Rigid moieties of relational homogeneous structures

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Given a countable set X, a *moiety* of X is a subset which is countable and co-countable. A *rigid* embedding of a structure M into a structure N is an embedding where each automorphism of M extends uniquely to an automorphism of N. We show the existence of rigid moieties in various homogeneous relational structures including universal K_n-free graphs, Henson's continuous family of digraphs and the universal structure in a finite relational language. We finally prove the following:

Theorem 1. *Let $\mathcal{K}$ be a not totally disconnected free amalgamation class in a finite relational language $\mathcal{L}$ and assume that all the one-point sets in $\mathcal{K}$ are isomorphic. Then every countably infinite $\mathcal{L}$-structure K, whose age lies in $\mathcal{K}$, can be embedded as a rigid moiety into the Fraïssé limit of $\mathcal{K}$, denoted $\mathbf{K}$. Moreover, there are 2^ω many such embeddings which are not conjugate in $Aut(\mathbf{K})$.*

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