

Weak wreath products and weak quantum duplicates

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Twisted tensor products (wreath products) are the key for the (strict) factorization problem of unital algebras. As it is well-known, for a unital algebra, there is a one-to-one correspondence between the set of factorization structures admitting two given algebras as factors and the set of so-called twisting maps (distributive laws). In this talk we recall the factorization problem answered by a *weak wreath product* of algebras. Motivated by arguments from Mathematical Physics, we introduce the notion of *weak quantum duplicate* of an algebra, a construction based on a weak wreath product of the algebra under consideration and a two-dimensional factor. We provide a characterization of weak quantum duplicates of a finite-dimensional algebra, extending that one of quantum duplicates given in [1]. As an application, we explicitly describe a great part of the set of weak factorization structures (and weak distributive laws [3]) existing between two two-dimensional unital algebras over a field, classifying (up-to isomorphism) the weak wreath products arising from them and covering the description in [2].

References

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