SOCIETY OF PHYSICS STUDENTS (SPS) EVENT

Dynamics of a Linear Polymer in a Microchannel Creeping flow

(A Summer Research experience under Dr. Fodor and Dr. Kaufman)

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Abstract:

An understanding of the dynamics of a polymer in a microchannel could be used to design the technology for high throughput molecular analysis and manipulation. We simulate the motion of a linear polymer advected by a fluid in a rectangular microchannel. We consider the creeping laminar flow, i. e. zero Reynolds number. The model polymer is made up of beads connected by elastic springs. The polymer is released in the fluid and the Newton's 2^{nd} law for each bead is calculated numerically using 4^{th} order Runge-Kutta techniques. The dynamics of this nonlinear mechanical system is studied as a function of model parameters: the spring equilibrium distance, the mass of a bead, and the spring constant.

WHERE

SI – 117

WHEN

Noon- 1pm
Thursday, March 10, 2011