



Commissioning of ESS superconducting linac

Monday 22 September 2025 11:00 (20 minutes)

The SCL is an in kind contribution to ESS by IJCLAB (spoke cavities and cryomodules), INFN (Medium Beta Cavities), STFC (High Beta cavities) and CEA (all elliptical cryomodule assembly). Spoke cryomodules have been tested at FREIA facility in Uppsala (Sweden) and elliptical cryomodules have been tested at the ESS Test Stand 2 in Lund. The installation of 27 cryomodules (13 spokes, 9 medium beta and 5 high beta elliptical) was completed in summer 2024, providing a 2 MW beam power capability on a neutron production target for the first operation phase of the facility. The ESS superconducting linac cool down to 4 K started in December 2024, followed by the non-on resonance cold coupler conditioning of all 82 superconducting cavity couplers (26 spoke, 36 medium beta and 20 high beta elliptical). Stable 2 K conditions were reached in January 2025, followed by the tuning to resonance and the start of cavity conditioning process to nominal operation parameters. The preparation of cavities for stable beam operation is currently ongoing, after recovering from infrastructure outages that resulted in cryoplant failure and full unintentional warmup cycle. Beam operation, first in the normalconducting front end and then to the temporary beam dump will start on March 19th. In the talk we summarize the experience of cryomodules commissioning in the ESS linac and compare tot the site acceptance test of the cryomodules and the factory acceptance tests of the cavities at the in kind partners.

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Yes

Footnotes

Funding Agency

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