Cubical Feynman categories and derived modular envelopes

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Abstract

A few years ago Kaufmann and Ward introduced Feynman categories in order to have a syntactically simple way of presenting operad-like structures. For instance, symmetric, cyclic and modular operads are algebras over certain cubical Feynman categories. The cubicity allows for a uniform way of defining "resolutions" for these algebras. In the case of symmetric operads we recover the W-resolution of Boardman and Vogt.

The formalism also yields an explicit computation of Quillen left derived functors of cubical Feynman functors. In particular, we identify combinatorial models of certain moduli spaces of Riemann surfaces with derived modular envelopes of cyclic operads.

This is joint work in progress with R.M. Kaufmann.