

Limit Laws for the Increments of Stochastic Processes

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Abstract. With a series of results and lots of stimulating ideas, Ulrich Stadtmüller has been contributing so far to a broad variety of fields in mathematics, e.g., according to MathSciNet, to approximations and expansions, Fourier analysis, functional analysis, functions of a complex variable, information and communication, circuits, integral transforms, operational calculus, real functions, sequences, series, summability, and, last but not least, to probability theory, stochastic processes and statistics. Since we have been sharing a number of research interests over the past four decades, it is our pleasure, on the occasion of his special anniversary, to take the opportunity for reviewing some selected works along these joint interests, naturally from a somewhat personal and subjective point of view. Topics to be covered among others include the classical Erdős-Rényi-Shepp laws of large numbers and their analogues for renewal processes, large deviations and convergence rates, an extended Erdős-Rényi law and a related conjecture of Révész, strong laws for the increments of random fields, and functional versions of Erdős-Rényi-Shepp laws, e.g., for partial sum processes or processes with independent increments. Finally, we shall also discuss some recent work concerning functional Erdős-Rényi laws for renewal processes.

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