SPEAKER: Bai-Ling Wang (Australian National University, Canberra) TITLE: Geometry of D-branes and twisted index theorem

ABSTRACT: In string theory D-branes were proposed as a mechanism for providing boundary conditions for the dynamics of open strings moving in spacetime. As D-branes themselves can evolve over time one needs to study equivalence relations on the set of D-branes. An invariant of the equivalence class is the topological charge of the D-brane, which should be thought of certain index of Atiyah-Singer type operators. In this talk, I will explain the geometry of spacetime with a background flux, and propose a mathematical definition of D-branes. As an application, we will study the Atiyah-Singer index theorem for a given twisting datum defined by the flux.