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Elizabeth Gillaspie* (elizabeth.a.gillaspie@dartmouth.edu), Dartmouth College
Mathematics Department, 27 N. Main St., Hanover, NH 03755. *K-theory and homotopies of
2-cocycles on groupoids*. Preliminary report.

The rotation algebras A_θ can be realized as twisted group C^* -algebras: $A_\theta = C^*(\mathbb{Z}, c_\theta)$, where

$$c_\theta((m, n), (j, k)) = e^{2\pi i \theta (nj)}.$$

Observe that the map $\theta \mapsto c_\theta((m, n), (j, k))$ is continuous for each fixed $(m, n), (j, k) \in \mathbb{Z}^2$. Moreover, all the rotation algebras have isomorphic K -theory groups.

In other words, the rotation algebras provide an example of a continuously varying family $\{\omega_t\}_{t \in [0,1]}$ of 2-cocycles on \mathbb{Z}^2 that gives rise to twisted group C^* -algebras with isomorphic K -theory.

This phenomenon is actually quite general: examples of groupoids for which a homotopy of cocycles induces an isomorphism on K -theory include symplectic vector bundles, transformation groups $G \ltimes X$ where G satisfies the Baum-Connes conjecture with coefficients and X is compact, and k -graph groupoids. Furthermore, there are no known counterexamples. In this talk, we will discuss some of the above-mentioned examples and our progress towards expanding the class of known examples to include Deaconu-Renault groupoids. (Received August 26, 2013)