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Simulation of GRETINA Lifetime Experiment CODY LITTLEY, HIRONORI IWASAKI, ANTOINE LEMASSON — In order to understand properties of exotic atomic nuclei, the research group has developed a method to measure the rate of decay of excited states in certain unstable isotopes, for example 66Fe [1]. By measuring the Doppler shift of gamma rays with a so-called plunger device [1] it is possible to deduce with great accuracy the excited-state lifetime. This technique, which is called the Recoil Distance Doppler-shift Method, has precision on the order of one pico second. I will present the development a simulation software package which will help the research team to quantize and to analyze the data from experimental runs. This software is based upon existing software which was used for simulations of the SeGA project. It has been modified to support the GRETINA detector, which is used in the experimental setup for the lifetime measurements. The software makes use GEANT and ROOT toolkits, which are essential for the calculations of the interactions of particles with the detector and the recording of that data.

[1] W.Rother et al., Phys. Rev. Lett. 106 (2011) 022502

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