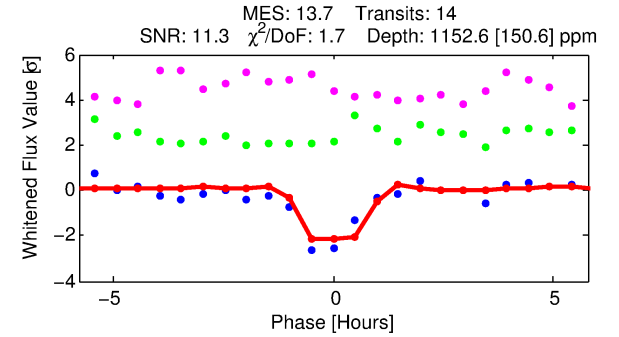
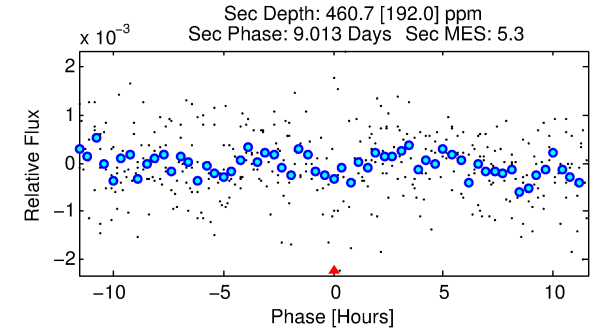
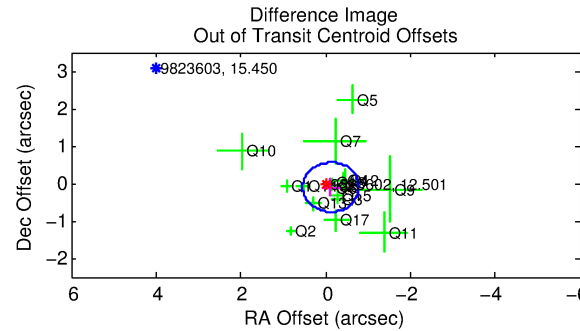
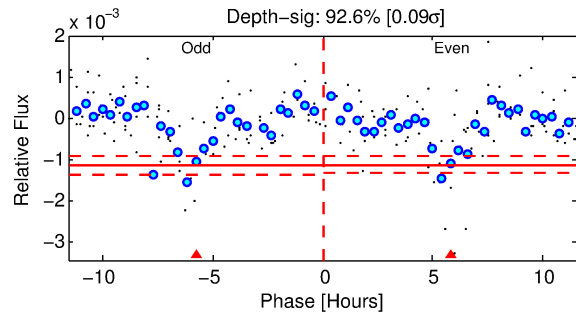
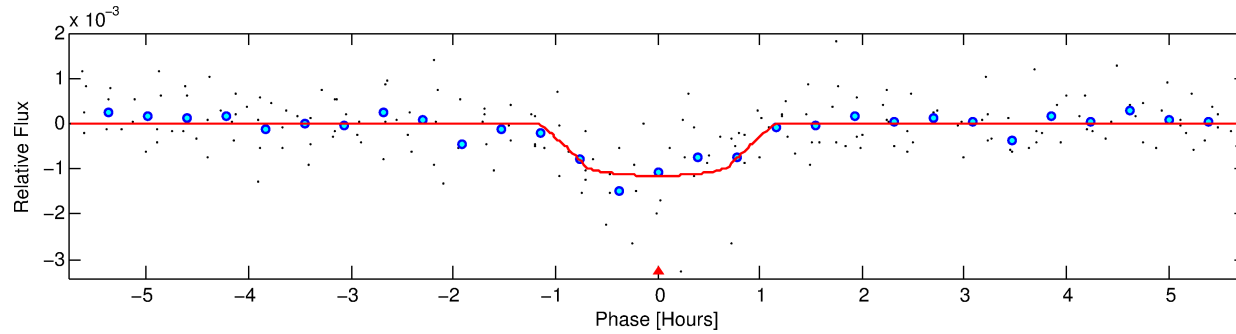
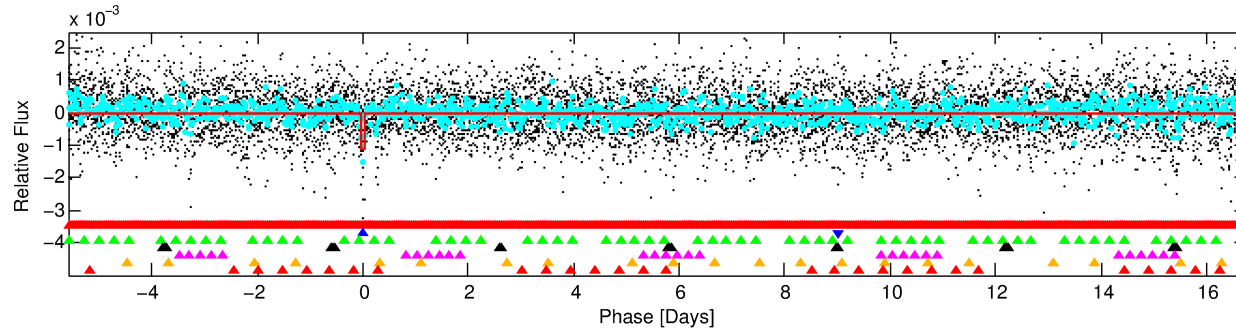
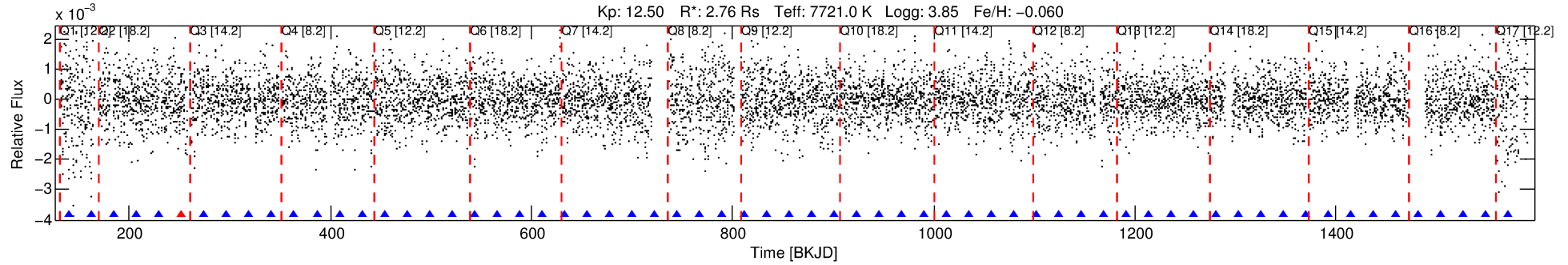
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823602-02

No Significant Match Found

DV One-Page Summary

KIC: 9823602 Candidate: 2 of 7 Period: 22.354 d



DV Fit Results:

Period = 22.35377 [0.00015] d
Epoch = 140.6788 [0.0052] BKJD
Rp/R* = 0.0318 [0.0465]
a/R* = 87.96 [747.44]
b = 0.29 [26.84]
Seff = 645.25 [369.51]
Teq = 1285 [184] K
Rp = 9.57 [14.49] Re
a = 0.1939 [0.0685] AU
Ag = 103.93 [312.55] [0.33 σ]
Teffp = 6344 [4698] K [1.08 σ]

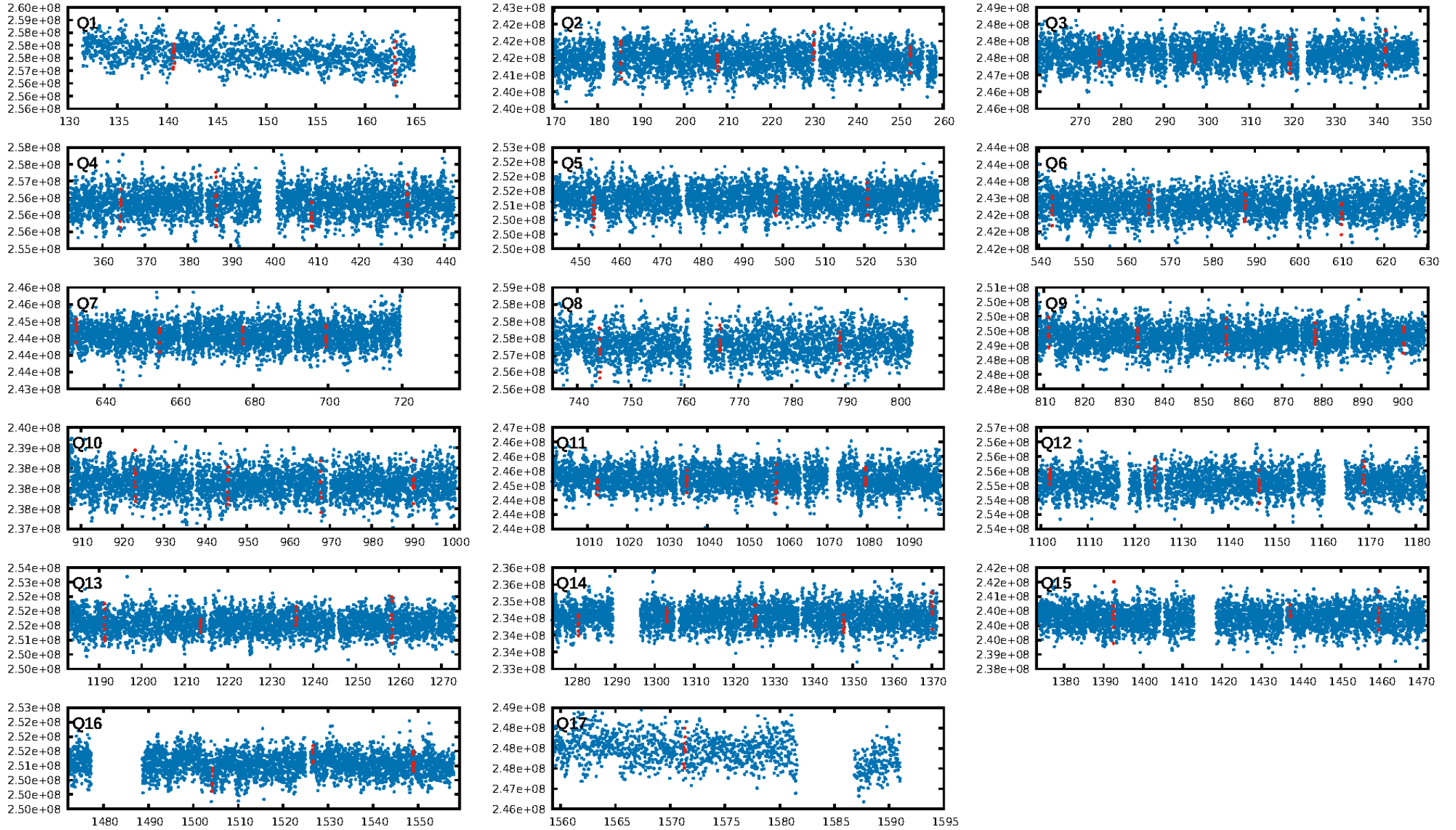
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.46 σ]
LongPeriod-sig: 100.0% [20.02 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 49.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.92 [12/13]
GhostDiagnostic-chr: -0.561
Centroid-sig: 0.3%
Centroid-so: 0.318 arcsec [3.81 σ]
OotOffset-rm: 0.159 arcsec [0.72 σ]
KicOffset-rm: 0.023 arcsec [0.10 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.53 [9/17]
DiffImageOverlap-fno: 0.53 [9/17]

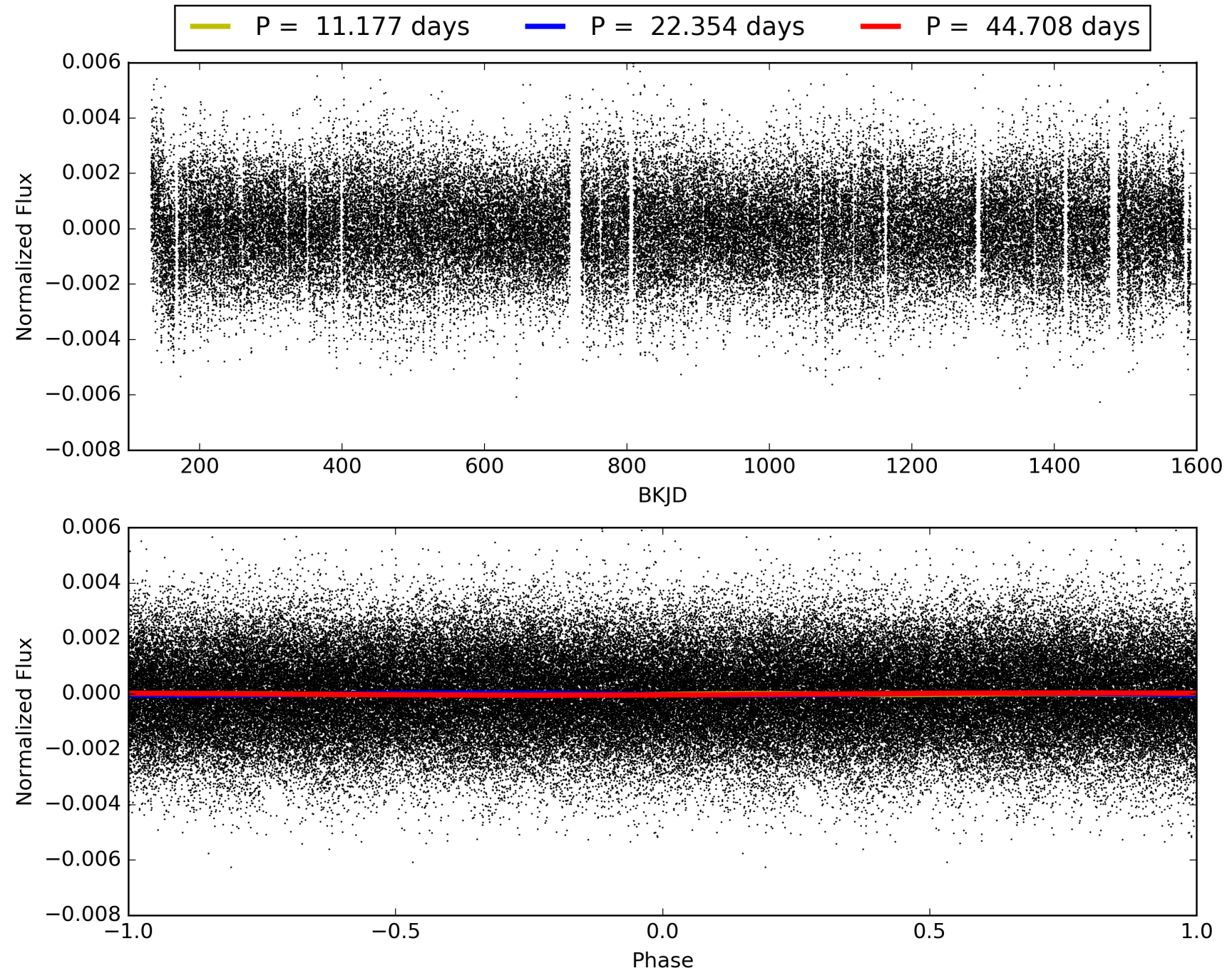
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:56:03 Z

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

TCE 009823602-02, PDC Light Curves

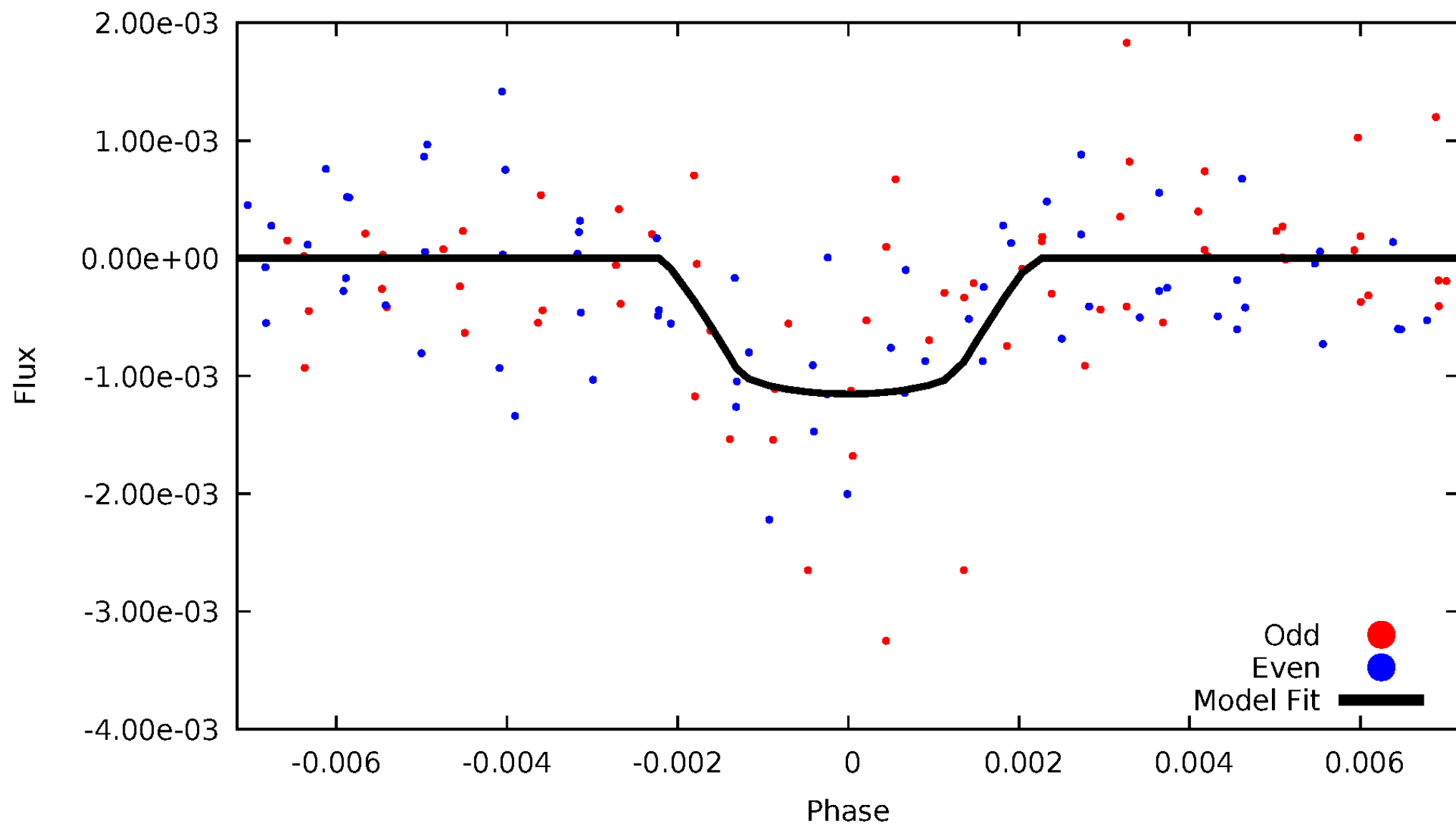


TCE 009823602-02



DV Odd/Even

TCE 009823602-02

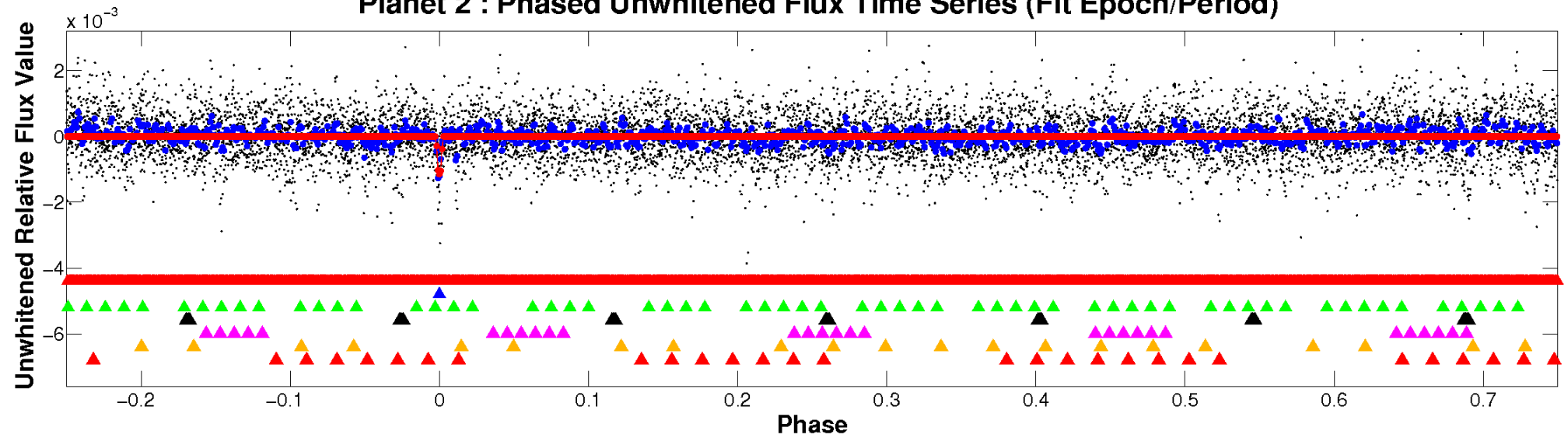


ALT Odd/Even

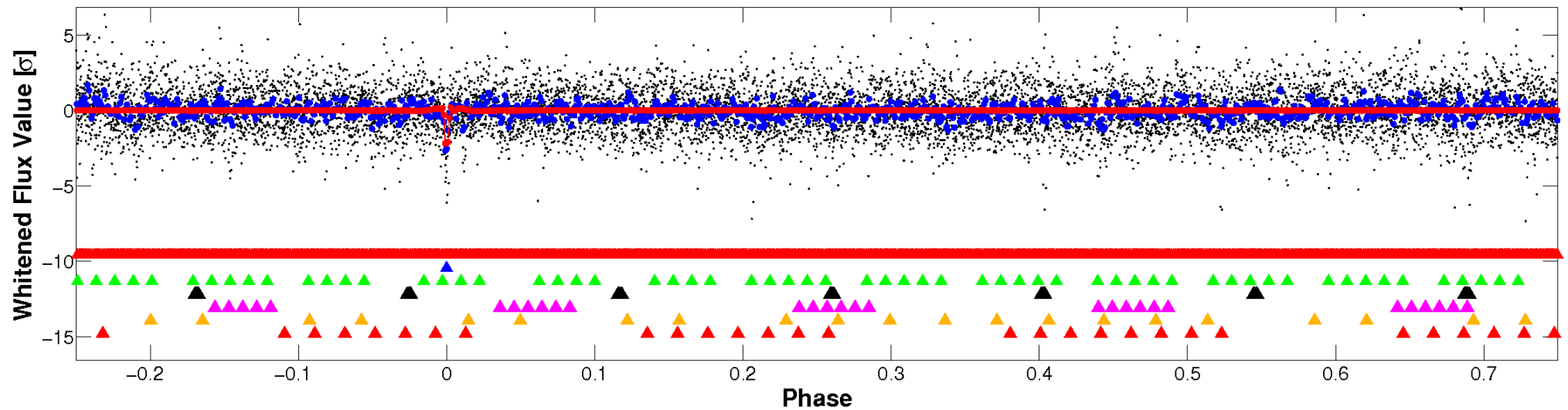
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

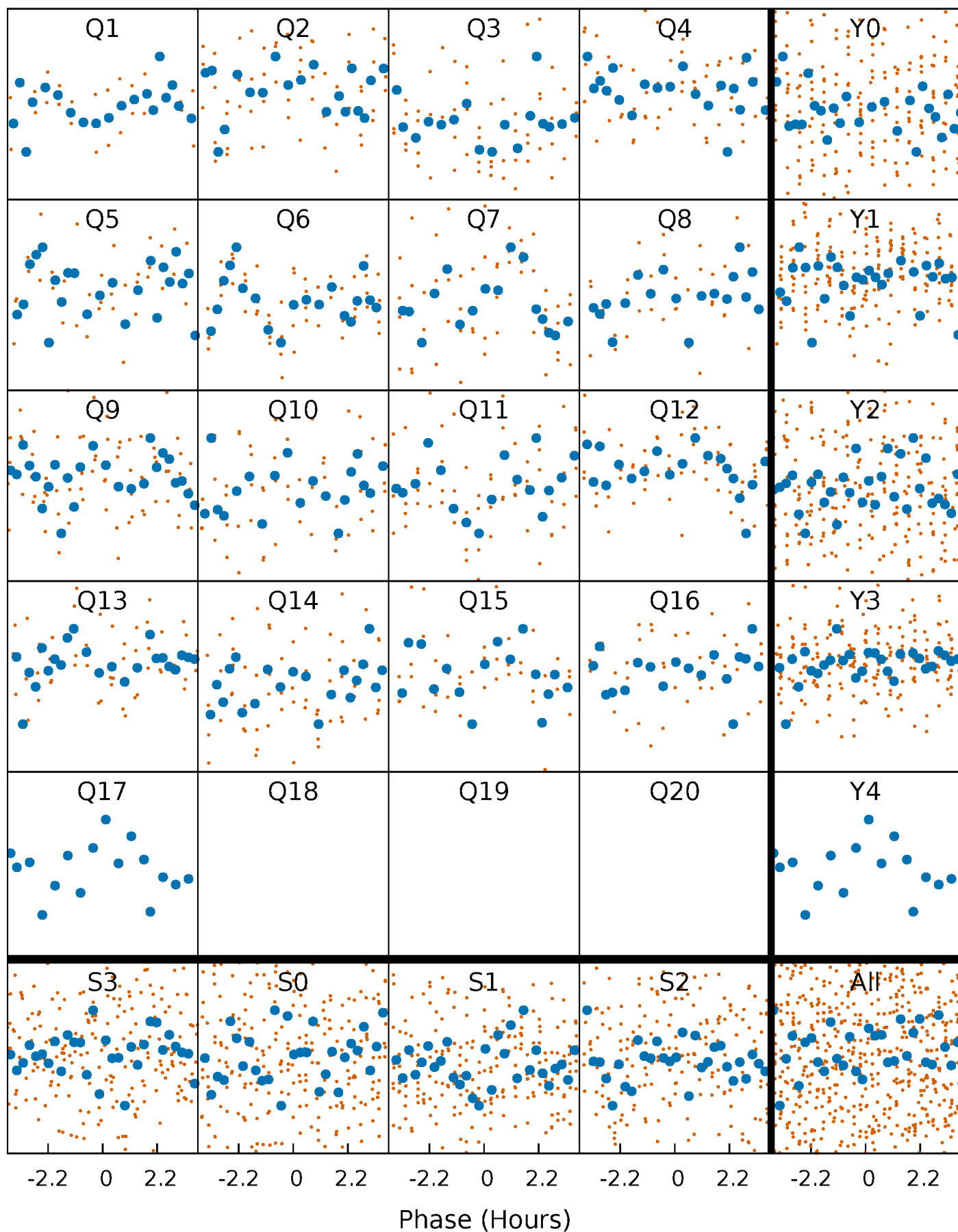


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



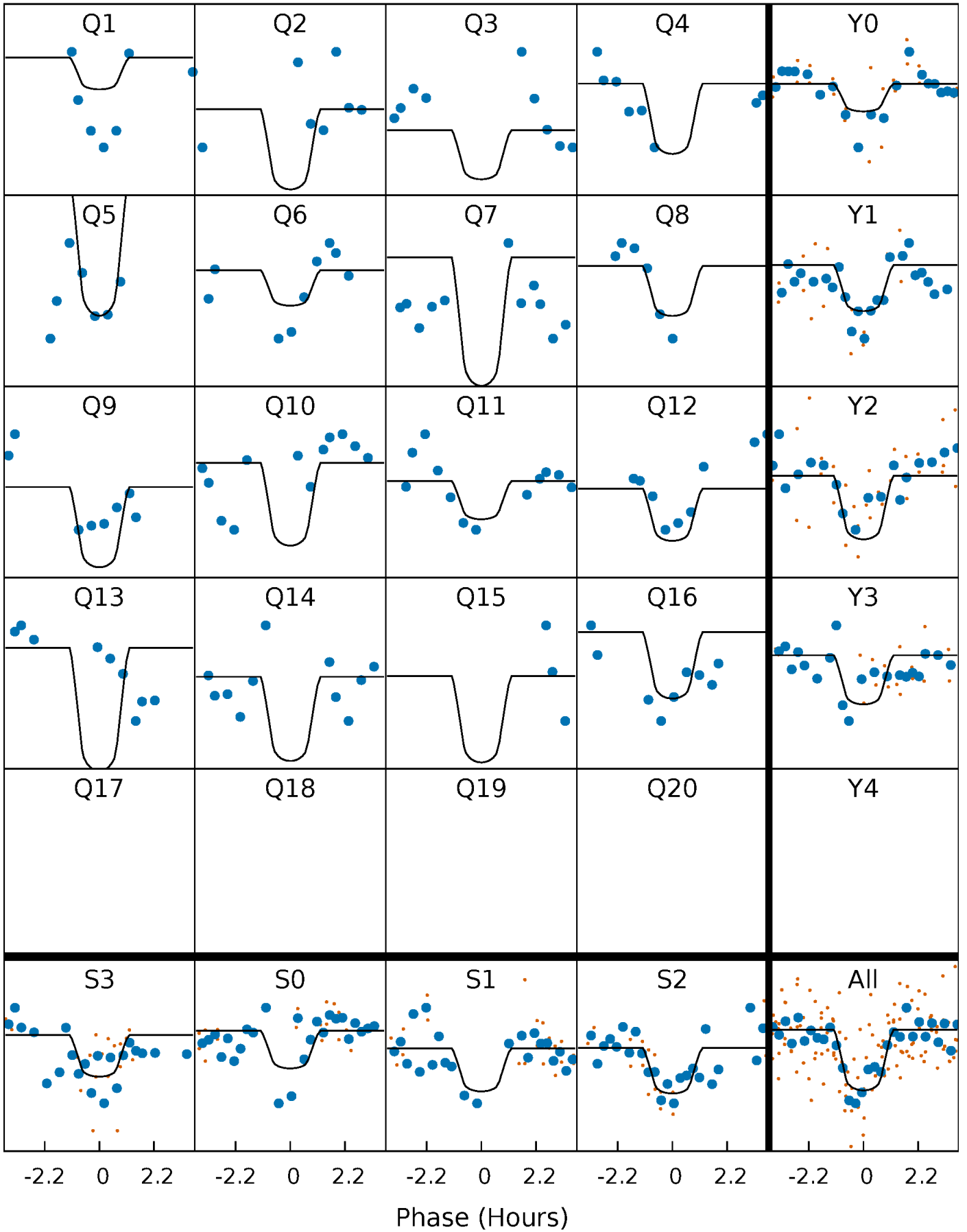
PDC Quarter-Phased Transit Curves

TCE 009823602-02 $P = 22.353765$ Days $T_0 = 140.678766$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 009823602-02 P= 22.353765 Days $T_0=140.678766$ (BKJD)

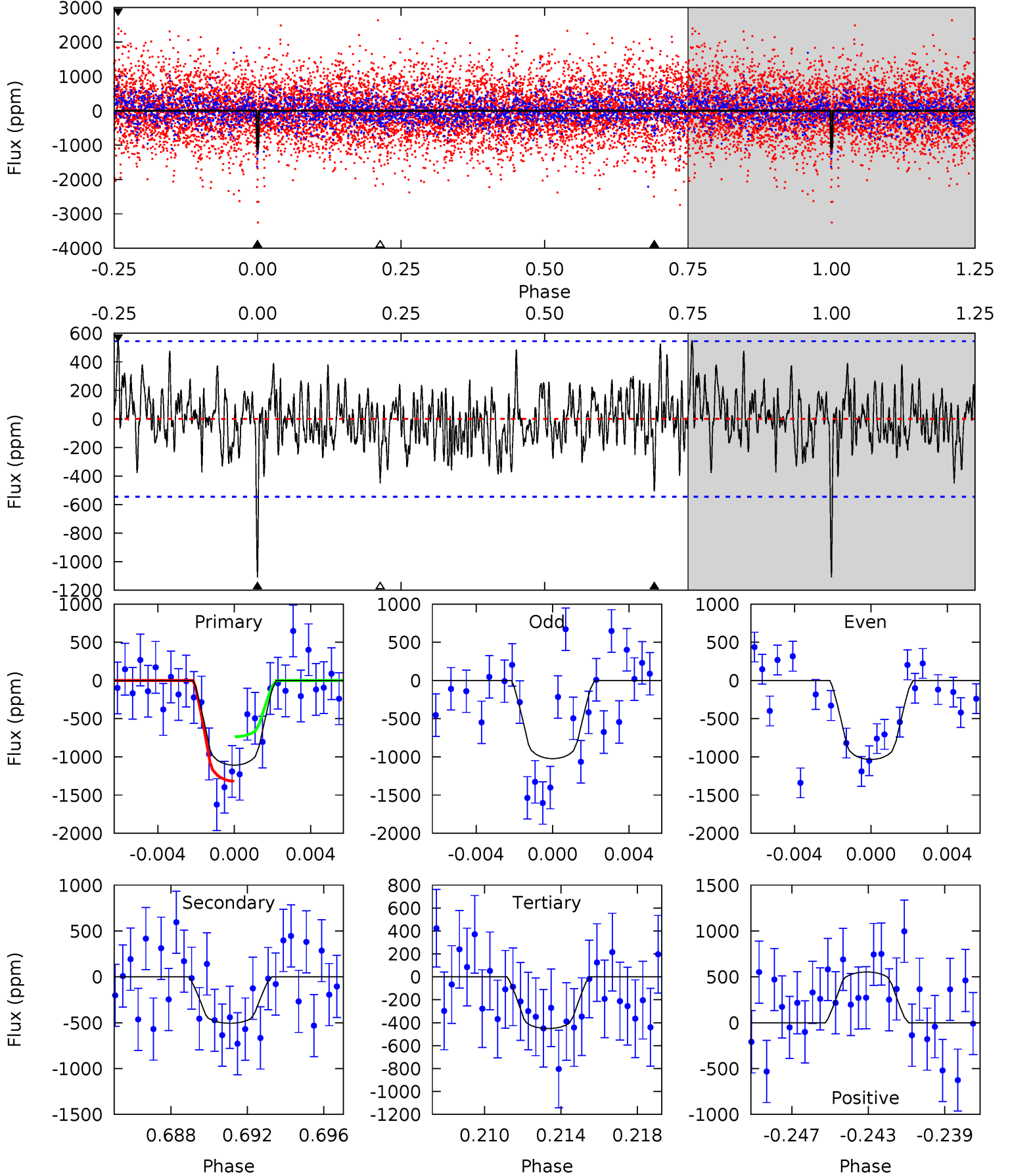


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

009823602-02, P = 22.353765 Days, E = 118.325001 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	4.83	4.30	5.27	5.19	2.87	1.49	6.27	5.30	0.53	-0.44	0.05	0.87	0.33	2.73



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 009823602

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7721^{+214}_{-322}	$3.845^{+0.315}_{-0.105}$	$-0.060^{+0.200}_{-0.350}$	$2.760^{+0.457}_{-1.066}$	$1.943^{+0.110}_{-0.467}$	$0.130^{+0.302}_{-0.043}$
	+3%/-4%	+8%/-3%	+333%/-583%	+17%/-39%	+6%/-24%	+232%/-33%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009823602-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-507 ± 105	$12.27^{+11.57}_{-8.44}$	1761^{+117}_{-176}	5360^{+5381}_{-1207}	65^{+611}_{-47}
Alt.	N/A	N/A	N/A	N/A	N/A

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 $A_{obs} \gg 1.0$

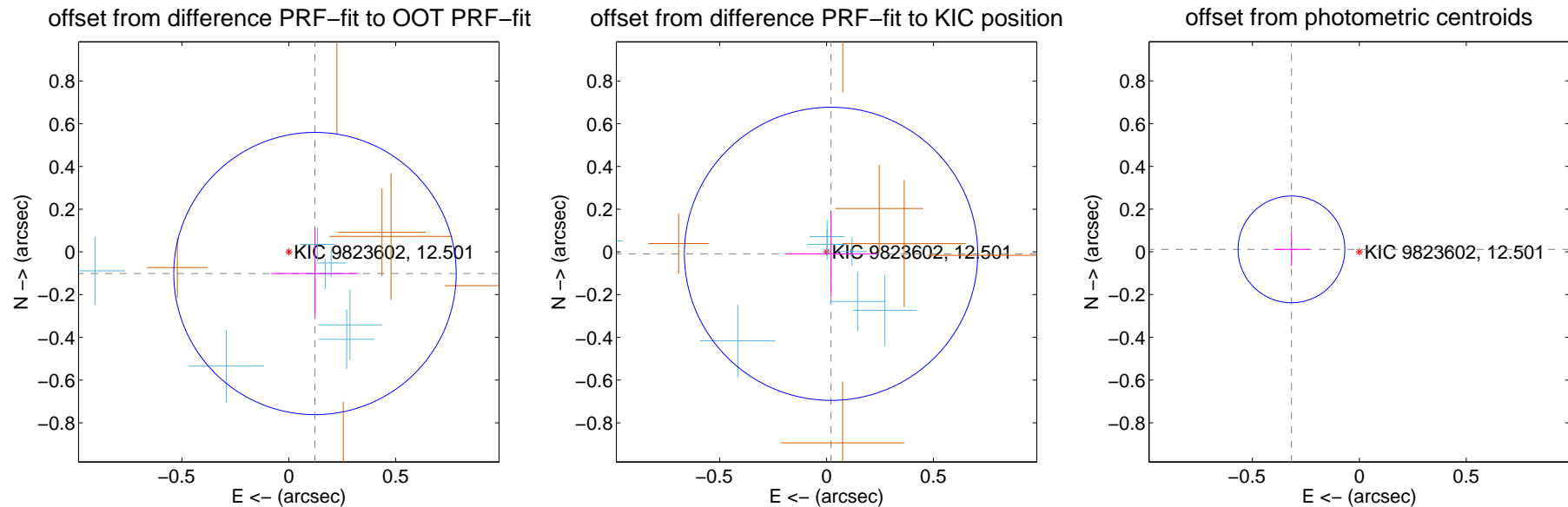
DV Centroid Data

Supplemental centroid analysis for 009823602-02. Kepler magnitude: 12.50. Transit SNR 11.32

There are 9 quarters with good PRF difference image offsets

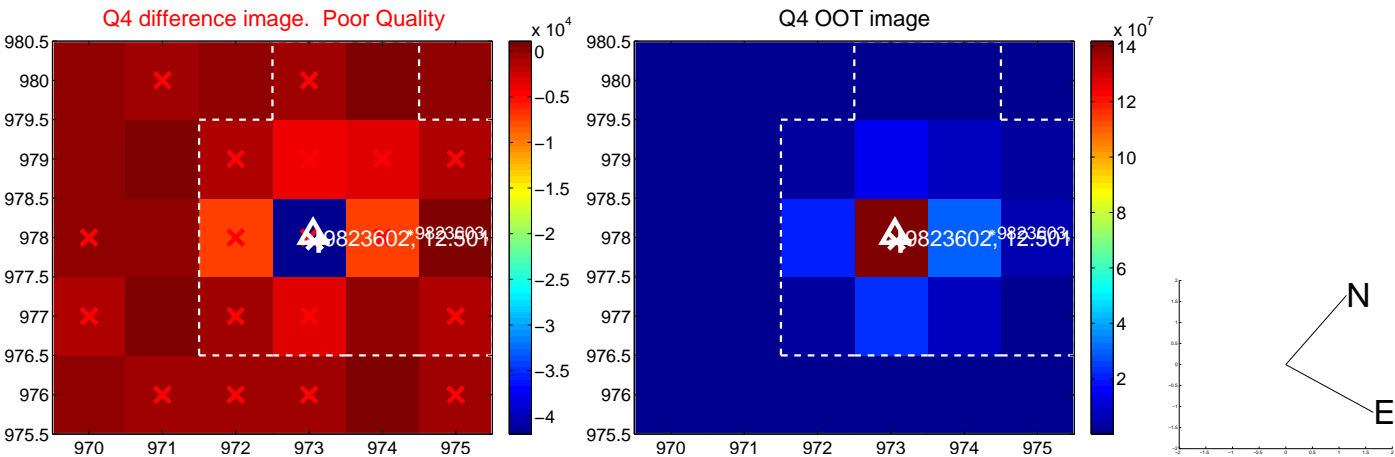
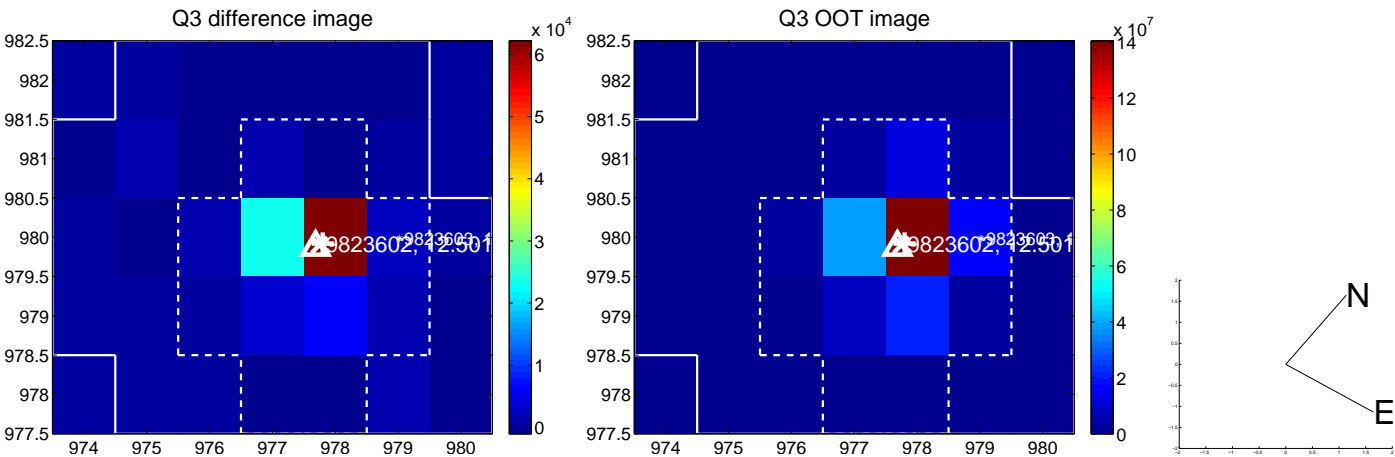
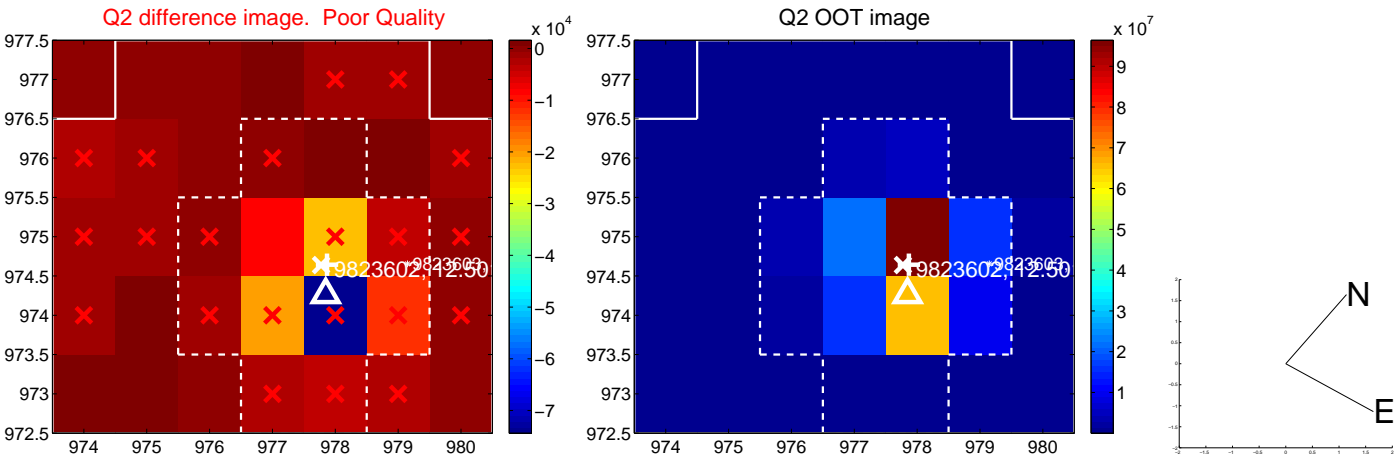
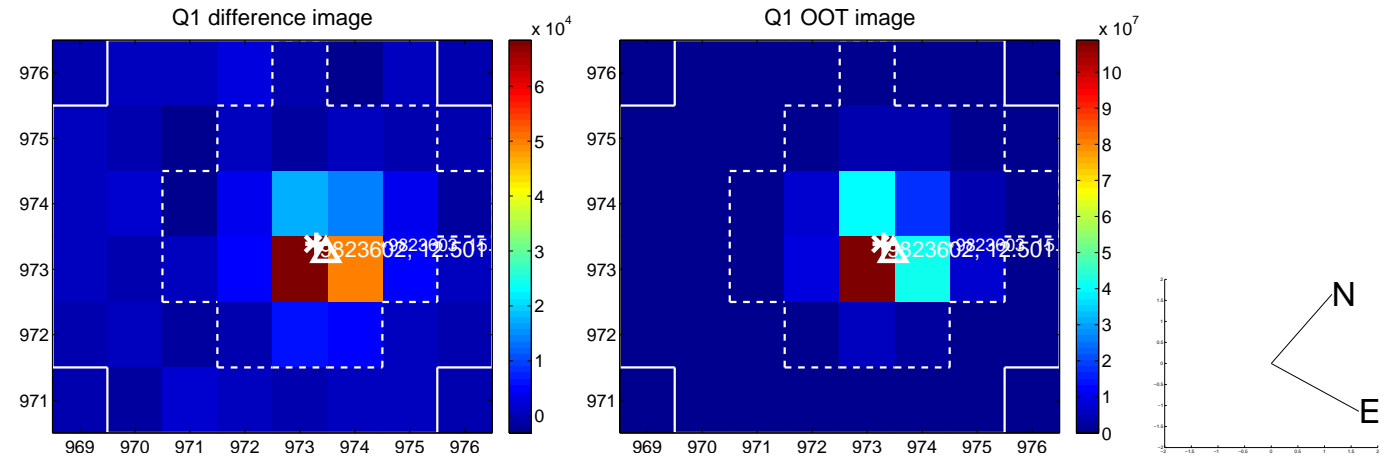
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.159 ± 0.220	0.72	-0.122 ± 0.205	-0.101 ± 0.210
PRF-fit source offset from KIC position	0.023 ± 0.229	0.10	-0.021 ± 0.215	-0.009 ± 0.202
photometric centroid source offset	0.32 ± 0.08	3.81	0.32 ± 0.08	0.01 ± 0.08

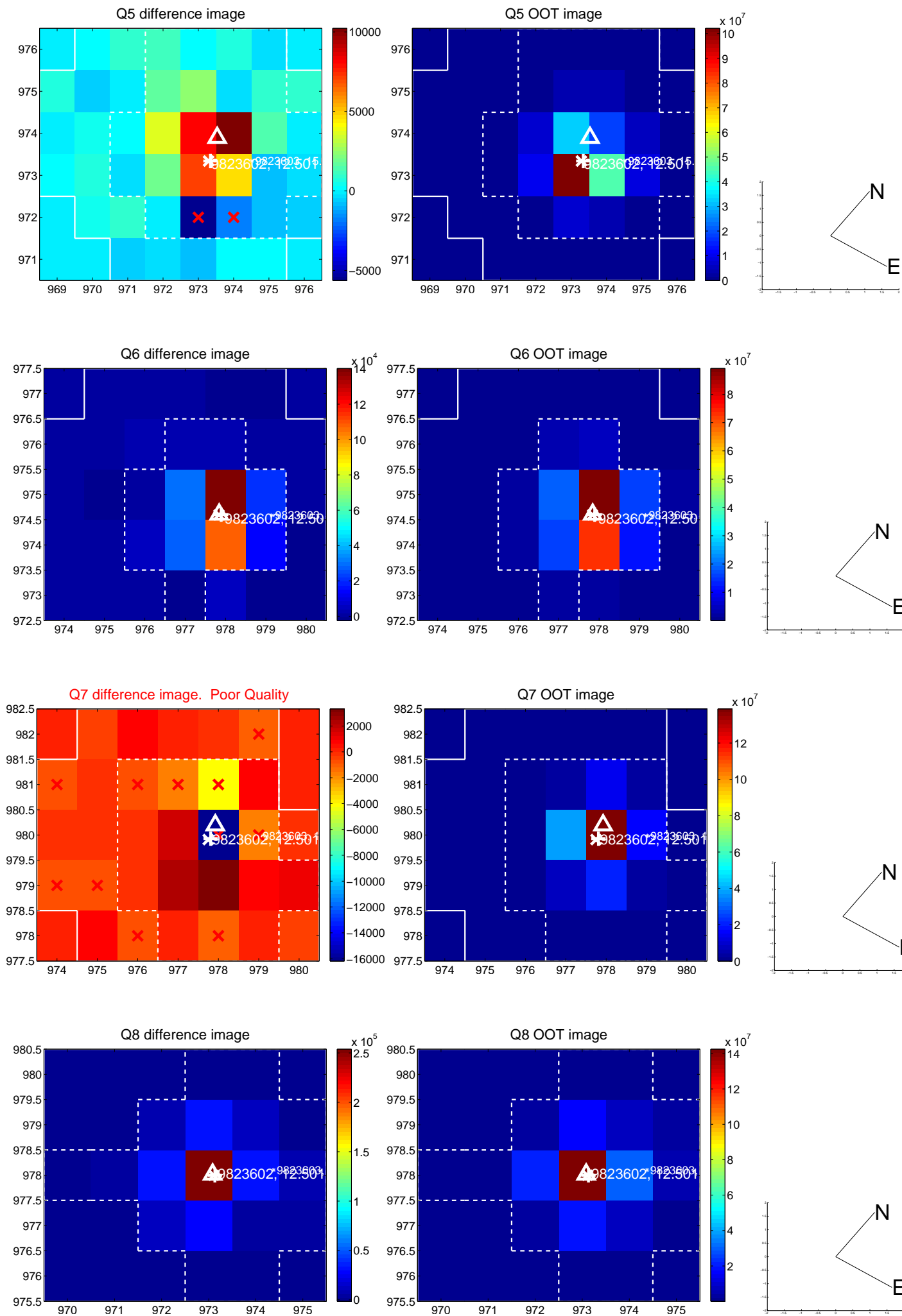


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

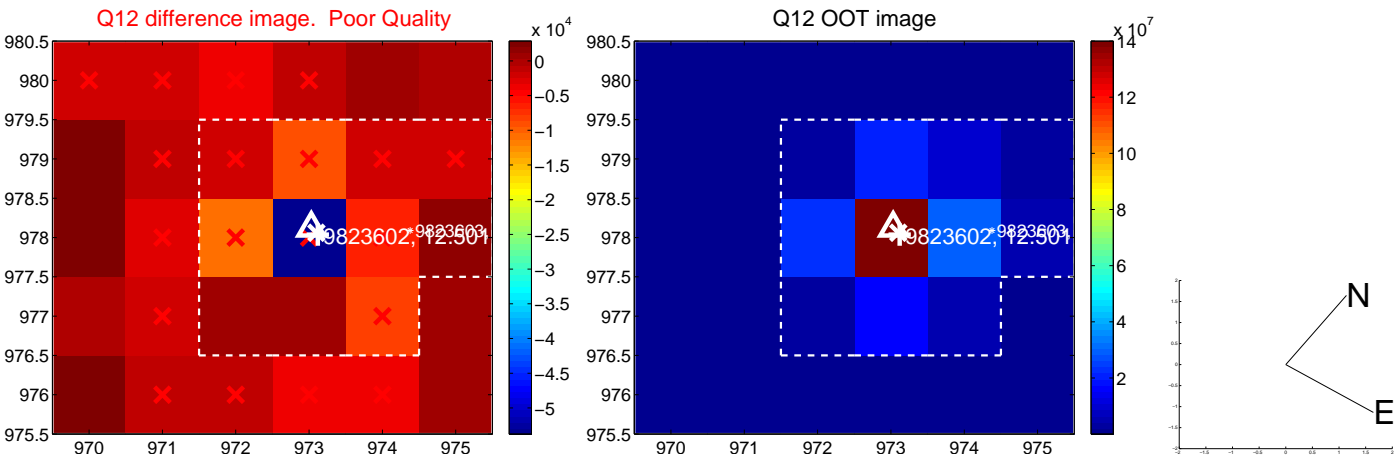
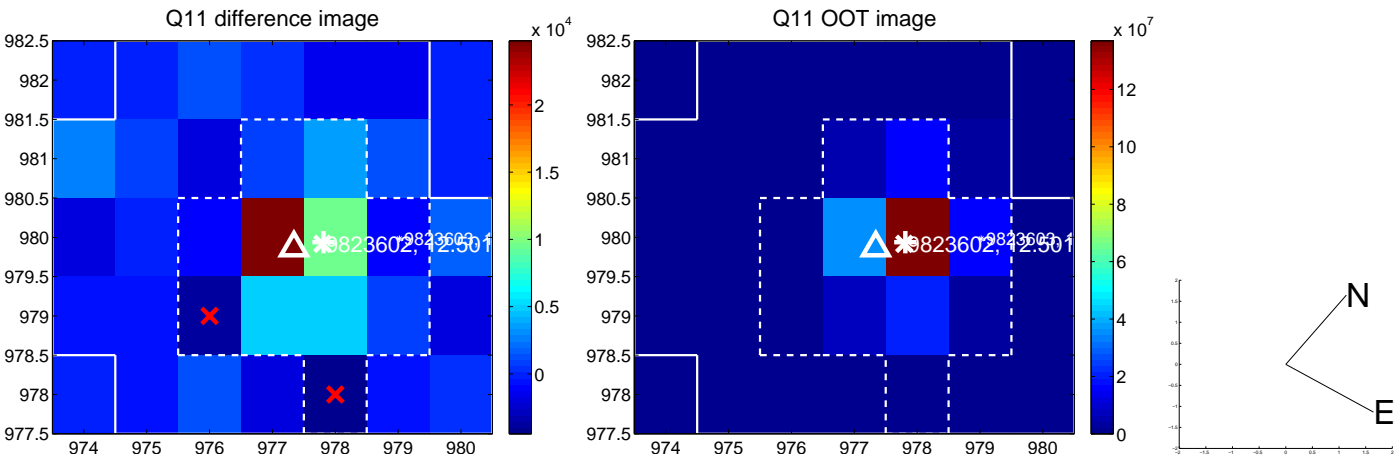
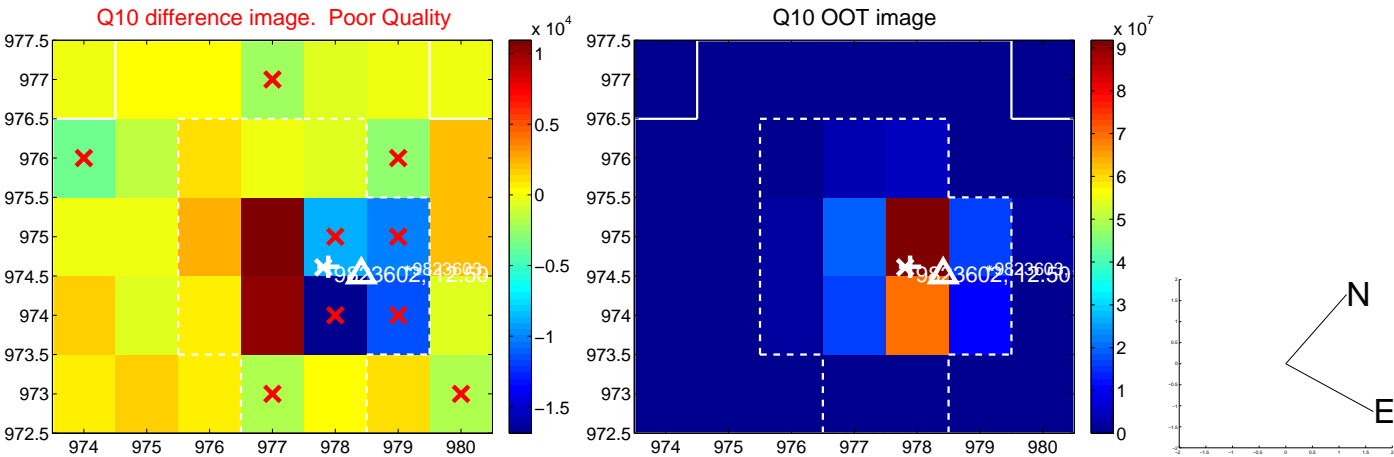
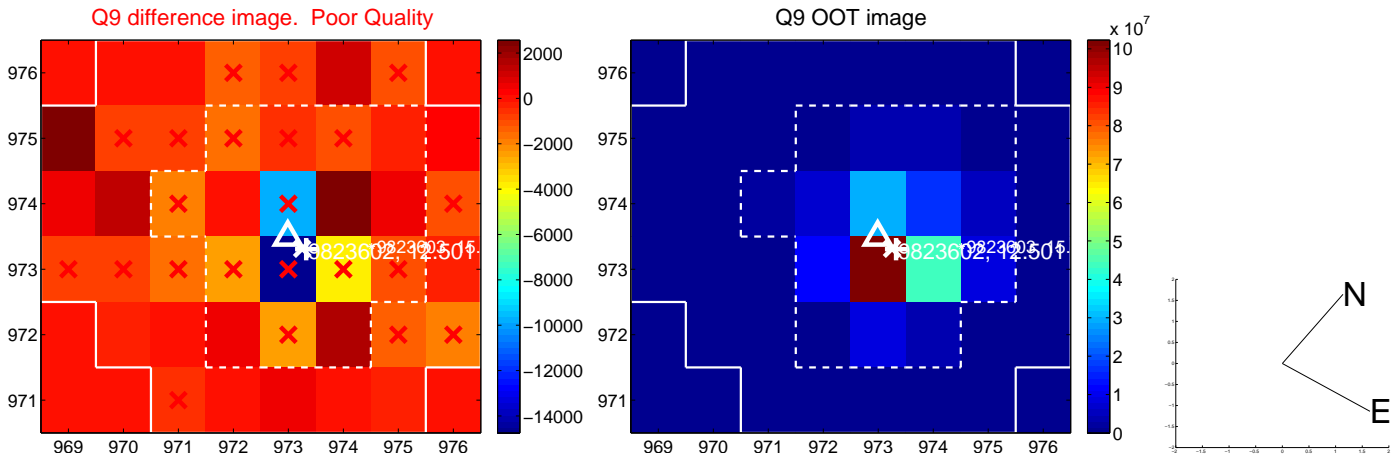
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



