

# Projectable $\ell$ -groups and algebras of logic

Francesco Paoli

Department of Pedagogy, Psychology and Philosophy  
University of Cagliari

Joint work with J. Gil F erez, A. Ledda, and C. Tsinakis

P.F. Conrad and other authors launched a general program for the investigation of lattice-ordered groups, aimed at elucidating some order-theoretic properties of these algebras by inquiring into the structure of their lattices of convex  $\ell$ -subgroups. Among its achievements, we mention a characterization of projectable  $\ell$ -groups and their negative cones in terms of their order structure.

This approach can be naturally extended to residuated lattices and their convex subalgebras. In this broader perspective, we revisit the Galatos-Tsinakis categorical equivalence between integral generalized MV-algebras and negative cones of  $\ell$ -groups with a nucleus, showing that it restricts to an equivalence of the full subcategories whose objects are the projectable members of these classes. Upon recalling that projectable integral generalized MV-algebras and negative cones of projectable  $\ell$ -groups can be endowed with a positive G odel implication, and turned into varieties by including this implication in their signature, we prove that there is an adjunction between the categories whose objects are the members of these varieties and whose morphisms are required to preserve implications.