

KIC 003964082

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})
003964082-01	OBS	No	0.729170	131.930923	30.1	1.766	7.8	6.6	1.16	6525	0.75	7786.33
003964082-02	OBS	No	0.582836	131.817305	39.8	6.519	8.4	12.0	1.16	6525	0.79	10496.45

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003964082-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003964082-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS

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

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

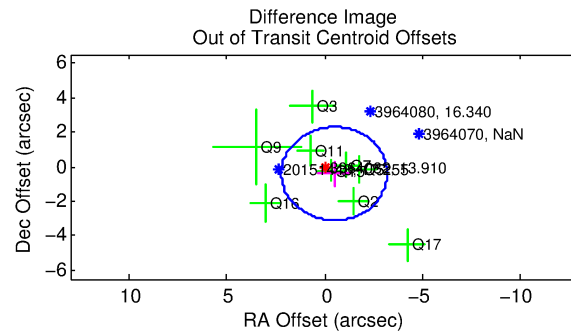
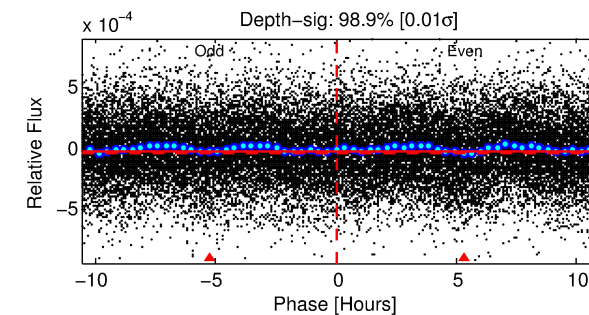
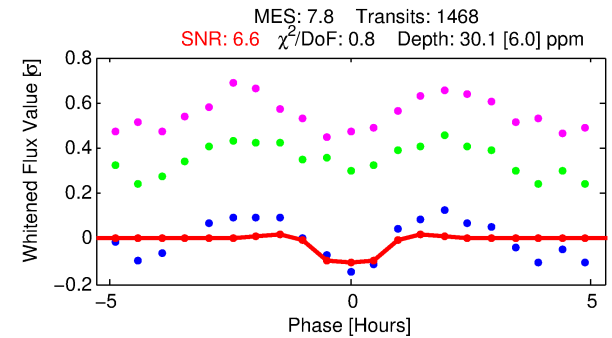
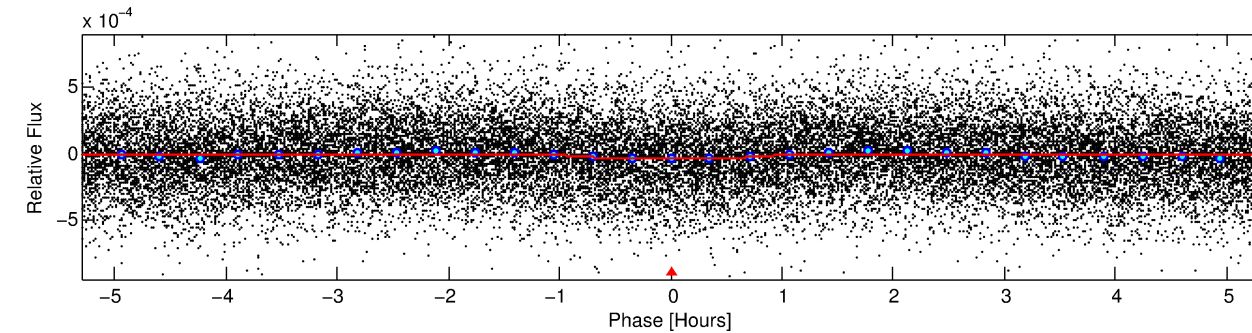
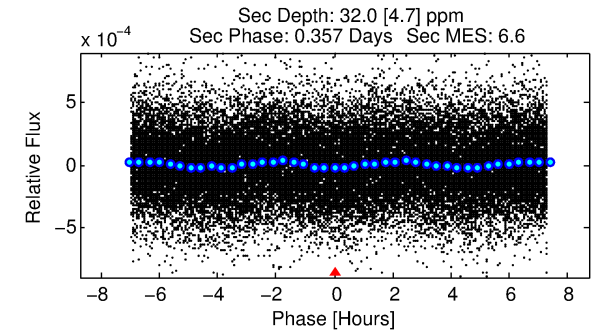
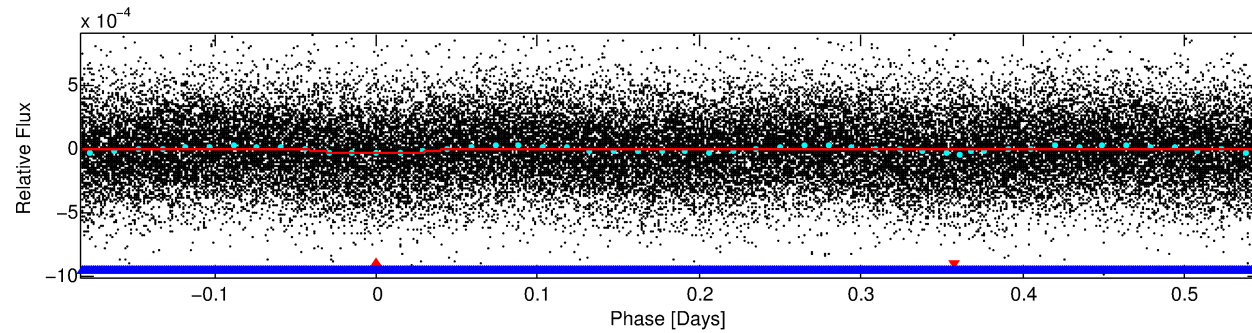
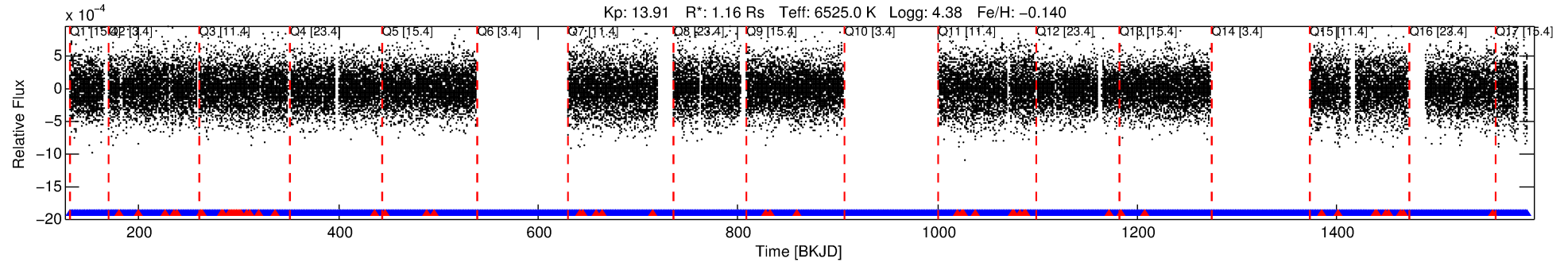
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003964082-01

No Significant Match Found

DV One-Page Summary

KIC: 3964082 Candidate: 1 of 2 Period: 0.729 d



DV Fit Results:

Period = 0.72917 [0.00002] d
Epoch = 131.9309 [0.0032] BKJD
Rp/R* = 0.0059 [0.0033]
a/R* = 1.70 [3.53]
b = 0.90 [0.68]
Seff = 7786.33 [2893.20]
Teq = 2395 [223] K
Rp = 0.75 [0.47] Re
a = 0.0168 [0.0041] AU
Ag = 8.91 [10.45] [0.76σ]
Teffp = 6399 [1802] K [2.20σ]

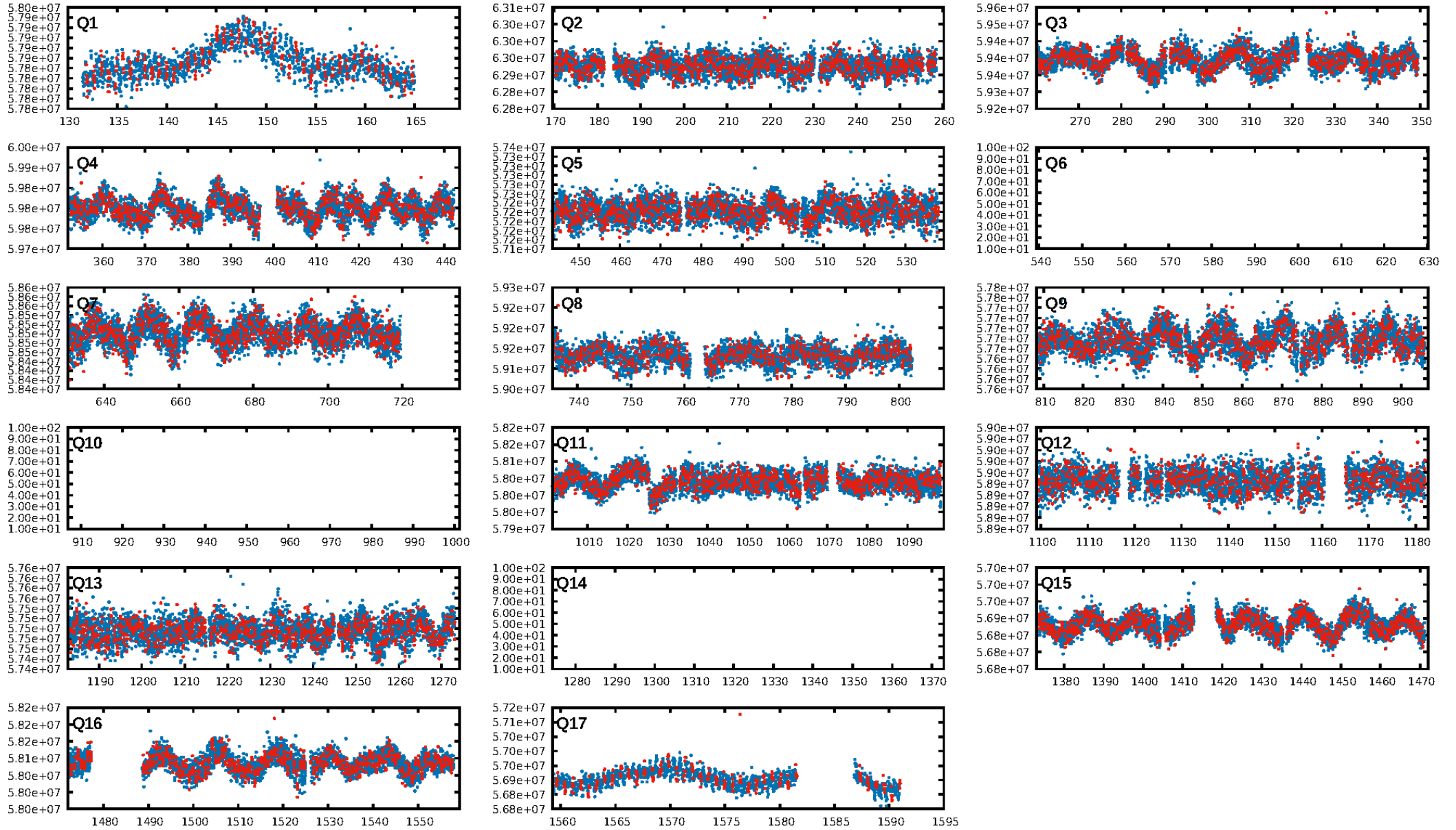
DV Diagnostic Results:

ShortPeriod-sig: 39.7% [0.52σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.96 [1327/1385]
GhostDiagnostic-chr: 3.587
Centroid-sig: 25.3%
Centroid-so: 1.600 arcsec [0.84σ]
OotOffset-rm: 0.636 arcsec [0.71σ]
KicOffset-rm: 0.675 arcsec [0.72σ]
OotOffset-st: 1/4/1/3 [9]
KicOffset-st: 1/4/1/3 [9]
DiffImageQuality-fgm: 0.67 [6/9]
DiffImageOverlap-fno: 0.00 [0/14]

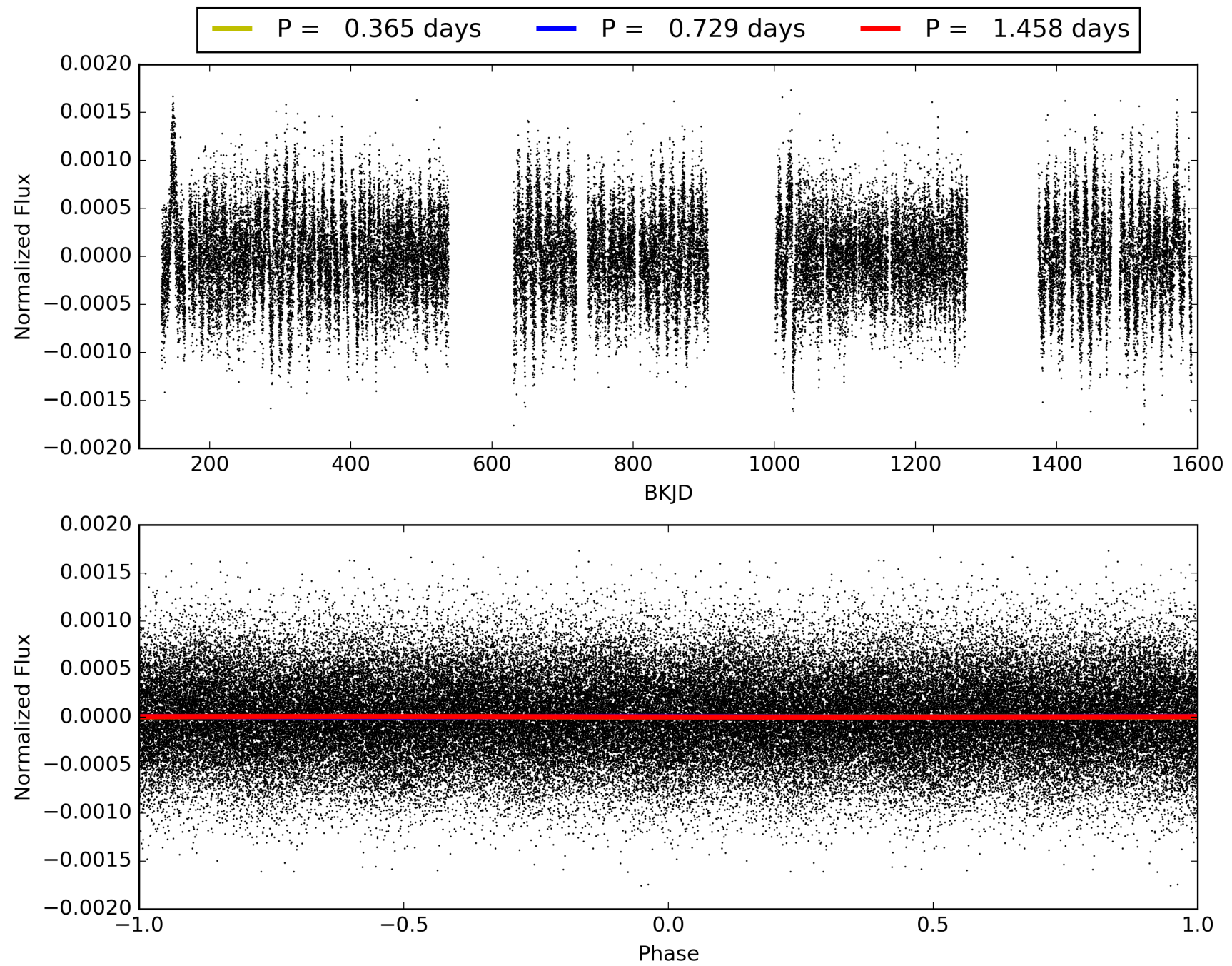
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:55:01 Z

