

KIC 002831091

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})
002831091-01	OBS	No	217.397075	327.472759	1265.5	4.348	23.4	8.1	0.92	5835	3.24	1.74
002831091-02	OBS	No	224.528096	152.018985	698.2	2.237	18.0	9.2	0.92	5835	2.66	1.67
002831091-03	OBS	No	262.404159	135.608970	1344.3	8.491	14.4	9.3	0.92	5835	5.73	1.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002831091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002831091-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002831091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—INCONSISTENT_TRANS—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.

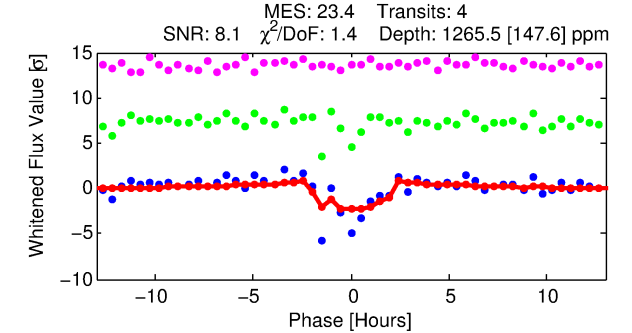
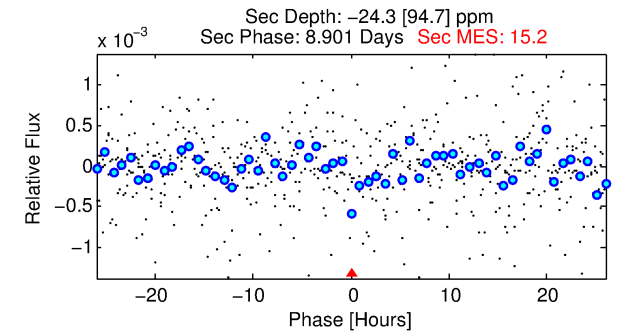
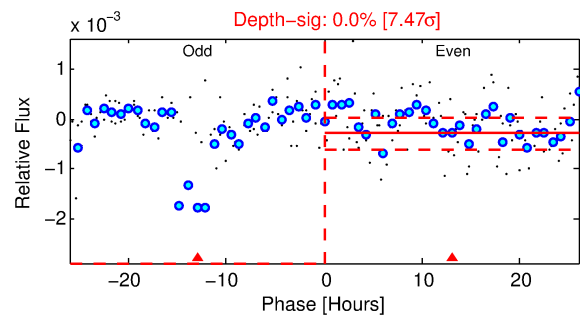
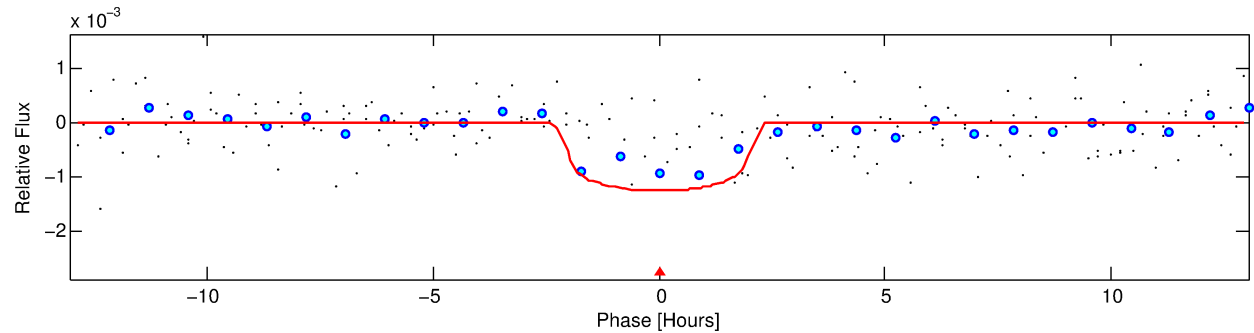
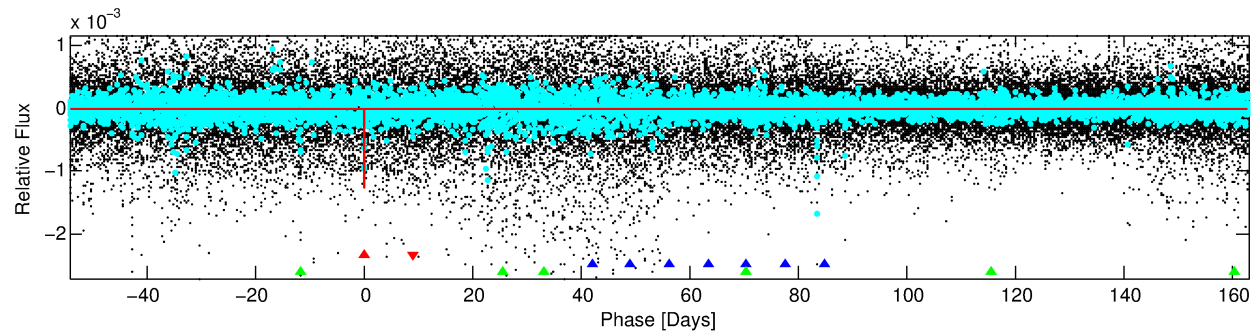
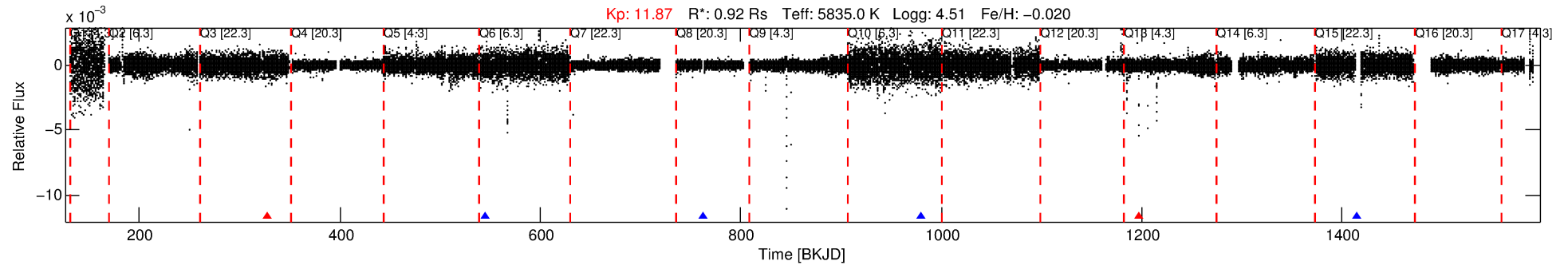
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002831091-01

No Significant Match Found

DV One-Page Summary

KIC: 2831091 Candidate: 1 of 3 Period: 217.397 d



DV Fit Results:

Period = 217.39707 [0.00312] d
Epoch = 327.4728 [0.0078] BKJD
Rp/R* = 0.0323 [0.0531]
a/R* = 394.21 [2872.41]
b = 0.02 [405.99]
Seff = 1.74 [0.67]
Teq = 293 [28] K
Rp = 3.24 [5.40] Re
a = 0.7102 [0.1740] AU
Ag = N/A
Teffp = N/A

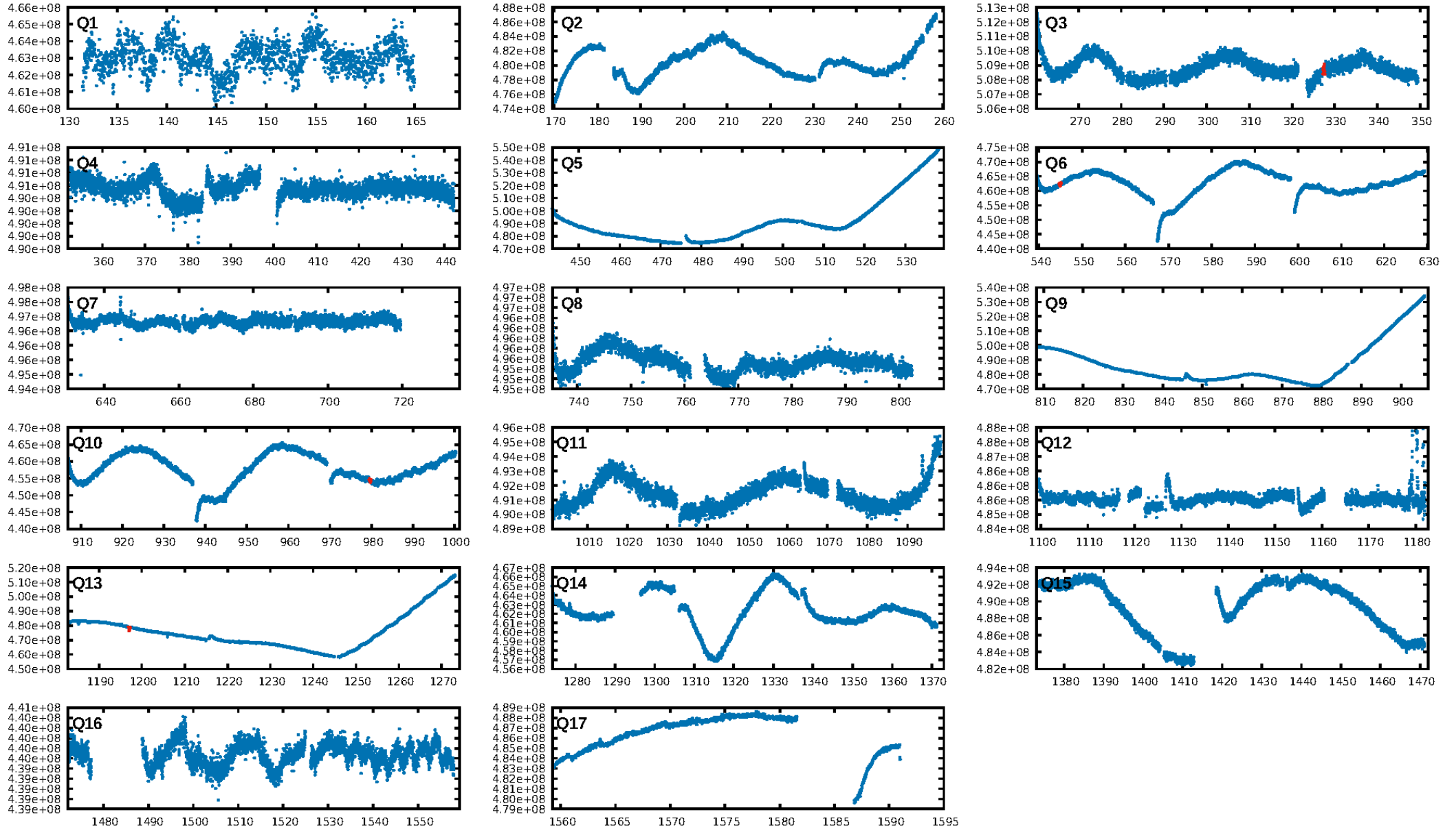
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [35.00 σ]
ModelChiSquare2-sig: 83.1%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 5.07e-30
RollingBand-fgt: 0.50 [2/4]
GhostDiagnostic-chr: 2.832
Centroid-sig: 86.4%
Centroid-so: 2.519 arcsec [15.13 σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [3/3]

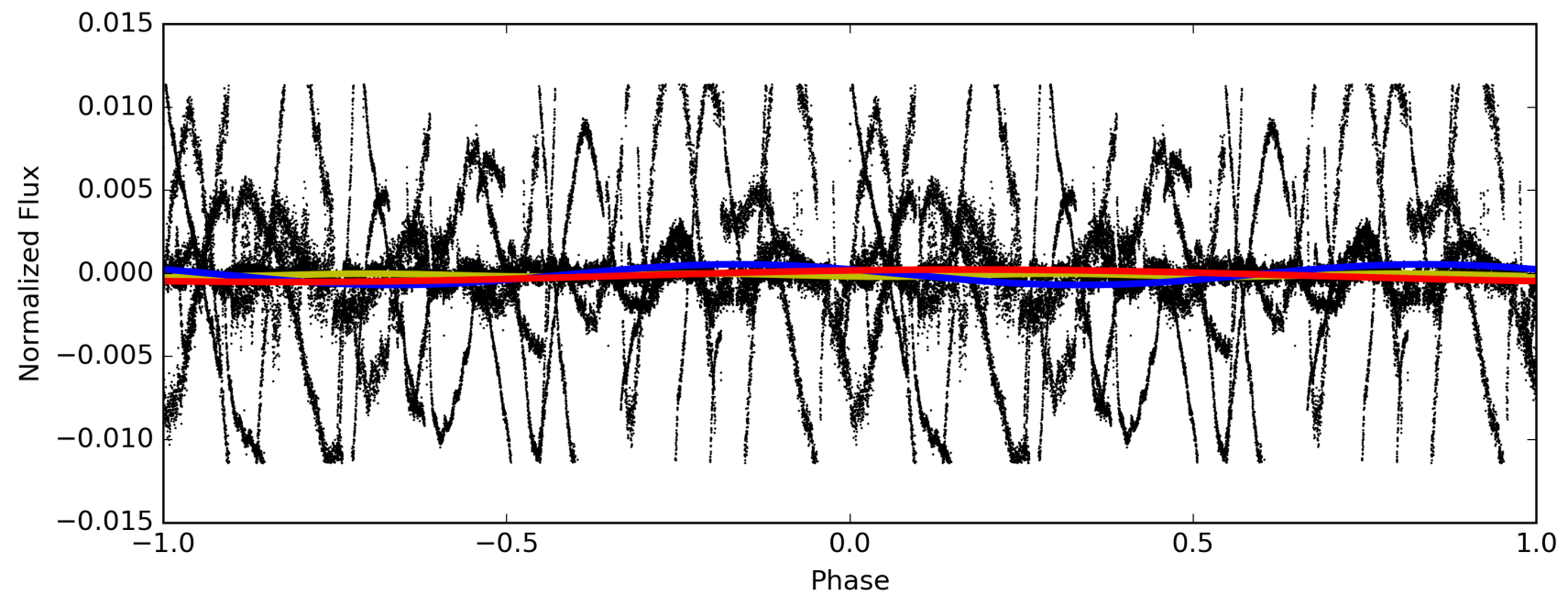
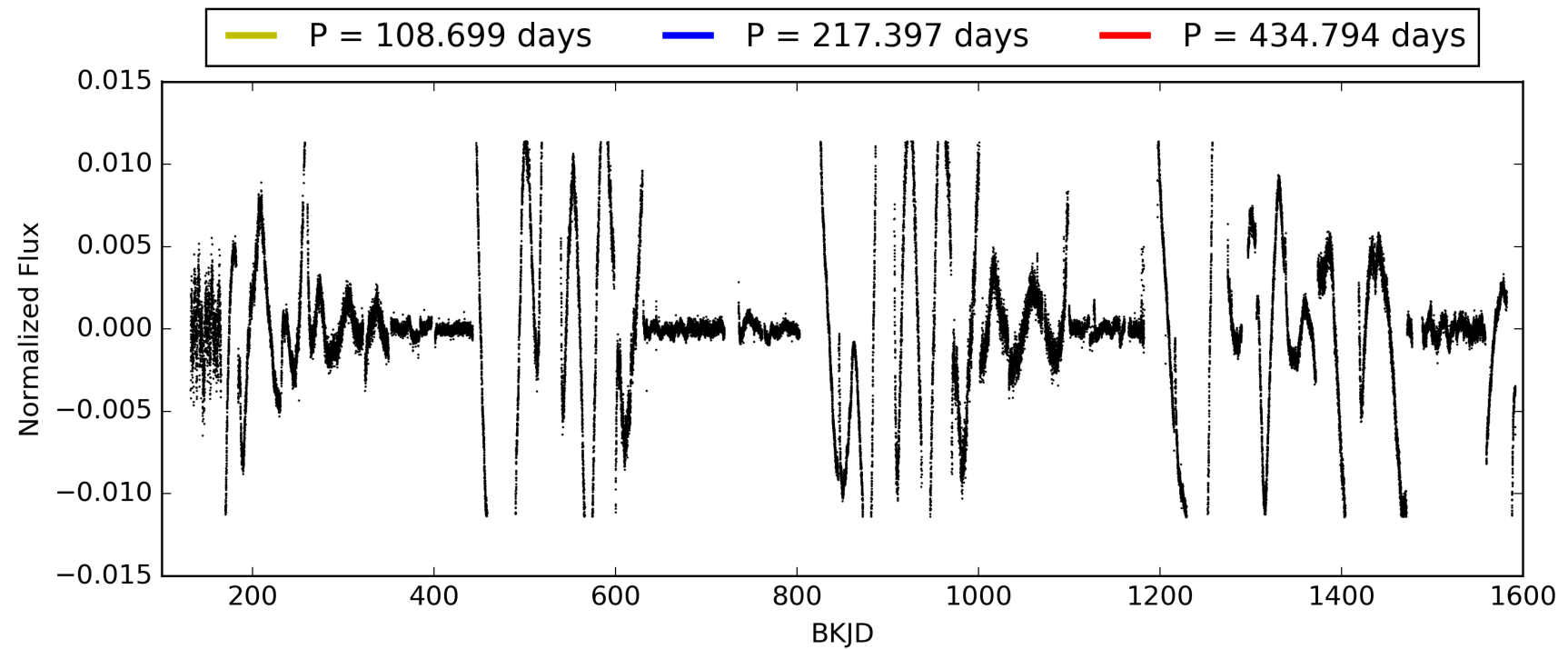
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:48:57 Z