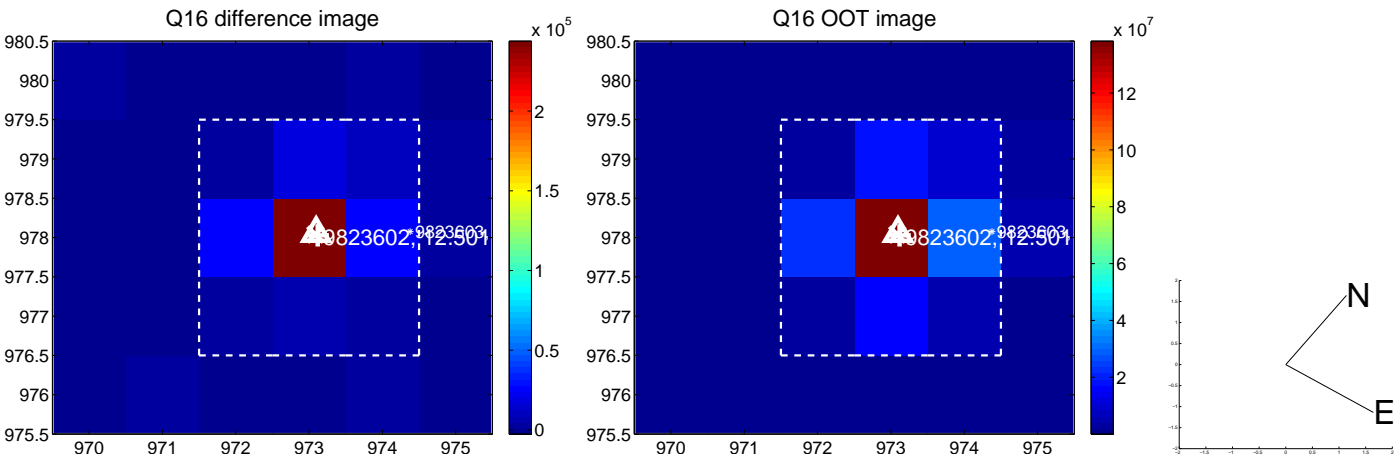
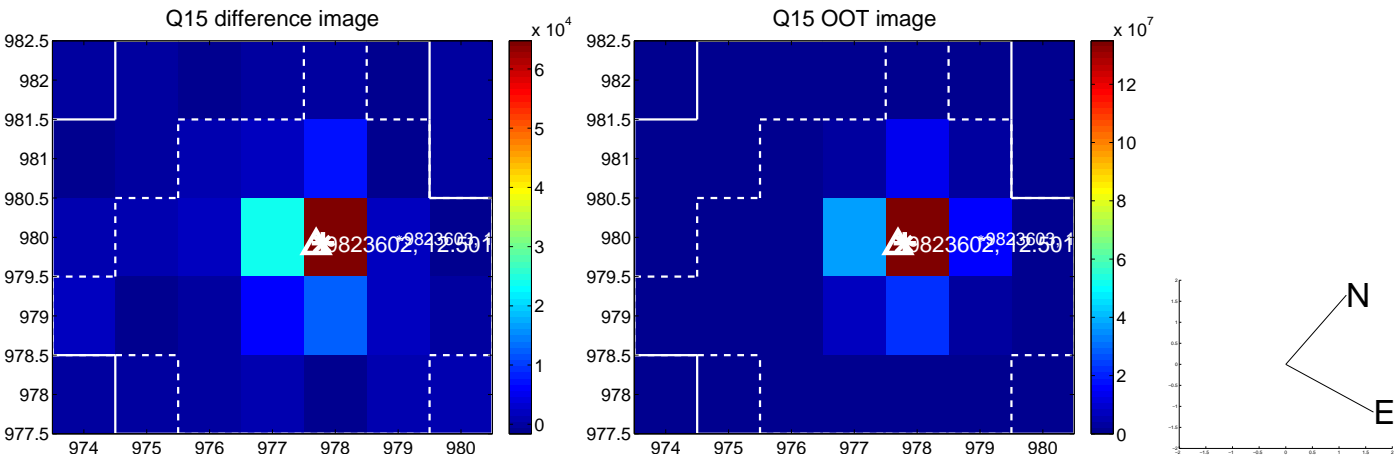
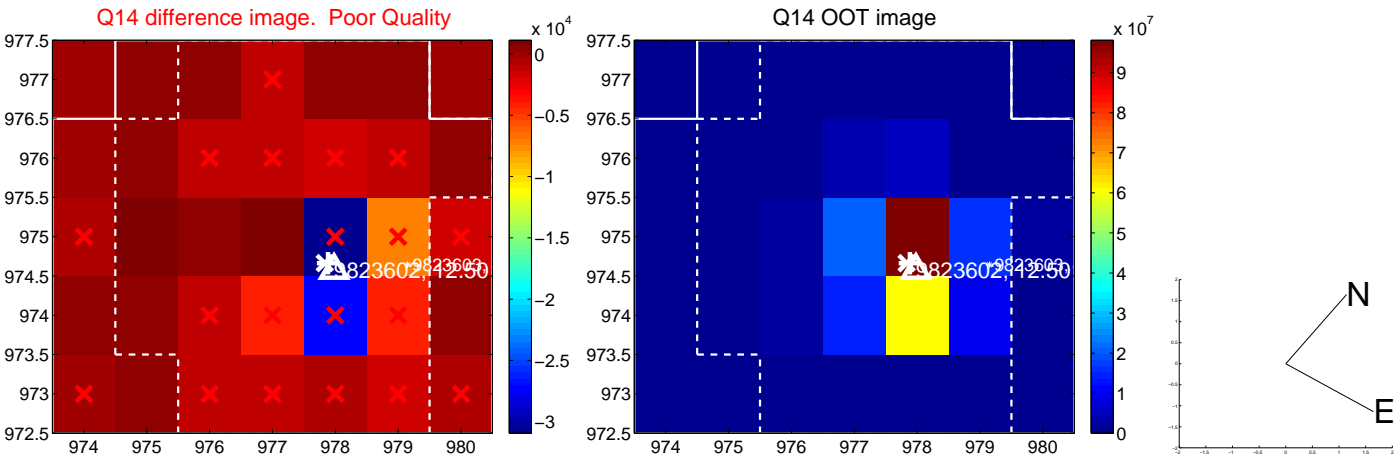
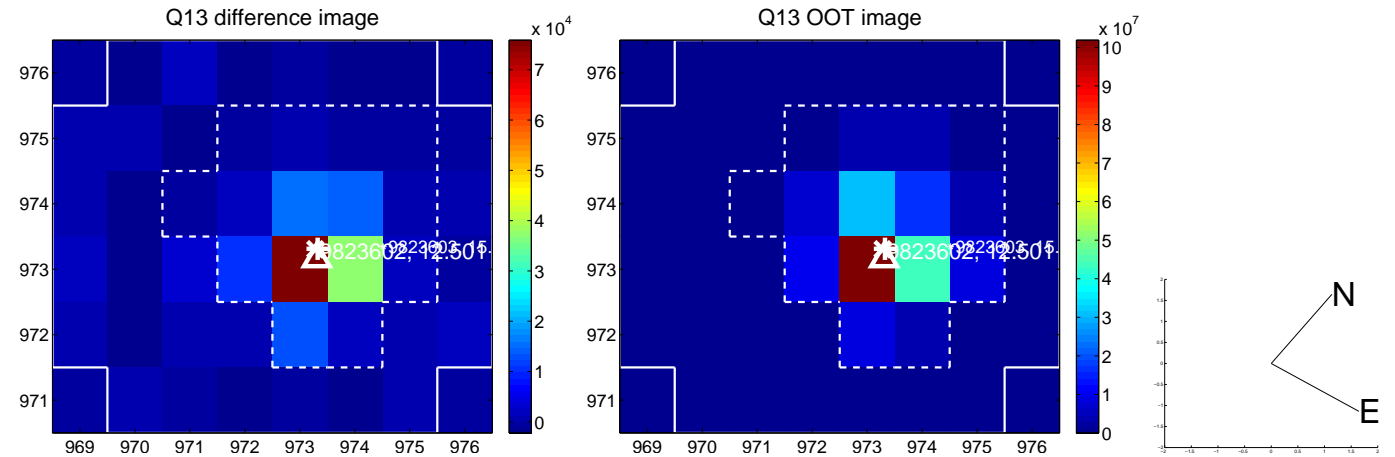
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



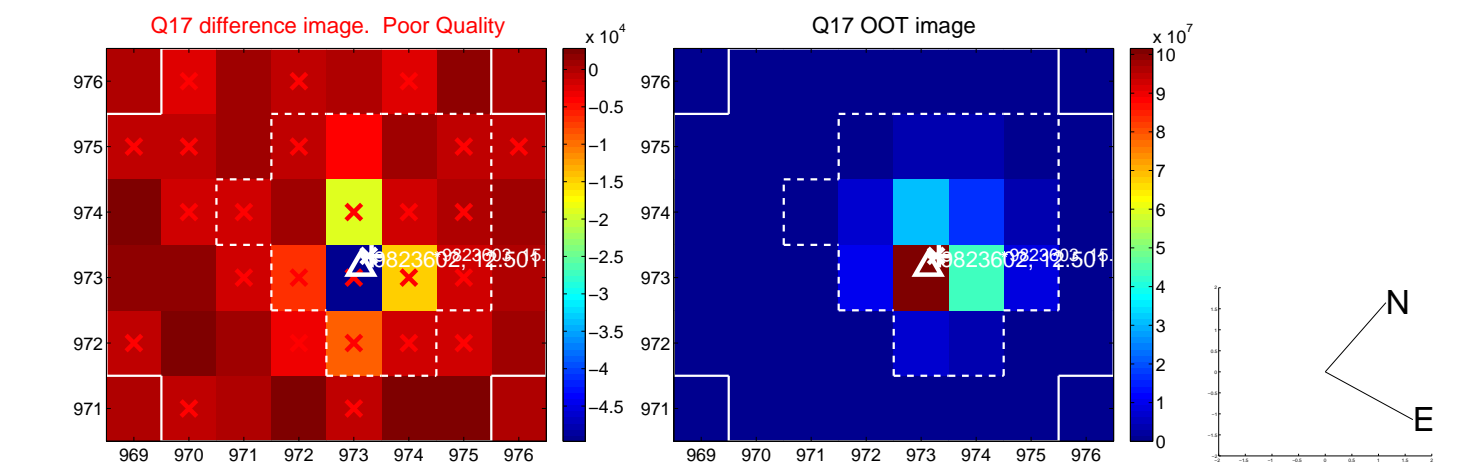
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



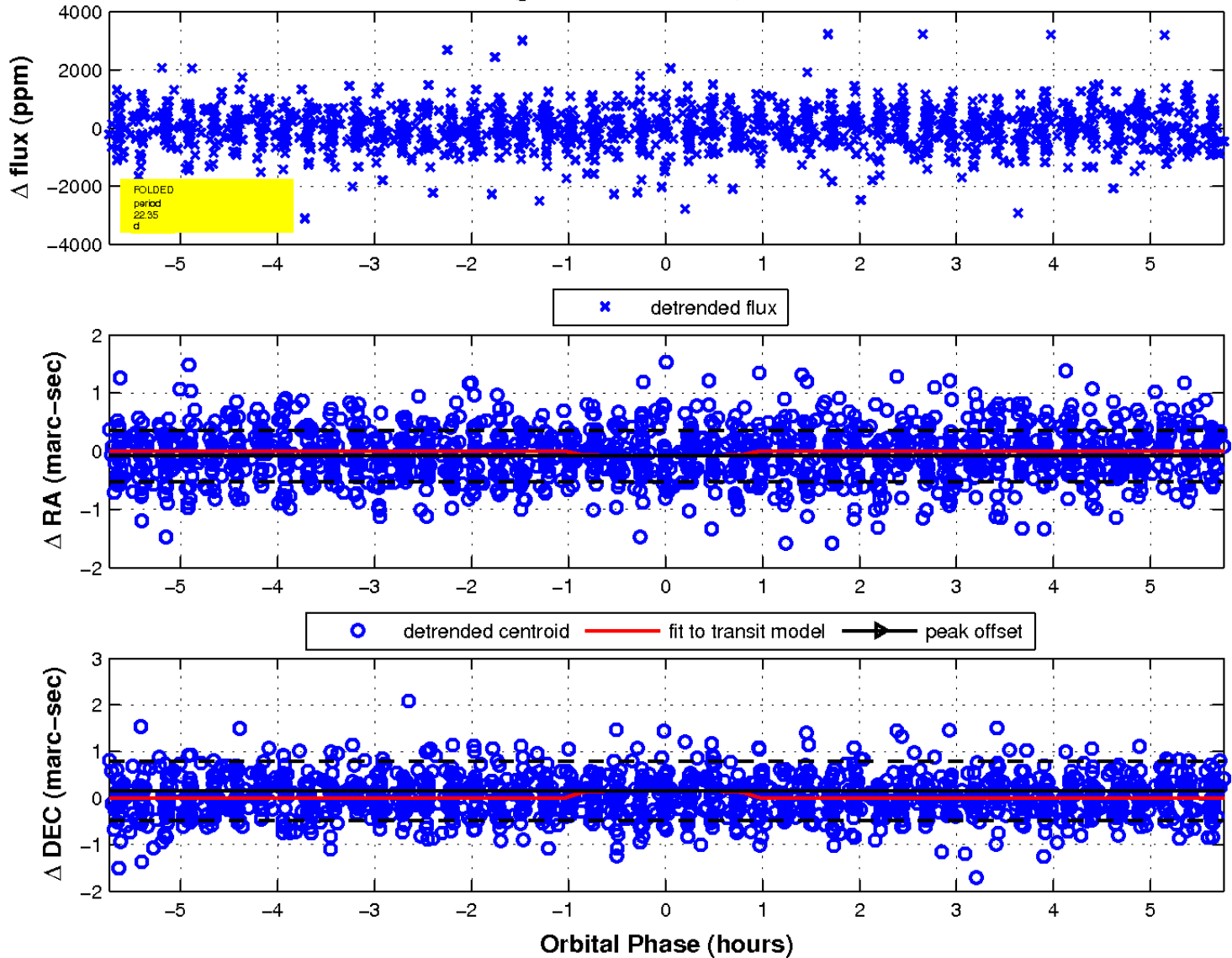
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

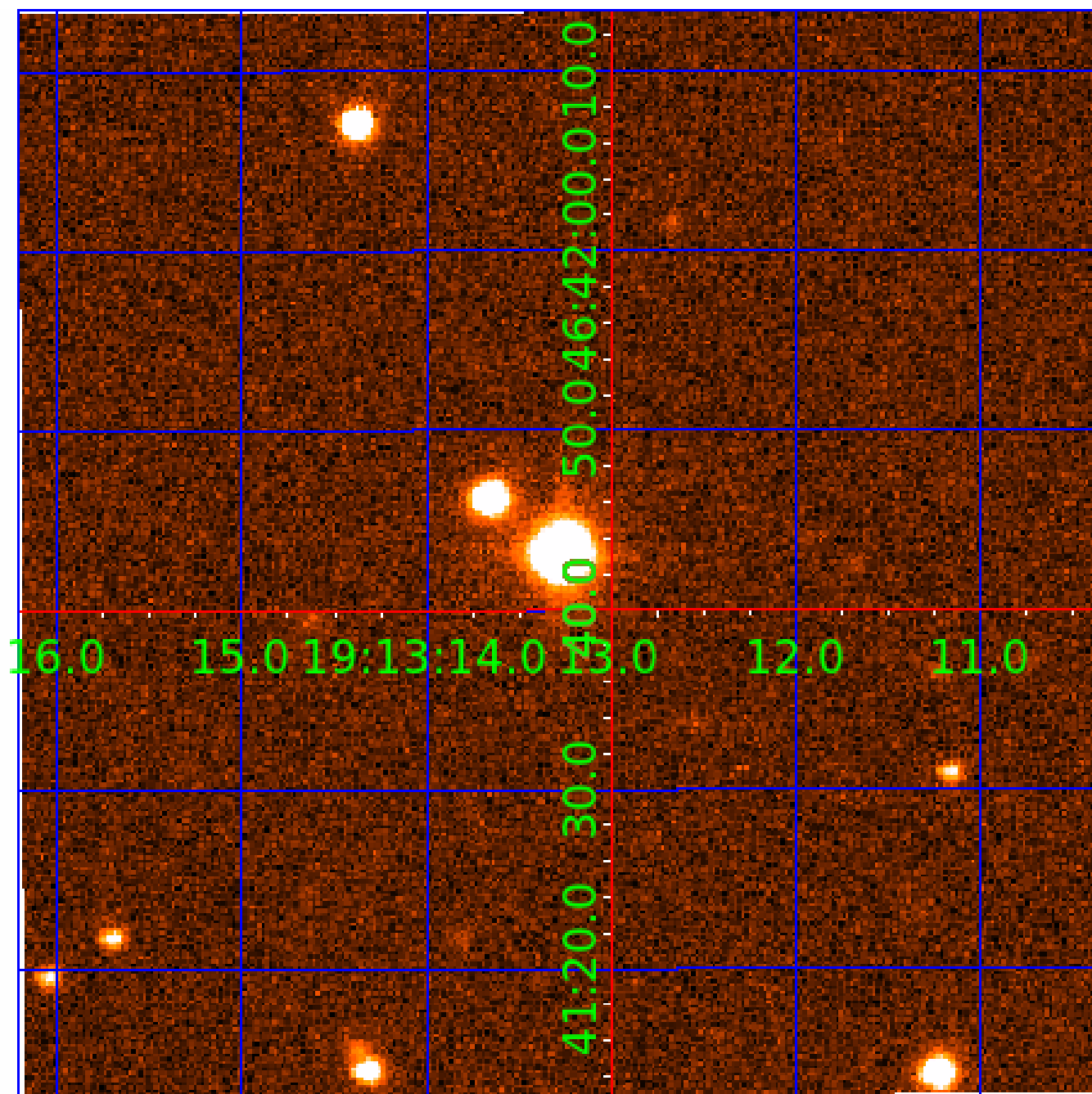


fluxWeightedCentroids, Planet 2 of 7



UKIRT Image

Declination



KIC 009823602

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})
009823602-01	OBS	No	0.885894	131.586408	69.1	5.867	9.5	9.3	2.76	7721	2.42	47755.01
009823602-02	OBS	No	22.353765	140.678766	1152.6	1.921	13.7	11.3	2.76	7721	9.57	645.25
009823602-03	OBS	No	24.094820	145.278836	2976.3	0.816	13.0	11.1	2.76	7721	25.70	583.84
009823602-04	OBS	No	51.091659	133.754778	1345.0	2.556	12.6	10.8	2.76	7721	16.91	214.32
009823602-05	OBS	No	49.220329	163.840237	1758.1	3.949	11.8	14.0	2.76	7721	18.82	225.25
009823602-06	OBS	No	69.458100	147.367148	1790.7	2.486	11.6	11.2	2.76	7721	13.61	142.31
009823602-07	OBS	No	50.182079	152.371615	359.6	2.000	10.9	-1.0	2.76	7721	5.31	219.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823602-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009823602-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
009823602-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
009823602-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009823602-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

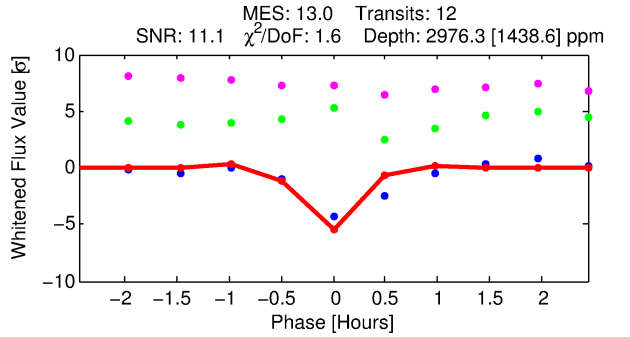
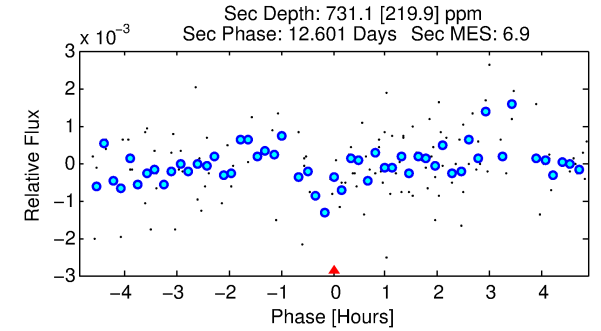
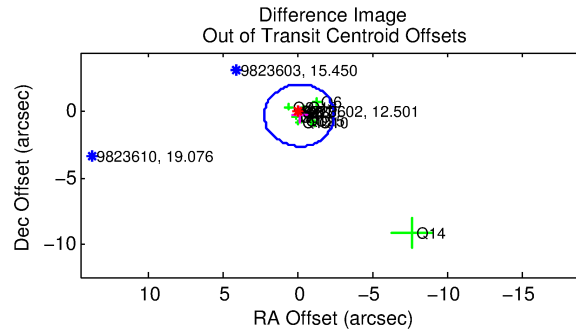
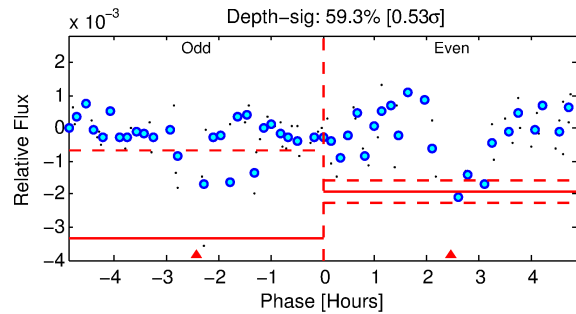
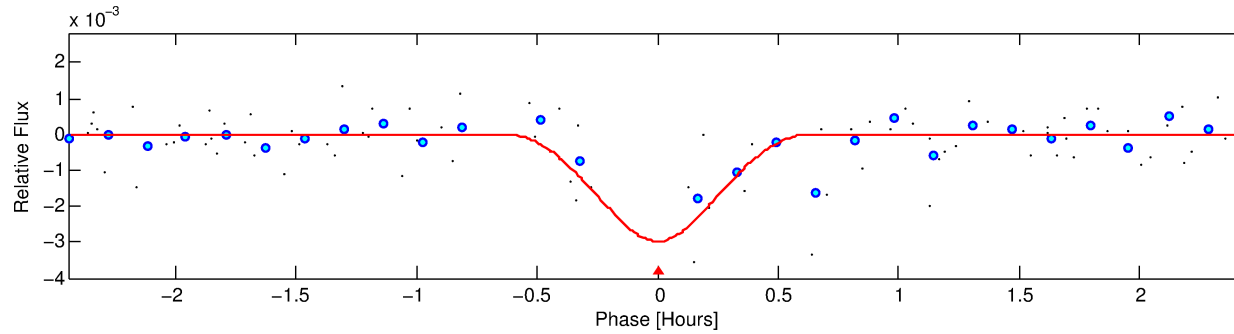
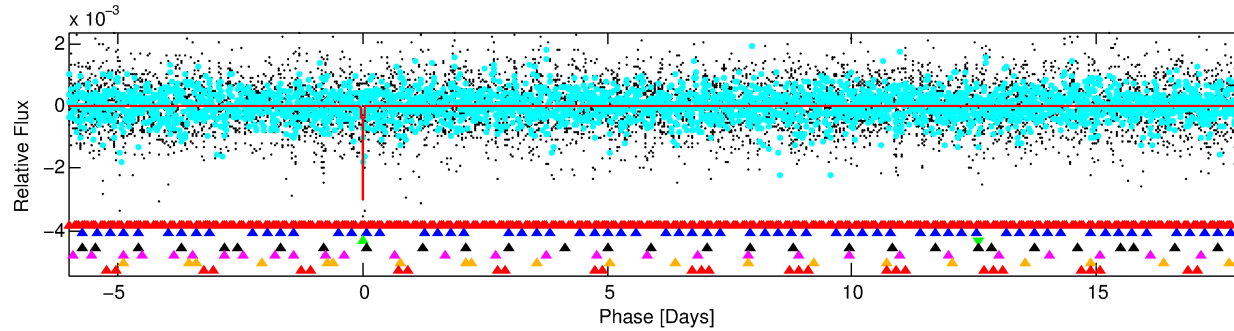
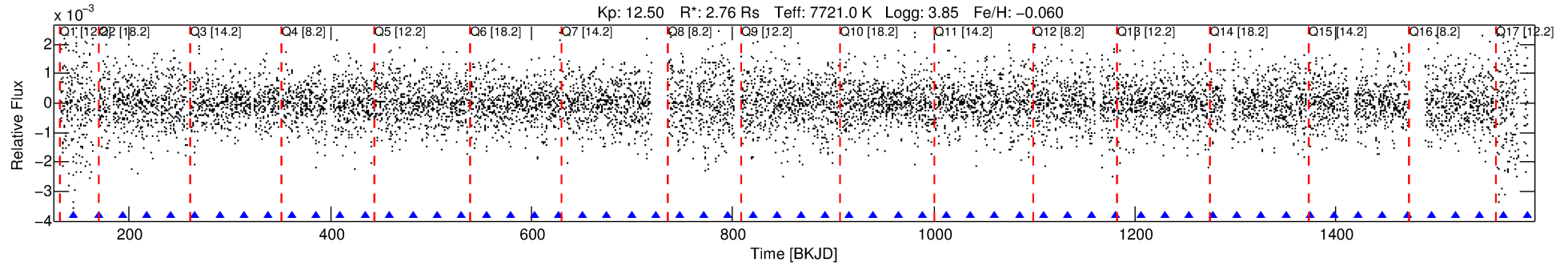
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823602-03

No Significant Match Found

DV One-Page Summary

KIC: 9823602 Candidate: 3 of 7 Period: 24.095 d



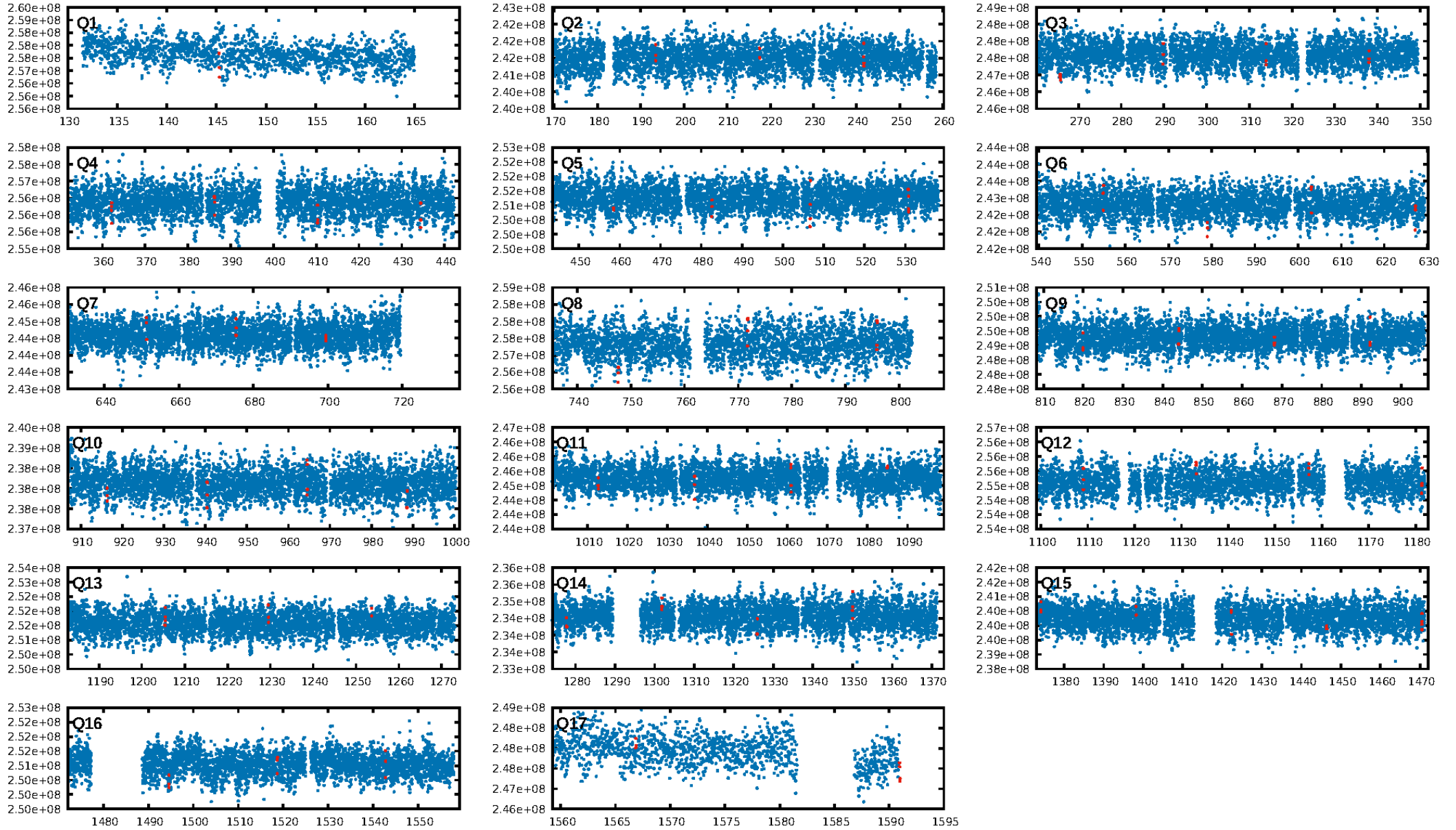
DV Fit Results:

Period = 24.09482 [0.00006] d
Epoch = 145.2788 [0.0018] BKJD
Rp/R* = 0.0853 [0.9625]
a/R* = 105.28 [324.40]
b = 0.98 [1.60]
Seff = 583.84 [334.34]
Teq = 1253 [179] K
Rp = 25.70 [290.06] Re
a = 0.2038 [0.0720] AU
Ag = 25.30 [571.16] [0.04 σ]
Teffp = 4347 [24520] K [0.13 σ]

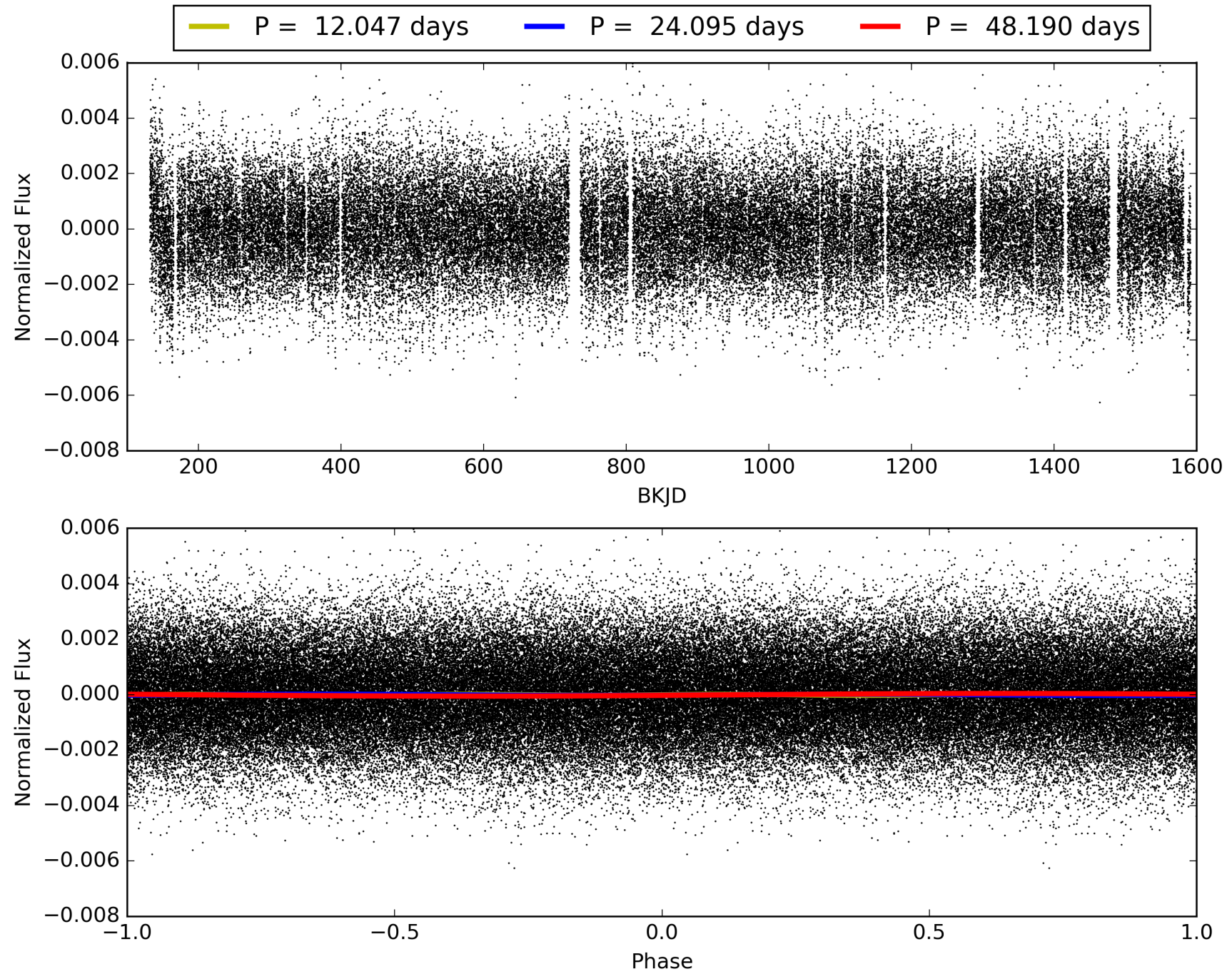
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [20.02 σ]
LongPeriod-sig: 100.0% [149.55 σ]
ModelChiSquare2-sig: 26.8%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: -0.7554
Centroid-sig: 37.1%
Centroid-so: 0.270 arcsec [4.81 σ]
OotOffset-rm: 0.303 arcsec [0.39 σ]
KicOffset-rm: 0.165 arcsec [0.25 σ]
OotOffset-st: 4/3/3/5 [15]
KicOffset-st: 4/3/3/5 [15]
DiffImageQuality-fgm: 0.53 [8/15]
DiffImageOverlap-fno: 0.53 [8/15]

TCE 009823602-03, PDC Light Curves

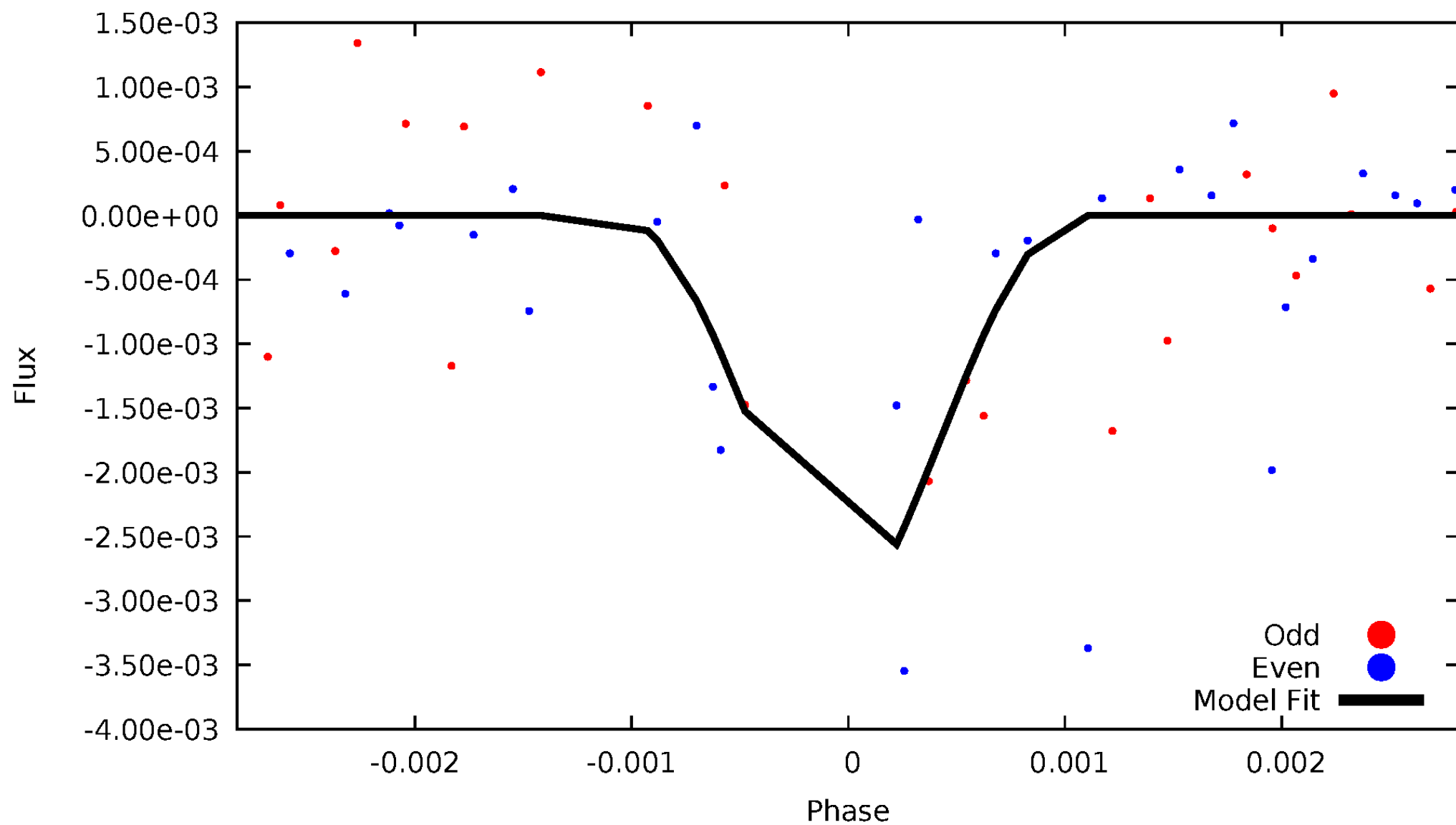


TCE 009823602-03



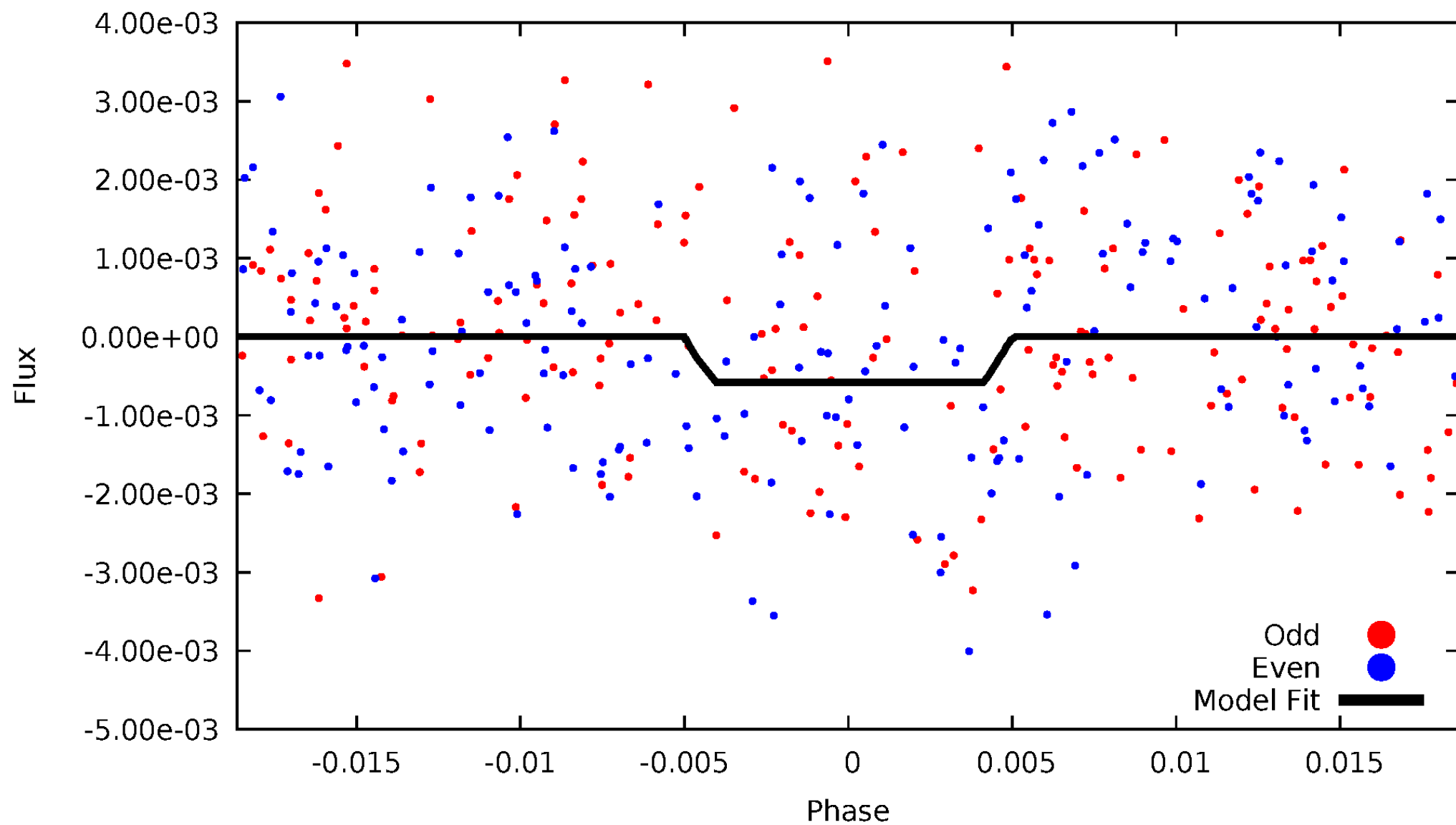
DV Odd/Even

TCE 009823602-03



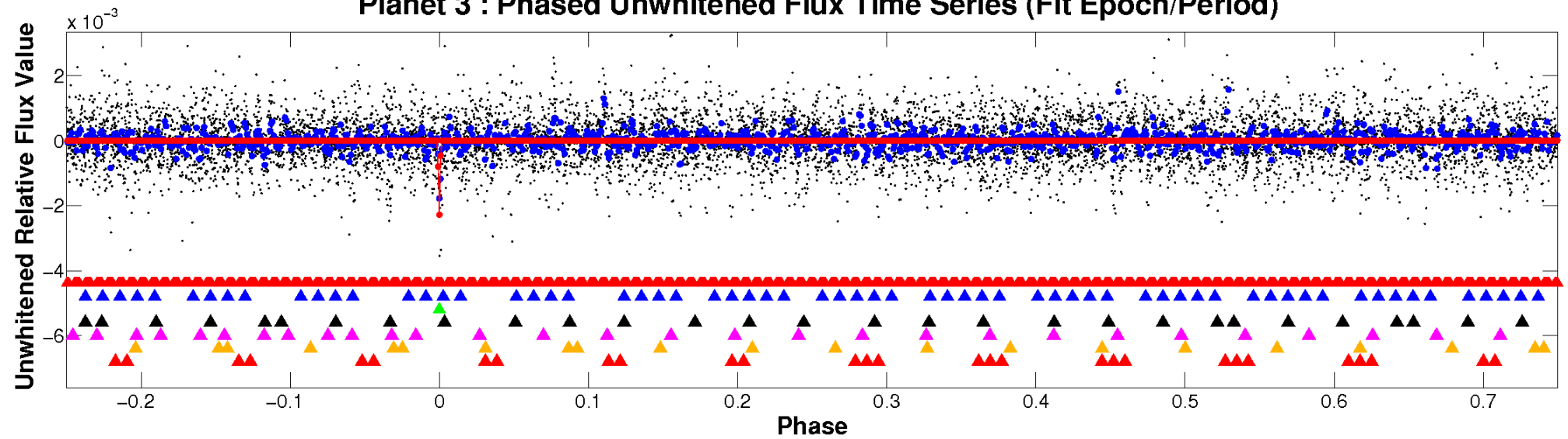
ALT Odd/Even

TCE 009823602-03

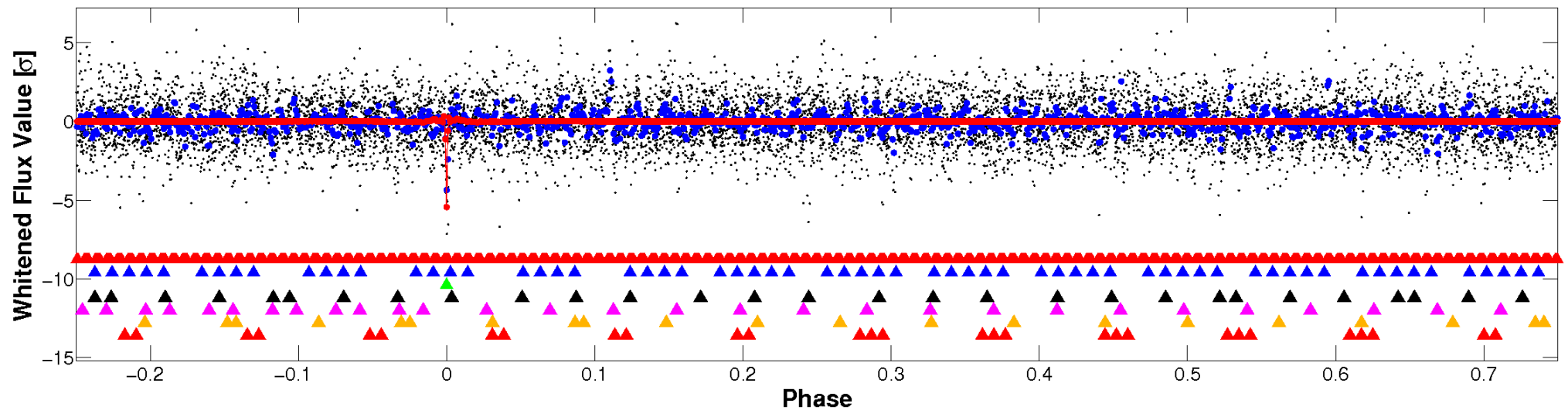


Non-Whitened Vs. Whitened Light Curve

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

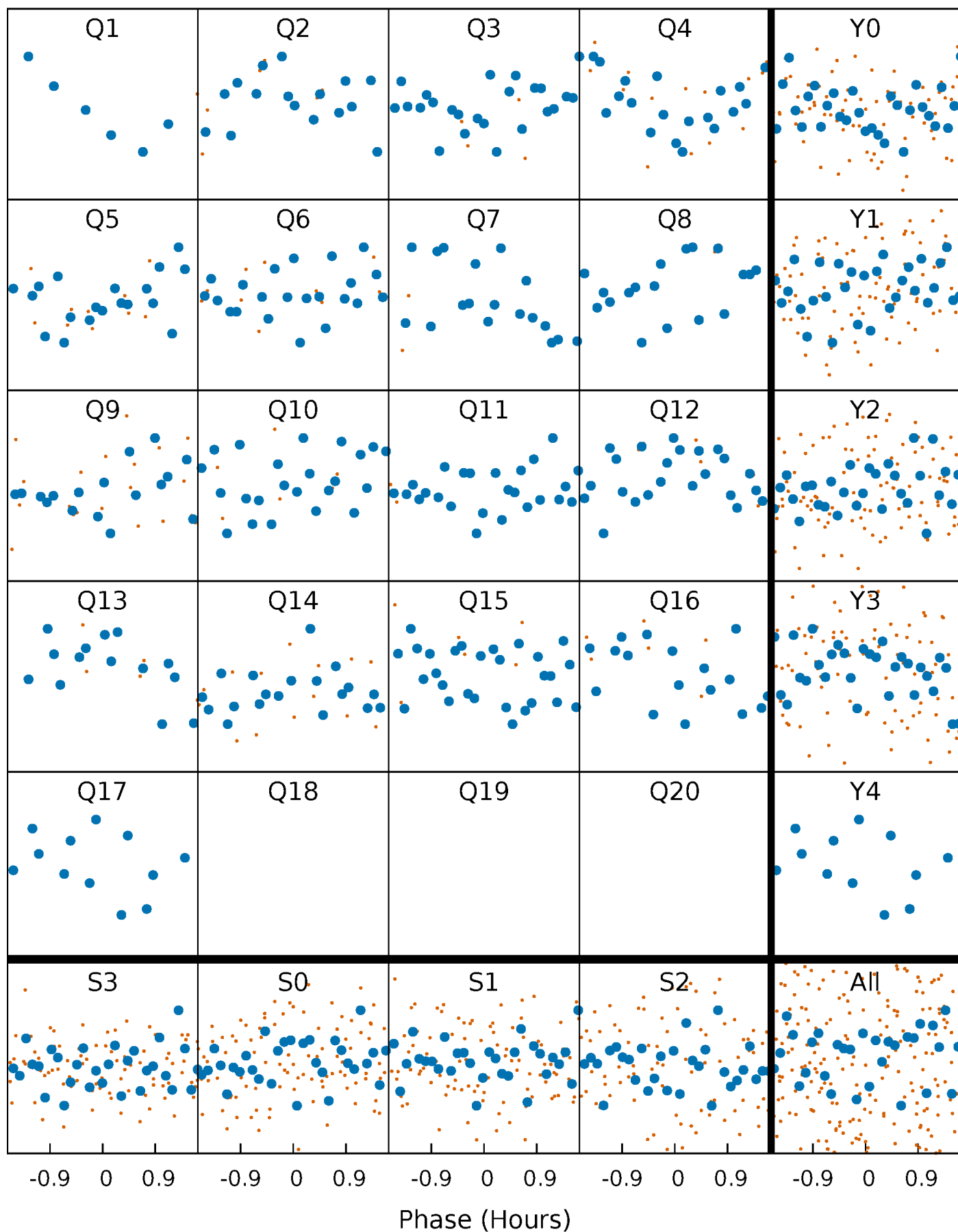


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



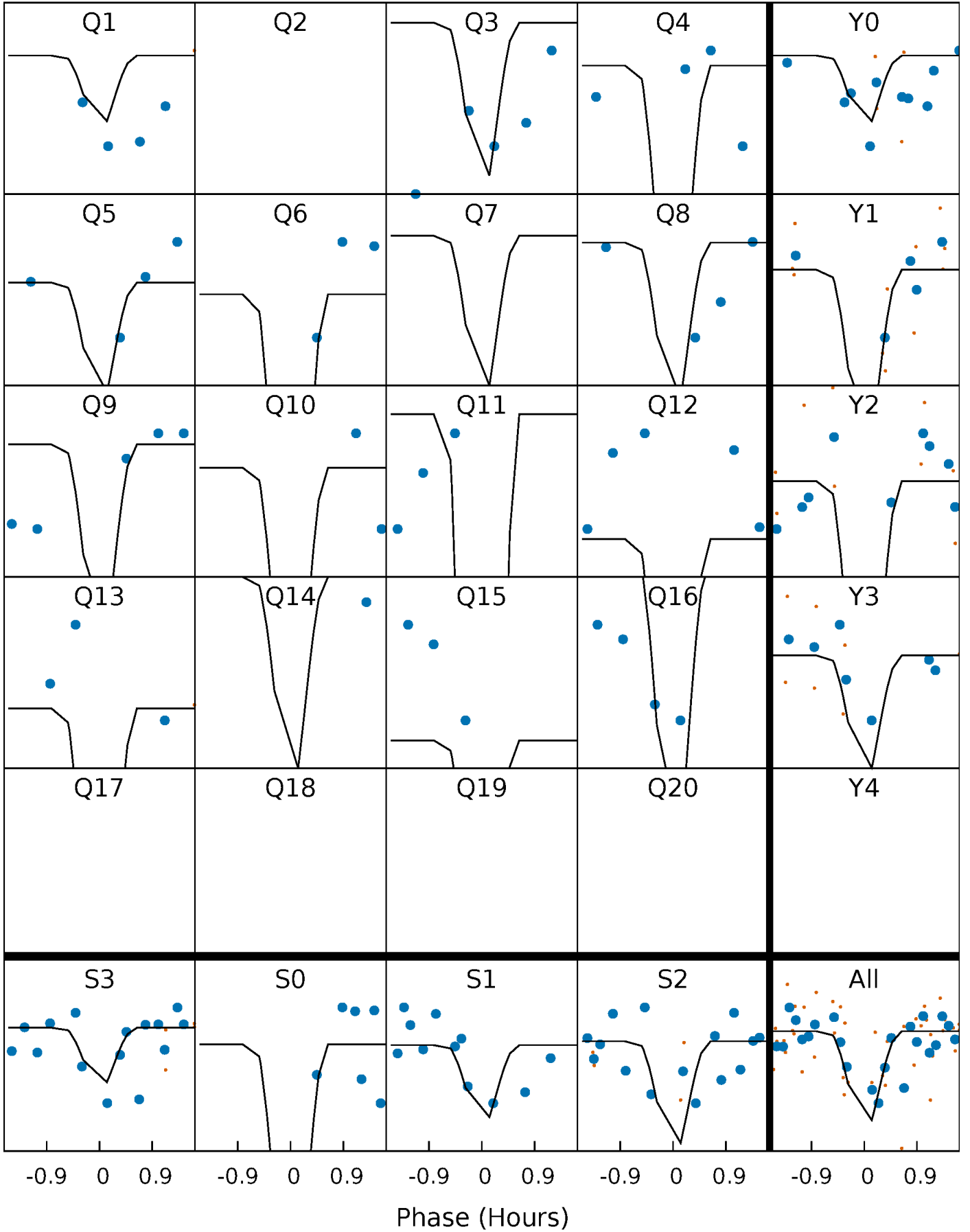
PDC Quarter-Phased Transit Curves

TCE 009823602-03 $P = 24.094820$ Days $T_0 = 145.278836$ (BKJD)



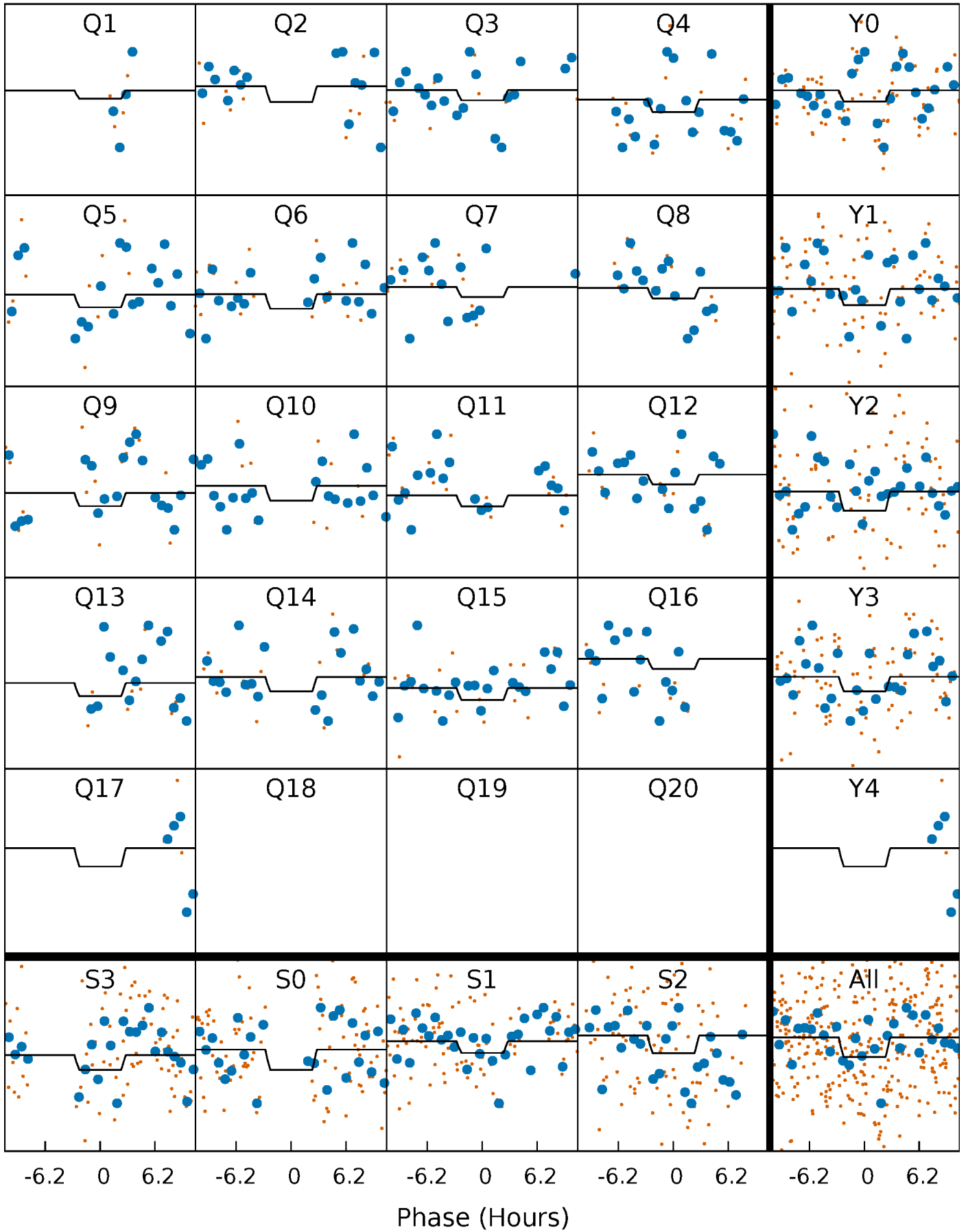
DV Quarter-Phased Transit Curves

TCE 009823602-03 $P = 24.094820$ Days $T_0 = 145.278836$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

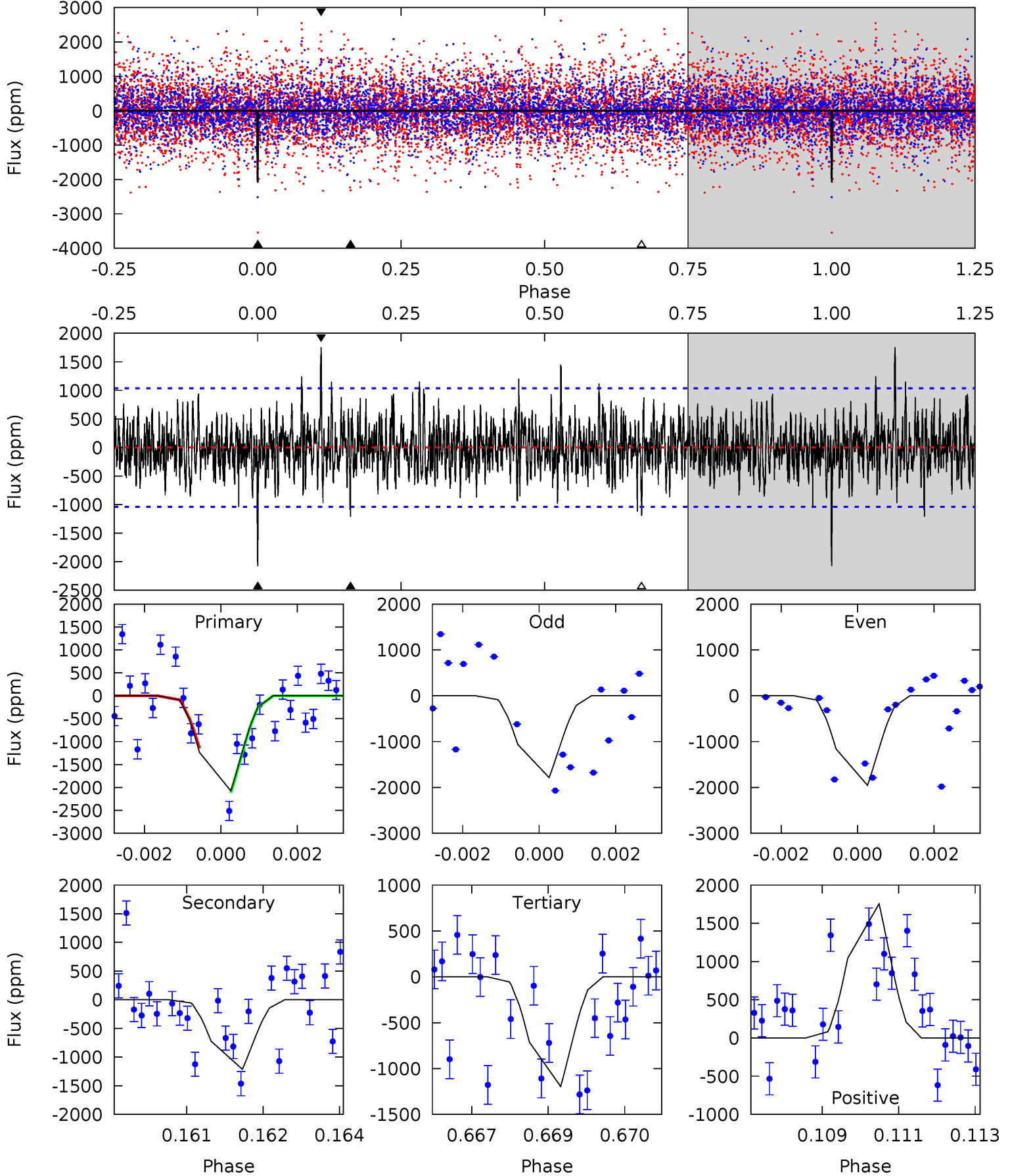
TCE 009823602-03 $P = 24.094812$ Days $T_0 = 145.216736$ (BKJD)



