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Self-completeness and the generalized uncertainty principle MAXIMILIANO ISI, JONAS MUREIKA, Loyola Marymount University, PIERO NICOLINI, Frankfurt Institute for Advanced Studies, J.W. Goethe-Universitat — The generalized uncertainty principle discloses a self-complete characteristic of gravity, namely the possibility of masking any curvature singularity behind an event horizon as a result of matter compression at the Planck scale. In this paper we extend the above reasoning in order to overcome some current limitations to the framework, including the absence of a consistent metric describing such Planck-scale black holes. We implement a minimum-size black hole in terms of the extremal configuration of a neutral non-rotating metric, which we derived by mimicking the effects of the generalized uncertainty principle via a short scale modified version of Einstein gravity. In such a way, we find a self- consistent scenario that reconciles the self-complete character of gravity and the generalized uncertainty principle.

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