Speaker: Ilias ZADIK (New York University, USA)

The All-or-Nothing Phenomenon: the Case of Sparse Tensor PCA

In this talk, we will discuss about a new sharp statistical phase transition, known as the all-or-nothing (AoN) phenomenon. The AoN phenomenon concerns the fact that in certain sparse inference models the asymptotic minimum mean squared error exhibits a sharp phase transition at some critical threshold; below the threshold, it is "trivial" (i.e. not beating the random guess), and above it, it is zero. This is in sharp contrast with multiple well-studied dense inference models such as Wigner PCA or the stochastic block model where the transition is either known or proven to be continuous. In this talk, we will focus on the AoN phenomenon in the context of sparse tensor PCA. This is joint work with Jonathan Niles-Weed.