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Stabilization of bursty transport by externally imposed magnetic perturbations[1] ROBERT KLEVA, PARVEZ GUZDAR, IREAP, University of Maryland, College Park, MD — Resonant magnetic field perturbations (RMP) introduced by external coils are found to mitigate type I ELMS in tokamak plasmas. Here we present results using the DRBM code, which solves the Braginskii fluid equations in a flux-tube geometry, to study the effect of externally imposed magnetic perturbations to mimic the RMPs. Transport bursts in simulations of the edge plasma in tokamaks are suppressed by the application of magnetic field perturbations. The amplitude of the applied magnetic field perturbations is characterized by a stochasticity parameter S. As S increases, but is still less than unity so that most of the magnetic flux surfaces are still preserved in the simulations, the magnitude of the ELM bursts decreases. The size of bursts is reduced to a very small value while S remains below unity. Widespread magnetic stochasticity is not a requirement for the stabilization of bursty transport observed in the simulations by the magnetic field perturbations. The magnetic field perturbations are found to suppress the growth of the resistive ballooning instability that underlies the bursty transport.

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