Resonant Errors, Reconstruction, Nescoil, and all that III

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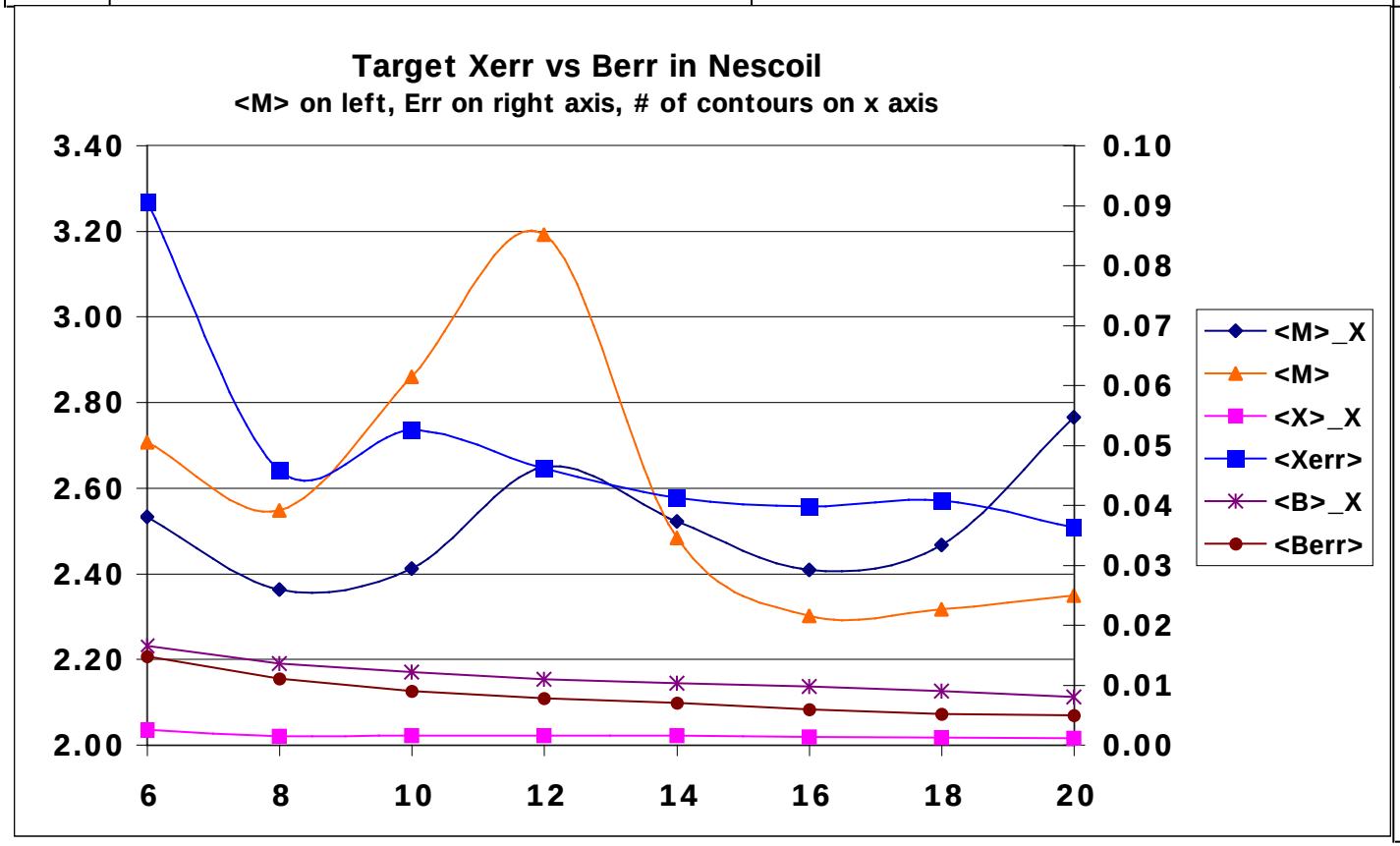
Preliminary results of targeting Xerr within Nescoil:

- We have run the c10 case with modified nescoil targeting Xerr for minimization.
- Art has cut 6,8,..,20 coils from this surface current solution, and has checked the VMEC reconstruction for these. I have calculated the corresponding Xerrors.
- Targeting Xerr improves Xerr a lot (~ by 30), does not change <Berr> much (~ by 1), but <M> does not decrease uniformly (<M> down for < 14, up for >=14 contours).
- We need to look more closely at these results and plots of VMEC reconstruction to understand this.

