A massively parallel space-time formulation for SCFT DAVID ACKERMAN, BASKAR GANAPATHYSUBRAMANIAN, Iowa State Univ — We present a massively parallel, scalable Self Consistent Field Theory framework for modeling multi block copolymers. This is based on a finite-element based real-space implementation - which enables investigating complex, non-periodic domains - integrated into a space-time formulation. A space time formulation allows the implementation of a posteriori error analysis to ensure rigorous error bounds on the propagator. The space-time formulation increases the computation problem size but dramatically enhances the scalability of the problem. We show scaling up to 45,000 processors. The system remains tractable through the use of high order integration schemes which allow a coarser chain model while retaining accuracy of lower order schemes. This framework is applied to rod-coil diblock copolymers utilizing a worm-like chain model. Results of this modeling on complex surfaces (spheres, tori) are presented.