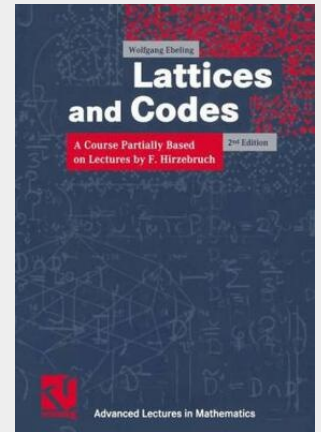


Lattices and Codes

A Course Partially Based on Lectures by F. Hirzebruch

In the 2nd edition numerous corrections have been made. More basic material has been included to make the text even more self-contained. A new section on the automorphism group of the Leech lattice has been added. Some hints to new results have been incorporated. With several new exercises. The purpose of coding theory is the design of efficient systems for the transmission of information. The mathematical treatment leads to certain finite structures: the error-correcting codes. Surprisingly problems which are interesting for the design of codes turn out to be closely related to problems studied partly earlier and independently in pure mathematics. In this book, examples of such connections are presented. The relation between lattices studied in number theory and geometry and error-correcting codes is discussed. The book provides at the same time an introduction to the theory of integral lattices and modular forms and to coding theory. In the 2nd edition numerous corrections have been made. More basic material has been included to make the text even more self-contained. A new section on the automorphism group of the Leech lattice has been added. Some hints to new results have been incorporated. Finally, several new exercises have been added.

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