

Schoutens, Wim

Stochastic processes and orthogonal polynomials. (English) Zbl 0960.60076

Lecture Notes in Statistics. 146. New York, NY: Springer. xiii, 163 p. (2000).

In this textbook the author presents the Askey scheme and orthogonal polynomials in general, presents all Markov processes needed in this work, discusses the relationship between birth and death processes and orthogonal polynomials, introduces a link between the broad class of Sheffer polynomials and Lévy processes of sums of i.i.d. variables, shows that Krawtchouk polynomials play an important role in the stochastic (integration) theory with respect to the binomial process, brings the classical orthogonal polynomials into relationship with Stein's method for Pearson's and Ord's classes of distributions, gives a chaotic representation for a general Lévy process, and recalls results concerning Karlin and McGregor's relation and extends these by considering doubly limiting conditional distributions.

Reviewer: [G.Oprişan \(Bucureşti\)](#)

MSC:

[60J99](#) Markov processes

[60-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to probability theory

[60H05](#) Stochastic integrals

Cited in 1 Review
Cited in 116 Documents

Keywords:

[Askey scheme](#); [orthogonal polynomials](#); [Markov processes](#); [Sheffer systems](#); [stochastic integral](#); [Stein approximation](#)