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## The Effective Field Theory approach to dark energy and modified gravity phenomenology

*Tuesday 8 September 2015 17:30 (20 minutes)*

I will discuss the relevance of the Effective Field Theory (EFT) approach in testing modified gravity and dark energy models that aim at solving the problem of cosmic acceleration.

In particular I will review the EFT construction and its implementation into the Einstein-Boltzmann solver EFTCAMB that is a powerful and versatile tool that can be used for several objectives. It can be employed to evolve the full dynamics of linear perturbations in any given single field dark energy or modified gravity model, once the latter is mapped into the EFT formalism. It offers a numerical implementation of EFT as a model-independent framework to test gravity on cosmological scales. It has a built-in check for the fulfilment of general stability conditions such as the absence of ghost and superluminal propagation of perturbations and handles phantom-divide crossing models.

It does not rely on any quasi-static approximation but rather evolves the full dynamics of perturbations on all linear scales which is an important feature in view of the accuracy and scale range of upcoming surveys.

At last I will present some of the observational results obtained with this code and discuss its latest developments toward testing gravity with large scale structure data.

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**Session Classification:** Dark Energy