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The neutron-gamma discrimination using ^{252}Cf source with four AGATA triple clusters

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A test experiment was performed at LNL (Padova) with four AGATA Triple cluster (ATC) detectors and a 60 kBq ^{252}Cf source placed at a distance of about 50 cm from the ATC:s. Gamma rays from the spontaneous fission decays were measured by 16 HELENA BaF₂ detectors which were used for hardware triggering and as a time reference for the time-of-flight (TOF) measurement. The aim of the experiment was to investigate the possibilities of discriminating neutrons and gamma rays in AGATA, for example by differences in TOF or pulse shapes, as well as to study the effect of neutrons on gamma-ray tracking. The preliminary results show that the neutron background can be suppressed by tracking, in agreement with our earlier simulation results. The neutron background may become a serious problem in future experiments with neutron-rich radioactive ion beams and in experiments where low background in the cleanness of the gamma-ray spectra is of utmost importance. Preliminary results from the analysis of the data obtained in the experiment will be presented.

Autori principali: ATAC, Ayse (Ankara University); SENYIGIT, Menekse (Ankara University); AKKOYUN, Serkan (Cumhuriyet University); KASKAS, ayse (Ankara University)

Coautore: GOTTARDO, Andrea (INFN, Laboratori Nazionali di Legnaro, Padova); MENGONI, Daniele (University of West Scotland); BAZACCO, Dino (Dipartimento di Fisica e INFN Padova); SAHIN, Eda (LNL-INFN, Padova); FARNEA, Enrico (Dipartimento di Fisica e INFN Padova); RECCHIA, Francesco (Dipartimento di Fisica e INFN Padova); CAMERA, Franco (Dipartimento di Fisica e INFN Milano); DOBON, J. J. Valiente (LNL-INFN, Padova); LJUNGVALL, Joa (CNRS, IN2P3, CSNSM, F-91405 Orsay); NYBERG, Johan (Uppsala University); PELLEGRI, Luna (Dipartimento di Fisica e INFN Milano); PALACZ, Marcin (Heavy Ion Laboratory, University of Warsaw); BENEDICTE, Million (Dipartimento di Fisica e INFN Milano); SODERSTROM, Par-Anders (Uppsala University); KEMPLEY, Ryan (University of Surrey); BRAMBILLA, Sergio (Dipartimento di Fisica e INFN Milano); RIBOLDI, Stefano (Dipartimento di Fisica e INFN Milano)

Relatore: SENYIGIT, Menekse (Ankara University)

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