Analysis Seminar

Title: Fractal substitution tilings and applications to noncommutative geometry

Speaker: M. Whittaker (Glasgow)

Date: Tue 10th October 2017 at 4:15PM

Location: UCD Science North 125

Abstract: Starting with a substitution tiling, such as the Penrose tiling, we demonstrate a method for constructing infinitely many new substitution tilings. Each of these new tilings is derived from a graph iterated function system and the tiles typically have fractal boundary. As an application of fractal tilings, we construct an odd spectral triple on a C^*-algebra associated with an aperiodic substitution tiling. Even though spectral triples on substitution tilings have been extremely well studied in the last 25 years, our construction produces the first truly noncommutative spectral triple associated with a tiling. My work on fractal substitution tilings is joint with Natalie Frank and Sam Webster, and my work on spectral triples is joint with Michael Mampusti.