

KIC 003231410

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})
003231410-01	OBS	No	0.515320	131.850009	158.9	1.241	10.4	7.6	1.00	5780	1.51	6316.89
003231410-03	OBS	No	0.515324	131.726196	231.2	1.377	9.6	10.8	1.00	5780	1.82	6316.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003231410-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
003231410-03	OBS	FP	0.00	1	0	1	1	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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

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

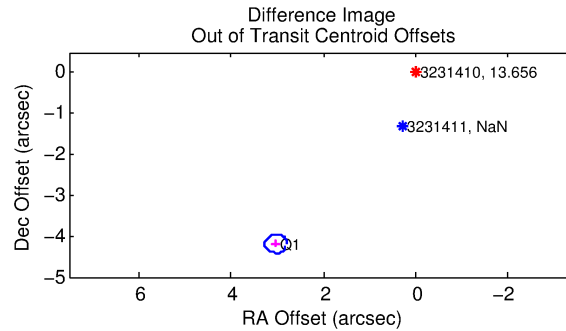
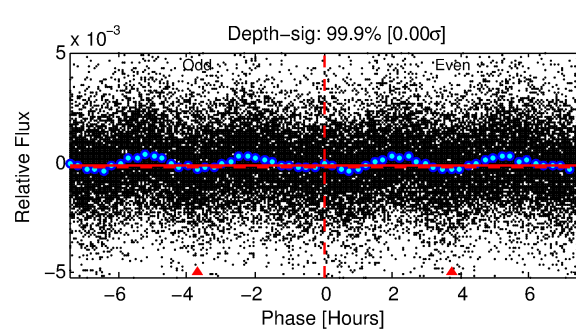
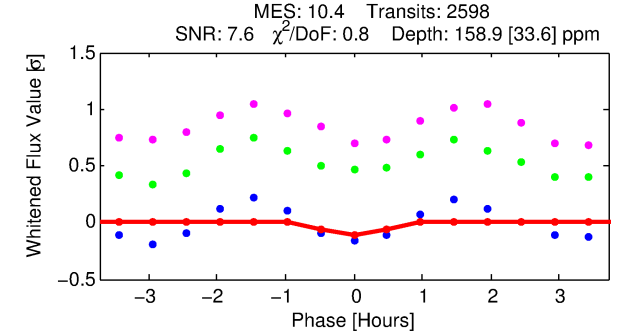
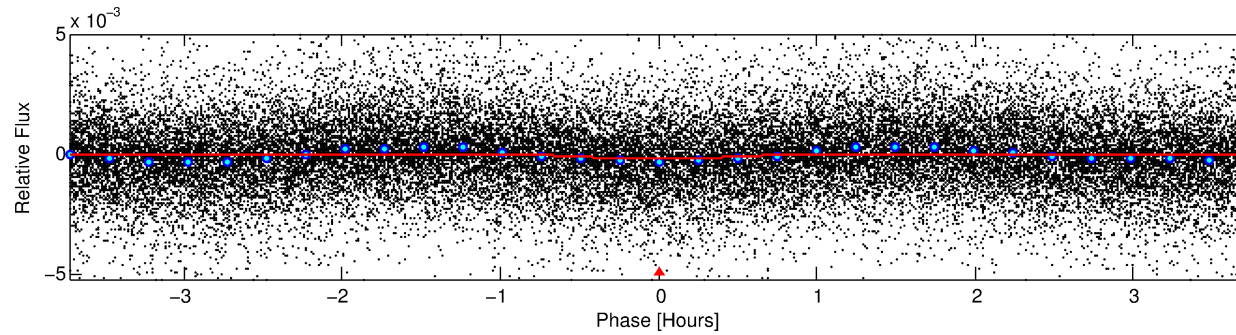
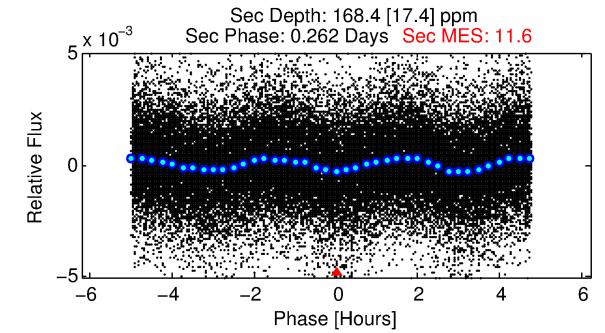
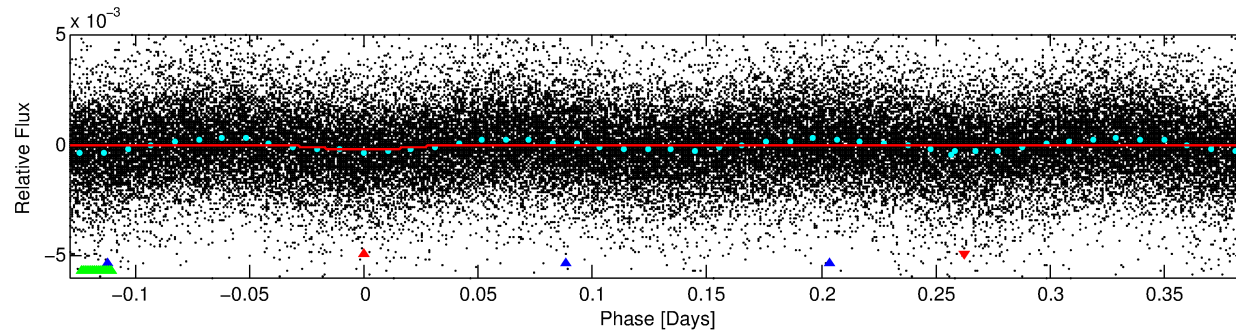
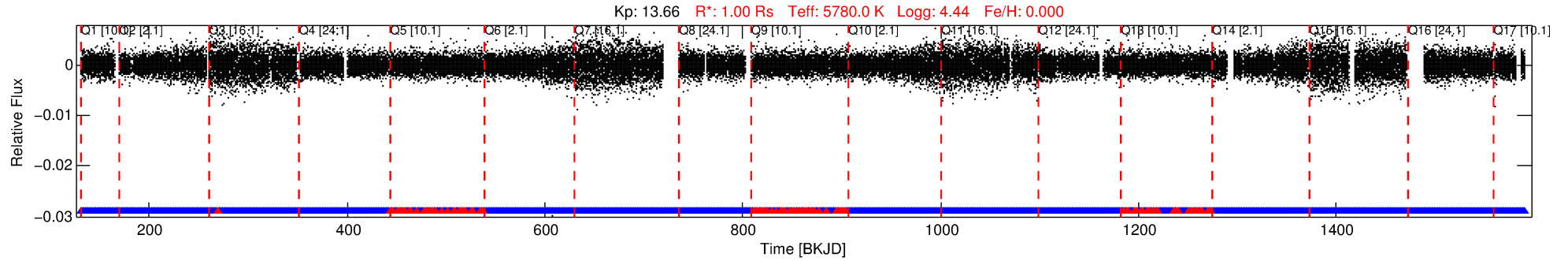
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003231410-01

No Significant Match Found

DV One-Page Summary

KIC: 3231410 Candidate: 1 of 3 Period: 0.515 d



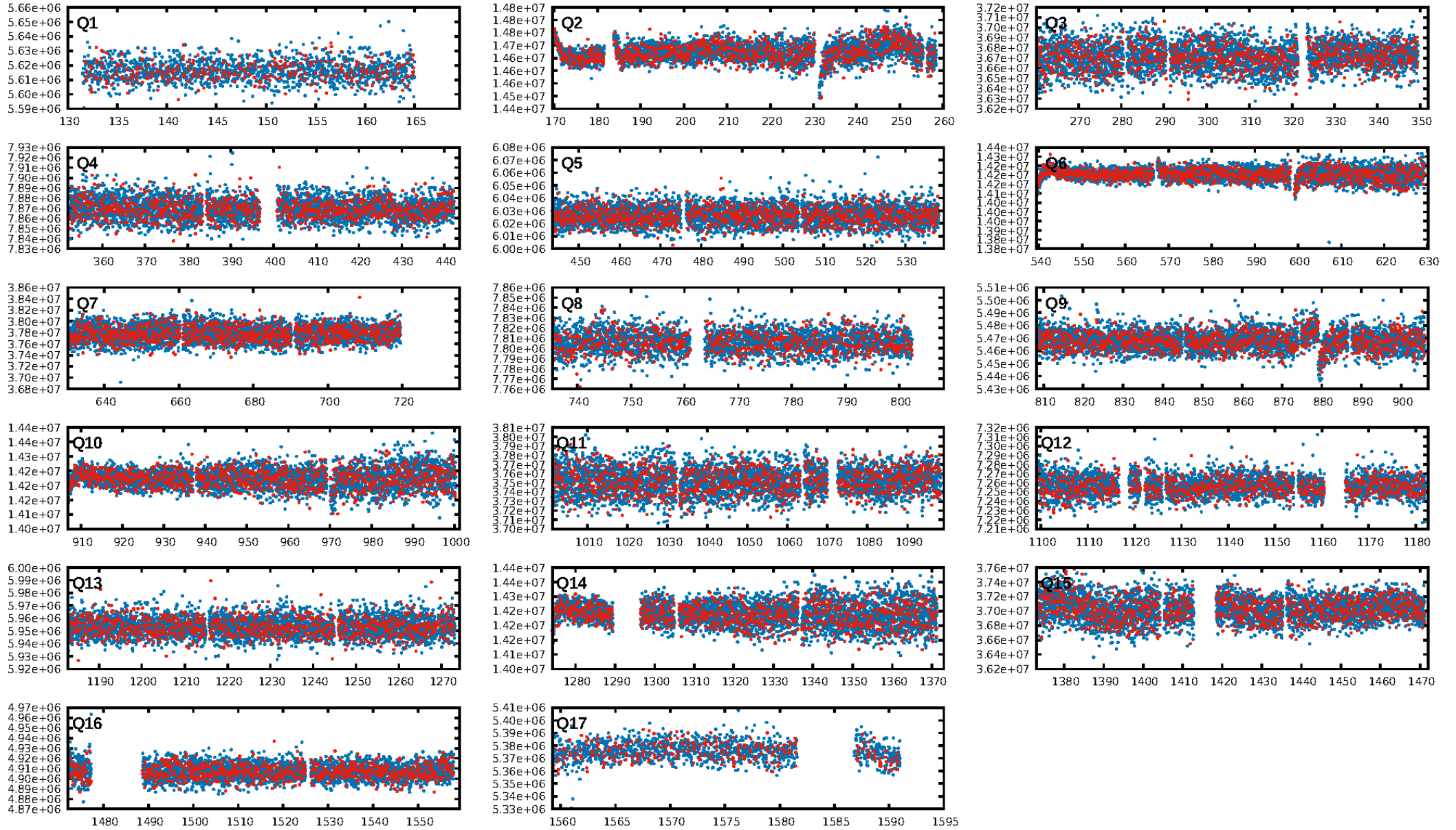
DV Fit Results:

Period = 0.51532 [0.00002] d
Epoch = 131.8500 [0.0026] BKJD
Rp/R* = 0.0138 [0.0129]
a/R* = 1.75 [5.24]
b = 0.90 [0.96]
Seff = 6316.89 [0.26]
Teq = 2273 [0] K
Rp = 1.51 [1.41] Re
a = 0.0126 [0.0000] AU
Ag = 6.46 [12.07] [0.45σ]
Teffp = 5602 [2619] K [1.27σ]

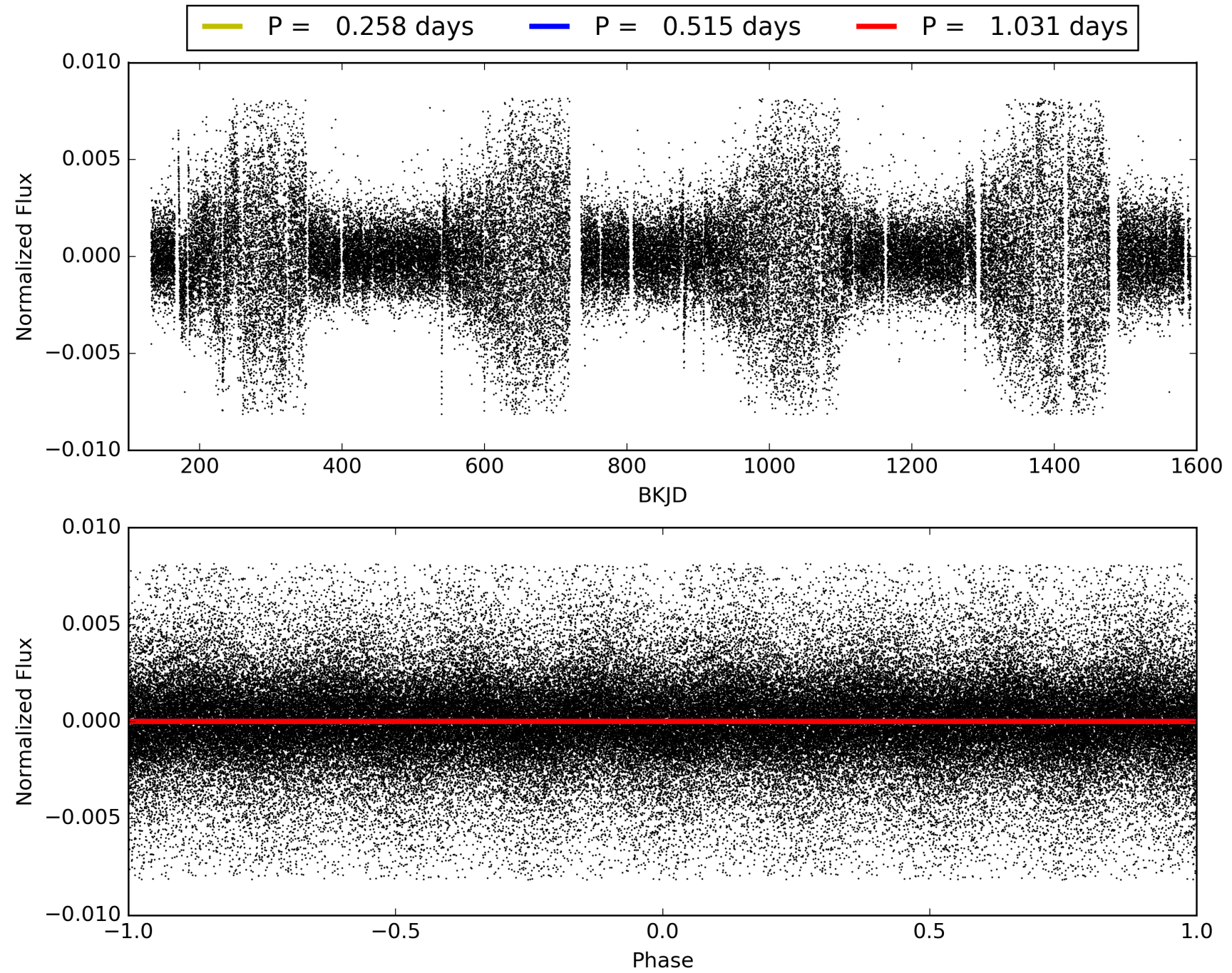
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.27e-24
RollingBand-fgt: 0.95 [2365/2481]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 5.161 arcsec [66.77σ]
KicOffset-rm: 8.008 arcsec [9.03σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 2/0/0/3 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 003231410-01, PDC Light Curves

