

Abstract Submitted
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Study of quasi-coherent fluctuations (QCFs) using BOUT++¹
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PPPL, XIANG GAO, ASIPP, R. GROEBNER, GA — The BOUT++ simulations
are used to study the characteristics of quasi-coherent fluctuations (QCFs) at dif-
ferent pressure profiles, which are generated by VARYPED tool based on measured
plasma profiles from DIII-D. The results show that QCFs can provide the necessary
transport to limit and saturate the H-mode pedestal gradient. The simulations pre-
dict that (1) QCFs are localized in the pedestal region as observed in DIII-D; (2) the
QCFs are near marginal unstable for ideal ballooning modes combined with drift-
Alfven wave modes; (3) the frequency of the mode is around 80kHz, close to that
of the measured QCF; and (4) particle transport is smaller than the heat transport.
(5) Strong nonlinear interactions can be found when the amplitude of QCFs grows
to a threshold value.

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