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## Regular black holes and their relationship to polymerized models and mimetic gravity

*Tuesday, 9 July 2024 15:25 (25 minutes)*

In this talk we present the analysis of the embedding of a large class of generalized LTB models in effective spherically symmetric spacetimes. We introduce a reconstruction algorithm that allows, for a large class of models, to construct from a given metric in Schwarzschild-like coordinates the corresponding effective spherically symmetric model, its dynamics as a 1+1-dimensional field theory, as well as a corresponding covariant Lagrangian of extended mimetic gravity in four dimensions. Such a reconstruction allows us to obtain Lagrangians of extended mimetic gravity models for black hole models with a regular center, e.g. of Bardeen and Hayward, as well as for effective LQG-inspired models. Moreover, the reconstruction allows us to extend static regular black hole models to exact general non-marginally bound inhomogeneous dust collapse solutions. For effective LQG-inspired models, within this formalism we can investigate and view the physical properties of the models, such as the existence of weak shell-crossing singularities and shock solutions, from a novel perspective. Concrete examples with standard LQC and an asymmetric bouncing model inspired by Thiemann regularized LQC in the LTB sector will be discussed.

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