

FYSS360 Numerical exercise

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A single particle electron model was used to estimate the loss cone of electrons in an ECR ion source. It is also a demonstration of the confinement of electrons (and ions) in a magnetic bottle formed by the generated solenoid and hexapole magnetic fields.

The on-axis solenoid field $B_z(r = 0, z)$ and the hexapole field $B(x, y)$ were plotted (figures 1 and 2).

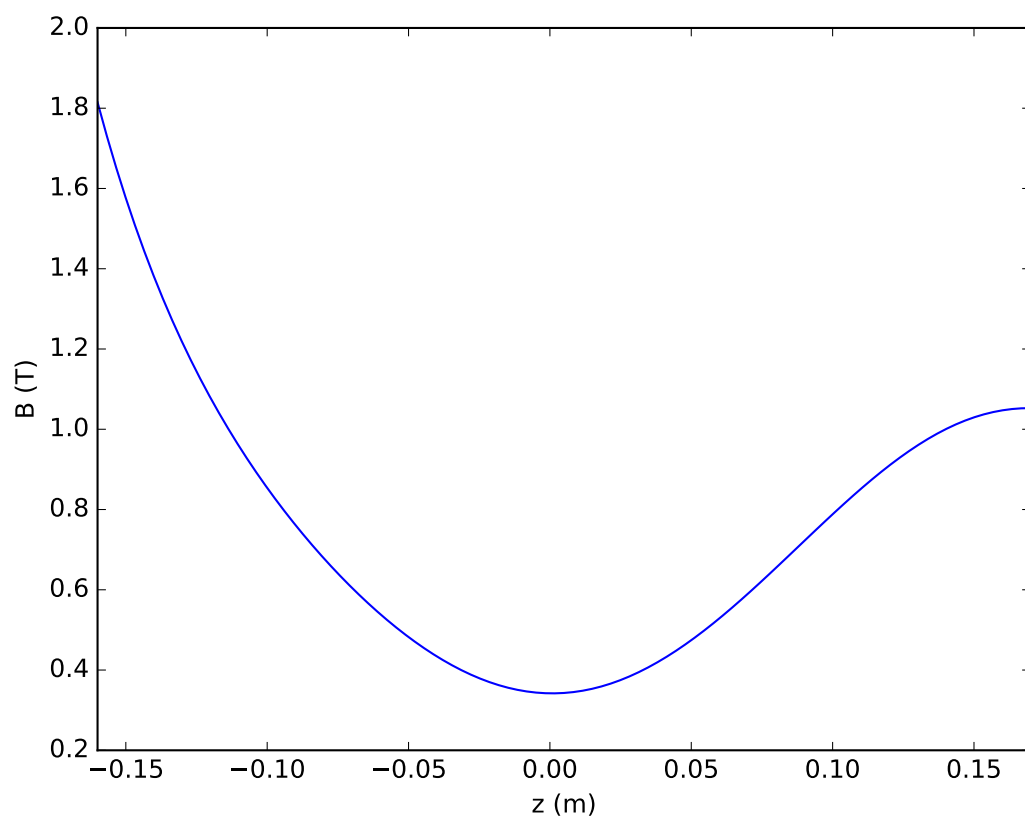


Figure 1: Solenoid on-axis magnetic field $B_z(r = 0, z)$.

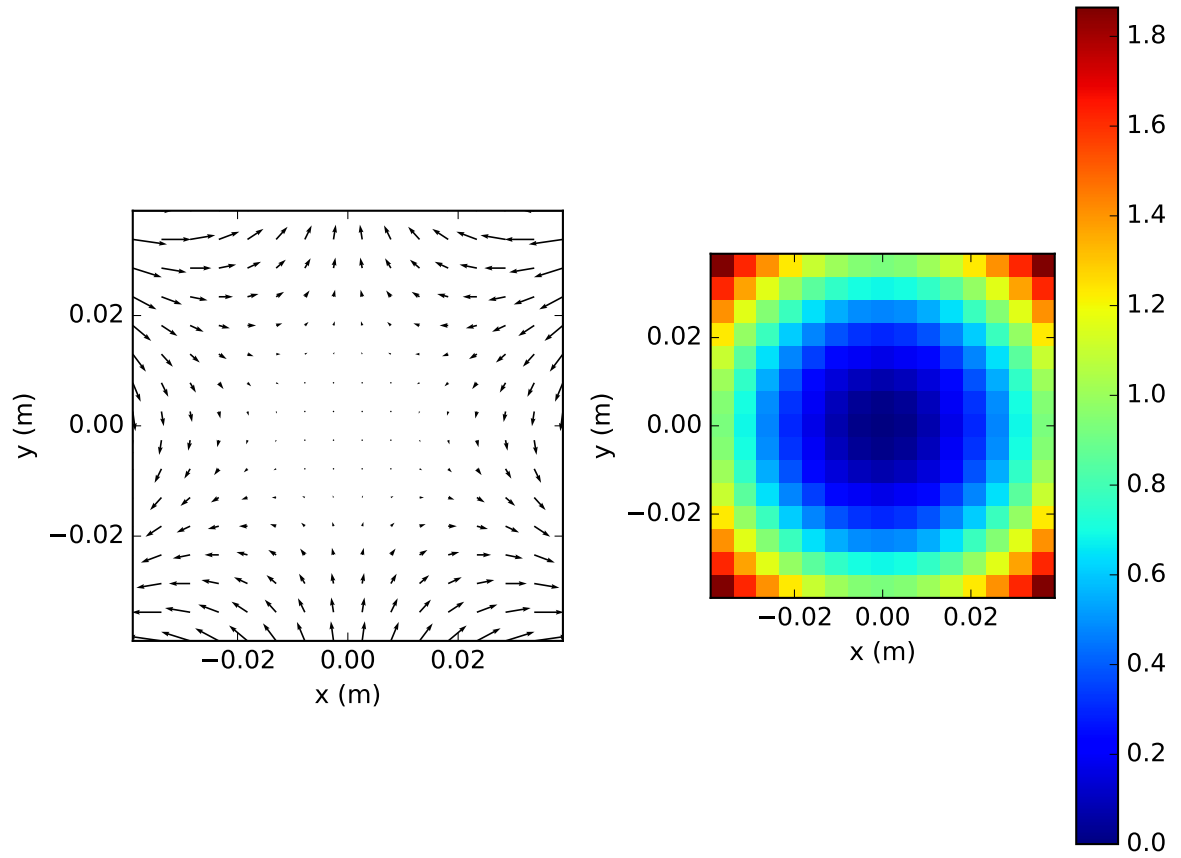


Figure 2: The direction and magnitude of the hexapole B field.