

KIC 004170631

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})
004170631-01	OBS	No	0.541773	131.957797	389.6	1.134	10.9	7.2	3.75	7693	8.73	0.00
004170631-02	OBS	No	0.590085	131.605244	613.6	1.064	8.5	8.0	3.75	7693	9.57	0.00
004170631-03	OBS	No	0.590093	131.831102	759.0	1.193	9.0	10.0	3.75	7693	12.21	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004170631-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004170631-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
004170631-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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.

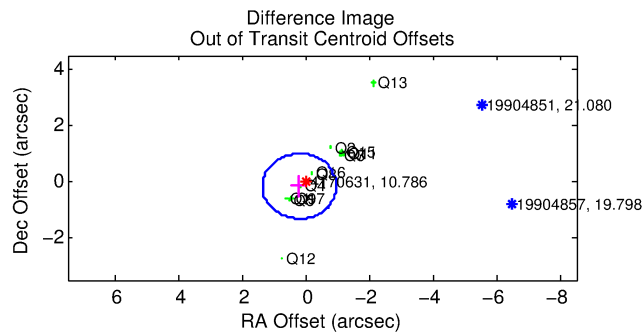
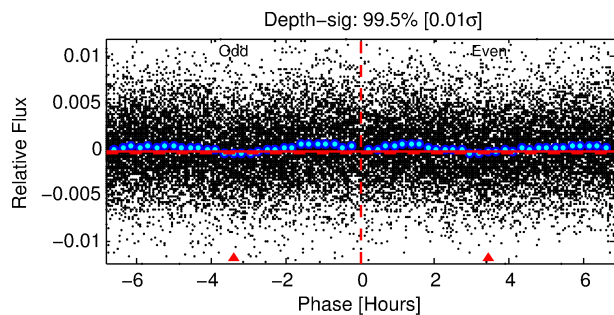
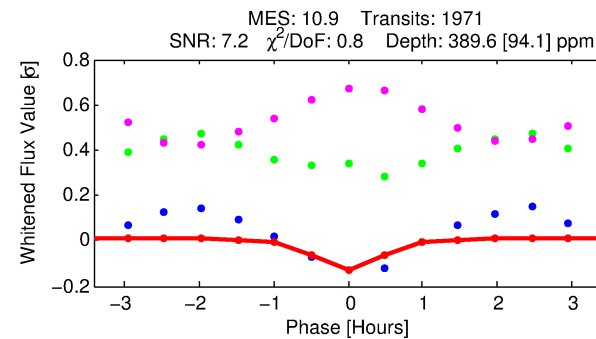
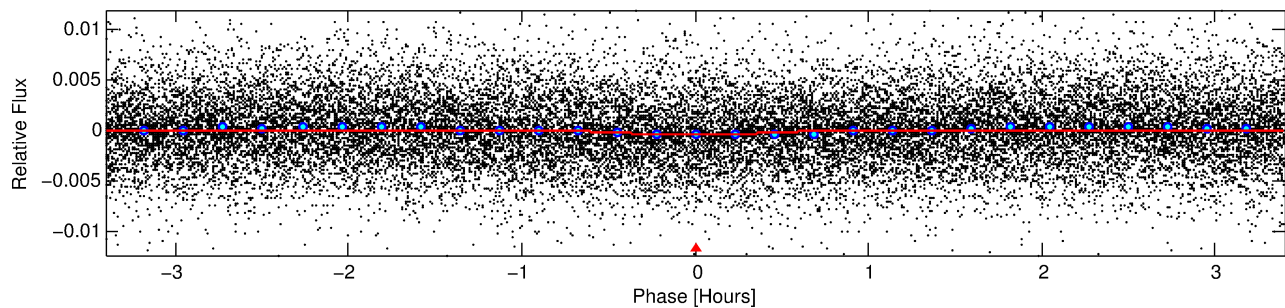
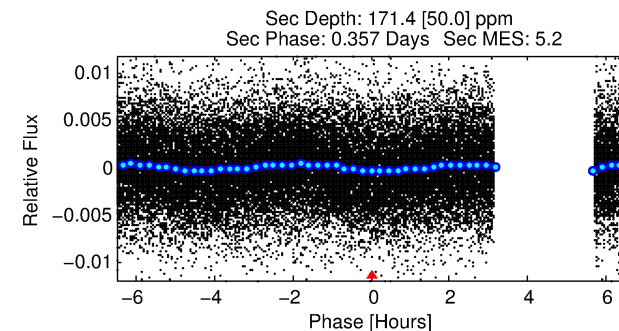
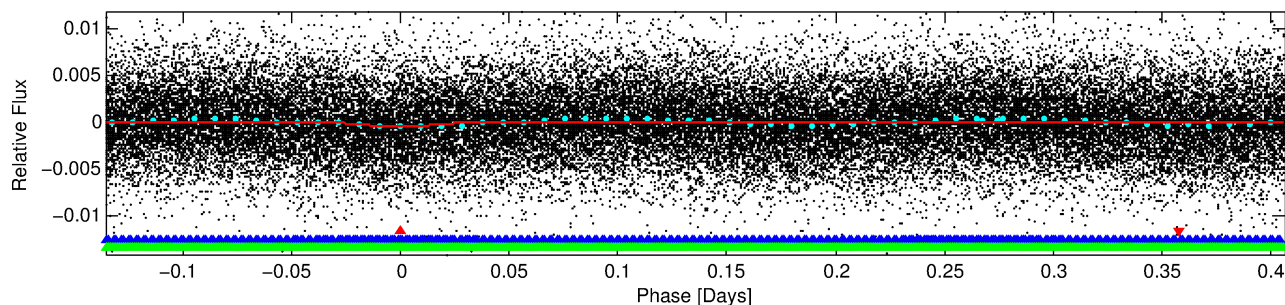
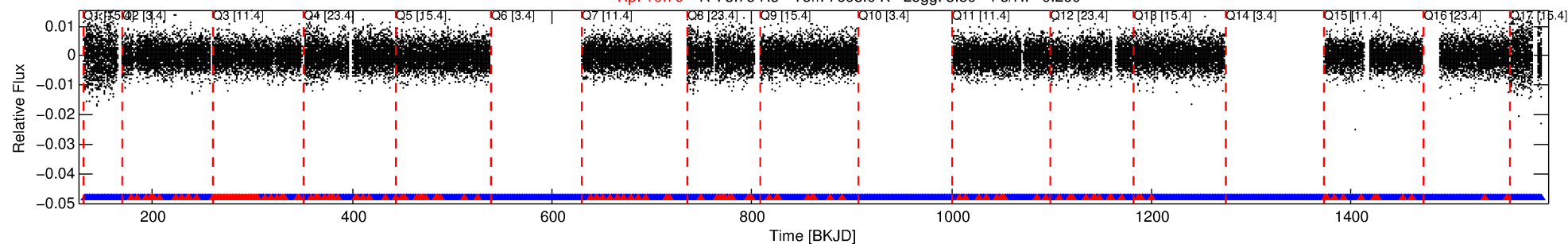
Ephemeris Match Information For 004170631-01

No Significant Match Found

DV One-Page Summary

KIC: 4170631 Candidate: 1 of 3 Period: 0.542 d

Kp: 10.79 R*: 3.75 Rs Teff: 7693.0 K Logg: 3.59 Fe/H: -0.260



DV Fit Results:

Period = 0.54177 [0.00002] d
Epoch = 131.9578 [0.0028] BKJD
Rp/R* = 0.0213 [0.0230]
a/R* = 2.01 [8.93]
b = 0.90 [1.31]
Seff = N/A
Teq = N/A
Rp = 8.73 [10.57] Re
a = N/A
Ag = N/A
Teffp = N/A

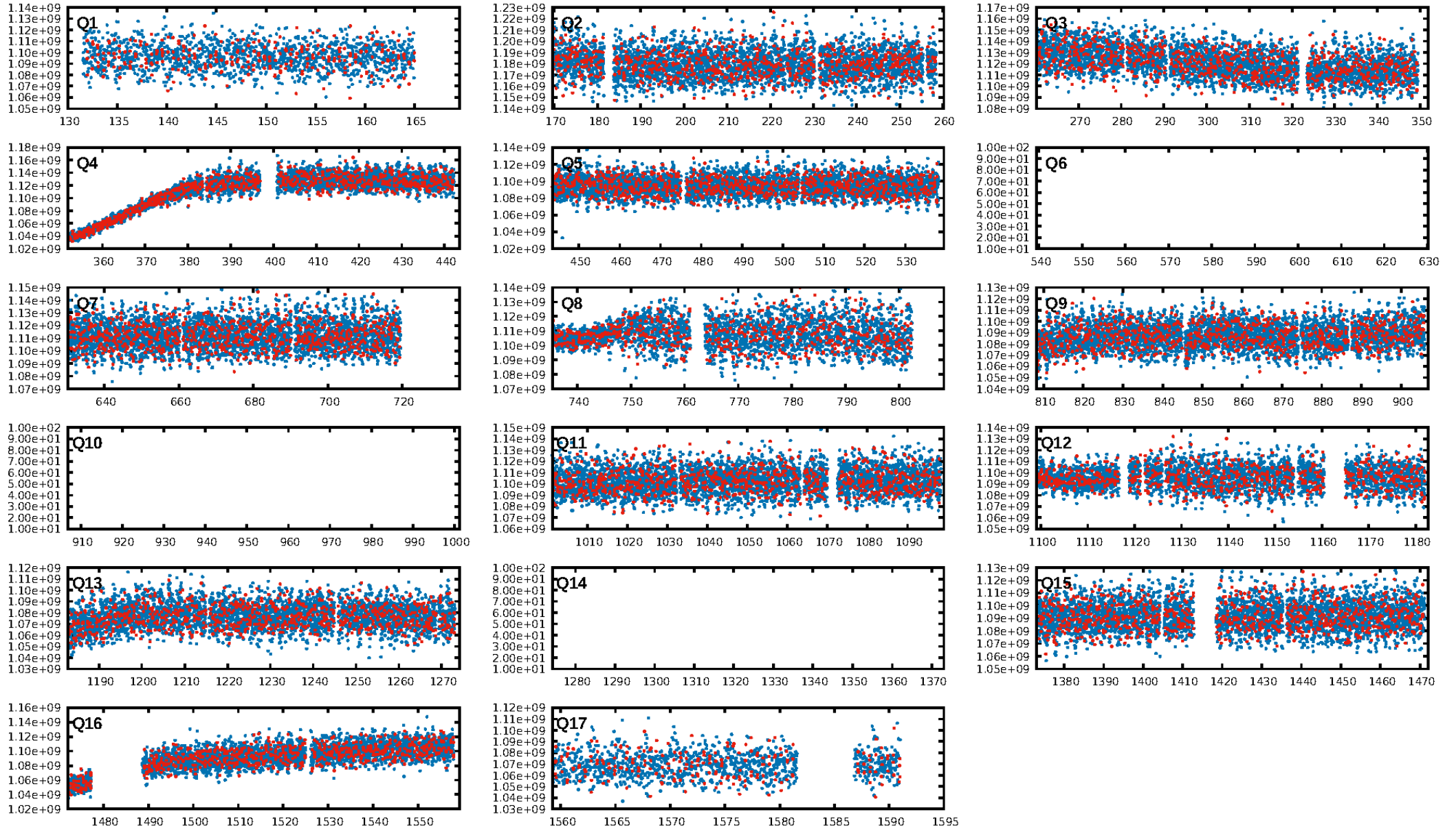
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 54.4% [0.75σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.41e-24
RollingBand-igt: 0.90 [1672/1860]
GhostDiagnostic-chr: 5.364
Centroid-sig: 0.7%
Centroid-so: 0.197 arcsec [1.70σ]
OotOffset-rm: 0.269 arcsec [0.70σ]
KicOffset-rm: 0.454 arcsec [0.85σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 0.00 [0/14]

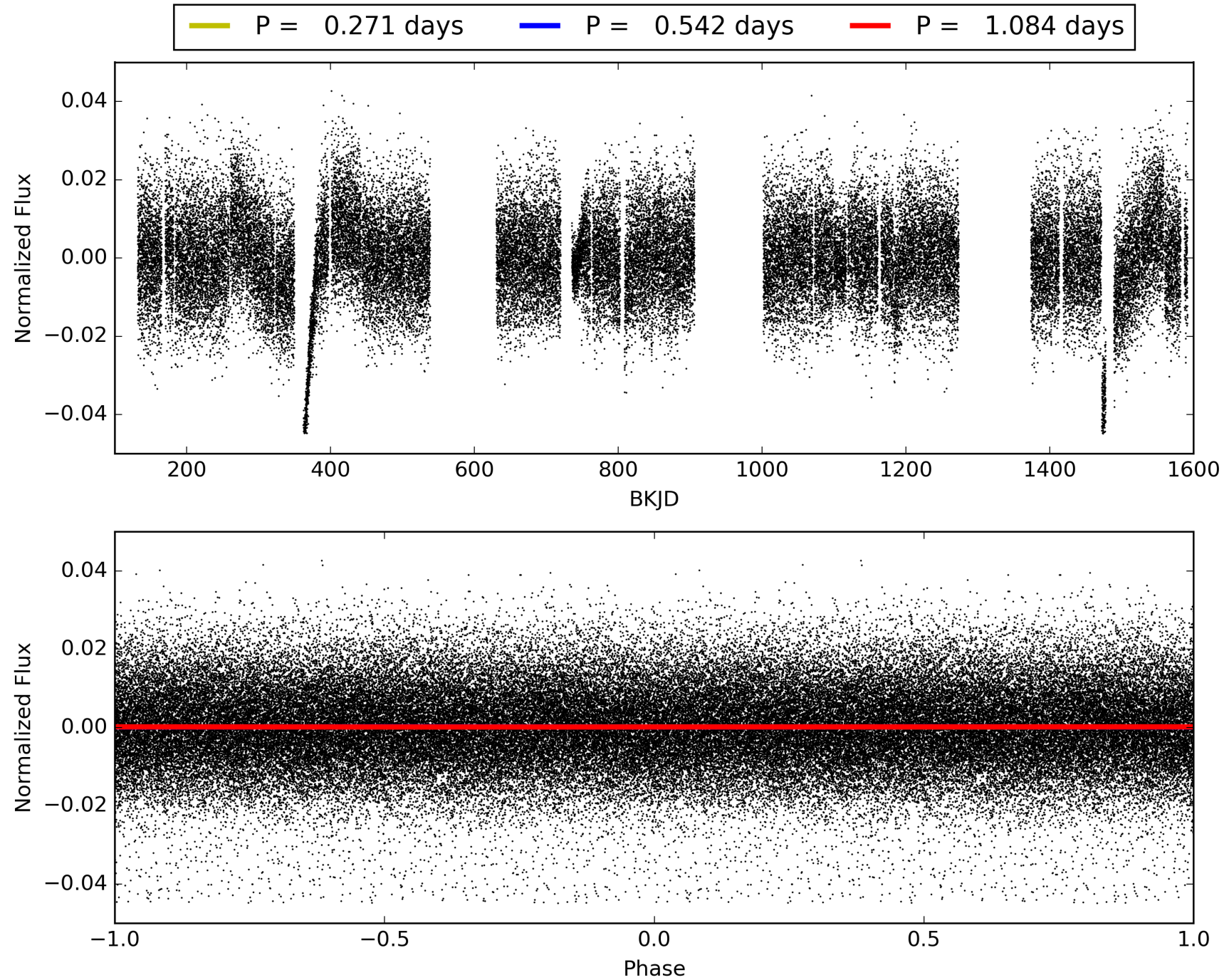
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004170631-01, PDC Light Curves

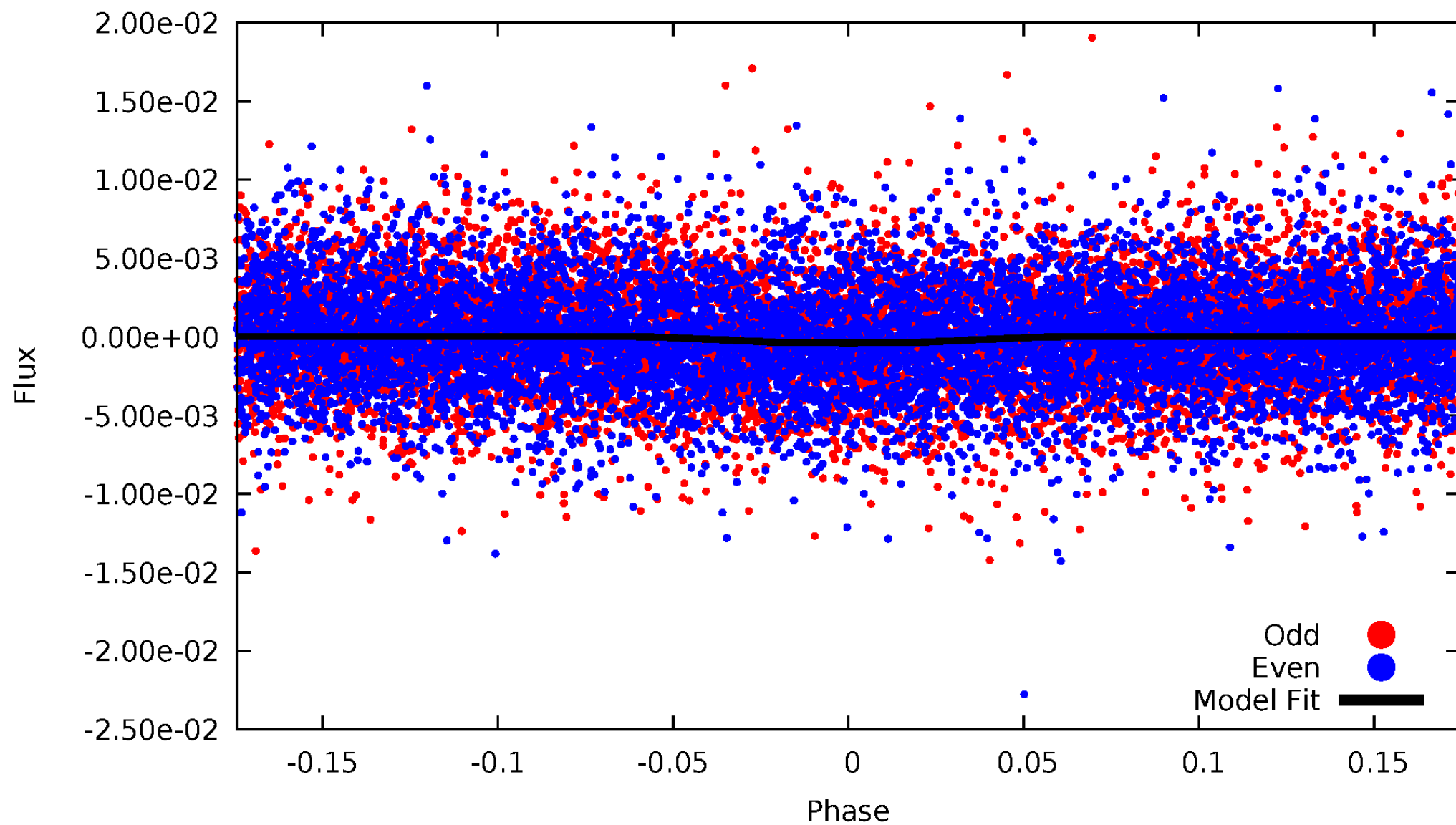


TCE 004170631-01



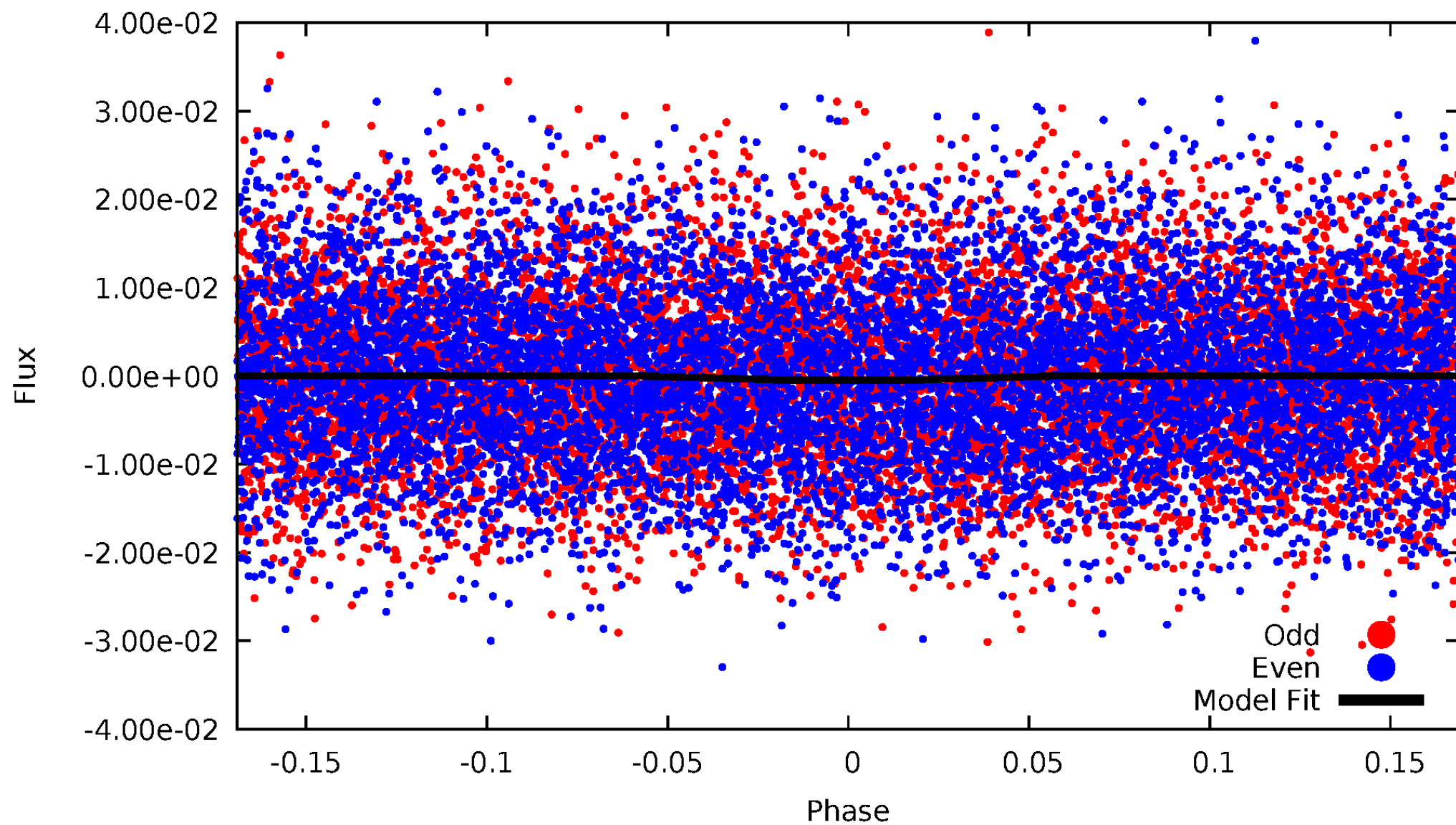
DV Odd/Even

TCE 004170631-01



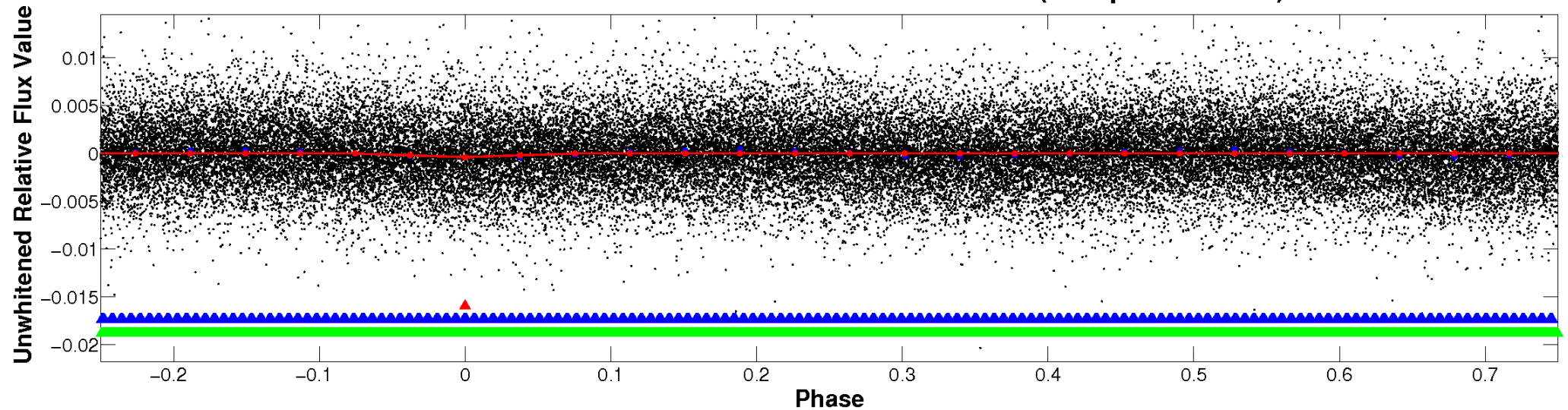
ALT Odd/Even

TCE 004170631-01

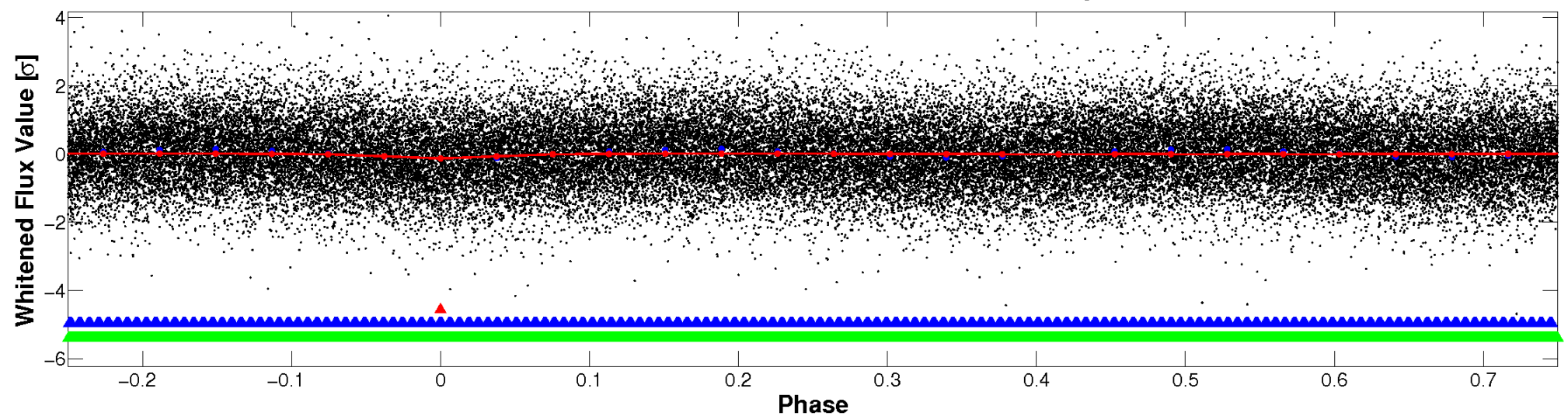


Non-Whitened Vs. Whitened Light Curve

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

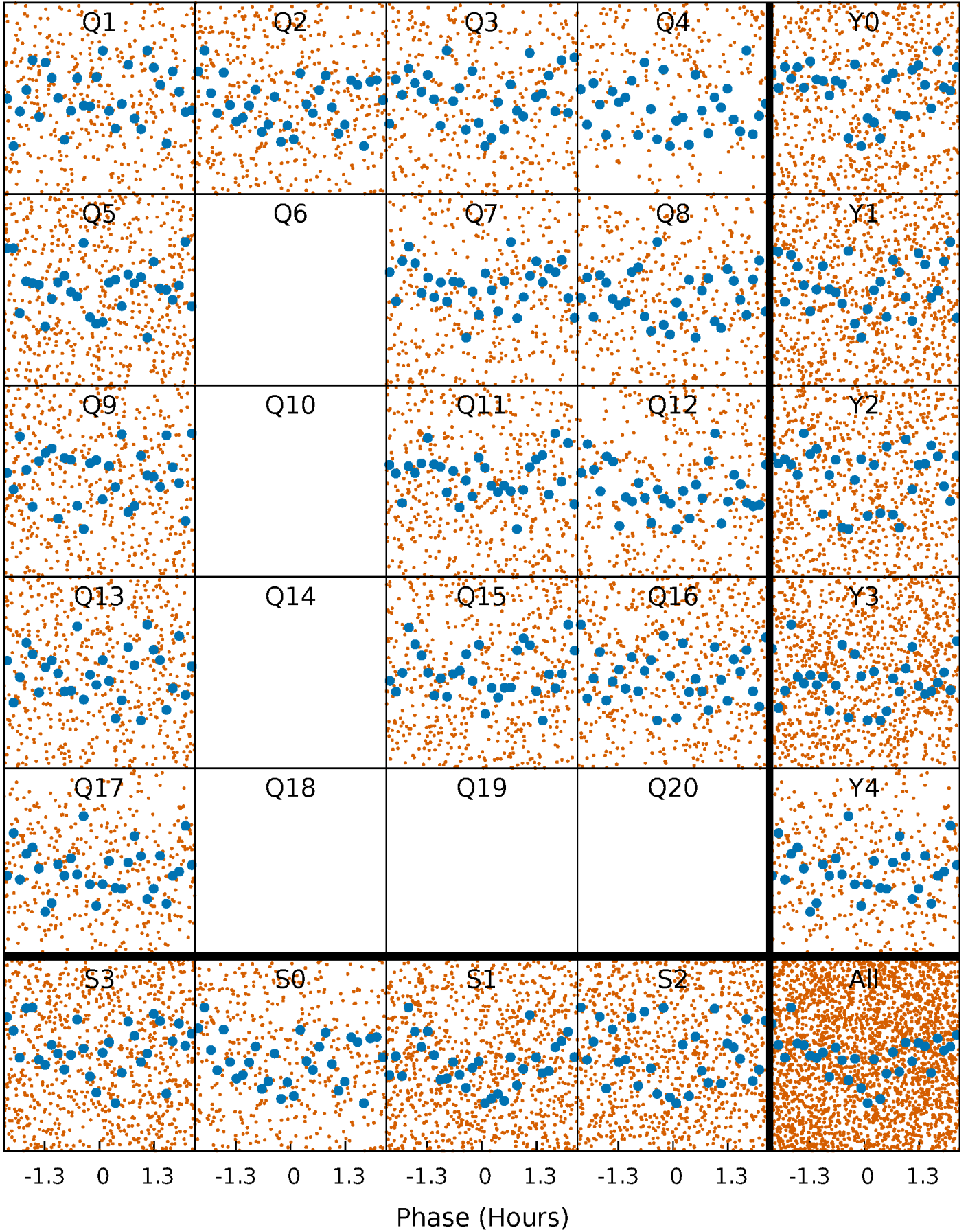


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



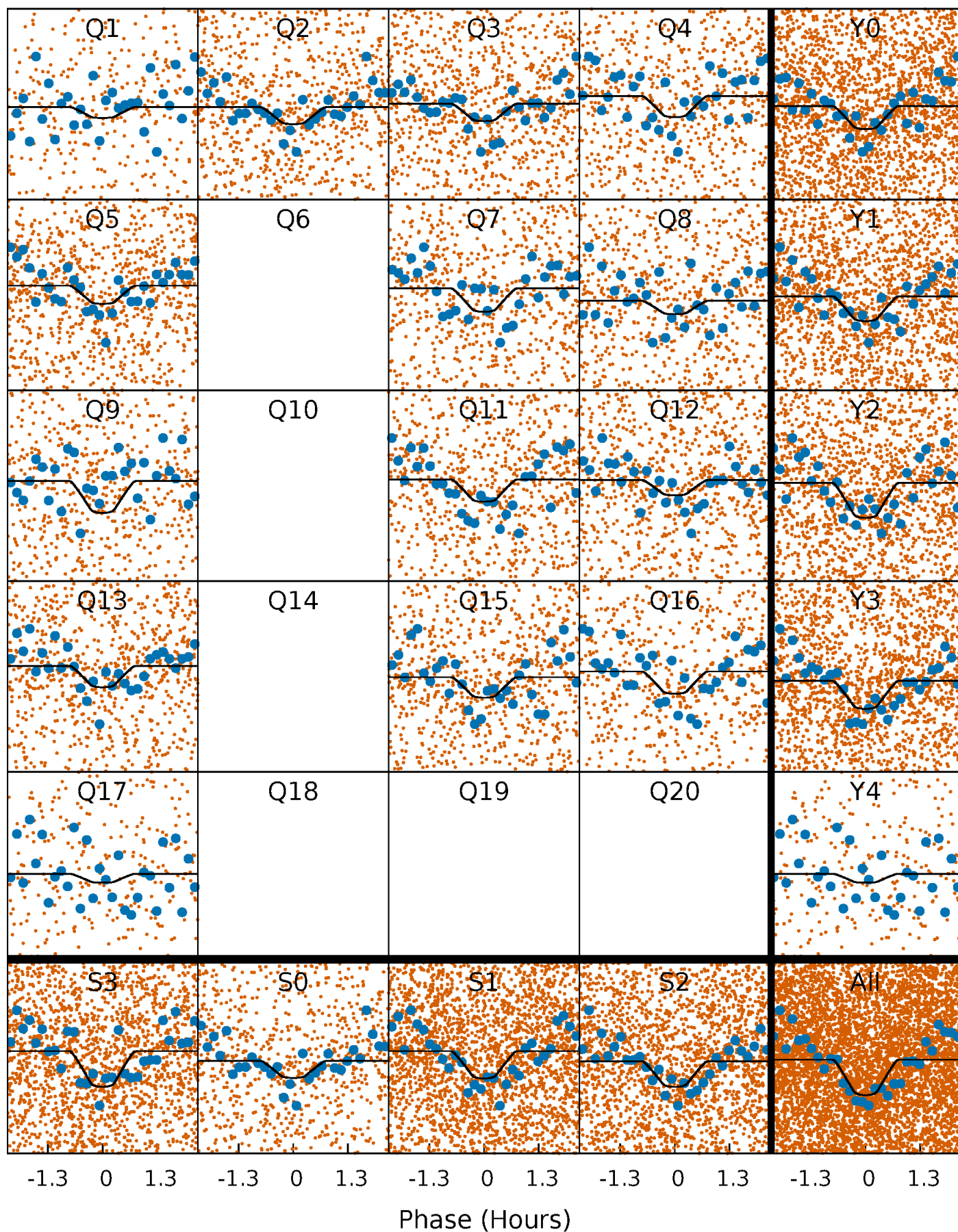
PDC Quarter-Phased Transit Curves

TCE 004170631-01 P= 0.541773 Days $T_0=131.957797$ (BKJD)



