

عنوان مقاله:

Numerical Analysis of the Turbulent Flow Structure Induced by the Cavitation Shedding using LES

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خلاصه مقاله:

To analyze the interaction between the turbulent flow structure with the cavitation shedding dynamics, a three-dimensional unsteady cavitating turbulent flow around the three-dimension NACA۰۰۹ hydrofoil is investigated in this study. The cavitating flow in has been modeled with a homogeneous mixture of liquid and vapor using LES. The interaction between the cavitation and the fluid vortex is analyzed and discussed. The results demonstrate that the vortex stretching is mainly in the center of the cloud cavity and changes quasi-periodically as the cloud cavity evolves. As a result, the mechanism of the inception of cavitation, re-entrant jet and cavitation cloud shedding are accurately captured and predicted by LES in accordance with the experiment data.

کلمات کلیدی:

NACA۰۰۹ hydrofoil, Sheet/cloud cavitation, LES, Vortex interaction, Cavitation, Fluid structure, Unsteady flow, Pressure fluctuations

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