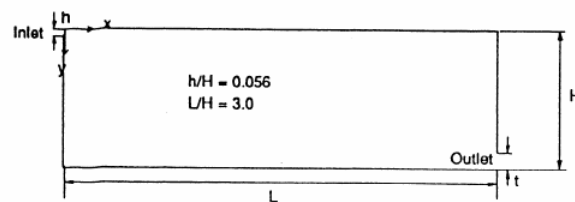


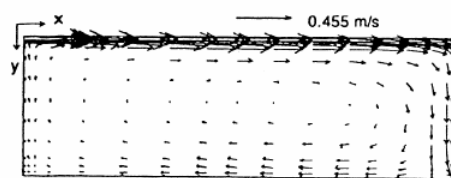
Chen, Q. and Z. Jiang, Significant Questions in Predicting Room Air Motion, ASHRAE Transactions, Part 1, 1992, pp. 929-932.

Based on a state-of-the-art review, some computational results, and experimental data, a few questions one usually encounters in numerical simulation of room air movement are discussed. The following conclusions can be drawn:

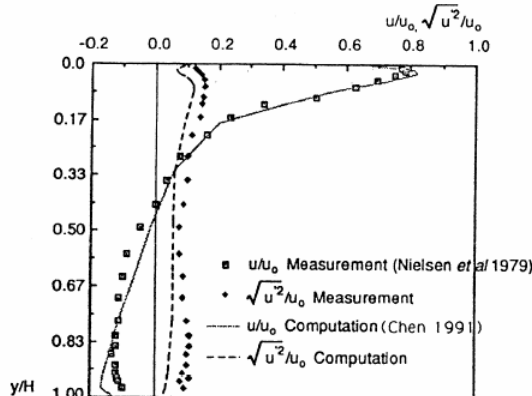
- The standard $k-\varepsilon$ model is still the most appropriate detailed model used in computing room airflows
- The standard $k-\varepsilon$ model may correctly predict turbulent air motion in a room if the thermal and flow boundary conditions are provided properly
- It is difficult to predict unstable airflow and airflows with multiple solutions
- The wall function method is not suitable for predicting heat exchange coefficients near a wall
- Many complex diffusers could be numerically simulated by a number of approximated methods



(a) Sketch of the two-dimensional case



(b) Computed velocity distribution (Chen 1991)



(c) Computed and measured dimensionless velocity u/u_0 and turbulence intensity $\sqrt{u^2}/u_0$ profiles at section $x/L=1/3$

Simulated and measured results of a two-dimensional case.