Application No. 105: Magnetic Sphere Lacks Momentum

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This magnetic sphere lags behind the normal phere

For this experiment you will need:

- a bowl (or a pan) made of copper or aluminium (e.g. a conductive material which is not itself magnetic, that means no steel or iron pans)
- a glass marble (or other sphere of non-magnetic metal)
- a magnetic sphere (www.supermagnete.de/eng/K-08-C)

Place the non-magnetic sphere on the top edge of the bow and let it fall. When it reaches the bottom of the bowl, let it circle.

Do the same with the magnetic sphere and observe the difference in behavior.

The non-magnetic sphere rolls down the side of the bowl quickly and circles easily in the bottom of the bowl with only a quick movement to get it started.

Video, 1.3 MB

On the other hand, the SuperMagnet falls grudgingly and hardly makes a circle in the bottom of the bowl even when you move the bowl manually.

The explanation:

This experiment shows the effect of the Lenz/Faraday principle (which is used in the brake systems of trucks and buses!). The movement of the magnetic sphere induces an electromotive force. The current flow created by the this force creates a magnetic field, which "is directed directly against the force which created it". In this way, the motion of the magnetic sphere is retarded.

Note from the supermagnete team: Further experiments on the topic of induction:

- "Bet on a Rolling Ball" (www.supermagnete.de/eng/project66)
- "Aluminum Foil as Contact-Free Parachute" (www.supermagnete.de/eng/project77)
- "Series of experiments" (www.supermagnete.de/eng/project194)
- "project329" (www.supermagnete.de/eng/project329)

Articles used

1 x K-08-C (www.supermagnete.de/eng/K-08-C)

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