

Update on ESS-Bilbao RFQ linac

Monday 26 August 2024 16:00 (2 hours)

The ESS-Bilbao RFQ fabrication is completed. The RFQ will operate at 352.2 MHz and will accelerate a 45 mA proton beam from 45 keV up to 3.0 MeV. The RFQ is build up of 4 copper segments, for a total length of 3.2 m. Each segment is composed of 4 subparts, 2 major and 2 minor vanes, that are assembled together by using bolts, vacuum and RF gaskets, with no brazing used in the procedure. This approach enables possible corrections in the assembly. The machining of all the segments has now finished. The RFQ structure has been assembled and the several tests have been carried out on it. In this paper we present aspects of the mechanical fabrication of the RFQ, the results of the vacuum tests of the whole structure, with all the tuners and couplers inserted. The low power RF measurements, frequency spectrum, quality factor and tuning operations by bead pull technique. Fabrication and testing of the components (tuners, couplers, pickups) are also presented. The operation of the RFQ is initially planned for low duty cycle, simplifying water cooling engineering and couplers design. The tests at low duty cycle will enable to define the required facilities for the use of the RFQ at its nominal power for future steps.

Footnotes

Funding Agency

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