DV Model-Shift Uniqueness Test

009823602-03, P = 24.094820 Days, E = 121.184016 Days

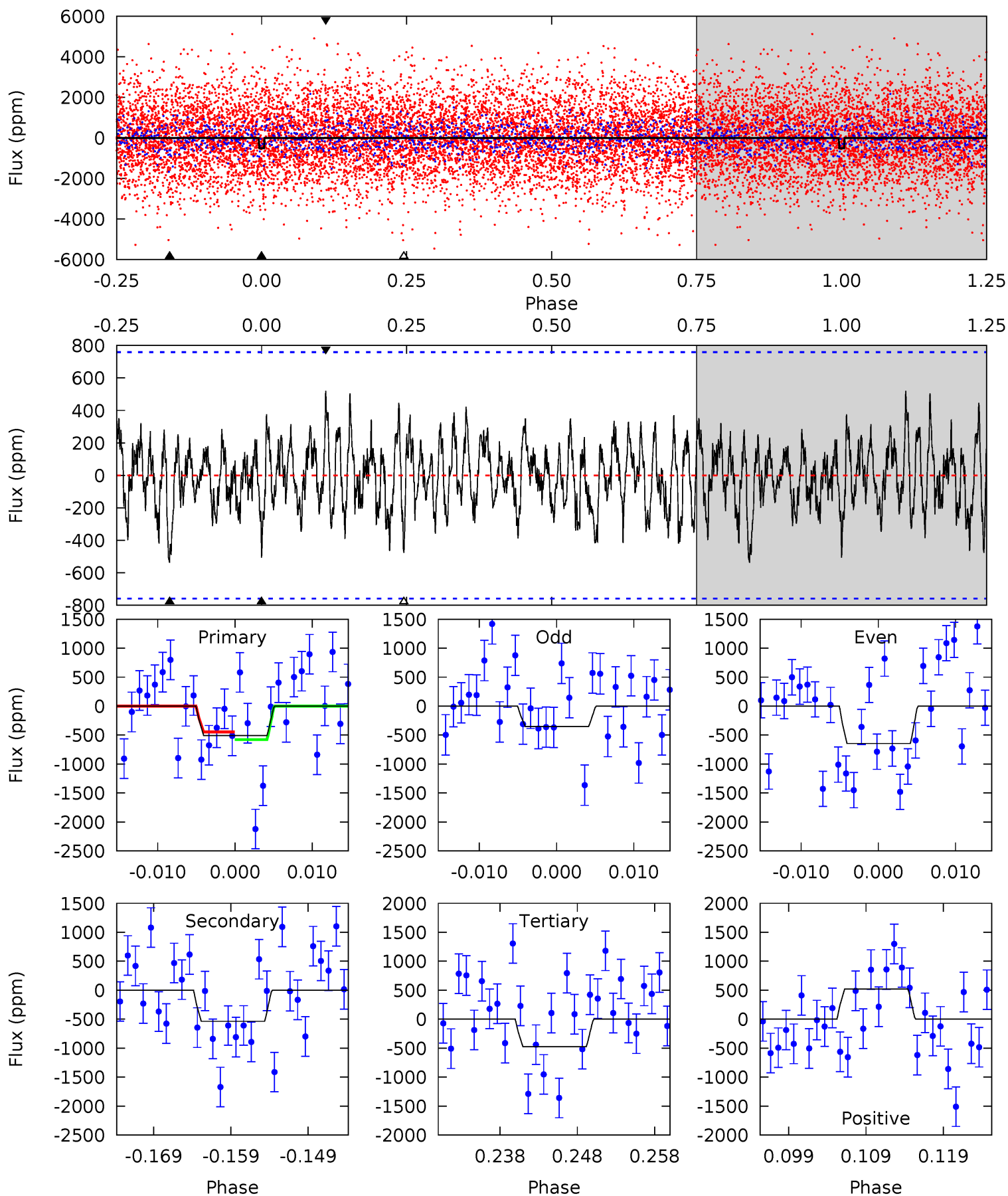
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	6.25	6.17	9.05	5.36	3.14	1.76	4.53	1.65	0.09	-2.79	0.44	1.05	0.46	2.47



Alt Model-Shift Uniqueness Test

009823602-03, P = 24.094812 Days, E = 121.121924 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.35	3.56	3.15	3.45	5.03	2.58	1.17	0.20	-0.10	0.41	0.11	0.98	1.76	0.49	0.43



Stellar Parameters For KIC 009823602

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7721^{+214}_{-322}	$3.845^{+0.315}_{-0.105}$	$-0.060^{+0.200}_{-0.350}$	$2.760^{+0.457}_{-1.066}$	$1.943^{+0.110}_{-0.467}$	$0.130^{+0.302}_{-0.043}$
	+3%/-4%	+8%/-3%	+333%/-583%	+17%/-39%	+6%/-24%	+232%/-33%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009823602-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1213±194	$180.77^{+194.14}_{-133.51}$	1706^{+120}_{-166}	2424^{+1350}_{-4494}	$0.797^{+11.334}_{-0.613}$
Alt.	-537±151	$168.78^{+200.82}_{-120.25}$	1714^{+128}_{-159}	2058^{+1232}_{-4278}	$0.427^{+4.759}_{-0.349}$

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

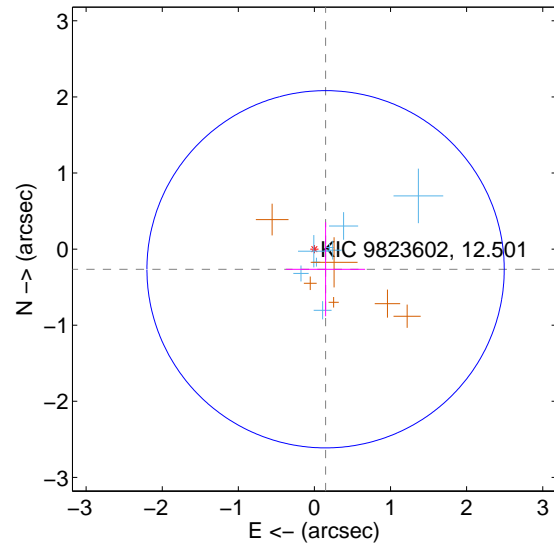
Supplemental centroid analysis for 009823602-03. Kepler magnitude: 12.50. Transit SNR 11.11

There are 8 quarters with good PRF difference image offsets

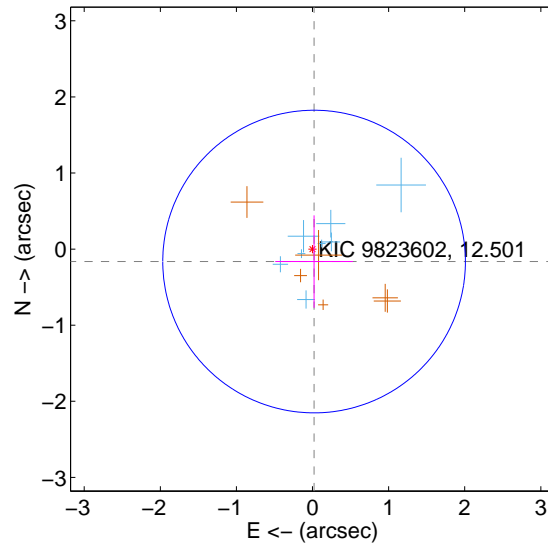
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.303 ± 0.782	0.39	-0.147 ± 0.520	-0.265 ± 0.618
PRF-fit source offset from KIC position	0.165 ± 0.663	0.25	-0.021 ± 0.510	-0.164 ± 0.607
photometric centroid source offset	0.27 ± 0.06	4.81	0.25 ± 0.06	0.10 ± 0.05

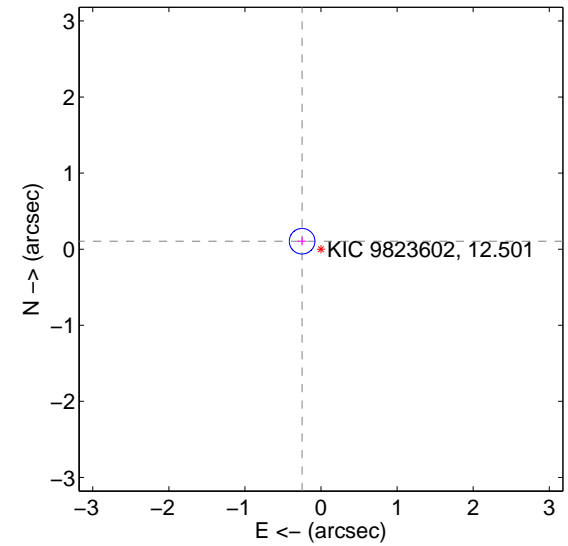
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

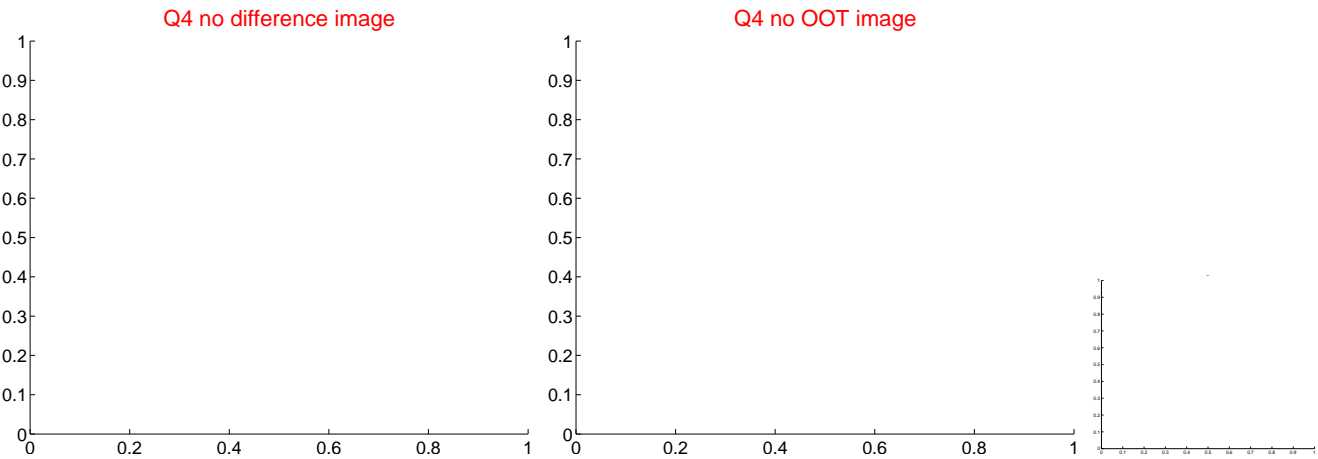
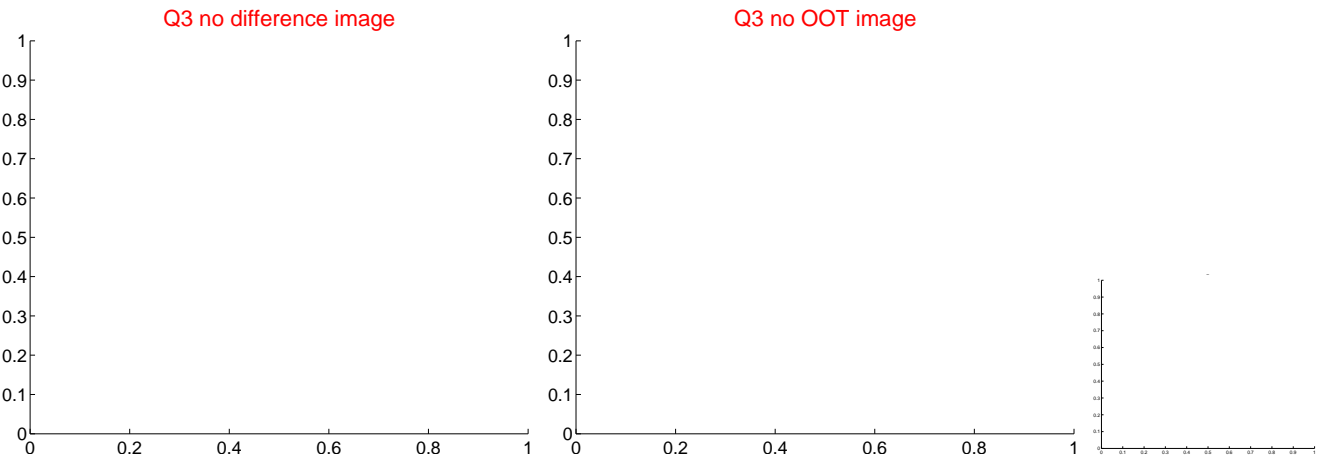
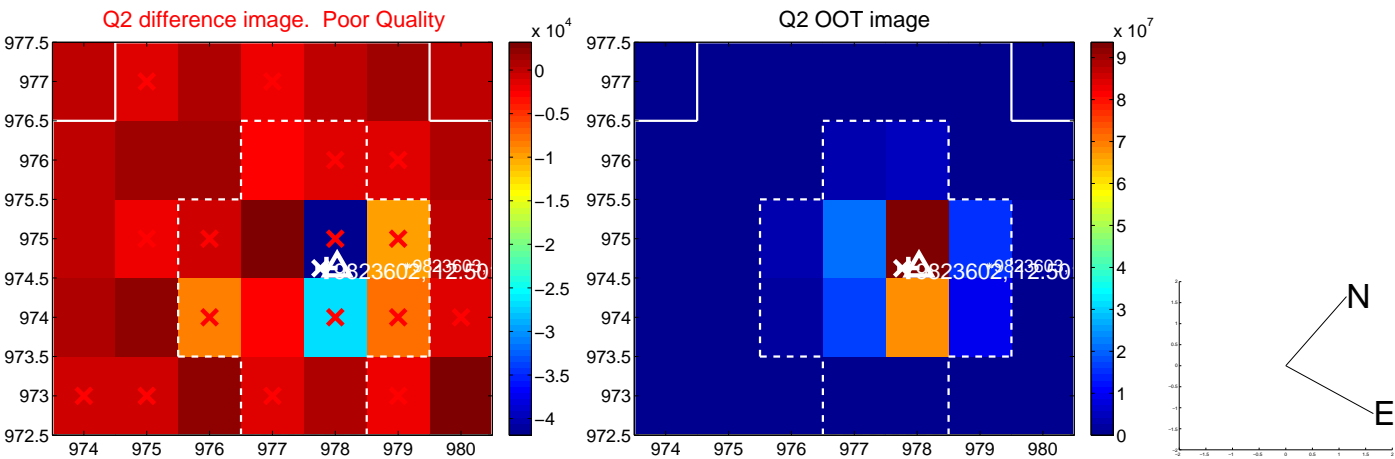
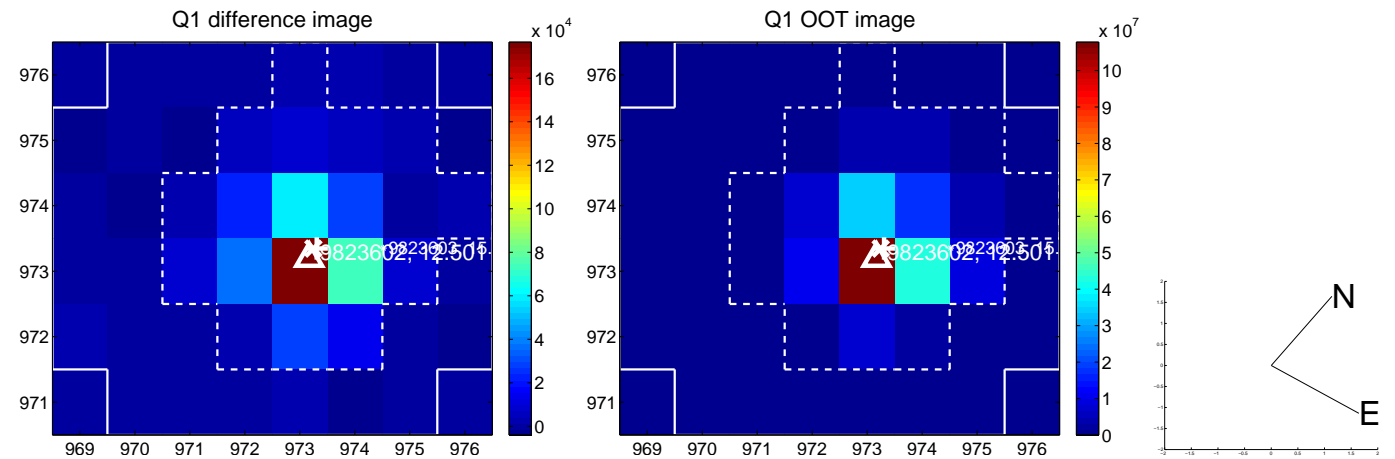


offset from photometric centroids

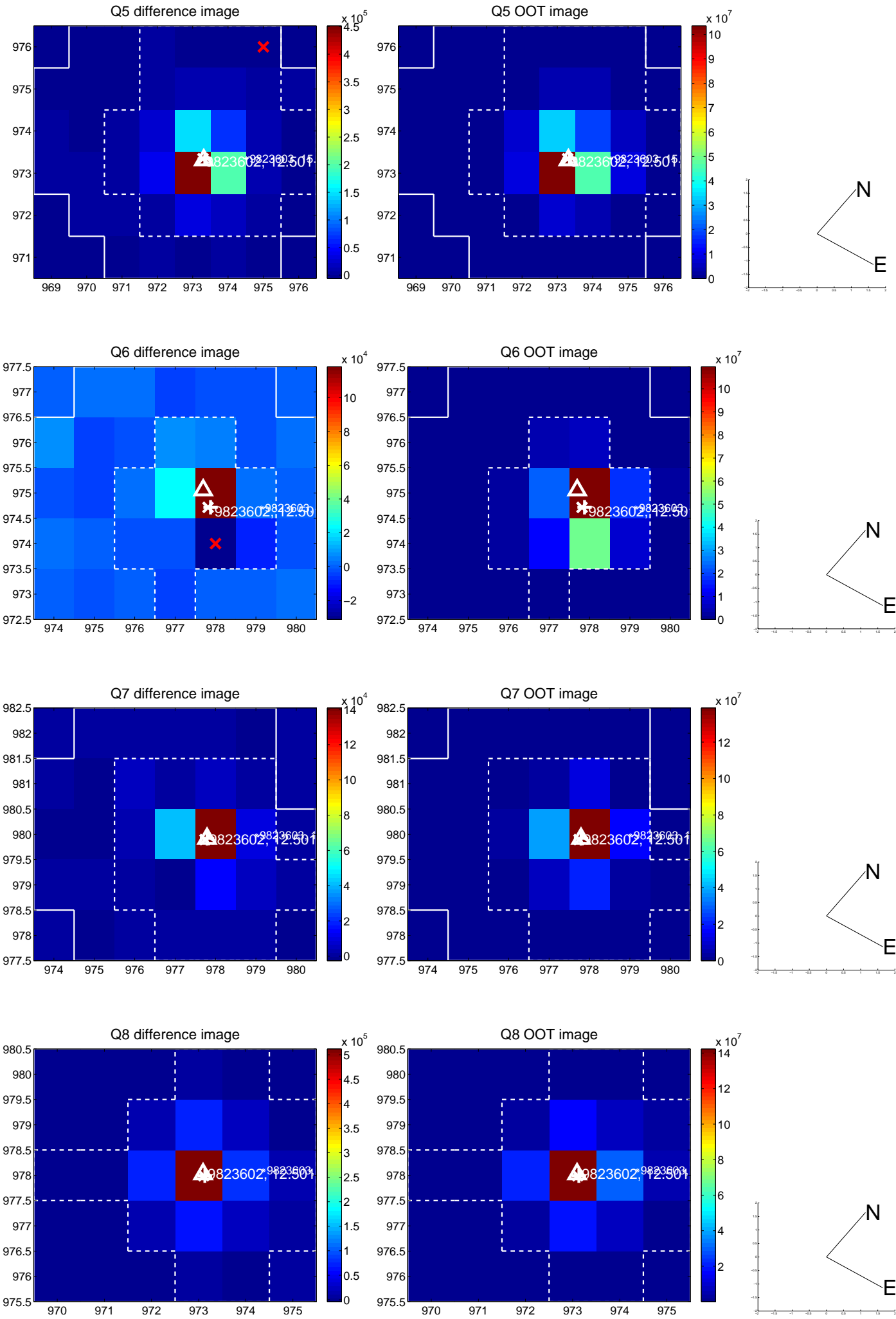


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

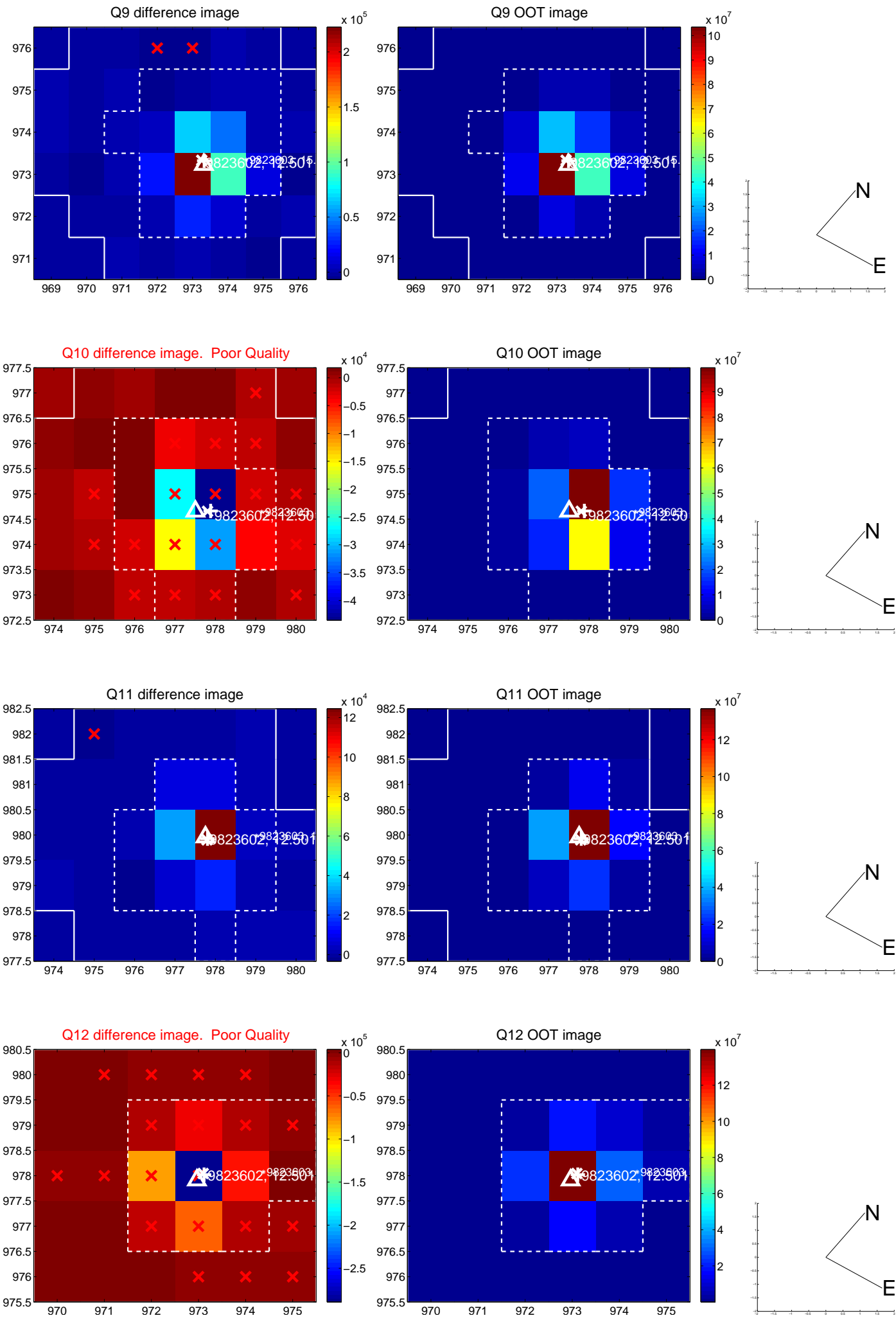
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



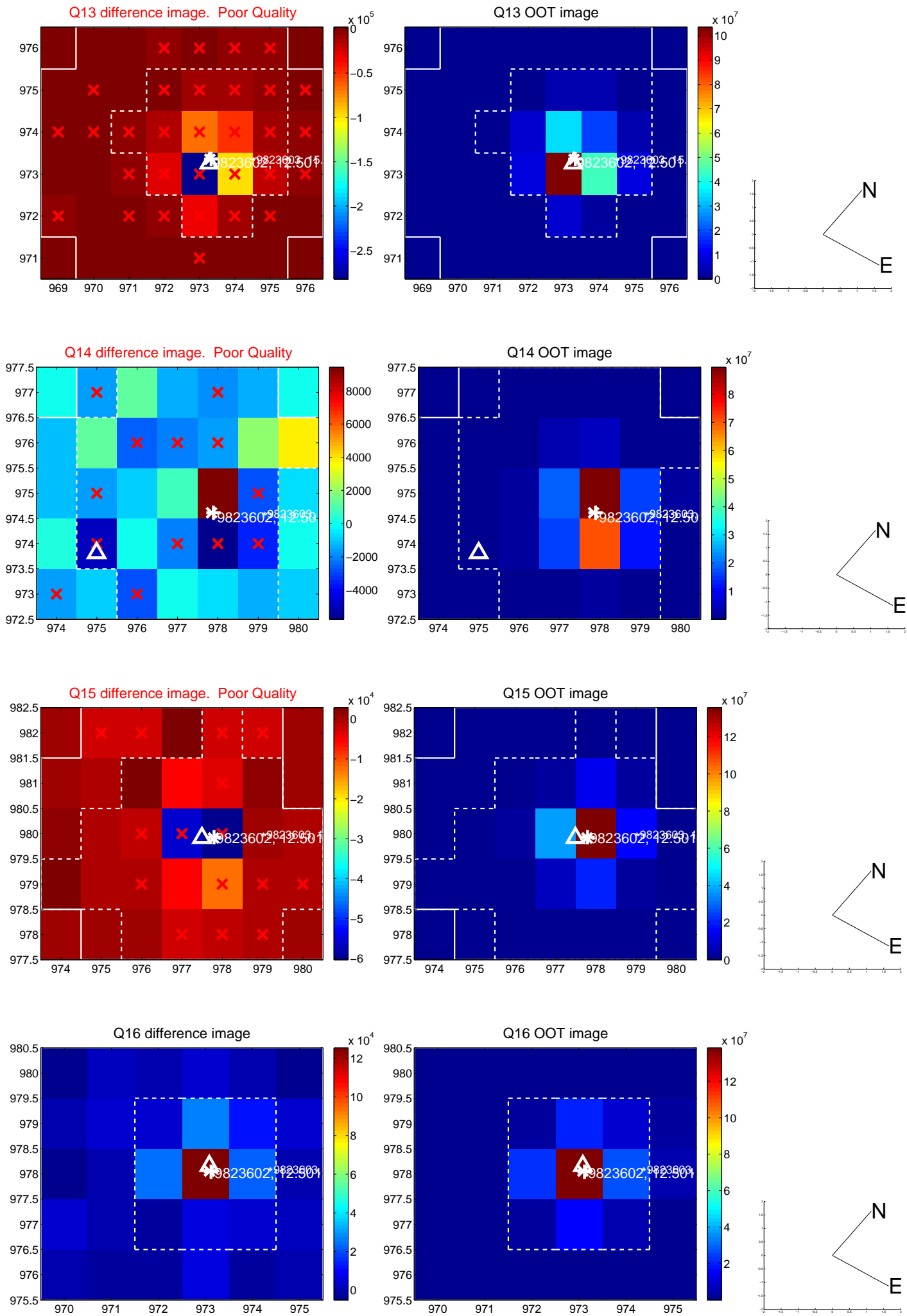
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



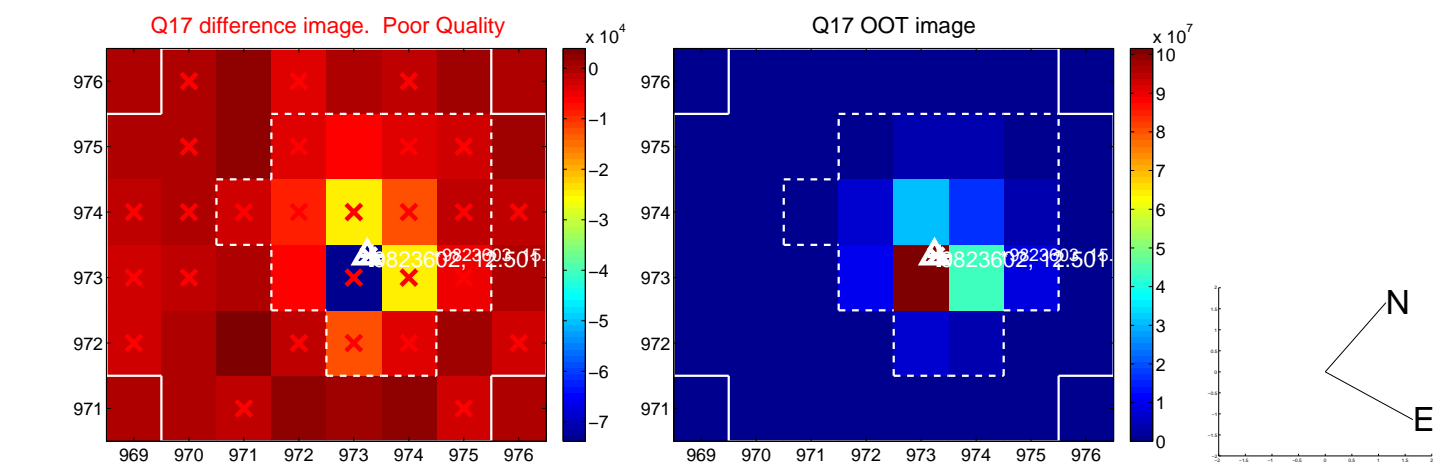
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



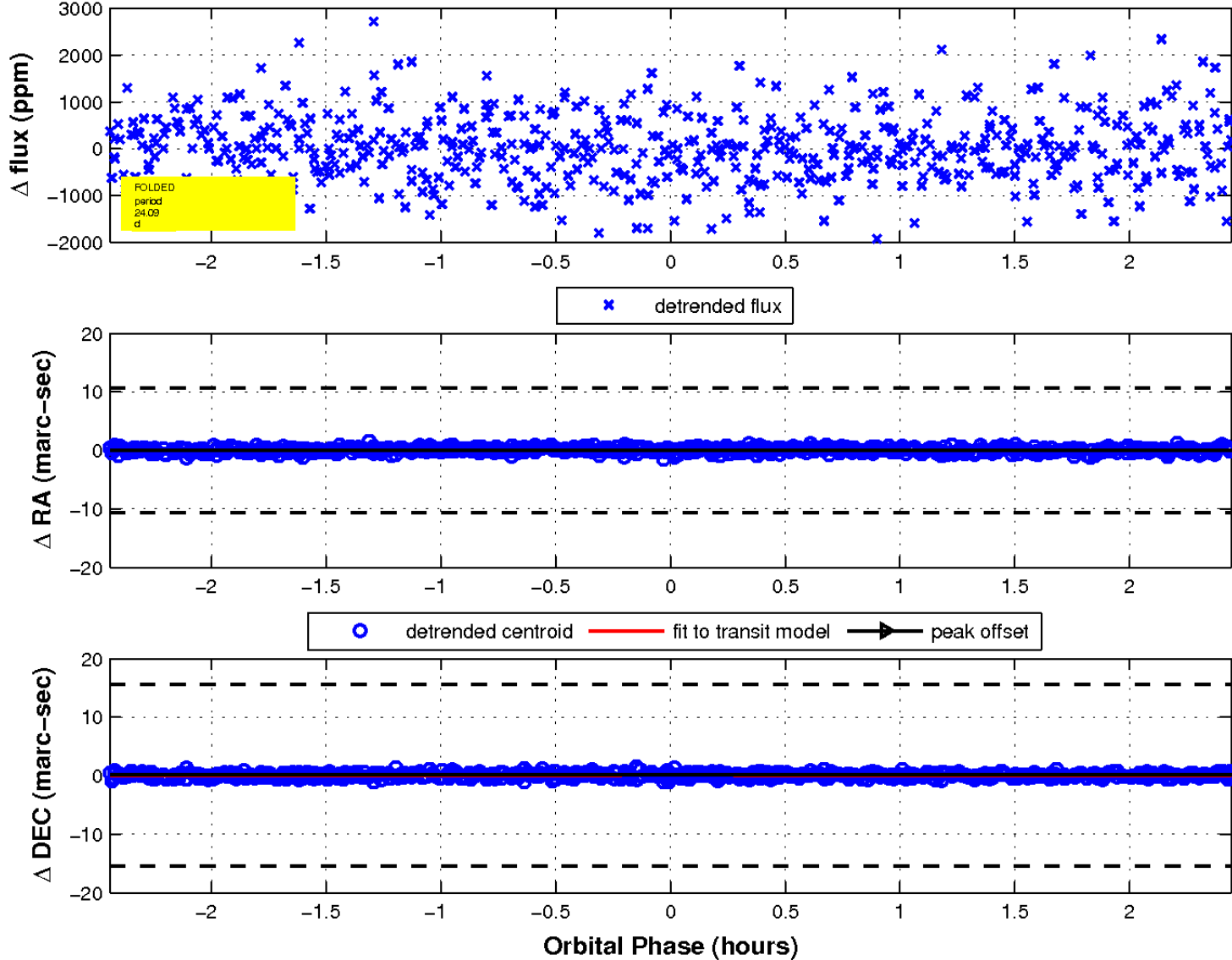
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

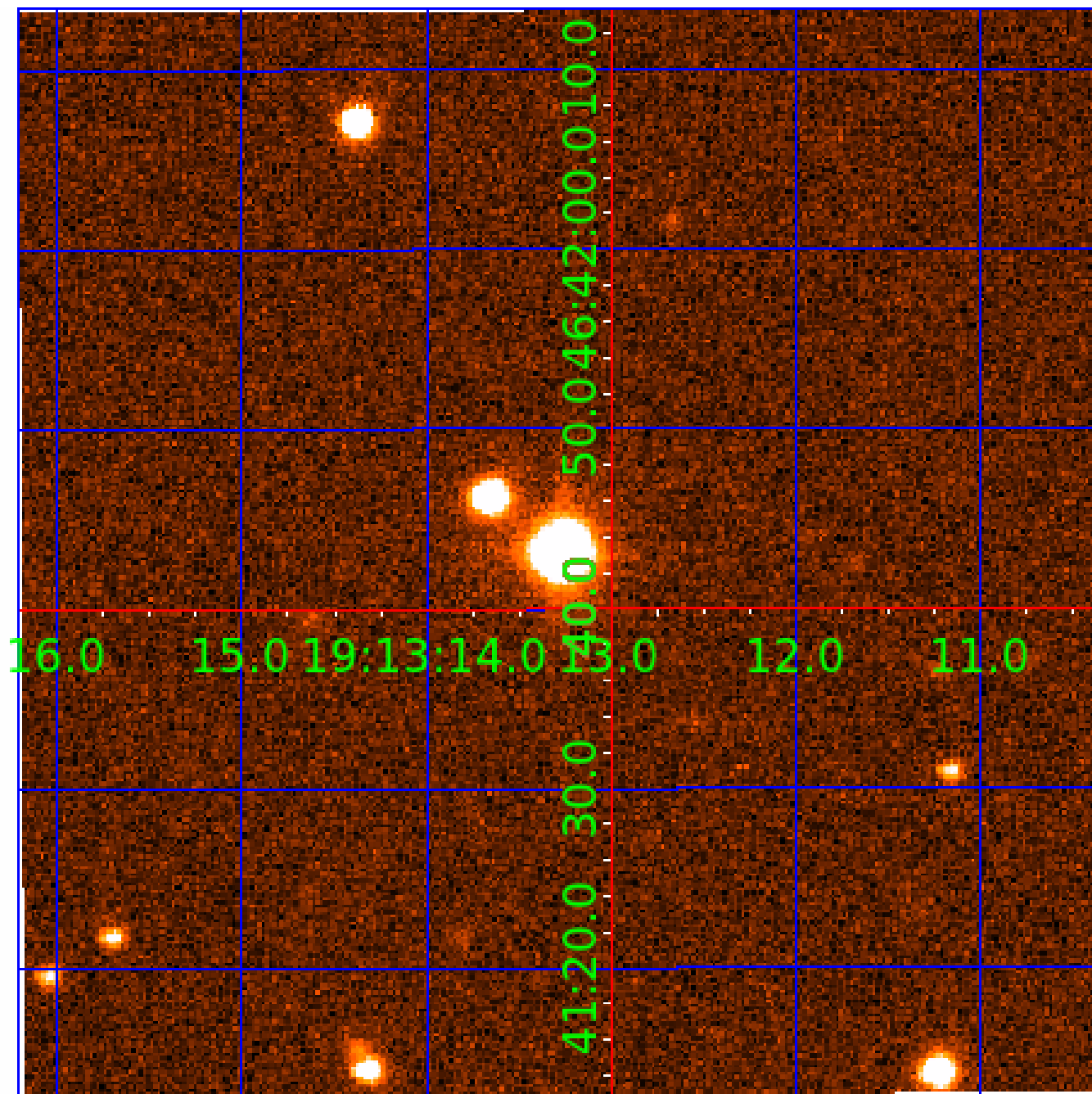


fluxWeightedCentroids, Planet 3 of 7



UKIRT Image

Declination



KIC 009823602

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})
009823602-01	OBS	No	0.885894	131.586408	69.1	5.867	9.5	9.3	2.76	7721	2.42	47755.01
009823602-02	OBS	No	22.353765	140.678766	1152.6	1.921	13.7	11.3	2.76	7721	9.57	645.25
009823602-03	OBS	No	24.094820	145.278836	2976.3	0.816	13.0	11.1	2.76	7721	25.70	583.84
009823602-04	OBS	No	51.091659	133.754778	1345.0	2.556	12.6	10.8	2.76	7721	16.91	214.32
009823602-05	OBS	No	49.220329	163.840237	1758.1	3.949	11.8	14.0	2.76	7721	18.82	225.25
009823602-06	OBS	No	69.458100	147.367148	1790.7	2.486	11.6	11.2	2.76	7721	13.61	142.31
009823602-07	OBS	No	50.182079	152.371615	359.6	2.000	10.9	-1.0	2.76	7721	5.31	219.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823602-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009823602-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
009823602-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
009823602-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009823602-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

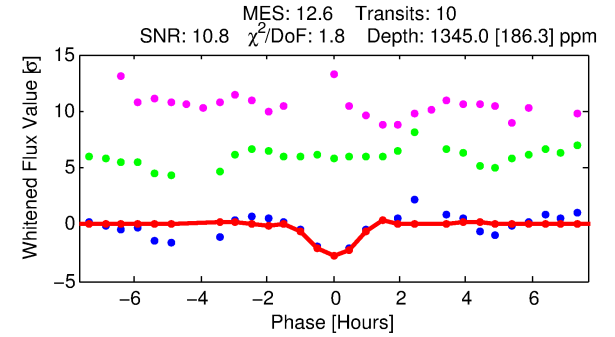
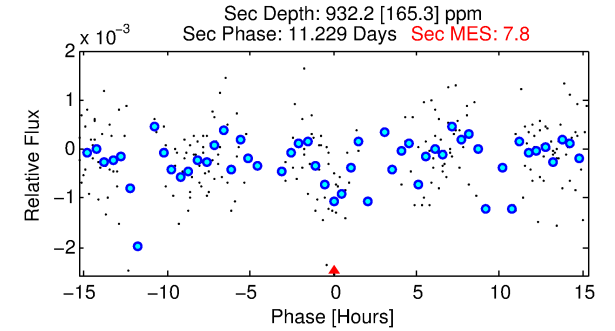
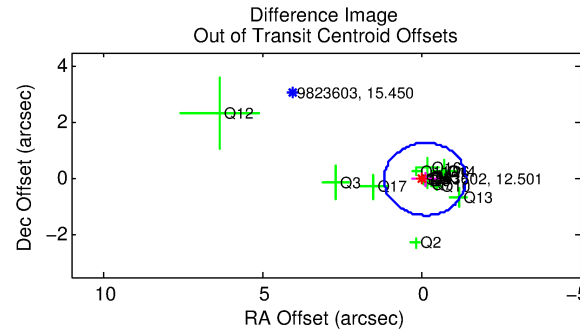
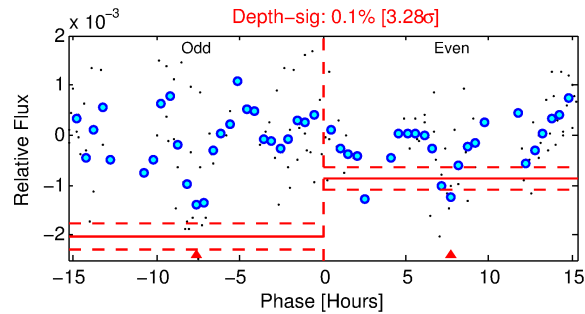
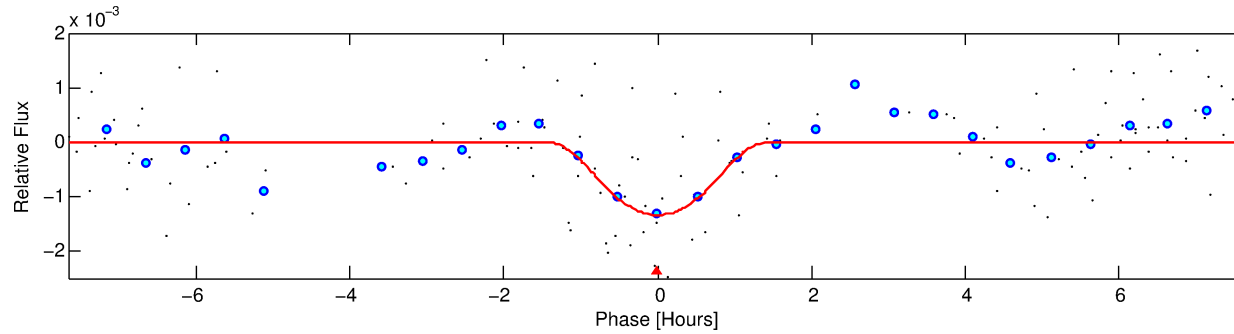
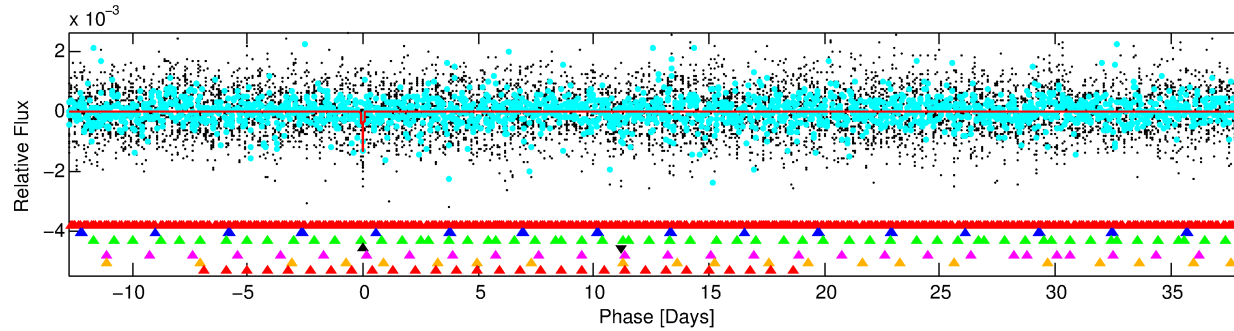
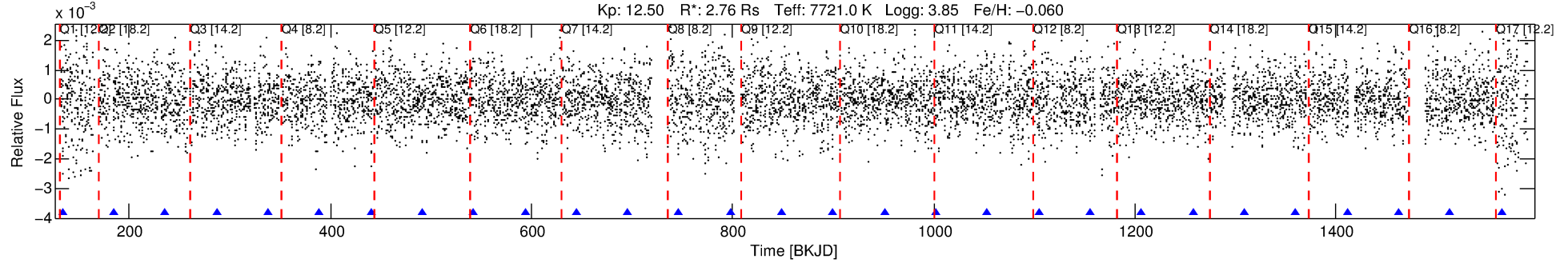
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823602-04

No Significant Match Found

DV One-Page Summary

KIC: 9823602 Candidate: 4 of 7 Period: 51.092 d



DV Fit Results:

Period = 51.09166 [0.00067] d
Epoch = 133.7548 [0.0076] BKJD
Rp/R* = 0.0561 [0.1777]
a/R* = 56.02 [50.95]
b = 0.99 [0.29]
Seff = 214.32 [122.73]
Teq = 976 [140] K
Rp = 16.91 [53.93] Re
a = 0.3364 [0.1188] AU
Ag = 203.06 [1291.17] [0.16 σ]
Teffp = 5694 [9021] K [0.52 σ]

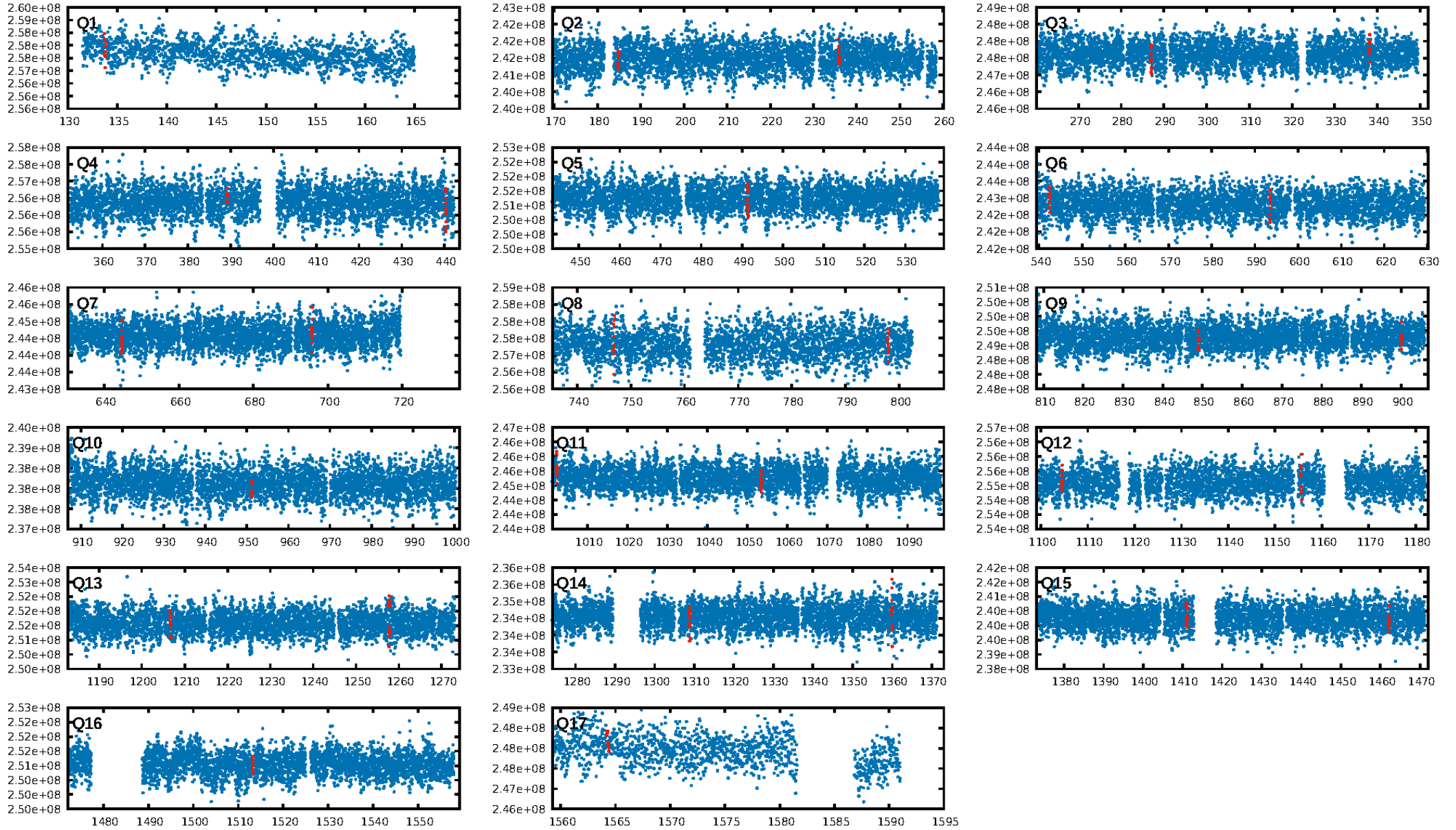
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.73 σ]
LongPeriod-sig: 100.0% [123.62 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 50.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -0.3863
Centroid-sig: 24.2%
Centroid-so: 0.153 arcsec [1.35 σ]
OotOffset-rm: 0.130 arcsec [0.30 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.108 arcsec [0.41 σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.62 [10/16]
DiffImageOverlap-fno: 0.24 [4/17]

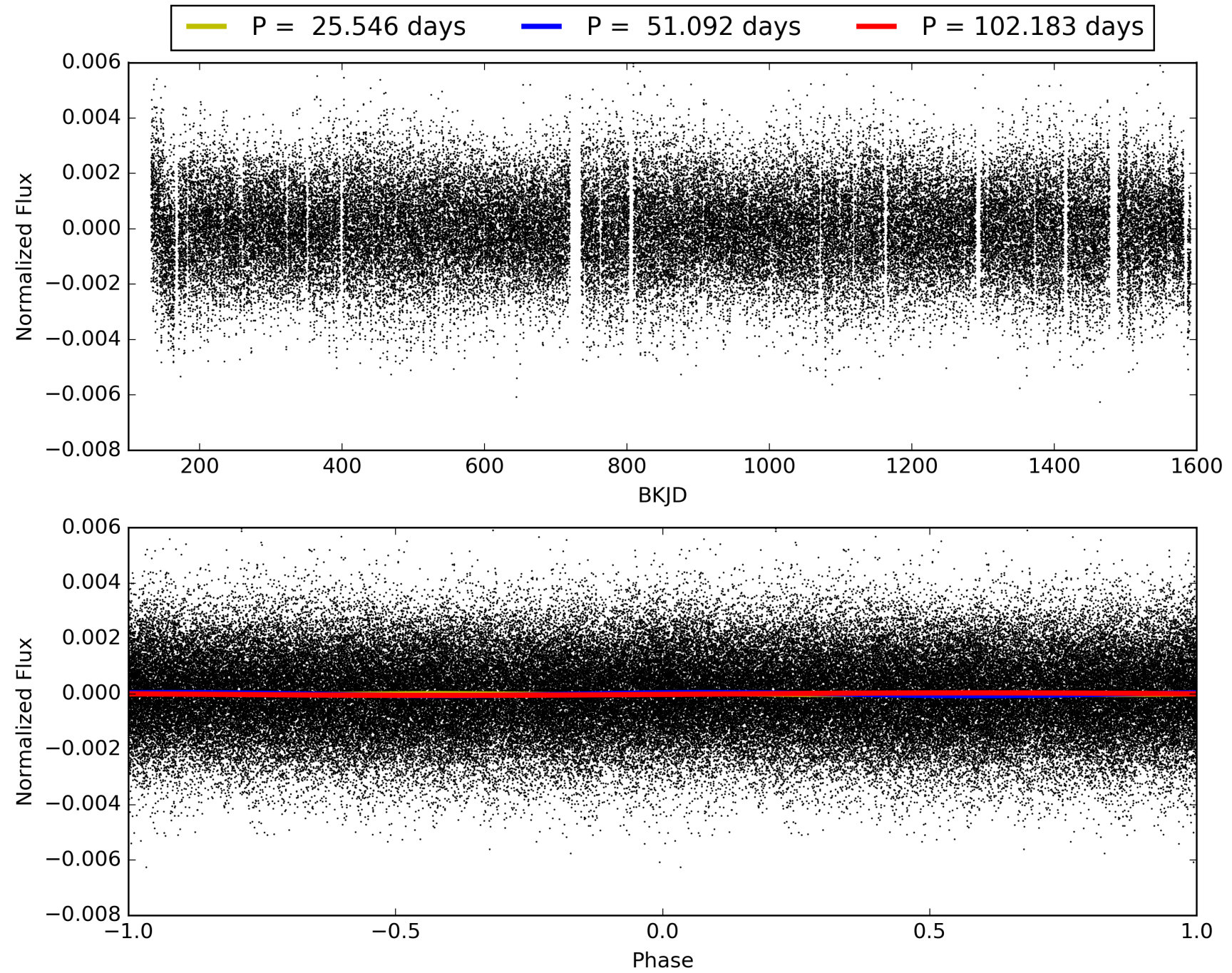
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:56:11 Z

