Contact probability scaling of the Hilbert curve
ADRIAN SANBORN, JIAN LI, Harvard College, EREZ L. AIDEN, Harvard Society of Fellows — Using Hi-C experiments, it has become possible to measure contact probability scalings for genomic polymers. However, the theoretical analysis of such scalings remains in its infancy. Here, we prove that contact probability scales with linear distance for lattice approximations of the Hilbert curve. These results point to the potential for new theoretical approaches to the study of contact probability, and shed light on the analysis behind the fractal globule, a recent model for the three-dimensional structure of the human genome.

1This work is supported by NIH Grants 1P50HG006193-01 (Center for Cell Circuits) and 1DP2OD008540-01 (NIH New Innovator Award).