

Homework Assignment 5

Due date: Sunday, June 21.

1. Draw the energy-momentum bifurcation diagram and the corresponding Fomenko graphs for your favorite integrable two-degree of freedom system. Conclude what is the effect of small perturbations on this system: what are the chaotic regions and what are the types of chaos you would expect for different energies and different regimes in the phase space. Supply some numerical simulations demonstrating these different behaviors.

Bonus: extend the above analysis to a 3 d.o.f. generalization of your system (e.g. by adding an oscillatory d.o.f., or a more challenging extension)