Cohomological equations for suspension flows over Vershik automorphisms

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Consider a finite oriented graph with fixed number of vertices, such that each vertex of this graph has both incoming and outgoing edges (multiple edges are permitted). An infinite sequence of such graphs can be represented as a graded graph Γ. We would like to a Markov compactum — the space X of all paths in Γ.

The subsets of paths with the same tail at the infinity form an asymptotic foliation on X. A linear ordering on the sets of paths starting from each vertex of Γ induces an ordering on the asymptotic foliation, linear on each leaf.

There is a natural map T defined on the asymptotic foliation of X, which is called a Vershik automorphism. The map T take each path in X to its successor with respect to the defined ordering.

Vershik automorphisms can be regarded as symbolic analogues of various dynamical systems of parabolic type. In particular, the interval exchange maps can be realized as Vershik automorphisms of Markov compacta via Rauzy-Veech induction.

The speaker obtained, following the works of G.Forni and Marmi-Moussa-Yoccoz on translation flows and interval exchange maps, the sufficient conditions for solvability of the cohomological equation for the Vershik automorphisms and respective suspension flows in terms of Hölder finitely-additive measures on the asymptotic foliations introduced by A. Bufetov.