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**Relativity of Scale: Emergence of Quantum Behavior from Space-Time Geometry and Its Implications**[1] SHANTIKUMAR NAIR, Amrita Vishwa Vidyapeetham (University) — The paper presents the principles of the relativity of scale - a new principle which relates the nature of the space-time background to the mass and size of a particle relative to the observer. The study shows that quantum behavior can evolve from the dynamic space-time background of general relativity. In principle then it is possible to construct a complete quantum theory based on general relativity. The paper further shows that around sufficiently small particles space-time can be substantially curved giving rise to time dilation and space contraction effects as with particles moving at high velocities. The forces calculated from the space-time geometry is fully consistent with known electromagnetic forces suggesting that this can be a new approach to unify the quantum world with the macroscopic world governed by general relativity.

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