

MATH 5344 - PROGRAMMING PROBLEM 2

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1. SYSTEM INFORMATION

System: Nick Moore's Desktop "NickArch"			
Software			
OS	Python version	Numpy version	SciPy version
Arch Linux (Kernel 5.8.14)	3.8.6	1.19.4	1.5.4
Processor Information			
Processor		Number of Cores	Speed
AMD Ryzen 7 3800X		8 (16 Threads)	3.9GHz Base, Boost to 4.5GHz
Memory Information			
Main RAM		L2	L3
32 GB @ 3000MHz DDR4		512KB per core	32MB

2. RESULTS FROM DH GMRES

Matrix: Debye-Huckel #9									
Size: 289×289									
Solver: GMRES									
Preconditioning: ILU right, fill_factor=15									
Stopping tolerance: $\tau = 10^{-6}$									
Fill drop tolerance	Convergence			Iterative solve time			Direct solve		
	Iters	$\ r_{\text{final}}\ $	$\ e\ $	Build ILU	GMRES loop	total	$\ r\ $	$\ e\ $	time
1.0	69	9.23e-7	2.81e-5	5.99e-4	0.0249	0.0255			7.47e-4
0.1									
0.01									
0.001									
0.0001									
Stopping tolerance: $\tau = 10^{-8}$									
Fill drop tolerance	Convergence			Iterative solve time			Direct solve		
	Iters	$\ r_{\text{final}}\ $	$\ e\ $	Build ILU	GMRES loop	total	$\ r\ $	$\ e\ $	time
1.0									
0.1									
0.01									
0.001									
0.0001									