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Correction to "On the hyperbolic metric on Harnack parts", Studia Math. 55 (1976), pp. 97-109

by

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In our paper entitled as above, the assertion that Ω is a BW-compact set (see p. 99, line 2) is not valid.

But under some minor modifications, the proof of Arveson's theorem can be obtained without using the BW-topology. For this we have only to change the point (ii) of Lemma 1 (see page 99) as follows:

"*For every* $b \in B$ *and* $h, k \in H$ *there exists* $w \in \mathscr{M}$, $w \geqslant 0$, *such that* $w(\mu) \geqslant |(\mu(b)h, k)|$ *for any* $\mu \in \Omega$".

Proof. Let $b \in B$ and $h, k \in H$. Since $\mathrm{Re}(\|b\| \cdot e \pm b) = \|b\| \cdot e \pm \mathrm{Re}\, b$ is positive, it results that $\|b\| \cdot \mu(e) - \mathrm{Re}\,\mu(b)$ is positive for every $\mu \in \Omega$. Thus for every $g \in H$ we have $|(\mu(b)g, g)| \leqslant 2\|b\|(\mu(e)g, g)$. Then using the polarisation formula we obtain

$$|(\mu(b)h, k)| \leqslant \frac{\|b\|}{2} \sum_{i=1}^{4} (\mu(e)g_i, g_i),$$

where $g_1 = h+k$, $g_2 = h-k$, $g_3 = h+ik$, $g_4 = h-ik$.

If we consider the positive diagonal matrix $(a_{ij}) \in S \otimes M_4$, $a_{ii} = \frac{\|b\|}{2} e$, $a_{ij} = 0$ for $i \neq j$, and if we put

$$w(\mu) = \sum_{i,j=1}^{4} (\mu(a_{ij})g_i, g_i), \quad \mu \in \Omega,$$

we have $w \in \mathscr{M}$, $w \geqslant 0$ and

$$|(\mu(b)h, k)| \leqslant w(\mu) \quad \text{for every} \quad \mu \in \Omega.$$

The proof is finished.

In the proof of Arveson's theorem (Theorem 1, pp. 101–102) we have only to change the text of lines 9–15 with:

"Using a standard extension theorem we can extend L_{φ_0} to a positive functional L_{φ_0} on the linear space.

$\tilde{\mathscr{M}} = \{f\colon \Omega \to C$; there exists $w \in \mathscr{M}$, $w \geqslant 0$, such that $w(\mu) \geqslant |f(\mu)|$; $\mu \in \Omega\}$.

By Lemma 1, point (ii), for every $b \in B$, $h, k \in H$, the function $w_{b;h,k}$ defined as

$$w_{b;h,k}(\mu) = \big(\mu(b)h, k\big)$$

belongs to $\tilde{\mathscr{M}}$".

Other results of the paper are not influenced.

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