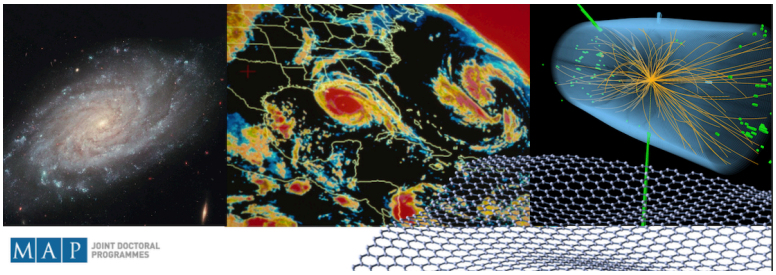

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Accretion of Generalized Chaplygin Gas onto Black Holes in an Expanding Universe

The study of the Generalized Chaplygin Gas (GCG) has established itself in recent years as an active and highly relevant field of research in cosmology. The GCG features an exotic equation of state that not only provides an effective description of the late-time accelerated expansion of the universe but also allows for the construction of a unified model of dark energy and dark matter. As a way to investigate local aspects of the model and to propose a novel method for constraining its fundamental parameters, we examine the accretion of this fluid by black holes. To incorporate the global features of the GCG into this analysis, we employ the so-called McVittie metric. In this framework, accretion is studied while accounting for the backreaction on the elements of the metric. Through a perturbative approach, we derive an expression for the black hole mass as a result of accretion. For clarity, this analysis is carried out in two distinct cosmic eras: first, in a matter-dominated era; and later, in a dark-energy-dominated era.

Which topic best fits your talk?

High Energy Physics and Cosmology

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