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Time-Dependent Modeling of Fast Wave Absorption with Multiple Damping Mechanisms,* W. Unglaub, *Colorado School of Mines*, R.I. Pinsker, *General Atomics*, R.W. Harvey, *CompX* – Plasma response to fast wave absorption is studied in a time-dependent model in which multiple damping mechanisms are present, including direct electron absorption and ion cyclotron harmonic damping in the core and an unspecified edge loss mechanism. Previous study of the plasma response to a step in FW power in a slab model [1] is extended to take into account more realistic effects such as the density rise with FW injection and confinement degradation with increased heating power. To extend this work to a axisymmetric toroidal equilibrium, we couple the GENRAY ray-tracing code to the ONETWO transport code. In both models, it is found that the final partitioning of power among the various damping mechanisms and the time needed to reach the final state strongly depend on initial conditions. The time to reach steady-state can be many energy confinement times.

[1] R.I. Pinsker, in *RF Power in Plasmas (Proc. 17th Top. Conf, 2007)*, (AIP, NY, 2007) p. 447.

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