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

TCE 003964082-01, PDC Light Curves

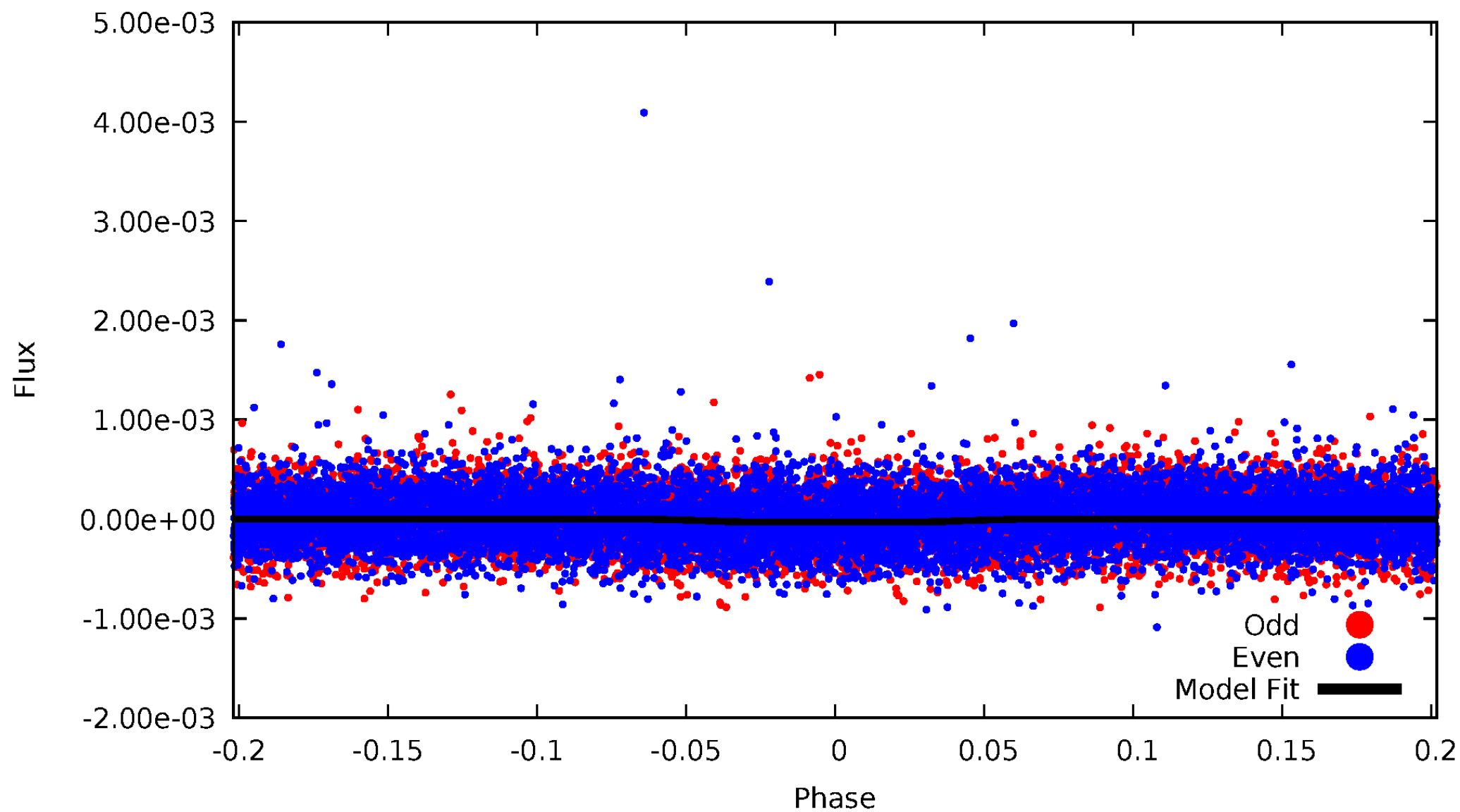


TCE 003964082-01



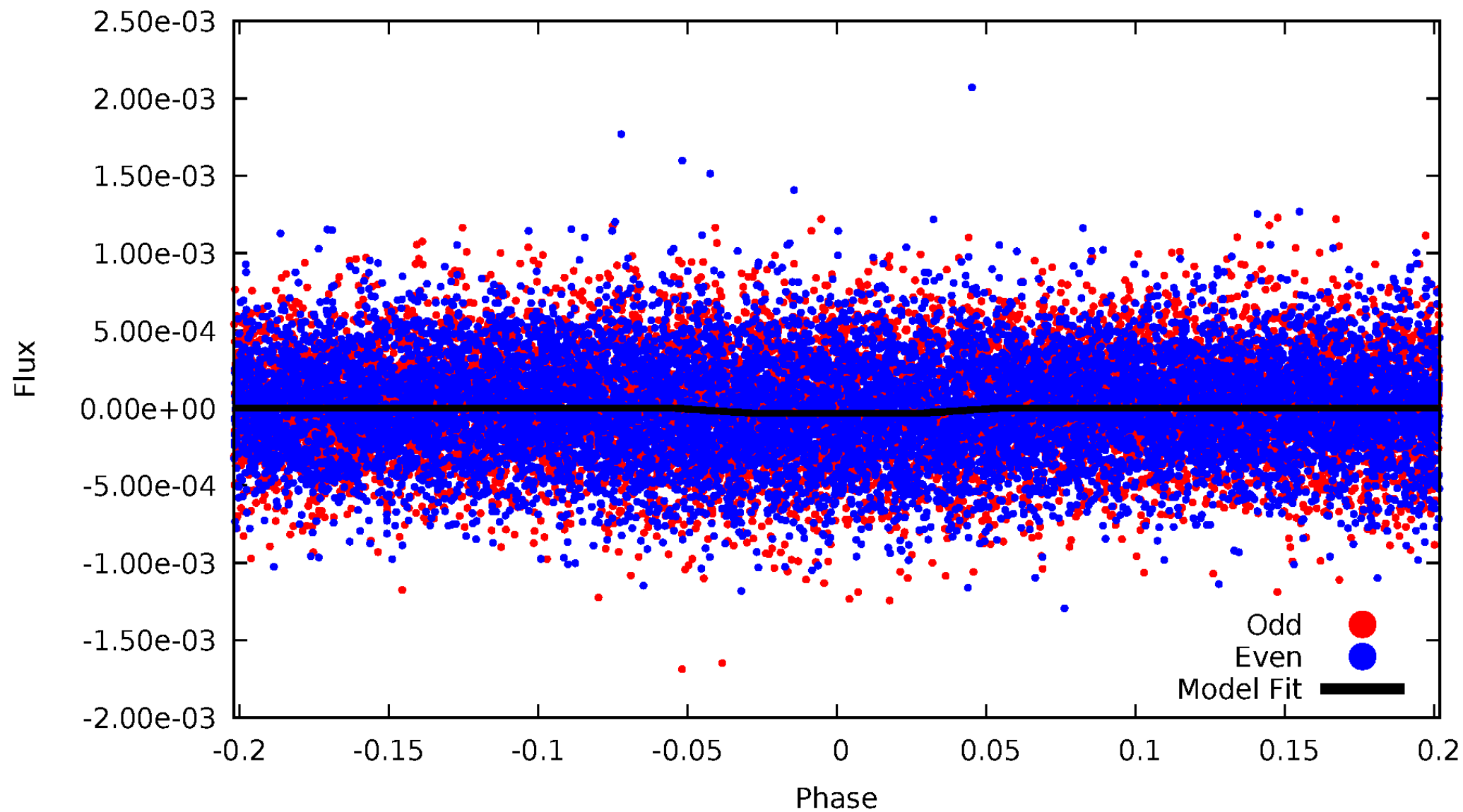
DV Odd/Even

TCE 003964082-01

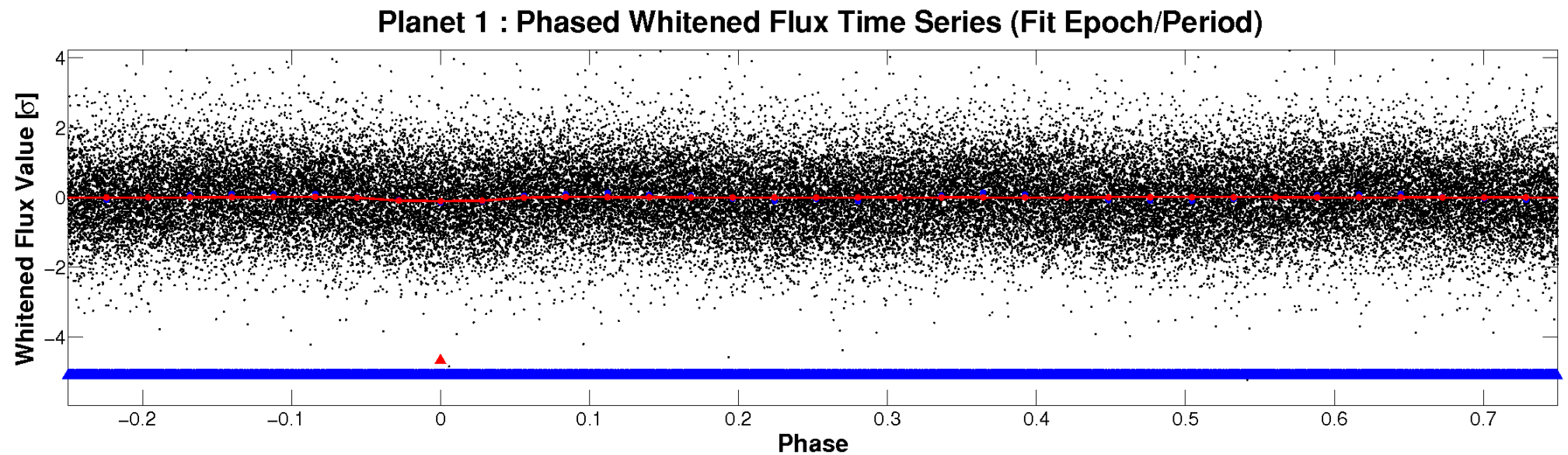
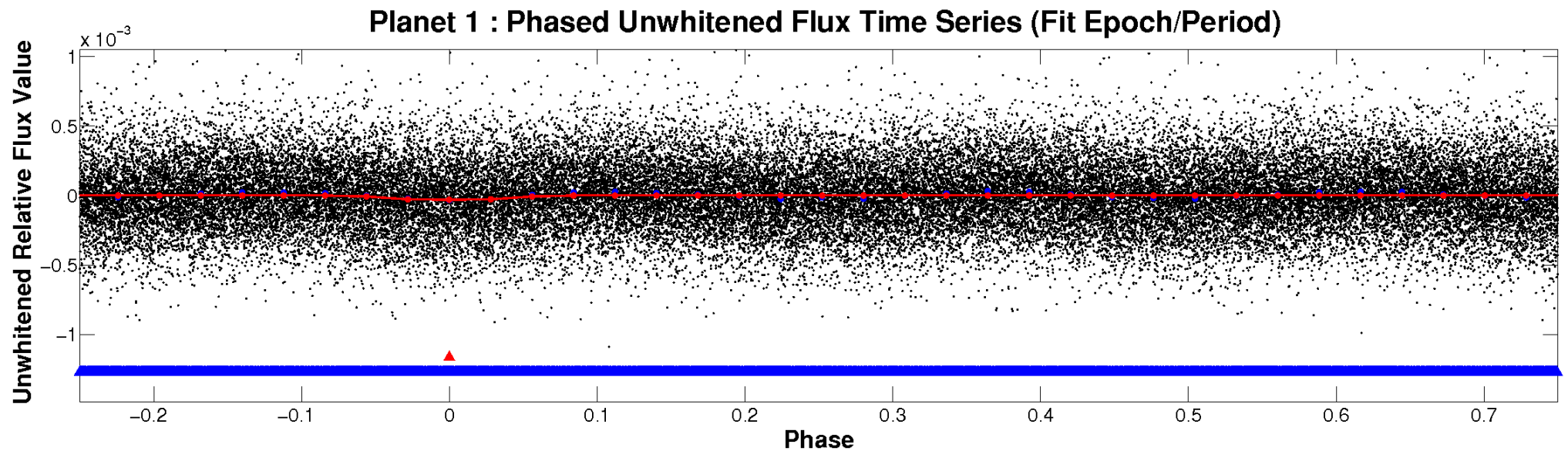


ALT Odd/Even

TCE 003964082-01

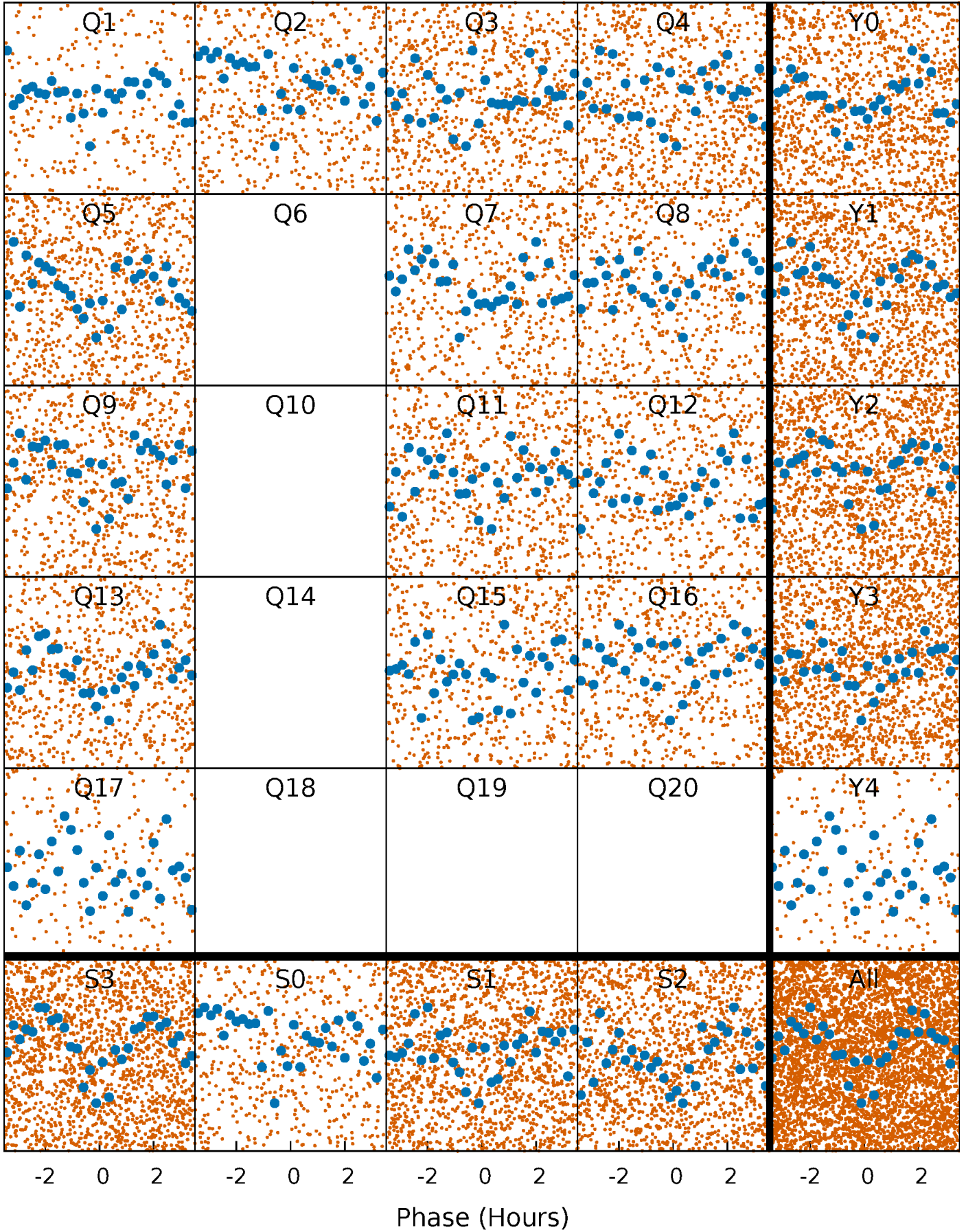


Non-Whitened Vs. Whitened Light Curve



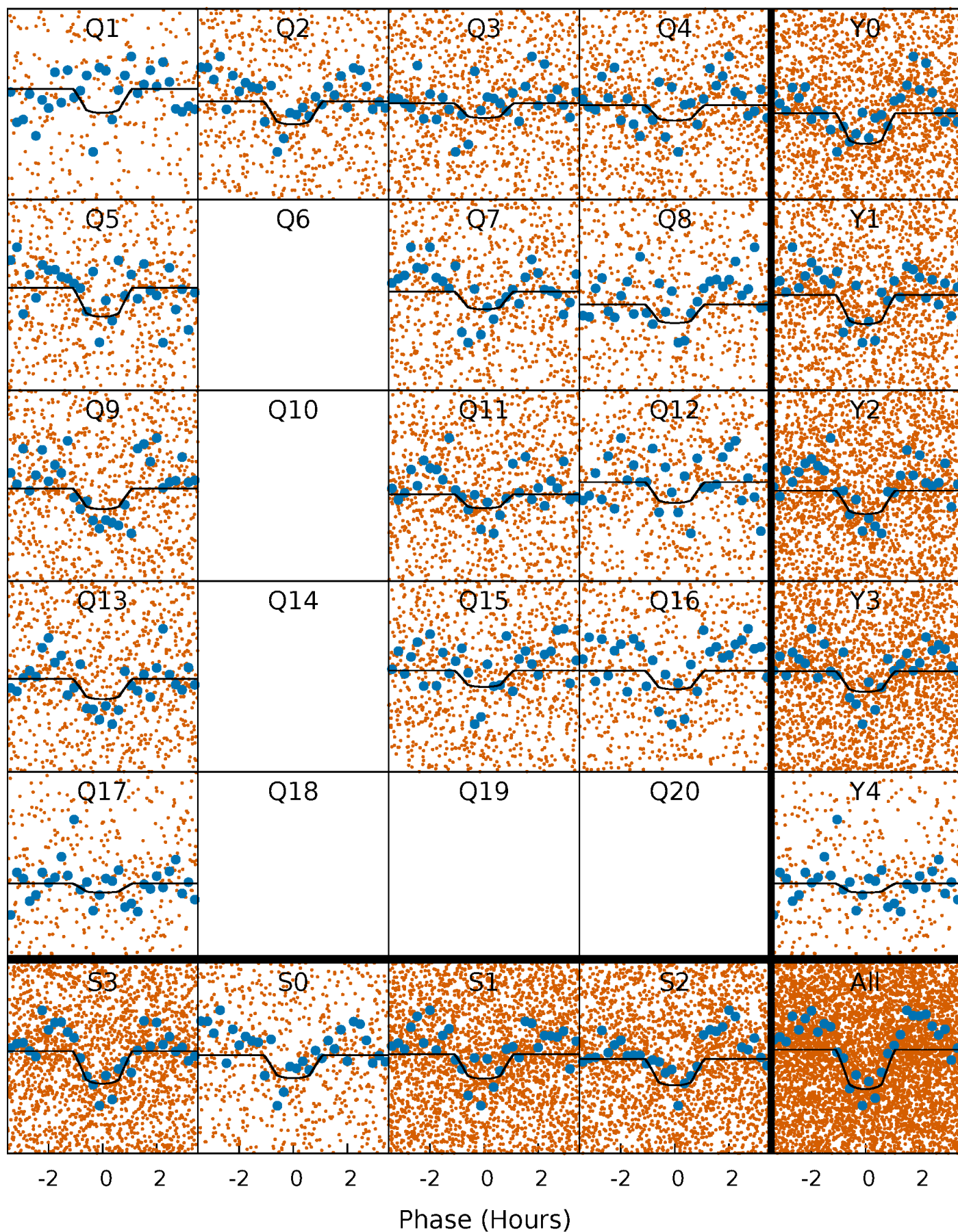
PDC Quarter-Phased Transit Curves

TCE 003964082-01 P= 0.729170 Days $T_0=131.930923$ (BKJD)



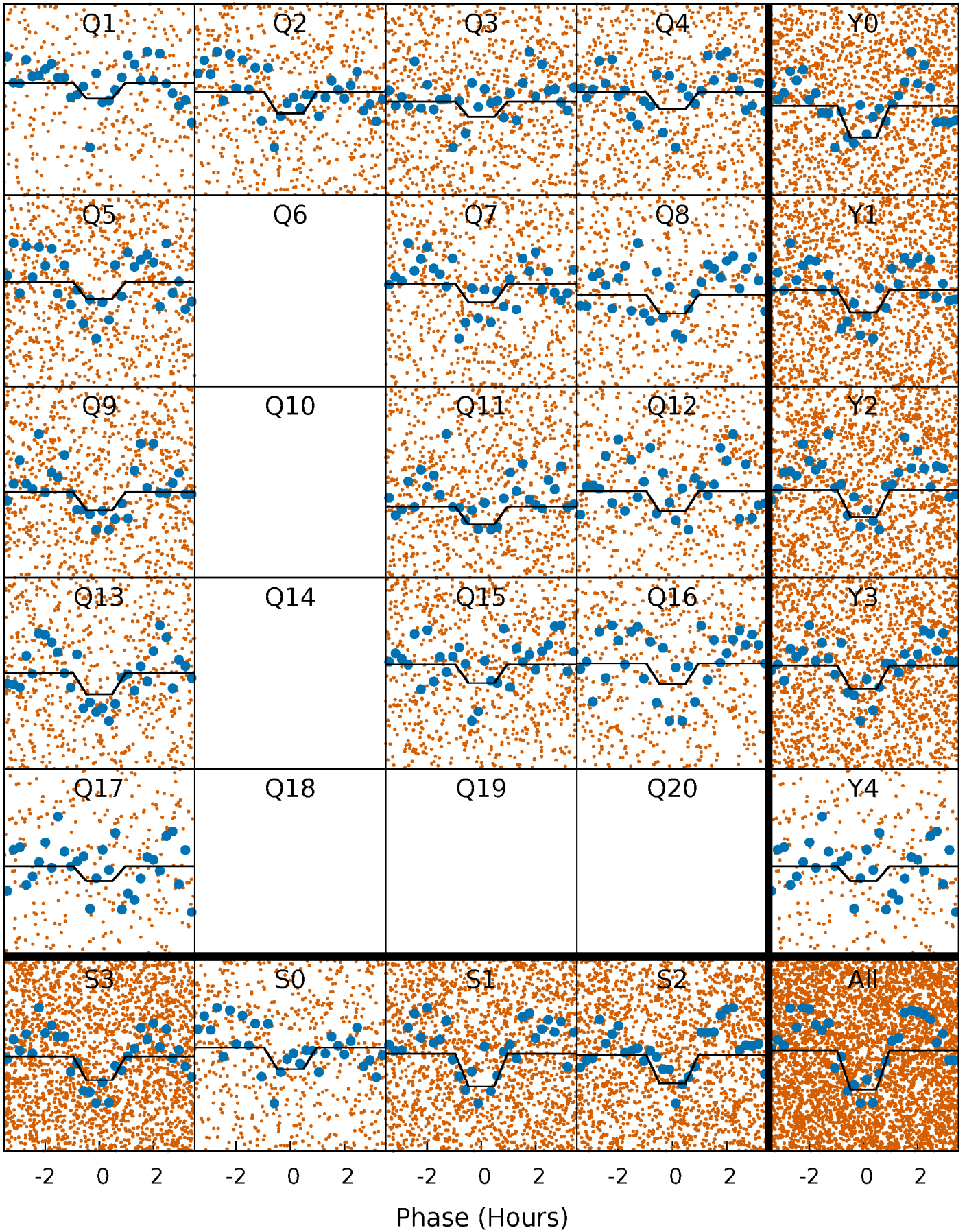
DV Quarter-Phased Transit Curves

TCE 003964082-01 P= 0.729170 Days $T_0=131.930923$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

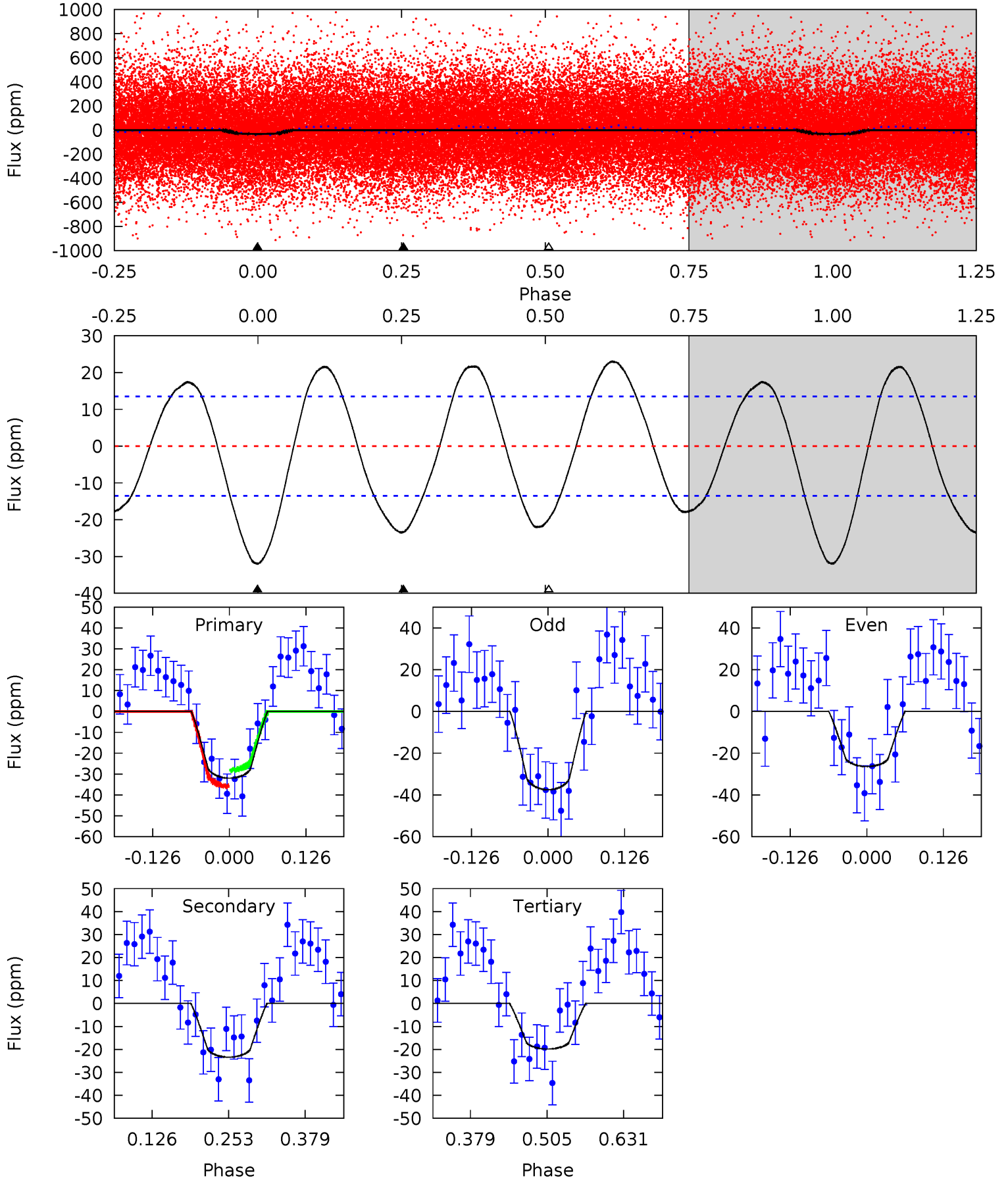
TCE 003964082-01 P= 0.729170 Days $T_0=131.930924$ (BKJD)



