Seminarium geometrów

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C^0-gap between entropy-zero Hamiltonians and autonomous diffeomorphisms of surfaces

Abstract: Let Σ be a surface equipped with an area form. There is a long standing open question by Katok, which, in particular, asks whether every entropy-zero Hamiltonian diffeomorphism of a surface lies in the C^0-closure of the set of integrable diffeomorphisms. A slightly weaker version of this question asks: "Does every entropy-zero Hamiltonian diffeomorphism of a surface lie in the C^0-closure of the set of autonomous diffeomorphisms?" In this talk I will answer in negative the later question. In particular, I will show that on a surface Σ the set of autonomous Hamiltonian diffeomorphisms is not C^0-dense in the set of entropy-zero Hamiltonians. Explicitly constructed examples of such Hamiltonians cannot be approximated by autonomous diffeomorphisms. (Joint with M. Khanevsky).