1047-19-69   **Semail Ulgen Yildirim*** (`sulgen@math.northwestern.edu`), 2033 Sheridan Rd Lunt Hall 223, EVANSTON, IL 60208. *Tilings, Modified Bellissard Algebra and K-theory.* Preliminary report.

We work on crossed product C^*-algebras such as the C^*-algebra $A = C(\Omega) \rtimes \mathbb{R}^d$ where $\mathbb{R}^d$ acts on $C(\Omega)$ by translations. Here Ω is a compact space formed by translations of a given tiling τ. Indeed, J. Bellissard defined the notion of a hull $(\Omega, \mathbb{R}^d, T)$ to model aperiodic solids. The hull $(\Omega, \mathbb{R}^d, T)$ is a dynamical system with group $\mathbb{R}^d$ acting by homeomorphisms on a compact metrizable space Ω. In the case of a perfect crystal, with translation group G, the hull $\Omega = \mathbb{R}^d/G$ is homeomorphic to $\mathbb{T}^d$. In fact, with any dynamical system, there is a canonical C^*-algebra, namely the crossed product C^*-algebra $A = C(\Omega) \rtimes \mathbb{R}^d$. We modify this algebra a little bit by enlarging the hull Ω after including rotational symmetry in addition to translational symmetry on tiles, in particular on aperiodic tilings and call it the modified Bellissard Algebra. In the periodic case one can study the K-theory of this modified C^*-algebra and try to detect the type of the crystal. (Received January 12, 2009)