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ITB Dynamics in Fusion Self-Heated Plasmas DAVID NEWMAN, Univ. of Alaska - Fairbanks, P.W. TERRY, Univ. of Wisconsin - Madison, RAUL SANCHEZ, Univ. Carlos III De Madrid — Simple dynamical models have been able to capture a remarkable amount of the observed dynamics of the transport barriers found in many devices, including the often disconnected nature of the electron thermal transport channel sometimes observed in the presence of a standard ("ion channel") barrier. The electron channel formation and evolution has been found to be even more sensitive to the alignment of the various gradients making up the sheared radial electric field then the ion barrier is. Because of this sensitivity and coupling of the barrier dynamics, the dynamic evolution of the fusion self-heating profile can have a significant impact on the barrier location and dynamics. To investigate this, self-heating has been added this model and the impact of the self-heating on the formation and controllability of the various barriers is explored. It has been found that the evolution of the heating profiles can suppress or collapse the electron channel barrier leading to the possibility of using NBI for profile/barrier control. Studies of different evolution scenarios will be presented.

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