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Expansion of a relativistic ionization wave launched by a sheath field in a strong magnetic field[1] HAOTIAN MAO, UCSD, ZHENG GONG, TODD DITMIRE, HERNAN QUEVEDO, UT Austin, ALEXEY AREFIEV, UCSD — MG-scale magnetic fields are now available through pulsed power technology, which opens the possibility of radially confining laser-generated plasma filaments in clustering deuterium jets. However, a long-lived relativistic ionization wave driven by a population of hot electrons created by an intense laser pulse, can be launched into the surrounding gas by the sheath field of the filament [PRL 112, 045002 (2014)], potentially affecting the transport of the entire plasma and negating the advantage of the confinement. In this work, we use 2D kinetic simulations to examine the impact of the applied magnetic field on the propagation of the ionization wave and to determine the criterion that must be satisfied to prevent the wave from being launched.

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