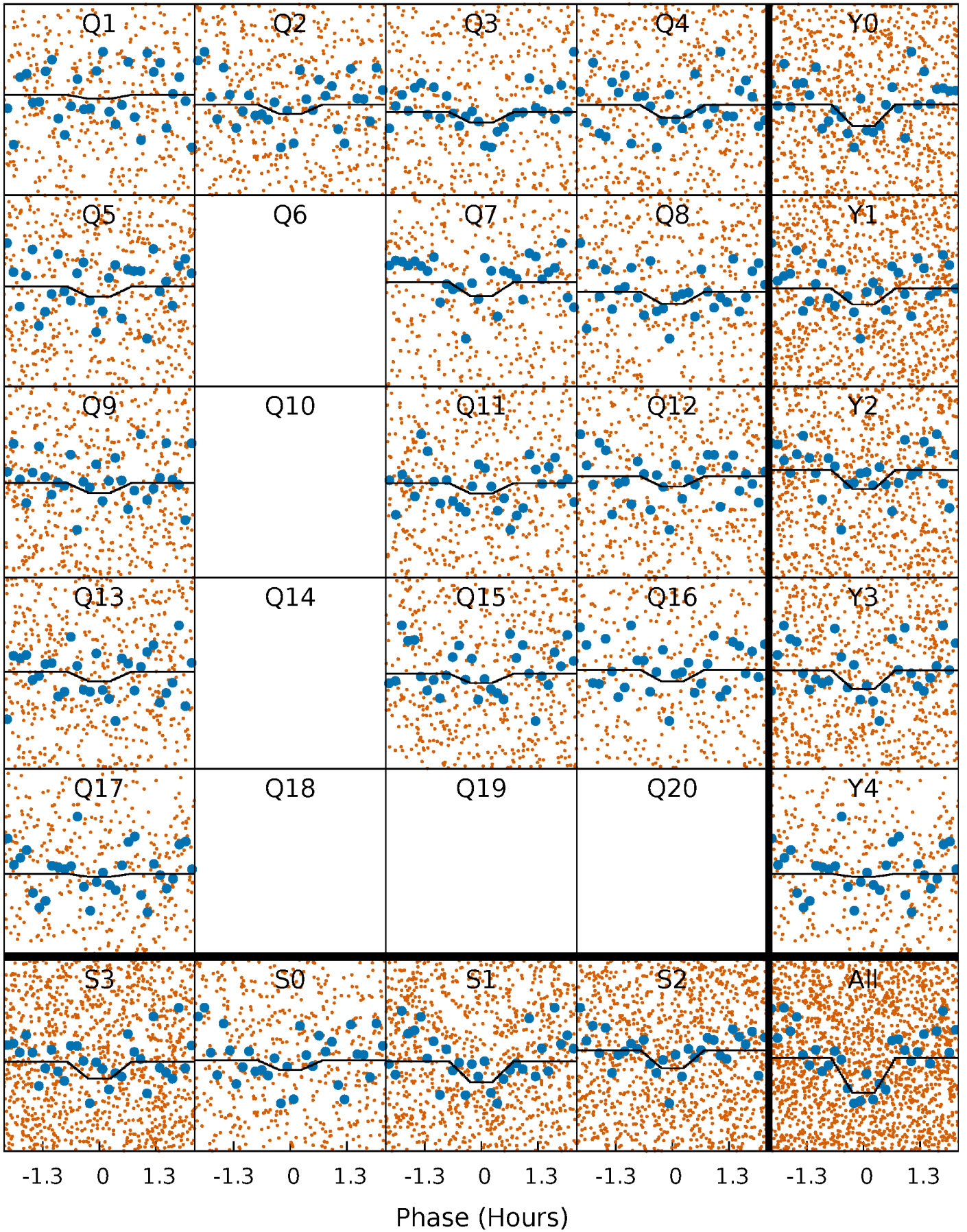
DV Quarter-Phased Transit Curves

TCE 004170631-01 P= 0.541773 Days $T_0=131.957797$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

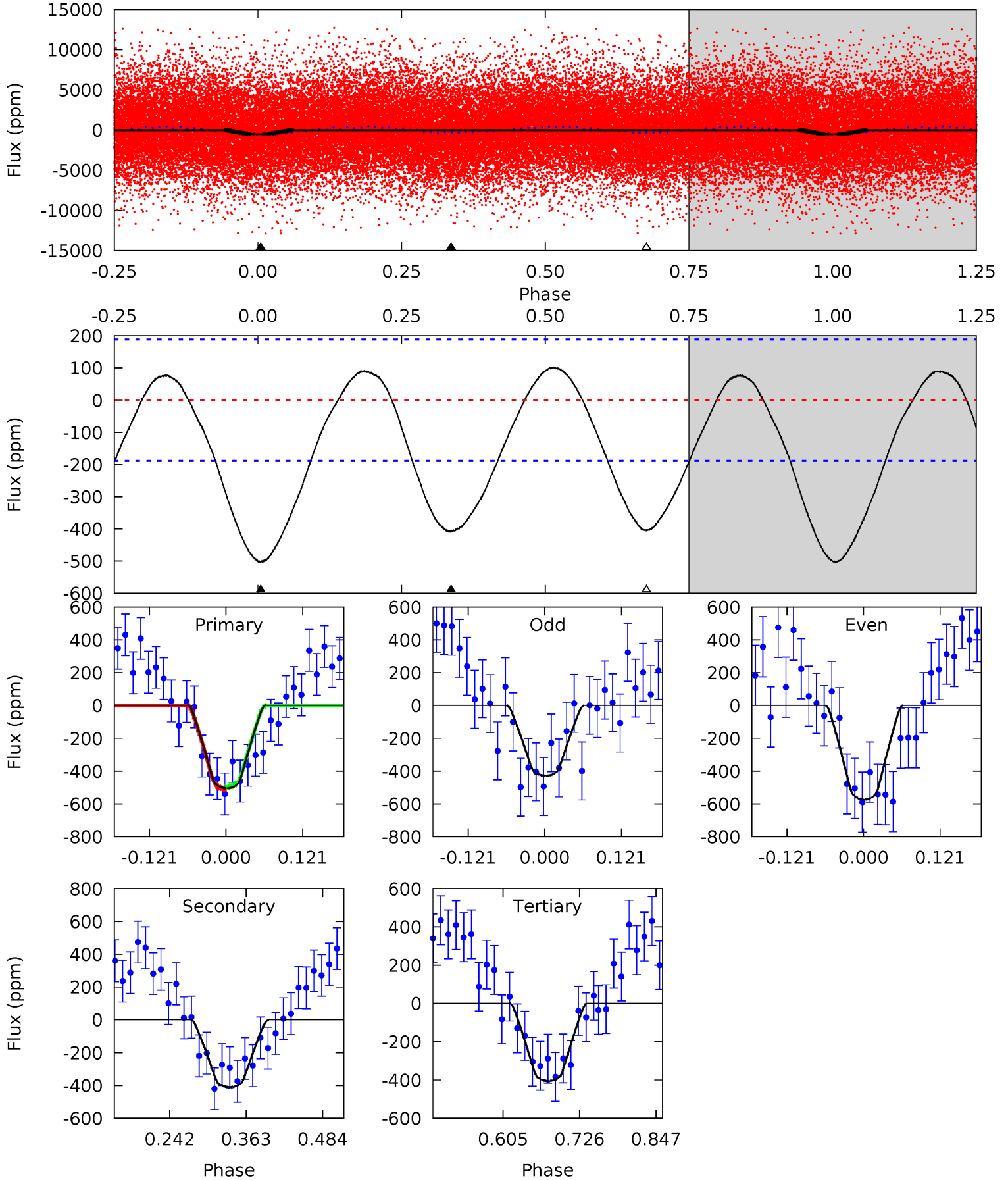
TCE 004170631-01 P= 0.541775 Days $T_0=131.957783$ (BKJD)



DV Model-Shift Uniqueness Test

004170631-01, P = 0.541773 Days, E = 131.416024 Days

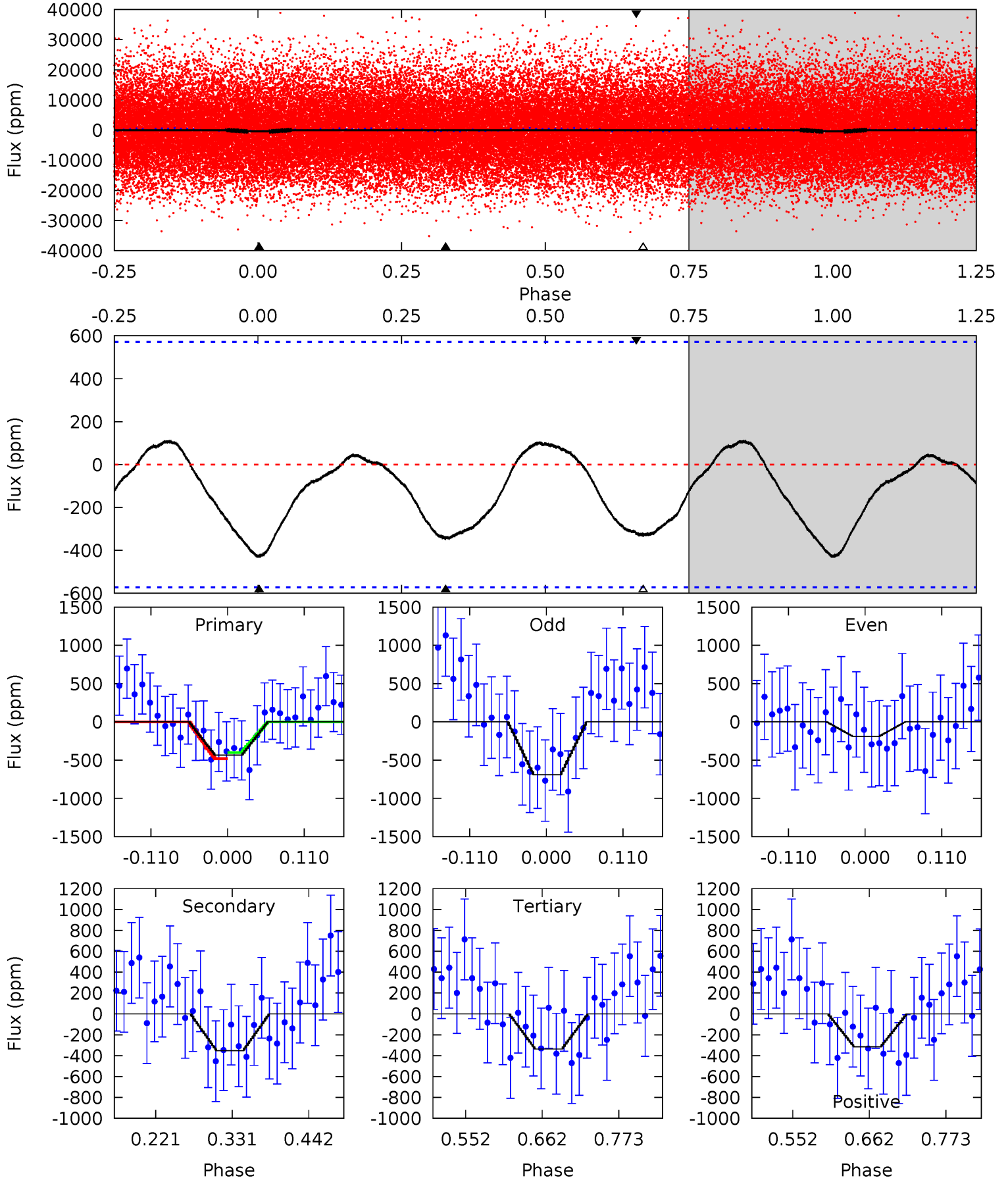
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	9.82	9.72	0	4.52	1.55	4.02	2.38	12.1	0.10	9.82	1.74	0.90	0.17	0.17



Alt Model-Shift Uniqueness Test

004170631-01, P = 0.541775 Days, E = 131.416008 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.45	2.79	2.67	-2.49	4.54	1.60	1.13	0.78	5.94	0.12	5.28	2.00	0.83	0.21	0.32



Stellar Parameters For KIC 004170631

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7693^{+243}_{-297}	$3.588^{+0.510}_{-0.060}$	$-0.260^{+0.250}_{-0.300}$	$3.751^{+0.511}_{-2.045}$	$1.987^{+0.163}_{-0.523}$	$0.053^{+0.351}_{-0.015}$
	+3%/-4%	+14%/-2%	+96%/-115%	+14%/-55%	+8%/-26%	+661%/-29%
Source	KIC0	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 004170631-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-409 ± 42	$9.07^{+7.96}_{-5.54}$	6866^{+505}_{-865}	5711^{+6049}_{-10088}	$0.725^{+4.303}_{-0.520}$
Alt.	-351 ± 126	$9.01^{+8.02}_{-5.96}$	6919^{+461}_{-887}	5407^{+7165}_{-10089}	$0.624^{+4.218}_{-0.466}$

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 $A_{\text{obs}} \gg 1.0$

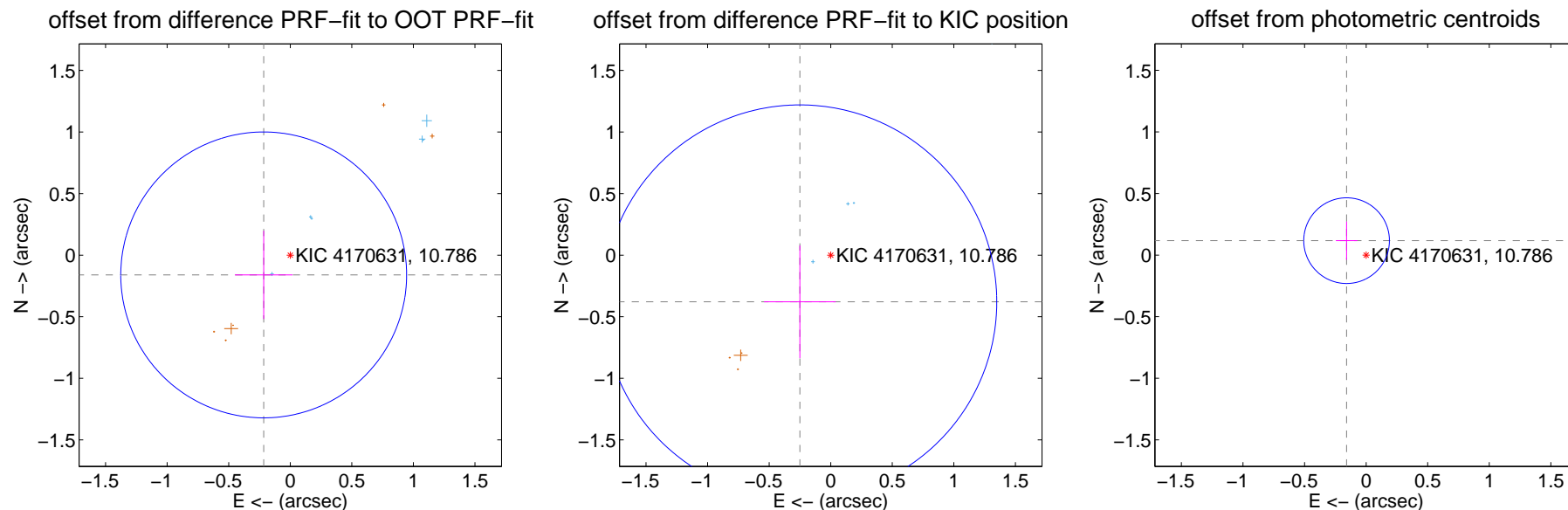
DV Centroid Data

Supplemental centroid analysis for 004170631-01. **Kepler magnitude: 10.79.** Transit SNR 7.24

There are 7 quarters with good PRF difference image offsets

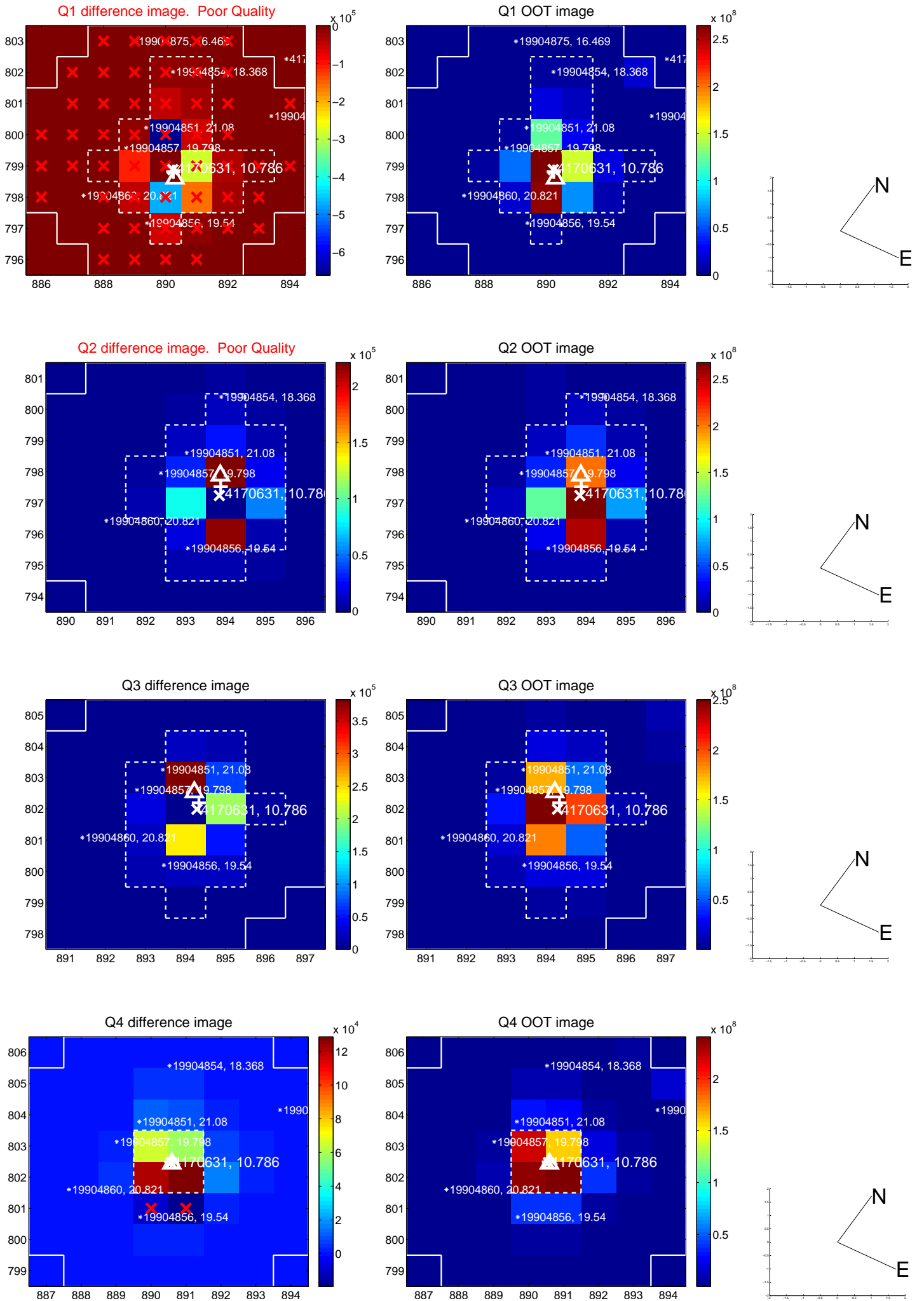
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.269 ± 0.387	0.70	0.216 ± 0.234	-0.160 ± 0.358
PRF-fit source offset from KIC position	0.454 ± 0.533	0.85	0.251 ± 0.291	-0.379 ± 0.457
photometric centroid source offset	0.20 ± 0.12	1.70	0.16 ± 0.09	0.12 ± 0.16

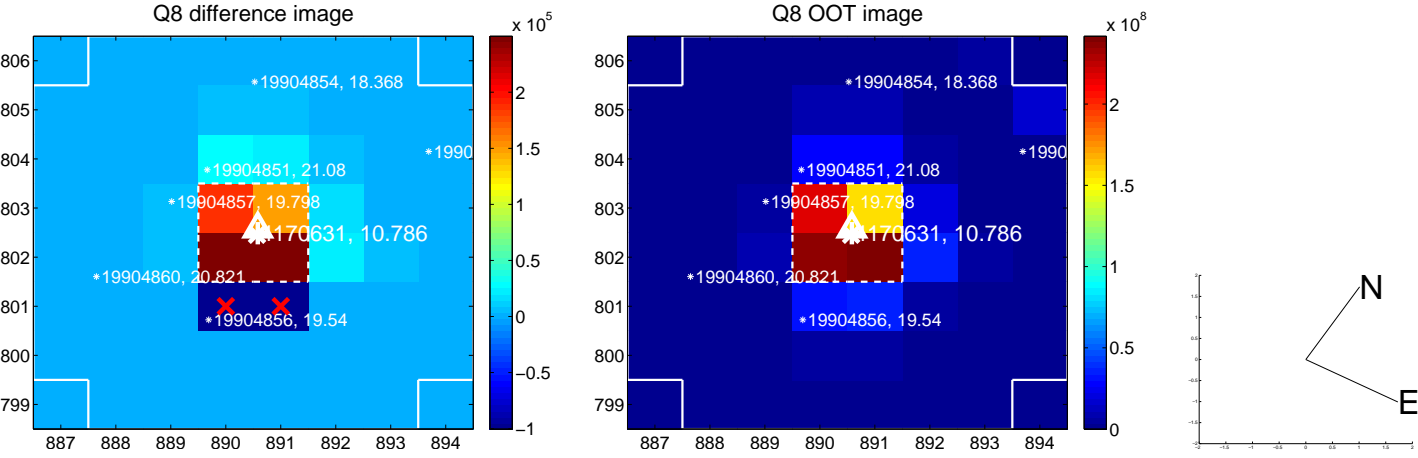
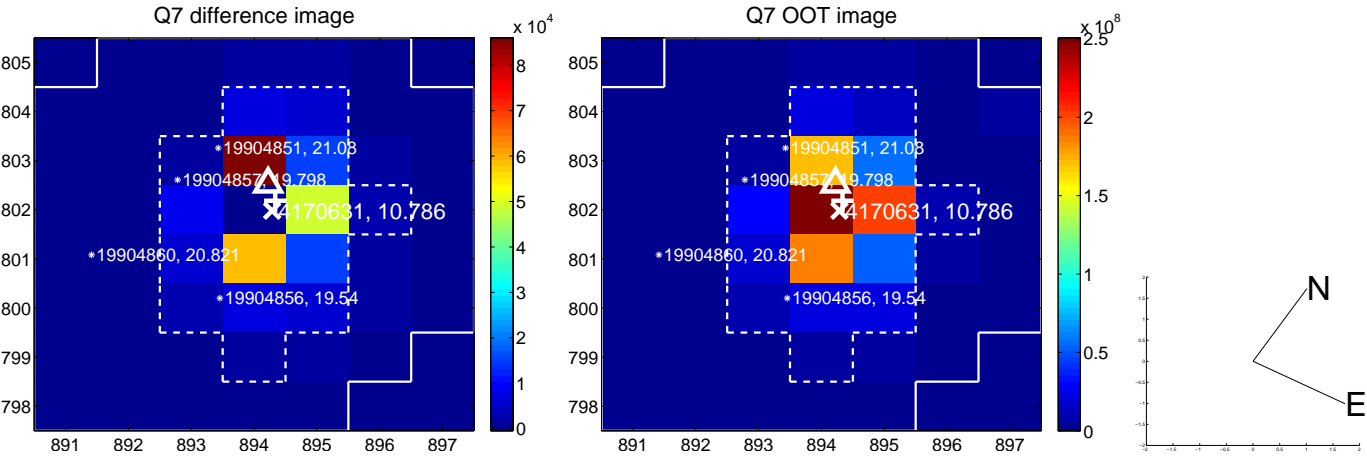
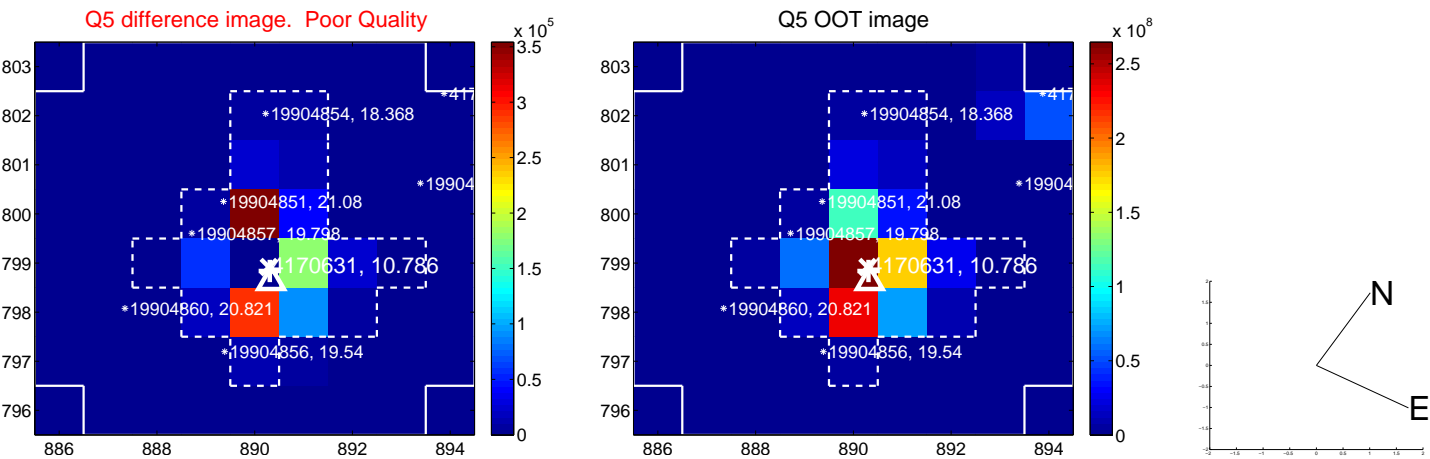


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

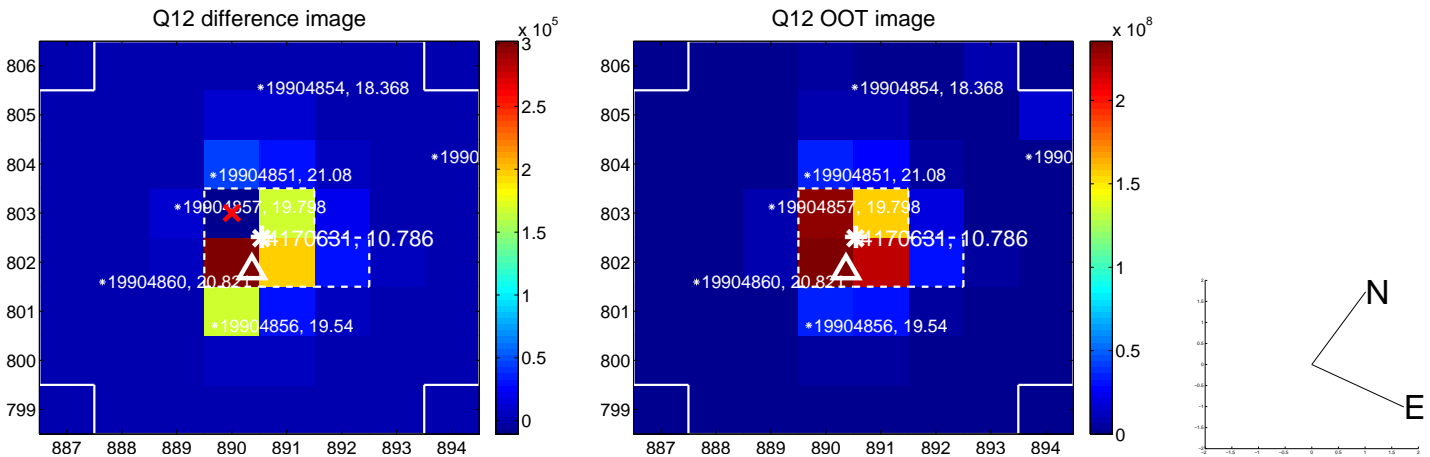
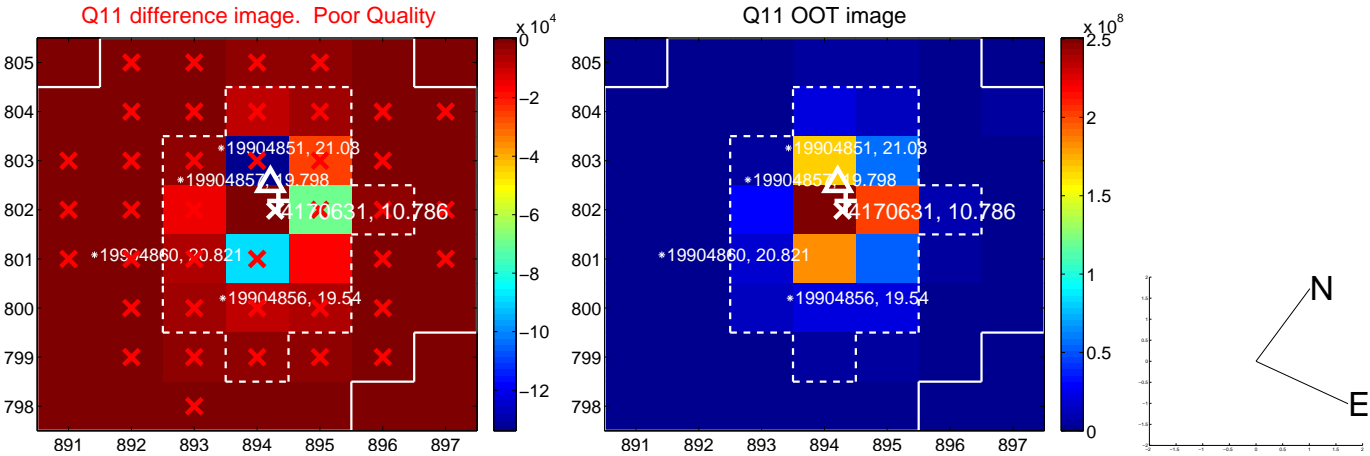
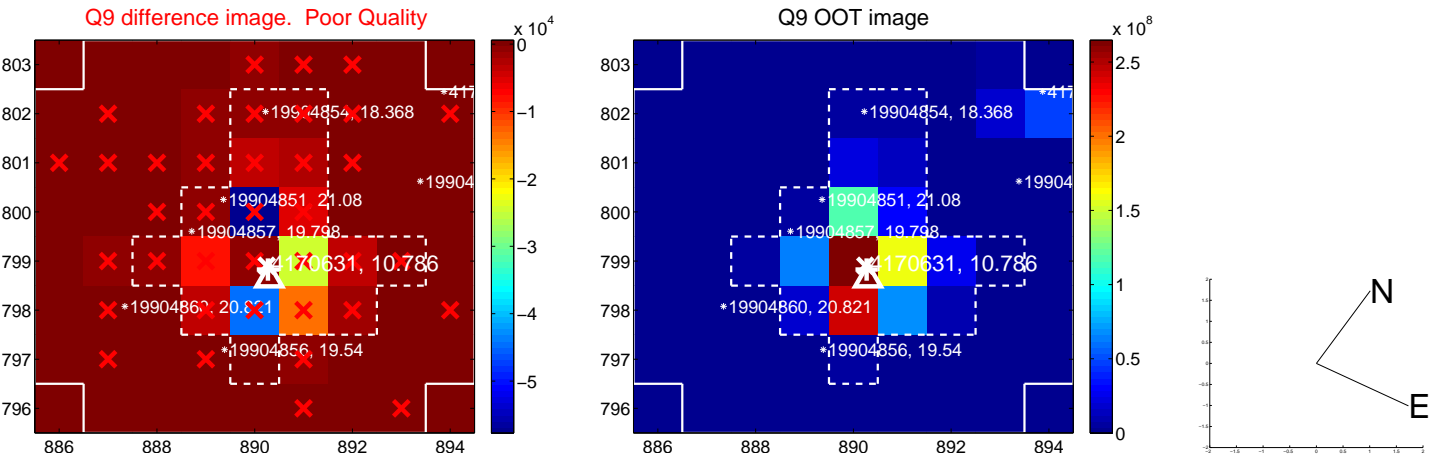
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



