1145-31-1719 **Daniel J Kelleher*** (dkellehe@mtholyoke.edu), South Hadley, MA 010175. *Differential forms on quantum graphs and Laakso spaces.* Preliminary report.

A general framework, in the setting of Dirichlet spaces, is developed to prove a weak form of the Bakry-Emery estimate and study its consequences. This estimate may be satisfied in situations, like metric graphs, where generalized notions of Ricci curvature lower bounds are not available. This is proven using semigroup domination, a beautiful, classical argument which relates the semigroup on differential forms to the heat semigroup. We discuss the application of this theory to fractals which are the limit of quantum graphs, such as Laakso spaces. Based on Joint work with P. Alonso-Ruiz, F. Baudoin, and A. Teplyaev. (Received September 24, 2018)