

Abstract Submitted  
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**Numerical modeling of metal pad instability in liquid metal batteries**<sup>1</sup> LINYAN XIANG, OLEG ZIKANOV, University of Michigan - Dearborn — The rolling pad instability caused by electromagnetic coupling of interfacial waves in a three-layer system is analyzed for a simplified model of a liquid metal battery - a promising device for large-scale stationary energy storage. Simulations are performed using OpenFOAM. The stability characteristics and selection between symmetrically and antisymmetrically coupled waves are found to be determined by system's parameters, in particular by the ratio of the density differences across the two interfaces. Various scenarios possible in the battery system: stability, instability leading to sloshing, and instability leading to short-circuit are presented.

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