

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Magnetic island induced bootstrap current on island evolution in tokamaks¹ K.C. SHAING, University of Wisconsin — In a previous paper [K. C. Shaing, and D. A. Spong, Phys. Plasmas **13**, 2006], the effects of the even component (relative to the mode rational surface) of the magnetic island induced bootstrap current on the island dynamics in tokamaks are investigated, It is found that island induced bootstrap current density has the stabilizing influence on the island stability. The theory is extended here to including the effects of the odd component of the bootstrap current on the island evolution by taking into account the asymmetric island shape relative to the mode rational surface in the derivation of the island evolution equation. There are two types of the perturbed bootstrap current density that is odd relative to the mode rational surface. One type is the island modified which is independent of the collision frequency and the other is the island induced which is inversely proportional to the collision frequency. Both of these contributions will be included in the island evolution equation. The effects of the island induced bootstrap current on the island stability in the high poloidal beta tokamak plasmas will be discussed.

¹This work was supported by US Department of Energy under Grant No. DE-FG02-01ER54619 with the University of Wisconsin.

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Date submitted: 23 Jul 2006

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