

Unity between Gravitational and Electromagnetic Forces: A Concept

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This paper ties together gravity, electricity and magnetism. It proposes that aether is the common denominator of those phenomena, with the bulk flow of aether being the cause of gravity and the interaction of cells of aether being the source of electricity and magnetism. The paper sets out implications arising from the unity proposal.

1. Introduction

This paper proposes a concept that ties together the mechanisms of gravity and electromagnetism. The concept is drawn from two papers by the present author, "The Cause of Gravity: A Concept" [1] and "Electricity and Magnetism: A Return to Aether" [2]. Both papers posit the existence of a sub-atomic substance, aether, as an essential component of gravity and electromagnetism.

The present paper and the two underlying papers are based upon the proposition that the phenomena of gravity, electricity and magnetism, and their respective energy fields, have mechanical explanations, such that their causes are entirely physical. In other words, these forces are the result of a physical process of direct contact, as distinct from what is known as "action-at-a-distance". This approach rejects any notion of attraction or repulsion that is not the result of actual physical contact.

The gravity paper argues that gravity is caused by aether flowing into and expelled out of cosmic bodies. Both incoming and outgoing aether exert ram pressure on any matter in their paths but, as explained in the gravity paper, aether that flows into cosmic bodies causes greater ram pressure than aether that is expelled into space. The difference accounts for the force of gravity.

The electromagnetism paper focuses upon aether cells. Aether cells are described as complex structures that are highly flexible and have the property of elasticity. When aether cells come in contact with each other, they contract and expand, much like rubber balls. The paper argues that the collective squeezing and expansion of aether cells underlies both electricity and magnetism. The concept is drawn in part from ideas proposed by James Clerk Maxwell [3] and Michael Faraday [4].

A useful analogue is the Earth's atmosphere. When air moves in bulk, that is, when wind blows, it exerts ram pressure on any matter that it encounters. So does the bulk movement of aether. When molecules that make up the atmosphere collide and interact, their vibrations transmit heat and sound waves, just as interacting aether cells transmit electromagnetic waves, including heat, light, electricity and magnetism.

2. The Concept

The fundamental concept proposed by the present paper is that aether is the stuff – the common denominator – of both

gravity and electromagnetism, with gravity being caused by the bulk movement of aether and electromagnetism being caused by the interaction of aether cells.

Details of these propositions are discussed in the gravity and electromagnetism papers. Pertinent excerpts from each of those papers are set out below.

2.1. The Cause of Gravity: A Concept [5]

"The proposed gravity concept is based upon the proposition that aether exists in space and in all cosmic bodies that occupy space. The concept posits that aether flows from space into cosmic bodies and, at the same time, aether or its constituent particles, collectively "aether", is expelled out of cosmic bodies into space. The movement of aether exerts ram pressure on any matter in its path. The ram pressure exerted by incoming aether is greater than the ram pressure produced by outgoing aether. The difference between incoming and outgoing ram pressure is the force of gravity."

"The phenomenon of 'ram pressure' plays an essential role in the gravity concept. What is ram pressure? It is that part of the dynamic pressure of a flowing fluid that actually transfers kinetic energy to any object in its path. [Ref. omitted] In other words, ram pressure is that portion of dynamic pressure that actually pushes a material object."

"Although the internal energy of aether is the driving force of inflowing aether, something else is necessary to give direction to the flow – something that causes the flow to be toward cosmic bodies. This brings into play the property of aether – like a gas – to flow from areas of higher density into areas of lower density. In this regard, the expulsion process is significant. Expulsion is caused by heat that is generated by the impacts of inflowing aether. The result of expulsion is that it leaves behind places of reduced density – spaces that the expelled aether occupied before being expelled. Spatial aether flows like a gas into these places of reduced density. In effect, inflow and expulsion are inextricably tied to each other. Each is a primary cause of the other. Together they form a continuous cycle."

"There are compelling reasons to expect that inward and outward ram pressures are unequal. The first is that inflow and outflow are quite separate and distinct processes. On the one hand, inflowing aether is driven by its internal energy. The application of this energy is continuous throughout the whole of the journey of inflowing aether from space to its destination. On the other hand, the application of energy to expel aether occurs

essentially instantaneously. It takes place at the point where aether cells or their constituent particles are expelled from cosmic bodies. Once the expulsion occurs, there is no further application of energy. Batchelor's text, *An Introduction to Fluid Mechanics* [Ref. omitted], draws a distinction between long-range forces of the bulk flow of fluids and short-range forces that propel molecules."

2.2. Electricity and Magnetism: A Return to Aether [6]

"This paper posits that aether cells are highly elastic, and their elasticity causes them to shrink and expand when they collide with other aether cells."

"Visualize a single aether cell being subjected to an electromotive force, such as that produced by an electric battery. Because of the elasticity of the cell, the electromotive force squeezes the cell from front-to-back. In the same instant, the sides of the cell bulge. Then, in the next instant, the cell's elasticity causes the cell to expand from front-to-back and shrink around its sides."

"In summary, the successive elastic collisions of aether cells along a conductor are seen as electric current, and collisions of aether cells that surround the conductor and proceed at right angles to the conductor are seen as the source of the magnetic field that encircles a conductor that is carrying electric current. The array of aether cells in which these collisions are taking place is seen as an electromagnetic field."

"What actually goes along a conductor, at close to the speed of light, when a light switch is actuated and a light bulb, some appreciable distance away, illuminates almost instantaneously? Proposed answer: Electric energy is transmitted by successive collisions of aether cells along the conductor."

