

KIC 004831728

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})
004831728-01	OBS	2739.01	10.107672	135.107631	291.7	3.968	20.9	23.4	1.17	5480	2.41	141.12
004831728-02	OBS	2739.02	7.095866	134.971462	88.1	4.636	8.1	9.0	1.17	5480	1.22	226.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004831728-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004831728-02	OBS	PC	0.90	0	0	0	0	NO_COMMENT

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.

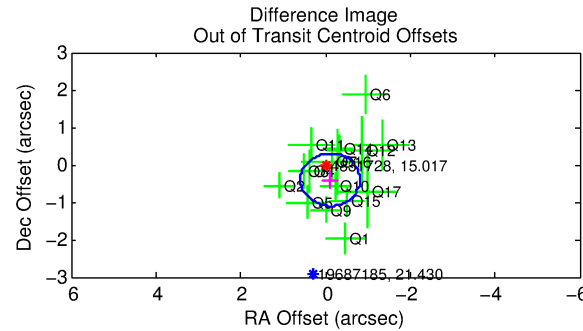
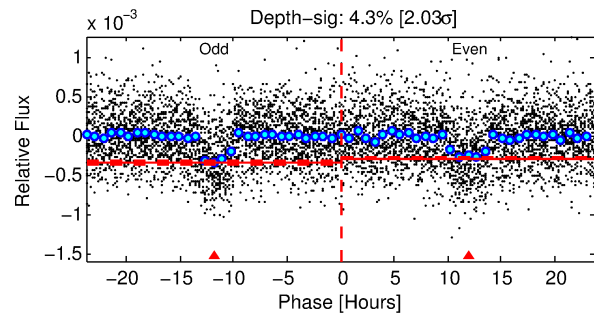
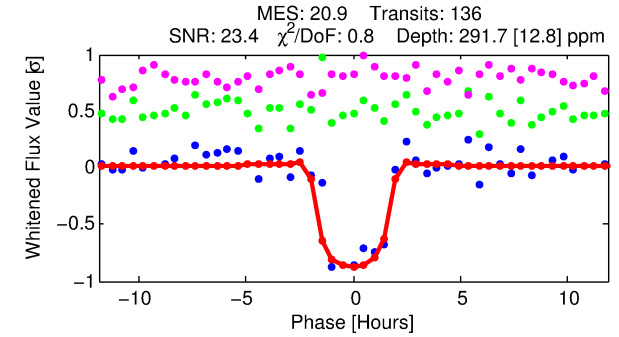
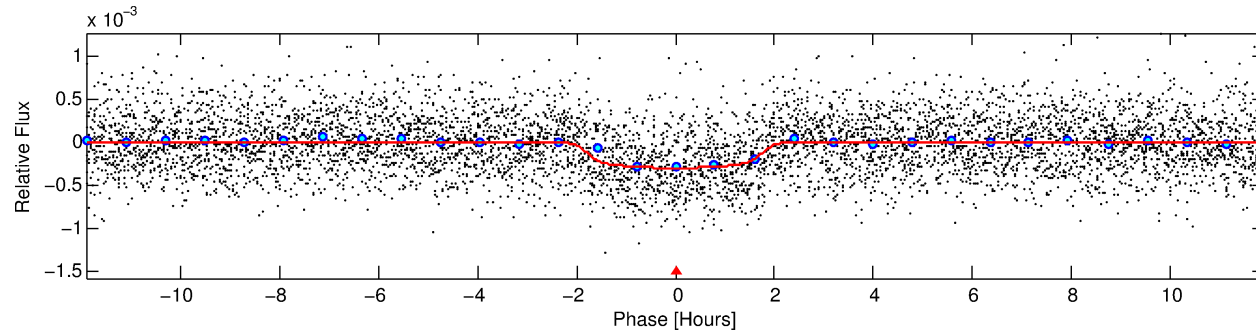
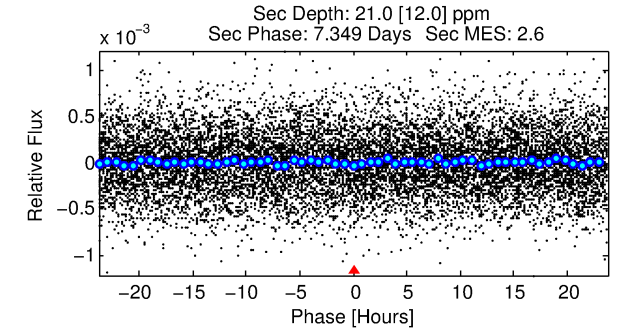
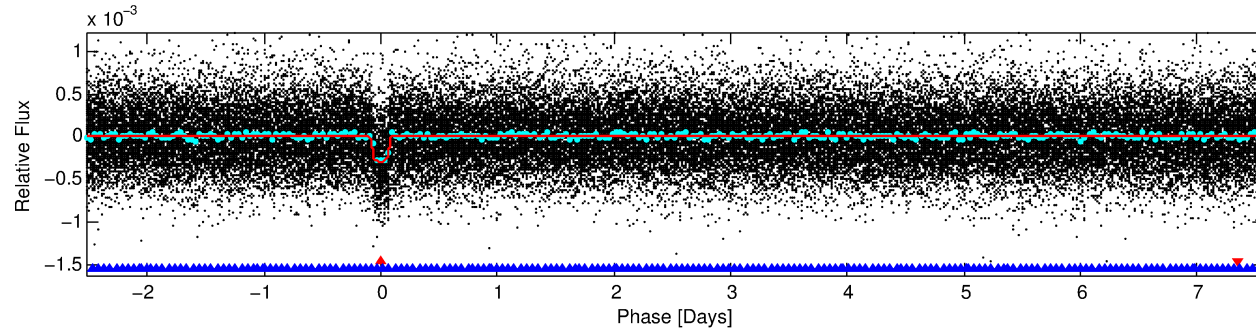
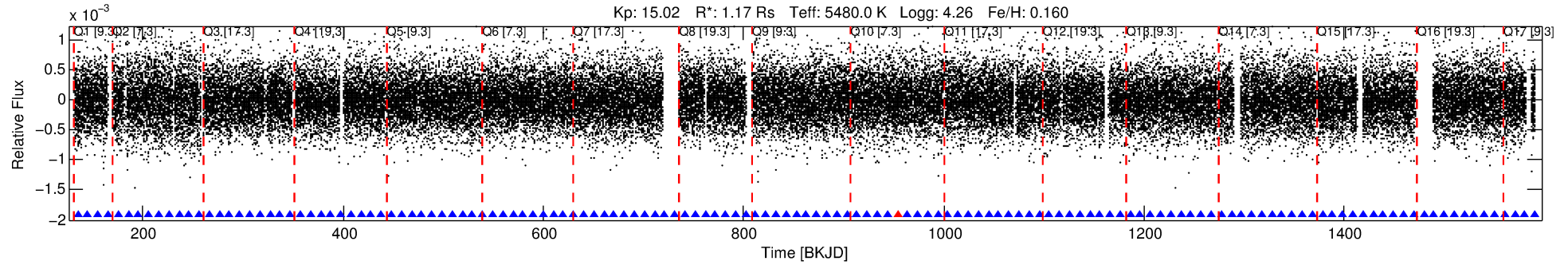
Ephemeris Match Information For 004831728-01

No Significant Match Found

DV One-Page Summary

KIC: 4831728 Candidate: 1 of 2 Period: 10.108 d

KOI: K02739.01 Corr: 0.960



DV Fit Results:

Period = 10.10767 [0.00004] d
Epoch = 135.1076 [0.0036] BKJD
Rp/R* = 0.0188 [0.0031]
a/R* = 9.27 [6.52]
b = 0.90 [0.15]
Seff = 141.12 [44.08]
Teff = 879 [69] K
Rp = 2.41 [0.62] Re
a = 0.0888 [0.0170] AU
Ag = 15.65 [11.35] [1.29σ]
Teffp = 2703 [446] K [4.04σ]

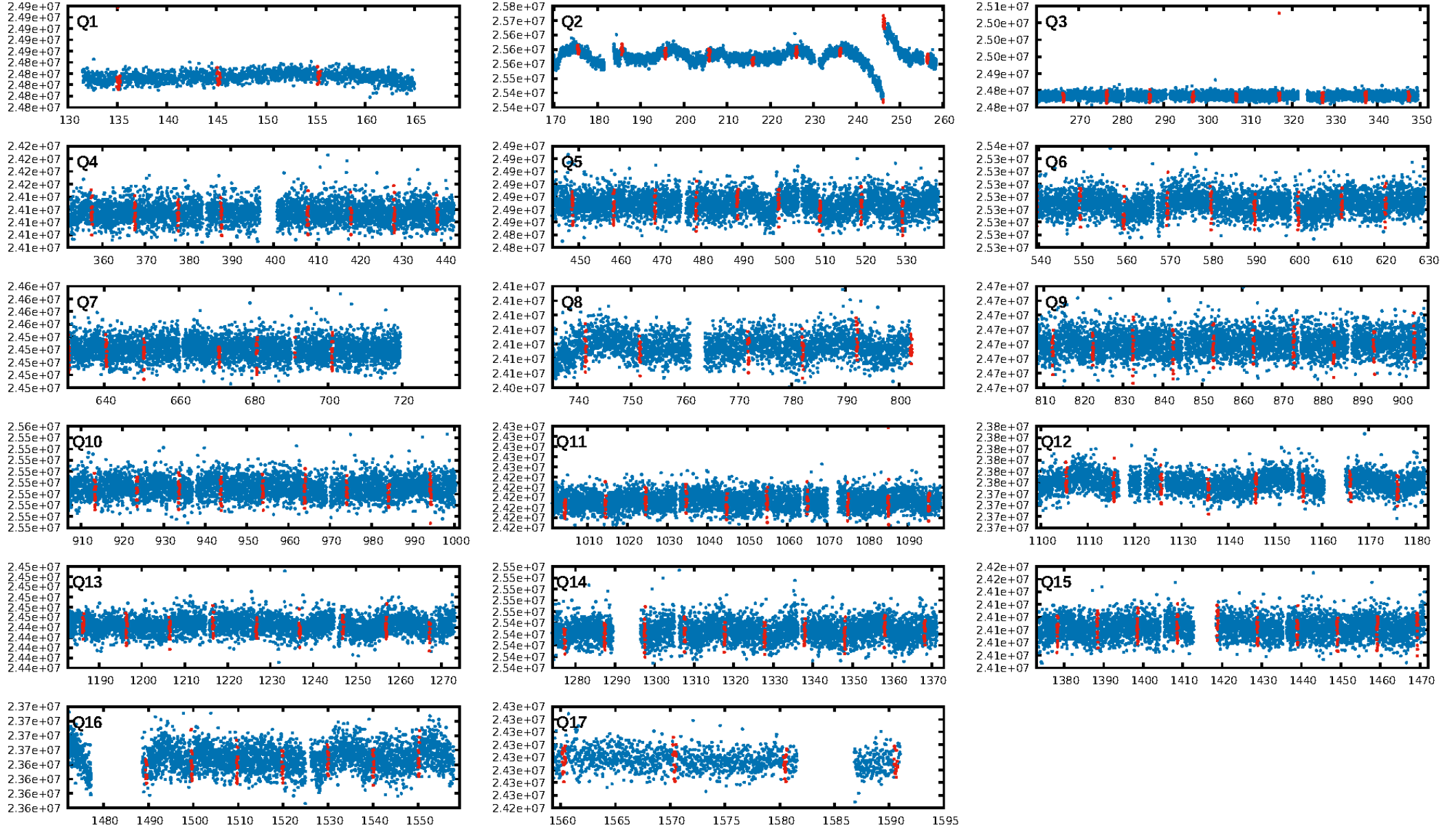
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.85σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.53e-96
RollingBand-fgt: 0.99 [128/129]
GhostDiagnostic-chr: 4.643
Centroid-sig: N/A
Centroid-so: 0.835 arcsec [1.53σ]
OotOffset-rm: 0.420 arcsec [1.80σ]
KicOffset-rm: 0.325 arcsec [1.39σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [17/17]

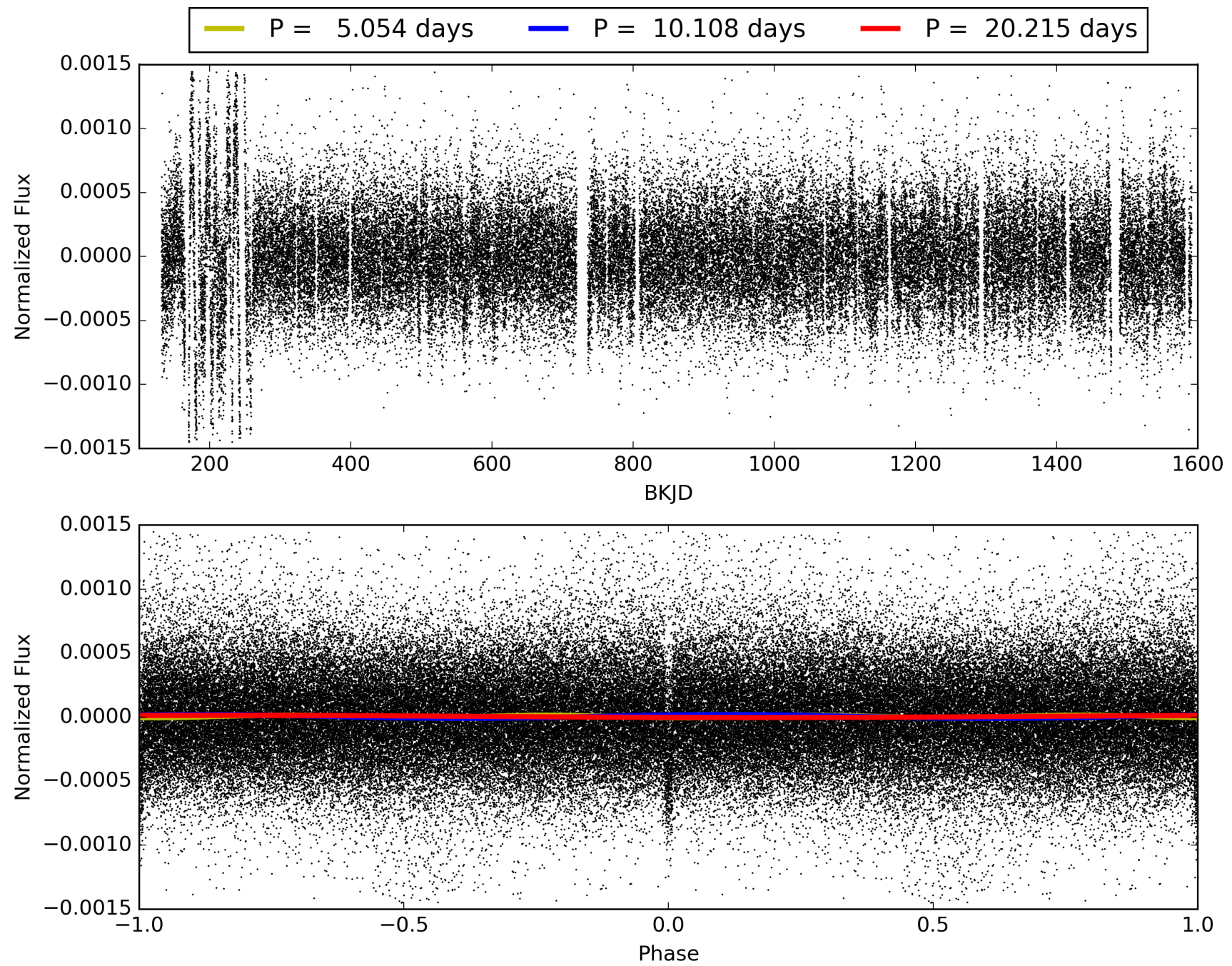
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:20:48 Z

