Complex analytic methods in the theory of real dynamical systems

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We will discuss the following two results. 1. Kupka-Smale property for generelized Henon mapping of the real plane. 2. Upper estimate of the number of limit cycles generated under a polynomial perturbation of a Hamiltonian vector field. Both problems are investigated by the use of complexification. Complete solution of the first problem and partial solution of the second one (mutual results with Buzzard, Hruska and with Glutsuk respectively) will be presented.