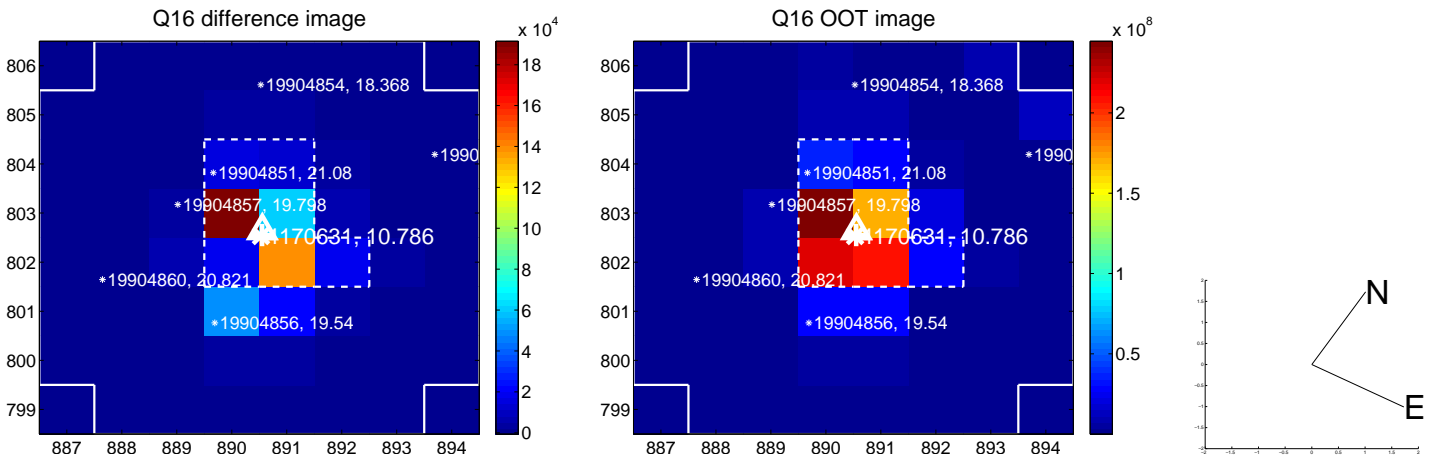
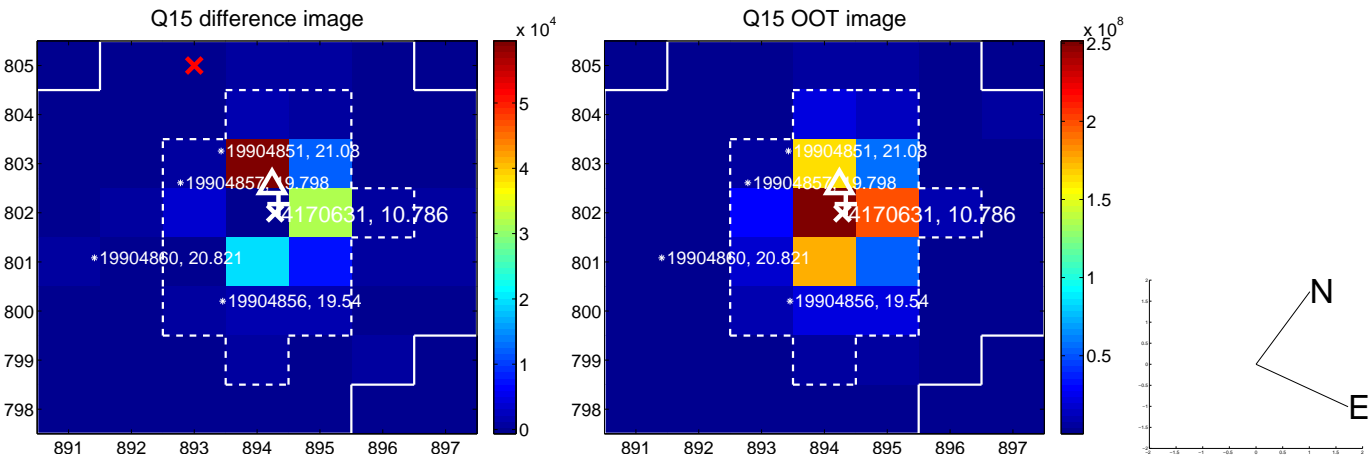
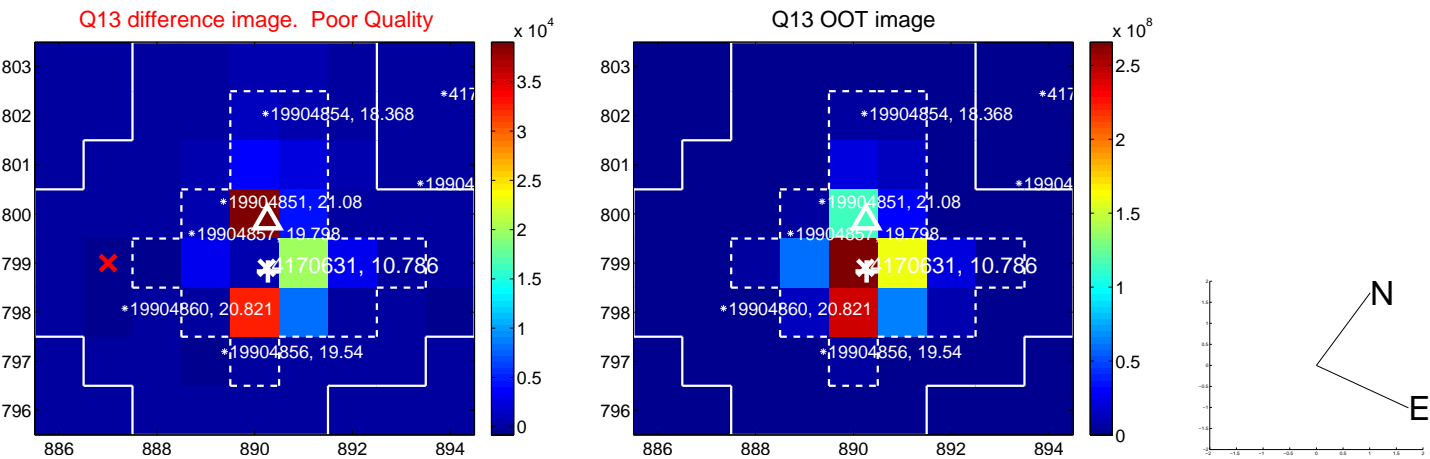
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



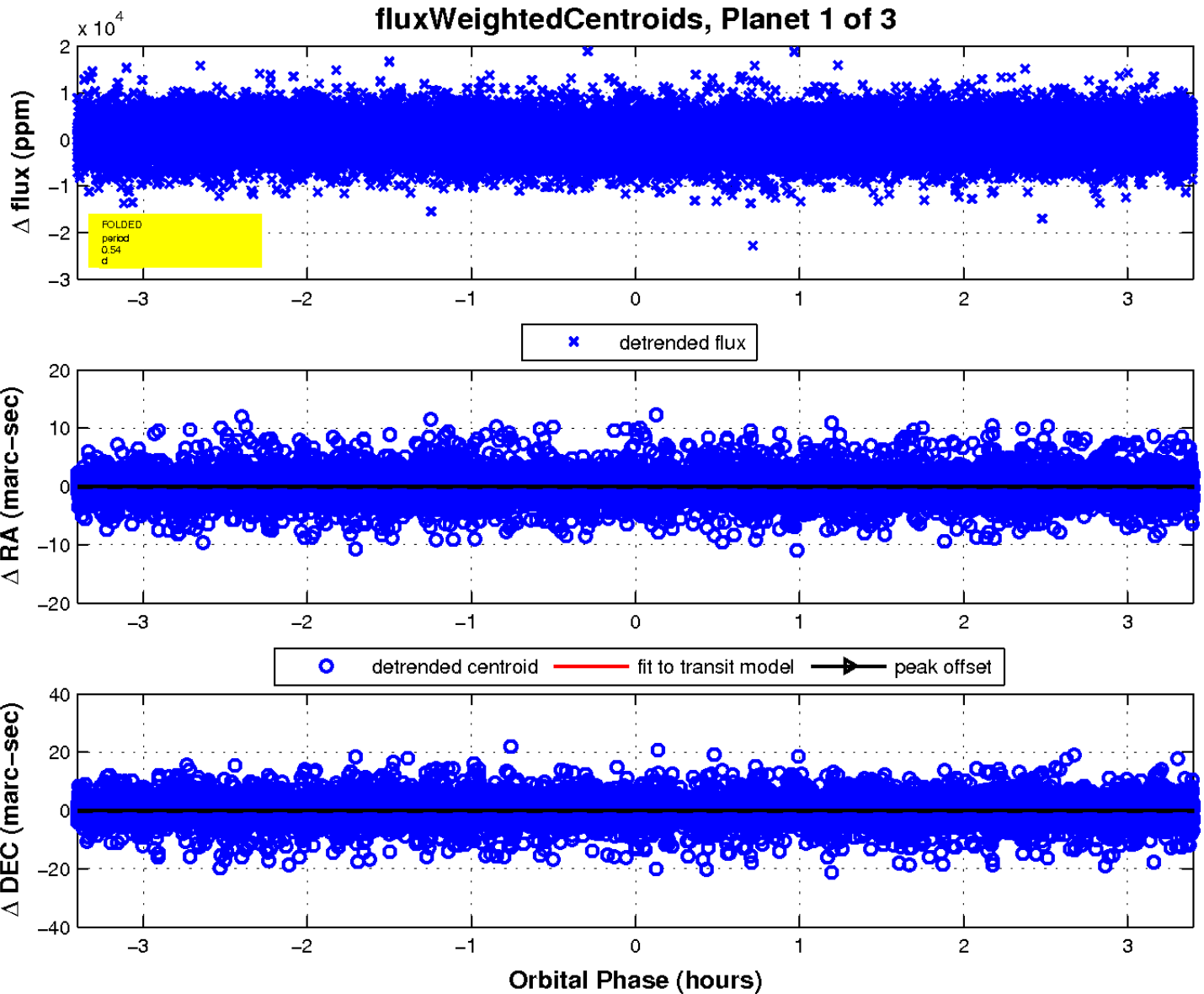
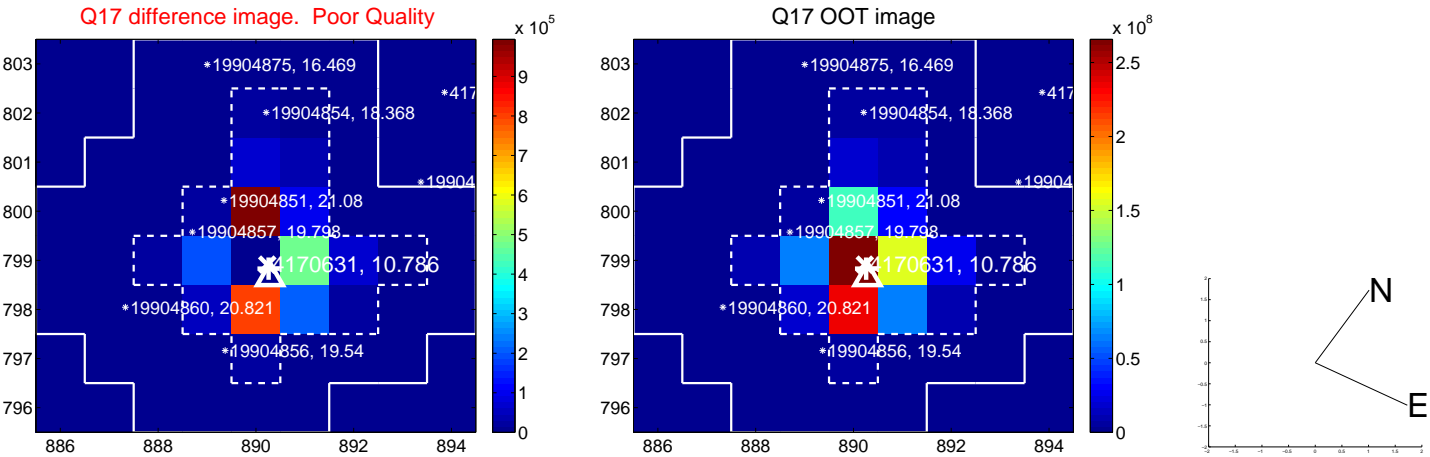
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

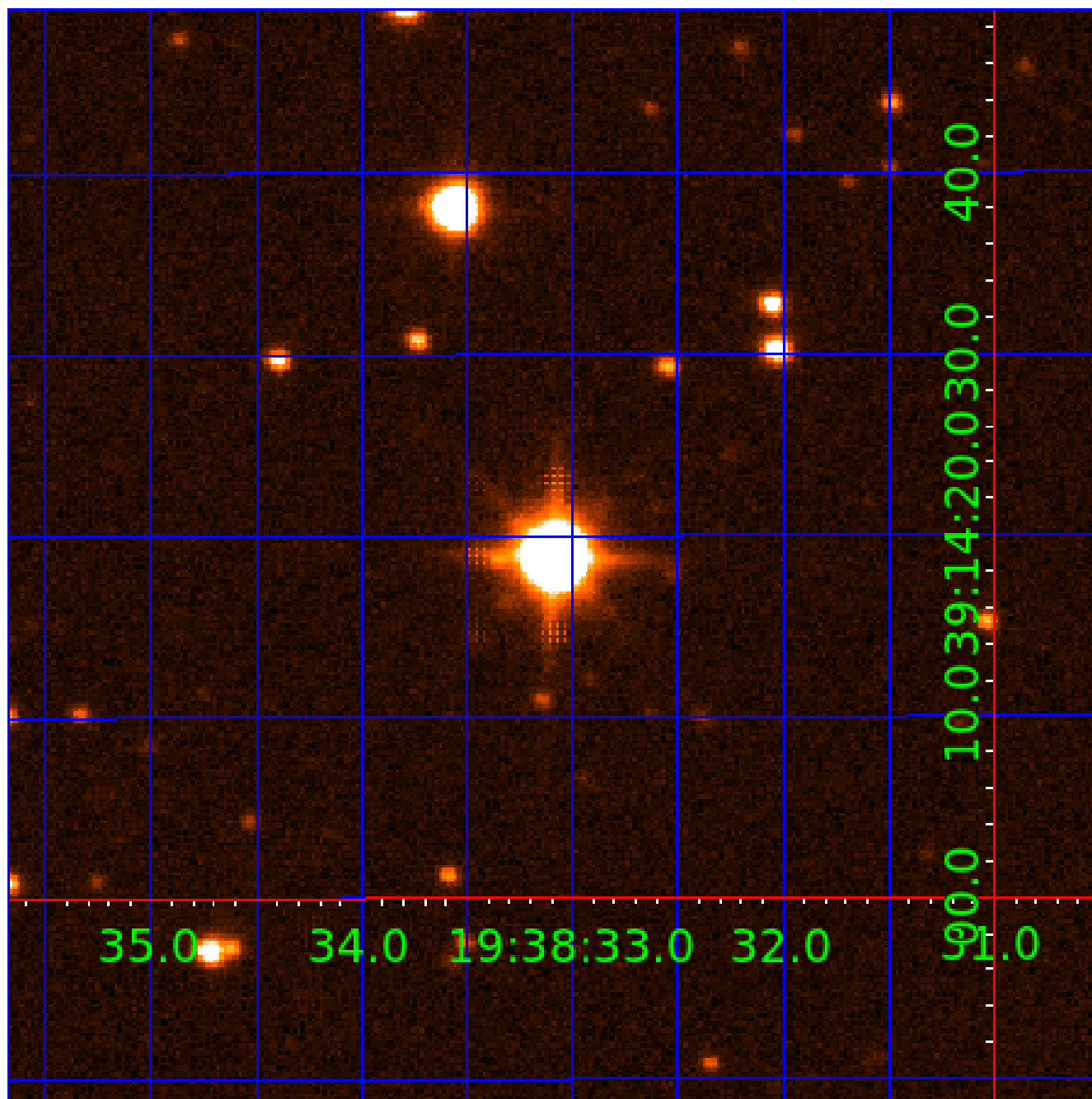


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004170631

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})
004170631-01	OBS	No	0.541773	131.957797	389.6	1.134	10.9	7.2	3.75	7693	8.73	0.00
004170631-02	OBS	No	0.590085	131.605244	613.6	1.064	8.5	8.0	3.75	7693	9.57	0.00
004170631-03	OBS	No	0.590093	131.831102	759.0	1.193	9.0	10.0	3.75	7693	12.21	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004170631-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004170631-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
004170631-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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.

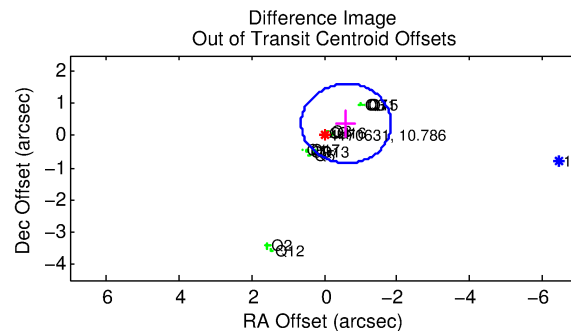
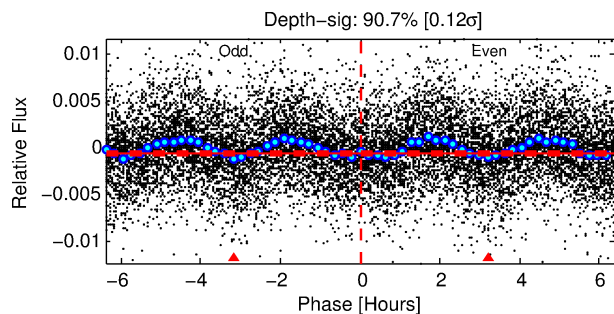
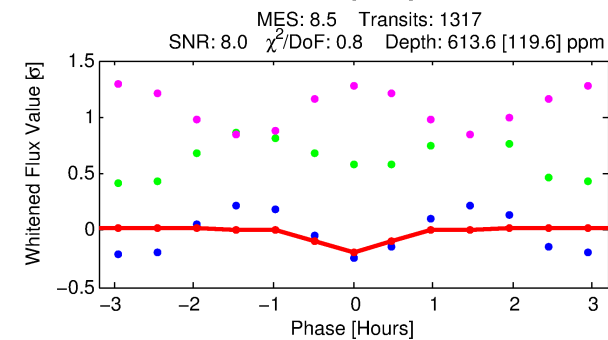
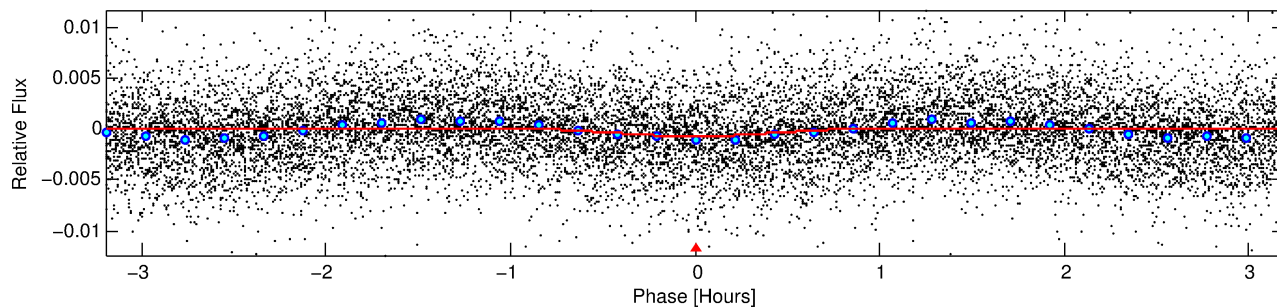
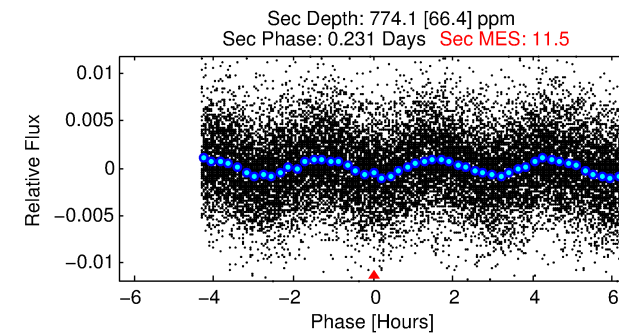
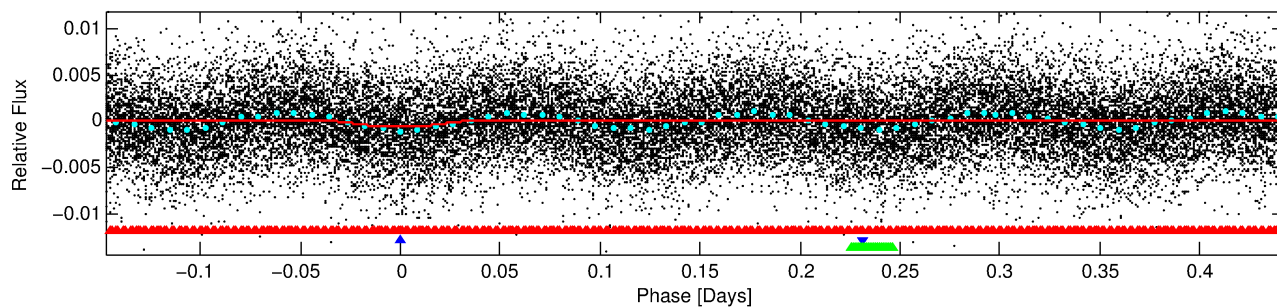
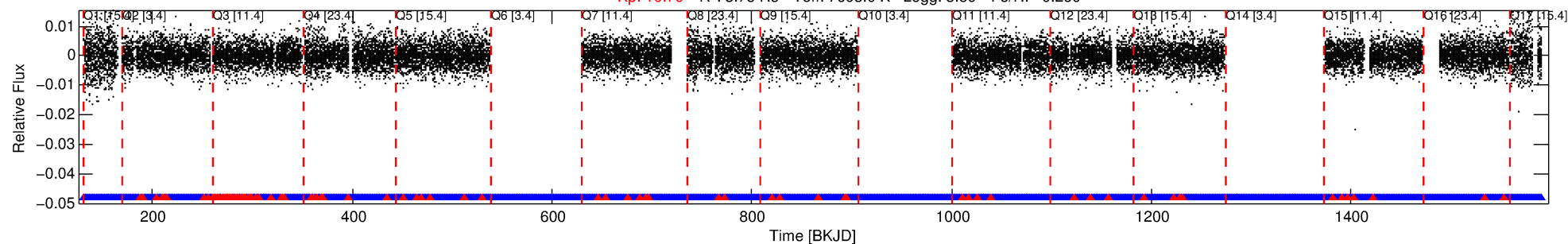
Ephemeris Match Information For 004170631-02

No Significant Match Found

DV One-Page Summary

KIC: 4170631 Candidate: 2 of 3 Period: 0.590 d

Kp: 10.79 R*: 3.75 Rs Teff: 7693.0 K Logg: 3.59 Fe/H: -0.260



DV Fit Results:

Period = 0.59008 [0.00001] d
Epoch = 131.6052 [0.0024] BKJD
Rp/R* = 0.0234 [0.0216]
a/R* = 4.00 [17.94]
b = 0.43 [9.24]
Seff = N/A
Teq = N/A
Rp = 9.57 [10.25] Re
a = N/A
Ag = N/A
Teffp = N/A

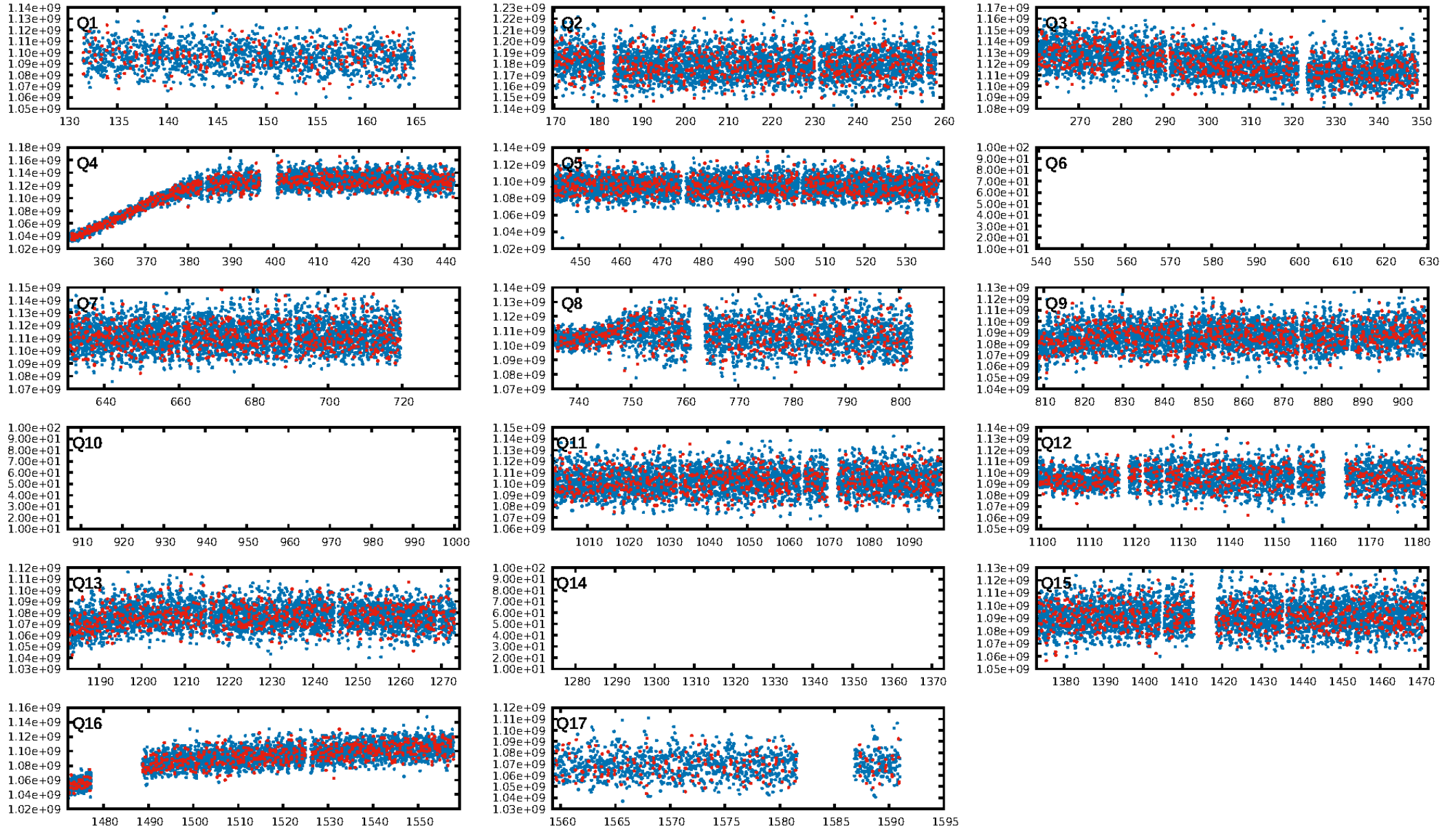
DV Diagnostic Results:

ShortPeriod-sig: 54.4% [0.75σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.55e-15
RollingBand-igt: 0.92 [1137/1241]
GhostDiagnostic-chr: 1.203
Centroid-sig: 48.9%
Centroid-so: 0.022 arcsec [0.34σ]
OotOffset-rm: 0.713 arcsec [1.73σ]
KicOffset-rm: 1.031 arcsec [2.36σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.43 [6/14]
DiffImageOverlap-fno: 0.00 [0/14]

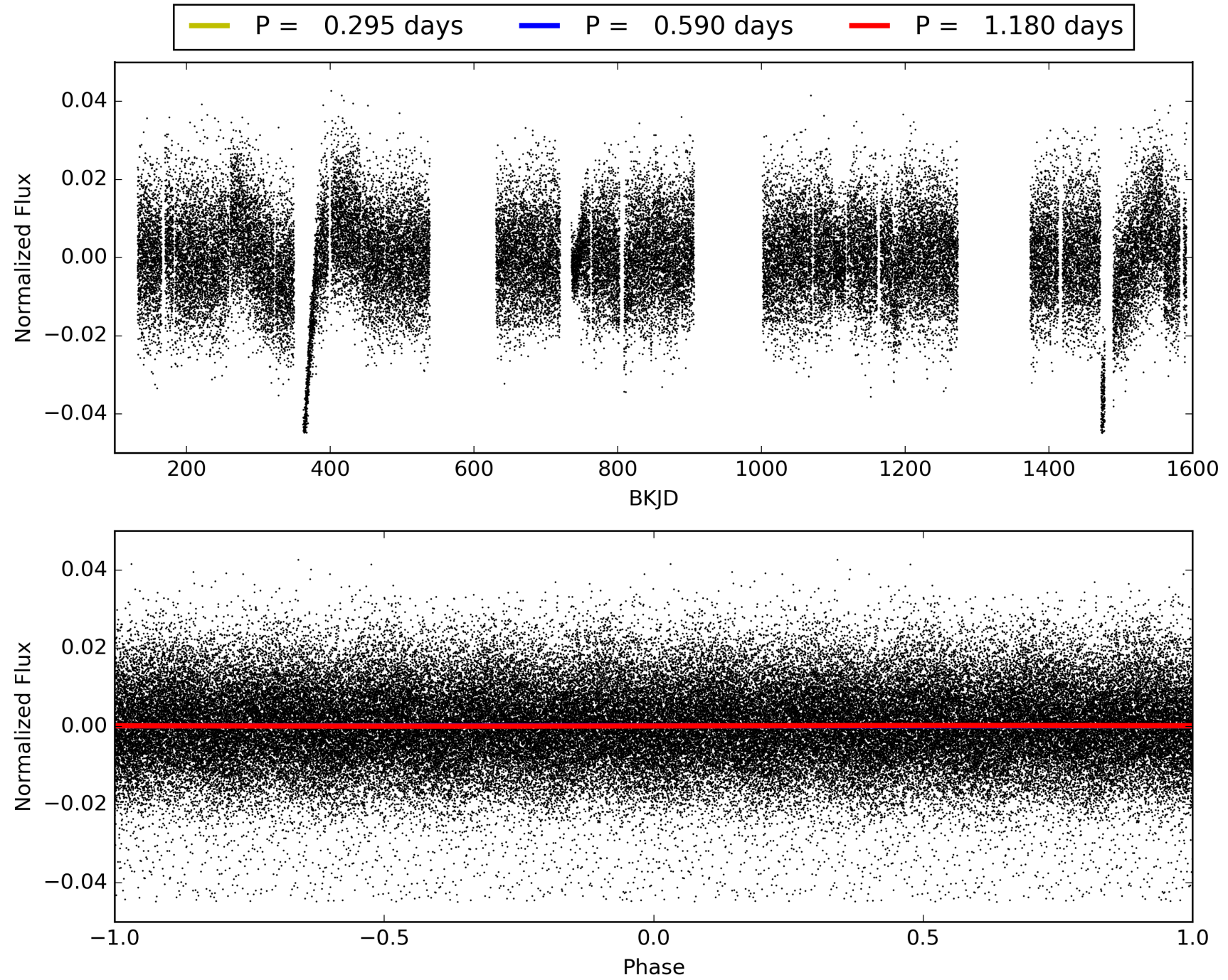
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:02:09 Z

