Golden Ratio in Quantum Mechanics

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Abstract

The experimental discovery of the golden mean in quantum mechanics by the Helmholtz group(R. Coldea, et al., Golden ratio discovered in a quantum world, Science, 8 January,2010) is discussed. The direct and important relation of this discovery with El Naschie's E-infinity theory is outlined.

Keywords: Golden mean, experiment at Helmholtz Centre, E-infinity theory, quantum mechanics.

The experimental discovery of the golden ratio in quantum magnetism[1] is an extremely important milestone in the quest for the understanding of quantum mechanics and E-infinity theory. We full heartedly agree with the explanation and discussion given by Prof. Affleck[2] is concerned. For this reason we would like to draw attention to a general theory dealing with the noncommutativity and the fine structure of spacetime which comes to similar conclusions and sweeping generalizations about the important role which the golden mean must play in quantum and high energy physics. Maybe the most elementary way to explain this point of view is the following: Magnetism is just one aspect of the five fundamental forces of nature. In a unified picture where all the five forces melt into one it is reasonable to suspect that the golden ratio will play a fundamental role. This fact immediately follows from the work of the French mathematician Alain Connes and the Egyptian engineering scientist and theoretical physicist M.S. El Naschie. In Connes' noncommutative geometry his dimensional function is explicitly dependant on the golden mean. Similarly the bijection formula in the work of El Naschie is identical with this dimensional function and implies the existence of random Cantor sets with golden mean Hausdorff dimension as the building blocks of a spacetime which is a Cantor set-like fractal in infinite dimensional but hierarchal space. Invoking Albert Einstein's ideas connecting spacetime to geometry with energy and matter, it is clear that these golden mean ratios must appear again in the mass spectrum of elementary particles and other constants of nature. There are several places where this work can be found[3,4,5].

References

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