



Multi-plectoneme phase of double-stranded DNA under torsion

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We use the worm-like chain model to study supercoiling of DNA under tension and torque. The model reproduces experimental data for a much broader range of forces, salt concentrations and contour lengths than previous approaches. Our theory shows, for the first time, how the behavior of the system is controlled by a multi-plectoneme phase in a wide range of parameters. This phase does not only affect turn-extension curves but also leads to a non-constant torque in the plectonemic phase. Shortcomings from previous models and inconsistencies between experimental data are resolved in our theory without the need of adjustable parameters.

Comments: 4 pages, 6 figures, submitted, 2 typo's corrected, one reference added

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