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TCE 004170631-02, PDC Light Curves

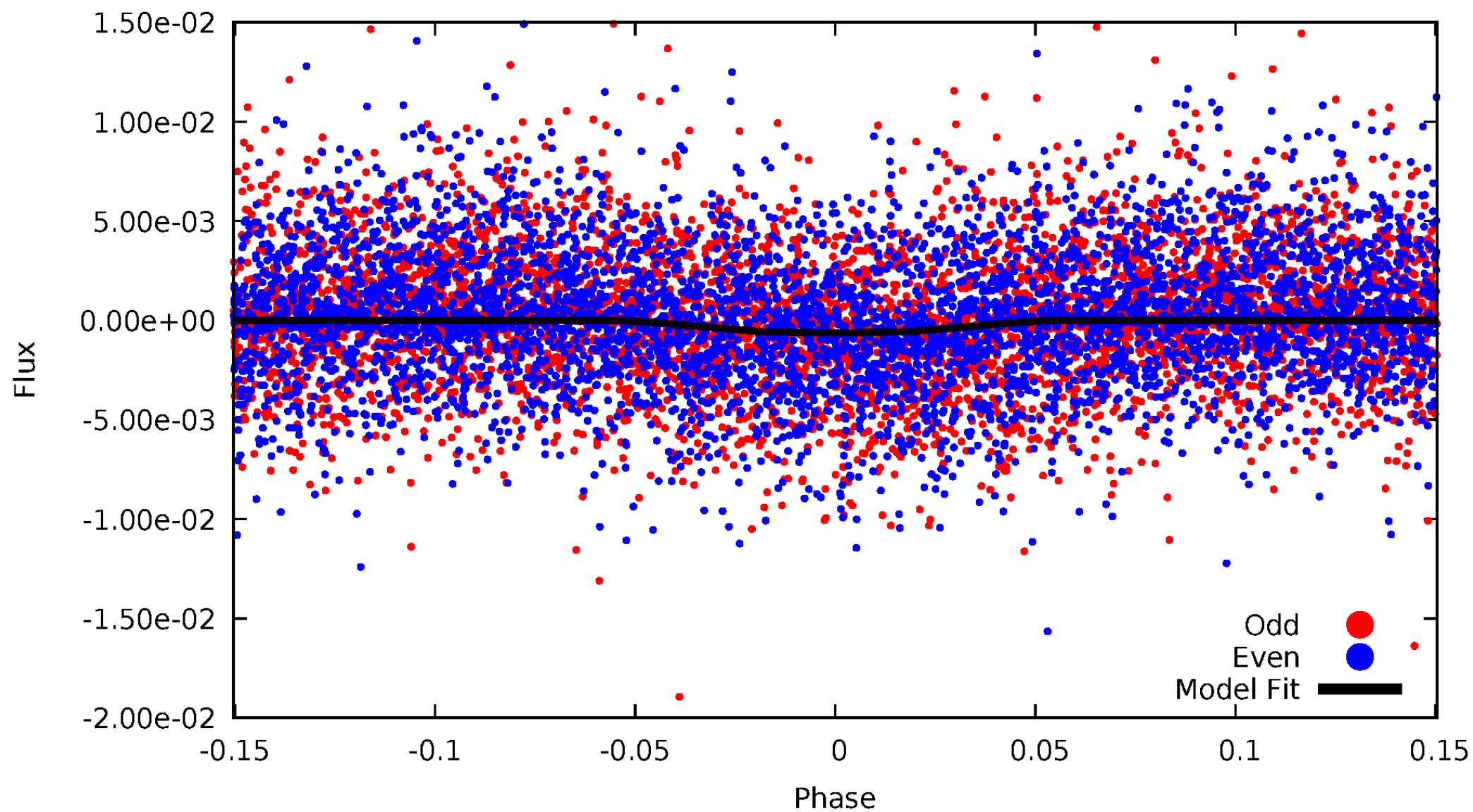


TCE 004170631-02



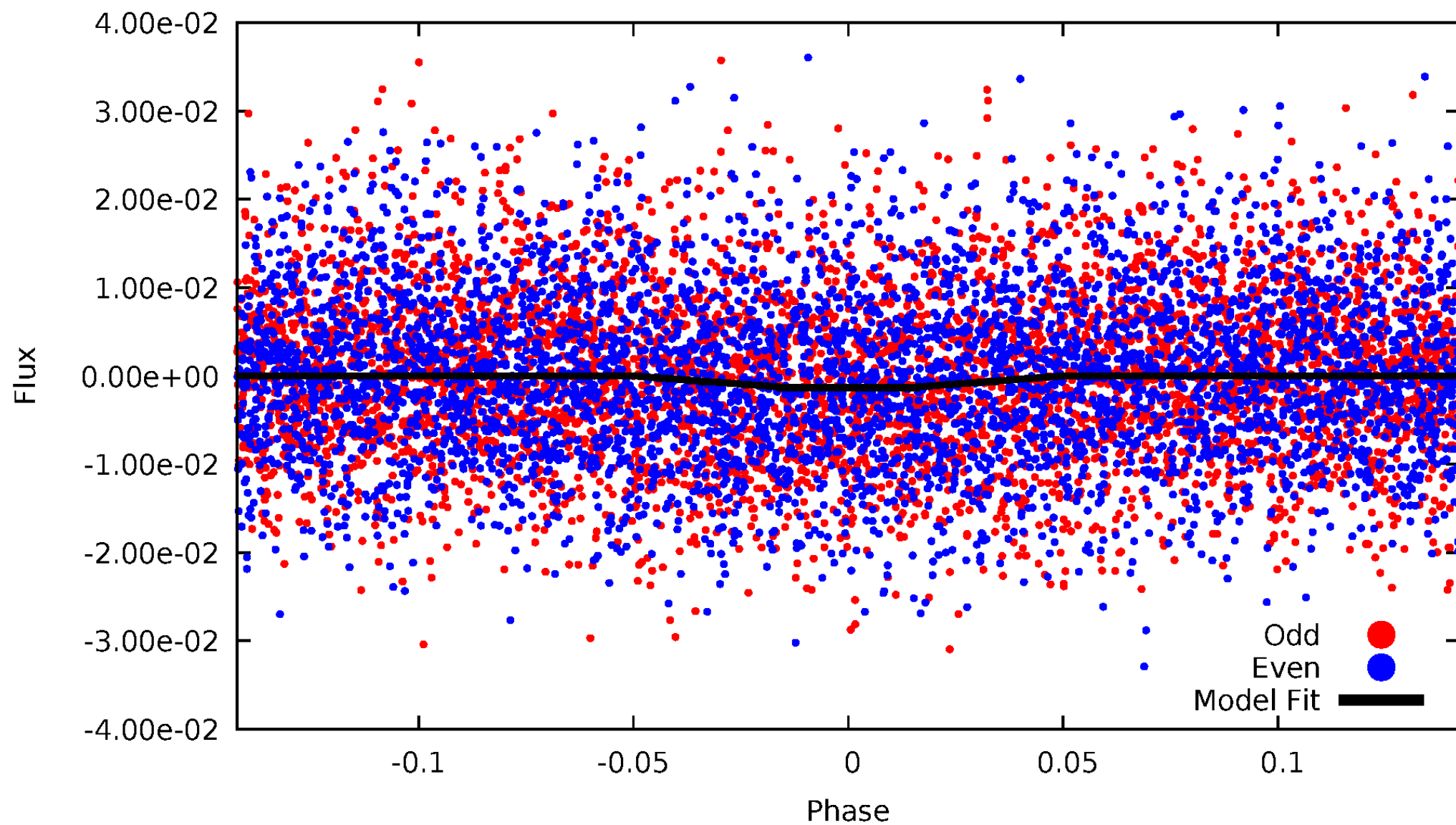
DV Odd/Even

TCE 004170631-02



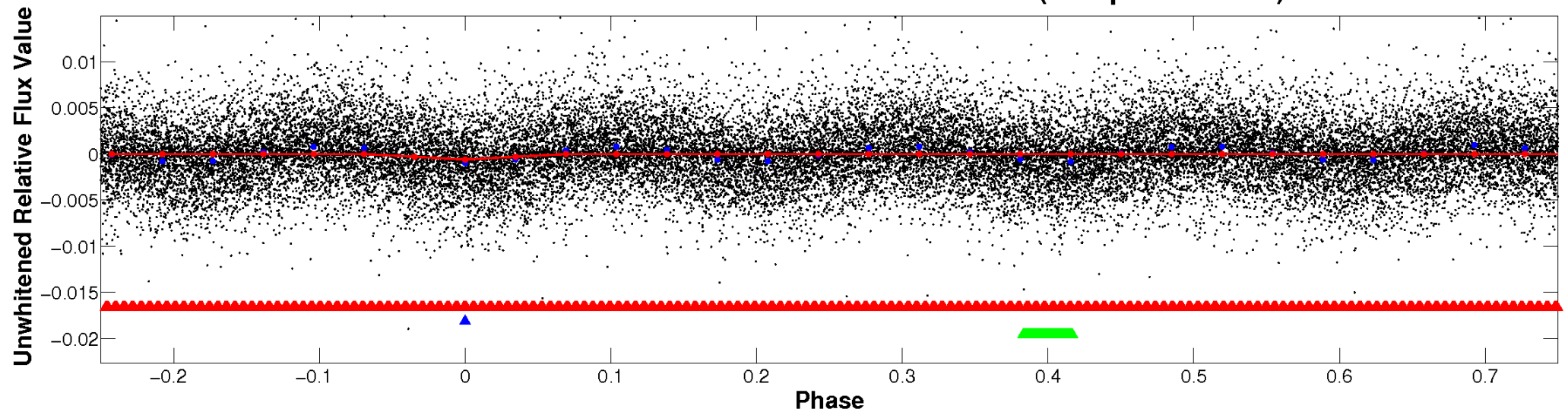
ALT Odd/Even

TCE 004170631-02

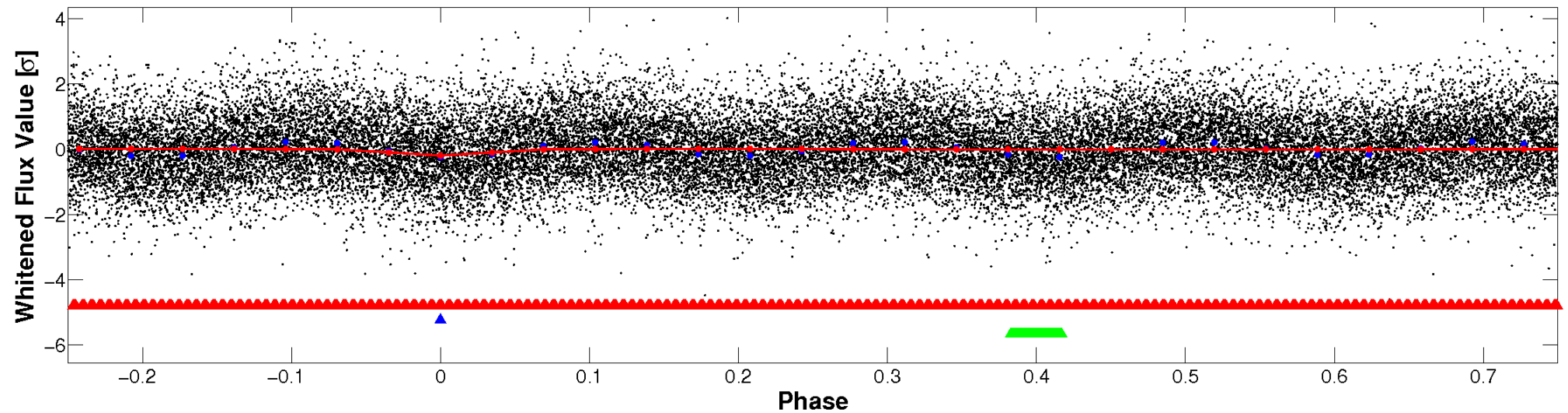


Non-Whitened Vs. Whitened Light Curve

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

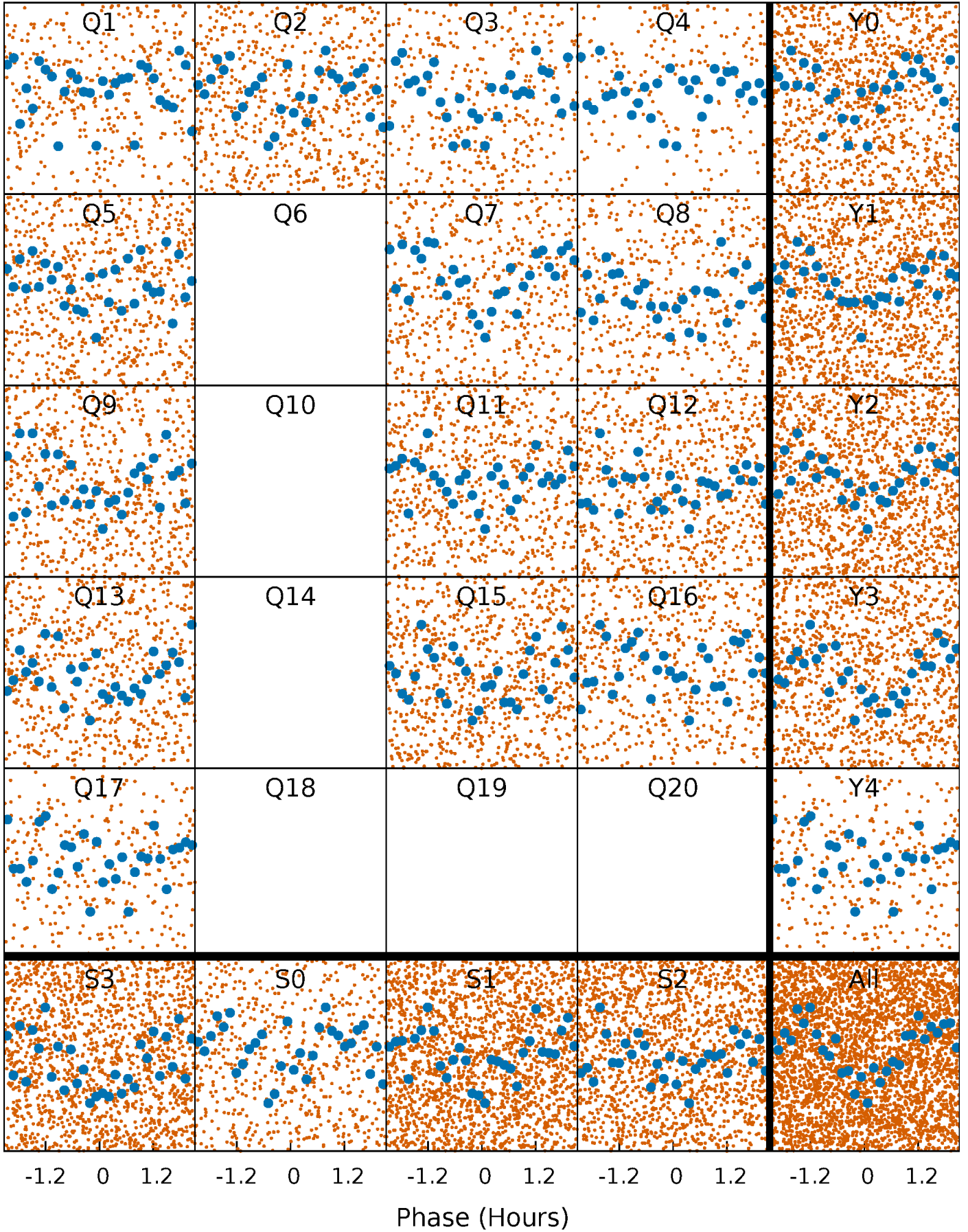


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



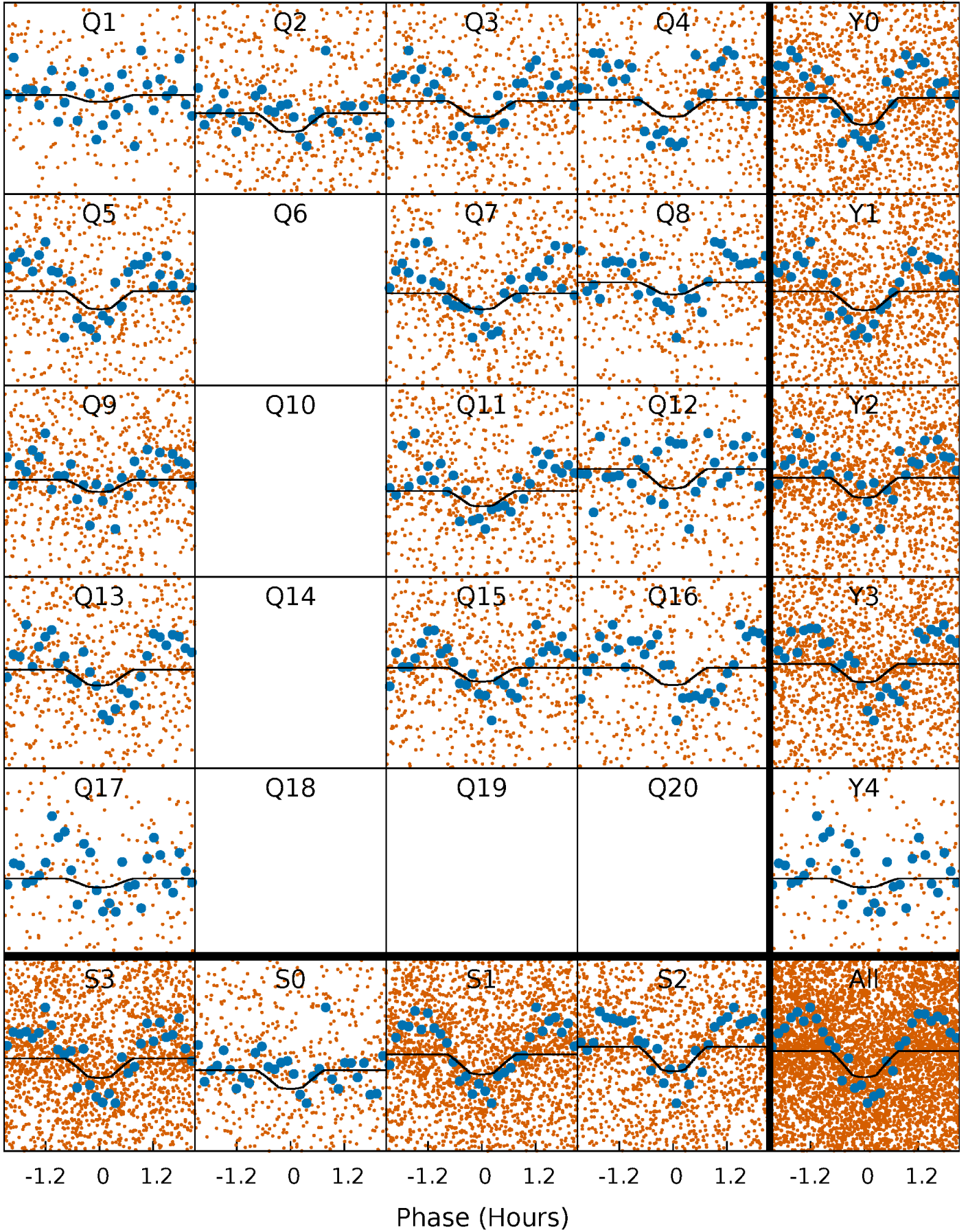
PDC Quarter-Phased Transit Curves

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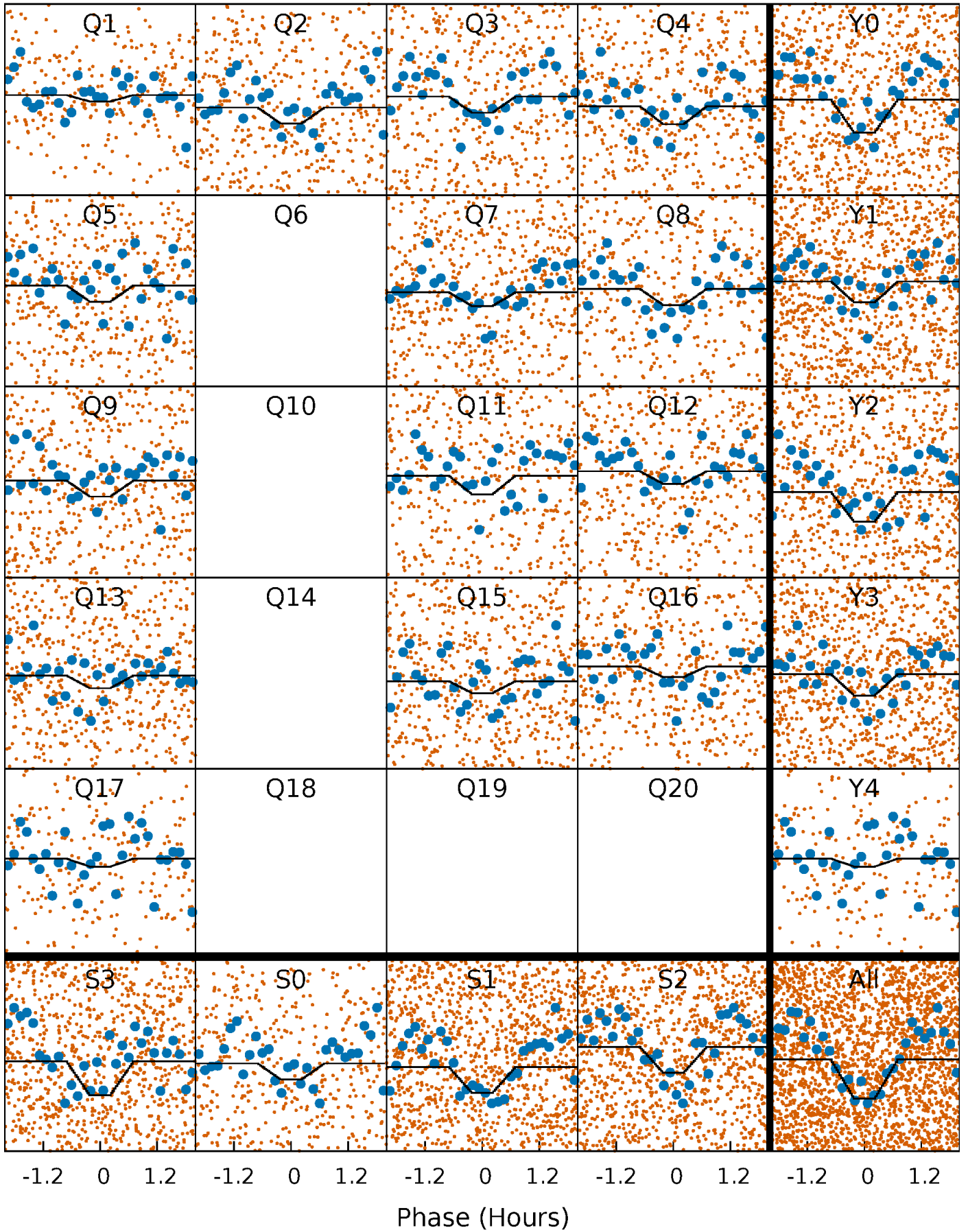
DV Quarter-Phased Transit Curves

TCE 004170631-02 P= 0.590085 Days $T_0=131.605244$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

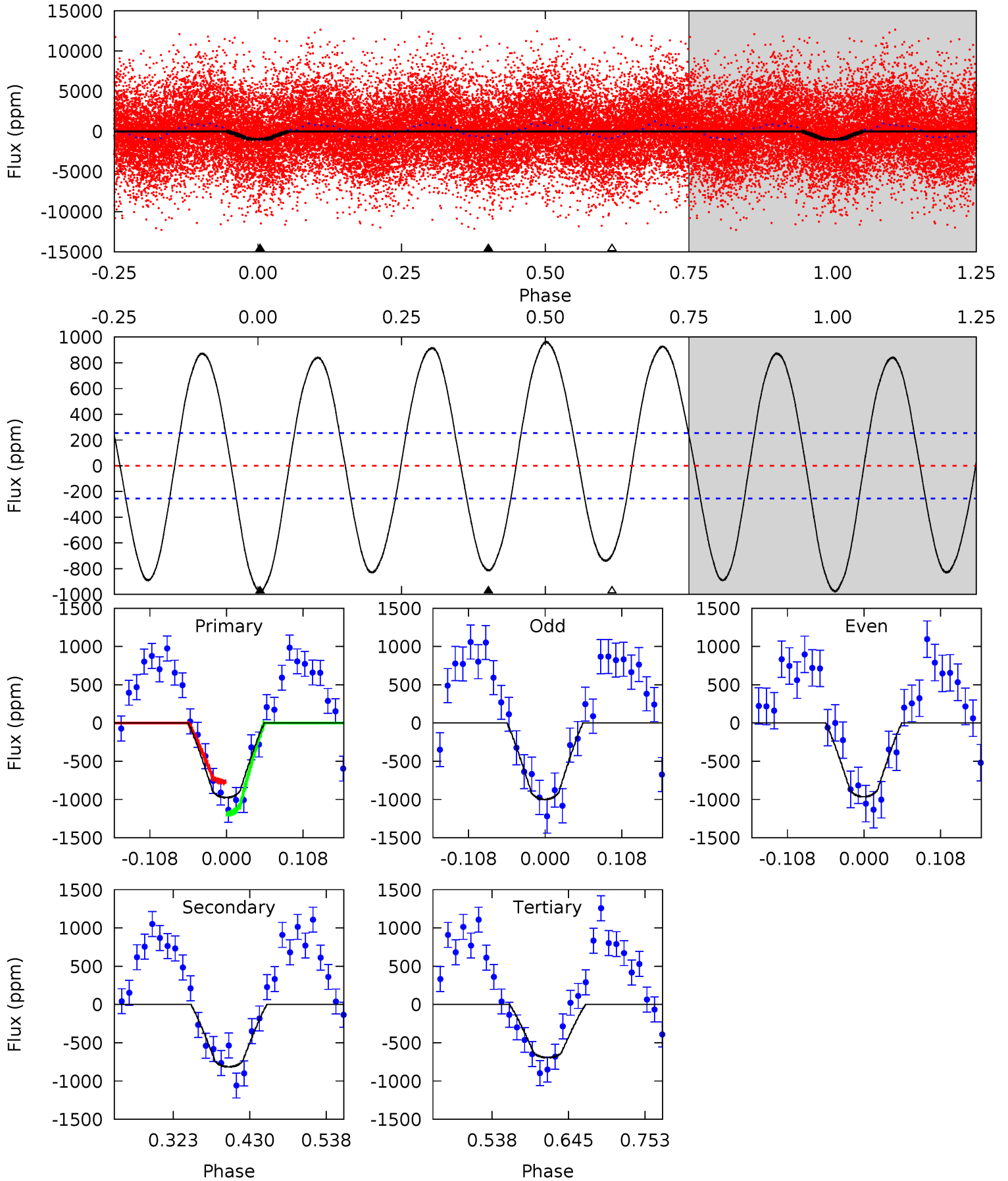
TCE 004170631-02 P= 0.590095 Days $T_0=131.595046$ (BKJD)



DV Model-Shift Uniqueness Test

004170631-02, P = 0.590085 Days, E = 131.015159 Days

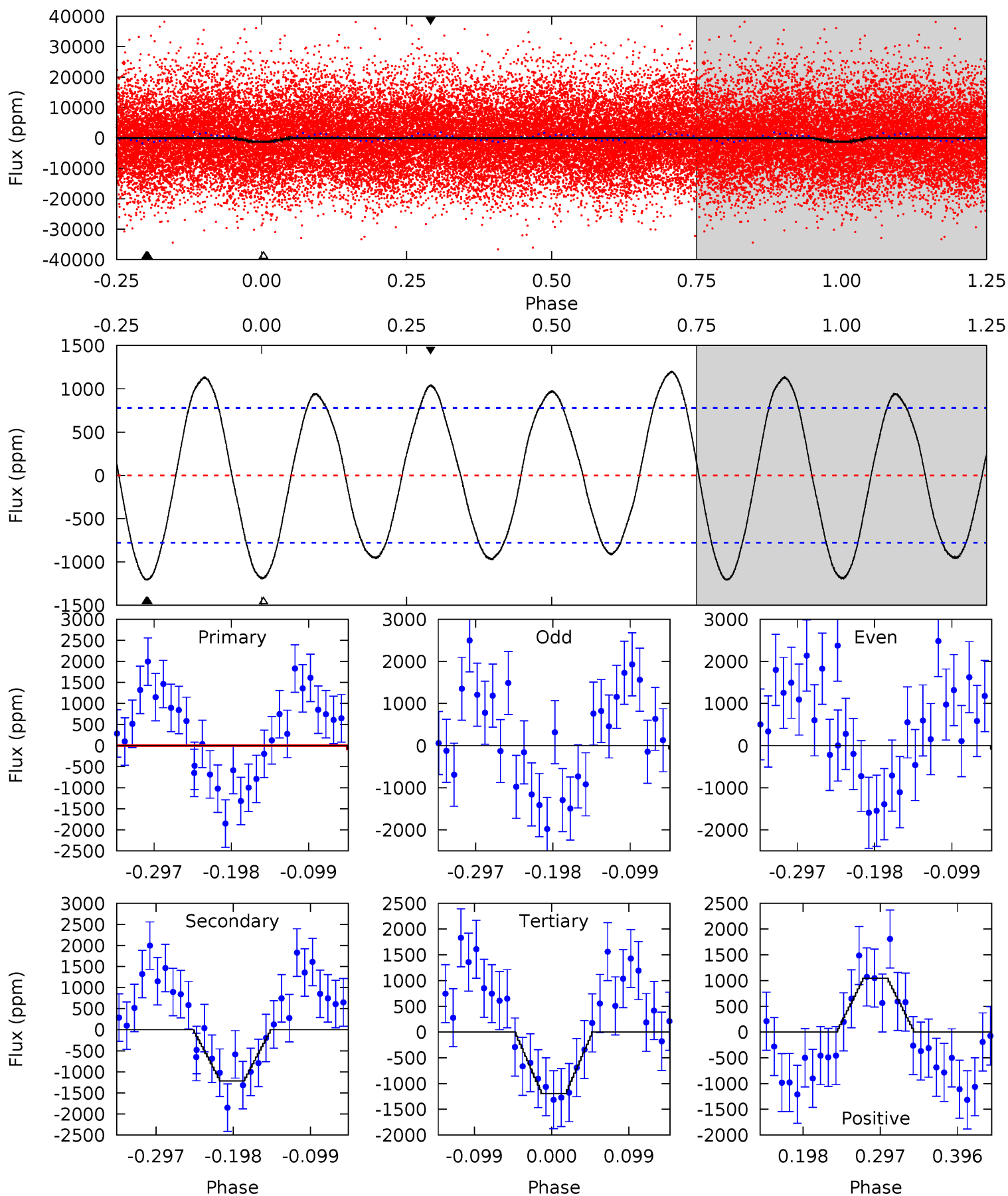
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.5	14.6	12.4	0	4.55	1.61	10.6	5.04	17.5	2.14	14.6	0.30	1.04	0.50	3.65



Alt Model-Shift Uniqueness Test

004170631-02, P = 0.590095 Days, E = 131.004951 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.11	7.12	7.02	6.15	4.57	1.65	4.19	0.09	0.97	0.10	0.98	0.01	0.84	0.50	0.34



