Holonomic gradient method for multivariate distribution theory

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Abstract

In 2011 we developed a new methodology "holonomic gradient method" (HGM, [3]), which is useful for evaluation of probabilities and normalizing constants of multivariate probability distributions. Since then we have applied HGM to various problems, including distribution of roots of Wishart matrices([1],[2]), orthant probabilities and some distributional problems related to wireless communication([4]). In this talk we give an introduction of HGM and present applications of the method for studying multivariate distribution theory.

Keywords

Algebraic statistics, Gröbner basis, Ordinary differential equation.

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