Chen, Q., Prediction of Room Air Motions by Reynolds-Stress Models, Building and Environment, Vol. 3.1, No 3, pp. 233-244, 1996.

The test results are presented from three Reynolds-stress models (two isotropization of production models and a quasi-isotropic model) and the standard *k-ε* model for predicting typical airflow in a room. The flow patterns studied are natural convection, forced convection and mixed convection in a room and an impinging jet flow. Experimental data from the literature are used for validation. The results show that the computations and the experimental data are in agreement for the mean air velocities, but less satisfactory for the turbulent quantities. The performance of the three Reynolds-stress models is similar; they all predict anisotropic turbulence and secondary recirculation existing in a room airflow for which the *k-ε* model fails. However, the Reynolds-stress models require additional computing effort compared to the *k-ε* model.

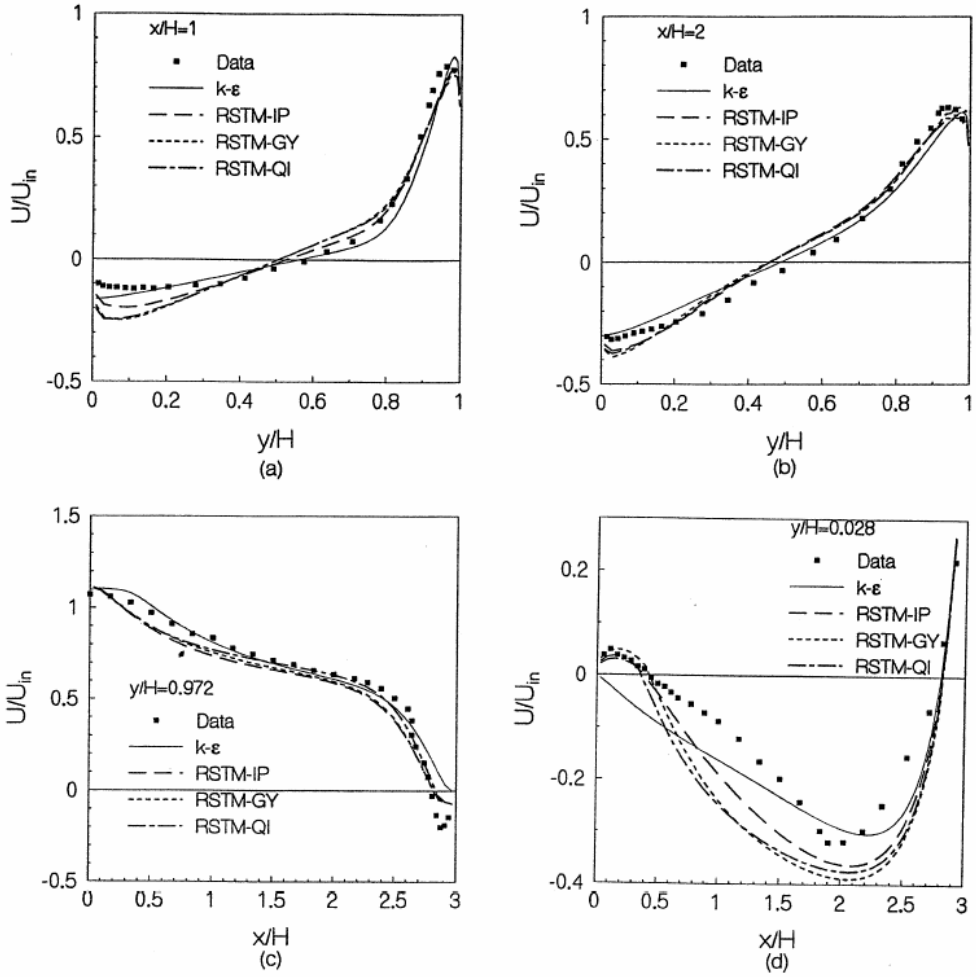


Fig. 4. Comparison between the computed profiles of mean velocity and the experimental data from Restivo [19] for the forced convection case. (a) $x/H = 1$; (b) $x/H = 2$; (c) $y/H = 0.972$; (d) $y/H = 0.028$.