

Séminaire de physique des particules et de cosmologie

Mardi 26/02/2019, 16h00-17h00

Orme des Merisiers Salle Claude Itzykson, Bât. 774

**Symmetron modified gravity: theoretical developments
and experimental tests**

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The accelerated universe motivates the modification of general relativity, which generically introduces new degrees of freedom. One popular modification is the symmetron, a scalar field which mediates a fifth force. This theory contains a screening mechanism, a property that attenuates the fifth force in dense environments, thereby evading traditional tests of gravity. This property relies on non-linear interactions of the field, which has the unfortunate side-effect of making exact analysis difficult. I will show how exact solutions to the classical equation of motion in 1+1 dimensions may be used to better understand symmetron screening in general. I will then discuss new laboratory tests that are specifically tuned to measure screened theories. In particular I will focus on atom interferometry, which is extremely sensitive and has placed strong constraints on the symmetron's coupling parameters.