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

TCE 002831091-01, PDC Light Curves

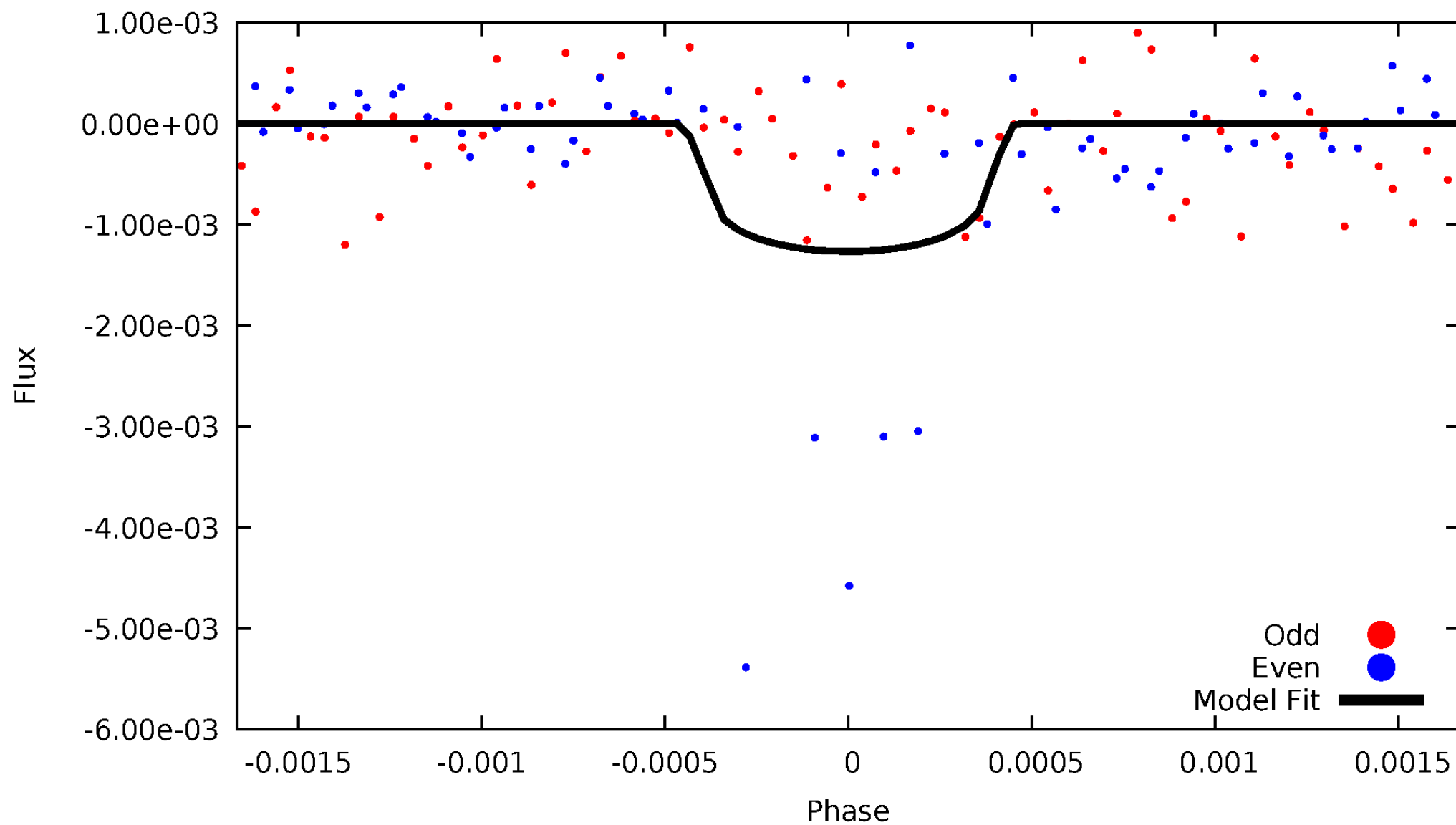


TCE 002831091-01



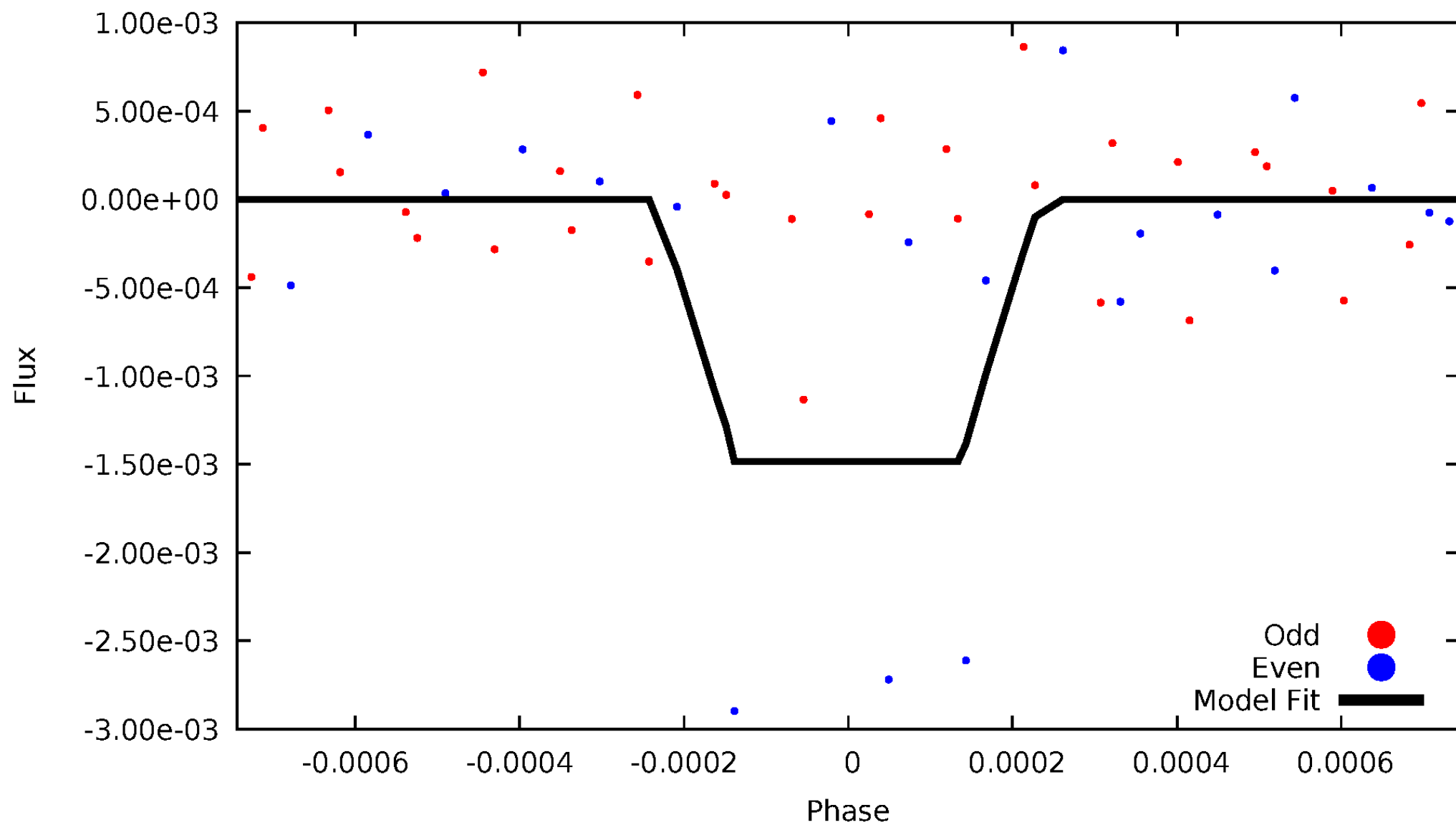
DV Odd/Even

TCE 002831091-01



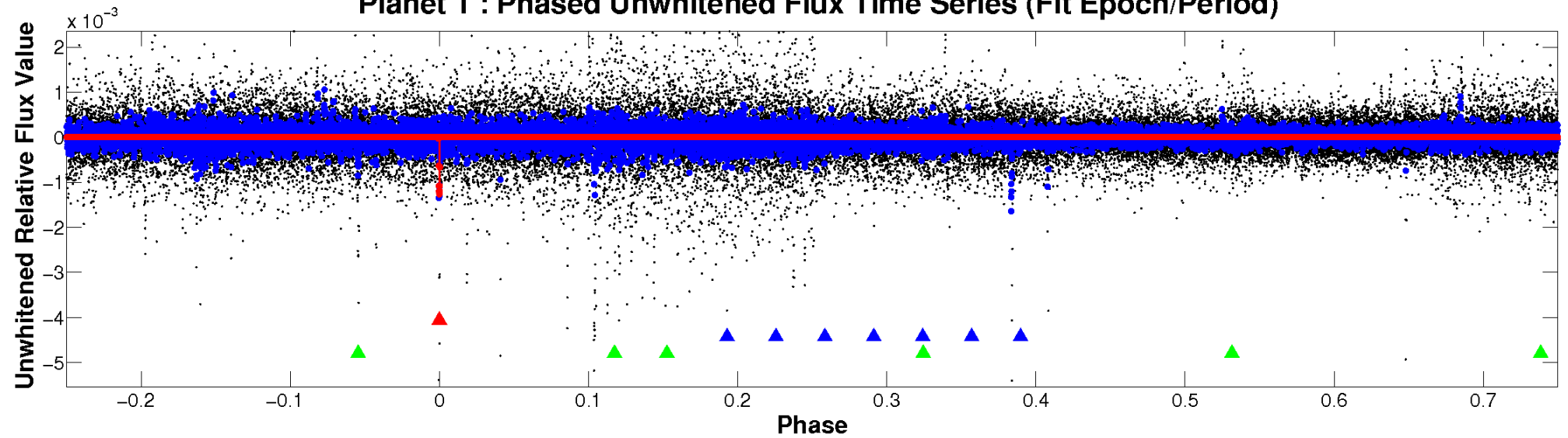
ALT Odd/Even

TCE 002831091-01

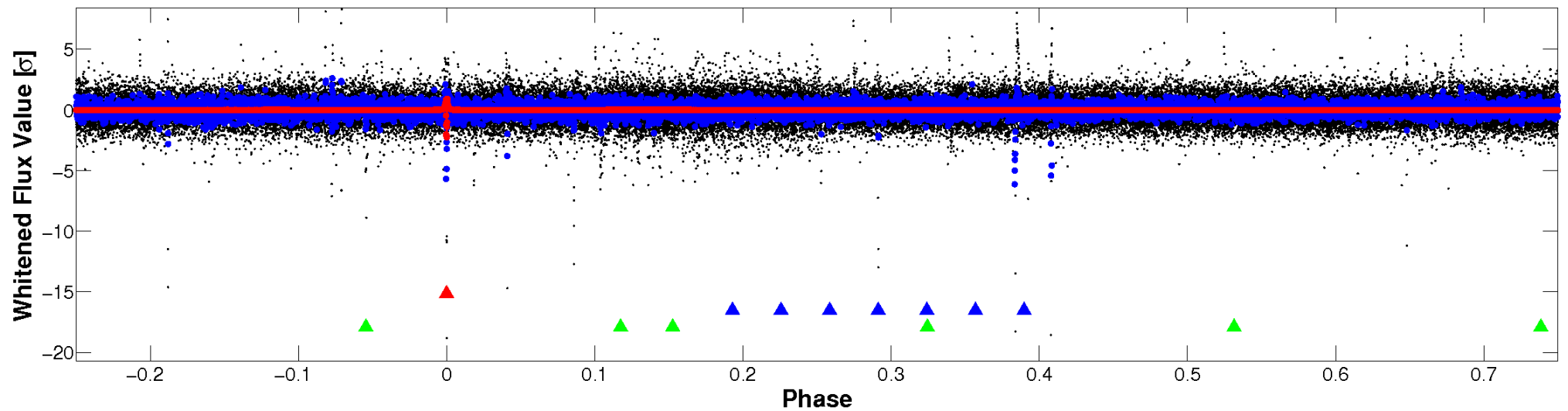


Non-Whitened Vs. Whitened Light Curve

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

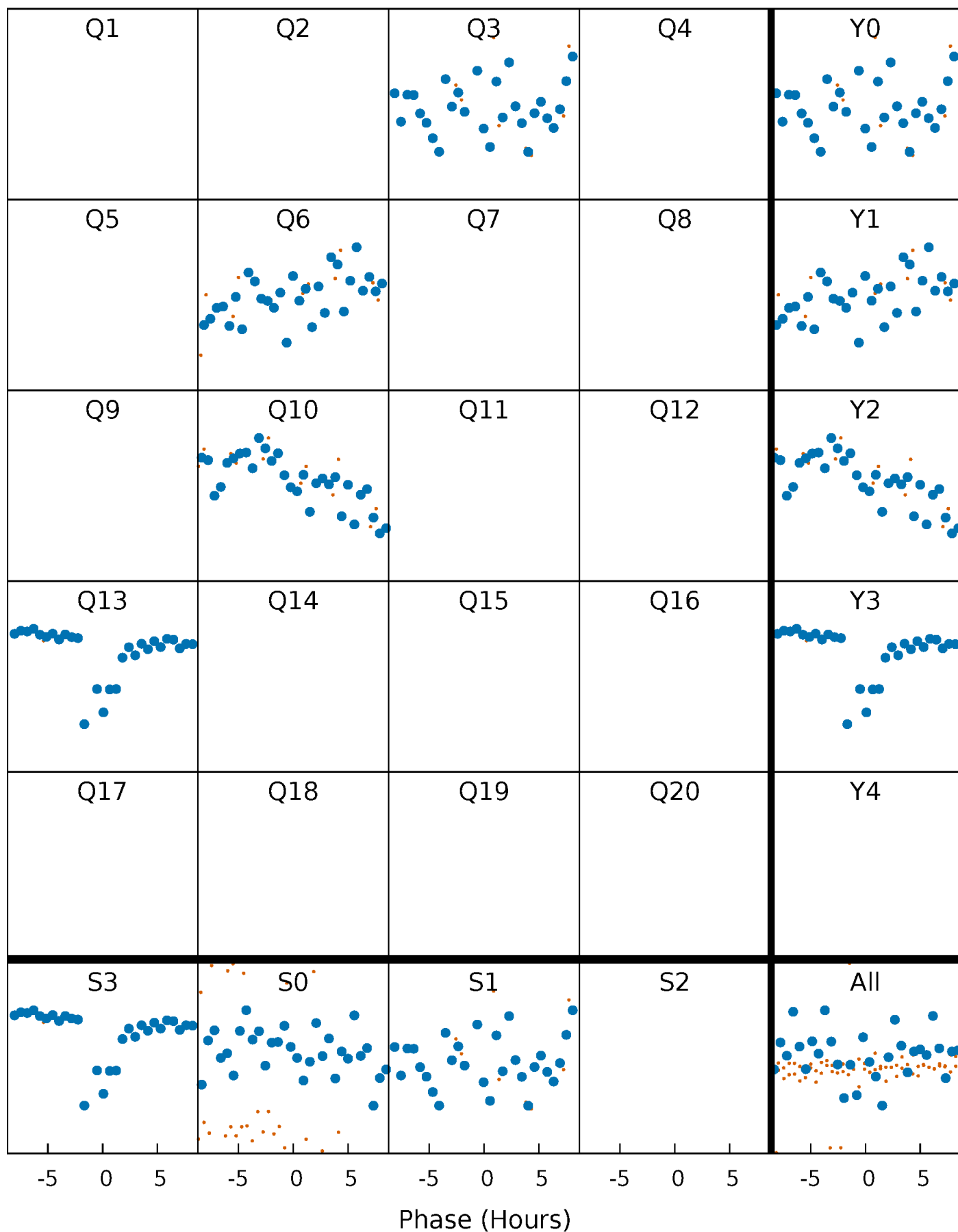


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



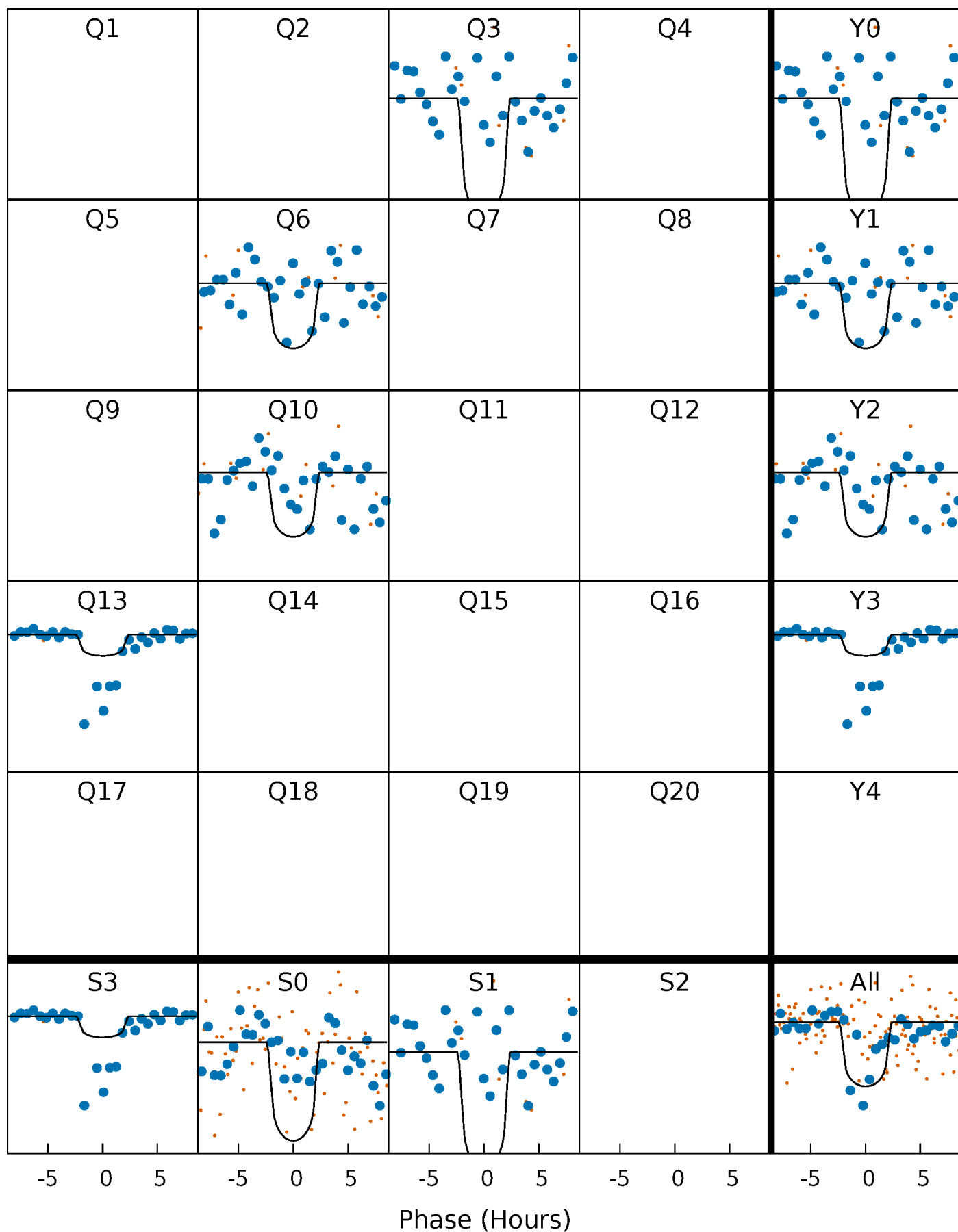
PDC Quarter-Phased Transit Curves

TCE 002831091-01 P=217.397075 Days $T_0=327.472759$ (BKJD)



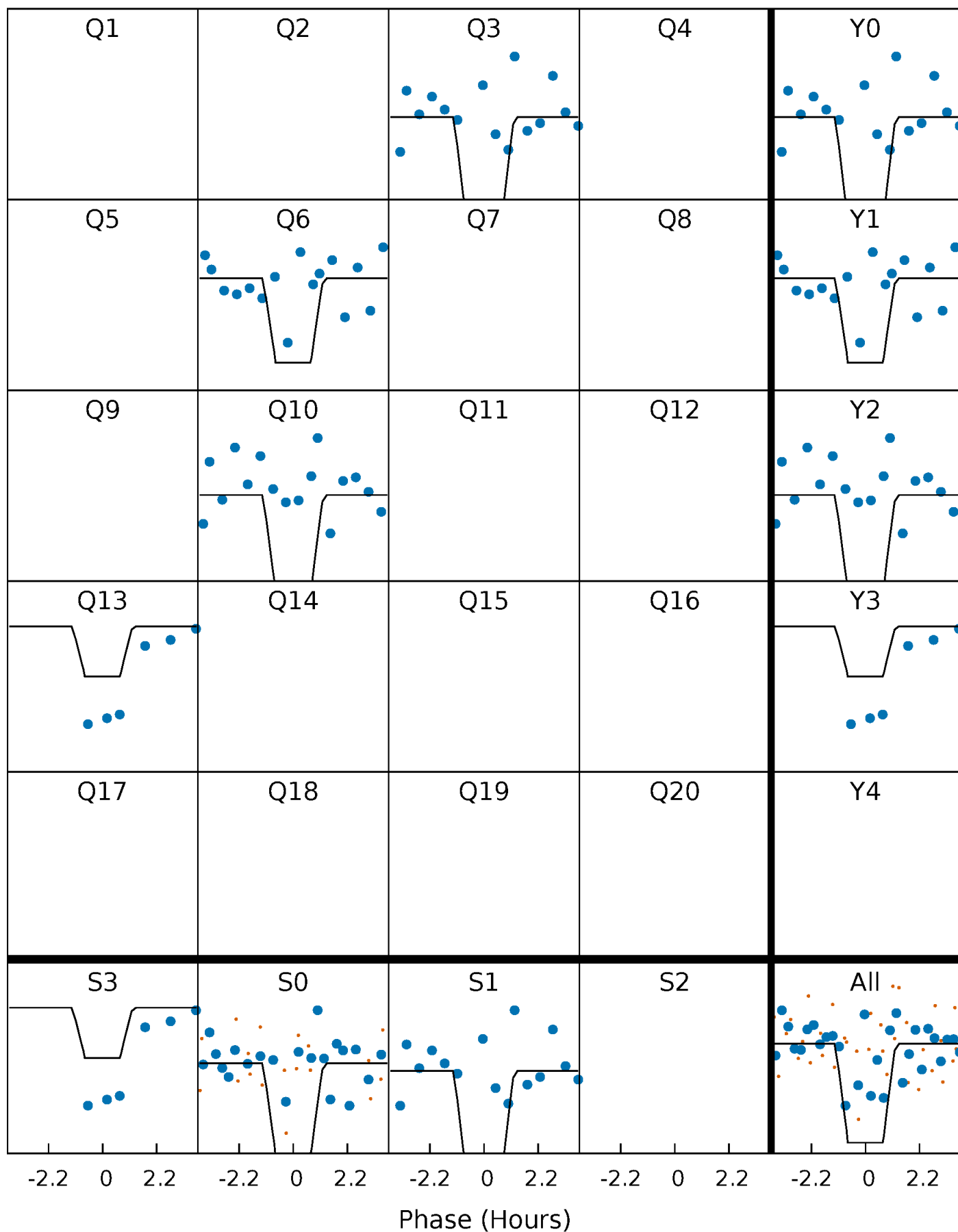
DV Quarter-Phased Transit Curves

TCE 002831091-01 P=217.397075 Days $T_0=327.472759$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

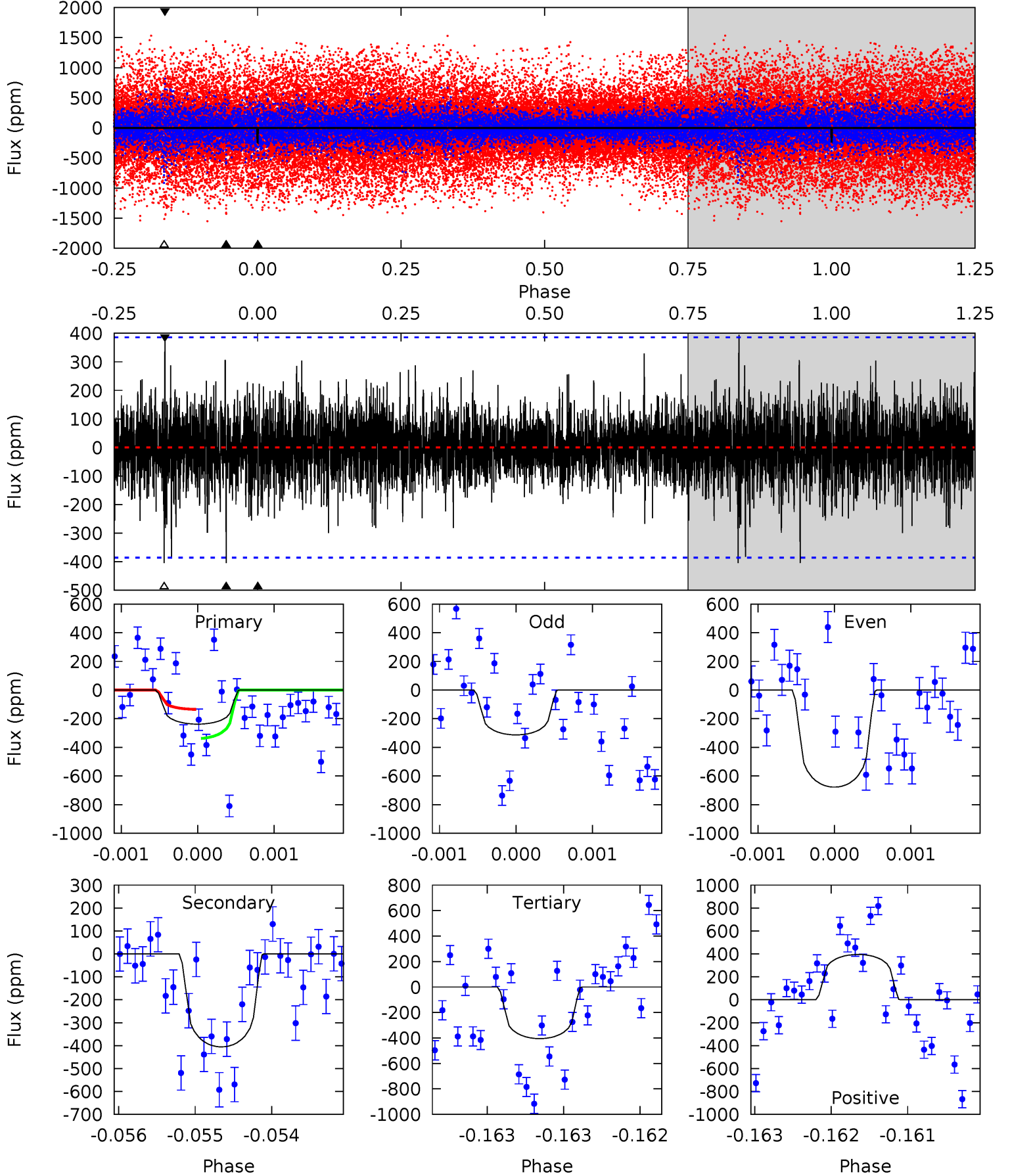
TCE 002831091-01 P=217.404719 Days $T_0=327.452443$ (BKJD)



DV Model-Shift Uniqueness Test

002831091-01, P = 217.397075 Days, E = 110.075684 Days

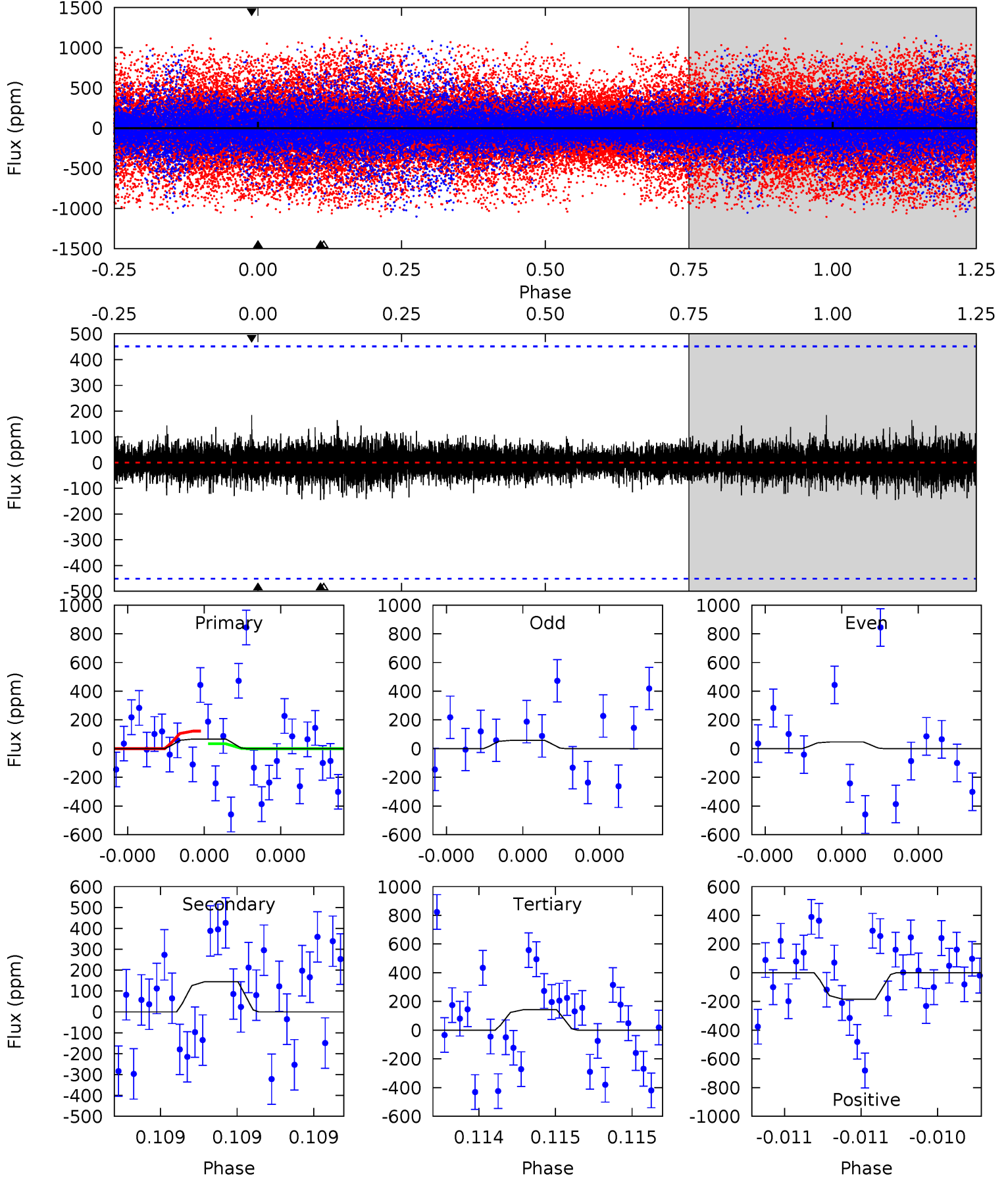
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.38	5.75	5.74	5.60	5.48	3.34	1.11	-2.37	-2.23	0.01	0.15	2.59	3.58	0.49	1.46



Alt Model-Shift Uniqueness Test

002831091-01, P = 217.404719 Days, E = 110.047724 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.83	1.80	1.77	2.28	5.58	3.50	0.41	-0.94	-1.45	0.03	-0.48	0.07	5.98	0.56	0.54



Stellar Parameters For KIC 002831091

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5835^{+140}_{-175}	$4.515^{+0.048}_{-0.204}$	$-0.020^{+0.250}_{-0.300}$	$0.920^{+0.260}_{-0.087}$	$1.009^{+0.116}_{-0.127}$	$1.827^{+0.465}_{-0.895}$
	+2%/-3%	+1%/-5%	+1250%/-1500%	+28%/-9%	+11%/-13%	+25%/-49%
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 002831091-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-405 ± 70	$5.28^{+4.84}_{-3.25}$	418^{+29}_{-19}	3994^{+1967}_{-750}	3742^{+22215}_{-2658}
Alt.	-145 ± 81	$5.59^{+5.20}_{-3.78}$	418^{+27}_{-19}	3241^{+1572}_{-615}	1105^{+9133}_{-871}

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 002831091-01. **Kepler magnitude: 11.87.** Transit SNR 8.08

There are 0 quarters with good PRF difference image offsets

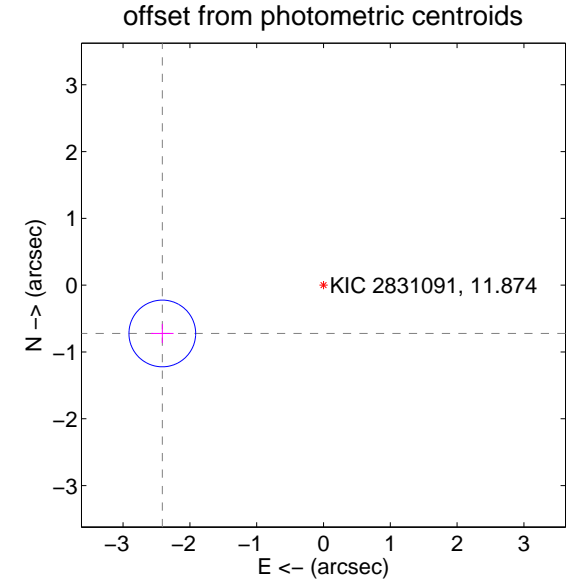
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	2.52 \pm 0.17	15.13	2.41 \pm 0.17	-0.72 \pm 0.14

