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Scaling of dynamic properties of polymer melts using friction coefficients of phantom chains - A Monte Carlo simulation study NENAD STOJILOVIC, John Carroll University, JUTTA LUETTMER-STRATHMANN , The University of Akron — A Monte Carlo simulation method is used to investigate two different models of athermal polymer melts. In one model chains are allowed to cross (phantom chains) whereas in the other bond crossing is forbidden (real chains). We confirmed that the conformational properties of both types of polymers are similar and analyzed the differences in chain dynamics due to entanglements of real chains. Phantom chains that are sufficiently long exhibit Rouse dynamics, so that friction coefficients can be extracted from self diffusion coefficients. For real chains, on the other hand, entanglement effects complicate the determination of friction coefficients. In this work, we use friction coefficients from phantom chains to investigate the scaling behavior of dynamic properties of real chains.

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