ECCD magnetic island suppression as converse of a forced reconnection problem

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The effect of ECCD is investigated as a converse of the Hahm Kulsrud Taylor (HKT) [1,2] forced reconnection problem, where the current drive plays the role of the drive force. We present analytical calculations which show the relation between the peaking value of the ECCD on the rational surface and the final island width [3]. Then the transition between the constant-ψ and non-constant-ψ regimes under the effect of a ECCD control is analyzed through highly accurate numerical simulations. It is shown that if the deposition width is below a critical value this transition occurs generating the X-point collapse and entering a plasmoid formation phase.

References

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