Mathematical Overview of the Stokes Equation

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1 Introduction

2 Model Problem

Let $\Omega \subseteq \mathbb{R}^2$ be a bounded Lipschitz domain. For an incompressible viscous flow, the Stokes equations are:

$$-\mu\Delta\mathbf{u} + \nabla p = \mathbf{f} \quad \text{in } \Omega \tag{2.1}$$

$$\nabla \cdot \mathbf{u} = 0 \quad \text{in } \Omega \tag{2.2}$$

$$\mathbf{u} = 0 \quad \text{on } \partial\Omega \tag{2.3}$$

where

3 Variational Formulation

4 Simulations

5 Results

6 Conclusions