Convex embeddability on countable linear orders

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Abstract

Given two countable linear orders L and M, we say that L is convex embeddable in M iff L is isomorphic to a convex set in M. We first show that, in contrast to the usual embeddability between linear orders, convex embeddability is combinatorially complicated. Then we study the complexity of the equivalence relation induced by convex embeddability with respect to Borel reducibility, proving that it "is not much more complicated" than the isomorphism relation between linear orders. Finally, we extend the notion of convex embeddability providing a family of quasi-orders on countable linear orders of which embeddability is a particular case as well. We study these quasi-orders from a combinatorial point of view and analyse their complexity, highlighting differences and analogies with embeddability and convex embeddability. This is joint work with Vadim Kulikov, Alberto Marcone, and Luca Motto Ros.