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A stepped pressure profile model for internal transport barriers[1]
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— We develop a multiple interface variational model, comprising multiple Taylor-relaxed plasma regions separated by ideal MHD barriers. The magnetic field in each region is Beltrami, $\nabla \times \mathbf{B} = \mu \mathbf{B}$, and the pressure constant. Between these regions the pressure, field strength, and rotational transform ι may have step changes at the ideal barrier. A principle motivation is the development of a mathematically rigorous ideal MHD model to describe intrinsically 3D equilibria, with nonzero internal pressure, using robust KAM surfaces as the barriers. As each region is locally relaxed however, such a model may also yield reasons for existence of internal transport barriers (ITBs). Focusing on the latter, we build on Hole *et al* Nuc. Fus. 47, pp746-753, 2007, which recently studied the stability of a two-interface periodic-cylinder configuration. In this work, we perform a stability scan over pressure and ι for a two-interface configuration with no jump in ι, and compare the characteristics of stable equilibria to those of ITB's.

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