

KIC 010000941

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})
010000941-01	OBS	4146.01	3.504751	133.715508	87.6	2.046	13.6	16.2	0.85	5115	0.95	254.90
010000941-02	OBS	4146.02	2.573866	132.166733	44.2	1.943	8.7	9.1	0.85	5115	0.69	384.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010000941-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
010000941-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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.

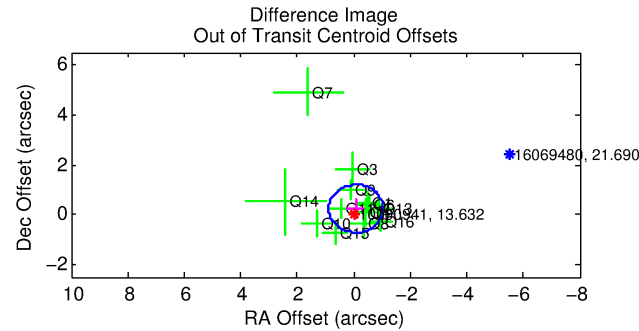
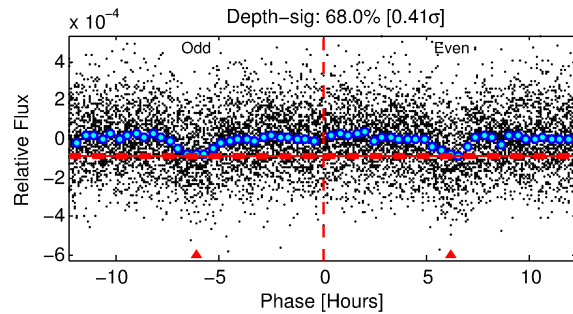
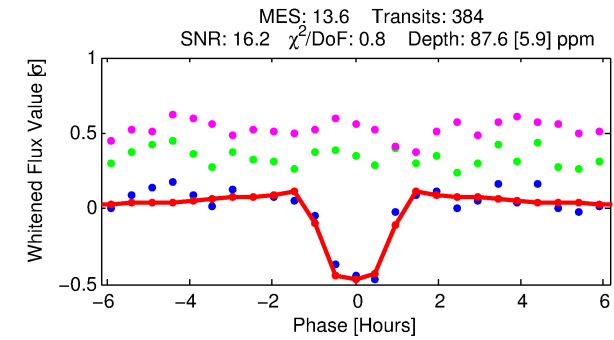
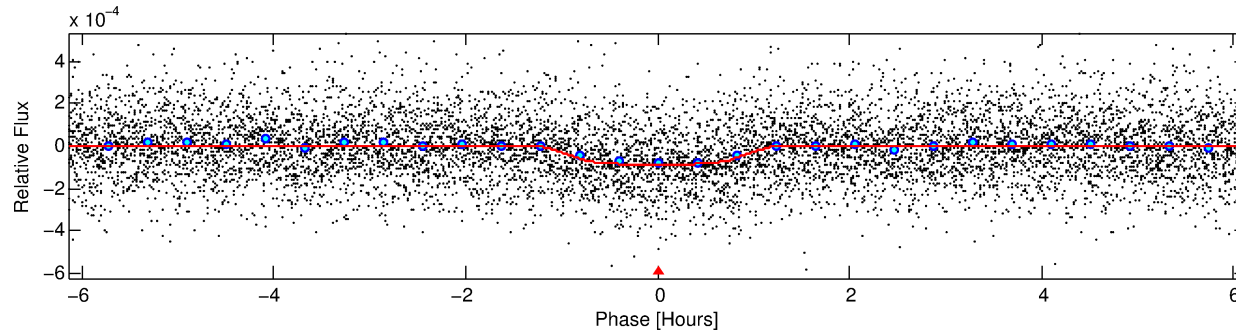
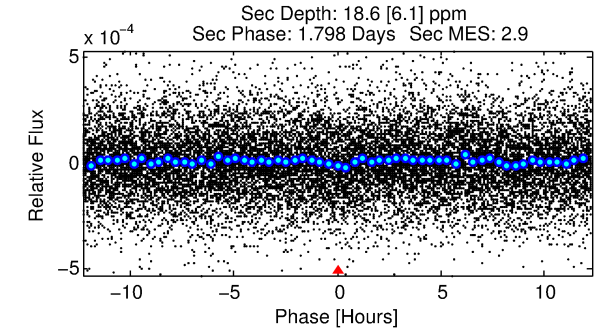
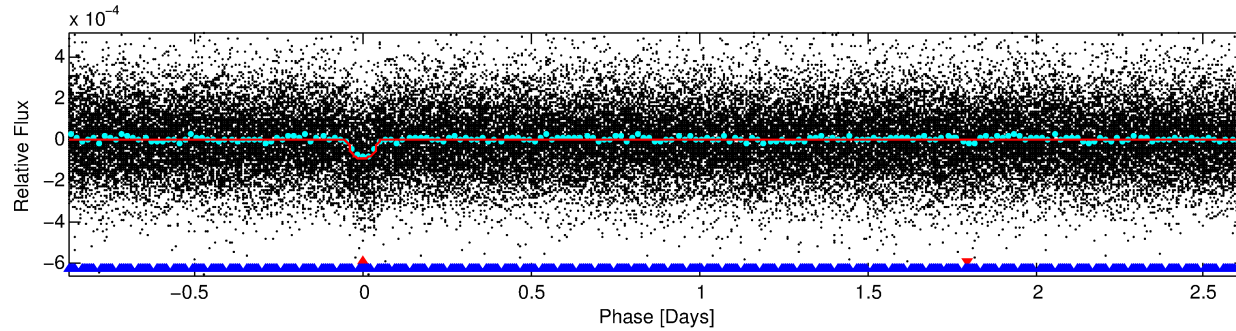
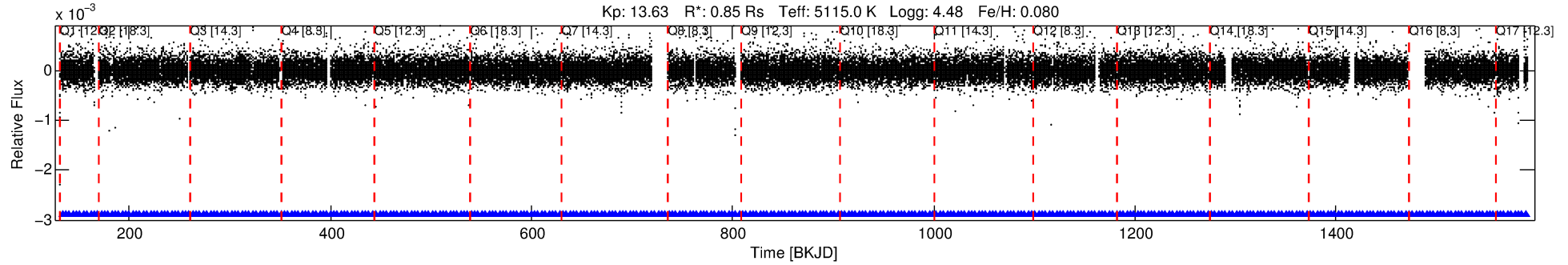
Ephemeris Match Information For 010000941-01

No Significant Match Found

DV One-Page Summary

KIC: 10000941 Candidate: 1 of 2 Period: 3.505 d

KOI: K04146.01 Corr: 0.942



DV Fit Results:

Period = 3.50475 [0.00001] d
Epoch = 133.7155 [0.0019] BKJD
Rp/R* = 0.0102 [0.0043]
a/R* = 6.49 [10.71]
b = 0.88 [0.43]
Seff = 254.90 [55.23]
Teq = 1019 [55] K
Rp = 0.95 [0.42] Re
a = 0.0419 [0.0048] AU
Ag = 19.67 [18.21] [1.02σ]
Teffp = 3317 [760] K [3.02σ]

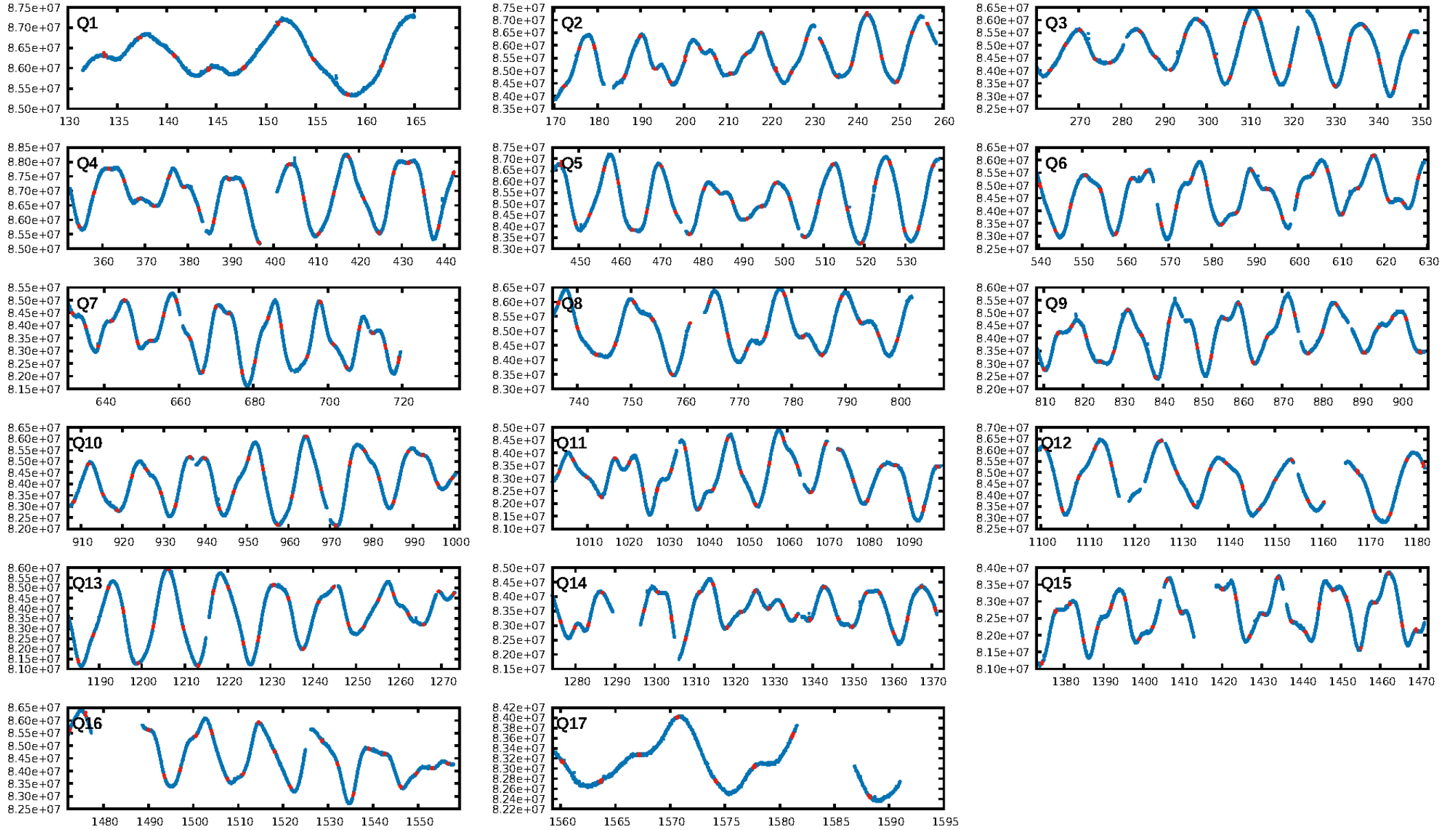
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.92σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.45e-35
RollingBand-fgt: 1.00 [367/367]
GhostDiagnostic-chr: 0.7055
Centroid-sig: 46.5%
Centroid-so: 0.850 arcsec [1.30σ]
OotOffset-rm: 0.250 arcsec [0.78σ]
KicOffset-rm: 0.537 arcsec [1.38σ]
OotOffset-st: 3/4/3/3 [13]
KicOffset-st: 3/4/3/3 [13]
DiffImageQuality-fgm: 0.92 [12/13]
DiffImageOverlap-fno: 1.00 [17/17]

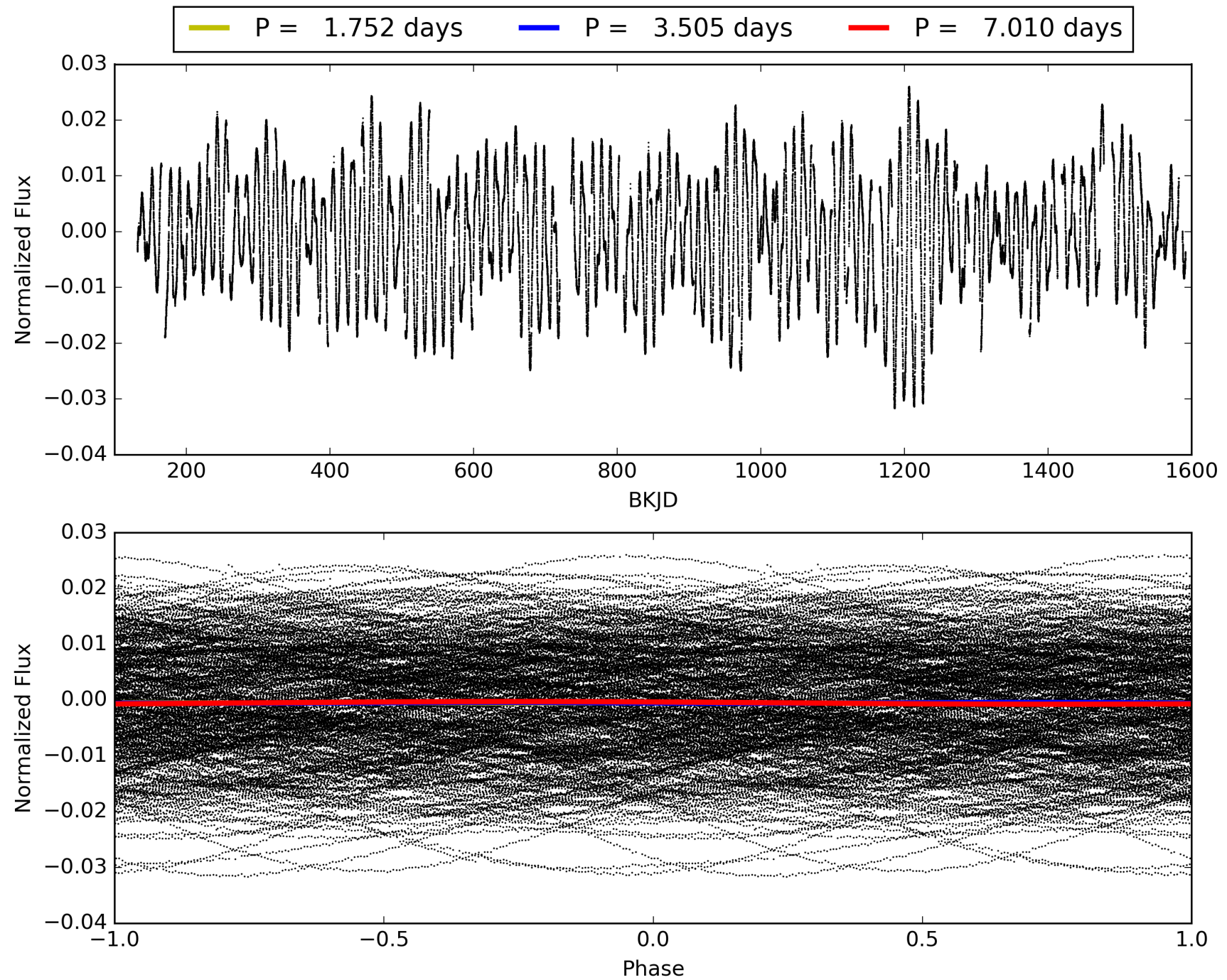
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:37:23 Z

