**Homework 10**

**Polywells**

A close up of a device

Description automatically generatedA Polywell is a polyhedral structure which contains metal rings, arranged in a way that are set to create null magnetic field at the center. When a beam of electrons is injected into it, their trajectory aligns with the center of the rings and form a cloud at the center creating an Electrostatic potential well. This potential well can be used in Nuclear fusion reactors due to which energy losses can be minimized.

**Figure: Polywell**

In this project, we are going to model the Magnetic field generated due to the polyhedral rings both at the center and due to individual rings. Then we will analyze the trajectory of the electrons in presence of this magnetic field and the concentration of these electron cloud at the center.

Initially, we have decided to start on the modelling of the magnetic field. We both will be working collectively on computational analysis of magnetic fields generated due to each ring and verify that the null magnetic field at the center of the polyhedral structure is zero. After the modelling of the magnetic fields, we will start analyzing how the motion of the injected electrons are affected in presence of these fields.

Based on these individual works, we have divided the timeline to work on it. We will be working on magnetic field modelling for 2 weeks and the electron trajectory for the next two weeks. This leads us with the last week before the deadline, in which we will be working on formatting this data onto a poster and finally submitting it to the class.