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

TCE 009823602-04, PDC Light Curves

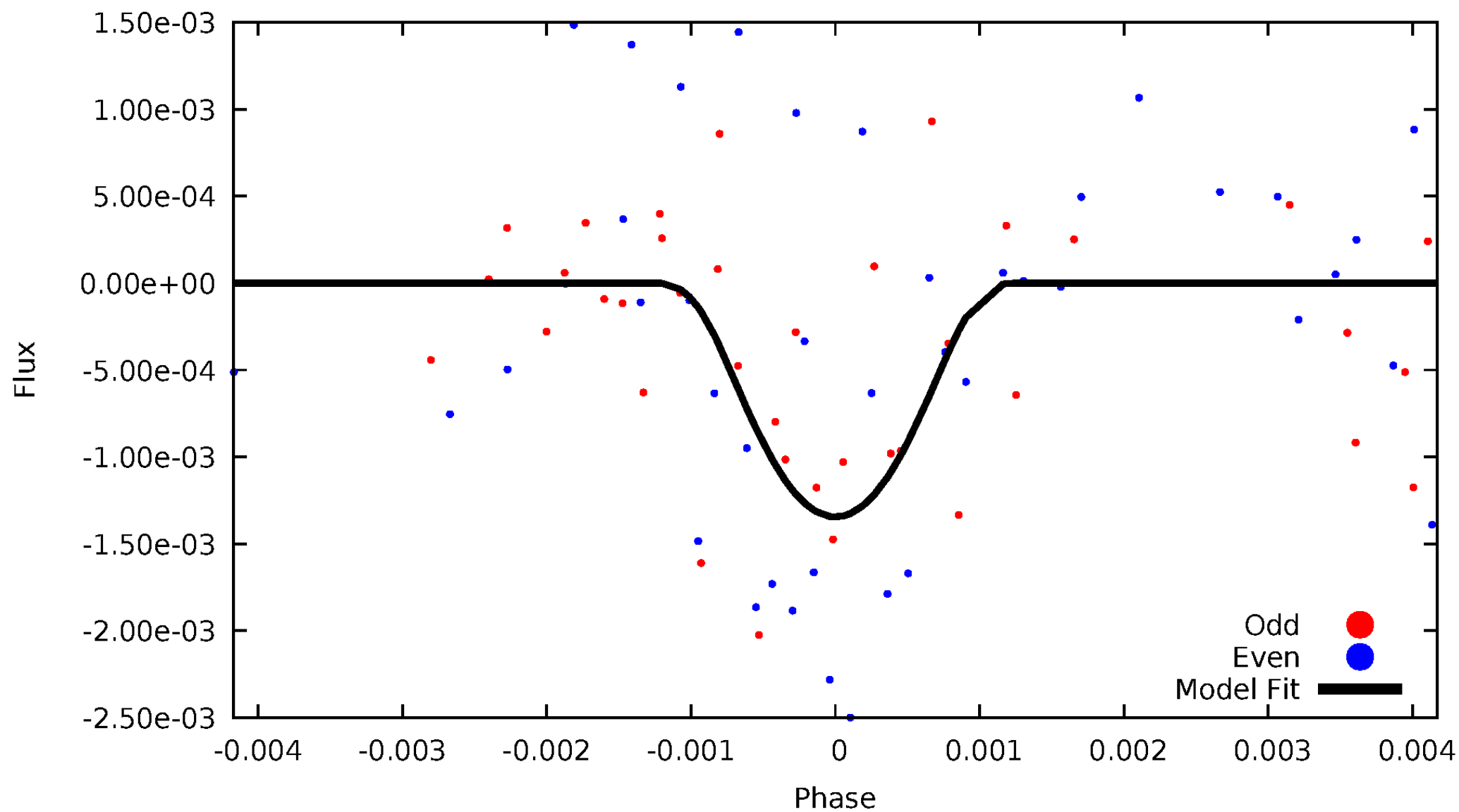


TCE 009823602-04



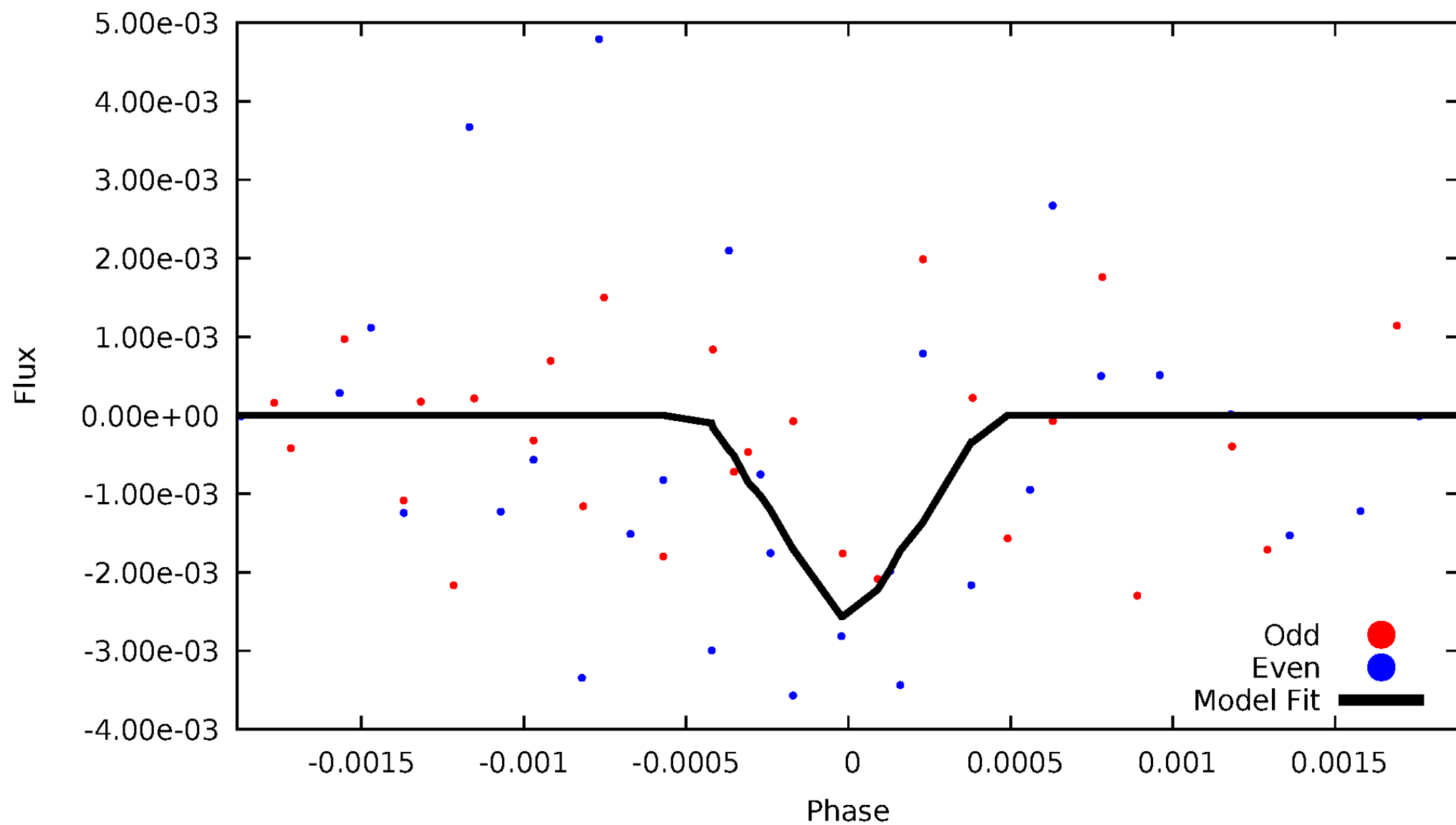
DV Odd/Even

TCE 009823602-04



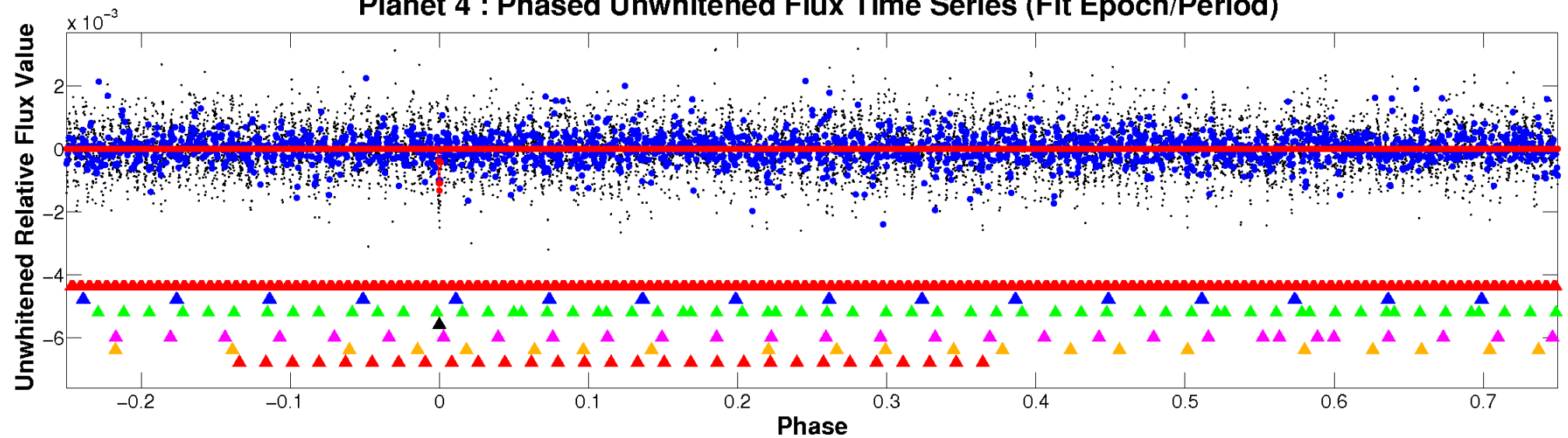
ALT Odd/Even

TCE 009823602-04

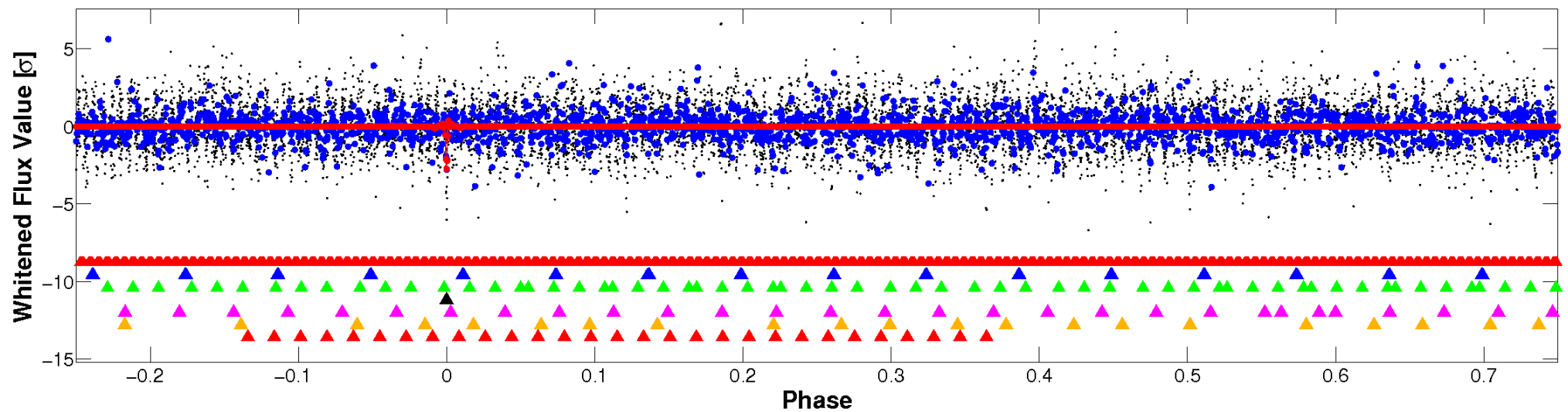


Non-Whitened Vs. Whitened Light Curve

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

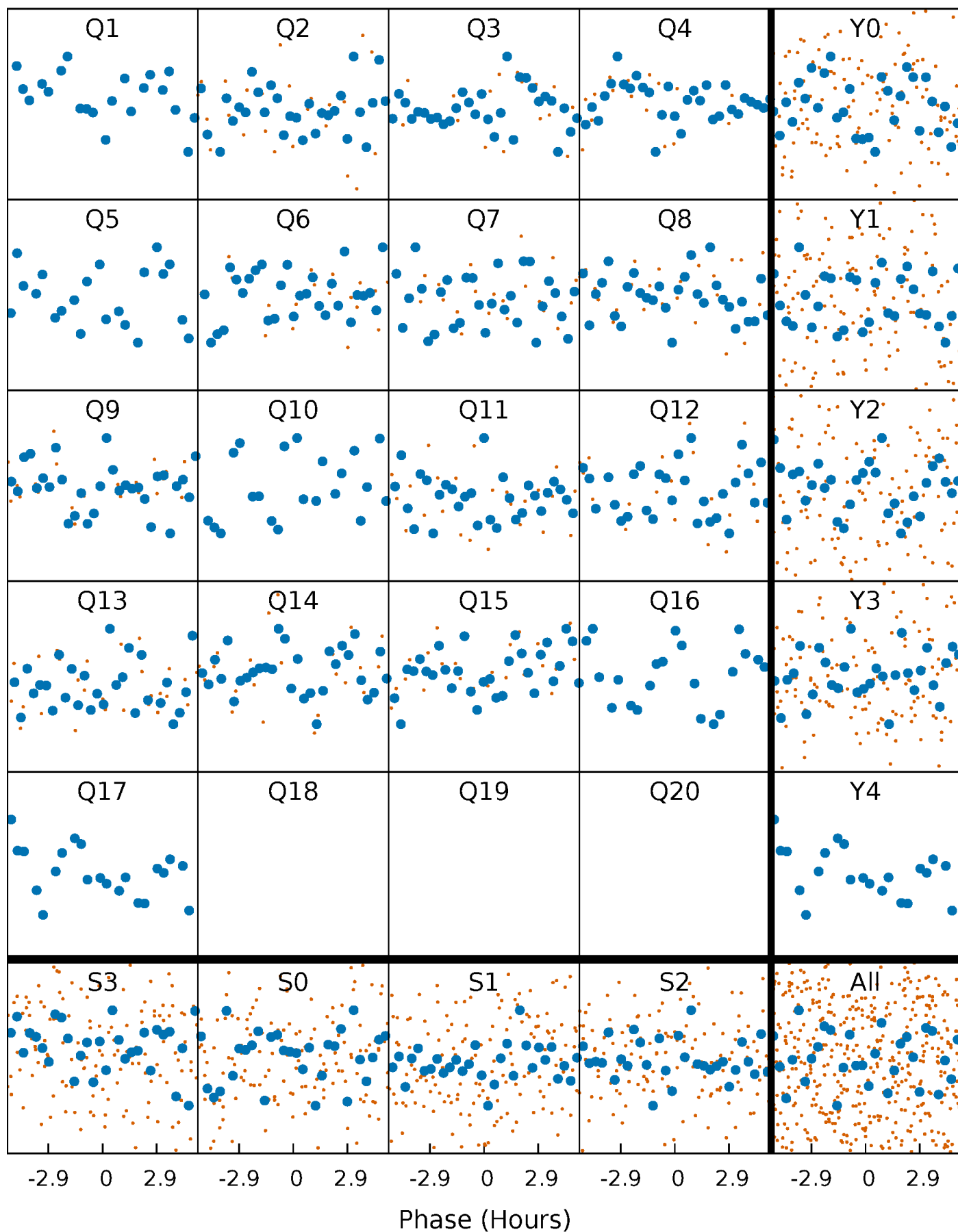


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



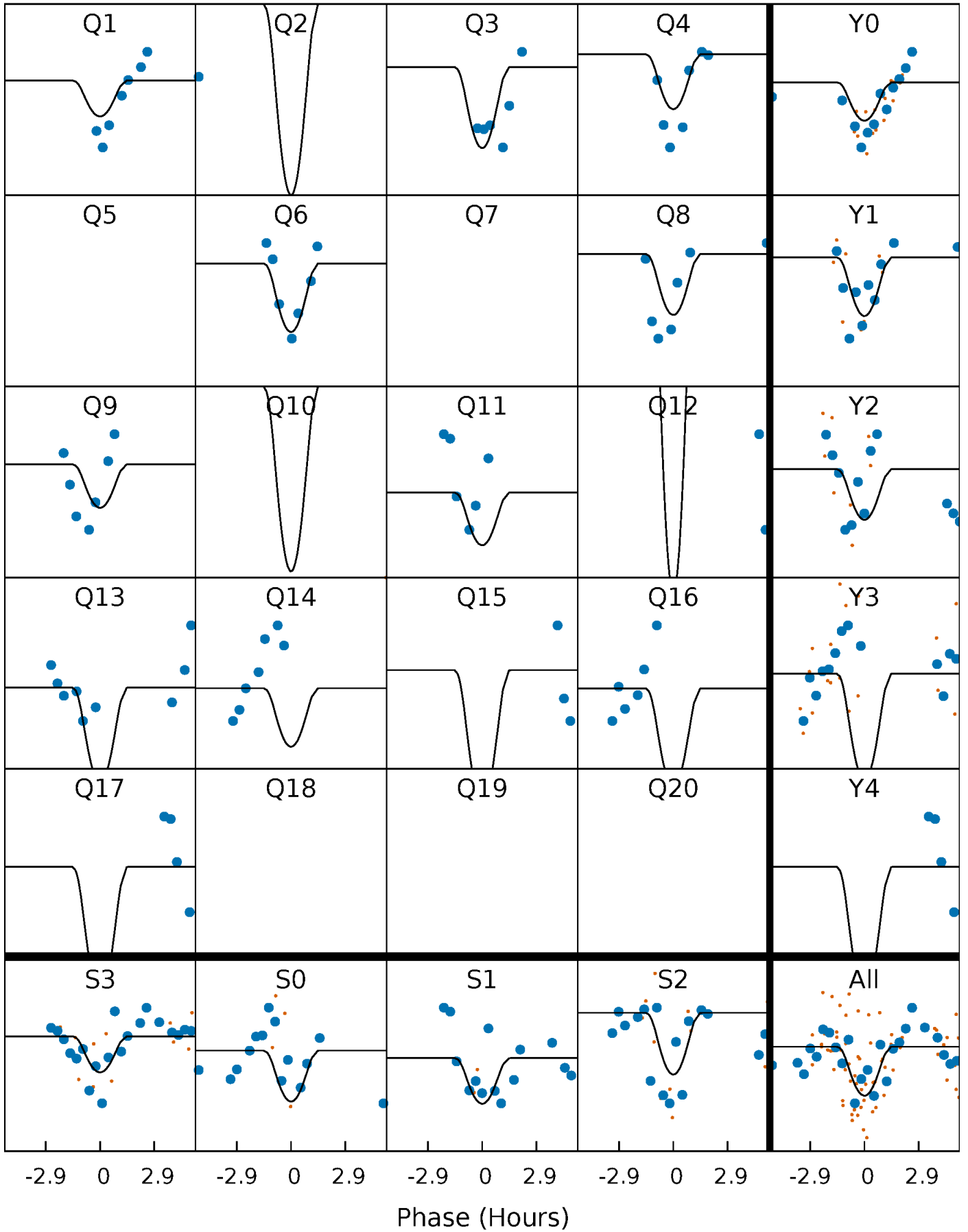
PDC Quarter-Phased Transit Curves

TCE 009823602-04 P= 51.091659 Days $T_0=133.754778$ (BKJD)



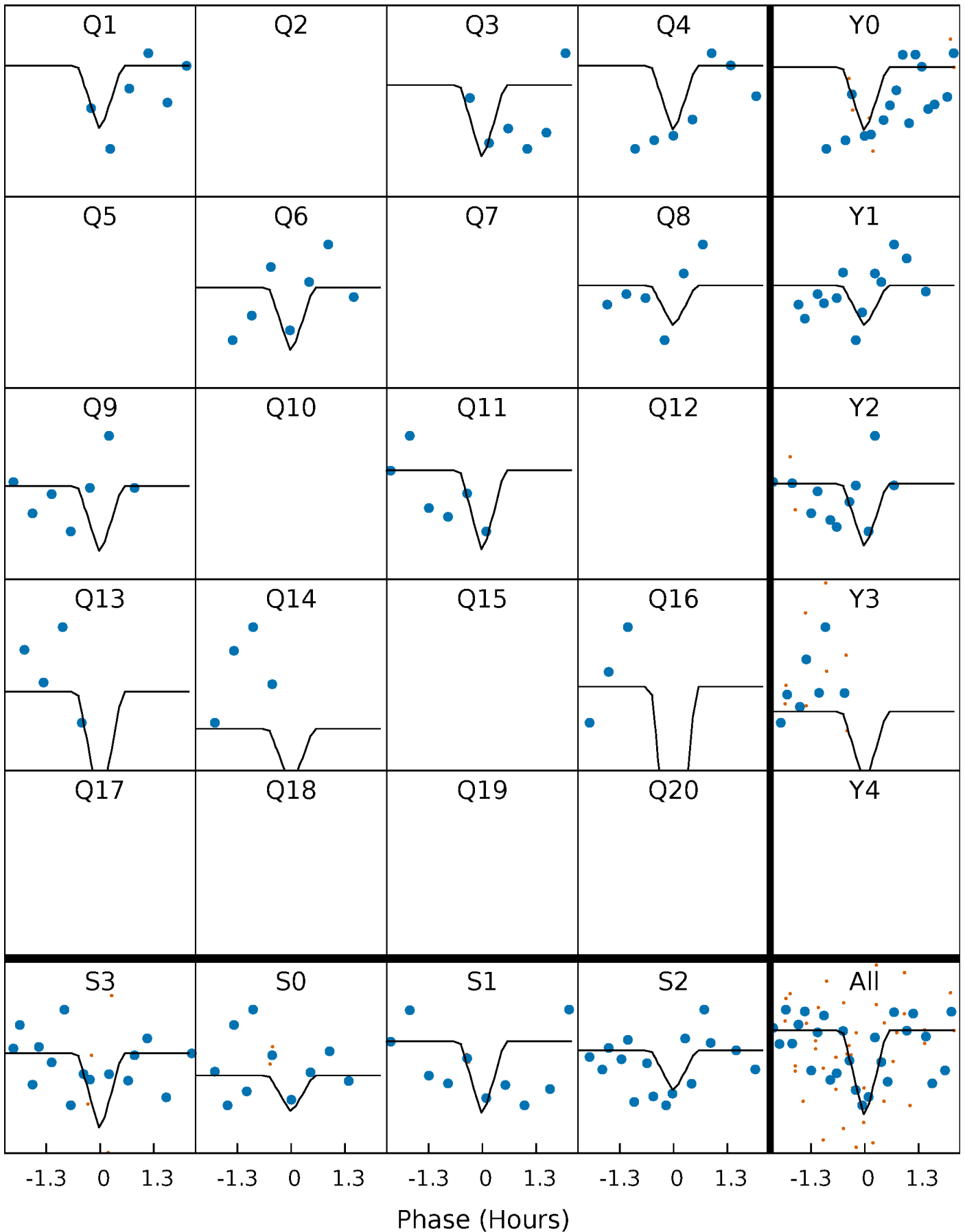
DV Quarter-Phased Transit Curves

TCE 009823602-04 P= 51.091659 Days $T_0=133.754778$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

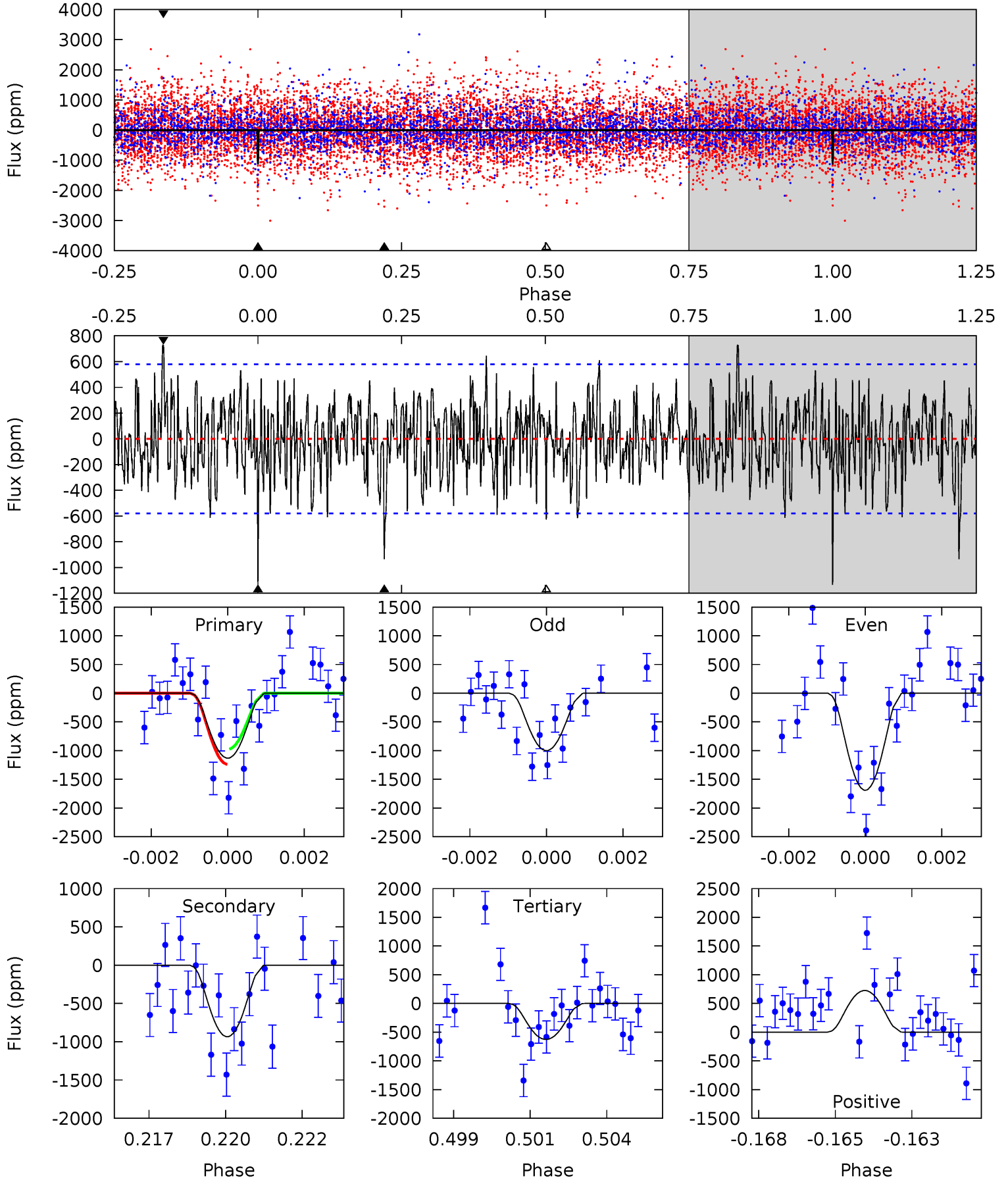
TCE 009823602-04 P= 51.091983 Days $T_0=133.751955$ (BKJD)



DV Model-Shift Uniqueness Test

009823602-04, P = 51.091659 Days, E = 82.663119 Days

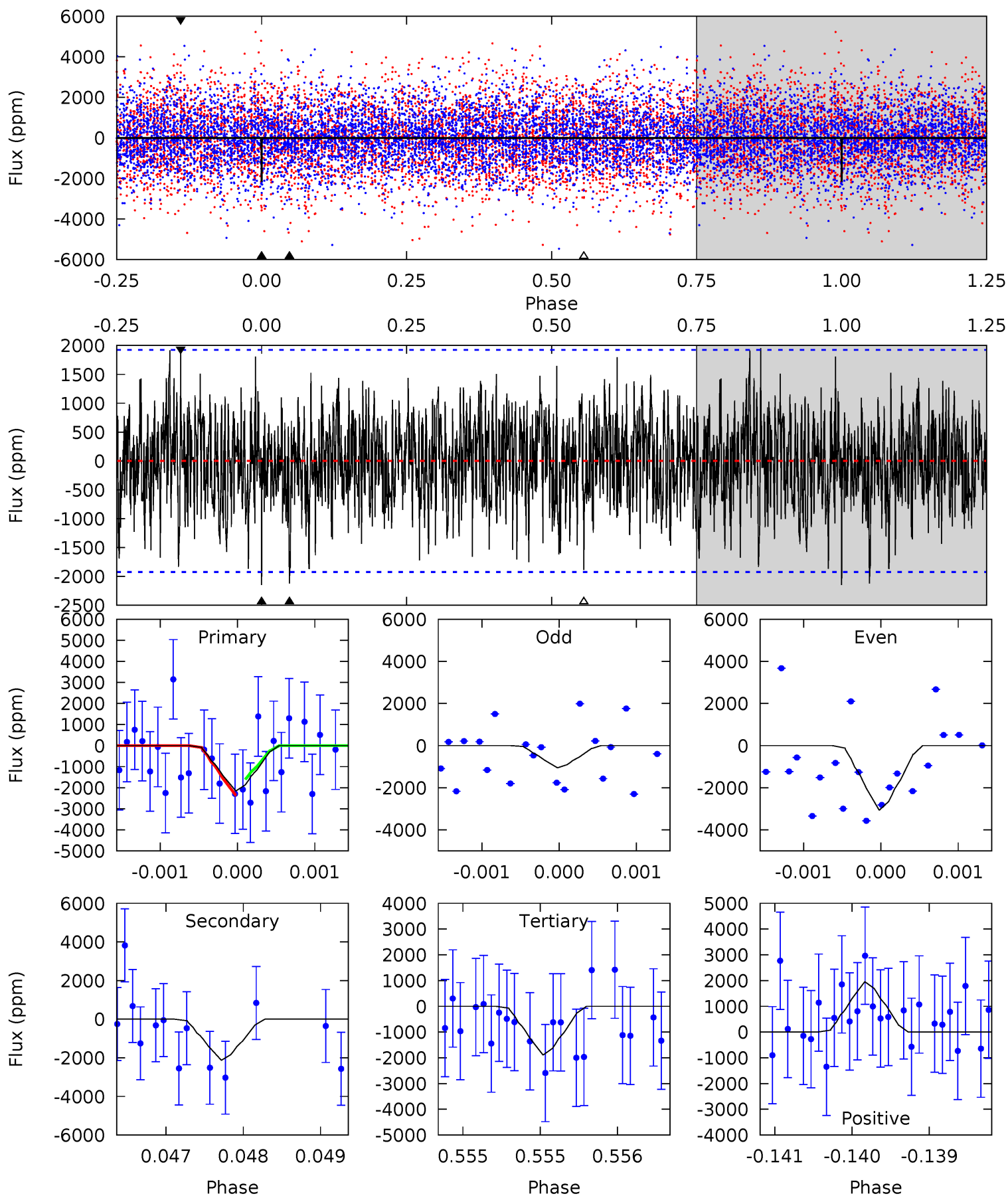
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	8.53	5.72	6.62	5.29	3.03	2.09	4.61	3.71	2.81	1.91	3.08	0.49	0.39	1.19



Alt Model-Shift Uniqueness Test

009823602-04, P = 51.091983 Days, E = 82.659972 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.11	6.02	5.36	5.55	5.47	3.32	1.67	0.74	0.56	0.66	0.48	2.83	0.91	0.48	1.06



Stellar Parameters For KIC 009823602

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7721^{+214}_{-322}	$3.845^{+0.315}_{-0.105}$	$-0.060^{+0.200}_{-0.350}$	$2.760^{+0.457}_{-1.066}$	$1.943^{+0.110}_{-0.467}$	$0.130^{+0.302}_{-0.043}$
	+3%/-4%	+8%/-3%	+333%/-583%	+17%/-39%	+6%/-24%	+232%/-33%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009823602-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-935 ± 110	$39.30^{+39.54}_{-26.40}$	1329^{+93}_{-112}	3829^{+2376}_{-721}	36^{+317}_{-27}
Alt.	-2119 ± 352	$36.55^{+43.58}_{-24.72}$	1332^{+91}_{-136}	4621^{+3256}_{-1079}	96^{+770}_{-74}

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

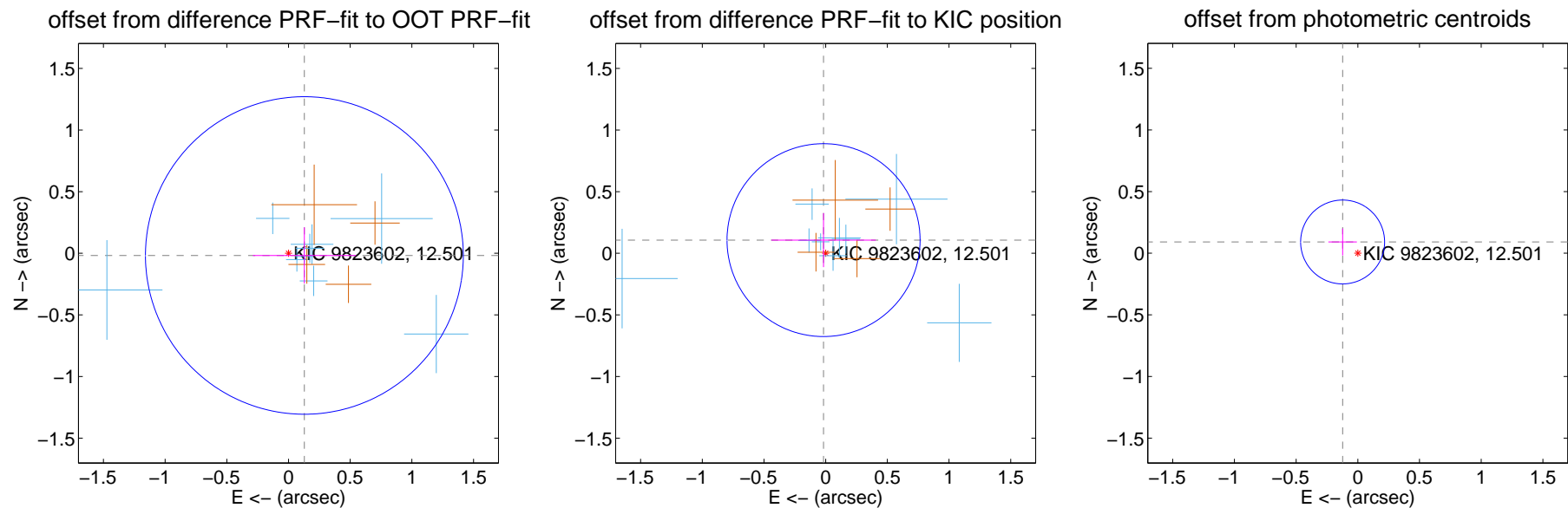
DV Centroid Data

Supplemental centroid analysis for 009823602-04. Kepler magnitude: 12.50. Transit SNR 10.79

There are 10 quarters with good PRF difference image offsets

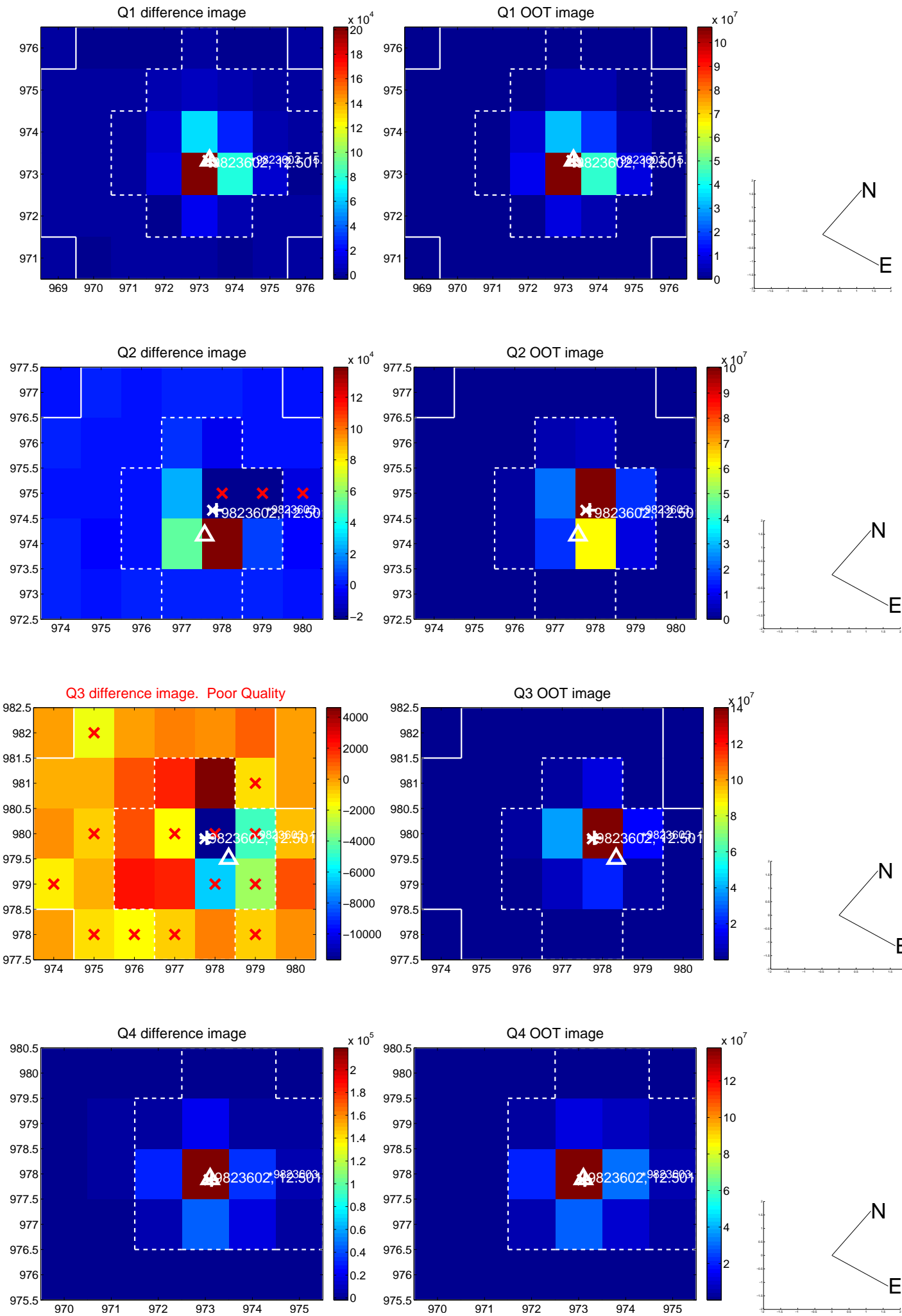
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.130 ± 0.429	0.30	-0.129 ± 0.418	-0.018 ± 0.228
PRF-fit source offset from KIC position	0.108 ± 0.261	0.41	0.017 ± 0.423	0.107 ± 0.219
photometric centroid source offset	0.15 ± 0.11	1.35	0.12 ± 0.12	0.09 ± 0.11

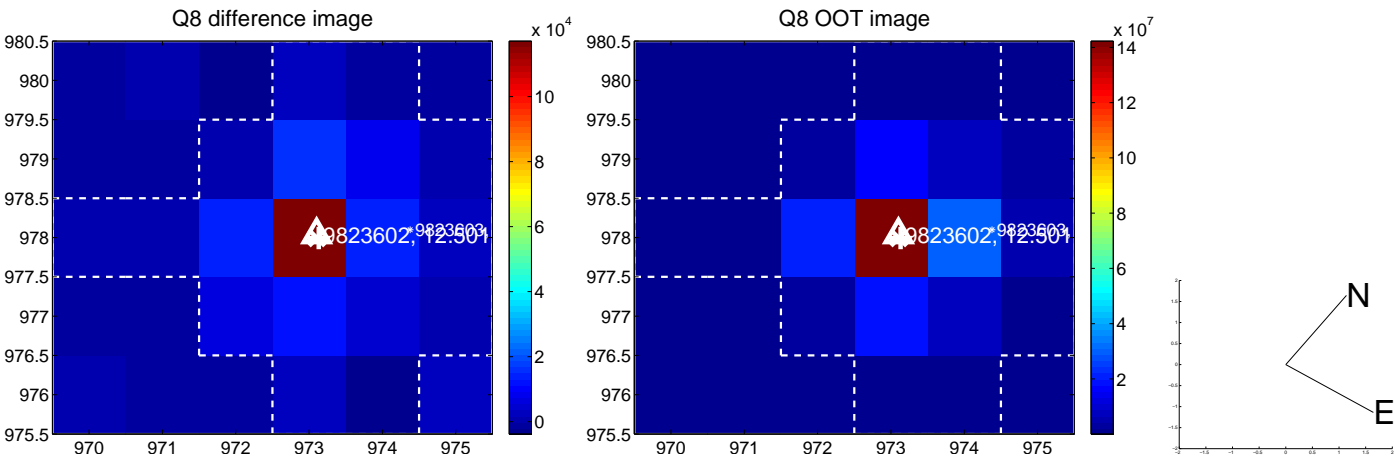
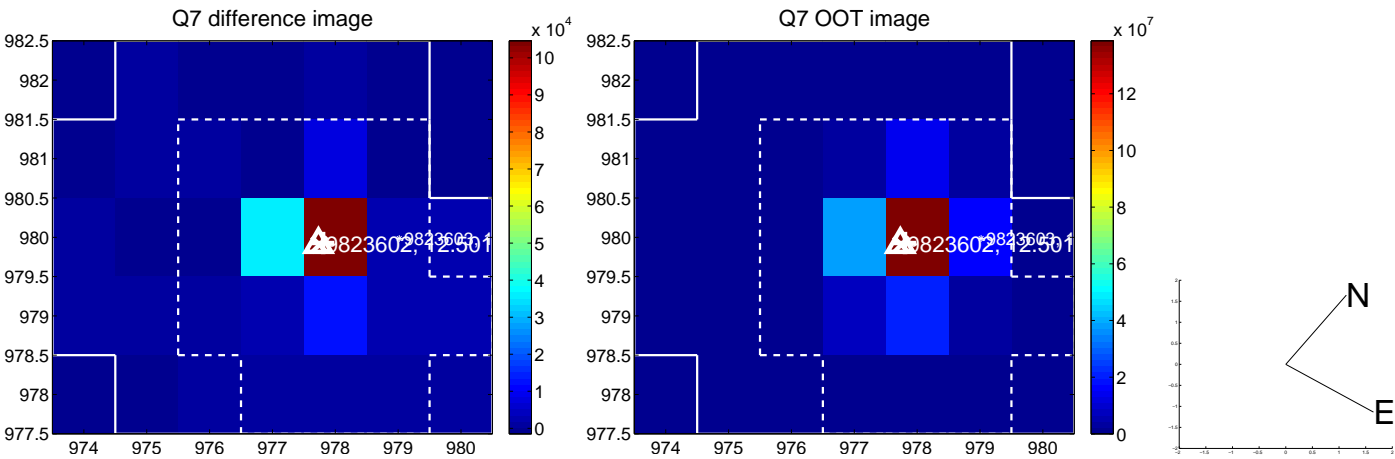
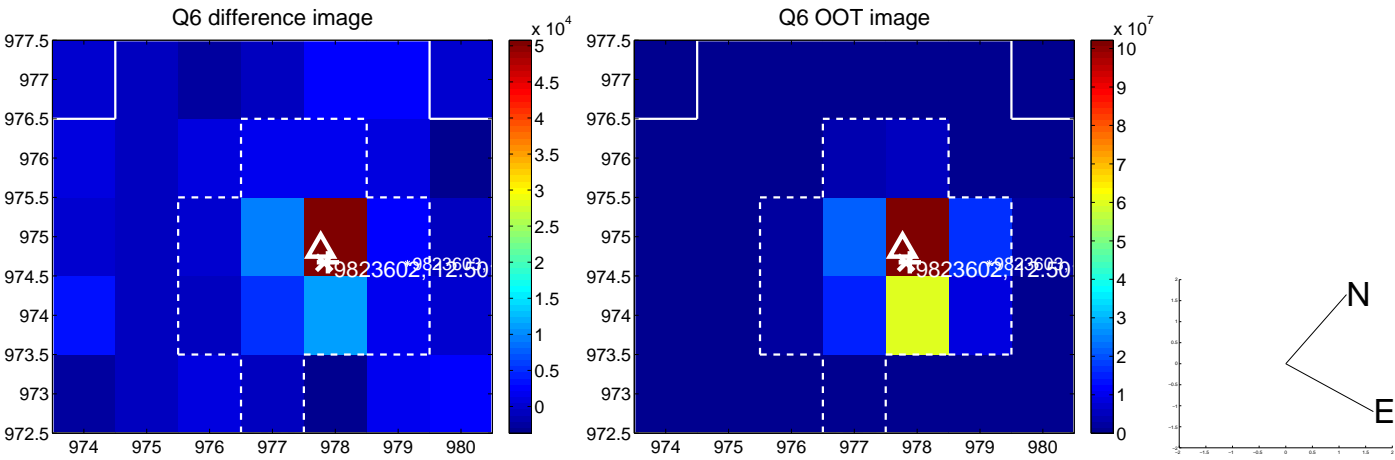
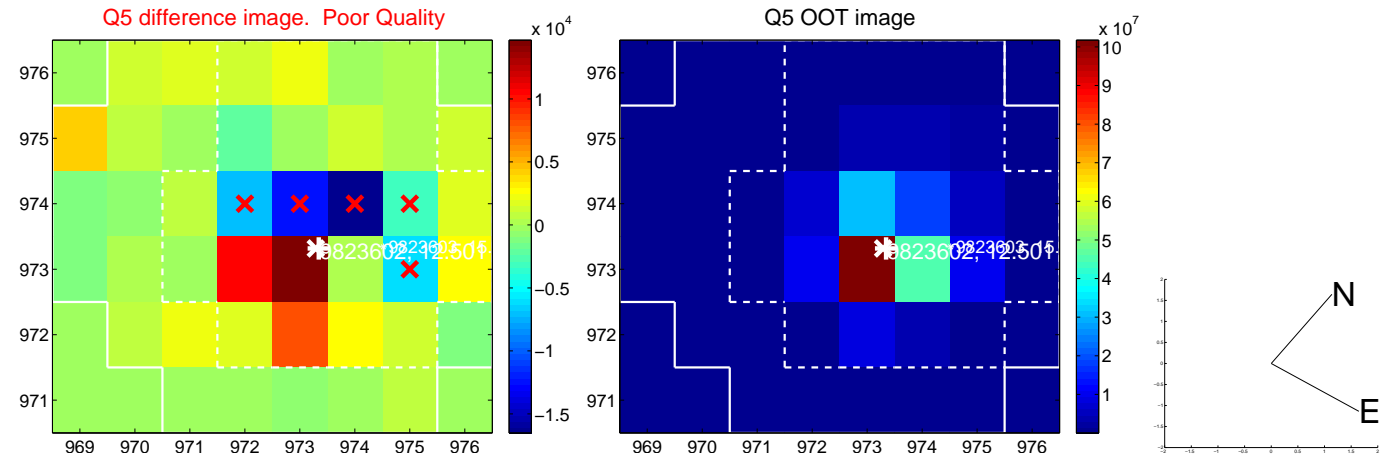


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

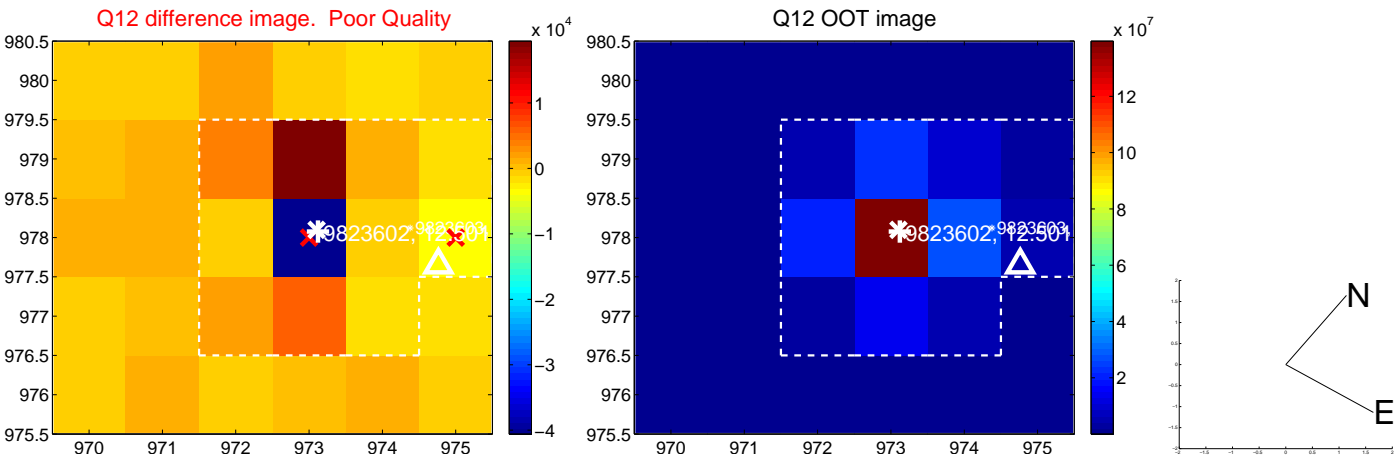
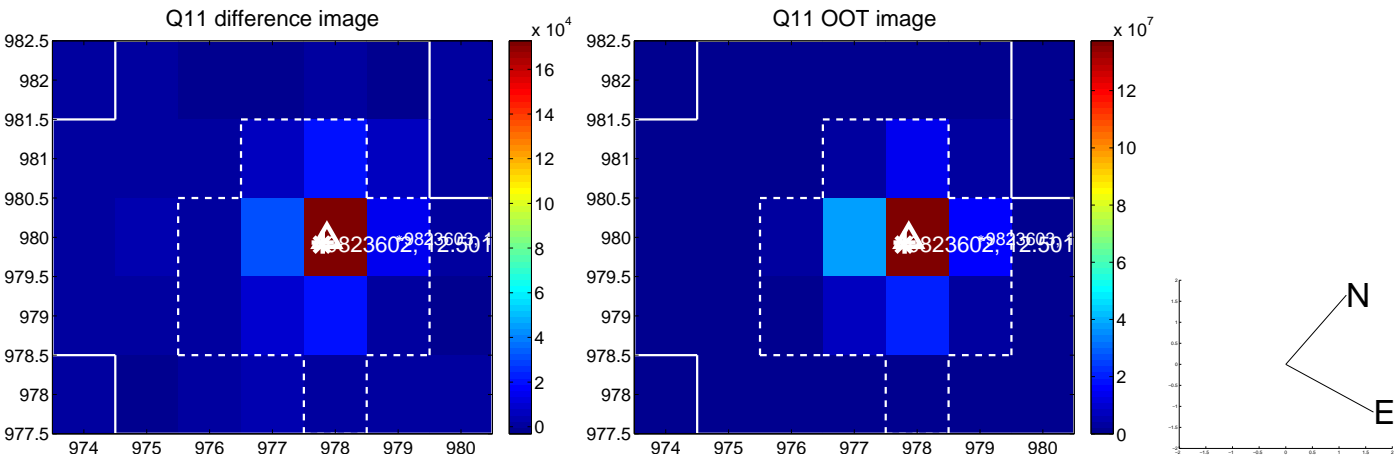
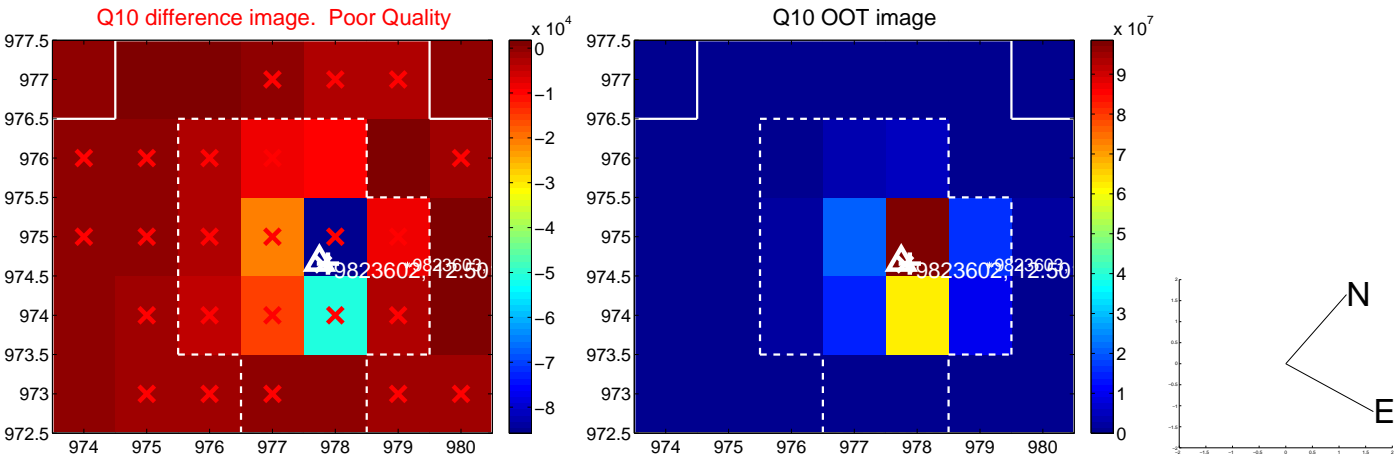
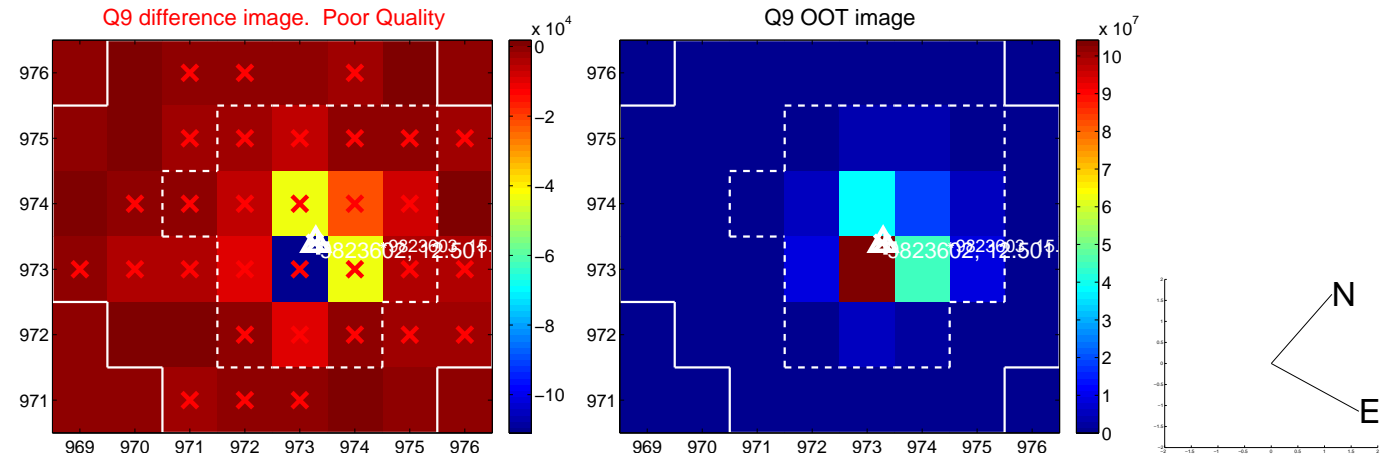
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



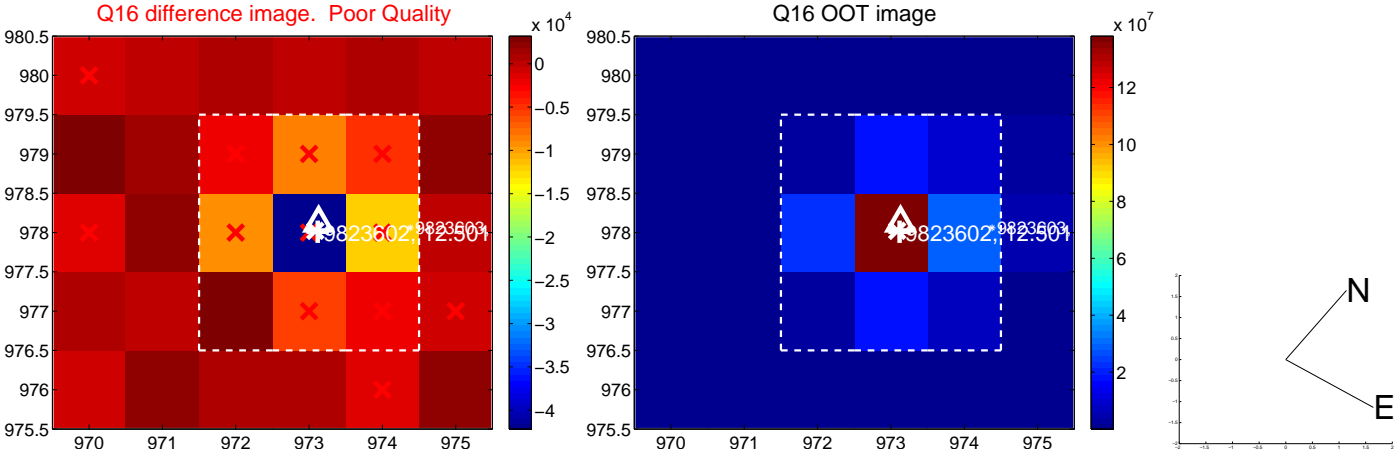
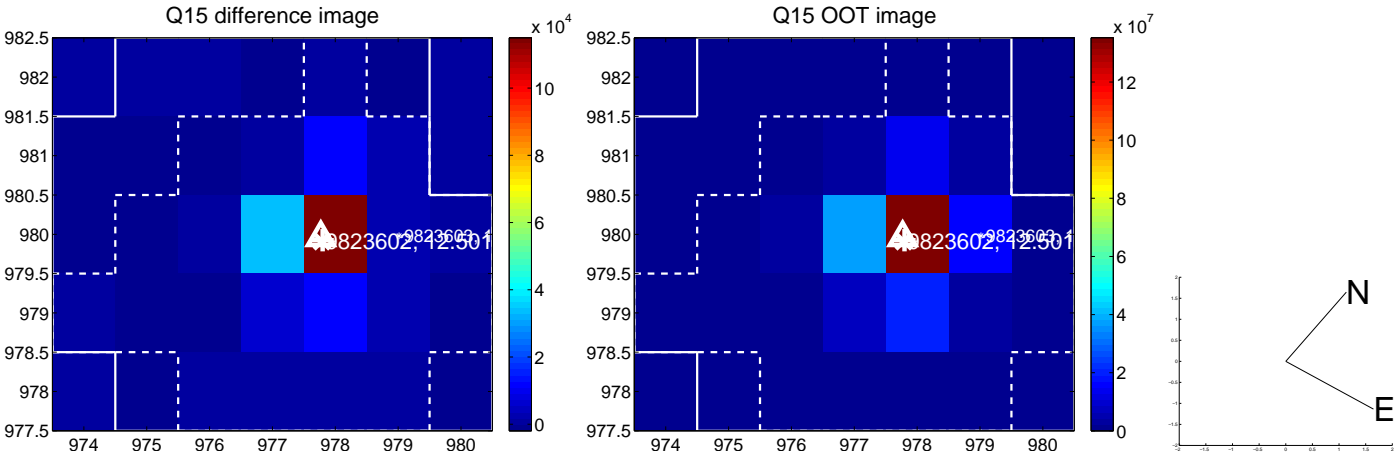
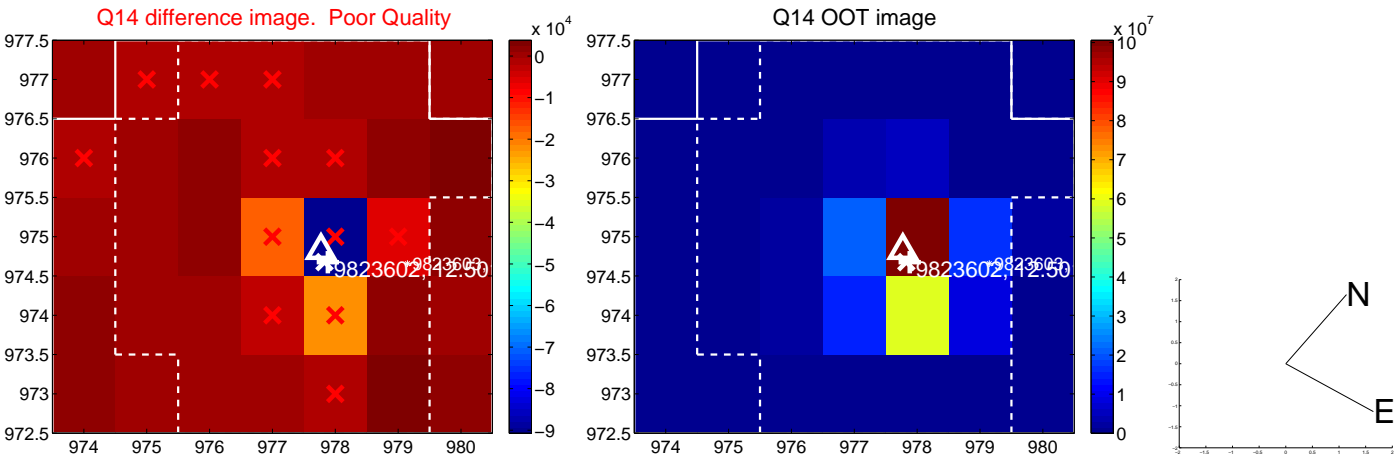
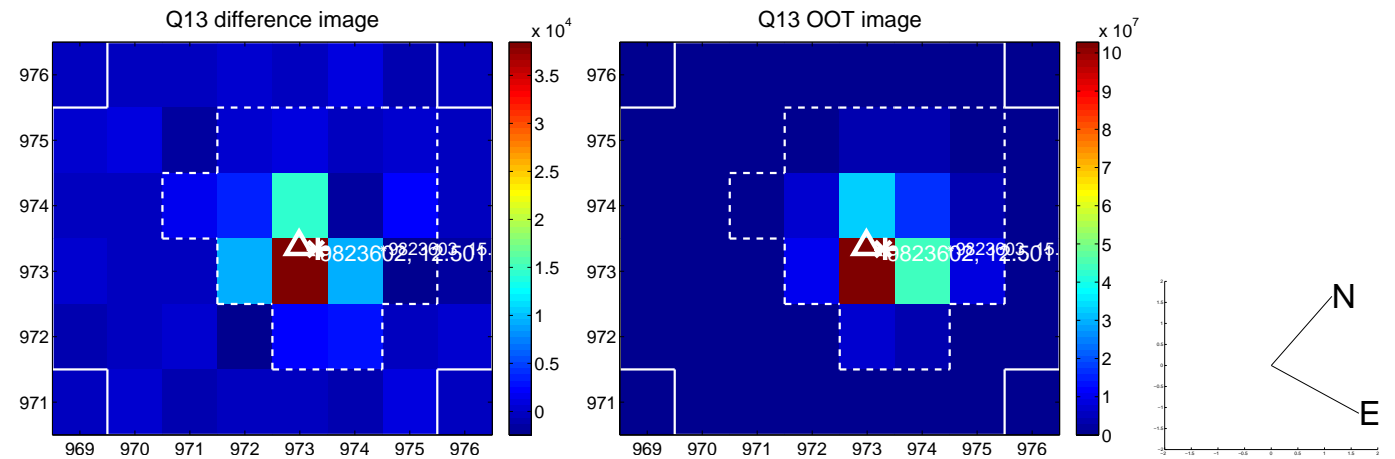
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



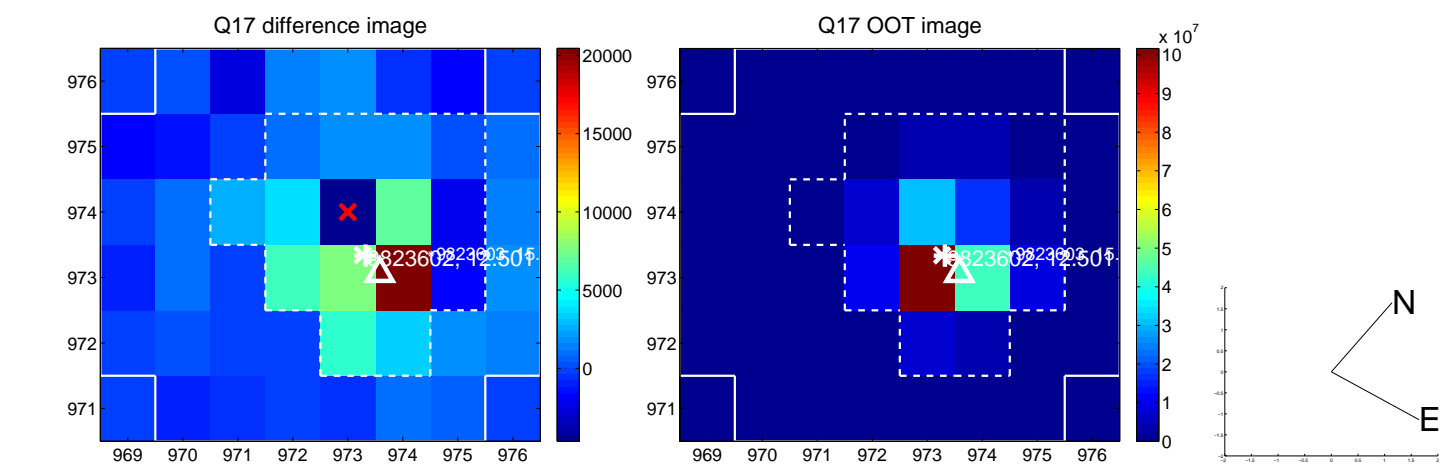
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



