Implicative twist-structures

Umberto Rivieccio
Birmingham University

The twist-structure construction is used to represent algebras related to non-classical logics (e.g., Nelson algebras, bilattices) as a special kind of power of some better-known algebraic structure (distributive lattices, Heyting algebras). I will introduce a special type of twist-structure that is built as a power of a generalized Boolean algebra and whose algebraic language is restricted to an implication and a negation. The class of algebras thus obtained is a variety that is semisimple, arithmetical, finitely generated and has equationally definable principal congruences. I will present a characterization of the congruences of each algebra in the variety in terms of the congruences of the corresponding generalized Boolean algebra and, using this result, I will describe the lattice of all subvarieties of implicative twist-structures.