DV Model-Shift Uniqueness Test

003964082-01, P = 0.729170 Days, E = 131.201753 Days

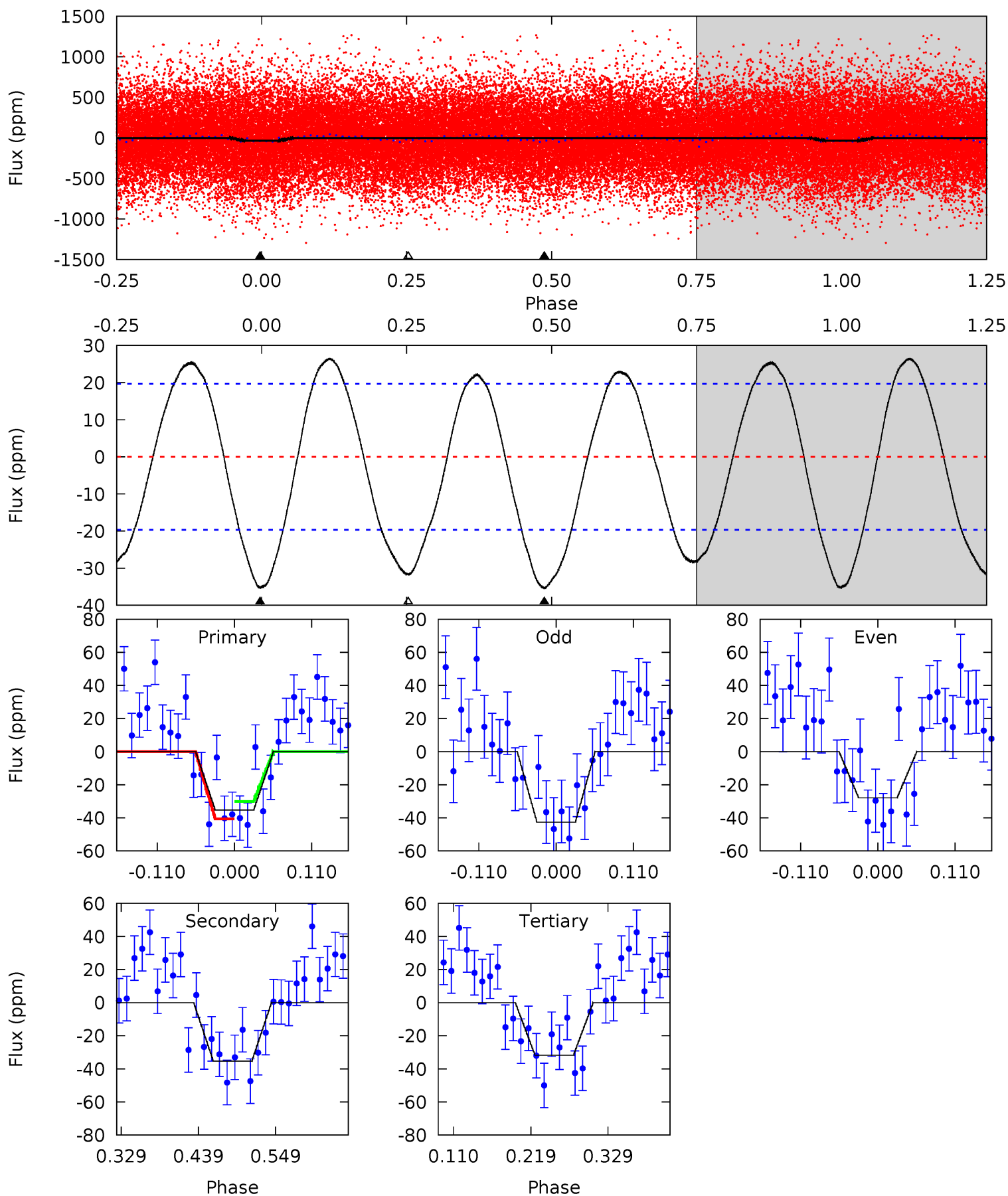
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	7.80	6.62	0	4.52	1.53	4.85	4.05	10.7	1.18	7.80	1.86	1.04	0.42	1.31



Alt Model-Shift Uniqueness Test

003964082-01, P = 0.729170 Days, E = 131.201754 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.16	8.18	7.34	0	4.55	1.60	4.57	0.82	8.16	0.84	8.18	1.71	0.89	0.43	1.20



Stellar Parameters For KIC 003964082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6525^{+154}_{-212}	$4.381^{+0.062}_{-0.188}$	$-0.140^{+0.250}_{-0.300}$	$1.161^{+0.339}_{-0.145}$	$1.183^{+0.164}_{-0.164}$	$1.065^{+0.343}_{-0.506}$
	+2%/-3%	+1%/-4%	+179%/-214%	+29%/-12%	+14%/-14%	+32%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003964082-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-23 ± 3	$0.80^{+0.45}_{-0.40}$	3404^{+215}_{-165}	5729^{+2560}_{-1145}	$5.470^{+14.643}_{-3.280}$
Alt.	-35 ± 4	$0.81^{+0.46}_{-0.38}$	3407^{+238}_{-166}	6335^{+2984}_{-1239}	$8.276^{+21.008}_{-4.945}$

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

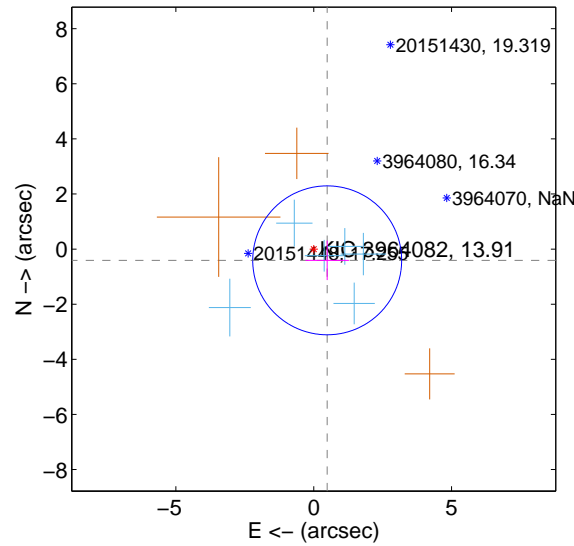
Supplemental centroid analysis for 003964082-01. Kepler magnitude: 13.91. Transit SNR 6.63

There are 6 quarters with good PRF difference image offsets

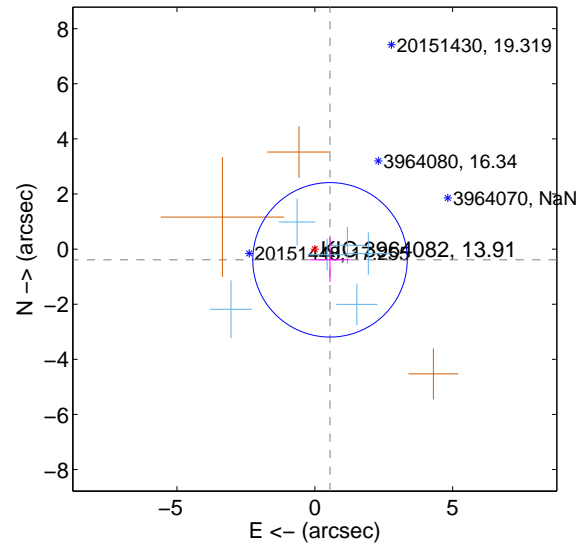
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.636 ± 0.901	0.71	-0.489 ± 0.788	-0.407 ± 0.718
PRF-fit source offset from KIC position	0.675 ± 0.934	0.72	-0.552 ± 0.733	-0.389 ± 0.803
photometric centroid source offset	1.60 ± 1.91	0.84	1.51 ± 1.93	0.53 ± 1.71

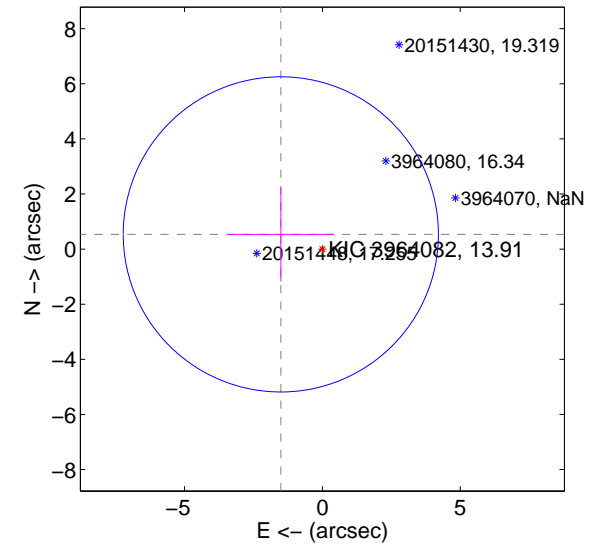
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

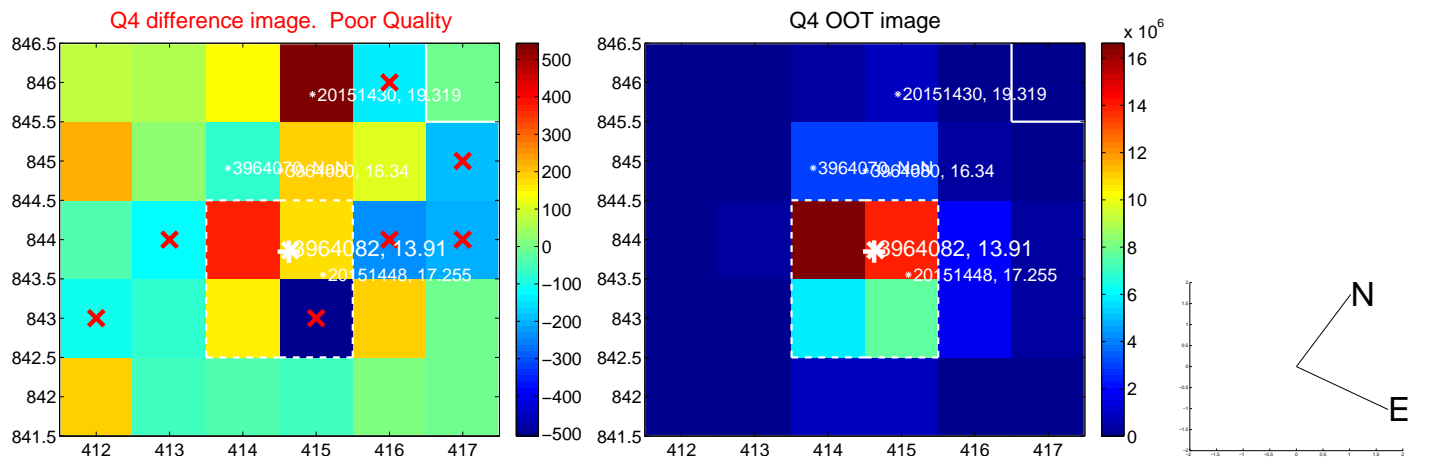
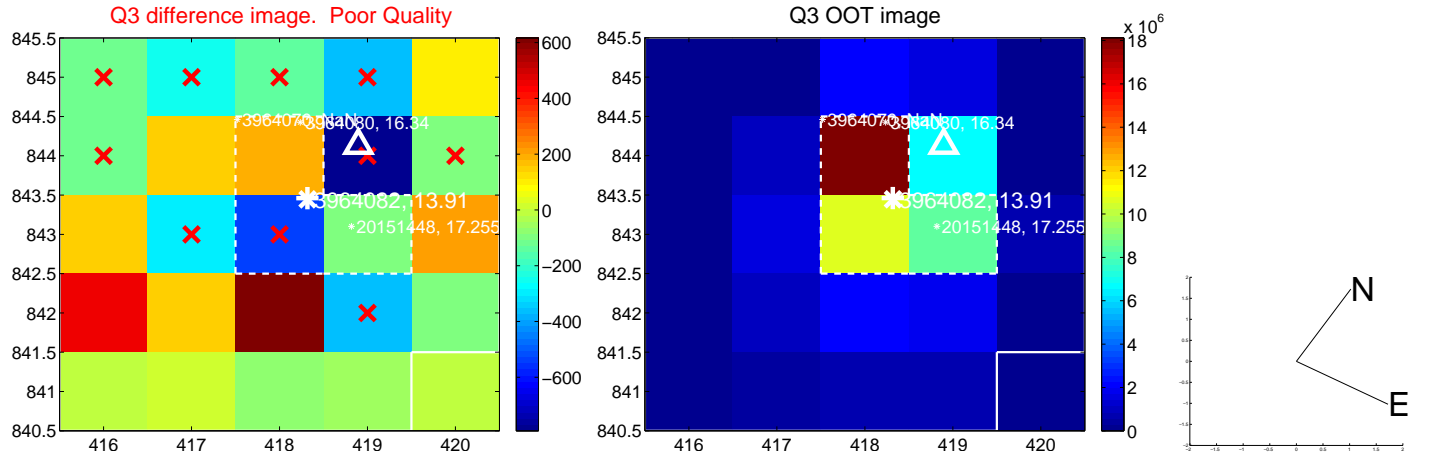
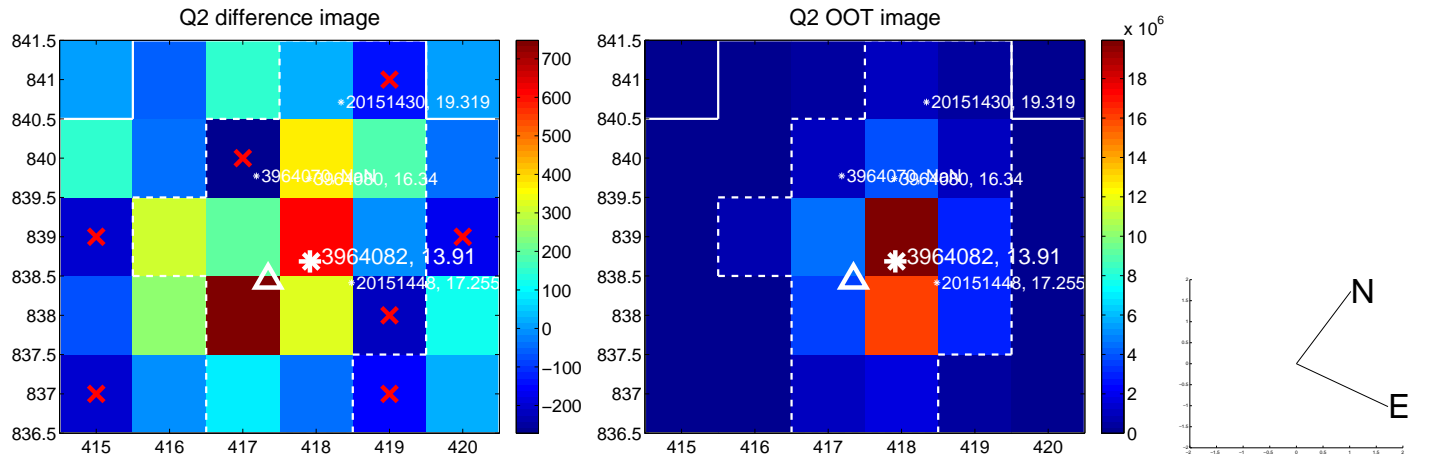
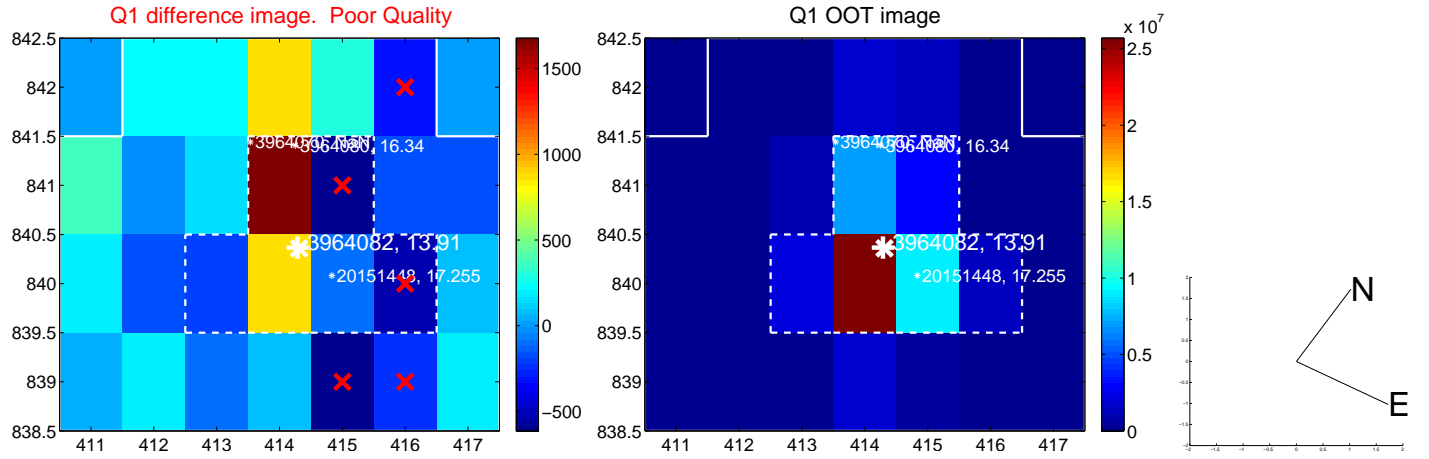


offset from photometric centroids

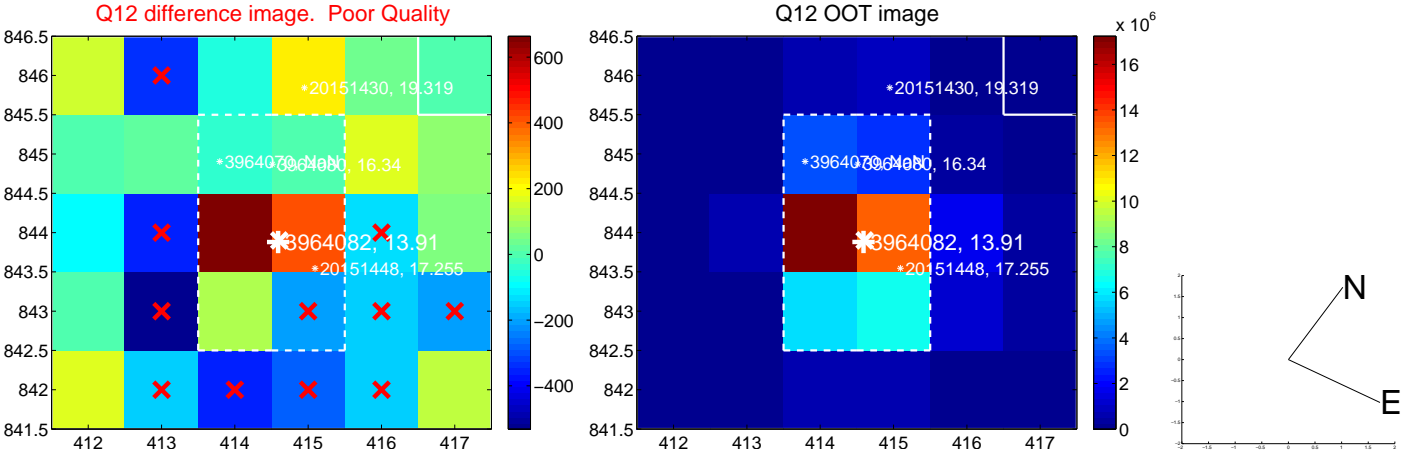
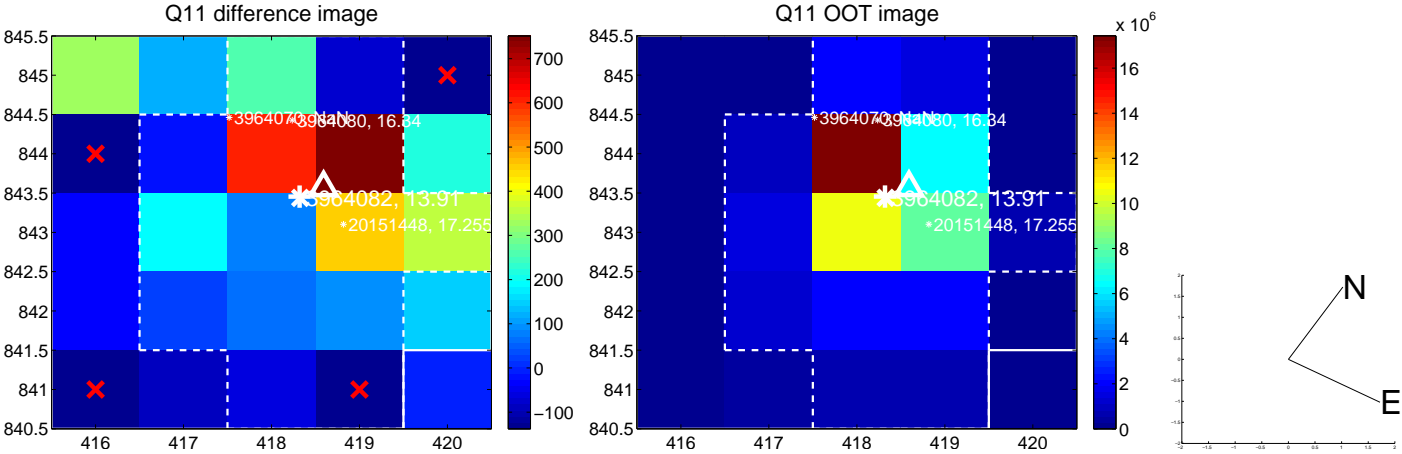
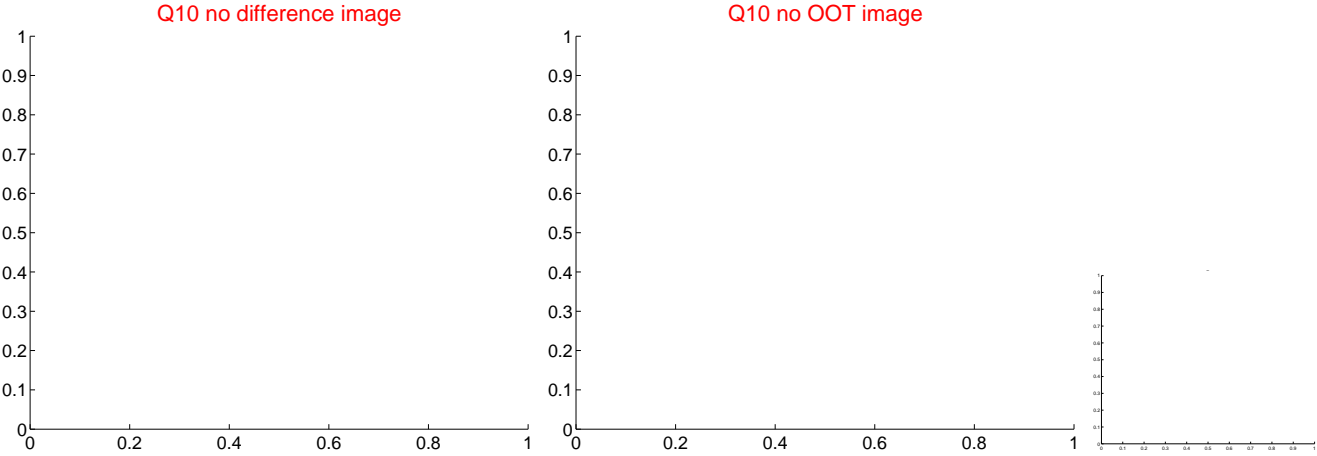
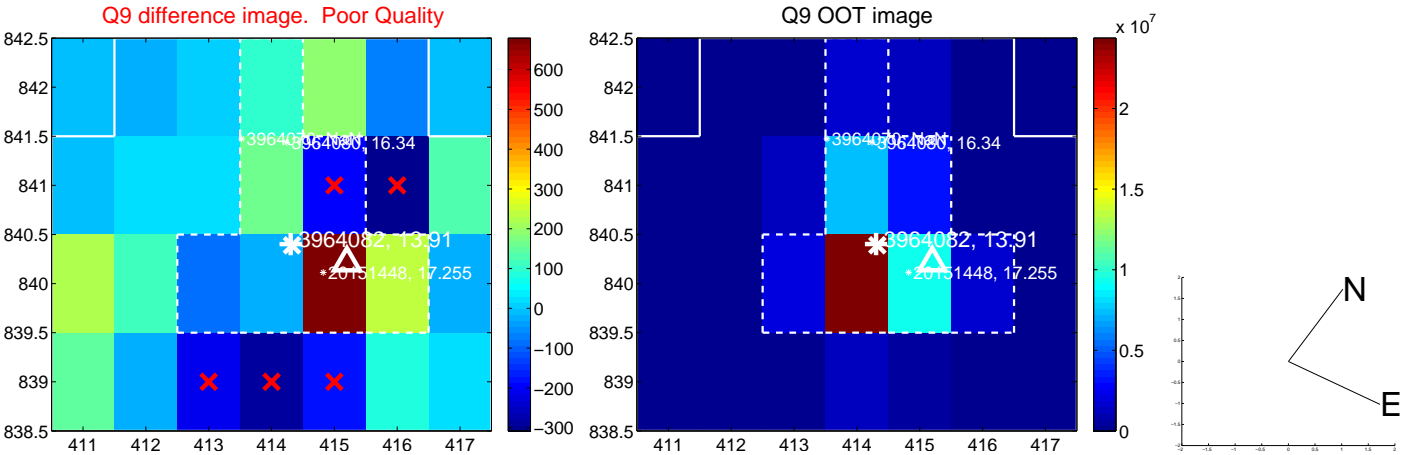