c_10	Cases with Xerr targeted in Nescoil					Cases with Berr targeted in Nescoil					Ratios of errors		
Contours	<M>_X	<B>_X	Bm_X	<X>_X	Xm_X	<M>	<Berr>	<Bmax>	<Xerr>	Xmax	<X>	<B>	<M>
6	2.53	0.0165	0.0678	0.0025	0.0058	2.71	0.0148	0.0611	0.0906	0.2454	36.43	1.12	0.94
8	2.36	0.0135	0.0654	0.0015	0.0044	2.55	0.0110	0.0438	0.0457	0.1607	31.54	1.23	0.93
10	2.41	0.0121	0.0383	0.0016	0.0055	2.86	0.0090	0.0402	0.0525	0.1829	33.51	1.34	0.84
12	2.65	0.0109	0.0358	0.0016	0.0057	3.19	0.0077	0.0369	0.0461	0.1915	29.71	1.42	0.83
14	2.52	0.0102	0.0343	0.0015	0.0058	2.48	0.0070	0.0309	0.0412	0.1367	27.32	1.45	1.02
16	2.41	0.0098	0.0328	0.0013	0.0043	2.30	0.0059	0.0274	0.0398	0.0941	31.49	1.67	1.05
18	2.47	0.0090	0.0317	0.0012	0.0040	2.32	0.0051	0.0250	0.0407	0.0783	34.47	1.76	1.06
20	2.77	0.0080	0.0278	0.0011	0.0034	2.35	0.0049	0.0225	0.0363	0.0846	32.19	1.63	1.18



