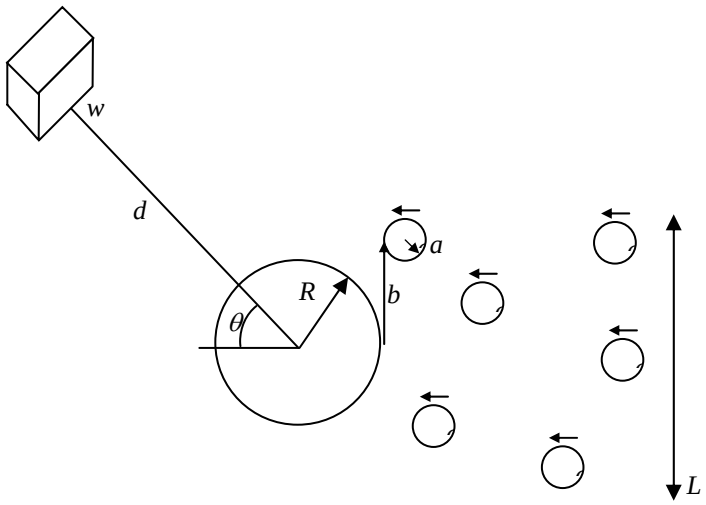
Princeton University **Physics 203** **Fall 2006**

Problem Set 6 due Wednesday, November 15 at 5 pm

1. Problem 9:50

2. Approximate a (not very good) hockey player by a stationary solid cylinder of radius *R*. A stream of hockey pucks of radius *a* approach him from the right and scatter elastically. The hockey pucks are uniformly distributed over a length *L*. The total number of pucks *N* is very large. A goal net is located a distance *d* away and has a width *w*. You can assume that *d*>>*R*, *d*>>*w*, *w*>>*a*.



Calculate the two dimensional scattering cross-section $\sigma_2(\theta)$ such that $(N/L)\sigma_2(\theta)d\theta$ gives the number of packs scattered into an angle $d\theta$. Out of N hockey pucks shot, how many will end up in the net?

3. Problem 12.7

4. Problem 12.16