Abstract Submitted
for the APR05 Meeting of
The American Physical Society

Quantum Field Theory on a Growing Lattice BRENDAN Z. FOSTER, TED JACOBSON, University of Maryland — We construct the classical and canonically quantized theories of a massless scalar field on a background lattice in which the number of points–and hence the number of modes–may grow in time. To obtain a well-defined theory certain restrictions must be imposed on the lattice. Growth-induced particle creation is studied in a two-dimensional example. The results suggest that local mode birth of this sort injects too much energy into the vacuum to be a viable model of cosmological mode birth, at least if only a small number of points is born at each time step.

Ted Jacobson
University of Maryland

Date submitted: 18 Jan 2005 Electronic form version 1.4