Contribution ID: **79** Type: **working group on synergies in instrumentation**

Active target ACTAR for the low-energy short-lived radioactive SPIRAL2 beams

Monday, 7 June 2010 18:00 (10 minutes)

The active targets (AT) are promising tools for the study of low-energy short-lived radioactive beams available in the next decade at SPIRAL2, HIE-ISOLDE, NSCL and RIKEN. They are based on a gaseous ionization detector for the measurement of the incoming radioactive ions and their particle decay stopping in the volume. Alternatively, the nuclei of the gas can interact as a target with the beam to study induced direct reaction in inverse kinematics. The active targets provide high efficiency, low detection threshold and ion tracking capabilities allowing angular distribution and energy measurements. The validity of the method has been demonstrated with the first generation of detection set-ups developed at Bordeaux [1] and Ganil [2-3]. The ACTAR (Active TARget) collaboration aims to build a new active target, working as a time-projection chamber (TPC), able to record the 3D-tracks of ionizing particles passing through the gas volume and to work with medium-mass high-intensity radioactive beams. The ACTAR joint research initiative has promoted an R&D program gathering 9 European laboratories led by Ganil to define the characteristics of ACTAR [4], namely a highly segmented cathode (25 pads/cm2) representing more than 10'000 electronic channels, having a large dynamic range (both in energy and time), self-triggering and high-data rate capabilities. A specific R&D program called GET (General Electronics for TPC) has been started by IRFU/Saclay, CENBG/Bordeaux, GANIL/Caen and NSCL/MSU to build in a 4-year plan a generic front-end electronics for AT-TPC. The French ANR and US agencies have already funded the project. It will be a modular scale-free system able to read various AT-TPC within the ACTAR specifications.

[1] J. Giovinazzo et al., Phys. Rev. Lett. 99 (2007) 102501
[2] C. Demonchy et al., Nucl. Instrum. Methods A 583 (2007) 341.
[3] I. Tanihata et al., Phys. Rev. Lett 100 (2008) 192502.
[4] H. Alvarez Pol, ActarSim, http://fpsalmon.usc.es/r3b/ActarSimACTAR.shtml
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Is this an invited talk? (please answer yes or no)

no

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no

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yes

Are you a student, postdoc or an attendee from an "emerging"country and would like to apply for financial support?

no

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