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

TCE 004831728-01, PDC Light Curves

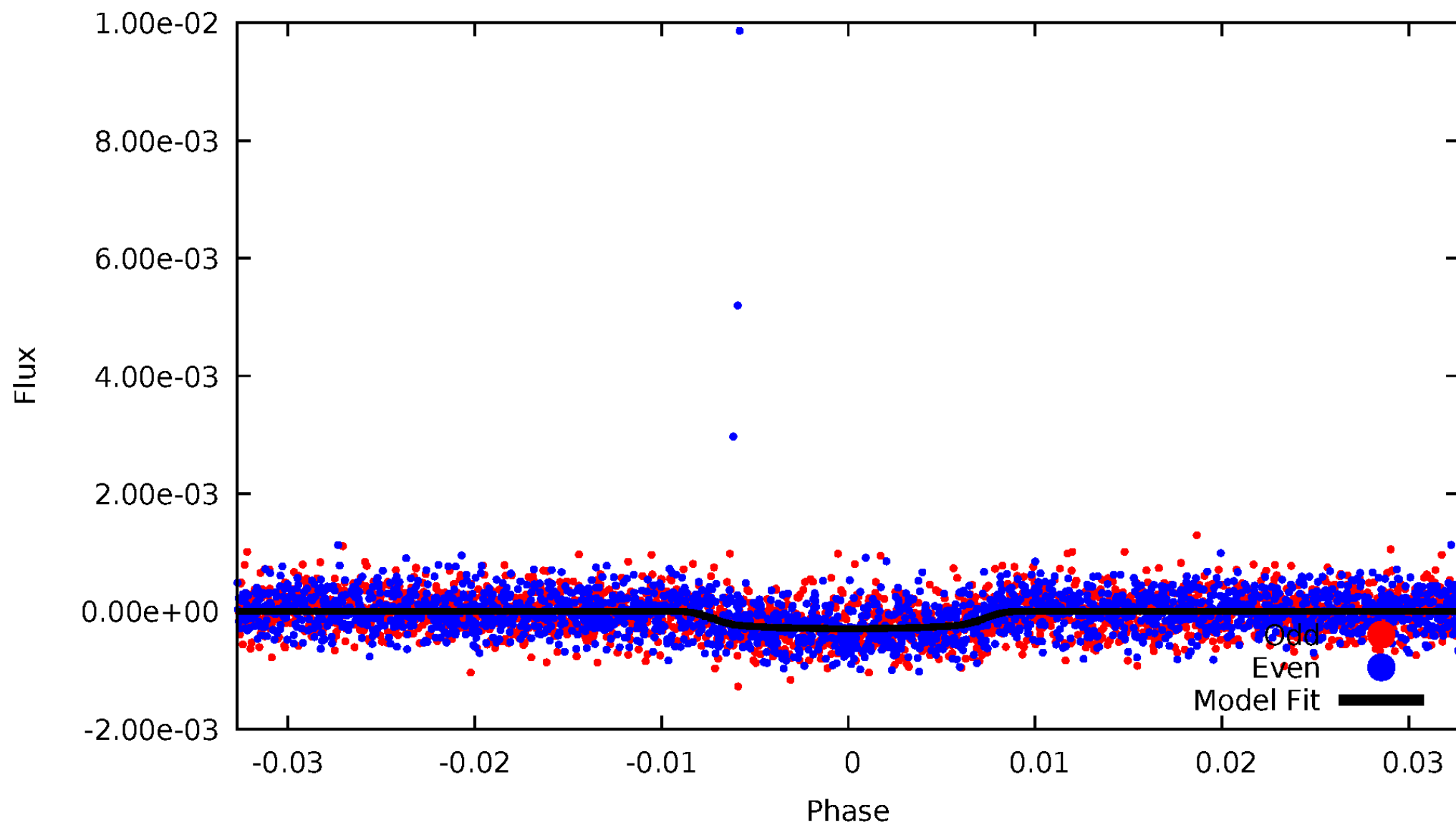


TCE 004831728-01



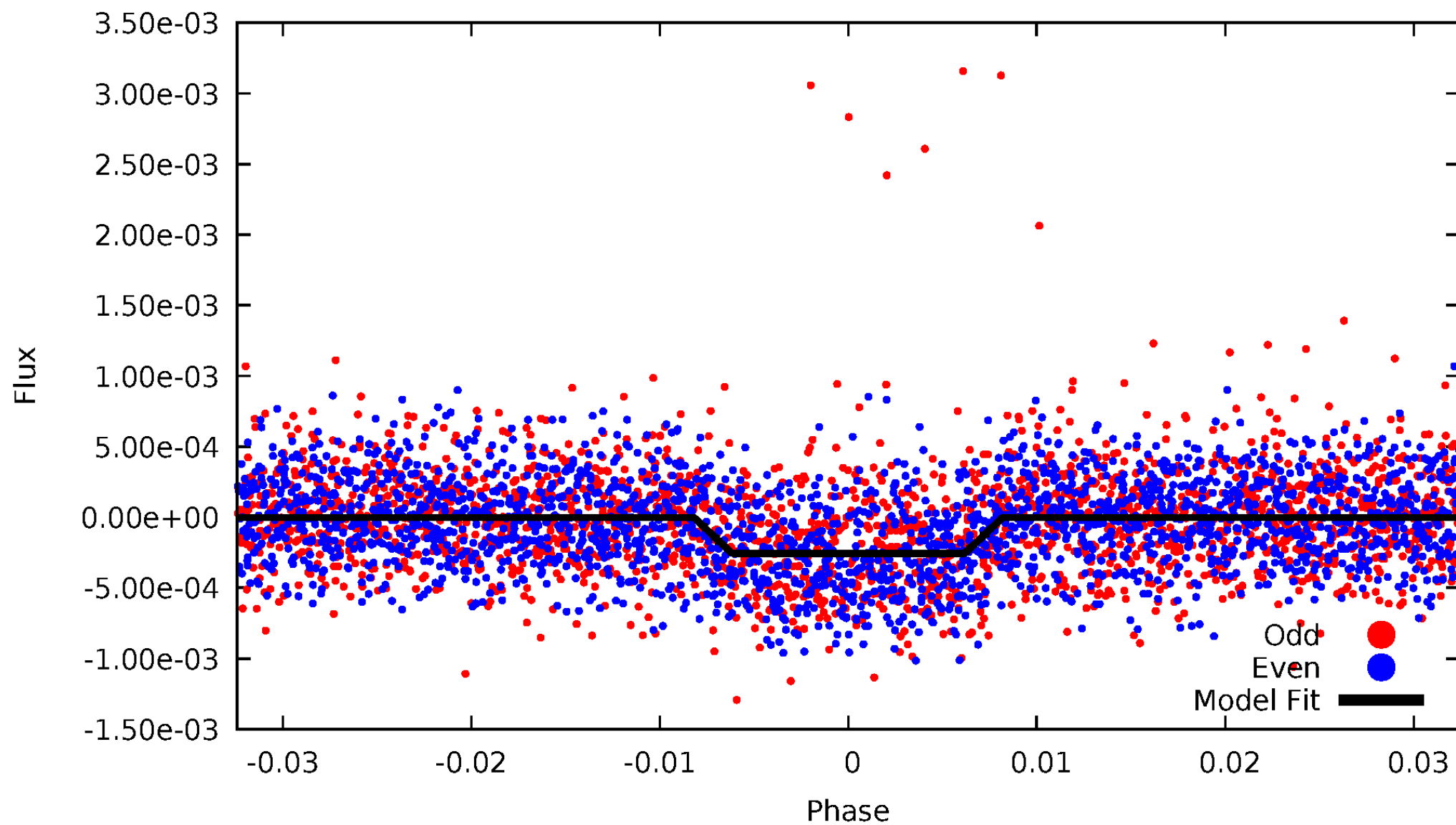
DV Odd/Even

TCE 004831728-01



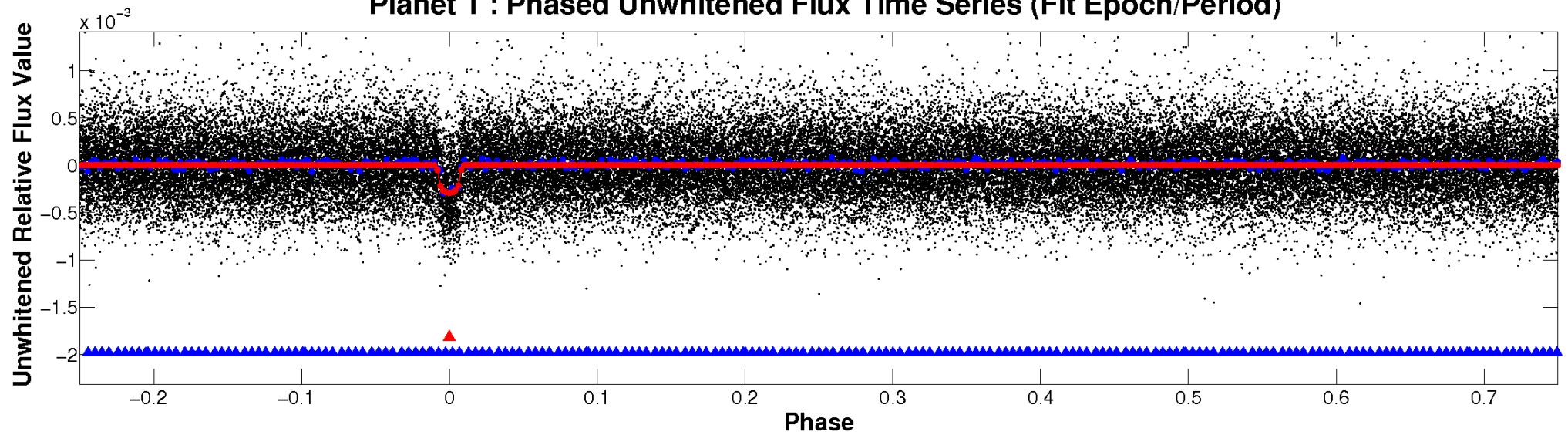
ALT Odd/Even

TCE 004831728-01

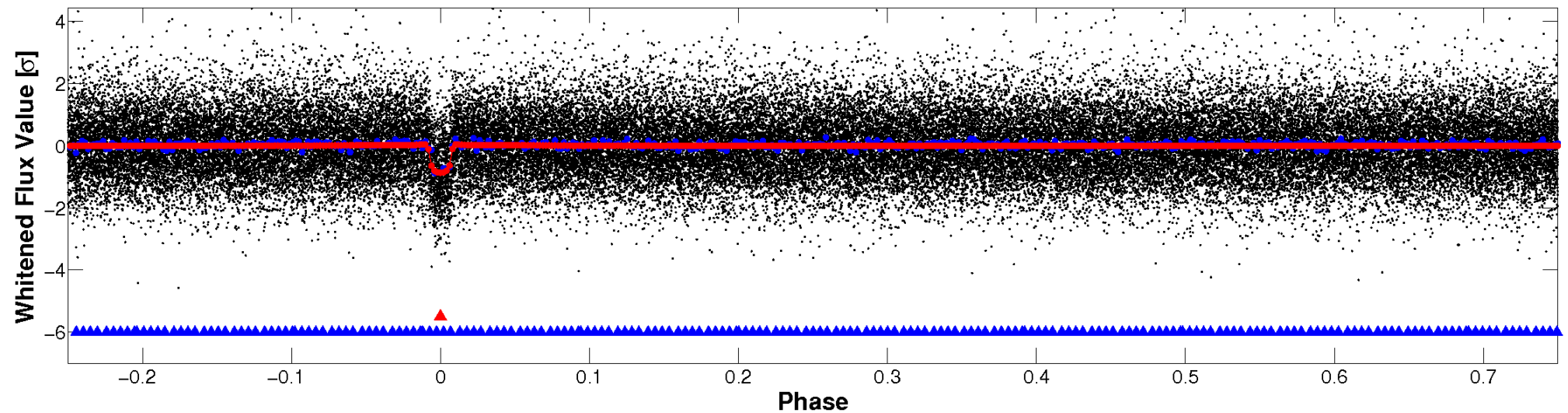


Non-Whitened Vs. Whitened Light Curve

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

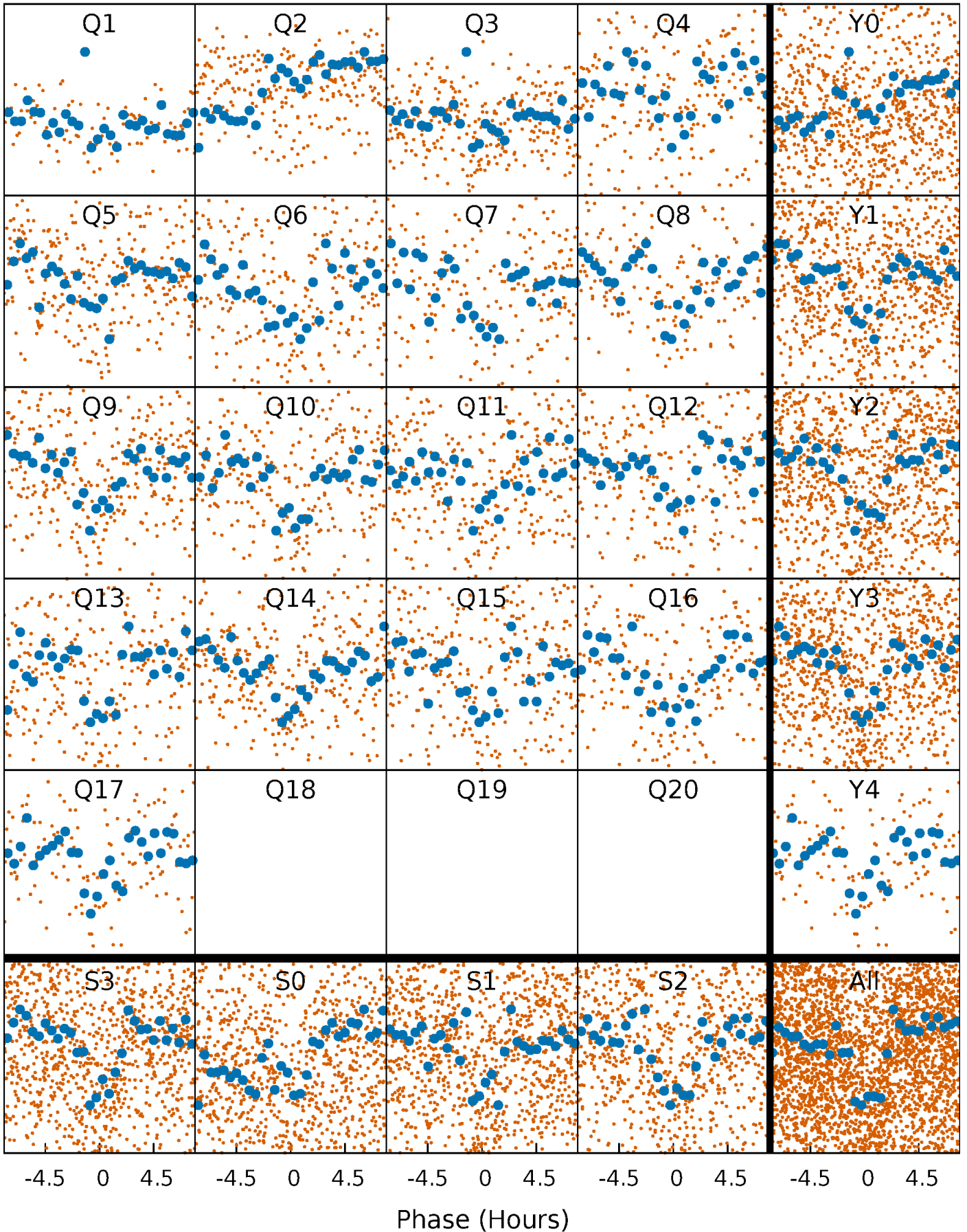


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



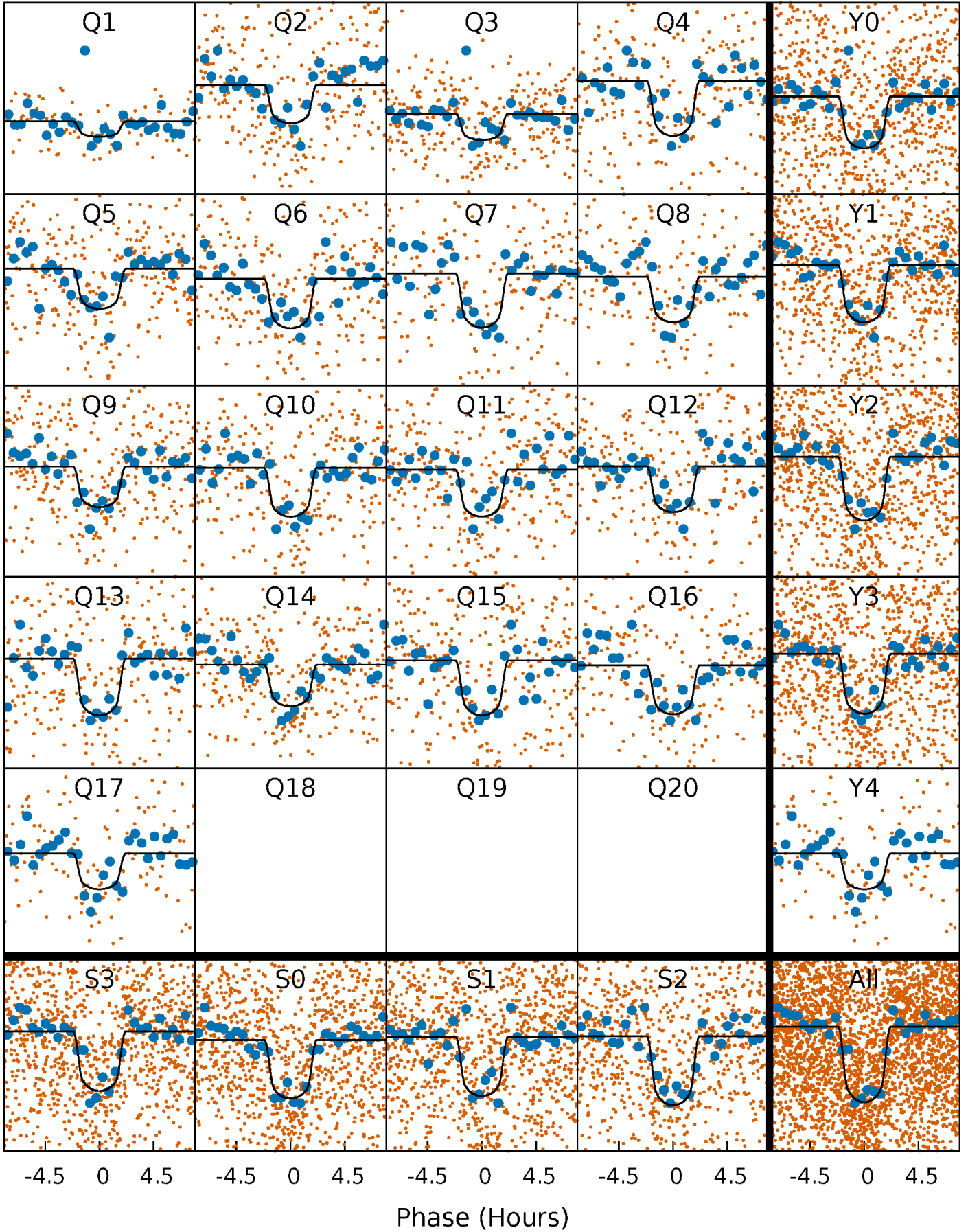
PDC Quarter-Phased Transit Curves

TCE 004831728-01 P= 10.107672 Days $T_0=135.107631$ (BKJD)



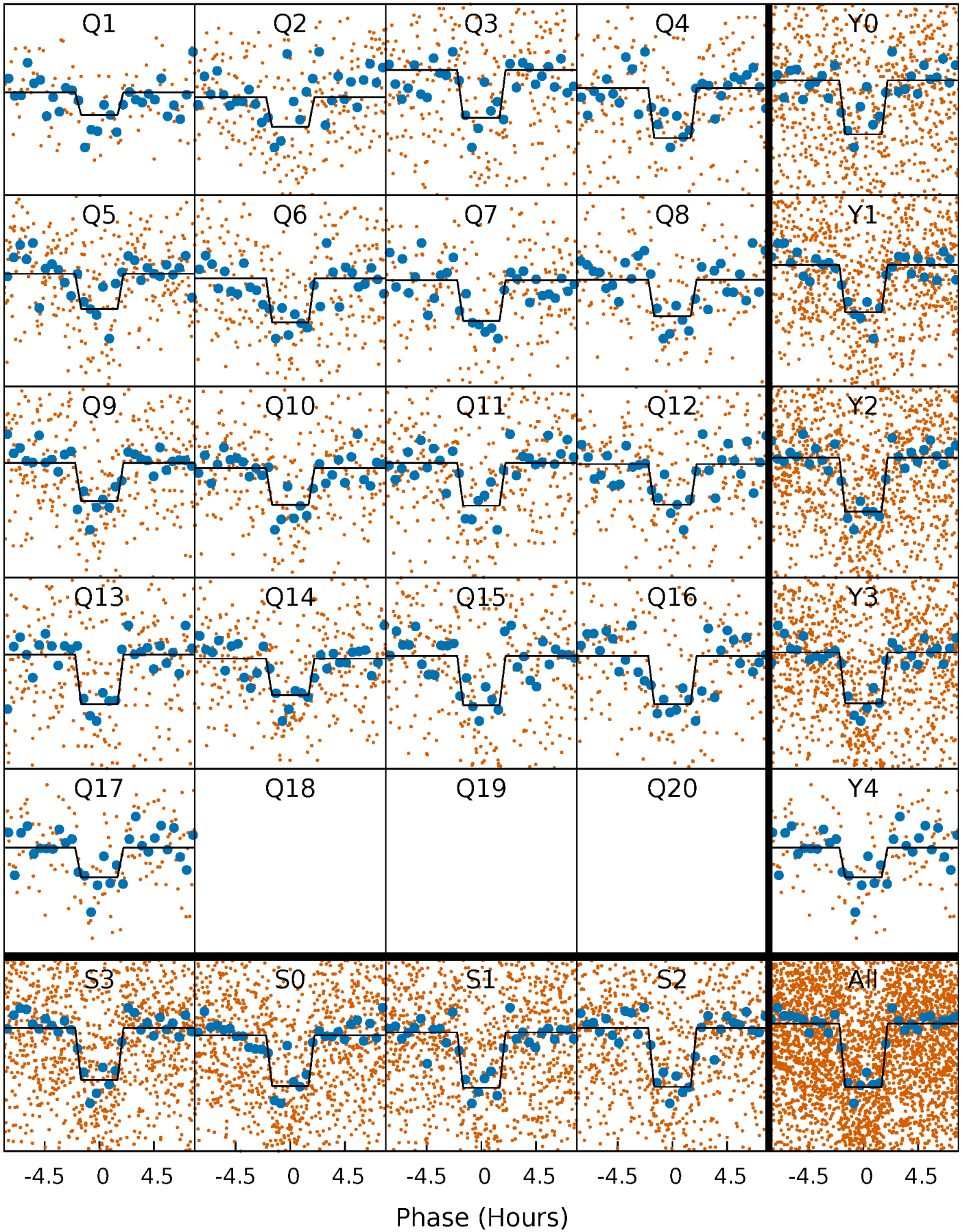
DV Quarter-Phased Transit Curves

TCE 004831728-01 P= 10.107672 Days $T_0=135.107631$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

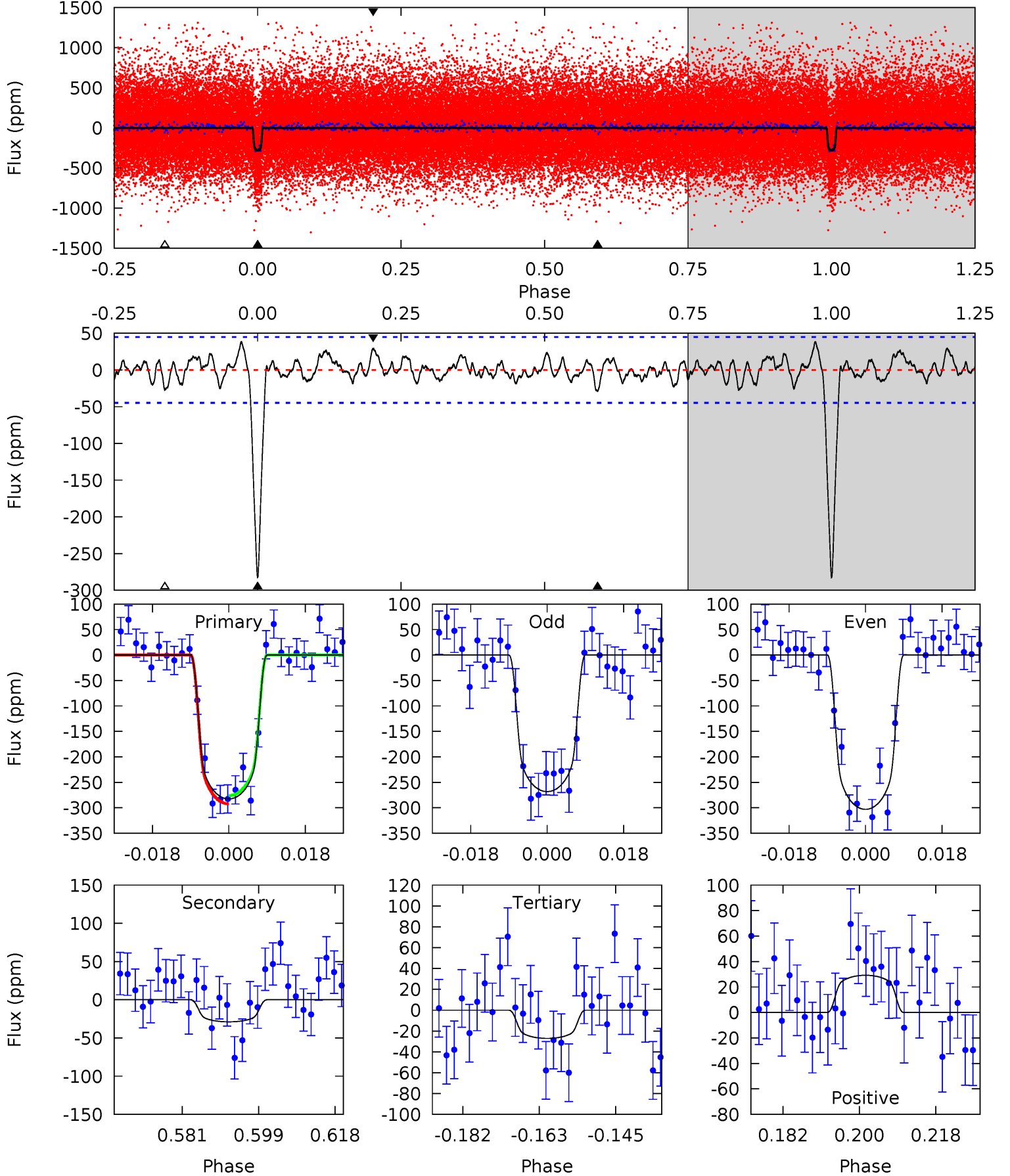
TCE 004831728-01 P= 10.107710 Days $T_0=135.104663$ (BKJD)



