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**Equivalence of some subcritical properties in continuum percolation.** (English) Zbl 1428.62425  
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Summary: We consider the Boolean model on  $\mathbb{R}^d$ . We prove some equivalences between subcritical percolation properties. Let us introduce some notations to state one of these equivalences. Let  $C$  denote the connected component of the origin in the Boolean model. Let  $|C|$  denotes its volume. Let  $\ell$  denote the maximal length of a chain of random balls from the origin. Under optimal integrability conditions on the radii, we prove that  $\mathbb{E}(|C|)$  is finite if and only if there exists  $A, B > 0$  such that  $\mathbb{P}(\ell \geq n) \leq Ae^{-Bn}$  for all  $n \geq 1$ .

**MSC:**

**60K35** Interacting random processes; statistical mechanics type models; percolation theory

Cited in 1 Document

**Keywords:**

Boolean model; continuum percolation; critical point

**Full Text:** [DOI](#) [Euclid](#)

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