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**Topics for Master Theses**

The Master thesis has to be written in LaTeX and in English. A very good understanding of stochastics, probability and stochastic processes is necessary. For the master thesis, it is expected a certain maturity and independence in approaching research articles.

**Programming and Simulation:** If you have good programming skills, there are several topics available that involve simulations (Python, R, or whatever you want) of random processes.

**Overview on Topics and Directions (some may be given):** concrete themes will be given in a personal meeting, according to the interests and qualifications of students.

1. Random graphs with applications to social networks ([Not available anymore!](#))
2. Cover time of random walks
3. Sandpile models ([Not available anymore!](#))
4. Frog models of random walks ([Not available anymore!](#))
5. Maker-Breaker games on random geometric graphs
6. Rotor models with simulations
7. Random walks on the Sierpinski gasket
8. Generating uniform spanning trees (Wilson algorithm)
9. Burning bijection and chip firing games
10. Information transmission models (routing of information at random)
11. Branching random walks
12. Random walks on Galton-Watson trees
13. SIR infection models
14. Quantum random walks ([Stochastics and Algebra, this thesis will be supervised together with Tim Netzer](#))

There are many other directions and possible topics, the list above is only for getting an idea in which research area do I move myself.