Stellar Parameters For KIC 004170631

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7693^{+243}_{-297}	$3.588^{+0.510}_{-0.060}$	$-0.260^{+0.250}_{-0.300}$	$3.751^{+0.511}_{-2.045}$	$1.987^{+0.163}_{-0.523}$	$0.053^{+0.351}_{-0.015}$
	+3%/-4%	+14%/-2%	+96%/-115%	+14%/-55%	+8%/-26%	+661%/-29%
Source	KIC0	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 004170631-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-814 ± 56	$9.20^{+7.90}_{-5.57}$	6669^{+492}_{-766}	7542^{+9384}_{-2796}	$1.611^{+8.081}_{-1.147}$
Alt.	-1213 ± 170	$13.01^{+8.63}_{-7.17}$	6665^{+501}_{-830}	6743^{+5429}_{-2247}	$1.169^{+4.232}_{-0.750}$

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 $A_{\text{obs}} \gg 1.0$

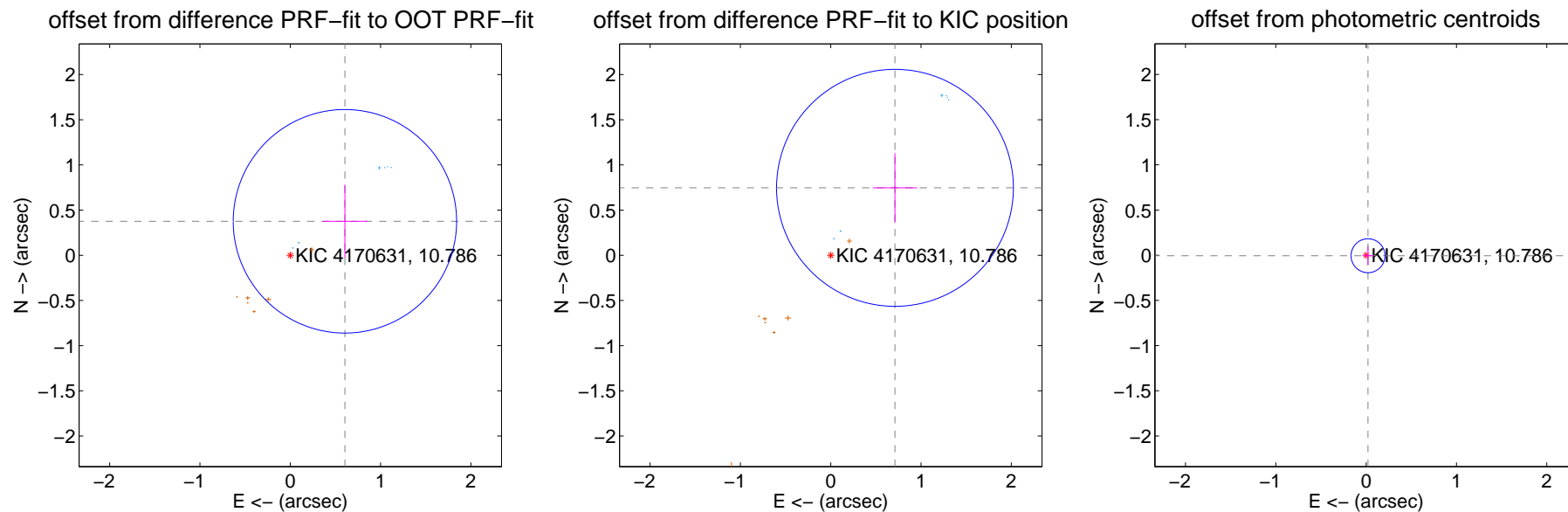
DV Centroid Data

Supplemental centroid analysis for 004170631-02. **Kepler magnitude: 10.79.** Transit SNR 7.95

There are 6 quarters with good PRF difference image offsets

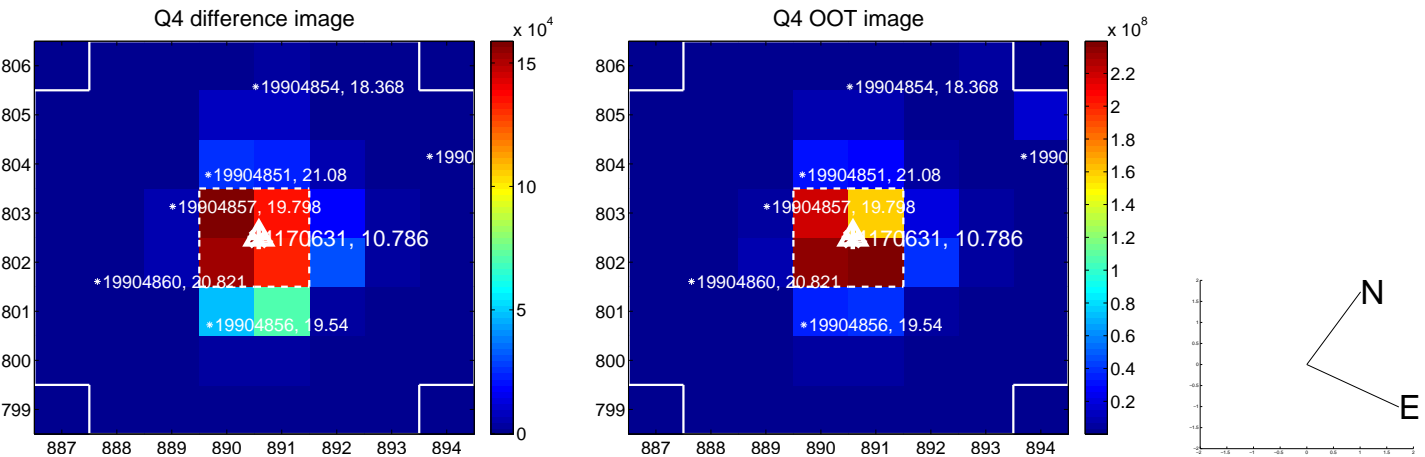
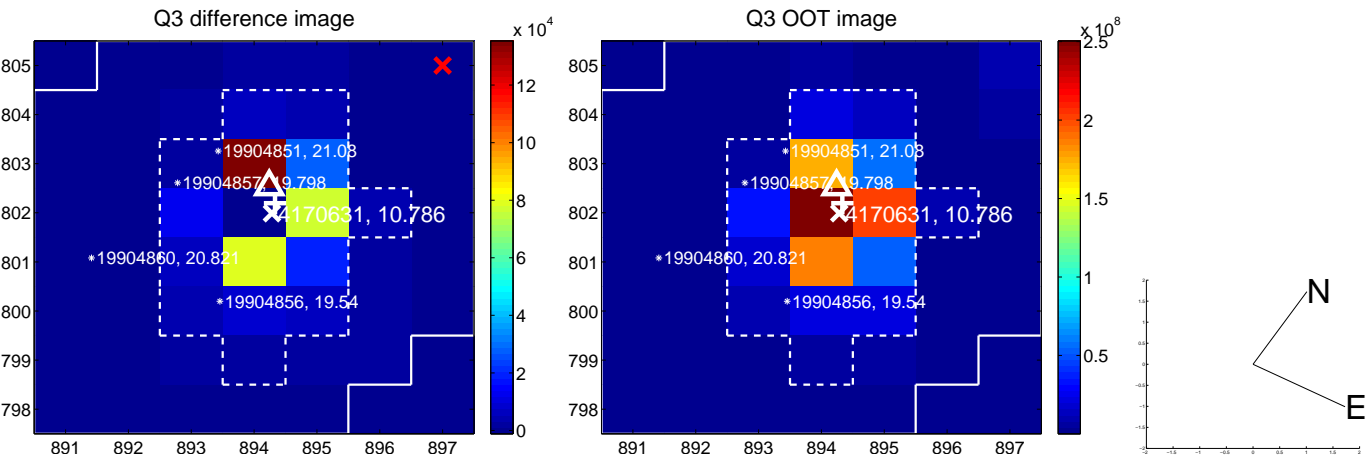
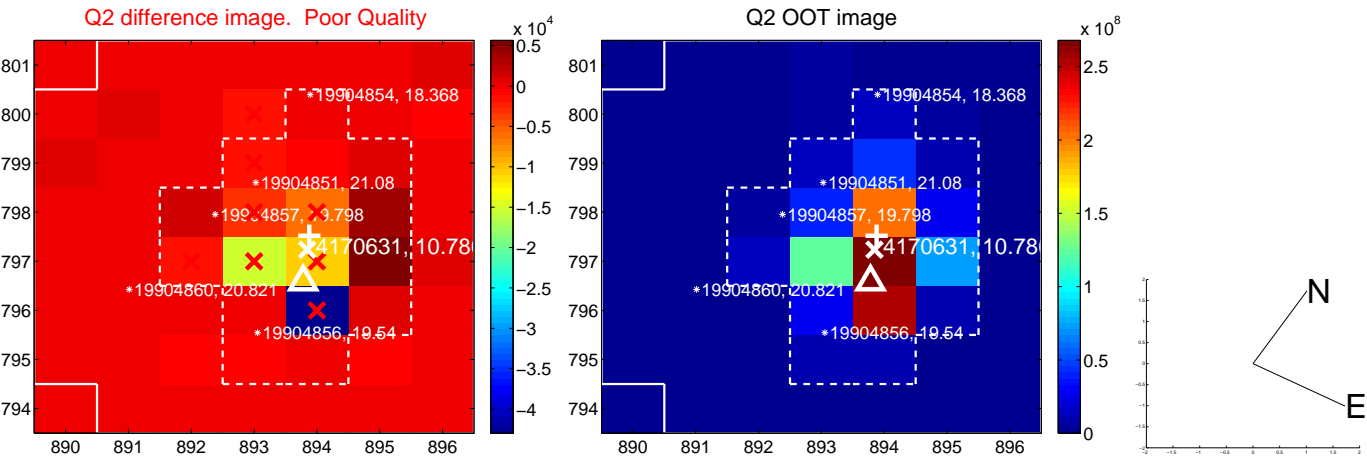
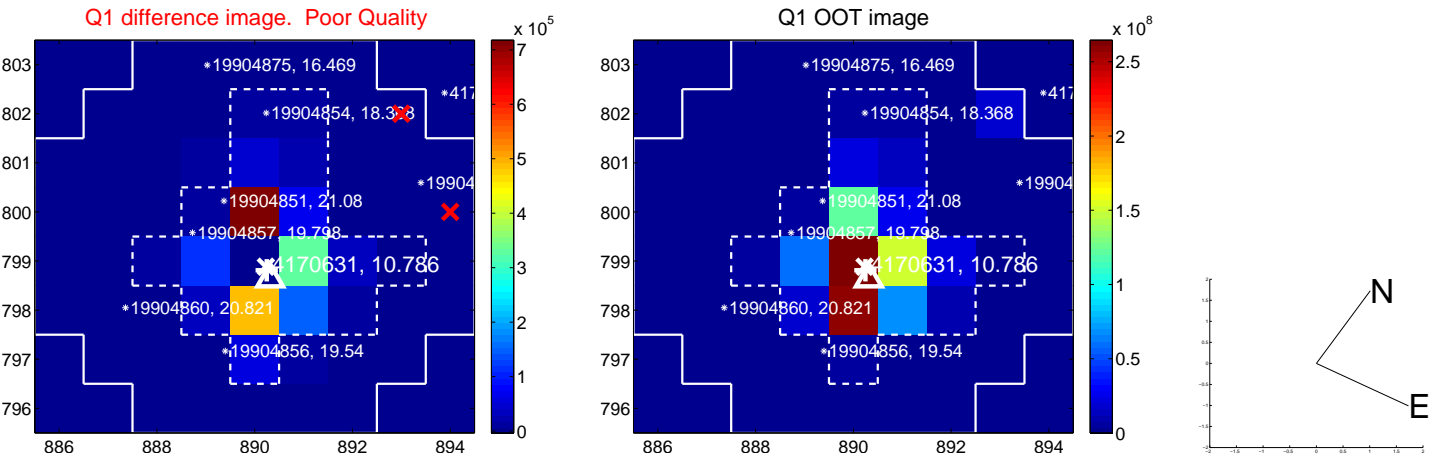
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.713 ± 0.412	1.73	-0.605 ± 0.249	0.376 ± 0.403
PRF-fit source offset from KIC position	1.031 ± 0.437	2.36	-0.712 ± 0.245	0.746 ± 0.385
photometric centroid source offset	0.02 ± 0.06	0.34	-0.02 ± 0.06	-0.01 ± 0.10

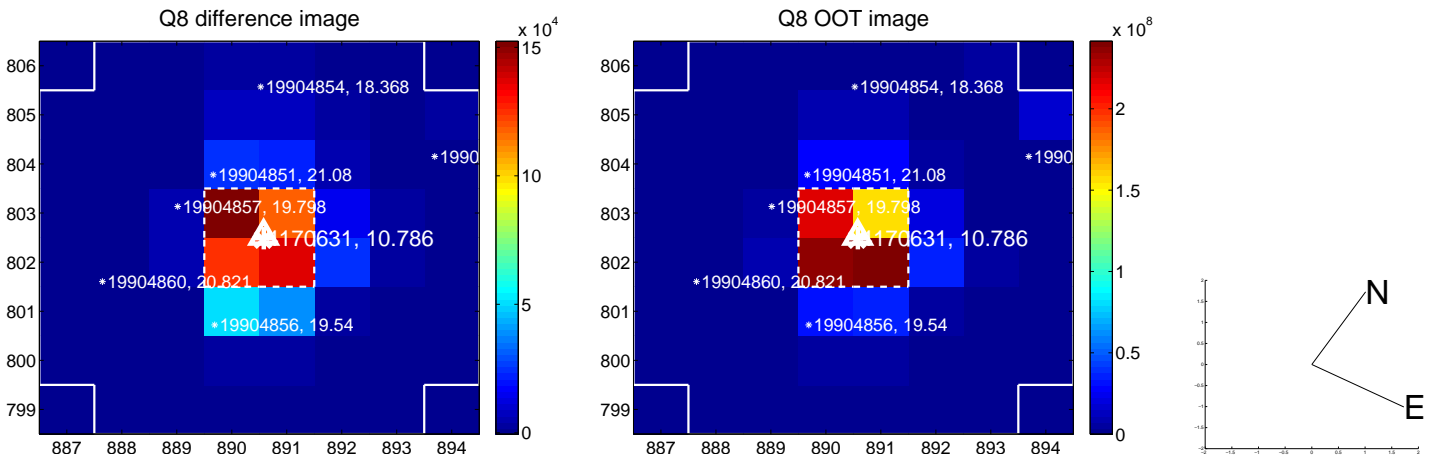
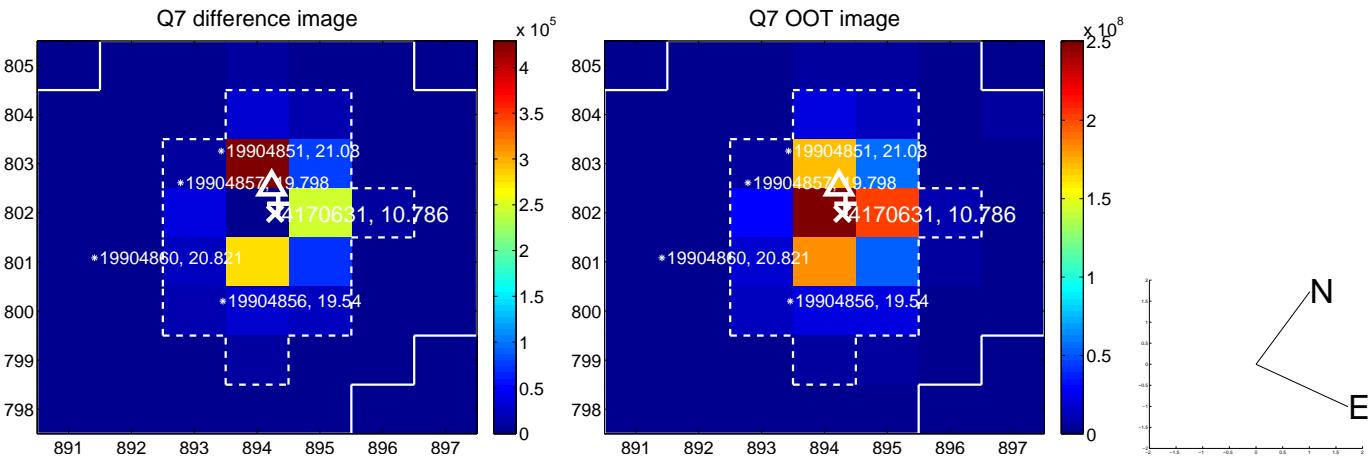
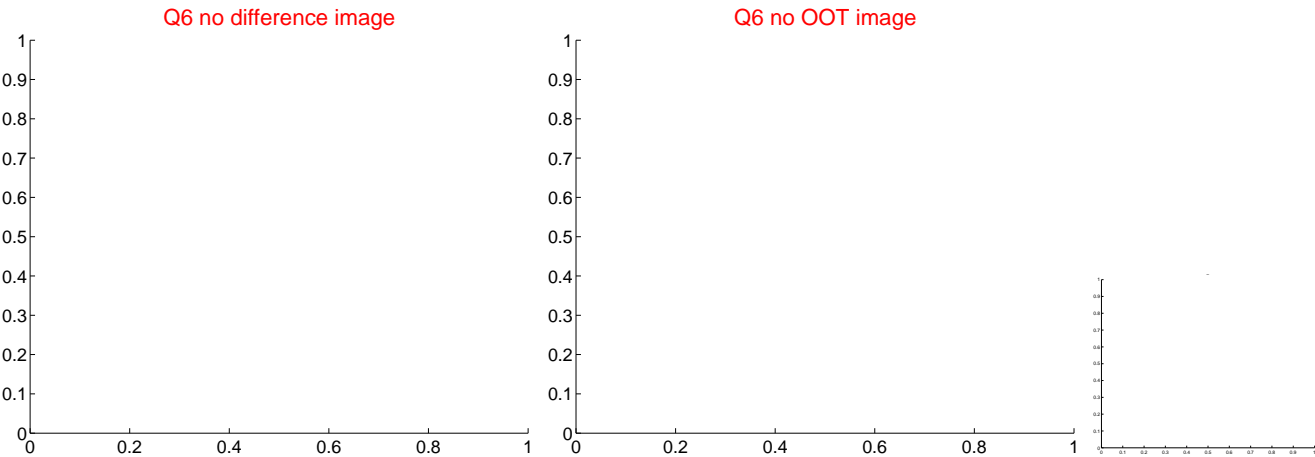
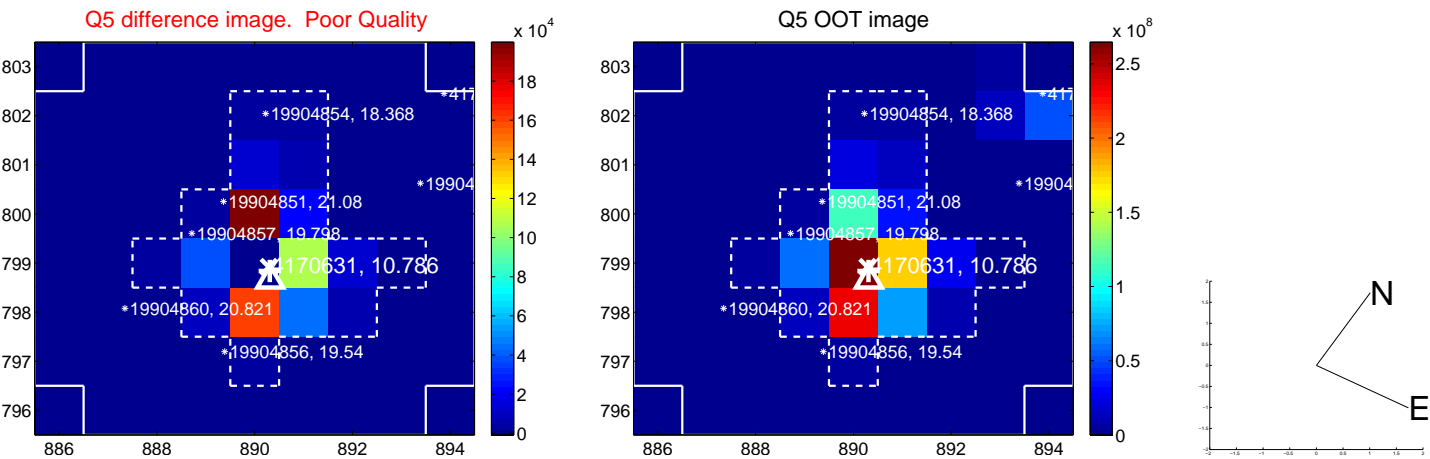


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

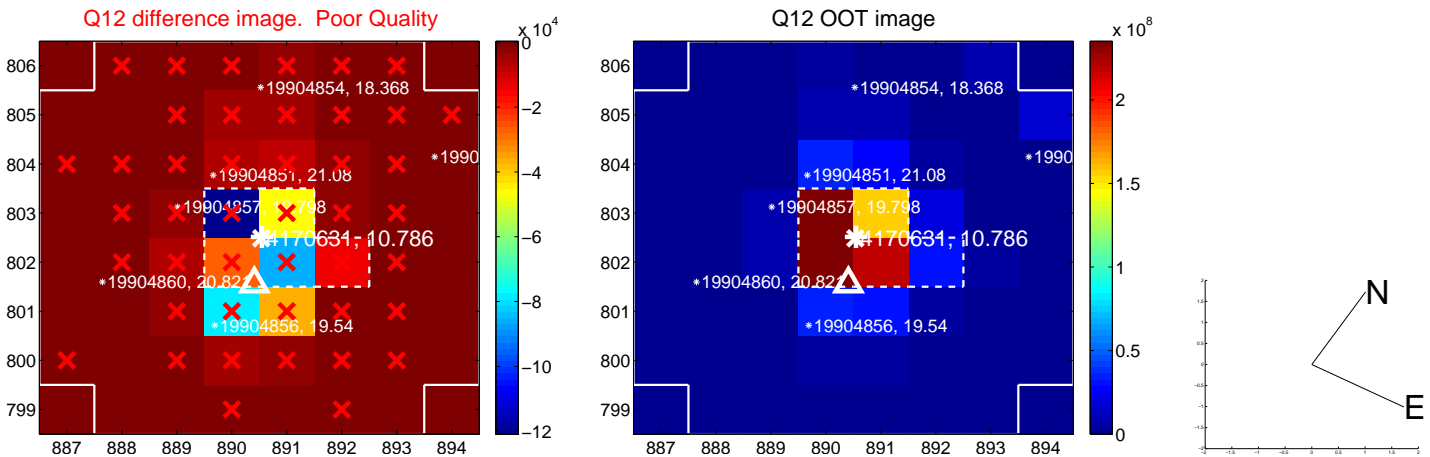
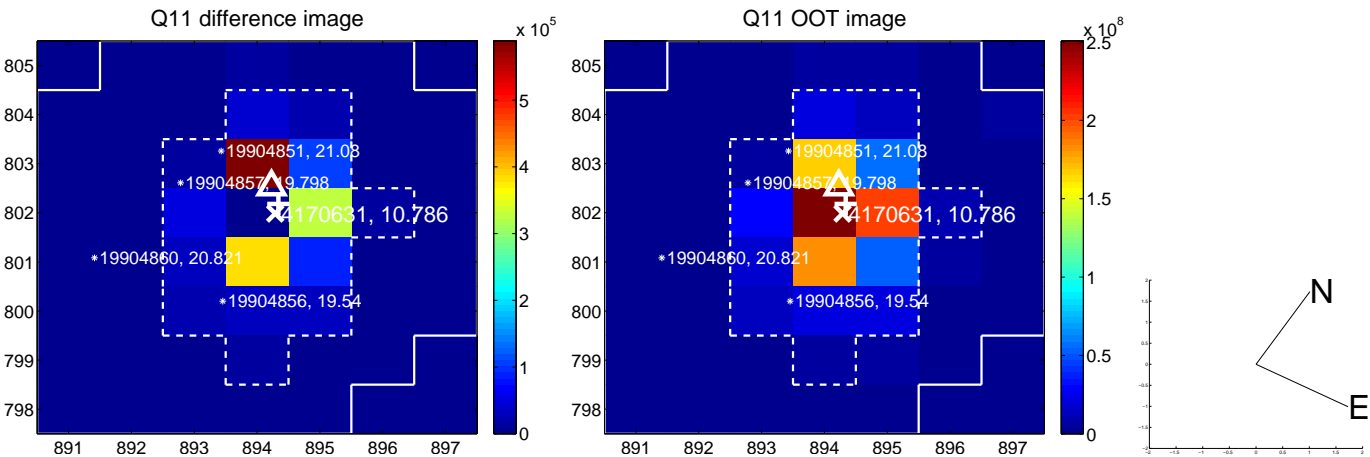
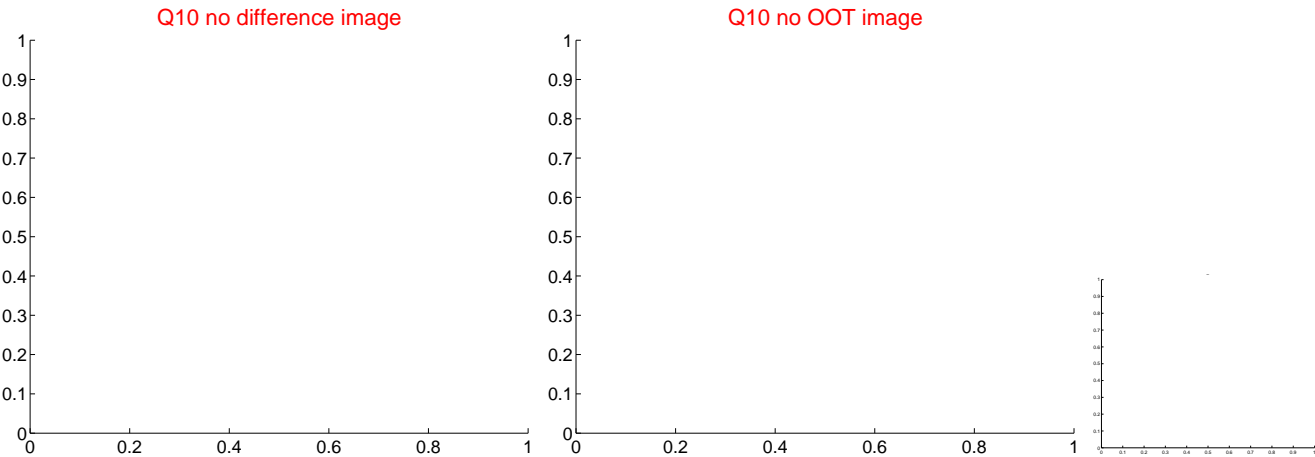
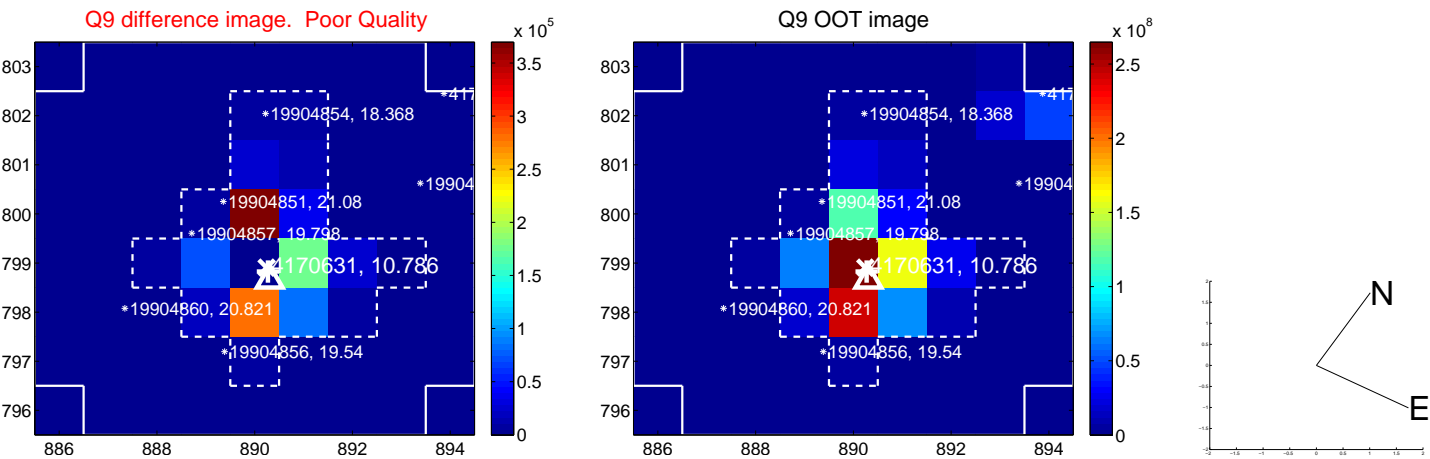
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



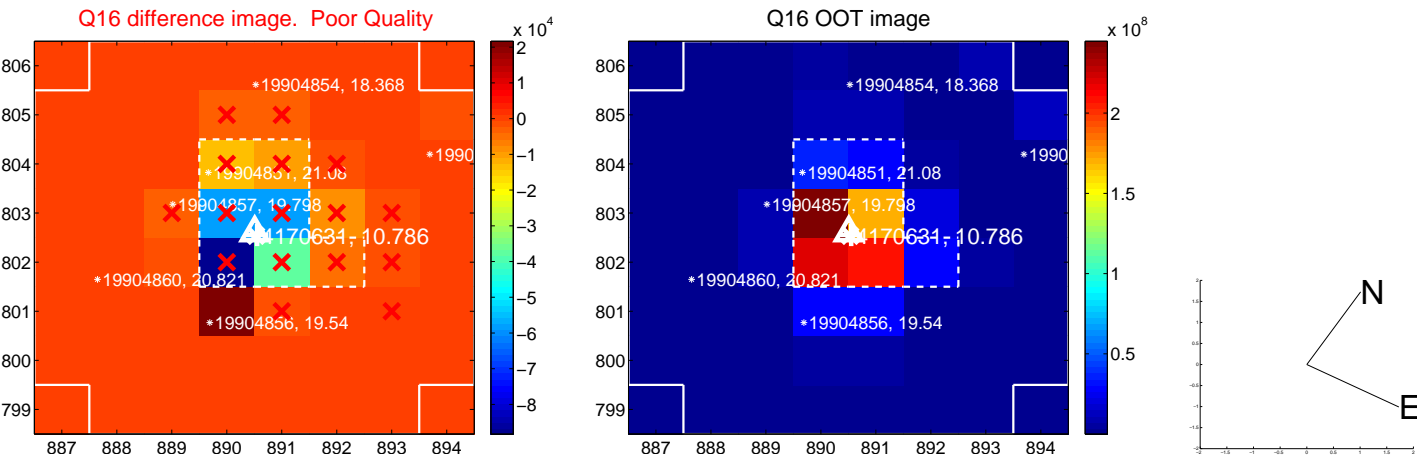
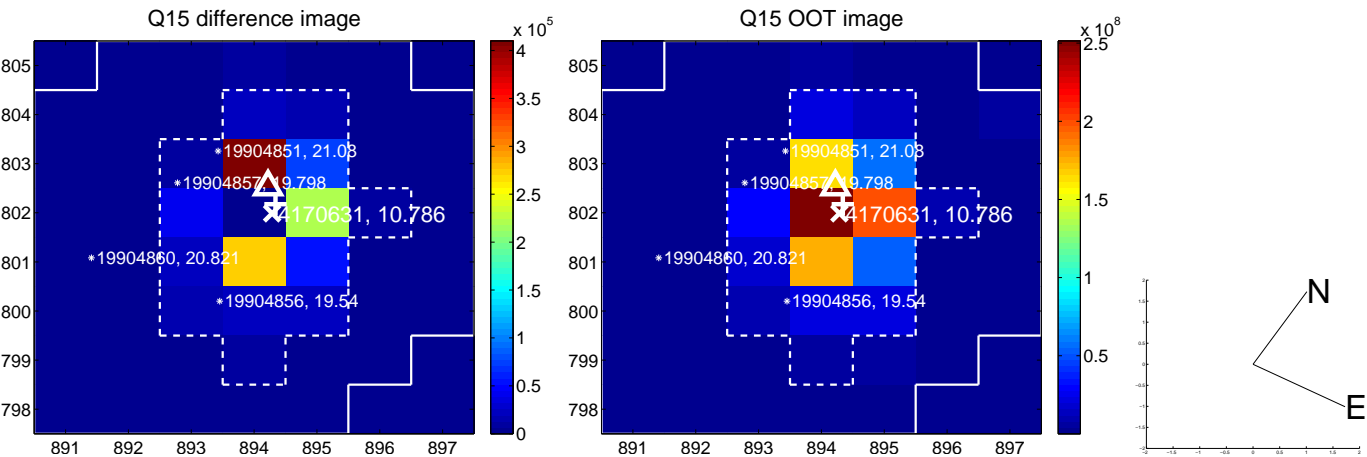
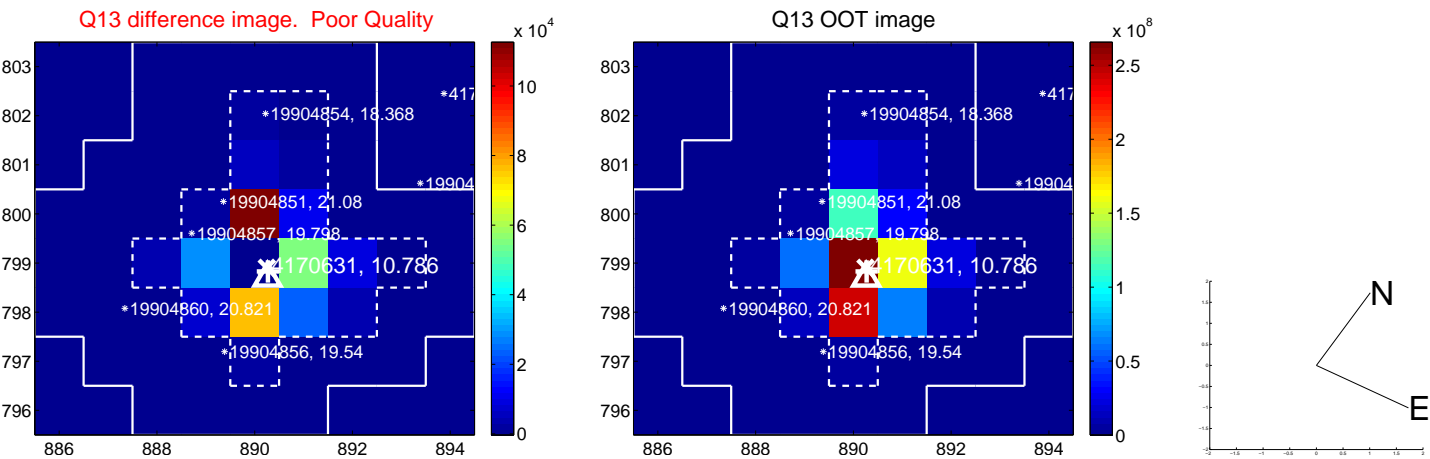
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



