4. M. E. H. Ismail, M. E. Muldoon, "Inequalities and monotonicity properties for Gamma and q-Gamma functions", pp. 309–323.
5. J. Letessier, G. Valent, J. Wimp, "Some differential equations satisfied by hypergeometric functions", pp. 371–381.
6. K.-C. Ng, R. Wong, "On a singular perturbation problem", pp. 477–484.
7. F. W. J. Olver, "The generalized exponential integral", pp. 497–510.
8. L. Pasquini, "On the computation of the zeros of the Bessel polynomials", pp. 511–534.
9. N. M. Temme, "Computational aspects of incomplete Gamma functions with large complex parameters", pp. 551–562.

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36[11Txx, 94A60, 94B60]—*Introduction to finite fields and their applications*, 2nd ed., by Rudolf Lidl and Harald Niederreiter, Cambridge Univ. Press, Cambridge, 1994, xii+416 pp., $23\frac{1}{2}$ cm, \$44.95

This is the second edition of the well-known 1986 text by Lidl and Niederreiter. The latter is, in turn, based on their 1983 monograph in volume 20 of the Encyclopedia of Mathematics and its Applications.

The second edition hardly differs from the first one: the authors have updated the bibliography and have extended their historical and bibliographical notes. The main text remains unaltered: a discussion of the theory of finite fields with some applications to coding theory and cryptography. The approach is easygoing, with a student reader in mind: the algebraic prerequisites are minimal and each chapter contains a lot of exercises.

The book contains ten chapters. The first one contains a rather general algebraic introduction. Chapters 2 and 3 contain the basic theory. Chapters 4, 5, 6 and 7 are devoted to factorization algorithms for polynomials, exponential sums, linear recurrences and designs, respectively. Chapters 8 and 9 contain the applications to coding theory and cryptography. Finally, Chapter 10 contains some tables of finite fields and irreducible polynomials over finite fields.

The authors introduce Gaussian sums, linearized polynomials etc., but they do not discuss the deeper properties of finite fields and polynomial equations over finite fields. They do not even state the main consequences of the work of P. Deligne or even A. Weil, on varieties over finite fields. This is a pity, but perhaps understandable, since a full discussion of their results in a book of this sort seems quite difficult.

On the other hand, many of the recent results on finite field theory obtained by researchers in computational number theory and computer algebra are quite accessible and can easily be explained to anyone aware of the contents of Chapters 2 and 3 of this book. The authors have not included these new results in their second edition, but have left the book as it was: an easygoing introduction to the theory of finite fields.

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