

Original Articles

关于广义Hamilton系统

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摘要 该文的目的是在更一般的情况下,讨论Hamilton系统的一些基本性质的推广.首先将辛群推广到一般N群 G_N ,且证明了其具有一定的相似性质. G_N 的特殊性质是作为Lie群 $\dim(G_N) \geq 1$.研究了它的Lie代数 \mathfrak{g}_N 的必然性质.所得结果用于讨论保结构系统,该系统将Hamilton系统保辛形式的性质,推广到某一动力系统的保域共变张量.该结果提供了应用辛算法于一类保结构系统的理论依据.

关键词 [辛代数](#) [辛算法](#)

分类号

On generalized Hamiltonian systems

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Abstract The purpose of this paper is to explore an extension of some fundamental properties of the Hamiltonian systems to a more general case. We first extend symplectic group to a general N-group, G_N , and prove that it has certain similar properties. A particular property of G_N is that as a Lie group $\dim(G_N) \geq 1$. Certain properties of its Lie-algebra \mathfrak{g}_N are investigated. The results obtained are used to investigate the structure-preserving systems, which generalize the property of symplectic form preserving of Hamiltonian system to a covariant tensor field preserving of certain dynamic systems. The results provide a theoretical benchmark of applying symplectic algorithm to a considerably larger class of structure-preserving systems.

Key words [Hamiltonian systems](#) [Hamiltonian control systems](#)

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