

**Massachusetts Institute of Technology
Department of Physics
Physics 8.022 - Fall 2002**

**Assignment #8
Fields of Moving Charges
Lorentz force, Magnetic Field, Biot-Savart
Ampere's Law, Vector Potential**

Reading *Purcell*: Chapter 5 and 6.

Problem Set #8

Work on **all** problems. Not all problems receive equal points. Total points for this set is 100.

- **(15 points) [1]** *Purcell* Problem 5.13 (p.202): Field lines of an electron.
- **(15 points) [2]** *Purcell* Problem 5.14 (p.202): Field lines of an electron.
- **(15 points) [3]** *Purcell* Problem 5.18 (p.204): Lorentz transformation of line charges and currents.
- **(15 points) [4]** *Purcell* Problem 5.19 (p.204): Proton-nucleus collisions.
- **(15 points) [5]** *Purcell* Problem 6.3 (p.245): Field of current rings.
- **(10 points) [6]** *Purcell* Problem 6.4 (p.246): Field of current hairpin.
- **(15 points) [7]** *Purcell* Problem 6.31 (p.251): Field of moving charges.

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