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Detection of High-Energy Gamma Rays with GRETINA EDANA MERCHAN, Department of Physics, University of Massachusetts Lowell, Lowell, MA,, MARIO CROMAZ, C.M. CAMPBELL, HEATHER CRAWFORD, Nuclear Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA, USA, TORBEN LAURITSEN, Physics Division, Argonne National Laboratory, Argonne, Illinois, USA, AMEL KORICHI, Centre de Spectromtrie Nuclaire et de Spectromtrie de Masse, IN2P3/CNRS Orsay, France — Recent experiments performed with the new tracking device GRETINA has given valuable insight on the properties of nuclei over a wide area of the nuclear chart. This new type of array has the ability of measure high gamma multiplicity reactions, fast-moving ions emissions and high energy gamma events, the later one is the problem addressed here. It is well known that the pair production cross section become important for gamma rays with energies of several MeV as the photo-electric cross section decreases. Identifying events that undergo pair production and reconstruct their full energy is one of the goals of the tracking algorithm used in the data analysis. The selection of pair production events is realized by considering the positions and relative distance of the interaction points within the detector. A study using GEANT4 simulations has been carried out to improve the pair-production selection efficiency in the tracking algorithm. The new analysis algorithm is being tested with a data set of ^{24}Mg(p,n)^{24}Al, which decays back to ^{24}Mg via β decay, collected with the GRETINA array at LBNL, where γ-rays of more than 7 MeV in the ^{24}Mg de-excitation process have been detected.

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