



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

Koroška cesta 160
2000 Maribor, Slovenija

ODDELEK ZA FIZIKO

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Chaotic and regular motion in time-(in)dependent barred galaxies

Predaval bo **dr. Thanos (Athanasios) MANOS**, CAMTP, Univerza v Mariboru, Krekova 2, 2000 Maribor in Fakulteta za aplikativno naravoslovje, Univerza v Novi Gorici, Vipavska 11c, 5270 Ajdovščina

Predavanje bo trajalo 45 minut in bo v angleškem jeziku.

Abstract:

I will first give a brief introduction on what we call chaos in dynamical systems and more precisely in *Hamiltonian* (energy conservative) systems, together with a summary of a few methods broadly used for the detection of *chaotic and regular* motion in such systems. This distinction of different kinds of motion becomes crucial when we are trying to build adequate and realistic models, in order to understand better the dynamical evolution and formation (history) of the galaxies astronomers observe. Next, I will focus on *time-independent* galaxy models, i.e., constant model parameters, I will show how these parameters may enhance the global (in)stability and how by combining different methods one can distinguish between “strong chaotic motion” and “weak chaotic and regular”. Later on I will show how, by allowing the parameters to be *time-dependent*, a single orbit’s motion can be much more complicated, interplaying between chaotic and regular behavior at different times. Finally, I will discuss some preliminary results of my current work on the construction and study of more realistic time-dependent potentials which incorporate the time dependencies of all involved parameters (masses, ratios, pattern speed, etc...) of the different components (disk, halo and bar) from real data of N-body simulations.

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Predavanje poteka v tednu promocije mednarodne mobilnosti mladih (projekt Listen to the Youngle) in je hkrati preiskusno predavanje za podelitev naziva gostujoči strokovnjak.