Equivariant configuration spaces and cyclic chains

Abstract: Kontsevich’s formality theorem states that the differential graded Lie algebra of multidifferential operators on a manifold $M$ is $L_\infty$-quasi-isomorphic to its cohomology. The construction of the $L_\infty$-map is given in terms of integrals of differential forms on configuration spaces of points in the upper half-plane. Here we consider configuration spaces of points in the disk and work equivariantly with respect to the rotation group. This leads to considering the differential graded Lie algebra of multivector fields endowed with a divergence operator. In the case of $\mathbb{R}^d$ with standard volume form, we obtain an $L_\infty$-morphism of modules over this differential graded Lie algebra from cyclic chains of the algebra of functions to multivector fields. As a first application we give a construction of traces on algebras of functions with star-products associated with unimodular Poisson structures. The construction is based on the Batalin-Vilkovisky quantization of the Poisson sigma model on the disk and in particular on the treatment of its zero modes. The talk is based on joint work with A. Cattaneo and T. Willwacher.