

Abstract Submitted
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WITHDRAWN: Simulation of Particle Interactions in DNA-laden Flows MICHAEL BYBEE, University of Illinois at Urbana-Champaign, GREG MILLER, University of California, Davis, DAVID TREBOTICH, Lawrence Livermore National Laboratory — We present a numerical method to simulate dynamics of DNA in array microchannels. Discrete DNA molecules are represented by a bead-rod polymer model and are fully coupled to the fluid. The fluid model is based on a high resolution finite difference method on Cartesian embedded boundary grids. We introduce a screened Coulomb potential between rods to model particle-particle and particle-structure electrostatic interactions while also accounting for excluded volume effects. We justify the use of this method by performing a statistical comparison of this “soft” potential approach to a previous “hard” constraint approach where particle-structure interactions were treated by elastic collision. This work was performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

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