

## Physics Cases and Instrumentation for the EURISOL-DF, next step towards Eurisol



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### Physics with light exotic beams

The region of the nuclear chart corresponding to light nuclei has, over the years, yielded many surprising results, among others the discovery of the halo structure in the neutron dripline nuclei. This region of the nuclear chart is also rich of many other phenomena like the appearance of molecular-like structures where  $\alpha$ -particle-clusters are bound together by the exchange of neutrons or the existence of cluster configurations where at least one of the clusters is a weakly bound nucleus.

The availability of post-accelerated radioactive ion beams in the 1-20 MeV/u region will open new opportunities to study the atomic nucleus as nuclear reaction studies below and above the Coulomb barrier will become possible. These studies should result in physics observables that can be compared to state-of-the-art theory and advance our understanding of the nuclear structure and reaction dynamics.

In this talk an overview of some of the new phenomena involving light exotic RIBs will be given and future perspectives discussed.

**Author:** Dr DI PIETRO, Alessia (INFN-Laboratori Nazionali del Sud)

**Presenter:** Dr DI PIETRO, Alessia (INFN-Laboratori Nazionali del Sud)