The Study of Resonant Magnetic Perturbations using Perturbed Equilibria

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The response of tokamaks to magnetic perturbations that evolve slowly compared to Alfvenic time scales is a perturbed equilibrium problem. At the simplest level, a perturbed equilibrium analysis is equivalent to an ideal MHD stability calculation. However, the study of Resonant Magnetic Perturbations (RMP) using perturbed equilibria requires the inclusion of kinetic effects, such as non-ambipolar transport, and the break-up of magnetic surfaces. The physics, methods, and issues associated with including these effects in an RMP analysis will be discussed.