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

TCE 010000941-01, PDC Light Curves

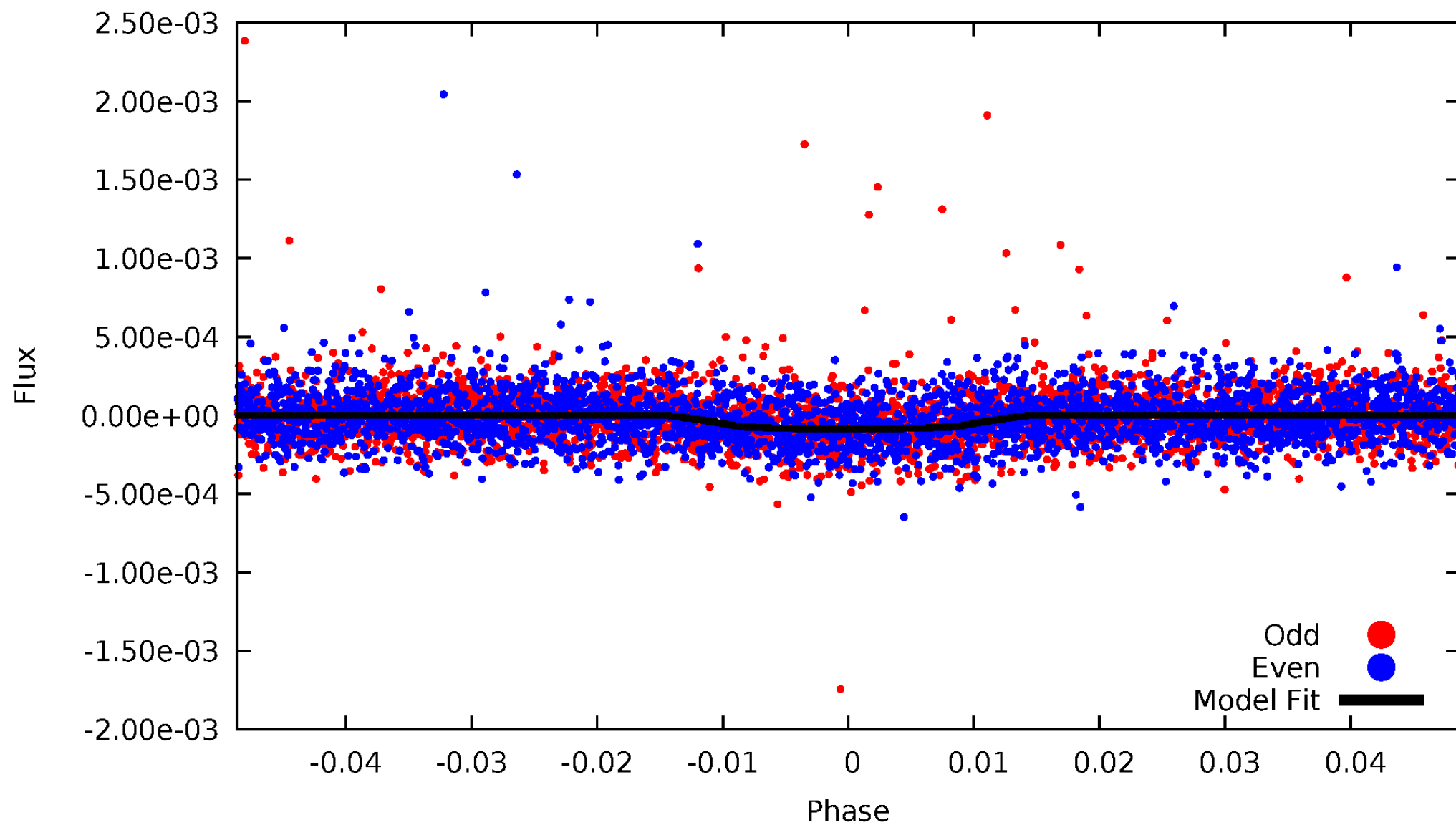


TCE 010000941-01



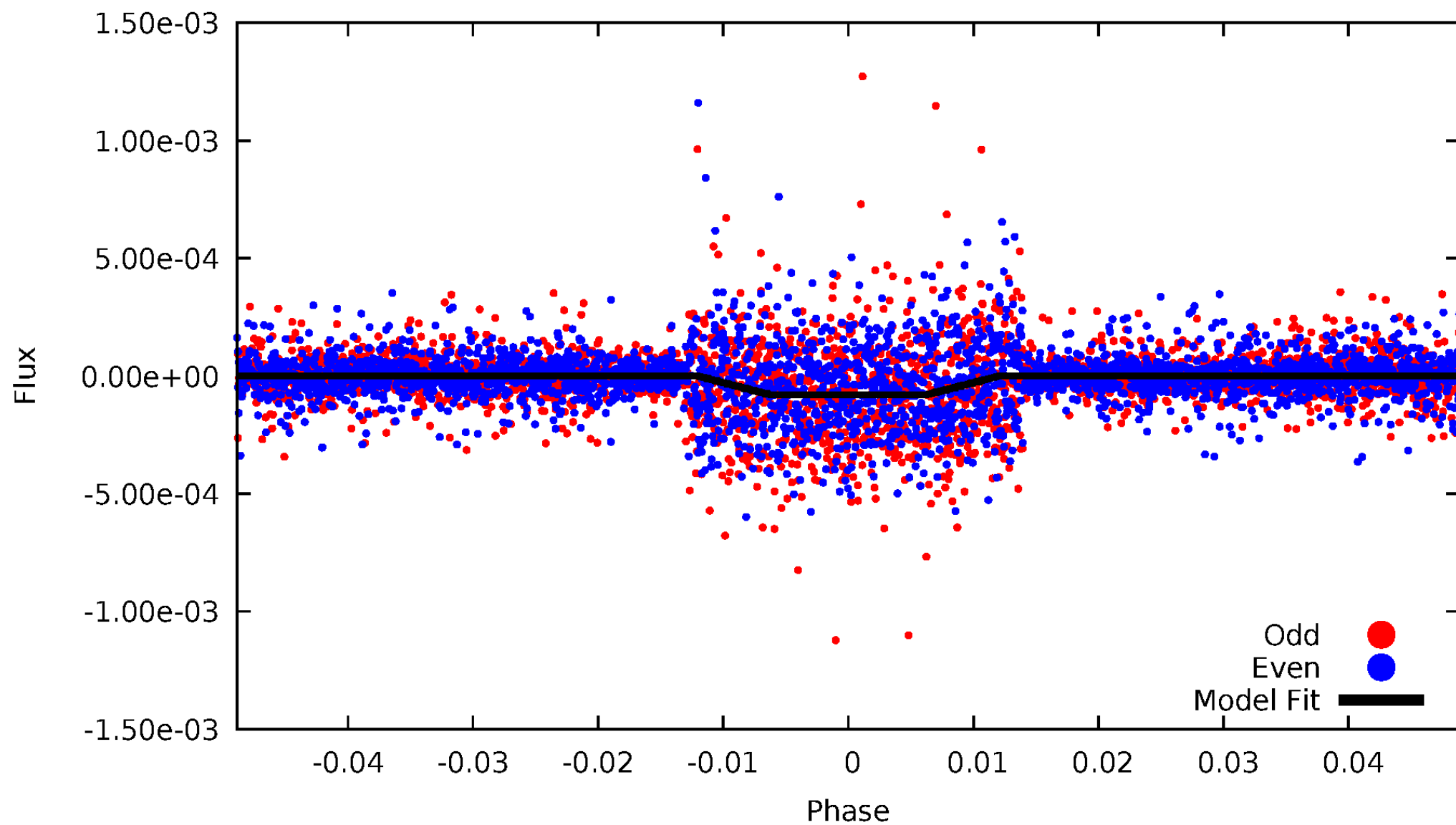
DV Odd/Even

TCE 010000941-01

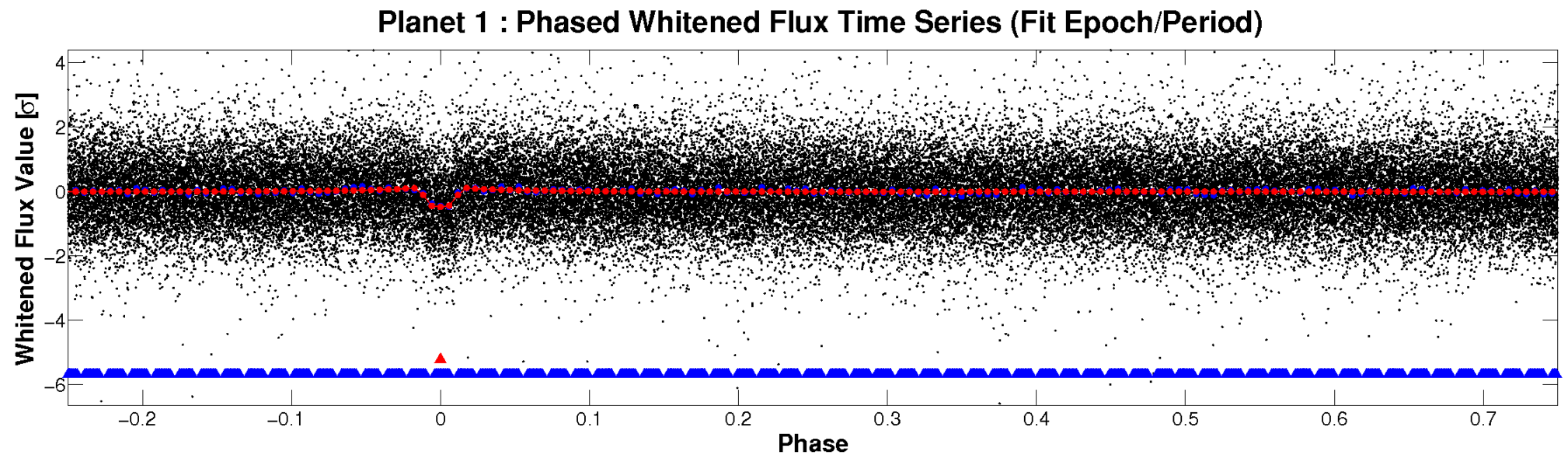
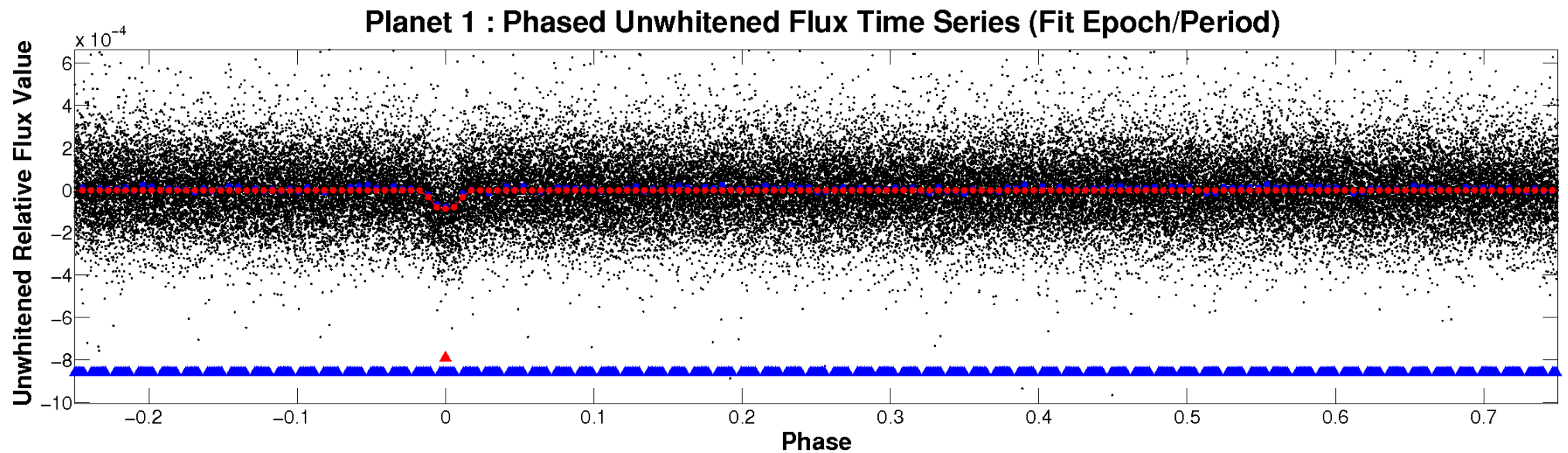


ALT Odd/Even

TCE 010000941-01

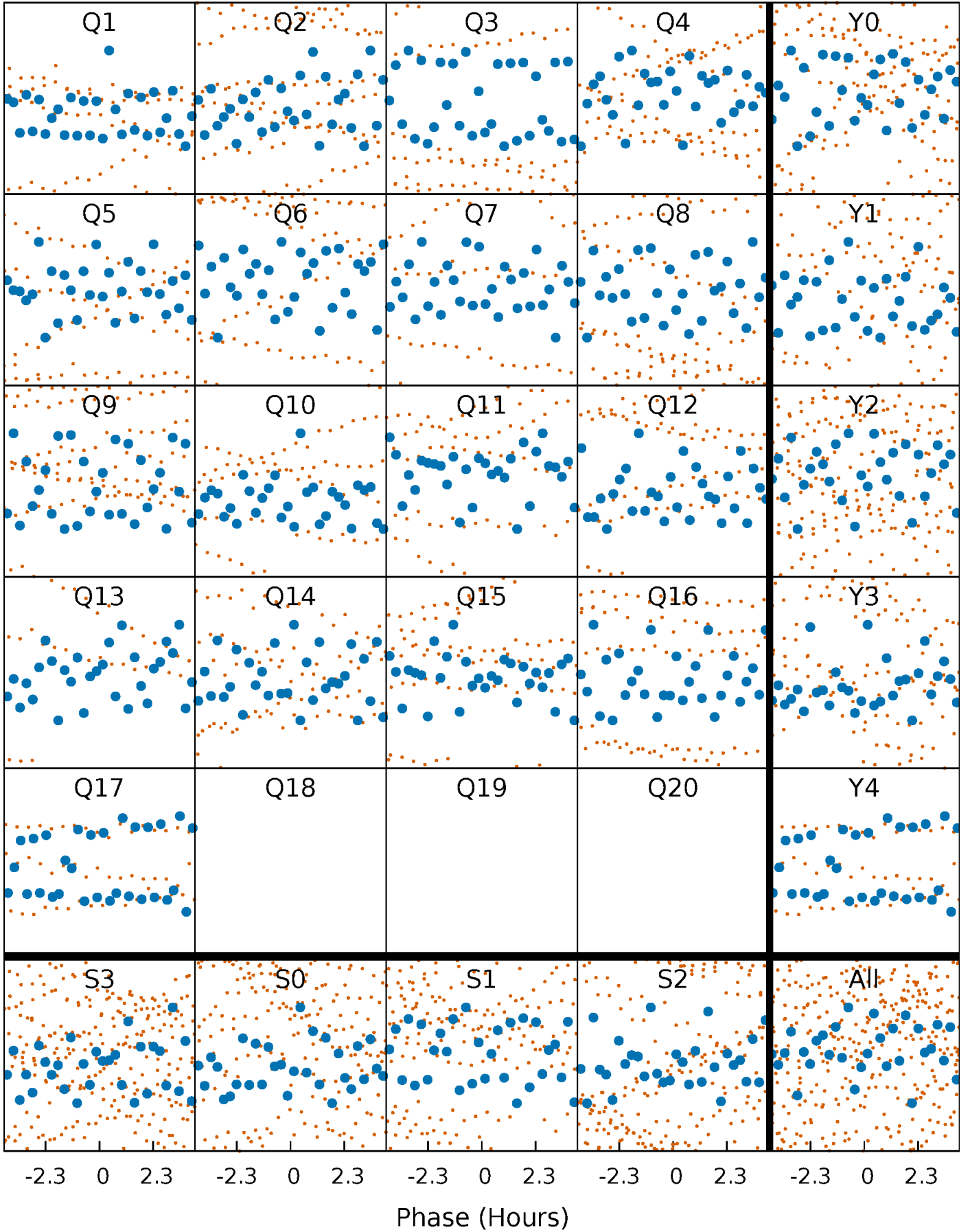


Non-Whitened Vs. Whitened Light Curve



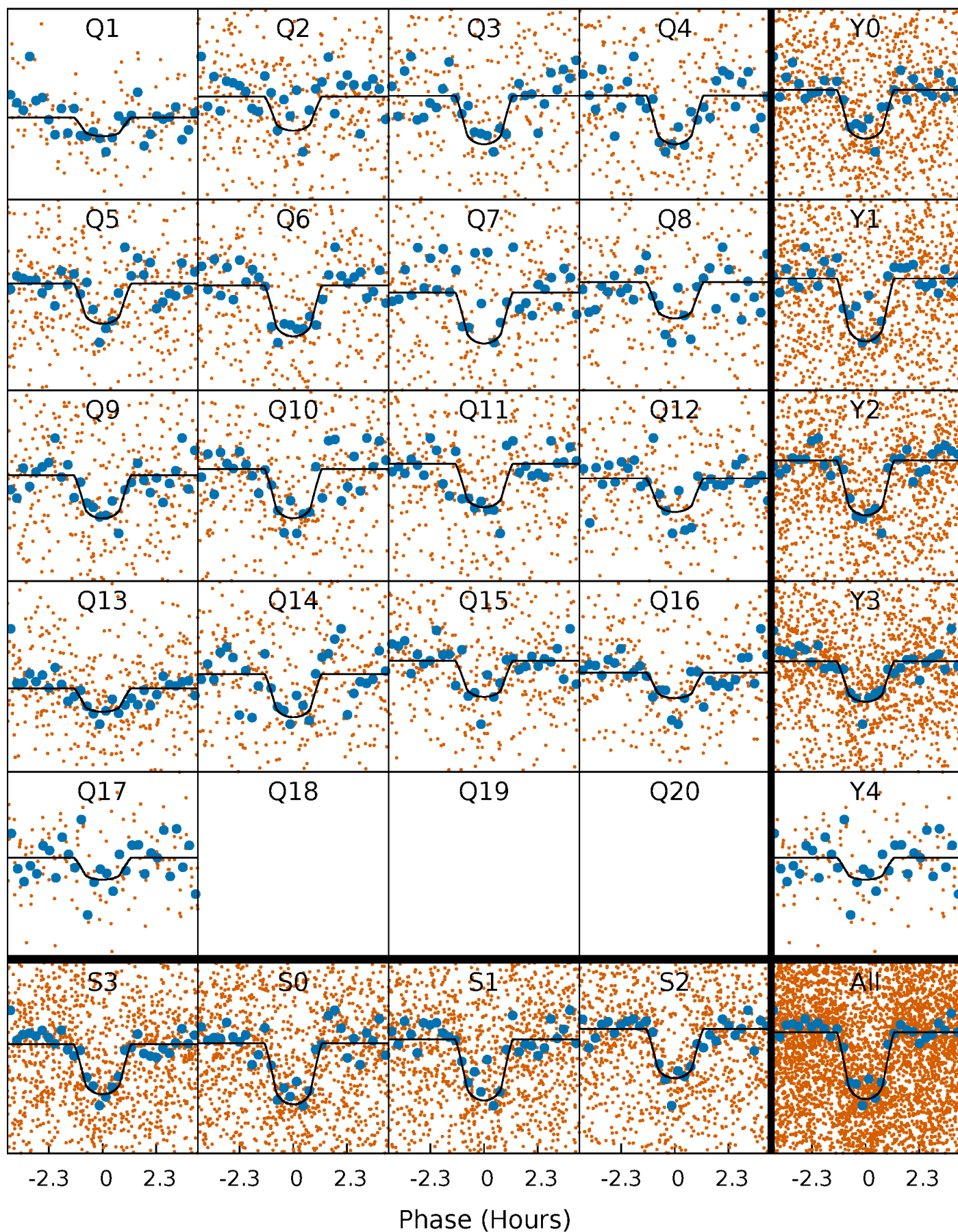
PDC Quarter-Phased Transit Curves

TCE 010000941-01 P= 3.504751 Days $T_0=133.715508$ (BKJD)



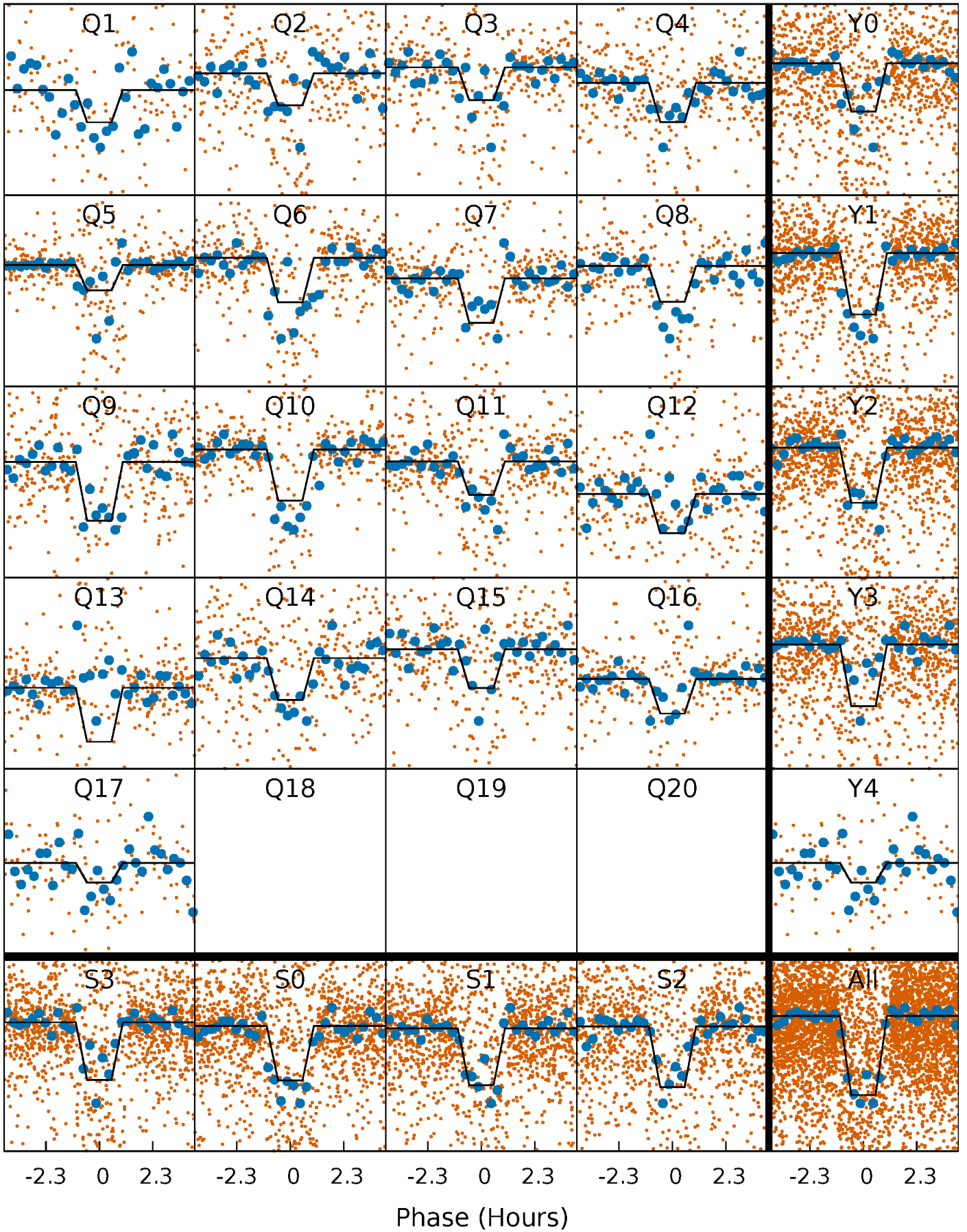
DV Quarter-Phased Transit Curves

TCE 010000941-01 P= 3.504751 Days $T_0=133.715508$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

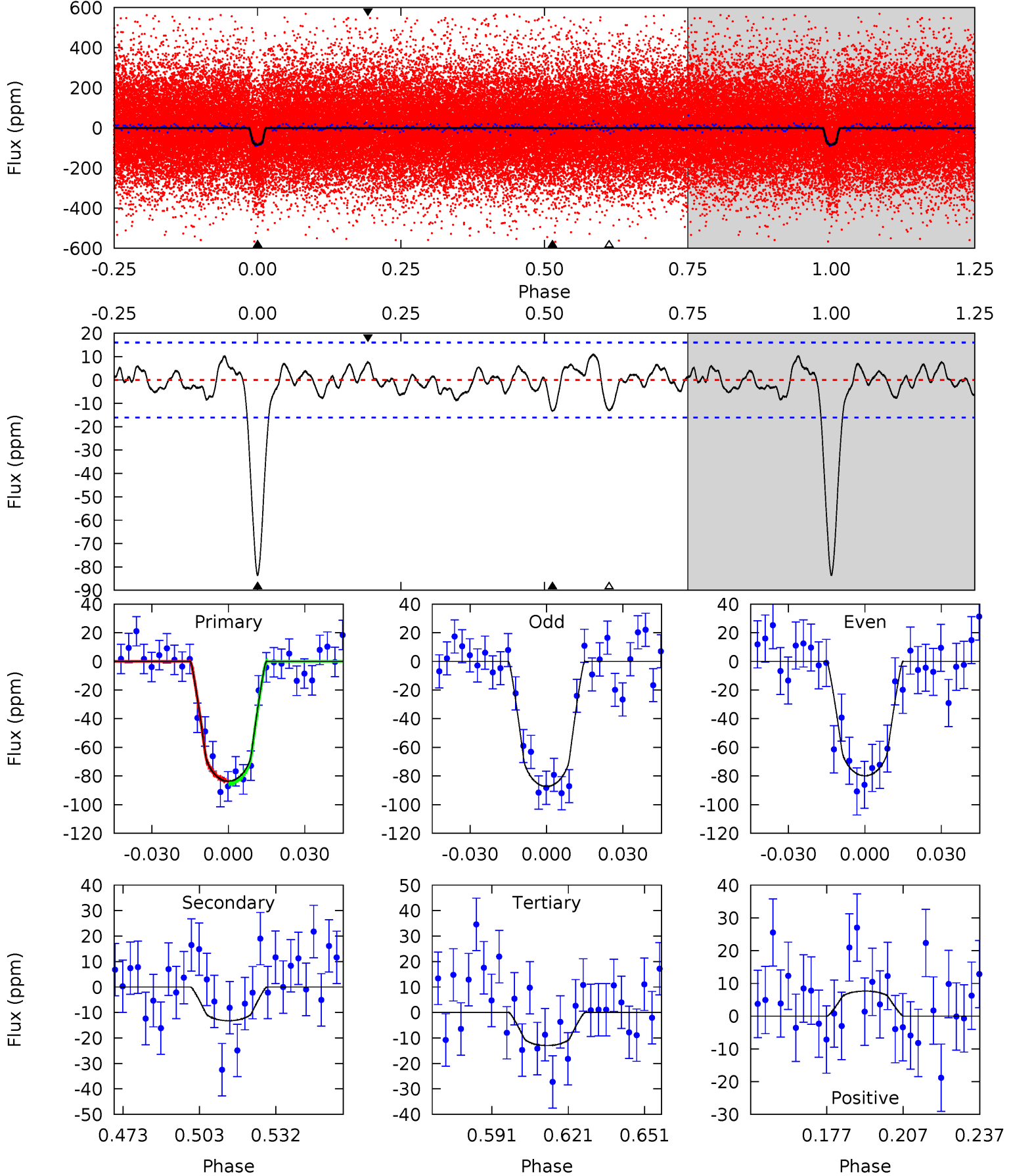
TCE 010000941-01 P= 3.504746 Days $T_0=133.717355$ (BKJD)



DV Model-Shift Uniqueness Test

010000941-01, P = 3.504751 Days, E = 130.210757 Days

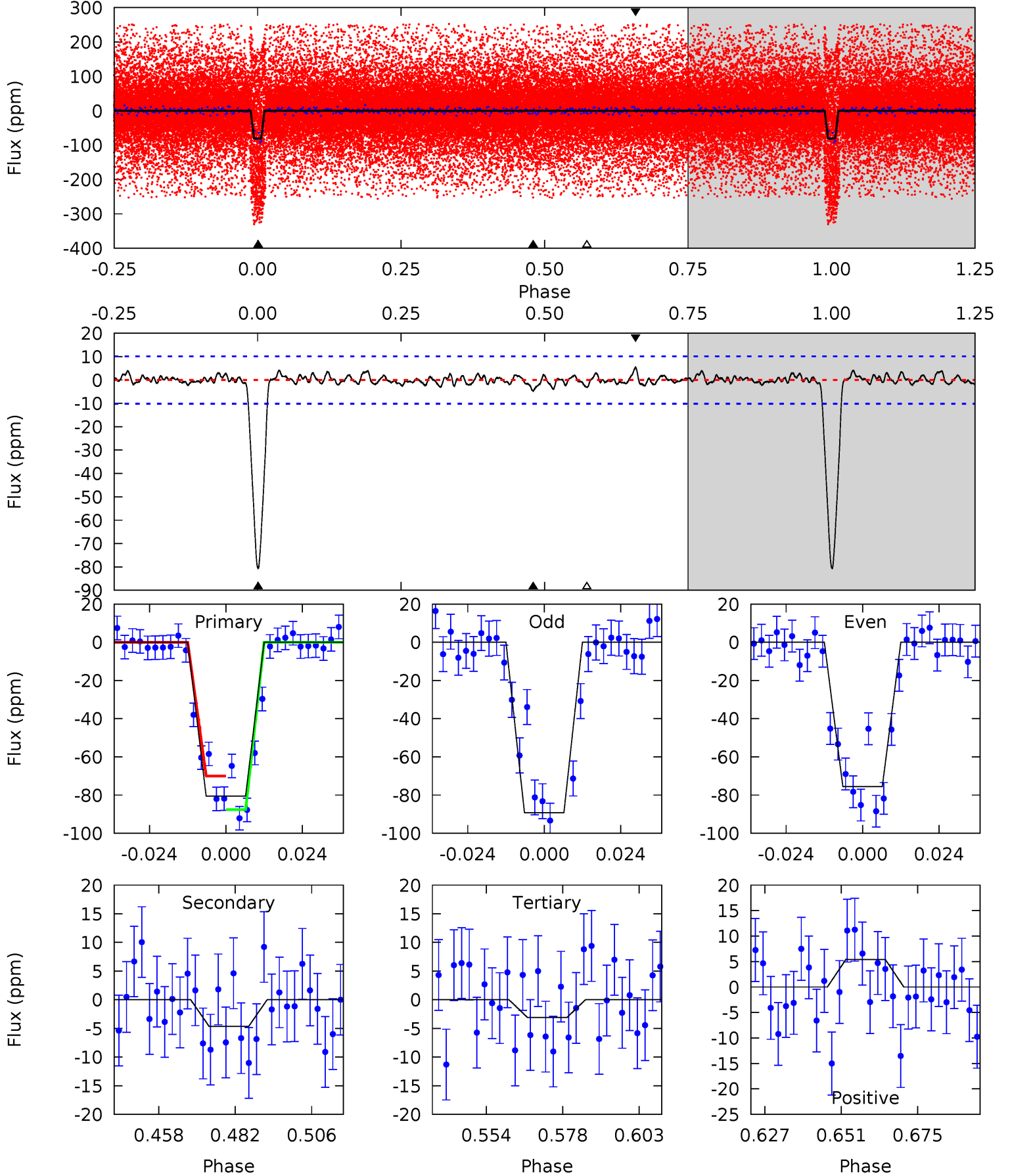
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.1	3.97	3.89	2.29	4.81	2.18	1.31	21.2	22.8	0.07	1.67	1.12	0.89	0.12	0.26



