This document is used as a simple description of each of the python files.
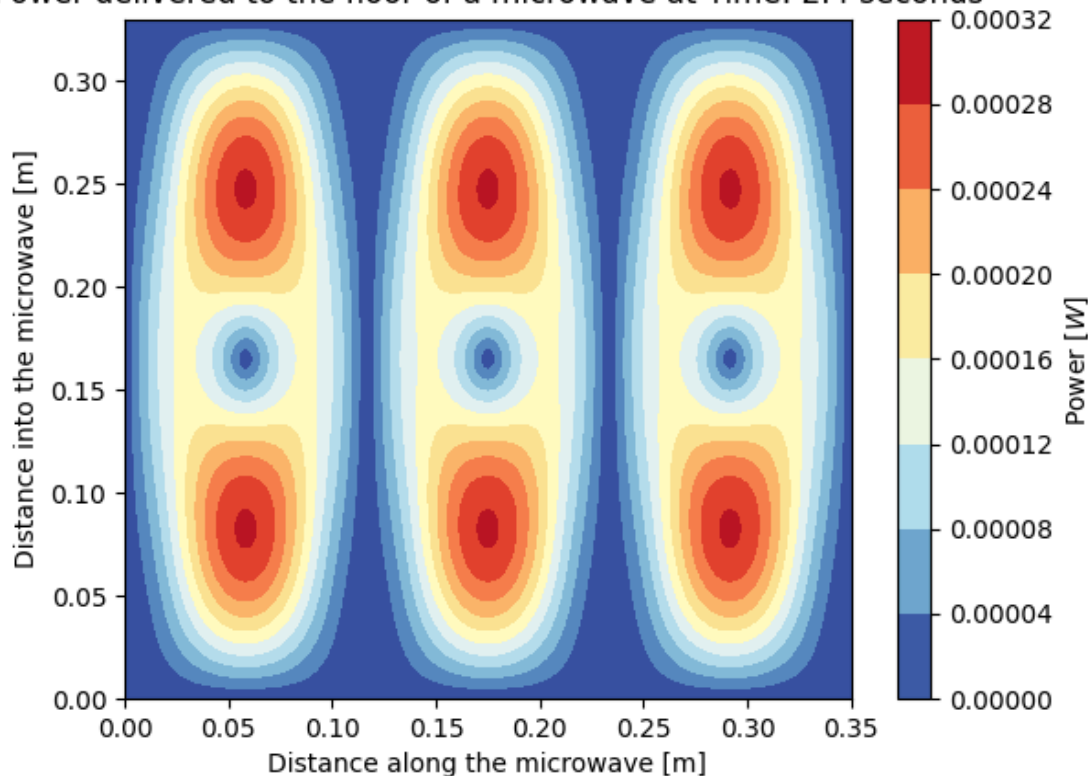
The file 332ComputerProject2D.py

This is a python file that displays an animation of the power delivered to each point on the floor of the microwave. The animation will loop from t=0 to t=2π. The modes, and dimensions of the microwave are chosen such that the standing wave frequency inside the microwave is close to 2.4GHz which is a standard.

The file treats the plane as a combination of small area elements and defines the power delivered to a small point as the power delivered to the entire area. This is like treating the power integral $\int S \cdot da$ as a Riemann sum. I could have increased the resolution (shrink the area elements) but it would increase the run time by too much.

The file should output an animation of the base of the microwave as well as some text that says what the frequency of the standing wave is inside the microwave.

Power delivered to the floor of a microwave at Time: 2.4 seconds

The file 332ComputerProject3D.py

This is also a python file that displays a couple graphs and also spits out some information. This time the area of a specific surface is considered inside the microwave instead of a plane. I chose the food to be a hotpocket which I estimated to be the size of my phone. There are comments in the code about the actual dimensions. It follows the same process of treating the sum of area elements as the integral. The power is treated as time averaged because it is dependent on sin and cos so the avg value occurs at t=π/8.

This file should output first the power delivered to the hotpocket if it is centered in the microwave. Then three plots, the next only opens after you close the current one open. The first plot shows how the power changes in the x direction (long width of the microwave), The second plot shows how the power changes in the y direction (second longest dimension). The last plot shows the power changing in the shortest dimension. Lastly, it outputs the 'best' location to deliver the most power in the shortest time. (there are comments at the end of the code that describe this). Then it says the average power delivered at that point in the microwave.