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Bifurcations of Periodic Solutions in Hamiltonian Systems

We consider Hamiltonian systems of 2 and $1\frac{1}{2}$ degrees of freedom depending on parameters. More precisely, we focus on localization of bifurcation points in families of periodic solutions using a geometrical method. General scheme will be illustrated by several examples: periodically forced mathematical pendulum, Beletsky equation for oscillations of a satellite in the plane of its elliptic orbit etc. Special attention will be paid to a particular non-integrable case of the general n -body problem: the restricted problem of three bodies.