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Nicolas Garcia Trillos, Moritz Gerlach, Matthias Hein and Dejan Slepcev*
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Pittsburgh, PA 15217. *Error estimates for the consistency of graph laplacians.*

A number of machine learning tasks relies on spectral properties of the graph laplacian associated to the data. I will consider data points obtained as random samples of a measure on a manifold in a Euclidean space. I will discuss conditions under which the spectrum of the graph laplacians on a neighborhood graph spanned by the samples converges almost surely to the spectrum of appropriate weighted Laplace-Beltrami operators on the manifold, as the sample size increases and the neighborhood size shrinks to zero. I will present error estimates for the convergence that explicitly depend on the geometry of the manifold, the number of data points available and the size of the neighborhood used in the graph construction. (Received September 11, 2016)