ROQED PHYSICS LAB

Study the Properties of a Permanent Magnet and Imaging Magnetic Fields

Objective: To become familiar with the poles of a permanent magnet and demonstrate which lines form magnetic fields around a magnet.

Equipment:
048 - magnets strip
iron filings
059 - sheet of paper

Theory:
Bodies that remain magnetized for a long time are called **permanent magnets.** Each atom contains negatively charged particles - electrons. When electrons move, a magnetic field arises, which causes the magnetization of iron and steel. Those places of the magnet where the strongest magnetic actions are found are called the poles of the magnet. Every magnet, like the magnetic needle we know, must have two poles: north (N) and south (S). By bringing the magnet to objects made of different materials, it can be established that very few of them are attracted by the magnet. Cast iron, steel, iron and some alloys are well attracted by a magnet, nickel and cobalt are much weaker. Opposite magnetic poles attract, while magnetic poles of the same name repel. The interaction of magnets is explained by the fact that there is aaround any magnet **magnetic field**. The magnetic field of one magnet acts on another magnet, and, conversely, the magnetic field of the second magnet acts on the first.
With the help of iron filings, you can get an idea of the form of the magnetic field of permanent magnets. This is what we propose to do in this work.

Work progress:
1. Put on the table the solenoid, the ring and the rod to demonstrate the magnetic field, as well as

the power supply.

2. Connect the terminals of the display stands to the power supply unit.

3. Start the simulation. The power supply will turn on and a magnetic field will appear on the stands.

4. Consider carefully the magnetic fields in each block.

5. Place the coil and magnetic needle on the table. Connect the coil to the power supply.

6. Start the simulation

7. Analyze the behavior of the magnetic needle near the coil.

8. Make a conclusion.

AND. Opposite magnetic poles attract, while magnetic poles of the same name repel.
With the help of magnetic filings, we examined the magnetic field. Near the poles of the magnet, the concentration of sawdust is greater, that is, the magnetic field near them is stronger.
IN. Like magnetic poles repel, like magnetic poles attract.
With the help of magnetic filings, we examined the magnetic field. Near the poles of the magnet, the concentration of sawdust is greater, that is, the magnetic field near them is stronger.
C. The opposite magnetic poles attract, the same ones repel.
With the help of magnetic filings, we examined the magnetic field. Near the poles of the magnet, the concentration of sawdust is less, that is, the magnetic field near them is weaker.