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Local Gas Puff Effects on Fast Wave Antenna Loading in H-mode[1]

A. NAGY, S. DEPASQUALE, E. FREDD, N.L. GREENOUGH, J.C. HOSEA, R. NAZIKIAN, J.R. WILSON, Princeton Plasma Physics Laboratory, F.W. BAITY, N. COMMAUX, R.H. GOULDING, G. HANSON, A.R. HORTON, M. MURAKAMI, D.A. RASMUSSEN, P.M. RYAN, Oak Ridge National Laboratory, F. CHAMBERLAIN, C.C. PETTY, R.I. PINSKER, General Atomics, M. PORKOLAB, Massachusetts Institute of Technology — Experiments show substantially enhanced resistive fast wave (FW) antenna loading in H-mode plasmas is obtained with a local gas puff during the application of rf. Results with short magnetic field lines connecting the puff orifice and the antenna face are compared with cases with longer field line connections. Scans of gas puff and FW pulse start timing suggest that filling the antenna box with gas prior to the application of rf may lead to antenna breakdown. Effects of the gas puffing on tokamak plasma include increased density, some reduction in confinement time, and strong effects on the edge localized mode character and frequency. The relationships between these results and those obtained in similar experiments elsewhere are discussed.

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