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Heavy Atom Neutral Beam Probe ALVARO GARCIA DE GORORDO, GARY A. HALLOCK, KENNETH W. GENTLE, The University of Texas at Austin — A Heavy Neutral Beam Probe (HNBP) is being developed to measure the space potential on Helimak. The HNBP will make overlapping potential measurements with an array of Langmuir probes (LP). This will allow a direct comparison of LPs and our HNBP measurements. Helimak is a low temperature (7 to 10 eV) plasma device designed to study turbulence with relevance to fusion devices. Several diagnostic techniques were considered to probe this low temperature plasma. Two new techniques proposed involve photo-ionization of the probing beam, which may be singly ionized or neutral. The HNBP was selected however due to its compatibility with the turbulence measurements desired for Helimak. The primary species that we intend to probe with is sodium, which will be electrostatically accelerated to energies of 8 to 12 keV as an ion and subsequently neutralized. Much of the hardware for this system consists of the original Elmo Bumpy Torus (EBT) Heavy Ion Beam Probe (HIBP). The new photo-ionization techniques are ideal for low temperature nonmagnetized plasmas where continuous time resolution is not required, as in plasma processing of semiconductors.

Gary A. Hallock
The University of Texas at Austin

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