CORSO DI DOTTORATO IN FISICA
Ciclo di lezioni

Dr S. Soskin

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"Selected topics of PHYSICS OF HAMILTONIAN CHAOS and its applications. STOCHASTIC WEBS."

An informal mini-course of four lectures, mainly devoted to such highly counter-intuitive objects as areas of a phase space, arising for weakly perturbed harmonic and weakly nonlinear oscillations, in which a diffusion of a purely dynamic origin occurs. Despite a rather recent prediction - in the end of the 80th – the low-dimensional stochastic webs (LDSWs) have been already found in a variety of real systems.

Apart from a well-known material, the course includes recent original results and a discussion of open problems.

Lectures will be from 16:00 to 18:00 on Thursday:

LECTURE 1 gives an overview of the subject and considers details of the basic type of the LDSWs, called a cobweb. **29/11/2012 Room B1**

LECTURE 2 describes other types of the LDSWs. **6/12/2012 Room G1**

LECTURE 3 considers a width of the cobweb filaments and tells about a recent discovery of the finiteness of the cobweb sizes as well as about ways of their strong enlargement by little means. **13/12/2012 Room G1**

LECTURE 4 describes an exciting example of relevance of the LDSWs to real systems, namely a role of the cobweb in the quantum electron transport in nanoscale semiconductor superlattices. **20/12/2012 Room G1**

R.Mannella