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Time-resolved kinetic modelling of ELM-induced tungsten influx in ITER STEVEN LISGO, ITER Organization, JAMES HARRISON, CCFE, MARTIN KOCAN, RICHARD PITTS, ITER Organization, STEFFEN POTZEL, IPP Garching, DETLEV REITER, FZJ, PETER STANGEBY, GA — High performance operation in ITER (Q $\sim$ 10) will require tungsten (W) core concentrations below $\sim 10^{-5}$. The steady-state influx of W from the strike-points will be nominal since only detached plasmas can satisfy the engineering heat-flux limit of 10 MW m^{-2}, but high energy particles reaching the target plates during Edge-Localized Modes (ELMs) will exceed the W sputtering threshold. Given the very low W concentration limit for the core, operational planning requires that the production and transport of W in the boundary plasma be assessed for controlled ELMs and infrequent natural Type-I ELMs, and in the absence and presence of resonant magnetic perturbations (RMPs). ELM simulations with the SOLPS plasma fluid code were recently performed, where prompt redeposition was found to reduce the W influx by more than an order of magnitude [D. Coster et al, 40th EPS, 2014]. The present study employs the OSM-EIRENE-DIVIMP code package, which utilizes an empirical fluid model to describe the bulk plasma evolution and W is treated kinetically. Model benchmarks against experimental data are presented. RMPs will be addressed in future work. The views and opinions expressed herein do not necessarily reflect those of the ITER Organization.

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