Jorge Antezana

Title: A geometric approach to the angular metrics and its connection with optimal paths in the unitary group

Abstract: The angular metrics have been introduced by Li, Qiu and Zhang. The aim of these metrics is to measure the distance between two subspaces, a question that naturally appears in many practical applications. Their definition involves the so called principal angles, and the so called gauge symmetric functions (g.s.f.). If the considered g.s.f. is the euclidean norm, then the corresponding angular metric can be characterized as the Finsler distance in the Grassmann manifold defined by some natural Riemannian structure. So, a natural question is whether or not the other angular metrics also come from a Finsler structure in the Grassmann manifold. This leads to the problem of optimal path in the manifold (Lie group) of unitary matrices. In this talk, after recalling briefly the definition of angular metrics, we will discuss its connection with Finsler structures, in the Grassmann manifold, as well as in the Lie group of unitary matrices. Then, we will discuss the problem of finding metric geodesics in those settings. Finally, we will say a few words about some generalizations to the infinite dimension setting.