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Nonlinear gyrokinetic simulation of CTEM turbulence and transport dynamics YONG XIAO, UC Irvine, ZHIHONG LIN, UCI — The collisionless trapped electron turbulence (CTEM) is regarded as one of the main candidates for the electron anomalous transport observed in tokamaks. The electron transport can be more significant in the burning plasma due to the heating of electrons by fusion products. The gyrokinetic particle simulation is applied to study the nonlinear physics and transport properties of CTEM turbulence using the Gyrokinetic Toroidal Code (GTC). The simulation observed a transition from Bohm to GyroBohm scaling with the increase of the system size, with the ITER-scale devices fall in the range of GyroBohm scaling. The transport dynamics study indicates the possibilities of non-diffusive feature of the electron heat transport, which will be further studied. Relevant physical time and spatial scales are analyzed to reveal the transport mechanism.

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