

Abstract Submitted
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Tokamaks and Quasi-Axisymmetric Shaping¹ ALLEN BOOZER,
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Since the pressure and current profiles are largely self-determined in a fusion plasma,
plasma shaping is the primary design freedom. The importance of axisymmetric
shaping to the feasibility of fusion in tokamaks is appreciated. Quasi-axisymmetric
shaping gives additional degrees of design freedom that are associated with stel-
larators while retaining the well-confined particle trajectories associated with the
axisymmetric tokamak. A factor of four extrapolation is expected to be required
in the ratio of driven to bootstrap current between ITER and steady-state DEMO
designs that are limited by axisymmetry. Quasi-axisymmetric shaping can not only
ensure steady-state maintenance of the magnetic configuration but also address is-
sues of MHD stability, robustness of plasma equilibria, density limit, and turbulent
transport modification. Resources have been very limited for carrying out relevant
design studies, but cases have been found that indicate the potential for addressing
important physics issues that must be addressed between ITER and DEMO.

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