Alt Model-Shift Uniqueness Test

010000941-01, P = 3.504746 Days, E = 130.212609 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.6	2.23	1.48	2.59	4.85	2.26	0.71	37.1	36.0	0.75	-0.36	3.30	1.02	0.06	4.24



Stellar Parameters For KIC 010000941

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5115^{+154}_{-139}	$4.477^{+0.095}_{-0.105}$	$0.080^{+0.250}_{-0.250}$	$0.854^{+0.103}_{-0.093}$	$0.798^{+0.092}_{-0.057}$	$1.805^{+0.772}_{-0.540}$
	+3%/-3%	+2%/-2%	+312%/-312%	+12%/-11%	+12%/-7%	+43%/-30%
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 010000941-01 / KOI 4146.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-13 ± 3	$0.96^{+0.41}_{-0.38}$	1426^{+67}_{-58}	3466^{+685}_{-388}	13^{+25}_{-7}
Alt.	-5 ± 2	$0.84^{+0.41}_{-0.38}$	1433^{+67}_{-66}	3113^{+619}_{-458}	$6.787^{+15.127}_{-4.517}$

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 $A_{obs} \gg 1.0$

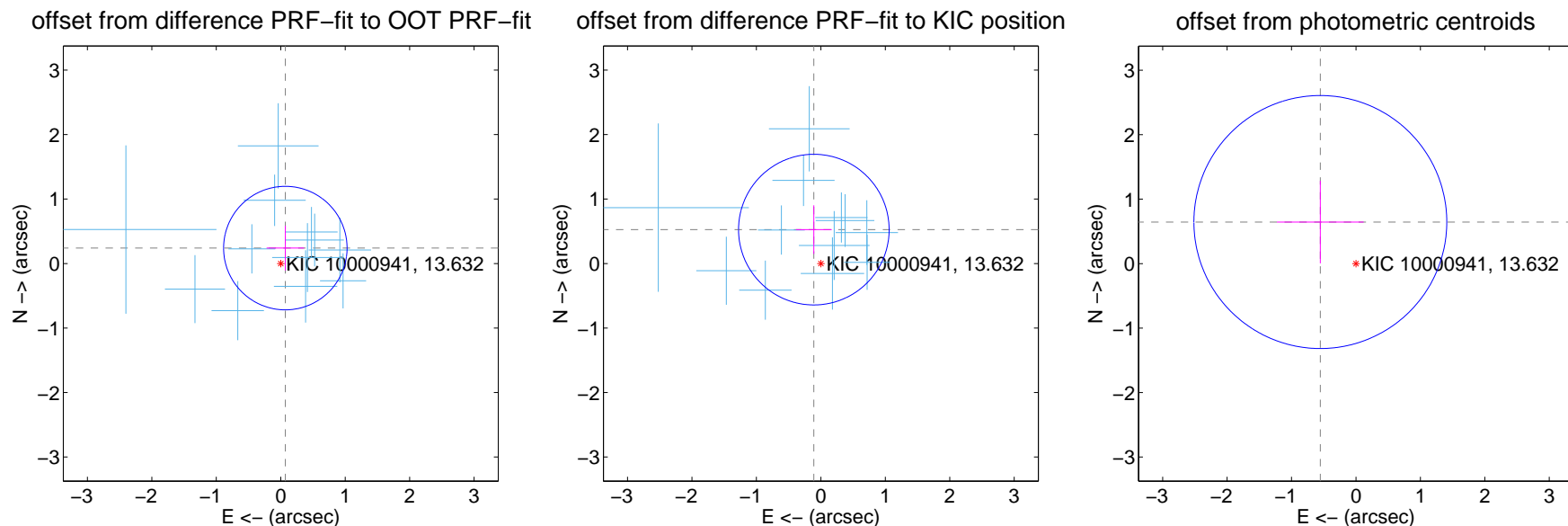
DV Centroid Data

Supplemental centroid analysis for 010000941-01. Kepler magnitude: 13.63. Transit SNR 16.18

There are 12 quarters with good PRF difference image offsets

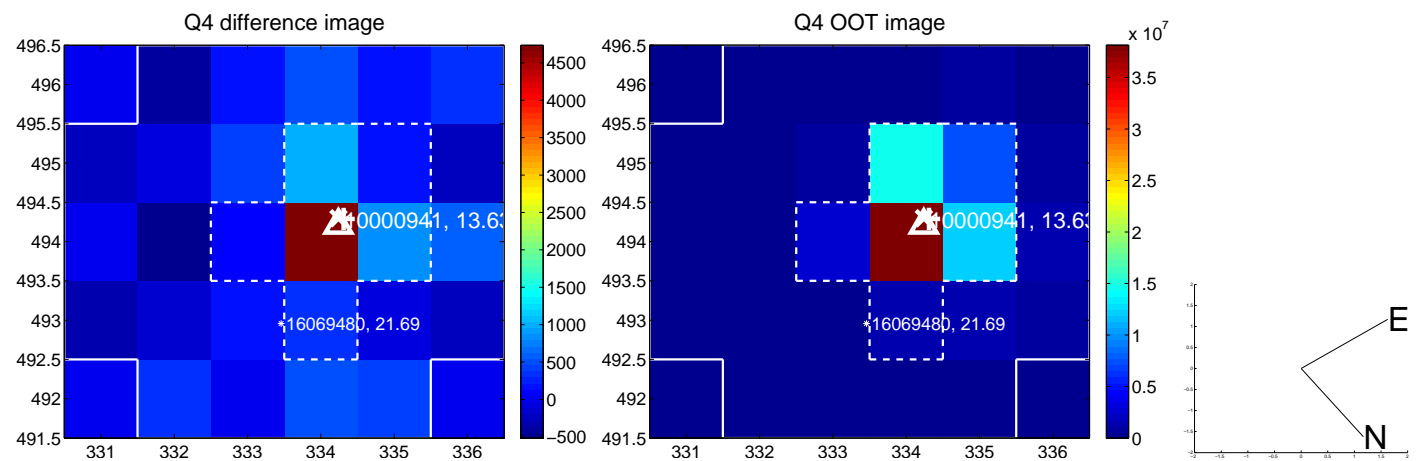
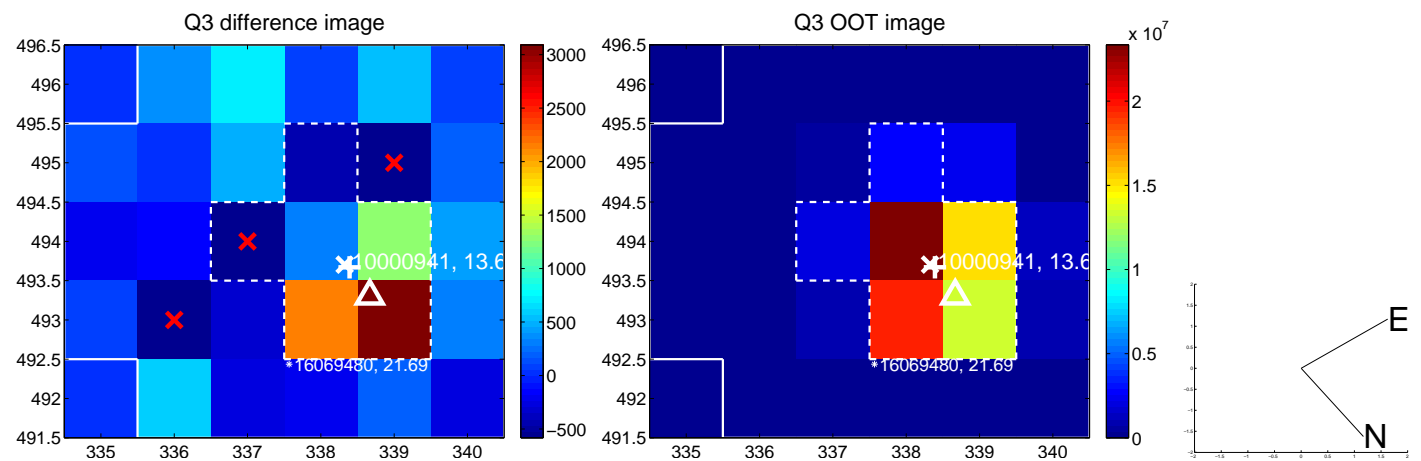
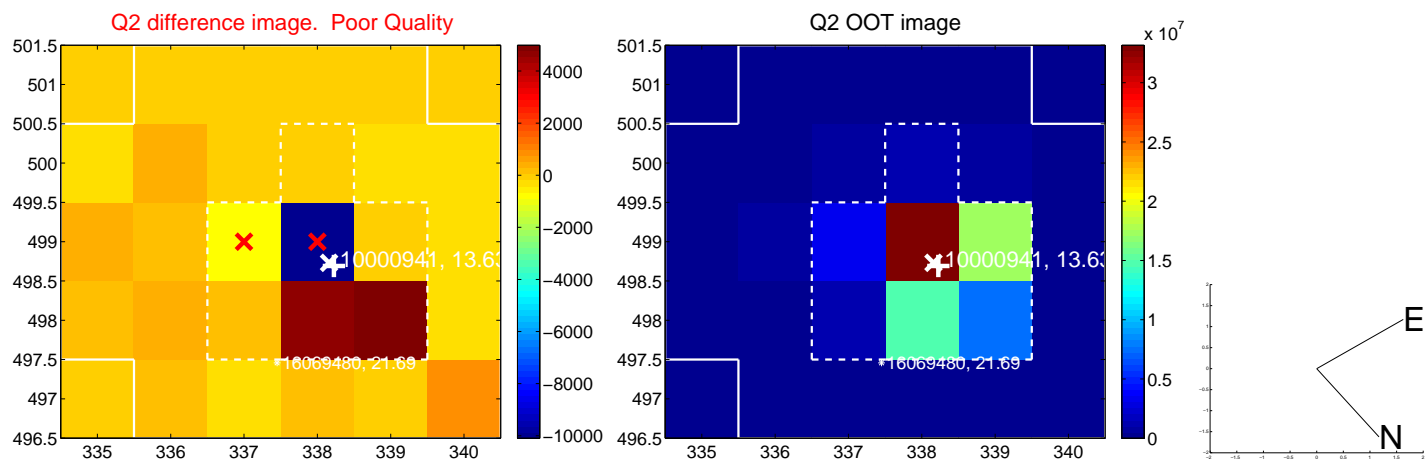
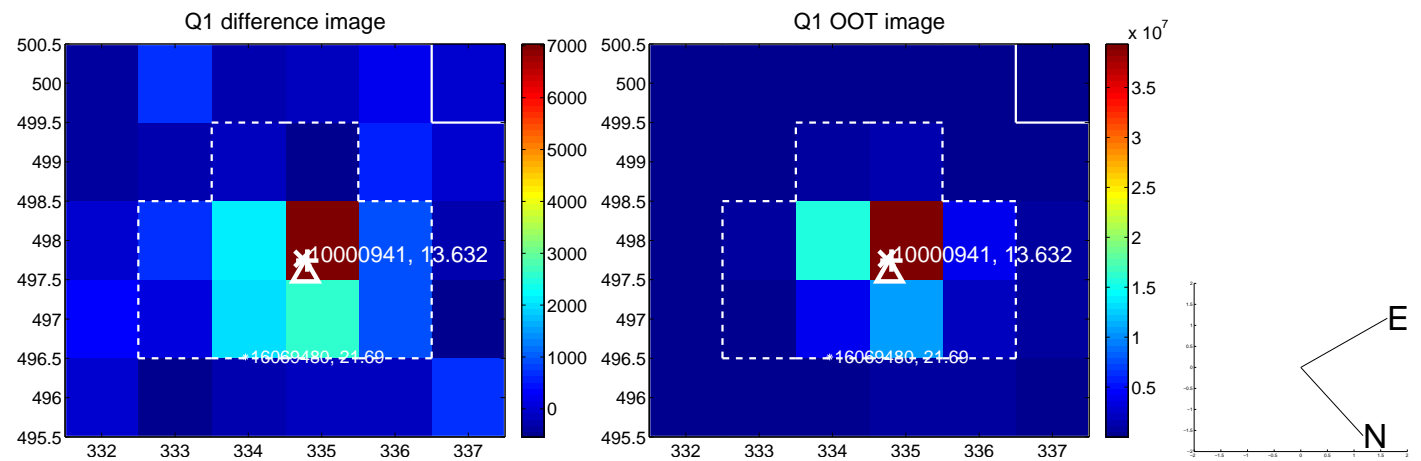
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.250 ± 0.319	0.78	-0.071 ± 0.291	0.240 ± 0.347
PRF-fit source offset from KIC position	0.537 ± 0.389	1.38	0.109 ± 0.277	0.526 ± 0.376
photometric centroid source offset	0.85 ± 0.65	1.30	0.55 ± 0.67	0.65 ± 0.64

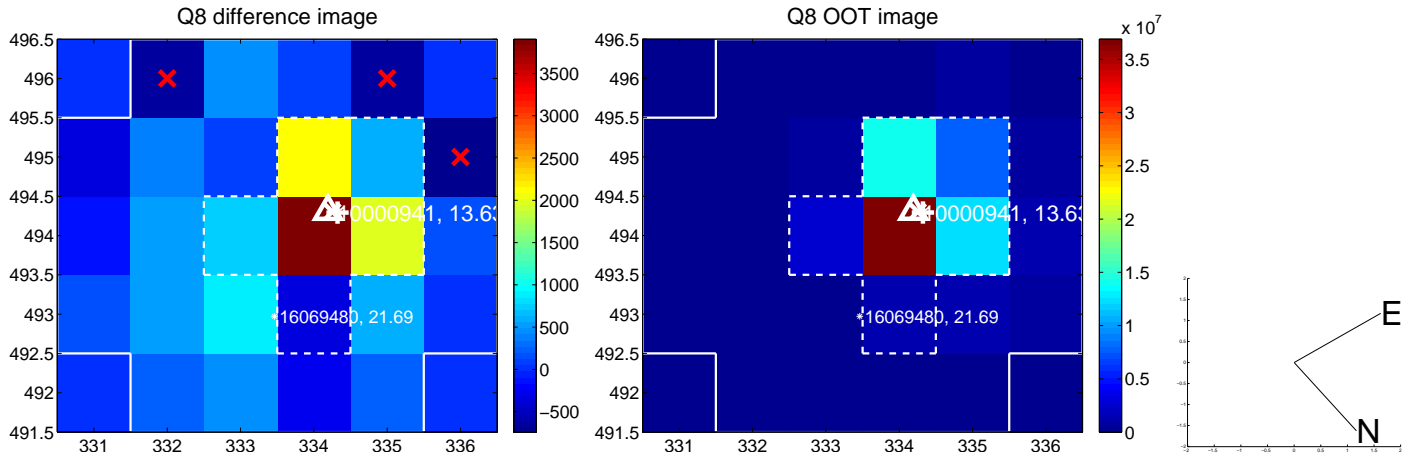
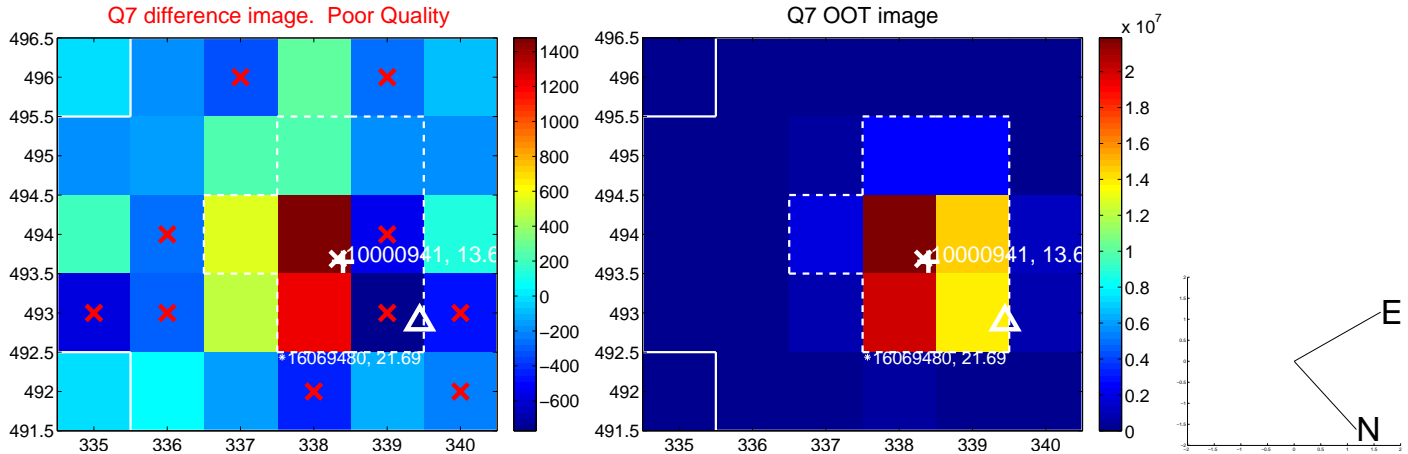
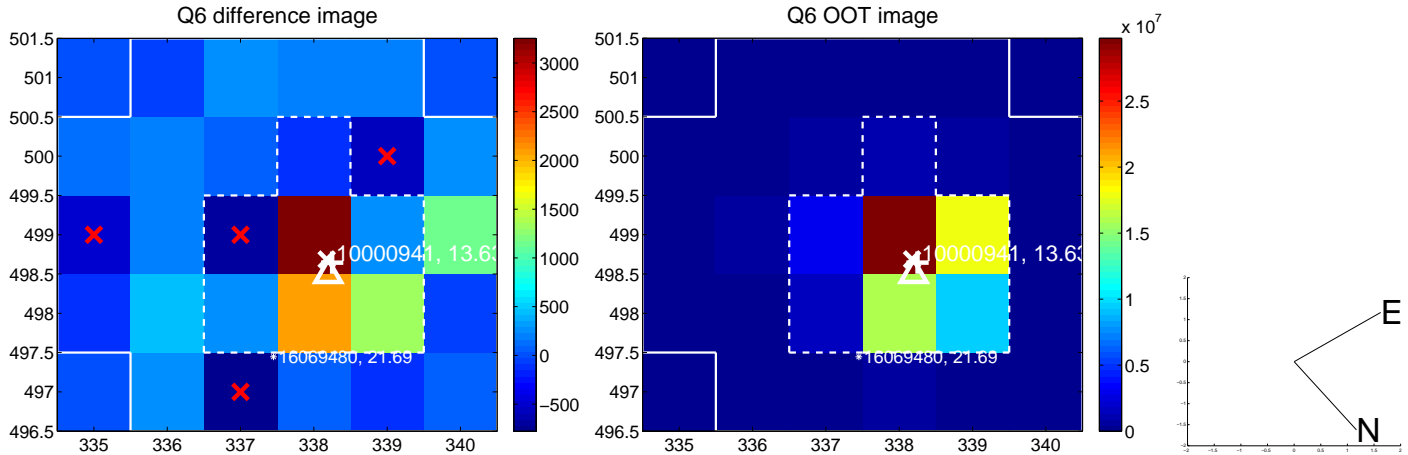
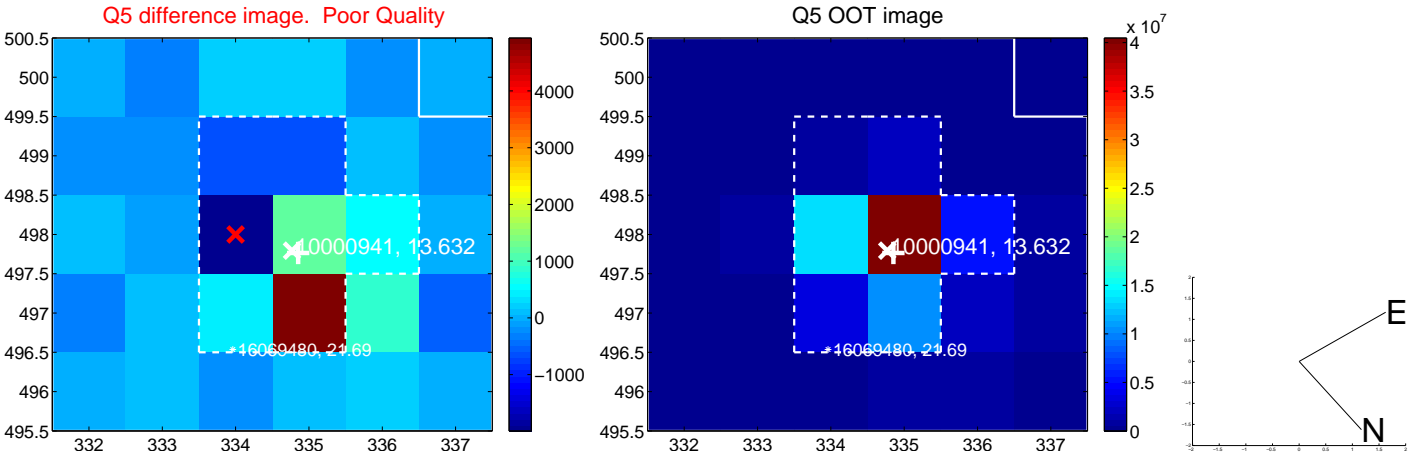