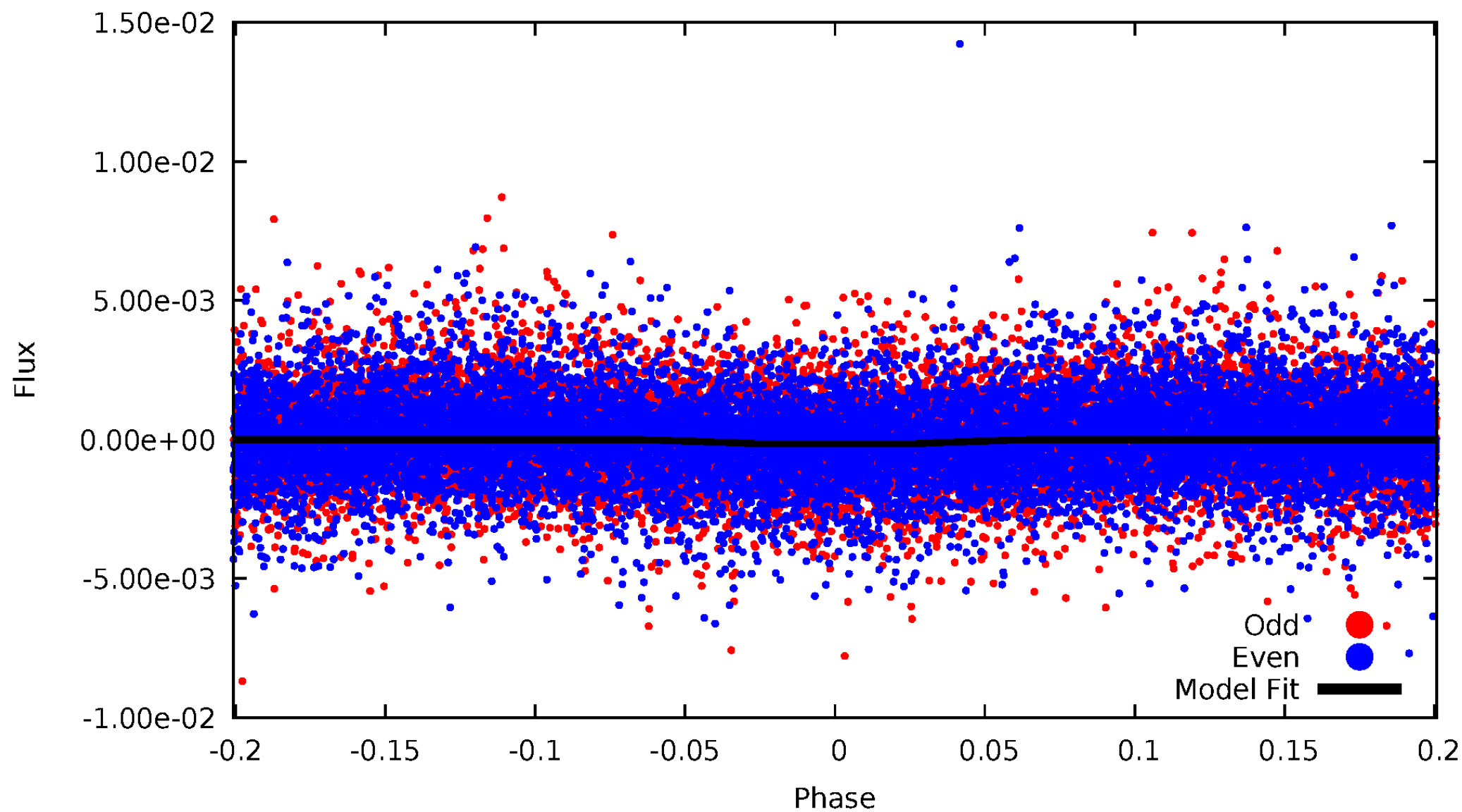


TCE 003231410-01



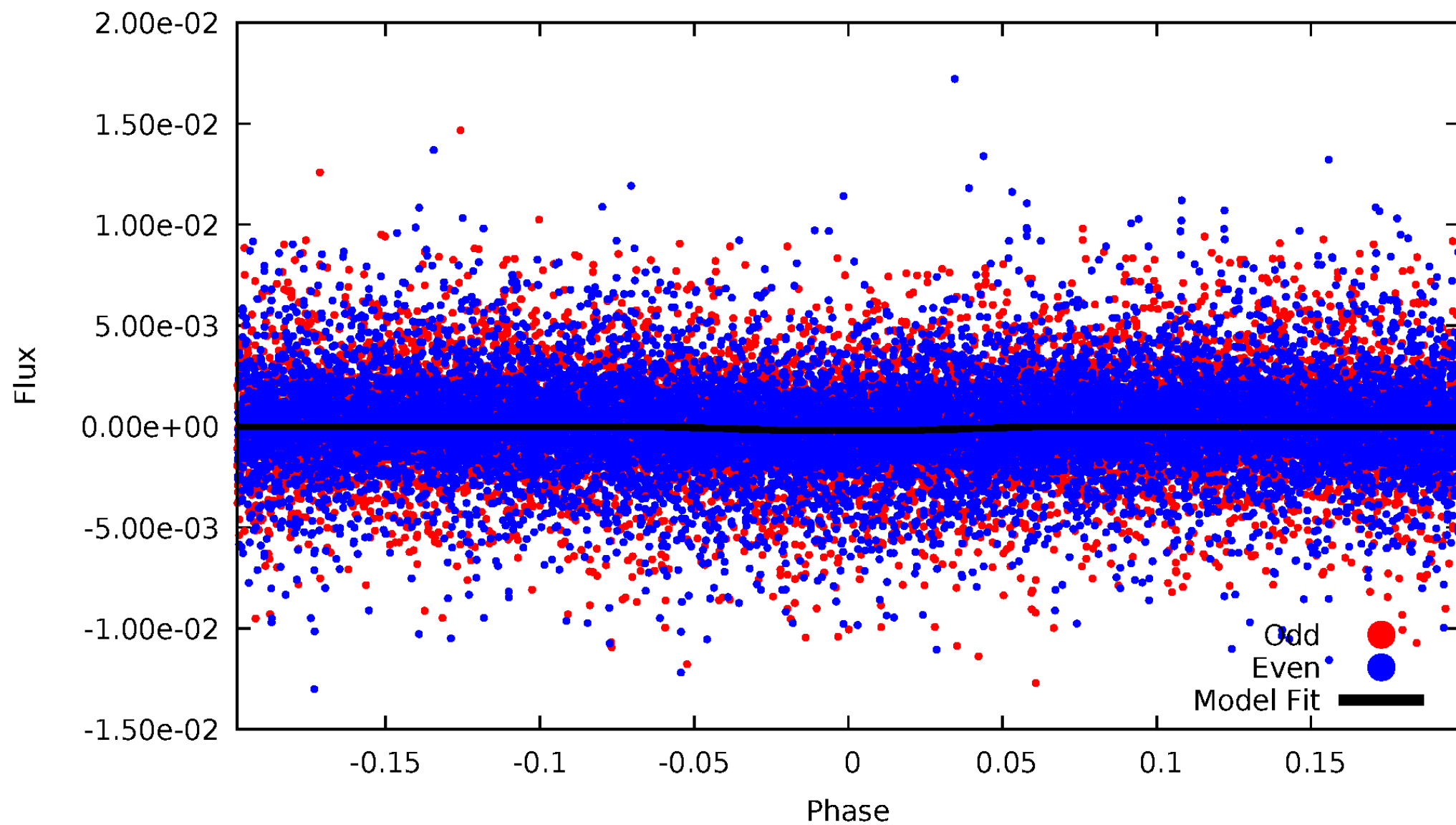
DV Odd/Even

TCE 003231410-01



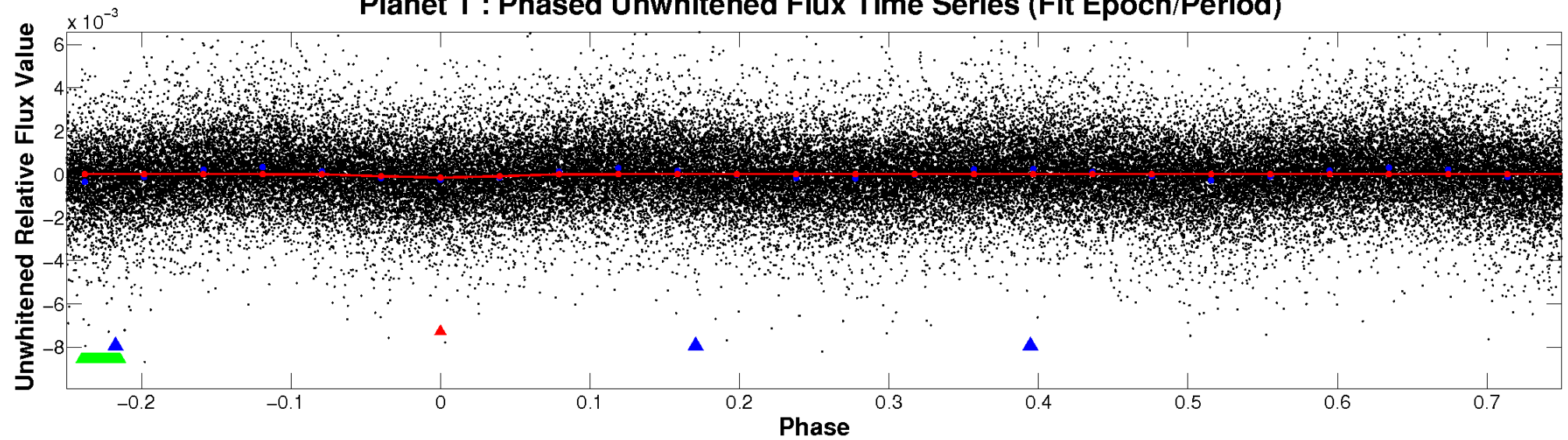
ALT Odd/Even

TCE 003231410-01

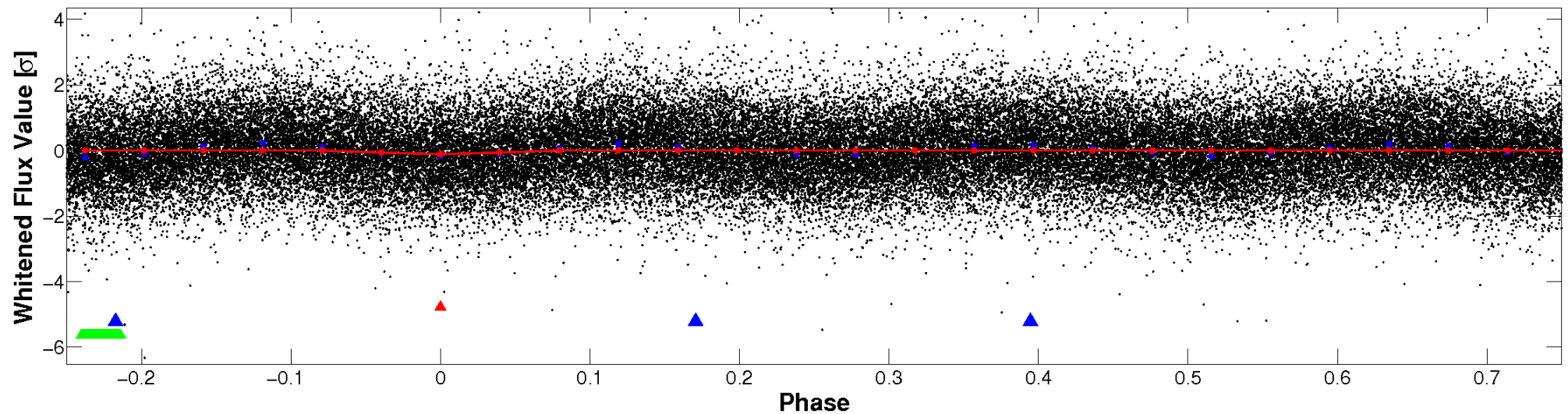


Non-Whitened Vs. Whitened Light Curve

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

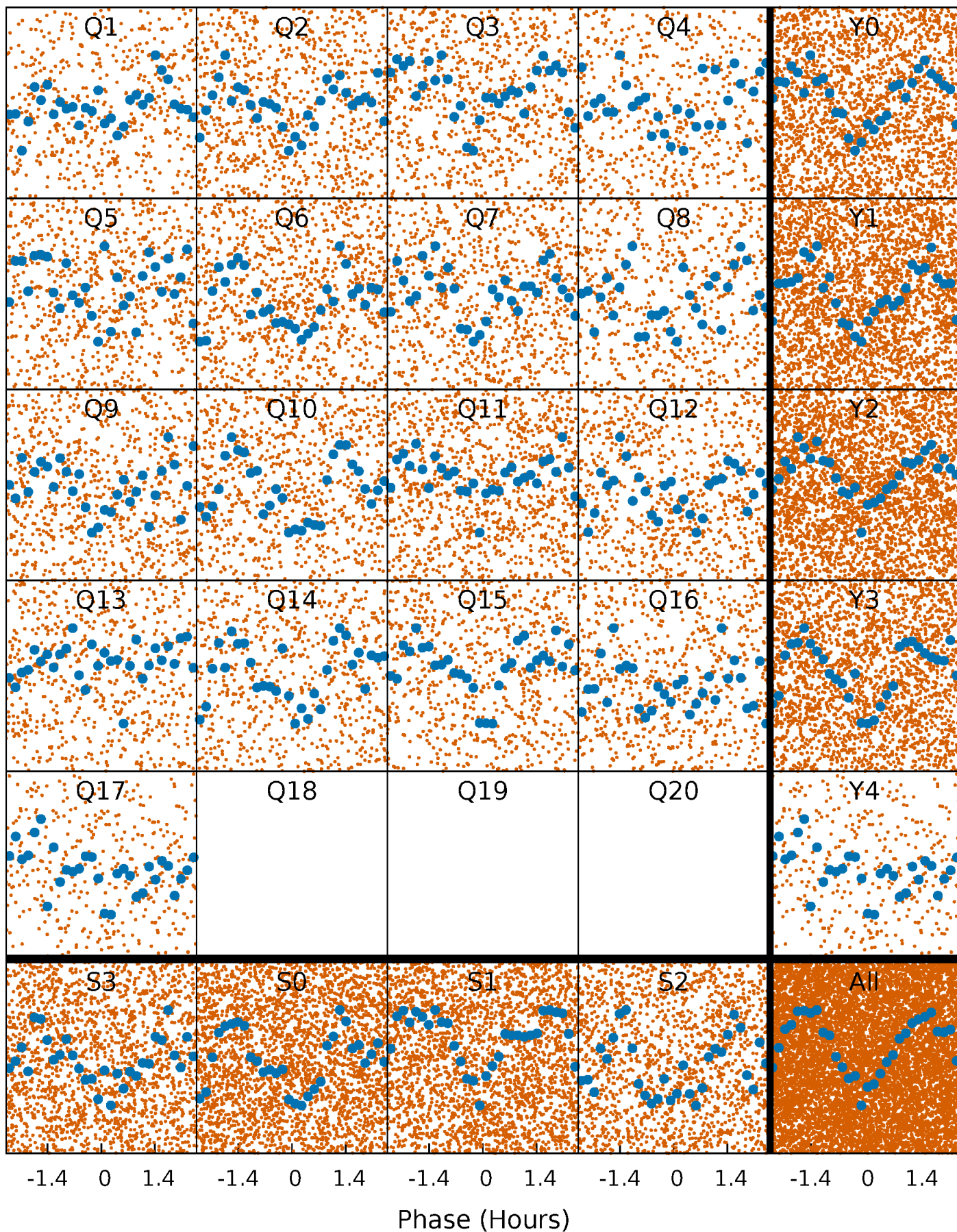


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



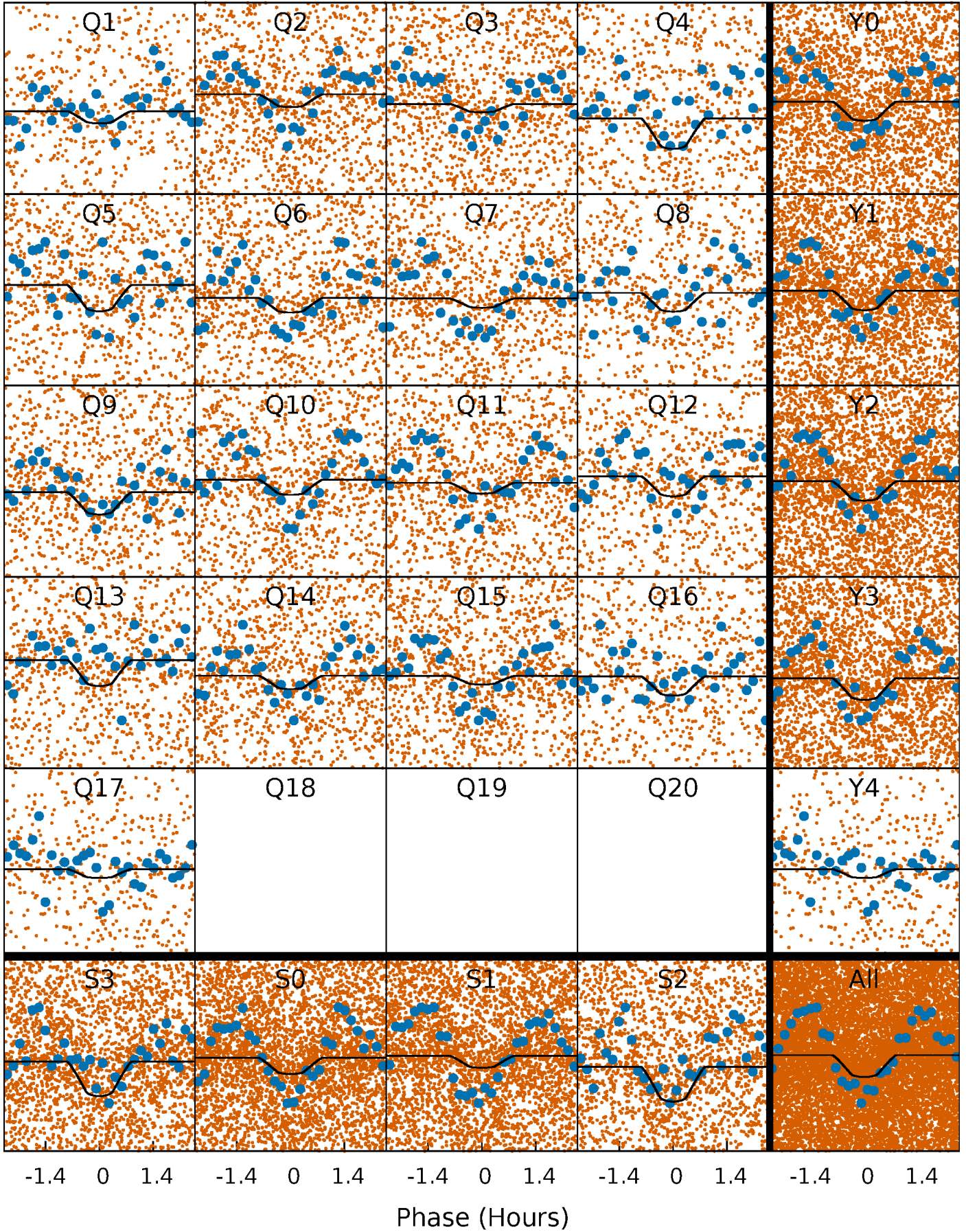
PDC Quarter-Phased Transit Curves

TCE 003231410-01 P= 0.515320 Days $T_0=131.850009$ (BKJD)



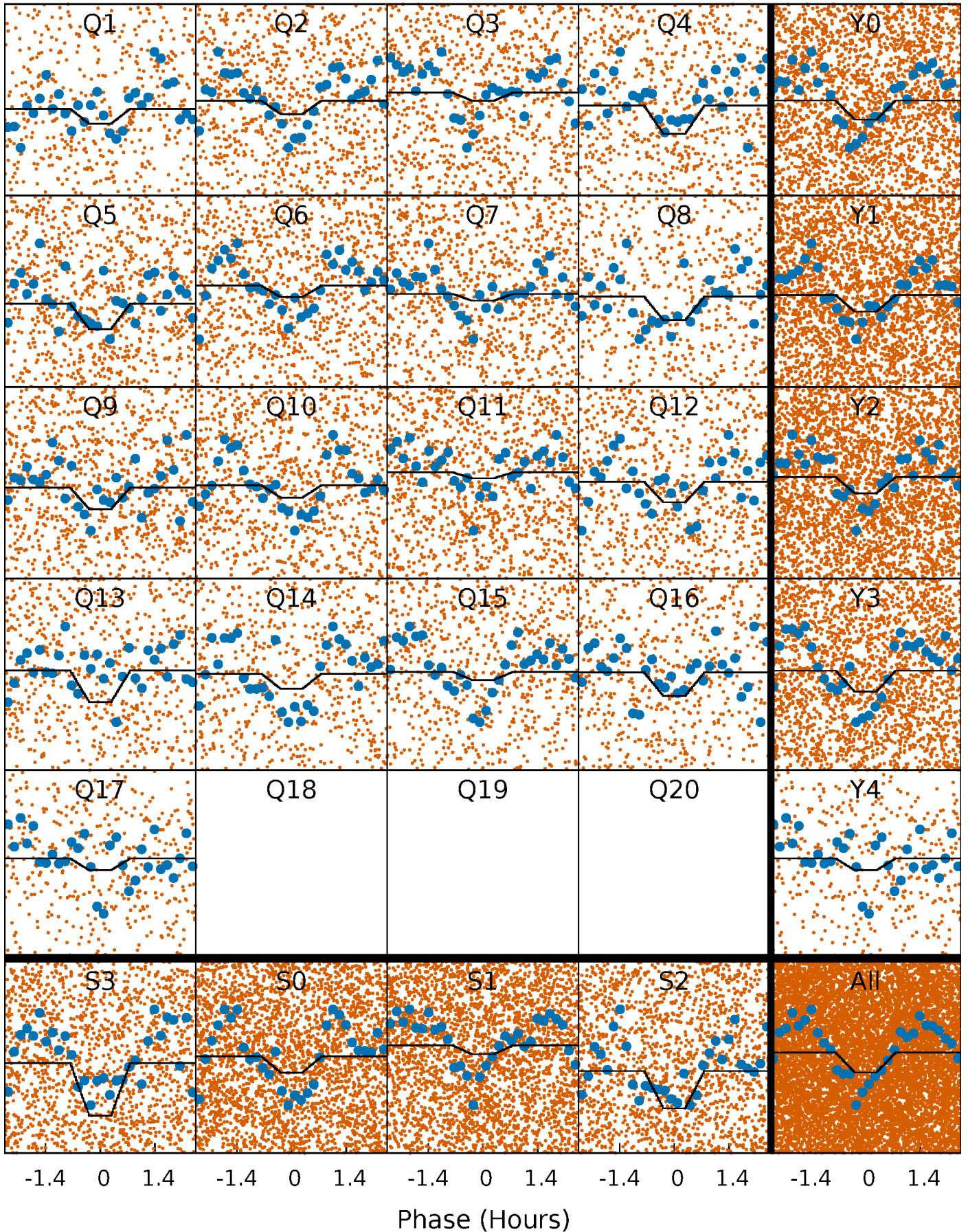
DV Quarter-Phased Transit Curves

TCE 003231410-01 P= 0.515320 Days $T_0=131.850009$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

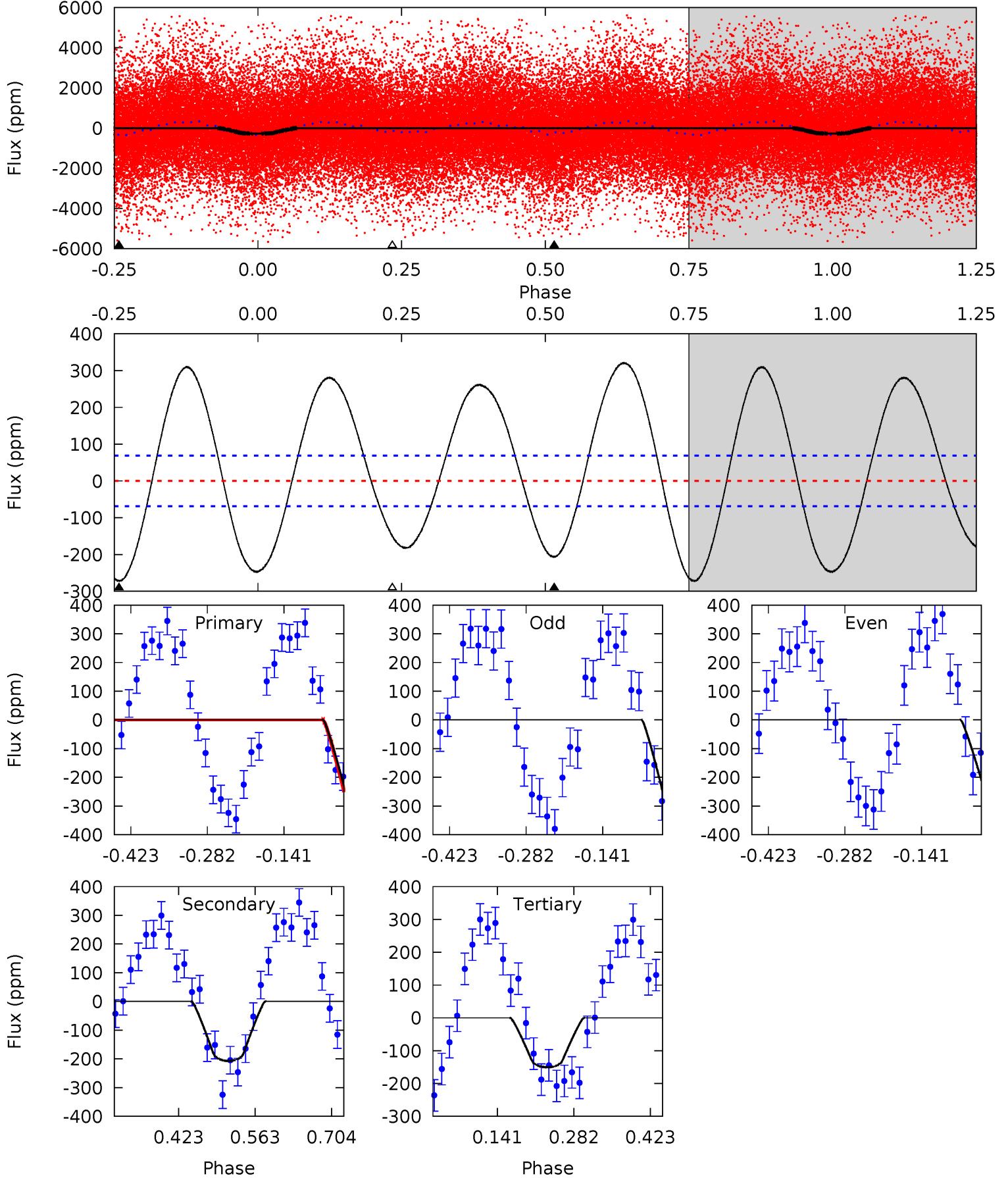
TCE 003231410-01 P= 0.515322 Days $T_0=131.850532$ (BKJD)



