Errata to "Stable ergodicity of skew products"

Keith Burns and Amie Wilkinson
Northwestern University

October 6, 2000

The description of the center bunching property on pages 861–862 is wrong. Center bunching requires that both $\|T_pF|_{E_F^c}\|$ and $m(T_pF\|_{E_F^c})$ should be close enough to 1. Having the ratio $\mu_c = 1$ does not imply center bunching. But center bunching certainly holds if the action of Tf on E^c is isometric, as is the case for the skew product examples considered in the paper.

In lines 1 and 4 of 871 (bottom of page 14 in the tex version), (x_0, g_0) should be changed to (x_0, e).

The following description of the partition $\mathcal{P}$ in Section 3 may be clearer than the one given in the paper: $\mathcal{P}$ consists of the level sets of the function $\eta : M \times G \to H\backslash G$ defined by $\eta(x,g) = \Phi(x)^{-1}g$.

(In the paper $\mathcal{P}$ is described as consisting of the set $P = \bigcup_{x\in M}\{x\} \times \Phi(x)$ and its right translates. See the bottom of page 863 or page 6 of the tex version.)

The partition into level sets of η is right invariant. This follows because right multiplication by a constant respects the partition of G into cosets belonging to $H\backslash G$, in the sense that each coset from $H\backslash G$ is carried to another coset from $H\backslash G$. We have

$$\begin{aligned} \eta(x_1,g_1) = \eta(x_2,g_2) &\Leftrightarrow \Phi^{-1}(x_1)g_1 = \Phi^{-1}(x_2)g_2 \\ &\Leftrightarrow \Phi^{-1}(x_1)g_1g = \Phi^{-1}(x_2)g_2g \\ &\Leftrightarrow \eta(x_1,g_1g) = \eta(x_2,g_2g), \end{aligned}$$

for any g.

We now show that $P = \eta^{-1}(H)$, where P is the set defined above. In order to do this we show that $\Phi(x) = \{g : \eta(x,g) = H\}$ for each x. Suppose that $\Phi(x) = g(x)H$. Then $\Phi^{-1}(x) = Hg(x)^{-1}$ and

$$\begin{aligned} \eta(x,g) = \eta(x,g') &\Leftrightarrow \Phi^{-1}(x)g = \Phi^{-1}(x)g' \\ &\Leftrightarrow Hg(x)^{-1}g = Hg(x)^{-1}g' \\ &\Leftrightarrow g(x)^{-1}g'g^{-1}g(x) \in H \\ &\Leftrightarrow g'g^{-1} \in g(x)Hg(x)^{-1} \\ &\Leftrightarrow g' \in g(x)Hg(x)^{-1}g. \end{aligned}$$

It is clear that the intersection with $\{x\} \times G$ of the level set of η containing (x, g) is $g(x)Hg(x)^{-1}g$. In particular $\Phi(x) = g(x)Hg(x)^{-1}g(x)$ is a level set in $\{x\} \times G$. This level set contains $g(x)$ and maps to H.

Thus $P = \bigcup_{x \in M} \{x\} \times \Phi(x)$ is the inverse image of H. This shows that the descriptions of $\mathcal{P}$ given here and in the paper are equivalent.