

***AN OVERVIEW OF THE BARYCENTER METHOD IN
NONPOSITIVELY CURVED MANIFOLDS II***

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Abstract: The barycenter method originates from E. Cartan's center-of-mass technique in 1920s, where he uses the convexity of distance function to show the existence and uniqueness of the center-of-mass for Hadamard spaces. In the late 1990s, Besson-Courtois-Gallot followed the similar idea and constructed the celebrated natural map, which proves the minimal entropy rigidity conjecture for rank one symmetric spaces. This leads to many important applications in differential geometry, geometric topology, group theory and dynamical systems.

In the series of lectures, we will give a brief introduction to the natural map and all kinds of the applications in the past 30 years. We will discuss examples and their geometry of nonpositively curved spaces, the construction of Patterson-Sullivan measures, the natural map, the barycentric straightening, towards applications to the minimal entropy rigidity theorem, the Mostow's rigidity, the positivity of simplicial volume, the homological vanishing theorems etc. In the end, we will talk about some open problems in the related fields.