

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

## Mathematics seminar

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### Sums of regular operators and the categorical approach to unbounded KK-theory

Thursday 31 May 2018, 14:15-15:15  
IMADA seminar room

#### Abstract

It is well known that unbounded self-adjoint operators in Hilbert  $C^*$ -modules should be handled with even more care than in Hilbert spaces. In particular, taking the sum of two such operators may not yield a self-adjoint operator again. In this talk I will discuss a notion of weak anticommutativity for such operators. When the anticommutator  $ST+TS$  of two self-adjoint operators  $S$  and  $T$  is "small" in an appropriate sense, their  $S+T$  sum yields a well defined self-adjoint operator as does the sum of their squares. Using these refined results, one can define a notion of differentiable KKcycle in such a way that these form a category in which composition is given by the unbounded Kasparov product.

Based partly on joint work with Matthias Lesch.

Host: David Kyed