

Solving the Schrödinger Equation Using the 2D Crank-Nicolson Method

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Github link: https://github.com/christopheblomsen/fys4150_pro5

I. INTRODUCTION

approach is given by

II. THEORY

$$\frac{u^{n+1} - u^n}{\Delta t} = \frac{1}{2} (F_i^{n+1} + F_i^n), \quad (2)$$

III. METHODS

where u^n is the dimensionless wavefunction, in two dimensions, at time step n . u^{n+1} is then the wavefunction at time step $n + 1$.

The bare Schrödinger equation can be written as

$$i \frac{\partial u}{\partial t} = -\frac{\partial^2 u}{\partial x^2} - \frac{\partial^2 u}{\partial y^2} + v(x, y)u. \quad (1)$$

IV. RESULTS

We will solve this equation by discretizing it according to the Crank-Nicolson approach. The Crank-Nicolson

V. CONCLUSION

REFERENCES
