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Sheaf Representation of MV-algebras

Abstract: Noticing that rings theory and MV-algebras theory meet in Boolean algebras and for the spectrum of rings too it doesn't exist a Stone-like representation theorem, we convince ourselves of the impossibility to find such a representation for the spectrum of MV-algebras. Moreover, in both theories, the spectrum of prime ideals properly contains the spectrum of maximal ideals, whereas for Boolean algebras the two spectra coincide. So, it seems to be natural to be inspired by representation theory of rings. For rings, there exist representations which are not purely topological, but use a topological space together with a sheaf structure. Sheaf representations allow establishing a bridge between the represented structure and geometric objects as it happens in Algebraic Geometry for rings which are tied to the affine schemes introduced by Grothendieck. In this context, Filipoiu and Georgescu get to set up a connection between MV-algebras and geometric objects. The used method is very similar to those used by Grothendieck in Algebraic Geometry, based on the categorical duality between rings and affine schemes and they involved the introduction of the so-called MV-algebraic spaces, which are the MV-algebraic version of ringed spaces. An important result provided by Filipoiu and Georgescu was a categorical equivalence between MV-algebras and a particular full subcategory of MV-algebraic spaces.

In this talk, we present a further development to the theory of sheaf representation in the category of MV-algebras. Since more general stalks can represent even more tight classes, we have been drawn to study what happens when in Filipoiu and Georgescu representation the stalks are fixed in particular classes of MV-algebras.