

Changes to code

Running the 2D code gives the table below

l	B DoF	Time	Iterations
4	800	0.0133	25
5	3,136	0.0330	26
6	12,416	0.1130	26
7	49,408	0.4565	26
8	197,120	1.9992	27
9	787,456	8.5055	27
10	3,147,776	37.1306	27
11	12,587,008	223.8530	28

Running the 3D code gives the table below

l	B DoF	Time	Iterations
1	98	0.0012	1
2	604	0.0121	17
3	4,184	0.0621	26
4	31,024	0.4781	28
5	238,688	5.4614	30
6	1,872,064	61.3943	29
7	14,827,904	578.5737	29
8	118,031,104	6075.8752	30

Running a 3D mixed form Maxwell problem

	l	Total DoF	Time	Minres	Iterations
0	1	125	0.0104		5
1	2	729	0.1148		8
2	3	4,913	0.4581		8
3	4	35,937	3.3781		8
4	5	274,625	39.5310		8
5	6	2,146,689	394.6725		7
6	7	16,974,593	3808.9475		7

C matrix identities

l	B DoF	AC	$MC - B^T$	$BC - L$
1	16	0.0000e+00	1.3323e-15	0.0000e+00
2	56	0.0000e+00	1.3323e-15	1.1102e-16
3	208	0.0000e+00	1.3323e-15	1.1102e-16
4	800	0.0000e+00	1.3323e-15	1.1102e-16
5	3136	0.0000e+00	1.3323e-15	1.1102e-16
6	12416	0.0000e+00	1.3323e-15	1.1102e-16
7	49408	0.0000e+00	1.3323e-15	1.1102e-16
8	197120	0.0000e+00	1.3323e-15	1.1102e-16

l	DoF	Time	MINRES Its	Hiptmair its	CG its
1	125	0.0106	6	2.7	1.0
2	729	0.1135	9	20.0	1.9
3	4913	0.4593	9	24.4	3.0
4	35,937	3.4168	9	26.0	4.0
5	274,625	39.2038	9	26.8	4.0
6	2,146,689	351.7276	7	27.2	4.3
7	16,974,593	3342.7477	7	26.7	4.5