# Quantum B-modules

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Quantum B-algebras are partially ordered residuated algebras characterizing the residuated structure of a quantale. Examples arise in algebraic logic, non-commutative arithmetic, and quantum theory. A quantum B-algebra with trivial partial order is equivalent to a group. A complete quantum B-algebra is the same as a quantale. In our recent work we introduced a corresponding analogue of quantale modules. It is proved that every quantum B-module admits an injective envelope which is a quantale module. The injective envelope is constructed explicitly as a completion, a multi-poset version of the completion of Dedekind and MacNeille.

This talk is based on joint research with Wolfgang Rump.