

KIC 009832208

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})
009832208-01	OBS	2553.01	88.071608	214.512560	840.9	6.916	12.0	13.0	0.82	4939	2.56	2.80
009832208-02	OBS	No	0.686916	131.712463	70.8	2.211	7.4	8.8	0.82	4939	0.85	1810.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009832208-01	OBS	PC	0.72	0	0	0	0	NO_COMMENT
009832208-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET

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 009832208-01

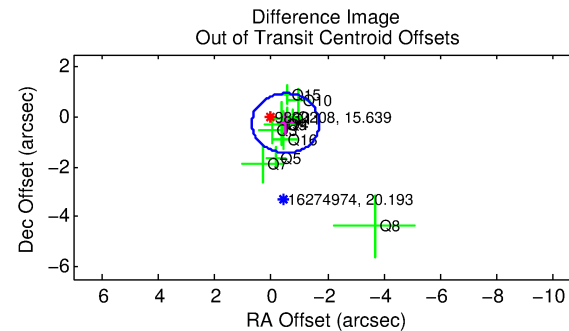
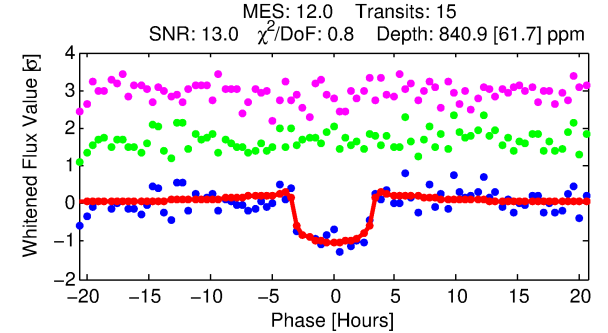
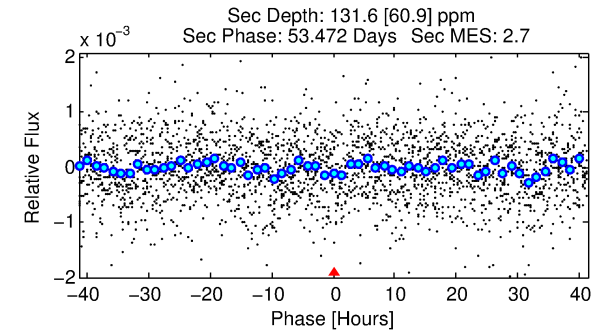
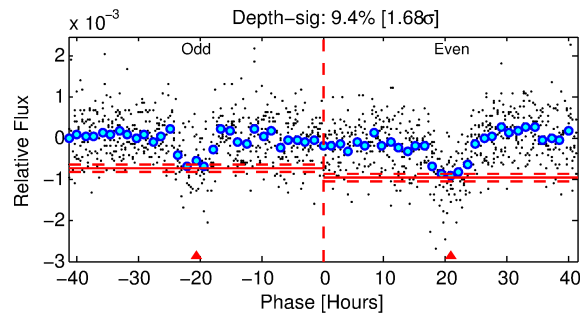
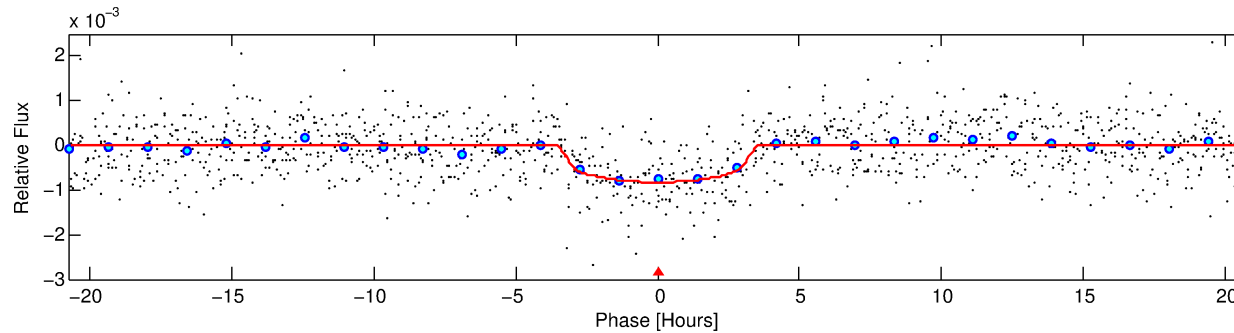
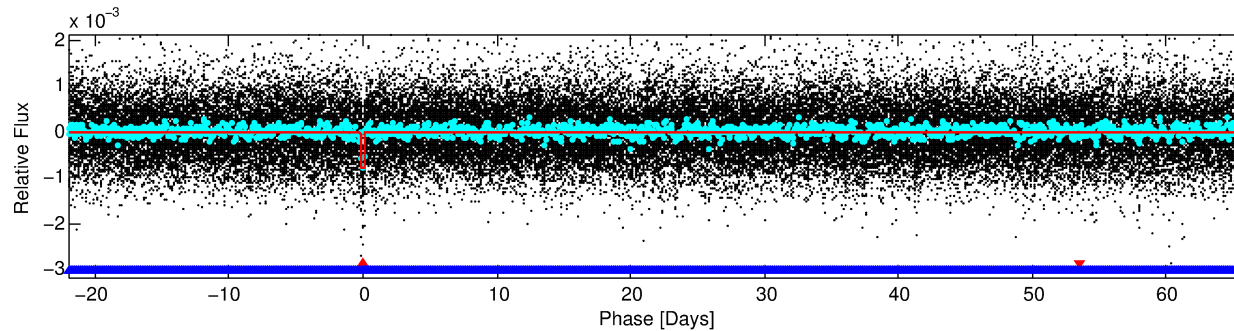
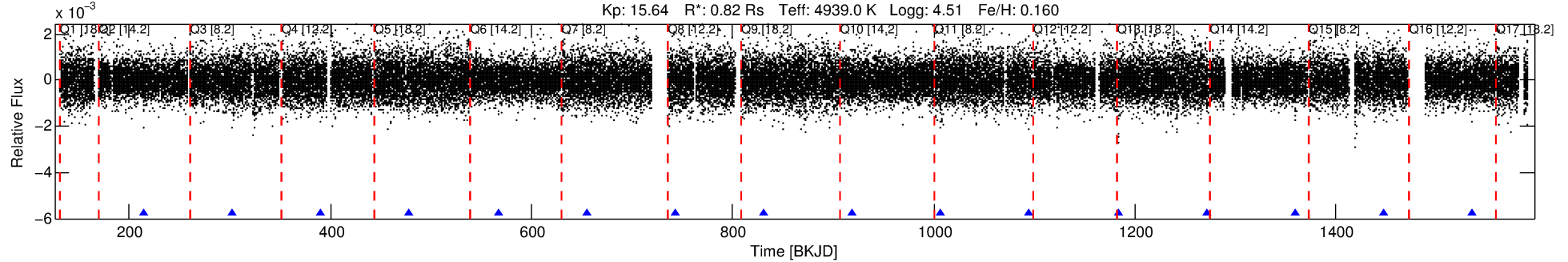
No Significant Match Found

DV One-Page Summary

KIC: 9832208 Candidate: 1 of 2 Period: 88.072 d

KOI: K02553.01 Corr: 0.989

Kp: 15.64 R*: 0.82 Rs Teff: 4939.0 K Logg: 4.51 Fe/H: 0.160



DV Fit Results:

Period = 88.07161 [0.00087] d
Epoch = 214.5126 [0.0079] BKJD
Rp/R* = 0.0287 [0.0110]
a/R* = 70.88 [91.69]
b = 0.73 [0.86]
Seff = 2.80 [0.38]
Teq = 330 [11] K
Rp = 2.56 [1.00] Re
a = 0.3574 [0.0254] AU
Ag = 1409.00 [1274.16] [1.11σ]
Teffp = 3125 [702] K [3.98σ]

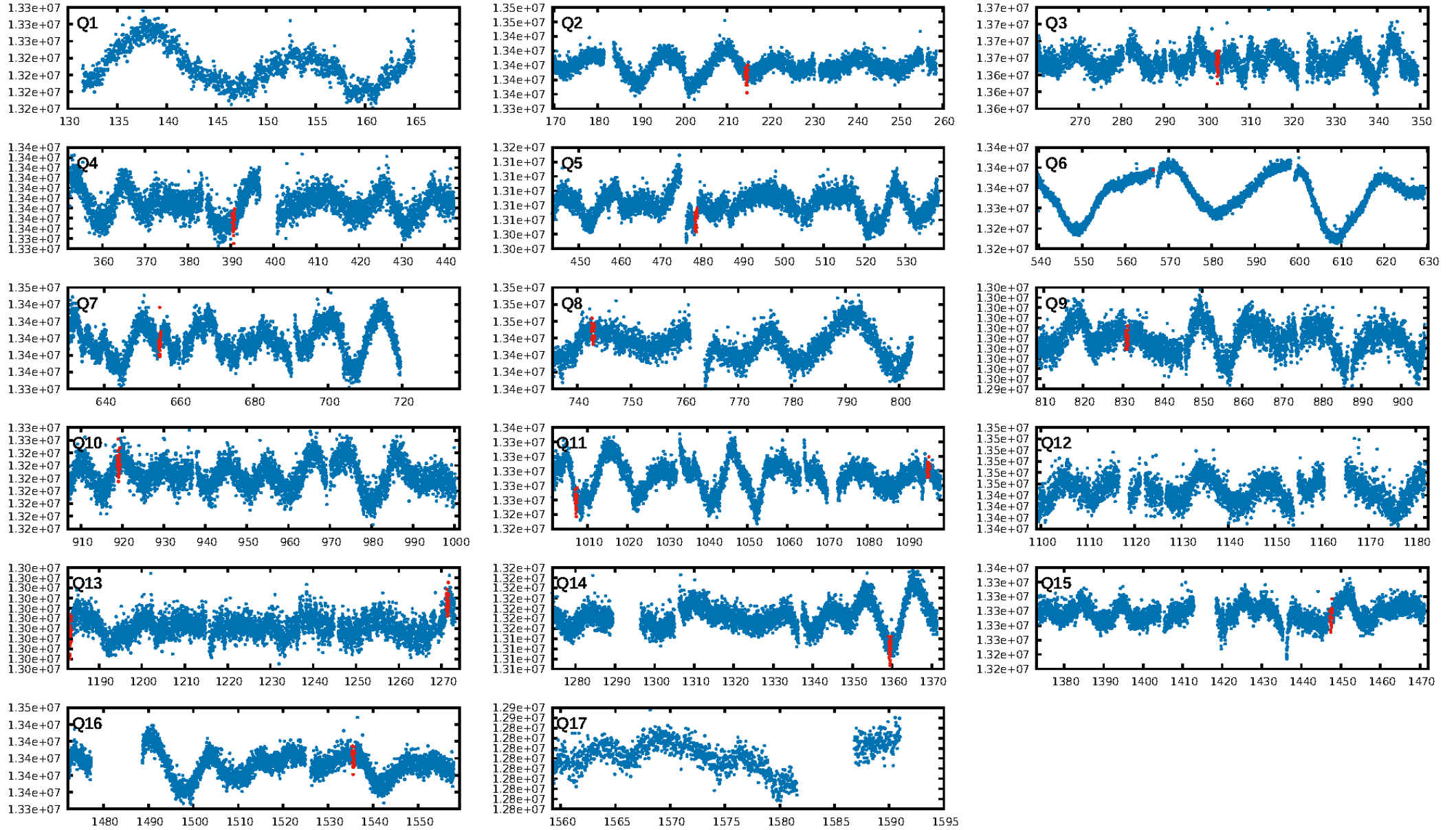
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [288.83σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 76.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.19e-26
RollingBand-fgt: 1.00 [15/15]
GhostDiagnostic-chr: -20.78
Centroid-sig: 0.0%
Centroid-so: 3.006 arcsec [3.14σ]
OotOffset-rm: 0.580 arcsec [1.46σ]
KicOffset-rm: 0.693 arcsec [1.46σ]
OotOffset-st: 2/4/3/2 [11]
KicOffset-st: 2/4/3/2 [11]
DiffImageQuality-fgm: 0.64 [7/11]
DiffImageOverlap-fno: 0.00 [0/13]

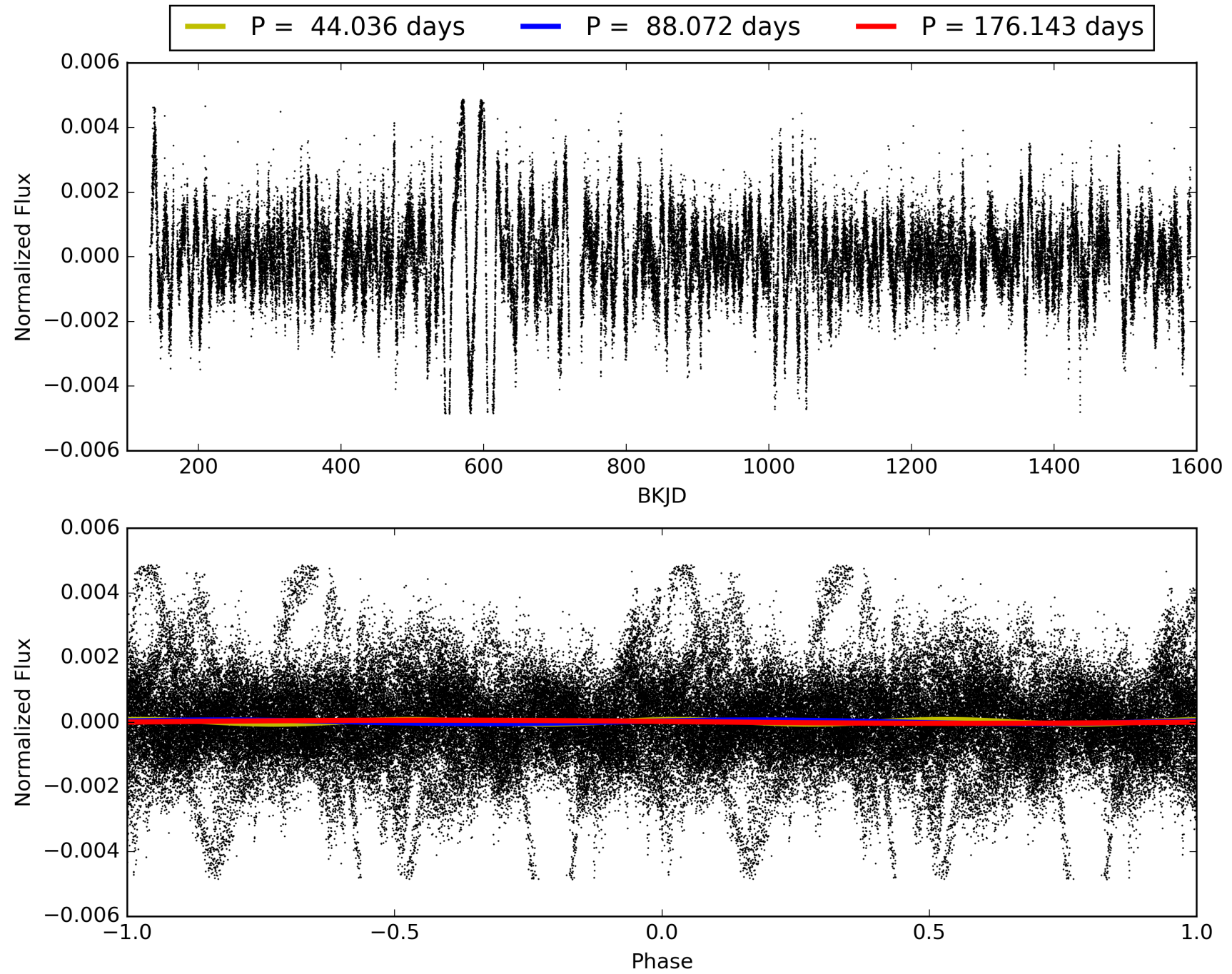
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:41:02 Z

