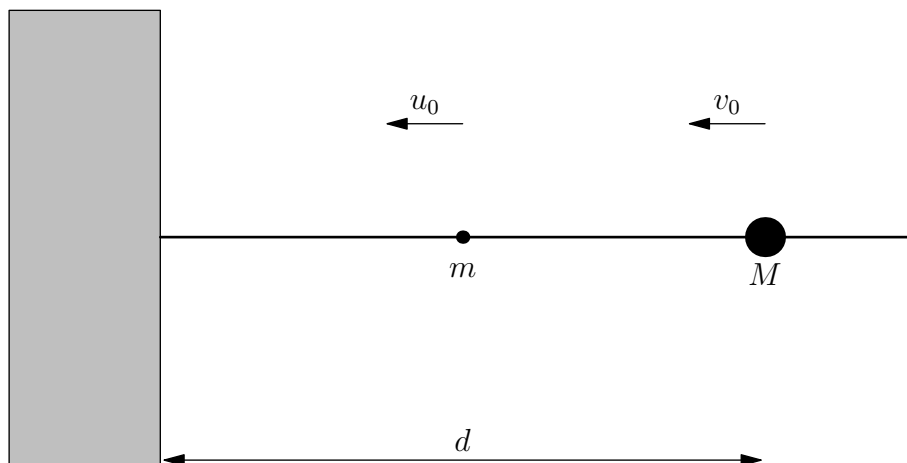


M04M.1—Particles on a Line

Problem

Two elastic spherical particles with masses m and M ($m \ll M$) are constrained to move along a straight line with an elastically reflecting wall at its end. At $t = 0$ they are in motion as shown, with $u_0 \gg v_0$.



Find the subsequent motion of M , averaged over the period of motion of m . In this approximation, how far does M travel before turning around?

(Note: The initial location of m is irrelevant in this limit.)