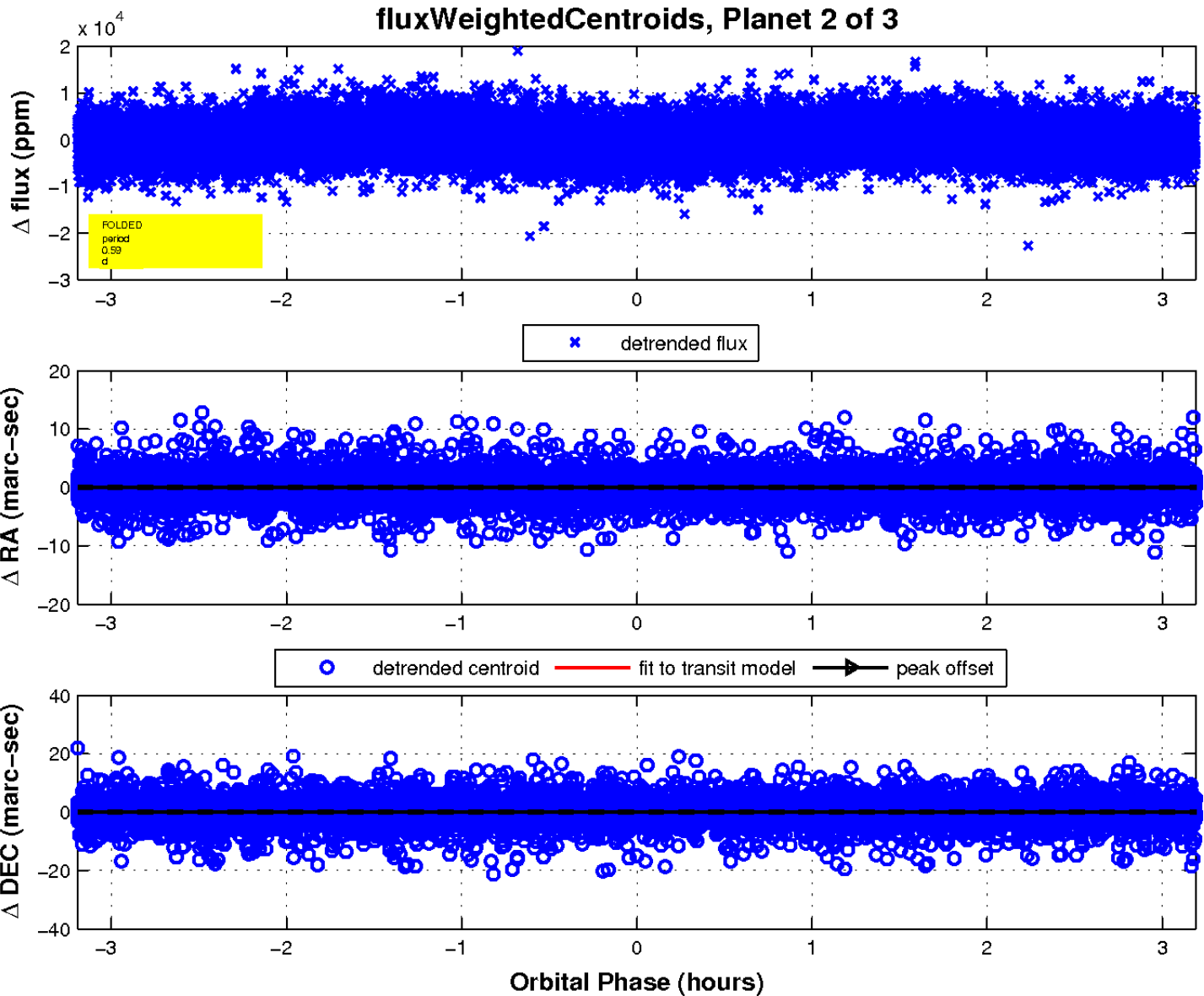
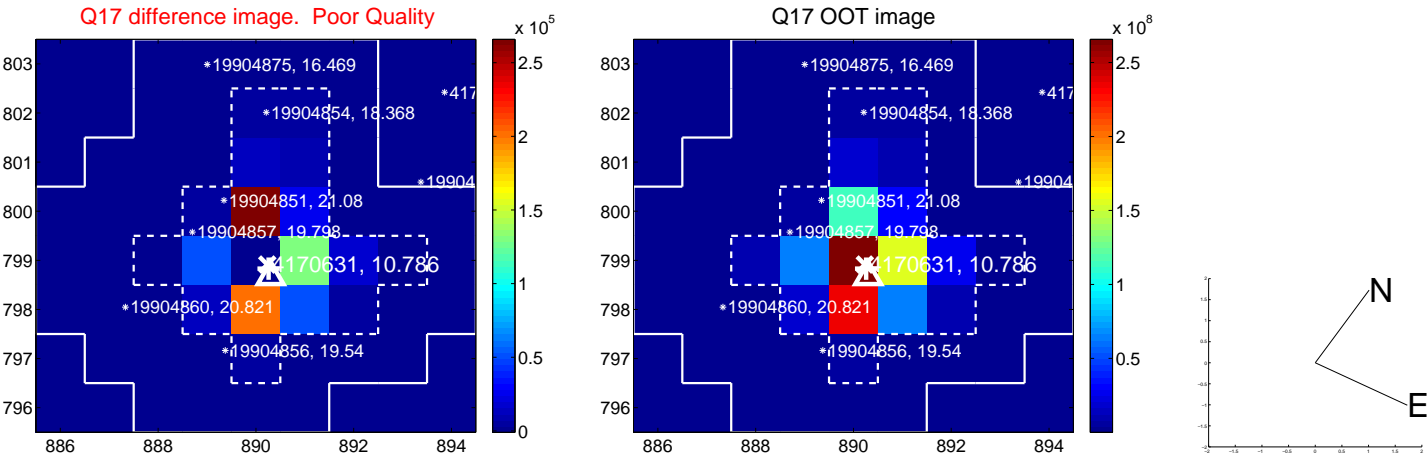
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

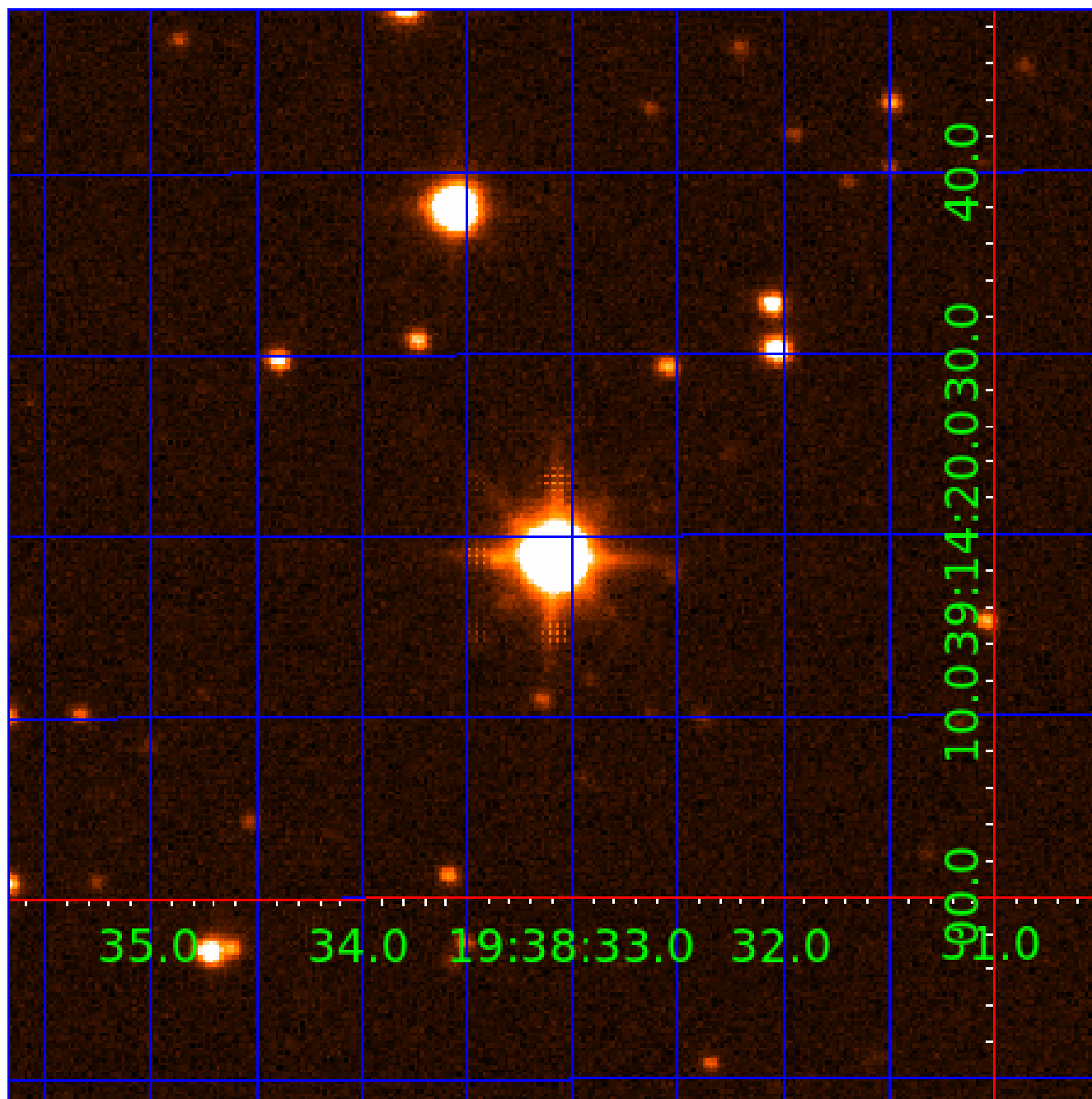


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004170631

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})
004170631-01	OBS	No	0.541773	131.957797	389.6	1.134	10.9	7.2	3.75	7693	8.73	0.00
004170631-02	OBS	No	0.590085	131.605244	613.6	1.064	8.5	8.0	3.75	7693	9.57	0.00
004170631-03	OBS	No	0.590093	131.831102	759.0	1.193	9.0	10.0	3.75	7693	12.21	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004170631-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
004170631-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
004170631-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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.

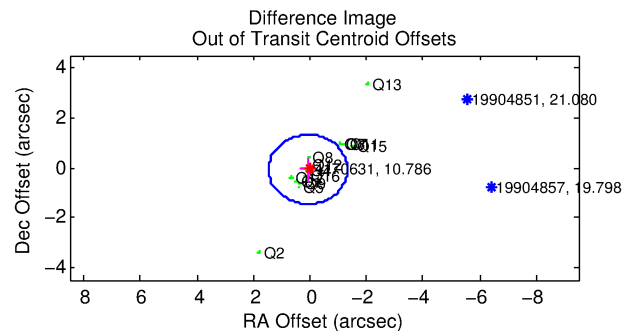
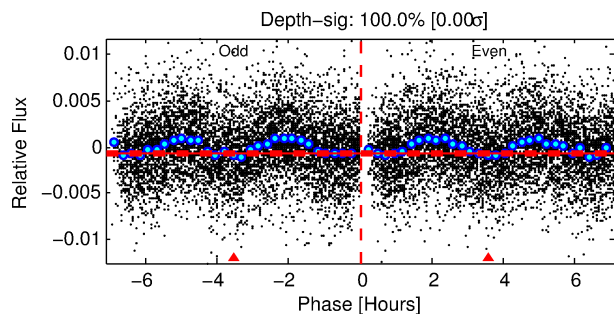
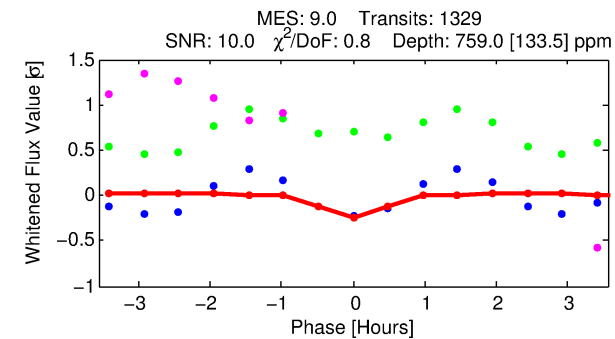
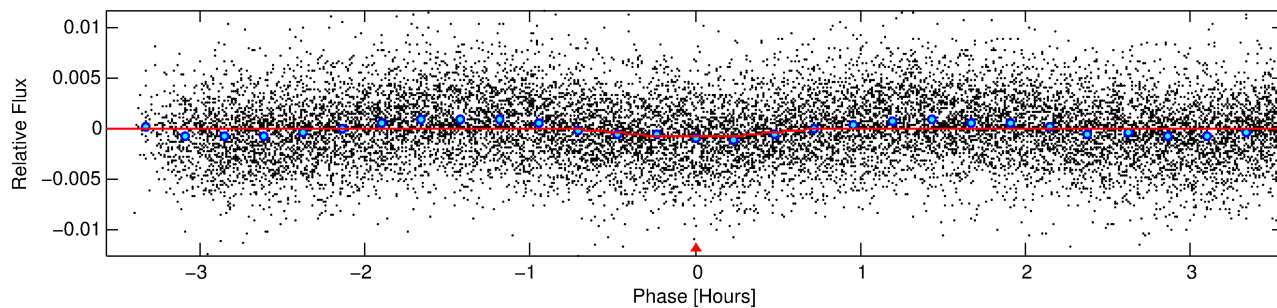
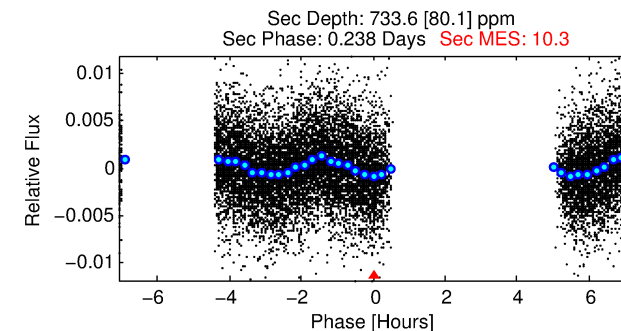
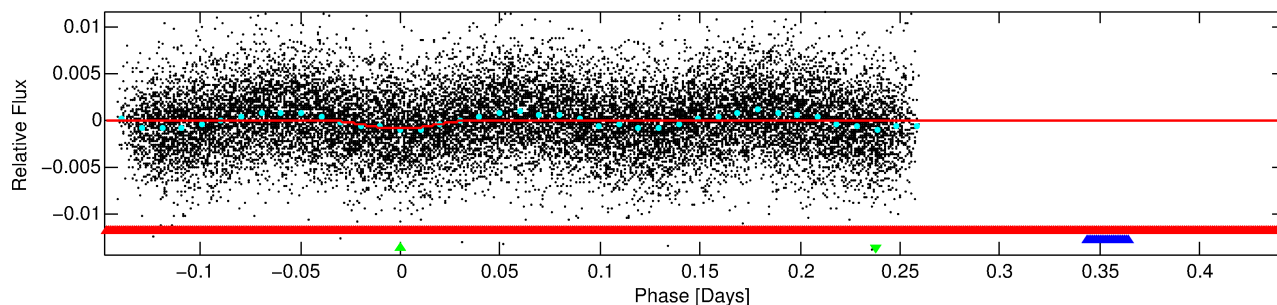
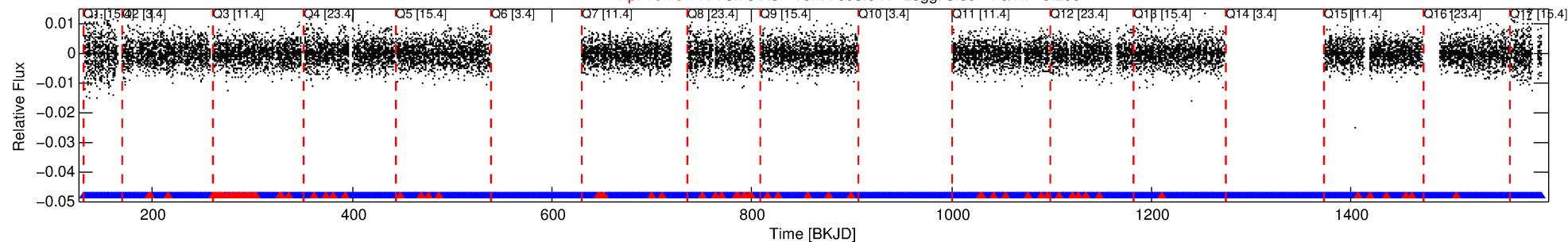
Ephemeris Match Information For 004170631-03

No Significant Match Found

DV One-Page Summary

KIC: 4170631 Candidate: 3 of 3 Period: 0.590 d

Kp: 10.79 R*: 3.75 Rs Teff: 7693.0 K Logg: 3.59 Fe/H: -0.260



DV Fit Results:

Period = 0.59009 [0.00001] d
Epoch = 131.8311 [0.0020] BKJD
Rp/R* = 0.0298 [0.0155]
a/R* = 2.11 [4.44]
b = 0.90 [0.59]
Seff = N/A
Teq = N/A
Rp = 12.21 [9.21] Re
a = N/A
Ag = N/A
Teff = N/A

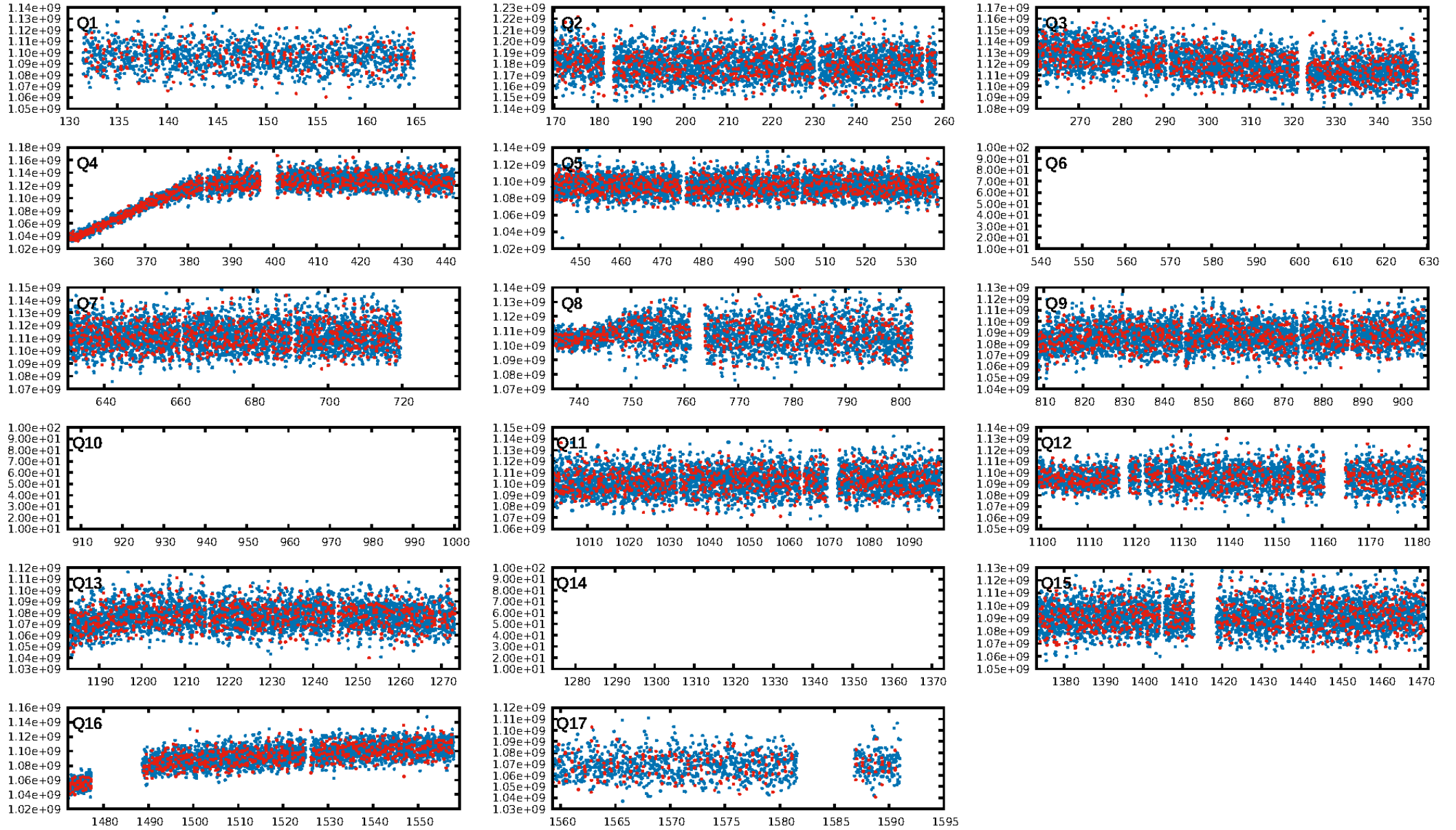
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.94e-17
RollingBand-fgt: 0.92 [1152/1252]
GhostDiagnostic-chr: 3.175
Centroid-sig: 0.0%
Centroid-so: 0.100 arcsec [1.44σ]
OotOffset-rm: 0.103 arcsec [0.22σ]
KicOffset-rm: 0.158 arcsec [0.36σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 0.00 [0/14]

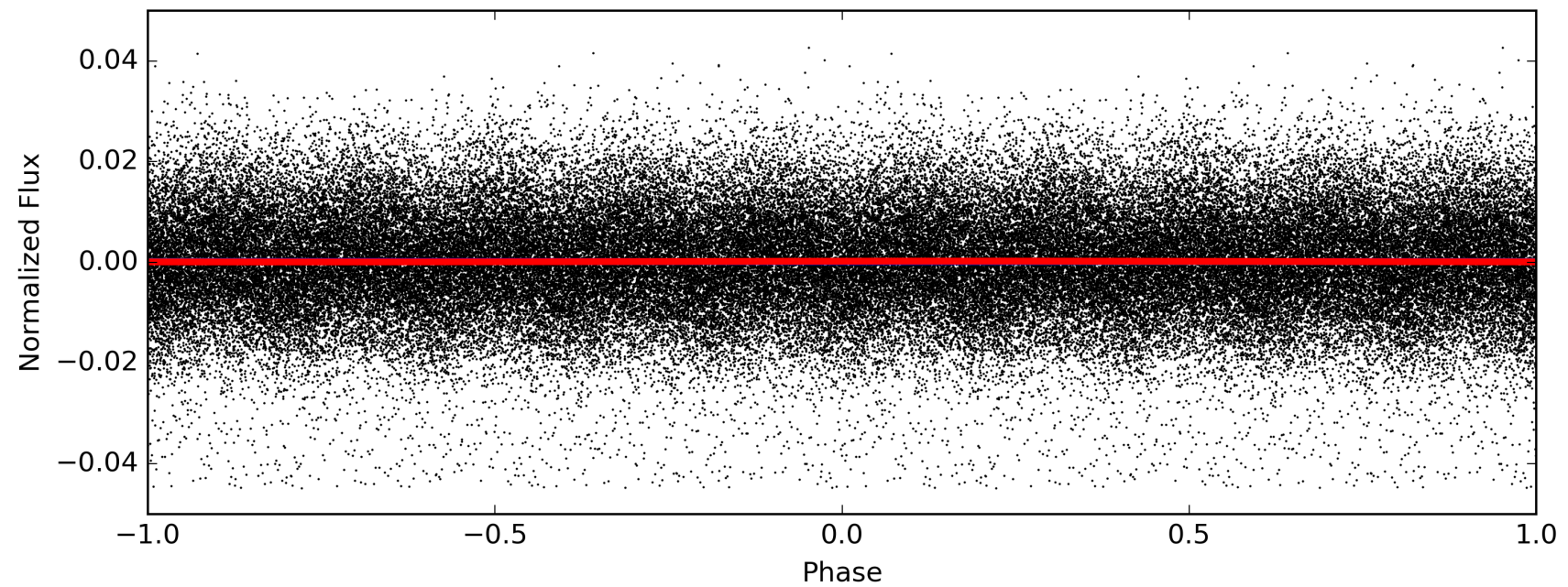
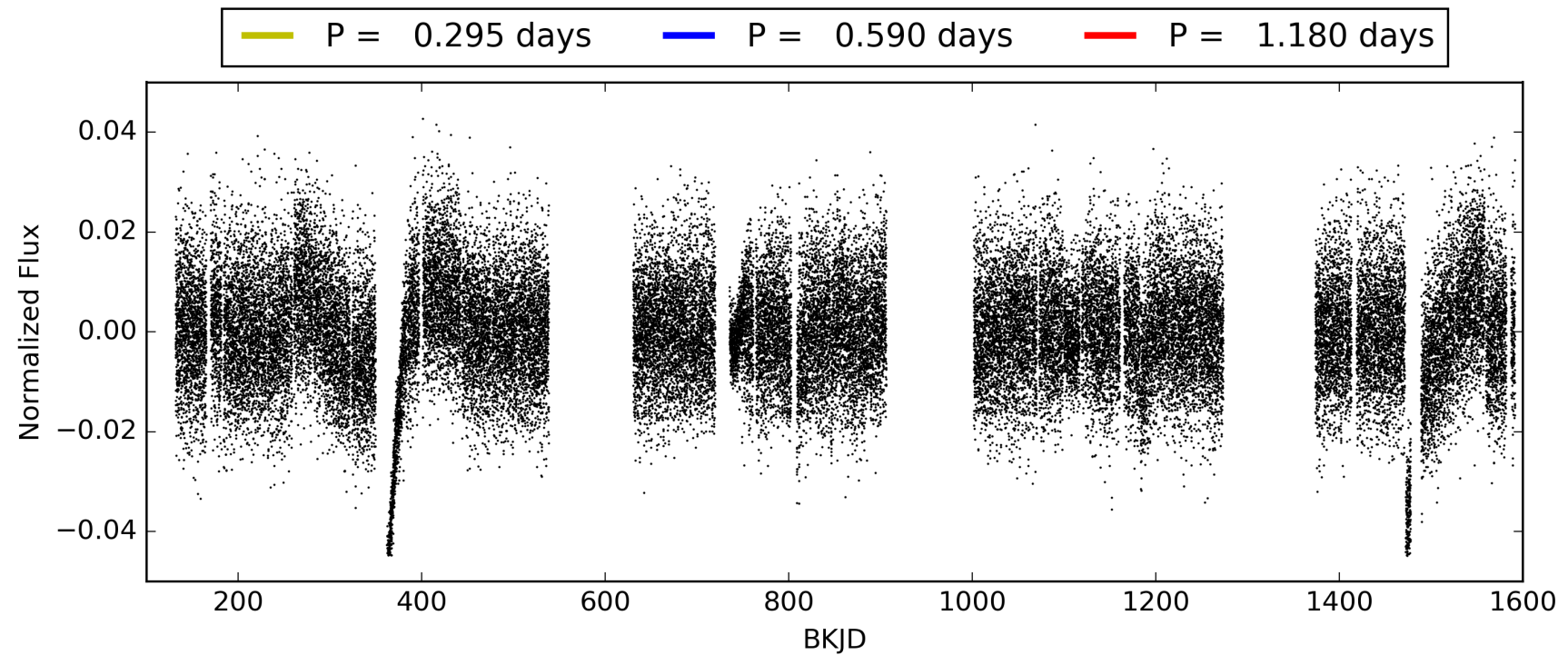
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:02:17 Z

