Abstract

For each subset $S \subseteq [0,1]$, let $G(S)$ be the two player game in which:

- Players I and II alternately choose decimal digits

$$d_1, d_2, d_3, d_4, \ldots, d_{2n+1}, d_{2n+2}, \ldots$$

- Player I wins if and only if the real number

$$d = 0.d_1d_2d_3d_4\ldots d_{2n+1}d_{2n+2} \ldots$$

is an element of $S$.

A subset $S \subseteq [0,1]$ is said to be determined if one of the two players has a winning strategy in the game $G(S)$. In this talk, we will consider the question of which subsets $S \subseteq [0,1]$ are determined. As we will see, this question is intimately related to existence of large cardinals; i.e. cardinals that are so large that they can prove the consistency of their own nonexistence.