Physics 335 February 9, 2023
Physics 635 **Due**: February 16, 2023

Homework #5

Problem 1

(**a**) Using your choice of methods from the `Numerical Recipes` library, find the roots of:

$$\cos x - 0.8 + px^2 = 0$$

for $p = 0.1$, 0.2, 0.3, 0.4.

(**b**) For what values of p is there a double root? What is the value of the root?

Problem 2

Use `zroots` to find the roots of

$$x^6 - 12.1x^5 + 59.5x^4 - 151.85x^3 + 212.6625x^2 - 156.6x + 48.5625 = 0$$

Project #1 - Group Investigation -

Simulate the magnetic properties of a `feromagnetic material` with the help of the `Ising` model.

Now that you have a working code implementing the Ising model, lets see what kind of results we can get. It's easy to run the code, get some results, and plot them. But, are the results right? How much do they vary with the size m of the lattice? How do they vary with the length of "time" you collect data?

As a group, you can test your implementations against one another's to be sure you are producing consistent results, and then you can divide up the work of doing the computations you need to do.