Contribution ID: **138** Type: **Poster (by default)**

Characterization of a Broad Beam Ion Source Converted into a High Intensity Deuterium Beam

Avalanche Energy is developing deuterium ion beams for the Orbitron fusion concept. For these and similar projects, modification of off-the-shelf high current ion sources enables affordable and rapidly accessible alternatives to custom-built systems. We have successfully operated the Veeco Mark 1 broad beam source on deuterium to create multi-keV energy ions. By applying custom optics and steering downstream of the source, we focused and collimated the beam into the Orbitron through a ¼ inch downstream orifice.
To characterize the beam's spread and losses, we implemented a series of faraday cup, wire probe and Bergoz induction coil diagnostics throughout the beam path. These measurements provided feedback to our optics design choices and allowed for a rapid design and iteration loop to maximize current delivered to the Orbitron. Moreover, the species and energy content of the ion beam was characterized using a Thomson Parabola developed in house. These tools showed a predominantly D2+ beam with over 1 mA of beam current delivered to the system.

Funding Agency

Email Address

vpodolsky@avalanche.energy

I have read the Code of Conduct to attend ICIS2023.

Yes

Presenter if not the submitter of this abstract

Vladlen Podolsky

Primary author: Dr PODOLSKY, Vladlen (Avalanche Energy)

Co-authors: Dr LANGTRY, Robin (Avalanche Energy); Mr SCHIPMANN, Scott (Avalanche Energy); HEPNER, Shadrach (Avalanche Energy Designs)

Presenter: Dr PODOLSKY, Vladlen (Avalanche Energy)

Session Classification: Tuesday

Track Classification: Beam Formation, Extraction, Transport, and Diagnostics