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Major Improvements in Diagnostic Neutral Beam Performance on HT-7 and EAST and Implications for CXRS[1] HE HUANG, WILLIAM L. ROWAN, Fusion Research Center, The University of Texas at Austin, YUEJIANG SHI, JUN LI, DONGHAI DING, CHUNDONG HU, BAONIAN WAN, Chinese Academy of Sciences, Institute of Plasma Physics — To improve the sensitivity of the charge exchange recombination spectroscopy (CXRS) diagnostic on HT-7 and the prospects for CXRS on EAST, a magnetic filter was added to the magnetic bucket plasma source on the diagnostic neutral beam (DNB). The density of the main energy component of the beam was increased by a factor of 2, radically improving the prospects for CXRS. The effect of the magnetic filter is to isolate the plasma production region from the beam extraction region. Further improvements in operation of the plasma source will be undertaken by re-engineering gas delivery and power supplies to increase the operational regime. New proposals for more efficient plasma excitation will be discussed. Simulations with the expected improvement both for HT-7 and for EAST are used to guide CXRS optical designs for the devices.

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