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Extraction of high-charge state neon and krypton from the D-Pace Penning ion source test stand

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D-Pace has a self-heated hot-cathode Penning ion source test stand at their Ion Source Test Facility (ISTF). High-charge state production of boron, arsenic, and phosphorous is interesting to the ion implantation industry, as it allows for higher energy implants of these dopants using the same accelerating gradient in a given accelerator system. We use Neon and Krypton as proxy gases to investigate whether the Penning ion source could be used for high-charge state production in ion implanters. We were able to produce charge states up to Ne^{3+} ($> 200 \text{ e}\mu\text{A}$) and Kr^{6+} ($> 7 \text{ e}\mu\text{A}$). The obstacles in using the current Penning ion source test stand are discussed, with comments on how to potentially increase the current output, stability, and lifetime of this ion source.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: SAVARD, Nicolas (British Columbia University)

Co-authors: MUNICH, Justine (Dehnel - Particle Accelerator Components & Engineering, Inc.); DEHNEL, Morgan (Dehnel - Particle Accelerator Components & Engineering, Inc.)

Presenter: MUNICH, Justine (Dehnel - Particle Accelerator Components & Engineering, Inc.)

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