

<<经典力学与天体力学中的数学问题>>

图书基本信息

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前言

要使我国的数学事业更好地发展起来，需要数学家淡泊名利并付出更艰苦地努力。

另一方面，我们也要从客观上为数学家创造更有利的发展数学事业的外部环境，这主要是加强对数学事业的支持与投资力度，使数学家有较好的工作与生活条件，其中也包括改善与加强数学的出版工作。

从出版方面来讲，除了较好较快地出版我们自己的成果外，引进国外的先进出版物无疑也是十分重要与必不可少的。

从数学来说，施普林格（Springer）出版社至今仍然是世界上最具权威的出版社。

科学出版社影印一批他们出版的好的新书，使我国广大数学家能以较低的价格购买，特别是在边远地区工作的数学家能普遍见到这些书，无疑是对推动我国数学的科研与教学十分有益的事。

这次科学出版社购买了版权，一次影印了23本施普林格出版社出版的数学书，就是一件好事，也是值得继续做下去的事情。

大体上分一下，这23本书中，包括基础数学书5本，应用数学书6本与计算数学书12本，其中有些书也具有交叉性质。

这些书都是很新的，2000年以后出版的占绝大部分，共计16本，其余的也是1990年以后出版的。

这些书可以使读者较快地了解数学某方面的前沿，例如基础数学中的数论、代数与拓扑三本，都是由该领域大数学家编著的“数学百科全书”的分册。

对从事这方面研究的数学家了解该领域的前沿与全貌很有帮助。

按照学科的特点，基础数学类的书以“经典”为主，应用和计算数学类的书以“前沿”为主。

这些书的作者多数是国际知名的大数学家，例如《拓扑学》一书的作者诺维科夫是俄罗斯科学院的院士，曾获“菲尔兹奖”和“沃尔夫数学奖”。

这些大数学家的著作无疑将会对我国的科研人员起到非常好的指导作用。

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内容概要

This work describes the fundamental principles, problems, and methods of classical mechanics. The main attention is devoted to the mathematical side of the subject. The authors have endeavored to give an exposition stressing the working apparatus of classical mechanics. The book is significantly expanded compared to the previous edition. The authors have added two chapters on the variational principles and methods of classical mechanics as well as on tensor invariants of equations of dynamics. Moreover, various other sections have been revised, added or expanded. The main purpose of the book is to acquaint the reader with classical mechanics as a whole, in both its classical and its contemporary aspects. The book addresses all mathematicians, physicists and engineers.

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作者：（俄罗斯）阿诺德（Vladimir I. Arnold）等

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章节摘录

插图：This problem has many common features with the classical n -body problem in Euclidean space. However, there are also essential differences. First, the two-body problem on S^3 proves to be non-integrable: there are not sufficiently many first integrals for its solution and its orbits look quite complicated (see [137]). Here the main difficulty is related to the fact that the Galileo-Newton law of inertia does not hold: the centre of mass of gravitating points no longer moves along an arc of a great circle. Furthermore, as in the classical case, binary collisions admit regularization. However, the question whether the generalized Sundman theorem is valid for the three-body problem in spaces of constant curvature remains open. This question essentially reduces to the problem of elimination of triple collisions. Recall that in the ordinary three-body problem the absence of simultaneous collisions is guaranteed by a non-zero constant value of the angular momentum of the system of n points with respect to their centre of mass (Theorem 2.3). Of interest is the problem of finding partial solutions for n gravitating bodies in spaces of constant curvature (similar to the classical solutions of Euler and Lagrange). Results in this direction can be found in the book [137]. The restricted three-body problem was studied in this book: relative equilibria were found and the Hill regions were constructed.

编辑推荐

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