

Igor Kanatchikov: Precanonical quantization of Yang-Mills theory and the problem of mass gap

Saturday, May 9, 2026 10:10 AM (30 minutes)

We discuss precanonical quantization of pure YM field theory, its relation to the canonical quantization in the functional Schrödinger representation, the expression of the Schroedinger wave functional as a Volterra product integral of precanonical wave functions, the emergence of a mass gap from the spectrum of the De Donder-Weyl Hamiltonian operator derived from precanonical quantization, and, briefly, relevance of this result in the context of quantum gravity and dark matter/dark energy problems. Based on I. Kanatchikov, Rep. Math. Phys. 82 (2018) 373, IJGMMP 14 (2017) 1750123; Symmetry 11 (2019) 1413; EPL 150 (2025) 59002, and a work in progress.