New electromagnetic phenomenon and the way it was predicted

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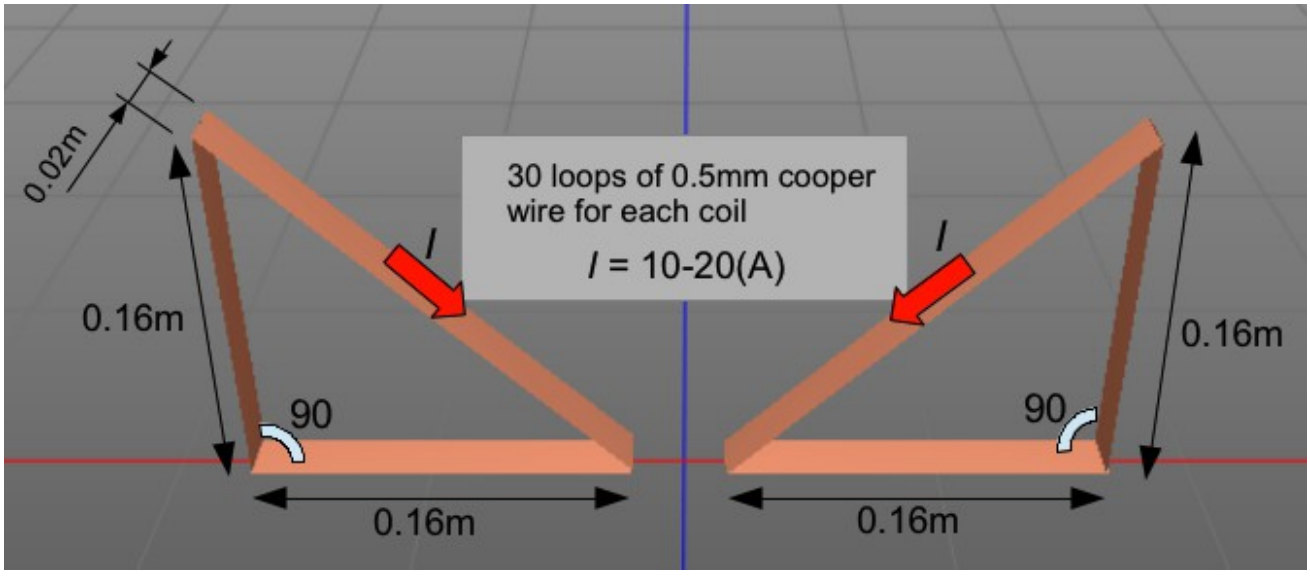
Abstract

Here I will present electromagnetic phenomenon
which can not be explained by known theories.
However this phenomenon was found not accidentally.
It was predicted by viewpoint very different to modern physics.

