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Control of magnetohydrodynamic modes with a resistive wall above the wall stabilization limit JOHN M. FINN, Los Alamos National Laboratory — Studies are shown of control of magnetohydrodynamic (MHD) modes in the presence of a resistive wall, below and above the regime for which stabilization is possible with a perfectly conducting wall, i.e. below and above the ideal wall limit. The results show that resistive plasma (tearing-like) modes can be feedback stabilized for current profiles which are unstable *above* the ideal wall limit, both for tokamak-like and reversed field pinch (RFP)-like profiles. However, above the limit for wall stabilization of ideal plasma modes, resonant or non-resonant, the feedback scheme cannot provide stabilization. The control scheme senses both normal and tangential components of the perturbed magnetic field, and the feedback is proportional to a linear combination of the two. Neither plasma rotation nor complex gain is included. A cylindrical reduced MHD model, in resistive or ideal form, is used, with tokamak-like profiles [increasing profile of $q(r)$] or RFP-like profiles [decreasing $q(r)$]. The possible relevance to RFPs and tokamaks will be discussed.

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