TOPOLOGY SEMINAR

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Tautological rings for high-dimensional manifolds

Tuesday, October 6th. 4:00 in 384-I

Abstract: The cohomology of the classifying space $BDiff(M)$ of the group of diffeomorphisms of a manifold $M$ may be considered as the ring of characteristic classes of smooth fibre bundles with fibre $M$. This ring is difficult to understand, but when $M$ is an orientable surface the close connection between $BDiff(M)$ and the moduli space of Riemann surfaces means that a lot is known. In this case, algebraic geometers have found it productive to focus not on all the cohomology but a certain subring, the “tautological ring”, containing the geometrically interesting classes. One can make a similar definition for manifolds of higher dimension. I will explain all these terms, and discuss some recent results on the large scale structure of these tautological rings. This is joint work with Ilya Grigoriev and Soren Galatius.