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# Leading-order term expansion for the Teukolsky equation on subextremal Kerr black holes

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The study of wave propagation on black hole spacetimes has been an intense field of research in the past decades. This interest has been driven by the stability problem for black holes and by questions related to scattering theory. On Kerr black holes, the analysis of Maxwell's equations and the equations of linearized gravity, can be simplified by introducing the Teukolsky equation, which offers the advantage of being scalar in nature. After explaining this reduction, I will present a result providing the large time leading-order term for initially localized and regular solutions of the Teukolsky equation, valid for the full subextremal range of black hole parameters and for all spins. I will explain how such a development follows naturally from the precise analysis of the resolvent operator on the real axis. Recent advances in microlocal analysis are used to establish the existence and mapping properties of the resolvent.

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