

## عنوان مقاله:

Large Eddy Simulation (LES) for fluid flow modeling of one and two phase flow

## محل انتشار:

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## خلاصه مقاله:

In this paper, the smagorinsky model are applied to simulate the turbulence on fluid flow problems consist of one and two phase flows and evaluate constant smagorinsky's coefficient and present suggestion about it to modify the results. For fluid flow modeling, Momentum and Continuity are the basic equations. The momentum equations in their final form are known as Navier-Stokes equations. In solution procedure, it needs to decide where to store the velocity components. In this research, staggered grids are used to evaluate this problem. On Staggered grids, the velocity components are stored at the cell face and the scalar variables such as pressure are stored at the central nodes. There are several methods for modeling of free surface flows. These methods are categorized as surface tracking and surface capturing methods. The Volume of Fluid (VOF) method is one of the surfaces capturing method. In this research, incompressible N-S equation solved using Large Eddy Simulation. Navier-Stokes equations are solved using SIMPLE method and VOF method is applied for free surface modeling. The numerical scheme is validated by simulating Lid-driven cavity flow and dam break modeling. Finally, Comparison of horizontal and vertical velocities at various Reynolds numbers for Cavity test and dam break that are samples of one and two phase flows for different quantity of constant smagorinsky's coefficient were performed. The results show that application of Smagorinsky's coefficient between [0.5-0.8] present the best results in cavity as a one phase flow problem. But its efficiency is negligible in two phase flow problems such as dam break modeling

## کلمات کلیدی:

Navier- Stokes equations, Large Eddy Simulation, Smagorinsky model, staggered grids, dam break, cavity, Volume of fluid method, two phase flow

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