"Why does a magnetic field surround a conductor that is carrying an electric current? Proposed answer: When aether cells are subjected to collisions in the direction of an electric current, the cells expand and contract at their sides, causing magnetic force to spread out at right angles to the conductor."

3. Implications

It is inevitable that new concepts bring with them new ways of looking at old problems. If the concepts proposed by the present paper and the two underlying papers are correct, there are potentially far reaching implications. Consider the following:

Composition of Atoms. If atoms are structures -- and it appears reasonable to assume they are -- might aether cells constitute the structure between the nucleus of an atom and its outer perimeter? Might aether cells form layers (i.e. shells) within the atomic structure, with the number of shells or layers depending upon where the particular atom fits into the periodic table of elements?

Energy in Atoms. There is no doubt that atoms contain energy, likely both in their nuclei and in the space between the nuclei and the atoms' outer reaches. The subject of energy in the nuclei of atoms is outside the scope of this paper. However, given the suggestion that the space between the nuclei and the outer reaches of atoms may be structured by aether cells, this leads to a consideration of energy in that structure. Might there be successive and continuous reciprocal vibrations of the aether cells? Could the vibrations be what are known as "zitterbewegung"? Might

such vibrations be the source of heat and light that radiate from atoms?

Point Charges. In David Griffith's *Introduction to Electrodynamics*, 3rd Ed. [7], the author deals with what he calls an "electromagnetic self-force" within the structure of a point charge. He speculates on the shape of the structure, using a dumb-bell as his model, and suggests interaction between the ends of the dumb-bell as the means by which a point particle may store electromagnetic self-force. If one accepts the notion of flexible aether cells that contain vibratory energy, are not the two concepts substantially the same?

Electrons and Photons. Might aether cells in atoms and their interactions (successive collisions) in fact be electrons? Could these interactions cause the radiation of waves from atoms through the medium of aether cells, with the waves being what we call photons?

Polarization. Assuming that individual aether cells are essentially identical, it seems reasonable that they must be able to collectively assemble in patterns. This idea is drawn from Stephen Wolfram's book, *A New Kind of Science* [8]. If, as posited, the forces of electricity and magnetism involve the interaction of aether cells, might these forces affect how aether cells line up *viz-a-viz* each other, that is, cause them to form into distinct patterns? If so, might these patterns be the phenomenon of polarization? Going one step further, and assuming that aether cells are structural components of atoms, might the polarization of aether cells within atoms be the means by which atoms themselves are polarized?

Entanglement. On the assumption that aether cells are essentially identical and can therefore assemble into patterns, might there be patterns that permit waves that are set off from a single source in opposite directions to be oppositely polarized, thus creating the impression of "action-at-a-distance"? Might this explain the phenomenon of entanglement?

Induction. It is suggested that the unity proposal is consistent with the phenomenon of induction. This is illustrated by hydro-electric power. Assuming that the bulk movement of incoming aether causes water to fall, and that falling water drives turbines that produce electricity (which, of course, it does), then it appears to follow that ram pressure of the bulk movement of aether is the source of that electricity.

Magnetism. The electricity and magnetism paper posits that electricity is the transmission of energy by front-to-back lines of aether cells. It also posits that side-to-side collisions of aether cells underlie magnetism. Picture the front-to-back squeezing and elongation motions of aether cells in the process of transmitting electricity. These are reciprocating motions. Are they not akin to the reciprocating motions of a pendulum? And is not a pendulum like a rotating flywheel, in the sense that the direction of motion can only be altered by a sideways force (Newton's First Law)? And is there not resistance to that application of force, such that there is tension between precession, on the one hand, and resistance to sideways movement, on the other? Might this be the interface between electricity and magnetism?

Grounding. Might the influx of bulk aether and its injection of energy into cosmic bodies be one and the same thing as electrical grounding from a conductor in the sense that each causes collisions and sends successive collisions into the ground? Put

another way, does each place electrical energy into the body of the Earth?

Positive and Negative Charges. Text books tell us that certain particles “carry” positive and negative charges. However, the text books do not say what a positive charge is and what a negative charge is. Rather, the texts say what positive and negative charges do, but they do not say what they, in fact, are. Assuming that aether cells exist, might a positive charge simply be the source of energy that propels waves through the medium of aether and a negative charge be the recipient of the energy of those waves? In other words, might the expressions “positive charge” and “negative charge” simply be labels indicating the source, direction and destination of the flow of electricity?

Lensing. Might the influx of aether from space into galaxies and clusters of galaxies cause a global shape to the aether that surrounds galaxies and clusters of galaxies? If so, might starlight that is passing by a galaxy or cluster of galaxies tend to follow the curvature of the aether? Might this explain lensing?

Wave/Particle Duality. This much debated concept raises the difficult question of how a wave can exist without a medium. Might this problem be simply resolved if in fact aether exists? With aether acting as a medium, then the proposition that light is no more than a wave through the medium of aether, seems to make sense.

Speed of Light. If, as posited, light is the transmission of energy by successive collisions of aether cells in the medium of aether, and if aether collectively flows into cosmic bodies in the gravity process, might this imply that the speed of light coming into individual cosmic bodies must vary with the speed of the inflowing aether? If so, might the speed of light coming into the

Sun be faster than the speed of light coming into the Earth? In regard to a black hole at a galactic centre, might the inflow of aether be so fast that it exceeds the speed of light, thus not allowing light to escape?

4. Conclusion

The tying of gravity to electromagnetism is a challenge that has long eluded scientists and continues to do so. The fact that the problem remains unresolved indicates that new conceptual ideas are needed. This paper offers just such a new idea for consideration.

References

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