

## **Eddy Currents**

### Effect of Eddy Currents on Falling Rates

#### Instructions

##### Materials:

Copper tubing  
Nonmagnetic Stainless Steel Sphere  
Magnetic Neodymium (Nb) Sphere  
Ring stand  
Double clamp

##### Set Up:

1. Clamp the copper tubing using a double clamp and a ring stand.
2. Show the difference between the two spheres; the strongly magnetic Neodymium sphere will readily stick to the ring stand whereas the nonmagnetic sphere will drop down showing no magnetic attraction.

##### Demo Procedure:

1. At the same time and from the same height, drop the nonmagnetic sphere through the copper tubing while the magnetic sphere is dropped through the air.
2. Both spheres fall with equal rate.
3. Switch the two spheres, and drop the magnetic sphere through the copper tubing while the nonmagnetic sphere is dropped through the air.
4. The magnetic sphere is slowed down as it falls through the copper tubing. It hits the counter well behind the nonmagnetic sphere.
5. With practice, the demonstrator can catch the nonmagnetic sphere and still have time to move across and catch the magnetic sphere underneath the copper tubing.