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

TCE 009832208-01, PDC Light Curves

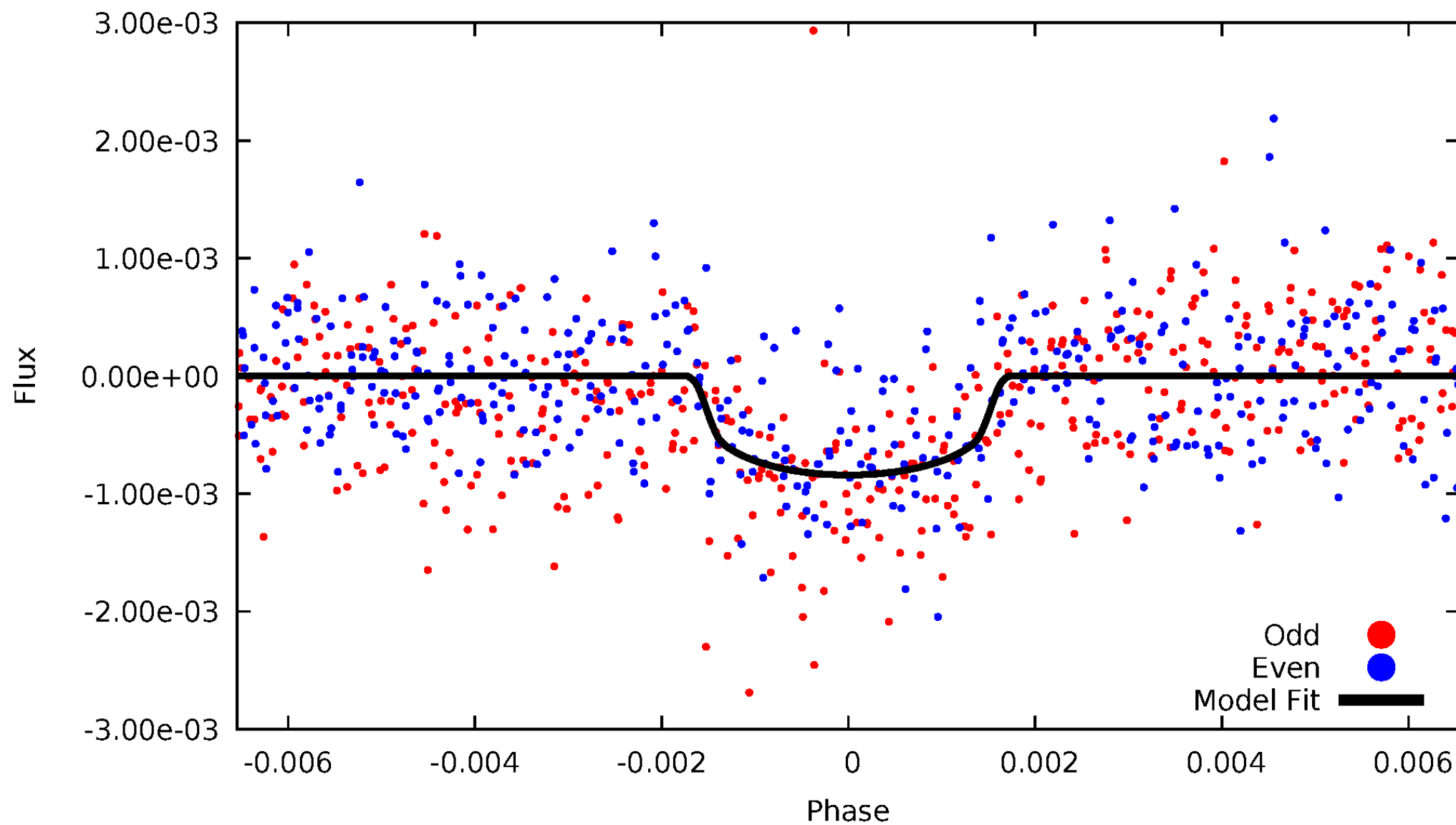


TCE 009832208-01



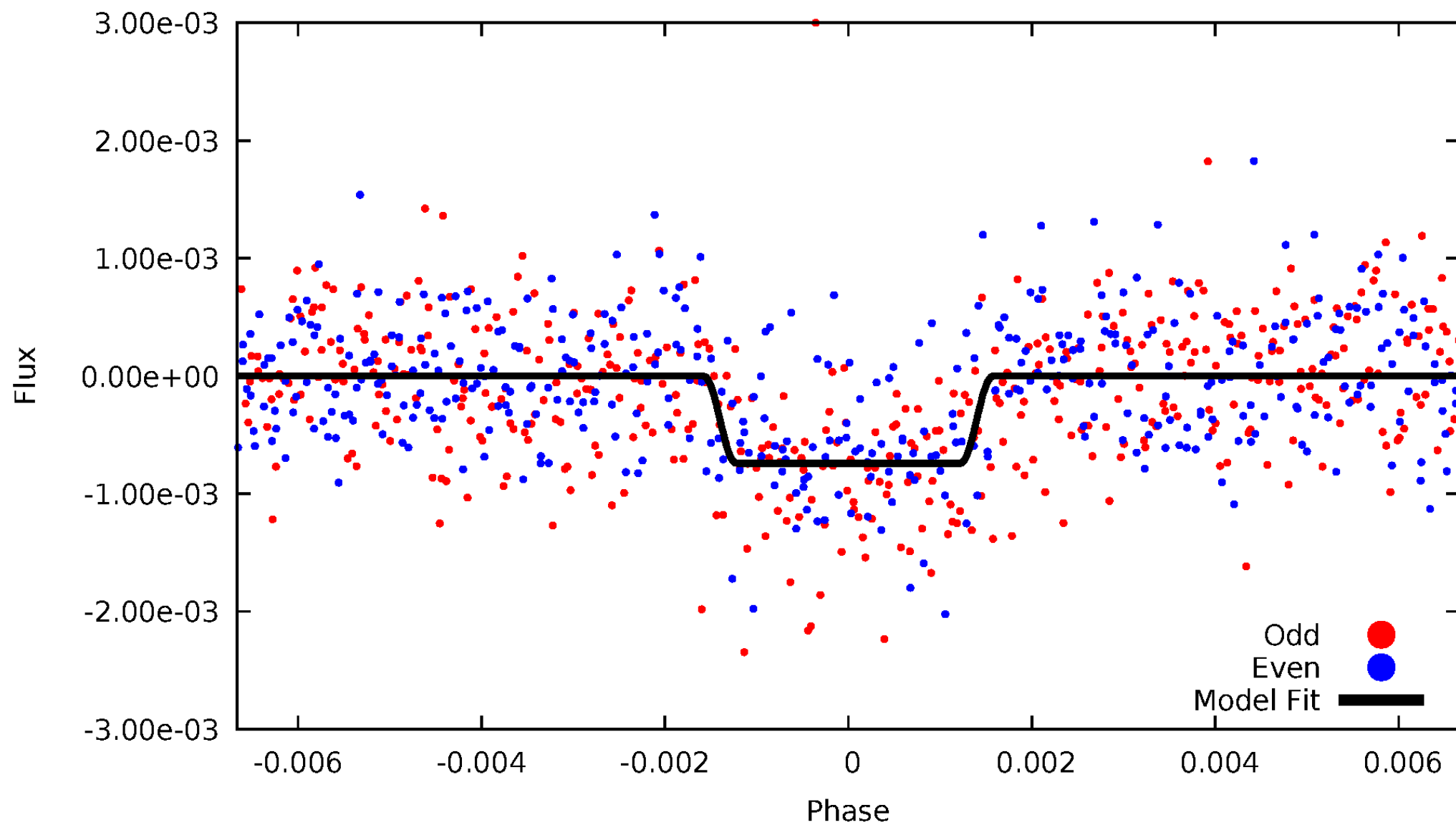
DV Odd/Even

TCE 009832208-01



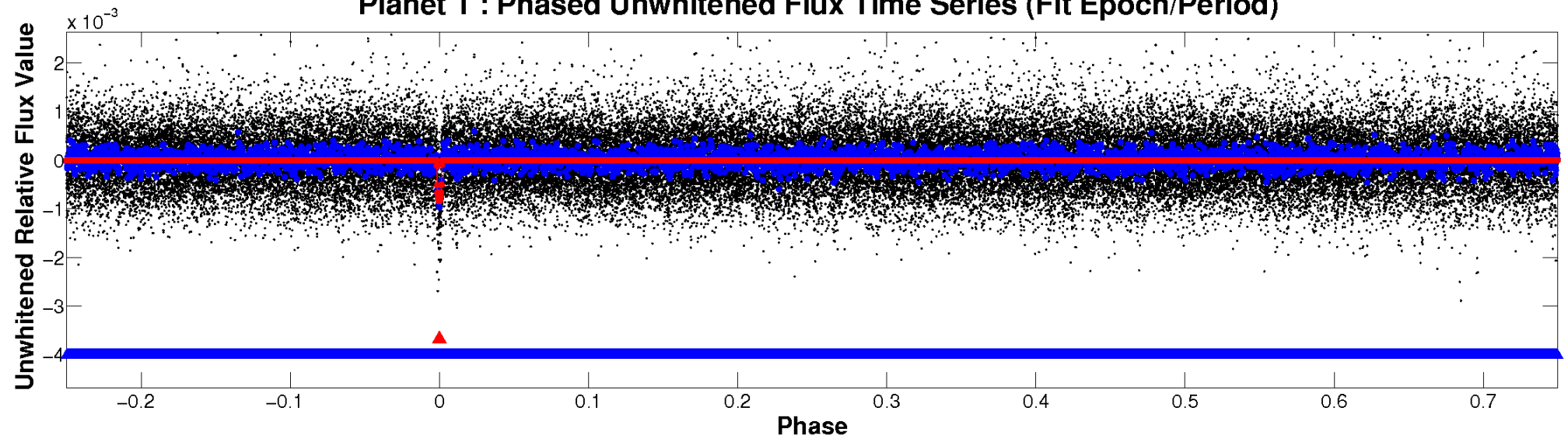
ALT Odd/Even

TCE 009832208-01

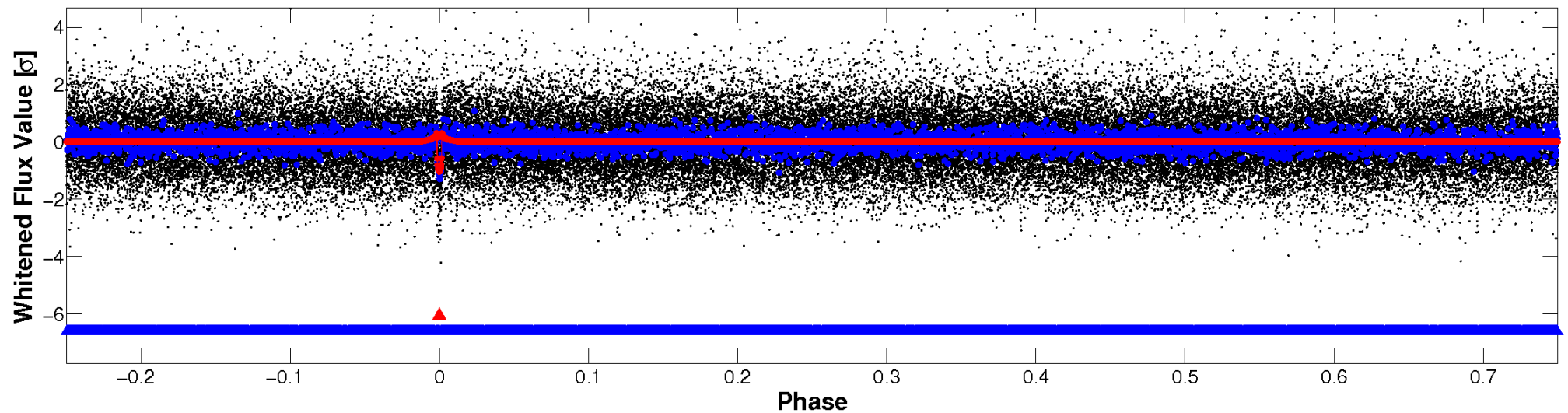


Non-Whitened Vs. Whitened Light Curve

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

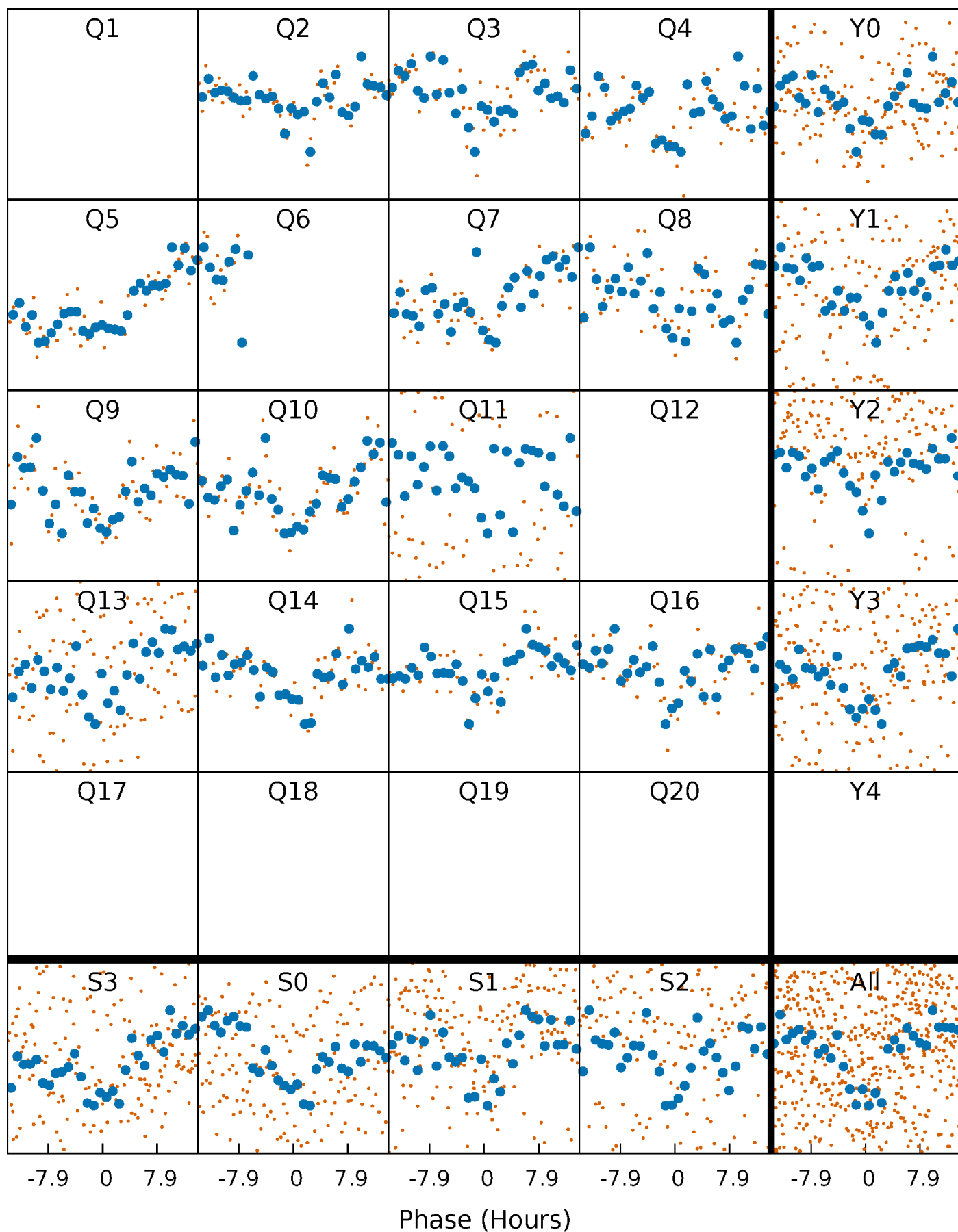


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



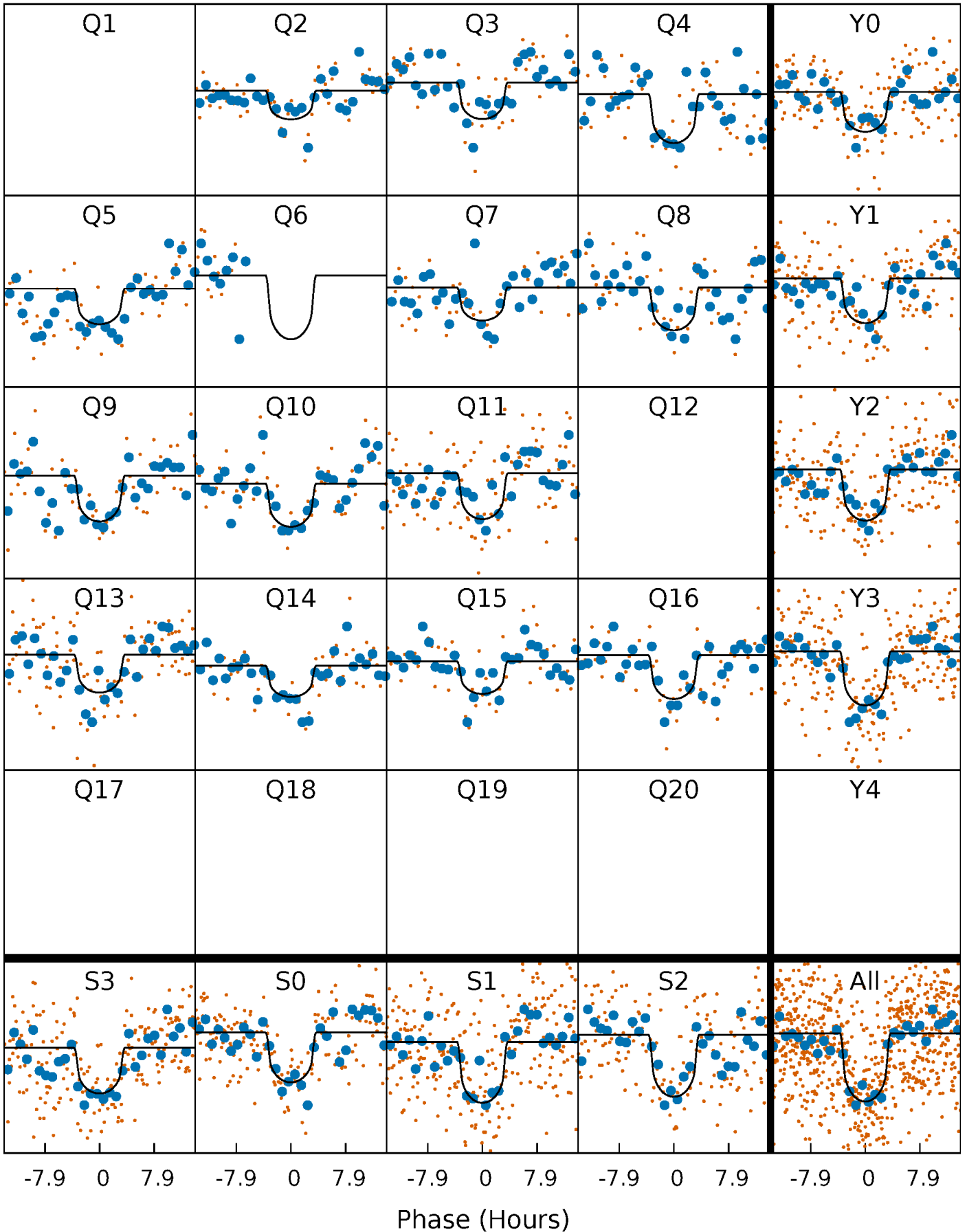
PDC Quarter-Phased Transit Curves

TCE 009832208-01 P= 88.071608 Days $T_0=214.512560$ (BKJD)



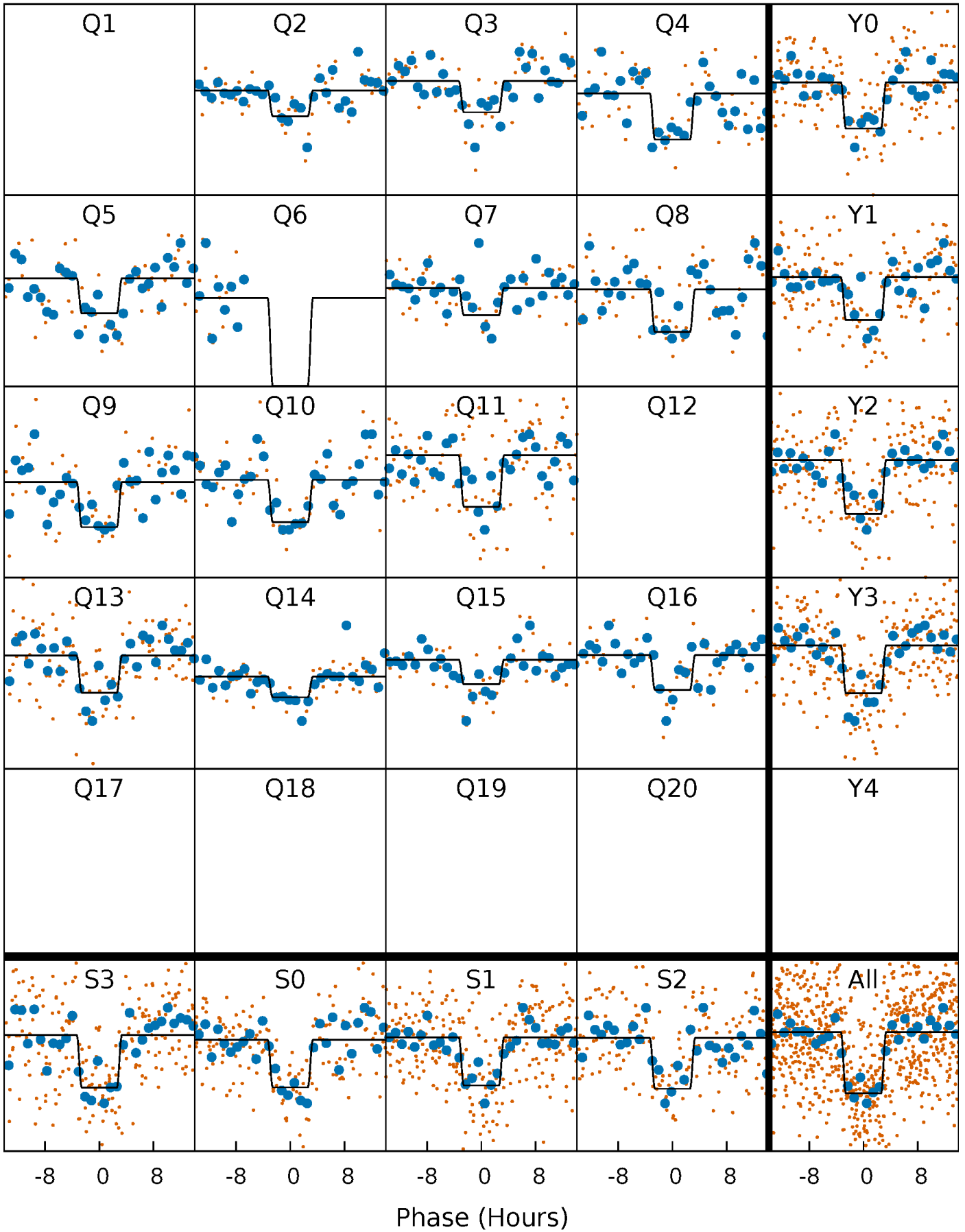
DV Quarter-Phased Transit Curves

TCE 009832208-01 P= 88.071608 Days $T_0=214.512560$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

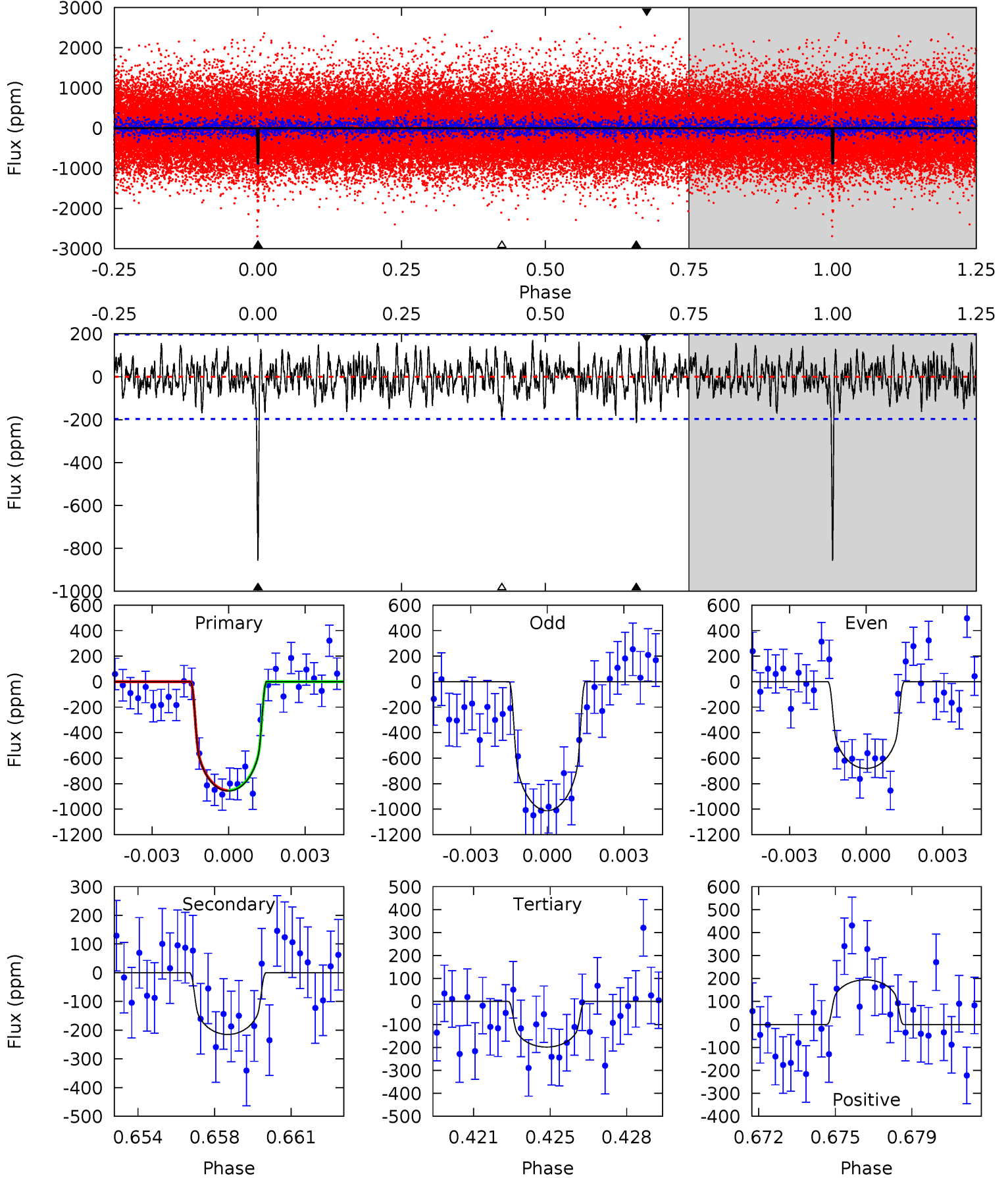
TCE 009832208-01 P= 88.072974 Days $T_0=214.504082$ (BKJD)



