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Marginally compact fractals

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This contribution is presenting our investigations on the role of complex connectivity of fractal macromolecules for their static and dynamic properties, and, in particular, for the density of self-contacts. Fractals provide typical models for hyperbranched polymers, proteins, sol-gel branched clusters, and colloidal aggregates.
In works [1,2] we have considered the so-called marginally compact fractals. These special structures use very effectively the available space by filling it densely, but at the same time they have almost all their monomers on the surface. They are of a particular interest in connection with melts of ring polymers as well as with chromatin. However, their existence has been questioned theoretically because of a logarithmic divergence of their self-contact density [3]. We have shown that such a divergence can be removed in practice by introducing linear spacers [1] or semiflexibility constraints [2] and we have characterized the dynamics of these structures.

[1] M. Dolgushev, J.P. Wittmer, A. Johner, O. Benzerara, H. Meyer, J. Baschnagel. *Soft Matter* **13**, 2499 (2017).
[2] M. Dolgushev, A.L. Hauber, P. Pelagejcev, J.P. Wittmer. *Phys. Rev. E* **96**, 012501 (2017).
[3] J.D. Halverson, W.B. Lee, G.S. Grest, A.Y. Grosberg, K. Kremer. *J. Chem. Phys.* **134**, 204904 (2011).

Choix de session parallèle

4.2 Physique des polymères: de la molécule au matériau

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