

Richard Steiner

University of Glasgow

Opetopes and chain complexes

The opetopic approach to higher category theory uses certain objects which are called opetopes. Originally opetopes were defined as polytopes representing operations of a particular kind. Kock, Joyal, Batanin and Mascari [1] have given a short and simple combinatorial description in terms of trees. In this talk (based on [2]) I use chain complexes to give an algebraic version of their description. The algebraic methods clarify the computation of faces. There are similar algebraic descriptions for objects involved in other approaches to higher category theory, for example simple omega-categories and orientals, and one can use the algebraic descriptions to compare the various approaches.

REFERENCES

- [1] J. Kock, A. Joyal, M. Batanin and J-F. Mascari, Polynomial functors and opetopes, *Adv. Math.* 224 (2010), no. 6, 2690–2737.
- [2] R. Steiner, Opetopes and chain complexes, *Theory and Applications of Categories* 26 (2012), no. 19, 501–519.