There is no PRF-fit offset from OOT-fit

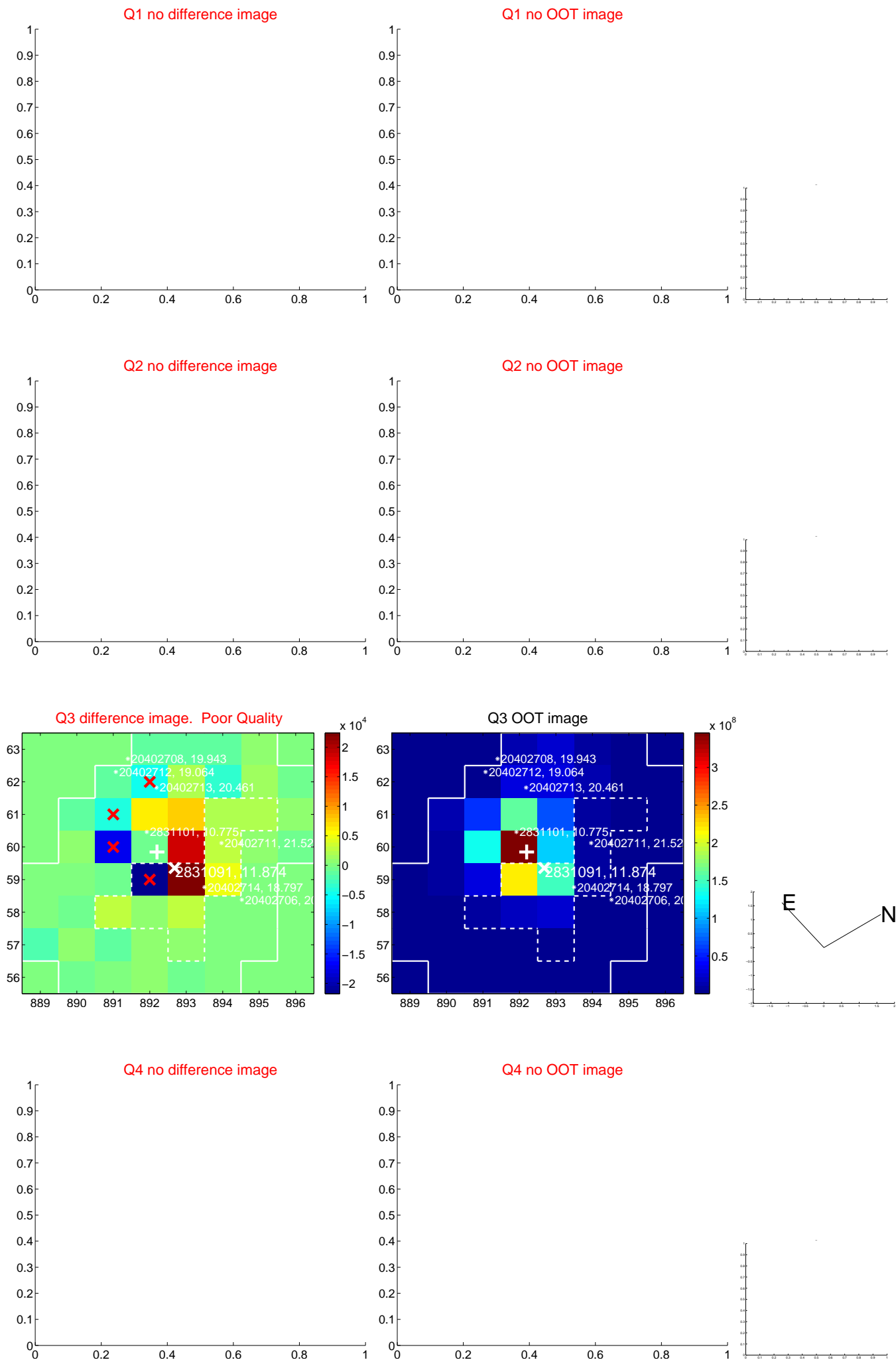


There is no PRF-fit offset from KIC

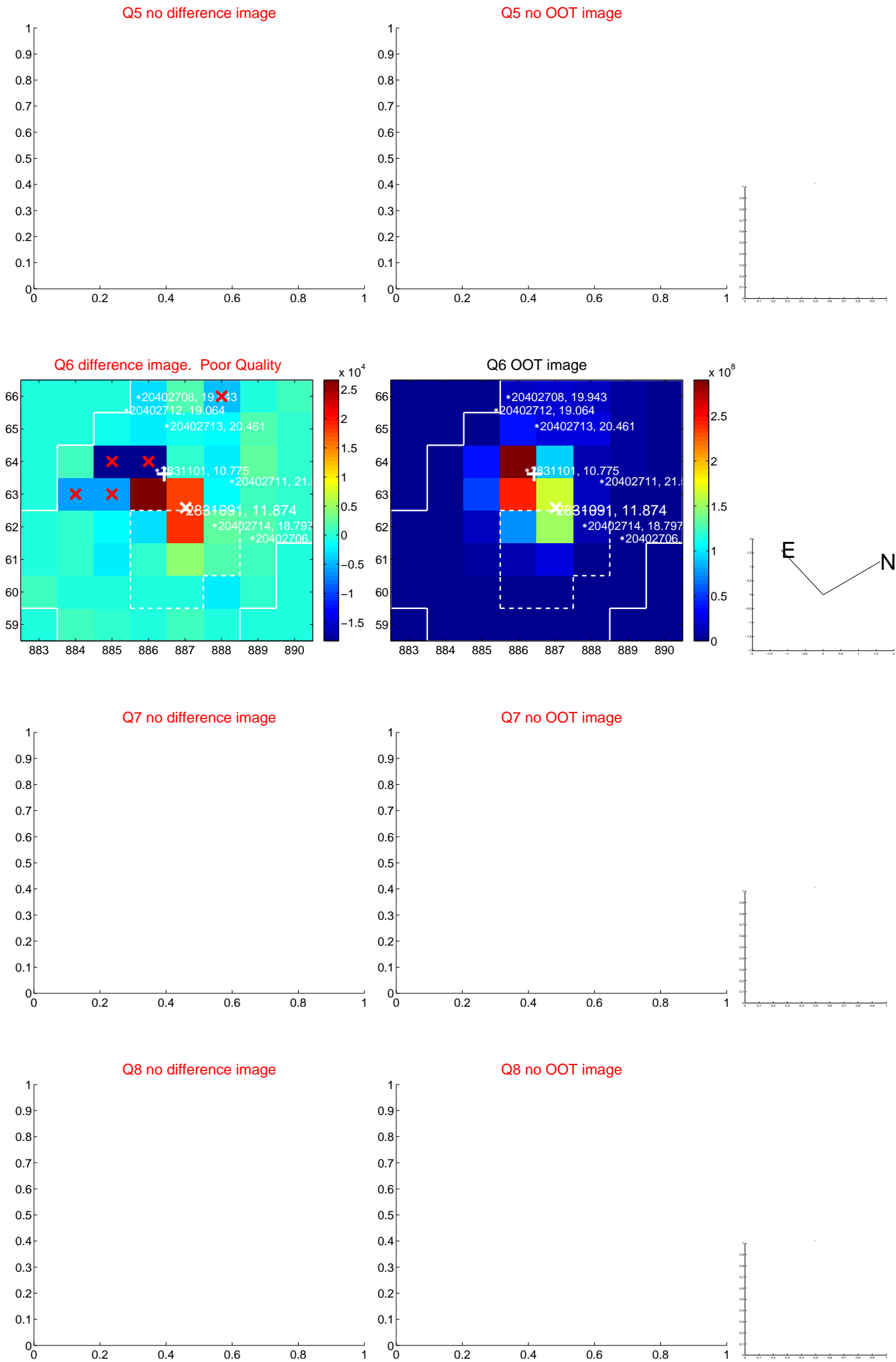


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

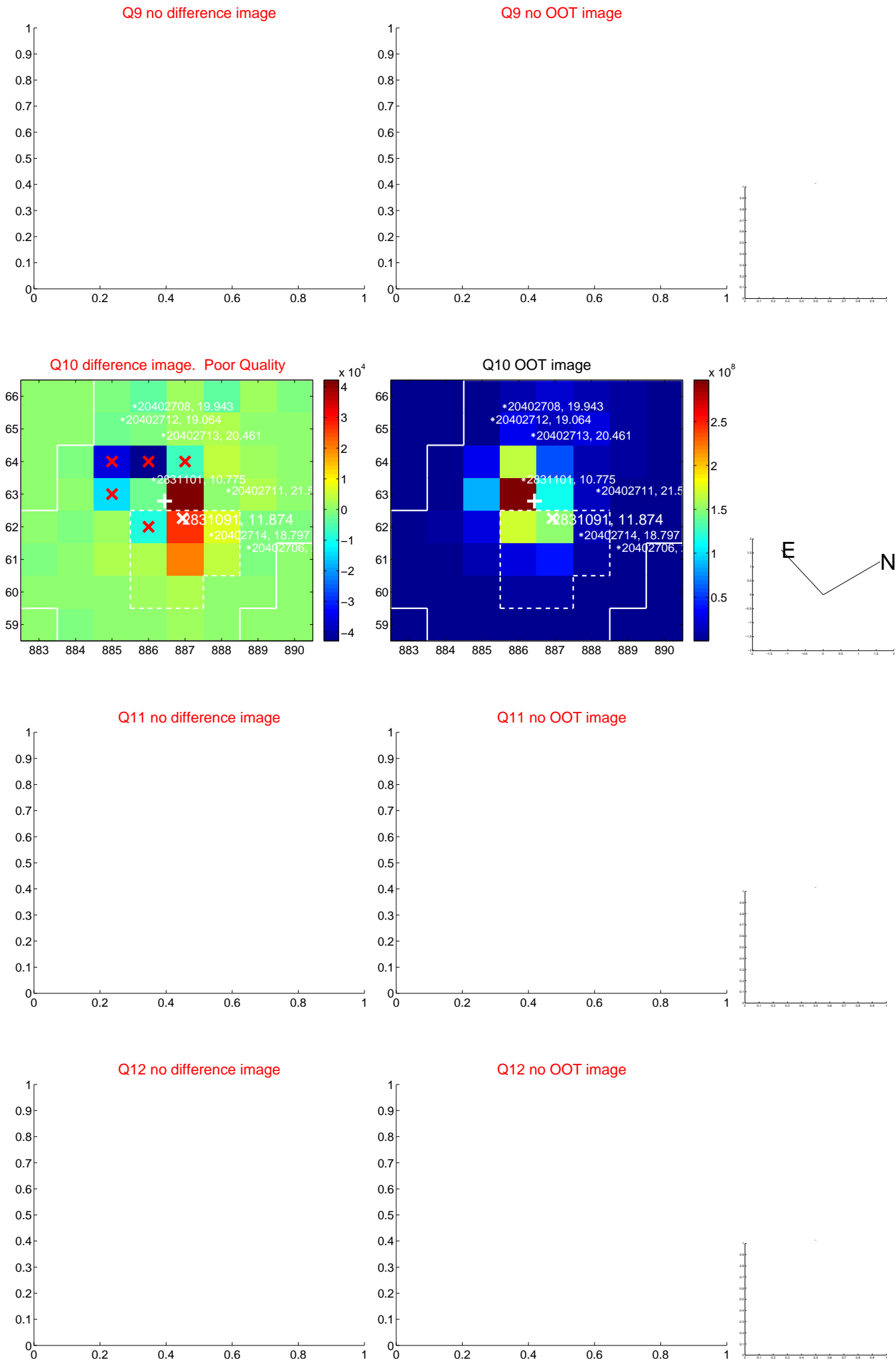
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



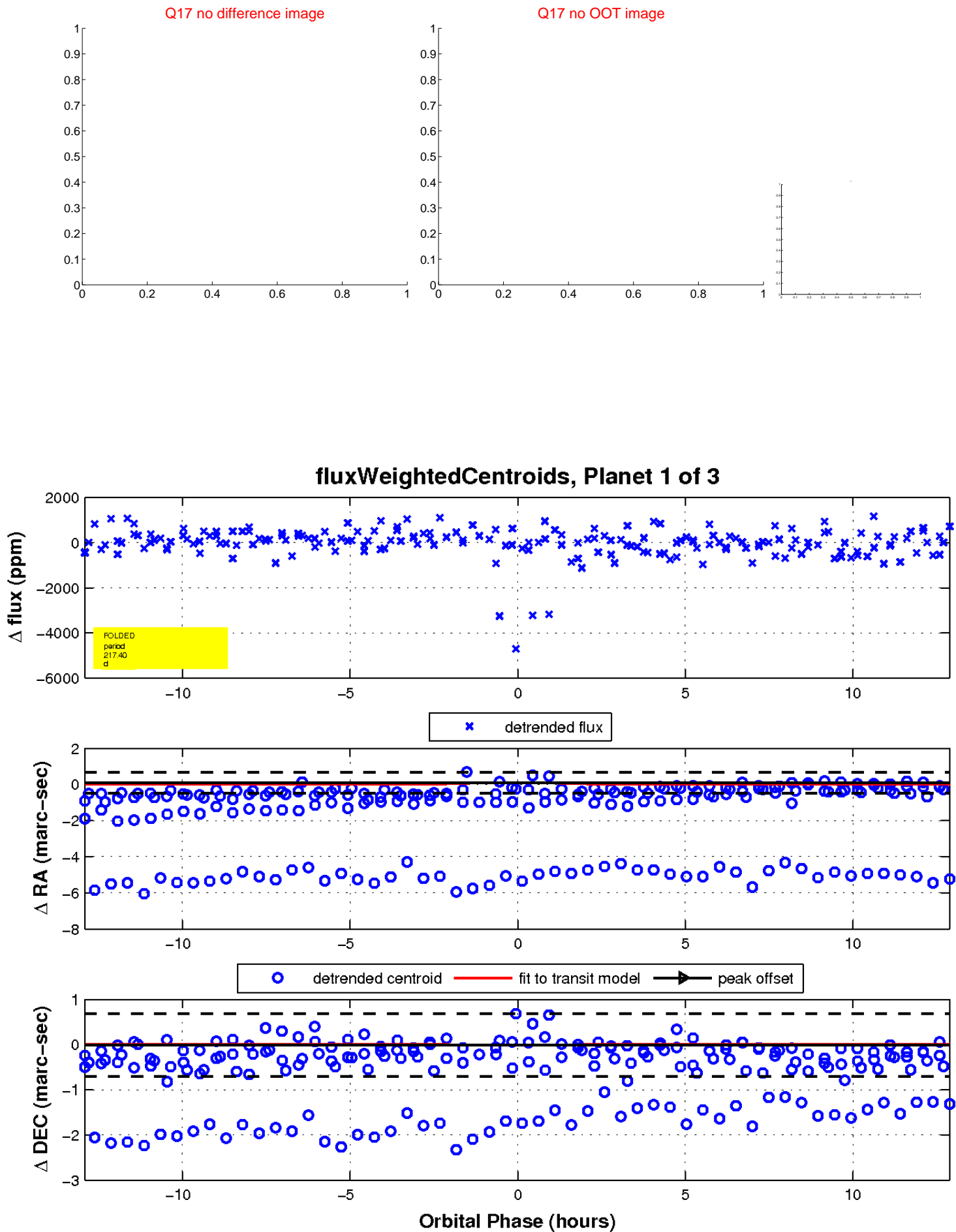
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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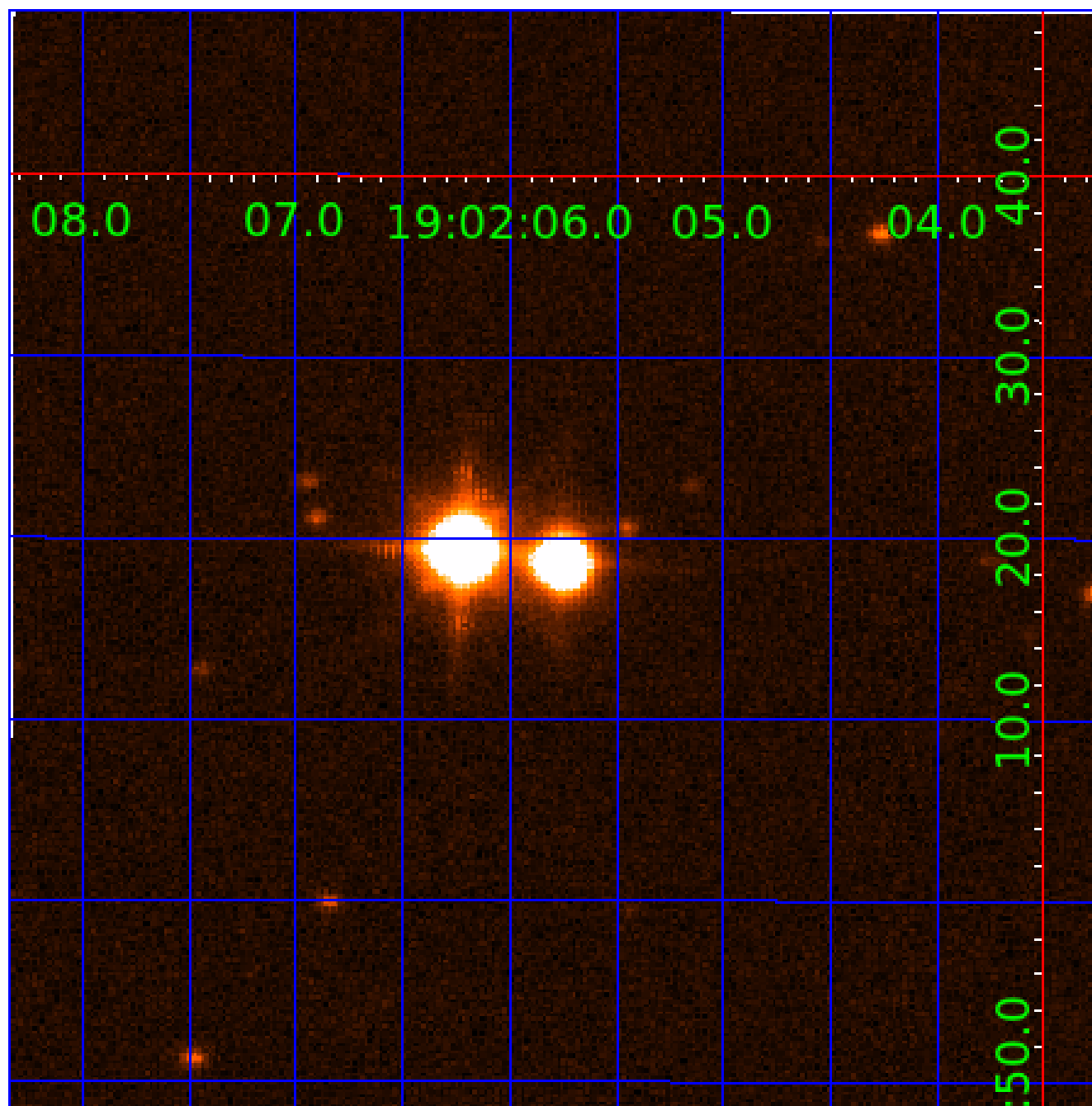


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002831091

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})
002831091-01	OBS	No	217.397075	327.472759	1265.5	4.348	23.4	8.1	0.92	5835	3.24	1.74
002831091-02	OBS	No	224.528096	152.018985	698.2	2.237	18.0	9.2	0.92	5835	2.66	1.67
002831091-03	OBS	No	262.404159	135.608970	1344.3	8.491	14.4	9.3	0.92	5835	5.73	1.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002831091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002831091-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002831091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—INCONSISTENT_TRANS—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.

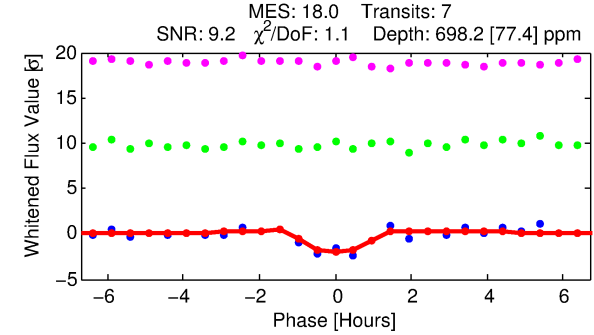
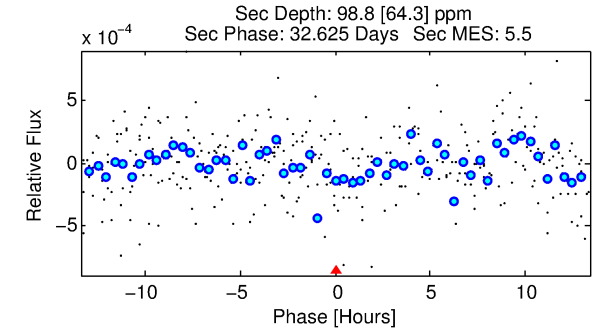
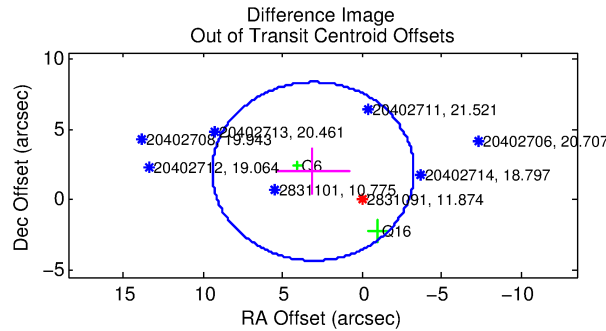
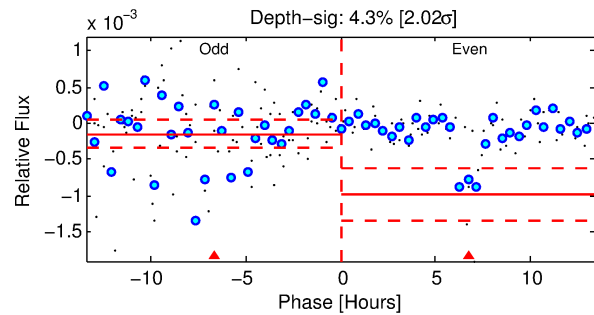
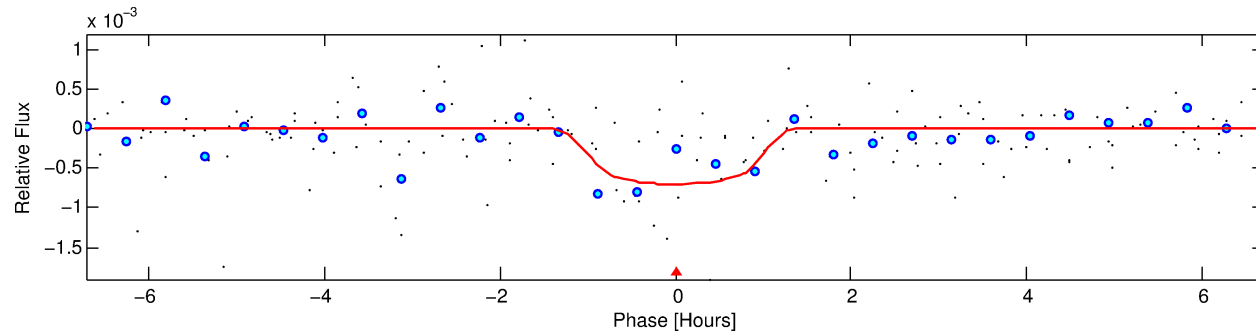
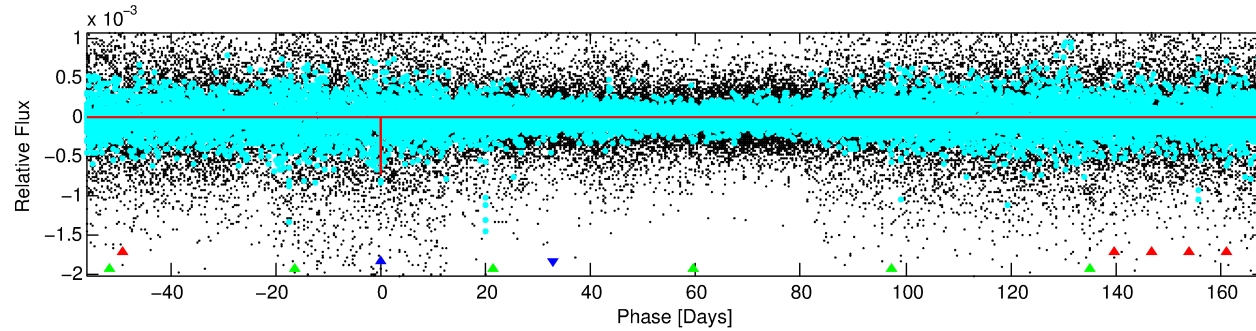
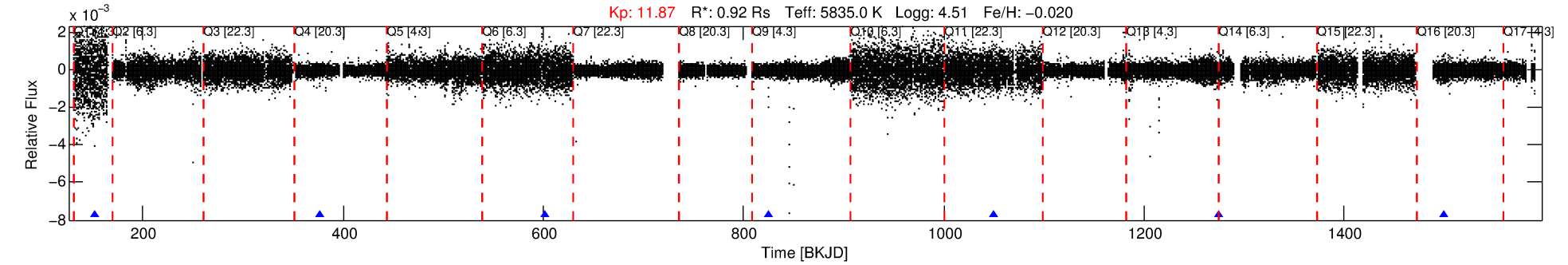
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002831091-02

No Significant Match Found

DV One-Page Summary

KIC: 2831091 Candidate: 2 of 3 Period: 224.528 d



DV Fit Results:

Period = 224.52810 [0.00155] d
Epoch = 152.0190 [0.0065] BKJD
Rp/R* = 0.0265 [0.0353]
a/R* = 524.17 [3144.28]
b = 0.77 [3.30]
Seff = 1.67 [0.64]
Teq = 290 [28] K
Rp = 2.66 [3.62] Re
a = 0.7257 [0.1778] AU
Ag = 4039.28 [11168.14] [0.36 σ]
Teffp = 3573 [2450] K [1.34 σ]

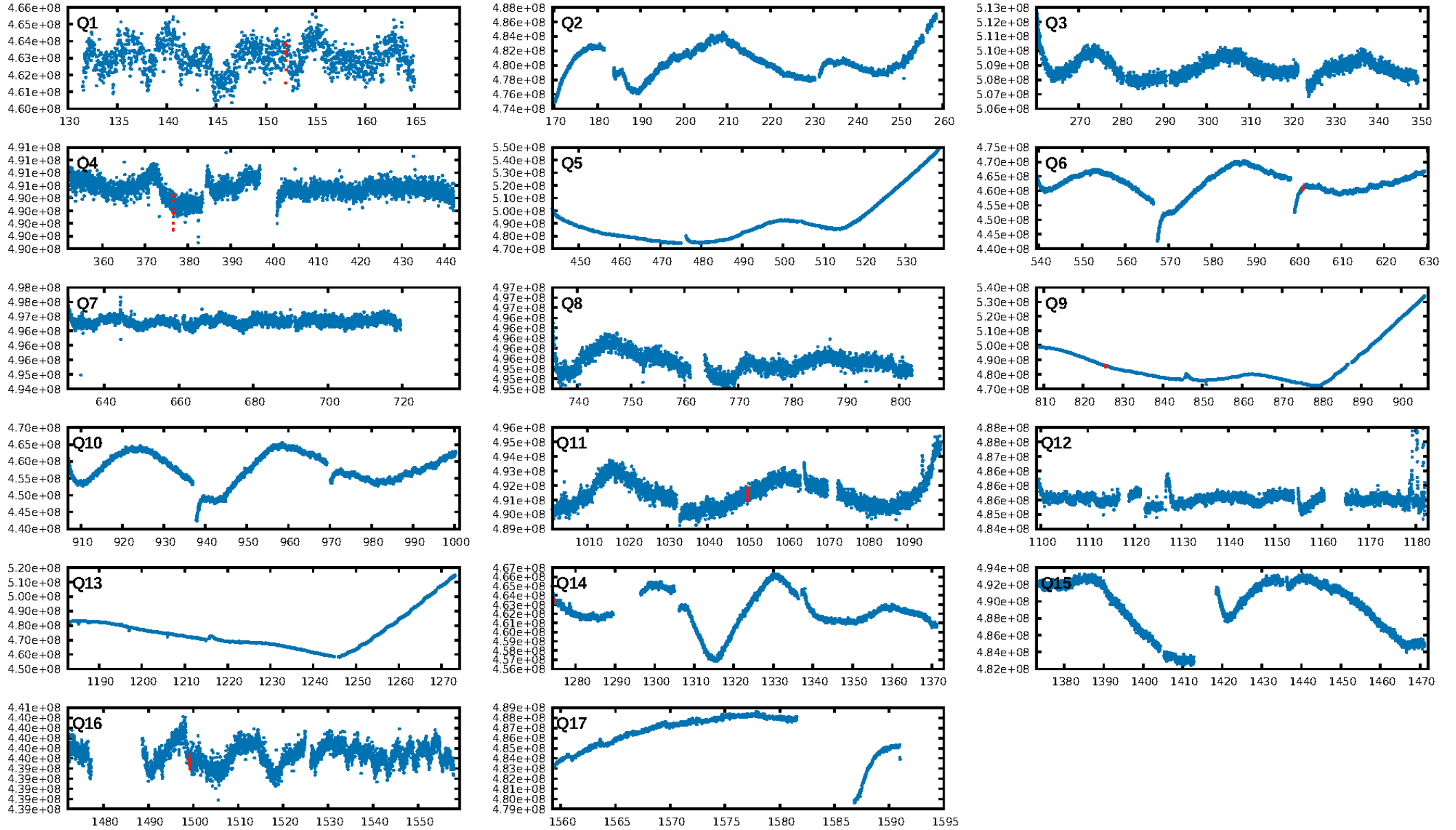
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [35.00 σ]
LongPeriod-sig: 100.0% [103.52 σ]
ModelChiSquare2-sig: 2.6%
ModelChiSquareGof-sig: 67.5%
Bootstrap-pfa: 1.08e-20
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -13.63
Centroid-sig: 5.3%
Centroid-so: 2.599 arcsec [12.56 σ]
OotOffset-rm: 3.691 arcsec [1.74 σ]
KicOffset-rm: 6.359 arcsec [4.57 σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [6/6]

