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**Investigating the Suppression of Burn in a Magnetized ICF Plasma** SAM O'NEILL, BRIAN APPELBE, JEREMY CHITTENDEN, AIDAN CRILLY, Imperial College London, CHRISTOPHER WALSH, Lawrence Livermore National Laboratory — The pre-magnetization of inertial confinement fusion capsules is a promising avenue for reaching ignition as magnetic fields reduce electron thermal conduction losses during hotspot formation. However, to reach very high yields the burn-up of remaining cold fuel must be as efficient as possible. This work investigates the potential suppression of burn in a magnetized plasma utilizing the radiation-MHD code Chimera, developed at Imperial College London. This code includes extended MHD effects, such as the Nernst term, and a Monte-Carlo model for magnetized alpha particle transport and heating. Simulations are carried out in planar geometry to investigate burn front dynamics. 1D simulations show a reduction in burn propagation rate with increasing magnetization. These studies also show the possibility of forming a transport barrier where electron magnetization grows faster at the burn front than in the hot fuel, suppressing heat flow through it. This barrier may grow unstably due to the action of Nernst and magnetic field advection. 2D simulations are used to study the evolution of this transport barrier and how it is affected by hydrodynamical instabilities. Integrated capsule simulations are also carried out to investigate the relevance of these effects to ICF experiments.

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