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The Immersed Interface Method for Flow Around Non-Smooth Boundaries. YANG LIU, SHENG XU, Southern Methodist University — In the immersed interface method, a boundary immersed in a fluid is generated by a singular force in the Navier-Stokes equations, and the singular force enters a numerical scheme as jump conditions across the boundary. In previous work, the method has been developed for smooth boundaries. In this talk, we present how to extend the method for non-smooth boundaries. We use panels to represent a boundary, compute necessary jump conditions explicitly, and compare two different pressure Poisson solvers. We test our extended method by simulating flows past a circular cylinder, a square cylinder or around a flapping plate. Our results show that the method is robust, accurate and efficient.

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