DV Model-Shift Uniqueness Test

003231410-01, P = 0.515320 Days, E = 131.334689 Days

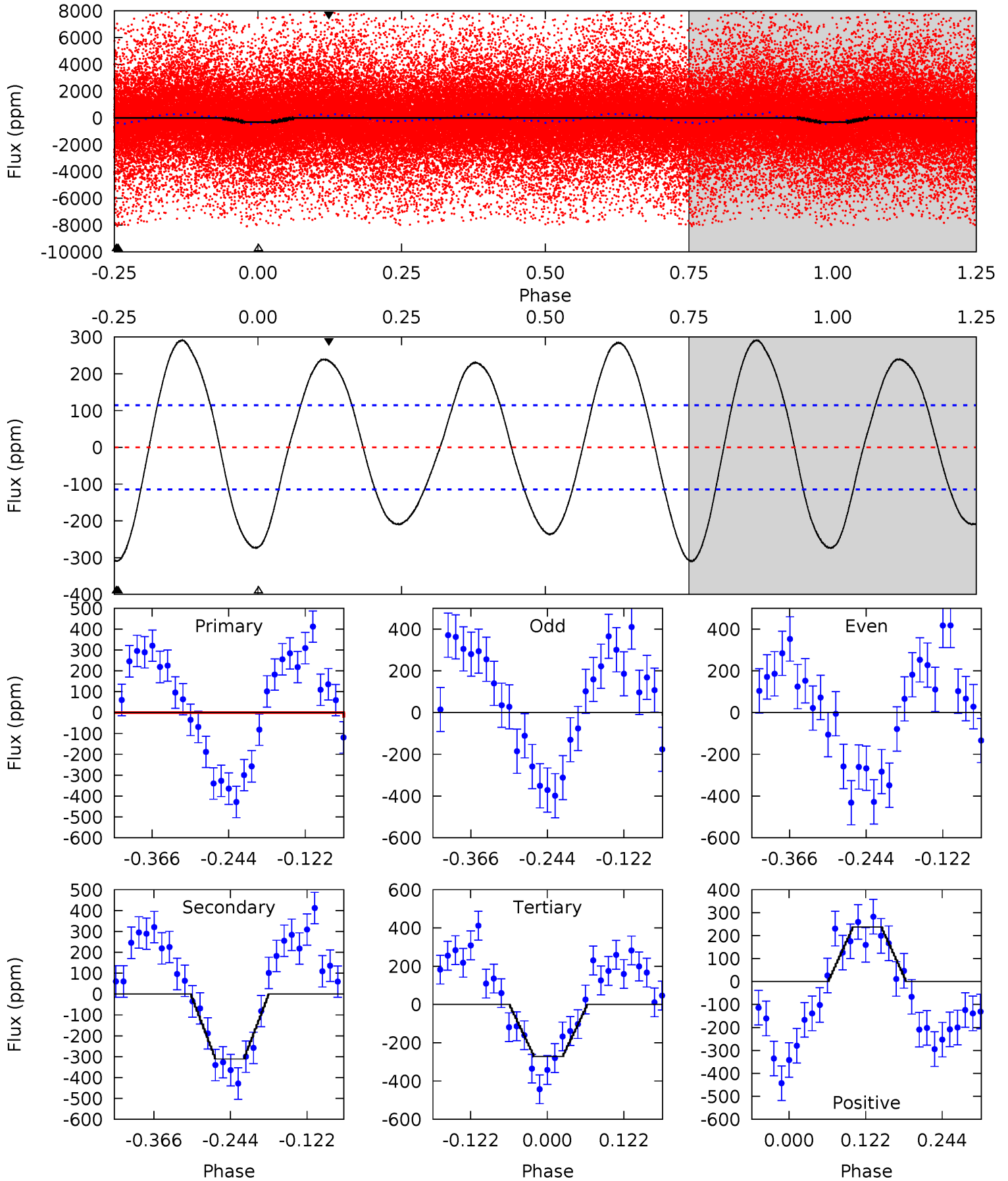
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	13.5	9.83	0	4.49	1.47	11.1	7.98	17.8	3.71	13.5	1.57	1.10	0.54	1.33



Alt Model-Shift Uniqueness Test

003231410-01, P = 0.515322 Days, E = 131.335210 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	12.3	10.7	9.35	4.52	1.55	6.87	1.49	2.89	1.53	2.93	0.28	1.31	0.49	3.04



Stellar Parameters For KIC 003231410

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 003231410-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-207 ± 15	$1.70^{+1.36}_{-1.05}$	3178^{+155}_{-155}	5493^{+4083}_{-1286}	$6.442^{+34.886}_{-4.543}$
Alt.	-311 ± 25	$1.77^{+1.29}_{-1.10}$	3179^{+155}_{-150}	6002^{+5070}_{-1397}	$8.670^{+53.996}_{-5.744}$

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 $A_{obs} \gg 1.0$

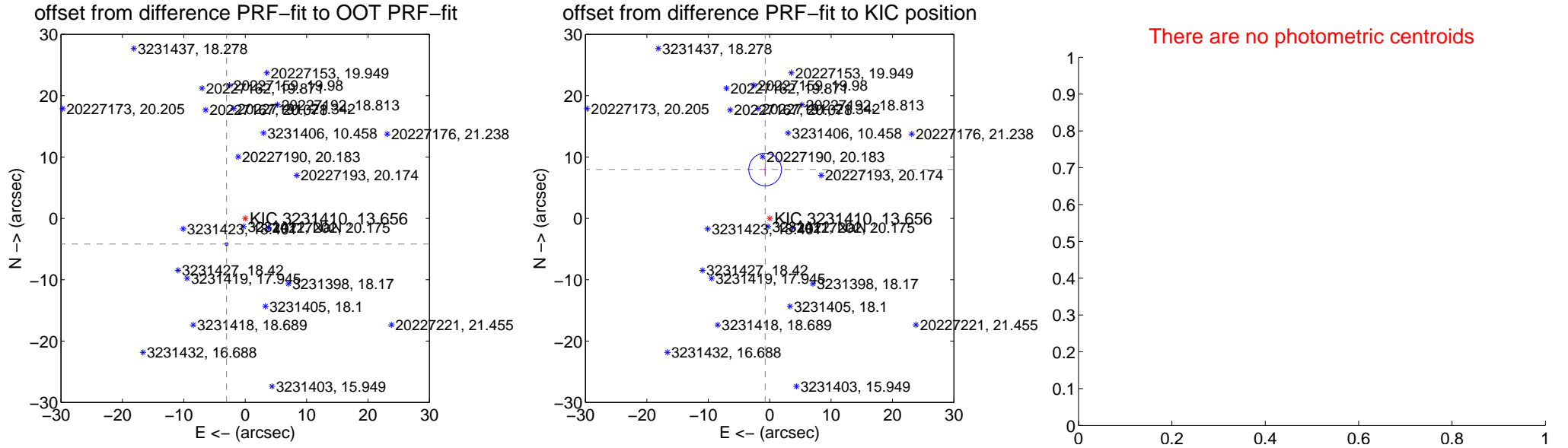
DV Centroid Data

Supplemental centroid analysis for 003231410-01. Kepler magnitude: 13.66. Transit SNR 7.63

There are 4 quarters with good PRF difference image offsets

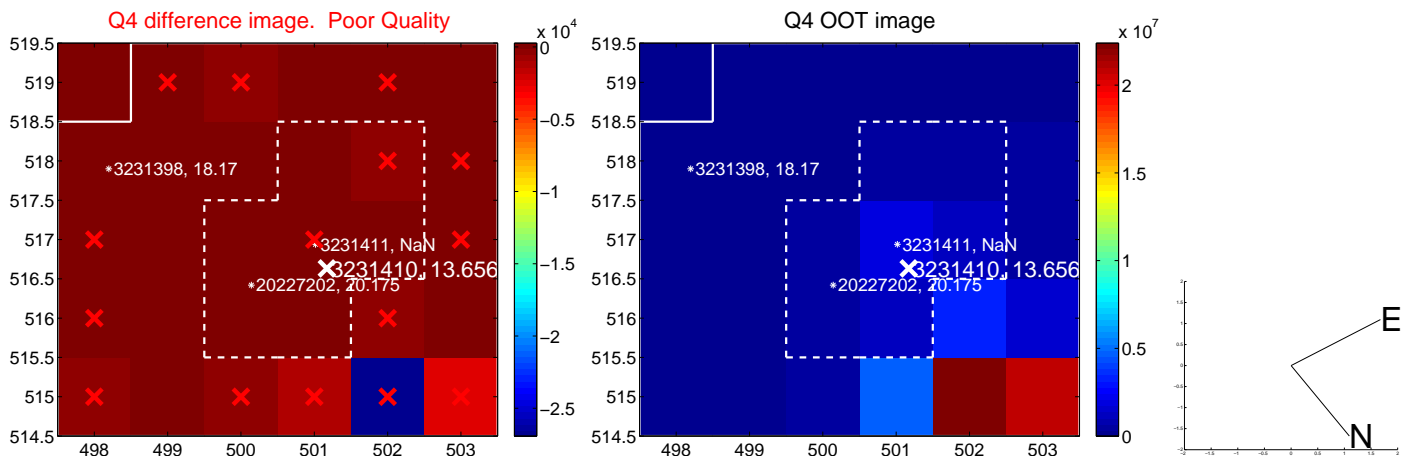
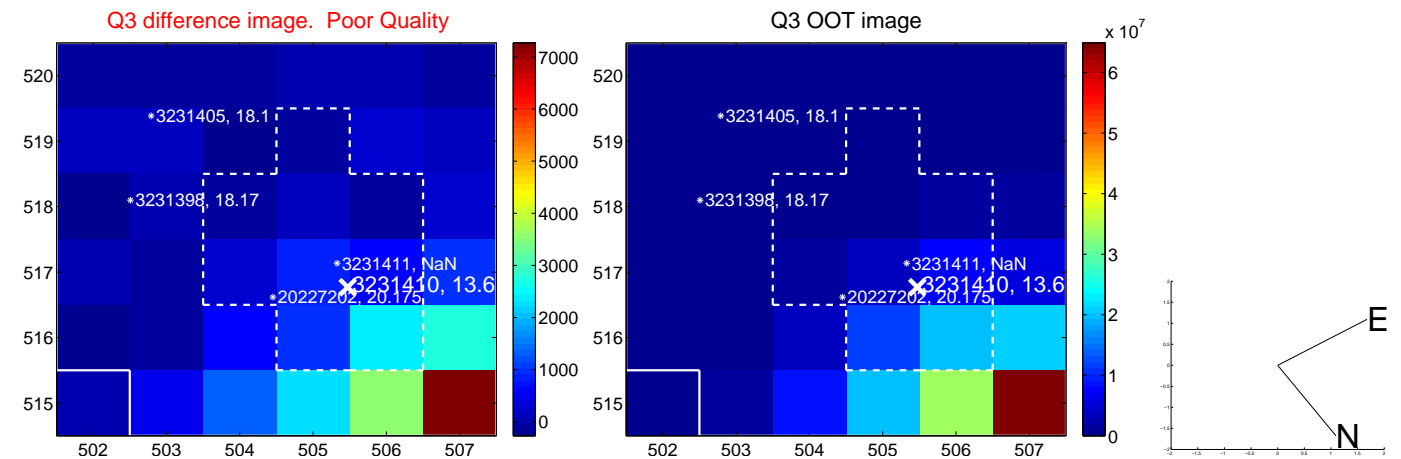
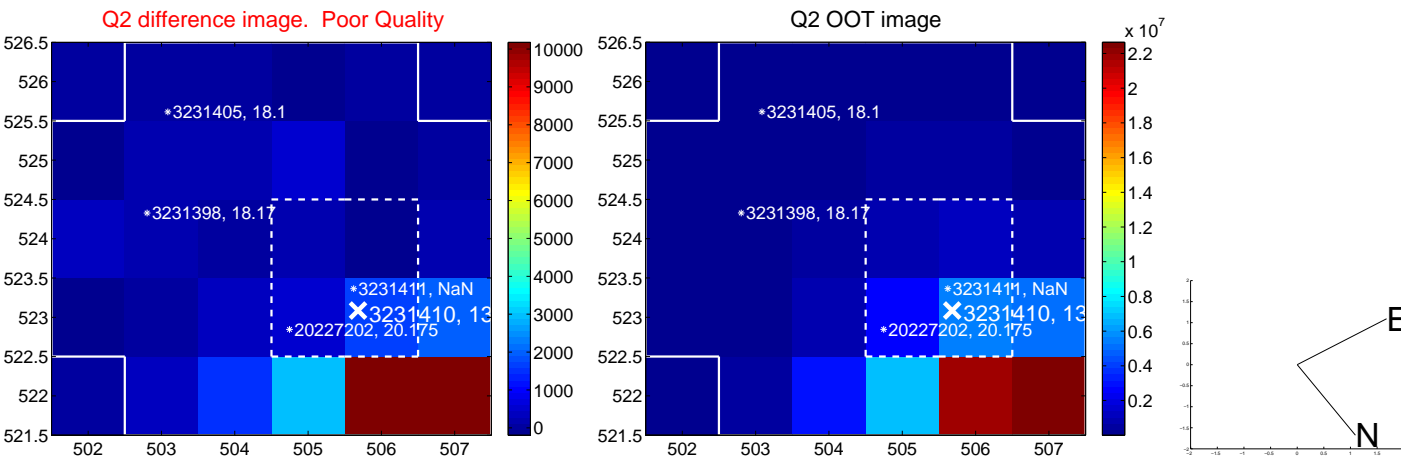
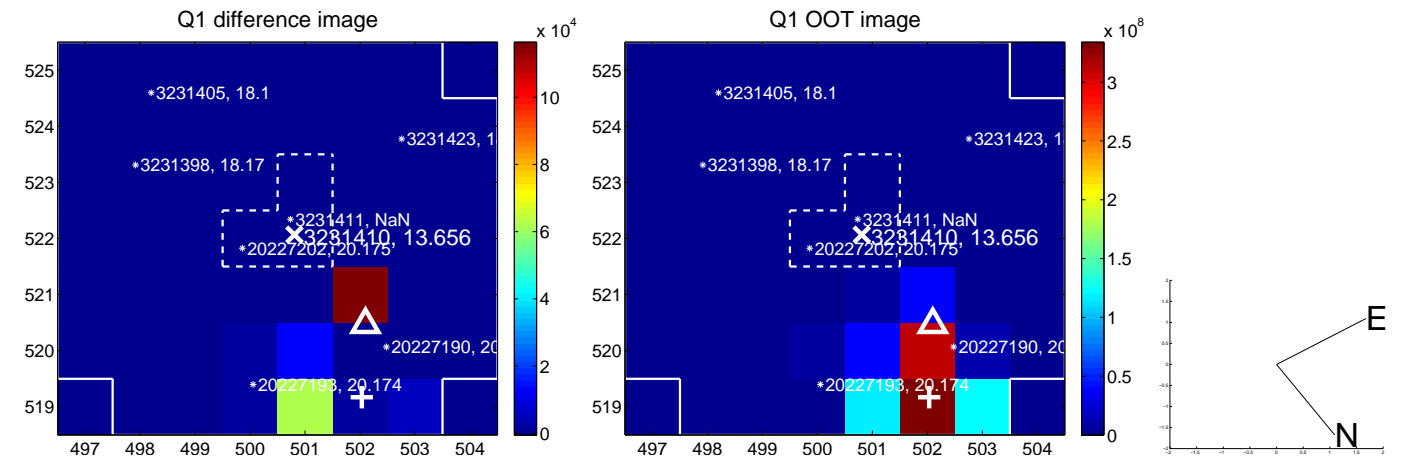
The OOT PRF centroid is offset from the target star catalog position by about 12.51 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.161 ± 0.077	66.77	3.026 ± 0.075	-4.180 ± 0.078
PRF-fit source offset from KIC position	8.008 ± 0.887	9.03	0.736 ± 0.166	7.974 ± 0.878
photometric centroid source offset	—	—	—	—

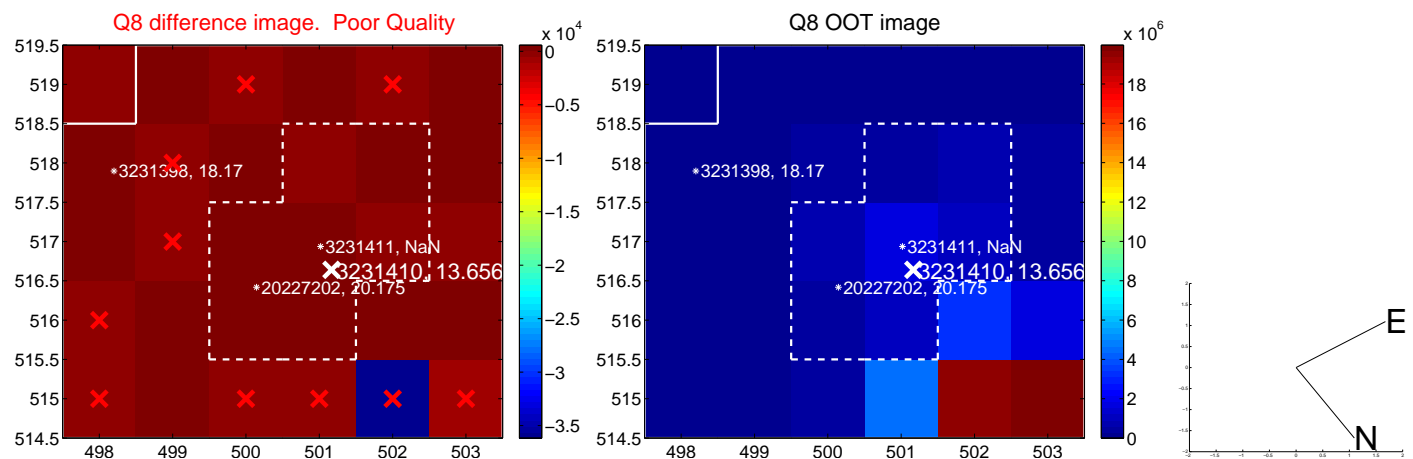
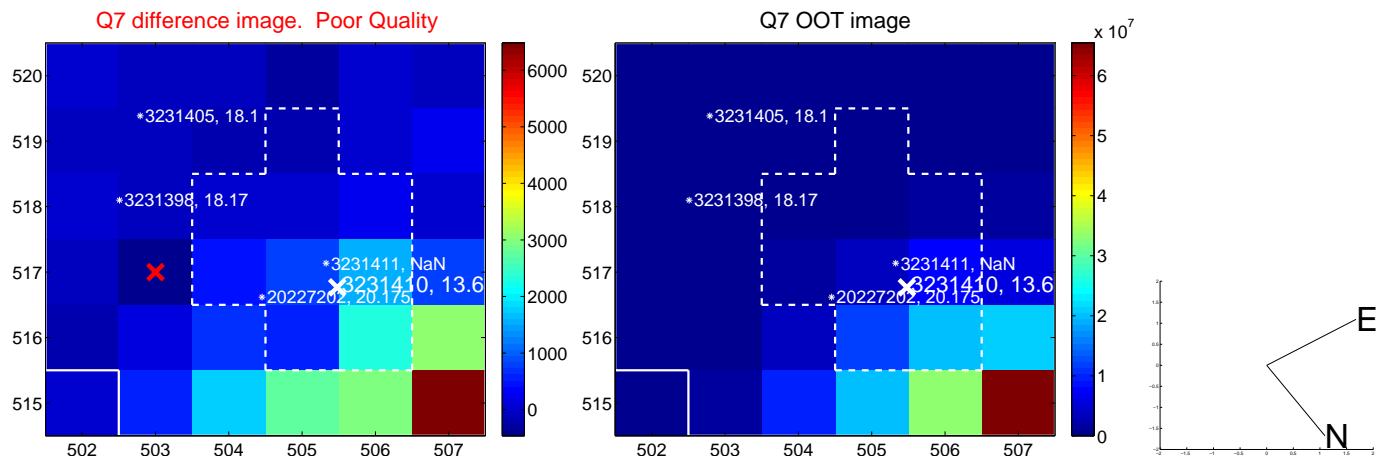
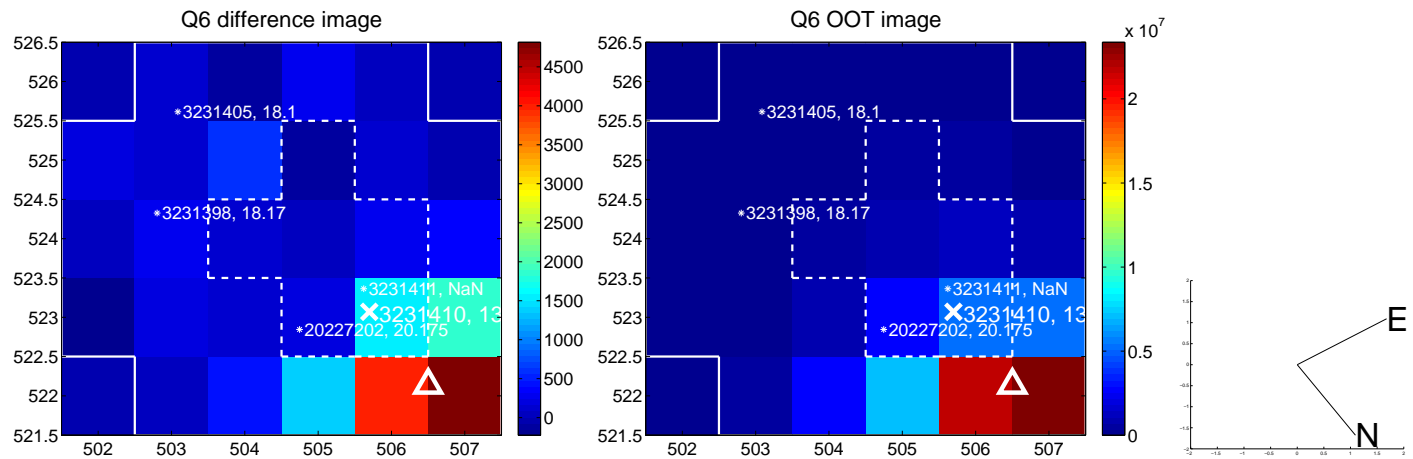
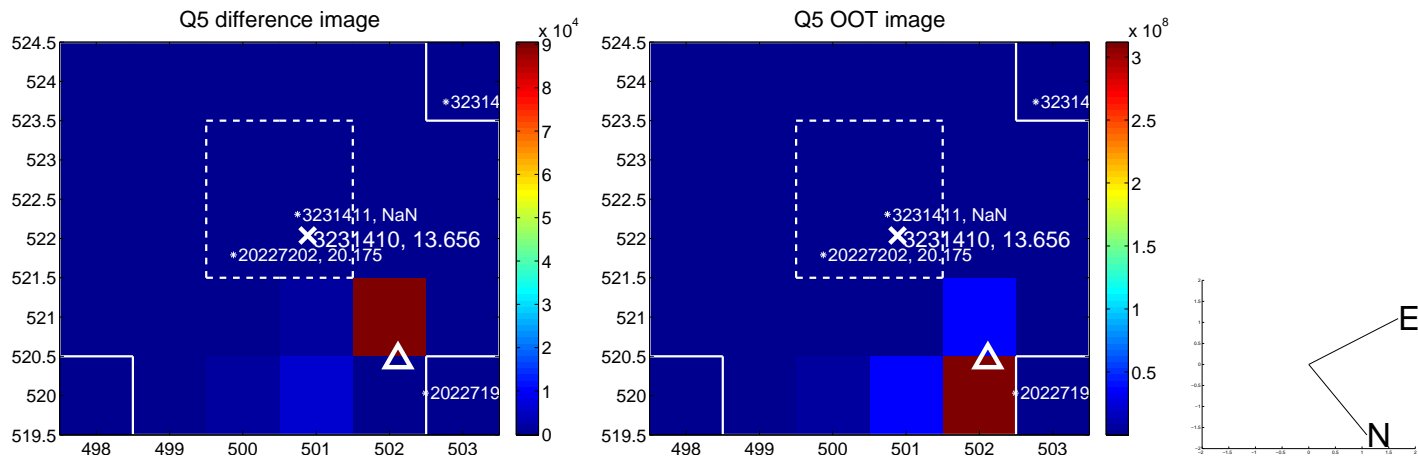


