MEASURING THE STABILITY. A PARADIGMATIC PROBLEM IN OPTIMIZATION

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The increasing interest of the optimizers for stability analysis in the last decades obeys both to its beautiful theory and the appealing practical applications and algorithmic repercussions. In this talk we focus mainly on linear programming problems, and particularly on Lipschitz-type properties of the feasible set mapping, the optimal value function, and the optimal set (argmin) mapping. Roughly speaking, we aim to compute or estimate the rate of variation of feasible/optimal solutions with respect to the problem's data perturbations. Some of these properties are local (as Aubin property and calmness), as far as they concentrate around a certain solution nearby a given parameter. Some other properties (such as Hoffman stability) are of a global nature, since they tackle global variations of the whole solution set. We emphasize the fact that the quantitative stability measures provided in this talk are mainly point-based; thus they are conceptually implementable in practice.

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