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An AMR moving cut-cell algorithm for particle-laden flows ARTHUR GHIGO, Department of Mathematics, University of British Columbia, STEPHANE POPINET, Institut Jean le Rond d'Alembert Universite Pierre et Marie Curie, ANTHONY WACHS, Department of Mathematics, Department of Chemical & Biological Engineering, University of British Columbia — Many biomedical applications, such as targeted drug delivery, involve a large number of interactions between rigid and deformable particles. Numerical simulations of such particleladen flows must therefore account for both complex moving embedded geometries and a wide range of spatial scales, while maintaining computational cost at a minimum. In this context, we propose an extension of the cut-cell algorithm of Johansen and Colella (Johansen and Colella, JCP 1998) to three-dimensional moving and deformable geometries. The algorithm allows for high-fidelity simulations of flows past complex moving boundaries. It is implemented in the software *Basilisk* (Popinet, JCP 2009), which provides a parallel framework for adaptive mesh refinement on non-conforming Cartesian grids. The method is validated and compared with our in-house code *Peliqriff* (Wachs, J Eng Math 2011) on test-cases involving moving rigid particles only. We then investigate the dynamics of particle suspensions in confined geometries.

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