Julius-Maximilians-
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MUΦX
Lehrstuhl X

Announcement

Seminar on Deformation Quantization and Geometry

4. 7. 2025 at 14:00 s.t.

Seminarroom SE 31

Christian Blohmann (MPI Bonn)

Homotopy momentum map and reduction of Lagrangian Field Theories

In field theories with diffeomorphism symmetries, Noether's theorem does not give rise to an equivariant momentum map. This long-standing fundamental problem has recently found a solution in the setting of multisymplectic geometry, where the map from spacetime vector fields to their Noether currents extends naturally to a morphism of L-infinity algebras, called a homotopy momentum map. The next step is to develop a notion of (premulti)symplectic reduction in this setting. In the homotopical setting, the vanishing of the momenta has to be replaced by a cohomological condition in the variational bicomplex. This leads to two simple and reasonable conditions describing the homotopy zero locus. Using diffeological methods, we can show that the homotopy zero locus, including its singular strata, is invariant under diffeomorphisms. This is joint work with Janina Bernardy.

Invited by Stefan Waldmann