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Studies of impact of plasma shaping on edge localized modes
with a nonlinear code BOUT++

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General Atomics, T.Y. XIA, Institute of Plasma Physics, CAS — The plasma
shaping has important effects on the edge localized modes (ELMs). In this work,
with the 3-field BOUT++ code, we study the impact of the plasma shaping on the
ELMs. Three kinds of typical plasma shapes are studied: circular (cbm), elongated
(dbm) and shaped with X-point (meudas). Our calculations show that the shaped
plasma and the X-point geometry have stabilizing effect on the ELMs. For linear
ideal MHD calculation we benchmark BOUT++ results with ELITE and GATO
codes. Then we study the role of non-ideal effects such as resistivity on the ELMs
for the X-point geometry. Also the nonlinear calculations are carried out to study
the impact of plasma shape on the ELM size.

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