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

TCE 004170631-03, PDC Light Curves

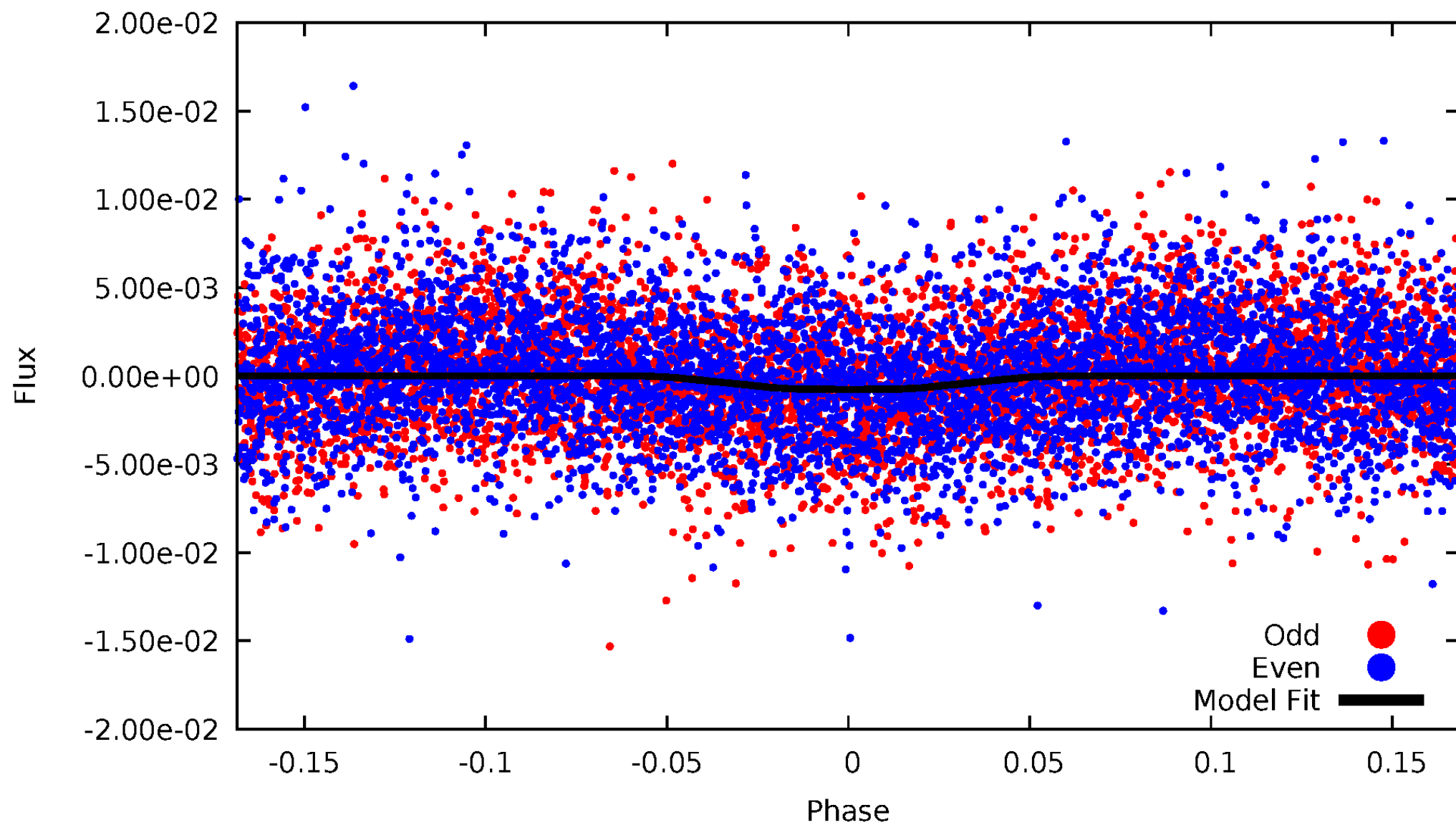


TCE 004170631-03



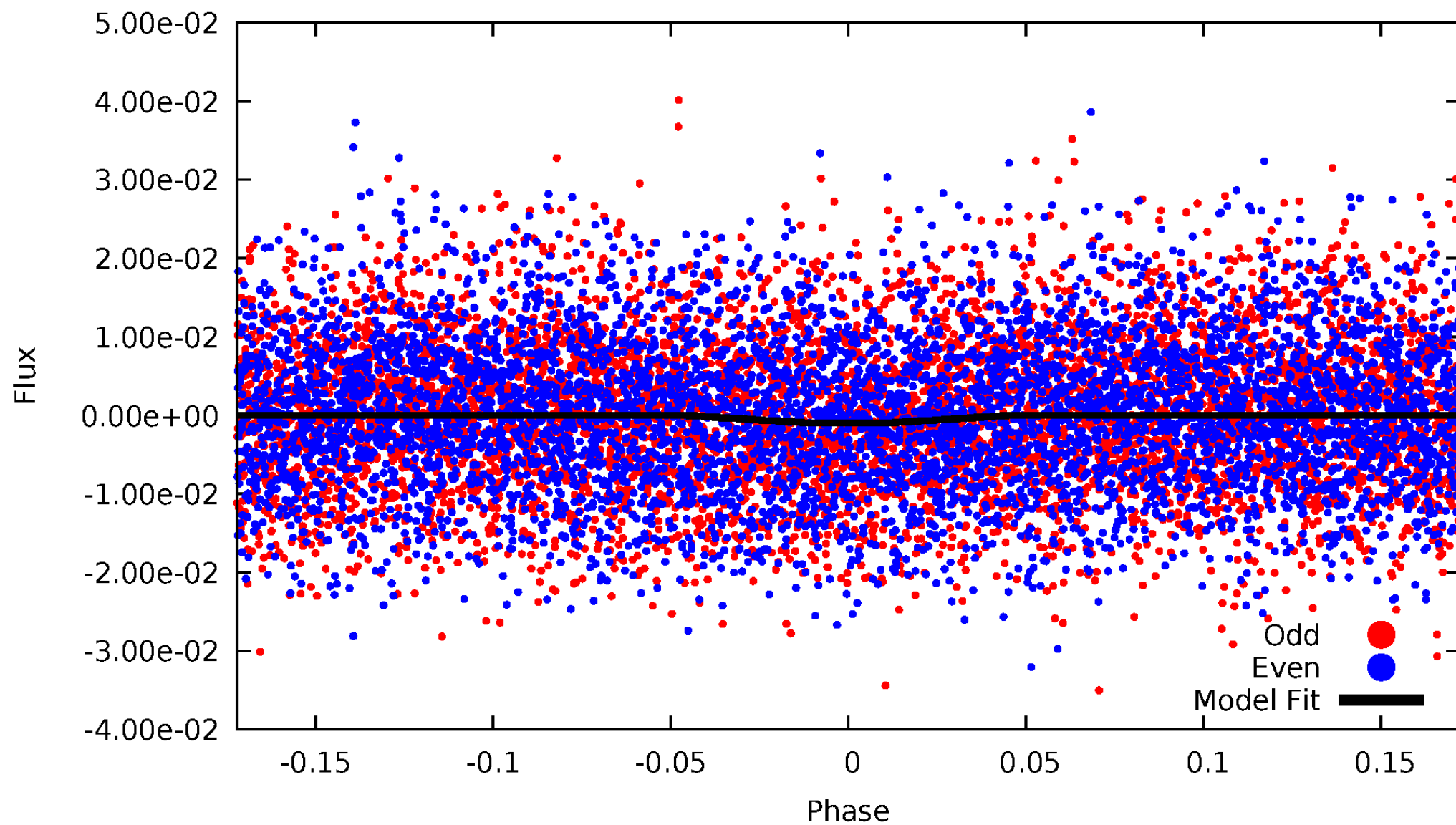
DV Odd/Even

TCE 004170631-03



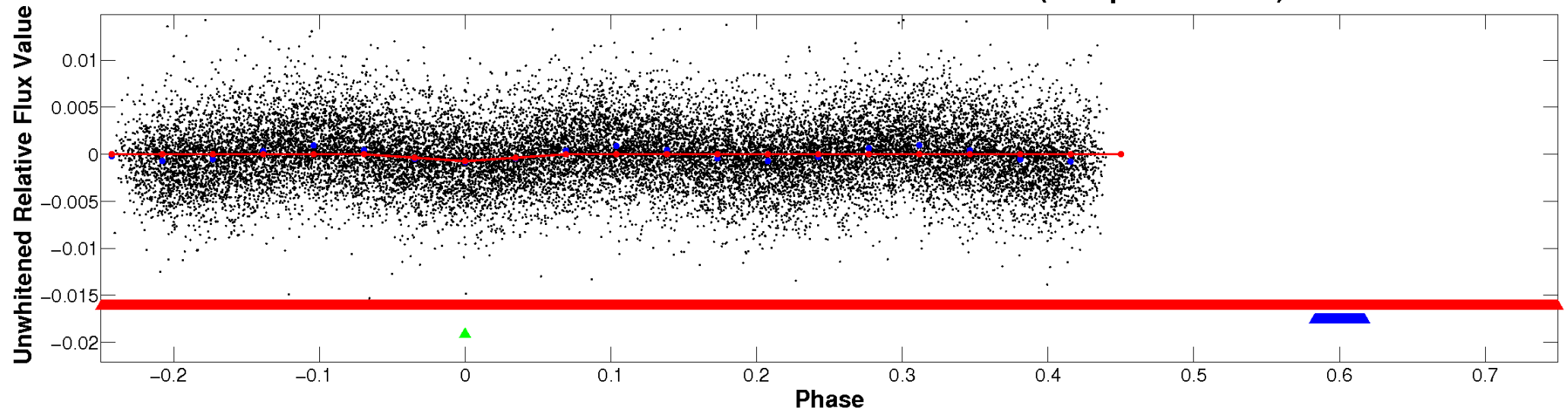
ALT Odd/Even

TCE 004170631-03

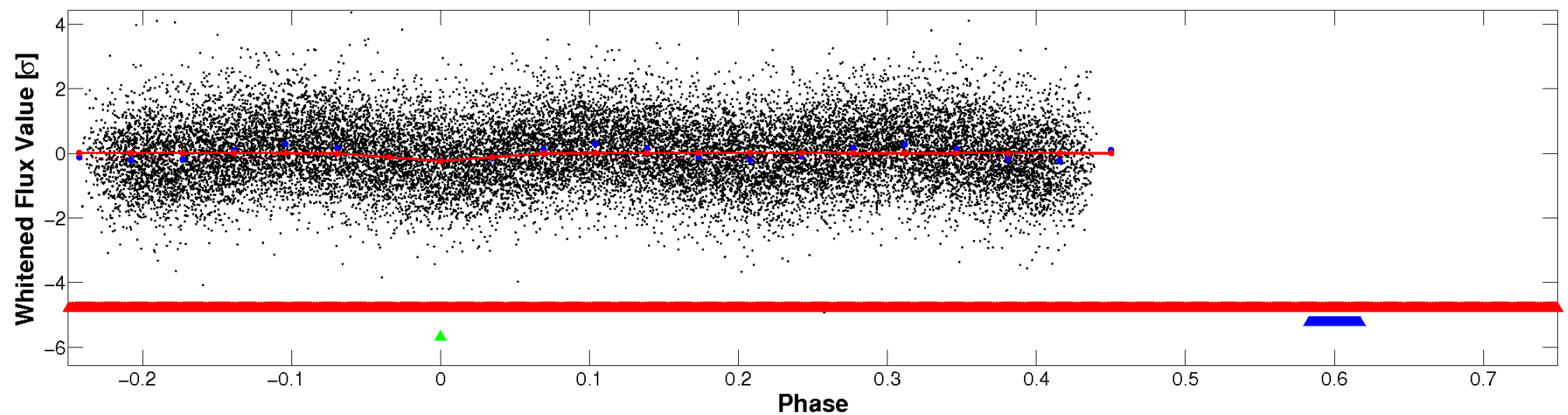


Non-Whitened Vs. Whitened Light Curve

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

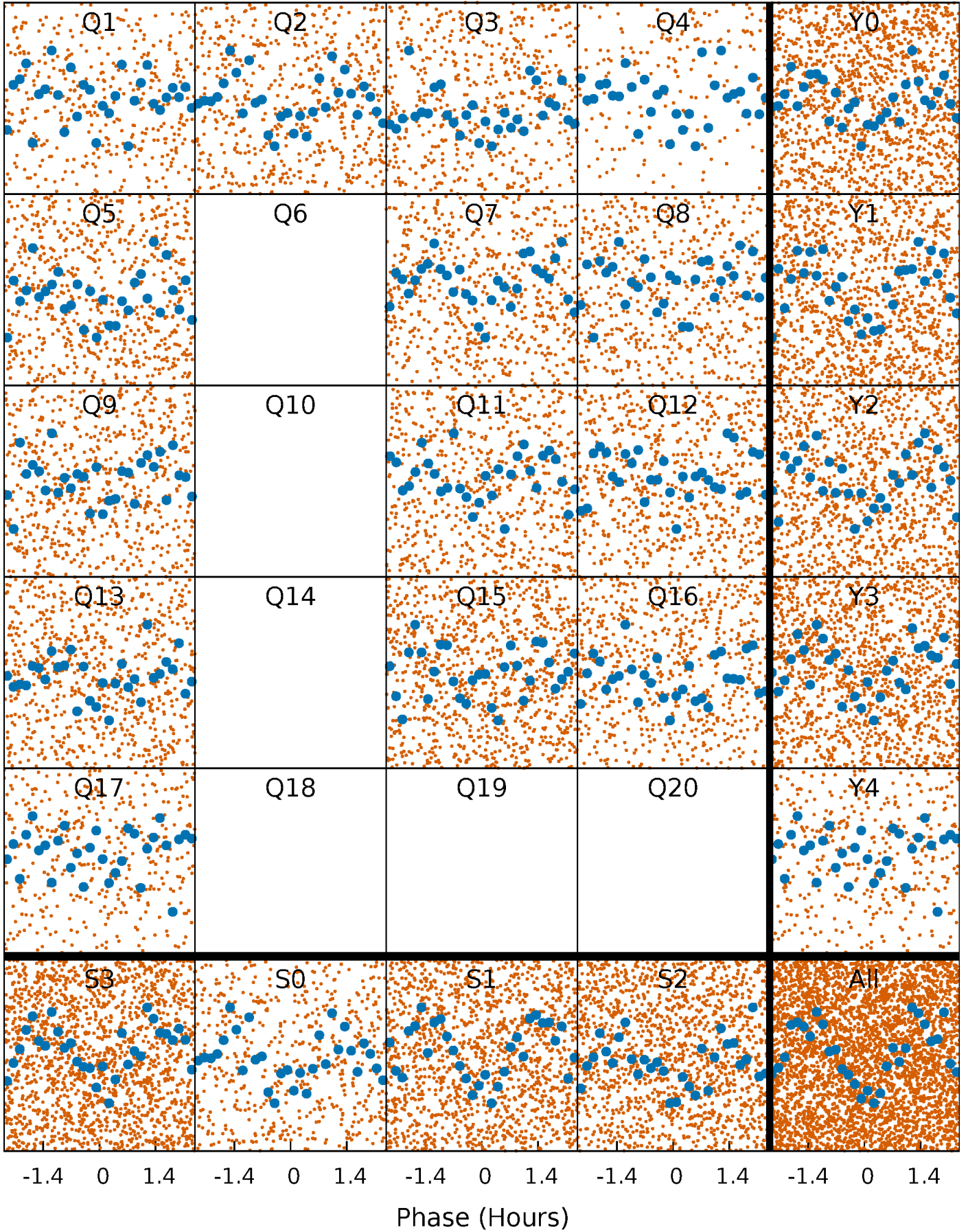


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



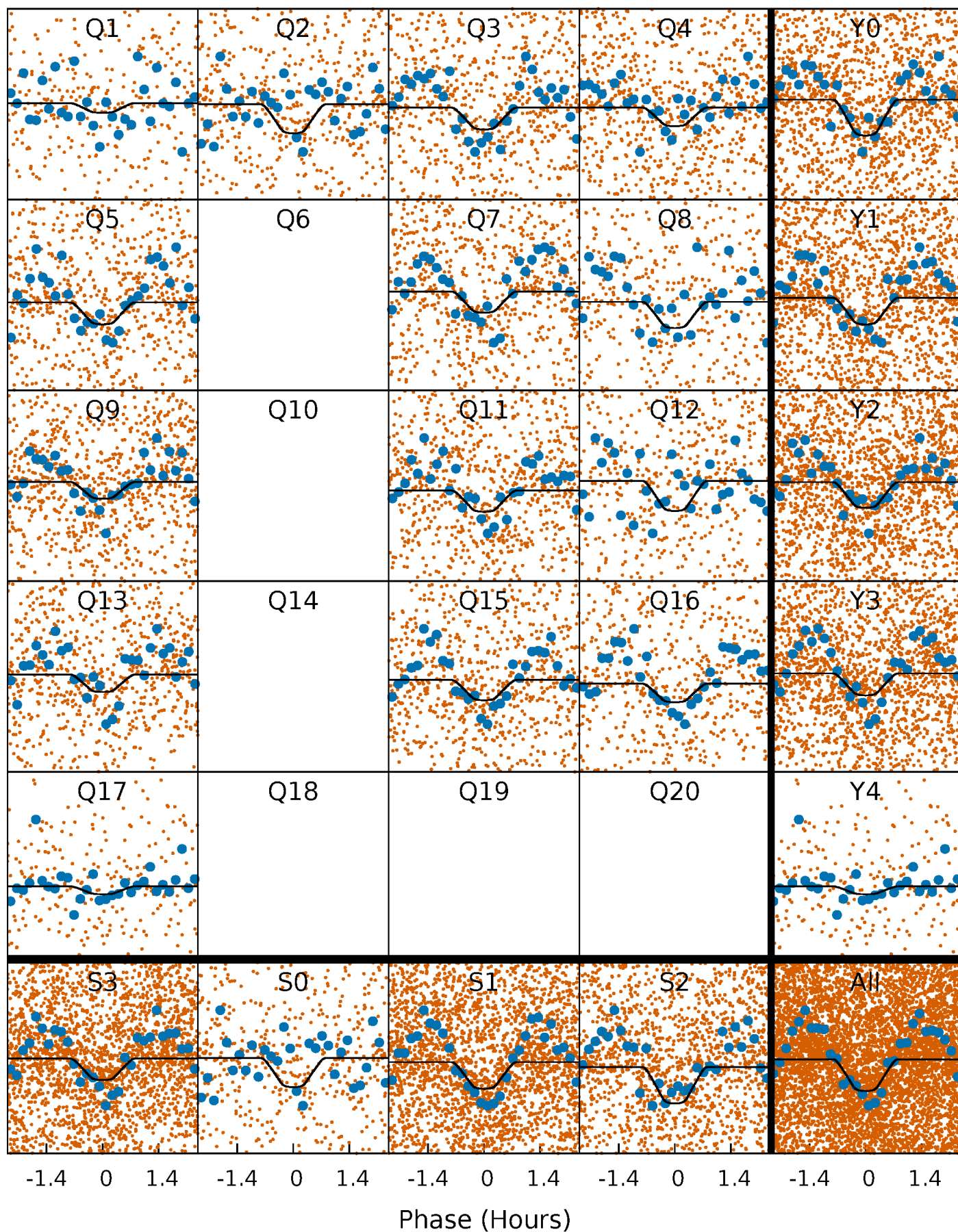
PDC Quarter-Phased Transit Curves

TCE 004170631-03 P= 0.590093 Days $T_0=131.831102$ (BKJD)



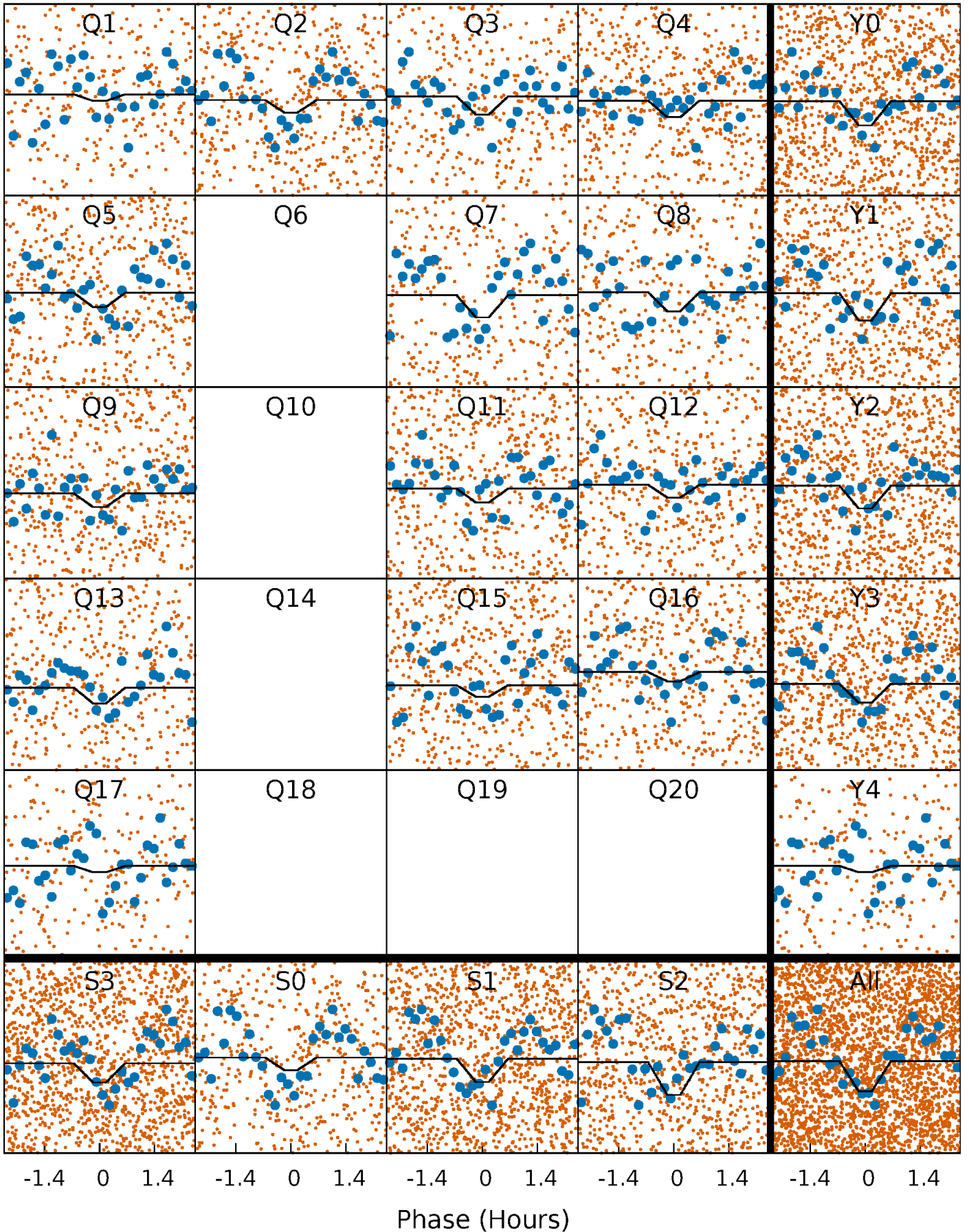
DV Quarter-Phased Transit Curves

TCE 004170631-03 P= 0.590093 Days $T_0=131.831102$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

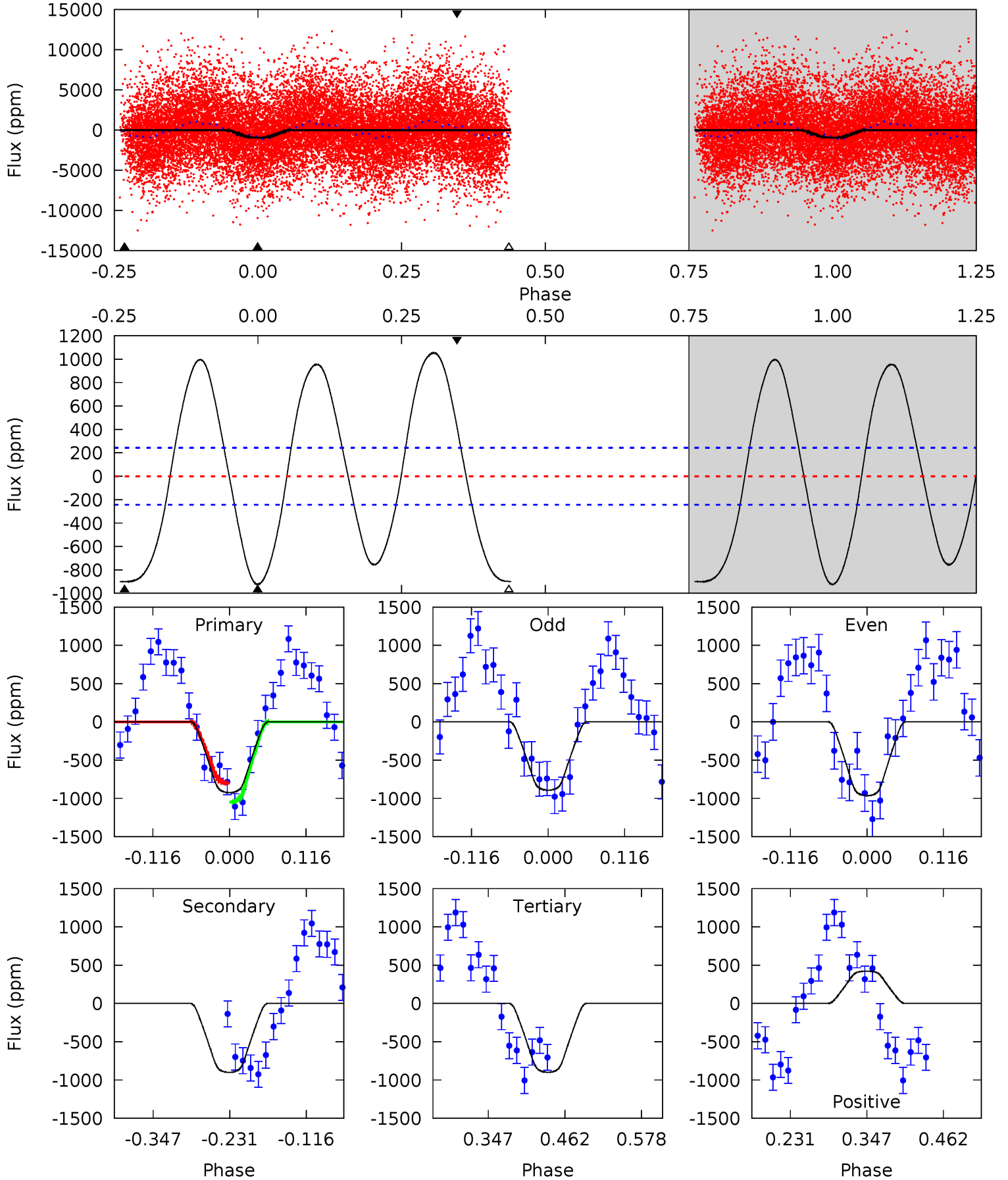
TCE 004170631-03 P= 0.590095 Days $T_0=131.829932$ (BKJD)



DV Model-Shift Uniqueness Test

004170631-03, P = 0.590093 Days, E = 131.241009 Days

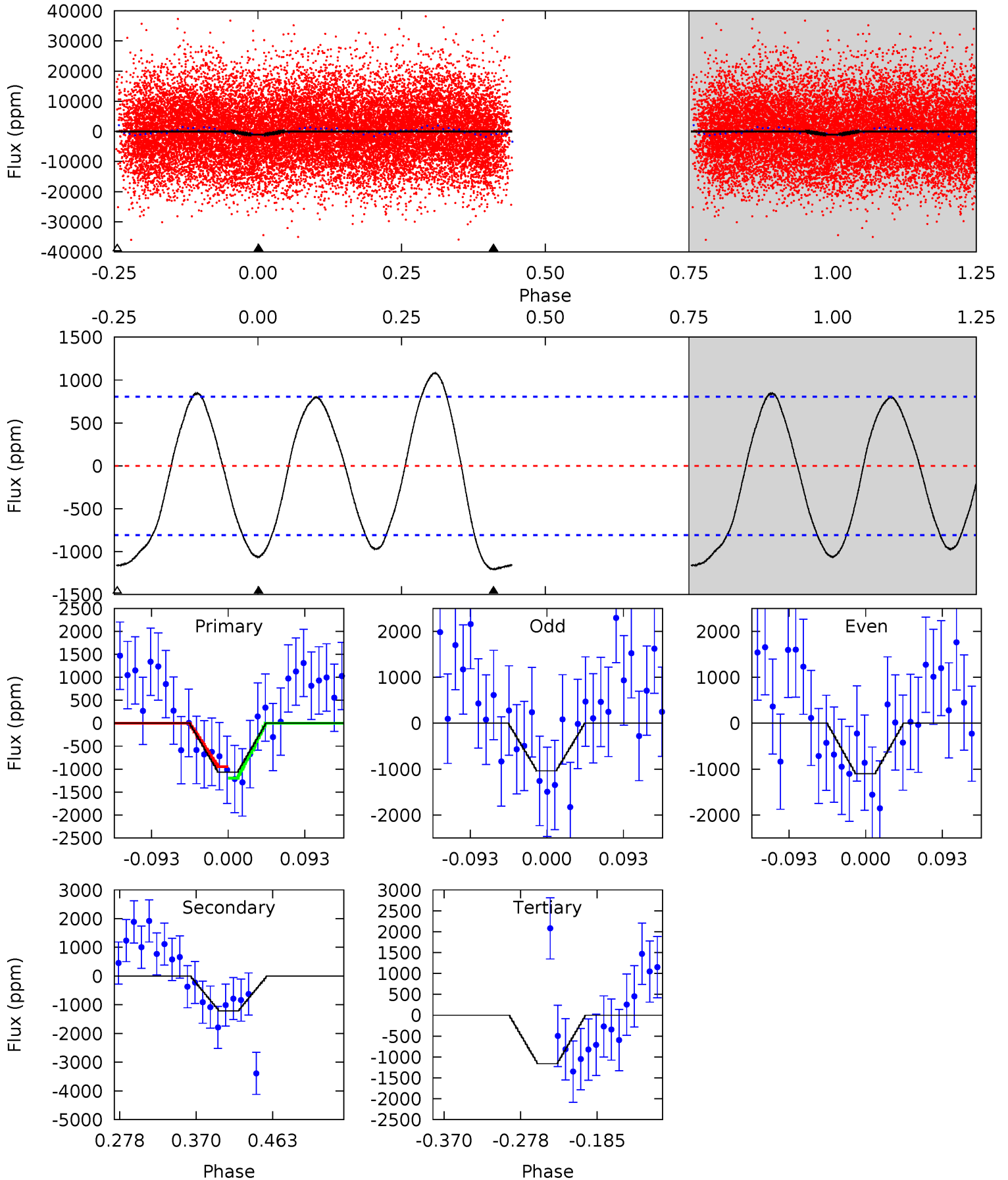
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	16.8	16.8	7.88	4.53	1.57	12.0	0.47	9.37	0.02	8.93	0.68	1.00	0.53	2.32



Alt Model-Shift Uniqueness Test

004170631-03, P = 0.590095 Days, E = 131.239837 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.07	6.88	6.61	0	4.58	1.68	4.05	-0.53	6.07	0.28	6.88	0.18	0.77	0.47	0.71



Stellar Parameters For KIC 004170631

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7693^{+243}_{-297}	$3.588^{+0.510}_{-0.060}$	$-0.260^{+0.250}_{-0.300}$	$3.751^{+0.511}_{-2.045}$	$1.987^{+0.163}_{-0.523}$	$0.053^{+0.351}_{-0.015}$
	+3%/-4%	+14%/-2%	+96%/-115%	+14%/-55%	+8%/-26%	+661%/-29%
Source	KIC0	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 004170631-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-901 ± 54	$10.61^{+6.28}_{-5.64}$	6717^{+427}_{-885}	7113^{+5042}_{-2060}	$1.301^{+4.539}_{-0.783}$
Alt.	-1211 ± 176	$11.00^{+6.25}_{-5.21}$	6704^{+458}_{-897}	7665^{+4770}_{-2111}	$1.613^{+4.451}_{-0.953}$

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 $A_{\text{obs}} \gg 1.0$

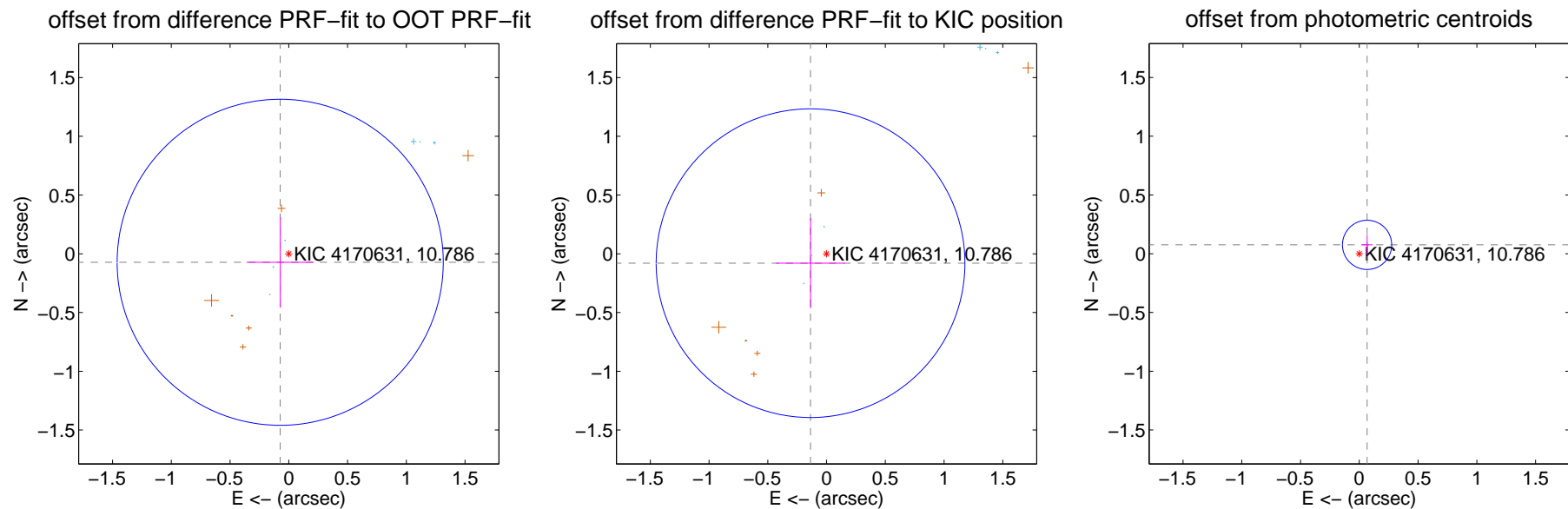
DV Centroid Data

Supplemental centroid analysis for 004170631-03. **Kepler magnitude: 10.79.** Transit SNR 10.04

