

GRADUATE STUDENT SEMINAR

4:30 pm, Monday, September 10, 2001

Martin M-101

The Finite Element Method and the Glowinski-Pironneau Pressure Decomposition for the Modified Stokes Problem

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Abstract

We present the Finite Element Method (FEM) applied to a simple one-dimensional problem, $u'' = f$, $u(0) = 0$, $u'(1) = 0$, $f \in C^0[0, 1]$. The intent is to give the audience a general idea of what FEM means.

In much less detail, we present our current application of the Glowinski-Pironneau pressure decomposition to the modified Stokes problem:

$$\begin{aligned}\eta\bar{u} - \nu\nabla^2\bar{u} + \nabla\rho &= \bar{f} && \text{on } \Omega, \\ \nabla \cdot \bar{u} &= 0 && \text{on } \Omega, \\ \bar{u}|_{\Gamma} &= \bar{b} && \text{on } \Gamma = \partial\Omega,\end{aligned}$$

$$\Gamma \in \mathbb{C}^*, \eta \geq 0, \nu > 0, \bar{f} \in L^2(\Omega)^N, \bar{b} \in H^{\frac{1}{2}}(\Gamma)^N.$$

All graduate students are strongly encouraged to attend. Pizza and discussion afterwards!

For further information see our website at www.ces.clemson.edu/~agorka/seminar/main.html