On the presence of bosonic clouds at the Galactic Center

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Abstract

The motion of S2, one of the stars closest to the Galactic Center, has been measured accurately and used to study the compact object at the centre of the Milky Way. It is largely accepted that this object is a supermassive black hole but the nature of its environment is still open to discussion. In this talk I'm going to show how the motion of S2 can be used to investigate the possibility that dark matter in the form of an ultralight field "cloud" clusters around SgrA*. Both the cases of a massive scalar and vector fields will be considered. I will explain the theoretical setup, the tools used to fit the available data and finally the constrains we can get on the mass of such clouds in the Galactic Center.

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