

Abstract

Witten deformation is a versatile tool with numerous applications in geometry and mathematical physics. In this talk, we will focus on the analysis of Witten deformation for a family of non-Morse functions, leading to a new proof of the gluing formula for analytic torsions. Then we could see that the gluing formula can be reformulated as the Bismut-Zhang theorem for non-Morse functions. Furthermore, this approach can be extended to analytic torsion forms, which also provides a new proof of the gluing formula for analytic torsion forms.