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

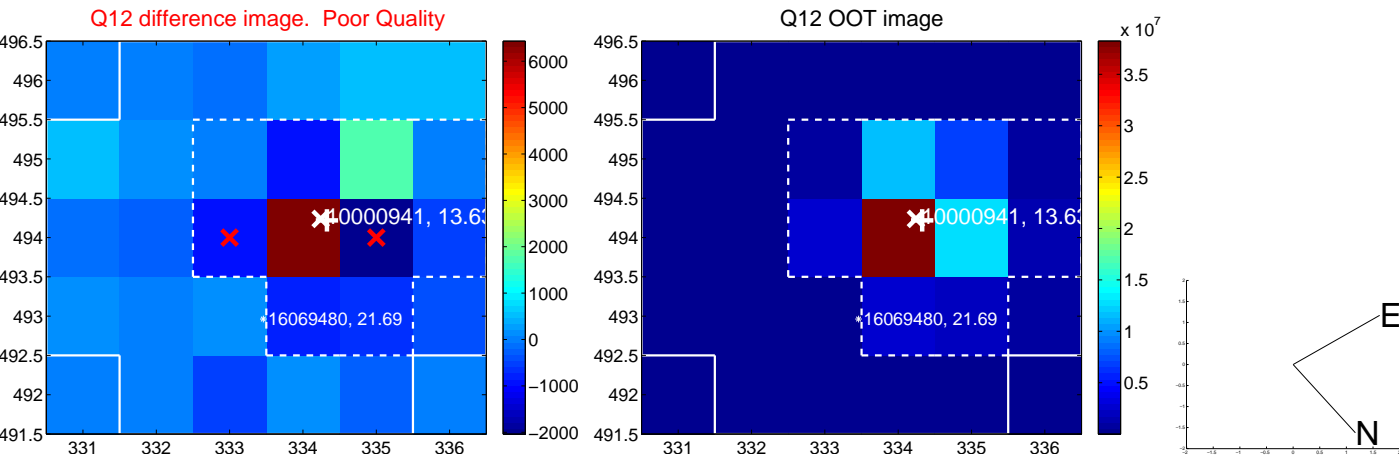
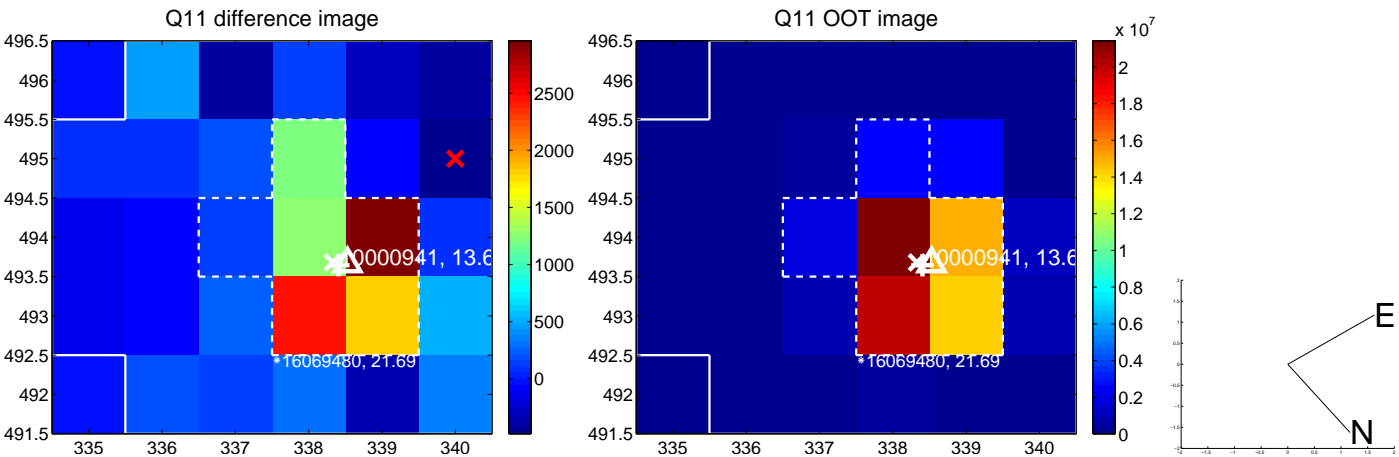
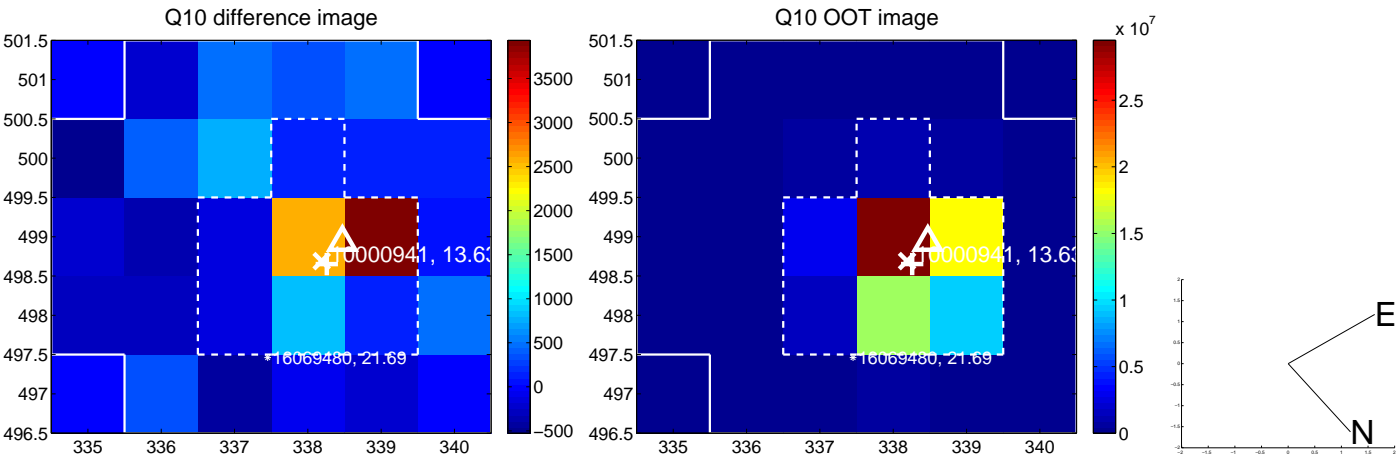
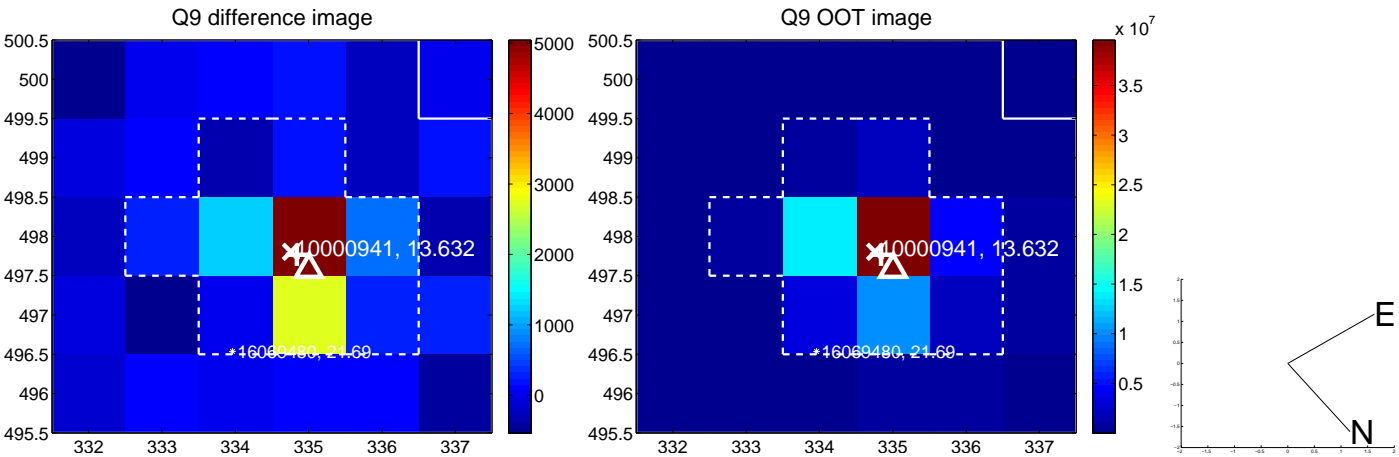
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



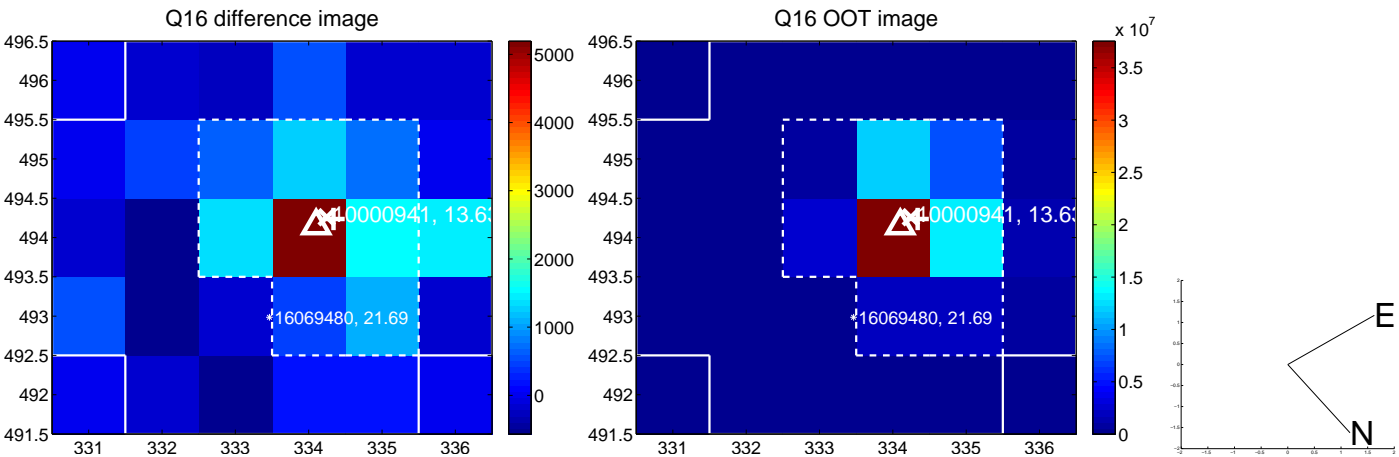
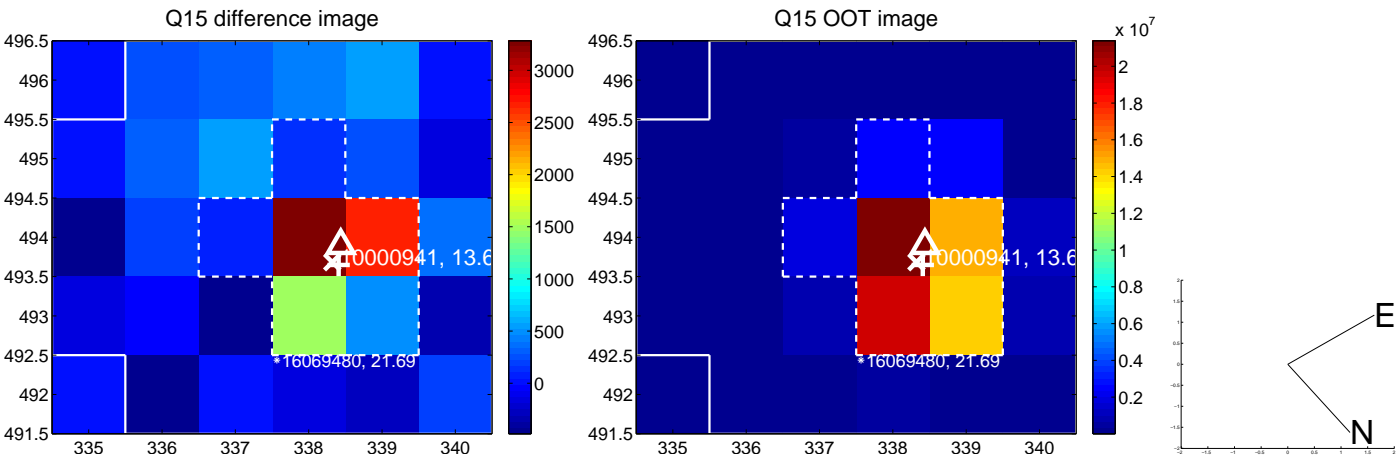
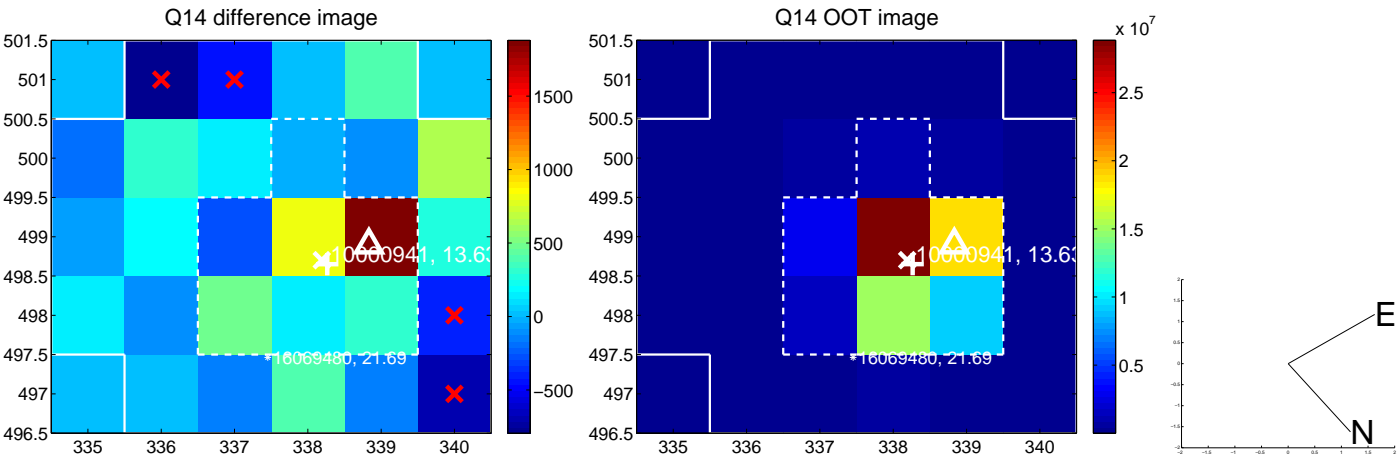
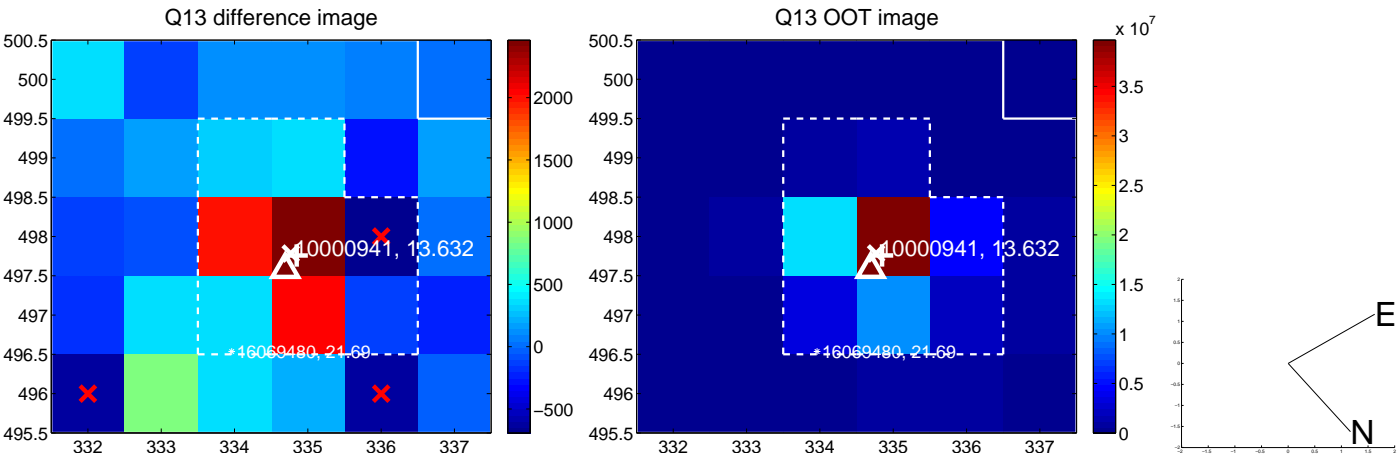
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



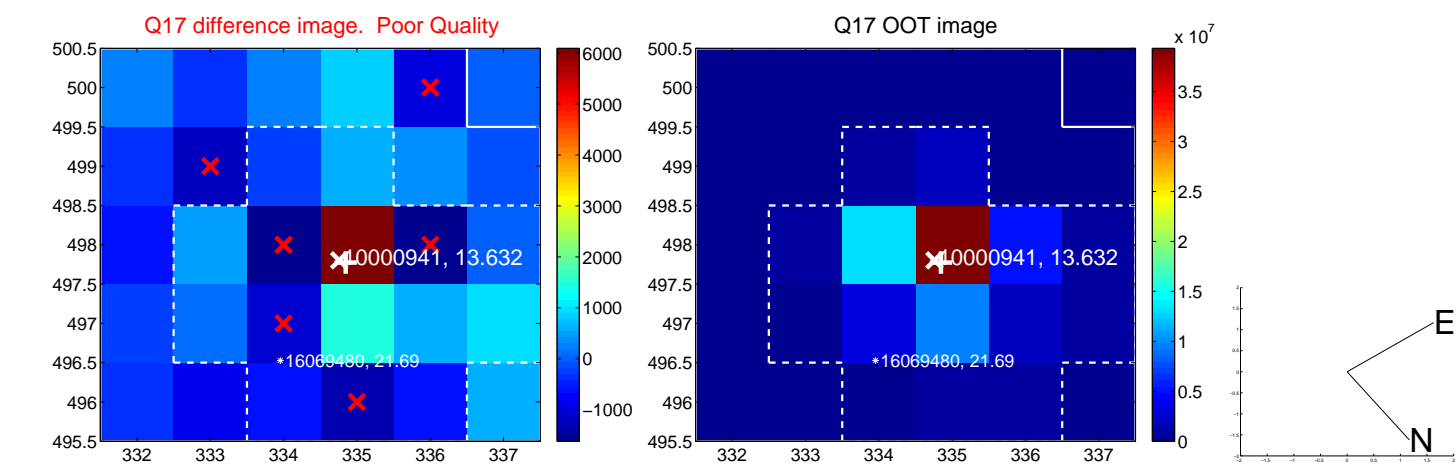
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



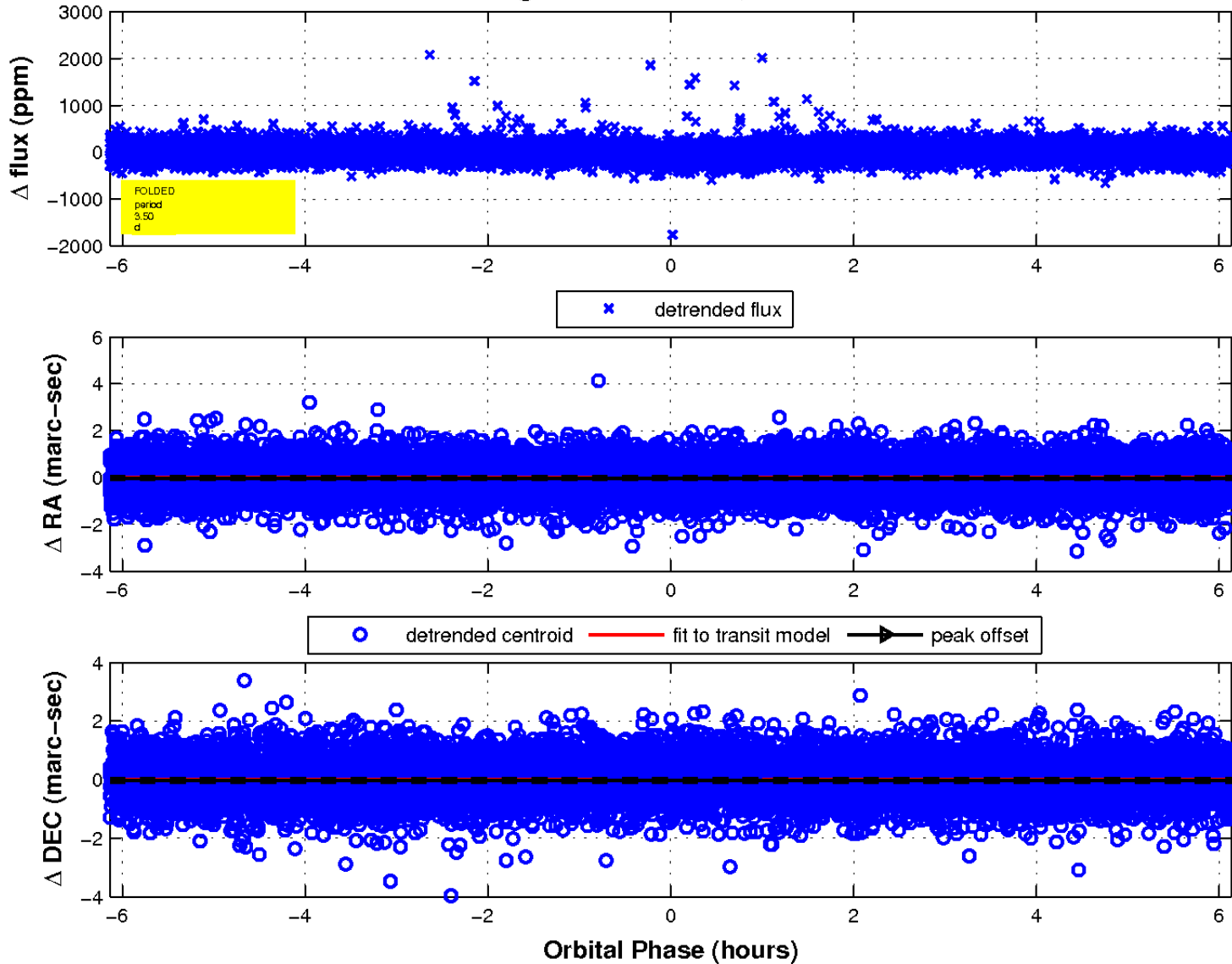
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

