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Characterization of SPIDER Beam Optics with Visible Cameras

The optics of the negative ion beam of SPIDER experiment is characterized by studying the width of the accelerated beamlets when varying the experimental conditions. The beam, which is composed by many beamlets, is observed by 15 visible cameras, and a multi-Gaussian fit of their profiles provides the width, the position and the intensity of the different beamlets, giving a spatial profile along the beam of these quantities. In particular, the optics is characterized as a function of the extraction and acceleration voltages, biase current and source pressure. Operation without caesium and with caesium evaporation are compared, by studying the link between the beamlet width and the accelerated negative ion current.

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