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**Spanning Trees and the Dynamics of Compact Polymers**[1] ARMIN RAHMANI, ANDREA VELENICH, CLAUDIO CHAMON, Physics Department, Boston University — We introduce a lattice model for a compact loop polymer confined to a two-dimensional box. By a mapping to spanning trees on a square lattice we calculate the partition function and the energy of the system as a function of temperature, bending rigidity and elasticity of the polymer. We study the dynamics of the system using a kinetically constrained model whose elementary moves consist of polymer fingering or, in the language of the spanning trees, local bond flips taking place at the leaves of the tree. We study, through Monte-Carlo simulations, the time dependence of the energy and the number of leaves in the system when quenched from infinite temperature to various finite temperatures. We find that for temperatures above a critical value, these observables monotonically decay to their equilibrium values whereas, for lower temperatures, a broad non-equilibrium plateau emerges.

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