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The Effective theory of Quantum Black holes

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We explore the quantum nature of black holes by introducing an effective frame- work that takes into account deviations from the classical results. The approach is based on introducing quantum corrections to the classical Schwarzschild geometry in a way that is consistent with the physical scales of the black hole and its classical symmetries. This is achieved by organizing the quantum corrections in inverse powers of a physical distance. By solving the system in a self-consistent way we show that the derived physical quantities, such as event horizons, temperature and entropy can be expressed in a well defined expansion in the inverse powers of the black hole mass. The approach captures the general form of the quantum corrections to black hole physics without requiring to commit to a specific model of quantum gravity.

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