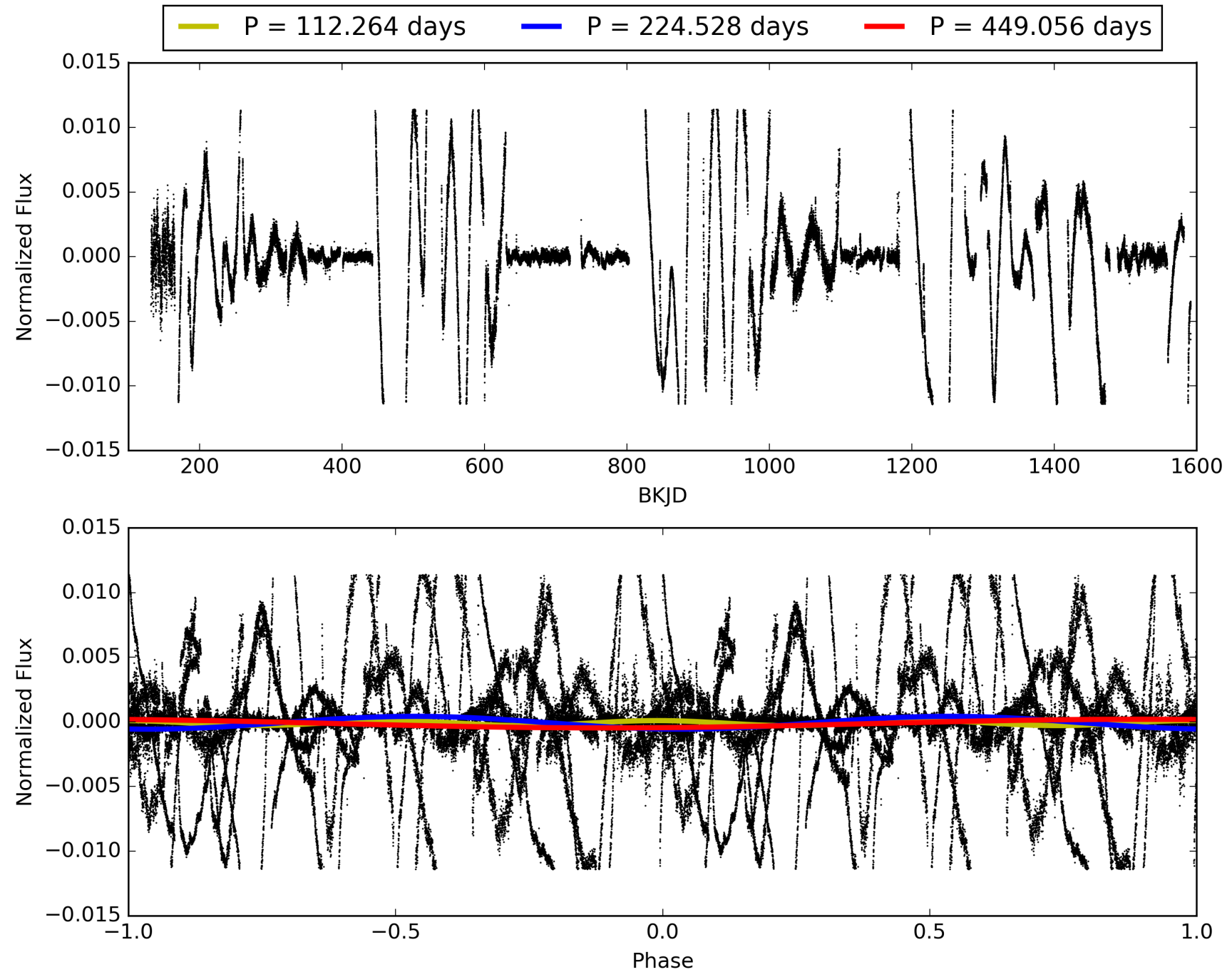
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:49:13 Z

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

TCE 002831091-02, PDC Light Curves

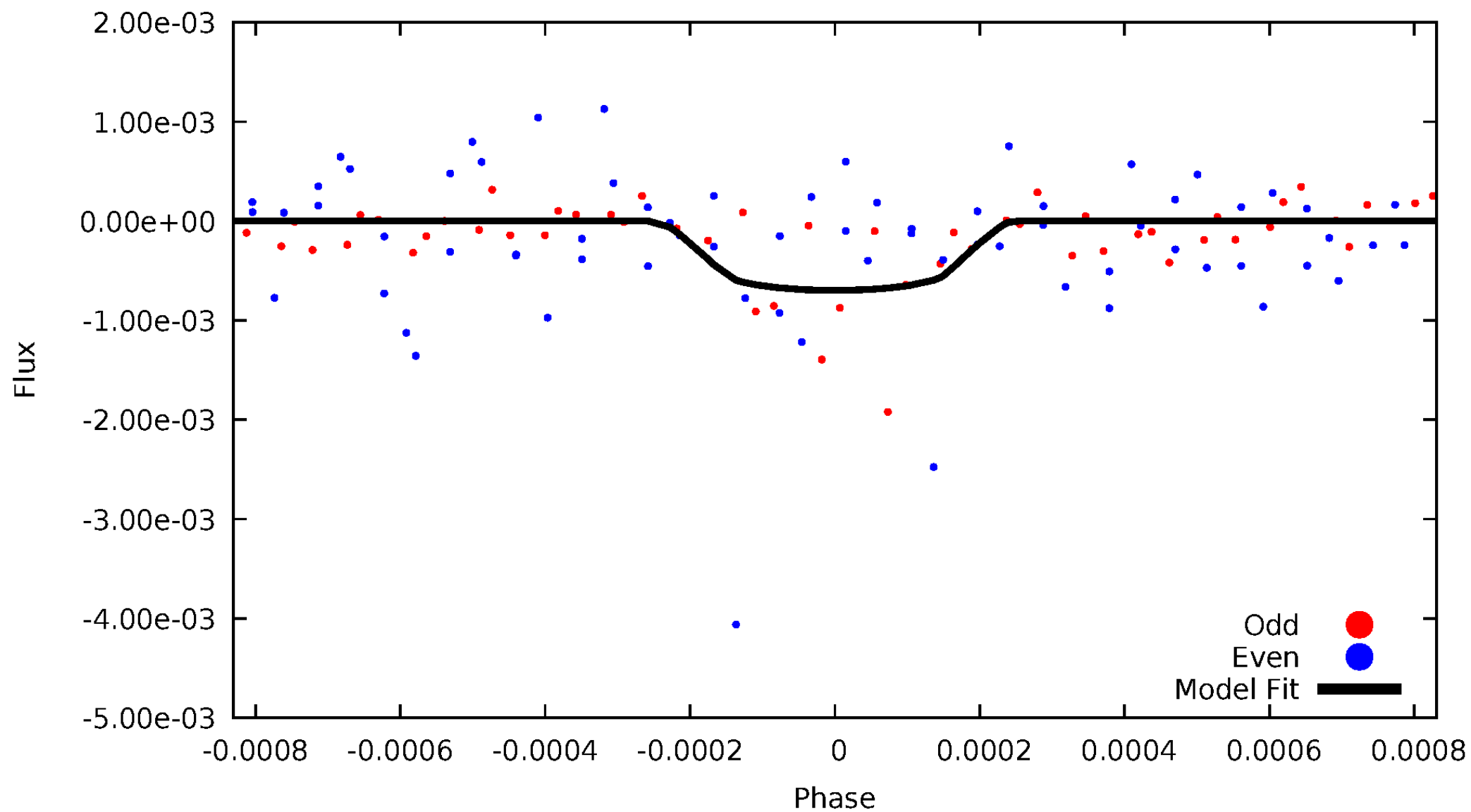


TCE 002831091-02



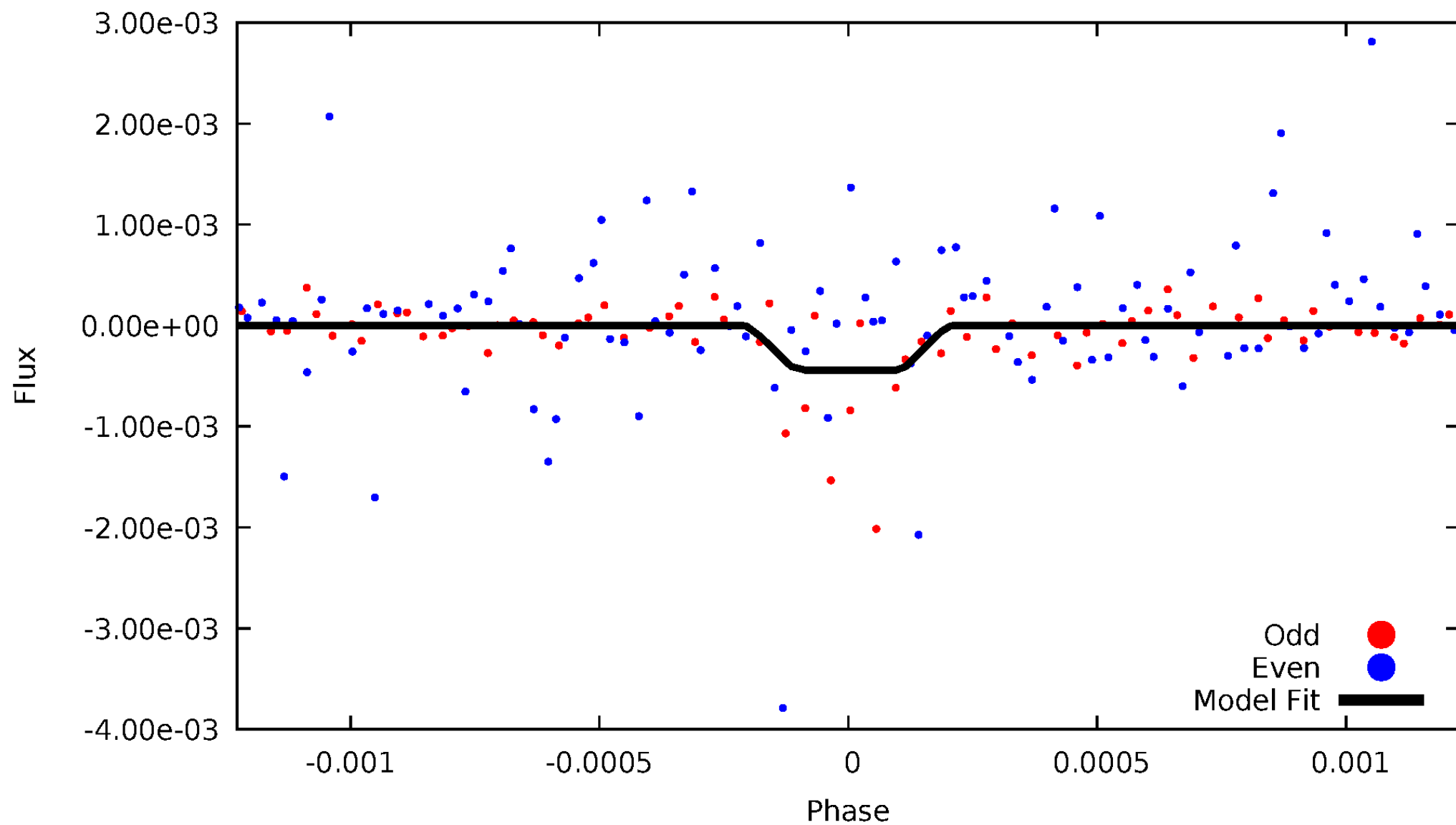
DV Odd/Even

TCE 002831091-02



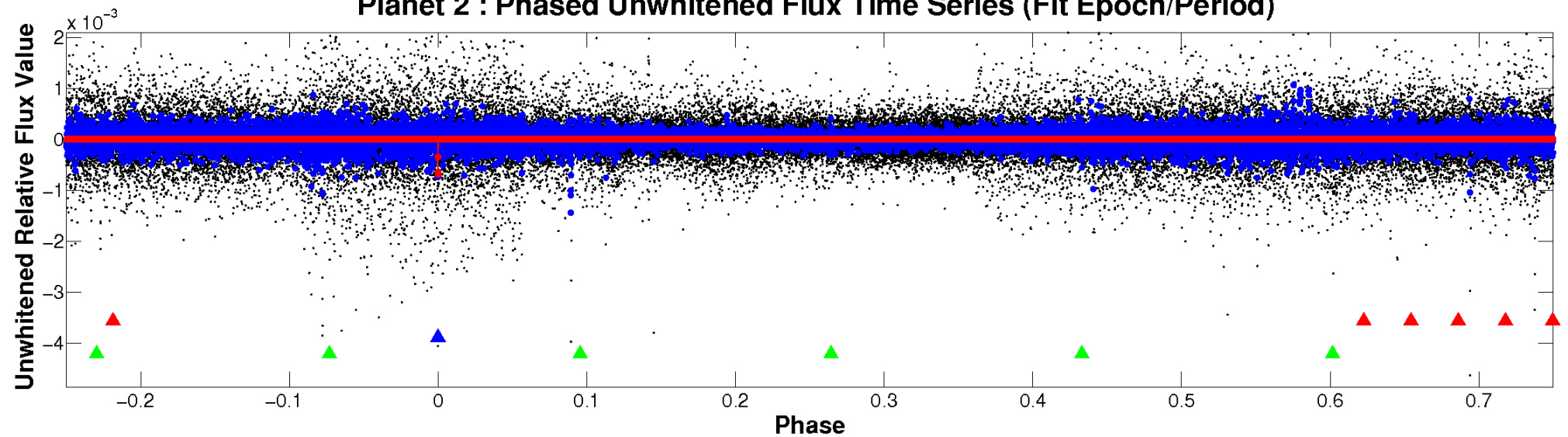
ALT Odd/Even

TCE 002831091-02

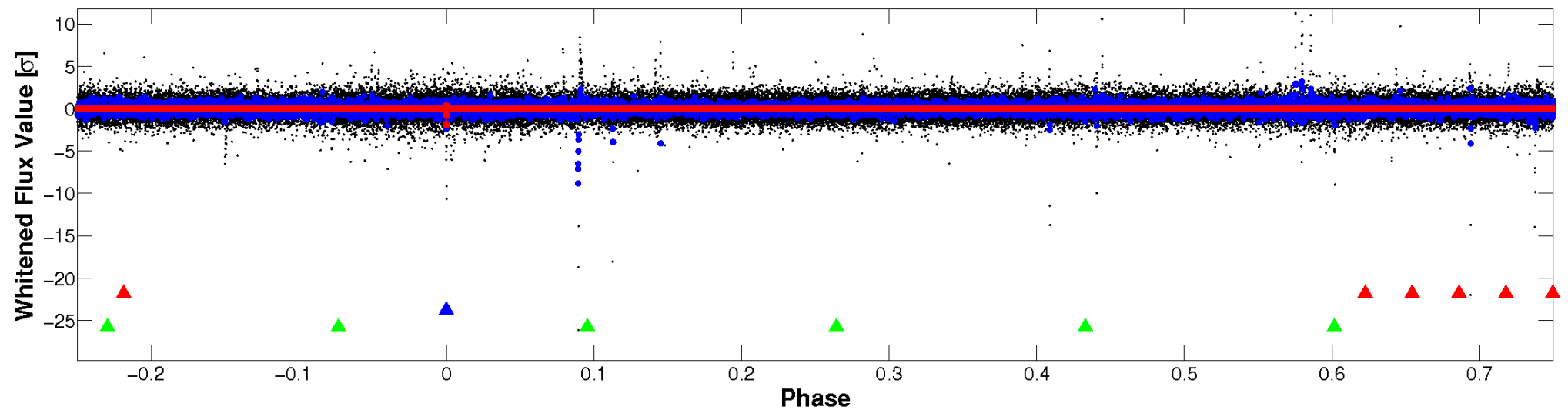


Non-Whitened Vs. Whitened Light Curve

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

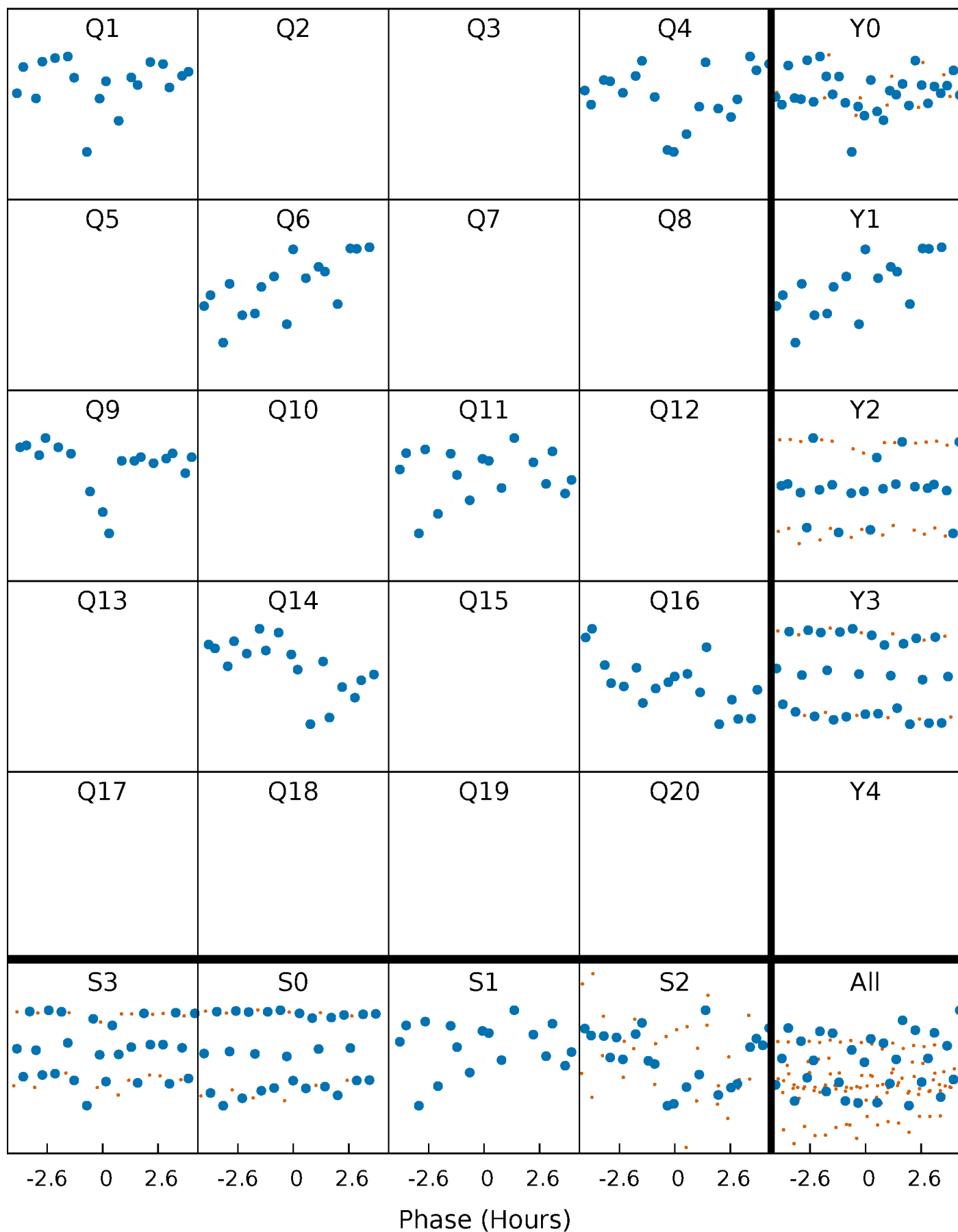


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



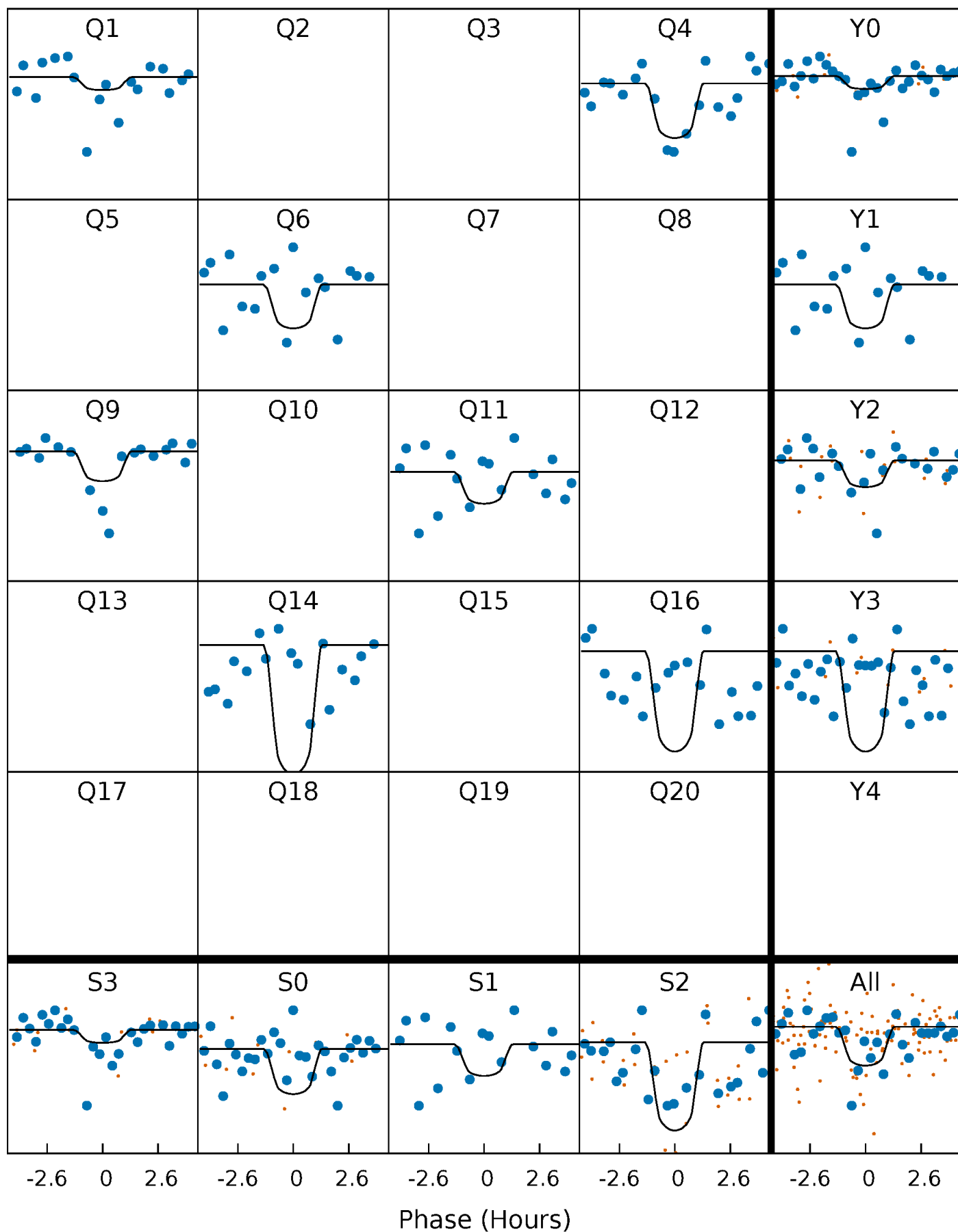
PDC Quarter-Phased Transit Curves

TCE 002831091-02 P=224.528096 Days $T_0=152.018984$ (BKJD)



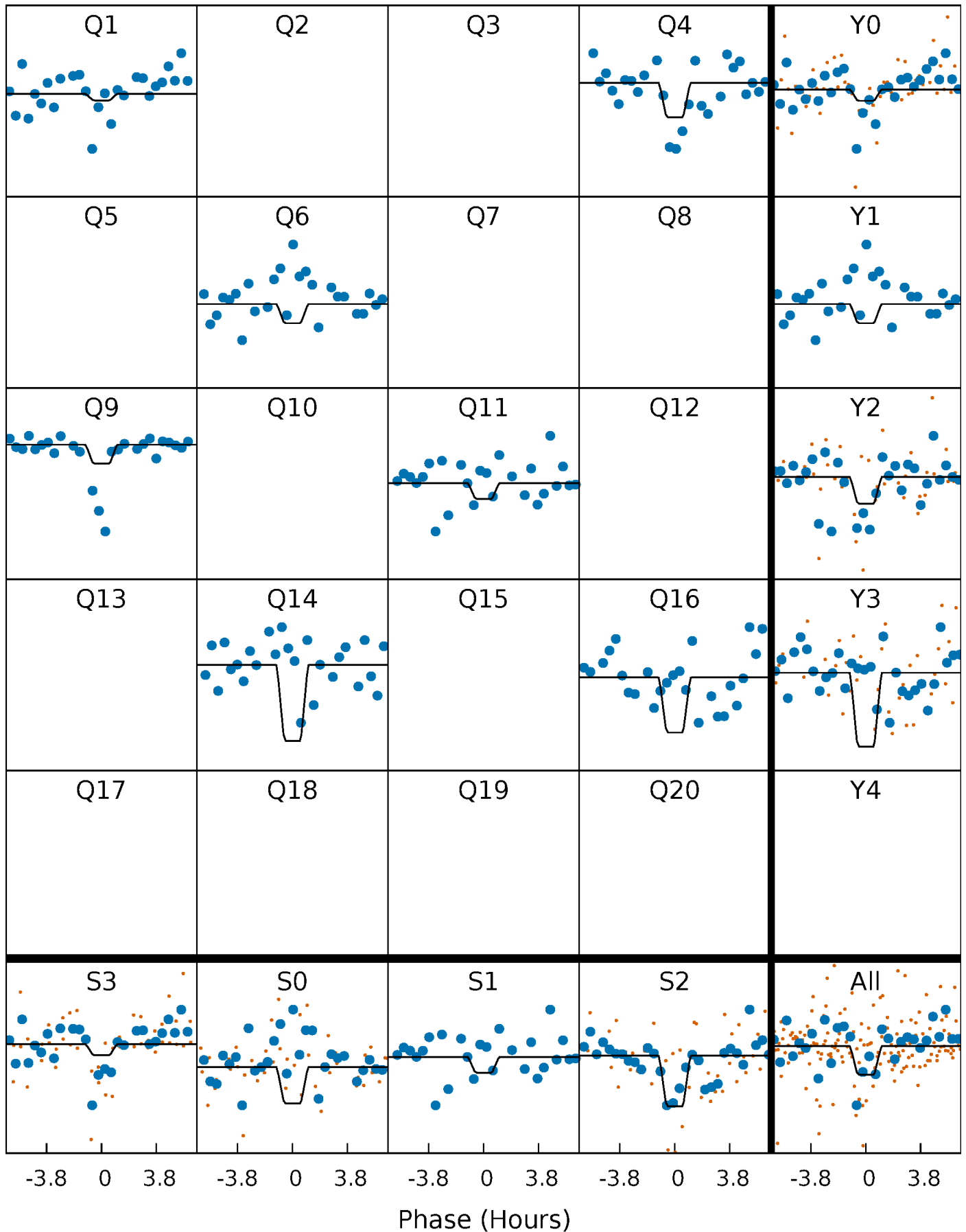
DV Quarter-Phased Transit Curves

TCE 002831091-02 P=224.528096 Days $T_0=152.018984$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

