

Departmental Colloquium

Non-abelian Hodge correspondence and higher Teichmüller spaces

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Abstract: Given a closed orientable surface S and a Lie group G , one can consider the set of equivalence classes of representations of the fundamental group of S in G , which is often referred as the G -character variety of the fundamental group of S . Choosing a complex structure on S , one can identify the elements in the G -character variety with certain holomorphic objects on the corresponding Riemann surface. If G is the circle, this gives the identification of the character variety with the Jacobian of the Riemann surface — correspondence that goes back to the 19th century. In this talk we will focus on the case in which G is a non-abelian non-compact semisimple Lie group. In this situation, the non-abelian Hodge correspondence identifies the G -character variety with the space of some holomorphic objects on the Riemann surface known as G -Higgs bundles. Using this correspondence, we give a classification of the simple Lie groups G for which the G -character variety has components that generalize the Teichmüller space of S parameterizing complex structures on S , regarded as a topological component of the character variety for $G=\mathrm{PSL}(2,\mathbb{R})$.

Friday, March 18 at 3:00 PM in 636 SEO