

Tangential EMF experiment

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Imagine a plane coil with zero magnetic flux through it. When it rotates in its plane, will an EMF be generated? Everybody would say no. Due to Faraday's law, no EMF could exist in a coil if the enclosed magnetic flux does not change. Then, how can you explain the experiment in this video?

<http://youtu.be/P33Hgj68G9M>

Figure 1 and Figure 2 show the experiment setup. The disc magnet's North Pole is at the top. The rectangular coil is facing the edge of the magnet and rotates in its plane.

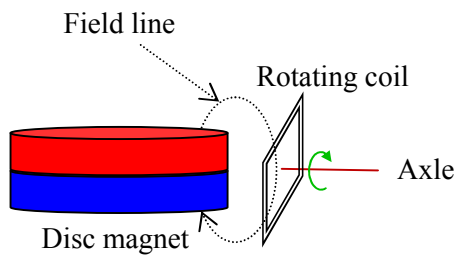


Figure 1

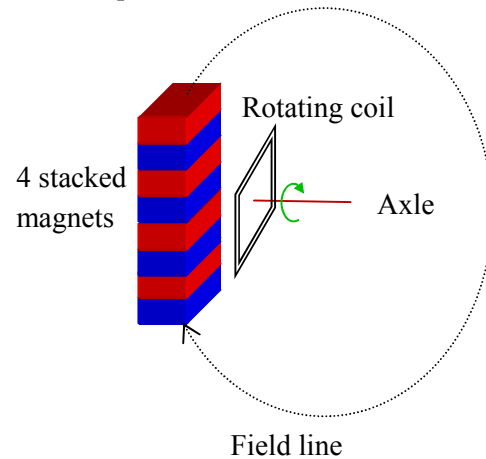


Figure 2

The magnetic field lines emerge from the top of the disc, go down and reenter the disc in the bottom. This is illustrated in Figure 3 and Figure 4 who show that the lines of magnetic field are symmetric with respect to the plan of the magnet. Whether the rectangular coil is right up or inclined (Figure 3), as its center is in the plan of the magnet, the field lines entering the coil area equals that leaving it and cancel each other (Figure 4), that is, the flux in the pink area is canceled by that in the green area in Figure 3. So, the total flux is constantly zero during the rotation and there is no variation of magnetic flux in the coil.

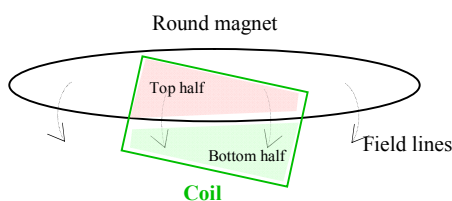


Figure 3

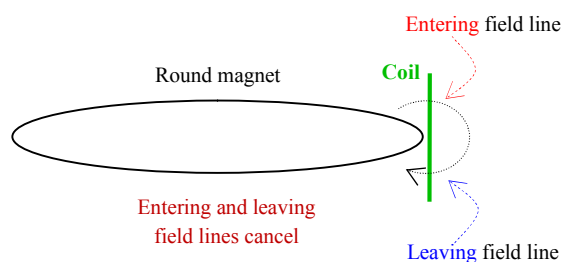


Figure 4

For the 4 stacked magnets (Figure 2), the distance between the North and South Poles being longer than the dimension of the coil, the field lines emerging from the North Pole do not enter the coil's area. The magnetic flux that emerges from the side surface go in and out the coil's area from the left and the magnetic flux through the coil is zero during the rotation.

In order to show the presence of EMF in the coil, a red and a green LED close the coil. The 2 LEDs are connected in parallel but in opposite direction so that when the current circulates in one direction, the red LED lights up, in the other direction the green LED lights up. Also, there is a threshold voltage of around 0.7 volt in diode that the applied voltage must overcome before any current could circulate. I have put 3 000 turns in the coil to secure this voltage.

In summary, the magnetic flux through the coil's area is zero and Faraday's law predicts no EMF when the coil rotates, so the LEDs should stay extinct in the 2 cases. But, the LEDs light up, indicating an EMF is generated. How is it generated? Many very competent people in electromagnetism have objected my paradoxes. Can they explain this EMF? This is a challenge that I launch to them.

Why these LEDs light up? What I can say is that my tangential force motor experiments "[Circular motor driven by tangential magnetic force, pdf, word with video](#)" and "[Tangential force motor with regular magnets, pdf, word with video](#)" have shown that tangential magnetic force can do work and it must generate a counter EMF. It is this EMF that illuminates these LEDs. The present experiment and the cited ones support mutually and thus are stronger in proving that the Lorentz force law and Faraday's law are wrong.

Since Faraday's law does not explain this EMF, what law governs it? A new law that describes the new EMF as well as the classical one must be constructed, an extended Faraday's law of sort. I will not explain this phenomenon because the new theory should be used. As this theory is not published and accepted, it is useless to explain.

For any new theory to be considered, one must first acknowledge that the old theory is wrong. The big problem now is that all physicists think the classical electromagnetic theory is perfect and no change should be made. This is why I'm writing these paradoxes, doing these experiments (see [Explanatory summary for my studies about the Lorentz force law](#)) and publishing them on the internet. I'm pulling the old building down just using my lonely hands. I hope that I will find help after more and more clever people understand my idea.

The present experiment has an immediate consequence in modern physics which is built upon the Maxwell equations and electromagnetic wave theory. When Faraday's law and the Lorentz force law are no longer correct, the theoretical model of the microscopic world is lost. Can one be as confident as before in interpreting the interaction between photons and elementary particles, when a tangential force photon is interfering with an electron or when magnetic field acts a tangential force on a charged particle?