DV Model-Shift Uniqueness Test

009832208-01, P = 88.071608 Days, E = 126.440952 Days

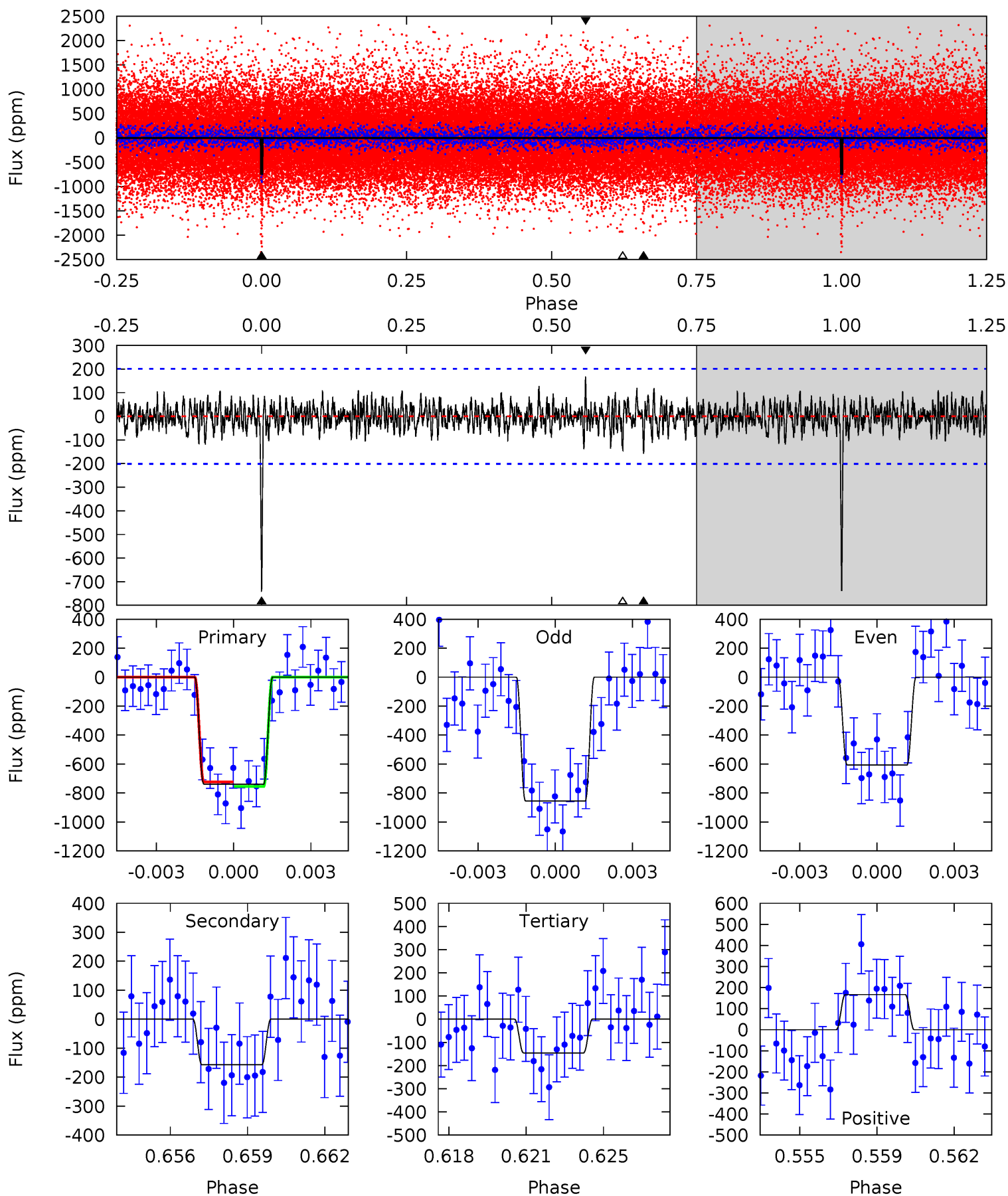
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	5.69	5.26	5.14	5.23	2.92	1.64	17.4	17.6	0.43	0.55	4.40	1.01	0.18	0.01



Alt Model-Shift Uniqueness Test

009832208-01, P = 88.072974 Days, E = 126.431108 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	4.11	3.80	4.35	5.24	2.95	1.09	15.5	14.9	0.31	-0.24	3.24	1.00	0.18	0.40



Stellar Parameters For KIC 009832208

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4939^{+79}_{-79}	$4.506^{+0.072}_{-0.022}$	$0.160^{+0.150}_{-0.150}$	$0.819^{+0.032}_{-0.055}$	$0.785^{+0.053}_{-0.028}$	$2.013^{+0.512}_{-0.187}$
	+2%/-2%	+2%/-0%	+94%/-94%	+4%/-7%	+7%/-4%	+25%/-9%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009832208-01 / KOI 2553.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-215 ± 38	$2.52^{+0.92}_{-0.89}$	458^{+10}_{-11}	3844^{+680}_{-413}	2388^{+3597}_{-1149}
Alt.	-158 ± 38	$2.44^{+1.01}_{-0.87}$	457^{+10}_{-11}	3690^{+714}_{-425}	1884^{+3251}_{-1021}

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 $A_{obs} \gg 1.0$

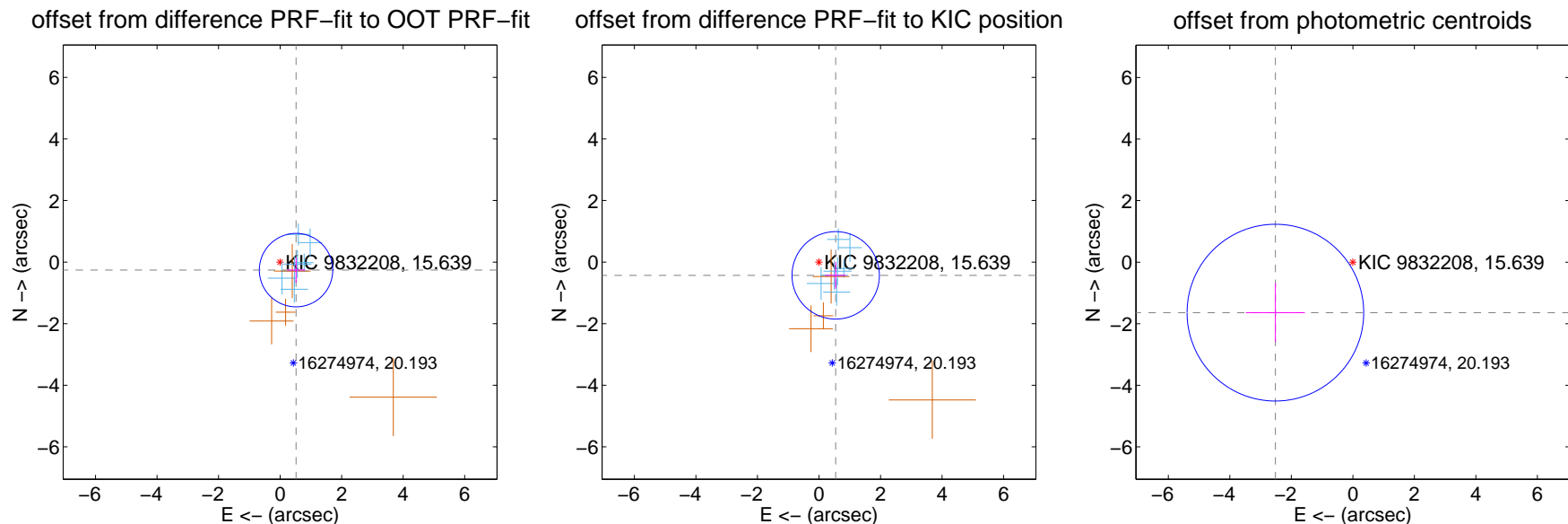
DV Centroid Data

Supplemental centroid analysis for 009832208-01. Kepler magnitude: 15.64. Transit SNR 13.01

There are 7 quarters with good PRF difference image offsets

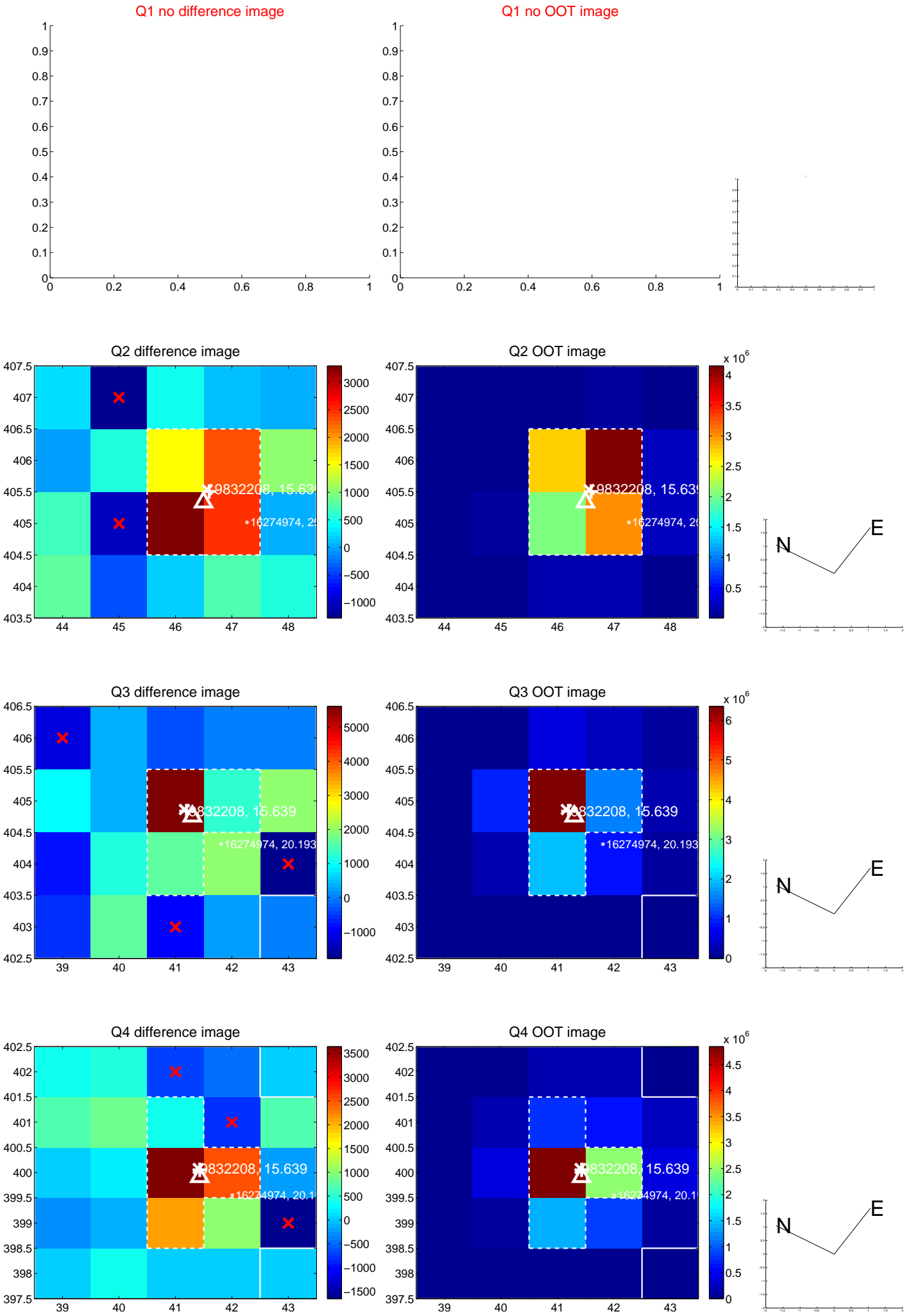
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.580 ± 0.398	1.46	-0.518 ± 0.294	-0.260 ± 0.409
PRF-fit source offset from KIC position	0.693 ± 0.473	1.46	-0.543 ± 0.337	-0.431 ± 0.434
photometric centroid source offset	3.01 ± 0.96	3.14	2.52 ± 0.96	-1.64 ± 0.96

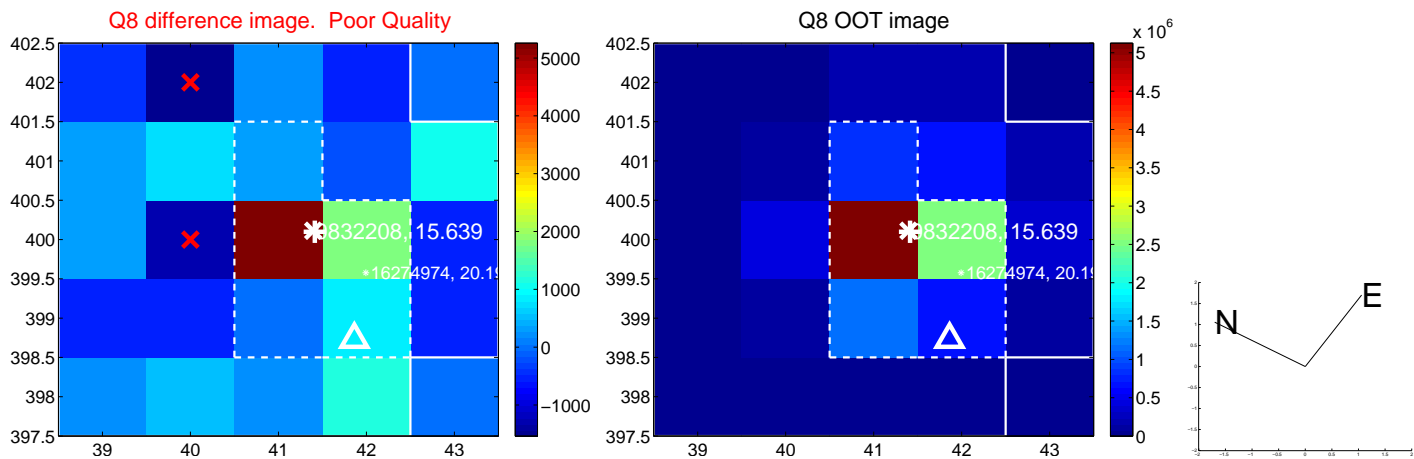
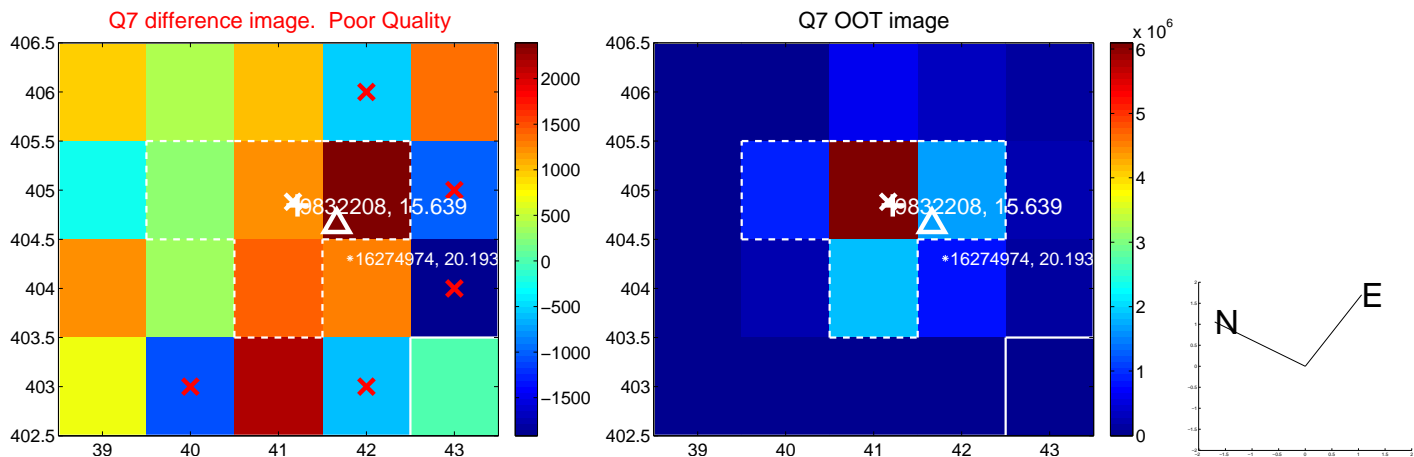
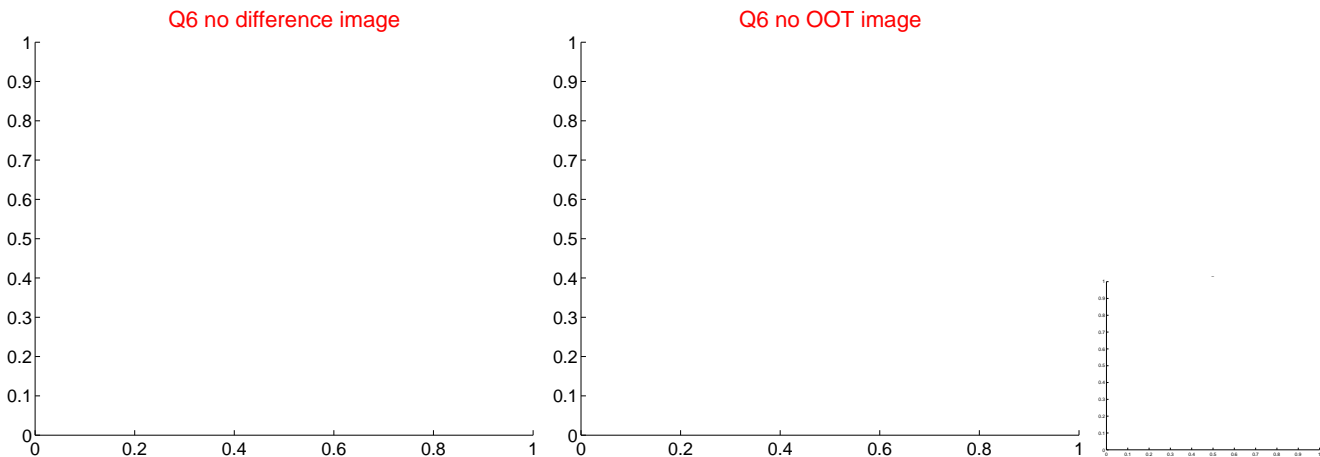
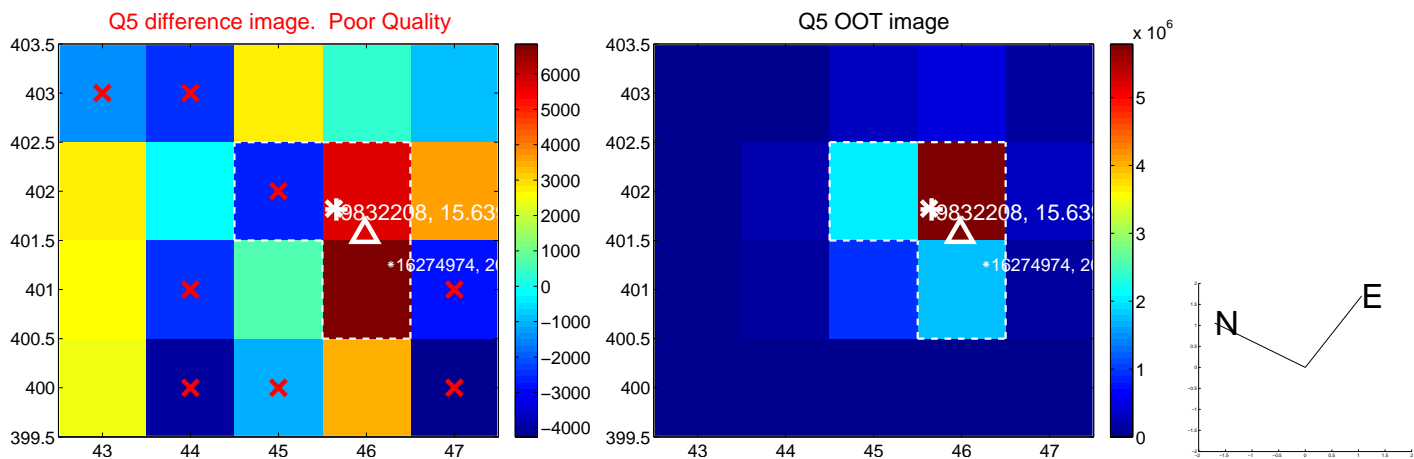


