Ion source development for the Proposed FNAL 750keV Injector Upgrade

D.S. Bollinger

Fermi National Accelerator Laboratory, Box 500, MS 307, Batavia, Illinois, 60510

bollinger@fnal.gov

Currently there is a Proposed FNAL 750keV Injector Upgrade for the replacement of the 40 year old Fermi National Laboratory (FNAL) Cockcroft-Watlon accelerators with a new ion source and 200MHz Radio Frequency Quadruple (RFQ) [1]. The slit type magnetron being used now will be replaced with a round aperture magnetron similar to the one used at Brookhaven National Lab (BNL). Operational experience from BNL has shown that this type of source is more reliable with a longer lifetime due to better power efficiency [2].

The current source development effort is to produce a reliable source with >60mA of H- beam current, 15Hz rep-rate, 100μs pulse width, and a duty factor of 0.2%. The source will be based on the BNL design along with development done at FNAL for the High Intensity Neutrino Source (HINS) [3].

This paper will cover the current FNAL source operation and source development for the proposed upgrade.