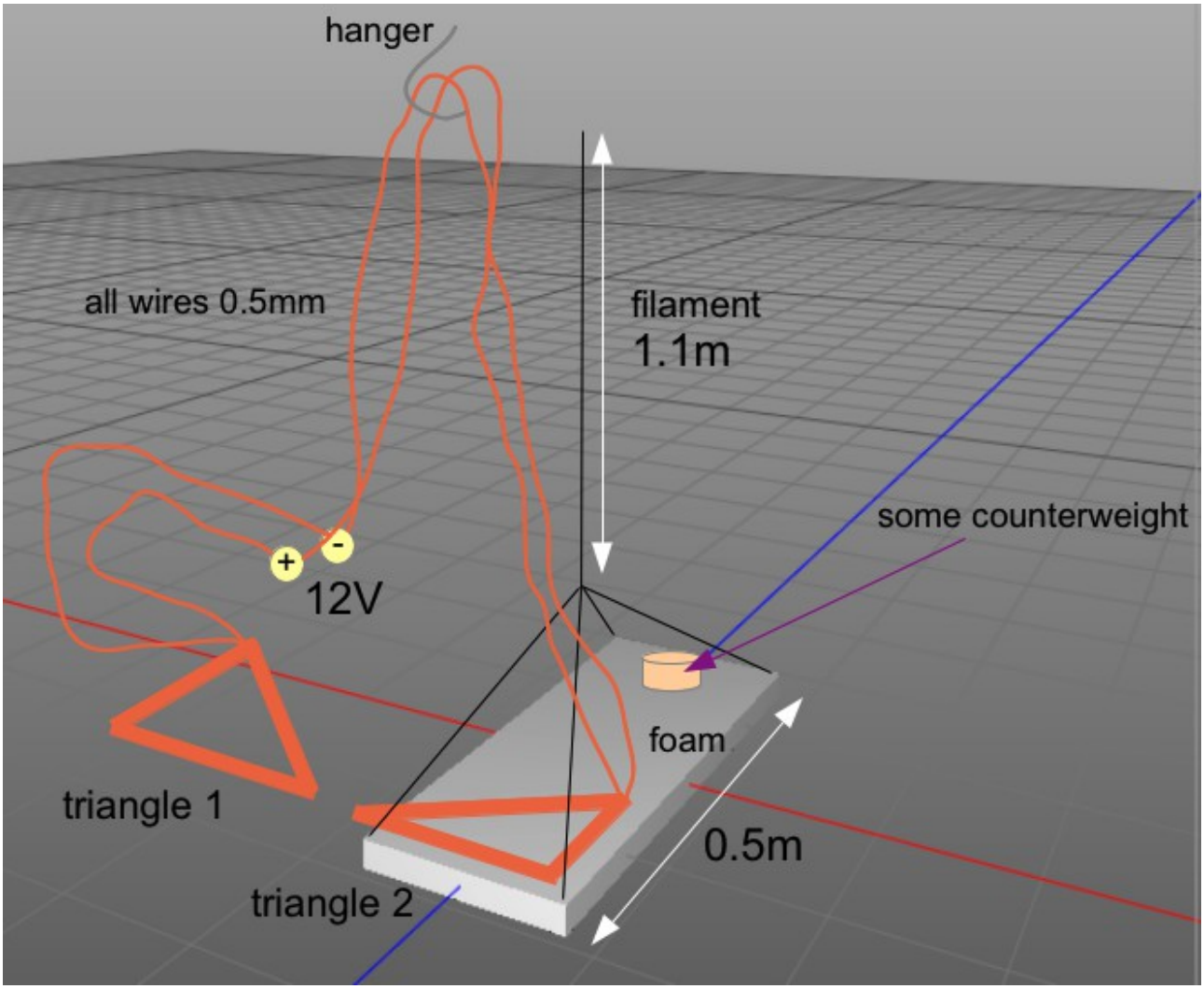
Keywords: Ampere's force, Coulomb's law, Doppler's effect

The experiment

Lets take two narrow triangular coils and place them like so

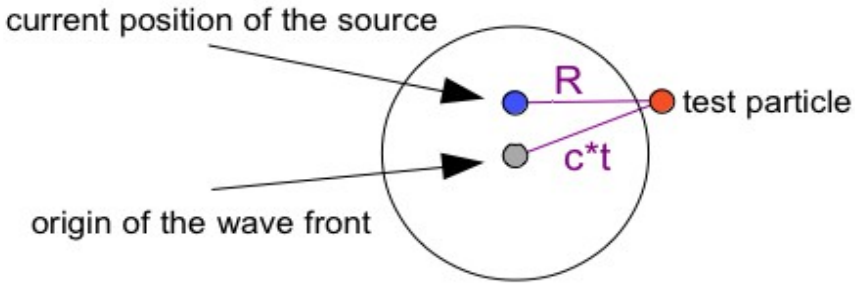


Now lets measure force of interaction between these coils along horizontal axis.
By Ampere and Grassmann these triangular coils could push each other to opposite directions.
However in reality such coils at mentioned setup attract each other!
This was tested by experiment. Actually the experiment it is very simple and can be implemented even by next setup.



The way this phenomenon was predicted

My viewpoints are based on ether paradigm [1] and absolute velocities relative to it.
The first important point is based on classical but a bit modified Doppler's formula [2].
Lets take a classical circle of wavefront in medium and a point infinitely close to it.



Now lets consider a question: what direction the point could move to collide with wavefront as soon as possible. It is clear that the point could move to the direction of the origin of the circle.
From this we may conclude that for receiver Doppler's formula could be symmetric relative to line c*t

(but not to line R like in classical version).

