

# Forced Magnetic Reconnection in the Taylor Problem

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## Abstract

A Bromwich contour integral for the reconnected magnetic flux is derived, and numerically inverted, in order to study a well-known model of forced reconnection. This model, known as the Taylor problem, considers the response of a tearing-stable slab plasma equilibrium to a sudden, small amplitude boundary perturbation. The applied perturbation is such as to force magnetic reconnection and subsequent magnetic island formation within the plasma. The early dynamical phases of the reconnection process are studied and found to be in good agreement with the analysis of Hahm and Kulsrud<sup>1</sup>. Recent criticisms of this analysis by Ishizawa & Tokuda<sup>2</sup> are found to be unwarranted.

[1] T.S. Hahm, R.M. Kulsrud, *Phys. Fluids*, **28**, (1985), 2412.

[2] A. Ishizawa, S. Tokuda, *Phys. Plasmas*, **8**, (2001), 376.

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