

On representations of double Boolean algebras

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Double Boolean algebras are abstract structures that arise in Formal Concept Analysis from the need to develop a Boolean Concept Logic, based on concepts as units of thought. Several representations have been addressed including contextual (pre-, semi-, proto-concept algebras)[1, 5], topological and logical[2, 3, 4] representations. We will review some of these in our presentation. This is an effort of the presenter to understand what has been done so far, avoiding reinventing the wheel.

References

- [1] C. Herrmann, P. Luksch, M. Skorsky, R. Wille. *Algebras of semiconcepts and double Boolean algebras*. In: Contributions to General Algebra **13**. Verlag Johannes heyn, Klagenfurt 2001, 175-188
- [2] P. Howlader, M. Banerjee. *Topological representation of double Boolean algebras*. Algebra Univers. **84** 15, 2023 doi:10.1007/s00012-023-00811-x
- [3] P. Howlader, L. Kwuida, M. Behrisch, C-J. Liao. *Towards a Simplified Theory of Double Boolean Algebras: Axioms and Topological Representation*. Preprint doi:10.48550/arXiv.2601.01418
- [4] G. Tenkeu K., M. Krebs, M., L. Kwuida, E.R. Temgoua A., Y.L. Tenkeu J. *A Stone Duality for Pure and Trivial Double Boolean Algebras*. In: Cellier, P., Ganter, B., Missaoui, R. (eds) Conceptual Knowledge Structures. CONCEPTS 2025. LNCS **15941**. Springer. doi:10.1007/978-3-032-03364-2_26
- [5] R. Wille. *Boolean Concept Logic*. In: Ganter, B., Mineau, G.W. (eds) Conceptual Structures: Logical, Linguistic, and Computational Issues. ICCS 2000. LNCS **1867**. Springer. doi:10.1007/10722280_22.