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A Multichain Self-Consistent Field Theory for Correlations in Polymers: Chain Swelling in Polymer Blends DAVID WU, Colorado School of Mines — The self-consistent mean field theory of polymers has been highly successful as a tractable computational framework for capturing the thermodynamics and structure of polymer systems. One notable limitation has been the neglect of fluctuations and correlations, which can be important in a variety of physical circumstances. One such circumstance involves the non-Gaussian conformations (swelling) of branched polymers. We present a method for calculating these correlations with an extension of the SCF theory when applied to multiple chains. As an example of the methodology, we show how the crossover from swollen to screened conformations occurs in a blends of star and linear polymers.

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