

Abstract Submitted
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Momentum and Scalar transport in a turbulent jet in crossflow : a DNS study¹ SUMAN MUPPIDI, KRISHNAN MAHESH, University of Minnesota — We discuss the velocity field and passive scalar mixing characteristics of a turbulent round jet in crossflow. Direct numerical simulation is performed at conditions matching that of experiment (Su & Mungal 2004). The velocity ratio is 5.7, the Reynolds number is 5000, the crossflow is laminar and the jet originates from a turbulent pipe flow. The results of the simulation will be compared to data of velocity and scalar fields available from Su & Mungal's experiment. A separate simulation of fully developed turbulent flow in a pipe is performed ($Re = 5000$) and the time-dependent velocity field from this simulation is used as the inflow boundary condition for the jet. The results of the pipe flow simulation show a good agreement with existing results (Eggels et al. 1994).

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Suman Muppidi
University of Minnesota

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