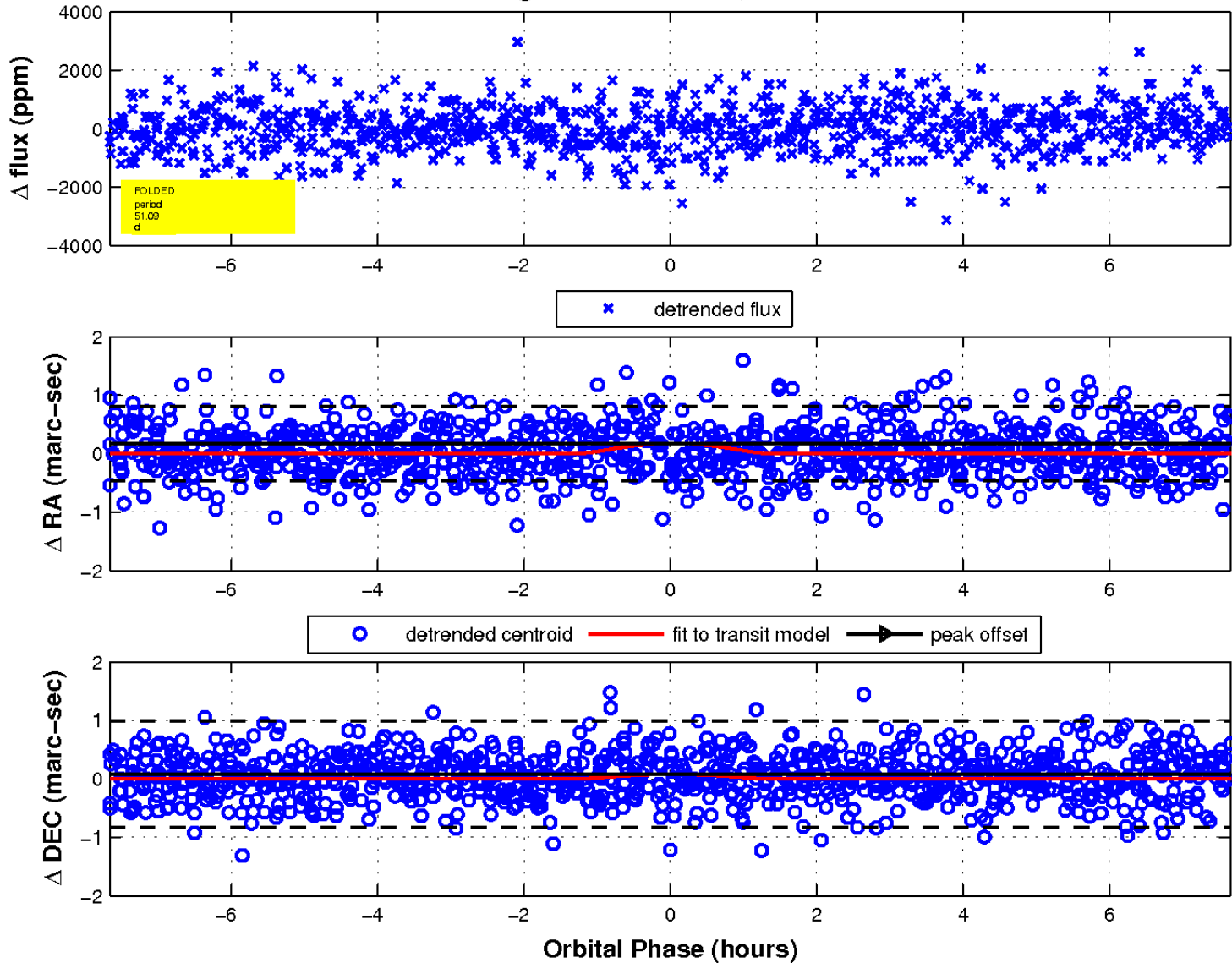
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

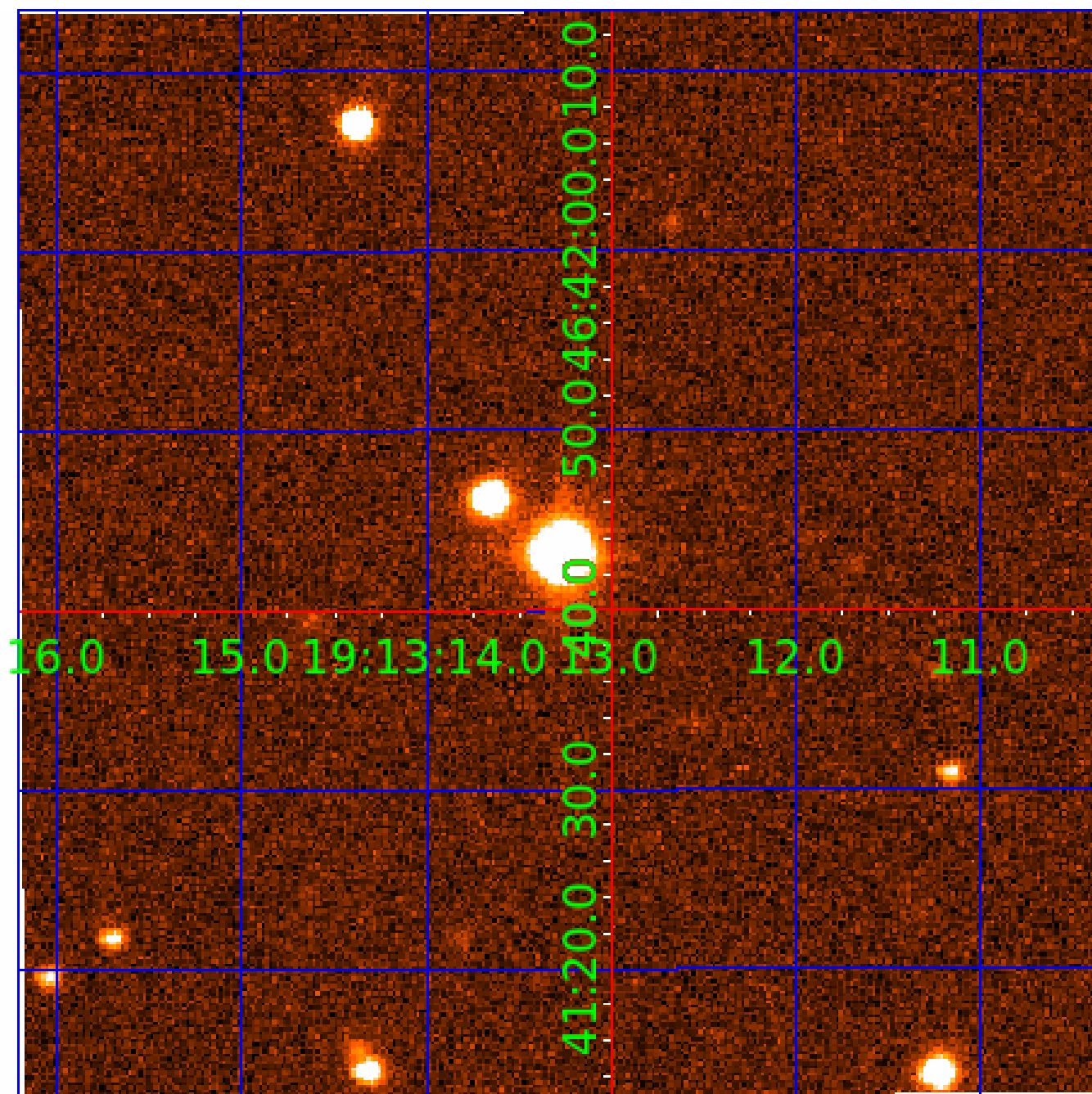


fluxWeightedCentroids, Planet 4 of 7



UKIRT Image

Declination



KIC 009823602

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})
009823602-01	OBS	No	0.885894	131.586408	69.1	5.867	9.5	9.3	2.76	7721	2.42	47755.01
009823602-02	OBS	No	22.353765	140.678766	1152.6	1.921	13.7	11.3	2.76	7721	9.57	645.25
009823602-03	OBS	No	24.094820	145.278836	2976.3	0.816	13.0	11.1	2.76	7721	25.70	583.84
009823602-04	OBS	No	51.091659	133.754778	1345.0	2.556	12.6	10.8	2.76	7721	16.91	214.32
009823602-05	OBS	No	49.220329	163.840237	1758.1	3.949	11.8	14.0	2.76	7721	18.82	225.25
009823602-06	OBS	No	69.458100	147.367148	1790.7	2.486	11.6	11.2	2.76	7721	13.61	142.31
009823602-07	OBS	No	50.182079	152.371615	359.6	2.000	10.9	-1.0	2.76	7721	5.31	219.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823602-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009823602-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
009823602-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
009823602-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009823602-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

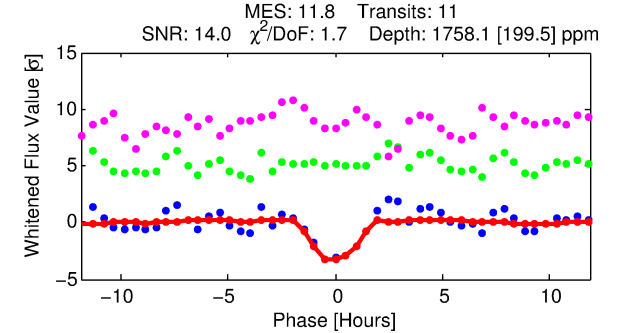
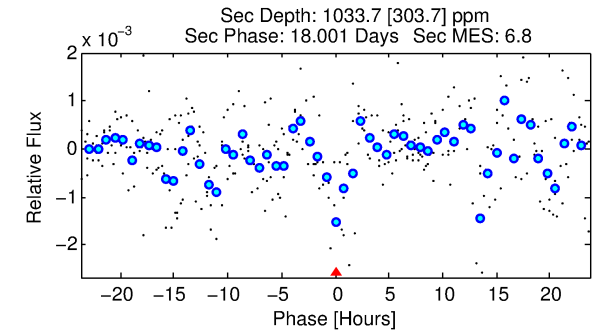
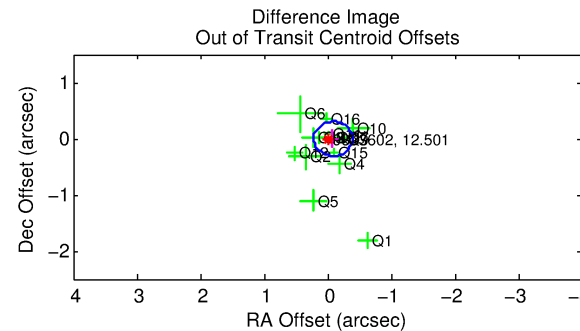
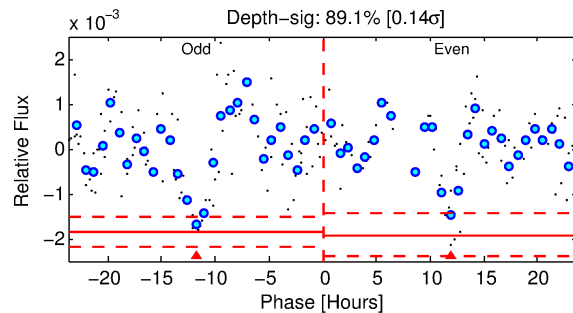
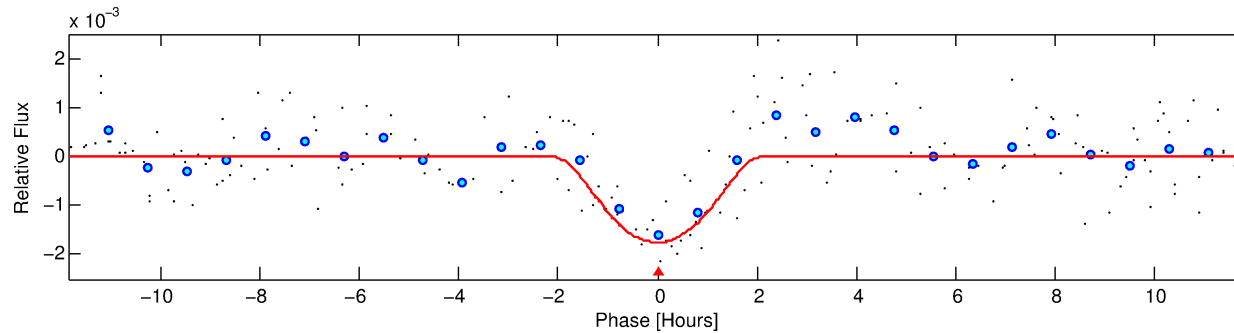
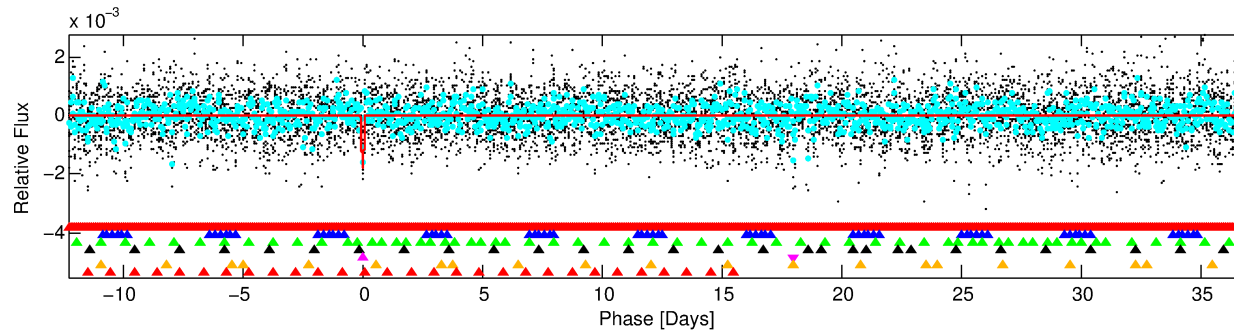
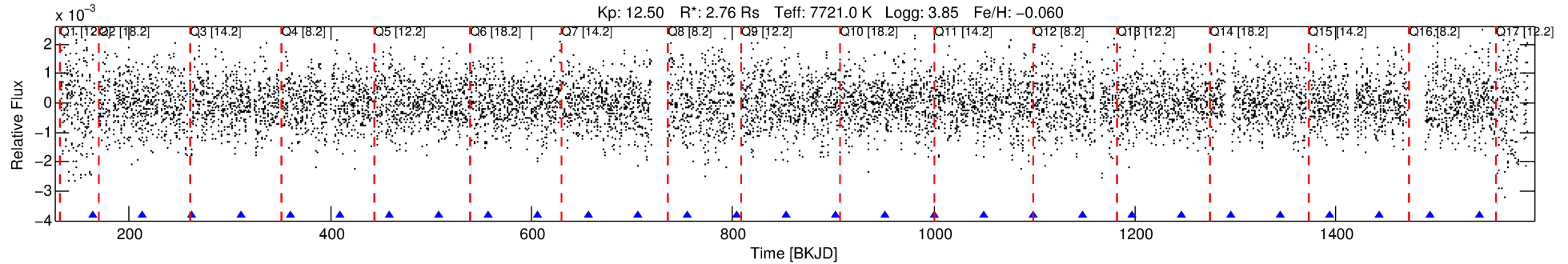
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823602-05

No Significant Match Found

DV One-Page Summary

KIC: 9823602 Candidate: 5 of 7 Period: 49.220 d



DV Fit Results:

Period = 49.22033 [0.00055] d
Epoch = 163.8402 [0.0081] BKJD
Rp/R* = 0.0625 [0.1287]
a/R* = 37.31 [21.84]
b = 0.99 [0.21]
Seff = 225.25 [128.99]
Teq = 988 [141] K
Rp = 18.82 [39.42] Re
a = 0.3281 [0.1159] AU
Ag = 172.84 [719.67] [0.24 σ]
Teffp = 5538 [5719] K [0.80 σ]

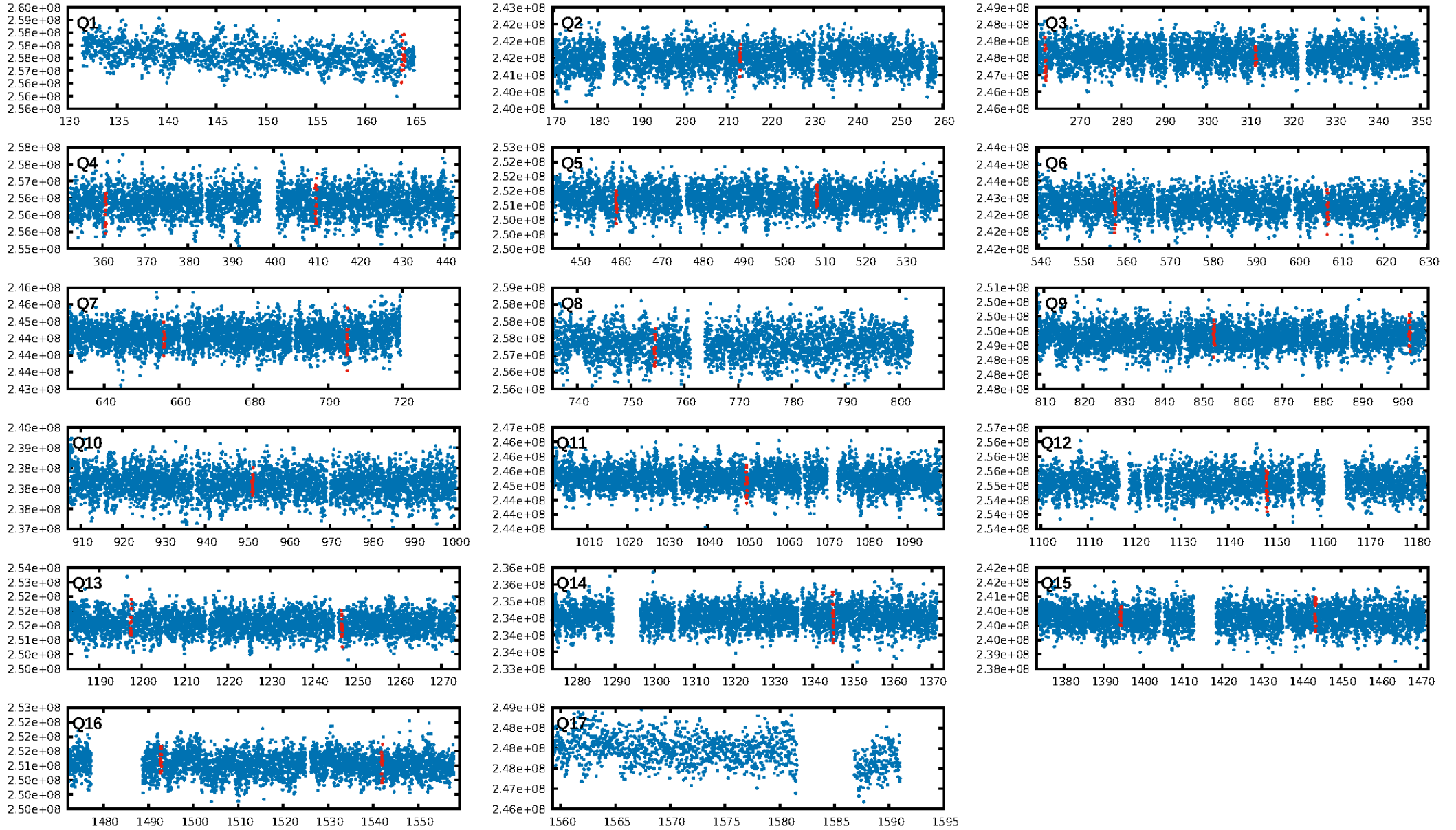
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [149.55 σ]
LongPeriod-sig: 100.0% [5.21 σ]
ModelChiSquare2-sig: 5.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 0.1532
Centroid-sig: 67.4%
Centroid-so: 0.328 arcsec [4.20 σ]
OotOffset-rm: 0.087 arcsec [0.85 σ]
KicOffset-rm: 0.109 arcsec [0.65 σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.53 [8/15]
DiffImageOverlap-fno: 0.00 [0/15]

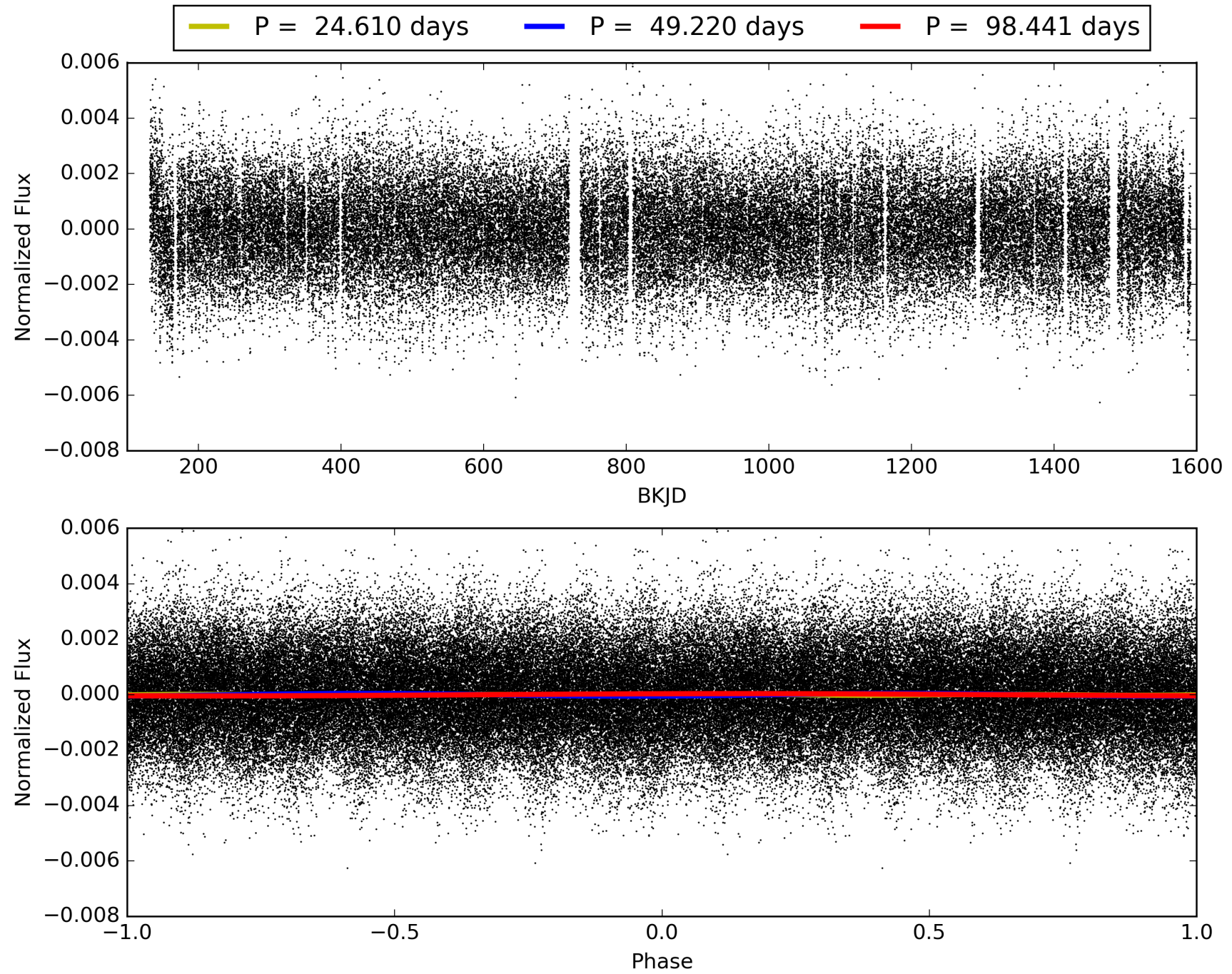
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:56:14 Z

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

TCE 009823602-05, PDC Light Curves

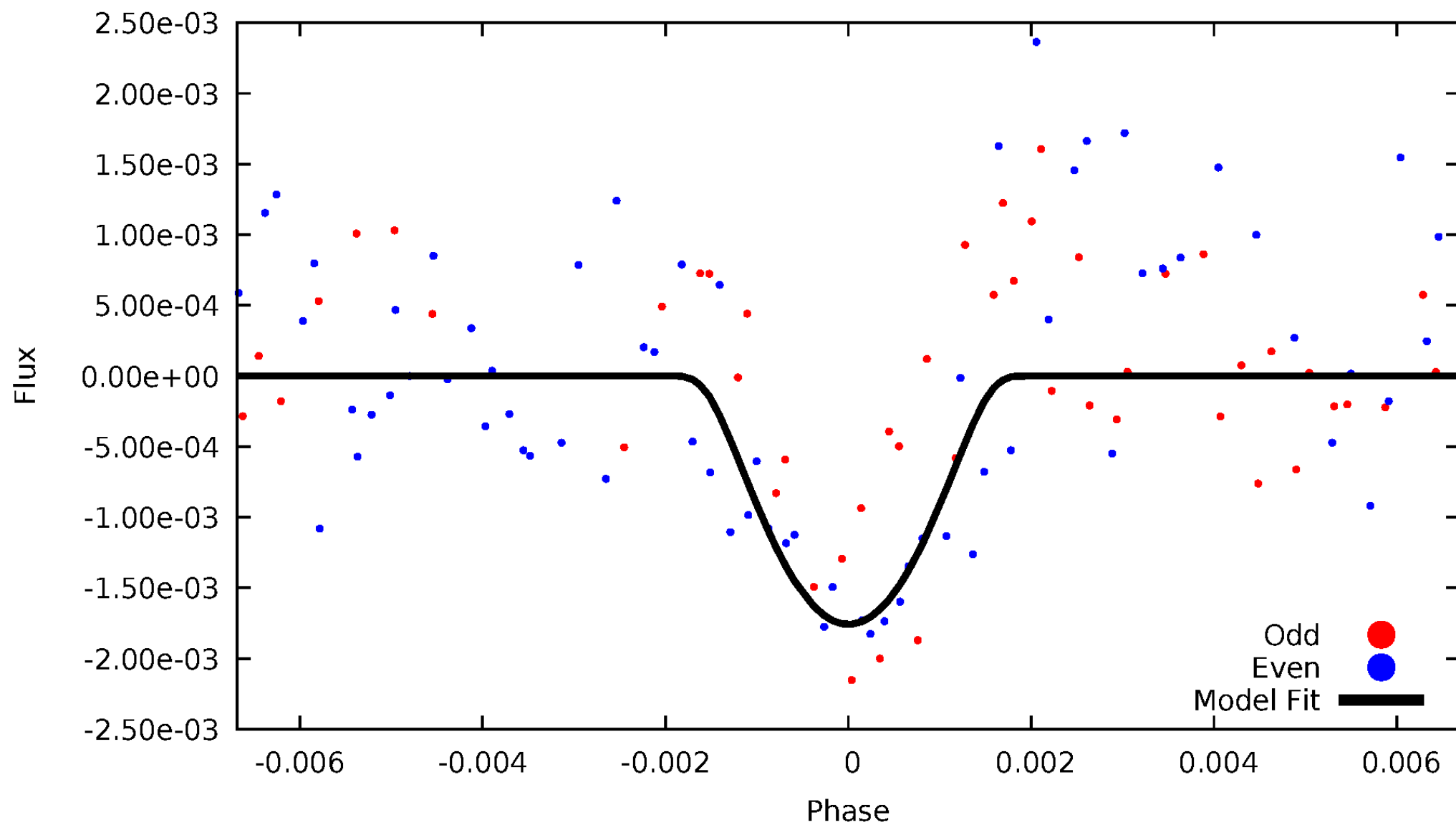


TCE 009823602-05



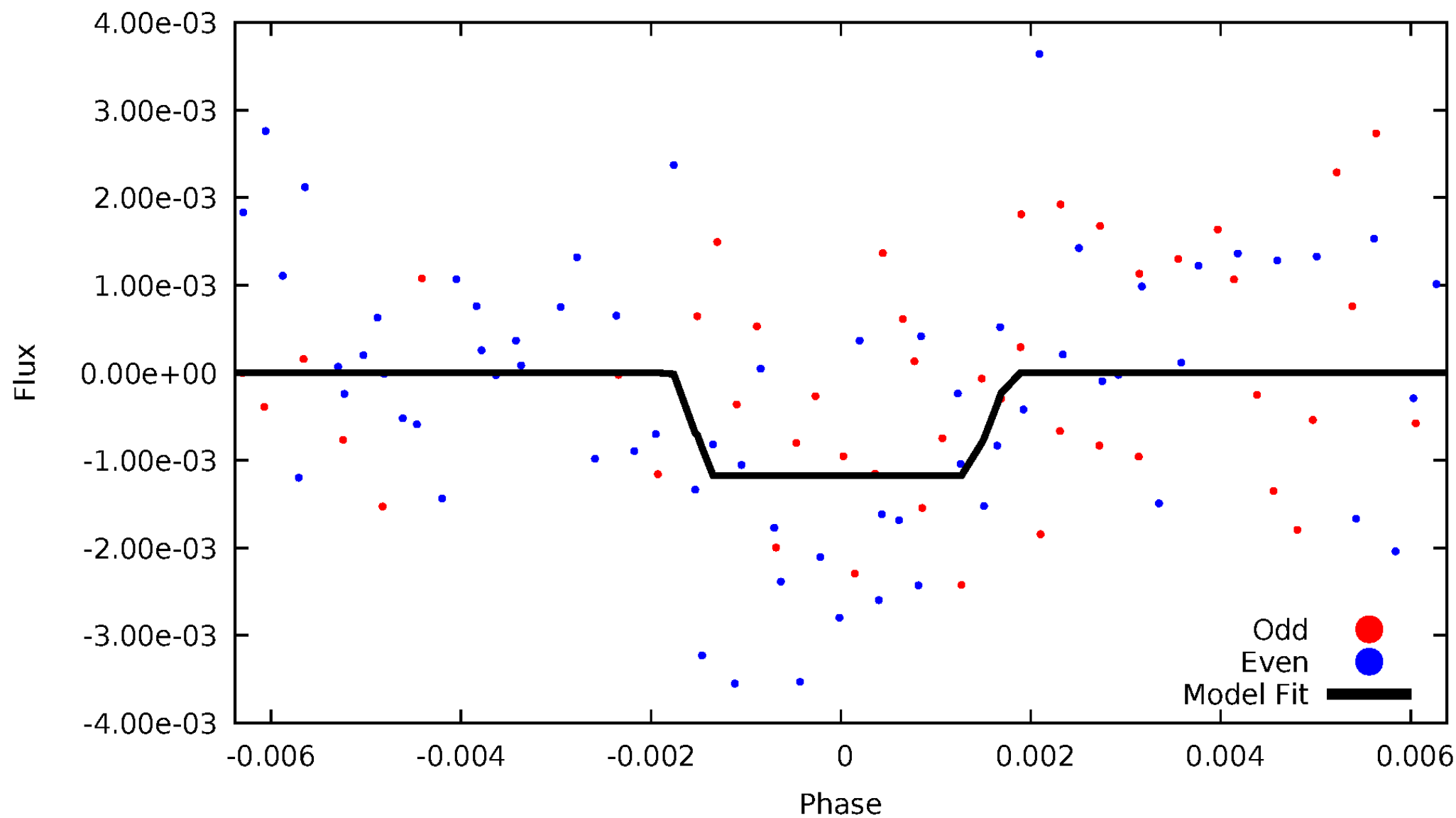
DV Odd/Even

TCE 009823602-05



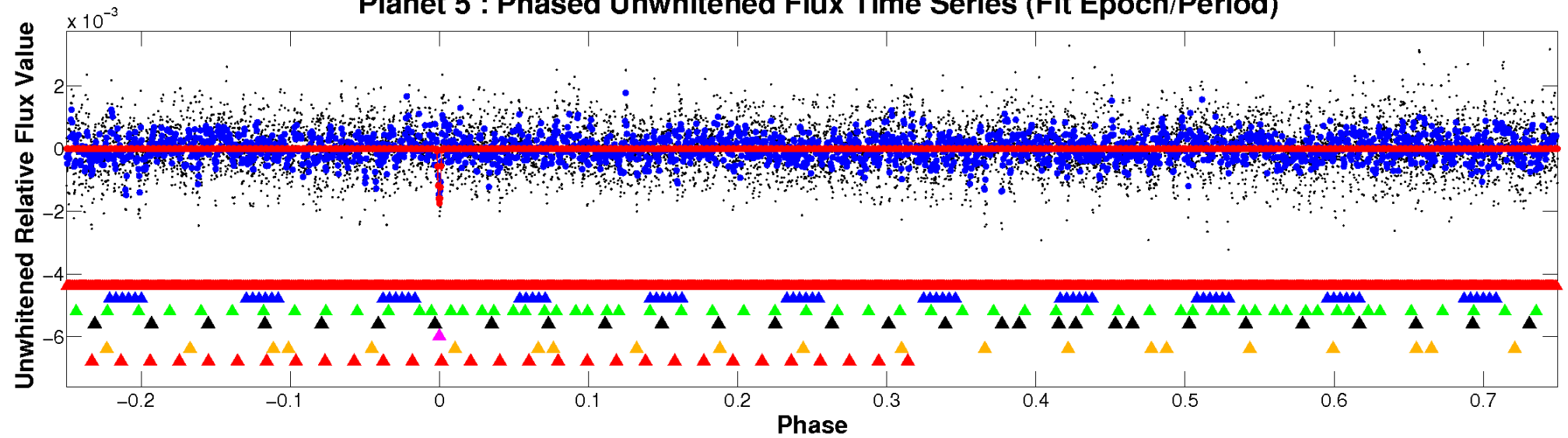
ALT Odd/Even

TCE 009823602-05

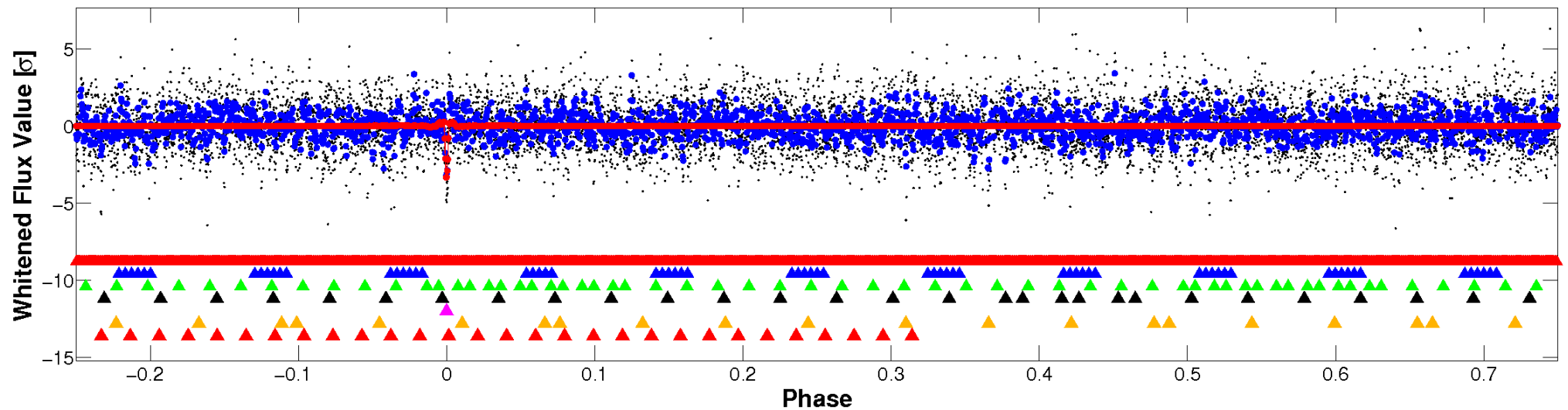


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

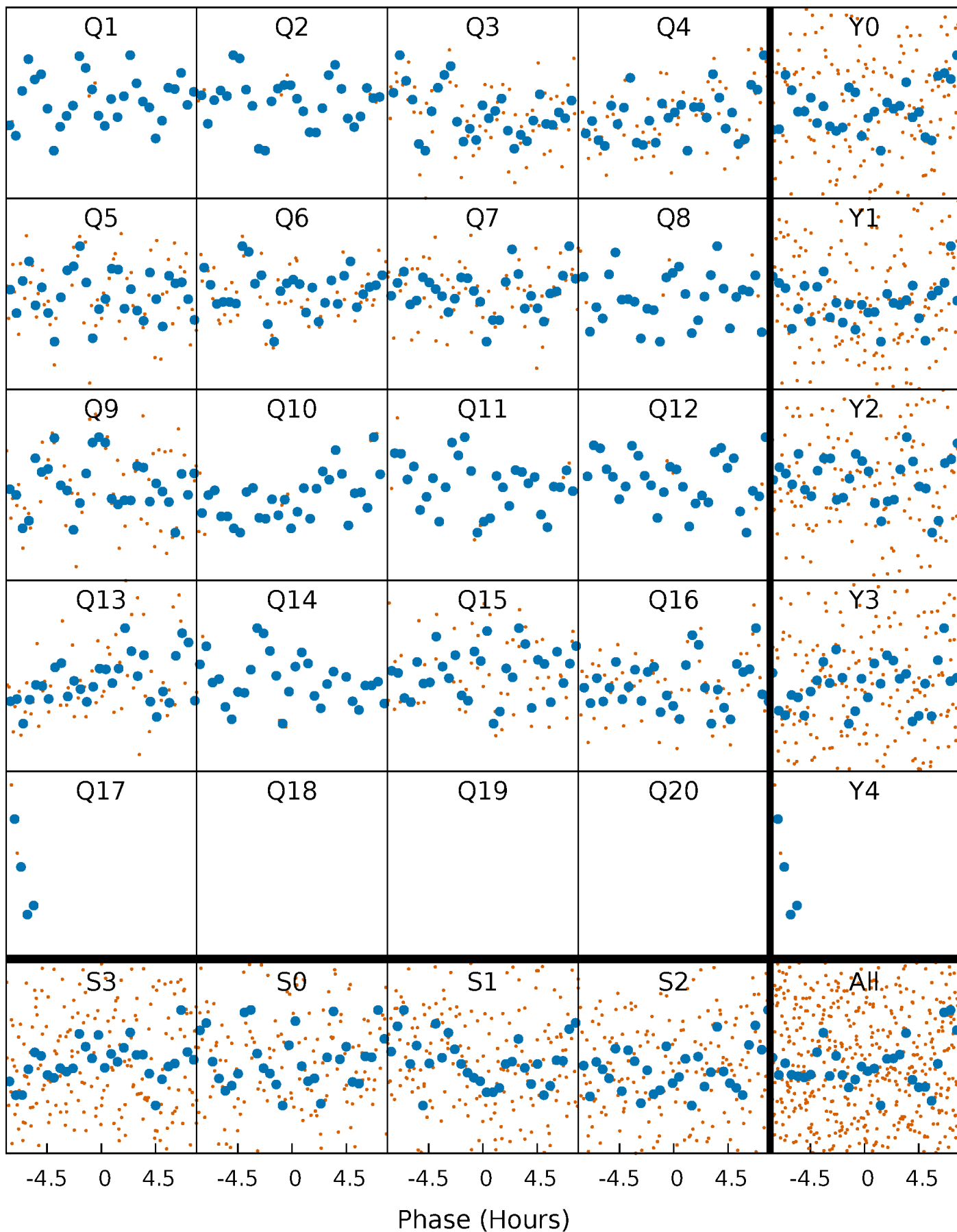


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



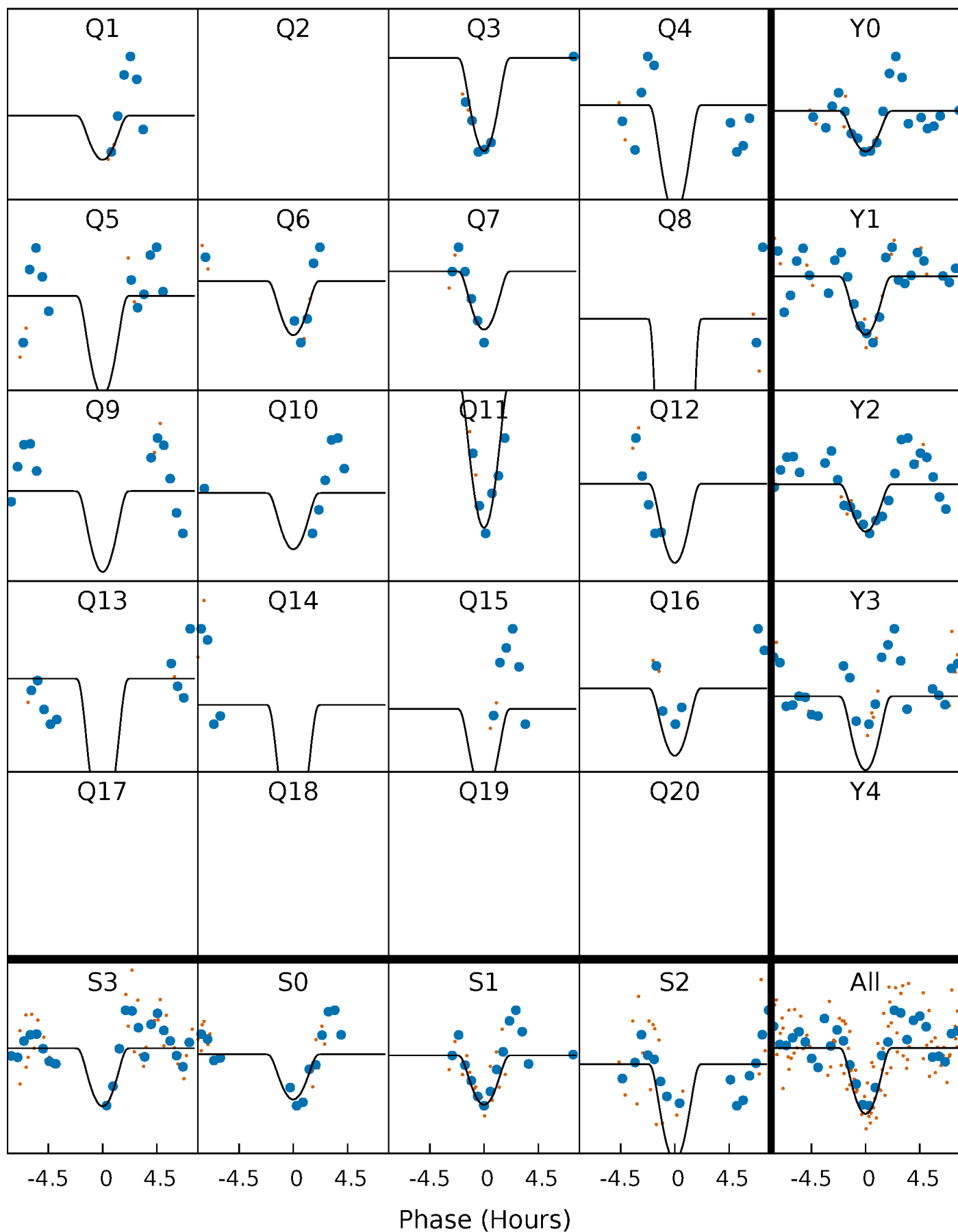
PDC Quarter-Phased Transit Curves

TCE 009823602-05 $P = 49.220329$ Days $T_0 = 163.840237$ (BKJD)



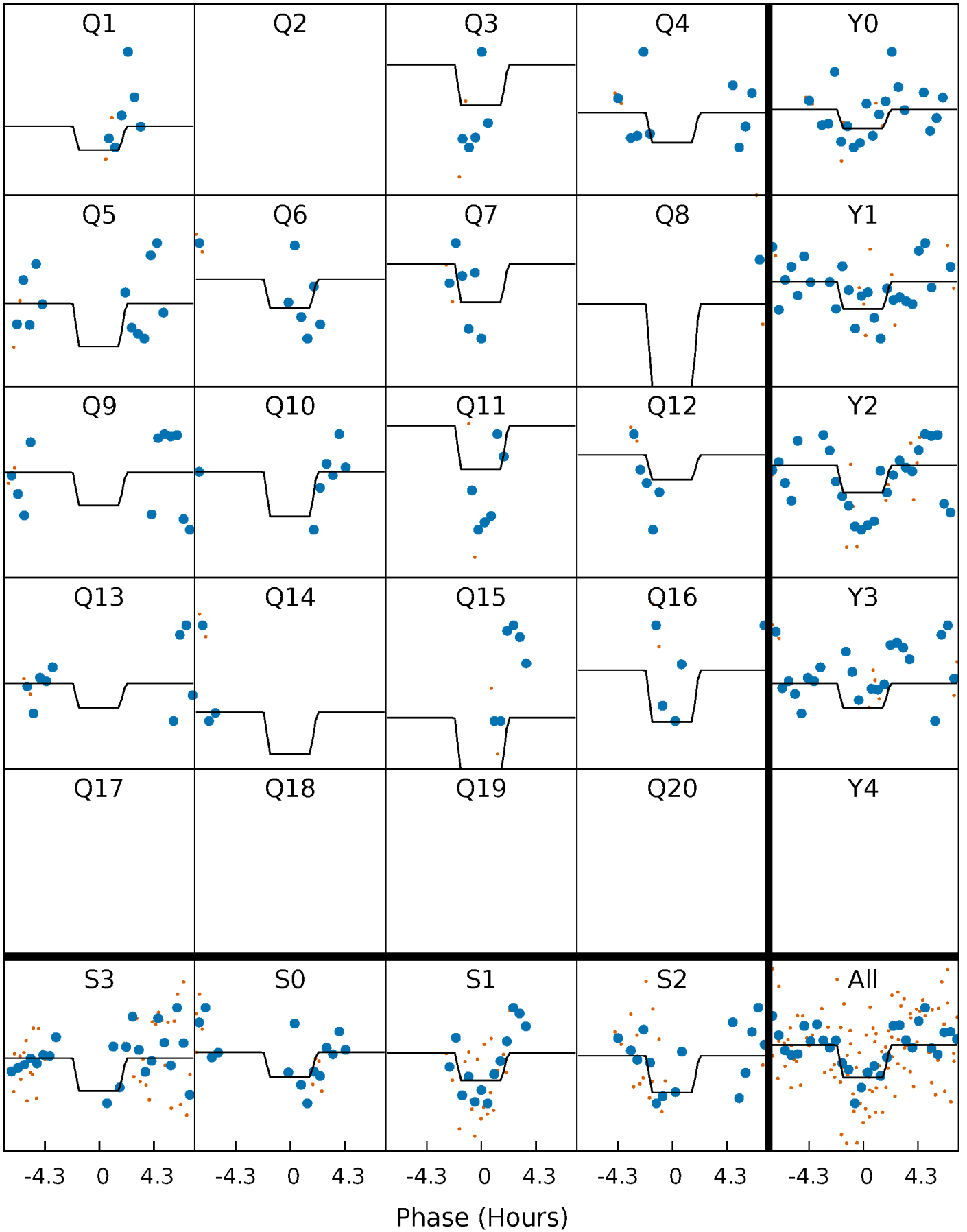
DV Quarter-Phased Transit Curves

TCE 009823602-05 $P = 49.220329$ Days $T_0 = 163.840237$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

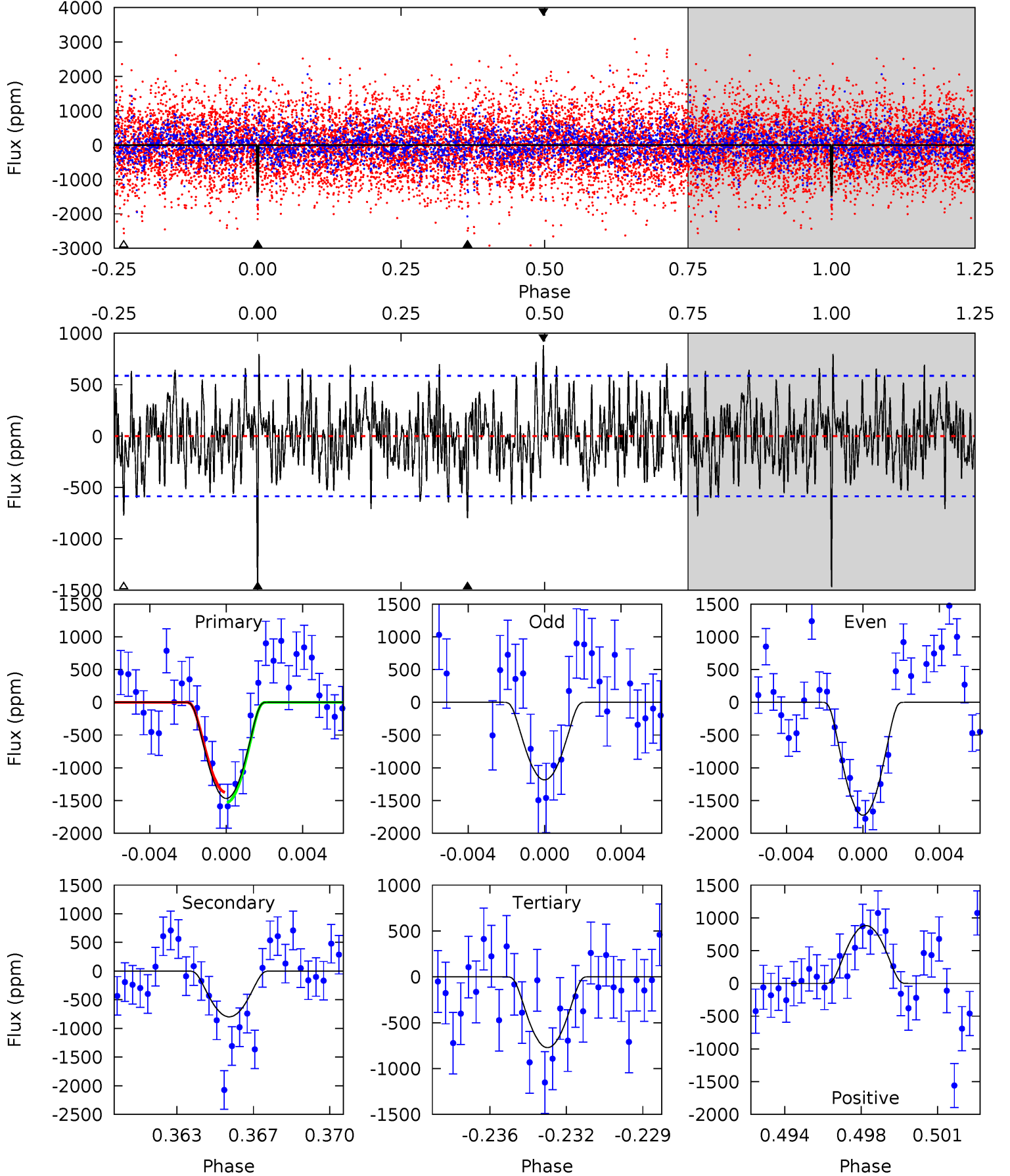
TCE 009823602-05 $P = 49.219989$ Days $T_0 = 163.838553$ (BKJD)



DV Model-Shift Uniqueness Test

009823602-05, P = 49.220329 Days, E = 114.619908 Days

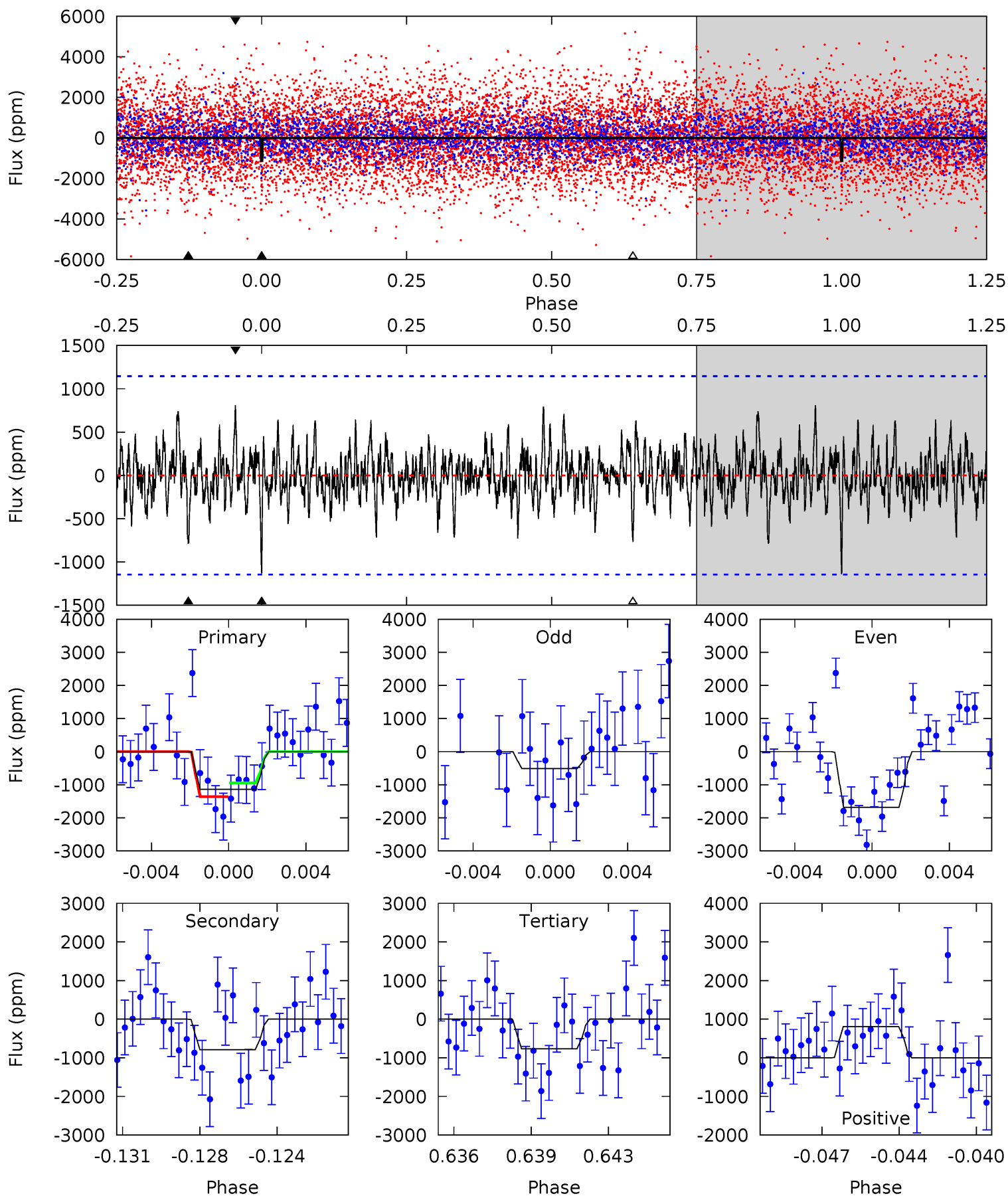
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	7.10	6.88	7.86	5.22	2.91	2.28	6.20	5.22	0.22	-0.76	2.39	0.83	0.38	0.69



Alt Model-Shift Uniqueness Test

009823602-05, P = 49.219989 Days, E = 114.618564 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.19	3.59	3.50	3.69	5.22	2.91	1.11	1.69	1.50	0.09	-0.10	2.65	1.20	0.42	0.95



Stellar Parameters For KIC 009823602

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7721^{+214}_{-322}	$3.845^{+0.315}_{-0.105}$	$-0.060^{+0.200}_{-0.350}$	$2.760^{+0.457}_{-1.066}$	$1.943^{+0.110}_{-0.467}$	$0.130^{+0.302}_{-0.043}$
	+3%/-4%	+8%/-3%	+333%/-583%	+17%/-39%	+6%/-24%	+232%/-33%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009823602-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-797 ± 112	$30.94^{+31.02}_{-18.92}$	1347^{+95}_{-124}	4041^{+2071}_{-799}	48^{+269}_{-36}
Alt.	-789 ± 220	$28.10^{+29.23}_{-19.61}$	1347^{+91}_{-126}	4153^{+3036}_{-853}	56^{+560}_{-44}

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

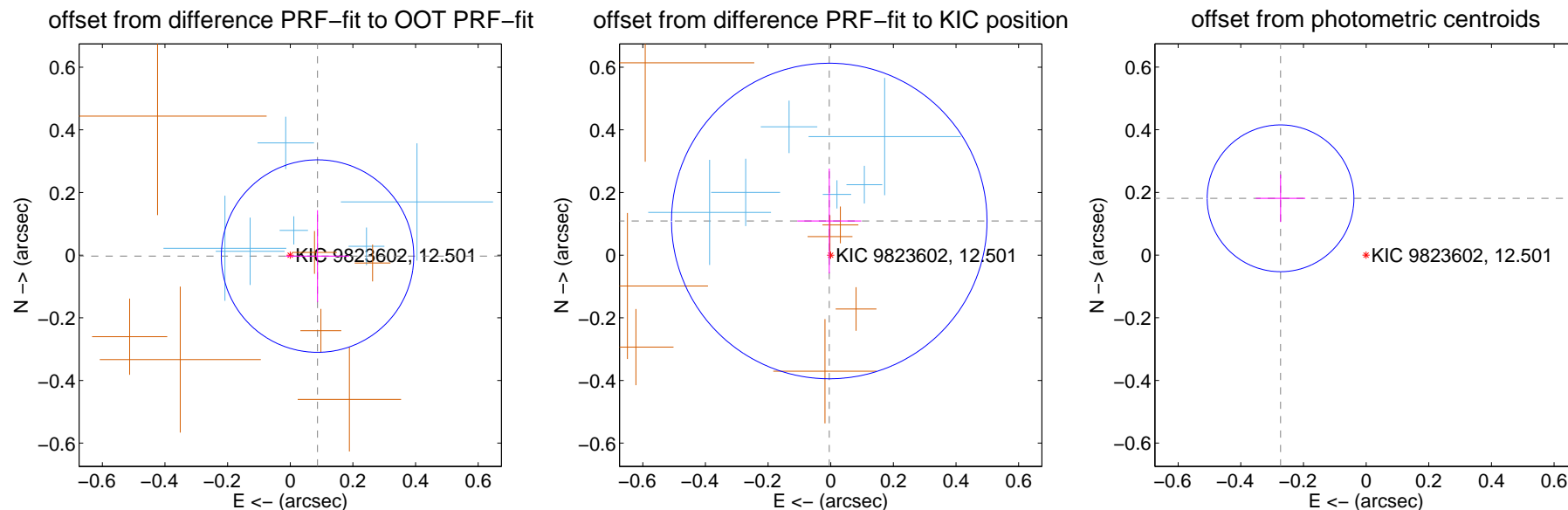
DV Centroid Data

Supplemental centroid analysis for 009823602-05. Kepler magnitude: 12.50. Transit SNR 13.96