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

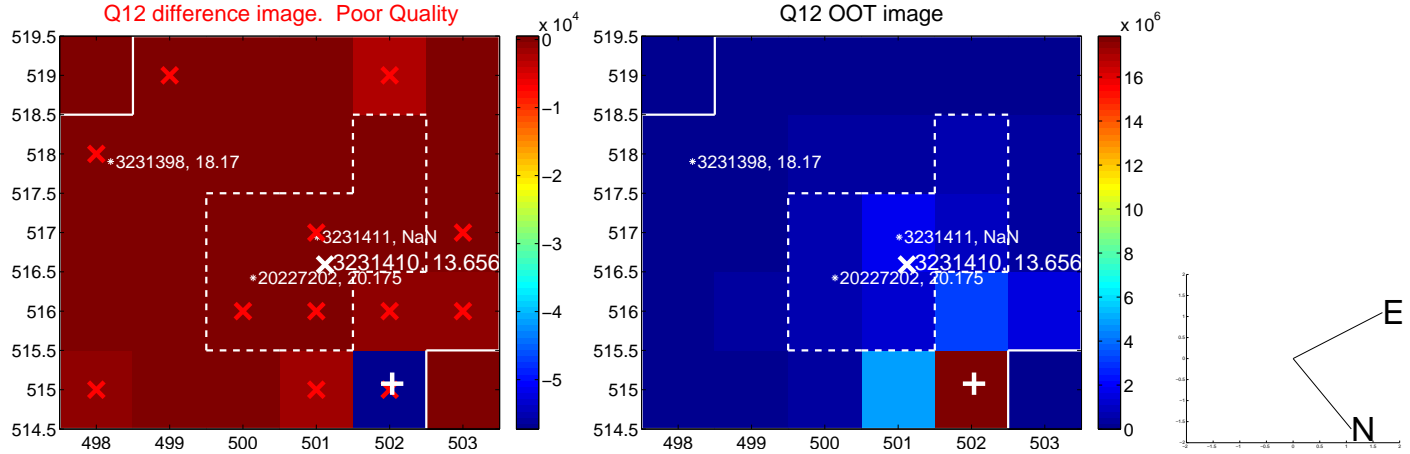
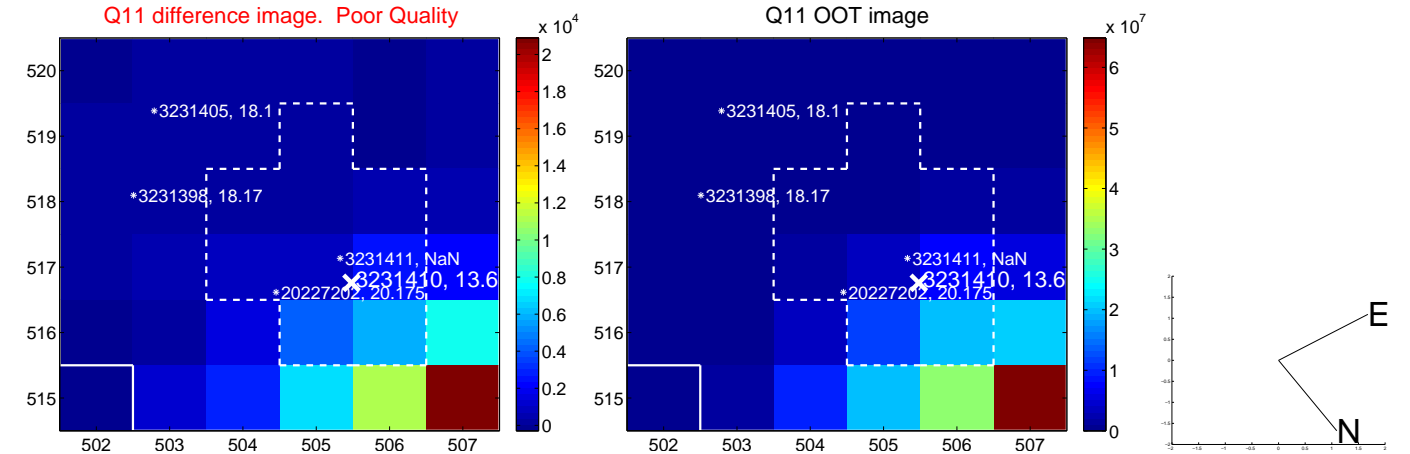
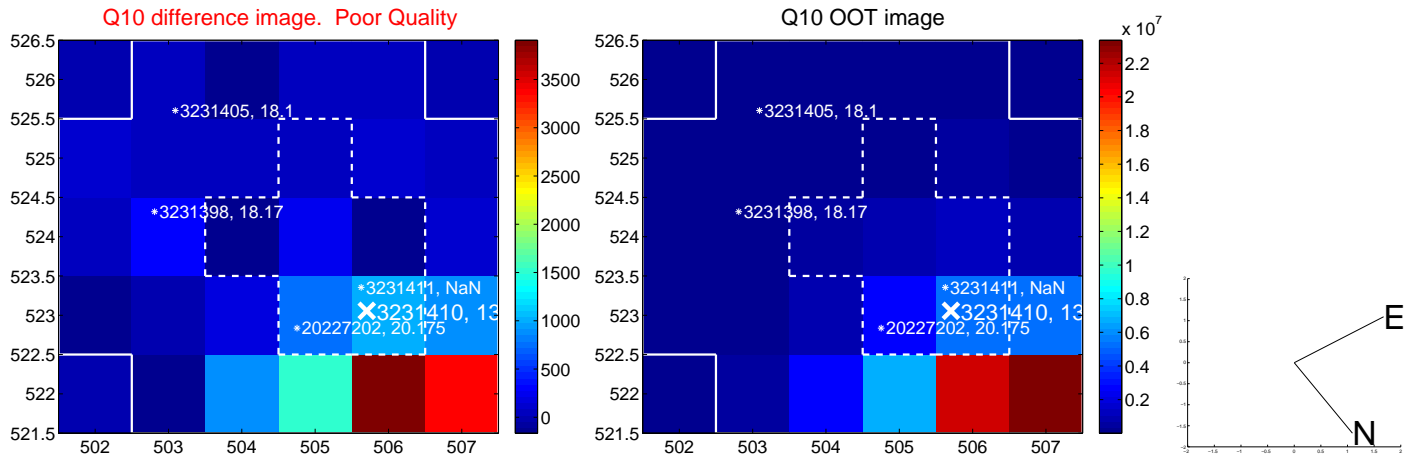
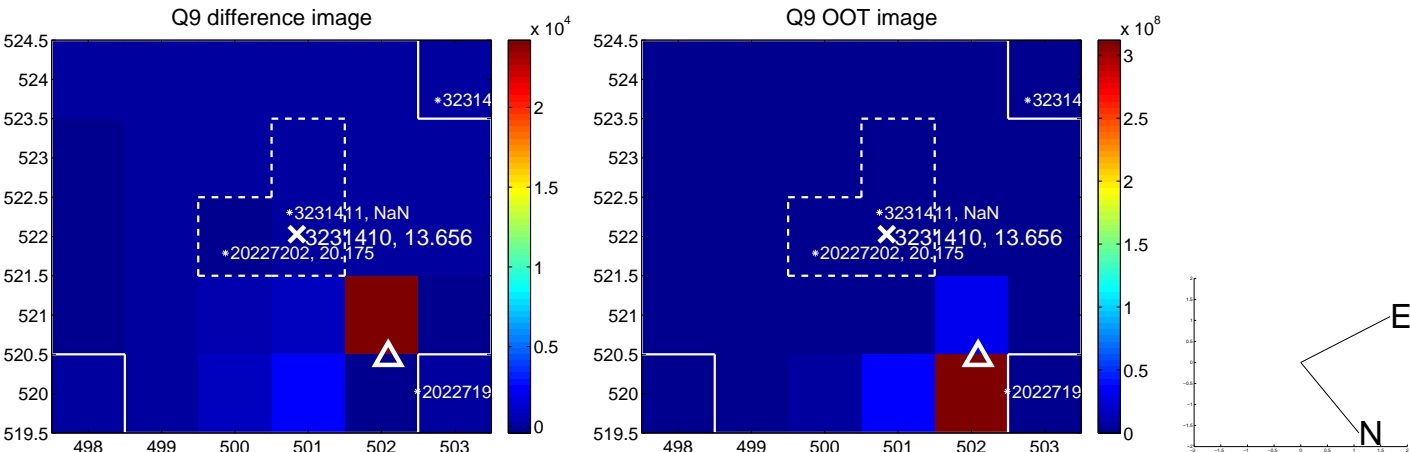
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



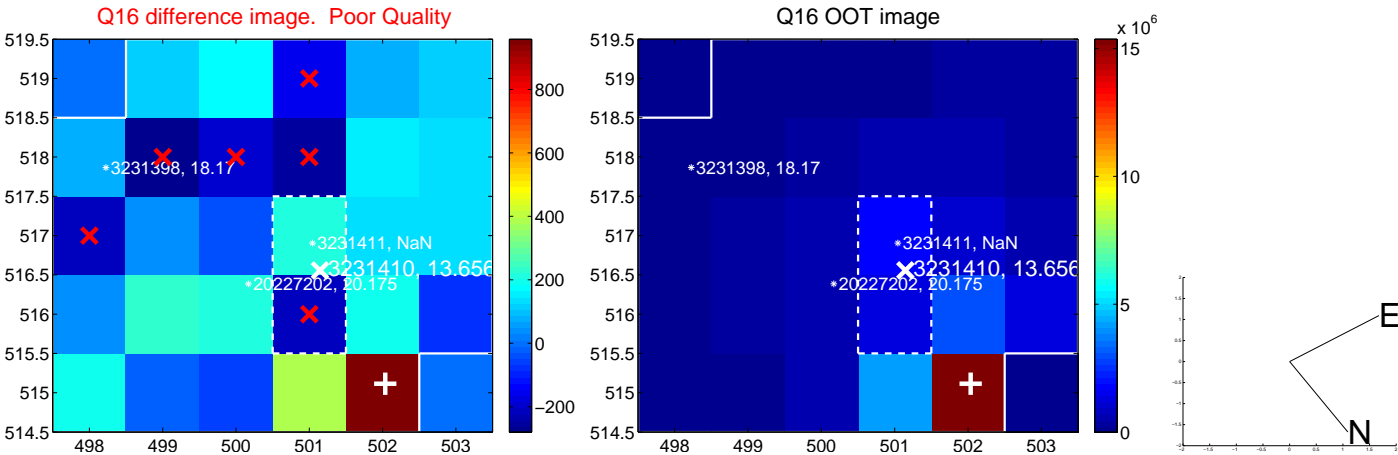
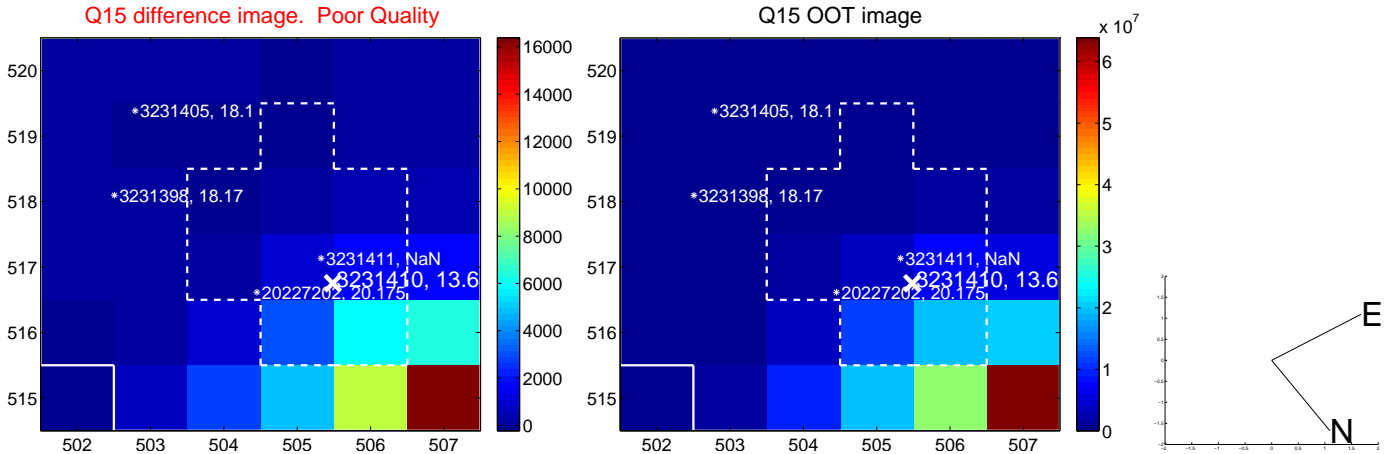
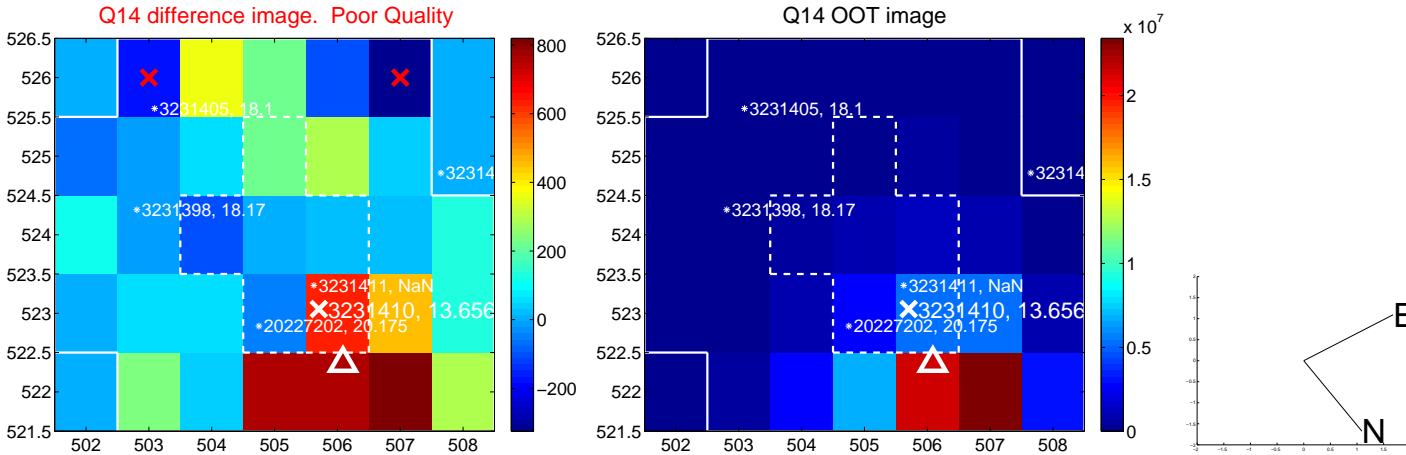
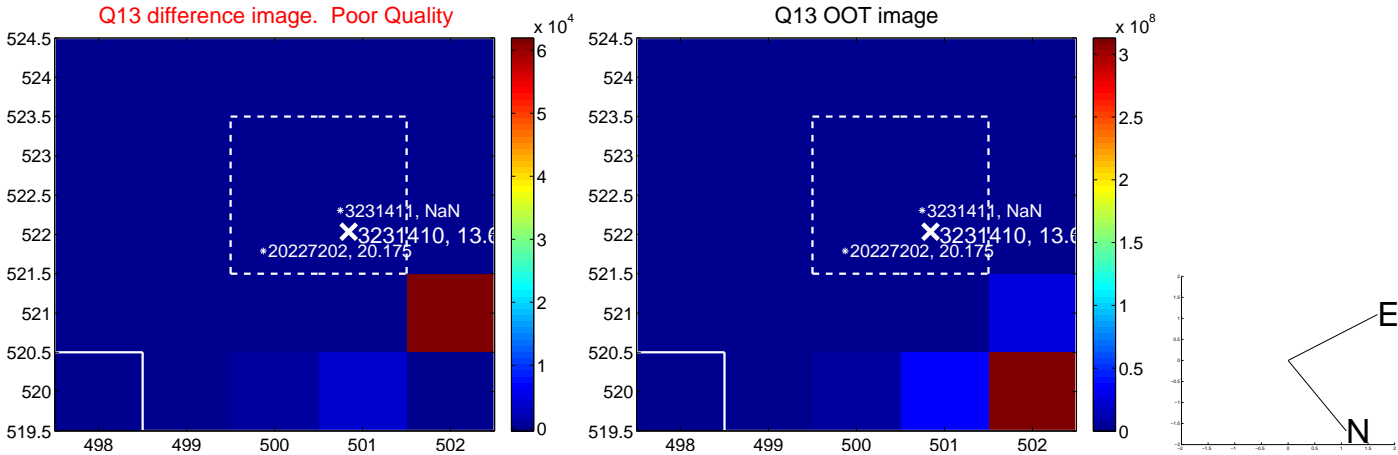
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



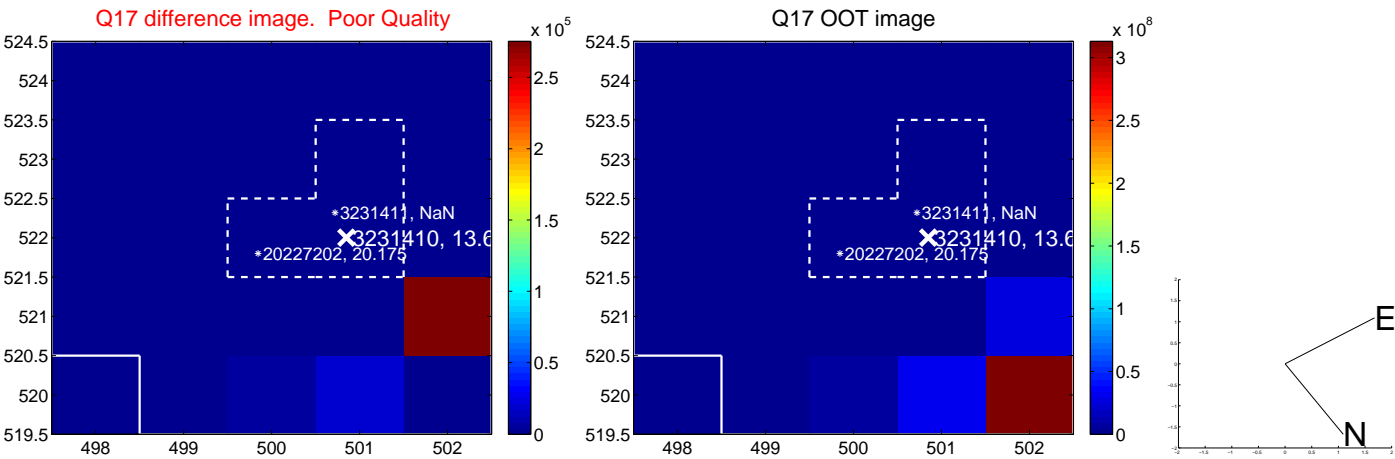
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