DV Model-Shift Uniqueness Test

004831728-01, P = 10.107672 Days, E = 124.999959 Days

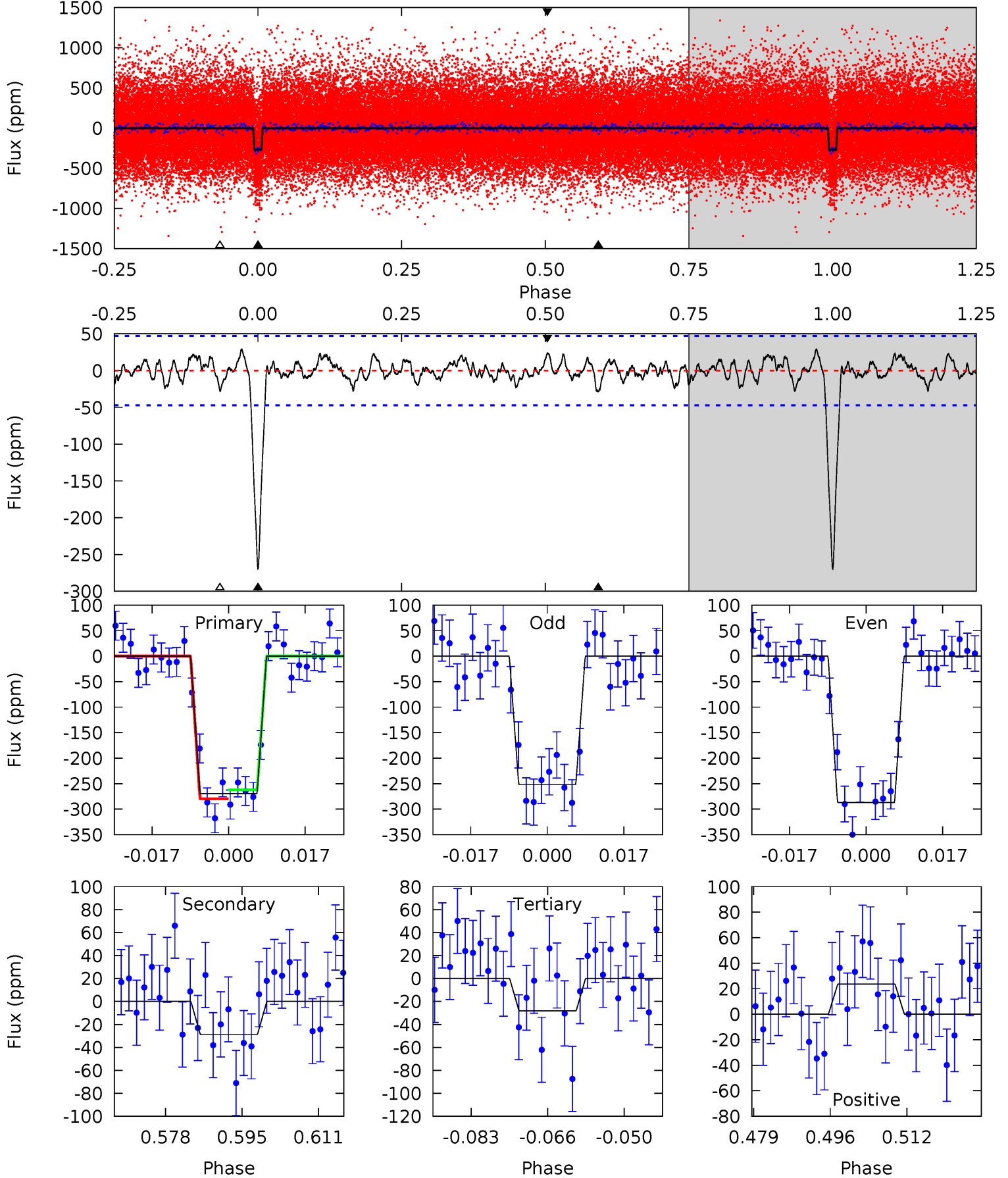
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.9	3.16	2.96	3.20	4.91	2.36	1.22	28.0	27.7	0.20	-0.03	1.90	0.97	0.12	0.89



Alt Model-Shift Uniqueness Test

004831728-01, P = 10.107710 Days, E = 124.996953 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.2	3.01	2.95	2.48	4.93	2.40	1.08	25.3	25.7	0.07	0.53	1.85	0.92	0.10	0.92



Stellar Parameters For KIC 004831728

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5480^{+82}_{-74}	$4.260^{+0.180}_{-0.120}$	$0.160^{+0.150}_{-0.100}$	$1.174^{+0.191}_{-0.234}$	$0.915^{+0.065}_{-0.038}$	$0.796^{+0.680}_{-0.268}$
	+1%/-1%	+4%/-3%	+94%/-62%	+16%/-20%	+7%/-4%	+85%/-34%
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 004831728-01 / KOI 2739.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-29 ± 9	$2.38^{+0.50}_{-0.48}$	1227^{+60}_{-75}	3423^{+275}_{-262}	22^{+15}_{-10}
Alt.	-29 ± 10	$2.03^{+0.47}_{-0.41}$	1228^{+52}_{-68}	3587^{+339}_{-304}	29^{+22}_{-13}

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 $A_{obs} \gg 1.0$

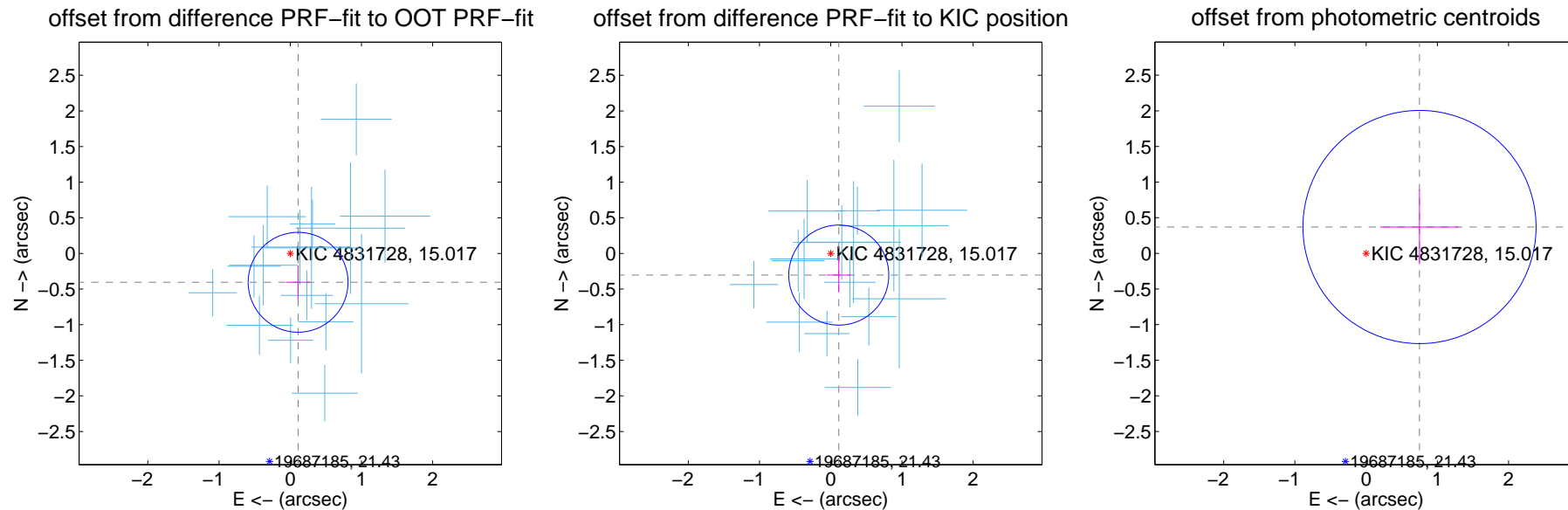
DV Centroid Data

Supplemental centroid analysis for 004831728-01. Kepler magnitude: 15.02. Transit SNR 23.42

There are 16 quarters with good PRF difference image offsets

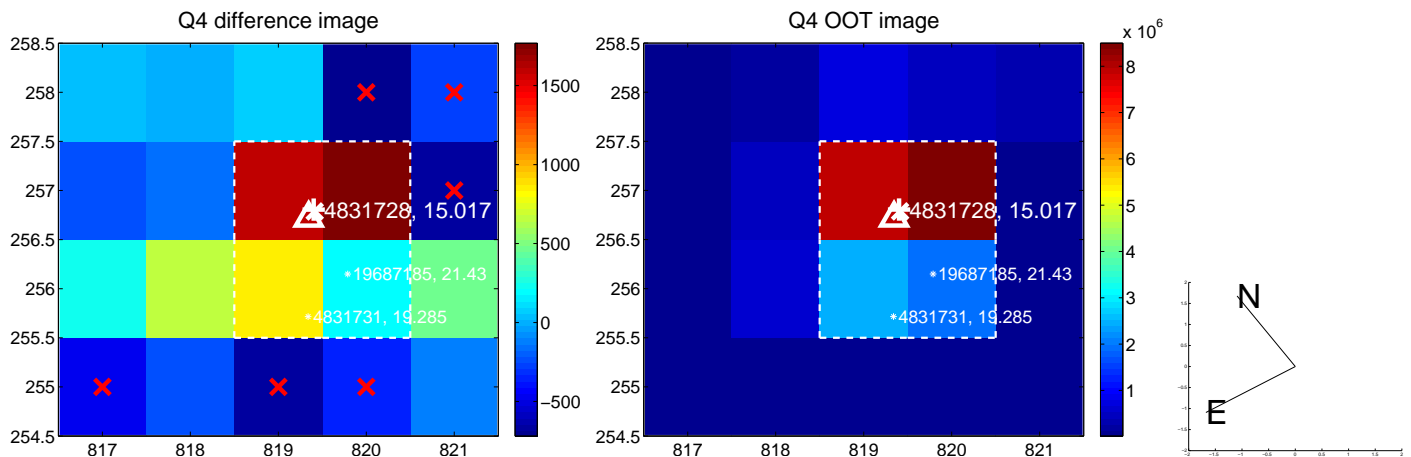
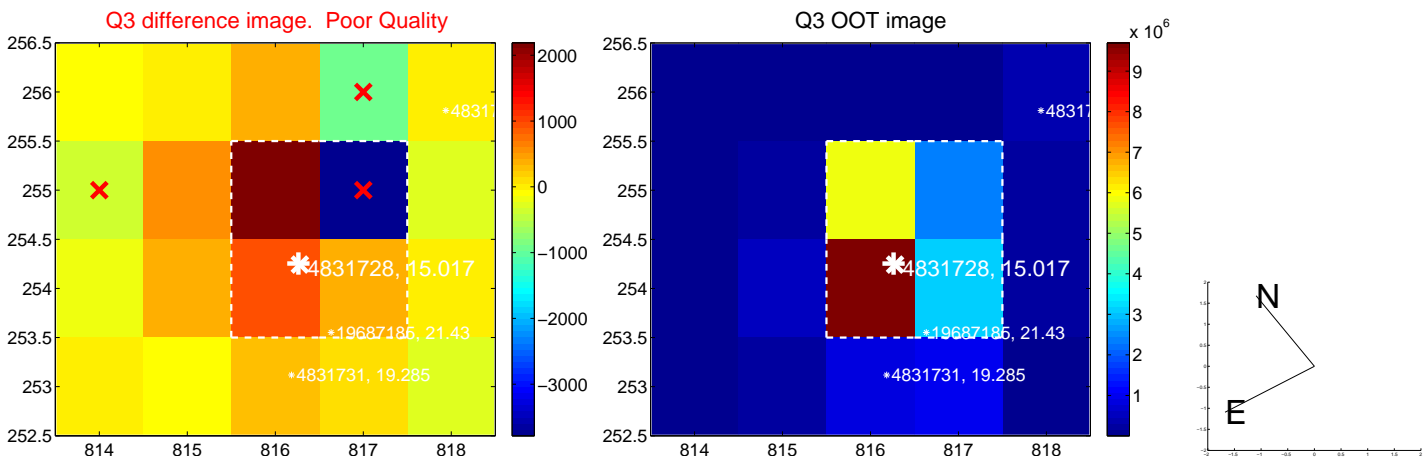
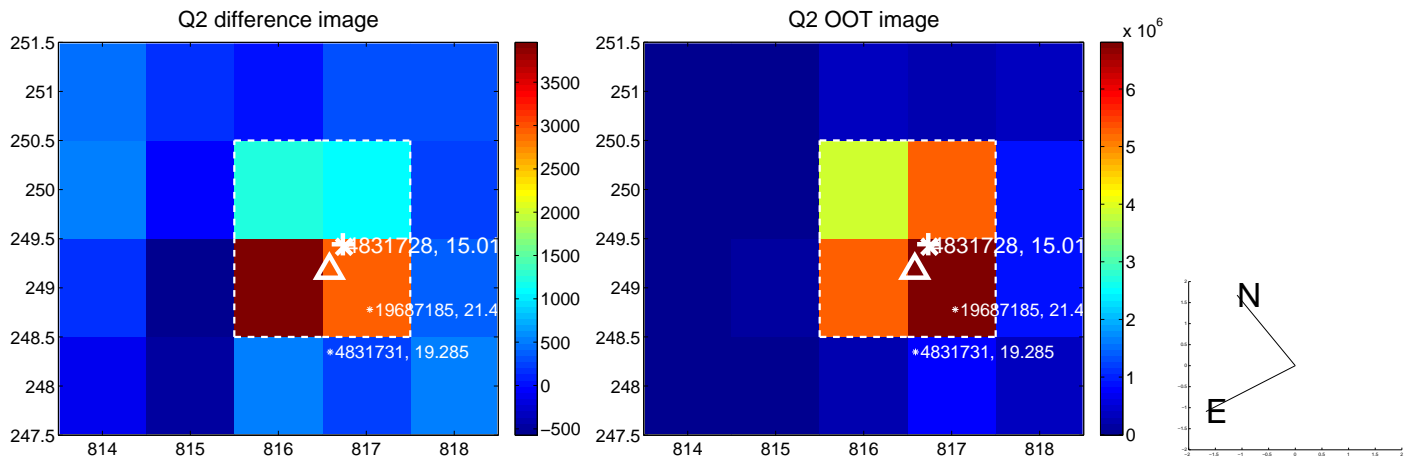
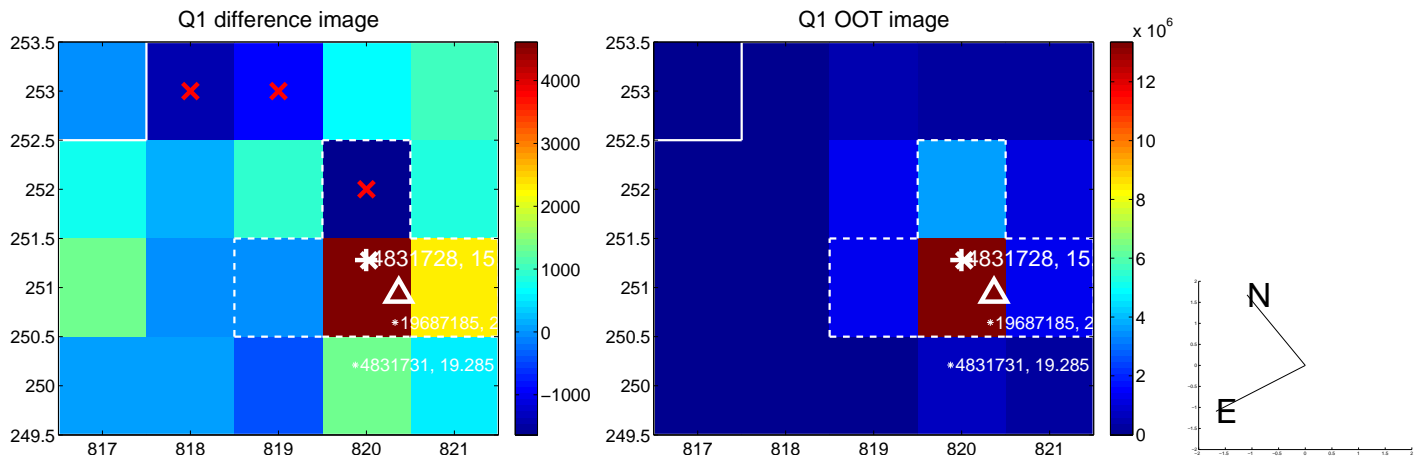
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.420 ± 0.234	1.80	-0.110 ± 0.169	-0.405 ± 0.238
PRF-fit source offset from KIC position	0.325 ± 0.234	1.39	-0.113 ± 0.169	-0.305 ± 0.242
photometric centroid source offset	0.84 ± 0.55	1.53	-0.75 ± 0.55	0.37 ± 0.52

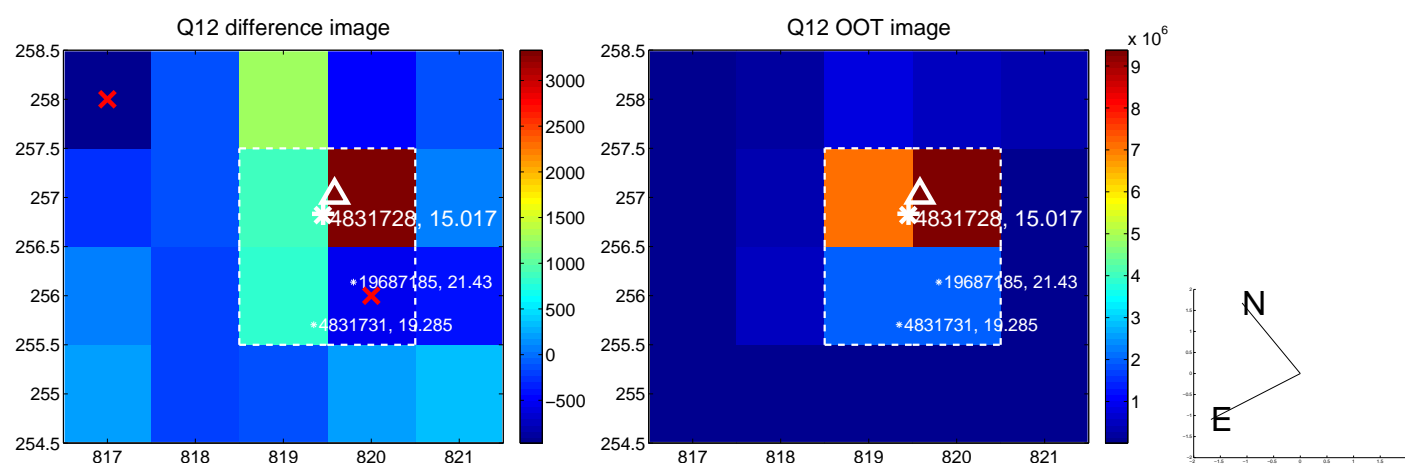
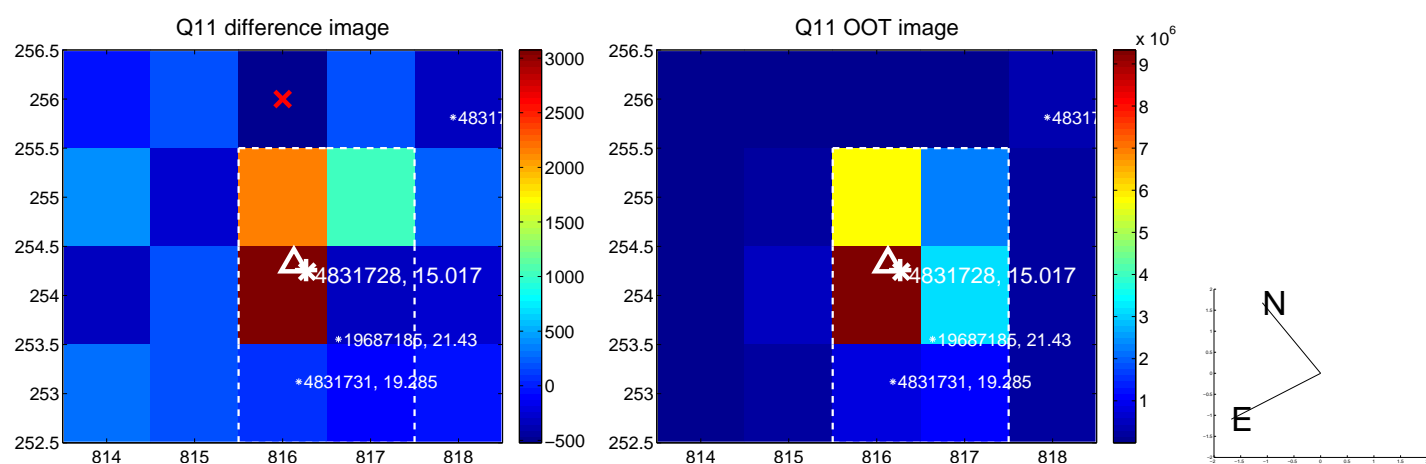
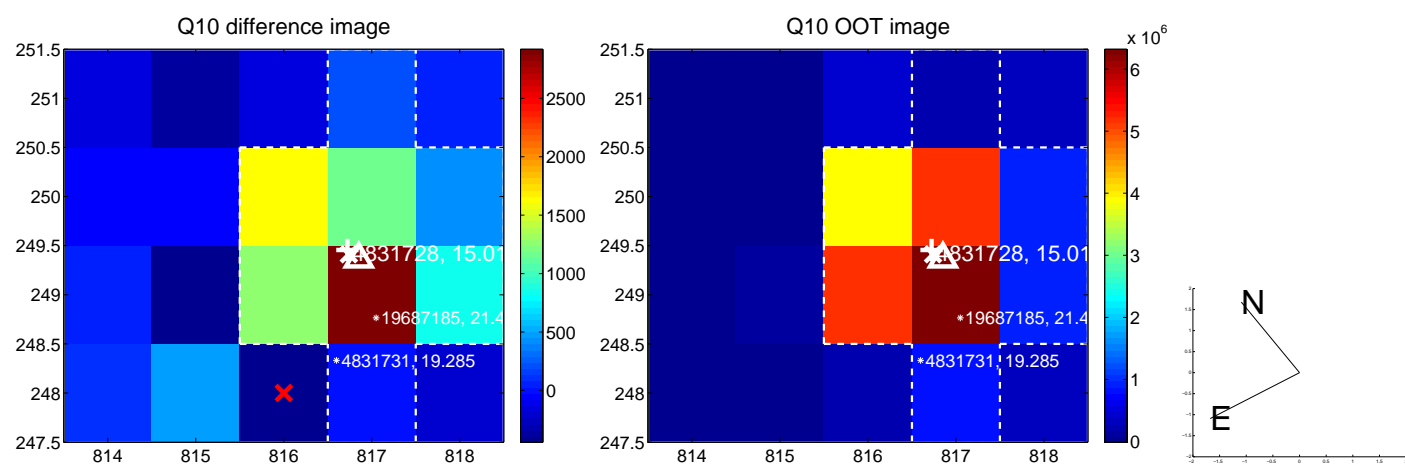
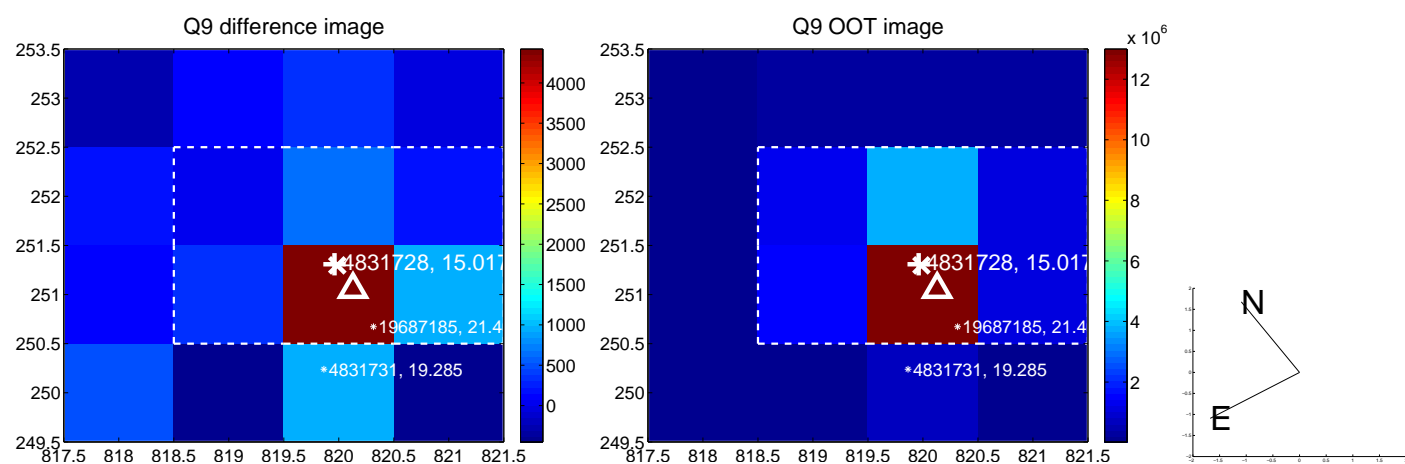


