

LMS UNDERGRADUATE SUMMER SCHOOL

SWANSEA UNIVERSITY, 12–23 JULY 2021

MINI-COURSE

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Arithmetic and combinatorics of Conway–Coxeter frieze patterns

Abstract

Continued fractions give an alternative way, comparing to the decimal system, to represent a real number as a sequence of integers. There are various approaches to this classical subject, and applications to many different areas of mathematics can be found in the literature. In this course we will develop a simple combinatorial approach based on such basic notions of combinatorics as triangulations of polygons. One of the main ingredients is the Farey graph of rational numbers. We will explore the connections with the beautiful and not very well-known notion of Conway–Coxeter frieze patterns.