

Graphs and Groups, Complexity and Convexity (G2C2-2024)

(Summer School, August 11-25, 2024, Hebei Normal University, Shijiazhuang, China)

Title: VC dimension and its applications

Lecturer: Hong Liu, Institute for Basic Science

Description: This series is an introduction to Vapnik–Chervonenkis dimension (VC dimension for short). VC dimension is a measure for combinatorial complexity of a family of sets, playing a pivotal role in learning theory and computational geometry. We will focus on its connections in discrete geometry and applications in extremal combinatorics, starting with the classics e.g. Sauer–Shelah lemma, its use in epsilon-net theorem etc. We aim to also survey some recent results utilizing VC dimension including topics like chi-boundedness in structural graph theory and chromatic thresholds in extremal graph theory.