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

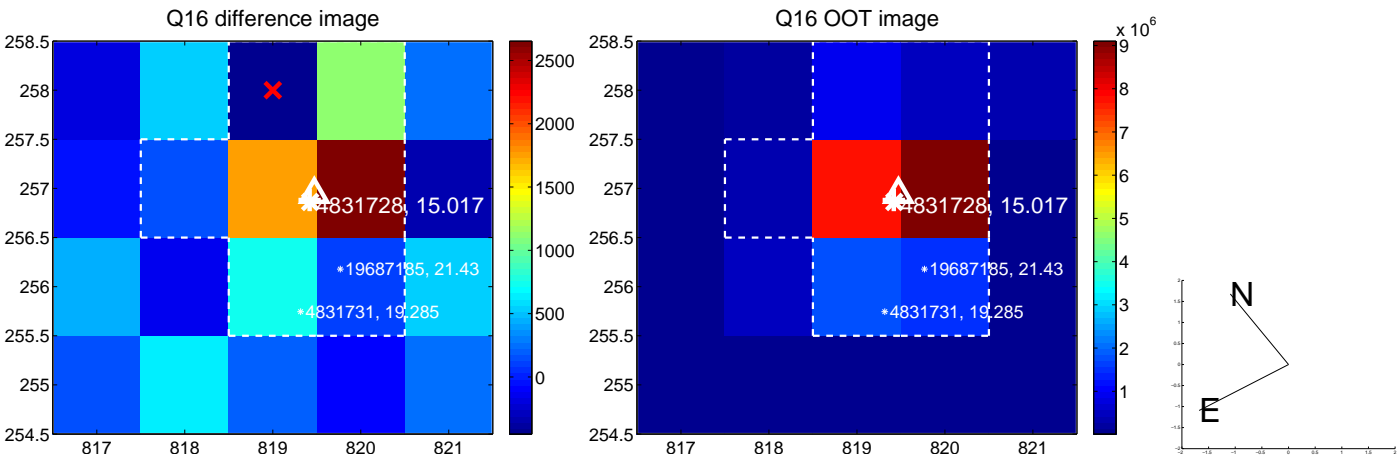
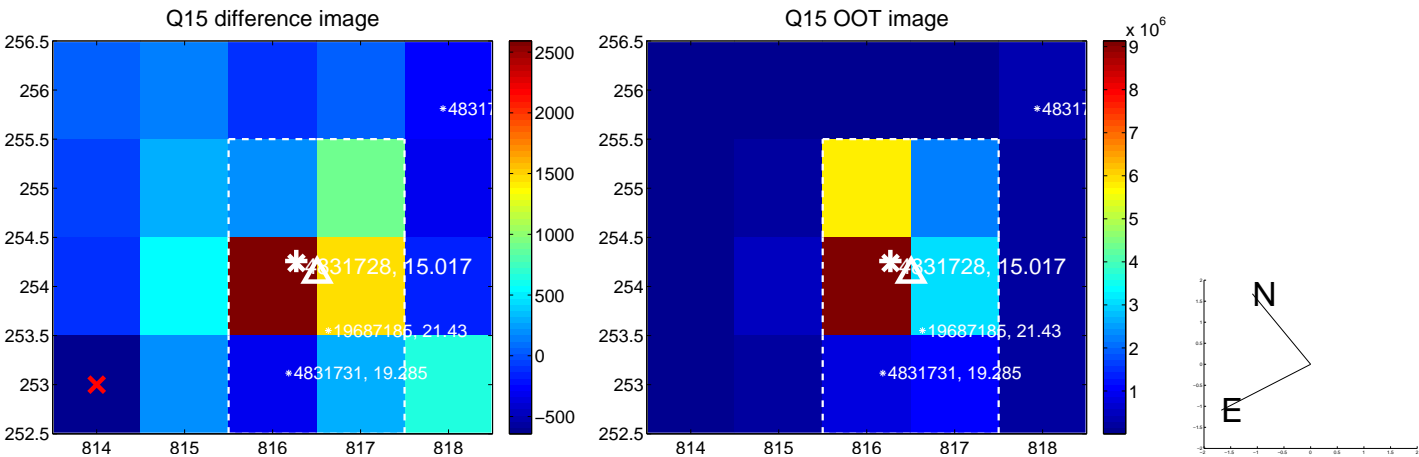
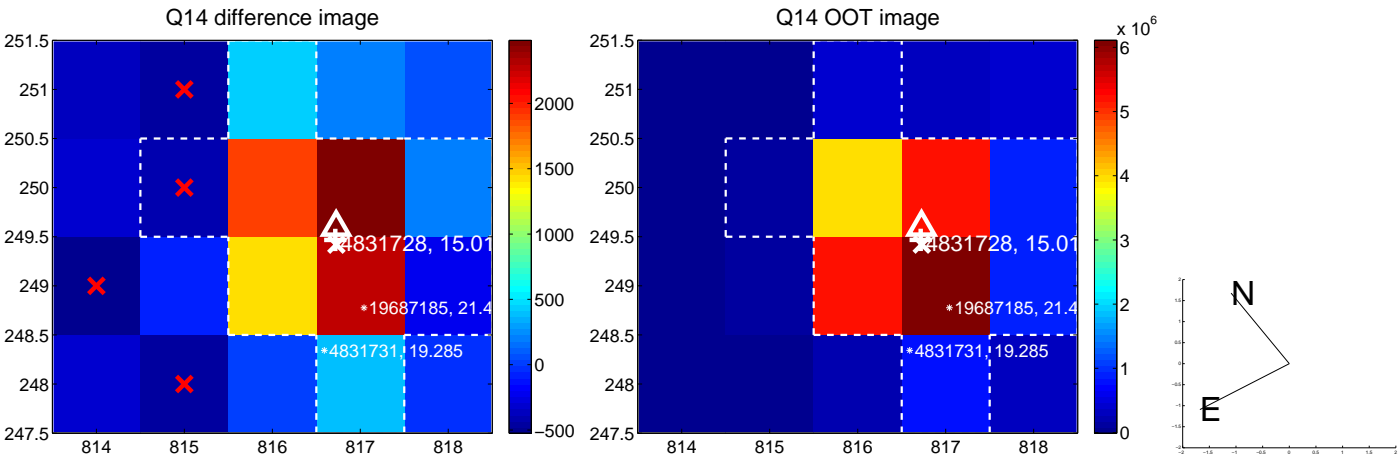
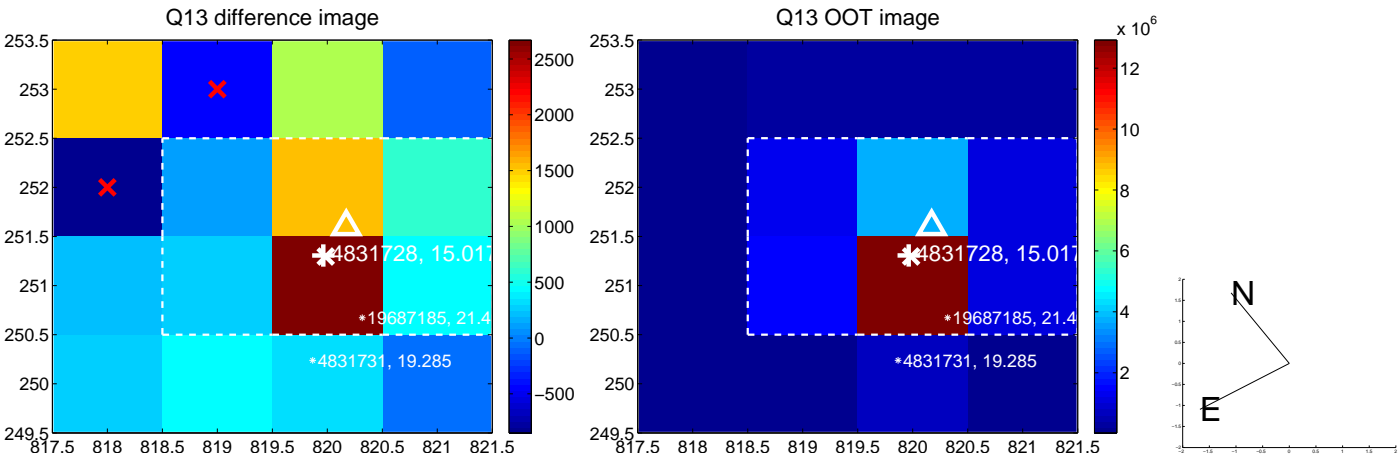
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



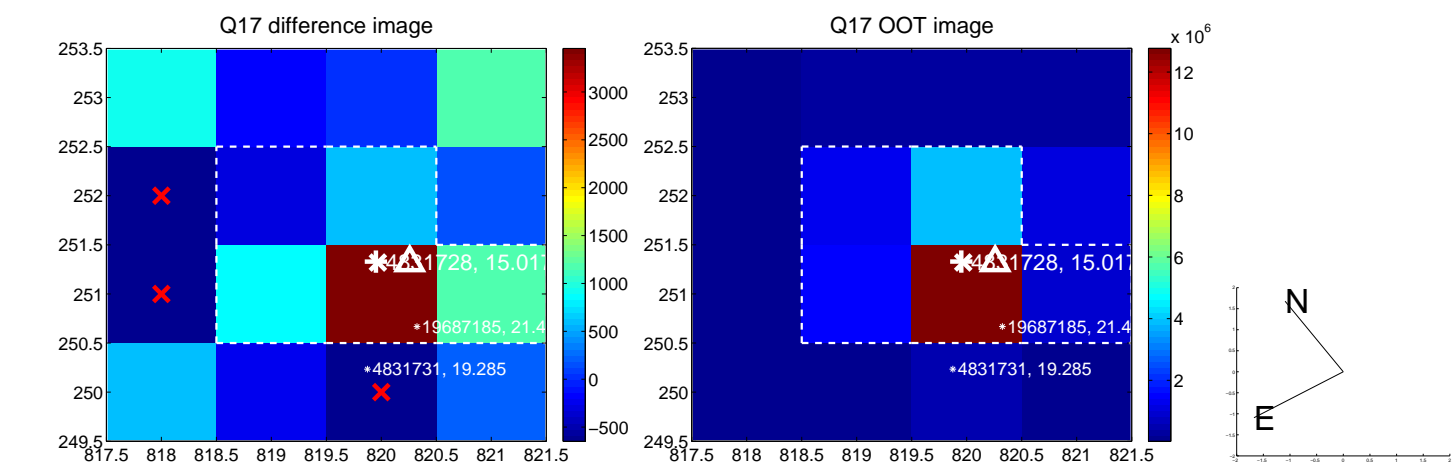
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



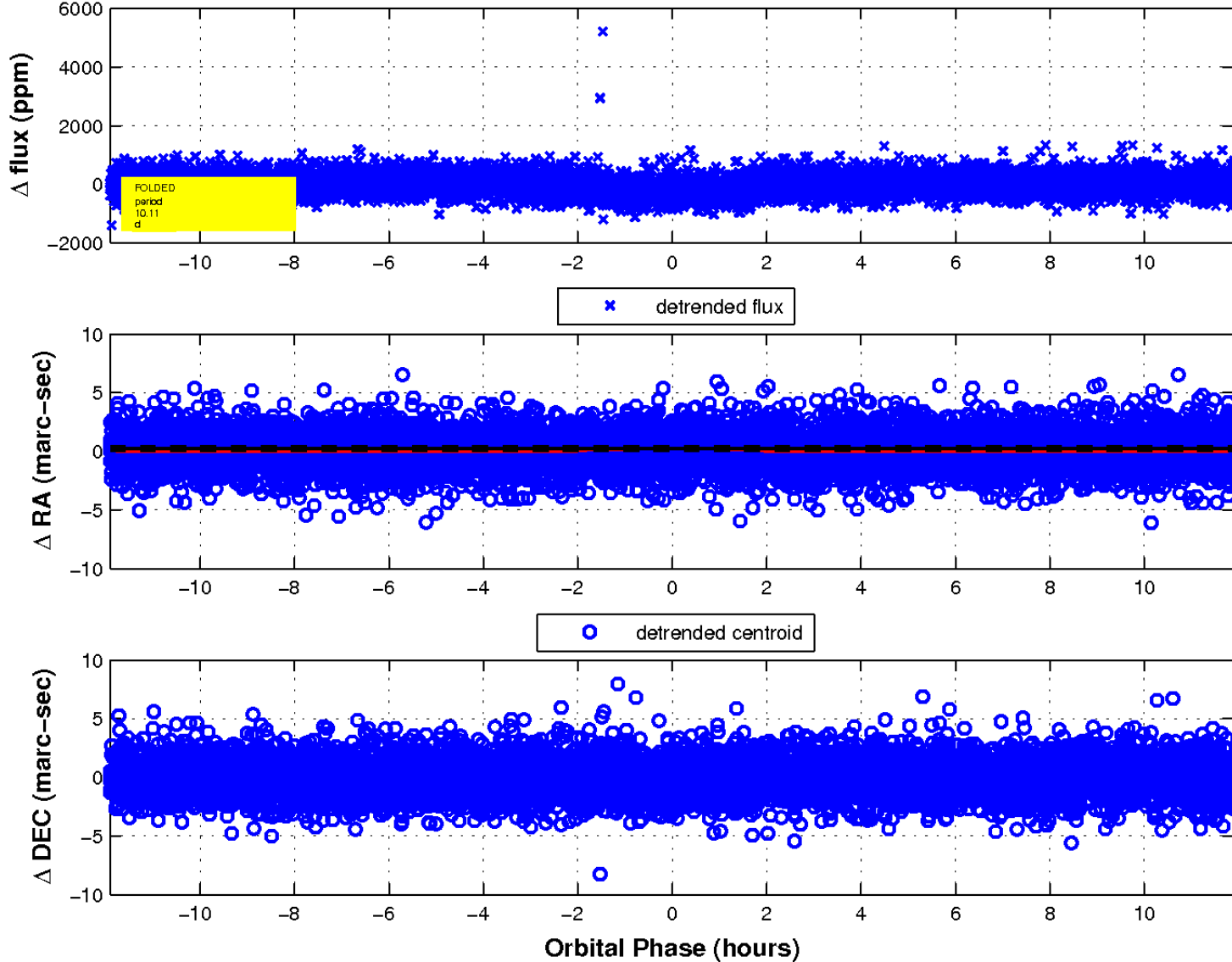
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

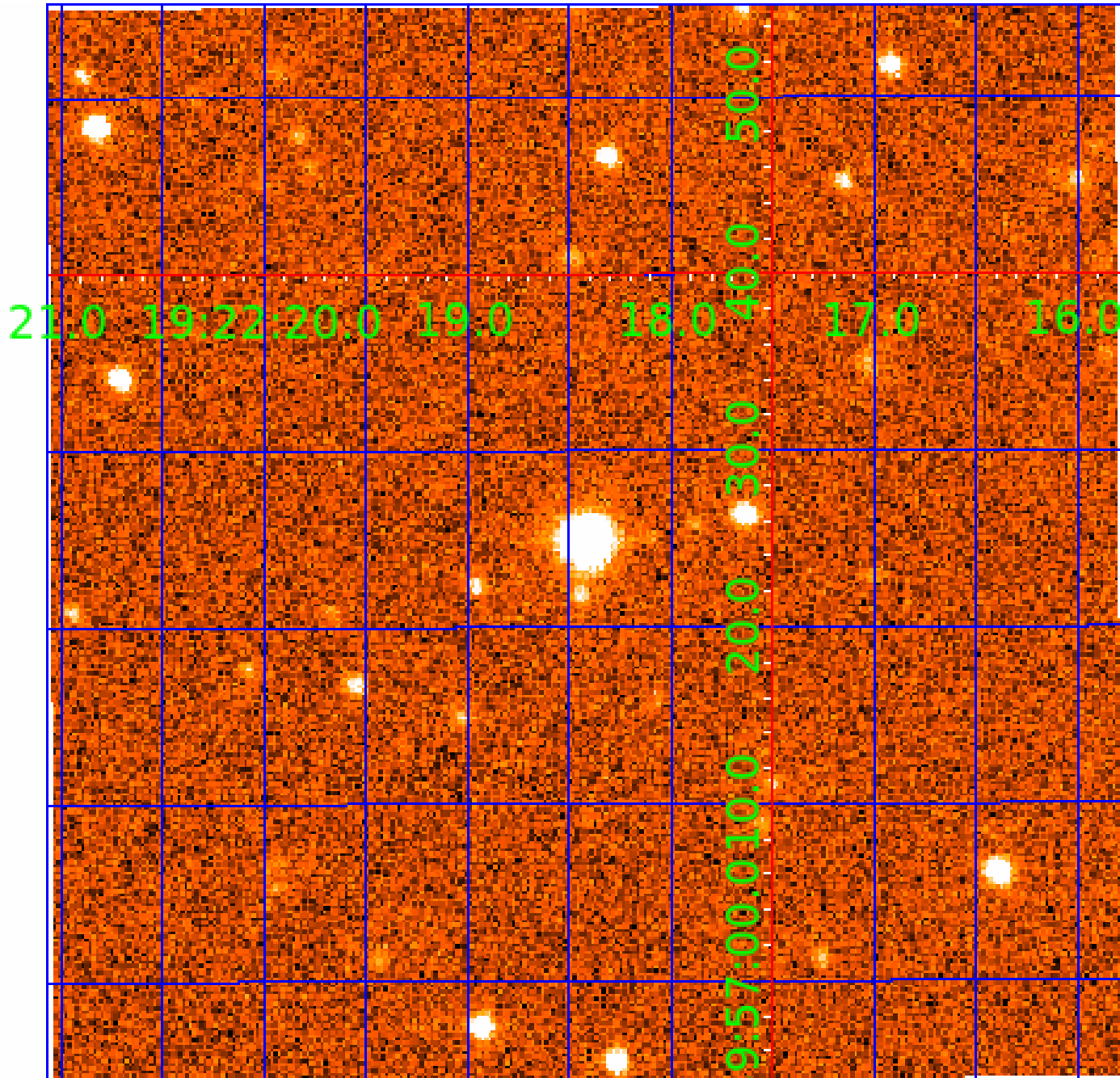


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 004831728

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})
004831728-01	OBS	2739.01	10.107672	135.107631	291.7	3.968	20.9	23.4	1.17	5480	2.41	141.12
004831728-02	OBS	2739.02	7.095866	134.971462	88.1	4.636	8.1	9.0	1.17	5480	1.22	226.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004831728-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
004831728-02	OBS	PC	0.90	0	0	0	0	NO_COMMENT

