

# Discrete Potential Theory :

## Simple Random Walk on the integer lattice $\mathbb{Z}^d$

Winter Semester 2016 / 2017

1. Symmetric random walk.
2. Transition function.
3. Paths behavior at  $\infty$ .
4. Harmonic functions.
5. Potentials
6. Excessive functions
7. Capacity.
8. Massive sets: Wiener test.
9. Massive sets on the integer axis.

## References

1. E. Dynkin and A. Yushkievich, Theorems and Problems on Markov Processes, Nauka 1967
2. F. Spitzer, Principles of Random Walks, Princeton, 1964
3. G. Anastassiou and A. Bendikov, A discrete analog of Kac's formula Indian J. pure appl. Math. 38 (1997) 1367-1383, 1997.