



Contribution ID: 982 Contribution code: TUPA121

Type: **Poster Presentation**

Design and optimization of a proton source extraction system for the JAEA-ADS linac

Tuesday, 9 May 2023 16:30 (2 hours)

The Japan Atomic Energy Agency (JAEA) is designing a 30 MW continuous wave (cw) superconducting proton linear accelerator (linac) for the Accelerator Driven Subcritical System (ADS) proposal. The JAEA-ADS linac's source must provide a proton beam over 20 mA with an energy of 35 keV and a normalized rms emittance of less than 0.1π mm mrad. As the extraction system determines the beam properties and quality, systematic optimizations in the geometry and input values of the extraction system design were conducted using the AXCEL-INP 2-D simulation program to satisfy the goal requirements. This work describes the extraction system design and reports the beam dynamics results of the first study for the proton source of the JAEA-ADS linac.

Funding Agency

Footnotes

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Yes

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Session Classification: Tuesday Poster Session

Track Classification: MC3: Novel Particle Sources and Acceleration Techniques: MC3.T01: Proton and Ion Sources