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

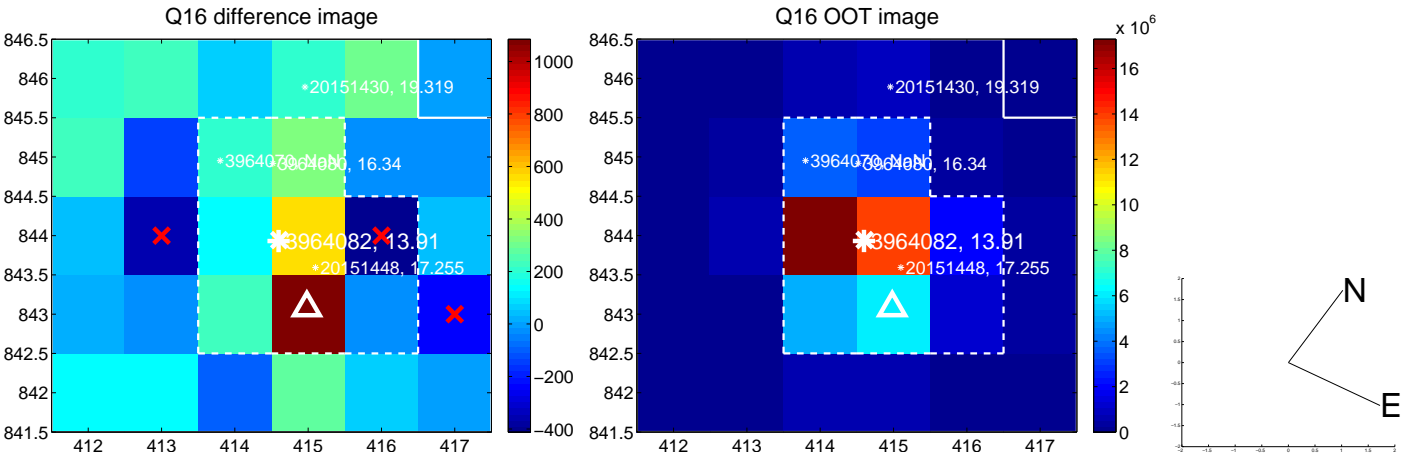
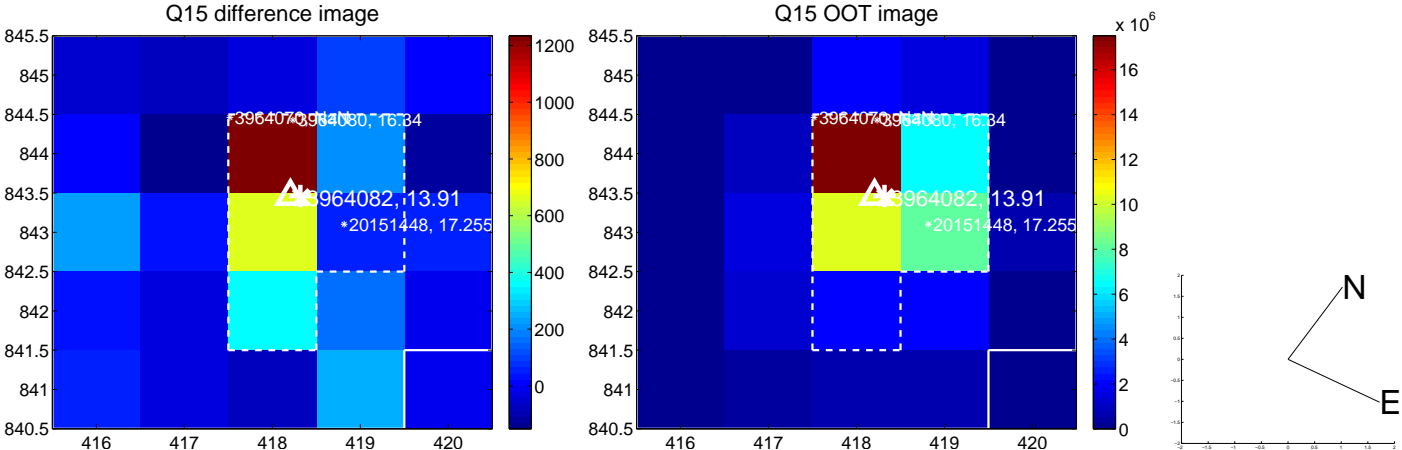
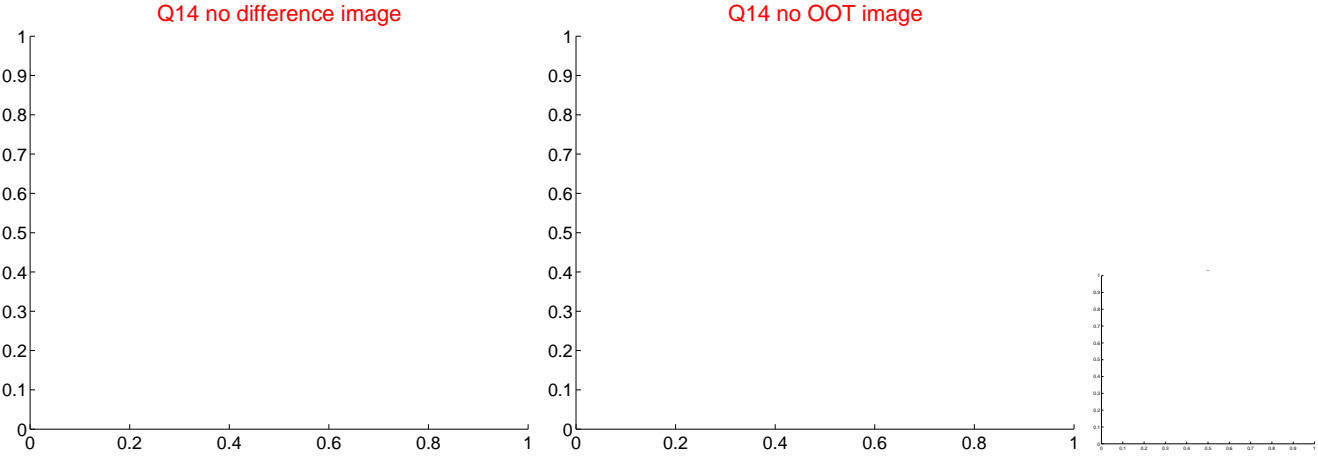
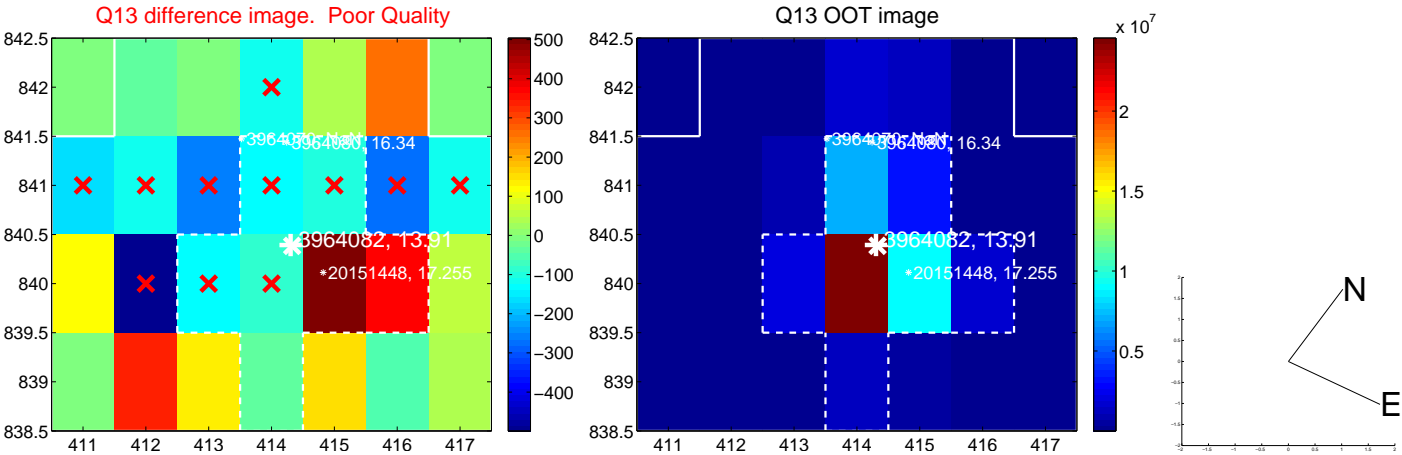
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



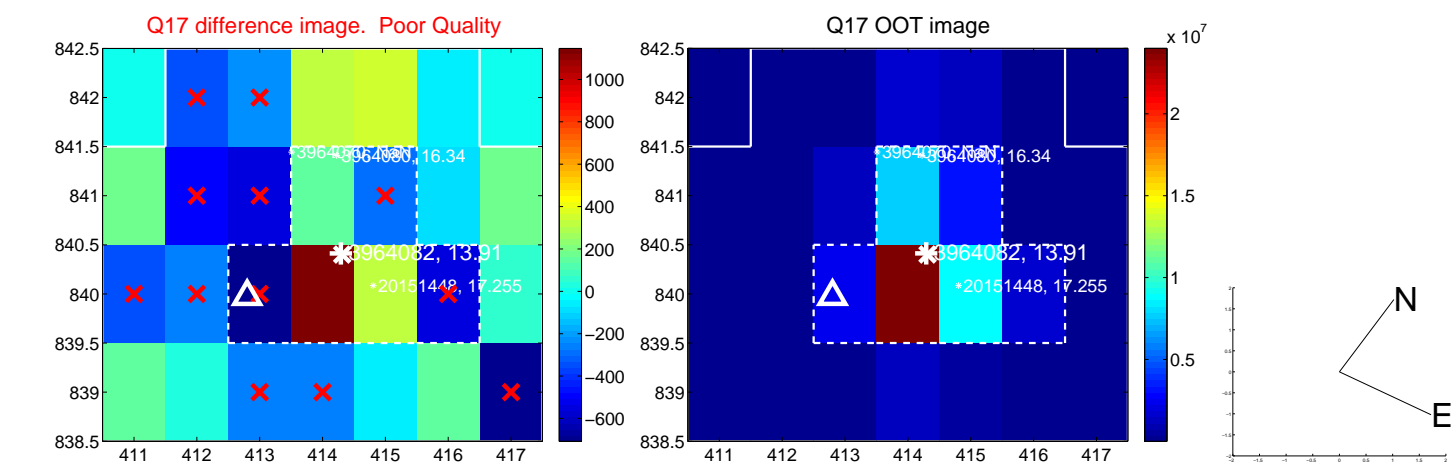
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



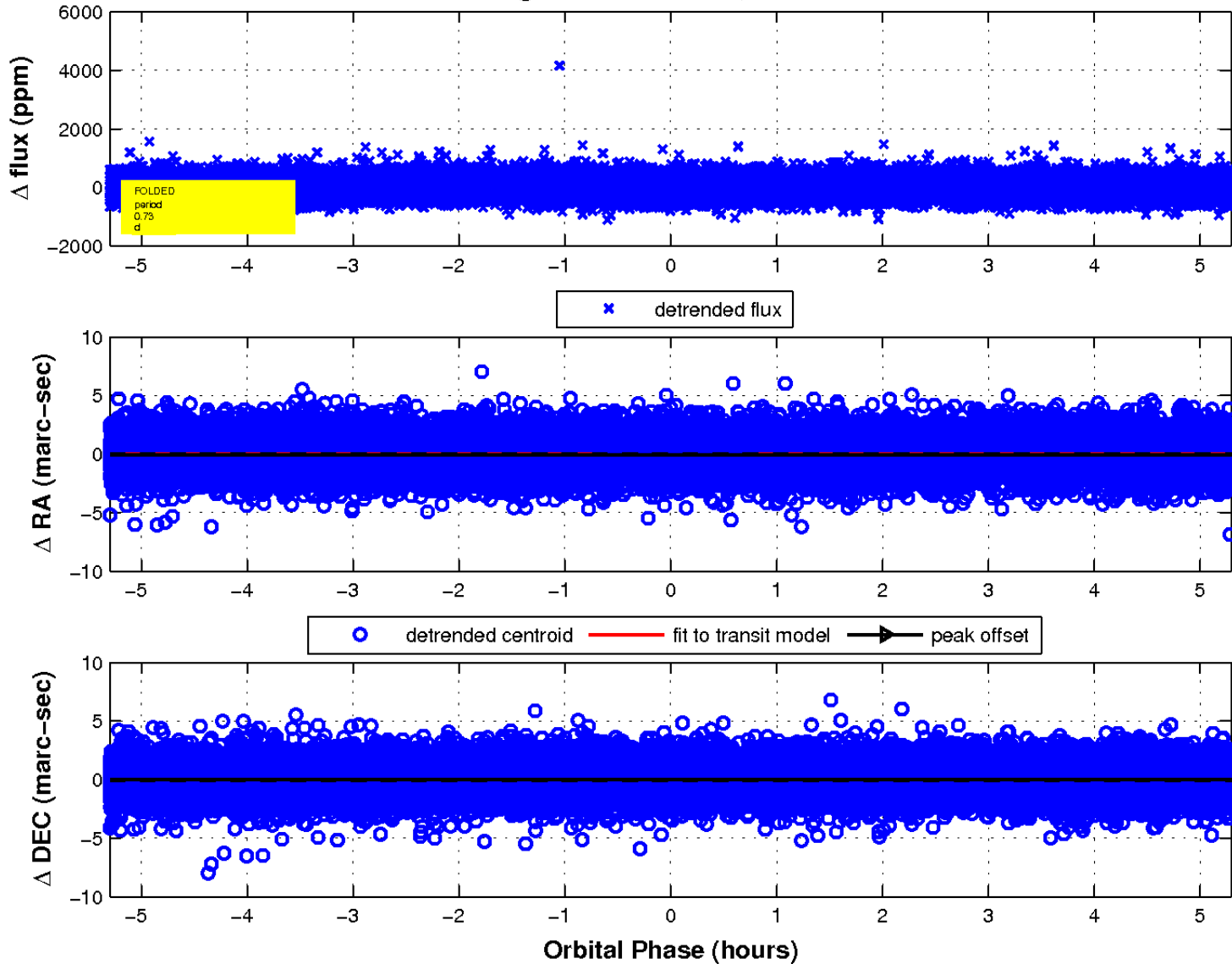
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

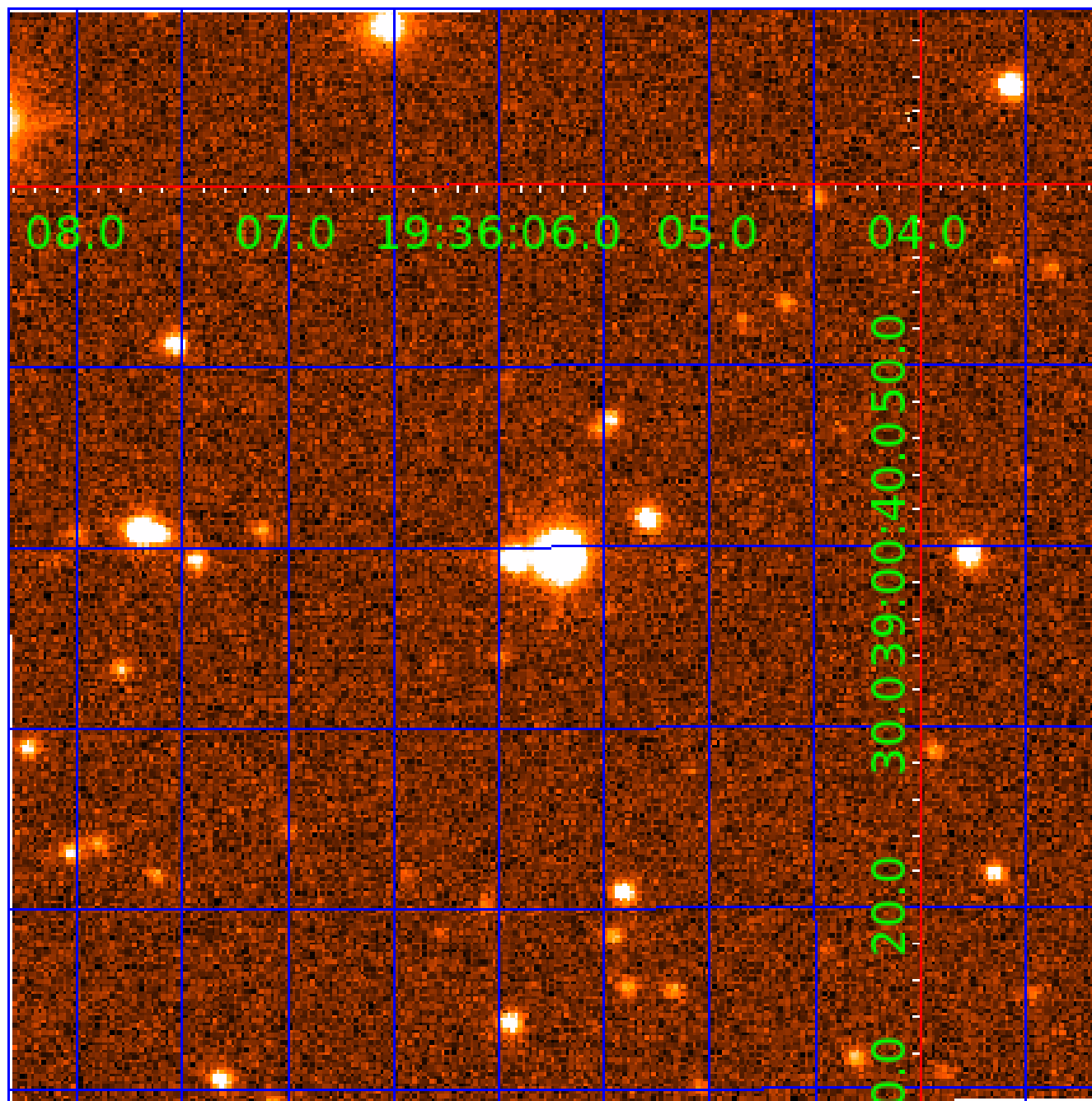


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 003964082

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})
003964082-01	OBS	No	0.729170	131.930923	30.1	1.766	7.8	6.6	1.16	6525	0.75	7786.33
003964082-02	OBS	No	0.582836	131.817305	39.8	6.519	8.4	12.0	1.16	6525	0.79	10496.45

