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Thermal Transport and Characterization of Fluctuations at the Pedestal Top using Gyrokinetic Simulations in ELMy H-mode on NSTX AHMED DIALLO, S-H. KU, W. GUTTENFELDER, B. LEBLANC, F. SCOTTI, PPPL, R. MAINGI, ORNL, C.-S. CHANG, PPPL — Early experimental work on NSTX has reported measurements of the spatial structure of turbulence fluctuations during an ELM cycle in the pedestal region. These measurements showed spatial structures with scales $k_\theta \rho_i^{ped}$ ranging from 0.1 to 0.2 propagating in the ion diamagnetic drift direction. These propagating spatial scales structures are found to have a large poloidal extent ($\sim 18\rho_i^{ped}$) and are found to be consistent with ion-scale microturbulence of the type ion temperature gradient (ITG), hybrid ITG and trapped electron mode, and/or kinetic ballooning modes (KBM). Motivated by these experimental observations, we seek to identify the role of pedestal transport between type I ELMs and compare it with microturbulence-induced transport in the pedestal region. Using TRANSP, we show that both the ion and electrons heat diffusivities at the pedestal top remains unchanged between ELMs. Preliminary simulations during the last part of the ELM cycle, using XGC1 code in a delta-f mode shows localized fluctuations consistent with experimental level radial and poloidal correlation lengths. Extension of these simulations to full-f mode will be presented. In addition, other gyrokinetics simulations (e.g., GS2, GYRO) will be performed to identify the unstable modes in the pedestal top and associated heat fluxes The turbulence and neoclassical contributions to these fluxes will also be discussed. Work supported by US DOE contracts DE-AC02-09CH11466.

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