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Structural transitions in helical polymers MATTHEW WILLIAMS, MICHAEL BACHMANN, UGA, SOFT MATTER SYSTEMS RESEARCH GROUP TEAM — Helical structures, as well as more complex tertiary structures, made up of helixes are relevant in biological systems. We perform generalized-ensemble Monte Carlo simulations to examine homopolymer models which include a torsional potential energy associated with each bond. With the inclusion of a torsional potential, helical structures emerge and can contort to form a variety of tertiary structural phases. We explore the two-dimensional space, parametrized by temperature and torsional energy scale, to map helical structures and to locate structural transitions. We see transitions occur between helical and non-helical secondary structures and also between various tertiary structures.

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