Electromagnetism

Let's talk about this subject called (EM) Electromagnetism. Electromagnetism is a large, encompassing theory, so it's no wonder that many people do not understand it because we cannot see it, feel it or even taste it. A basic book on it will almost immediately dive into the world of boring mathematics, such as Maxwell's equations!

Electric and magnetic fields (EMF) are invisible lines of force that surround any electrical device. Power lines, electrical wiring, and electrical equipment all produce EMF. There are many other sources of EMF as well. The focus of this discussion is on the basic understanding of EMF--that is, EMF associated with the generation, transmission, and use of electric power.

Electric fields are produced by voltage and increase in strength as the voltage increases. The electric field strength is measured in units of volts per meter (V/m). Magnetic fields result from the flow of current through wires or electrical devices and increase in strength as the current increases. Magnetic fields are measured in units of gauss (G) or tesla (T).

Most electrical equipment has to be turned on, i.e., current must be flowing, for a magnetic field to be produced. Electric fields are often present even when the equipment is switched off, as long as it remains connected to the source of electric power. Brief bursts of EMF (sometimes called "transients") can also occur when electrical devices are turned on or off.

Electric fields are shielded or weakened by materials that conduct electricity--even materials that conduct poorly, including trees, buildings, and human skin. Magnetic fields, however, pass through most materials and are therefore more difficult to shield. Both electric fields and magnetic fields decrease rapidly as the distance from the source increases.

Even though electrical equipment, appliances, and power lines produce both electric and magnetic fields, most recent research has focused on potential health effects of magnetic field exposure. This is because some epidemiological studies have reported an increased cancer risk associated with estimates of magnetic field exposure. No similar associations have been reported for electric fields; many of the studies examining biological effects of electric fields were essentially negative.

The term "EMF" usually refers to electric and magnetic fields at extremely low frequencies such as those associated with the use of electric power. The term EMF can be used in a much broader sense as well, encompassing electromagnetic fields with low or high frequencies.

Measuring EMF: Common Terms

Electric fields: Electric field strength is measured in volts per meter (V/m) or in kilovolts per meter (kV/m). 1 kV = 1000 V

Magnetic fields: Magnetic fields are measured in units of gauss (G) or tesla (T). Gauss is the unit most commonly used in the United States. Tesla is the internationally accepted scientific term. 1 T = 10,000 G Since most environmental EMF exposures involve magnetic fields that are only a fraction of a tesla or a gauss, these are commonly measured in units of microtesla (μT) or milligauss (mG). A milligauss is 1/1,000 of a gauss. A microtesla is 1/1,000,000 of a tesla. 1 G = 1,000 mG; 1 T = 1,000,000 μT To convert a measurement from microtesla (μT) to milligauss (mG), multiply by 10. 1 μT = 10 mG; 0.1 μT = 1 mG

The earth produces EMF, mainly in the form of static fields, similar to the fields generated by DC electricity. Electric fields are produced by air turbulence and other atmospheric activity. The earth's magnetic field of about 500 mG is thought to be produced by electric currents flowing deep within the earth's core. Because these fields are static rather than alternating, they do not induce currents in stationary objects as do fields associated with alternating current. Such static fields can induce currents in moving and rotating objects.

The wavy line at the right illustrates the concept that the higher the frequency, the more rapidly the field varies. The fields do not vary at 0 Hz (direct current) and vary trillions of times per second near the top of the spectrum. Note that 104 means 10 x 10 x 10 x 10 or 10,000 Hz. 1 kilohertz (kHz) = 1,000 Hz. 1 megahertz (MHz) = 1,000,000 Hz.

You cannot see a magnetic field, but this illustration represents how the strength of the magnetic field can diminish just 1-2 feet (30-61 centimeters) from the source. This magnetic field is a 60-Hz power-frequency field. When it comes to using EMF detectors, may folks have no clue on how to use them properly or the ability to determine man-made sources such as (AC), which is alternating current from natural ones (DC), which is direct current.

The problem is amplified by the fact that most meters are calibrated at 60Hz AC, the same frequency as household wiring and other man-made electrical systems. They were not designed for what we are using them for, such as paranormal research.

Most of us, aka ghost hunters will tell you that ghosts are believed to emit some kind of electromagnetic field, so called EMF. However, when asked why they believe this, many cannot give a good scientific answer because we are still in the beginning stages of this frontier research.

Here is some of our hypothesizes explaining how the EMF detector problem can be solved to some degree in the field of paranormal research. The scientific method is the best way yet discovered for winnowing the truth from lies and delusion. The basic version looks something like this:

1. Observe some aspect of the universe.
2. Invent a theory that is consistent with what you have observed.
3. Use the theory to make predictions.
4. Test those predictions by experiments or further observations.
5. Modify the theory in the light of your results.
6. Go back to step 3 and loop again.