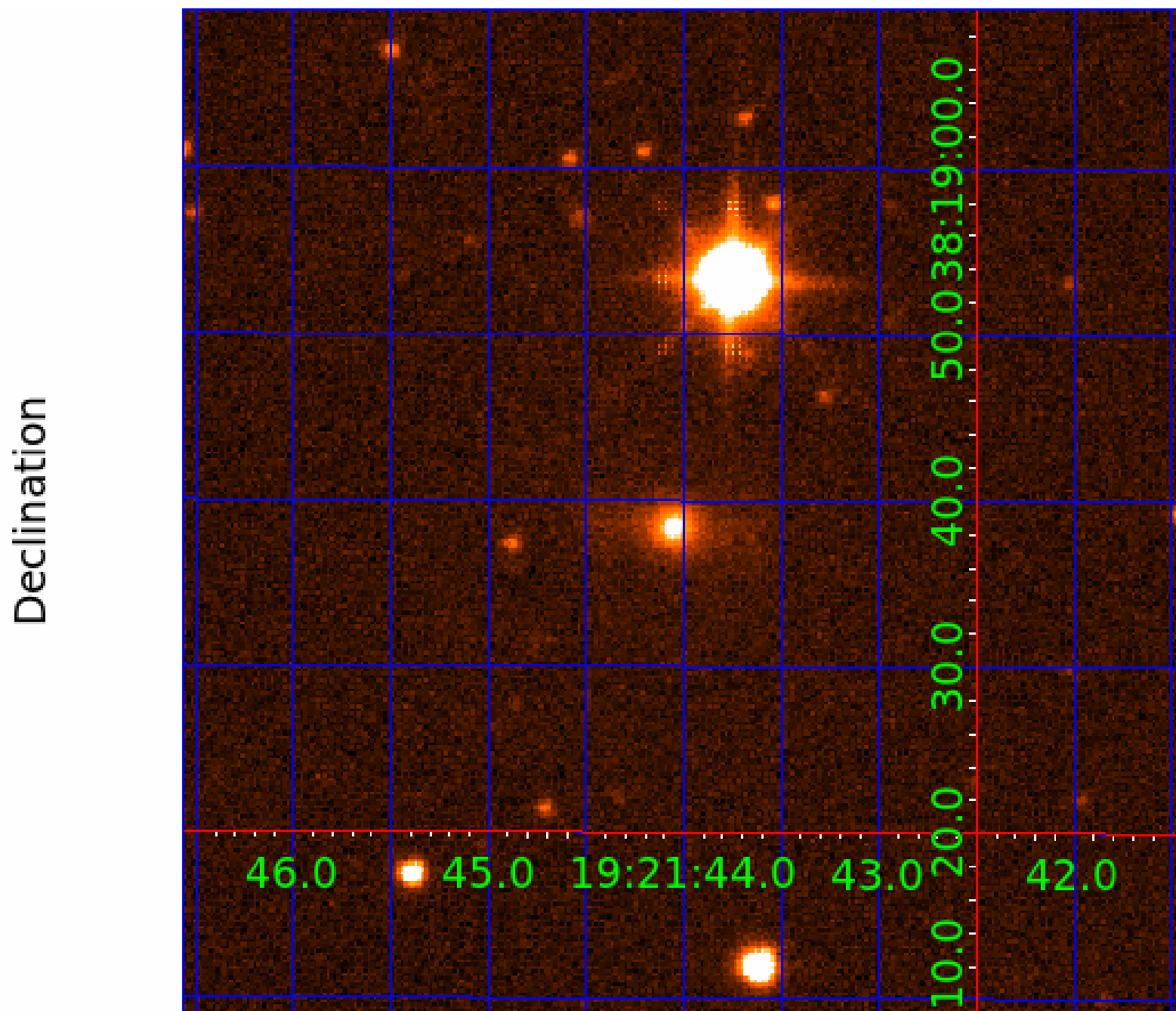


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image



KIC 003231410

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})
003231410-01	OBS	No	0.515320	131.850009	158.9	1.241	10.4	7.6	1.00	5780	1.51	6316.89
003231410-03	OBS	No	0.515324	131.726196	231.2	1.377	9.6	10.8	1.00	5780	1.82	6316.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003231410-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
003231410-03	OBS	FP	0.00	1	0	1	1	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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.

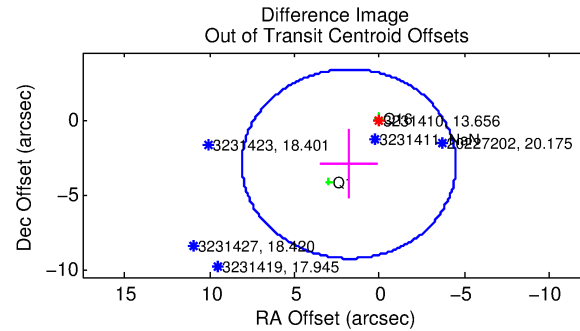
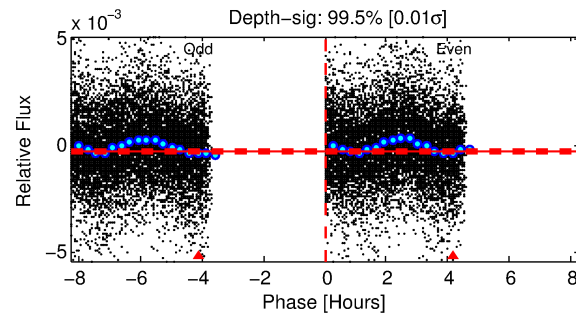
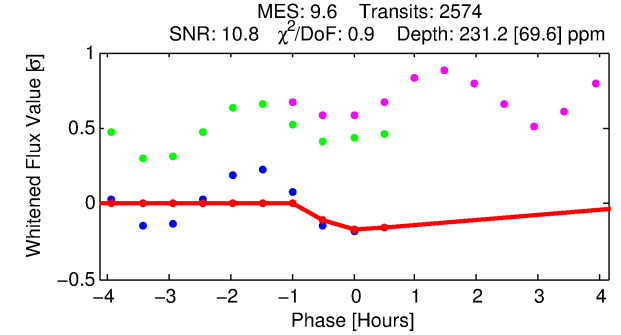
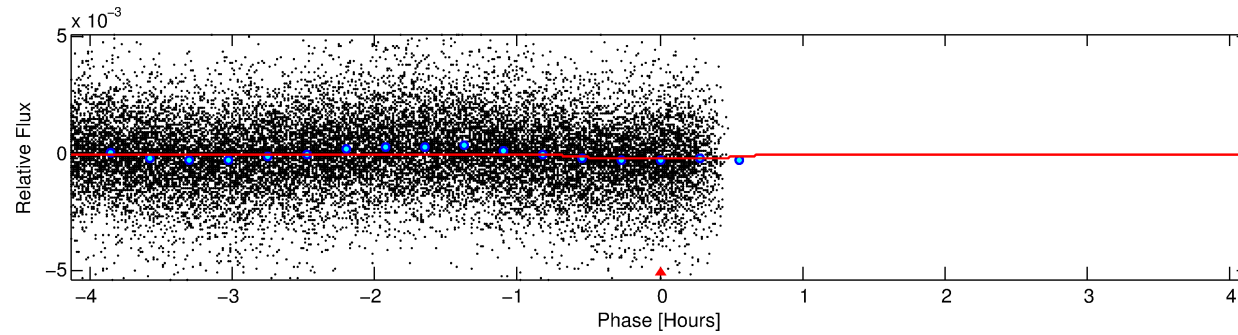
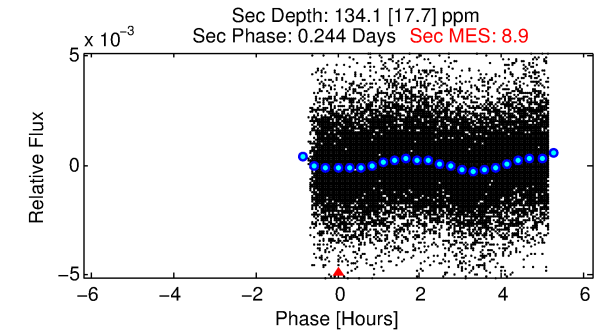
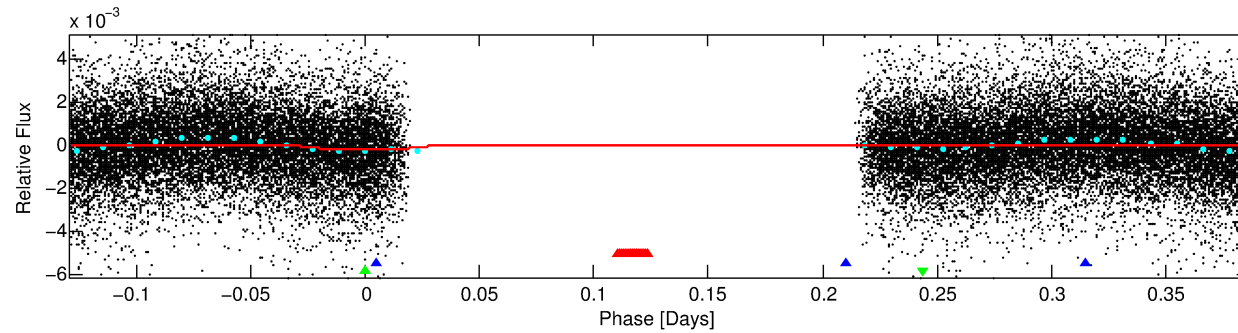
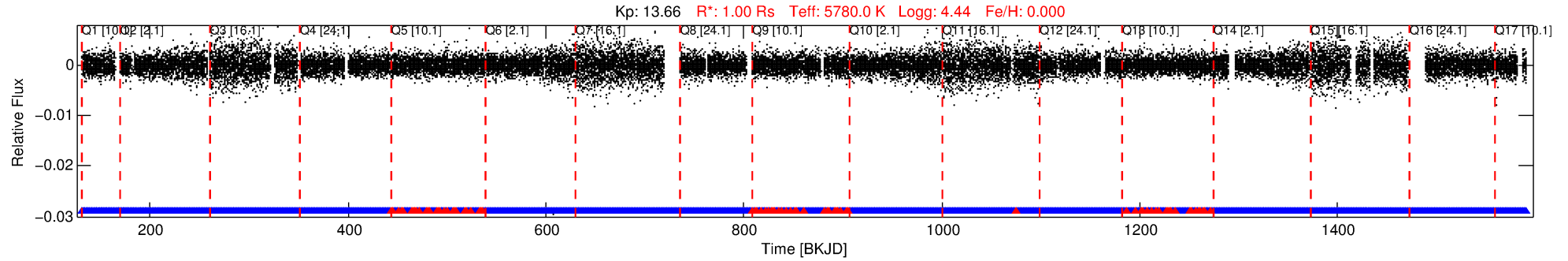
Ephemeris Match Information For 003231410-03

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
003231410-03	3231410	003231406-01	3231406	1:1	14.2	3	-1	10.46	13.66	2.03	Direct-PRF	0	1.48	0.07

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 3231410 Candidate: 3 of 3 Period: 0.515 d



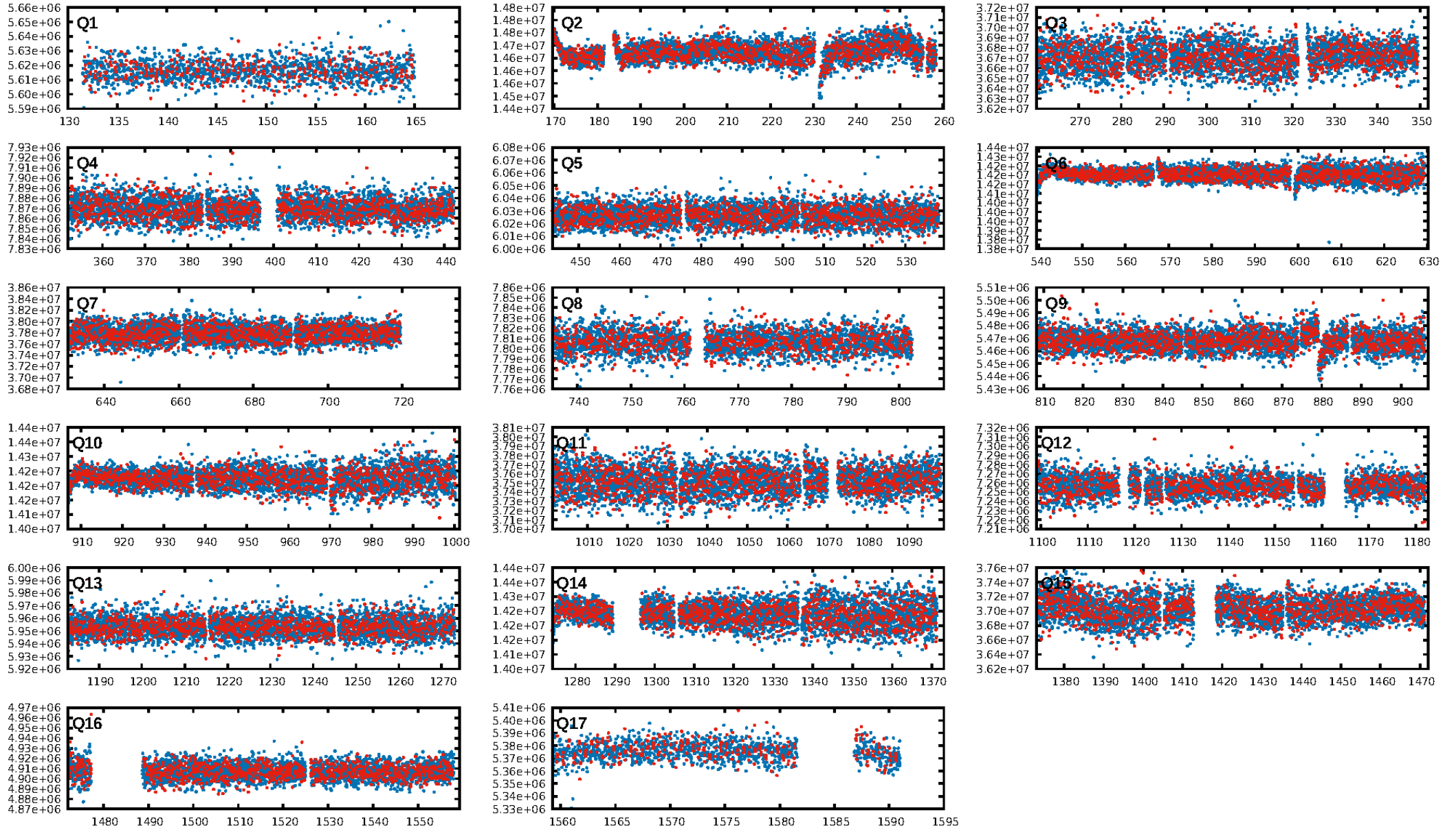
DV Fit Results:

Period = 0.51532 [0.00003] d
Epoch = 131.7262 [0.0055] BKJD
Rp/R* = 0.0167 [0.0175]
a/R* = 1.64 [5.01]
b = 0.90 [1.04]
Seff = 6316.81 [0.50]
Teq = 2273 [0] K
Rp = 1.82 [1.91] Re
a = 0.0126 [0.0000] AU
Ag = 3.52 [7.41] [0.34σ]
Teffp = 4816 [2532] K [1.00σ]

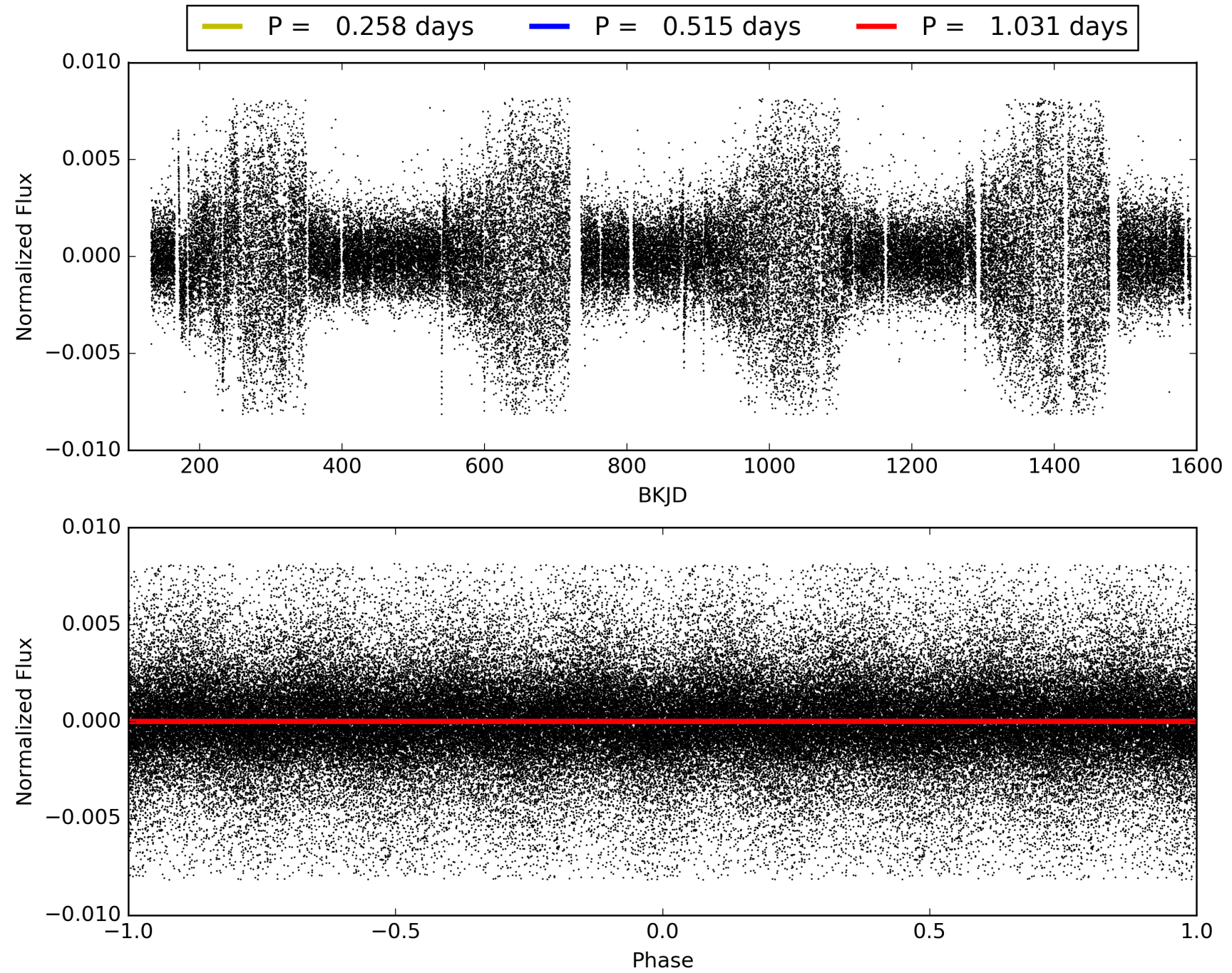
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [557.01σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.03e-21
RollingBand-fgt: 0.97 [2378/2458]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 3.444 arcsec [1.64σ]
KicOffset-rm: 7.959 arcsec [13.04σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 2/0/1/3 [6]
DiffImageQuality-fgm: 0.83 [5/6]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 003231410-03, PDC Light Curves

