A Fast Solver For Differential Equations



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Abstract

plenty of waffle, plenty of waffle.

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Motivation

1.1 A class of differential equations

Einstein's paper: [?]

Discretization of the equations

- 2.1 Deducing the approximations
- 2.1.1 Finite differences method
- 2.1.2 Creating a linear system
- 2.1.3 Backward Euler
- 2.2 Sparse data structures
- 2.2.1 Requirements
- 2.2.2 CSR format
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3.3

Theoretical aspects

Experimental results

Comparison

Preconditioned version

Classic iterative algorithms

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General comparison and comments

The Multigrid Method

- 4.1 Motivation
- 4.1.1 Capturing different frequencies
- 4.1.2 The 2-grid algorithm
- 4.2 Formulation
- 4.2.1 The V-Cycle
- 4.2.2 Smoothers
- 4.2.3 Prolongation and restriction operators
- 4.3 Experimental results

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Appendix A

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Appendix B

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