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Comparisons of ELMing and RMP H-mode Transport Results from a 2D Fluid Code and Theoretical Models[1] S. MORDIJCK, R.A. MOYER, UCSD, W.M. STACEY, GA Tech, T.E. EVANS, GA — Changes in the simulated radial transport from an ELMing to an RMP H-mode are compared. The radial transport coefficients have been calculated with B2-EIRENE (a 2D fluid code coupled to a Monte-Carlo neutral code). The radial particle diffusion increases by a factor 2 between Ψ_N of 0.9 and 1 during the ELM suppressed RMP H-mode compared to the ELMing H-mode. The electron heat conduction does not change and differences in the electron temperature profile can be explained by increased convection. At the same time, the ion heat conduction increase over the entire computational domain of the simulation, outside $\Psi_N = 0.8$ in the RMP H-mode. To better understand the simulated transport changes, differences in the modeled transport coefficients are compared to differences in predictions from theoretical models for the ELMing and RMP H-mode experiments. We introduce quasilinear magnetic diffusion (QMD) coefficients from field-errors (FE) and FE correction coils (FECC) in the ELMing H-mode transport and compare these to the QMD results in RMP H-mode with FE, FECC and edge-localized $n = 3$ RMPs from an internal non-axisymmetric coil.

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