

Quasi-normal modes on black hole horizons

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The gravitational waves emitted by a perturbed black hole ringing down are well described by damped sinusoids, whose frequencies are the so-called quasinormal modes. Until recently first-order black hole perturbation theory was used to calculate these frequencies. However, it is now clear that second-order effects are also necessary to model the gravitational-wave signal during the ringdown.

In this talk, I will show that (1) the horizon of a newly formed black hole after the head-on collision of two black holes in numerical simulations also shows evidence of non-linear modes, (2) discuss recent results on second-order black hole perturbation theory with the goal to ultimately compare this with the non-linear results.

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Session Classification: Plenary talks

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