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Nuclear Structure Studies with Radioactive Beams at 10-50 MeV/nucleon

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Secondary beams of radioactive nuclei open up new opportunities in nuclear structure studies and also bring extra requirements for position sensitive detectors. Individual incident beam particles often need to be tracked, and then the angles and energies of reaction products need to be recorded with extraordinarily high efficiency to compensate for low beam currents of less than 100,000 per second. The UK-led TIARA and CHARISSA collaborations have built and exploited detection systems for charged particles, and TIARA extends also to include position dependent gamma ray detection with segmented Ge in the EXOGAM array. The charged particle detection mainly exploits double-sided and resistive Si strip detectors, but supplemented by CsI scintillators and gas filled drift chambers. The implementation and use in experiments of CHARISSA and TIARA at the GANIL laboratory in France will be described, with examples and an indication of future developments.

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