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Morphology of diblock copolymers under confinement DAVID ACKERMAN, BASKAR GANAPATHYSUBRAMANIAN, Iowa State Universtiy — The structure adopted by polymer chains is of particular intrest for materials design. In particular, a great deal of effort has been made to study diblock polymers due to the importance they have in industrial applications. The bulk structure of most systems has been the most widely studied. However, when under the effect of confinement, the polymer chains are forced to adopt structures differing from the familiar bulk phases. As many applications utilize polymers in sizes and shapes that lead to these non bulk structures, the confinement effects are important. A commonly used tool for computationally determining structures is the continuum self consistant field theory (SCFT). We discuss our highly scalable parallel framework for SCFT using real space methods (finite element) that is especially well suited to modelling complex geometries. This framework is capable of modeling both Gaussian and worm like chains. We illustate the use of the software framework in determining structures under varying degrees of confinement. We detail the method used and present selected results from a systematic study of confinement using arbitrary structures.

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