Dep. Física Atómica, Molecular y Nuclear
Universidad de Sevilla

SEMINAR ANNOUNCEMENT

"Two-nucleon correlations in light exotic nuclei: The ^{11}O case"

by

Dr. Jesús CASAL BERBEL

*ECT** (Trento, Italy)

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Abstract

In the past few decades, the development of Radioactive-Ion Beam (RIB) facilities has enabled the study of nuclei far from stability. A strong effort has been devoted to understand the structure and decay modes associated with the exotic properties of these systems. Of particular interest is the case of the so-called halo nuclei, formed by a compact core and one or more weakly-bound nucleons which give rise to a diffuse matter distribution. Typical examples for two-neutron halos are 6He and 11Li, whose mirror partners are the proton-unbound systems 6Be and 11O. Interestingly, the 6Be ground state decays via a correlated two-proton emission, showing a clear symmetry with the two-neutron halo in 6He. The situation for 11Li/11O is less clear, as little is known about 11O and the breaking of mirror symmetry along light isobaric chains has been a long-debated problem.

I will present core+N+N calculations to study the correlation of the valence nucleons in three-body systems. I will validate the method with 17Ne(15O+p+p), whose ground state presents a strong diproton configuration, and 16Be(14Be+n+n), an unbound two-neutron emitter. Then, I will study the mirror symmetry in 6He(4He+n+n)/6Be(4He+p+p) and 11Li(9Li+n+n)/11O(9C+p+p).