There are 7 quarters with good PRF difference image offsets

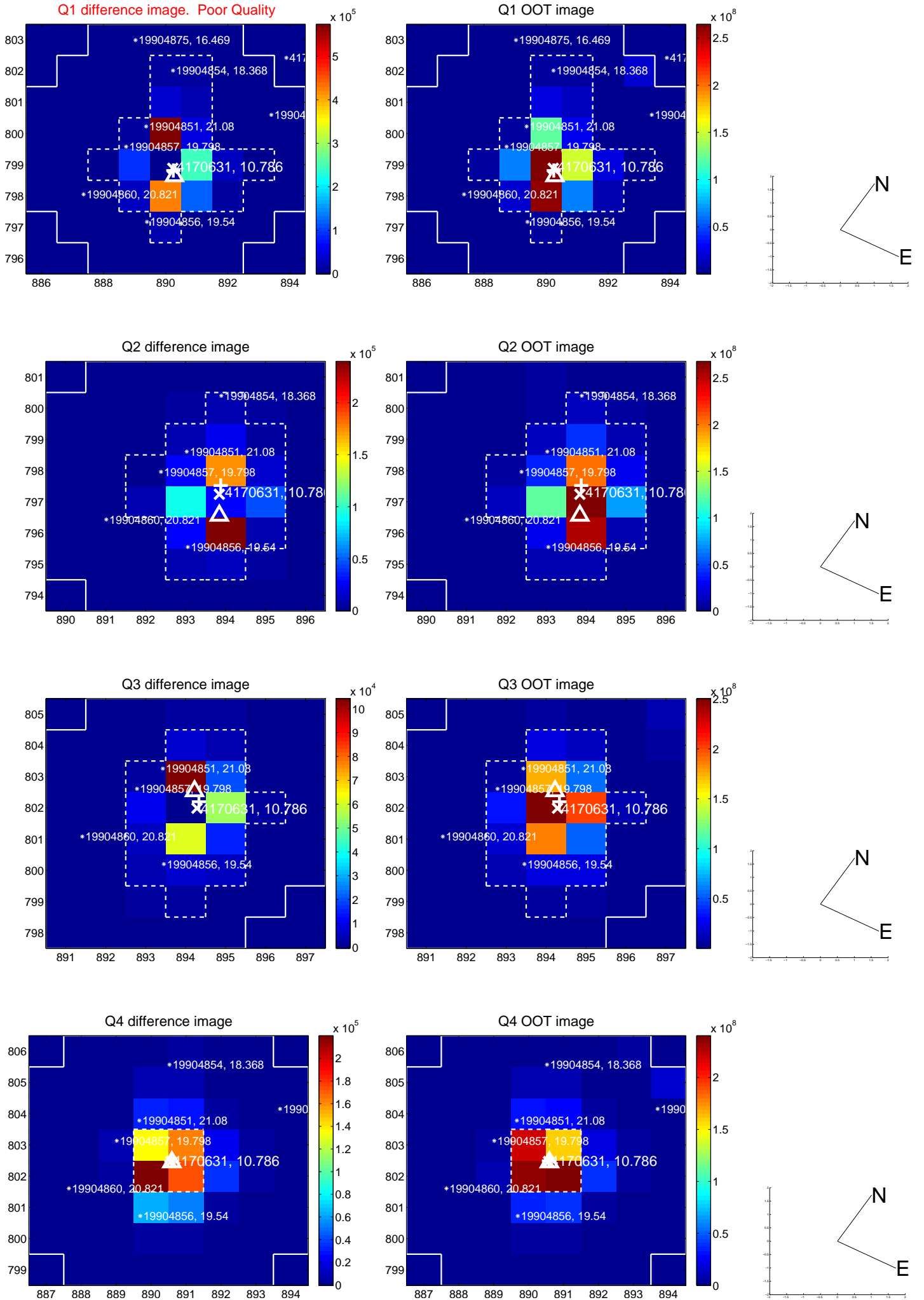
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.103 ± 0.463	0.22	0.073 ± 0.286	-0.072 ± 0.386
PRF-fit source offset from KIC position	0.158 ± 0.438	0.36	0.137 ± 0.292	-0.080 ± 0.384
photometric centroid source offset	0.10 ± 0.07	1.44	-0.07 ± 0.05	0.08 ± 0.08

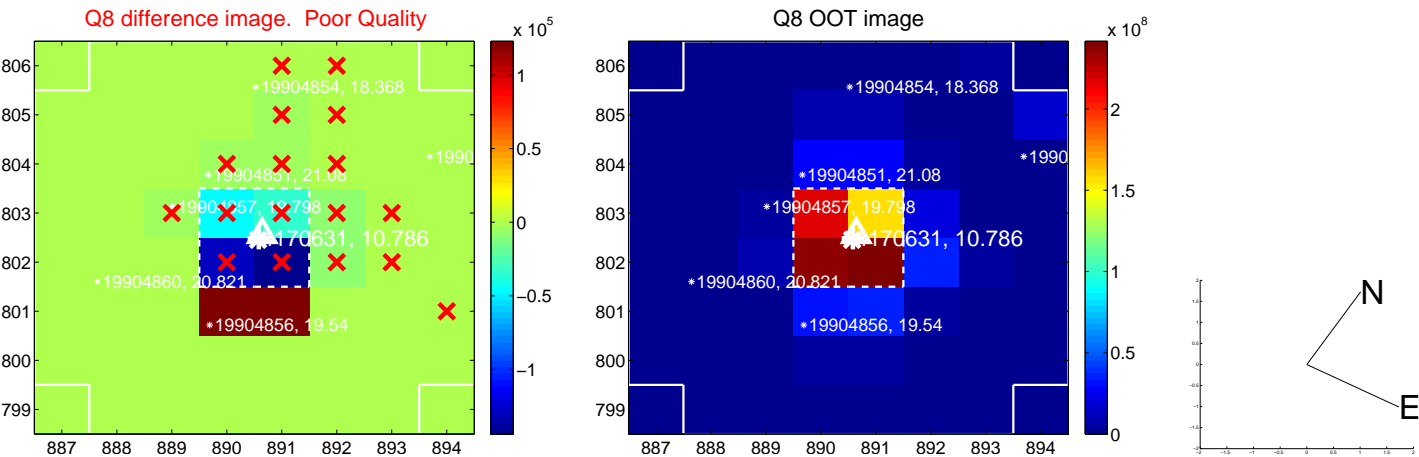
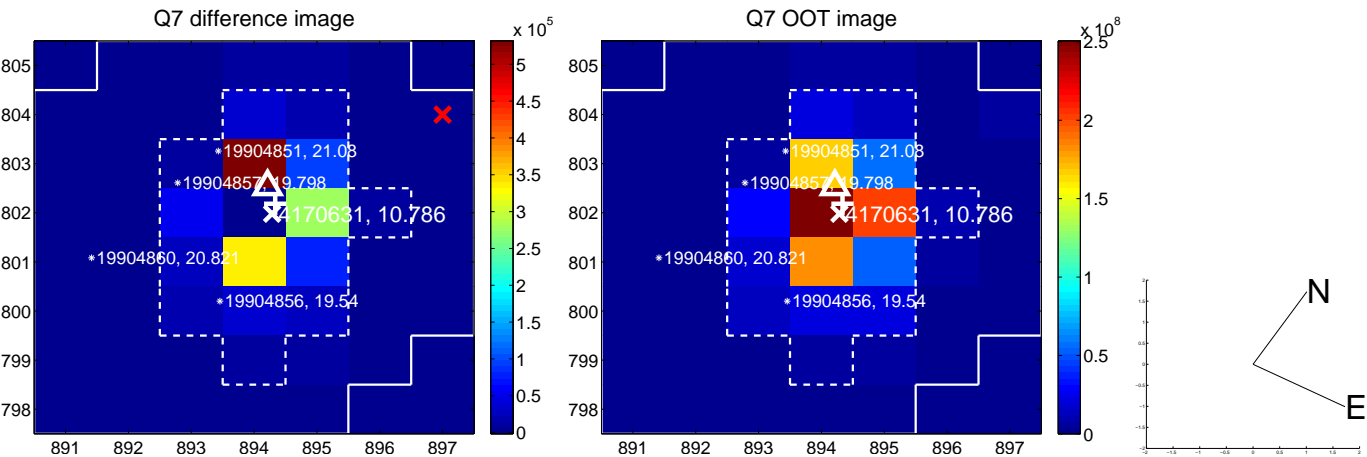
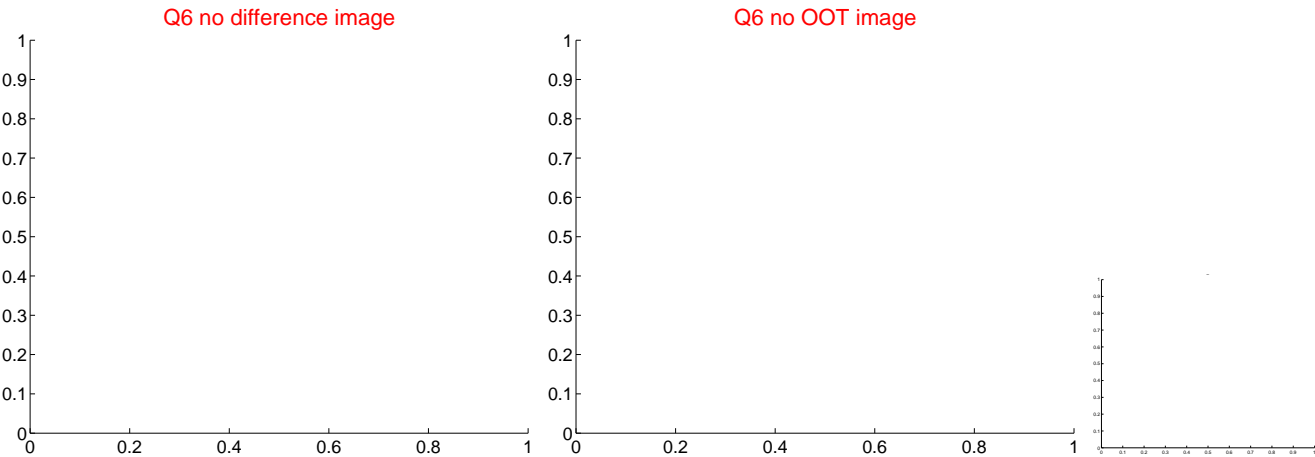
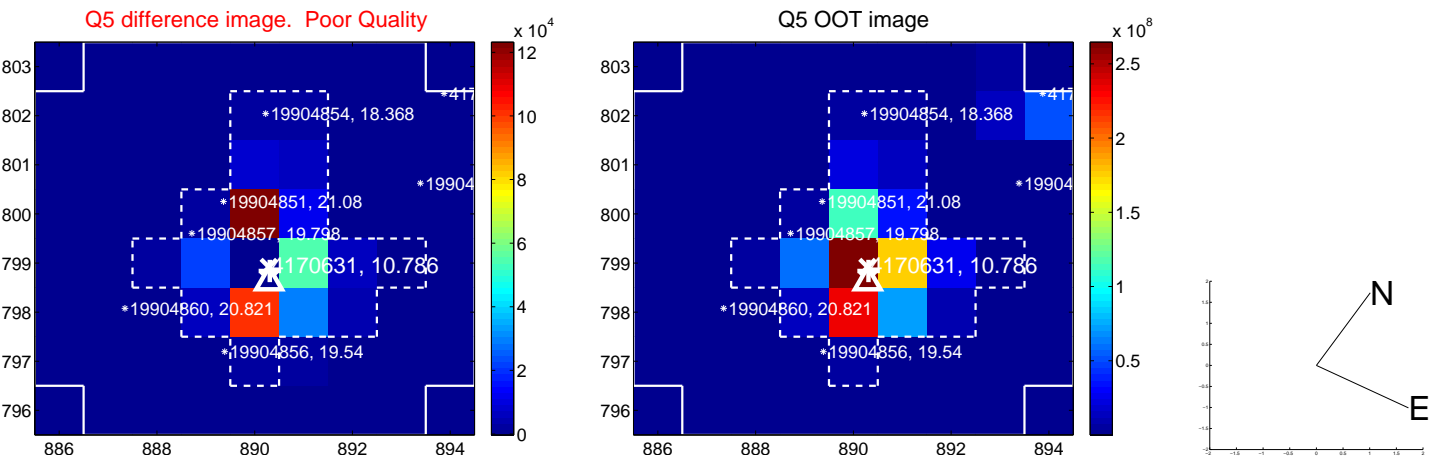


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

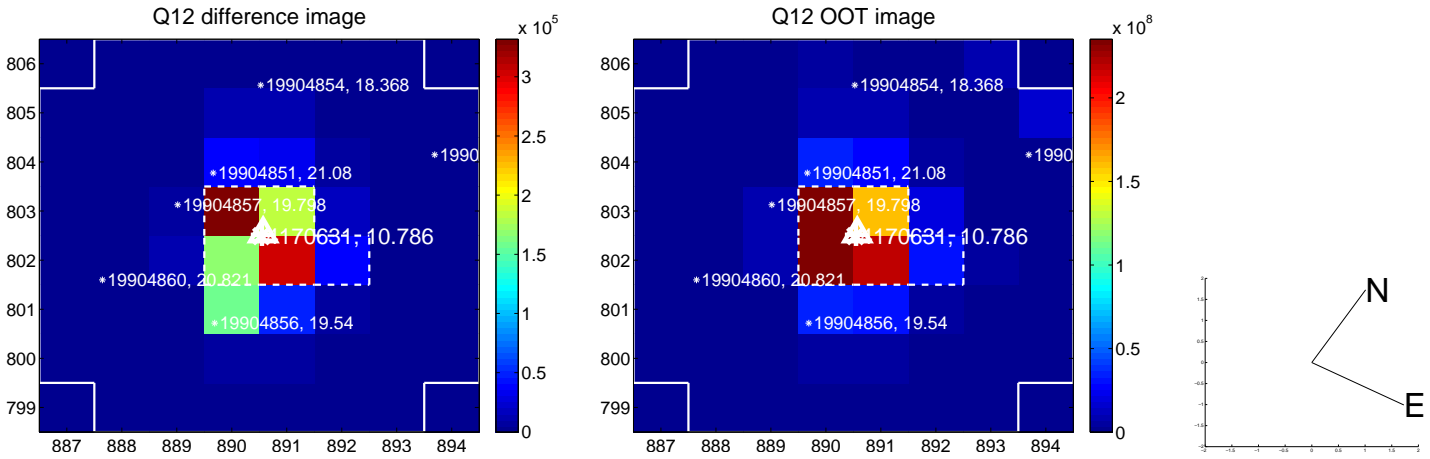
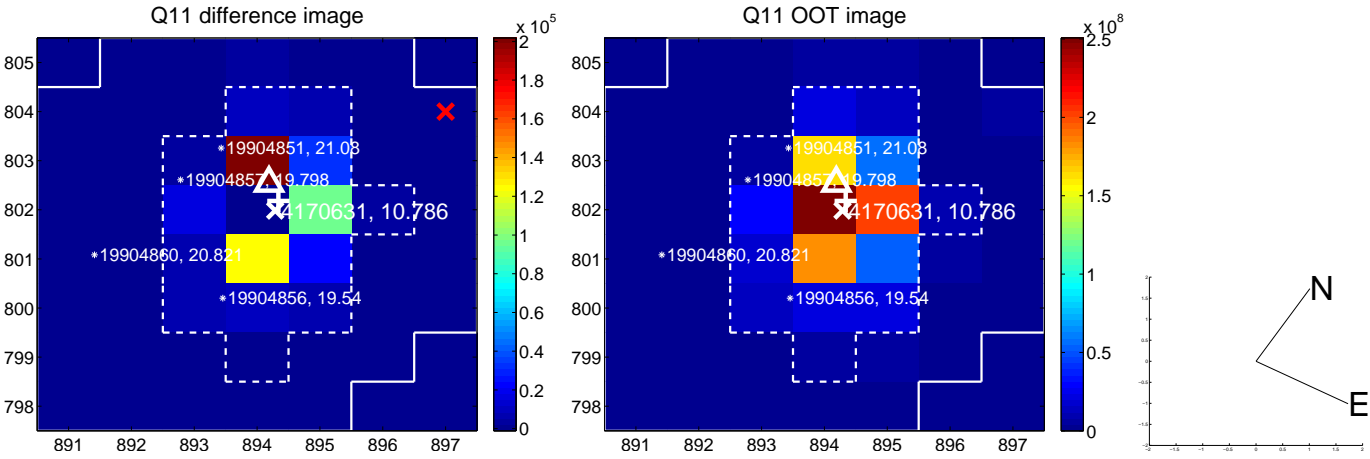
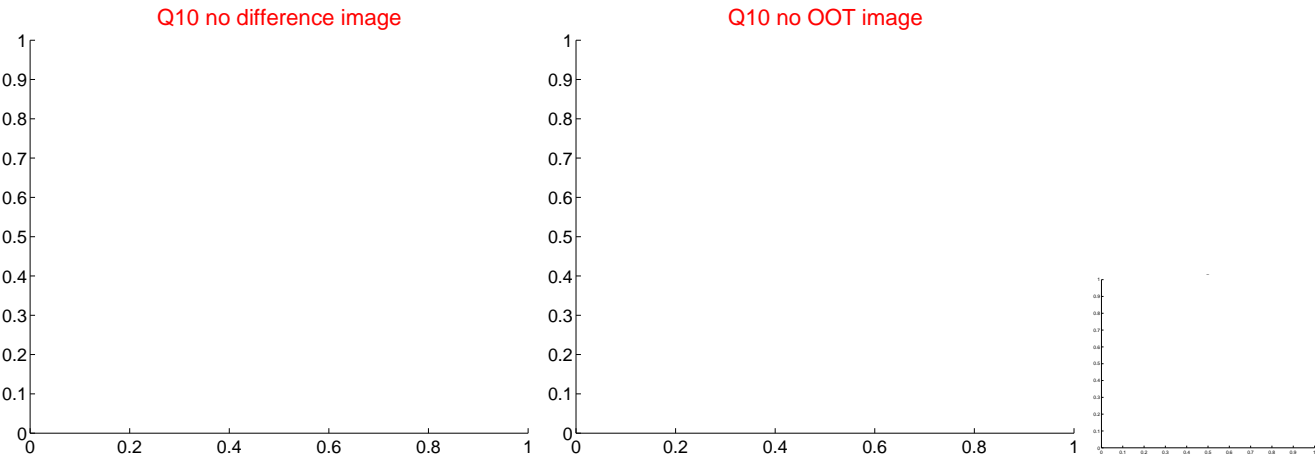
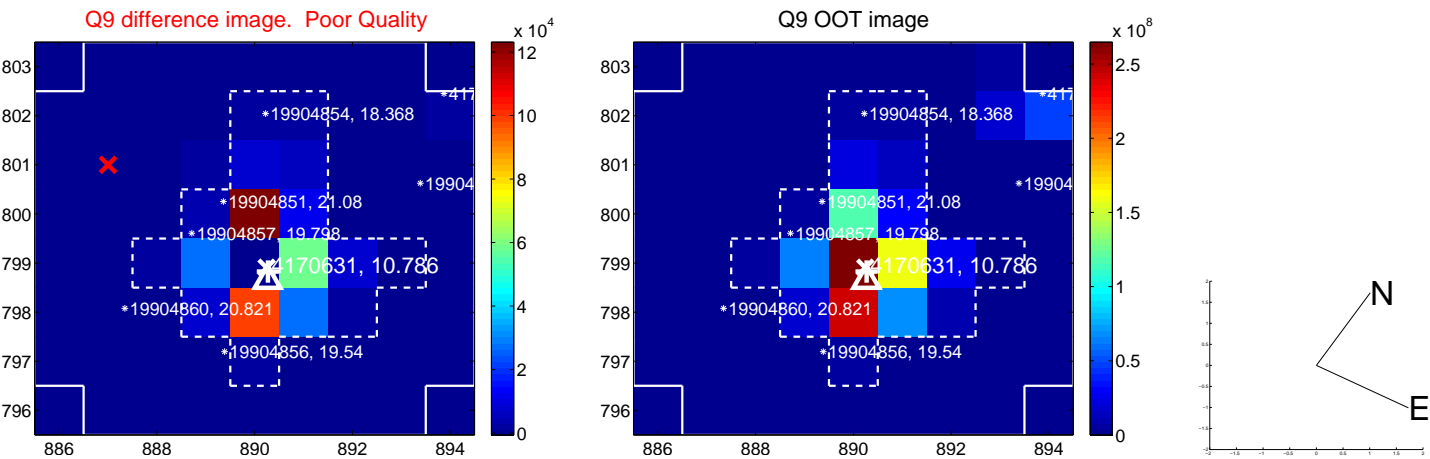
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



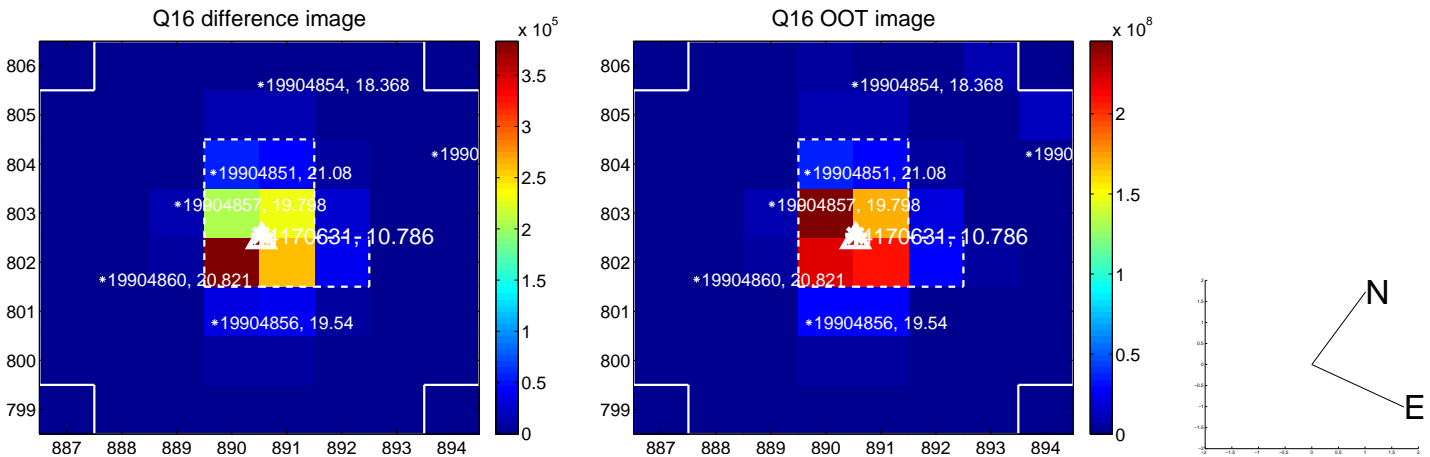
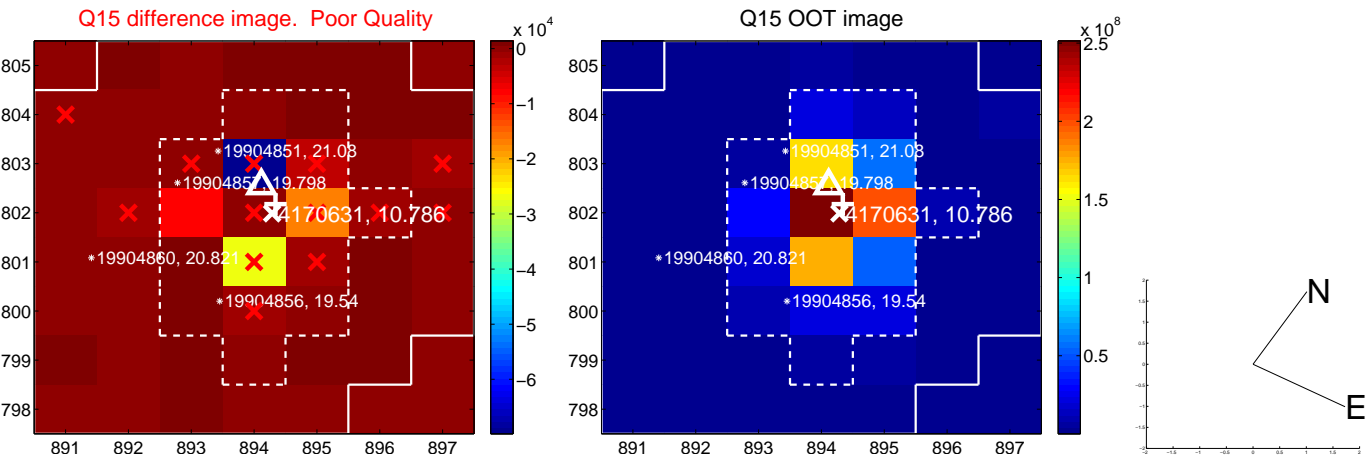
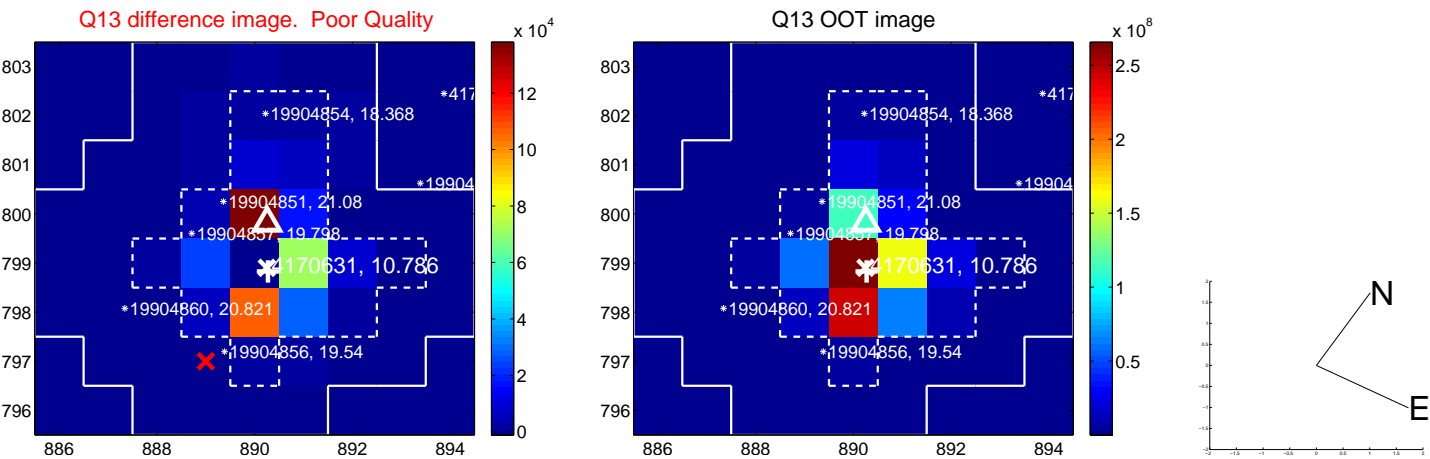
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



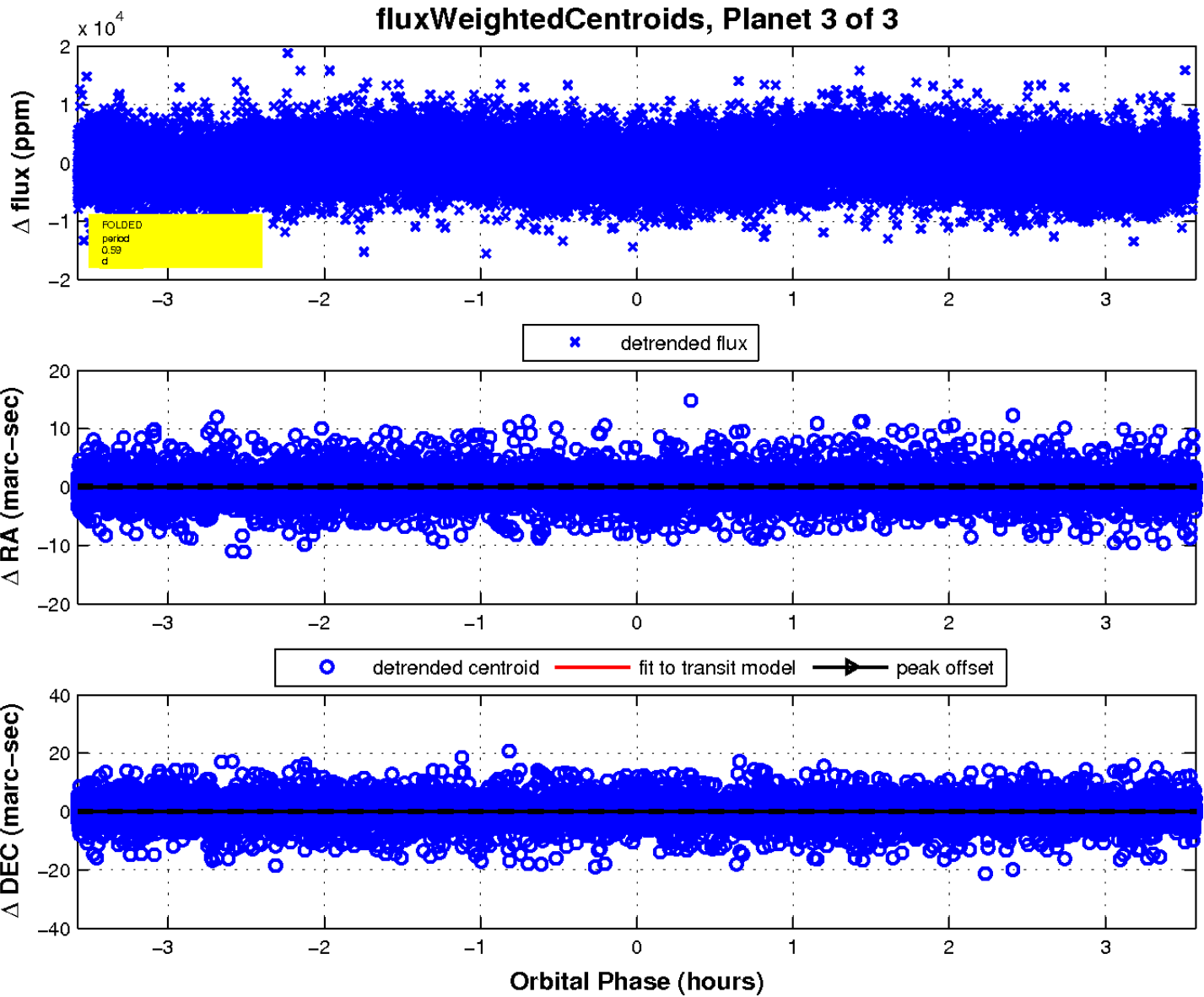
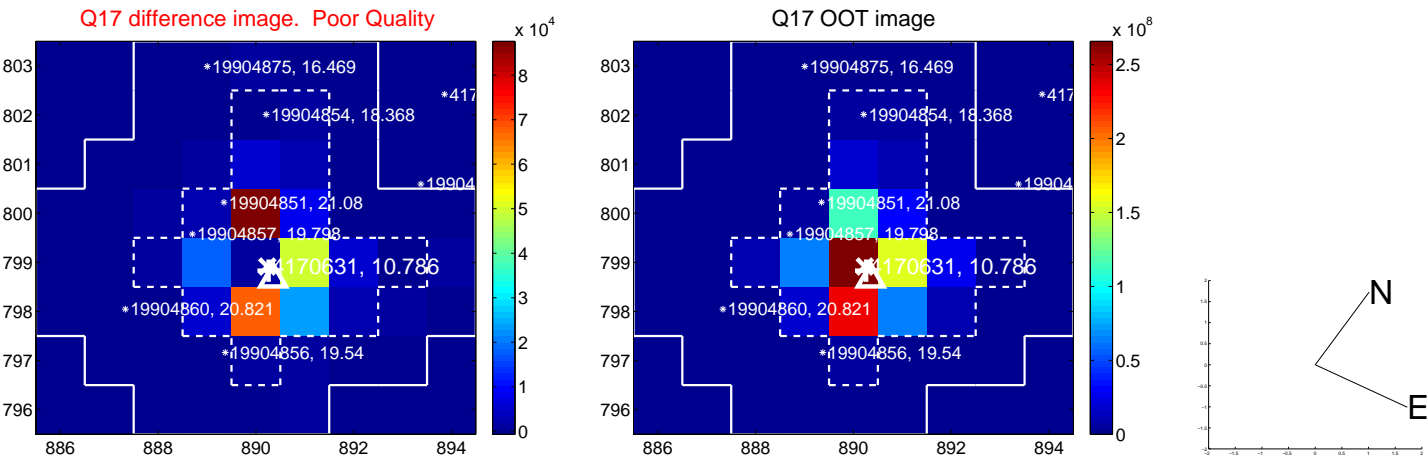
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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UKIRT Image

Declination

