

ALE and FLUID-STRUCTURE INTERACTION

Applications For Industrial problems

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When solving Fluid Structure Interaction problems, the main concern is mesh distortions at the fluid structure interface due to the moving structure. Mesh distortion limits the applicability of a Lagrangian and Eulerian description of motion when modeling large deformation processes.

An alternative technique is the ALE (Arbitrary Lagrangian Eulerian) formulation. It is a method where the mesh motion is independent of the material or fluid particle velocity.

The ALE formulation is not free from numerical problems. There are dissipation and dispersion problems associated with the flux of mass between elements.

In this presentation, fluid structure interaction algorithms, as well as their applications to academic and industrial problems are presented.