Iniziativa Specifica NUCSYS

Title: The strongly correlated nuclear system: effective interactions, models, reactions, fundamental symmetries and applications

---

Responsabile Nazionale: Alejandro Kievsky

Unità e Responsabili Locali:

- Lecce: Luca Girlanda
- Padova: Luciano Canton
- Pavia: Carlotta Giusti
- Pisa: Alejandro Kievsky
- Torino: Maria Benedetta Barbaro
- Trento: Winfried Leidemann

Composizione dell'unità di Pisa:

Alejandro Kievsky (PR, afferenza al 100%)
Laura E. Marcucci (PA, afferenza al 100%)
Michele Viviani (PR, afferenza al 100%)

Temi di ricerca:

The present project results from a partial merging of two previous INFN projects: Few-Body Systems (FBS) and Many-Body Systems (MANY BODY), both of them intended to describe particular aspects of atomic nuclei which are relevant for the progress in the knowledge of fundamental interactions.

Argomenti seguiti principalmente a Pisa:

● Ab-initio approaches in few-nucleon systems to validate and constrain our modern understanding of the nuclear interaction and the interaction of nuclei with external probes, based on the (chiral) effective field theory (EFT) paradigm.

● Implementation of the contact three-nucleon interaction to solve discrepancies observed in polarization observables in three- and four-nucleon systems at low energies.

● Use of the pionless approach to the nuclear interaction, valid at much lower energies, in connection to universal properties of weakly bound systems.

● Systematic study of nuclear processes of astrophysical interest, as for example the A=3-6 radiative captures, of relevance for the theory of the Big Bang Nucleosynthesis.

● Accurate calculations of parity and/or time-reversal violating observables in light nuclei that will allow, when confronted to on-going experimental efforts worldwide, to address the structure of hadronic parity violation or fundamental issues like identifying sources of CP violation beyond the Standard Model.

Richieste alla sezione:

- Incontro Nazionale di Fisica Nucleare Teorica (Cortona)
  Ottobre 2021

- Electron-Nucleus Scattering (Marciana Marina)
  Giugno 2021

Queste attività sono da confermare!