Report
Simulation Sciences Laboratory

Minimal Surfaces

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Abstract

bla bla bla

Contents

1 Introduction

...

2 Background

Some bla bla on the background

Minimal surface equation, $z(x, y) \in C_2(\bar{\Omega})$ s.th.

$$(1 + z_y^2)z_{xx} - 2z_x z_y z_{xy} + (1 + z_x^2)z_{yy} = \mathcal{F}(z) = 0 \qquad \text{in } \Omega \qquad (1)$$

$$z(x, y) = g(x, y) \qquad \text{on } \partial\Omega \qquad (2)$$

nonlinear, elliptic PDE of second order, ...

Solve numerically by Newton, approximate derivatives by FD-stencils, ...

If totally bored, check consistency of the method

3 Implementation

How we implemented things, ...

a nice flowchart (can be maybe done in powerpoint, easier here) on how the code works, plus explanations

test coverage

4 Results, benchmark

A few nice pictures for stuff

timing benchmarks for different approaches (openMP and not), compare to matlab maybe

5 Conclusions and outlook

Some wise words, what how can we extend stuff, ...