

What is the Origin of Spin?

By

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Ask the question, “*What is the origin of the rotation or spin of all objects from galaxies, suns and planets to atoms and subatomic particles?*” – and you may get the answer that it originates at the big bang as an initial impulse (moment) and that it has been spinning since then in a frictionless environment. From this response, now you may have two additional questions: is a frictionless environment a good representation of our observation, and where did the energy come from initially? To the first one, our universe is comprised of not only space, but matter/energy—all of which is interacting in plasma dynamics of galaxies, solar systems (solar winds), and so on. Even in the intergalactic vacuum, which is the largest vacuum we’ve observed, molecules are only centimeters apart. All of this stuff interacting does not make for an ideal frictionless environment. In fact, this idealization further standardizes the spinning object as a solid with no viscosity difference of spin. A good experiment that you can perform is to boil an egg and after the egg is completely cooled, try to spin it on your desk. It will spin in a uniform manner and you can imagine that if it was in a frictionless environment it could spin forever. Now perform the same experiment with a non-boiled egg; you will observe that the egg will slow down rapidly due to its viscous core. Now envision the viscous magma inside our planet—it certainly is not spinning in a frictionless environment. In fact, our Earth’s center is thought to act as a dynamo to generate our magnetic field; however, it takes torque to spin the dynamo! Currently there are elaborate thermal and magnetic models that attempt to explain the inner spin of the core of our planet; however, none explain where the impulse moment initially comes from. Where is the force coming from? The same dilemma applies for the spin of all objects – our sun, galaxies, atoms, subatomic particles, and so on, which brings us back to the second part of our question above concerning the origin of the energy of spin. The origin of the energy is unknown, and at the quantum level of subatomic particles causation is not addressed!

Yet, without spin/rotation none of reality can come to exist. All things spin! Even things that appear not to! You may say, “a tree doesn’t spin,” but in fact every atom in that tree spins, and that tree is on a planet that is spinning, and this planet is in a solar system that is spinning inside a galactic disk and so on. So we could say that spin is fundamental to creation, and objects that appear to be inanimate exist solely because spinning atoms within allow the objects to radiate, and hence, appear in our reality. So an important endeavor of physics would be to find the fundamental forces necessary to generate spin since, if those were known, we would ultimately know the foundations of reality. That is a valuable thing to know – never mind the fact that it could provide very important clues about energy and gravity, which can have huge impacts on our current state of technology and ecology. Yet, in all of the intricacies of both quantum theory and relativistic equations (and I assure you that these complexities are not trivial), no

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equations, no concepts, no fundamental theories have to date been postulated to describe the origin of spin.

This deficiency in our understanding of the dynamics of spin/rotation is what lead prominent Nobel-prize laureate C.N. Yang (of the famous Yang-Mills equation) to comment that, “Einstein's general relativity theory, though profoundly beautiful, is likely to be amended...” and that amendment, “somehow entangles spin and rotation.” Although Dr. Rauscher and I were unaware of Dr. Yang’s most accurate statement, we believe that our recently completed paper entitled, “The Origin of Spin: A Consideration of Torque and Coriolis Forces in Einstein’s Field Equations and Grand Unification Theory” addresses this very issue. As you can deduce from the title, we imbued Einsteinian spacetime with a torque and Coriolis term that becomes the cause and origin of all spins. We then solved the equation and related the solution to a modified GUT Theory (Grand Unification Theory) for the electromagnetic and subatomic particle scale of reality. In doing so we have arrived at a true Unification view, for we have bridged the macro and the micro. Sure, there is much more math to be worked out; however, this amendment to Einstein’s Field Equations – we believe – becomes a landmark foundation from which a new level of physics can be written that generates a more accurate and complete picture of not only galactic formations and solar system structures, but as well planetary plasma mechanics, and atomic and subatomic dynamics. Although the math involved may seem quite complex, the concepts are quite simple. Einstein, with his beautiful field equations, showed that gravity is not a force resulting from objects themselves (as in Newtonian views), but that gravity is a force resulting from the curvature of spacetime in the presence of matter/energy. Imagine a ball placed in the center of a flexible surface such as a trampoline. The ball would curve the surface of the trampoline (spacetime) around it so that any other ball on the surface of that trampoline would be attracted to it. That is the standard simplified view of the result of Einstein’s Field Equations describing gravity. Those field equations have their basis in earlier equations that are known as the LaPlace-Poisson Equations, which describe gradients (in this case, gradient densities), making spacetime curve more or less depending on the density/mass of the object. Now what we have done is that we have added a term to Einstein’s equations which accounts for a fundamental force in spacetime generating torque, which is forcing the spacetime manifold to spin – just as the engine of your car must apply the force of torque to the wheels of your car in order for them to rotate. One may ask, “But where is the spacetime torque coming from?” i.e. “Where is the engine?” The answer is, just as we think of the spacetime curvature generating gravity as a density increase in the presence of matter energy, we can think of the torque force of the curvature of space as increasing as density increases. Thus, the torque comes from a change in density (or gradient) in the geometry of spacetime.

