

Abstract Submitted
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DNA Electrophoresis: how partially denatured DNA stops moving in a gel. DAVID SEAN, GARY SLATER, University of Ottawa — During temperature gradient gel electrophoresis (TGGE), a DNA strand travels in a gel with a temperature gradient. As the strand travels in a position of higher temperature, the stability of the double helix is reduced resulting in melted domains. It has been experimentally observed that in a gel, a partially melted DNA strand exhibits a steep reduction in mobility —perhaps even trapping. The sequence dependent melting of DNA can therefore be translated into a sequence dependent position at which the strand appears to stop. Thus, this can be used as an effective method for discriminating between strands that differ only in composition. However, the dominant blocking mechanisms remain unclear. Blocking/trapping events are re-created using Langevin dynamics simulations using the ESPResSo package to understand the physics behind the observed steep reduction in electrophoretic mobility. From these simulations a relation between gel parameters and the mobility of the strand is proposed.

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