There are 8 quarters with good PRF difference image offsets

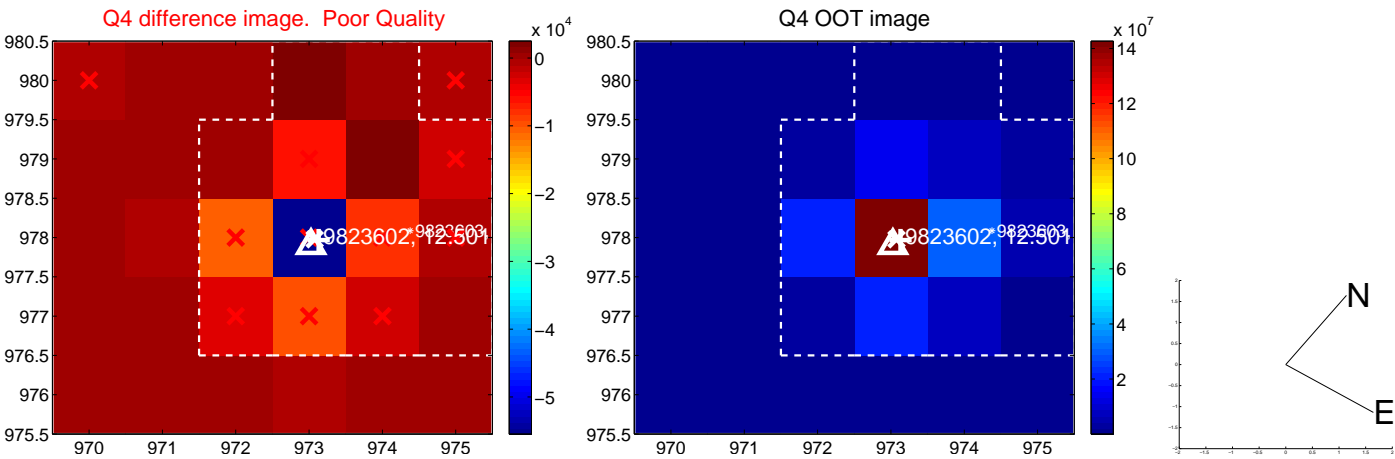
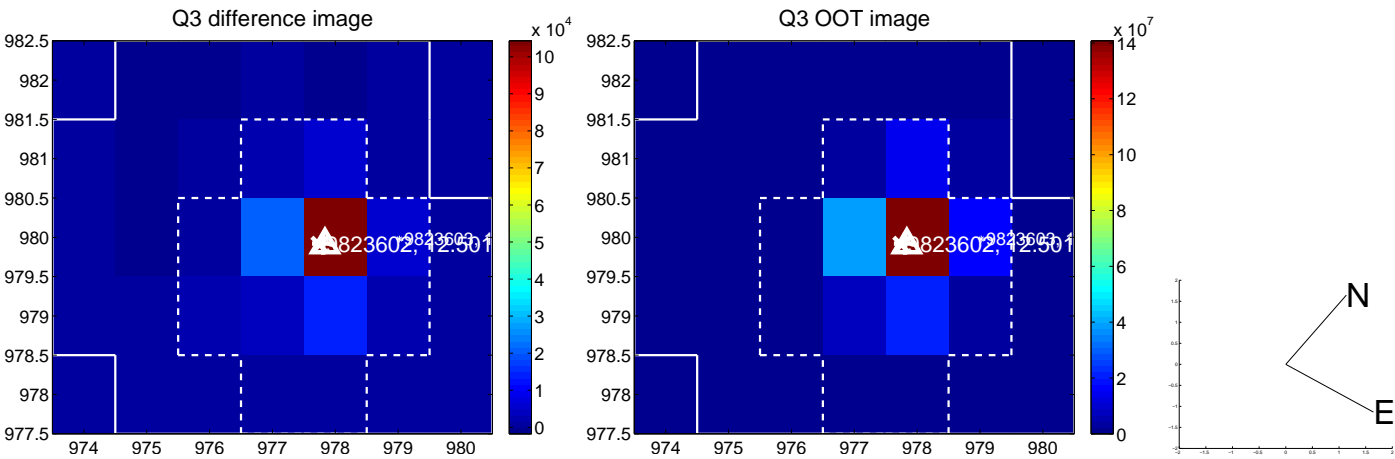
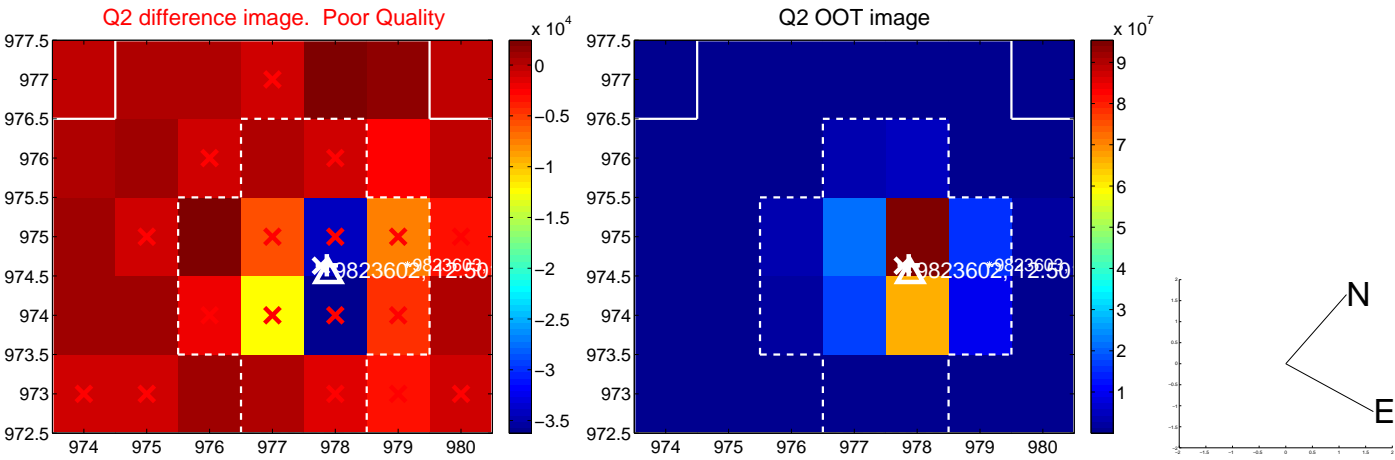
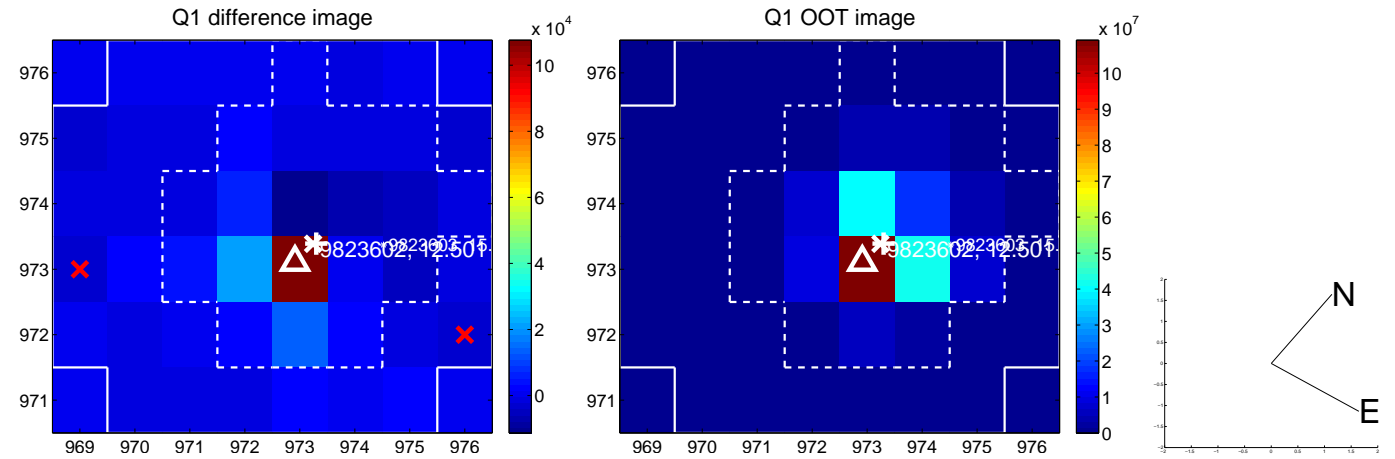
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.087 ± 0.102	0.85	-0.087 ± 0.102	-0.003 ± 0.146
PRF-fit source offset from KIC position	0.109 ± 0.168	0.65	0.005 ± 0.102	0.109 ± 0.167
photometric centroid source offset	0.33 ± 0.08	4.20	0.27 ± 0.08	0.18 ± 0.08

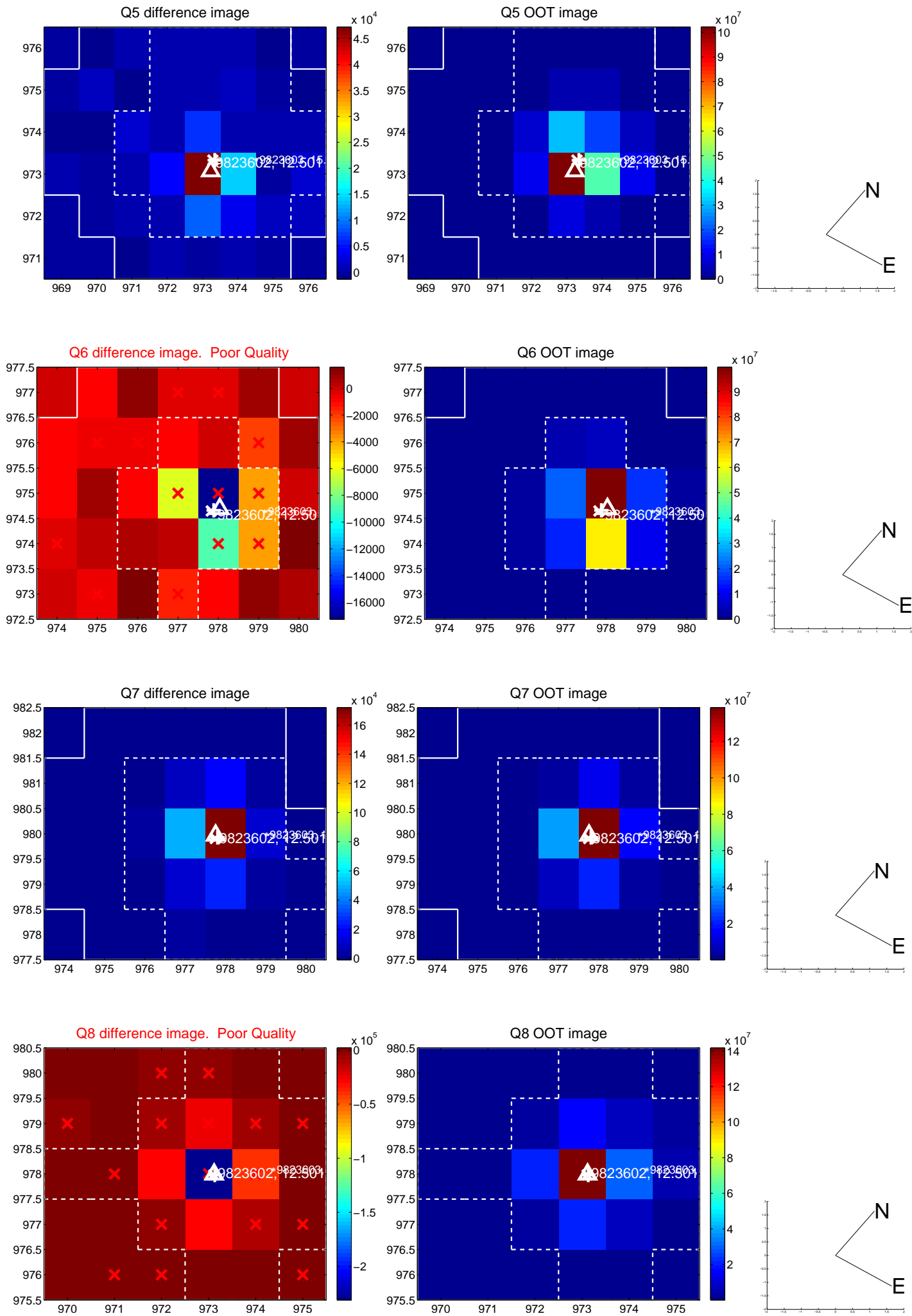


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

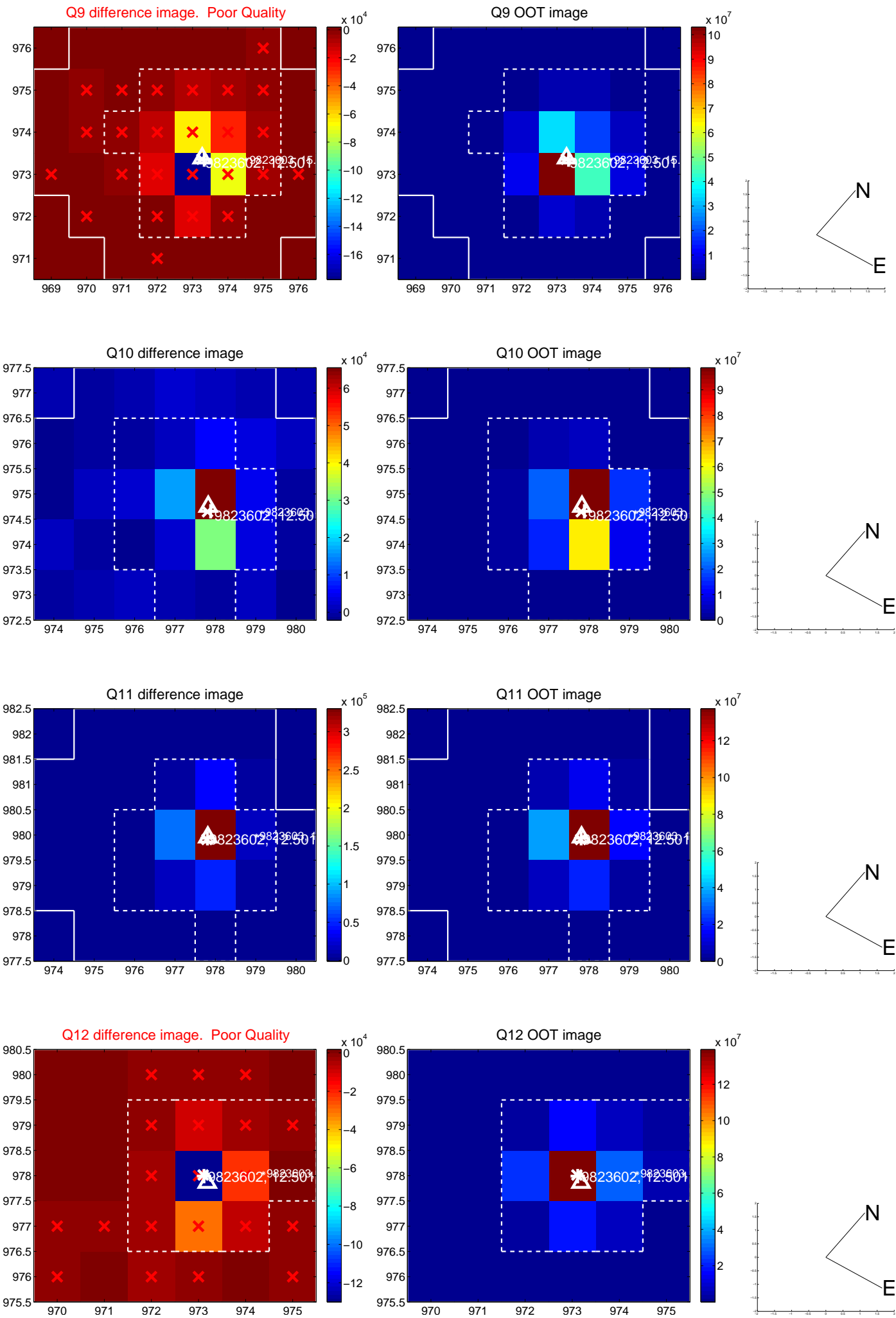
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



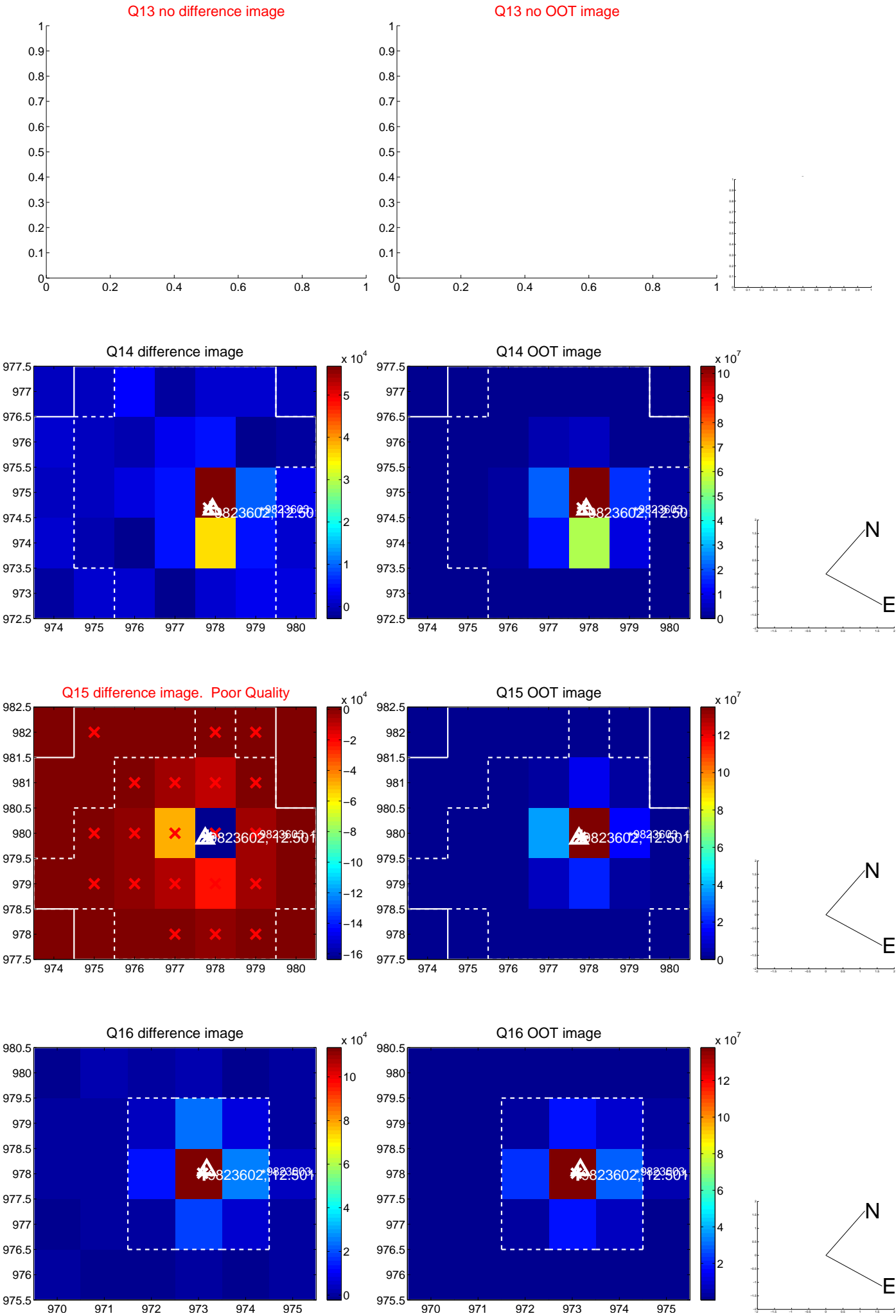
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



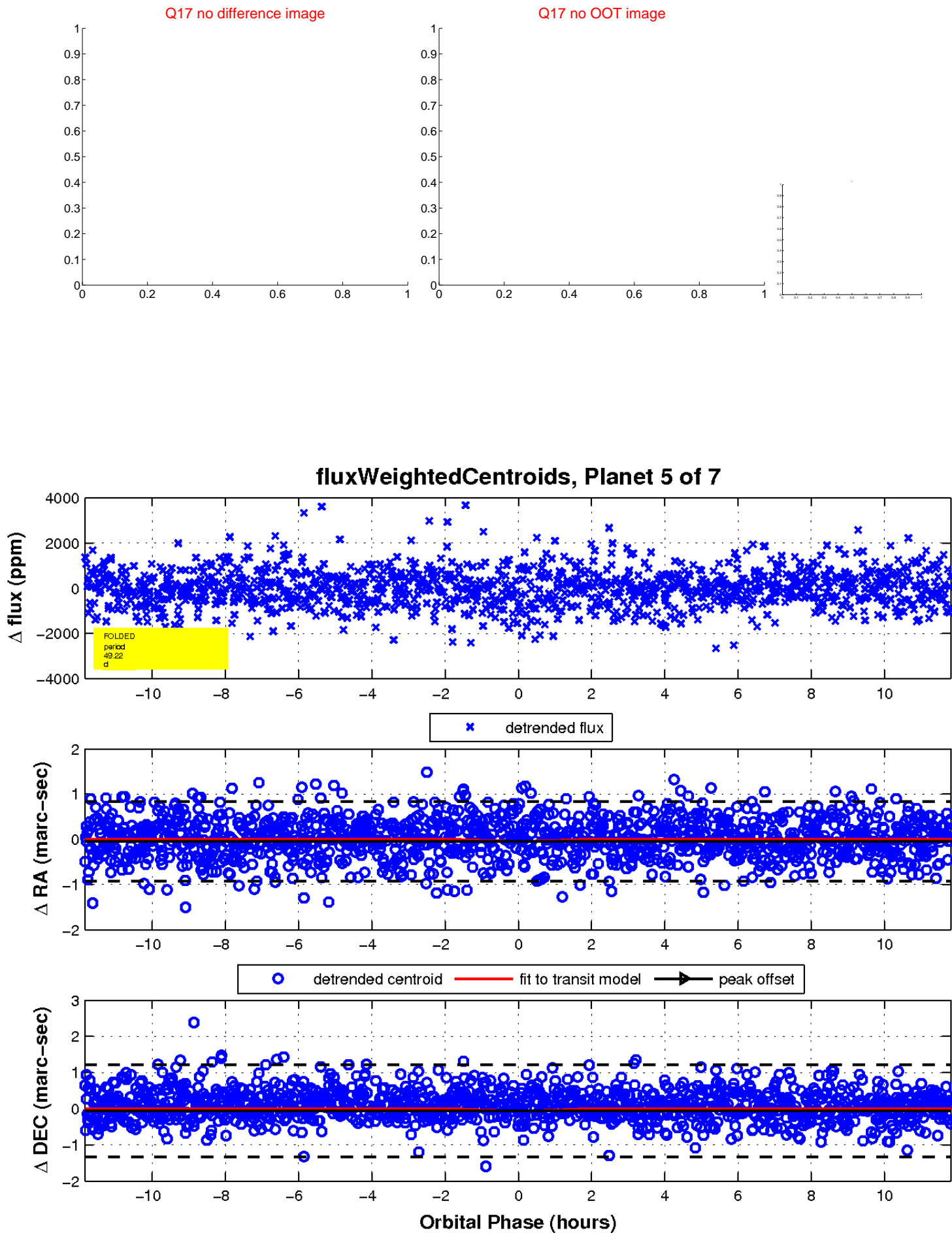
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

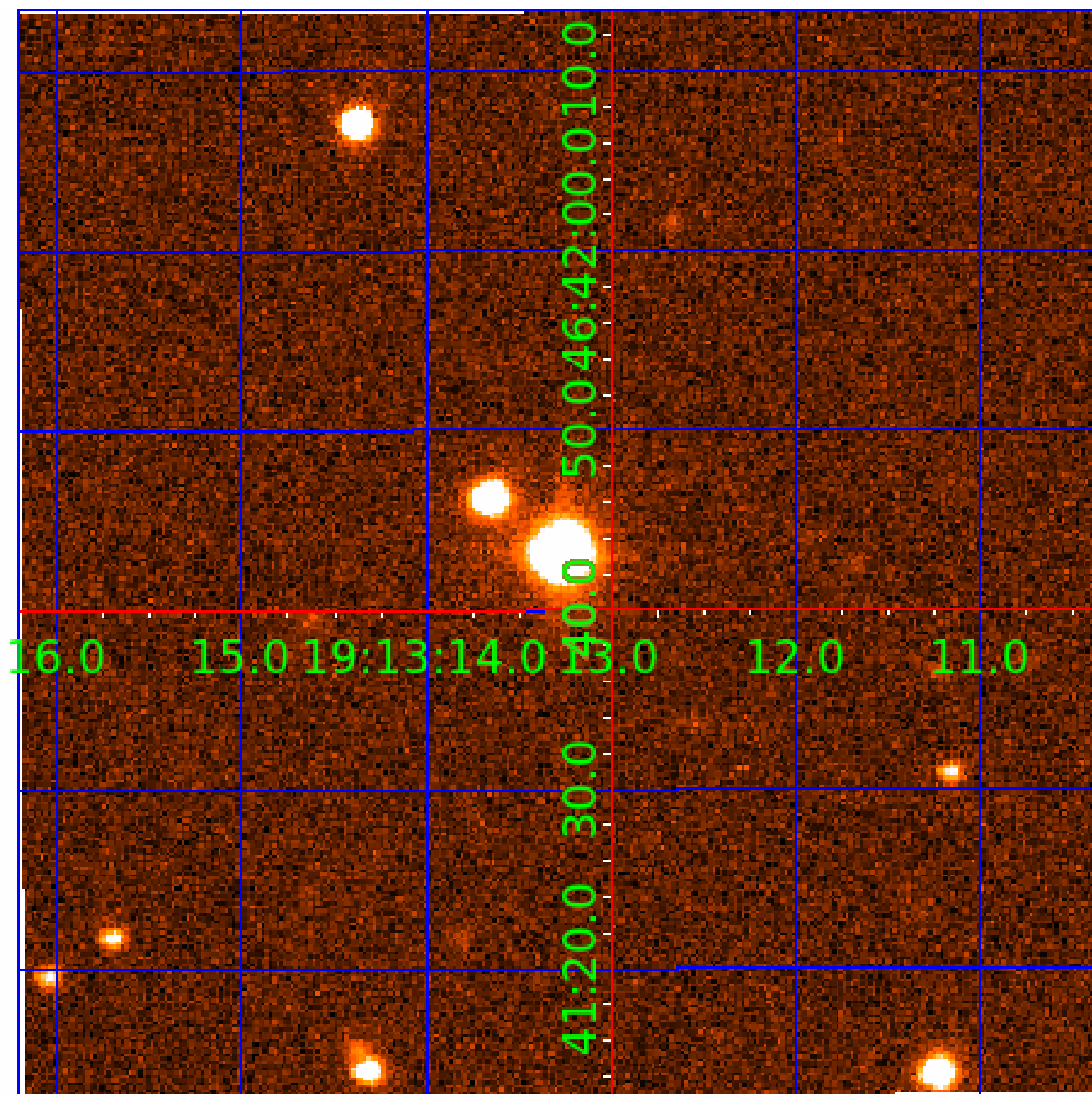


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009823602

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})
009823602-01	OBS	No	0.885894	131.586408	69.1	5.867	9.5	9.3	2.76	7721	2.42	47755.01
009823602-02	OBS	No	22.353765	140.678766	1152.6	1.921	13.7	11.3	2.76	7721	9.57	645.25
009823602-03	OBS	No	24.094820	145.278836	2976.3	0.816	13.0	11.1	2.76	7721	25.70	583.84
009823602-04	OBS	No	51.091659	133.754778	1345.0	2.556	12.6	10.8	2.76	7721	16.91	214.32
009823602-05	OBS	No	49.220329	163.840237	1758.1	3.949	11.8	14.0	2.76	7721	18.82	225.25
009823602-06	OBS	No	69.458100	147.367148	1790.7	2.486	11.6	11.2	2.76	7721	13.61	142.31
009823602-07	OBS	No	50.182079	152.371615	359.6	2.000	10.9	-1.0	2.76	7721	5.31	219.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823602-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009823602-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
009823602-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
009823602-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009823602-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

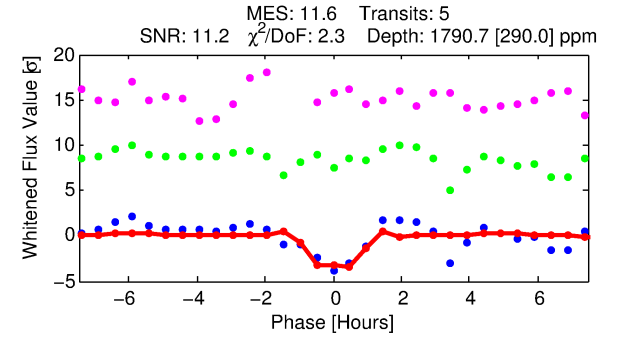
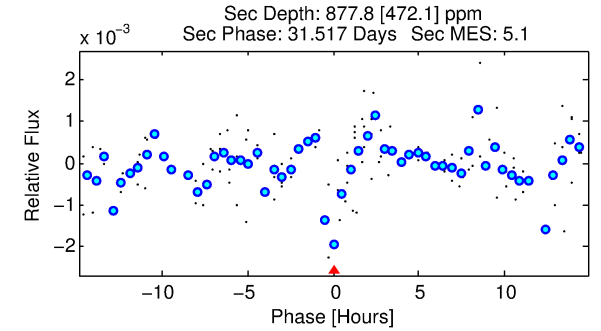
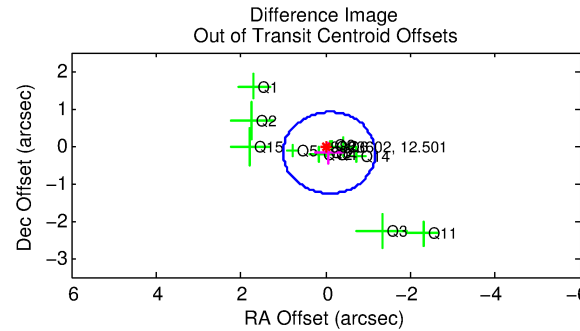
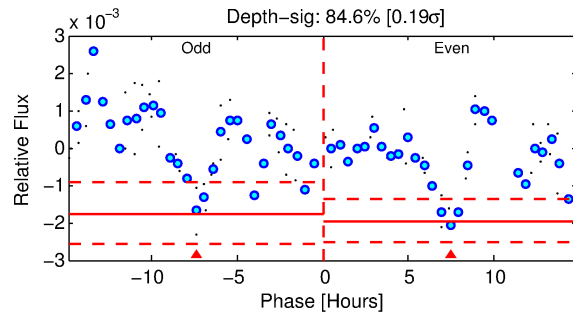
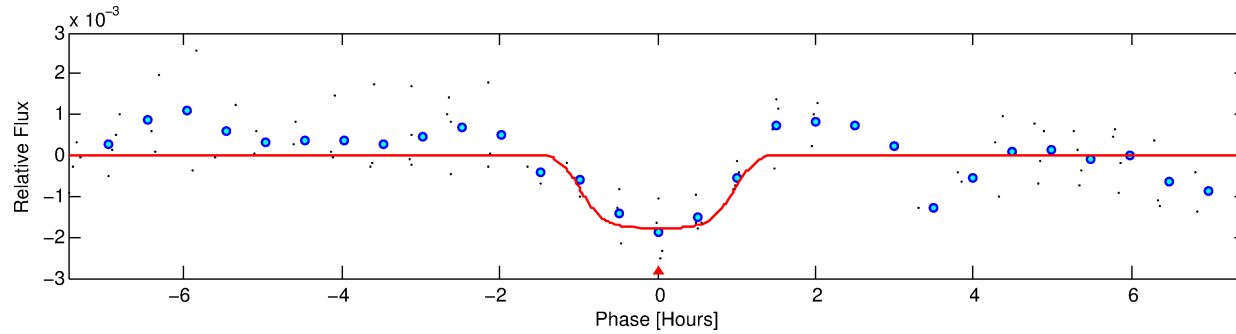
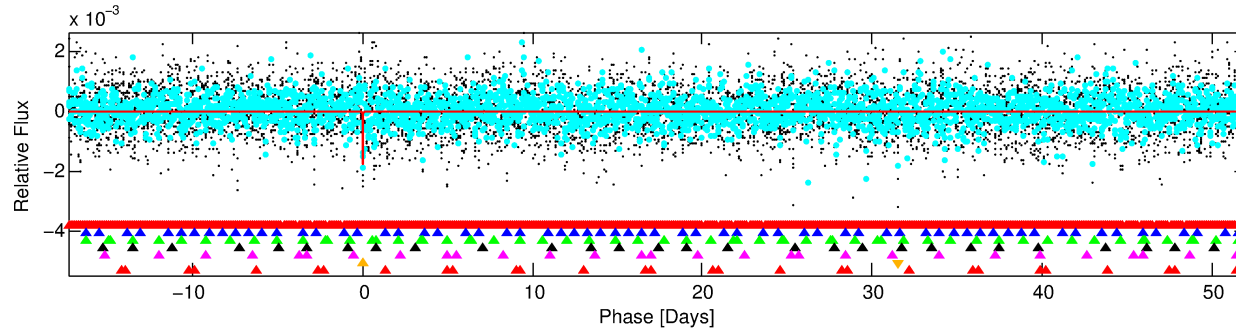
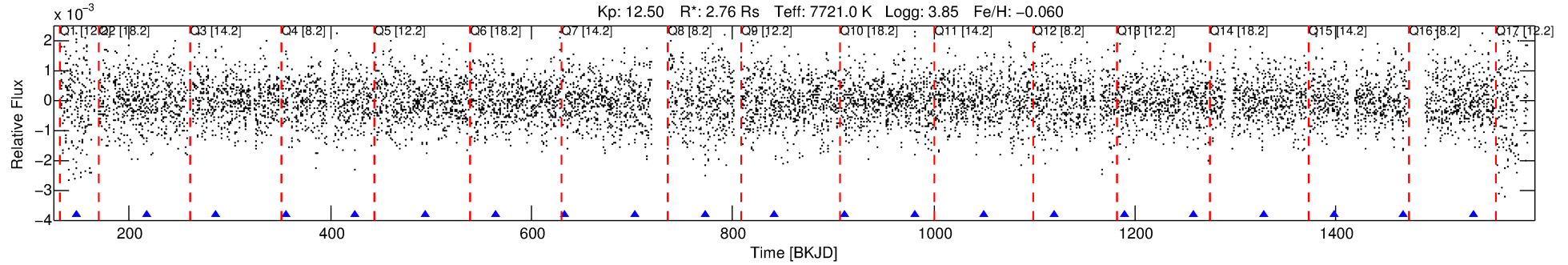
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823602-06

No Significant Match Found

DV One-Page Summary

KIC: 9823602 Candidate: 6 of 7 Period: 69.458 d



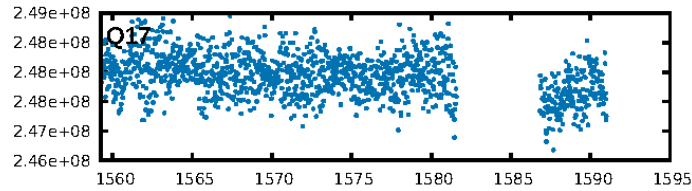
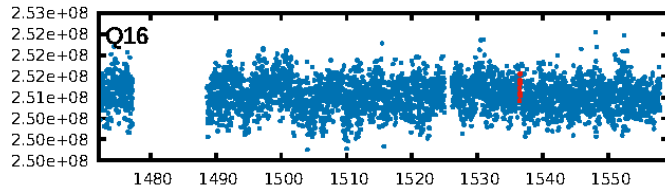
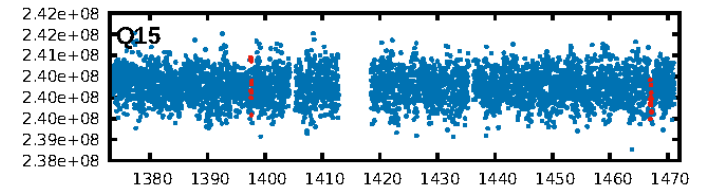
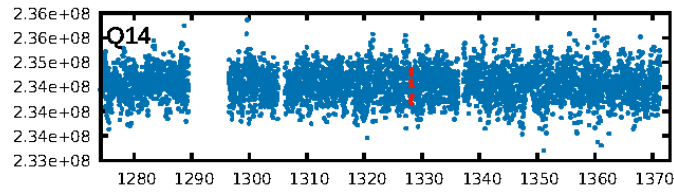
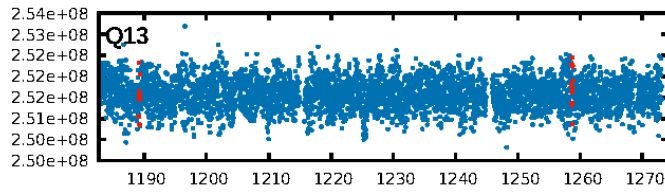
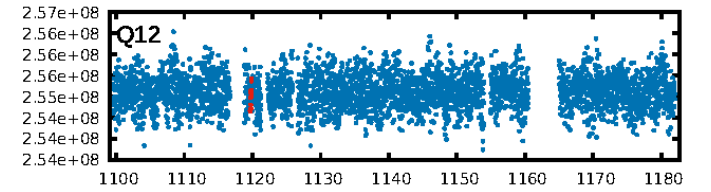
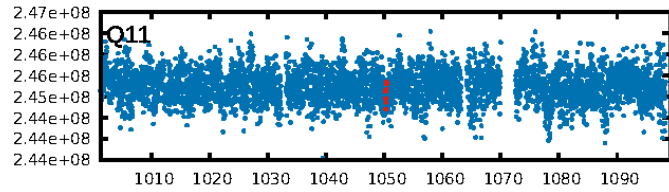
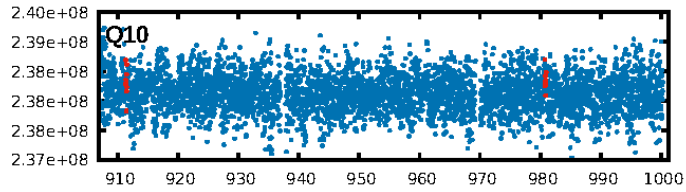
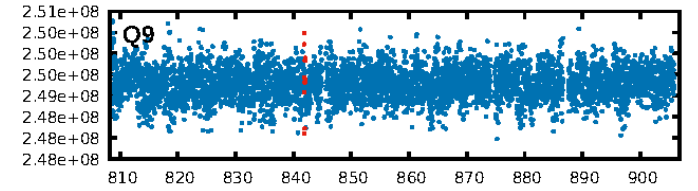
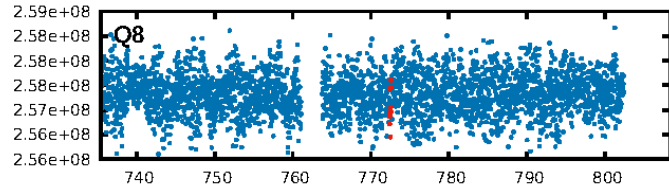
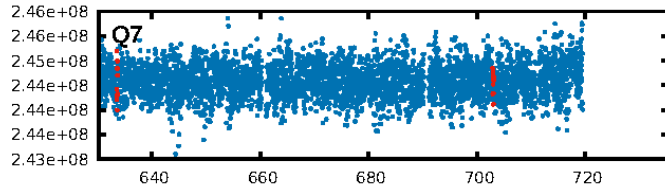
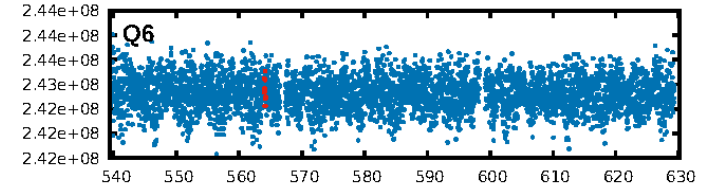
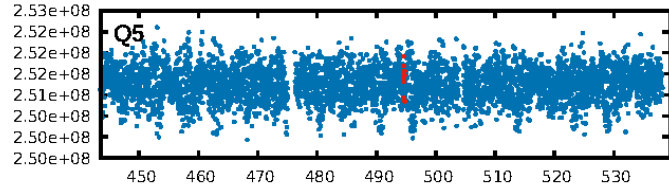
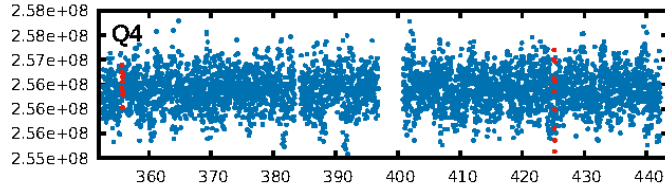
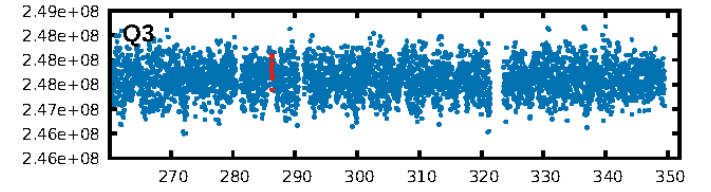
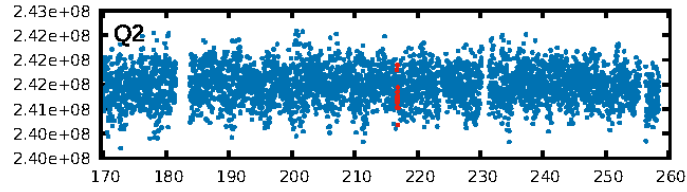
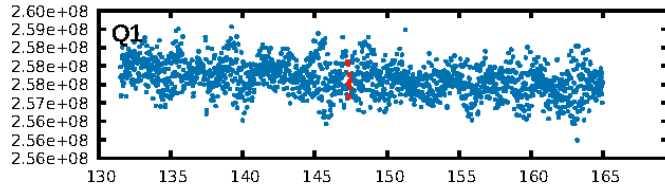
DV Fit Results:

Period = 69.45810 [0.00059] d
Epoch = 147.3671 [0.0084] BKJD
Rp/R* = 0.0452 [0.0156]
a/R* = 112.72 [213.03]
b = 0.90 [0.40]
Seff = 142.31 [81.49]
Teq = 881 [126] K
Rp = 13.61 [7.04] Re
a = 0.4128 [0.1458] AU
Ag = 444.37 [458.40] [0.97 σ]
Teffp = 6252 [1391] K [3.85 σ]

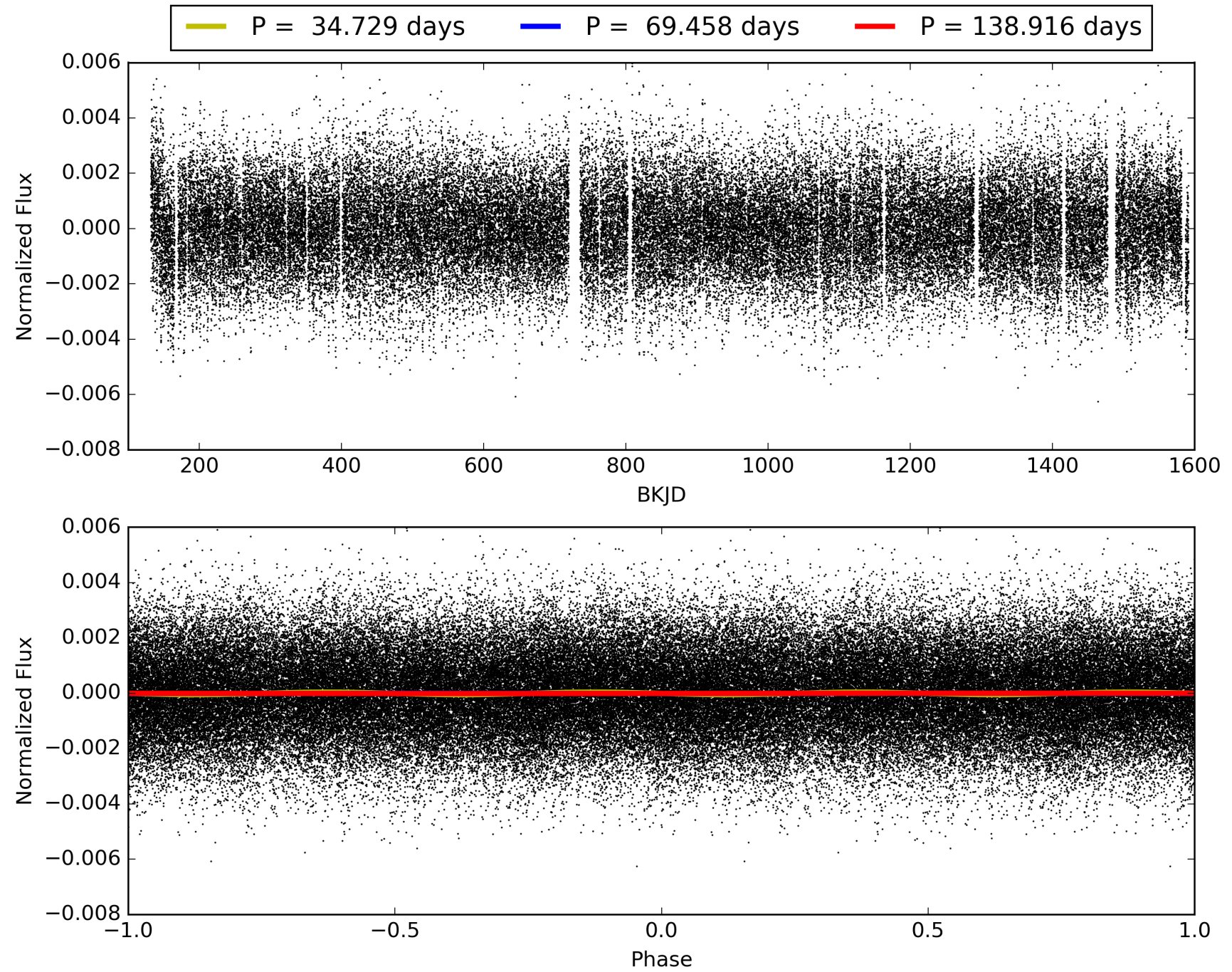
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [123.62 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 4.2%
ModelChiSquareGof-sig: 97.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.759
Centroid-sig: 23.9%
Centroid-so: 0.313 arcsec [3.56 σ]
OotOffset-rm: 0.200 arcsec [0.55 σ]
KicOffset-rm: 0.110 arcsec [0.55 σ]
OotOffset-st: 3/4/3/3 [13]
KicOffset-st: 3/4/3/3 [13]
DiffImageQuality-fgm: 0.62 [8/13]
DiffImageOverlap-fno: 0.12 [2/16]

TCE 009823602-06, PDC Light Curves

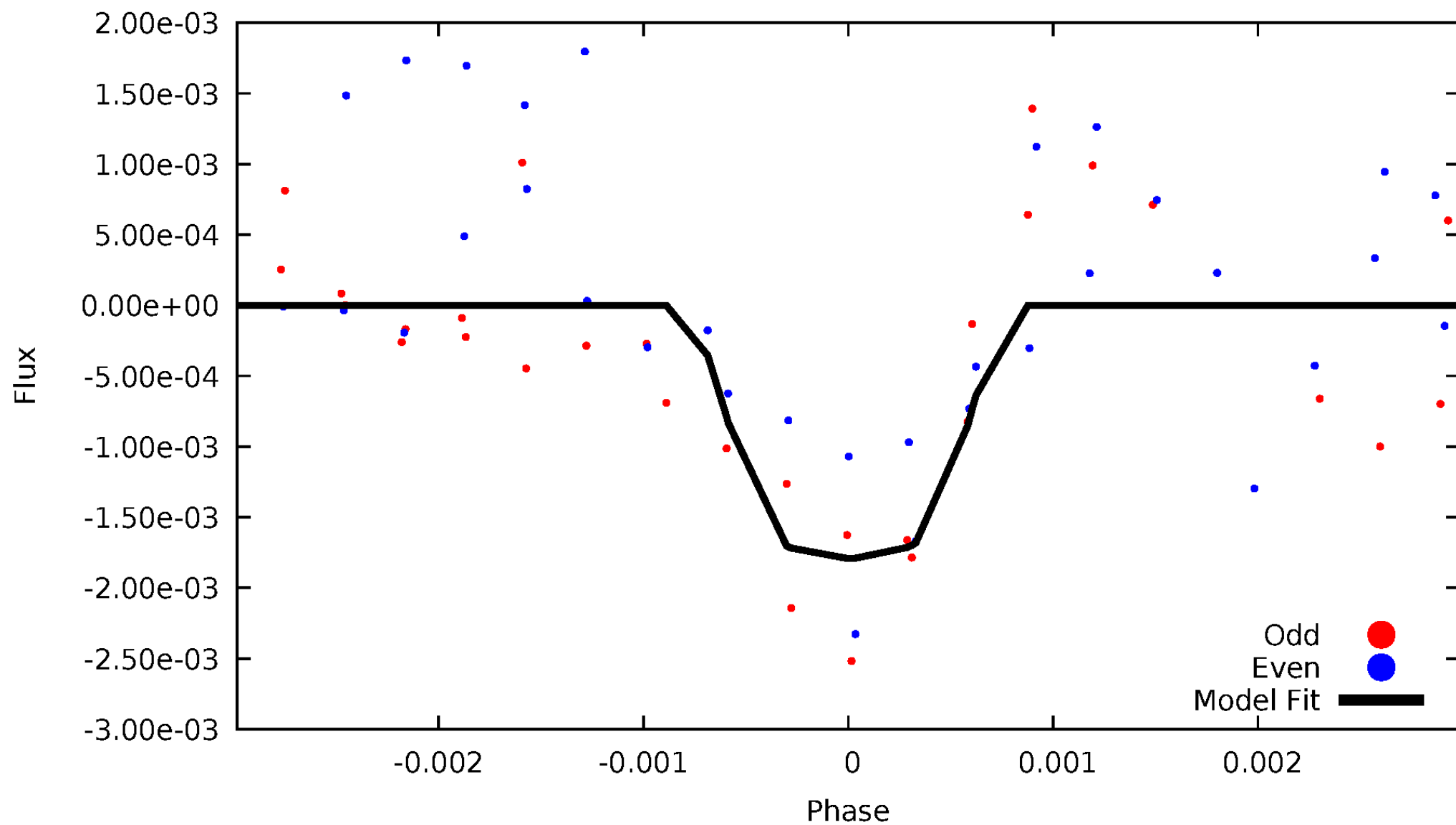


TCE 009823602-06



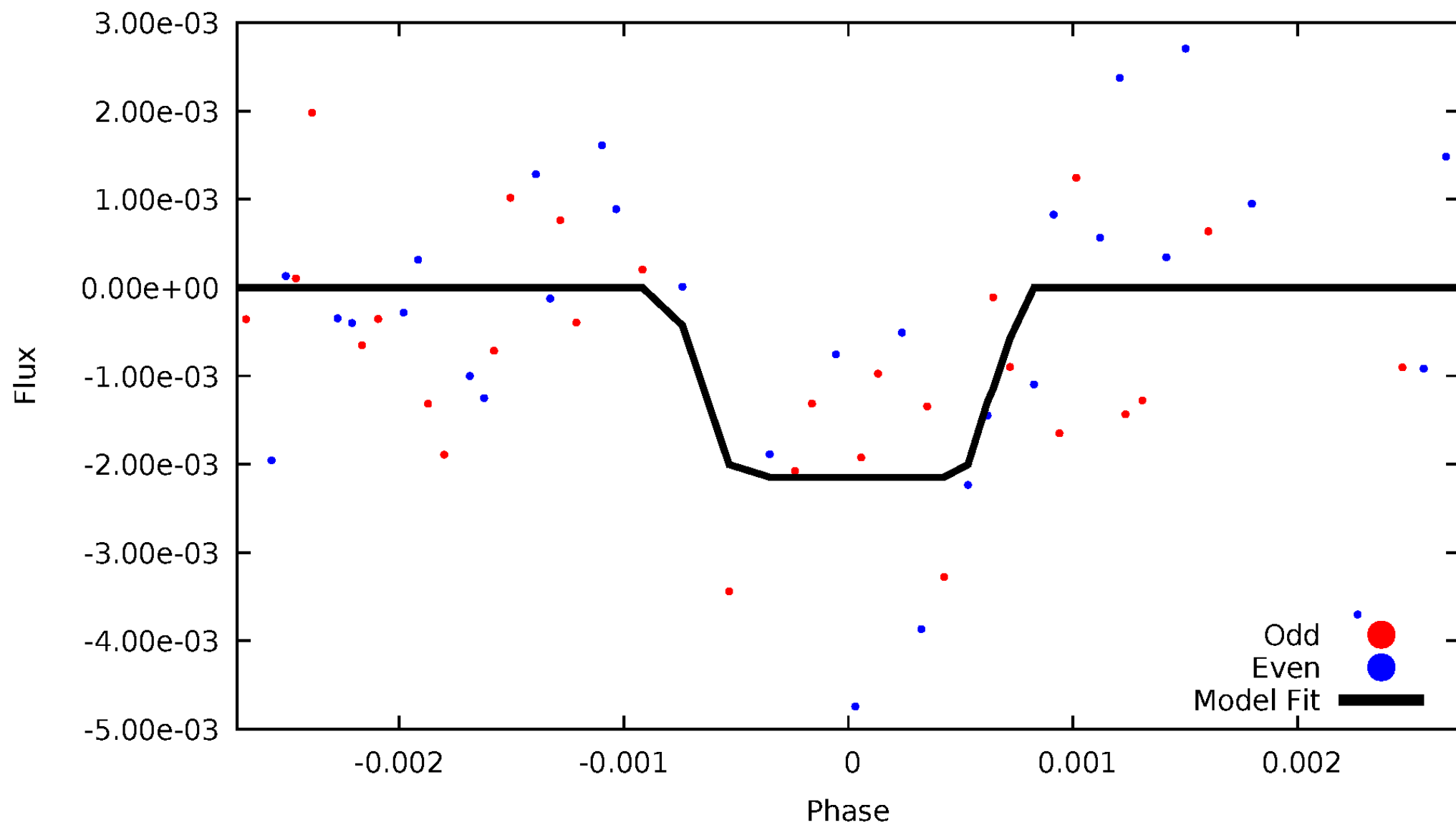
DV Odd/Even

TCE 009823602-06



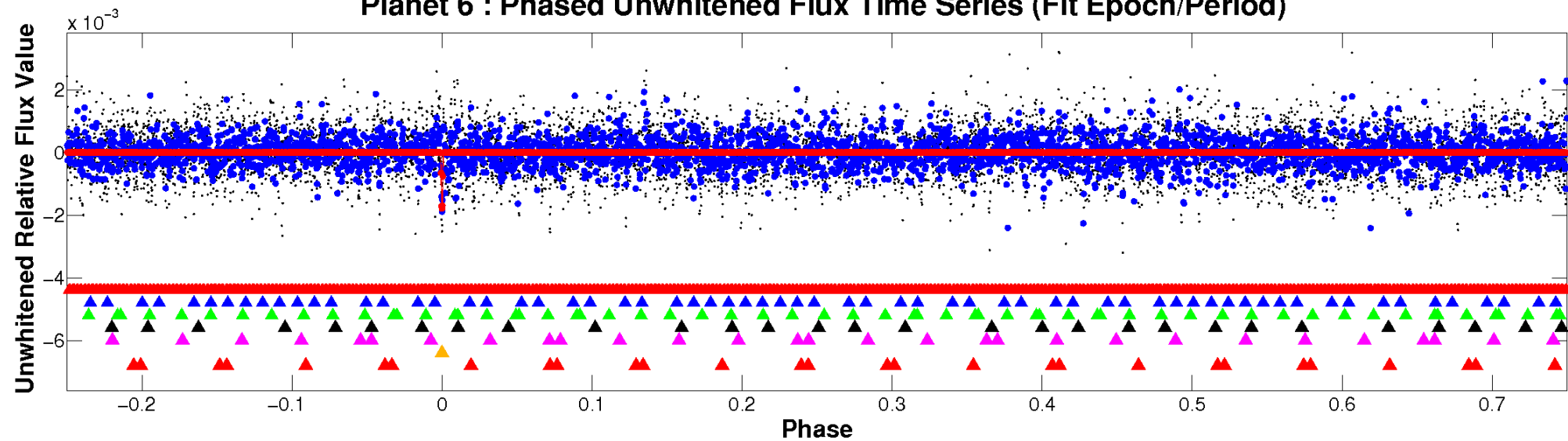
ALT Odd/Even

TCE 009823602-06

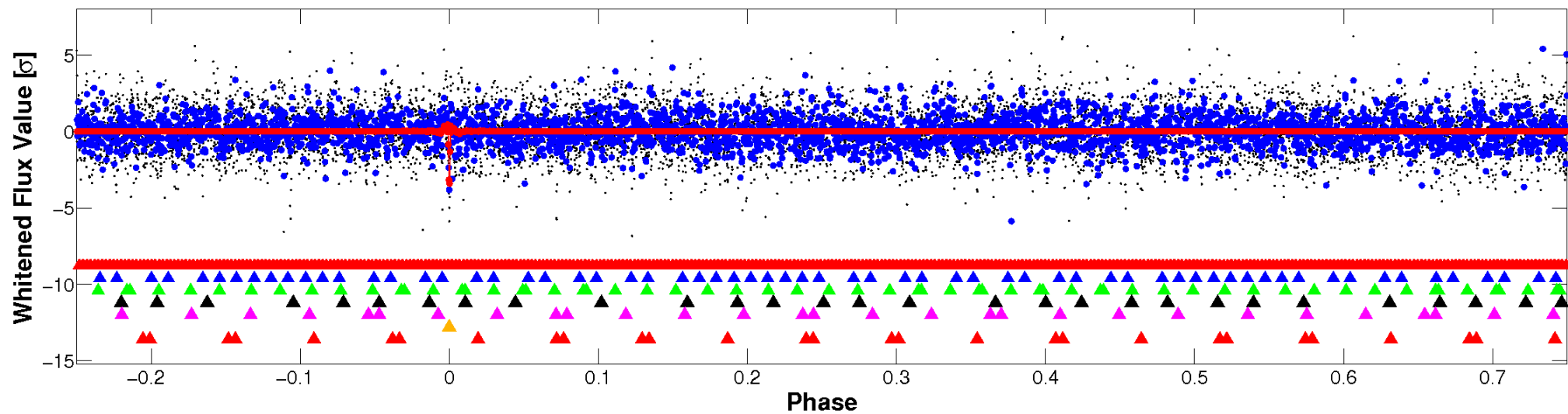


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

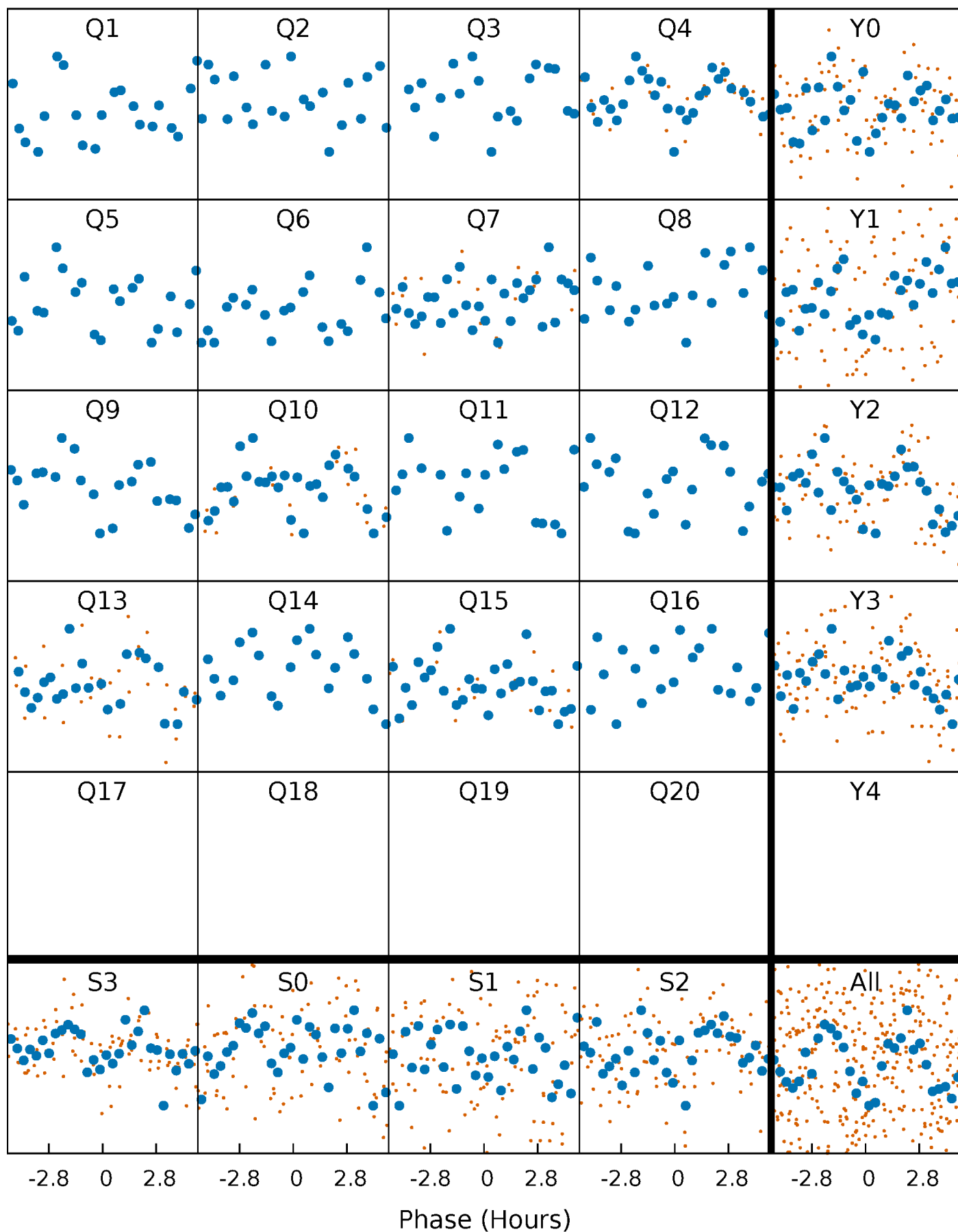


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



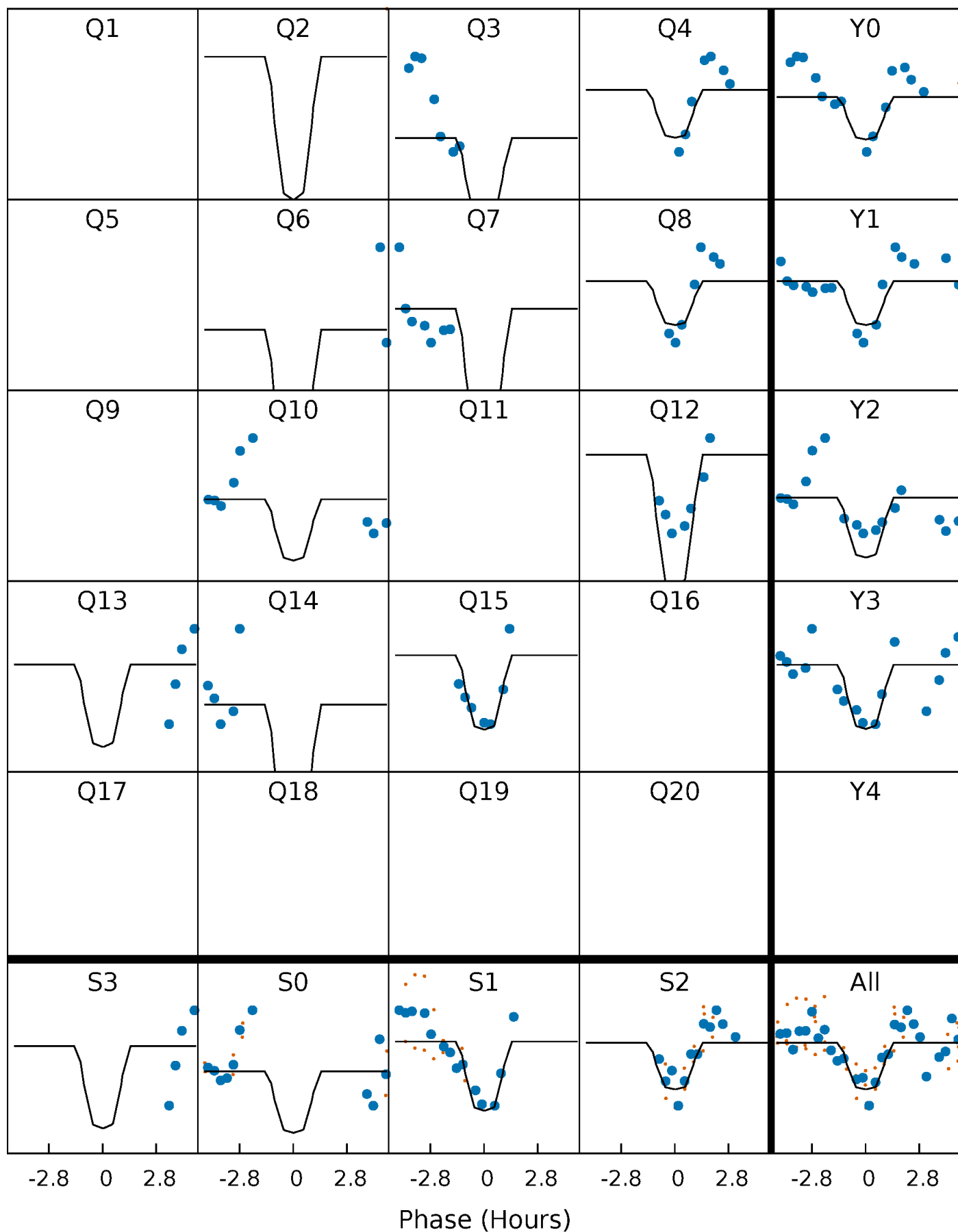
PDC Quarter-Phased Transit Curves

TCE 009823602-06 P= 69.458100 Days $T_0=147.367148$ (BKJD)



