Title: **Subdifferential of the supremum function: walking between continuous and non-continuous settings**

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Abstrtact: In this talk we present general formulas for the subdifferential of the pointwise supremum of convex functions, which cover and unify both the compact continuous and the non-compact non-continuous settings. From the non-continuous to the continuous setting, we proceed by a compactification-based approach which leads us to problems having compact index sets and upper semi-continuously indexed mappings. This process gives rise to new characterizations of the subdifferential of the supremum by means of the new regularized functions and the enlarged compact index set. In the opposite direction, we rewrite the subdifferential of these new regularized functions by using the original data, also leading us to new results on the subdifferential of the supremum. We shall conclude by giving a couple of applications, the first one concerning the nonconvex Fenchel duality, and the second one establishing Fritz-John and KKT optimality conditions in convex semi- infinite programming.