

## **The diagonal of the multiplihedra**

**Guillaume Laplante-Anfossi**

University of Melbourne

`guillaume.laplanteanfossi@unimelb.edu.au`

The structure of homotopy associative algebra, or  $A$ -infinity algebra, is encoded by a family of polytopes named associahedra. Morphisms between  $A$ -infinity algebras are encoded by another family of polytopes, first introduced by Stasheff: the multiplihedra. In a joint work with Thibaut Mazuir, we define a cellular approximation of the diagonal of the multiplihedra, and describe its image combinatorially. This allows us to define a tensor product of  $A$ -infinity morphisms, compatible with that of  $A$ -infinity algebras, by explicit formulas. This result opens the doors to explicit computations in symplectic topology, in particular the study of the Fukaya category formed by products of symplectic manifolds.

**(joint work with Thibaut Mazuir)**