On Difunctionality of Class Relations

Diana Rodelo

For a given variety $\mathcal{V}$ of algebras, we define a class relation *to be a binary relation $R \subseteq S^2$ which is of the form $R = S^2 \cap K$ for some congruence class K on A^2, where A is an algebra in $\mathcal{V}$ such that $S \subseteq A$. In this paper we study the following property of $\mathcal{V}$: every reflexive class relation is an equivalence relation. In particular, we obtain equivalent characterizations of this property analogous to well-known equivalent characterizations of congruence-permutable varieties. This property determines a Mal'tsev condition on the variety and in a suitable sense, it is a join of Chajda's egg-box property as well as Duda's direct decomposability of congruence classes.*

Joint work with Zurab Janelidze and Michael Hoefnagel