Electrostatic effect on the magnet

Has anyone seen an electrostatically charged ball interact with a magnet? No, nobody saw. If someone noticed such a phenomenon, would he have a chance to discover important laws of nature? Yes, if he were a physicist, he would have had such a chance. Until now, physicists, i.e. until March 13, 2011, at 4.00 - 5.16, they did not discover this kind of influence. It can be said that they did not discover because they were unable to create the appropriate conditions for the experiment to be carried out.

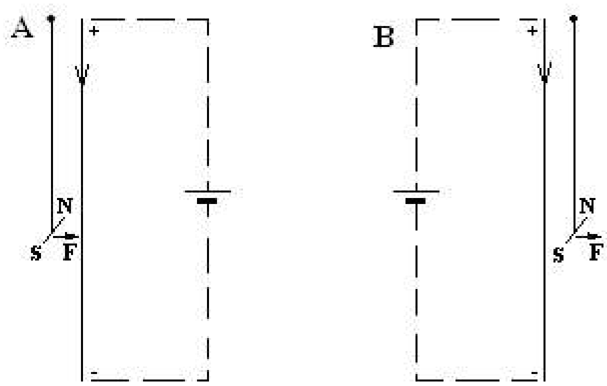
I conducted such an experiment theoretically through mental analysis. I am presenting this experience here so that everyone can check its theoretical and logical correctness. And anyone who wants and has the right equipment could carry out this experiment in nature.

In order to see the influence of an electrified body on a magnet, conditions are necessary for this influence to be revealed. So, this process should not be hampered by surface friction or gravity.

In order to see in which direction the electrified ball is accelerated by the magnet, one can use the description of an experiment with a conductor in which an electric current flows, which conductor is located above the magnetic needle. You can help yourself with this experience and go through intermediate steps that will help you understand the mechanism of the phenomenon.

In this auxiliary magnet and conductor experiment, the magnet should hang freely on the long thread and, in that position, be free to rotate horizontally and swing freely on the thread in any direction. It can be a magnetic needle, but instead of resting on the point of a vertical needle, it should hang over the thread.

After the oscillating and rotating motion has stabilized, the magnet should remain stationary and horizontally in the "north-south" direction. In the first part of the experiment, the electrical conductor should be placed near the center of the magnet on the east side; the conductor should be vertical, parallel to the thread and as close as possible to the magnet, but so as not to obstruct the swing of the magnet. The diagram of the experiment with swinging a magnet under the influence of a conductor with an electric current is shown in the figure below.



Ejection of a suspended magnet under the influence of a current in a conductor; a conductor parallel to the thread, situated (A) to the east and (B) to the west of the thread

Note that the magnet deviates from the vertical in the same direction also when the conductor with the electric current is "west" of the hanging magnet.

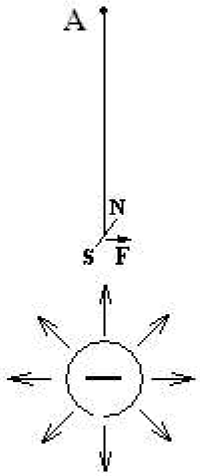
The analysis of the situation can be carried out using the magnetic induction vector and the right hand rule, or only using the idea of flowing electrons (electric current) and protoelectrons (magnetic field - details about protoelectrons at http://pinopa.republika.pl/Magnet_pole_pl.html). Such an analysis shows that the magnet suspended on the thread will swing to the east, without changing the direction of its "north-south" position - in the figure, the vector F shows the direction of the deflection.

This experiment can be done in a different version. To perform the experiment, a coil on a torus is needed. The current in the coil should flow in such a direction that in the coils from the center of the torus it has the "top down" direction. When such a toroidal current-carrying coil is inserted from below (or from above), so that it surrounds a freely hanging magnet (from the previous experiment), the magnet will deflect to the east.

The behavior of a hanging magnet in experiments with single conductors with electric current and in an experiment with a torus-shaped coil indicates the existence of a magnetic field. This can be said by someone who uses a simplified understanding of the phenomenon, calling it a magnetic field, who uses the concept of a magnetic induction vector and uses the right hand rule when interpreting the phenomenon. But whoever understands this phenomenon more deeply can say that the course of the phenomenon indicates the existence, on the one hand, of the movement of electrons in the form of an electric current in the magnet and in conductors and (in another experiment) in the coil, and on the other hand, it indicates the existence of a certain a kind of protoelectron wind. This wind accompanies the flow of electrons in the magnet and conductors and is caused by this flow of electrons, but most importantly, the windstreams are inseparable from these objects. The mutual interaction of the flowing streams is tantamount to the interaction of these objects and in experiments it manifests itself in the form of deflection of a suspended magnet from the vertical.