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

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

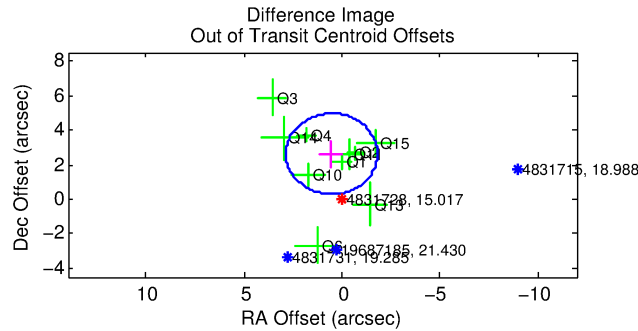
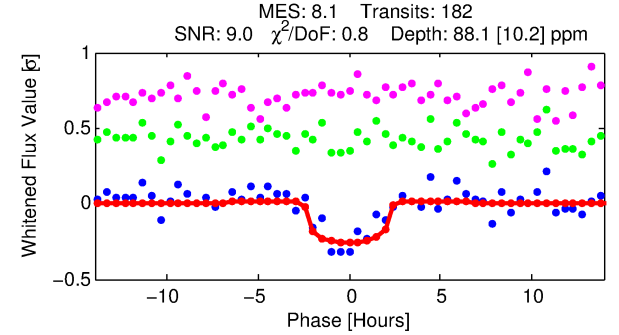
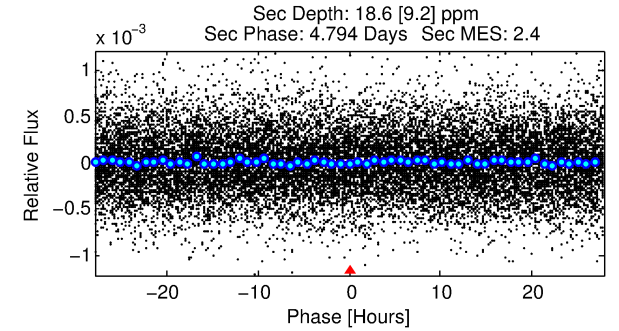
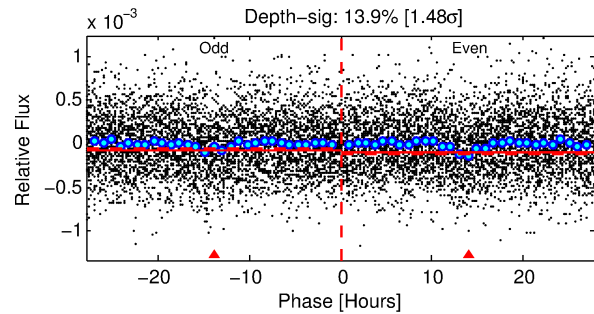
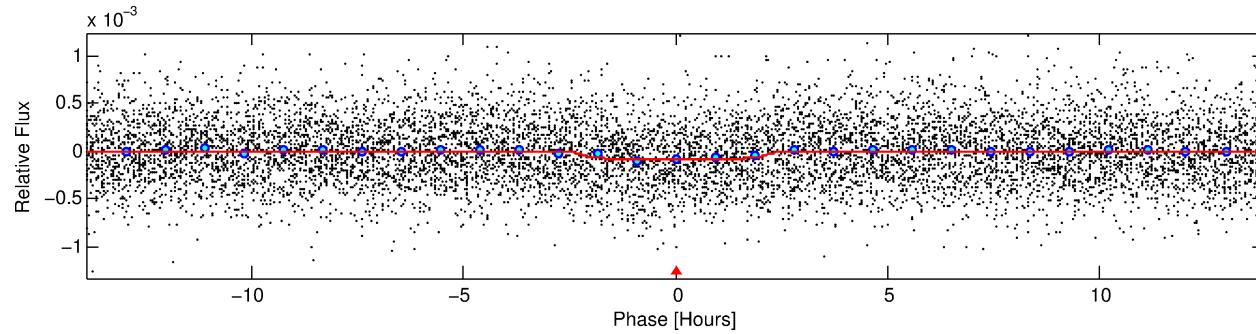
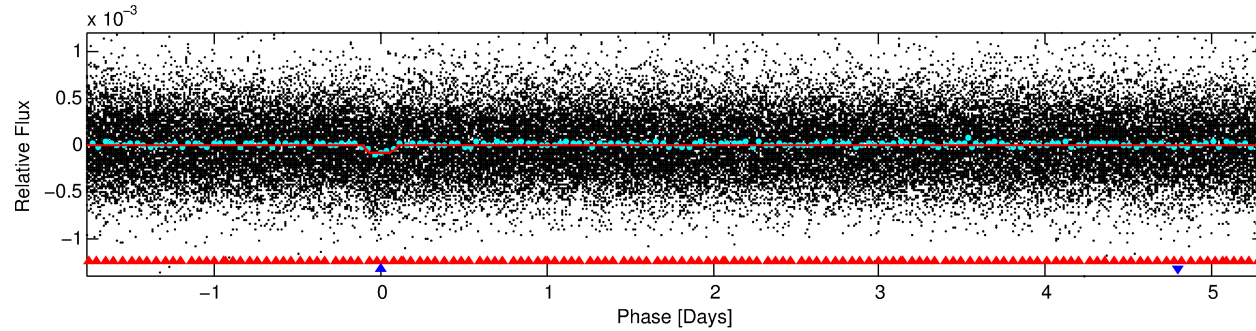
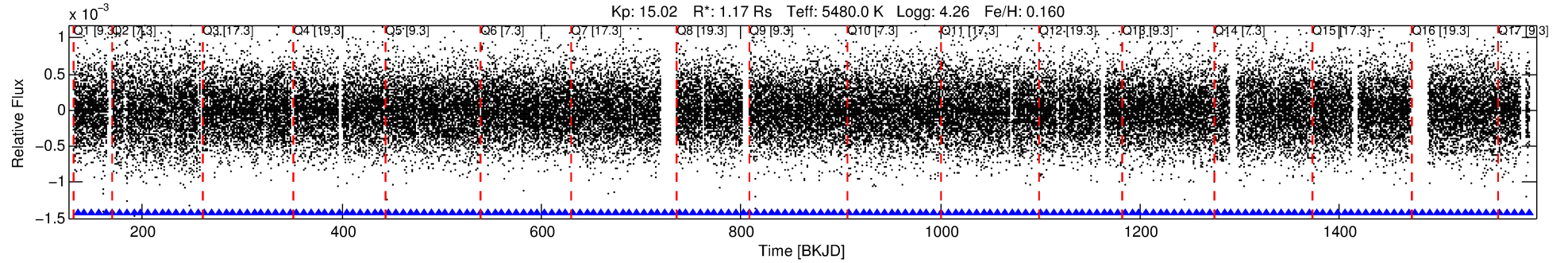
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004831728-02

No Significant Match Found

DV One-Page Summary

KIC: 4831728 Candidate: 2 of 2 Period: 7.096 d
KOI: K02739.02 Corr: 0.895



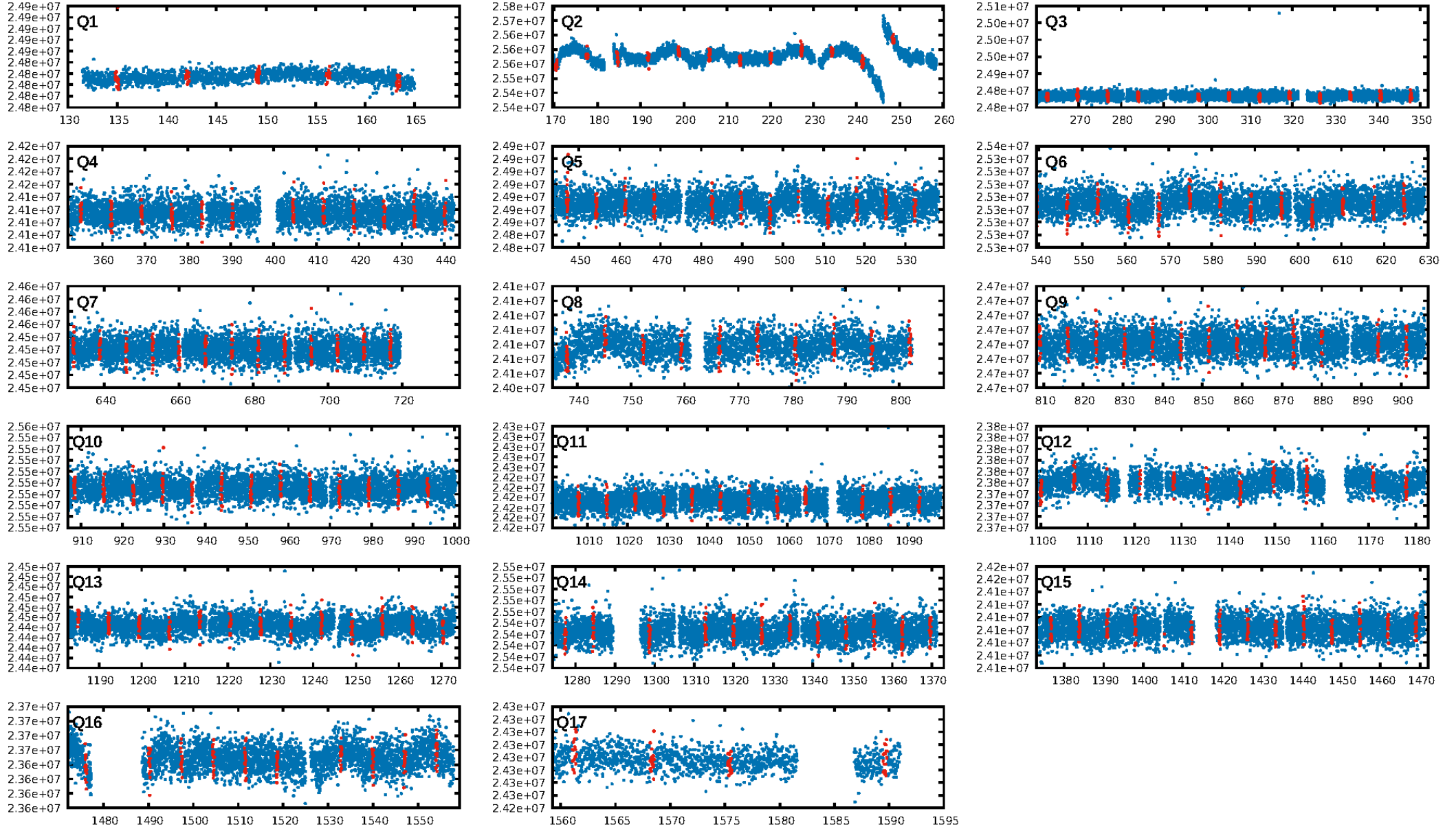
DV Fit Results:

Period = 7.09587 [0.00009] d
Epoch = 134.9715 [0.0096] BKJD
Rp/R* = 0.0095 [0.0079]
a/R* = 7.37 [24.50]
b = 0.79 [1.62]
Seff = 226.18 [70.66]
Teff = 989 [77] K
Rp = 1.22 [1.04] Re
a = 0.0702 [0.0135] AU
Ag = 33.69 [59.11] [0.55 σ]
Teffp = 3683 [1592] K [1.69 σ]

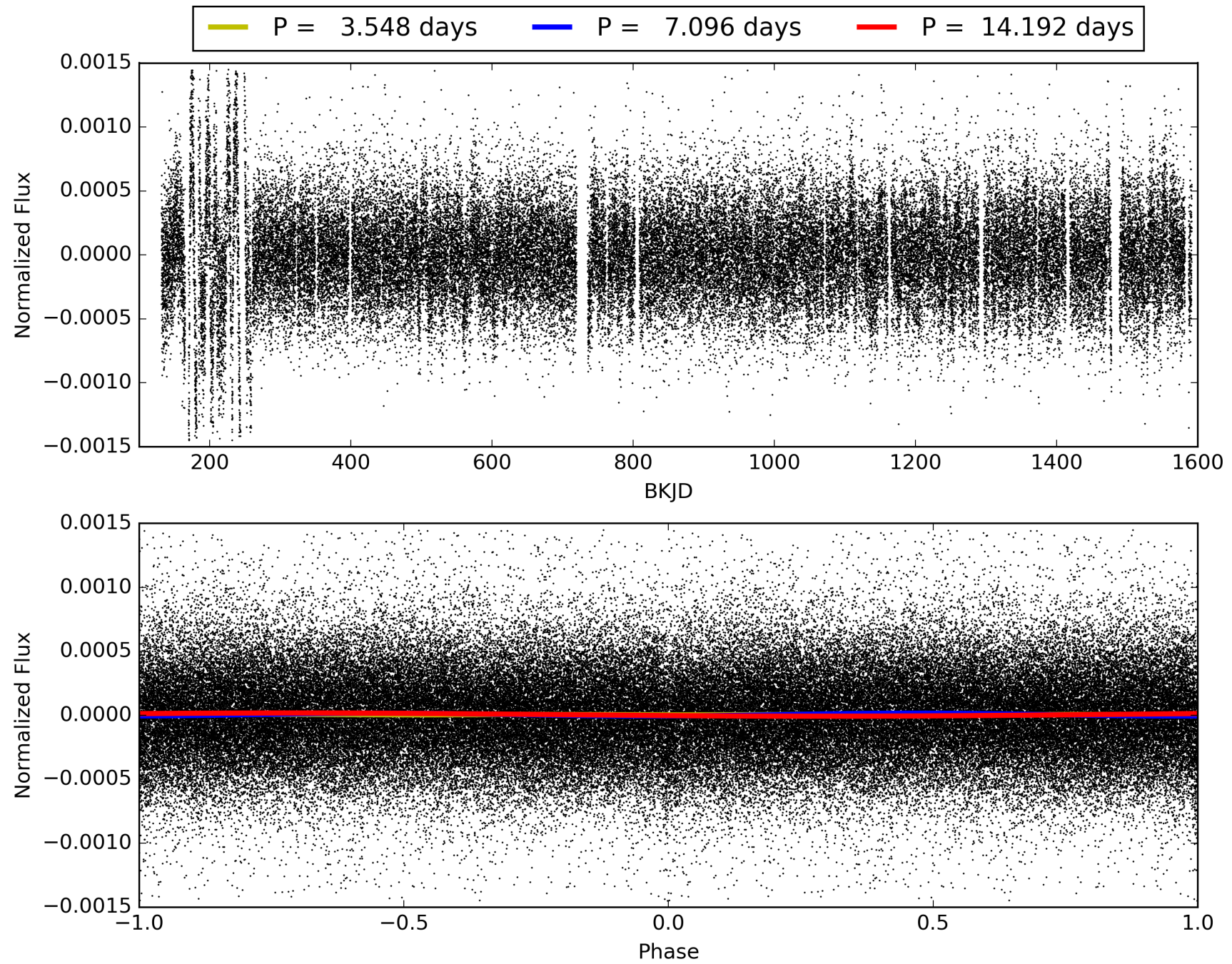
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [11.85 σ]
ModelChiSquare2-sig: 99.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.09e-16
RollingBand-fgt: 1.00 [174/174]
GhostDiagnostic-chr: 3.827
Centroid-sig: N/A
Centroid-so: 2.226 arcsec [1.65 σ]
OotOffset-rm: 2.677 arcsec [3.43 σ]
KicOffset-rm: 2.784 arcsec [3.46 σ]
OotOffset-st: 4/3/1/2 [10]
KicOffset-st: 4/3/1/2 [10]
DiffImageQuality-fgm: 0.40 [4/10]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 004831728-02, PDC Light Curves

