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On the intersection cohomology of vector bundles

Wednesday, 20 September 2023 11:30 (1 hour)

The moduli space of vector bundles on curves is a classical object in modern algebraic geometry. Mumford proved that it is a projective, generally singular variety, thus it is natural to investigate its topological properties, such as the cohomology. In this talk we study a natural invariant which is well behaved also for singular varieties, namely intersection cohomology. The study of the intersection cohomology of the moduli spaces of semistable bundles on curves began in the 80's with the works of Kirwan. Motivated by the work of Mozgovoy and Reineke, in joint work with Andras Szenes and Olga Trapeznikova, we give a complete description of the intersection cohomology of vector bundles via a detailed analysis of the celebrated Decomposition Theorem of Beilinson, Bernstein, Deligne and Gabber applied to a certain map from parabolic bundles. We also give a new formula for the intersection Betti numbers of these moduli spaces, which has a clear geometric meaning.

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