

Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Numerical simulation of particle laden coaxial turbulent jet flows¹

KUMARAN KANNAIYAN, REZA SADR, Texas A&M at Qatar — The study of coaxial turbulent particle laden jets has been of interest due to its importance in many applications such as industrial burners, and mixing devices. The addition of the second phase to the continuous phase jet can change the already complicated flow pattern and turbulent characteristics of the jets. Albeit the vast research efforts that have been devoted to understand such phenomena, demand for detailed investigation of particle laden flows remains an active area of research. The advent of laser diagnostics has helped to quantify the myriad details of the jet flow fields in more details. In parallel computational fluid dynamics (CFD) can provide additional information by further investigating such flows with an acceptable level of accuracy. In this work, numerical simulations results are presented for the flow and turbulent characteristics of a coaxial jet with and without the dispersed phase. The results are compared with the experimental data measured using Molecular Tagging Velocimetry diagnostic technique. The key objective of this work is to undermine the flow field details that are difficult if not impossible to measure.

¹Supported by QSTP.

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Date submitted: 05 Aug 2010

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