The immersed interface method for fluid-solid interaction with boundary condition capturing on triangular meshes[1] SHENG XU, Math Department, Southern Methodist University — In the immersed interface method, the effect of a rigid solid moving in a fluid is represented as jump conditions incorporated into the discretization of the flow governing equations on a fixed Cartesian grid. In this talk, I present a strategy to numerically compute the required jump conditions toward boundary condition capturing on triangular meshes for solid surfaces. I focus on how to invert a surface gradient operator using a triangular surface mesh to obtain the jump condition of the pressure with desired accuracy. With the boundary condition capturing on triangular surface meshes, the immersed interface method can treat non-smooth solid surfaces. Last, I provide numerical tests to demonstrate the accuracy, efficiency and robustness of the method.

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