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Abstract quantum theory and space-time structure. Ur theory and Bekenstein-Hawking Entropy

Dhyey Dharmendra Kumar Mavani
P.P. Savani cambridge International School, Gujarat, India

We discuss the close connection between a quantum theory of binary alternatives and the local Lorentzian structure of space-time, and outline v. Weizsäcker's concept of the "ur"-the quantized binary alternative. Then space-time is introduced mathematically as a symmetric space of the invariance group of the ur. It is physically interpreted as "the" cosmological space-time, the universe. In our model spacelike structures rest on the concept of "hypermembranes"—dynamical manifolds of codimension 1 in space-time. For a given number of urs asmallest length is introduced in this cosmic model by group-theoretic arguments. Already before introducing a dynamics the concept of isolated noncomposite objects can be given. They can be understood as simple models either for elementary particles or for black holes. Identifying the maximal localized states of many urs with a localized state of a particle, we get a good description of the large cosmological numbers and also alower bound for a neutrino mass. A simple counting of the particle states given from the ur-theoretic ansatz allows an easy explanation of the Bekenstein-Hawking entropy. One can give good resons why reality cannot at all be represented by a continuous field. From the Quantum phenomena it appers to follow with certainty that a finite system of finite energy can be completely described by a finit set of numbers(quantum numbers). This does not seen to be in accordance with a continuum theory and must lead to an attempt to find a purely algebraic theory ofor the description of reality. But nobody knows how to obtain the basis of such a theory—Albert Einstein.

Biography

Dhyey Dharmendra Kumar Mavani is just 15 years old & studying as a Junior Year of High School Student for Cambridge - A level course. He has done six research projects and published in reputed international journal during his high school Study. He achieved 2nd regional awards of south asia in IACC (International Astronomy & Astrophysics competitions 2019) by scoring full 40 points. He selected for stage-2 with national top 1% in international olympaid in astronomy and astrophysics (stage-1). During 9th and 10th grade he scored full bands in total 9 advance placement exams with perfect score in 4 satsubject tests. He also achieved gold medals in various science olympaid during middle school & high school.

dbmavani@rediffmail.com

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