CURRENT DRIVE BY EC WAVES IN THE PRESENCE OF MAGNETIC ISLANDS AND TRANSPORT

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In this paper, we address the problem of current drive by Electron Cyclotron waves in the presence of magnetic islands and transport. Our approach makes use of the quasilinear theory by numerically solving the Fokker-Planck equation in slab geometry. The slab geometry is corrected for ray refraction and electron trapping. We take into account the actual geometry of the islands along the calculations as well as the changes in the plasma density and temperature profiles due to the action of the waves. The particle transport is supposed to have magnetic origin. We also take into account the finite confinement time of energy, calculated in a consistent way directly from the power deposition profile of the waves and from the plasma density and temperature profiles. Our results show that the use of equilibrium profiles as usually done in the studies on the subject of neoclassical tearing mode control may not be the better choice, and point out to the need of taking into account the actual islands geometry.