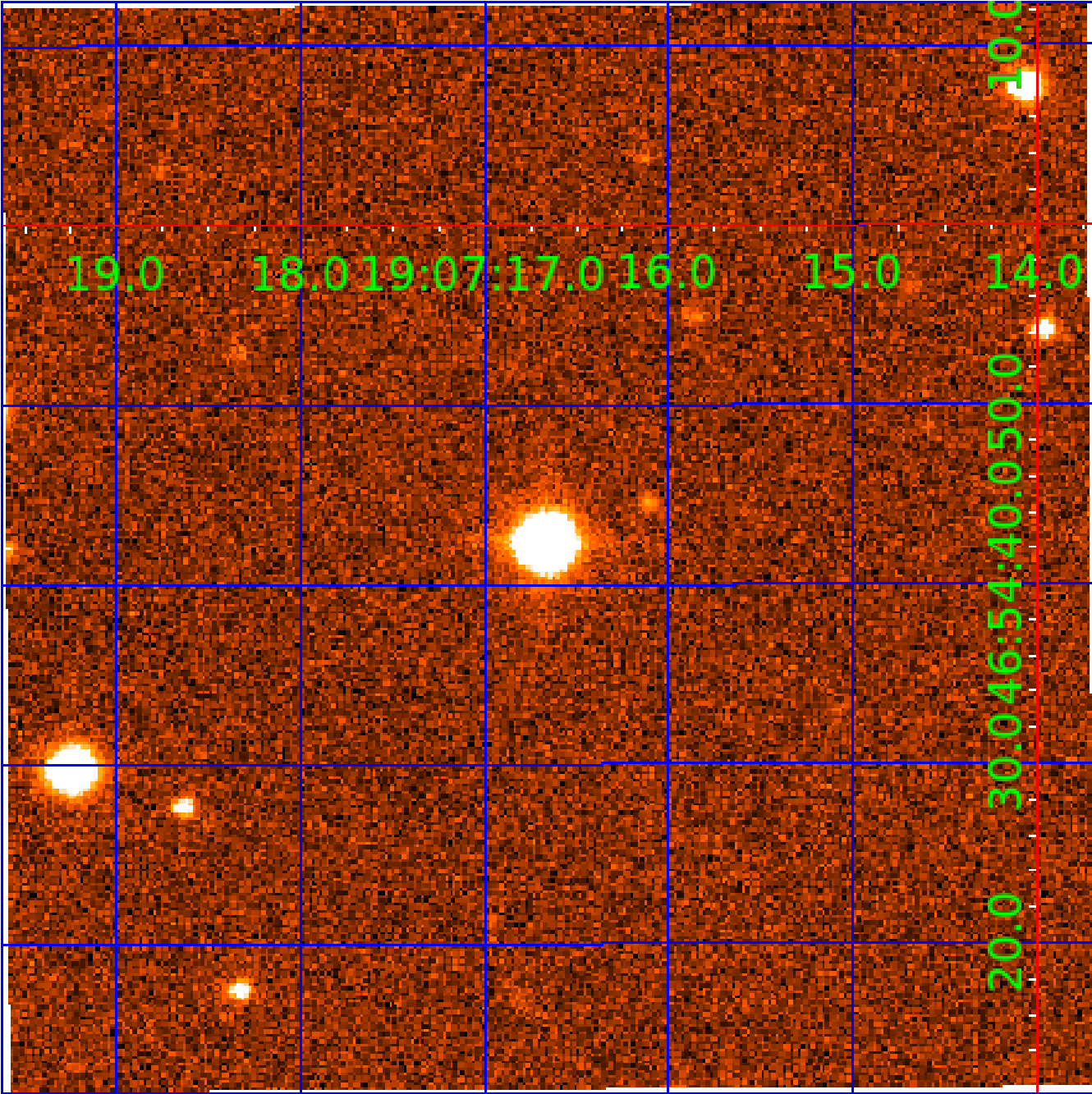


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010000941

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})
010000941-01	OBS	4146.01	3.504751	133.715508	87.6	2.046	13.6	16.2	0.85	5115	0.95	254.90
010000941-02	OBS	4146.02	2.573866	132.166733	44.2	1.943	8.7	9.1	0.85	5115	0.69	384.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010000941-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
010000941-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

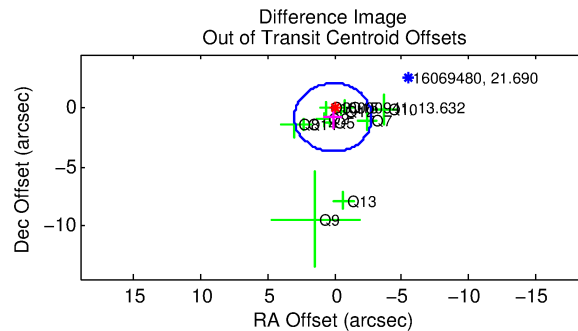
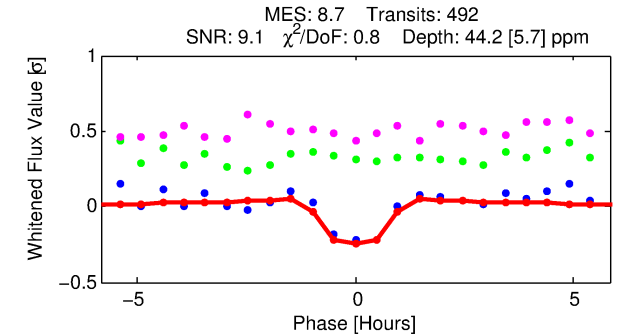
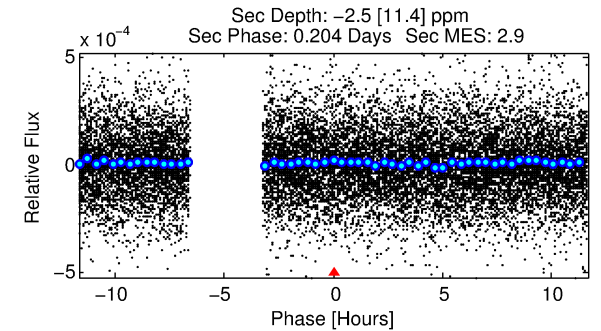
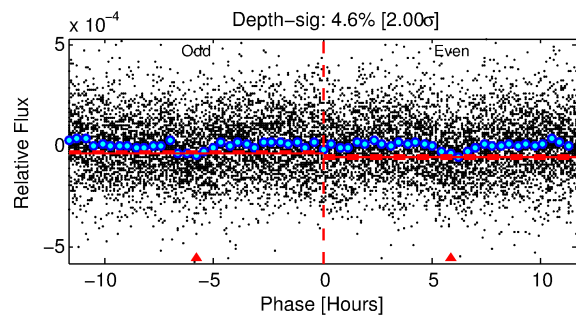
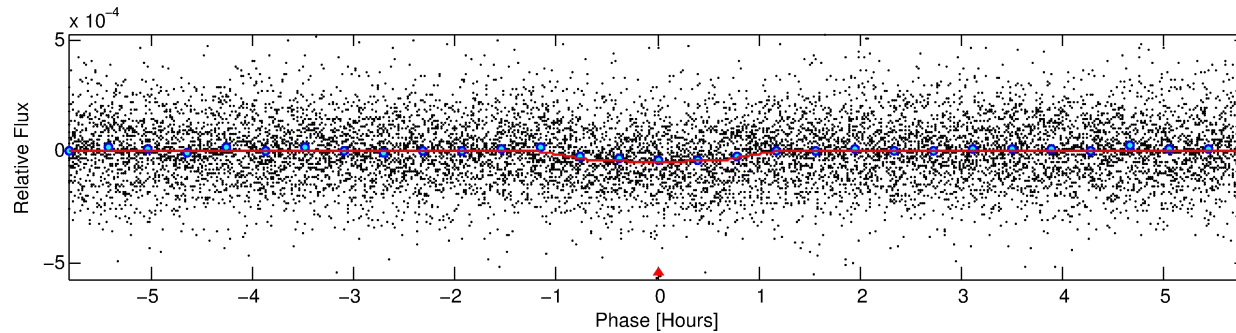
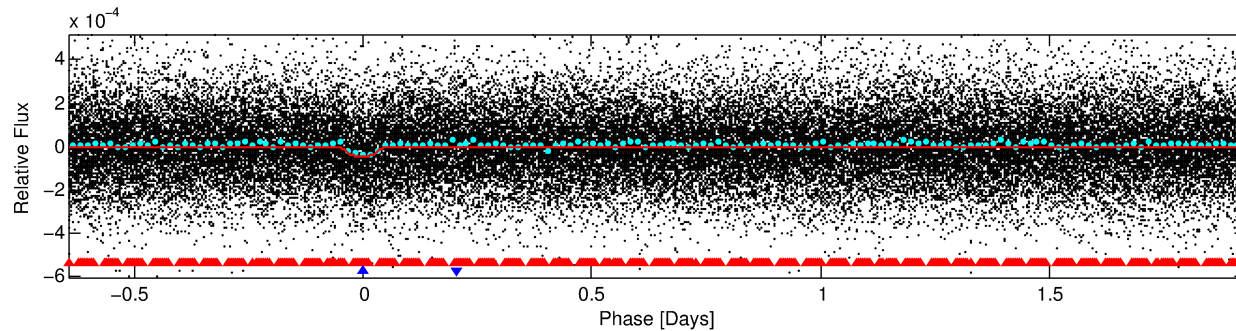
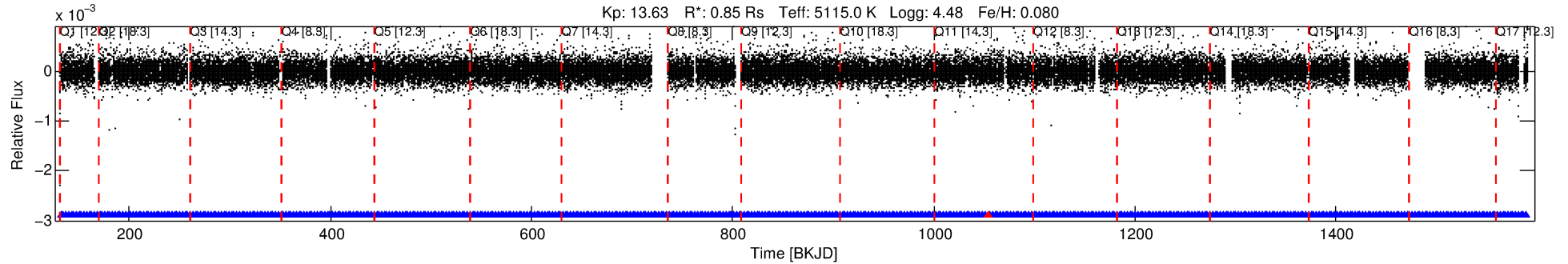
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010000941-02

No Significant Match Found

DV One-Page Summary

KIC: 10000941 Candidate: 2 of 2 Period: 2.574 d
KOI: K04146 Corr: No Ephemeris Match



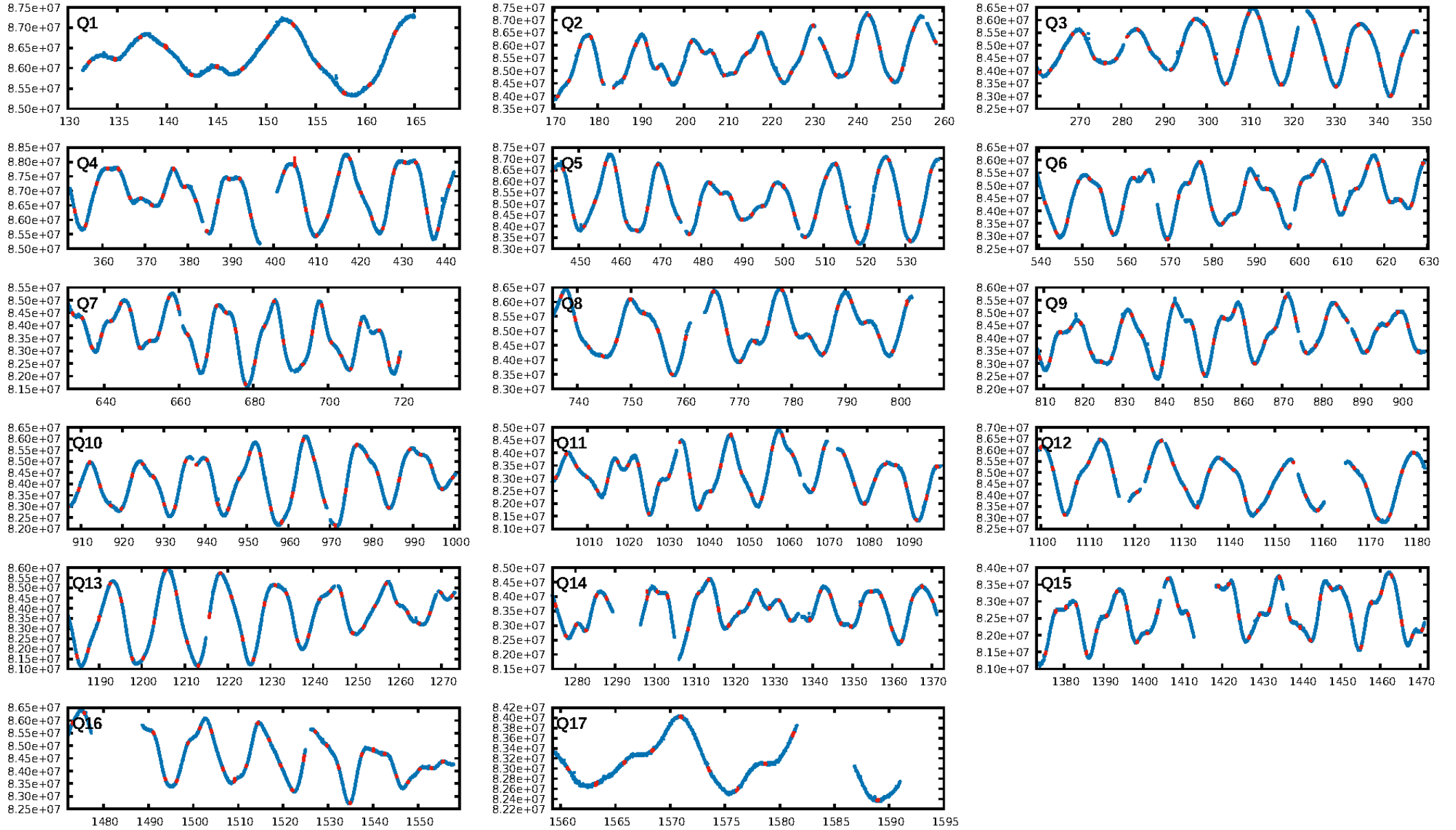
DV Fit Results:

Period = 2.57387 [0.00002] d
Epoch = 132.1667 [0.0031] BKJD
Rp/R* = 0.0074 [0.0048]
a/R* = 4.70 [11.91]
b = 0.90 [0.58]
Seff = 384.71 [83.36]
Teq = 1129 [61] K
Rp = 0.69 [0.45] Re
a = 0.0341 [0.0039] AU
Ag = N/A
Teffp = N/A

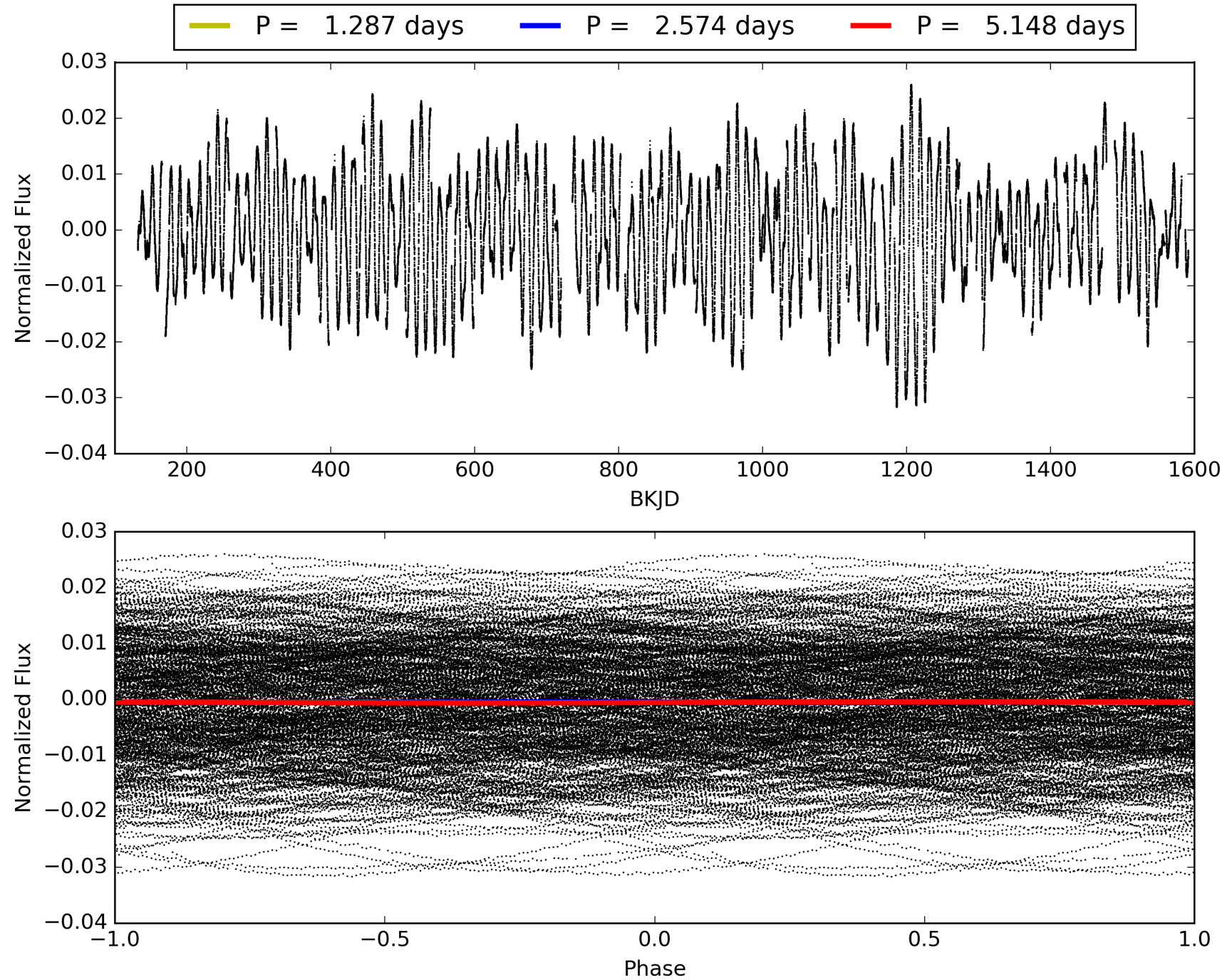
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [7.92 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.32e-15
RollingBand-fgt: 1.00 [470/471]
GhostDiagnostic-chr: 1.058
Centroid-sig: 11.2%
Centroid-so: 1.550 arcsec [1.40 σ]
OotOffset-rm: 0.843 arcsec [0.88 σ]
KicOffset-rm: 0.626 arcsec [0.65 σ]
OotOffset-st: 3/3/2/3 [11]
KicOffset-st: 3/3/2/3 [11]
DiffImageQuality-fgm: 0.64 [7/11]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 010000941-02, PDC Light Curves