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

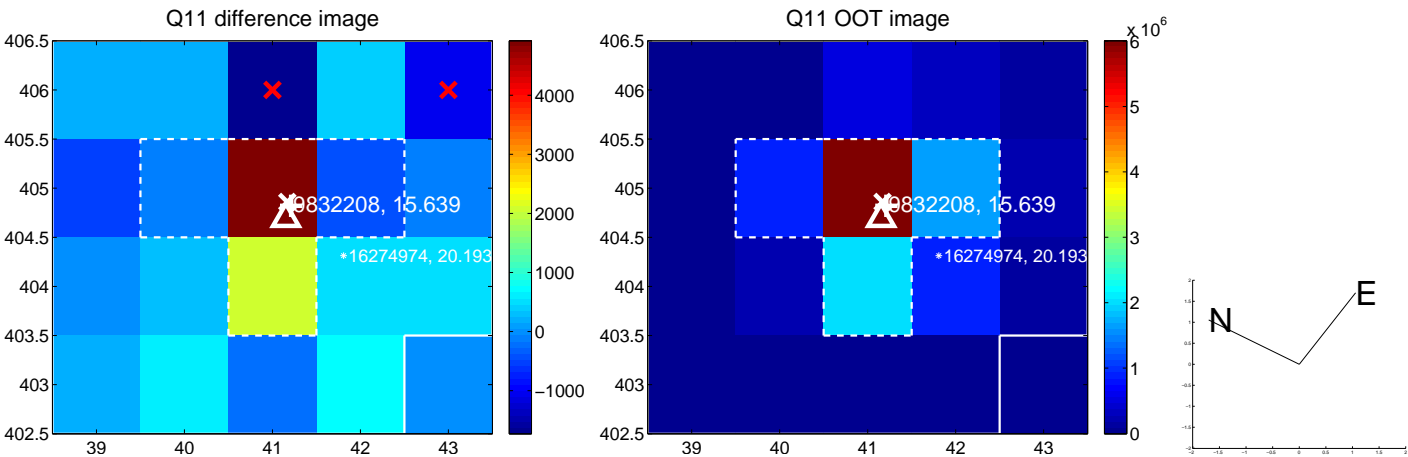
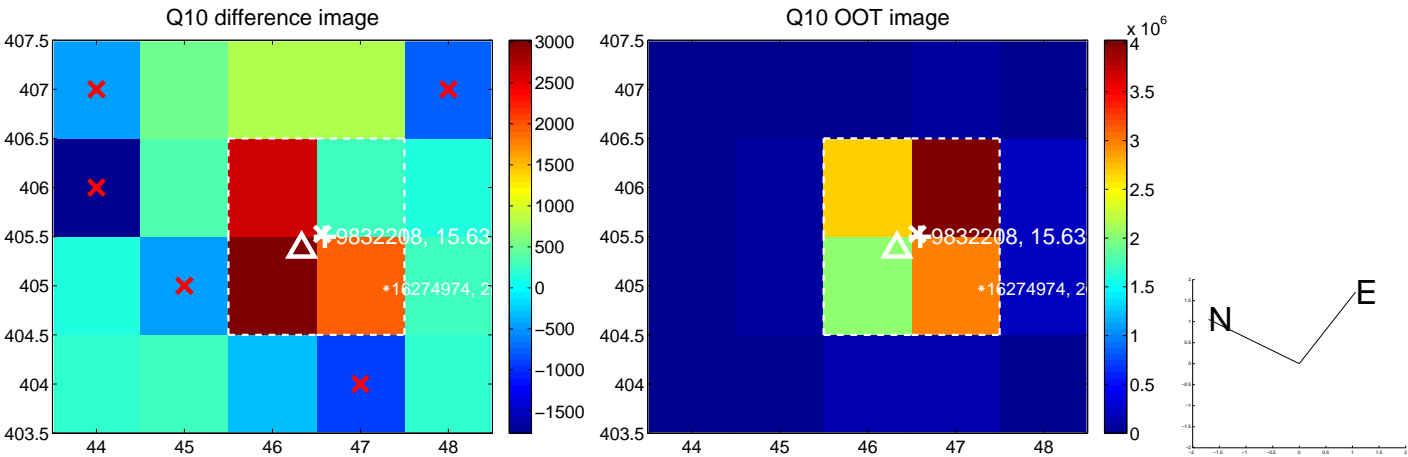
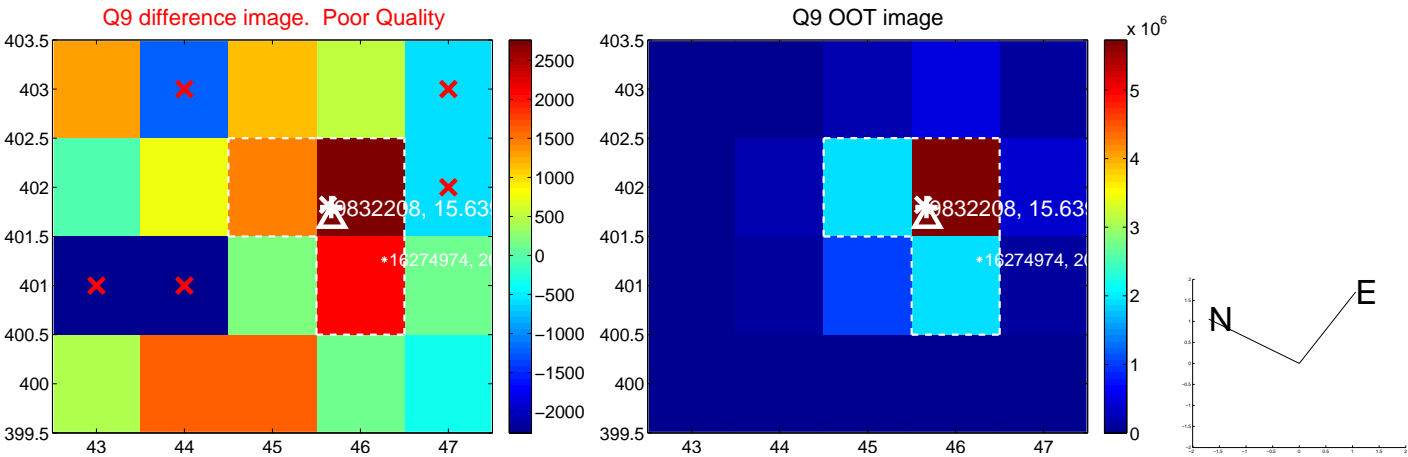
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



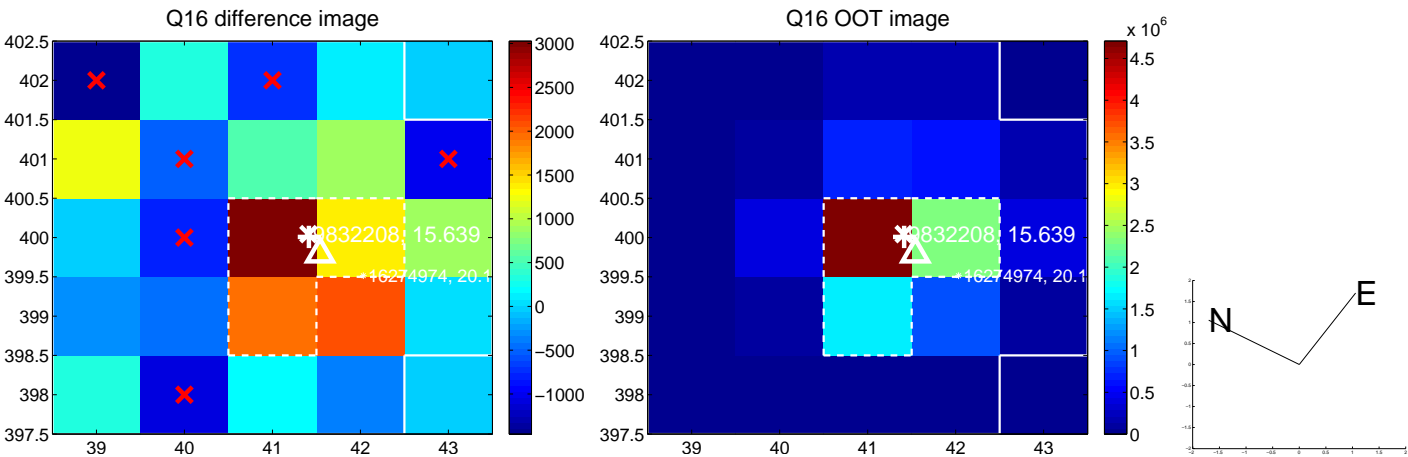
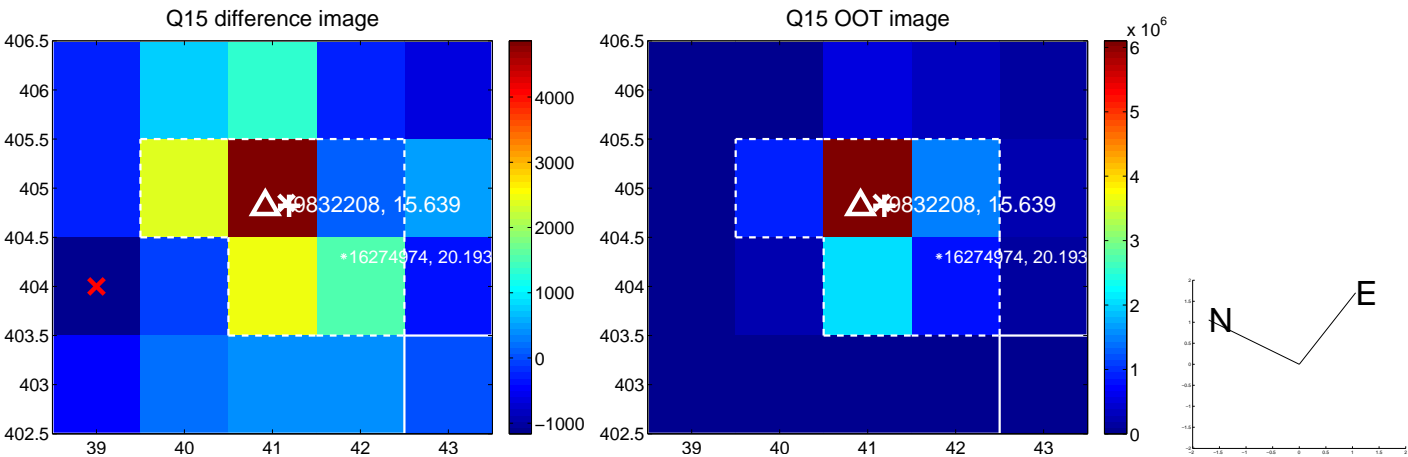
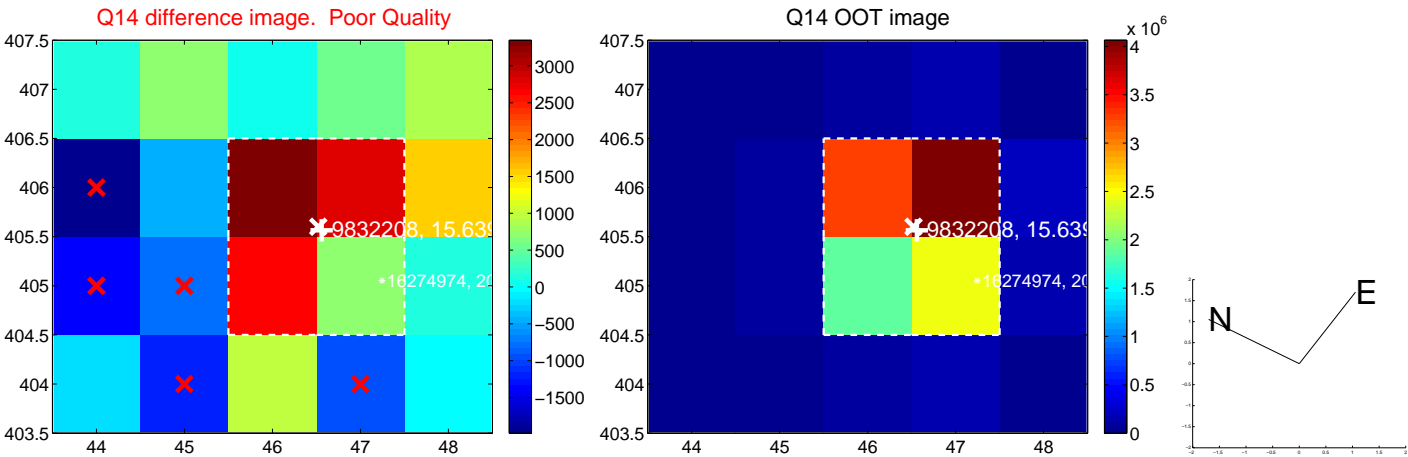
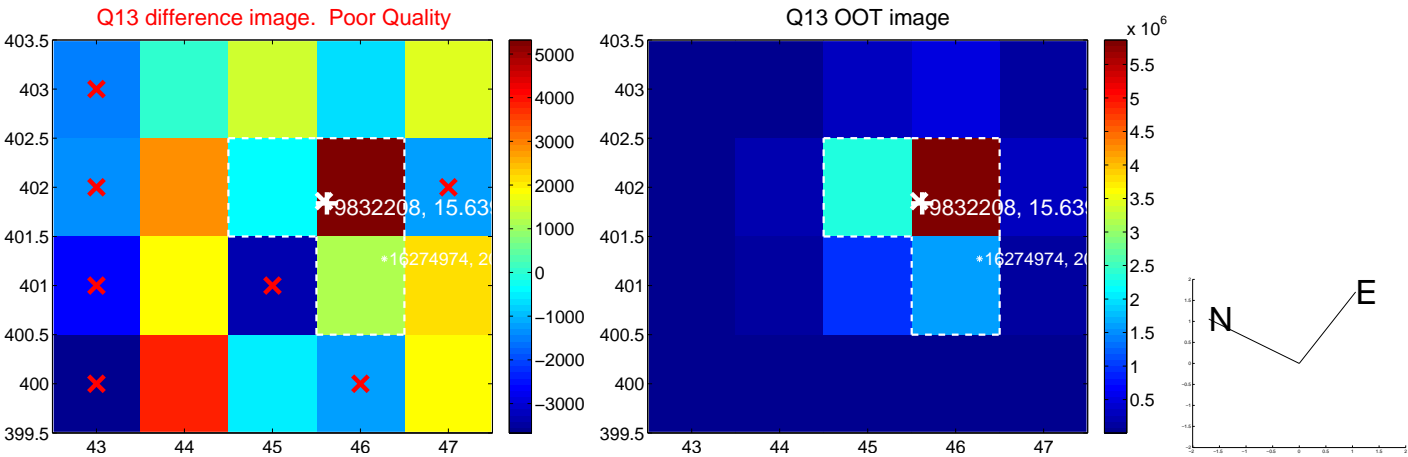
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



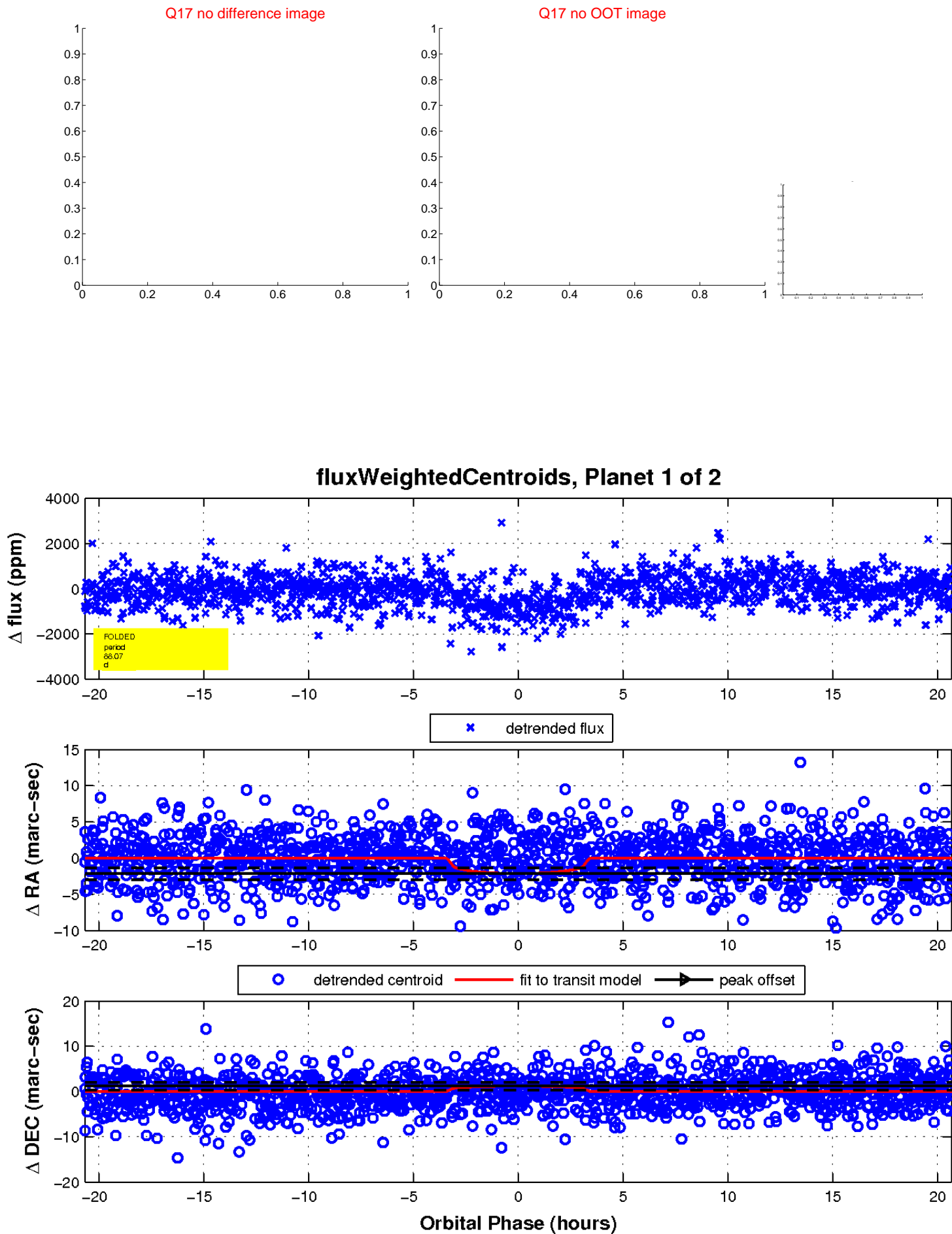
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

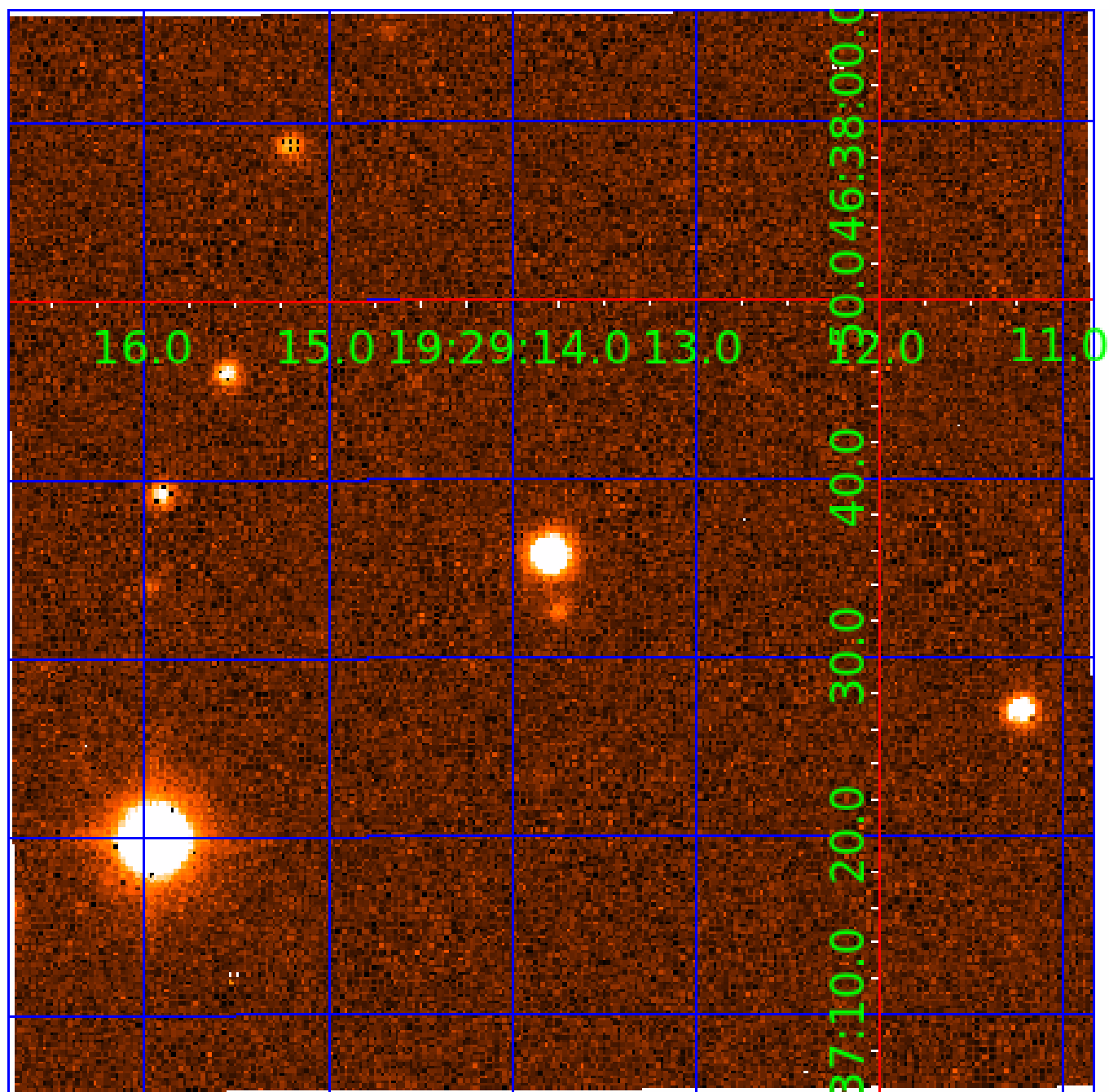


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009832208

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})
009832208-01	OBS	2553.01	88.071608	214.512560	840.9	6.916	12.0	13.0	0.82	4939	2.56	2.80
009832208-02	OBS	No	0.686916	131.712463	70.8	2.211	7.4	8.8	0.82	4939	0.85	1810.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009832208-01	OBS	PC	0.72	0	0	0	0	NO_COMMENT
009832208-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET

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.

