Random walks, Laplacians, and volumes in sub-Riemannian geometry

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Abstract. We study a variety of random walks on sub-Riemannian manifolds and their diffusion limits, which give, via their infinitesimal generators, second-order operators on the manifolds. A primary motivation is the lack of a canonical Laplacian in sub-Riemannian geometry, and thus we are particularly interested in the relationship between the limiting operators, the geodesic structure, and operators which can be obtained as divergences with respect to various choices of volume.