First-order Theories of r-projectable ℓ-groups and Priestley Products

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(A large part of the following belongs to a joint work with D.Gluschankof)

Boolean products where used in the study of first order properties of projectable ℓ-groups

We introduce the Priestley products as a generalisation of both the Boolean products, and of the Hahn products on a root system.

We also introduce the r-projectability property as a generalisation of the projectability property. It is more suitable in the case of Hahn products on a root system, when this root system is neither a chain nor an antichain.

Using these generalisations we obtain results in two different directions.

– A first order classification of a large class of r-projectable divisible ℓ-groups, (containing special valued ones), in terms of a lattice which encodes the maximal supports of the elements of the ℓ-group when carefully embedded in a Hahn product .

– A transfert result of the elementary equivalence for Priestley products on a given Priesley space, and for Priestley powers of totally ordered groups on different Priestley spaces, in terms of the elementary equivalence of two structures involved: on the one hand the totally ordered groups, on the other hand lattices related to the Priestley spaces.

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