Limits of weighted hyperfinite graphs

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In this talk, I will define the local convergence of Schreier graphs of finitely generated groups. This notion was introduced by Benjamini and Schramm in 2001. Given a fixed finite generating system of the group, all Schreier graphs have bounded degrees. Therefore, we can consider the local statistics of a given graph, that is, the distribution of r-balls of a vertex chosen at random. When these statistics converge for a given sequence of graphs, the sequence is said to be locally convergent. The limits of such graphs can be represented with graphings of p.m.p. actions of the group. Schramm proved in 2008 that a when a graph sequence converges to a graphing, then the sequence is hyperfinite if and only if the graphing is.
I will furthermore discuss how this concept changes when, instead of choosing a uniformly random vertex, we assign non-uniform weights to the nodes of the graph. It turns out that in this case, the limit objects are associated with non-singular actions of the group. We proved that Schramm's theorem holds in the weighted setting as well.

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