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Density Fluctuations as an Intrinsic Mechanism to Keep Self-Consistent Shape of Pressure Profile

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The paper presents new insight into previous and new experimental data of the turbulent density fluctuations behavior in T-10 OH and ECRH discharges. The experiments showed existence of the same maximal peaked pressure profile in both OH and ECRH tokamak plasmas as well as strong deterioration of particle confinement after plasma reach this profile (fast density decay in OH, "density pump out" in ECRH). Maximal peaking could be achieved either by flat density and peaked temperature or vice versa. Minimal turbulence level does not depend on heating power and observed when pressure profile is slightly wider than the extreme one. The density fluctuations did not significantly contribute to the heat transport but determined particle fluxes to maintain the pressure profile.

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