PHYS 671: Homework IV

due date: Tuesday, November 19th, 2013 at class meeting.

You are welcome to work together. If you partially use work from other (e.g. something you might have found in a book or a journal paper), you should properly credit the author by citing the material used.

total points: 100 + 20 bonus

1. Jackson’s 3rd edition, problem 14.12. [(total 20 pts) a: 10 pts, b: 5 pts, c: 5 pts]

2. Jackson’s 3rd edition, problem 14.15. [(total 30 pts) a: 20 pts, b:10 pts, c: 10 pts].


4. A positively charged particle, initially in rectilinear motion with constant velocity $1.5 \times 10^8 \text{m.s}^{-1}$, is suddenly stopped and stays immobile. Make a sketch, 1 nanosecond after the particle stopped, of the electromagnetic field associated to the particle. In particular:

   (a) identify the domain the field is associated to radiation, (10 pts)

   (b) draw the field lines associated to the electric and magnetic fields. (10 pts)

The drawing must be clear, to scale, and the distance must be clearly indicated. An argumentation supporting the drawing must be provided.