

Shuffles of trees

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There is a well known notion of shuffle of two natural numbers, or of two finite linear orders, named after shuffling two stacks of cards, and counted by binomial coefficients. It plays a role in combinatorics and many aspects of algebraic topology. The construction of such shuffles can be extended to several categories of a combinatorial nature more general than that of linear orders. I will in particular focus on categories of trees. Shuffles of trees are closely related to the Boardman-Vogt tensor product of operads and related monoidal structures. Independently of this, such shuffles raise all kinds of combinatorial questions, and in particular seem hard to count.