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**The field-dependent flow-front speed of natural convection in magnetic fluids** JUN HUANG, YI LIU, ZHENYU ZHOU, WEILI LUO, University of Central Florida — The flow front of natural convection in a magnetic fluid was studied in applied field with two configurations: one with temperature gradient,  $\nabla T$ , parallel to the field gradient,  $\nabla B$ , and the other with  $\nabla T$  anti-parallel to  $\nabla B$ . The temperature profiles inside the two quasi one-dimensional cells were used to analyze the speeds of flow fronts. We found that when  $\nabla B$  is anti-parallel to  $\nabla T$ , the flow speed is slower than that in zero field; while when  $\nabla B$  is parallel with  $\nabla T$ , the flow speed is faster than that in zero field. These results confirmed our earlier work that in the parallel configuration the field enhances, while in the anti-parallel configuration the field suppresses the convection.

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