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Status and plan of the European Spallation Source proton linac beam commissioning

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The European Spallation Source is a spallation neutron source driven by a superconducting proton linac and currently under construction in Lund, Sweden. The proton linac of a 5 MW design power, with a 62.5 mA peak current, 2.86 ms pulse length, and 14 Hz repetition rate, is undergoing staged beam commissioning towards the initial user operation planned in 2026 at a reduced power of 2 MW. In 2022, beam was accelerated up to 21 MeV with the first tank of a drift-tube linac (DTL), consisting of five tanks. Following the commissioning step this year (2023) up to the fourth DTL tank and 74 MeV, low power beam commissioning through superconducting structures is planned for the next year (2024), up to 570 MeV and against a beam dump. The last beam commissioning step prior to the initial user operation, when the beam is sent to the spallation target, is planned for 2026. This paper provides a summary of the past beam commissioning activities and presents the current strategy for the upcoming beam commissioning steps, including machine configuration at each step.

Funding Agency

Footnotes

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Yes

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