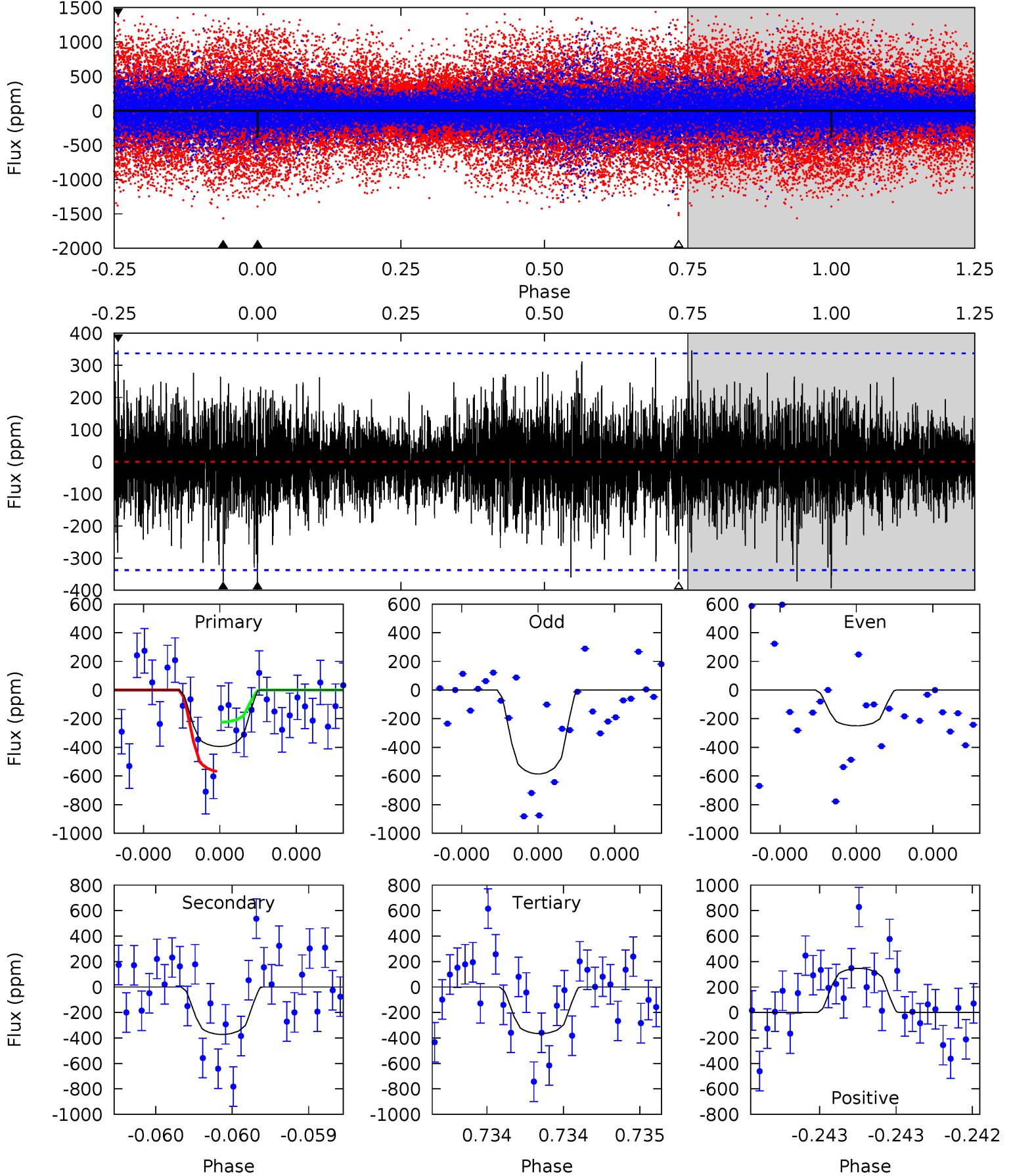
TCE 002831091-02 $P=224.529721$ Days $T_0=152.017904$ (BKJD)



DV Model-Shift Uniqueness Test

002831091-02, P = 224.528096 Days, E = 152.018984 Days

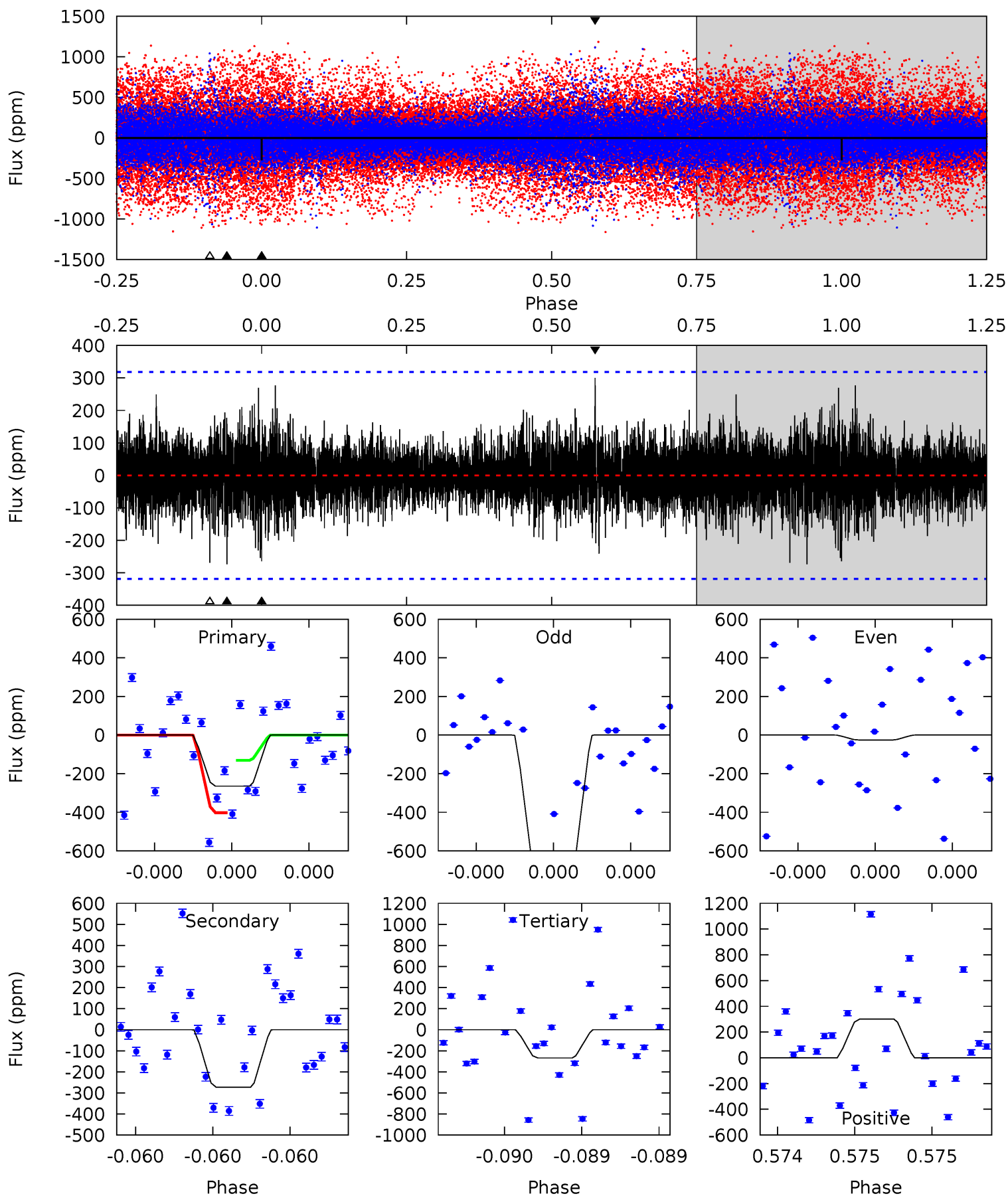
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.52	6.16	6.05	5.73	5.58	3.49	1.38	0.46	0.79	0.11	0.43	2.79	3.84	0.47	2.74



Alt Model-Shift Uniqueness Test

002831091-02, P = 224.529721 Days, E = 152.017904 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.66	4.82	4.72	5.29	5.61	3.53	1.04	-0.07	-0.63	0.09	-0.47	6.12	15.4	0.52	2.23



Stellar Parameters For KIC 002831091

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5835^{+140}_{-175}	$4.515^{+0.048}_{-0.204}$	$-0.020^{+0.250}_{-0.300}$	$0.920^{+0.260}_{-0.087}$	$1.009^{+0.116}_{-0.127}$	$1.827^{+0.465}_{-0.895}$
	+2%/-3%	+1%/-5%	+1250%/-1500%	+28%/-9%	+11%/-13%	+25%/-49%
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 002831091-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-372 ± 60	$3.64^{+3.66}_{-2.44}$	413^{+27}_{-19}	4502^{+3080}_{-984}	7760^{+60826}_{-5845}
Alt.	-274 ± 57	$3.51^{+3.10}_{-2.27}$	414^{+26}_{-19}	4335^{+2656}_{-887}	6341^{+43319}_{-4719}

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

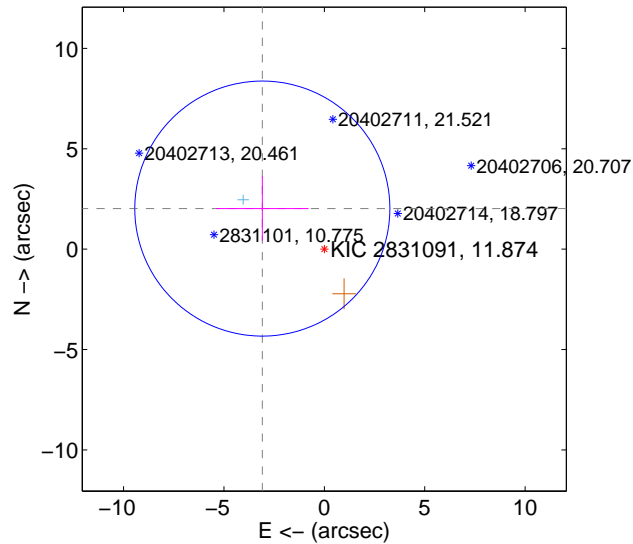
Supplemental centroid analysis for 002831091-02. **Kepler magnitude: 11.87.** Transit SNR 9.15

There are 1 quarters with good PRF difference image offsets

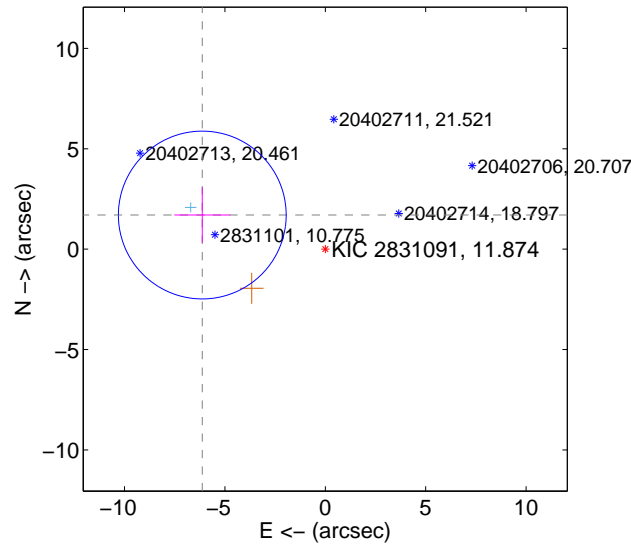
The OOT PRF centroid is offset from the target star catalog position by about 4.66 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.691 ± 2.117	1.74	3.088 ± 2.303	2.022 ± 1.601
PRF-fit source offset from KIC position	6.359 ± 1.393	4.57	6.128 ± 1.394	1.701 ± 1.378
photometric centroid source offset	2.60 ± 0.21	12.56	2.39 ± 0.21	-1.02 ± 0.19

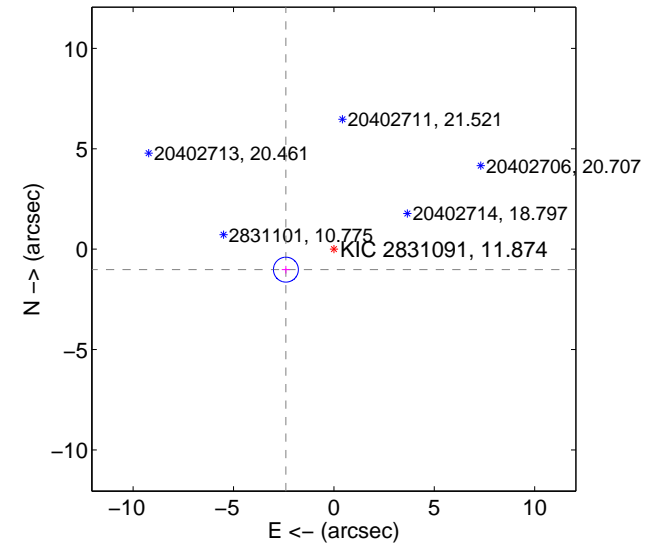
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

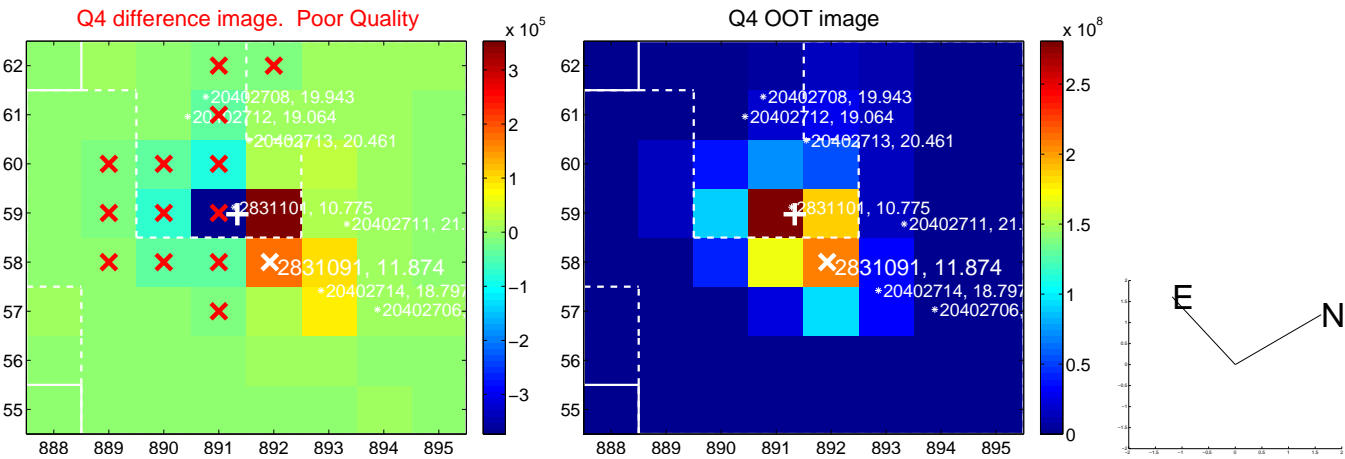
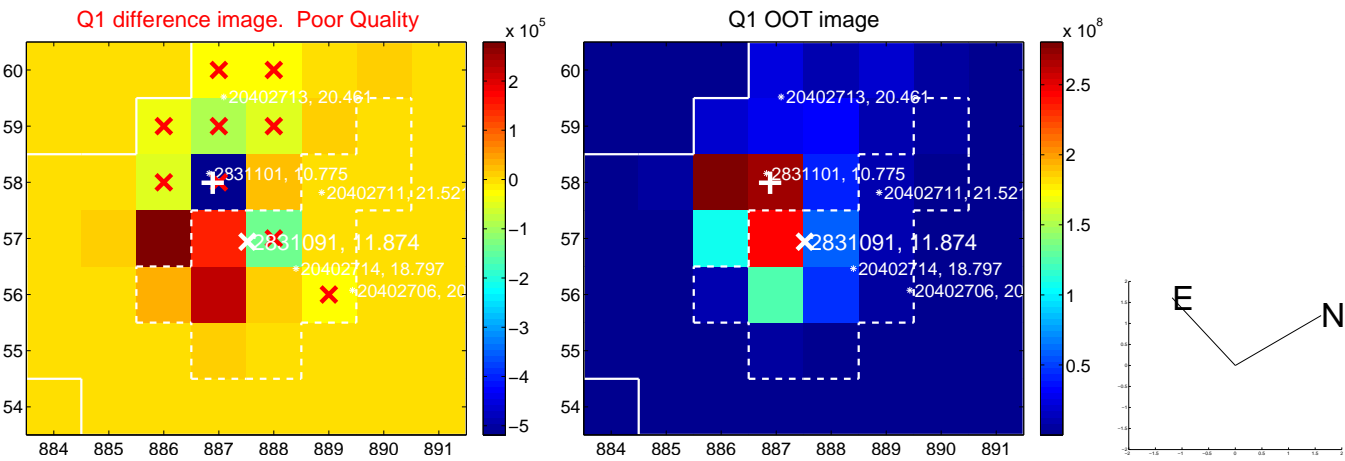


offset from photometric centroids

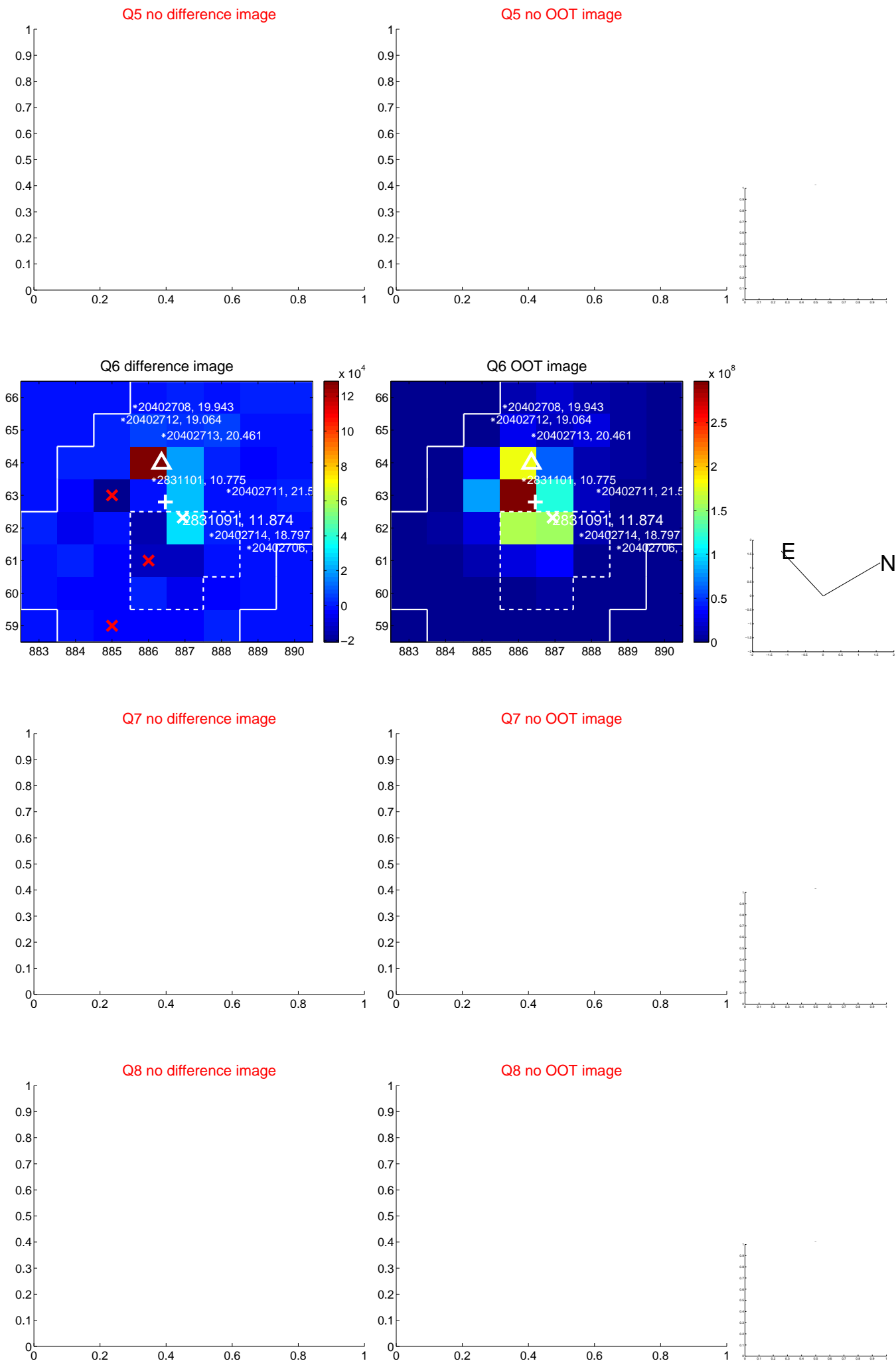


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

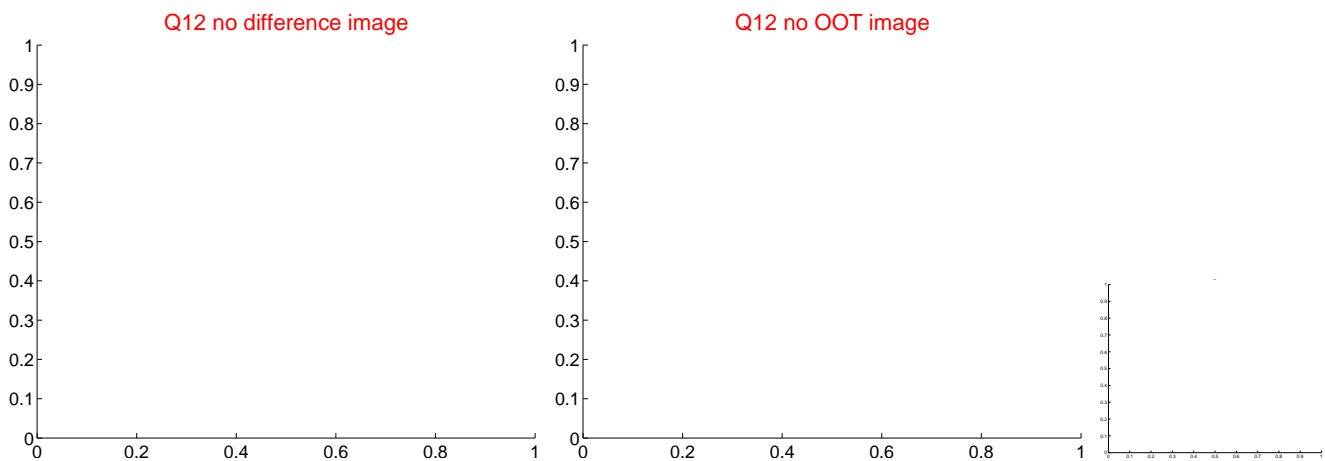
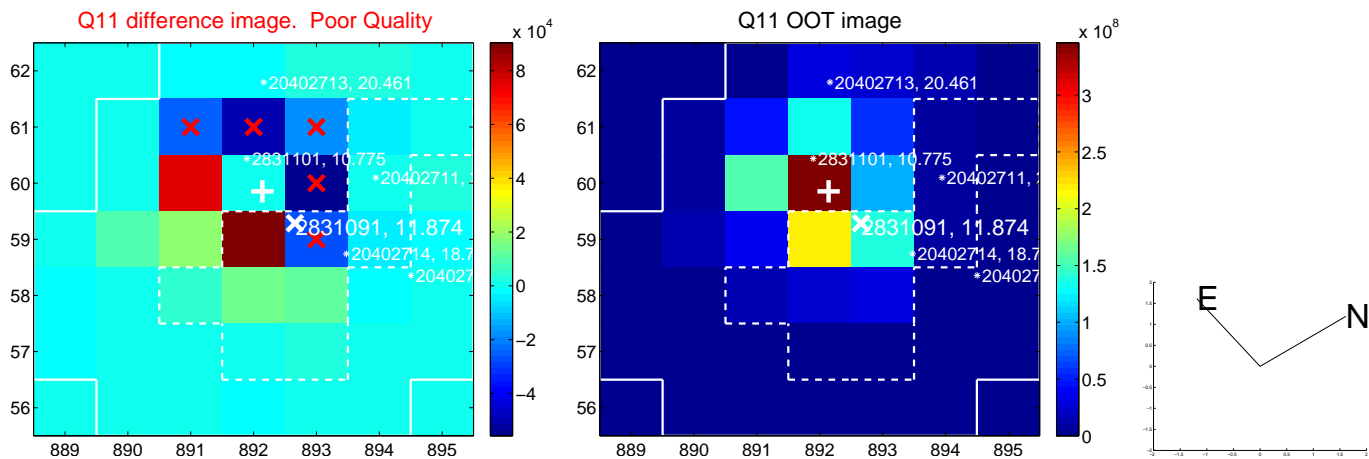
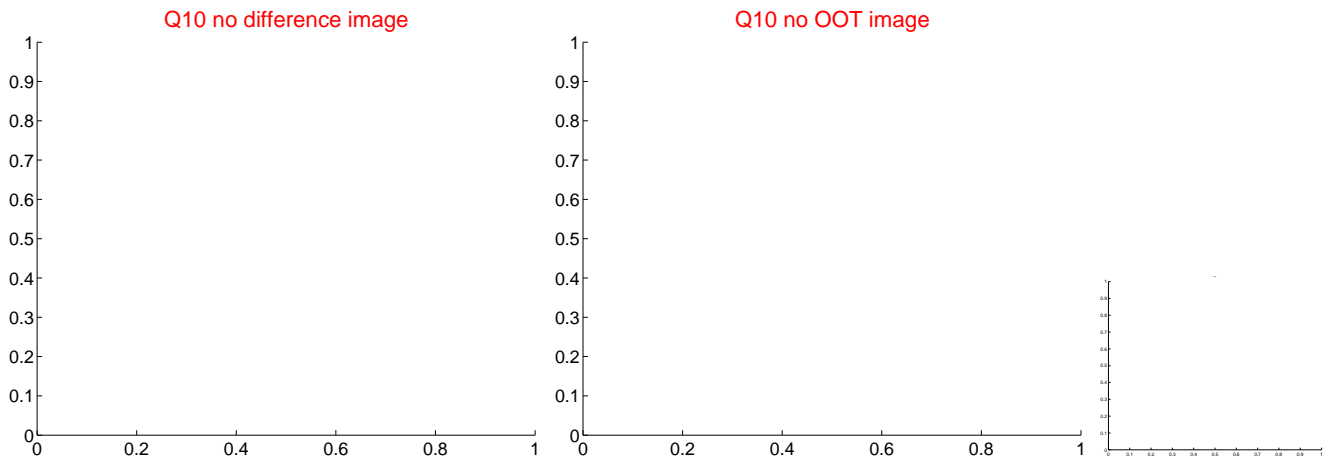
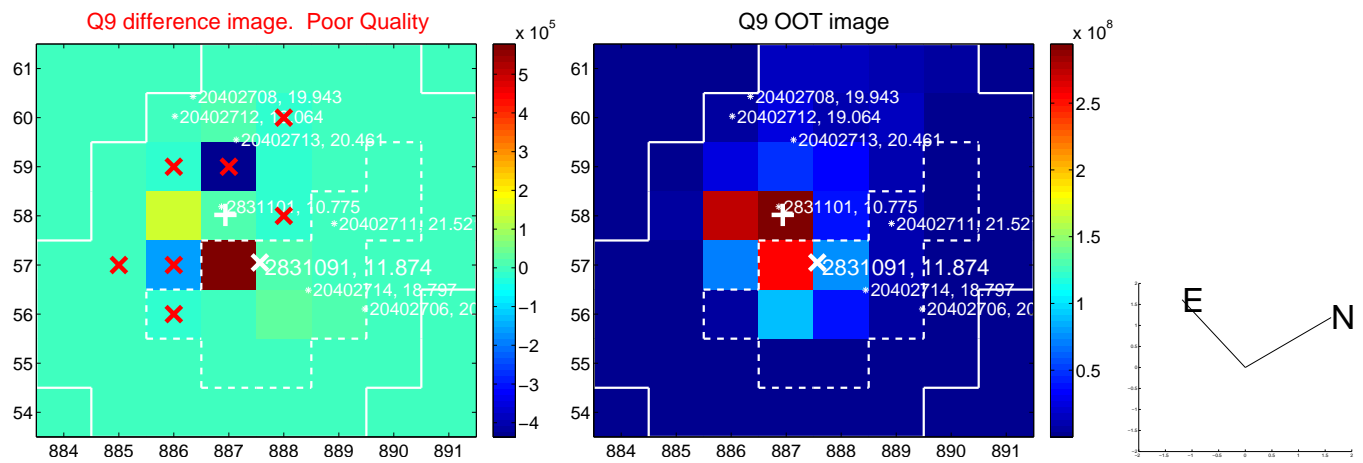
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



