

Abstract Submitted  
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**Interaction of neutral atoms and plasma turbulence in the tokamak edge region** CHRISTOPH WERSAL, PAOLO RICCI, ROGERIO JORGE, JORGE MORALES, PAOLA PARUTA, FABIO RIVA, Ecole Polytechnique Federale de Lausanne (EPFL), Swiss Plasma Center (SPC), CH-1015 Lausanne, Switzerland — A novel first-principles self-consistent model that couples plasma and neutral atom physics suitable for the simulation of turbulent plasma behaviour in the tokamak edge region has been developed [1] and implemented in the GBS code [2]. While the plasma is modelled by the drift-reduced two fluid Braginskii equations, a kinetic model is used for the neutrals, valid in short and in long mean free path scenarios. The model includes ionization, charge-exchange, recombination, and elastic collisional processes. The model was used to study the transition from the sheath to the conduction limited regime, to include gas puffs in the simulations, and to investigate the interplay between neutral atoms and plasma turbulence.

C. Wersal and P. Ricci 2015 *Nucl. Fusion* **55** 123014

P Ricci et al 2012 *Plasma Phys. Control. Fusion* **54** 124047

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