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The Royden boundary and the Dirichlet problem in a standard H -cone. (English)

Zbl 1179.31008

Libertas Math. 26, 49-54 (2006).

Summary: In the case of a self adjoint harmonic space *F.-Y. Maeda* [Dirichlet integrals on harmonic spaces. Lecture Notes in Mathematics. 803. Berlin-Heidelberg-New York: Springer-Verlag. X, 180 p. (1980; Zbl 0426.31001)] has constructed a Royden boundary and has solved the associated Dirichlet problem. The harmonic space is taken in the sense of *C. Constantinescu* and *A. Cornea* [Ideal boundaries of Riemann surfaces. (Ideale Ränder Riemannscher Flächen.) (German) Ergebnisse der Mathematik und ihrer Grenzgebiete. Neue Folge. 32, Reihe: Moderne Funktionentheorie. Berlin-Göttingen-Heidelberg: Springer-Verlag. 244 S. (1963; Zbl 0112.30801)]. An analogous situation in the global axiomatic theory of potentials is the case of an autodual H -cone which satisfies the axiom D [*N. Boboc, Gh. Bucur* and *A. Cornea*, Order and convexity in potential theory: H -cones. In collab. with Herbert Höllein. (English) Lecture Notes in Mathematics. 853. Berlin-Heidelberg-New York: Springer-Verlag. IV, 286 p. (1981; Zbl 0534.31001)]. So, in [*L. Popa*, Bull. Math. Soc. Sci. Math. Répub. Soc. Roum., Nouv. Sér. 31(79), 153–162 (1987; Zbl 0634.31007)] we proved that in a standard autodual H -cone which satisfies the axiom D , a Royden boundary can be constructed and relative to it the Dirichlet problem can be solved. We drop the hypothesis of autoduality and the axiom D and we extend the previous results to this new situation. We prove that the solution of the Dirichlet problem relative to the Royden boundary minimizes the norm given by the Dirichlet integral, in a suitable class of bounded functions with finite Dirichlet integrals.

MSC:

31D05 Axiomatic potential theory

Keywords:

Dirichlet problem; H -cone; Royden boundary