

The geometry and analysis of black hole spacetimes

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In these lectures, I will begin by describing the geometry of Schwarzschild, Reissner—Nordstrom and Kerr black hole spacetimes.

I will then turn to the problem of the mathematical analysis of wave propagation on both their exterior and interior regions.

Finally, I will put this in the context of various larger problems in general relativity, including the stability of the black hole spacetimes themselves as solutions to the Einstein equations and the structure of generic singularities in the black hole interior.