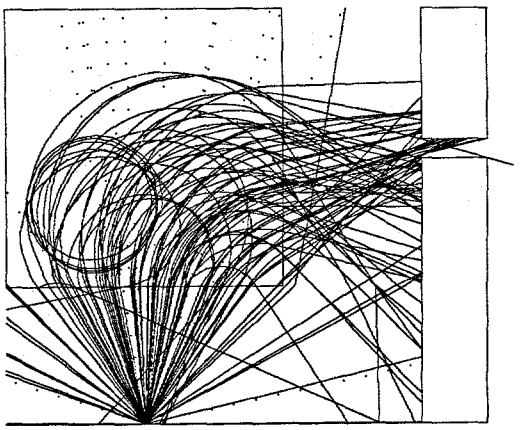

Figure 9. Same as Fig. 8, but energy is 3.5 MeV and magnetic field is 1.0 kG.

A number of EGS4 "experiments" can be performed rather easily once the basic geometry and magnetic field transport is established. For example, one can replace the air regions and/or the copper window with vacuum in order to determine what effect they have. What was discovered by doing this is that the copper window has the greatest effect on the transmission through the lead slit.

Figure 10, incidentally, demonstrates what happens when the magnetic field is turned off.

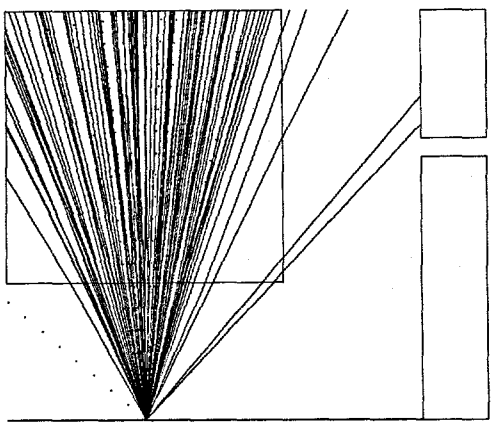

Figure 10. Same as Fig. 8 (*i.e.*, 8.5 MeV again) but magnetic field *turned off*.

7.3 Nuclear Fuel Rod Irradiation

In addition to using geometry methods intrinsic to EGS4, one can also create rather complex geometries using the Combinatorial Geometry (CG) package that is available with the MORSE-CG program[8]. User Codes are available to make this task very easy. Furthermore, a special version of SHOWGRAF, called CGSHOWGF, allows for the visualization of the particle trajectories in the CG geometry.

We recently set up a CG geometry to simulate the irradiation of nuclear fuel rods by electron accelerator x-ray beams (*e.g.*, to study the possibility of reducing the concentration of a select group of very long-lived radioisotopes).