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003964082-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003964082-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS

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

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

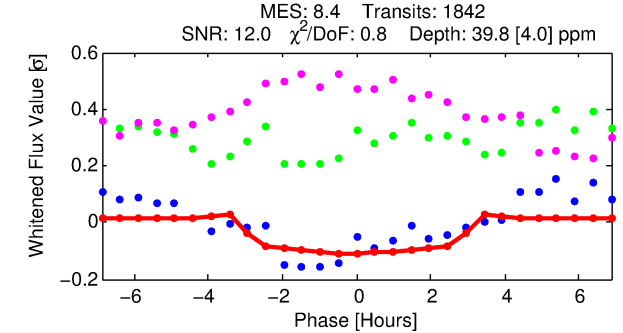
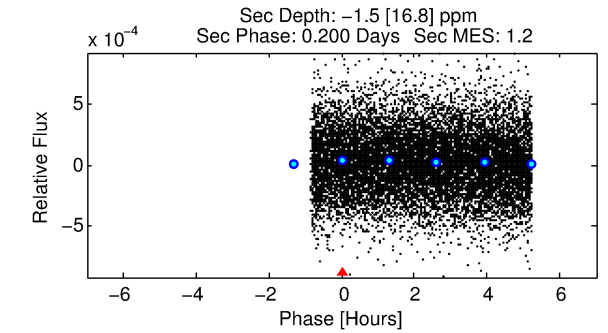
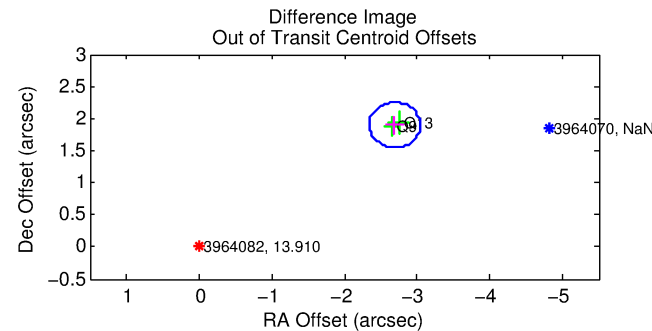
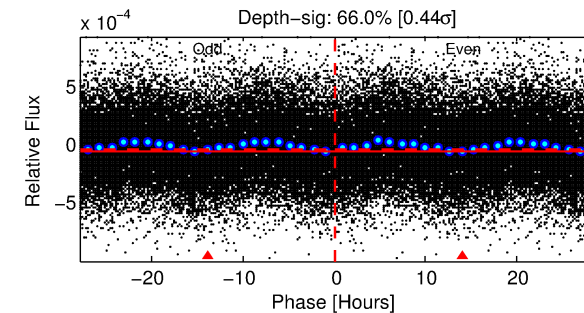
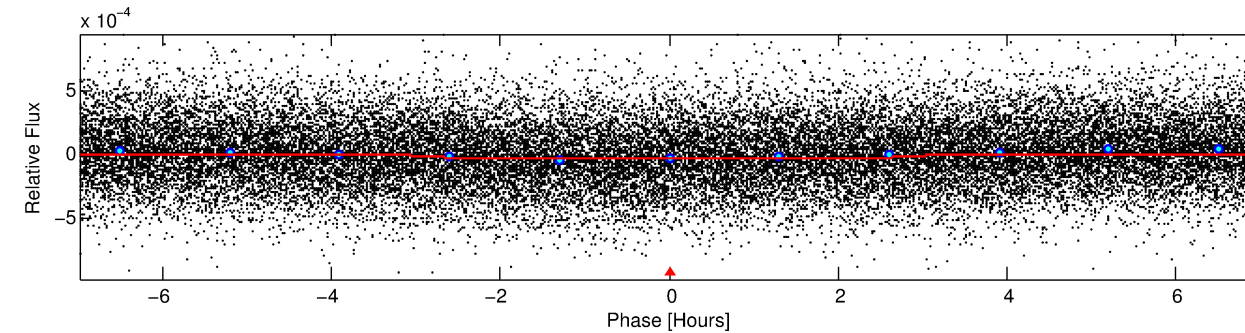
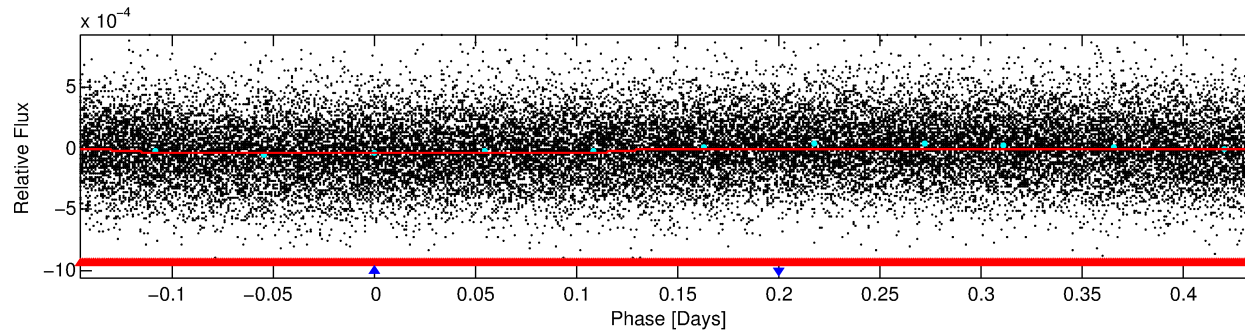
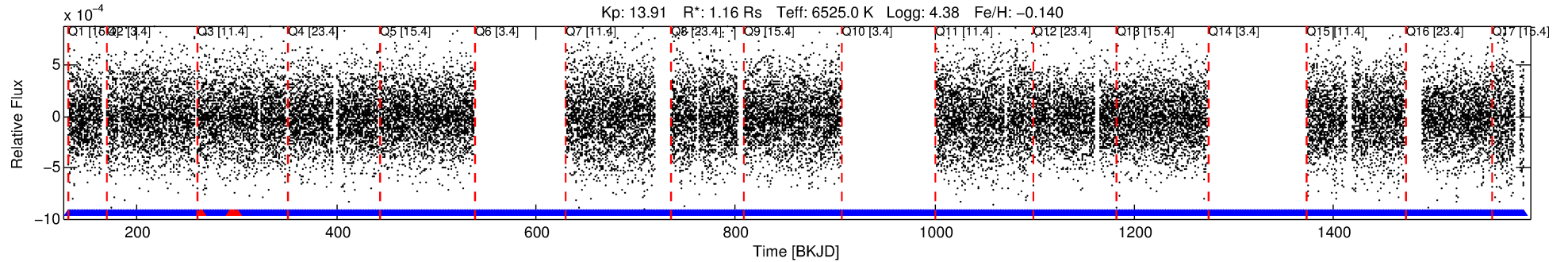
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003964082-02

No Significant Match Found

DV One-Page Summary

KIC: 3964082 Candidate: 2 of 2 Period: 0.583 d



DV Fit Results:

Period = 0.58284 [0.00001] d
Epoch = 131.8173 [0.0043] BKJD
Rp/R* = 0.0062 [0.0024]
a/R* = 1.01 [0.03]
b = 0.72 [1.50]
Seff = 10496.45 [3900.21]
Teq = 2581 [240] K
Rp = 0.79 [0.39] Re
a = 0.0144 [0.0035] AU
Ag = N/A
Teffp = N/A

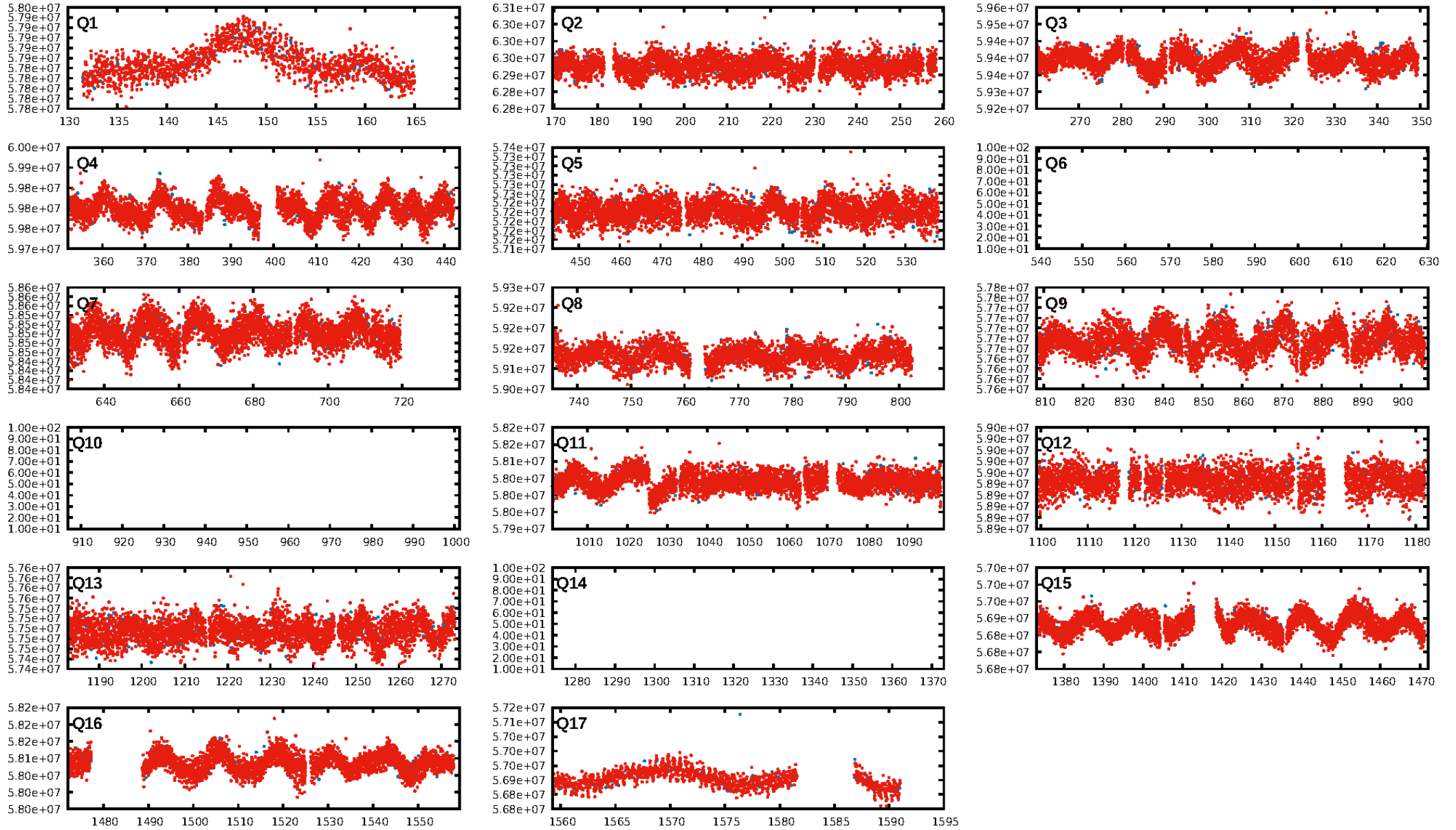
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 39.7% [0.52 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1728/1738]
GhostDiagnostic-chr: 1.873
Centroid-sig: 95.3%
Centroid-so: 0.321 arcsec [0.47 σ]
OotOffset-rm: 3.294 arcsec [28.05 σ]
KicOffset-rm: 3.374 arcsec [28.85 σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/14]

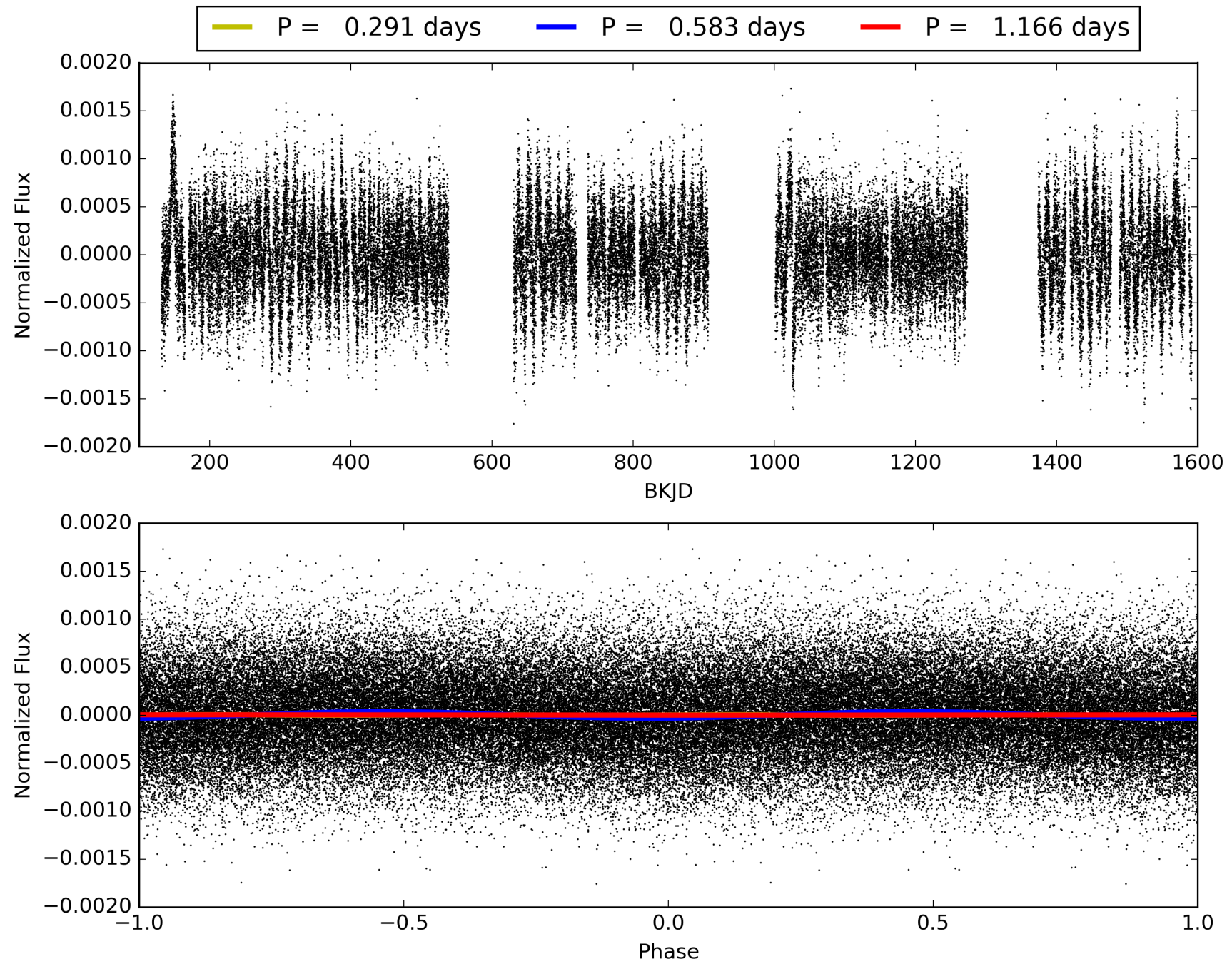
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:55:16 Z

