Compressional Alfvén Eigenmode Similarity Study,* W.W. Heidbrink, UC Irvine, E.D. Fredrickson, N.N. Gorelenkov, PPPL, T.L. Rhodes, UCLA — NSTX and DIII-D are nearly ideal for Alfvén eigenmode (AE) similarity experiments, having similar neutral beams, fast-ion to Alfvén speed \( v_f/v_A \), fast-ion pressure, and shape of the plasma, but with a factor of 2 difference in the major radius. Toroidicity-induced AE with \(~100\) kHz frequencies were compared in an earlier study [1]; this paper focuses on higher frequency AE with \( f \sim 1\) MHz. Compressional AE (CAE) on NSTX have a polarization, dependence on the fast-ion distribution function, frequency scaling, and low-frequency limit that are qualitatively consistent with CAE theory [2]. Global AE (GAE) are also observed. On DIII-D, coherent modes in this frequency range are observed during low-field (0.6 T) similarity experiments. Experiments will compare the CAE stability limits on DIII-D with the NSTX stability limits, with the aim of determining if CAE will be excited by alphas in a reactor. Predicted differences in the frequency splitting \( \Delta f \) between excited modes will also be used.


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