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Richard L Kramer* (ricardo@iastate.edu), 903 Furman Dr, Ames, IA 50010. *Some new weak representations of certain finite relation algebras.*

A relation algebra is an algebraic structure extending Boolean algebras modeling the algebra of binary relations on a set, with an additional unary operator and a binary operator to model relational converse and composition of relations, respectively, along with a constant to represent the identity relation, subject to certain equational axioms true for actual binary relations on a set.

A (square) representation of a relation algebra is a homomorphism from the relation algebra into the set of all binary relations on a set U , preserving the Boolean operations as well as converse, the relational product, and the identity element.

A (square) weak representation weakens the conditions on a (square) representation by not requiring that the operations of "+" (union) and "-" (complementation) be preserved.

We will present and discuss some new examples of (square) weak representations of finite relation algebras which are not representations. (Received March 05, 2013)