Department of Mathematics, BGU

BGU Probability and Ergodic Theory (PET) seminar

On *Thursday, January ,9 2020*

At *11:10 − 12:00*

In *101-*

Aron Wennman (Tel-Aviv University)

will talk about

The hole event for Gaussian Entire Functions and a curious emergence of quadrature domains

Abstract: The Gaussian Entire Function (GEF) is the random Taylor series, whose coefficients are independent centered complex Gaussians such that the n-th coefficient has variance 1/n!. The zero set of the GEF is a random point process in the plane, which is invariant with respect to isometries. The topic of this talk is the zero distribution of the GEF conditioned on the event that no zero lies in a given (large) region.

If the hole is a disk of radius r, Ghosh and Nishry observed a striking feature. As r tends to infinity, the density of particles vanishes not only on the given hole, but also on an annulus beyond the (rescaled) hole — a forbidden region emerges. Here, we study this problem for general simply connected holes, and find a curious connection to quadrature domains and a seemingly novel type of free boundary problem.

This reports on joint work in progress with Alon Nishry.