

# **Towards an Efficient and Accurate Adaptive SPH Algorithm**

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The use of variable resolution in SPH schemes is receiving a lot of attention in literature. As the Lagrangian nature of the scheme makes the introduction of variable resolution zones much more challenging than in classical Eulerian methods, Adaptivity is one of the Grand Challenges identified by the SPH European Research Interest Community SPHERIC. In the talk, a conservative SPH formulation will be derived using an Hamiltonian approach and a possible algorithm to introduce adaptivity will be discussed, analyzing the effect of different splitting patterns on both accuracy and efficiency. Also the key issue of creating a data structure that can maximize efficiency in a h-variable parallel code will be addressed via basic examples and relevant results.