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Dominant electron heating with low torque towards ITER baseline on EAST BIN ZHANG, XIANZU GONG, JINPING QIAN, Institute of Plasma Physics, Chinese Academy of Sciences — Steady-state high performance plasma up to 60s has been demonstrated on EAST with dominant electron heating (T_e = 5keV, f_{GW} = 0.78, $H_{98,y2}$ = 1.3) by using zero torque radio-frequency (RF) heating (LHW+ECRH). Meanwhile, extending to high fusion performance has been explored by applying moderate (neutral beam) NB power (β_N = 2.0, β_p = 2.5, $H_{98,y2}$ = 1.2). Synergy effect of electron internal transport barrier and Shafranov shift stabilizing of turbulence improves the energy confinement in this scenario. Efforts towards high fusion gain towards ITER baseline have been made at lower q_{95} and torque. Recent experiments achieved β_N = 1.55 at q_{95} = 3.2 and torque T_{inj} = 0.33Nm with the upper ITER-like tungsten divertor, which was obtained by utilizing lower hybrid wave heating and current drive along with NB power. The $n = 4$ resonant magnetic perturbation coil was applied as an integrated control technique of ELM mitigation (f_{ELM} = 400-600Hz) and high-Z impurity exhaust, while had little degradation impact on plasma performance. In the plasma core region, sawtooth oscillation was observed by soft X-ray diagnostic, suggesting the existing of $q0$ <1.0.

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