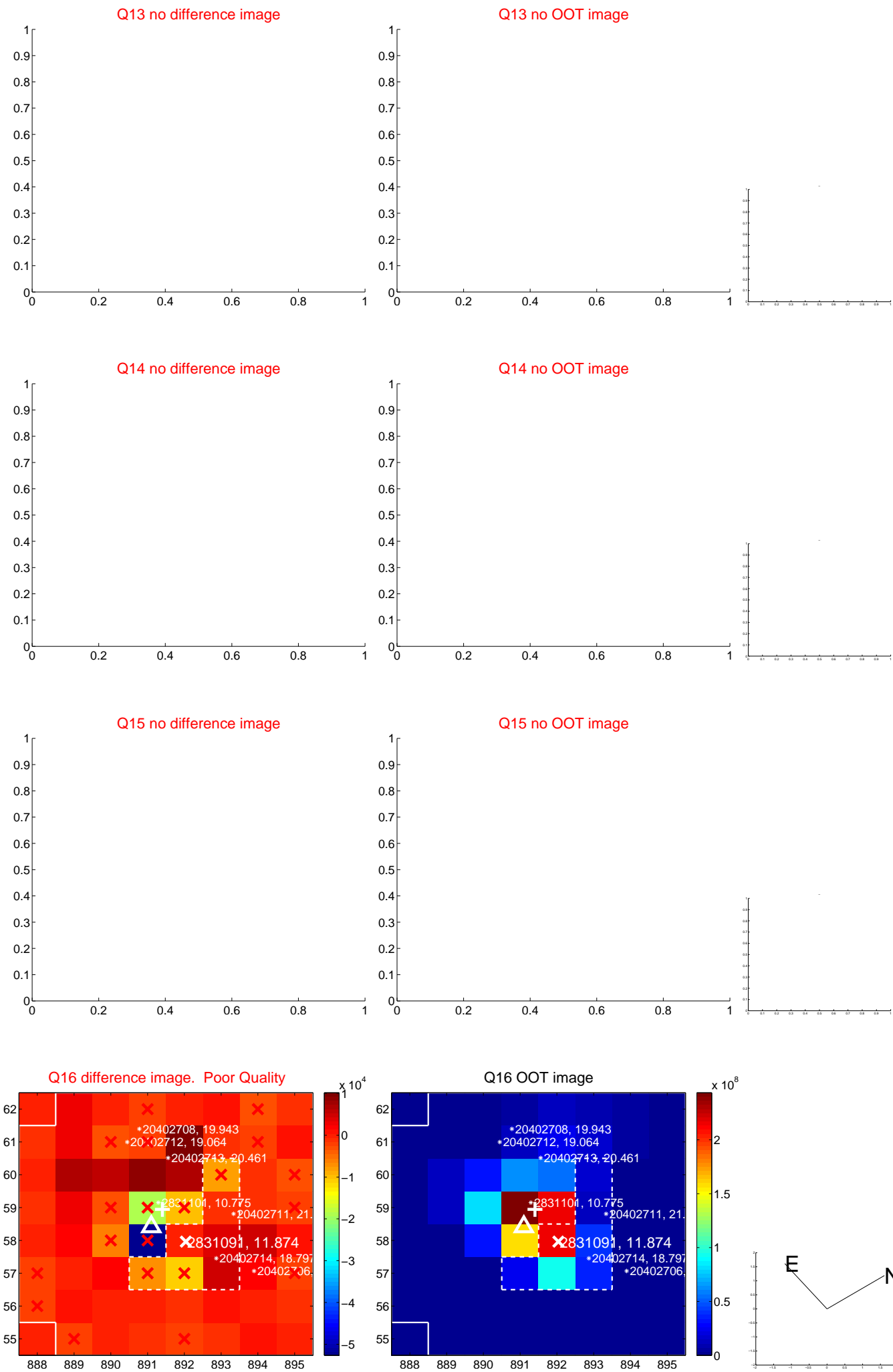
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



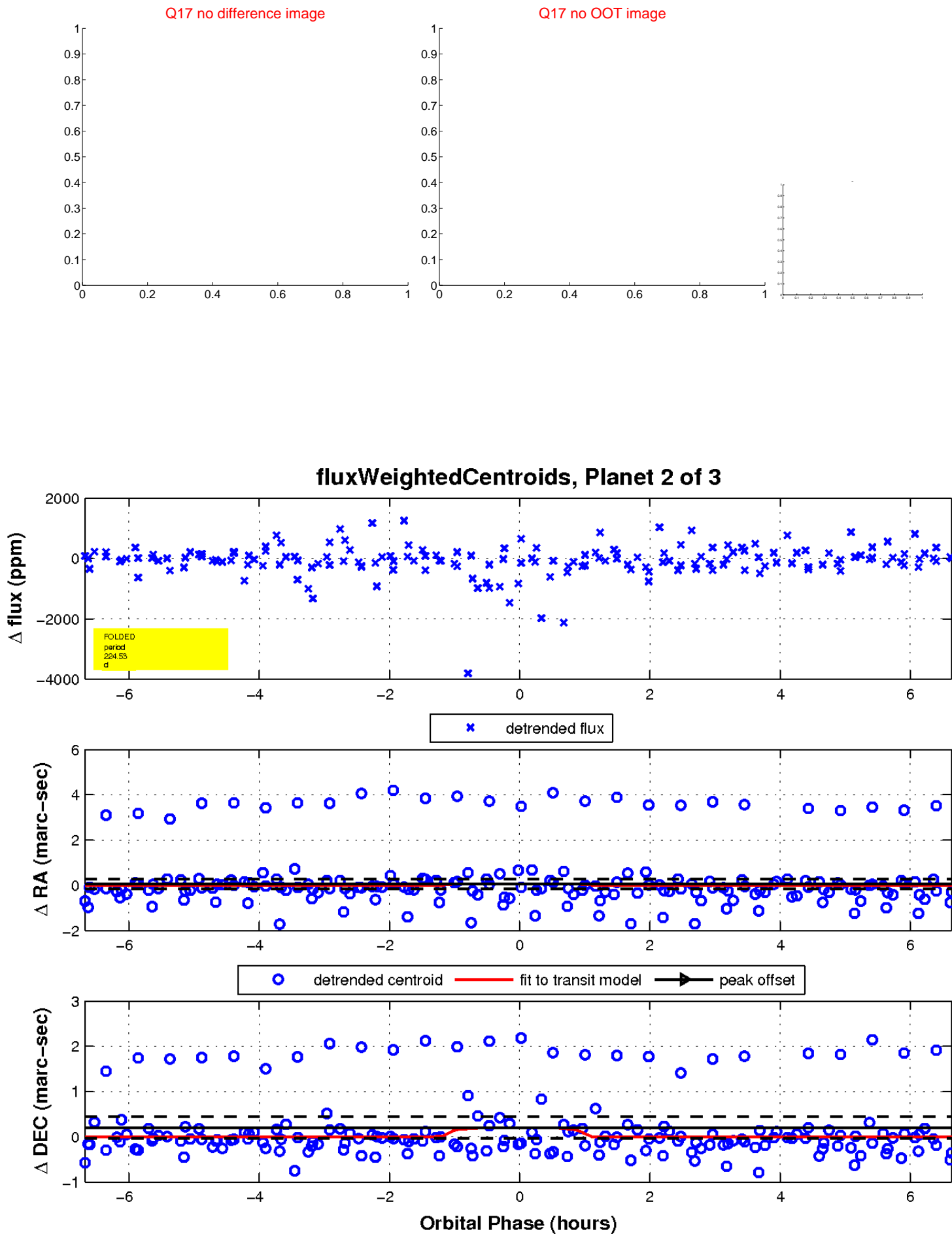
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

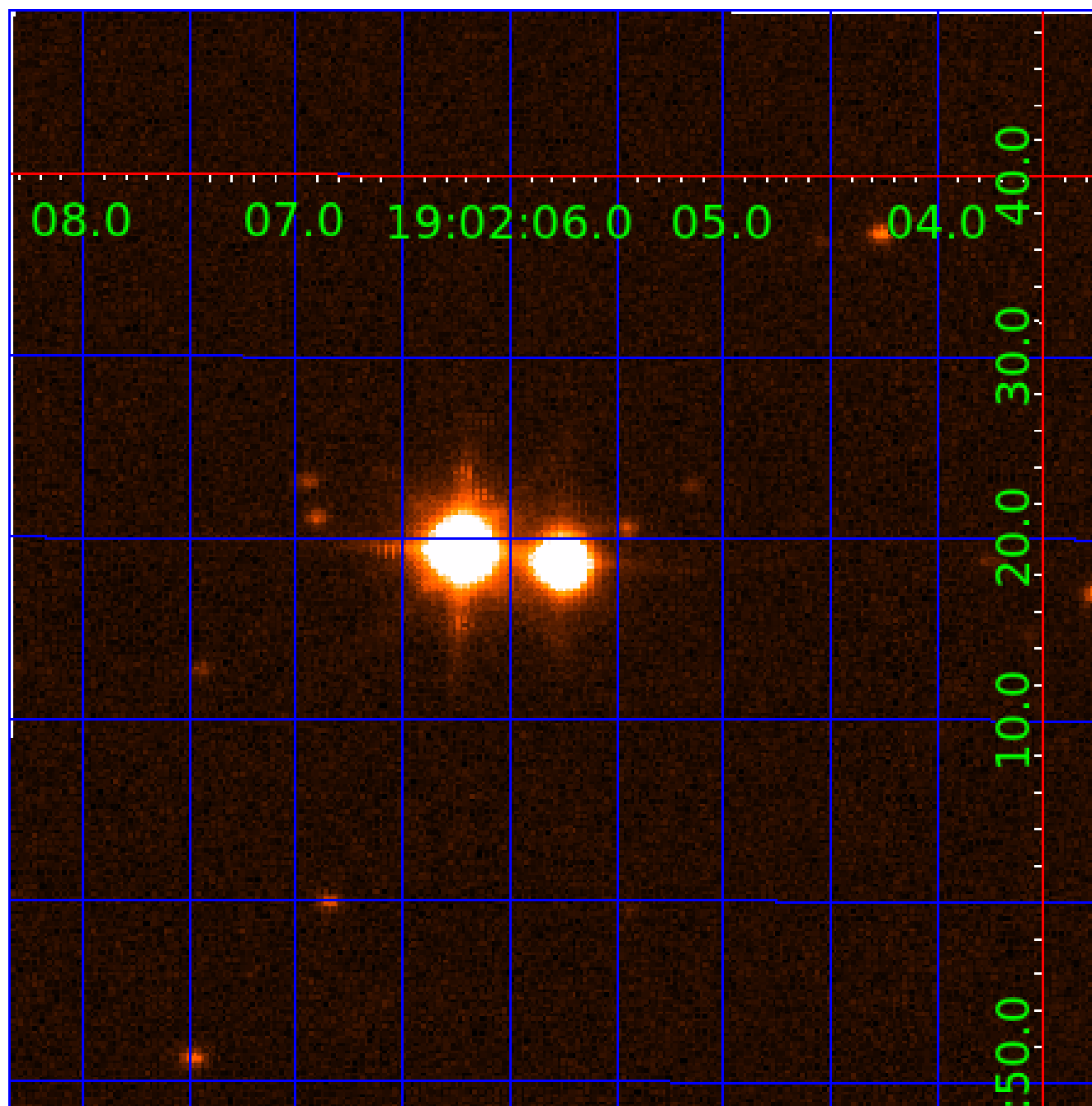


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002831091

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})
002831091-01	OBS	No	217.397075	327.472759	1265.5	4.348	23.4	8.1	0.92	5835	3.24	1.74
002831091-02	OBS	No	224.528096	152.018985	698.2	2.237	18.0	9.2	0.92	5835	2.66	1.67
002831091-03	OBS	No	262.404159	135.608970	1344.3	8.491	14.4	9.3	0.92	5835	5.73	1.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002831091-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002831091-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002831091-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—INCONSISTENT_TRANS—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.

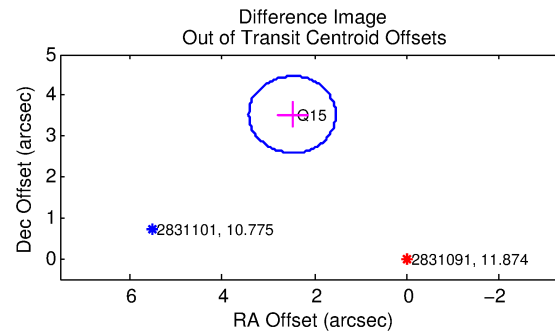
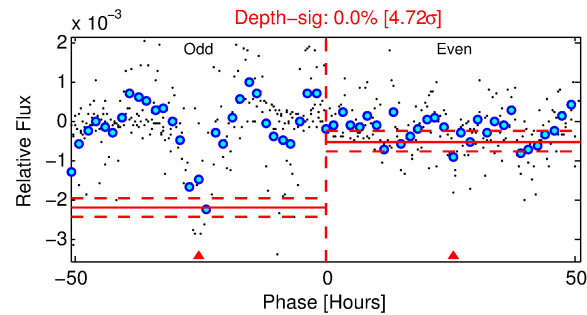
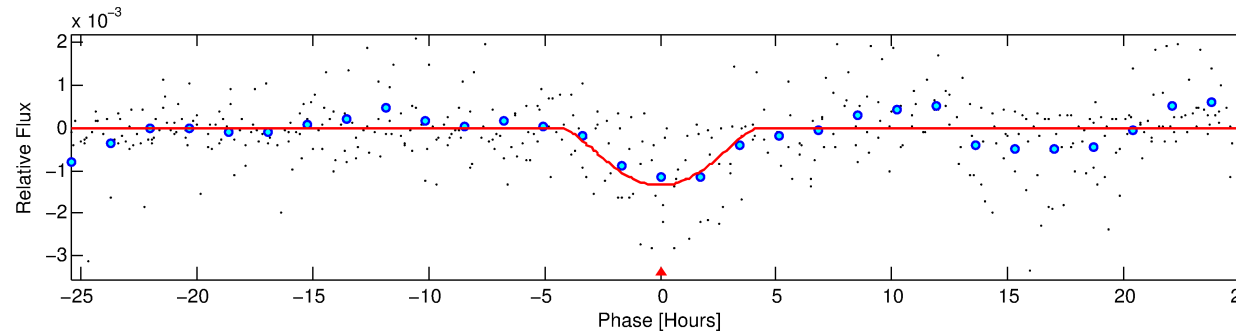
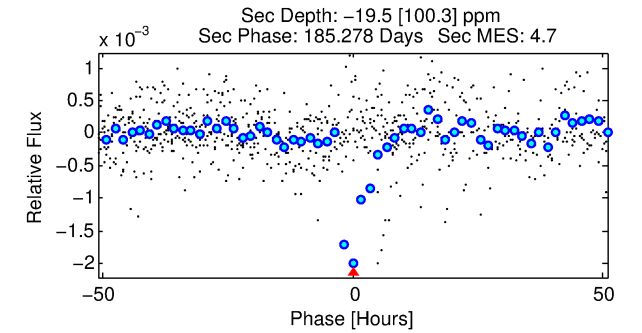
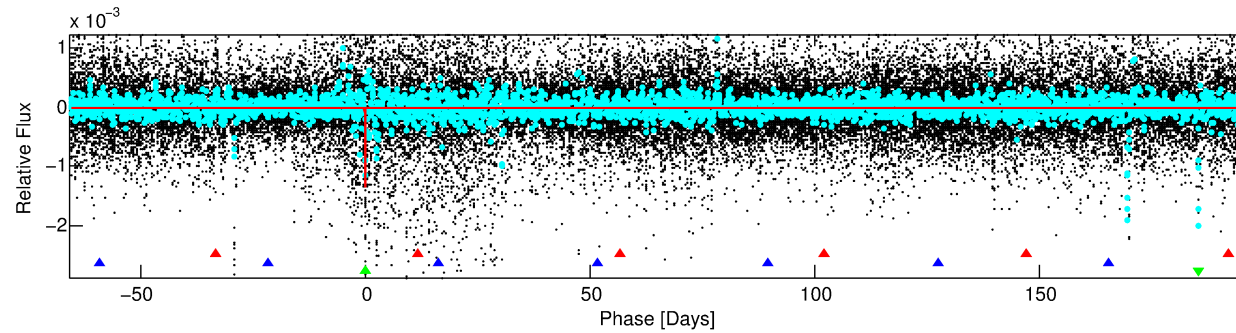
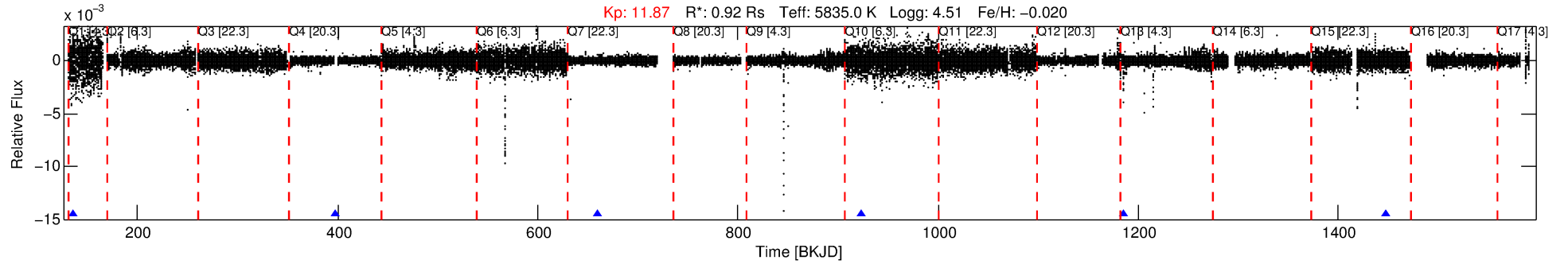
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002831091-03

No Significant Match Found

DV One-Page Summary

KIC: 2831091 Candidate: 3 of 3 Period: 262.404 d



DV Fit Results:

Period = 262.40416 [0.00803] d
Epoch = 135.6090 [0.0312] BKJD
Rp/R* = 0.0571 [0.1184]
a/R* = 88.67 [50.76]
b = 0.99 [0.19]
Seff = 1.36 [0.52]
Teq = 275 [26] K
Rp = 5.73 [12.00] Re
a = 0.8051 [0.1972] AU
Ag = N/A
Teffp = N/A

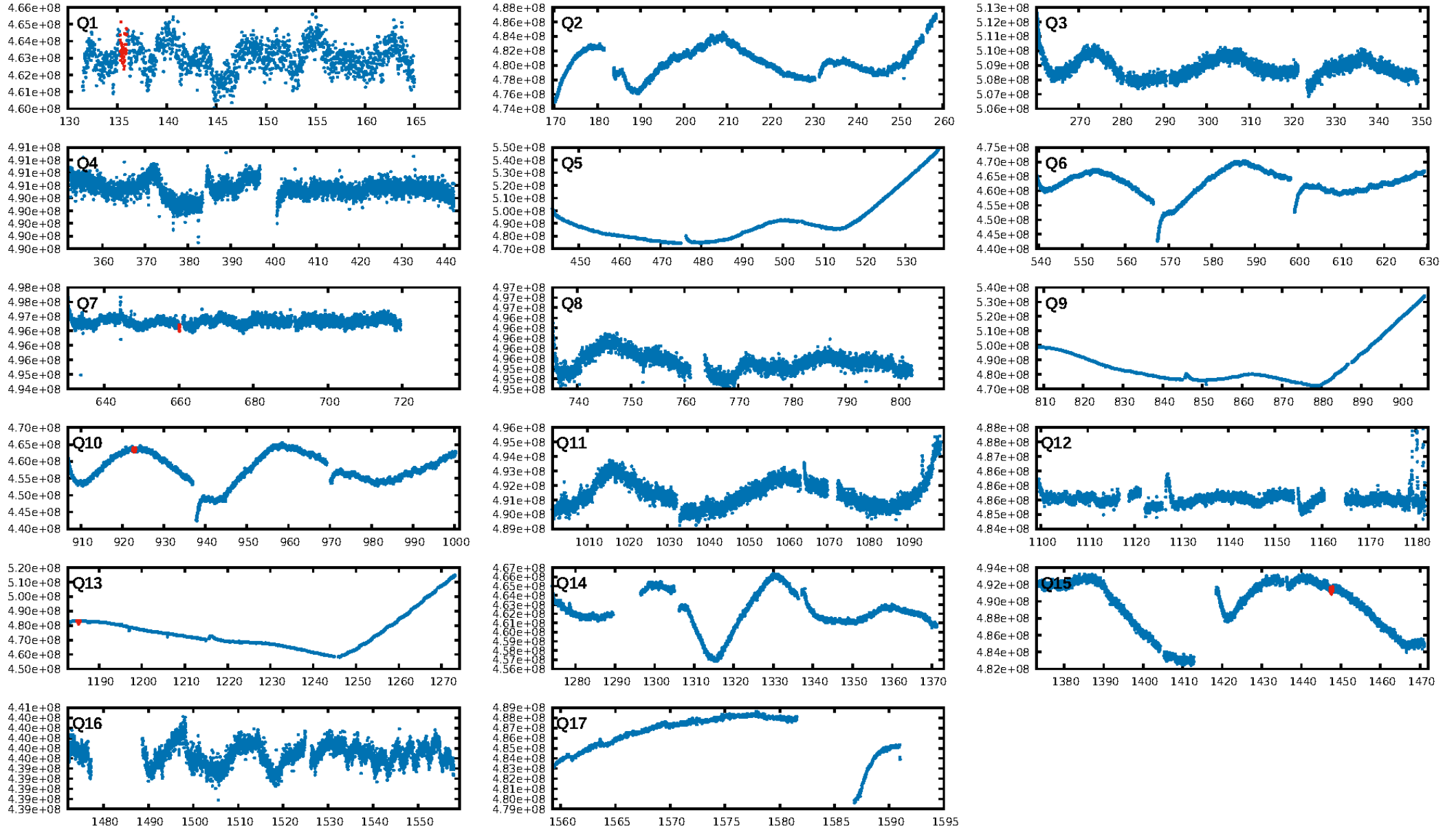
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [103.52σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 59.9%
Bootstrap-pfa: 4.16e-15
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.716
Centroid-sig: 46.2%
Centroid-so: 2.697 arcsec [18.04σ]
OotOffset-rm: 4.308 arcsec [13.75σ]
KicOffset-rm: 6.154 arcsec [19.06σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

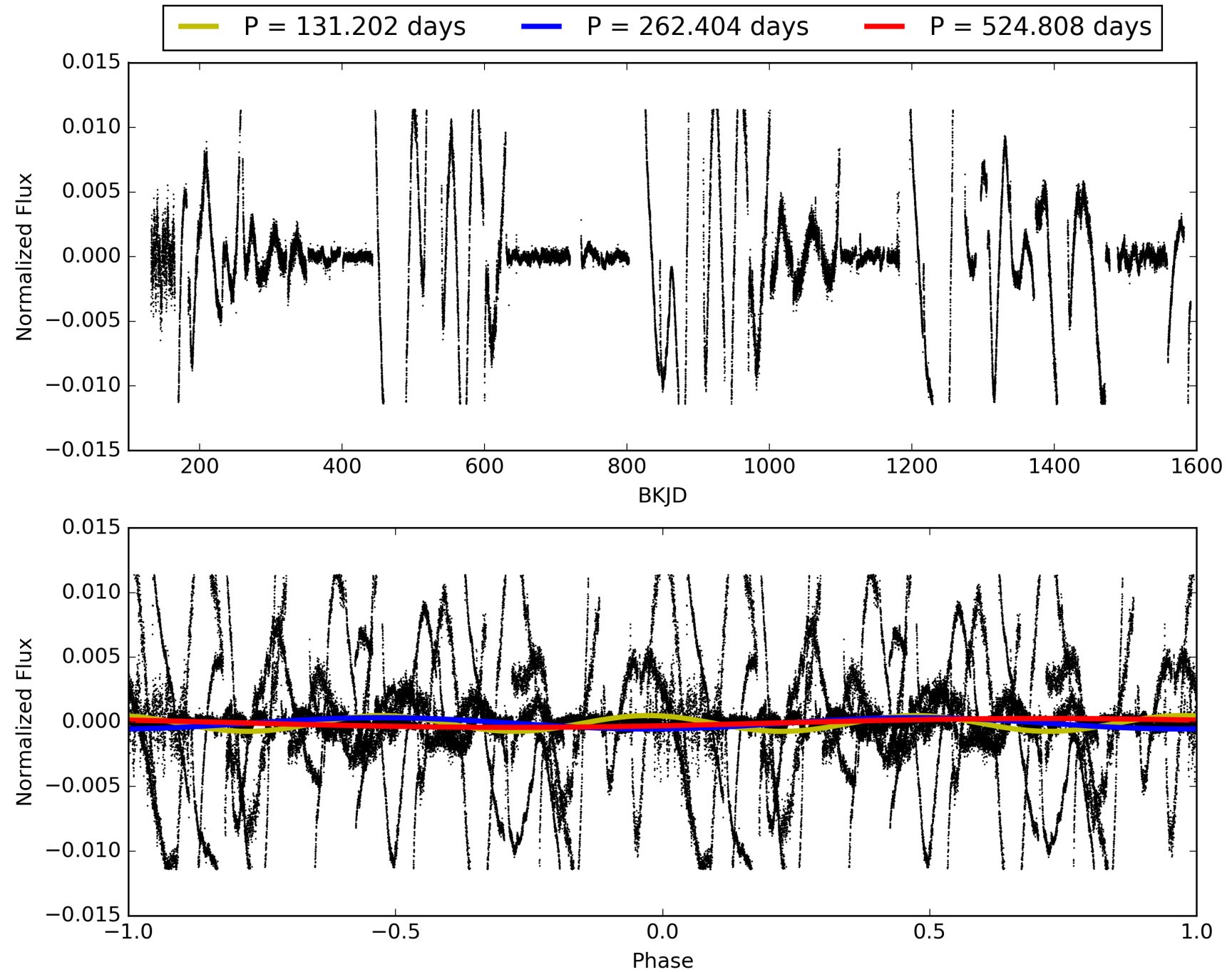
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:49:22 Z

