

Fermilab PIP Booster Accelerator RF Cavity Refurbishment

M. Slabaugh¹, J. Reid¹

¹Accelerator Division, Fermi National Accelerator Laboratory, Batavia, IL, USA

The Fermilab Booster is a synchrotron accelerator with a circumference of 474 meters and first took beam in 1970. The Booster accelerates a proton beam from 400 MeV to 8 GeV and currently contains 19 RF stations.

In 2011, Fermilab's Accelerator Division began the Proton Improvement Plan (PIP) with a goal of doubling the beam throughput in Booster. In order to accomplish this goal, the Booster RF system must operate continuously at a 15Hz repetition rate, which is a factor of two over the current running conditions. The expected increase in RF duty factor triggered a series of necessary upgrades to the 45 year-old Booster RF system addressing capability and reliability issues. In this talk, we will present an overview of some technical challenges of the Booster RF cavities mechanical refurbishment, including: scope of work, procurement, documentation, simulation, testing, and skilled resources.