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The Immersed Interface Method for Insect Flight Simulation SHENG XU, Southern Methodist University — The effect of a fluid-solid interface can be represented as a singular force in the Navier-Stokes equations. Two problems arise from this representation. One is how to calculate the force density, and the other is how to treat the force singularity. In the immersed interface method, the latter is solved with second-order accuracy and the sharp fluid-solid interface by incorporating singularity-induced flow jump conditions into discretization schemes. This talk focues on the former problem. In particular, I will present approaches to calculating the force density for both flexible and rigid solids. Results from insect flight simulation will be shown to demonstrate the approaches.

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