Now, after these experiments with the magnet and the wind of protoelectrons, which is caused by the flowing electric current, when the mechanism of this phenomenon is known, one can perform experiments with an electrostatically charged sphere. Now you can guess how the magnet suspended on the thread will behave when such a charged ball is approached "from below" towards it. If you do not yet understand what the essence of the sphere's electrostatic charge is, then by performing this experiment (even mentally) you have the opportunity to find out that the electrostatic field is also related to the protoelectron medium and its movement.

If you have an electrified ball and you do not know what type of charge it is electrified, it is enough for this ball to be brought "from below" to the hanging magnet, and you will observe in which direction the magnet is tilted. If it tilts to the east, which is as in the described experiments with current, it will mean that the ball is negatively charged. So it means that the protoelectrons in groups leave the sphere, as in the figure below, creating a wind whose streams are directed "from the center" of the sphere.



Moving a suspended magnet with a ball charged with a negative electrostatic charge

When the ball is under the magnet, the streams of this electrostatic wind, interacting with the streams that orbit the magnet, deflect the magnet to the east. The direction of the electrostatic protoelectron wind in the area around the magnet, i.e. "up", is consistent with the wind direction, which occurred in experiments with current, when the electric current had a conventional "down" direction, and the electrons and protoelectrons associated with it moved in the opposite direction, or "up".

By analogy, it can be said that there is a shortage of electrons in a sphere that has been positively charged and the process of replenishing them goes in the opposite direction. That is, protoelectrons fly from the medium surrounding the sphere towards its center. In this way, streams of electrostatic wind are created, which in physics is called an electrostatic field.

The presented phenomenon of electrostatic influence on a magnet may be the basis for the development of new energy sources. It is already possible to imagine a magnetic-electrostatic motor in the stator of which would be placed next to each other magnets, positioned with poles in the same direction. The magnets would surround an insulated rotor, which would be constantly electrified to replenish the electrostatic charge. The opposite effect would occur in such an engine. That is, the magnets would be stationary and the moving part would be an electrostatically charged rotor.

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Electrostatic effect on the magnet - Experience

