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High Intensity Proton Injector for the Fair P-Linac

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For the FAIR anti-proton research the compact proton linac will produce proton beams with energy of 70 MeV that will be injected into upgraded Heavy Ion Synchrotron (SIS 18), accelerated to 4 GeV, and further accelerated to 30 GeV in SIS 100. The commissioning of the proton injector which would serve for the injection into the proton linac is already started at CEA/Saclay. The ion source operates with a microwave frequency equal to 2.45 GHz based on electron cyclotron (ECR) plasma production with two coils each with 87.5 mT magnetic field will deliver 100 mA proton beam at 95 keV energies. The low energy beam transport (LEBT) including two short solenoids system including integrated sterrer will transport proton beam to the RFQ entrance with the expected emittance lower than 0.3π mm mrad (normalized, rms). After the LEBT electrostatic chopper will be mounted in front of RFQ to short the beam pulse to 36 μ s. This paper presents the status of the commissioning phases including first results of proton injector.

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