

Current Outlook on Geometry, Ergodic Theory and Number Theory

(COGENT)

21 March, 2022

Abstracts of Talks

School of Mathematics

Tata Institute of Fundamental Research

Abstracts

Monday, 21 March 2022 (13:30-14:30)

Speaker : Barak Weiss

Title : Geometric and arithmetic aspects of approximation vectors

I will describe several natural questions that arise in connection with the sequence of best approximation vectors. This sequence, which I will introduce in the talk, is a higher dimensional generalization of continued fraction convergents (which I will also discuss briefly). The questions involve the statistical behavior of certain observables, and the means to understand them involve a mix of number theory, ergodic theory, and elementary geometry. The talk will be based on joint work with Uri Shapira.

Monday, 21 March 2022 (15:00-16:00)

Speaker : Debanjan Nandi

Title : Harmonic measures on the Bowditch boundary of groups hyperbolic relative to virtually nilpotent subgroups

This talk will be about metric and measure structures on the Bowditch boundaries of relatively hyperbolic groups with virtually nilpotent parabolic subgroups, obtained using suitable random walks on certain graphs associated to the groups. I will discuss the drift and entropy associated to the walk and their relation to the dimension of the measure. The approach allows for obtaining the Bowditch boundary of such a group as the Martin boundary of the random walk, which is also the horofunction boundary for a suitable Green metric. The harmonic measure in this case is a conformal density corresponding to it.

Monday, 21 March 2022 (16:30-17:30)

Speaker : Ursula Hamenstädt

Title : Boundaries of mapping class groups

We discuss various notions of boundary for a countable finitely generated group and how such boundaries can be used to obtain information on the group. We then show that the mapping class group of a closed surface of genus at least 2 admits an explicit Z -structure (which is notion of boundary), and we conclude with open questions.