Nuclear Dimension of Simple C*-Algebras and Extensions

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The nuclear dimension of a C*-algebra, introduced by Winter and Zacharias, is a non-commutative generalisation of the covering dimension of a topological space.

Whilst any non-negative integer or infinity can be realised as the nuclear dimension of some commutative C*-algebra, the nuclear dimension of a simple C*-algebra must be either 0,1 or infinity. This trichotomy is just one application of my joint work on the Toms–Winter Conjecture with Castillejos, Tikuisis, White, and Winter. In this talk, I will outline the results, their application to classification theory, and the new ideas at the heart of our work.

I will then discuss the recent developments on the nuclear dimension of extensions, including the work on the Cuntz–Toeplitz algebras undertaken during the Glasgow Summer Project 2019.