Dissipative Solitons:
Max Proft - u5190335

My honours thesis will be looking at the Complex Ginsberg Landau Equation (CGLE).
This equation models the behaviour in a wide range of systems, such as deep water waves and superfluidity, and it can be considered as an extension to the nonlinear Schrodinger equation (setting some of the constants to zero we get the nonlinear Schrodinger equation)

For my thesis I will create a program to numerically solve the CGLE.
I'll look at different ways that it could be solved to determine the best method to numerically solve the CGLE.
I will learn Fortran to write program this as I am aware that python (the only programming language I know) is somewhat slower. I chose Fortran since it appears to be better than C languages numerical work.
I also plan on making this program work on multiple cores, something I have never done before either.

I'll compare my program to previous work done to allow me to have confidence it the accuracy of my program.

Once I have a working program, I'll try to find new types of dissipative solitons that are solutions to this equation.

$$\partial_t \psi = A\psi + B\partial_x^2 \psi + C|\psi|^2\psi + D|\psi|^4\psi$$