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Electron Temperature Turbulence and Poloidal Turbulent Flow in Negative Triangularity Plasmas on DIII-D[1] G. WANG, K. BARADA, R. HONG, T.L. RHODES, W.A. PEEBLES, UCLA, M.E. AUSTIN, UT-Austin, A. MARINONI, MIT — The reactor-relevant negative triangularity (-δ) shape recently achieved in the DIII-D Tokamak is potentially a good candidate for future fusion reactors. It generally has an energy confinement similar to H-mode plasmas in conventional positive triangularity (+δ) shape but without ELMs. This work presents electron temperature turbulence and poloidal turbulent flow in -δ plasmas on DIII-D for understanding their transport and confinement properties. In an Inner Wall Limiter (IWL) configuration with an L-mode edge, the core electron temperature turbulence level in -δ shape is similar to or slightly less than a +δ L-mode in the IWL configuration, but near the separatrix the -δ shape has much lower (˜40%) turbulence. The poloidal turbulent flow for IWL plasmas (both -δ and +δ) shows no strong velocity shear contrary to conventional +δ H-mode plasmas. However, in an L-mode diverted configuration a slight well in the edge poloidal velocity is observed in the -δ shape, and the electron temperature turbulence level is lower from the edge to the core compared to the IWL case. Interestingly, as the plasma goes into an "H-mode like" condition, the edge velocity well becomes much deeper, while electron temperature fluctuation level is not reduced.

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