

Sam Nariman (Northwestern University)

„On a comparison of symplectomorphisms with finite dimensional Lie groups.“

Abstract:

There are at least three different approaches to construct characteristic invariants of symplectic bundles. Reznikov generalized Chern-Weil theory for finite dimension Lie groups to the infinite dimensional group of symplectomorphisms. He constructed nontrivial invariants of symplectic bundles whose fibers are diffeomorphic to complex projective spaces. Kontsevich used formal symplectic geometry to build interesting classes that are not yet known to be nontrivial. For surface bundles whose holonomy groups preserve the symplectic form, Kotschick and Morita used the flux homomorphism to construct many nontrivial stable classes.

In this talk, we introduce infinite loop spaces whose cohomology groups describe the stable characteristic invariants of symplectic surface bundles. As an application, we give a homotopy theoretic description of Kotschick and Morita's classes and prove a result about codimension 2 foliations that implies the nontriviality of KM classes.