

Solar Physics 2005-2006: Exercises to Lecture 11

C.U.Keller

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1 Electric and magnetic energy densities

Show that the electric energy density is completely dominated by the magnetic energy density for non-relativistic plasmas. Hint: the electric energy density is given by $\epsilon_0 E^2$ and the magnetic energy density is given by $\frac{B^2}{2\mu_0}$. Use $\nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$ to relate the magnitude of the two fields.

2 Problems from Stix's Book

Solve problems 8.1 to 8.5.