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Observation of low-frequency oscillations in LDX with an angular electrostatic probe R.M. BERGMANN, A.C. BOXER, J.L. ELLSWORTH, J. KESNER, MIT Plasma Science and Fusion Center, D.T. GARNIER, M.E. MAUEL, Columbia University — Previous computational models using magnetic configurations similar to LDX have yielded results where convective cells transport particles without transporting energy [1], and this would prove useful in a fusion reactor since it could remove ash from the core without cooling it. A vertically adjustable angular electrostatic probe array has been designed to observe the previously seen low-frequency oscillations [2] with better resolution and to identify if they are related to the expected convective cells. The array will rest one meter from the centerline of the device and measure edge fluctuations on field lines near the separatrix that are mapped to 1.7m to 1.85m at midplane. It will cover ninety degrees angularly and have 24 probes mounted on it for total probe tip separation of 7.1cm. Each probe will consist of a 1cm tungsten electrode inside an alumina tube in series with a one mega-ohm resistor located 50 cm from the probe tip. The array can be fitted with an extension to provide radial sampling at a later date.
[1] J. Tonge, N. Leboeuf, C. Huang, and J.M. Dawson Phys. Plasmas 10 (2003) 9.
[2] D. Garnier et al., J. Plasma Phys. 74 (2008).

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