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Statistical Behavior of Polymer Chains in Curved Space[1] JIAN-FENG LI, The State Key Laboratory of Molecular Engineering of Polymers, Department of Macromolecular Science, Fudan University, Shanghai, China, 200433, AN-CHANG SHI, Department of Physics & Astronomy, McMaster University, Hamilton, Canada, HONGDONG ZHANG, FENG QIU, YULIANG YANG, The State Key Laboratory of Molecular Engineering of Polymers, Department of Macromolecular Science, Fudan University, Shanghai, China, 200433 — Recently, we have derived the modified diffusion equation of the propagator (the end-segment distribution function) in general curved space for both Gaussian and wormlike chains. Mathematically, a Gaussian-curvature term appears as an extra external field in the diffusion equation of Gaussian chains while there is an additional normal-curvature term for the case of wormlike chains. The basic statistical behavior of polymer chains in curved space can be also extracted by examining these newly derived diffusion equations revealing that Gaussian chains are aware of the intrinsic curvature of the space but are blind to the external curvature while wormlike chains can feel both.

Jianfeng Li
Fudan Univ

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