# Heat flow and a sharp Buser inequality on RCD(K,∞) spaces

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In the first part of the talk, I will give a basic introduction to the theory of metric measure spaces with Ricci curvature bounded from below in synthetic sense, the so-called $\mathsf{RCD}(K, \infty)$ spaces. We will see that this theory is strictly connected, from the very beginning, to the study of the heat flow on these (possibly) non-smooth spaces. I will then present a recent work (joint with Andrea Mondino) where we sharpen and generalize to this setting bounds involving the Cheeger's isoperimetric constant $h$ and the first eigenvalue $\lambda_1$ of the Laplacian. The results improve the inequalities obtained by Cheeger, Buser and Ledoux for smooth Riemannian manifolds.

Keywords:

**Ricci curvature • metric measure spaces • heat semigroup • Buser inequality**

"Obvious" is the most dangerous word in mathematics.
- Eric Temple Bell