

Sampling real polynomials

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In this talk, based in joint work with Robert Berman, we discuss the problem sampling multivariate real polynomials of large degree in a general framework where the polynomials are defined on an affine real algebraic variety equipped with a weighted measure. We will show that a necessary condition for sampling, is that the asymptotic density of the sampling points is greater than the density of the corresponding weighted equilibrium measure, as defined in pluripotential theory. This result thus generalizes the well-known Landau type results for sampling in the Paley-Wiener space, where the corresponding critical density corresponds to the Nyquist rate, as well as the classical results saying that the zeros of orthogonal polynomials become equidistributed with respect to the logarithmic equilibrium measure, as the degree tends to infinity.