# Al@Bicocca seminar

You are all welcome to the next "Al@Bicocca spring flash workshop"

One day, three algebra seminars at Bicocca!

11.00 - 12.00: Matteo Tarocchi, Université Paris-Saclay

## Homeomorphism groups of basilica, rabbit and airplane Julia sets

**Abstract:** The airplane, the basilica and the Douady rabbit (and, more generally, rabbits with more than two ears) are well-known Julia sets of complex quadratic polynomials. Bruno Duchesne and I examined the groups of all homeomorphisms of such fractals and of all automorphisms of their laminations. In particular, we identified them with some kaleidoscopic group acting on dendrites or universal groups acting on biregular trees, realizing them as Polish permutation groups. From these identifications, we deduced algebraic, topological and geometric properties of these groups. This talk will present the identification of the groups and the results of this work.

13.30 - 14.30: Andreas Lorrain, Vrije Universiteit Brussel

### The Dehn function of Thompson's group *F* is quadratic

**Abstract:** One can describe groups via presentations using generators and relations. Every element in the group can then be described via a word in the given generators. In 1911, Dehn posed the following question: "Given a group with presentation, does there exist an algorithm that can determine if a word represents the identity?". It turns out that this depends on the group. If this question has a positive answer, one could ask 'how complex' is the algorithm? This can be measured by the Dehn function which was introduced by Gromov in 1987. In this talk we will formally introduce these concepts and discuss a result by Guba showing that the Dehn function of Thompson's group F is quadratic.

14.30 - 15.30: Davide Perego, Université de Genève

### Rational embedding of continuous automatic groups

**Abstract:** The interplay between abstract machines and groups has attracted significant attention over the past decades. Two notable examples of this connection are the class of automatic groups and the rational group defined by asynchronous transducers. In this talk, we will explore potential links between this class and this group. Particularly interesting examples of automatic groups include hyperbolic groups and CAT(0) cubulated groups, and we will offer further commentary on these special cases.



14 May 2025

Online venue: WebEx

University of Milano-Bicocca Via R. Cozzi 55 Milano (IT)

#### Organizers:

Marco Barbieri Marco Fusari Nicola Grittini Ettore Marmo Francesco Matucci Matteo Tarocchi

Website 🏶