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First Beam Through the Superconducting Linac of ESS

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The European Spallation Source in Lund, Sweden, is a facility under the final stages of its commissioning process, with the first user program planned in 2027. The 600 m long proton linac underwent beam commissioning in Spring 2025 with first beams through the superconducting part of the accelerator and to the tuning beam dump. This last commissioning run aimed to test all the critical linac components and establish their operations, as well as to establish a stable beam with the final energy larger than 800 MeV at a low beam intensity and short pulse length. These were achieved, and a low-power beam of 6 mA and 5 µs pulse length was successfully accelerated to 810 MeV. Basic tuning schemes, such as phase scans, for setting cavity amplitudes and phases, and beam steering, were also successfully tested. This paper will give an overview of the results from this commissioning phase and the challenges ahead for the initial operations.

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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