1139-62-458 **Victor-Emmanuel Brunel*** (vebrunel@mit.edu). *The principal minor assignment problem and its application to learning determinantal point processes.*

The principal minor assignment (PMA) problem consists of finding all matrices with a prescribed list of principal minors, in given class. More precisely, if $\mathcal{A} \subseteq \mathbb{C}^{N\times N}$ is a class of matrices (e.g., real symmetric matrices, Hermitian matrices, etc.) and $(p_J)_{J\subseteq[N],J\neq\emptyset} \subseteq \mathbb{C}$, the PMA problem consists of finding all matrices $K \in \mathcal{A}$ with $det(K_J) = p_J$ for all $J \subseteq [N], J \neq \emptyset$. One part of this talk will be focused on solving the PMA at both a theoretical and a computational level. Namely, for some specific classes $\mathcal{A}$, we describe all the solutions to the PMA problem and we ask how to find one of them with as few queries of the prescribed list as possible.

This problem is closely related to that of identifiability and estimation of the parameters of discrete determinantal point processes, which have recently gained a lot of attention in the machine learning and statistics literature, as an alternative to Ising models. In this talk, we will review the definition of these processes and use the PMA problem in order to characterize the identifiability of their parameters and design algorithms to learn them in a statistical sense. (Received February 18, 2018)