Witten instanton complexes and applications on stratified pseudomanifolds

Gayana Jayasinghe
University of Illinois at Urbana-Champaign

The classical fixed point theorem of Lefschetz has been generalized in various directions, with numerous applications in various areas of mathematics and physics. Atiyah and Bott proved a version for elliptic complexes on smooth manifolds, opening the doors to various localization formulas. Essentially these allow for computing certain global integrals in terms of data near fixed points of self-maps on spaces. In the early 80's, Witten began studying supersymmetry breaking in a series of papers in mathematics and physics, where he related it to Morse theory, generalizing it to elliptic complexes under certain conditions, using it as a tool to study various important questions in physics.

I will describe a generalization of Witten's instanton complex construction for holomorphic Morse theory on certain singular spaces, generalizing Lefschetz-Riemann-Roch theorems. These can be used to explicitly compute equivariant indices of various operators and partition functions that are of interest to physicists, and I will show some examples.

Data: Xoves 12 de Setembro de 2024

Lugar: Aula 7, Facultade de Matemáticas USC e en liña a través do enlace *Teams Meeting*

Duración: 1 hora

Hora: 16:00