

1041-92-248

**Mariel Vazquez\*** ([mariel@math.sfsu.edu](mailto:mariel@math.sfsu.edu)), Mathematics department, San Francisco State University, 1600 Holloway Ave, San Francisco, CA 94132. *Modeling DNA unknotting*. Preliminary report.

Multiple cellular processes, such as DNA replication and transcription, affect the topology of DNA. Controlling these changes is key to ensuring stability inside the cell. Changes in DNA topology are mediated by enzymes such as topoisomerases and site-specific recombinases. We use techniques from computational knot theory to analyze the action of such enzymes. We will report on our progress modeling DNA unknotting by type II topoisomerases. We will present various strand-passage regimes and how they affect the transition probabilities between knot types. This is joint work with Rob Scharein and a group of students. (Received August 12, 2008)