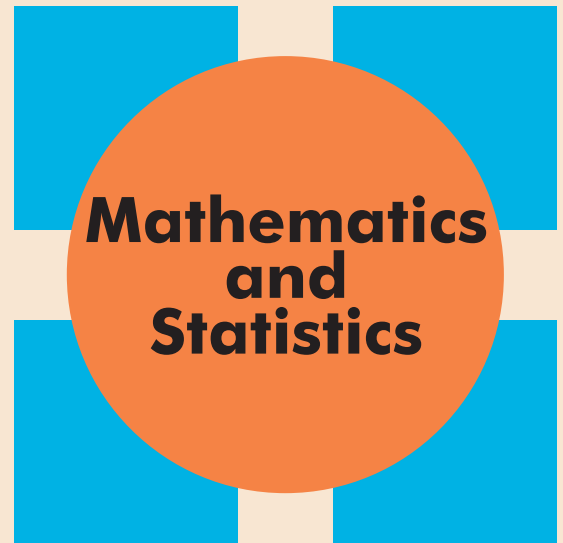


COLLOQUIUM

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On inductive limit spectral triples



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Time: 3:30 - 4:30 PM

Room: CL 305

Abstract: In Alain Connes' noncommutative geometry, the geometric information carried by a C^* -algebra A is deciphered through conversion in spectral information, a process that is obtained with the help of a Dirac-type operator D that acts on the Hilbert space \mathcal{H} on which the given algebra is represented. The constituent objects A , \mathcal{H} and D of this process define the notion of spectral triple.

In the literature, one can find several examples of spectral triples (A, \mathcal{H}, D) that are built on inductive limit C^* -algebras $A = \varinjlim A_j$ in such a way that their Hilbert spaces \mathcal{H} and Dirac operators D can also be realized as inductive limits of Hilbert spaces $\mathcal{H} = \varinjlim \mathcal{H}_j$, respectively of selfadjoint operators $D = \varinjlim D_j$. Moreover, the connecting maps that occur in all these inductive limit constructions are compatible in a natural way, making the systems of spectral triples $\{(A_j, \mathcal{H}_j, D_j)\}_j$ into inductive systems.

Our purpose, in this presentation, is to discuss several necessary and sufficient conditions under which the triple $(\varinjlim A_j, \varinjlim \mathcal{H}_j, \varinjlim D_j)$ associated with an inductive system of spectral triples $\{(A_j, \mathcal{H}_j, D_j)\}_j$ is also a spectral triple. We also analyze and describe some classical examples of spectral triples in terms of these conditions.

This is joint work with Asghar Ghorbanpour.