Contribution ID: **710** Type: **Talk in the parallel session**

Superentropic black hole with Immirzi hair

Monday, July 5, 2021 5:05 PM (25 minutes)

In this talk I will report an analytic solution describing asymptotically anti–de Sitter black holes with hyperbolic horizon, derived in the context of f(R) generalizations to the Holst action, endowed with a dynamical Immirzi field. These black holes exhibit scalar hair of the second kind, which ultimately depends on the Immirzi field radial behavior. In particular, the latter is reponsible for modifications to the usual entropy law associated to the black hole and it boils down to a constant value in the asymptotic region, thus restoring the standard loop quantum gravity picture. I will then discuss the black hole thermodynamics in the extended phase space approach, proving the violation of the reverse isoperimetric inequality, which results in the superentropic nature of the black hole, and discussing the thermodynamic stability of the solution.

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