

# The quasi-normal modes of a white hole

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We linearize the Einstein equations about the Schwarzschild geometry within a Bondi-Sachs, or null cone, framework. The quasi-normal modes are those frequencies at which the perturbations are regular at both the event horizon and infinity. We develop a numerical method to find the quasi-normal modes for this problem, and present results in the simplest case,  $\ell = 2$ . The results obtained are different to the well-known values of a Schwarzschild black hole. In the present case the hypersurface on which the calculation is performed intersects only the past horizon and not the future horizon, and therefore the results obtained represent the quasi-normal modes of a white hole.