

# Plasma Response to Resonant Magnetic Perturbations in Tokamaks

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Resonant magnetic perturbations (RMPs) have been applied in tokamaks to mitigate or even suppress plasma edge localized modes (ELMs) [1]. For some RMPs, it is necessary to consider the plasma response to accurately calculate the perturbed magnetic field inside the plasma. Several models have been used to estimate the plasma response according to references [2,3,4]. In this work we consider an ergodic magnetic limiter to create a RMP [5], superimposed to large aspect ratio tokamak equilibrium, and a resonant current sheet inside the tokamak to simulate the plasma response. For a given perturbation the plasma response is estimated, as proposed in [3], by choosing the current sheet on the internal surface to produce a null radial magnetic field on that surface. Toroidal polar coordinates [5] are used to calculate the equilibrium and perturbed magnetic fields. The nonuniform escape of the chaotic field lines is analyzed by studying the connection lengths and footprints in the presence of plasma response.

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