Digraph descriptions of certain Mal'tsev conditions

Gergő Gyenizse[1]
University of Szeged, Hungary

By a 1973 result of Hagemann and Mitschke a variety is congruence n-permutable iff any edge in any reflexive directed graph compatible with the operations of an algebra of the variety is part of an n-circle. Accordingly, the n-permutability of a variety depends only on the set of digraphs admitted by it. Similarly, the n-permutability of a *locally finite* variety depends only on the *finite* digraphs admitted by it. In this talk, we show that a similar result holds for Taylor varieties, and the locally finite version holds for varieties omitting TCT types 1 and 5. We also consider the digraphs admitted by Polin's variety, which suggest that a digraph description for congruence modularity is unlikely.

[1]Joint work with B. Bodor, M. Maróti, L. Zádori