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ITG driven turbulent transport in the toroidal plasma including external heating KAZUHIRO MIKI, Kyoto Univ., YASUAKI KISHIMOTO COLLABORATION, NAOAKI MIYATO COLLABORATION¹ — The dynamics of zonal modes such as zonal flows and zonal pressures and also zonal magnetic fields plays an important role in regulating the turbulent transport. Specifically, the zonal pressure which correspond to a profile relaxation sometimes cause an intermittent transport and blow-off events. Such a profile relaxation, which may also link to the zonal flows, is sustained by external heating, leading to a quasi-steady state. So far many simulations have been done by initially assuming a linearly unstable profile. Here, we investigate the turbulent transport based on our gyro-fluid global toroidal code¹ by introducing the effect of external heating. In order to model experimental discharges, the plasma pressure is allowed to gradually evolve from linearly stable profile to unstable one, crossing a critical gradient. We found that the ratio of the zonal flow energy to that of turbulent fluctuations depends on the structure of the zonal pressure and also heating profile. It is found that the zonal flow level when the profile relaxation is allowed becomes higher than that in the case of the fixed profile. ¹N. Miyato, Y. Kishimoto, and J. Li, Phys. Plasmas **11**, 5557 (2004).

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