

Ph.D. Course "Chromatic symmetric functions: recent advances"

Abstract

Chromatic symmetric functions were introduced in the nineties by Stanley as an extension of chromatic polynomials of graphs, and they immediately attracted a lot of attention as they were shown to be related to Hecke algebras and Kazhdan-Lusztig polynomials.

In the last few years, in an attempt to make progress on the so called Stanley-Stembridge conjecture (the most important open problem in this area, but probably also in the whole of algebraic combinatorics), a burst of activity led to the discovery of new interesting connections among chromatic symmetric functions, Hessenberg varieties and LLT polynomials.

In this course we present some of the most interesting developments that occurred in the last decade.

The prerequisites are little to none, so the course will be accessible to any student with mathematical maturity and curiosity.