Akbarbaglu, Ibrahim; **Heydarpour, Majid**; **Maghsoudi, Saeid**
Uniqueness of uniform norm and C^*-norm in $L^p(G,\omega)$. (English) Zbl 1349.43002
Math. Slovaca 64, No. 2, 411-422 (2014).

A uniform norm on a Banach algebra A is a norm satisfying $\|x^2\| = \|x\|^2$ for all $x \in A$. A is said to have the unique uniform norm property (UUNP) if it admits exactly one uniform norm, and the unique C^*-norm property (UC*NP) if it admits exactly one C^*-norm. The authors consider these properties for the class of weighted L_p-algebras. Given a locally compact abelian group G and a positive measurable function w, the algebra $L_p^w(G)$ is defined as $\{f\ fw \in L_p(G)\}$, with the norm $\|f\|_{p,w} = \|fw\|_p$.

The main result (Theorem 3.2) is that for a translation invariant algebra $L_p^w(G)$ with $p > 1$, (b) UUNP is equivalent to (a) the existence of a minimal uniform norm and to (c) the Shilov regularity. There is however a problem in the proof of the implication (b)⇒(c): it is assumed implicitly that the spectrum of $L_p^w(G)$ is equal to the dual group $\widehat{G}$; this is always true for regular algebras, and might be true for algebras with UUNP, but the paper does not contain a proof of the latter fact.

Reviewer: Yulia Kuznetsova (Besançon)

MSC:

43A10 Measure algebras on groups, semigroups, etc.

Keywords:

uniform norm; regular commutative Banach algebra; weighted L_p-algebra; Beurling algebra; unique C^*-norm property; unique uniform norm property

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References:

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