

Colloque national DARK ENERGY - 2ième édition



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Can laboratory experiments help to characterize Dark Energy?

In several theoretical scenarios, a scalar field is introduced to model dark energy. While some properties of this scalar field can be constrained by cosmological observations, certain properties like its coupling with the standard model fields can be searched for with local experiments such as the ones testing for the universality of free fall and the ones using atomic clocks. Such measurements have recently been used successfully to search for scalar ultra-light dark matter candidates. In this talk, I will present some of the scalar dark matter models [1] that have been searched for using local experiments and briefly review some of the measurements that have been used to constrain these models [2,3]. Then, I will make a comparison between some dark matter and dark energy models and show how local experiments can be useful to provide additional constraints on some dark energy models.

[1] Arvanitaki, A., et al, Phys. Rev. D 91, 015015, 2015

[2] Hees, A. et al, Phys. Letters 117, 061301, 2016

[3] Hees, A. et al, Phys. Rev. D 98, 064051, 2018

Auteurs principaux: Dr HEES, Aurelien (SYRTE, Observatoire de Paris); Dr ABGRALL, Michel (SYRTE, Observatoire de Paris); Dr BIZE, Sébastien (SYRTE, Observatoire de Paris); Dr DELVA, Pacôme (SYRTE, Observatoire de Paris); Dr GUÉNA, Jocelyne (SYRTE, Observatoire de Paris); Dr MINAZZOLI, Olivier (Artemis, OCA and CSM); Dr ROBERTS, Benjamin (SYRTE, Observatoire de Paris); Dr SAVALLE, Etienne (SYRTE, Observatoire de Paris); Dr STADNIK, Yevgeny (Helmholtz Institute Mainz); Prof. WOLF, Peter (SYRTE, Observatoire de Paris)

Orateur: Dr HEES, Aurelien (SYRTE, Observatoire de Paris)