

A Study of the Efficiency of "Intelligent Shells"

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Abstract

An "Intelligent Shell" [Bishop, Plasma Phys. and Contr. Fusion 31, 1179 (1985)] is a resistive wall equipped with feedback loops intended to make it appear ideally conducting to the plasma. Two problems associated with intelligent shells are addressed, using a simple model solved numerically, namely, the influence on the stabilization efficiency of the number of feedback loops employed and of gaps between loops of the feedback system. Without gaps between the sensor loops it is found that a modest number of loops per period (such as eight) is almost as stabilizing as infinitely many loops. It is also found that the stabilizing effect is decreasing rapidly by increasing gaps between loops.