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Hawking radiation in loop quantum gravity JORGE PULLIN, Louisiana State Univ - Baton Rouge, RODOLFO GAMBINI, Universidad de la Republica Oriental del Uruguay — We use the recently found exact solution representing a spherically symmetric quantum space-time to perform a quantum field theory in quantum space time analysis of a scalar field. The main influence of the presence of the quantum geometry is to yield a theory that effectively lives on a lattice due to the discreteness of space-time in loop quantum gravity. This in particular has consequences for the structure of the quantum vacua. Essentially all singular behaviors are removed by the discreteness. The resulting formula for the Hawking radiation suffers only small corrections, at least for macroscopic black holes and their natural frequencies and coincides with a formula that had been heuristically derived in the past.

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