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Recent Progress on Long Pulse Divertor Operation on EAST

H.Y. GUO, J. LI, G.-N. LUO, Z.W. WU, S. ZHU, Institute of Plasma Physics, Chinese Academy of Sciences, EAST TEAM — Significant progress has been made in EAST on both physics and engineering fronts toward steady state operations. Long pulse diverted discharges well over 60 seconds have been achieved in EAST by lower hybrid current drive with advanced wall conditioning and active divertor pumping. A series of divertor physics experiments have been carried out to assess both SN and DN divertor performance in EAST under Ohmic and L-mode plasma conditions. Dedicated field reversal experiments have also been conducted to investigate divertor asymmetries, and contributions from various drifts are assessed using the SOLPS code. To actively control power and particle fluxes to divertor target plates, gas puffing with Ar and N₂ has been explored in EAST to preferentially reduce peak heat fluxes near outer strike points and mitigate in-out divertor asymmetries. Methane injection at various divertor locations (inner divertor, outer divertor and private region) has also been explored to quantitatively assess divertor screening for intrinsic carbon impurities. Further efforts will be dedicated to active feedback control of gas puffing rates to maintain the divertor plasma in partial detachment conditions, which is essential for achieving higher power, long pulse operations.

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