

Exact tridiagonalization of Teukolsky's radial equation

Friday 7 July 2023 14:00 (20 minutes)

Although solutions to Teukolsky's radial equation play a key role in black hole perturbation theory, there are limitations in our understanding that obscure our practical use and application of e.g. QNM overtone solutions. Towards addressing these limitations, I'll present a collection of results that conclude with the tridiagonalization of Teukolsky's radial equation. In particular, I'll develop a scalar product space for Kerr, novel polynomials native to the space, and then examples of the exact tridiagonalization of Teukolsky's radial equation for zero, moderate, and nearly extremal black hole spins.

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