Meeting 3 Lesson Plan

Prerequisites: The prerequisite for this meeting will be to install the emcee package in python. This is a package for python which handles Markov Chain Monte Carlo (MCMC) analysis, a topic we will be covering in this meeting. Unfortunately, it is not one of the packages included with anaconda (that you should have installed already), but it is very easy to get, since anaconda comes with an easy package installer. Go to your command line and type `pip install emcee` (you should also install `pymc`). This will automatically find the package on the web, download it, and integrate it with anaconda and should take no more than a minute or two. You can check that it has installed correctly by going to Python and importing it via `import emcee`. If no errors crop up, then you were successful. If you really want to check that installed exactly correctly, you can do `emcee.test()`.

Topics Covered:

- Interpolation — *Leader:* Brandon
  - `scipy.interpolate.interp1d`
  - `scipy.interpolate.splev`
  - `scipy.interpolate.lagrange`
- Minimizing Functions — *Leader:* Brandon
  - Bracketing Minimums
  - `scipy.optimize.minimize`
- Fitting to Functions — *Leader:* Brandon
  - `scipy.optimize.curve_fit`
  - `numpy.polyfit`
  - mpfit
- Markov Chain Monte Carlo — *Leader:* Paul
  - Theory
  - Implementation with `emcee`
- Parallelizing Your Code — *Leader:* Chris
  - See Link

Collaborative Program: Will be interspersed throughout the lessons.