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Magnetic Rayleigh-Taylor Instability with Biermann Battery Effect[1] CHUAN-CHIH (JASON) CHOU, BRUCE FRYXELL, R. PAUL DRAKE, BART VAN DER HOLST, University of Michigan — Recently, unexpected morphology has been observed in high-energy Rayleigh-Taylor experiments. In these experiments with 3D initial perturbations, the spikes lack the mushroom cap observed in 2D or low-energy counterparts. It is suspected that magnetic field generated by Biermann battery may be responsible for this unusual morphology. In order to estimate the magnitude of the magnetic field due to Biermann battery effect under the experimental circumstances, we performed preliminary simulations using CRASH and its recent implementation of Biermann battery term. Although limited by the lack of corresponding dissipation term, we are able to obtain the upper limit of the magnetic field present in the experiment. We will discuss its implication in the context of the plausibility of the Biermann battery hypothesis.

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