

ACCELERATOR SEMINAR

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GSI

Thursday, 20. January 2022 at 4 pm

Online-Seminar via Zoom
(ID: 672 9307 1823 / PW: 707528)

High intensity proton beams at GSI (heavy ion) UNILAC

A significant part of the experimental program at FAIR is dedicated to pbar physics requiring a high number of cooled pbars per hour. The primary proton beam has to be provided by a 70 MeV proton linac followed by two synchrotrons. The new FAIR proton linac will deliver a pulsed high intensity proton beam of up to 35 mA of 36 μ s duration at a repetition rate of 4 Hz. The GSI heavy ion linac (UNILAC) is able to deliver intense heavy ion beam intensities for injection into SIS18, but it is not suitable for FAIR relevant proton beam operation. In an advanced machine investigation program it could be shown, that the UNILAC is able to provide for sufficient high intensities of CH₃-beam, cracked (and stripped) in a supersonic nitrogen gas jet into protons and carbon ions. This new operational approach results in up to 3 mA of proton intensity at a maximum beam energy of 20 MeV, 100 μ s pulse duration and a rep. rate of 4 Hz. For some time now, UNILAC proton beam operation with higher intensities has been offered as standard for users. Recent linac beam measurements will be presented, showing that the UNILAC is able to bridge the time until the FAIR-proton linac delivers high-intensity proton beams.



Coordinator: Claude Krantz, Janet Schmidt
Secretary: Larissa Birli

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