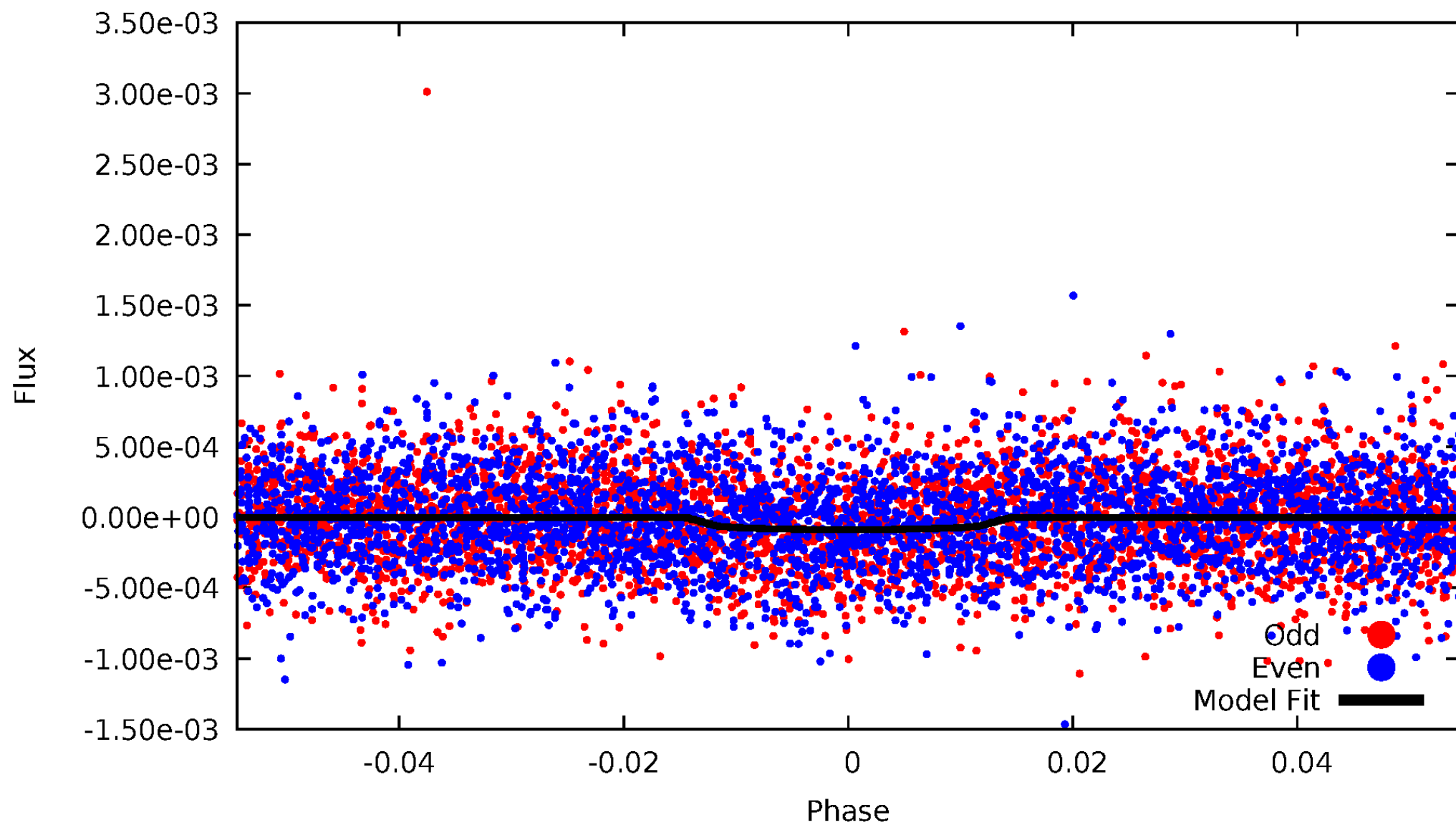


TCE 004831728-02



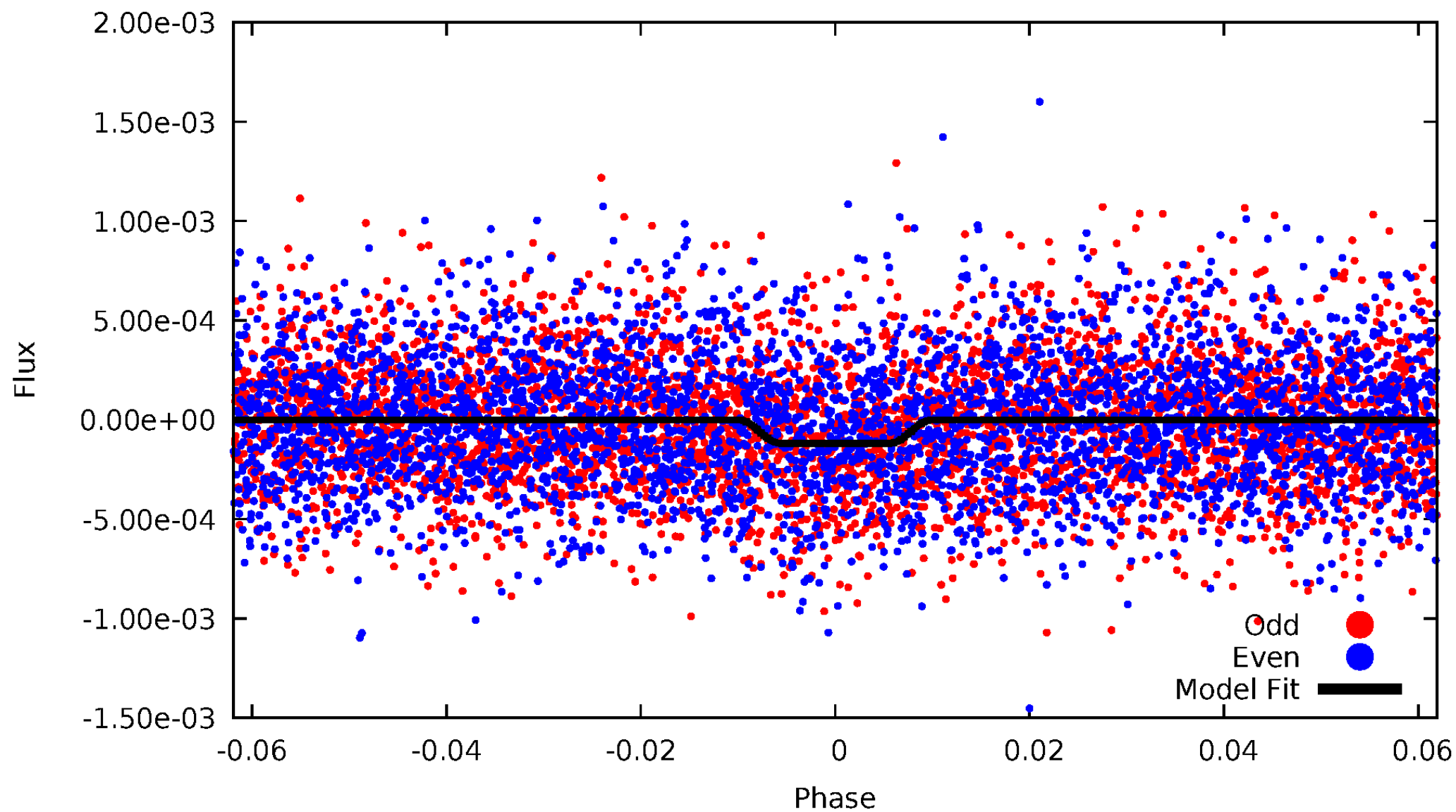
DV Odd/Even

TCE 004831728-02



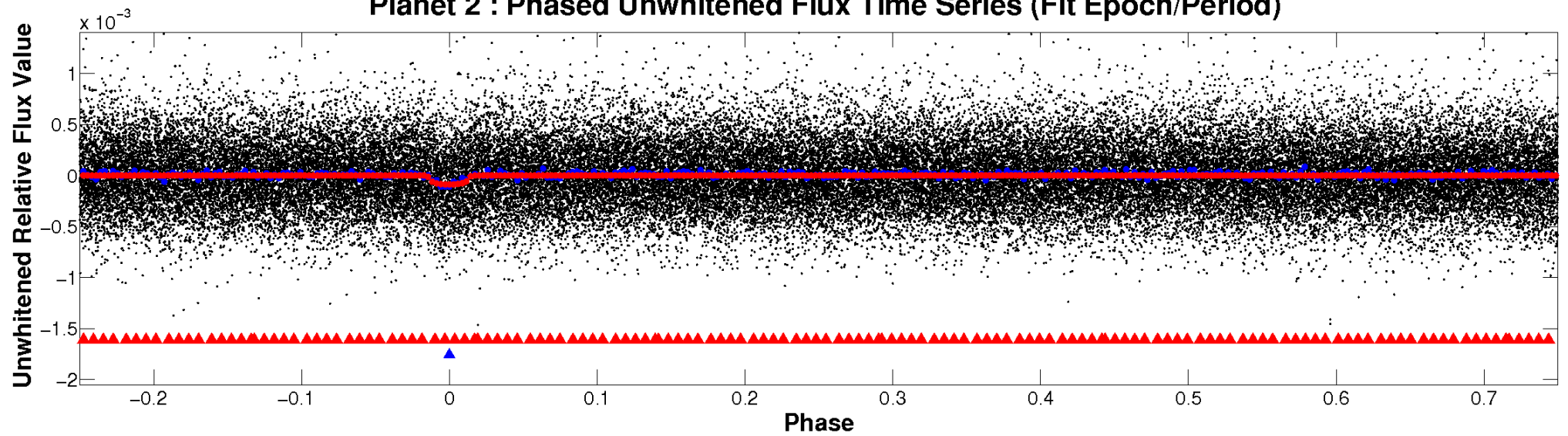
ALT Odd/Even

TCE 004831728-02

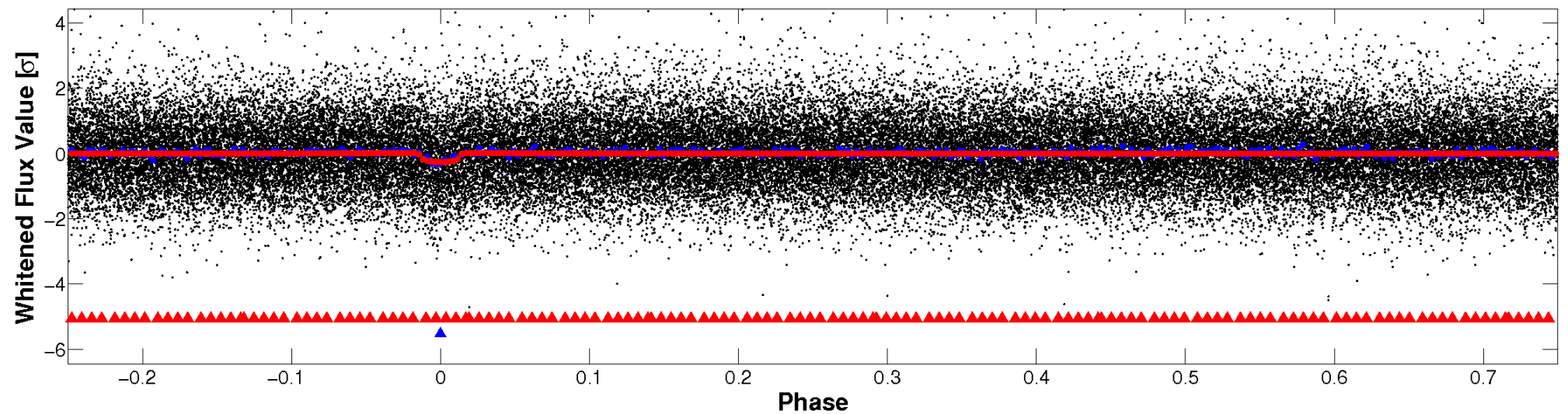


Non-Whitened Vs. Whitened Light Curve

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

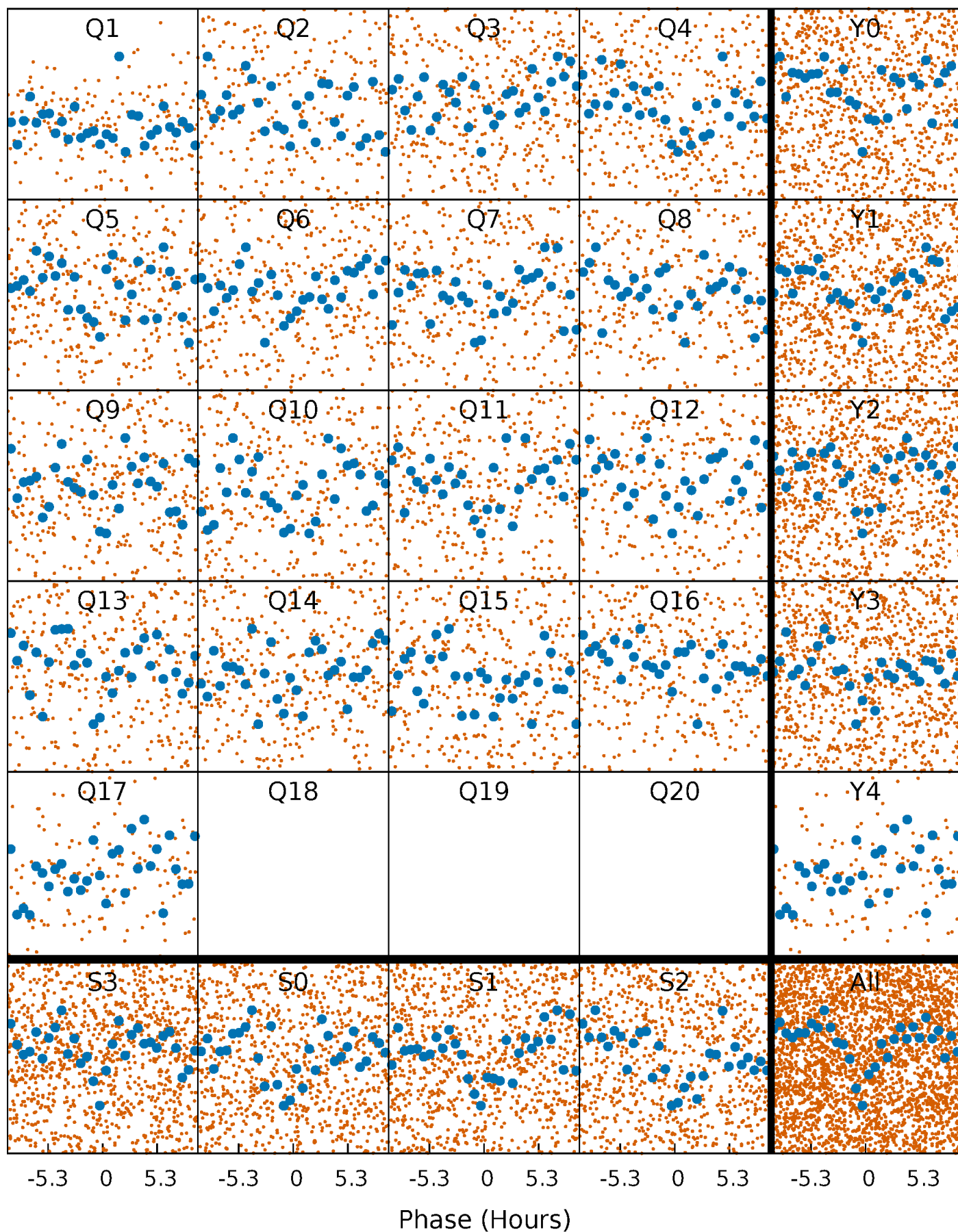


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



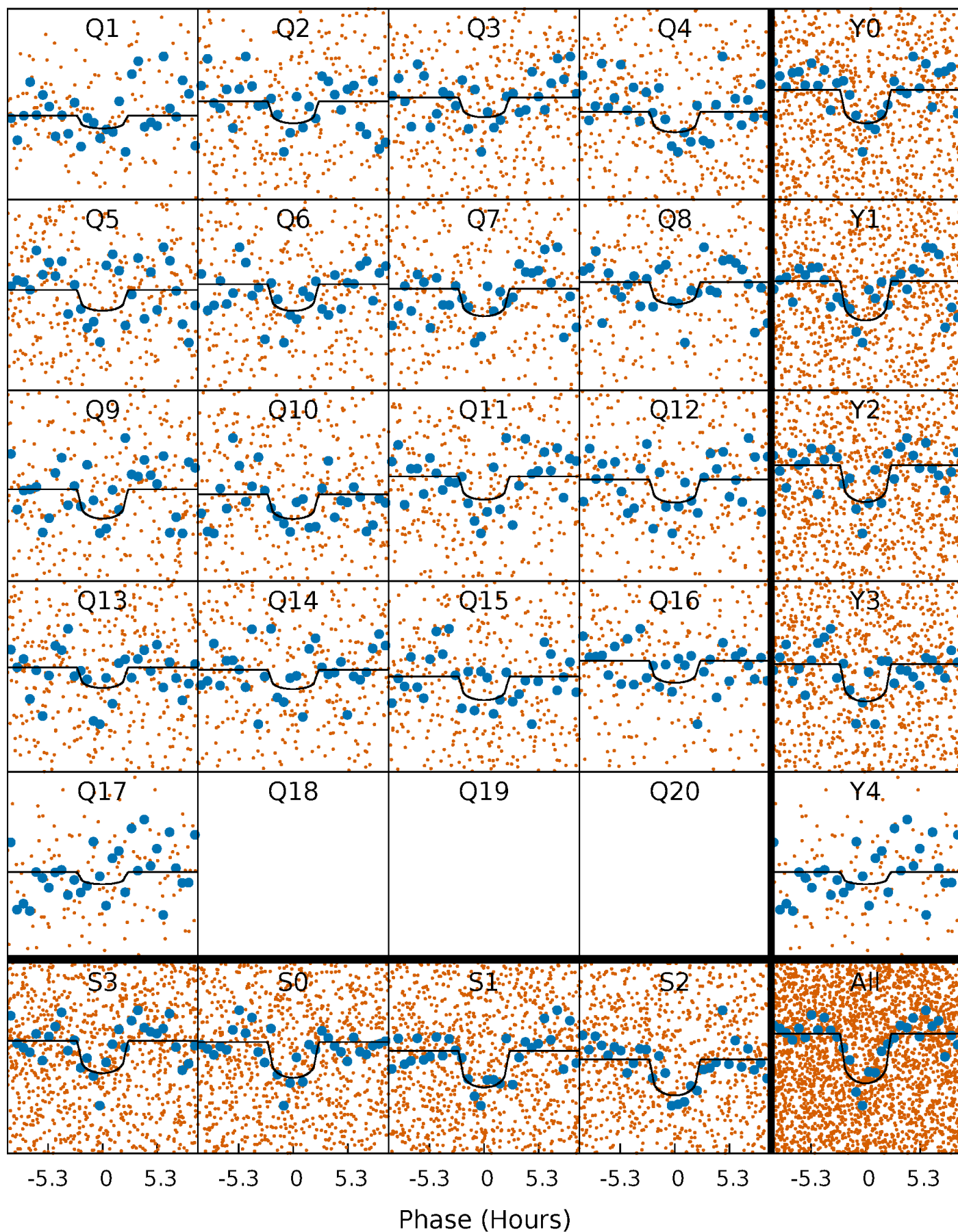
PDC Quarter-Phased Transit Curves

TCE 004831728-02 P= 7.095866 Days $T_0=134.971462$ (BKJD)



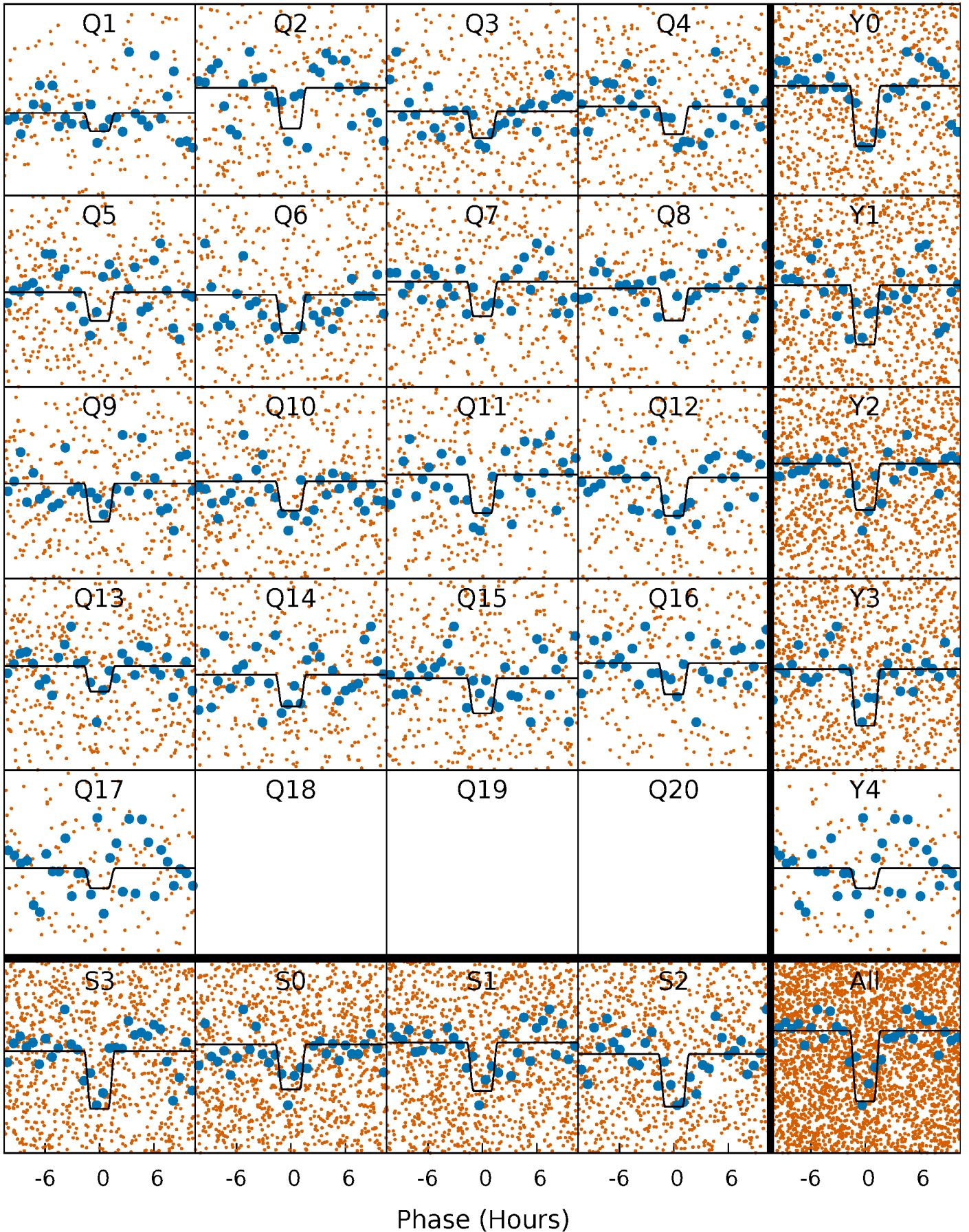
DV Quarter-Phased Transit Curves

TCE 004831728-02 P= 7.095866 Days $T_0=134.971462$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

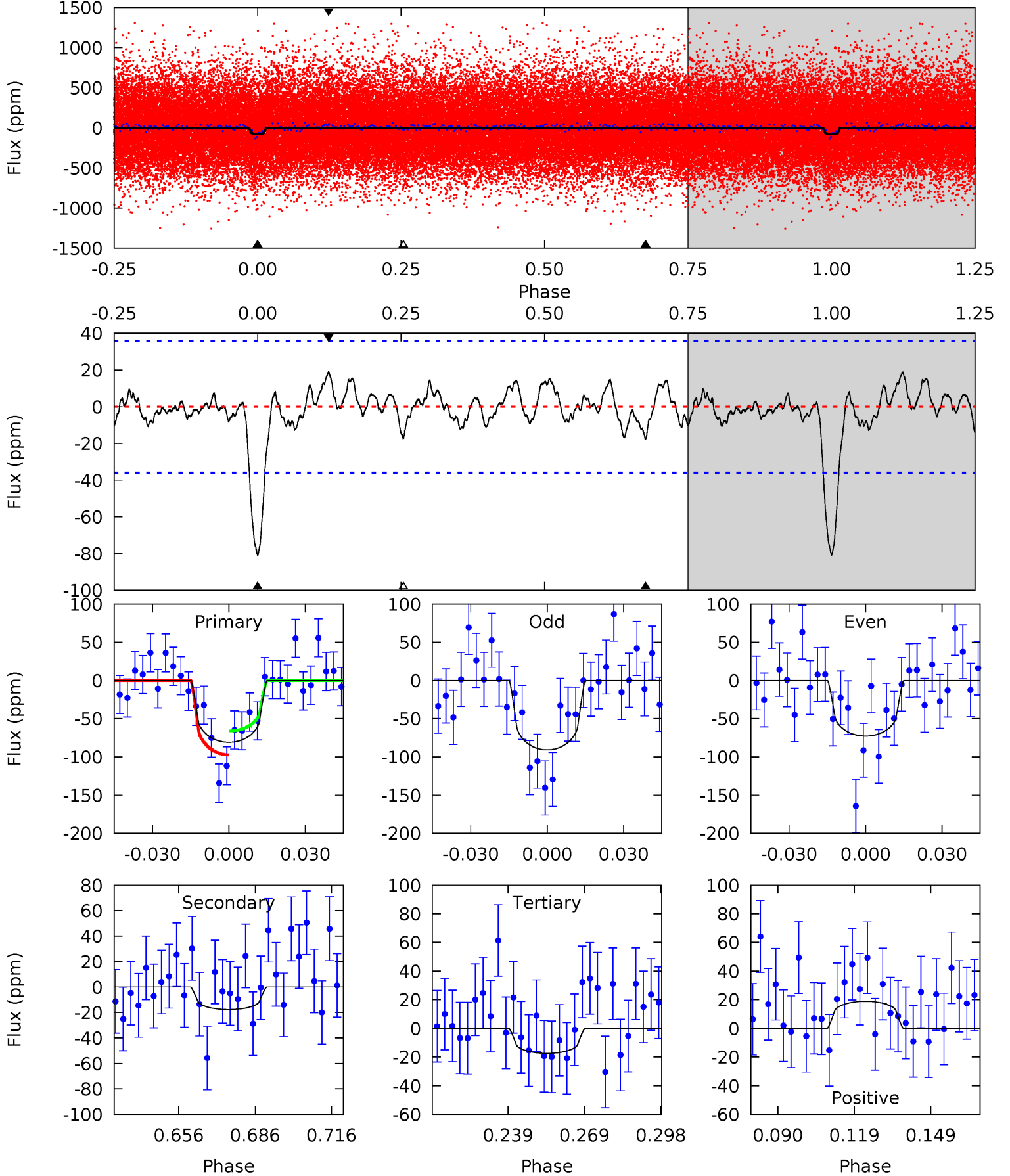
TCE 004831728-02 P= 7.095806 Days $T_0=134.966990$ (BKJD)



DV Model-Shift Uniqueness Test

004831728-02, P = 7.095866 Days, E = 127.875596 Days

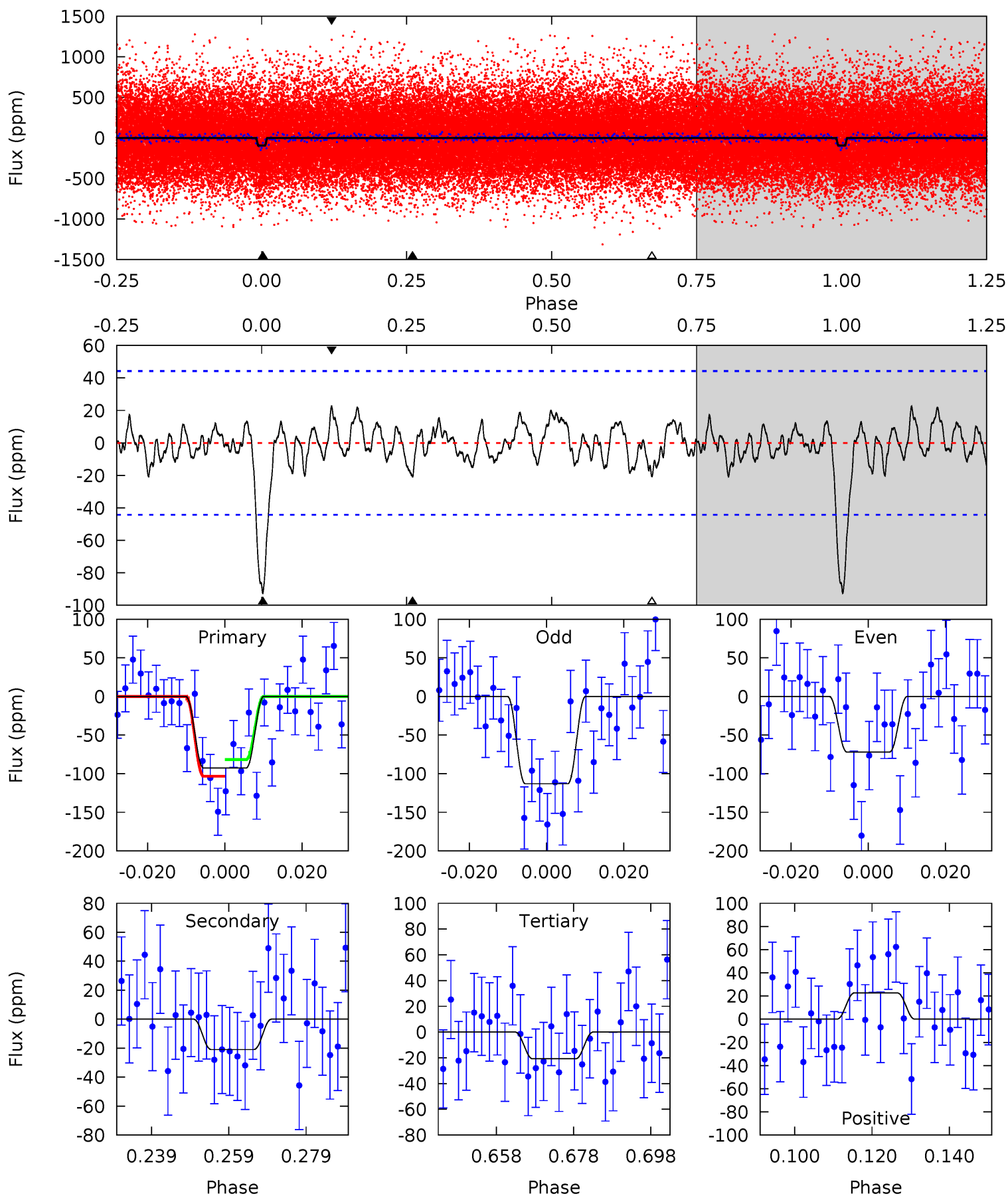
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	2.37	2.33	2.53	4.81	2.17	0.95	8.51	8.30	0.04	-0.16	1.22	0.99	0.19	2.10



