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CORRECTION TO "AN EXTENSION OF THE VITALI-HAHN-SAKS THEOREM"

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Condition (2.2) below was missing in the statement of Theorem 2.1 in [1], which should read

Theorem 2.1. *Let $\{\lambda_n\}$ and λ be σ-finite (nonnegative) measures on $(X, \mathcal{B})$ such that, as $n \to \infty$,*

$$\int_X v\, d\lambda_n \to \int_X v\, d\lambda \ \forall v \in C_0(X). \tag{2.1}$$

Assume also that every λ_n is absolutely continuous with respect to μ, and

$$\lambda_n(B) = \int_B u_n\, d\mu, \ B \in \mathcal{B}, \ n = 1, \dots, \ \text{with} \ \liminf_{n\to\infty} \|u_n\|_\infty < \infty. \tag{2.2}$$

Then λ is absolutely continuous with respect to μ.

In the proof of Theorem 2.1 in [1], for an arbitrary μ-null set $B \in \mathcal{B}$, there is an open set G_ϵ with $B \subset G_\epsilon$ and $\mu(G_\epsilon) < \epsilon$. It was shown that

$$\liminf_{n\to\infty} \lambda_n(G_\epsilon) \geq \lambda(G_\epsilon) \geq \lambda(B).$$

On the other hand, from $\int_{G_\epsilon} u_n\, d\mu \leq \mu(G_\epsilon)\|u_n\|_\infty$, we have

$$\liminf_{n\to\infty} \lambda_n(G_\epsilon) = \liminf_{n\to\infty} \int_{G_\epsilon} u_n\, d\mu \leq \liminf_{n\to\infty} \mu(G_\epsilon)\, \|u_n\|_\infty \leq \epsilon \liminf_{n\to\infty} \|u_n\|_\infty.$$

Therefore, letting $\epsilon \downarrow 0$, we obtain $\lambda(B) = 0$ and the proof is complete.

The missing condition (2.2) in Theorem 2.1 in [1], states that some subsequence of the λ_n's must have bounded densities w.r.t. μ.

References

1. O. Hernández-Lerma and J.B. Lasserre, *An extension of the Vitali-Hahn-Saks Theorem*, Proc. Amer. Math. Soc. 124, pp. 3673-3676, 1996. MR **97f:**28012

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