Games and Dimension

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In 1911 Lebesgue introduced covering dimension for topological spaces. For finite dimensional real vector spaces this dimension is equal to the algebraic dimension. There are several ways of extending Lebesgue covering dimension to infinite dimensional spaces (i.e. spaces that are not finite dimensional). Until recently none of these provided a covering dimension value for a class of spaces such as the infinite dimensional separable Banach spaces.

In this talk I will introduce by means of a game a covering dimension function that assigns an ordinal dimension to each topological space. In metric spaces, finite Lebesgue covering dimension coincides with game the game dimension. Moreover, the Continuum Hypothesis is equivalent to the statement that the algebraic dimension of $\mathbb{R}^N$ is equal to its game dimension.

**Time:** Thursday, 09/02/2010, 2:40-3:30pm  
**Location:** MG 124