

DYNAMICAL SYSTEMS AND CHAOS

Undergraduate Seminar No. 77638

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Syllabus

1. Fixed points and linear stability analysis
2. Nonlinear oscillator
3. Resonance in nonlinear oscillator
4. Auto-oscillations: limit cycle
5. Bifurcations in one and two dimensions
6. Chaos in the Henon-Heiles Hamiltonian
7. Kicked rotor and standard map
8. Logistic map and its relatives - 1
9. Logistic map and its relatives - 2
10. Fractals. Fractal dimension.
11. Chaotic attractors. Lyapunov exponents