

Erratum to “Globalizing Locally Compact Local Groups”

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We thank A. I. Shtern for pointing out in his review [2] that Lemma 3.2 in our paper “Globalizing locally compact local groups” [1], is incorrect. Contrary to what that review suggests, it is easy to repair this (routine) lemma so that the proof of the main result goes through. There were two errors in our text: one is that we inadvertently omitted the word “continuous” in our definition, on p. 520, of *morphism of local groups*. (The paper makes no sense without this requirement.) The other error is that we forgot to say that the map ι in Lemma 3.2 is *injective*. Here is a slightly more explicit and corrected version of that lemma and its proof:

Lemma 0.1. *Let G be a local group, H a group, and $\iota: G \rightarrow H$ an injective map from the underlying set of G into the underlying set of H such that $\iota(xy) = \iota(x)\iota(y)$ for all $(x, y) \in \Omega_G$ and $\iota(G)$ generates H . Then there is a unique Hausdorff topology τ on H such that (H, τ) is a topological group and $\iota: G \rightarrow (H, \tau)$ is an open morphism of local groups.*

Proof. Let \mathcal{B} be the set of open neighborhoods of 1 in G . Let

$$\iota\mathcal{B} := \{\iota(U) \mid U \in \mathcal{B}\}.$$

It is routine to check that $\iota\mathcal{B}$ is a neighborhood base at 1 for a group topology τ on H : the assumption that $\iota(G)$ generates H is used to show that for every $V \in \iota\mathcal{B}$ and $h \in H$ there is $W \in \iota\mathcal{B}$ with $hWh^{-1} \subseteq V$. The injectivity of ι ensures that τ is a Hausdorff topology. Then $\iota: G \rightarrow (H, \tau)$ is clearly an open morphism of local groups. Uniqueness is clear. ■

References

- [1] van den Dries, L. and I. Goldbring, *Globalizing locally compact local groups*, Journal of Lie Theory **20** (2010), 519-524.
- [2] Shtern, A.I., Mathscinet Review MR2743102

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