BOSTON UNIVERSITY GEOMETRY SEMINAR

Differential index theory

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Wednesday Oct. 26, 4-5 pm in MCS B21.
Tea 3:45-4 in MCS 144.

Abstract: The Atiyah-Singer family index theorem can be stated as the equality of analytic and topological index maps in K-theory. In recent years, extensions of K-theory, called differential K-theory, have been developed, with motivation from mathematical physics. There are several models of differential K-theory, due to Bunke-Schick, Freed-Lott, Hopkins-Singer and Simon-Sullivan. The family index theorem has been generalized to differential K-theory by Bunke-Schick and Freed-Lott.

In this talk, we briefly sketch the models of differential K-theory constructed by Freed-Lott and Simons-Sullvian, and we define a super version of differential K-theory. We state the differential index theorem in Freed-Lott theory and discuss the problem of defining the analytic index in Simons-Sullivan theory. Finally we discuss some open problems on proving the differential index theorem in super differential K-theory.