عنوان مقاله:

Obstacle Geometry Effect on the Stability of Two-Dimensional Incompressible Flow in a Channel

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خلاصه مقاله:

Two-dimensional incompressible fluid flow around a rectangular shape placed over a larger rectangular shape is analyzed numerically. The vortex shedding is investigated at different arrangements of the two shapes. The calculations are carried out for several values of Reynolds numbers from low values up to 52. At low Reynolds number, the flow remains steady. The flow characteristics are analyzed for each configuration. The analysis of the flow evolution shows that with increasing Re beyond a certain critical value, the flow becomes unstable and undergoes a bifurcation. It is observed that the transition to unsteady regime is performed by a Hopf bifurcation. The critical Reynolds number beyond which the flow becomes unsteady is determined for each configuration.

کلمات کلیدی:

Incompressible fluid flow, obstacle, Von Karman vortex street, Finite, volume method, Critical Reynolds Number

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