So, what is my theory, the basis for ghostly energetic? There is really only one possibility within known science, so let's go to the specialists.

To begin our quest, we must first take a look at the ghost in the human machine, the conscious of the mind. Professor McFadden from the School of Biomedical and Life Sciences at the University of Surrey in the UK believes our conscious mind could be an electromagnetic field. His theory may solve many previously intractable problems of consciousness and could have profound implications for our concepts of mind, spirituality and even life and death.

There are wide differences in the concepts of consciousness, which are prevalent among biologists, psychologists, and sociologists. The threefold meaning of consciousness comes from the Latin word 'con-scio': a) to cut, b) to make a distinction, and c) to know.

There are three different ways to know the difference
-- 'con-scientia':
1) Through genetic bio-reactive knowledge,
2) Through personal self-reflexive knowledge, and,
3) Through social, consensually validated knowledge.

Most people consider "mind" to be all the conscious things that we are aware of. However this is not quite accurate. The majority of mental activity occurs without awareness. Actions such as peddling a bicycle or walking can become as automatic as breathing. The biggest puzzle in neuroscience is how the brain activity that we're aware of (consciousness) differs from the brain activity of all of those unconscious actions.

The human brain is a symphony of electromagnetic signals, but science has had trouble finding the conductor of the symphony. One of the problems that neurologists have with consciousness is called the binding problem. The best way to explain the binding problem is to use the analogy of a tree. A tree seems to contain thousands of leaves, all of which are contained on several branches. Neurobiology tells us that the information contained in the mind (all the leaves) is dissected and scattered among millions of widely separated neurons. The binding problem is encountered when science tries to explain where in the brain all those leaves are stuck together to form the conscious impression of a whole tree.

How does our brain bind information to generate consciousness? The data does not seem to add up and our symphony conductor is once again missing.

Through his research, Professor McFadden realized that every time a nerve fires, the electrical activity sends a signal to the brain's electromagnetic field. However, unlike solitary nerve signals, information that reaches the brain's electromagnetic field is automatically bound together with all the other signals in the brain.

The brain's electromagnetic field does the binding that is characteristic of consciousness. Conscious information processing is associated with the EM component of ultra low frequency (ULF) brainwaves in either:

a) Dialectically "denser" parts of the brain in the normal awake state of consciousness; or
b) a gaseous ionic structure in the vicinity of the mind.

This is why we aka ghost hunters look at EM fields. It is the basis of life itself (a great book on the subject that I'd recommend for ghost hunters is " The electromagnetic origins of life" by Dr. Becker). The brain's EM field is the only possible thing that could survive bodily death.

EEG and the brain's state
EEG (Electroencephalography) technology is used to measure brain's electrical vibrations from the surface of the scalp. The resulting EEG pattern will contain frequency elements mainly below 30Hz. The frequencies are categorized into four states as follows:

State Frequency Range Amplitude State of Mind
Delta 0.5Hz - 4Hz high (up to 200uV) Deep sleep
Theta 4Hz - 8Hz low (5uV - 20uV) Drowsiness (also first stage of sleep)
Alpha 8Hz - 14Hz high (up to 200uV) Relaxed but alert
Beta 14Hz - 30Hz low (less than 10uV) Highly alert and focused

The dominant frequency in the EEG pattern determines what is called the current state of the brain. If the amplitude of the alpha range frequencies is highest, the brain is said to be in the alpha stage. Note that other frequencies still occur; it is not meaningful to give any exact frequency your brain is "operating on."

So what happens at death? Using the first law of thermodynamics there are several possibilities. First, all that energy could transform into heat and bleed out of the skull. That would also mean no afterlife, much less any possibility for ghosts. Fortunately, there are other possibilities. The EM field could also change frequency or polarity. Interestingly enough there is some data out there that suggests that the mind goes into theta waves just before death, which gives us a possibility of ghosts.

Using what data we have from neurology, we can assume that the frequency change could not exceed much more than 40Hz or so. The bottom line is that we are looking for low frequency DC EM fields. These types of fields are what we need to take a serious look at. The biggest problem with EMF detectors is that they are not giving you the most vital piece of information of the EM field, its FREQUENCY!

They can only give you the power associated with a field. There is an instrument that can give you both power levels and frequency. It's a laptop computer. We have a program that transforms your laptop into a spectrum analyzer. Using the proper coil or antenna, so can quickly tell if a field is manmade or not and record the data from the field onto the hard drive of the laptop.