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Chronicles of regular black holes: the higher-curvature saga

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As shown by Hawking and Penrose, black holes in general relativity are doomed to contain a singularity in their interior, where even the notion of space-time breaks down. This is no longer the case for regular black holes, for which no singularities appear. In this talk, I will explain how regular black holes arise naturally as exact solutions of theories of gravity including an infinite tower of higher-curvature corrections. I will also discuss how these regular black holes are formed through dynamical collapse of matter.

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