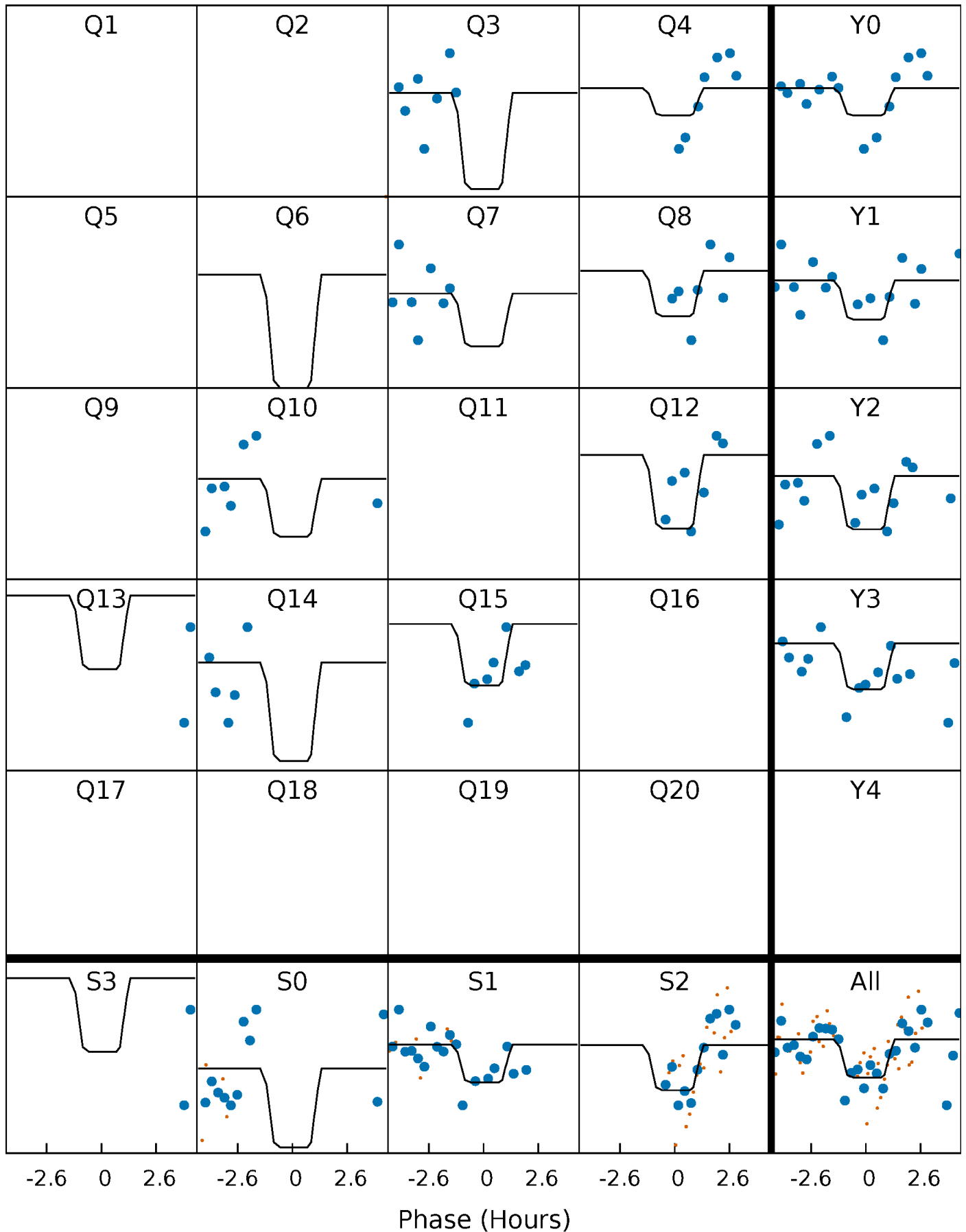
DV Quarter-Phased Transit Curves

TCE 009823602-06 P= 69.458100 Days $T_0=147.367148$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

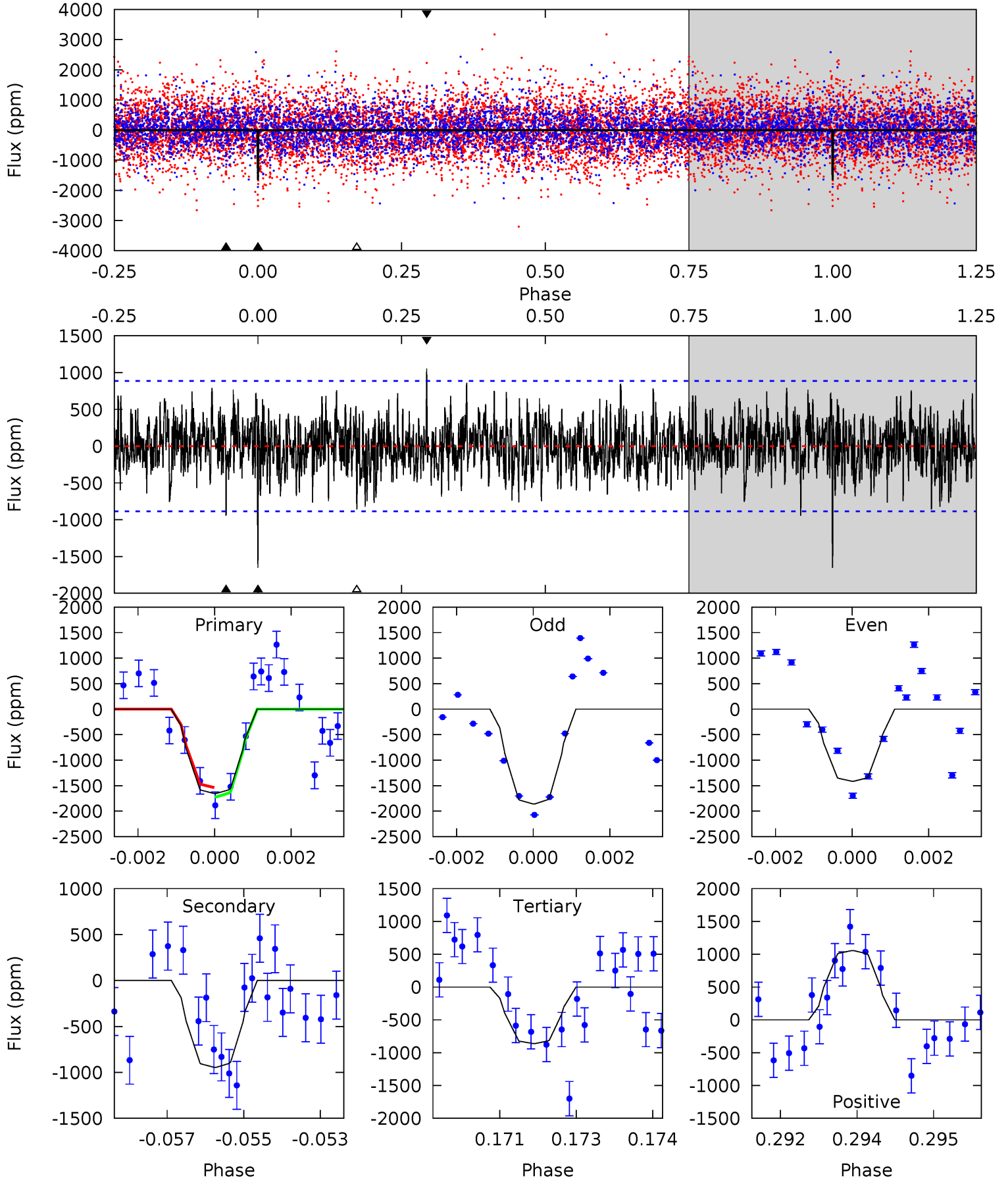
TCE 009823602-06 P= 69.456425 Days $T_0=147.374136$ (BKJD)



DV Model-Shift Uniqueness Test

009823602-06, P = 69.458100 Days, E = 77.909048 Days

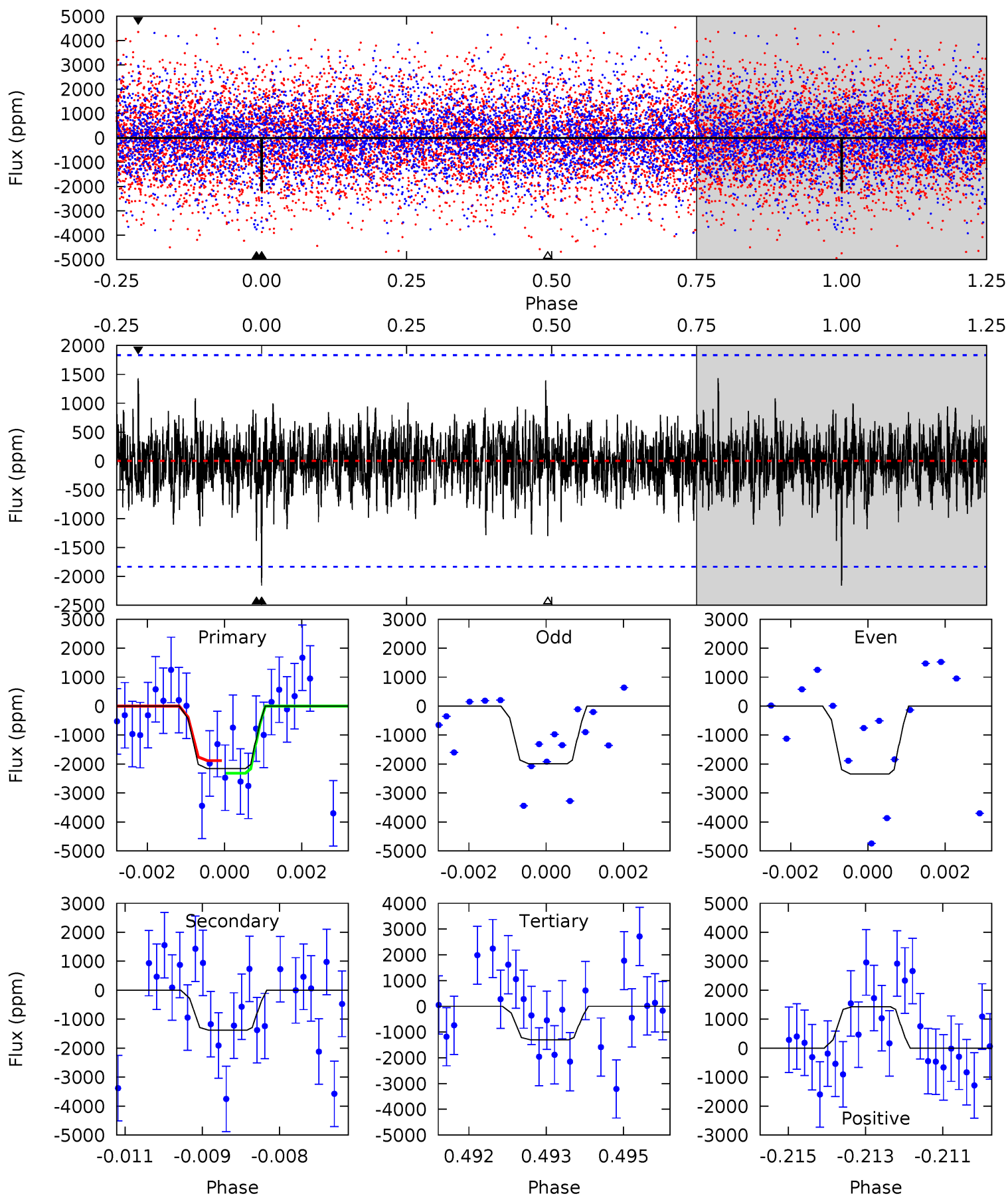
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	5.73	5.21	6.39	5.37	3.16	1.67	4.80	3.62	0.51	-0.67	1.33	0.93	0.39	0.53



Alt Model-Shift Uniqueness Test

009823602-06, P = 69.456425 Days, E = 77.917711 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.33	4.05	3.81	4.20	5.37	3.16	1.07	2.52	2.13	0.24	-0.15	0.53	1.18	0.40	0.59



Stellar Parameters For KIC 009823602

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7721^{+214}_{-322}	$3.845^{+0.315}_{-0.105}$	$-0.060^{+0.200}_{-0.350}$	$2.760^{+0.457}_{-1.066}$	$1.943^{+0.110}_{-0.467}$	$0.130^{+0.302}_{-0.043}$
	$+3\%/-4\%$	$+8\%/-3\%$	$+333\%/-583\%$	$+17\%/-39\%$	$+6\%/-24\%$	$+232\%/-33\%$
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009823602-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-945 ± 165	$12.53^{+5.10}_{-4.44}$	1205^{+79}_{-117}	6144^{+1667}_{-810}	532^{+842}_{-258}
Alt.	-1381 ± 341	$12.64^{+5.16}_{-4.59}$	1199^{+87}_{-112}	6820^{+2006}_{-1083}	800^{+1194}_{-439}

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

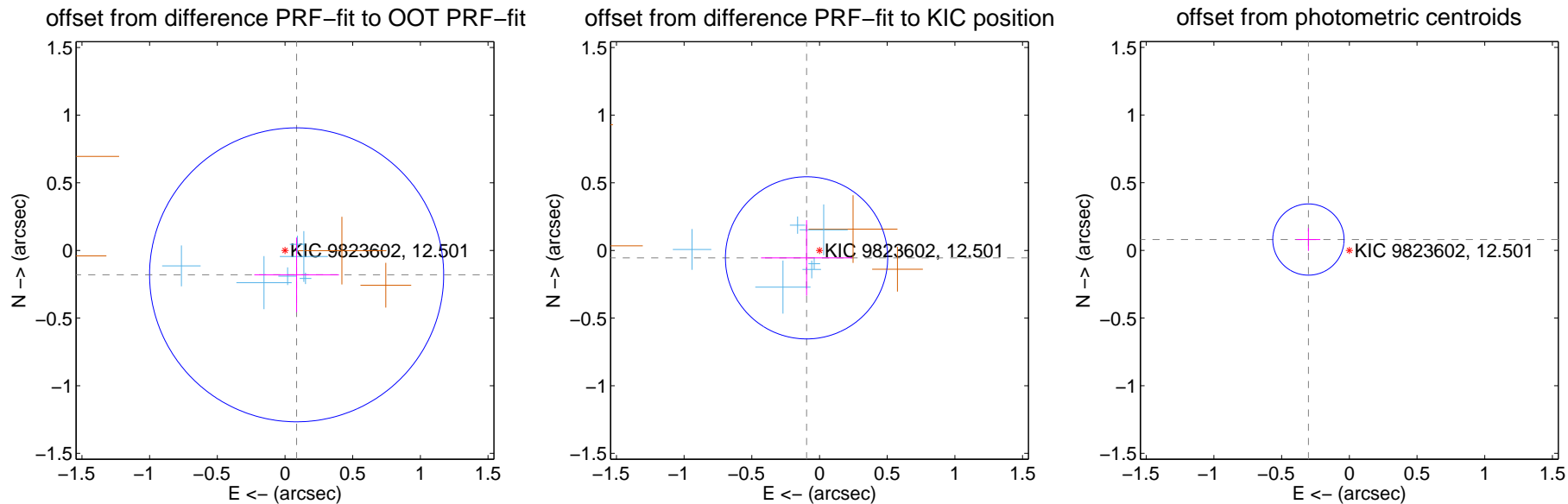
DV Centroid Data

Supplemental centroid analysis for 009823602-06. Kepler magnitude: 12.50. Transit SNR 11.19

There are 8 quarters with good PRF difference image offsets

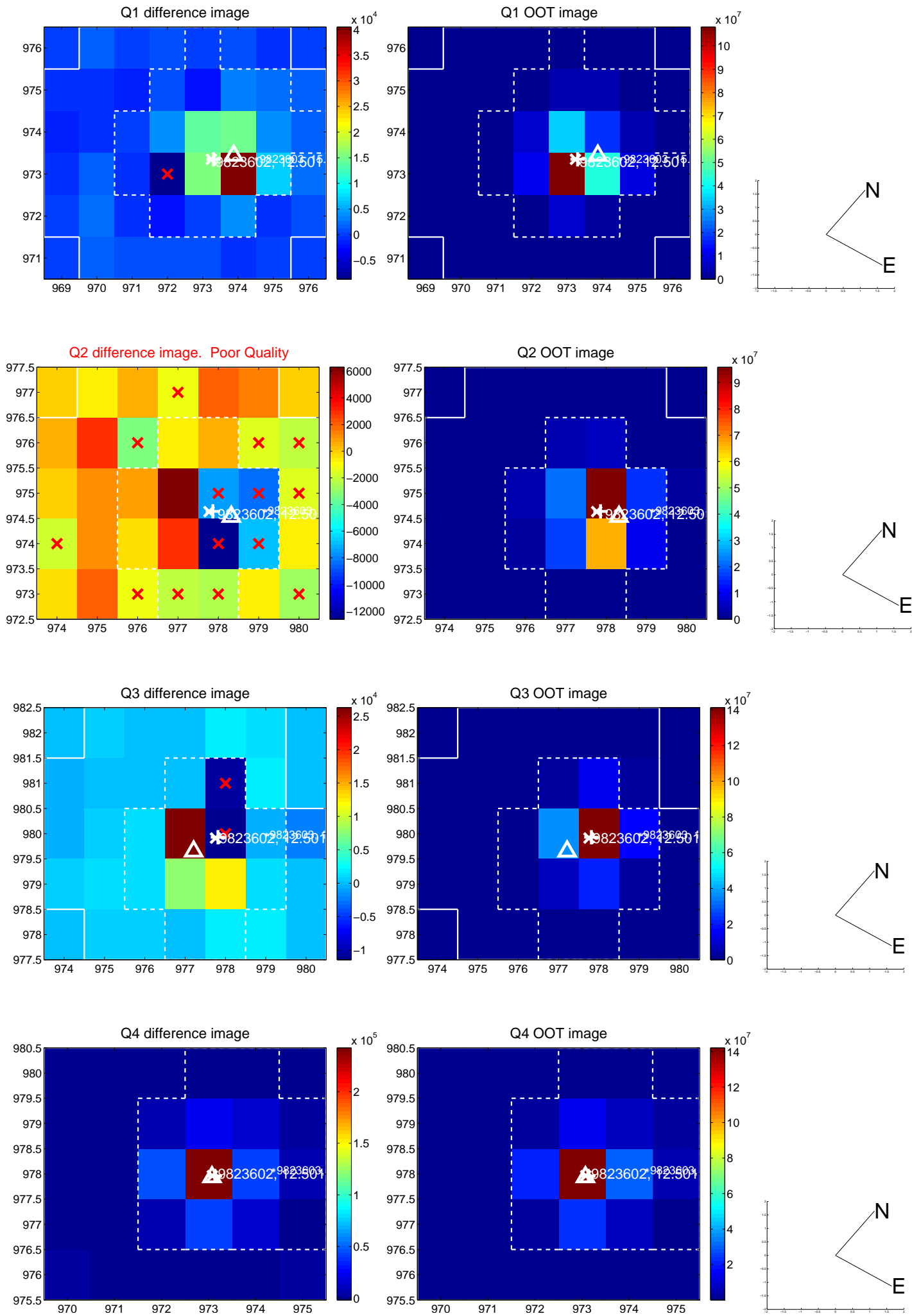
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.200 ± 0.362	0.55	-0.086 ± 0.313	-0.180 ± 0.276
PRF-fit source offset from KIC position	0.110 ± 0.200	0.55	0.096 ± 0.337	-0.055 ± 0.279
photometric centroid source offset	0.31 ± 0.09	3.56	0.30 ± 0.09	0.08 ± 0.08

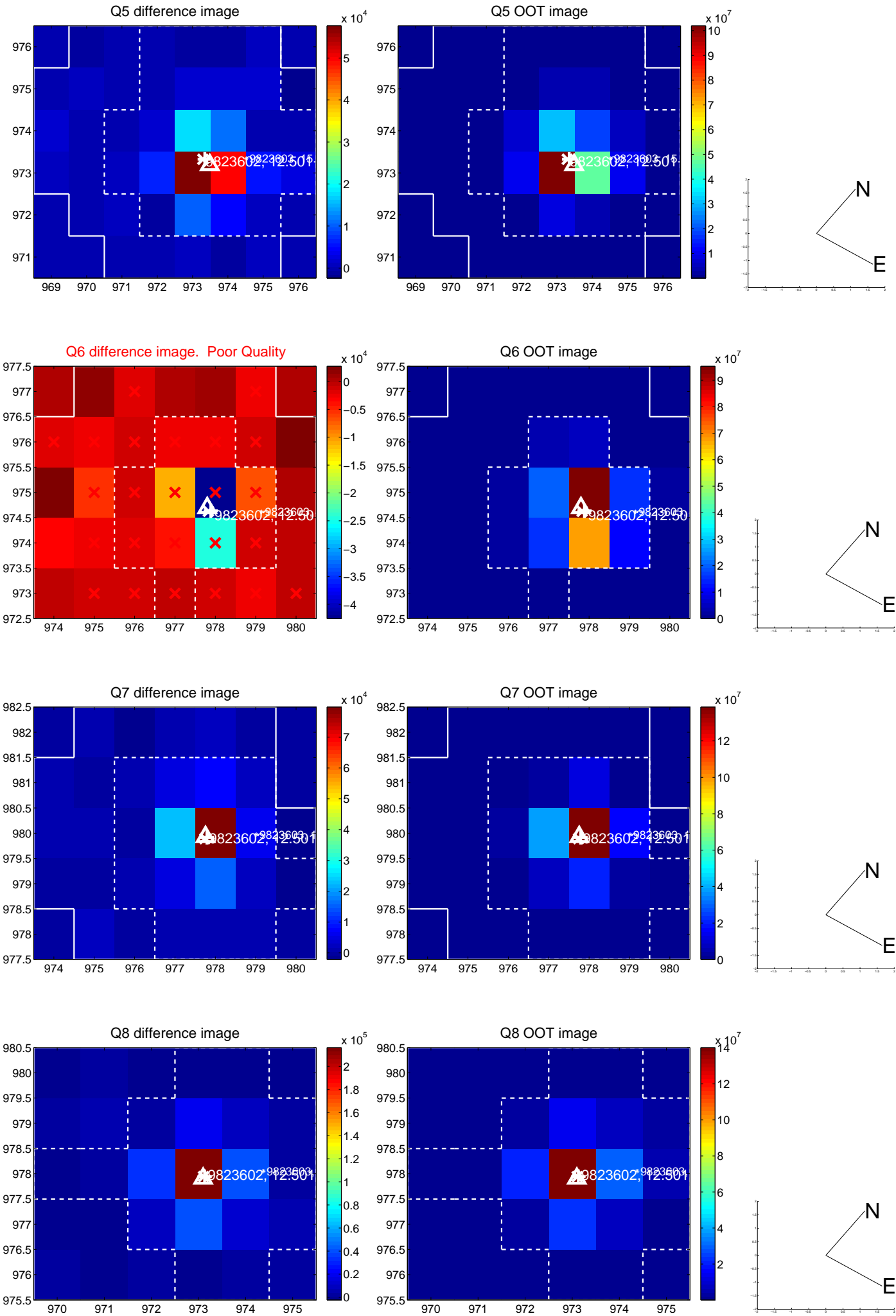


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

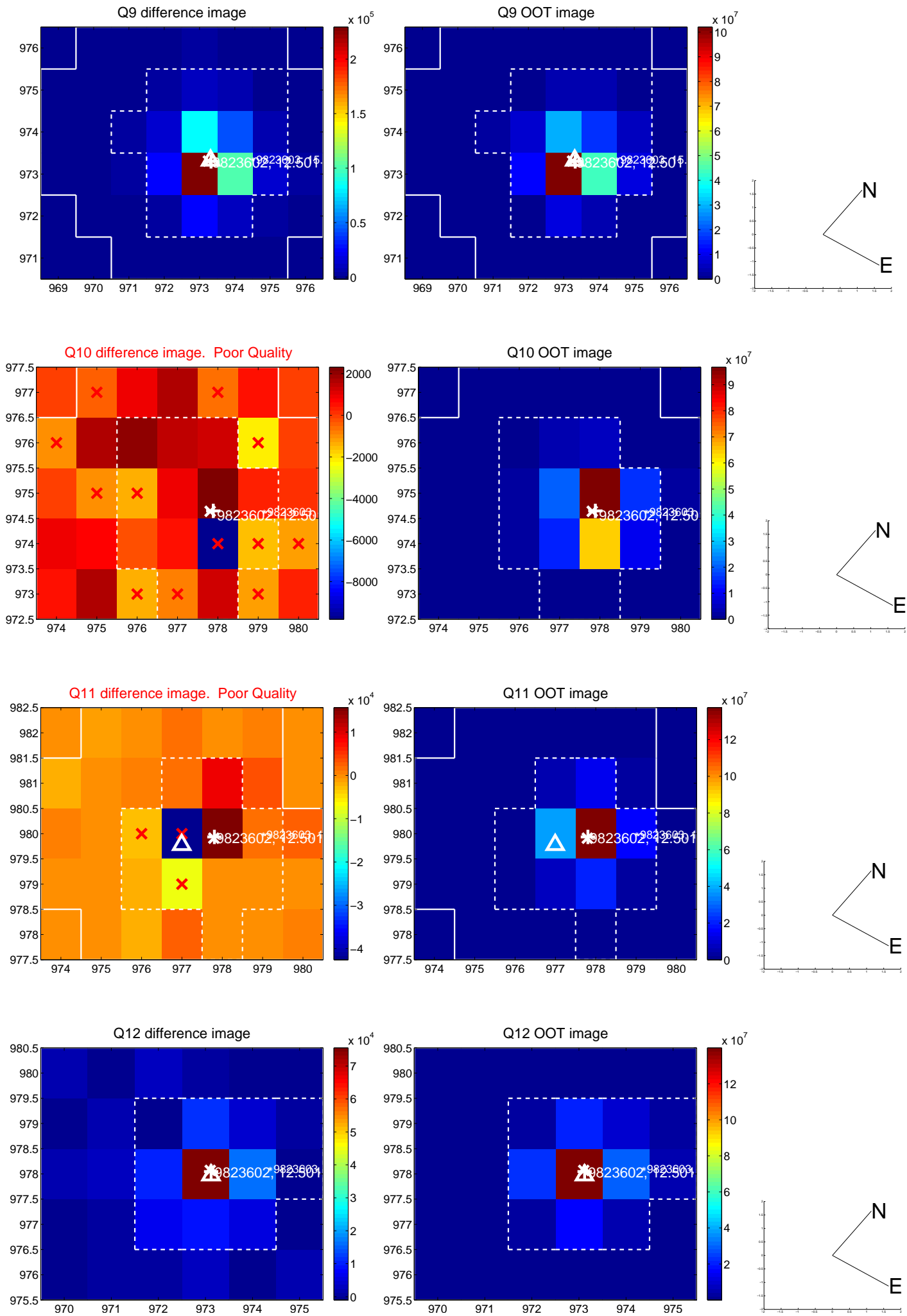
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



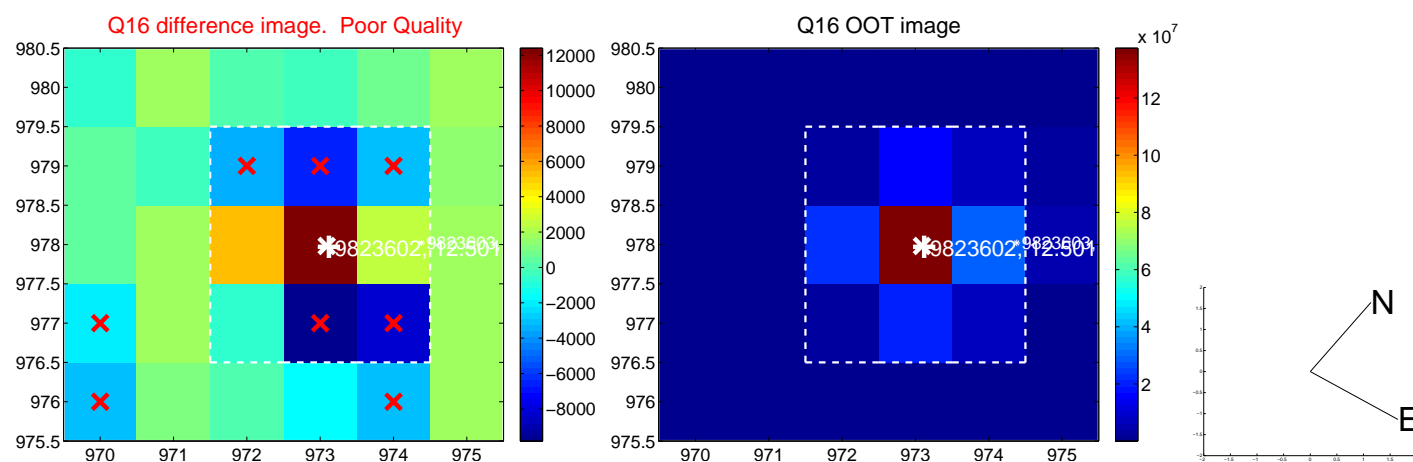
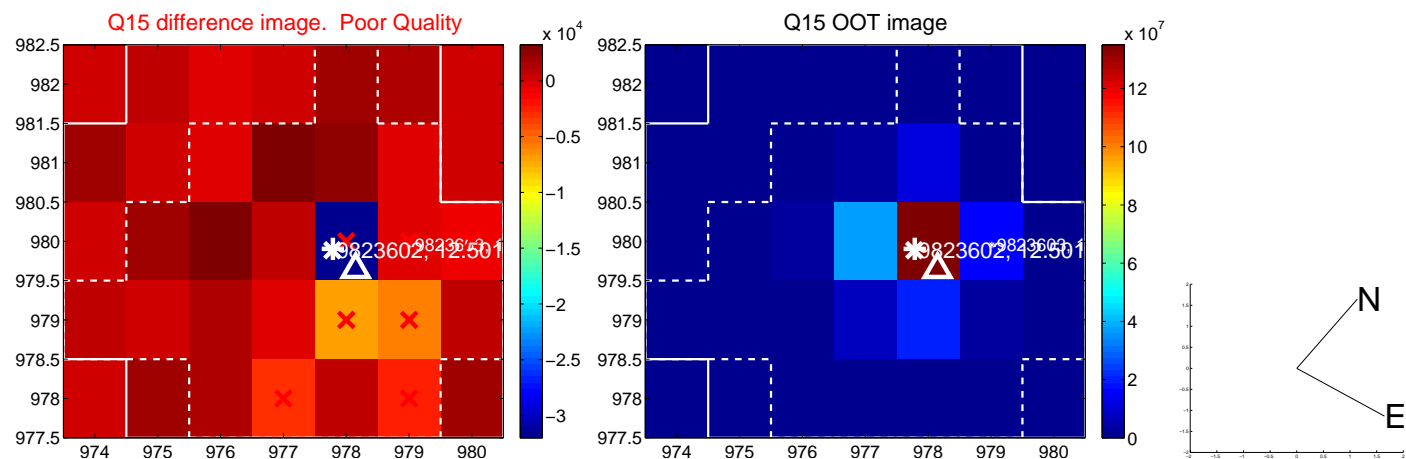
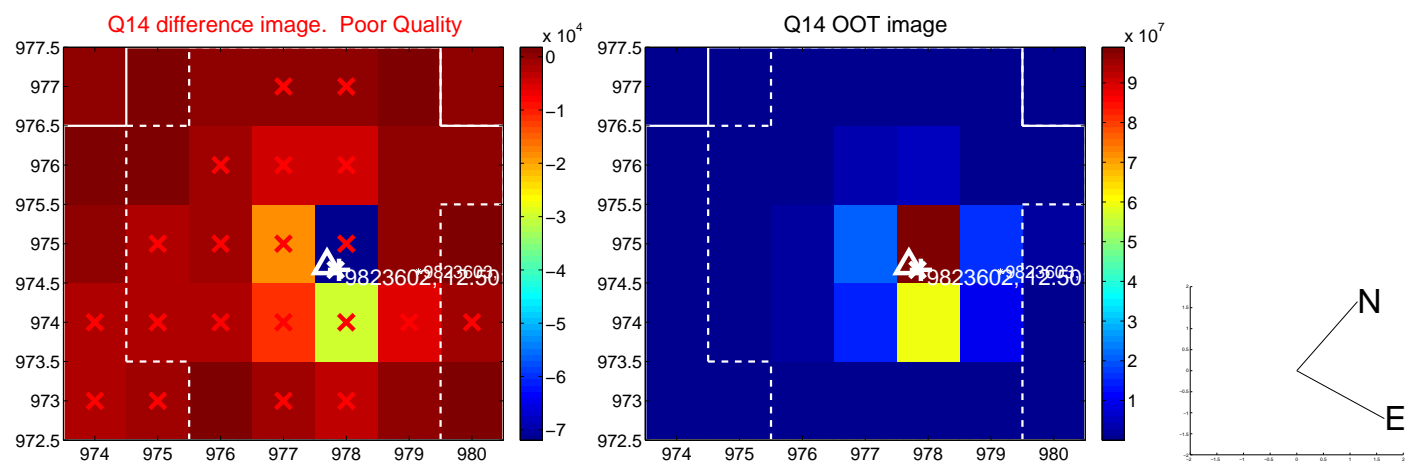
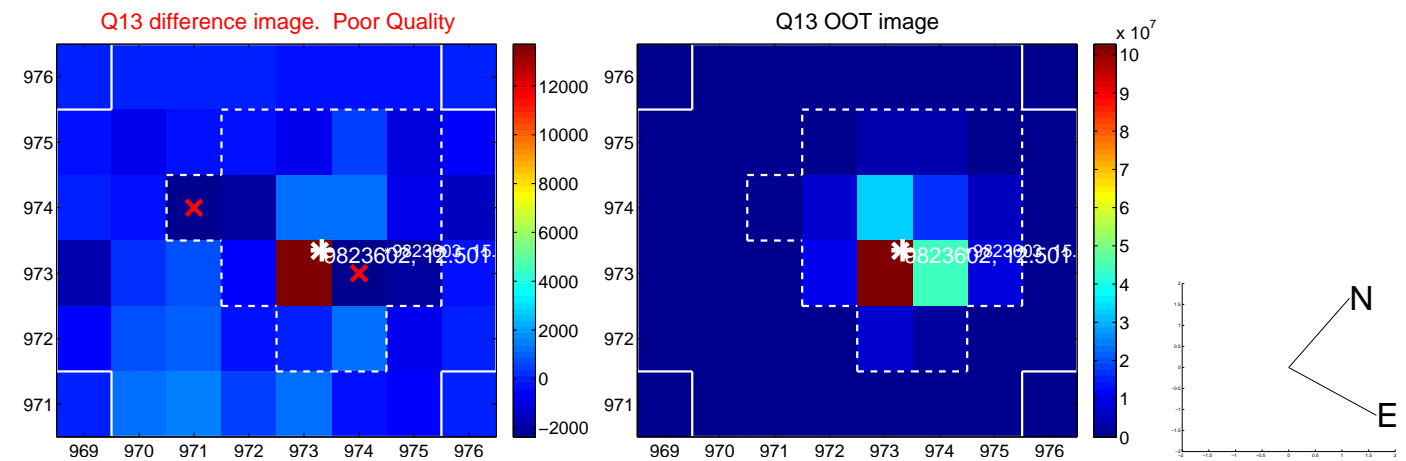
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



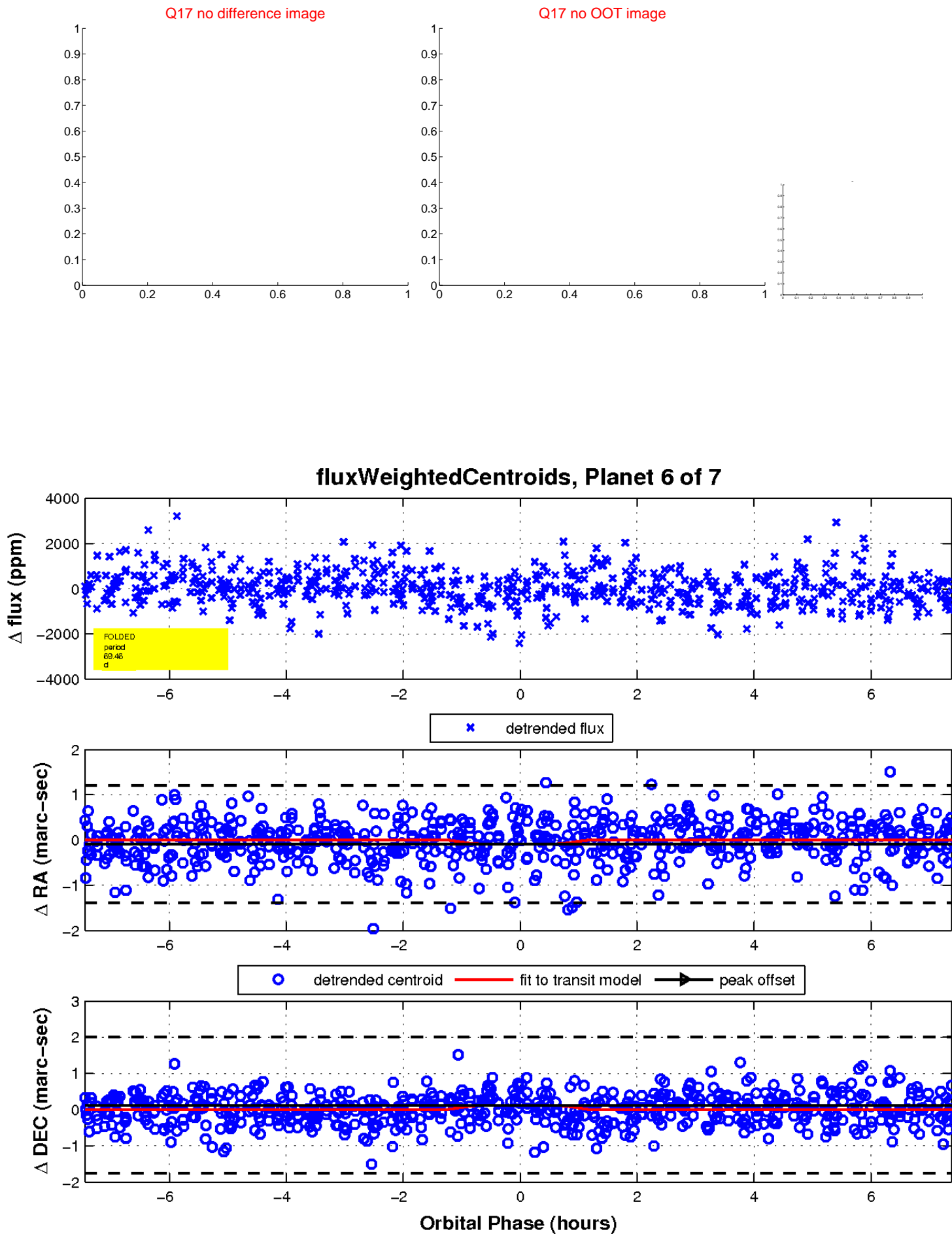
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

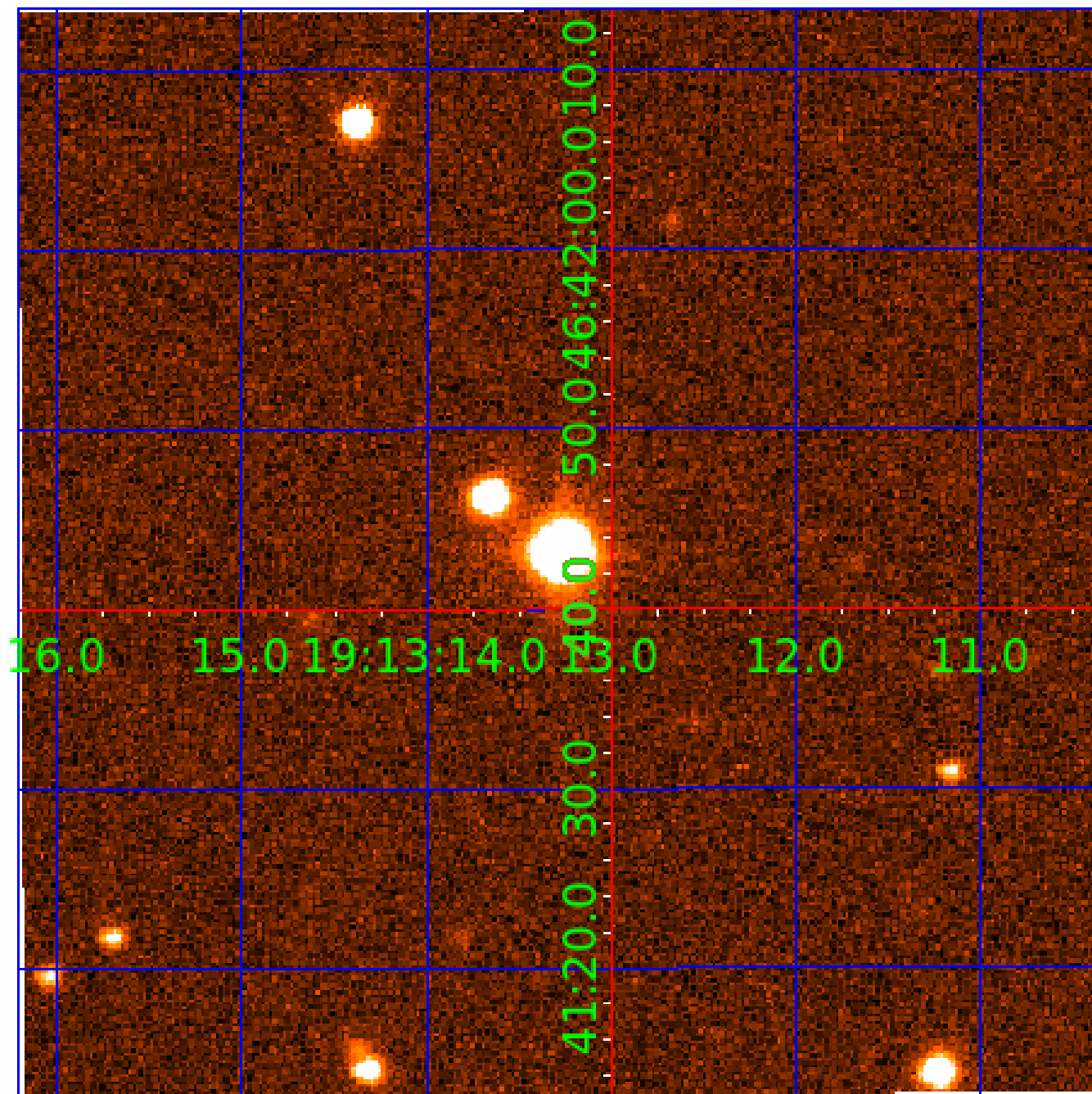


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009823602

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})
009823602-01	OBS	No	0.885894	131.586408	69.1	5.867	9.5	9.3	2.76	7721	2.42	47755.01
009823602-02	OBS	No	22.353765	140.678766	1152.6	1.921	13.7	11.3	2.76	7721	9.57	645.25
009823602-03	OBS	No	24.094820	145.278836	2976.3	0.816	13.0	11.1	2.76	7721	25.70	583.84
009823602-04	OBS	No	51.091659	133.754778	1345.0	2.556	12.6	10.8	2.76	7721	16.91	214.32
009823602-05	OBS	No	49.220329	163.840237	1758.1	3.949	11.8	14.0	2.76	7721	18.82	225.25
009823602-06	OBS	No	69.458100	147.367148	1790.7	2.486	11.6	11.2	2.76	7721	13.61	142.31
009823602-07	OBS	No	50.182079	152.371615	359.6	2.000	10.9	-1.0	2.76	7721	5.31	219.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823602-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009823602-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV
009823602-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009823602-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—HALO_GHOST
009823602-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009823602-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

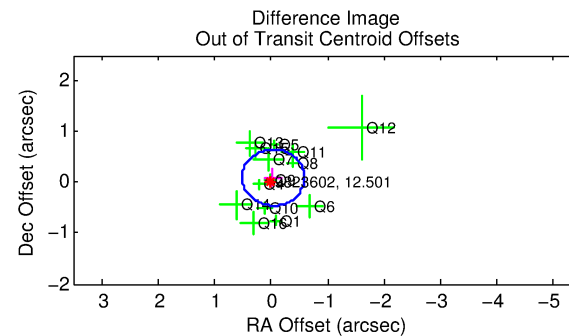
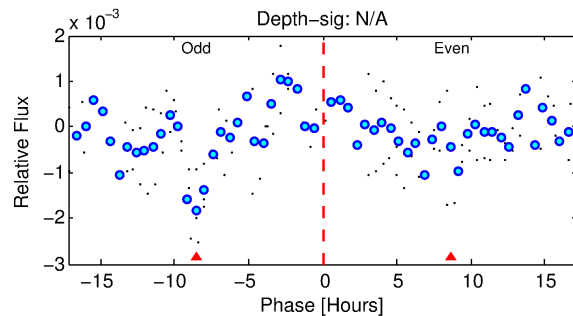
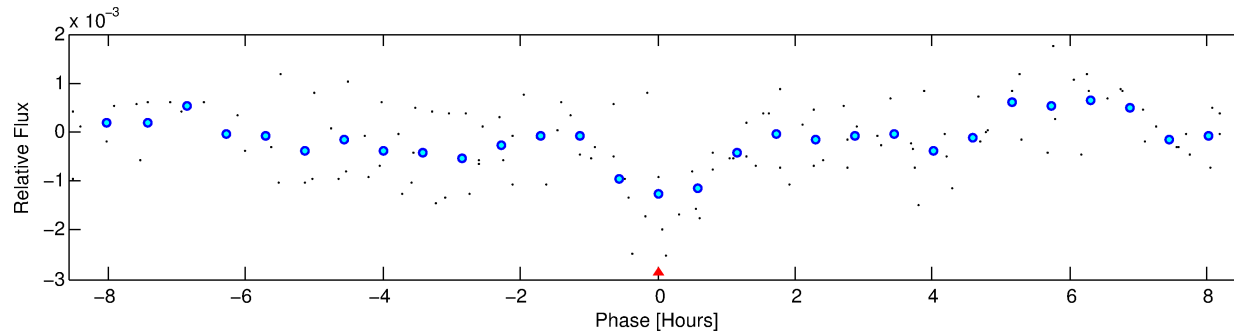
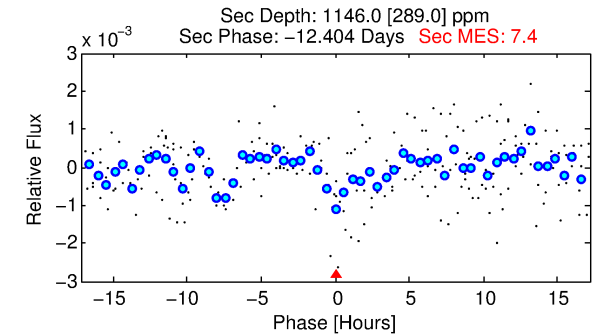
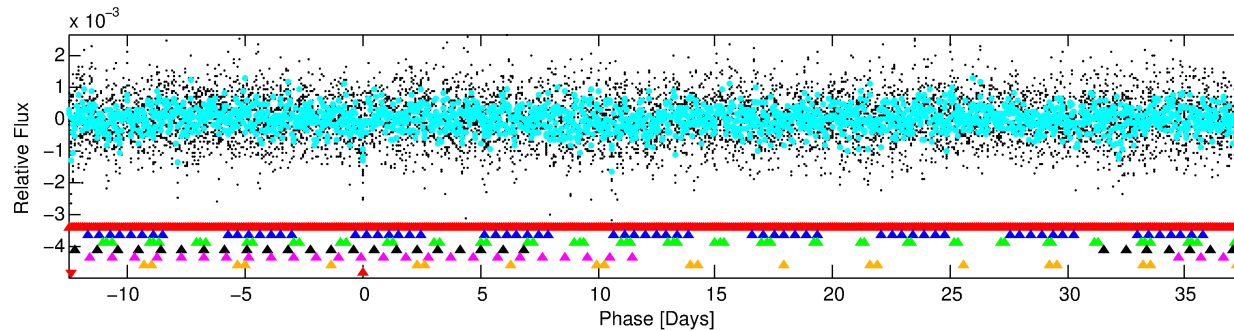
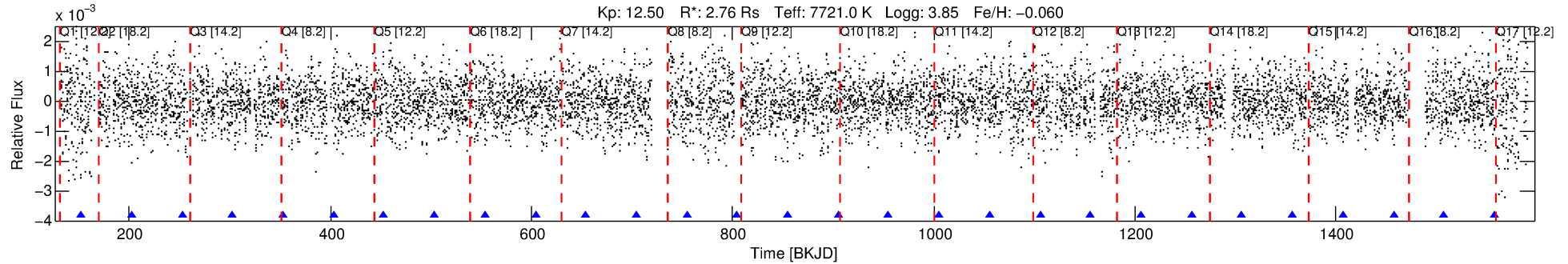
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823602-07

No Significant Match Found

DV One-Page Summary

KIC: 9823602 Candidate: 7 of 7 Period: 50.182 d



TPS TCE Results:

Period = 50.18208 d
Epoch = 152.3716 BKJD

DV fit results are unavailable

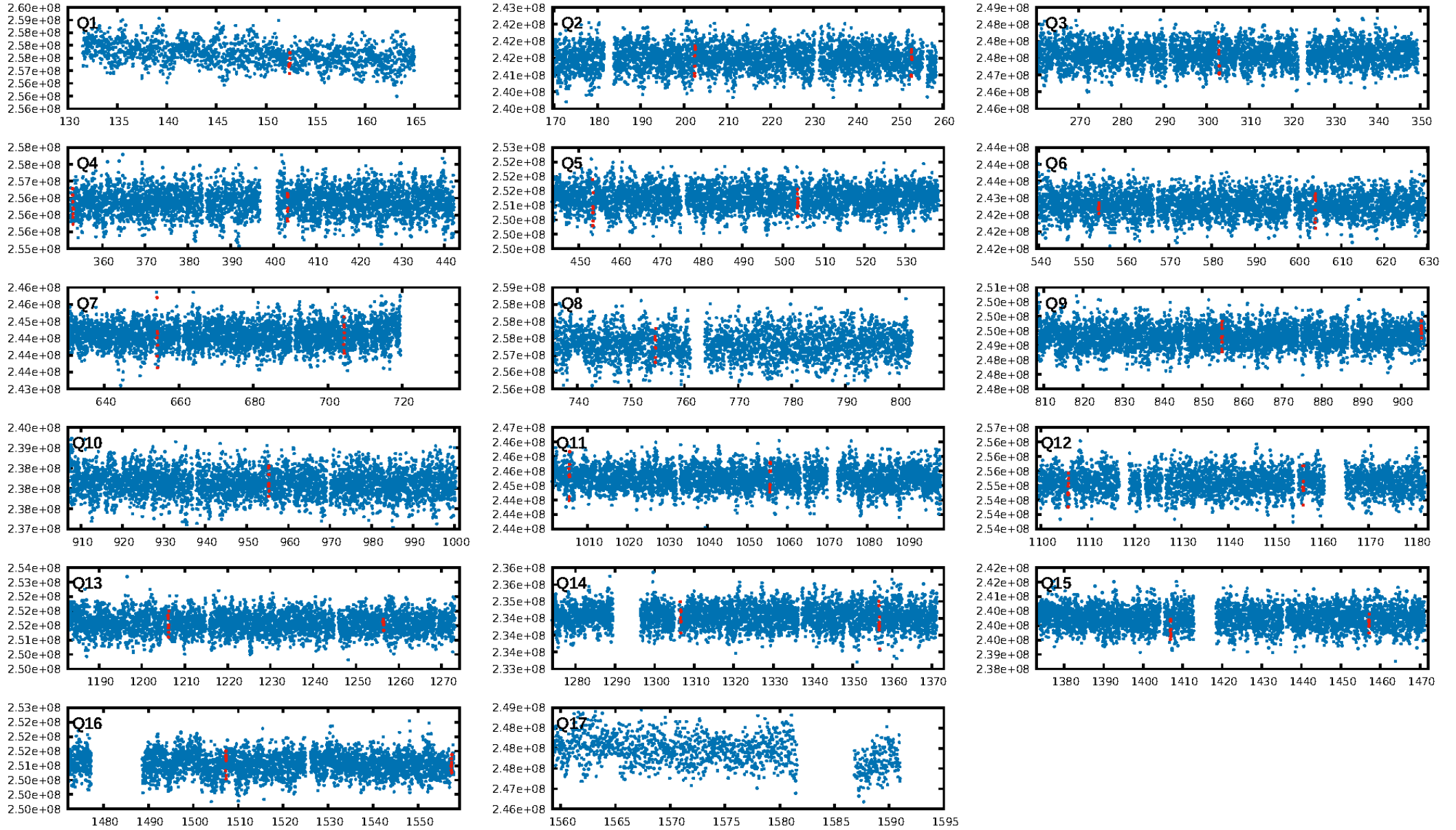
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.21 σ]
LongPeriod-sig: 100.0% [6.73 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 0.4524
Centroid-sig: 7.4%
Centroid-so: 0.208 arcsec [1.28 σ]
OotOffset-rm: 0.103 arcsec [0.56 σ]
KicOffset-rm: 0.252 arcsec [1.65 σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.57 [8/14]
DiffImageOverlap-fno: 0.06 [1/16]

