

# Capacity of the range of a critical branching random walk

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**Abstract:** Let  $R_n$  be the range of a critical branching random walk with  $n$  particles on  $Z^d$ , which is the set of sites visited by a random walk indexed by a critical Galton–Watson tree conditioned on having exactly  $n$  vertices. For  $d \in \{3, 4, 5\}$ , we prove that  $n^{-\frac{d-2}{4}} \text{Cap}(R_n)$ , the renormalized capacity of  $R_n$ , converges in law to the capacity of the support of the integrated super-Brownian excursion. The proof relies on a study of the intersection probabilities between the critical branching random walk and an independent simple random walk on  $Z^d$ .

## References

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