

B(3), B(3)? What on Earth is B(3)?

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Dr. Taishi Kurata, who died only a few years ago, was interested in following some of the ideas that Prof Myron Evans came up with on the interaction of circularly polarised radio and lightwaves on chemical reactions. His ECE "B(3)" theories seem to show a completely overlooked area of physics.

B, as you may recall, is the symbol given to magnetic fields. An "ordinary" bar magnet has magnetic, "B-field" around it which is responsible for all the things it does. A bar-magnet's B-field operates in a single line that goes between it's north and south pole. As such, if you were to toboggan down that field-line it'd pretty well seem a bit of a one-dimensional world to you. So we call it "B(1)".

Now imagine you decide to get a bit more funky, and you decide that you're going to vary the magnetic fields, with an electromagnet say, then we have a bar magnet that pulses and sends out a field that varies. If you took a snapshot of it, you'd see peaks and troughs of magnetic field spreading out from around your electromagnet. It exists, predominantly in TWO-dimensions. This kind of field is what we use in various configurations for just about everything we do with radio communications. The field wobbles up and down like wagging a rope on a playground and it has what we call "linear polarisation". Again this a result of the field operating in TWO dimensions. We call this B-field a "B(2)" field.

As such, the entirety of physics to do with electromagnetism is described by B(2). The first task on any theoretical analysis you're taught in a physics degree is to simplify a system into 2 dimensions and work with that. It works extremely well, after all look at all our radio-telescopes and GSM telephones etc. However ... there's more ...

A while ago one or two folk started to notice a few "odd" things going on, mainly folk at the extremes of space and time, looking deep into the outer reaches of the known universe at spiral galaxies, other folk looking at the very very tiny things going on in a quantum world inside sub-atomic reactions and finally some chemists predicting how molecular bonding should work with their quantum-chemistry. To some extent, what they saw didn't really fit what the theory was saying it should. This has been successfully swept under the rug by inventing things like "dark matter" a "big bang", "string theory" and "super-string theory". By inventing unobservable "dimensions" in space-time (I think they're up to 11 now), you can mainly confuse the bajeezas out of anyone looking at it and claim you're the only expert. This works very well for Prof. Hawking and has kept him at the head of his field for decades. However, one rather unfortunate consequence is that it isn't really true and one, rather clever chap in Swansea really has come up with another explanation. This guy is Prof Myron Evans. He pointed out that we've carefully ignored a 3rd dimension, and everything that can exist in it. Mainly spirals, spinning and twisting.

So our magnetic fields can SPIN - if you stretch this out and take a snap-shot again, you'd see a ROTATING magnetic field like a long slinky spring. He found that this interacts with molecules that are, themselves spinning and rotating (much as every molecule and atom does). NOW we have a mechanism that's been utterly overlooked on how the two things can interact. Freely rotating molecules with rotating magnetic fields. In quantum-language, when something interacts, it "exchanges energy". Thus we can dump some energy into a molecule by beaming rotating ("circularly polarised") light or radio-waves at it.

So, you're thinking, "goodness, this is 10 minutes of my life I won't see again, what the hell should I care about this stuff?" Well, I pray your indulgence a little longer. A chemical reaction requires energy to work. You usually do that by heating stuff up. Simple. BUT, if in heating it, you start to uncontrollably break down molecules, then you end up with, well, a burning smoking mess. Bad news if you're trying to break down olive-oil pressings into petrol really. So what we need is a clever way of dumping a little bit of energy into the olive-oil without heating it. T'daa.... we beam circularly polarised microwaves at it, in a "B(3)" beam. THIS allows a catalyst to work at a MUCH lower temperature and bingo! We've got petrol molecules coming out of any old oily waste we can chuck into the machine!

And that, in a nutshell, is how the Cordoba plant works. There's a link to a rather pretty computer simulation of the process working with a bunch of molecules at the VERY bottom of [THIS](#) page that Myron and Chris Pelkie made in 1990 entitled "Laser Effects on Molecular Dynamics in Optically Active Media" which is also available on <http://video.google.com>.