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An exact solution to the gravity of Bakry-Émery-Ricci

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Theories based on metric measure spaces generalize the Ricci tensor by adding a scalar function coupled to the metric through second derivatives. An example is the Bakry-Émery-Ricci (BER) tensor, which has been intensively studied from the mathematical point view and, in minor form, with relation to gravitational theories. In particular, it has been shown that generalized energy conditions give place to extended singularity theorems. Interestingly, certain gravitational theories beyond general relativity, such as Brans-Dicke, f(r) and scalar-tensor, among others, can be written in terms of the BER. In this talk we will solve the vacuum BER-generalized Einstein field equations with spherical symmetry and we will compare the solution with the Schwarzschild and gravitational global monopole spacetimes. Finally, an action principle will be proposed for these generalized field equations.

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