

MATH 5016 RANDOM WALKS, HEAT KERNELS AND APPLICATIONS SPRING 2023

SASHA TEPLYAEV

topic	number of lectures (<i>proposed</i>)
1. Random Walk and Discrete Heat Equation	5 January 17–31
2. Brownian Motion and the Heat Equation	2 February 2, 7
3. Martingales	2 February 9, 14
5. Intro to the general theory of semigroups and the heat kernels	1 February 16 Th
4. Fractal Dimension	1 February 21 Tue
6. Gaussian random fields: following Yimin Xiao (Hölder continuity and dimensions)	5 February 23 — The Spring Break
8. Applications to Machine Learning: following Gine and Koltchinskii (Empirical Graph Laplacian Approximation of Laplace-Beltrami Operators: Large Sample Results)	5 March 21 Tue — April 4 Tue
7. Applications to Machine Learning: following Raghav Venkatraman (The semi-supervised learning problem and Laplacian-learning)	5 April 6 Th — April 20 Th
9. Related research topics	2 April 25, 27 TuTh

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