



CENTRO DE  
**MATEMÁTICA**  
UNIVERSIDADE DO PORTO

## Seminar on Semigroups, Automata and Languages

Friday, May 2, 2025, 14:30

Online Zoom Meeting

**Herman Goulet-Ouellet**

Czech Technical University

### DENSITY OF RATIONAL LANGUAGES UNDER INVARIANT PROBABILITY MEASURES

In this talk, I will present recent results, obtained in collaboration with Valérie Berthé and Dominique Perrin, on the density of rational languages under shift invariant probability measures on spaces of two-sided infinite words. This notion of density generalizes a classical notion of density studied in formal languages and automata theory. The density of a language is defined as the limit in average (if it exists) of the probability that a word of a given length belongs to the language. I will explain how we establish the existence of densities for all rational languages under all shift invariant measures using tools from ergodic theory, and how the proof leads to explicit formulas under certain conditions.

This session will be held in the following Zoom link:

<https://fc-up-pt.zoom.us/j/85665346562>



Com o apoio do projeto UID/MAT/00144/2021