<<偏微分方程讲义>>

图书基本信息

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前言

In the mid-twentieth century the theory of partial differential equations wasconsidered the summit of mathematics, both because of the difficulty andsignificance of the problems it solved and because it came into existence laterthan most areas of mathematics. Nowadays many are inclined to look disparagingly at this remarkable areaof mathematics as an old-fashioned art of juggling inequalities or as a testingground for applications of functional analysis. Courses in this subject haveeven disappeared from the obligatory program of many universities (for ex-ample, in Paris). Moreover, such remarkable textbooks as the classical three-volume work of Goursat have been removed as superfluous from the library ofthe University of Paris-7 (and only through my own intervention was it possi-ble to save them, along with the lectures of Klein, Picard, Hermite, Darboux, Jordan) The cause of this degeneration of an important general mathematical the-ory into an endless stream of papers bearing titles like "On a property ofa solution of a boundary-value problem tor an equation" is most likely theattempt to create a unified, all-encompassing, superabstract "theory of every-thing."

The principal source of partial differential equations is found in thecontinuous-medium models of mathematical and theoretical physics. Attemptsto extend the remarkable achievements of mathematical physics to systemsthat match its models only formally lead to complicated theories that aredifficult to visualize as a whole, just as attempts to extend the geometry ofsecond-order surfaces and the algebra of quadratic forms to objects of higherdegrees quickly leads to the detritus of algebraic geometry with its discourag-ing hierarchy of complicated degeneracies and answers that can be computedonly theoretically. The situation is even worse in the theory of partial differential equations：here the difficulties of conunutative algebraic geometry are inextricably boundup with noncomnutative differential algebra, in addition to which the topo-logical and analytic problems that arise arc profoundly nontrivial.

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内容概要

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