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ELM elimination with lithium aerosol injection in upper-single null discharges using the tungsten divertor in EAST Z. SUN, ASIPP, R. MAINGI, PPPL, J. HU, ASIPP, R. LUNSFORD, A. DIALLO, PPPL, K. TRITZ, JHU, T. OSBORNE, G.A., J. CANIK, ORNL, G. ZUO, L. WANG, G. XU, X. GONG, ASIPP, EAST TEAM TEAM — A reproducible, fully non-inductive H-mode regime devoid of large ELMs has been achieved by continuous Li injection in EAST into the upper 'ITER-like' tungsten divertor, extending previous results on the graphite divertor [J.S. Hu et al., PRL 114 (2015) 055001]. These discharges did not suffer from density or impurity accumulation, and maintained constant core radiated power. The new results extend the energy confinement multiplier H98(y,2) ˜1.2, as compared to H98(y,2) ˜0.75 previously on the graphite divertor. The observed ELM elimination is correlated with a decrease in particle recycling, as expected from the strong Li coating before the experiment, and real-time Li aerosol injection. In addition, core W concentration was reduced during the Li injection. ELM elimination is likely related to the reduced recycling and density /temperature profile changes. A low-n electromagnetic coherent mode (MCM) at ˜40kHz became stronger in amplitude and also more coherent. The MCM shows strong magnetic fluctuations as measured by fast Mirnov coils, but weak density fluctuations. As compared to the graphite divertor, Li injection into the tungsten divertor eliminated ELMs at twice the previous auxiliary heating power, and reduced pedestal collisionality.

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