

GROUPS AND AUTOMATA

博士生前沿短课

Speaker: Eduard Schesler
Karlsruhe Institute of Technology

Time: Sep. 9, Wednesday 15:00 - 17:00;
Sep. 16, Wednesday 15:00 - 17:00;
Sep. 18, Friday 15:00 - 17:00.

Venue: Room 102, SCMS

Zoom id: 646 617 8889

Passcode: 123456wu

Abstract:

Since their first appearance in the 1960s, finite-state automata groups have remained a constant source of groups with exotic and intriguing properties. Roughly speaking, an automata group consists of homeomorphisms of the Cantor set — viewed as the space of infinite words over a finite alphabet — described by finitely many rules that determine how words are processed letter by letter. In this mini-course, I will introduce the theory of automata groups and present some of its classical examples. I will also discuss the role of automata groups in the solutions of several classical problems in group theory: the construction of finitely generated infinite torsion groups (Burnside's problem), groups of intermediate growth (Milnor's problem), groups of non-uniform exponential growth (Gromov's problem), and finitely presented amenable groups that are not elementary amenable (Day's problem). If time permits, we will broaden the perspective by discussing self-similar groups and asynchronous automata, as well as cellular automata and their connections with amenability and soficity.