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Universidad del País Vasco
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Seminarios de Física Teórica
Fisika Teorikoa: Hitzaldiak

General Relativity in the limit of very many dimensions

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Abstract One hundred years after Einstein formulated General Relativity, the pivotal role of its most fundamental and fascinating objects — the black holes — is nowadays recognized in many areas of physics, even beyond astrophysics and cosmology. Still, solving the theory that governs their dynamics remains a formidable challenge that demands new ideas. I will argue that, from many points of view, it is natural to consider the number of spacetime dimensions, D, as an adjustable parameter in the theory. Then we can use it for a perturbative expansion of the theory around the limit of very many dimensions, that is, considering 1/D as a small number. We will see that in this limit the gravitational field of a black hole simplifies greatly and its equations often turn out to be analytically tractable. A simple picture emerges in which, among other things, the shape of the black hole is determined by the same equations that are used for describing soap bubbles..

Prof. A. Chamorro Seminar Room, Dept. of Theoretical Physics, Corridor 4.-2.
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