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Developments and characterization of a gas jet ionization imaging optical column

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Standard methods of measuring the transverse beam profile are not adaptable for sufficiently high-intensity beams. Therefore, the development of non-invasive techniques for extracting beam parameters is necessary. Here we present experimental progress on developing a transverse profile diagnostic that reconstructs beam parameters based on images of an ion distribution generated by beam-induced ionization. Laser-based ionization is used as an initial step to validate the electrostatic column focusing characteristics, and different modalities, including velocity map imaging. This paper focuses on measurements of the ion imaging performance, as well as the dependence of Ion intensity on gas density and incident beam current for low-energy electron beams (<10 MeV).

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Footnotes

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Yes

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