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A family of metric-affine f(R) theories for Loop Cosmologies

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In this talk we will review the known result that the background evolution of standard LQC can be reproduced by a covariant metric-affine f(R) theory all the way up to bounce curvatures. We will then show that other Loop Cosmologies dubbed as mLQC-I and mLQC-II, differing on standard LQC due to quantisation ambiguities related to the Lorentzian term of the Hamiltonian, also admit covariant metric-affine Lagrangians of the f(R) class reproducing the background evolutions can also be found. Remarkably, the Lagrangians reproducing LQC, mLQC-I and mLQC-II can be embedded into a three-parameter family of f(R) theories, where two parameters are fixed by initial conditions at the bounce.

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