

Accelerator Physics and Technology Seminar

The Fermilab Booster in the PIP-II Era: An Overview Including Simulation Results

Jean-Francois Ostiguy, FNAL

Date: Tuesday, December 17

When: 4:00 pm CDT

Where: One West (WH1W) and Zoom

Abstract: In the PIP-II era, the Fermilab Booster injection will be raised to 800 MeV, the beam intensity will increase by 50% and the acceleration cycle frequency by 33% from 15 to 20 Hz. As a result, the delivered beam power will approximately double. This has to be accomplished without increasing beam power losses beyond the current level while meeting beam quality requirements for transfer to the downstream Recycler ring. The measures planned to reach these objectives include replacing the present adiabatic capture injection scheme with a new phase space painting scheme, as well as introducing mitigations to limit particle loss and emittance blowup at transition. This talk will discuss the new injection scheme as well as the challenges posed by minimizing deleterious effects at transition. Relevant results from injection and transition simulations will be presented and summarized.