Abstract Submitted for the 52nd Annual Meeting
Division of Plasma Physics
November 8–12, 2010, Chicago, Illinois

[ ] Theory [x] Experiment

Solid State Neutral Particle Analyzer in Current Mode on DIII-D Tokamak,* Y.B. Zhu, W.W. Heidbrink, *University of California, Irvine;* S. Celle, *General Atomics* — A new three-channel solid state neutral particle analyzer (ssNPA) array, with the abilities of both active and passive charge exchange (CX) measurement, has been developed and successfully tested on the DIII-D tokamak. In active measurement mode, the three near-vertical viewing chords intersect with the footprint centerline of the closest near-tangential neutral beam at major radii of 1.50, 1.65, and 1.83 m; the outer and middle channels' sightline also cross the closest near-perpendicular neutral beam at major radii of 1.76 and 1.55 m, respectively. The inside channel is blocked for background detection during diagnostic commissioning stage. Directly deposited ultra-thin foils on the detector surface block stray photons below the energy of 1 keV and also bring about a 25 keV low energy threshold for deuterium particle detection. Operation of ssNPA in current mode provides an economical and simple approach for the diagnosing of the fast-ion distribution in energetic particle relevant experiments.

*Work supported by the US Department of Energy under SC-G903402 and DE-FC02-04ER54698.