Comments

1. Xerr goes down a lot when it is targeted in nesc

2. Berr goes up a bit

3. We would expect this to lead to much better reconstruction <M>

4. This is so for < 14 contours but not so for >= 14

5. Do not yet understand why

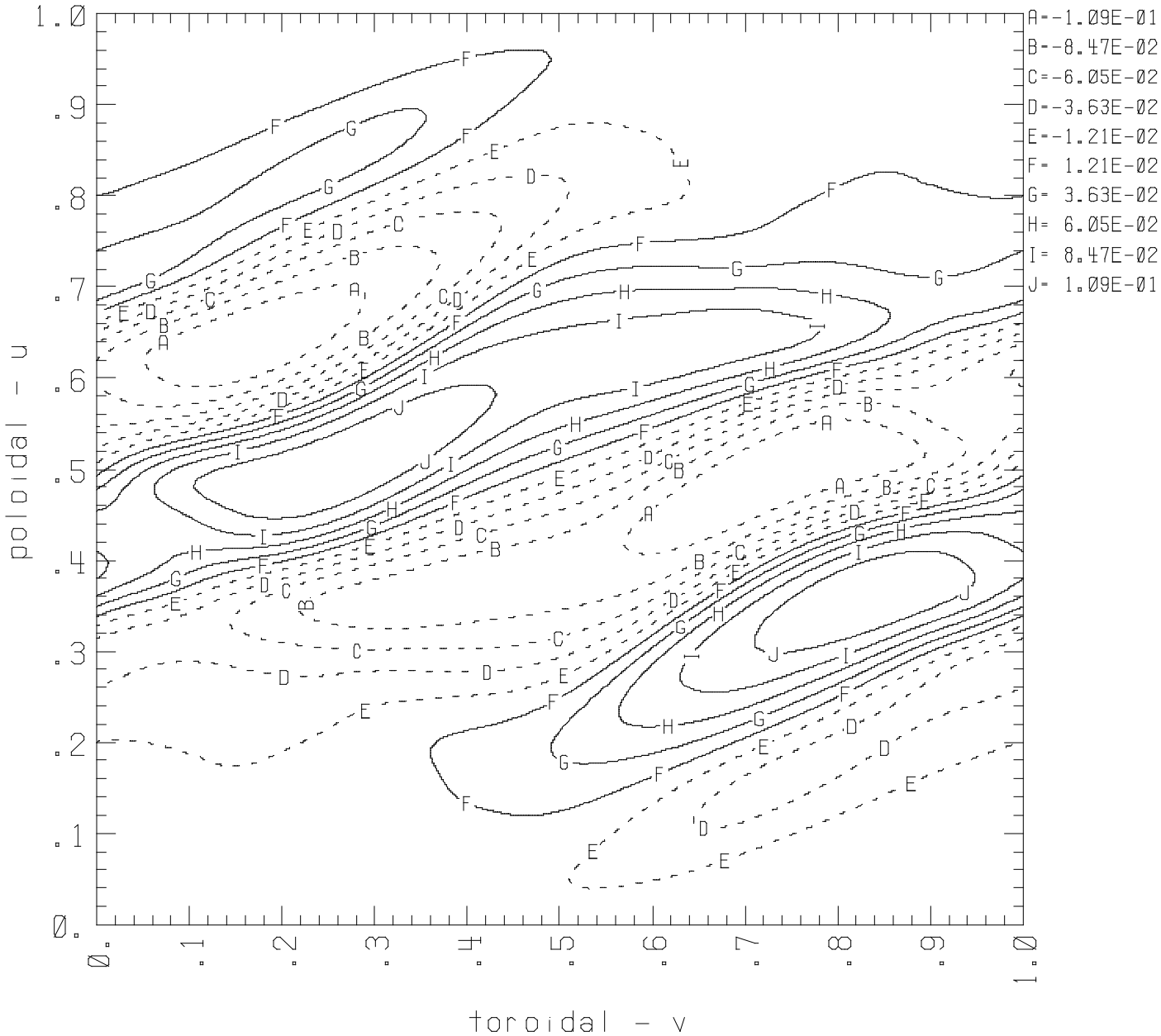
