Title: Spinor approach to 3D Lorentzian loop quantum gravity

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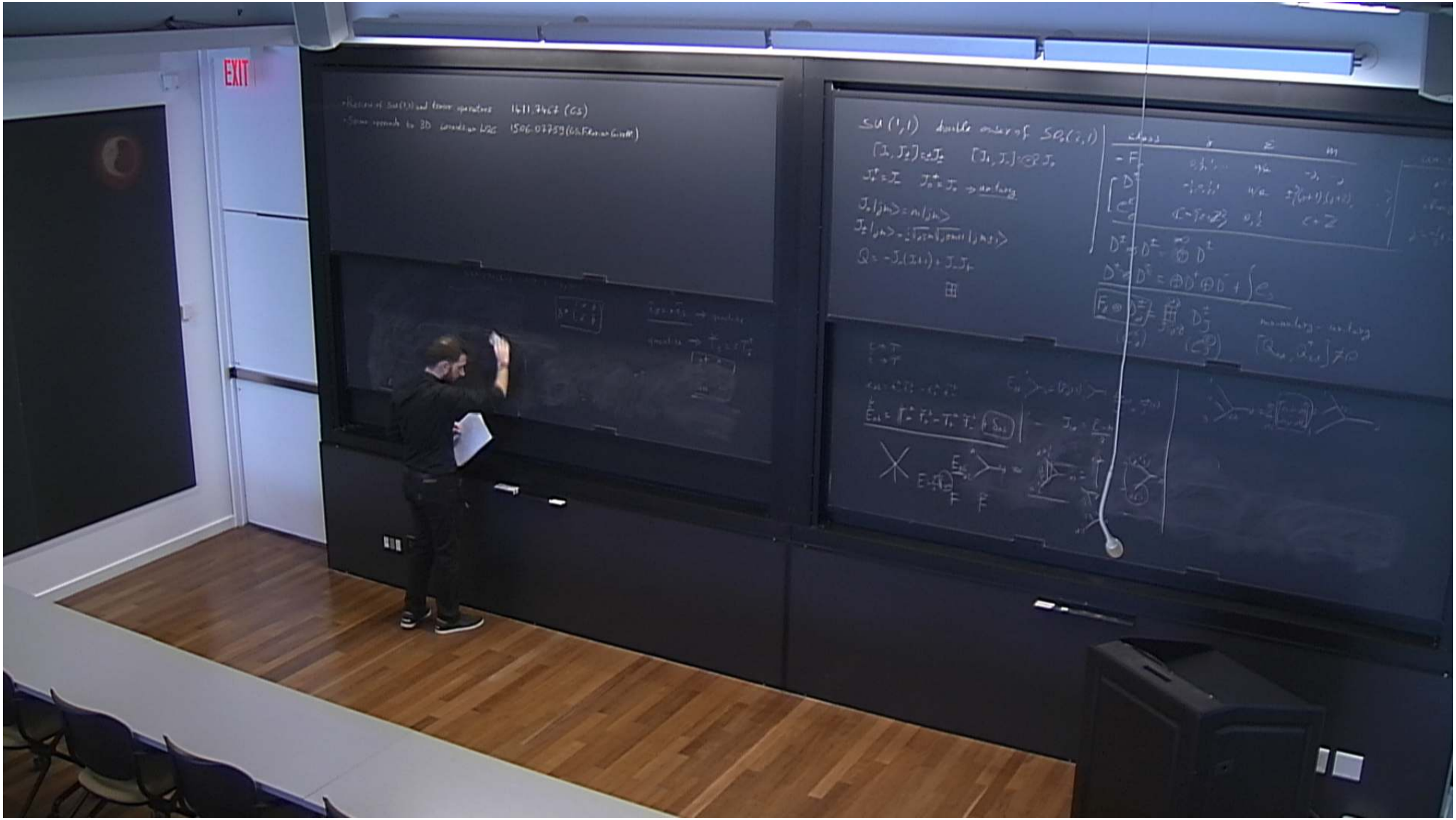
Abstract: I will present a generalization of the spinor approach of Euclidean loop quantum gravity to the 3D Lorentzian case, where the gauge group is the noncompact SU(1,1). The key tool of this generalization is the recoupling theory between unitary infinite-dimensional representations and non-unitary finite-dimensional ones, needed to generalize the Wigner-Eckart theorem to tensor operators for SU(1,1).
SU(1,1) tensor operators are used to build observables and a quantum Hamiltonian constraint, analogous to the one introduced by Bonzom and Livine in the Euclidean case. I will show that the Lorentzian Ponzano-Regge amplitude is a solution of the Hamiltonian constraint, by making use of the Biedenharn-Elliott relations (generalized to the case where unitary and non-unitary SU(1,1) representations are coupled to each other).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