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# Moving Mesh Methods for Burger's and Navier-Stokes Equations †

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**Abstract:** In this talk, we focus on the numerical simulation of the viscous Burger's equation and the incompressible Navier-Stokes equations. Generally, the solution of Burger's equation exhibits boundary layers; to obtain a uniformly convergent numerical solution, we apply the finite difference scheme on layer-adapted moving meshes obtained through the mesh equidistribution principle. We study the simulation of the Navier-Stokes equations in domains with moving boundaries. Arbitrary Lagrangian-Eulerian is used to transform the problem from the moving domain to a fixed reference domain; this is achieved with the help of an artificial domain velocity. To solve the resultant Navier-Stokes equation in the fixed domain, we use the characteristic method. For the interfaces, suitable boundary conditions are used. The proposed method is applied to three different problems, and the results are compared with the earlier results.
**Keywords:** Burger's equation; Navier-Stokes equations; mesh equidistribution principle.



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## Conflicts of Interest

The authors declare no conflict of interest.