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Palle E. T. Jorgensen* (jorgen@math.uiowa.edu), Dept of Math MLH, University of Iowa, Iowa City, IA. *Analysis on Graphs*. Preliminary report.

This represents joint work with Erin Pearse. Our object is analysis on infinite weighted graphs. We make use of the theory of unbounded Hermitian operators in Hilbert space. While there is a large literature on discrete analysis treating such aspects as potential theory, probability, harmonic functions, and boundary theory; the questions we address here are different. For example, we obtain extensions of Shannon's theory of interpolation and sampling. Starting with an infinite graph G , and a suitable fixed positive weight function, we show that there are continua (certain sets X) extending G , and associated formulas for interpolation band-limited functions on X from their values on G . Depending on the applications, we will be making use of several notions of metric and a variety of boundaries. (Received June 18, 2010)