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A Quasilinear Description of Pedestal Transport induced by RMPs CHRISTOPHER MCDEVITT, XIAN-ZHU TANG, ZEHUA GUO, Los Alamos National Laboratory — The abrupt release of stored energy by large edge localized modes (ELM) and its subsequent deposition onto plasma facing components can place significant limitations on material lifetimes. Resonant magnetic perturbations (RMP) have been suggested as a means of tailoring pedestal profiles in order to suppress large ELM events. In this work, we utilize a quasilinear collision operator formulation in order to compute transport induced by a stochastic magnetic field. This formulation allows for phase transport induced by fluctuations (including field perturbations) as well as Coulomb collisions to be treated on an equal footing, hence allowing for general collisionality regimes to be treated. In addition, such a phase space formulation incorporates kinetic effects such as particle trapping as well as magnetic drifts, which are crucial to the description of pedestal transport. Particular emphasis is placed on determining the relative efficiency RMPs have on transporting density, current and heat in order to better understand how RMPs may be employed to shape pedestal profiles. Ongoing work is focused on the self-consistent description of the electric field induced by the response of the plasma to RMPs.

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