Abstract Submitted
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Linear Stability and Quasilinear Particle and Heat Fluxes in Ion-ITB Plasmas in LHD[1] D.R. MIKKELSEN, PPPL, K. TANAKA, M. NUNAMI, T.-H. WATANABE, H. SUGAMA, Y. YOSHINUMA, K. IDA, Y. SUZUKI, M. GOTO, W. BERND, I. YAMADA, R. YASUHARA, T. TOKUZAWA, T. AKIYAMA, NIFS — The linear stability of ion-scale microinstabilities in an LHD ion-ITB plasma is studied using the GS2 gyrokinetic turbulence code. The ion-ITB phase is preceded by carbon pellet injection, so the carbon density varies considerably during this period. The carbon density develops an "impurity hole" that is typical of ion-ITB plasmas in LHD. Quasilinear carbon and helium particle fluxes as well as the influence of the carbon density and its gradient on the quasilinear heat fluxes are discussed. The calculations are based on experimentally measured profiles of electron and ion temperature, as well as electron and carbon density. The measured Zeff and the edge ratio of hydrogen and helium influxes are used to constrain the density profiles of these species. All three ions and the electrons are treated kinetically in the calculations, and the finite electron collision rate is included (the results are not significantly affected by ion collisions so they are usually not included).

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