Higher structure in the cohomology of automorphisms of manifolds

Alexander Berglund
Stockholm University

Abstract

In a collaboration that started some ten years ago, Ib Madsen and I discovered some remarkable higher structure, governed by a certain graph complex in the sense of Kontsevich, in the rational cohomology of certain automorphism groups of the "generalized surfaces" $\#^g(S^d \times S^d)$ for $d > 1$. In this talk, I will report on some recent developments prompted by this discovery. In particular, I will present new structural results for spaces of self-homotopy equivalences of arbitrary simply connected Poincaré duality spaces that lead to a more conceptual explanation of this higher structure.