Combinatorial and analytic properties of the n-dimensional Hermite polynomials

Plamen Simeonov

University of Houston-Downtown

Email: simeonovp@uhd.edu

We investigate some combinatorial and analytic properties of the n-dimensional Hermite polynomials introduced by Hermite in the late 19-th century. We derive combinatorial interpretations and recurrence relations for these polynomials. We also establish a new linear generating function and a Kibble-Slepian formula for the n-dimensional Hermite polynomials which generalize the Kibble-Slepian formula for the univariate Hermite polynomials and the Poisson kernel (Mehler formula) for the n-dimensional Hermite polynomials. This talk is based on a joint work with Professor Mourad Ismail.