We also know when both source and receiver moves with the same velocity to the same direction there is no any frequency shift.
The only way to reach this is to make formula symmetric relative to line c*t for the source also.

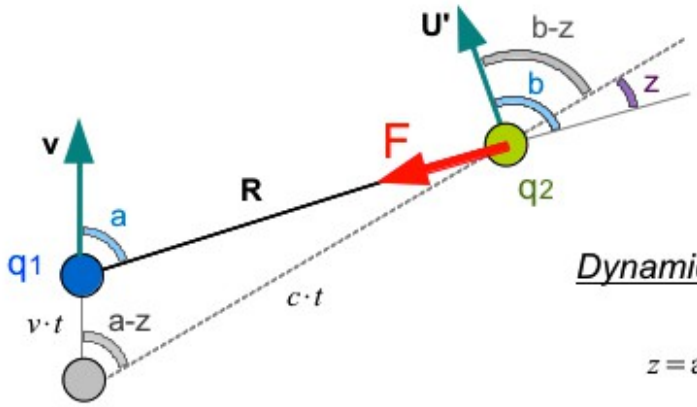
Now what is electric force itself? Likely some small entities of micro world support test body with momentum. We know that electromagnetic action propagates with speed of light. Therefore these entities can be seen as something similar to photons.

If we consider a point source density of these entities in 3D space could decrease by reverse square law. As we consider ether viewpoint to calculate this decreasing we must use distance c*t instead of R. Because c*t shows real distance force carriers was traveled relative to the ether and therefor it could be used to account real decreasing of density of the force carriers.
Than additionally we need to account Doppler's effect, because our force carriers have some properties of photons.

In this way we may speculate a new version for Coulomb's Force Law [3][4].

$$F = k \cdot \frac{q_1 \cdot q_2}{(c \cdot t)^2} \cdot (\textit{modified Doppler})$$

More detailed version will look like so:



