**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**
**UNIVERSITY OF SOUTHERN DENMARK, ODENSE**

# Mathematics seminar

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## Hannover

# Hecke operators and K-homology of arithmetic groups

## Thursday 12 May 2016, 16:15-17:00
## IMADA seminar room

**Abstract**

Cohomology of arithmetic groups and its structure as a Hecke module plays a prominent role in modern number theory. Classically the cohomology of an arithmetic group \Gamma can be studied geometrically through its action on the associated global symmetric space X. In low dimensions, such actions produce noncompact hyperbolic manifolds as quotient spaces, as well as dynamically complicated actions on the boundary of X. In joint work with Haluk Sengun (Sheffield), we show that the cohomology of \Gamma, as a Hecke module, can be captured by the K-groups of a certain noncommutative C*-algebras which encode the action of \Gamma on X as well as its boundary. The Hecke operators can be rigidly defined as explicit classes in KK-theory, acting on the relevant K-groups in a way compatible with Morita equivalence and boundary maps. This provides a uniform framework to study the K-homology of arithmetic groups. This is joint work with M.H Sengun at Sheffield.

**Host: David Kyed**