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

TCE 003964082-02, PDC Light Curves

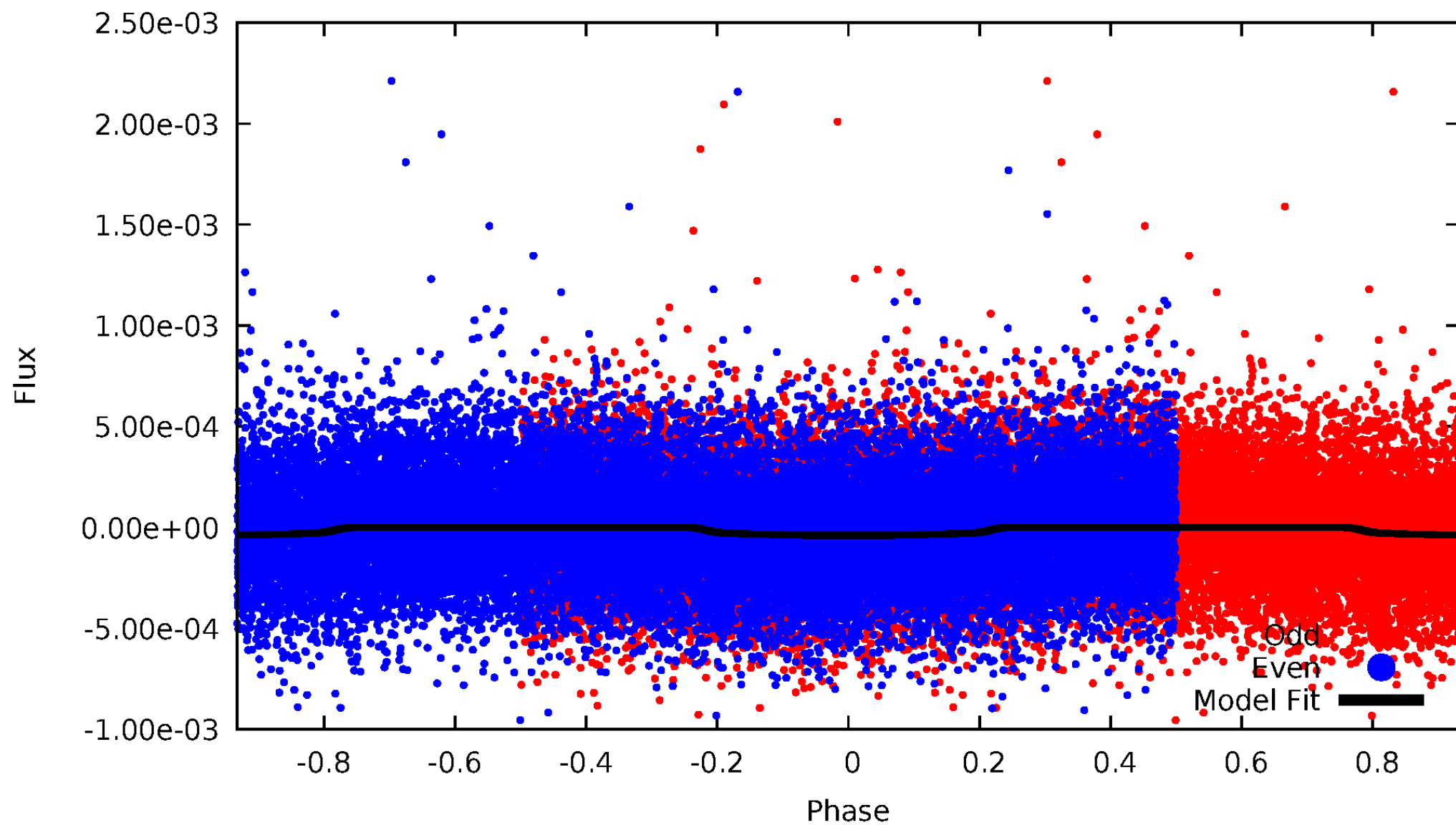


TCE 003964082-02



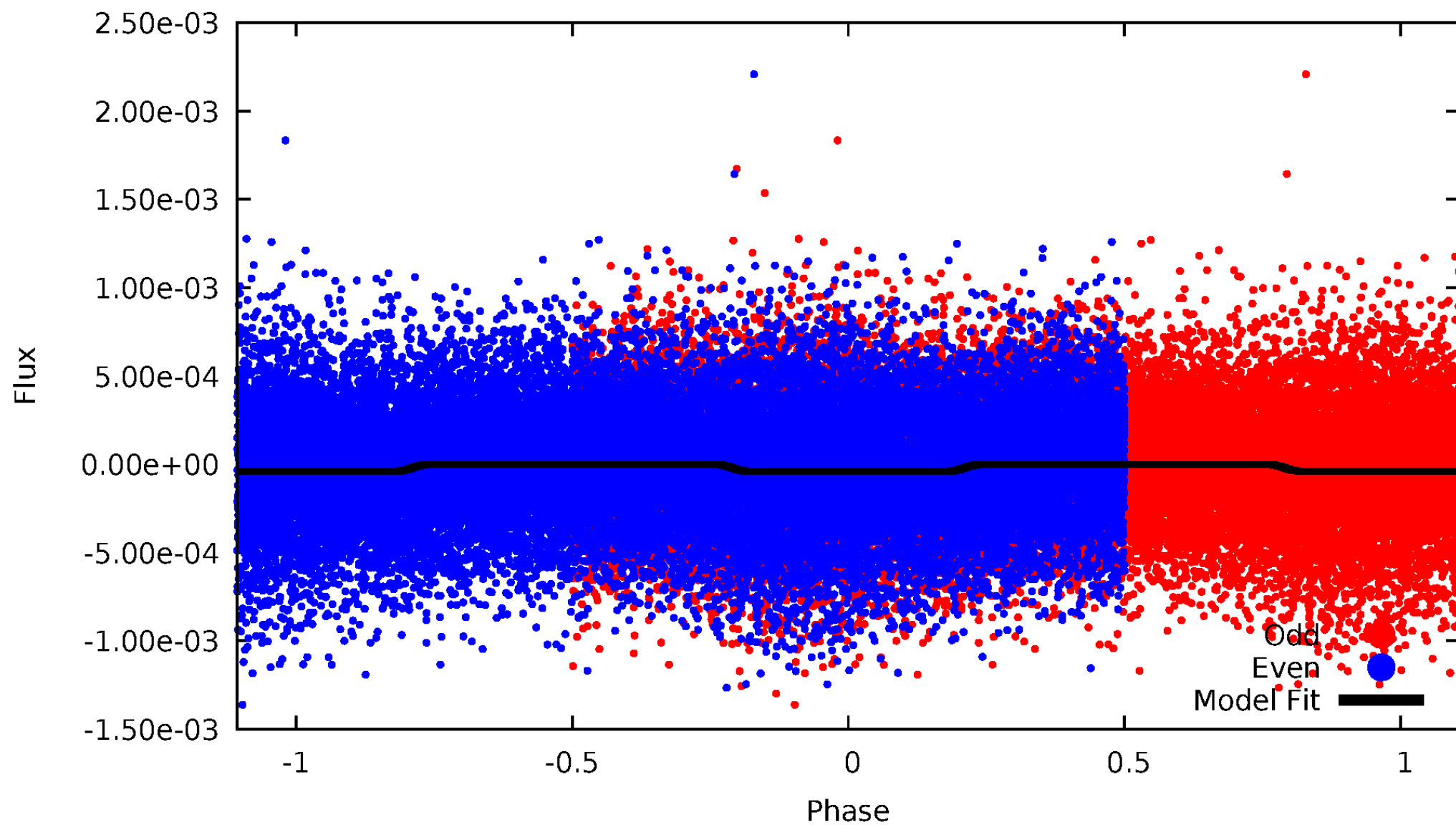
DV Odd/Even

TCE 003964082-02



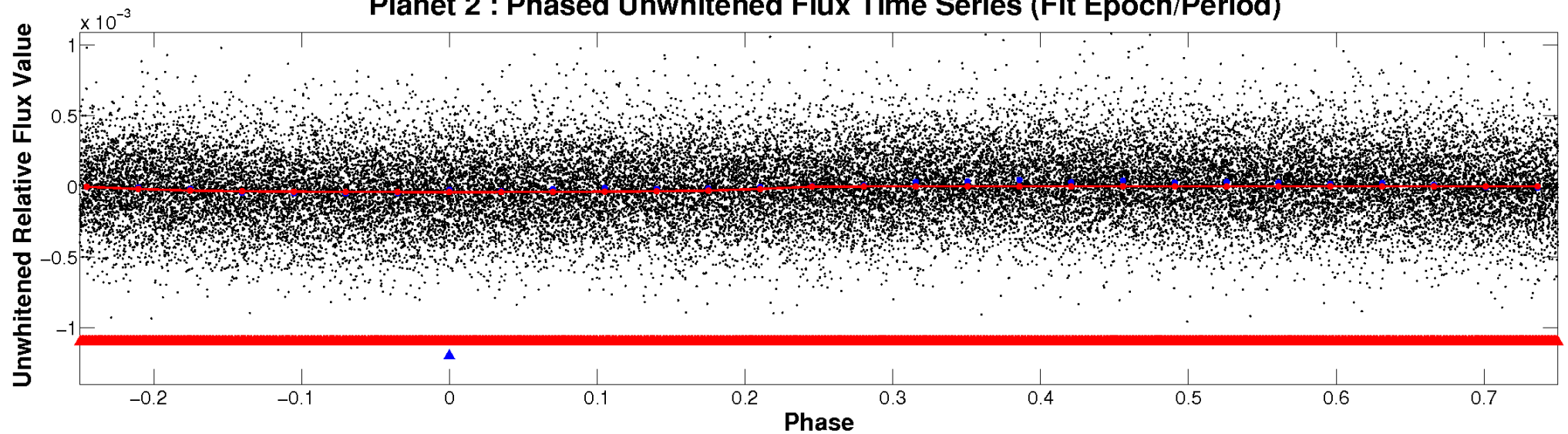
ALT Odd/Even

TCE 003964082-02

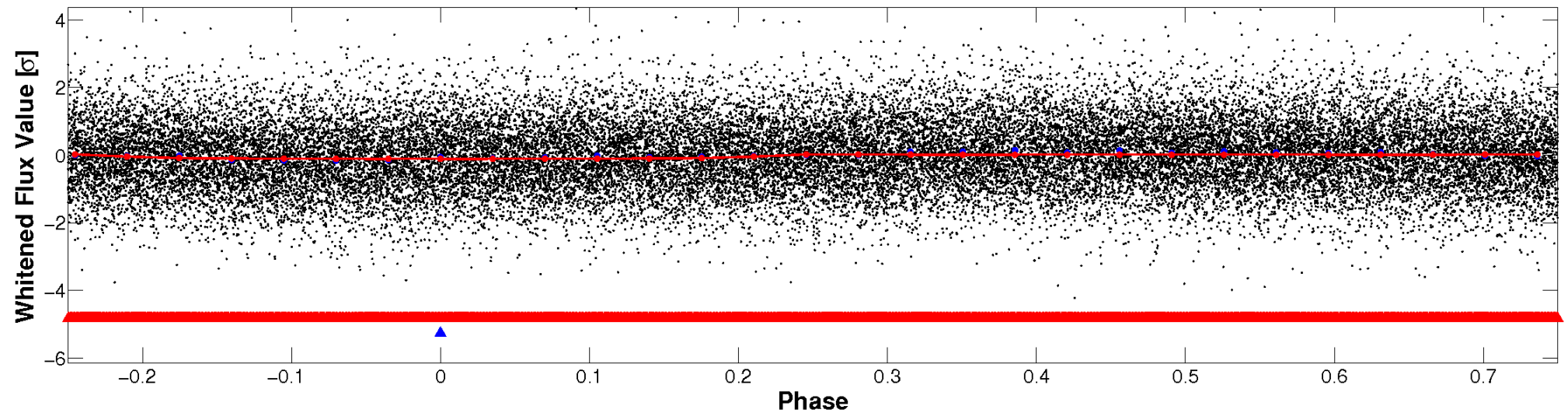


Non-Whitened Vs. Whitened Light Curve

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

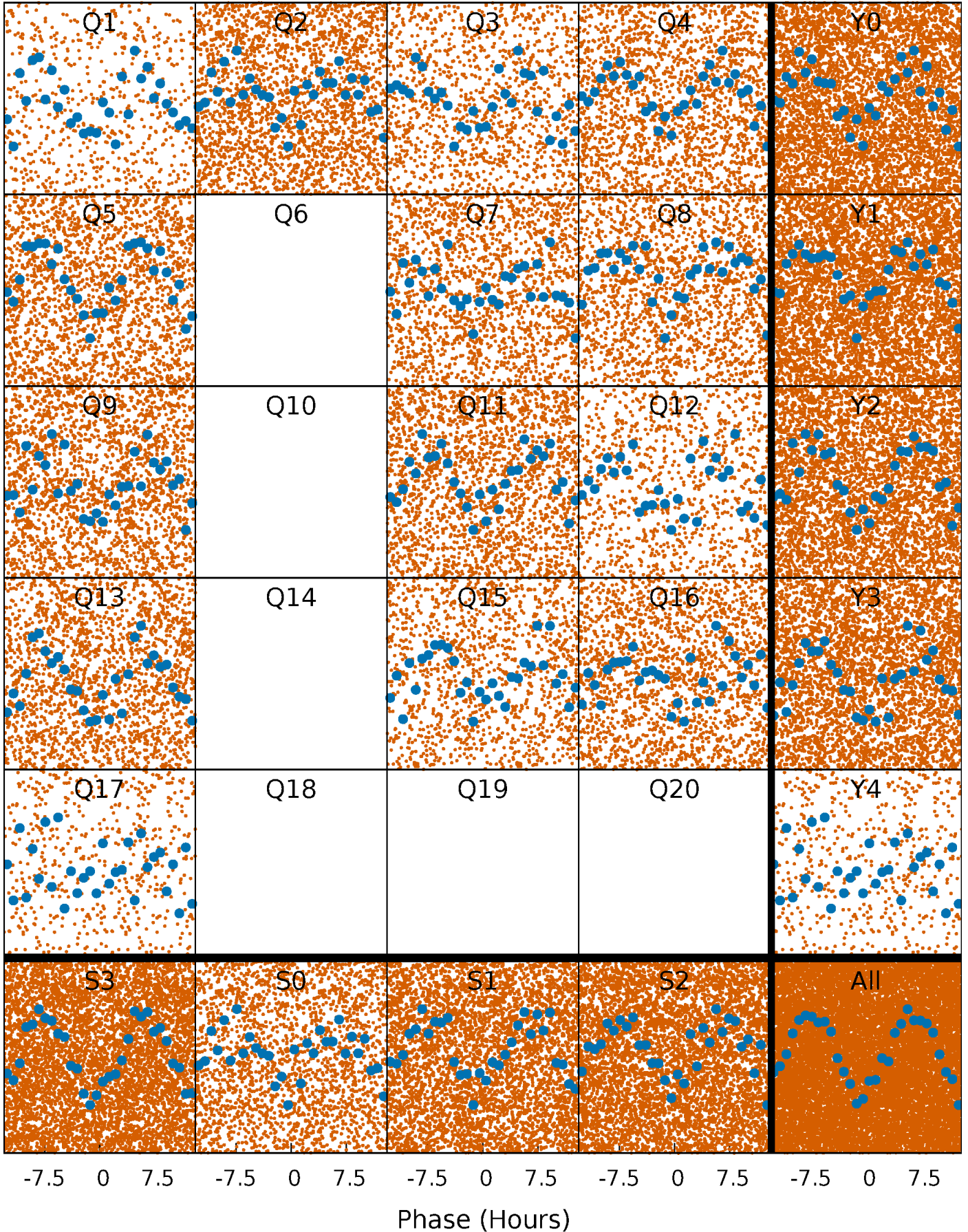


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



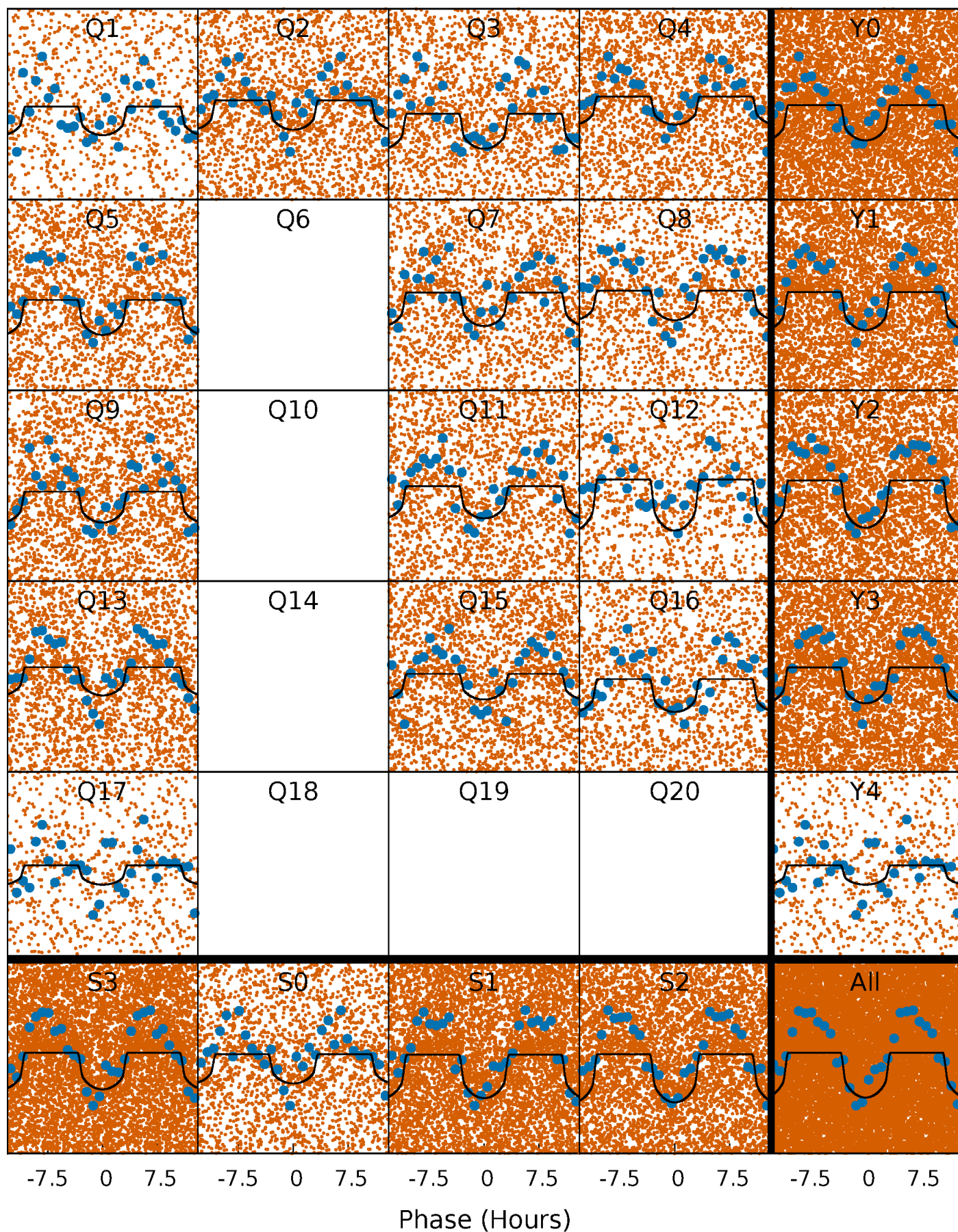
PDC Quarter-Phased Transit Curves

TCE 003964082-02 P= 0.582836 Days $T_0=131.817305$ (BKJD)



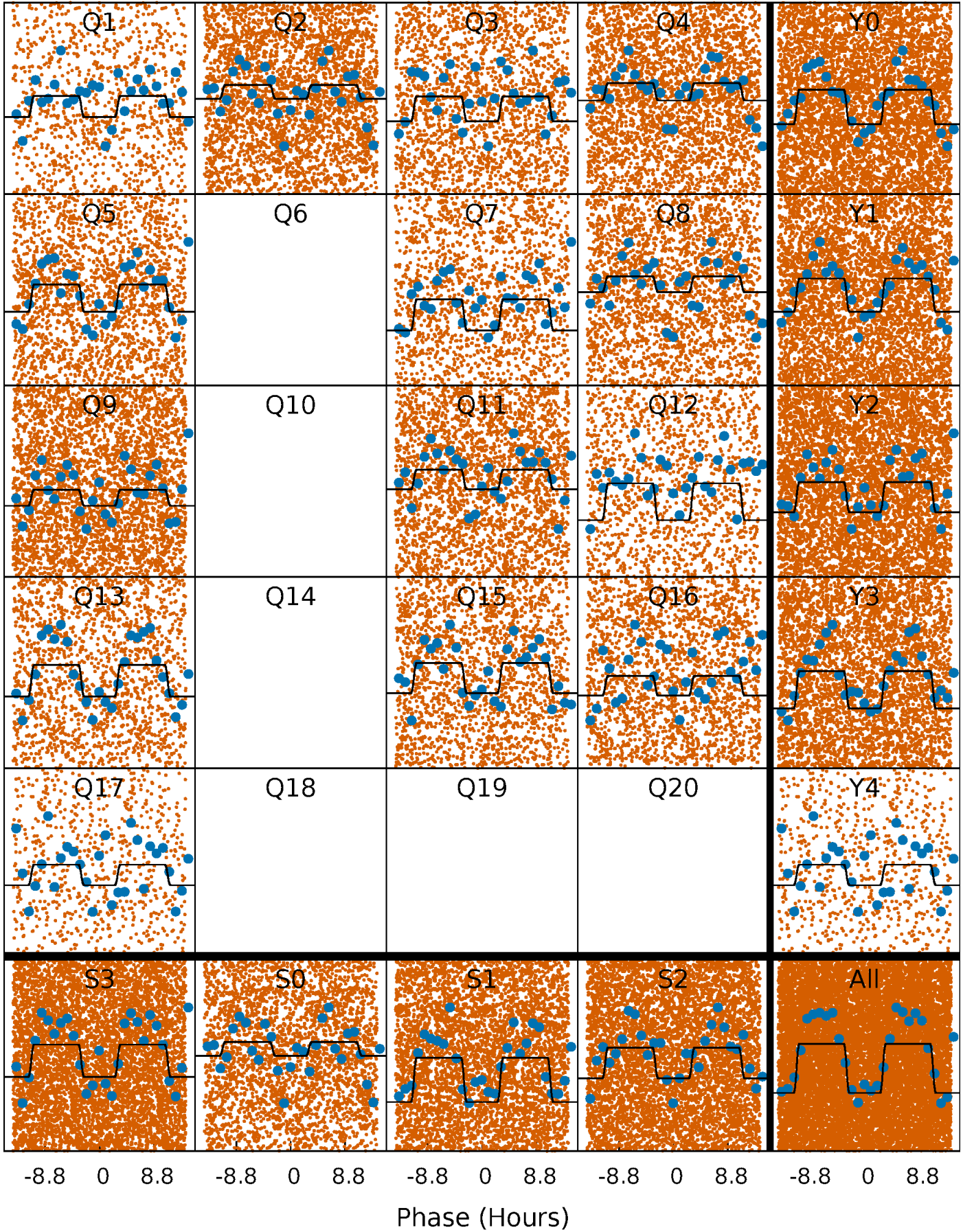
DV Quarter-Phased Transit Curves

TCE 003964082-02 P= 0.582836 Days $T_0=131.817305$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

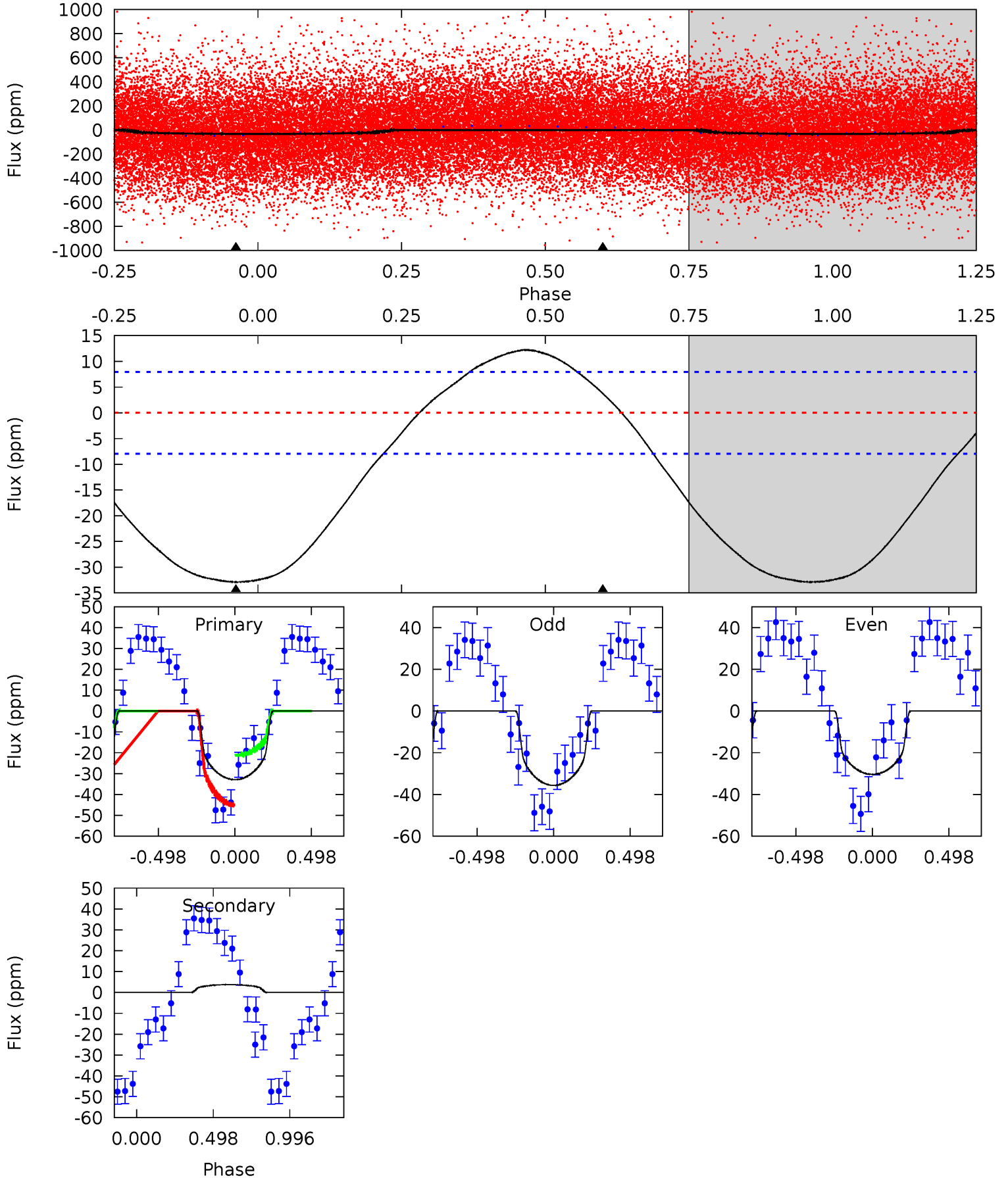
TCE 003964082-02 P= 0.582840 Days $T_0=131.817105$ (BKJD)