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

TCE 002831091-03, PDC Light Curves

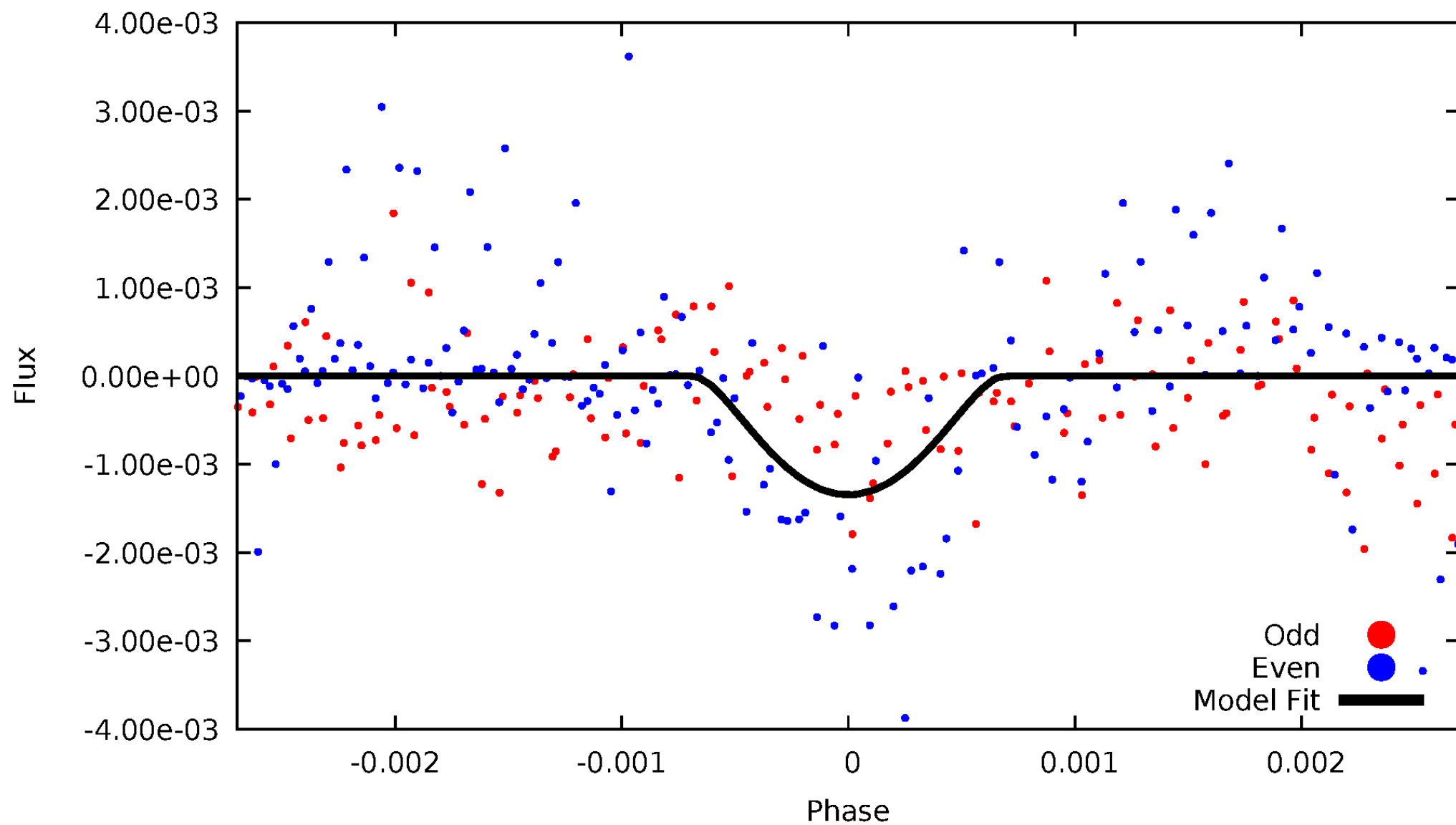


TCE 002831091-03



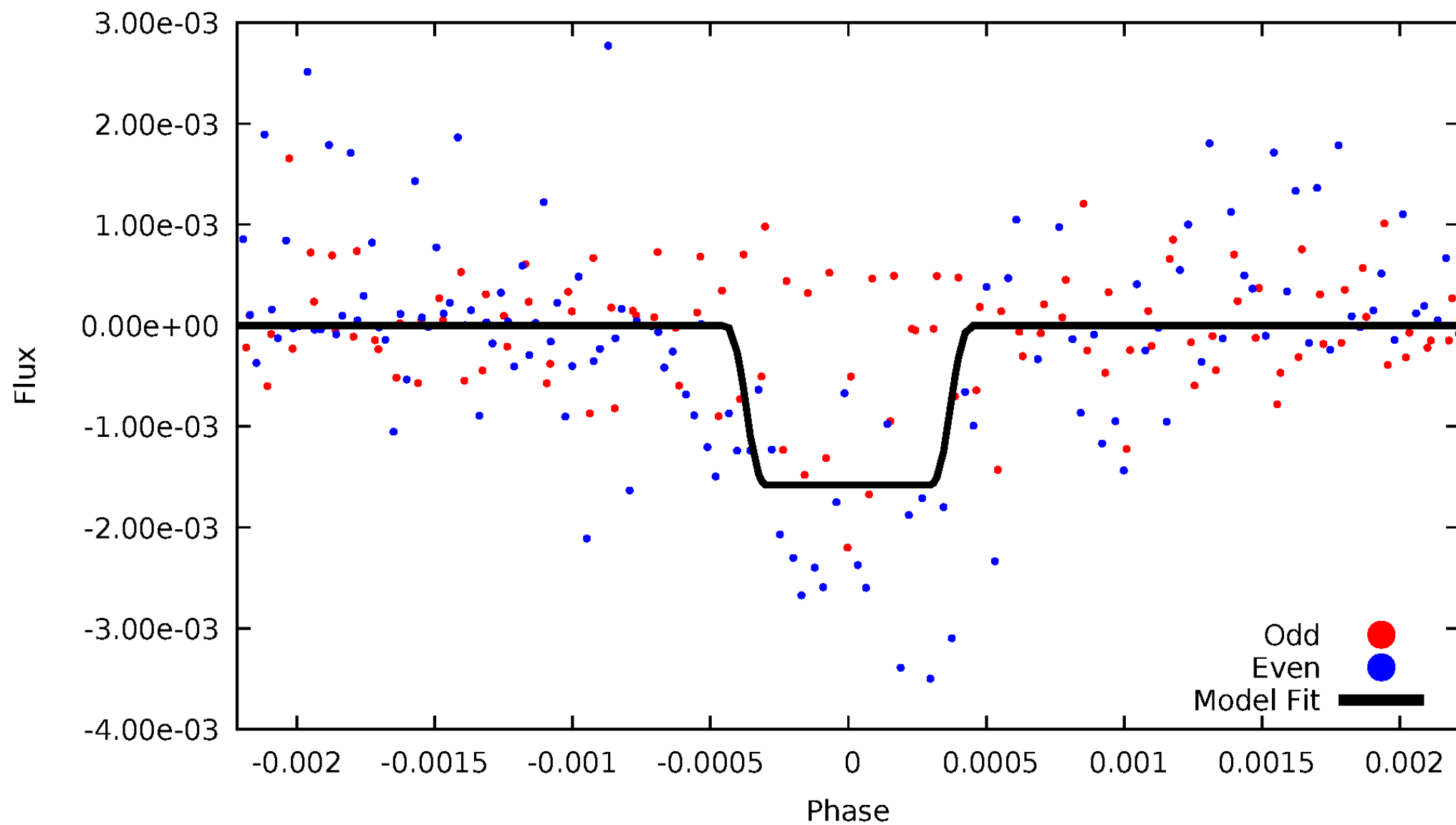
DV Odd/Even

TCE 002831091-03



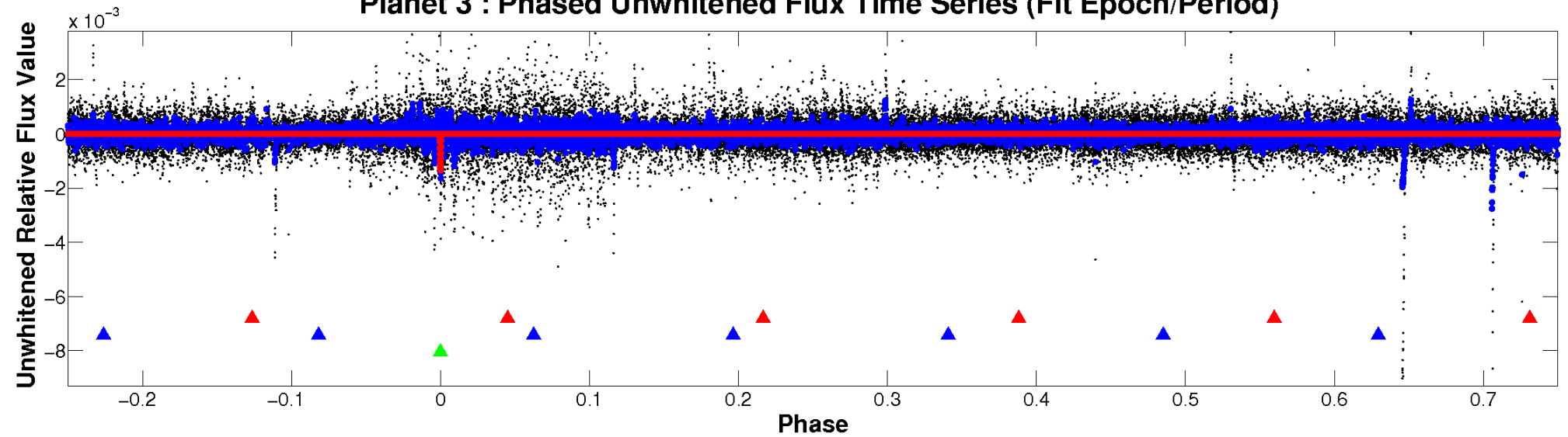
ALT Odd/Even

TCE 002831091-03

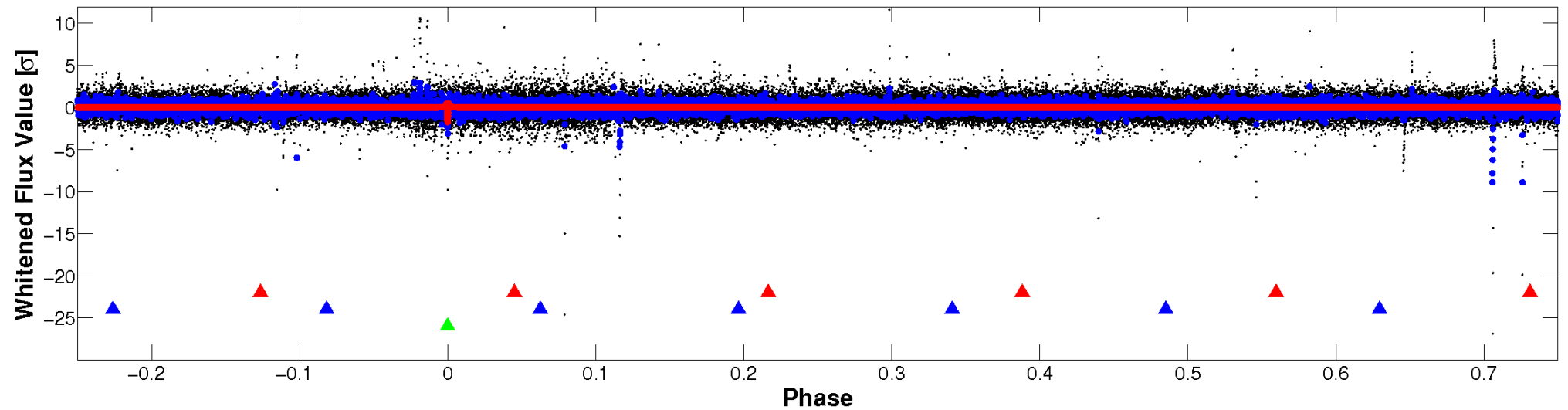


Non-Whitened Vs. Whitened Light Curve

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

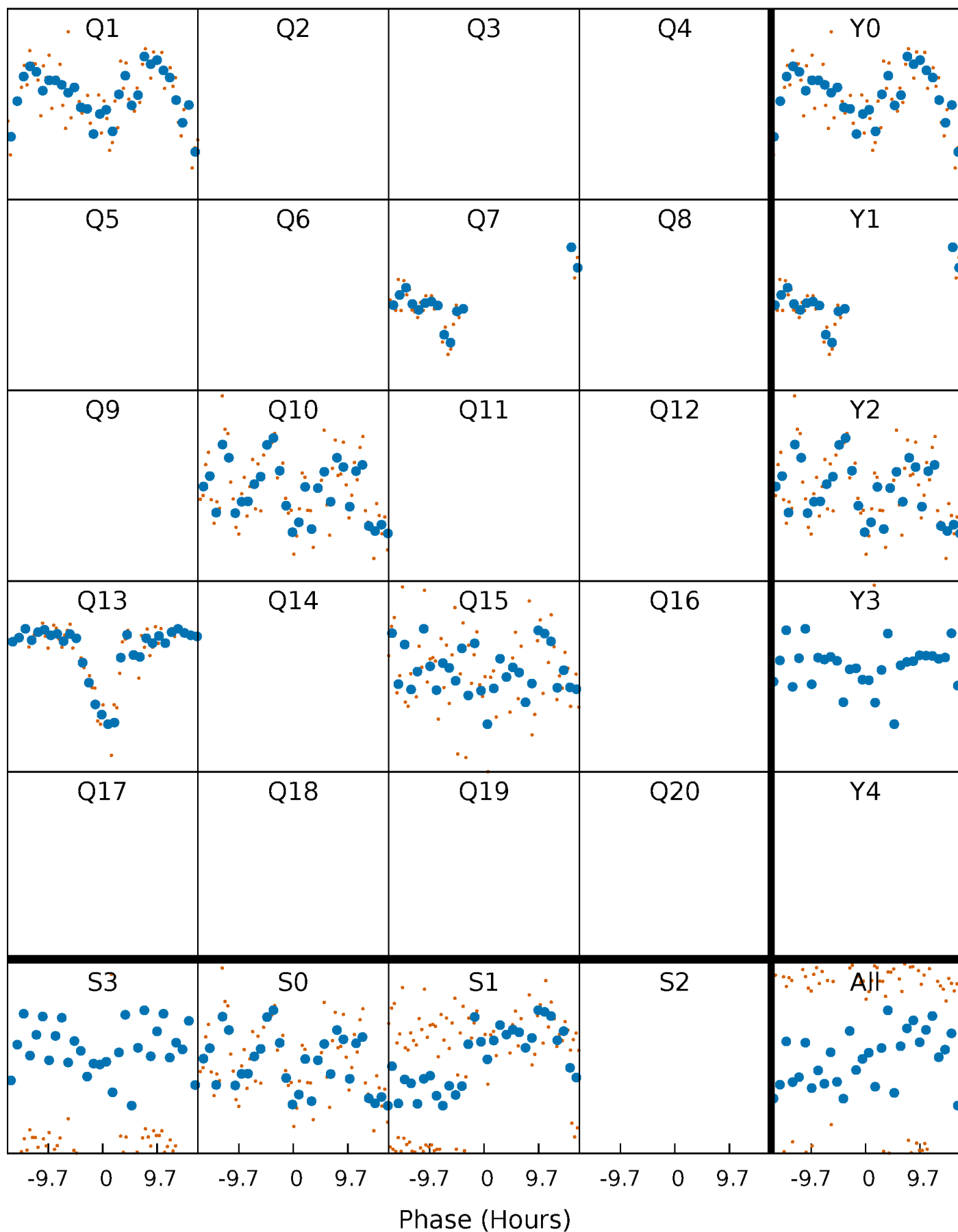


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



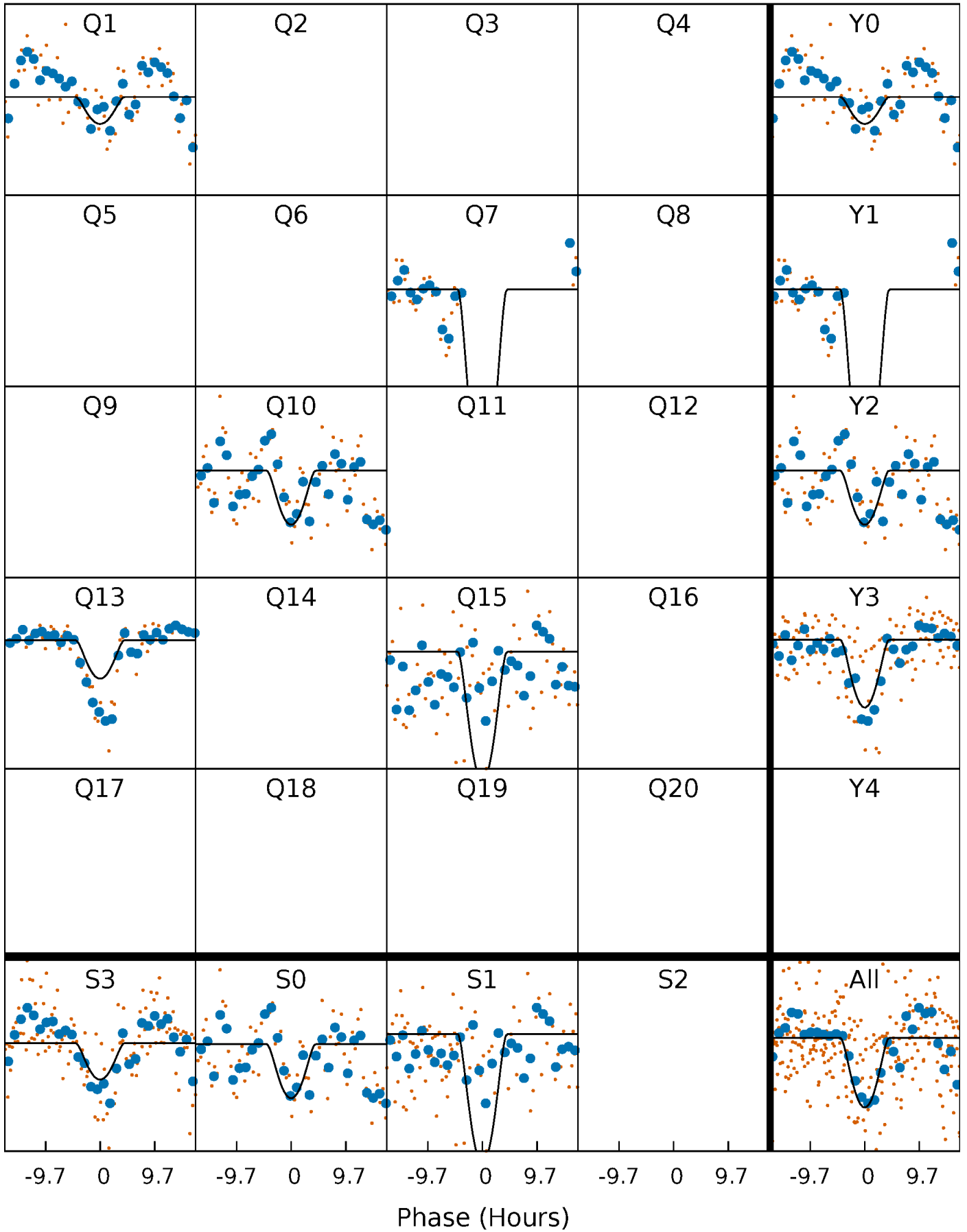
PDC Quarter-Phased Transit Curves

TCE 002831091-03 P=262.404159 Days $T_0=135.608970$ (BKJD)



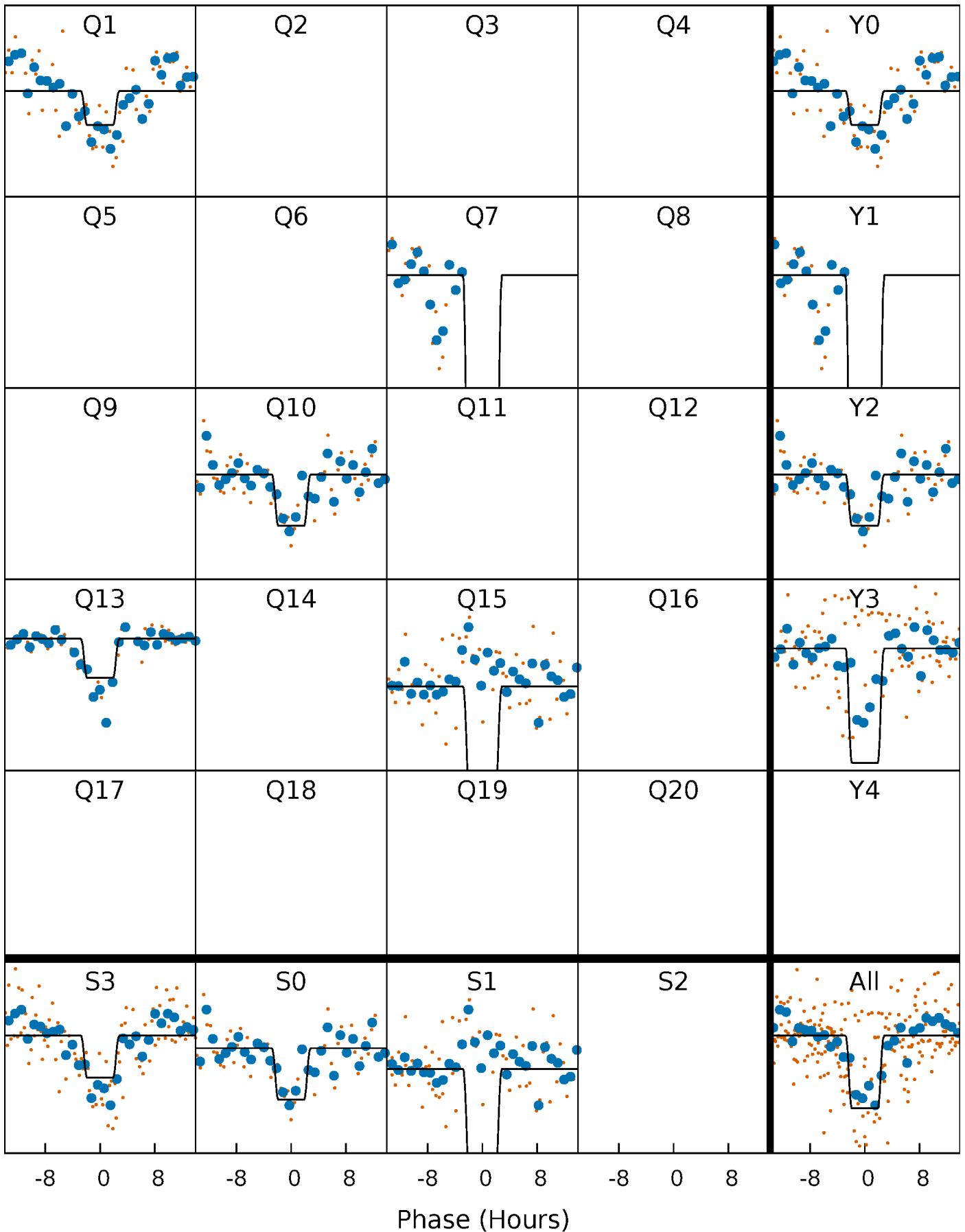
DV Quarter-Phased Transit Curves

TCE 002831091-03 $P=262.404159$ Days $T_0=135.608970$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

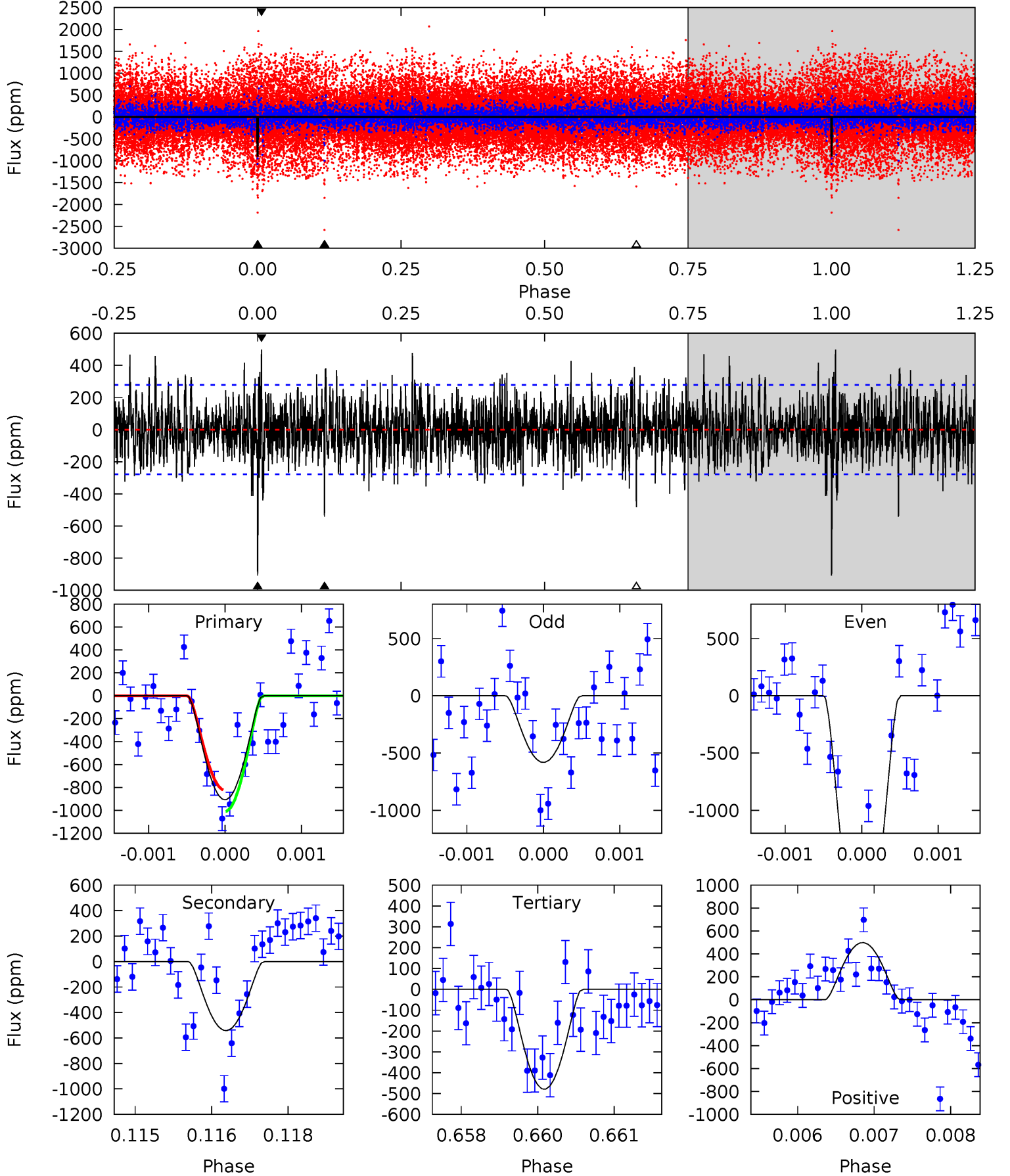
TCE 002831091-03 P=262.414589 Days $T_0=135.583150$ (BKJD)



DV Model-Shift Uniqueness Test

002831091-03, P = 262.404159 Days, E = 135.608970 Days

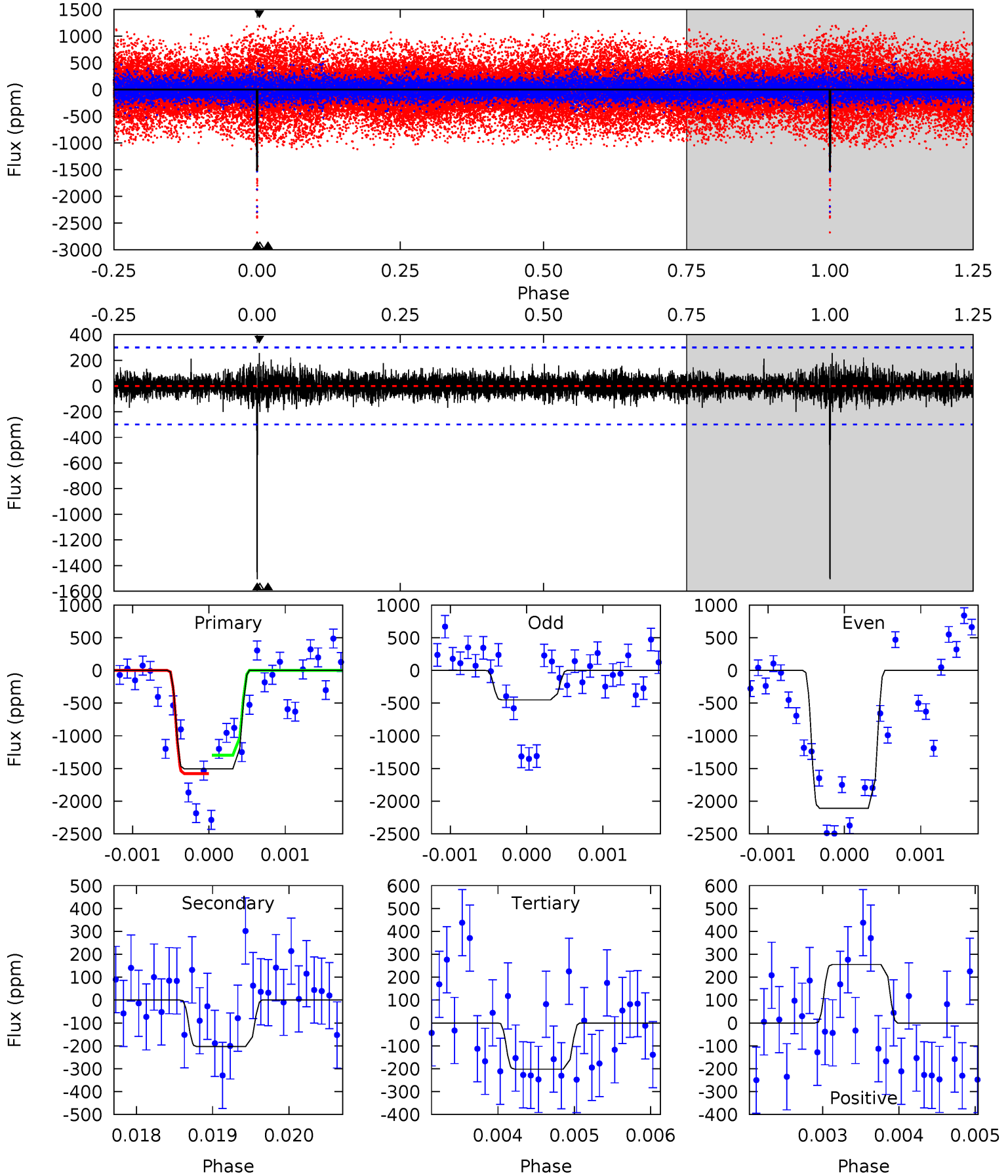
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	10.5	9.29	9.66	5.39	3.19	2.42	8.29	7.92	1.21	0.84	16.6	1.41	0.35	1.82



