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EX/P4-17: Edge Plasma Response to Beam-driven MHD Instability in Heliotron J

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Nonlinear behavior of broad-band fluctuation and dynamical potential change, associated with beam-driven MHD phenomenon, are observed around edge region in a medium-sized helical device, Heliotron J. Nonlinear phase relationship between the MHD and broad-band fluctuation is demonstrated as a result of bicoherence and envelope analyses applied to floating potential signals measured with multiple Langmuir probes (LPs) in neutral beam injection (NBI) heated plasmas. Also, structural potential profile change synchronized with the cyclic MHD burst is discovered. These experimental observations suggest that such MHD fluctuations can have influence on the confinement property of bulk plasma through nonlinear process and/or change of electric field structure.

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