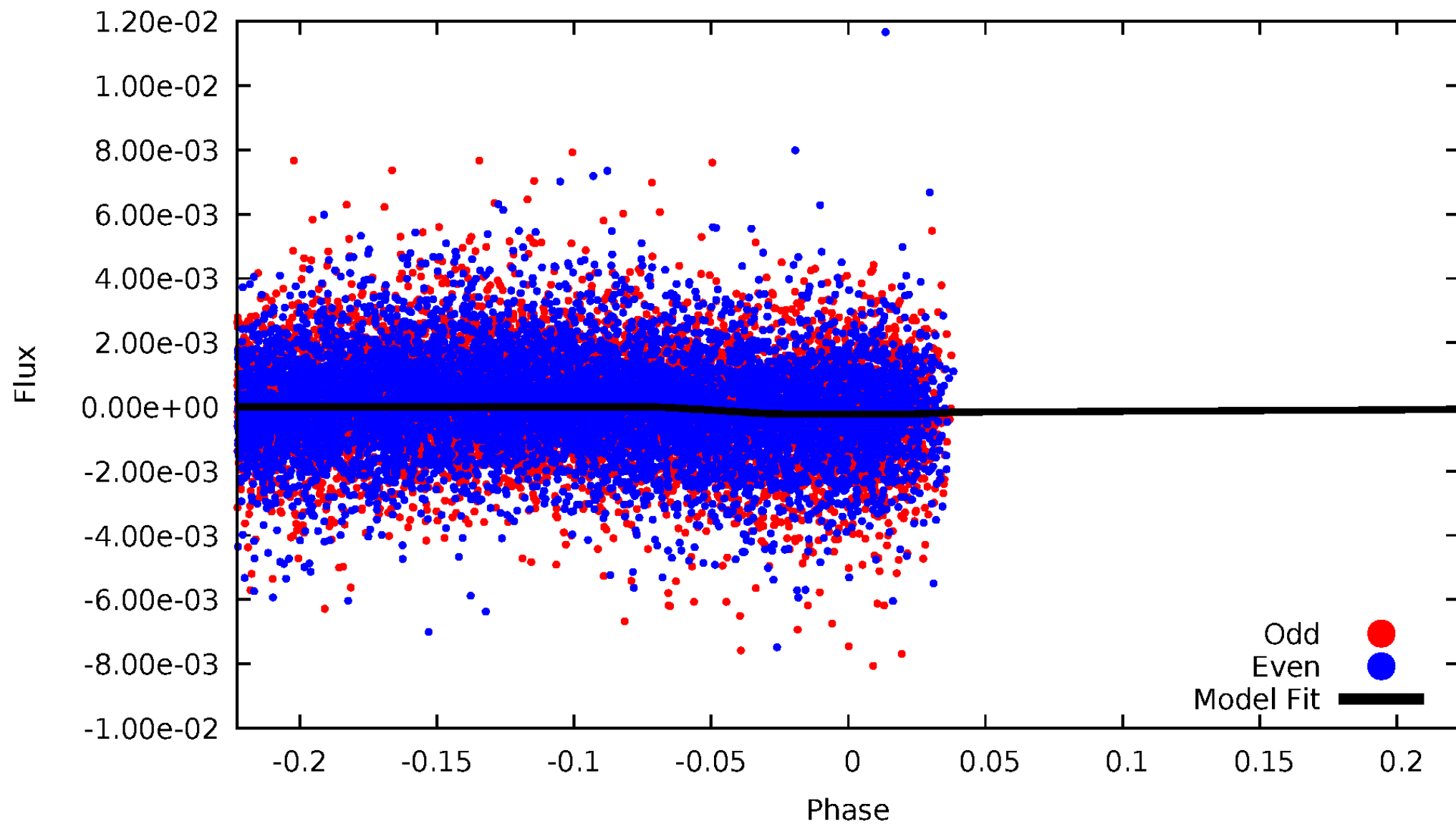


TCE 003231410-03



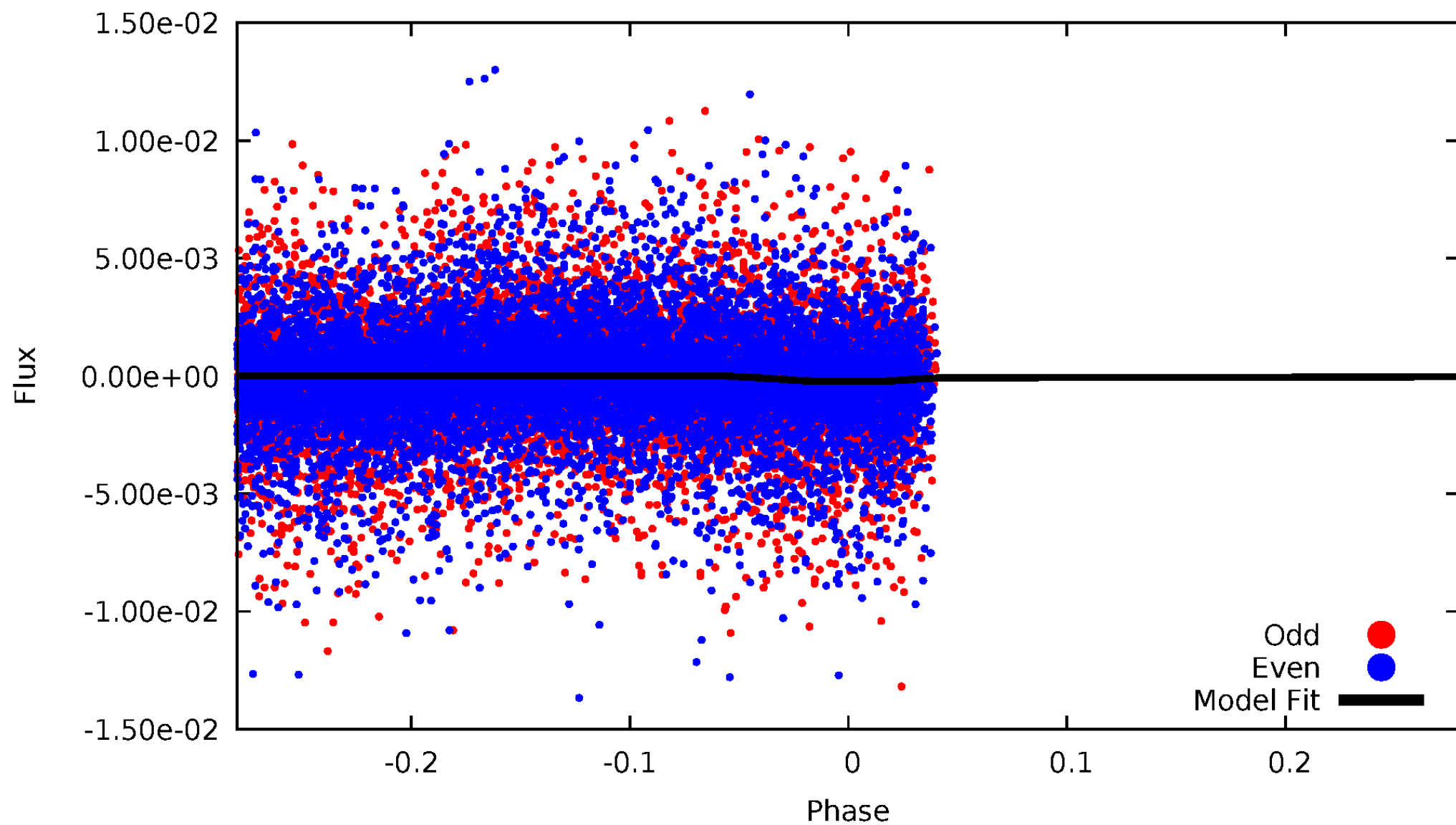
DV Odd/Even

TCE 003231410-03



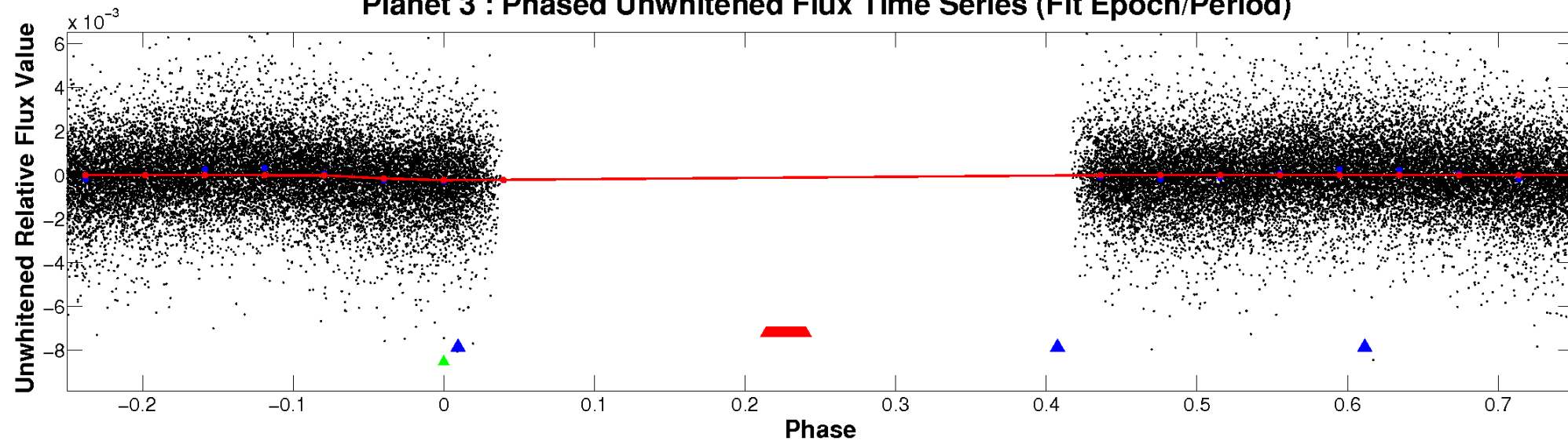
ALT Odd/Even

TCE 003231410-03

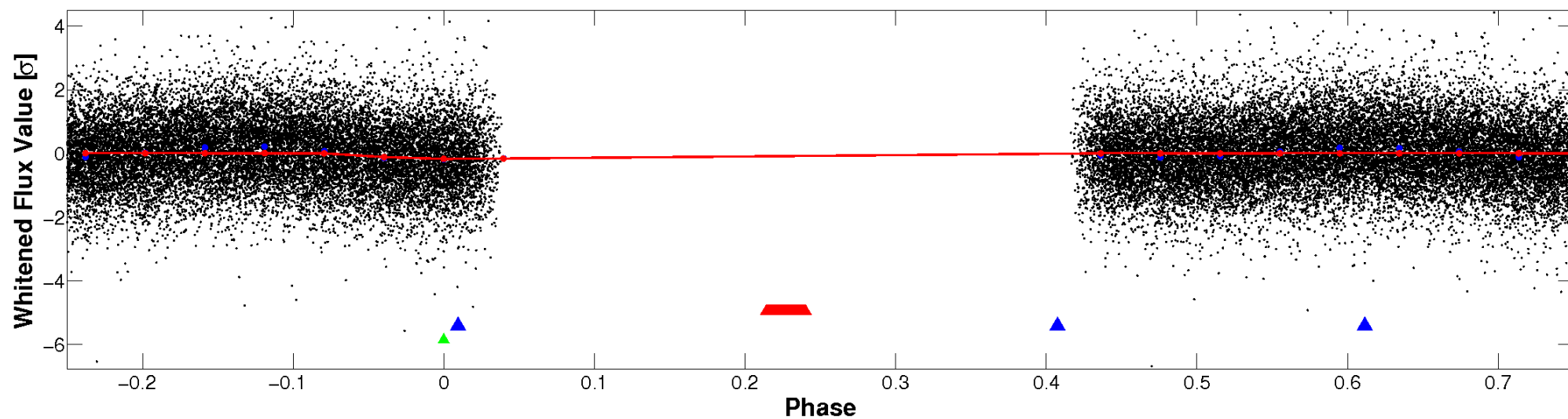


Non-Whitened Vs. Whitened Light Curve

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

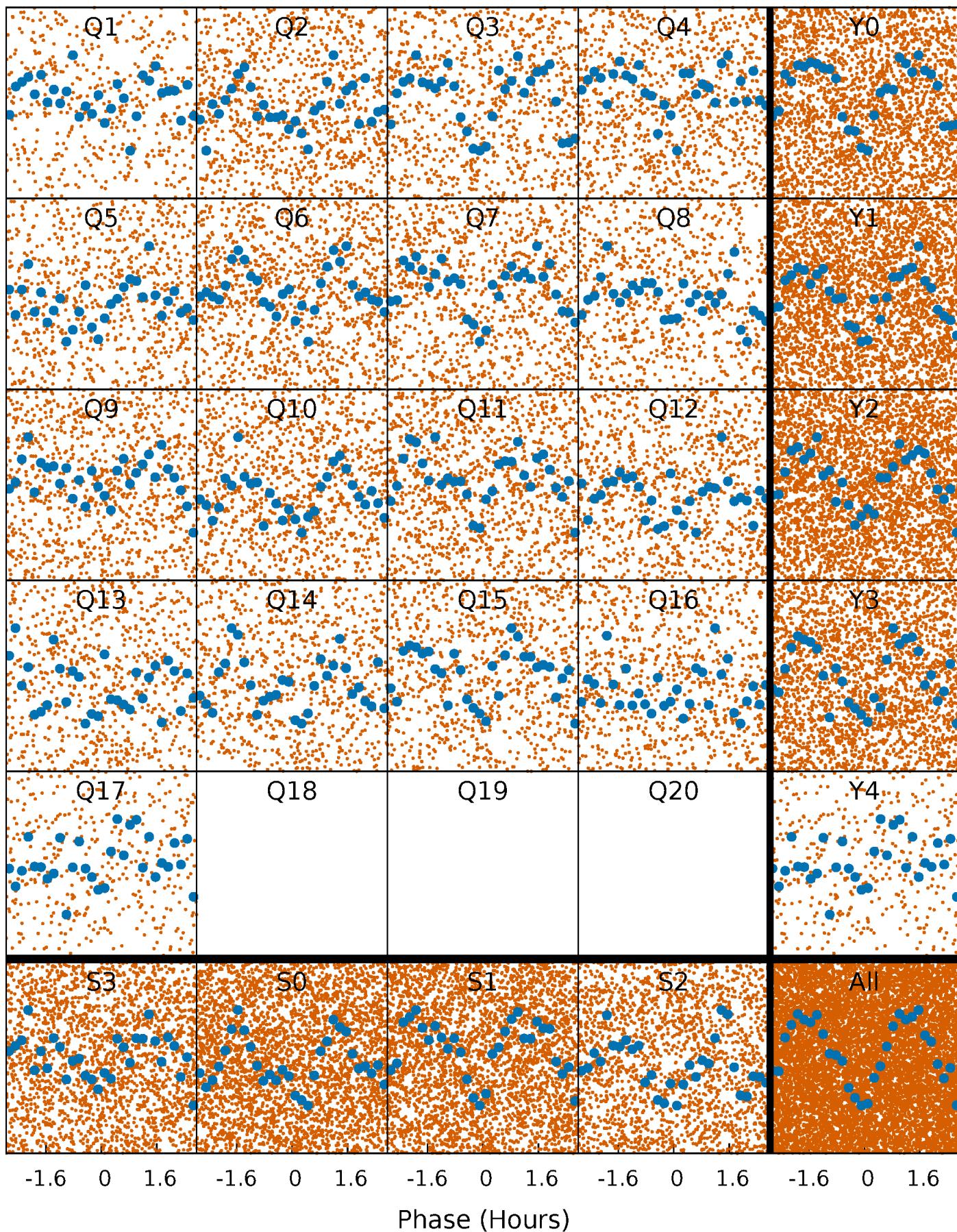


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



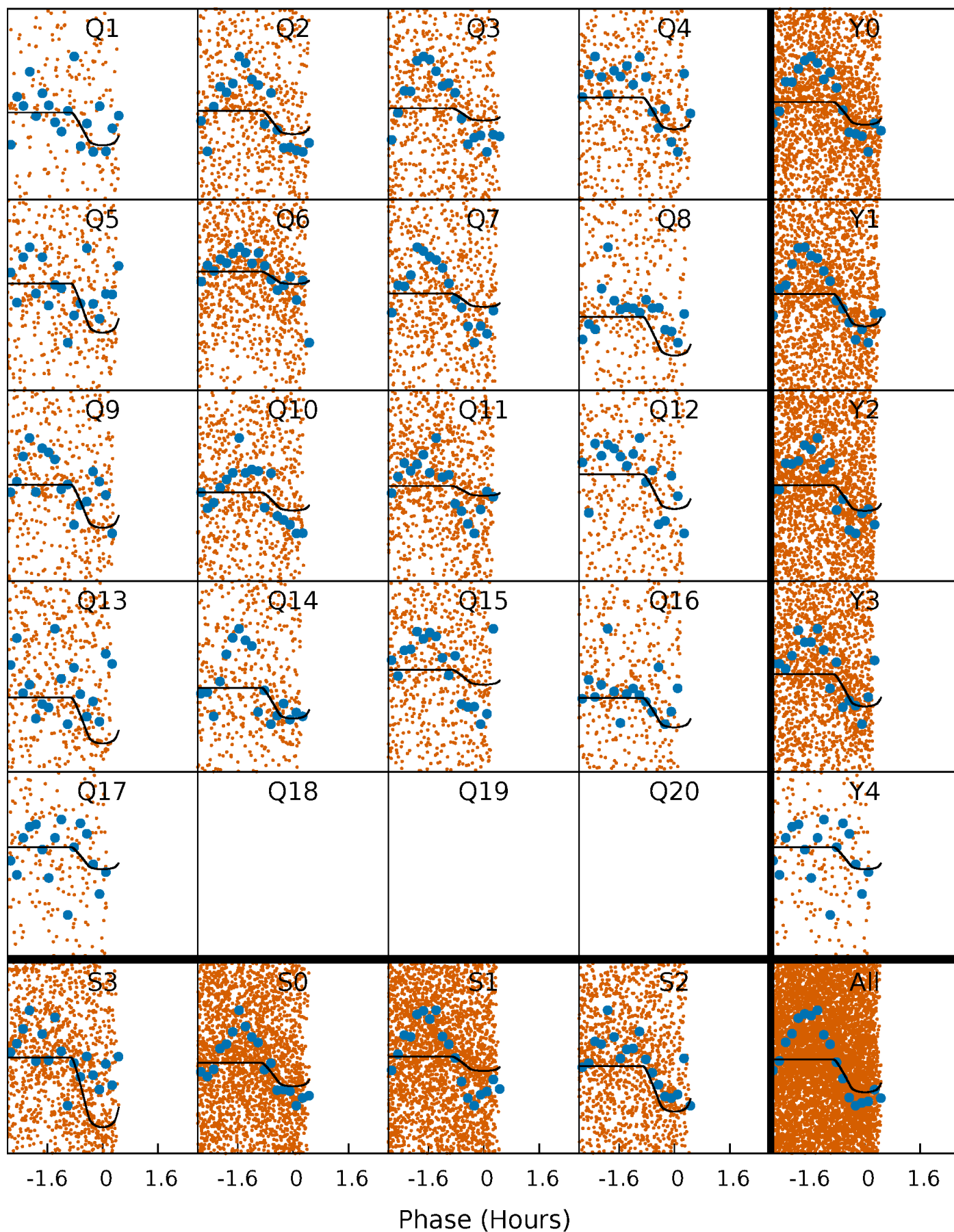
PDC Quarter-Phased Transit Curves

TCE 003231410-03 P= 0.515324 Days $T_0=131.726196$ (BKJD)



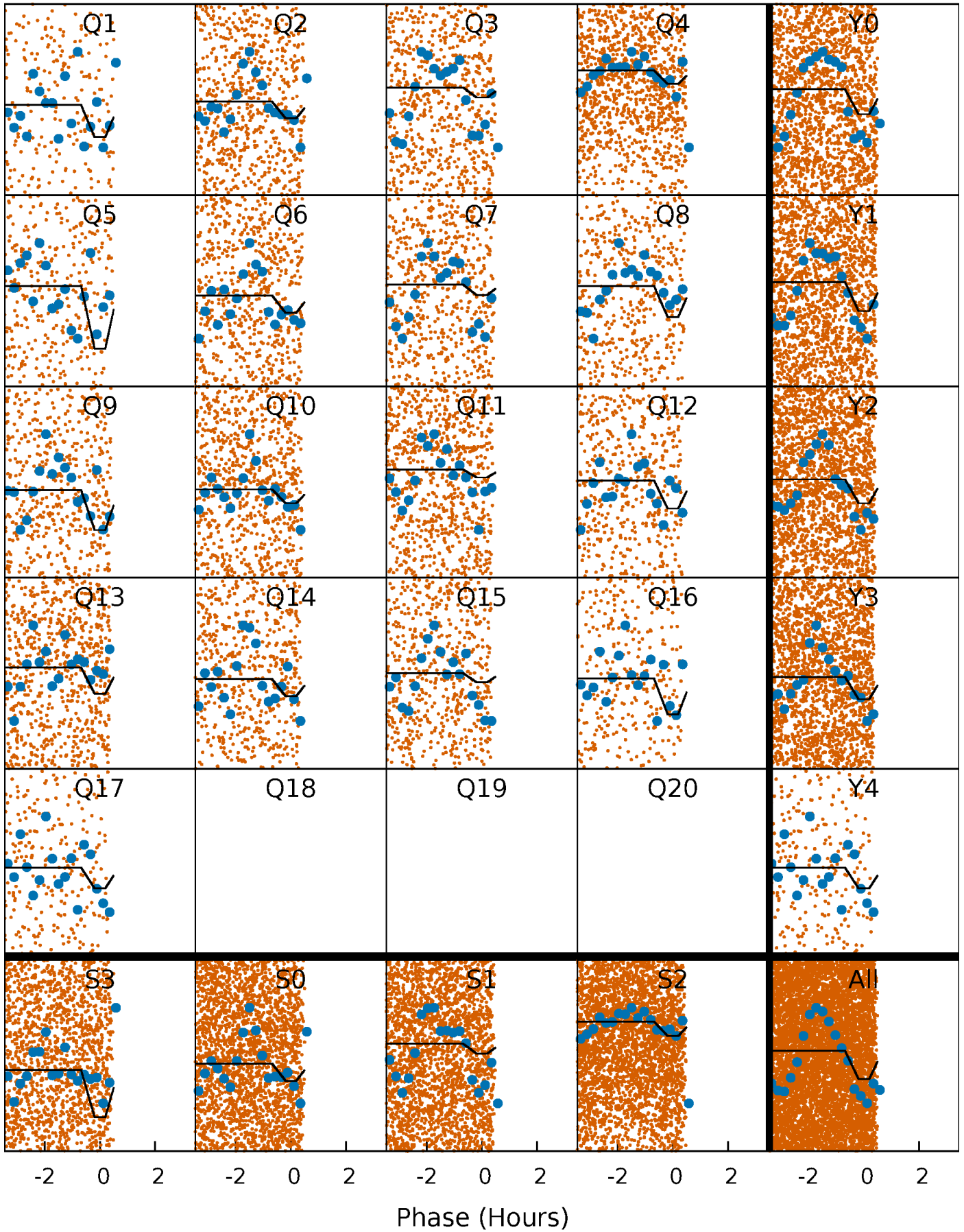
DV Quarter-Phased Transit Curves

TCE 003231410-03 P= 0.515324 Days $T_0=131.726196$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

