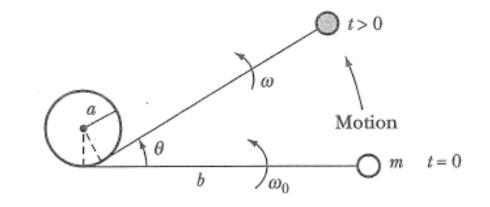A deuteron (nucleus of deuterium atom consisting of a proton and a neutron) with speed 14.9 km/s collides elastically with a neutron at rest. Use the approximation that the deuteron is twice the mass of the neutron. (a) If the deuteron is scattered through a LAB angle $\psi = 10°$, what are the final speeds of the deuteron and neutron? (b) What is the LAB scattering angle of the neutron? (c) What is the maximum possible scattering angle of the deuteron?

A particle of mass m at the end of a light string wraps itself about a fixed vertical cylinder of radius a (Figure 9-F). All the motion is in the horizontal plane (disregard gravity). The angular velocity of the cord is ω_0 when the distance from the particle to the point of contact of the string and cylinder is b. Find the angular velocity and tension in the string after the cord has turned through an additional angle θ.