Contribution ID: **70** Type: **not specified**

New concept for beam loss monitoring based on fast neutron detection with Micromegas

The new hadron accelerators under construction will have much higher intensity and power than the actual ones. For example, the European Spallation Source (ESS), a neutron source, located in Lund (Sweden), will produce 5MW proton beam (up to 2 GeV). For the safe and efficient operation of such an accelerator, it is critical to continuously monitor the beam losses and even shut down the beam in a short time after a dangerous beam loss is detected. For the standard Beam Loss Monitors (BLM) the emitted X-rays and photons produced in the superconductive accelerators due to high electric fields may present a real problem since no discrimination can be made from cavity and beam loss contributions.

We propose a new concept for BLM to detect fast neutrons using Micromegas technology (nBLM). They are designed to be highly sensitive only to fast neutrons while being insensitive to X-rays and photons. Different types of moderators and neutrons-to-charge convertors are used to tune the sensitivity, the detection efficiency and the response time of the system, to meet the desired requirements. This new concept will be presented in this work.

Primary authors: SEGUI, Laura (CEA); PAPAEVANGELOU, Thomas (CEA/IRFU,Centre d'etude de Saclay Gif-sur-Yvette (FR))

Presenters: SEGUI, Laura (CEA); PAPAEVANGELOU, Thomas (CEA/IRFU,Centre d'etude de Saclay Gif--sur-Yvette (FR))