

# CENTRE D'ETUDES NUCLÉAIRES DE BORDEAUX-GRADIGNAN

**Judi 20 Novembre 2014**

*à*

**11H00**

*Un café sera servi à partir de 10h45*

**Guiseppe VERDE**

Institut de Physique Nucléaire (IPN), Orsay

## **Exploring nuclear systems with particle-particle correlations**

The physics of particle-particle correlation measurements and FEMTOSCOPY in nuclear reactions will be presented, with special emphasis on IMAGING techniques and the study of space-time properties of emitting processes in heavy-ion collisions. These techniques allow us to disentangle emitting processes (pre-equilibrium vs evaporation) in measured spectra thus providing tools to explore the different transient density stages of dilute and hot nuclear matter produced during the collision. The extracted information are key to explore the in-medium nuclear interaction, its corresponding equation of state and the symmetry energy, playing a key role in neutron stars and supernovae explosions.

Correlation studies also allow to explore the formation and decay properties of exotic unbound states (such as their spins, branching ratios and sequential decays) within the same experiment. Applications of similar techniques to explore  ${}^8\text{B}$ ,  ${}^{10}\text{C}$  and  ${}^{12}\text{C}$  will be shown.

The ongoing FARCOS and FAZIA projects will also be presented as experimental tools to study reaction dynamics and correlations at European low and intermediate energy accelerator facilities. Possibilities with charged particle and neutron measurements will be discussed in view of studying the density dependence of the symmetry energy.

**Salle des Séminaires du CENBG**

*Le Haut Vigneau - BP 120 - F-33175 Gradignan Cedex*