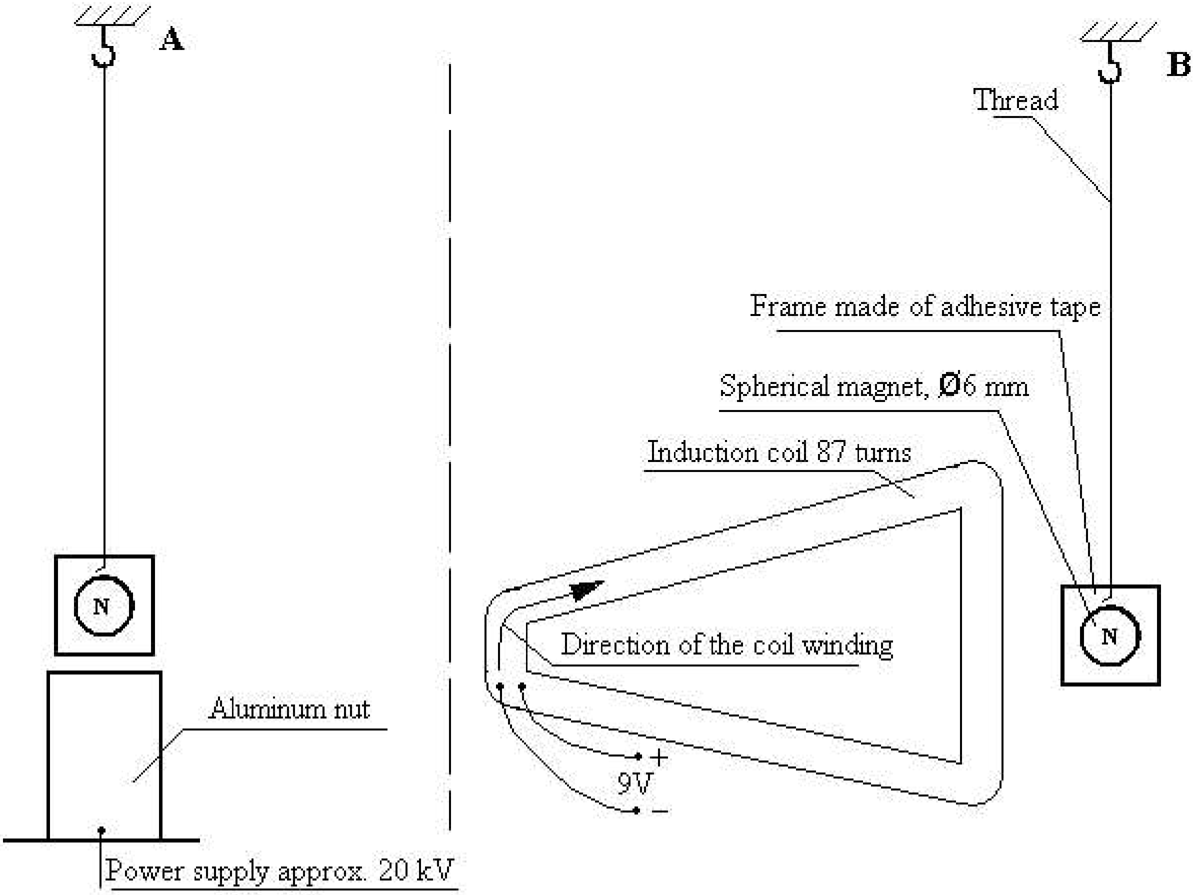
Today is Sunday November 6, 2011. In the morning I thought that today I could conduct an experiment with which I could practically see what I know from the theory of electrostatic effects on a magnet. As I thought, I did ... I did this experiment. I had the opportunity to see with my own eyes how, under the influence of the electrified "aluminum nut", which served as an electrified ball (which is described in the above article of 03/03/13), a magnet hanging on a thread (hanging above this nut) swung back together with the thread from its original vertical position towards the west. The magnet deflected and kept its poles on the "North-South" line at the same time.

The magnet was a magnetized ball from a bicycle bearing. I chose this shape of the magnet to avoid "magnetic field lines piling up" on sharp edges. Because I also tested experimentally how a magnet behaves near a conductor with a flowing constant electric current. (In the experiment a rectilinear section of the inductor was used for this purpose - see the drawing below.) In such an experiment, an important role is played by these "field lines". Because of them, either the south pole or the north pole of the magnetic needle can be attracted to a conductor with a flowing electric current (at the same direction of the current flow). Which pole will be attracted depends on its position in relation to the conductor - the pole will be attracted to the conductor, which at the beginning of the experiment will be slightly closer to the conductor than the other pole. And when the magnet is spherical and hanging on the thread, it behaves like a magnetic needle, then (thanks to the spherical shape of the magnet) the current that flows in the conductor parallel to the position of the thread has a greater influence on the deflection of the magnet with the thread from the vertical position, and to a lesser extent affects the rotation of the magnet around the axis that runs along the thread.

The generator of an old but functional computer monitor was used as the source of high voltage. I used a cable for power supply, which in the monitor lamp powers the positive electrode (accelerating electrons).

In order to use a magnetized steel ball and to see that it points in the "North-South" direction, two small pieces of adhesive tape sticking to the ball on both sides are enough. These petals of adhesive tape form a kind of frame for the ball. Between them, the end of the thread, which is used to hang this spherical magnet - the compass, should be glued. The plane of the bezel is perpendicular to the axis of the spherical

magnet - to the axis that passes through its magnetic poles. So in fact the frame fulfills an auxiliary function, because it is located in a vertical plane, in the "east-west" direction. Such a position of the frame plane in relation to the axis of the spherical magnet results from the fact that the magnetization of the ball and the very process of its "binding" between the two petals of the adhesive tape took place (in the described case) using a magnet in the form of a tablet.
All the accessories that were used in the experiment are shown schematically in the figure below.



Investigation of A) electrostatic and B) electrodynamic influence on a magnet

Those who have the opportunity and the will to do so can repeat this experience. You must remember to follow the safety rules when working with electricity and high voltage.

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Poland, Legnica, 2011.11.06.

