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Polymer model of supercoiled molecules including multiple structural forms of DNA

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Summary

DNA supercoiling lies at the core of transcriptional regulation. Except for a few cases, capturing its impact in vivo remains elusive, though. Supercoiling is indeed distributed in a non-trivial way between twist, writhe (plectonemes) and change of structural forms of DNA (including denaturation) and depends, a priori, on genomic sequences. In this talk, we will present a polymer model of DNA that allows studying these properties quantitatively. We will show in particular the possibility to study the behavior of DNA sequences whose length corresponds typically to the topological microdomains that have been experimentally highlighted in *Escherichia coli* and *Salmonella typhimurium*.

Auteurs principaux: M. JUNIER, Ivan (LAPM - CNRS UMR 5163 - Université Grenoble 1 - Grenoble); LEPAGE, Thibaut (LAPM - CNRS UMR5163)

Orateur: LEPAGE, Thibaut (LAPM - CNRS UMR5163)

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