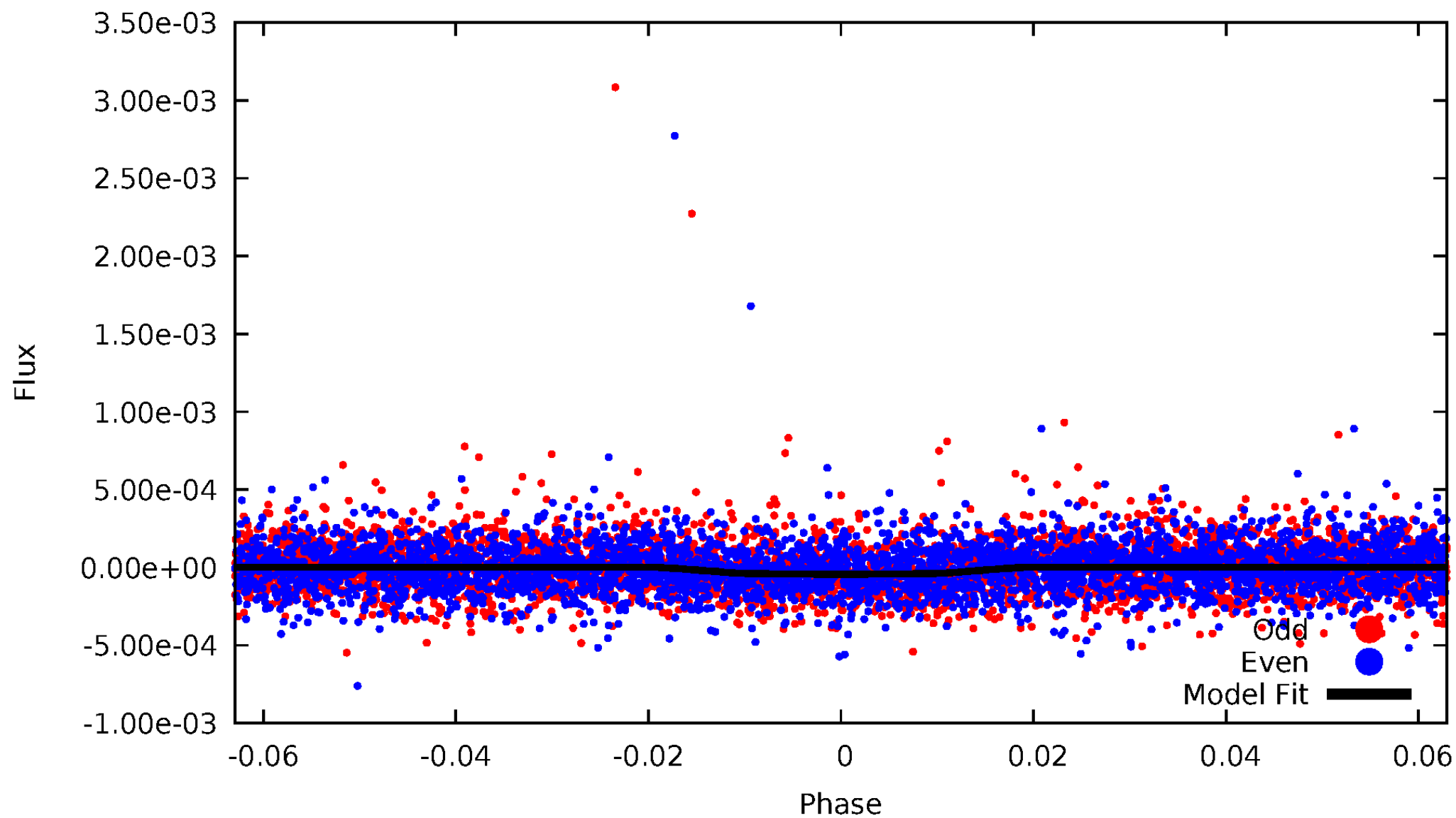


TCE 010000941-02



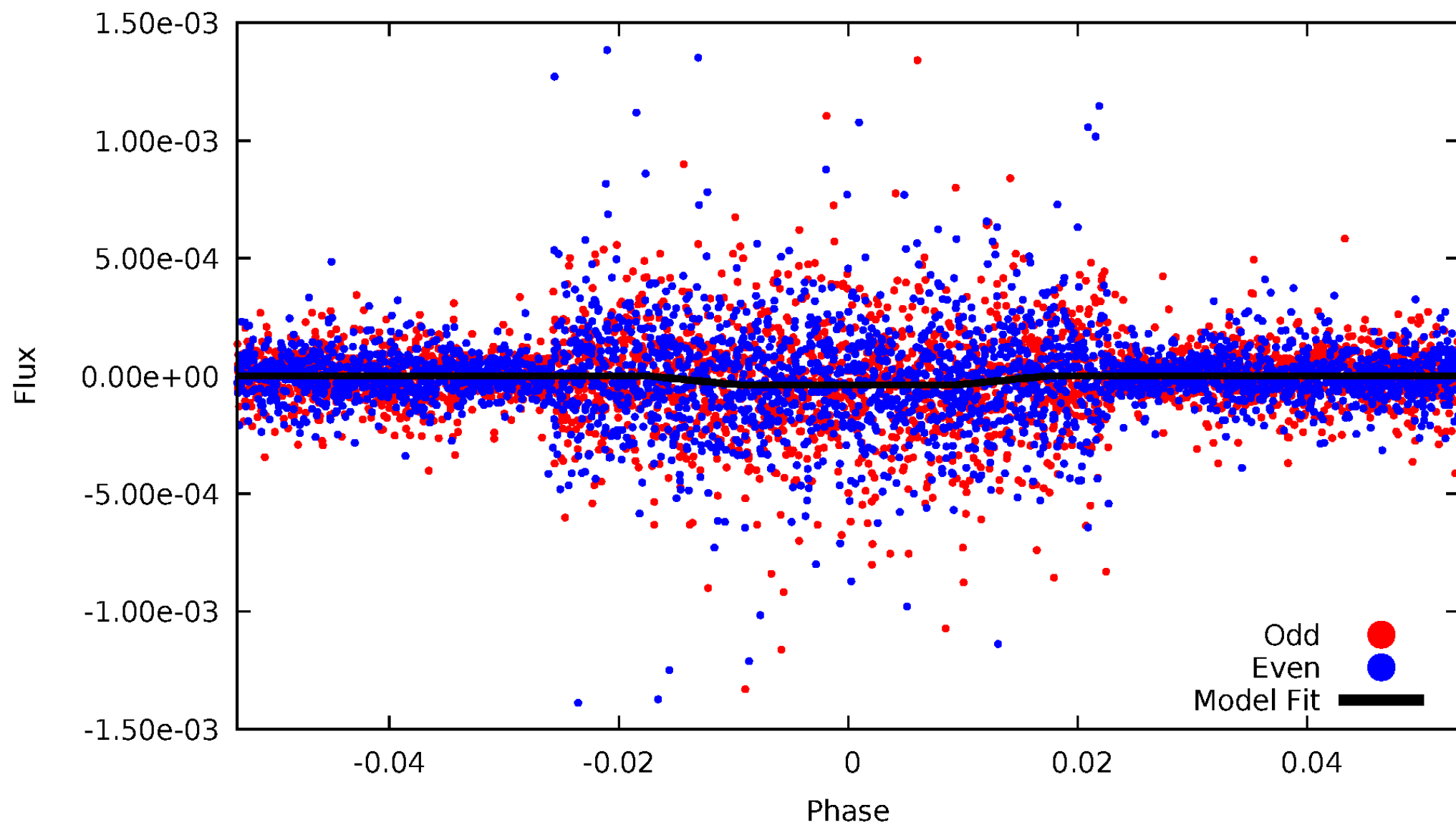
DV Odd/Even

TCE 010000941-02



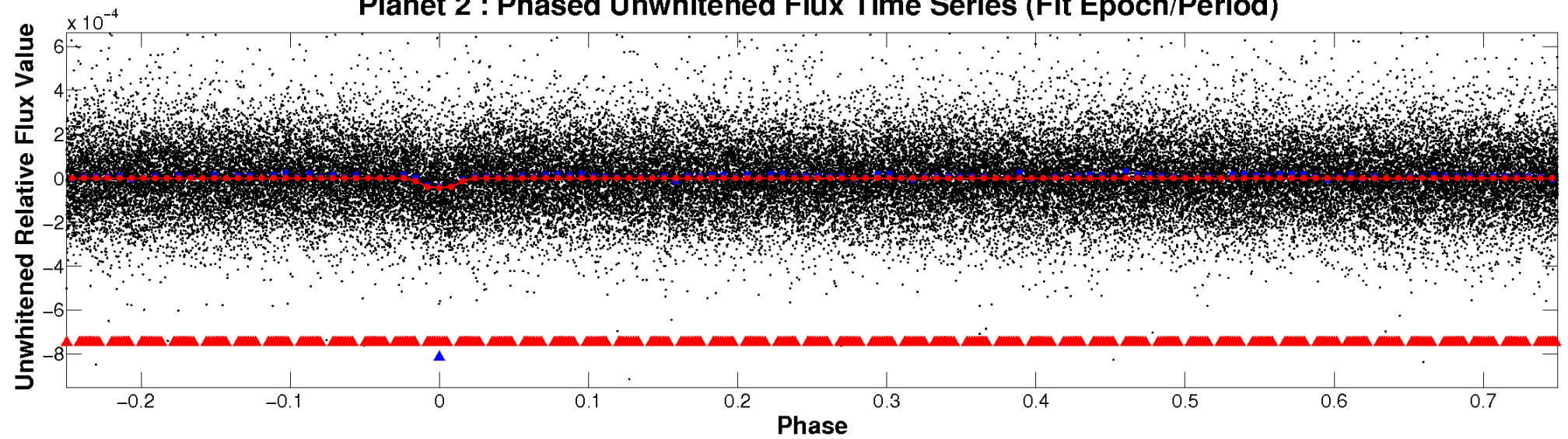
ALT Odd/Even

TCE 010000941-02

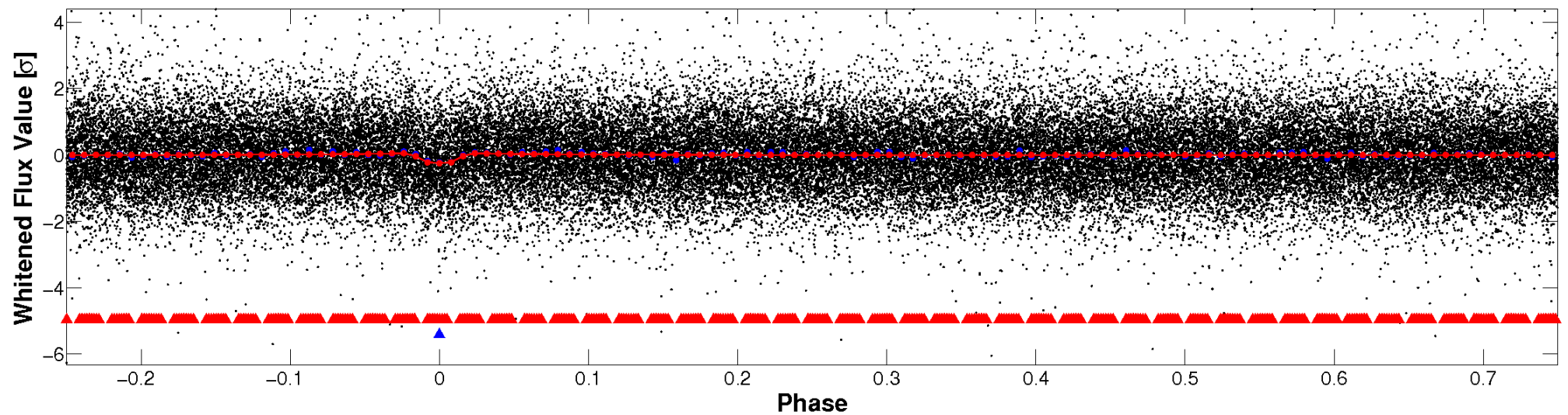


Non-Whitened Vs. Whitened Light Curve

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

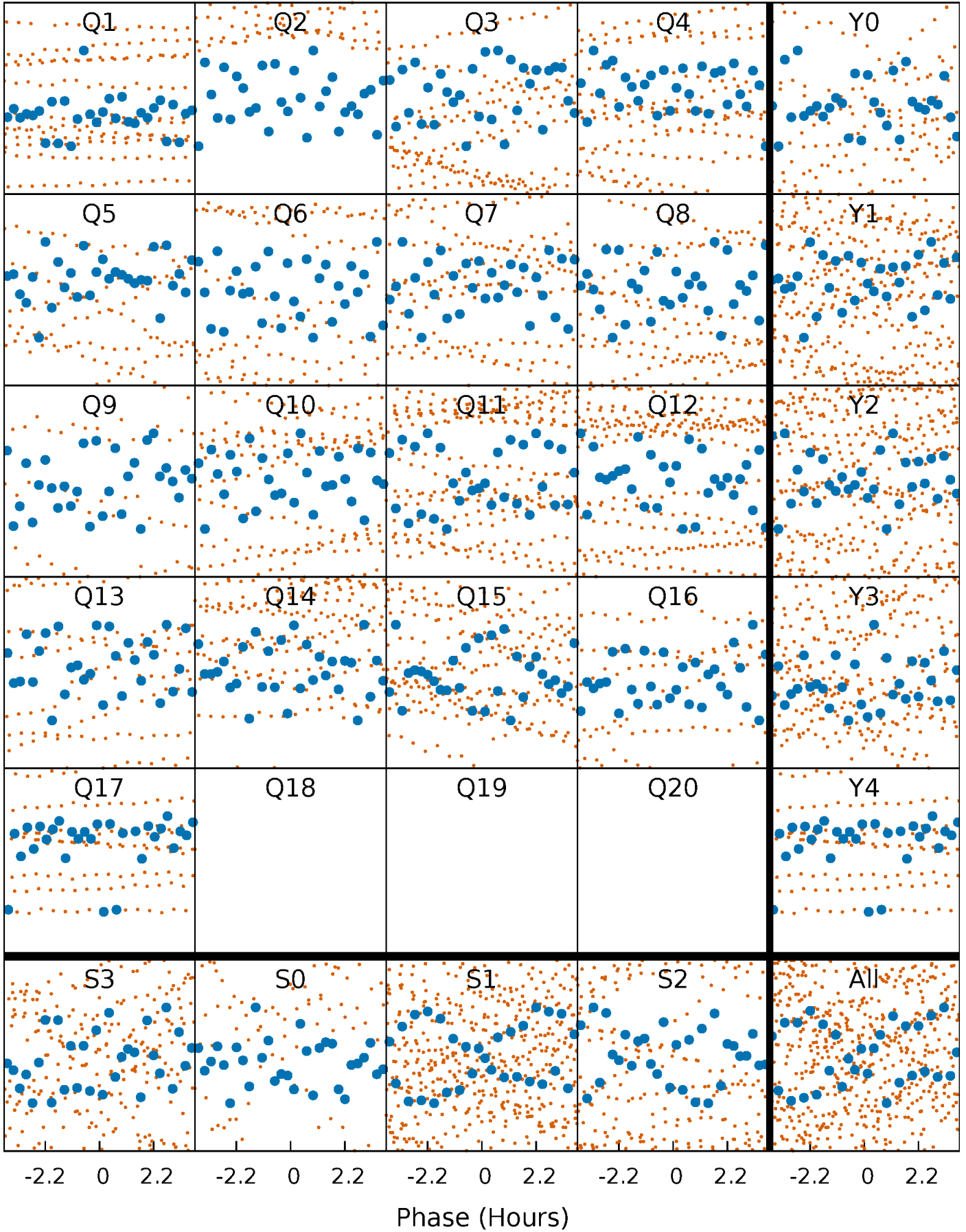


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



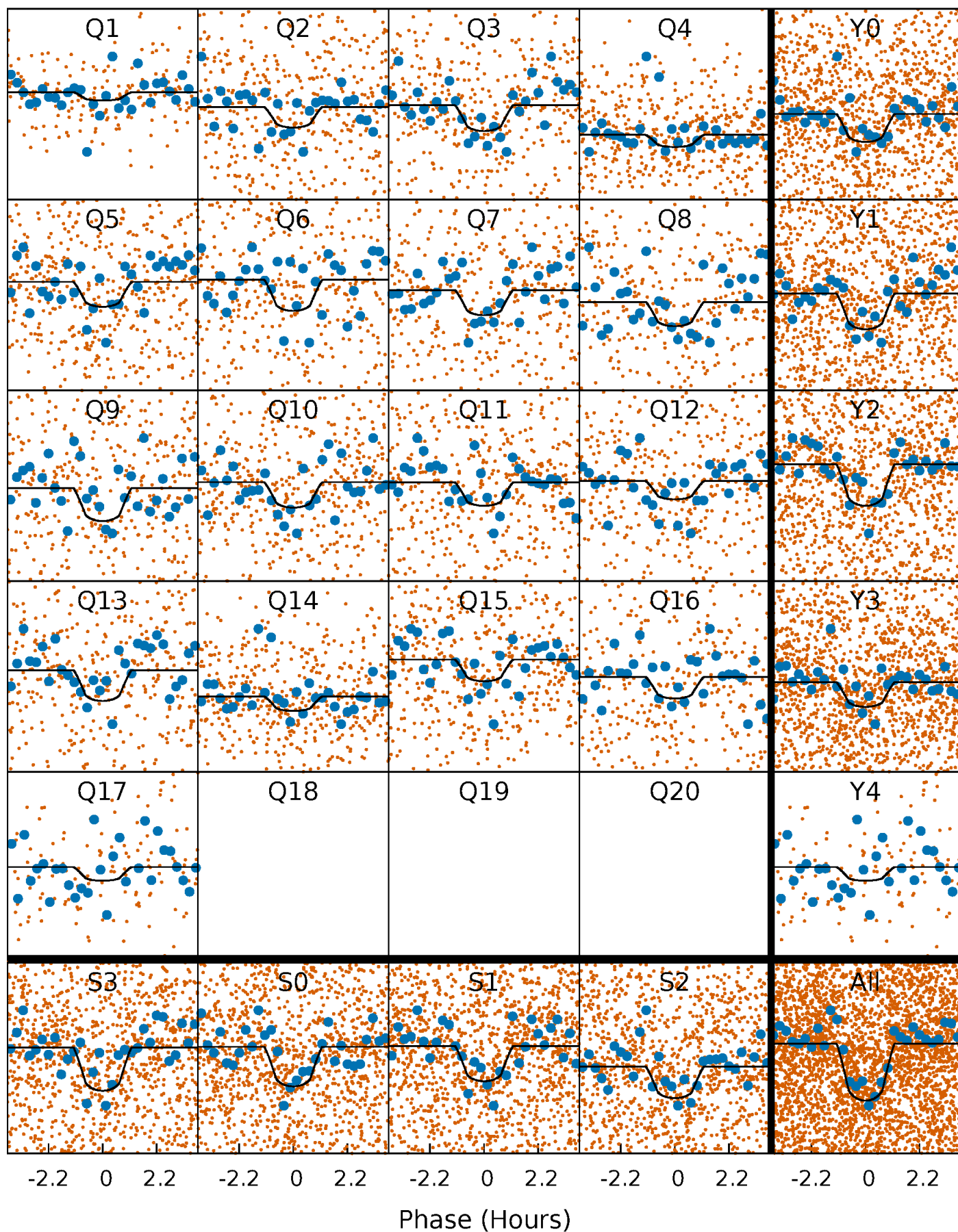
PDC Quarter-Phased Transit Curves

TCE 010000941-02 P= 2.573866 Days $T_0=132.166733$ (BKJD)



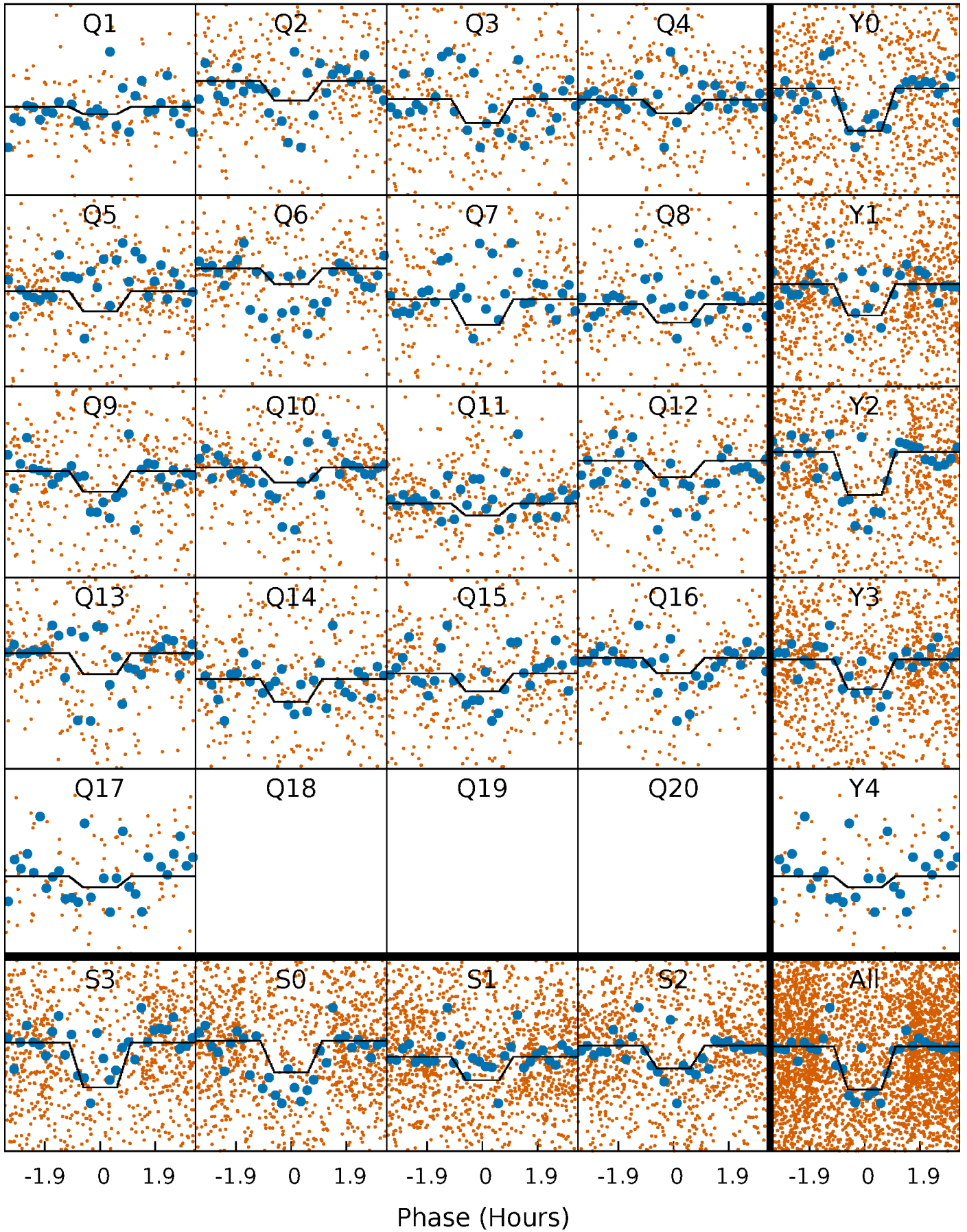
DV Quarter-Phased Transit Curves

TCE 010000941-02 P= 2.573866 Days $T_0=132.166733$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

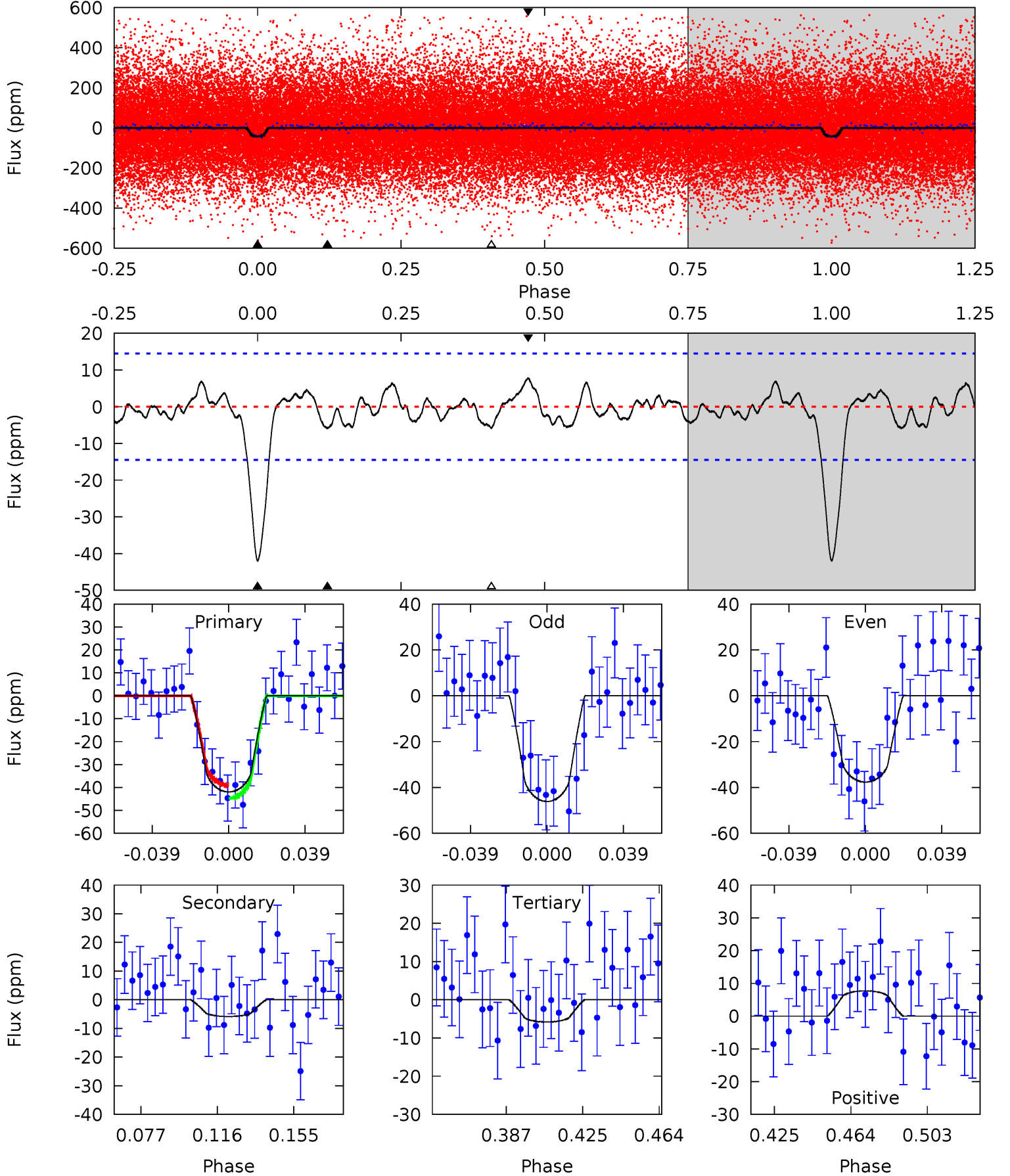
TCE 010000941-02 $P = 2.573845$ Days $T_0 = 132.170325$ (BKJD)



