

PERIODIC ORBITS IN THE PLANETARY N-BODY PROBLEM

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In 2004 appeared the first complete proof of Arnold's theorem [1] on the existence of KAM tori for the planetary $(n + 1)$ -body problem, [4]; recently, a new proof has been given, [2], where, in particular, full torsion of the secular system has been established. We shall discuss how from the non-vanishing of the torsion one can derive, following Conley and Zehnder, [3], the existence of periodic orbits with longer and longer periods cumulating on KAM tori.

Keywords: N-body problem, KAM theory, resonances in celestial mechanics, Kolmogorov's normal forms, periodic orbits, planetary systems

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