Abstract Submitted
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**A numerical investigation of the laminar, three-dimensional backward-facing step**[1] NIKOLAOS MALAMATARIS, TEI W. Macedonia / George Mason University, RAINALD LOHNER, George Mason University — The three-dimensional, backward-facing step is a benchmark problem in CFD. However, only recently, Malamataris and Löhner (2011) were able to compute the eddy along the upper wall of the step for this flow in laboratory feasible conditions, although the existence of this eddy is known from the experiments of Armaly et al (1983) and Lee and Mateescu (1998). There are some misinterpretations regarding three-dimensional effects for this flow due to the fact that at the time of the work of Armaly et al (1983) only two-dimensional computations were available that perpetuated until the work of Malamataris and Löhner. The issues with three-dimensional effects are shown to leave the flow phenomena unaffected in the plane of symmetry for the conditions of Armaly et al's experiment by showing streamlines in planes parallel/perpendicular to the plane of symmetry. The Reynolds number ranges from 100 to 1050. The steady state, three-dimensional Navier Stokes equations are solved with finite elements using two different codes FEFLO and FEM3D.

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