

Abstract Submitted
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Entrainment and mixing in a turbulent transverse jet: a DNS study¹ SUMAN MUPPIDI, KRISHNAN MAHESH, University of Minnesota — DNS of passive scalar mixing in a round turbulent transverse jet is performed at conditions matching that of experiment (Su and Mungal, *J. Fluid Mech.* 2004). The velocity ratio is 5.7 and the jet Reynolds number is 5000. The simulation is validated by detailed comparison of mean velocity, turbulence intensities, and scalar concentration to experiment. The simulation data is used to discuss the turbulent kinetic energy budget, and different timescales present in the flow, entrainment characteristics and mechanisms, and possible reasons why RANS computations do not predict this flow field adequately.

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