

*An edited Google translation of the Russian article:*

Original title:

[Refero Relata \(рассказываю рассказанное\), или: Снова о магнитной ловушке для вируса](#)



Refero Relata (telling the story), or: Again about the magnetic trap for the virus

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REFERO RELATA (I tell the story), or Again about the magnetic trap for the virus

Well, yes, I suggested the "Virus Trap" ("Wed", 03/30/2020). But some respected members of the forum rejected it (and biology is not my field of studies). But weren't they in a hurry?

Once my scientific advisor [Andronic Iosifyan](#) (he is the founder and first director of [VNIIEМ](#), he is vice-president of the [Academy of Sciences of the Armenian SSR](#) and Hero of Socialist Labor) said that if someone is not able to write [Maxwell's equations](#) and explain their meaning outright - - talking about electromagnetism with someone like that is pointless. He even added: "Ignorance can be aggressive. Гони его в шею!" - but this is already a consequence of the inflammable Caucasian temperament.

However, since the time of Iosifyan, a lot of things have changed in the former Soviet science. And not for the better. It is ridiculous to demand that all members of the forum know Maxwell's equations. In addition, everyone becomes ill in the same way: both forum users and non-forum users. Therefore, I will try to explain the same thing, but with a different example.

An electric dipole in the theory of an electromagnetic field is called two equal in absolute value point electric charges (+ q and -q), connected mechanically, but separated in space by a non-conductive gap  $l$ . The total electric charge of the electric dipole is zero, and the magnitude of its electric moment is  $ql$ . If this dipole is placed in an external constant electric field  $E$ , a pair of forces will arise, aligning the dipole in the direction of the field. But the dipole as a whole will remain where it was: the electric force acting on one charge will be exactly equal in magnitude and opposite in direction to the force acting on the other charge.

But if a dipole is placed in a non-constant field (with a gradient  $dE / dx$ ), different forces will act on the charges, and the dipole as a whole will have a force equal in magnitude to the product of the moment and the field gradient ( $ql dE / dx$ ).

The same is with the magnetic moment in a magnetic field, although the magnetic moment outwardly does not look very much like the electric moment.

**The magnetic field of the virus can be represented as the field of a microscopic ringlet with an area  $S$  (limited by the ringlet) and with an electric current in the ringlet  $J$ . If you depict the lines of force of the magnetic field of the virus, the structure of its lines of force will be similar to the structure of the lines of force of an electric dipole field, and the magnitude of the magnetic moment virus will be equal to  $JS$ . At the same time, nothing prevents to give the magnetic moment a washout of the vector directed along the normal to the site  $S$ .**

[Russian: Магнитное поле вируса можно представить как поле микроскопического колечка с площадью  $S$  (ограниченной колечком) и с электрическим током в колечке  $J$ . Если изобразить силовые линии магнитного поля вируса, структура его силовых линий будет похожа на структуру силовых линий поля электрического диполя, а величина магнитного момента вируса будет равна  $JS$ . Ничто не мешает при этом придать магнитному моменту смысл вектора, направленного по нормали к площадке  $S$ .]

This similarity made the authors of the "[Physical Encyclopedic Dictionary](#)" / "[Физический энциклопедический словарь](#)" (Moscow, "Soviet Encyclopedia", 1984) introduce the concepts of an electric dipole and a magnetic moment under one heading ("Dipole", p. 161)

**If now the virus is placed in a constant external magnetic field with magnetic induction  $B$  (vector), the magnetic moment of the virus (vector), like a compass needle, will line up along the magnetic field line, but will not fly anywhere.**

**If the field has a gradient ( $dB / dx$ ), a force appears that acts on the magnetic moment (virus) and is equal in absolute value to  $JS dB / dx$  (I deliberately do not push in the direction of the vectors). Under the influence of this force, the virus will start moving along the magnetic field.**

Thus, the analogy between an electric dipole in an electric field and a magnetic moment in a magnetic field is quite obvious and known to everyone who was not too lazy to study Maxwell's equations and other "wisdom" of classical electrodynamics in their youth.

**However, the magnetic moment of the coronavirus is still unknown to anyone. And only experiment can determine it. Equipping a hospital ward with a magnet is still worth it.**

And the road, as you know, can only be mastered by walking.

**No forums will help here.**

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