

Algebraic Geometry

The gravity operad is free

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The “gravity operad” was introduced by Ezra Getzler; it is a gadget that encodes the cohomology of all the moduli spaces $M_{0,n}$ of n -pointed smooth curves of genus zero. We show that it is in fact free as a nonsymmetric operad, and that the generators are given by the cohomology of a partial compactification $M_{0,n}^\delta$ introduced by Francis Brown in connection with the study of multiple zeta values. As part of the proof we construct a novel description of the cohomology of $M_{0,n}$ in terms of certain diagrams of chords on a polygon with n edges.

This is joint work with Johan Alm, Stockholm University.