DV Model-Shift Uniqueness Test

010000941-02, P = 2.573866 Days, E = 129.592867 Days

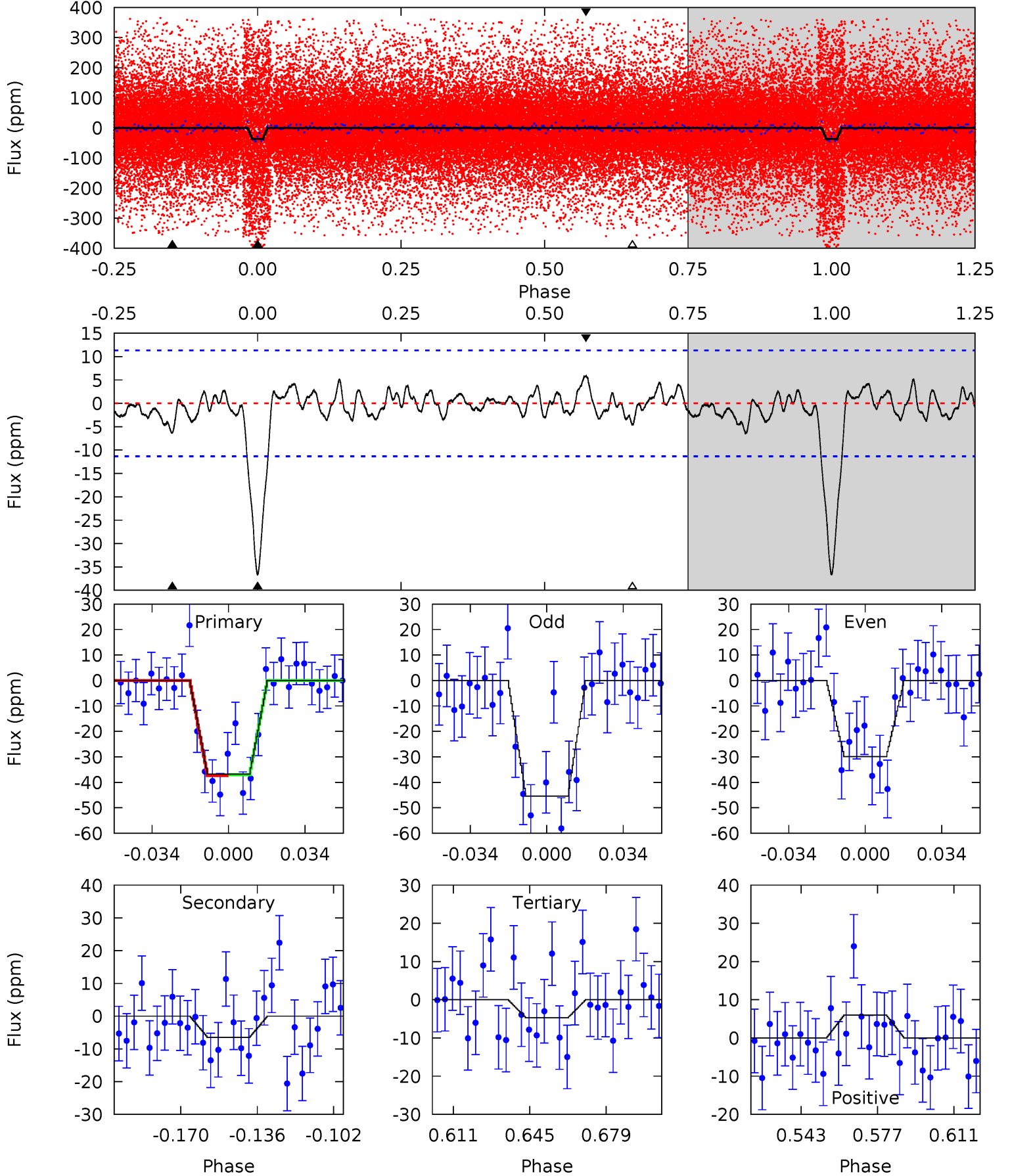
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	1.92	1.92	2.54	4.76	2.07	0.96	11.9	11.3	0.01	-0.62	1.40	0.80	0.16	0.94



Alt Model-Shift Uniqueness Test

010000941-02, P = 2.573845 Days, E = 129.596480 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	2.73	1.98	2.53	4.79	2.12	0.87	13.5	13.0	0.75	0.20	3.27	1.19	0.14	0



Stellar Parameters For KIC 010000941

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5115^{+154}_{-139}	$4.477^{+0.095}_{-0.105}$	$0.080^{+0.250}_{-0.250}$	$0.854^{+0.103}_{-0.093}$	$0.798^{+0.092}_{-0.057}$	$1.805^{+0.772}_{-0.540}$
	+3%/-3%	+2%/-2%	+312%/-312%	+12%/-11%	+12%/-7%	+43%/-30%
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 010000941-02 / KOI 4146.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-6 ± 3	$0.74^{+0.46}_{-0.44}$	1579^{+72}_{-67}	3324^{+1237}_{-594}	$7.209^{+36.351}_{-5.242}$
Alt.	-6 ± 2	$0.63^{+0.41}_{-0.37}$	1578^{+76}_{-62}	3524^{+1444}_{-594}	10^{+55}_{-7}

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 $A_{obs} \gg 1.0$

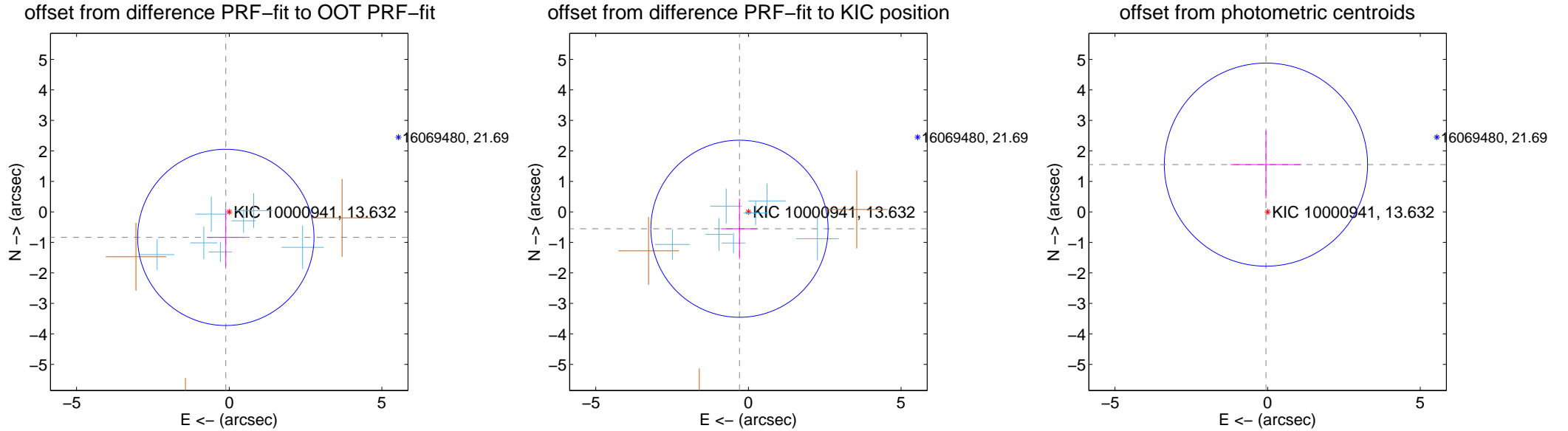
DV Centroid Data

Supplemental centroid analysis for 010000941-02. Kepler magnitude: 13.63. Transit SNR 9.05

There are 7 quarters with good PRF difference image offsets

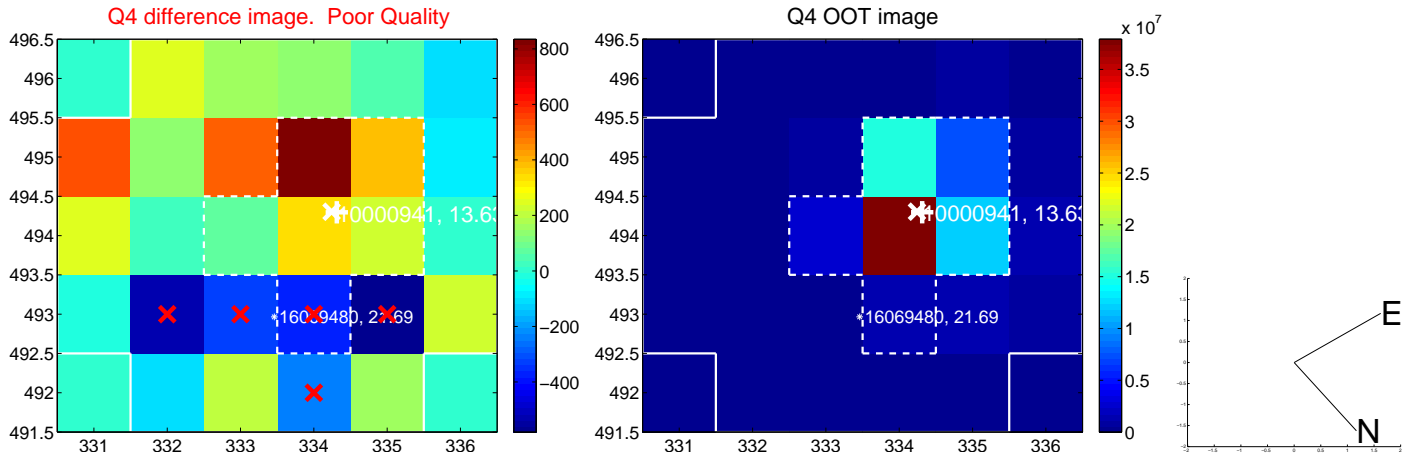
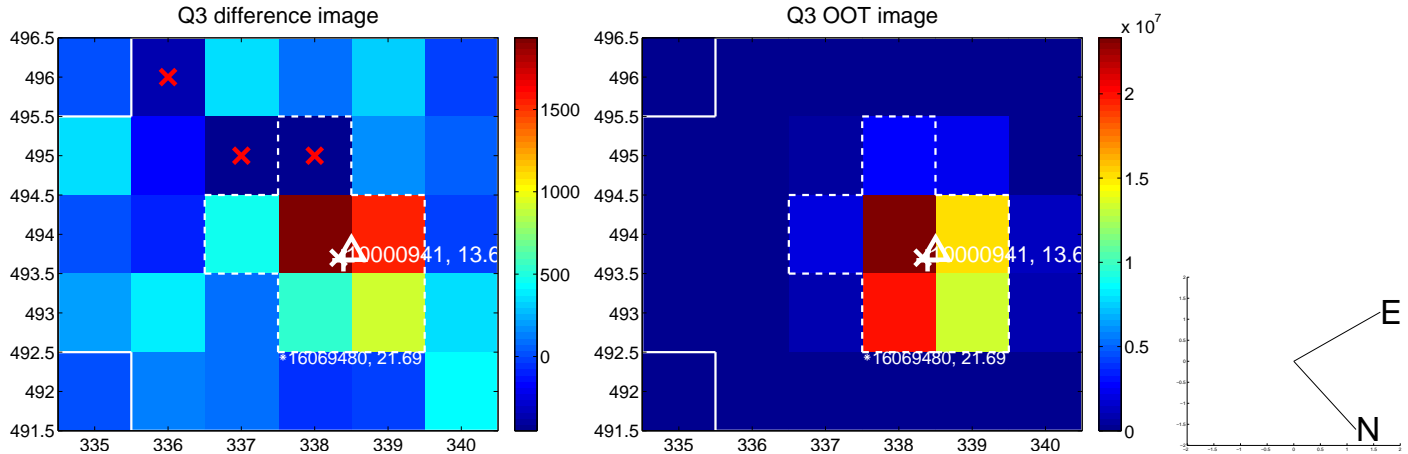
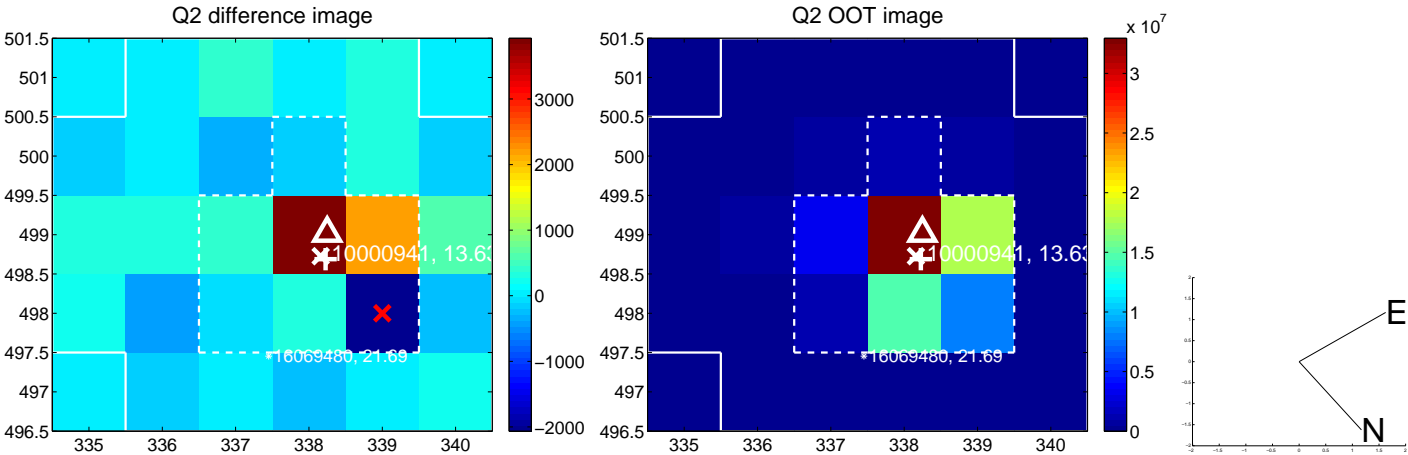
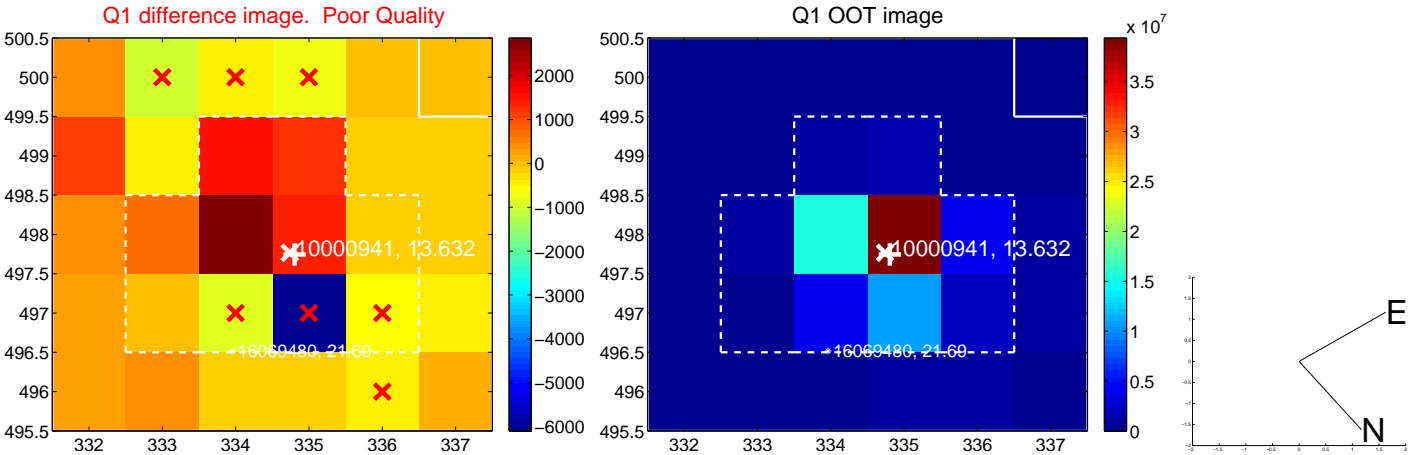
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.843 ± 0.963	0.88	0.111 ± 0.609	-0.836 ± 0.947
PRF-fit source offset from KIC position	0.626 ± 0.968	0.65	0.294 ± 0.601	-0.552 ± 0.984
photometric centroid source offset	1.55 ± 1.11	1.40	0.05 ± 1.16	1.55 ± 1.11

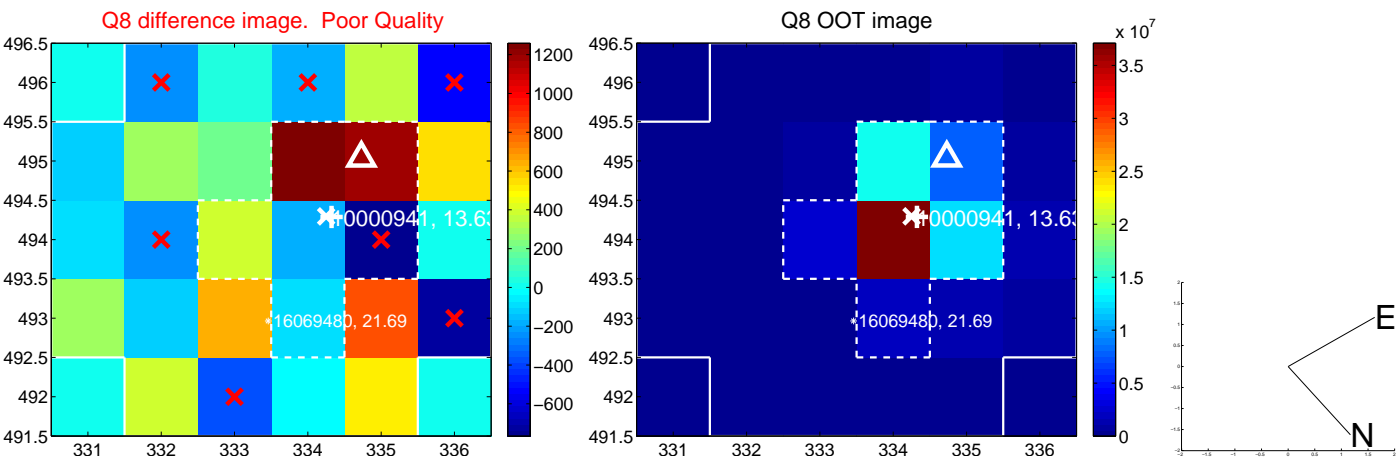
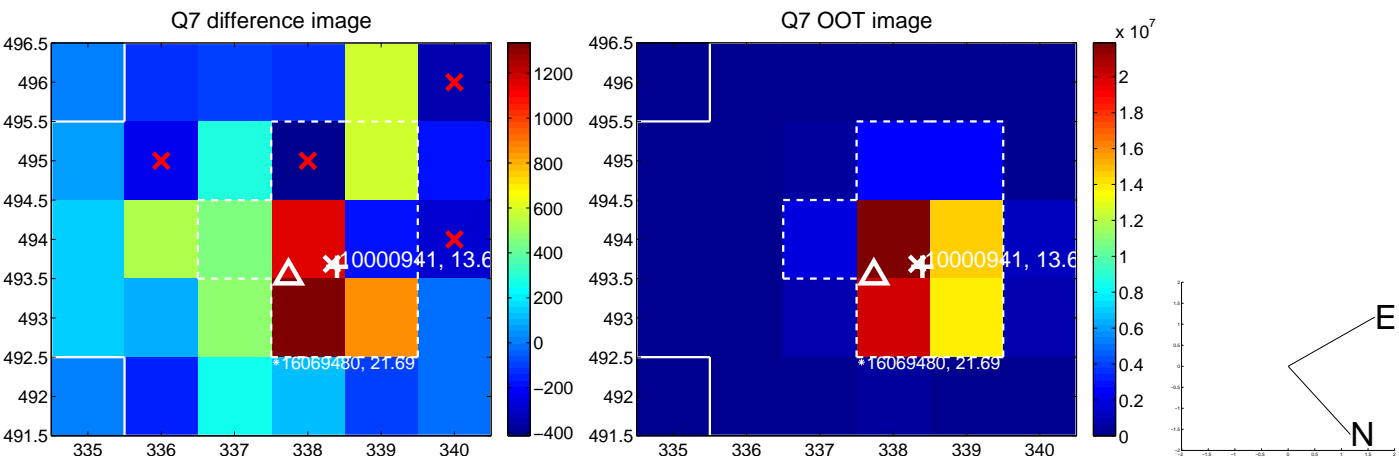
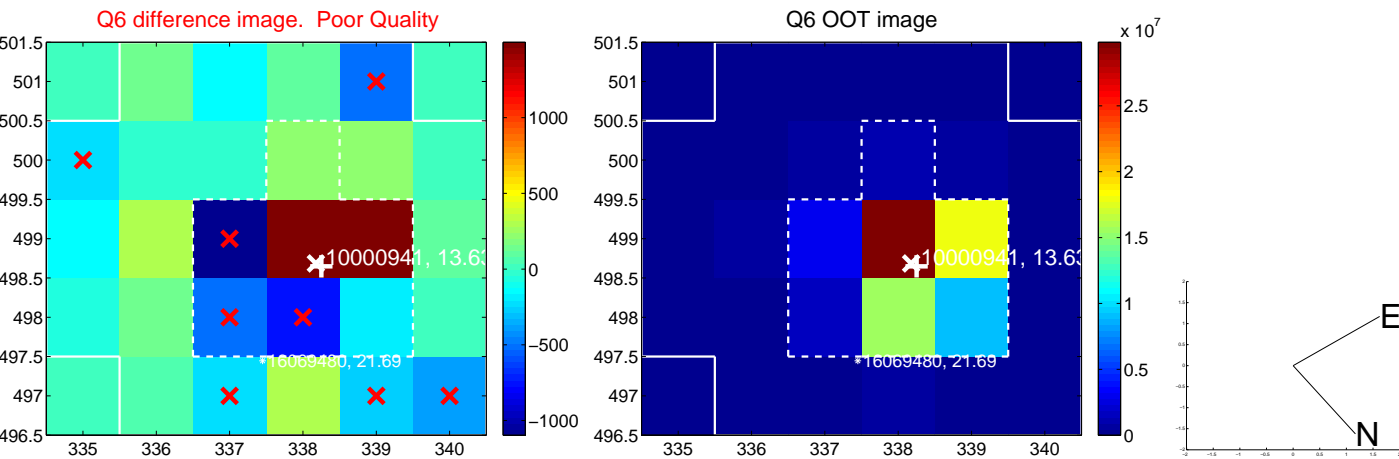
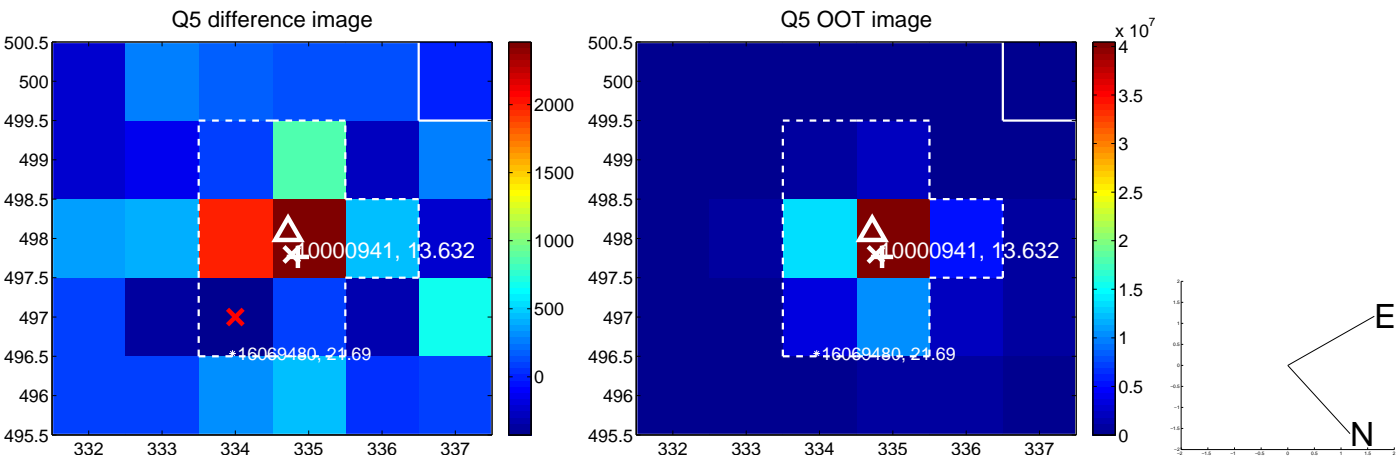


