

Targets' control systems for S3

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In the first phase of exploitation of SPIRAL-2, the LINAG beams will be delivered to the NFS (Neutrons For Science) and S3 (Super Separator Spectrometer) experimental halls. These instrumentations were designed according to the Letters of Intent submitted by a large physics community [1]. With S3, special emphasis is on the study of rare nuclei, such as superheavy elements and neutron-deficient isotopes, produced by fusion evaporation reactions. The spectrometer includes a rotating target [2] to sustain the high-energy deposition, a two-stage separator (momentum achromat followed by a mass spectrometer) that can be coupled to the implantation-decay station SIRIUS or to a gas catcher[3].

In order to cope with the very low production rate of the rare events, the beam intensities will be higher by a factor of five to ten compared to the present ones. Then, a major experimental concern is the behavior of thin targets under these highly intense heavy ion beams.

We propose to report on the targets control systems envisaged for S3 targets stations with a description of the experimental set-up (electron gun and infrared camera) and an overview of the present results.

[1] SPIRAL2 Letters of Intent: <http://pro.ganil-spiral2.eu/spiral2>

[2] Ch. Stodel et al, Journal of Radioanalytical and Nuclear Chemistry, (DOI) 10.1007/s10967-015-3936-5

[3] J. Piot and the S3 collaboration, Acta Phys. Pol. B 43 (2012)

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