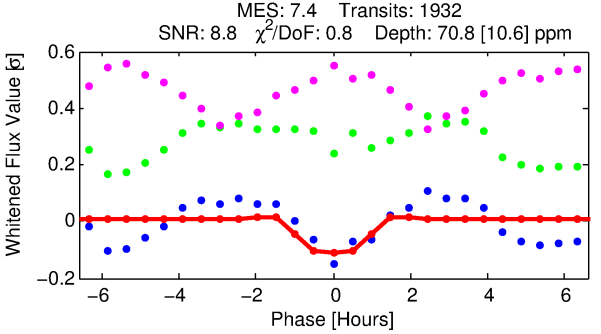
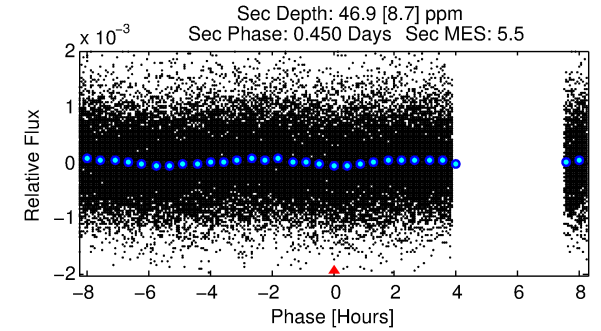
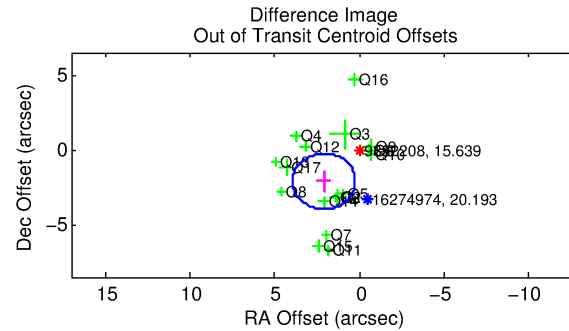
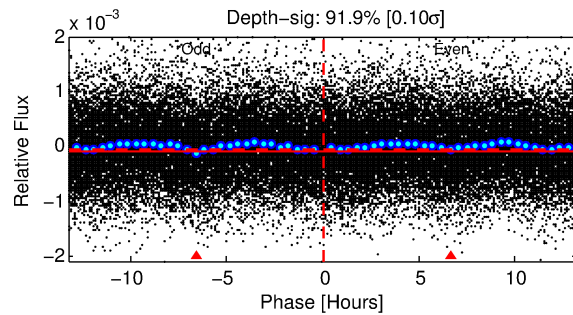
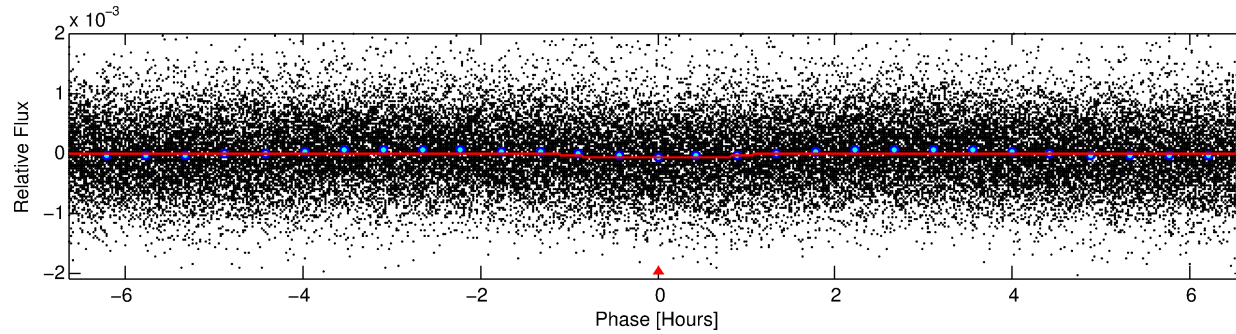
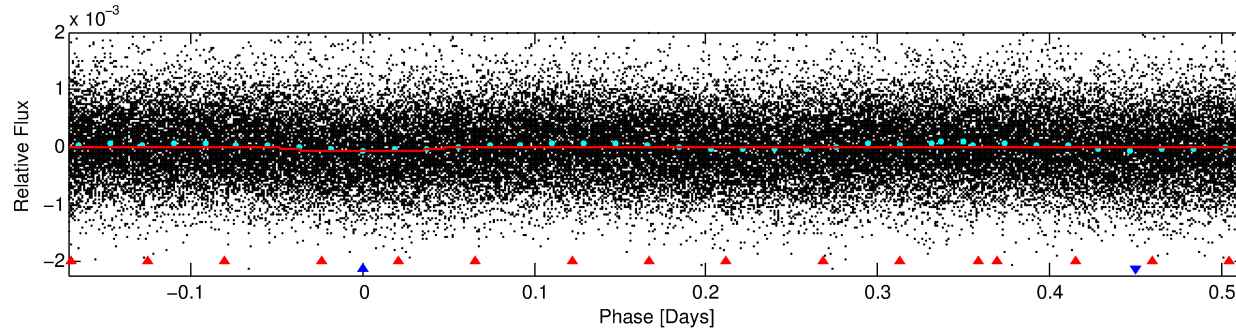
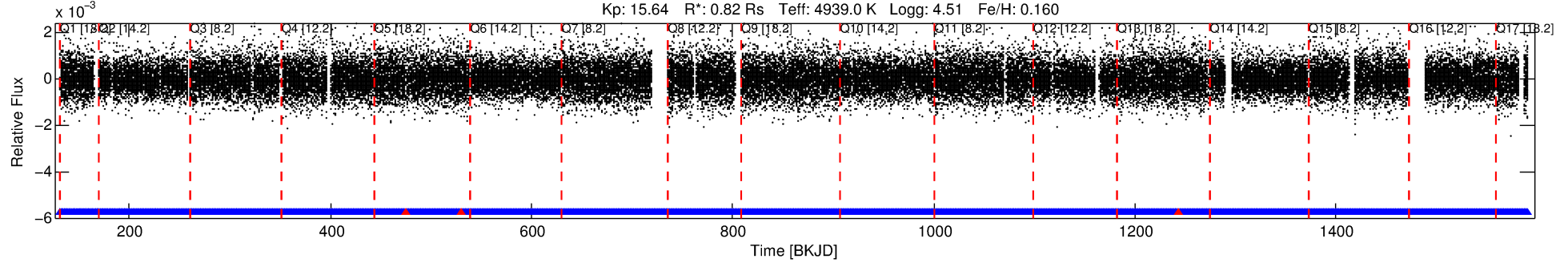
Ephemeris Match Information For 009832208-02

No Significant Match Found

DV One-Page Summary

KIC: 9832208 Candidate: 2 of 2 Period: 0.687 d
KOI: K02553 Corr: No Ephemeris Match

Kp: 15.64 R*: 0.82 Rs Teff: 4939.0 K Logg: 4.51 Fe/H: 0.160



DV Fit Results:

Period = 0.68692 [0.00001] d
Epoch = 131.7125 [0.0030] BKJD
Rp/R* = 0.0095 [0.0087]
a/R* = 1.42 [2.60]
b = 0.90 [0.75]
Seff = 1810.37 [244.99]
Teq = 1663 [56] K
Rp = 0.85 [0.78] Re
a = 0.0141 [0.0010] AU
Ag = 7.08 [13.03] [0.47σ]
Teffp = 4195 [1926] K [1.31σ]

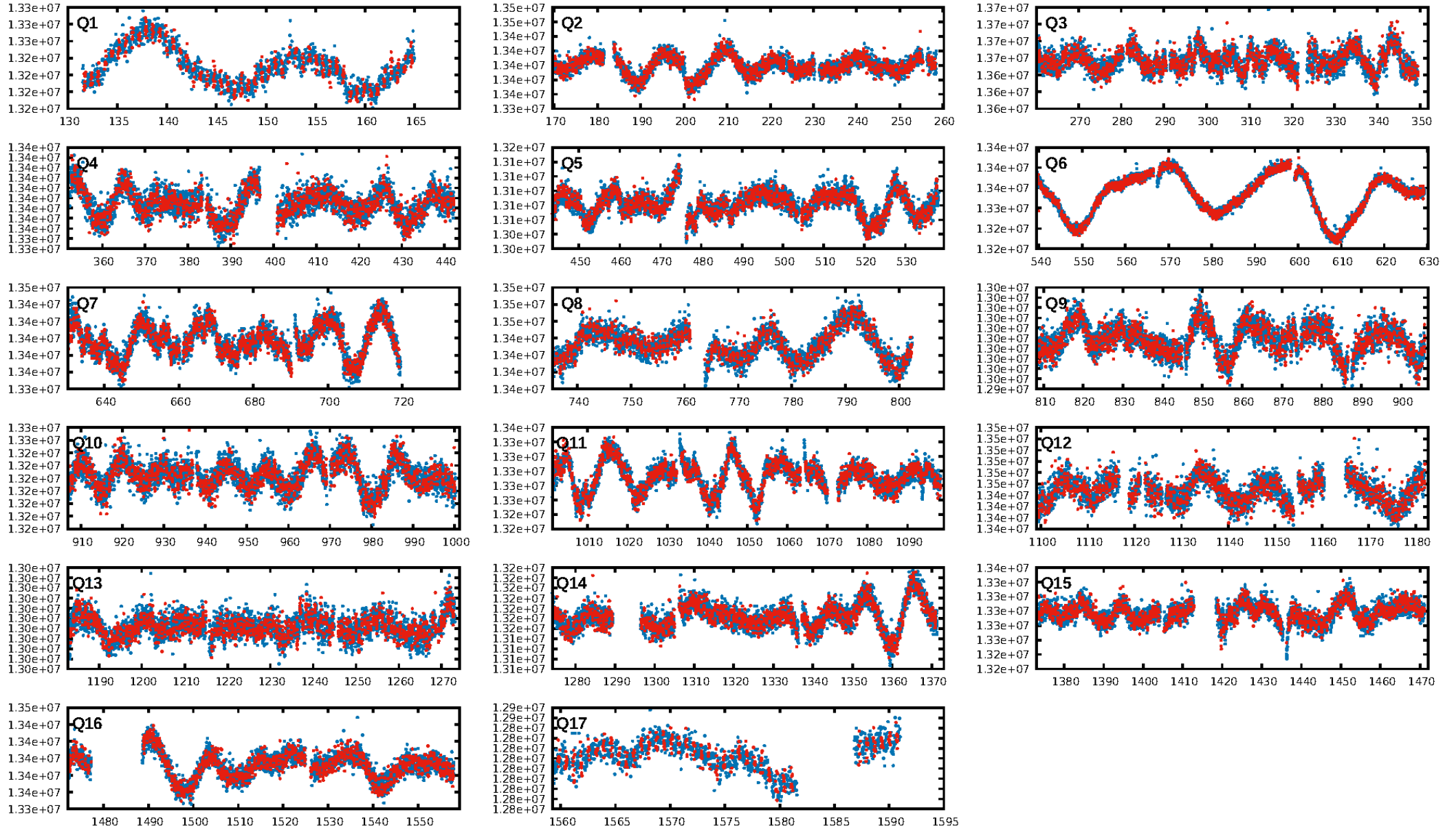
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [288.83σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.87e-13
RollingBand-fgt: 1.00 [1842/1845]
GhostDiagnostic-chr: -2.301
Centroid-sig: 0.1%
Centroid-so: 4.056 arcsec [2.52σ]
OotOffset-rm: 2.982 arcsec [4.81σ]
KicOffset-rm: 3.069 arcsec [4.71σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

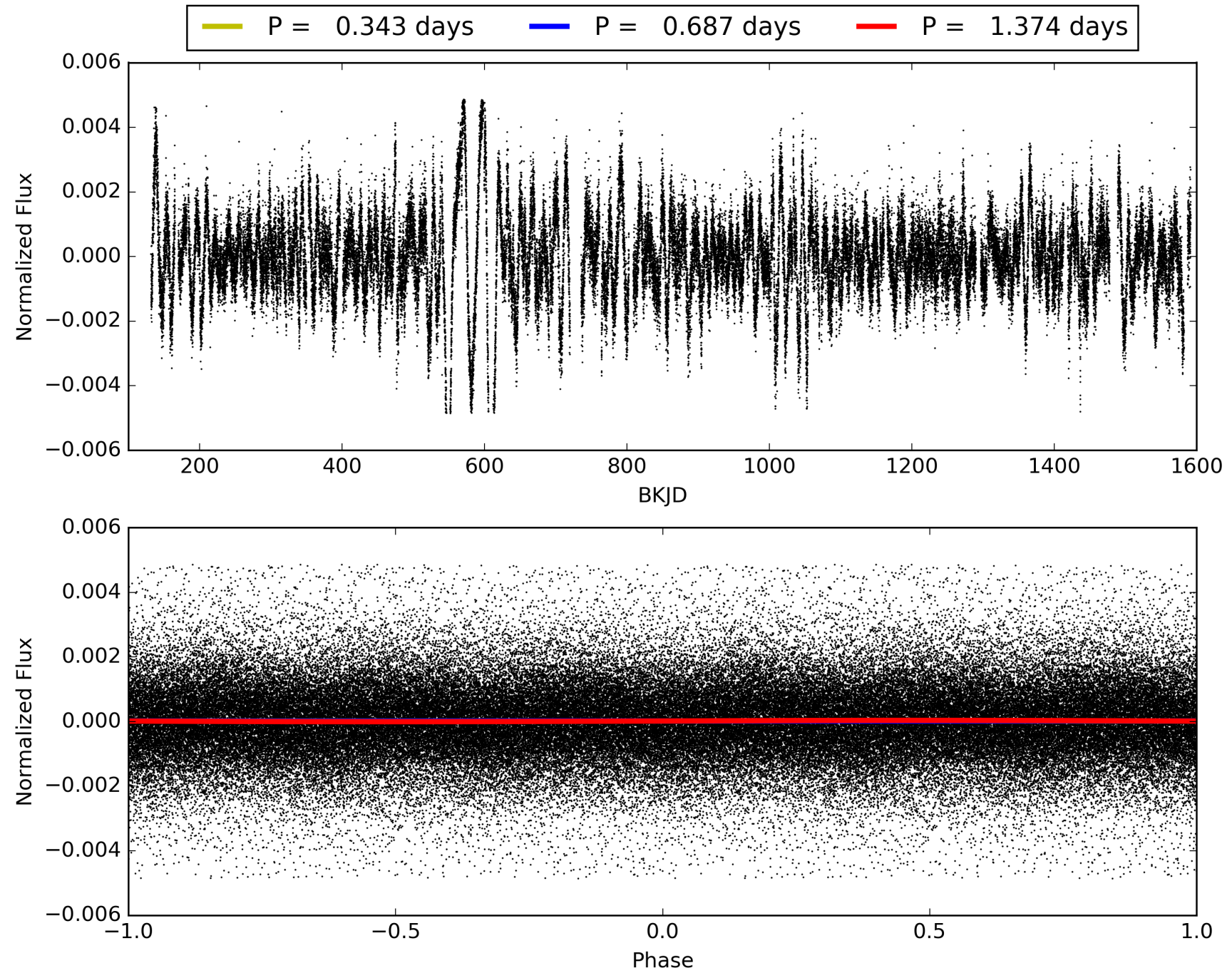
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:41:10 Z