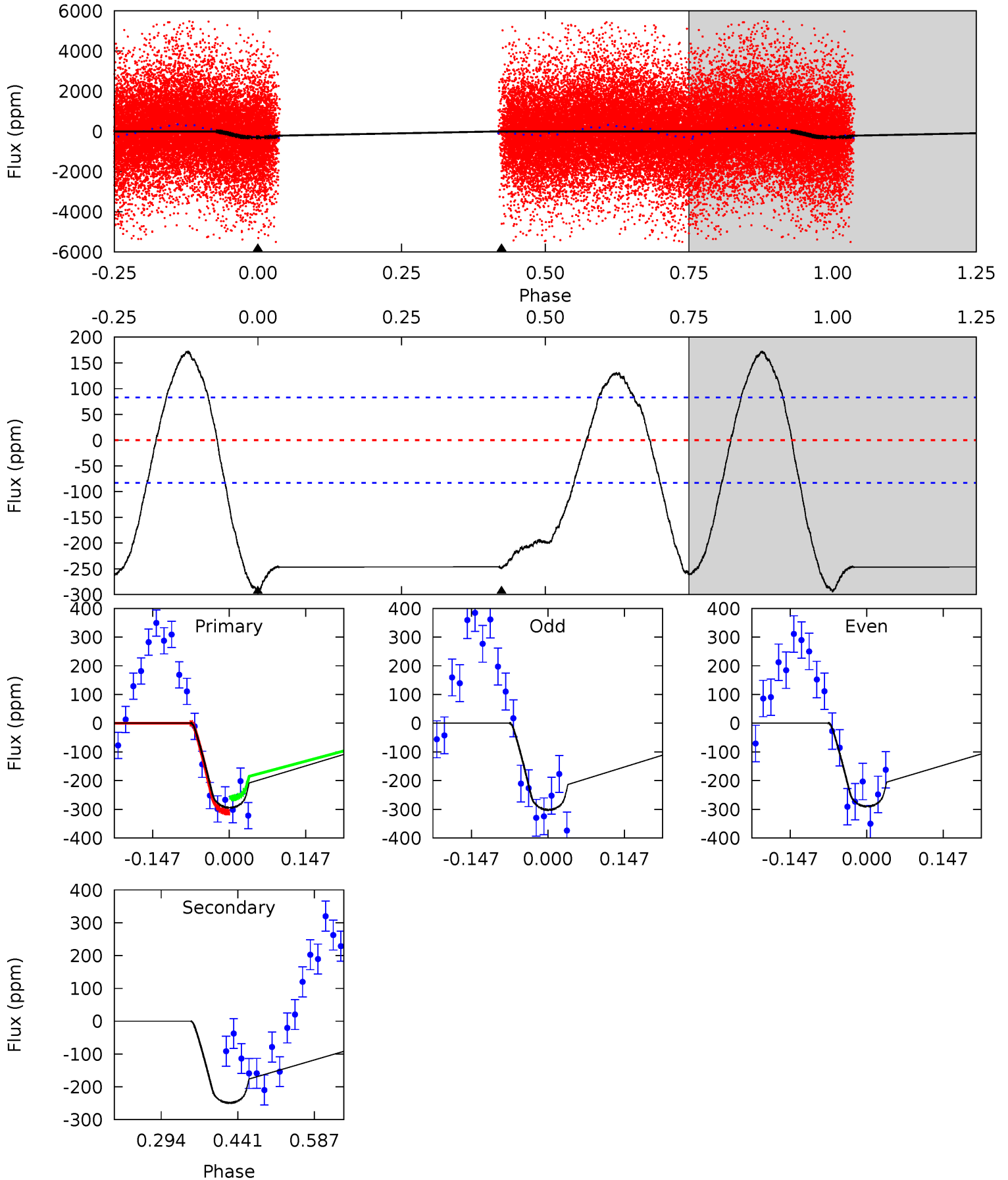
TCE 003231410-03 P= 0.515322 Days $T_0=131.725084$ (BKJD)



DV Model-Shift Uniqueness Test

003231410-03, P = 0.515324 Days, E = 131.210872 Days

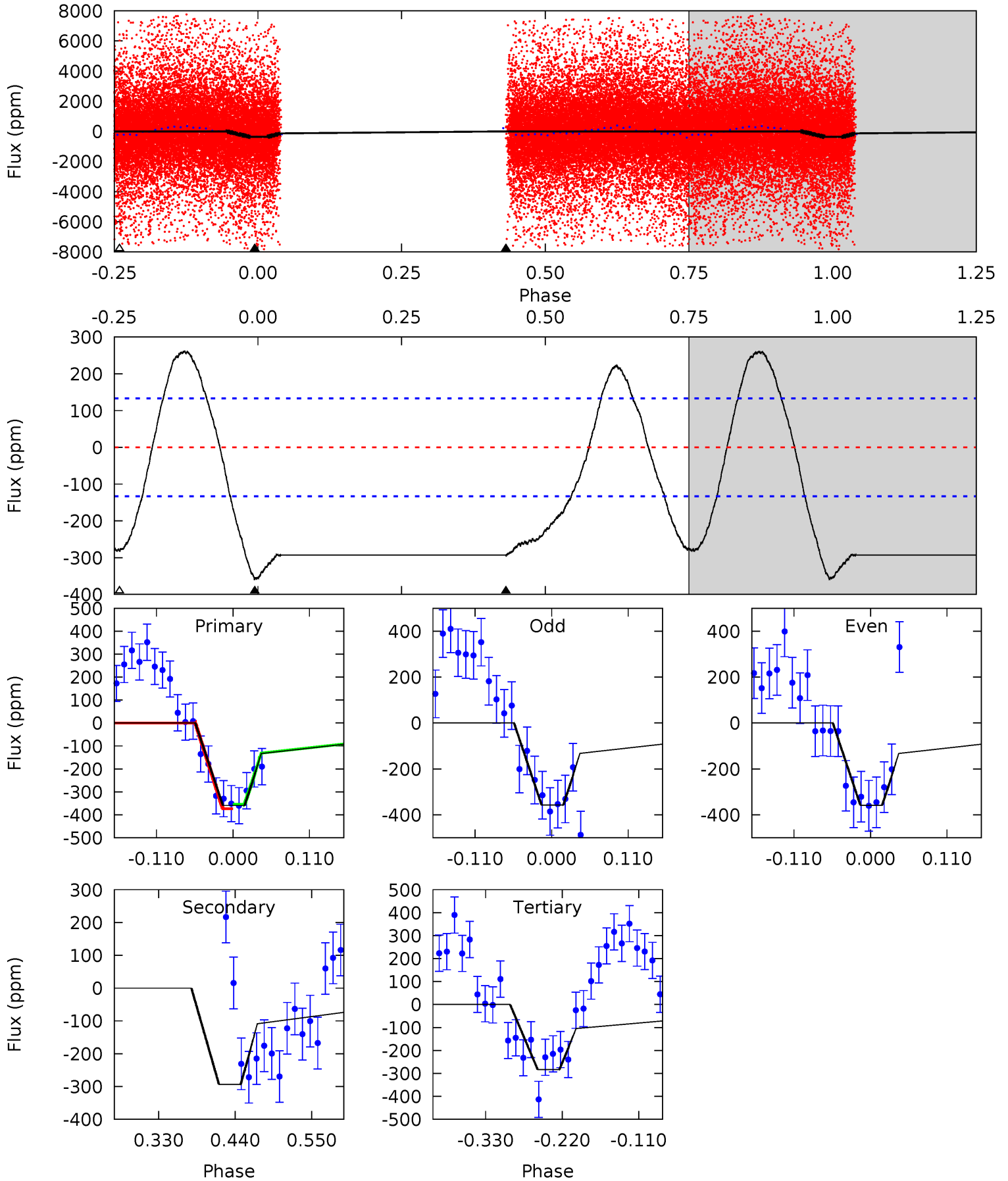
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.9	13.5	0	0	4.48	1.45	7.26	15.9	15.9	13.5	13.5	0.32	1.19	0.37	1.21



Alt Model-Shift Uniqueness Test

003231410-03, P = 0.515322 Days, E = 131.209762 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	10.0	9.67	0	4.54	1.60	6.01	2.59	12.3	0.35	10.0	0.02	1.39	0.42	0.32



Stellar Parameters For KIC 003231410

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 003231410-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-249±19	$2.15^{+1.58}_{-1.46}$	3177^{+152}_{-142}	5137^{+4811}_{-1135}	$4.662^{+40.179}_{-3.131}$
Alt.	-293±29	$2.19^{+1.76}_{-1.43}$	3174^{+152}_{-142}	5319^{+4408}_{-1233}	$5.394^{+41.254}_{-3.733}$

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

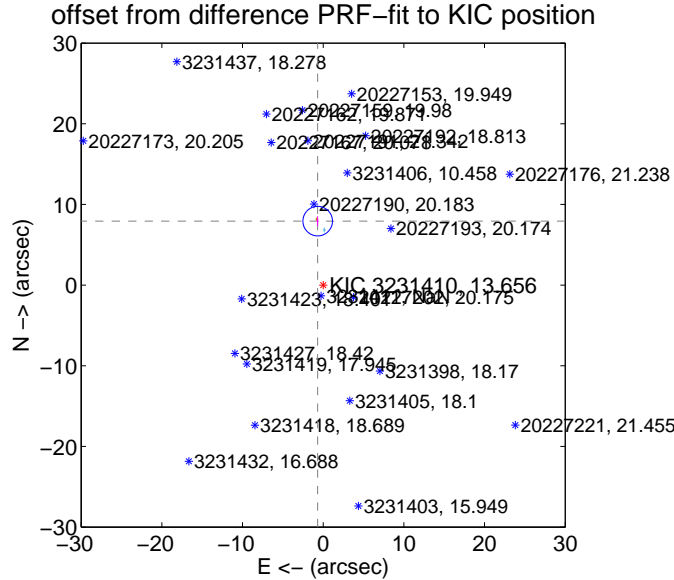
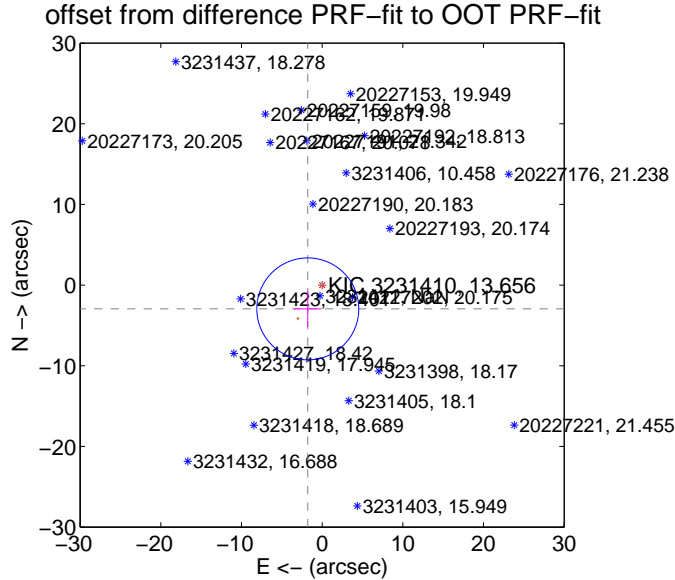
DV Centroid Data

Supplemental centroid analysis for 003231410-03. Kepler magnitude: 13.66. Transit SNR 10.84

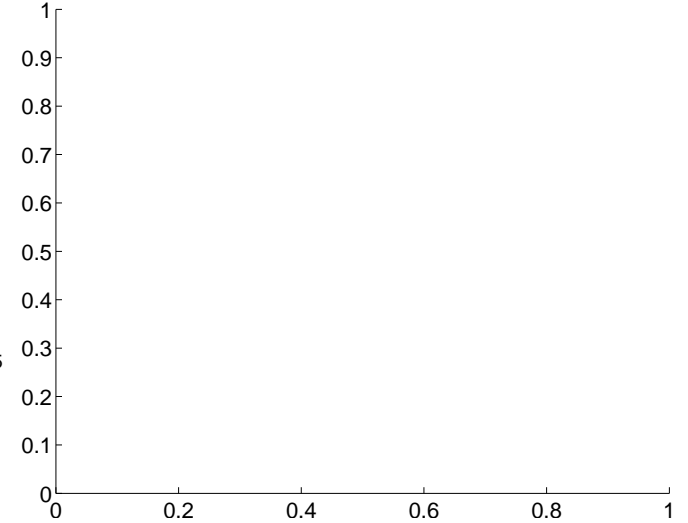
There are 5 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 6.74 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	3.444 ± 2.106	1.64	1.777 ± 1.699	-2.950 ± 2.235
PRF-fit source offset from KIC position	7.959 ± 0.611	13.04	0.682 ± 0.141	7.930 ± 0.608
photometric centroid source offset	—	—	—	—

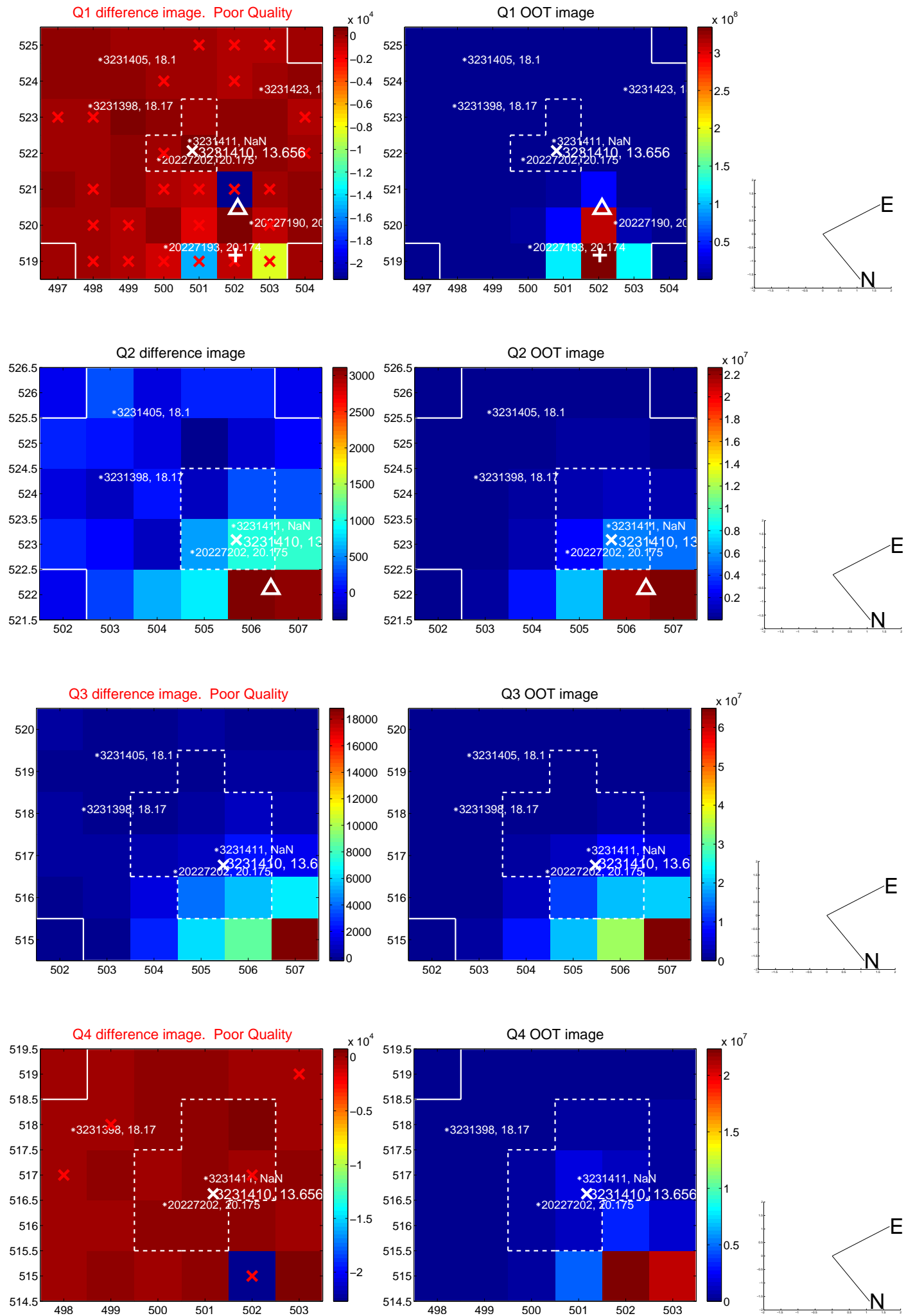


There are no photometric centroids

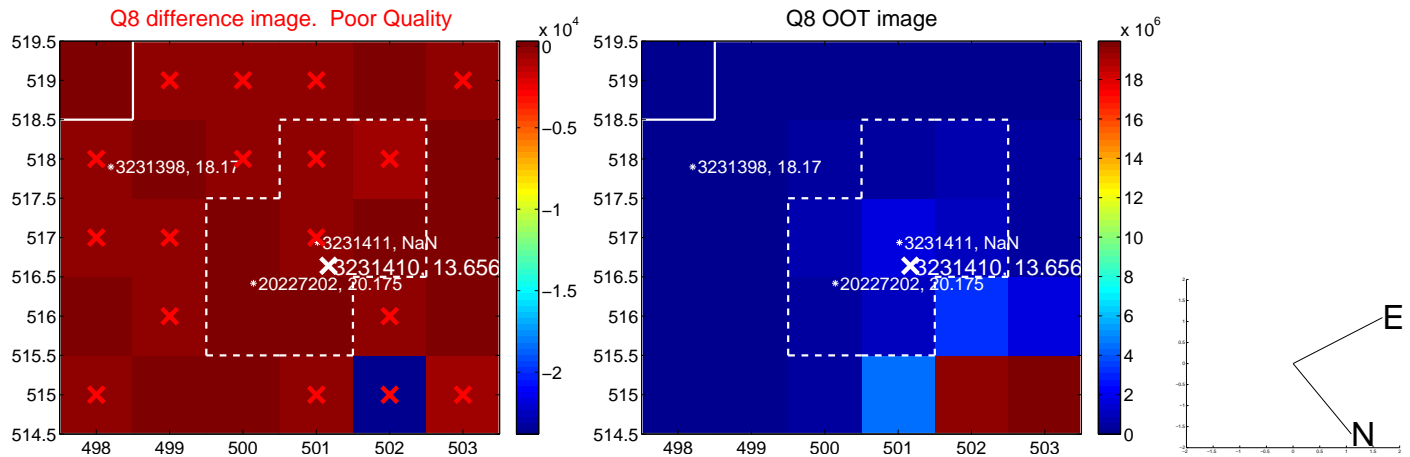
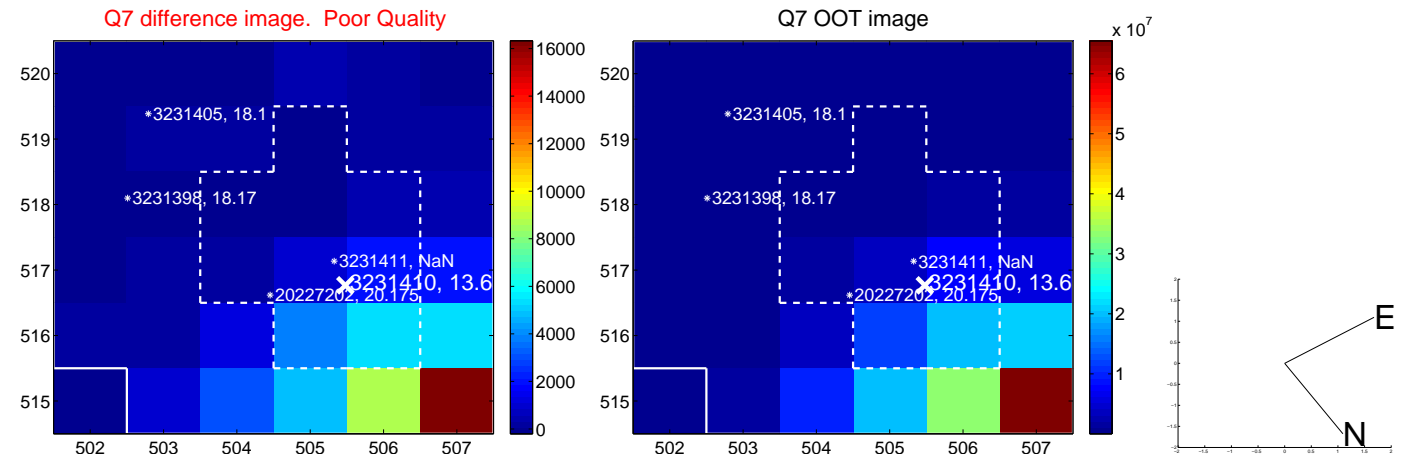
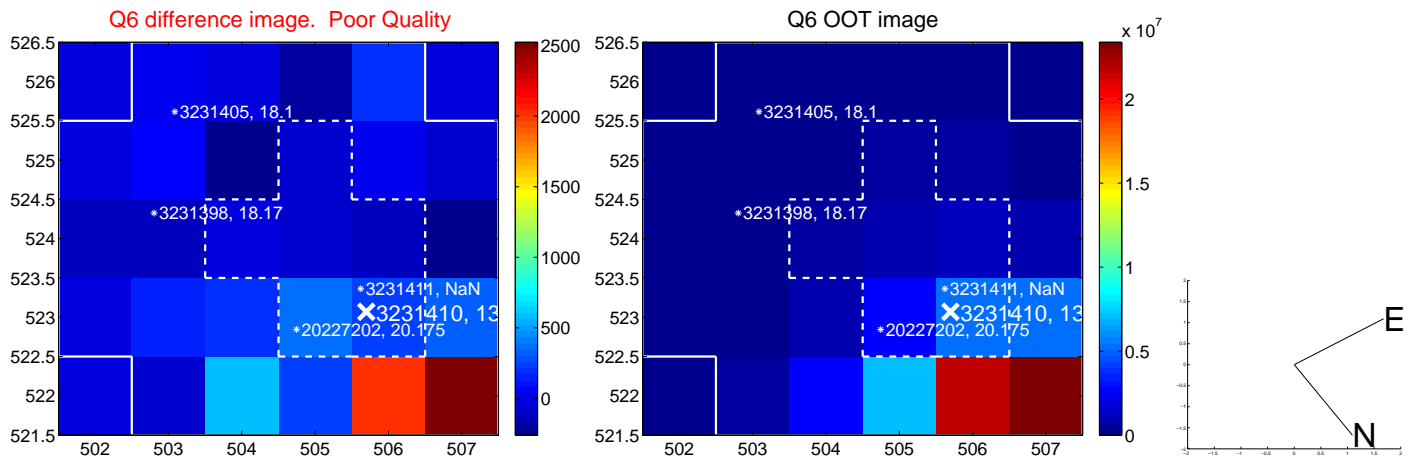
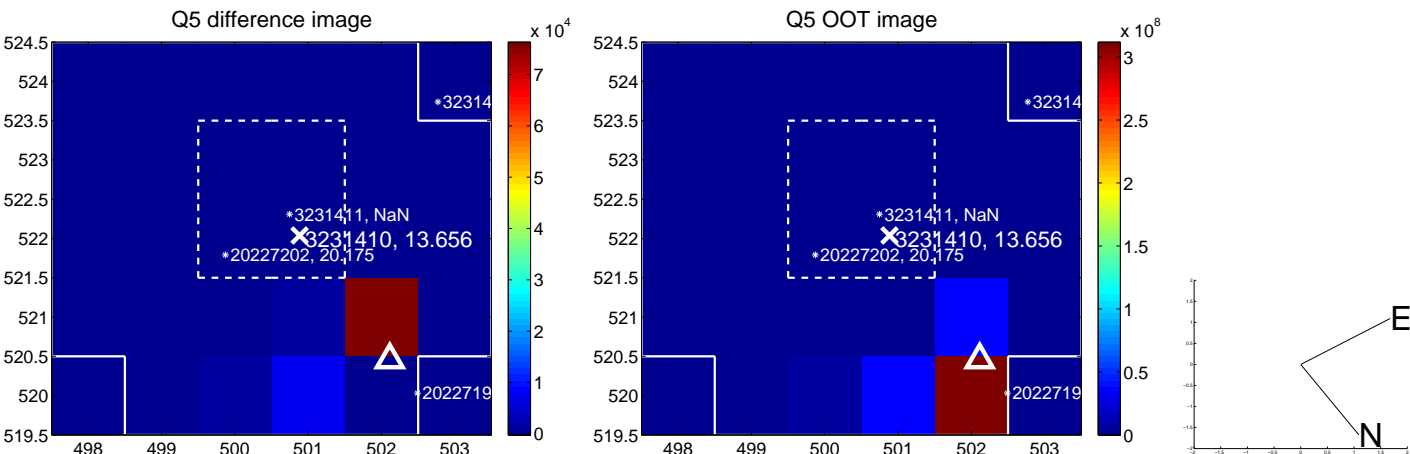


