

1057-46-32

Semai ULGEN YILDIRIM* (sulgen@math.northwestern.edu), 2033 Sheridan Rd, Lunt Hall 223, Evanston, IL 60208. *Gap Labeling Theorems.*

We will review the use of noncommutative topology in the generalisation of Bloch theory from crystals to quasicrystals. After introducing Bloch theory, we will construct the noncommutative space of tilings and we will argue that this is the noncommutative analogue of the Brillouin zone which is used in Bloch theory. The K-theory of the noncommutative Brillouin zone will be used to provide a labeling of the gaps in the spectrum of quasiperiodic Hamiltonians, which can be seen as first step towards a generalisation of Bloch theory to quasicrystals. We will talk about the Gap Labeling Theorems and their proofs. (Received December 09, 2009)