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

TCE 009832208-02, PDC Light Curves

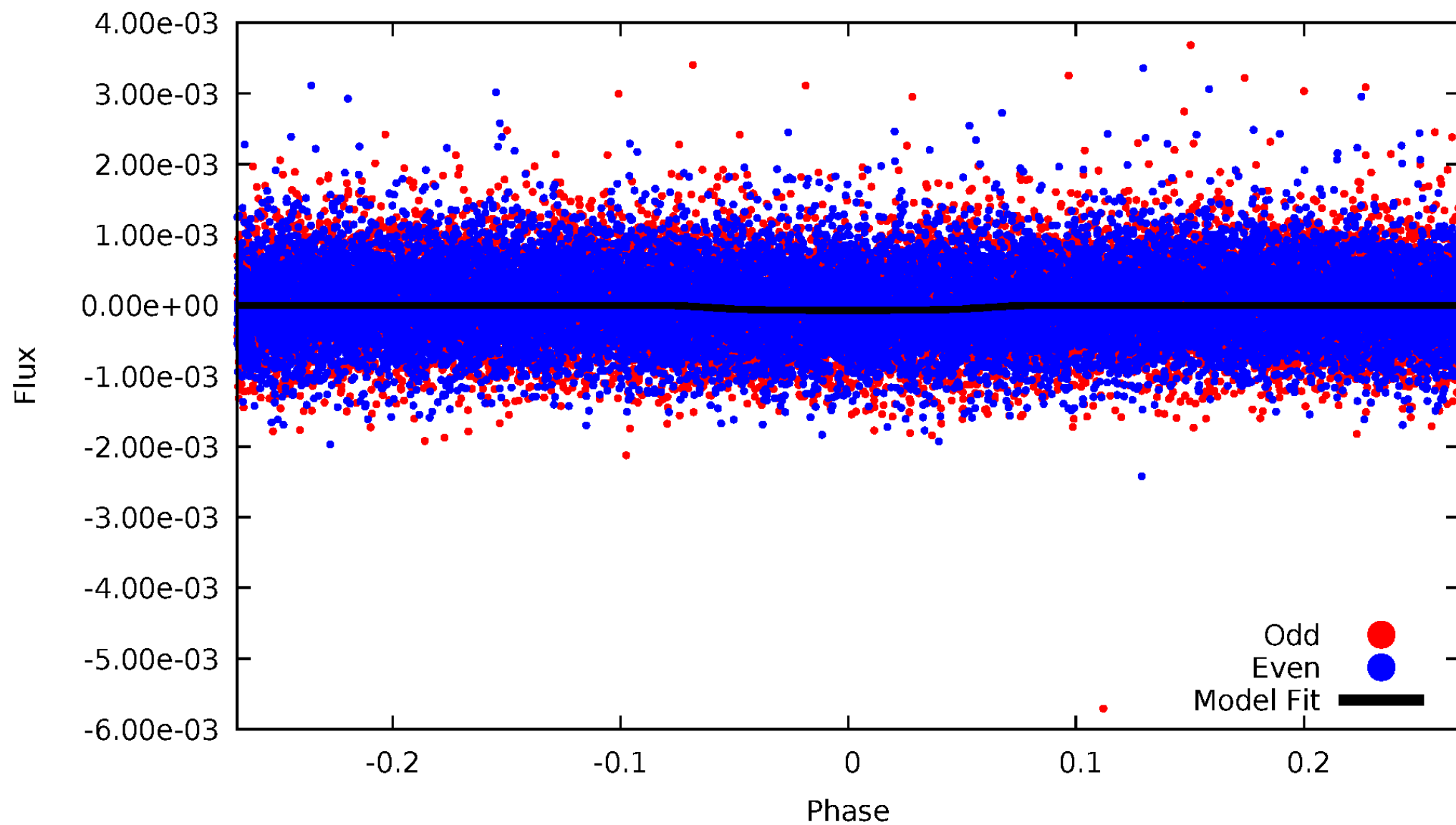


TCE 009832208-02



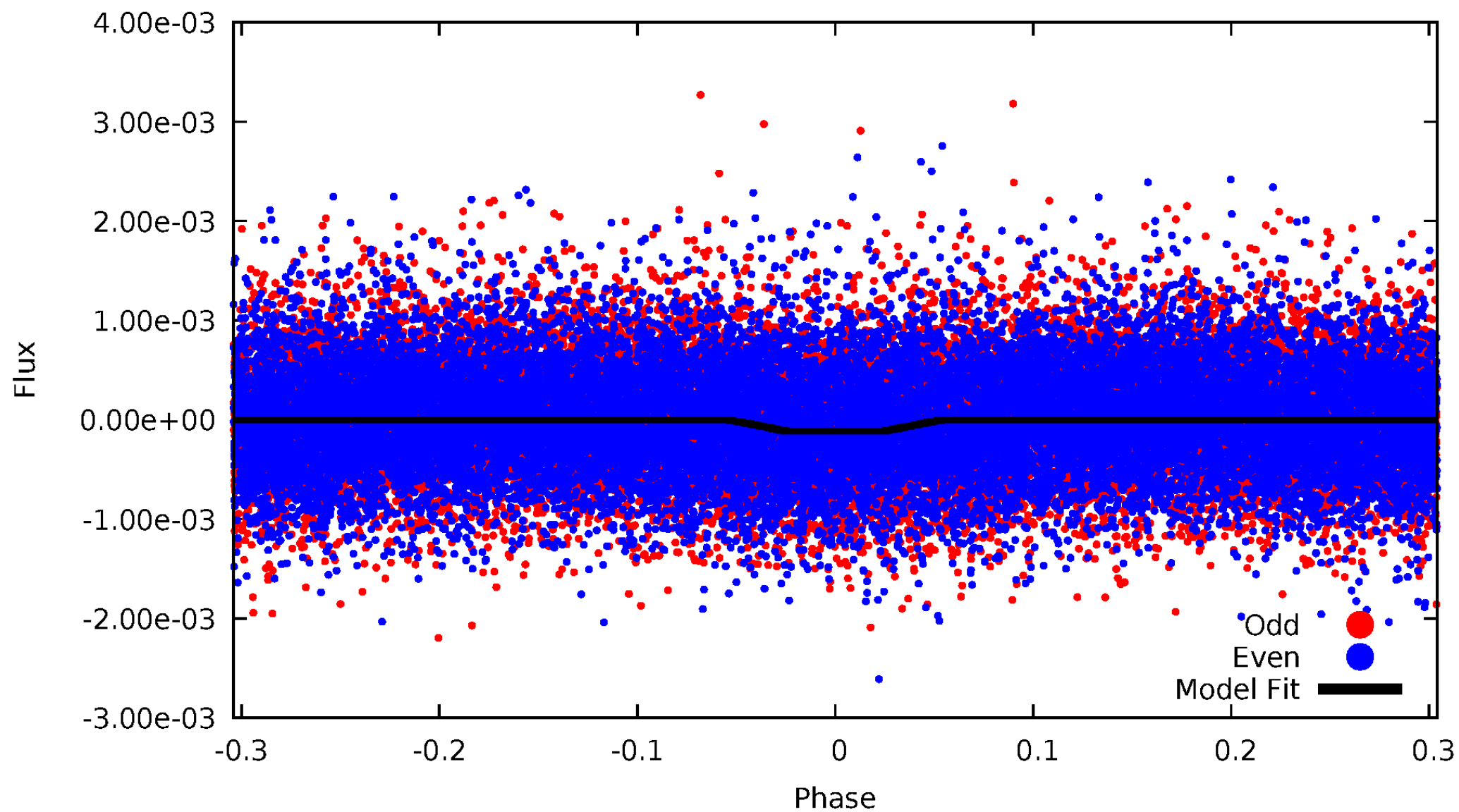
DV Odd/Even

TCE 009832208-02



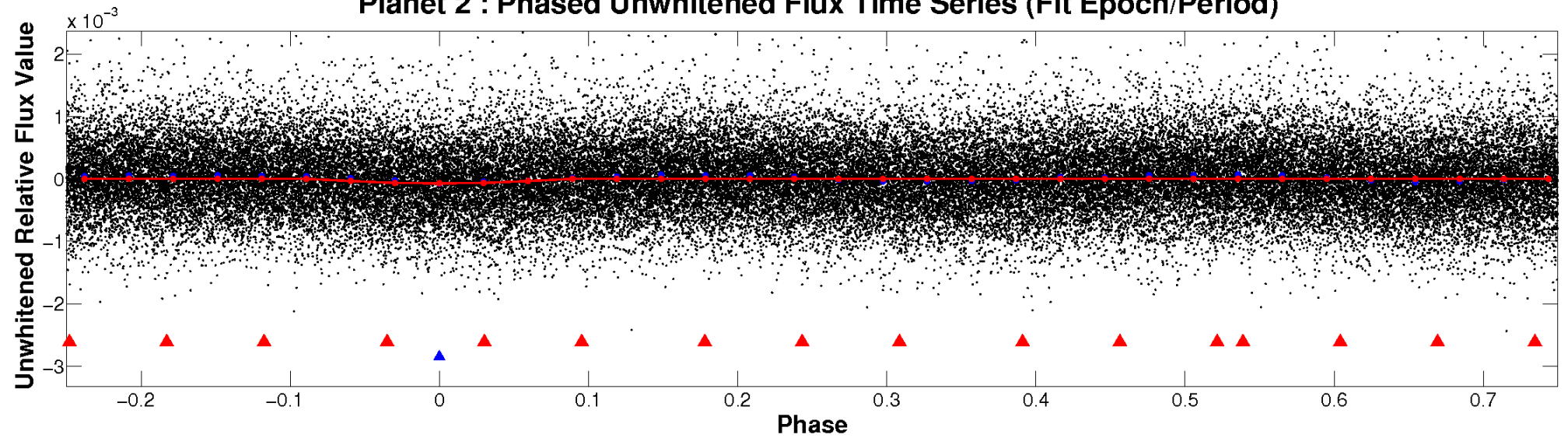
ALT Odd/Even

TCE 009832208-02

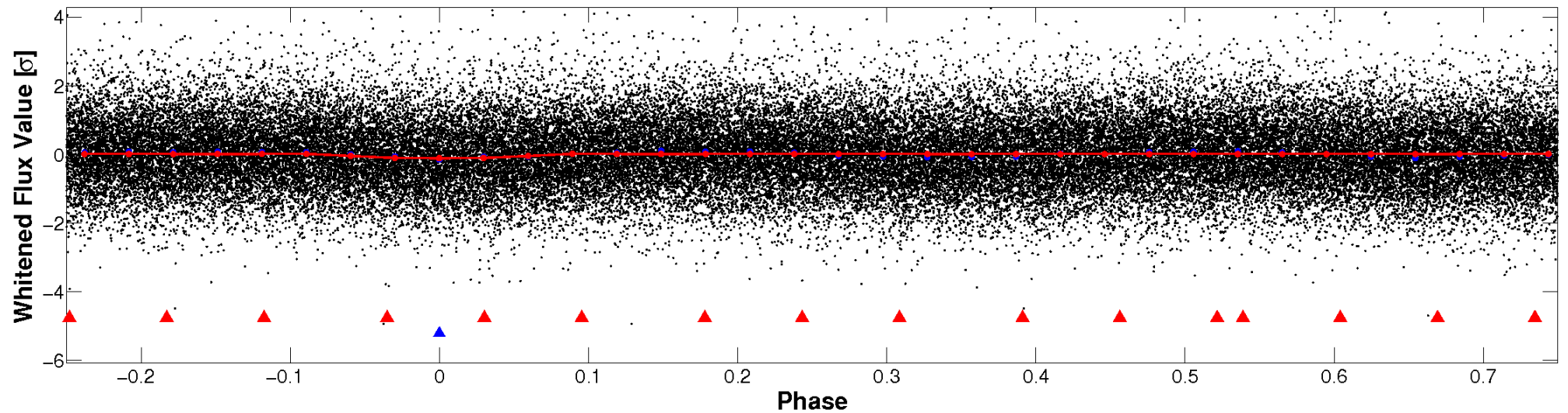


Non-Whitened Vs. Whitened Light Curve

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

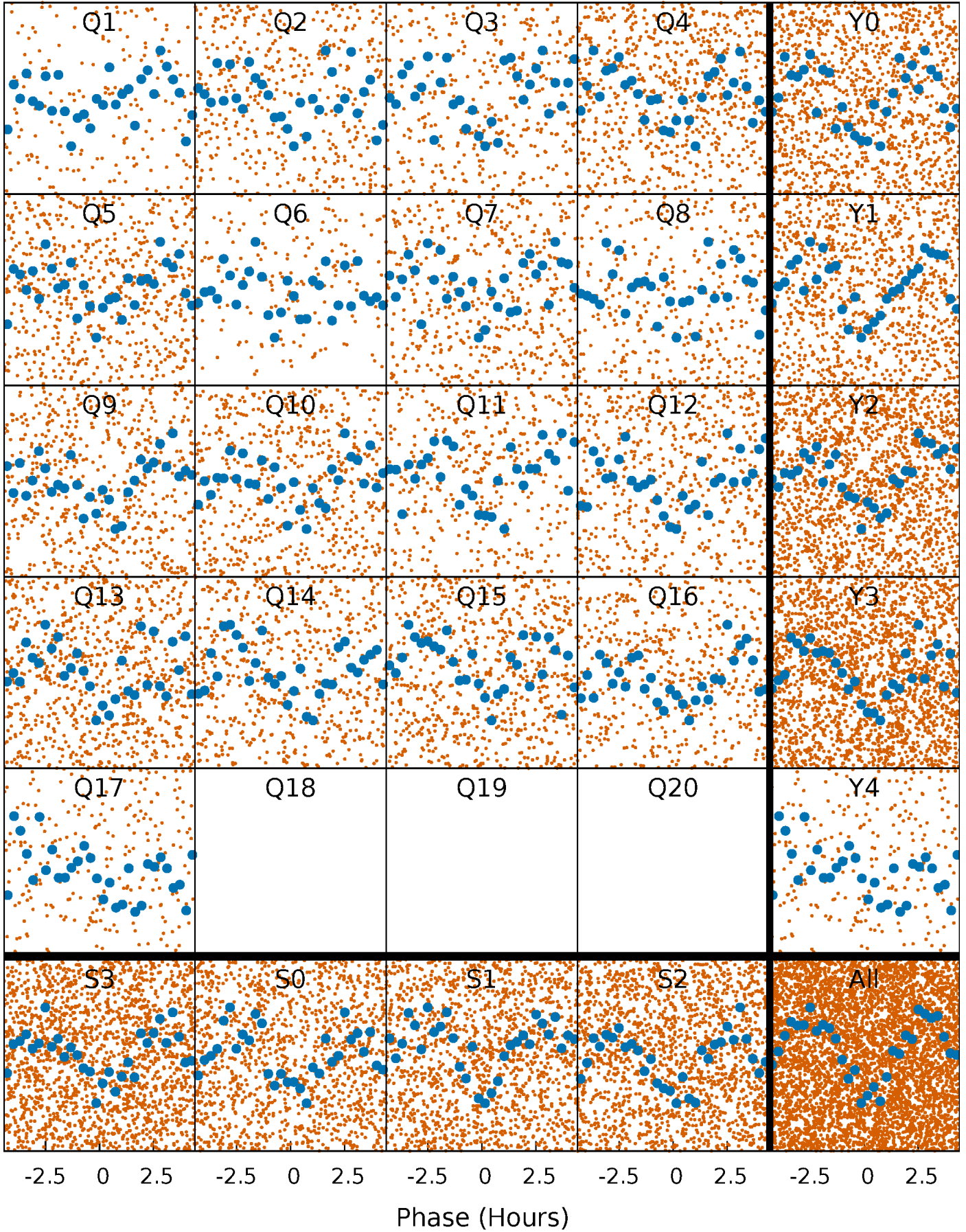


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



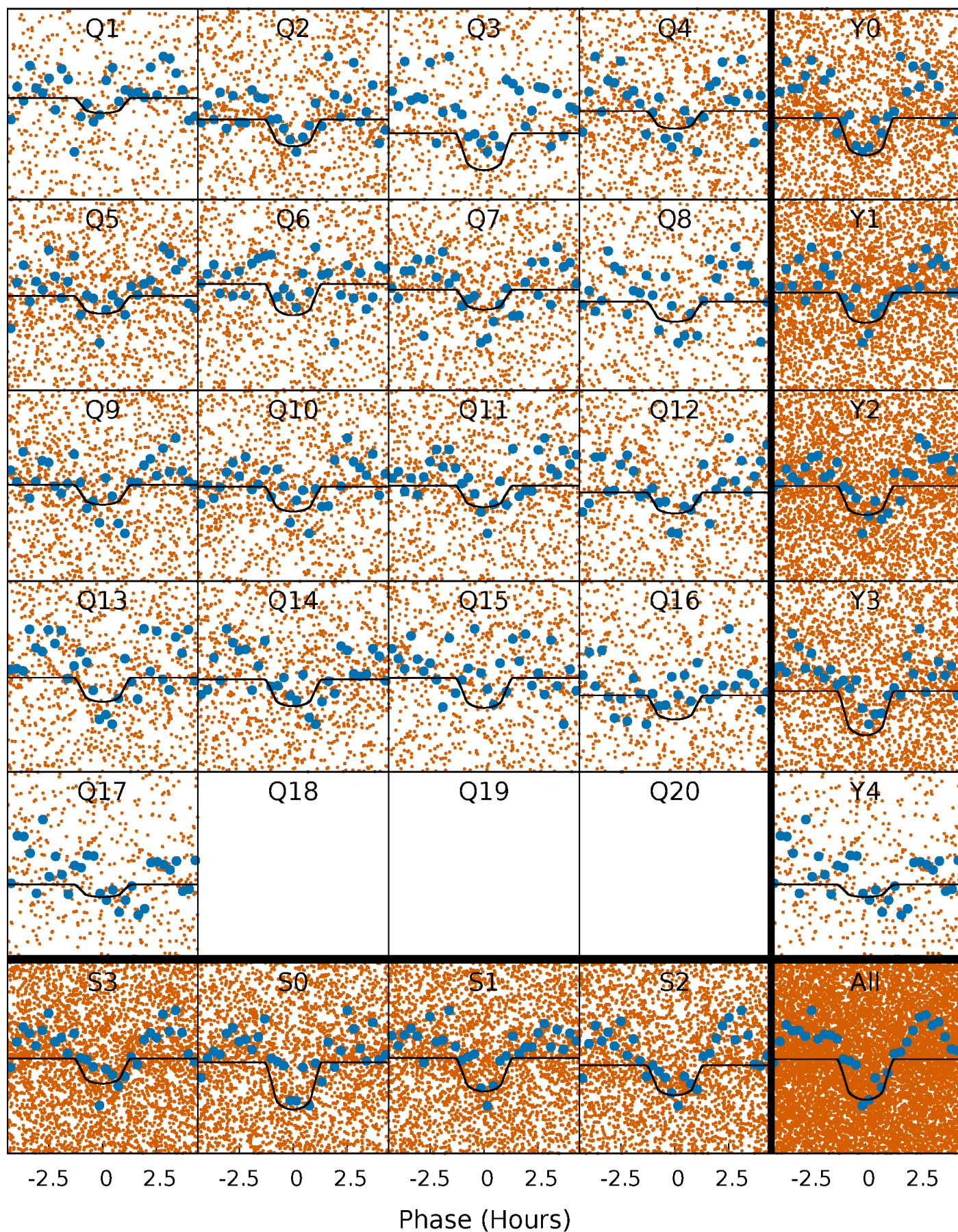
PDC Quarter-Phased Transit Curves

TCE 009832208-02 P= 0.686916 Days $T_0=131.712463$ (BKJD)



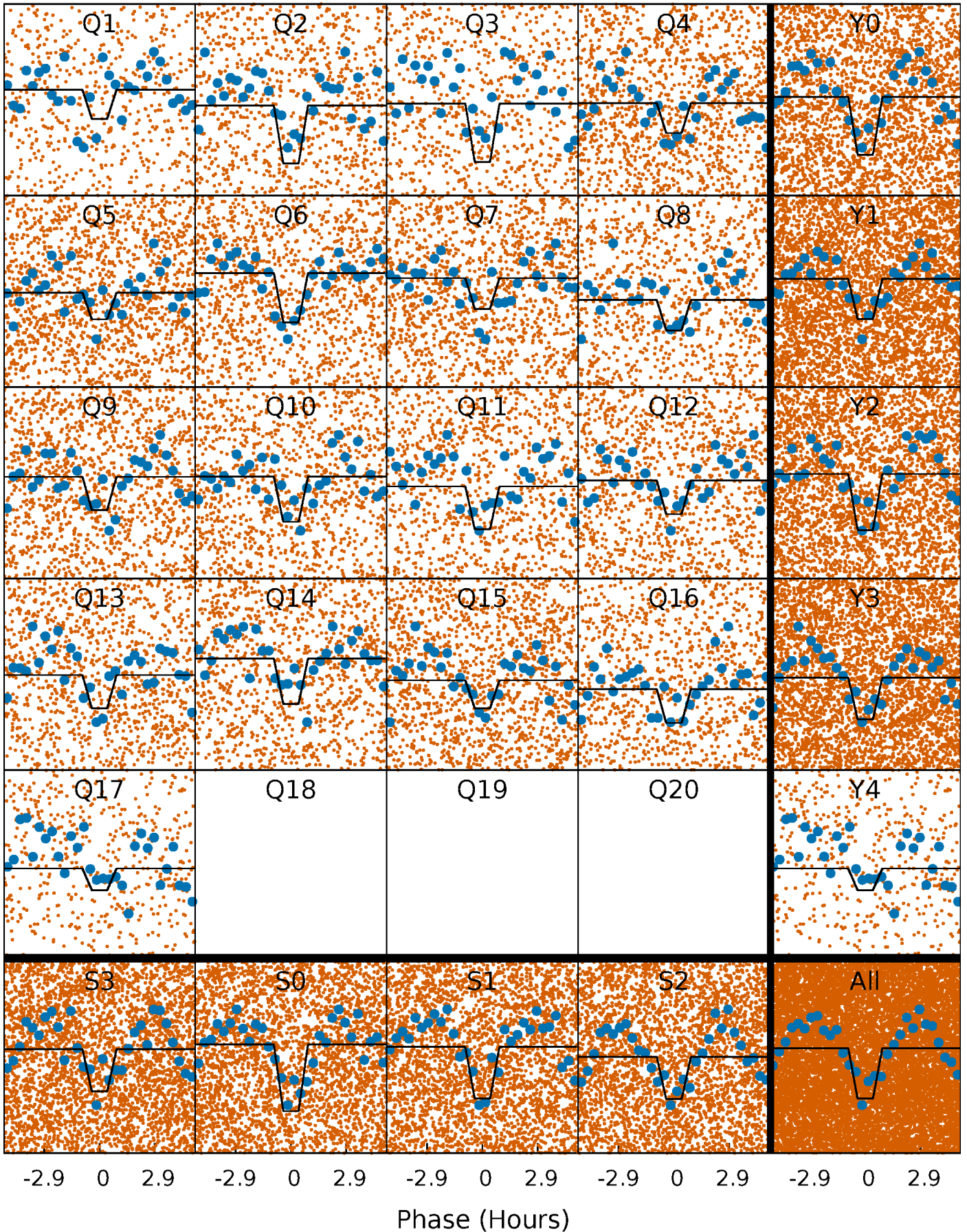
DV Quarter-Phased Transit Curves

TCE 009832208-02 P= 0.686916 Days $T_0=131.712463$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

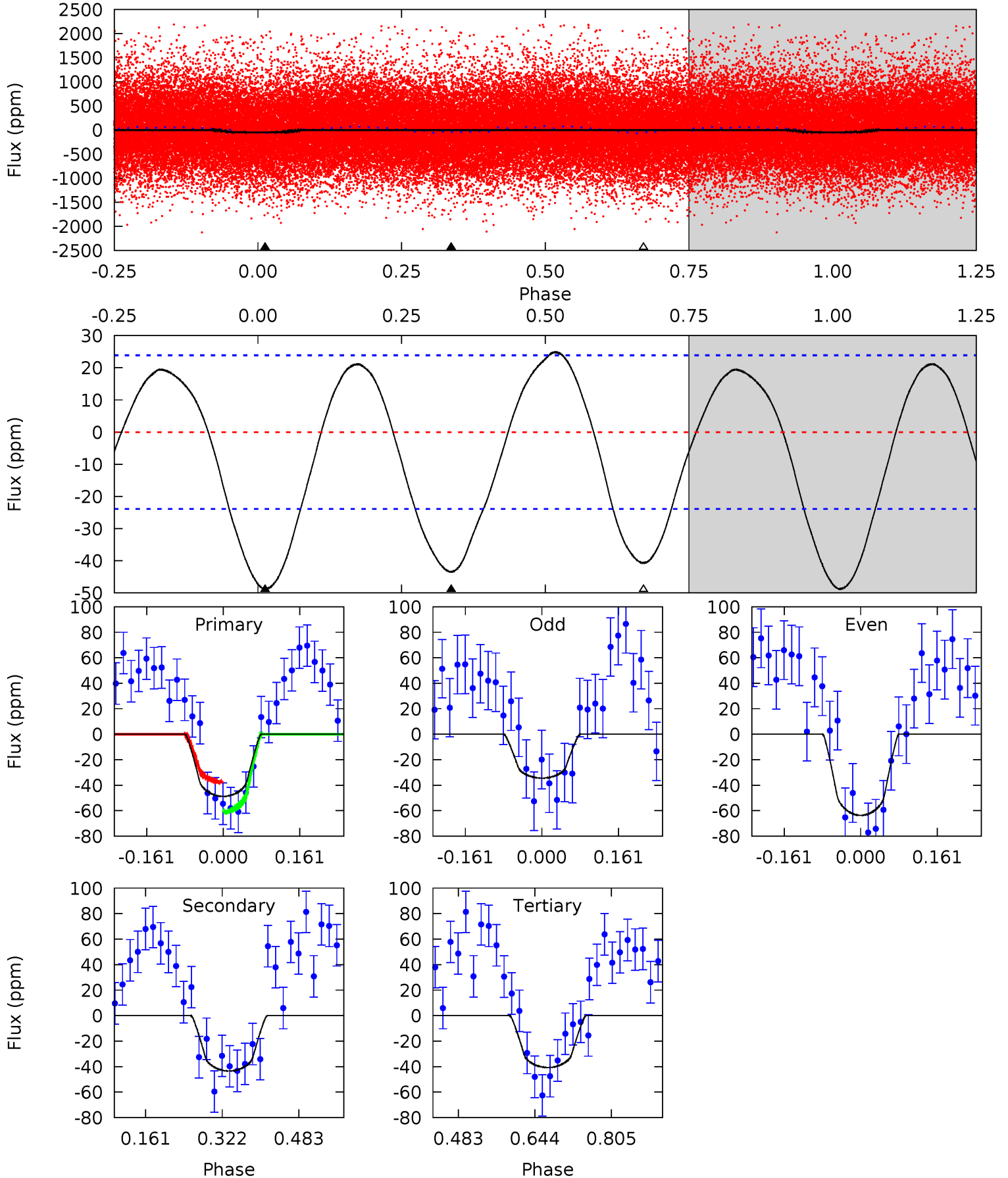
TCE 009832208-02 P= 0.686924 Days $T_0=131.710510$ (BKJD)



