<<几何分析手册>>

图书基本信息

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前言

The marriage of geometry and analysis, in particular non-linear differentialequations, has been very fruitful. An early deep application of geometric analysisis the celebrated solution by Shing-Tung Yau of the Calabi conjecture in 1976. Infact, Yau together with many of his collaborators developed important techniquesin geometric analysis in order to solve the Calabi conjecture. Besides solvingmany open problems in algebraic geometry such as the Severi conjecture, thecharacterization of complex projective varieties, and characterization of certainShimura varieties, the Calabi-Yau manifolds also provide the basic building blocksin the superstring theory model bf the universe. Geometric analysis has alsobeen crucial in solving many outstanding problems in low dimensional topology, for example, the Smith conjecture, and the positive mass conjecture in generalrelativity. Geometric analysis has been intensively studied and highly developed since1970s, and it is becoming an indispensable tool for understanding many partsof mathematics. Its success also brings with it the difficulty for the uninitiatedto appreciate its breadth and depth. In order to introduce both beginners andnon-experts to this fascinating subject, we have decided to edit this handbook ofgeometric analysis. Each article is written by a leading expert in the field and willserve as both an introduction to and a survey of the topics under discussion. Thehandbook of geometric analysis is divided into several parts, and this volume isthe third part. Shing-Tung Yau has been crucial to many stages of the development of geo-metric analysis. Indeed , his work has played an important role in bringing thewell-deserved global recognition by the whole mathematicM sciences communityto the field of geometric analysis. In view of this, we would like to dedicate thishandbook of geometric analysis to Shing-Tung Yau on the occasion of his sixtiethbirthday.

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内容概要

Geometric Analysis combines differential equations and differential geometry. An important aspect is to solve geometric problems by studying differential equations. Besides some known linear differential operators such as the Laplace operator, many differential equations arising from differential geometry are nonlinear. A particularly important example is the Monge-Ampere equation. Applications to geometric problems have also motivated new methods and techniques in differential equations. The field of geometric analysis is broad and has had many striking applications. This handbook of geometric analysis provides introductions to and surveys of important topics in geometric analysis and their applications to related fields which is intend to be referred by graduate students and researchers in related areas.

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编辑推荐

The launch of this Advanced Lectures in Mathematics series is aimed at keepingmathematicians informed of the latest developments in mathematics， as well asto aid in the learning of new mathematical topics by students all over the world.Each volume consists of either an expository monograph or a collection of signifi-cant introductions to important topics. This series emphasizes the history andsources of motivation for the topics under discussion， and also gives an overviewof the current status of research in each particular field. These volumes are thefirst source to which people will turn in order to learn new subjects and to dis-cover the latest results of many cutting-edge fields in mathematics.

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