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Titolo	Limit Theorems for Multi-Indexed Sums of Random Variables [[electronic resource] /] / by Oleg Klesov
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Soggetti	Probabilities Statistics Physics Probability Theory and Stochastic Processes Statistical Theory and Methods Mathematical Methods in Physics
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Notation and auxiliary results -- 2. Maximal inequalities for multiple sums -- 3. Weak convergence of multiple sums -- 4. Weak law of large numbers for multiple sums -- 5. Almost sure convergence for multiple series -- 6. Boundedness of multiple series -- 7. Rate of convergence of multiple sums -- 8. Strong law of large numbers for independent non-identically distributed random variables -- 9. Strong law of large numbers for independent identically distributed random variables -- 10. Law of the iterated logarithm -- 11. Renewal theorem for random walks with multidimensional time -- 12. Existence of moments of the supremum of multiple sums and the strong law of large numbers -- 13. Complete convergence.
Sommario/riassunto	Presenting the first unified treatment of limit theorems for multiple sums of independent random variables, this volume fills an important gap in the field. Several new results are introduced, even in the classical setting, as well as some new approaches that are simpler than those already established in the literature. In particular, new proofs of the strong law of large numbers and the Hajek-Renyi inequality are

detailed. Applications of the described theory include Gibbs fields, spin glasses, polymer models, image analysis and random shapes. Limit theorems form the backbone of probability theory and statistical theory alike. The theory of multiple sums of random variables is a direct generalization of the classical study of limit theorems, whose importance and wide application in science is unquestionable. However, to date, the subject of multiple sums has only been treated in journals. The results described in this book will be of interest to advanced undergraduates, graduate students and researchers who work on limit theorems in probability theory, the statistical analysis of random fields, as well as in the field of random sets or stochastic geometry. The central topic is also important for statistical theory, developing statistical inferences for random fields, and also has applications to the sciences, including physics and chemistry.
