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On the behavior of the population density of branching random walk in random environment.

ABSTRACT: We consider a branching process with spatial motion, branching random walks in random environment. In this talk, random environment means that offspring distributions are given as i.i.d. random variables in space and time.

We can define the population density which is a random probability measure on \mathbb{Z}^d when the process survives. If branching process satisfies some assumptions, then the properly scaled population density weakly converges to Gaussian measure, almost surely on survival event. On the other hand, localization happens if the environment is random enough.