

Abstract Submitted
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Equilibrium reconstruction including kinetic effects and impact on MHD stability interpretation¹ JONATHAN MENARD, ZHIRUI WANG, PPPL, YUEQIANG LIU, CCFE — Non-ideal plasma equilibrium effects such as toroidal rotation and the presence of fast-ions from neutral beam heating can play an important role in MHD stability for both ideal-wall-mode and resistive-wall-mode instabilities. Systematic comparisons between measured and predicted ideal-wall-mode instability characteristics (such as marginal stability threshold and mode real frequency) have been carried out and highlight the sensitivity of the results to the rotation profile and fast-ion density and pressure profiles. A key uncertainty is the potential redistribution of fast-ions by higher frequency Alfvénic instabilities. Analysis indicates that utilizing reconstructed total pressure and rotation profiles as opposed to using modeled/predicted fast-ion pressure and angular momentum profiles from TRANSP in the limit of zero anomalous fast-ion diffusion can yield better agreement between measured and predicted stability characteristics – consistent with apparent redistribution of fast-ions. Reconstruction methodologies and associated stability implications will be discussed.

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