

Physics 201, Fall 2009

Problem Set 4

Due Friday, October 2.

Problems from Taylor, Zafiratos and Dubson:

2.25, 2.31, 2.35a,b, 2.38, 2.46

Additional Problems:

1. A tube of water is moving with speed $c/4$ with respect to the lab frame when a beam of light traveling in the same direction enters it. What is the speed of the light in the water with respect to the lab frame? (The index of refraction of water is $4/3$.)
2. The total energy of a particle of mass m is three times its rest energy. What is the magnitude of the particle's momentum?

(These two problems are slight variations of problems from the sample Physics GRE available at the ETS website.)