MAST90112: Summary of Lectures 1–8

Lecture 1: Introduction and definition of Erdős-Rényi random graph

Lecture 2: First and second moment method, Paley-Zygmund inequality (Roch Section 2.2.1)

Lecture 3: Method of indicators, thresholds for cliques and subgraphs (Roch Section 2.2.2)

Lecture 4: Asymptotic "big-o" notation, threshold for connectivity and isolated vertices (Roch Section 2.2.4, vdHo Section 5.3.1)

Lecture 5: Connectivity in the critical window (Roch Section 2.2.4, vdHo Section 5.3.2)

Lecture 6: Total variation distance, equivalent definitions; coupling (Roch Section 4.2, vdHo Section 2.2)

Lecture 7: Roch problems 2.1, 2.11, 2.12: Poisson convergence at the threshold via the method of moments

Lecture 8: Total variation distance coupling definition; intro to concentration of Erdős-Rényi degree distribution (Roch Section 4.2, vdHo Sections 2.2 and 5.4)