Contribution ID: **195** Type: **Poster**

New Results on Excited States in the one-particle one-hole nucleus 56Co measured with Miniball detectors

In the work presented here we have studied the mainly fusion-evaporation 56Fe(p,n)56Co reaction with an incident 10 MeV proton-beam. The gamma radiation emitted in the de-excitation of the excited odd-odd 56Co nucleus was measured in-beam with four high-purity germanium (Ge) MINIBALL-triple detectors. The MINIBALL array is a γ-ray spectrometer optimized to achieve a high photo-peak efficiency in combination with position sensitivity γ-ray detection. The experiment was performed at the Maier-Leibnitz-Laboratory (MLL) of the Technische Universität München (TUM, Germany). This work was partly motivated by a 56Zn-decay experiment performed at GANIL (Caen, France) which populated the excited states in 56Cu, the mirror nucleus of 56Co.

The complex level scheme of 56Co was constructed mainly based on the analysis of the gamma-gamma coincidences. The angular distributions of the gamma-rays were also analysed and allowed us to assign spin-parity values to most of the excited states in that nucleus. Despite the extensive work previously done studying the 56Co nucleus, the experiment presented in this work has resulted in a large improvement in the knowledge of its structure. The experimental results were compared with large-scale shell-model calculations with the ANTOINE and NuShellX@MSU codes. On the other hand, the study of the isospin mixing between two 0+ states in 56Co (the IAS of 56Feg.s. and a nearby state) was one of the main motivations of the thesis. The determination of the M1 transition intensities from both states offered new and relevant information about the effects associated to the relative phases of the isospin-mixed states and showed that these two states decay in a different way.

Primary authors: MONTANER PIZA, Ana (Istituto Nazionale di Fisica Nucleare); RUBIO, Berta (CSIC Valencia); MUECHER, Dennis (TU Munich); ORRIGO, Sonja (IFIC-CSIC Valencia, Spain); GELLETLY, W. (Surrey University, Surrey, United Kingdom); AGRAMUNT, J. (Instituto de Física Corpuscular IFIC (CSIC-Univ. Valencia), Valencia, Spain); ALGORA, Alejandro (IFIC (CSIC-Univ. Valencia)); GUADILLA, V. (Instituto de Física Corpuscular IFIC (CSIC-Univ. Valencia), Valencia, Spain); REICHERT, S. (Technische Universität München (TUM), Munich, Germany); HELLGARTNER, Dominikus (Technische Universität München, Physik Department); BENDER, C. (Technische Universität München (TUM), Munich, Germany); FUJITA, Yoshitaka (Research Center for Nuclear Physics, Osaka University); GANIOGLU, E. (Istanbul University, Istanbul, Turkey)

Presenter: MONTANER PIZA, Ana (Istituto Nazionale di Fisica Nucleare)

Session Classification: POSTER SESSION