

Abstract Submitted
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MHD-stable axisymmetric mirrors DMITRI RYUTOV, Lawrence Livermore National Laboratory — The traditional way of making MHD-stable mirror configurations is to use quadrupolar magnets. This approach indeed provides stability, but only at the cost of creating complex three-dimensional plasma equilibria, with a number of undesirable features like enhanced cross-field transport, lower magnetic field, and engineering complexity. Over the years, numerous ideas have been suggested for achieving the MHD stability in axisymmetric mirrors. Some of them have been successfully tested experimentally. In this paper, a brief summary of various approaches to the axisymmetric mirror stability will be made that will include: stabilization by sloshing ions, non-paraxial stabilization, the use of magnetic divertors, sheared plasma rotation, and enhanced line-tying stabilization. Wherever possible, relation to existing experiments will be made. The general conclusion is that there are ways of providing MHD stability of the reactor-relevant plasma in axisymmetric mirrors. Prepared by LLNL under Contract DE-AC52-07NA27344.

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