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☐ Theory      ☐ Experiment

**Evaluation of a DNB for ITER-Based on Common Long-Pulse Positive Ion Source Technology,\*** D.M. Thomas, R.W. Callis, R.M. Hong, H.K. Chiu, *GA*; M. von Hellermann, *FOM Inst. For Plasma Physics* – The use of a diagnostic neutral beam (DNB) is critical for the ITER diagnostic mission in order to provide radially resolved profiles of helium ash density as well as ion temperature, density, and rotation profiles. However, the estimated performance requirements for a suitable beam have yet to be demonstrated for either negative or positive ion source technology. In this paper we re-examine the suitability of existing common long pulse source (CLPS) technology, as exemplified in the DIII-D and TFTR programs, to provide a positive-ion-based DNB that will satisfy the ITER mission requirements with high reliability and ease of modulation. Straightforward modifications of the existing ion sources are expected to provide greater than 50 A of full energy hydrogen atoms at 100 keV, with a peak current density at the shield aperture approaching 200 A/m<sup>2</sup>. Estimated S/N for BES and CXRS measurements for specific ITER operating scenarios will also be presented.

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