



ID de Contribution: 28

Type: **Talk**

innovative 4Demittancemeter

mardi 29 mai 2018 15:25 (20 minutes)

The emittance is an essential feature to measure for an accelerator beam. It describes the behavior of the beam at each longitudinal position. For the time, the Alisson scanner is the most used system to qualify the emittance of a proton beam. However, this type of measurement has a default: it is a two-dimensions diagnostic. It means that it can only measure the position and angular repartition of the intensity belong one transverse axis at a time.

The purpose of the 4Demit project is to develop an innovative four dimensions emittance meter (measure the emittance belong the two transverse axis at the same time). The pepper pot principle is the basis of the diagnostics. In addition, the realization of each part has been complex because of the large range of beam to qualify.

After 4 years of development and realization, the prototype of 4Demit has been tested for the first time in March 2018 on the beam injector FAIR.

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Classification de Session: Accelerator Physics