**Solving the Helmholtz Equation Utilizing**

**Gauss-Seidel & Over-Relaxation in MATLAB**

**MECE 5397 – Scientific Computing**

**Project A - Helmholtz Equation**

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# Abstract

# Mathematical Statement of Project

This reports will cover the different test conducted, utilizing numerical methods to solve the Helmholtz Equation. In the subject of mathematics, the Helmholtz equation is the partial differential equation that represents the time-independent wave equation. Equation 1 represent the Helmholtz Equation, where is the Laplacian, k is the wavenumber, and A is the amplitude.

(1)

The problem assigned asked to solve the Helmholtz equation on a rectangular surface with the following boundary conditions: 3 nonhomogeneous Dirichlet, 1 homogenous Neumann, and a function of F(x,y).

# Discretized Version of the Equations

# Numerical Method – Pseudo Code

# Technical Specification of the Computer Used

# Results