

"Recent Advances and Future Opportunities for Experiments to Investigate Rayleigh-Taylor Driven Mixing"

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LA-UR 10-02010

Abstract

The last 20 years has seen a dramatic increase in research to explore the development of Rayleigh-Taylor instabilities, and turbulent mixing driven by Rayleigh-Taylor instabilities. Indeed, the appearance of Rayleigh-Taylor in the research literature has exponentially increased as its role in many mixing processes has been recognized. Much of the research has been driven by innovative diagnostics and experiments, that have provided detailed validation data for complex mathematical models of instability growth, and turbulent material mixing. This talk will review the myriad of applications/processes that now attribute some or all of their flow to Rayleigh-Taylor instabilities, past experimental successes, and recent advances with experiments that have investigated Rayleigh-Taylor driven mixing. The talk will close with a look to future opportunities, with particular emphasis on diagnostics and validation needs.