



Contribution ID: 89

Type: Talk

Tracking of low energy heavy ions with emissive foil detectors

The tracking of low energy ($<5A.MeV$) heavy ($Z>10$) ions faces a major difficulty: these particles strongly interact with matter and their trajectories are then perturbed. The resulting energy straggling and, more important, the angular straggling can strongly degrade the precision of the measurements. That is the reason why we must use detectors that are as thin as possible. We will present here the different studies we have performed on emissive foil detectors. Such kind of detectors needs only one thin foil on the ion trajectories. While the ion cross the foil, secondary electrons are emitted. They are accelerated by an electric field and possibly focused by a collinear magnetic field if a good spatial resolution is required. They are guided toward a secondary electron detector (SeD) that will amplify the signal, thus allowing for the measurement of the time of the passing ion and for the reconstruction of their position on the emissive foil. We will focus here on the use of low pressure gas detectors as SeD, either Multiwire proportional counters or Micromegas based chambers. We will present the very good performances we have obtained during laboratory and in-beam tests on the counting rate and time resolution. Finally we will present existing and future applications for such detectors.

Author: DROUART, Antoine (CEA)

Presenter: DROUART, Antoine (CEA)