

Abstract Submitted
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Suppression of Neoclassical Tearing Modes with ECCD¹ FRANCOIS WAELBROECK, University of Texas — Electron Cyclotron Current Drive (ECCD) is routinely used on several tokamaks to suppress the Neoclassical Tearing Mode (NTM). The conventional explanation of the suppression is that it is achieved through the replacement by the ECCD of the bootstrap current lost through the flattening of the pressure profile inside the island. This explanation appears to conflict, however, with the observation that both co and counter ECCD have a stabilizing effect of comparable magnitude. In order to apply the ECCD method of NTM suppression to next-step devices it is clearly necessary to better understand the mechanism responsible for the suppression. This is necessary, in particular, in order to deduce reliable estimates of the required power in ITER. Here we re-examine the effect of ECCD and Electron Cyclotron Heating (ECH) on rotating magnetic islands using the Braginskii model. We consider in particular the effect of the EC wave absorption on the island rotation frequency and the possible effect of the modification of this frequency on island suppression.

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