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Design of the H- beam line for the LANL RFQ test stand

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The Los Alamos Neutron Science Center (LANSCE) accelerator produces high intensity H⁺ and H⁻ beams for multiple experiments in fundamental and national security science. The proposed LANSCE Modernization Project (LAMP) is evaluating necessary upgrades to enable continuous LANSCE operations in years to come. LAMP seeks to upgrade the H⁺ and H⁻ 750 kV Cockcroft-Walton (CW) generators with a dual-beam, 3-MeV Radiofrequency Quadrupole (RFQ). For technology maturation and know-how associated with this concept, an RFQ test stand with LAMP-like layout is being set-up to demonstrate dual-beam operation in an RFQ with all beam patterns required by experiments. The RFQ test stand will have 35-keV H⁺ and H⁻ beamlines that simultaneously inject into a 750 keV RFQ. Assembly and initial characterization of the H⁺ beam is under way. The H⁻ beamline has stringent requirements and will also demonstrate systems like a beam chopper and a low frequency buncher to produce required beam patterns. We describe the design of the H⁻ beamline based on accelerator codes Warp and Impact.

Footnotes

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