Optimality Conditions for Linear-Convex Optimal Control Problems with Mixed Constraints

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ABSTRACT

In this talk we provide sufficient optimality conditions for convex optimal control problems with mixed constraints. On one hand, the data delimiting the problem we consider is continuous and jointly convex on the state and control variables, but on the other hand, smoothness on the data of the problem, on the candidate to minimizer and/or on the multipliers are not needed. We also show that, under a suitable interior feasibility condition, the optimality conditions are necessary as well and can be written as a Maximum Principle in normal form. The novelty of this last part is that no additional regularity conditions on the mixed constraints, such as the Mangasarian-Fromovitz constraint qualification or the bounded slope condition, are required. A discussion about the regularity of the costate is also provided.

This is a joint work with *Jorge Becerril* from *Instituto Tecnológico y de Estudios Superiores de Monterrey.*