

## The PIP-II Project at Fermilab

Joint accelerator institutes seminar series – Michaelmass 2021  
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### Abstract:

The Proton Improvement Plan II (PIP-II) project is an essential upgrade to Fermilab's particle accelerator complex to enable the world's most intense neutrino beam for LBNF/DUNE and a broad particle physics programme for many decades to come. PIP-II will deliver 1.2 MW of proton beam power from the Main Injector, upgradeable to multi-MW capability.

The central element of PIP-II is an 800 MeV linac, which comprises a room temperature front-end followed by an SRF accelerator. The front-end was constructed and operated with beam in the PIP-II Injector Test facility (PIP2IT). The SRF accelerator consists of five different types of cavities/cryomodules, including Half Wave Resonators (HWR), Single Spoke and elliptical resonators operating at state-of-the-art parameters. The first two PIP-II cryomodules, HWR and Single Spoke Resonator 1 (SSR1), have accelerated beam to 17 MeV in PIP2IT.

PIP-II is the first U.S. accelerator project that will be constructed with significant contributions from international partners, including India, Italy, France, United Kingdom and Poland. The project is baselined, and conventional facilities construction is underway. The project will be completed in 2028.