

Lenz's Law Tube



Purpose: To demonstrate Lenz's Law by dropping a magnet through an aluminum tube.

Location: Room 146; in a shipping tube against the wall next to the tall bins (near the door to room 144) (left photo)

This setup consists of an aluminum tube, a non-magnetic, blue weight, and a black magnet that is the same weight and dimensions as the blue weight. Drop the blue weight down the tube to show that it falls at a normal rate. (To protect the floor and the weights, please catch them as they come out the bottom.) Next, drop the black, magnetic weight down the tube. It will take much longer for the magnet to reach the ground than the blue weight did. Ask students for their explanations of this “anti-gravity” force. If they think it's just magnetic attraction, show them that neither of the weights is magnetically attracted to the aluminum tube.

Explain that the magnet, when dropped, induces eddy currents in the tube which in turn produce a magnet field which slows the magnet's descent. On shelf N2 there are two smaller versions of this demonstration to pass around the class.