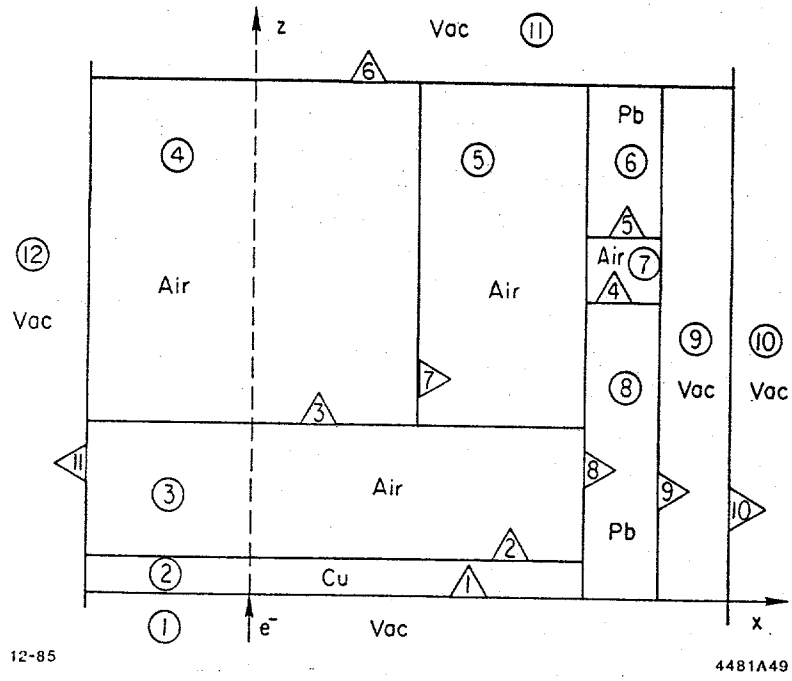

Figure 7. EGS4 geometry diagram used in the RF cavity simulation (not to scale).

Electrons start from the origin (at plane 1), transport through the copper window (Region 2), emanate out into the air (Region 3), and pass through the magnetic field, which is constant and along the positive y-direction (in Region 4 *only*). They are then bent in the direction of the lead wall (Regions 6 and 8) where some of them pass through the slit (Region 7) and get scored (at Plane 10). By varying the field strength of the magnet, one should be able to re-create the observations for both 3.5 MeV and 8.5 MeV.

The result of running this EGS4 simulation at 8.5 and 3.5 MeV is shown in Figs. 8 and 9, respectively, for 100 incident electrons. It becomes clear from pictures such as these that it is easier to focus the 8.5-MeV electrons through the slit than the 3.5-MeV ones.

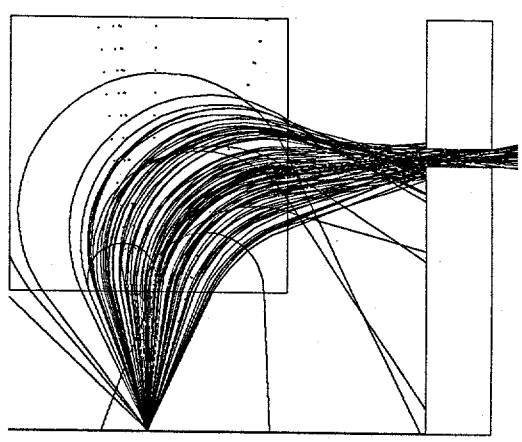

Figure 8. 8.5-MeV electrons (solid lines) scattering in a 0.38 mm copper foil, bending in a 2.6 kG focusing field, and passing through a lead slit.