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

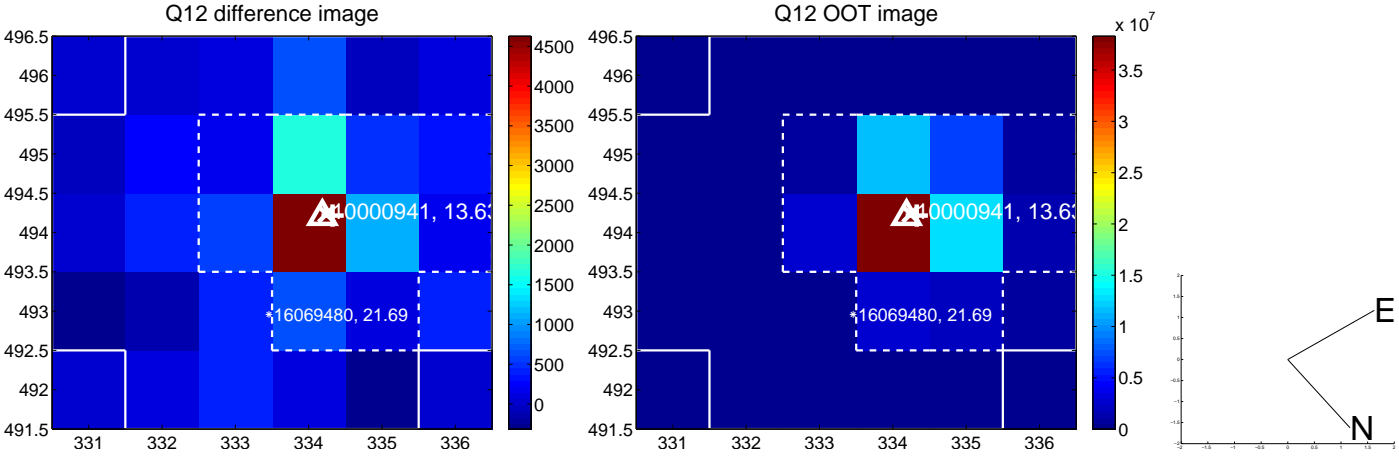
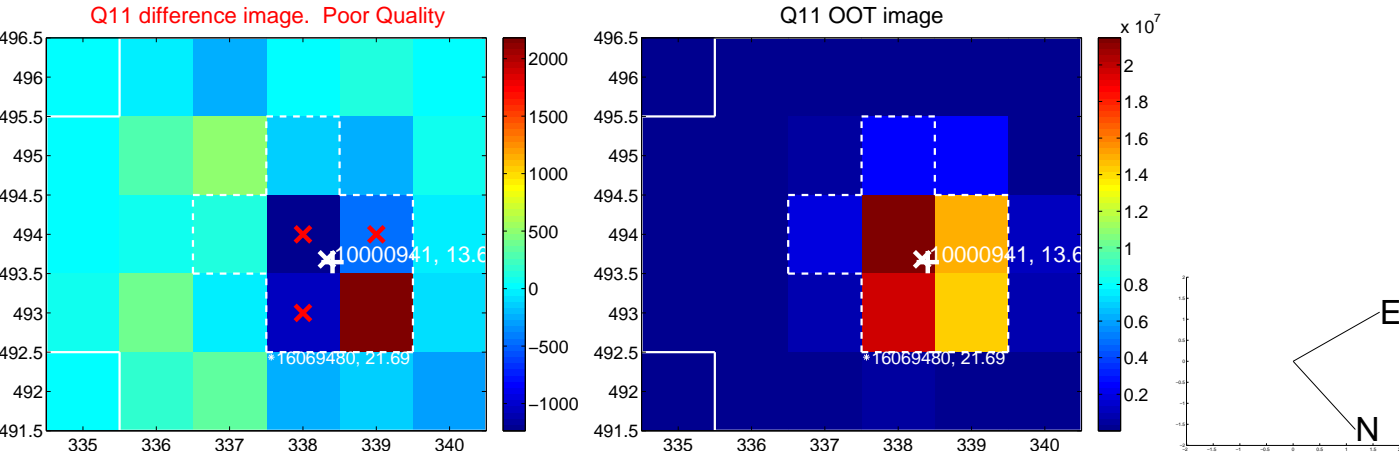
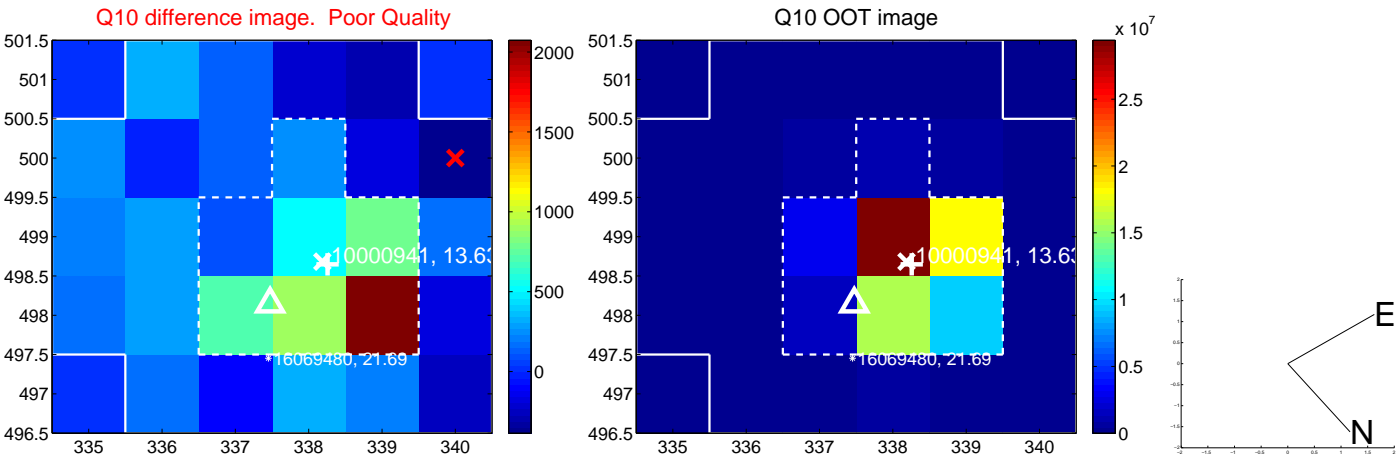
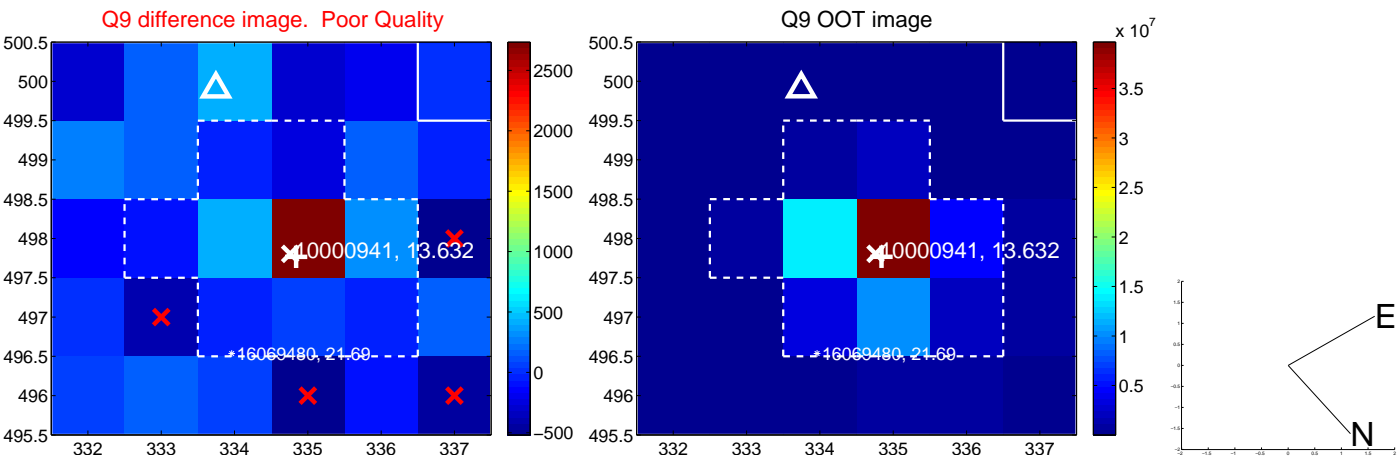
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



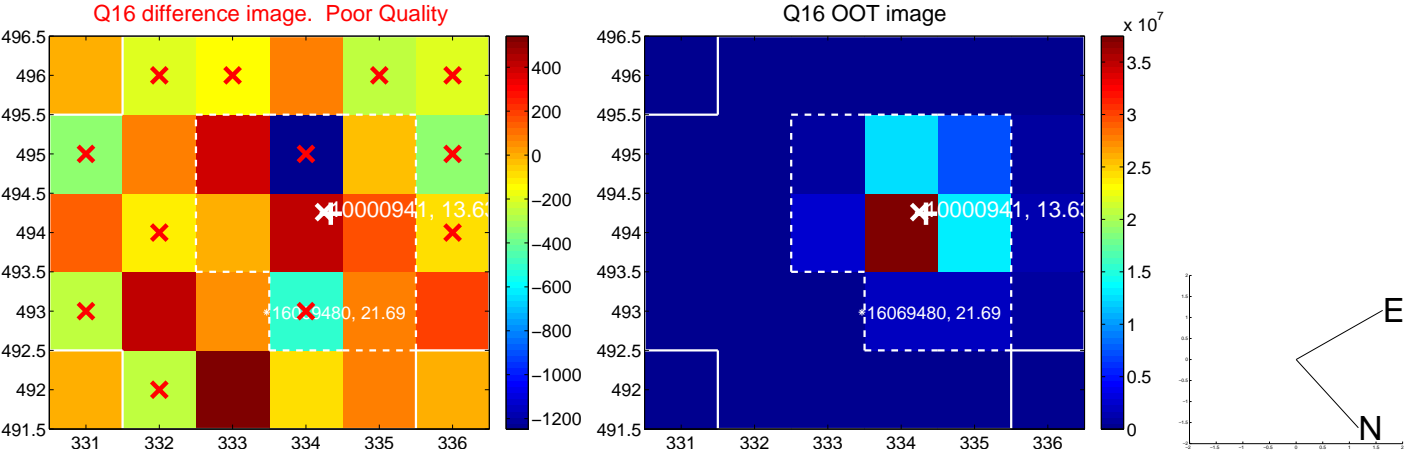
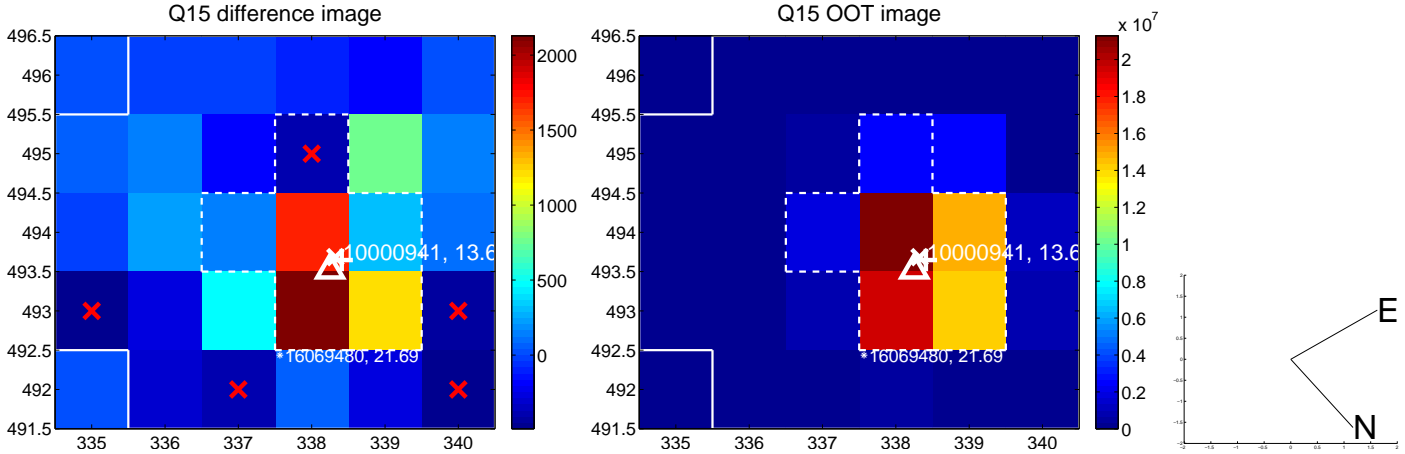
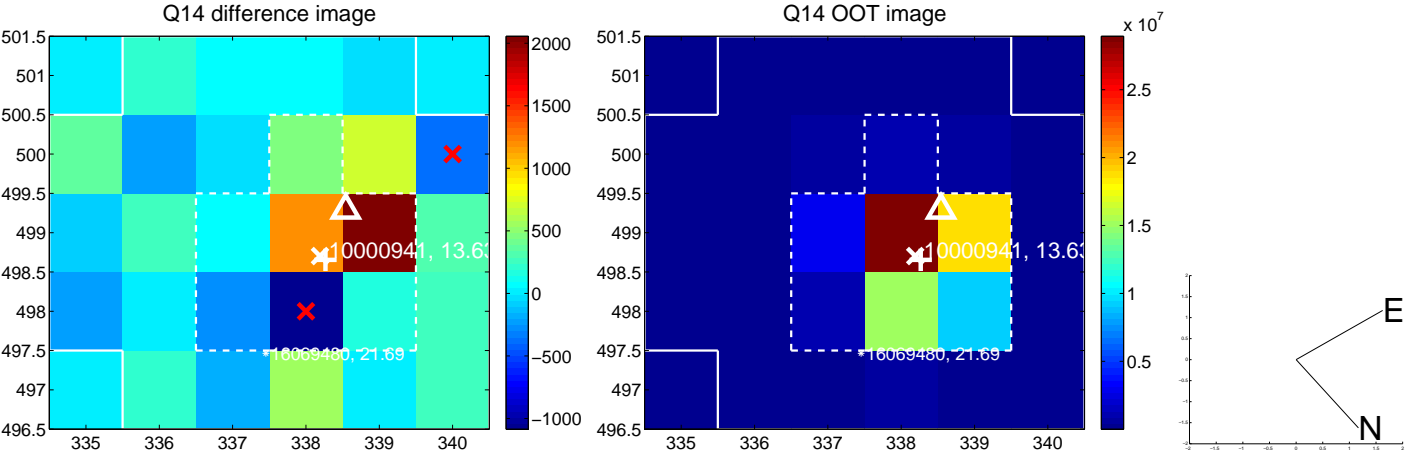
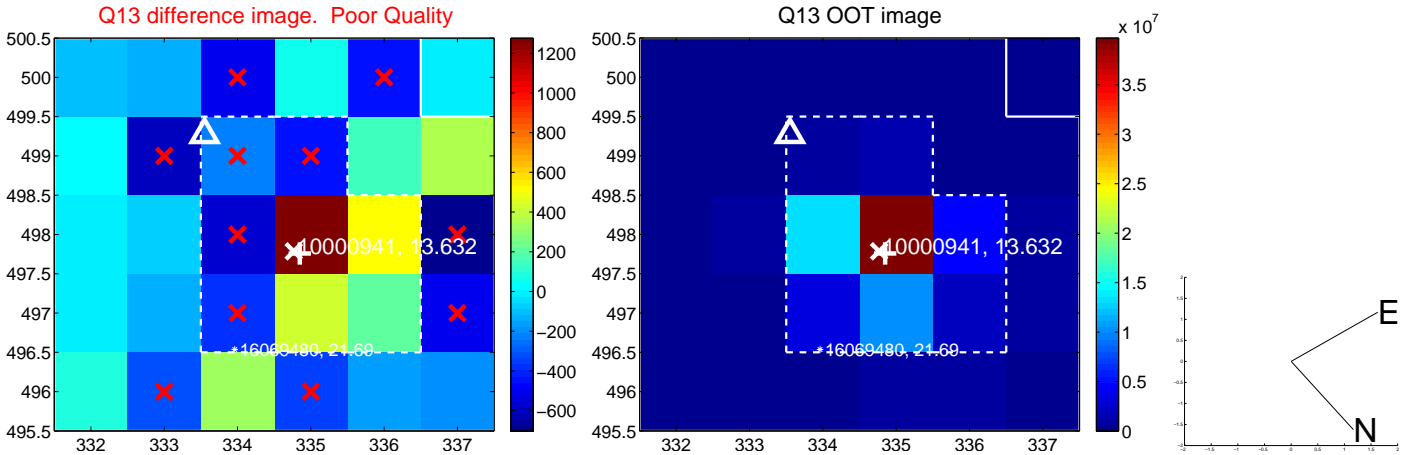
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



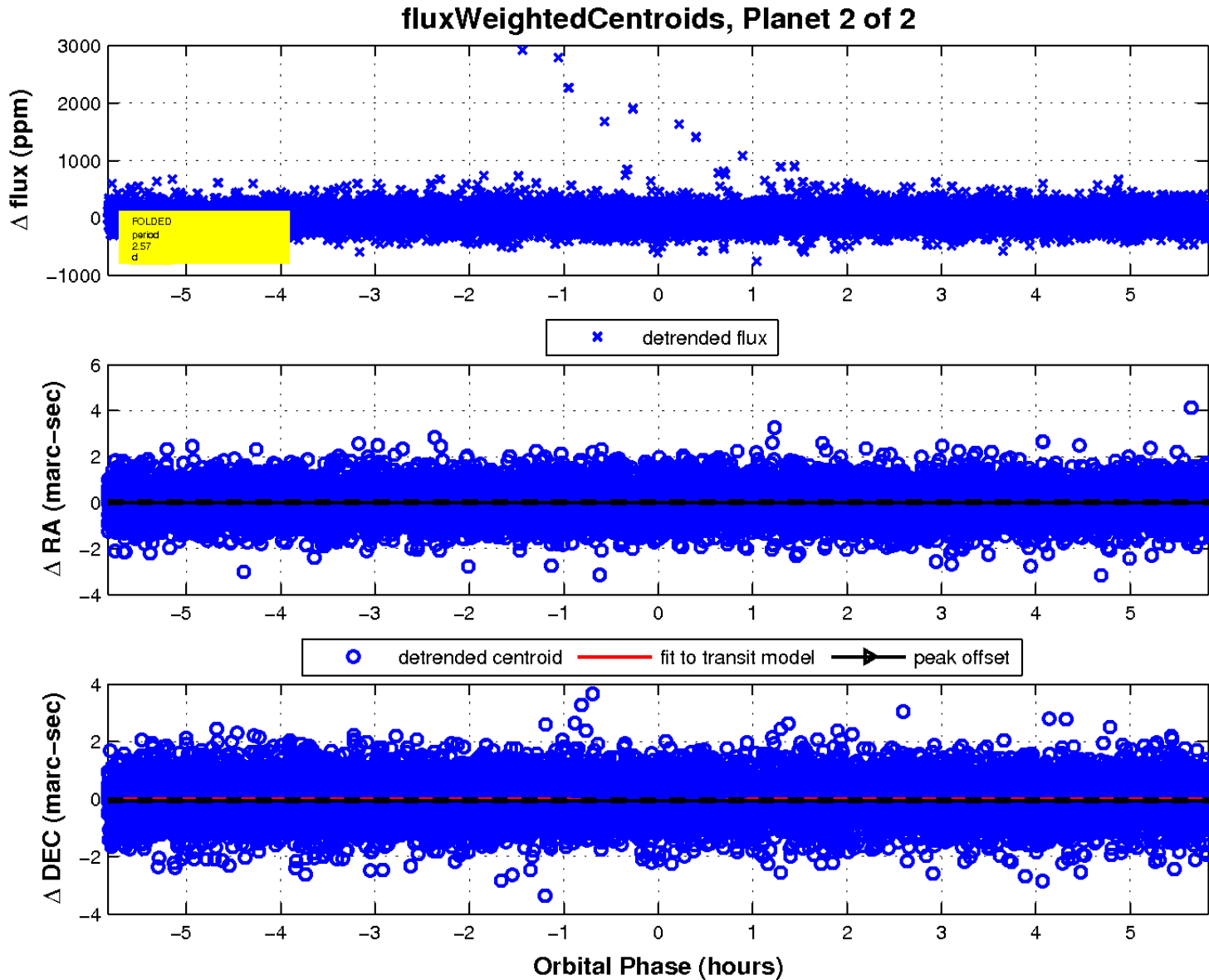
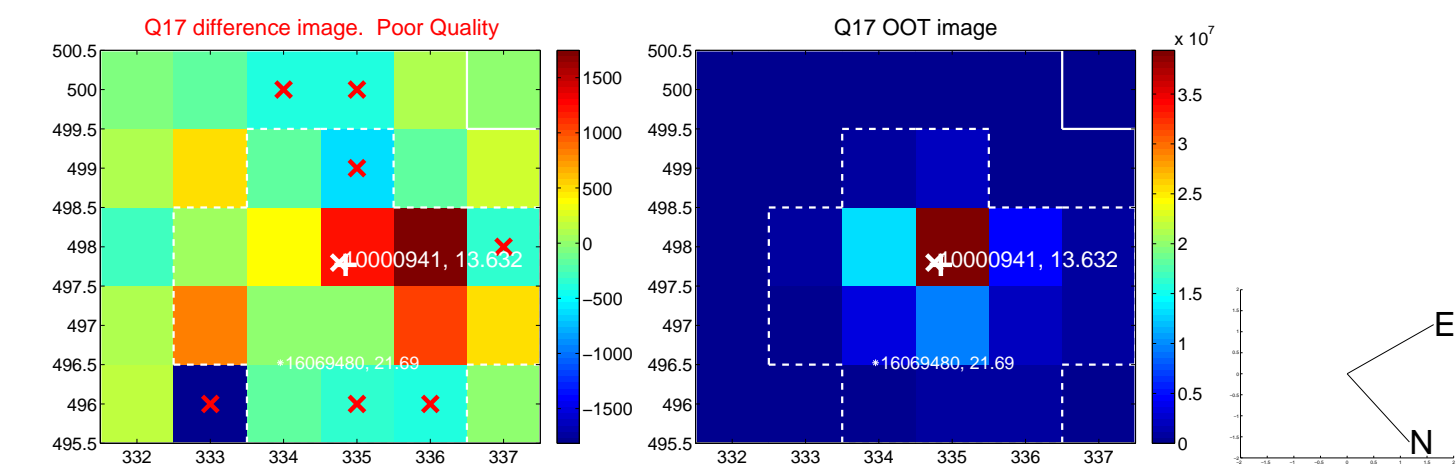
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