Dynamic Coulomb's Force

$$z = \arcsin\left(\frac{v}{c} \cdot \sin(a)\right)$$

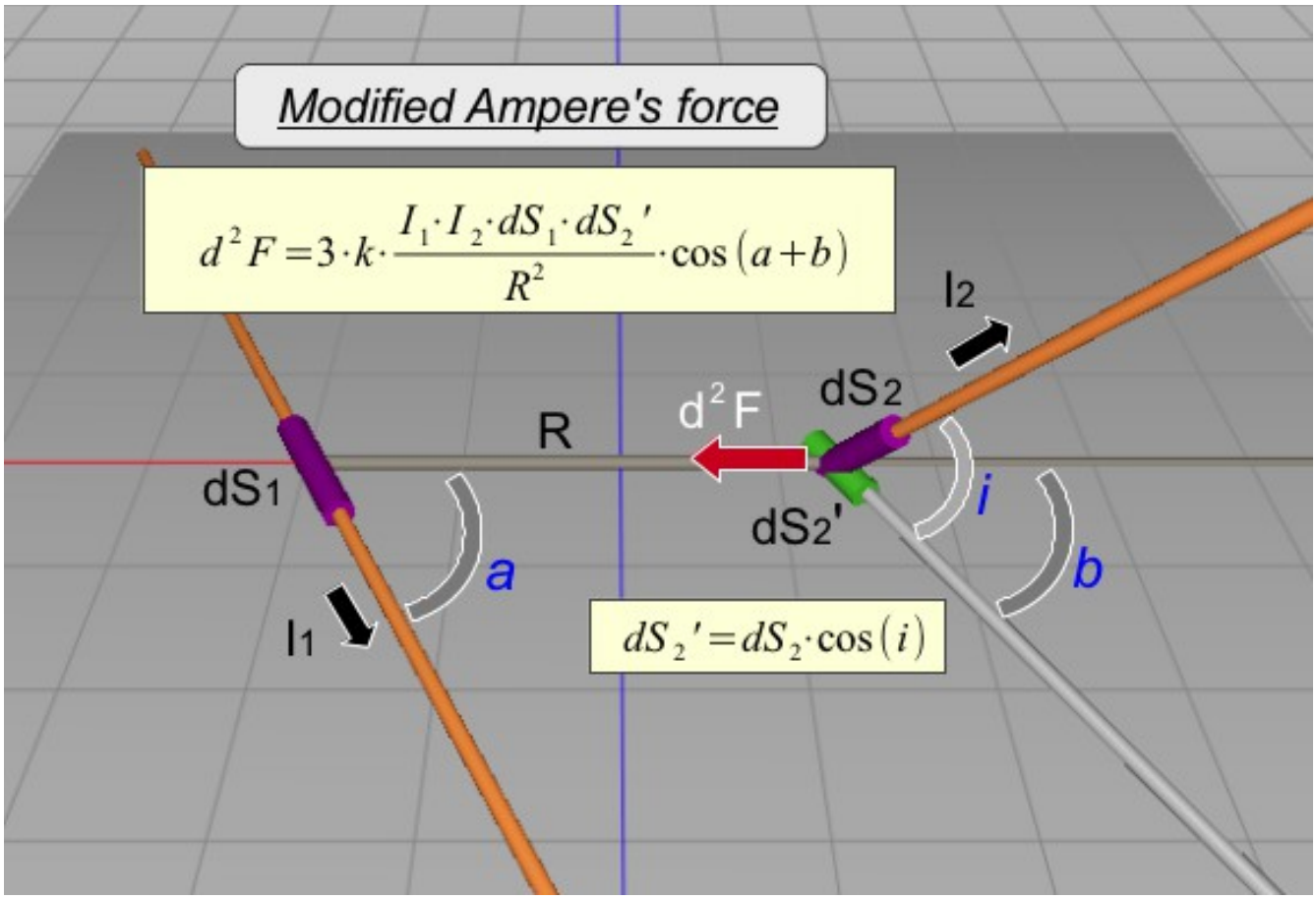
$$F = k \cdot \frac{q_1 \cdot q_2}{R^2} \cdot \underbrace{\left(\frac{1 - \frac{v^2}{c^2}}{\sqrt{\left(1 - \frac{v^2}{c^2} \cdot \sin^2(a)\right)} + \frac{v}{c} \cdot \cos(a)}\right)^2}_{\text{delay}} \cdot \underbrace{\left(\frac{1 - \frac{u'}{c} \cdot \cos(b - z)}{1 - \frac{v}{c} \cdot \cos(a - z)}\right)}_{\text{modified doppler}}$$

Here velocities v and u are absolute relative to an ether.
Velocity u' is just a projection of any 3D velocity u onto surface of the picture.
So everything here is in one plane.

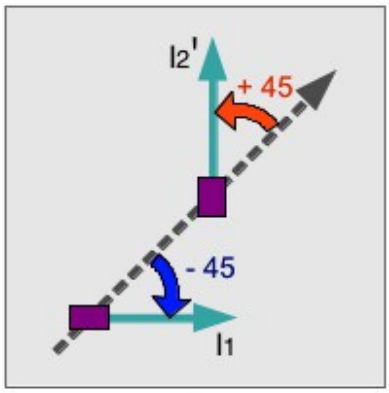
Then my target was to look for some testable cases with currents. For this case we may consider a small bit of wire just like a point with 2 charges (1 positive static and 1 negative dynamic charge).

Now if we consider 2 separate bits of wire we may use the formula of Dynamic Coulomb's Force to calculate the sum of 4 interactions: **(+)->(+)**; **(-)->(-)**; **(+)<-(-)**; **(-)<-(+)**.

This total formula of the sum of 4 interactions can be used and tested directly. However it becomes really big and uncomfortable to use. Therefore I have plot it and have found another much simpler formula which plot is visually inseparable from the first one for the case of small velocities. Therefore we may state it is good enough approximation for our purpose. I call this new formula like "Modified Ampere's Force".



Here angles *a* and *b* are in one plane and can be positive and negative like so:



From this point of view I was looking for some good testable cases. I have integrated numerically many different setups and have found mentioned earlier setup with 2 triangular coils.
And just the first experiment have shoved I am right. These 2 coils attract each other regardless of opposite predictions of Ampere's or Grassmann's formula [5][6].

Conclusions

Presented here simple experiment with two triangular coils it is much intrigue and I hope it is worth to be repeated by many laboratories.

References

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