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**Quantum black holes in loop quantum gravity**

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In this contribution I will comment on the last advances in relation to the loop quantization of spherically symmetric spacetimes. I will briefly summarize the vacuum case, where the physical states and observables are known explicitly. The main physical consequences are i) a genuine discretization of the geometry and ii) singularity resolution. Afterwards I will consider the coupling with a thin spherically symmetric null-dust shell. This is one of the simplest collapse scenarios with nontrivial dynamics. I will provide a representation for the scalar constraint that is consistent with the Dirac quantization approach, and the quantum observables of the model. Finally, I comment on the possible physical consequences of this model.