

Homework 9 for September 12, 2008  
Due 8AM September 15 2008  
Physics 221 with Professor Jeff Terry

1. Consider an isolated 1D system on the x-axis. There is a proton, P, held fixed at the origin. A second proton, Q, begins infinitely far from Q with initial velocity  $v$ . What is the initial velocity,  $v$ , at which Q will halt 1 meter from P?
2. What is the electric field (magnitude and direction) at Q when it stops?
3. In the exact moment that Q has stopped, it is held fixed and P is released and begins accelerating due to the repulsion from Q. When P is infinitely far from Q, what is its velocity?