

Abstract Submitted
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Proton Linac Front End for High Intensity Neutrino Source at Fermilab WAI-MING TAM, GIORGIO APOLLINARI, ROBYN MADRAK, ALFRED MORETTI, LEONARDO RISTORI, GENNADY ROMANOV, JAMES STEIMEL, ROBERT WEBBER, DAVID WILDMAN, Fermilab — Fermilab has recently proposed the construction of an 8 GeV superconducting linac for the exploration of the high intensity frontier. The High Intensity Neutrino Source (HINS) R&D program was established to explore the feasibility of certain technical solutions proposed for the front end of a high intensity linac. The low energy (~ 60 MeV) section operates at 325 MHz and comprises an RFQ, two re-buncher cavities, 16 room temperature (RT) and 29 superconducting cross-bar H-type resonators, and superconducting solenoid focusing elements. One of the distinguishing features of this linac is the use of one klystron to feed multiple radio frequency (RF) elements. As an example, the RFQ, the re-bunchers and the 16 RT cavities are powered by a single 2.5 MW pulsed klystron. To achieve individual control over the phase and the voltage amplitude, each of the RF elements is equipped with a high power vector modulator. The RF control system will be discussed. The first RT cavity is completed with a power coupler, two mechanical tuners, vacuum and cooling systems, and has been RF conditioned. Preliminary tests on resonance frequency stability control and tests results of the cavity resonance frequency response to cooling water temperature and tuner position will also be discussed.

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