

Are Unified Field Theories Justified?

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"Great spirits have always encountered violent oppositions from mediocre minds." – A. Einstein

Modern physics seems to be searching for ways to incorporate all physical phenomena into a single unified theory. The question that comes to mind is why? The question arises as to the conceptual need for such an activity and whether the activity only adds to the complexity involved in achieving an understanding of nature. The only apparent need for the activity seems to be a quasi-religious motivation among mathematical theorists to make the Science of Physics "elegant" (whatever that means). No objective reason seems to have been presented to preclude the likelihood that Nature operates through multiple independent mechanisms which may or may not interact with each other to produce more complex phenomena.

Consider first the phenomena described by Maxwell's Equations. These equations describe the manner in which electric and magnetic fields interact to produce the electromagnetic field. They show that a changing electric field produces a changing magnetic field and visa versa. They do not preclude the existence of unchanging magnetic or electric fields. Indeed, such fields are common and we have all experienced them. For example, static magnetic fields are exhibited by permanent magnets and electromagnets operated by a DC current and, in the region of space surrounding them at least, where the magnetic field may be quite strong, do not involve an electric field. Similarly, electric fields are readily observed, as evidenced by the rising of the hair on your arm when it is placed close to the faceplate of a TV set or when one slides a polystyrene cup from a stack (such an induced electric field may make the lower cup "float" inside the cup above it). In these cases an electric field is observed to be present without an accompanying magnetic field. It is only when one of those fields (electric and magnetic) has a rate of change with respect to time that the other field manifests itself in accordance with Maxwell's Equations. It should be obvious to all that electric and magnetic fields interact to produce an effect which we denote as the electromagnetic field but in no way is the electromagnetic field fundamental since both the electric and magnetic fields can be observed independently. (An analogy from chemistry would be salt since is composed of atoms of sodium and chlorine which are

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combined into a molecule which we call salt. The molecule is hardly a fundamental entity, it is a compound of two fundamental entities.)

A similar consideration may be made with respect to the combination of gravitational and inertial accelerations. It is presently accepted that both of these observable accelerations are aspects of a single phenomena caused by the curvature of space impelling matter to follow a path termed the null geodesic. Unfortunately for this view, as is the case with the magnetic and electric fields, both gravitational and inertial accelerations can be observed independently of each other. As you sit reading this you can feel the effect of the force of gravity pulling you downwards (the acceleration of gravity). When you analyze what is occurring and compare it with the results which would be observed at the opposite side of the Earth (which undergoes the same inertial acceleration as occurs at your location to an accuracy of 0.03% or better) there is no legitimate way to ascribe the force you feel in the seat of your pants to an inertial acceleration. (The writer has received a few foolish responses asserting that the force we feel results from the fact that, in sitting, we are preventing ourselves from following our proper null geodesic path. That allegation is most certainly true, but what impels us to attempt to follow that path if it is not the classical force of gravity?) Just as we can sense gravity as an independent force, we can also sense the force of inertial acceleration independently of gravitational attraction. This is precisely what is done during the rocket sled experiments conducted in the latter part of the last century.

When an object is in freefall about a gravitationally attracting object it is acted upon by both acceleration and gravitational forces. The gravitational force acts to impel the object towards the center of attraction while the inertial effect resists that attractive force and causes the object's velocity vector to change. The result is an orbital path about the attracting object which is termed the "null geodesic". Just as is the case of the electromagnetic field, the result does not represent a single entity, it represents two individual interacting entities. To attempt to treat that interaction as if it were and as the current practice seems to do is, in itself, the height of folly. Gravitational theory does not produce a unified field theory. As with electromagnetism, there are two independent fields involved!

The source material for this posting may be found in "Gravity" (1987), "The Einstein Hoax" (1997), and "Corrections to Residual Errors in Special Relativity" (1999) located at

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