DV Model-Shift Uniqueness Test

009832208-02, P = 0.686916 Days, E = 131.025547 Days

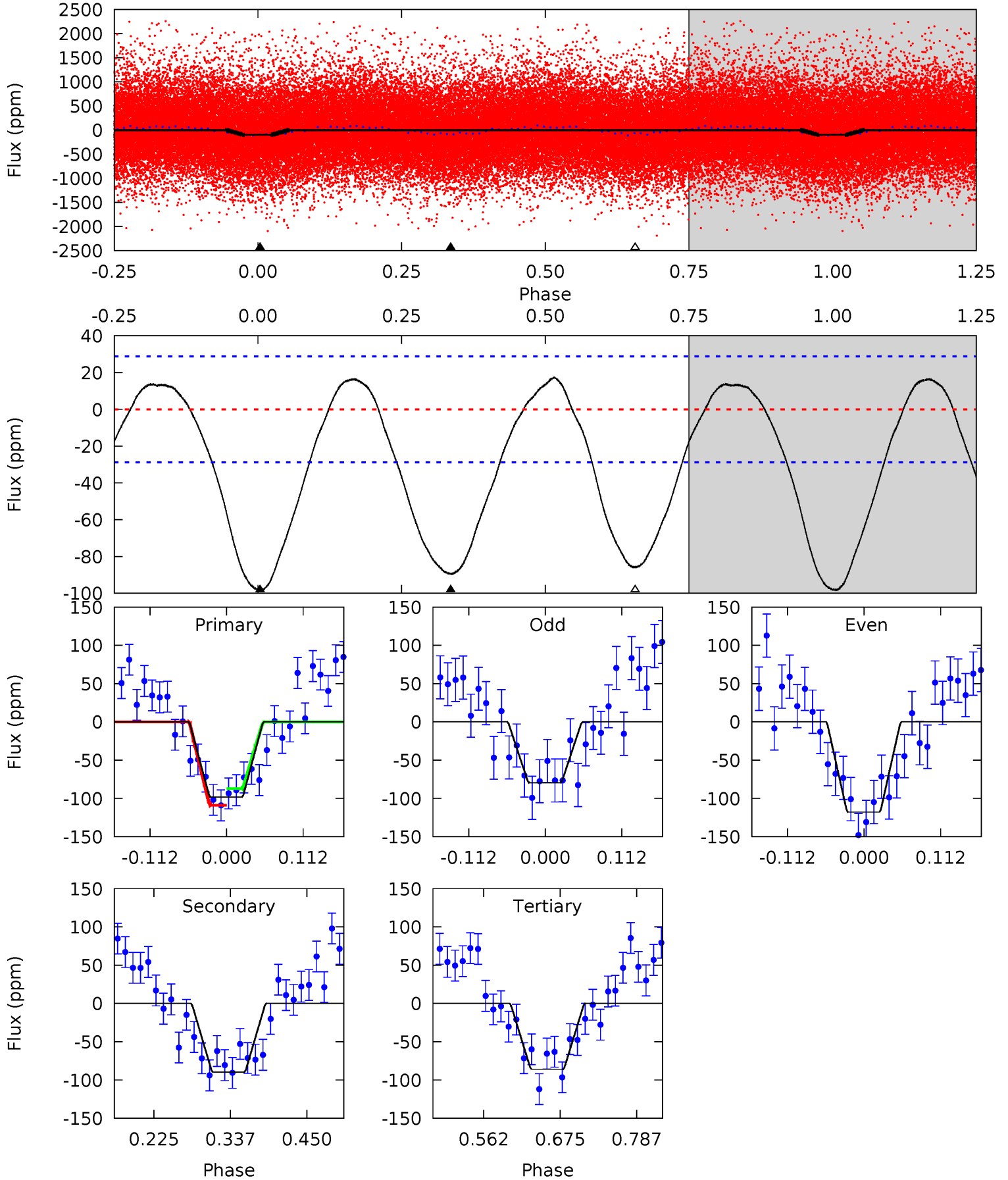
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.11	8.12	7.60	0	4.46	1.40	4.27	1.51	9.11	0.52	8.12	2.74	1.07	0.34	2.23



Alt Model-Shift Uniqueness Test

009832208-02, P = 0.686924 Days, E = 131.023586 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.5	14.1	13.6	0	4.54	1.59	5.32	1.96	15.5	0.58	14.1	3.03	0.92	0.15	1.73



Stellar Parameters For KIC 009832208

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4939^{+79}_{-79}	$4.506^{+0.072}_{-0.022}$	$0.160^{+0.150}_{-0.150}$	$0.819^{+0.032}_{-0.055}$	$0.785^{+0.053}_{-0.028}$	$2.013^{+0.512}_{-0.187}$
	+2%/-2%	+2%/-0%	+94%/-94%	+4%/-7%	+7%/-4%	+25%/-9%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 009832208-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-43 ± 5	$0.96^{+0.71}_{-0.56}$	2307^{+50}_{-56}	4019^{+1849}_{-752}	$5.325^{+25.134}_{-3.614}$
Alt.	-90 ± 6	$1.07^{+0.73}_{-0.60}$	2307^{+50}_{-58}	4439^{+2045}_{-784}	$8.549^{+35.748}_{-5.444}$

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

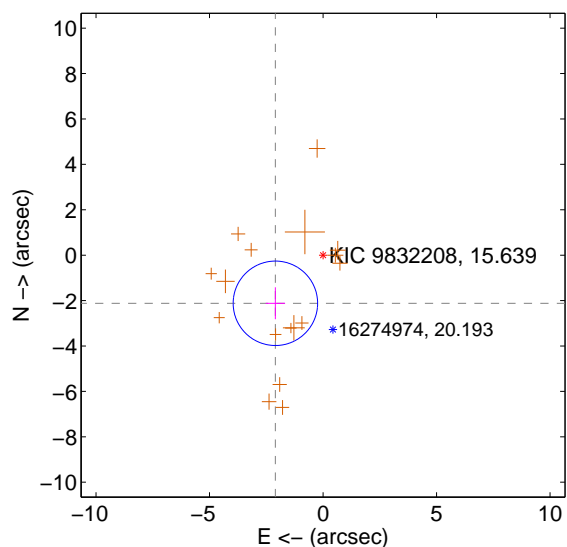
Supplemental centroid analysis for 009832208-02. Kepler magnitude: 15.64. Transit SNR 8.82

There are 0 quarters with good PRF difference image offsets

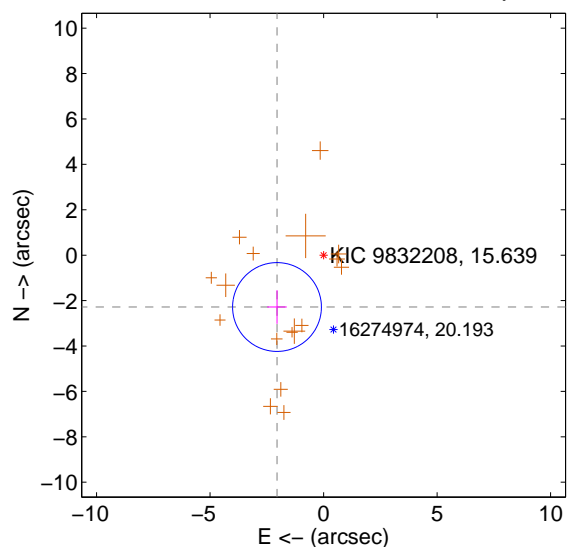
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.982 ± 0.620	4.81	2.098 ± 0.426	-2.119 ± 0.704
PRF-fit source offset from KIC position	3.069 ± 0.652	4.71	2.052 ± 0.430	-2.283 ± 0.743
photometric centroid source offset	4.06 ± 1.61	2.52	3.37 ± 1.62	-2.26 ± 1.58

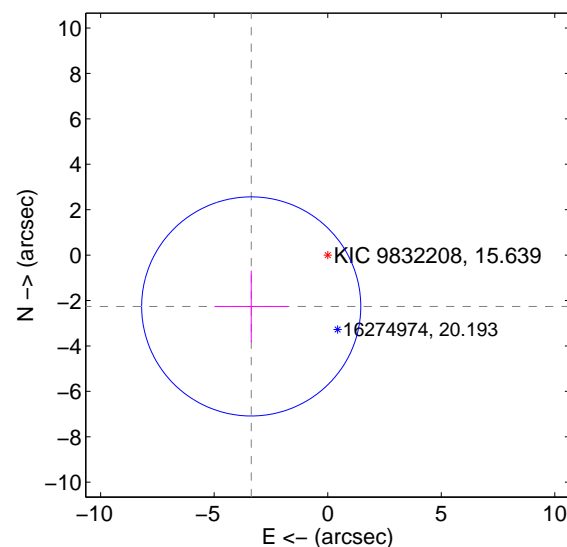
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

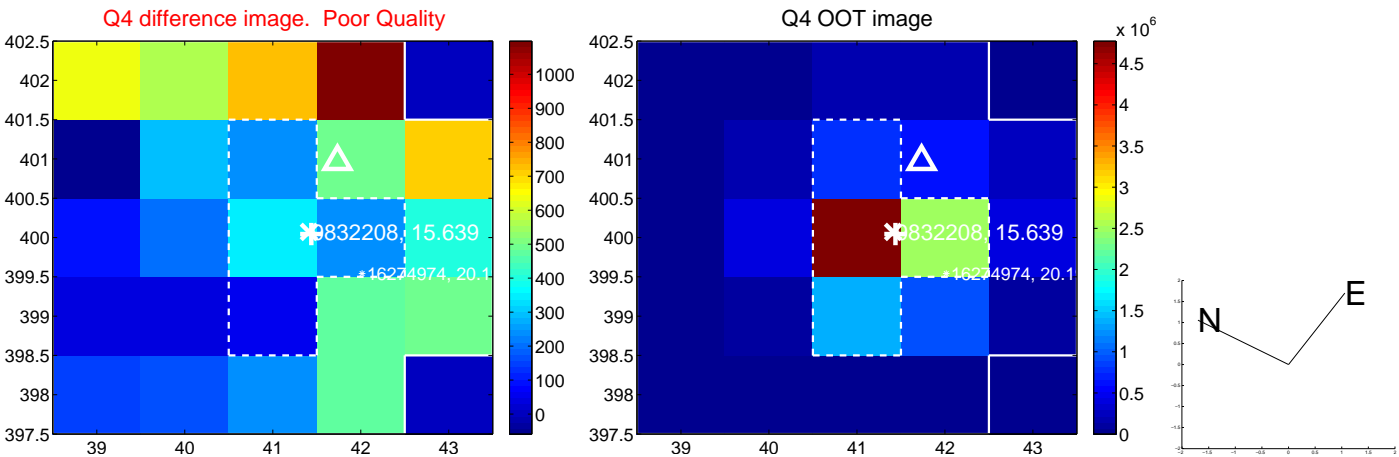
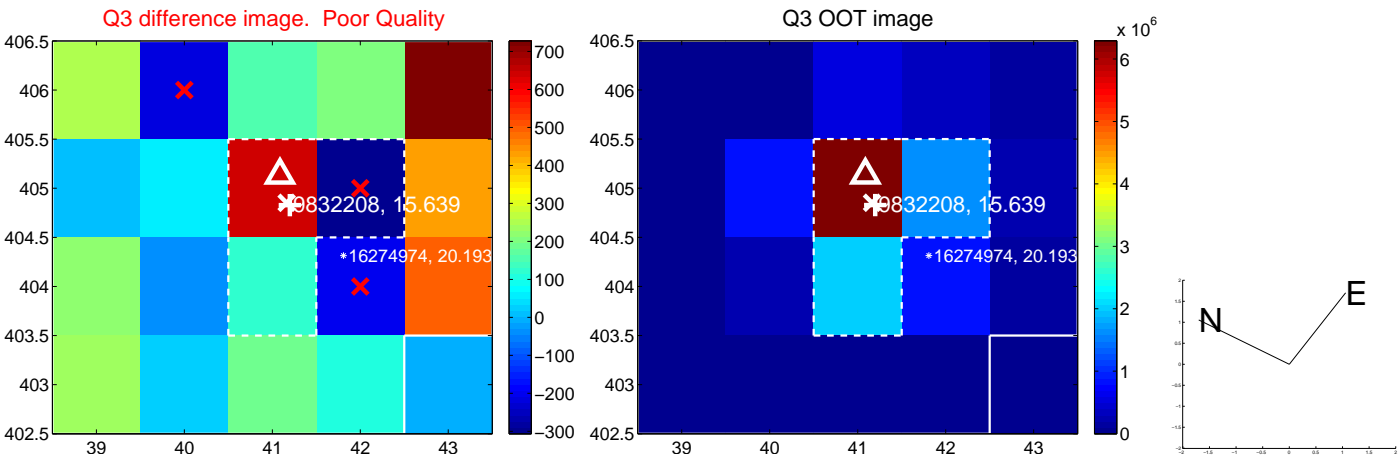
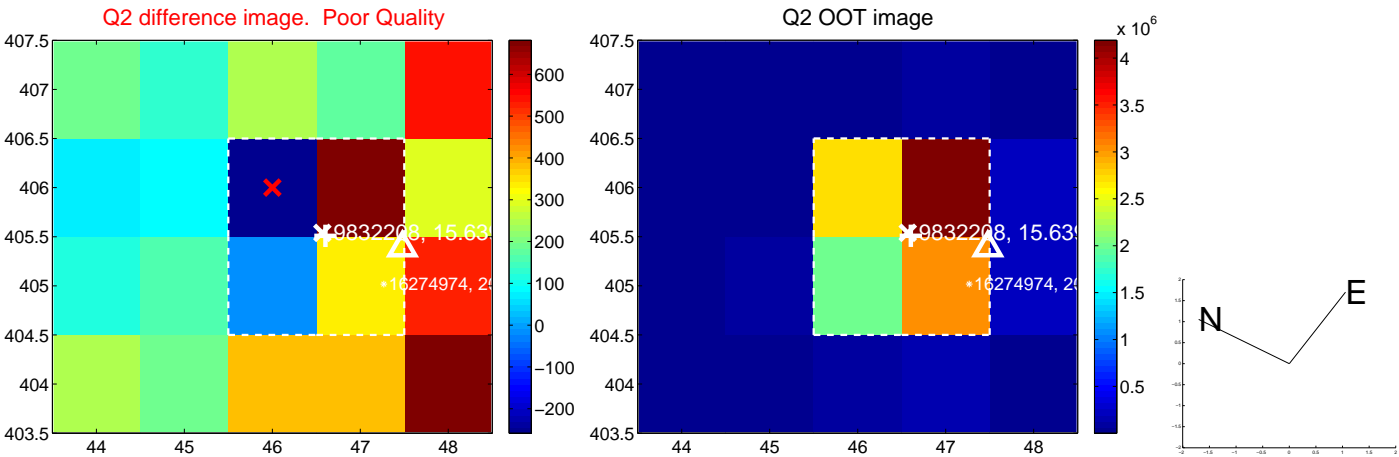
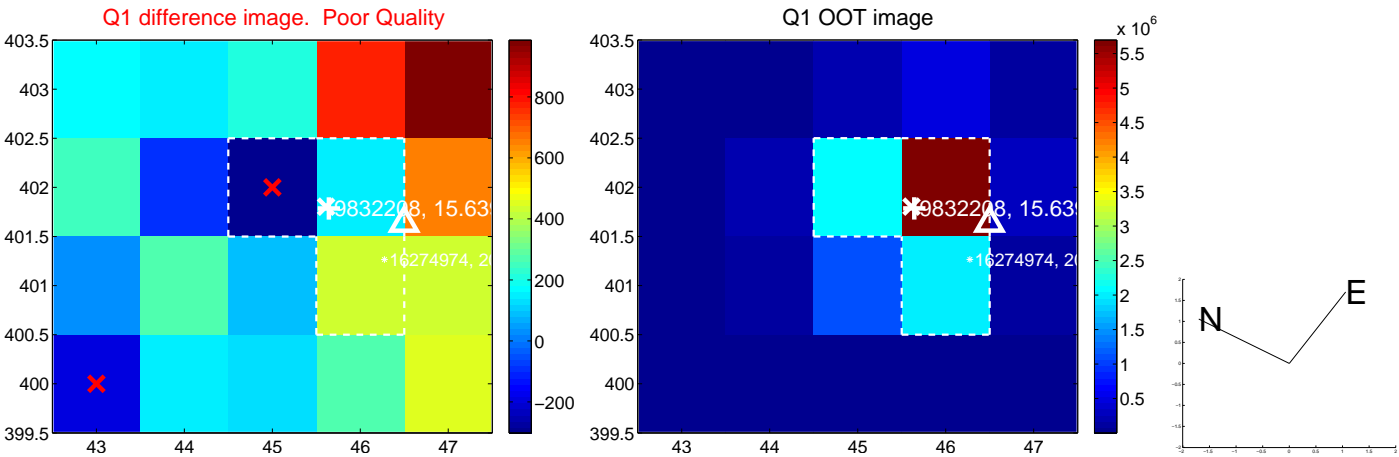


