

Local systems on analytic germ complements

Abstract: A conjecture of Beauville and Catanese from 1980's stated, in a slightly different form, that the sets of rank one local systems on a compact Kähler manifold with prescribed cohomology are special varieties, that is, their irreducible components are torsion-translated subtori. The conjecture has finally been fully proved by Botong Wang in 2013. Around the same time, Wang and I proved that the same holds for all quasi-projective complex algebraic manifolds. In this talk, we present the recent proof of a much more subtle case: germ complements of complex analytic sets. This is a vast generalization of the classical Monodromy Theorem stating that the eigenvalues of the monodromy on the cohomology of the Milnor fiber of a germ of a holomorphic function are roots of unity. The proof uses the Riemann-Hilbert correspondence between D-modules and perverse sheaves. Joint work with Botong Wang.