

Abstract Submitted
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Stabilizing Effect of Resistivity towards ELM-free H-mode Discharge in Lithium-conditioned NSTX¹ DEBABRATA BANERJEE, University of Science and Technology of China, PING ZHU, University of Science and Technology of China, University of Wisconsin-Madison, RAJESH MAINGI, Princeton Plasma Physics Laboratory — The stabilizing effect of edge resistivity on the edge localized modes (ELMs) has been recently recovered through analyzing NSTX experimental profiles of Lithium-conditioned ELM-free H-mode discharge. Comparative studies of ELM-free and a reference NSTX ELMy-H mode equilibria have been performed using both resistive and 2-fluid MHD models implemented in the initial value extended MHD code NIMROD. Our results indicate that in addition to the pedestal profile refinement in electron pressure, the inclusion of enhanced resistivity due to the increase in the effective electric charge number Z_{eff} , which is observed after Lithium-conditioning in experiment, is further required to account for the full stabilization of the low- n edge localized modes. Such a stabilization from the enhanced edge resistivity only becomes effective when the two-fluid diamagnetic and finite-Larmor-radius (FLR) effects are considered in the MHD model.

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