Preface

The classic "*Limit Distributions for sums of Independent Random Variables*" by B. V. Gnedenko and A. N. Kolmogorov was published in 1949. Since then the theory of summation of independent variables has developed rapidly. Today a summing-up of the studies in this area, and their results, would require many volumes. The monograph by I. A. Ibragimov and Yu. V. Linnik, "*Independent and Stationarily Connected Variables*", which appeared in 1965, contains an exposition of the contemporary state of the theory of the summation of independent identically distributed random variables. The present book borders on that of Ibragimov and Linnik, sharing only a few common areas. Its main focus is on sums of independent but not necessarily identically distributed random variables. It nevertheless includes a number of the most recent results relating to sums of independent and identically distributed variables. Together with limit theorems, it presents many probabilistic inequalities for sums of an arbitrary number of independent variables. The last two chapters deal with the laws of large numbers and the law of the iterated logarithm. These questions were not treated in *Ibragimov and Linnik*; *Gnedenko and Kolmogorov* deals only with theorems on the weak law of large numbers.

Thus this book may be taken as complementary to the book by Ibragimov and Linnik. I do not, however, assume that the reader is familiar with the latter, nor with the monograph by Gnedenko and Kolmogorov, which has long since become a bibliographical rarity. I therefore include a number of classical results of the theory of the summation of independent random variables. The greater part of the text is nevertheless given over to material which has not appeared in monographs on probability theory either here or abroad.

The book omits from its scope such broad subjects as multidimensional limit theorems, boundary problems for sums of independent random variables, limit theorems for sums of a random number of independent terms and some others.

Each chapter is accompanied by a supplement in which results that border on the basic text are stated. The text itself does not depend on

the supplements. The bibliography is not complete; it includes only material cited in the text.

It is assumed that the reader is familiar with the fundamentals of probability theory, to the extent of the material contained in Chapters 1—8 of “*Kurs Teorii Veroyatnostei*” by B. V. Gnedenko (A Course in Probability Theory).¹ A summary of the essential results is given in Chapter I.

I hope that this book will be useful to specialists in probability theory and to students concerned with the theory of summation of independent random variables.

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I take advantage of the occasion, to express my warmest thanks to Professor Yu. V. Linnik and Professor J. Neyman for their consideration and support. I owe to them the inspiration for the writing of this book.

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¹ Gnedenko, B. V.: The Theory of Probability, tr. B. D. Seckler, New York: Chelsea 1962.