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Projection method tilings, their C^*-algebras and KK-theory

We begin with a short introduction to aperiodic tilings, particularly those obtained by the projection method. We will described the C^*-algebras associated to such systems, as introduced by Jean Bellissard and studied by Forrest, Hunton and Kellendonk. This leads to considering actions of free abelian groups on totally disconnected spaces. In addition, we show the existence of very natural elements of the KK-groups of a pair of such systems. These yield new methods for the computation of their K-theory.