ATMO 656A. Atmospheric Radiation and Remote Sensing
Project 6 (10 points)

Thursday, April 11, 2024
Due date: April 18, 2024

MIE SCATTERING (CONTINUE)

You are now familiar (probably at greater sacrifice of time and energy) with running the Mie program for a single particle. The next step is to compute scattering properties for a distribution of particles. This program is designed to compute scattering by a log-normal distribution of stratified spheres.

1. Play with the program to make sure that you understand what the inputs and outputs are.

2. One limiting case of size distribution integration is monodisperse particles. Reproduce approximately the Q_{ext} plot in class ppt by setting the standard deviation of a value of around 1.1 and what's different from monodisperse particles. (you cannot use 1.0, which is the right value for monodisperse particles because the *ln* value of 1.0 goes to infinity).

3. Now calculate Q_{ext} for a series of standard deviation values at 1.1, 1.4, 1.8, 2.1 and 2.5 for m=1.3873+0.0066i. What happens to the ripple structure? Why?

4. Compute for the same m, a standard deviation of 1.8, and a wavelength of 0.5 μm, but let the mean radius vary from 0.01 to 10 um. Plot these results.