

Abstract Submitted
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A coarse-grained model for suspensions of inextensible, flexible fibers DAVID STEIN, MICHAEL SHELLEY, Flatiron Institute — The modeling of inextensible flexible fibers immersed in a fluid is a challenging computational problem. Although several well-developed computational methods exist, fibers do not always occur in isolation: in many biologically and industrially relevant contexts, there are many fibers, and the fluid the fibers are moving through may be best thought of as a porous media with an anisotropic porosity that depends on the configuration of those fibers. We develop a coarse-grained model for these systems, and use it to investigate fluid mediated elastic relaxation, buckling instabilities, and flow rectification.

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