

First experience with carbon stripping foils for the 160 MeV H⁻ Injection into the CERN PSB

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160 MeV H⁻ beam will be delivered from the new CERN linear accelerator (Linac4) to the Proton Synchrotron Booster (PSB), using a H⁻ charge-exchange injection system. A 200 µg/cm² carbon stripping foil will convert H⁻ into protons by stripping off the electrons. The H⁻ charge-exchange injection principle will be used for the first time in the CERN accelerator complex and involves many challenges. In order to gain experience with the foil changing mechanism and the very fragile foils, in 2016, prior to the installation in the PSB, a stripping foil test stand has been installed in the Linac4 transfer line. In addition, parts of the future PSB injection equipment are also temporarily installed in the Linac4 transfer line for tests with a 160 MeV H⁻ commissioning proton beam. This paper describes the foil changing mechanism and control system, summarizes the practical experience of gluing and handling these foils and reports on the first results with beam.

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