DV Model-Shift Uniqueness Test

003964082-02, P = 0.582836 Days, E = 131.234469 Days

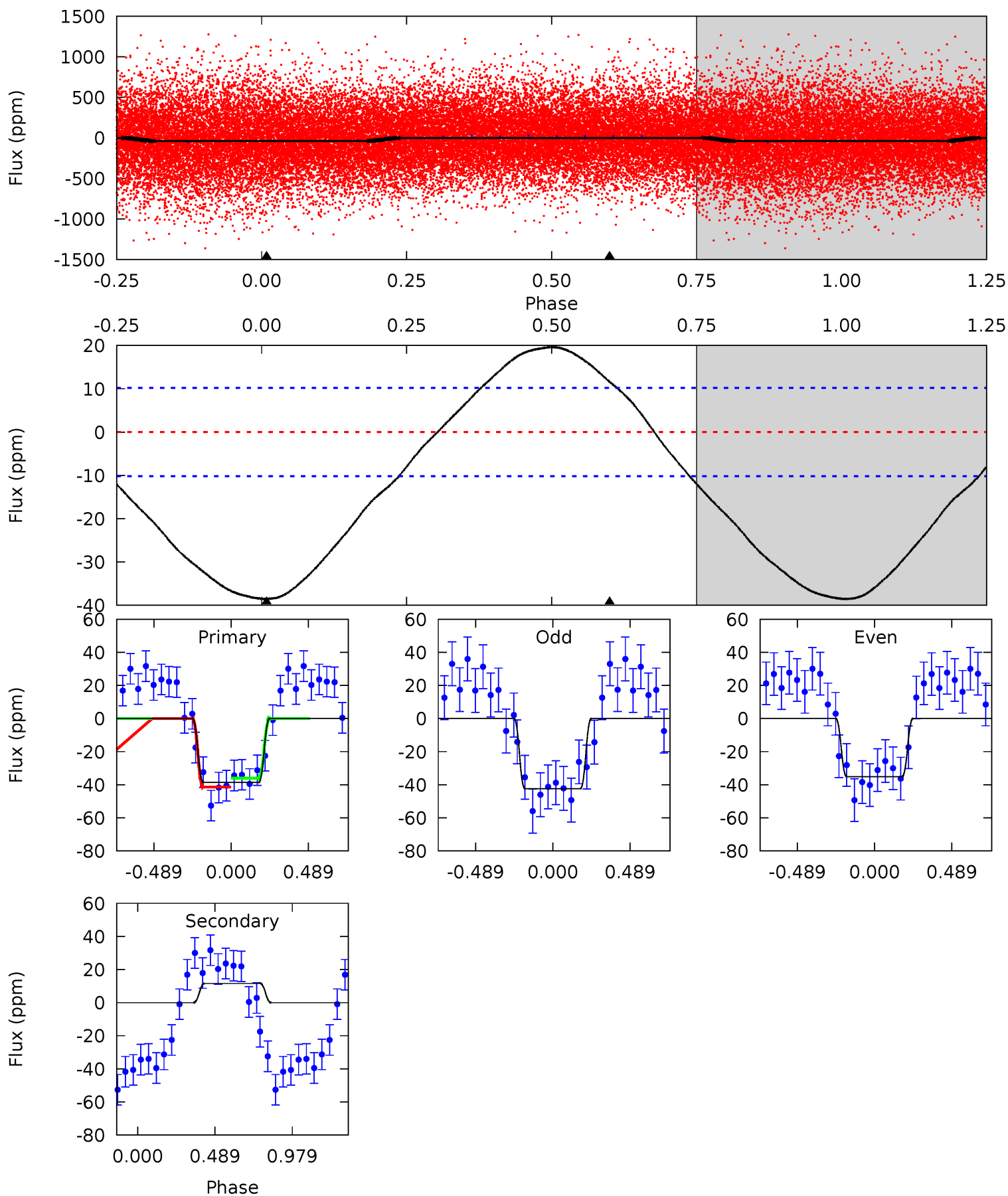
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.5	-1.99	0	0	4.22	0.68	1.75	17.5	17.5	-1.99	-1.99	1.39	1.12	0.27	6.36



Alt Model-Shift Uniqueness Test

003964082-02, P = 0.582840 Days, E = 131.234265 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	-4.80	0	0	4.22	0.69	1.69	16.0	16.0	-4.80	-4.80	1.51	0.98	0.34	1.05



Stellar Parameters For KIC 003964082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6525^{+154}_{-212}	$4.381^{+0.062}_{-0.188}$	$-0.140^{+0.250}_{-0.300}$	$1.161^{+0.339}_{-0.145}$	$1.183^{+0.164}_{-0.164}$	$1.065^{+0.343}_{-0.506}$
	+2%/-3%	+1%/-4%	+179%/-214%	+29%/-12%	+14%/-14%	+32%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 003964082-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	4 ± 2	$0.81^{+0.38}_{-0.35}$	3656^{+262}_{-157}	-4246^{+424}_{-825}	$-0.619^{+0.421}_{-1.391}$
Alt.	12 ± 2	$0.83^{+0.36}_{-0.34}$	3665^{+248}_{-183}	-5046^{+580}_{-1249}	$-1.887^{+0.979}_{-3.598}$

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

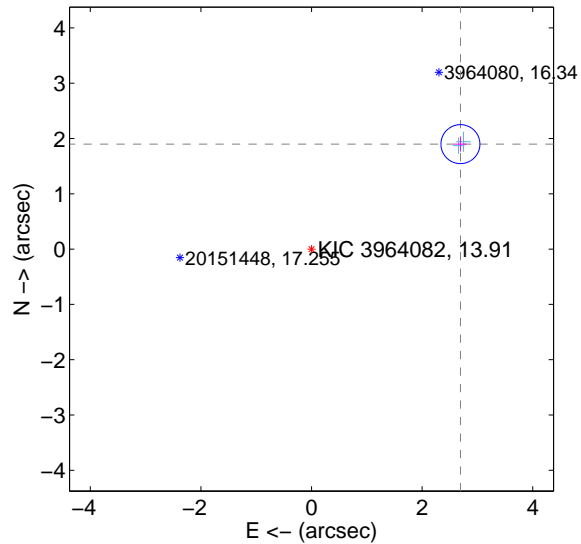
Supplemental centroid analysis for 003964082-02. Kepler magnitude: 13.91. Transit SNR 12.00

There are 2 quarters with good PRF difference image offsets

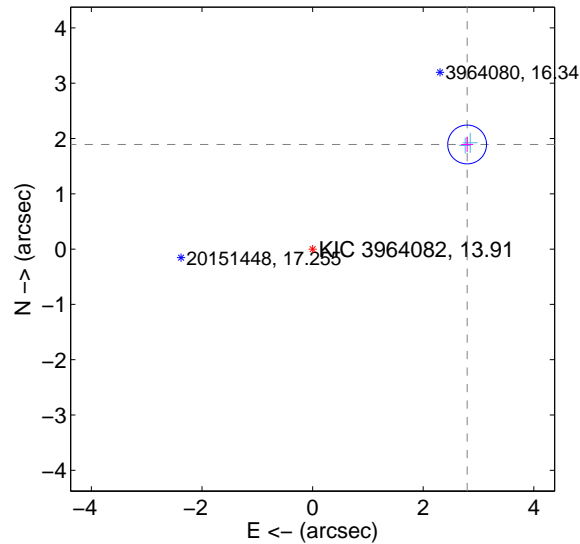
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.294 ± 0.117	28.05	-2.692 ± 0.108	1.898 ± 0.134
PRF-fit source offset from KIC position	3.374 ± 0.117	28.85	-2.794 ± 0.108	1.892 ± 0.134
photometric centroid source offset	0.32 ± 0.69	0.47	-0.21 ± 0.74	-0.24 ± 0.65

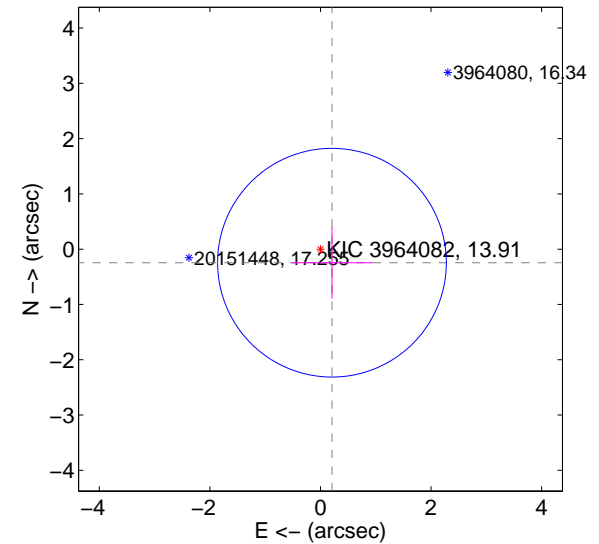
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

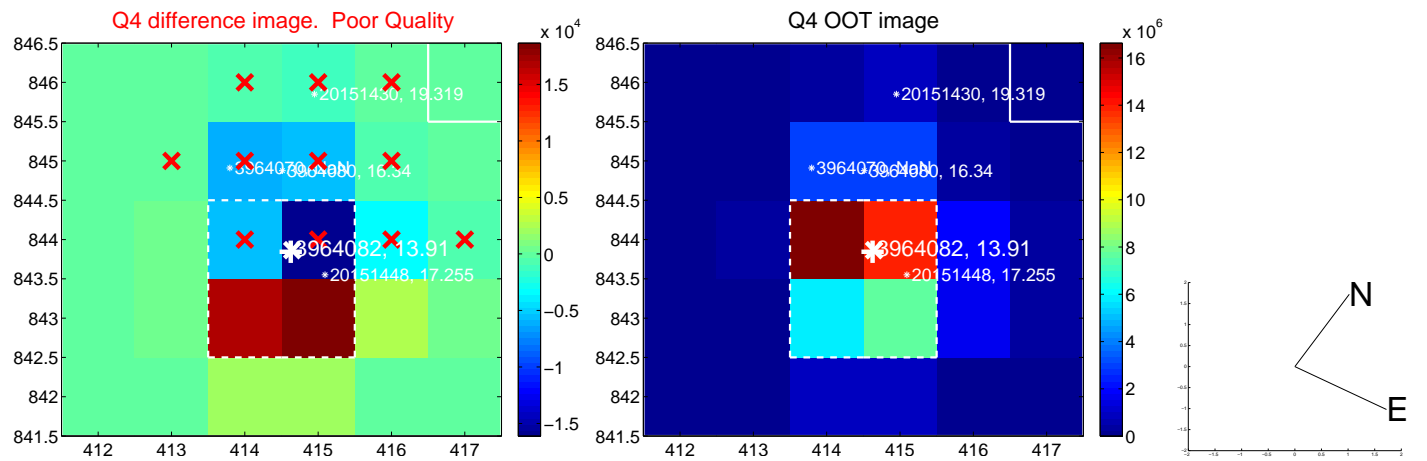
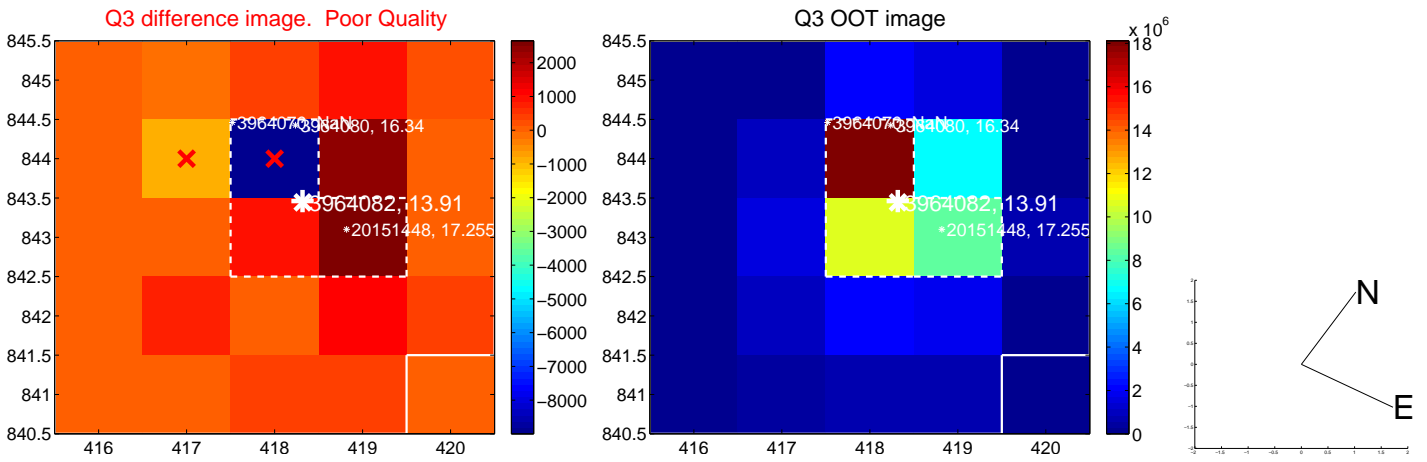
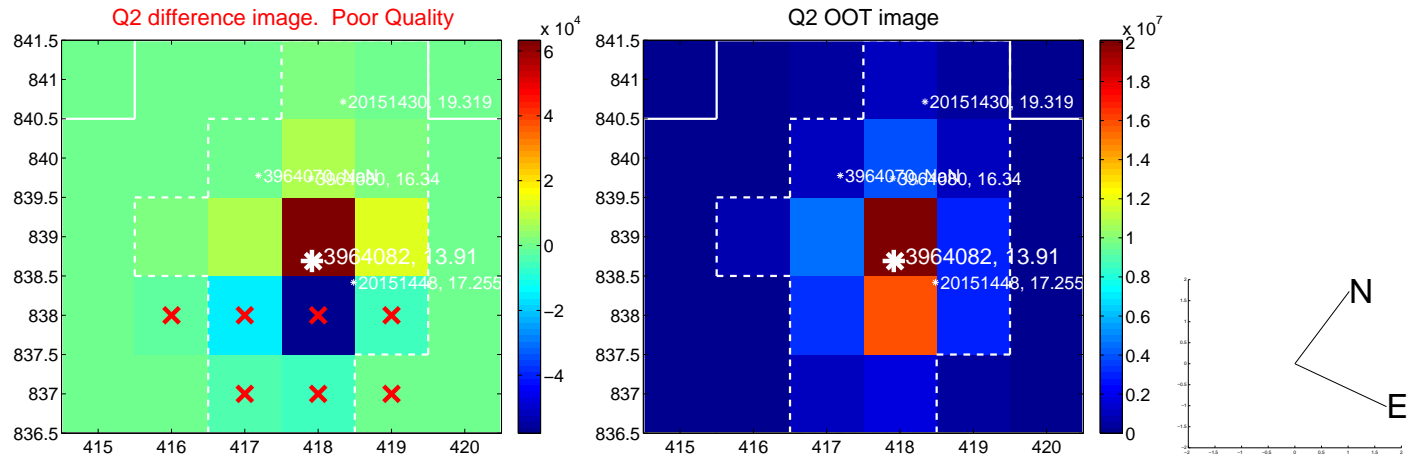
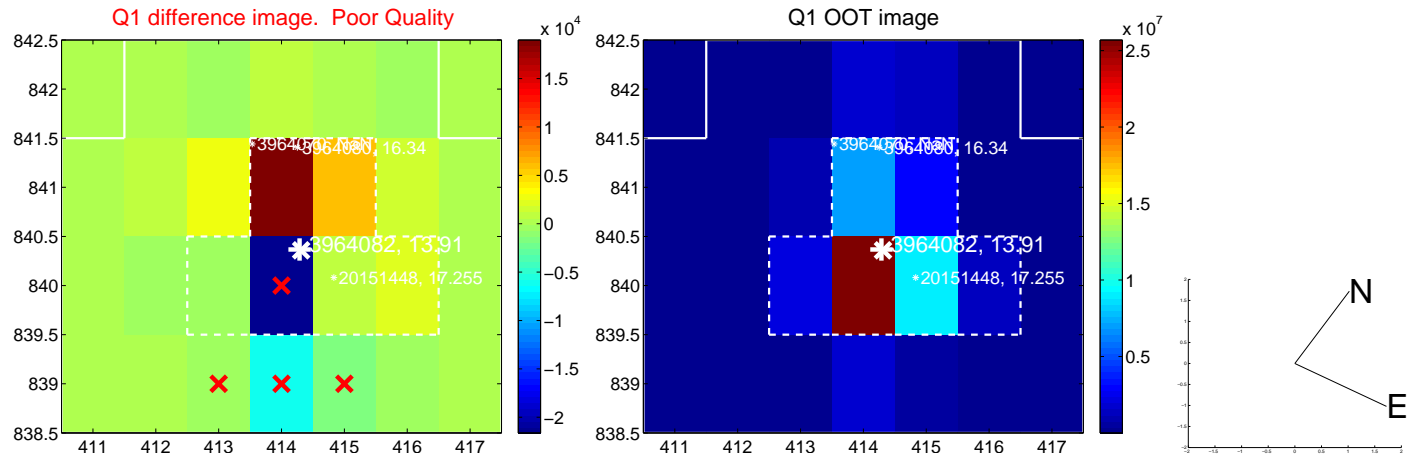


offset from photometric centroids

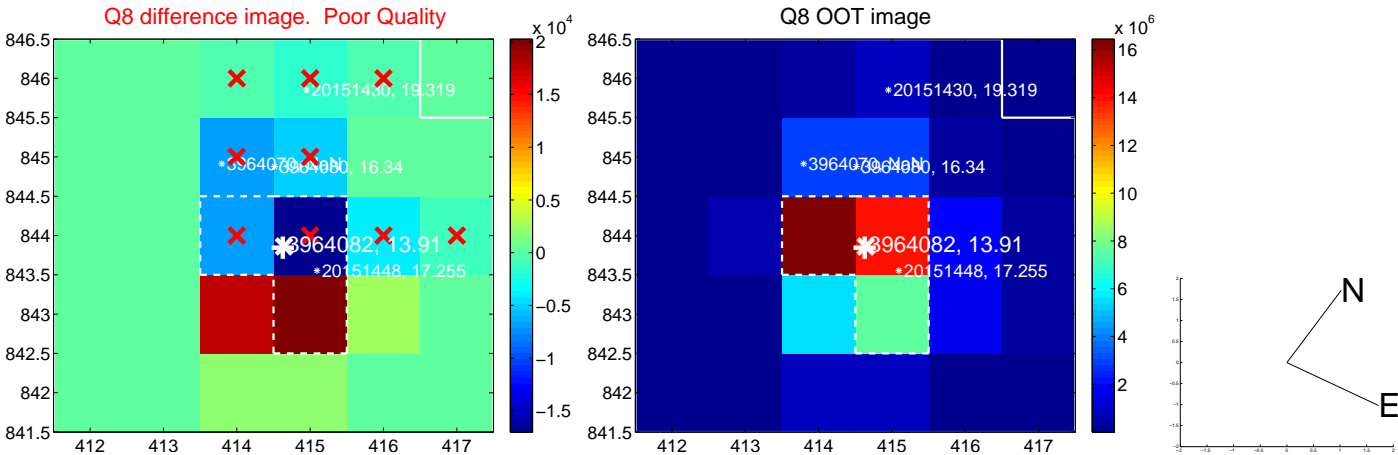
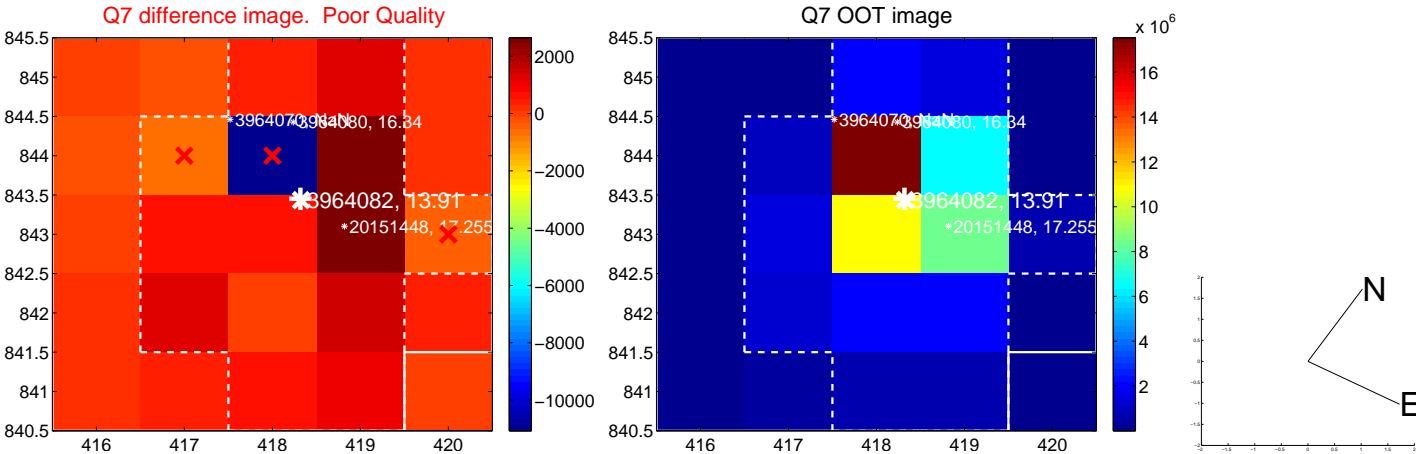
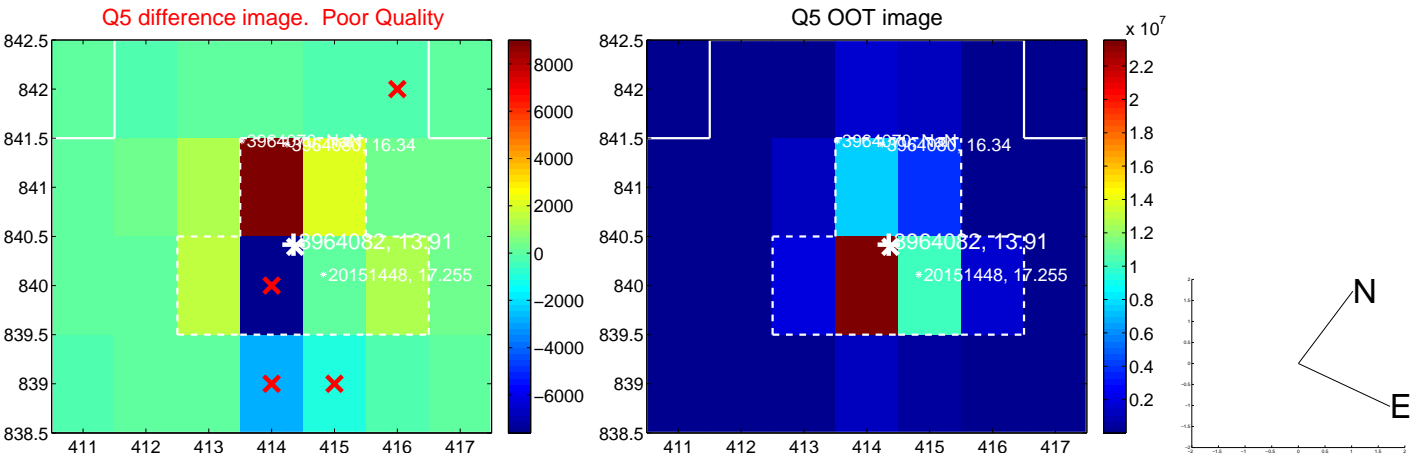


