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Black hole impostors from string theory

Wednesday 28 September 2022 16:40 (20 minutes)

In this talk I will argue that “black shells”, which are spherical brane bubbles enclosing AdS spacetime can mimic black holes. Such bubbles of AdS are generically unstable, but can be stabilized at a finite radius just outside the would-be horizon of the object by dissolved D0 branes and a gas of open strings.These bubbles can arise from brane polarization effects and are natural to expect from string theory. After illustrating key features of black shells that mimic a Schwarzschild black hole, I will describe slowly spinning black shells which mimic a Kerr black hole. Remarkably, they possess a distinct observational signature in the form an independent quadrupole moment that can, in principle, be detected by astrophysical observations. I will then briefly talk about recent progress on the stability/in-stability of these objects, and highlight a highly non-trivial characteristic of these objects that warrants further study.

This talk will be based on a series of papers [1705.10172], [1712.00511], [2110.10542].

Summary

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