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ANALYSIS OF NEWTONIAN FLOWS IN CONFLUENT CHANNELS

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Abstract. In this work, the newtonian flow in a X junction is modeled and the effect of the angle between inlets and outlets is studied. The problem is solved by using two coupled methods, Lattice Boltzmann (LBM) and Immersed Boundary (IB). The LBM-IB method is a good choice for low Reynolds experiments, providing accurate solutions in reasonable times. Numerical simulations show changes from simple laminar to complex flow with recirculation at the center of the junction as the cross angle is changed from 90 to 30 degrees. Also, we study the effects of increasing the Reynolds number on the structure of the flow. Results are compared with experimental data found in the literature, and good agreement is shown.