To give you a mental picture, replace the surface of the trampoline we were discussing earlier with the surface tension of water as it goes down the drain of your bathtub. The change of density between the air in the drain of your tub and the water makes the water surface curve towards the drain, but significantly, the surface is no longer a smooth curve (as in the trampoline example), but now it curls as the water goes down and as the air spins out. Another way to look at this is to analyze the dynamics of

weather patterns on Earth (note that in this example the same could be said for water currents). Take, for example, a hurricane. As a result of a relatively small difference in density/temperature in the atmosphere, immense currents gather large quantities (tons and tons) of water orbiting in a highly defined structure – sometimes hundreds of kilometers – resulting in huge energy events that include enormous electromagnetic discharges, high velocity winds, and sometimes funnel tornadoes. Now compare those dynamics to the ones of spiral arm galaxies with their spiraling galactic discs. The similarities are obvious, however in our equation the change in density is not in the air of a planet, but in the plasma gases of our universe. For instance, recall that the density of the relative vacuum between galaxies – although being the largest vacuum observed and millions of times more vacuum than that of our solar system – has its atoms only a few centimeters apart. Yet the vacuum density inside our galaxy is much greater. The difference in densities in this case, just as with the differences in densities in air currents of our atmosphere creating hurricanes, is what generates spacetime torquing matter/energy, and spinning it into the observed topology of a galactic disc with its galactic halos and galactic polar jets. Further, as in the case for a hurricane, Coriolis forces dictate very specific structures that are related to a torus (donut structure) or more specifically to a dual torus bubble, because the Coriolis forces manifest in two opposite rotational patterns (go to www.theresonanceproject.org/research/torus.htm to view the dual torus animation).

We named this amendment to Einstein’s Field Equations the Haremeim-Rauscher solution. We believe that it will more accurately predict the observed dynamics of our universe, including its galactic clusters, galactic structures and planetary plasma dynamics. This solution may as well be able to describe galactic structures and universal behavior without the need for exotic inclusions such as dark matter and dark energy.

Another interesting result from this amendment is that we have found a topological (geometric) relationship between the dual torus spacetime manifold of our solution and the structure of subatomic particles described by group theoretical models, typically used to describe subatomic particle interactions. The relationship involves a very specific geometric structure called a cubeoctahedron, or in other cases a vector equilibrium, which can be constructed from eight (8) edge-bounded tetrahedrons generating twelve (12) radiating vectors and twenty-four (24) edge vectors. This group theoretical model relationship then allows us to unify the atomic scale forces to the macro cosmological scale objects, and thus generate a Unified Field Theory. Furthermore, the twelve radiating topological cubeoctahedral vectors generating a dual torus field are the base vectors of a 3D fractal structure I had discovered many years ago and concluded to be the foundation geometry of creation at all scales (to view this unique fractal model at its 64 tetrahedron iteration, go to www.theresonanceproject.org/graphics/3d.htm). You could imagine the same dual torus bubble and cubeoctahedron occurring at all scales, driven by the torque forces of spacetime as the density increases towards the microscopic scale of the atom, and along the way, spinning everything into existence.

In a work-in-progress, we are writing a balance equation between the gravitational torque forces of spacetime and the electromagnetic repulsive forces. In this view, then,

the Universe seems to be spinning in perpetual motion in a frictionless environment only due to the exchange between the torque of spacetime and the electromagnetic entropy, where the torque overcomes the shearing friction viscosity of the Universe's plasma dynamics to generate billions of years of rotation in a seemingly frictionless manner at all scales. This brings us to a deeper view of black hole dynamics where the black holes are no longer only absorbing material/information, but radiating this information back out in the form of electromagnetic radiation, and the feedback between the two generates the topology of the dual torus structure of the Hamein-Rauscher solution driven by spacetime. Now the black hole is no longer black since its exterior event horizon radiates, which is what I have been calling the white hole portion. Here the black hole/white hole are concentric to each other, where the black hole is inside and the white hole is concentrically structured outside and activates the plasma dynamics and Coriolis forces of the ergosphere of the black hole, which I coined the black-white whole.

Dr. Stephen Hawking, who for nearly thirty years insisted that black holes could not radiate information, in a recent announcement has now made a complete 180 degree turn in his views (much to his credit), predicting that black holes may be able to radiate information. This has been a fundamental contingency of this unification view for almost twenty years, and I am excited to see these views now being embraced by others. Interestingly, I arrived to these conclusions long before confirming these relationships with standard mathematics. I did so by using pure logic, a keen observation of nature and geometric extrapolations, some resulting from in-depth studies of ancient symbols and esoteric schools of thought, such as the Pythagorean schools and ancient Hebraic and Egyptian texts. In many respects, I unknowingly followed a similar path of investigation as Sir Isaac Newton, who had spent a significant part of his adult life deeply immersed in the study of ancient texts and monuments before arriving at his fundamental laws of nature. But I am getting ahead of myself—this is all for a future article, on the seemingly ancient profound understandings of the geometry of nature to what that means in our technological modern era.