

## Axial Magnetism

A coaxial cable consists of a solid inner conductor of radius  $R_1$  surrounded by a hollow, very thin outer conductor of radius  $R_2$ . The two carry equal currents  $I$ , but in opposite directions. The current density is uniformly distributed over each conductor. Find expressions for three magnetic fields: within the inner conductor, in the space between the conductors, and outside the outer conductor.

