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Titolo: *Random processes through non-local operators: analytical versus stochastic approaches*

Abstract: We describe two different (in some cases, alternative) approaches to introducing non-local operators in random models: the analytic approach versus the stochastic one. In the first case, fractional derivatives, in either the classical or generalized sense, appear in place of integer-order derivatives in the partial differential equations that govern the random processes. In the second case, on the other hand, non-local differential and integral operators are introduced directly into the definition of the generalized random process in infinite-dimensional spaces (with various types of measures). Both approaches can lead to models of anomalous diffusions and processes with memory.