

Abstract Submitted
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Observations of Intrinsic Rotation Reversal Hysteresis in Alcator C-Mod Plasmas¹ NORMAN CAO, JOHN RICE, ANNE WHITE, SEUNG BAEK, MARK CHILENSKI, ALEXANDER CREELY, PAUL ENNEVER, AMANDA HUBBARD, JERRY HUGHES, JIM IRBY, PABLO RODRIGUEZ-FERNANDEZ, Massachusetts Institute of Technology, MATTHEW REINKE, Oak Ridge National Laboratory, PATRICK DIAMOND, University of California, San Diego, ALCATOR C-MOD TEAM — Intrinsic core toroidal rotation in Alcator C-Mod L-mode plasmas has been observed to spontaneously reverse direction when the normalized collisionality ν^* , evaluated at the profile minimum, passes through a critical value around 0.4. In Ohmic plasmas, the low density linear Ohmic confinement regime exhibits co-current toroidal rotation, and the higher density saturated Ohmic confinement regime exhibits counter-current rotation. The reversal manifests a hysteresis loop in ν^* , where the critical collisionalities for the forward and reverse transitions differ by 10-15%. There appears to be memory associated with the rotation state, since reversals which do not begin from fully saturated rotation states do not manifest this hysteresis. In addition, high-k PCI fluctuation wings ($k_\theta \rho_s$ up to 1) at low density and high current appear only in the co-current rotation state, while density peaking and non-local heat transport behavior do not appear to change significantly with the rotation state. Results from fluctuation measurements and preliminary transport and stability analyses will also be presented.

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