Physics 418, Homework Assignment
Due in Class, Wednesday, March 25, 2004

1. Griffiths, Problem 2.7
2. Griffiths, Problem 2.8
3. Show that the lifetime of an unstable particle in its own rest system is shorter than the lifetime measured by an oberver at rest in any coordinate system in which the particle is moving.
4. A high-momentum beam Σ^- hyperons was produced at Fermilab. The mean (average) distance travelled between production and decay was observed to be 11.1 meters. What was the momentum of these hyperons in GeV/c.
   (The Σ^- hyperon has a mass, $Mc^2 = 1.197$ GeV, and a mean lifetime in its own rest system of 1.48×10^{-10} seconds.)
5. Griffiths, Problem 3.15
6. Griffiths, Problem 3.20
7. Griffiths, Problem 3.22