The quest for real density-splay coupling constant

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Our aim is to prove the existence of a finite density-splay coupling constant across various real-life polymers. To achieve this, we derive a multiscale continuum field model of a polymer in the isotropic phase [1], using sufficiently decorrelated simulation trajectories as the basis for analysis. By examining long-wavelength fluctuation amplitudes of monomer density and nematic tensor components, we gain quantitative insight into the coupling between density and order. To date, we have characterized density-splay coupling in double-stranded DNA and are currently extending this analysis to other polymer systems.

References:

[1] D. Svenšek, J. Sočan, M. Praprotnik, *Macromol. Rapid Comm.* **45** (2024) 2400382.