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

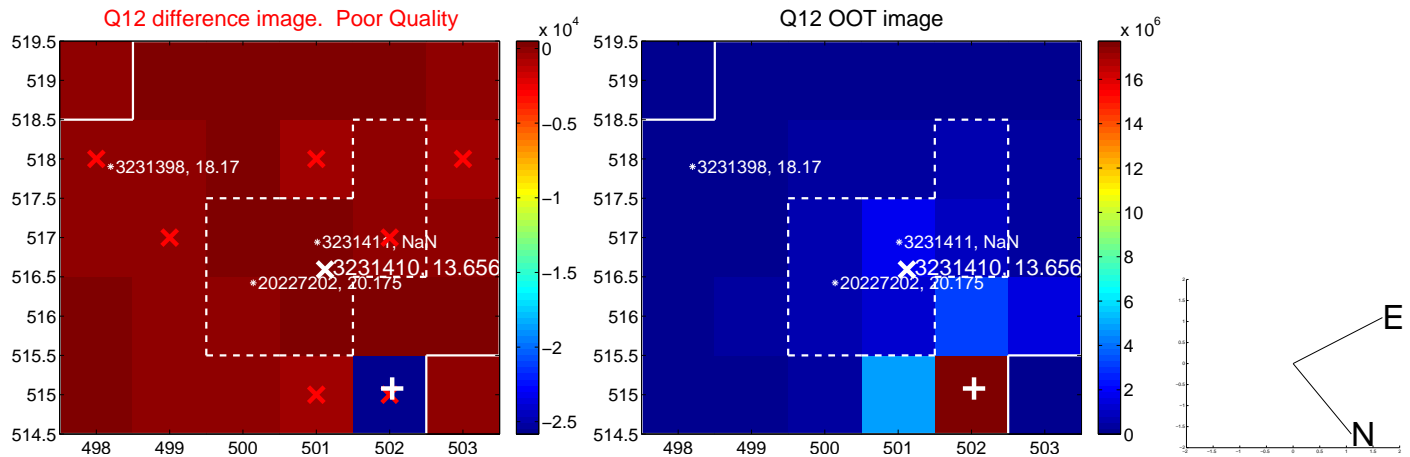
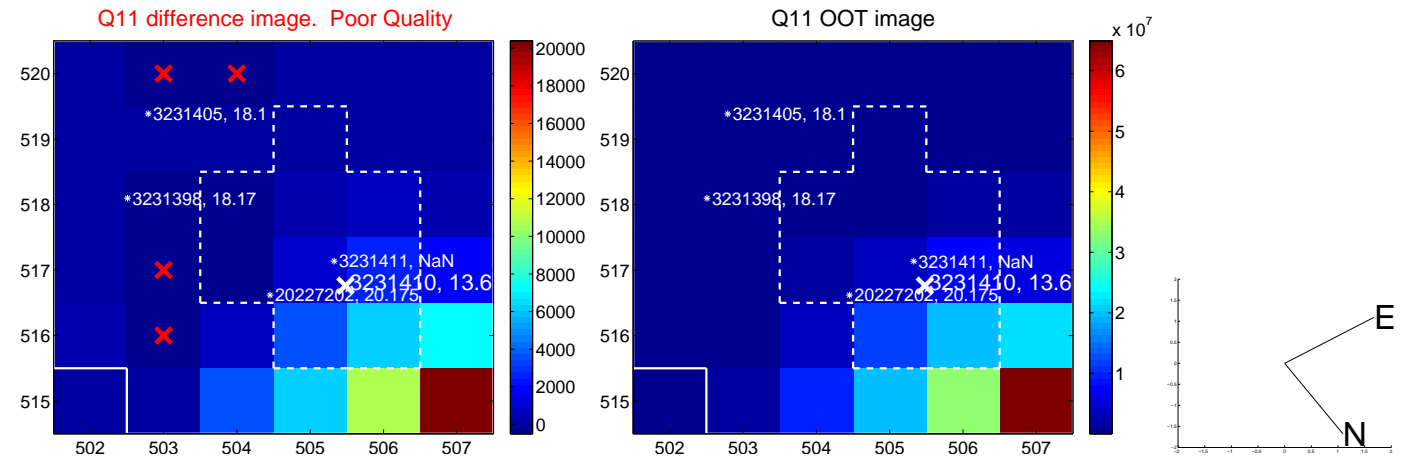
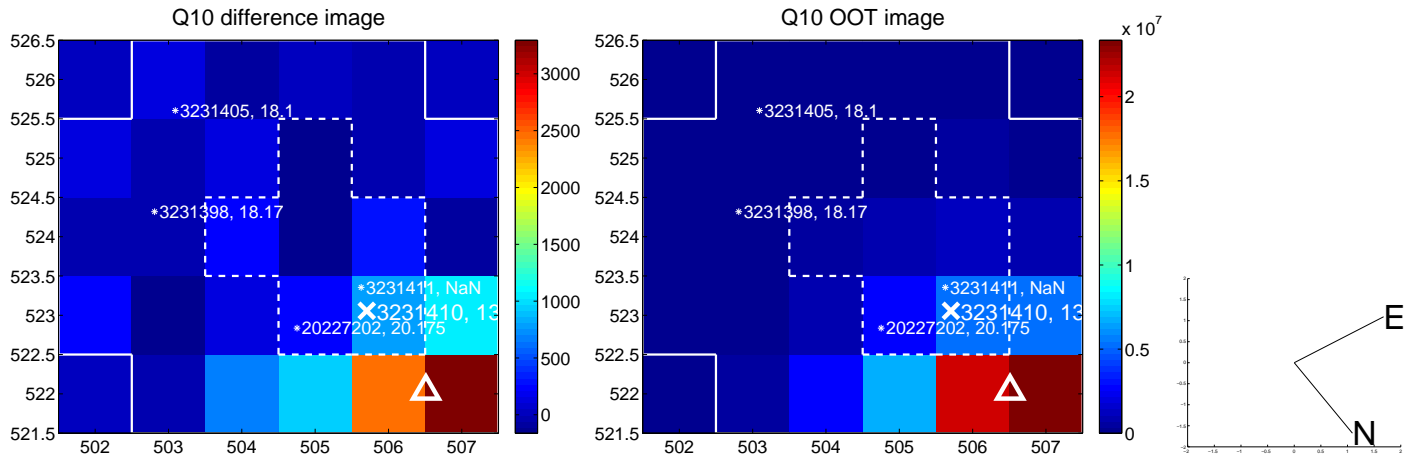
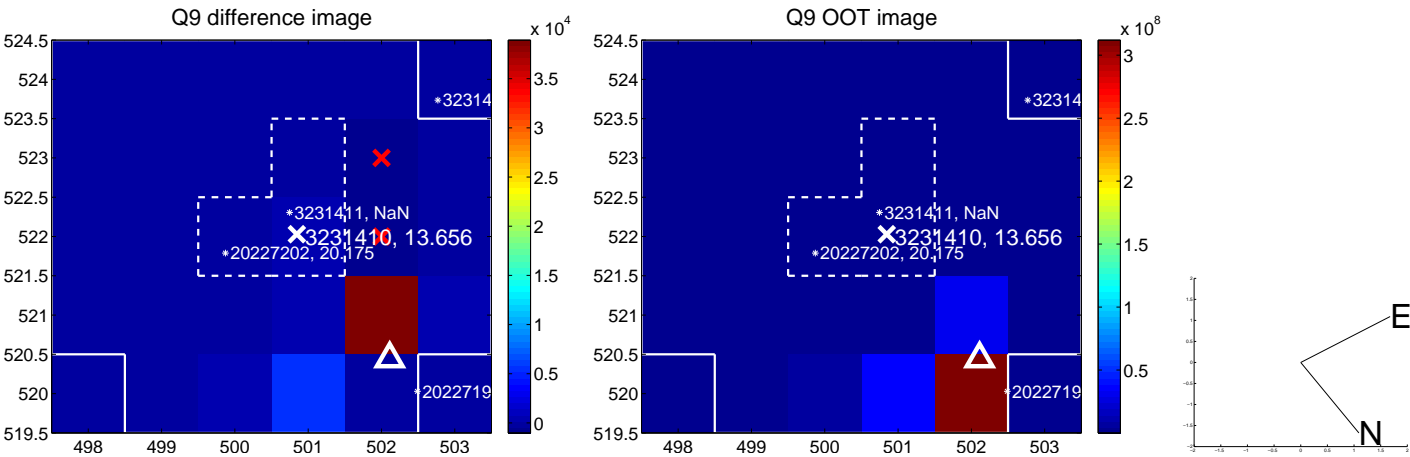
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



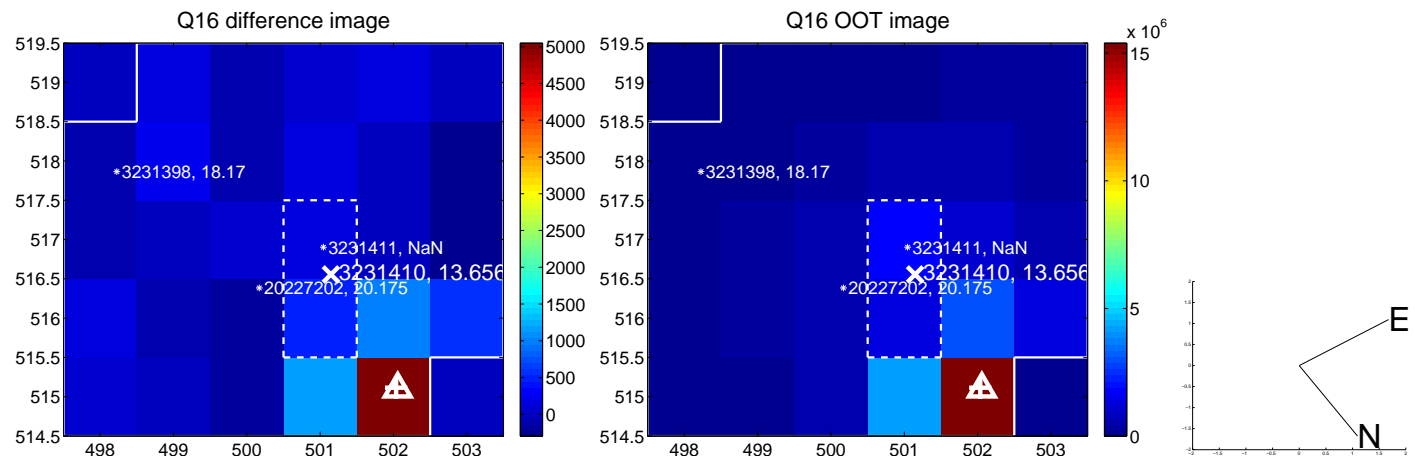
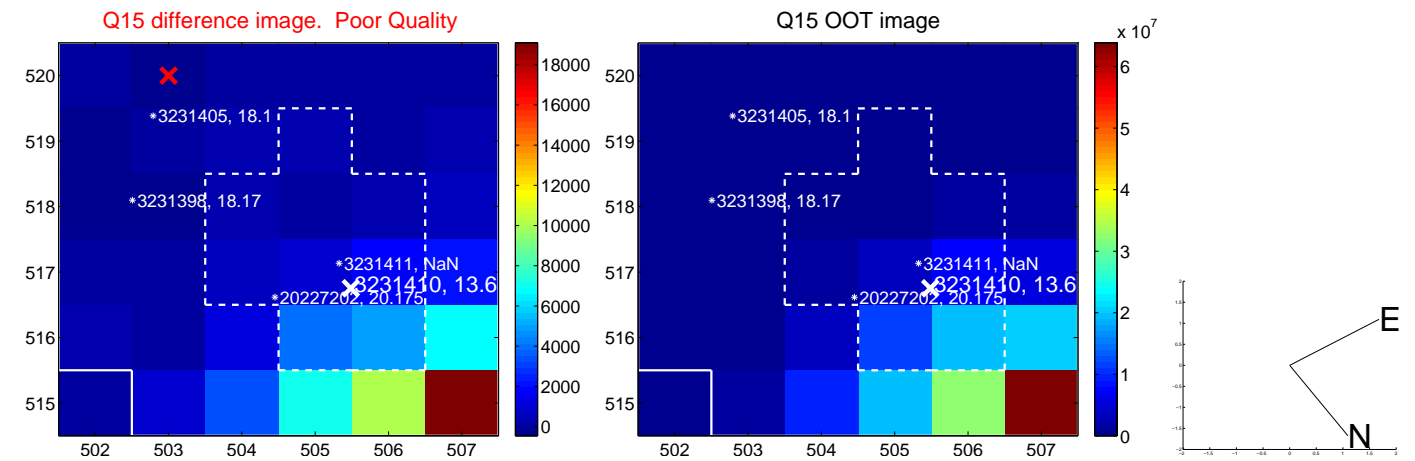
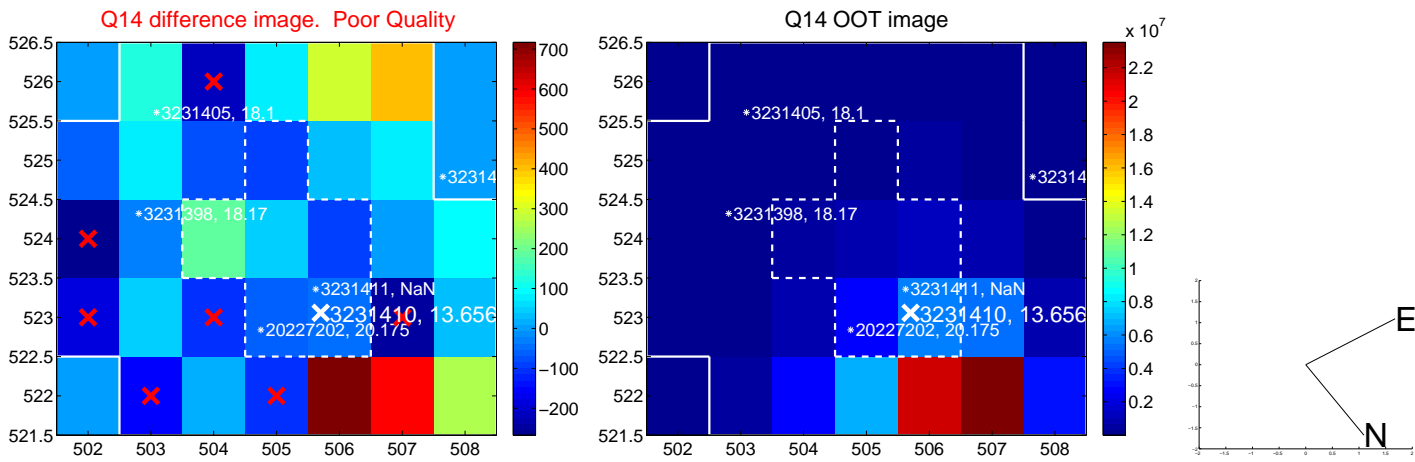
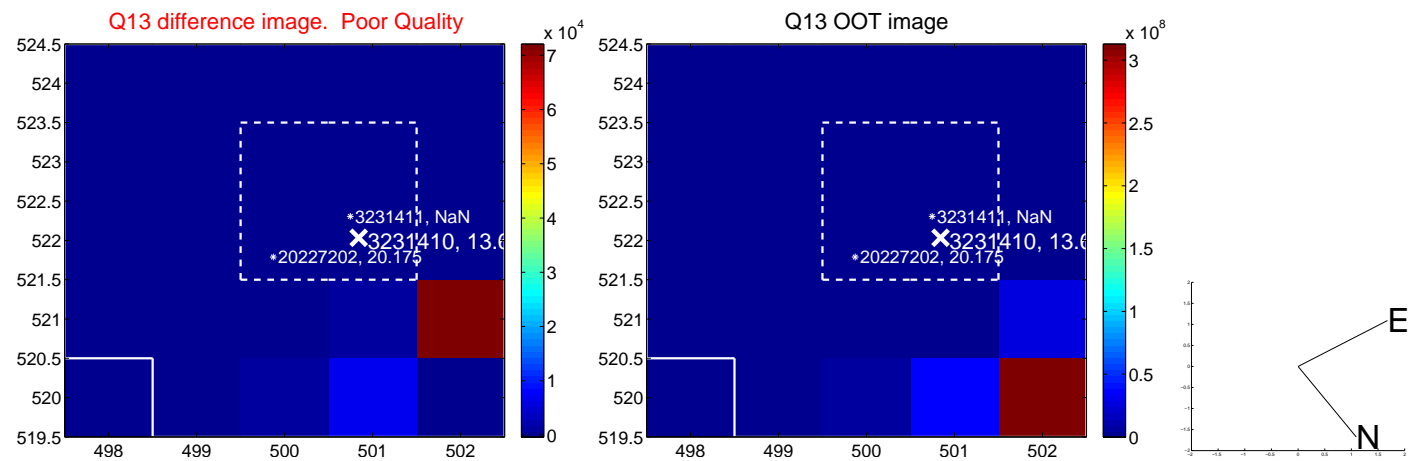
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



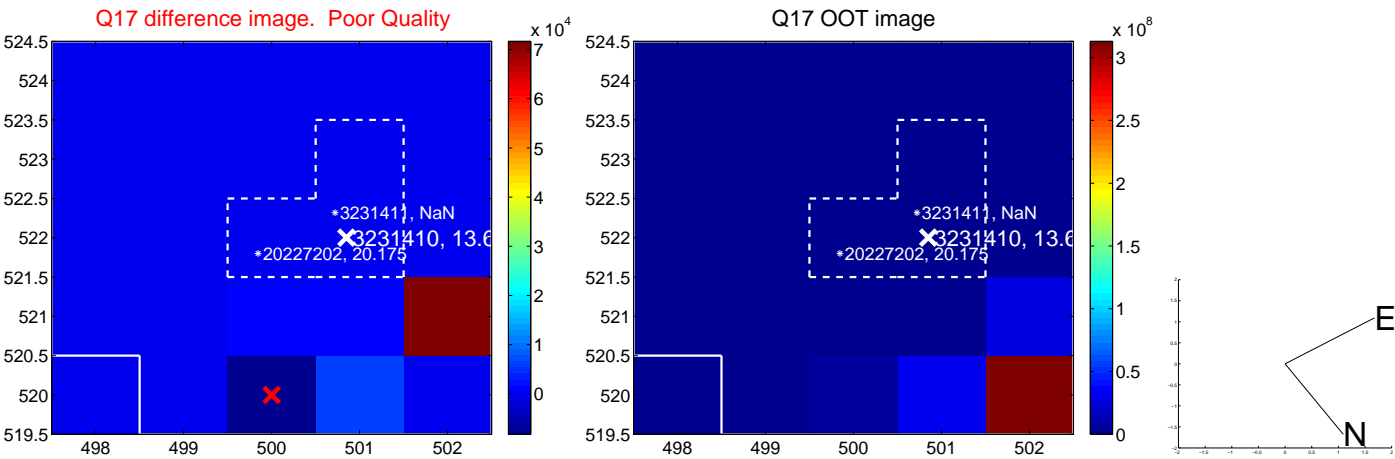
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



folded centroid time series figure for this object.

UKIRT Image

