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**Geometry of algebraic curves. Volume I.** (English) [Zbl 0559.14017](#)

*Grundlehren der mathematischen Wissenschaften*, 267. New York etc.: Springer-Verlag. XVI, 386 p. DM 128.00 (1985).

The main theme of the book under review is the study of special linear series on algebraic curves (a divisor  $D$  on a smooth curve  $C$  is called special if  $h^1(C, \mathcal{O}(D)) = 0$ ). The first volume is devoted to linear series on a fixed curve and includes both classical results and new achievements in this field. The central topic is the Brill-Noether theory as developed in recent papers by Kempf, Kleiman, Laksov, Fulton and Lazarsfeld. The authors also give a detailed account of the theory of Castelnuovo curves, the analysis of the ideal of a canonical curve performed by Enriques, Babbage and Petri, the geometric theory of Riemann's theta function according to Kempf, Andreotti's proof of the Torelli theorem for curves, the Andreotti-Mayer theory, and some other subjects.

Before the publication of the book under review, most of its material was dispersed among numerous research articles, and it is very convenient to get it collected together. - One of the most attractive features of the book is the presence of hundreds of exercises divided into series each of which usually represents the contents of a research article. The exercises form an indispensable supplement to the main body of the book.

The second volume will deal with deformation theory and moduli spaces of curves.

Reviewer: [F.L.Zak](#)

**MSC:**

- [14Hxx](#) Curves in algebraic geometry
- [14-02](#) Research exposition (monographs, survey articles) pertaining to algebraic geometry
- [14C20](#) Divisors, linear systems, invertible sheaves
- [14K25](#) Theta functions and abelian varieties
- [14C22](#) Picard groups
- [14H45](#) Special algebraic curves and curves of low genus

Cited in <b>33</b> Reviews Cited in <b>751</b> Documents
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**Keywords:**

special divisor; special linear series on algebraic curves; Brill-Noether theory; Castelnuovo curves; theta function; Torelli theorem for curves