Miyamoto, Ikuko; **Yosida, Hidenobu**

On a covering property of rarefied sets at infinity in a cone. (English) Zbl 1119.31003

Aikawa, Hiroaki (ed.) et al., Potential theory in Matsue. Selected papers of the international workshop on potential theory, Matsue, Japan, August 23–28, 2004. Tokyo: Mathematical Society of Japan (ISBN 4-931469-33-7/hbk). Advanced Studies in Pure Mathematics 44, 233-244 (2006).

This paper is concerned with domains of the form $C(\Omega) = \{rz : r > 0, z \in \Omega\}$, where Ω is a $C^{2,\alpha}$-domain in the unit sphere of $\mathbb{R}^n$. There is a Martin function for $C(\Omega)$, associated with the point at infinity, which has the form $K(rz) = r^\alpha f(z)$ for $r > 0$ and $z \in \Omega$. If v is a positive superharmonic function on $C(\Omega)$ such that $\inf_{C(\Omega)} v/K = 0$, then the set E_v, defined as $\{rz \in C(\Omega) : v(rz) \geq r^\alpha\}$, cannot be large near infinity. The authors show that such a set E_v can always be covered by a sequence of balls $B(x_k, r_k)$ such that $\sum(r_k/|x_k|)^{n-1} < \infty$. The case of a halfspace had previously been treated by *V. S. Azarin* [Mat. Sb. (N.S.) 66 (108), 248–264 (1965; Zbl 0135.32203)] and *M. Essén, H. L. Jackson* and *P. J. Rippon* [Hiroshima Math. J. 15, 393–410 (1985; Zbl 0594.31014)].

For the entire collection see [Zbl 1102.31001].

Reviewer: Stephen J. Gardiner (Dublin)

MSC:

31B25 Boundary behavior of harmonic functions in higher dimensions
31B05 Harmonic, subharmonic, superharmonic functions in higher dimensions

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superharmonic function; boundary behaviour