An h-adaptive immersed boundary method for simulating fluid-structure interaction PAN ZHANG, Institute of Applied Physics and Computational Mathematics — Fluid-structure interaction (FSI) problems is encountered in many scientific and engineering applications. As an important calculation model in the field of computational fluid dynamics, immersed boundary method is commonly used to deal with FSI problems. And the method has a wide range of applications. However, for FSI of moving boundary problems for large-scale motion, the moving boundary problem of large-scale motion, the immersed boundary method on uniform grid or non-uniform grid has limitations. This work combines the flexibility of adaptive mesh refinement methods, specially for uniform Cartesian grids, and the immersed boundary method requirements for uniform Euler mesh. Based on the common characteristics of these two methods, the adaptive mesh refinement method is applied to the immersed boundary method and an adaptive immersed boundary method is presented to adapt to the calculation of the moving boundary problem of large-scale motion.

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