HKU Algebra and Number Theory Seminar

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Run Run Shaw Building, room 210

Title: Partitions of algebraic numbers

Abstract: Integer partitions are at the intersection of additive number theory and combinatorics. They attracted the attention of great mathematicians such as Euler, Hardy, and Ramanujan, who discovered many beautiful partition identities. The notion of partition can be generalized by replacing positive integers with totally positive integral elements in a number field. Can we say something interesting about partitions in this setting?

The first part of the talk will be about partitions in real quadratic fields. I will describe an efficient algorithm for computing the number of partitions and discuss the properties of the partition function that have been discovered so far. In the second part, I will talk about another class of partitions, the so-called *m-ary partitions*, where each part is a power of a fixed integer $m \geq 2$. What happens when we replace m by an algebraic number? This provides a link with the theory of number systems (numeration).

The talk is based on joint work with V. Kala and D. Stern.