

Introduction to Coding Theory

It is gratifying that this textbook is still sufficiently popular to warrant a third edition. I have used the opportunity to improve and enlarge the book. When the second edition was prepared, only two pages on algebraic geometry codes were added. These have now been removed and replaced by a relatively long chapter on this subject. Although it is still only an introduction, the chapter requires more mathematical background of the reader than the remainder of this book. One of the very interesting recent developments concerns binary codes defined by using codes over the alphabet $\mathbb{F}_4$. There is so much interest in this area that a chapter on the essentials was added. Knowledge of this chapter will allow the reader to study recent literature on $\mathbb{F}_4$ -codes. Furthermore, some material has been added that appeared in my Springer Lecture Notes 201, but was not included in earlier editions of this book, e. g. Generalized Reed-Solomon Codes and Generalized Reed-Muller Codes. In Chapter 2, a section on "Coding Gain" (the engineer's justification for using error-correcting codes) was added. For the author, preparing this third edition was a most welcome return to mathematics after seven years of administration. For valuable discussions on the new material, I thank C.P.I.M. Baggen, I. M. Duursma, H.D.L. Hollmann, H. C. A. van Tilborg, and R. M. Wilson. A special word of thanks to R. A. Pellikaan for his assistance with Chapter 10.

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J.H. van Lint

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