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Characterization Bench Dedicated for Focused Ion Beam Sources

Focused Ion Beam (FIB) column is an optical instrument that allows the production of ion beams with spots size down to few tens of nanometers. FIB is today an essential technology used for micromachining as well as microscopy. The resolution of the FIB is driven by the ion source properties, brightness, energy spread and angular density and also by aberrations induced by optical elements of the column.

In order to develop new ion sources dedicated to FIB applications, we designed a characterization bench for ion sources and optical elements that allows:

- The measurement of the 4D emittance using 2D Allison scanner principle. For fast acquisition, we adapted electronic from microscopy.
- An energy spread measurement using a retarding electric field.

The bench was tested on well-known ion sources such as Gallium Liquid Metal Ion Source to validate it in a first time and after that, compact RF Plasma Ion Source has been characterized.

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