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Is quantum TEGR equivalent to quantum GR?

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We will review our previous work on precanonical quantization of GR and the recent work on precanonical quantization of the teleparallel equivalent of GR. Both approaches are based on Palatini formulations in vielbein variables and the analysis of constraints within the De Donder-Weyl Hamiltonian formulation which treats space and time variables on equal footing. In both theories, we obtain the generalized Dirac brackets of fundamental variables represented by differential forms. Their quantization leads to two different descriptions of quantum space-time: quantum connection dynamics in the case of GR and the quantum frames dynamics in the case of TEGR. In both cases, we present the corresponding covariant precanonical Schroedinger equations and briefly discuss the classical limit, the quantum-gravitational avoidance of singularities, the emergence of the cosmological constant, and compare the simplest quantum cosmological solutions and their potentially observable consequences.

Author: Dr KANATCHIKOV, Igor

Presenter: Dr KANATCHIKOV, Igor

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