

The Fictitious Domain Method for the Navier-Stokes Equations in Natural Variables

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Abstract: In this paper, we consider a variant of the fictitious domain method associated with the modification of nonlinear terms in a fictitious sub-domain. The model problem shows the effectiveness of using this modification. The proposed version of the method is used to solve the problem of an arbitrary region and to set a boundary condition for pressure. A numerical solution is implemented and the results of numerical results are given.

Keywords: Fictitious domain method, Navier-Stokes equations, numerical solution.

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