Abstract Submitted
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Vorticity transport in shock driven plasma flows: A comparison of MHD and two-fluid models[1] DARYL BOND, VINCENT WHEATLEY, The University of Queensland, DALE PULLIN, The California Institute of Technology, RAVI SAMTANEY, King Abdullah University of Science and Technology — Suppression of the Richtmyer-Meshkov instability in a plasma, through the application of a seed magnetic field, has been studied in the framework of ideal magnetohydrodymanics. These studies have shown that suppression is achieved through the transport of vorticity by magnetohydrodynamic waves away from a perturbed fluid-fluid interface where it was baroclinically generated by shock impact. The implementation of a more physically accurate, fully electromagnetic, two-fluid plasma representation allows a more realistic investigation of vorticity transport in shock driven plasma flows. Results comparing ideal one-dimensional two-fluid and magnetohydrodymanic flows are presented. Substantial increases in the complexity of the flow field and vorticity transport dynamics are observed with important ramifications for the stabilization of shock driven interfaces.

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Vincent Wheatley
The University of Queensland

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