Alt Model-Shift Uniqueness Test

004831728-02, P = 7.095806 Days, E = 127.871184 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	2.32	2.30	2.51	4.89	2.33	0.98	7.94	7.73	0.02	-0.19	2.27	1.05	0.20	1.19



Stellar Parameters For KIC 004831728

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5480^{+82}_{-74}	$4.260^{+0.180}_{-0.120}$	$0.160^{+0.150}_{-0.100}$	$1.174^{+0.191}_{-0.234}$	$0.915^{+0.065}_{-0.038}$	$0.796^{+0.680}_{-0.268}$
	+1%/-1%	+4%/-3%	+94%/-62%	+16%/-20%	+7%/-4%	+85%/-34%
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 004831728-02 / KOI 2739.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-18 ± 7	$1.38^{+0.94}_{-0.85}$	1379^{+69}_{-81}	3729^{+1837}_{-611}	25^{+154}_{-17}
Alt.	-21 ± 9	$1.48^{+1.06}_{-0.86}$	1376^{+70}_{-77}	3741^{+1600}_{-615}	25^{+126}_{-17}

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 $A_{obs} \gg 1.0$

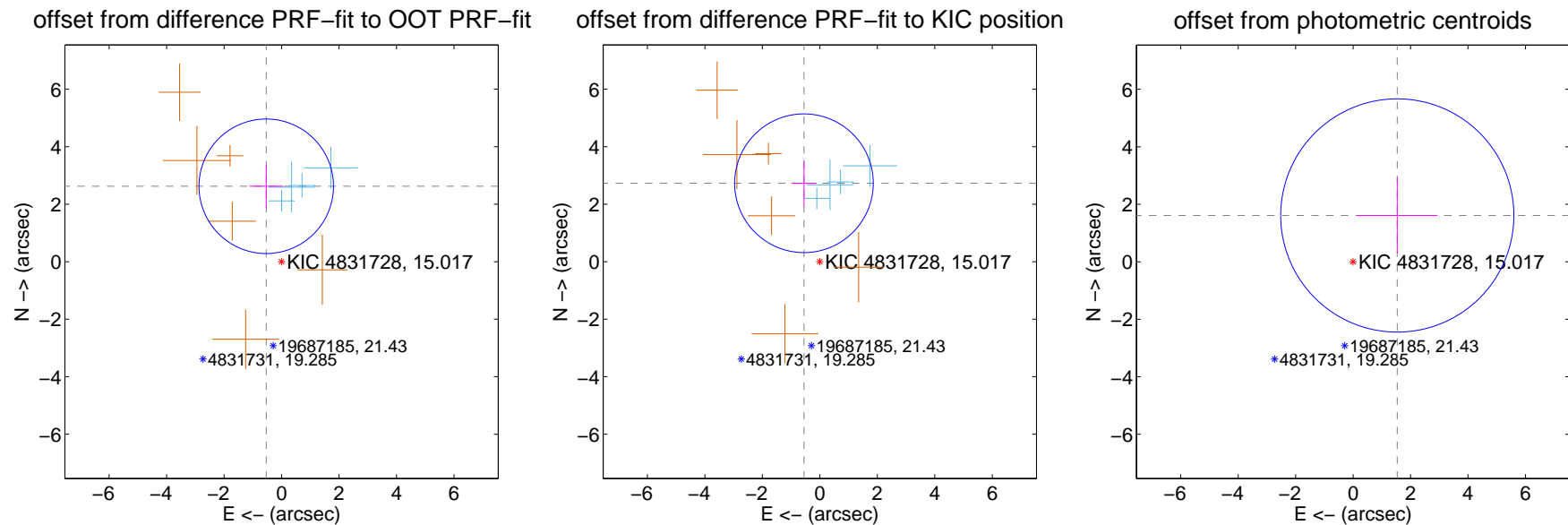
DV Centroid Data

Supplemental centroid analysis for 004831728-02. Kepler magnitude: 15.02. Transit SNR 8.98

There are 4 quarters with good PRF difference image offsets

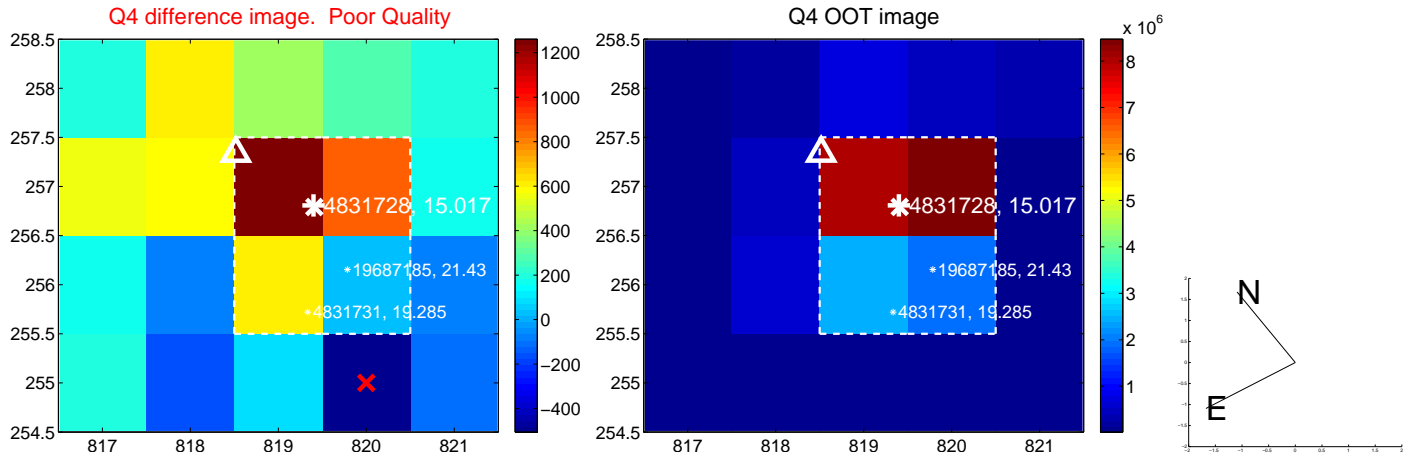
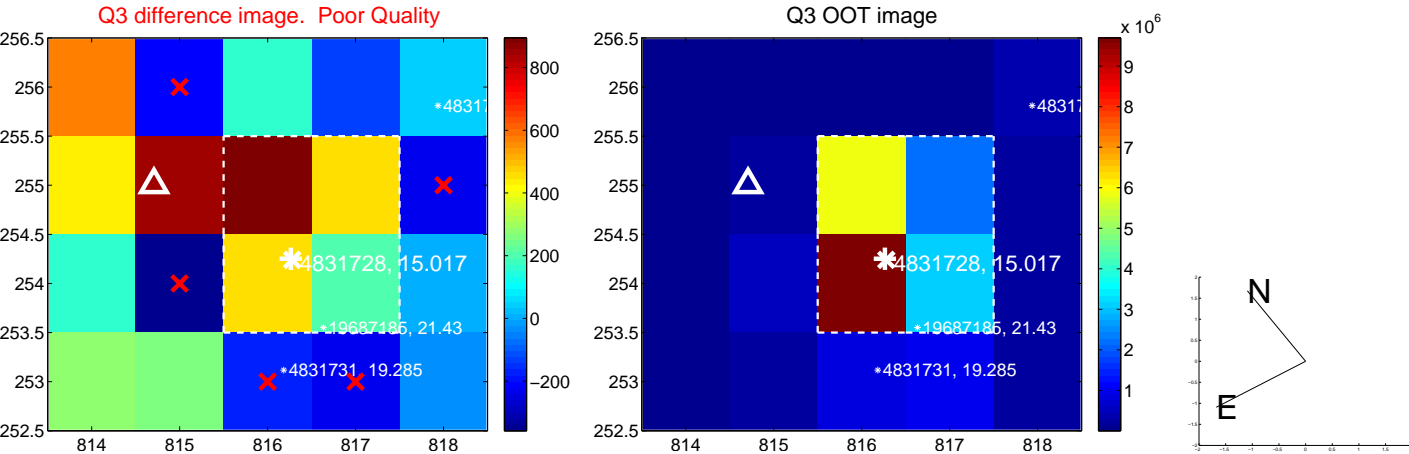
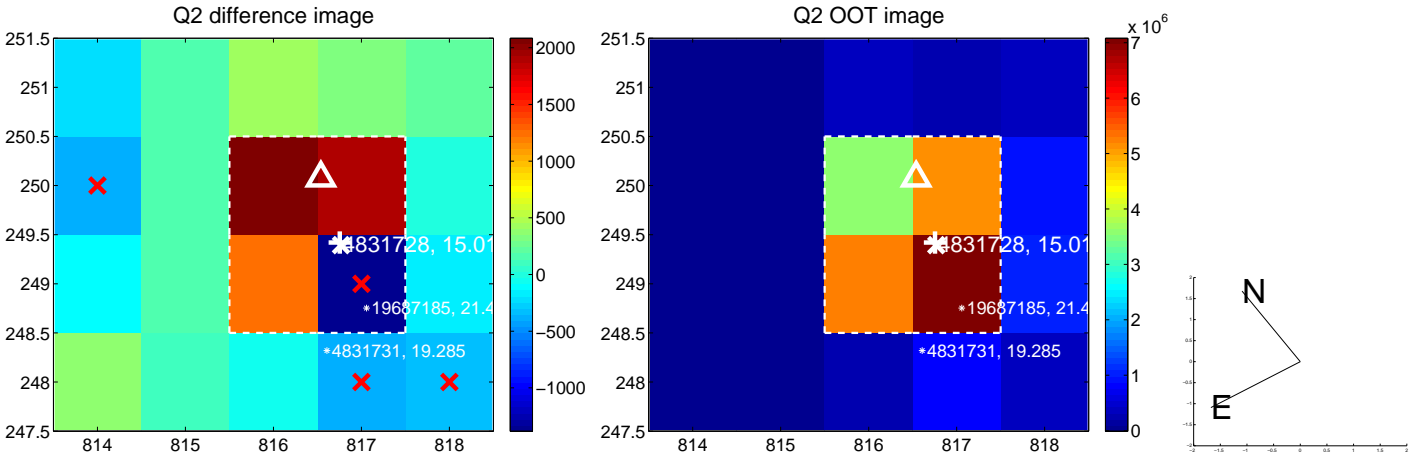
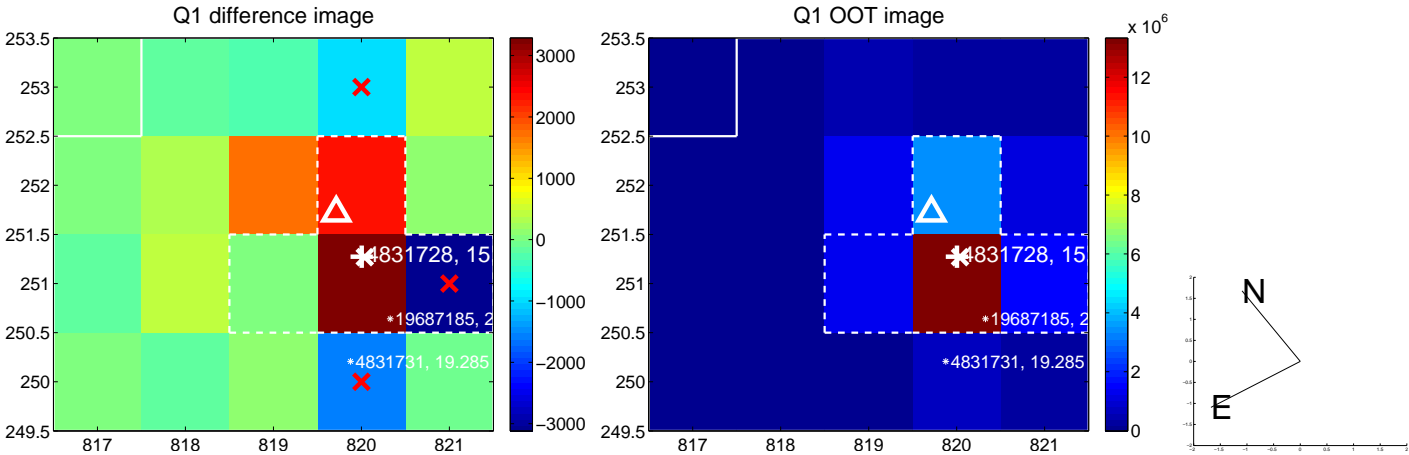
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.677 ± 0.780	3.43	0.534 ± 0.580	2.623 ± 0.747
PRF-fit source offset from KIC position	2.784 ± 0.804	3.46	0.553 ± 0.435	2.728 ± 0.785
photometric centroid source offset	2.23 ± 1.35	1.65	-1.54 ± 1.40	1.61 ± 1.31

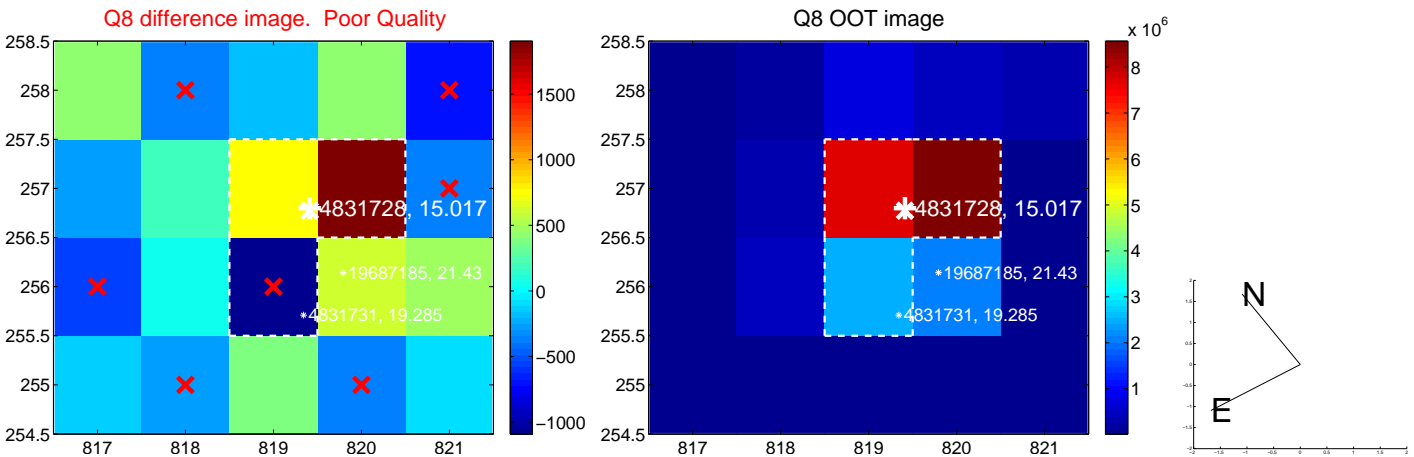
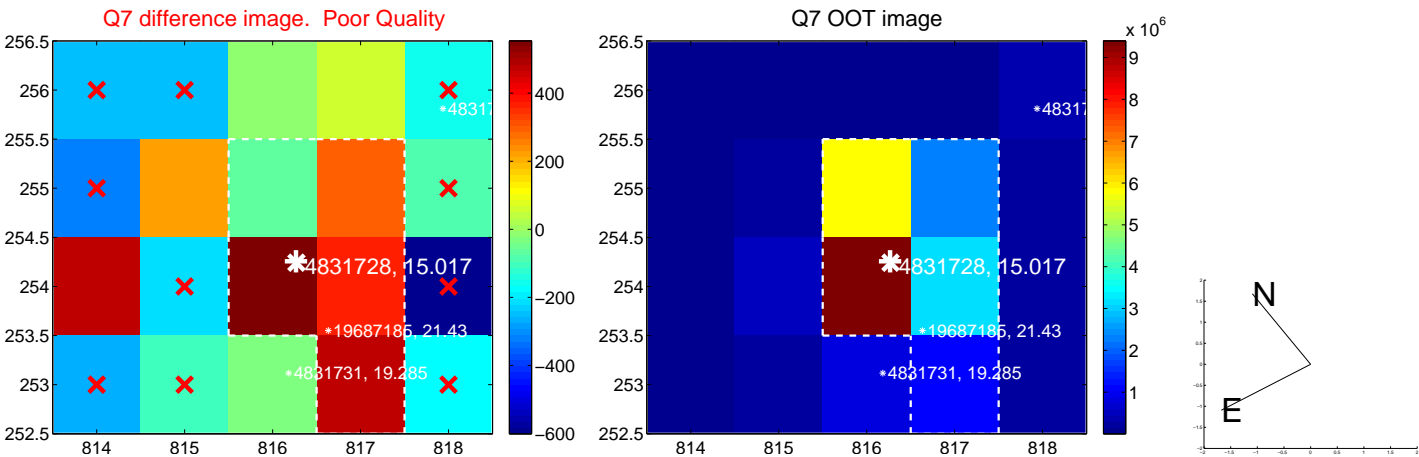
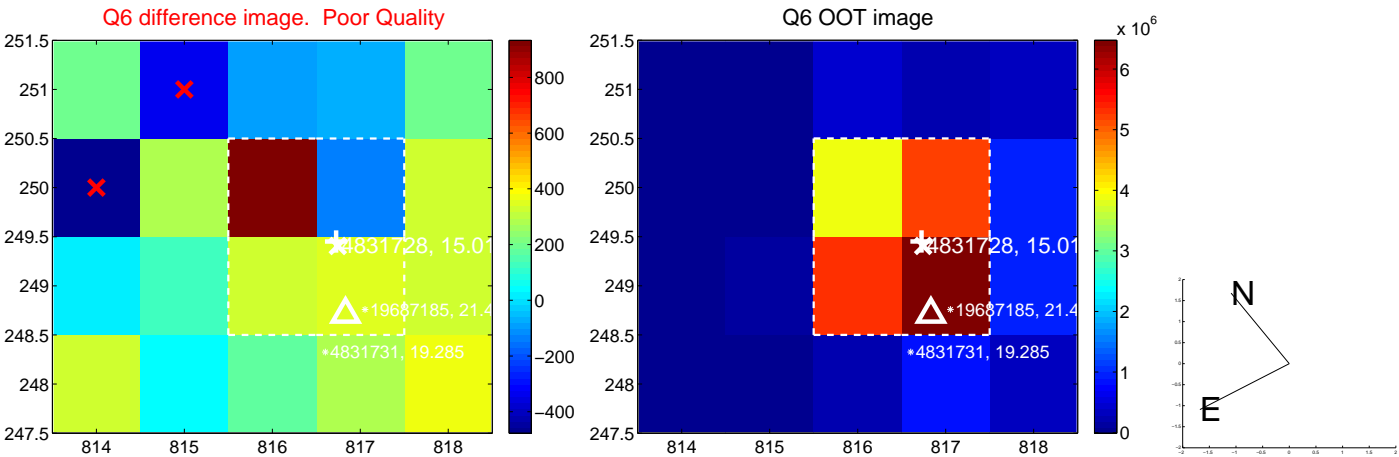
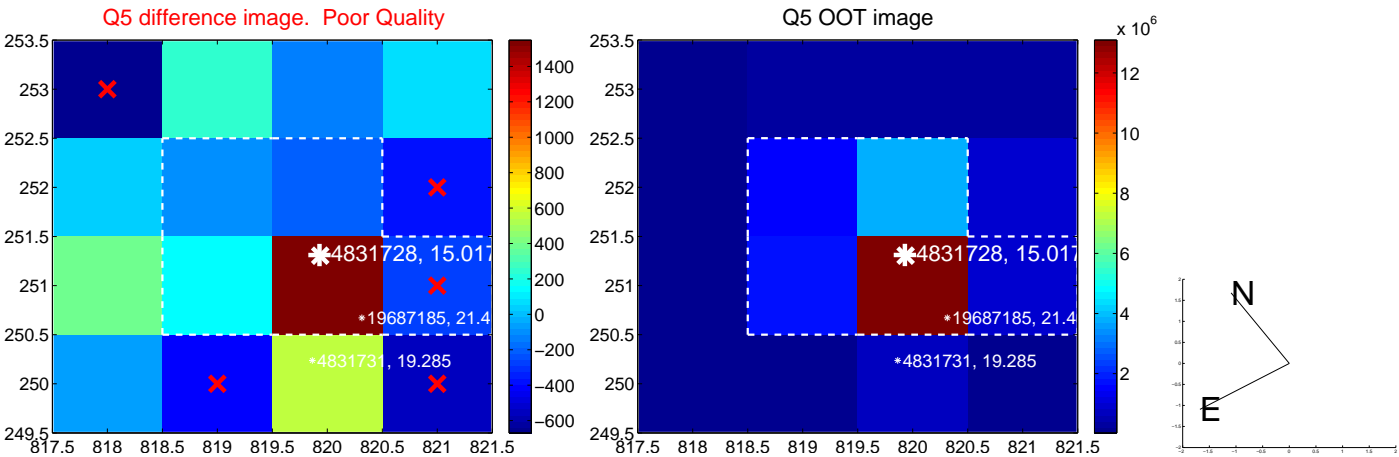


