

Abstract Submitted
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Progress on a 200kW Diagnostic Neutral Beam ETHAN SCHARTMAN, E.L. FOLEY, F. LEVINTON, Nova Photonics, Inc, J.W. KWAN, K.N. LEUNG, Y. WU, H. VAINIONPAA, Lawrence Berkeley Laboratory — The interaction of neutral beam atoms with a magnetized plasma provides diagnostic access to the interiors of fusion experiments. Parameters which can be measured using neutral beams include ion temperature and velocity, density fluctuations and also local magnetic field direction. Nova Photonics, Inc and Lawrence Berkeley National Laboratory are developing a diagnostic neutral beam for use in fusion experiments which lack neutral heating beams, or on which the heating beam is not suitable for diagnostics. Our apparatus is designed to produce a 1 s duration, 5 x 8 cm elliptical cross section hydrogen beam at energies up to 40 kV and up to 5 A current. Hydrogen ions are produced in a multicusp 13 kW, 13 MHz RF source. The extracted ions have current densities of 100 - 150 mA/cm². The proton fraction of the hydrogen ions is 85%. Beams are extracted from the source with a rectangular, multi-aperture grids. Details of the source performance will be presented as well as initial operation of the extraction optics and neutralizer region. This work is supported by the U.S. DOE under grant DE-FG02-05ER86256.

Ethan Schartman
Nova Photonics, Inc

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