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Lifetime Measurements in Neutron-rich Cu isotopes

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In this work, we present the preliminary results obtained in the experiment of “Lifetime Measurements in Neutron-rich Cu isotopes” performed at Laboratori Nazionali di Legnaro (Italy) in June 2010. The aim of the experiment has been to measure lifetime of excited states in neutron-rich nuclei in the region of 78Ni , in particular Ni and Cu isotopes, using the recoil distance Doppler shift method (RDDS). The states have been populated in a multi-nucleon transfer reaction between a $\text{Ge}76$ beam of 577 MeV energy and a $\text{U}238$ target of 1.5 mg/cm² together with a 1.4 mg/cm² thick Ta backing. The target was mounted together with a Nb degrader foil of 4.2 mg/cm² thickness in a compact Plunger device, provided by the University of Cologne. The projectile-like reaction partners have been identified using the PRISMA magnetic spectrometer, which was positioned at 55° with respect to the beam axes, close to the grazing angle, while γ rays were detected by the AGATA Demonstrator located at backward angles sensitive to their Doppler shift. Only four of the five clusters were available for the experiment. Therefore the efficiency of the system was about 3-4%. The results of the work will be discussed in detail at the talk.

Primary authors: SAHIN, Eda (LNL, INFN); DONCEL, Maria (University of Salamanca)

Co-author: ET AL, – (–)

Presenter: DONCEL, Maria (University of Salamanca)

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