

Title for the seminar: Sampling polynomials in algebraic varieties.

Abstract: I will present a joint work with Robert Berman where we consider the problem of 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. It is shown that a necessary condition for sampling, in this general setting, is that the asymptotic density of 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 on the torus, where the corresponding critical density corresponds to the Nyquist rate, as well as the classical result saying that zeroes of orthogonal polynomials become equidistributed with respect to the logarithmic equilibrium measure as the degree tends to infinity.