

# Resampling strategies in finite volume particle methods

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In contemporary applications of scientific computing, models based on conservation laws are considered. These physical laws are usually described by time-dependent hyperbolic partial differential equations. Although there already exists a large variety of different high-performance numerical methods to solve these equations, novel approaches are still under investigation.

One example is the Finite Volume Particle Method (FVPM), which is highly flexible and has, moreover, high potential for the numerical simulation of multiscale phenomena, for high-dimensional problems, for problems with complicated geometries, moving boundaries, or rapid variations of the solution.

This talk discusses selected numerical aspects concerning the efficient implementation of the FVPM, where particular focus is placed on resampling strategies, as they are required for the adaptive refinement and coarsening of the particles' distribution. For further illustration, supporting numerical examples are presented.