

## **The Cyclotron**

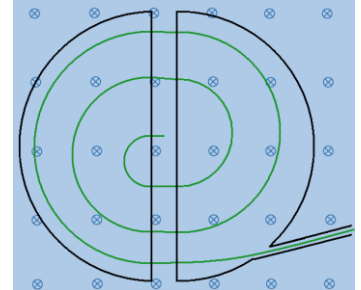
To be able to describe the main features of a cyclotron and explain how it works

### **The Cyclotron**

A cyclotron is a particle accelerator. It consists of two hollow D-shaped electrodes (called 'dees') that are attached to an alternating p.d. supply. The D's are placed in vacuum chamber and a magnetic field which acts at right angles to them.

A particle will move in a circle because of the magnetic field.

When it reaches the gap between the D's the alternating supply has made the other dee have the opposite charge to the particle. This causes the particle to accelerate across the gap and enter the second D. This continues to happen until the particle is moving at the required speed. At this point it leaves the cyclotron.



### **Pair Production**

Pair production is when a photon of energy is converted into a particle and an antiparticle, such as an electron and a positron. If this happens in a magnetic field the electron will move in a circle in one direction and the positron will move in a circle in the other direction.