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Novel large scintillator arrays for RIB facilities

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The advent of radioactive ion beam facilities, both in Europe (FAIR, SPIRAL2, SPES, HIE-ISOLDE and, in the future, EURISOL) and worldwide (e.g. FRIB, RIKEN) is expected to give access to unreachable so far exotic nuclei and exotic processes. This in turn demands development and usage of highly efficient and dedicated instrumentation. For gamma ray detection with high-energy resolution large germanium arrays, possessing tracking capabilities, are being constructed (AGATA or GRETA). But recent progress on scintillator materials, offering medium energy resolution and very good timing resolution (e.g. LaBr₃), allowed to design and start constructing novel large scintillator arrays. They may be complementary to the germanium arrays, and replaced them in physics cases where highest energy resolution is not priority (very exotic nuclei or fast beams), but the highest efficiency or time resolution are a must. In the talk the development of large scintillator arrays aiming at specific physics cases will be overviewed, starting from the Milano-Copenhagen-Krakow HECTOR+HELENA array, via new projects as HECTOR+, PARIS, SHOGUN and others, and finishing with the CALIFA project. Also the synergies between those projects will be discussed, exemplified by the recent GANAS@NUPNET project.

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