

# Documentation for the `cmp.py` script

## 1 Introduction

The program in this project is written in the open source programming language [Python](#), using the standard library, along with the [NumPy](#) and [Matplotlib](#) packages, with PyQt5 being used for the GUI. The versions used in development was

- Python 3.6.5
- NumPy 1.14.3
- Matplotlib 2.2.2
- PyQt 5.9.2

The program should work with newer versions, though maybe not if they are major updates (where a package changes its leftmost version number). You can find instructions on how to install the different packages on their respective websites.

It is however recommended that you install [Anaconda](#), which is a Python distribution that also includes both NumPy, Matplotlib and PyQt5, along with a wealth of other packages useful for scientific computing. The [Jupyter](#) package, especially, is useful, as it allows the user to write a bunch of small scripts (called cells) in a single file (called a notebook), and run the cells individually and quickly, while sharing the workspace between cells (i.e., variables persist between cells). A quick intro to Jupyter notebooks can be found at [this link](#).

## 2 Installation

As recommended we will install the [Anaconda distribution](#). Install the software, and when asked if you want to include Anaconda to the path (or something along those lines) say: “Yes”. This will allow you to start Python from your command line/terminal with the command `python`.

Next you will need the files `cmp.py`, `lattices.py`, `gui.py` and `notebook.ipynb`, which can be found on the course page, or at [the following GitHub page](#).

## 3 Usage

There are two main ways of starting the program. Either directly from the command line or from a Jupyter Notebook. Using the command line:

- Start the terminal/command line
- navigate to the directory where you downloaded the files to.
- type `python cmp.py` and press return.

or using Jupyter Notebooks:

- Start Jupyter Notebooks. Either by opening the terminal/command line and typing `jupyter notebook`, or by opening the program `anaconda-navigator`, installed with Anaconda, and then launch Jupyter Notebooks from there

- A browser window should have appeared. Navigate to the directory where you downloaded the files to and open the file `notebook.ipynb`.
- in the open cell type `run cmp.py` and press ctrl+return to run the cell.