



# Codes on Algebraic Curves

SERGUEI A. STEPANOV

Springer

1st  
edition

1999, XIII, 350 p.

## Printed book

Hardcover

## Printed book

Hardcover

ISBN 978-0-306-46144-6

£ 149,99 | CHF 187,00 | 169,99 € |

186,99 € (A) | 181,89 € (D)

Available

## Discount group

Science (SC)

## Product category

Contributed volume

## Other renditions

Softcover

ISBN 978-1-4613-7167-0

## Mathematics : Algebra

Stepanov, Serguei A.

# Codes on Algebraic Curves

This is a self-contained introduction to algebraic curves over finite fields and geometric Goppa codes. There are four main divisions in the book. The first is a brief exposition of basic concepts and facts of the theory of error-correcting codes (Part I). The second is a complete presentation of the theory of algebraic curves, especially the curves defined over finite fields (Part II). The third is a detailed description of the theory of classical modular curves and their reduction modulo a prime number (Part III). The fourth (and basic) is the construction of geometric Goppa codes and the production of asymptotically good linear codes coming from algebraic curves over finite fields (Part IV). The theory of geometric Goppa codes is a fascinating topic where two extremes meet: the highly abstract and deep theory of algebraic (specifically modular) curves over finite fields and the very concrete problems in the engineering of information transmission. At the present time there are two essentially different ways to produce asymptotically good codes coming from algebraic curves over a finite field with an extremely large number of rational points. The first way, developed by M. A. Tsfasman, S. G. Vladut and Th. Zink [210], is rather difficult and assumes a serious acquaintance with the theory of modular curves and their reduction modulo a prime number. The second way, proposed recently by A.

Order online at [springer.com/booksellers](https://www.springer.com/booksellers)

Springer Nature Customer Service Center GmbH

Customer Service

Tiergartenstrasse 15-17

69121 Heidelberg

Germany

T: +49 (0)6221 345-4301

[row-booksellers@springernature.com](mailto:row-booksellers@springernature.com)



ISBN 978-0-306-46144-6 / BIC: PBF / SPRINGER NATURE: SCM11000

Prices and other details are subject to change without notice. All errors and omissions excepted. Americas: Tax will be added where applicable. Canadian residents please add PST, QST or GST. Please add \$5.00 for shipping one book and \$ 1.00 for each additional book. Outside the US and Canada add \$ 10.00 for first book, \$5.00 for each additional book. If an order cannot be fulfilled within 90 days, payment will be refunded upon request. Prices are payable in US currency or its equivalent.

Part of **SPRINGER NATURE**