

Circles of Magnetism

Electric currents create magnetic fields.

Try this:

- Notice that the compass needles all point north, even if you turn the tabletop.
- Press the button near the table edge. The button sends an electric current through the rod in the center of the table.
- Notice that, with the electric current flowing, the compass needles no longer point north. Instead, they form circles around the rod.

What's going on?

Compass needles are small magnets. The earth is a giant magnet.

With no other magnets nearby, these compass needles will line up with the earth's magnetic field (that is, the north pole of each compass needle/magnet will point north).

But electric currents create magnetic fields.

When you push the button, you send an electric current flowing through the rod. It creates a magnetic field that's stronger than the earth's magnetic field. As long as the current is flowing, the compass needles will line up with the rod's magnetic field.