

Re: A rotating disk PARADOX??

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From: JM Albuquerque (*jm.aREMOV.E_at_sapo.pt*)

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Date: Thu, 8 Jul 2004 17:21:40 +0100

"sal" wrote:

- > *I think you may also be asking about solid state chemistry.*
- >
- > *My chemistry is 30 years out of date but let me try to clarify this a*
- > *little. In covalent bonds, roughly speaking, two adjacent atoms agree to*
- > *share a pair of electrons, and those two atoms are then bonded together.*

Mine is about 25 years out of date.

- > *In a "metallic" bond, all the atoms in a crystal agree to "share" their*
- > *outermost electrons. Those electrons, which are "communally owned", are*
- > *essentially unbound -- they can migrate freely through the crystal.*
- >
- > *The electrons in a metal which are free to wander are referred to as*
- > *electrons in the "conduction band", which would be worth looking up.*
- >
- > *The conduction band electrons, as a group, are electrostatically bound to*
- > *the crystal they're in, which is why they don't just fall out.*

That's exactly what I've learned in the University.

- > *Those conduction band electrons form the "gas" I talked about in previous*
- > *posts. Their behaviour is distinguished from the behaviour of electrons*
- > *inside a superconductor in part by the fact that they undergo periodic*
- > *collisions with the lattice as they move through the crystal, which*
- > *converts their kinetic energy into heat. That's the source of electrical*
- > *"resistance".*

The above cannot explain current out of phase with voltage in conventional AC systems. If resistance goes to zero and if you use an inductor or capacitor as a load, you will have current 90 degrees out of phase with voltage and no heat is produced, nor mechanical energy consumed.

Nevertheless current flows and no work is done.

Reactive energy doesn't produce any work, but large amounts of current can flow at a power factor zero.

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You cannot talk about resistance.

You must say impedance, because $V = Z I$.

There is a lot of difference when a wire is wound like a coil. You can have current flowing and no work done, nor mechanical energy consumed and the theory goes down the toilet.

There are 3 things we don't know and probably we will never know:

- Electricity;
- Magnetism;
- Gravity.

All of them involve rotation and rotation drives the Universe.

What would be the Universe without rotation ?

> *On Tue, 06 Jul 2004 23:03:28 +0100, JM Albuquerque wrote:*

> >

> > *I can solve the same problem noting that around the wire (perpendicular to the main E field vector) there is a circular magnetic field that will interact with the main B field in such a way that it works exactly like conventional generators does.*

>

> *My knowledge of E&M doesn't extend much above the individual electron level, so it's my turn to say "Huh?"*

I don't have any theory.

I just have build a way to understand induction based on magnetic poles hunting magnetic poles (like it was done in the beginning by many developers of electrical machines).

Also I cannot explain how it works. All I know are the usual rules.

It is another way to understand mechanical to electrical energy conversion, starting from the mechanical point of view.

> *You're modeling the behavior of a generator here using macroscopic objects, and in that arena I've been told it's perfectly legitimate to assign a potential energy to a (dipole) magnet in a magnetic field, in which case, according to this model, the magnetic field is indeed "doing work".*

Right.

> *But I'm completely unfamiliar with the details of this point of view so I can't say anything intelligent about it. I will, however, observe that this point of view is related to the elementary "eVxB" model about as closely as organic chemistry is related to Schroedinger's equations -- they're down there somewhere but you don't use them to figure out if the solution in the test tube is going to turn blue.*

My vision is not new and it is out of use.

Nevertheless I found it better for my proposes than the "virtual work" approach, which deals with Lorentz transformation.

All you need in RAM enough in your brain to process a moving problem.

I can see the working mechanism, but no calculation can be made because

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there are no means to know what the magnetic potential is and how much magnetic flow is involved (linked) and not involved in the process, like in the case of electricity which have separate voltage and current. Basically there are no magnetic monopoles, so we miss the source.

Magnetism and gravity are big puzzles.

So far, my conclusions are as follows:

- 1 – Magnetism relates to rotation.
- 2 – Current relates to force, torque and work.
- 3 – Gravity relates to a potential, like voltage does.

All of them are a mystery.

> > *Note that ahead the wire you will have repelling magnetic poles slowing
> > down the disk and behind the wire you will have attracting poles also
> > slowing down the disk. Hence it is quit obvious that from this point of
> > view it is the magnetic field that does all the work (the usual way –
> > see stepper motors and reluctance machines, as well as induction and
> > synchronous).*
> >
> > *So far we have discussed the generator problem. And what about the
> > motor? Can you work out the same problem in the motor approach ? I guess
> > not.*
> >
> > *If you apply a battery instead of the load the same disk must turn
> > giving mechanical energy out.*
> > *It is very easy to solve according to my explanation and
> > straightforward. You apply the E field and a circular E field is created
> > around the wire (radius).*
> > *Then circular B field will interact with the main B field. Ahead the
> > wire you will have repelling magnetic poles and behind the wire you will
> > have attracting poles, hence the disk goes nice and easy.*
>
> --
> *I can be contacted through <http://www.physicsinsights.org>*
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