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The 9,11Li+64Zn experiment within a systematical nuclear reactions program

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Exotic nuclei play a fundamental role in the stellar processes, such as the r-process in the stellar nucleosynthesis. Their study on Earth allows us to test the validity of models used with stable nuclei in these species, in order to better understand such processes. In this talk, we will discuss the experiment S1847, where the 9,11Li + 64Zn reactions were measured, for the first time. We will present the experimental set-up used for these measurements, as well as the data analysis and the main preliminary results. Results will be compared with previous ones obtained for 9,11Li + 208Pb. Furthermore, we will compare the experimental data with different theoretical calculations, based mainly on different optical model (OM) approaches, assuming the double folding (DF) São Paulo potential (SPP). Beyond the exotic nuclei, light weakly bound nuclei are involved in numerous interstellar reactions, at low energies. In this talk, we will show the new research line of nuclear reactions experiments with weakly bound projectiles colliding on light targets, at energies around the Coulomb barrier, carried out at the National Accelerators Center (CNA) in Seville, Spain. This research line is part of a wider systematical study developed for exotic and stable, tightly and weakly bound, nuclei reactions performed within the Ibero American Network of Nuclear Astrophysics (IANNA) collaboration.

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