COMPUTATION OF AN AXISYMMETRIC JET USING OPENFOAM

By

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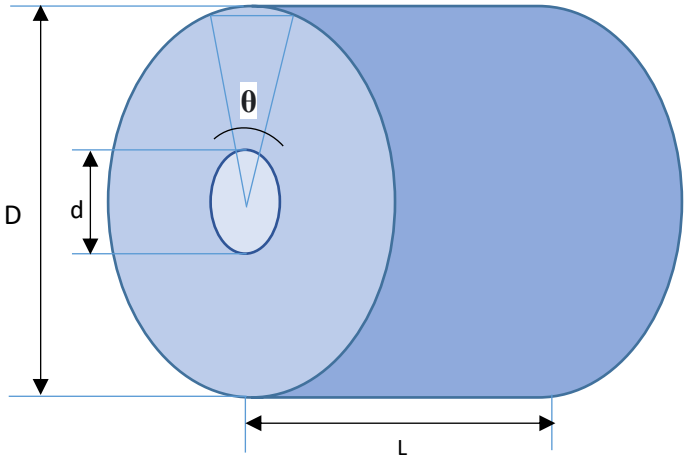
Problem Statement:

To compare the results of the practical experiment of an axisymmetric jet, done by **PL** (N.R.**P**ANCHAPAKESAN and J.L.**L**UMLEY), with the predictions from CFD simulations and similarly validate the CFD simulation results by (Kannan B.T.)

Abstract:

The study is primarily centered in validating a paper as titled above. Further the consistency of the simulation results are compared with the experimental results obtained by **PL** (N. R.**P**ANCHAPAKESAN and J. L.**L**UMLEY). The simulation employed the **k-epsilon model** in **OpenFoam** Software for the simulation of the axisymmetric turbulent air jet using **RANS** (Reynolds Averaged Navier-Stokes equations) and the **blockMeshDict** utility for meshing of **3D wedge** geometry, the solver used was **simpleFoam**. Our forecast using the k-epsilon model and the experimental results by **PL** are in high similitude, even better than the simulation of the referred paper.

Problem Schematic:



d=diameter of orifice (inlet)

D=diameter of the cylinder, entrainment section (wall).

D=300d

L=Length of the cylinder

L=250d

θ=angle of the wedge section

$\theta < 5^0$