

Abstract Submitted  
for the NES11 Meeting of  
The American Physical Society

**Nanocoulomb Proton Burst** NICHOLAS BORGES, KIMYLI RECCA, GREGG PARKER — At the UMASS Lowell Van-de-Graph accelerator, we are required to provide proton irradiation doses which corresponds to proton charges much less than one  $\mu\text{C}$ . We found that machine regulation requires a proton beam of about  $1\text{ }\mu\text{A}$ . We designed a shutter provided with a slit which allows us to irradiate a sample for a fraction of 1 second with a  $1\text{ }\mu\text{A}$  beam. To determine the time,  $\Delta t$ , during which the shutter is open, we use a light beam. Our equipment consists of the following: a photomultiplier tube (BURLE S83010E) set up as a photodiode, an electrometer (KEITHLEY 6514), a HeNe laser and a shutter that interrupts the laser beam. We measure the photodiode current,  $I_0$ , with the shutter open and we measure the charge with the electrometer,  $Q=I_0\Delta t$ , delivered to the target which the shutter is operated. From this data we obtain  $\Delta t$ , the time during which the shutter permits the light beam to pass, and during which we would pass the proton beam.

Nicholas Borges

Date submitted: 11 Mar 2011

Electronic form version 1.4