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A Weyl law for black hole quasinormal modes

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In this talk, I will present a recent conjecture about a Weyl's law for black hole quasinormal mode frequencies, that recovers the structural features of the standard Weyl's law for the eigenvalues of Laplacian-like operators in compact regions. More precisely, we propose that the asymptotic behavior of the counting function of quasinormal frequencies follows a power-law depending on the dimension of space and on two structural properties of the underlying black hole geometry, namely the redshift effect, through the surface gravity, and the trapped set of null geodesics. This conjecture will be explicitly motivated on the example of the Schwarzschild black hole, and then generalized to a generic stationary black hole geometry, extending (and being inspired by) the Weyl's law proven by Dyatlov and Zworski some years ago.

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