Linear algebra in computational physics

Project 1

Supervisor: Morten

By

Anna Lina P. Sjur
Jan-Adrian H. Kallmyr

September 2, 2018

1 Abstract

Contents

2 Introduction

In this report we compare different numerical methods of solving differential equations using linear algebra. More specifically, we consider Poisson's equation

$$\frac{\mathrm{d}^2\phi}{\mathrm{d}r^2} = -4\pi r\rho(r) \tag{2.1}$$

, which we solve using both gaussian elimination and LU-decomposition. For compar ison we look at the relative error for different integration points, as well as comparing the CPU time of both algorithms.

3 Methods

4 Results

5 Discussion

List of Figures

List of Tables