Title : The two-dimensional Coulomb gas with spectral gaps

Abstract:

The talk will focus around some new results relating to fluctuations of smooth linear statistics of two-dimensional Coulomb gas ensembles, where the droplet is disconnected, i.e., it has some "spectral gaps". The particles which fall near the boundary of the gap come with an additional uncertainty, since there are several disjoint boundary components to choose from. For a class of centrosymmetric model ensembles, we quantify this uncertainty in terms of the Jacobi theta function as well as a discrete Gaussian distribution. If time permits, I will also discuss a related large n expansion of the partition function. Joint work with Christophe Charlier and Joakim Cronvall (both from Lund University).