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Disentanglement in thin polymer films HENDRIK MEYER, ULP Institut Charles Sadron, CNRS UPR22, Strasbourg, France — Molecular dynamics simulations of thin polymer films confined between structureless walls show accelerated in-plane dynamics with decreasing film thickness. Using the primitive path analysis (PPA) introduced by Everaers et al [Science 303 (2004) 823] for chain length up to $N=1024$, we can show that the entanglement density decreases with decreasing film thickness. However, the effect becomes pronounced only for films thinner than the bulk radius of gyration where also the chain structure becomes modified by the confinement [1]. The PPA algorithm can be modified to estimate the contribution of self-entanglements: The latter become more important for thinner films, however, they do not counterbalance the global decrease of entanglements. [1] H. Meyer et al Eur. Phys. J. Sp.Top. 141 (2007) 167.

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