

Left and Right Convergence for Sequences of Graphs with Bounded Degrees

Christian Borgs, Microsoft Research New England

Abstract

The theory of convergent graph sequences for dense graphs, defined in terms of graph homomorphisms, has led to many interesting connections, including connections to the theory of testing in computer science. For sparse graphs, an early notion of graph convergence, which has led to many interesting results in probability theory, was proposed by Benjamini and Schramm. It turns out that the latter notion can be equivalently defined by requiring that for each fixed graph F , the number of homomorphisms from F into the elements of the sparse sequence, G_n , converges when suitably normalized. We call this notion left-convergence. By contrast, right-convergence will be defined by considering the entropy of homomorphism from G_n into a small target graph H . In this talk I will show that for sufficiently dense graphs H , these two notions are equivalent.

This is joint work with Jennifer Chayes, Jeff Kahn and Laci Lovasz.