



## 论文摘要

中南大学学报(自然科学版)

ZHONGNAN DAXUE XUEBAO(ZIRAN KEXUE BAN)

Vol.33 No.5 Oct.2002

[PDF全文下载] [全文在线阅读]

文章编号: 1005-9792(2002)05-0522-04

### 一种复杂机电系统的全局建模方法

唐华平, 钟 掘

(中南大学机电工程学院, 湖南长沙 410083)

**摘 要:** 根据复杂机电动力学系统的特点, 提出了一种约束函数递推组集法的复杂机电系统全局建模方法. 首先, 根据复杂机电系统的拓扑结构和约旦变分原理, 建立机械系统的单体动力学模型, 应用递推组集技术建立树形复杂机电系统的动力学模型; 其次, 建立非树形复杂机械系统约束函数, 解除非树形系统约束, 利用树形系统的建模方法建立非树形系统的动力学模型; 最后, 建立机电耦合约束函数, 利用约束函数与机电系统方程解约, 建立复杂机电系统的全局模型.

**关键字:** 机电耦合; 多体系统; 动力学

### A method for global modeling of complex electromechanical system

TANGHua-ping,ZHONG Jue

(College of Mechanical and Electrical Engineering, Central South University, Changsha 410083, China)

**Abstract:**To establish a modeling for complex electromechanical system, a dynamic equations of single machine body is derived based on characteristics of complex system and the Jordain's principle, and the dynamic equations of tree multi-body of complex mechatronic system is derived by means of recursive technique. The restriction function of complex machine non-tree system is given, the restriction of non-tree system is raveled, and the dynamic modeling of non-tree system is given based on the method of modeling tree system. The restriction function of the mechanismcoupled electricity is given, the restriction is raveled using restriction function and electricity equation, and the global modeling of complex mechatronic system is given.

**Key words:**mechanism coupled electricity; multibody system; dynamics

## 有色金属在线

## 中国有色金属权威知识平台

版权所有：《中南大学学报(自然科学版、英文版)》编辑部

地 址：湖南省长沙市中南大学 邮编： 410083

电 话： 0731-88879765 传真： 0731-88877727

电子邮箱： zngdxb@mail.csu.edu.cn 湘ICP备09001153号