

The Resistive Wall Mode in Tokamaks

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Abstract

The Resistive Wall Mode (RWM) is a generic obstacle to the achievement of high-performance fusion plasmas in many magnetic confinement schemes. The RWM arises because perturbation magnetic flux can diffuse through the wall, and the resultant slowly growing mode potentially limits plasma operation to the more severe stability margins that are found in the complete absence of a wall. Plasma rotation can mitigate the growth of the RWM, but this effect may not prove reliable for either ITER or fusion power plant designs. However, a simple analysis indicates that the RWM can be stabilised by a secondary rotating wall (which could in principle be provided by either an external set of suitably programmed coils, or a flowing lithium blanket). The talk will outline the basic theory of the RWM, and discuss approaches to such rotational stabilisation.

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