

Electromagnetism and Spacetime

Given the codependency and, in fact, interchangeability of electric and magnetic behaviors under conditions such relative motion and location, I am feeling more and more convinced that spacetime itself, and perhaps even relativistic effects, are manifestations of the behaviors of electromagnetism (which is itself some strange, yet-inexplicable symmetry within an space of undefined parameters), rather than any kind of "backdrop" upon which physics happens, and under transformations of which Electromagnetism has different properties, as it has always been conceptualized (which is, in my current opinion, a blunder). The existence of quantities such as spin, which seem to be fundamental, abstract quantities relating to physical rotation, only serve to further this suspicion. It seems to me that electromagnetism's properties are, instead, the fundamental thing, and spacetime itself is a manifestation of these properties.

One may be inclined to say, "well, of course spacetime is the more fundamental, I see it and move around in it all the time! I don't experience electromagnetism and such, I experience spacetime!" Well, your body and brain are composed of objects which are themselves but excitations of the electromagnetic field. Of course you experience your motion and physical interactions within a space of sorts, which is limited in its degrees of freedom to the interactions of the electromagnetic field itself. And as for what you see, you see a 3d world because you see using photons, which might I add, are themselves nothing but the most fundamental building blocks of the electromagnetic field.

If, for a moment, we take this all to be true, and electromagnetism itself is the cause of spacetime's existence, what are many of the things that exist within it? Energy, for one. What is energy? Energy is, under this perspective, not a fundamental quantity, but rather an emergent one, brought about by electromagnetism's symmetries, in particular the one we call the "time-translation symmetry." As for spacetime itself, it may be quantized, since electromagnetism's behaviors are quantum in nature (or, perhaps, alternatively, spacetime isn't quantized, and there is something more profound at play that may explain the origin of electromagnetism's quantum behavior from the perspective of a thing existing in the "spacetime" it creates, if one takes this perspective).

Additionally, the relationship between electromagnetism and gravity takes a sudden shift, with gravity now occurring due to changes in the structure of the spacetime that the laws of electromagnetism create, making gravity itself an emergent phenomenon, linked inextricably to electromagnetism itself. Taking this into account with the fact that energy may also be an emergent property of the laws of electromagnetism, phenomena like gravity, dark matter, and cosmic inflation may be strange emergent behaviors of the structure of energetic systems and their relevant quantities. Perhaps it is some modifier of the effect that distance has on the

strength of the electromagnetic interaction, proportional to the strength of mass-giving mechanisms. Things like dimensionality, as well, are then manifestations of electromagnetic law, and complications arising where extra spacial dimensions may typically be needed for certain interactions can likely be thought about differently.

This is all an infant line of thought, and lacks theoretical structure, but the perspective seems promising, and the implications seem to be linked very strongly to current gaps in our understanding of physics. It also may explain what the universe really is, and why it exists anyways. It will likely weigh heavily on my personal thought process going forward. □