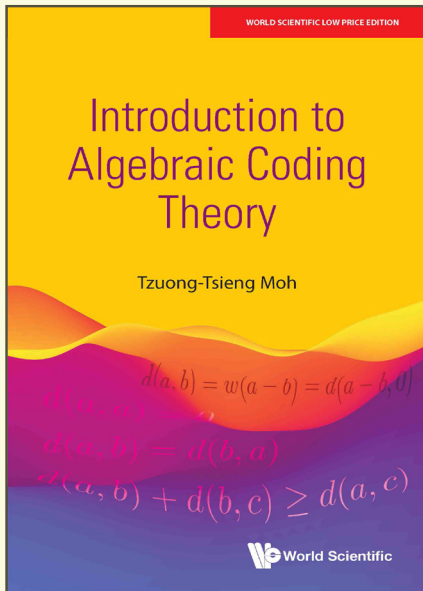


Introduction to Algebraic Coding Theory



By **Tzuong-Tsieng Moh**
(Purdue University, USA)

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ABOUT THE BOOK

In this age of technology where messages are transmitted in sequences of 0's and 1's through space, errors can occur due to noisy channels. Thus, self-correcting code is vital to eradicate these errors when the number of errors is small. It is widely used in industry for a variety of applications including e-mail, telephone, and remote sensing (for example, photographs of Mars).

An expert in algebra and algebraic geometry, Tzuong-Tsieng Moh covers many essential aspects of algebraic coding theory in this book, such as elementary algebraic coding theories, the mathematical theory of vector spaces and linear algebras behind them, various rings and associated coding theories, a fast decoding method, useful parts of algebraic geometry and geometric coding theories.

This book is accessible to advanced undergraduate students, graduate students, coding theorists and algebraic geometers.

READERSHIP

Advanced college students, graduate students, working coding theorists, working algebraic geometers.

CONTENTS

Part I: Vector Space Codes:

- Linear Codes

Part II: Ring Codes:

- Rings
- Ring Codes

Part III: Algebraic Geometry:

- Algebraic Geometry

Part IV: Algebraic Geometric Codes:

- Algebraic Curve Goppa Codes
- Decoding the Geometric Goppa Codes

Appendices:

- Convolution Codes
- Sphere-Packing Problem and Weight Enumerators
- Other Important Coding and Decoding Methods
- Berlekamp's Decoding Algorithm

ABOUT THE AUTHOR

T. T. Moh is an Emeritus Professor of Mathematics at Purdue University, specializing in algebra and algebraic geometry. He received his PhD in mathematics from Purdue University in 1969 and became an Assistant Professor there afterward. He also spent time at the Institute for Advanced Study in Princeton and was on the faculty of University of Minnesota before rejoining Purdue University in 1976.

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