Title:
Arities of theories and their dynamics

Abstract:
Arities of theories are important characteristics showing complexity measures of theories. Special cases for arities of theories, especially binary, ternary and related ordered theories are studied in a series of papers by B.S. Baizhanov, B.Sh. Kulpeshov, D. Macpherson et al. Structures and links with respect to binary formulas are investigated both in general case and for a series of natural classes of theories by B.Sh. Kulpeshov, D.Yu.Emel'yanov et al. At the present talk we adapt the general cylindric approach by A.I. Mal'tsev, A. Tarski, L. Henkin, J.D. Monk et al. and describe semantically arities of theories, properties related to the n-arity and n-aritizability of theories, and their dynamics. A series of illustrative algebraic, geometric and relational examples is shown. Applications to group theories are obtained with In.I. Pavlyuk. The research of arities of theories can be used both for databases, simplifying them to ones with bounded dimensions, for geometric objects represented as finite combinations of cylinders, and for cryptographic constructions representing complicated configurations by simpler ones.