offset from photometric centroids

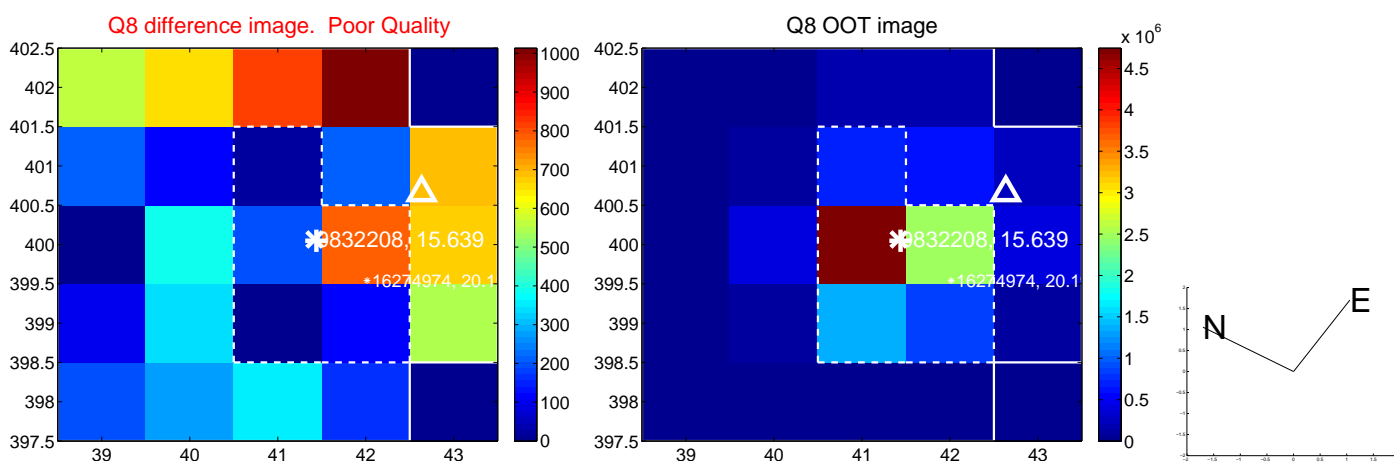
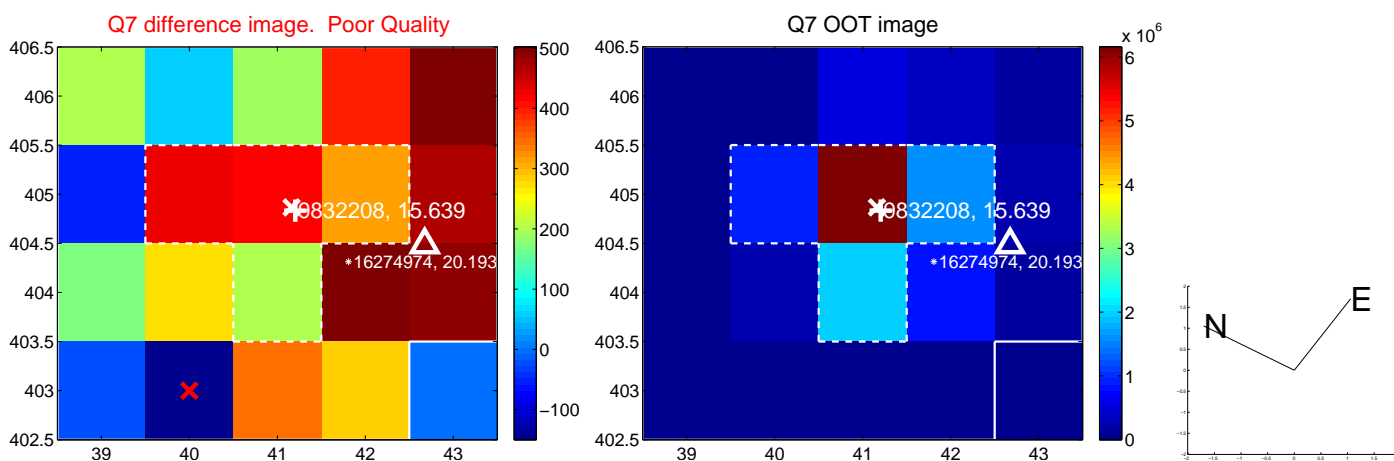
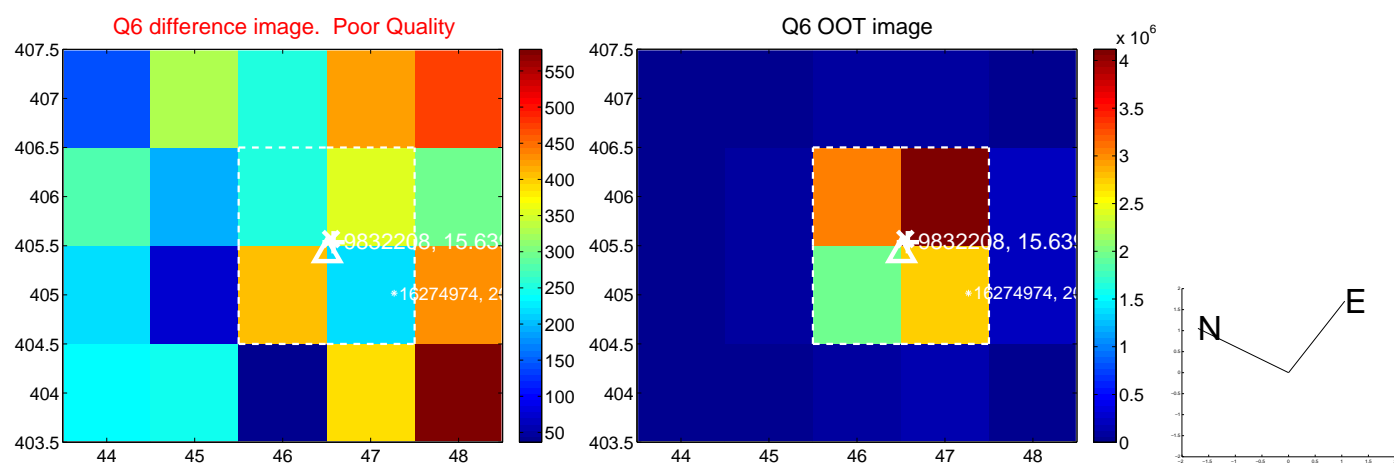
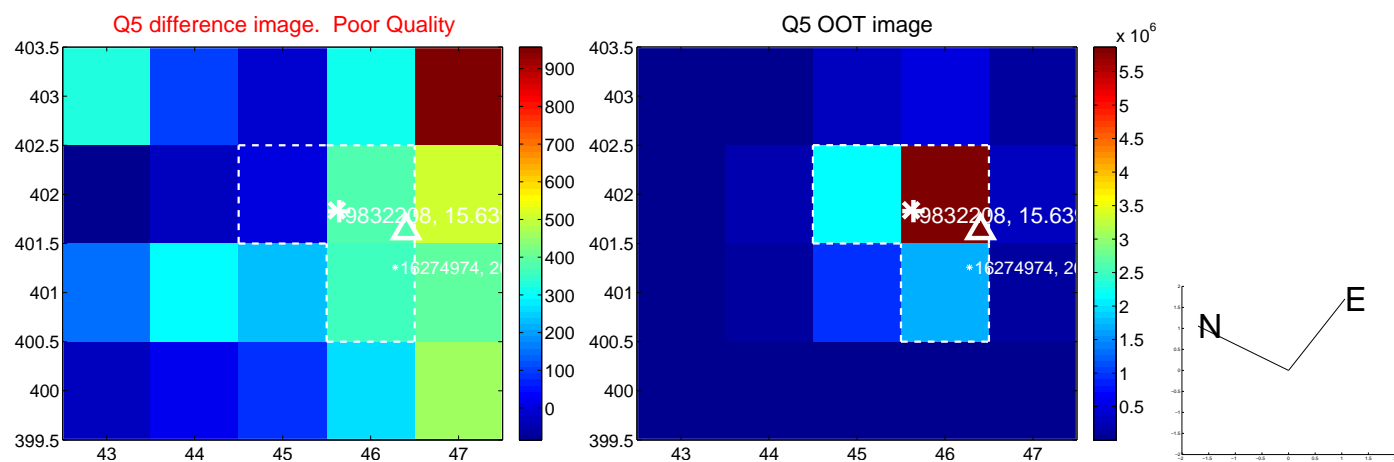


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

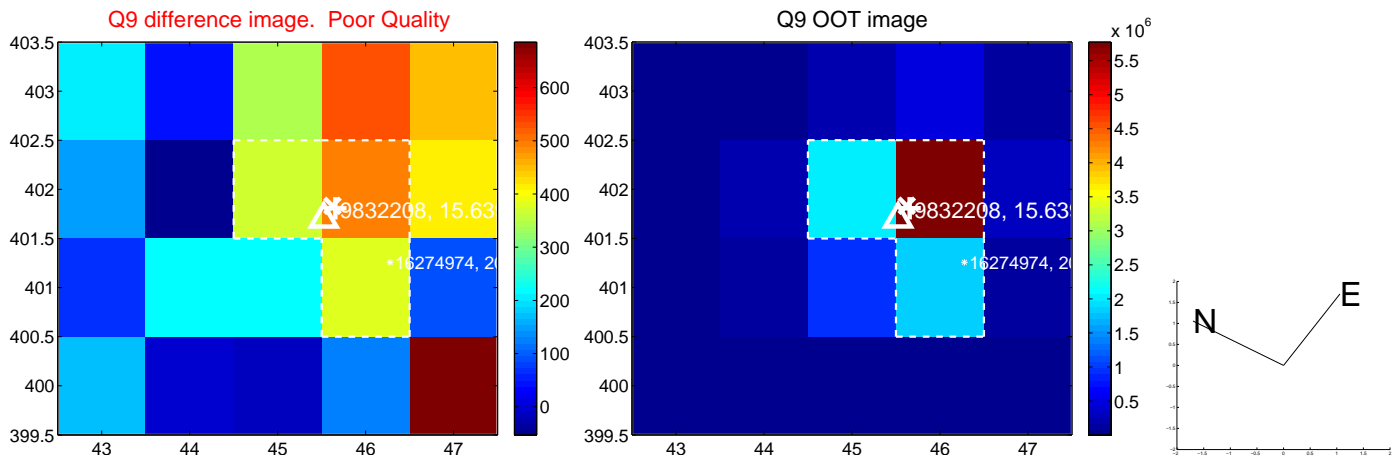
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



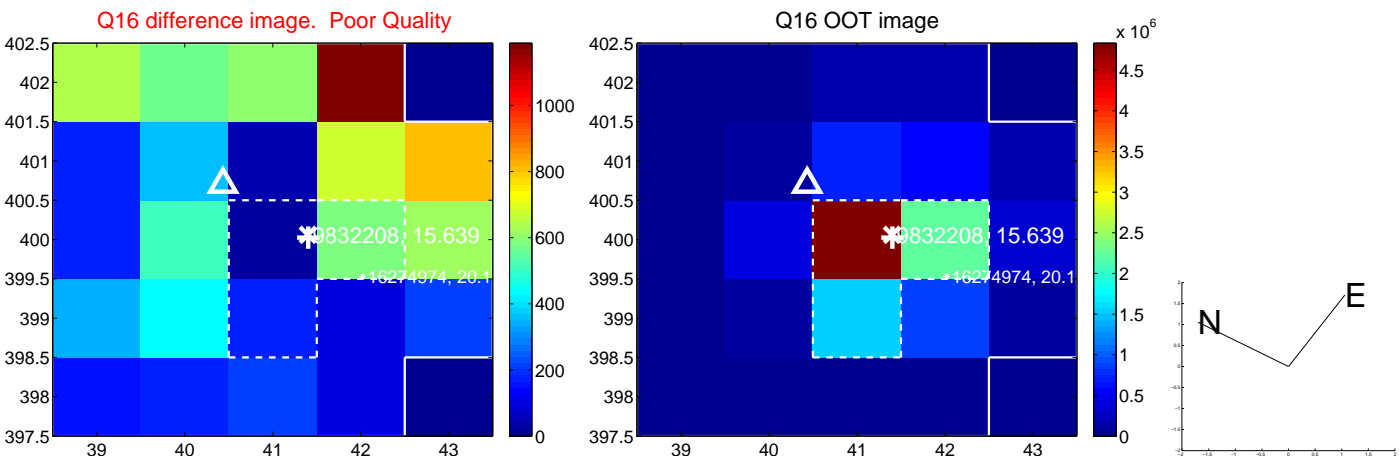
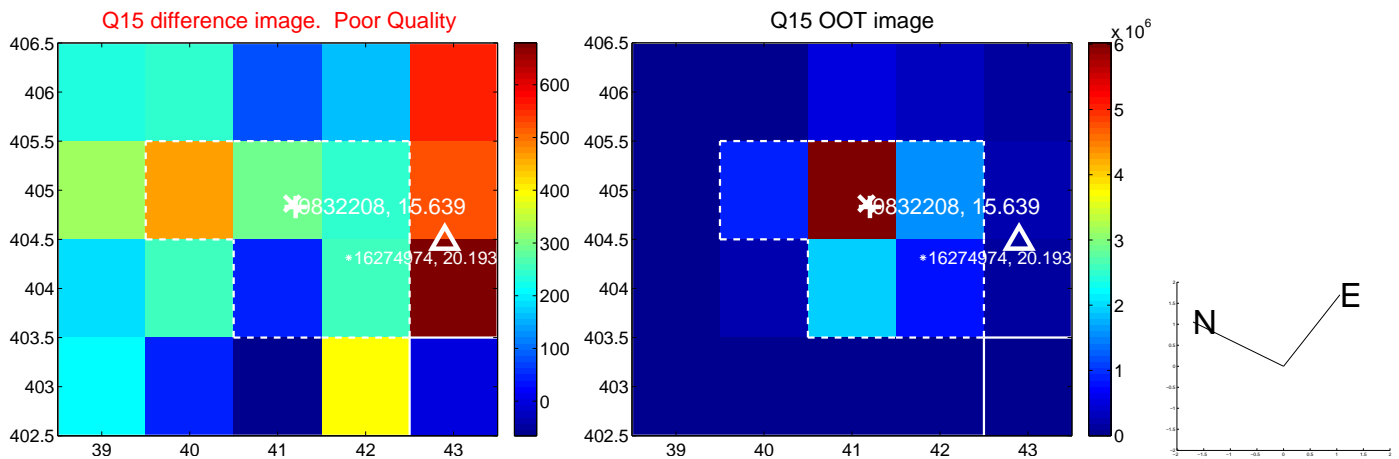
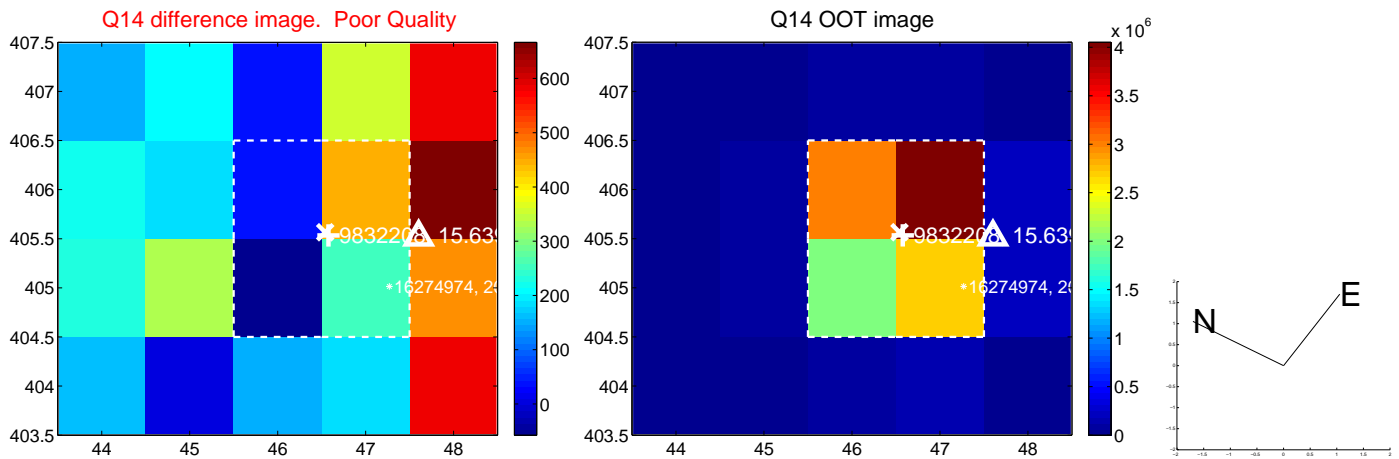
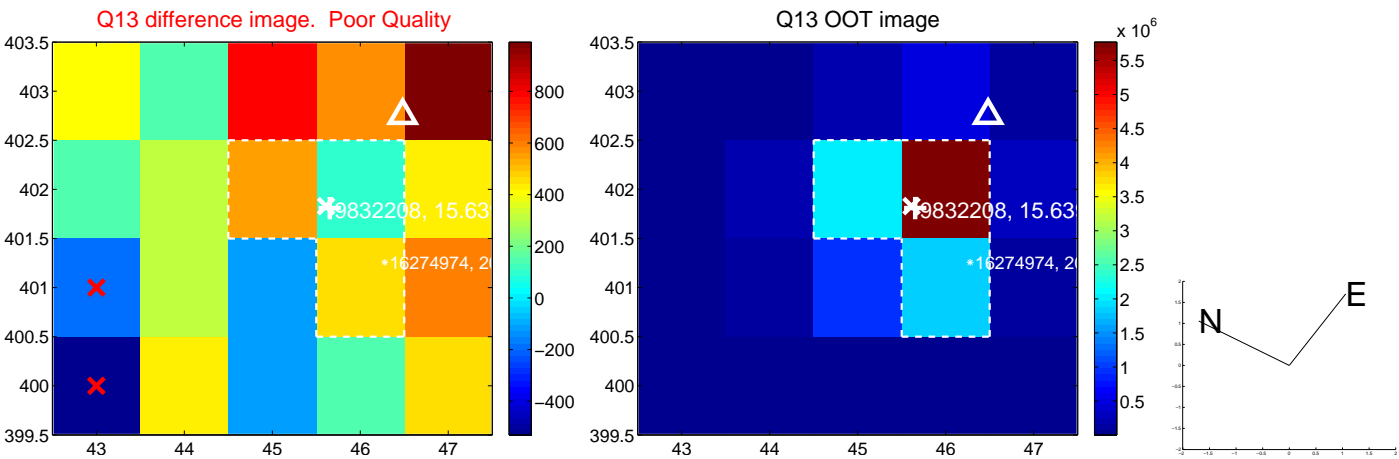
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



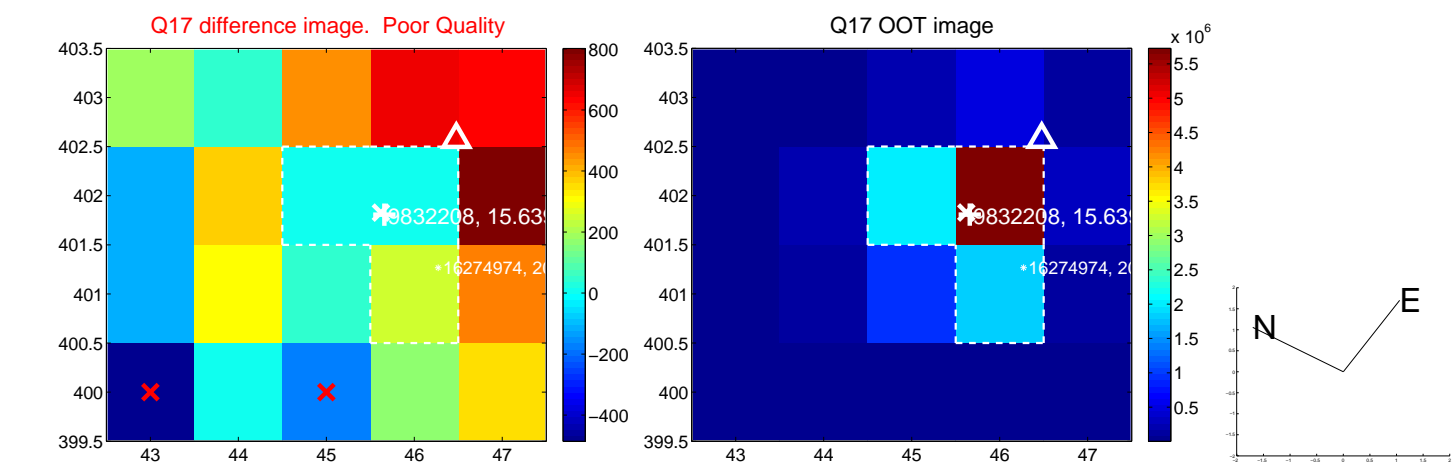
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



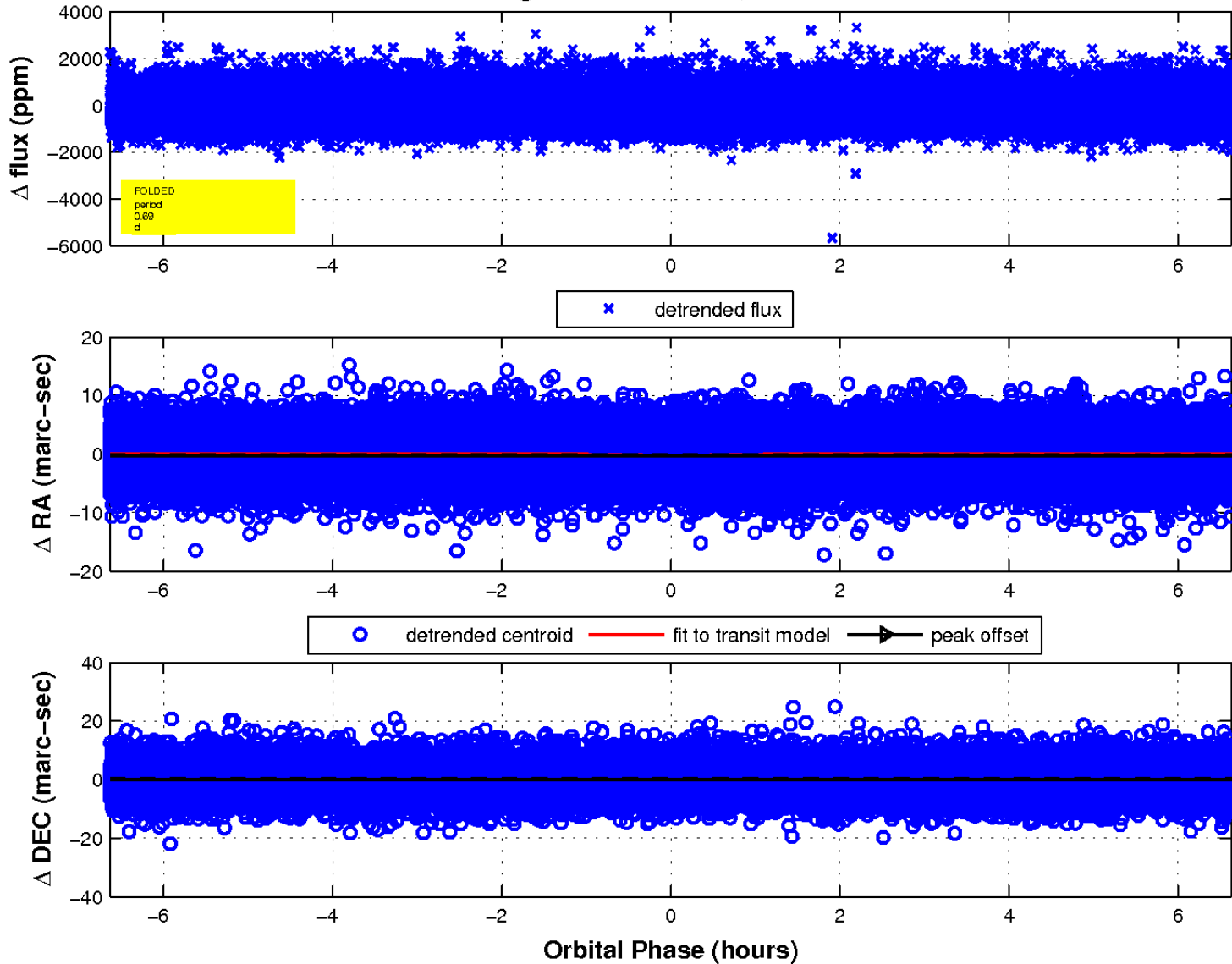
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

