

Full dualities and coloured ordered sets

Miroslav Haviar

M Bel University, Banská Bystrica, Slovak Republic

Coauthors: Brian A. Davey and Jane G. Pitkethly

Abstract. We study the lattice of finite-level full dualities for bounded distributive lattices based on the three-element chain. Using Priestley duality, we establish a correspondence between the alter egos that fully dualise the three-element chain at the finite level and special enriched ordered sets, which we call 'coloured ordered sets'. Then we can use combinatorial arguments to show that the studied lattice is uncountable. We also show that it is non-modular. The complexity of the lattice is somewhat surprising, given that the corresponding lattice for the two-element bounded lattice has only size 1. This is the first thorough investigation into the structure of an infinite lattice of finite-level full dualities.