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

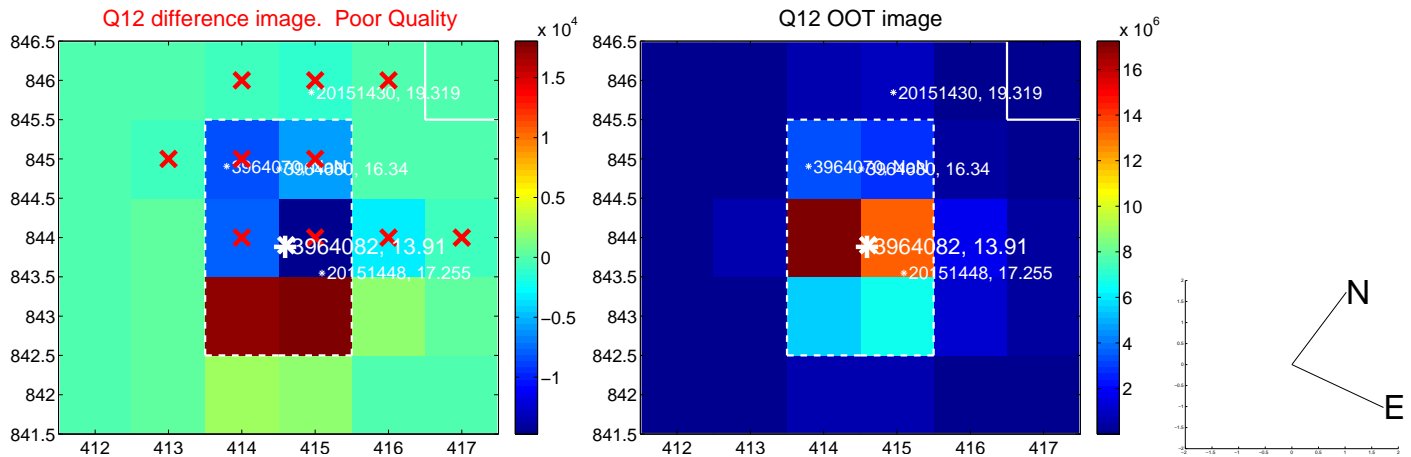
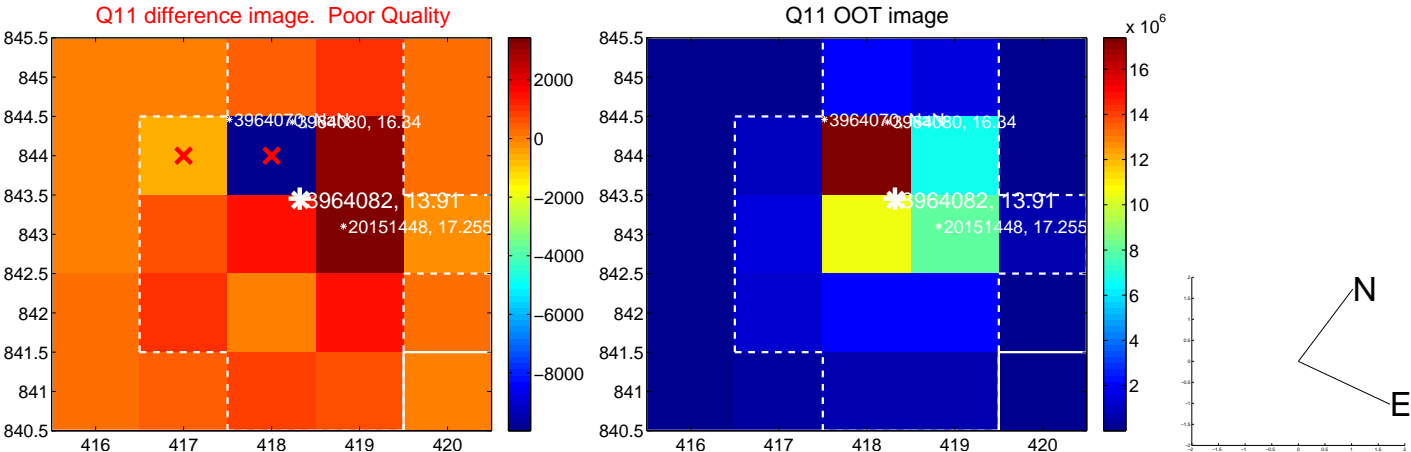
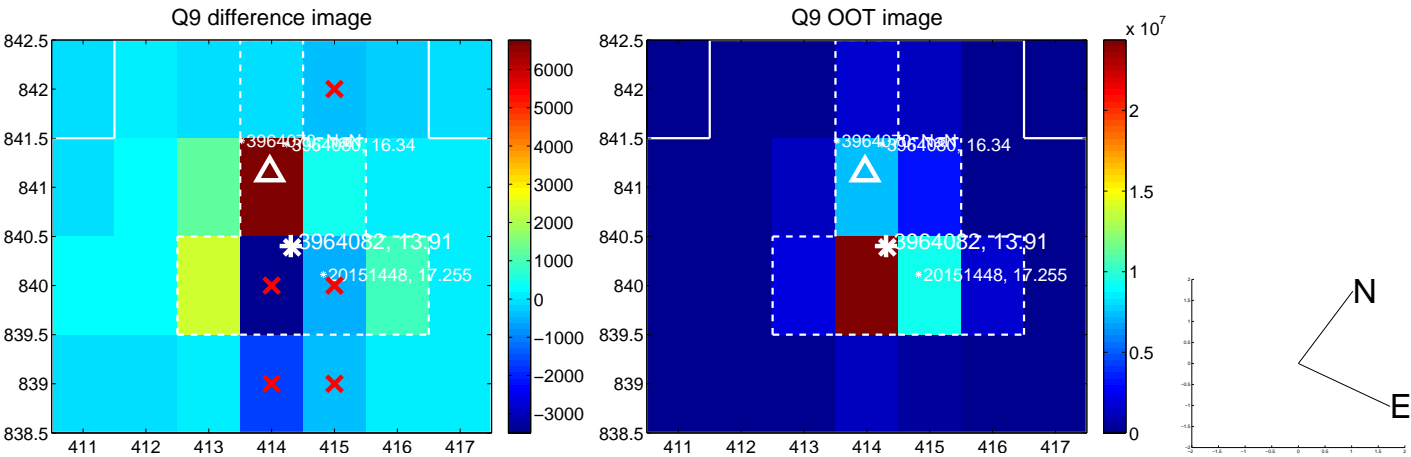
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



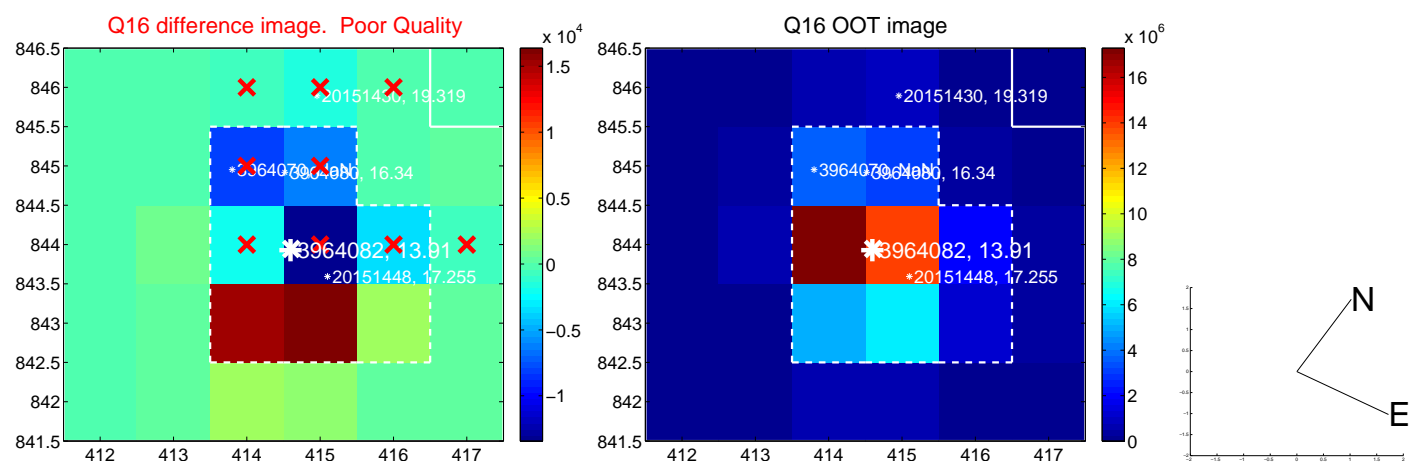
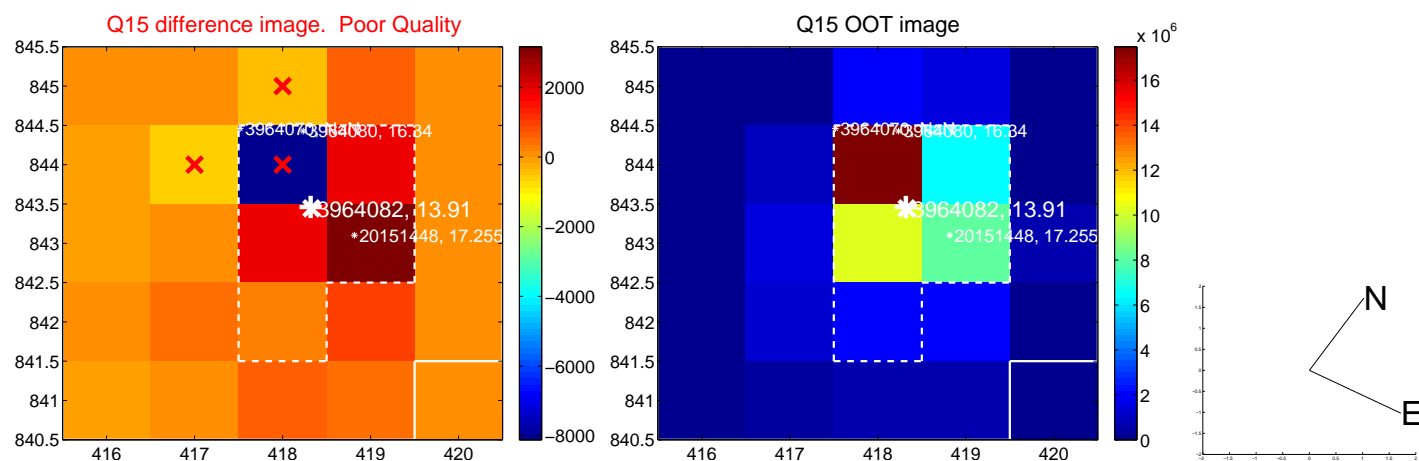
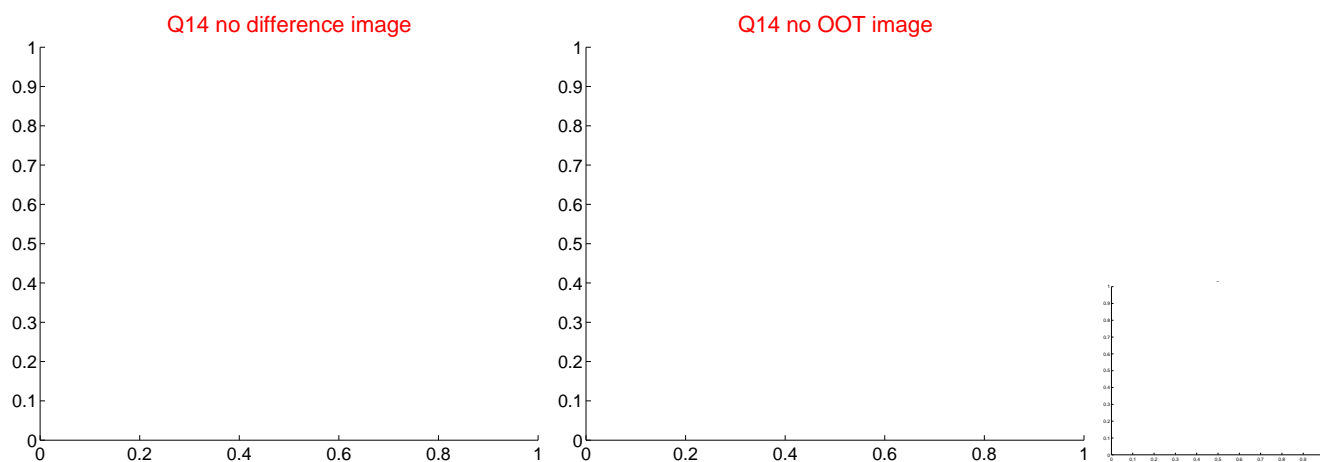
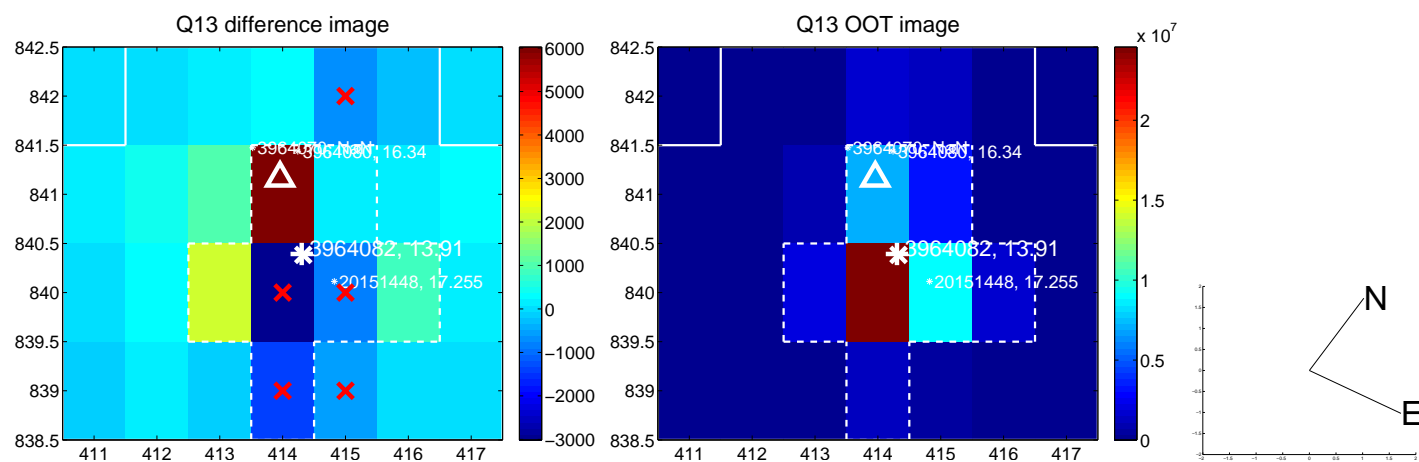
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



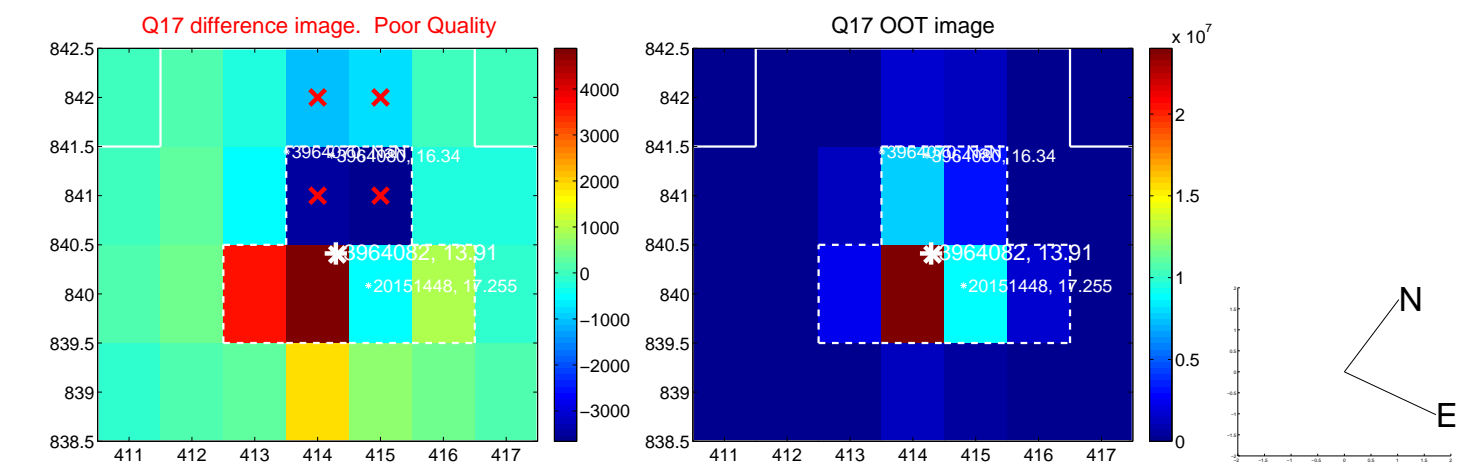
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



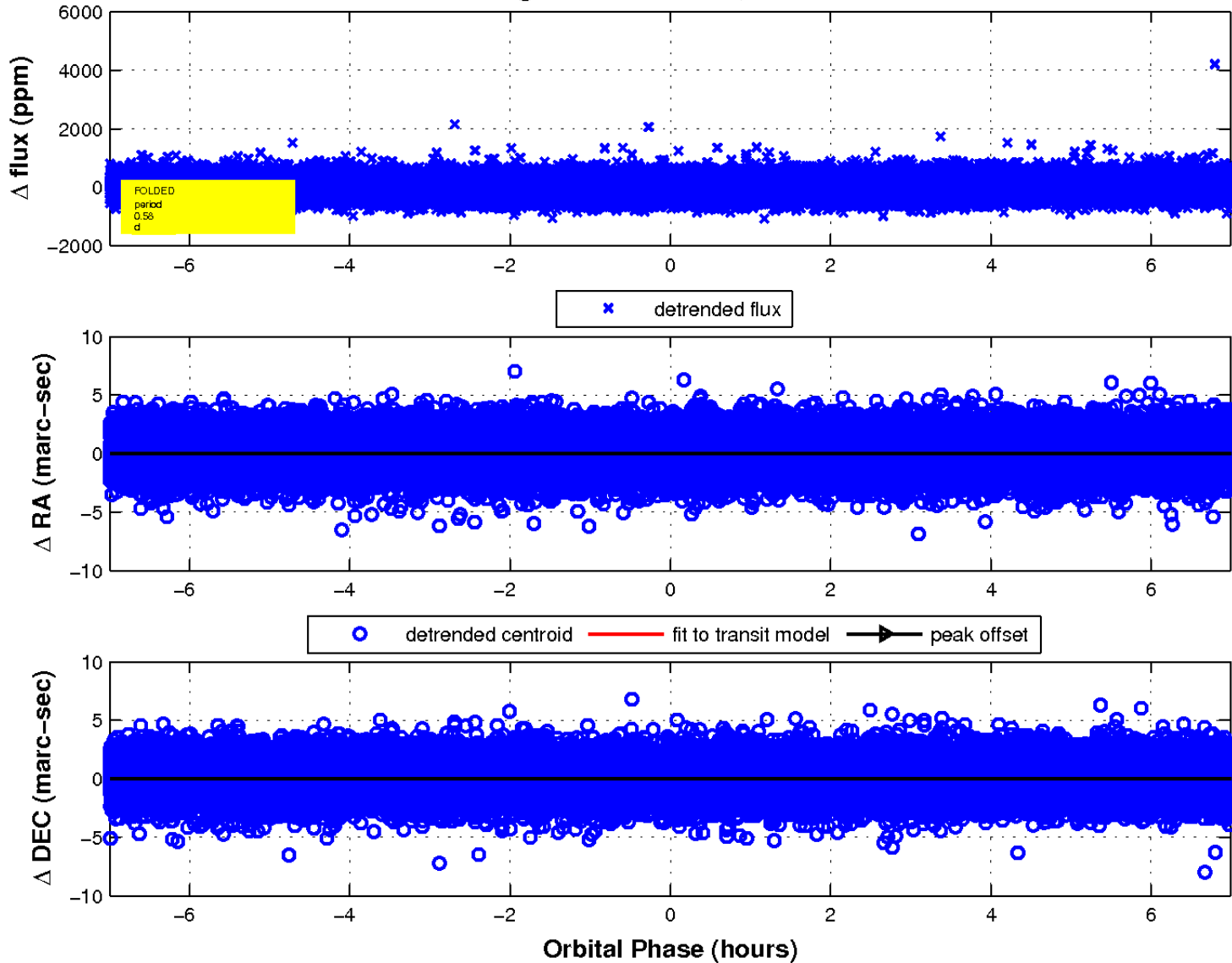
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

