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The numerical simulation of strongly unsteady flow with hundreds of moving bodies. (English) [Zbl 0986.76043](#)
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Summary: We develop a methodology for the simulation of strongly unsteady flows with hundreds of moving bodies. An unstructured grid, high-order, monotonicity preserving, ALE solver with automatic refinement and remeshing capabilities was enhanced by adding equations of state for high explosives, deactivation techniques and optimal data structures to minimize CPU overheads, automatic recovery of CAD data from discrete data, two new remeshing options, and a number of visualization tools for the preprocessing phase of large runs. The combination of these improvements has enabled the simulation of strongly unsteady flows with hundreds of moving bodies. Several examples demonstrate the effectiveness of the proposed methodology.

MSC:

76M10 Finite element methods applied to problems in fluid mechanics

Cited in **10** Documents

Keywords:

high-order monotonicity preserving ALE solver; automatic remeshing; equations of state; high explosives; deactivation techniques; optimal data structures; visualization

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