

Slow-spin black hole perturbation theory

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By deriving corrections to the Regge-Wheeler and the Zerilli equations up to second order in the spin, one can find that the two potentials are still isospectral, provided the correct choice of the tortoise coordinate. Isospectrality with slow-rotating Teukolsky equation is also verified. This result has huge implications since it provides an analytic way to perform the so-called metric reconstruction.

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