Functional Analysis and Operator Theory
Webinar

Isometric rigidity of compact Wasserstein spaces

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Let $\mathbb{P}_p(X)$ denote the space of probability measures with finite $p-$moments on a metric measure space $(X, d, \mathfrak{m})$. Using the solutions to the Monge-Kantorovich optimal transport problem it is possible to define a distance on $\mathbb{P}_p(X)$, the so called L^p-Wasserstein distance $\mathbb{W}_p$. It is known that the metric space $(\mathbb{P}_p(X), \mathbb{W}_p)$ reflects many geometrical properties of the base space X such as: compactness, geodesics, and non-negative sectional curvature (in the case $p = 2$).

It is then natural to wonder just how closely related are the spaces $(X, d, \mathfrak{m})$ and $(\mathbb{P}_p(X), \mathbb{W}_p)$, for example we can study if it is possible for the Wasserstein space to be more symmetric than the base space X.

In this talk we will discuss some of the results obtained regarding this question, but first we will introduce the optimal transport problem as well as some of the properties of Wasserstein spaces.

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