

**APPLICATION OF ADAPTIVE MESH REFINEMENT METHOD FOR PREDICTING  
INCOMPRESSIBLE VISCOUS CAVITY FLOWS**

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**Abstract**

An adaptive mesh refinement method is presented for predicting incompressible viscous cavity flows in a two-dimensional domain. Viscous fluid flow in the cavity has long been a popular test case for evaluating numerical techniques. In this paper, the adaptive mesh refinement method relies on numerical errors or gradients and employs Richardson extrapolation to estimate truncation errors from different levels. In addition, the conservative treatment has been found necessary for pressure-correction equation. Neumann-Dirichlet boundary condition is used to treat conservative interface boundary between coarse-fine grids. The present approach is numerically robust and efficient to automatically find truncation errors. It can speed up the computing time significantly.

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