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Equimorphism types of linear orderings

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We analyze the structure of equimorphism types of linear orderings ordered by embeddability. (Two linear orderings are equimorphic if they can be embedded in each other.) Our analysis is mainly from the viewpoints of Computable Mathematics and Reverse Mathematics. But we also obtain results, as the definition of equimorphism invariants for linear orderings, which provide a better understanding of the shape of this structure in general.

Here are our main results: Spector proved in 1955 that every hyperarithmetic ordinal is isomorphic to a computable one. We extend his result and prove that every hyperarithmetic linear ordering is equimorphic to a computable one. From the viewpoint of Reverse Mathematics, we look at the strength of Fraïssé's conjecture. From our results, we deduce that Fraïssé's conjecture is sufficient and necessary to develop a reasonable theory of equimorphism types of linear orderings.