Zeitschrift: L'Enseignement Mathématique

Herausgeber: Commission Internationale de l'Enseignement Mathématique

Band: 35 (1989)

Heft: 1-2: L'ENSEIGNEMENT MATHÉMATIQUE

Artikel: ON THE POSITIVE LINEAR FUNCTIONALS ON THE DISC ALGEBRA

Autor: Pavone, Marco

Bibliographie

DOI: https://doi.org/10.5169/seals-57362

think of looking at the restriction map $\alpha(f) = f \mid [-1, 1], f \in A$, and define a positive linear functional on $\alpha(A)$ by $G(\alpha(f)) = F(f)$ (G is well defined because α is one-to-one by the analytic continuation principle). If G were continuous, we would use the denseness of $\alpha(A)$ in $C[-1, 1]$ to find a positive measure on $[-1, 1]$ which represents G and therefore F. We know retrospectively that G must be continuous by the existence of such representing measure, but it is not easy to prove it.

In fact, the map $\alpha(f) \mapsto f$ is not continuous (if α^{-1} were continuous, then $\alpha(A)$ would be complete. But $\alpha(A)$ contains the polynomials, so it would be $\alpha(A) = C[-1, 1]$, which is incompatible with the existence of continuous non differentiable functions on $[-1, 1]$).

Acknowledgment. It is the author's pleasure to express his debt to Professor Chernoff for much more than just the conversations related to the contents of this note. The author was Paul Chernoff's assistant for his course on Banach Algebras and Spectral Theory in Berkeley, Fall 1986.

REFERENCES

[1] GAMELIN, T. W. *Uniform Algebras.* Prentice-Hall, Inc., Englewood Cliffs, N.J., 1969.
[2] GELFAND, I. and M. A. NAIMARK. Rings with involutions and their representations. *Izvestiya Akad. Nauk. SSSR, Ser. Matem., 12* (1948), 445-480 (Russian).
[3] NAIMARK, M. A. *Normed Rings.* Erven P. Noordhoff, Ltd., Groningen, Netherlands, 1960 (Original Russian edition, 1955).
[4] RUDIN, W. *Functional Analysis.* McGraw-Hill, New York, 1973.

(Reçu le 28 mars 1988)

Marco Pavone
Department of Mathematics
University of California
Berkeley, California 94720 (USA)