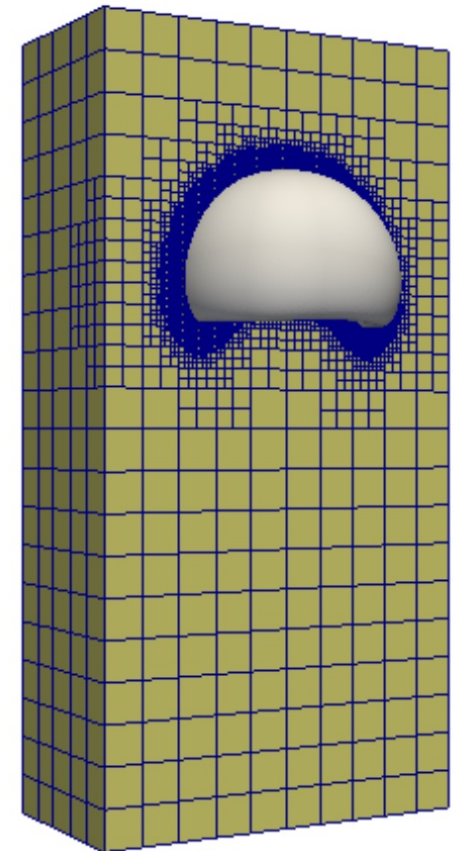




### Comparing the convected level-set and the Allen-Cahn phase-field methods in AMR/C simulations of two-phase flows

The modeling and simulation of two-phase flows is still an active research area, mainly when surface tension is present. One way to model the different phases is with interface-capturing methods. This talk reviews and compares two different interface-capturing approaches to simulate two-phase flows: a level-set and a phase-field method. First, we will present a modified level-set method called convected level-set. The difference from the standard level-set method is that the re-initialization step is embedded in the convection equation, avoiding a separate step during the calculation. Then, we present a phase-field approach that uses a conservative Allen-Cahn equation with a Lagrange multiplier to conserve mass. Both methods are implemented in libMesh, a parallel adaptive finite element library, using the same finite element formulations, time-marching schemes, solvers, and mesh adaptivity strategies. Finally, we show numerical solutions for both methods considering adaptive mesh refinement and coarsening (AMR/C), and discuss their differences.



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**25 gennaio 2023, ore 12:00 (precise)**

**Aula MS1 (DICAr)**