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Modification of Edge Current Profile and Drift-Alfven Mode Suppression in SINP-TOKAMAK by Biased Electrode at the Edge Region¹

DEBJYOTI BASU, RABINDRANATH PAL, Saha Institute of Nuclear Physics, 1/AF-Bidhannagar, Kolkata-700064, WB, India — Experiments with biased electrode inserted in the edge region have been carried out to study the physics behind improve plasma confinement in the SINP-Tokamak, an iron-core tokamak with major and minor radii of 30 and 7.5 cm, respectively. Previously improved confinement with modification of edge current density profile was reported² in its very low edge safety factor ($1 < q_a < 2$) operation. The same experiment has been extended now in normal q_a (~ 5 to 7) operational regime of the tokamak. Improvement of plasma confinement is also observed in this case with nearly similar results. Introducing small magnetic and Langmuir probes carefully in the edge region the edge plasma current density profile is seen to be modified as before. Interestingly, analysis of fluctuation measurements in the probes indicates suppression of drift-Alfven mode by biased electrode leading to better confinement. Detailed experimental results will be presented in this paper.

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²J. Ghosh, R. Pal, P. K. Chattopadhyaya and D. Basu, Nuclear Fusion **47**, 331 (2007)

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