Peter Cameron: *Limits of cubes*

There is an obvious way to embed an n-dimensional cube into an $(n+1)$-dimensional cube, as a face of codimension 1. Taking the limit of these embdeddings gives an "infinite-dimensional cube".

With Sam Tarzi, I have been looking at a different embedding, which takes the n-dimensional cube into the $2n$-dimensional cube with the distances re-scaled. The limit of these embeddings is a rather interesting infinite metric space, which has something to do with Conway's "Nim-field". Its competion turns out to be isometric to the space of Lebesgue-measurable subsets of the unit interval modulo null sets, and any countable locally finite group acts on it in a natural way.

I will not assume any knowledge, but will explain all these things during the talk.