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Field-Based Modeling and Simulation of Interfacial Fluctuations in Block Copolymers AUGUST BOSSE, Polymers Division, NIST — The Edwards-model-based, field-theoretic simulation framework of Fredrickson is the cutting edge methodology in coarse-grained, field-based simulation of fluctuating copolymer systems [V. Ganesan and G.H. Fredrickson, *Europhys. Lett.* **55**, 814 (2001); G.H. Fredrickson, V. Ganesan, and F. Drolet, *Macromolecules* **35**, 16 (2001)]. Coarse graining the standard Edwards model yields the classic phenomenological "phase field" model of Ohta and Kawasaki [T. Ohta and K. Kawasaki, *Macromolecules* **19**, 2621 (1986)]. Further coarse graining, coupled with the assumption of weak segregation, yields the ubiquitous Leibler-Brazovskii-Fredrickson-Helfand model [G.H. Fredrickson and E. Helfand, *J. Chem. Phys.* **87**, 697 (1987)]. Each of these field-based models is capable of capturing thermodynamic fluctuations; however, the applicability of each model depends on the quench depth, the molecular weight, and the composition of the constituent copolymers, among other variables. Here we examine fluctuation effects in, and limitations of field-based models in the context of measuring interfacial fluctuations in a two dimensional diblock copolymer melt.

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