Lipschitz homotopy convergence of Alexandrov spaces

Ayato Mitsuishi (Gakushuin University)

Alexandrov spaces are metric spaces having a lower curvature bound in a synthetic sense.

Such a space naturally appear when we consider the limits of Riemannian manifolds keeping a uniform lower bound of sectional curvature, or the quotients of Riemannian manifolds by group actions of isometries.

The most important fact is that a class of Alexandrov spaces with a uniform lower curvature bound is closed in the Gromov-Hausdorff topology.

Due to Perelman, it is known that if two Alexandrov spaces of the same dimension are close, then these are homeomorphic.

Furthermore, he was stating that such spaces are actually bi-Lipschitz homeomorphic, but its proof did not appear.

I will announce that if two Alexandrov spaces are close, in the given class, then they are Lipschitz homotopy equivalence.

It may be considered as a weak solution to the above unproved Perelman's theorem.

This talk is based on a joint work with Takao Yamaguchi (Kyoto University).