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Ponderomotive Density Modification via High Power Radio-Frequency Waves in the Scrape-Off Layer. (PhD Oral-24)[1] RHEA BARNETT, COLIN WATERS, Univ of Newcastle, DAVID GREEN, JEREMY LORE, Oak Ridge National Laboratory, DAVID SMITHE, Tech-X, JIM MYRA, Lodestar, CORNWALL LAU, Oak Ridge National Laboratory, BART VAN COMPERNOLLE, General Atomics, STEVE VINCENA, University of California Los Angeles — Maximising the energy transfer from ion cyclotron range of frequencies (ICRF) actuators to the core of fusion plasmas will be integral to reliable operation of devices such as ITER. Injected RF wave properties depend on and modify plasma properties such as density, leading to a coupled system that requires a self-consistent description. The role of the ponderomotive force on density redistribution during application of RF power in regions close to the actuator is of interest. Simulation results from a 1D (parallel to the confining magnetic field), coupled full-wave cold plasma RF and plasma transport solver are described and the results compared with experimental data from the Large Plasma Device (LAPD). Parallel gradients in the total electric field are also considered. Plasma transport and RF cold plasma parameters for which the ponderomotive force may drive significant density redistribution will be highlighted.

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