LUDOVICK BOUTHAT, Université Laval
The Geometry of the Birkhoff Polytope

The geometry of the Birkhoff polytope, i.e., the compact convex set of all $n \times n$ doubly stochastic matrices, has been an active subject of research. While its faces, edges and facets as well as its volume have been intensely studied, other geometric characteristics such as the center and radius were left off, despite their natural uses in some areas of mathematics. In this talk, we present recent results on the Chebyshev center and the Chebyshev radius of the Birkhoff polytope associated with the metrics induced by the operator norms from ℓ_n^p to ℓ_n^p and by the Schatten p-norms, both for the range $1 \leq p \leq \infty$. While studying these properties, an intrinsic connection to the minimal trace, which naturally appears in the assignment problem, is also established.