The fundamental group of a locally finite graph with ends: a hyperfinite approach

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It is well known that the fundamental group of a finite graph is a free group that is freely generated on the set of chords of a spanning tree for the graph. Diestel and Sprussel gave a similar combinatorial description of the end compactification of a locally finite graph. Diestel asked whether or not nonstandard analysis could be used to simplify their description. In joint work with Alessandro Sisto, we showed that this was indeed the case. In this talk, I will outline our nonstandard description of the fundamental group of the end compactification of a locally finite graph, indicating heuristically why the nonstandard method is more intuitive and outlining the advantages of the nonstandard approach.