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Impact of the Time Interval in the Numerical Solution of Incompressible Flows

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Abstract : In paper, we will deal with incompressible Couette flow, which represents an exact analytical solution of the Navier-Stokes equations. Couette flow is perhaps the simplest of all viscous flows, while at the same time retaining much of the same physical characteristics of a more complicated boundary-layer flow. The numerical technique that we will employ for the solution of the Couette flow is the Crank-Nicolson implicit method. Parabolic partial differential equations lend themselves to a marching solution; in addition, the use of an implicit technique allows a much larger marching step size than would be the case for an explicit solution. Hence, in the present paper we will have the opportunity to explore some aspects of CFD different from those discussed in the other papers.

Keywords : incompressible couette flow, numerical method, partial differential equation, Crank-Nicolson implicit
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