

Application No. 134: Rotating sphere magnets

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Two magnetic spheres influence each other through the table top

You need:

2 sphere magnets K-10-C (www.supermagnete.de/eng/K-10-C) (or smaller ones, but then the attractive force won't be as strong)

The sphere on top of the table goes round in circles! But why?

For this experiment you only need a wooden table of appropriate thickness. You place one sphere magnet on top and one on the bottom of the tabletop.

When you move the sphere below, the one above will follow the movement. With some practice you can get the upper sphere into a circular movement. When this works, you hold the sphere under the table in place, and the top sphere, as if by magic, will keep going round in circles, around that spot where you locked the bottom sphere into position. Just like a moon circles a planet.

The result is weird, when you think about that the magnetic field of a sphere is different from the earth's gravitation field. I think you get this effect, because the two magnetic fields - as long as they are separated by the table at the right distance - are similar.

After a while, the attractive force of the lower sphere slows down the sphere, it comes closer to the center and the rotation speed goes up again. In the end the sphere stops though.

With a little practice, you can grasp the sphere under the table, pull it away a bit from the table and move it in a circular motion at this distance. This way you can decrease and later increase the attractive force again and the upper sphere can therefore circle slower or faster. An entertaining and educational game!

Online since: 19/09/2008

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