6. Look at VMEC reconstructs

7. Can't find any code errors Need to look more at results

Current Potential qa3_c10.a1010.d18.1

0.0 0.0 ../tfefcoils 0 0

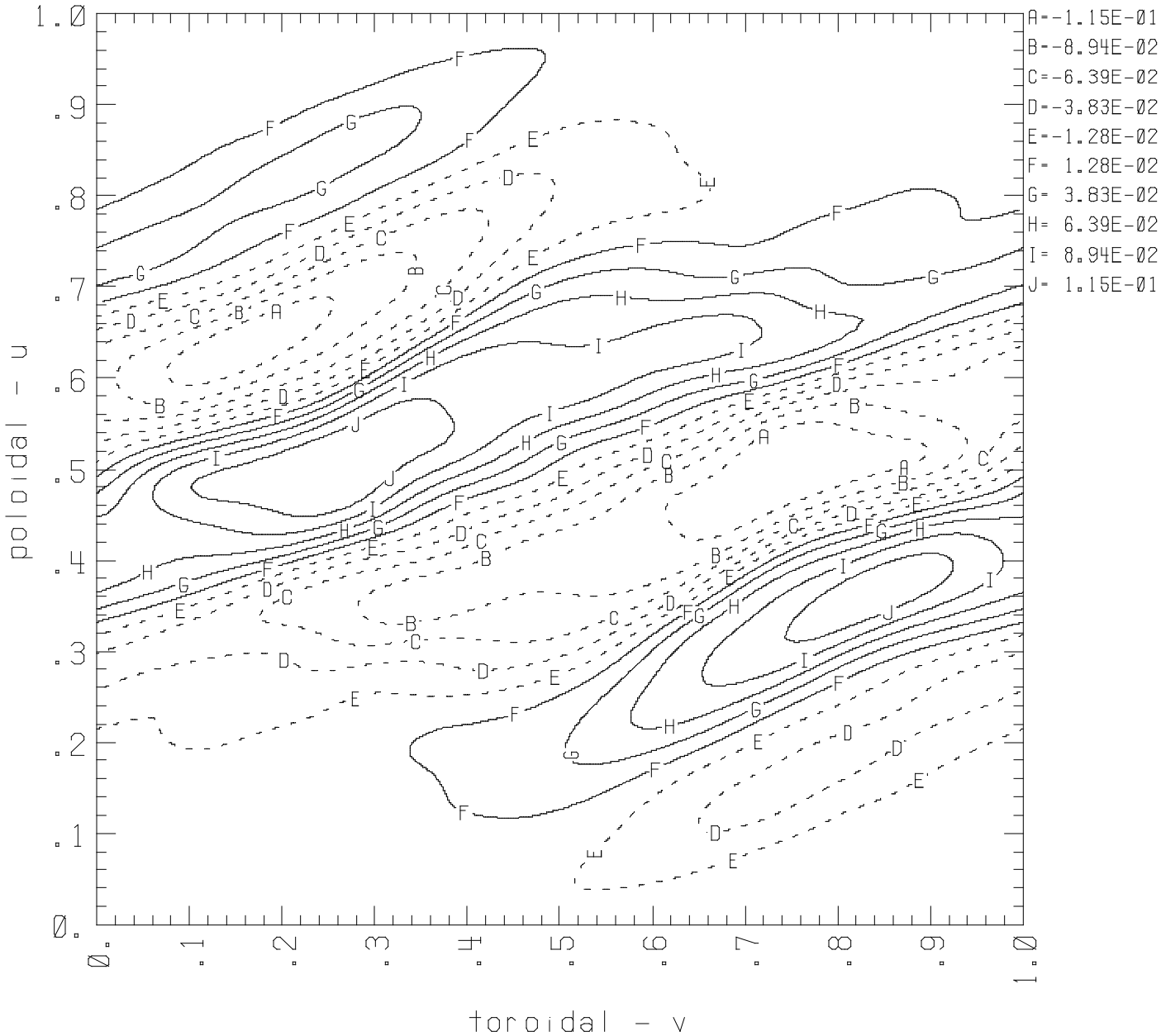
Max Value = 1.33E-01 Min Value = -1.33E-01 Contours = 2.42E-02

