Complexity of distances, reducibility and universality

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We introduce and study the notion of Borel reducibility between pseudometrics on standard Borel spaces, which is a generalization of the famous notion of Borel reducibility between equivalence relations.

The central object of our investigations is the Gromov–Hausdorff distance, which turns out to be equally complex as several other distances between metric or Banach spaces, such as the Kadets distance or the Banach–Mazur distance. Next, we consider the notion of an orbit pseudometric and provide a continuous version of the well-known result of Clemens, Gao and Kechris that the relation of isometry of Polish metric spaces is bireducible with a universal orbit equivalence relation.

The present results come from the collaboration with Marek Cúth and Michal Doucha; see [1, 2, 3].

[1] M. Cúth, M. Doucha, and O. Kurka, *Complexity of distances between metric and banach spaces: Theory of generalized analytic equivalence relations*, J. Math. Logic (to appear).

[2] M. Cúth, M. Doucha, and O. Kurka, *Complexity of distances between metric and banach spaces: Reductions of distances between metric and banach spaces*, Israel J. Math., 248 (2022), pp. 383–439.

[3] O. Kurka, *Orbit pseudometrics and a universality property of the Gromov–Hausdorff distance*, arXiv:2204.08375.