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Edge turbulence changes with increasing lithium coating in NSTX BIN CAO, IPP, CAS, STEWART ZWEBEN, DAREN STOTLER, AHMED DIALLO, BENOIT LEBLANC, PPPL — Lithium wall coating improves energy confinement and suppresses edge localized modes in NSTX, but the mechanism of this improvement is not yet well understood. We have investigated whether lithium wall coating is correlated with changes in the edge turbulence by analyzing data from the NSTX gas puff imaging (GPI) diagnostic. This diagnostic provided two dimensional fast camera images of the D-alpha light emitted by a deuterium gas puff near the outer midplane. So far we have not found any systematic changes of the time-averaged radial profile of GPI D-alpha light with increased lithium wall coating. However, we did observe a clear reduction in the GPI intensity fluctuations, autocorrelation times, and radial correlation lengths with this increased lithium coating, but with no obvious change in poloidal correlation length. The time-averaged GPI profile results will be interpreted using the DEGAS 2 code, with input from the edge density and temperature data from Thomson scattering. The fluctuation changes will be interpreted using models based on shear-stabilization of edge turbulence, including possible effects of the neutral density. This work was supported by DOE Contract DE-AC02-09CH11466.

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