Université Paris-Saclay
IJCLab
(Laboratoire de Physique des 2 Infinis Irène Joliot-Curie)
Bât. 100, F-91405 Orsay

**Séminaire de Physique Nucléaire Théorique**

# Gogny-Based Optical Potential

**Guillaume Blanchon**
*(CEA)*

We present a nucleon elastic scattering calculation based on Green function formalism in the random-phase approximation. The finite-range Gogny effective interaction is used consistently throughout the whole calculation to account for the complex, nonlocal, and energy-dependent optical potential. Effects of intermediate single-particle resonances are included and found to play a crucial role in the account for measured reaction cross sections. Double counting of the particle-hole second-order contribution is carefully addressed. The resulting integro-differential Schrödinger equation for the scattering process is solved without localization procedures. The method is applied to neutron and proton elastic scattering from $^{4}$0Ca and $^{4}$8Ca. A successful account for differential and integral cross sections, including analyzing powers, is obtained for incident energies up to 30 MeV. Discrepancies at higher energies are related to a much-too-high volume integral of the real potential for large partial waves. This work opens the way to simultaneously assess effective interactions suitable for both nuclear structure and reactions.

**Mercredi 20 Décembre 2017**
**11 :30**
**IJCLab, Bât. 100, Salle Bâtiment 100, Salle A015**