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Dynamical black hole in a bouncing universe

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In this talk, I analyze the dynamical evolution of a black hole that is immersed in a universe that goes through a classical bounce. The black hole is represented by the McVittie metric, an exact solution of Einstein Field Equations for an inhomogeneity embedded in a Friedmann-Lemaître-Robertson-Walker cosmological background. I present a full analysis of the causal structure of the spacetime. This includes the calculation of trapping horizons, radial null geodesics, and curvature invariants throughout the cosmic time. I close the presentation with a possible interpretation of this spacetime and a discussion of the implications of the results obtained for classical bouncing cosmologies.

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