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Design and Test of Beam Diagnostics Equipment for the FAIR Proton Linac

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The future proton injector Linac (pLinac) for the Facility of Antiproton and Ion Research (FAIR) at GSI, Darmstadt, will provide a 68 MeV, up to 70 mA proton beam at a duty cycle of max. $35\mu\text{s}$ / 2.7 Hz for the SIS18/SIS100 synchrotrons, using the existing UNILAC transfer beamline. The Linac will operate at 325 MHz and consists of a novel so called 'Ladder' RFQ, followed by a chain of CH-cavities, partially coupled by rf-coupling cells. In this contribution we present the beam diagnostics system for the pLinac with special emphasis on the Secondary Electron Emission (SEM) Grids and the Beam Position Monitor (BPM) system. We also describe design and status of our diagnostics testbench for stepwise Linac commissioning, which includes an energy spectrometer with associated optical system.

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