

Turbulent energy exchange: calculation and relevance for profile prediction

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Abstract

The anomalous heat production due to turbulence is neither routinely calculated in nonlinear gyrokinetic simulations, nor routinely retained in profile prediction studies. In this work we develop a symmetrized method to compute the exchange which dramatically reduces the intermittency in the time-dependent moment, thereby improving the accuracy of the time-average. We also examine the practical impact on transport-timescale simulations, and show that the exchange has only a minor impact on profile evolution for a well-studied DIII-D discharge.

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