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**Section:**

## 9. Ordinary Differential Equations and Dynamical Systems

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**Aboundance of Lower Dimensional Invariant Tori in Hamiltonian Systems**

Consider a Hamiltonian system with $n$ degrees of freedom ($n \geq e3$). Assume it is of KAM type, $H(p,q) = N(p) + P(p,q)$, i. e. $N$ is the main part and $P$ is a small perturbation. Also the Hessian of $N$ is nondegenerate. If $\omega = \frac{\partial N}{\partial p}|_{p_o}$ satisfies one resonance condition $\langle I, \omega\rangle = 0$, ($I \in \mathbb{Z}^n$), then the invariant torus of unperturbed system $p = p_o$ has a foliation into a family of $(n-1)$ dimensional tori. Assume the frequence of the flow on these lower dimensional tori are of diophantine. We show that there are infinitely many $(n-1)$-dimensional invariant tori emerging from the break down of the resonance torus under small perturbations. Generically, these tori are in infinitely many different homological classes.

References:

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