## Introduction of the concept of probabilistic algebras

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The notion of probabilistic algebra is introduced, which relies both on Universal algebra and on Probability theory.

Let *A* and *B* be non-empty sets, and let  $D_B$  be the set of all discrete distributions on *B*. A probabilistic mapping from *A* to *B* is a mapping  $h : A \to D_B$ . Every probabilistic mapping from  $A^n$  to *A* is a probabilistic (*n*-ary) operation on *A*. Probabilistic algebra is a pair (*A*, *F*) of a set *A* and a family *F* of probabilistic operations on *A*. "Ordinary" algebras can be considered as a special type of probabilistic algebras. If *F* consists of single binary probabilistic operation *f* on *A*, then (*A*, *f*) is called probabilistic groupoid.

In this paper, we deal with the class of probabilistic groupoids, regarding identities, subgroupoids, direct products and homomorphisms.