

LadHyX Seminar – June 20, 14:30 – LadHyX library

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Lubricated Immersed Boundary Method with Application to Fiber Bundles

Fluid-mediated near contact of elastic structures is a recurring theme in biofluids. The thin fluid layers that arise in various real-world applications, such as the flow of red blood through blood vessels in the microcirculation, are difficult to resolve by standard computational fluid dynamics methods based on uniform fluid grids. A key assumption of the lubricated immersed boundary method, which incorporates a subgrid model to resolve thin fluid layers between immersed boundaries, is that the average velocity of nearby boundaries may be used to bridge between different spatial scales. Here, we present a one-dimensional numerical analysis to assess the performance of the average velocity as a multiscale quantity, and show results from two-dimensional simulations of cell suspensions and filament bundles.