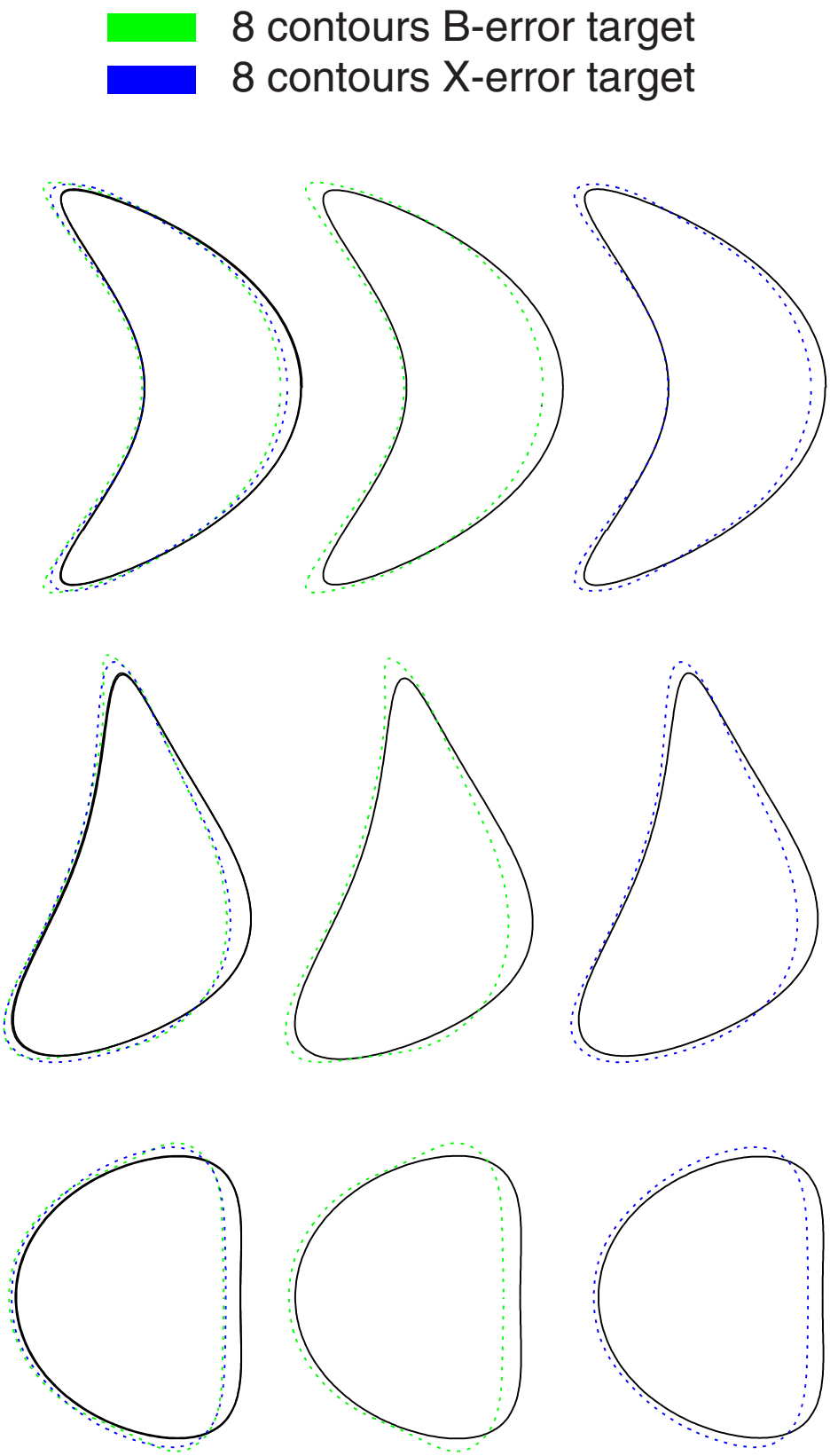


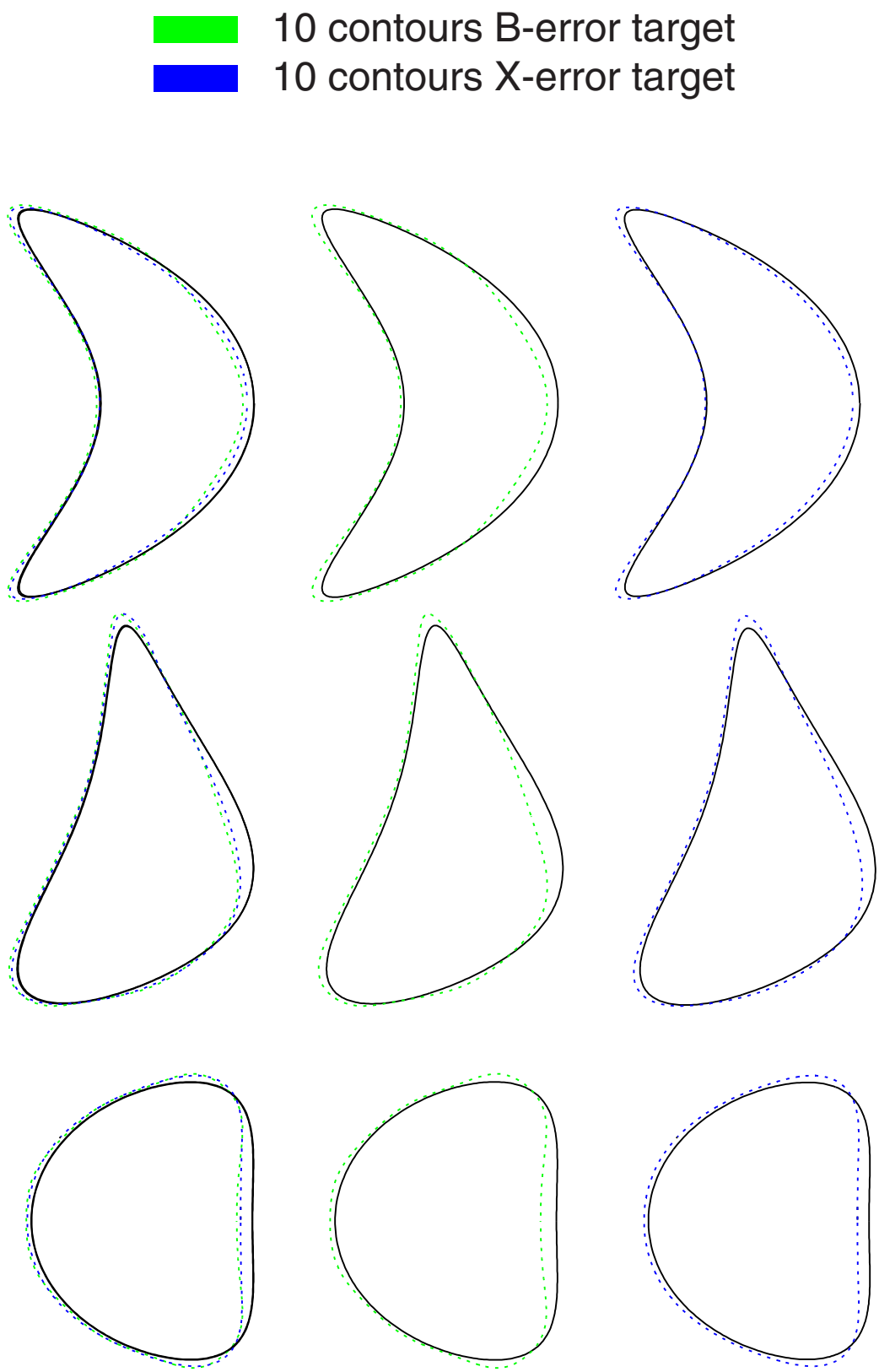
Current Potential qa3_c10.a1010.d18.10

0.0 0.0 ../tfefcoils 2 130

Max Value = 1.41E-01 Min Value = -1.41E-01 Contours = 2.56E-02




8 contours B-error target
8 contours X-error target


10 contours B-error target
10 contours X-error target