B_{max}/B_o scan for reactor-scale QA, QO
Jmax reduction for c82 and c93
More promising results

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Two major goals of the effort past 2 weeks(+ends)

Scan B_{max}/B_o for reactor-scaled qa and qo at many A and A_Δ

Use svdscan to find min of Jmax for c93: is it 20% lower than c82?

B_{max}/B_o from nescoil surface currents looks good (~ 2 at A_Δ ~ 5.8)

Lowest C93 J_{max} ~ as C82 J_{max}, but at lower <Berr> .2%, not .6%

Comparison of c82 and c93 best Jmax cases (all good surfaces)

Mf,nf	Nsvd	<Berr>	MaxBerr	Jmax	Complex	Comments
10,10	STD	0.22	3.76	1.170	3.242	C82 Good surf, no EF,
8,8	STD	0.26	4.96	1.155	3.179	Dsur^2, high Jmax
10,10	194	0.22	2.54	0.9493	3.104	Better than Case 2
8,8	121	0.60	6.71	0.8316	3.119	Great, but Berr too high?
10,10	STD	0.21	5.24	0.925	3.123	C93 Good surf, no EF,
8,8	STD	0.28	3.95	0.980	3.119	Dsur^2, lower Jmax
10,10	194	0.23	3.28	0.816	3.127	Same as 121, lower Berr
8,8	all	0.281	3.63	0.980	3.119	No low Jmax (Lin SVD)

Jmax about same in C93 as in c82, but Berr is lower

Can this translate into lower Jcoil_max for C93?

Summary B_{max}/B_o scans

B_{max}/B_o is ~ 2 for most cases. About 25% higher than tokamak.

Needs 128 by 128 u,v points for calculation. Very sensitive to radial coil depth.

B_{coil}/B_o is max where Jsurf is max, 25% higher than Ipol-only case.

J variation on current surface accounts for almost all the 25% increase.

Aspect ratio scan and A_Δ scan have been completed

B/Bo max increases with decreasing A and A_Δ.

Lowest A_Δ so far for QA c82 and 93 is 5.8 (acceptable contours)

This gives a reactor R_o = 9.28 m

Summary of Bmax/Bo for QA c82 and c93:

Aspect = 3.4		Ro= 145		Reactor delta needed (cm) = 160							
Adelta = 7.25		Reactor R 11.6		Scale = 8		ccs at 20					
Half Coil	c82.d20	Bo= 5.173		c93.d18	Bo = 5.0767		ccs-to-B				
depth cm	64x64	128x128	B/Bo 128	64x64	128x128	B/Bo 128	dist cm	Ipol c82	c82/Ipol	Tokamak	c82/toka
20	59.120	11.834	2.288	39.906	9.588	1.889	2.5	7.714	1.534	7.411	1.597
30	15.519	8.481	1.639	15.059	7.281	1.434	3.75	6.711	1.264	6.877	1.233
40	8.298	8.117	1.569	7.179	6.840	1.347	5	6.354	1.277	6.693	1.213
80	6.542	6.543	1.265	5.939	5.928	1.168	10	5.924	1.105	6.316	1.036
Note : This Adelta (7.25) is too big, gives R reactor = 11.6 m											

Aspect = 3.4		Ro= 145		Reactor delta needed (cm) = 160			
Adelta = 5.8		Reactor R 9.28		Scale = 6.4		ccs at 25	
Half Coil	c82.d25	Bo= 5.175		c93.d25	Bo = 5.0699		ccs-to-B
depth cm	64x64	128x128	B/Bo 128	64x64	128x128	B/Bo 128	dist cm
16	97.85	19.291	3.728	81.876	17.337	3.419	2.5
24	25.78	11.548	2.231	21.092	9.762	1.925	3.75
30	13.29	10.608	2.050	11.887	9.215	1.818	4.688
32	11.55	10.335	1.997	10.677	9.053	1.786	5
64	7.74	7.755	1.499	7.229	7.250	1.430	10
Note : We Can't find good contours beyond 25 cm, I.e., Adelta = 5.8 so far							

Aspect = 4.1		Ro= 145		Reactor delta needed (cm) = 160			
Adelta = 5.8		Reactor R 9.28		Scale = 6.4		ccs at 25	
Half Coil	c82.a4.d25	Bo= 4.990		c93.a4.d25	Bo =		ccs-to-B
depth cm	64x64	128x128	B/Bo 128	64x64	128x128	B/Bo 128	dist cm
16	75.518	14.391	2.781				2.5
24	20.175	10.193	1.969				3.75
30	10.799	9.563	1.848				4.688
32	9.718	9.368	1.810				5
64	7.176	7.179	1.387				10
Note : We Can't find good contours beyond 25 cm, I.e., Adelta = 5.8 so far							