

Abstract Submitted
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Development of an operational scenario for a current hole plasma using TSC on Alcator C-MOD¹ S. SHIRAIWA, P. BONOLI, A. HUBBARD, J. KO, O. MENEGHINI, R. PARKER, G. WALLACE, S. WOLFE, S. WUKITCH, PSFC, MIT, C. KESSEL, S. SCOTT, R. WILSON, PPPL, Y. TAKASE, Graduate School of Frontier Sciences, University of Tokyo — A current hole develops when the q-profile is extremely deeply reversed and the toroidal current density becomes zero around the center of a tokamak plasma. In order to investigate the possibility of creating a current hole on Alcator C-mod, TSC and LSC (ray-tracing with 1D FP) simulations have been carried out. Using experience from the OH-less experiments on JT-60U[1] it is found that the plasma evolves towards a current hole configuration with a moderate LHCD power (~ 1 MW) at a plasma current of 300kA, when a compound spectrum is employed. The plasma produced is nearly 100% driven by LHCD in steady-state with a very small bootstrap current, providing a good test for our understanding of the current hole. These simulations are being used to formulate an experiment on Alcator C-mod. A possibility of increasing the bootstrap current by additional ICRF heating will also be discussed. [1] S. Shiraiwa, et al., Phys. Rev. Lett. 92, 035001 (2004)

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