

sparselizard speedup benchmark: 4 cores .. 16 cores

Febr. 2020

3D_mechanics (static)

Isotropic elasticity on 3D disk geometry – full hexahedral mesh (Cholesky used to solve $Ax = b$). h1xyz shape functions

Interpolation order	1				2				3			
	Num unknowns	Gen. Time:	Sol Time:	TOTAL TIME [s]:	Num unknowns	Gen. Time:	Sol Time:	TOTAL TIME [s]:	Num unknowns	Gen. Time:	Sol Time:	TOTAL TIME [s]:
10080 hex	33957	0.29	0.89	1.35	257127	2.83	18.98	21.96	850953	15.33	150.68	166.19
CORE i7 – 4 cores ..		0.33	0.88	1.32		2.68	12.54	15.34		12.87	69.68	82.67
CORE i9 – 16 cores ..				1.022727273				1.431551499				2.010281843
Speedup:												
40056 hex	137529	1.32	4.96	6.86	1031511	10.81	137.69	149.1	3402957	EXCEEDED 32 GB RAM		
CORE i7 – 4 cores ..		1.15	4.16	5.81		10.19	64.63	75.32		51.18	405	456
CORE i9 – 16 cores ..				1.180722892				1.979553903				
437232 hex +48 prisms	1521513	18.56	130.72	155.28	11335623	EXCEEDED 32 GB RAM				EXCEEDED 32 GB RAM		
CORE i7 – 4 cores ..		17.77	66.51	89.2		121	225	351		EXCEEDED 186 GB RAM		
CORE i9 – 16 cores ..				1.740807175								

3D Electromagnetic wave propagation (1.2GHz, harmonic)

Full tetrahedral mesh (LU to solve $Ax = b$). hcurl shape functions

Interpolation order	1				2				3			
	Num unknowns	Gen. Time:	Sol Time:	TOTAL TIME [s]:	Num unknowns	Gen. Time:	Sol Time:	TOTAL TIME [s]:	Num unknowns	Gen. Time:	Sol Time:	TOTAL TIME [s]:
87648 tet	222544	2.42	8.43	11.45	877440	13.93	82.97	97.6	2245344	EXCEEDED 32 GB RAM		
CORE i7 – 4 cores ..		2.13	5.9	8.53		10.39	36.23	47.12		37.7	138.5	176.7
CORE i9 – 16 cores ..				1.342321219				2.071307301				
179388 tet	449976	5.15	22.86	29.5	1782252	30.21	230.7	262.3		EXCEEDED 32 GB RAM		
CORE i7 – 4 cores ..		4.44	13.48	19.04		21.22	93.14	115.36		EXCEEDED 186 GB RAM		
CORE i9 – 16 cores ..				1.549369748				2.273751734				
547920 tet	1339792	15.63	154.6	174.3	5357964	EXCEEDED 32 GB RAM				EXCEEDED 32 GB RAM		
CORE i7 – 4 cores ..		12.81	60.77	77.04		73	461	537		EXCEEDED 186 GB RAM		
CORE i9 – 16 cores ..				2.262461059								