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Probing dark matter around black holes at the centers of galaxies

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The dark matter (DM) distribution in the central regions of galaxies remains poorly constrained at present. In particular, DM density profiles may be significantly affected by the presence of central black holes, leading to the possible formation of density spikes. I will discuss different avenues that can shed light on the characteristics of the DM distribution in the cores of galaxies. On the one hand, I will focus on the vicinity of supermassive black holes in the central regions of the Milky-Way or giant galaxies such as M87 and Centaurus A, in light of experiments such as Fermi-LAT, H.E.S.S., and the Event Horizon Telescope. On the other hand, there is also growing evidence for intermediate-mass black holes in smaller objects like dwarf galaxies and globular clusters. I will present gamma-ray observations that provide us with information on the inner regions of these objects.

Auteur principal: Dr LACROIX, Thomas (Laboratoire Univers & Particules de Montpellier)

Orateur: Dr LACROIX, Thomas (Laboratoire Univers & Particules de Montpellier)