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The Cuntz semigroup of a minimal diffeomorphism C^*-algebra

The Cuntz semigroup of a stably finite C^*-algebra is an extension of the Murray–von Neumann semigroup to the realm of positive elements. Alternatively, for C^*-algebras of stable rank one, it is the semigroup, under direct sums, of isomorphism classes of countably generated Hilbert modules over a given C^*-algebra. This semigroup is a crucial invariant for simple separable amenable C^*-algebras, whence a basic interest in its structure.

In this talk I will describe the Cuntz semigroup of the C^*-algebra associated to a minimal diffeomorphism of a smooth compact manifold. Some consequences of this description include a classification of countably generated Hilbert modules over such algebras in terms of K-theory and traces, a similar classification of the closures of unitary orbits of self-adjoints, the confirmation of a conjecture of Blackadar and Handelman concerning dimension functions, and a norm-separable analogue of McDuff's uncountable family of non-isomorphic II_1 factors.