Uncountable finitely homogeneous structures

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Abstract

In this joint work with Mirna Džamonja nad Wiesław Kubiś (see https://arxiv.org/abs/2411.17889) we study the existence of an uncountable first-order structure W that is homogeneous with respect to its finitely generated substructures and whose age is a given Fraïssé class $\mathcal{F}$. In many classical cases, this is known. For example, in the case of a finite relational language, W can be constructed using ultrapowers.

We give more general results based on carefully constructed sequences of self-embeddings of the Fraïssé limit U of $\mathcal{F}$. In particular, we examine the monoid of self-embeddings of U and, using abstract Fraïssé theory, we present a method of constructing W based on the amalgamation property of this monoid.