

# Random walks, random media, branching

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Abstract:

## **Random walks, random media, branching**

This mini - course will discuss random walks in random environment on the  $d$ -dimensional lattice and introduce important tools as renewal techniques and regeneration times. While the case  $d = 1$  is well-understood, for  $d \geq 2$  even elementary questions as recurrence/transience or the validity of the central limit theorem can only be answered with partial results.

The course will also give an introduction to branching random walks and branching random walks in random environments. Here, instead of investigating the motion of one single particle, one studies a whole population which moves and reproduces as time goes on.

The emphasis will be on open problems and we will discuss various open conjectures along the course.