1107-35-271 **Dana Mendelson*** (dana@math.mit.edu). *Symplectic non-squeezing for the cubic nonlinear Klein-Gordon equation on* $\mathbb{T}^3$.

We consider the periodic defocusing cubic nonlinear Klein-Gordon equation in three dimensions in the symplectic phase space $H^{\frac{1}{2}}(\mathbb{T}^3) \times H^{-\frac{1}{2}}(\mathbb{T}^3)$. In this space, the global well-posedness of this equation is still open and there is no uniform control on the local time of existence of solutions. We present a local in time non-squeezing result and a global in time non-squeezing result for certain open subsets of the phase space, with no smallness condition on the size of the initial data. We will first discuss how to define a subset of the phase space which has full measure, with respect to a suitable randomization, and on which the flow is globally defined. The proof of non-squeezing then relies on Gromov's non-squeezing theorem and an approximation result for the flow, which uses probabilistic estimates for the nonlinear component of the flow map and deterministic critical stability theory. (Received January 17, 2015)