Bern-Fribourg Graduate Seminar

a seminar for Master and PhD students

Thursday 21$^{\text{st}}$ September, 2023: 17:15 - 18:00

Room 2.52, Perolles 08, Fribourg

Levi Salomon Ryffel

University of Bern

The combinatorics of curve systems on surfaces

Abstract

We study systems of simple closed curves on surfaces up to isotopy and so-called twist moves, given by applying the Dehn twist about one of the curves to another. Given two systems of curves, we aim to answer the question of whether they are related by a sequence of twist moves. This question is wide open, but we are (almost) able to describe the twist equivalence class of graphs homeomorphic to intervals using a construction from graph theory called line graphs. Inspired by the theory of Coxeter groups, we proceed to construct a twist invariant symmetric bilinear form over the field with two elements, and use it to give a linear bound on the number of twist equivalence classes among curve systems with a given number of curves. You do not need to have any previous knowledge in low-dimensional topology, graph theory, nor Coxeter groups in order to follow this talk.