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Electrophoresis of DNA on a disordered two-dimensional substrate CYNTHIA J. OLSON REICHHARDT, CHARLES REICHHARDT, Theoretical Division and Center for Nonlinear Studies, Los Alamos National Laboratory — We propose a new method for electrophoretic separation of DNA in which adsorbed polymers are driven over a disordreed two-dimensional substrate which contains attractive sites for the polymers. Using simulations of a model for long polymer chains, we show that the mobility increases with polymer length, in contrast to gel electrophoresis techniques, and that separation can be achieved for a range of length scales. We demonstrate that the separation mechanism relies on excluded volume interactions between polymer segments.

Cynthia Reichhardt
Los Alamos National Laboratory

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