Erratum to "Tracial states on crossed products associated with Furstenberg transformations on the 2-torus"

(Studia Math. 115 (1995), 183–187)

by

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Due to a fatal error, [3, Lemma 2] cannot hold since it contradicts Baggett [1, Theorem 2]. So the author does not know whether [3, Theorem 3 and Corollary 4] hold or not. But in the same way as in the proof of [3, Theorem 3] we can show the following proposition:

PROPOSITION. *Let f be a real-valued continuous function on $\mathbb{T}$. Suppose that there are a $G \in L^\infty(\mathbb{T})$ and a $\lambda \in \mathbb{T}$ such that $e^{2\pi i f(x)} G(e^{2\pi i\theta} x) = \lambda G(x)$ $(x \in \mathbb{T})$ and that $G \neq 0$ in $L^\infty(\mathbb{T})$. Then the Furstenberg transformation ϕ_f induced by f is uniquely ergodic. Hence the associated crossed product $A(\phi_f)$ has a unique tracial state.*

Remark. (1) By P. Hellekalek and G. Larcher [2, Corollary], if a real-valued function f on $\mathbb{T}$ is continuously differentiable and $\int_{\mathbb{T}} f(x)\,dx = -1/2$, then the induced Furstenberg transformation ϕ_f is uniquely ergodic.

(2) By the above remark and Baggett [1, Theorem 2] we see that there are an irrational number θ and a real-valued continuously differentiable function f on $\mathbb{T}$ such that f cannot be split with respect to $e^{2\pi i\theta} \in \mathbb{T}$ and that the induced Furstenberg transformation ϕ_f is uniquely ergodic.

References

[1] L. Baggett, *On functions that are trivial cocycles for a set of irrationals*, Proc. Amer. Math. Soc. 104 (1988), 1212–1215.

[2] P. Hellekalek and G. Larcher, *On the ergodicity of a class of skew products*, Israel J. Math. 54 (1986), 301–306.

[3] K. Kodaka, *Tracial states on crossed products associated with Furstenberg transformations on the 2-torus*, Studia Math. 115 (1995), 183–187.

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Received October 17, 1995 (3379)