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Coupled Electron and Ion Heat Pulse Propagation,* M. Gildner, Bucknell University, C.C. Petty, T.C. Luce, J.C. DeBoo, *General Atomic* – Heat transport in a tokamak plasma can be studied by analyzing the effect of a modulated heat source on the temperature profile. Electron cyclotron heating provides a spatially localized heat source that is rapidly thermalized by the bulk electrons. Using perturbative solutions to the linearized Braginskii energy conservation equation, we can determine the (effective) contributions of diffusion, convection, and damping to the heat transport. Previous research has encompassed only the electron heat pulse propagation. We expand the method to include the effects of electron-ion coupling through both collisional exchange and the transport coefficients, which allows us to analyze simultaneous heat pulse propagation in the electron and ion channels. The solutions are compared with experimental data to determine the relative strength of the effects on the heat pulse propagation of different types of electron-ion coupling.

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