

Tensors of KZ-algebras

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Abstract

We investigate tensors of pseudo-algebras for KZ (aka lax idempotent) 2-monads. Our leading example is the tensor product of (unsorted) algebraic theories. This will be used throughout the talk to motivate and present the abstract theory. We shall consider tensors both in the sense of weighted bicolimits and of pseudo-monoidal structure. In each case, we will provide a construction of tensors and establish their coherence structure. Being concerned with KZ-algebraic structure, our development is somewhat elementary and akin to the classical categorical approach to tensor products classifying bilinear maps. The theory directly applies to strongly-finitary KZ-monads. Well-known examples are finite product, coproduct, and biproduct completions. However, the techniques may be used more broadly and further examples will be discussed. In particular, we will consider tensors of distributive categories, the 2-monad for which is strongly-finitary and property-like but not pseudo-commutative (and thereby neither KZ). This is joint work, in progress, with André Joyal. Further questions and problems in connection to it will be indicated during the talk.