Project 4, FYS4150

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About the problem

The aim of this project is to simulate the development of a system of spins fixed in a position in the plane. The particles can have spin up or down represented by the values ± 1

The algorithm

Analytic solution

Results

N	ϵ_r LU decomposition	CPU time LU decomposition	ϵ_r	CPU time tridiagonal decomposition
5	-12.5	-	-0.7	-
10	?	-	-1.2	-
100	-1.3	-	-3.0	-
500	-1.9	-	-4.4	-
1000	-2.2	30	-4.8	-
10000	-3.2	3160	-5.0	-
10^5	x	out of memory	-5.1	-
10^6	x	out of memory	-5.07	20
10^7	x	out of memory	x	250
10^8	x	out of memory	x	2380
$1.5*10^8$	x	out of memory	x	3480

Stability and precision

Final comments