

12. Aurel STAN (Ohio State University)

Three-dimensional 1-Meixner random vectors

Abstract

We review first the definition of quantum and semi-quantum operators of a finite family of random variables, having finite moments of all orders. After that, the d -dimensional n -Meixner random vectors are defined using n nested commutators involving the semi-quantum operators. We then focus our attention on the 1-Meixner random vectors and find a system of differential equations satisfied by their Laplace transforms. We give some necessary conditions for this system to have a non-zero solution. In dimension $d = 2$, it can be shown that the two components of a 1-Meixner random vector, can be reduced via an injective affine transformation to two linearly independent Gamma or Gaussian random variables. Finally, in dimension $d = 3$, we present an example of a 1-Meixner random vector whose components cannot be reduced via any injective affine transformation to three independent classic Meixner random variables. This is a joint work with Florin Catrina from St. John's University, New York, U.S.A.