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The One-Dimensional Turbulence (ODT) Model Applied to Spray Atomization MICHAEL OEVERMANN, AMIRREZA MOVAGHAR, ALAN KERSTEIN, Chalmers University of Technology — Liquid jet breakup is an important fundamental multiphase flow, often found in many industrial engineering applications. The breakup process is very complex, involving jets, ligaments, and small droplets, featuring tremendous complexity in interfacial topology and a large range of spatial scales. One computational strategy for capturing micro-scale processes not affordably resolved in multi-dimensional turbulence simulations is to represent these processes by a lower-dimensional formulation. An approach formulated in one spatial dimension, denoted One-Dimensional Turbulence (ODT), is outlined. The one-dimensional turbulence (ODT) model has been proposed recently as a spray primary breakup model. This stochastic modeling approach provides high lateral resolution by affordably resolving all_relevant scales in that direction. In this paper, we present our latest ODT results for spray simulations including comparisons with DNS data and ongoing activities to couple ODT with a LES simulation.

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