

A THRESHOLD FOR THE SIZE OF RANDOM CAPS TO COVER A SPHERE

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Abstract. Consider a unit sphere on which are placed N random spherical caps of area $4\pi p(N)$. We prove that if $\overline{\lim} (p(N) \cdot N / \log N) < 1$, then the probability that the sphere is completely covered by N caps tends to 0 as $N \rightarrow \infty$, and if $\underline{\lim} (p(N) \cdot N / \log N) > 1$, then for any integer $n > 0$ the probability that each point of the sphere is covered more than n times tends to 1 as $N \rightarrow \infty$.

Key words and phrases: Coverage problem, random caps, threshold function.