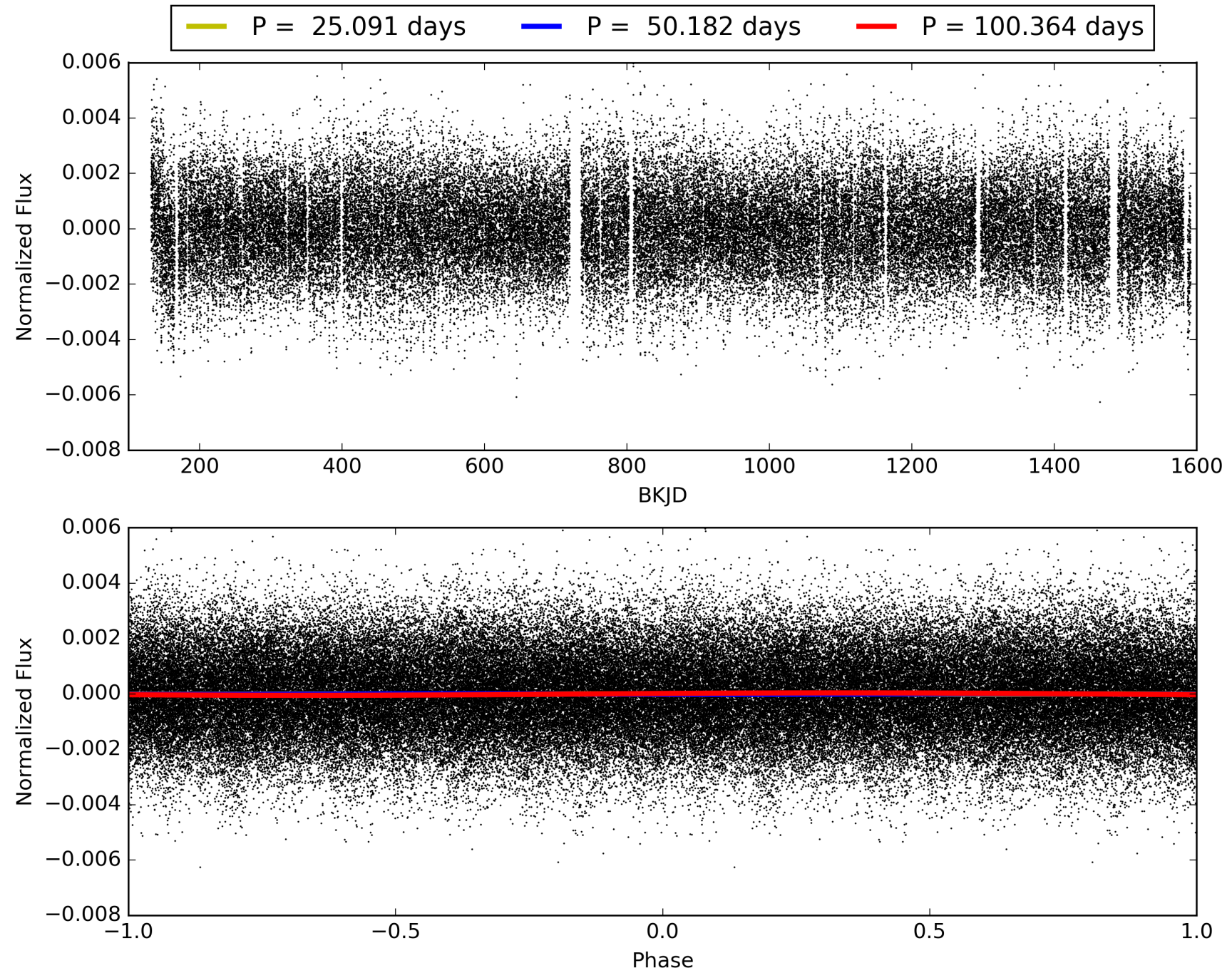
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:56:21 Z

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

TCE 009823602-07, PDC Light Curves

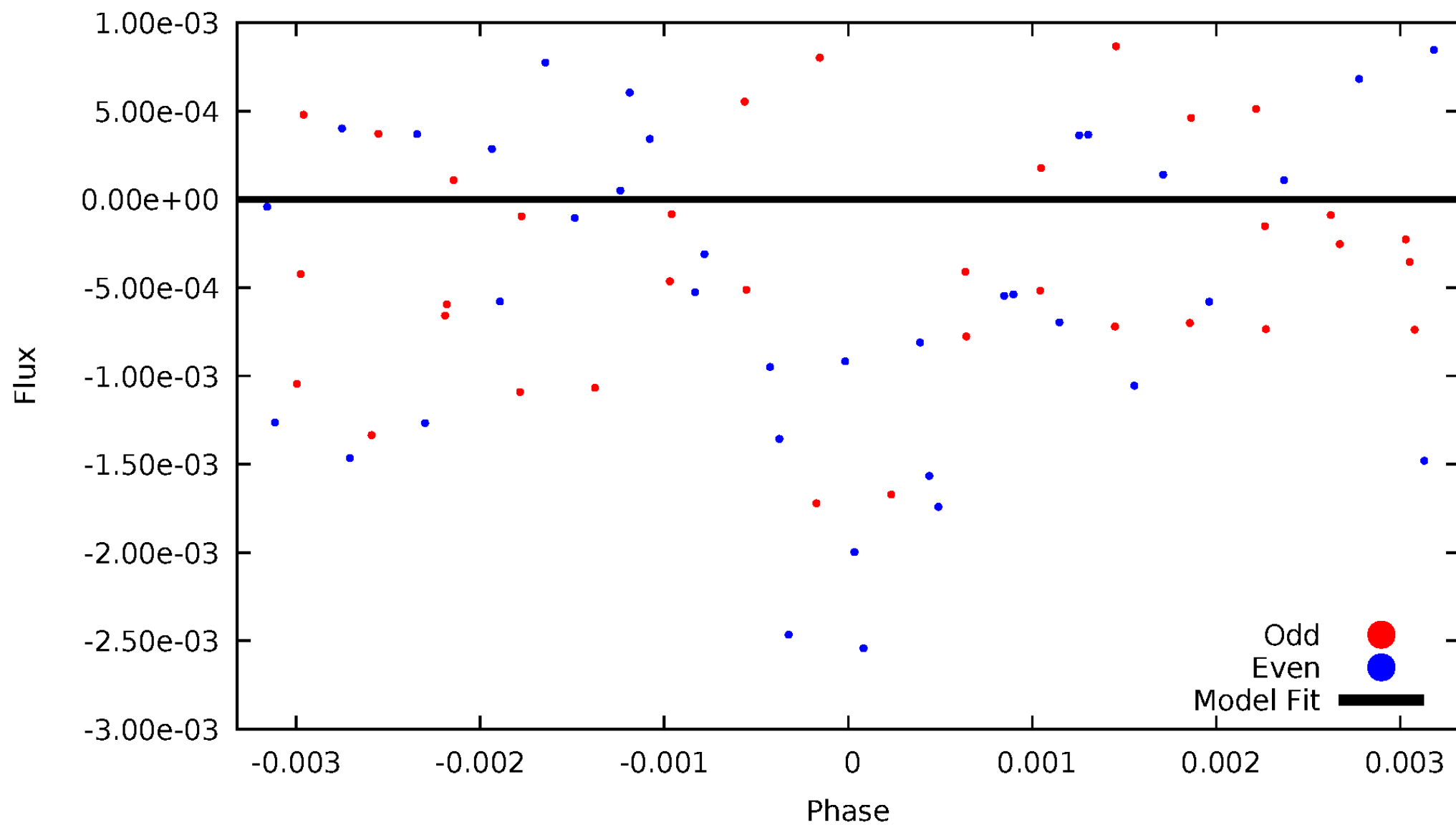


TCE 009823602-07



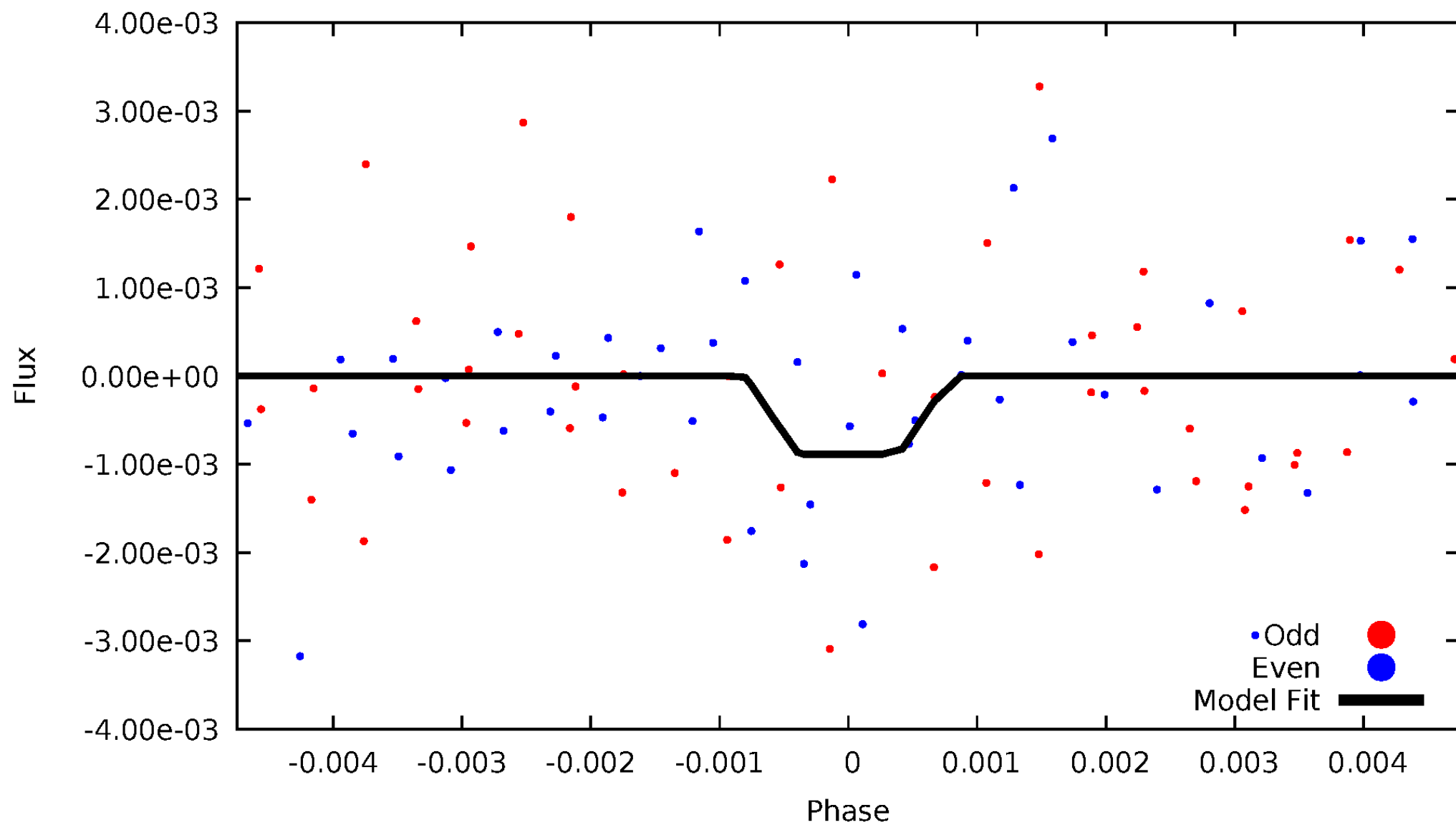
DV Odd/Even

TCE 009823602-07



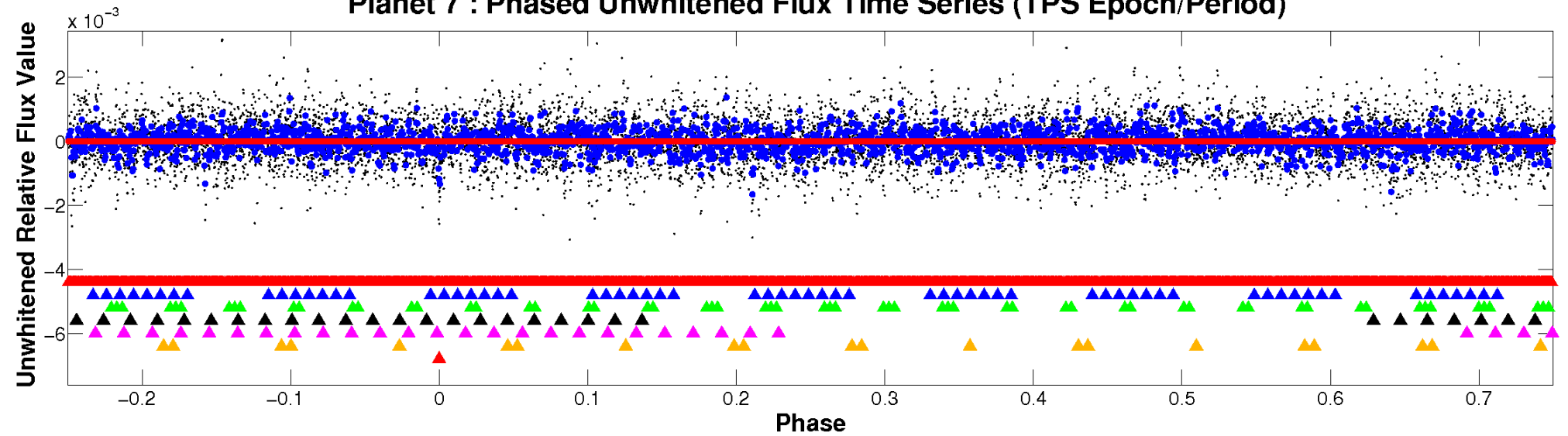
ALT Odd/Even

TCE 009823602-07



Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

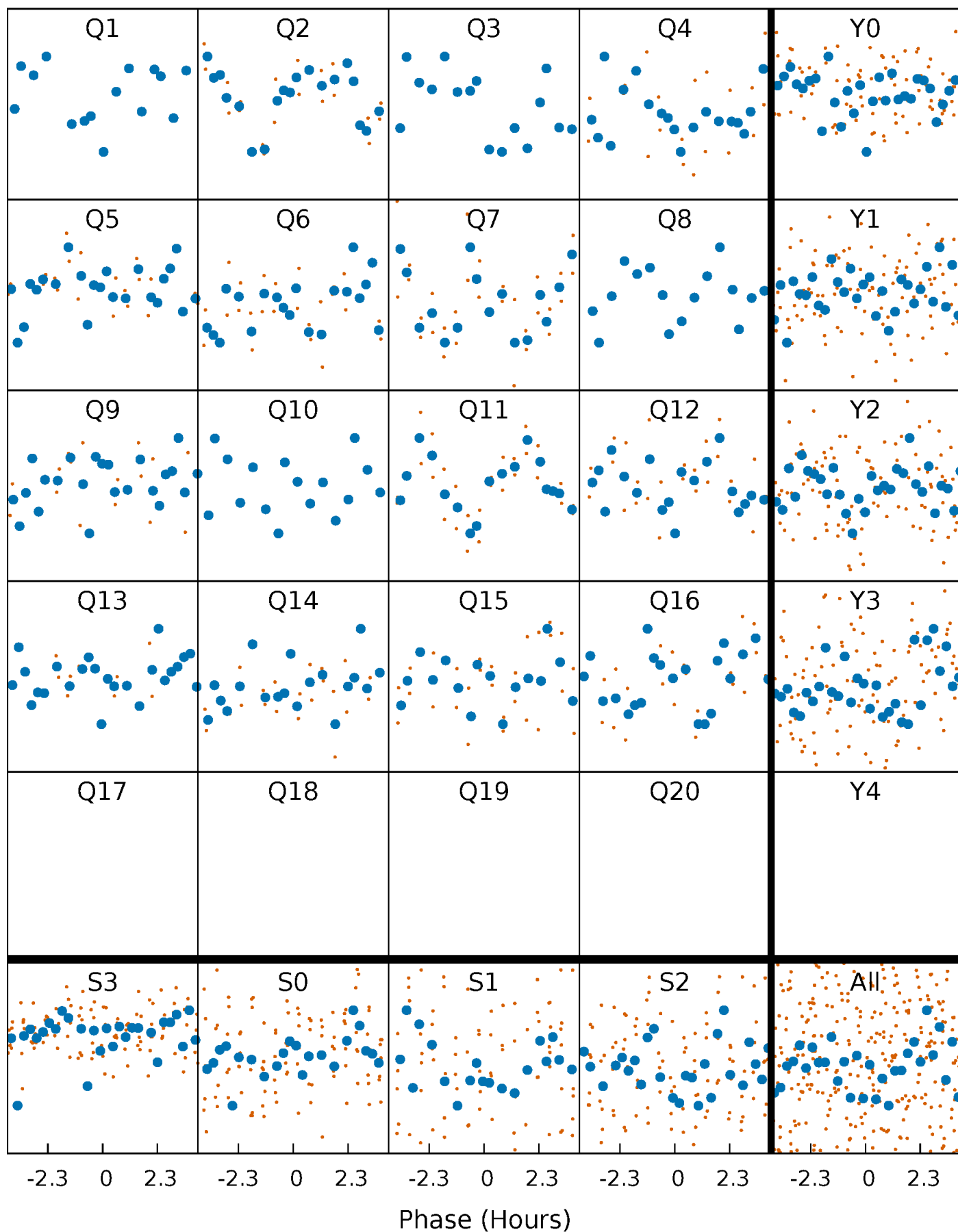


Planet 7 : Phased Whitened Flux Time Series (TPS Epoch/Period)



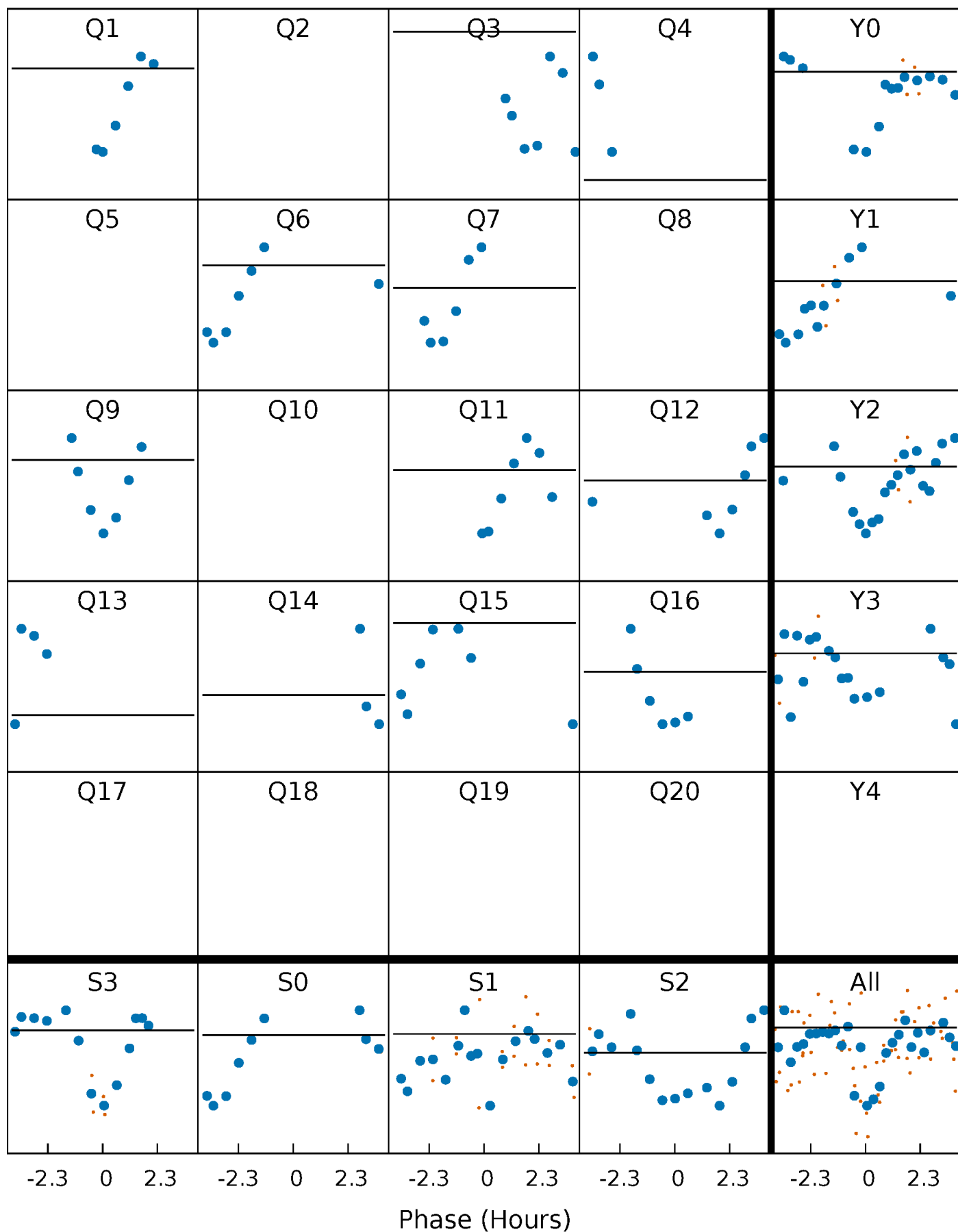
PDC Quarter-Phased Transit Curves

TCE 009823602-07 $P = 50.182079$ Days $T_0 = 152.371615$ (BKJD)



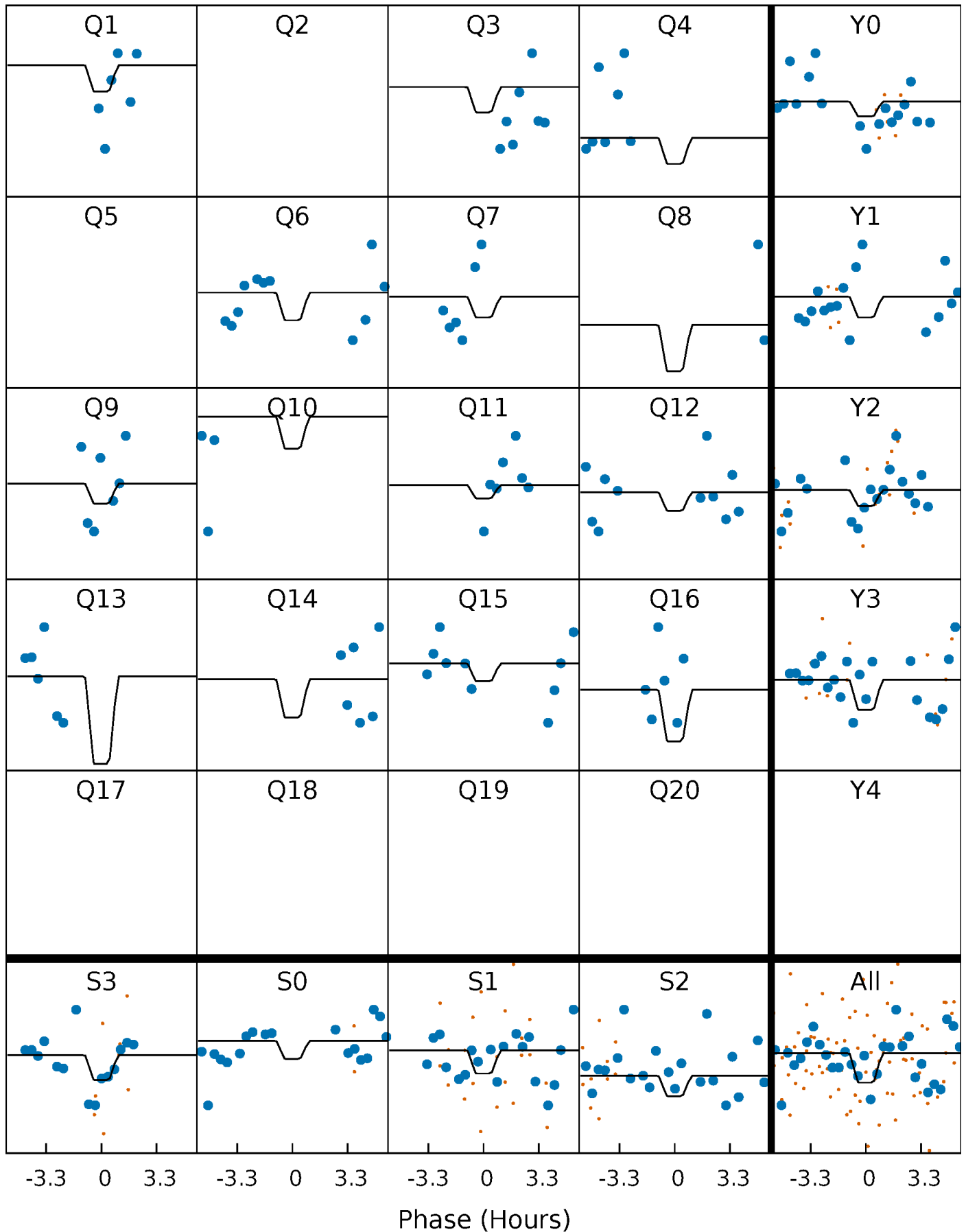
DV Quarter-Phased Transit Curves

TCE 009823602-07 $P = 50.182079$ Days $T_0 = 152.371615$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

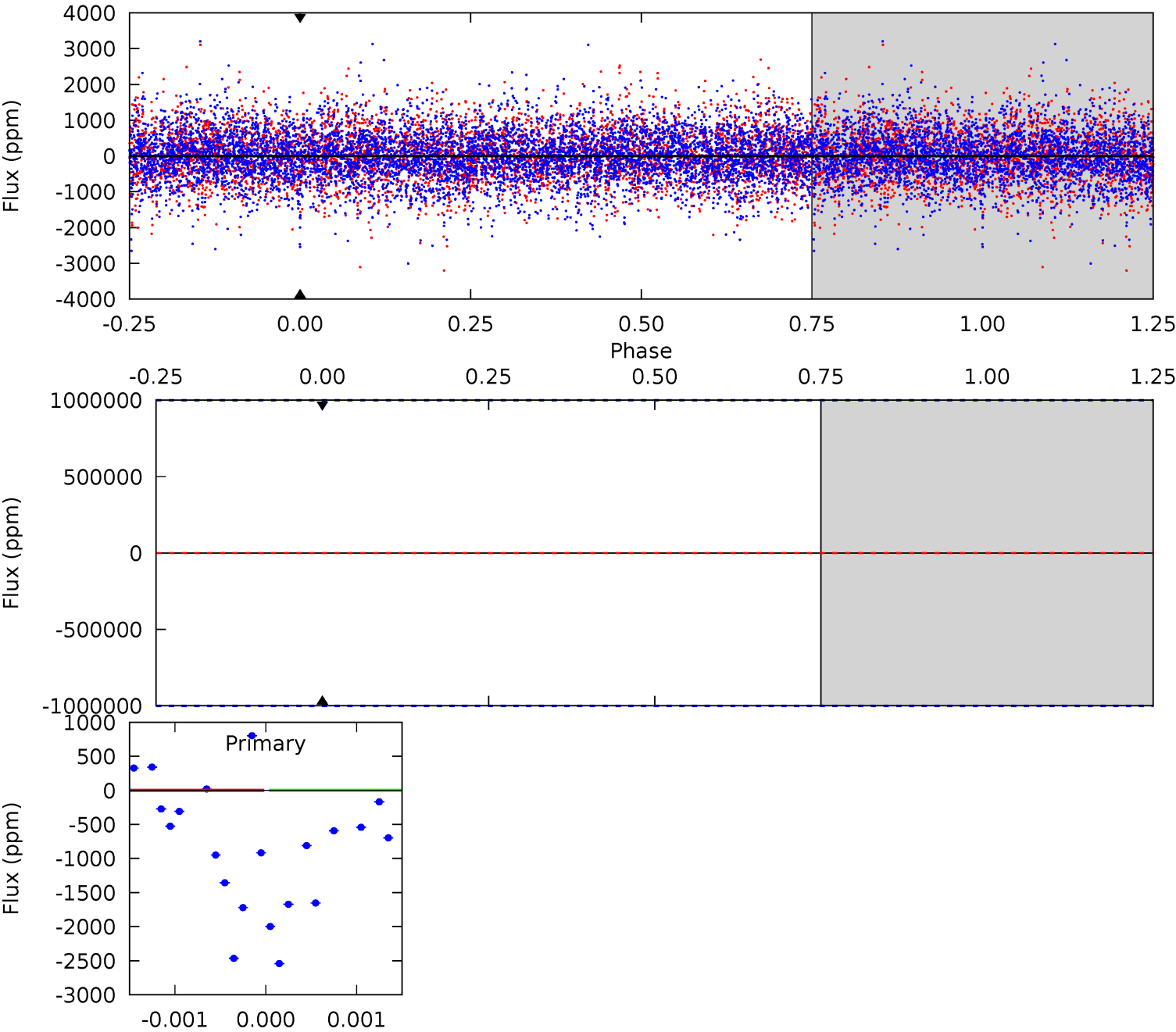
TCE 009823602-07 $P = 50.182079$ Days $T_0 = 152.370131$ (BKJD)



DV Model-Shift Uniqueness Test

009823602-07, P = 50.182079 Days, E = 102.189536 Days

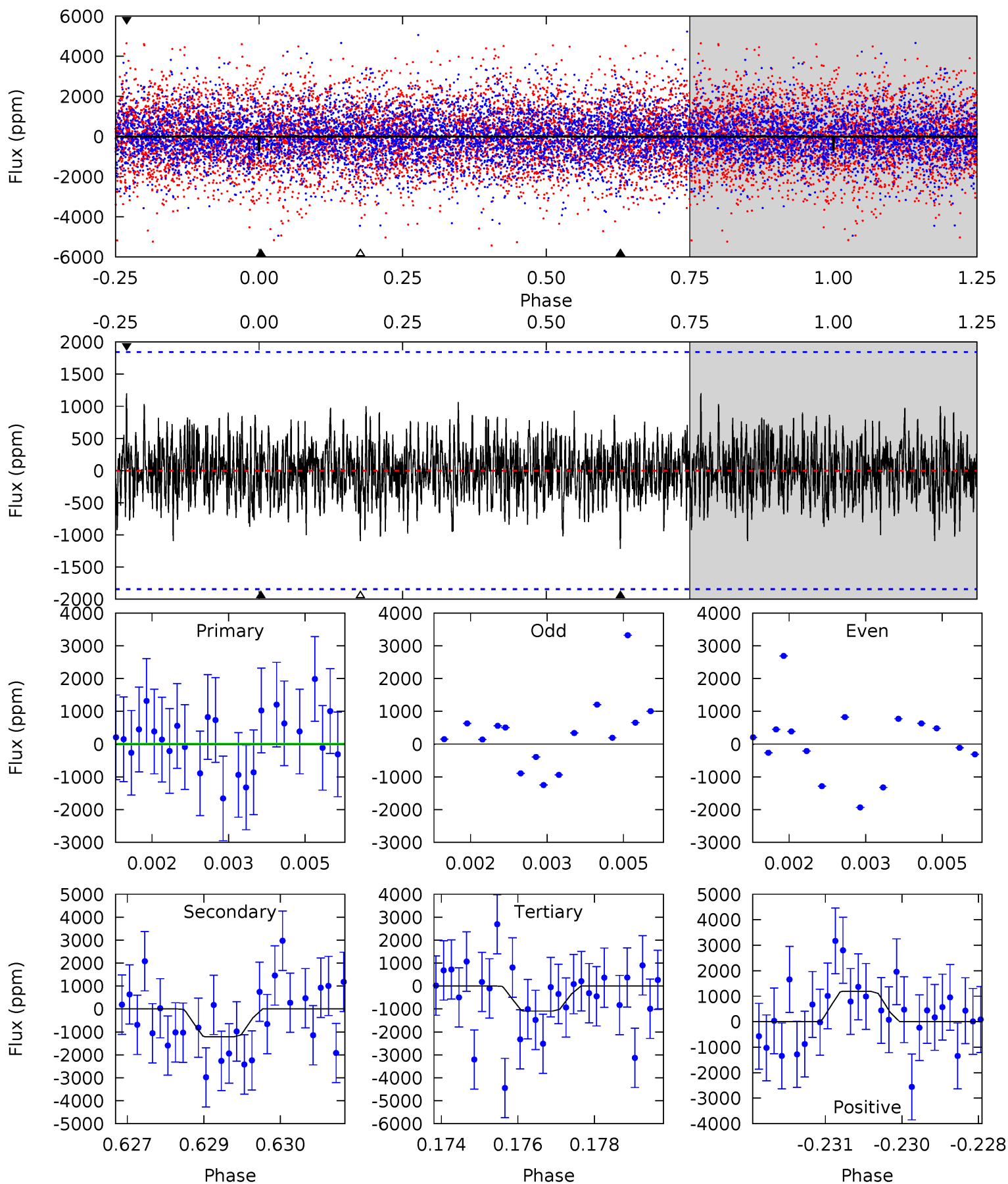
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009823602-07, P = 50.182079 Days, E = 102.188052 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.92	3.53	3.18	3.46	5.36	3.15	1.02	-1.26	-1.54	0.35	0.07	0.57	0.55	0.50	0.31



Stellar Parameters For KIC 009823602

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7721^{+214}_{-322}	$3.845^{+0.315}_{-0.105}$	$-0.060^{+0.200}_{-0.350}$	$2.760^{+0.457}_{-1.066}$	$1.943^{+0.110}_{-0.467}$	$0.130^{+0.302}_{-0.043}$
	+3%/-4%	+8%/-3%	+333%/-583%	+17%/-39%	+6%/-24%	+232%/-33%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009823602-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$19.92^{+22.48}_{-12.99}$	1339^{+94}_{-129}	7118^{+44630}_{-43478}	589^{+35089}_{-21102}
Alt.	-1214 ± 344	$21.38^{+24.46}_{-14.51}$	1335^{+95}_{-129}	5116^{+4179}_{-1326}	155^{+1191}_{-122}

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 $A_{obs} \gg 1.0$

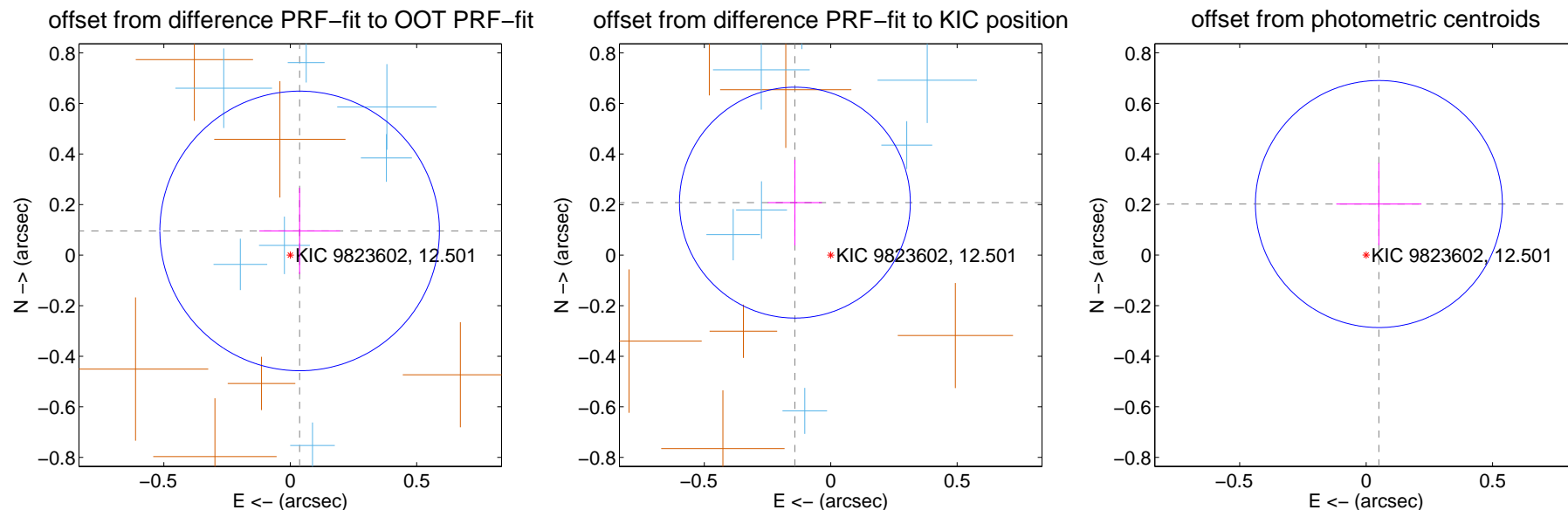
DV Centroid Data

Supplemental centroid analysis for 009823602-07. Kepler magnitude: 12.50. Transit SNR -1.00

There are 8 quarters with good PRF difference image offsets

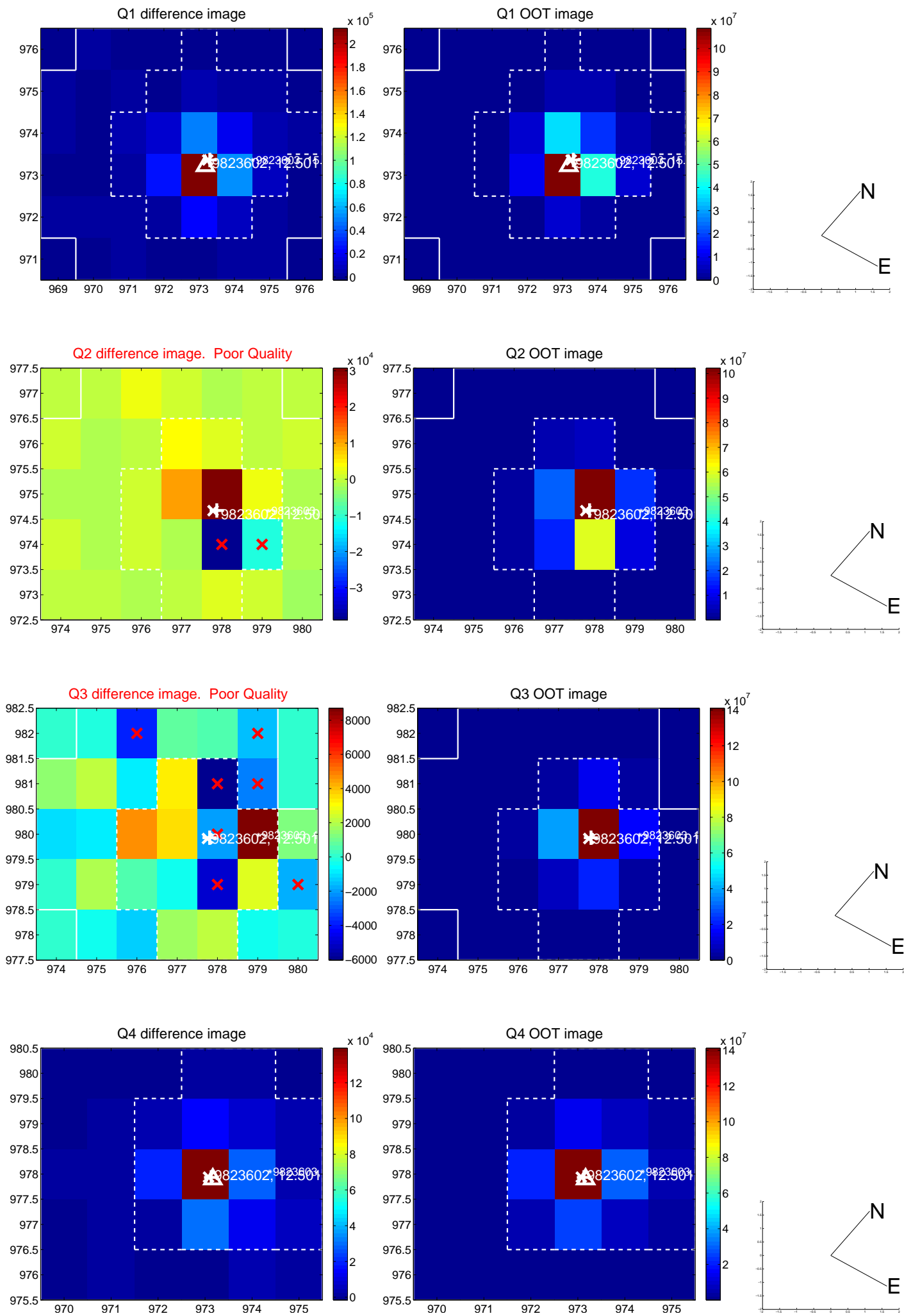
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.103 ± 0.184	0.56	-0.037 ± 0.159	0.096 ± 0.171
PRF-fit source offset from KIC position	0.252 ± 0.152	1.65	0.142 ± 0.107	0.208 ± 0.169
photometric centroid source offset	0.21 ± 0.16	1.28	-0.05 ± 0.17	0.20 ± 0.16

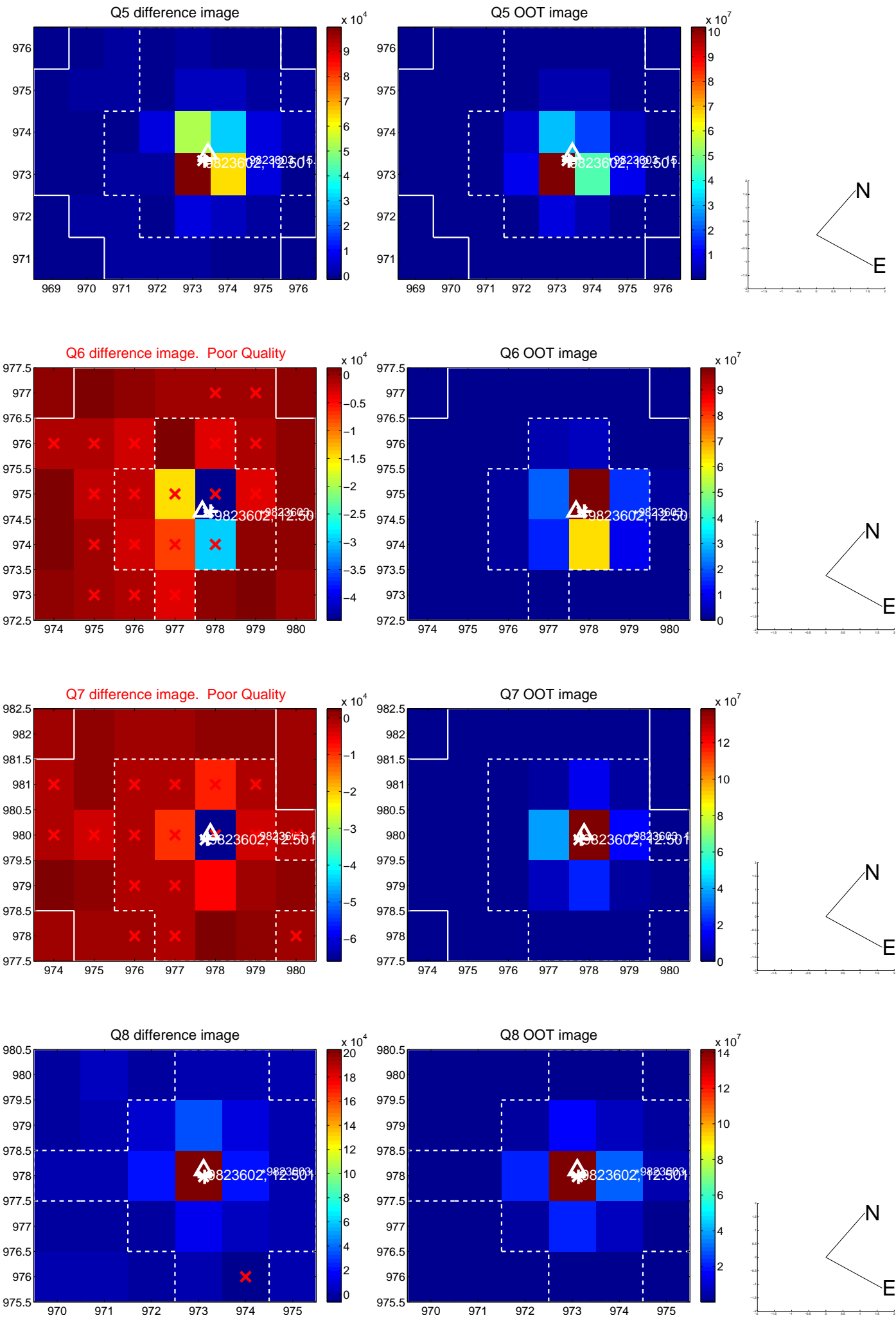


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

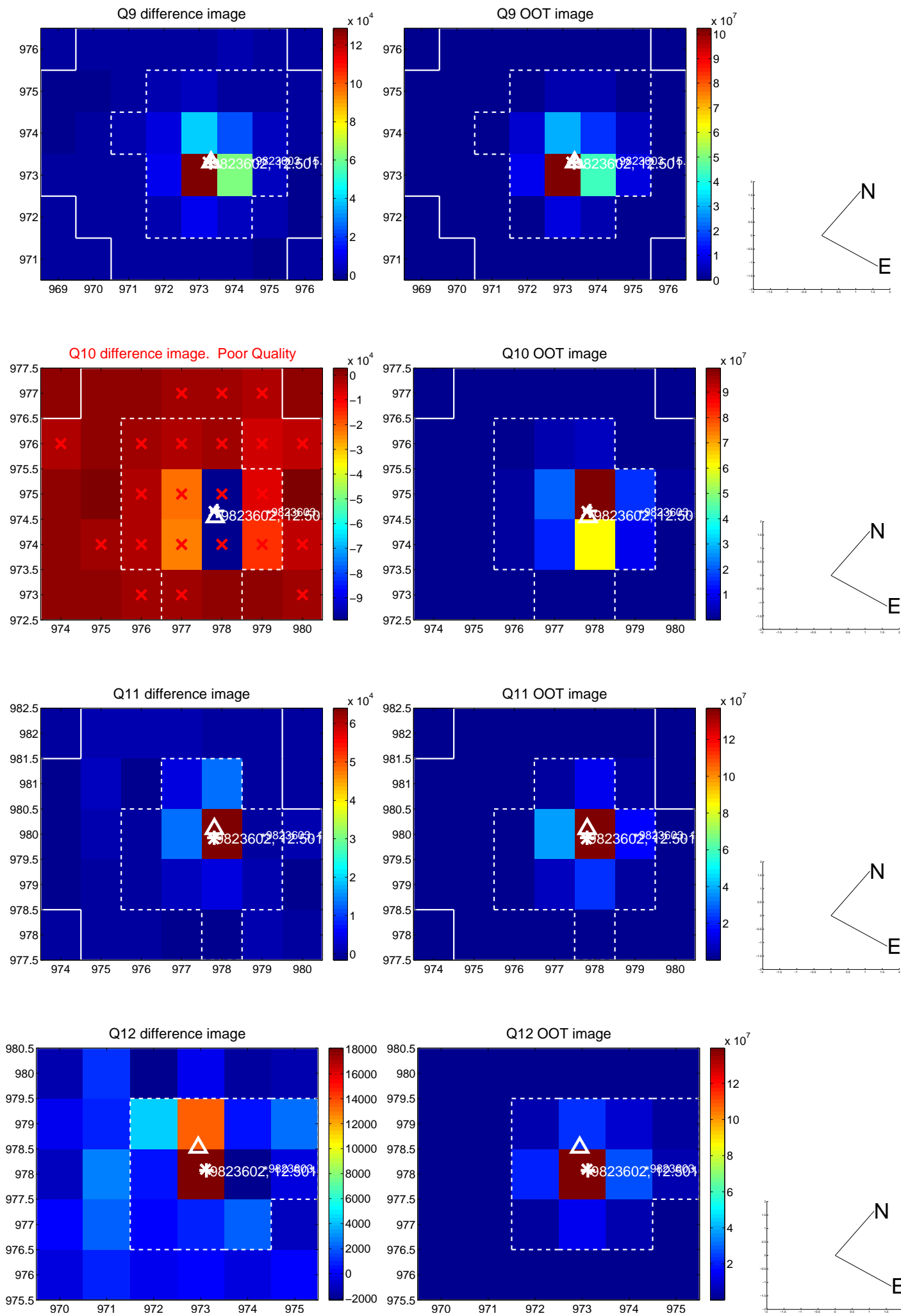
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



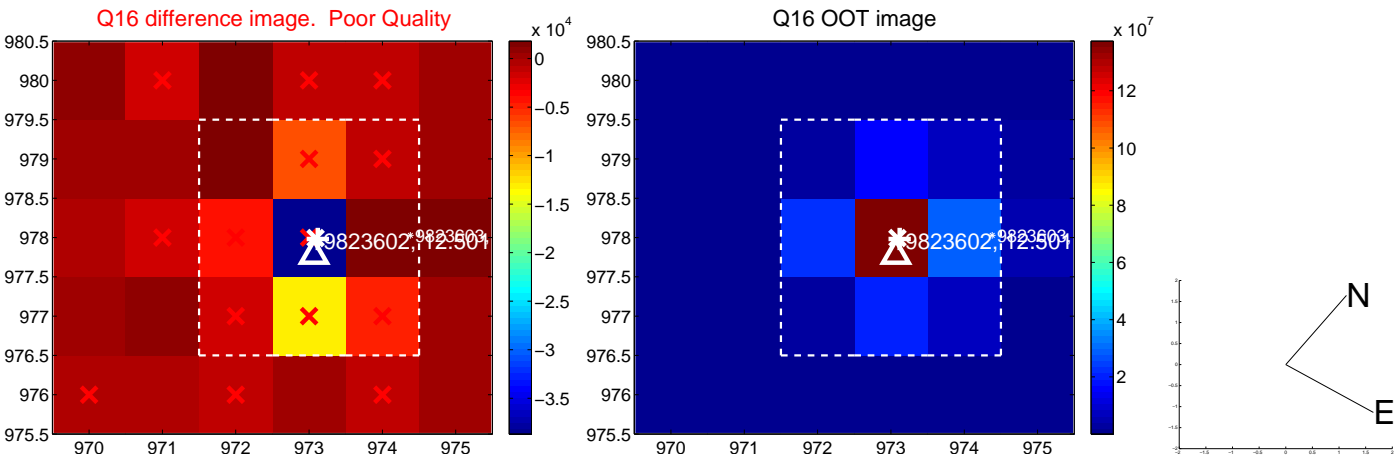
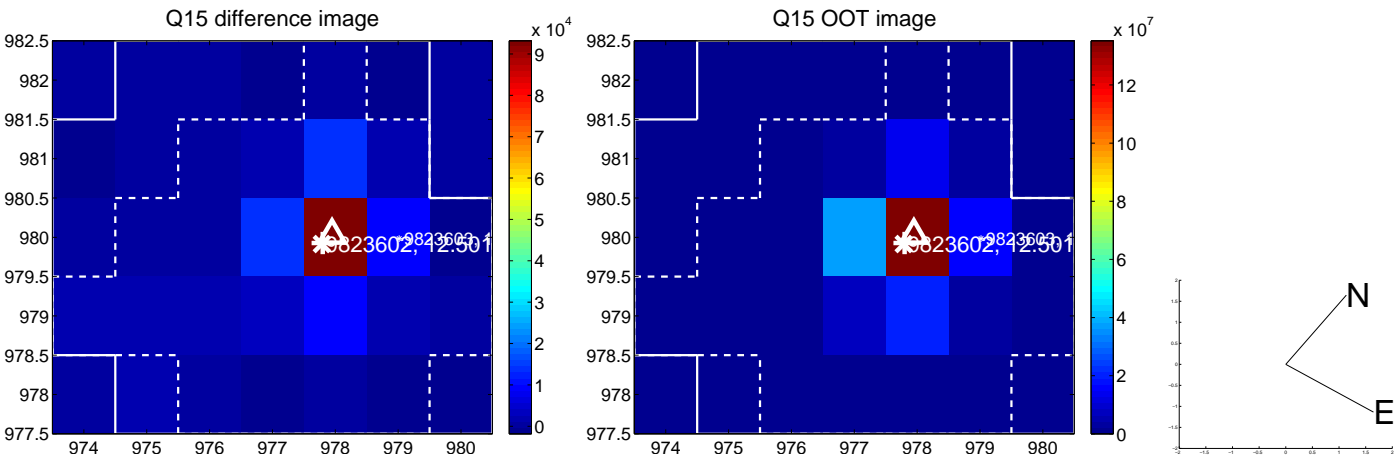
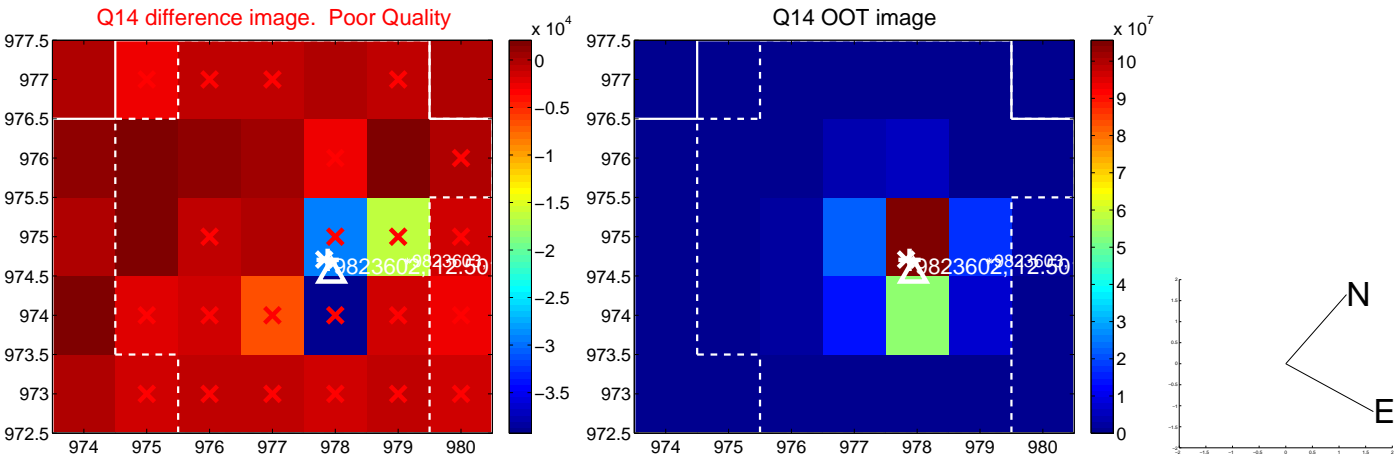
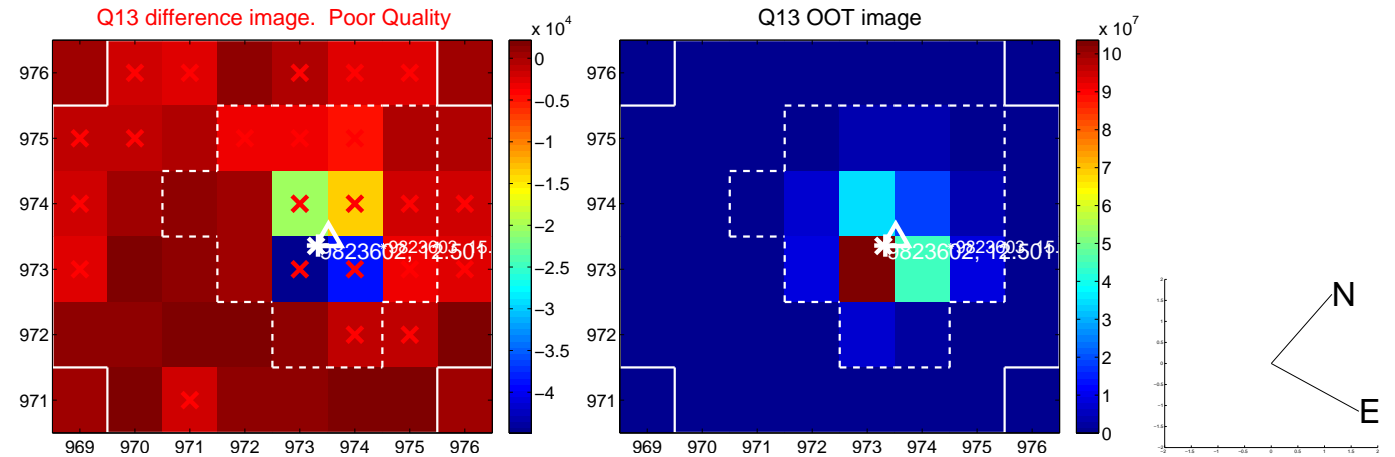
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



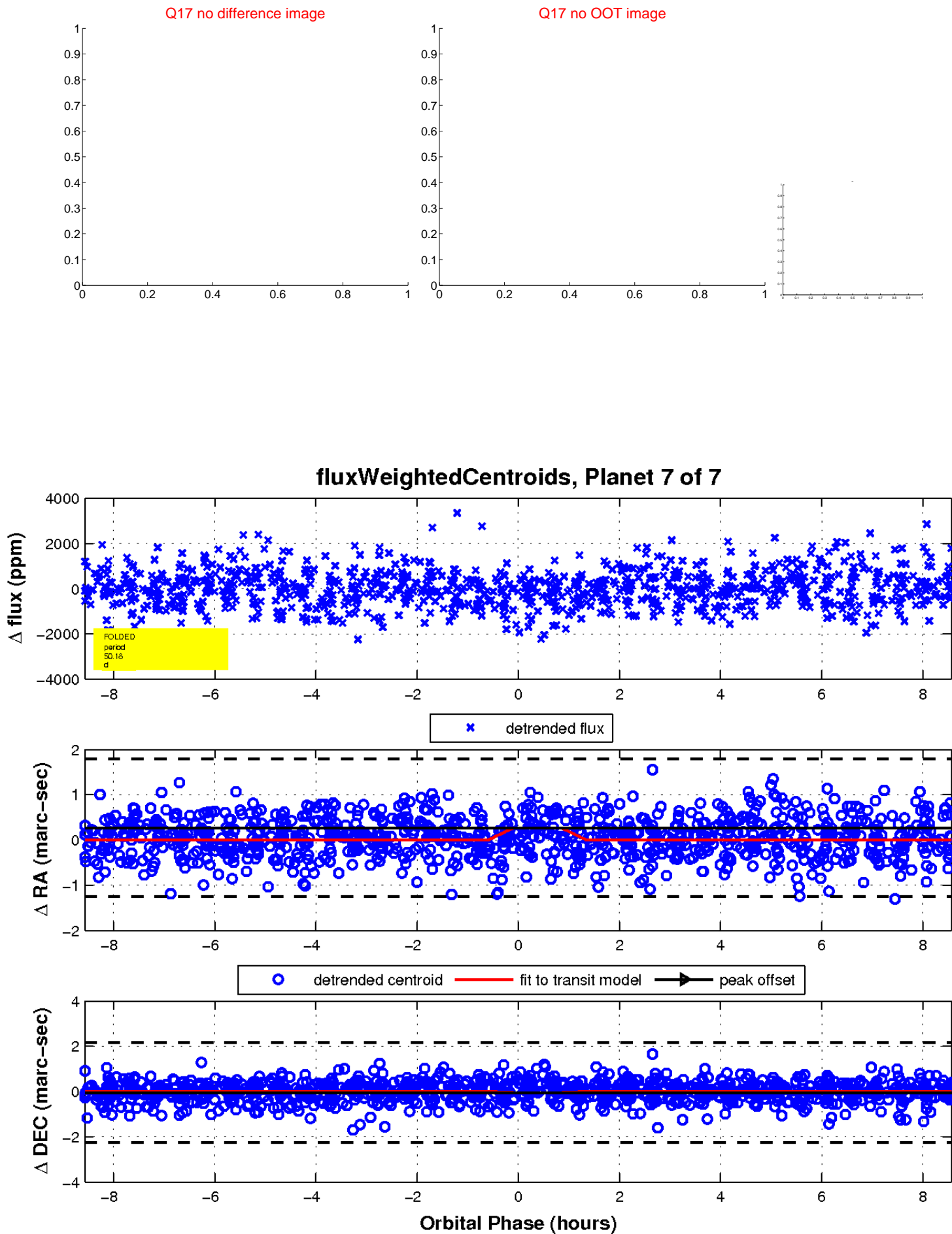
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

