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Title: "Non-locality and observables in quantum gravity"

In this talk I will discuss the problem of choosing appropriate gauge-invariant observables in quantum gravity. I will focus on the example of relational observables that can be obtained from their classical counterparts using the framework of perturbative algebraic quantum field theory (pAQFT). Applying these ideas in cosmological models reproduces in first order the standard quantities used in cosmological perturbation theory.