

This computational study shows, for the first time, a clear transition to two-dimensional Hopf bifurcation for laminar incompressible flows in symmetric plane expansion channels. Due to the well-known extreme sensitivity of this study on computational mesh, the critical Reynolds numbers for both the known symmetry-breaking (pitchfork) bifurcation and Hopf bifurcation were investigated for several layers of mesh refinement. It is found that under-refined meshes lead to an overestimation of the critical Reynolds number for the symmetry breaking and an underestimation of the critical Reynolds number for the Hopf bifurcation.