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**Dissimilar $\beta$ effect on electrostatic and electromagnetic turbulence in DIII-D H-mode plasmas**[1] GUIDING WANG, TERRY RHODES, NEAL CROCKER, WILLIAM PEEBLES, KSHITISH BARADA, UCLA, GEORGE MCKEE, University of Wisconsin Madison, COLIN CHRYSTAL, General Atomics — The anomalous transport in existing tokamaks and stellerators is generally attributed to electrostatic turbulence. The electromagnetic turbulent transport mechanism is predicted to play an important role in future high $\beta$ (ratio of plasma pressure to magnetic pressure) fusion plasmas. It is essential to understand the $\beta$ effect on turbulence to test turbulence theory and simulations. A $\beta_N$ (with $\beta_N = \beta/(I_p/aB_T)$) ramp experiment was performed in DIII-D H-mode plasmas. It was observed that the internal magnetic turbulence measured by millimeter wave cross-polarization scattering increased with $\beta_N$ while low-k ñ decreased, and intermediate-k ñ remained approximately constant. A decrease in electron thermal confinement time was also observed coinciding with the $\beta_N$ ramp. These results indicate a decoupling of the density and magnetic fluctuations as well as an effect on electron thermal confinement which might be explained by magnetic fluctuations. Comparison with turbulence simulations will be reported.

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