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Luoding Zhu* (luozhu@iupui.edu), 402 N Blackfort Street, Indianapolis, IN 46202. *An elastic sheet interacting with a 3D non-Newtonian fluid flow*. Preliminary report.

Motivated by fluid-structure-interaction (FSI) phenomena in life sciences (e.g., erythrocytes moving in flowing blood), we consider a simple FSI model problem — interaction of an elastic sheet (fixed at the midline) with a non-Newtonian fluid in three dimensions. The non-Newtonian flow is modelled by the power law. The fluid flow is modelled by the lattice Boltzmann equations. The deformable structure and the FSI is handled by the immersed boundary (IB) method. Drag of the sheet is computed, drag scaling is studied, and effects of fluid property, Reynolds number, and sheet bending rigidity on drag and its scaling are investigated. (Received August 29, 2016)