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**Regularization of Transport Bifurcation Models**[1] L. BERIA, M.A. MALKOV, P.H. DIAMOND, CASS and Physics Dept., UCSD — A simple theoretical understanding of what regulates the width of both ITB and H-mode layers remains elusive. One-field models "solve" the problem via the Maxwell construction, and related phase coexistence criteria. Unfortunately, an interesting barrier model must evolve two independently driven fields, such as density and temperature. We present an analytical solution of a simple two-field model. The problem of regularization, encountered previously, is solved by retaining pressure profile curvature effects in the electric field shear. Retaining such effects allows us to determine when a transition actually occurs within the interval of possible transitions. In fact, transitions are predicted to occur at the lower end (in heating power) of the co-existence range. This softens threshold requirements. A testable consequence of this approach is that the model predicts that transitions may occur in regimes of flat density. Ongoing work is aimed at exploring the effect of noise.

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