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**Constructing Universal Laws of Gravity at Short distances and Small time scales**

**Abstract**

Both Einstein's theory of General Relativity and Newton's theory of gravity possess a short distance and small time scale catastrophe. The blackhole singularity and cosmological Big Bang singularity problems highlight that current theories of gravity are incomplete description at early times and small distances. I will discuss how one can potentially resolve these fundamental problems at a classical level, and discuss various ramifications for fundamental aspects of physics from cosmology to Hierarchy problem in Standard Model of particle physics.