



The Abdus Salam
**International Centre
for Theoretical Physics**



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Analysis and geometry in $SL(2, \mathbb{Z})$ -dynamics

Abstract

In 1990s John H. Conway proposed "topographic" approach to describe the values of the binary quadratic forms, which can be applied also to the description of the celebrated Markov triples and, more generally, to any action of the modular group $PSL(2, \mathbb{Z})$. The growth of the orbits on the corresponding trivalent tree depends on the choice of the branch, which can be labelled by the points of real projective line.

I will discuss the function Λ on RP^1 , describing the growth of Markov numbers and of the spectral radius of $SL(2, \mathbb{Z})$ matrices on the Conway topograph. I will show that Λ has very special properties, using classical Markov's results from number theory and the link with hyperbolic geometry and Federer-Gromov stable norm.

The talk is based on joint works with K. Spalding and A. Sorrentino.