SOLVING THE POISSON-EQUATION IN ONE DIMENSION: TRIDIAGONAL MATRIX ALGORITHM AND LU-DECOMPOSITION

FYS3150: COMPUTATIONAL PHYSICS

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ABSTRACT. Abstract write last.

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1. Introduction

Introduction to the report

2. Theory

2.1. **The Poisson Equation.** add section on poisson equation » Dirilect boundary conditions » relation between f(x) u" » Check equal

2.2. **Approximation of the Second Derivative.** Add section on approx of second derivative » Going from diff equation » linear form $Av = b$ » Matrix -1,2,-1

2.3. **Relative Error.** Add short theory of relative error » YES

3. Algorithms

3.1. **Tridiagonal Matrix Algorithm.** Section on the TDMA » Problem b » Implementation » FLOPS

3.2. **Specialized algorithm.** Section on the optimization » Specialized algorithm problem c » FLOPS » CPU time

3.3. **LU Decomposition.** Section on LU-decomposition » Alogrithm for LU-decomposition » FLOPS » CPU time

4. Results

Results from the report. » CPU time difference » Plots » Difference in relative error

5. Discussion

Discussion of the report.

6. Conclusion

Conclusion of the report.