Solid-Fluid Interaction Analysis in Fixed Mesh and its Application to Functional Design of Component

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This paper describes computational method with finite element method in fixed mesh flexible solid-fluid interaction problems. Finite element method in fixed mesh can treat large deformation without mesh failure and contact between different materials. This presentation explains governing equation in strong form with mixture theory and capturing method of free-moving material interfaces. In addition, after verification of the above computational method in simple example, we apply the proposed procedure to practical solid-fluid interaction behavior such as functional design of component.

Keywords: Solid-Fluid Interaction, Fixed Mesh, Functional Design