T-based Orthomodular dynamic algebras

Richard Smolka

Masaryk University

Abstract

We extend the foundational work of Kishida, Rafiee Rad, Sack, and Zhong on orthomodular dynamic algebras (ODAs), who constructed dynamic structures by closing the set of Sasaki projections on a complete orthomodular lattice under composition. In contrast, we begin with an arbitrary set G of linear operators, along with certain other modifications, on the lattice L, required only to include all Sasaki projections (plus possibly other morphisms), and freely generate an involutive quantale $\mathrm{FQ}(G)$ over this set. This generalization preserves the orthomodular character of the dynamics while permitting a more expressive range of quantum actions. We expect to recover analogous equivalence and representation results for this enriched setting.