
JUNLIANG SHEN, MIT

Cohomological χ -independence for moduli of 1-dimensional sheaves and moduli of Higgs bundles

Let M_χ be either (a) the moduli space of 1-dimensional semistable sheaves F on a toric del Pezzo surface (e.g. \mathbb{P}^2) with $\chi(F) = \chi$, or (b) the moduli space of semistable Higgs bundles (E, θ) with respect to an effective divisor D on a curve of degree $\deg(D) > 2g - 2$ satisfying $\chi(E) = \chi$. Although the topology of the (possibly singular) variety M_χ relies heavily on χ , we show that the intersection cohomology of M_χ is independent of χ . This proves conjectures of Bousseau and Toda. In this talk, we will discuss particularly the role played by integrable systems in the χ -independence phenomenon. This is based on joint work in progress with Davesh Maulik.