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CONNECTED SETS OF PERIODIC SOLUTIONS  
OF AUTONOMOUS HAMILTONIAN SYSTEMS

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Abstract. Let  $\Omega \subset \mathbb{R}^{2N}$  be open and let  $H \in C^2(\text{cl}(\Omega), \mathbb{R})$  be such that  $H'^{-1}(0) \cap \Omega = H'^{-1}(0) \cap \text{cl}(\Omega)$  is finite. The aim of my lecture is to present the global bifurcation theorem for  $2\pi$ -periodic solutions of autonomous Hamiltonian system of the form

$$\dot{x}(t) = \lambda JH'(x(t)), \tag{1}$$

where  $\lambda > 0$ .

More precisely speaking, we will formulate sufficient and necessary conditions for the existence of connected sets of non-stationary  $2\pi$ -periodic solutions of the system (1) bifurcating from the set  $H'^{-1}(0) \times (0, +\infty) \subset C_{2\pi}([0, 2\pi], \Omega) \times (0, +\infty)$ .

To illustrate the abstract results we will apply them to some celestial mechanics inspired Hamiltonian systems.

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