

Séminaire d'algèbre, topologie et géométrie
Jeudi 5 octobre à 14h
Salle I

Alessandro Malusà

Aarhus

Hitchin-Witten connection and perturbations of curve operators

One result in quantum $SU(2)$ -Chern-Simons theory was the definition of a formal Hitchin connection on a certain bundle over the Teichmüller space (based on the asymptotic properties of Toeplitz operators), together with a trivialisation. Basing on similar methods one can look for a formal Hitchin-Witten connection for the $SL(2, \mathbb{C})$ theory. The problem can be set in terms of a certain recursion of differential equations, which can in turn be phrased in co-homological terms. This talk will cover some partial results about the recursion, including an explicit solution for the first step and an argument for the vanishing of a cohomological obstruction to the existence of whole solutions. In the case of genus 1, an infinite family of solutions can be found by means of a primitive for the potential of the Hitchin-Witten connection.