ECE 4960: Scientific and Numerical Computation

Proposal for project 5

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The idea is to work with the same kind of CS Amplifiers as given in Project 4, but work with different frequencies. Here the frequency can vary from small frequency to a very large frequency almost equal to cutoff frequency. The idea is to use different kinds of Runge-Kutta methods such as RK23, RK34 and RK45 and analyze their performance in terms of speed and accuracy at the different frequencies mentioned above.

Along with this, the project will also look into different time stepping methods and will analyze which method performs the best for stiff equation in case of CS Amplifier. A stiff equation is a differential equation for which certain numerical methods for solving the equation are numerically unstable, unless the step size is taken to be extremely small. Stiff differential equation will be achieved when the frequency is very close to the cut-off frequency.