Universität Konstanz

Expansions of groups by automatic sets: Choose-your-own-adventure

A talk by Dr. Alexi Block Gorman (Université Gustave Eiffel, France) as part of the KWIM lecture series.

Monday, 11th November 2024, 15:15 in F426.

Abstract. There are compelling and long-established connections between automata theory and model theory, particularly regarding expansions of the ordered group of integers by sets whose base-k representations are recognized by a finite-state automaton. We call such sets "k-automatic". Büchi automata are the natural extension of finite-state automata to a model of computation that accepts infinite-length inputs. We say a subset X of the reals is k-automatic if there is a Büchi automaton that accepts (one of) the base-k representations of every element of X, and rejects the base-k representations of each element in its complement. These sets often exhibit fractal-like behavior–e.g., the Cantor set is 3-automatic. In this talk we will look at the geometry of the collections of k-automatic sets over the ordered group of integers and over the real additive group.

FB Mathematik und Statistik

KWIM & Schwerpunkt Relle Geometrie und Algebra