

**Date:** March 14, 2024

**Time:** 15:00 CET

**Room:** UB T2 (Universitat de Barcelona)

---

## Local and global statistics for determinantal point processes on $\mathbb{C}^d$

Leslie Molag

Universidad Carlos III

We consider determinantal point processes on  $d$ -complex-dimensional space. These are characterized by a correlation kernel (Bergman kernel) constructed with complex multivariate orthogonal polynomials. For  $d=1$  they describe the eigenvalues of random normal matrices. It is well-known (and recently proved in generality) that the boundary of the limiting spectrum of eigenvalues exhibits a universal error function behavior as the matrix dimension becomes large. We show that such error function behavior extends to higher dimension  $d$ , for a particular “elliptic” subclass, and expect its universality to extend to more general higher dimensional models. For  $d=1$  it is known that this boundary behavior yields a non-negligible contribution to the variance of linear statistics. We end the talk with some preliminary results for linear statistics of smooth functions and indicator functions.