Spontaneous black hole scalarization

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We have recently identified a class of scalar-tensor theories with coupling between a scalar field and the Gauss-Bonnet invariant that exhibits spontaneous scalarization for black holes. These scalar-Gauss-Bonnet theories formally admit all of the stationary solutions of general relativity, although they are not dynamically preferred if certain conditions are satisfied, giving rise to a novel family of black holes with scalar hair. This makes these theories interesting candidates for testing strong-field gravity phenomenology with current and upcoming gravitational-wave events. In this talk, we present the general properties of these scalarized black hole solutions and discuss their stability.