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

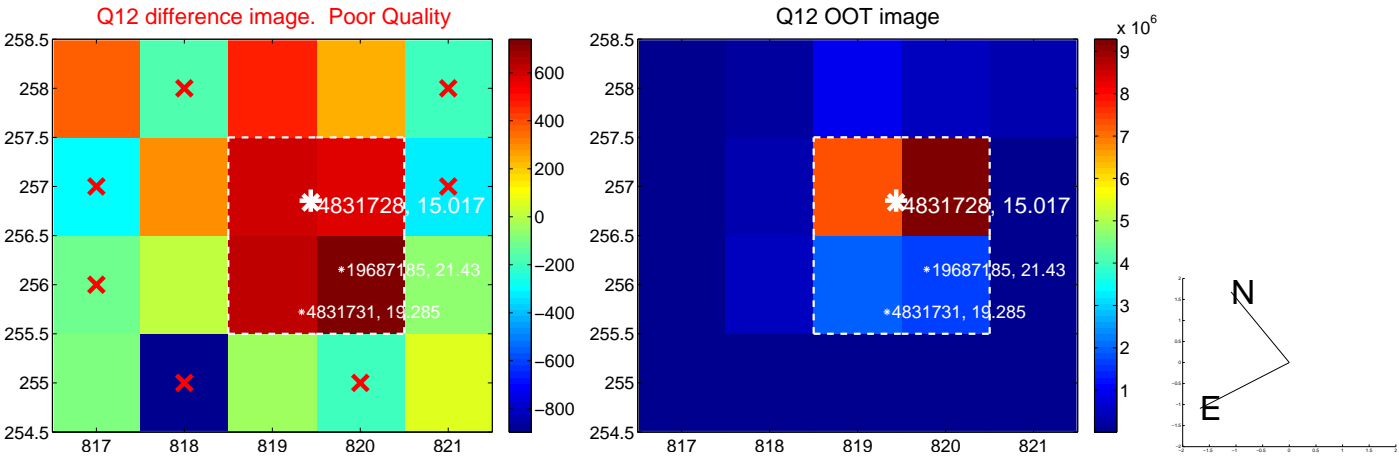
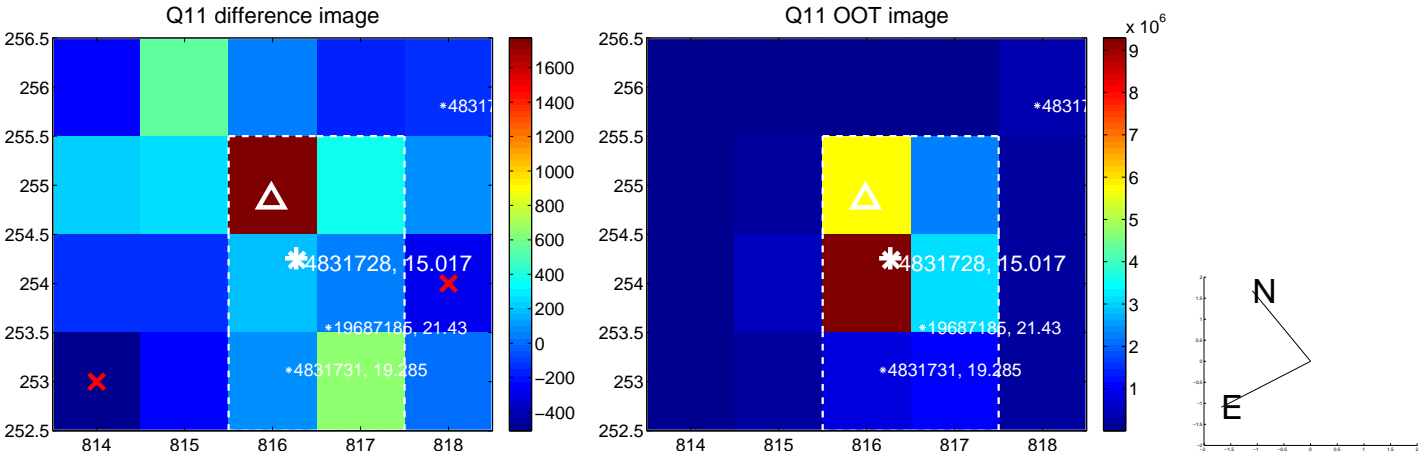
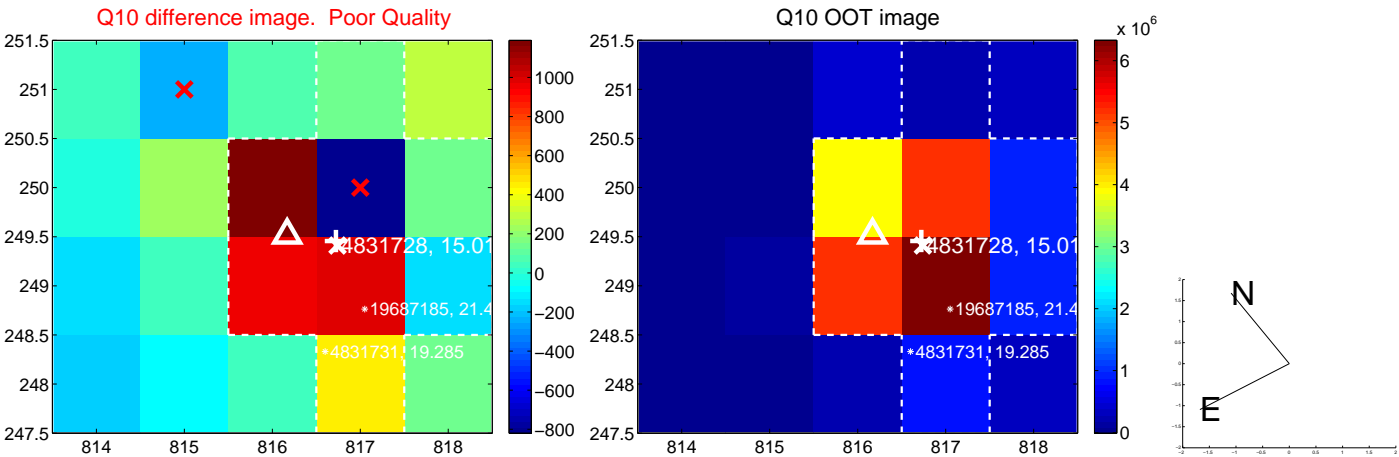
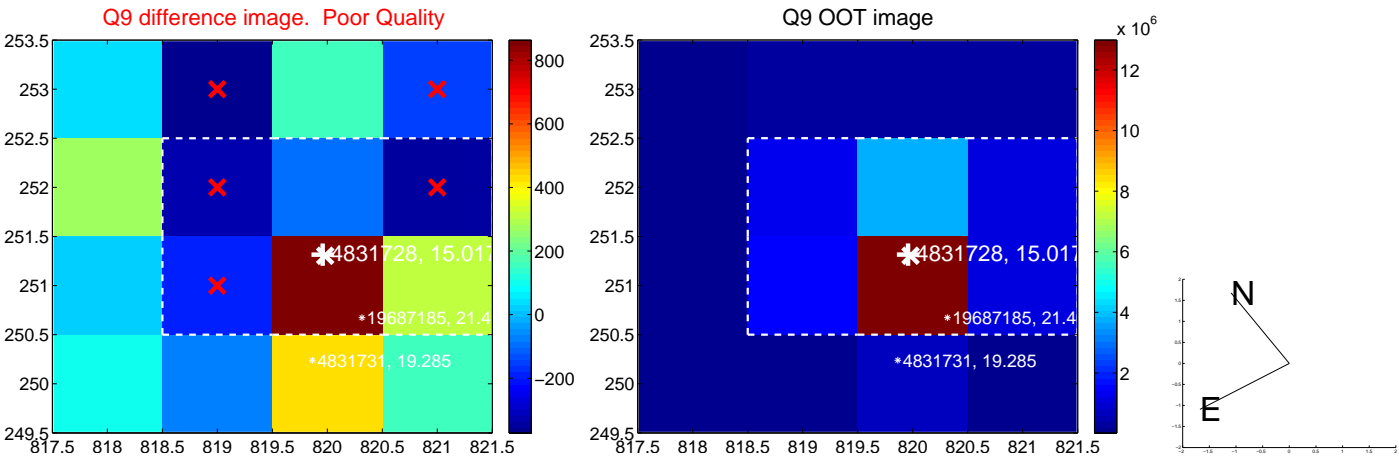
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



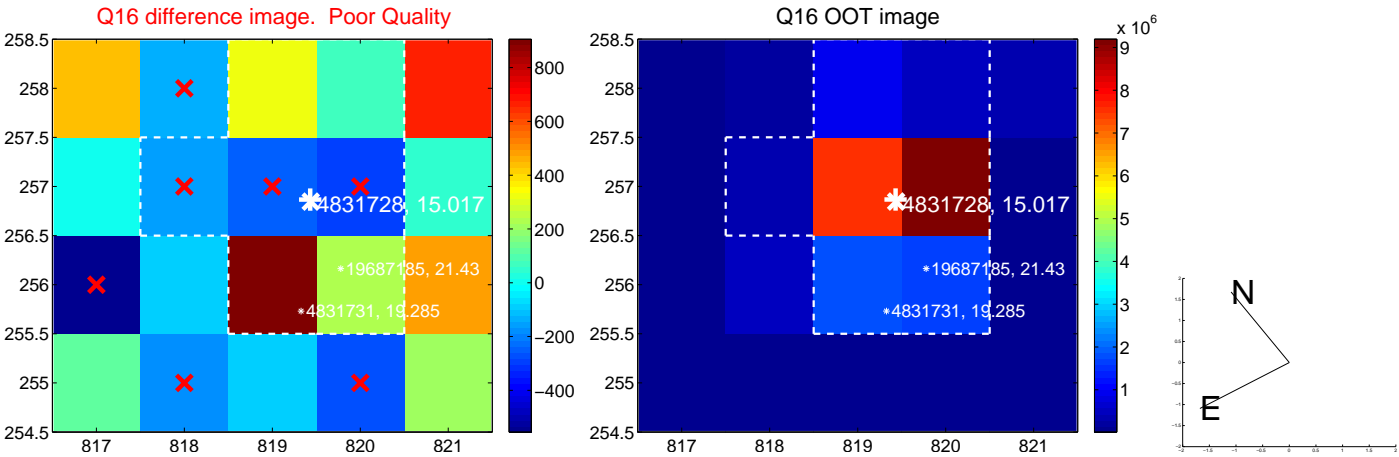
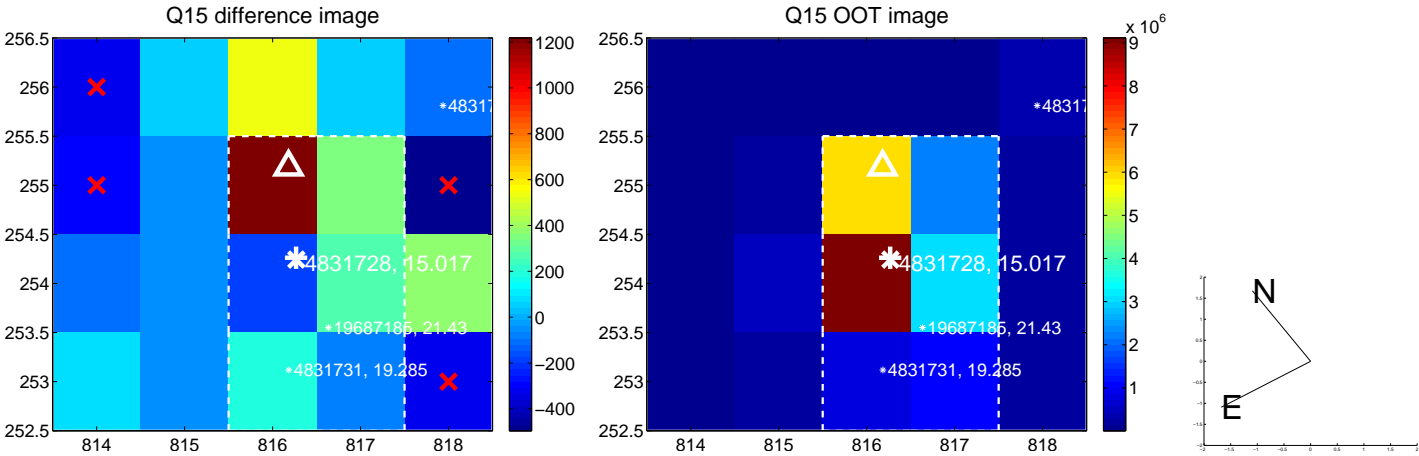
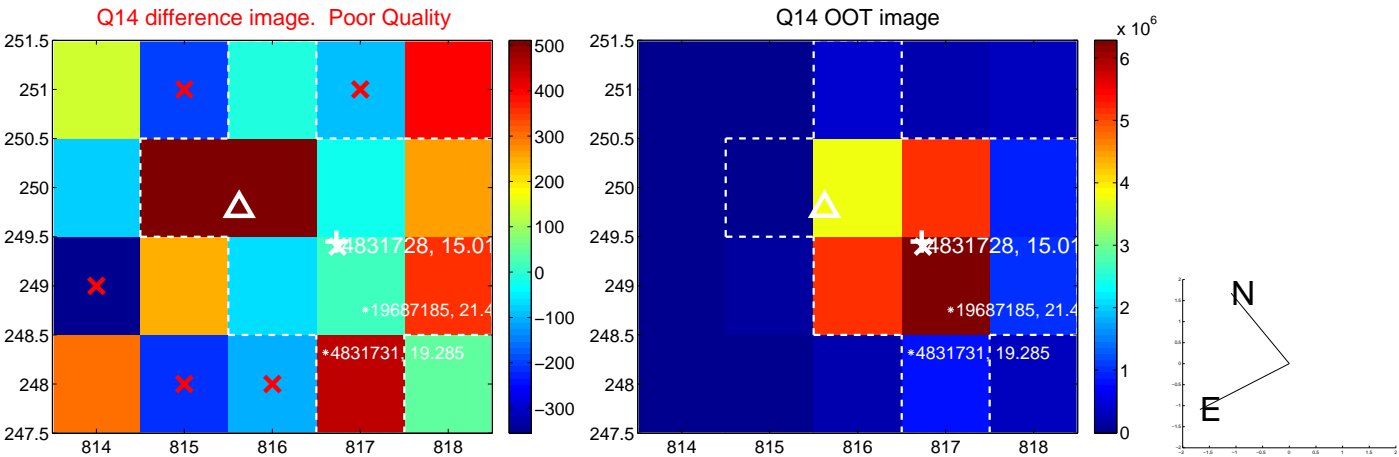
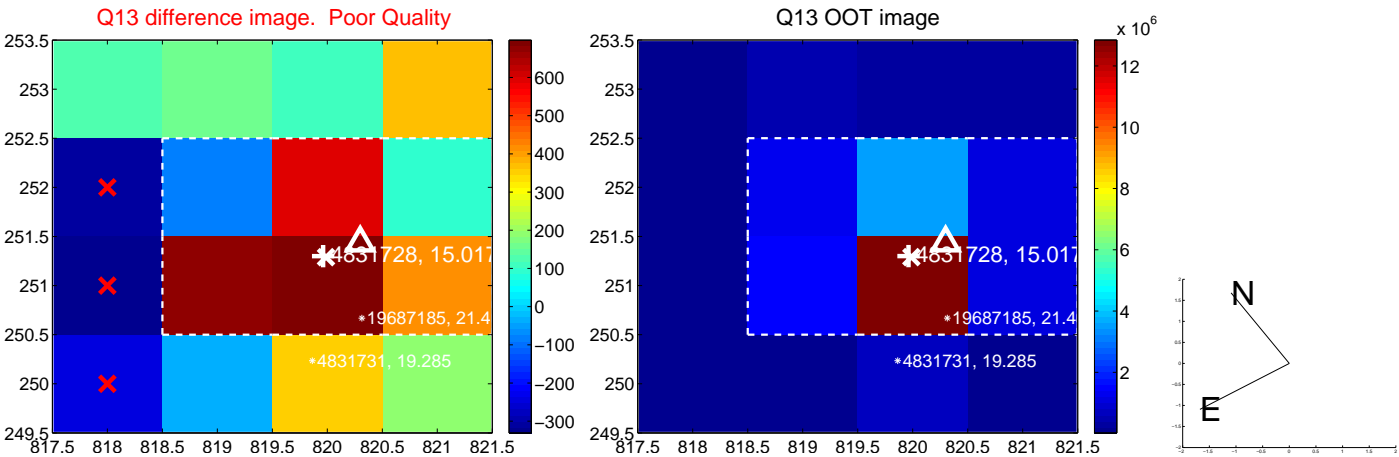
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



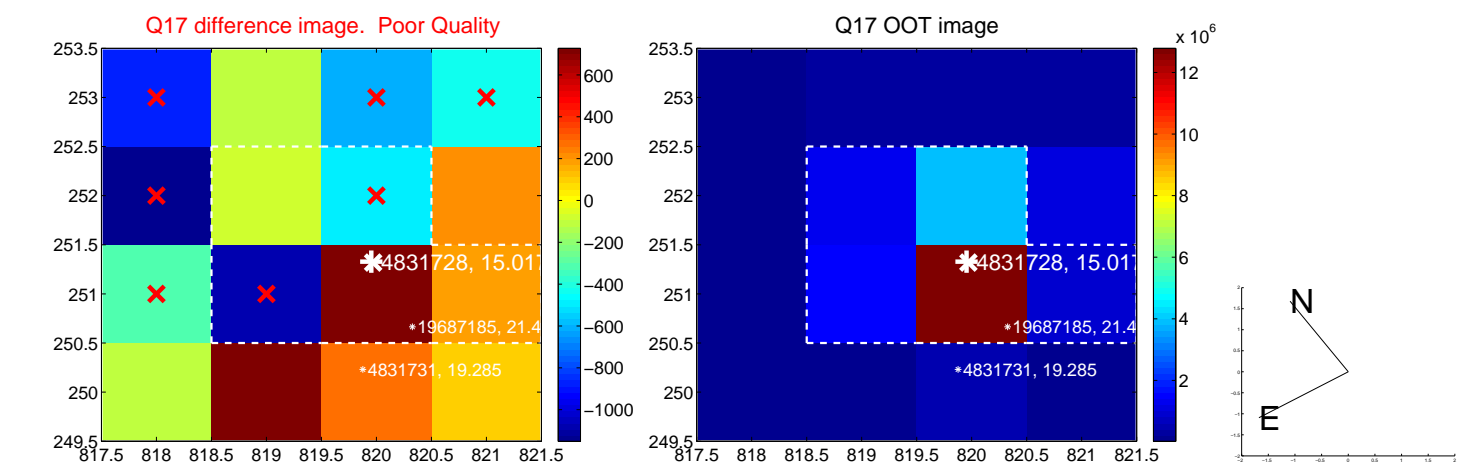
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



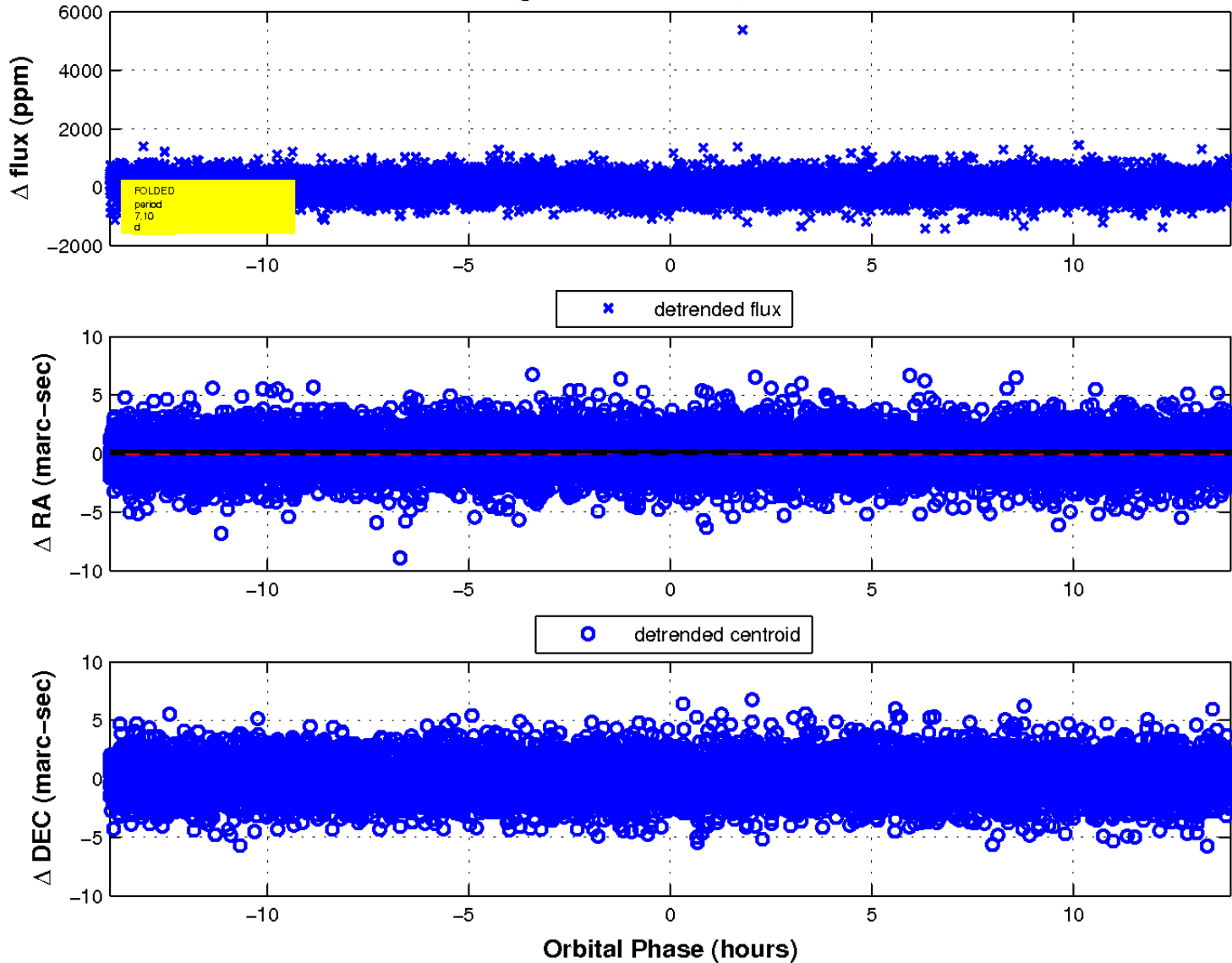
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

