

## Laser Beam-Profile Monitor Development at BNL for SNS\*

R. Connolly, P. Cameron, J. Cupolo, D. Gassner, M. Grau, M. Kesselman,  
S. Peng and R. Sikora  
Brookhaven National LabUpton, NY, USA

A beam profile monitor for H<sup>-</sup> beams based on laser photoneutralization is being developed at Brookhaven National Laboratory for use on the Spallation Neutron Source. An H<sup>-</sup> ion has a first ionization potential of 0.75eV and can be neutralized by light from a Nd:YAG laser ( $\lambda=1064\text{nm}$ ). To measure beam profiles, a narrow laser beam is passed through the ion beam neutralizing a portion of the H<sup>-</sup> beam struck by the laser. The laser trajectory is stepped across the ion beam. At each laser position, the perturbation of the beam current caused by the laser is measured. A proof-of-principle experiment was done earlier at 750keV. This paper reports on measurements made on 200MeV beam at BNL and with a compact scanner prototype at LBL on beam from the SNS RFQ.

\*SNS is managed by UT-Battelle, LLC, under contract DE-AC05-00OR22725 for the U.S. Department of Energy. SNS is a partnership of six national laboratories: Argonne, Brookhaven, Jefferson, Lawrence Berkeley, Los Alamos, and Oak Ridge.

Roger Connolly  
connolly@bnl.gov  
4698  
8374

Invited talk