

Speaker: Mima Stanojkovski

Title: The geometry of stable lattices in Bruhat-Tits buildings

Abstract. Let K be a discretely valued field with ring of integers R and let d be a positive integer. Then the rank d free R -submodules of K^d (called R -lattices) are the 0-simplices of an infinite simplicial complex called a Bruhat-Tits building. If O is an order in the ring of $d \times d$ matrices over K , then the collection of lattices that are also O -modules (called O -lattices) is a non-empty, bounded and convex subset of the building. Determining what these subsets are is in general a difficult question.

I will report on joint work with Yassine El Maazouz, Gabriele Nebe, Marvin Hahn, and Bernd Sturmfels describing the geometric features of the set of O -lattices for some particular orders. If time permits, I will also define spherical codes in Bruhat-Tits buildings and show how these fit in this framework and how they give rise to codes of submodules over chain rings.