

# **Projected profile similarity in gyrokinetic simulations of Bohm and gyroBohm scaled DIII-D L- and H-modes**

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## **Abstract**

Global gyrokinetic simulations of DIII-D [M.A. Mahdavi and J.L. Luxon (eds.) “DIII–D Tokamak Special Issue,” Fusion Sci. Technol. **48**, 2 (2005)] L- and H-mode dimensionally similar discharge pairs are treated in detail. The simulations confirm the Bohm scaling of the well-matched L-mode pair. The paradoxical but experimentally apparent gyroBohm scaling of the H-mode pair at larger relative gyroradius ( $\rho$ -star) and lower transport levels is due to poor profile similarity. Simulations of projected experimental plasma profiles with perfect similarity show both the L- and H-mode pairs to have Bohm scaling. A  $\rho_*$  stabilization rule for predicting the breakdown of gyroBohm scaling from simulations of a single discharge is presented.

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