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Disruption Control Using Biased Electrode in Aditya Tokamak

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Improvement in tokamak plasma confinement using biased electrodes observed in many tokamaks is a well-established phenomenon. In this paper we show that very use of the same biased electrode can mitigate the disruptions in tokamak plasmas through stabilization of magnetohydrodynamics (MHD) modes. Disruption induced in Aditya tokamak by H₂ gas puffing is successfully mitigated by applying the positive bias voltage to the electrode placed in the LCFS prior to the gas injection. Sheared ($(E_r) \times (B_\phi)$) rotation of the plasma generated by biasing leads to substantial reduction in growth of MHD modes ($m/n = 3/1, 2/1$) and avoids disruptions through prevention of mode locking.

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Author: Mr DHYANI, Pravesh (Institute for Plasma Research, Gandhinagar, India)

Co-authors: Dr CHATTOPADHYAY, Asim Kumar (Institute for Plasma Research, Gandhinagar, India); Mr GUPTA, C.N. (Institute for Plasma Research, Gandhinagar, India); Dr RAO, C.V.S. (Institute for Plasma Research, Gandhinagar, India); Dr RAJU, D. (Institute for Plasma Research, Gandhinagar, India); Dr BASU, Debjyoti (Institute for Plasma Research, Gandhinagar, India); Dr GHOSH, J. (Institute for Plasma Research, Gandhinagar, India); Mr SATHYANARAYANA, K. (Institute for Plasma Research, Gandhinagar, India); Ms RAMAIYA, N. (Institute for Plasma Research, Gandhinagar, India); Mr ATREY, P.K. (Institute for Plasma Research, Gandhinagar, India); Dr CHATTOPADHYAY, P.K. (Institute for Plasma Research, Gandhinagar, India); Prof. PAL, R. (Saha Institute of Nuclear Physics, Kolkata, India); Mr TANNA, R.L. (Institute for Plasma Research, Gandhinagar, India); Prof. JHA, Ratneshwar (Institute for Plasma Research, Gandhinagar, India); Mr JOISA, S. (Institute for Plasma Research, Gandhinagar, India); Mr KUMAR, S. (Institute for Plasma Research, Gandhinagar, India); Mr BHATT, S.B. (Institute for Plasma Research, Gandhinagar, India); Prof. SAXENA, Y.C. (Institute for Plasma Research, Gandhinagar, India)

Presenter: Mr DHYANI, Pravesh (Institute for Plasma Research, Gandhinagar, India)

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