

Overview of Miniball results combined with decay spectroscopy studies for middle-mass nuclei

Tuesday 26 November 2013 14:30 (30 minutes)

Studying the region around the doubly magic nucleus ^{78}Ni with the $Z=28$ and $N=50$ shell closures is particularly interesting for testing the validity of the contemporary nuclear models and for unraveling new aspects of the interactions used in these models. Especially the evolution of single-particle and collective phenomena between the harmonic oscillator shell closure at $N=40$ and the shell closure at $N=50$ challenges our understanding of the nuclear structure. In recent years, intense experimental and theoretical work has resulted in a substantial progress in our understanding of the nuclear structure in this region, but still several questions remain. A large part of the experimental data available has been obtained at ISOLDE exploiting Coulomb Excitation reactions at safe energies with the Miniball setup. In recent years the availability of a system for measuring transfer reactions has extended the possibilities of Miniball. With this setup it is even possible to perform transfer reactions using a radioactive beam and a radioactive tritium target. These results have been complemented by the data coming from decay spectroscopy, like the beta-decay studies of neutron-rich Mn isotopes.

In this contribution we will highlight some of the physics results from several experimental campaigns. An outlook to the opportunities in decay spectroscopy with the new Isolde Decay Stations (IDS) and in nuclear reactions at HIE-ISOLDE will be presented.

Elisa Rapisarda for the Miniball Collaboration

Primary author: RAPISARDA, Elisa (CERN)

Presenter: RAPISARDA, Elisa (CERN)

Session Classification: Structure Medium Mass Nuclei