Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Target Chamber Manipulator ANTHONY TANTILLO, MATTHEW WATSON, State Univ of NY - Geneseo — A system has been developed to allow remote actuation of sensors in a high vacuum target chamber used with a particle accelerator. Typically, sensors of various types are placed into the target chamber at specific radial and angular positions relative to the beam line and target. The chamber is then evacuated and the experiments are performed for those sensor positions. Then, the chamber is opened, the sensors are repositioned to new angles or radii, and the process is repeated, with a separate pump-down cycle for each set of sensor positions. The new sensor positioning system allows scientists to pre-set the radii of up to a dozen sensors, and then remotely actuate their angular positions without breaking the vacuum of the target chamber. This reduces the time required to reposition sensors from 6 hours to 1 minute. The sensors are placed into one of two tracks that are separately actuated using vacuum-grade stepping motors. The positions of the sensors are verified using absolute optical rotary encoders, and the positions are accurate to 0.5 degrees. The positions of the sensors are electronically recorded and time-stamped after every change. User control is through a GUI using LabVIEW.

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Date submitted: 20 Jul 2015 Electronic form version 1.4