From Few-Nucleon Forces to Many-Nucleon Structure
Trento, June 10-14, 2013

Main Topics

The workshop will focus on the interplay of chiral effective field theory for the construction of nuclear interactions and ab initio many-body techniques using these interactions to predict nuclear structure and reaction observables. At present there are decisive advances in both areas: The development of nuclear interactions from chiral effective field theory is reaching a stage of consistent high-precision NN plus 3N plus 4N interactions at NLO, which will soon be ready for application in nuclear structure theory. At the same time the next-generation chiral interactions are under development. The progress in nuclear many-body theory and computational techniques makes it possible to use 3N and possibly 4N interactions systematically for exact and approximate ab initio calculations. We are now able to quantify the impact of 3N interactions for a range of nuclei and nuclear structure observables and to establish constraints and provide guidance for the construction of next-generation interactions. We aim to establish a continued exchange and feedback cycle between the two areas, promoting the use of QCD-based interactions for precise and predictive nuclear structure and reaction calculations.

Key speakers include


Organizers

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