CENTRE D'ETUDES NUCLÉAIRES DE
BORDEAUX-GRADIGNAN

Lundi 28 Mai 2018

à **11H**

Un café sera servi à partir de 10h45

Mario SANCHEZ

IPNO

The two-nucleon system within Chiral Effective Field Theory

The paradigm of effective field theories (EFTs) offers an original and useful perspective in the theoretical comprehension of a number of very diverse physical problems. In this seminar, the notion of EFT will be introduced, and some concepts that are key for the construction of an EFT will be reviewed. More specifically, the utility of the EFT approach in few-body problems of nuclear physics will be discussed. A few examples of possible connections between nuclear EFT and current issues of nuclear structure and nuclear reactions will be given, too.

In the momentum regime near the pion mass (approximately 140 MeV) up to the QCD mass scale (around 1 GeV), the approximate chiral symmetry of QCD can be exploited to devise a nuclear EFT, “Chiral EFT”, in which only nucleons and pions are treated as propagating degrees of freedom. In this seminar, two novel case studies of the application of the Chiral EFT approach to the two-nucleon problem will be presented : on the one hand, a new power-counting scheme for the 0-spin, S-wave nucleon-nucleon channel will be proposed ; on the other hand, the power-counting suppression of the one-pion-exchange interaction in those 0-spin, peripheral nucleon-nucleon channels will be commented. Finally, our results will be summarized and a few ideas of research projects for the future will be mentioned.

Salle des Séminaires du CENBG

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