Alt Model-Shift Uniqueness Test

002831091-03, P = 262.414589 Days, E = 135.583150 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.5	3.71	3.69	4.67	5.48	3.33	0.87	23.8	22.8	0.03	-0.95	17.3	0.78	0.15	2.63



Stellar Parameters For KIC 002831091

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot cm^{-3})$
	5835^{+140}_{-175}	$4.515^{+0.048}_{-0.204}$	$-0.020^{+0.250}_{-0.300}$	$0.920^{+0.260}_{-0.087}$	$1.009^{+0.116}_{-0.127}$	$1.827^{+0.465}_{-0.895}$
	+2%/-3%	+1%/-5%	+1250%/-1500%	+28%/-9%	+11%/-13%	+25%/-49%
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 002831091-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-542 ± 52	$11.14^{+11.08}_{-7.33}$	391^{+26}_{-17}	3293^{+1453}_{-587}	1552^{+10908}_{-1174}
Alt.	-203 ± 55	$10.41^{+10.32}_{-7.27}$	393^{+24}_{-19}	2907^{+1414}_{-481}	656^{+7011}_{-502}

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 $A_{obs} \gg 1.0$

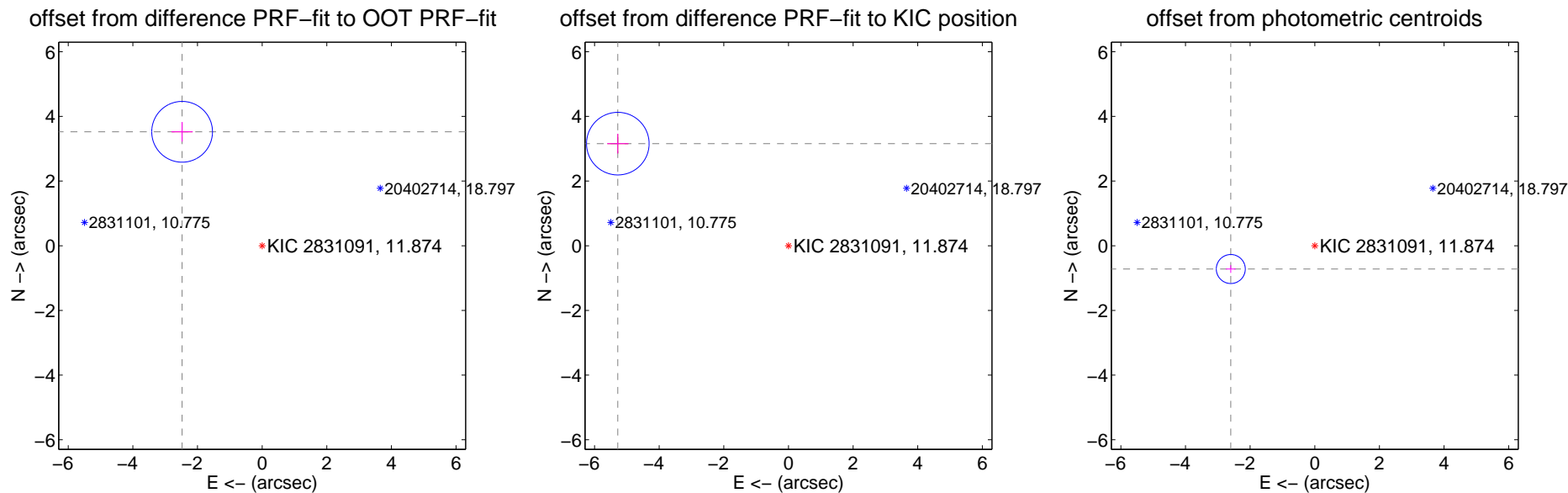
DV Centroid Data

Supplemental centroid analysis for 002831091-03. **Kepler magnitude: 11.87.** Transit SNR 9.33

There are 0 quarters with good PRF difference image offsets

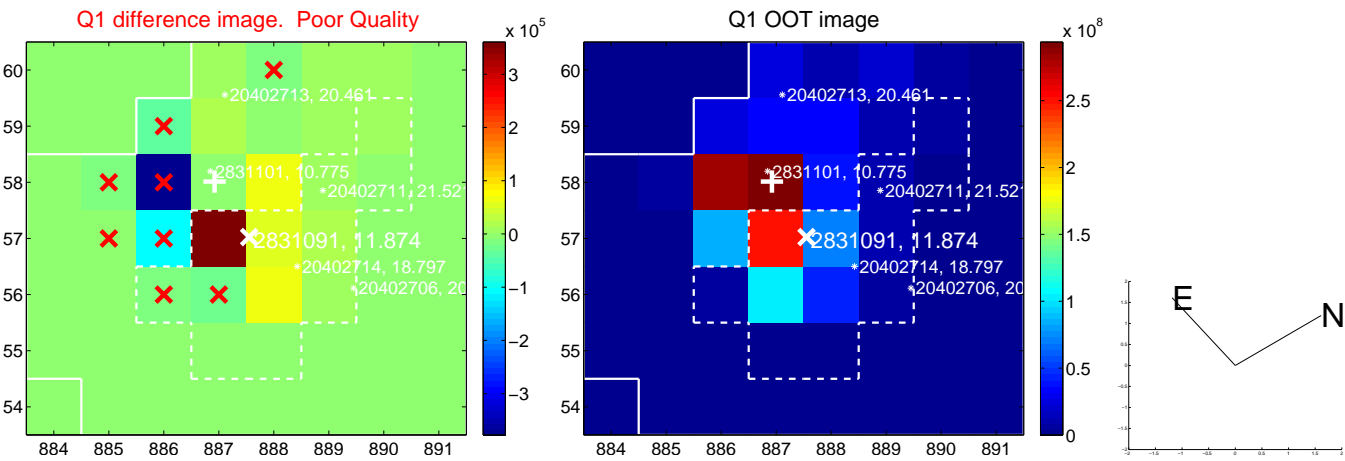
The OOT PRF centroid is offset from the target star catalog position by about 2.83 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.308 ± 0.313	13.75	2.477 ± 0.329	3.524 ± 0.305
PRF-fit source offset from KIC position	6.154 ± 0.323	19.06	5.282 ± 0.329	3.158 ± 0.305
photometric centroid source offset	2.70 ± 0.15	18.04	2.60 ± 0.15	-0.72 ± 0.12



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.

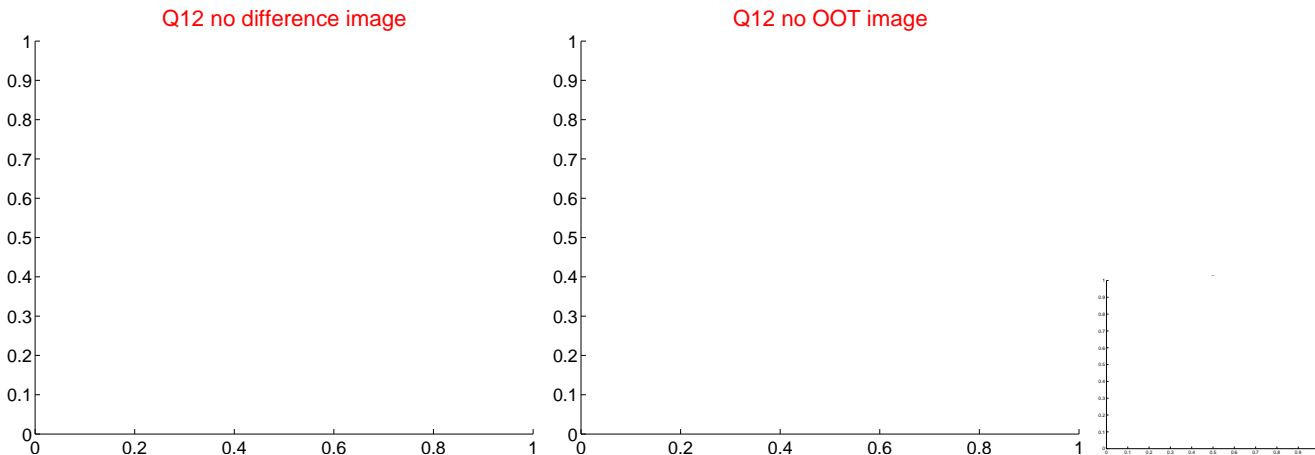
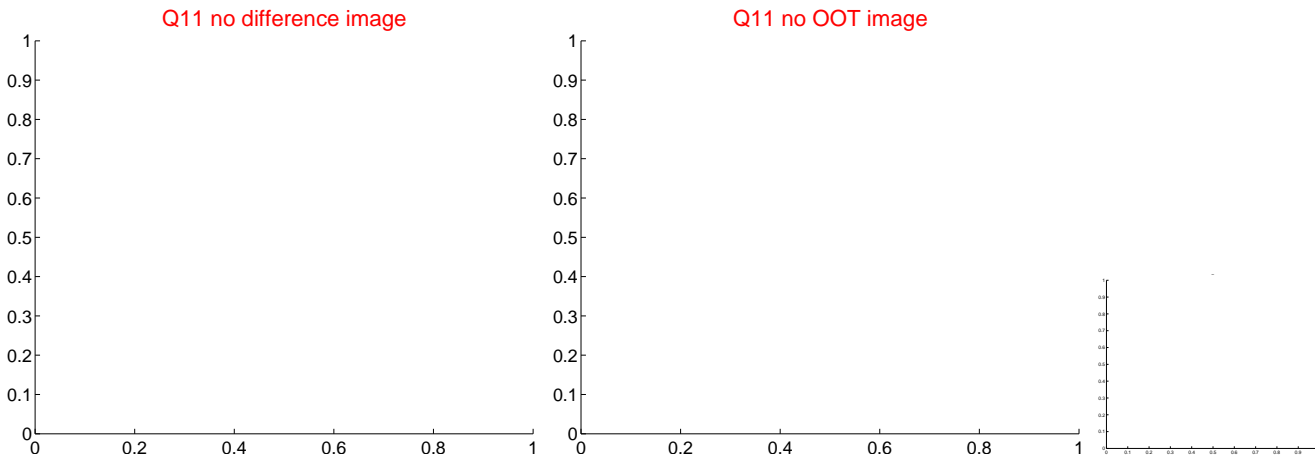
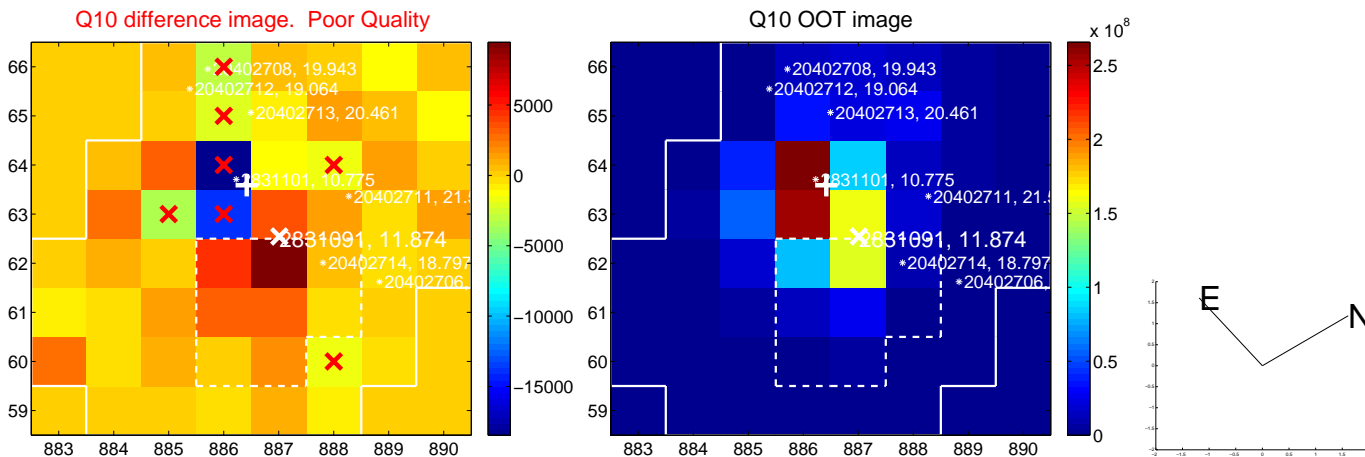
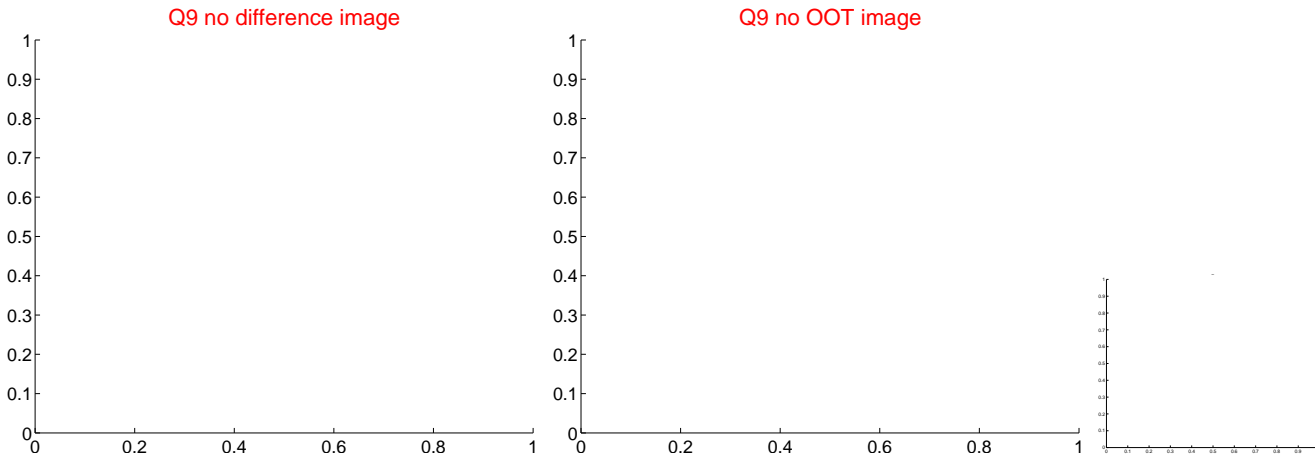
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



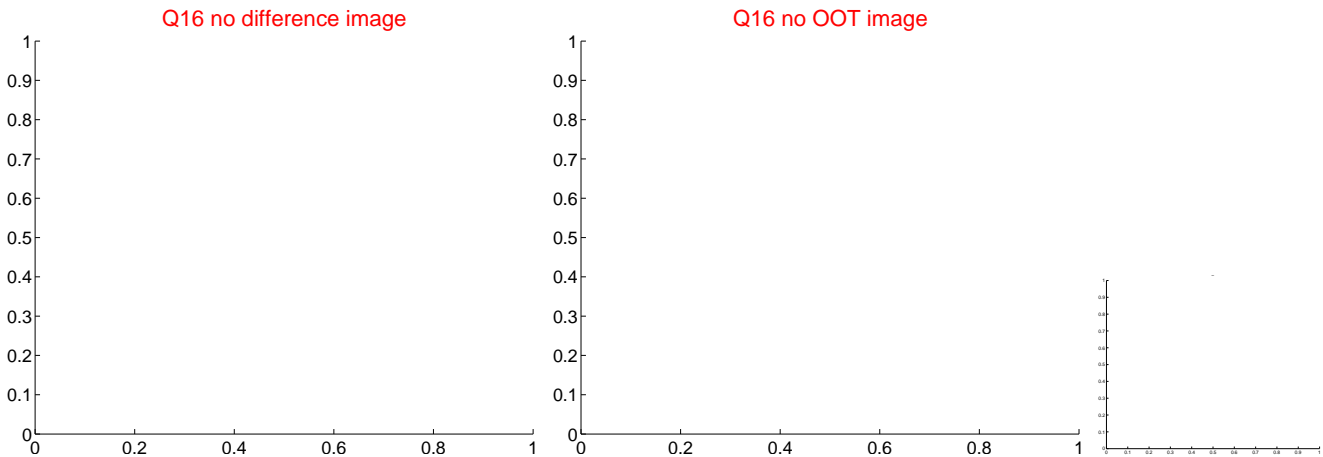
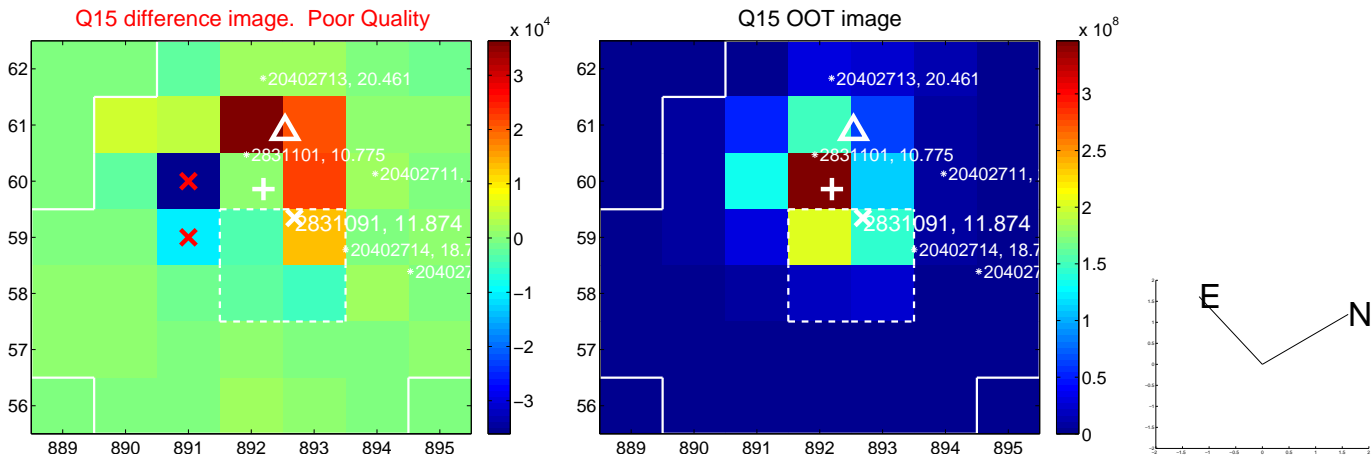
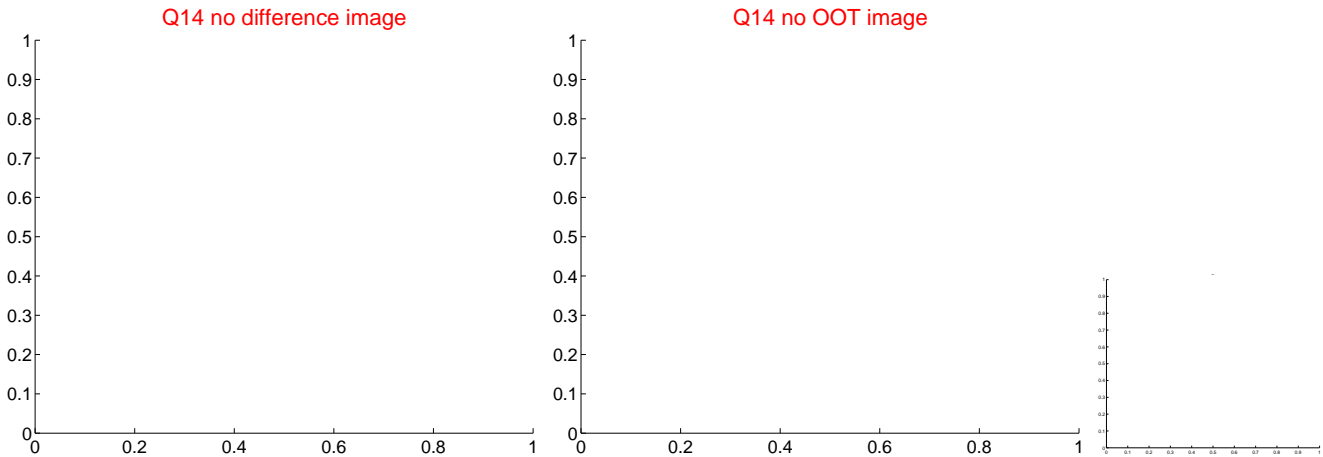
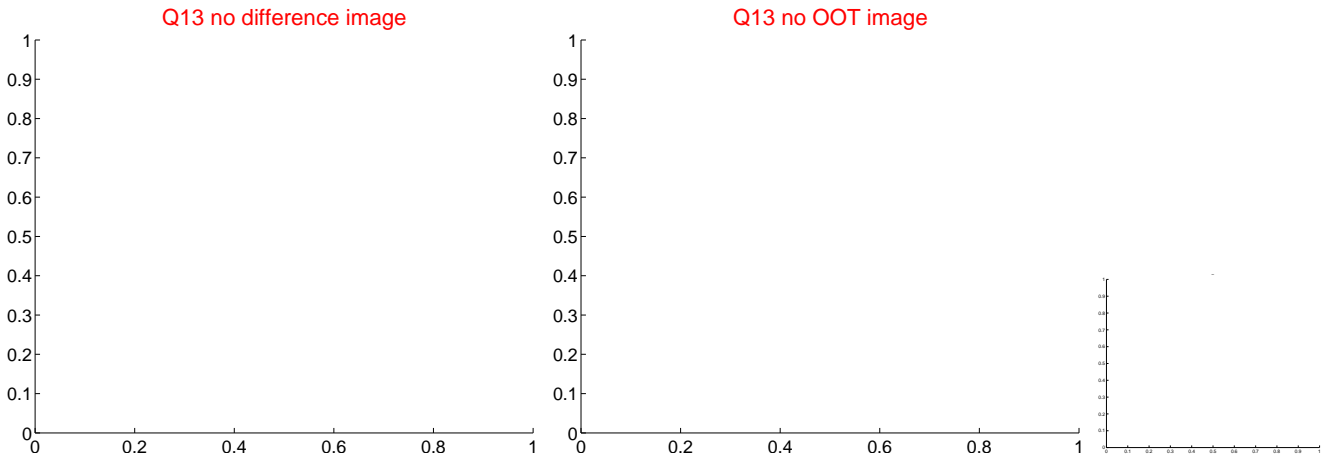
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



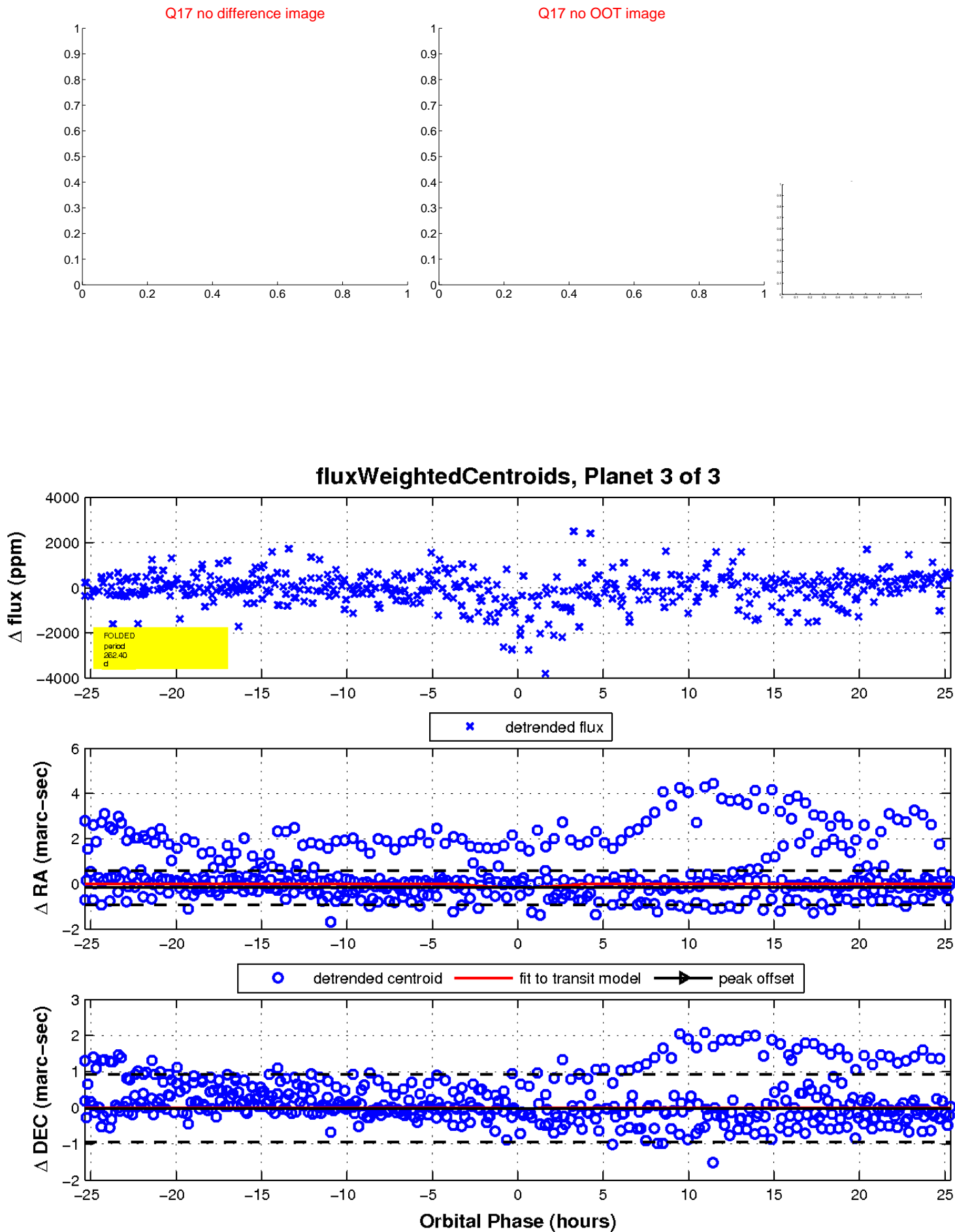
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

