Einladung zum
Mathematischen Kolloquium

Am Dienstag, 6. Juli 2010

spricht

Prof. Dr. Jean Bellissard
Georgia Institute of Technology, Atlanta, USA

über

Noncommutative aspects of compact metric spaces
Subtitle: Group actions on spectral metric spaces

(i) A noncommutative analog of a locally compact space is a C*-algebra. The set of states on it is the analog of the probability measures on the space. If a group acts on a C*-algebra, the corresponding dynamical system can be described through an algebra called "crossed product”.

(ii) A noncommutative analog of Riemannian manifolds was proposed in the eighties by A. Connes under the names of "spectral triples” or "K-cycles”. He also indicated how to recover the metric from the algebraic set-up and this metric extends to the state space. The characterization of K-cycles giving rise to a metric providing the weak* topology leads to the notion of "spectral metric space”

(iii) The main question addressed in this talk is the following: starting from a spectral metric space with a group action, can one construct a spectral metric space based on the crossed product algebra that recover the metric properties of the dynamical system? The answer to this question is more complex than it looks. It is positive if and only if the group is equivalent to a group of isometries. The case of uniformly hyperbolic systems provides a major counter example. It will be shown that, provided the algebra is extended to what is the noncommutative analog of the "metric bundle” over a manifold, it is possible to see any action as given by isometries on this extended spectral metric space.

(This is a joint work with my collaborators Matilde Marcolli and Kamran Reihani)

Der Vortrag findet statt um 16 Uhr c.t. im Raum 1090, 1. Ebene des Mehrzweckhochhauses (MZH) der Universität Bremen, Bibliothekstraße.
Zuvor gibt es Kaffee/Tee und Gebäck im Raum 7140.

Alle Interessierten sind herzlich eingeladen.
R.-E. Hoffmann als Kolloquiumsbeauftragter.