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Effect of screened resonant magnetic perturbations on the density profile[1] F.L. WAELBROECK, Inst. Fusion Studies, U. Texas, I. JOSEPH, Lawrence Livermore Natl. Lab., E. NARDON, F. MILITELLO, UKAEA Culham — At low collisionality, Resonant Magnetic Perturbations (RMP) can suppress the edge localized modes (ELM), which present a threat to the ITER divertor.[1]. Explanations of the suppression based on the effects of magnetic stochasticity face several difficulties: (1) while stability analyses show that the suppression is caused by a reduction of the edge pressure gradient, it is primarily the density rather than the temperature gradient that is reduced. (2) A steepening of the electron-temperature pedestal indicates the persistence of good magnetic flux surfaces. (3) There is no island spin-up after removal of the RMP. (4) Signs of mode-penetration are absent during ramp-up of the RMP. In fact, low-density locked modes are carefully avoided in RMP experiments because of their undesireable consequences, such as disruptions. Here, we use a 2-fluid model to examine the quasilinear transport of particles caused by the convection cells generated near suppressed RMPs.[2] [1] T. Evans et al., Nucl. Fusion 48, 024002 (2008). [2] E. Nardon et al., Phys. Plasmas 14, 092501 (2007).

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F. L. Waelbroeck
Inst. Fusion Studies, U. Texas

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