

From Continuous to Discrete Estimates in Numerical Analysis :
An Applitation of the Geometry of Numbers

Luis Miguel Pardo

Depto. de Matemática, Estadística y Computación, Universidad de Cantabria, Santander, España
`pardo@matesco.unican.es`

In this talk I exhibit a new technique to transfer Continuous Probability estimates of Numerical Analysis into uniform distribution Discrete Estimates. The interest of this technique is mainly based on questions related to the computational behaviour of Numerical Analysis Operators as Projective Newton method. This new technique is mainly inspired in an almost lost and elementary idea of H. Davenport, combined with upper bounds estimates for the number of connected components of semi-algebraic sets by Milnor–Thom–Oleinik–Petrovski–Warren). The main outcome states that the average size of approximate zeros of systems of homogeneous multivariate polynomial equations is polynomial in the number of variables.